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Section 19-13. Used for lightweight fill using EPS geofoam blocks. Use with NSSP for sections 96-1.02S and 96-1.02T.

Replace section 19-13 with:

19-13 EPS GEOFOAM BLOCKS

## 19-13.01 GENERAL

### 19-13.01A Summary

1

Section 19-13 includes specifications for placing Expanded Polystyrene geofoam blocks and gasoline resistant geomembrane for EPS geofoam block lightweight fill.

### 19-13.01B Definitions

2

**EPS geofoam block:** expanded polystyrene geofoam block.

### 19-13.01C Submittals

#### 19-13.01C(1) General

3

Submit EPS geofoam block manufacturer's product literature and technical data, including 10-year physical property warranty.

4

Submit summary of the manufacturer's test that demonstrates the EPS geofoam blocks comply with the quality characteristics of the EPS Types specified in section 96-1.02S and ASTM D6817.

5

Submit summary of the manufacturer's test that demonstrates the gasoline resistant geomembrane comply with the quality characteristics specified in section 96-1.02T.

#### 19-13.01C(2) Certificate of Compliance

6

Submit a third-party certificate of compliance for EPS geofoam blocks and gasoline resistant geomembrane.

#### 19-13.01C(3) Shop Drawings

7

Submit 5 copies of shop drawings. After review, submit from 6 to 12 copies, as requested, for authorization and use during construction.

8

Shop drawings and calculations must be stamped and signed by an engineer who is registered as a civil engineer in the State.

9

Shop drawings must include:

1. Construction sequence

2. Methods of excavation, limits of excavation, and types of excavation equipment

3. Methods of EPS geofoam block placement and types of construction equipment

4. Methods of placement for gasoline resistant geomembrane including location of seams

5. Methods to protect EPS geofoam blocks and gasoline resistant geomembrane during construction

6. Elevation view of EPS geofoam blocks showing top and bottom elevations, and elevations at each EPS geofoam block layer

7. EPS geofoam block layout, which must be designed as follows:

7.1. Plane on which a given layer of EPS geofoam blocks is placed must be parallel to the longitudinal axis of the road alignment.

7.2. There must be a minimum of two layers of EPS geofoam blocks at all locations.

7.3. Within a given layer of EPS geofoam blocks, the longitudinal axes of all EPS geofoam blocks must be parallel to each other.

7.4. Within a given layer of EPS geofoam blocks, the vertical joints between the adjacent ends of EPS geofoam blocks within a given row of EPS geofoam blocks must be offset to the greatest extent practicable relative to EPS geofoam blocks in adjacent rows.

7.5. Longitudinal axes of EPS geofoam blocks for layers above or below a given layer must be perpendicular to the longitudinal axes of EPS geofoam blocks within that given layer.

7.6. Longitudinal axes of the uppermost layer of EPS geofoam blocks must be perpendicular to the longitudinal axis of the road alignment.

8. Layout plan of retaining wall or structures and limits of EPS geofoam blocks including wall or structure stations and offsets

9. Cross sections with elevations at maximum 50-foot intervals showing the wall or structures, EPS geofoam blocks in each layer, and gasoline resistant geomembrane

10. Layout of all EPS geofoam blocks in each layer including EPS geofoam block types, dimensions and orientation

### 19-13.01D Quality Assurance

#### 19-13.01D(1) General

10

Assign a manufacturer's representative for EPS geofoam blocks and gasoline resistant geomembrane to:

1. Provide technical assistance for the use of their material

2. Attend preconstruction meeting

3. Provide training to workers

4. Be at the job site before starting construction activities related to EPS geofoam blocks

5. Remain at the job site until released by the Engineer

11

After the manufacturer's representative has been released by the Engineer, your employee certified by the manufacturer must be present at all times during the placement of the EPS geofoam block.

#### 19-13.01D(2) Training

12

Workers must receive training for the handling, seaming, and placing of EPS geofoam blocks and gasoline resistant geomembrane before starting construction activities related to EPS geofoam blocks.

#### 19-13.01D(3) Preconstruction Meeting

13

At least 10 days before the start of construction activities related to EPS geofoam blocks, hold a preconstruction meeting. Attendees must include:

1. Engineer

2. Manufacturer's representative for EPS geofoam blocks and gasoline resistant geomembrane

3. Your project manager

4. Your project Superintendent

14

Present and discuss the project plans, specifications, and the processes for producing materials and constructing each item of work, including:

1. Quality control

2. Department acceptance of materials

3. Training

4. Submittals

5. Handling and placing of materials

6. Any other pertinent issue

#### 19-13.01D(4) Quality Control

15

Provide the manufacturer's product certificate showing evidence of third-party quality control.

Sample and test EPS geofoam blocks under ASTM D7557.

## 19.11.02 MATERIALS

16

Not Used

## 19-13.03 CONSTRUCTION

### 19-13.03A General

17

Comply with approved shop drawings and construction details. Comply with manufacturer's instructions for handling, seaming and placing materials.

### 19.11.03B Subgrade Preparation

18

Remove loose or extraneous materials and sharp protruding objects. The subgrade surface to receive the EPS geofoam blocks must have less than 0.4 inches vertical deviation over any 10 feet before the placement of the first EPS geofoam block layer.

19

Do not place EPS geofoam blocks on the area with standing water or accumulated snow or ice on the subgrade. Do not place EPS geofoam blocks above EPS geofoam blocks where snow or ice has developed.

### 19.11.03C EPS Geofoam Blocks

20

Prevent mechanical damage to EPS geofoam blocks during delivery, storage and construction. Protect EPS geofoam blocks from petroleum products and ultraviolet light exposure. Cover EPS geofoam blocks to blocks ultraviolet light when EPS geofoam blocks will be exposed to sunlight for more than 12 hours. Weigh down cover material completely to prevent exposure to sunlight.

21

Do not operate construction equipment directly on EPS geofoam blocks. Replace damaged EPS geofoam blocks.

22

Place EPS geofoam blocks to the lines, grades and dimensions shown. Minimum thickness of any EPS geofoam block layer is 0.5-foot. Adjust EPS geofoam block dimensions to meet planned excavation and roadway subgrade geometrics and elevations. The horizontal surface of each layer of EPS geofoam blocks must be level across the planned slope of each layer, with a maximum vertical grade deviation of less than 0.5 inches over any 10-foot interval.

23

Use custom-cut or field-cut EPS geofoam blocks for irregular slope areas and roadway subgrade geometrics.

24

Place EPS geofoam blocks so that all vertical and horizontal joints between EPS geofoam blocks are tight. All EPS geofoam blocks must butt tightly against adjacent blocks on all sides. Do not use heat or open flame near the EPS geofoam blocks.

25

Secure EPS geofoam blocks in place with methods recommended by the manufacturer.

26

Construct the topmost surface of lightweight fill using EPS geofoam blocks to a tolerance of less than 3 inches of finished grade.

27

### 19-13.03D Gasoline Resistant Geomembrane

28

Completely encase EPS geofoam blocks within gasoline resistant geomembrane. Gasoline resistant geomembrane must cover and conform to 90-degree edges and corners of EPS geofoam blocks at 45°F ambient temperatures without applying heat.

29

Bond all gasoline resistant geomembrane field seams using an electrically-heated hot wedge device, following manufacturer's instructions. Produce vapor-tight seams. Do not use hot air extrusion welding devices or solvent bonding chemicals. Cool field seams to below 145°F before placing gasoline resistant geomembrane in contact with EPS geofoam blocks.

30

Do not operate construction equipment directly on gasoline resistant geomembrane. Replace or perform authorized repairs on gasoline resistant geomembrane.

## 19-13.04 PAYMENT

31

Not Used