

SOIL NAIL WALL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 AND ITS LATEST REVISIONS , AND THE AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, DATED 2001, AND ITS LATEST REVISIONS.
2. DURING THE CONSTRUCTION OF THE SOIL NAIL WALL, TH 66 MAY BE CLOSED TO ALL TRAFFIC FOR A PORTION OF THE DAY EXCEPT FOR EMERGENCY SITUATIONS AS NOTED IN THE GENERAL NOTES.
3. THE FOLLOWING PARAMETERS WERE USED IN DESIGN:

FILL MATERIAL BEHIND CONCRETE RETAINING WALL:	
UNIT WEIGHT OF SOIL BEHIND EXISTING CONCRETE WALL	20.4 kN/m ³
FRICTION ANGLE (PHI) OF MATERIAL BEHIND CONCRETE WALL	34°
COHESION	0 kPa
ULTIMATE BOND STRENGTH (GROUT AND SOIL)	75.8 kPa
CALCULATED BOND STRENGTH FOR 150 MM HOLE - ULTIMATE	36.3 kN/m
INSITU MATERIAL BELOW CONCRETE RETAINING WALL:	
UNIT WEIGHT OF SOIL BEHIND EXISTING CONCRETE WALL	17.3 kN/m ³
FRICTION ANGLE (PHI) OF MATERIAL BEHIND CONCRETE WALL	30°
COHESION	0 kPa
ULTIMATE BOND STRENGTH (GROUT AND SOIL)	48.3 kPa
CALCULATED BOND STRENGTH FOR 150 MM HOLE - ULTIMATE	23.1 kN/m
GLOBAL STABILITY FACTOR OF SAFETY	1.35
INTERNAL STABILITY FACTOR OF SAFETY	1.35
FACING FLEXURE FACTOR OF SAFETY	1.5
FACING PUNCHING SHEAR FACTOR OF SAFETY	1.5
PULLOUT RESISTANCE FACTOR OF SAFETY	2.0
NAIL BAR TENSILE STRENGTH	0.6 Fy
NAIL BAR DIAMETER	2.5 cm
BORE HOLE SIZE	152 cm
ULTIMATE PLATE CAPACITY	169 kN
SOIL NAIL Fy	524 MPa
CONCRETE FACING f'c	27.6 MPa
GROUT f'c	20.7 MPa
4. THE EXISTING RETAINING WALL WITHIN THE LIMITS OF THE SOIL NAIL WALL (AS SHOWN ON THE PLANS) SHALL REMAIN IN PLACE.
5. AS SHOWN IN THE PLANS, THE REHABILITATED WALL SYSTEM SHALL CONSIST OF A CAST - IN - PLACE, REINFORCED CONCRETE WALL FACING DIRECTLY IN FRONT OF EXISTING RETAINING WALL, SECURED TO THE EMBANKMENT WITH SOIL NAILS DRILLED THROUGH EXISTING WALL. SOIL NAIL LENGTHS, SPACING AND INCLINATION SHALL BE AS SHOWN IN THE PLANS.
6. FOR DESIGN PURPOSES, ANY POTENTIAL CONTRIBUTION OF THE EXISTING RETAINING WALL TO PERMANENT WALL SUPPORT HAS BEEN IGNORED. FOR SOIL CHARACTERISTICS USED IN DESIGN SEE SPECIAL PROVISIONS AND PROJECT BORINGS ON SHEET 25 OF THE PLANS
7. PROOF AND VERIFICATION WILL BE REQUIRED ON SOIL NAILS. A MINIMUM OF TWO SACRIFICIAL NAILS SHALL BE INSTALLED FOR VERIFICATION TESTS AT LOCATION AGREED UPON BY THE CONTRACTOR AND ENGINEER. THE LOCATIONS MUST BE SELECTED TO APPROXIMATE THE SAME SOIL CONDITIONS INTO WHICH THE PRODUCTION NAILS WILL BE INSERTED. APPROXIMATELY 5% OF THE PERMANENT NAILS SHALL BE PROOF LOAD TESTED TO 1.5 TIMES DESIGN LOAD. NAILS FAILING TO MEET THE REQUIRED PROOF LOADING SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. SEE SPECIAL PROVISIONS FOR ITEM 535 FOR INFORMATION ON THIS TESTING
8. THE FORM LINER PATTERN SHALL BE "RUSTIC ASHLAR", CUSTOM ROCK DURA FORM PATTERN #11003, OR AN APPROVED EQUIVALENT. ANY PROPOSED SUBSTITUTION MUST BE APPROVED IN WRITING BY THE PROJECT MANAGER.
9. THE CONTRACTOR SHALL ACCOMMODATE ANY PIPES, GEOMEMBRANE LINER, DRAINAGE STRUCTURES, FOUNDATIONS, AND ANY OTHER SUCH APPURTENANCES THAT ARE WITHIN THE DESIGNED SOIL NAIL WALL VOLUME.
10. FORM LINERS SHALL BE USED FOR ALL EXPOSED WALL FACINGS . THE SIMULATED COLUMNS AT THE CONSTRUCTION AND EXPANSION JOINTS MAY HAVE HORIZONTAL SCORE MARKS PROVIDED BY CONVENTIONAL FORMING METHODS OR BY FORM LINER PROCESS. THE METHOD SHALL BE INCLUDED IN THE PACKAGE SUBMITTED FOR APPROVAL AS DESCRIBED IN THE SPECIAL PROVISIONS. THE PAYMENT FOR ALL FORM LINER WORK SHALL BE UNDER ITEM 602.25, STONE MASONRY FACING (MODIFIED FORM LINER). SEE SPECIAL PROVISIONS FOR DETAILS CONCERNING THIS ITEM.
11. HORIZONTAL CONSTRUCTION JOINTS HAVE NOT BEEN SHOWN IN THE FACING DETAILS. THE CONTRACTOR MAY PROPOSE THE USE OF HORIZONTAL JOINTS BUT THE FORM LINER PATTERN SHALL BE CONTINUOUS THROUGH AND ACROSS ALL HORIZONTAL CONSTRUCTION JOINTS.
12. THE 20 mm PRE MOLDED EXPANSION MATERIAL USED IN VERTICAL EXPANSION JOINTS SHALL BE A COLOR CLOSELY MATCHING THAT OF THE ADJACENT CONCRETE. PAYMENT FOR THE EXPANSION MATERIAL SHALL BE INCIDENTAL TO THE CONCRETE PAY ITEM.

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02sc180soilnail.dgn	
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DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
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