General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.) 2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.) Seismic Design Category = C (Seismic Zone - 3) (No Seismic Analysis) (Seismic Analysis) (Seismic Analysis) Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{D1} = 0.369g ⚠ (Seismic Analysis) Acceleration Coefficient (effective peak ground acceleration coefficient), A = 0.338g

For strength limit state and extreme event limit state, the wall designer to confirm that the minimum Capacity to Demand Ratio (CDR) for bearing, sliding, overturning, eccentricity, and internal stability is greater than or equal to 1.0. MSE wall designer shall include this note on shop drawings.

For Extreme Event I limit state, the wall designer shall design wall for $\gamma EQ = 0.5$

 $\Phi_b=22\,^\circ$ and Unit weight, $\gamma_o=120$ pcf for retained backfill material to be retained by the mechanically stabilized earth wall system.

 Φ_{r} = 22° for unimproved foundation ground where wall is to bear. \triangle improved

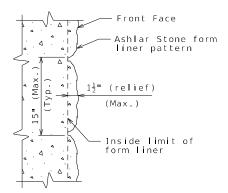
For <u>unimproved</u> foundation ground, factored bearing resistance is 2.2 ksf for strength limit state and factored bearing resistance is 3.0 ksf for extreme event limit state.

The maximum applied factored bearing stress for the strength and extreme event limit state(s) at the foundation level shall be shown on the shop drawings and shall be less than the factored bearing resistance.

Factored bearing resistance shall be used as shown on the plans. No adjustments are allowed.

Contractor shall include design Φ_r (actual $\Phi_r \geq 34^\circ$) and the total unit weight, y, , for the select granular backfill (reinforced backfill and wedge area ${\sf backfill})$ for structural systems on shop drawings. Contractor shall identify source of select granular backfill material, submit proctor in accordance with AASHTO T 99 (ASTM D698) and gradation with the shop drawings. When backfill material is too coarse to develop a proctor curve the contractor shall determine the maximum dry density (relative density) in accordance with ASTM D4253 and ASTM D4254 and assume percent passing the 200 sieve for optimum water content.

Total unit weight, $\gamma_c = (95\% \text{ compaction}) \times (\text{maximum dry density}) \times (1 + \text{optimum})$ water content)



FORM LINER DETAIL (PRECAST MODULAR PANEL WALL)

Notes for Form Liners:

The cost of form liners for MSE wall systems, complete in place, will be considered completely covered by the contract unit price for Mechanical Stabilized Earth Wall System.

Form liner shall be constructed in accordance with Special Provisions.

The following is a list of form liner manufacturers and types which may be used. Depth of relief for all form liner patterns shall vary up to 1 1/2. The height of any single 'stone' shall be 15" maximum

- Scott System, Inc.: Form liner pattern #167 "Ashlar Stone"
- Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone"
- Greenstreak: Form liner pattern #330 "Ashlar Stone"
- Spec Formliners: Form liner pattern #1515 "Ashlar Stone"
- Customrock: Form liner pattern #12020 "Tollway Ashlar"
- An approved equal

12/08/24 Designed: Detailed: Checked: HNG

Note: This drawing is not to scale. Follow dimensions.

Design $\Phi_r = 34^{\circ}$ for the select granular backfill (reinforced backfill)

No-Seismic-Analysis provisions may be considered for MSE wall design in laccordance with LRFD 11.5.4.2.

Use default values for the pullout friction factor, F^* , in accordance with LRFD figure 11.10.6.3.2-2 and default value for scale effect correction factor, α , in accordance with LRFD table 11.10.6.3.2-1. For approved steel strips not shown in LRFD figure 11.10.6.3.2-2, use $F^* \leq 2.0$ at zero depth and $F^* \leq T$ an ϕ , at 20 feet depth and ϕ , design = 34°. F^* and α values shall be shown on the

Design Unit Stresses:

All concrete for leveling pad and coping shall be Class B or B-1

The minimum compressive strength of concrete for precast modular panel shall be 4,000 psi in accordance with Sec 1052.

Excavation:

Excavation quantities and pay items are given on the roadway plans. Excavation quantities are based on a soil reinforcement length of 8 ft. The soil reinforcement length may vary based upon the wall design selected by the contractor. Plan excavation quantities will be paid regardless of any actual quantities removed based on the soil reinforcement length and design selected.

The MSE wall system shall be built vertical.

Sheet No. 2 of 6

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

The MSE wall system shall be a precast modular panel wall system.

Precast modular panel, drycast modular block, wetcast modular block 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. When CIP coping sections extend beyond the limits of a single panel, bond breaker (roofing felt or other approved alternate) between wall panel and coping is required. Coping joints shall use 3/4-inch chamfers and shall be sealed with 3/4-inch joint filler. Coping reinforcement shall terminate 1 1/2-inch minimum from face of coping joint.

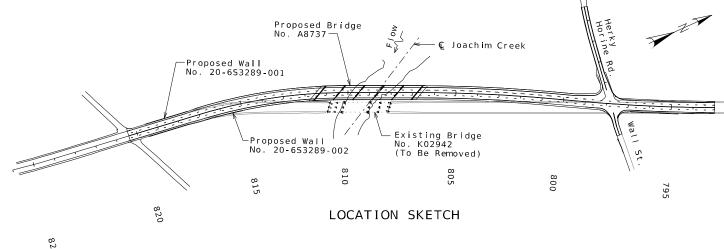
The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed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

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. A edges of each fabric strip shall provide a positive seal. A minimum 12 overlap shall be provided between spliced filter fabric.

Aluminized soil reinforcement shall have edges coated with coating material

Soil reinforcement shall be spaced to avoid roadway drop inlet behind wall.

Upper two layers of soil reinforcement shall be extended 3 feet beyond the lower layers when wall height is greater than or equal to 10 feet



GENERAL NOTES FOR MSE WALL NO. 20-6S3289-001

⚠ Seismic analysis provisions shall not be

ignored for MSE wall design

HOWARD NELSON GOTSCHALL II NUMBER PE-2004000786

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

09/29/25 61/67 MO SHEET NO BR

> **JEFFERSON** J6S3289

PROJECT NO.

BRIDGE NO 20-653289-001

ANSON
onal Services Inc.
Ave., Sulte 950 Ĭ

General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.) 2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)
Seismic Design Category = C (Seismic Zone - 3) (No Seismic Analysis)
Design earthquake response spectral acceleration coefficient at 1.0 second period, - ⚠ (Seismic Analysis)

 $S_{\rm D_1}<0.15=0.369$ Acceleration Coefficient (effective peak ground acceleration coefficient), $A_{\rm s}=0.338$

Design Loading:

For strength limit state and extreme event limit state, the wall designer to confirm that the minimum Capacity to Demand Ratio (CDR) for bearing, sliding, overturning, eccentricity, and internal stability is greater than or equal to 1.0. MSE wall designer shall include this note on shop drawings.

For Extreme Event I limit state, the wall designer shall design wall for $\gamma EQ = 0.5$

 $\Phi_\text{b}=22\,^\circ$ and Unit weight, $\gamma_\text{b}=120$ pcf for retained backfill material to be retained by the mechanically stabilized earth wall system.

 $\Phi_{\star} = 22^{\circ}$ for unimproved foundation ground where wall is to bear.

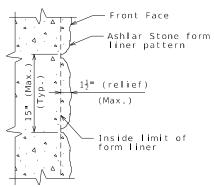
For unimproved foundation ground, factored bearing resistance is 3.0 ksf for strength limit state and factored bearing resistance is 4.0 ksf for extreme event limit state.

The maximum applied factored bearing stress for the strength and extreme event limit state(s) at the foundation level shall be shown on the shop drawings and shall be less than the factored bearing resistance.

Factored bearing resistance shall be used as shown on the plans. No adjustments are allowed.

Contractor shall include design Φ_{r} (actual $\Phi_{r} \geq 34^{\circ}$) and the total unit weight, γ_c , for the select granular backfill (reinforced backfill and wedge area backfill) for structural systems on shop drawings. Contractor shall identify source of select granular backfill material, submit proctor in accordance with AASHTO T 99 (ASTM D698) and gradation with the shop drawings. When backfill material is too coarse to develop a proctor curve the contractor shall determine the maximum dry density (relative density) in accordance with ASTM D4253 and ASTM D4254 and assume percent passing the 200 sieve for optimum water content.

Total unit weight, $\gamma_r = (95\% \text{ compaction}) \times (\text{maximum dry density}) \times (1 + \text{optimum})$ water content)



FORM LINER DETAIL (PRECAST MODULAR PANEL WALL)

Notes for Form Liners:

The cost of form liners for MSE wall systems, complete in place, will be considered completely covered by the contract unit price for Mechanical Stabilized Earth Wall System.

Form liner shall be constructed in accordance with Special Provisions.

The following is a list of form liner manufacturers and types which may be used. Depth of relief for all form liner patterns shall vary up to 1 1/2. The height of any single 'stone' shall be 15" maximum

- Scott System, Inc.: Form liner pattern #167 "Ashlar Stone"
- Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone"
- Greenstreak: Form liner pattern #330 "Ashlar Stone"
- Spec Formliners: Form liner pattern #1515 "Ashlar Stone"
- Customrock: Form liner pattern #12020 "Tollway Ashlar"
- An approved equal

12/08/24 Designed: Detailed: Checked: HNG

Note: This drawing is not to scale. Follow dimensions.

Design $\Phi_r = 34^{\circ}$ for the select granular backfill (reinforced backfill)

No-Seismic-Analysis provisions may be considered for MSE wall design in accordance with LRFD 11.5.4.2.

Use default values for the pullout friction factor, F*, in accordance with LRFD figure 11.10.6.3.2-2 and default value for scale effect correction factor, α , in accordance with LRFD table 11.10.6.3.2-1. For approved steel strips not shown in LRFD figure 11.10.6.3.2-2, use F* \leq 2.0 at zero depth and F* \leq Tan Φ , at 20 feet depth and Φ , design = 34°. F* and α values shall be shown on the shop drawings.

Design Unit Stresses:

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

The minimum compressive strength of concrete for precast modular panel shall be 4,000 psi in accordance with Sec 1052.

Excavation quantities and pay items are given on the roadway plans. Excavation quantities are based on a soil reinforcement length of 0.95H or a minimum of 8 ft. The soil reinforcement length may vary based upon the wall design selected by the contractor. Plan excavation quantities will be paid regardless of any actual quantities removed based on the soil reinforcement length and design selected.

The MSE wall system shall be built vertical.

Sheet No. 2 of 7

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

The MSE wall system shall be a precast modular panel wall system.

Precast modular panel, drycast modular block, wetcast modular block 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. When CIP coping sections extend beyond the limits of a single panel, bond breaker (roofing felt or other approved alternate) between wall panel and coping is required. Coping joints shall use 3/4-inch chamfers and shall be sealed with 3/4-inch joint filler. Coping reinforcement shall terminate 1 1/2-inch minimum from face of coping joint.

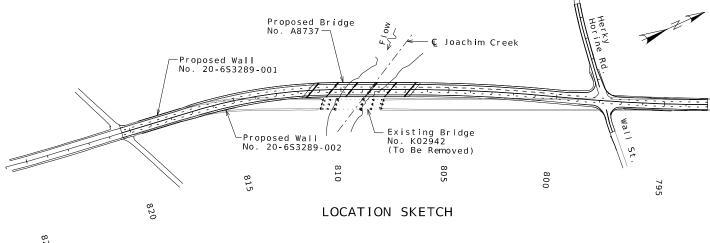
The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed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

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. All edges of each fabric strip shall provide a positive seal. A minimum 12 overlap shall be provided between spliced filter fabric.

Aluminized soil reinforcement shall have edges coated with coating material

Soil reinforcement shall be spaced to avoid roadway drop inlet behind wall.

Upper two layers of soil reinforcement shall be extended 3 feet beyond the Tower layers when wall height is greater than or equal to 10 feet.



GENERAL NOTES

⚠ Seismic analysis provisions shall not be

ignored for MSE wall design

HOWARD NELSON GOTSCHALL II NUMBER PE-2004000786

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

09/29/25 61/67 MO SHEET NO BR

> **JEFFERSON** J6S3289

PROJECT NO.

BRIDGE NO 20-653289-002

HANSON

FOR MSE WALL NO. 20-6S3289-002

									PIPE	S AND) END	SECT	ONS							
															FLARED	PIPE	PIPE	PRECAST	PRECAST	
PLAN	EXIT			FROM		ТО		CLASS 3			GROUP			GROUP B	END SECTION	COLLAR	COLLAR	BEND	WYE	TEMP
SHEET NO	STRUCTURE	PIPE			OFFSET		OFFSET	EXCAV.	12 IN		l	24 IN	36 IN	72 IN	72 IN GROUP B	TYPE A	MOD. TYPE C	45 DEG.	36 IN / 72 IN	SHORIN
(_ OF 11)	ID	ID	ROADWAY		` ′	STATION	(FT)	(CY)	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	LS
5	DI 1-10	SS 1-10	US 61/67	951+33.80	30.50LT	951+95.47	81.55 RT	181				126								1
5	EX GI 1-11	SS 1-11	US 61/67	951+30.64	36.77 LT	951+33.80	30.50 LT	4				5								
5	DI 1-20	SS 1-20	US 61/67	949+97.04	30.50 LT	951+33.80	30.50 LT	95				135								
4	EX GI 1-21	SS 1-21	US 61/67	949+96.72	35.98 LT	949+97.04	30.50 LT	9	4											
4	DI 1-30	SS 1-30	US 61/67	948+20.69	29.35 LT	949+97.04	30.50 LT	108				174								
4	DI 1-31	SS 1-32	US 61/67	948+22.48	34.63 RT	948+20.69	29.35 LT	31		58										
4	DI 1-40	SS 1-40	US 61/67	948+04.51	49.89 LT	948+20.69	29.35 LT	17				25								
6	DI 2-80	SS 2-80	US 61/67	957+92.89	33.50 LT	958+28.76	33.50 LT	26				34								
7	PCA 2-35	SS 2-35	US 61/67	962+15.68	31.77 LT	962+23.22	33.50 LT	7				6				1				i
7	MH 2-30	SS 2-30	US 61/67	962+23.22	33.50 LT	962+28.46	32.98 LT	2		3										1
7	PCA 2-25	SS 2-30	US 61/68	962+23.22	33.50 LT	962+28.46	32.98 LT									1				1
10	BEND 3-05	SS 3-05	US 61/67	978+82.77	237.01 RT	979+39.87	236.94 RT	171						57	1			1		1
10	WYE 3-10	SS 3-10	US 61/67	978+51.88	206.20 RT	978+82.77	237.01 RT	126						42					1	1
10	BEND 3-11	SS 3-11	US 61/67	978+38.50	192.85 RT	978+51.88	206.20 RT	57						19				1		1
10	PCC 3-12	SS 3-12	US 61/67	978+32.65	192.36 RT	978+38.50	192.85 RT	18						6			1			1
10	MH 3-20	SS 3-20	US 61/67	978+51.84	109.76 RT	978+51.88	206.20 RT	173					94							
10	DI 3-30	SS 3-30	US 61/67	977+89.30	46.30 RT	978+51.84	109.76 RT	121					86							i
10	DI 3-40	SS 3-40	US 61/67	977+86.53	30.50 RT	977+89.30	46.30 RT	17					15							
10	DI 3-41	SS 3-41	US 61/67	976+60.72	29.41 RT	977+86.32	28.64 RT	87		126										
10	T10 3-50	SS 3-50	US 61/67	977+77.37	31.17 LT	977+86.53	30.50 RT	69					60							
10	MH 3-51	SS 3-51	US 61/67	978+42.76	31.68 LT	977+77.37	31.17 LT	56				58								1
10	T10 3-52	SS 3-52	US 61/67	979+21.18	30.87 LT	978+42.76	31.68 LT	65				71								
10	EX DCI 3-53	SS 3-53	US 61/67	979+99.78	34.55 LT	979+21.18	30.87 LT	56				70								
10	PCA 3-55	SS 3-55	US 61/67	977+77.63	38.57 LT	977+77.37	31.17 LT	3	4							1				
10	PCA 3-56	SS 3-56	US 61/67	978+42.93	35.79 LT	978+42.76	31.68 LT	1	2							1				
10	DI 3-60	SS 3-60	US 61/67	976+55.59	29.01 LT	977+77.37	31.17 LT	104			116									1
							SUBTOTAL	1604	10	187	116	704	255	124	1	4	1	2	1	1
						Ţ	PAY TOTAL	1719	10	187	116	704	255	124	1	4	1	2	1	1

*	NO	DIRECT	PAY	FOR	SAWCUT	OVER	PIPE

* - SEE PIPE TABLE FOR TOTAL

							INLETS & MA	NHOLES					
PLAN					CLASS 3	CURVED VANE	CURVED VANE		MANHOLE	MANHOLE	PRECAST	PRECAST CONCR	ETE MANHOLE
SHEET NO	STRUCTURE			OFFSET	EXCAV.	GRATE AND FRAME	GRATE AND FRAME	CURB	FRAME AND COVER FRA	ME AND COVER	DROP INLET	48 IN	60 IN
						2 FT X 2 FT	4 FT X 2 FT	INLET	TYPE 1-A	TYPE 3	3 FT X 3 FT		
_ OF 11)	ID	ROADWAY	STATION	(FT)	(CY)	(EA)	(EA)	(EA)	(EA)	(EA)	(LF)	(LF)	(LF)
5	DI 1-10	US 61/67	951+33.80	30.50 LT	6	1					3		
5	DI 1-11	US 61/67	951+30.64	36.77 LT		1							
5	DI 1-20	US 61/67	949+99.71	29.00 LT	4	1					2		
4	DI 1-30	US 61/67	948+20.69	29+.35 LT	5	1					3		
4	DI 1-31	US 61/67	948+22.62	32.51 RT	4	1					3		
4	DI 1-40	US 61/67	948+04.51	49.89 LT	5	1					3		
7	MH 2-30	US 61/67	962+23.22	33.50 LT	7				1			3	
7	D 2-50	US 61/67	960+64.03	32.25 LT		1							
6	D 2-60	US 61/67	959+17.48	32.25 LT		1							
6	D 2-70	US 61/67	958+28.65	32.25 LT		1							
6	D 2-80	US 61/67	957+92.76	32.25 LT	6	1					1		
10	MH 3-20	US 61/67	978+51.84	109.76 RT	14				1				7
10	DI 3-30		977+89.30		7	1					4		
10	DI 3-40		977+86.53		7	1					4		
10	DI 3-41		976+57.71		5	1					3		
10	T10 3-50		977+89.41		16			4		4	4		
10	MH 3-51	US 61/67	978+42.76	31.68 LT	10				1			4	
10	T10 3-52		979+21.18		14			4		4			
10	DI 3-60	,	976+55.59		5		1						
10	DI 3-70	,	975+51.19				1						
10	DI 3-80		975+14.69			1							
10	DI 3-90	-	974+46.43	28.65 LT		1							
10	DI 3-110		971+86.90			1							
10	T5 3-120		970+82.09	30.50 LT				2		2			
10	T5 3-130	US 61/67	969+98.97	30.50 LT				2		2			
				SUBTOTAL	115	16	2	12	3	12	30	7	7
				PAY TOTAL	*	16	2	12	3	12	30	7	7

1 REVISED

DATE PREPARED
9/29/2025
ROUTE STATE
61/67 MD
DISTRICT SHEET N
SL 3

JOB NO.

J6S3391

CONTRACT ID.

PROJECT NO. BRIDGE NO.

SUMMARY OF QUANTITIES SHEET 9 OF 10