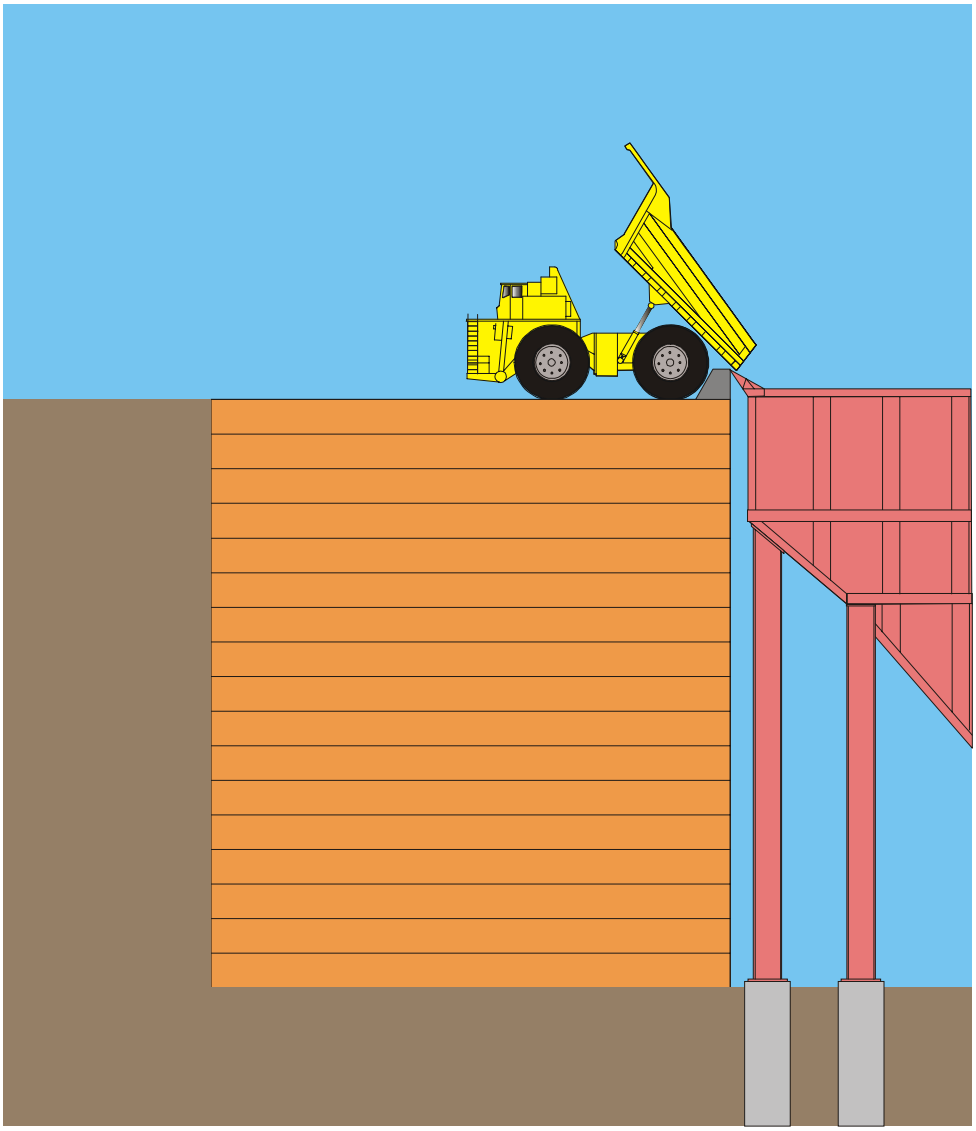
T&B STRUCTURAL SYSTEMS, INC.

ENGINEERED STRUCTURES



MECHANICALLY STABILIZED EARTH STRUCTURES

WELDED WIRE WALL

WELDED WIRE WALL

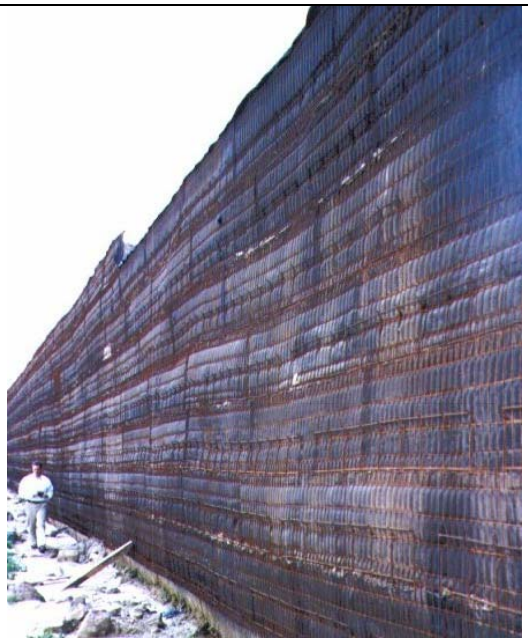
T&B STRUCTURAL SYSTEMS INC.
637 West Hurst Blvd.
Hurst, Texas 76053
Phone 817.280.9858 • Fax 817.280.9864

TEMPORARY WELDED WIRE WALL

SURCHARGE WALL - CONNECTICUT

TEMPORARY WELDED WIRE WALL

MAINTENANCE OF TRAFFIC - PGA BLVD PALM BEACH, FL



TEMPORARY WELDED WIRE WALL

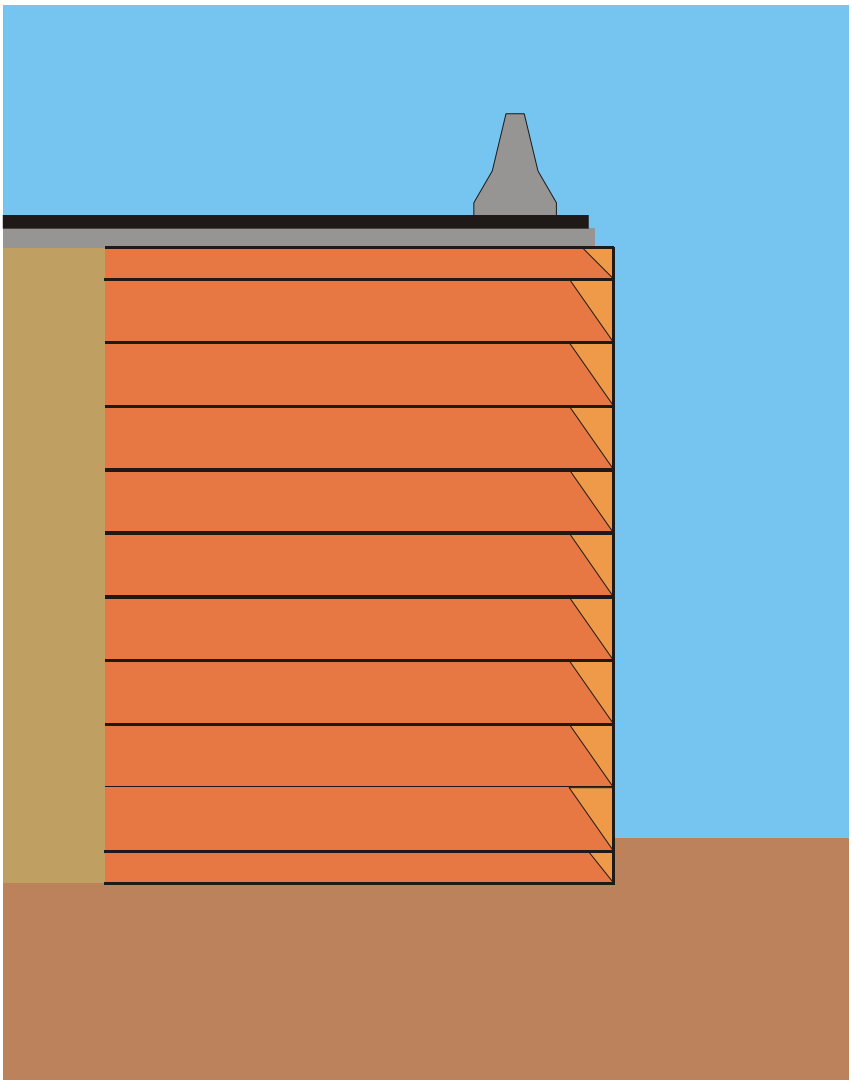
MAINTENANCE OF TRAFFIC - I4 RECONSTRUCTION TAMPA, FL

WELDED WIRE WALL

PRIMARY CRUSHER - DIAVIK DIAMONDS MINE NORTHWEST TERRITORY, CANADA

T&B STRUCTURAL SYSTEMS, INC.

ENGINEERED STRUCTURES



MECHANICALLY STABILIZED EARTH STRUCTURES

WELDED WIRE WALL SYSTEM

INSTALLATION GUIDE

MECHANICALLY STABILIZED EARTH STRUCTURES

WELDED WIRE WALL SYSTEM

INSTALLATION GUIDELINES

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IT IS THE RESPONSIBILITY OF THE ENGINEER OF RECORD
TO REVIEW AND VERIFY THE ACCURACY OF THESE CALCULATIONS.
BY SIGNING AND SEALING THE ENGINEER OF RECORD ASSUMES
THE LEGAL RESPONSIBILITIES FOR THIS PROJECT.

LIST OF FIGURES

TBSS GABION WELDED WIRE WALL SYSTEM

1 INTRODUCTION

This manual is designed to provide a set of general guidelines and specifications for the owner, contractor, and erector of the ***TBSS GABION WELDED WIRE*** retaining wall system (GWWW).

Mechanically Stabilized Earth (MSE) is a composite structure consisting of welded wire facing panels, steel soil reinforcing and compacted soil. The inclusion of tensile resisting steel soil reinforcing elements in the soil significantly improves the strength of the soil. This unique combination, when designed and installed properly, will create a cost effective integrated retaining structure.

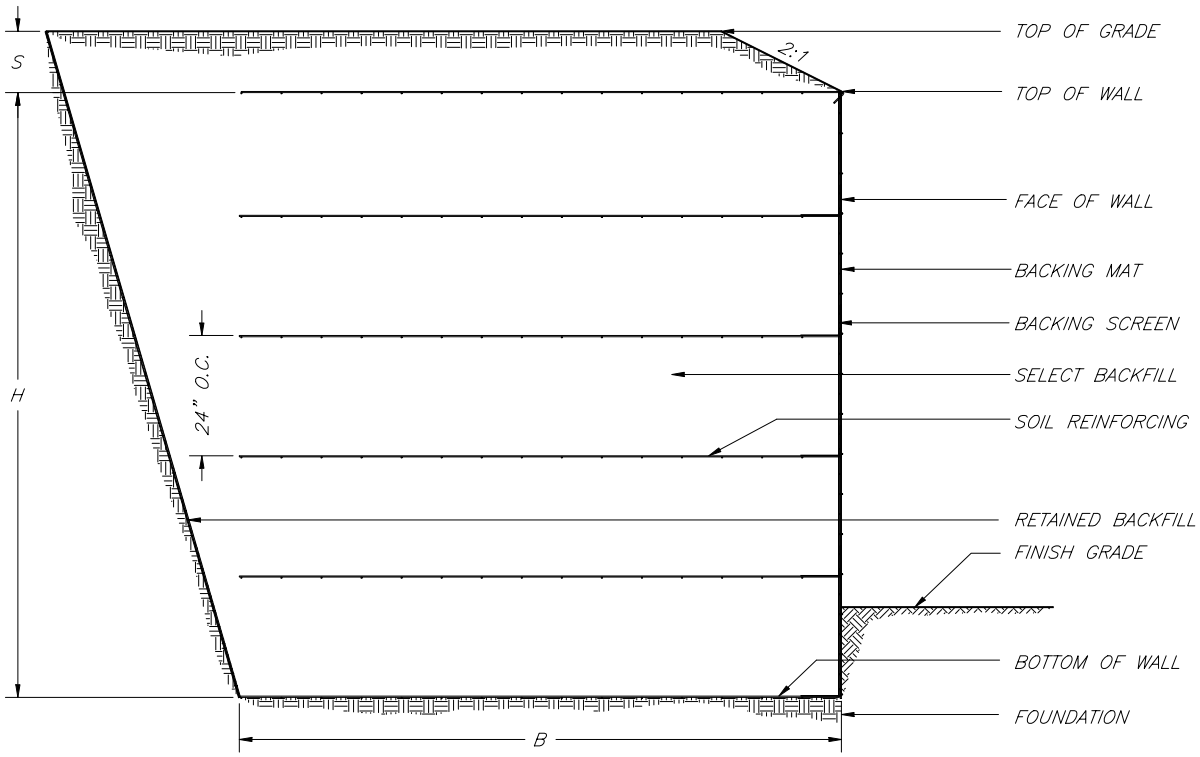


Figure 1 – Typical Wall Section

2 TERMINOLOGY

Backing Mat – A welded wire mesh panel that is placed at the back face of the facing panel. Typically spans between adjacent facing.
Connection Pin - A structural steel pin that joins the soil reinforcement to the welded wire element. Typically used to splice to soil reinforcing elements together.

Coping – An element that is used as the top of wall treatment. Can be either pre-cast or cast-in-place concrete.

Face Panel - A special welded wire facing with variable, high density welded wire, that is connected to a variable, low density welded wire soil reinforcement, and that prevents the raveling of soil between the layers of soil reinforcement.

Face Of Wall - The front face of the wire face panel.

Filter Fabric - A geo-textile fabric that is placed behind the welded wire face piece in temporary wall systems that prevents the erosion of soil from the MSE mass.

Finish Grade - The material that is placed in front of the MSE wall that protects the bottom of the wall from erosion and undercutting.

Gabion – Basket full of rocks.

Geogrid - A high density polypropylene or woven polyester with an apparent opening of ¼" that is placed behind the welded wire face panel that prevents the erosion of soil from the MSE mass.

Hardware Cloth - A woven steel mesh with an apparent opening of ¼" that is placed behind the welded wire face panel that prevents the erosion of soil from the MSE mass. Typically used in permanent wall applications.

Hog Ring - Steel special shaped wire ring that is used to tie the filter fabric to the face panel and to tie wire together.

Hog Ring Pliers - Special pliers that are specifically manufactured for the application of hog rings.

Inclusion - Any steel or geo-textile element that is inserted into the soil mass so as to improve the structural properties of the soil.

Mechanically Stabilized Earth (MSE) - Engineering term for the stabilization of earth through the use of soil inclusions.

Prepared Foundation - The excavated and proofed rolled area that the MSE wall bears on.

Prong - The bottom and top vertical wires after the last transverse wire. The top prong aids in the tying of face panels together with the soil reinforcement.

Reinforced Soil - A composite structure composed of soil and layers of inclusions inserted into the soil.

Retained Fill - The backfill material that is directly behind the reinforced soil volume. Usually consists of normal highway embankment material.

Select Fill - The volume of soil that is placed within the reinforced soil.

Soil Reinforcement - A manufactured welded wire grid element.

Traffic Barrier - A structural element that retains traffic impact and directs the impact in a desired direction.

3 CONSTRUCTION SEQUENCE

The construction of the Mechanical Stabilized Earth Structure is a repetitive process that requires successive placement of layers of soil reinforcing inclusions, compacted soil and facing panels. Each layer requires the same erection procedures and standard material. The difference between layers typically is the size, spacing, and configuration of the soil reinforcing inclusions.

In order to speed erection it is highly recommended that the erector be familiar with the location and type of each of the components in the wall, and where they are stored on the site. The shop drawings detail the proper orientation and combination of material contained within the structure.

The material that arrives to the site should be sorted and grouped by type and size. It is the responsibility of the contractor or erector to properly store the material so as to prevent damage.

3.1 SITE PREPARATION

It is important to prepare the site properly before placement of any of the soil reinforcement. The foundation has to be capable of supporting the loads that are to be placed on it by the reinforced volume and all anticipated external loading. The foundation shall be grubbed and graded level for a width equal to the length of the soil reinforcement, plus 6 inches. All foundation material that is suspected of being of poor quality shall be compacted or removed and replaced. The foundation preparation is the critical part of the wall construction. *Taking time to properly prepare the foundation will greatly decrease the chances of problems occurring during or after construction.*

3.2 SOIL REINFORCEMENT PLACEMENT

A welded wire soil reinforcement grid is defined by a horizontal soil reinforcing section and a vertical face section. The vertical face section and horizontal soil reinforcing is fabricated as one continuous element. The welded wire wall system is fabricated with a 90° bend at the interface of the soil reinforcing and facing panel.

The shop drawings detail the soil reinforcing type that is matched to a specific configuration. Typically an alphanumeric number is placed within the rectangular face area in the details such as follows:

A - 1

The first alpha designator defines the facing panel type. The second designator defines the soil reinforcing type. Each corresponding designator is coordinated with the appropriate material schedule. The material schedule dictates the size and spacing of each member.

The minimum required length of the soil reinforcement is given in the elevation drawings, under the dimension line, and is identified with “B = “.

It is important that the wall erector place the correct size, length and configuration of soil reinforcement with the correct face panel. *Typically, heavier gauge wire with greater transverse spacing is used in the bottom of the structure, and a lighter gauge wire with a closer transverse spacing is used at the top of the structure*.

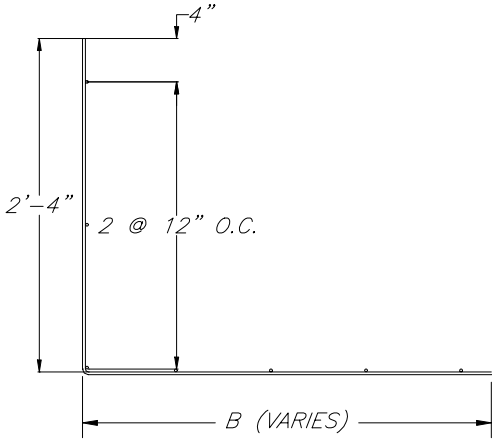


Figure 2 – Section Soil Reinforcing Element

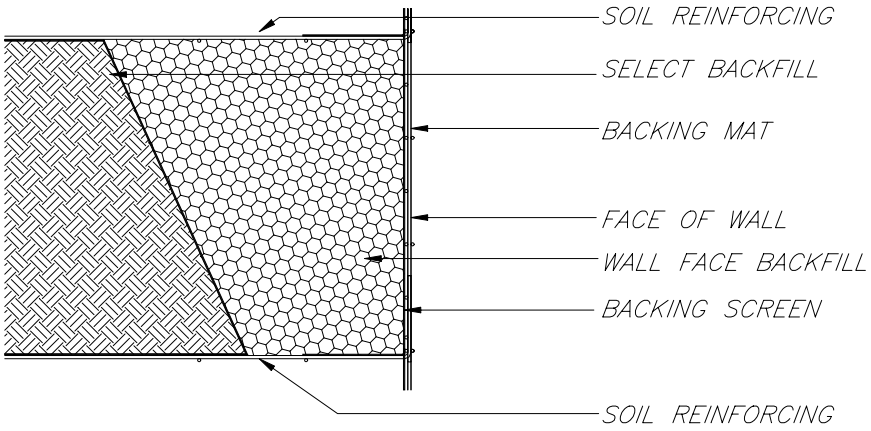


Figure 3 – Typical Lift Section

The first row of soil reinforcement and face panel is placed on the compacted foundation. The soil reinforcement and face panel shall be aligned and spaced apart from adjacent soil reinforcing and face panels by the spacing of the longitudinal wires, which is typically 8".

3.3 OBSTRUCTIONS

During the design phase an attempt is made to detail special panels and connections at the locations of vertical and horizontal obstructions. If a vertical obstruction is encountered where the proper number of soil reinforcements cannot be achieved, the Engineer of Record (EOR) should be notified for solutions. It may be necessary to cut some of the transverse wires and bend the detached longitudinal wires by the obstruction. Horizontal obstructions can be passed by gradually skewing the soil reinforcement. If the soil reinforcement is skewed horizontally, care should be taken so as not to kink the reinforcement. A 4"-6" buffer of soil shall be placed over the obstruction before the placement of the soil reinforcement.

Post for railings, barriers, or similar vertical penetrations can be driven after construction or they can be placed in a hollow vertical shaft that is placed in the soil during the erection and placement of the soil reinforcing.

3.4 REINFORCEMENT PLACEMENT

The soil reinforcing panels are 4'-0" or 8'-0" and are designed to span a center-to-center spacing of 4'-8" or 9'-4" respectively. The soil reinforcing has a length equal to "B" which is detailed on the elevation drawings and is typically given under the dimension line. The vertical section defines the face panel and is 24" from the mid-point of the bottom horizontal wire to the mid-point of the top horizontal wire. Contained above the top vertical wire are 4" prongs. These prongs help line up successive rows of soil reinforcing and tie the facing portions of each layer together. The soil reinforcing contains longitudinal wires that are spaced at 8" on center and transverse wires that are typically spaced a 12" but can vary from 8" to 30" on center.

Adjacent soil reinforcing and facing panels are spaced 8" apart. Once the soil reinforcement is placed and aligned accordingly, a backing mat is attached to the back face of the soil reinforcing face panel. The backing mat is fabricated with dimensions equal to 2'-0" x 9'-4". The backing mat contains horizontal wires and 8" spaced vertical wires. The backing mat is placed so the lead end falls at the mid point of an adjacent face panel. The backing mat then spans between a full-face panel and mid way between the successive adjacent face panels. This configuration will provide a 4" x 4" grid opening in the face of the wall. The backing mat can be tied to the face panel with hog rings or with tie wire. If hog rings are used they should be placed sparingly. The hog ring is not intended to be a structural element and is used to temporarily hold the backing mat on the face panel in order to maintain alignment.

Once the backing mat is placed and secured in place the hardware cloth, filter fabric or geogrid is placed over the entire back face of the backing mat. The hardware cloth, filter fabric or geogrid is also temporarily held in place by hog rings. At the location of the 90° bends it is necessary to split the hardware-cloth so it does not create a void when the fill is placed at the face. To prevent binding of the cloth, fabric, or geogrid, manually force it into the facing panel below or by carefully placing it horizontally on the soil-reinforcing element.

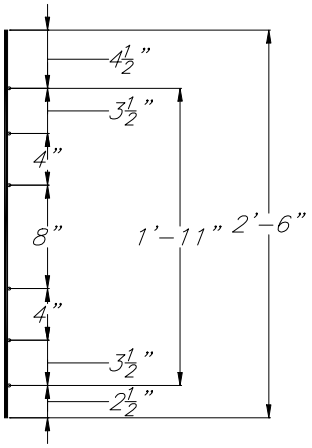


Figure 4 – Section Backing Mat

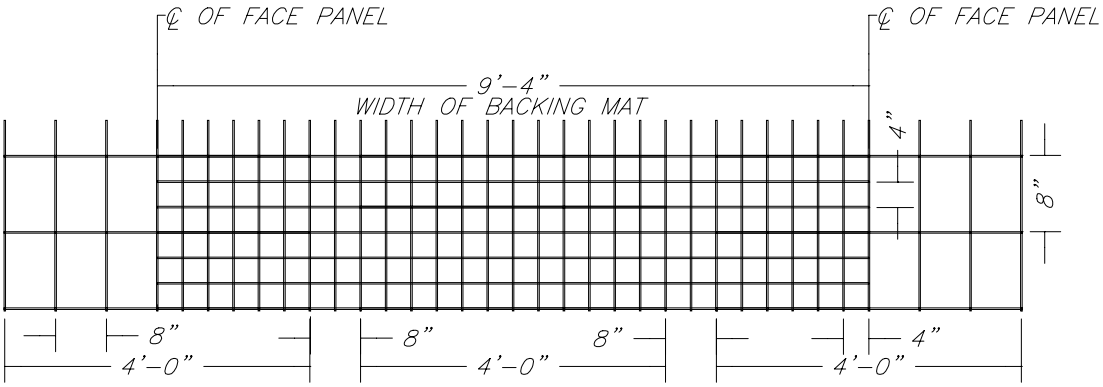


Figure 5 – Assembled Facing Element

3.5 BACKFILL PLACEMENT

The placement of the backfill should begin parallel to the wall face at a distance greater than or equal to one foot from the back face of the structure. The backfill should be placed in 12" compacted layers. The fill is leveled by machinery moving p*arallel* to the wall, fanning the material *toward the tail of the mat*. The placement of the backfill from the front of the soil reinforcement to the tail of the soil reinforcement will help keep the wall face aligned. Failure to place the backfill toward the tail, or by turning the compaction equipment sharply on during the placement will force the wall out of alignment.

Compaction of the backfill a distance of three feet from the face of the wall shall be performed with an 8-10 ton roller. A smooth wheel or rubber tire rollers are acceptable. Compactors that employ grid type rollers shall be used with caution. Compaction must be parallel to the wall face working toward the end of the reinforcement. Proper moisture content of the backfill material should be maintained uniformly within each layer. The material should be placed on the dry side of the optimum moisture content. Care should be used in adding water to the backfill material in order to get the proper compaction density.

The three-foot zone of fill located at the back of the wall is placed with an end loader and spread manually. The material is then compacted with the use of a 1000-pound vibratory roller or plate. This compaction operation should force the face panel to vertical. Care should be exercised within this area and during the compaction process so as not to force the alignment of the face panel past vertical. Compaction should proceed from the back face of the panel to the end of the mat. Never compact toward the wall face.

Compaction test and gradation tests shall be taken and recorded per the contract plans. These reports shall be made part of the wall erectors log. Proper compaction will alleviate problems in the future. Improper compaction can cause the face piece to move outward past vertical. Not enough compaction can cause the face piece to not move to vertical. The alignment should be monitored continuously during the compaction process.

3.6 FACE BACKFILL

The material directly behind the facing panel will dictate how the face of the wall behaves under load. The better the material directly behind the facing panel the better the alignment and performance of the face of the wall. In permanent applications it is recommended that the facing material be well-graded gravel with a grain size distribution between 1" to ¼". Well-graded gravel is easier to compact than select backfill material. Better compaction will decrease the void size and possible settlement and bulging of the face of the wall. If bulging of the face does occur it is a sign of improper installation and compaction. Do not confuse face bulging with foundation settlement.

3.7 DRAINAGE

It is extremely important not to allow the reinforced volume to become saturated at any time during construction. At each days end proper precautions shall be taken in order to assure that the MSE volume cannot become saturated. The wall erector shall slope the reinforced volume of soil away from the facing panel at the end of each days operation. Saturation of the reinforced volume can result in destabilizing forces that cause the structure to fail or deform excessively.

Heavy rainfall can cause erosion of the soil from within the layers of the reinforced volume. If any erosion does occur or if the backfill becomes saturated it shall be removed and replaced with material that conforms to the specifications or it shall be allowed sufficient time to dry out. Care shall be taken during periods of heavy rain to assure proper drainage and to provide positive flow away from the facing.

3.8 FINISH GRADE PLACEMENT

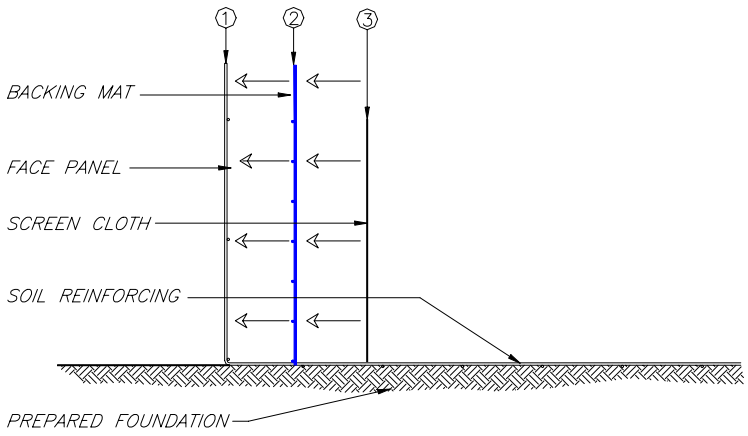
The placement of the finish grade fill material in front of the wall shall occur before the wall height exceeds 20 feet. Ideally it should be placed as soon as possible to prevent undercutting of the base of the wall and possible foundation saturation and to prevent the base course from bulging outward. Although the fill in front of the wall is not considered in the stability calculations it should be understood that any excavation in front of the wall at depths below the base course could greatly affect the structural stability of the reinforced volume. No excavation will be allowed until written permission is received from the Engineer of Record and the wall supplier.

3.9 BARRIER PLACEMENT

The placement of the barrier requires that the top of wall be at the proper elevation and orientation as shown in the contract plans. If the barrier is to be placed directly at the face of the wall special design considerations will need to be incorporated in order to keep the wall facing from deforming or causing outward rotation. It is recommended that front face of all barriers be kept a minimum of one foot from the wall face.

4 CONSTRUCTION SEQUENCE

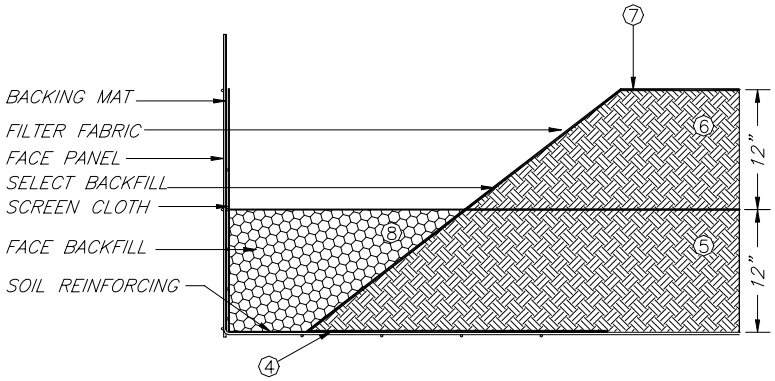
4.1 STEP ONE



Sequence 1

1. Place soil reinforcing and facing panel on prepared foundation. Place elements in proper orientation vertically and horizontally.
2. Attach backing mat to back face of facing panel. Place horizontal wires so they are on the same side. Attach hog-rings for temporary support.
3. Attach filter fabric, hardware cloth or geogrid to back face of backing mat.

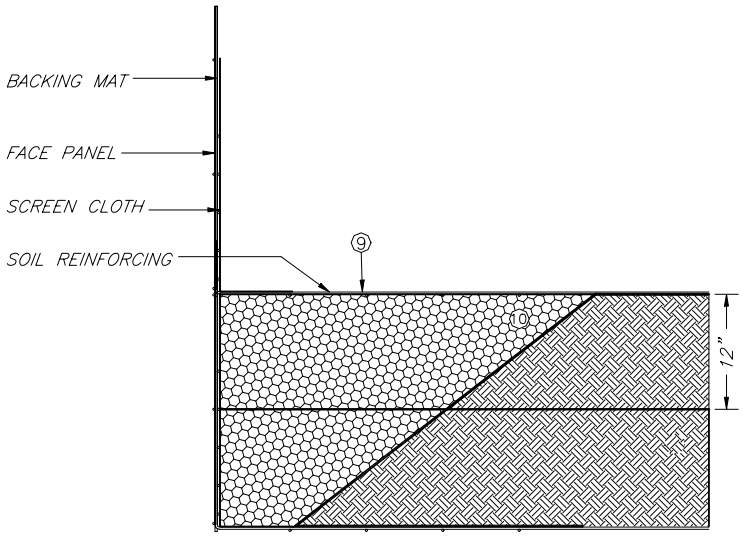
4.2 STEP TWO



Sequence 2

4. If facing backfill and select backfill are to be isolated, place filter fabric on soil reinforcing a minimum of 12". If facing backfill is not required filter fabric shall be placed on back of backing mat.
5. Place and compact 12" of select backfill. Slope backfill in order to prevent wall face from moving out of alignment.
6. Place and compact second 12" lift of select backfill. Slope backfill away from face.
7. Lap filter fabric over and on top of select backfill if facing backfill is used. Lap a minimum of 12".
8. If required place 12" of facing backfill and compact. Place and compact material so as not to distort alignment of wall face.

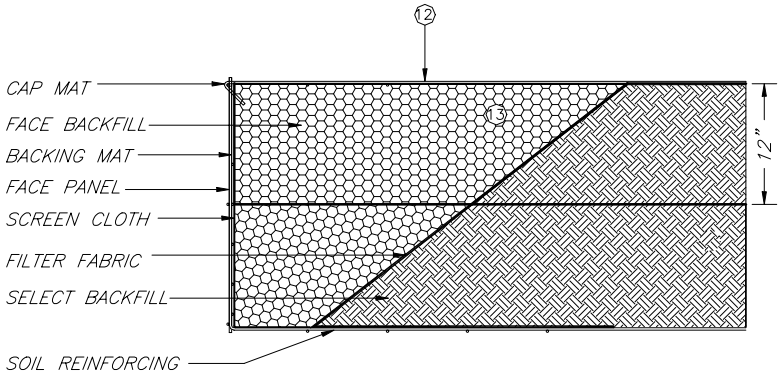
4.3 STEP THREE



Sequence 3

9. Place next lift of soil reinforcing. Place soil reinforcing over prongs of facing panel below. Pull wall facing into alignment. Soil reinforcing grid shall be anchored with stake or by placing select backfill on tail of mat.
10. Place and compact facing backfill or select backfill in void of lift below. Mound backfill over soil reinforcing mat and compact forcing backfill into void. It is very important to work this material fully into void.
11. Repeat steps 1-10 until top of wall elevation is achieved.

4.4 CAP MAT



Sequence 4

12. Place cap mat at elevation of top of wall. Cap mat can be connected at any location where there is a horizontal wire. The horizontal wire can be on the facing panel or on the backing mat.
13. Place backfill in void at face of wall and compact. Mound backfill on top of cap mat and force through opening.

A. WALL ERECTION CHECK LIST

1.	Yes	No	Do you have an approved copy of shop drawings?
2.	Yes	No	Do you have backfill certifications?
3.	Yes	No	Do you have material certifications?
4.	Yes	No	Does the wire mill have material manufactured and inspection certifications?
5.	Yes	No	Is all material on site?
6.	Yes	No	Is material stored properly to prevent on site damage?
7.	Yes	No	Has damaged material been recorded and a copy of rejected material given to suppliers?
8.	Yes	No	Is the foundation excavated and proof rolled per the specifications and to the required width and elevation?
9.	Yes	No	Has unsuitable material been compacted or removed and replaced?
10.	Yes	No	Is the first row of soil reinforcing mats properly placed, aligned, and spaced.
11.	Yes	No	Are the proper face panels being installed?
12.	Yes	No	Are the required number of soil reinforcing mats and the correct type being used?
13.	Yes	No	Are the correct connection pins being used and are the mats making proper contact with the face piece?
14.	Yes	No	Is the filter fabric or screen cloth being properly placed and hog-ringed to the face piece?
15	Yes	No	Is the fill being properly placed? Are they using 12-inch lifts? Are they spreading backfill from one foot of back face of panel to tail of mat?
16.	Yes	No	Is the equipment being kept off of the mat until 6” of material is placed?
17.	Yes	No	Is proper compaction being met? A minimum 90% of maximum density for first one foot and 95% of maximum density for the remaining area.
18.	Yes	No	Are the mats properly aligned?
19.	Yes	No	Is the vertical and horizontal alignment of the structure being checked periodically?
20.	Yes	No	At the end of each days operation is the reinforced volume being protected from runoff and saturation?

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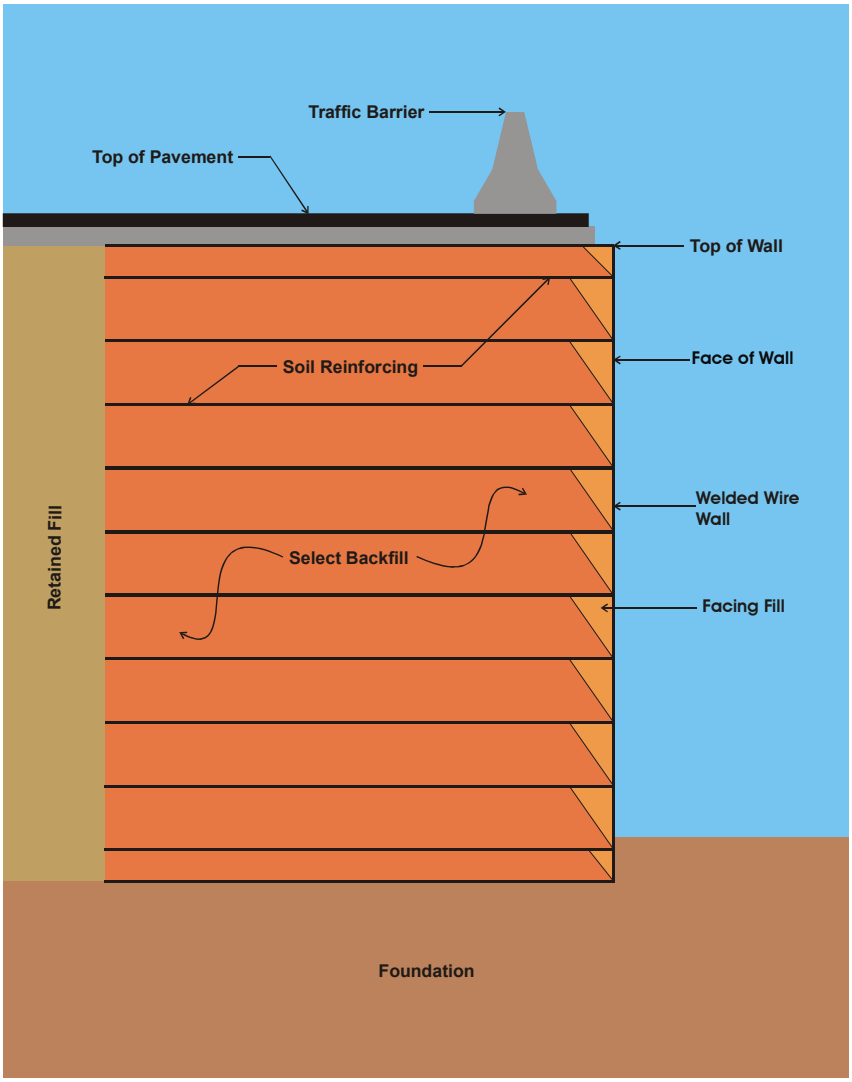
ENGINEERED STRUCTURES



MECHANICALLY STABILIZED EARTH STRUCTURES

STANDARD DETAILS

WELDED WIRE WALL

STANDARD DETAILS
WELDED WIRE WALL

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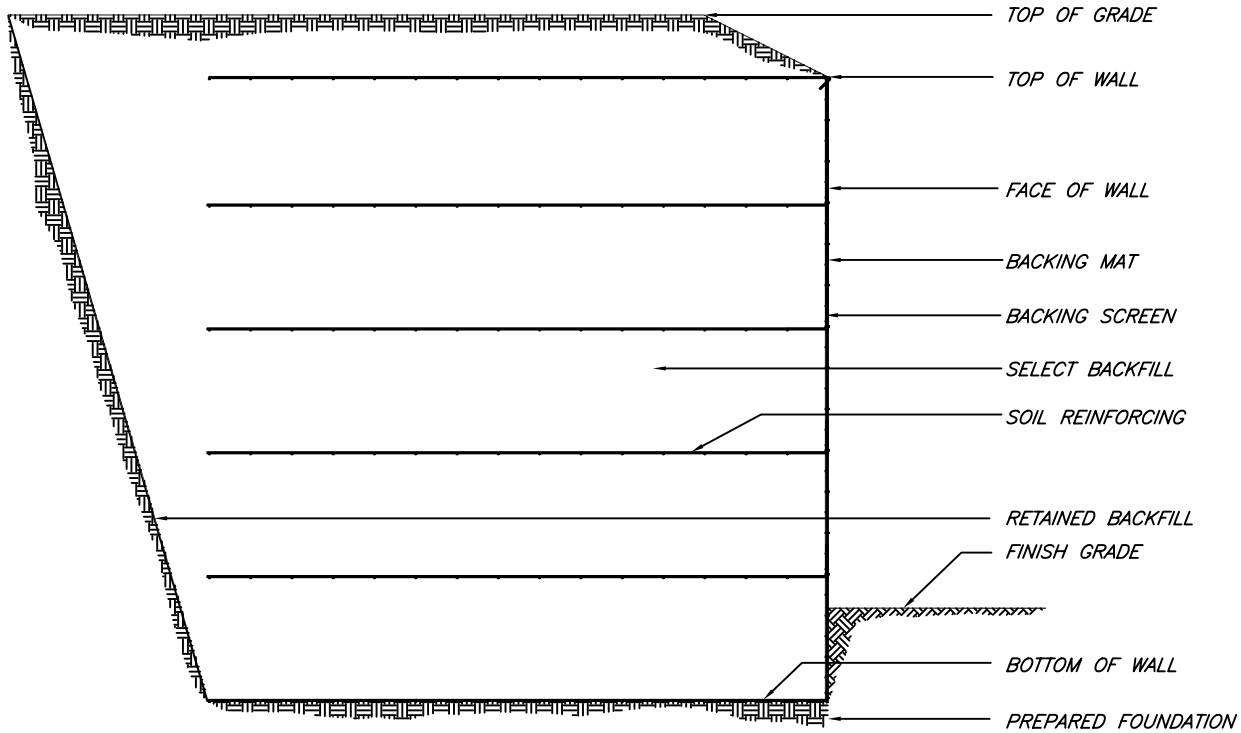
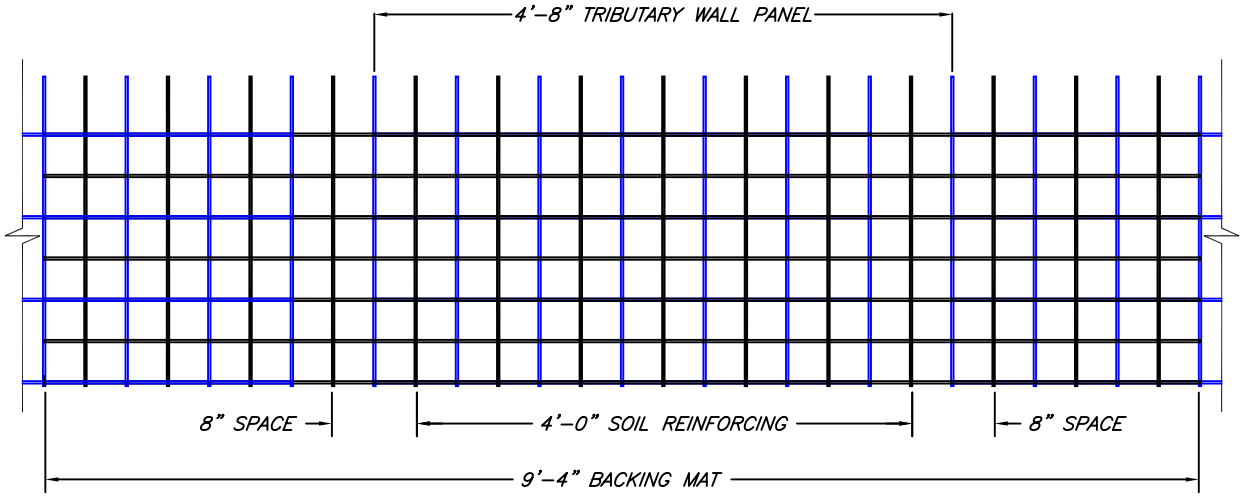
STRUCTURES



A1 **TYPICAL WALL SECTION**
N.T.S



B1 **ASSEMBLED WALL ELEVATION**
N.T.S.

Sheet Title:	Standard Details – Gabion Faced Welded Wire Wall
Project Name:	Detail Book
Project Number:	2002–GabWWW
Date:	September 11, 2002

BY	TpT
CHKBY	
REV No.	
DATE	

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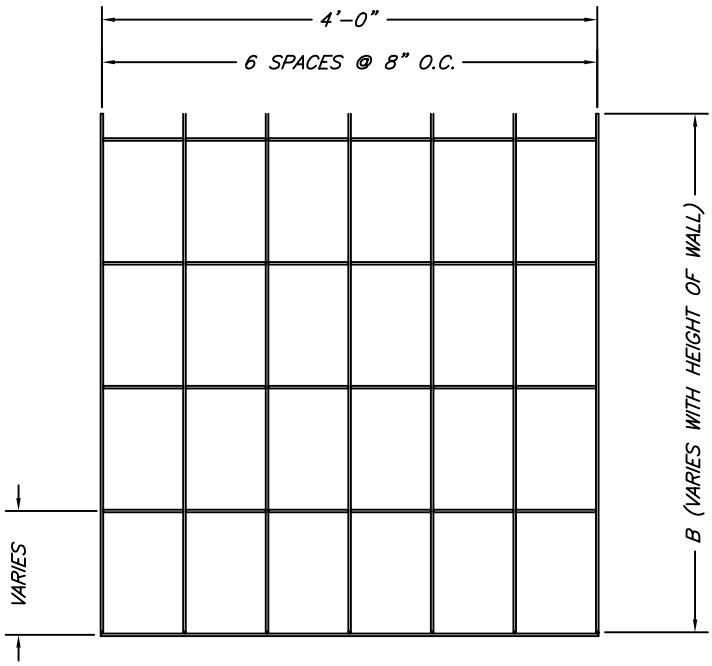

A/2 **PLAN SOIL REINFORCING**
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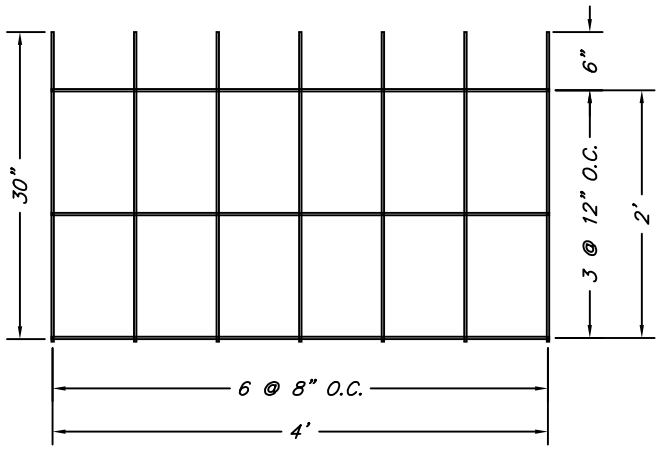

B/2 **ELEVATION SOIL REINFORCING**
N.T.S.

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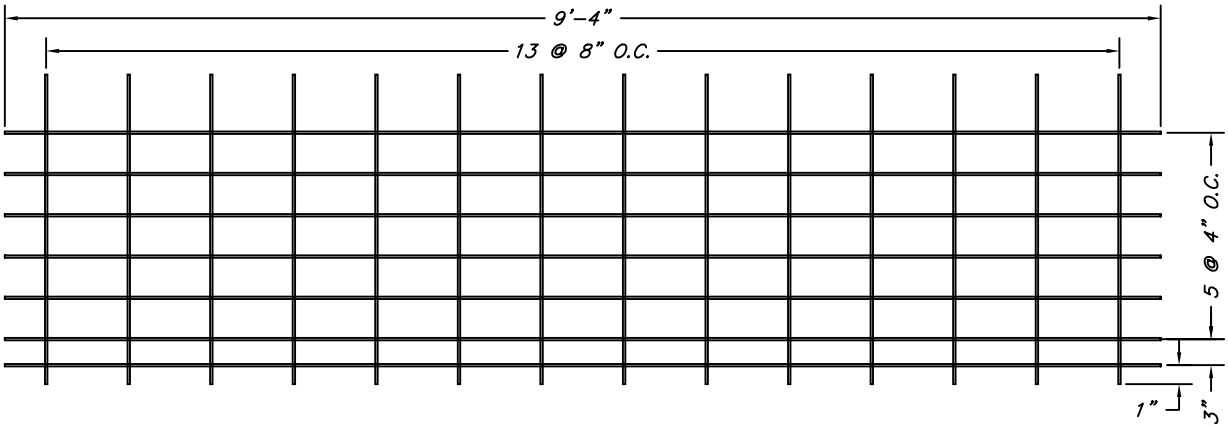
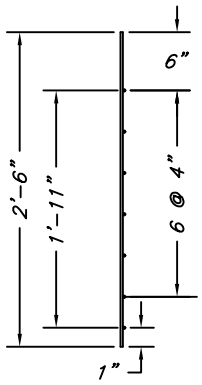


A/3 **BACKING MAT**
ELEVATION – N.T.S.



B/3 **BACKING MAT**
SECTION – N.T.S.

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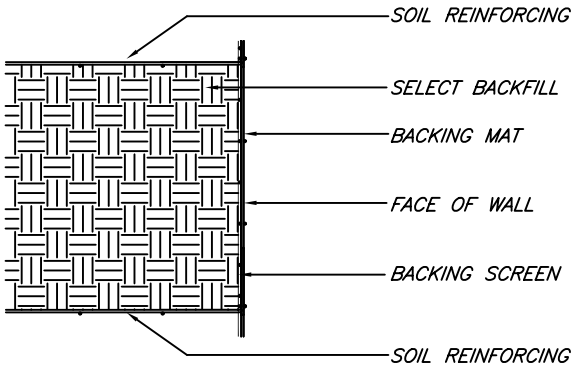
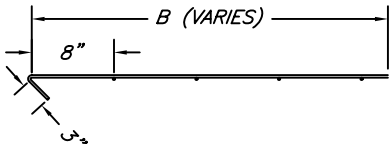
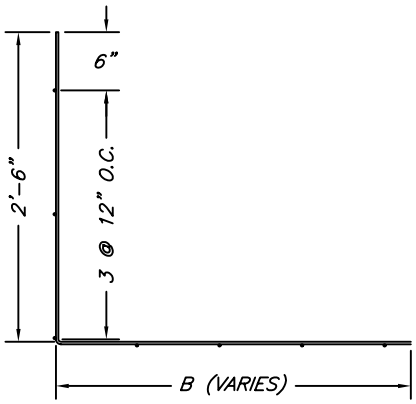


A/4 TYPICAL LIFT SECTION
N.T.S



D/1 SECTION CAP MAT
N.T.S



B/4 SECTION SOIL REINFORCING
N.T.S.

Sheet Title:	Standard Details – Gabion Faced Welded Wire Wall
Project Name:	Detail Book
Project Number:	2002–GabWWW
Date:	September 11, 2002
BY	TpT
CHKBY	
REV No.	
DATE	

T&B STRUCTURAL SYSTEMS, INC
ENGINEERED STRUCTURES
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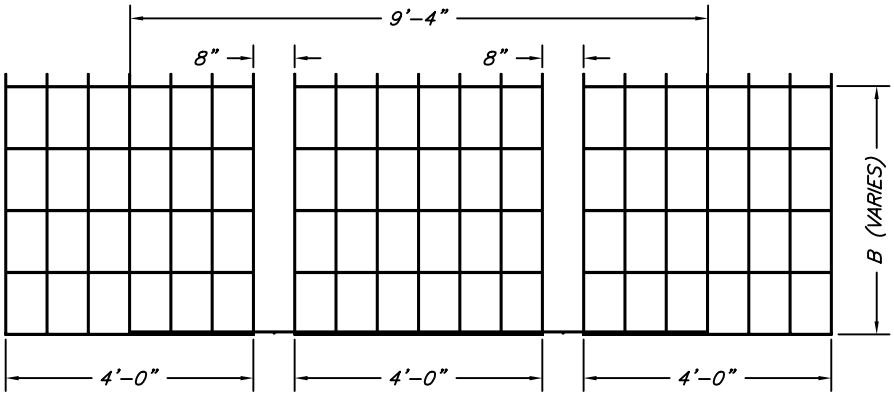
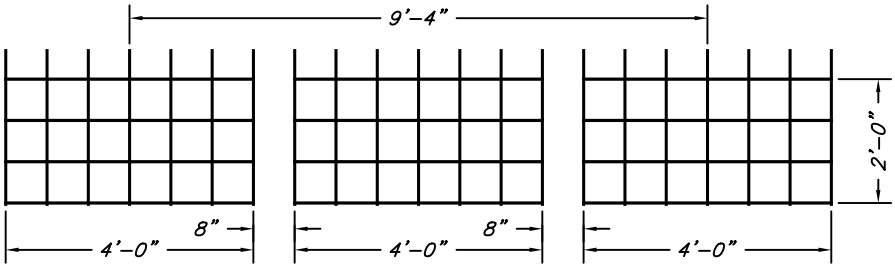
HURST, TEXAS 76053
(817) 280-9858 • (FAX) 280-9864

tbss ENGINEERED STRUCTURES



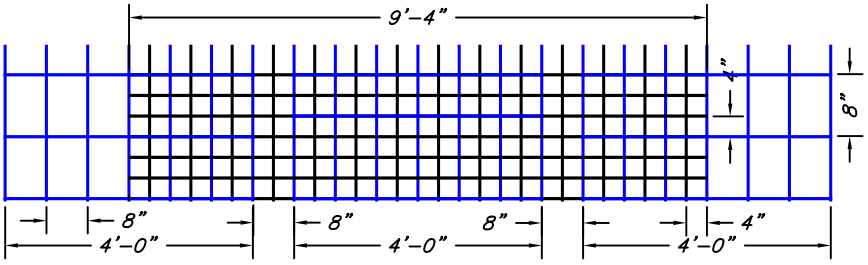
A 5 PLAN VIEW SOIL REINFORCING

SOIL REINFORCING LAYOUT



B 5 ELEVATION SOIL REINFORCING

FACE PANEL ELEVATION



C 5 FACING ELEVATION WITH BACKING MAT

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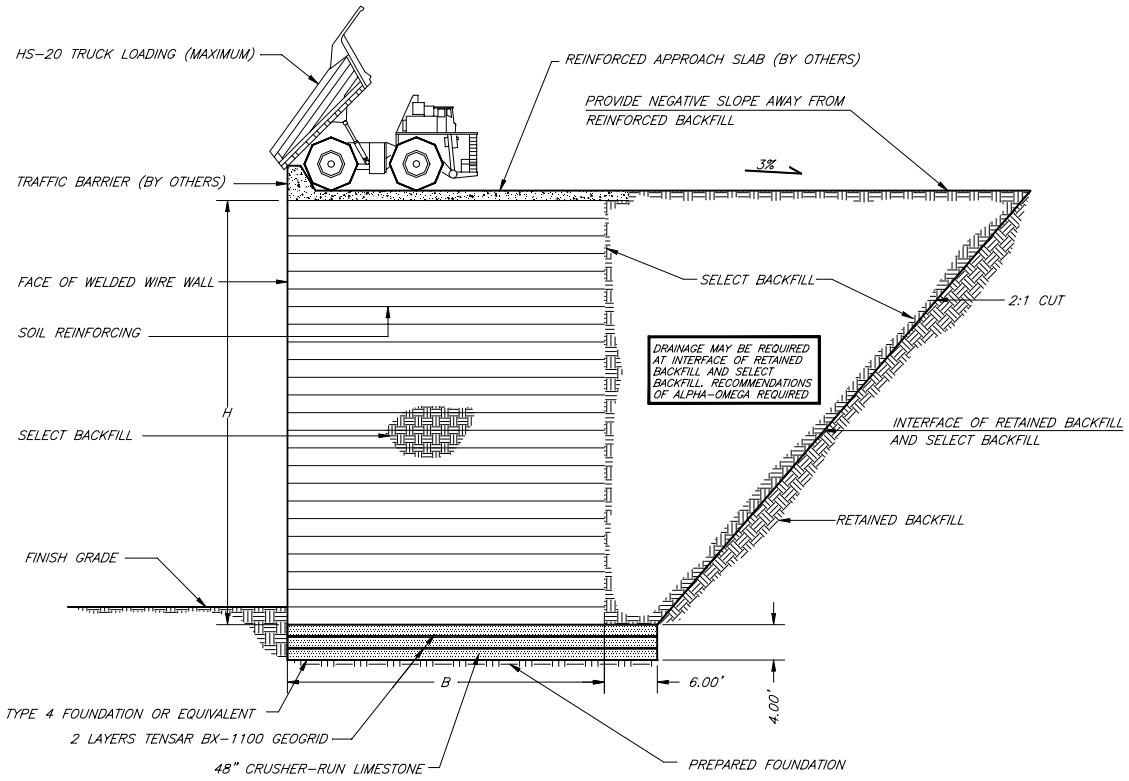

MECHANICALLY STABILIZED EARTH STRUCTURES
WELDED WIRE WALL SYSTEM

TECHNICAL SPECIFICATION

MECHANICALLY STABILIZED EARTH STRUCTURES

WELDED WIRE WALL SYSTEM

TECHNICAL SPECIFICATION

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IT IS THE RESPONSIBILITY OF THE ENGINEER OF RECORD
TO REVIEW AND VERIFY THE ACCURACY OF THESE CALCULATIONS.
BY SIGNING AND SEALING THE ENGINEER OF RECORD ASSUMES
THE LEGAL RESPONSIBILITIES FOR THIS PROJECT.

TBSS GABION WELDED WIRE WALL

1 GENERAL

The work specified in this section consists of the TBSS Gabion Welded Wire retaining wall constructed in accordance with these specifications and in conformity with the lines, grades, design, and dimensions as shown on the plans or as established by the Engineer.

2 WELDED WIRE MATERIALS

The owner shall make his own arrangements to purchase the materials covered by this section including all Gabion Welded Wire Wall components and all necessary incidentals from T&B Structural Systems, Inc. located in Hurst, Texas, USA. The owner shall furnish the Engineer a certification of compliance with the material requirements of this specification. Materials not conforming to this specification shall not be used without the written permission of the Engineer.

2.1 WELDED WIRE COMPONENTS

The welded wire components shall conform to ASTM A-82 and ASTM A-185. The soil reinforcing elements consist of standard mats and cap mats. The size and spacing of these mats vary and are dependent upon the design.

2.2 FILTER FABRIC

The filter fabric shall be a needle-punched geotextile. The fabric shall conform to the following specifications:

Grab Tensile Strength	100lbs	(ASTM D4632)
Mullen Burst	255 psi	(ASTM D3786)
Permeability	0.22 cm/sec	(ASTM D4491)
UV Resistance	70%	(ASTM D4355)

2.3 HARDWARE CLOTH

Hardware cloth shall be fabricated per ASTM A-740 and shall be 30" tall with a 1/4" apparent opening. The cloth shall be commercially galvanized at 0.40 oz/ft.

3 BACKFILL MATERIALS

All backfill material used in the reinforced volume shall be free draining, shall not exceed the organic limits specified below, and shall conform to the gradation limits as determined in accordance with AASHTO T-27 and ASTM D-422:

SIEVE SIZE	PERCENT PASSING
3 ½ inch	100
¾ inch	70-100
No. 4	30-100
No. 40	15-100
No. 100	5-65
No. 200	0-15

Backfill material containing more than 2.0% by weight of organic material, as determined by AASHTO T-27 and ASTM D-422 and by averaging the test results for three randomly selected samples from each stratum or stockpiles of a particular material, shall not be used as backfill within the reinforced volume. If an individual test value of the three samples exceeds 3.0%, the stratum or stockpile will not be suitable for the material within the reinforced volume.

The internal friction angle shall not be less than 30º. The plasticity index as determined by AASHTO T-90 shall not exceed 6 and the liquid limits as determined by AASHTO T-90 shall be less than 15. The material shall be compacted in accordance with ASTM D-698.

The contractor shall have the backfill material tested by a certified testing laboratory. A copy of the test results and certification of compliance, stating that the backfill meets the above requirements, shall be submitted to the TBSS Engineer of record for his review and approval. The backfill material shall not be delivered to the site without the Engineers approval.

4 DRAINAGE REQUIREMENTS

The MSE mass shall be protected from hydrostatic pressure. This shall include, when necessary, face drains, blanket drains, and chimney drains. The contractor shall properly address any ground water that is encountered during construction. All drainage shall be the responsibility of the contractor or owner and is not part of TBSS design.

5 CONSTRUCTION REQUIREMENTS

5.1 GENERAL

Due to the unique nature of the structure and the concepts, TBSS shall provide technical instructions, guidance in pre-construction activities. On-site technical assistance during construction shall be an extra to the contract unit price. The contractor shall closely follow any instructions from the TBSS unless otherwise directed by the owners Engineer. The contractor shall submit a copy of any such instructions to TBSS.

5.2 WALL EXCAVATION

Excavation shall conform to the limits as shown on the plans and shall be in accordance with this specification.

5.3 FOUNDATION PREPARATION

The foundation for the reinforced volume shall be graded level to the extent of the soil-reinforcing mat, plus 6 inches. The graded area shall be proof rolled with a vibratory roller weighing a minimum of eight tons for at least five passes in the presence of the Engineer or as directed by the Engineer. Any soft, loose or unsuitable material must be removed and replaced.

5.4 WALL ERECTION

The Gabion Welded Wire Wall system shall be installed as shown in the plans and in the erection guide. Backfilling and compaction shall be in accordance with this specification. Vertical tolerance (plumbness) and horizontal alignment tolerance shall not exceed three inches when measured with a ten-foot straight edge. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed three inches per ten feet of wall height. The final overall horizontal tolerance shall not exceed three inches.

5.5 BACKFILL PLACEMENT

Backfill placement shall follow the erection courses of soil reinforcement. The backfill shall be spread by moving parallel to the face of the wall, fanning the material to the tail of the soil-reinforcing mat. Equipment weighing more than ten tons shall not be allowed closer than two feet of the face of the wall.

Backfill shall be placed in such a manner as to a void any damage or unacceptable disturbance to the wall material. Excessive misalignment of the face of the wall caused by turning equipment on the soil reinforcing mats occurs the face panel and soil mat shall be removed and replaced to the specified alignment. All necessary re-alignment shall be at the Contractor's expense.

The moisture content of the backfill material, prior to and during construction, shall be uniformly distributed throughout each layer of material. Backfill material shall have an in place moisture content at the dry side of the optimum moisture content. Excessively saturated backfill material shall not be transported to the site. The optimum moisture content shall be in accordance with ASTM D-698.

Compaction of the zone within three feet of the wall face may be achieved with the use of a self contained power operated roller or plate, weighing 1,000 pounds. Backfill in this area shall be compacted to 95% of the maximum dry density as determined by ASTM D-698.

Compaction of the zone three feet and greater from the face of the wall shall be compacted to 95% of the maximum dry density as determined by AASHTO D-698. Compaction shall be achieved by either a smooth wheel, with or without vibratory, or rubber tire rollers. Sheep-foot, grid rollers or other similar types of compaction equipment containing a girded depression shall not be used. The maximum lift thickness after compaction shall not exceed six inches. If proper compaction is not being achieved the contractor shall decrease the lift thickness.

At the end of each days operation the contractor shall slope the reinforced volume backfill surface away from the face of the wall in order to permit positive runoff of rainwater or provide some other means of drainage in order to keep the reinforced volume form becoming saturated. All saturated backfill material shall be removed and replaced.

6 METHOD OF MEASUREMENT

The area of the Gabion Welded Wire Wall System to be used for payment shall be the area bounded by the top of the wall and the bottom of the wall at the face of the wall (as shown in the plans), and the beginning and end of wall limits as shown in the drawings.

This quantity shall be paid at the contract unit price per square foot of TBSS Gabion Welded Wire Wall supplied whether installed or accepted.

7 BASIS OF PAYMENT

All payments shall conform to the signed and accepted TBSS materials purchase order contract. Any other payment options must be agreed upon prior to manufacturing of material. Failure to follow the contract will not relieve the buyer of the responsibility of paying for the manufactured material whether material is transported to the project site or if the material is stored at TBSS or a TBSS supplier.