

ADDENDUM NO. 4

NOTICE is hereby given to prospective Bidders of the following information, clarifications, and modifications to the Bidding Documents. The Bidding Documents remain unchanged except for modifications specifically indicated under Modifications. Bidders must acknowledge receipt of this Addendum in the Bid Form and comply with the requirements for submission of Bids as set forth in the Bidding Documents.

INFORMATION

The answers below are provided in response to questions and comments submitted by a prospective bidder.

Question: there is a note on sheet C-102 which calls for a "vegetated geocell slope stabilization." I do not see a detail for the geocell nor spec. Please Advise.

Answer: New Section 31 32 19.13, Geogrid Soil Stabilization, has been added and is issued with this Addendum.

Question: Additionally, on the same sheet at the Southern Wing wall there is a note indicating "Provide Propex Pyramat 25" this note appears to be pointing to an area designated as rip rap is that what the project calls for?

Answer: Sheet C-102 has been revised to clarify the proposed limits of slope stabilization and material type.

MODIFICATIONS

NOTICE is hereby given that the Bidding Documents have been modified as follows.

Individual replacement pages are issued herewith, have an Issue Date of July 18, 2023, contain reference to "ADDENDUM NO. 4" in the footer, and text changes identified by double-underline for additions and ~~Strikeout~~ for deletions.

Replacement pages (with text changes shown)	Pages provided for purposes of double-sided printing only (reverse side of page with no changes) or only page endings revised
00 01 10-2	00 01 10-1

The following new section(s) are herewith **added**, have an Issue Date of July 18, 2023, and contain(s) reference to “ADDENDUM NO. 4” in the footer.

New Sections	Number of Pages
Section 31 32 19.13, Geogrid Soil Stabilization	8

Individual Drawings as identified below are reissued herewith, have a revision date of July 18, 2023 in the revision block **with changes encircled by “clouds”** and designated as “ADDENDUM NO. 4”.

Drawing No. C-102 - Culvert Replacement Plan & Profile

This Addendum and items listed above are provided to Bidders in Portable Document Format (.PDF) as indicated in the email notice.

Prepared and Issued by Woodard & Curran (Engineer) on behalf of Owner:

Town of Agawam, MA

REPLACEMENT PAGES

SECTION 00 01 10

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DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

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00 01 10	Table of Contents
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PROCUREMENT/BIDDING REQUIREMENTS

00 11 16	Invitation to Bid
00 21 13	Instructions to Bidders
00 22 13	Supplementary Instructions to Bidders
00 31 00	Available Project Information
00 41 01	Bid Form
	Bid Bond – Penal Sum (Form C-00 43 13)
00 45 05	Bidder's Representations and Certifications
00 45 13	Bidder's Qualifications
00 45 19	Non-Collusion Affidavit

CONTRACTING REQUIREMENTS

	Sample Notice of Intent to Award (C-00 50 55)
	Sample Notice of Award (C-00 51 00)
00 52 10	Agreement Form
	Performance Bond Form (C-00 61 13.13)
	Payment Bond Form (C-00 61 13.16)
	Sample Notice to Proceed (C-00 55 00)
00 60 00	Project Forms
00 72 05	Standard General Conditions of the Construction Contract (EJCDC C-700, 2007) <i>Including modifications</i>

Supplementary Conditions

00 73 10	General Supplementary Conditions
00 73 43	Wage Rate Requirements
00 73 73	Statutory Requirements
00 73 74	General Federal Requirements

SPECIFICATIONS

DIVISION 01 GENERAL REQUIREMENTS

- 01 11 00 Summary of Work
- 01 15 30 Payment and Administrative Procedures and Quality Requirements
- 01 43 05 Qualification Requirements
- 01 50 00 Temporary Facilities and Controls
- 01 57 05 Temporary Dewatering
- 01 57 13 Temporary Erosion and Sediment Controls
- 01 57 30 Temporary Water Bypass
- 01 57 35 Temporary Stream Bypass
- 01 60 00 Product Requirements
- 01 70 00 Execution and Closeout Requirements

DIVISION 02 - EXISTING CONDITIONS

- 02 41 14 Selective Site Demolition and Restoration

DIVISION 03 - CONCRETE

- 03 MassDOT Specification Supplement - Subsection 901
- 03 41 26 Precast Concrete Structures

DIVISION 31 - EARTHWORK

- 31 00 00 Earthwork
- 31 05 19.13 Geotextiles for Earthwork
- 31 05 19.14 HDPE Liners for Earthwork
- 31 10 00 Site Clearing
- 31 14 13.16 Soil Stockpiling
- 31 25 00 Erosion and Sedimentation Controls
- 31 32 19.13 Geogrid Soil Stabilization
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DIVISION 32 - EXTERIOR IMPROVEMENTS

- 32 12 16 Asphalt Paving
- 32 16 13 Curbs and Gutters
- 32 17 23 Pavement Markings
- 32 31 65 Steel Guardrails

DIVISION 33 - UTILITIES

- 33 42 20 Stormwater Utility Drainage Piping
- 33 49 00 Stormwater Structures
- 33 42 27 Aluminum Structural Plate Single Radius Arch Structure and Headwalls/Wingwalls

APPENDICES

- Appendix A Geotechnical Report dated May 23, 2023
- Appendix A1 Revised Geotechnical Reported dated July 11, 2023

END OF SECTION

NEW SECTIONS

SECTION 31 32 19.13

GEOGRID SOIL STABILIZATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide and install geocell slope stabilization system in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. ASTM International (ASTM)
 - a. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
 - b. ASTM D1505 - Density of Plastics by the Density-Gradient Technique
 - c. ASTM D1603 – Standard Test for Carbon Black in Olefin Plastics
 - d. ASTM D1693 – Environmental Stress-Cracking of Ethylene Plastics
 - e. ASTM D 5394 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics
 - f. ASTM D 5199 – Measuring Nominal Thickness of Geotextiles and Geomembranes
 - g. ASTM D 5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
 - h. ASTM D 5721 - Standard Practice for Air-Oven Aging of Polyolefin Geomembranes
 - i. ASTM D 5885 - Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry

- j. ASTM D 6693 (Type IV) - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
- k. ASTM D 7328 - Standard Test Method for Effect of Exposure of Unreinforced Polyolefin Geomembrane Using Fluorescent UV Condensation Apparatus
- l. ASTM E 41 – Terminology Relating to Conditioning
- 2. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO M218 - Steel Sheet, Zinc-Coated (Galvanized) for Corrugated Steel Pipe
 - b. AASHTO M288 - Geotextile Specification for Highway Applications
- 3. US Army Corps of Engineers (USACE)
 - a. Technical Report GL-86-19, Appendix A

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
- B. Product Data: manufacturer's product specifications.
- C. Manufacturer's instructions for storage, handling, and installation of geotextiles
- D. Source and Field Quality Control Submittals: manufacturing quality control certificates for representative rolls for each lot of material delivered.
- E. Qualification statements of manufacturer
- F. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications: per Division 01 General Requirements and as follows.

1. The manufacturer shall provide certification of compliance to all applicable testing procedures and related specifications upon the customer's written request. Request for certification shall be submitted no later than the date of order placement. The manufacturer shall have a minimum of 20 years of experience producing geocell systems.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store in accordance with manufacturer's instructions.
- C. Protect materials from damage and away from direct sunlight.
- D. Deliver, unload and install to prevent and minimize damage.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GEOCELL SYSTEM

- A. Acceptable level of quality: equivalent to Presto Geosystems Geocell, 6 inch (150 mm) depth.
- B. Manufacturing certification: a certificate of registration, which demonstrates that its quality-management system for its geocell system is in accordance with currently registered to the ISO 9001:2015 and CE quality standards.
- C. Base Materials
 1. Polyethylene Stabilized with Carbon Black
 - a. Density shall be 58.4 to 60.2 pound/ft³ (0.935 to 0.965 g/cm³) in accordance with ASTM D 1505 or D 792.
 - b. Environmental Stress Crack Resistance (ESCR) shall be 5000 hours in accordance with ASTM D 1693.
 - c. Ultra-Violet light stabilization with carbon black.
 - d. Carbon Black content shall be 1.5 to 2 percent by weight, through addition of a carrier with certified carbon black content, in accordance with ASTM D 1603.

- e. Carbon black shall be homogeneously distributed throughout material, in accordance with ASTM D 5596.
 - f. The manufacturer shall have an in-place quality control to prevent irregularities in strip material.
- D. Cell Properties
- 1. Individual cells shall be uniform in shape and size when expanded.
 - 2. Individual cell dimensions (nominal) shall be dimensions plus or minus 10 percent.
- E. Strip Properties and Assembly
- 1. Perforated Textured Strip/Cell
 - a. The polyethylene strips shall be textured and perforated such that the peak friction angle between the surface of the textured / perforated plastic and #40 silica sand at 100% relative density shall be no less than 85 percent of the peak friction angle of the silica sand in isolation when tested by the direct shear method per ASTM D 5321.
 - b. Polyethylene strips shall be textured surface with a multitude of rhomboidal (diamond shape) indentations.
 - c. Textured sheet thickness shall be 60 mil plus or minus 6 mil (1.52 mm plus or minus 0.15 mm).
 - d. Indentation surface density shall be 140 to 200 per in² (22 to 31 per cm²).
 - e. Perforated with horizontal rows of 0.4 inch (10 mm) diameter holes.
 - f. Perforations within each row shall be 0.75 inches (19 mm) on-center.
 - g. Horizontal rows shall be staggered and separated 0.50 inches (12 mm) relative to hole centers.
 - h. Edge of strip to nearest edge of perforation shall be a minimum of 0.3 inches (8 mm).
 - i. Centerline of spot weld to nearest edge of perforation shall be a minimum of 0.7 inches (18 mm).
 - j. A slot with a dimension of 3/8 inch by 1-3/8 inch (10 mm by 35 mm) is standard in the center of the non-perforated areas and at the center of each weld.

2. Assembly of Cell Sections
 - a. Fabricate using strips of sheet polyethylene each with a length of 142 inches (3.61 m) and a width equal to cell depth.
 - b. Connect strips using full depth ultrasonic spot-welds aligned perpendicular to the longitudinal axis of strip.
 - c. Ultrasonic weld melt-pool width shall be 1.0 inch (25 mm) maximum.
- F. Cell Seam Strength Tests
 1. Minimum seam strengths are required by design and shall be reported in test results. Materials submitted with average or typical values will not be accepted. Written certification of minimum strengths must be supplied to the engineer at the time of submittals.
 2. Short-Term Seam Peel-Strength Test
 - a. Cell seam strength shall be uniform over full depth of cell.
 - b. Minimum seam peel strength shall be 480 lbf (2,130 N) for 6 inch (150 mm) depth.
 3. Long-Term Seam Peel-Strength Test Conditions
 - a. Minimum of 7 days in a temperature-controlled environment that undergoes change on a 1-hour cycle from room temperature to 130 degrees F (54 degrees C).
 - b. Room temperature shall be in accordance with ASTM E41.
 - c. Test samples shall consist of two, four-inch (100 mm) wide strips welded together.
 - d. Test sample consisting of two carbon black stabilized strips shall support a 160 pound (72.5 kg) load for test period.

2.02 INFILL MATERIALS

- A. Engineered infill shall consist of topsoil and aggregate mixture for vegetated surfaces for structural strength.
 1. Engineered infill shall be a mix of topsoil and aggregate having a homogeneous mixture of a clear crushed aggregate having an AASHTO #5 or similar designation blended with pulverized topsoil and a minimum 30 percent void space for air and/or water.
 2. The mixture shall promote vegetation growth and provide structural support.

3. The aggregate portion shall have a particle range from 0.375 to 1.0 inches (9.5 to 25 mm) with a D50 of 0.5 inches (13 mm) and shall be 67 percent of the total volume.
 4. The percentage void space of the aggregate portion when compacted shall be at least 30%.
 5. The pulverized topsoil portion shall equal 33% of the total volume. The topsoil shall be blended with the aggregate to produce a homogeneous mixture.
 6. Once placed, the mixture shall be compacted to a 95 percent Standard Proctor.
- B. Infill material shall be free of any foreign material.
- C. Clays and silts are not acceptable infill material.
- D. Infill material shall be free-flowing and not frozen when placed in the geocell panels.

2.03 SURFACE PROTECTION

- A. Surface protection: seed mix as specified.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Examination
1. Verify site conditions are as indicated on the Drawings. Notify the Engineer if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.
 2. Verify layout of structure is as indicated on the Drawings. Notify the Engineer if layout of structure is not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

3.02 INSTALLATION OF THE SLOPE PROTECTION SYSTEM

- A. Prepare sub-grade and install protection system in accordance with manufacturer's recommendations.
- B. Sub Grade Preparation:
1. Excavate or fill foundation soils so top of installed section is flush with or slightly lower than adjacent terrain or final grade as indicated on the drawings or as directed by the Engineer.

2. Install geotextile separation layer on prepared surfaces ensuring required overlaps are maintained and outer edges of geotextile are buried in accordance with the manufacturer's recommendations.
3. Install geomembrane separation layer on prepared surfaces ensuring seams are welded and outer edges of geomembrane are buried in accordance with the manufacturer's recommendations.

C. Anchorage:

1. Anchorage requirements for the sections shall be as required by the Geogrid manufacturer.
2. Position collapsed sections at the crest of the slope.
3. If required, excavate the anchor trench at the top of the slope to the depth as required by the manufacturer.
4. Anchorage pattern and stake length shall be as required by the manufacturer.
5. Fill the anchorage trench with the specified material and compact as required.

D. Installation

1. Excavate the anchor trench at the top of the slope to the depth as shown on the manufacturer.
2. Position the collapsed sections at the crest of the slope.
3. Fill the anchorage trench with the specified material and compact as required by the manufacturer.

E. Topsoil Infill Placement

1. Place specified infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip.
2. Limit drop height to prevent panel distortion.
3. Fill sections from the crest of the slope to toe or in accordance with manufacturer's direction.
4. Infill material shall be free-flowing and not frozen when placed into the Geogrid sections.
5. Evenly spread infill and tamp into place.

- F. Toe of Slope Interface
 - 1. Terminate and anchor the geogrid at the toe of the slope or top of headwalls in accordance with manufacturer's direction.
- G. Surface Treatment
 - 1. Install surface protection (native wildflower seed mix) immediately after placement of the infill material.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION