

MECHANICALLY STABILIZED EARTH WALL NOTES

WALL DESIGN

- FINAL DRAWINGS SHOWING PROPOSED PANEL SIZE, THE REQUIRED NUMBER OF REINFORCEMENT ELEMENTS PER PANEL, THE REINFORCEMENT ELEMENT LENGTHS, REINFORCEMENT ELEMENT LAYOUT, CONCRETE PANEL REINFORCEMENT DETAILS, PANEL TIE-IN DETAILS WITH COPING AND LEVELING PAD SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL. ALL MATERIALS WITHIN THE MECHANICALLY STABILIZED EARTH (MSE) VOLUME, METHODS OF CONSTRUCTION, AND THE QUALITY OF PREFABRICATED MATERIALS SHALL MEET THE REQUIREMENTS OF THE SPECIAL PROVISIONS FOR THIS PROJECT.

2. DESIGN CRITERIA:

SOIL PARAMETERS FOR DESIGN OF MSE WALLS:

THE PROPERTIES FOR THE FOUNDATION SOIL BELOW THE MSE WALL ARE:

ALLOWABLE BEARING CAPACITIES, q_{α} :	300 kPa
DENSITY:	17.30 kN/m ³
INTERNAL SOIL FRICTION ANGLE, ϕ :	30°
COHESION:	0
COEFFICIENT OF FRICTION, f :	
SOIL AGAINST FORMED CONCRETE:	0.30
CONCRETE CAST AGAINST SOIL:	0.40
FACTOR OF SAFETY AGAINST OVERTURNING:	2.0
FACTOR OF SAFETY AGAINST SLIDING:	1.5
ACTIVE EARTH PRESSURE COEFFICIENT, K_a :	0.31 kN/m

SELECT FILL MATERIAL FOR MSE WALL AND ABUTMENT:

ALLOWABLE BEARING CAPACITIES, q_{α} :	200 kPa
DENSITY:	22.00 kN/m ³
INTERNAL SOIL FRICTION ANGLE, ϕ :	34°
COEFFICIENT OF FRICTION, f :	
SOIL AGAINST FORMED CONCRETE:	0.35
CONCRETE CAST AGAINST SOIL:	0.45
FACTOR OF SAFETY AGAINST OVERTURNING:	2.0
FACTOR OF SAFETY AGAINST SLIDING:	1.5
ACTIVE EARTH PRESSURE COEFFICIENT, K_a :	0.28

ROADWAY EMBANKMENTS / APPROACH EMBANKMENTS:

DENSITY:	17.30 kN/m ³
INTERNAL SOIL FRICTION ANGLE, ϕ :	30°
COEFFICIENT OF FRICTION, f :	
SOIL AGAINST FORMED CONCRETE:	0.30
CONCRETE CAST AGAINST SOIL:	0.40
FACTOR OF SAFETY AGAINST OVERTURNING:	2.0
FACTOR OF SAFETY AGAINST SLIDING:	1.5
ACTIVE EARTH PRESSURE COEFFICIENT, K_a :	0.33

ABUTMENT DESIGN LOADS (PER METER ALONG WALL):

VERTICAL LOADS

DEAD LOAD FROM STRUCTURE:	81.57 kN/m
DEAD LOAD FROM APPROACH SLAB:	32.54 kN/m
LIVE LOAD FROM SUPERSTRUCTURE:	47.40 kN/m

HORIZONTAL LOADS

LONGITUDINAL FORCES:	0.58 kN/m
R + S + T :	8.86 kN/m

- ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE MSE VOLUME, AS DETERMINED BY THE ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH GRANULAR BORROW OR OTHERWISE STABILIZED AS DIRECTED BY THE ENGINEER.

WALL CONSTRUCTION

- BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR MSE WALLS TO A LEVEL OF THE CENTER OF THE REINFORCEMENT ELEMENT CONNECTIONS +/- 50. INSTALLATION OF REINFORCING ELEMENTS SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL HAS REACHED THE REQUIRED LEVEL.
- BACKFILL COMPACTION AND EQUIPMENT SHALL BE KEPT TO A MINIMUM OF 1 METER FROM THE BACK FACE OF THE MSE PANELS. COMPACTION WITHIN 1 METER OF THE PANELS SHALL BE ACHIEVED WITH A MINIMUM OF THREE PASSES OF A LIGHT WEIGHT MECHANICAL TAMPER, ROLLER OR VIBRATORY SYSTEM.
- THE CONTRACTOR SHALL ACCOMMODATE ANY PIPES, GEOMEMBRANE, GEOTEXTILE ROADBED SEPARATOR, RAIL POST, CRUSHED STONE, DRAINAGE STRUCTURES, FOUNDATIONS, AND ANY OTHER APPURTENANCES THAT ARE WITHIN DESIGNED MSE VOLUME.
- TOP PANELS SHALL HAVE #13 DOWELS PROTRUDING FROM THE TOP EDGE INTO THE CAST IN PLACE COPING ONLY. THE DOWELS SHALL BE CAST INTEGRALLY WITH THE TOP PANELS. THE COST OF THE DOWELS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".
- THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER REINFORCING ELEMENTS DOWNWARD TO AVOID CONFLICTS WITH APPROACH SLAB AND/OR BASE SLAB SUBGRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO THE EFFECTS OF SUPERELEVATION.
- THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING THE STORM WATER DRAINAGE IN THE VICINITY OF THE WALL DURING CONSTRUCTION. STORM WATER RUNOFF IS TO BE COLLECTED AND DISCHARGED AWAY FROM THE WALL AND THE REINFORCED BACKFILL.
- THE REQUIRED HORIZONTAL LIMIT OF SELECT GRANULAR BACKFILL SHALL EXCEED THE NOMINAL REINFORCEMENT ELEMENT LENGTH BY 300mm.

MATERIAL NOTES

- THE SELECT GRANULAR BACKFILL QUANTITY SHALL BE CALCULATED FOR BIDDING AND PAYMENT PURPOSES BY MULTIPLYING THE NOMINAL REINFORCEMENT LENGTH (PLUS 300) BY THE TRIBUTARY WALL SURFACE AREA AND CONVERTING THE RESULT TO A NEATLINE CUBIC METER QUANTITY.
- THE PRECAST PANEL FOR THIS PROJECT SHALL HAVE A RUSTIC ASHLAR STONE PATTERN APPROVED BY THE PROJECT MANAGER. THE CONCRETE SHALL BE COLORED IN ACCORDANCE WITH AN APPROVED SUBMITTAL FOR THE CONCRETE PANELS. SEE SPECIAL PROVISIONS.
- CONCRETE FOR THE CAST-IN-PLACE COPING SHALL BE CONCRETE HIGH PERFORMANCE CLASS B. CONCRETE FOR THE COPING SHALL BE PAID UNDER THE ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B". REINFORCEMENT IN THE COPING SHALL BE PAID UNDER THE ITEM 507.17 "EPOXY COATED REINFORCING STEEL". THE COST OF MATERIALS AND INSTALLATION OF THE LEVELING PAD SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 526.30, "MECHANICALLY STABILIZED EARTH (MSE) WALL".

NOTE TO CONTRACTORS

- THE FOLLOWING MATERIALS SHALL BE SUPPLIED BY THE MSE WALL SYSTEM MANUFACTURER UNDER THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".

PRECAST CONCRETE FACING
 PANELS REINFORCING ELEMENTS
 ANY NECESSARY HARDWARE FOR ATTACHING PRECAST PANELS TO REINFORCING ELEMENTS
 BEARING BLOCKS
 RUBBER SHIMS
 FILTER FABRIC AND ADHESIVE FOR PANEL JOINTS

- OTHER MSE WALL MATERIALS SPECIFIED IN THE CONTRACT PLANS SHALL BE SUPPLIED BY THE CONTRACTOR. THIS MAY INCLUDE, BUT IS NOT LIMITED TO, ANY JOINT MATERIAL SHOWN AT THE INTERFACE OF PRECAST PANELS AND CAST-IN-PLACE CONCRETE ELEMENTS, SANDBLASTING, SEALERS OR OTHER SPECIAL APPLIED COATINGS, PVC PIPE, ELBOWS, 30 MILL GEOTEXTILE MEMBRANE, GEOTEXTILE ROADBED SEPARATOR, CLAMPS FOR PROVIDING WATER TIGHT SEAL AND CRUSHED STONE. ALL MATERIALS SHALL BE PAID FOR UNDER THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".
- THE MSE WALL SYSTEM MANUFACTURER SHALL BE RESPONSIBLE FOR DESIGNING AND DETAILING ANY NECESSARY ATTACHMENTS OR REINFORCEMENTS AROUND THE PVC PIPE INVERT AT STATION 1+166.500. THE COST OF DESIGNING, DETAILING AND SUPPLYING AS WELL AS THE INSTALLATION OF THE MODIFIED REINFORCEMENT WILL BE CONSIDERED INCIDENTAL TO THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02c180msedet.dgn	PLOT DATE: 15-APR-2005
IPARM FILE NAME: s02c180msedet4.i	DRAWN BY: M. GAGULIC
DESIGNED BY: M. GAGULIC	CHECKED BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS	MSE WALL NOTES
	SHEET: 54 OF 130