



**MIDWEST
GENERATION EME, LLC**

An EDISON INTERNATIONALSM Company

REQUEST FOR PROPOSALS

**No. 2 & 3 ASH POND LINER REPLACEMENT AND MISCELLANEOUS
WORK- FALL OF 2008**

SPECIFICATION NO. WC08 – ASHPONDLINER

**MIDWEST GENERATION EME, LLC
WILL COUNTY GENERATING STATION
529 EAST 135TH STREET
ROMEOWILLE, IL 60441**

**Issued by: Midwest Generation EME, LLC
Will County Generating Station
529 East 135th Street
Romeoville, IL 60446**

Issue:	<u>No.</u>	<u>Date</u>	<u>Status</u>
	A	09-08-08	Issued for Bid

MWG13-15_29165



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* These drawings will be provided by Mabco who is the selected subcontractor to perform the No. 3 overflow weir replacement. The drawings are not included in this bid package.

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**MIDWEST
GENERATION EME, LLC**

An EDISON INTERNATIONAL Company

**PREBID MEETING
REQUEST FOR PROPOSALS
SEPTEMBER 8, 2008**

**NO. 2 & 3 ASH POND LINER REPLACEMENT AND MISCELLANEOUS
WORK**

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**MIDWEST GENERATION EME, LLC
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GENERAL INFORMATION

- No. 2 & 3 Ash Pond Linear Bid Meeting to be held on Monday, September 8, 2008.
- Bids will be due on Tuesday, September 23, 2008.
- Award will be no later than Friday, September 26, 2008.
- No. 3 Ash Pond Linear replacement work to begin upon verbal award of project
- No. 2 Ash Pond Linear replacement work to begin in Spring of 2009.
- Bids will be for both No. 3 and 2 Ash Pond Linear Replacement Work.
- Project will include the management of subcontractor Mabco who will be replacing the No. 3 overflow pond weir. Any work associated with the overflow pond weir replacement will be completed by Mabco.

No. 2 and 3 Ash Pond Liner Scope of Work

As shown in Section 00001, Specification Data Sheet, the project activities will consist of removal of the existing Poz-o-Pac liner (as needed), preparing the subgrade, which would include grading, excavation, transport, stockpiling and disposal (as needed), installation of marker posts and guard rails, excavation of anchor trench, installation of white, 60-mil HDPE geomembrane and surrounding geotextile, placement of warning layer and cushion layer materials and performing a leak location survey of the geomembrane. The manufacturer of the geomembrane as well as the contractor for the installation of the geomembrane have been selected and are outlined in Section 02600.

It should be noted that any removal of material that will have a final destination as landfill (i.e., removed existing Poz-o-Pac liner) will be decided by Owner. Any required analytical testing of potential landfilled material will be covered by Owner. Costs associated with handling and transporting material to landfill shall be provided by Contractor at time to be determined later and do not need to be included in this bid package. Disposal of any material will be in a manner compliant with Federal, State and Local regulatory requirements.

Project will also include the management of subcontractor Mabco who will be replacing the existing overflow weir on the Number 3 Ash pond. This management would also include the coordination of any excavation, grading or other activities with the work required for the weir replacement. The cost associated with the overflow weir replacement will be provided by Mabco. Any changes to the proposed amount for the weir replacement should be discussed with Owner and Mabco.

Contact for Mabco for the cost estimate of the overflow weir replacement is as follows:

Mark Bronkhorst
Mabco, Inc.
924 Newton Avenue
Glen Ellyn, IL 60137
630-790-9755

Bidders must also request copies of the following drawings from Mabco in regards to the No. 3 overflow weir replacement project:

Drawing #18-869D1-C26 Ash Ponds, Units 1,2,3,4 Effluent Troughs Sheet 1
Drawing #18-86 9D1-C27 Ash Ponds, Units 1,2,3,4 Effluent Troughs Sheet 2

These drawings are not included in this bid package.

Listed below are the individual technical specification sections of the project that are included in this bid package. Refer to each of these sections for the detailed work outline.

- See Section 01050 for a scope of the field engineering and surveying work associated with the project
- See Table 1 for a list of documentation surveys required for the project
- See Section 01300 for a scope of the general requirements, submittal format and submittal procedures required for the project
- See Table 2 for a list of the submittals required for the project
- See Section 01400 for the construction quality assurance and control requirements and the roles of the contractor, engineer and owner of the project
- See Section 01700 for the procedures and records required to finalize and closeout the project
- See Section 02300 for the requirements of the various earthwork that is required of the project including
- See Section 02600 for the requirements of the installation of the 60-mil High Density Polyethylene (HDPE) geomembrane. This section includes the geomembrane supplier as well as the required installer.

PURCHASER'S REPRESENTATIVE(S)

The following personnel represent the Purchaser in the subject matter indicated.
Contact information is as listed below.

Purchaser's Project Manager
(Station Project Manager)
FAX: 815-372-4585

Blake E. Connolly 815-372-4634
email: bcconnolly@mwgen.com

Purchaser's Technical Representative
(Environmental Specialist)
FAX: 815-372-4565

Beckie Maddox 815-372-4589
email: rmaddox@mwgen.com

Purchaser's Procurement Representative
FAX: 815-372-4565

Gene Petrovits 815-372-4558
email: epetrovits@mwgen.com

Purchaser's Engineering Representative
Natural Resource Technology, Inc.
FAX: 262-523-9001

Heather M. Simon 262-522-1207
email: hsimon@naturalrt.com

CONTRACTOR DELIVERABLES

- Bidder's to provide the desired date to begin staging excavation and other heavy equipment on-site.
- Bidder's to provide written notice of construction start date at least 5 days prior to beginning site activities.
- Refer to Section 01050 and Table 1 of the technical specification for the field engineering surveys required for the project.
- Refer to Section 01300 and Table 2 of the technical specifications for the submittals required for this project
- Refer to Section 02600 for the requirements of the HDPE Geomembrane deliverables. Provide written confirmation from the geomembrane supplier that the liner has been ordered and what the proposed delivery date is estimated as.
- Provide written confirmation to the Owner and engineer that the geomembrane installer has been scheduled and what the installation date is proposed as.
- Bidder's to identify any Material Lead Time / Lead Time of any Sub-Contracted work that can not be accomplished with a September 26, 2008 Award Date.
- Deliverables from today's meeting are due by noon on **Tuesday, September 23 2008**. Bids to be provided to site in sealed envelope per Section 6.2 of the Instruction to Bidders documentation.

END OF DOCUMENT

1. INTRODUCTORY INFORMATION

- 1.1 Project Title: Nos. 2 & 3 Ash Pond Liner Replacement and Miscellaneous Work
- 1.2 Purchaser: Midwest Generation, LLC
- 1.3 Work Location: Will County Generating Station
 529 East 135th Street
 Romeoville, IL 60446

2 SCOPE OF WORK

The Contractor shall provide material procurement and fabrication, materials, equipment, demolition, and construction services (including supervision, labor, tools, services, personal and consumable supplies, etc.), testing services and complete documentation as required by the specifications included in this bid package and other information disseminated during the bid meeting/walk down. The Work is broken down and described in the following Scope of Services and generally includes the following:

2.1 SCOPE OF SERVICES

- Section 001050 Documentation Surveys
- Section 02300 Earthwork
- Section 02600 HDPE Geomembrane Installation

The work will also include the management of the subcontractor Mabco during the replacement of the No. 3 overflow weir.

2.2 Pre-employment Drug Testing

Purchaser will require enforcement of pre-employment drug testing on all employees. The Bidder shall account for this testing in his pricing. Additionally, all labor will be required to be tested for any Time and Material Work. Contractor shall provide a Unit Price per Drug Test for all emergent Time & Material Work. Unit price shall include price of test and man-hours required for the testing.

2.3 Time and Material:

Purchaser may require Contractor to procure materials at Purchaser's direction for a portion of this work. This may include, but is not limited to the handling and transporting of materials removed from the ash ponds to a designated facility selected by Owner.

- 2.5 Purchaser is dedicated to maintain the cleanliness of the work area and requires each Bidder to specify the total labor hours that will be committed exclusively to keeping the work area and plant clean.

- NOTES:
1. General requirements for the performance of various phases of the Work are given in this Specification and the Drawings/technical documents referred to herein. Contractor shall be governed by these requirements. If for any reason it is necessary to deviate therefrom, written permission shall first be obtained from Purchaser's Representative.
 2. Contractor shall perform the Work in a manner consistent with recognized good practice for Power Generation Service and in accordance with such detailed instructions as may be submitted by Purchaser.
 3. Contractor shall be held responsible and bear any and all expense for rework and/or additional work required due to Contractor's acts of commission or omission.
 4. Contractor shall be solely responsible for advising the Purchaser in writing of any conflicts between the specifications and Contractor's design, including performance and levels of quality.

3.0 WORK SCHEDULE

- 3.1 Contractor shall perform the related Work in accordance with the following strategy for No.3 Ash Pond :**

The Scopes of Work to be performed are considered "Proprietary Information" of Midwest Generation, EME, LLC. Bidders are not to provide or share this information with any additional Companies, including Contractors, Independent Power Producers, and any potential competitor of Midwest Generation, EME, LLC, except as required to obtain materials or subcontracts to bid or perform the Work.

A. MOBILIZATION

At the discretion of the Contractor, anytime on or after verbal award of contract sometime after Tuesday September 23, 2008.

**B. EXCAVATION OF No. 3
 ASH POND AND SUBGRADE PREP**

Can begin as soon as equipment is mobilized. Contingent upon initial pond survey being completed

**C. GEOMEMBRANE HANDLING AND
 INSTALLATION**

Per Section 02600. Installation to begin upon receipt of the membrane from manufacturer. Installation is weather dependent.

DIVISION 1
GENERAL REQUIREMENTS

SECTION 01011
SUMMARY OF WORK

D. PLACEMENT OF CUSHION, WARNING LAYERS AND RIPRAP	Upon completion of geomembrane installation and seaming
E. LEAK LOCATION OF GEOMEMBRANE	Upon completion of cushion, warning layer and riprap placement

The schedule for the work for the No. 2 Ash Pond will be determined in the early spring of 2009.

3.2 Work Shifts:

A. Contractor's Supervisory and Technical Personnel may work other shift schedules and durations as approved by Purchaser. However, Contractor, in performing the Work, shall provide appropriate supervision and adequately man and equip the job and work such hours and days as may be necessary to meet the Schedule. Contractor shall have sufficient infrastructure to complete any other Emergent Work on schedule requested by Purchaser, i.e. valves, scaffolding, etc. Contractor shall bear all costs that may be incurred in procuring and/or maintaining the necessary labor force and equipment for the Work, including, but not limited to, such items as overtime, bonus or premium time, transportation and living expenses. No overtime will be worked unless preapproved by Purchaser's Representative.

In the event Contractor determines it necessary to schedule his work force more than the normal work week, or to change his Work schedule, Contractor shall consult in advance with the Purchaser's Representative to make certain that the proposed schedule will not conflict with other work being carried on and shall obtain written approval of the revised schedule prior to making the change.

3.3 Contractor shall take into consideration that work by other contractors or by Purchaser's personnel may be in progress at or near the site of the Work. Contractor shall cooperate with Purchaser in scheduling the performance of the Work in such a manner as to avoid interference with any other work being performed at the Premises. This will include cooperating with and managing the No. 3 overflow weir replacement that will be completed by Mabco.

3.4 Schedule Incentives:

No Schedule Incentives to be included in this Contract.

4.0 SITE REPRESENTATION

As a minimum, Contractor shall supply and include in his pricing the following staff personnel for this Project. The Project Manager and Project Superintendents shall be full time salaried employees of the Contractor.

A. Project Manager/Superintendent - Shall be responsible for the complete administration of the Contract for the Contractor. The primary responsibility

shall be coordination between Contractor's home office support and field operations and with interface with the Purchaser.

- B. Purchaser will not incur any Supervision, General Foreman, Foreman, Union Steward, Tool room man, Technician, Quality Assurance Representative, Welding Engineer, Home or Field Office Clerical, etc. charges for Emergent Time and Material, Cost Plus, or Out of Scope work unless the Work is performed outside the Contractor's established work schedule, or in the case of increased staffing, an additional foreman is required. Purchaser will not accept any charges for the above unless authorized by the Purchaser's Representative. Emergent Out of Scope, Time and Material and Cost Plus work is to be completed in the established time frame of the Contract unless the Purchaser's Representative grants an extension.

5.0 PURCHASER'S REPRESENTATIVE(S)

The following personnel represent the Purchaser in the subject matter indicated. Contact information will be available at the pre-bid meeting.

Purchaser's Technical Representative (Station Project Manager)	Blake Connolly email: bconnolly@mwgen.com FAX: 815-372-4565	815-372-4634
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Purchaser's Technical Representative (Environmental Specialist)	Beckie Maddox email: rmaddox@mwgen.com FAX: 815-372-4565	815-372-4589
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Purchaser's Procurement Representative -	Gene Petrovits email: epetrovits@mwgen.com FAX: 815-372-4565	815-372-4558
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- 5.1 The Purchaser reserves the right to change the Representative assignments, or to add additional Representatives as deemed necessary.

END OF SECTION 01011

SECTION 01016 GENERAL RULES AND REQUIREMENTS1.0 INDEX

1.1 Unless specified elsewhere in the Contract documents, Contractor shall perform the Work in accordance with the requirements contained in this Section. The following issues are addressed:

- 1.0 Index
- 2.0 Scheduling and Progress Reporting
- 3.0 Field Reports, Documentation, and Meetings
- 4.0 Site Representation and Labor Union Requirements
- 5.0 Control and Charge of Construction
- 6.0 Extras and Contract Changes
- 7.0 Material and Equipment by Contractor
- 8.0 Material and Equipment by Purchaser
- 9.0 Quality, Standards, and Codes
- 10.0 Existing Conditions
- 11.0 Protection of Existing Facilities
- 12.0 Purchaser's Rules and Regulations
- 13.0 Purchaser's Facilities
- 14.0 Contractor's Storage and Temporary Buildings
- 15.0 Contractor's Facilities
- 16.0 Contractor's Tools and Equipment
- 17.0 Safety and Fitness for Duty Testing Requirements
- 18.0 Asbestos/Lead Notification and Asbestos Free Insulation
- 19.0 Clean-Up
- 20.0 Public Relations
- 21.0 Permits

2.0 SCHEDULING AND PROGRESS REPORTING

- 2.1 Contractor shall provide the necessary supervision, labor, materials, tools, equipment, and consumable and personal supplies in sufficient quantity and ample time; do all the necessary expediting; and so manage the operations in order to complete the Work and additions on schedule.
- A. The specified schedule dates shall be considered firm milestones. The Contractor shall be prepared to adjust resources or work schedules to meet these dates.
 - B. The current construction schedule is the original specified schedule modified only by subsequent changes which have been mutually agreed to between the Contractor and the Purchaser.
 - C. Contractor shall complete all specified work within the current construction schedule.
 - D. Contractor shall complete all emergent and additional Work within the current construction schedule.
 - E. Contractor shall inform the Purchaser in writing (FCR Form) immediately of any emergent work or delay beyond his control for which he will request a schedule change. The report shall state the number of people affected, reason for the delay, estimated duration of the delay, and the proposed resolution.

- 2.2 Contractor shall take into consideration that work by other contractors or by Purchaser's personnel may be in progress at or near the site of the Work. Contractor shall cooperate with Purchaser in scheduling the performance of the Work in such a manner as to avoid interference with any other work being performed. The cooperation of Contractor with Station personnel is mandatory. All coordination with Others shall be through the Purchaser's Representative.
- 2.3 Proposal Schedule-
- A. Bidder shall submit with his Proposal a preliminary project schedule in bar chart form. The Schedule shall cover a period from contract award through completion of all work. It shall include: major milestones (See Attachment II), activities of sufficient detail to illustrate the Bidder's understanding of the Work, the dates that the Bidder anticipates starting and completing each activity, any interface points with the Purchaser or other contractors, shift plans (days/week and hours/day), and man hours required to perform each activity.
- 2.4 Construction Schedule-
- A. Within 5 days after award of an order, Contractor shall prepare and submit a detailed construction schedule of the Work. The level of detail will be agreed to between the Contractor and the Purchaser. The schedule shall contain a specific line for each design, engineering, material procurement, site deliverable, construction/erection, testing, or interfacing activity. Each activity shall, as a minimum, indicate the estimated duration, start and end dates, logic ties, resource, estimated man-hours, and estimated quantities. Contractor should first consult with the Purchaser as to the general approach that will be utilized so as to minimize re-work. Contractor shall conform to Purchaser's activity coding system.
- B. Contractor shall meet with Purchaser to review and revise the submitted construction schedule to the satisfaction of the Purchaser. Contractor shall then revise and re-submit the schedule. This schedule will be integrated with other schedules by the Purchaser.
- C. During the course of the Work, Contractor shall submit schedule updates which have been modified to reflect changes in the work (additional work, deleted work, milestone changes, logic changes, recovery plans, etc).
- D. The activities listed in the schedule will be used to report expended man hours. New activities which reflect new work must be authorized by the Purchaser.
- 2.5 Integrated Schedule-
- A. Purchaser may elect to add the Contractor's Construction Schedule to an Integrated Schedule which combines schedules from multiple work groups and is maintained by the Purchaser or designee.
- B. Contractor shall become knowledgeable with the Integrated Schedule and the work it represents. Contractor is responsible for ensuring that his Construction Schedule is accurately reflected on the Integrated Schedule. Contractor shall, in a timely manner, advise the Purchaser where conflicts occur between his Work and work by others.
- 2.6 When requested, Contractor shall submit to the Purchaser a written schedule covering his personnel's normal working hours. The schedule shall include the following: Start Time, Time expected in Work Area, Permissible Break Period and Time away from Work Area (start and finish), Permissible Lunch Period and Time away from Work Area (start and finish), Time expected to Leave Work Area at end of Shift, and Actual Quitting Time.

- 2.7 In the event Contractor determines it necessary to change his Work schedule or normal work hours, he shall consult in advance with the Purchaser to make certain that the proposed schedule will not conflict with other work being carried on or site rules and shall obtain written approval of the revised schedule prior to making the change.
- 2.8 Contractor shall notify the Purchaser well in advance of all required station equipment outages, construction tests, hold point inspections, OEM inspections, or any other activities which require action from others.
- 2.9 Schedule status reporting-
- A. If requested on a daily basis during the course of the Work, Contractor shall submit to the Purchaser, in a format acceptable to the Purchaser, schedule status information which includes as a minimum for each activity: start dates, completion dates, percent complete, remaining duration, installed quantities, changes in logic, changes in estimated man-hours, and changes in estimated quantities.
 - B. Actual man-hours will be reported on a daily basis with man-hours reported against each activity.
- 3.0 **FIELD REPORTS, DOCUMENTATION, AND MEETINGS**
- 3.1 After contract award, Contractor shall attend a Pre-Job Start Meeting at the site to review Work plans and exchange necessary information with the Purchaser's Representative.
- 3.2 Contractor shall submit to the Purchaser documentation, reports, and other information as indicated in this or other specification sections or other contract documents. The documentation includes, but is not limited to:
- A. Daily Force Reports
 - 1. Contractor shall provide Daily Force Reports which are to be submitted within the first 1/2 hour of each shift. These are to report the Contractor's plans for the day including the expected number of Contractor's workers (by Craft), the Work to be performed, subcontractors, significant material deliveries, construction tests, NDE, and other special information.
 - B. Time & Material Tickets (Out of Scope / Emergent Work)
 - 1. Contractor shall provide Time & Material Tickets which are to be submitted daily. These are to report the actual man-hours for the Contractor and his sub-contractor(s) expended against Work activities for each shift. The data shall be for all Work performed on site and may be requested for Work performed off site.
 Additionally, Time & Material Tickets shall record the actual quantities of materials, major tools and equipment, or other non-labor cost items. The Contractor to provide adequate back-up documentation to substantiate quantities and costs. Subcontractor input shall be submitted with similar detail.
 Each Time & Material Ticket shall include a running total which shall equal the final billing amount.
 - 2. The Time & Material Tickets shall be prepared in accordance with instructions from Purchaser's Representative.
 - C. Safety Information and Performance Data
 - 1. Provide the Purchaser with the names of emergency medical and rescue providers.

2. The Contractor shall verbally report all injuries of Contractor's personnel to the Purchaser immediately after each incident. Contractor shall also insure that 'For Cause' Drug Sampling has been completed if Off-Site Medical attention is required.
 3. Submit a copy of OSHA Form 45 or comparable form to the Purchaser within 24 hours of the incident. The Contractor is also expected to classify the accident as either OSHA recordable or not and what action will be taken to avoid recurring accidents.
 4. For each previous period (day or week at the discretion of the Purchaser), submit a summary of safety data which includes: man hours expended (Contractor's plus sub-contractor's), on-site first aid cases, soft tissue injuries, eye injuries, off-site treatment cases, lost time accidents, and OSHA recordable accidents.
 5. Inform the Purchaser of any changes to previously reported data.
- D. Material or Equipment documentation-
1. Bills of Materials
 2. Equipment O&M manuals
 3. Equipment spare parts list
 4. Equipment lubrication list
- E. Quality documentation
- F. Special notifications
1. Contractor shall provide Purchaser with timely notification of special or unusual circumstances such as starting operations at the site under the Contract (two days minimum), changing Work schedule, changing employee's daily schedule, construction testing, equipment outages, start of excavation Work, discovery of defective materials or Work, discovery of non-conforming conditions (existing, new Work, or Work by others), and routing instructions for delivery of materials and equipment.
- G. Other reports, data, or information requested by the Purchaser
- 3.3 Contractor and his subcontractors shall attend progress meetings when called by Purchaser to discuss work progress, coordinating, expediting, scheduling, safety, etc.
 - 3.4 For Work involving inspections, Contractor shall prepare and submit a written report consisting of: scope of inspection, methods used, as found conditions, dimensional data, sketches, test data, recommendations, and other pertinent information.
 - 3.5 If requested, Contractor shall furnish a written report upon completion of the Work identifying problems that were encountered in performing the Work and recommendations for solving or avoiding these problems on future projects.
 - 3.6 After completion of all Work, Contractor shall attend a Job Close Meeting at the site to review Work performance and exchange necessary information with the Purchaser's Representative.
- 4.0 SITE REPRESENTATION
- 4.1 Purchaser will assign an Purchaser's Representative to act as liaison between the Contractor and the Purchaser's organization. The communication and submittal requirements indicated in the contract documents shall be through the Purchaser's Representative unless stated otherwise. Other relationships between the Contractor and the Purchaser's personnel must be specifically authorized by the Purchaser's Representative.
 - 4.2 Contractor's representative(s)-

- A. Contractor shall have a Superintendent or other representative present on site at all times when the Work is in progress.
 - B. The person responsible for Contractor's daily activities regarding the Work shall attend all pre/post award and Work scheduling meetings.
 - C. Supervisory personnel changes shall first be approved by Purchaser prior to personnel's arrival on the work site.
 - D. Contractor personnel shall be brought in to perform the job activities to assure that work schedules or due dates are not jeopardized. This shall not be a basis for a change to costs.
- 4.3 When performing Construction Trade Work on the Purchaser's property, Contractor is, or agrees to become signatory to the "Power House Labor Agreement" (PHLA) dated 3/22/00. Contractor agrees to perform the Work under provisions of the agreement and to employ personnel represented by the appropriate craft union(s). When performing Non-Construction Trade Work on Purchaser's property, Contractor agrees to employ personnel represented by an appropriate AFL-CIO affiliated labor union(s). Questions regarding labor union representation shall be directed to the Midwest Generation Construction Lead at 312-583-6061.
- 4.4 Contractor shall immediately notify the Purchaser of an actual or potential labor dispute that delays or threatens to delay the performance of the Work.
- 4.5 Contractor shall be accountable for the actions of his personnel on station property.
- 4.6 Work involving Contractor and service engineers obtained by Purchaser will be coordinated through Purchaser's Representative.
- 5.0 **CONTROL AND CHARGE OF CONSTRUCTION**
- 5.1 Contractor shall be solely responsible for and shall have control and charge of construction means, methods, techniques, sequences, and procedures, and for safety precautions and programs in connection with the Work, and shall carry out the Work in accordance with the Contract Documents.
- 5.2 Purchaser will not be responsible for nor have control or charge over the acts or omissions of Contractor, his Subcontractors, or any of their agents or employees.
- 5.3 Contractor shall carry on the Work at his own risk until the Work is fully completed.
- 6.0 **EXTRAS AND CONTRACT CHANGES**
- 6.1 In the event of any inconsistency between the provisions of the Contract, the inconsistency shall be resolved by giving precedence in the following order:
- A. Written Amendments or Change Orders
 - B. The Owners Contract Form of Purchase Order which incorporates the Contractor's Proposals and Submittals
 - C. The Technical Specification
 - D. The Purchaser's General Terms and Conditions
 - E. Other documents incorporated into the Contract or Purchase Order

- 6.2 Contractor shall obtain written approval (FCR Form) from Purchaser's Representative prior to starting any work that is considered by the Contractor to be an extra to the Contract. Without such prior approval, no claim for extra compensation will be honored.
- 6.3 Contractor shall inform Purchaser's Representative in writing (FCR Form) immediately of any delay beyond his control for which he will request any Contract Adjustment or Extra Compensation. The report shall state the number of people affected, reason for the delay, estimated duration of the delay, and the proposed resolution. No request for adjustment or extra compensation due to delays will be considered if this procedure is not strictly followed.
- 6.4 Purchaser may elect to authorize changes in the Work resulting from field conditions, specification changes, drawing revisions, or other circumstances by issuing Contract Change documentation.
- 6.5 Contract Changes with proposal terms-
- A. Contractor shall submit an itemized proposal for changes in the Work when requested by the Purchaser.
 - B. Submit proposal within two (2) days after receipt by the Contractor of a request for such proposal, unless an extension is mutually agreed to by both parties.
 - C. One proposal shall be submitted for each Drawing Transmittal, specification revision, or Contract Change Authorization.
 - D. For revised drawings or specification changes, each proposal shall be subdivided into total costs for each Drawing or Specification revision.
 - E. Contractor's itemized proposal should include: (1) Items for which Contract Unit Prices have been established. Include the item, quantity, and Contract Unit Price. Unit Prices must be accepted and authorized by the Purchaser's Procurement Representative before they are used in proposals. (2) Items for which there are no Contract Unit Prices. Provide sufficient detail of labor, materials, tools and equipment, or other cost items. Include quantities, unit of measure, cost per unit, or other pricing methods. (3) Subcontractor proposals shall be submitted with similar detail.
 - F. Normally, take off sheets need not be submitted. However, the Contractor will be required to submit these if requested by the Purchaser.
 - G. Proposals shall be submitted in quadruplicate to the address listed on the contract change document.
- 6.6 Contract Changes with Cost Plus (or Time and Material) terms-
- A. Contractor shall perform work on a Cost Plus (or Time and Material) basis when requested by the Purchaser. Source documentation for labor, materials, equipment, etc. will be in accordance with Purchaser's requirements.
 - B. Contractor shall use Purchaser's Time and Material Tickets or Purchaser's approved equal. Contractor shall record Time and Material ticket number and corresponding costs on billings submitted for payment approval. Material, rental equipment and subcontractors supplied by Contractor shall be backed up with invoices or other supportive documentation before payment is authorized. Time and Material tickets and instructions are available from the Purchaser upon request. Contractor shall fill out, sign and submit Time and Material tickets daily to the Purchaser's Representative.

- C. For Contract Change work performed on a Firm Price, Cost Not to Exceed, or Cost Plus (or Time and Material) basis, Purchaser will not incur any charges for indirect or overhead items (Supervision, General Foreman, Foreman, Union Steward, Tool room man, Technician, QA Rep., Welding Engineer, Home or Field Office Clerical, trailers, welding machines, etc.) that are already included in Firm Price portions of the Work, unless the additional work is performed outside the Contractor's established work schedule. Purchaser will not accept any charges for the above unless authorized by the Purchaser's Representative.
- 6.7 If Contractor determines rental tools and/or rental equipment which will be charged to Purchaser's account are necessary, written authorization must be received from Purchaser prior to Contractor renting the tools and/or equipment. This same written authorization is required for rental extensions. Purchaser will not pay any costs incurred by Contractor as a result of renting tools and/or equipment unless this requirement is met.
- 7.0 MATERIAL AND EQUIPMENT BY CONTRACTOR
- 7.1 Materials not specifically designated herein or in the Contract Drawings shall be subject to approval by Purchaser, shall be the most suitable materials for the purpose and shall comply with applicable ASTM, ANSI, or other approved standards. No asbestos containing materials shall be furnished by Contractor without express written approval from the Purchaser.
- 7.2 Selection of equipment or materials-
- A. The Contractor shall refer to and select from the latest revision of the Purchaser's catalogue of Equipment and Materials as much as possible.
- B. Certain equipment, articles, materials or processes may be designated in this Specification by trade name or by catalog name and number to ensure that the proper quality or type is furnished. Such designations shall be deemed to be followed by the words "or equal" whether such words are shown or not, and Contractor may offer any material or process which shall be substantially equal in every respect to that so indicated or specified. Purchaser's Representative has the final authority on the acceptability of an alternate. Any purchase or use of the proposed alternate prior to approval is at Contractor's risk.
- 7.3 Material or product information-
- A. Contractor shall furnish any detailed information for products, materials, equipment, fabricated assemblies, etc. where indicated in the Contract Documents or as deemed reasonable and necessary by the Purchaser.
- B. Purchaser's review and approval of submitted information is for general detail only and will not relieve the Contractor of responsibility for meeting all requirements and for accuracy.
- 7.4 Design information-
- A. Design information shall be submitted on full-size certified drawings or in letters during the design period of the Work. The fact that such design information may later be included in the instruction/operating books does not relieve Contractor from compliance with this requirement.
- B. Purchaser reserves the right to examine Contractor's design calculations and engineering data in order to verify compliance with requirements of the Contract. Contractor shall submit any documentation requested by the Purchaser for the purpose of this verification, including, but not limited to, calculations, diagrams and documents associated with computer-aided analyses and programs. Contractor's standard design procedure will not be accepted as a substitute for any requirements specified herein. If requested information is considered proprietary by Contractor, Contractor shall allow the Purchaser to review the information at Contractor's offices with the understanding that no copies of proprietary information will be given to the Purchaser.

- 7.5 Equipment design-
- A. Equipment shall be designed in conformity with ANSI, ASME, IEEE, NEMA and other generally accepted applicable standards. It shall be of rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation, and all conditions of operation. All bearings and moving parts shall be adequately protected against wear by bushings or other approved means.
 - B. Equipment parts shall conform to the dimensions within allowable tolerances shown on the manufacturers working drawings.
 - C. The corresponding parts of identical machines shall be made interchangeable.
 - D. Protruding members, such as joints, corners and gear covers shall be finished in appearance. All exposed welds shall be ground and the corners of structural shapes shall be rounded or chamfered for personnel protection.
 - E. All equipment shall be safeguarded in accordance with the safety codes of the ANSI, OSHA and local industrial codes.
 - F. Equipment shall be furnished with factory applied finish paint of the manufacturer's standard color.
- 7.6 Each piece of equipment shall be provided with a substantial brass, stainless steel or plastic nameplate, securely fastened in a conspicuous place and clearly inscribed with the equipment manufacturer's name, year of manufacture, serial number, and principal rating data.
- 7.7 All equipment furnished under the Contract shall be corrosion protected prior to shipment. All surfaces subject to corrosion shall be coated with approved rust preventing compound before shipment. Where equipment is shipped in protective crates and boxes, parts may be sealed in heavy duty plastic.
- 7.8 Contractor shall furnish the Purchaser with 8 sets of bound Operation and Maintenance Manuals for all equipment furnished by Contractor. These shall include the manufacturer's instruction books, leaflets, and drawings for the proper erection, operation, and maintenance of the equipment. They shall also include reduced-sized drawings of general arrangements, elevations, schematic diagrams, and wiring diagrams showing internal connections. Each instruction/operating book shall have an index listing of all leaflets, etc., in the same order as they appear in the book. Individual submittal of various manufacturer's instruction books, etc., will not be acceptable. The instruction/operating books shall be issued at least one (1) month prior to shipment of the equipment.
- 7.9 One (1) month prior to shipment of equipment, Contractor shall submit a Recommended Spare Parts and Quotation List, which shall:
- A. Be applicable to all equipment components, auxiliaries, accessories and materials furnished under the Contract.
 - B. Include for each recommended spare part, the supplier's name, the unit price, quantity, description, catalog number, drawing references etc., to completely identify the item and the equipment component for which it is recommended.
 - C. Include manufacturer's descriptive literature for the equipment and accessories.
- 7.10 Contractor shall furnish a list of lubricants required for the initial filling and operation of all equipment furnished by Contractor. The list shall include suggested type, the required quantity of lubricant and a cross reference of quality lubricants of other manufacturers. Required lubricants for new equipment will be supplied by Purchaser.

- 7.11 If special tools are required by the original equipment manufacturer for the assembly, operation, or maintenance of the equipment, Contractor shall provide a complete set as part of the equipment supply.
- 7.12 Material and equipment handling-
- A. Contractor shall be responsible for receiving, unloading, inventorying, storing in accordance with supplier's instructions, protecting, removing from storage, and erecting or installing all equipment and materials furnished by Contractor or the Purchaser under the provisions of this specification.
 - B. Material and equipment handling and storage methods shall be approved by the Purchaser.
 - C. Contractor shall supply all tools and equipment that may be required for unloading and handling such equipment and materials.
 - D. Demurrage and/or detention charges incurred as a result of Contractor's failure to unload on time shall be paid by Contractor at no additional cost to Purchaser.
- 7.13 All drains, inlet lines and other openings shall be sealed prior to shipping to prevent contamination or damage from foreign objects entering the openings. Where special on site protection is required, Contractor shall furnish equipment protection in accordance with manufacturer's recommendations.
- 7.14 Shipment-
- A. Routing instructions for the delivery of materials and equipment supplied by the Contractor will be furnished upon request to the Purchaser.
 - B. Materials and equipment shall be delivered to allow for proper sequencing of construction and installation.
- 8.0 **MATERIAL AND EQUIPMENT BY PURCHASER**
- 8.1 Certain equipment and material will be furnished and delivered by others, but are to be erected or installed by the Contractor.
- A. Contractor shall be responsible for receiving, inspecting (prior to unloading), unloading, inventorying, storing in accordance with supplier's instructions, protecting, removing from storage, and erecting or installing this equipment or material.
 - B. Notify Purchaser immediately of any damage to material or equipment upon receipt.
 - C. Material and equipment handling and storage methods shall be approved by the Purchaser.
 - D. Contractor shall supply all tools and equipment that may be required for unloading and handling such equipment and materials.
 - E. Demurrage and/or detention charges incurred as a result of Contractor's failure to unload on time shall be paid by Contractor at no additional cost to Purchaser.
 - F. Contractor's responsibility for equipment and materials furnished by others commences on the date Contractor starts work at the Premises or on the date such materials and equipment are delivered, whichever is later.
- 8.2 Contractor shall prepare Bills of Materials, as instructed by the Purchaser's Representative, for equipment or materials that are to be furnished by the Purchaser.
- 8.3 Bidder shall include in his bid any specific material and equipment delivery dates that are required for the proper sequencing of the Work.
- 8.4 If the Work includes removal of equipment or materials for off-site work, Contractor shall package, load, enclose, secure, and brace that equipment or material on carrier in good workmanlike manner in accordance with applicable standard trade practices.

- 8.5 Surplus material remains the property of the Purchaser. Contractor shall transport and store surplus material to a location specified by the Purchaser.
- 9.0 **QUALITY, STANDARDS, AND CODES**
- 9.1 Design requirements and information contained herein represent Purchaser's minimum requirements and shall be reviewed by Contractor for compliance with all local, state, and federal requirements. Discrepancies between local, state, or federal codes and standards and Purchaser's requirements will be promptly brought to Purchaser's attention for resolution.
- 9.2 Codes and Standards-
 - A. Where standards and codes are specified, the issue in effect at the Proposal due date shall apply. Other equivalent standards may be substituted if prior written approval is obtained from the Purchaser. Any use of the proposed alternative prior to approval is at the Contractor's risk. Purchaser's decision on acceptability of alternatives is final.
 - B. Design, materials, and workmanship shall be in accordance with the applicable codes and standards, including, but not limited to, the ASME Boiler and Pressure Vessel Code, Sections I, V, VIII, and IX, ASME B31.1, and the AISC Manual of Steel Construction.
 - C. Contractor-supplied equipment and modifications to any boiler equipment shall be in accordance with NFPA 85C, "Prevention of Furnace Explosion/Implosions in Multiple-Burner Boiler - Furnaces" unless directed otherwise by Purchaser.
 - D. Electrical work, including temporary or construction power, installed by Contractor shall conform to the National Electric Code and Purchaser's requirements
- 9.3 Publications including but not limited to the following agencies shall form a part of the Specifications to the extent specified therein. References to their publications are to the latest issue of each, together with the latest additions and/or amendments thereto, as of the date of Contract, unless otherwise indicated. Reference to the sponsoring agencies will be made in accordance with the abbreviations indicated:

ANSI	American National Standards Institute, Inc.
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
IEEE	Institute of Electrical & Electronic Engineers
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
MSS	Mfgs. Standardization Society of the Valve and Fitting Industry
- 9.4 If Contractor is required to perform Work which falls under the jurisdiction of the National Board Inspection Code [NBIC](ASME Sections I, IV and VIII), Contractor shall perform the Work in accordance with the applicable portions of his NBIC or State accepted Quality Program. The Contractor shall have on site a current, controlled copy of his NBIC or State accepted Quality Program and a copy of any applicable NBIC or State Certificate(s) of Authorization.
 - A. The design, materials, fabrication, construction, testing and certification of ALL "Non-boiler external" piping systems and auxiliary mechanical piping systems (pipe, valves, components and component supports) shall conform, at a minimum, to the requirements of *ANSI/ASME B31.1 (latest revision - as applicable) and to all federal, state and local Codes and Regulations having jurisdiction.

*Anhydrous Ammonia piping systems shall comply with the requirements of ANSI/ASME B31.4 (latest revision - as applicable).

- 9.5 Inspection and test-
- A. All materials, equipment, and Work by Contractor are subject to inspection and testing by Purchaser's testing service. Contractor shall supply the appropriate labor and means necessary to assist in the performance of the inspections and tests. Inspections, tests, or waivers thereof shall not relieve Contractor of responsibility for meeting all requirements of the Specifications. Such inspections and tests are to be made during the progress of the Work.
 - B. No portion of the Work shall be enclosed or covered over until inspected by the Purchaser.
- 9.6 Contractor shall submit Code documentation and forms to the Purchaser upon completion of the Work.
- 9.7 Material certification and marking-
- A. Contractor shall keep and maintain certified Material Test Reports (or Certificates of Conformance) and Purchase Orders on all ASME Code or VR Program materials supplied.
 - B. Boiler tubes and other components furnished shall be marked and stamped in accordance with ASME Pressure Vessel Code, Section I.
- 9.8 When requested by Purchaser, Contractor shall supply certification that the calibration of his test and measuring equipment is traceable to an accepted standard e.g., National Institute of Standards and Technology. The documentation shall include procedures used, acceptance criterion, and name of the Testing Agencies.
- 10.0 EXISTING CONDITIONS
- 10.1 Contractor shall visit site prior to the start of Work in order to verify all dimensions and existing conditions, to the extent such conditions may affect his Work. Contractor shall notify Purchaser immediately in case of any variation between the contract drawings and the existing conditions of the various portions of the Work.
- 10.2 Contractor shall identify and mark all parts removed from existing equipment or structures to ensure proper re-assembly. Contractor is responsible for the proper storage and safekeeping of these parts.
- 11.0 PROTECTION OF EXISTING FACILITIES
- 11.1 Neither Purchaser nor his officers or agents shall be responsible to Contractor for damages as a result of the location or existence of the facilities being other than as indicated on the Contract Drawings.
- 11.2 Protection of existing facilities and equipment-
- A. Any damage to the facilities of Purchaser or of others or interruption of Purchaser's operation as a result of Contractor's work shall be remedied by Contractor at no additional cost to Purchaser and to the complete satisfaction of Purchaser's Representative.
 - B. Existing roadways shall be protected from damage due to Contractor's activities during the progress of the Work. Any road sections damaged during the progress of the Work shall be repaired by Contractor at no added cost to Purchaser and to the complete satisfaction of Purchaser's Representative.

- C. The Contractor shall give proper notices, make all necessary arrangements, and perform all other services required to avoid damage to all public utilities, including gas mains, water pipes, sewer pipes, electric cables, fire hydrants, lamp posts, etc., for which Purchaser could be held liable.
 - D. Contractor shall cover all openings made in drains, inlet and outlet lines, tubes, bearing cavities, valves, etc. as soon as possible, to prevent contamination by foreign objects penetrating the opening. Contractor shall verbally report to the Purchaser any item(s) that accidentally fall into an opening.
 - E. Contractor shall ensure that liquids or solids will not be poured (disposed of) into Purchaser's drain, sewer systems or lake (where applicable). Contractor shall be liable for any damage and clean up of improperly disposed liquids or solids.
- 11.3 Contractor's work practices shall minimize dust generated during installation or removal of asbestos free insulation, such as fibrous glass, ceramic fibers and mineral wool. Due to the potential health risks associated with these insulating materials, the minimum requirements are as follows, unless otherwise instructed in writing by Purchaser's Representative:
- A. A regulated area shall be established to limit access to the work area (barricade rope).
 - B. Where permitted, materials shall be worked in a wet state sufficient to prevent the generation of airborne fibers/dust.
 - C. Fire retardant plastic shall be spread over surfaces such as gratings and catwalks and secured to prevent insulating materials from falling below.
 - D. Personal protection shall be worn if material is being used in a way to generate significant airborne material. This shall include body covering approved for asbestos removal. The minimum respiratory protection shall be a half mask equipped with HEPA filters.
 - E. After completion of all insulation and fireproofing work within a regulated area, a thorough cleanup shall be made using an approved asbestos HEPA vacuum. Sweeping is not permitted.
 - F. Waste materials (including body coverings) shall be disposed of in fiber drums or heavy gauge plastic bags provided by Contractor.
- 11.4 Underground facilities-
- A. Known underground facilities and structures owned by Purchaser and by others expected to be adjacent to or encountered in the Work are indicated on the Contract Drawings. Such facilities may include, but are not necessarily limited to, gas lines, sewer lines, water pipes, electrical conduits and trays and cathodic protection systems. There may be discrepancies and omissions in locations and quantities of facilities and structures shown on the Drawings. Information shown is for the convenience of Contractor only, and responsibility is not assumed by the Purchaser for their accuracy or completeness.
 - B. Contractor shall be responsible for contacting the companies owning each of the underground facilities which may be encountered or affected by any excavation or drilling in the Work area and shall be responsible for arranging to have such facilities located and staked by representatives of such companies prior to the start of Contractors Work in the vicinity of such facilities. Contractor shall provide competent, experienced personnel for all excavation activities.

- C. Contractor shall notify Purchaser at least two working days in advance when existing underground facilities are to be affected. Under no circumstances shall the Contractor expose any such facility without first requesting and obtaining permission from Purchaser. Contractor shall locate and expose underground facilities in the Work area by hand digging where requested by the owners of such facilities or where it is reasonably necessary for the protection of such facilities. Contractor shall expose and furnish and maintain such temporary support for underground facilities in the Work area as may be reasonably necessary for the protection of such facilities. Contractor shall backfill all excavations in such a manner and with such materials as may be necessary in order to provide reliable support for such facilities and as approved by Purchaser's Representative.
- 11.5 Contractor shall make a survey of the areas of entry into Station structures, the work areas, and the routes authorized by Purchaser for use, and shall determine items of permanent construction that will interfere with any portion of the Work. The Contractor shall obtain written authorization from Purchaser regarding any item it deems necessary to be removed in order to perform the Work. Contractor, after receipt of Purchaser's approval, shall perform the movement, re-routing, etc., of items in strict compliance with Purchaser's directions. At such time as is appropriate and before completion of the Work, Contractor shall restore moved items to their original positions and conditions. The Work will not be considered complete until Purchaser is notified to inspect the Work, and determines that the Work is acceptable.
- 11.6 All road openings which the Contractor cuts for the Work must be approved by the Purchaser. Contractor shall return the road to its original condition as soon as the associated Work is completed and at no additional cost to Purchaser.
- 11.7 Contractor will follow OSHA regulations providing a grounding program and ground fault circuit interrupters as required.

12.0 PURCHASER'S RULES AND REGULATIONS

- 12.1 Parking areas for Contractor's personnel and access routes to those areas will be designated by Purchaser prior to the start of work. Contractor's vehicles parked outside of the designated areas may have a warning sticker placed on the window and may be towed at the vehicle owner's expense. Contractor's personnel vehicles shall be subject to search upon entering and leaving the Premises.
- 12.2 Purchaser's gate officers are not permitted to admit Contractor's or his subcontractor's employees until they have provided proper "Identification" and have been "Acknowledged" by responsible representatives of Contractor or his subcontractor, and authorized by Purchaser's Representative. Purchaser may require Contractor to establish a "Brassing" system for identification.
- 12.3 Contractor's tool boxes, vehicles, and employee's personal items may be searched by Purchaser upon arrival at the Premises. A list of tool and equipment serial numbers may be requested by Purchaser from the Contractor. Contractor vehicles and equipment may be inspected by Purchaser upon departure from the Premises.
- 12.4 Contractor personnel shall sign onto station property upon arrival and sign off when leaving at the entrance designated by Purchaser.
- 12.5 Items not allowed on site-
- A. Contractor employee's personal television sets, radios and other entertainment devices are not allowed on Purchaser's property.
 - B. Contractor's employees are not to bring items for sale or raffle to the job site. Any solicitation for donation must have prior approval.

- 12.6 Contractor shall abide by all station rules and regulations Purchaser may have in effect at the Work site. Purchaser may modify existing rules or establish new rules during the course of the Work that he deems reasonable or necessary.
- 12.7 Contractor employees who are in violation of Purchaser's rules regarding the following are subject to immediate removal from the job site:
- A. Safety Rules
 - B. Possession of alcoholic beverages on Purchaser's property or job site
 - C. Under the apparent influence of alcohol
 - D. Possession of controlled substances
 - E. Under the apparent influence of controlled substances
 - F. Gambling
 - G. Fighting
 - H. Sexual harassment
 - I. Willfully damaging equipment, materials, tools, etc.
 - J. Possession of firearms or weapons
 - K. Sleeping
 - L. Theft
 - M. Making false claims of injury
- 12.8 Contractor's and his subcontractor's employees shall be restricted to the immediate area of the Work and to approved storage and office areas. Routes for entry and egress shall be established in advance by Purchaser. Contractor shall obtain information from Purchaser as to all restricted areas and shall be responsible for policing his personnel to keep them out of unauthorized areas, including, but not limited to, the following: Locker rooms, Lunch rooms, Wash rooms, Control rooms, Offices, Tool room, Storerooms, Near running machinery, Maintenance shops, Outside of work area, Purchaser's personnel parking areas.
- 12.9 Contractor's personnel shall observe all safety, warning, equipment identification, instructional signs and tags. Do not remove any tag without prior consent of Purchaser's Representative.
- 12.10 For Contractor's and subcontractor's employees, visitors and any other individuals: Smoking is prohibited inside any building, structure, vehicle or work space, including manholes and vaults. Smoking is only allowed at clearly marked locations designated by the owner.
- 12.11 Contractor shall not take unauthorized photographs of any kind on Station property.
- 12.12 The station fire and emergency alarm signal tones will be identified at a site meeting.
- 12.13 Contractor shall not alter Station structures or devices other than as described in the Contract Documents except by authorization of Purchaser.
- 12.14 Contractor's personnel shall report all fires by methods identified by Purchaser at a site pre-job meeting.
- 12.15 On-site vehicular traffic-
- A. Contractor owned and insured vehicles that are necessary for the Work will be allowed on-site as follows:
 - 1. On-site vehicles must remain on the Premises for the duration or extended portion of the Work schedule and will not be allowed to be used for transportation through the Purchaser's gates, unless the exit and subsequent re-entry is authorized by the Purchaser.

- 2. For short duration usage that is necessary for the Work or where tools, equipment, or materials cannot be easily off-loaded, as approved by the Purchaser's Representative.
 - 3. Vehicles that are delivering or picking-up tools, equipment, or materials, as approved by the Purchaser's Representative.
 - B. Vehicles that are allowed on-site must obey all traffic signs and speed limits.
- 12.16 Contractor shall not operate Station overhead cranes, forklifts, power tools, or other equipment, unless authorized by owner.
- 13.0 PURCHASER'S FACILITIES
- 13.1 Purchaser will furnish temporary power, water, compressed air, and other facilities as indicated in this Section to the extent to which they already exist. Contractor shall familiarize himself with the existing conditions and facilities.
- 13.2 Temporary power-
- A. All electrical energy required for Contractor's light and power will be provided by Purchaser. Electrical energy will be supplied at 480 volts, three phase, 60 Hz for power, welding, heat treating, etc. and 120 volt, single phase three wire for hand tools and lighting, etc. at existing Purchaser designated locations.
 - B. Contractor is responsible to examine the Purchaser's facility to determine existing locations and quantity of 120V and 480V power and it's proximity to the work locations. Contractor is responsible to provide power from Temporary Power Feeds established by Purchaser, at existing locations to the work locations with Purchaser's Approval. Purchaser shall inspect and provide approval for all Temporary Power Feeds prior to their being placed in service.
 - C. Contractor will provide 'Ground Fault Protection' for all 120V receptacles at the source of the power outlet.
 - D. Contractor shall notify the designated MWGen Project Manager of temporary power requirements 15 business days prior to commencing work or to the start of a unit outage.
 - E. Installer shall sign on to Access Permit(s) as required prior to making connections to the station source and sign off Access Permit(s) after connections are complete and the load is safe to be energized.
 - F. Installer shall ground case/frame of power distribution panels, transformers, and power-packs to local building steel with a ground conductor sized per NEC Table 250.122.
Note: the frames/cases of portable generators do not require a ground of the generator supplies only cord-and-plug connected through receptacles mounted on the generator.
 - G. Electrical energy shall not be used for space heating or air conditioning without permission from Purchaser's Representative.
 - H. If Contractors 120V power requirement is greater than 20 amps, contractor shall supply 480V step down transformer(s) to supply his own 120V power source. Contractor will supply and incorporate the use of 'Ground Fault Protection' at all sources of 120V power sources.
 - I. Contractor shall be responsible for determining the type of electrical receptacles available at the work site and shall adapt his equipment to fit Purchaser's facilities as required.
 - J. Purchaser will arrange for 24 hour service of the temporary construction power system to the point where it is supplied to the Contractor. However, if there is an interruption of electrical power on this system for any reason, the Contractor agrees that he will not hold Purchaser responsible for any losses or delays which he may suffer as a result of such interruption.

- 13.3 Illumination of aisles, passages, and work areas in the building and floodlighting of outdoor areas is available to the extent to which it already exists.
- 13.4 Water supply-
- A. Water on station property will be furnished by Purchaser free of charge. Contractor shall use due care to protect Purchaser's domestic water supply from contamination. No connections shall be made or any water used without approval from Purchaser's Representative. Precautions shall be followed to prevent contamination by interflow or siphonage through direct connections to tanks, waste or drain lines. Contractor may not modify or adapt Station HPSW Fire Protection System unless approved by Owner.
 - B. Contractor shall furnish and install all temporary connections he requires and shall furnish his own shutoff valves and hose connections.
 - C. Upon completion of the Work, Contractor shall return all water systems to their original condition and remove temporary equipment and facilities.
- 13.5 Compressed air-
- A. For work within the main station building, Contractor shall have determined, during the bid period, whether compressed air will be available from Purchaser's facilities in sufficient quantity and at suitable pressure (normal supply approx. 90 psig and 100 scfm) to meet Contractor's needs. However, if Contractor elects to use this system and there is an interruption of compressed air supply for any reason, the Contractor agrees that he will not hold Purchaser responsible for any lapses or delays which he may suffer as a result of such interruption.
 - B. For work outside of the main station building, and for work inside the building if compressed air is not available from Purchaser's facilities, Contractor shall furnish and operate any required air compressing equipment. Such equipment shall be non-electric driven and shall be located outside the building.
 - C. Contractor shall furnish suitable hoses to transport compressed air from Purchaser's outlets or from Contractor's compressor to the work areas.
Note: Compressed air may not be used to remove dust / particulates from equipment or clothing.
- 13.6 Contractor's employees shall not remove Purchaser's installed fire extinguishers from their mountings unless they are needed to fight an actual fire. In such cases, the fire extinguishers shall be returned to a location designated by Purchaser's Representative for recharging.
- 13.7 Station elevators will be available for use by Contractor's personnel at times designated by Purchaser's Representative. Elevators will not be available when their use is required by Purchaser's personnel. No equipment shall be hoisted in the elevator without prior consent of Purchaser's Representative. Purchaser will not be held liable for any delays due to interruptions of service and will not accept such interruptions as the basis of a claim for extra compensation.
- 13.8 Contractors use of Purchaser's mobile man lifts is prohibited.

- 13.9 The availability, locations and capacities of Purchaser's crane facilities shall be determined by the Bidder, if necessary, during the bid period. If Purchaser's crane facilities are required and are available for the Work, Purchaser will schedule crane use and Contractor shall cooperate with Purchaser and others who require the use of the cranes. Contractor shall obtain permission from Purchaser's Representative prior to use of the crane and shall carry out such crane usage with promptness in order that cranes may be utilized efficiently. Purchaser will furnish power and a crane operator free of charge, but Contractor shall be liable for injuries or death and for any damage to Contractor's and Purchaser's material and equipment. Operators furnished by Purchaser will be available only during normal working hours. Purchaser will not be responsible for any premium time for operators to make up for inability to schedule straight time use of the crane. Purchaser will not accept crane down time or unavailability as an excuse for Work delay or as the basis of a claim for extra compensation.
- 14.0 **CONTRACTOR'S STORAGE AND TEMPORARY BUILDINGS**
- 14.1 Indoor Space for the location of Contractor's offices, shops or warehouses and the storage of materials will be furnished by the Purchaser. Purchaser will designate the areas that will be available for such use at the time Bidder visits the site or when the plant layout is finalized.
- 14.2 All temporary facilities required by Contractor shall be furnished, maintained, and removed by Contractor. These include but are not limited to offices, employee changing/washing/eating facilities, shop, tool storage, and material storage.
- 14.3 Temporary buildings-
- A. Temporary buildings required by Contractor, including associated utilities (electrical, water, HVAC, etc), shall be erected and maintained by him.
 - B. Contractor shall remove all his temporary facilities at the termination of their usefulness or termination of the Work or when directed by Purchaser's Representative and shall leave Premises in condition satisfactory to Purchaser in every respect. If Contractor fails to comply with this provision, Purchaser will have the right to perform the work, and to charge the cost of such removal and restoration to Contractor. Such charge shall apply as a credit to the Contract amount.
 - C. Prior to erection of any temporary buildings, Contractor shall submit plans to Purchaser for general approval of construction and appearance before the building is erected.
- 14.4 Outdoor space for the location of Contractor's oxygen and acetylene tanks will be furnished by the Purchaser.
- 15.0 **CONTRACTOR'S FACILITIES**
- 15.1 Temporary chemical toilet accommodations shall be furnished and maintained by Contractor for the use of his employees. Location shall be as directed by Purchaser's Representative. "Open" portable toilet facilities must be located such that they are closed off from the line of sight to the sides and from above. Use of Purchaser's toilet facilities by Contractor's employees is not permitted.
- 15.2 Contractor shall provide his own storage vessels, coolers, ice, water containers, etc., as required for his own drinking water use. Contractor shall supply a trash can with each drinking water container to receive used paper cups. Contractor shall maintain drinking water container, supply suitable water cups and dispose of trash as required.
- 15.3 Communication facilities-
- A. Contractor shall arrange for his own telephone services.

- B. Contractors "On Site Superintendent" shall carry a Cell Phone while on Owner Property to insure that he is accessible at all times during business hours.
 - C. Contractor shall supply walkie-talkie radio equipment to his supervisory personnel for communication and job coordination. Contractor shall also provide one radio for Purchaser's use.
- 15.4 Each Contractor is expected to pre-arrange medical emergency services for on site and off site treatment. This includes, but is not limited to, first aid, rescue, and ambulance services.
- 15.5 Fire protection facilities-
- A. Contractor shall provide his own temporary fire protection facilities for the equipment and materials furnished by him or by Purchaser and for his temporary construction buildings and structures. This equipment shall be maintained and inspected in accordance with applicable NFPA codes.
 - B. Furnish a suitable quantity and type of portable fire extinguishers and equipment, to meet OSHA and applicable codes.
- 15.6 Purchaser will not furnish any additional illumination of aisles and passages in the buildings and floodlighting of outdoor areas other than that which is existing. Any additional lighting required by the Contractor shall be provided by the Contractor.
- 15.7 Contractor shall provide and maintain suitably located distribution centers with fused switching equipment and appropriate Ground Fault Interruption protection. The equipment supplied shall comply with OSHA regulations and standards.
- 15.8 Contractor shall supply all adapters and equipment required to connect to station air, water, and electrical systems. At the time of demobilization, Contractor shall insure that all temporary connections are restored to their as found condition.
- 15.9 Any heating facilities required for the performance of the Work shall be furnished, maintained, and removed by Contractor. Open fires WILL NOT BE PERMITTED at any time. Heating equipment shall be as approved by Purchaser's Representative.
- 15.10 Any temporary weather protection required for the performance of the Work shall be furnished, maintained, and removed by Contractor.
- 16.0 CONTRACTOR'S TOOLS AND EQUIPMENT
- 16.1 Tools and equipment-
- A. Contractor shall supply tools and equipment in sufficient size and quantities to complete the Work in an efficient and high quality manner. Contractor shall maintain and store tools and equipment for safe and proper use.
 - B. Contractor shall provide hoisting equipment as required to perform the Work. Provide all the necessary guards, signals, and safety devices required for its safe operation. Construction and operation of hoisting equipment shall comply with all applicable requirements of ANSI A10.5, the AGC Manual of Accident Prevention in Construction, and to all applicable federal, state, and local codes. Hoisting equipment shall not be used to transport personnel.
- 16.2 Contractor shall furnish and maintain scaffolding required for the Work. Scaffolding shall meet the requirements of OSHA, NFPA and NML.
- 16.3 Rigging-
- A. Contractor shall design, furnish, and maintain rigging required for the Work.

- B. Purchaser reserves the right to examine Contractor's design calculations, engineering data, plans, and procedures. Contractor shall submit any documentation requested by the Purchaser for the purpose of this review, including, but not limited to, calculations, diagrams and documents associated with computer-aided analyses and programs. If requested information is considered proprietary by Contractor, Contractor shall allow the Purchaser to review the information at Contractor's offices with the understanding that no copies of proprietary information will be given to the Purchaser.

NOTE: All rigging or other lifting devices may only be attached to 'Building Structural Steel' or 'Manufactured Framework' that is clearly marked with the rated capability of the beam or structure. If the beam or structure is not rated, a Professional Structural Engineer licensed by the State of Illinois must rate and approve the structure before use.

- C. Purchaser's review and approval of submitted information is for general detail only and will not relieve the Contractor of responsibility for meeting all requirements and for accuracy.

17.0 SAFETY

- 17.1 The entire performance of the Work shall comply with the standards authorized by the latest issue of the U.S. Department of Labor Occupational Safety and Health Act (OSHA), as well as state and local jurisdictional requirements.

17.2 Contractor's safety manual-

- A. The Contractor shall have on file, and submit with his proposal, a copy of his most current Safety and Industrial Hygiene Manual. As a minimum, this Manual must address the following items when applicable to their trade: OSHA Compliance, Accident Investigation, Corrective Action, First Aid Treatment, Inspections and Reporting of Deficiencies, Material Handling and Rigging, Performance and Accountability, Personal Safety Equipment, Safety Guidelines, Safety Meetings, Training, Housekeeping, Hearing Protection, Respiratory Protection, Fire Prevention, Grounding Program, Confined Space Entry, Hazard Communication, Fall Protection, and Trenching and Shoring.
- B. The Contractor's superintendent or other responsible person must have a copy of the Contractor's most current Safety and Industrial Hygiene Manual available at the job site.
- C. The Contractor will provide 'Hard Barriers' as railings, toe boards, kick plates, etc. shall be used to guard openings such as floor plates and floor gratings, excavations, open manholes, screen bays, wall openings and where there is a danger from operating machinery, falling materials etc. as a requirement of their Fall Protection Program. Barriers must be placed to prevent anyone from entering the area between the barrier and the opening.
- D. The Contractor / Subcontractor / Supplier's Safety Program is to include the utilization of fall arrest equipment that shall be worn at all times where there is a potential to fall four feet or more to a lower level from an unprotected height. Examples include, but are not limited to edges of hoist areas, transformers, tanks and containments, wells and pits, shaft openings and similar excavations, floor openings, platforms, and walkways.

Note: All Fall Protection Harnesses must include tags to document that the monthly inspection has been completed by a competent inspector w/ name and date.

- 17.3 Prior to the start of work at the job site, Contractor shall contact Purchaser's Representative to arrange to have all Contractors' Site Personnel for the project receive general and site safety awareness information training. The Training Meetings for Safe Access to Plant and Site Safety Orientation will last approximately 2 hours. In addition, Contractor shall provide his employees with orientation in all Contractor, Purchaser, and job specific safety requirements related to their work area. This orientation shall include but not be limited to Safety Procedures for work in Confined Space, Fall Protection, Hoists, Cranes, and Scaffold Inspections.
- 17.4 Fitness for Duty-
- A. The Contractor/Sub-Contractor/Supplier is required to have a drug and alcohol screening program for all employees assigned to work on Purchaser's property. The program must provide screening for pre-access testing, "for cause" testing and random testing. The Contractor/Sub-Contractor/Supplier shall certify that their employees have passed the appropriate screening test in accordance with their programs.
 - B. Personnel covered by this program shall be denied access to, or may be required to leave the Purchaser's location if there are reasonable grounds to believe that the individual is:
 - 1. Under the influence of using, possessing, buying, selling, or otherwise exchanging (whether or not for profit) controlled substances or drug paraphernalia.
 - 2. Under the influence of consuming, possessing, buying, selling, or otherwise exchanging (whether or not for profit) alcoholic beverages.
 - C. Contractor assumes all financial responsibility for craft personnel waiting for false positive results of drug testing to be resolved.
- 17.5 Contractor personnel shall wear hard hats, hearing protection and safety glasses at all times in the Work area. The hard hats shall be marked with the Contractor's identification and the employee's identification number. The numbers are to be a minimum of 2 In. x ¼ In. and shall be displayed on both sides of the hard hat. Written numbers with felt marker are not acceptable. Hard hats shall be worn with the bill facing forward.
- 17.6 Serviceable work attire-
- A. All contracted field personnel shall wear serviceable work attire while working on Purchaser's property. Serviceable work attire includes: Shoes with substantial uppers, soles, and heels. Athletic type shoes, sandals, moccasins, etc will not be acceptable;
 - B. Per General Industry OSHA Standard 29 CFR 1910.269(1)(6), "The employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing, that when exposed to flames or arcs, could increase the extent of injury that would be sustained by the employee." Although this pertains to generating station standards and not to the construction standards, each Contractor employee must wear 100% natural fiber clothing when reporting to work and take all actions necessary to inform and protect the employee from hazards. Long sleeve shirts are also required and must be worn with the sleeves rolled down. The only exception to this is in outside areas, office environment settings such as in meeting rooms and in control rooms.
- 17.7 Plant operating equipment- Contractor shall be aware that Work may be performed in and around operating equipment.

17.8 Out-of-Service Policy S.A.F.E. Safe Access to Plant (Out-of-Service Requirements)

A. Contractors access to any Plant Equipment that may fall into one of the following categories will require the Purchaser to issue an 'Access Permit':

- Access to potential Confined Spaces.
- HV electrical apparatus is required.
- Electrical and/or mechanical isolations and/or extensive special precautions are required.
- Excavation where underground obstacles are identified to exist.

B. The Contractor Supervisor and all Working Personnel will be required to attend Midwest Generation's "Working Party Member" training. This training will last approximately 0.75 hours.

C. Contractor shall not start Work until notified by the Purchaser Representative that all equipment has been suitably isolated and de-energized, the required "Access Permit" has been issued and a "Danger Tag" has been placed on all identified isolation devices and equipment.

D. All necessary grounding will be provided by the Purchaser.

E. The Purchaser's Representative will 'Sign On' the Access Permit to confirm that the Plant Equipment has been properly isolated.

F. At the start of each workday the Responsible on Site Contractor Supervisor, and all Working Personnel will 'Sign On' the Access Permit as directed by the Purchaser's Representative according to Station Procedures.

G. Upon the completion of each workday the Responsible on Site Contractor Supervisor, and all Working Personnel will 'Sign Off' of the Access Permit as directed by the Purchaser's Representative according to Station Procedures. Proxy Form must be completed for all contractor employees signed off in their absence.

H. Under no circumstance shall the Contractor will not be allowed to place 'Equipment Locks' of any type or variety on Purchaser's Property or Equipment.

I. Copies of Purchaser's 'Access Permit' including isolation points will be made available upon request.

17.9 Welding, cutting, and burning permits-

- A. Contractor shall not start welding or cutting operations without a "Welding and Cutting Permit". Permits shall be obtained from Purchaser and posted in accordance with Station site-specific Safety Training requirements.
- B. Contractor shall use non-asbestos, fire retardant blankets as required to protect Purchaser's equipment, cable trays, coal transport and storage areas, etc. and to cover gratings (for personnel safety) when welding, grinding and flame cutting processes are used overhead or in such close proximity as to pose a hazard.
- C. Contractor shall supply appropriate portable fire extinguishers in welding and cutting areas.

17.10 Material Safety Data Sheets-

- A. The Purchaser shall make Material Safety Data Sheets (MSDS's) readily available to the Contractor for those substances to which the Contractor's employees may be exposed during normal working conditions and which are under the Purchaser's control.
 - B. The Contractor shall make Material Safety Data Sheets (MSDS's) readily available to the Purchaser for those substances which are furnished by and under the control of the Contractor. These are to be available at the time of delivery of the substance to the Purchaser's Premises.
 - C. It is the responsibility of the Contractor to train his employees on MSDS's.
- 17.11 Contractor shall comply with all federal, state and local regulations and codes pertaining to handling and storage of flammable liquids and gases.
- 17.12 Cleaning agents, solvents, or other substances brought by Contractor into any of Purchaser's buildings by Contractor shall be stored, handled and used and properly disposed of in accordance with applicable standards at contractors expense.
- 17.13 All cranes, hoists, or derricks shall be operated in compliance with existing State and Federal regulations or orders. All cranes shall stop in parking area outside main gate until Purchaser's Representative is able to provide an escort to the Work area. Cranes and hoists shall not be operated near high voltage lines or equipment until a safe operating clearance has been established.
- 17.14 The Contractor is to provide the Purchaser with the name and quantity of usage of any listed Section 313 Toxic Chemical of the Emergency Planning and Community Right-to-Know Act of 1986 (40CFR372).
- 17.15 Temporary Fuel Tanks can only be brought on site with the Owners' knowledge and consent. The Owner will identify and approve all locations. All Temporary Fuel Tanks are subject to comply with all Regulatory Requirements and Inspections.
- 18.0 ASBESTOS/LEAD NOTIFICATION AND ASBESTOS FREE INSULATION
- 18.1 If asbestos/lead removal is included in the Work, procedures for such work will be detailed in another section of the Specification. If such work is not included, however, Contractor's personnel shall be made aware of the fact that Purchaser's facility may contain asbestos/lead products. If the surface of any material which may contain asbestos/lead is damaged in the course of the Work, the Purchaser's Representative shall be notified immediately so that protective action may be taken.
- 18.2 Contractor shall identify and mark "NONASBESTOS" and "Type of Material Used" on any newly installed insulation. It shall be visible on the exterior surface. Method used shall be compatible with previous insulation work or as approved by the Purchaser.
- 19.0 CLEAN-UP
- 19.1 Housekeeping-
- A. Contractor shall prevent the unnecessary accumulation or scattering of materials, tools and equipment, or debris around the Premises at all times, and shall conduct the Work in an orderly manner.
 - B. When it is necessary in the opinion of Purchaser or upon completion of the Work, Contractor shall remove from the Premises his tools, equipment, scaffolding, barricades and surplus materials, and shall leave the Premises in good order and condition.

- 19.2 Contractor shall dispose of steel, scrap, trash, all debris, salvageable material or any other refuse that is the result of his Work in appropriate receptacles or locations designated and furnished by Purchaser. Contractor shall cut any large materials so they are not protruding out of receptacles. Under no circumstances shall any rubbish or waste be dropped or thrown from one level to another within or outside any building.
- 19.3 All loaded trucks departing with fill, equipment, salvage or debris shall be properly trimmed. Any debris or fill that does fall on the Premises or on public or private property shall be promptly removed. Public walks and streets adjacent to the Premises, which are used by trucks for removal of fill, equipment, salvage or debris shall be washed down to the complete satisfaction of Purchaser's representative as often as required by him.
- 19.4 If Contractor fails to comply with any housekeeping or clean-up requirements, Purchaser will have the right to remove debris, tools, and equipment, and to charge the cost of such removal to Contractor. Such charge shall apply as a credit to the Contract amount.
- 20.0 PUBLIC RELATIONS
- 20.1 Contractor shall perform the Work in a manner that will not inconvenience the public or adjacent property owners.
- 20.2 Contractor shall carry on the Work at all times so as to maintain the best possible relations between Purchaser and the public and all public authorities having jurisdiction.
- 21.0 PERMITS
- 21.1 If applicable, Purchaser will apply for and Contractor will pick up and pay for the Building Permit. Purchaser will reimburse Contractor for Building Permit Fee only.
- 21.2 Contractor shall, unless otherwise noted, secure and pay for all necessary permits and licenses from Governmental Authorities which are required in order to perform the Work. All such permits and licenses shall be obtained prior to the start of work at the Premises.

END OF SECTION 0101

SPECIFICATION NO. WC08 – ASHPOND LINER

INSTRUCTIONS TO BIDDERS

1.0 PROPOSAL

- 1.1 Bidder's proposal will not be considered unless it includes all Proposal Forms completely filled out, together with any other required submittals. Proposals submitted on forms other than those attached to the Specification will not be considered.
- 1.2 Questions concerning this Invitation for Proposals relative to Project, site, procurement, or engineering issues should be directed to the appropriate Purchaser's Representative as designated in the Job Summary.

2.0 PRICE INFORMATION

- 2.1 The FIRM LUMP SUM PRICE shall appear only where specified in Proposal Form, Part I and shall not appear elsewhere in the Proposal. Price information shall not be included in the Proposal transmittal letter or in the Bidder's technical or other non-price data.

3.0 COMPLETENESS OF PROPOSAL

- 3.1 Bidder's Proposal shall be complete in order to avoid extras to the contract price.
- 3.2 Bidder shall include in his bid all work which is normally considered part of the type of work covered by the Bid Documents, whether or not such work is fully detailed in the Bid Documents.

4.0 BID DOCUMENTS

- 4.1 Any contract or purchase order resulting from the Bid Documents will incorporate the terms and provisions of said documents. These Bid Documents shall prevail over conflicting provisions of Bidder's proposal. All exceptions to the Bid Documents must be specifically identified in Proposal Form where requested. Bidder's printed terms and conditions are not considered specific exceptions.

5.0 BIDDER'S RESPONSIBILITY

- 5.1 Bidder shall be responsible for providing and dispensing all information to his sub-bidders regarding the provisions of the Bid Documents and any other information a sub-bidder may require.
- 5.2 Contact between sub-bidders and Purchaser shall be only through the Bidder.
- 5.3 With each request for payment, Purchaser requires that Contractor submit a properly filled out Payment Request Form as required in Services and Material Agreement, General Conditions, unless exception to this Clause is noted on the Purchase Order.

6.0 SUBMITTAL OF PROPOSAL

- 6.1 One clearly labeled sealed priced copy of the Proposal, the original, shall contain Proposal Forms Part I, Part II and Part III and one clearly labeled sealed un-priced copy for this project shall be submitted to the address referenced in these Instructions to Bidders. Any possible alternative bids for this project will be considered only if the base bids have been submitted and must accompany the priced copy only.
- 6.2 All copies of the Proposal shall be delivered (mailed or delivered in person) by the appointed time to: Midwest Generation Sealed Bid Auditor, Gene Petrovits, Will County Generating Station, 529 East 135th Street, Romeoville, IL 60446.

SPECIFICATION NO. WC08 – ASHPONDLINER

- 6.3 Submittals subsequent to the original proposal shall be marked "Supplementary Proposal for Specification No. WC08 – ASHPONDLINER", and be submitted in the same number of copies as the original. The reason for submitting a supplemental proposal shall be stated.
- 6.4 If proposal data cannot be conveniently included with the priced proposal, it shall be submitted separately to the same location and in a similar manner as the Proposal Forms.
- 7.0 NONDISCLOSURE OF PRICE INFORMATION
- 7.1 The price information given in the Proposal Form shall not be disclosed to Purchaser's employees, agents or consultants, except where specifically approved by Purchaser's Representative.
- 8.0 RIGHT TO REJECT
- 8.1 The right is reserved to reject any or all proposals or any portion thereof. Neither receipt of a proposal nor failure to reject a proposal shall impose any legal obligation on the Purchaser.
- 9.0 SPECIAL PROPOSAL REQUIREMENTS
- 9.1 Bidder shall submit the following with each copy of his bid:
- A. Detailed specifications covering methods and materials to be used in performing the Work.
 - B. Sample of Bidder's standard progress report form.
 - C. Copy of current "State Unemployment Insurance Contribution Rate Determination Notice"
NOTE: Bidder's State Unemployment Tax shall not exceed this rate.
 - D. Bidder shall supply the names, with complete resumes, of at least two site Supervisors who could be assigned to manage this project. Purchaser reserves the right of personnel selection as a condition of Contract award.
- 9.2 Bidder shall furnish Purchaser with additional data when requested.
- 10.0 BIDDER'S MEETING AND EXAMINATION OF SITE
- 10.1 If a Site visit is scheduled, time and date are included in the invitation to bid letter. If no meeting is scheduled, Bidder shall make arrangements with Purchaser's Representative to tour the Site.
- 10.2 The Contract will be administered with the understanding that Contractor visited the Project Site during the bid period, and insofar as possible the areas where work would be performed, and familiarized himself with the conditions under which the Work would be performed.
- 10.3 During this visit, Contractor shall have consulted with Purchaser's personnel as to the means of access to the Project Site and the areas of work, as well as methods to be used in unloading and bringing construction materials and equipment onto the Project Site, and as to areas on the Project Site where Purchaser will make space available for Contractor's use.
- 10.4 Contractor's later plea of ignorance of existing or foreseeable conditions which create difficulties or hindrances in the execution of the Work are not acceptable as an excuse for any failure on the part of Contractor to fulfill in every detail the requirements of the Specification. Furthermore, Contractor's pleas of ignorance will not be acceptable as the basis for any claim whatsoever for additional or extra compensation.

END OF INSTRUCTIONS TO BIDDERS

Mabco Subcontractor Work

Overflow Weir Replacement by Subcontractor Mabco \$ _____

NO 3. ASH POND LINER SUBTOTAL, LUMP SUM \$ _____

POND #2 LINER REPLACEMENT SPRING OF 2009

Section 001050 – Documentation Surveys \$ _____
(Surveys are listed on Table 1)

Section 02300 – Earthwork

- a. Removal of Poz-o-pac liner, existing fill and other materials \$ _____
- b. Installation of marker posts \$ _____
- c. Installation of guard rails \$ _____
- d. All other work outlined in Section 02300 \$ _____

Section 02600 HDPE Geomembrane Installation

- a. Installation of Geomembrane (including seaming) \$ _____
- b. Leak Location \$ _____
- c. All other work outlined in Section 02600 \$ _____

NO 2. ASH POND LINER SUBTOTAL, LUMP SUM \$ _____

TOTAL PROJECT COST – ASH PONDS 2 & 3 \$ _____

1.1 Unit price for Drug Test per Section 01011, Para. 2.3
Includes complete cost for labor hours & testing \$ _____

2.0 **INSURANCE POLICY INFORMATION**

2.1 Bidder has reviewed the insurance requirements specified in Purchaser's Terms and Conditions, and certifies that such insurance requirements will be met.

Yes ___ No ___

2.2 Bidder will furnish the evidence of same upon notification of award and agrees to indemnify Purchaser against any loss, harm or damage resulting from failure to provide the specified insurance coverage.

2.3 Bidder understands he may be required to provide a copy of his certificate of insurance, showing his General Liability, Workers Compensation and automobile coverage. It may be necessary to add Purchaser to the General Liability coverage, as an additional insured, using endorsement GL2010.

2.4 Bidder shall furnish the following information regarding each of the insurance policies required under the provisions of Purchaser's Terms and Conditions, for Bidder and for each subcontractor:

A. Name of Insurance Carriers:

B. Policy Number:

C. Expiration Date of Policy:

3.0 **BIDDER'S STATE WORKMEN'S UNEMPLOYMENT COMPENSATION NUMBER**

4.0 **BIDDER'S CERTIFICATION**

Bidder hereby certifies that he agrees to all provisions of the Bid Documents, unless exceptions are clearly and specifically listed in Part II of the Proposal. Bidder's printed terms and conditions are not considered specific exceptions.

Name of Bidder

Signature of Bidder

Date of Bid

END OF PROPOSAL FORM - PART 1

Name of Bidder: _____

Date of Bid: _____

PROPOSAL FORM - PART II

Specification #: WC08 - ASHPONDLINER

Project: NO. 2&3 ASH POND LINER REPLACEMENT AND MISCELLANEOUS WORK

Location: MIDWEST GENERATION
WILL COUNTY GENERATING STATION
529 EAST 135 TH STREET
ROMEONVILLE, ILLINOIS 60446

1.0 BID VALIDITY

1.1 Bidder hereby agrees that his Proposal will remain valid for acceptance by Purchaser for a period of 60 days from the Proposal due date.

Yes ___ No ___ (Bid remains valid through _____)

2.0 SUBCONTRACTED WORK

2.1 Bidder shall answer the following questions regarding subcontracted Work:

A. Are any portions of the Work to be subcontracted?

Yes ___ No ___

B. If "yes" state which portions are to be subcontracted?

C. What percent of Total Firm Lump Sum Price is to be subcontracted? _____ %

3.0 CONTRACTOR - CRAFT UNION(S) WORKING AGREEMENT

3.1 The successful Bidder shall be signatory to a pre-numbered original PHLA Adherence Agreement prior to the start of the Work. A photocopy of the signed PHLA Adherence Agreement shall be sent to the Construction and Technical Services Dept. of Midwest Generation, Chicago Office as soon as possible after signing. Bidder agrees that there shall be no changes to the PHLA.

A. Is Bidder currently signatory to PHLA?

Yes ___ (Serial # _____) No ___

3.2 Does the Bidder agree to perform the Work covered by this specification under the provisions of the PHLA and employ employees represented by the appropriate Craft Union(s)?

Yes ___ No ___ (See 3.3)

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Name of Bidder: _____

Date of Bid: _____

3.3 If Bidder does not intend to perform the Work covered by this Specification under the provisions of the PHLA, Bidder shall attach to this proposal signed copies of the Working Agreements Bidder intends to use. The conditions set forth above with respect to becoming signatory and adhering to PHLA shall not apply if there is prior written approval by Purchaser of such agreements and an agreement by the Bidder to employ employees represented by the appropriate Craft Union(s) under the terms of said approved agreements.

A. Applicable Working Agreement(s) Contractor intends to use:

CRAFT WORKING AGREEMENT

1. _____
2. _____
3. _____
4. _____

B. Are copies of each of the above Working Agreements attached to this proposal?

Yes ___ No ___ (If No, please explain.)

4.0 **MINORITY PARTICIPATION**

- 4.1 Purchaser is actively engaged in involving minority and woman-owned business enterprises and expects the Bidder to actively pursue the utilization of minority and woman-owned business enterprises, either as joint venture partner(s), supplier(s), or as subcontractor(s) in connection with the Work covered by the Bid Specification. The Bid Proposal shall be evaluated with appropriate consideration given to the extent such minority and/or woman-owned business enterprises are proposed by Bidder to share in the Work.
- 4.2 In joint venture arrangements, the prime Contractor will be responsible for the overall project while the minority and/or woman-owned firm(s), if not the prime Contractor, shall also have commercial liability for their portion of the Work.
- 4.3 The Purchaser can provide Bidder, if requested, with the names of minority and woman-owned enterprises that have expressed an interest in the specified work scope or similar work. This will be done without comment or warranty as to the capability or viability of those enterprises.
- 4.4 Certification as a minority or woman-owned business is required to qualify as a minority or woman-owned vendor. Purchaser recognizes certification by the following organizations only:
 - A. The Chicago Regional Purchasing Council (MBE)
 - B. Women's Business Development Center (WBE)
 - C. Illinois Department of Transportation (MBE/WBE)
 - D. City of Chicago (MBE/WBE)
 - E. WMBE Clearinghouse (MBE/WBE)
- 4.5 Shown below is/are the name(s) and address(es) of minority and/or woman-owned business enterprises which Bidder proposes to utilize in connection with the Work covered by this Specification, the type(s) of business arrangements and the amount (in dollars) of that participation.

Name of Bidder: _____

Date of Bid: _____

<u>Minority Business Name and Address</u>	<u>Contact Name and Phone Numbers</u>	<u>Type of Business Arrangement</u>	<u>Amount of Participation</u>
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5.0 SCHEDULE

5.1 Can Bidder perform the Work in accordance with the Schedule set forth in the Specification?

Yes ___ No ___ (If No, please explain.)

6.0 ADDENDA

6.1 Bidder represents that this Proposal includes provision for the following Addenda. Bidder shall insert Addendum Numbers and Dates. If none are included, so state:

<u>Addenda Number</u>	<u>Date</u>
-----------------------	-------------

7.0 DOCUMENTATION SUBMITTALS WITH BIDDER'S PROPOSAL

7.1 Documents Required with Proposal Document:

- | | |
|---|-----------------------|
| A. Special Proposal Requirements | ITB, Para. 9 |
| B. Preliminary Schedule | Sec. 01016, Para. 2.3 |
| C. List of Work to be Subcontracted | |
| D. List of Craft Unions and PHLA Serial Numbers | |

7.2 Does Bidder certify that each of the above documents is attached to this Proposal?

Yes ___ No ___

8.0 DOCUMENTATION AND QUALITY CONTROL REQUIREMENTS (POST AWARD)

9.0 ELECTRIC POWER REQUIREMENT

9.1 Bidder shall insert an estimate of the required amperage at each voltage. If over 20 amps total (2000 watts, 2½ HP), Contractor shall supply 480 volt step down transformers to provide his own 120 volt power source. Additional description can be found in Section 01016, Paragraph 13.2.

120 volts _____ amps 480 volts (3 phase) _____ amps

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Name of Bidder: _____

Date of Bid: _____

9.2 If the Bidder leaves these required amperage spaces blank, it shall mean the Bidder intends to supply all of his construction power with his gasoline engine driven generators. These generators shall be set up/located under the direction of Purchaser's Representative.

10.0 CONTRACTOR'S PERSONNEL TO CONTACT, CONCERNING:

	<u>Name</u>	<u>Phone No. /</u>
	<u>Fax No.</u>	<u>Email Address</u>
10.1 Engineering/Design	_____	_____
	_____	_____
10.2 Construction	_____	_____
	_____	_____
10.3 This Proposal	_____	_____
	_____	_____

11.0 BIDDER'S CERTIFICATION

11.1 Bidder hereby certifies that he agrees to all provisions of the Bid Documents listed in the "Instructions to Bidders", unless exceptions are clearly and specifically listed in the proposal as "Exceptions" and summarized below. Bidder's printed terms and conditions are not considered specific exceptions.

Name of Bidder: _____

Date of Bid: _____

11.2 Bidder's exceptions to the Bid Documents, together with the price changes to eliminate each exception, are summarized below. (IF NO EXCEPTIONS ARE TAKEN BY BIDDER, SO STATE):

List of Exceptions

Name of Bidder

Signature of Bidder

Address

Phone Number

Date of Bid

FAX Number

END OF PROPOSAL FORM PART II

SPECIFICATION NO. WC07- U4BLRFALL

PFII-5

MWG13-15_29207

Name of Bidder: _____

Date of Bid: _____

SECTION PFIII COST PLUS CHANGES IN WORK ON LUMP SUM CONTRACTS

Should the Purchaser elect to handle changes in the Work while performing lump sum contracts on a cost-plus basis, the value of the change shall be the actual labor and payroll taxes cost, plus a percentage for insurance, overhead and profit, computed and itemized in the manner specified in this Section.

The bidder shall provide information requested in Items 1.2, 1.3, 2.1, 3.1, 4.1 and on Forms A, B, and C attached. "N/A", "to be supplied at a later date", or similar responses are not acceptable.

1.0 LABOR

1.1 Provide the actual day shift straight time wage scale for craftsmen (e.g. apprentices, journeymen, foremen, and/or general foremen) as itemized on the attached "Form B".

1.2 Overhead and Profit. For each man hour worked, the Purchaser will pay a percentage of the actual day shift straight time craft wage scale (without any premiums for shift differential or other adders) to cover the Contractor's overhead and profit. (See Item 5, Basis for Overhead and Profit)

A. Percentage of 1.1 day shift rate for Overhead and Profit. _____%

1.3 Payroll Taxes and Insurance. For each man hour worked, the Purchaser will pay a percentage of the actual day shift straight time craft wage scale (without any premiums for shift differential or other adders) to reimburse the Contractor for directly related payroll taxes and insurance on labor paid by the Contractor. (Itemize the taxes and insurance on attached "Form C".) The insurance percentage shall be based upon Contractor's record concerning labor turnover, accident rates, etc, and shall not be adjusted to actual costs. For any Contract where the schedule of Work exceeds one (1) year, the rates stated by Contractor shall be subject to review for adjustment up or down at the end of each year's Work.

A. Percentage of 1.1 day shift rate for payroll taxes _____%

B. Percentage of 1.1 day shift rate for insurance _____%

1.4 Other Payroll Costs. All other actual payroll costs of labor paid by Contractor including but not limited to such items as subsistence allowances, travel, welfare contributions and all other fringe benefits but excluding taxes and insurance on labor should be itemized on attached "Form B". The Contractor shall attach to his bid a complete list of these payroll items and will only be reimbursed for such listed and approved items. The Purchaser will not reimburse the Contractor as an actual payroll cost or any other basis for costs of Industry Advancement and/or similar promotional funds.

2.0 MATERIALS AND FREIGHT

2.1 The Purchaser will pay a percentage of the net purchase price of materials after all trade and cost discounts (whether realized or not) and before taxes and freight, for the Contractor's overhead and profit.

A. Percentage of 2.1 net price of materials _____%

2.2 Materials and transportation charges for those materials must be recorded on the Purchaser's Time and Material Tickets.

2.3 Contractor billings requesting payment for materials and/or transportation must include receipts to verify the actual costs.

3.0 **SMALL TOOLS, SMALL CONSTRUCTION EQUIPMENT, CONSUMABLE SUPPLIES, AND PERSONAL SUPPLIES**

3.1 For each man hour of craft activity requiring tools the percentage of the actual day shift straight time craft wage scale (without any premiums for shift differential or other adders) shall be added for the use of Small Tools, Small Construction Equipment, Consumable Supplies, and Personal Supplies.

A. Percentage of 1.1 day shift rate for Small Tools, etc ____%

3.2 Small Tools and Small Construction Equipment shall be defined as items having a new purchase price of less than \$1,000 for each item. Small Construction Equipment which can normally be used independently or combined into a complex system is considered Small Construction Equipment regardless of the total system costs.

3.3 Consumable and Personal Supplies shall be defined as items that will not become a permanent part of the work.

4.0 **PERCENTAGES FOR OVERHEAD AND PROFIT ON SUBCONTRACTED WORK**

4.1 The Purchaser will pay a percentage of subcontractors' labor and other actual costs as invoiced to the Contractor to cover the Contractor's overhead and profit.

A. Percentage of 4.1 subcontractor's cost ____%

4.2 Subcontractors mark up for overhead and profit shall not exceed the contractors percentage for overhead and profit indicated in Item 1.2.

5.0 **BASIS FOR CONTRACTOR'S OVERHEAD AND PROFIT**

5.1 The percentages specified for overhead and profit per Item 1.2 shall cover the cost of:

A. Home Office costs and overhead, which include Contractor's home office roving supervision, business systems, engineering, license and permits to perform the Work, construction and purchasing skill, patent methods and patent rights for owned appliances, any interest on account of capital or borrowed money employed, attention and services of executive officers, project managers, departmental managers, engineers, and other employees in the home offices during the course of the Work (including but not limited to their travel and living expenses while traveling in the direct interests of the Work, rent, stenographic, clerical, expenses and accounting help, office supplies, stationary, postage, telephone service, payment processing, etc.)

B. Field Office costs, which include field office supplies, storage trailers, equipment trailers, change trailers, office trailers, standard office equipment such as, but not limited to, computers, typewriters, calculators, copy machines, radios, and expenses such as postage, telephone, cell phones, pagers, and overnight/express mail.

5.2 When the Work is essentially completed, as determined by Purchaser, and if Purchaser elects to retain Contractor and his Resident Project Superintendent for additional work to be performed (at the Project Site) on the cost-plus bases set forth in this Section, then the percentages for overhead and profit covered by Item 5.1, shall be subject to negotiation.

6.0 MAJOR CONSTRUCTION EQUIPMENT

6.1 General

- A. All equipment not covered by Item 3.0 of this Section shall be considered as major construction equipment, whether owned or rented by the Contractor (items with an initial cost less than \$1000 shall be deemed to be small tools). Rental charges for this equipment shall be based on the rental rates and rental percentages set forth in this Item 6, and shall be listed on Major Equipment data sheets similar to sample "Form A".
- B. The Contractor is responsible for providing all insurance for his owned and rented equipment and vehicles.

6.2 Equipment Owned by Contractor

- A. Contractor shall submit, with his Bid Proposal, his complete published list of all owned major construction equipment, or of all such equipment that he proposes to use for the Work, and shall include the book value, his published daily, weekly, and monthly rental rates, and the percentage of these rates that he will charge for rental, after book value has been reached for each piece of equipment complete with appurtenances such as boom, bucket, etc. (If the Contractor does not have a published list, then Contractor shall use the current edition of the Associated Equipment Distributors' Handbook or Blue Book as a guide for furnishing the data specified.)
- B. For any major construction equipment not included initially on Form A, but which later appears to be required for the Work, the Contractor shall submit to the Purchasing Department a supplementary Form A covering the additional equipment. This supplementary list shall be subject to approval by Purchaser prior to the Contractor bringing any of the additional major equipment onto the Project Site.
- C. All rates shall include transportation to and from the job site, maintenance and repairs (including parts), fuel, insurance, lubricants, mobilization and demobilization and all other expenses for the equipment except for operating personnel.
- D. The rental charge per month shall not exceed the monthly rate regardless of multiple shift use. For equipment used less than 173 hours per month or 8 hours per day, an hourly rate of 1/173 of the monthly rate shall apply.
- E. For any Contract where the schedule of Work exceeds one (1) year, the rates stated by Contractor shall be subject to review for adjustment up or down at the end of each year's Work.
- F. When the total charges paid by Purchaser for each piece of equipment equal the book value stated in the Equipment data sheets, there shall be no further charges for the use of each piece of equipment except for operating personnel and maintenance expenses.

6.3 Equipment Rented by Contractor

- A. Contractor shall also include with his Proposal, a complete list, similar to that required for Item 6.2.A, of all equipment which he proposes to rent for the Work.
- B. Rental of equipment shall be competitively bid.
- C. Rental charges for leased equipment shall be the lessor's invoice price less any cash, trade, or volume discounts whether realized or not.
- D. Contractor shall be reimbursed for actual costs of maintenance, insurance, fuel, lubricants, and all other expenses approved by Purchaser that are associated with the rented equipment except for operating personnel.

COST PLUS CHANGES IN WORK WITHIN LUMP SUM CONTRACTS

ORM C ITEMIZATION OF INSURANCE AND TAXES

Insurance and taxes to be itemized below showing percentage for each item per Item 1.3.
If insurance rates vary between crafts, list crafts separately.

A. Contractor Provides Required Insurance		
for (Craft) _____		<u>Straight Time</u>
1. Payroll Taxes		
a. F.I.C.A.	_____	
b. Federal Unemployment	_____	
c. State Unemployment	_____	
Total Payroll Taxes		_____
2. Insurance		
a. Workmen's Compensation	_____	
b. Other *	_____	
Total Insurance		_____

*Other is defined as the types of insurance coverage specified in the Purchaser's General Terms and Conditions. If other types of coverage are being charged, they shall be itemized on an attached list.

Include with your proposal, one (1) example of the total 'Built-Up Labor Cost' for your craft labor. This example will provide a detailed listing of hourly wages, insurance, benefits, all payroll taxes etc., with the total summarized cost.

END OF PROPOSAL FORM PART III

**SECTION 00001
SPECIFICATION DATA SHEET**

INTRODUCTORY PAGE

SPECIFICATION TITLE: South Ash Pond Liner Replacement
Midwest Generation, LLC Will County Generation Station
Romeoville, Illinois

REVISION NO.: 1

DATE: September 3, 2008

**MIDWEST GENERATION
PROJECT MANAGER:** Blake Connolly-- (815) 372-4634

**NATURAL RESOURCE
TECHNOLOGY, INC. (NRT)
ENGINEERS:** Eric J. Tlachac, PE – Project Manager--(262) 522-1214
Heather M. Simon, PE – Project Engineer--(262) 522-1207

DESCRIPTION OF WORK SUMMARY:

Replacement of liner in South Ash Pond 2 and 3 at Will County Generation Station in Romeoville, Illinois. Site activities will consist of removal of existing Poz-o-Pac liner (as needed), subgrade preparation, including grading, excavation, transport, stockpiling and disposal (as needed), installation of marker posts, excavation of anchor trench, installation of white, 60-mil HDPE geomembrane and surrounding geotextile, placement of warning layer and cushion layer materials, and leak location survey of geomembrane.

Work will also consist of managing subcontractor Mabco with the South Ash Pond 3 overflow weir replacement. Mabco is the contractor selected by Will County Station to perform the weir replacement work. The South Ash Pond 3 liner work will need to be coordinated with the weir replacement work that Mabco will be performing.

END OF SECTION

SECTION 01050
FIELD ENGINEERING AND SURVEYING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Work by Contractor
- B. Contractor's Responsibilities and Submittals
- C. Survey Data for Construction Documentation
- D. Construction Documentation Drawings

1.02 WORK BY CONTRACTOR: Contractor shall provide field engineering and surveying services as required for proper completion of work including:

- A. Documenting topography of prepared subgrade prior to placement geomembrane.
- B. Documenting location of anchor trench.
- C. Documenting location and elevation of geomembrane panels.
- D. Documenting location of marker posts.
- E. Documenting location of guardrails.
- F. Documenting topography of warning layer.

1.03 CONTRACTOR'S RESPONSIBILITIES AND SUBMITTALS

- A. Upon commencement of construction work, become familiar with the location of existing benchmarks, control points, and other necessary reference points. Maintain their accuracy and prevent disturbance or destruction. Contractor is responsible for re-establishing control points and benchmarks if such items are damaged and/or destroyed at no cost to Owner.
- B. Establish and verify grades, lines, levels, locations and dimensions as shown on Drawings and report any errors or inconsistencies to Owner and/or Engineer before commencing work.
- C. Initial staking of discharge pipe and anchor trench.
- D. Lay out own work and be responsible for all surveys, lines, elevations, and measurements of structures and other work executed under Contract. Exercise proper preparation to verify figures on Drawings within construction limits before laying out work. Any error resulting from failure to exercise such precautions or work done without being properly located may be removed at Owner's direction and corrected or replaced at Contractor's expense.

- F. Contractor shall verify its own work with respect to required grades prior to documentation surveys. Areas deficient will be corrected and resurveyed at Contractor's expense.

1.04 SURVEY DATA FOR CONSTRUCTION DOCUMENTATION

- A. Survey work performed by Contractor shall be certified by a registered land surveyor (RLS), and will include items identified in Table 1.
- B. Frequency of surveys for each item is summarized in Table 1 and relevant Sections of the Technical Specifications.
- C. Survey data shall be supplied to Owner and/or Engineer in one of the following formats within two working days after completion of survey:
 - 1. Topographic map (hard copy and electronic file compatible with AutoCAD).
 - 2. Tabular (according to Table 1).
 - 3. ASCII files (northing, easting, elevation).
- D. Contractor will be notified by Owner and/or Engineer of areas to be adjusted or will be given written approval of surveyed area within two working days of receiving survey data.
- E. Contractor shall obtain written approval from Owner and/or Engineer for each surveyed area prior to placement of any overlying materials.

1.05 CONSTRUCTION DOCUMENTATION DRAWINGS

- A. Contractor shall distribute record drawings to Owner and/or Engineer based on results of documentation survey within four working days following completion of survey for a particular surface or set of features as supplied by the RLS.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Table 1. List of Documentation Surveys
South Ash Pond Liner Replacement Specifications
Midwest Generation – Will County

Survey	Responsible Party	Frequency	Technical Specification Reference
Topographic survey of prepared subgrade prior to placement of geomembrane	Contractor	50 ft square grid and at grade changes	Section 0105, 1.02A
Location of anchor trench alignment	Contractor	Every 25 ft intervals	Section 01050, 1.02B
Location and elevation geomembrane panels	Contractor	At panel corners and repairs, as necessary	Section 01050, 1.02C Section 02600, 1.05C, 3.10A
Location of marker post	Contractor	As necessary	Section 01050, 1.02D
Location of guardrails	Contractor	As necessary	Section 01050, 1.02E
Topographic survey of warning layer	Contractor	50 ft square grid and at grade changes	Section 01050, 1.02F

Notes

1. Contractor shall provide Owner and/or Engineer results of survey within 2 working days after completion.
2. Owner and/or Engineer acceptance or rejection will be provided within 2 working days following receipt of documentation survey.



SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General Requirements
- B. Submittal Format
- C. Submittal Procedures

1.02 GENERAL REQUIREMENTS

- A. Procedures and format for submittals required by the Technical Specifications that may include but are not limited to:
 - 1. Soil and/or material test data
 - 2. Survey data
 - 3. Product test data
 - 4. Progress reports
 - 5. Shop drawings
 - 6. Manufacturers instructions, certificates, guarantees and warranties
 - 7. Management, staging and sequencing plans
 - 8. Schedules
- B. Refer to Technical Specifications and Table 2 for list of submittals.

1.03 SUBMITTAL FORMAT

- A. All submittals shall be transmitted by Contractor with the following identified on the cover sheet:
 - 1. Project name and contract number.
 - 2. Applicable Technical Specification (Section) and submittal number.

3. Date (or revision number).
 4. Sequential page numbers.
- B. Submittals shall be made in triplicate.
- C. Stamp, sign, or initial submittal certifying products or field dimensions, whichever pertains, are in accordance with requirements of Work and Contract Documents.

1.04 SUBMITTAL PROCEDURES

- A. Provide all submittals and information as identified in Technical Specifications to named parties in the time frames indicated in Table 2. Payments may be withheld, in whole or in part, at discretion of the Owner in the event that submittals are not made within times specified unless previously requested in writing by the Contractor (to Owner and/or Engineer) and approved in writing by Owner and/or Engineer.

Transmit Submittals to Owner Representative:

Blake Connolly
Will County – Midwest Generation, LLC
529 E. 135th Street
Romeoville, IL 60446

bconnolly@mwgen.com
Phone: (815) 372-4634
Fax: (815) 372-4565

- B. Transmit submittals by appropriate means to expedite review of submittal. Submittals delivered by hand, facsimile, or mail service are acceptable. Business addresses of project representatives will be provided at the pre-construction meeting.
- C. Submittals shall be made far enough in advance of the scheduled approval dates to allow adequate time for reviews, approvals, and revisions.
- D. Submittals shall identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of completed work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**Table 2 - List of Submittals
South Ash Pond Liner Replacement Specifications
Midwest Generation - Will County**

	Submittal	From	To	Time Frame	Reviewer	Technical Specification	
						Section	Part
1	Subcontractor List	Contractor	Owner and/or Engineer	With bid documents	Owner		
2	Baseline Construction Schedule	Contractor	Owner and/or Engineer	With bid documents and update within 10 calendar days of the date of the Contract award	Owner and/or Engineer		
3	Name and Location of Recycling / Disposal Facility	Contractor	Owner and/or Engineer	With bid documents	Owner and/or Engineer	02300	1.06E
4	Leak Location Contractor's Work Plan	Contractor	Owner and/or Engineer	With bid documents	Owner and/or Engineer	02600	1.05B
5	Construction Start Date	Contractor	Owner and/or Engineer	5 Working days prior to construction start	Owner and/or Engineer	02300	1.06D
6	IEPA Water Pollution Control Construction Permit	Owner through Engineer	Contractor	Prior to project start	Contractor		
7	Site Superintendent/Foreman's Name & Phone Number	Contractor	Owner and/or Engineer	Prior to project start	Owner and/or Engineer		
8	Location of Off-site Fill Material Sources	Contractor	Owner and/or Engineer	Prior to project start	Owner and/or Engineer	02300	1.06C
9	Off-site Fill Material Certificates/Test Results	Contractor	Owner and/or Engineer	Prior to project start	Owner and/or Engineer	02300	1.06E
10	Resin Supplier, Address, Brand Name, Product Number and Test Results	Contractor	Owner and/or Engineer	Prior to project start	Owner and/or Engineer	02600	1.05A
11	Source and nature of additives	Contractor	Owner and/or Engineer	Prior to project start	Owner and/or Engineer	02600	1.05A
12	Geomembrane Installer's Information, Layout Diagram, Schedule, Seaming Equipment	Contractor	Owner and/or Engineer	Prior to project start	Owner and/or Engineer	02600	1.05A



**Table 2 - List of Submittals
South Ash Pond Liner Replacement Specifications
Midwest Generation - Will County**

	Submittal	From	To	Time Frame	Reviewer	Technical Specification	
						Section	Part
13	Accident Reports, Work Stoppage/Dispute Records, Contractor Invoices, Schedule of Values, Test Report Records, and Equipment Check Records	Contractor	Owner and/or Engineer	As Necessary	Owner and/or Engineer		
14	Cushion Material Representative Sample	Contractor	Owner and/or Engineer	Two weeks prior to delivery	Owner and/or Engineer	02300	2.03
15	Warning Layer Representative Sample	Contractor	Owner and/or Engineer	Two weeks prior to delivery	Owner and/or Engineer	02300	2.04
16	Geomembrane Manufacturer's Certification-PGI Standards	Contractor	Owner and/or Engineer	5 working days prior to delivery to site	Owner and/or Engineer	02600	1.05A
17	Geotextile - Product Information	Contractor	Owner and/or Engineer	5 working days prior to delivery to site	Owner and/or Engineer	02600	1.05A
18	Geomembrane Manufacturer's Certification - Product Information	Contractor	Owner and/or Engineer	5 working days prior to delivery to site	Owner and/or Engineer	02600	1.05A
19	Certification of Geomembrane Manufacturer's Quality Control Plan	Contractor	Owner and/or Engineer	5 working days prior to delivery to site	Owner and/or Engineer	02600	1.05A
20	Geomembrane Installer's Daily Logs and Quality Control Documentation	Contractor	Owner and/or Engineer	During geomembrane installation	Owner and/or Engineer	02600	1.05C
21	Geomembrane Installer's Subgrade Acceptance	Contractor	Owner and/or Engineer	Each day prior to geomembrane installation	Owner and/or Engineer	02600	1.05C 3.02A
22	Geomembrane Installation Certificate, As-Builts, and Warranties	Contractor	Owner and/or Engineer	Within 10 working days of geomembrane installation completion	Owner and/or Engineer	02600	1.05D



Table 2 - List of Submittals
South Ash Pond Liner Replacement Specifications
Midwest Generation – Will County

	Submittal	From	To	Time Frame	Reviewer	Technical Specification	
						Section	Part
23	Written Certification for Project	Contractor	Owner and/or Engineer	Upon completion of work	Owner and/or Engineer	01700	1.03B & C
24	Conditional and/or Final Geomembrane Installation Acceptance	Owner and/or Engineer	Contractor	Upon completion of geomembrane installation and submittals	Contractor	2600	1.05F
25	Record Documents	Contractor	Owner and/or Engineer	Prior to submittal of final invoice	Owner and/or Engineer	01700	1.04
26	Survey Data	Contractor	Owner and/or Engineer	Within 4 days following completion of survey	Owner and/or Engineer	01050	1.05
27	Final Leak Location Survey Report	Contractor	Owner and/or Engineer	Within 14 days following completion of leak location survey	Owner and/or Engineer	02600	1.05G



SECTION 01400
QUALITY ASSURANCE AND CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Construction Quality Assurance
- B. Contractor's Role
- C. Engineer's Role
- D. Owner's Role

1.02 CONSTRUCTION QUALITY ASSURANCE

- A. Owner shall arrange for and inform Contractor of inspection and testing activities to confirm that the construction activities and completed Work complies with Technical Specifications and Contract Drawings.
- B. Owner's inspection and testing activities shall consist of following activities:
 - 1. Daily observation and record of Contractor activities.
 - 2. Arrange for in-place soil compaction testing, as necessary.
 - 3. Obtain material samples and transport samples to laboratory, as necessary.
 - 4. On-site visual material inspection and testing.
 - 5. Verifying compliance with Technical Specifications and Drawings.

1.03 CONTRACTOR'S ROLE

- A. Perform work in strict accordance with Technical Specifications and Drawings, using necessary construction procedures and techniques. Coordinate, supervise, and oversee subcontractors as needed to perform construction activities.
- B. Perform testing as deemed necessary to satisfy requirements of Technical Specifications related to off-site materials prior to delivery to site. Materials that do not meet specifications shall be removed from site at Contractor's expense.
- C. Contractor shall replace and/or recompact material at Contractor's expense, if soil compaction not acceptable per compaction requirements.
- D. Furnish material samples and provide assistance in on-site inspection and test activities.
- E. Provide submittals required by Contract Documents within times specified. Failure to do so will result in withholding of payment.

- F. Perform or arrange survey and layout work to construct Work in accordance with Drawings and applicable sections of Technical Specifications.
- G. If manufacturer's instructions and/or standard industry practice conflicts with Technical Specifications or Drawings request clarification from Owner and/or Engineer before proceeding.
- H. Communicate any pertinent issues with the Owner and/or Engineer.

1.04 ENGINEER'S ROLE

- A. Provide clarifications to Technical Specifications and Drawings, as well as any necessary design changes requested by the Owner.
- B. Issue a Field Directive in cases where deviation from specified design, Technical Specifications and Drawings is necessary.
- C. Communicate any pertinent issues with the Owner and/or Contractor.
- D. Confirm construction compliance with Technical Specifications and Drawings by performing observations, inspections, verifications, and documentation activities, as directed by Owner.
- E. Provide photo documentation and daily written reports documenting construction according to the Technical Specifications and Drawings, as directed by Owner.
- F. Perform or observe soil and/or geosynthetic inspections and testing to confirm materials meet requirements herein, as directed by Owner.

1.05 OWNER'S ROLE

- A. Perform Owner's engineering review and monitor construction progress, progress payment approval, and approval of field job orders.
- B. Confirm construction compliance with Technical Specifications and Drawings by performing observations, inspections, verifications, and documentation activities, as necessary.
- C. Perform Owner's administrative and managerial responsibilities. Owner has authority to accept/reject materials and workmanship, and for dispute resolution.
- D. Communicate any pertinent issues with Contractor and/or Engineer. Maintain communication with IEPA, as necessary.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

1900 MWG-South Ash Pond Liner Replacement Specifications

Section 01400-2

**SECTION 01700
PROJECT CLOSEOUT**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description of Work
- B. Procedures
- C. Record Documents

1.02 DESCRIPTION OF WORK

- A. To provide an orderly and efficient transfer of the completed Work to the Owner.

1.03 PROCEDURES

- A. Remove temporary above grade or buried utilities, equipment, materials, prior to final application or payment inspection, and clean and repair damage caused by installation or use of temporary facilities.
- B. Substantial Completion: When all work described in the contract documents is completed:
 - 1. Owner and/or Engineer will prepare and submit a list of items to be completed for Contractor review and completion.
 - 2. Should the Owner and/or Engineer determine that the Work is not substantially complete; Contractor will remedy the deficiencies and notify the Owner and/or Engineer when ready for re-inspection.
- C. Final Completion:
 - 1. Remove waste and surplus materials, rubbish, and construction facilities from site.
 - 2. Prepare and submit the notice that all Work is complete.
 - 3. Certify in writing that the Work is complete and ready for final inspection.
 - 4. Owner and/or Engineer will make a final inspection to verify status of completion.

1.04 RECORD DOCUMENTS

- A. Contractor will maintain on site one set of following record documents of all items of work; record actual revisions of all items of work:
 - 1. Drawings.
 - 2. Technical Specifications.
 - 3. Change orders and other modifications to contract.
 - 4. A copy of approvals of work performed.
 - 5. Record documents.
- B. Engineer, as directed by Owner, will record information concurrent with construction progress including changes made by addenda and modifications.
- C. Contractor will maintain a Daily Field Log including work times, personnel on site, equipment used, and other essential information of the operation's progress.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02300 EARTHWORK

PART 1 - GENERAL

1.01 WORK INCLUDES

- A. Removal of Poz-o-pac liner and existing fill material from bottom of South Ash Ponds 2 and 3, excluding the area around the pipe support foundations, as needed to achieve subgrade elevation.
- B. Load, transport, and stockpile Poz-o-pac liner material from ponds to Owner's approved location on-site, as needed.
- C. Load, transport and stockpile excavated existing fill material to a stockpile area on site for reuse, as needed and directed by Owner.
- D. Clearing and grubbing vegetation and removing rocks and other debris greater than 3 inches in diameter along side slopes and base of pond.
- E. Load and transport rocks and other debris removed from liner subgrade to an approved recycling or disposal facility. Recycling or disposal facility will be determined by Owner.
- F. Installation of marker posts along toe of the pond side slopes, as shown on Contract Drawings, prior to installation of geomembrane.
- G. Trenching, backfilling, and compaction for anchoring geomembrane and geotextile including field verifying the location of underground utilities, protection and maintenance of trench, and support of existing structures (i.e., aboveground piping, outlet and inlet).
- H. Load and transport anchor trench spoils to an approved recycling or disposal facility. Recycling or disposal facility will be determined by Owner.
- I. Placement, grading, and compaction of excavated existing fill material, including loading and transporting from on-site stockpile area to reuse as cushion material following installation of Geomembrane, as approved and directed by Owner and/or Engineer.
- J. Placement and grading of cushion material, including transportation to site, following installation of geomembrane.
- K. Placement, grading, and compaction of warning layer material, including transportation to site, following placement of cushion material.
- L. Placement of riprap at base of outlet, including transportation to site.

1.02 RELATED SECTIONS

- A. Section 01050 – Field Engineering and Surveying
- B. Section 02600 – HDPE Geomembrane

1.03 DEFINITIONS

- A. **Structures and Surface Features:** Existing structures and surface features including buildings, signs, posts, utility poles, fences, trees, shrubs, landscaped surface features, and other miscellaneous items.
- B. **Utilities:** Existing gas mains, water mains, electric lines, storm sewers and conduits, telephone and other communication lines and conduits, sewer pipe, cable television, other utilities, and appurtenances.
- C. **Clearing and Grubbing:** cutting, removal and disposal of trees, roots, brush, stumps, windfalls, logs, and other vegetation.

1.04 REFERENCES

- A. ASTM D422-63 – Standard Test Method for Particle-Size Analysis of Soils.
- B. ASTM D2487-93 – Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- C. ASTM D2940 – Standard Specifications for Graded Aggregate Material for Bases or Subbases for Highways or Airports
- D. State of Illinois, Department of Transportation, Standard Specifications for Road and Bridge Construction, current edition.
- E. OSHA 29 CFR Part 1926, Occupational Safety and Health Standards: Excavations.

1.05 PERFORMANCE REQUIREMENTS

- A. Excavation and grading shall be done without damage to adjacent property or structures and without interference to public and/or plant pedestrian and vehicular traffic.
- B. Complete Work to required grades as indicated in the Contract Drawings.

1.06 SUBMITTALS

- A. In accordance with Section 01300.

- B. Submit prior to start of construction the name and location of all sources that will be used to obtain the materials specified in this Section.
- C. Provide Owner and/or Engineer written notice of construction start date at least five working days prior to beginning site activities.
- D. Submit for documentation certificates and/or test results for one sample of each material obtained from off-site sources indicating compliance with Specifications prior to start of construction. Owner and/or Engineer may take random samples of the material upon delivery or placement to verify compliance with the Specifications.

PART 2 - PRODUCTS

2.01 GENERAL SOIL MATERIALS

- A. Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
 - a. Satisfactory Soils: ASTM D2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
 - b. Unsatisfactory Soils: ASTM D2487 soil classification groups GC, SC, MH, CH, OL, OH, and PT, or a combination of these group symbols.
- D. Poz-o-Pac Material: Unidentified quantity of material at the base of the pond is a stabilized subgrade/liner that is comprised with lime, fly ash and aggregate. Compressive strength could be between 500 to 1,000 psi.
- E. Excavated Existing Fill Material: Excavated material from base of the pond between the first and second Poz-o-pac liners that does not require disposal and may be reused as backfill, subject to Owner's and/or Engineer's approval.
- F. Anchor Trench Backfill: Trench spoils free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- G. Riprap at Base of Outlet: Riprap shall be durable field or quarry stone between 4 and 12 inches in diameter.

2.03 CUSHION MATERIAL

- A. Conform to Section 1003.01, Fine Aggregates of IDOT Standard Specifications for Road and Bridge Construction:
 - a. Description: Sand or screenings

- b. Grade No. FA 1, FA 2, FA3 or FA5 shall be used;
 - c. Excavated existing fill material subject to Owner's and/or Engineer's approval; and/or
 - d. Other materials with greater or equal characteristics with the written approval of the Owner and/or Engineer.
- B. Contractor shall provide Owner and/or Engineer a representative gradation (ASTM D422) and classification (ASTM D2487) for the cushion layer two weeks prior to delivery to site.

2.04 WARNING LAYER MATERIAL

- A. Imported Warning Layer Material shall be obtained from an off-site borrow source of the Contractor's choice and shall at a minimum satisfy the following specifications:
- 1. Conform to Section 1004.04, Coarse Aggregate for Stabilized Subbase of Standard Specifications for Road and Bridge Construction:
 - a. Grade No. CA 6 shall be used; or
 - b. Other materials with greater or equal characteristics with the written approval of the Owner and/or Engineer.
- B. Contractor shall provide Owner and/or Engineer a representative gradation (ASTM D422) and classification (ASTM D2487) for the warning layer two weeks prior to delivery to site.

PART 3 - EXECUTION

3.01 PROTECTION OF UTILITIES AND STRUCTURES

- A. At least ten business days before beginning Work, coordinate utility locate with Owner and Owner's utility locator for locating Owner's private utilities near the South Ash Ponds.
- B. Protect existing utilities not specified for removal against damage.
- C. Locate existing underground utilities by hand excavation.
- D. If unmarked utilities are encountered during excavation, stop work, place work in a safe condition, and notify Owner and/or Engineer.
- E. Preserve and protect benchmarks and other structures. If damaged during construction, notify Owner and/or Engineer immediately. If determined by Owner and/or Engineer that the integrity of the structure is compromised, Contractor shall repair damaged

benchmarks or other structures at Contractor's expense under observation of Owner and/or Engineer.

- F. Protect, support, and maintain conduits, wires, pipes, or other utilities that are to remain in place during work as indicated in the Contract Drawings.

3.02 PREPARATION

- A. Contractor shall perform, as necessary, additional survey and layout to establish location, line and grades for controlling the work.
- B. Vicinity Controls
 - 1. **Surface Water:** Contractor is responsible for management of surface water and maintaining adequate berms and drainage to control surface water run-on into the ash pond, as needed. Surface water and run-on water may be directed to South Ash Pond 2, as needed to complete work and as approved by Owner.
 - 2. **Dust Controls:** Dust shall be minimized at all times. Appropriate engineering controls shall be maintained that include using a light water spray with or without additives as approved by the Owner to minimize off-site migration of fugitive dust from stockpiles, truck routes, and other Contractor disturbed areas.

3.03 LINER SUBGRADE

- A. Remove entire first layer of Poz-o-pac liner (estimated thickness 12 inches) from base of pond, excluding the area around the pipe support foundations, as indicated on Contract Drawings. Poz-o-pac liner may not exist in some areas at the original base elevation of 582.5 feet above mean sea level (NGVD 29 datum). Contractor shall verify base of pond elevation prior to removal of material. Assume 800 cubic yards of Poz-o-pac material will be removed from each pond. The material shall be stockpiled on-site, as directed by Owner. Final destination and laboratory sampling of stockpiled material will be managed by Owner. Contractor shall be responsible for handling and transporting excavated poz-o-pac liner to approved final destination. Costs associated with the handling, transporting and final disposal of material will be provided at a later date by Contractor.
- B. Contractor shall excavate 6 inches of existing fill material from beneath first layer of Poz-o-pac liner. Contractor shall verify final base of pond subgrade surface is at 581 feet above mean sea level (NGVD 29 datum). Second layer of Poz-o-pac liner and/or bedrock surface shall not be exposed at the base pond. Existing fill material shall be stockpiled on-site, as directed by Owner. Fill material to be reused as backfill, as described in 3.03F and subject to Engineer and/or Owner approval.
- C. Ash pond side slopes shall be graded to 3 horizontal to 1 vertical (3H:1V), or as approved by the Owner and/or Engineer. The base of the pond subgrade surface shall not exceed a 1% slope (shall be relatively flat).

- D. Contractor shall prepare the liner subgrade by clearing and grubbing vegetation and removing rocks and other debris greater than 3 inches in diameter along side slopes and base of pond.
- E. Contractor shall clear ramp surface of rocks, debris and soil that may pose a hazard to the geomembrane liner to the extent practical.
- F. Place excess fill material at base of pipe supports to provide a smooth transition between the base of the pond and pipe support structure for placement of the geomembrane liner, as shown on the Contract Drawings. No more than 6 inches of material shall be placed at the base of the structures.
- G. Place excess fill at base of outlet structure to provide a smooth transition for placement of the geomembrane liner, as shown on the Contract Drawings.
- H. Smooth subgrade with smooth-drum compactor. Do not roll wet or saturated subgrade.
- I. Reconstruct liner subgrade damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Owner and/or Engineer and Geomembrane Installer.
- J. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances (3.03C).
- K. The surface of the subgrade shall be acceptable to the Owner and/or Engineer and Geomembrane Installer, and graded so it is free of irregularities, protrusions, loose soil, and abrupt changes in grade. Rocks with sharp protrusions and rocks or other debris greater than 3 inches in any dimension shall be removed.
- L. Vegetation, rocks and other debris removed during subgrade preparation shall be loaded and transported to an approved recycling or disposal facility.

3.04 ANCHOR TRENCH

- A. Excavate to required alignment and grade. Where feasible, Contractor shall place anchor trench at least 2 feet from top of side slopes. If not feasible, Contractor shall submit proposed alignment to Owner and/or Engineer for approval.
- B. Contractor shall not excavate more than the amount of anchor trench required for one day of geosynthetics deployment, unless otherwise specified by the Owner and/or Engineer. Rounded corners shall be provided in the trenches where the geosynthetics enter the trench to allow them to be uniformly supported by the subgrade and to avoid sharp bends.
- C. Remove water which may accumulate in trench. Water shall be pumped to South Ash Pond 2 (active pond), as directed by Owner and/or Engineer.
- D. Owner and/or Engineer may limit amount of open trench where field conditions dictate.
- E. Owner and/or Engineer may order additional excavation where unsuitable soil conditions are encountered.

- F. Excavations shall be filled with trench spoils, as directed by Owner and/or Engineer. Care shall be taken when backfilling to prevent any damage to Geomembrane or other geosynthetics that may be placed prior to backfilling.
- G. Anchor Trench Backfill shall be mechanically compacted to a hard durable surface with no evidence of pumping or ponding of water. Backfill shall be compacted to the degree that no further appreciable consolidation is evident under the action of compaction equipment. The geosynthetics shall not be supported by loose soils in anchor trenches.
- H. Anchoring, backfilling, and compaction of anchor trench will be observed by Owner and/or Engineer.

3.05 INSTALLATION OF MARKER POSTS

- A. Prior to deployment of the geomembrane liner, Contractor shall install marker posts along the toe of the pond side slopes, as shown on Contract Drawings.
- B. Contractor shall drill 4 feet deep, 1 foot diameter holes. The hole shall be backfilled with concrete and 12 foot long steel poles.
- C. Marks spaced every foot from the top of the subgrade layer shall be inscribed in the steel poles to the top of the pole, as indicated on the Contract Drawings.

3.06 PLACEMENT OF CUSHION AND WARNING LAYER MATERIALS

- A. Prior to placement of the cushion and warning layer materials, the Owner and/or Engineer and Geomembrane Installer shall verify the area of geomembrane completion and provide Contractor notification to proceed with placement of cushion and warning layers.
- B. Contractor shall place cushion material to achieve 12-inch thickness over the 12-oz non woven geotextile within the Ash Pond, as indicated on Contract Drawings. The cushion material shall be placed at least 4 feet along the pond's side slopes over the non woven geotextile.
- C. Contractor shall place warning layer material to achieve 6-inch thickness over the cushion material within the Ash Pond, as indicated on Contract Drawings. The warning layer material shall be placed at least 4 feet along the pond's side slopes over the cushion material.
- D. Cushion and warning layer materials shall not be placed directly on geomembrane.
- E. Place materials evenly on all sides of structures to required elevation.

- F. Compact warning layer with smooth-drum roller to a hard, durable surface with no evidence of pumping or ponding of water. Materials shall be compacted to the degree that no further appreciable consolidation is evident under the action of compaction equipment.
- G. Apply following general criteria for covering of the 12-oz non woven geotextile and geomembrane liner:
 - 1. Do not place soils on the geomembrane at an ambient temperature below 32 degrees F, (0 degrees C) nor above 104 degrees F (40 degrees C), unless otherwise specified.
 - 2. Do not drive equipment used for placing soil directly on the geomembrane.
 - 3. A minimum thickness of 1 foot of soil shall be between tracked equipment and the geomembrane.
 - 4. Do not compact soils placed directly on geomembrane.
 - 5. Damage to the geomembrane resulting from placement of cover soils shall be repaired in accordance with Section 02600 by the Geomembrane Installer at the Contractor's expense.
 - 6. Do not push soil downslope. Soil shall be placed over the geomembrane starting from base of the slope, up to top of the slope.

3.07 PLACEMENT OF RIPRAP

- A. Place 12-inch thick layer of riprap at the base of the outlet over 12 oz non woven geotextile. The non woven geotextile shall cover the geomembrane batten bar attachment.
- B. Riprap shall be placed cautiously to prevent damage to the batten bar attachment and geomembrane. Any damages to the batten bar or geomembrane shall be repaired at Contractor's expense.

3.08 RAMP CONSTRUCTION

- A. Following installation of 16-oz non woven geotextile and geomembrane, Contractor shall place two layers of 12-oz non woven geotextile over geomembrane.
- B. Following installation of the geomembrane and two layers of 12-oz non woven geotextile, Contractor shall place and compact cushion material to achieve 6 inch thickness over the 12-oz non woven geotextile.
- C. Contractor shall place warning layer material to achieve 6-inch thickness over the cushion material to construct final ramp surface.

- D. The final ramp surface shall maintain 6H:1V slope toward the base of the ramp, as indicated on Contract Drawings.
- E. Compaction shall be conducted with smooth-drum roller.

3.09 GUARDRAIL (OPTION)

- A. Furnish and install guardrails along edge of pond, as shown on Contract Drawings and as directed by Owner based on field conditions. Guardrails are to be placed between the geomembrane anchor trench and no more than 5 feet from the top of pond slope. Access road between South Ash Ponds 2 and 3 shall be no less than 15 feet wide between installed guardrails. Guardrails sections shall be placed every 20 feet, as shown on Contract Drawings and as approved by Owner and/or Engineer.
- B. Drill approximately 44 inch deep hole every 12 feet, 6 inches at locations shown on Contract Drawings. Install 4 inch x 6 inch x 6 feet timber post in each hole.
- C. Attach 12 feet, 6 inch or 25-foot length, 12 gauge steel W-Beam guardrail to posts. The finished guardrail height shall be 27 inches above the ground surface, as shown on Contract Drawings. Secure guardrail to post in accordance with manufacture's requirements/instructions.
- D. Flared end sections shall be installed at each end of guardrail.

3.11 BACKFILLING, GENERAL

- A. Material used to construct surface water diversion berms, as needed, may be reused for backfill as directed by the Owner and/or Engineer.
- B. Imported backfill materials shall be pre-approved by the Owner and/or Engineer before delivery to the site in accordance with this Section.
- C. Materials placed, which are not conforming to the Technical Specifications, shall be reworked or removed. Replacement material and fill surfaces upon which it is placed shall conform to all requirements of this specification. All reworking or removal and replacement will be performed at Contractor's expense.
- D. Mechanical tamping around structures shall be done in no greater than 6-inch lifts.

3.12 STOCKPILING, GENERAL

- A. Stockpile materials on site at locations specified by Owner and consistent with the Contractor's Earthwork Plan.
- B. Stockpile in sufficient quantities to meet project schedule and requirements.
- C. Separate differing materials and stockpile separately to prevent mixing.

- D. Direct surface water away from stockpiles to prevent erosion or deterioration of materials, as needed.

3.13 MOISTURE CONTROL

- A. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- B. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that is too wet to compact to specified dry unit weight.

3.14 GRADE TOLERANCE

- A. Cushion layer shall have minimum thickness of 12-inches, shall have a tolerance of 0 to +0.1 feet of design grade.
- B. Warning layer shall have a minimum thickness of 6-inches, shall have a tolerance of 0 to +0.1 feet of design grade.
- C. Top of ramp surface is to be a minimum thickness of 12-inches, shall have a tolerance of 0 to +0.1 feet of design grade.
- D. Layer thickness shall be measured vertically. Minimum thickness shall be measured against previous layer grades.

3.15 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Owner and/or Engineer, reshape and recompact.
- C. Where settling occurs before Project completion, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.16 SITE RESTORATION AND CLEANUP

- A. Remove surplus soil and waste material, including unsatisfactory soil, trash, and debris, and transport off-site for disposal as directed by the Owner.
- B. Restore pavement, base course, topsoil, landscaping, and utilities which are disturbed during the performance of the Work to preconstruction condition.
- C. Temporary erosion control measures shall be removed.
- D. Contractor shall correct, at no expense to the Owner, any damage to buildings, telephone or other cables, overhead and underground utilities or their structures as a result of his construction, whether or not the item is shown on the Contract Drawings.
- E. All Contractor equipment and materials shall be removed from the site.

END OF SECTION

SECTION 02600
HIGH DENSITY POLYETHYLENE (HDPE) GEOMEMBRANE

PART 1 - GENERAL

1.01 WORK INCLUDES

- A. Furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for installation of 60-mil High Density Polyethylene (HDPE) geomembrane, as specified herein, and as shown on Contract Drawings.

1.02 REFERENCE STANDARDS

- A. ASTM D1004 – Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
- B. ASTM D1238 – Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
- C. ASTM D1505 – Test Method for Density of Plastics by the Density-Gradient Technique.
- D. ASTM D1603 – Test Method for Carbon Black in Olefin Plastics.
- E. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
- F. ASTM D5199 – Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
- G. ASTM D5397 – Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.
- H. ASTM D5596 – Test Method for Microscopic Evaluation of Dispersion of Carbon Black in Polyolefin Geosynthetics.
- I. ASTM D5994 Standard Test Method for Measuring Core Thickness of Textured Geomembranes.
- J. ASTM D6392 – Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.
- K. ASTM D6693 Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.
- L. ASTM D7007 Standard Practice for Locating Leaks in Geomembranes Covered with Water or Earthen Materials.
- M. GRI Test Method, GM 9 – Cold Weather Seaming of Geomembranes
- N. GRI Test Method, GM 13 - Test Methods, Test Properties and Testing Frequency for

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High Density Polyethylene (HDPE) Smooth and Textured Geomembranes

- O. GRI Test Method, GM 14 – Selecting Variable Intervals for Taking Geomembrane Destructive Seam Samples Using the Method of Attributes.
- P. GRI Test Method, GM 19 – Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes.

1.03 DEFINITIONS

- A. Geomembrane Installer: hired by Contractor responsible for field handling, transporting, storing, deploying, seaming and testing of the geomembrane seams.
- B. Geomembrane Manufacturer: hired by Geomembrane Installer to provide HDPE geomembrane.
- C. Leak Location Contractor: hired by Contractor and responsible for locating potential holes in the installed geomembrane using electrical methods.
- D. Geosynthetic Quality Assurance Laboratory (Testing Laboratory): Party, independent from the Owner, Manufacturer and Installer, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the Owner.
- E. Lot: A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.
- F. Resin Supplier: selected by Geomembrane Manufacturer to provide resin used in manufacturing geomembrane.
- G. Panel: Unit area of a geomembrane that will be seamed in the field that is larger than 100ft².
- H. Patch: Unit area of a geomembrane that will be seamed in the field that is less than 100ft².
- I. Subgrade Surface (Bedding Layer): Soil Layer surface which immediately underlies the geosynthetic material(s).

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - I. Geomembrane Installer:
 - a. 5 years of continuous experience in installation of HDPE geomembrane.
 - b. Experience totaling a minimum of 5,000,000 square feet of installed HDPE geomembrane on some combination of at least 10 completed facilities.

High Density Polyethylene (HDPE) Geomembrane

- c. Personnel performing seaming operations qualified by experience or by successfully passing seaming tests. Master seamer shall have experience seaming a minimum of 3,000,000 square feet of geomembrane using same type of seaming apparatus to be used on this project.
- d. Geomembrane Installer that is qualified and approved by Engineer is listed below:
 - i. **Clean Air and Water Systems**
Dousman, WI
Brain McKeown
262-965-4366

2. Leak Location Contractor:

- e. 3 years of continuous experience in performing leak location surveys using electrical methods.
- f. Experience totaling a minimum of 2,000,000 square feet of geomembrane leak location surveys on some combination of at least 5 completed facilities.
- g. Personnel performing survey qualified by experience with at least 2 years of geomembrane testing experience using the leak location survey electrical method.
- h. Leak Location Contractors that are qualified and approved by Engineer are listed below:
 - i. **Leak Location Services, Inc.**
San Antonio, TX
210-408-1241
 - ii. **The Hutchinson Group, Ltd.**
Murrysville, Pennsylvania
724-325-3996
 - iii. Or other approved by Owner and/or Engineer.

B. Quality Assurance Program:

- 1. Geomembrane Manufacturer/Installer shall conform with requirements of these Technical Specifications.
- 2. The Owner and/or Engineer may document geomembrane installation including panel placement, seaming, pre-qualification seam testing, non-destructive seam and repair testing, repair size and locations, and weather conditions.
- 3. The Owner may engage and pay for the services of Engineer and QA Laboratory to monitor geomembrane installation.

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Section 02600-3

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1.05 SUBMITTALS

- A. Prior to project start, submit the following to Owner and/or Engineer in accordance with Section 01300, Submittals:**
- 1. Raw Materials:**
 - a. Name of Resin Supplier, location of supplier's production plant(s), resin brand name and product number.**
 - b. Source and nature of plasticizers, fillers, carbon black and any other additives along with their percent addition to geomembrane material.**
 - c. Test results documenting conformance with the "index properties" of GRI Test Method, GM 13.**
 - 2. Geomembrane Manufacturer's Certification:**
 - a. Written certification that Geomembrane Manufacturer's Quality Control Plan was fully implemented during production of geomembrane material supplied for this project. (Submittal shall be made within 5 working days of delivery to site).**
 - 3. Geomembrane Manufacturer Production Information:**
 - a. Corporate background information indicating compliance with qualification requirements.**
 - b. Quality control plan for manufacturing.**
 - c. Copy of quality control certificates demonstrating compliance with the quality control plan for manufacturing and the test property requirements of GRI Test method, GM 13 (i.e., mill certificates).**
 - 4. Contractor shall provide the Engineer a certificate stating the name of the geotextile manufacturer, product name, chemical composition of the filaments and other pertinent information to fully describe the geotextile.**
 - 5. Geomembrane Installer's Seaming Personnel**
 - a. Corporate background information indicating compliance with qualification requirements.**
 - b. Training completed by personnel.**
 - c. Seaming experience for each personnel.**
 - 6. Geomembrane Installer's Information:**

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- a. Corporate background information indicating compliance with qualification requirements.
 - b. List of completed facilities, totaling 5,000,000 square feet minimum for which Geomembrane Installer has completed installation of a HDPE geomembrane. Include name and purpose of facility, location, date of installation, and quantity installed.
 - c. Resumes of personnel performing field seaming operation, along with pertinent experience information. Include documentation regarding which seamers are qualified to use thermal fusion welding apparatus.
 - d. Installation quality control plan.
7. Installation panel layout diagram identifying placement of geomembrane panels, seams, and any variance or additional details which deviate from Contract Drawings or Technical Specifications. Layout shall be drawn to scale and shall be adequate for use as a construction plan. Layout shall include dimensions and pertinent seam and anchorage details.
8. Installation Sequence and Schedule shall be included as part of Construction Progress Schedule.
9. Description of seaming apparatus to be used indicating compliance with specified requirements.
- B. With bid, submit the following to Owner and/or Engineer in accordance with Section 01300, Submittals
1. Leak Location Contractor's Work Plan:
 - a. Corporate background information indicating compliance with qualification requirements.
 - b. List of completed facilities, totaling 2,000,000 square feet minimum of geomembrane leak location surveys on some combination of at least 5 completed facilities. Include name and purpose of facility, location, date of survey, survey method, and quantity surveyed.
 - c. Resumes of personnel performing leak location survey, along with pertinent experience information.
 - d. Leak Location Contractor quality control plan including description of the proposed survey methods and procedures, and field calibration procedures.
 - e. Leak Location Contractor's required site preparations to be completed to perform the proposed leak location survey, and estimated duration to complete the survey.

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- f. An example of a final report (per ASTM D 7007) provided by the Leak Location Contractor following the completion of the survey.
- C. During installation, submit the following to the Owner and/or Engineer:
 - 1. Daily records/logs prepared by Geomembrane Installer documenting work performed, personnel involved, general working conditions, and any problems encountered or anticipated on project. Submit on a weekly basis.
 - 2. Copy of subgrade acceptance signed by Geomembrane Installer for areas to be covered with geomembrane each day.
- D. Within 10 days of geomembrane installation completion, submit the following to Owner and/or Engineer:
 - 1. Geomembrane installation certification that Work was performed under Geomembrane Installer's approved quality control plan and in substantial compliance with Technical Specifications and Contract Drawings.
 - 2. As-built panel diagram identifying placement of geomembrane panels, seams, repairs, and destructive seam sample locations.
 - 3. Copy of warranty for material (including factory seams) and installation covering both for a period of 2 years from the date of substantial completion.
- E. The Owner and/or Engineer will review and inspect geomembrane installation upon completion of all Work specified in this Section. Deficiencies noted shall be corrected at no additional cost to the Owner.
- F. The Owner and/or Engineer will provide written final acceptance of the geomembrane installation after completion of the leak location survey. Written conditional geomembrane installation acceptance can be provided to the Contractor prior to completion of the leak location survey when the following conditions are satisfied, if necessary, and requested by the Contractor:
 - 1. The entire geomembrane installation is completed or any pre-determined subsection if the project is phased.
 - 2. All installation quality assurance/control documentation has been completed and submitted to the Owner and/or Engineer.
 - 3. Verification of the adequacy of all field seams, repairs and associated testing is complete.
- G. Within 14 days of completion of the leak location survey, submit final written report (per ASTM D 7007) of the leak location survey provided by Leak Location Contractor.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Transportation:

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High Density Polyethylene (HDPE) Geomembrane

1. Geomembrane rolls shall be transported, unloaded and handled at the job site in accordance with manufacturer recommendations. Damaged material may be rejected by the Owner and/or Engineer. Manufacturer packaging shall be labeled in accordance with Section 02700, 2.02G.
- B. On-site Storage:**
1. Geomembrane rolls which have been delivered to job site shall be unloaded and stored in original, unopened packaging in a secure location, determined by Owner and/or Engineer.
 2. Store geomembrane rolls to ensure adequate protection against exposure to the following:
 - a. Equipment;
 - b. Strong oxidizing chemicals, acids, or bases;
 - c. Flames, including welding sparks;
 - d. Temperatures in excess of 160 deg. F;
 - e. Dust;
 - f. Ultraviolet radiation (i.e. sunlight); and
 - g. Inclement weather.
 3. Whenever possible, provide a 6-inch minimum air space between rolls.
 4. Containers/rolls shall not be stacked.
- C. On-Site Handling:**
1. Handle rolls per Geomembrane Manufacturer's recommendations and as necessary to prevent damage.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Geotextile to be used for cushioning between subgrade and geomembrane shall be polyester or polypropylene, non-woven needlepunched fabric and shall conform to the following requirements:

GEOTEXTILE PROPERTIES

Property	Units	Value	Test	Criterion
Mass Per Unit Area	oz/yd ²	16	ASTM D5261	MARV
Puncture Strength	lb	170	ASTM D4833	MARV
Trapezoid Tear	lb	145	ASTM D4533	MARV
Grab Tensile Strength	lb	370	ASTM D4632	MARV
Grab Elongation	%	50	ASTM D4632	MARV
UV Resistance @500 hours	% retained	70	ASTM D4355	Minimum

- B. Geotextile to be used for separation between geomembrane and cushion material shall be polyester or polypropylene, non-woven needlepunched fabric and shall conform to the following requirements:

GEOTEXTILE PROPERTIES

Property	Units	Value	Test	Criterion
Mass Per Unit Area	oz/yd ²	12	ASTM D5261	MARV
Apparent Opening Size	US Sieve	100	ASTM D4751	MARV
Puncture Strength	lb	210	ASTM D4833	MARV
Trapezoid Tear	lb	125	ASTM D4533	MARV
Grab Tensile Strength	lb	320	ASTM D4632	MARV
Grab Elongation	%	50	ASTM D4632	MARV
UV Resistance @500 hours	% retained	70	ASTM D4355	Minimum

- C. High Density Polyethylene (HDPE) White Textured Geomembrane

1. HDPE geomembrane shall be white, textured (both sides), 60-mil product approved by the Owner and/or Engineer.
2. The Contractor shall submit, with the bid, written certification from the proposed Geomembrane Manufacturer that geomembrane products proposed in the bid satisfy the following requirements:
 - a. The proposed Geomembrane Manufacturer shall have a minimum of 5 years of continuous experience manufacturing HDPE geomembrane totaling 1,000,000 square feet.
 - b. The proposed HDPE compound shall be comprised entirely of virgin materials. Compliance with this specification shall be documented in accordance with Geomembrane Manufacturer's quality control program

and submitted to the Owner and/or Engineer with the written conformance certification.

- c. The proposed Geomembrane Manufacturer shall certify that any plasticizers, fillers and additives incorporated into the manufacturing process for the proposed HDPE geomembrane have demonstrated acceptable performance on past projects.
- d. The proposed geomembrane shall meet the requirements of Geosynthetic Research Institute's test method GM 13.
- e. The nominal thickness of proposed geomembrane shall be 60 mil., or as approved by the Owner and/or Engineer.
- f. Geomembrane Manufacturer that is qualified and approved by Engineer:
 - i. **GSE**
Houston, TX
800 435 2008

- 3. Geomembrane sheets shall be visually consistent in appearance and shall contain no holes, blisters, undisbursed raw materials or other signs of contamination by foreign material. Geomembrane must have no striations, roughness or bubbles on the surface.

B. Seaming Apparatus

- 1. Thermal fusion welding machines used for joining geomembrane surfaces may be either extrusion or hot wedge. These machines shall include sufficient temperature and rate-of-travel monitoring devices to allow continuous monitoring of operating conditions.
- 2. One spare, operable thermal fusion seaming device shall be maintained on site at all times.

C. Field Test Equipment

- 1. **Field Tensiometer:** the field tensiometer shall be calibrated within three months prior to project start date over the range of field test values.
- 2. **Air Channel Test Equipment:** air channel test equipment shall consist of hoses, fittings, valves and pressure gauge(s) needed to deliver and monitor the pressure of compressed air through an approved pressure feed device.
- 3. **Air Compressor:** the air compressor utilized for field testing shall be capable of producing and maintaining an operating pressure of at least 50 psi.
- 4. **Vacuum Box:** the vacuum box shall consist of a vacuum gage, valve, and a gasket around the edge of the open bottom needed to apply vacuum to a surface.

2.02. CONFORMANCE TESTING REQUIREMENTS

- A. Geomembrane shipped to site shall undergo conformance testing. Manufacturer's roll certificates may be used for conformance evaluation at the option of the Owner and/or Engineer. Nonconforming material shall either be retested at the direction of the Owner and/or Engineer or removed from site and replaced at Contractor's expense.**

- B. Conformance Test Methods**
 - 1. Samples will be located and collected by the Owner and/or Engineer at a rate of one sample per 100,000 square feet of geomembrane delivered to site.**
 - 2. One sample will be obtained from each geomembrane production batch delivered to the site.**
 - 3. Samples shall be cut by Geomembrane Installer and be at least 45 square feet in size.**
 - 4. Samples shall be tested in accordance with Table 1 (Smooth) or Table 2 (Textured) specified in GRI Test Method GM13.**
 - 5. Geomembrane thickness shall be measured a minimum of three times per panel during deployment to verify conformance with GRI Test Method GM13.**

- C. Role of Testing Laboratories**
 - 1. The Owner and/or Engineer will be responsible for acquiring samples of the geomembrane for conformance testing. The Owner or Engineer will retain an independent, third party laboratory to perform conformance testing on samples of geomembrane.**
 - 2. Retesting of geomembrane panels by the Geomembrane Installer because of failure to meet any of the conformance specifications can only be authorized by the Owner and/or Engineer. Non-conforming panels may be retested in accordance with Subsection 2.03(B) and 2.03(D) under authorization of the Owner and/or Engineer.**
 - 3. The Geomembrane Manufacturer and/or Geomembrane Installer may perform independent tests in accordance with methods and procedures specified in Subsection 2.03(B). Results shall not be substituted for quality assurance testing described herein.**

- D. Procedures for Determining Conformance Test Failures**
 - 1. If conformance test results fail to meet specifications, the roll and/or batch may be retested using specimens from either the original roll sample or from another**

sample collected by the Owner and/or Engineer. Two additional tests (retests) shall be performed for each failed test procedure. Each retest shall consist of multiple specimen tests if multiple specimens are specified in the test procedure. If the results of both retests meet specifications, the roll and batch will be considered to have passed conformance testing.

2. Failure of any retest shall be cause for rejection of the entire roll or batch depending on the type of failing test. The Owner and/or Engineer reserves the right to collect samples from other roll of a particular batch for further conformance testing. The Owner and/or Engineer may choose to accept only a portion of the batch on the basis of the results of conformance testing of samples collected from other rolls.
3. If retesting does not result in conformance with the specifications as defined in preceding paragraph, or if there are any other nonconformities with the material specifications, the Contractor shall remove the rolls from use in project. The Contractor shall also be responsible for removal of rejected geomembrane from the site and replacement with acceptable geomembrane at no additional cost to the Owner.

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION MEETING

- A. A Pre-Construction Meeting shall be held at the site to discuss and plan the details of geomembrane installation. This meeting shall be attended by the Geomembrane Installer, Owner, Engineer and the Contractor.
- B. The following topics relating to geomembrane installation shall be addressed:
 1. Responsibilities of each party.
 2. Lines of authority and communication.
 3. Methods for documenting, reporting and distributing documents and reports.
 4. Procedures for packaging and storing archive samples.
 5. Review of the schedule for all installation and quality assurance testing, including third-party testing turnaround times.
 6. Review of panel layout, access and numbering systems for panels and seams including details for marking on the HDPE geomembrane.
 7. Procedures and responsibilities for preparation and submittal of as-built drawings.

8. Temperature and weather limitations, installation procedures for adverse weather conditions and defining acceptable subgrade or ambient moisture and temperature conditions for working during liner installation.
9. Subgrade conditions, dewatering responsibilities and subgrade maintenance plan.
10. Deployment techniques including allowable subgrade for geomembrane.
11. Procedures for covering of the geomembrane to prevent damage.
12. Plan for minimizing wrinkles in the geomembrane.
13. Measurement and payment schedules.
14. Site health and safety procedures/protocols.

3.02 SUBGRADE PREPARATION

- A. The Geomembrane Installer shall visually inspect the subgrade immediately prior to geomembrane deployment. Inspection shall verify that there are no potentially harmful foreign objects present, such as sharp rocks and other deleterious debris. Any foreign objects encountered shall be removed by Geomembrane Installer or Contractor. All subgrade damaged by construction equipment and deemed unsuitable for geomembrane deployment shall be repaired prior to geomembrane deployment. All repairs shall be approved by the Owner and/or Engineer and Geomembrane Installer. The responsibility for preparation, repairs, and maintenance of the subgrade shall be defined in the preconstruction meeting. The Geomembrane Installer shall provide the Owner and/or Engineer with written acceptance of subgrade surface over which 16 oz non woven geotextile and geomembrane is deployed (Part 1.05C) for each day of deployment.

3.03 GEOMEMBRANE LINER DEPLOYMENT

- A. Geomembrane Installer shall deploy 16-oz non woven geotextile following applicable certifications/quality control certificates listed in subsection 1.05 of this section and approved by the Owner and/or Engineer. Any 16-oz non woven geotextile placed prior to approval by the Owner and/or Engineer shall be at the sole risk of the Contractor. If geotextile installed prior to approval by the Owner and/or Engineer does not meet the requirements of this specification, it shall be removed from the site at no additional cost to the Owner.
- B. Geomembrane will be deployed following installation of 16-oz non woven geotextile and applicable certifications/quality control certificates listed in subsection 1.05 of this section according to submitted panel layout drawing as approved by the Owner and/or Engineer. The Owner and/or Engineer is to be notified of and approve any revisions or modifications to the approved panel layout drawing prior to deploying geomembrane in the area of review.
- C. Adequate temporary anchoring (sand bags, tires, etc.) that will not damage the geomembrane shall be placed on a deployed panel to prevent uplift by wind.
- D. Geomembrane shall not be deployed if:

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1. Ambient temperatures are below 41 degrees F (5 degrees C) or above 104 degrees F (40 degrees C) measured six inches above geomembrane surface unless approved by the Owner and/or Engineer.
 2. Precipitation is expected or in the presence of excessive moisture or ponded water on the subgrade surface.
 3. Winds are excessive as determined by Geomembrane Installer in agreement with the Owner and/or Engineer.
 4. The Owner and/or Engineer will have the authority to suspend work during such conditions.
- E. The Geomembrane Installer shall be responsible for conformance with the following requirements:
1. Equipment utilized for installation/quality assurance testing does not damage geomembrane. Such equipment shall have rubber tires and a ground pressure not exceeding 5 psi or total weight exceeding 750 lbs. Only equipment necessary for installation and quality assurance testing is allowed on the deployed geomembrane.
 2. Personnel working on geomembrane do not damage geomembrane (activities such as smoking or wearing damaging clothing shall not be allowed).
 3. Method of deployment does not damage geomembrane.
 4. Method of deployment minimizes wrinkles.
 5. Temporary loading or anchoring does not damage geomembrane.
 6. Direct contact with geomembrane is minimized.
- F. Geomembrane Installer shall place 12-oz non woven geotextile on the geomembrane at the base of the impoundment and at least 4 feet up side slopes, as indicated on Contract Drawings. Geomembrane Installer shall cover the outlet and pipe support batten bar attachments with the 12-oz non woven geotextile.
- G. Geomembrane Installer shall place two layers of 12-oz non woven geotextile on the ramp geomembrane.
- H. No vehicles shall be allowed on deployed geomembrane under any circumstances.

3.04 FIELD SEAMS

A. Seam Layout

1. In general, seams shall be oriented parallel to the line of the maximum slope. In corners and at other odd-shaped geometric intersections, number of seams should

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be minimized. If at all possible, seams shall not be located at low points in the subgrade unless geometry requires seaming to be done at these locations.

2. A seam numbering system compatible with the panel numbering system shall be agreed upon at the Pre-Construction Meeting.

B. Seaming Processes/Equipment

1. Approved processes for field seaming (panel to panel) are extrusion or hot wedge fusion-type seam methods. No other processes can be used without prior written authorization from the Owner and/or Engineer. Only equipment which has been specifically approved by make and model shall be used, if applicable.
3. The Geomembrane Installer will meet following requirements regarding use, availability, and cleaning of welding equipment at job site:
 - a. Intersecting hot wedge seams shall be patched using extrusion welding process.
 - b. Electric generator for equipment shall be placed on a smooth base such that no damage occurs to geomembrane. A smooth insulating plate or fabric shall be placed beneath hot equipment after usage.
3. The Geomembrane Installer shall keep records for performance and testing of all seams.

C. Seaming Requirements/Procedures

1. Weather Conditions - Range of weather conditions under which geomembrane seaming can be performed are as follows:
 - a. Unless otherwise authorized in writing by Owner and/or Engineer, no seaming shall be attempted or performed at an ambient temperature below 41 degrees F (5 degrees C) or above 104 degrees F (40 degrees C).
 - b. Between ambient temperatures of 32 degrees F (0 degrees C) and 41 degrees F (5 degrees C), seaming shall follow GRI GM9 cold weather seaming guidelines. Pre-qualification seams shall be produced to determine appropriate seaming parameters and for Engineer's approval.
 - c. Above 41 degrees F (5 degrees C), no special conditions will be required.
 - d. Geomembrane shall be dry and protected from wind.
 - e. Seaming shall not be performed during any precipitation event.
 - f. Seaming shall not be performed in areas where ponded water has collected below surface of geomembrane.
2. If the Geomembrane Installer chooses to use methods which may allow seaming at ambient temperatures below 41 degrees F or above 104 degrees F, the

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Geomembrane Installer shall demonstrate and submit certification to Owner and/or Engineer that methods and techniques used to perform seaming produce seams that are equivalent to seams produced at temperatures above 41 degrees F and below 104 degrees F. The Owner and/or Engineer may deny approval for use of the proposed technique regardless of demonstration results.

3. **Overlapping - Geomembrane panels shall have finished overlap as follows:**
 - a. Minimum of 6 inches for thermal fusion welding.
 - b. Insufficient overlap will be considered a failed seam.

4. **Pre-qualification tests for geomembrane fusion welding shall be conducted by a minimum of 2 pre-qualification seams conducted per day per welding machine by each seaming technician performing welding with that machine. At least one test shall be performed at the start of each work day, with tests at intervals of no greater than 5 hours and additional pre-qualification tests following work interruptions, weather changes, changes to machine settings, or as directed by the Owner and/or Engineer. Pre-qualification seams shall be made under the same conditions as the actual seams.**
 - a. Pre-qualification seam samples shall be 5 feet long by 1-foot wide (minimum) after seaming, with seam centered along its length. Each pre-qualification seam shall be labeled with the date, geomembrane temperature, seaming unit identifier, seam number or test location, technician performing the test seam and description of testing results.
 - b. Seam overlap shall be in accordance with subsection 3.04(C)(3).
 - c. Pre-qualification seams shall be inspected for proper squeeze-out, footprint pressure, and general appearance.
 - d. Four specimens, each 1-inch in length, shall be cut from opposite ends of the pre-qualification seam sample by the Geomembrane Installer. The remainder of pre-qualification seam shall be retained by the Owner and/or Engineer and may be submitted for laboratory testing.
 - e. The Geomembrane Installer shall complete two shear tests and two peel tests.
 - f. Pre-qualification seams failed by inspection or testing may be retested at request of the Geomembrane Installer. If the second pre-qualification seam fails, then the seaming apparatus or seaming technique shall be disqualified from use until two consecutive, satisfactory pre-qualification seams are obtained.

5. **Seam Preparation**
 - a. Prior to seaming, seam area shall be clean and free of moisture, dust, dirt, debris of any kind, and foreign material.

- b. Seams shall be aligned so as to minimize number of wrinkles and fishmouths.

6. General Seaming Procedures

- a. Fishmouths or wrinkles at seam overlaps shall be cut along ridge of the wrinkle to achieve a flat overlap. Cut fishmouths or wrinkles shall be repaired, and/or patched in accordance with Part 3.07.
- b. Seaming shall extend to the outside edge of geomembrane panels including material placed in anchor trenches.
- c. For cross seams, the intersecting thermal fusion seams shall be patched using the extrusion welding process.

3.05 NON-DESTRUCTIVE TESTING

- A. Each field seam shall be non-destructively tested over its entire length by the Installer. Testing shall be conducted as field seaming progresses, not at completion of all seams, unless specifically agreed to by the Owner and/or Engineer in writing.
- B. Vacuum Testing – shall be performed in accordance with ASTM D5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
- C. Air Pressure Testing – shall be performed in accordance with ASTM D5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes, and GRI GM 6, Pressurized Air Channel Test for Dual Seamed Geomembranes.
- D. Each seam tested non-destructively shall be marked with the date of the test, name of the testing technician, length of the seam, test method and results. The same shall also be recorded by the Owner and/or Engineer on the appropriate CQA documentation.
- E. Non-Destructive Seam Test Failures
 - 1. Seams failing non-destructive testing shall be repaired by the Geomembrane Installer according to Part 3.07. Seams shall be non-destructively retested. If the seam defect cannot be located, the entire section of seams affected shall be repaired and retested.

3.06 ELECTRONIC LEAK LOCATION SURVEY

- A. Leak Location Contractor shall identify actions required by Contractor to prepare the site for the leak location survey.
- B. Contractor shall ensure that the cushion and warning layers, and 12 oz non woven geotextile above and 16 oz non woven geotextile below the geomembrane contains sufficient moisture to conduct a leak location survey. Typically, a moisture content of earth materials of 1% to 2% by weight is sufficient to conduct the survey. If the moisture content of the cushion layer, warning layer and subgrade is not sufficient per the requirements of the Leak Location Contractor, Contractor shall add sufficient water the layers, as required.

- C. Contractor shall provide electrical isolation of the metal marker posts, batten bars, and concrete structures, as requested by Leak Location Contractor.
- D. Leak Location Contractor shall inspect the site prior to commencing the survey to ensure all site preparations are completed and the site conditions are appropriate for conducting the leak location survey.
- E. Any discrepancy in the required site preparation detailed in the Leak Location Contractor's Work Plan or site conditions shall be reported to the Contractor for corrective or appropriate action.
- F. After the warning layer is placed, conduct a leak location survey on the warning layer material using the procedures for surveys with earth materials covering the Geomembrane as described in ASTM D 7007.
- G. A leak detection sensitivity test using an artificial leak shall be conducted on the geomembrane for each set of equipment used before the equipment is used on for the leak location survey, as described in ASTM D 7007 to determine the detection distance for the survey.
- H. The leak location survey shall be taken on survey lines or on a grid spaced no farther apart than twice the leak detection distance as determined in the leak detection sensitivity test.
- I. The Leak Location Contractor shall inform the Owner and/or Engineer and mark the locations of all identified or indicated leaks with a flag or spray paint. The Geomembrane Installer shall repair the defect/hole as detailed in Part 3.07 of this Section.

3.07 DEFECTS AND REPAIRS

- A. The geomembrane shall be examined by the Geomembrane Installer and the Owner and/or Engineer for defects, holes, blisters, undispersed raw materials, and any signs of contamination by foreign matter. The geomembrane surface shall be swept and/or washed by the Geomembrane Installer if the amount of dust or mud inhibits examination. The Contractor shall provide a water truck, an operator, clean water and hoses as reasonably necessary to assist the Geomembrane Installer in this activity.
- B. Portions of geomembrane exhibiting flaws, or failing a non-destructive or destructive (if conducted) test, shall be repaired or replaced by the Geomembrane Installer. Repair procedures available include:
 - 1. Patching - used to repair large holes, tears, undispersed raw materials, contamination by foreign matter, holes resulting from destructive sampling (if conducted), and locations where seam overlap is insufficient;
 - 2. Capping - used to repair large lengths of failed seams; and
 - 3. Additional Procedures - used upon recommendation of the Geomembrane Installer if agreed to by the Owner and/or Engineer.

- C. Patches or caps.
 - 1. Extend patch or cap 6 inches (minimum) beyond the edge of the defect.
 - 2. Round corners of patch and/or cap (suggest 3-inch radius).
 - 3. Repair procedures, equipment, materials, and techniques will be approved by the Owner and/or Engineer prior to repair.
 - 4. Geomembrane below large caps shall be appropriately cut to avoid water or gas collection between two sheets.
- D. The Geomembrane Installer shall mark on the geomembrane (using a non-puncturing writing utensil), repair date, time, and personnel involved.
- E. Each repair shall be non-destructively tested in accordance with Part 3.05. Large caps may require destructive test sampling at the discretion of the Owner and/or Engineer (in accordance with Part 3.06).
- F. Repairs which fail testing shall be redone and retested until a passing result is obtained. The Geomembrane Installer will perform non-destructive testing or repairs and will document retesting of repairs.
- G. The Owner and/or Engineer will document repairs, repair testing, and retesting results.
- H. The Geomembrane Installer shall cut and seam wrinkles which may adversely affect long-term integrity of the geomembrane, hinder subsequent construction of overlying layers, or impede drainage off of the geomembrane after it is covered by soil. Seaming shall be done in accordance with procedures described in Parts 3.04(B) and 3.04(C), and it shall be subject to test provisions of Parts 3.05 (non-destructive testing) and 3.06 (destructive testing – if conducted).

3.08 PROTRUSIONS AND CONNECTIONS TO GEOMEMBRANE

- A. If required, the Geomembrane Installer shall install geomembrane around utility poles, guy wires, and other structures according to the Contract Drawings and the following requirements:
 - 1. Use minimum 2-ft long membrane pipe boots and steel straps to seal the geomembrane around pole or structure.
 - 2. Use standard welding procedures to seam the membrane boot to the geomembrane.
 - 3. Seaming performed on and around penetrations, and other appurtenances shall be non-destructively tested using the vacuum testing method.

3.09 SURVEY DOCUMENTATION

- A. Prior to covering the geomembrane, the Geomembrane Installer shall provide the Contractor, Owner and/or Engineer with 24-hour notification to conduct a survey. The

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Contractor shall survey the location of all seams (panel corners acceptable), and repairs. The Contractor shall provide survey data to the Owner and/or Engineer within one working day of survey completion and in accordance with Section 01050.

3.10 DAILY FIELD INSTALLATION REPORTS

- A. At the beginning of each day, the Geomembrane Installer shall provide the Owner and/or Engineer with a report for all work completed the previous day.
- B. The Daily Field Installation Report shall include the following:
 - 1. The total amount and location of geomembrane placed.
 - 2. The total length and location of seams completed, technician name and welding unit numbers.
 - 3. A drawing or sketch depicting the geomembrane installed the previous day including the panel number, seam number and locations of non-destructive and destructive testing (if conducted).
 - 4. Results of pre-qualification test seams, if available.
 - 5. Results of non-destructive testing.
- C. Destructive test results (if conducted) shall be reported within 48 hours or prior to covering the geomembrane, whichever is practical.

END OF SECTION

Will County Station
Bid Meeting

DATE 9/8/2008 POND LINERS

Please Print

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BOB TURGETO	SOFT	GRAYCOR	ONE GRAYCOR DRIVE HOMERWOOD, IL 60430	708-206-1316	708-816-0428
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MIKE VALENTINE	PROJECT MANAGER	M.B.I.C.	1026 MOEN AVE. JOLIET IL 60436	815-729-4355	815-729-1580
Tedd Mills	P.M.	Brier	24101 S. Main. rd Channahon, IL 60410	815-521-0777	815-521-0900
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