

DESIGN AND CONSTRUCTION REQUIREMENTS for REINFORCED SLOPES

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2013	STP-M-7900(29)	2EE

1.0 GENERAL

1.1 THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN AND CONSTRUCTION OF REINFORCED SOIL SLOPE (RSS).

1.2 SEE DETAIL DRAWINGS FOR EROSION PROTECTION AND SURFICIAL STABILITY REQUIREMENTS.

2.0 MATERIALS

2.1 GEOSYNTHETIC REINFORCEMENTS

A. GEOSYNTHETIC REINFORCEMENTS SHALL CONSIST OF GEOGRIDS MANUFACTURED FOR SOIL REINFORCEMENT APPLICATIONS. THE TYPE, STRENGTH AND PLACEMENT LOCATION OF THE REINFORCING GEOGRID SHALL BE DETERMINED BY THE ENGINEER PROVIDING SLOPE DESIGN AND LISTED ON THE TDOT QUALIFIED PRODUCTS LIST.

2.2 REINFORCED BACKFILL

THE DESIGN APPROACH IS TO USE LOCAL SOILS AS REINFORCED BACKFILL MATERIALS. THE FOLLOWING TABLE BELOW PRESENTS THE DESIGN PARAMETERS USED IN THE DESIGN:

PARAMETER	LOCAL BACKFILL SOIL
MOIST UNIT WEIGHT	121
EFF. (LOG-TERM) ANGLE OF INTERNAL FRICTION	28
MAXIMUM LIQUID LIMIT	40
MAXIMUM PLASTICITY INDEX	20

2.3 SOIL DESIGN PARAMETERS:

THE DESIGN SHALL BE BASED ON THE FOLLOWING EXISTING SOIL PROPERTIES:

MOIST UNIT WEIGHT:	118 PCF
EFF. (LONG TERM) ANGLE OF INTERNAL FRICTION:	26-28°
EFF. (LONG TERM) COHESION:	0 PSF
UNDRAINED SHEAR STRENGTH (SHORT-TERM):	750 PSF

3.0 SLOPE DESIGN CRITERIA

THE CONTRACTOR SHALL CONSIDER INTERNAL, EXTERNAL AND COMPOUND STABILITY OF THE REINFORCED SOIL MASS AND SHALL DESIGN THE REINFORCED SOIL SLOPE (RSS) IN ACCORDANCE WITH THE DESIGN PROCEDURES AND REQUIREMENTS AS DESCRIBED IN PUBLICATION FHWA-NHI-10-024, DESIGN AND CONSTRUCTION OF MECHANICALLY STABILIZED EARTH WALLS AND REINFORCED SOIL SLOPES.

3.1 DESIGN LIFE

THE DESIGN LIFE FOR THE REINFORCED SOIL SLOPE SHALL BE 75 YEARS.

3.2 SOIL

THE CONTRACTOR IS RESPONSIBLE FOR EVALUATION OF THE REINFORCED FILL, RETAINED FILL AND FOUNDATION SOIL. SHEAR STRENGTH PARAMETERS AND UNIT WEIGHT USED FOR DESIGN SHALL BE CLEARLY INDICATED ON THE DESIGN CALCULATIONS AND SHOP DRAWINGS.

3.3 MINIMUM FACTORS OF SAFETY:

- A. EXTERNAL STABILITY:
 - SLIDING: FS > 1.3
 - DEEP SEATED (STATIC): FS > 1.3
 - DEEP SEATED (SEISMIC): FS > 1.1
- B. COMPOUND FAILURE (STATIC): FS > 1.3
- COMPOUND FAILURE (SEISMIC): FS > 1.1
- C. INTERNAL STABILITY (STATIC): FS > 1.3
- INTERNAL STABILITY (SEISMIC): FS > 1.1
- D. PULLOUT RESISTANCE (STATIC): FS > 1.3
- PULLOUT RESISTANCE (SEISMIC): FS > 1.1

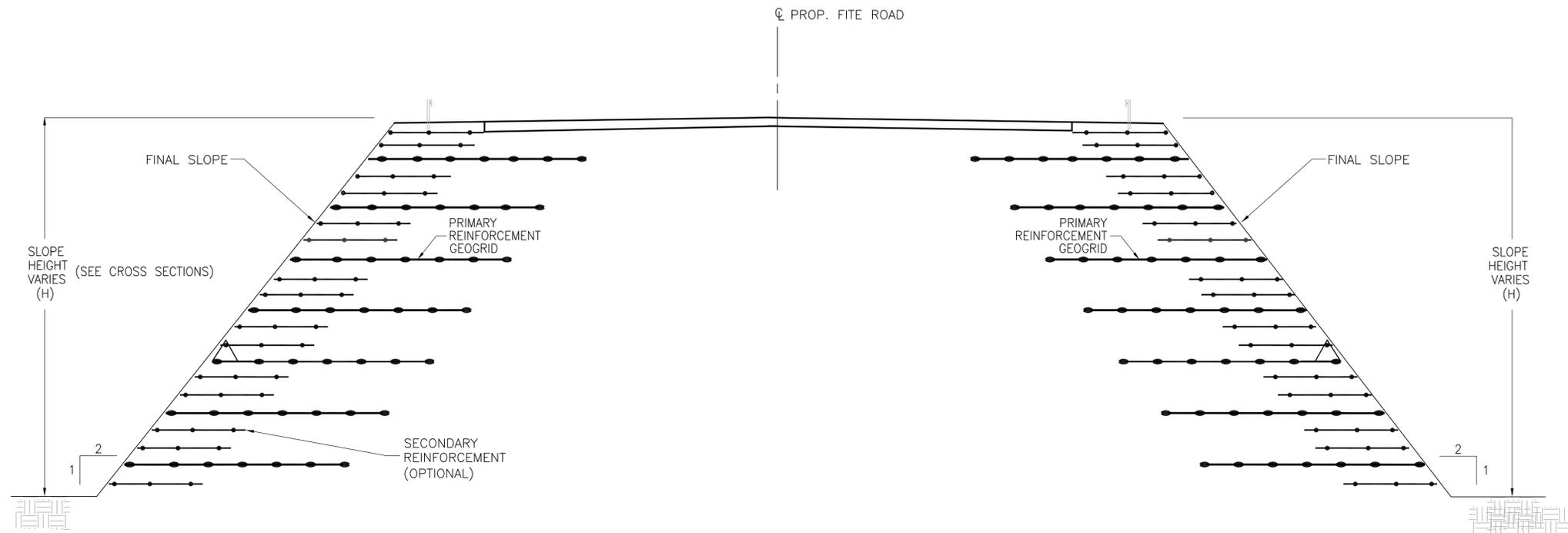
3.4 SURCHARGE LOADING

SURCHARGE LOADING 250 psf.

4.0 DESIGN SUBMITTAL

AT LEAST 60 DAYS PRIOR TO BEGINNING REINFORCED SLOPE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL 4 SETS OF DESIGN DRAWINGS AND CALCULATIONS. THE FULLY DETAILED PLANS AND DESIGN COMPUTATIONS SHALL BE PREPARED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF TENNESSEE. COST TO BE INCLUDED IN PRICE FOR ITEM NO. 740-07.02, GEOGRID REINFORCEMENT (SOIL SLOPES).

REINFORCED SOIL SLOPE			
LOCATION		MAX. HT.	SLOPE MAX.
STA. 75+25 TO STA. 75+60	RIGHT	37'	2:1
STA. 76+50 TO STA. 77+24 ±	LEFT	39'	2:1
STA. 78+40 TO STA. 80+38 ±	RIGHT	40'	2:1
STA. 78+46 TO STA. 79+75	LEFT	43'	2:1



TYPICAL CROSS-SECTION
NOT TO SCALE

COORDINATE VALUES ARE NAD/83(1995)
AND ARE DATUM ADJUSTED BY THE FACTOR
0.999994954 & TIED TO THE TGRN.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

**REINFORCED
SLOPE
DETAIL**