

**GENERAL NOTES:**

1. THE RETAINING WALL DESIGN WAS BASED ON THE EXISTING AND PROPOSED GRADING PLAN PROVIDED BY URS ON MAY 30, 2013, AND THE SUBSURFACE EXPLORATION AND LABORATORY TESTING DATA PROVIDED IN GEODESIGN, INC.'S REPORT, DATED FEBRUARY 2012. DESIGN AND CONSTRUCTION GUIDELINES WERE BASED ON FHWA-NHI-00-043, MECHANICALLY STABILIZED EARTH WALLS AND REINFORCED SOIL SLOPES DESIGN AND CONSTRUCTION GUIDELINES, DATED MARCH 2001. THE DESIGN HEREIN IS BASED UPON INFORMATION PROVIDED BY THE REFERENCE DOCUMENTS. ON THE BASIS OF THIS INFORMATION, GEODESIGN HAS DESIGNED THE INTERNAL STABILITY AND EXTERNAL STABILITY INCLUDING FOUNDATION AND SLOPE STABILITY. REMOVE ALL VEGETATION, ORGANIC SOILS AND UNSUITABLE FILL SOILS FROM THE WALL AND GRID ALIGNMENT AREAS. BENCH CUT ALL EXCAVATED SLOPES.
2. THE GEOTECHNICAL ENGINEER SHALL VERIFY EXISTING SITE CONDITIONS AND THAT FOUNDATION SOILS SATISFY THE DESIGN STANDARDS AND PARAMETERS SHOWN ON THE PROJECT DOCUMENTS. THE GEOTECHNICAL ENGINEER SHALL VERIFY ALLOWABLE BEARING CAPACITY OF SOILS OF 5 KSF. DO NOT OVEREXCAVATE UNLESS DIRECTED TO DO SO BY THE GEOTECHNICAL ENGINEER IN ORDER TO REMOVE UNSUITABLE SOIL. IF OVEREXCAVATING IN ORDER TO IMPROVE BEARING CAPACITY, THE EXCAVATION SHALL EXTEND AT 1H:1V (FROM THE WALL BASE UNIT) IN FRONT OF THE WALL FACE AND THE FULL WIDTH OF THE DRAINAGE LAYER BEHIND THE WALL.
3. FOUNDATION SOIL SHALL BE PROOF COMPACTED AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF LEVELING PAD.
4. THE LEVELING PAD SHALL BE A MINIMUM OF 9 INCHES THICK AND 60 INCHES WIDE AND CONSIST OF EITHER 1.5 INCH CRUSHED STONE (VTRANS ITEM 704.02C) OR UNREINFORCED LEAN CONCRETE ( $f'c = 300$  PSI).
5. MINIMUM EMBEDMENT OF THE RETAINING WALL BELOW FINISHED GRADE VARIES AND SHALL BE AS INDICATED ON THE DEVELOPED ELEVATION ON DRAWING RW-3 AND RW-4 AND THE TYPICAL SECTION ON DRAWING RW-5. MAXIMUM HEIGHT ABOVE LEVELING PAD SHALL BE APPROXIMATELY 39 FEET.
6. FOLLOW APPLICABLE PROVISIONS OF THE MANUFACTURER'S INSTALLATION AND WRITTEN SPECIFICATIONS, ESPECIALLY WITH REGARDS TO LEVELING BLOCKS AND BASE.
7. UNIT INFILL SHALL BE INSTALLED WITHIN EACH STONE STRONG UNIT. THIS MATERIAL SHALL BE CLEAN 3/4 INCH CRUSHED STONE (VTRANS ITEM 704.02B). SAND BORROW FOR GEOGRID REINFORCEMENT BACKFILL AND BACKFILL BELOW THE WALL AS SHOWN ON THESE DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF VTRANS ITEM 703.03. TOPSOIL SHALL MEET THE REQUIREMENTS OF VTRANS ITEM 651. THE TOPSOIL SHALL BE SALVAGED FROM STRIPPING OR OTHER GRADING OPERATIONS.
8. PROVIDE PERFORATED HDPE TILE DRAINS AT BASE OF THE FACE OF THE WALL AND A SOLID OUTLET PIPE TO DAYLIGHT THE SLOPE AT LOCATIONS DESIGNATED ON DRAWINGS RW-3 AND RW-4. ELEVATIONS WILL VARY.
9. PLACE AND COMPACT SAND BORROW BELOW AND BEHIND THE WALLS AS THE WALLS ARE INSTALLED. LIFTS SHALL NOT EXCEED 9 INCHES. FIELD DENSITY TESTS SHALL BE PERFORMED AS THE WALLS ARE INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE CLIENT'S SITE REPRESENTATIVE. COMPACTION OF BACKFILL MATERIALS SHALL BE TO 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D1557 AND IN ACCORDANCE WITH FAA AC150/5370-10D (ITEM P-152 EXCAVATION AND EMBANKMENT).
10. THE GEOGRID REINFORCEMENT SHALL MEET THE REQUIREMENTS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH FAA AC 150/5370-10D (ITEM G-152 GEOGRID AND GEOTEXTILE). GEOGRID REINFORCEMENT SHALL BE LAID HORIZONTALLY ON THE COMPACTED RETAINING WALL FILL AND PLACED ON THE STONE STRONG UNITS AT THE ELEVATIONS AND TO THE LENGTHS SHOWN. CORRECT ORIENTATION (ROLL DIRECTION) OF THE GEOGRID REINFORCEMENT SHALL BE VERIFIED BY THE OWNER'S SITE REPRESENTATIVE TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE GEOGRID REINFORCEMENT SHALL BE IN TENSION AND FREE OF WRINKLES PRIOR TO PLACEMENT OF SOIL FILL ABOVE. NOMINAL TENSION SHALL BE APPLIED TO THE GEOGRID REINFORCEMENT AND SECURED IN PLACE UNTIL IT IS COVERED WITH AT LEAST 6 INCHES OF SOIL.
11. PROVIDE LATERAL DRAINAGE SWALES TO DIRECT FLOWS AROUND THE ENDS OF THE WALLS AND AWAY FROM THE WALL DURING CONSTRUCTION.
12. SOME ACCEPTABLE FORM OF SOIL EROSION PROTECTION SHOULD BE ESTABLISHED AT THE TOP OF THE WALL AS SOON AS THE WALL IS COMPLETED.
13. RECOMMENDED COMPACTION EQUIPMENT INCLUDES HAND TAMP OR VIBRATORY PLATE COMPACTOR WITHIN 4 FEET OF THE FACES OF THE WALL. AND NOTHING LARGER THAN A DOUBLE-DRUM OR WALK-BEHIND COMPACTOR GREATER THAN 4 FEET BEHIND THE WALL.
14. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND/OR IN THE PROJECT DOCUMENTS, THE CONTRACTOR MUST CONTACT GEODESIGN PRIOR TO PROCEEDING WITH THE CONSTRUCTION.
15. AN APPLIED LIVE LOAD SURCHARGE OF 150 PSF HAS BEEN ASSUMED FOR THE DESIGN TO ACCOUNT FOR TEMPORARY CONSTRUCTION AND LANDSCAPE EQUIPMENT. IF THE ANTICIPATED SURCHARGE LOAD IS DIFFERENT, GEODESIGN MUST BE NOTIFIED SO THAT THE DESIGN CAN BE UPDATED.
16. THERE ARE PROPOSED SUBSURFACE UTILITIES THAT WILL BE INSTALLED WITHIN THE GEOGRID REINFORCED ZONE OF THE RETAINING WALL. WE RECOMMEND THESE STRUCTURES BE INSTALLED AS THE RETAINING WALL IS CONSTRUCTED. A STRUCTURAL FRAME SHALL BE INSTALLED AROUND THE STRUCTURE WHICH IS CAPABLE OF CARRYING THE LOAD FROM THE GEOGRID REINFORCEMENTS IN FRONT OF THE STRUCTURE TO THE GEOGRID REINFORCEMENT CONNECTED TO THE STRUCTURAL FRAME BEHIND THE STRUCTURE. SEE DETAIL ON DRAWING RW-5.

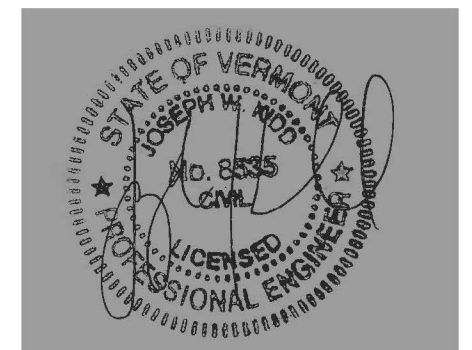
**NOTES:**

1. CARE SHOULD BE TAKEN TO REMOVE ALL ORGANIC AND OR OTHER DELETERIOUS MATERIAL FROM THE BASE OF THE EXCAVATION FOR THE RETAINING WALL.
2. THE ENDS OF THE RETAINING WALL ARE TO BE BLENDED INTO THE EXISTING GRADES IN A MANNER SATISFACTORY TO THE OWNER'S SITE REPRESENTATIVE.
3. THE LENGTHS OF GEOGRID REINFORCEMENT SHOWN ON DRAWINGS RW-3 AND RW-4 ARE THE MINIMUM LENGTHS TO BE USED. GEOGRID REINFORCEMENT LENGTHS ARE MEASURED PERPENDICULAR FROM THE FRONT FACE OF THE WALL. ALL GEOGRID IS TO BE PLACED PERPENDICULAR TO THE WALL FACE.
4. FOR GEOGRID REINFORCEMENT OVERLAP AT CURVES, THE CONTRACTOR SHALL PLACE AT LEAST 3-INCHES OF FILL BETWEEN OVERLAPPING LAYERS.
5. FOR DRAINAGE PIPES WHICH OUTLET THROUGH THE FACE OF THE WALL, THE SPACE NEEDED TO SQUARE OFF THE PIPE TO THE WALL SHALL BE FILLED WITH NON-SHRINK MORTAR, BLOCKS CUT TO SIZE, OR OTHER APPROVED SEALANT METHOD TO PREVENT MIGRATION OF BACKFILL MATERIAL THROUGH GAPS AROUND THE PIPE.
6. A PROTECTIVE FENCE AND ANCHOR SYSTEM WILL BE INSTALLED AT THE TOP OF THE WALL AS SHOWN ON THE DRAWINGS THAT WILL BE WITHIN THE LENGTH OF THE GEOGRID REINFORCEMENT. FENCE AND ANCHOR POSTS SHALL BE LOCATED AT LEAST 5 INCHES BEYOND THE BACK FACE OF ANY BLOCK UNIT TO AVOID INTERFERENCE WITH THE BLOCKS DURING INSTALLATION. THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED FOR POST INSTALLATION WHERE GEOGRID REINFORCEMENT IS LESS THAN 18 INCHES FROM THE SURFACE. EVALUATION OF THE STRUCTURAL CAPABILITIES OF ANY PROTECTIVE FENCE SYSTEM INSTALLED IS NOT PART OF THIS DESIGN.
  - a. THE SOIL ABOVE THE FIRST GEOGRID REINFORCEMENT IS TO BE EXCAVATED AND THE GEOGRID REINFORCEMENT HAND CUT. THE HOLE CUT IS TO BE JUST LARGE ENOUGH FOR THE POST INSTALLATION. IF THE POST EXTENDS THROUGH FURTHER GEOGRID REINFORCEMENT LAYERS, IT MAY BE DRIVEN THROUGH ADDITIONAL LAYERS, PROVIDED THE DRIVEN END IS TAPERED IN SOME FORM TO PROVIDE A POINT. SQUARE-EDGE POSTS SHALL NOT BE DRIVEN THROUGH GEOGRID REINFORCEMENT LAYERS, DRIVING WOOD POSTS IN CLOSE PROXIMITY TO THE REAR OF THE WALL COULD PUSH THE WALL FACE OUTWARD DUE TO DISPLACED SOIL AND SHOULD NOT BE ALLOWED.
  - b. AUGERING OF POST HOLES IS ACCEPTABLE, PROVIDED GEOGRID REINFORCEMENT LAYERS WITHIN 18 INCHES OF THE SURFACE ARE HAND-CUT PRIOR TO AUGERING THE HOLE.
  - c. IF THE POSTS ARE TO BE SLEEVED AND SET IN CONCRETE, ALL GEOGRID REINFORCEMENT LAYERS MUST BE HAND CUT, WITH THE CUT HOLES JUST LARGE ENOUGH TO PROVIDE ROOM FOR THE SLEEVE. USE OF A HAND-OPERATED POST-HOLE SHOVEL TO CUT THROUGH GEOGRID REINFORCEMENT IS ACCEPTABLE FOR LAYERS DEEPER THAN 19 INCHES FROM THE SURFACE OR UTILITY LESS THAN OR EQUAL TO 6 INCHES IN DIAMETER.

**SUGGESTED CONSTRUCTION SEQUENCE:**

1. CLEAR ANY DEBRIS AND STRIP ALL VEGETATION, ORGANIC SOILS, AND UNSUITABLE FILL SOILS FROM THE RETAINING WALL AREA. BENCH CUT EXCAVATED SLOPES.
2. INSTALL EROSION CONTROL FENCE IN ACCORDANCE WITH APPROVED SOIL EROSION AND SEDIMENTATION CONTROL PLAN.
3. LAYOUT THE LOCATION OF THE PROPOSED LEVELING PAD AND RETAINING WALL. WHERE PROPOSED, CONSTRUCT THE LEVELING PAD PRIOR TO EXCAVATION FOR AND INSTALLING THE FIRST COURSE OF STONE STRONG UNITS.
4. THE RETAINING WALL FOUNDATION SOIL SHALL BE PROOF COMPACTED OR INSTALLED IN ACCORDANCE WITH THE DRAWINGS. THE CONTRACTOR SHALL REMOVE AND REPLACE UNSUITABLE SOILS AT THE DIRECTION OF THE OWNER'S SITE REPRESENTATIVE.
5. CONSTRUCT THE LEVELING PAD TO THE LINES AND GRADES SHOWN.
6. PLACE THE FIRST COURSE OF STONE STRONG UNITS DIRECTLY ON THE LEVELING PAD. THE UNITS SHALL BE LEVEL SIDE TO SIDE AND FRONT TO REAR. ENSURE THE UNITS ARE IN FULL CONTACT WITH THE BASE AND ANY ADJACENT UNITS, AND INSTALL DRAINAGE PIPE.
7. FILL ALL VOIDS BETWEEN AND WITHIN THE UNITS WITH UNIT INFILL.
8. INSTALL GEOGRID REINFORCEMENT AND PLACE THE NEXT COURSE OF STONE STRONG UNITS MAKING SURE THE ALIGNMENT PRODUCES A BATTER OF 4 INCHES EVERY 36 INCHES OF VERTICAL WALL HEIGHT.
9. FILL VOIDS BETWEEN AND WITHIN THE UNITS WITH UNIT FILL.
10. REPEAT STEPS 8 AND 9 FOR SUBSEQUENT COURSES.
11. INSTALL GEOTEXTILE FILTER FABRIC OVER TOP OF FINAL COURSE OF STONE STRONG UNITS, INSTALL DUAL FACE BLOCK, CORNER, AND CAP STONE UNITS, AND INSTALL SURFACE DRAINAGE AND FALL PROTECTION BARRIER IN ACCORDANCE WITH PROJECT REQUIREMENTS.

DESIGN ASSUMPTIONS	
RETAINING WALL UNIT INFILL	120 PCF $\phi=35^\circ$
RETAINED SOIL	125 PCF $\phi=34^\circ$
FOUNDATION SOIL	125 PCF $\phi=34^\circ$
APPLIED SURCHARGE	150 PSF
MAXIMUM SLOPE BEHIND WALL	VARIES FROM NEAR LEVEL TO 3H:1V
MAXIMUM SLOPE AT TOE WALL	VARIES FROM LEVEL TO 2H:1V
SEISMIC ACCELERATION	N/A
FREE WATER IMMEDIATELY BEHIND WALL	NONE (DRAINAGE PROVIDED)



Record Drawings  
Work completed in general conformance  
with contract plans.

AIP 3-50-0015-34

**VERMONT AGENCY OF TRANSPORTATION**

 Geotechnical   Construction   Environmental Engineers and Scientists 54 MAIN STREET WINDSOR, VT 05089 TELEPHONE: 802.674.2033 FACSIMILE: 802.674.5843	DRAWING NO. <b>RW-1</b> SHEET 1 OF 5	 URS CORPORATION 3 CORPORATE DRIVE, SUITE 203 CLIFTON PARK, NY 12065 (518) 688-0015	PROJECT NAME: RUTLAND SOUTHERN VERMONT REGIONAL AIRPORT CLARENDON, VERMONT PROJECT NUMBER: AV14-8018-300
	PROJECT NO. 0880-011.5		FILE NAME: z07h124notes_wa11.dgn PROJECT LEADER: JWK DESIGNED BY: RPJ RETAINING WALL AND REINFORCED PAD NOTES

6/2/2013 P:\CADD\Consultants\z07h124notes\_wa11.dgn