

DESIGN NOTES:

Reference: Wall Site Plan, Pacific Engineering Design

The following design assumptions were used:

- Internal angle of friction for reinforced soil = 32 degrees (design only - see Material Note "F")
- Unit weight of reinforced soil = 130 pcf
- Maximum wall height = 22.1 feet
- Batter of wall = 1H : 10V
- Surcharge = Footing (5' Setback) and 250 psf Traffic or 3H : 1 Slope Surcharge

TECHNICAL SPECIFICATIONS FOR MECHANICALLY STABILIZED LOCK & LOAD RETAINING WALLS
GENERAL:

A. The work involves the supply and installation of soil reinforced retaining walls. The Concrete Panels and Counterforts will consist of Lock & Load Stone. Counterfort and Geogrid are the types of soil reinforcement. The work will include, but is not limited to:

- A-1 excavation to the grades shown on the civil drawings
- A-2 supply and installation of geogrid reinforcement
- A-3 supply and installation of drainage fill and piping
- A-4 supply and installation of segmental Lock & Load Stones
- A-5 supply and installation of retained and reinforced soil fill

B. The walls shall be installed on undisturbed Native Soils or Structural Fill, as appropriate.

MATERIALS

A. Concrete Panels and Counterforts are locked together to form a "Stone". The retaining walls have been designed on the basis of Lock & Load Retaining Wall "Stones". Stones are to be purchased from a licensed Lock & Load manufacturer. The Lock & Load trademark on each pallet identifies Lock & Load products.

B. Information on the purchase of Lock & Load products can be obtained through:

Lock & Load Retaining Walls Ltd.
Tel. (877) 901-9990
Website: www.lock-load.com

C. Geogrid - See Geogrid Schedule.

D. Drainage Fill - Drainage Fill placed around and above the perforated drainage pipe shall consist of round or angular "clean" rock between 3/4 inch and 1 inch.

E. Face Gravel - 3/4" clean crushed rock. Substitution with comparable material is acceptable, upon approval of the Geotechnical Engineer.

F. Reinforced and Retained Backfill - Suitable granular soil possessing an internal angle of friction of at least 34 degrees. Fill material shall be approved by the Geotechnical Engineer. Fines shall not exceed 15 percent (or as approved by engineer).

G. Leveling Pad - The Leveling Pad shall consist of angular, crushed aggregate of maximum size of 3/4 inch. The Leveling Pad Fill may be single size or may be well graded containing a maximum of 5% passing the #200 sieve.

EXECUTION

A. Contractor shall excavate to the lines and grades shown on the construction drawings. The Geotechnical Engineer should observe the excavation prior to the placement of the leveling material or fill soils.

B. Over-excavation of deleterious soils or rock shall be replaced with material meeting the specifications described in the section "Material F" above, and compacted to 95% of ASTM D-1557-91 (Modified Proctor) within 2% of the optimum moisture content of the soil.

C. The first course of concrete Lock & Load Stones shall be placed on the Leveling Pad and the alignment and level checked.

D. Stones shall be placed with the top of the panel level and parallel to the wall face. The Counterfort Base installs horizontal and perpendicular to the face of the retaining wall.

E. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.

F. Geogrid reinforcement shall be placed at the levels and to the lengths shown on the drawings beginning at the back of the Lock & Load Panels.

G. The geogrid shall be laid horizontally in the direction perpendicular to the face of the retaining wall. The geogrid shall be pulled taut, free of wrinkles and anchored prior to backfill placement on the geogrid.

H. The geogrid reinforcement shall be continuous throughout their embedment lengths. Spliced connection between shorter pieces of geogrid is not permitted.

I. The drainage pipe discharge points shall be connected to approved discharge.

J. Reinforced and Retained Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack in the geogrid.

K. Reinforced and Retained Backfill shall be placed and compacted in lifts not to exceed 8 inches where hand compaction equipment is used and not more than 12 inches where heavy compaction equipment is used. FIRST - compact over tail of Counterfort then away from the retaining wall structure. Hand operated compaction equipment (700 lbs. to 1,000 lbs.) Vibratory Plate shall be used to compact face gravel at wall face.

L. Reinforced and Retained Backfill shall be compacted to 95% of the maximum density as determined by ASTM D-1557-91 (Modified Proctor) or equivalent. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be within 2 percentage points of the optimum moisture content.

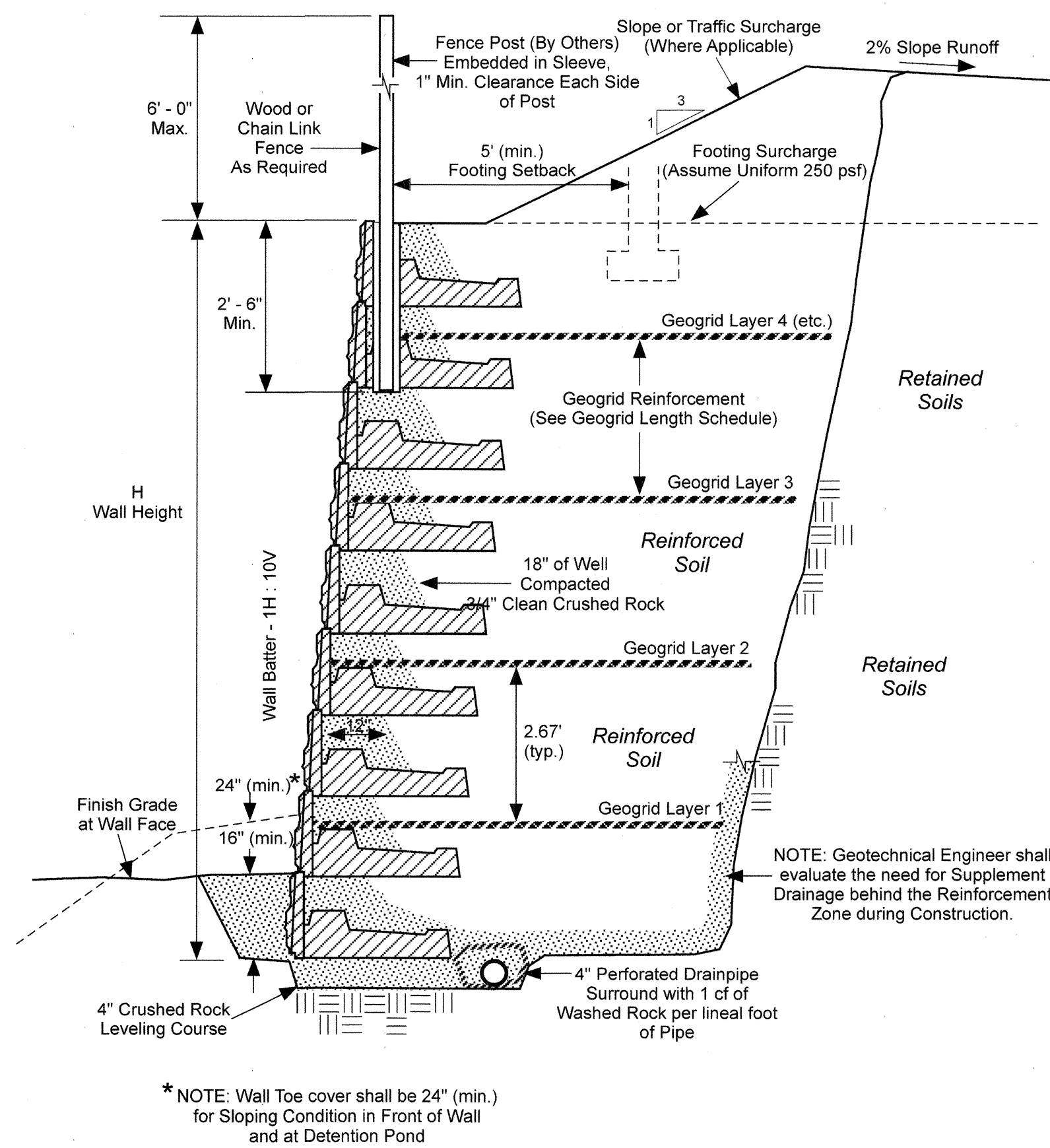
M. Hand-operated equipment (700 lbs. to 1,000 lbs. Vibratory Plate) shall be used within 26 inches of the front face of the concrete facing.

N. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid.

O. Rubber tired equipment may pass over the geogrid reinforcement at slow speeds less than 5 mph. Sudden braking and sharp turning shall be avoided.

P. At the end of each day of operation, the contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from the wall face. The contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

NOTE: Wall Alignment and Heights To Be Established By Contractor / Surveyor.

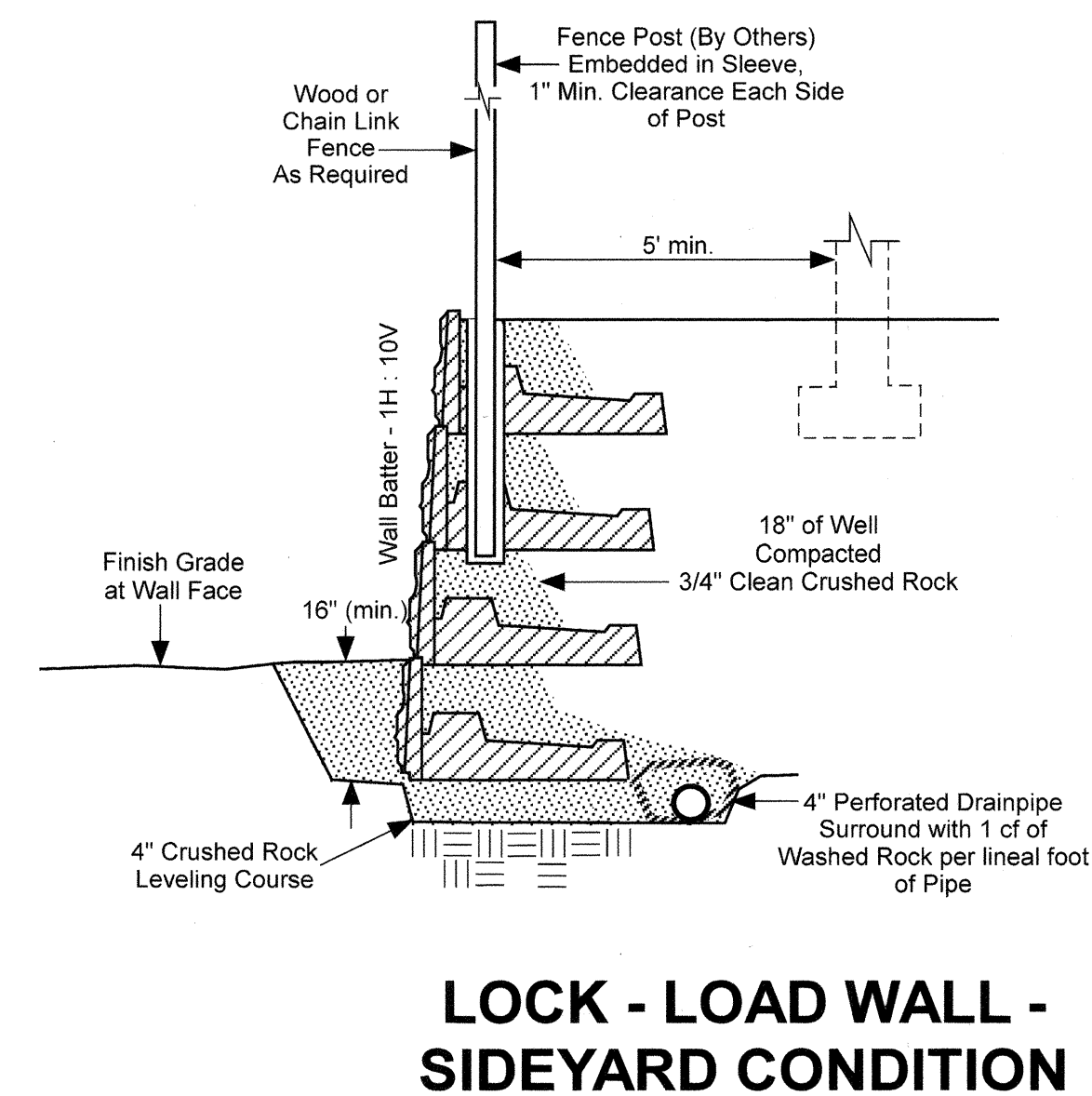


LOCK - LOAD WALL - TYPICAL SECTION

NOT - TO - SCALE

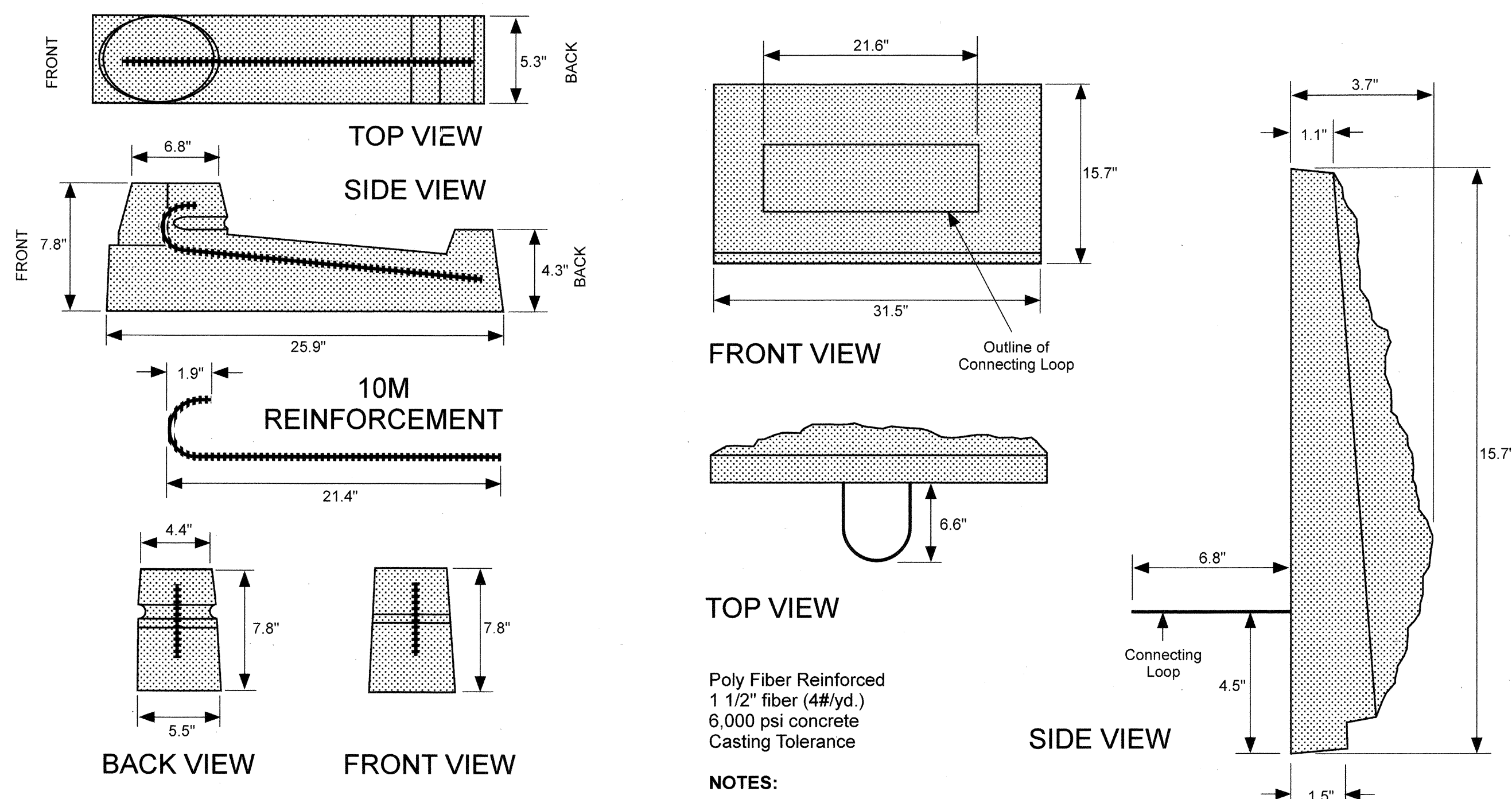
GEOGRID SCHEDULE											
# of Panels	Wall Height (feet)	Geogrid Length (feet)	Layers								
			1	2	3	4	5	6	7	8	9
3	3.9	4.0	A	-	-	-	-	-	-	-	
4	5.2	5.0	A	A	-	-	-	-	-	-	
5	6.5	6.0	A	A	-	-	-	-	-	-	
6	7.8	7.0	A	A	A	-	-	-	-	-	
7	9.1	7.0	A	A	A	-	-	-	-	-	
8	10.4	8.0	A	A	A	A	-	-	-	-	
9	11.7	9.0	A	A	A	A	-	-	-	-	
10	13.0	10.0	A	A	A	A	A	-	-	-	
11	14.3	11.0	A	A	A	A	A	-	-	-	
12	15.6	12.0	B	A	A	A	A	-	-	-	
13	16.9	13.0	B	A	A	A	A	A	-	-	
14	18.2	14.0	B	A	A	A	A	A	-	-	
15	19.5	15.0	B	A	A	A	A	A	-	-	
16	20.8	17.0	B	A	A	A	A	A	A	-	
17	22.1	18.0	B	A	A	A	A	A	A	-	

GEOGRID: A = Syntee SF-65
B = Syntee SF-90



LOCK - LOAD WALL - SIDEYARD CONDITION

NOT - TO - SCALE



NOTES:

- Installation to be completed in accordance with manufacturer's specifications.
- Do not scale from drawings.
- Contractor's Note - For product and purchasing information visit www.PROJECTmarketsite.com, reference number 406-002A.

LOCK & LOAD COUNTERFORT

NOT - TO - SCALE

NOTES:

- Installation to be completed in accordance with manufacturers specifications.
- Do not scale from drawings.
- Contractor's Note - For product and purchasing information visit www.PROJECTmarketsite.com, reference number 406-001.

LOCK & LOAD PANEL

NOT - TO - SCALE

PROJECT REF: **FAC07-0016**
 H5 May 16, 2013
 THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S ENGINEERING REQUIREMENTS.
 APPROVED BY: *Dennis Sells*
 DATE APPROVED: 5/16/13

RECORD DRAWING CERTIFICATION
 THESE DRAWINGS CONFORM TO THE CONTRACTOR'S CONSTRUCTION RECORDS.
 BY _____ DATE _____
 TITLE POSITION _____
 CONFIRMED BY CITY _____ DATE _____

Lock - Load Wall Design
LAKELAND HILLS
 Auburn, Washington

Earth Solutions NW LLC
 Geotechnical Engineering, Construction Monitoring and Environmental Sciences

Revisions
Date

Proj. No. 0040.12
Date 11/15/2012
Drawn By GLS
Checked By RAC
Sheet No. W1

