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PART 1: GENERAL

1.01 DESCRIPTION

- A. THE WORK TO BE PERFORMED INCLUDES SOURCING, PROVIDING AND INSTALLING CONCRETE RETAINING WALL BLOCKS TO THE LINES AND GRADES AS SPECIFIED ON THE PROJECT CONSTRUCTION DRAWINGS AND AS MAY BE FURTHER SPECIFIED HEREIN.
- B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD, DRAINAGE AGGREGATE, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.
- C. WORK INCLUDES FURNISHING AND INSTALLING ALL RELATED MATERIALS REQUIRED FOR CONSTRUCTION OF THE RETAINING WALL AS SHOWN ON THE CONSTRUCTION SHOP DRAWINGS.

1.02 REFERENCE STANDARDS

- A. ASTM D448 SIZES OF AGGREGATE FOR ROAD AND BRIDGE CONSTRUCTION.
- B. ASTM D698 LABORATORY COMPACTION CHARACTERISTICS USING STANDARD EFFORT.
- C. AASHTO T27 SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES.
- D. AASHTO T90 STANDARD METHOD OF TEST FOR DETERMINING THE PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS.

1.03 QUALITY ASSURANCE

- A. OWNER SHALL BE RESPONSIBLE FOR SOIL TESTING AND INSPECTION QUALITY CONTROL DURING EARTHWORK OPERATIONS.

PART 2: MATERIALS

2.01 DEFINITIONS

- A. RECON RETAINING WALL UNIT - A PRECAST CONCRETE, SEGMENTAL FACING BLOCK PROVIDED BY AN AUTHORIZED MANUFACTURER UNDER LICENSE TO RECON RETAINING WALL SYSTEMS, INC.
- B. BASE LEVELING PAD - AN UNREINFORCED CAST-IN-PLACE OR COMPACTED CRUSHED STONE PAD WHICH SERVES AS A FLAT SURFACE FOR PLACING THE INITIAL COURSE OF PRECAST UNITS.
- C. DRAINAGE AGGREGATE - CLEAN 1" ANGULAR CRUSHED ROCK LOCATED WITHIN AND IMMEDIATELY BEHIND THE RETAINING WALL UNITS TO FACILITATE DRAINAGE AND AVOID COMPACTION IN CLOSE PROXIMITY TO THE RETAINING WALL UNITS.
- D. FOUNDATION SOIL - SOIL ZONE IMMEDIATELY BENEATH THE RETAINING WALL FACING UNITS AND THE WALL LEVELING PAD.
- E. RETAINED SOIL - SOIL IMMEDIATELY BEHIND THE RETAINING WALL FACING DRAINAGE AGGREGATE.
- F. SUBSURFACE DRAINAGE SYSTEM - A SYSTEM FOR REMOVING WATER FROM BEHIND THE WALL AND CHANNELING IT TO A POINT OF POSITIVE DRAINAGE.
- G. GEOTEXTILE FABRIC - PERMEABLE FABRIC USED IN SUBSURFACE DRAINAGE TO SEPARATE, FILTER, AND PROVIDE PERMANENT EROSION CONTROL.

2.02 RECON RETAINING WALL UNITS

- A. RECON WALL UNITS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. STANDARD WEIGHT CONCRETE SHALL HAVE A ~~4.5-7.5%~~ AIR ENTRAINMENT BY VOLUME. WEIGHT OF CONCRETE SHALL BE 145 PCF.
- B. RECON BLOCKS SHALL BE CONSISTENT AND FREE OF STAINS, DEFECTS, CRACKS, OR CHIPS. UNITS THAT CONTAIN VISIBLE DEFECTS SUCH AS, BUT NOT LIMITED TO, VERTICAL OR HORIZONTAL SEAMS, CONSPICUOUS STAINS, FORM MARKS, OR COLOR STREAKS SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER OR REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- C. TEXTURE ON THE FACE OF THE BLOCK SHALL BE NORTH SHORE GRANITE (NATURAL GREY).

5%-9%

E. VTrans Standards Specifications for Construction and Contract Special Provisions

2.03 BASE LEVELING PAD MATERIAL

- A. MATERIAL SHALL CONSIST OF UNREINFORCED CONCRETE OR COMPACTED CRUSHED STONE AS SHOWN ON THE CONSTRUCTION DRAWING.

2.04 DRAINAGE AGGREGATE AND CRUSHED STONE RETAINED BACKFILL (PHI 40°)

- A. AGGREGATE SHALL HAVE AT LEAST TWO FRACTURED FACES AND SHALL NOT BE RIVER ROCK OR PEA GRAVEL.
- B. AGGREGATE SHALL CONSIST OF CLEAN 1" CRUSHED STONE MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
1"	100
3/4"	100 - 75
NO. 4	0 - 10
NO. 50	0 - 5

2.05 RETAINED BACKFILL (PHI 34°)

- A. BACKFILL SHALL BE FREE OF DEBRIS AND ORGANIC MATERIAL MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
4"	100
3"	100 - 75
NO. 40	0 - 60
NO. 200	0 - 12

PLASTICITY INDEX (PI) < 6

- B. SOUNDNESS. THE MATERIAL SHALL BE SUBSTANTIALLY FREE OF SHALE OR OTHER SOFT PARTICLES WITH POOR DURABILITY CHARACTERISTICS. THE MATERIAL SHALL HAVE A SODIUM SULFATE SOUNDNESS LOSS OF LESS THAN 8% AFTER FIVE (5) CYCLES, AS DETERMINED IN ACCORDANCE WITH AASHTO T104.
- C. MATERIAL CAN BE SITE EXCAVATED MATERIAL WHEN THE ABOVE REQUIREMENTS ARE MET. UNSUITABLE SOILS FOR BACKFILL (HIGH PLASTIC CLAYS OR ORGANIC MATERIALS) SHALL NOT BE USED IN THE RETAINED SOIL MASS.
- D. CONTRACTOR SHALL SUBMIT RETAINED FILL SAMPLE AND TEST RESULTS TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

2.06 SUBSURFACE DRAINAGE SYSTEM

- A. SUBSURFACE DRAINAGE SYSTEM SHALL CONSIST OF PERFORATED POLYETHYLENE (PE) PIPE WRAPPED IN A GEOTEXTILE FABRIC OR NON-PERFORATED WHERE REQUIRED.
- B. NON-PERFORATED PIPE SHALL BE USED TO CONNECT DRAINS FROM THE WALL TO DRAINAGE STRUCTURES OR HEADWALLS.
- C. FITTINGS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

2.07 GEOTEXTILE FABRIC

- A. GEOTEXTILE FABRIC SHALL BE A NON-WOVEN FABRIC MEETING THE REQUIREMENTS OF SECTION 649 FOR GEOTEXTILE FOR ROADBED SEPARATOR, UNLESS OTHERWISE SPECIFIED.

PART 3: EXECUTION

3.01 EXCAVATION

- A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. CONTRACTOR SHALL BE CAREFUL NOT TO DISTURB EMBANKMENT AND FOUNDATION MATERIALS BEYOND LINES SHOWN.

3.02 FOUNDATION SOIL PREPARATION

- A. FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR LEVELING PAD DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- B. UNSUITABLE SOILS SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL.
- C. OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH APPROVED COMPACTED BACKFILL MATERIAL.

3.03 BASE LEVELING PAD

- A. LEVELING PAD MATERIALS SHALL BE PLACED UPON APPROVED FOUNDATION AS SHOWN ON THE CONSTRUCTION DRAWINGS TO A MINIMUM THICKNESS OF 6".
- B. AGGREGATE MATERIAL SHALL BE COMPACTED TO PROVIDE A DENSE, LEVEL SURFACE ON WHICH TO PLACE THE FIRST COURSE OF MODULAR UNITS. COMPACTION SHALL BE TO 95% OF STANDARD PROCTOR DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698.
- C. CRUSHED STONE SHALL BE PLACED IN MAXIMUM 6" LIFTS AND SHALL BE WELL COMPACTED WITH A VIBRATORY PLATE COMPACTOR OR OTHER SUITABLE EQUIPMENT.

3.04 UNIT INSTALLATION

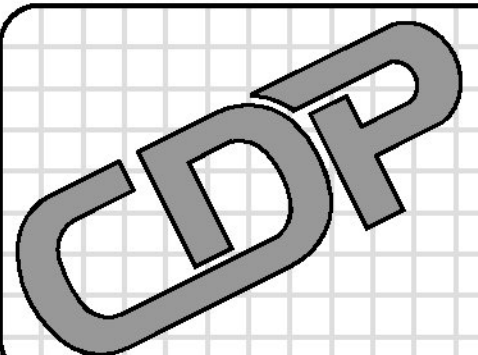
- A. THE FIRST COURSE OF CONCRETE MODULAR WALL UNITS SHALL BE CAREFULLY PLACED ON THE BASE LEVELING PAD. EACH UNIT SHALL BE CHECKED FOR LEVEL AND ALIGNMENT.
- B. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM A BASE LINE.
- C. SWEEP EXCESS MATERIAL FROM TOP OF UNITS AND INSTALL NEXT COURSE. ENSURE THAT EACH COURSE IS COMPLETELY UNIT FILLED, BACKFILLED AND COMPACTED PRIOR TO PROCEEDING TO NEXT COURSE.

3.05 DRAINAGE SYSTEM PLACEMENT

- A. A DRAINAGE SYSTEM SHALL BE PROVIDED AT THE BASE OF THE WALL SYSTEM BEHIND THE RECON UNITS.
- B. THE DRAINAGE SYSTEM SHALL CONSIST OF 4" PERFORATED POLYETHYLENE (PE) PIPE WRAPPED WITH GEOTEXTILE FABRIC.
- C. THE PIPE SHALL BE INSTALLED WITH POSITIVE DRAINAGE, 1% MINIMUM.

3.06 FILL PLACEMENT

- A. BACKFILL PLACEMENT SHALL CLOSELY FOLLOW ERECTION OF EACH ROW OF BLOCKS. BACKFILL SHALL BE PLACED IN A WAY THAT DOES NOT CAUSE DAMAGE OR DISTURBANCE TO THE WALL.
- B. THE AREA IN FRONT AND AROUND THE LEVELING PAD SHALL BE BACKFILLED AS SOON AS PRACTICALLY POSSIBLE.
- C. BACKFILL MATERIAL SHALL BE PLACED WITH A MAXIMUM OF 8" LIFTS AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698. THE IN PLACE MOISTURE CONTENT SHALL NOT EXCEED THE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH ASTM D698 AND BE NO LOWER THAN 2% BELOW OPTIMUM MOISTURE CONTENT.
- D. CRUSHED STONE BACKFILL COMPACTION REQUIREMENTS:
 - 1. CRUSHED STONE BACKFILL SHALL BE PLACED IN UNIFORM MAXIMUM LIFTS OF 9".
 - 2. THE CRUSHED STONE BACKFILL SHALL BE COMPACTED BY A MINIMUM OF 3 PASSES OF A VIBRATORY COMPACTOR CAPABLE OF EXERTING 2,000 LBS OF CENTRIFUGAL FORCE AND TO THE SATISFACTION OF THE ONSITE GEOTECHNICAL ENGINEER OR THEIR DESIGNATED REPRESENTATIVE.
- E. COMPACTION WITHIN 3 FEET OF BACK FACE OF WALL SHALL BE ACHIEVED BY MEANS OF A MINIMUM 3 PASSES WITH A LIGHTWEIGHT MECHANICAL TAMPER, ROLLER, OR VIBRATORY SYSTEM. MAXIMUM LIFT SIZE SHALL NOT EXCEED 8 INCHES LOOSE. SOIL DENSITY IN THIS AREA SHALL NOT BE LESS THAN 90% STANDARD PROCTOR DENSITY.



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No	Date	Revision	By
1	2.02.2016	REVISE BLOCK AND QUANTITIES	TPH
2			
3			
4			
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MICHAEL R. JOHNSON, P.E. Date 2/2/16