ITEM 203 - ROADWAY MISC.: EPS GEOFOAM FILL

THIS WORK CONSISTS OF FURNISHING, TRIMMING AND PLACING BLOCK-MOLDED EXPANDED POLYSTYRENE (EPS) FOR USE AS A GEOFOAM GEOSYNTHETIC PRODUCT IN APPLICATIONS REQUIRING LIGHTWEIGHT FILL MATERIAL.

FURNISH EPS GEOFOAM BLOCKS PRODUCED BY A MANUFACTURER WITH A QUALITY CONTROL PROGRAM WHICH IS MONITORED AND CERTIFIED BY AN ACCREDITED, THIRD-PARTY TESTING ORGANIZATION. AT LEAST 20 DAYS BEFORE THE WORK IS TO BEGIN, SUBMIT TO THE ENGINEER THE FOLLOWING DOCUMENTS:

1. CERTIFIED TEST DATA SHOWING THE EPS GEOFOAM MEETS THE SPECIFIED REQUIREMENTS.
2. MANUFACTURER'S QUALITY CONTROL PLAN AND EVIDENCE OF THIRD-PARTY QUALITY CONTROL MONITORING.
3. SHOP DRAWINGS SHOWING BLOCK THICKNESS, WIDTH, LENGTH, AND LAYING PATTERN OR SCHEDULE.

FURNISH EPS GEOFOAM BLOCKS CONFORMING TO ASTM D 6817, RIGID CELLULAR POLYSTYRENE GEOFOAM, ACCORDING TO THE GEOFOAM TYPE INDICATED IN THE PLANS AND THE TABLE BELOW.

ASTM TYPE	EPS29
MINIMUM DENSITY, LB/CU.FT.	1.8
COMPRESSIVE RESISTANCE	
AT 1% STRAIN, PSI	10.9
AT 5% STRAIN, PSI	24.7
AT 10% STRAIN, PSI	29.0
FLEXURAL STRENGTH, PSI	50.0

FURNISH BLOCKS TREATED BY THE MANUFACTURER WITH A TESTED AND PROVEN TERMITE TREATMENT FOR BELOW GRADE APPLICATIONS. THE TREATMENT SHALL BE EPA REGISTERED, MEET REQUIREMENTS OF ICC ES AC239, AND BE RECOGNIZED IN AN ICC ES REPORT. FURNISH BLOCKS THAT MEET THE PRODUCT FLAMMABILITY REQUIREMENTS SPECIFIED IN ASTM C578.

FURNISH BLOCKS THAT ARE SMOOTH AND FLAT ON ALL SURFACES AND HAVE A DIMENSIONAL TOLERANCE OF ±0.5 PERCENT. THE CORNER OR EDGE FORMED BY ANY TWO FACES OF A BLOCK SHALL BE PERPENDICULAR. THE DEVIATION OF ANY FACE OF THE BLOCK FROM A THEORETICAL PERPENDICULAR PLANE SHALL NOT EXCEED 1/8 INCH OVER A DISTANCE OF 20 INCHES. ANY ONE FACE OF A BLOCK SHALL NOT DEVIATE FROM A THEORETICAL PLANE BY MORE THAN 1/4 INCH WHEN MEASURED USING A STRAIGHTEDGE WITH A LENGTH OF 10 FEET.

BEFORE SHIPPING TO THE SITE, ENSURE BLOCKS ARE SEASONED BY STORING THEM AT THE MANUFACTURER'S FACILITY FOR AT LEAST 72 HOURS AT NORMAL AMBIENT ROOM TEMPERATURE AFTER BEING RELEASED FROM THE MOLD. DURING SEASONING, ALLOW ADEQUATE SPACE BETWEEN THE BLOCKS TO ALLOW AIR CIRCULATION SO AS TO FOSTER THE OUTGASSING OF BLOWING AGENT AND TRAPPED CONDENSATE FROM WITHIN THE BLOCKS.

LABEL EACH BLOCK WITH THE MANUFACTURER'S NAME, ASTM EPS TYPE, THE DATE THE BLOCK WAS MOLDED, THE WEIGHT AND THE DENSITY OF THE BLOCK AS MEASURED AFTER SEASONING.

PROTECT THE BLOCKS FROM EXPOSURE TO THE FOLLOWING:

1. ORGANIC SOLVENTS SUCH AS ACETONE, BENZENE, AND PAINT THINNER
2. PETROLEUM BASED SOLVENTS SUCH AS GASOLINE AND DIESEL FUEL
3. HEAT SOURCES OR ACTIVITY THAT PRODUCES HEAT OR FLAME, INCLUDING TOBACCO SMOKING
4. MORE THAN 30 DAYS EXPOSURE TO SUNLIGHT

PROVIDE TIE DOWN STRAPS, SANDBAGS OR OTHER FLEXIBLE WEIGHTS TO PREVENT BLOCKS FROM BEING DISLODGED BY WIND. DO NOT STORE BLOCKS WHERE THERE IS A POTENTIAL FOR FLOODING.

PROTECT BLOCKS FROM DAMAGE. BLOCKS WITH SLIGHT DAMAGE WHICH AFFECTS A VOLUME OF 0.12 CUBIC FEET OR LESS MAY BE USED AS IS. BLOCKS WITH MODERATE DAMAGE WHICH AFFECTS A VOLUME OF 0.35 CUBIC FEET OR LESS MAY BE USED AND THE DAMAGED AREA FILLED WITH SAND. DO NOT USE BLOCKS WITH DAMAGE THAT AFFECTS A VOLUME GREATER THAN 0.35 CUBIC FEET. THE CONTRACTOR MAY CUT AND REMOVE THE DAMAGED PORTION OF A BLOCK AND THEN USE THE REMAINING UNDAMAGED PORTION OF THE BLOCK IF IT MEETS ALL OTHER REQUIREMENTS.

PREPARE THE SURFACE ON WHICH THE FIRST LAYER OF BLOCKS WILL BE PLACED BY STRIPPING ALL VEGETATION AND GRADING SO THAT IT IS LEVEL WITHIN A TOLERANCE OF 0.5 INCH OVER A 10 FT DISTANCE. PLACE GRANULAR MATERIAL CONFORMING TO SIZE NO. 9 IN TABLE 703.01 IN THE CM&S ON THE SURFACE TO FILL ANY LOW SPOTS IN THE SURFACE. ALSO USE NO. 9 SIZE GRANULAR MATERIAL TO FILL VOIDS BETWEEN THE SOIL AND SIDES OF THE BLOCKS.

PLACE BLOCKS AS INDICATED ON THE PLANS AND SHOP DRAWINGS. PLACE BLOCKS SO THAT ALL VERTICAL AND HORIZONTAL JOINTS BETWEEN BLOCKS ARE TIGHT. GAPS SHALL NOT EXCEED 1 INCH. AVOID CONTINUOUS VERTICAL JOINTS BY OFFSETTING AND ROTATING SUCCESSIVE LAYERS OF BLOCKS. OFFSET BLOCKS AT LEAST 2 FEET BETWEEN LAYERS. THE SURFACE OF EACH LAYER OF BLOCKS ON WHICH ANOTHER LAYER WILL BE PLACED MUST BE LEVEL TO WITHIN 0.5 INCH OVER A 10 FT DISTANCE. CONSTRUCT THE SURFACE OF THE UPPERMOST LAYER OF BLOCKS TO THE GRADE SHOWN ON THE PLANS TO A TOLERANCE OF ZERO TO MINUS 2.5 INCHES.

TRIM THE BLOCKS AS REQUIRED USING A SAW OR HOT WIRE.

PLACE CONNECTOR PLATES BETWEEN HORIZONTAL LAYERS OF BLOCKS. PLACE AT LEAST TWO CONNECTOR PLATES PER BLOCK. FURNISH CONNECTOR PLATES MANUFACTURED FROM GALVANIZED STEEL OR STAINLESS STEEL AND THAT ARE BARBED ON BOTH SIDES. EACH CONNECTOR PLATE SHALL HAVE A LATERAL HOLDING STRENGTH OF AT LEAST 60 LBS.

PORTIONS OF THE GEOFOAM FILL THAT ARE NOT BENEATH A CONCRETE DISTRIBUTION SLAB OR CONCRETE APPROACH SLAB MUST BE PROTECTED FROM HYDROCARBON SPILLS (E.G. DIESEL OR GASOLINE) BY COVERING THE GEOFOAM BLOCKS ON THE TOP AND SIDES FURNISH A GEOMEMBRANE MANUFACTURED FROM A TRI-POLYMER MATERIAL CONSISTING OF POLYVINYL CHLORIDE, ETHYLENE INTERPOLYMER ALLOY, AND A POLYURETHANE OR A COMPARABLE POLYMER COMBINATION. THE MATERIAL SHALL MEET THE FOLLOWING PHYSICAL AND CHEMICAL REQUIREMENTS.

- THICKNESS: MINIMUM 30 MILS (ASTM D751)
- UNLEADED GASOLINE VAPOR MAXIMUM TRANSMISSION RATE 0.40 OZ. PER SQUARE FOOT PER 24 HOURS (ASTM D814)
- GRAB TENSILE STRENGTH: MINIMUM 550 LBS BOTH MACHINE AND CROSS DIRECTION (ASTM D751)
- ELONGATION AT BREAK: 20% MINIMUM (ASTM D751)
- TOUGHNESS: MINIMUM 11,000 POUNDS (GRAB TENSILE STRENGTH MULTIPLIED BY PERCENT ELONGATION)
- PUNCTURE RESISTANCE: MINIMUM 750 LB (ASTM D751 BALL TIP)
- COLD CRACK: PASS AT -30° FAHRENHEIT (ASTM D2136 1-INCH MANDREL, 4 HOURS)
- FACTORY SEAMS: 2-INCH MINIMUM BONDED WIDTH
- SHEAR: MINIMUM 320 LB (ASTM D751)

PROVIDE CERTIFIED TEST DATA FROM THE MANUFACTURER THAT DEMONSTRATES THE GEOMEMBRANE MEETS THE ABOVE REQUIREMENTS. OVERLAP THE GEOMEMBRANE A MINIMUM OF 18 INCHES AT THE ENDS AND SIDES. PLACE THE BEGINNING OF EACH NEW ROLL BENEATH THE END OF THE PREVIOUS ROLL TO PREVENT THE ADVANCING FILL FROM LIFTING THE GEOMEMBRANE. STAGGER END OVERLAPS AT LEAST 5 FEET FROM THE OTHER END OVERLAPS IN ADJACENT ROLLS.

DO NOT DRIVE, OPERATE CONSTRUCTION EQUIPMENT, OR PLACE CONCENTRATED LOADS DIRECTLY ON THE BLOCKS. REMOVE AND REPLACE BLOCKS DAMAGED DUE TO THE CONTRACTOR'S OPERATIONS AT NO EXPENSE TO THE DEPARTMENT. PLACE AT LEAST 12 INCHES OF FILL OVER THE TOP OF THE BLOCKS BEFORE BEGINNING COMPACTION.

THE DEPARTMENT WILL MEASURE THE QUANTITY OF EPS GEOFOAM FILL BY THE NUMBER OF CUBIC YARDS COMPLETED AND ACCEPTED IN PLACE. INCLUDE IN THE CONTRACT UNIT PRICE FOR EPS GEOFOAM FILL THE COST OF SITE PREPARATION, GRANULAR MATERIAL, CONNECTOR PLATES, GEOMEMBRANE WRAP, AND OTHER ITEMS WHICH DO NOT HAVE A SEPARATE PAY ITEM BUT ARE NECESSARY TO INSTALL THE EPS GEOFOAM FILL. THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICES AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
203	CY	ROADWAY MISC.: EPS GEOFOAM FILL

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN

THIS ITEM SHALL BE PERFORMED ACCORDING TO C&MS 511, EXCEPT DECK FORMWORK HANGERS SHALL BE GALVANIZED PER C&MS 711.02.

ABBREVIATIONS:

ABUT. - ABUTMENT
ADT - AVERAGE DAILY TRAFFIC
ADTT - AVERAGE DAILY TRUCK TRAFFIC
APPR. - APPROACH
B - BOTTOM
℄ - BASELINE
B.F. - BACK FACE
BM - BENCHMARK
BOT. OR BTM. - BOTTOM
BRG. - BEARING
BTA - BRIDGE TERMINAL ASSEMBLY
℄ - CENTERLINE
C/C - CENTER TO CENTER
C.I.P. - CAST-IN-PLACE
C.J. - CONSTRUCTION JOINT
CLR. - CLEAR
CMS - CONSTRUCTION AND MATERIAL SPECIFICATIONS
CONC. - CONCRETE
CONSTR. - CONSTRUCTION
CVN - CHARPY V-NOTCH
DIA. - DIAMETER
DIM. - DIMENSION
DWG. - DRAWING
E - EAST
EB - EASTBOUND
E.F. - EACH FACE
EL. OR ELEV. - ELEVATION
EOP - EDGE OF PAVEMENT
EQ. - EQUAL
EST. - ESTIMATED
EX. - EXISTING
EXP. - EXPANSION
F.A. - FORWARD ABUTMENT
F/F - FACE TO FACE
F.F. - FRONT FACE
FT. - FOOT OR FEET
FTG. - FOOTING
FWD. - FORWARD
FWS - FUTURE WEARING SURFACE
HMWM - HIGH MOLECULAR WEIGHT METHACRYLATE
HORIZON - HORIZONTAL
HW - HIGH WATER
IN. - INCH
JT. - JOINT
L.F. - LEFT FORWARD
LT. - LEFT
MAX. OR MAX - MAXIMUM
MIN. - MINIMUM
MISC. - MISCELLANEOUS
MSE - MECHANICALLY STABILIZED EARTH
N - NORTH
NB - NORTHBOUND
NO. - NUMBER
N.P.C.P.P. - NON-PERFORATED CORRUGATED PLASTIC PIPE
OHWM - ORDINARY HIGH WATER MARK
O/O - OUT TO OUT
P.C.P.P. - PERFORATED CORRUGATED PLASTIC PIPE
P.E.J.F. - PREFORMED EXPANSION JOINT FILLER
PROP. - PROPOSED
PSF - POUNDS PER SQUARE FOOT
P.V.I. - POINT OF VERTICAL INTERSECTION
Q - FLOW RATE
R - RADIUS
R.A. - REAR ABUTMENT
RCP - ROCK CHANNEL PROTECTION
REQD. - REQUIRED
R.F. - RIGHT FORWARD
R.R. - RAILROAD
RT. - RIGHT
R/W - RIGHT OF WAY
S - SOUTH
SB - SOUTHBOUND
SER. - SERIES
SHLDR - SHOULDER
SPA. - SPACE OR SPACES
STA. - STATION
STD. - STANDARD
STR - STRAIGHT
T - TOP
T&B - TOP & BOTTOM
TBD - TO BE DETERMINED
TBR - TO BE RELOCATED
TEMP. - TEMPORARY
T.O.S. OR T/S - TOP OF SLOPE
TR - TO REMAIN
T/T - TOE TO TOE
TYP. - TYPICAL
UNK - UNKNOWN
U.N.O. - UNLESS NOTED OTHERWISE
VAR. - VARIES
V - VELOCITY
V.C. - VERTICAL CURVE
VPF - VANDAL PROTECTION FENCE
W - WEST
WB - WESTBOUND
WWR - WELDED WIRE REINFORCEMENT

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GENERAL NOTES
BRIDGE NO. COL-7-2634
S.R. 7 OVER NORFOLK SOUTHERN RAILROAD

COL-7-26.30
PID No. 99646