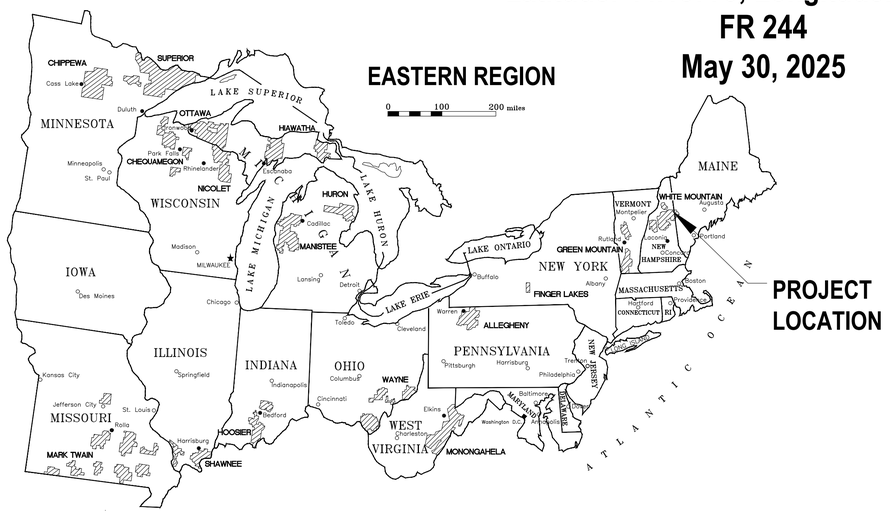
US Department of Agriculture
Forest Service
Region Nine

FOREST DEVELOPMENT PROJECT

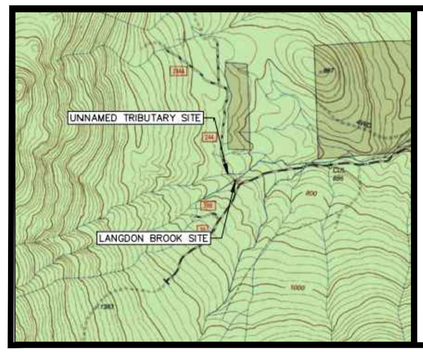
CORRIDOR 19 BRIDGES OVER LANGDON BROOK AND UNNAMED TRIBUTARY

White Mountain National Forest
Saco Ranger District
Chatham, Carroll County, NH

FINAL DESIGN DRAWINGS
Structure #092200000035580, McDonough Brook 1
Latitude: 44.15719, Longitude: -71.03632
Structure #092200000035579, McDonough Brook 2
Latitude: 44.15779, Longitude: -71.03698
FR 244
May 30, 2025



PROJECT LOCATION



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SHEET	NAME	TITLE
1	C0.01	COVER SHEET
2	C0.02	GENERAL NOTES
3	C1.11	LANGDON BROOK ROADWAY PLAN & PROFILE
4	C1.12	TRIBUTARY ROADWAY PLAN & PROFILE
5	C3.01	TYPICAL ROADWAY SECTION
6	C3.20	ROADWAY SECTIONS 0+80 - 3+90
7	C3.21	ROADWAY SECTIONS 4+00 - 6+00
8	S1.01	LANGDON BROOK BRIDGE PLAN & ELEVATION
9	S1.02	TRIBUTARY BRIDGE PLAN & ELEVATION
10	S1.21	LANGDON BROOK SUBSTRUCTURE PLAN & SURVEY LAYOUT
11	S1.22	TRIBUTARY SUBSTRUCTURE PLAN & SURVEY LAYOUT
12	S5.11	SUBSTRUCTURE SECTION & ELEVATION

Supplemental Plans

1	V1.01	EXISTING - FEATURES PLAN
2	W0.01	ENVIRONMENTAL RESOURCE NOTES
3	W1.11	LANGDON BROOK PLAN & PROFILE
4	W1.12	TRIBUTARY PLAN & PROFILE
5	W1.21	LANGDON BROOK EROSION & SEDIMENT CONTROL PLAN
6	W1.22	TRIBUTARY EROSION & SEDIMENT CONTROL PLAN
7	W3.01	TYPICAL CHANNEL SECTIONS
8	W3.11	LANGDON BROOK CHANNEL SECTIONS
9	W3.12	TRIBUTARY CHANNEL SECTIONS
10	W5.11	EROSION & SEDIMENT CONTROL DETAILS

JAMES INNES
Digitally signed by JAMES INNES
Date: 2025.08.21 08:10:36 -04'00'

DISTRICT RANGER - SACO RANGER DISTRICT — DATE

WARREN LEES
Digitally signed by WARREN LEES
Date: 2025.08.25 09:26:26 -04'00'

FOREST ENGINEER — DATE

Digitally signed by DEREK IBARGUEN
Date: 2025.08.25 16:01:33 -04'00'

FOREST SUPERVISOR — DATE

Jeffrey W. Dulka
Digitally signed by Jeffrey W. Dulka
DN: C=US, E=jeffrey.w.dulka@usda.gov, O=Engineering, OU=Forest Service, CN=Jeffrey W. Dulka
Location: R09 Regional Office
Reason: I have reviewed this document
Contact Info: Regional Bridge Program Mgr R09
Date: 2025.09.10 09:39:44 -05'00'

REGIONAL BRIDGE PROGRAM MANAGER - EASTERN REGION — DATE

JONATHAN HEYL
Digitally signed by JONATHAN HEYL
Date: 2025.09.10 10:31:09 -05'00'

DIRECTOR OF ENGINEERING - EASTERN REGION — DATE

Design Loads, Materials, and Specifications:

1. Design Loading: HL-93
2. Design Method: Load and Resistance Factor Design (LRFD)
3. Specifications: AASHTO LRFD Bridge Design Specifications, 9th Ed. 2020 as amended
   Federal Highway Administration (FHWA) FP-14 Standard Specifications
   United States Forest Service (USFS) Supplemental Specifications
4. Reinforcing Steel: AASHTO M31 (ASTM A615) Grade 60
5. Foundation Data:
   Abutments and Wingwalls: Spread footing with structural fill on undisturbed natural soil.
   Factored bearing resistance at the strength limit state of 3.0 ksf. Factored maximum bearing resistance at the service limit state of 3.0 ksf for post construction settlement of 1-inch or less. Design frost depth is 5 feet.
6. Concrete:
   Precast Block = 3,000 psi

General Notes:

1. Pre-manufactured steel bridges with transverse timber deck and wearing surface will be purchased by Owner. The Contractor will be responsible for the installation of the bridge. Items 55504-0200 and 55504-0300.
2. FR 244 shall be closed within the project limits as shown for the duration of construction. The Contractor shall provide traffic barricades as approved. All associated costs shall be incidental to Item 63501-0000.
3. The Contractor shall take all necessary measures to ensure that debris does not fall on any roadway, railroad, or waterway below the existing structure. All costs including erection, maintenance, and removal of temporary structures or other such approved methods shall be subsidiary to the appropriate items of work being performed.
4. All existing bronze discs representing state benchmarks or survey triangulation points must not be disturbed. When the work called for involves disturbing a bronze disc, the Contractor shall notify the Engineer sufficiently in advance of the work, in order to permit the USFS to temporarily relocate the affected marker.
5. The following items shall be installed as shown as shown on wetland sheets W1.11-W5.11.
   Item 15701-0000 Soil Erosion Control
   Item 15705-0100 Soil Erosion Control, Silt Fence
   Item 20815-0000 Cofferdams
   Item 64704-1600 Mitigation, streambed channel reconstruction
6. Item 20304-2000, Removal of Bridge, shall include the removal of the entire superstructure and substructure, and satisfactory disposal.

Foundation Notes:

1. Protruding boulders or cobbles encountered at the final excavation depth shall be removed or split to provide a level bearing surface.
2. Upon discovery of bedrock during excavating, the USFS Contracting Officer's Representative shall be contacted to discuss options and contract obligations.
3. For locations requiring rock removal, the required elevation for rock removal shall be 1-foot below the top of the leveling pad. Any rock removed below an elevation 1-foot lower than the required elevation will be considered as excess removal and will not be paid. No payment will be made for granular backfill that is required to replace excess rock removal. Rock excavation shall be paid under Item #20421-0000.
4. The dimensions and geometric layout of the structure (layout dimensions, elevations and working points coordinates) were developed based on the precast block dimensions shown in these plans. If the dimensions or geometry of the precast blocks are altered by the Contractor from what is shown, the Contractor should adjust the affected dimensions, elevations, and working point coordinates accordingly. Any required changes to the dimensions or geometric layout on the plans shall be subsidiary to FHWA Item #55211-0000.
5. Any foundation materials weakened as a result of insufficient care taken in maintaining a dewatered condition shall be removed and replaced with structural fill at the expense of the Contractor.
6. All footings shall be founded on a 1-foot thick layer of compacted structural fill placed over undisturbed soil. Structural fill, Item 20805, shall consist of crushed stone consisting of AASHTO M 80, Size Number 3, 4, 5, 57, 67, or 7.
7. Clean stone fill, meeting the requirements of the FHWA Specifications, may be substituted for structural fill if the maximum depth is less than 12 inches and directed by the Engineer.
8. Placement of structural fill shall be completed in the dry.
9. Rock bridge excavation may use either drilling and blasting methods or mechanical methods and will be paid for under FHWA Item 20421-0000. The Contractor shall be responsible for any damage or repairs to the cofferdam that result from blasting.

Timber Treatment Notes:

1. Timber preservation treatment shall be in accordance with the current AASHTO specifications.
2. All timber shall be treated with copper naphthenate hydrocarbon solvent A, per AWPA, UC4C (Minimum).

Langdon Brook Quantities:

Item #	Description	Unit	Quantity
15101-0000	Mobilization	LPSM	1
15701-0000	Soil erosion control	LPSM	1
15705-0100	Soil erosion control, silt fence	LNFT	450
20101-0000	Clearing and grubbing	ACRE	0.1
20304-2000	Removal of bridge	LPSM	1
20401-0000	Roadway excavation	CUYD	15
20402-0000	Subexcavation	CUYD	275
20410-0000	Select borrow	CUYD	15
20421-0000	Rock excavation	CUYD	70
20701-2000	Separation geotextile, non-woven	SQYD	75
20801-0000	Structure excavation	CUYD	105
20803-0000	Structural backfill	CUYD	50
20805-0000	Structural Fill	CUYD	30
20815-0000	Cofferdams	LPSM	1
21201-0000	Linear grading	MILE	0.0167
30103-2000	Aggregate base grading D	CUYD	40
31302-0000	Aggregate-topsoil course	SQYD	350
55210-0000	Precast Structural Concrete	CUYD	32
55504-0200	Erect 50 ft. prefabricated steel bridge	LPSM	0
55504-0300	Erect 70 ft. prefabricated steel bridge	LPSM	1
56401-0000	Bearing device	EACH	2
62502-0000	Turf establishment	SQYD	350
62901-0600	Rolled erosion control product, type 2.B	SQYD	350
63308-0000	Object marker	EACH	4
63501-0000	Temporary traffic control	LPSM	1
64704-1600	Streambed channel reconstruction	CUYD	100

Tributary Quantities:

Item #	Description	Unit	Quantity
15101-0000	Mobilization	LPSM	1
15701-0000	Soil erosion control	LPSM	1
15705-0100	Soil erosion control, silt fence	LNFT	440
20101-0000	Clearing and grubbing	ACRE	0.1
20304-2000	Removal of bridge	LPSM	1
20401-0000	Roadway excavation	CUYD	25
20402-0000	Subexcavation	CUYD	35
20410-0000	Select borrow	CUYD	150
20421-0000	Rock excavation	CUYD	25
20701-2000	Separation geotextile, non-woven	SQYD	75
20801-0000	Structure excavation	CUYD	60
20803-0000	Structural backfill	CUYD	55
20805-0000	Structural Fill	CUYD	32
20815-0000	Cofferdams	LPSM	1
21201-0000	Linear grading	MILE	0.0309
30103-2000	Aggregate base grading D	CUYD	90
31302-0000	Aggregate-topsoil course	SQYD	300
55210-0000	Precast Structural Concrete	CUYD	34
55504-0200	Erect 50 ft. prefabricated steel bridge	LPSM	1
55504-0300	Erect 70 ft. prefabricated steel bridge	LPSM	0
56401-0000	Bearing device	EACH	2
62502-0000	Turf establishment	SQYD	300
62901-0600	Rolled erosion control product, type 2.B	SQYD	300
63308-0000	Object marker	EACH	4
63501-0000	Temporary traffic control	LPSM	1
64704-1600	Streambed channel reconstruction	CUYD	50

Legend

- Overhead utility wires/pole
- Existing Major contour
- Existing Minor contour
- Proposed Major contour
- Proposed Minor contour
- Cofferdams
- Silt fence
- Existing Vegetation line
- Proposed Vegetation line
- Wetland
- Edge of gravel
- Edge of pavement
- R3UB3H — Wetland classification
- Right-of-way
- Erosion control matting
- Natural Channel Bottom
- Riprap
- Intersection point
- Iron pipe/rebar found
- TOB — OHW — Ordinary High Water-Top of Bank
- DV — Delineated Wetland

General Notes

STATE OF NEW HAMPSHIRE
CHRISTOPHER J. FOURNIER
No. 12651
LICENSED
PROFESSIONAL ENGINEER

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

HEB ENGINEERS
HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936

Drawing Title
General Notes

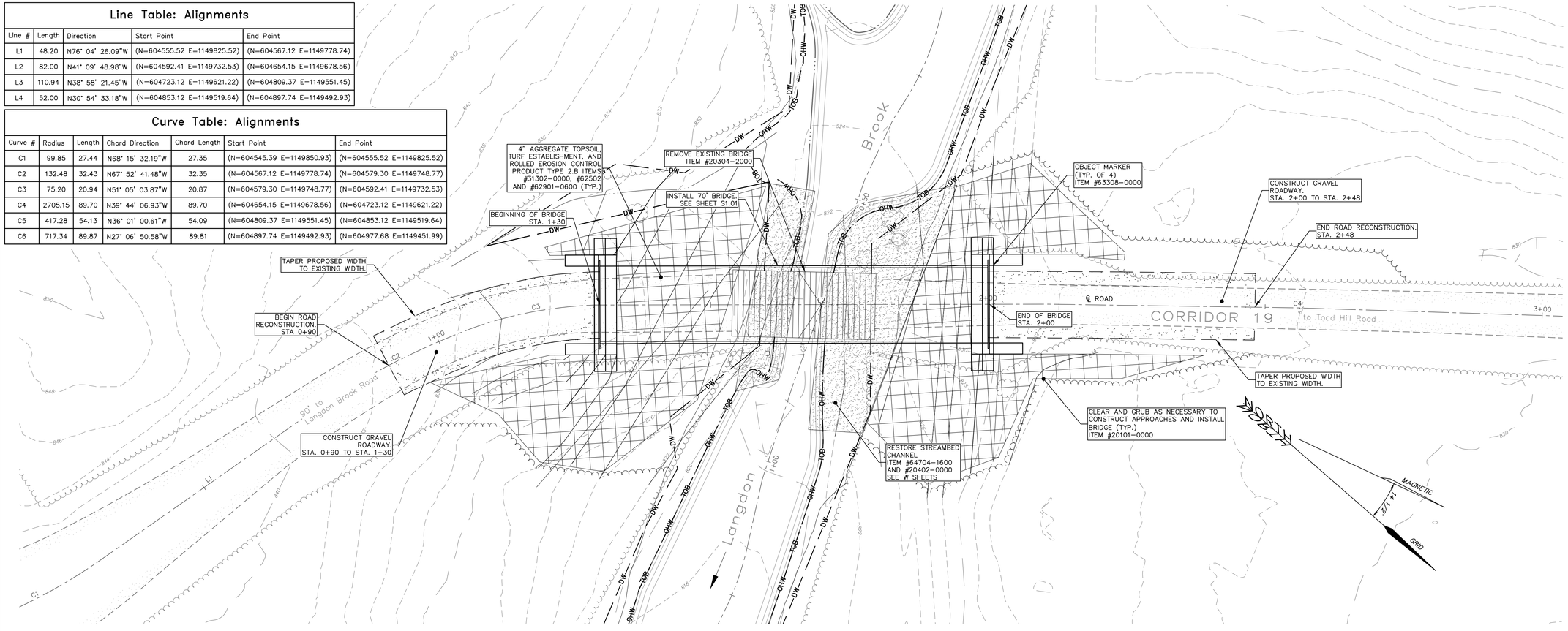
Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: C0.02
CAD File No.: -	
Date: 05/30/2025	
Scale: N.T.S.	

Line Table: Alignments

Line #	Length	Direction	Start Point	End Point
L1	48.20	N76° 04' 26.09"W	(N=604555.52 E=1149825.52)	(N=604567.12 E=1149778.74)
L2	82.00	N41° 09' 48.98"W	(N=604592.41 E=1149732.53)	(N=604654.15 E=1149678.56)
L3	110.94	N38° 58' 21.45"W	(N=604723.12 E=1149621.22)	(N=604809.37 E=1149551.45)
L4	52.00	N30° 54' 33.18"W	(N=604853.12 E=1149519.64)	(N=604897.74 E=1149492.93)

Curve Table: Alignments

Curve #	Radius	Length	Chord Direction	Chord Length	Start Point	End Point
C1	99.85	27.44	N68° 15' 32.19"W	27.35	(N=604545.39 E=1149850.93)	(N=604555.52 E=1149825.52)
C2	132.48	32.43	N67° 52' 41.48"W	32.35	(N=604567.12 E=1149778.74)	(N=604579.30 E=1149748.77)
C3	75.20	20.94	N51° 05' 03.87"W	20.87	(N=604579.30 E=1149748.77)	(N=604592.41 E=1149732.53)
C4	2705.15	89.70	N39° 44' 06.93"W	89.70	(N=604654.15 E=1149678.56)	(N=604723.12 E=1149621.22)
C5	417.28	54.13	N36° 01' 00.61"W	54.09	(N=604809.37 E=1149551.45)	(N=604853.12 E=1149519.64)
C6	717.34	89.87	N27° 06' 50.58"W	89.81	(N=604897.74 E=1149492.93)	(N=604977.68 E=1149451.99)



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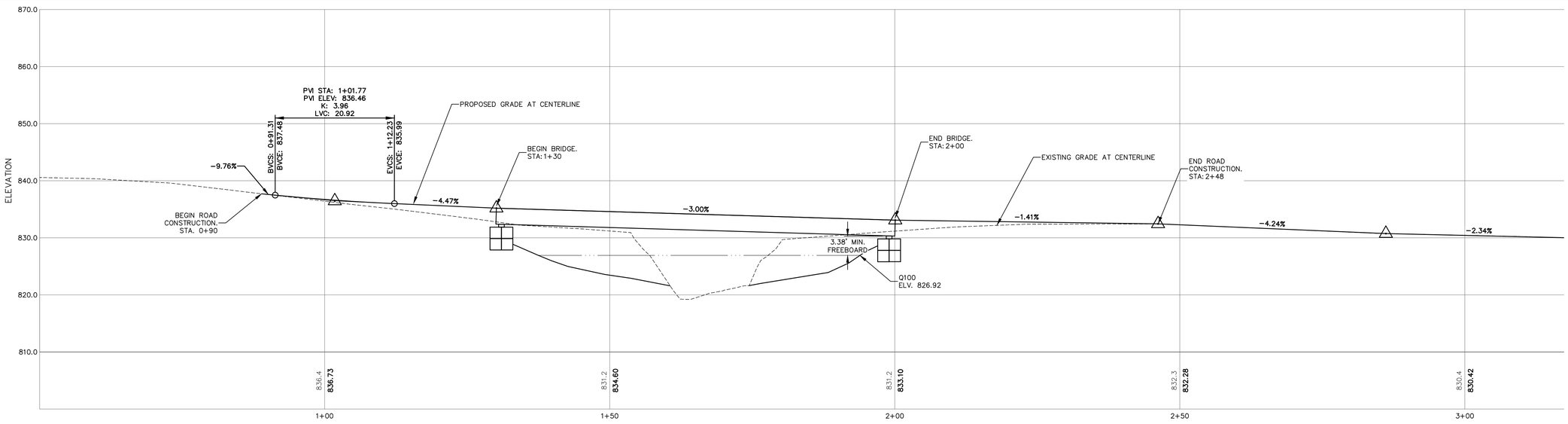

Profile
Scale: 1" = 10'

General Notes

CHRISTOPHER J. FOURNIER No. 12851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

No.	Revision/Issue	Date
4		
3		
2		
1		

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FOREST SERVICE
R-9

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North Conway, NH 03860
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Drawing Title
Langdon Brook Roadway Plan & Profile

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: C1.11
CAD File No.: -	
Date: 05/30/2025	
Scale: 1"=10'	

Line Table: Alignments

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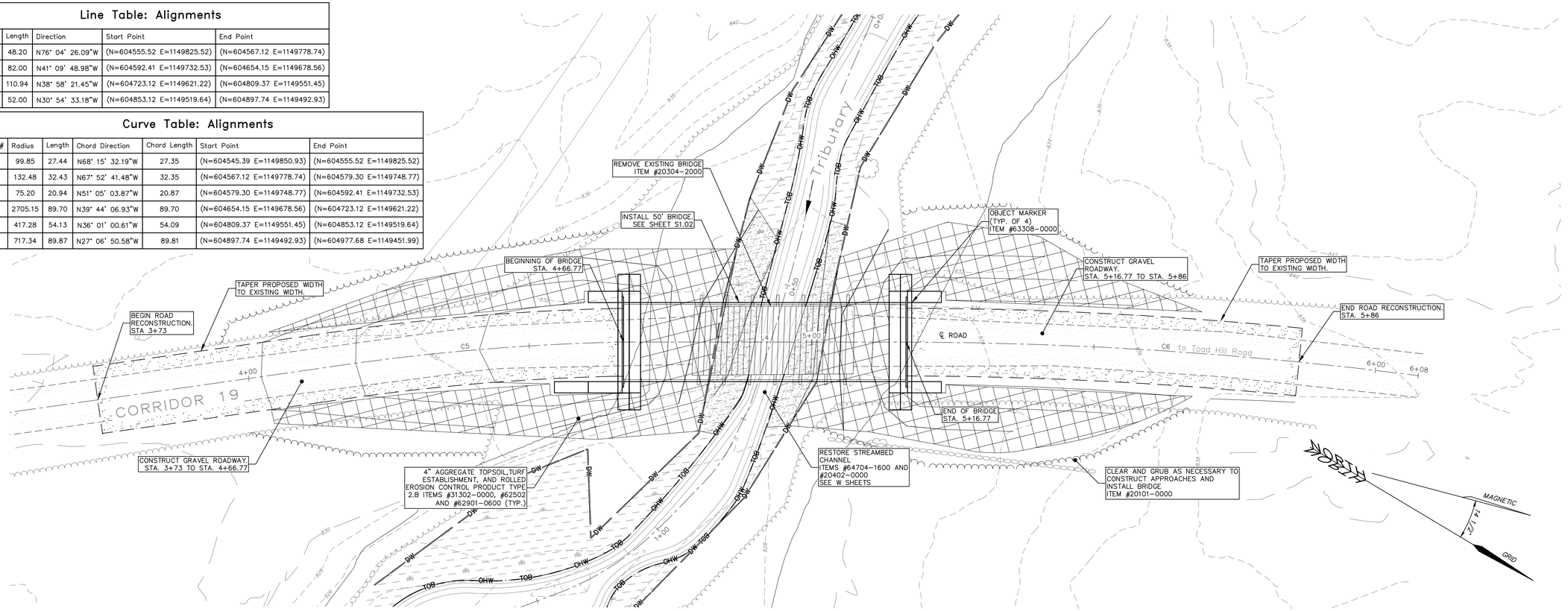

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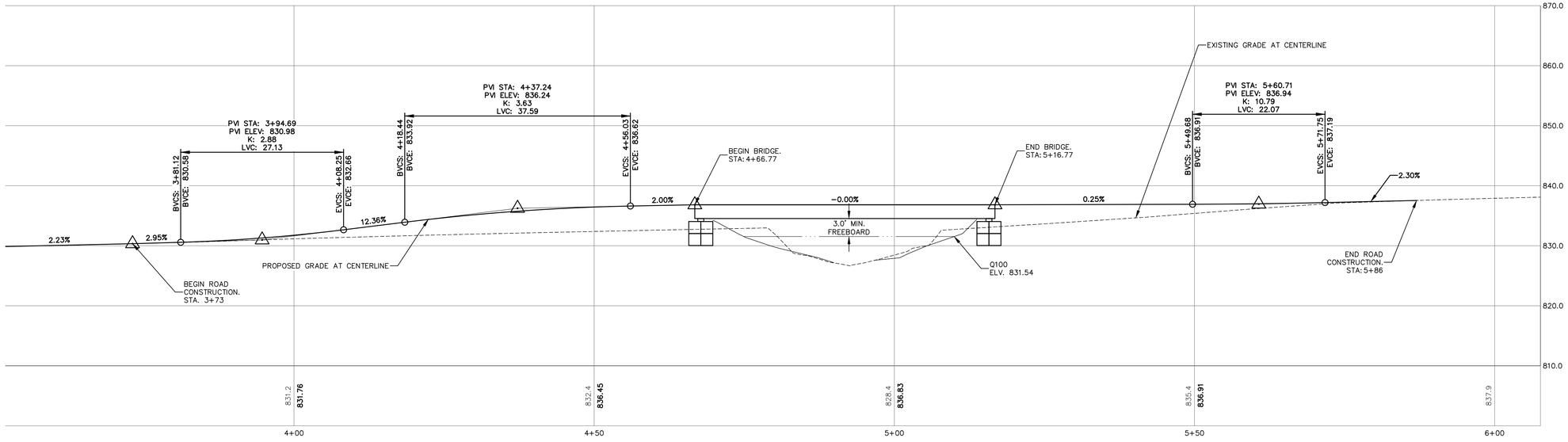

Profile
Scale: 1" = 10'

General Notes

STATE OF NEW HAMPSHIRE
CHRISTOPHER J. FOURNIER
No. 12651
LICENSED
PROFESSIONAL ENGINEER

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4		
3		
2		
1		

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Drawing Title
Tributary Roadway Plan & Profile

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: C1.12
CAD File No.: -	
Date: 05/30/2025	
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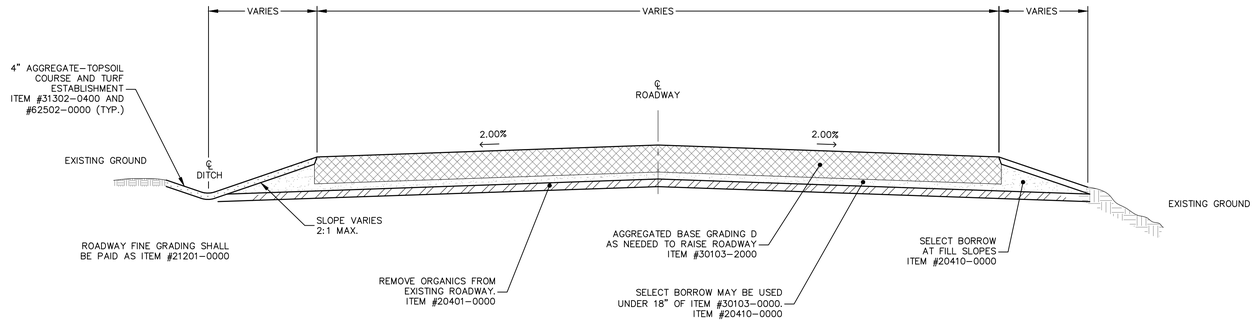

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

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FOREST SERVICE
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Corridor 19 Bridges
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Drawing Title
Typical Roadway Section

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.
CAD File No.: -	C3.01
Date: 05/30/2025	
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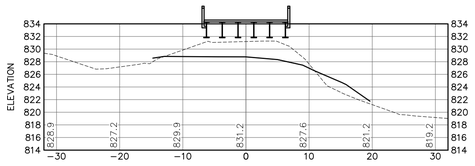

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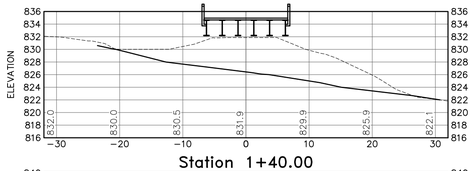

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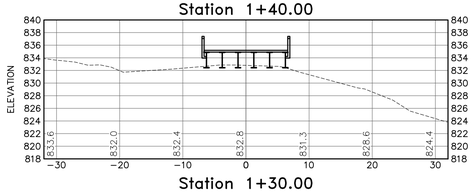

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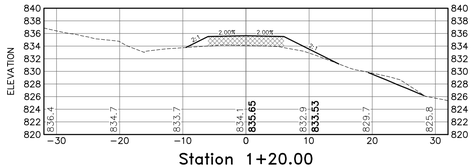

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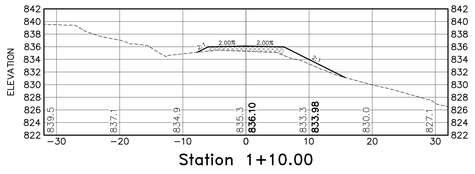

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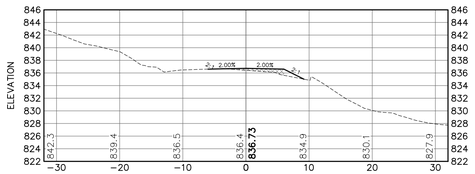

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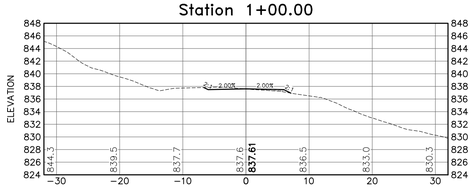

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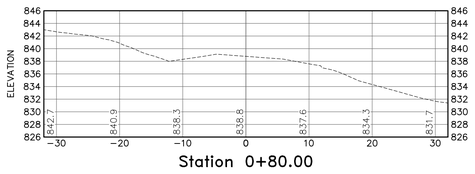

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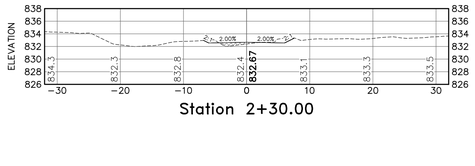

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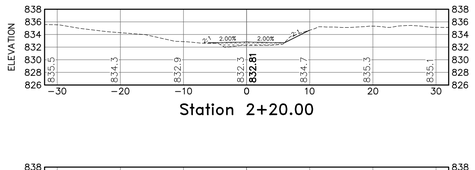

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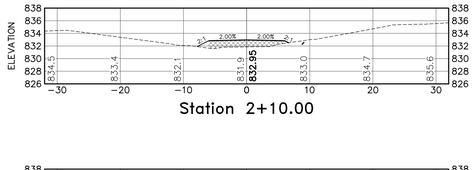

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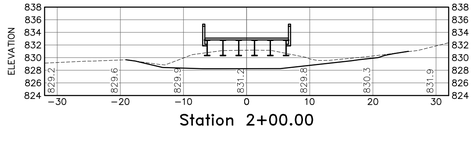

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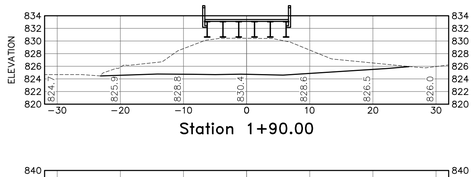
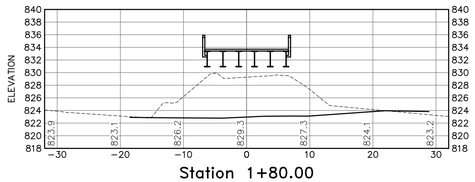


Station 1+90.00



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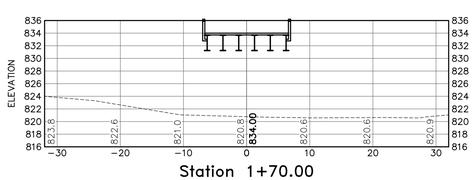
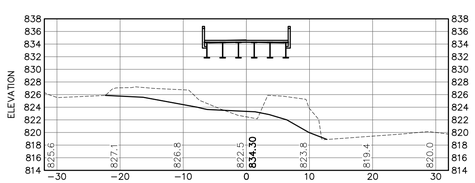
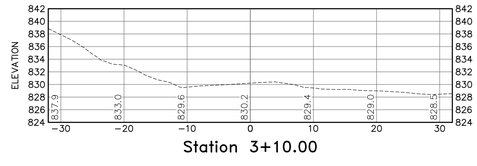


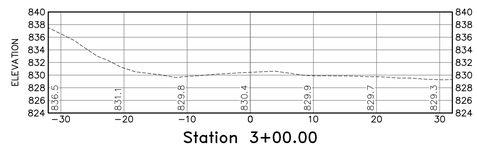
Station 1+70.00



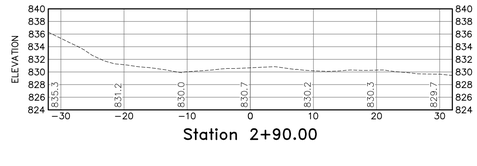
Station 1+60.00



Station 3+10.00



Station 3+00.00



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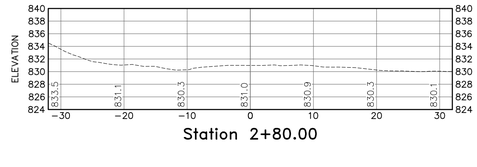

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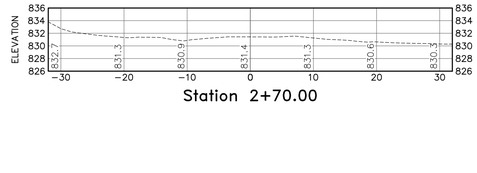

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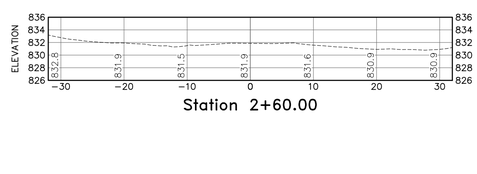
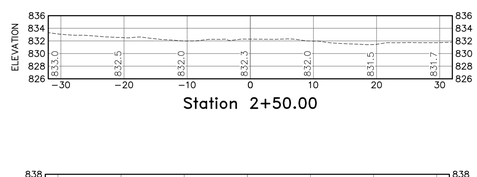
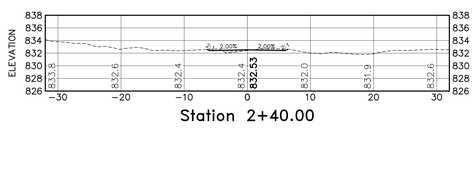


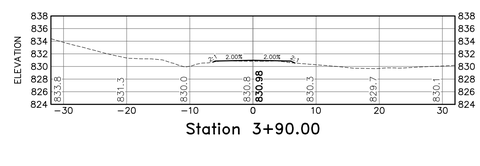
Station 2+60.00



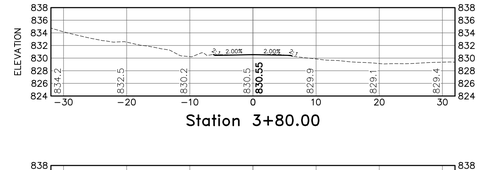
Station 2+50.00



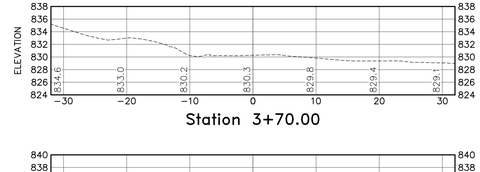
Station 2+40.00



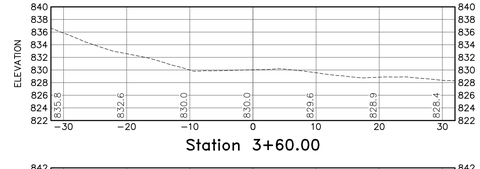
Station 3+90.00



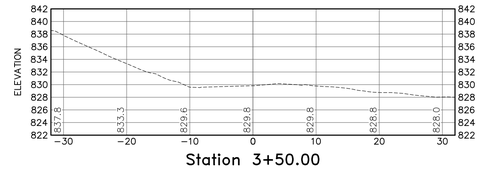
Station 3+80.00



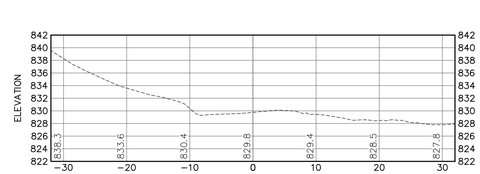
Station 3+70.00



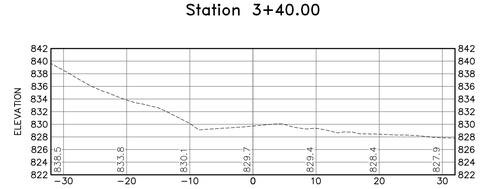
Station 3+60.00



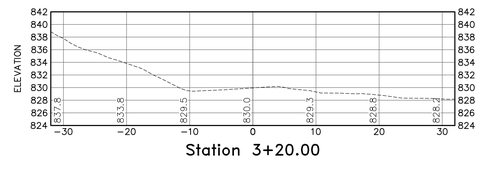
Station 3+50.00



Station 3+40.00



Station 3+30.00



Station 3+20.00

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

R-9

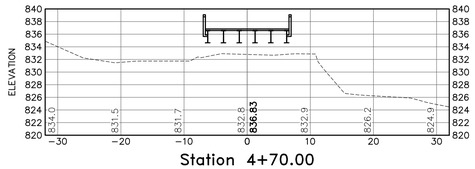
Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

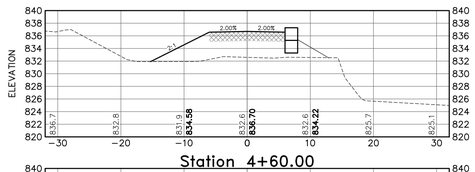
HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936

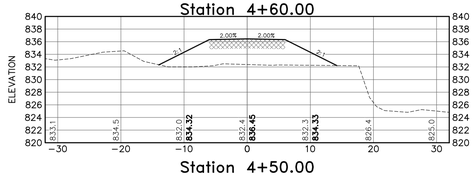
Drawing Title

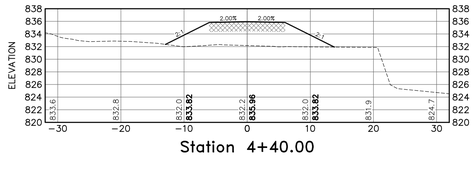
Roadway Sections 0+80 - 3+90

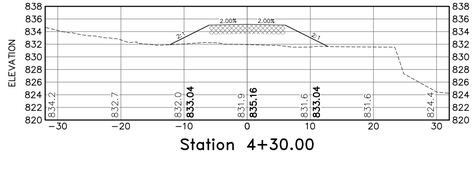
Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: C3.20
CAD File No.: -	
Date: 05/30/2025	
Scale: 1"=10'	

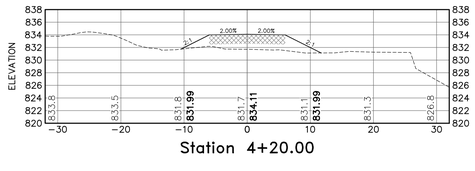


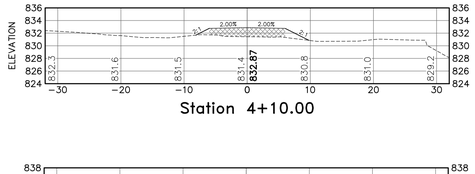


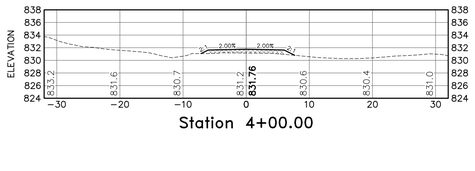


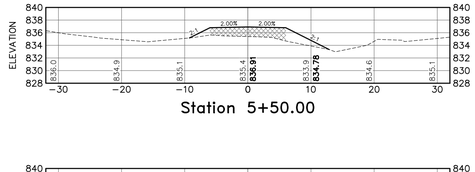


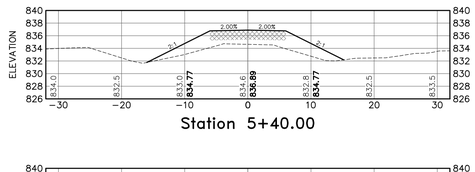


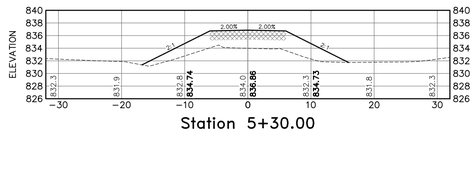


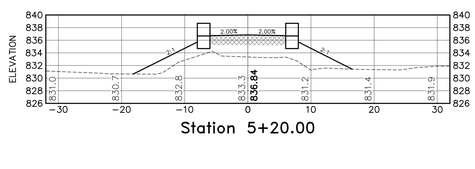


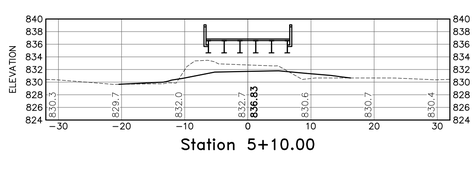


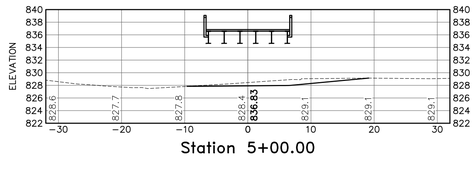


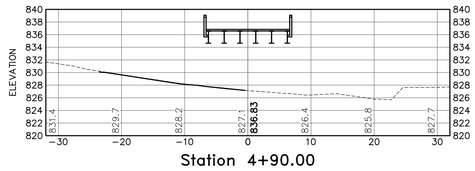


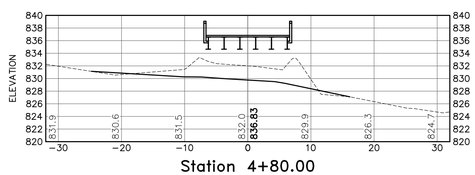


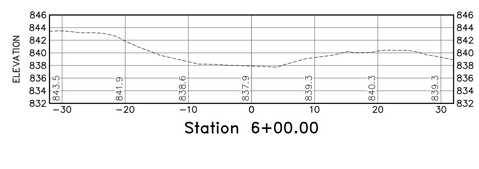


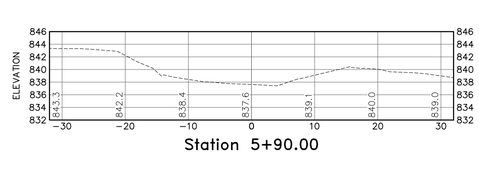


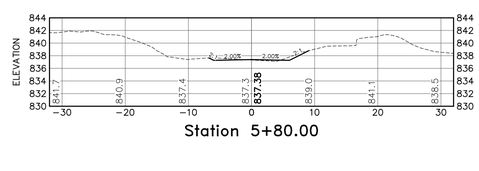


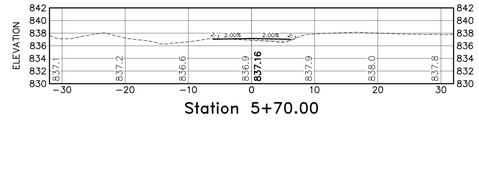


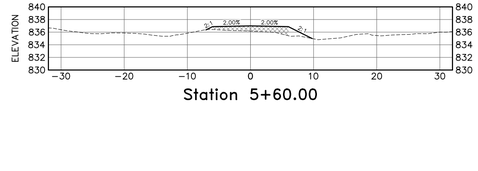












General Notes

No.	Revision/Issue	Date
4		
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U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

R-9

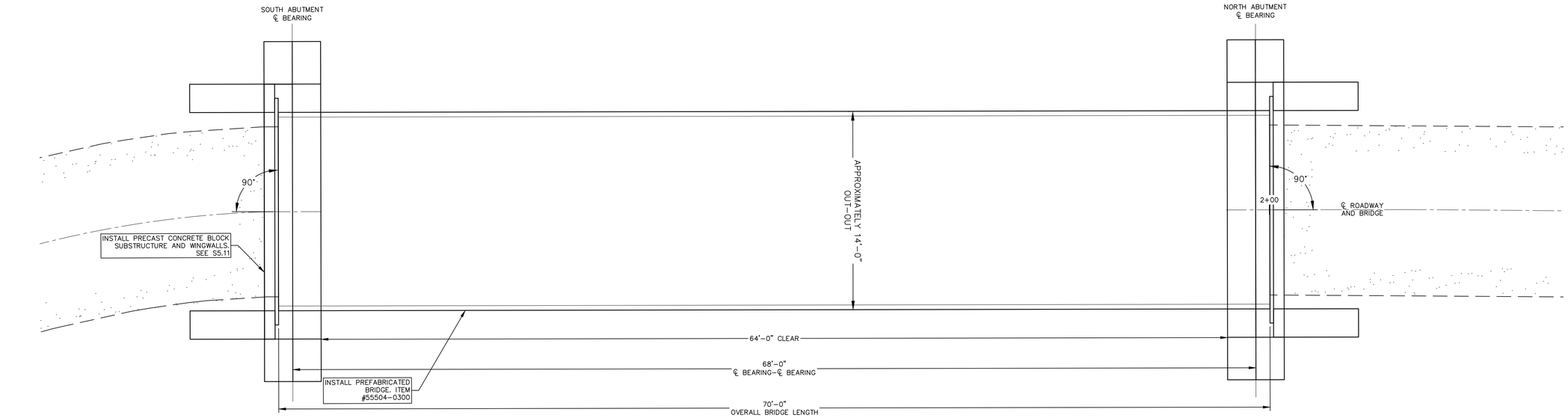
Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936

Drawing Title

Roadway Sections 4+00 - 6+00

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: C3.21
CAD File No.: -	
Date: 05/30/2025	
Scale: 1"=10'	

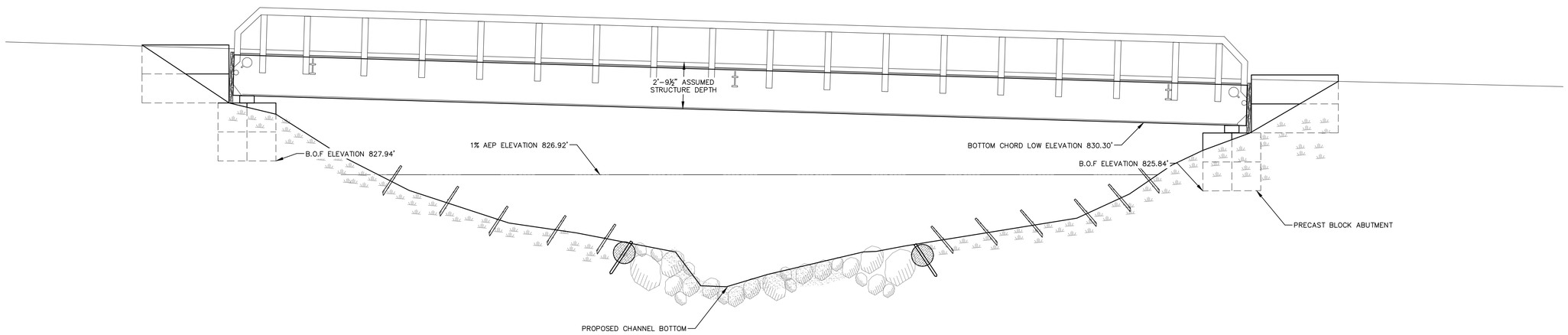


Langdon Brook Plan
Scale: 1/4" = 1'-0"

Design Superstructure Loads:

Loads based on ADM Welding and Fabrication, 70' Portable Bridge:

Reactions to abutments:
DL = 38 Kips
LL = 110.9 Kips (w/ Dynamic Load Allowance)
Handling Size:
(2) @ 8'x70' (Nominal)
Handling Weight:
(2) @ 38 kips



Langdon Brook Downstream Elevation
Scale: 1/4" = 1'-0"

General Notes

STATE OF NEW HAMPSHIRE
CHRISTOPHER J. FOURNIER
No. 12851
LICENSED
PROFESSIONAL ENGINEER

No.	Revision/Issue	Date
4		
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U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

HEB ENGINEERS
HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
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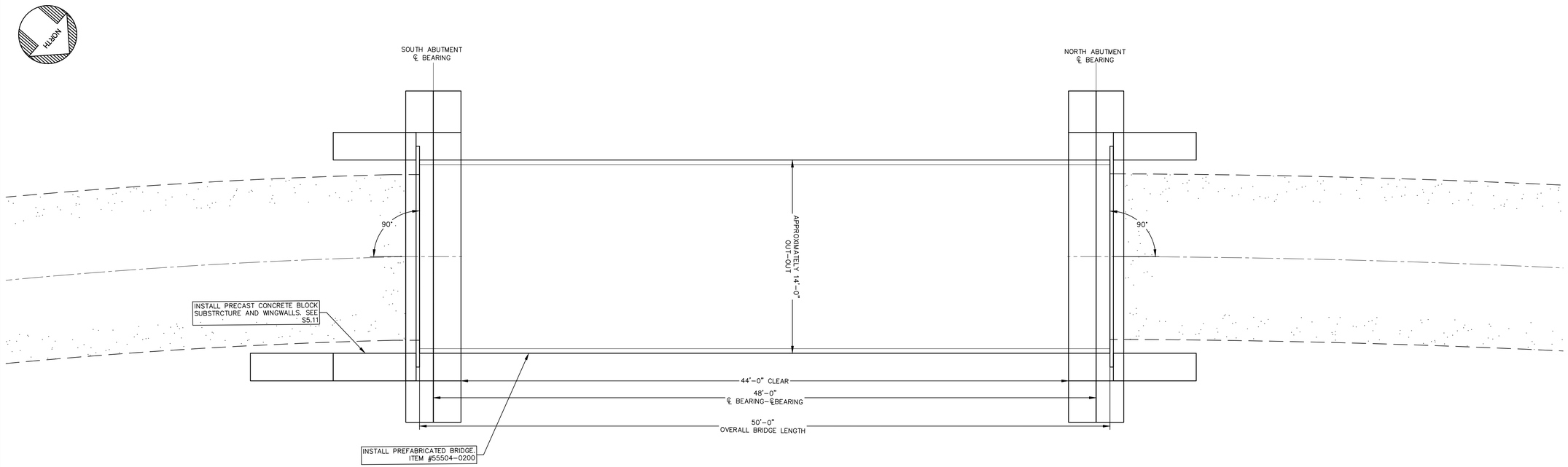
Office (603) 356-6936

Drawing Title
Langdon Brook Bridge Plan & Elevation

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: S1.01
CAD File No.: -	
Date: 05/30/2025	
Scale: 1/4" = 1'-0"	

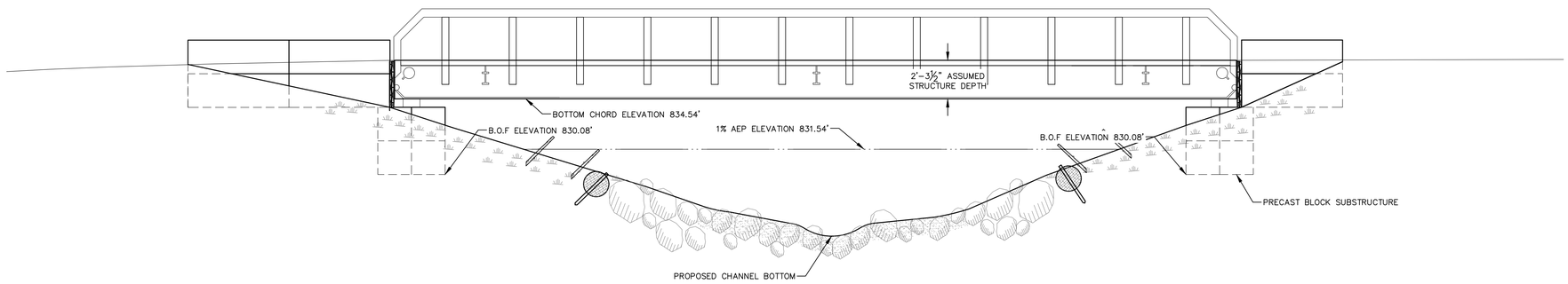


Tributary Plan
Scale: 1/4" = 1'-0"

Design Superstructure Loads:

Loads based on ADM Welding and Fabrication, 50' Portable Bridge:

Reactions to abutments:
DL = 20.3 Kips
LL = 96.2 Kips (w/ Dynamic Load Allowance)
Handling Size:
(2) @ 8'x50' (Nominal)
Handling Weight:
(2) @ 20.3 kips



Tributary Downstream Elevation
Scale: 1/4" = 1'-0"

General Notes

STATE OF NEW HAMPSHIRE
CHRISTOPHER J. FOURNIER
No. 17851
LICENSED
PROFESSIONAL ENGINEER

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

HEB ENGINEERS
HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
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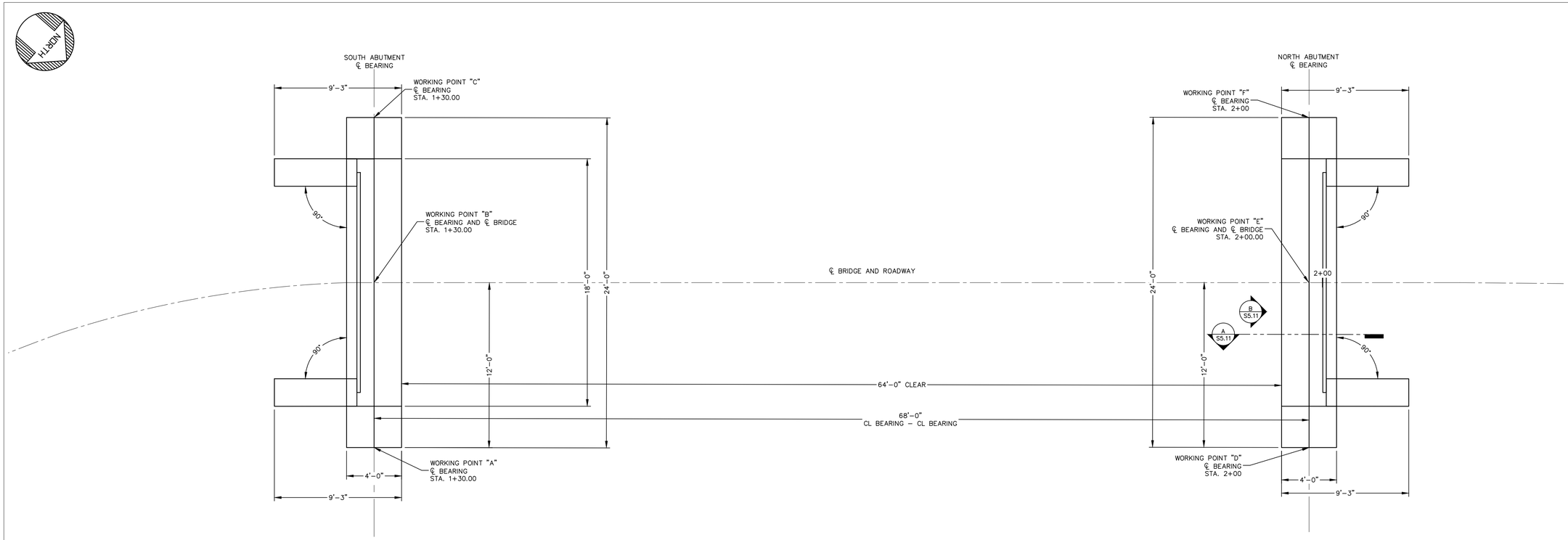
Office (603) 356-6936

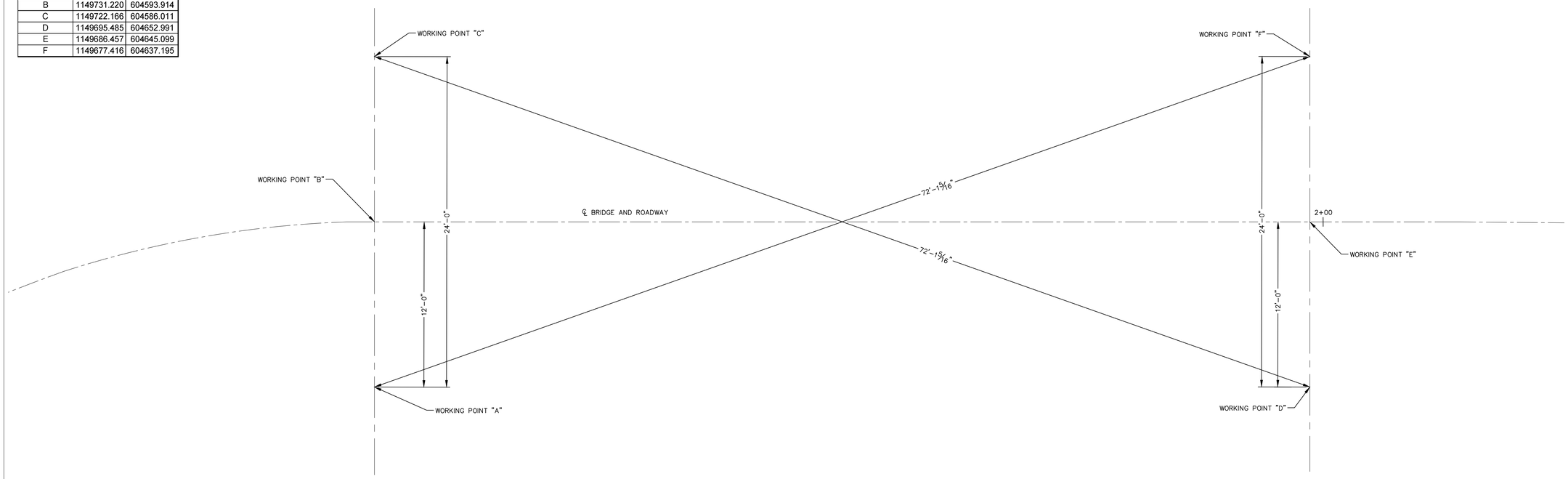
Drawing Title
Tributary Bridge Plan & Elevation

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No. S1.02
CAD File No.: -	
Date: 05/30/2025	
Scale: 1/4"=1'-0"	



Langdon Brook Substructure Plan
Scale: 1/4" = 1'-0"

Working Point Coordinates		
Working Point	Easting	Northing
A	1149740.243	604601.799
B	1149731.220	604593.914
C	1149722.166	604586.011
D	1149695.485	604652.991
E	1149686.457	604645.099
F	1149677.416	604637.195



Langdon Brook Survey Layout
Scale: 1/4" = 1'-0"

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
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North Conway, NH 03860
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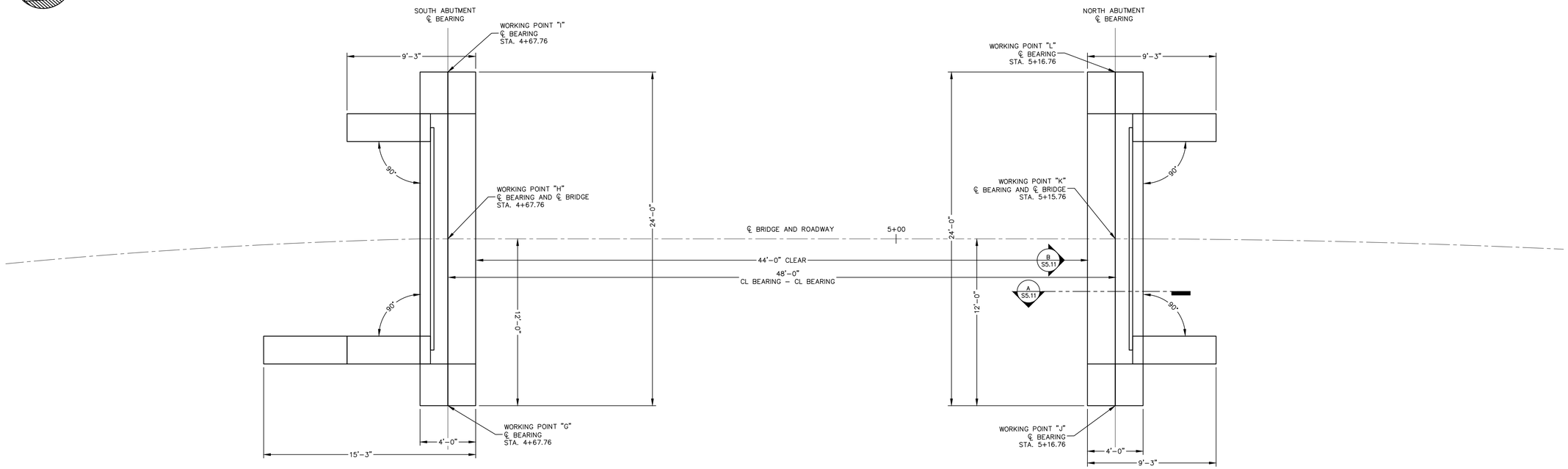
Office (603) 356-6936

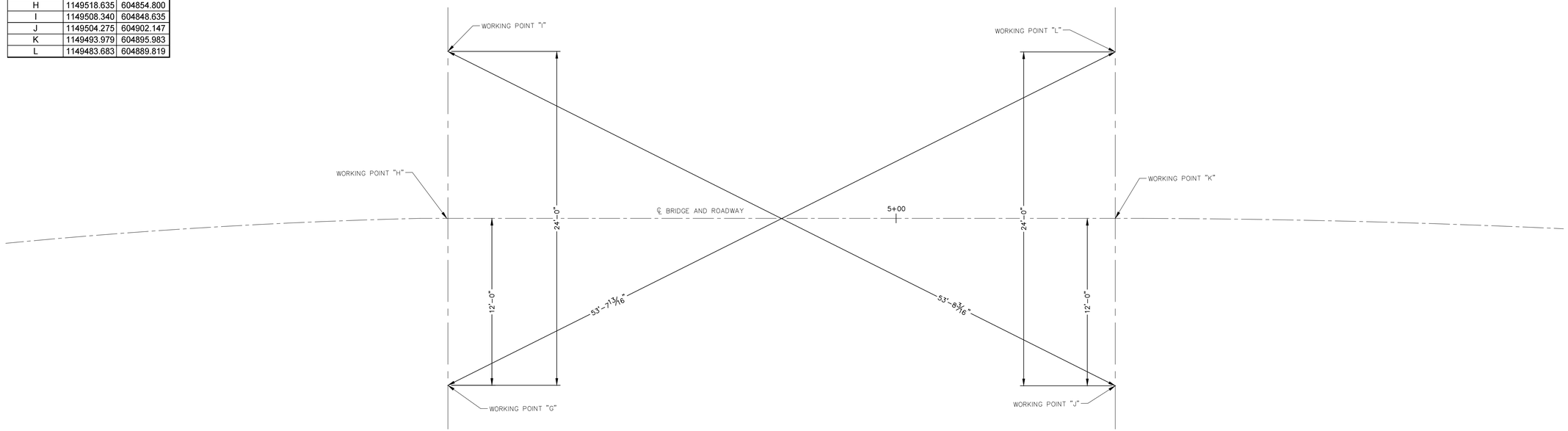
Drawing Title
Langdon Brook Substructure Plan
& Survey Layout

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.
CAD File No.: -	S1.21
Date: 05/30/2025	
Scale: 1/4"=1'-0"	



Tributary Substructure Plan
Scale: 1/4" = 1'-0"

Working Point Coordinates		
Working Point	Easting	Northing
G	1149528.931	604860.964
H	1149518.635	604854.800
I	1149508.340	604848.635
J	1149504.275	604902.147
K	1149493.979	604895.983
L	1149483.683	604889.819



Tributary Survey Layout
Scale: 1/4" = 1'-0"

General Notes

STATE OF NEW HAMPSHIRE
CHRISTOPHER J. FOURNIER
No. 12851
LICENSED
PROFESSIONAL ENGINEER

No.	Revision/Issue	Date
4		
3		
2		
1		

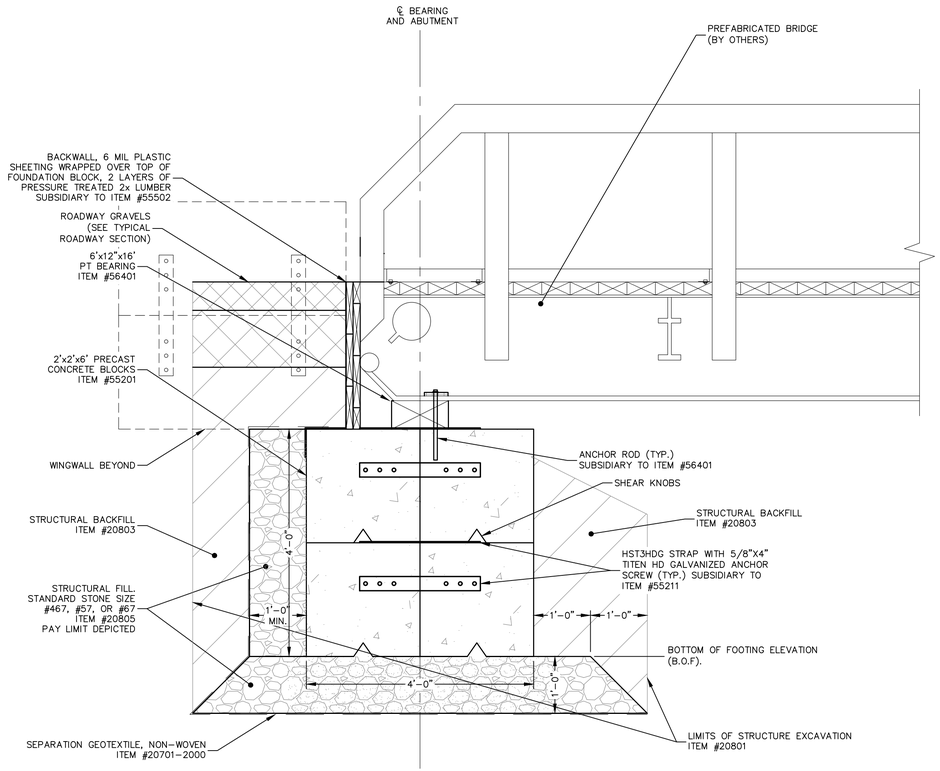
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

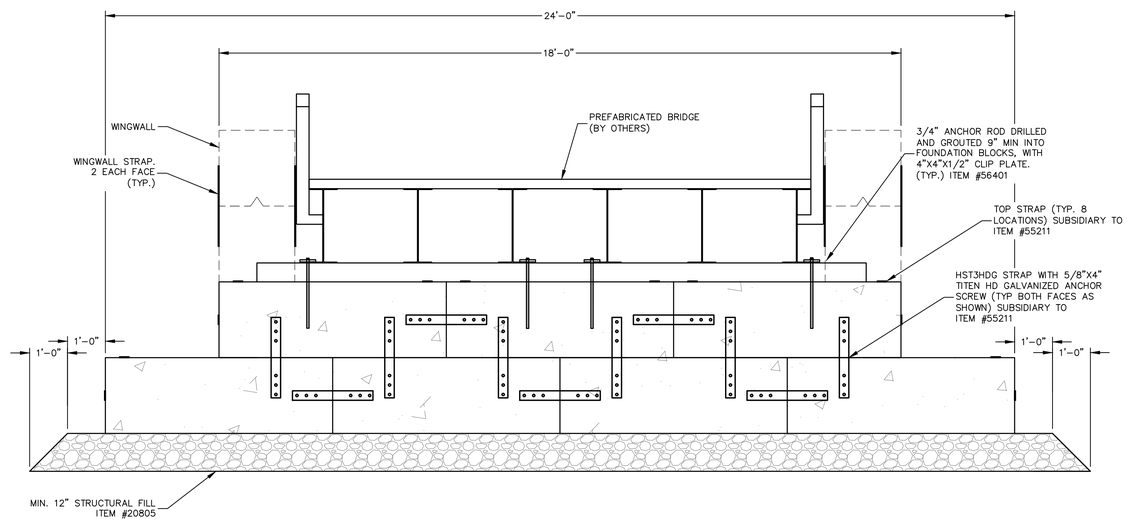
HEB ENGINEERS
HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936

Drawing Title
Tributary Substructure Plan
& Survey Layout

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.
CAD File No.: -	S1.22
Date: 05/30/2025	
Scale: 1/4"=1'-0"	



A S1.21 **Typical Substructure Section**
Scale: 3/4" = 1'-0"



B S1.21 **Typical Substructure Elevation**
Scale: 1/2" = 1'-0"

General Notes

No.	Revision/Issue	Date
4		
3		
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U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

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White Mountain National Forest
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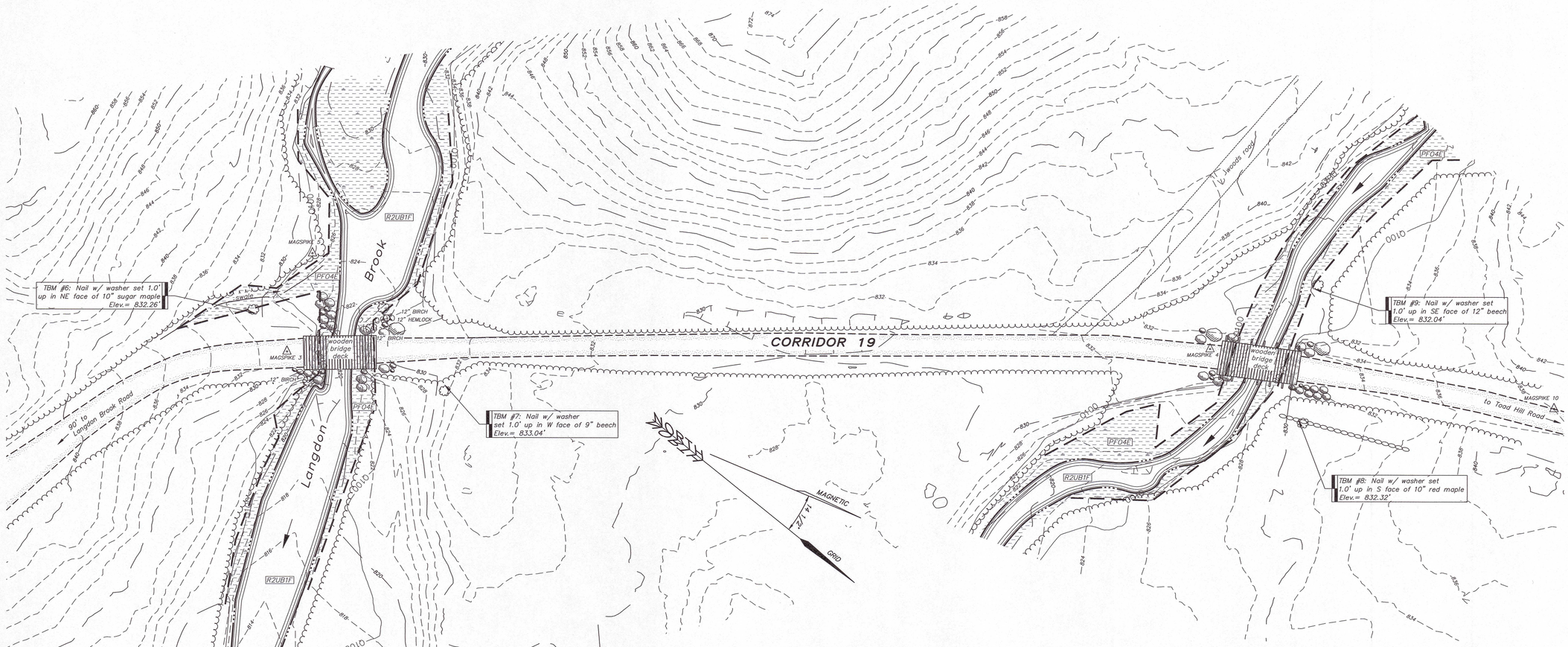
Drawing Title
Substructure Section & Elevation

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: S5.11
CAD File No.: -	
Date: 05/30/2025	
Scale: AS NOTED	

Control–Point Table

Point #	Description	Northing	Easting	Elevation
3	MAGSPIKE	604606.07	1149719.23	831.19
4	MAGSPIKE	604859.84	1149512.42	833.01
5	MAGSPIKE	604591.02	1149686.28	827.12
10	MAGSPIKE	604967.96	1149452.07	838.20



U.S. Fish and Wildlife Service Wetland Classifications:

PF04E Palustrine, Forested, Needle–Leaved Evergreen, Seasonally Flooded/Saturated
R2UB1F Riverine, Upper Perennial, Unconsolidated Bottom, Cobble–Gravel, Semipermanently Flooded

Wetland Delineation Certification:

These wetland delineations are a representation of field data collected on May 18, 2023 by Gregory W. Howard, CWS of North Country Soil Services. The delineated wetland areas mee the criteria for freshwater wetlands as noted in the New Hampshire RSA 482–A:2 (X) "Freshwater Wetlands" meaning an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and which under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Th wetland delineations were conducted in accordance with NH Code of Administrative Rules CHAPTER Env–Wt 400, PART Env–Wt 406, SECTION Env–Wt 406.02 "Delineation of Wetland Boundaries" effective December 15, 2019, utilizing the Corps of Engineers Wetlands Delineation Manual, January 1987, Technical Report Y–87–1 and the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, January 2012.

The wetland delineations shown on this plan are based on my best knowledge and opinion thereof as of the date of this mapping.

12/6/2024
Date

Gregory W. Howard, Certified Wetland Scientist #078

STATE OF NEW HAMPSHIRE
GREGORY W. HOWARD
No. 078
CERTIFIED WETLAND SCIENTIST
12/6/2024

20 0 20 40 80 ft
4 0 10 20 m
1 inch = 20 feet
(1 : 240)

General Notes

Survey Notes:

1. Site features and topography are per field surveying performed June 2023, under the direct supervision of Seth E. Burnell, LLS #985; using a Leica TS16 robotic total station and Leica GS18 GNSS receivers; and conforming with the technical standards for topographic surveys per the NH Code of Administrative Rules of the Board of Licensure for Land Surveyors.
2. Orientation is grid. Coordinate grid is NH State Plane Coordinate System NAD83 datum, established with GPS observations tied to the NGS CORS network.
3. Contour interval = 2 ft. Vertical datum is NAVD88, established with GPS observations tied to OPUS
4. Jurisdictional wetlands shown were delineated on May 18, 2023 by North Country Soil Services (Gregory W. Howard, CWS #78) and surveyed by HEB per Note 1.

Legend

- Major contour
- Minor contour
- Edge of Water
- Stone wall
- Vegetation line
- Edge of gravel
- Delineated wetland
- Boulder
- Proposed 1% AEP Flood Elevation

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
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Drawing Title
Existing-Features Plan

Designed/Drawn: DWI/TRC	Project: 2023-004
Checked: JLT	Drawing No.: V1.01
CAD File No.: -	
Date: 12/03/2024	
Scale: 1" = 20'	

P:\Jobs\2023\2023004\NRCS\CR - Two Snowmobile Bridges, Corridor 19, Chatham, NH\Dwg\Plan Set 2 - Design\Sheet Files\2023-004 V1.01 Existing-Features Plan.dwg, V1.01, 12/6/2024 6:21:40 AM, cfuteaux

Water Diversion Notes:

1. All items covered under the applicable section of the New Hampshire Department of Transportation (NHDOT) Standard Specifications shall be designed by a Professional Engineer, licensed in the State of New Hampshire. The Contractor shall submit stamped working drawings and calculations for review and documentation in accordance with the Contract.
2. Water diversion and a clean water bypass are required to generate dry working conditions by means of diverting stream flow around excavation areas. Water diversion structures and clean water bypasses shall be designed and constructed to accommodate the 50 percent recurrence storm event. Water diversion shall be watertight, so as to direct all stream flow through the clean water bypass and prevent flow into excavation areas.
3. It may be possible to use a cofferdam, such as a sandbag dike or sheet piling, in lieu of a water diversion structure and clean water bypass as a means of maintaining flow through a partial channel area during excavation. If a cofferdam is used, it is subsidiary to the water diversion structure item.
4. Water diversion shall be maintained until channel restoration, including installation of riprap and natural streambed material to grades shown on plans, has progressed to a point such that the channel is capable of maintaining a flow equivalent to the water diversion design storm event.
5. The water diversion structure design shall account for the effects of unbalanced earth pressure and construction equipment on the water diversion structure stability.
6. Pre-excavation of cobbles and boulders may be required prior to placing steel sheeting. During excavation the Contractor shall disturb the area as little as possible and use necessary precautions to minimize the impacts to the channel. All costs included in the pay item.
7. The Contractor should be prepared to perform any subsurface investigations needed for the water diversion structure design. All costs associated with the completion of subsurface investigations, redesign, or reinstallation of water diversion structures due to subsurface conditions encountered during installation that are different from what the water diversion structure designer assumed and/or interpreted from the available subsurface information, shall be subsidiary to the associated water diversion structure item.

Dewatering Notes:

1. Control of water within the bridge and wingwall excavation shall be conducted in accordance with the applicable specifications in the Contract, and paid under the associated bridge excavation item. Pumping areas shall be located outside the footing support limits and properly filtered to prevent the pumping of fines.
2. Any foundation soil weakened as a result of insufficient care taken in maintaining a dewatered condition shall be removed and replaced with structural fill at the expense of the Contractor.
3. Dewatering shall be continuous until substructures are backfilled to the elevations of the surrounding water table, unless noted otherwise.
4. All means and methods associated with handling water during construction of foundations shall be located within the limits of work shown on the Wetlands Permit approved for the project, and are subsidiary to the bridge excavation item.

Natural Streambed Material Notes:

1. The intent is to stockpile excavated natural streambed material during bridge removal and regrading. The amount of stockpiled material is expected to be less than what is needed for stream restoration, and additional material will likely need to be imported. Material used in restoration should be representative of the up and down stream conditions. Surface roughness, permeability, and particle-size and distribution should all be addressed as part of this work.
2. Contractor shall provide samples for Owner's Representative approval for any imported material prior to installation. All costs for stockpiling, importing, and placement of this material are included in the pay item.
3. Voids of the cobbles and boulders shall be washed in with well-graded rounded stones, sand, and fines to prevent subsurface flow.
4. Contractor shall place the natural streambed material in lifts with a thickness of less than 1½ times the maximum dimension of the rocks. The material shall be placed using methods that do not cause segregation or damage to the surface below. Individual rocks shall be placed or rearranged using methods to obtain a compact, low permeability material. Voids shall be filled in prior to placing the next lift.

Critical Erosion Areas:

Temporary seeding and/or mulching shall be used to protect exposed critical areas during construction. The following areas are particularly susceptible to erosion and shall receive extra attention when being inspected and maintained:

1. The larger cut and fill areas along the road and driveways.
2. Areas not worked or not to be worked for 3 weeks.
3. Areas of concentrated flow such as the ditches, swales, and toe of uphill facing slopes.
4. Stormwater ponds and level spreaders.

Winter Construction Requirements:

The primary intent of the erosion control requirements and the construction sequence is to stage the project in a manner that will minimize the potential for erosion and the potential negative effects associated therewith. The Engineer shall be contacted and the plan shall be amended if the intent is not being achieved.

1. After October 15th, incomplete parking areas where active construction has stopped for the winter shall be protected with a minimum 3-inch layer of base course gravels.
2. The area of exposed unstabilized soil shall be limited to one (1) acre.
3. Areas with slope of less than 15 percent which do not exhibit 85 percent vegetative growth by October 15th shall be seeded and covered with 3 to 4 tons of hay or straw mulch per acre and anchored with netting or tackifier. All stabilization shall be completed within a day of establishing final grade or that will exist for more than 5 days.
4. Areas with slope greater than 15 percent which do not exhibit 85 percent vegetative growth by October 15th shall be seeded and covered with erosion control blanket. All stabilization shall be completed within a day of establishing final grade or that will exist for more than 5 days.
5. All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15th or which are disturbed after October 15th shall be stabilized temporarily with stone or erosion control blankets.
6. Installation of anchored hay mulch or erosion control mix shall not occur over snow of greater than 1-inch in depth.
7. Installation of erosion control blankets shall not occur over snow greater then 1-inch in depth or on frozen ground.

Construction Equipment Notes:

1. Precautions shall be taken within riparian areas to limit unnecessary removal of vegetation for construction access.
2. Construction equipment shall be inspected daily for leaking fuel, oil, and hydraulic fluid prior to working near surface waters or wetlands.
3. Faulty equipment shall be repaired prior to working near jurisdictional areas.
4. The Contractor shall have appropriate oil spill kits on site and readily accessible at all times during construction and each operator shall be trained in its use.

General Erosion-Control Requirements:

The primary intent of the erosion-control requirements and the construction sequence is to stage the project in a manner that will minimize the potential for erosion and sediment and the potential negative effects associated therewith. The Contract Administrator shall be contacted and the plan shall be amended if the intent is not being achieved.

Realizing there is more than one method of achieving the intent, the Contractor may submit an alternate erosion-control plan to the Contract Administrator for consideration. The alternate plan may be implemented if, in the opinion of the Engineer, it will achieve the intent and it is in compliance with the associated permits.

1. Erosion-Control Definitions:

   "Strip topsoil": Excavate topsoil, screen, and stockpile.

   "Seed(ing)": Adjust pH, apply fertilizer, sow the seed mixture, apply mulch (or erosion-control matting), apply tackifier.

   "Stabilize(d)": Apply treatment that will minimize erosion when subject to normal rainfall and wind events.

   "Significant rainfall event": More than ½ inch of rain.

2. Install all erosion-control measures prior to earthwork operation and maintain all erosion-control measures and seeded embankments during construction. Erosion-control shall be removed only upon the establishment of all vegetated areas.
3. All drainage structure inlets shall be protected using inlet protection or catch basin inserts.
4. Erosion-control measures shall be implemented complying with Best Management Practices (BMPs) of the "Stormwater Management and Erosion-and Sediment-Control Handbook for Urban and Developing Areas in New Hampshire" by the NHDES, USDA SCS, and Grafton County Conservation District, latest edition.
5. Do not disturb areas outside the limits of proposed work. Areas disturbed by the Contractor's operations shall be restored to their original condition at the Contractor's expense. All areas disturbed during construction not covered with buildings, structures, or pavement shall receive 4 inches of loam and seed.
6. The downhill side of all stockpiles shall be encircled with silt fence.
7. All ditches, swales, and other areas of concentrated flow shall be stabilized prior to directing flow to them. Catch basin inserts to be installed on all catch basins until the project is fully established.
8. Before weekends, and if a significant rainfall event is anticipated during the construction of the cut/fill embankments, a temporary berm shall be constructed along the top of the fill embankments, and temporary slope drains (pipes) with temporary stone outlet aprons shall be installed at the base of the slopes.
9. The maximum time that any disturbed areas shall be left unstabilized shall be 14 days.
10. The smallest practical area shall be disturbed to complete the required construction, but no more than five (5) acres at any one time.
11. All cut and fill slopes shall be seeded and mulched within 72 hours after their construction.
12. Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway and the associated drainage is complete and stable.
13. An area shall be considered stable if one of the following has occurred:
    A. Base course gravels have been installed in areas to be paved;
    B. A minimum of 85 percent vegetated growth has been established;
    C. A minimum of 3 inches of non-erosive material such as stone or riprap has been installed; or
    D. Erosion-control blankets have been properly installed.
14. Throughout the construction period, all erosion-control measures shall be inspected at the end of each week and before anticipated significant rainfall events and repaired, if deficient. Extra attention shall be given to the critical areas listed separately.
15. All erosion-control measures shall be inspected weekly and after every ½ inch or greater rainfall within a 24 hour period.
16. All roadways/parking areas and cut and fill slopes shall be stabilized within 72 hours of achieving finished grade.

Seeding Notes:

1. Seed mixture: Prior to construction, submit certification from seed supplier that the mixture complies with the requirements. Include the requirements on the certification.
2. Prepare subsoil by eliminating uneven areas; removing foreign materials, weeds, and other undesirable plants and their roots; scarifying subsoil to a depth of 3 inches.
3. Spread loam to yield a minimum depth of 4 inches after rolling. Rake smooth to remove stones and roots. Loam shall consist of loose friable topsoil with no admixture of refuse or material toxic to plant growth. Loam shall be generally free from stones, lumps, stumps, subsoil, roots, and weeds or similar objects larger than 2 inches in greatest diameter. The term as used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The minimum and maximum pH value shall be from 5.5 to 7.6. Loam shall contain a minimum of 3 percent and a maximum of 10 percent of organic matter as determined by loss by ignition. Not more than 65 percent shall pass a No. 200 sieve as determined by the wash test in accordance with ASTM D 1140. In no instance shall more than 20 percent of that material passing the No. 4 sieve consist of clay size particles.
4. Apply agricultural limestone at a rate of 100 pounds per 1,000 square foot.
5. Apply commercial grade 10-10-10 fertilizer at a rate of 10 pounds per 1,000 square foot.
6. Sow uniformly with last year's crop of the local natural resource conservation service's "conservation mix" at a rate of ½ pound per 1,000 square foot. Mixture is to have a germination rate of not less than 80 percent and a purity of not less than 85 percent.
7. Roll seeded area with hand roller.
8. Mulch with seedless hay, oak, or straw mulch at a rate of 2 bales per 1000 square foot.
9. All ditches shall receive erosion-control matting.

Temporary:

1. Bedding: Remove stones and trash that will interfere with seeding the area. Where feasible, till the soil to a depth of about 3 inches to prepare a seedbed and mix fertilizer into the soil. The seedbed should be left in a firm and smooth condition. The last tillage operation should be performed across the slope wherever practical.
2. Fertilizers: Fertilizer should be uniformly spread over the area prior to being incorporated into the soil. A minimum of 300 pounds per acre (7 pounds per 1,000 square foot) of 10-10-10 fertilizer, or its equivalent, should be applied.
3. Where it is impracticable to incorporate fertilizer and seed into moist soil, the seeded area should be mulched to facilitate germination.
4. Seed Mixture: Use any of the following:

Species	Per Acre	Per 1,000 sf	Dates	Depth
Winter Rye	112 lbs	2.5 lbs	8/15-9/5	1 inch
Oats	80 lbs	2.0 lbs	Spring-5/15	1 inch
Annual Ryegrass	40 lbs	1.0 lb	4/15-9/15	¼ inch
Perennial Ryegrass	30 lbs	0.7 lbs	4/1-6/1 or 8/15-9/15	½ inch

5. Maintenance: If seeding fails to grow, it may need to be re-established to provide adequate erosion control. If weeds become a problem, they may need to be controlled by mowing.

Construction Sequence:

The New Hampshire Department of Environmental Services (NHDES) requires that certain steps be taken in order to minimize the erosion of soil within the limits of work. These measures are integral to the successful restoration of the project site. Listed below is a potential construction sequence that would achieve this goal. The specific means and methods are to be determined by the Contractor, but must meet the requirements of the approved Wetlands Permit and supporting Contract Documents. Contractor's proposed construction sequence shall be approved by Contract Administrator prior to construction.

1. Install erosion and sediment control measures prior to any earth moving activity that will influence or affect stormwater runoff.
2. Remove any item above the waterline that would interfere with the sedimentation barriers, water diversion, and clean water bypass to be installed in the channel.
3. Install temporary siltation barriers, water diversion, and clean water bypass.
4. Remove existing bridget.
5. Segregate and stockpile the excavated stone materials, soil materials and woody debris. The stockpiled stone materials, soil materials and woody debris will be utilized in the restoration of the wetland areas to be impacted.
6. Stockpile natural streambed materials to be used to restore the channel.
7. Install bridge abutments, riprap, and natural streambed material inside of the new bridge.
8. Install pre-manufactured bridge. Backfill and compact as required. Install fill on banks and in channel as required.
9. Complete construction of the roadway and grading, as indicated in the plans. All construction must be finalized prior to removing siltation measures in the channel.
10. Remove temporary siltation barriers, water diversion, and clean water bypass from the channel.
11. Construct ditches and guardrail, and remove erosion control measures.
12. In wetland areas to be restored, regrade area to original surface or as shown on plan with stockpiled natural materials and scarify surface to prepare for seeding.
13. Seed, fertilize and mulch disturbed or filled upland areas with local conservation mix or equivalent.
14. Once all contributing, upslope areas have been permanently stabilized and vegetated, remove trapped sediment from behind all silt fence, hay bales and any other temporary sediment control devices. Remove all temporary sediment control devices.

Sheet Index

Legend

- Culvert
- 520 — Existing major contour
- 518 — Existing minor contour
- 520 — Proposed major contour
- 518 — Proposed minor contour
- Water diversion structure
- Silt fence
- Existing vegetation line
- Proposed vegetation line
- Delineated wetland
- PFO1E — Wetland classification
- Edge of gravel
- Edge of pavement
- Right-of-way/property line
- Erosion control matting
- Compost socks with live staking
- 1% AEP — Proposed 1% AEP Flood Elevation

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

HEB ENGINEERS
HEB Engineers, Inc.
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North Conway, NH 03860
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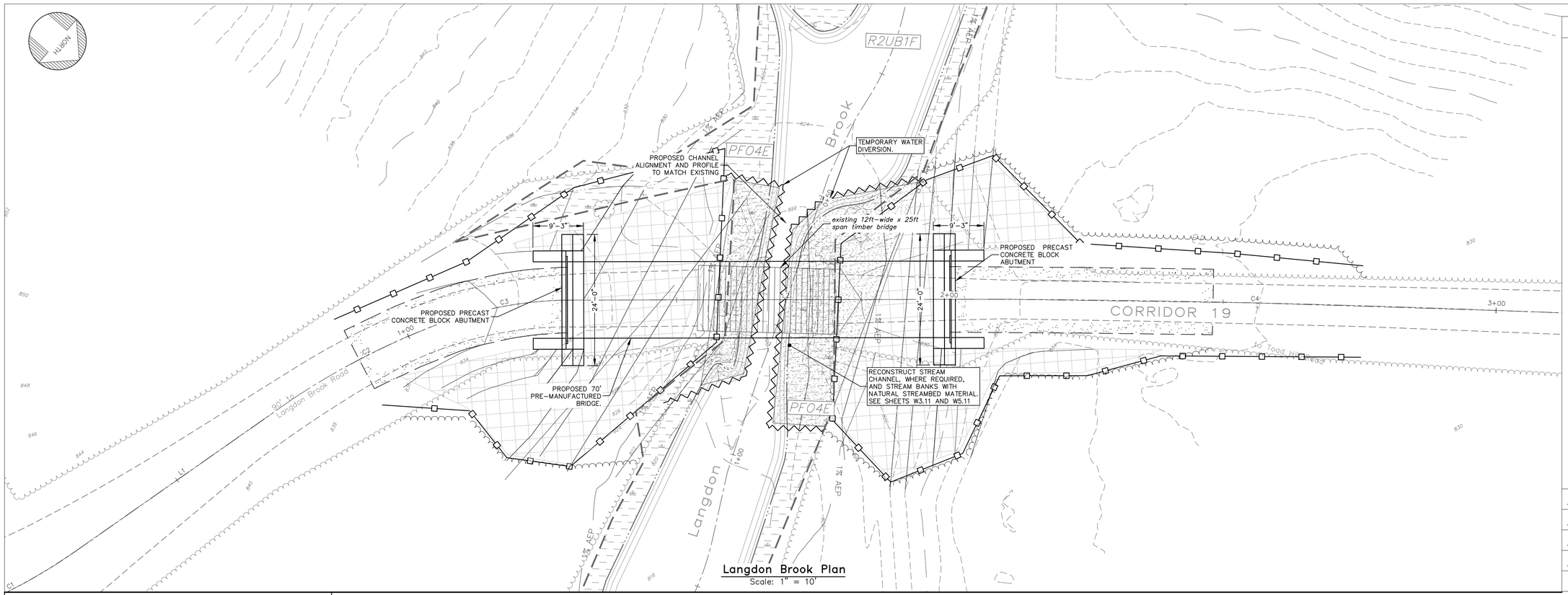
Office (603) 356-6936

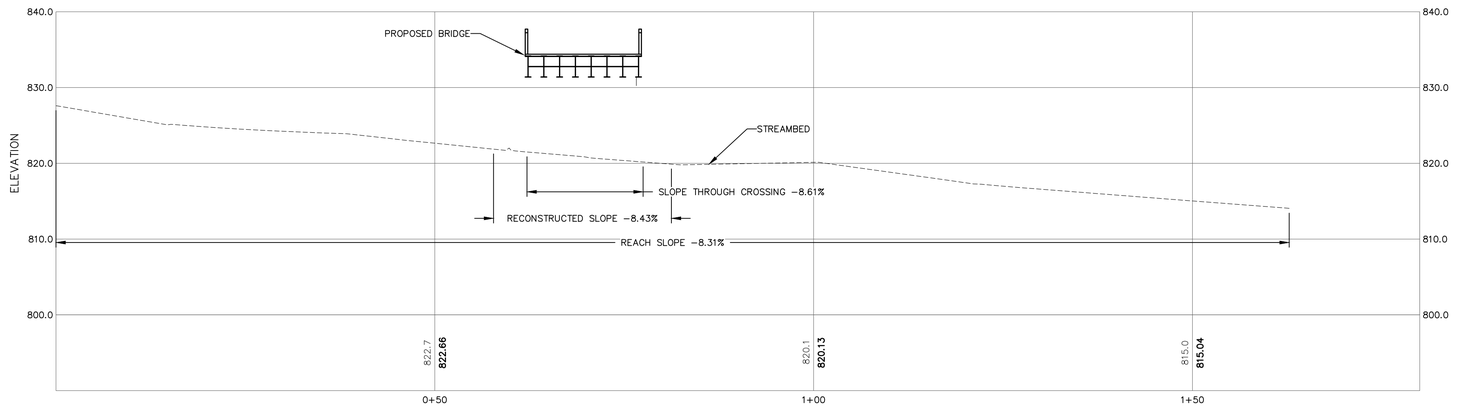
Drawing Title
Environmental Resource Notes

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W0.01
CAD File No.: -	
Date: 12/03/2024	
Scale: N/A	



Langdon Brook Plan
Scale: 1" = 10'

Hydraulic Data	
Drainage Area	0.99 mi²
Design Flood Discharge – Inlet (100 yr.)	732 CFS
Design Flood Elevation – Inlet (100 yr.)	826.92 ft
Design Flood Velocity (100 yr.)	4.51 FPS
Bridge Full Waterway Opening Perpendicular to River	480 ft²



Langdon Brook Profile
Scale:
Horizontal: 1"=10'
Vertical: 1"=10'

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

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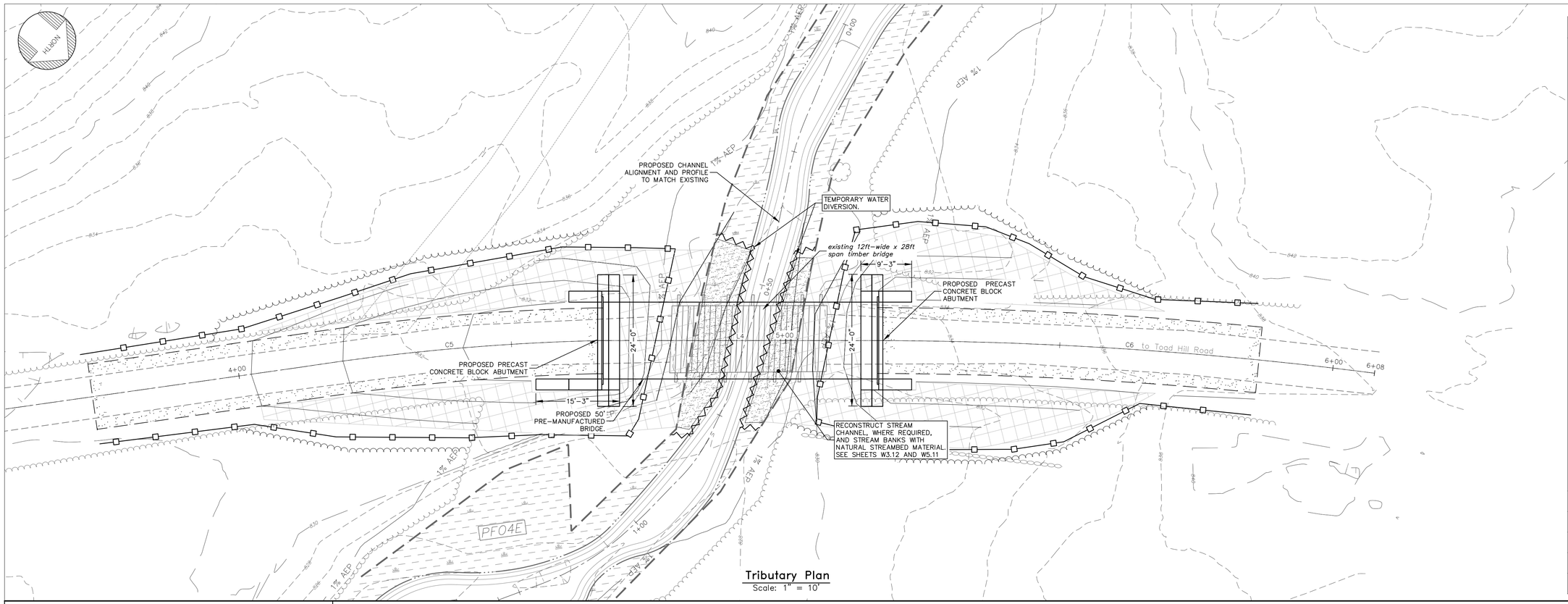
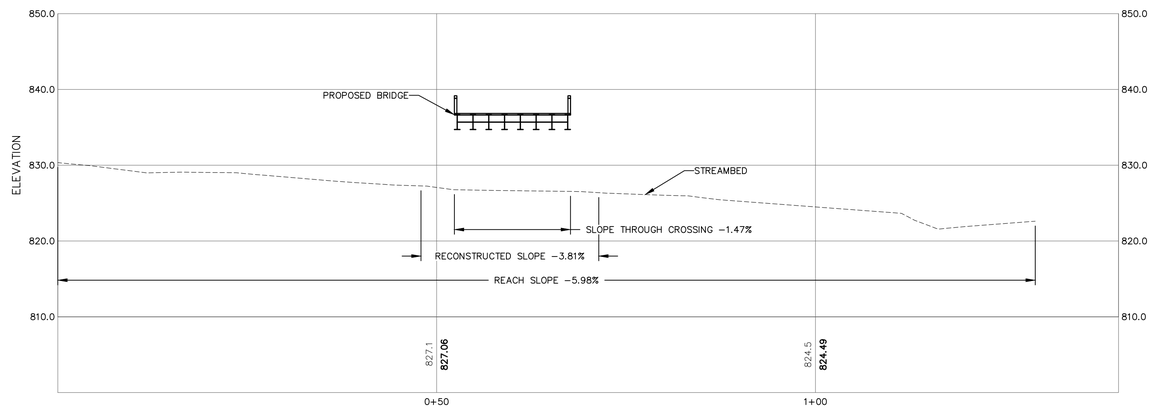
Drawing Title
Langdon Brook Plan and Profile

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W1.11
CAD File No.: -	
Date: 12/03/2024	
Scale: 1"=10'	



Tributary Plan
Scale: 1" = 10'

Hydraulic Data	
Drainage Area	0.59 mi²
Design Flood Discharge – Inlet (100 yr.)	374 CFS
Design Flood Elevation – Inlet (100 yr.)	831.54 ft
Design Flood Velocity (100 yr.)	3.62 FPS
Bridge Full Waterway Opening Perpendicular to River	217 ft²



Unnamed Tributary Profile
Scale:
Horizontal: 1"=10'
Vertical: 1"=10'

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
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Drawing Title
Tributary Plan and Profile

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W1.12
CAD File No.: -	
Date: 12/03/2024	
Scale: 1"=10'	

Wetland Impacts Legend

- Permanent Wetland Impacts
- Temporary Wetland Impacts
- Stream Channel Impacts
- Stream Bank Impacts
- #–X — Wetland Designation Number and Location

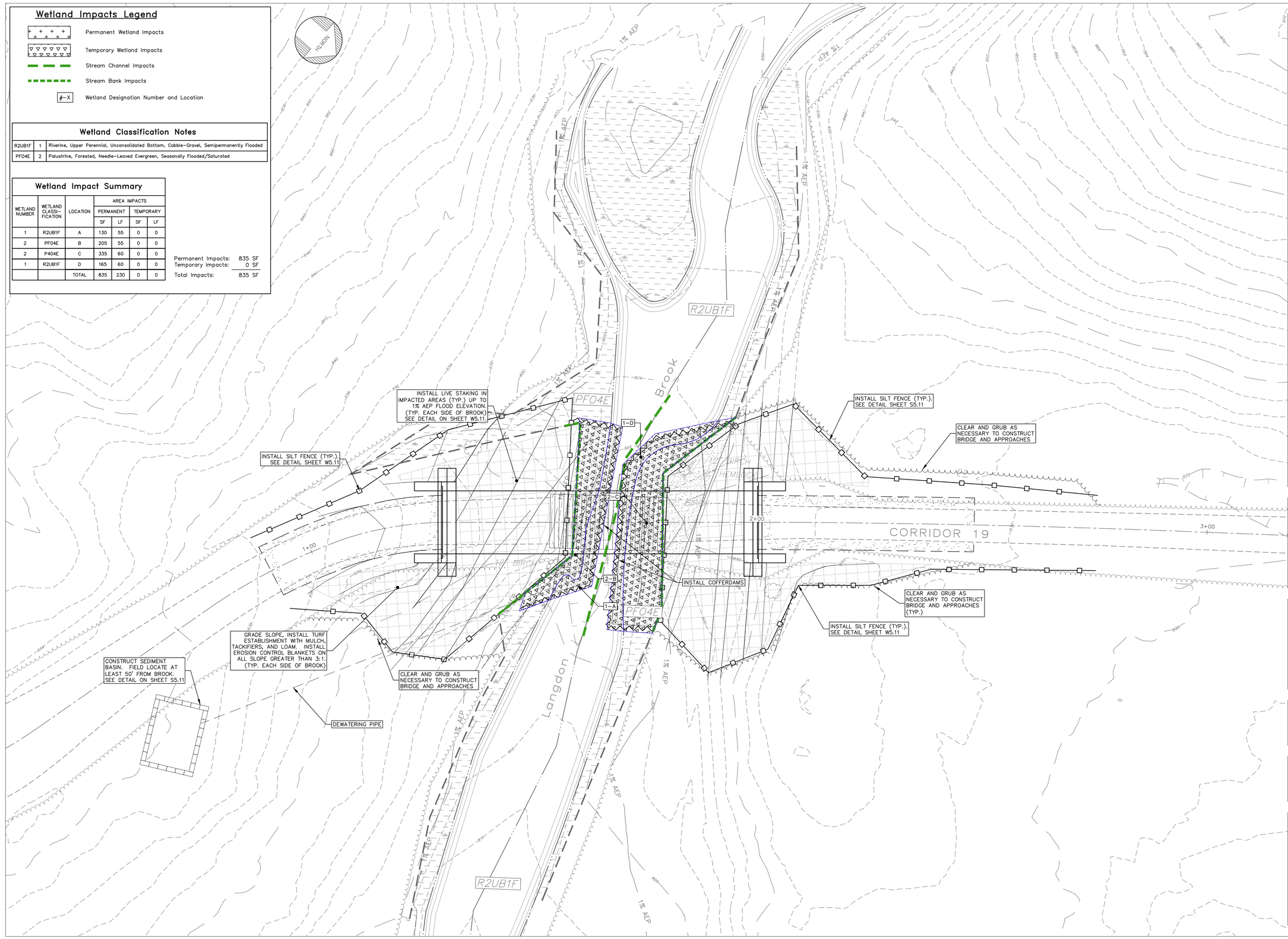
Wetland Classification Notes

R2UB1F	1	Riverine, Upper Perennial, Unconsolidated Bottom, Cobble–Gravel, Semipermanently Flooded
PF04E	2	Palustrine, Forested, Needle–Leaved Evergreen, Seasonally Flooded/Saturated

Wetland Impact Summary

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS			
			PERMANENT		TEMPORARY	
			SF	LF	SF	LF
1	R2UB1F	A	130	55	0	0
2	PF04E	B	205	55	0	0
2	P404E	C	335	60	0	0
1	R2UB1F	D	165	60	0	0
		TOTAL	835	230	0	0

Permanent Impacts: 835 SF
Temporary Impacts: 0 SF
Total Impacts: 835 SF



General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

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Drawing Title
Langdon Brook Erosion & Sediment Control Plan

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W1.21
CAD File No.: -	
Date: 12/03/2024	
Scale: 1"=10'	

Wetland Impacts Legend

- Permanent Wetland Impacts
- Temporary Wetland Impacts
- Stream Channel Impacts
- Stream Bank Impacts
- #–X — Wetland Designation Number and Location

Wetland Classification Notes

R2UB1F	1	Riverine, Upper Perennial, Unconsolidated Bottom, Cobble–Gravel, Semipermanently Flooded
PF04E	2	Palustrine, Forested, Needle–Leaved Evergreen, Seasonally Flooded/Saturated

Wetland Impact Summary

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS			
			PERMANENT		TEMPORARY	
			SF	LF	SF	LF
1	R2UB1F	E	40	45	0	0
2	PF04E	F	240	45	0	0
2	P404E	G	170	40	0	0
1	R2UB1F	H	50	40	0	0
		TOTAL	500	170	0	0

Permanent Impacts: 500 SF
Temporary Impacts: 0 SF
Total Impacts: 500 SF

NORTH

INSTALL LIVE STAKING IN IMPACTED AREAS UP TO 1% AEP FLOOD ELEVATION. (TYP. EACH SIDE OF BROOK.) SEE DETAIL ON SHEET W5.11.

INSTALL SILT FENCE (TYP.). SEE DETAIL SHEET W5.11 ITEM 15705–0100

CLEAR AND GRUB AS NECESSARY TO CONSTRUCT BRIDGE AND APPROACHES

INSTALL SILT FENCE (TYP.). SEE DETAIL SHEET W5.11 ITEM 15705–0100

GRADE SLOPE, INSTALL TURF ESTABLISHMENT WITH MULCH, TACKIFIERS, AND LOAM. INSTALL EROSION CONTROL BLANKETS ON ALL SLOPE GREATER THAN 3:1. (TYP. EACH SIDE OF BROOK)

INSTALL COFFERDAMS ITEM 20815–0000

CLEAR AND GRUB AS NECESSARY TO CONSTRUCT BRIDGE AND APPROACHES

CLEAR AND GRUB AS NECESSARY TO CONSTRUCT BRIDGE AND APPROACHES. (TYP.)

INSTALL SILT FENCE (TYP.). SEE DETAIL SHEET W5.11 ITEM 15705–0100

DEWATERING PIPE

CONSTRUCT SEDIMENT BASIN. FIELD LOCATE AT LEAST 50' FROM BROOK. SEE DETAIL ON SHEET W5.11

1–E
2–F
2–G
1–H

PF04E
R2UB1F
1% AEP
2% AEP
to Toad Hill Road
4+00
6+00
6+08

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

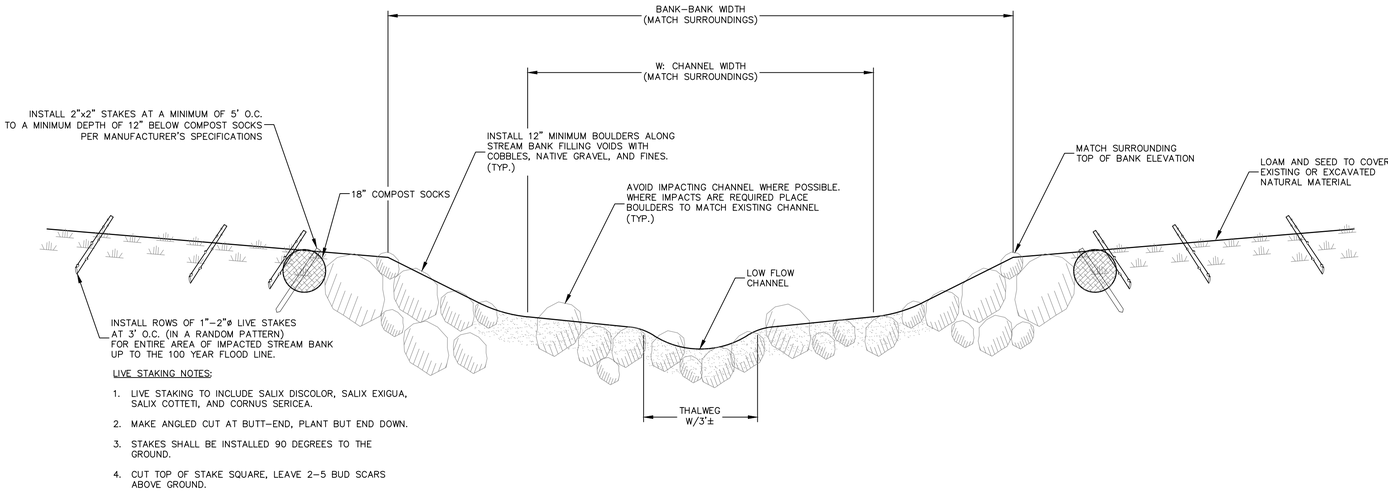
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-9

Corridor 19 Bridges
over Langdon Brook & Unnamed Tributary
White Mountain National Forest
Saco Ranger District

HEB Engineers, Inc.
PO Box 440, 2605 White Mountain Hwy.
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936

Drawing Title
Tributary Erosion & Sediment Control Plan

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W1.22
CAD File No.: -	
Date: 12/03/2024	
Scale: 1"=10'	



LIVE STAKING NOTES:

1. LIVE STAKING TO INCLUDE SALIX DISCOLOR, SALIX EXIGUA, SALIX COTTETI, AND CORNUS SERICEA.
2. MAKE ANGLED CUT AT BUTT–END, PLANT BUT END DOWN.
3. STAKES SHALL BE INSTALLED 90 DEGREES TO THE GROUND.
4. CUT TOP OF STAKE SQUARE, LEAVE 2–5 BUD SCARS ABOVE GROUND.

Typical Channel Section

Scale: 1" = 1'–0"

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

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FOREST SERVICE

R-9

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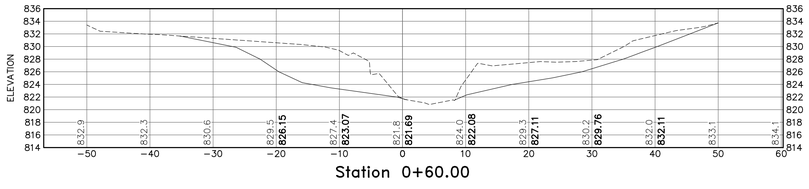
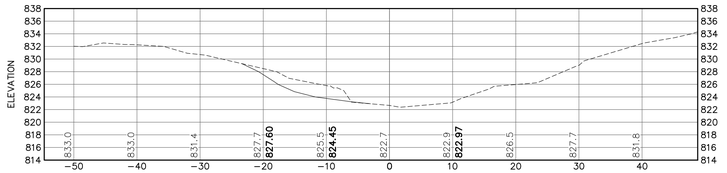
Drawing Title

Typical Channel Sections

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W3.01
CAD File No.: -	
Date: 12/03/2024	
Scale: 1" = 1'-0"	



Station 0+60.00



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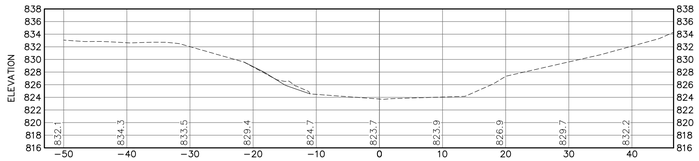

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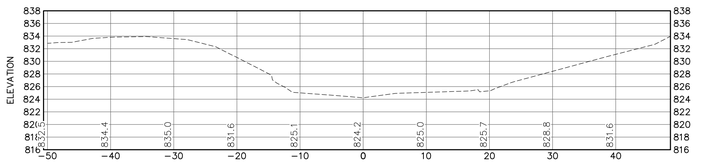

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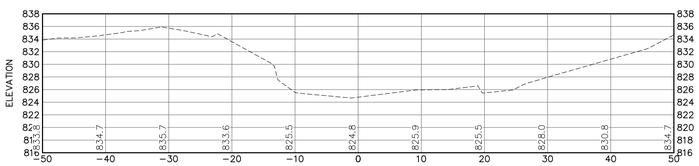

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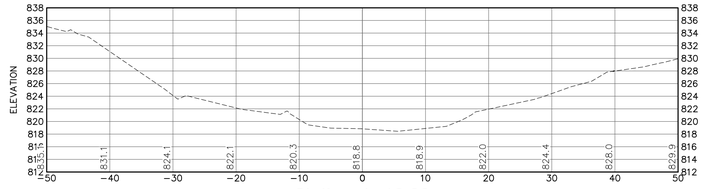

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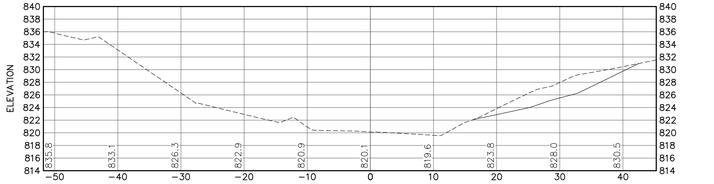

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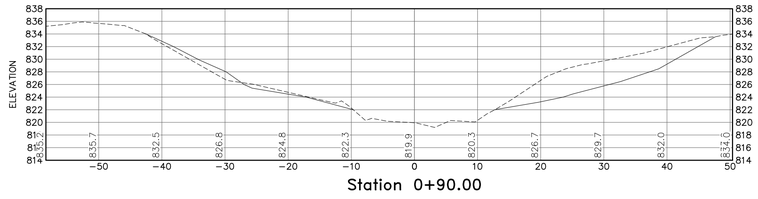

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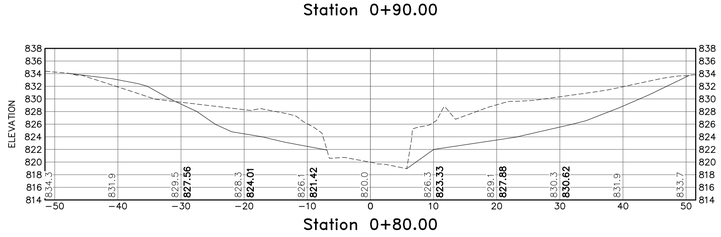

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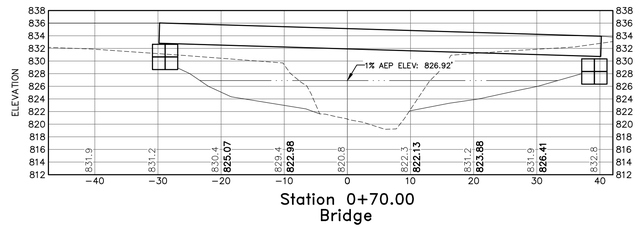

Station 0+70.00
Bridge

General Notes

No.	Revision/Issue	Date
4		
3		
2		
1		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

R-9

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White Mountain National Forest
Saco Ranger District

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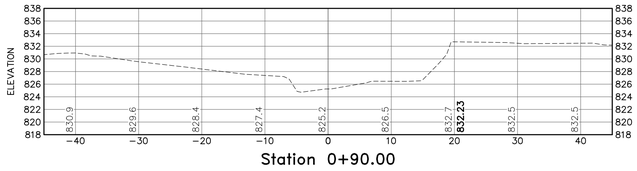
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936

Drawing Title

Langdon Brook Channel Sections

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W3.11
CAD File No.: -	
Date: 12/03/2024	
Scale: 1" = 10'	



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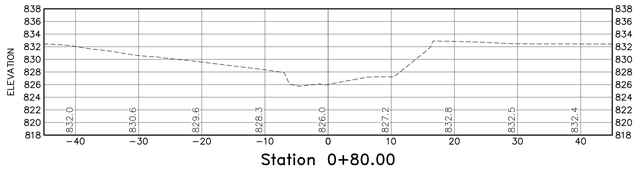

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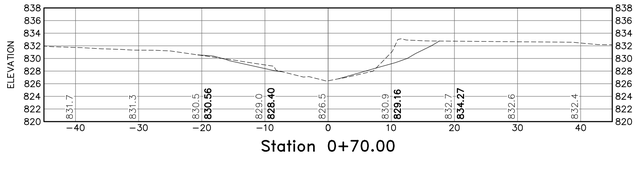

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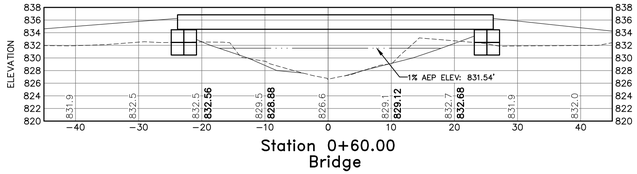
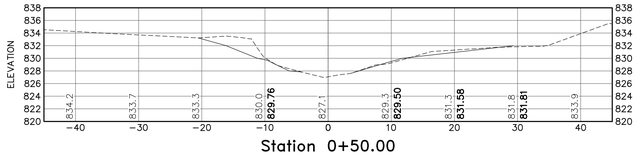


Station 0+60.00
Bridge



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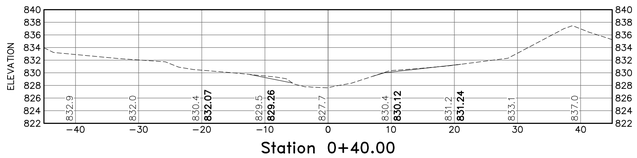
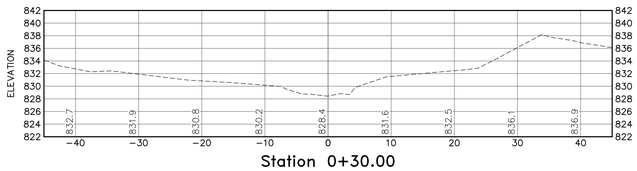


Station 0+40.00



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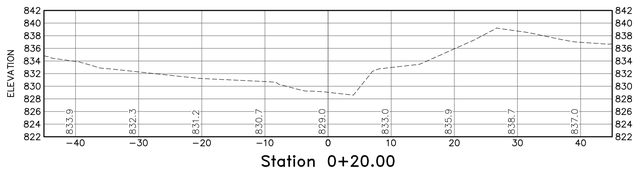

Station 0+20.00

General Notes

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4		
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FOREST SERVICE

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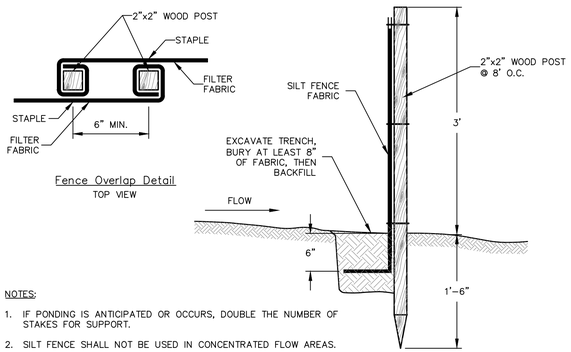
Drawing Title
Tributary Channel Sections

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W3.12
CAD File No.: -	
Date: 12/03/2024	
Scale: 1" = 10'	

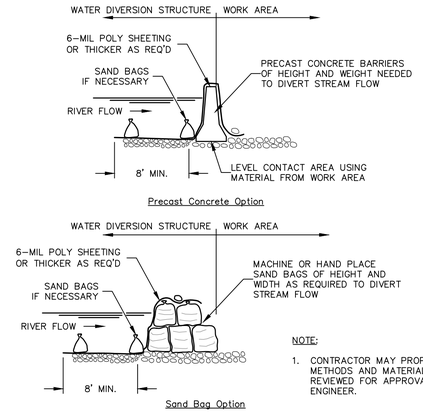


Fence Overlap Detail
TOP VIEW

NOTES:

1. IF PONDING IS ANTICIPATED OR OCCURS, DOUBLE THE NUMBER OF STAKES FOR SUPPORT.
2. SILT FENCE SHALL NOT BE USED IN CONCENTRATED FLOW AREAS.
3. SEDIMENT DEPOSITS SHALL BE INSPECTED AFTER EVERY STORM EVENT AND REMOVED WHEN DEPOSITS REACH APPROXIMATELY ½ THE HEIGHT OF THE SILT FENCE, OR WHEN "BULGES" DEVELOP IN THE SILT FENCE.

Silt Fence Installation
Scale: 1" = 1'



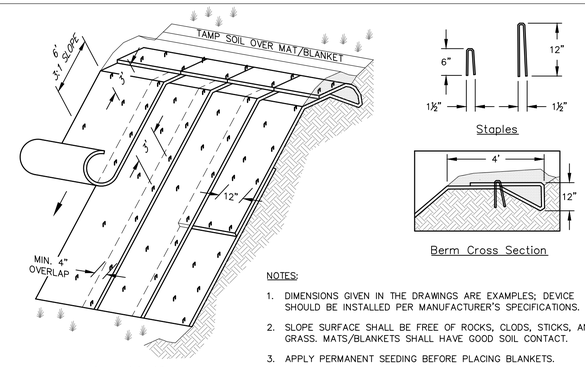
Precast Concrete Option

Sand Bag Option

NOTE:

1. CONTRACTOR MAY PROPOSE OTHER METHODS AND MATERIALS TO BE REVIEWED FOR APPROVAL BY ENGINEER.

Temporary Water Diversion Structure
NTS



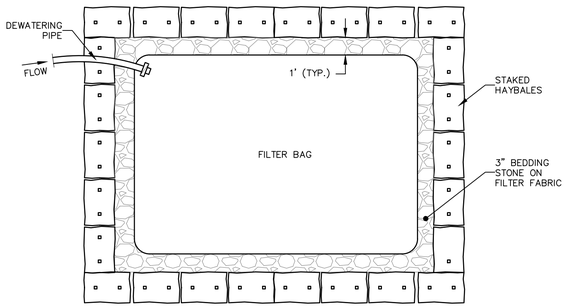
Isometric View

Typical Slope Soil Stabilization

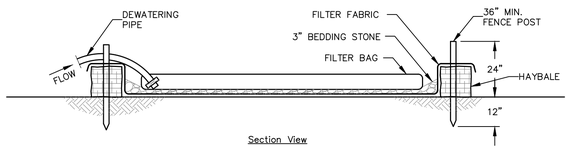
NOTES:

1. DIMENSIONS GIVEN IN THE DRAWINGS ARE EXAMPLES; DEVICE SHOULD BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
5. BLANKETS SHOULD BE INSTALLED VERTICALLY DOWNSLOPE.

Erosion Blankets Slope Installation
NTS



Plan View



Section View

NOTES:

1. GEOTEXTILE BAG MATERIAL BASED ON PARTICLE SIZES IN PUMPED WATER, (I.E., FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON-WOVEN MATERIAL).
2. DO NOT OVER PRESSURIZE BAG OR USE BEYOND CAPACITY.
3. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
4. DOWNGRADIENT FROM RECEIVING AREA MUST BE WELL VEGETATED OR OTHERWISE STABLE FROM EROSION, (I.E., FOREST FLOOR OR COARSE GRAVEL/STONE).
5. DISCHARGE LOCATION SHALL MEET ALL REGULATORY SETBACKS FROM WETLANDS AND OTHER WATER COURSES.
6. ALL MATERIALS, LABOR, CONSTRUCTION, MAINTENANCE AND REMOVAL OF THE SEDIMENTATION BASIN, AND RESTORATION OF THE AREA SHALL BE INCLUDED IN THE PAY ITEM. DISPOSE OF FILTER BAGS WHEN FULL AND REPLACE.
7. CONTRACTOR IS RESPONSIBLE FOR SIZING OF THE SEDIMENTATION BASIN. THE SEDIMENTATION BASIN SHALL HAVE SUFFICIENT CAPACITY TO FILTER PUMPED WATER THROUGH THE FILTER BAG, FILTER FABRIC, AND HAYBALES. A LARGER SEDIMENTATION BASIN OR ADDITIONAL SEDIMENTATION BASINS SHALL BE NECESSARY IF THE SEDIMENTATION BASIN IS OVERFLOWING OR OTHERWISE INCAPABLE OF FILTERING ALL PUMPED WATER. ADDITIONAL SEDIMENTATION BASINS SHALL BE INCLUDED IN THE PAY ITEM.
8. DETAILS SHOWN ARE TYPICAL FOR ALL SEDIMENTATION BASINS USED THROUGHOUT THE DURATION OF CONSTRUCTION.

Sedimentation Basin Details
NTS

General Notes

No.	Revision/Issue	Date
4		
3		
2		
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Drawing Title
Erosion & Sediment Control Details

Designed/Drawn: COB	Project: 2023-004
Checked: JKM	Drawing No.: W5.11
CAD File No.: -	
Date: 12/03/2024	
Scale: As Noted	