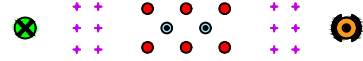


EXAMPLE OF GEPS PATTERN



GEPS  
UNITS

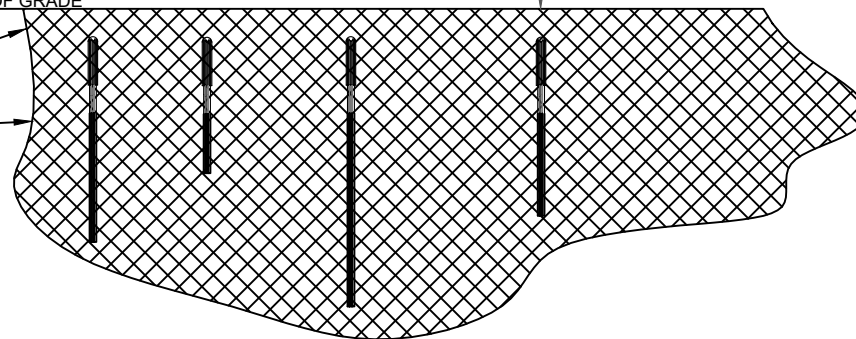
5 FT	●
10 FT	●
20 FT	●
40 FT	●

INSTALLATION DEPTH: 2 FT BELOW TOP OF GRADE

GEPS LENGTHS INCLUDE: 5 FT, 10 FT, 20 FT, AND 40 FT

TOP OF GRADE

GROUND



**SIDE VIEW**  
(NOT TO SCALE)

**SPECIFICATIONS**

DIAMETER	1.25 INCHES
BASE LENGTH	5 TO 40 FEET
MATERIAL	POLYETHYLENE
INSTALLATION DEPTH	2 FT BELOW GROUND SURFACE
DRILL HOLE DIAMTER	2.5 INCHES
GEPS UNIT WEIGHT	1.2 OZ / FOOT
CAP WEIGHT	1.4 OZ / CAP

## GROUNDWATER ENERGY PASSIVE SYSTEM (GEPS) TYPICAL DETAIL & SPECIFICATIONS

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NOVEMBER 2024

GROUNDWATER ENERGY PASSIVE SYSTEM - GEPS® SECTION 33 46 00

STORMWATER MANAGEMENT

EXLTERRA INC. – ALL RIGHTS RESERVED

PART 1 GENERAL

1.1 DESCRIPTION

A. SUMMARY

1. THE FOLLOWING GENERAL SPECIFICATIONS DESCRIBE THE COMPONENTS AND INSTALLATION REQUIREMENTS FOR A PASSIVE VOLUMETRIC MOISTURE-REBALANCING SYSTEM THAT UTILIZES THE PHYSICAL AND CHEMICAL MECHANISMS OF SOIL AND WATER TO PASSIVELY IMPROVE STORMWATER INFILTRATION THROUGH THE SURROUNDING AREA AND INCREASE SOIL STABILITY IN A PROJECT SITE. THE GROUNDWATER ENERGY PASSIVE SYSTEM (GEPS) SHALL BE A COMPLETE SYSTEM OF GEPS PRODUCTS TO BE PLACED PER THE APPROVED DRAWINGS TO PASSIVELY INCREASE NATURAL INFILTRATION PROCESSES AND IMPROVE SOIL CONDITIONS TO MEET PROJECT GOALS.

2. THE GROUNDWATER ENERGY PASSIVE SYSTEM (GEPS) IS COMPRISED OF THE FOLLOWING COMPONENTS:

a. GEPS UNITS

1) POLYETHYLENE BLEND, HD AND NA.

2) CONSIST OF A LONG SHAFT (EXTRUSION IN LENGTHS FROM 5'-40') AND A DIAPHRAGM.

3) IMPLEMENTED FOR MOISTURE REBALANCING, INFILTRATION AND STABILIZATION.

b. BSTR UNITS

1) POLYETHYLENE BLEND, HD AND NA.

2) CONSIST OF A SINGLE 1.5' EXTRUSION.

3) 3) IMPLEMENTED FOR INFILTRATION.

B. WORK INCLUDED.

1. THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING GROUNDWATER ENERGY PASSIVE SYSTEM UNITS AS SHOWN ON THE APPROVED LAYOUTS, AS DESCRIBED BELOW, AND AS DIRECTED.

C. WORK SPECIFIED ELSEWHERE.

1. THIS SECTION IS NOT A STAND-ALONE SECTION. OTHER REQUIREMENTS AND SPECIFICATIONS RELATED TO THIS SECTION AND THIS PRODUCT ARE NOTED ELSEWHERE IN THESE DOCUMENTS. THE CONTRACTOR AND ALL SUBCONTRACTORS ARE REQUIRED TO REVIEW THIS ENTIRE DOCUMENT ALONG WITH THE DRAWINGS IN AN EFFORT TO IDENTIFY ALL REQUIREMENTS.

1.2 REFERENCES 01 42 00

A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. ASTM D 1248, III, CLASS A, CAT. 5 – STANDARD SPECIFICATION FOR IDENTIFICATION OF POLYETHYLENE PLASTICS.

2. ASTM D1505 – STANDARD SPECIFICATION FOR DENSITY OF PLASTICS.

3. ASTM D1238 – STANDARD SPECIFICATION FOR MELT-FLOW RATES OF PLASTICS.

4. ASTM D638 - STANDARD SPECIFICATION FOR TENSILE PROPERTIES OF PLASTICS (DUMBBELL).

5. ASTM D790 - STANDARD SPECIFICATION FOR FLEXURAL PROPERTIES OF PLASTICS.

6. ASTM D882 - STANDARD SPECIFICATION FOR TENSILE PROPERTIES OF PLASTICS (SHEET).

7. ASTM D1709 - STANDARD SPECIFICATION FOR IMPACT RESISTANCE OF PLASTICS (SHEET).

8. ASTM D1922 - STANDARD SPECIFICATION FOR ELMENDORF TEAR STRENGTH OF PLASTICS (FILM).

9. ASTM D1525 - STANDARD SPECIFICATION FOR VICAT SOFTENING TEMPERATURE OF PLASTICS.

1.3 QUALITY ASSURANCE 01 43 00 / QUALITY CONTROL 01 45 00

A. MANUFACTURER QUALIFICATIONS 01 43 13

1. THE POLYETHYLENE BLEND USED IN GEPS COMPONENTS MUST MEET THE ASTM AND FDA

SPECIFICATIONS OUTLINED IN 1.2 – REFERENCES 01 42 00.

B. FIELD QUALITY CONTROL PROCEDURES 01 45 16

1. ALL COMPONENTS SHALL BE VISUALLY INSPECTED FOR DEFECTS. ALL DEFECTIVE COMPONENTS SHALL IMMEDIATELY BE REMOVED FROM THE SITE AND REPLACED.

2. REPAIRS MAY NOT BE MADE TO DEFECTIVE COMPONENTS. ALL DEFECTIVE COMPONENTS MUST BE REPLACED AND ARE NOT TO BE USED ON THE PROJECT SITE.

3. THE QUALITY AND COMPOSITION OF ALL COMPONENTS SHALL BE SUBJECT TO INSPECTION UPON DELIVERY OF THE GEPS PRODUCTS TO THE PROJECT SITE. INSTALLATION IS TO BE PERFORMED ONLY BY EXLTERRA-LICENSED INSTALLERS WITH THE EXPRESS APPROVAL OF EXLTERRA PRIOR TO INSTALLATION.

4. CHANGES TO THE LAYOUT OF GEPS UNITS DURING INSTALLATION MUST BE APPROVED BY AN EXLTERRA ENGINEER OR LAYOUT DESIGNER BEFORE THE CHANGES ARE MADE. ALL APPROVED CHANGES TO THE LAYOUT MUST BE MARKED BY THE EXLTERRA-LICENSED INSTALLER FOR THE CREATION OF AN AS-BUILT DRAWING TO MAINTAIN QUALITY AND ACCOUNTABILITY.

1.5 DELIVERY, STORAGE, AND HANDLING

A. MEET ALL REQUIREMENTS OF THE MANUFACTURER IN TERMS OF HANDLING AND STORAGE.

B. PROTECT ALL MATERIALS FROM DAMAGE DURING DELIVERY AND STORE ALL MATERIALS AWAY FROM UV LIGHT IN THE PROVIDED BOXES OR UNDER A TARP WHEN TIME FROM DELIVERY TO INSTALLATION EXCEEDS 48 HOURS.

C. STORAGE OF GEPS SHAFTS SHOULD OCCUR ON LEVEL SURFACES TO PREVENT WARPING OR DAMAGE TO THE PLASTIC EXTRUSIONS.

GROUNDWATER ENERGY PASSIVE SYSTEM (GEPS) SPECIFICATIONS



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CONT'D ON NEXT PAGE.

## PART 2 PRODUCTS

### 2.1 GEPS UNITS

A. GEPS UNITS WILL INCLUDE SHAFTS OF VARIOUS LENGTHS AND DIAPHRAGMS.

1. EXLTERRA GROUNDWATER ENERGY PASSIVE SYSTEM AS DESIGNED BY EXLTERRA INC., 618 EAST 10 MILE RD, MI, 48030. (248) 268-2336.

2. SHAFT LENGTHS RANGE FROM 5' TO 40', AND PLACEMENT OF SPECIFIC UNITS OF SPECIFIC LENGTH SHALL BE DETERMINED DURING THE LAYOUT PROCESS. LICENSED INSTALLERS SHALL FOLLOW THE PROVIDED LAYOUT.

3. 20' AND 40' GEPS UNITS CONSIST OF THREE (3) SHAFTS AND THREE (3) DIAPHRAGMS EACH, WHILE 5' AND 10' GEPS UNITS CONSIST OF ONE (1) SHAFT AND ONE (1) DIAPHRAGM EACH, RESPECTIVELY. THESE MUST BE BUNDLED BEFORE INSTALLATION AS PER EXLTERRA'S REQUIREMENTS.

B. GEPS UNITS SHALL MEET OR EXCEED THE CONSERVATIVE ESTIMATED INFILTRATION RATE OF 50 US GALLONS PER HOUR PER UNIT.

C. THE GROUNDWATER ENERGY PASSIVE SYSTEM HAS AN ACCLIMATION PERIOD OF INCREASING EFFICACY BEFORE PLATEAUING AT ITS PEAK PERFORMANCE. THE DURATION OF THIS IS DIRECTLY AFFECTED BY SEVERAL FACTORS SUCH AS INITIAL SOIL CONDITIONS, PRECIPITATION AND CLIMATE CONDITIONS, ETC., AND CANNOT BE PRECISELY PREDICTED.

### 2.2 BSTR UNITS

A. BSTR UNITS ARE A SINGLE EXTRUSION.

1. EXLTERRA GROUNDWATER ENERGY PASSIVE SYSTEM AS DESIGNED BY EXLTERRA INC., 618 EAST 10 MILE RD, MI, 48030. (248) 268-2336.

2. BSTR UNITS SHALL BE PLACED BY LICENSED INSTALLERS FOLLOWING THE PROVIDED LAYOUT.

## PART 3 EXECUTION

### 3.1 GENERAL

A. PLACE ALL GEPS UNITS AND BSTR IN ACCORDANCE WITH EXLTERRA'S REQUIREMENTS AS OUTLINED IN 3.2 – INSTALLATION AND THE PROVIDED GEPS LAYOUT.

### 3.2 INSTALLATION

A. EXLTERRA INC. / LICENSED EXLTERRA INSTALLER TO FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL AND/OR PREPARE THE SITE FOR PLACEMENT OF GEPS IN ACCORDANCE WITH EXLTERRA'S INSTRUCTIONS AND AS SHOWN ON THE LAYOUTS AND AS SPECIFIED.

B. REVIEW EXLTERRA'S INSTALLATION PROCEDURES AND COORDINATE INSTALLATION WITH OTHER WORK AFFECTED, SUCH AS GRADING, EXCAVATION, UTILITIES, CONSTRUCTION ACCESS AND EROSION CONTROL TO PREVENT SITUATIONS WHERE GEPS CANNOT BE INSTALLED AS PER EXLTERRA'S INSTRUCTIONS AND AS PER THE PROVIDED LAYOUT.

C. WEATHER CONDITIONS

1. EXERCISE GOOD CONSTRUCTION SITE SAFETY PRACTICES TO ENSURE THAT INSTALLATION IS NOT ATTEMPTED IN WEATHER CONDITIONS THAT WOULD BE UNSAFE OR INEFFECTIVE, I.E. DURING/DIRECTLY AFTER HEAVY RAINFALL.

2. THE POLYMER BLENDS USED IN GEPS AND BSTR ARE CAPABLE OF WITHSTANDING TEMPERATURES AS LOW AS -20°F WITHOUT STRUCTURAL OR PERFORMANCE CONCERNS – LOW TEMPERATURES WILL NOT HAMPER

INSTALLATION OF GEPS, BUT CARE MUST BE TAKEN TO ENSURE THE GROUND CAN BE DRILLED WITHOUT DAMAGE TO THE INSTALLER'S EQUIPMENT.

D. PROTECT PARTIALLY COMPLETED INSTALLATION AGAINST DAMAGE FROM OTHER CONSTRUCTION TRAFFIC WHEN WORK IS IN PROGRESS AND FOLLOWING COMPLETION OF BACKFILL THROUGH PROPER COMMUNICATION AND CLEAR VISUAL INDICATORS.

E. SOIL CONDITIONS

1. ENSURE SOIL CONDITIONS ALLOW FOR THE EQUIPMENT/MACHINERY TO BE SAFELY USED FOR THE PURPOSE OF GEPS INSTALLATION. TAKE NOTE OF GROUND STABILITY AND SLOPE AND PLAN ACCORDINGLY. IF COMPLICATIONS ARE EXPECTED DUE TO OBSERVED SOIL CONDITIONS IN A GIVEN AREA, CONTACT EXLTERRA IMMEDIATELY TO CONFIRM A CHANGE IN THE LAYOUT.

2. ENSURE SOIL CONDITIONS ALLOW FOR SAFE DRILLING. UNFORESEEN ROCKY CONDITIONS MUST BE REPORTED TO EXLTERRA, AS IT MAY REQUIRE A CHANGE IN LAYOUT, AND A NEW ESTIMATE FOR THE PROJECT TIMELINE MUST BE MADE.

F. PACKAGING

1. GEPS IS ASSEMBLED ON SITE, PRIOR TO INSTALLATION.

2. ALL GEPS COMPONENTS AND BSTR ARE DELIVERED IN PALLETS/SKIDS OF BOXES OF VARYING DIMENSIONS BASED ON QUANTITY AND PRODUCT LENGTH.

### 3.3 CLEANUP

A. KEEP ALL GEPS UNITS CLEAN UNTIL THEY ARE INSTALLED AND BACKFILLED.

B. UPON COMPLETION, CLEAN THE SURROUNDING AREA OF DEBRIS AND LEFTOVER CONSTRUCTION MATERIALS.

C. ENSURE THAT SOIL LEFTOVER AFTER BACKFILLING HAS BEEN COMPLETED IS DISPOSED OF ACCORDING TO CLIENT SPECIFICATIONS.

A. NO ADDITIONAL MAINTENANCE IS REQUIRED OF GEPS OR BSTR ONCE INSTALLATION IS COMPLETED.

## GROUNDWATER ENERGY PASSIVE SYSTEM (GEPS) SPECIFICATIONS



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END OF SPECIFICATION