STATE OF UTAH MSE WALL INSPECTION FORM

Compiled As Part of Research By The Utah Department of Transportation

Instructions:

1-Fill out required sections for MSE Wall Inspector and Wall Characteristics.

2-Inspect the wall using the attached form. Questions that require a 'Yes' answer should be documented by noting the extent of the problem in the right most column and photo documentation. Photo documentation should consist of wall or bridge number, nature of problem, date, photo number for wall, and a size reference, which should be indicated in the photo (white board/paper). Photos taken should be placed on the Top View layout and indicated with the appropriate number. Note should be taken by the inspector that often anomalies are due to construction and should be distinguished from those that are a result of post-construction. If it is observable that they existed at the time of construction note should be taken in the space provided for drawings.

3- Shoot digital photos of the entire wall. This may require the use of a variety of shots and angles on each wall to cover the wall in its entirety.

4- Indicate Layout of MSE Wall in respect to major intersections, roadways, potential hazards, irrigation, vegetation, locations of conditions for which 'Yes' was marked, etc. in space provided below. Also Indicate approximate GPS Coordinates of Site of Interest in space provided below

Inspector Information

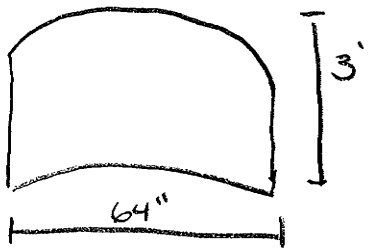
Inspection Date	7/30/07	**Names Of Inspectors**	Ryan Maw, Holly Griffin
Region	2	**Identifying Road/Intersection**	SR - 224 MP 6

MSE WALL CHARACTERISTICS

MSE Wall at Bridge	Y (N)	**Bridge Number if applicable:**	
Surrounding Structures	power pole		
Distance to Each Structure	35 ft		
State Route Number	224		
Approximate Mile Marker			
GPS Datum	(WGS/84) NAD/83, or NAD/27		
MSE Wall GPS Coordinates (Location of Measurement shown on plan view)	N 40° 38.990 W 111 29.903		
If known, Panel or System Manufacturer			

Wall Number	R-442
Maximum Height of Wall (ft)	20ft
One Stage, Two Stage or Block Wall	benched (2)
Estimated Max Length of Wall Abutment	1440 ft
Max Slope of Ground in front of wall:	0
Max Height of wall burial line above surrounding level ground:	0

Please draw rough layout of panel with approximate dimensions in space provided below:



Summary of Key Observations:

- severe panel deterioration
- along main thoroughfare
- severe bowing
- near power pole

Plan View/Drainage:

Cross Sections:

Cross Sections:

MSE WALL DRAINAGE

Required Tools: Nylon Mallet-Water Bottle-GPS-Camera

Yes	No	N/A	UKN	Drainage	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	N/A	UKN	1-Is there an active water source near the toe of the wall (is the wall near a body of water with scour potential?)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	2-If applicable, are the catch basins at the base of the wall blocked?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	3-Are there culverts protruding through the wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	4-Are there vertical drains that travel through the backfill?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	5-Is there erosion at the base of the wall or leveling pad? (Photo 12)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	6-Is there erosion along the wing walls?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	7-Are there any signs of water flow along the base of the wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	8-Is there less than 14 feet between irrigation sprinklers and wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	9-Does the backfill or joint fabric appear to be saturated?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	10-Is there vegetation growing in panel joints (Photo 8)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	11-Are the deck drains and outlets at the top of the wall blocked? (Photo 14)	Blocked Partial Clear / 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	12-Can water enter the wall between coping and slab (i.e., Drain appropriately)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	13-Is there evidence at discharge point of fill washing through drain pipes?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MSE WALL JOINTS

Required Tools: Long Level-String-Camera-GPS

Yes	No	N/A	UKN	Joints	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	N/A	UKN	14-Is backfill coming out of joints or are there piles of backfill at the base of the wall? (Pictures 2 & 3)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	15-Are the joints wide enough to see fabric or backfill behind panels when looking into joints? (Photo 5) If yes, record the approximate maximum joint width in inches.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	16-Is exposed backfill visible in the horizontal joints? (Photo 4)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	17-Are there visible tears in the fabric? Is there evidence of backfill or water leaking through tear? (Do not induce additional damage to fabric)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	18-Do the joints have a non-uniform horizontal spacing/size? Are some horizontal joints larger/smaller than others? (Photo 6)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	19-Do the joints have a non-uniform vertical spacing/size? Are some vertical joints larger/smaller than others? (Photo 6)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	20-Are the panels offset at the joints either in or out of the wall? (Photo 7) If yes, record the approximate maximum offset.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	21-Does the fabric appear brittle, or appear as if it has undergone excessive UV exposure?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MSE WALL FACING

Required Tools: Long Level-String-GPS-Camera-Crack Gauge

Yes	No	N/A	UKN	Wall Facing	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	N/A	UKN	22-Are the panels "Tilt-Up"? Is there excessive cracking in the panels?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	23-Are there cracks that continue vertically through adjacent panels (Photos 9 & 10)? If yes, record the approximate number of panels in the wall with cracking.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	24-Are there cracks that continue horizontally through adjacent panels (Photos 9 & 10)? If yes, record the approximate number of panels in the wall with cracking.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	25-Are the panel corners making contact with each other? If yes, record the approximate number in the wall.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	26-Are the panel corners "popped-off" or chipped from contact with an adjacent panel? If yes record the number in the wall.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	27-Does crack spacing suggest Differential Settlement?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	28-Does the overlying coping exhibit Vertical Offset?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	29-Are the coping and parapets loose or detaching? If yes, it may be appropriate to contact UDOT if detachment seems eminent.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	30-Are the panels in danger of falling off? (If potential exists contact appropriate UDOT region).	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	31-Are the panels 'bulging' (bowing horizontally)? If so, record maximum deformation from accessible coping to leveling pad. (Photo 11)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	32-Is there 'tipping' at the top or bottom of the wall? (Record maximum degree of tipping from azimuth using vertical level and affected area).	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MSE TOP OF WALL OBSERVATIONS

Required Tools: Long Level-Crack Gauge-GPS-Camera

Yes	No	N/A	UKN	Top Of Wall	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	N/A	UKN	33-Is there evidence of settlement at the top of the wall? (pavement cracking, etc)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	34-Are there any open cracks in the concrete coping (not hairline)? If yes record the approximate maximum crack width.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	35-Have the construction joints in the concreting coping opened up? (Photo 6). If yes, record the maximum joint width.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	N/A	UKN	36-Is there a large gap between the approach slab and the approach pavement? (Photo 15) Often this produces a bumping sensation as the overpass is crossed. Record the approximate maximum gap size.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

Y	N	N/A	UKN	
Y	N	N/A	UKN	22-Are the panels "Tilt-Up"? Is there excessive cracking in the panels?
Y	N	N/A	UKN	23-Are there cracks that continue vertically through adjacent panels (Photos 9 & 10)? If yes, record the approximate number of panels in the wall with cracking.
Y	N	N/A	UKN	24-Are there cracks that continue horizontally through adjacent panels (Photos 9 & 10)? If yes, record the approximate number of panels in the wall with cracking.
Y	N	N/A	UKN	25-Are the panel corners making contact with each other? If yes, record the approximate number in the wall.
Y	N	N/A	UKN	26-Are the panel corners "popped-off" or shipped from contact with an adjacent panel? If yes record the number in the wall.
Y	N	N/A	UKN	27-Does crack spacing suggest Differential Settlement?
Y	N	N/A	UKN	28-Does the overlying coping exhibit Vertical Offset?
Y	N	N/A	UKN	29-Are the coping and parapets loose or detaching? If yes, it may be appropriate to contact UDOT if detachment seems eminent.
Y	N	N/A	UKN	30-Are the panels in danger of falling off? (If potential exists contact appropriate UDOT region).
Y	N	N/A	UKN	31-Are the panels 'bulging' (bowing horizontally)? If so, record maximum deformation from accessible coping to leveling pad. (Photo 11)
Y	N	N/A	UKN	32-Is there 'tipping' at the top or bottom of the wall? (Record maximum degree of tipping from azimuth using vertical level and affected area).

MSE TOP OF WALL OBSERVATIONS

Required Tools:	Long Level-Crack Gauge-GPS-Camera			
Yes	No	N/A	UKN	
Y	N	N/A	UKN	33-Is there evidence of settlement at the top of the wall? (pavement arcuking, etc)
Y	N	N/A	UKN	34-Are there any open cracks in the concrete coping (not hairline)? If yes record the approximate maximum crack width.
Y	N	N/A	UKN	35-Have the construction joints in the concreting coping opened up? (Photo 6). If yes, record the maximum joint width.
Y	N	N/A	UKN	36-Is there a large gap between the approach slab and the approach pavement? (Photo 15) Often this produces a bumping sensation as the overpass is crossed. Record the approximate maximum gap size.
Y	N	X	UKN	37-At the abutments, has the joint between the wall coping and the abutment opened up significantly? If so record maximum distance.
Y	N	X	UKN	38-Is the coping/wall pulling away from pavement/roadway section? Please record maximum displacement for wall.

MSE STABILITY

Required Tools:	Shovel, GEO-Probe		
Yes	No	N/A	UKN
Y	N	N/A	(UKN)
Y	(N)	N/A	UKN
Y	N	N/A	(UKN)
(Y)	N	N/A	UKN
Y	(N)	N/A	UKN
Y	(N)	N/A	UKN
(Y)	N	N/A	UKN

Structural Integrity	
	39-What is the location depth of Leveling pad? Pound Geo-Probe into soil located 2 inches from wall to a maximum depth of 24 inches (24 inches is the minimum depth for MSE Wall)
	40-Is leveling pad exposed?
	41-Is there cracking in the leveling pad? If so, record maximum crack size with gage.
	42-Is there a four foot 'bench' (level slope) directly along the wall before the slope changes (Record Width)?
	43-Is there a slope steeper than V: 1.5 to H:1 in front of the wall? Please record slope and height of backfill above top of wall.
	44-Is there a slope greater than V: 1.5 to H:1 below the wall? Please record slope and height of backfill below the wall.
	45-Is there excessive degradation of panel faces?

MSE METAL CORROSION

Required Tools:	Nylon Mallet-Camera-GPS-Zip Lock Bag-Trowel			
Yes	No	N/A	UKN	
Y	(N)	N/A	UKN	46-Is there excessive corrosion on guardrails or other exposed metal that might indicate corrosive conditions?
(Y)	N	N/A	UKN	47-Are there major rust stains on the face panels? Along joints? If so, record total number.
Y	N	N/A	UKN	48-Are any internal straps exposed? Does there appear to be corrosion on these straps? If applicable please record the total number of straps affected.
Y	(N)	N/A	UKN	49-Was a resistivity sample taken of exposed soil? If so, please indicate depth in inches.
(Y)	N	N/A	UKN	50-Is there any indication of rebar corrosion (swelling bars, rust, exposed metal inside epoxy coating)? If so please record the total number of panels affected.

MSE IMPACT/COLLISION PROTECTION

Required Tools:	Camera-GPS			
Yes	No	N/A	UKN	
Y	(N)	N/A	UKN	51-Are guardrails/ wall protections in place at the base of the wall (to protect it from potential traffic hazards)?
Y	(N)	N/A	UKN	52-Does it appear that the wall has been involved in an accident (replaced panel, recent dings in the wall)?
Y	(N)	N/A	UKN	53-Does it appear the walls functionality and integrity has been compromised by a collision or accident?

MSE OBSTRUCTIONS IN REINFORCEMENT GEOMETRY

Required Tools:	Drawings		
Yes	No	N/A	UKN

Obstructions in Reinforcement Geometry

Measurement/Extent of Problem/Location/Photo Numbers

Measurement/Extent of Problem/Location/Photo Numbers

Measurement/Extent of Problem/Location/Photo Numbers

Measurement/Extent of Problem/Location/Photo Numbers

Measurement/Extent of Problem/Location/Photo Numbers

Measurement/Extent of Problem/Location/Photo Numbers

/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /