



STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
16 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333-0016

JOHN ELIAS BALDACCI  
GOVERNOR

DAVID A. COLE  
COMMISSIONER

January 11, 2010  
Subject: **Swanville**  
Federal Project No: BR-1561(700)X  
State Project No. 015617.00  
**Amendment No. 3**

Dear Sir/Ms:

Make the following changes to the Bid Documents:

In the Bid Book (page 64), "SPECIAL PROVISION, SECTION 403, HOT MIX ASPHALT", **CHANGE** Item Number "403.209" under "Sidewalks, Drives, Islands & Incidentals" to read Item Number "**403.207**".

In the Bid Book, after page 78, **ADD** the attached "SPECIAL PROVISION, SECTION 620, REINFORCEMENT GEOGRID", 3 pages dated January 8, 2010.

The following questions have been received:

**Question:** There are currently overhead utility lines that cross over the proposed work area. Is it intended to reroute the over head lines to the new poles to be set as described on page 28 of the Contract Book? Are these new poles to be set before the excavation begins? Please define the course the new overhead wires will be taking. I assume it to be CMP #34.1 to new pole @ 11+66R-153', to new pole @12+04R-86'.

**Response:** All lines that may interfere with excavation will be moved/removed prior to excavation. The pole at station 10+90 Lt. will feed the building. New lines will go behind the building (from 141) to pole 11+66R to pole 12+04R.

**Question:** Please clarify the special provision Section 403 stating that the testing method is "B" for the travel way and shoulder approach areas. Would the Department consider this as a Method C?

**Response:** Method B will be used.

**Question:** In the Special Provisions Section 403, it states the 403.209 item, can you clarify where this item will be placed and should it be an item on the project?



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**Response:** Please see the above pen and ink change.

**Question:** Note #3 under the Precast Box notes on sheet 5 of the plans references “standard membrane waterproofing”. Is this in addition to or the same as the 12” wide joint wrap required in Special Provision 534?

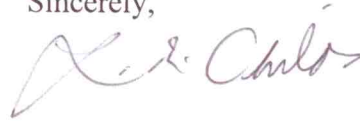
**Response:** The standard waterproofing membrane is in addition to the 12” wide joint wrap.

**Question:** Can you give us a specification on 620.65, Reinforcement Geogrid?

**Response:** Please see the attached Special Provision 620.

Consider these changes and information prior to submitting your bid on **January 13, 2010.**

Sincerely,



For

Scott Bickford  
Contracts & Specifications Engineer

**SPECIAL PROVISION**  
**SECTION 620**  
**REINFORCEMENT GEOGRID**

**Description**

This work shall consist of furnishing and installing reinforcement geogrid in accordance with these specifications and in reasonably close conformity with the lines, grades, and dimensions shown on the plans or as directed by the Resident.

**Material**

Geogrids shall consist of a regular network of integrally connected polymeric tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil, aggregate or other material. The geogrid structure shall be dimensionally stable to retain its geometry under construction stresses and shall have high resistance to damage during construction, ultraviolet degradation, and all forms of chemical and biological degradation encountered in the soil being reinforced. Woven geogrids are not acceptable for this application.

The reinforcement geogrid shall meet or exceed the Minimum Average Roll Values (MARV) of the properties in Table 1.

Acceptable manufacturers for reinforcement geogrids must be approved by the Resident.

Table 1. - Physical Property Requirements  
(Non-Woven Biaxial Reinforcement Geogrid)

| Reinforcement<br>Mechanical Property | Geogrid | Test Method | Minimum Average Roll Value<br>(MARV) <sup>1</sup> |
|--------------------------------------|---------|-------------|---|
| Tensile Strength at 5% Strain MD     |         | ASTM D-6637 | 600 lb/ft   |
| Tensile Strength at 5% Strain XD     |         | ASTM D-6637 | 1,200 lb/ft                                       |
| Rib Junction Strength                |         | GRI-GG2     | 1,000 lb/ft in both directions                    |
| Aperture Openings                    |         |             | Between 0.75 and 3 inches                         |
| Percent Open Area                    |         |             | 50 to 80%   |

**Certification**

Prior to construction the Contractor shall submit to the Resident the Manufacturer's certification that the geogrid supplied has been evaluated in full compliance with this Specification and is fit for long-term, critical soil reinforcement applications. The Contractor's submittal package shall include, but not be limited to, actual tests for tension/creep, durability/aging, construction damage, and quality control tensile testing.

**Delivery, Storage and Handling**

The Contractor shall check the reinforcing geogrid upon delivery to ensure that the proper material has been received. Each geogrid roll shall be shipped in a protective bag and clearly marked with roll number, lot number, geogrid style and principle strength direction. During all

<sup>1</sup> Values are minimum average roll values determined in accordance with ASTM D-4759.

periods of shipment and storage, the geogrid shall be protected from temperatures greater than 140°F and all deleterious materials that might otherwise become affixed to the geogrid and affect its performance. The manufacturer's recommendations shall be followed with regard to protection from direct sunlight. The geogrid shall be stored off the ground in a clean, dry environment out of the pathway of construction equipment.

### **Construction Requirements**

Reinforcement geogrid shall be installed, in accordance with the manufacturer's recommendations, to the proper elevation and alignment, as shown on the plans or as directed by the Resident.

1. The geogrid shall be laid at the proper elevation and alignment as shown on the plans. The Contractor shall verify correct orientation of the geogrid. Geogrid may be temporarily secured in-place with staples, pins, sand bags or backfill as required by fill properties, fill placement procedures, or weather conditions, or as directed by the Resident.
2. Reinforcement geogrid shall be oriented such that the roll length runs parallel to the construction centerline.
3. Adjacent rolls of reinforcement geogrid shall be overlapped a minimum of 1 foot.
4. Lengths of reinforcement geogrid shall be continuous, splicing along the length will not be allowed.
5. Seams along adjacent lengths of reinforcement geogrid shall be tied together with hog rings or cable ties every 3 to 6 feet.
6. The reinforcement geogrid shall be anchored at each end, and pulled taut, to reduce any considerable slack, as directed by the Resident.
7. Fill shall not be dumped directly onto the Reinforcement Geogrid or Reinforcement Geotextile. It shall be dumped at the edge of Reinforcement Geogrid/Reinforcement Geotextile or on a previous course of fill with a minimum compacted depth of 8 inches.
8. The geogrid shall be covered with fill materials within 14 days of placement to protect against unnecessary exposure.
9. Fill may then be pushed onto the reinforcement geogrid using a track mounted bulldozer. At no time shall construction equipment be allowed directly onto the reinforcement geogrid. Track mounted equipment shall be allowed on previous courses of fill with a minimum compacted depth of 8 inches. Smooth drum roller compaction equipment shall be allowed on previous courses of fill with a minimum compacted depth of 8 inches and spread fill with a minimum depth of 12 inches, loose measure. At no time shall rubber tired or sheeps-foot rollers be allowed onto the reinforced fill. Turning of vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid. Sudden breaking and sharp turning shall be avoided. Equipment speeds over 15 MPH shall not be allowed.

10. Placement, spreading, and compaction of soil on top of the reinforcement geogrid shall advance from one end of the reinforcement geogrid and move towards the other. Care shall be taken to minimize the development of wrinkles and to ensure that the reinforcement geogrid doesn't move from its position during fill placement. Limited stacking may be permitted, as directed by the Resident.

11. Fill shall be compacted as specified in (1) the Standard Specifications or (2) to at least 90 percent of the maximum dry density determined in accordance with AASHTO T-180, whichever is greater. Density testing shall be made at a minimum frequency of one (1) test per lift or as otherwise specified in the Standard Specifications.

12. During construction the surface of the fill shall be kept approximately horizontal. Fill shall be graded away from the slope crest and rolled at the end of each work day to prevent ponding of water on the surface of the reinforced soil mass.

13. Any geogrid damage shall be repaired or replaced in accordance with the manufacturer's recommendations. The Contractor shall replace any geogrid damaged during installation at no additional cost to the Department.

14. Rutting may develop within the initial granular lift but rut depths should not exceed 3 inches. It may be necessary to decrease the size and/or weight of the construction equipment or increase the thickness of the granular lift if rut depths of 3 inches or less cannot be maintained.

15. All rutting formed during construction shall be filled with new base material. In no case shall rutting be filled by blading down

**Method of Measurement**

Reinforcement Geogrid measurement will be by the square yard of material installed. Incidental overlaps for connections, splices, etc. are not included in the pay item.

**Basis of Payment**

Reinforcement geogrid placement will be paid for at the Contract unit price per square yard which shall be full compensation for all off-loading, inspection, storage, labor, materials, equipment, tools and any incidentals to complete the installation.

| Pay Item | Description           | Pay Unit    |
|----------|-----------------------|-------------|
| 620.65   | Reinforcement Geogrid | Square Yard |