Standard Drawing Guidance (do not shown on plans):

Proposed grade & theoretical top of leveling pad elevation shall be shown in constant slope. Slope line shall be adjusted per project. Top of wall or coping elevation & stationing shall be shown in the developed elevation per project. Sample wall shown. Draw actual wall in elevation and plan per project.

① Show the minimum embedment = maximum (2 feet; embedment based on Geotechnical Report and global stability requirements; and FHWA-NHI-10-024, Table 2-2).

② Show theoretical top of leveling pad elevation on the plan based on minimum embedment requirements. Minimum embedment shall be provided in accordance with AASHTO 5.8.1; FHWA-NHI-10-024, Table 2-2, and Geotechnical Report.

General notes shown shall be reviewed/revised per project.

③ The allowable bearing pressure and an angle of internal friction, Φ_f, for unimproved and improved ground where wall is to bear as determined by the Geotechnical Section and reported on the Foundation Investigation Geotechnical Report (FIGR) shall be shown on the plans. Show areas and locations of ground improvement along the wall where required, for example, using stationing or using changes in wall height. Provide cross-section of ground improvement based on FIGR. Provide any other geotechnical requirements in FIGR on plans.

Add note EPG 751.50 J1.25, when limits of improved foundation ground is required by Geotechnical Section.

④ Show all boring locations on Plan.

⑤ Use for all large block MSE walls.

⑥ NOTE TO ROADWAY AND BRIDGE DESIGNERS: Excavation classes, quantities and pay items are the responsibility of District Design Division for including on the roadway 2B quantity sheets which is noted on the MSEW plans and required in accordance with Sec 720. All other quantities are the responsibility of the division responsible for the MSE wall plans.

⑥A NOTE TO ROADWAY AND BRIDGE DESIGNERS: If rock is not known to exist from a geotechnical report or study, place the following note on the plans,

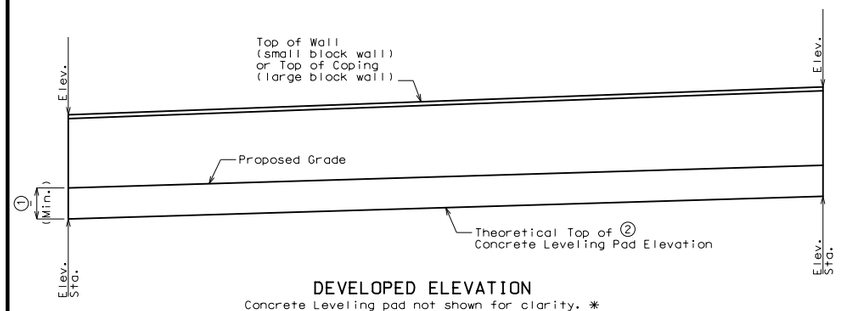
"If rock is encountered in the proposed reinforced backfill area or wedge area of the MSE wall before or during excavation, the contractor shall immediately cease excavating and notify the engineer."

Otherwise, if rock is known to exist and it is to be excavated, then do not place above note on plans and determine the excavation class and estimate a rock quantity. For all Bridge Division MSE walls, Bridge Division and District Design Division shall coordinate in estimating excavation quantities when rock is known to exist from the geotechnical report and if rock is to be used as part of the wall backfill or excavated for MSE wall construction.

SEC/SUR ✱ TWP ✱ RGE ✱

X'MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL SYSTEM

PLAN ④



DEVELOPED ELEVATION
Concrete Leveling pad not shown for clarity. ✱

③ DETAILS OF GROUND IMPROVEMENTS

LOCATION SKETCH

✱ Wall contractor shall show the following items on the design drawings and/or on the fabricator shop drawings.

1. Leveling pad horizontal.
2. Leveling pad length and step elevations shall be based on wall manufacturer's recommendation. Top of leveling pad elevations shall not be higher than theoretical top of leveling pad elevations shown on these plans.

Estimated Quantities

Item		Total
Mechanically Stabilized Earth Wall Systems	sq. foot	

Designed
Detailed
Checked

◔ Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet(s) No. -- and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

General Notes:

Design Specifications:

2002 AASHTO LFD (17th Ed.) Standard Specifications (Section 5, ASD Design)
Seismic Performance Category _
Acceleration Coefficient = ___

Design Loading:

Φ_b = __° and Unit weight, γ_b = ___ pcf for retained backfill material to be retained by the mechanically stabilized earth wall system.

Φ_f = __° for unimproved foundation ground where wall is to bear.
Φ_f = __° for improved foundation ground where wall is to bear.

Limits of improved foundation ground and allowable bearing pressure shall not be adjusted from that shown on the plans.

Actual $\Phi_r \geq 34°$ for the select granular backfill (reinforced backfill and wedge area backfill) for structural systems.

Design $\Phi_r = 34°$ for the select granular backfill (reinforced backfill) only for structural systems.

③ The allowable bearing pressure for unimproved foundation ground ___ ksf.
The allowable bearing pressure for improved foundation ground ___ ksf.

The maximum applied bearing pressure for the controlling design case at the foundation level shall be shown on the manufacturer's design plans where the maximum applied bearing pressure ≤ allowable bearing pressure. For seismic design the maximum applied bearing pressure ≤ two times allowable bearing pressure.

Factor of safety shall be 2.0 for overturning and 1.5 for sliding.

For seismic design the factor of safety shall be 1.5 for overturning and 1.1 for sliding.

⑤ Use default values for the pullout friction factor, F✱, in accordance with AASHTO figure 5.8.5.2A. For approved steel strips not shown in AASHTO figure 5.8.5.2A, use F✱ ≤ 2.0 at zero depth and F✱ ≤ Tan Φ_r at 20 feet depth and Φ_r design = 34°. F✱ values shall be shown on the manufacturer's design plans.

Design Unit Stresses:

All concrete for leveling pad and coping shall be Class B or B-1 with f'c = 4000 psi.

Miscellaneous:

The MSE wall system shall be built vertical.

The MSE wall system shall be built in accordance with Sec 720.

The MSE wall system shall be a small large block wall system.

The cost of joint filler and joint seal, complete in place, will be considered completely covered by the contract unit price for Concrete Traffic Barrier (Type A D). See Roadway Plans.

Panel and coping (or capstone) reinforcement shall be epoxy coated.

A filter cloth meeting the requirements for a Separation Geotextile material shall be placed between the select granular backfill for structural systems and the backfill being retained by the mechanically stabilized earth wall system.

Coping shall be required on this structure unless a small block system is used. Bond breaker (roofing felt or other approved alternate) between wall panel and coping required if coping is cast in place.

The top and bottom elevations are given for a vertical wall. If a battered small block wall system is used, the height of the wall shall be adjusted as necessary to fit the ground slope and the concrete leveling pad shall be adjusted as necessary to account for the wall batter. If a fence is built on an extended gutter, then the height of the wall shall be adjusted further.

The baseline of the wall shown is for a vertical wall. If a battered wall system is used, this baseline shall correspond to Elevation .

The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed and placed to avoid damage by pile driving, guardrail post installation, utility and sign foundations. (See Roadway and Bridge plans.)

⑤ Minimum 18" wide Geotextile strips shall be centered at vertical and horizontal joints of panel. Geotextile material shall be adhered to back face of panel using an adhesive compound supplied by the manufacturer.

Aluminized soil reinforcement shall have edges coated with coating material per manufacturer.

B.M.

MSE Wall Systems Data Table

Proprietary Wall Systems		Combination Wall Systems			
Manufacturer	System	Facing Unit Manufacturer	Facing Unit	Geogrid Manufacturer	Geogrid

MSE Wall Systems Data Table is to be completed by MoDOT construction personnel to record the manufacturer of the proprietary wall system or the manufacturers of the combination wall system that was used for constructing the MSE wall.

Note: This drawing is not to scale. Follow dimensions. Sheet No. 1 of

RETAINING WALL ALONG ✱
ROUTE ✱ FROM ✱ TO ✱
ABOUT ✱ MILES ✱ OF ✱
✱ STATION ✱

STD.	
STD.	
STD.	
STD.	

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	7/26/2019
ROUTE	STATE
✱	MO
DISTRICT	SHEET NO.
BR	1
COUNTY	✱
JOB NO.	✱
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	MSEW 1

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)