

DESIGN NOTES

- Design is based on the assumption that backfill within the reinforced soil mass, methods of construction and quality of materials conform to the requirements of Hilfiker Retaining Walls.
- Assumed Soil Characteristics:
 Wall Backfill:
 Unit Weight: 135 pcf
 Internal Friction Angle: 34°
 Cohesion = 0 psf
 Retained Backfill:
 Unit Weight: 125 pcf
 Internal Friction Angle: 28°
 Cohesion = 0 psf
 Foundation Soils:
 Unit Weight: 140 pcf
 Friction Angle for Sliding: 45°
 Cohesion = 0 psf

Loads - Under Bridge Sill - LL = 2338 psf
 DL = 1766 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.
- 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.
- 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.

 Drainage control shall be as specified in the project plans and specifications or as directed by the engineer.
- Design Procedure:
 Mechanically Stabilized Earth walls and Reinforced Soil Slopes, FHWA report No. FHWA-NHI-00-043.

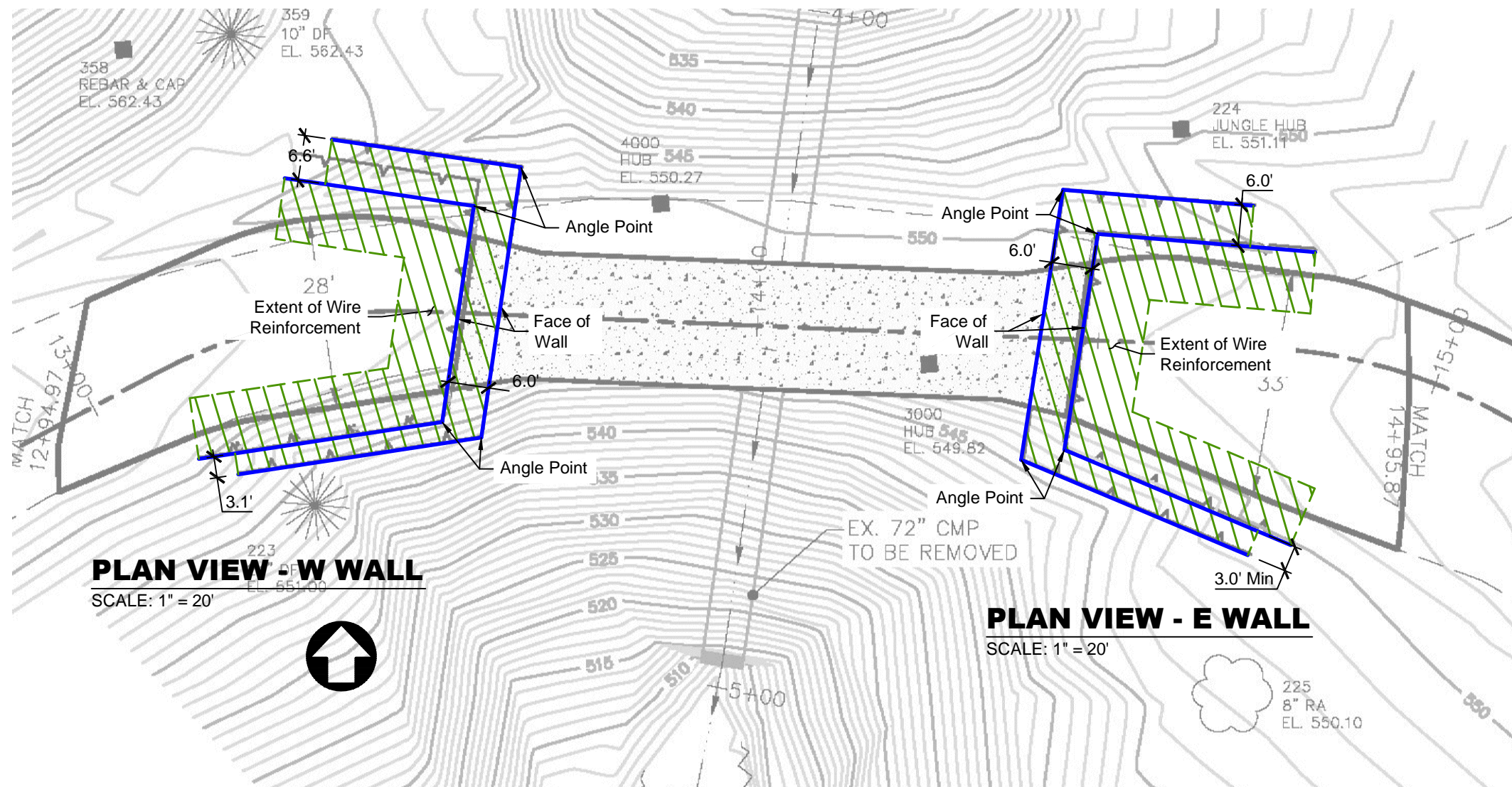
- All information hereon is derived from the reference drawings, and is subject to geometric and geotechnical confirmation. The applicable Hilfiker construction guide and specifications are an integral part of this submittal.

 Reference Documents:
 Civil Plans - 3 Road Bridge (172) Abutment Walls by Stevens & Associates, Dated December 12, 2014.
 Cross Section & Soil parameters by Mark Stevens Dated 12/2/14.
- Hilfiker Retaining Walls shall be responsible only for the internal stability of the retaining wall, and not foundation bearing capacity. Internal Stability includes sliding, overturning, rupture and pullout conditions. The owner/contractor shall be responsible for all job site drainage, safety and fall protection provisions for workers in compliance with OSHA and any other applicable requirements.

SUPPLIED QUANTITIES:

| | |
|--------------|---------------|
| W WALL AREA: | 2,032 SQ. FT. |
| E WALL AREA: | 1,992 SQ. FT. |
| Total: | 4,024 SQ. FT. |

Applied Bearing Pressure - By Wall - 6,350 psf. @ 20' High Section



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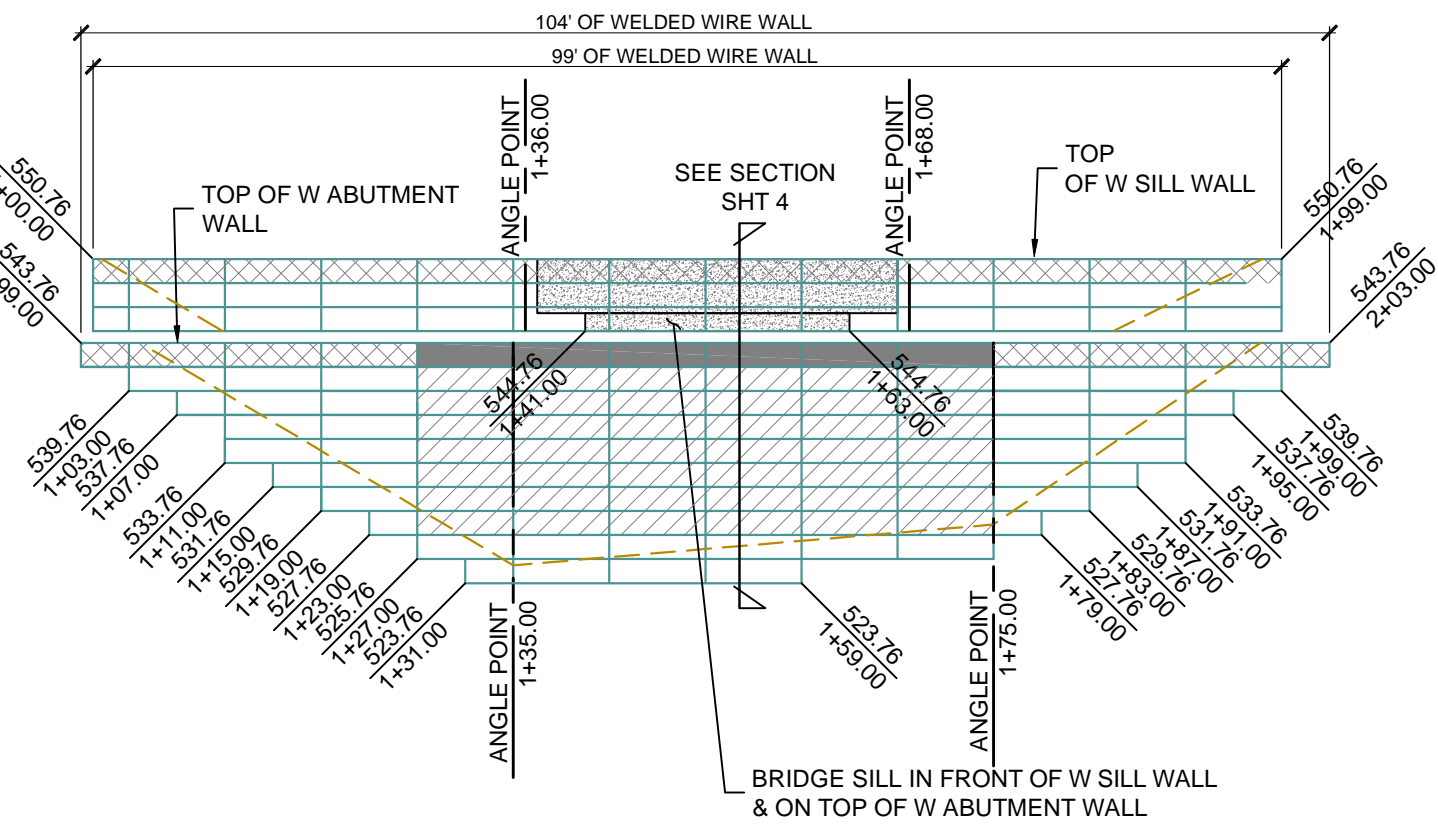
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3 ROAD BRIDGE (172)
**MSE RETAINING WALLS PLAN VIEW
 & GENERAL NOTES**

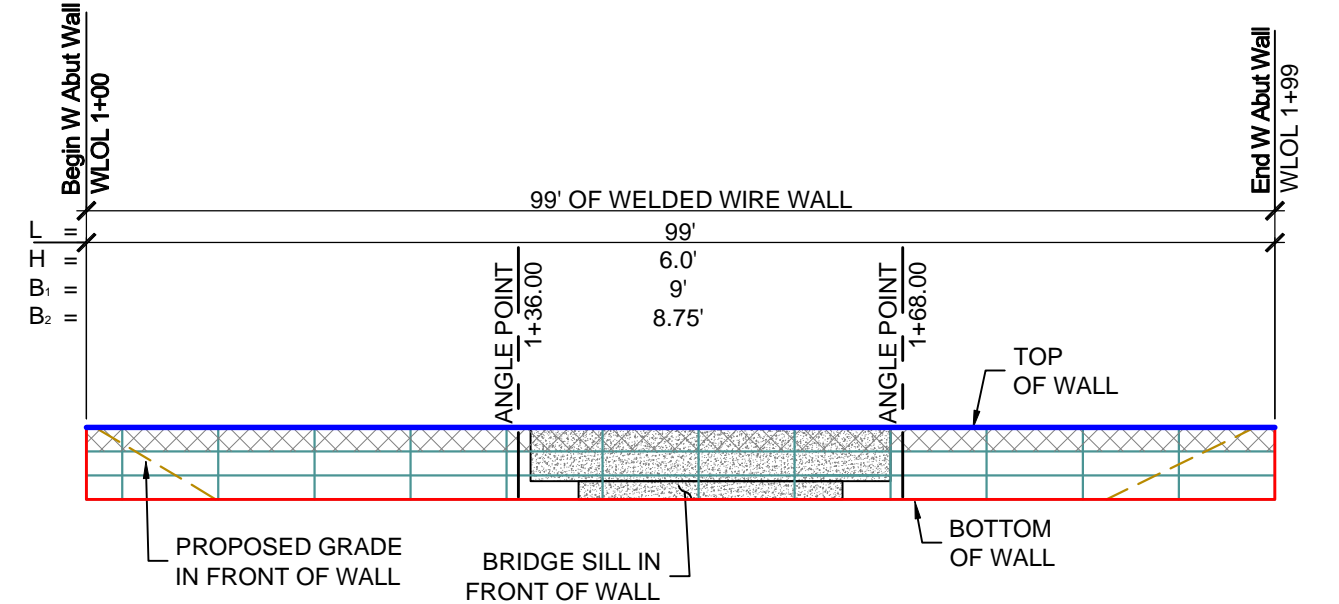
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| PROJECT | 14-114 |
| DATE | 12-17-14 |
| DESIGN | KLC |
| DRAWN | KLC |
| SHT | 1 OF 5 |

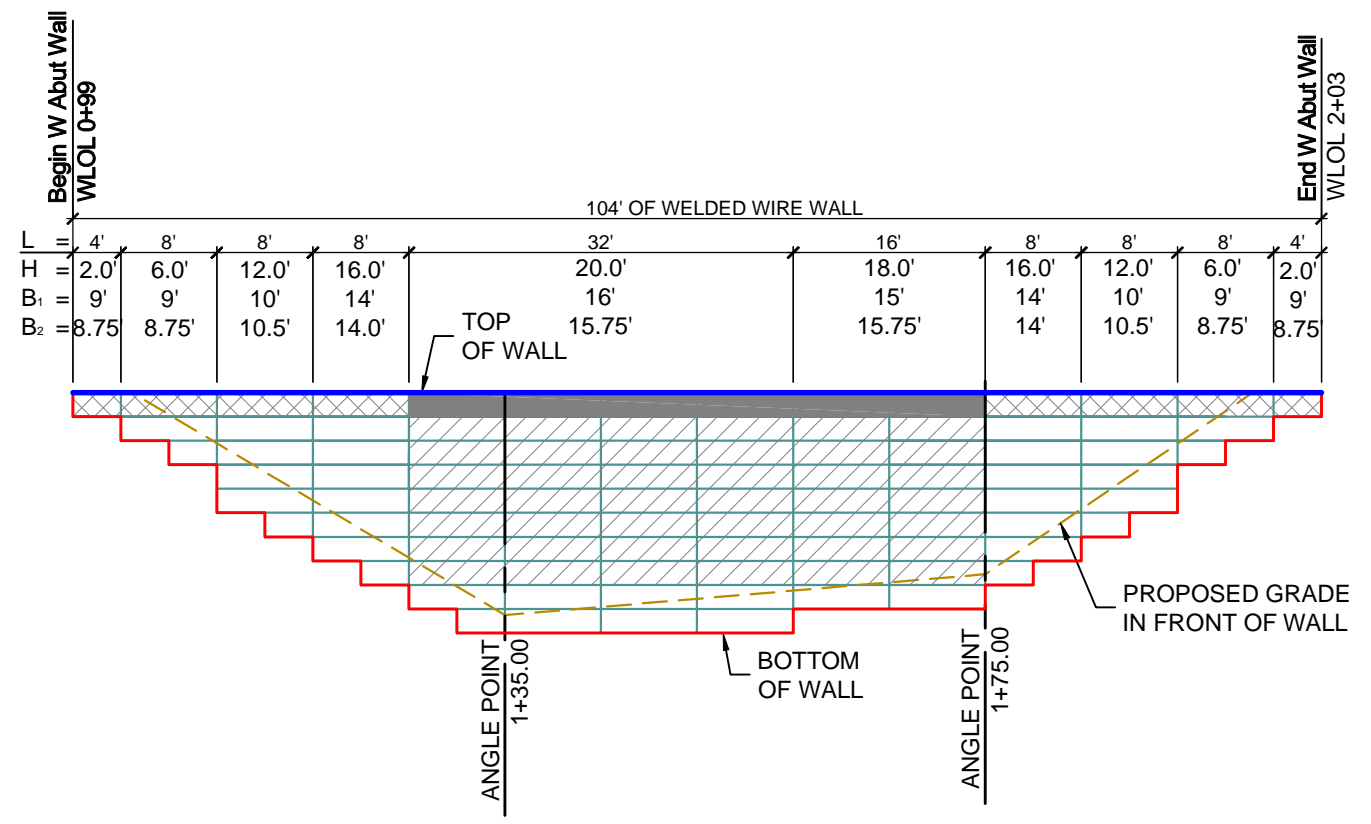
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W WALL - ELEVATION VIEW
SCALE: 1" = 16'



W SILL WALL ELEVATION VIEW
SCALE: 1" = 16'



W ABUTMENT WALL ELEVATION VIEW
SCALE: 1" = 16'

WALL WIRE TYPE LEGEND

- FINISH: HOT DIP
SERVICE LIFE: 75 YEARS
- TYPE 1 - 8x12 W7.0x3.5 MATS
 - TYPE 2 - 8x10.5 W7.0x3.5 MATS
 - TYPE 3 - 8x12 W9.5x3.5 MATS
 - TYPE 4 - 8x21 W9.5x4.0 MATS

WELDED WIRE WALL PARAMETERS

| Height of Wall (H) ft | Length of Cap & Prongless Mats (B ₁) ft | Base Length of Mats (B ₂) ft |
|-----------------------|---|--|
| <8' | 9' | 8.75' |
| 12' | 10' | 10.5' |
| 14' | 10' | 10.5' |
| 16' | 14' | 14' |
| 18' | 15' | 15.75' |
| 20' | 16' | 15.75' |

Cap & Top Mats (B₁) are 8x12 W7.0 & W9.5x3.5 WWR (Type 1&3)
Standard Mats (B₂) are 8x10.5 W7.0x3.5 & 8x21 W9.5x4.0 WWR (Type 2&4)

Finish: Hot Dip - 75 Year Service Life

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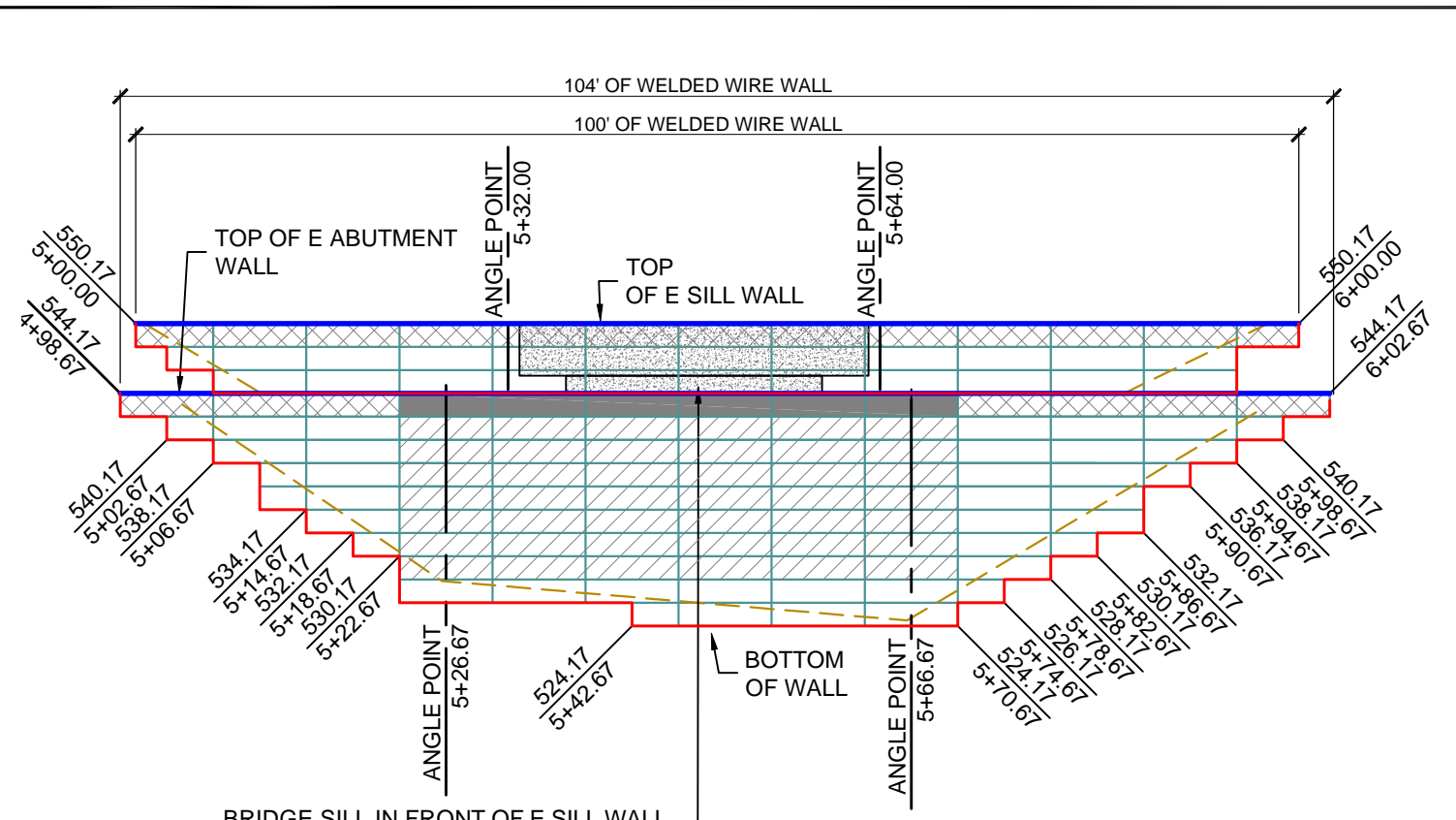
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3 ROAD BRIDGE (172)
MSE RETAINING WALLS ELEVATION VIEWS

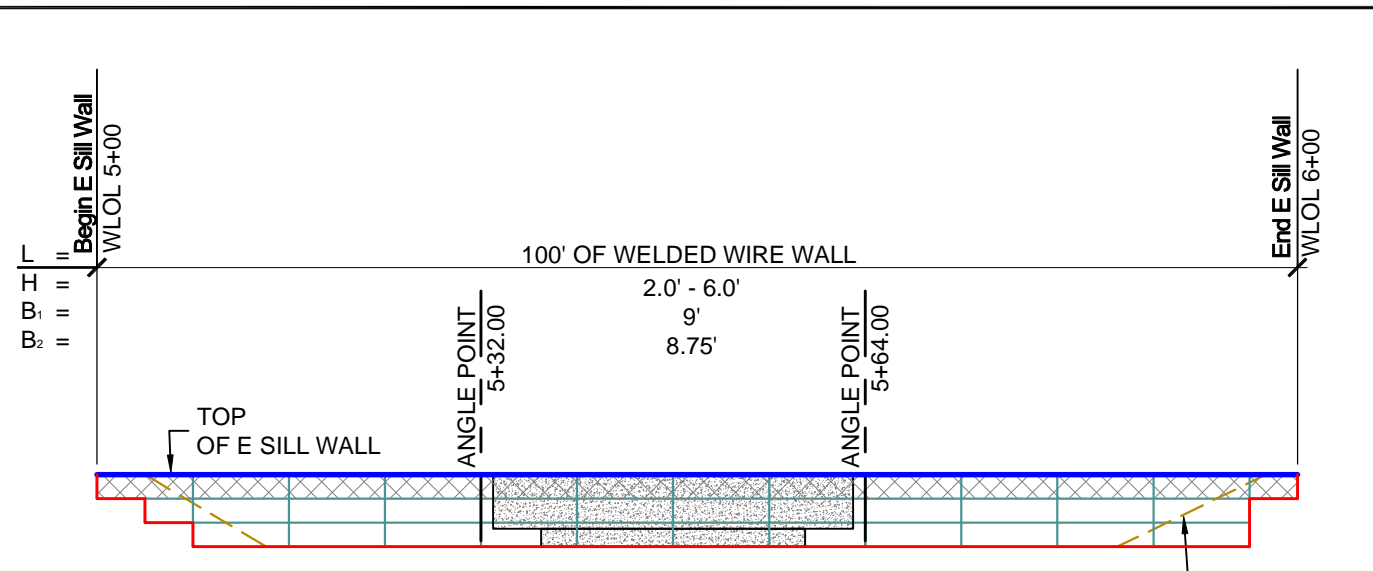
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| DATE | 12-17-14 |
| DESIGN | KLC |
| DRAWN | KLC |
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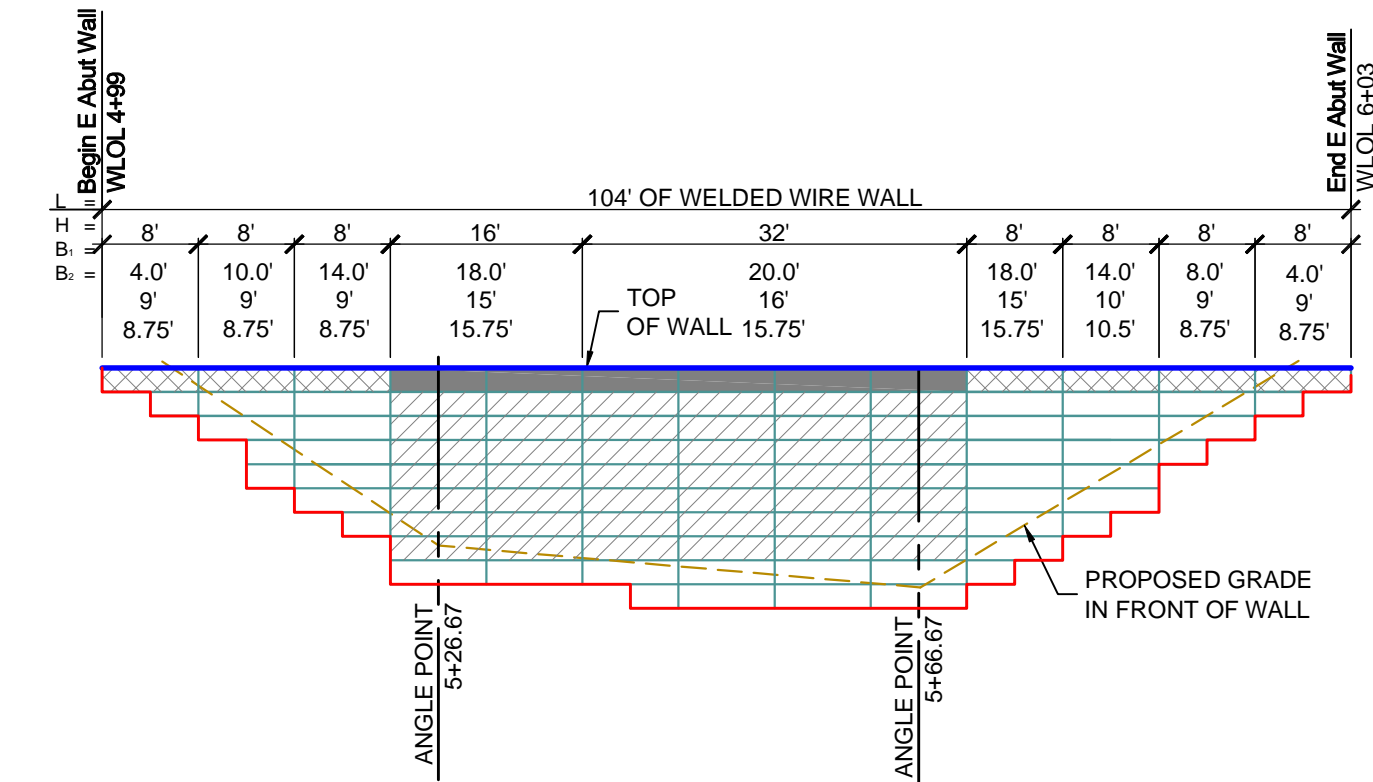
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SCALE: 1" = 16'



E SILL WALL ELEVATION VIEW

SCALE: 1" = 16'



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| WELDED WIRE WALL PARAMETERS | | |
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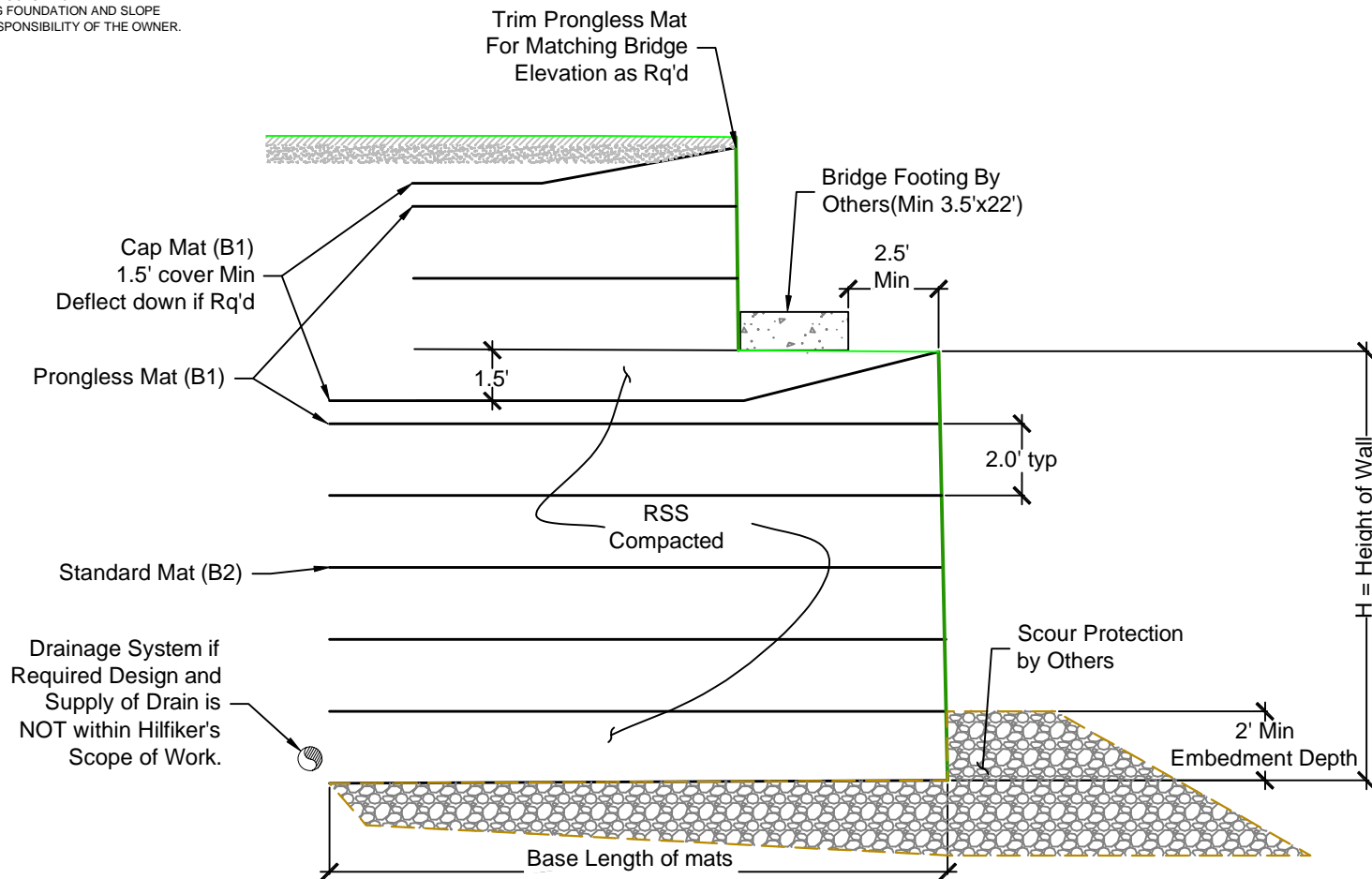
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3 ROAD BRIDGE (172)

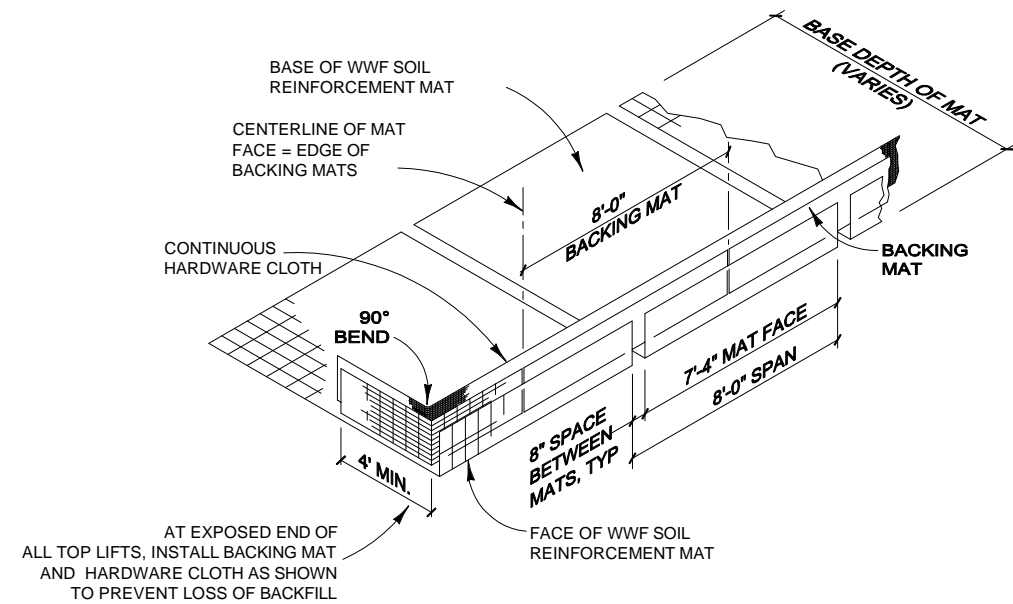
MSE RETAINING WALLS ELEVATION VIEWS

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| DESIGN | KLC |
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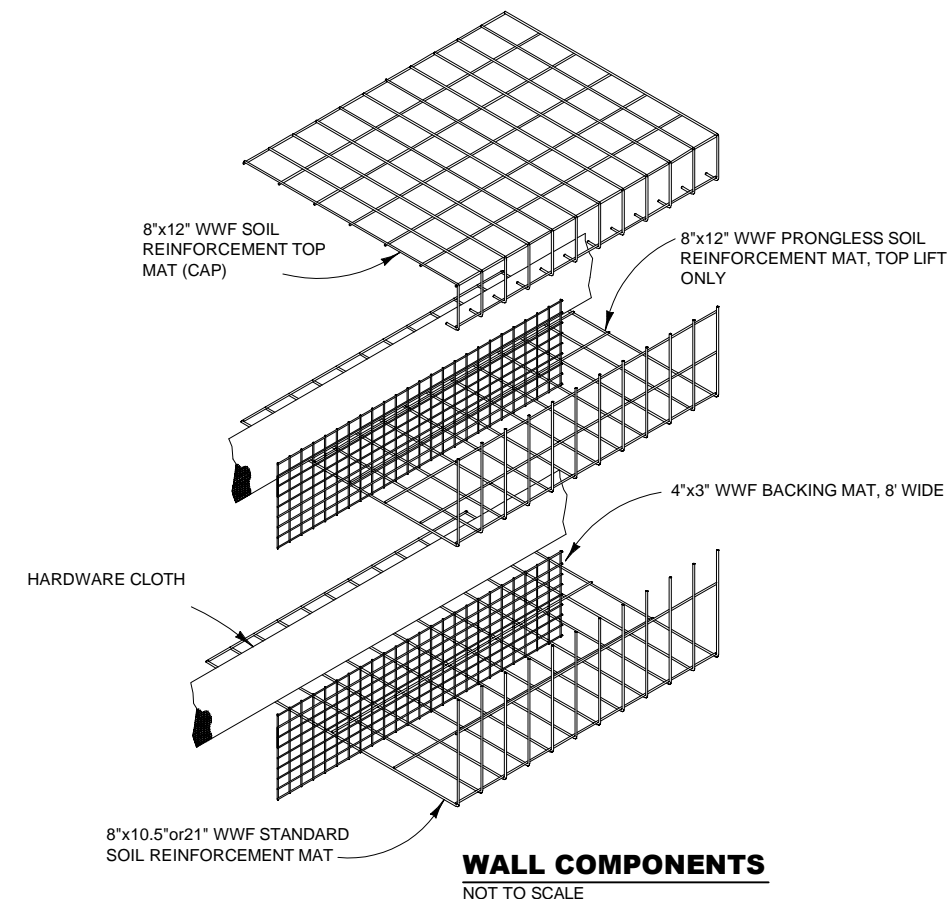
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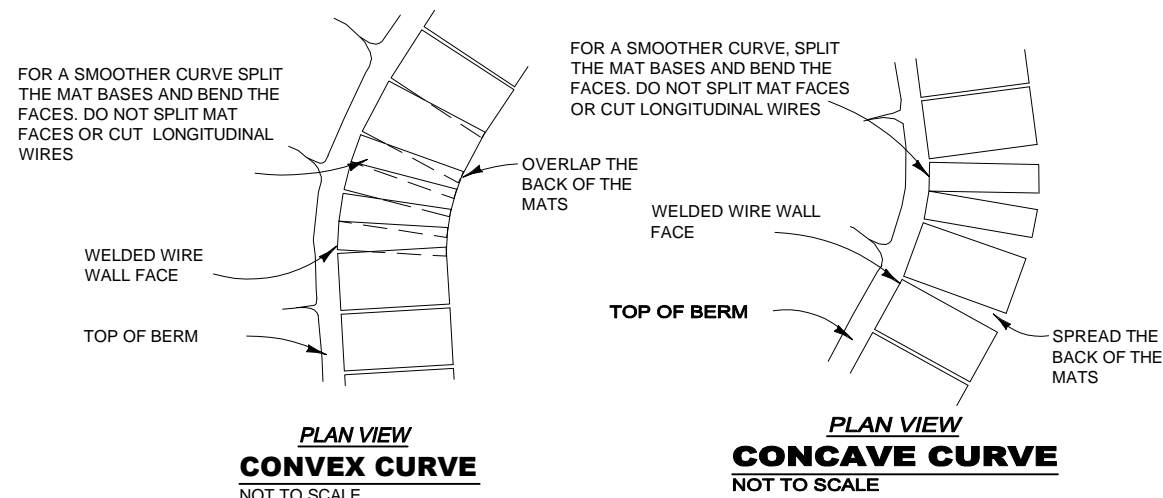
CROSS SECTION @ SILL
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ISOMETRIC VIEW
WELDED WIRE WALL COMPONENTS WITH RETURN MAT
NOT TO SCALE

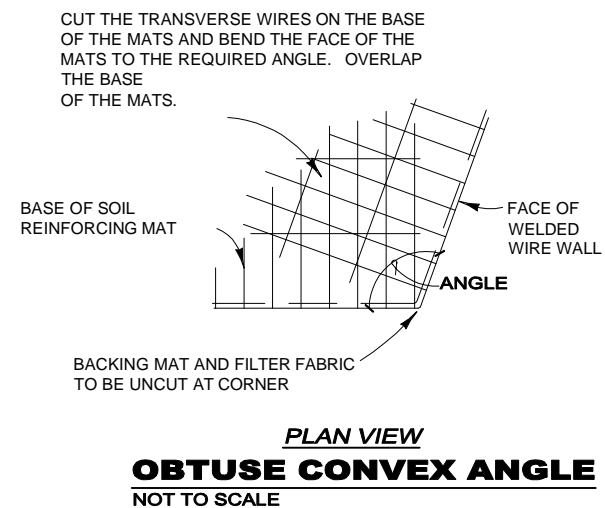


WALL COMPONENTS
NOT TO SCALE



PLAN VIEW CONVEX CURVE
NOT TO SCALE

PLAN VIEW CONCAVE CURVE
NOT TO SCALE



PLAN VIEW OBTUSE CONVEX ANGLE
NOT TO SCALE

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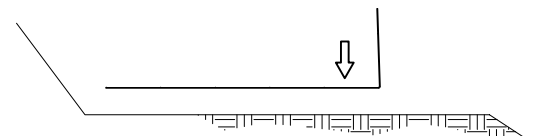
3 ROAD BRIDGE (172)
MSE RETAINING WALLS
CROSS SECTION & DETAILS

HW-141202CW

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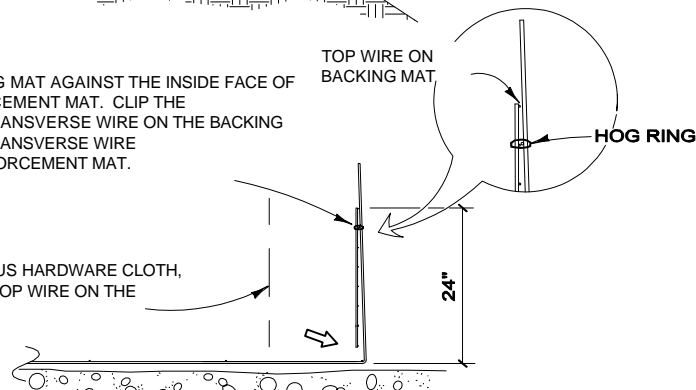
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STEP 1
PLACE THE FIRST COURSE OF SOIL REINFORCEMENT MATS ON PREPARED FOUNDATION



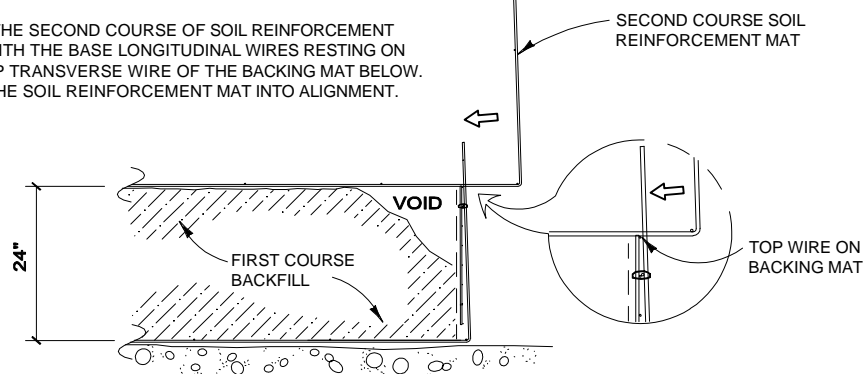
STEP 2
PLACE THE BACKING MAT AGAINST THE INSIDE FACE OF THE SOIL REINFORCEMENT MAT. CLIP THE SECOND-TO-TOP TRANSVERSE WIRE ON THE BACKING MAT TO THE TOP TRANSVERSE WIRE ON THE SOIL REINFORCEMENT MAT.

INSTALL CONTINUOUS HARDWARE CLOTH, HOG-RING TO THE TOP WIRE ON THE BACKING MAT.

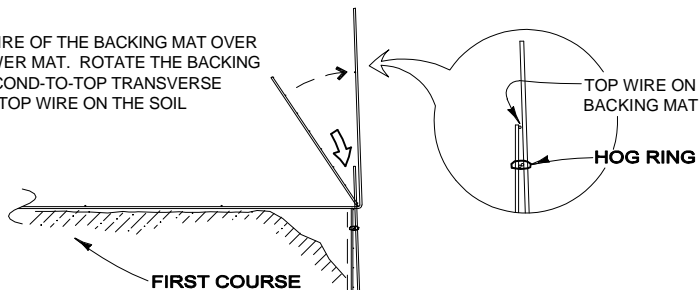


STEP 3
PLACE AND COMPACT THE BACKFILL IN LAYERS AND DENSITIES AS SPECIFIED IN THE PROJECT PLANS. LEAVE A VOID AT THE FACE AS SHOWN.

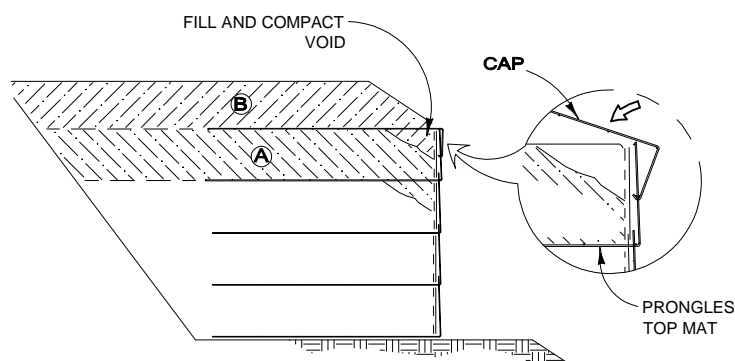
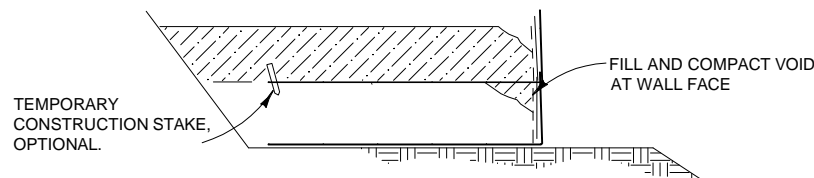
PLACE THE SECOND COURSE OF SOIL REINFORCEMENT MATS WITH THE BASE LONGITUDINAL WIRES RESTING ON THE TOP TRANSVERSE WIRE OF THE BACKING MAT BELOW. SLIDE THE SOIL REINFORCEMENT MAT INTO ALIGNMENT.



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.

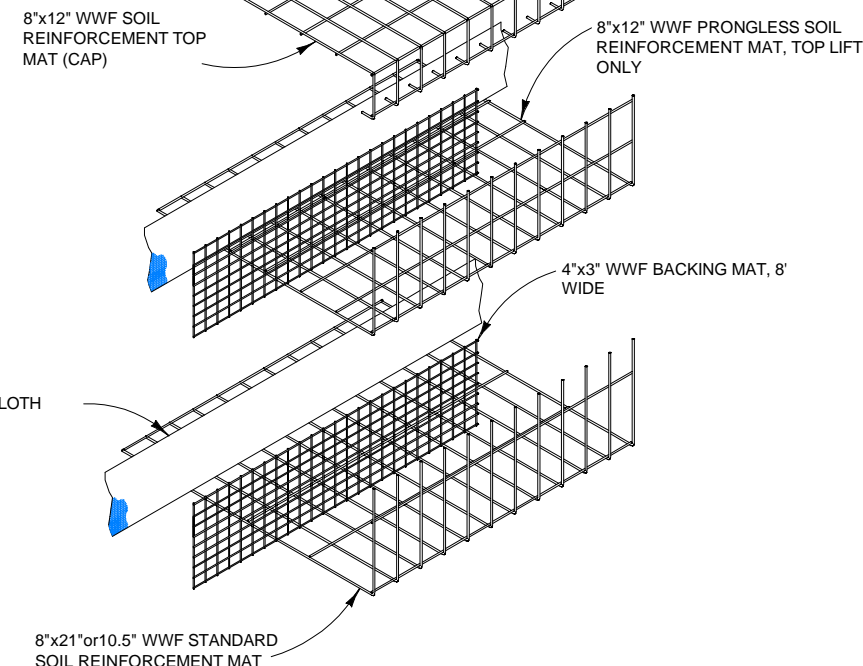


STEP 5
INSTALL THE CONTINUOUS HARDWARE CLOTH. PLACE AND COMPACT THE BACKFILL TO THE BASE ELEVATION OF THE NEXT MAT. REPEAT STEPS 3 THROUGH 5 TO THE TOP LIFT.

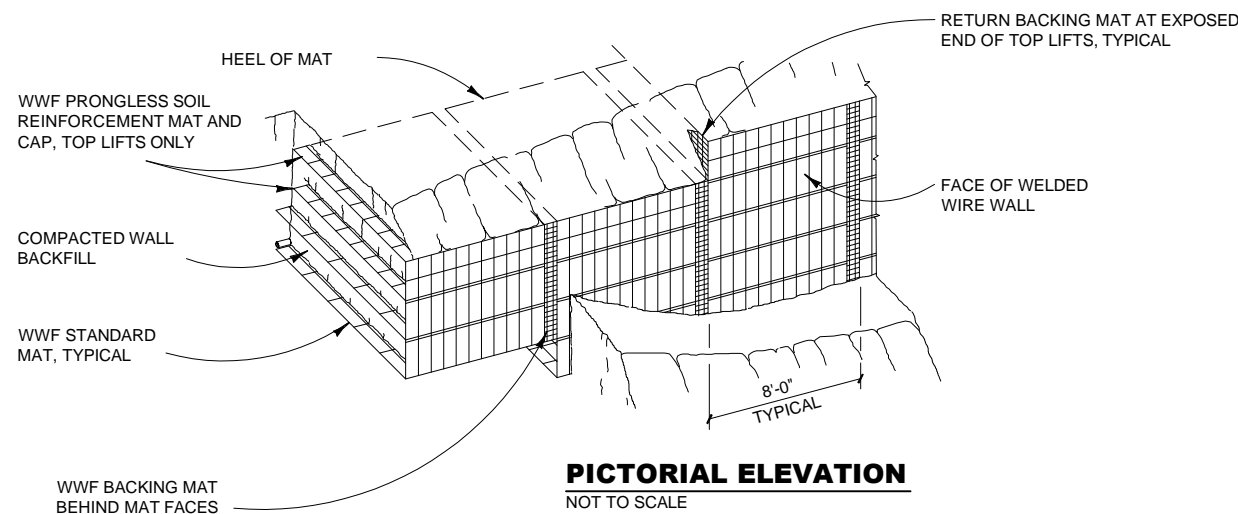


STEP 6: TOP LIFT
PLACE THE TOP LIFT PRONGLESS MAT, BACKING MAT AND CONTINUOUS HARDWARE CLOTH. PLACE AND COMPACT BACKFILL IN AREA "A". HOOK THE CAP OVER THE MIDDLE TRANSVERSE WIRE ON THE PRONGLESS MAT, AND ROTATE INTO PLACE. BACKFILL "B" TO 1'-6" MIN. COVER OVER THE CAP.

CONSTRUCTION SEQUENCE
NOT TO SCALE



WALL COMPONENTS
NOT TO SCALE



PICTORIAL ELEVATION
NOT TO SCALE

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3 ROAD BRIDGE (172)
MSE RETAINING WALLS
GENERAL DETAILS

HW-141202CW

| | |
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| PROJECT | 14-114 |
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| DRAWN | KLC |

SHT 5 OF 5