

DESIGN NOTES

1. Design is based on the soil parameters in the Project Geotechnical Report with following Characteristics:

- | | |
|---|--|
| Wall Backfill:
Unit Weight: 125 pcf
Internal Friction Angle: 34°
Cohesion = 0 psf
Retained Backfill:
Unit Weight: 125 pcf
Segment 1 - Internal Friction Angle: 32°
Segment 2 - Internal Friction Angle: 36°
Cohesion = 0 psf
Foundation Soils:
Unit Weight: 125 pcf
Internal Friction Angle: 36°
Cohesion = 0 psf
Traffic Surcharge Loading (LL) = 250 psf | SN - Retained Existing Soils
Unit Weight: 125 pcf
Internal Friction Angle: 36°
Cohesion = 300 psf
Bond Stress = 7 psi |
|---|--|

3. If during construction, the wall location, structure location or loads are different than that proposed in this plan set and calculation package, HRW shall be notified to evaluate the need for a redesign.

4. The design requires a non-saturated backfill. Surface and sub-surface drainage control may be required to prevent saturation of the backfill or relieve hydrostatic pressures.

5. Design Procedure:
AASHTO LRFD Bridge Design Manual.

Spiralnail Wall Design Procedure:
Geotechnical Engineering Circular No. 7 - Soil Nail Walls
FHWA Report No. FHWA0-IF-03-017.

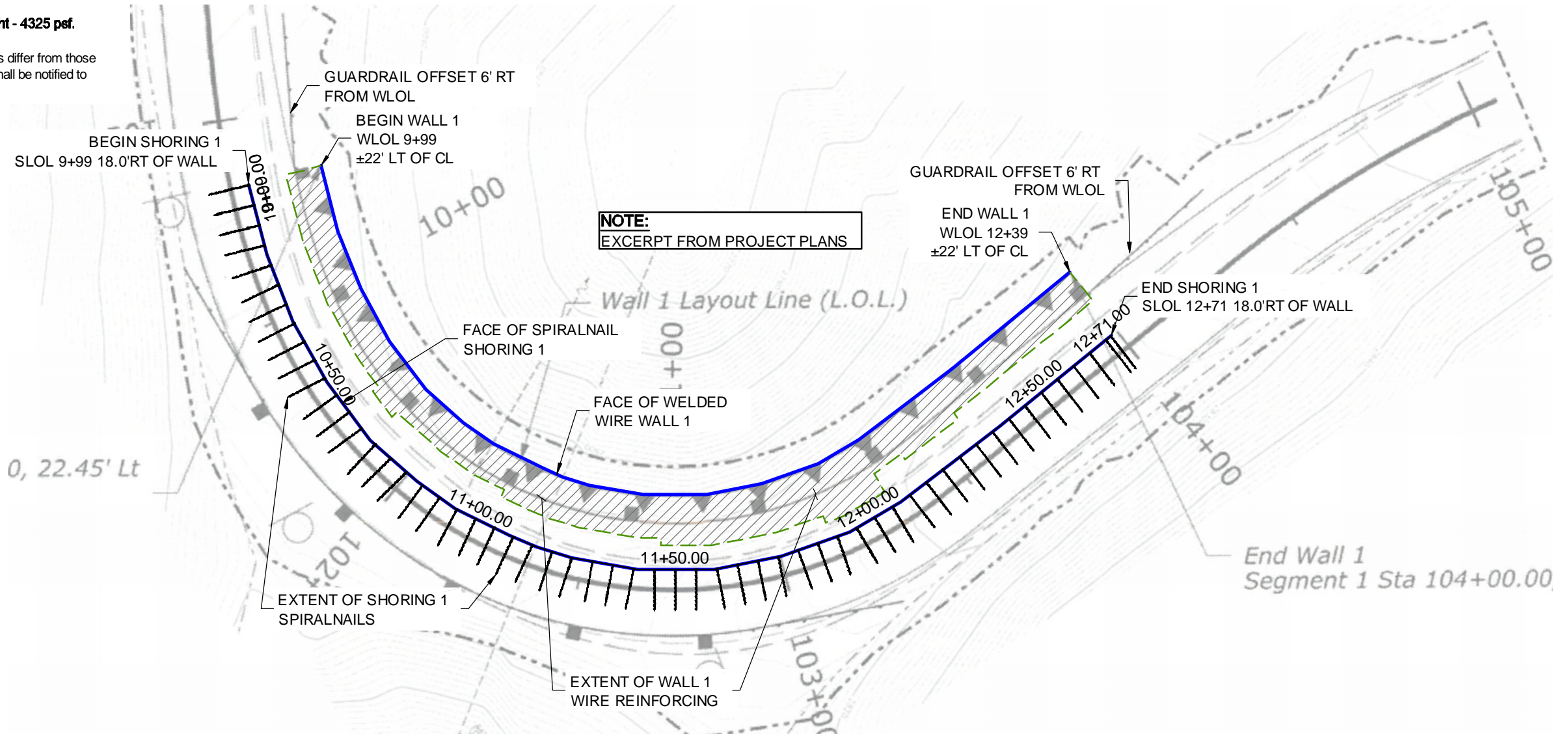
6. All information hereon is derived from the reference drawings, and is subject to geometric and geotechnical confirmation. The applicable Hilfiker construction guide and specifications are an integral part of this submittal.

7. Hilfiker Retaining Walls shall be responsible only for the internal stability of the retaining wall, and not for global stability or foundation bearing capacity. The Owner shall be responsible for global stability and foundation competence. The Owner is responsible for all job site drainage, safety and fall protection provisions for workers in compliance with OSHA and any other applicable requirements.

8. Conflicts between the actual ground conditions and shoring obstructions are resolved in the field by any combination of the following:
a) Trimming the wall panel wires and or bending vertical & horizontal wires to accommodate the penetration through the facing.
c) Slight Re-orientation of the spiralnail angle or direction. If re-orientation of the nails is more than one foot from the planned location, confirmation of the change shall be approved by CES.

Worst Case Factored Bearing Load by MSE Wall- @ 18' Height - 4325 psf.

If actual characteristics, grades or dimensions of soil materials differ from those listed above or shown on the plans, Hilfiker Retaining walls shall be notified to evaluate the need to redesign.



SHORING 1 & WALL 1 - PLAN VIEW

SCALE: 1" = 30'

ESTIMATED QUANTITIES	
10'L - SPIRALNAILS	198
19'L - SPIRALNAILS	116
FLAT MATS	60

ESTIMATED QUANTITIES	
WALL NO.	FACE AREA
WALL 1	2,984 SQ. FT.
WALL 2	640 SQ. FT.
WALL 3	1,304 SQ. FT.
TOTALS	4,928 SQ. FT.

THE DESIGN CONTAINED ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, THE HILFIKER COMPANY HAS DESIGNED, AND IS RESPONSIBLE FOR THE INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.

REV. NO.	DATE	BY	DESCRIPTION
	5-10-21	KLC	Initial .pdf Release
	6-11-21	KLC	Revised per 5.19.21 Plan Check Comments

HILFIKER RETAINING WALLS

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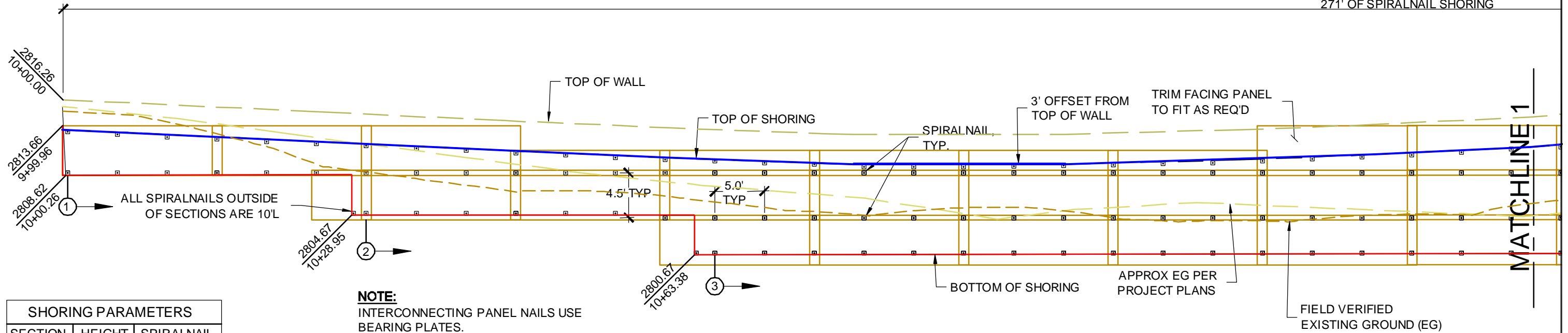
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Ruth Zenia Road & Van Duzen Road, CA FLAP TRI
CR 502(1) & 511(1)
**MSE WELDED WIRE WALL 1 &
SPIRALNAIL SHORING 1**
PLAN VIEW & GENERAL NOTES

HW 2103020BW

PROJECT	21-013
DATE	5-10-21
DESIGN	KLC
DRAWN	KLC
SHT	1 OF 11

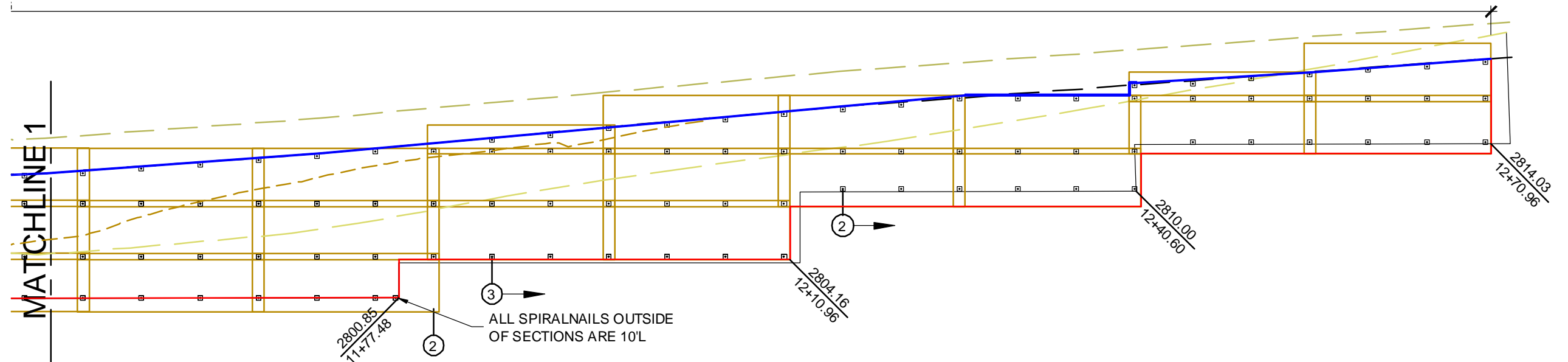


SHORING PARAMETERS		
SECTION	HEIGHT	SPIRALNAIL
1	5.0'	2 - 10'L
2	9.0'	3 - 10'L
3	14.0'	4 - 19'L

NOTE:
 INTERCONNECTING PANEL NAILS USE BEARING PLATES.
 TOP, BOTTOM AND NON-INTERCONNECTING PANEL NAILS USE WASHER PLATES.

SHORING 1 - ELEVATION (REAR) VIEW
 SCALE: 1" = 10'

NOTE:
 TOP & BOTTOM SPIRALNAILS ARE INCLINED 15°, EXCEPT WHERE OTHERWISE NOTED.



SHORING 1 - ELEVATION (REAR) VIEW (CONT'D)
 SCALE: 1" = 10'

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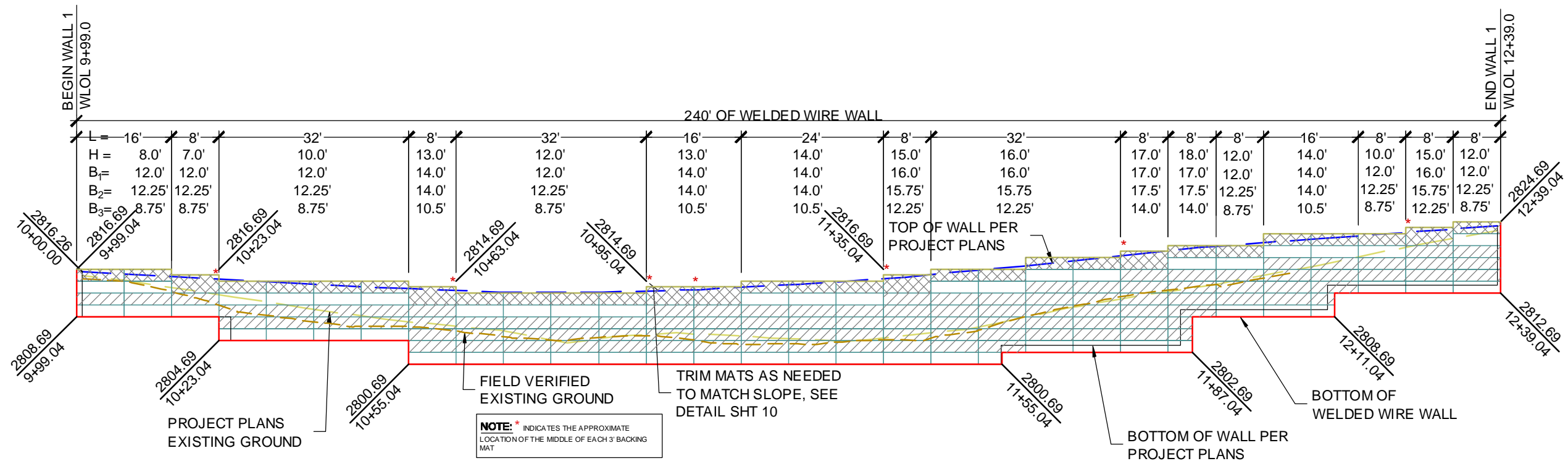
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**SPIRALNAIL SHORING 1
 ELEVATION VIEW**

HW 2103020BW

PROJECT	21-013
DATE	5-10-21
DESIGN	KLC
DRAWN	KLC

SHT **2** OF 11



WALL 1 - ELEVATION (REAR) VIEW
SCALE: 1" = 10'

WALL WIRE TYPE LEGEND

FINISH: HOT DIP GALVANIZED
SERVICE LIFE: 75 YEARS

	TYPE 1 - 8X12 W4.5x3.5 MATS
	TYPE 2 - 8x21 W4.5x4.0 MATS
	TYPE 3 - 8x21 W7.0x4.0 MATS

WELDED WIRE WALL PARAMETERS			
Height of Wall (H) ft	Length of Cap & Prongless Mats (B ₁) ft	Base Length of Top Std Mat (B ₂) ft	Base Length of Std Mats below top Std (B ₃) ft
≤12'	12.0'	12.25'	8.75'
14'	14.0'	14.0'	10.5'
16'	16.0'	15.75'	12.25'
18'	17'	17.5'	14.0'

Cap & Top Mats (B₁) are: 8x12 W4.5x3.5 WWR (Type 1)
Standard Mats (B₂) are: 8x21 W4.5x4.0 WWR (Type 2)
8x21 W7.0x4.0 WWR (Type 3)

Finish: Hot Dip Galvanized - 75 Year Service Life

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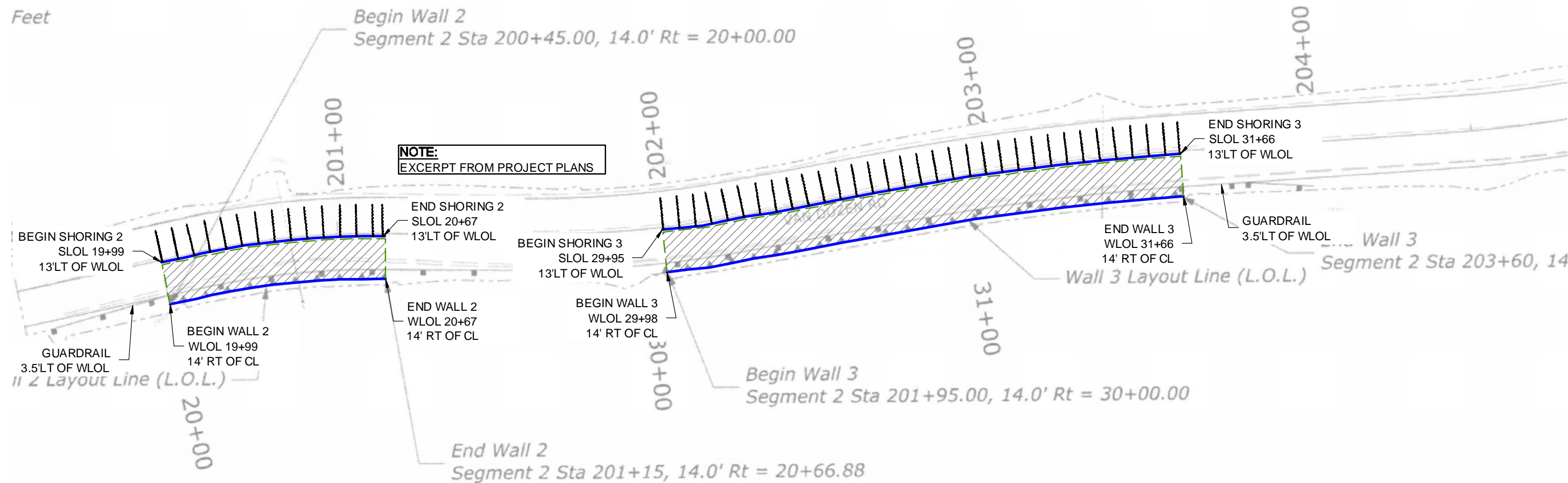
MSE WELDED WIRE WALL 1
ELEVATION VIEW

HW 2103020BW

PROJECT	21-013
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DRAWN	KLC

SHT 3 OF 11

Feet



SHORING 2 & 3 / WALL 2 & 3 - PLAN VIEW

SCALE: 1" = 30'



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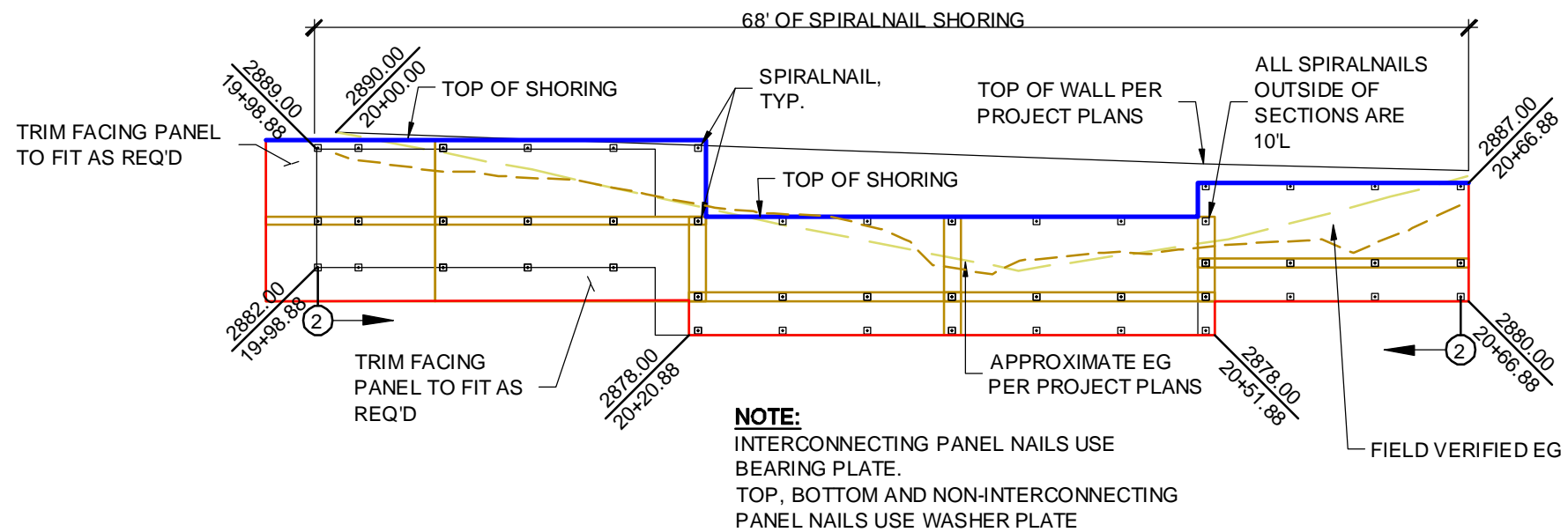
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Ruth Zenia Road & Van Duzen Road, CA FLAP TRI
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**MSE WELDED WIRE WALLS 2&3/
SPIRALNAIL SHORING 2&3
PLAN VIEW**

HW 2103020BW

PROJECT	21-013
DATE	5-10-21
DESIGN	KLC
DRAWN	KLC

SHT **4** OF 11



SHORING PARAMETERS		
SECTION	HEIGHT	SPIRALNAIL
1	5.0'	2 - 10'L
2	9.0'	3 - 10'L
3	14.0'	4 - 19'L

NOTE:
TOP & BOTTOM SPIRALNAILS ARE INCLINED 15°, EXCEPT WHERE OTHERWISE NOTED.

SHORING 2 - ELEVATION (FRONT) VIEW
SCALE: 1" = 10'

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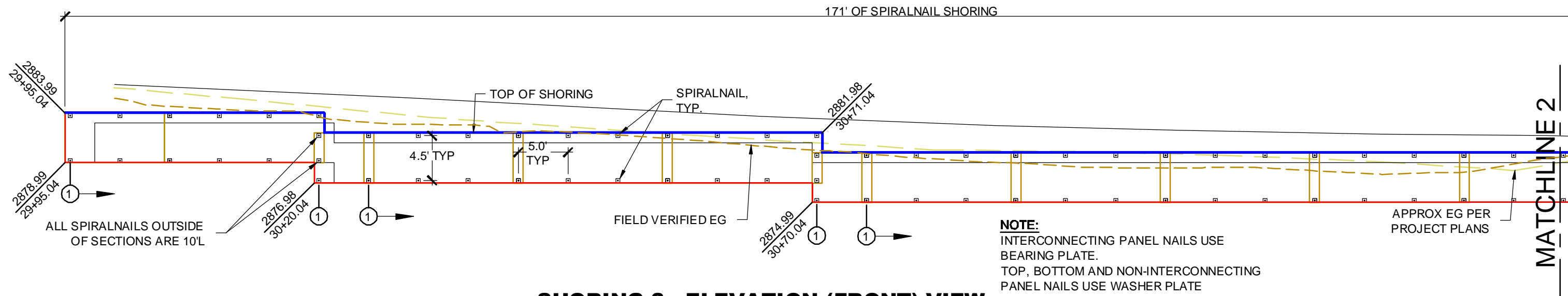
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**SPIRALNAIL SHORING 2
ELEVATION VIEW**

HW 2103020BW

PROJECT	21-013
DATE	5-10-21
DESIGN	KLC
DRAWN	KLC
SHT	5 OF 11

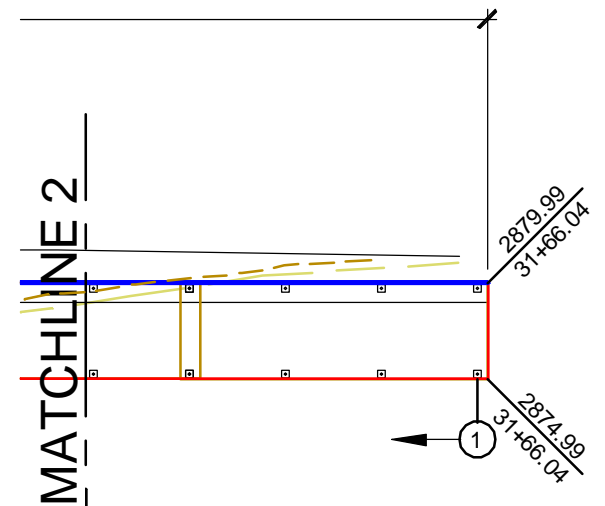


SHORING 3 - ELEVATION (FRONT) VIEW

SCALE: 1" = 10'

NOTE:
 INTERCONNECTING PANEL NAILS USE BEARING PLATE.
 TOP, BOTTOM AND NON-INTERCONNECTING PANEL NAILS USE WASHER PLATE

APPROX EG PER PROJECT PLANS



SHORING 3 - ELEVATION (FRONT) VIEW (CONT'D)

SCALE: 1" = 10'

SHORING PARAMETERS		
SECTION	HEIGHT	SPIRALNAIL
1	5.0'	2 - 10'L
2	9.0'	3 - 10'L
3	14.0'	4 - 19'L

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**SPIRALNAIL SHORING 3
 ELEVATION VIEW**

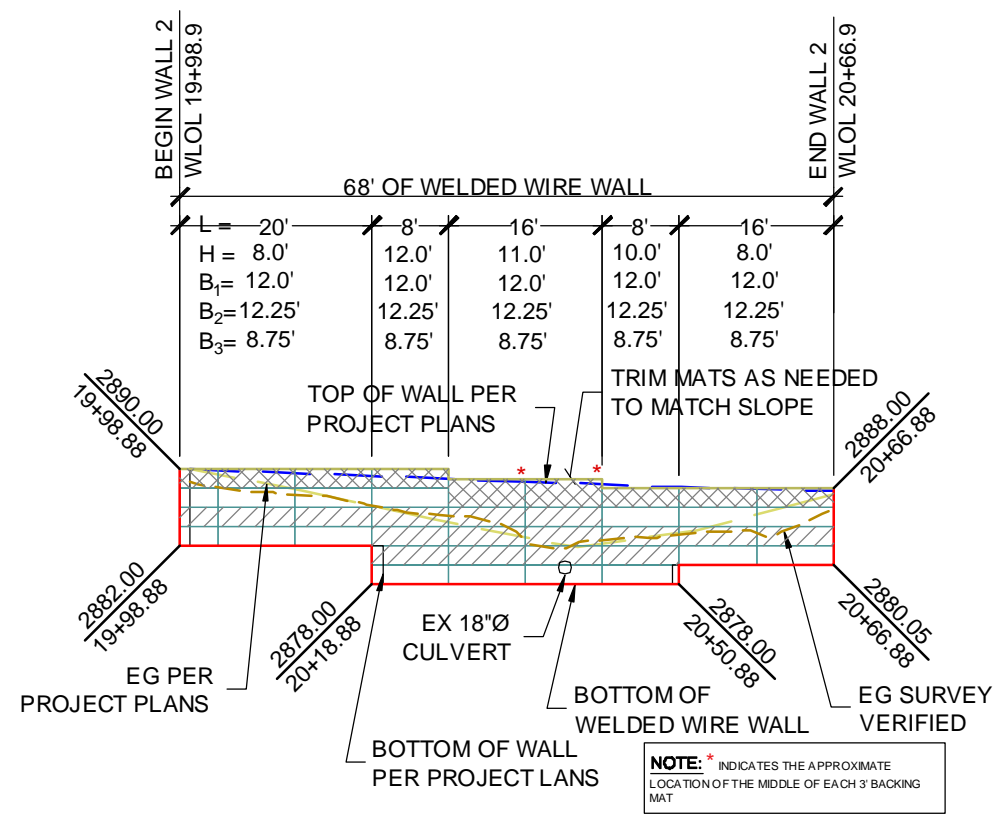
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PROJECT	21-013
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DESIGN	KLC
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WALL WIRE TYPE LEGEND

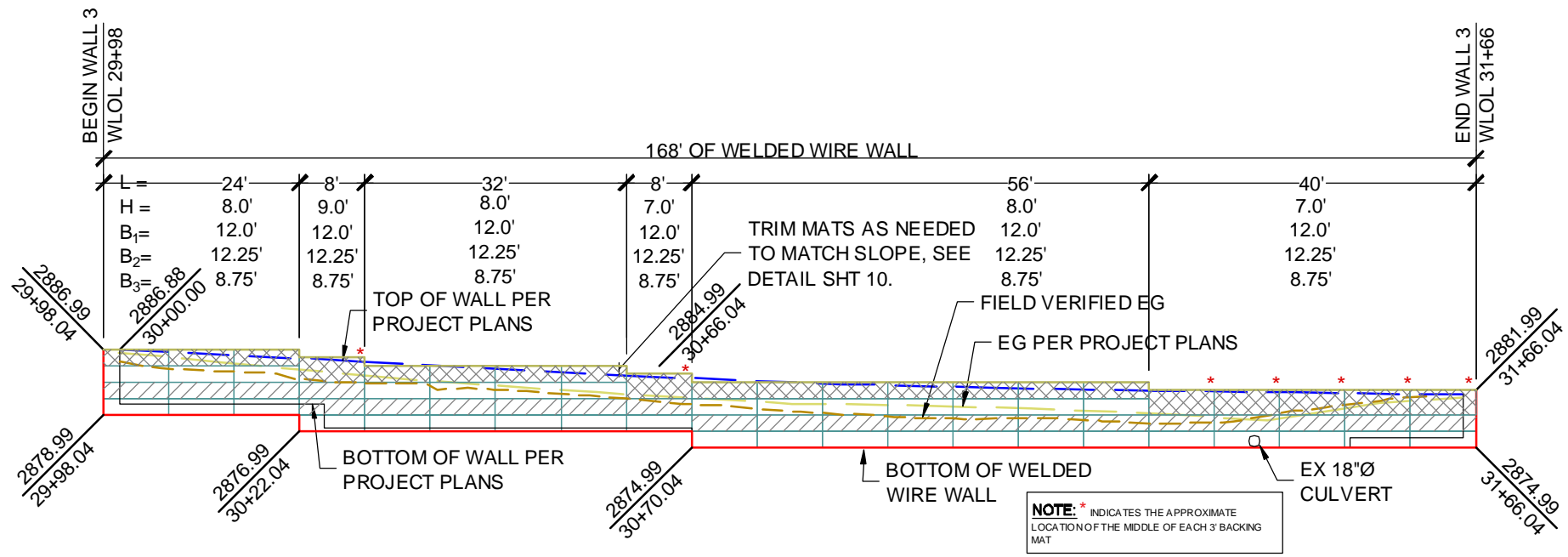
FINISH: HOT DIP GALVANIZED
SERVICE LIFE: 75 YEARS

	TYPE 1 - 8x12 W4.5x3.5 MATS
	TYPE 2 - 8x21 W4.5x4.0 MATS
	TYPE 3 - 8x21 W7.0x4.0 MATS



WALL 2 - ELEVATION (FRONT) VIEW

SCALE: 1" = 20'



WALL 3 - ELEVATION (FRONT) VIEW

SCALE: 1" = 20'

WELDED WIRE WALL PARAMETERS			
Height of Wall (H) ft	Length of Cap & Prongless Mats (B ₁) ft	Base Length of Top Std Mat (B ₂) ft	Base Length of Std Mats below top Std (B ₃) ft
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14'	14.0'	14.0'	10.5'
16'	16.0'	15.75'	12.25'
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8x21 W7.0x4.0 WWR (Type 3)

Finish: Hot Dip Galvanized - 75 Year Service Life

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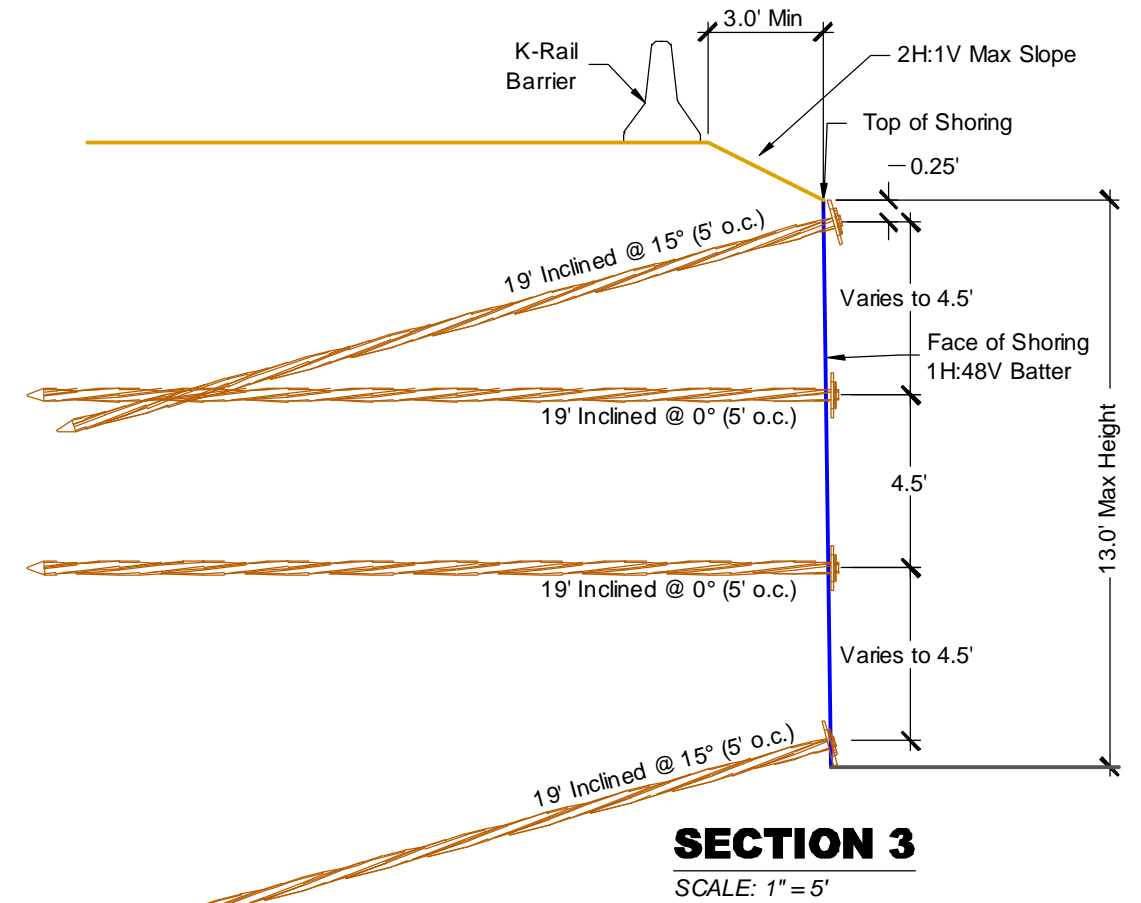
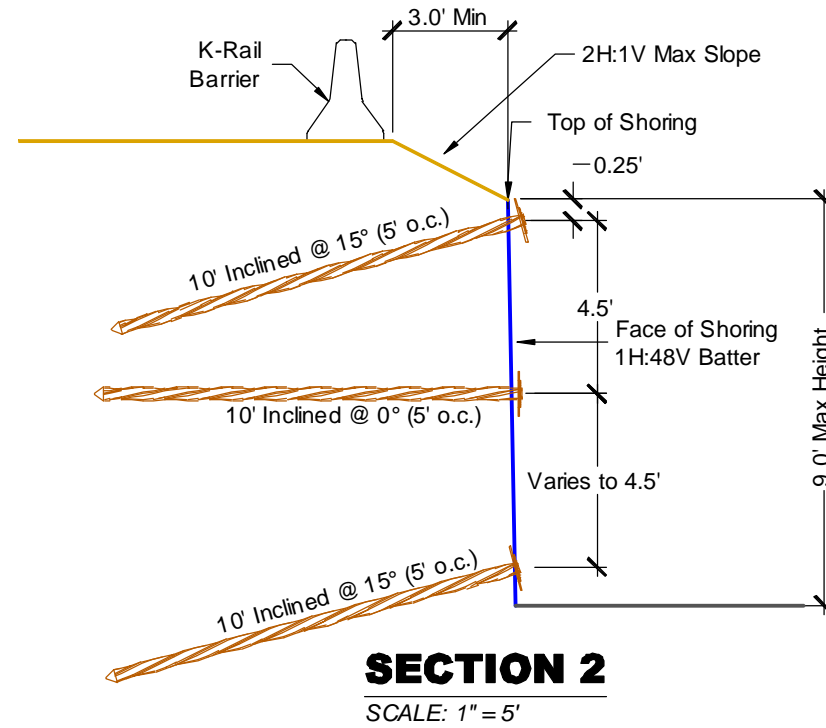
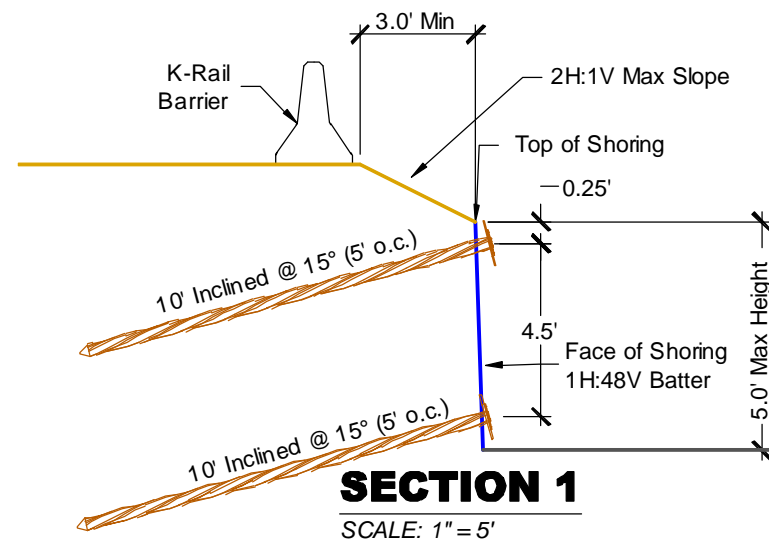
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**MSE WELDED WIRE WALL 2 & 3
ELEVATION VIEW**

PROJECT	21-013
DATE	5-10-21
DESIGN	KLC
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SHT	7 OF 11



REV. NO.	DATE	BY	DESCRIPTION

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PROJECT
DATE
DESIGN
DRAWN
SHT 8 OF 8

STEP 1
EXCAVATE DOWN 5' CONFIRM SOIL CAN STAND 5' ON IT OWN AND PREPARE FOR STEP 2. SEE OPEN CUT POLICY SHT 1.

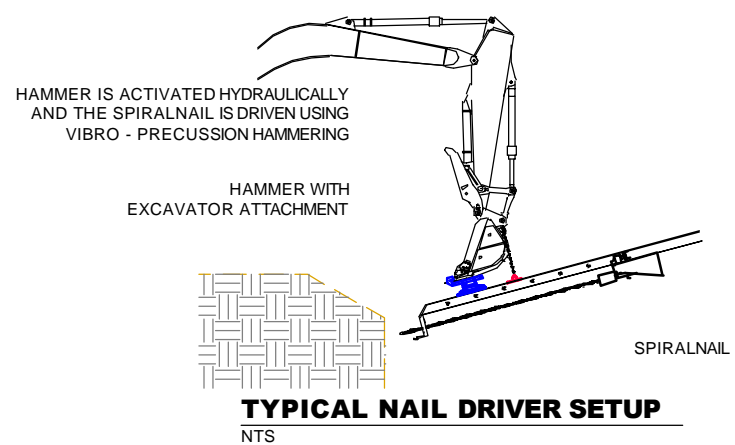
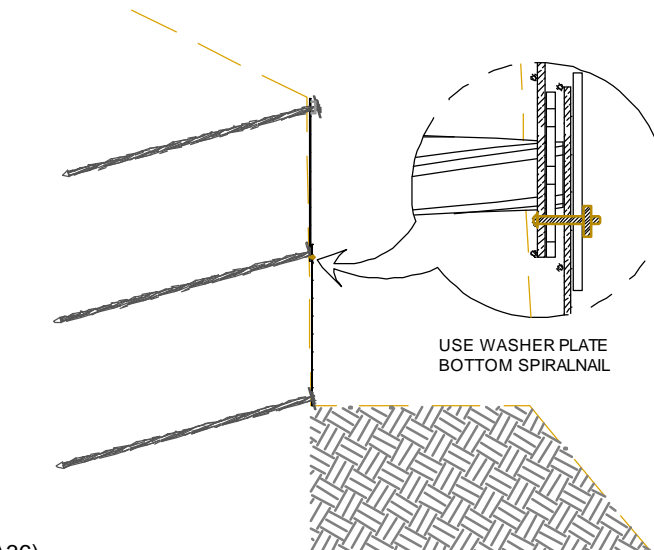
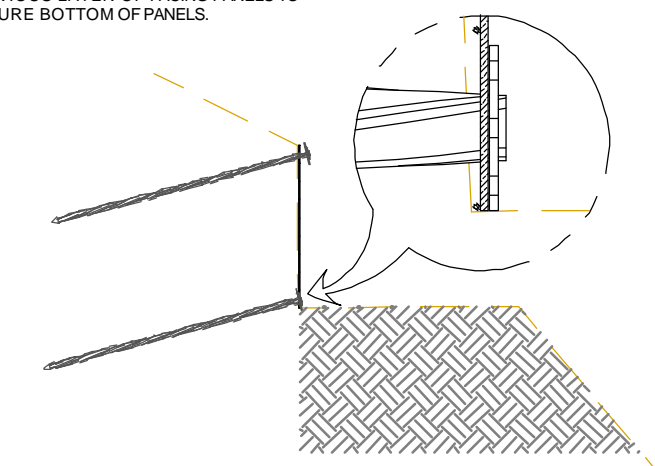
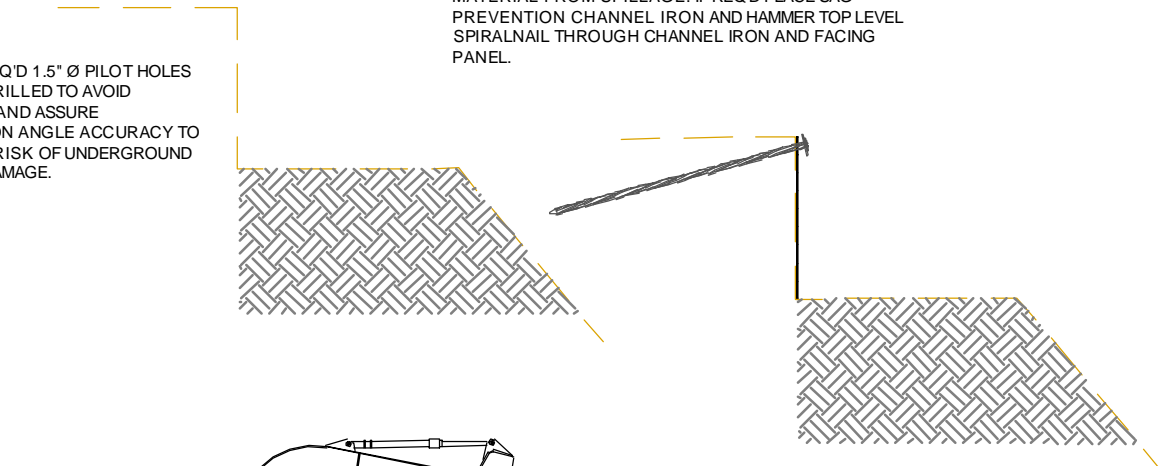
NOTE
WHERE REQ'D 1.5" Ø PILOT HOLES MAY BE DRILLED TO AVOID REFUSAL AND ASSURE INCLINATION ANGLE ACCURACY TO MINIMIZE RISK OF UNDERGROUND UTILITY DAMAGE.

STEP 2
PLACE LAYER OF FACING PANELS AND FILTER FABRIC (OR EQUIV.) TO BE USED TO PREVENT BACKFILL MATERIAL FROM SPILLAGE. IF REQ'D PLACE SAG PREVENTION CHANNEL IRON AND HAMMER TOP LEVEL SPIRALNAIL THROUGH CHANNEL IRON AND FACING PANEL.

STEP 3
DRIVE NEXT LAYER OF SPIRALNAILS THROUGH PREVIOUS LAYER OF FACING PANELS TO SECURE BOTTOM OF PANELS.

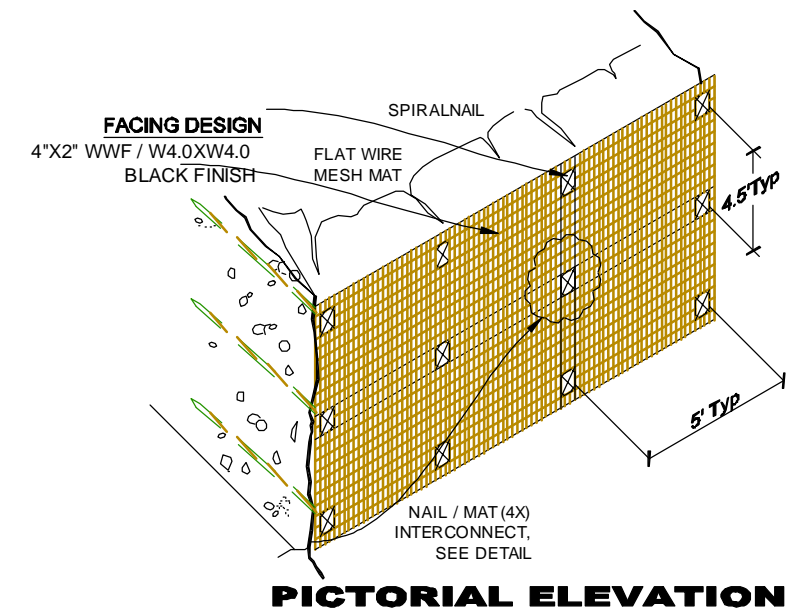
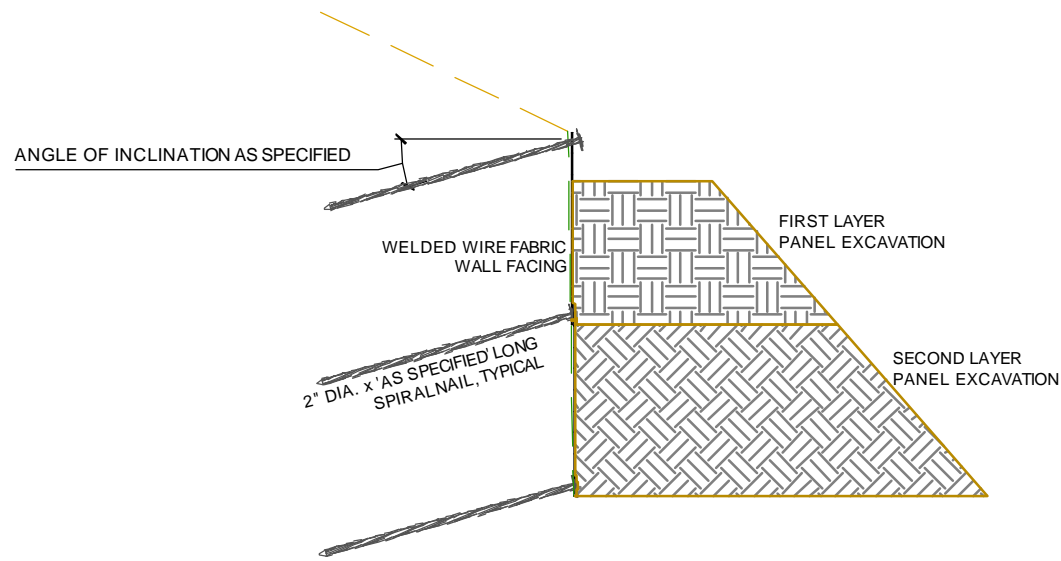
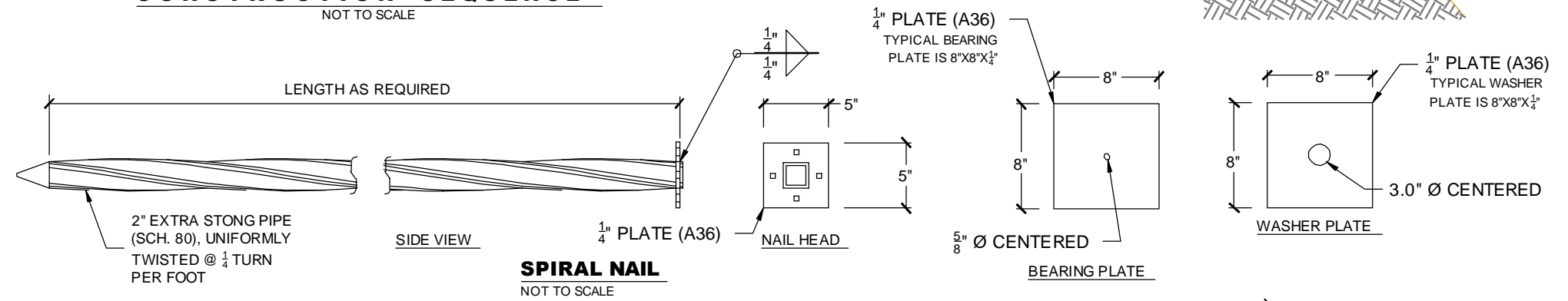
STEP 4
EXCAVATE DOWN AN ADDITIONAL 5' AND PLACE ANOTHER LAYER OF FACING PANELS. REPEAT STEPS 3 THROUGH 4 TO BOTTOM OF WALL SECURING FINAL LAYER OF FACING PANELS WITH THE BOTTOM LAYER OF SPIRALNAILS.

NOTE:
A HILFIKER REPRESENTATIVE WILL BE ON SITE DURING THE INITIAL STAGES OF CONSTRUCTION OF THE SPIRALNAIL SHORING AS WELL AS PRESENT DURING THE INITIAL PULLOUT TESTING PROCEDURE.



CONSTRUCTION SEQUENCE

NOT TO SCALE



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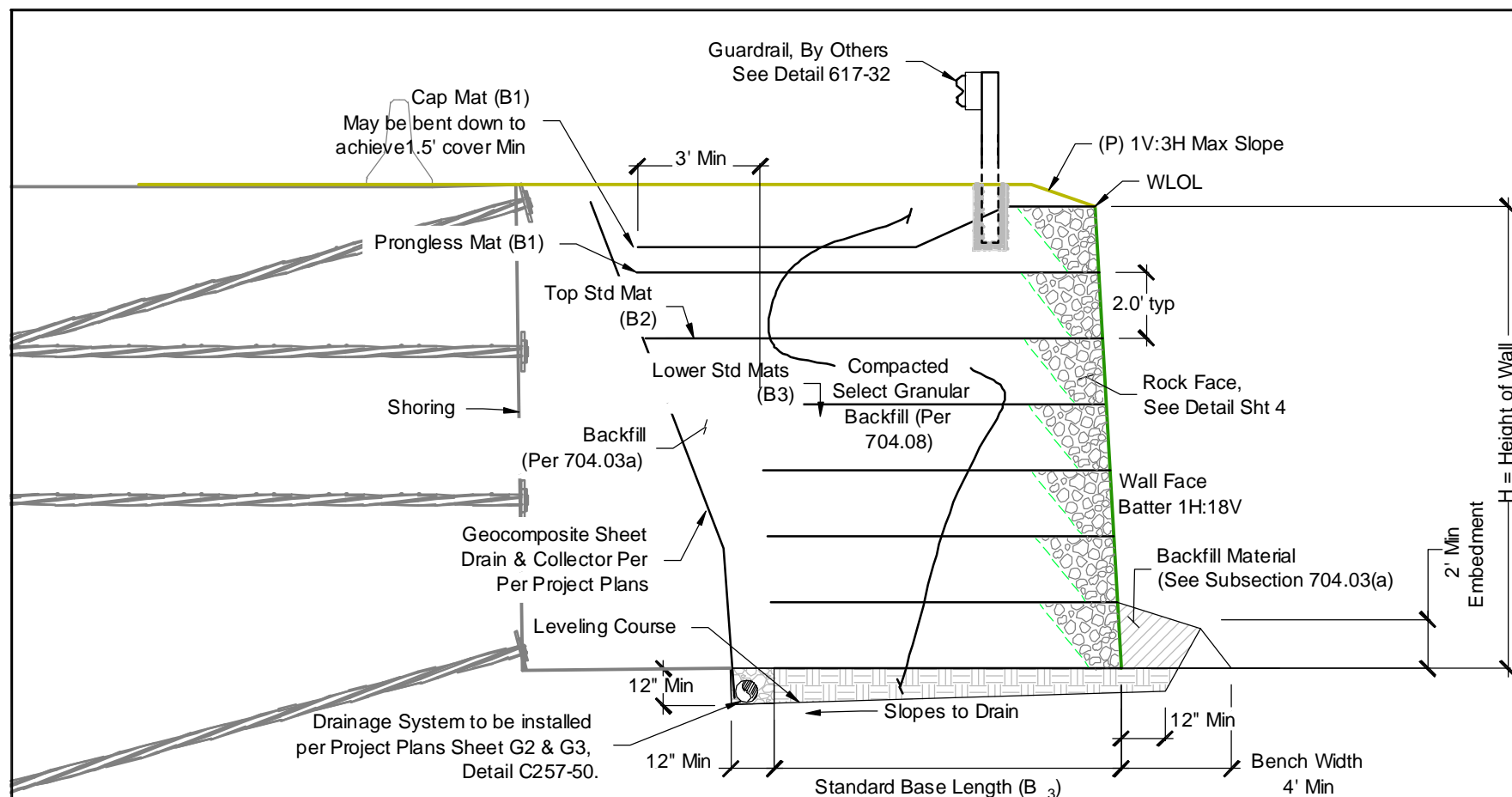
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SPIRALNAIL SHORING
CONSTRUCTION SEQUENCE &
DETAILS

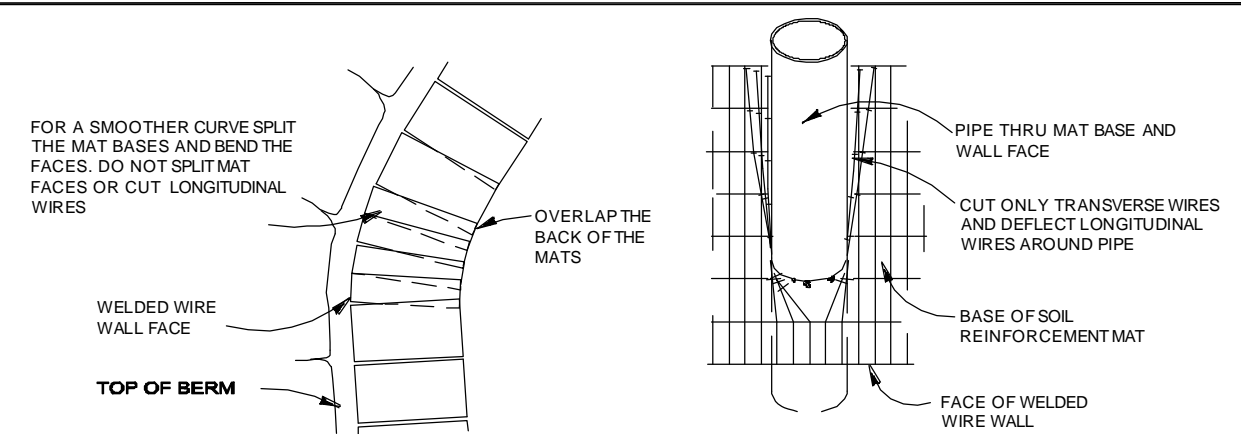
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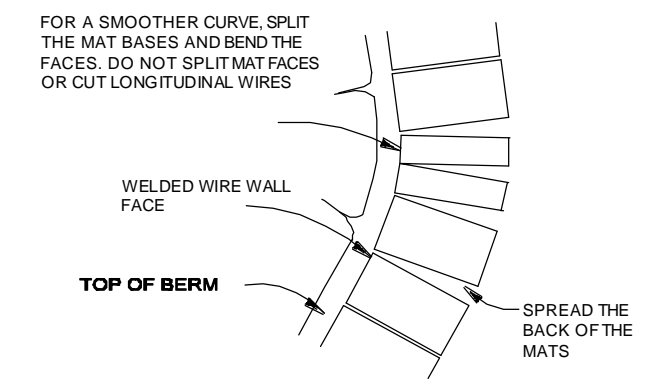


CROSS SECTION, TYP
SCALE: 1" = 5'

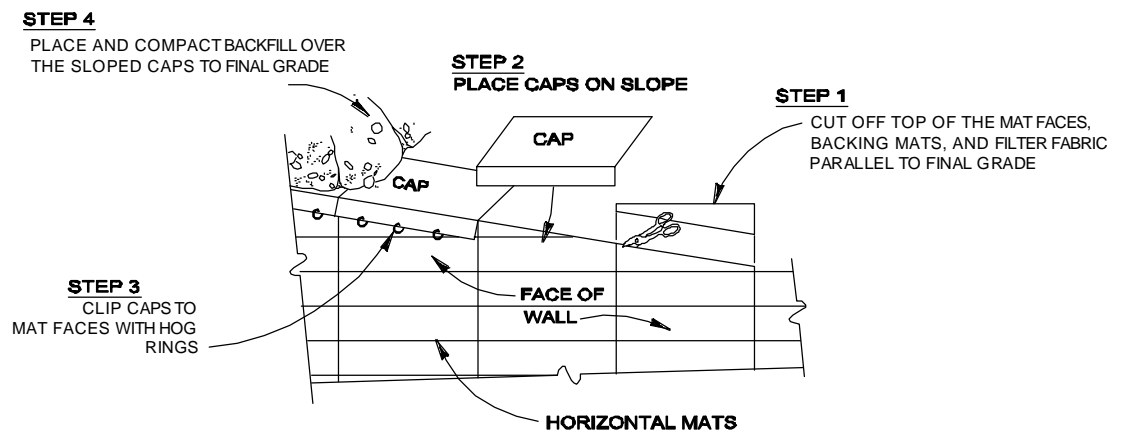


PLAN VIEW CONVEX CURVE
NOT TO SCALE

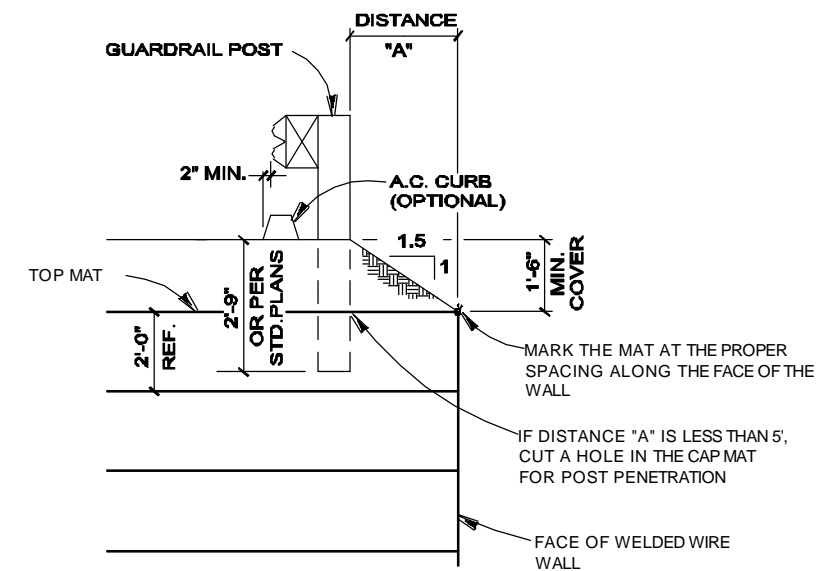
PLAN VIEW PIPE OR SLEEVE PENETRATION
NOT TO SCALE



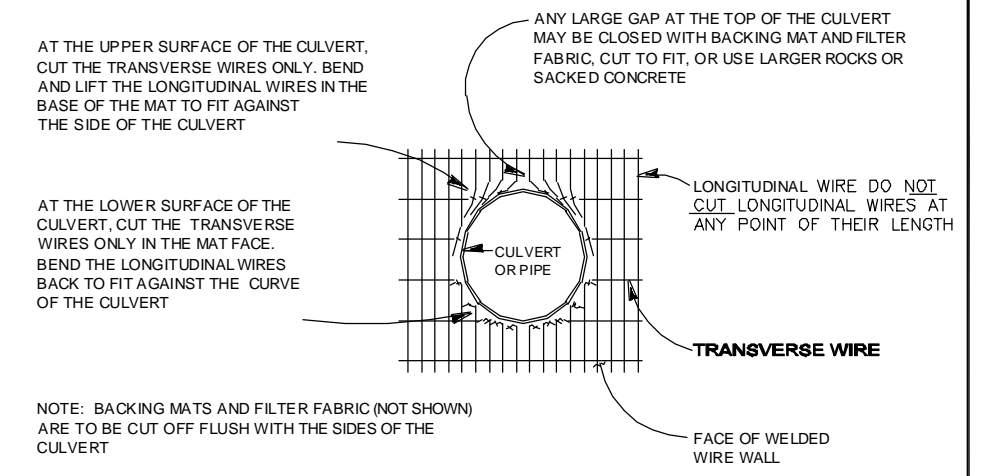
PLAN VIEW CONCAVE CURVE
NOT TO SCALE



PICTORIAL ELEVATION SLOPED CAP MAT DETAIL
NOT TO SCALE



SECTION GUARDRAIL DETAIL
NOT TO SCALE



ELEVATION CULVERT THRU WALL FACE
NOT TO SCALE

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REV. NO.	DATE	BY	DESCRIPTION
	5-10-21	KLC	Initial .pdf Release
	6-11-21	KLC	Revised per 5.19.21 Plan Check Comments

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MSE WELDED WIRE WALL
CROSS SECTION & DETAILS

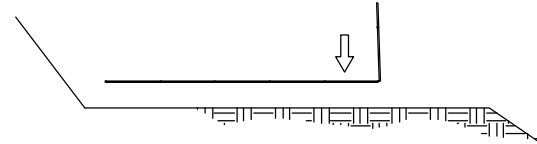
HW 2103020BW

PROJECT	21-013
DATE	5-10-21
DESIGN	KLC
DRAWN	KLC

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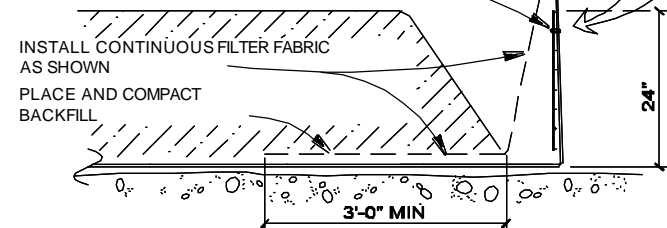
STEP 1

PLACE THE FIRST COURSE OF SOIL REINFORCEMENT MATS ON PREPARED FOUNDATION.



STEP 2

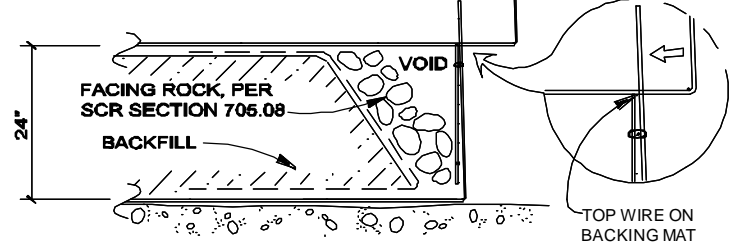
PLACE THE BACKING MAT AGAINST THE INSIDE FACE OF THE SOIL REINFORCEMENT MAT. CLIP THE SECOND-TO-TOP TRANSVERSE WIRE ON THE BACKING MAT TO THE TOP TRANSVERSE WIRE ON THE SOIL REINFORCEMENT MAT.



STEP 3

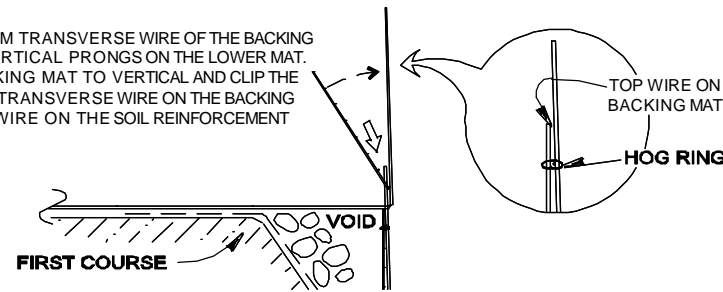
BRING THE FILTER FABRIC OVER THE FRONT AND TOP OF THE BACKFILL AS SHOWN. PLACE THE ROCK IN THE FACE OF THE WALL. LEAVE A VOID AS SHOWN.

PLACE THE SECOND COURSE OF SOIL REINFORCEMENT MATS WITH THE BASE LONGITUDINAL WIRES RESTING ON THE TOP TRANSVERSE WIRE OF THE BACKING MAT BELOW. SLIDE THE SOIL REINFORCEMENT MAT INTO ALIGNMENT.



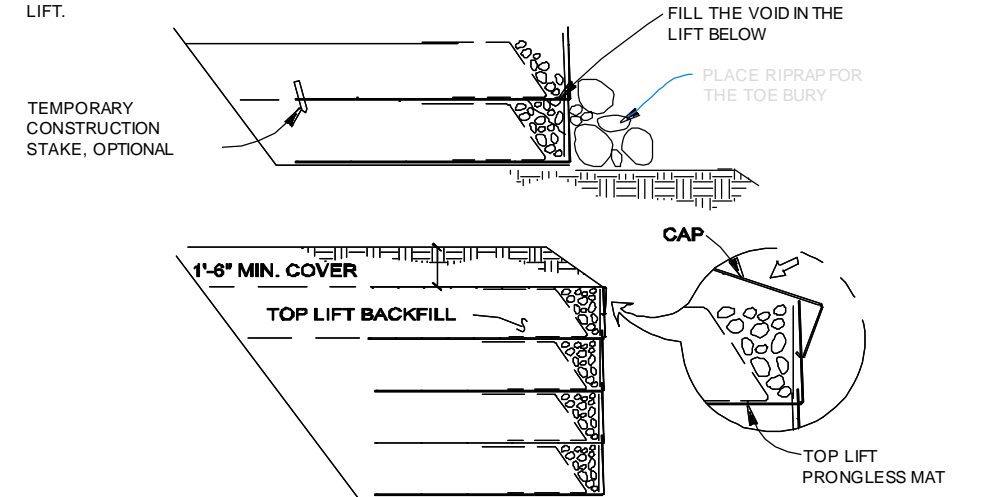
STEP 4

HOOK THE BOTTOM TRANSVERSE WIRE OF THE BACKING MAT OVER THE VERTICAL PRONGS ON THE LOWER MAT. ROTATE THE BACKING MAT TO VERTICAL AND CLIP THE SECOND-TO-TOP TRANSVERSE WIRE ON THE BACKING MAT TO THE TOP WIRE ON THE SOIL REINFORCEMENT MAT.



STEP 5

INSTALL THE FILTER FABRIC AS IN STEPS 2 AND 3. PLACE AND COMPACT THE BACKFILL AND ROCK TO THE BASE ELEVATION OF THE NEXT MAT. REPEAT STEPS 2 THROUGH 5 TO THE TOP LIFT.

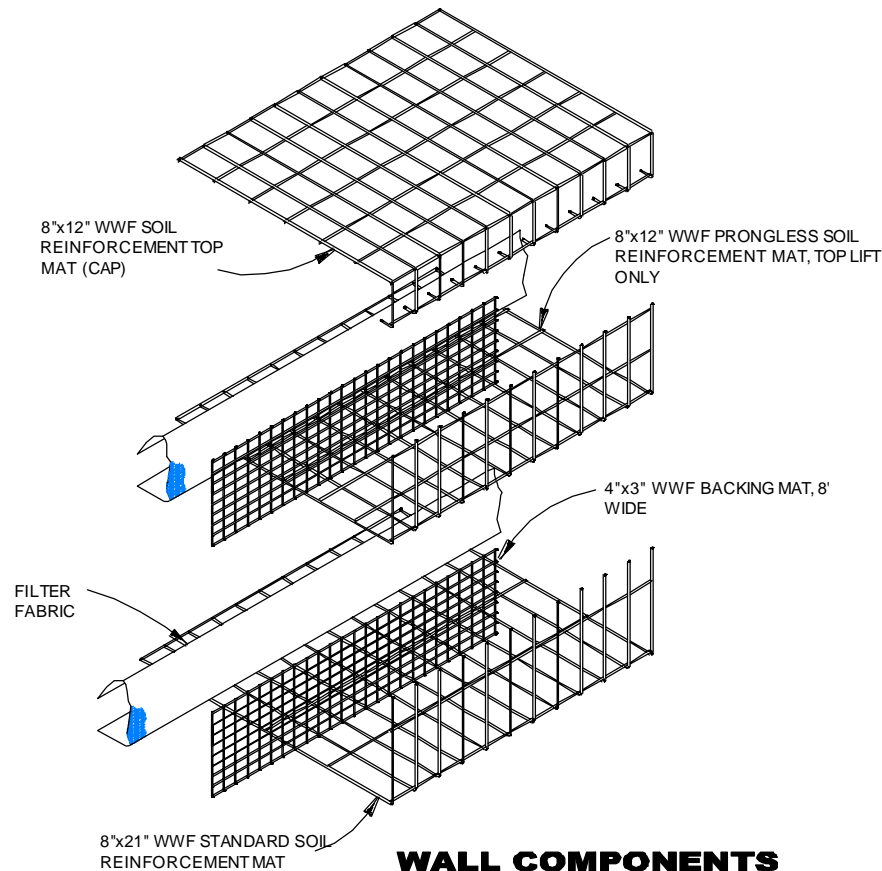


STEP 6: TOP LIFT

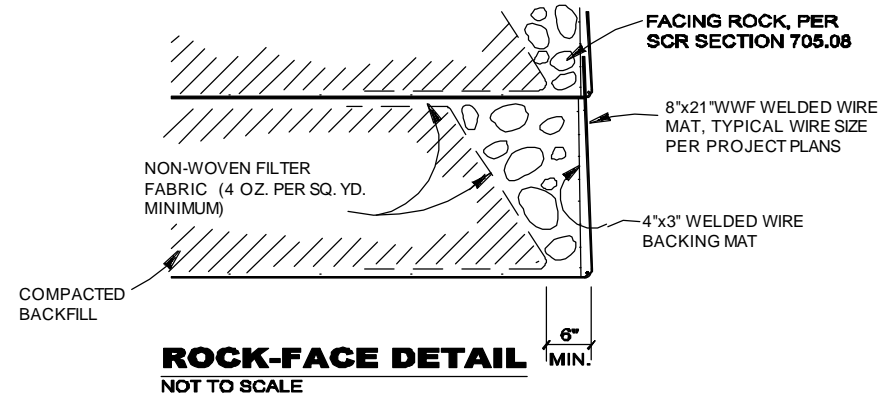
PLACE THE TOP LIFT PRONGLESS MAT, BACKING MAT AND FILTER FABRIC. PLACE AND COMPACT BACKFILL AND ROCK IN THE TOP LIFT. HOOK THE CAP OVER THE MIDDLE TRANSVERSE WIRE ON THE PRONGLESS MAT, AND ROTATE INTO PLACE. PLACE AND COMPACT COVER OVER TOP MAT TO 1'-6" MINIMUM DEPTH.

CONSTRUCTION SEQUENCE

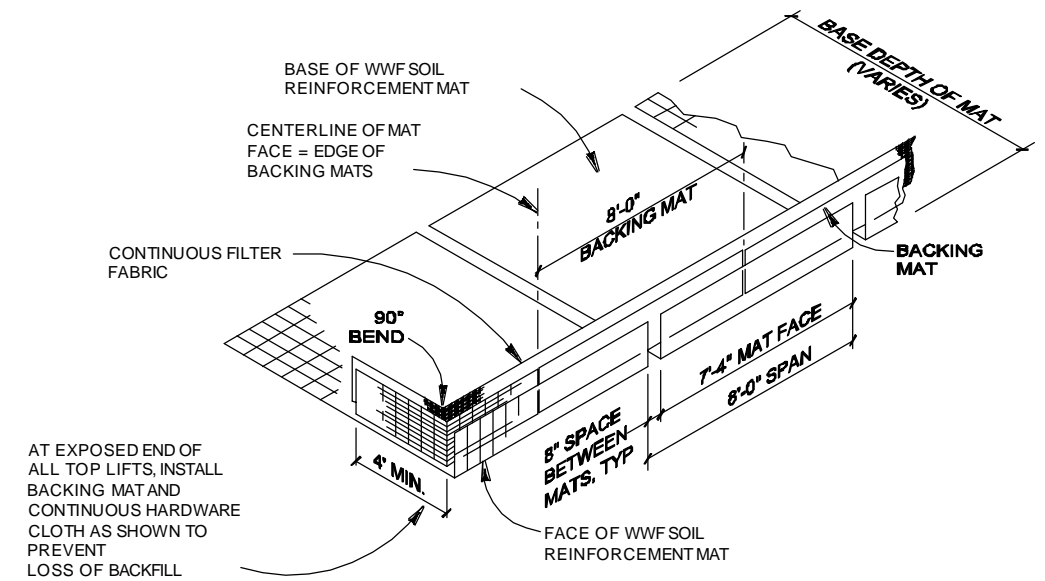
NOT TO SCALE



WALL COMPONENTS
NOT TO SCALE



ROCK-FACE DETAIL
NOT TO SCALE



ISOMETRIC VIEW
WELDED WIRE WALL COMPONENTS WITH RETURN MAT
NOT TO SCALE

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