

# STATE OF UTAH MSE WALL INSPECTION FORM

Compiled As Part of Research By The Utah Department of Transportation

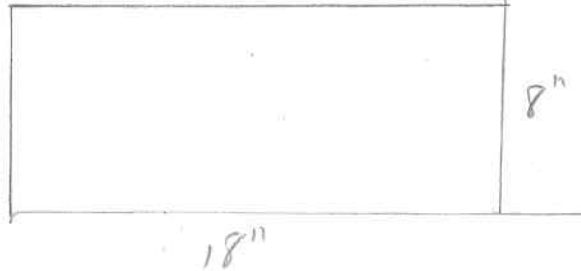
**Instructions:**

- 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

<b>Region</b>	4	<b>Identifying Road/Intersection</b>	Milford, SR-21, WPAR, west side
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## MSE WALL CHARACTERISTICS

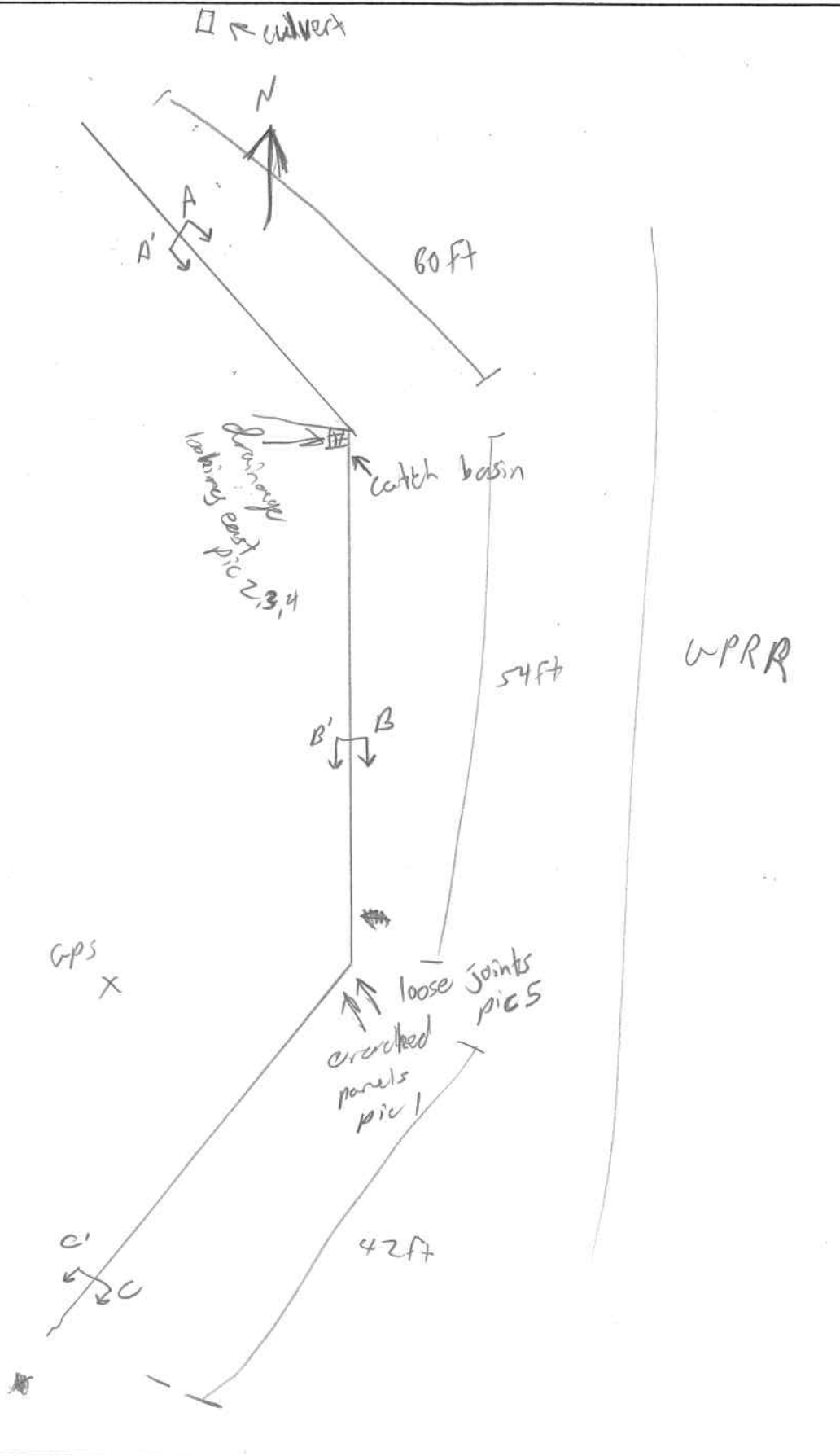
MSE Wall at Bridge	(Y) N	Bridge Number if applicable:	Wall Number
Surrounding Structures	Rail road		Maximum Height of Wall (ft) 21 Ft
Distance to Each Structure	30 Ft		One Stage, Two Stage or Block Wall 1-stage, modular block
State Route Number			Estimated Max Length of Wall Abutment: 155 Ft
Approximate Mile Marker			Max Slope of Ground in front of wall: 1.7:1
GPS Datum	WGS/84, NAD/83, or NAD/27		Max Height of wall burial line above surrounding level ground: 15 Ft
MSE Wall GPS Coordinates (Location of Measurement shown on plan view)	58° 23' 15.42" N 113° 0' 51.27" W elev. 1499 ft		
If known, Panel or System Manufacturer	Please draw rough layout of panel with approximate dimensions in space provided below:		



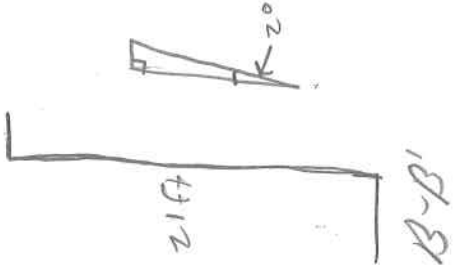
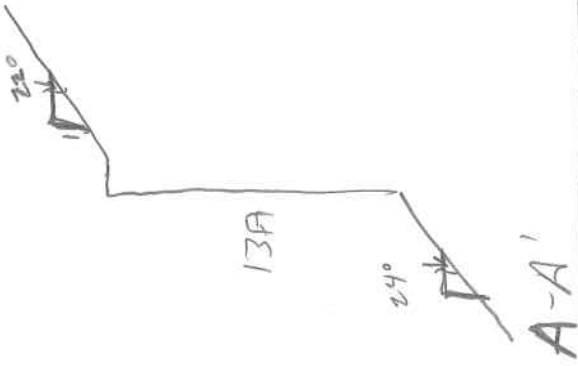
**Summary of Key Observations:**

South, west corner open joints and cracked blocks  
 blocks appear porous (more than others inspected)  
 suggest strength test in compression on blocks  
 water can drain around slope protection

**Plan View/Drainage:**



Cross Sections:



Cross Sections:



$$\frac{12}{12} \sqrt{\frac{17}{2}}$$

$$\frac{31}{8} \sqrt{\frac{21}{248}}$$

RISE WALL DRAINAGE

Required Tests	Long Level String - Concrete/CFS	Drainage	Measurement/Extent of Problem/Location/Photo Numbers
Yes	N/A	1-Is there an active water source near the toe of the wall (to the wall near a body of water with water potential)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	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/A	3-Are there culverts protruding through the wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	4-Are there vertical drains that travel through the backfill?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	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/A	6-Is there erosion along the wing wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	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/A	8-Is there less than 1 ft. between impervious backfill and wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	9-Does the backfill or joint fabric appear to be saturated?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	10-Is there vegetation growing in pad/joint (Photo 8)?	Blocked / 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	11-Are the dead drains and outlets at the top of the wall blocked? (Photo 14)	Clear / 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	12-Can water enter the wall between coping and slab (i.e. Drains appropriately)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	13-Is there evidence of discharge point of fill washing through drain pipe?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

Not yet

RISE WALL JOINTS

Required Tests	Long Level String - Concrete/CFS	Joint	Measurement/Extent of Problem/Location/Photo Numbers
Yes	N/A	14-Is backfill coming out of joint or are there piles of backfill at the base of the wall? (Photos 2 & 3)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	15-Are there cracks for concrete or backfill behind panels when backing into joint? (Photo 7) If yes, record the approximate maximum joint width in inches.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	16-Is exposed backfill visible in the horizontal joint? (Photo 4)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	17-Are there visible signs in the joint? Is there evidence of backfill or water leaking through joint? (Do not record the joint width in inches)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	18-Do the joints have a non-uniform horizontal spacing? Are some horizontal joints larger/smaller than others? (Photo 6)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	19-Do the joints have a non-uniform vertical spacing? Are some vertical joints larger/smaller than others? (Photo 6)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	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/A	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% /

RISE WALL FACING

Required Tests	Long Level String - Concrete/CFS	Wall Facing	Measurement/Extent of Problem/Location/Photo Numbers
Yes	N/A	22-Are the panels "Tilt-Up"? Is there excessive cracking in the panel?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	23-Are there cracks for concrete or backfill behind 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/A	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/A	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/A	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/A	27-Does crack spacing suggest Differential Settlement?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	28-Does the wall exhibit Vertical Offset?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	29-Are the panels and supports loose or dislodged? If yes, is it necessary to contact UDOT if dislodgment occurs?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	30-Are the panels in danger of falling off? If possible, refer to UDOT for assistance.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	31-Are the panels "bulging" (bowing horizontally)? If so, record maximum deformation from acceptable coping to leveling pad. (Photo 11)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	32-Is there "flipping" at the top or bottom of the wall? (Record maximum degree of flipping from minimum along vertical level and finished area)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

RISE TOP OF WALL OBSERVATIONS

Required Tests	Long Level String - Concrete/CFS	Top Of Wall	Measurement/Extent of Problem/Location/Photo Numbers
Yes	N/A	33-Is there evidence of settlement at the top of the wall (prevent cracking, etc)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	34-Are there any open cracks in the concrete coping (not building)? If yes, record the approximate maximum crack width.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N/A	35-Is there the construction joint in the connecting coping opened up? (Photo 6) If yes, record the maximum joint width.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

None

Y	N	UKN	36-Is there a large gap between the approach slab and the approach pavement? (Photo 15) Often this produces a sharp transition as the approach is raised. Record the approximate maximum gap size.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	37-A) the abutment, has the joint between the wall coping and the abutment opened up significantly? If so record maximum distance.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	37-B) the coping wall pulling away from pavement roadway section? Please record maximum displacement for wall.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

*New*

MISE STABILITY				
Required Item: Slurry Test/Probe				
Yes	No	UKN	Structural Integrity	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	UKN	39-What is the location depth of leveling coat? (Based on probe into wall located 2 inches from wall to a maximum depth of 24 inches) (24 inches is the minimum depth for MSE Wall)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	40-Is leveling coat exposed?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	41-Is there cracking in the leveling coat? If so, record maximum crack size with page.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	42-Is there a fine front beam? (Level drops) directly along the wall before the slope changes? (Record width)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	43-Is there a deep slope than V: 1.5 to H: 1 in front of the wall? Please record depth and height of backfill above top of wall.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	44-Is there a deep slope than V: 1.5 to H: 1 below the wall? Please record depth and height of backfill below the wall.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	45-Is there excessive degradation of panel faces?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MISE METAL CORROSION				
Required Item: N/A Not Measured/CFR/Zip Lock Bag/In-situ				
Yes	No	UKN	Metal Corrosion	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	UKN	46-Is there excessive corrosion on gunnaball or other exposed steel that might indicate excessive conditions?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	47-Are there major rust stains on the face panels? Along joints? If so, record total number.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	48-Are any (small) items exposed? Does there appear to be corrosion on these items? If applicable please record the total number of items affected.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	49-What is a relatively simple action of exposed soil? If so, please indicate depth in inches.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	50-Is there any indication of rebar corrosion (swelling, rust, exposed steel inside epoxy coating)? If so please record the total number of panels affected.	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MISE IMPACT/COLLISION PROTECTION				
Required Item: Concrete/CFR				
Yes	No	UKN	Impact/Collision	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	UKN	51-For gunnaball wall protection is piece at the base of the wall (to prevent it from potential traffic).	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	52-Does it appear that the wall has been involved in an accident (imploded panel, recent dips in the wall)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	53-Does it appear the wall functionality and integrity has been compromised by a collision or accident?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MISE OBSTRUCTIONS IN REINFORCEMENT GEOMETRY				
Required Item: Drawings				
Yes	No	UKN	Obstructions in Reinforcement Geometry	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	UKN	24-Are there acute wall angles (<90)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

MISE AS BUILT DIFFERENT FROM DESIGN				
Required Item: Drawings/Concrete/CFR				
Yes	No	UKN	MISE as built different than design	Measurement/Extent of Problem/Location/Photo Numbers
Y	N	UKN	54-Are there available drawings for the wall? Please indicate type (Situation and Layout, Design, As Built, etc.)	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	56-Is the layout in general accordance with drawings?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	57-Are the panels CFR (Cast in Place)? Does there appear to be excessive cracking in the panels?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	58-What is the OED/beam used in the construction of the wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	59-Are there any structures on or near wall that were not included in initial drawings?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	60-Are there any tripods, utilities, or structures that are not part of the initial drawings?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	61-How have there been any excavations or evidence of excavations near the wall?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	62-How have local property owners changed the dynamics of the wall (additional structures, tripods, vegetation, etc.)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /
Y	N	UKN	63-Are there piles located in the wall (bridge abutment)?	/ 0-No 1% 5% 10% 25% 50% 75% 90% 95% 100% /

*Likely*