

KEY
 WALL TYPE 1 1(H):6(V) SETBACK
 WALL W/CAP



DESIGNBUILD CONSULTING SERVICES, LLC

P.O. Box 185112
 FORT WORTH, TX
 SMILLER@DESIGNBUILDCONSULTING.NET

REVISIONS

NO.	DATE	DESCRIPTION

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 CHECKED BY: TAP

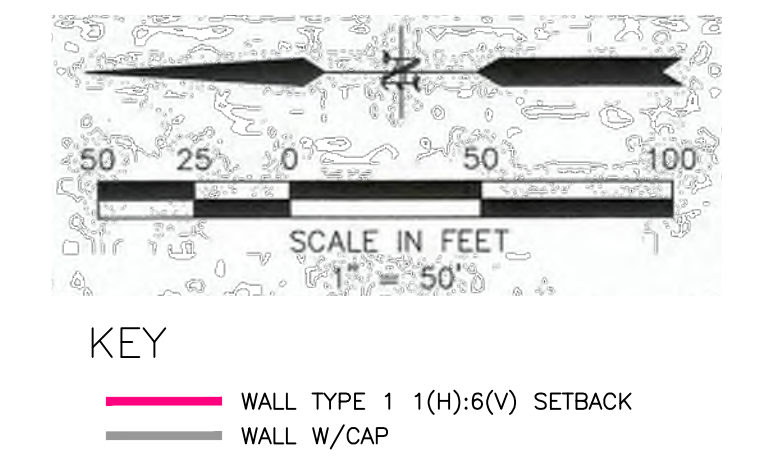


DesignBuild Consulting Services LLC
 Texas Registered Engineering Firm
 F-21892

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SADDLE STAR SOUTH
 PH. 2
 ROCKWALL, TEXAS
 WALL LOCATIONS

JOB#: SF-23-0013 DATE: 02/16/23 SHEET: 1 OF 4



KEY
 — WALL TYPE 1 1(H):6(V) SETBACK
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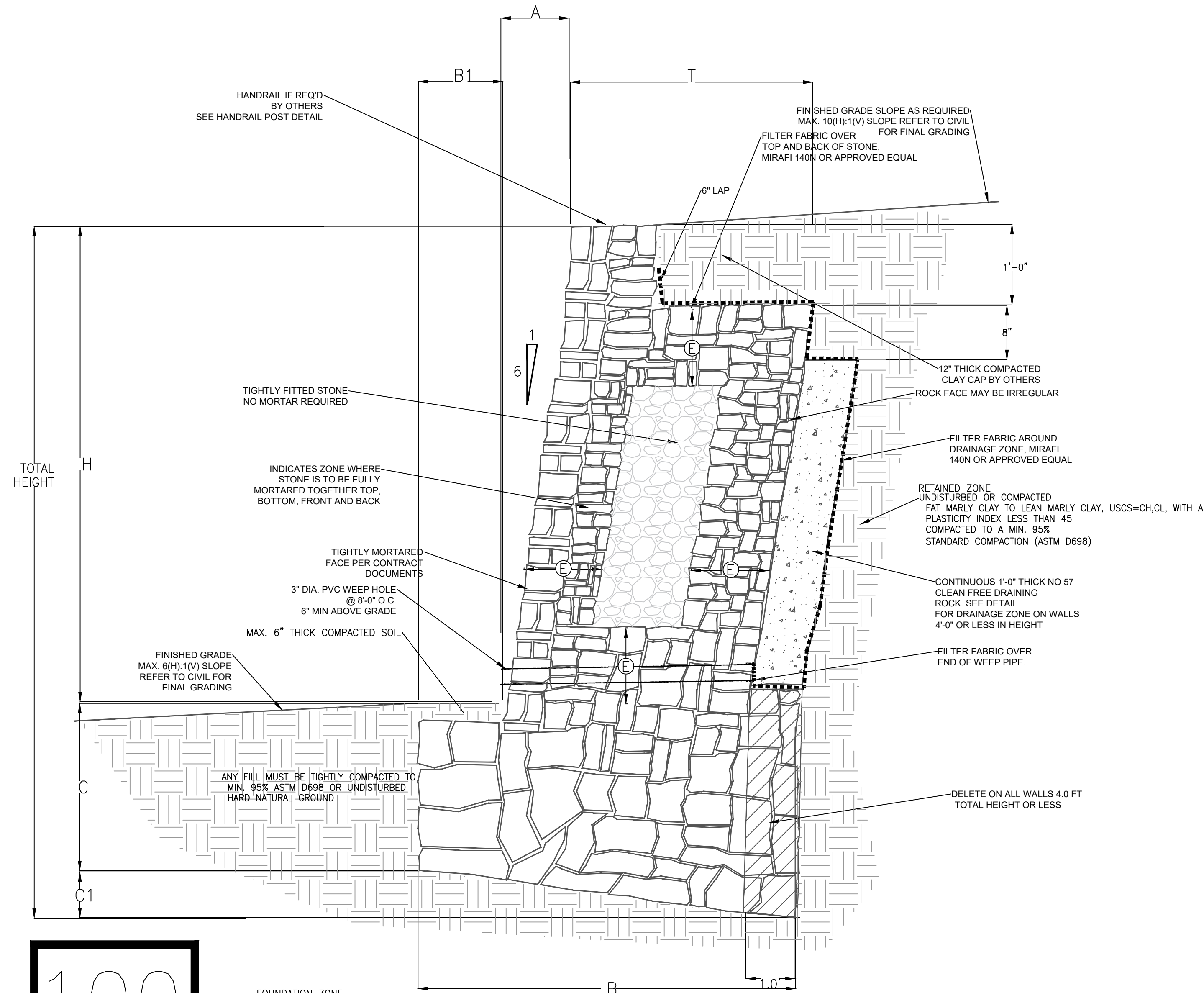


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SADDLE STAR SOUTH
 PH. 2
 ROCKWALL, TEXAS
 WALL LOCATIONS

JOB#: SF-23-0013 DATE: 02/16/23 SHEET: 2 OF 4

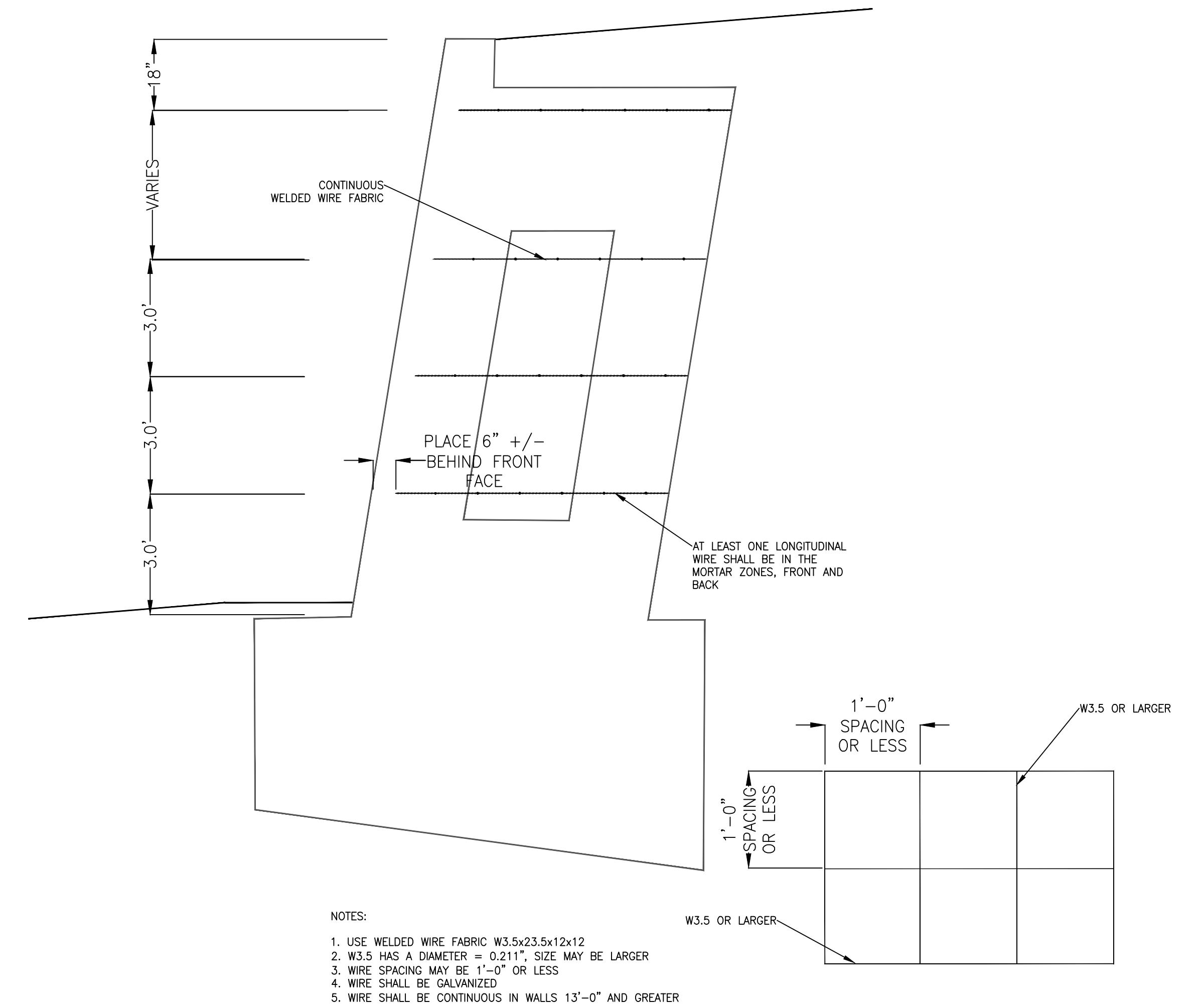
Wall Height H	Total Ht.	Base Width B	Toe B1	Base Depth (Toe) C	Base Depth (Heel) C1	Fully Mortared Zone E	Thickness T	Setback A	Bearing Pressure PSF
2'	2' 9"	1' 6"	0' 0"	0' 6"	0' 3"	FULLY MORTARED	1' 6"	0' 4"	500
3'	3' 10"	1' 9"	0' 3"	0' 6"	0' 4"	FULLY MORTARED	1' 6"	0' 6"	600
4'	5' 2"	2' 6"	0' 6"	0' 9"	0' 5"	FULLY MORTARED	2' 0"	0' 8"	700
5'	6' 9"	4' 0"	0' 9"	1' 1"	0' 8"	0' 8"	2' 3"	0' 10"	900
6'	8' 3"	4' 4"	0' 10"	1' 6"	0' 9"	0' 9"	2' 6"	1' 0"	1000
7'	9' 9"	4' 9"	1' 0"	1' 11"	0' 10"	1' 0"	2' 9"	1' 2"	1200
8'	11' 1"	5' 4"	1' 1"	2' 2"	0' 11"	1' 0"	3' 3"	1' 4"	1400
9'	12' 6"	6' 0"	1' 3"	2' 6"	1' 0"	1' 3"	3' 9"	1' 6"	1600
10'	13' 10"	6' 5"	1' 5"	2' 9"	1' 1"	1' 3"	4' 0"	1' 8"	1700



FOUNDATION ZONE UNDISTURBED OR COMPACTED FAT MARLY CLAY TO LEAN MARLY CLAY, USCS=CH,CL, WITH A PLASTICITY INDEX LESS THAN 45

TYPICAL MASONRY GRAVITY WALL SECTION
SCALE: NONE

100



- NOTES:
1. USE WELDED WIRE FABRIC W3.5x23.5x12x12
 2. W3.5 HAS A DIAMETER = 0.211", SIZE MAY BE LARGER
 3. WIRE SPACING MAY BE 1'-0" OR LESS
 4. WIRE SHALL BE GALVANIZED
 5. WIRE SHALL BE CONTINUOUS IN WALLS 13'-0" AND GREATER

WIRE SPACING FOR WALLS 10'-0" AND GREATER
SCALE: NONE



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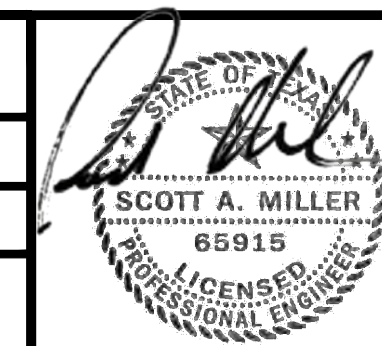
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SADDLE STAR SOUTH
PH. 2
ROCKWALL, TEXAS

WALL SECTION & DETAIL

JOB#: SF-23-0013 DATE: 02/16/23 SHEET: 3 OF 4

NOTES:

A. Design

1. Design Codes: IBC, 2015 Edition

2. Soils Report: A Geotechnical Report by Alpha Testing, LLC dated March 16, 2022 was provided for the project and the soil properties used were correlated from the information in the geotechnical report.

3. Civil Plans: Sheet 14 & 15 of 46 of the Project Plans by Engineering Concepts & Design, L.P. dated: November 17, 2021.

4. Design Parameters

Soil Parameters:

Soil Type	Friction Angle	Cohesion(psf)	Unit Weight(pcf)
Retained Backfill	24 deg	100 psf	120 pcf
Foundation Soils	24 deg	100 psf	120 pcf

Factors of Safety

- External Stability
- Minimum Factor of Safety Against Base Sliding(Static Condition) 1.5
 - Minimum Factor of Safety Against Overturning 2.0
 - Minimum Factor of Safety for Bearing Capacity 2.0

Retaining Walls should not have solid fence (such as wood fence) placed on top of wall other than that shown on these plans. Retaining walls shall not have additional surcharge placed above wall other than that shown on these plans. Retaining walls shall not have slope at base or top of wall that exceed that which is shown on these plans.

Analysis of the global stability of the walls and slopes at the site was not in the scope of the wall design and should be reviewed by the Geotechnical Engineer of Record. Instability of the slopes at the site could cause wall distress

Live Load Behind Walls	None
Dead Load	None

B. Materials

1. Soil Types

- Retained Backfill -- Fat marly clay to lean marly clay, USCS=CH,CL, $P_i < 45$, $\phi = 24^\circ$, $\gamma = 120$ pcf, $c = 100$ psf
- Foundation Soils -- Fat marly clay to lean marly clay, USCS=CH,CL, $P_i < 45$, $\phi = 24^\circ$, $\gamma = 120$ pcf, $c = 100$ psf
- Drainage Material -- ASTM C33 No. 57 crushed stone.

2. Dimension Facing Stone

- Average Density of masonry wall varies from 130pcf to 140 pcf.
- Stone size varies from 8" tall, 4" deep with varying sizes.
- Face stone shall be coordinated between contractor and owner/developer.

3. Rebar/Welded Wire Fabric

- All steel reinforcement shall be new billet steel conforming to ASTM A-615, Grade 60 with $f_y = 60$ ksi
- All reinforcement shall not have deleterious material on it.
- All welded wire fabric shall have minimum $f_y = 65$ ksi and be hot dipped galvanized.

4. Drainage Materials

- Weep pipes shall be PVC SCH 40 min. 3" dia.
- Drainage zone shall be separated from retained backfill by Mirafi 140N filter fabric or approved equal.

5. Rock Infill

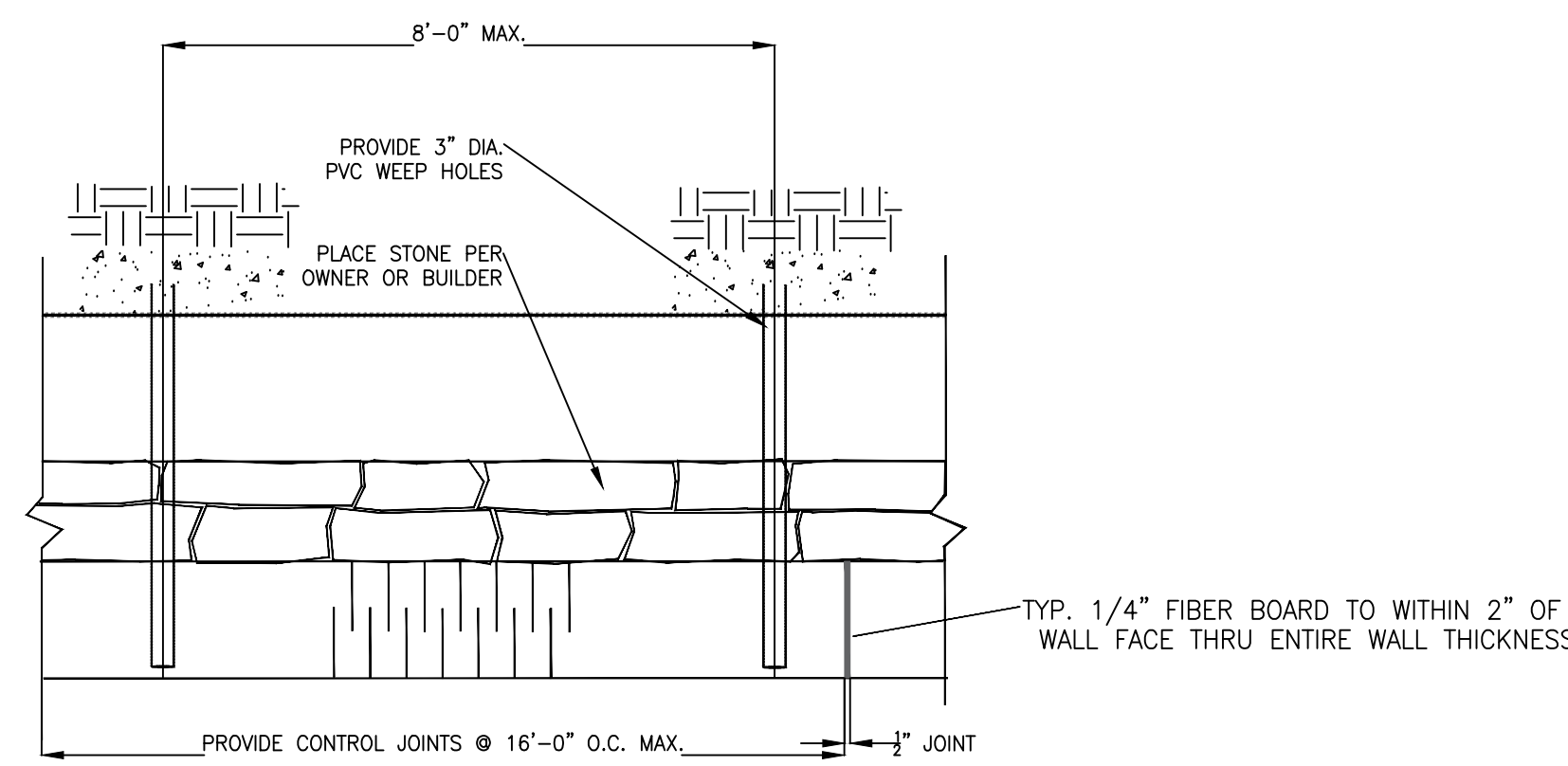
- All rock shall be hard, durable, angular stone with a maximum 8.0 particle size when placed. Any larger rocks may be split on site to be used in the wall.
- Mortared sections of wall shall be filled completely with mortar with no voids.
- Un-mortared center wall sections shall have the rock hand placed, with the rocks tightly placed.
- No rock or mortar shall be placed by machine

6. Portland Cement Mortar for Retaining Wall Construction

The portland cement mortar used for construction of the masonry stone retaining walls shall be provided with the following proportions per cubic yard of concrete. The portland cement mortar supplier shall provide "tickets" clearly indicating that the appropriate amount of materials are provided in each truck load. The tickets shall clearly indicate the amount batched, the date, the project name and shall be provided to DesignBuild Consulting Services LLC for review, documentation, and file.

Contents	Amount per cubic yard	Specific Gravity
Type 1 Portland cement:	451 lbs	3.15
Type F Fly Ash	113 lbs	2.93
Fine Aggregate (sand)	2746 lbs	2.59
Potable Water	367 lbs	44 Gallons
Sika Air (or equivalent)	(As Required) oz	4.5%

Note: The mortar supplier material weights may vary slightly based on the specific gravity of the materials used.



TYPICAL PLAN VIEW AT BASE
SCALE: NONE

C. Construction

1. Preparation Work

- Prior to grading or excavation of the site, confirm the location of the retaining walls and all underground features, including utility location with the area of construction. Ensure surrounding structures are protected from the effects of wall excavation, and construction.
- Coordinate installation of underground utilities and other improvements with wall installation.
- Coordinate wall location with batter of wall face. Confirm the top of wall location per the civil plans.

2. Excavation

- Fill over-excavated area in front of the wall footing with compacted on site soils or TXDOT Flex Base before the wall construction exceeds 4 feet in height.
- In areas where the walls are installed in a cut, the required excavation shall extend horizontally to the extent of the width of the retaining wall. The wall may be built to the cut. If the wall is over cut, the soil shall either be compacted or the draining zone may be widened.

3. Wall Construction

- The wall shall be constructed to the dimensions as shown on these plans.
- Face rock type shall be coordinated between the architect, owner, and retaining wall contractor.
- All wall construction shall be done when the air temperature is above 32° F and not scheduled to be below 32° F within 48 hours after wall placement.

4. Retained Backfill Placement

- Retained backfill shall be placed per the recommendations of the Geotechnical Engineer, but should not be less than 95% Standard Proctor Maximum Dry Density (ASTM D698).
- Fill should be placed in maximum 8" thick compacted lifts within 2% of optimum moisture content.
- Large compaction equipment (equipment heavier than 7,500 lb) shall remain a minimum of 1.5x the height of the wall away from the back of the wall for a period of 2 weeks from the time of the construction.
- After a period of 2 weeks from the time of construction large compaction equipment (greater than 7500 lb.) may be used behind the wall but shall stay a minimum of 5'-0" away from the back of the wall
- Soil placed within 5'-0" of the back of the wall shall be placed using small handheld compaction equipment.
- Compaction of all soil backfill shall be verified by the Testing Agency of Record with at least one test per 5000 sq. ft. of fill placed per day and at least 20% of the test within 5.0 ft. behind the wall

5. Retaining Wall Performance, Maintenance, and Other Comments

- Control joints are provided in the retaining wall to allow for minor movements due to settlement and shrink swell of the soils. Some cracking may occur in the face of the retaining wall. This cracking, if minor (less than 3/8") may be cosmetically repaired as desired.
- The retaining walls are designed to allow surface water to flow over the tops of the retaining walls. Care should be taken during and after construction to not allow water to pond behind the retaining walls, as this can have a negative impact on the stability of the retaining walls.
- If downspouts are located near the back of the retaining wall they should either be plumbed through the retaining wall to drain below the wall or collected and tied into the storm sewer system.
- Positive drainage over the top of the walls shall be maintained throughout the life of the structure. If swales are placed behind the wall they shall remain clean and free draining. If water is found to be ponding in the swale it shall be fixed to allow water to freely drain as soon as possible.
- Any broken sprinklers behind the retained wall shall be turned off and repaired as soon as possible.

6. Cold Weather Construction of Retaining Walls

Construction Requirements for temperatures between 40° F and 25° F:

- Water and aggregates used in mortar shall not be heated above 140°F.
- Mortar sand or mixing water shall be heated to produce mortar temperatures between 40°F and 120°F at the time of mixing.
- The mortar temperature shall be maintained above freezing until used in masonry stone retaining wall.
- Visible ice and snow shall be removed from the top surface of existing foundations and masonry to receive new construction. These surfaces shall be heated to above freezing, using methods that do not result in damage.
- Newly constructed masonry shall be completely covered with weather-resistive membrane for 48 hours after being completed.
- No work shall be done when air temperatures are below 25°F.
- Do not construct walls when air temperatures are expected below 25°F within 72 hours.

The above procedures come from section 2104.3.2.1 2104.3.2.2, 2104.3.2.3, 2104.3.3.3 and 2104.3.3.4 of the international building code, and is in compliance with Masonry Standards Joint Committee recommendations for cold weather construction of masonry structures.

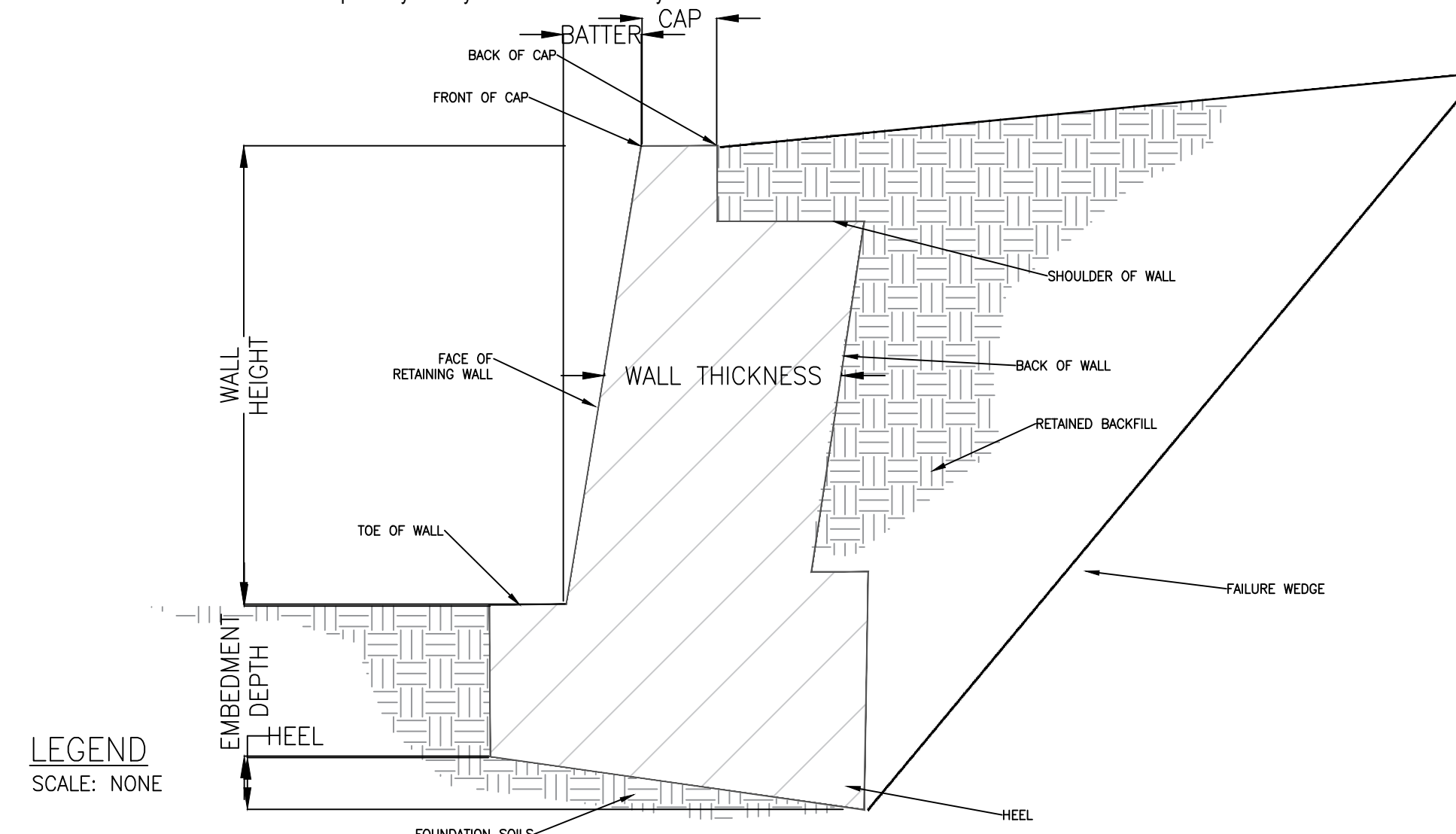
D. Construction Observations

1. Construction Observations by Design Build Consulting Services, LLC

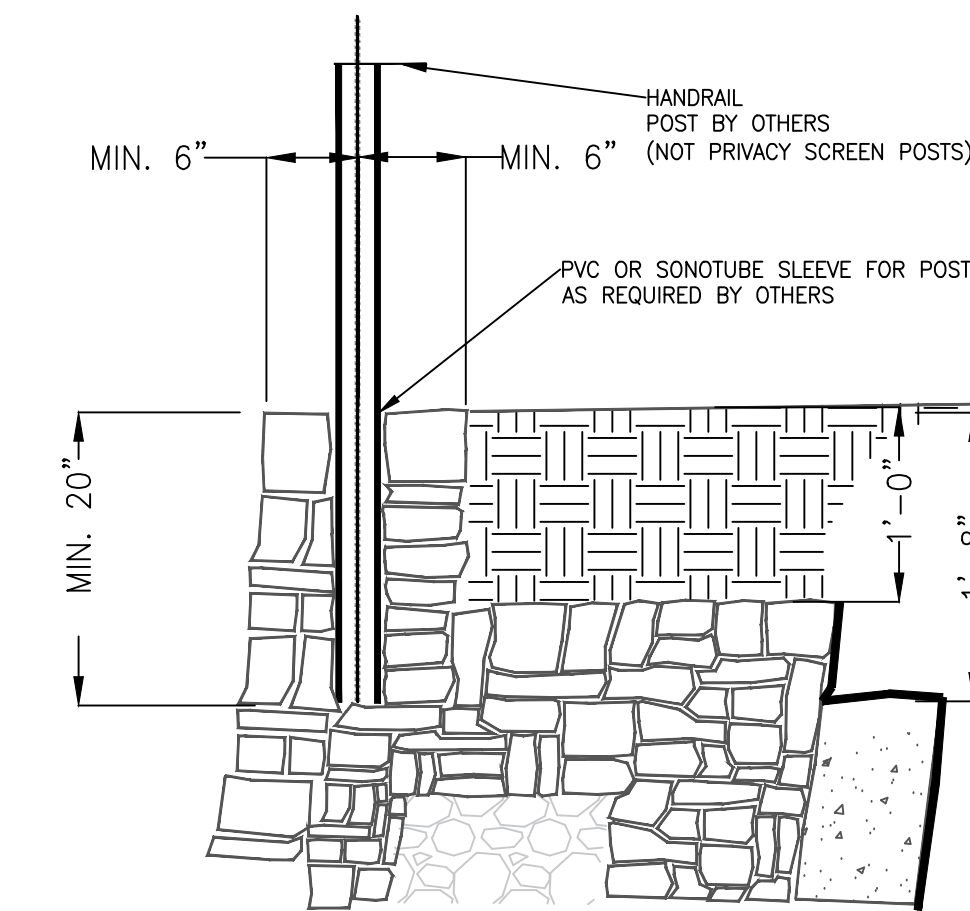
- Design Build Consulting Services, LLC will perform construction observation, but only as a means of verification of the contractor's quality control performance.
- Design Build Consulting Services, LLC will act as the Special Inspector for this project. Contractor shall contact Design Build Consulting Services, LLC to set up the inspections, at least 1 day before construction starts.
- All required materials testing shall be performed by an approved materials testing laboratory.
- Design Build Consulting Services, LLC is not responsible for means, methods, and material furnished by the retaining wall contractor.

2. Construction Observations by Others

- Construction observations as required by the city shall be coordinated by the contractor.

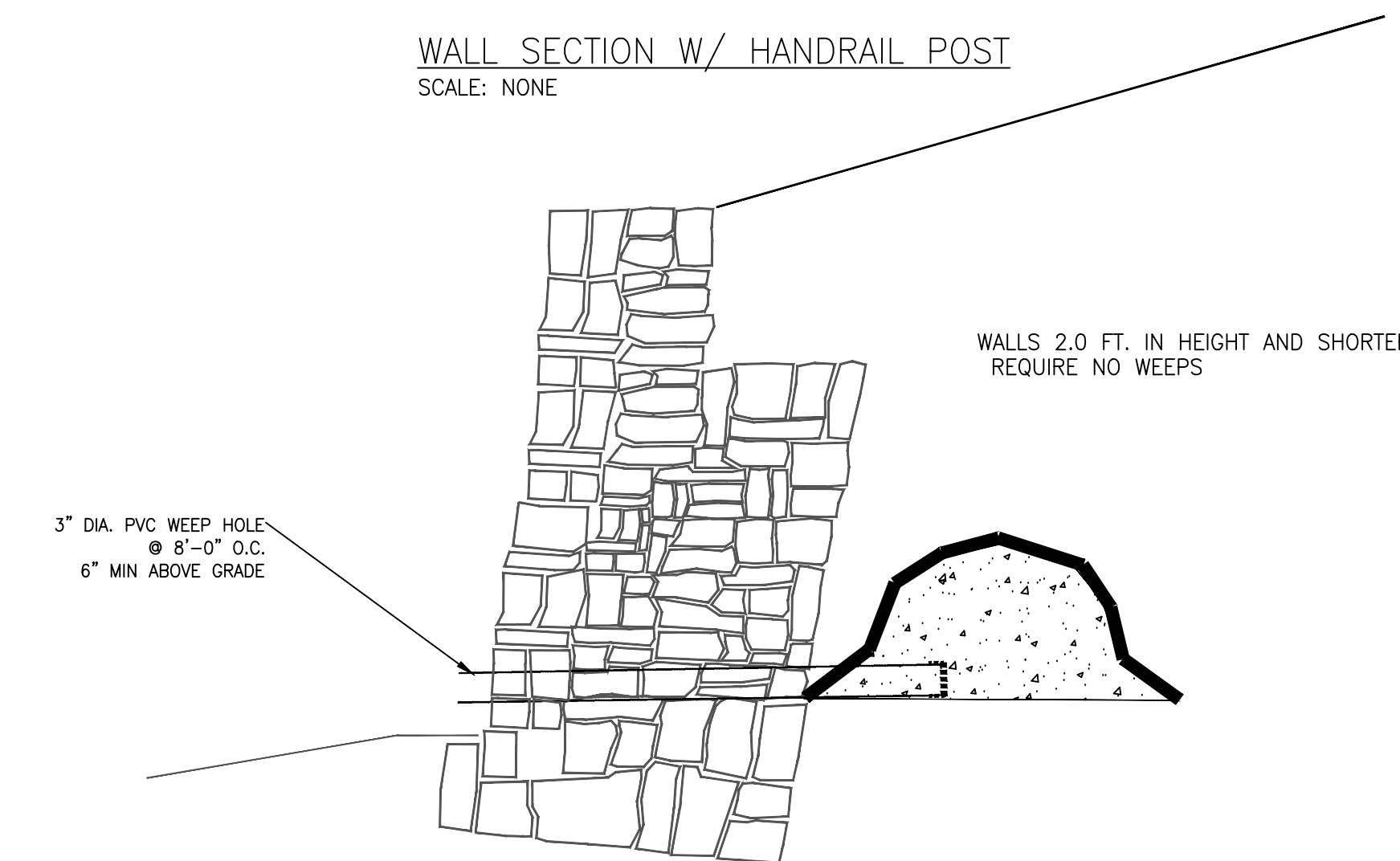


LEGEND
SCALE: NONE

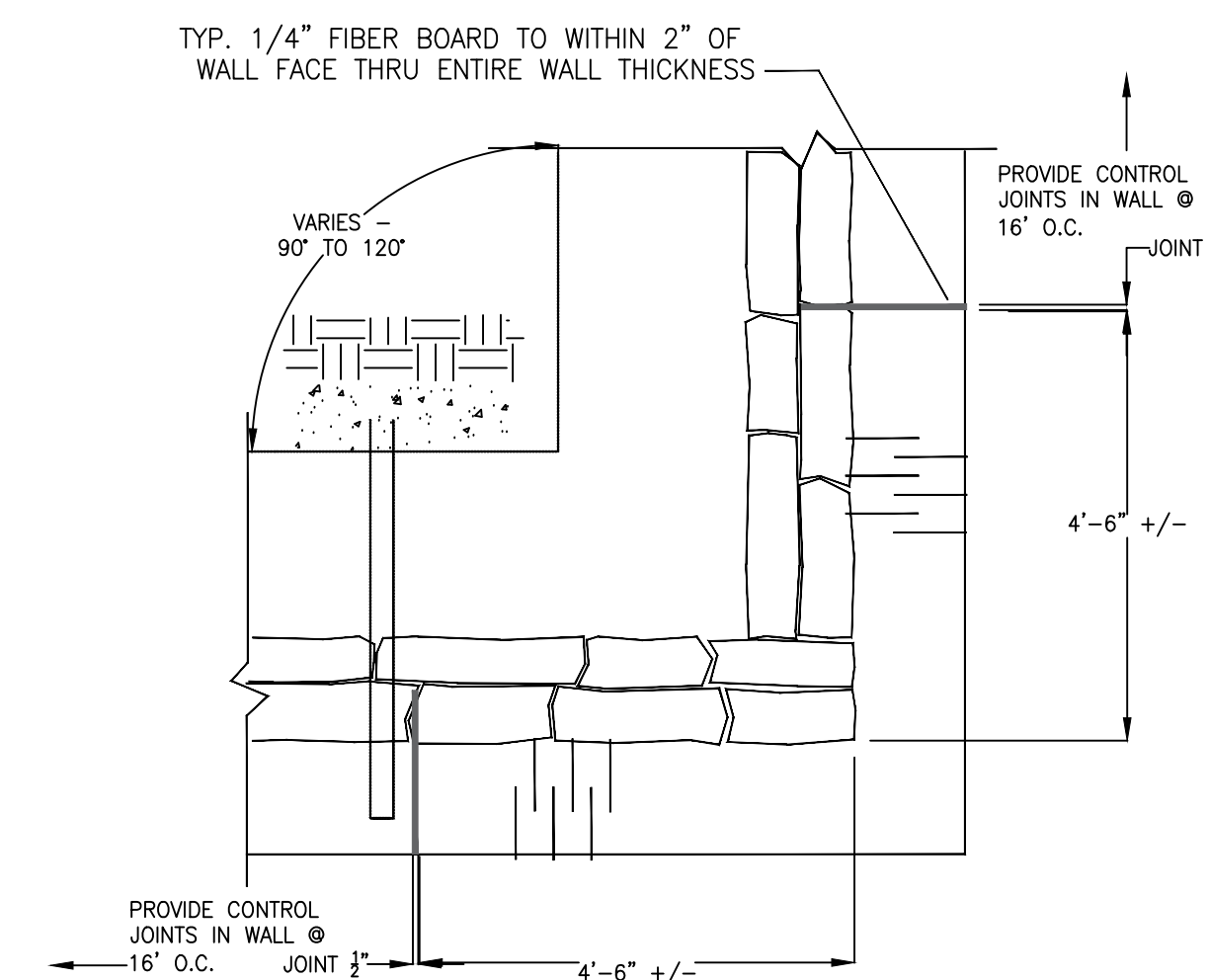


WALL SECTION W/ HANDRAIL POST
SCALE: NONE

NOTE: DURING INSTALLATION OF HANDRAIL POST IF SLEEVE LOCATION DOES NOT MATCH POST LOCATION IT IS PERMISSIBLE TO CORE DRILL THE 1'-8" DEPTH



DRAINAGE PACKET ON WALLS 2' TO 4' TALL
SCALE: NONE



TYPICAL PLAN VIEW AT CORNERS
SCALE: NONE



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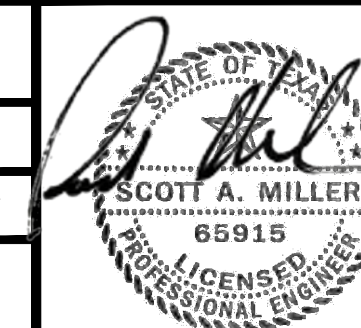
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WALL NOTES & DETAILS

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