

PART 1: GENERAL

- 1.01 DESCRIPTION
- A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A VERDURA 30 RETAINING WALL SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN AND DIMENSIONS SHOWN ON THESE PLANS.
  - B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD (IF REQUIRED), PLANTABLE SOIL UNIT FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.
  - C. WORK INCLUDES FURNISHING AND INSTALLING GEOSYNTHETIC SOIL REINFORCEMENT OF THE TYPE, SIZE, LOCATION, STRENGTH AND LENGTHS DESIGNATED ON THESE PLANS.
  - D. WORK INCLUDES FURNISHING AND INSTALLING FOUNDATION DRAIN, SUBDRAIN AND OTHER WALL-RELATED DRAINAGE SYSTEMS SHOWN AND SPECIFIED ON THESE PLANS.

- 1.02 REFERENCE STANDARDS
- A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
    - 1) ASTM C-140-STD. SPEC. FOR SAMPLING AND TESTING CONCRETE MASONRY UNITS
    - 2) ASTM C-145-STD. SPEC. FOR SOLID LOAD BEARING CONCRETE MASONRY UNITS
    - 3) ASTM C-1372-SPECIFICATION FOR SEGMENTAL RETAINING WALL UNITS
    - 4) ASTM D-1557-LABORATORY COMPACTION CHARACTERISTICS OF SOIL MODIFIED PROCTOR
    - 5) ASTM D-1785-STANDARD SPECIFICATION FOR PVC PLASTIC PIPE
    - 6) ASTM D-4318-LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS
    - 7) ASTM D-4595-TENSILE PRIORITIES OF GEOTEXTILES - WIDE WIDTH STRIP
    - 8) ASTM D-4829-EXPANSION INDEX OF SOILS
    - 9) ASTM D-5262-UNCONFINED TENSION CREEP BEHAVIOR OF GEOSYNTHETICS
    - 10) ASTM D-6638-CONNECTION STRENGTH BETWEEN REINFORCEMENT AND SEGMENTAL CONCRETE UNITS
    - 11) ASTM D-6913-STANDARD TEST METHODS FOR GRADATION OF SOILS
    - 12) ASTM D-6916-SHEAR STRENGTH BETWEEN SEGMENTAL CONCRETE UNITS
  - B. GEOSYNTHETIC RESEARCH INSTITUTE (GRI)
    - 1) GRI-GT7-DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOTEXTILES
  - C. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
    - 1) "DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS, 3RD EDITION," (2010)
  - D. ICC EVALUATION SERVICES, INC.
    - 1) ICC-ES EVALUATION REPORT, ESR-3073, VERDURA RETAINING WALL SYSTEM.
  - E. FEDERAL HIGHWAY ADMINISTRATION (FHWA)
    - 1) "DESIGN AND CONSTRUCTION OF MECHANICALLY STABILIZED EARTH WALLS AND REINFORCED SOIL SLOPES" (2009)

- 1.03 SUBMITTALS/CERTIFICATION
- A. CONTRACTOR SHALL SUBMIT A LIST OF PROPOSED MATERIALS TO BE USED FOR CONSTRUCTION TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.
- 1.04 QUALITY ASSURANCE
- A. CONTRACTOR SHALL ADHERE TO MANUFACTURER'S MATERIAL AND INSTALLATION SPECIFICATIONS.
  - B. OWNER SHALL PROVIDE SOIL TESTING AND QUALITY ASSURANCE DURING EARTHWORK AND WALL CONSTRUCTION OPERATION. OWNER'S QUALITY ASSURANCE PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR WALL PERFORMANCE.

- 1.05 DELIVERY, STORAGE AND HANDLING
- A. CONTRACTOR SHALL CHECK ALL MATERIALS UPON DELIVERY TO ASSURE THAT THE PROPER TYPE, GRADE, AND CERTIFICATION HAVE BEEN RECEIVED.
  - B. CONTRACTOR SHALL PROTECT ALL MATERIALS FROM DAMAGE DUE TO JOBSITE CONDITIONS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DAMAGED MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK.

PART 2: MATERIALS

- 2.01 MODULAR CONCRETE RETAINING WALL UNITS
- A. MODULAR CONCRETE UNITS SHALL BE VERDURA 30 BLOCK, AS INDICATED IN TABLE 2.
  - B. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-1372.
  - C. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING STRUCTURAL AND GEOMETRIC REQUIREMENTS:
    - \* COMPRESSIBLE STRENGTH = 5,000 PSI MINIMUM AT 28 DAYS;
    - \* MOISTURE ABSORPTION ≤ 8 LBS PER CUBIC FEET FOR STANDARD WEIGHT AGGREGATES;
    - \* BLOCK DIMENSIONS = AS INDICATED IN TABLE 2;
    - \* DIMENSIONAL TOLERANCES = ±1/4" FROM NOMINAL UNIT DIMENSIONS (NOT INCLUDING EXPOSED AGGREGATE FACE TEXTURE), ±1/4" UNIT HEIGHT - TOP AND BOTTOM PLANES.
- 2.02 GEOSYNTHETIC REINFORCEMENT (IF REQUIRED)
- A. GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF POSI-DURA REINFORCEMENT FABRIC PER THE VERDURA 30 STANDARD DESIGN REPORT. SUBSTITUTE GEOSYNTHETIC REINFORCEMENTS ARE NOT PERMITTED.
  - B. POSI-DURA REINFORCEMENT FABRIC CONSISTS OF MULTI-FILAMENT POLYESTER YARNS WOVEN INTO A STRIP FABRIC USED FOR EARTH REINFORCEMENT.
  - C. POSI-DURA REINFORCEMENT FABRIC STRENGTH PROPERTIES ARE PROVIDED IN TABLE 5.
- 2.03 POSI-DURA FABRIC TO VERDURA 30 BLOCK CONNECTION
- A. CONNECTORS SHALL BE 1 INCH DIAMETER SCHEDULE 80 PVC PIPE AND MUST BE CAPABLE OF PROVIDING POSITIVE MECHANICAL INTERLOCK BETWEEN POSI-DURA REINFORCEMENT FABRIC AND BLOCK.
  - B. CONNECTORS SHALL BE CAPABLE OF HOLDING THE POSI-DURA REINFORCEMENT FABRIC IN THE PROPER DESIGN POSITION DURING GEOSYNTHETIC PRE-TENSIONING AND BACKFILLING PROCEDURES
- 2.04 UNIT INFILL (PLANTABLE SOIL)
- A. UNIT INFILL SHALL CONSIST OF SOILS USED FOR WALL BACKFILL OR AS SPECIFIED BY THE PROJECT LANDSCAPE ARCHITECT FOR ENHANCED WALL PLANTABILITY.
- 2.05 BACKFILL AND FOUNDATION MATERIAL
- A. ENGINEERED FILL FOR THE REINFORCED SOIL AND RETAINED SOIL ZONES SHALL BE ON-SITE OR IMPORTED SOILS ACCEPTED BY THE GEOTECHNICAL ENGINEER OF RECORD AND HAVE SOIL CLASSIFICATIONS AS NOTED IN TABLE 3.
- 2.06 REINFORCED BACKFILL
- A. REINFORCED SOIL SHALL BE FREE OF DEBRIS AND MEET THE FOLLOWING RECOMMENDATIONS;
- GRADATION TESTED IN ACCORDANCE WITH ASTM D-6913:
- | SIEVE SIZE       | PERCENT PASSING |
|------------------|-----------------|
| 2 INCH (50 MM)   | 100             |
| 3/4 INCH (20 MM) | 100-75          |
| NO. 4            | 100-40          |
| NO. 40           | 0-60            |
| NO. 200          | 0-50            |
- EXPANSION INDEX (EI) ≤ 50 PER ASTM D4829
- PLASTICITY INDEX (PI) < 20 AND LIQUID LIMIT < 40 PER ASTM D4318
- B. NON-ANGULAR PARTICLES UP TO 4 INCHES IN SIZE MAYBE ALLOWED FOR NO MORE THAN 15% OF BACKFILL.
  - C. ENGINEERED FILL MATERIALS FOR THE UPPER ONE (1) FOOT IMMEDIATELY BEHIND THE TOPMOST BLOCK AND ABOVE THE ZONE OF REINFORCED SOIL SHALL BE COMPROMISED OF MORE IMPERVIOUS SOILS.
  - D. UNSUITABLE SOILS (HIGH PLASTIC CLAYS OR ORGANIC SOILS) SHALL NOT BE USED.
  - E. GEOTECHNICAL ENGINEER OF RECORD SHALL PERFORM LABORATORY TESTS ON THE SOIL MATERIAL PROPOSED FOR USE TO ENSURE COMPLIANCE WITH REQUIREMENTS STATED ABOVE PRIOR TO THE PLACEMENT OF THE MATERIALS.
- 2.07 DRAIN ROCK
- A. CLEAN 3/4" CRUSHED AGGREGATE
- 2.08 DRAINAGE PIPE
- A. PROVIDE A PERFORATED AND SOLID PIPING SYSTEM CONSISTING OF 4-INCH-DIAMETER SCHEDULE 40 PVC PIPE (OR EQUAL) AS SHOWN ON THESE PLANS.
- 2.09 FILTER FABRIC
- A. PROVIDE FILTER FABRIC CONSISTING OF MIRAFI 140N (OR EQUAL) AS SHOWN ON THESE PLANS.

# VERDURA® 30 RETAINING WALL PLANS

PART 3: EXECUTION

- 3.01 SURFACE CONDITIONS
- A. PRIOR TO WORK, CAREFULLY INSPECT PREVIOUS GRADING WORK. VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
  - B. VERIFY THAT WORK OF THIS SECTION MAY BE INSTALLED IN STRICT ACCORDANCE WITH THE ORIGINAL DESIGN, ALL PERTINENT CODES AND REGULATIONS.
  - C. VERIFY WALL DRAINAGE SYSTEM IS COORDINATED WITH POINTS OF CONNECTION TO STORM DRAINAGE SYSTEM OR OTHER APPROVED OUTLET LOCATION.
  - D. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROJECT CIVIL ENGINEER, \_\_\_\_\_, AT (###) ###-####. DO NOT PROCEED WITH INSTALLATION UNTIL ALL SUCH DISCREPANCIES HAVE BEEN RESOLVED.
- 3.02 LAYOUT
- A. VERIFY ALL STAKING AND FIELD ENGINEERING REQUIRED TO IMPLEMENT THE WORK AS SHOWN ON THE DRAWINGS.
  - B. PROTECT ALL STAKES AND BENCHMARKS. REPLACE ALL STAKES AND BENCHMARKS DAMAGED DURING THE COURSE OF CONSTRUCTION.
  - C. SET GRADE STAKES USING INSTRUMENT TECHNOLOGY, AT 50-FOOT GRID INTERVALS AT AREAS WHERE GRADIENTS ARE LESS THAN 2 PERCENT. SET GRADE STAKES USING INSTRUMENT TECHNOLOGY, 25-FOOT-INTERVALS AT AREAS WHERE GRADES ARE GREATER THAN 2 PERCENT.
  - D. HAND TRIM EXCAVATIONS TO REQUIRED ELEVATIONS. CORRECT OVER-EXCAVATION WITH FILL MATERIALS APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD.
  - E. REMOVE LARGE STONES OR OTHER HARD MATTER WHICH WOULD DAMAGE PIPES OR IMPEDE CONSISTENT BACKFILLING OR COMPACTION.
  - F. PROVIDE ALL EQUIPMENT OF SUCH TYPE, FUNCTION, AND DESIGN AS REQUIRED TO ACHIEVE SPECIFIC VALUES. WHERE NECESSARY, PROVIDE RUBBER-TIRED AND VIBRATORY SHEEPSFOOT COMPACTION EQUIPMENT.
- 3.03 SUBSURFACE DRAINAGE SYSTEM INSTALLATION
- A. EXCAVATE TRENCHES FOR SUBSURFACE DRAINAGE SHOWN ON DRAWINGS OR AT LOWEST POINT POSSIBLE THAT CAN BE OUTLET.
  - B. LAY FILTER FABRIC IN BOTTOM OF EXCAVATION PRIOR TO PLACING DRAIN ROCK. PLACE MINIMUM 4-INCH-THICK BED OF DRAIN ROCK OVER FABRIC.
  - C. INSTALL AND JOIN PERFORATED 4 INCH PVC PIPE AND PIPE FITTINGS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. INSTALL DRAINAGE PIPING WITH PERFORATIONS DOWN. JOIN PIPE ENDS AND CAP ANY FREE ENDS OF PERFORATED PIPE WITH SOLVENT CEMENT.
  - D. LAY PERFORATED 4 INCH PVC PIPE TO SLOPE GRADIENTS OF THE WALL FOUNDATION.
  - E. SURROUND PERFORATED PIPE WITH DRAIN ROCK.
  - F. WRAP FILTER FABRIC AROUND DRAIN ROCK WITH 12" MINIMUM OVERLAP OF THE FABRIC.
  - G. EXTEND NON-PERFORATED 4 INCH PVC DISCHARGE PIPES TO APPROVED OUTLET LOCATIONS AS SHOWN ON DRAWINGS OR AT LOWEST POINT POSSIBLE WITH A MINIMUM 2% FALL TOWARDS OUTLET LOCATION.
  - H. PROVIDE TRENCHING, BEDDING, AND BACKFILL AS REQUIRED FOR OUTLET DRAINAGE PIPE. DO NOT DISPLACE OR DAMAGE PIPE WHEN COMPACTION.
- 3.04 EXCAVATION
- A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. OWNER'S REPRESENTATIVE SHALL INSPECT THE EXCAVATION AND APPROVE PRIOR TO PLACEMENT OF LEVELING MATERIAL OR FILL SOILS. PROOF ROLL FOUNDATION AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD TO DETERMINE IF REMEDIAL WORK IS REQUIRED.
  - B. OVER-EXCAVATION AND REPLACEMENT OF UNSUITABLE FOUNDATION SOILS BELOW THE WALL WITH APPROVED COMPACTED FILL SHALL BE DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD.
- 3.05 MODULAR UNIT INSTALLATION
- A. FIRST COURSE OF UNITS SHALL BE PLACED ON APPROVED FOUNDATION SOILS OR LEVELING MATERIAL, AS DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD, AT THE APPROPRIATE LINES AND GRADES. MODULAR UNITS SHALL BE USED FOR ALIGNMENT. ALIGNMENT AND LEVEL SHALL BE CHECKED IN ALL DIRECTIONS AND ENSURE THAT ALL UNITS ARE IN FULL CONTACT WITH THE FOUNDATIONS SOILS AND PROPERLY SEATED.
  - B. UNITS SHALL BE PLACED ON THE FOUNDATION SOILS WITH A MAXIMUM DISTANCE OF 9 INCHES BETWEEN ADJACENT UNITS. THE SPACING BETWEEN UNITS INSTALLED IN CURVED REGIONS (CONCAVE OR CONVEX) MUST BE ADJUSTED ACCORDINGLY SUCH THAT THE RUNNING BOND LAYOUT IS MAINTAINED. VERTICALLY ADJACENT UNITS SHALL BE CENTERED ON UNITS ABOVE AND BELOW. ALL BLOCK LAYOUT AND PLACEMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - C. MODULAR UNITS MAY BE INSTALLED HORIZONTALLY WITH RESPECT TO THE PROFILE WALL ALIGNMENT OR MAY BE MADE TO FOLLOW THE BOTTOM OF WALL CONTOURS ("RUN WITH THE GRADE"), WHERE BOTTOM OF WALL CONTOURS ARE USED TO SET THE FIRST ROW OF MODULAR BLOCKS, GRADES MAY NOT SLOPE MORE THAN 15% WITH RESPECT TO THE WALL PROFILE BASE.
  - D. PLACE UNIT FILL WITHIN THE BLOCK CELL AND LIGHTLY CONSOLIDATE VIA FOOT PRESSURE.
  - E. PLACE AND COMPACT REINFORCED AND RETAINED FILL BEHIND WALL UNITS.
  - F. SCREED EXCESS UNIT FILL (ROD-BOARDED) OFF TO DEVELOP A FLAT BASE UPON WHICH SUBSEQUENT UNITS CAN BE POSITIONED.
  - G. FOLLOW WALL ERECTION AND UNIT FILL CLOSELY WITH REINFORCED FILL. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS PRIOR TO UNIT INFILL AND REINFORCED/RETAINED BACKFILL PLACEMENT AND COMPACTION SHALL NOT EXCEED ONE COURSE.
- 3.06 POSI-DURA REINFORCEMENT FABRIC INSTALLATION
- A. POSI-DURA REINFORCEMENT FABRIC SHALL BE ORIENTED WITH THE HIGHEST STRENGTH AXIS PERPENDICULAR TO THE WALL ALIGNMENT.
  - B. POSI-DURA REINFORCEMENT FABRIC SHALL BE PLACED AT THE STRENGTHS, LENGTHS, AND ELEVATIONS SHOWN ON THESE DRAWINGS.
  - C. POSI-DURA REINFORCEMENT FABRIC SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND ATTACHED TO THE MODULAR WALL UNITS IN ACCORDANCE WITH THE DETAILS OF THESE PLANS AND SPECIFICATIONS. THE GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE LAID FLAT PRIOR TO BACKFILL PLACEMENT ON THE GEOSYNTHETIC SOIL REINFORCEMENT.
  - D. POSI-DURA REINFORCEMENT FABRIC SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF EMBEDMENT. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF POSI-DURA REINFORCEMENT FABRIC WILL NOT BE PERMITTED.
- 3.07 REINFORCED BACKFILL PLACEMENT
- A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF SLACK IN THE POSI-DURA REINFORCEMENT FABRIC AND INSTALLATION DAMAGE.
  - B. REINFORCED BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT TO EXCEED THE "RAIL HEIGHT" OF THE UNITS BEING PLACED. LIFT THICKNESSES SHALL BE DECREASED TO ACHIEVE THE REQUIRED DENSITY AS REQUIRED.
  - C. REINFORCED BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL PRIOR TO AND DURING COMPACTION SHALL BE AT OR SLIGHTLY ABOVE OPTIMUM MOISTURE CONTENT AND UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER.
  - D. ONLY LIGHTWEIGHT HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 1 FOOT FROM THE BACK OF THE MODULAR CONCRETE UNIT.
  - E. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY UPON THE POSI-DURA REINFORCEMENT FABRIC. A MINIMUM FILL THICKNESS COVER OF 6 INCHES IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE POSI-DURA REINFORCEMENT FABRIC. TRACKED VEHICLE TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND DAMAGING THE POSI-DURA REINFORCEMENT FABRIC.
  - F. RUBBER TIRED EQUIPMENT MAY PASS OVER POSI-DURA REINFORCEMENT FABRIC AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED. ANY DISPLACED REINFORCEMENTS SHALL BE RE-ALIGNED PRIOR TO BACKFILL.
  - G. AT THE END OF EACH DAY'S OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT OF REINFORCED BACKFILL AWAY FROM THE WALL UNITS TO DIRECT RUNOFF AWAY FROM THE WALL FACE. THE CONTRACTOR SHALL NOT ALLOW SURFACE RUN-OFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION SITE.
  - H. CARE SHOULD BE TAKEN DURING EXCAVATION FOR AND CONSTRUCTION OF THE V-DITCH AND ALL OTHER SURFACE IMPROVEMENTS ADJACENT TO THE WALL STRUCTURE TO PREVENT DAMAGE TO THE UPPER POSI-DURA REINFORCEMENT FABRIC. IF THE POSI-DURA REINFORCEMENT FABRICS ARE DAMAGED, THEY NEED TO BE PROPERLY REPLACED.

- 3.08 EROSION CONTROL
- A. PROVIDE DUST AND EROSION CONTROL PER CIVIL PLANS.
- 3.09 AS-BUILT CONSTRUCTION TOLERANCES
- A. VERTICAL ALIGNMENT: ±1.5 INCHES OVER ANY 10 FT DISTANCE.
  - B. WALL BATTER: WITHIN 2 DEGREES OF DESIGN BATTER.
  - C. HORIZONTAL ALIGNMENT: ±1.5 INCHES OVER ANY 10 FT DISTANCE.
  - D. CORNERS, BENDS, CURVES: ±1 FT TO DESIGN LOCATIONS.
  - E. MAXIMUM HORIZONTAL GAP BETWEEN ERECTED UNITS SHALL BE 9 INCHES.
- 3.10 FIELD QUALITY CONTROL
- A. THE OWNER SHALL ENGAGE INSPECTION AND TESTING SERVICES, INCLUDING INDEPENDENT LABORATORIES, TO PROVIDE QUALITY ASSURANCE AND TESTING SERVICES DURING CONSTRUCTION. THIS DOES NOT RELIEVE THE CONTRACTOR FROM SECURING THE NECESSARY CONSTRUCTION CONTROL TESTING DURING CONSTRUCTION.
  - B. QUALIFIED AND EXPERIENCED TECHNICIANS AND ENGINEERS SHALL PERFORM TESTING AND INSPECTION SERVICES.
  - C. AS A MINIMUM, QUALITY CONTROL TESTING SHOULD INCLUDE FOUNDATION SOIL INSPECTION, SOIL AND BACKFILL TESTING, VERIFICATION OF DESIGN PARAMETERS, AND OBSERVATION OF CONSTRUCTION FOR GENERAL COMPLIANCE WITH DESIGN DRAWINGS AND SPECIFICATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
  - D. FIELD QUALITY CONTROL SHALL BE PERFORMED BY THE GEOTECHNICAL ENGINEER OF RECORD.
- 3.11 SPECIAL INSPECTION
- A. PER ICC-ES EVALUATION REPORT ESR-3073, SPECIAL INSPECTION DURING INSTALLATION MUST BE PROVIDED IN ACCORDANCE WITH THE 2013 CALIFORNIA BUILDING CODE (CBC). INSPECTION RESPONSIBILITIES INCLUDE VERIFYING THE FOLLOWING:
    1. BLOCK TYPE AND UNIT DIMENSIONS.
    2. VERIFICATION OF BLOCK UNIT FOR COMPLIANCE WITH ASTM C1372, INCLUDING COMPRESSIVE STRENGTH AND WATER ABSORPTION, AS DESCRIBED IN SECTION 3.2.1 OF ESR-3073.
    3. PRODUCT IDENTIFICATION, INCLUDING EVALUATION REPORT NUMBER (ESR-3073).
    4. FOUNDATION PREPARATION.
    5. VERDURA BLOCK UNIT PLACEMENT, INCLUDING PROPER ALIGNMENT AND INCLINATION WITHIN DESIGN TOLERANCES.
    6. PVC PIPE CONNECTIONS, INCLUDING INSTALLATION LOCATIONS, PROPER FIT WITHIN THE BLOCKS, AND INSTALLATION SEQUENCE WITH RESPECT TO THE POSI-DURA REINFORCEMENT FABRIC PLACEMENT.
    7. POSI-DURA REINFORCEMENT FABRIC IDENTIFICATION, LOCATION AND PLACEMENT.
    8. PLACEMENT OF APPROVED BACKFILL MATERIAL AND COMPACTION.
    9. DRAINAGE PROVISIONS.
  - B. SPECIAL INSPECTIONS MAY BE COMPLETED BY THE PROJECT ENGINEERS OR AN INDEPENDENT INSPECTION SERVICE.

TABLE 1 - REFERENCED DOCUMENTATION:

1. VERDURA 30 RETAINING WALL STANDARD DESIGN, PREPARED BY SOIL RETENTION PRODUCTS, INC.
2. GRADING/SITE PLAN, PREPARED BY COMPANY.
3. GEOTECHNICAL INVESTIGATION/RECOMMENDATIONS, PREPARED BY COMPANY.

TABLE 2 - VERDURA BLOCK PROPERTIES

UNIT TYPE, VERDURA	V30
UNIT SIZE, RAIL HEIGHT, IN.	6.5
UNIT SIZE, CROWN HEIGHT, IN.	9.25
UNIT SIZE, WIDTH, IN.	18
UNIT SIZE, DEPTH, IN.	12
WEIGHT, LBS.	68
BATTER = (DEGREES FROM VERTICAL)	18

TABLE 3 - BACKFILL AND FOUNDATION MATERIAL

MATERIAL	SOIL CLASSIFICATIONS
	CLASS OF SOIL
REINFORCED SOIL*	3/4
RETAINED SOIL	3/4/5
FOUNDATION SOIL	3/4/5
SEISMICITY	N/A FOR RETAINING WALLS UNDER 6'

TABLE 4 - SOIL CLASSIFICATIONS

CLASS OF SOIL	CLASS OF MATERIALS PER USCS	DESCRIPTION
3	GW AND GP	SANDY GRAVEL AND/OR GRAVEL
4	SW, SP, SM, SC, GM AND GC	SAND, SILTY SAND, CLAYEY SAND, SILTY GRAVEL AND CLAYEY GRAVEL
5	CL, ML, MH AND CH	CLAY, SANDY CLAY, SILTY CLAY, CLAYEY SILT, SILT AND SANDY SILT

- \* USCS - UNIFIED SOIL CLASSIFICATION SYSTEM
- CLASS OF SOIL PER TABLE 1806.2 OF CBC/IBC CODES

TABLE 5 - GEOSYNTHETIC REINFORCEMENT PROPERTIES

POSI-DURA FABRIC			
	TEST METHOD UNIT		HS667
	TENSILE STRENGTH (AT ULTIMATE)	ASTM D4595	
LONG TERM ALLOWABLE DESIGN LOAD	GRI GT-7	lbs/ft	3795 (PER STRIP)