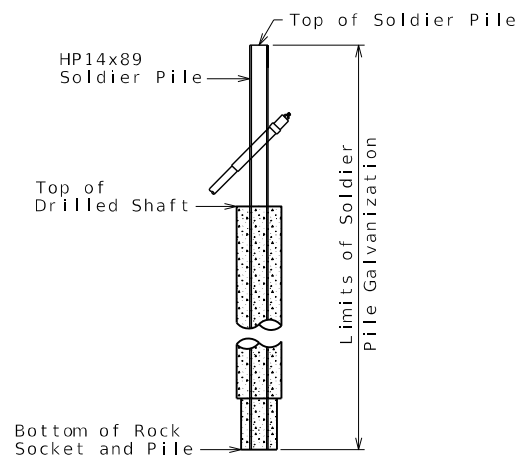


Estimated Quantities

Item	Unit	Total
Drilled Shafts (2 ft. 6 in. Dia.)	linear foot	397
Rock Sockets (2 ft. 0 in. Dia.)	linear foot	305
Video Camera Inspection	each	13
Foundation Inspection Holes	linear foot	183
Tieback Anchor Performance Test	lump sum	1
Tieback Anchors	linear foot @ 56'	56
Galvanized Structural Steel Soldier Piles (HP14x89)	linear foot	1229
Concrete Coping	linear foot	360
Precast Concrete Wall Panels	sq. foot	2620
Fabricated Structural Carbon Steel (Misc.)	pound	4880
Fabricated Structural Low Alloy Steel (Misc.)	pound	4090
Drainage System	lump sum	1
	1900'	

Note: Supplementary Television Camera Inspection and Foundation Inspection Holes shall be performed per Sec 702 on 20% of the drilled shafts at the discretion of the engineer.



GALVANIZATION DETAIL

Notes:
All piles shall be galvanized full length.
All structural steel shall be galvanized in accordance with ASTM A123 and Sec 1081.

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specification (9th Ed.)
2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)
Seismic Design Category = B (Seismic Zone 2) (Seismic Analysis)
Design earthquake response acceleration coefficient at 1.0 second period, $S_{D1} < 0.15 = 0.15$
Acceleration Coefficient (effective peak ground acceleration coefficient), $A_s = 0.11$

Design Loading:
HL-93
Earth = 130 lb/cf, Equivalent Fluid Pressure 45 lb/cf (Drained)
Earth = 130 lb/ft, Equivalent Fluid Pressure 107 lb/ft (Undrained)

Design Unit Stresses:
Class A-1 Concrete $f'c = 4,000$ psi
Class B-1 Concrete (Substructure) $f'c = 4,000$ psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets) $f'c = 4,000$ psi
Reinforcing Steel (ASTM A615 Grade 60) $f_y = 60,000$ psi
Structural Steel (ASTM A709 Grade 50) $f_y = 50,000$ psi
Structural Steel HP Pile (ASTM A709 Grade 50) $f_y = 50,000$ psi
Structural Carbon Steel (ASTM A709 Grade 36) $f_y = 36,000$ psi
Steel Pipe (ASTM A53 Grade B) $f_y = 35,000$ psi
Structural steel shall be galvanized in accordance with ASTM A123 and Sec 1081.

Joint Filler:

All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.
All reinforcement shall be epoxy coated.

Miscellaneous:

All concrete for the precast wall panels shall be Class A-1.
The contractor shall have the option to cast-in-place the precast concrete wall panels using Class B-1.

All concrete for the coping shall be Class B-1.

The wall shall be built vertical.

The contractor shall protect the galvanized surfaces of the soldier piles during installation and placement of backfill.

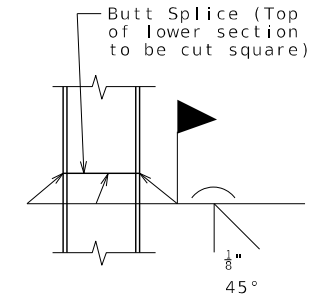
The contractor shall not backfill behind or in front of the wall higher than 1 foot below the tieback anchor elevation until the tieback anchor is installed, attached to the soldier pile and the anchor grout has attained a compressive strength of 3,000 psi or greater.

The contractor shall limit the difference in backfill height, between the back of wall and front of wall to less than 5 ft. until the tieback anchor is installed, attached to the soldier pile and the anchor grout has attained a compressive strength of 3,000 psi or greater.

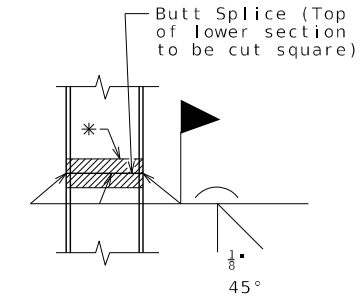
Route 76 to be closed during construction.

Suggested General Sequence of Construction:

- Complete general excavation as shown on Roadway Plans.
- Install and test performance test tieback anchor.
- Drill drilled shafts and rock sockets, then install soldier piles and backfill with concrete.
- Install bottom precast wall panel and drainage system.
- Install additional precast wall panels as required to maintain backfill.
- Place backfill behind wall and in front of the wall to 1 ft. below tieback elevation to allow drilling to install the tiebacks. The contractor shall ensure the difference in backfill heights does not exceed 5 ft.
- Install tiebacks and snug nut on tieback to restrain wall.
- Backfill behind wall to top.
- Proof-test tieback anchors and lockoff.
- Install coping and gutter.
- Place remainder of fill and riprap in front of wall.
- Complete remaining roadway work.



STEEL PILE SPLICE
(If required)



STEEL PILE SPLICE
(If required within the length of galvanization)

* Galvanization material shall be omitted or removed for a minimum of 2" around weld locations. The method used to omit or remove galvanizing material shall be as approved by the engineer.

Splices to provide additional length to the pile shall only be added at the bottom end of the pile.

Foundation Data

Type	Design Data	Soldier Pile, Drilled Shaft & Rock Socket Number																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Soldier Pile	Pile Type and Size	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89
Drilled Shaft	Minimum Nominal Axial Compressive Resistance	ksf	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Rock Socket	Minimum Nominal Axial Compressive Resistance (Skin Friction)	ksf	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5

Foundation Data

Type	Design Data	Soldier Pile, Drilled Shaft & Rock Socket Number																			
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Soldier Pile	Pile Type and Size	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89
Drilled Shaft	Minimum Nominal Axial Compressive Resistance	ksf	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Rock Socket	Minimum Nominal Axial Compressive Resistance (Skin Friction)	ksf	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5

Foundation Data

Type	Design Data	Soldier Pile, Drilled Shaft & Rock Socket Number																			
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soldier Pile	Pile Type and Size	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89	HP14x89
Drilled Shaft	Minimum Nominal Axial Compressive Resistance	ksf	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Rock Socket	Minimum Nominal Axial Compressive Resistance (Skin Friction)	ksf	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5

Note: For lengths of soldier piles, drilled shafts and rock sockets, see Sheet No. 5.

Designed: SMC 11/06/25
Detailed: SMC 11/06/25
Checked: HNG 11/06/25

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

Sheet No. 4 of 23



REVISED 04-06-2026

QUANTITIES, GENERAL NOTES & FOUNDATION DATA TABLES



THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 04/06/26

ROUTE: 76 STATE: MO

DISTRICT: BR SHEET NO.: 4

COUNTY: TANEY JOB NO.: JSR0326

CONTRACT ID.

PROJECT NO.

BRIDGE NO.: A9800

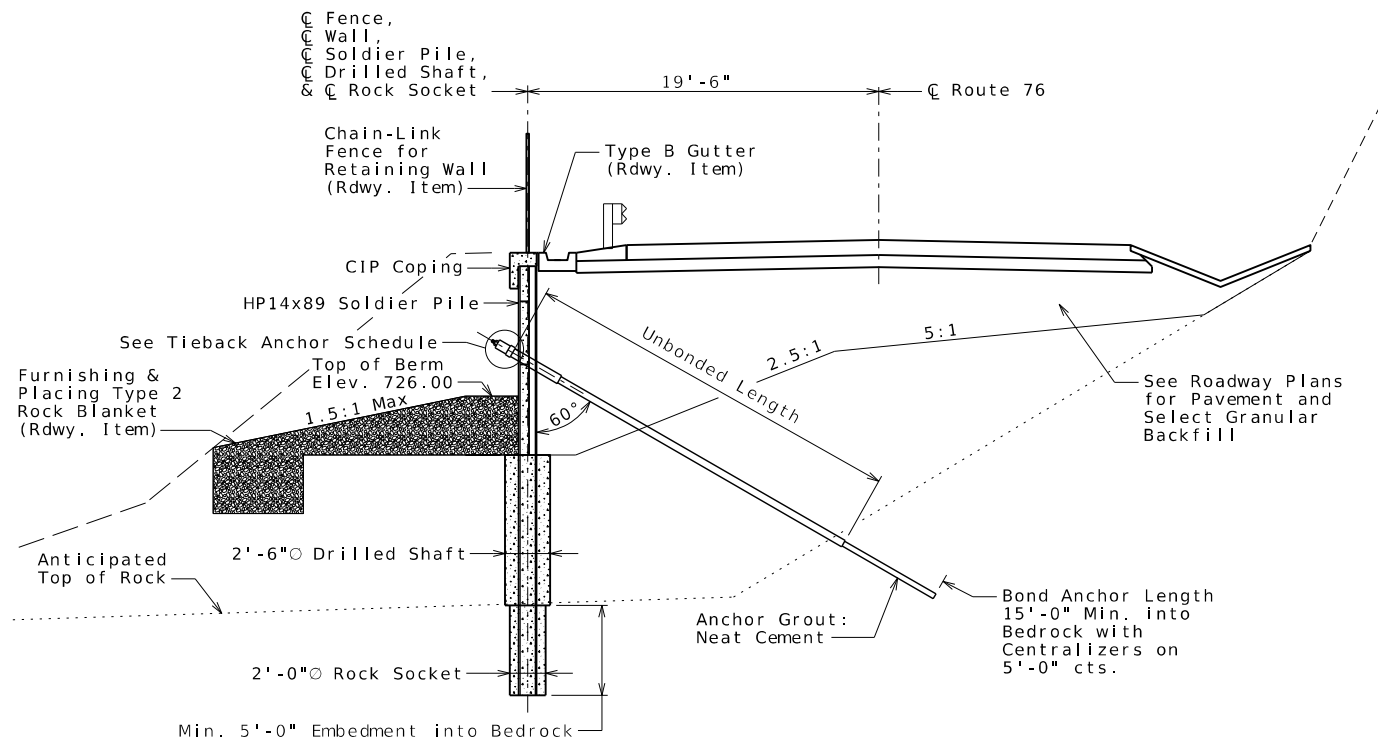
DATE	DESCRIPTION	REVISION	QUANTITY
04-06-2026			

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



HANSON Professional Services Inc.
600 Washington Ave, Suite 950
St. Louis, Missouri 63101
Professional Engineer 63101
www.hanson-inc.com 314.770.0467

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WALL TYPICAL SECTION

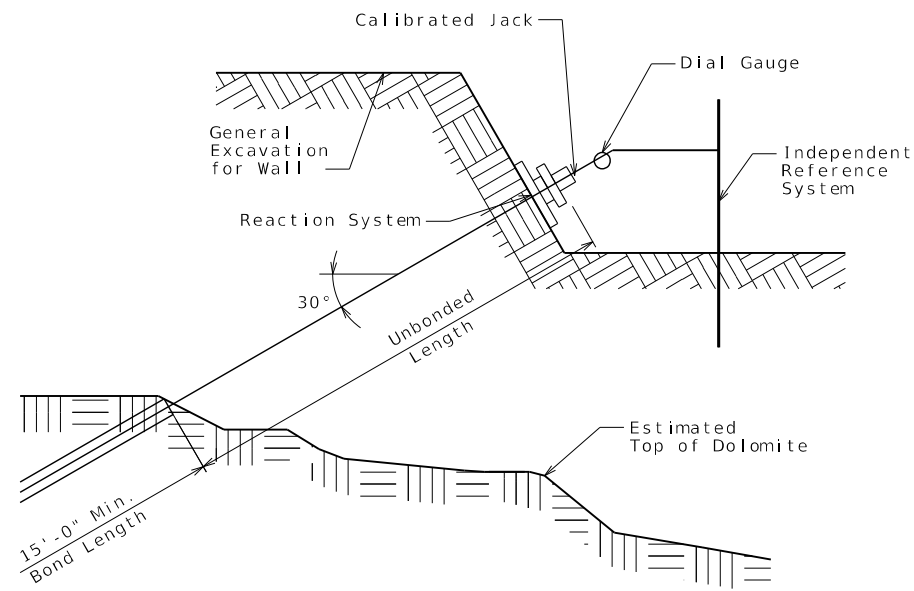


DIAGRAM OF PERFORMANCE TEST ANCHOR
STA 193+02, 19.5' LT.

Performance Test Note:

Tieback - use same Tieback System (e.g. Corrosion Protection, Grout, Bar) and Installation methods as production Tieback Anchors. Install and test performance Test Tieback Anchor before installing production Tieback Anchors. Permanent Casing not required for performance Test Anchor.

Tie Back Number	Soldier Pile Number	Elev. at Face of Wall (ft)	Unbonded Length (ft)	Total Length* (ft)	Design Load (kips)	Lockoff Load (kips)
1	4	731.50	25	40	150	105
2	5	730.00	25	40	150	105
3	6	728.00	25	40	150	105
4	7	728.00	25	40	150	105
5	8	728.00	25	40	150	105
6	9	728.00	20	35	150	105
7	10	728.00	20	35	150	105
8	11	728.00	20	35	150	105
9	12	728.00	20	35	150	105
10	13	728.00	20	35	150	105
11	14	728.00	20	35	150	105
12	15	728.00	20	35	150	105
13	16	728.00	20	35	150	105
14	17	728.00	20	35	150	105
15	18	728.00	20	35	150	105
16	19	728.00	20	35	150	105
17	20	728.00	20	35	150	105
18	21	728.00	20	35	150	105
19	22	728.00	20	35	150	105
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28	31	728.00	20	35	150	105
29	32	728.00	20	35	150	105
30	33	728.00	20	35	150	105
31	34	728.00	20	35	150	105
32	35	728.00	20	35	150	105
33	36	728.00	20	35	150	105
34	37	728.00	20	35	150	105
35	38	728.00	20	35	150	105
36	39	728.00	20	35	150	105
37	40	728.00	20	35	150	105
38	41	728.00	20	35	150	105
39	42	728.00	20	35	150	105
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43	46	728.00	20	35	150	105
44	47	728.00	15	30	150	105
45	48	729.00	15	30	150	105
46	49	729.00	15	30	150	105
47	50	729.00	15	30	150	105
48	51	729.00	10	25	150	105
49	52	729.00	10	25	150	105
50	53	729.00	10	25	150	105
51	54	729.00	10	25	150	105
52	55	729.00	15	30	150	105
53	56	729.00	15	30	150	105
54	57	729.00	15	30	150	105
55	58	729.00	15	30	150	105
56	59	729.00	15	30	150	105
Total Length				1900	Linear Feet	

Added

Notes:

* Total length is from behind the anchor plate to end of bond zone. It does not include length above the anchor plate needed for stressing and lockoff.

All tieback anchors shall have the following:

- Angle of Inclination = 60°
- Minimum Bond Length = 15 ft.
- Est. Elev. of Top Bond Zone = Varies

Contractor may select the Threadbar Anchor or Steel Prestressing Strand alternative.

Contractor shall add additional length as needed for the type of anchor and stressing equipment.

For additional tieback anchor details, see Sheet No. 11.

For additional soldier pile details, see Sheet No. 12.

Chain-Link Fence for Retaining Wall shall be attached to the cast in place coping in accordance with STD. 607.11.

Fence posts shall clear joints in the wall coping at soldier piles by 6" min.

Select granular backfill (CY) to be paid for as roadway item.

Remaining backfill to be paid for as compacting embankment (CY), roadway item.

REVISION 04-06-2026

WALL TYPICAL SECTION & PERFORMANCE TEST ANCHOR

Designed: SMC 11/06/25
Detailed: SMC 11/06/25
Checked: HNG 11/06/25

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

Sheet No. 10 of 23

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STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-200400786
PROFESSIONAL ENGINEER

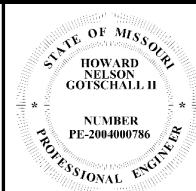
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DATE PREPARED: 04/06/26
ROUTE: 76 STATE: MO
DISTRICT: BR SHEET NO.: 10
COUNTY: TANEY
JOB NO.: JSR0326
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9800

DATE	DESCRIPTION
04-06-2026	REVISED QUANTITY TABLE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

HANSON
Hanson Professional Services Inc.
600 Washington Ave. Suite 950
St. Louis, Missouri 63101
Professional Engineer 001632
www.hanson-inc.com 314.770.0467



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DATE PREPARED
04/06/26

ROUTE 76 STATE MO

DISTRICT BR SHEET NO. 11

COUNTY TANEY

JOB NO. JSR0326

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9800

DATE DESCRIPTION

04-06-2026 REVISED NOTES

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

Notes:

- All tieback anchors shall have the following:
 - Angle of Inclination = 60°
 - Minimum Bond Length = 15 ft.
 - Est. Elev. of Top Bond Zone = Varies

Contractor may select the Threadbar Anchor or Steel Prestressing Strand alternative.

Contractor shall add additional length as needed for the type of anchor and stressing equipment.

Ultimate strength of Threadbar shall = 150 ksi.

Ultimate strength of Steel Prestressing Strands shall = 270 ksi.

Nominal bond stress between anchor grout and dolomite shall be 25 ksf with a $\phi_G = 0.5$.

Nominal bond stress between Rock Socket and Concrete shall be 11.5 ksf with a $\phi_G = 0.44$.

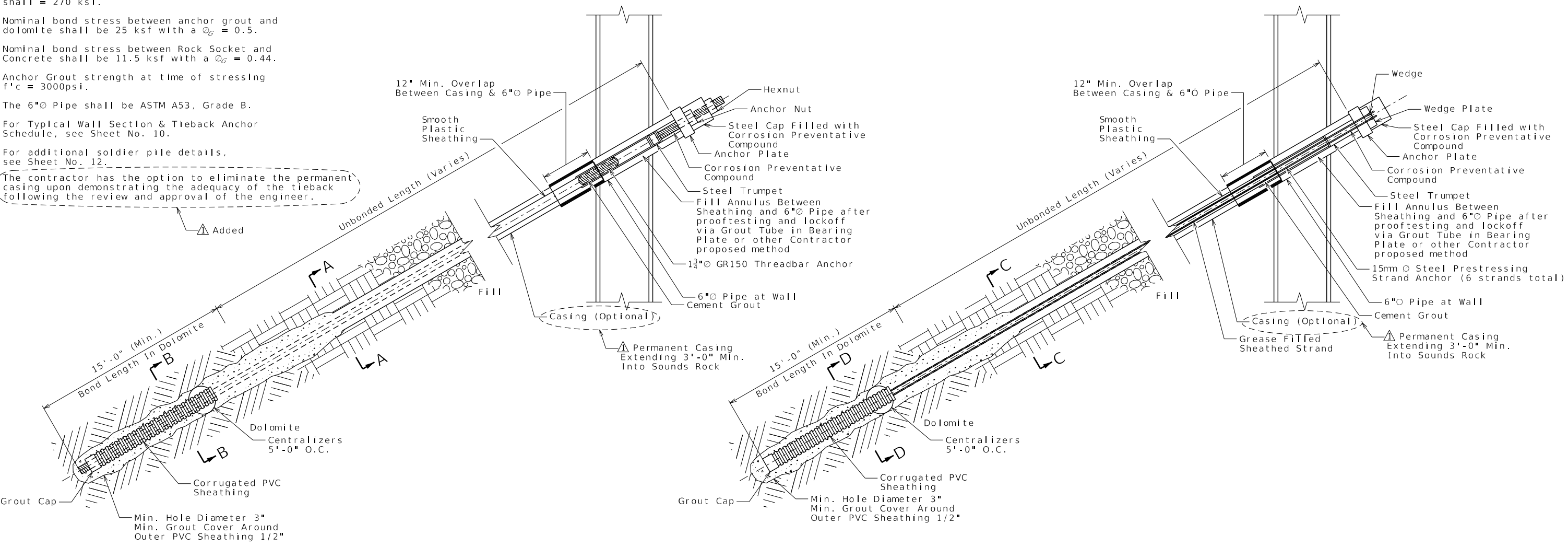
Anchor Grout strength at time of stressing $f'c = 3000psi$.

The 6" Pipe shall be ASTM A53, Grade B.

For Typical Wall Section & Tieback Anchor Schedule, see Sheet No. 10.

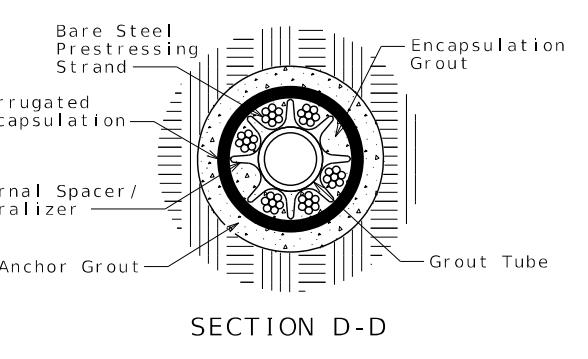
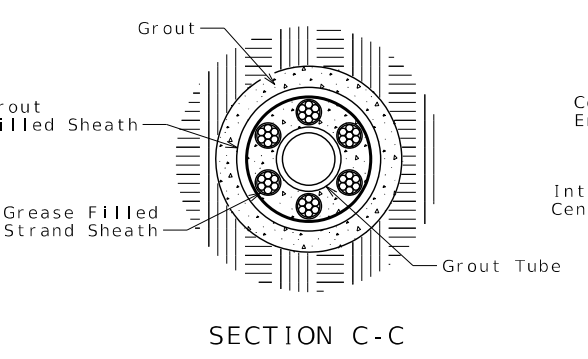
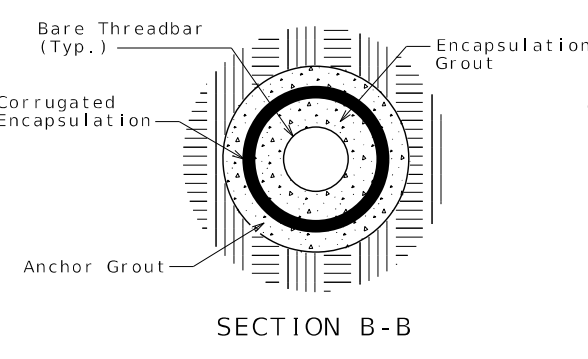
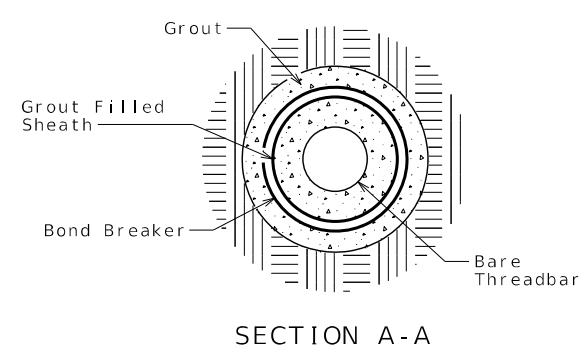
For additional soldier pile details, see Sheet No. 12.

The contractor has the option to eliminate the permanent casing upon demonstrating the adequacy of the tieback following the review and approval of the engineer.



TYPICAL THREADED BAR TIEBACK ANCHOR DETAIL WITH CLASS 1 CORROSION PROTECTION

TYPICAL STEEL PRESTRESSING STRAND TIEBACK ANCHOR DETAIL WITH CLASS 1 CORROSION PROTECTION



Designed: SMC 11/06/25
Detailed: SMC 11/06/25
Checked: HNG 11/06/25

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

Sheet No. 11 of 23

1 REVISED 04-06-2026

TIEBACK ANCHOR DETAILS



THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
04/06/26

ROUTE 76 STATE MO

DISTRICT BR SHEET NO. 12

COUNTY TANEY

JOB NO. JSR0326

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9800

DESCRIPTION

DATE

REVISIONS

NOTE

04-06-2026

REVISIONS

NOTE

04-06-2026

REVISIONS

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04-06-2026

REVISIONS

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04-06-2026

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04-06-2026

REVISIONS

NOTE

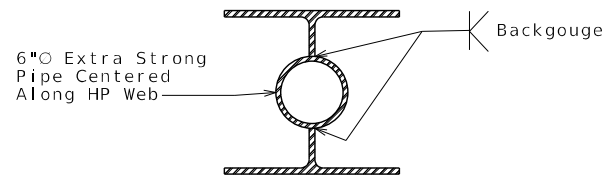
04-06-2026

REVISIONS

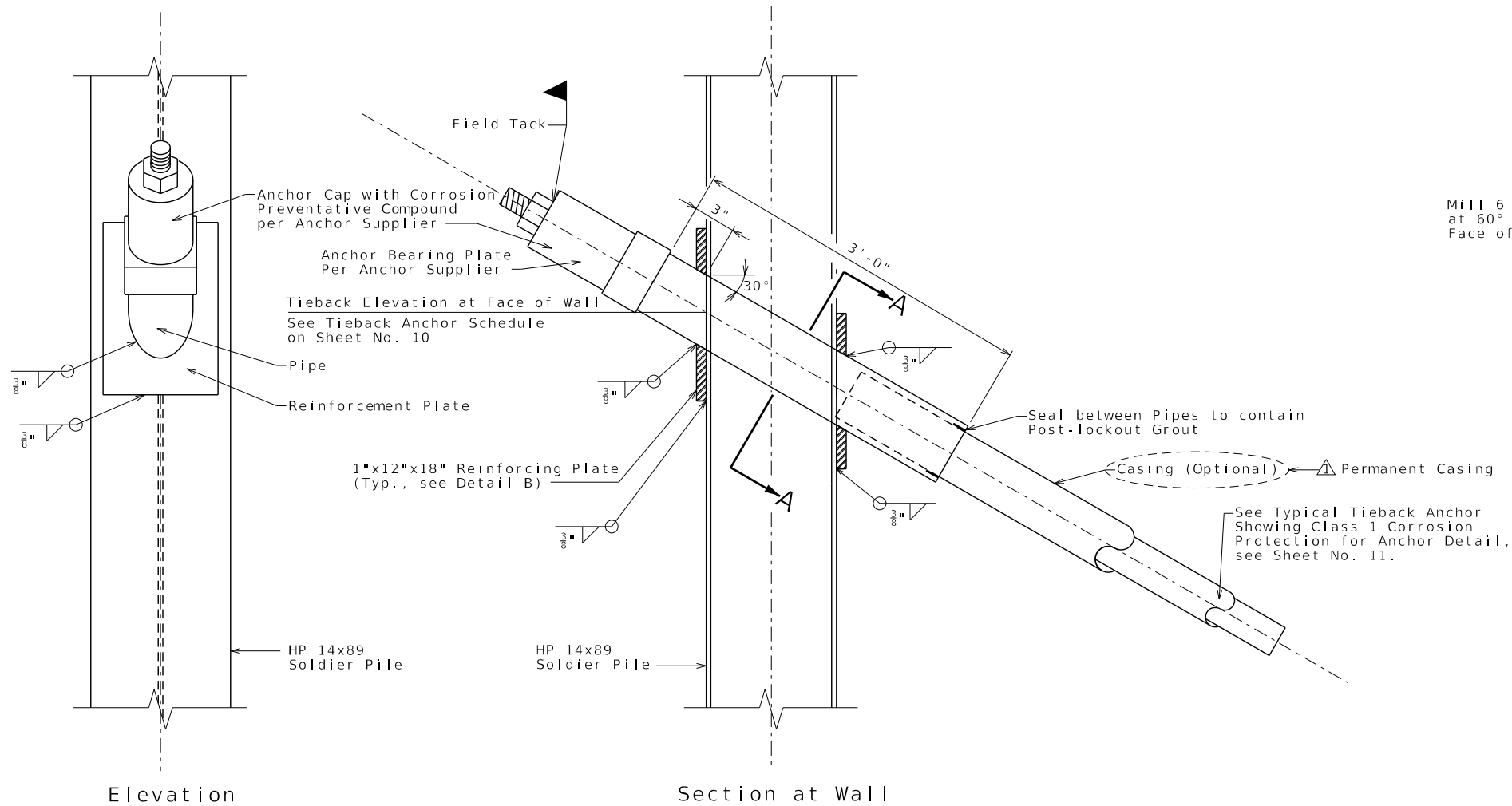
NOTE

04-06-2026

REVISIONS

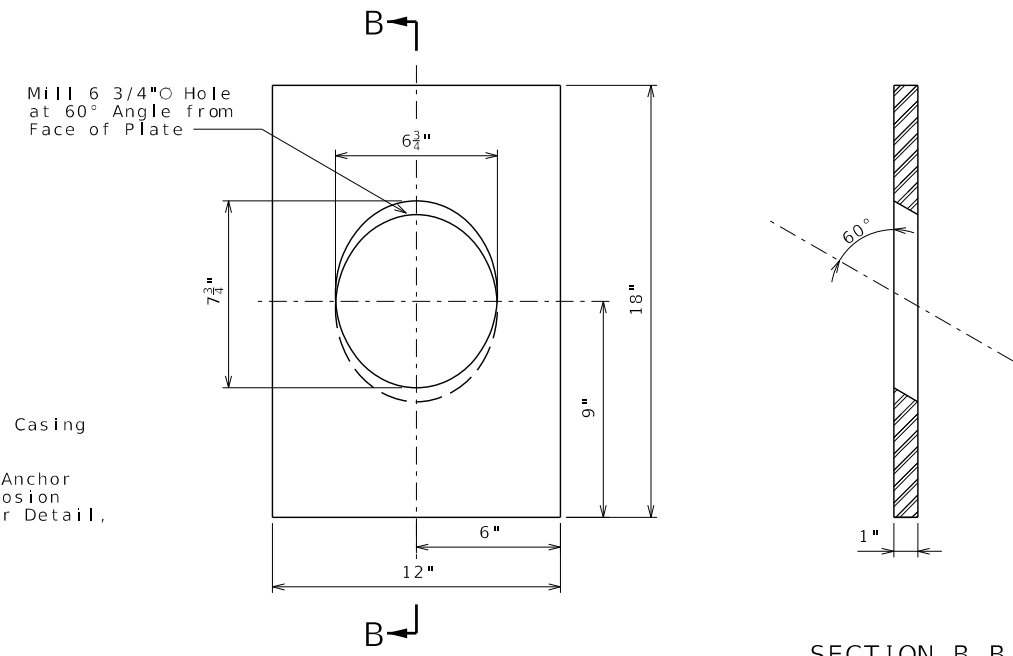


SECTION A-A
(Anchor not Shown for Clarity)



TYPICAL ANCHOR - SOLDIER PILE CONNECTION DETAIL

Note: 1 3/4" Ø GR150 Threadbar Anchor alternative shown, 6-15mm Ø Steel Prestressing Strand Anchor alternative similar.



DETAIL B
REINFORCEMENT PLATE AT ANCHOR-SOLDIER PILE CONNECTION
(2 Plates per Connection)

Notes:

For Typical Wall Section & Tieback Anchor Schedule, see Sheet No. 10.

For tieback anchor details, see Sheet No. 11.

The reinforcing plates and soldier pile (HP14x89), shall be ASTM A709, Grade 50.

The 6"Ø Pipe shall be ASTM A53, Grade B.

The reinforcing plates and 6"Ø Pipe shall be galvanized.

The anchor bearing plate, anchor cap and nut shall be galvanized in accordance with ASTM A123 and Sec 1081.

Designed: SMC 11/06/25
Detailed: SMC 11/06/25
Checked: HNG 11/06/25

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

Sheet No. 12 of 23

1 REVISED 04-06-2026

ANCHOR - SOLDIER BEAM CONNECTION DETAILS



Hanson Professional Services Inc.
600 Washington Ave, Suite 950
St. Louis, Missouri 63101
Professional Engineer 001632
www.hanson-inc.com
314.770.0467

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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