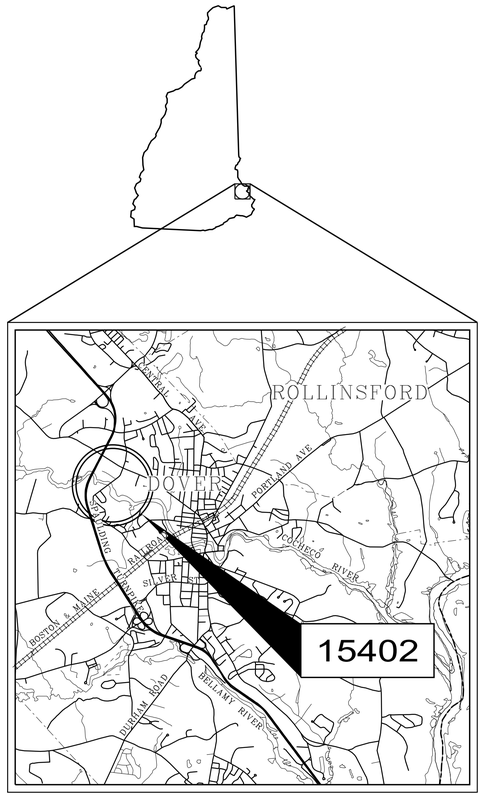
CITY OF DOVER
DEPARTMENT OF COMMUNITY SERVICES
CONSTRUCTION PLANS
WHITTIER STREET OVER COCHECO RIVER

FEDERAL PROJECT NO. X-A002(794)
N.H.D.O.T. PROJECT NO. 15402
FEBRUARY 2016

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 10	5,000 VPD
AVERAGE DAILY TRAFFIC 20 32	7,400 VPD
PERCENT OF TRUCKS	3%
DESIGN SPEED	30
LENGTH OF PROJECT	0.22 MI

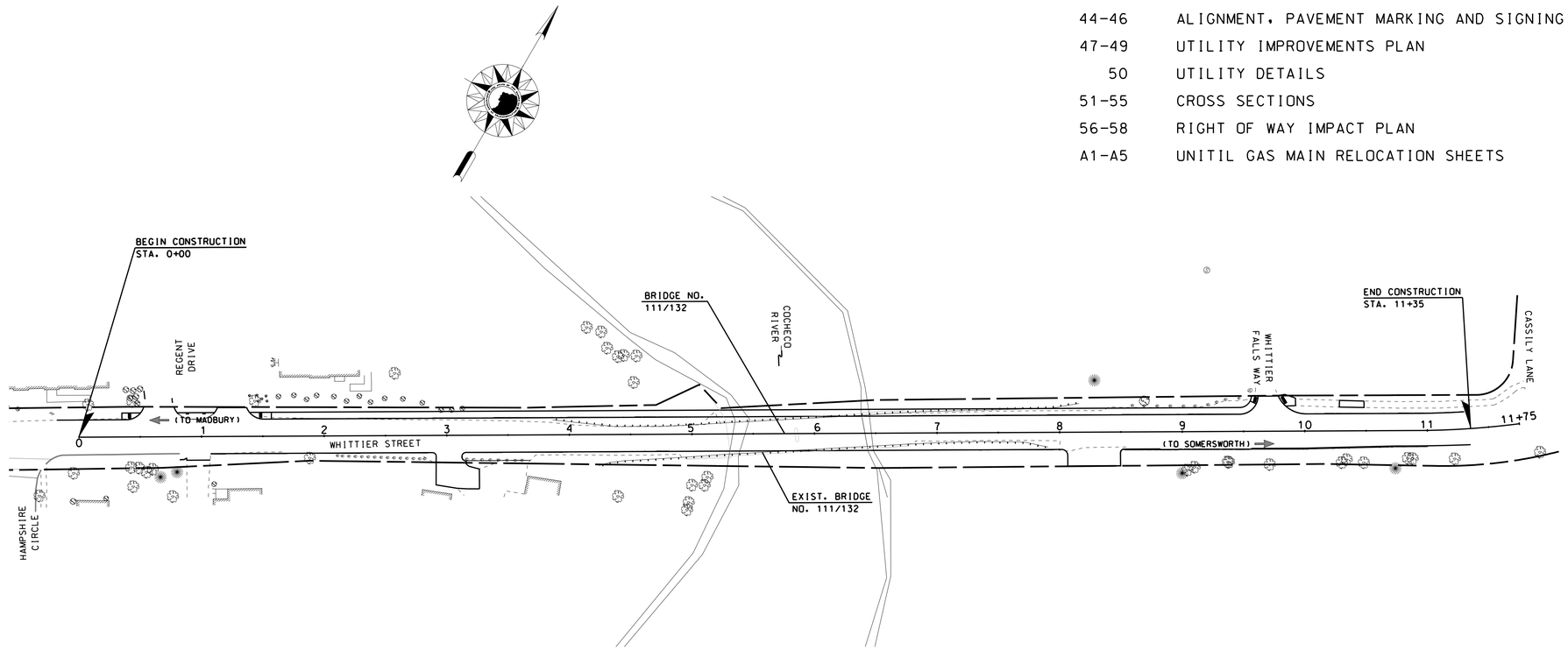
INDEX OF SHEETS



LOCATION MAP

1 1/2 0 1 2 mi.

GRAPHIC SCALE



CITY OF DOVER
COUNTY OF STRAFFORD
NOT TO SCALE

DRAWN BY DGB DATE 04/13
CHECKED BY KSW DATE 04/13

ROADWAY PLANS PREPARED BY
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200
BY: _____

STATE OF NEW HAMPSHIRE TIMOTHY C HIGGINSON No. 11928 LICENSED PROFESSIONAL ENGINEER

BRIDGE PLANS PREPARED BY
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200
BY: _____

STATE OF NEW HAMPSHIRE THERESA D. McAULIFFE No. 14126 LICENSED PROFESSIONAL ENGINEER

CITY OF DOVER
DEPARTMENT OF COMMUNITY SERVICES

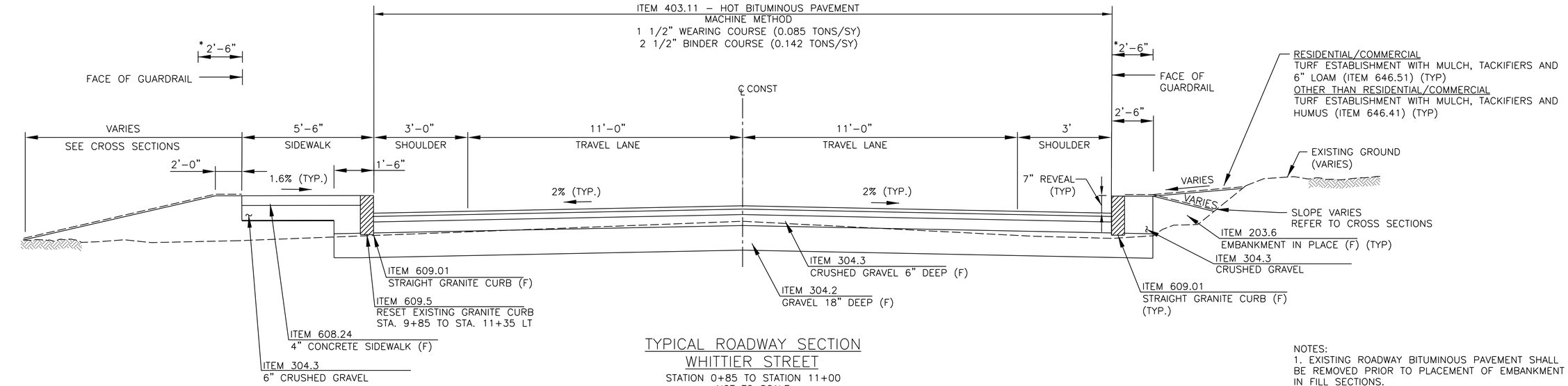
APPROVED: _____ CITY ENGINEER _____ DATE

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

APPROVED: _____ BUREAU OF PLANNING AND COMMUNITY ASSISTANCE _____ DATE

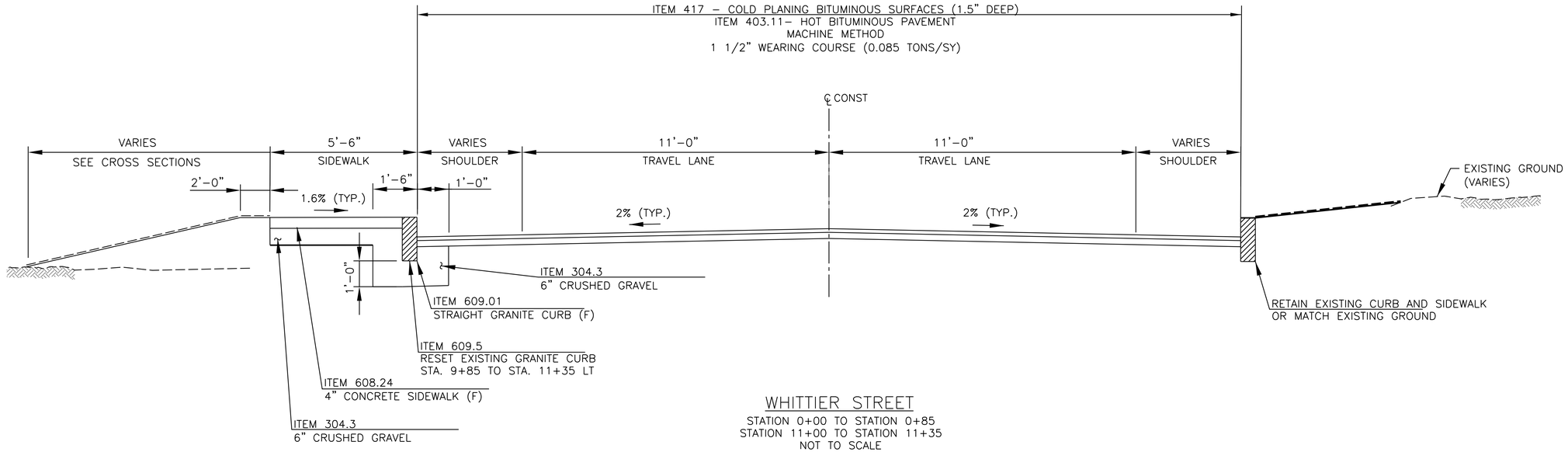
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A002(794)	15402	1	58

* WHEN GUARDRAIL IS USED



TYPICAL ROADWAY SECTION
WHITTIER STREET
STATION 0+85 TO STATION 11+00
NOT TO SCALE

NOTES:
1. EXISTING ROADWAY BITUMINOUS PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF EMBANKMENT IN FILL SECTIONS.
2. CONSTRUCT BITUMINOUS CURB TYPE B 4" REVEAL FROM STA. 8+50 TO STA. 11+00 RT.



WHITTIER STREET
STATION 0+00 TO STATION 0+85
STATION 11+00 TO STATION 11+35
NOT TO SCALE

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

		DATE
SDR PROCCESSED		
NEW DESIGN	TH	2/6/13
SHEET CHECKED	TL/DBF/TH	10/15
AS BUILT DETAILS		

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

TYPICAL ROADWAY SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402TYP	15402	2	58

GENERAL NOTES

1. ALL WORK SHALL BE IN CONFORMANCE WITH CURRENT NHDOT STANDARD SPECIFICATIONS, STANDARD PLANS AND DETAILS.
2. ENGINEER SHALL BE DEFINED AS THE RESIDENT ENGINEER / OWNER'S REPRESENTATIVE, WHO IS RESPONSIBLE FOR ENGINEERING SUPERVISION OF THE CONSTRUCTION, ACTING DIRECTLY OR THROUGH HIS DULY AUTHORIZED REPRESENTATIVES.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY DIG-SAFE PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING THE HORIZONTAL AND VERTICAL CONTROL THROUGHOUT THE PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY RESIDENTS OF ANY WORK RESTRICTING ACCESS TO ANY DRIVEWAY 24 HOURS IN ADVANCE.
6. SURVEY DATA FOR THIS PROJECT WAS COLLECTED BY PROMISED LAND SURVEY LLC. 25 NASHUA ROAD. SUITE B1. LONDONDERRY. NH 03053 IN JUNE 2011. COORDINATES ARE NEW HAMPSHIRE STATE PLANE COORDINATES OF N.A.D.1983/1986 AND THE BEARINGS ARE GRID. ELEVATIONS ARE REFERENCED TO NGVD 29.
7. REFER TO NHDOT STANDARD PLANS FOR MAILBOX ASSEMBLY AND CONSTRUCTION DETAILS.
8. THE COCHECO RIVER IS ALSO ACCEPTABLY SPELLED AS COCHECHO RIVER.

SIDEWALK NOTES

1. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1, THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2' FROM THE ROADWAY CURBLINE.
3. INTERCEPT DRAINAGE ALONG THE CURB IN ADVANCE OF SIDEWALK CURB RAMPS OR LANDINGS. CATCH BASINS, MANHOLES, ETC, SHALL NOT BE LOCATED IN, OR AT THE BASE OF, SIDEWALK CURB RAMPS OR LANDINGS.
4. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
5. THE SURFACE OF A PERPENDICULAR SIDEWALK CURB RAMP OR THE LANDING OF A PARALLEL SIDEWALK CURB RAMP SHALL CONTRAST VISUALLY WITH THE ADJOINING SIDEWALK SURFACE, EITHER ASPHALT/LIGHT-COLORED CONCRETE OR LIGHT-COLORED CONCRETE/DARK-STAINED CONCRETE. THE CONCRETE SURFACE SHALL BE SLIP RESISTANT.
6. INSTALL DETECTABLE WARNINGS (TRUNCATED DOMES) AT THE LOCATIONS SHOWN. DETECTABLE WARNINGS SHALL MEASURE 2' IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE SIDEWALK RAMP, AND THE EDGE OF THE NEAREST CURBLINE SHALL BE LOCATED 1.5' - 2.0' FROM THE FACE OF THE CURBLINE.

MAINTENANCE OF TRAFFIC (ITEM 619.1)

1. CONTRACTOR SHALL DEVELOP A DETOUR PLAN AND SIGN PACKAGE SUBMITTAL FOR CITY REVIEW AND APPROVAL. ALL ITEMS ASSOCIATED WITH DETOUR PLAN AND SIGN PACKAGE SHALL BE SUBSIDIARY TO ITEM 619.1.
2. THE ANTICIPATED DETOUR ROUTE WILL UTILIZE 6TH STREET, GROVE STREET, 4TH STREET AND WASHINGTON STREET.

EROSION CONTROL NOTES

1. SILT FENCE SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED AFTER EACH RAIN EVENT.
4. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED AND APPROVED BY THE ENGINEER.

DRAINAGE NOTES

NOTES FOR DRAINAGE CONSTRUCTION:

- ALL STATIONS AND OFFSETS PROVIDED IN THESE NOTES ARE TO THE CENTERLINE OF THE STRUCTURE AND DO NOT ALWAYS REFLECT THE CENTER OF THE GRATE OR COVER.
- IN GUARDRAIL AREAS THE STRUCTURES ARE DESIGNED TO USE ECCENTRIC CONES AND HAVE THE STRUCTURE CENTERLINE SET OFF THE FACE OF GUARDRAIL AS FOLLOWS:
  - 1.7' FOR 4' DIAMETER STRUCTURES
  - 2.2' FOR 5' DIAMETER STRUCTURES
- ALL TOP OF GRATE ELEVATIONS IN PAVEMENT ARE SET 0.5" BELOW NORMAL ELEVATION AT CENTERLINE OF GRATE.
- REFER TO NHDOT STANDARD PLANS AND SPECIFICATIONS FOR DETAILS REGARDING GRATE AND CATCH TYPE AND DETAILS.

1 TO 2 INTENTIONALLY LEFT BLANK

3
STA. 4+08.00, LT 87.0' TO STA. 3+70.60, LT 13.0'
CONSTRUCT 81 LF X 15" PE PIPE (TYPE S)
CONSTRUCT 18" ALUMINIZED STEEL END SECTION @ +08.00, LT 87.0'
15" INV. OUT = 50.05
CONSTRUCT CB-B 5' DIA. @ 3+70.60, LT 13.0'
15" INV. OUT = 50.70
15" INV. IN = 52.10 (SW)
15" INV. IN = 52.10 (NE)
15" INV. IN = 52.10 (SE)
GRATE ELEV. = 58.30
CONSTRUCT 4' WIDE X 16' LONG STONE LINED CHANNEL WITH STONE FILL CLASS C (SEE ROADWAY DETAILS SHEET)

4
STA. 3+70.60, LT 13.0' TO STA. 3+70.60, RT 13.0'
CONSTRUCT 22 LF X 15" RCP 2000D
CONSTRUCT CB-B 4' DIA. @ 3+70.60, RT 13.0'
15" INV. OUT = 52.40
15" INV. IN = 52.65 (SW)
15" INV. IN = 52.65 (NE)
GRATE ELEV. = 58.30

5
STA. 3+70.60, RT 13.0' TO STA. 3+96.00, RT 12.3'
CONSTRUCT 22 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-B 4' DIA. @ 3+96.00, RT 12.3'
WITH ECCENTRIC CONE
15" INV. OUT = 52.80
GRATE ELEV. = 58.38

6
STA. 3+70.60, LT 13.0' TO STA. 3+96.00, LT 13.0'
CONSTRUCT 22 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-B 4' DIA. @ 3+96.00, LT 13.0'
15" INV. OUT = 52.80
GRATE ELEV. = 58.38

7
STA. 3+70.60, RT 13.0' TO STA. 3+46.00, RT 13.0'
CONSTRUCT 21 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-B 4' DIA. @ 3+46.00, RT 13.0'
15" INV. OUT = 52.80
15" INV. IN = 53.05
GRATE ELEV. = 58.39

7A
STA. 3+46.00, RT 13.0' TO STA.2+78.00, RT 13.0'
CONSTRUCT 64 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-B 4' DIA. @ 2+78.00, RT 13.0'
15" INV. OUT = 53.75
GRATE ELEV. = 59.32

8
STA. 3+70.60, LT 13.0' TO STA. 3+46.00, LT 13.0'
CONSTRUCT 21 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-B 4' DIA. @ 3+46.00, LT 13.0'
15" INV. OUT = 52.80
GRATE ELEV. = 58.39

9 INTENTIONALLY LEFT BLANK

10
STA. 6+85.00, RT 25.0' TO STA. 7+00.00, RT 11.8'
CONSTRUCT 18 LF X 15" PE PIPE (TYPE S)
CONSTRUCT 18" ALUMINIZED STEEL END SECTION @ +85.00, RT 25.0'
15" INV. OUT = 59.50
CONSTRUCT CB-F 4' DIA. @ 7+00.00, RT 11.8'
WITH ECCENTRIC CONE
15" INV. OUT = 59.75
15" INV. IN = 60.00
GRATE ELEV. = 66.43

11
STA. 7+00.00, RT 11.8' TO STA. 7+00.00, LT 13.0'
CONSTRUCT 21 LF X 15" RCP 2000D
CONSTRUCT CB-F 4' DIA. @ 7+00.00, LT 13.0'
15" INV. OUT = 60.25
15" INV. IN = 60.50
GRATE ELEV. = 66.42

12
STA. 7+00.00, LT 13.0' TO STA. 8+70.00, LT 13.0'
CONSTRUCT 166 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-F 4' DIA. @ 8+70.00, LT 13.0'
15" INV. OUT = 68.95
15" INV. IN = 69.20 (SE)
15" INV. IN = 69.20 (NE)
GRATE ELEV. = 74.96

13
STA. 8+70.00, LT 13.0' TO STA. 10+03.00, LT 13.0'
CONSTRUCT 129 LF X 15" PE PIPE (TYPE S)
CONSTRUCT CB-F 4' DIA. @ 10+03.00, LT 13.0'
15" INV. OUT = 80.20
GRATE ELEV. = 86.32

14
STA. 8+70.00, LT 13.0' TO STA. 8+70.00, RT 13.0'
CONSTRUCT 22 LF X 15" RCP 2000D
CONSTRUCT CB-F 4' DIA. @ 8+70.00, RT 13.0'
15" INV. OUT = 69.40
GRATE ELEV. = 74.96

GUARDRAIL CONSTRUCTION NOTES

1
STA. 3+77.32, RT TO STA. 4+52.32, RT
CONSTRUCT 25FT EAGRT STA. 3+77.32, RT TO STA. 4+02.32, RT
CONSTRUCT W-BEAM GUARDRAIL STA. 4+02.32, RT TO STA. 4+52.32, RT
CONNECT TO BRIDGE RAIL AT STA. 4+52.32, RT

2
STA. 7+72.18, RT TO STA. 7+97.18, RT
CONSTRUCT 25FT EAGRT STA. 7+72.18, RT TO STA. 7+97.18, RT
CONSTRUCT W-BEAM GUARDRAIL STA. 7+22.18, RT TO STA. 7+72.18, RT
CONNECT TO BRIDGE RAIL AT STA. 7+22.18, RT

3
STA. 2+64.82, LT TO STA. 4+52.32, LT
CONSTRUCT G2 END UNIT STA.2+64.82, LT TO STA. 2+77.32, LT
CONSTRUCT W-BEAM GUARDRAIL STA. 2+77.32, LT TO STA. 4+52.32, LT
CONNECT TO BRIDGE RAIL AT STA. 4+52.32, LT

4
STA. 7+22.18, LT TO STA. 8+97.18, LT
CONSTRUCT 25FT EAGRT STA. 8+72.18, LT TO STA. 8+97.18, LT
CONSTRUCT W-BEAM GUARDRAIL STA. 7+22.18, LT TO STA. 8+72.18, LT
CONNECT TO BRIDGE RAIL AT STA. 7+22.18, LT

DRAINAGE REMOVAL NOTES

R1
STA. 4+07.0, LT 83.5' TO STA. 3+63.0, RT 14.8'
REMOVE 28 LF X 12" EXIST. HDPE
REMOVE 78 LF X 12" EXIST.HDPE (SUBSIDIARY)
REMOVE EXIST. CB @ 3+63.0, RT 14.8'

SUMMARY OF ROADWAY QUANTITIES - PARTICIPATING

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
201.1	CLEARING AND GRUBBING (F)	A	0.13
201.21	REMOVING SMALL TREES	EA	4
202.41	REMOVE EXISTING PIPE 0-24" DIA	LF	30
202.5	REMOVAL OF CATCH BASINS, DROP INLETS, AND MANHOLES	EA	1
202.7	REMOVAL OF GUARD RAIL	LF	525
203.1	COMMON EXCAVATION	CY	1,600
203.2	ROCK EXCAVATION	CY	160
203.5555	GUARDRAIL 25' EAGRT PLATFORM	U	3
203.6	EMBANKMENT-IN-PLACE (F)	CY	1,415
206.1	COMMON STRUCTURE EXCAVATION	CY	11
206.19	COMMON STRUCTURE EXCAVATION - EXPLORATORY	CY	12
206.2	ROCK STRUCTURE EXCAVATION	CY	4
214	FINE GRADING	U	1
304.2	GRAVEL (F)	CY	1,300
304.3	CRUSHED GRAVEL (F)	CY	567
304.35	CRUSHED GRAVEL FOR DRIVES	CY	80
403.11	HOT BITUMINOUS PAVEMENT, MACHINE METHOD	TON	690
403.12	HOT BITUMINOUS PAVEMENT, HAND METHOD	TON	80
403.6	PAVEMENT JOINT ADHESIVE	LF	2,650
417	COLD PLANING BITUMINOUS SURFACES	SY	450
585.2	STONE FILL, CLASS B	CY	190
585.3	STONE FILL, CLASS C	CY	8
593.411	GEOTEXTILE; PERM CONTROL CL.1, NON-WOVEN	SY	1,550
603.00215	15" R.C. PIPE, 2000D	LF	70
603.36118	18" ALUMINZED STEEL END SECTION	EA	2
603.82215	15" PE PIPE (TYPE S)	LF	555
604.0007	POLYETHYLENE LINER	EA	12
604.12	CATCH BASINS TYPE B, 4 FOOT DIAMETER	U	6.1
604.125	CATCH BASINS TYPE B, 5 FOOT DIAMETER	U	1.3
604.16	CATCH BASINS TYPE F, 4 FOOT DIAMETER	U	5.5
604.51	RECONSTRUCTING/ADJUSTING SEWER MANHOLES	LF	4.0
606.12	BEAM GUARDRAIL (STANDARD SECTION - STEEL POST)	LF	425
606.12551	BEAM GUARDRAIL (TERM. UNIT TYPE EAGRT, TL2-25')(STEEL POST)	U	3
606.127	BEAM GUARDRAIL (TERMINAL UNIT TYPE G-2) (STEEL POST)	U	1
606.417	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL	LF	60
607.5108	WOOD STOCKADE FENCE, 8' HIGH	LF	60
608.24	4" CONCRETE SIDEWALK (F)	SY	400
608.54	DETECTABLE WARNING DEVICE CAST IRON	SY	6
609.01	STRAIGHT GRANITE CURB	LF	1,160
609.02	CURVED GRANITE CURB	LF	115
609.5	RESET GRANITE CURB	LF	108
609.811	BITUMINOUS CURB, TYPE B (4" REVEAL)	LF	250
614.342	4" 2-DUCT STEEL CONDUIT	LF	95
614.512	CONCRETE PULL BOX - 18 INCH	EA	2
615.034	RELOCATING TRAFFIC SIGN - TYPE C	U	5
618.61	UNIFORMED OFFICERS WITH VEHICLE	$	1
618.7	FLAGGERS	HR	80
619.1	MAINTENANCE OF TRAFFIC	U	1
619.253	PORTABLE CHANGEABLE MESSAGE SIGN (UNIT WEEK)	UWK	32
622.1	STEEL WITNESS MARKERS	EA	3
628.2	SAWED BITUMINOUS PAVEMENT	LF	250
632.0104	RETROREFLECT. PAINT PAVE. MARKING, 4" LINE	LF	4,450
632.0106	RETROREFLECT. PAINT PAVE. MARKING, 6" LINE	LF	210
632.0112	RETROREFLECT. PAINT. PAVE. MARKING, 12" LINE	LF	25
645.3	EROSION STONE	TON	100
645.531	SILT FENCE	LF	2,000
645.7	STORMWATER POLLUTION PREVENTION PLAN	U	1
645.71	MONITORING SWPPP AND EROSION AND SEDIMENT CONTROLS	HR	250
646.41	TURF ESTABLISHMENT WITH MULCH,TACKIFIERS & HUMUS	SY	800
646.51	TURF ESTABLISHMENT WITH MULCH,TACKIFIERS & LOAM	SY	600
650.2	LANDSCAPING	U	1
670.066	MAILBOX SUPPORT ASSEMBLIES	EA	2
670.95	TEMPORARY SAFETY FENCE	LF	1,000
692	MOBILIZATION	U	1
693	ON-THE-JOB TRAINING OF UNSKILLED WORKERS	$	1
698.13	FIELD OFFICE TYPE C	MON	12
698.11913	FIELD OFFICE (EQUIPMENT AND SUPPLIES)	MON	12
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	$	1
1010.15	FUEL ADJUSTMENT	$	1

SUMMARY OF ROADWAY QUANTITIES - NON PARTICIPATING

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
608.13	3" BITUMINOUS SIDEWALK (F)	SY	15
611.05212	12" CEMENT LINED DUCTILE IRON WATER PIPE, CL.52	LF	590
611.70012	12" FITTING	EA	13
611.71001	REPLACE NUTS ON EXISTING WATER VALVE	U	2
611.71012	12" GATE VALVE WITH BOX	EA	2
611.74	CHLORINE INJECTION TAP	EA	4
611.90001	ADJUSTING WATER GATES AND SHUTOFFS SET BY OTHERS	EA	6
612.99	UTILITY PIPE BRIDGE - GAS MAIN	U	1

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION	STATION	DATE	NUMBER

		DATE
SDR PROCCESSED		
NEW DESIGN	NM	DATE 9/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

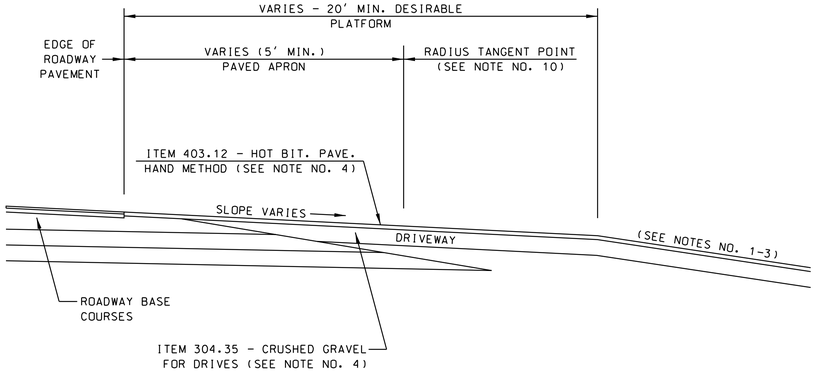
CITY OF DOVER, NEW HAMPSHIRE

WHITTIER STREET OVER COCHECO RIVER

SUMMARY OF QUANTITIES AND NOTES

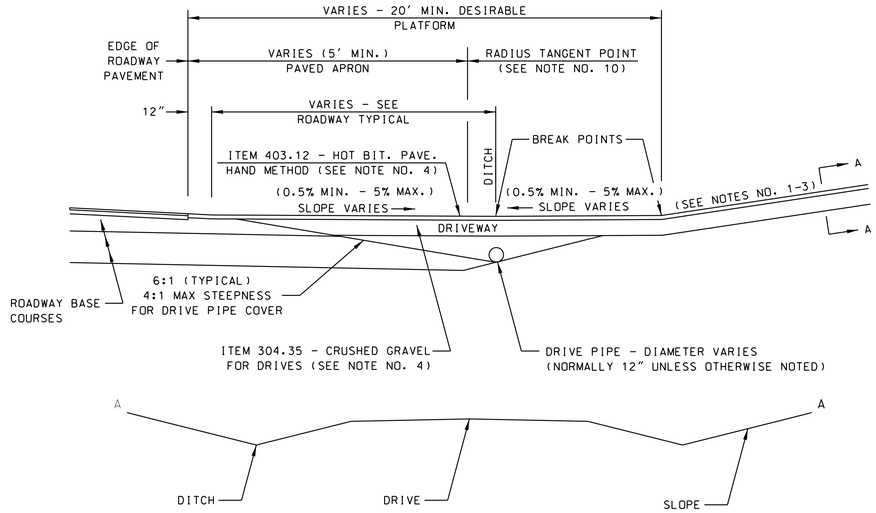
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402QUANT	15402	3	58

NOTE: REFER TO PAVEMENT LAYOUT PLANS AND CROSS-SECTIONS FOR DRIVEWAY LENGTHS, WIDTHS, RADII, CURB CUTS, GRADES, AND PAVEMENT & BASE COURSE DEPTHS



TYPICAL UNCURBED DRIVE IN FILL SECTION

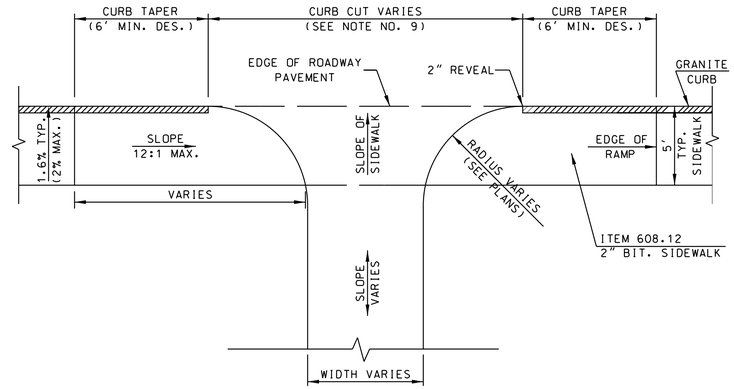
NOT TO SCALE



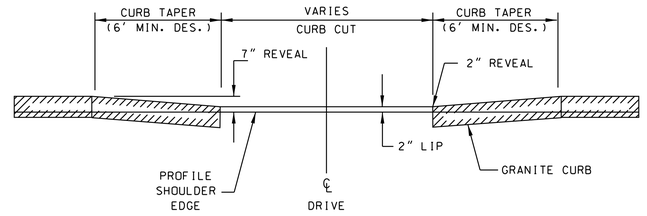
A - A DRIVEWAY CROSS-SECTION

TYPICAL UNCURBED DRIVE IN CUT SECTION

NOT TO SCALE

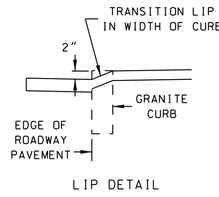


PLAN VIEW WITH SIDEWALK RAMP

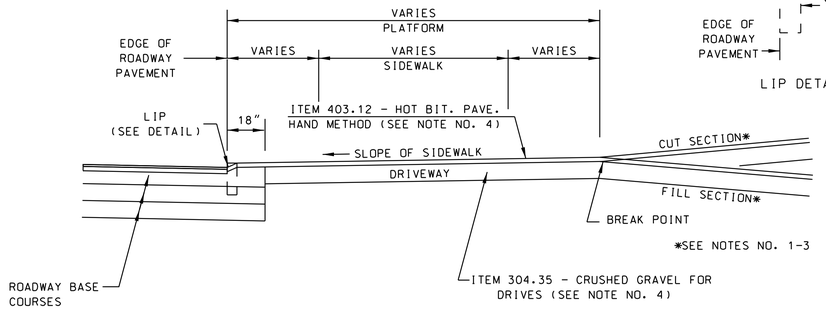


END VIEW

NOT TO SCALE



LIP DETAIL



TYPICAL URBAN CURBED DRIVE IN CUT/FILL SECTION

NOT TO SCALE

GENERAL NOTES

1. GRADES OF MAJOR ENTRANCES BEYOND THE PLATFORM SHOULD NOT EXCEED 8%.
2. GRADES OF OTHER DRIVES BEYOND THE PLATFORM SHOULD NOT EXCEED 15%.
3. THE ALGEBRAIC DIFFERENCE BETWEEN TWO ADJACENT GRADES SHOULD NOT EXCEED 10%.
4. PAVEMENT & BASE COURSE DEPTHS FOR RESIDENTIAL DRIVES ARE TYPICALLY 8" CRUSHED GRAVEL WITH 3" H.B.P. (HAND METHOD) PLACED IN TWO COURSES. FOR COMMERCIAL/ INDUSTRIAL DRIVES WITH FREQUENT HEAVY TRUCK TRAFFIC. 12" CRUSHED GRAVEL WITH 3" H.B.P. (PLACED IN TWO COURSES) SHOULD BE USED. UNLESS NOTED OTHERWISE IN THE DRIVEWAY CONSTRUCTION NOTES BELOW.
5. FOR DESIGN CRITERIA AND OTHER ADDITIONAL INFORMATION, REFER TO THE NHDOT DRIVEWAY MANUAL.
6. DITCHES ARE RECOMMENDED FOR UNCURBED DRIVEWAYS IN CUT SLOPES.
7. USE SLOPED END SECTIONS ON DRIVE PIPES FOR UNCURBED DRIVEWAYS.
8. CURBING CAN BE FLARED TO FIT DRIVE RADII IF APPROPRIATE OR ENDED AS DETAILED ABOVE.
9. CURB CUTS FOR RESIDENTIAL DRIVES WITH ANGLES OF ENTRY OF 75°-90° ARE TYPICALLY 25 FT.

DRIVEWAY CONSTRUCTION NOTES

1. STA. 0+65 LT AND STA. 1+25 LT SHALL BE PAVED WITH 3" H.B.P. AND 12" CRUSHED GRAVEL.
2. STA. 1+00 RT SHALL BE PAVED WITH 3" H.B.P. AND 8" CRUSHED GRAVEL.
3. STA. 3+00 RT SHALL BE PAVED WITH 3" H.B.P. AND 8" CRUSHED GRAVEL.
4. STA. 8+25 RT SHALL BE GRAVEL ITEM 304.35 12" THICK.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

		DATE
SDR PROCCESSED		DATE
NEW DESIGN	--	DATE --
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

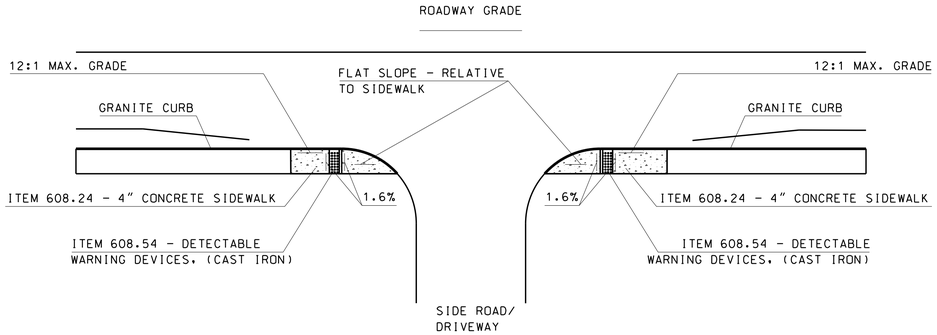
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER, NEW HAMPSHIRE

WHITTIER STREET OVER COCHECO RIVER

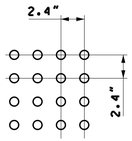
DRIVEWAY MATCH DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402RD00.dgn	15402	4	58



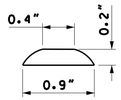
INTERSECTION DETAIL

SCALE: 1/16" = 1'-0"



DOME SPACING (NOMINAL)

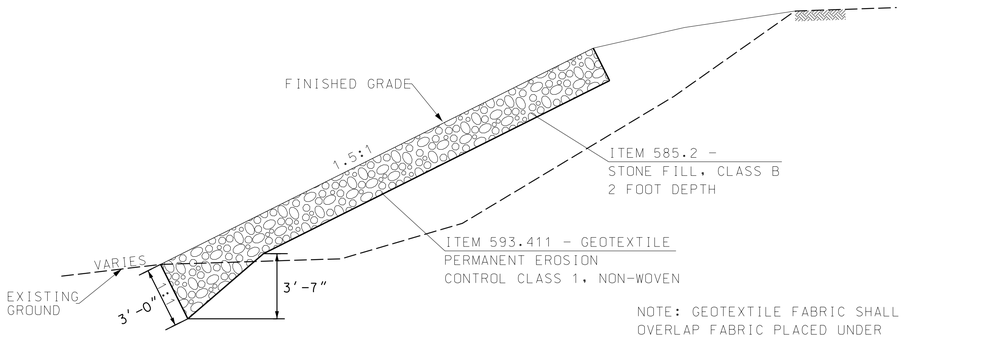
SCALE: 1 1/2" = 1'



DOME SECTION (NOMINAL)

SCALE: 1" = 1"

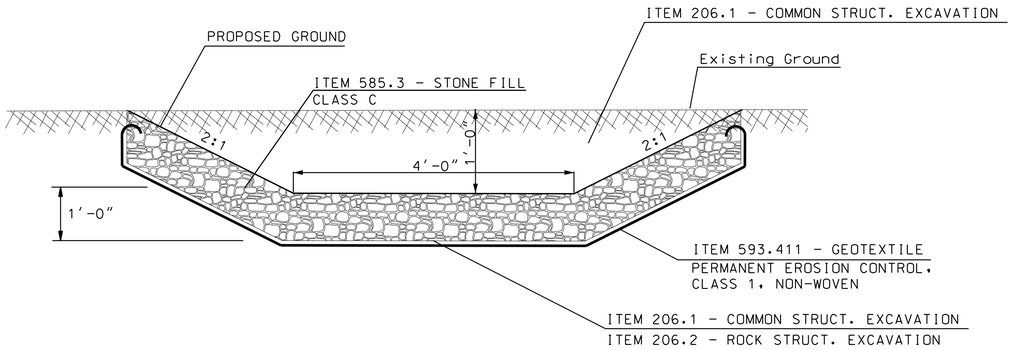
CURB RAMP DETAILS



NOTE: GEOTEXTILE FABRIC SHALL OVERLAP FABRIC PLACED UNDER ADJACENT KEYED STONE FILL AS RECOMMENDED PER MANUFACTURER RECOMMENDATIONS.

ARMORED EMBANKMENT SLOPE FOR 1.5:1 SLOPES

STA. 6+92.5 LT TO STA. 7+60 LT
STA. 6+92.5 RT TO STA. 7+50 RT
NOT TO SCALE



STONE LINED CHANNEL

DRAINAGE NOTE 3
NOT TO SCALE

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCCESSED		DATE
NEW DESIGN	NM	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

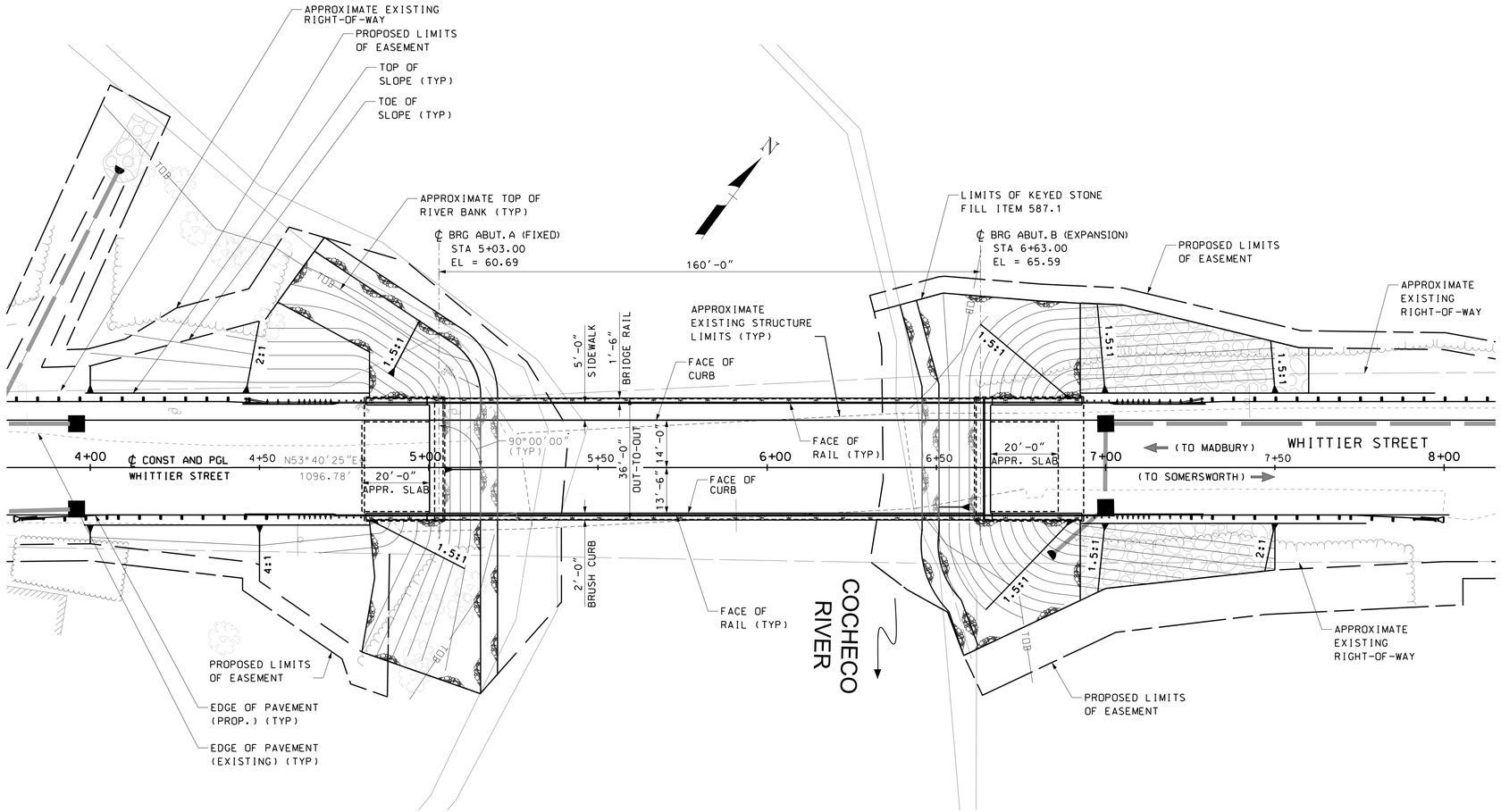
CITY OF DOVER, NEW HAMPSHIRE

WHITTIER STREET OVER COCHECO RIVER

ROADWAY DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402RD00.dgn	15402	5	58

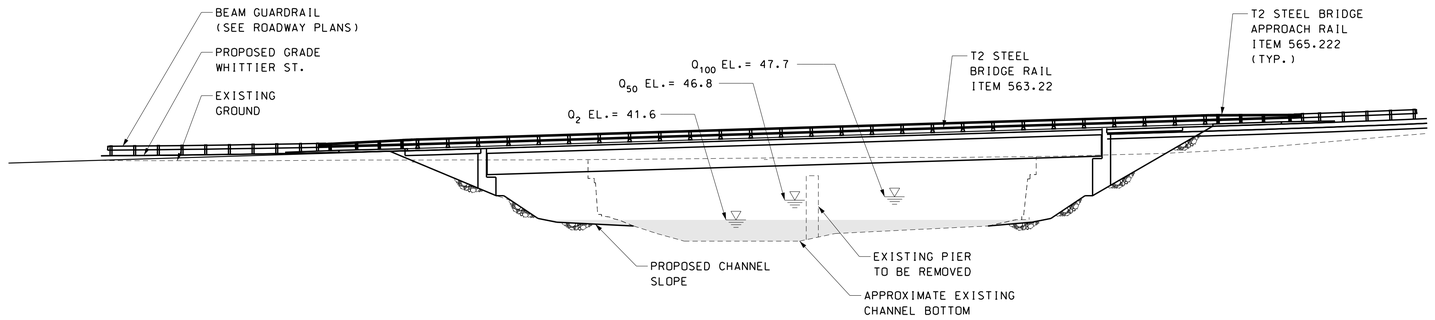
INDEX OF BRIDGE SHEETS	
BRIDGE SHEET NO.	SHEET TITLE
1	GENERAL PLAN AND ELEVATION
2	SITE PLAN AND PROFILE
3	BRIDGE NOTES (SHEET 1 OF 2)
4	BRIDGE NOTES (SHEET 2 OF 2)
5	SURVEY LAYOUT AND CHANNEL SECTION
6	BORING LOGS (SHEET 1 OF 5)
7	BORING LOGS (SHEET 2 OF 5)
8	BORING LOGS (SHEET 3 OF 5)
9	BORING LOGS (SHEET 4 OF 5)
10	BORING LOGS (SHEET 5 OF 5)
11	ABUTMENT FOOTINGS - MASONRY
12	ABUTMENT FOOTINGS - REINFORCEMENT
13	ABUTMENT A - MASONRY
14	ABUTMENT A - REINFORCEMENT
15	ABUTMENT B - MASONRY
16	ABUTMENT B - REINFORCEMENT
17	ABUTMENT A WINGWALLS MASONRY & REINFORCEMENT
18	ABUTMENT B WINGWALLS MASONRY & REINFORCEMENT
19	ELASTOMERIC BEARING DETAILS
20	FRAMING PLAN
21	GIRDER DETAILS (SHEET 1 OF 2)
22	GIRDER DETAILS (SHEET 2 OF 2)
23	SUPERSTRUCTURE DETAILS
24	TYPICAL SECTION AND DECK SLAB DETAILS
25	DECK PLAN AND SECTIONS
26	DECK DETAILS 1
27	APPROACH SLABS
28	EXPANSION JOINT DETAILS (SHEET 1 OF 2)
29	EXPANSION JOINT DETAILS (SHEET 2 OF 2)
30	RAIL LAYOUT PLAN
31	T4 STEEL BRIDGE RAIL (PL2)
32	T2 STEEL BRIDGE RAIL
33	T4 STEEL BRIDGE APPROACH RAIL (STEEL POST)
34	T2 STEEL BRIDGE APPROACH RAIL (STEEL POST)
35	PRECAST CONCRETE DECK PANEL DETAILS



PLAN

SCALE: 1" = 20'-0"

* FOR ADDITIONAL ALIGNMENT DATA SEE HIGHWAY PLANS.



ELEVATION

SCALE: 1" = 20'-0"

HYDRAULIC DATA

1. DRAINAGE AREA:	171.4 SQUARE MILES
2. DESIGN FLOOD (O_{50}):	11,140 CFS
3. DESIGN VELOCITY:	10.8 FPS
4. DESIGN FLOOD ELEVATION:	46.8 FT
5. O_{100} ELEVATION:	47.7 FT

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

GENERAL PLAN AND ELEVATION

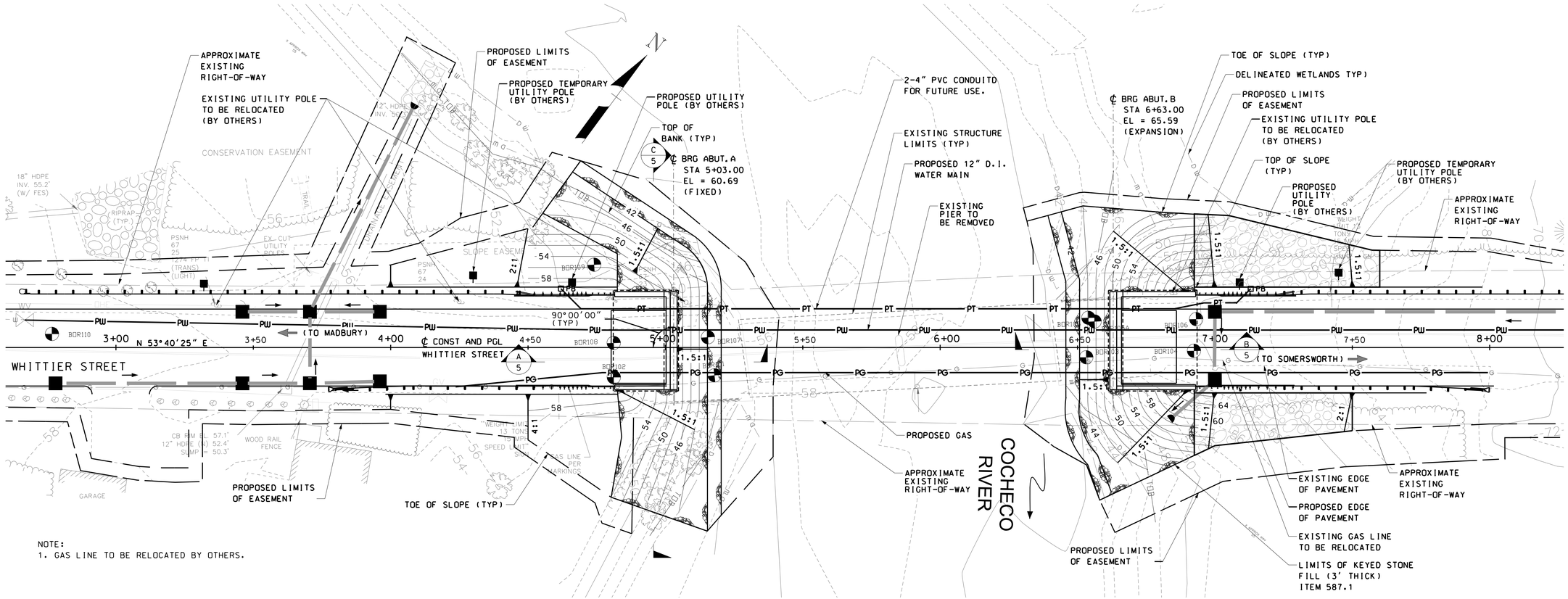
BRIDGE SHEET 1 OF 35

FILE NUMBER

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
			DESIGNED	TWP	11/15	CHECKED	KSW 11/15
			DRAWN	DWM	11/15	CHECKED	KSW 11/15
			QUANTITIES	TWP	11/15	CHECKED	HNH 11/15

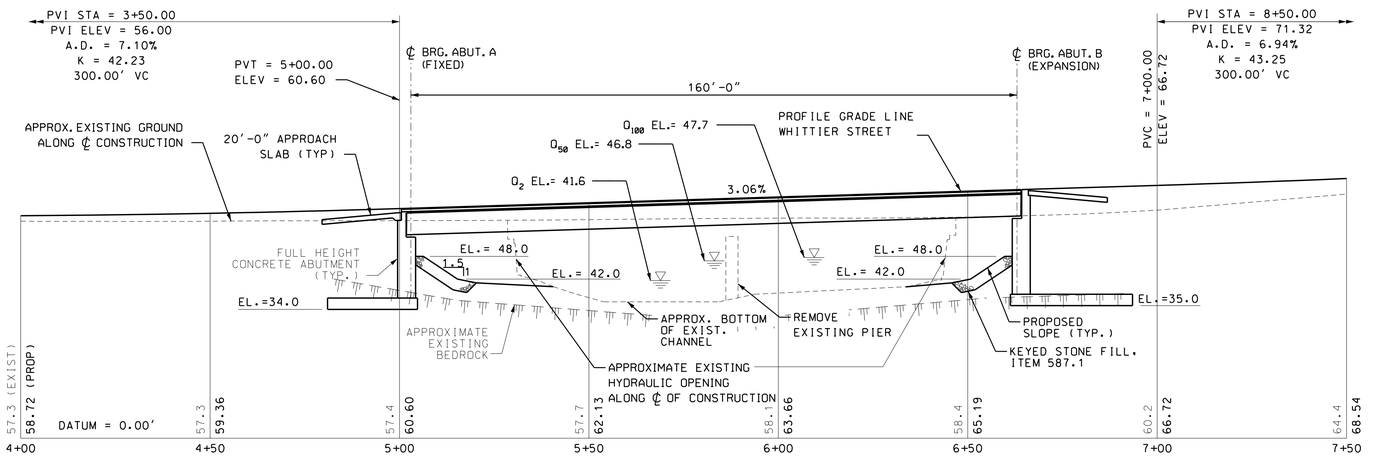
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	=	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174055	15402GenPlan	AS NOTED	REV. DATE		X-A002(794)	6	58



NOTE:
1. GAS LINE TO BE RELOCATED BY OTHERS.

PLAN

SCALE: 1" = 20'-0"



PROFILE

SCALE: 1" = 20'-0"

LEGEND

- 50 PROPOSED CONTOUR
- 50 EXISTING CONTOUR
- APRIL 2011 SOIL BORING
- PROPOSED TRAVEL LANE

SUMMARY OF BRIDGE QUANTITIES (PARTICIPATING)

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
207.3	UNCLASSIFIED CHANNEL EXCAVATION	400	CY
209.201	GRANULAR BACKFILL (BRIDGE) (F)	1500	CY
403.911	HOT BITUMINOUS BRIDGE PAVEMENT, 1" BASE COURSE	30	TON
502	REMOVAL OF EXISTING BRIDGE STRUCTURE	1	U
503.201	COFFERDAMS	1	U
503.202	COFFERDAMS	1	U
504.101	COMMON BRIDGE EXCAVATION	2500	CY
504.2	ROCK BRIDGE EXCAVATION	430	CY
520.02	CONCRETE CLASS AA, ABOVE FOOTINGS (F)	50	CY
520.0302	CONCRETE CLASS AA, APPROACH SLABS (OC/OA) (F)	51	CY
520.12	CONCRETE CLASS A ABOVE FOOTINGS (F)	457	CY
520.211	CONCRETE CLASS B, FOOTINGS (ON ROCK)	305	CY
520.70026	CONCRETE BRIDGE DECK (OC/OA) (PANEL OPTION) (F)	220	CY
534.3	WATER REPELLENT (SILANE-SILOXANE)	36	GAL
538.2	BARRIER MEMBRANE, PEEL AND STICK - VERTICAL SURFACES (F)	48	SY
538.6	BARRIER MEMBRANE, HEAT WELDED - MACHINE METHOD (F)	524	SY
541.1	PVC WATERSTOPS, NH TYPE 1 (F)	27	LF
541.4	PVC WATERSTOPS, NH TYPE 4 (F)	144	LF
541.5	PVC WATERSTOPS, NH TYPE 5 (F)	38	LF
544.3	REINFORCING STEEL (CONTRACTOR DETAILED)	100000	LB
544.31	REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED)	73000	LB
544.7	SYNTHETIC FIBER REINFORCEMENT (F)	358	LB
547	SHEAR CONNECTORS (F)	910	EA
548.21	ELASTOMERIC BEARING ASSEMBLIES (F)	10	EA
550.1	STRUCTURAL STEEL (F)	325000	LB
559.41	ASPHALTIC PLUG FOR CRACK CONTROL (F)	28	LF
561.1001	PREFABRICATED STRIP SEAL EXPANSION JOINT (F)	36	LF
562.1	SILICONE JOINT SEALANT	165	LF
563.22	BRIDGE RAIL T2	212	LF
563.24	BRIDGE RAIL T4	212	LF
565.222	BRIDGE APPROACH RAIL T2 (STEEL POSTS)	2	U
565.242	BRIDGE APPROACH RAIL T4 (STEEL POSTS)	2	U
587.1	KEYED STONE FILL	950	CY
609.3	STRAIGHT GRANITE CURB (BRIDGE)	164	LF
1010.42	QUALITY CONTROL / QUALITY ASSURANCE (QC/QA) FOR CONCRETE	1	$

SUMMARY OF BRIDGE QUANTITIES (NON-PARTICIPATING)

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
603.25024	24" STEEL PIPE SLEEVE, STANDARD SCHEDULE	50	LF
611.43904	12" CEMENT LINED DUCTILE IRON WATER PIPE (BRIDGE)	214	LF
614.74218	4" 2-DUCT PVC CONDUIT, SCHEDULE 80	165	LF

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

SITE PLAN AND PROFILE

BRIDGE SHEET 2 OF 35

FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402SitePlan	AS NOTED

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	7	58

PROJECT GENERAL NOTES

1. ALL WORK SHALL BE IN CONFORMANCE WITH CURRENT NHDOT STANDARD SPECIFICATIONS AND DETAILS OR AS OTHERWISE MODIFIED WITHIN THE CONTRACT DOCUMENTS.

2. ENGINEER SHALL BE DEFINED AS THE RESIDENT ENGINEER / OWNER'S REPRESENTATIVE, WHO IS RESPONSIBLE FOR ENGINEERING SUPERVISION OF THE CONSTRUCTION, ACTING DIRECTLY OR THROUGH HIS/HER DULY AUTHORIZED REPRESENTATIVES.

3. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN, ON THESE PLANS PRIOR TO CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION SHALL BE TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL NOTIFY DIG-SAFE PRIOR TO CONSTRUCTION (1-888-DIG-SAFE).

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING A LICENSED SURVEYOR IN THE STATE OF NEW HAMPSHIRE TO ESTABLISH HORIZONTAL AND VERTICAL CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE HORIZONTAL AND VERTICAL CONTROL THROUGHOUT THE PROJECT.

5. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY RESIDENTS OF ANY WORK RESTRICTING ACCESS TO ANY DRIVEWAY 24 HOURS IN ADVANCE.

6. FOR STANDARD PLANS, SEE CURRENT NHDOT "STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION".

7. OVERHEAD UTILITY LINES ARE LOCATED THROUGHOUT THE PROJECT WITH CROSSINGS AT VARIOUS LOCATIONS AND RUNNING ALONG THE ROAD. THE CONTRACTOR IS ADVISED THAT EXTREME CAUTION WILL BE REQUIRED IN THE OPERATION OF EQUIPMENT, ESPECIALLY CRANES.

8. REMOVE TOPSOIL FOR ITS TOTAL DEPTH WITHIN THE LIMITS OF THE SLOPE LINES. UNLESS OTHERWISE DIRECTED, STOCKPILE TOPSOIL AND USE IT ON THIS PROJECT AS NEEDED UNDER SECTION 641 - LOAM AND/OR SECTION 646.31 - TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS. STOCKPILE LOCATION SHALL BE DETERMINED BY THE CONTRACTOR WITHIN THE RIGHT-OF-WAY OR OFF SITE. ALL COSTS FOR STOCKPILING OF TOPSOIL SHALL BE INCLUDED IN THE APPROPRIATE 641 OR 646 ITEMS OF THIS CONTRACT.

9. ALL WORK SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY OR ACQUIRED TEMPORARY RIGHT OF ENTRY LIMITS.

10. SURVEY DATA FOR THIS PROJECT WAS COLLECTED BY PROMISED LAND SURVEY LLC, 25 NASHUA ROAD, SUITE B1, LONDONDERRY, NH 03053 IN JUNE 2011. COORDINATES ARE NEW HAMPSHIRE STATE PLANE COORDINATES OF N.A.D. 1983/1986 AND THE BEARINGS ARE GRID. ELEVATIONS ARE REFERENCED TO NGVD 29.

11. 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.

12. EXISTING BEDROCK WITHIN THE LIMITS OF THE PROPOSED KEYED STONE FILL AND UNCLASSIFIED CHANNEL EXCAVATION SHALL NOT BE REMOVED.

BRIDGE GENERAL NOTES

1. DESIGN LOADING: HL-93.

2. DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN METHOD (LRFD).

3. SPECIFICATIONS: AASHTO LRFD 2014, WITH 2015 INTERIMS
NHDOT 2010 STANDARD SPECIFICATIONS.

4. FOUNDATION DATA: ABUTMENTS AND WINGWALLS - SPREAD FOOTING ON PREPARED BEDROCK. NOMINAL BEARING RESISTANCE = 30.0 TSF IN COMBINATION WITH A RESISTANCE FACTOR OF 0.45

5. REINFORCING STEEL: AASHTO M 31 (ASTM A 615) GRADE 60.
BACKWALL, APPROACH SLABS, DECK, SIDEWALK, CURB AND WING WALL CAP, REINFORCING STEEL SHALL BE EPOXY COATED, AS NOTED ON THE PLANS.

6. STRUCTURAL STEEL: AASHTO M270, GRADE 50W (ASTM A709, GRADE 50W), UNPAINTED EXCEPT AS NOTED.

7. CONCRETE: BRIDGE DECK, SIDEWALK, CURB, WING WALL COPINGS AND APPROACH SLABS = 4,000 PSI (AT 28 DAYS)
FOOTINGS, ABUTMENTS AND WING WALL STEMS = 3,000 PSI (AT 28 DAYS)

8. SEISMIC PEAK GROUND ACCELERATION (PGA) = 0.10
SITE CLASS C
ZONE = 1.0

9. 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 TO PERMIT THE STATE TO TEMPORARILY RELOCATE THE AFFECTED MARKER.

10. MAINTENANCE OF TRAFFIC: TEMPORARY DETOUR - REFER TO HIGHWAY GENERAL NOTES, SHEET 3 OF 35.

11. FOR SURVEY LAYOUT SEE BRIDGE SHEET 5 OF 35.

BRIDGE REMOVAL NOTES

1. THE CONTRACTOR SHALL SUBMIT, FOR DOCUMENTATION IN ACCORDANCE WITH SECTION 105.02, A DETAILED OUTLINE OR PLAN OF THE PROPOSED METHOD FOR REMOVAL OF THE EXISTING BRIDGE PRIOR TO COMMENCEMENT OF ANY REMOVAL WORK. BRIDGE REMOVAL SUBMITTALS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.

2. ITEM 502, REMOVAL OF EXISTING BRIDGE STRUCTURE, SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF THE EXISTING BRIDGE SUPERSTRUCTURE, STEEL PIER CAP, CONCRETE ABUTMENT AND SEATS, CONCRETE WINGWALL CAPS, STONE ABUTMENTS AND WINGWALLS. REMOVE THE CONCRETE PIER AND CONCRETE PIER FOOTINGS TO THE LEVEL OF EXISTING BEDROCK OR 3 FT BELOW EXISTING STREAM BED.

3. REMOVE THE EXISTING ABUTMENTS TO LEVEL OF PROPOSED STREAMBED OR LIMITS OF KEYED STONE FILL. REMOVE THE EXISTING WINGWALLS TO THE LIMITS OF THE UNCLASSIFIED CHANNEL EXCAVATION OR KEYED STONE FILL AND A VERTICAL LINE 1'-6" OUSIDE THE LIMITS OF THE PROPOSED FOOTINGS.

4. REMOVAL OR EXCAVATION OF FILL MATERIAL WITHIN THE PROPOSED CHANNEL WHICH IS NOT WITHIN THE LIMITS OF 502, 504.101 OR 504.2 SHALL BE REMOVED UNDER ITEM 207.3, UNCLASSIFIED CHANNEL EXCAVATION.

5. PLANS OF THE EXISTING BRIDGE STRUCTURE ARE AVAILABLE AT THE CITY OF DOVER.

6. ROCK BRIDGE EXCAVATION MAY USE EITHER DRILLING AND BLASTING METHODS OR MECHANICAL METHODS AND WILL BE PAID FOR UNDER ITEM 504.2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE OR REPAIRS TO THE COFFERDAM THAT RESULT FROM BLASTING.

7. TEMPORARY FILLS SHALL REMAIN WITHIN WETLAND IMPACT AREAS SHOWN IN THE WETLAND PERMIT AND WITHIN EASEMENTS SHOWN ON THE SITE PLANS. A GEOTEXTILE FABRIC SHALL BE PLACED UNDER ALL TEMPORARY FILLS TO MINIMIZE DISRUPTION OF NATIVE SOILS AND VEGETATION. ALL COSTS SUBSIDIARY TO ITEM 502.

BORING NOTES

1. BORINGS INDICATED THUS ◔ WERE MADE BY NEW HAMPSHIRE TEST BORING, INC. UNDER CONTRACT TO WARD GEOTECHNICAL CONSULTING IN APRIL/MAY 2011. BLOW COUNTS SHOWN ARE THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. STANDARD SPLIT SPOON SAMPLER 6", USING A 140 LB WEIGHT FALLING 30".

2. BORINGS ARE FOR DESIGN PURPOSES SHOWING CONDITIONS AT BORING POINTS ONLY, AND DO NOT NECESSARILY INDICATE MATERIAL TO BE ENCOUNTERED DURING CONSTRUCTION.

3. ROCK CORES WERE MADE USING A 2" I.D. CORE BARREL.

4. GROUNDWATER LEVELS NOTED, IF ANY, WERE MEASURED AT THE TIME OF EXPLORATION. THE WATER LEVELS ENCOUNTERED DURING CONSTRUCTION MAY VARY CONSIDERABLY DUE TO PREVAILING CLIMATE, RAINFALL, OR OTHER FACTORS.

COFFERDAM NOTES

1. ITEM 503.201, COFFERDAMS, SHALL BE REQUIRED TO CONSTRUCT THE ABUTMENTS. THE CONTRACTOR SHALL SUBMIT THE COFFERDAM DESIGN AND PROPOSED METHOD OF CONSTRUCTION TO THE ENGINEER IN ACCORDANCE WITH SECTION 105.02 OF THE NHDOT STANDARD SPECIFICATIONS. COFFERDAM SUBMITTALS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. ALL COSTS FOR DESIGN, INSTALLATION AND REMOVAL OF COFFERDAMS SHALL BE INCLUDED IN ITEM 503.201.

2. THE CONTRACTOR SHALL DETERMINE THE COFFERDAM LIMITS REQUIRED TO SUPPORT THE PROPOSED EXCAVATION WHILE MINIMIZING IMPACTS TO THE RIVER.

FOUNDATION NOTES

1. ABUTMENT FOUNDATIONS WILL CONSIST OF REINFORCED CONCRETE PLACED DIRECTLY ON BEDROCK. AT THE CONTRACTOR'S OPTION, SOUND BUT IRREGULAR AREAS DUE TO OVERBREAKAGE MAY BE FILLED TO THEORETICAL BOTTOM OF FOOTING WITH ITEM 520.211, CONCRETE CLASS B, FOOTINGS (ON ROCK).

2. ALL ABUTMENT FOUNDATION SUBGRADES SHALL BE PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT. USE OF THE ALTERNATIVE GEOTECHNICAL RECOMMENDATIONS FOR FOUNDATION ON GLACIAL TILL IS PRECLUDED FOR THIS PROJECT.

3. FOR ADDITIONAL INFORMATION, SEE GEOTECHNICAL REPORT, INCLUDED IN THE CONTRACT DOCUMENTS.

4. DEWATERING SHALL BE CONTINUOUS UNTIL THE STRUCTURE IS BACKFILLED TO THE ELEVATION OF THE SURROUNDING WATER TABLE, UNLESS DIRECTED OTHERWISE.

5. 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.

6. TO CONSTRUCT THE PROPOSED ABUTMENT AND WINGWALLS, THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS OF EXCAVATION FOR THE PROPOSED UTILITY POLES ADJACENT TO EACH PROPOSED ABUTMENT. THE POLES SHALL BE SET PRIOR TO THE CONSTRUCTION OF THE ABUTMENTS AT THE PROPOSED GRADE AND SHALL BE MAINTAINED WITHOUT UNDERCUTTING.

ABUTMENT AND WINGWALL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED $^{3}/_{4}$".

2. ABUTMENT FOOTING AND WINGWALL FOOTING CONCRETE SHALL BE PAID AS ITEM 520.211, CONCRETE CLASS B, FOOTINGS (ON ROCK). ALL OTHER CONCRETE IN THE ABUTMENTS (EXCEPT AS STATED IN NOTE 4) AND WINGWALLS BELOW THE COPINGS SHALL BE ITEM 520.12, CONCRETE CLASS A, ABOVE FOOTINGS (F).

3. THE CONTRACTOR SHALL POUR ALL CONCRETE IN THE DRY.

4. THE CONCRETE IN THE BACKWALLS ABOVE THE BEARING SEAT CONSTRUCTION JOINT AND ALL COPINGS SHALL BE CONCRETE CLASS AA. BACKWALL AND COPING CONCRETE SHALL BE THE SAME MIX AS THE DECK AND PAID UNDER ITEM 520.02, CONCRETE CLASS AA, ABOVE FOOTINGS (F).

5. ITEM 538.2, BARRIER MEMBRANE, PEEL AND STICK - VERTICAL SURFACES (F), SHALL BE PLACED OVER THE BEARING SEAT CONSTRUCTION JOINT, 1'-0" ABOVE AND BELOW THE JOINT, OVER THE JOINTS BETWEEN THE WINGWALL AND ABUTMENT WALLS, AND OVER VERTICAL CONTRACTION JOINTS. SEE DETAILS ON BRIDGE SHEETS 13 & 15 OF 35.

6. ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE) SHALL BE APPLIED TO THE FACE OF THE BACKWALL (EXCLUDING THE EXPANSION JOINT STEEL) AND THE ENTIRE BRIDGE SEAT, INCLUDING THE BEARING PEDESTAL SURFACES.ITEM 534.3 SHALL BE APPLIED TO ALL EXPOSED SURFACES OF ABUTMENTS AND WINGWALLS TO 1'-0" BELOW THE FILL LINE.

7. BLOCKOUTS AND SLEEVES SHALL BE PROVIDED IN THE ABUTMENT BACKWALLS BETWEEN EACH GIRDER FOR THE INDIVIDUAL UTILITIES AS SHOWN. REINFORCING STEEL SHALL BE ADJUSTED AS REQUIRED. ADDITIONAL BARS FOR UTILITY BLOCKOUTS SHALL BE PROVIDED AROUND EACH BLOCKOUT ON EACH FACE. ALL COSTS SUBSIDIARY TO ITEM 544.31.

8. ANCHOR RODS SHALL BE SET BY TEMPLATE PRIOR TO PLACING ABUTMENT CONCRETE. FOR ANCHOR BOLT LOCATION PLAN, SEE BRIDGE SHEET 19 OF 35.

9. ALL REINFORCING IN THE ABUTMENTS ABOVE THE BACKWALL CONSTRUCTION JOINT AND IN THE WINGWALL COPINGS SHALL BE EPOXY COATED AND SHALL BE PAID AS ITEM 544.31, REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED). ALL OTHER REINFORCING STEEL IN THE ABUTMENTS AND WINGWALLS SHALL BE PAID AS ITEM 544.3, REINFORCING STEEL (CONTRACTOR DETAILED).

10. ALL REINFORCING SHALL BE A MINIMUM OF $2^{1}/_{2}$" FROM CONCRETE SURFACES, UNLESS NOTED OTHERWISE.

11. ITEM 562.1 SILICONE JOINT SEALANT SHALL BE USED TO SEAL ALL CONCRETE ABUTMENT AND WINGWALL CONTRACTION AND EXPANSION JOINTS. SEALANT SHALL ALSO BE APPLIED BETWEEN THE GRANITE CURB AND THE BRIDGE BACKWALL AND THE WINGWALL COPING.

ELASTOMERIC BEARING NOTES

1. ELASTOMERIC BEARING PADS SHALL BE VIRGIN NATURAL RUBBER WITH A SHEAR MODULUS OF 165 KSI (±15%) AND A MINIMUM LOW TEMPERATURE GRADE 4.

2. STEEL LAMINATES FOR ELASTOMERIC BEARING PADS SHALL CONFORM TO ASTM A1011 WITH A MINIMUM GRADE OF 36.

3. BEARING ASSEMBLIES, INCLUDING ELASTOMERIC BEARING PADS, SOLE PLATES, MASONRY PLATES, ANCHOR RODS, NUTS, AND WASHERS SHALL BE PAID AS ITEM 548.21, ELASTOMERIC BEARING ASSEMBLIES (F).

4. DESIGN LOADS: (SERVICE LOADS - DESIGN METHOD B):
MAXIMUM NON-COMPOSITE DEAD LOAD: 111.0K
MAXIMUM SUPERIMPOSED DEAD LOAD: 35.5K
MAXIMUM LIVE LOAD: 112.7K

5. ANCHOR RODS SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 550.2.5.1. ANCHOR RODS SHALL CONFORM TO ASTM F1554 GRADE 55. ANCHOR RODS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION AND CONFORM TO AASHTO M 232 (ASTM A153).

6. APPLY AN APPROVED SEALANT ALONG THE TRANSVERSE EDGES OF THE SOLE PLATE, UP AND AROUND TO THE ENDS OF THE FILLET WELDS. COST SHALL BE INCLUDED IN ITEM 548.21.

7. ALL STEEL PLATES SHALL CONFORM TO AASHTO M 270 GRADE 50W (ASTM A 709 GRADE 50W). MASONRY AND SOLE PLATES SHALL BE PAINTED AFTER VULCANIZING.

8. THE CONTINUOUS WELD CONNECTING THE BOTTOM OF THE GIRDER FLANGE TO THE TOP OF THE SOLE PLATE SHALL BE ALLOWED TO COOL AFTER EACH PASS. HOWEVER, THE TEMPERATURE OF THE STEEL ADJACENT TO THE ELASTOMER SHALL NOT EXCEED 200°F (TEMPERATURE SHALL BE CONTROLLED BY WELDING PROCEDURES AND TEMPERATURE INDICATING CRAYON OR OTHER DEVICES APPROVED BY THE ENGINEER). BEARING SURFACES IN CONTACT TO BE WELDED, SHALL BE FINISHED IN ACCORDANCE WITH AASHTO DIVISION II, SECTION 11.4.6. ALL PLATES SHALL BE FLAT AND TRUE AFTER WELDING.

9. SOLE AND MASONRY PLATS SHALL BE BLAST CLEANED (SSPC-SP 10) AFTER THE VULCANIZING PROCEDURE PRIOR TO PAINTING. SHOP PAINT BEARING ASSEMBLIES PER SPECIAL PROVISION 550. AFTER WELDING TO THE GIRDER FLANGE, CLEAN AND APPLY FINISH COATS TO THE SOLE PLATES.

10. IF STEEL GIRDERS ARE ERECTED WITH BEARINGS PLUMB AT THE AMBIENT TEMPERATURE HIGHER THAN 70°F OR LOWER THAN 20°F, AND THE BEARING SHEAR DEFLECTION EXCEEDS ONE-SIXTH OF THE BEARING HEIGHT AT 60°F±10°F, THE GIRDERS SHALL BE JACKED AND THE BEARINGS RESET TO PLUM (UNDEFORMED SHAPE) AT 60°F±10°F AS DIRECTED BY THE ENGINEER. ALL COSTS SUBSIDIARY TO ITEM 548.21.

11. THE FABRICATOR SHALL CLEARLY MARK THE BEARING ASSEMBLIES TO ENSURE PROPER ORIENTATION IN THE FIELD.

12. THE GIRDER BOTTOM FLANGE SHALL NOT BE FIELD WELDED TO THE TOP OF THE STEEL SOLE PLATE UNTIL AFTER THE CONCRETE DECK IS POURED.

13. FOLLOWING THE MANUFACTURE OF ELASTOMERIC BEARINGS AND VERIFICATION OF THE INTERNAL STEEL LAMINATES, THE PIN GROOVE OPENING SHALL BE COATED WITH AN APPROVED ASPHALTIC SEALER AND THE SPACE FILLED WITH SILICONE CAULKING.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BRIDGE NOTES (SHEET 1 OF 2)

BRIDGE SHEET 3 OF 35

FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402BrNotes01	AS NOTED

ISSUE DATE	=	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	8	58

STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL SHALL CONFORM TO AASHTO M 270, GRADE 50W (ASTM A709, GRADE 50W) UNPAINTED (EXCEPT AS NOTED). ALL STRUCTURAL STEEL SHALL BE PAID UNDER ITEM 550.1, STRUCTURAL STEEL (F), INCLUDING THE GIRDERS, CROSS FRAMES, GUSSET PLATES, FILL PLATES, CONNECTION PLATES, SPLICE PLATES, STIFFENERS, AND FASTENERS.

2. THE NOTCH TOUGHNESS REQUIREMENTS OF THE NHDOT STANDARD SPECIFICATION 550.2.2 SHALL APPLY TO THE WEB, FLANGES AND SPLICE PLATES OF THE GIRDERS.

3. ALL WELDING AND THE PREPARATION AND ASSEMBLY OF MATERIAL FOR WELDING SHALL CONFORM TO THE NHDOT STANDARD SPECIFICATIONS, THE BRIDGE WELDING CODE (AASHTO/AWS D1.5) AND ALL INTERIM REVISIONS.

4. ALL STRUCTURAL STEEL, INCLUDING BRIDGE SHOES, ADJACENT TO THE DECK EXPANSION JOINTS SHALL BE PAINTED WITHIN 10' OF THE CENTERLINE OF BEARING, EXCEPT THE FASCIA SURFACES OF THE EXTERIOR GIRDER (THE BOTTOM OF THE TOP FLANGE, WEB, AND THE TOP AND EDGE OF THE BOTTOM FLANGE) SHALL NOT BE PAINTED.

5. THE LOCATION OF SHOP SPLICES SHALL BE APPROVED BY THE ENGINEER. WEB SPLICES SHALL BE LOCATED A MINIMUM OF 9" FROM WELDED FLANGE SPLICES AND A MINIMUM OF 6" FROM TRANSVERSE STIFFENERS OR CONNECTION PLATES.

6. ALL BOLTED FIELD CONNECTIONS SHALL BE MADE WITH $^{7}/_{8}$" Ø HIGH STRENGTH BOLTS AASHTO M164 (ASTM A325) TYPE 3 PLACED IN $^{15}/_{16}$" Ø HOLES. BOLTS IN PAINTED AREAS SHALL BE ASTM A325 TYPE 1 GALVANIZED.

7. DIRECT TENSION INDICATOR WASHERS SHALL BE INSTALLED WITH HIGH STRENGTH BOLTS.

8. HOLES FOR FIELD SPLICES SHALL BE SHOP DRILLED WHILE GIRDERS ARE ASSEMBLED TO FIT BEARING ELEVATIONS.

9. GIRDERS SHALL BE CAMBERED FOR THE FULL DEAD LOAD DEFLECTION. SEE BRIDGE SHEET 21 OF 35 FOR CAMBER TABLE. CAMBER TOLERANCE IS $+^{15}/_{16}$",-0".

10. SHOP OR FIELD WELDING OF ATTACHMENTS TO, OR PLACEMENT OF HOLES IN ANY EXPOSED PORTION OF THE PLATE GIRDERS FOR CONSTRUCTION PURPOSES, IS NOT PERMITTED. SHOP OR FIELD ATTACHMENTS TO THE TOP FLANGE FOR CONSTRUCTION PURPOSES MUST BE APPROVED BY THE ENGINEER.

11. CROSS FRAMES SHALL BE SHOP WELDED WITH $^{1}/_{4}$" FILLET WELDS, UNLESS NOTED OTHERWISE. THE GRAVITY AXES OF CROSS FRAME MEMBERS SHOULD INTERSECT AS NEARLY AS PRACTICAL AT THE CENTERLINE OF THE GIRDER.

12. BEARING STIFFENERS AND GIRDER ENDS SHALL BE VERTICAL UNDER FULL DEAD LOAD DEFLECTION.

13. GIRDERS AND CROSS FRAMES SHALL BE FABRICATED SO THAT GIRDER WEBS ARE PLUMB UNDER FULL DEAD LOAD DEFLECTION.

14. THE BOLTED SPLICE CONNECTIONS SHALL BE PREPARED AS SLIP CRITICAL CLASS B.

15. SCREED RAIL SUPPORTS REQUIRED FOR THE PLACEMENT OF THE DECK CONCRETE SHALL BE LOCATED AT THE CENTERLINE OF THE GIRDER.

16. ALL SHEAR CONNECTORS SHALL BE FIELD WELDED TO THE TOP FLANGE WITH AUTOMATICALLY TIMED STUD WELDING EQUIPMENT. SHEAR CONNECTORS AT FIELD SPLICE LOCATIONS SHALL BE ARRANGED TO CLEAR FASTENERS AND SHALL BE WELDED TO THE SPLICE PLATES. THE TOTAL NUMBER OF SHEAR CONNECTORS IN A GIVEN LENGTH SHALL NOT BE REDUCED. SEE BRIDGE SHEET 20 OF 35 FOR SHEAR CONNECTOR DETAILS.

17. STEEL ERECTION SHALL NOT BE PERMITTED UNTIL THE ABUTMENTS HAVE BEEN BACKFILLED TO THE LEVEL OF THE APPROACH SLAB.

18. PRIOR TO HANDLING THE STRUCTURAL STEEL, THE CONTRACTOR SHALL SUBMIT DETAILED HANDLING AND ERECTION PLANS IN ACCORDANCE WITH SECTION 550.

19. TEMPORARY SHORING TOWERS SHALL NOT BE REMOVED UNTIL ALL STRUCTURAL STEEL IS ERECTED AND ALL SPLICES AND CROSS FRAME CONNECTIONS ARE FULLY TIGHTENED. ALL TEMPORARY SHORING TOWERS SHALL BE REMOVED PRIOR TO CONSTRUCTING THE DECK.

20. ALL STEEL ERECTION COSTS ARE INCLUDED IN ITEM 550.1.

21. THE ENGINEER WILL INSPECT THE SHOP FABRICATION OF THE STRUCTURAL STEEL.

22. ALL WELDS SHALL HAVE CORROSION RESISTANCE AND WEATHERING APPEARANCE AS SPECIFIED FOR WEATHERING STRUCTURAL STEEL.

23. THE STRUCTURAL STEEL FABRICATOR SHALL ARRANGE FOR NON-DESTRUCTIVE TESTING OF THE WELDS, ALL COSTS TO BE INCLUDED IN ITEM 550.1.

24. SHOP DRAWINGS SHALL INDICATE THE METHOD AND SEQUENCE TO BE FOLLOWED IN WELDING THE GIRDER COMPONENTS.

25. ALL PLAN DIMENSIONS ARE MEASURED HORIZONTAL AT 45°F WITHOUT ACCOUNT FOR PROFILE GRADE, UNLESS OTHERWISE NOTED.

DECK SLAB NOTES

1. AFTER THE STEEL GIRDERS ARE ERECTED, BUT BEFORE THE DECK FORMS ARE BUILT, ELEVATIONS ON THE TOP FLANGE OF THE GIRDERS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE TABLE. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THOSE SHOWN IN THE TABLE IS THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF THE GIRDER TO THE BOTTOM OF THE DECK SLAB AT THE CENTERLINE OF THE GIRDER. SEE ELEVATION TABLE AND HAUNCH DETAIL ON BRIDGE SHEET 24 OF 35.

2. ELEVATIONS SHOWN IN THE TABLE ARE BOTTOM OF DECK SLAB ELEVATIONS ADJUSTED FOR TOTAL DEAD LOAD DEFLECTION, LESS THE DEFLECTION DUE TO GIRDER WEIGHT.

3. CONCRETE FOR THE BRIDGE DECK, SIDEWALK AND BRUSH CURB SHALL BE ITEM 520.70026, CONCRETE BRIDGE DECK (QA/QC)(PANEL OPTION)(F)

4. THE BRIDGE DECK CONCRETE SHALL BE PLACED IN ONE CONTINUOUS POUR AND REMAIN PLASTIC THROUGHOUT THE ENTIRE POUR.

5. DECK SLAB THICKNESS GIVEN IS FOR CAST-IN-PLACE DECK. FOR THICKNESS WITH DECK PANEL OPTION, SEE BRIDGE SHEET 35 OF 35.

6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED $^{3}/_{4}$".

DECK REINFORCEMENT NOTES

1. ALL REINFORCING IN THE BRIDGE DECK, SIDEWALK AND BRUSH CURB SHALL BE EPOXY COATED AND SHALL BE PAID AS ITEM 544.31, REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED).

2. ALL REINFORCING SHALL BE $2^{1}/_{2}$" FROM CONCRETE SURFACES, UNLESS OTHERWISE NOTED.

APPROACH SLAB NOTES

1. CONCRETE FOR THE APPROACH SLABS SHALL BE ITEM 520.0302, CONCRETE CLASS AA, APPROACH SLABS (QC/QA) (F).

2. ALL REINFORCING STEEL SHALL BE $2^{1}/_{2}$" CLEAR FROM CONCRETE SURFACES EXCEPT AS NOTED.

3. REINFORCEMENT IN THE APPROACH SLABS SHALL BE EPOXY COATED, AND PAID UNDER ITEM 544.31, REINFORCING STEEL EPOXY COATED (CONTRACTOR DETAILED).

4. FILL SPACE BETWEEN TIPPED DOWN APPROACH SLAB AND ROADWAY CURB OR WINGWALLS WITH ITEM 520.0302 CONCRETE CLASS AA, APPROACH SLABS (QC/QA) (F) (6" MIN DEPTH). EXTEND CONCRETE FROM ABUTMENT END OF APPROACH SLAB 6' ALONG SLAB, OR AS DIRECTED BY ENGINEER (QC/QA TESTING REQUIREMENTS WAIVED).

5. ITEM 544.7, SYNTHETIC FIBER REINFORCEMENT (F), SHALL BE ADDED TO THE CONCRETE USED FOR THE APPROACH SLABS.

REINFORCEMENT NOTES

1. REINFORCEMENT IN THE FOOTING, APPROACH SLABS, AND FACE OF CONCRETE CURB SHALL HAVE 3" CLEAR COVER. ALL OTHER REINFORCEMENT SHALL HAVE $2^{1}/_{2}$" CLEAR COVER, UNLESS OTHERWISE NOTED.

2. PLACE REINFORCING STEEL TO AVOID WEEPERS, RAIL POST ANCHOR ASSEMBLIES, PILES AND EXPANSION JOINT STEEL.

3. REINFORCING IN THE TOP OF ABUTMENTS SHALL BE ADJUSTED TO CLEAR ANCHOR RODS.

4. ANY EPOXY COATED REBARS CUT TO FIT SHALL BE TOUCHED UP WITH AN APPROVED EPOXY COATING MATERIAL. ALL COSTS SHALL BE INCLUDED IN ITEM 544.3 OR 544.31.

5. REINFORCING LEGEND:

ALT = ALTERNATE	BOT = BOTTOM	BRG = BEARING
CLR = CLEAR	DOW = DOWEL	EQ = EQUAL
FF = FAR FACE	MAX = MAXIMUM	MC = MECHANICAL CONNECTOR
MID = MIDDLE	MIN = MINIMUM	NF = NEAR FACE
SECT= SECTION	SP = SPACE	SPL = SPLICE
SYM = SYMMETRICAL	TYP = TYPICAL	E = EPOXY COATED
SS = STAINLESS STEEL		

EXPANSION JOINT NOTES

1. ALL EXPANSION JOINT STEEL, INCLUDING ANCHORS, SHALL BE GALVANIZED. STEEL ANGLES SHALL BE AASHTO M223 (ASTM A572) GRADE 50. MINOR STEEL PLATES MAY CONFORM TO AASHTO M183 (ASTM A36). THE ENTIRE ASSEMBLY, INCLUDING STRIP SEAL, SHALL BE PAID FOR AS ITEM 561.1001, PREFABRICATED STRIP SEAL EXPANSION JOINT (F).

2. SPLICES FOR EXPANSION JOINT STEEL SHALL DEVELOP FULL STRENGTH.

3. EXPANSION JOINT OPENING SHALL BE ADJSTED TO TEMPERATURE ANTICIPATED JUST PRIOR TO POURING DECK BLOCKOUT. FINAL SETTING IN THE FIELD SHALL BE DETWERMINED BY THE ENGINEER. SEE TEMPERATURE ADJSTMENT TABLE AND NOTES.

4. STRIP SEAL SHALL BE FURNISHED IN ONE CONTINUOUS LENGTH. NO SPLICES WILL BE ALLOWED. SEAL SHALL BE INSTALLED IN THE FIELD BY THE CONTRACTOR, IN ACCORDANCE WITH THE MANUFACTURER OF THE SEAL, USING AN APPROVED TOOL THAT WILL NOT DAMAGE THE SEAL.

5. JOINT SUPPORT PLATES AND CURB PLATES SHALL BE SHOP WELDED TO EXPANSION JOINT STEEL AND SHALL BE NORMAL TO GRADE AFTER JOINT ASSEMBLY HAS BEEN ADJUSTED FOR ROADWAY CROSS-SLOPE AND GRADE. STEEL ANGLES AND EXTRUSIONS SHALL BE ASSEMBLED WITH A CONSTANT JOINT OPENING TO ENSURE PROPER PERFORMANCE AND WATER TIGHTNESS.

6. THE EXPANSION JOINT ASSEMBLY SHALL BE INSTALLED ONLY AFTER THE ABUTMENT HAS BEEN BACKFILLED TO WITHIN 3'-0" OF FINISHED GRADE.

7. IMMEDIATELY AFTER THE JOINT HAS BEEN SECURED TO THE STRUCTURAL STEEL AND BACKWALL, REMOVE SHIPPING DEVICES AND GRIND SMOOTH ANY WELDS ON EXPOSED SURFACES. REPAIR ANY DAMAGE TO GALVANIZED SURFACES IN ACCORDANCE WITH SECTION 550.

8. PROTECT TOP OF EXPANSION JOINT DURING PLACEMENT OF CONCRETE AND BITUMINOUS PAVEMENT.

9. THE STRIP SEAL HAS BEEN DESIGNED FOR A TOTAL FACTORED MOVEMENT OF 1.87 INCHES. DESIGN INCLUDES MOVEMENT DUE TO TEMPERATURE, SKEW, SHRINKAGE AND MINIMUM INSTALLATION WIDTH. THE CONTRACTOR SHALL USE AN SE-400 SEAL BY WATSON BOWMAN OR A2R-400 BY D.S. BROWN.

10. ELEVATIONS SHOWN AT TOP OF ANGLES ARE $^{1}/_{8}$" LOWER THAN PROPOSED FINISHED ROADWAY GRADE.

11. ANGLES 6"x4"x$^{3}/_{4}$" SHALL BE UTILIZED FOR SEALS LESS THAN 5" (HEIGHT).

12. STEEL ANGLES AND STOP BARS SHALL BE MAINTAINED FREE FROM DIRT, WATER AND ANY OTHER LOOSE DEBRIS, WITH THE USE OF COMPRESSED AIR, TO ENSURE PROPER FIT OF THE SEAL. CARE SHALL BE TAKEN NOT TO DAMAGE GALVANIZED SURFACES.

13. IF JOINT ASSEMBLY IS IN PLACE OVER A WINTER WITHOUT A SEAL, THE JOINT OPENING AND ABUTMENT SHALL BE WASHED PRIOR TO INSTALLATION OF THE SEAL. ALTERNATELY, A TEMPORARY SEAL CAN BE PLACED AND REMOVED FOR INSTALLATION OF THE FINAL SEAL. ALL COSTS SHALL BE SUBSIDIARY TO THE EXPANSION JOINT.

TEMPERATURE ADJUSTMENT NOTES

1. "T" DIMENSIONS ARE PERPENDICULAR TO FACE OF BACKWALL.

2. MINIMUM "T" WIDTH FOR SEAL INSTALLATION = 1.5" FOR THE SE-400 OR 1.75" FOR THE A2R-400 (APPROXIMATELY 65°F OR LESS).

3. VALUES IN THE TEMPERATURE ADJUSTMENT TABLE ARE FOR SETTING THE EXPANSION JOINT ASSEMBLY IMMEDIATELY PRIOR TO POURING THE DECK BLOCKOUT.

UTILITY NOTES

1. ITEM 611.43904, 12" CEMENT LINED DUCTILE IRON WATER PIPE (BRIDGE), SHALL INCLUDE ALL NECESSARY MATERIALS, INCLUDING PIPE, INSULATION, STRAPS, PROTECTIVE JACKETING, EXPANSION JOINTS, SADDLES, ROLLER SUPPORTS, ASSOCIATED HARDWARE AND LABOR TO INSTALL THE UTILITY. FOR LIMITS, SEE BRIDGE SHEET 23 OF 35.

2. ITEM 614.74218, 4 INCH 2-DUCT PVC CONDUIT, SCHEDULE 80, SHALL INCLUDE ALL NECESSARY MATERIALS, INCLUDING CONDUIT, HANGER SYSTEMS, COUPLINGS, EXPANSION COUPLINGS, PULL WIRES, AND LABOR TO INSTALL THE COMMUNICATIONS CONDUITS. LIMITS OF ITEM 614.74218 SHALL BE BETWEEN THE FRONT FACES OF ABUTMENT BACKWALLS.

3. CONDUIT EXPANSION COUPLINGS SHALL PROVIDE MINIMUM MOVEMENT RANGE OF 4".

4. UTILITY SUPPORTS FOR COMMUNICATIONS CONDUIT SHALL BE FIBERGLASS 1H X 2W BASE SUPPORTS BY METRA INDUSTRIAL CORPORATION OF COLUMBUS, OHIO OR APPROVED EQUAL. SUPPORTS SHALL BE CAPABLE OF SUPPORTING A TOTAL CONDUIT REACTION OF 0.5 KIPS.

5. ALL THREADED RODS, NUTS, WASHERS, STRAPS, AND PIPE ROLL SUPPORTS SHALL BE GALVANIZED.

6. ALL HOLES IN STRUCTURAL STEEL SHALL BE SHOP DRILLED. FIELD DRILLING WILL NOT BE PERMITTED. HOLE DIMENSIONS AND SPACING SHALL BE VERIFIED BY CONTRACTOR FOR ACTUAL UTILITY SUPPORTS UTILIZED.

7. ALL WORK RELATED TO THE INSTALLATION OF THE TEMPORARY PIPE BRIDGE, REMOVAL OF THE EXISTING GAS LINE ON THE BRIDGE AND APPROACHES, INSTALLATION OF THE PROPOSED GAS LINE UTILITY SUPPORTS AND PIPE ROLLER SUPPORTS, AND REMOVAL OF TEMPORARY GAS MAIN AND TEMPORARY PIPE BRIDGE SHALL BE SUBSIDIARY TO ITEM 612.99.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BRIDGE NOTES (SHEET 2 OF 2)

BRIDGE SHEET 4 OF 35

THE Louis Berger Group, INC.
Manchester, New Hampshire
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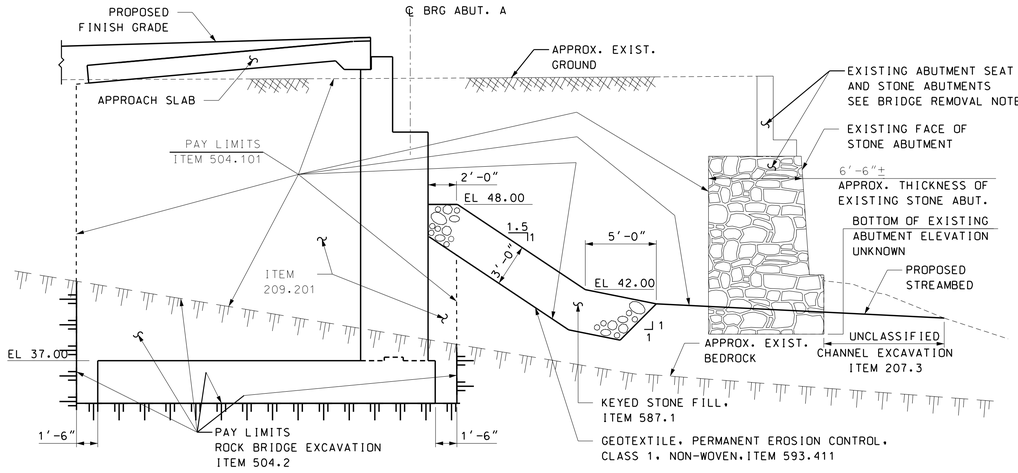
REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

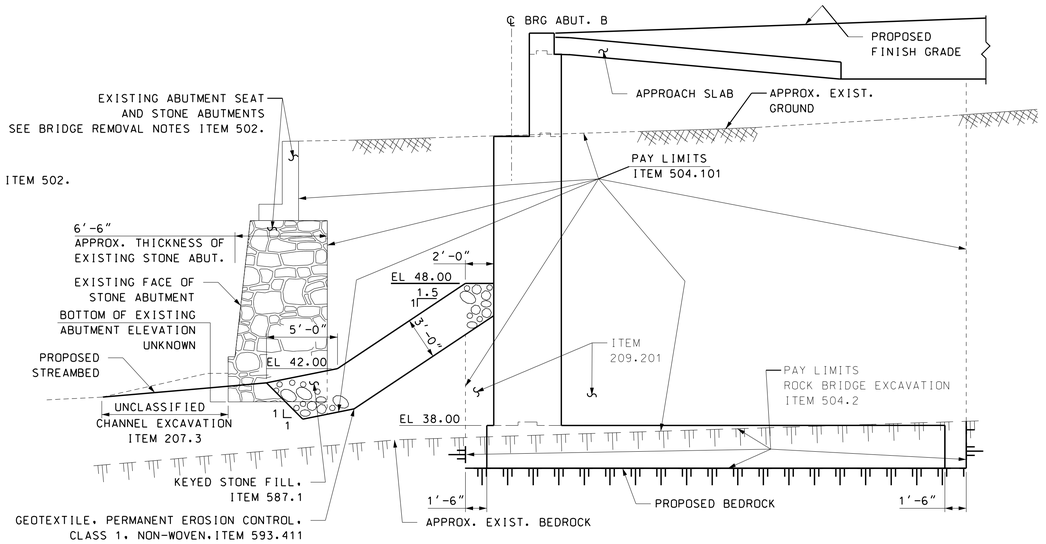
FILE NUMBER

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402BrNotes02	AS NOTED

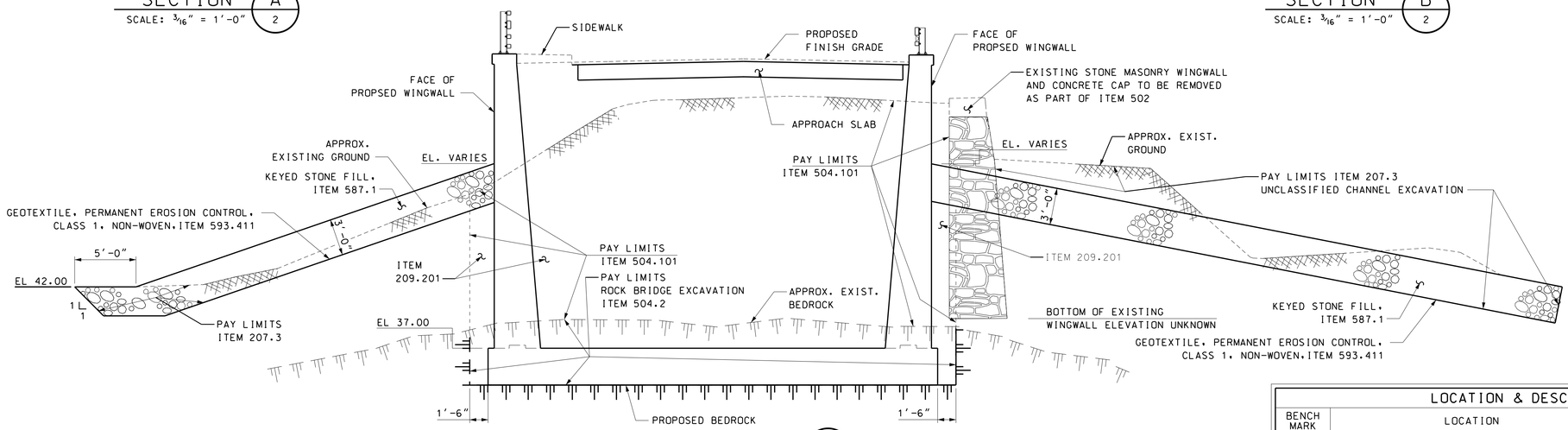
ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	9	58



SECTION A
SCALE: 3/16" = 1'-0"
2

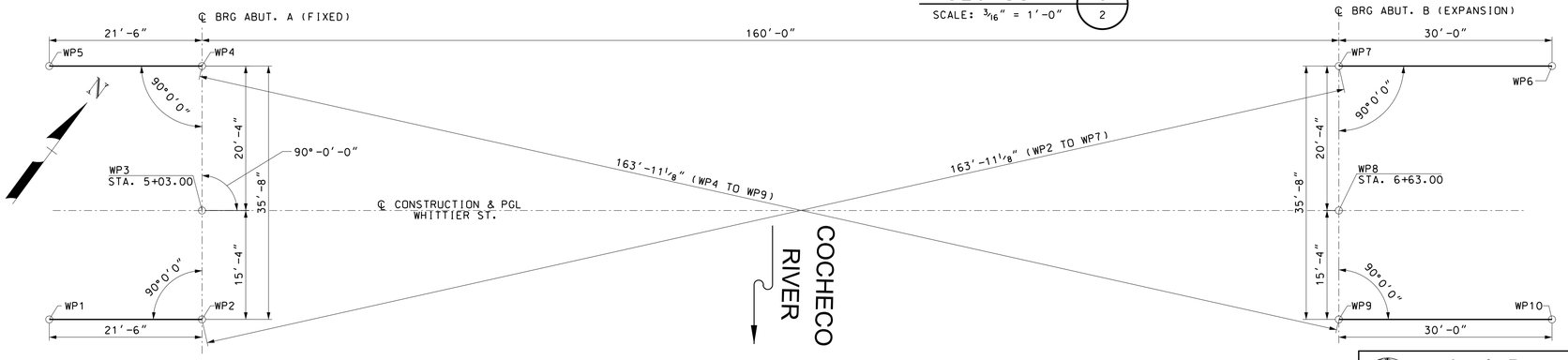


SECTION B
SCALE: 3/16" = 1'-0"
2



SECTION C
SCALE: 3/16" = 1'-0"
2

WORKING POINT COORDINATES		
WORKING POINT NO.	NORTHING	EASTING
WP1	257858.3185	1190419.9454
WP2	257871.0548	1190437.2670
WP3	257883.4082	1190428.1838
WP4	257899.7899	1190416.1385
WP5	257887.0536	1190398.8170
WP6	258012.3431	1190569.2129
WP7	257994.5716	1190545.0433
WP8	257978.1899	1190557.0885
WP9	257965.8366	1190566.1717
WP10	257983.6081	1190590.3414



SURVEY LAYOUT
SCALE: 1" = 10'

LOCATION & DESCRIPTION OF BENCHMARKS				
BENCH MARK	LOCATION	NORTHING	EASTING	ELEVATION
TBM"W1"	MAG NAIL SET 0.6' HIGH IN UTILITY POLE ACROSS FROM HAMPSHIRE CIRCLE (WEST)	257367.13	1189692.08	74.10'
TBM"W2"	MAG NAIL SET 0.6' HIGH IN UTILITY POLE ACROSS FROM HAMPSHIRE CIRCLE (EAST)	257587.66	1189993.84	71.92'
TBM"W3"	MAG NAIL SET 0.6' HIGH IN UTILITY POLE	257797.23	1190284.87	58.18'
TBM"W4"	MAG NAIL SET 0.8' HIGH IN UTILITY POLE	258104.53	1190693.11	73.26'
TBM"W5"	MAG NAIL SET 1.0' HIGH IN UTILITY POLE	258280.94	1190917.50	101.81'
TBM"W6"	MAG NAIL SET 0.6' HIGH IN UTILITY POLE NORTH OF CASSILY LANE	258428.93	1191026.89	114.32'

HORIZONTAL DATUM: NAD1983, NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM
VERTICAL DATUM: NGVD1929

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER | BRIDGE NO. 111\132 | STATE PROJECT 15402

SURVEY LAYOUT AND CHANNEL SECTIONS

BRIDGE SHEET 5 OF 35

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TPL	04/13	CHECKED	KSW	04/13
	DRAWN	DGB	04/13	CHECKED	KSW	04/13
	QUANTITIES	--	--	CHECKED	--	--

FILE NUMBER --

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A002(794)	10	58

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402ChannelSect	AS NOTED

BORING NO. B101

STA. 5+17.9, 10.1' RT.

Ward Geotechnical Consulting, PLLC	Project: Whittier Street Bridge Location: Dover, New Hampshire Client: The Louis Berger Group, Inc. Project No.: 11210		Boring Log **B101**
Contractor: New Hampshire Boring, Inc. Logged By: Craig Ward Drilling Dates: 4/27/2011 Drill Rig: Mobile B-47 Truck	Groundwater Depth: Date:		Page 1 of 2
	GS Elevation: 57.4 feet Datum: NGVD29	Boring Location: west abutment - eastbound lane	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
					4" Case & Wash		7.5" Asphalt Pavement S1: upper 10": **Sand with Gravel (SW)** - fine to medium (some coarse) sand, 20%-30% subangular gravel to 1", bown. lower 2": **Silty Sand (SM)** - fine to medium sand, 15%-25% nonplastic fines, brown.	Fill
	S1	23-17 10-8	24	12				
5	S2	4-2 3-3	24	10			S2: **Silty Sand (SM)** - fine to medium sand, 40%-50% slightly plastic fines, occasional subangular gravel to 3/8", redish brown.	~10'
					Little casing driving resistance 4' to 9'. Rolled through gravel or cobble at 8.8'.			
10	S3	6-3 2-10	24	16			S3: **Sandy Silt (ML)** - slightly plastic fines, 10%-20% fine to medium sand, occasional subangular gravel to 1/4", fine roots throughout, moist, redish brown. Rock fragment in tip of spoon.	Sandy Silt ~14'
					Little casing driving resistance 9' to 14'.			
15	S4	30-50 11-22	24	9	Split-spoon bent. Casing refusal at 16.4'. Rolled ahead and broke through boulder at 17'. Drove casing to 19'. End of casing crimped.		S4: **Silty Sand with Gravel (SM)** - fine to coarse sand, 20%-30% nonplastic fines, 30%-40% angular gravel to 1" (including rock fragments), olive-brown.	Silty Sand with Gravel (Possible Glacial Till)
20	S5	25-27 35-16	24	10	Rolled ahead to 24', then drove casing to 24'.		S5: **Silty Sand with Gravel (SM)** - fine to medium sand, 20%-30% nonplastic fines, 30%-40% subangular gravel to 1" (including black rock fragments), olive & rust.	
24.0	S6	50/0"	0	0			**S6: Spoon Refusal** - no penetration/no recovery	24'

BOTTOM OF FOOTING ABUTMENT A (EL.=34.00)

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

BORING NO. B101

CONTINUED

Ward Geotechnical Consulting, PLLC	Project: Whittier Street Bridge Location: Dover, New Hampshire Client: The Louis Berger Group, Inc. Project No.: 11210		Boring Log **B101**
Contractor: New Hampshire Boring, Inc. Logged By: Craig Ward Drilling Dates: 4/27/2011 Drill Rig: Mobile B-47 Truck	Groundwater Depth: Date:		Page 2 of 2
	GS Elevation: 57.4 feet Datum: NGVD29	Boring Location: west abutment - eastbound lane	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
25	C1		60	60	Rolled to 25' to core. Slowly lost water while coring. Coring rates varied from 6.5 to 11.5 min/foot		C1: **Bedrock** - fine grained gray meta-sedimentary rock, soft to hard, fresh to slightly weathered, steep foliation (60° - 90°), several fine quartz veins and quartz intrusion from 27.8' to 3.1', most joints near horizontal & dipping 10° to 30°, one joint dipping 60° to 70° at 28.6', joint spacings range from 0.5" to 16". RQD = 39"/60" = 65%	Bedrock
30							Bottom of Boring at 30'	
35								
40								
45								

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

BORING NO. B102

STA. 4+81.2, 10.8' RT.

Ward Geotechnical Consulting, PLLC	Project: Whittier Street Bridge Location: Dover, New Hampshire Client: The Louis Berger Group, Inc. Project No.: 11210		Boring Log **B102**
Contractor: New Hampshire Boring, Inc. Logged By: Craig Ward Drilling Dates: 4/27/2011 Drill Rig: Mobile B-47 Truck	Groundwater Depth: Date:		Page 1 of 1
	GS Elevation: 57.2 feet Datum: NGVD29	Boring Location: west abutment (rear) - eastbound lane	

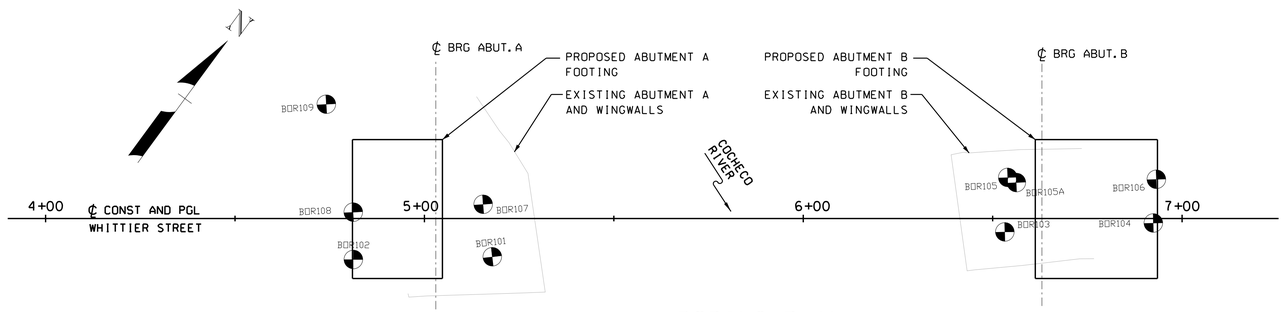
DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
					4" Case & Wash		6" Asphalt Pavement S1: upper 3": **Silty Sand with Gravel (SM)** - fine to medium sand, 10%-20% nonplastic fines, 10%-20% subang. gravel to 3/8",black, next 3": **Sand with Silt & Gravel (SW-SM)** - fine to coarse sand, 5%-15% nonplastic fines, 10%-20% subang gravel to 3/8", brown.	Fill ~2'
	S1	10-5 4-3	24	14				
5	S2	5-7 9-10	24	16			lower 8": **Sandy Silt (ML)** - slightly plastic fines, 10%-20% fine to medium sand, occasional subrounded gravel to 3/4", orange-brown. S2: **Sandy Silt (ML)** - nonplastic fines, 15%-30% fine sand, stratified structure, orange-brown, light brown, & dark brown.	Sandy Silty and Silty Sand
10	S3	6-5 4-50	24	14			S3: **Silty Sand (SM)** - fine sand, 40%-50% slighity plastic fines. stratified structure, fine samd parting near bottom of sample, occasional subrounded gravel to 3/8", small twig imbedded in middle of sample, orange-brown & brown.	~11'
					Boulder at 11'. Rolled ahead and broke thru at ~12'. Difficult driving casing 12' to 14'. Cobbles or boulders at ~13'.		Rock fragment with silty sand (fine to medium sand with 15%-25% nonplastic fines) in tip of spoon,	
15	S4	50/5.5"	5.5	4	Casing crimped. Rolled ahead thru several cobbles or boulders from 14.5' to 18'. Rolled in boiulder or bedrock from 18' to 21'.		S4: **Silty Sand with Gravel (SM)** - fine to coarse sand, 20%-30% nonplastic fines, 25%-35% subangular gravel to 3/4", heterogeneouse structure, olive. Black rock fragment in tip of spoon.	Silty Sand with Gravel and Cobbles/Boulders (Possible Glacial Till) ~18'
20							**Boulder or Bedrock**	Possible Bedrock
							Bottom of boring at 21'	

BOTTOM OF FOOTING ABUTMENT A (EL.=34.00)

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample



BORING PLAN

SCALE: 1" = 20'-0"

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BORING LOGS (SHEET 1 OF 5)

BRIDGE SHEET 6 OF 35

FILE NUMBER

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	TWP	11/15	CHECKED	KSW 11/15
	DRAWN	DWM	11/15	CHECKED	KSW 11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH 11/15

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174055	15402Borings01	AS NOTED	REV. DATE	X-A002(794)	11	58

BORING NO. B103

STA. 6+53.2, 3.5' RT.

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B103
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 1 of 2
Drilling Dates:	4/28/2011	GS Elevation: ~58.4 feet	Boring Location: east abutment - eastbound lane
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
					4" Case & Wash		10" Asphalt Pavement	
	S1	15-17 11-7	24	13			S1: upper 2": **Asphalt and Gravel** next 3": **Sand with Gravel (SW)** - fine to medium (some coarse) sand, 15%-25% subangular gravel to 1/2", light brown. lower 6": **Silty Sand with Gravel (SM)** - fine to medium (some coarse) sand, 15%-25% nonplastic fines, 10%-20% subangular gravel to 3/4", brown.	
5	S2	3-2 3-4	24	2	Pushed cobble ahead with spoon. Casing drove easily 4' to 9'. Rolled through gravel or cobbles at ~8.7' to 9'.		S2: **Silty Sand (SM)** - fine to medium sand, 15%-25% nonplastic fines, 10%-20% subangular gravel to 3/4", brown.	Fill
10	S3	10-8 9-11	24	10			S3: **Silty Sand with Gravel (SM)** - fine to medium sand, 20%-30% nonplastic fines, 20%-30% angular gravel to 3/4", occasional brick fragments, olive-brown.	
					Casing drove easily from 9' to 14'. Rolled through gravel or cobbles.			~13'
15	S4	3-2 2-3	24	0	Pushed cobble ahead with spoon. Casing drove easily to ~17'.		S4: **No Recovery** Redrove with 3" split-spoon: 12" recovery: **Sandy Silt (ML)** - slightly plastic fines, 10%-30% fine to medium sand, occasional gravel to 3/4", 2 small pockets of organic soil, olive-brown.	Sandy Silt 17'
20	S5	25-26 50/5"	17	10	Rolled through cobbles or boulders below 18'. Casing refusal at 19.6'. Rolled ahead. Rolled on dense till or weathered bedrock at 21'. Rolled to 23' to core.		S5: **Silty Sand with Gravel (SM)** - fine to medium (some coarse) sand, 15%-25% nonplastic fines, 25%-35% subangular gravel to 1" (some weathered), heterogeneous structure, olive-brown.	Silty Sand with Gravel (Possible Glacial Till) 21' Bedrock

BOTTOM OF FOOTING ABUTMENT B (EL.=35.00)

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

BORING NO. B103

CONTINUED

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B103
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 2 of 2
Drilling Dates:	4/28/2011	GS Elevation: ~58.4 feet	Boring Location: east abutment - eastbound lane
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
25	C1		60	18	Coring rate varied from 2 to 13 min/foot. Only 18" recovery - attempt to retreive failed.		C1: **Bedrock** - fine grained gray meta-sedimentary rock, soft to hard, moderately weathered, steep foliation (~80°), several fine quartz veins, joints dipping 10° to 20° and ~80° (along foliations), joint spacings range from 0.5" to ~4", silty gouge on some fracture faces. RQD ~ 0%	Bedrock
30	C2		16	12	Coring rates of 1.5 & 5 min/foot. Core barrel jamed at 29.3'. Rolled to 30' to core C3.		C2: **Bedrock** - fine grained gray meta-sedimentary rock, soft to hard, highly weathered, steep foliation (~80°), several fine quartz veins, joints near vertical and near horizontal, joint spacings range from 0.5" to ~3". RQD ~ 0.	
35	C3		60	60	Coring rate varied from 4 to 6 min/foot.		C3: **Bedrock** - fine grained gray meta-sedimentary rock, soft to hard, fresh to slightly weathered, steep foliation (70° to 80°), 3" thick quartz intrusion at 32.7', joints above quartz intrusion dip 70° to 80° with spacings of 0.5" to 5.5", joints below quartz intrusion are near horizontal and near vertical at spacings of 0.5" to 3". RQD = 13.5"/60" = 23%	
40							Bottom of boring at 35'.	
45								

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

BORING NO. B104

STA. 6+92.4, 1.2' RT.

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B104
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 1 of 1
Drilling Dates:	4/28/2011	GS Elevation: 59.7 feet	Boring Location: east abutment - eastbound lane (rear)
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
					4" Case & Wash		9" Asphalt Pavement	
	S1	12-10 8-8	24	15			S1: upper 9": **Sand with Gravel (SW)** - fine to coarse sand, 10%-20% subangular gravel to 1/2", orange-brown. lower 6": **Silty Sand (SM)** - fine to medium sand, 20%-30% nonplastic fines, occasional subrounded gravel to 3/4", 3/8" chunk of asphalt, olive-brown.	Fill ~3.5'
5	S2	4-3 5-5	24	15	Rolled through cobble at ~3.5'.		S2: upper 10": **Sandy Silt (ML)** - nonplastic fines, 10%-20% fine sand (occasional medium to coarse sand), vague stratification, occasional fine roots, orange-brown. lower 5": **Silty Fine Sand (SM)** - fine (some medium) sand, 10%-20% nonplastic fines, light brown-orange.	
10	S3	4-3 3-4	24	14			S3: **Silty Fine Sand (SM)** - fine sand, 20%-30% nonplastic fines, vague stratification, light brown-orange. Orange-brown silt in tip of spoon.	Sandy Silt and Silty Sand ~13'
15	S4	10-31 43-28	24	6	Rolled through several coobles from 16' to 19'.		S4: **Silty Sand with Gravel (SM)** - fine to medium (some coarse) sand, 20%-30% nonplastic fines, 30%-40% subangular gravel to 3/4", olive-brown. Rock fragment in tip of spoon.	
20	S5	41-33 36-44	24	13	Rolling on boulder or bedrock from 21.5' to 24.1'.		S5: **Silty Sand with Gravel (SM)** - similar to S4.	Silty Sand with Gravel (Possible Glacial Till) 21.5'
							Bottom of Boring at 24.1'	Boulder or Bedrock

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BORING LOGS (SHEET 2 OF 5)

BRIDGE SHEET 7 OF 35

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402Borings02	AS NOTED

ISSUE DATE — FEDERAL PROJECT NO. X-A002(794) — SHEET NO. 12
REV. DATE

FILE NUMBER

TOTAL SHEETS 58

BORING NO. B105

STA. 6+54.0, 10.8' LT.

Ward Geotechnical Consulting, PLLC	Project: Whittier Street Bridge Location: Dover, New Hampshire Client: The Louis Berger Group, Inc. Project No.: 11210		Boring Log **B105**
Contractor: New Hampshire Boring, Inc. Logged By: Craig Ward Drilling Dates: 4/29/2011 Drill Rig: Mobile B-47 Truck	Groundwater Depth: Date:		Page 1 of 1
	GS Elevation: 58.3 feet Datum: NGVD29	Boring Location: east abutment - westbound lane	

DEPTH FT.	SAMPLE TYPE & NO.	SAMPLE BLOWS per 6 IN.	SAMPLE PEN. IN.	SAMPLE REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
					4" Case & Wash		11" Asphalt Pavement S1: upper 7": **Sand with Silt & Gravel (SW-SM)** - fine to coarse sand, 5%-15% nonplastic fines, 25%-35% subrounded gravel to 3/4", brown & black. lower 6": **Sandy Silt with Gravel (ML)** - nonplastic fines, 10%-20% fine sand, light brown-orange.
	S1	16-7 5-3	24	13			
5	S2	2-3 6-12	24	10			S2: **Sandy Silt with Gravel (ML)** - nonplastic fines, 10%-30% fine to medium sand, 10%-20% subrounded gravel to 3/4", light brown-olive.
					Split-spoon kicked away from river.		
10	S3	24-18 19-10	24	10	Spoon bent. Casing refusal at 10'. Rolled thru boulder at 11.5'. Casing refusal at 12.8'. Rolled ahead (lost water) to 13.1'. Seated casing at 13'. Rolled to 14' to core.		S3: **Silty Sand with Gravel (SM)** - fine to medium sand, 20%-30% nonplastic fines, 30%-40% subangular gravel to 1", olive-brown.
15	C1		36	21	Core barrel dropped suddenly from 15' to 15.4'. Core barrel dropped suddenly again from 16.5' to 17'. Pulled core barrel to check. Took S4 at 17'.		C1: **Boulders or Stone Masonry** - gray meta-sedimentary rock similar to local bedrock but with horizontal foliation - probably stone masonry near bottom of wing wall or abutment wall.
	S4	16-7 19-46	25	5			S4: **Silty Sand with Gravel (SM)** - fine (some medium) sand, 20%-30% nonplastic fines, 20%-30% subangular gravel to 3/4", olive-brown & gray. Possibly fill or till that was disturbed by coring.
20					Tried to roll ahead to 19', but hole collapsed. Coud not advance casing through boulders or masonry (refusal at 13'). Abandoned boring and moved ~2.5' east to B5A.		Bottom of Boring at 19'

Fill

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

BORING NO. B105A

STA. 6+56.2, 9.5' LT.

Ward Geotechnical Consulting, PLLC	Project: Whittier Street Bridge Location: Dover, New Hampshire Client: The Louis Berger Group, Inc. Project No.: 11210		Boring Log **B105A**
Contractor: New Hampshire Boring, Inc. Logged By: Craig Ward Drilling Dates: 4/29/2011 Drill Rig: Mobile B-47 Truck	Groundwater Depth: Date:		Page 1 of 2
	GS Elevation: 58.5 feet Datum: NGVD29	Boring Location: east abutment - westbound lane	

DEPTH FT.	SAMPLE TYPE & NO.	SAMPLE BLOWS per 6 IN.	SAMPLE PEN. IN.	SAMPLE REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
					4" Case & Wash		Moved to B5A from B5, which was abandoned due to difficulties in advancing casing through boulders or masonry blocks. B5A drilled to determine conditions below 19', where B5 was abandoned. No samples obtained from B5A above 19'. Refer to log for B5 for descriptions of subsurface condtions above 19'.
5					Little resistance to driving casing from 4' to 9'.		
10					Little resistance to driving casing from 9' to 14'.		
15					Increased casing resistance at ~17'.		
20	S1	29-31 56-73	24	13	Rolled ahead to 22'. Drove casing to refusal at 22.3'. Rolled in bedrock from 22.3' to 23' to core.		S1: **Silty Sand with Gravel (SM)** - fine to medium (some coarse) sand, 15%-25% nonplastic fines, 25%-35% subangular gravel to 1", olive-brown.

Silty Sand with Gravel (Glacial Till) — 22.3' — Bedrock

BOTTOM OF FOOTING
ABUTMENT B (EL. +35.00)

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

BORING NO. B105A

CONTINUED

Ward Geotechnical Consulting, PLLC	Project: Whittier Street Bridge Location: Dover, New Hampshire Client: The Louis Berger Group, Inc. Project No.: 11210		Boring Log **B105A**
Contractor: New Hampshire Boring, Inc. Logged By: Craig Ward Drilling Dates: 4/29/2011 Drill Rig: Mobile B-47 Truck	Groundwater Depth: Date:		Page 2 of 2
	GS Elevation: 58.5 feet Datum: NGVD29	Boring Location: east abutment - westbound lane	

DEPTH FT.	SAMPLE TYPE & NO.	SAMPLE BLOWS per 6 IN.	SAMPLE PEN. IN.	SAMPLE REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
25	C1		60	59	Coring rate varied from 4 to 5 min/foot.		C1: **Bedrock** - fine grained gray meta-sedimentary rock, soft to hard, fresh to slightly weathered, steep foliation (60° to 80°), joints dipping 0° to 20° and ~70° (along foliation) at spacings ranging from 1.5" to 9". RQD = 45"/60" = 75%
30							Botto of Boring at 28'
35							
40							
45							

Bedrock

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel — S - Split Spoon Sample — U - Undisturbed Tube Sample
REC - Recovery length of sample — C - Rock Core Sample

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BORING LOGS (SHEET 3 OF 5)

BRIDGE SHEET 8 OF 35

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

FILE NUMBER

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402Borings03	AS NOTED

ISSUE DATE —
REV. DATE

FEDERAL PROJECT NO. X-A002(794)

SHEET NO. 13

TOTAL SHEETS 58

BORING NO. B106

STA. 6+93.2, 10.3' LT.

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B106
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 1 of 1
Drilling Dates:	4/29/2011	GS Elevation: 59.9 feet	Boring Location: east abutment - westbound lane (rear)
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
					4" Case & Wash		9" Asphalt Pavement	
	S1	6-4 5-6	24	22			S1: **Silty Fine Sand (SM)** - fine sand, 10%-30% (variable) nonplastic fines, occasional angular gravel to 3/4", light brown-orange.	Fill ~5'
5	S2	5-4 5-5	24	20			S2: **Silty Fine Sand (SM)** - fine sand, 10%-30% (increasing with depth) nonplastic fines, light brown-orange.	Silty Fine Sand ~14'
10	S3	4-3 2-2	24	21			S3: **Silty Fine Sand (SM)** - similar to S2.	
15	S4	26-22 15-21	24	7	Rolled through boulder from 16.8' to ~19'.		S4: **Silty Sand with Gravel (SM)** - fine to medium sand, 15%-25% nonplastic fines, 25%-35% subangular gravel to 3/4", olive-brown.	Silty Sand with Gravel (Possible Glacial Till) 23.4'
20	S5	24-25 26-35	24	17	Rolling on boulder or bedrock from 23.4' to 27.4'.		S5: **Silty Sand with Gravel (SM)** - fine to medium (some coarse) sand, 10%-20% nonplastic fines, 30%-40% subangular gravel to 1", olive-brown.	Bedrock or Boulder
							Bottom of Boring at 27.4'	

BOTTOM OF FOOTING
ANUTMENT B (EL.=35.00)

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel
REC - Recovery length of sample
S - Split Spoon Sample
C - Rock Core Sample
U - Undisturbed Tube Sample

BORING NO. B107

STA. 5+15.5, 3.8' LT.

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B107
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 1 of 2
Drilling Dates:	5/2/2011	GS Elevation: 57.4 feet	Boring Location: west abutment - westbound lane
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
					4" Case & Wash		9" Asphalt Pavement	
	S1	10-12 15-13	24	10			S1: **Sand with Gravel (SW)** - fine to medium (some coarse) sand, 25%-35% subrounded gravel to 3/4", orange-brown.	Fill ~3.5'
5	S2	4-2 2-12	24	6			S2: **Sandy Silt (ML)** - nonplastic fines, 10%-20% fine to medium sand, occasional rounded gravel to 1/2", light brown-orange. Possible Fill.	
10	S3	10-4 10-6	24	14	Rolled through boulder at ~8.5'.		S3: **Sandy Silt (ML)** - nonplastic fines, 5%-10% subrounded gravel to 3/4", olive-brown. Possible Fill.	Sandy Silt - Possible Fill ~14'
15 15.2	S4	26-40 60/2"	14	6	Casing refusal at 15.6'. Rolled ahead, lost water, and broke thru boulder at 16.2'. Drove casing to refusal at 18.7'. Rolled ahead and lost water at 19'. Took S5. Rolled ahead to 21.4' and drove casing to 20.4'. Rolled on bedrock or boulder from 21.2' to 22'. Started core at 22'.		S4: **Sandy Silt (ML) & Rock Fragments** - slightly plastic fines, 10%-20% fine sand, olive-brown. About 60% of sample consists of angular rock fragments.	Sandy Silt and Silty Sand with Boulders/Cobbles (Possible Glacial Till) ~21'
20	S5	29-75	12	3			S5: **Rock Fragments** - angular rock fragments with a small amount of silty sand. Possible till with boulders or weathered bedrock.	
	C1		38	38	Core barrel jammed at 25.2'.		C1: **Bedrock** - fine grained gray meta-sedimentary rock, steep foliation (70° to 90°), fresh to slightly weatered, joints dipping ~10°, 35° to 45°, and 70° to 90° (along foliation) at spacings of 1.5" to 9". RQD = 22.5"/38" = 59%	Bedrock

BOTTOM OF FOOTING
ABUTMENT A (EL.=34.00)

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel
REC - Recovery length of sample
S - Split Spoon Sample
C - Rock Core Sample
U - Undisturbed Tube Sample

BORING NO. B107

CONTINUED

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B107
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 2 of 2
Drilling Dates:	5/2/2011	GS Elevation: 57.4 feet	Boring Location: west abutment - westbound lane
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
25 25.2	C2		22	21	Coring rate varied from 5.5 to 7.5 min/foot. Coring rate of 7.5 min/foot.		C2: **Bedrock** - fine grained gray meta-sedimentary rock, fresh to slightly weathered, ~45° foliation, quartz intrusion from 25.8' to 26.1', joints near horizontal and dipping ~45° (along foliation) at spacings from 1.5" to 6.5". RQD = 11.5"/22" = 52% Bottom of Boring at 27'.	Bedrock
30								
35								
40								
45								

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel
REC - Recovery length of sample
S - Split Spoon Sample
C - Rock Core Sample
U - Undisturbed Tube Sample

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BORING LOGS (SHEET 4 OF 5)

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	15402Borings04	AS NOTED

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	14	58

BRIDGE SHEET 9 OF 35
FILE NUMBER

BORING NO. B108

STA. 4+81.2, 1.7' LT.

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B108
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 1 of 1
Drilling Dates:	5/2/2011	GS Elevation: 57.3 feet	Boring Location: west abutment - westbound lane (rear)
Drill Rig:	Mobile B-47 Truck	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
	S1	18-13 10-6	24	3	4" Case & Wash		10" Asphalt Pavement S1: **Sand with Silt & Gravel (SP-SM)** - fine to medium sand, 5%-15% nonplastic fines, 20%-30% gravel, brown. Rock fragment in tip of spoon. Due to poor recovery, overdrove 3" spoon: 20" recovery: upper 12": **Sand with Gravel (SW)** - fine to coarse sand, 25%-35% subrounded & subangular gravel to 2", 5%-10% fines, brown.	Fill ~2'
5	S2	4-3 5-13	24	13			lower 8": **Sandy Silt (ML)** - nonplastic fines, 10%-20% fine to medium sand, occasional fine roots, olive-brown. Possible Fill. S2: **Sandy Silt (ML)** - similar to lower 8" of S1 overdrive. Possible Fill.	Sandy Silt - Possible Fill ~8'
10 9.7	S3	22-50/2"	8	0	Increased casing resistance below 8'. Lost water at 9'. Rolled ahead and drove casing to 14'.		S3: **No Recovery** - probably pushed boulder with spoon.	Silty Sand with Gravel & Cobbles/ Boulders (Possibly Glacial Till)
14.2 15	S4	50/3"	3	1	Rolled ahead. Cuttings in wash appear to be weathered rock. Roller bit cut rapidly from 15' to 16', then slowed. Lost water at 16.4'. Rolled to 18' in boulder or bedrock.		S4: **Silty Sand with Gravel (SM)** - fine to coarse sand, 10%-20% nonplastic fines, 40%-50% angular gravel and rock fragments, olive-brown.	~15'
								Boulder or Bedrock
20							Bottom of Boring at 18'	

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel
REC - Recovery length of sample
S - Split Spoon Sample
C - Rock Core Sample
U - Undisturbed Tube Sample

BORING NO. B109

STA. 4+74.1, 30.2' LT.

Ward Geotechnical Consulting, PLLC

Project:	Whittier Street Bridge	Boring Log	B109
Location:	Dover, New Hampshire		
Client:	The Louis Berger Group, Inc.		
Project No.:	11210		
Contractor:	New Hampshire Boring, Inc.	Groundwater Depth:	Date:
Logged By:	Craig Ward		Page 1 of 1
Drilling Dates:	5/3/2011	GS Elevation: 47.5 feet	Boring Location: near toe of embankment at northwest quadrant
Drill Rig:	Remote ATV Rig	Datum: NGVD29	

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS per 6 IN.	PEN. IN.	REC. IN.	REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS	
	S1	2-4 12-100/4"	22	16	4" Case & Wash		S1: upper 2": **Forest Mat** next 9": **Sandy Silt (ML)** - nonplastic fines, 20%-30% fine sand, roots, brown.	Silt ~1'
1.8					Rolled in bedrock to 3' to core.		lower 5": **Sand with Gravel (SW)** - fine to medium (some coarse) sand, 30%-40% subrounded gravel and angular rock fragments to 3/4", dry, light brown-gray.	Sand Gravel ~2'
5	C1		60	55	Coring rate varied from 3 to 4 min/foot. Core barrel dropped ~1" at 4.9'.		C1: **Bedrock** - fine grained gray meta-sedimentary rock, fresh to slightly weathered, vague foliation dipping ~45° to 80° (variable), 1/2" thick quartz intrusion at 6.5', occasional quartz veins, joints dipping 0° to 15°, ~30°, 60° to 70° at spacings ranging from 1.5" to 8". RQD = 44"/60" = 73%	Bedrock
10							Bottom of Boring at 8'	
15								
20								

Notes:

Abbreviations:

PEN - Penetration length of sampler or core barrel
REC - Recovery length of sample
S - Split Spoon Sample
C - Rock Core Sample
U - Undisturbed Tube Sample

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

BORING LOGS (SHEET 5 OF 5)

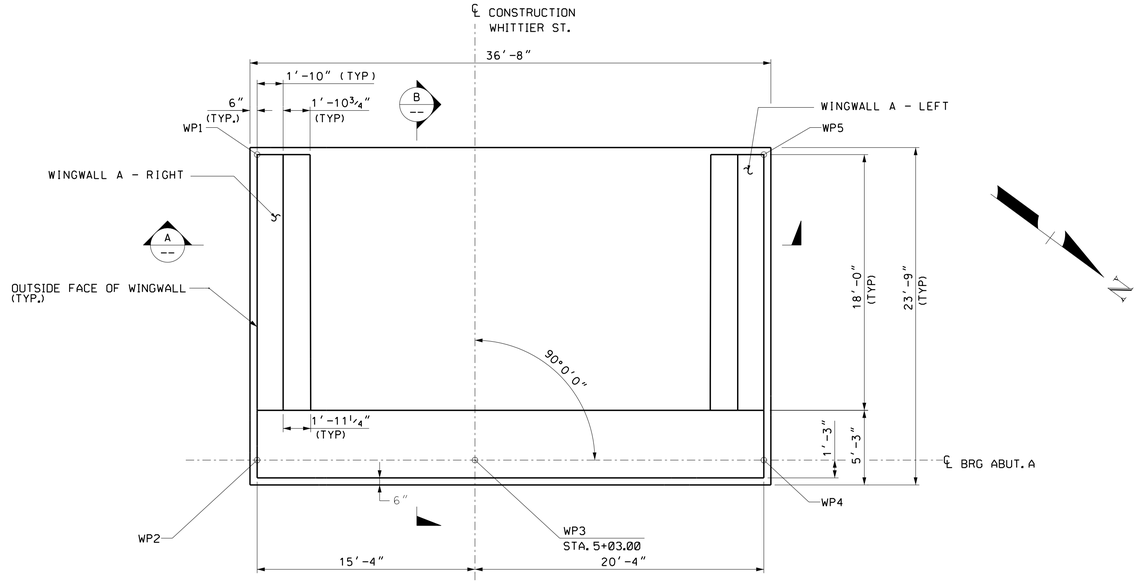
BRIDGE SHEET 10 OF 35

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TWP	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

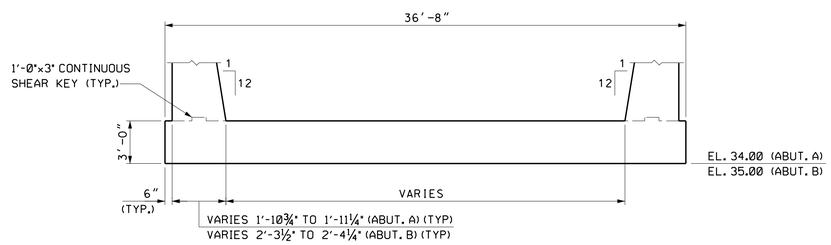
FILE NUMBER

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174055	15402Borings05	AS NOTED	REV. DATE		X-A002(794)	15	58



FOOTING LAYOUT PLAN – ABUTMENT A

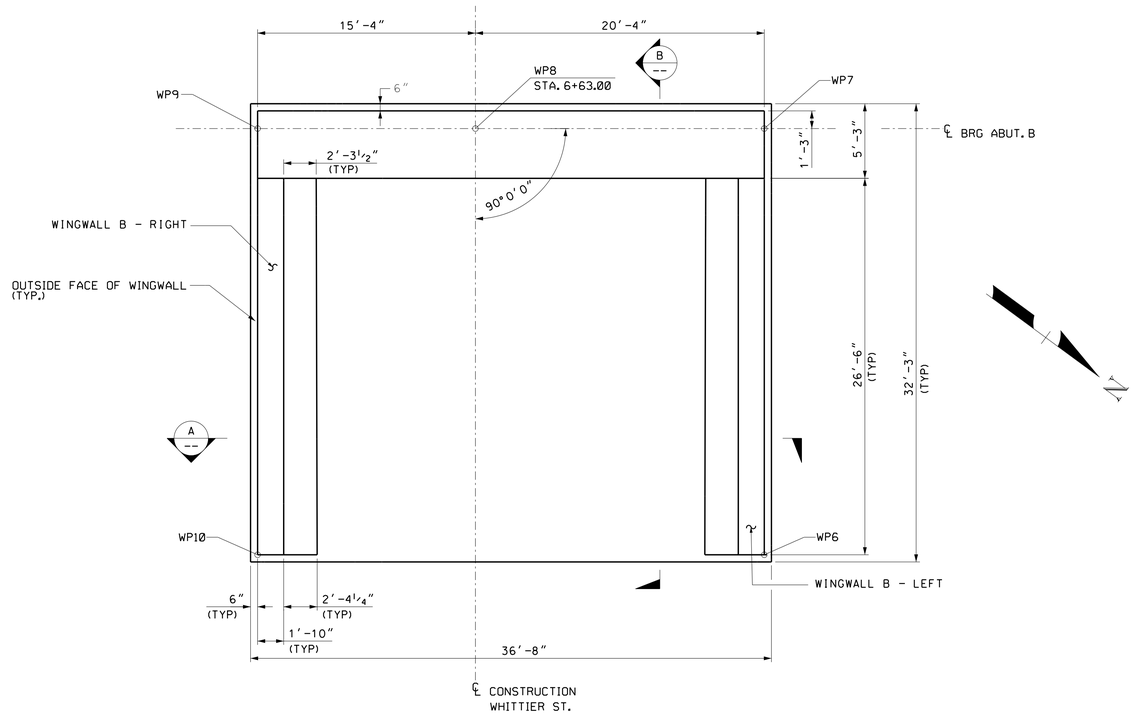
SCALE: 3/16″ = 1′-0″



SECTION A

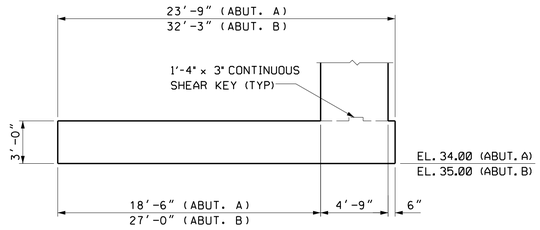
SCALE: 3/16″ = 1′-0″

(ABUT. A SHOWN, ABUT. B SIMILAR)



FOOTING LAYOUT PLAN – ABUTMENT B

SCALE: 3/16″ = 1′-0″



SECTION B

SCALE: 3/16″ = 1′-0″

(ABUT. A SHOWN, ABUT. B SIMILAR)

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUTMENT FOOTINGS - MASONRY

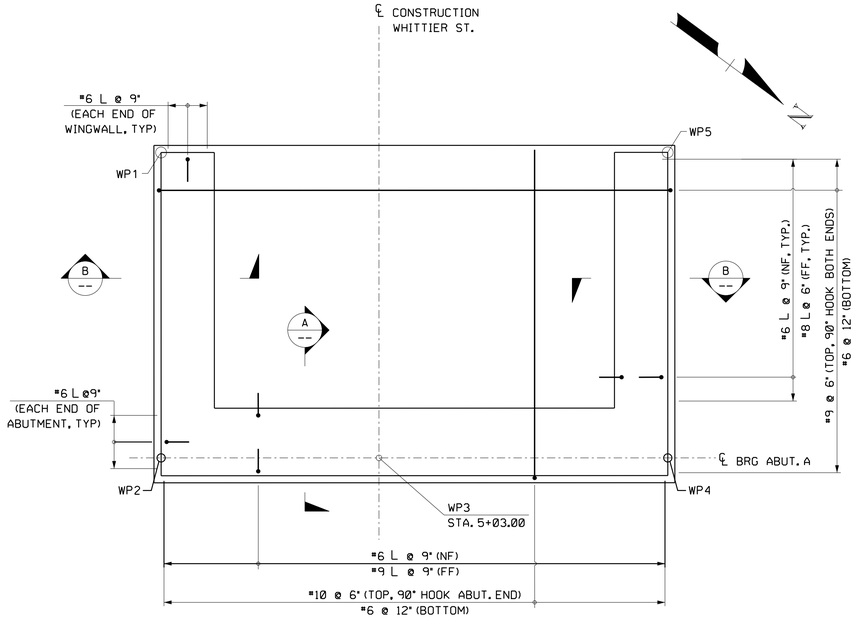
BRIDGE SHEET 11 OF 35

FILE NUMBER

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	RWM	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

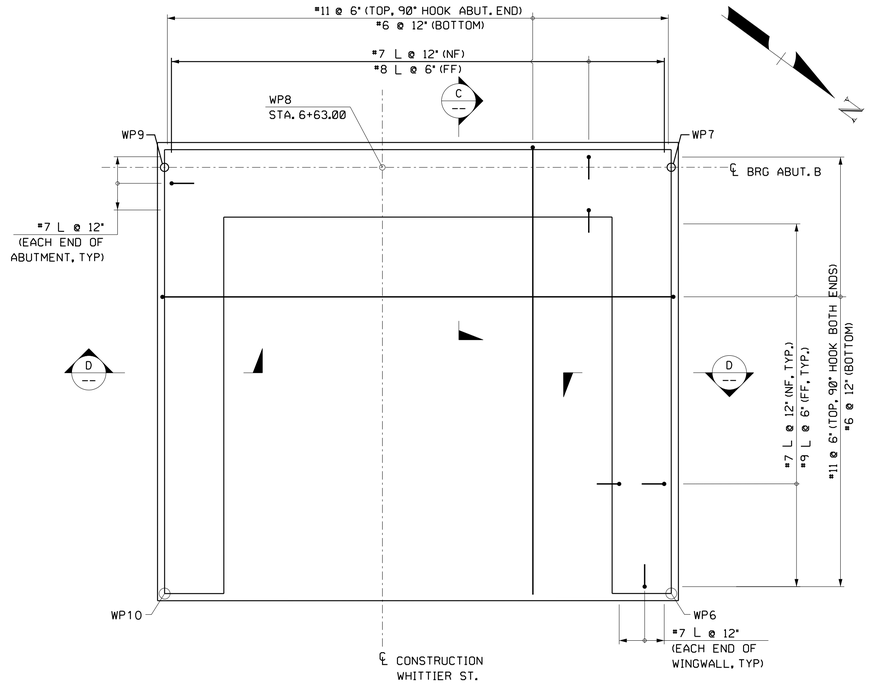
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	=	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174053	15402AbutFoot	AS NOTED	REV. DATE		X-A002(794)	16	58



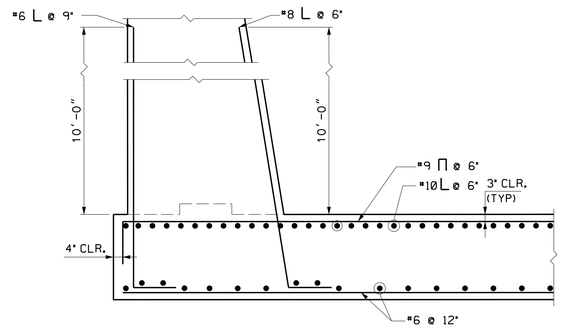
FOOTING REINFORCEMENT PLAN – ABUTMENT A

SCALE: 3/16" = 1'-0"



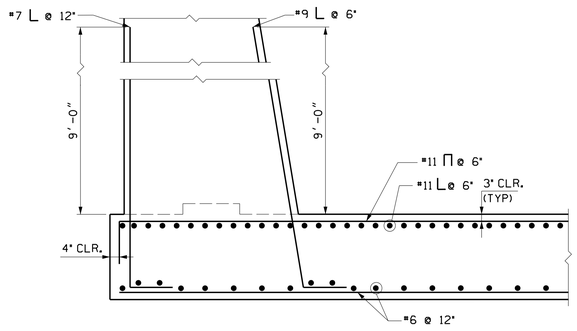
FOOTING REINFORCEMENT PLAN – ABUTMENT B

SCALE: 3/16" = 1'-0"



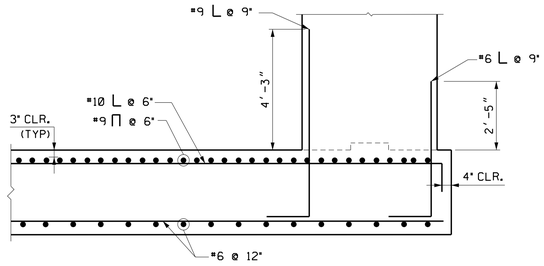
SECTION B

SCALE: 3/8" = 1'-0"



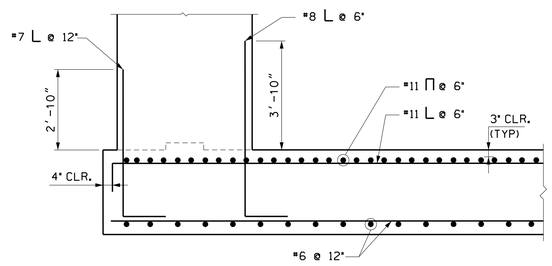
SECTION D

SCALE: 3/8" = 1'-0"



SECTION A

SCALE: 3/8" = 1'-0"



SECTION C

SCALE: 3/8" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUTMENT FOOTINGS - REINFORCEMENT

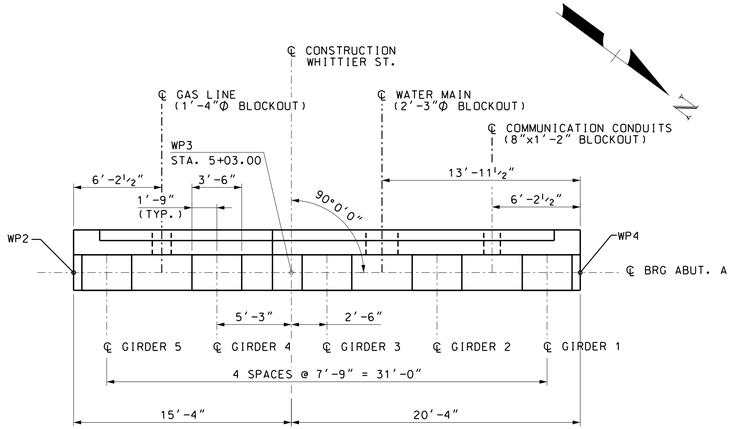
BRIDGE SHEET 12 OF 35

FILE NUMBER

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

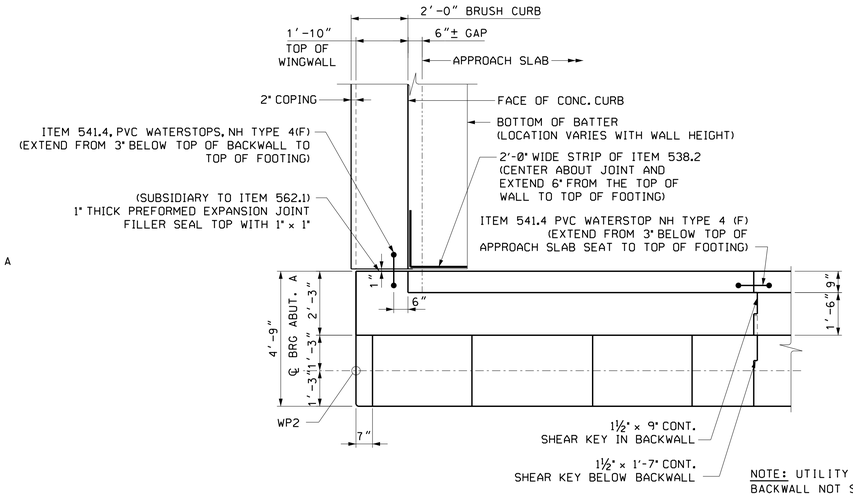
REVISIONS AFTER PROPOSAL				BY	DATE		BY	DATE
			DESIGNED	RWM	11/15	CHECKED	KSW	11/15
			DRAWN	DWM	11/15	CHECKED	KSW	11/15
			QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
			ISSUE DATE	—		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
			REV. DATE			X-A002(794)	17	58

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174053	15402AbutFootReinf	AS NOTED



ABUTMENT A – PLAN

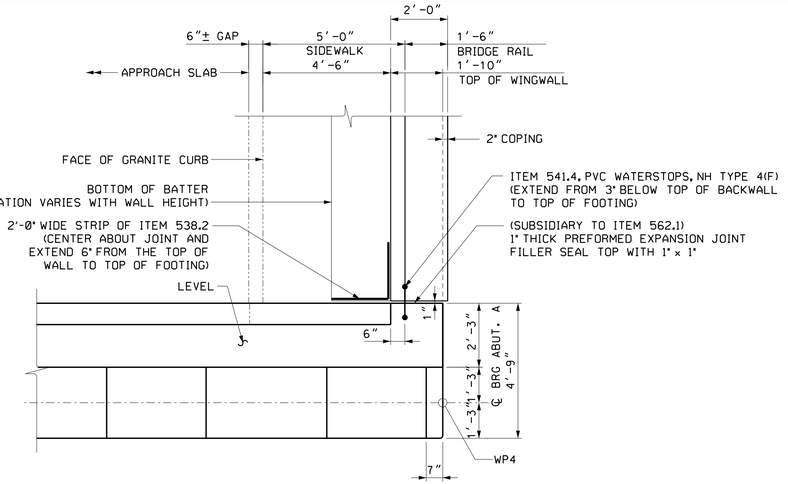
SCALE: 3/16" = 1'-0"



ABUTMENT A – ENLARGED PARTIAL PLAN 1

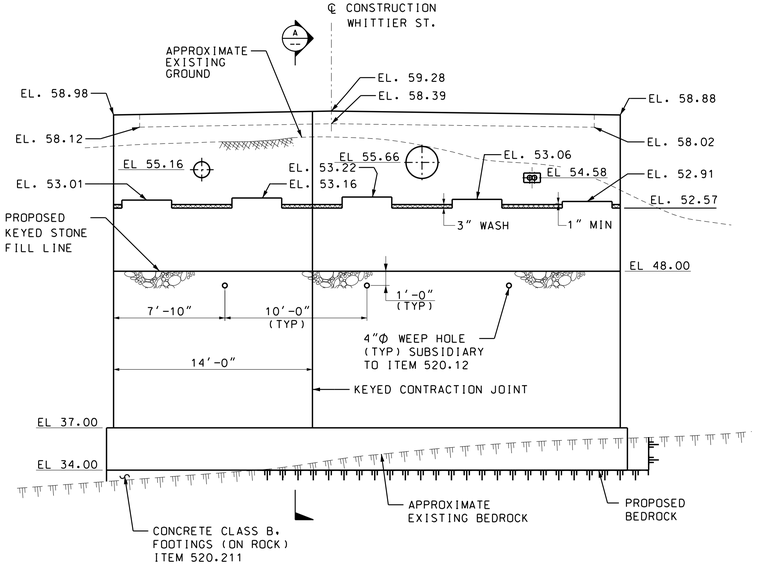
SCALE: 3/8" = 1'-0"

NOTE: UTILITY PENETRATIONS THROUGH BACKWALL NOT SHOWN FOR CLARITY.



ABUTMENT A – ENLARGED PARTIAL PLAN 2

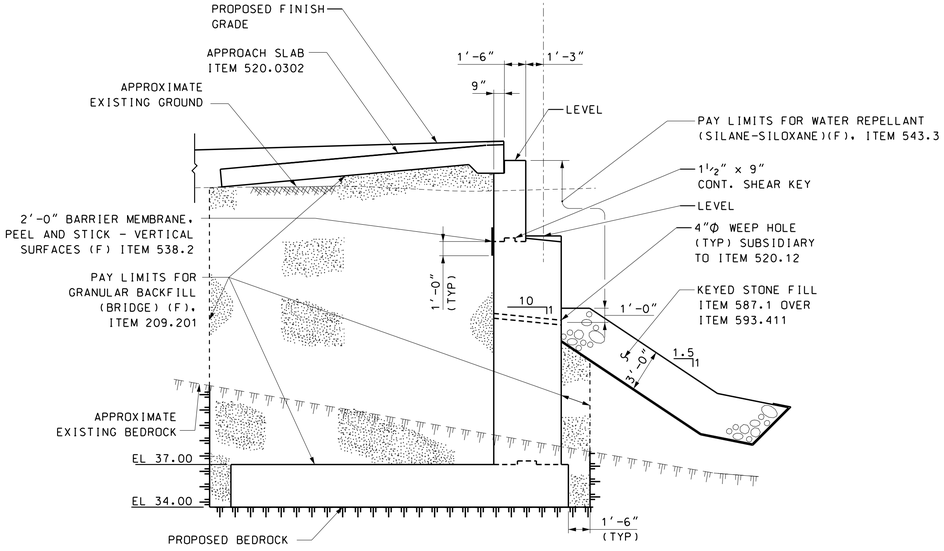
SCALE: 3/8" = 1'-0"



ABUTMENT A – ELEVATION

SCALE: 3/16" = 1'-0"

NOTES:
1. ELEVATIONS AT TOP OF BACKWALL TAKEN AT BACK FACE.
2. ELEVATIONS OF UTILITIES THROUGH BACKWALL ARE APPROXIMATE AND TO BE CONFIRMED IN FIELD BY OTHERS.
3. BEAM SEATS SHALL BE LEVEL.



SECTION A

SCALE: 3/16" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUTMENT A - MASONRY

BRIDGE SHEET 13 OF 35

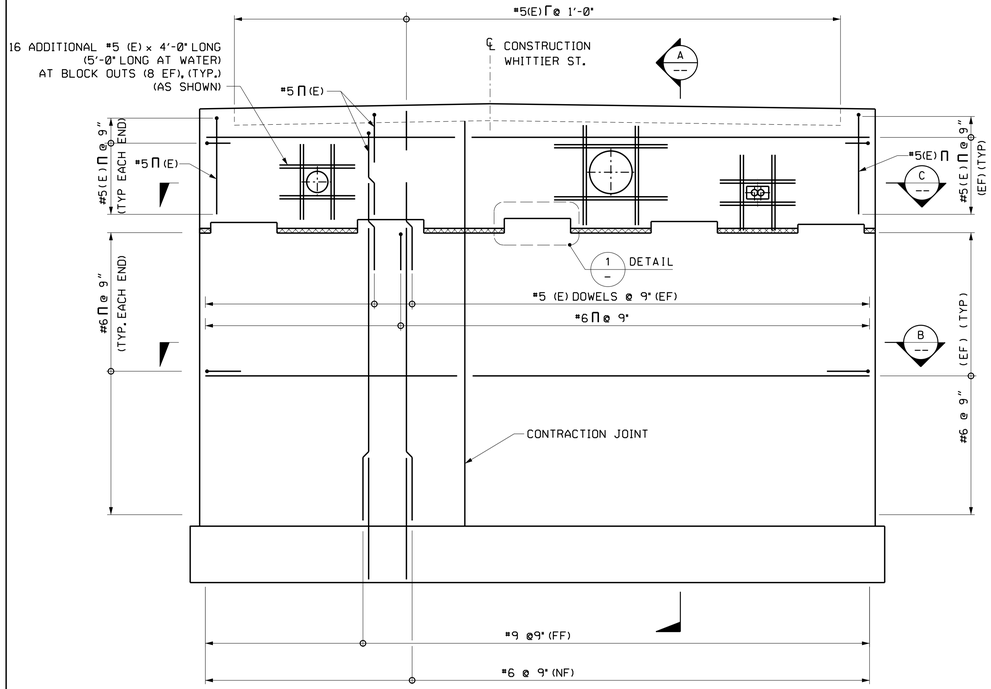
FILE NUMBER

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	RWM	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

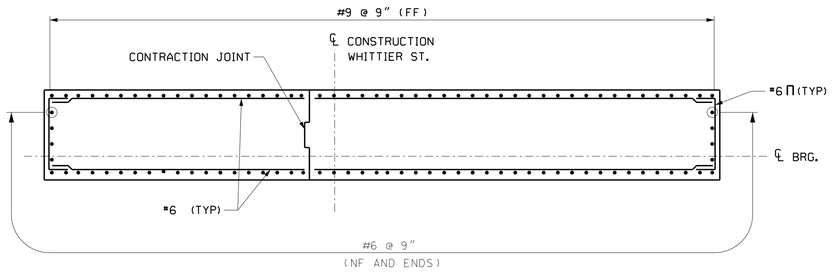
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174053	15402Abut-Plan-Elev	AS NOTED

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	18	58



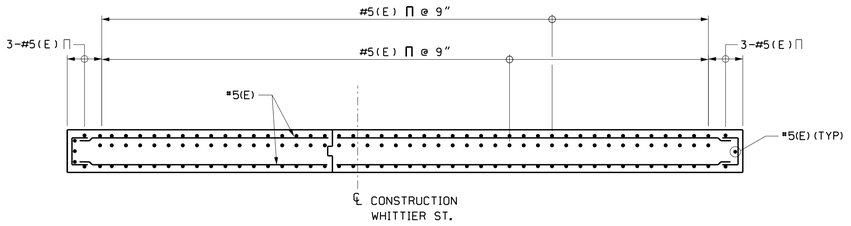
ABUTMENT A ELEVATION

SCALE: 1/4" = 1'-0"



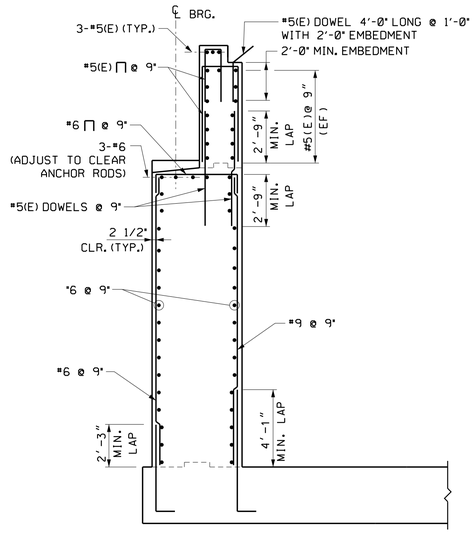
SECTION B

SCALE: 1/4" = 1'-0"



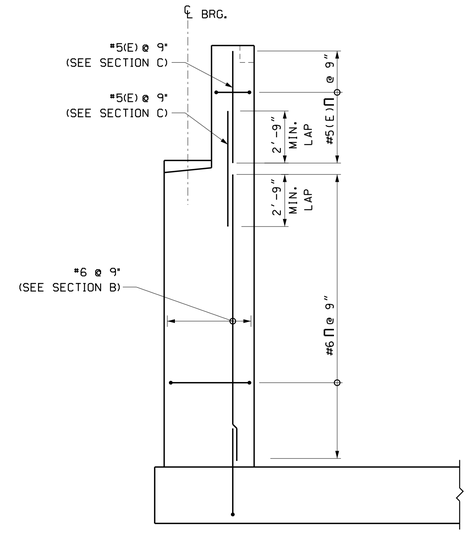
SECTION C

SCALE: 1/4" = 1'-0"



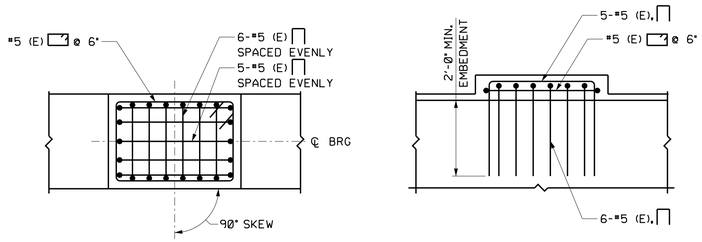
SECTION A

SCALE: 1/4" = 1'-0"



LEFT END ELEVATION

(RIGHT END ELEVATION SIMILAR)
SCALE: 1/4" = 1'-0"



TYPICAL PEDESTAL DETAIL 1/-

SCALE: 1/2" = 1'-0"

THE Louis Berger Group, INC. Manchester, New Hampshire (603) 644 5200							
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE					
d0174053	15402AbutDetls01	AS NOTED					

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUTMENT A - REINFORCEMENT

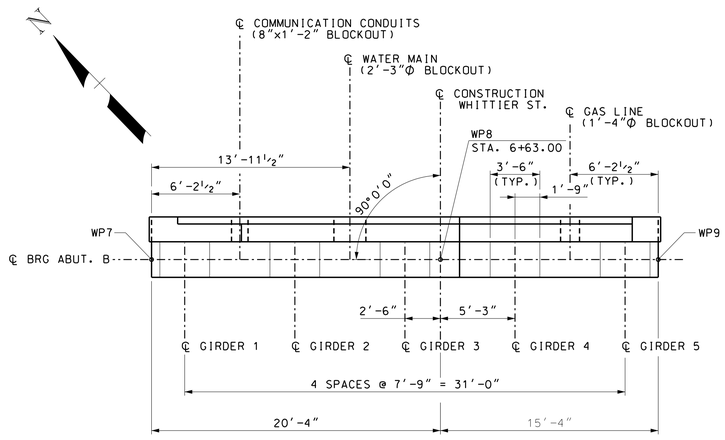
REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	RWM	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	19	58

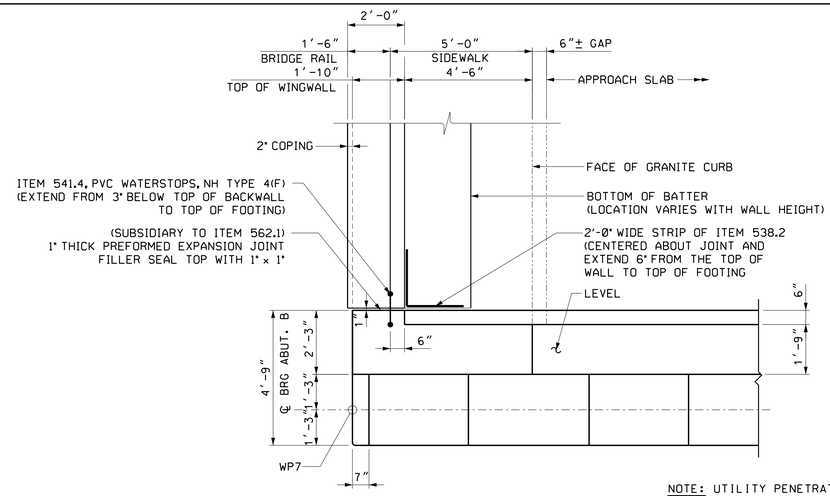
BRIDGE SHEET 14 OF 35

FILE NUMBER



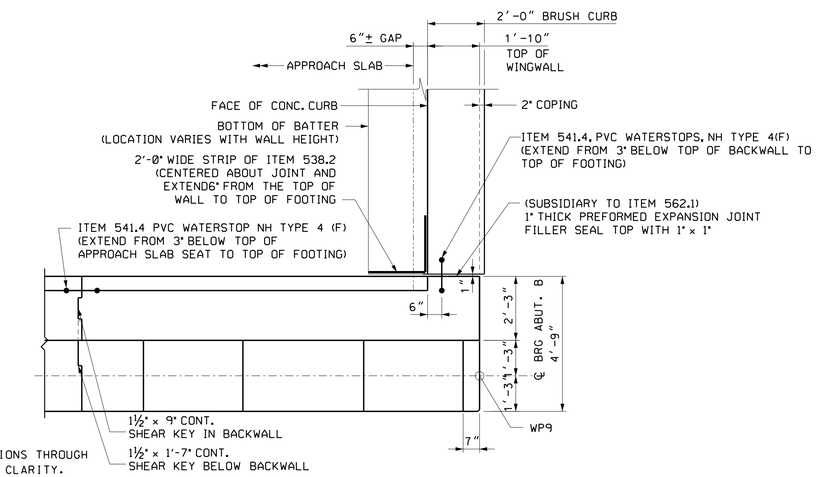
ABUTMENT B – PLAN

SCALE: 3/16" = 1'-0"



ABUTMENT B – ENLARGED PARTIAL PLAN 1

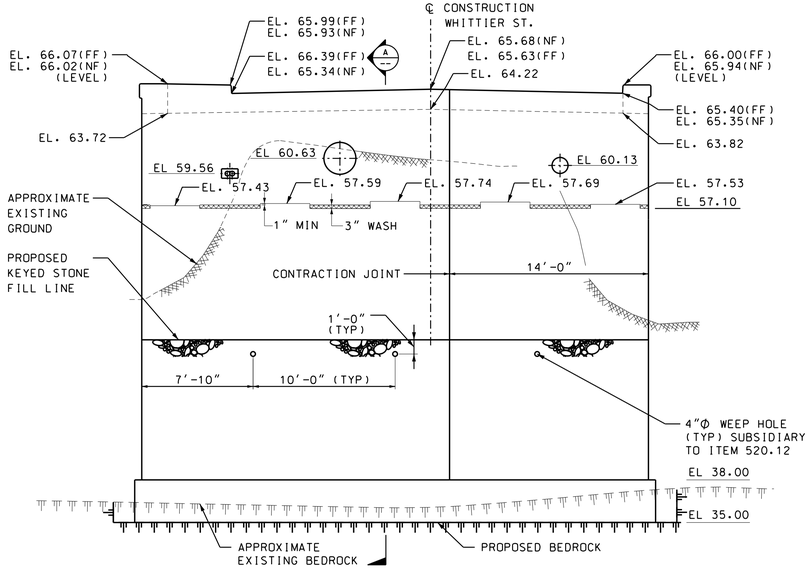
SCALE: 3/8" = 1'-0"



NOTE: UTILITY PENETRATIONS THROUGH BACKWALL NOT SHOWN FOR CLARITY.

ABUTMENT B – ENLARGED PARTIAL PLAN 2

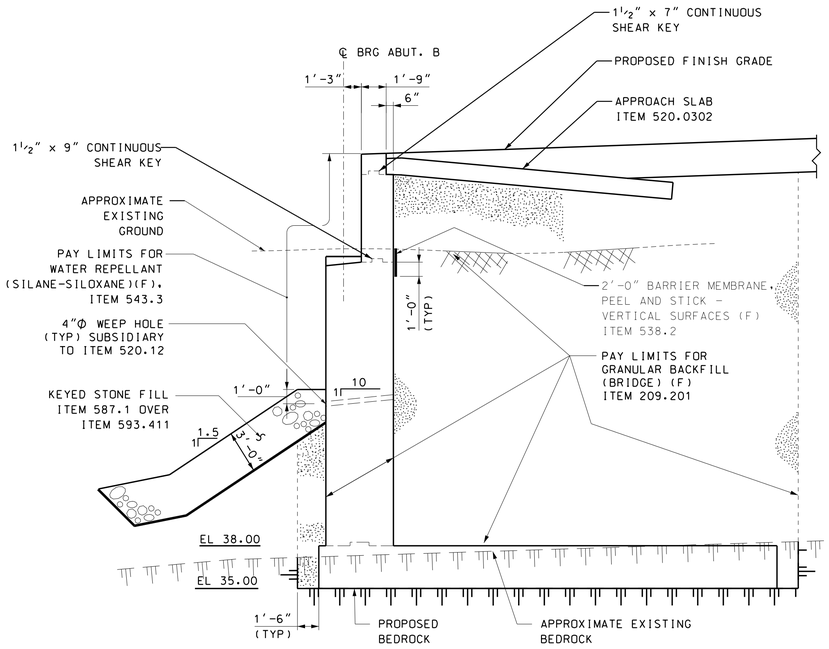
SCALE: 3/8" = 1'-0"



NOTES:
1. ELEVATIONS OF UTILITIES THROUGH BACKWALL ARE APPROXIMATE AND TO BE CONFIRMED IN FIELD BY OTHERS.
2. BEAM SEATS SHALL BE LEVEL.

ABUTMENT B – ELEVATION

SCALE: 3/16" = 1'-0"



SECTION A

SCALE: 3/16" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUTMENT B - MASONRY

BRIDGE SHEET 15 OF 35

FILE NUMBER

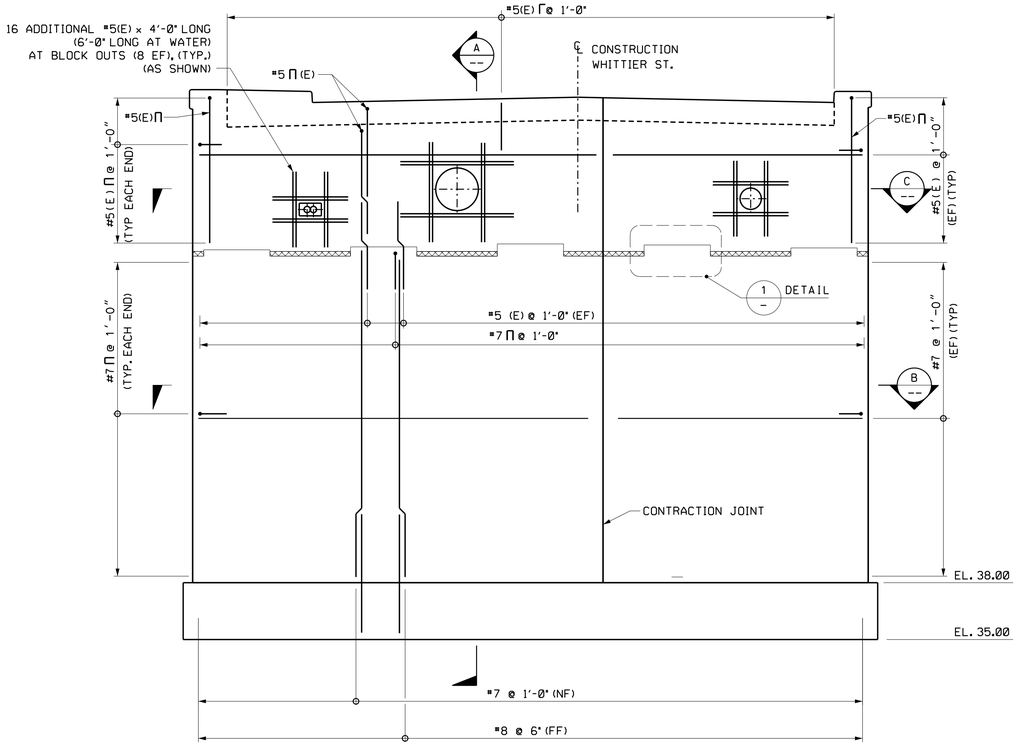
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	RWM	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

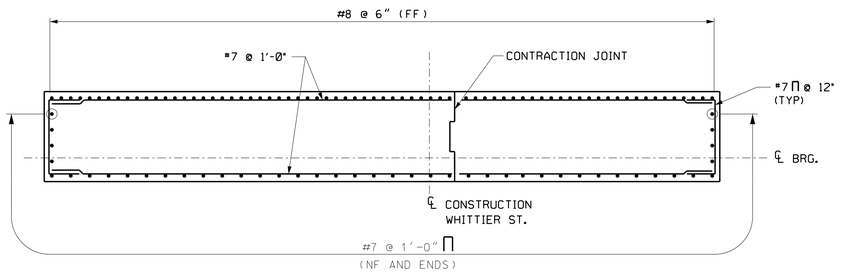
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174054	15402B-Abut-Plan-Elev	AS NOTED

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	20	58



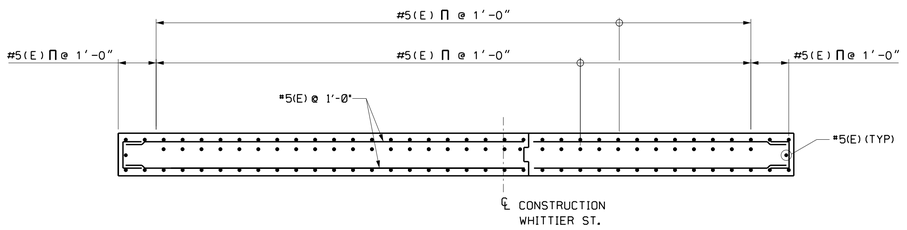
ABUTMENT B ELEVATION

SCALE: 1/4" = 1'-0"



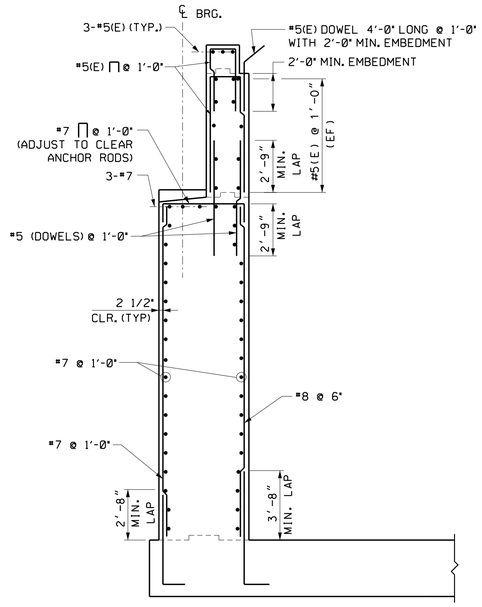
SECTION B

SCALE: 1/4" = 1'-0"



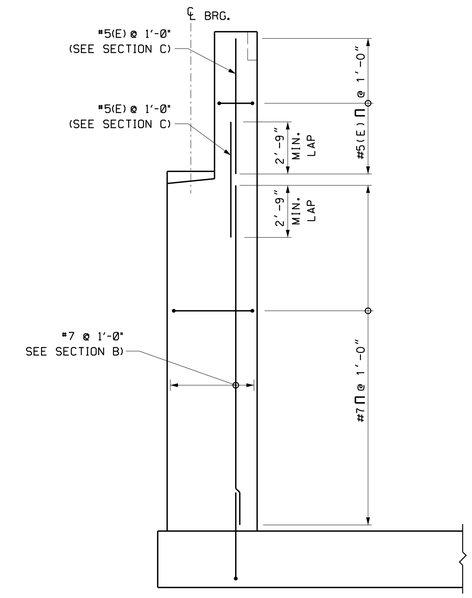
SECTION C

SCALE: 1/4" = 1'-0"



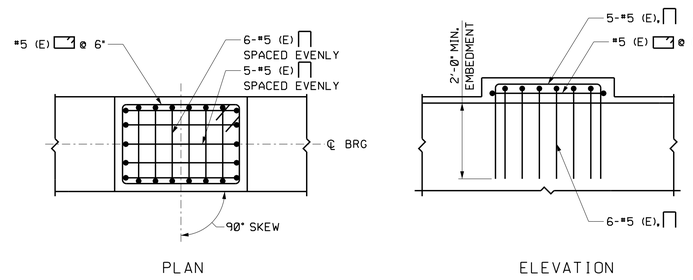
SECTION A

SCALE: 1/4" = 1'-0"



RIGHT END ELEVATION

(LEFT END ELEVATION, SIMILAR)
SCALE: 1/4" = 1'-0"



PLAN ELEVATION

TYPICAL PEDESTAL DETAIL 1/-

SCALE: 1/2" = 1'-0"

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174054	15402B-AbutDetls01	AS NOTED

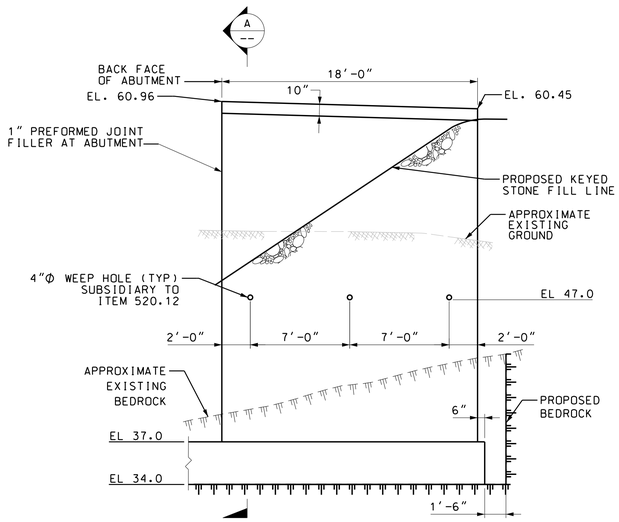
CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUTMENT B - REINFORCEMENT

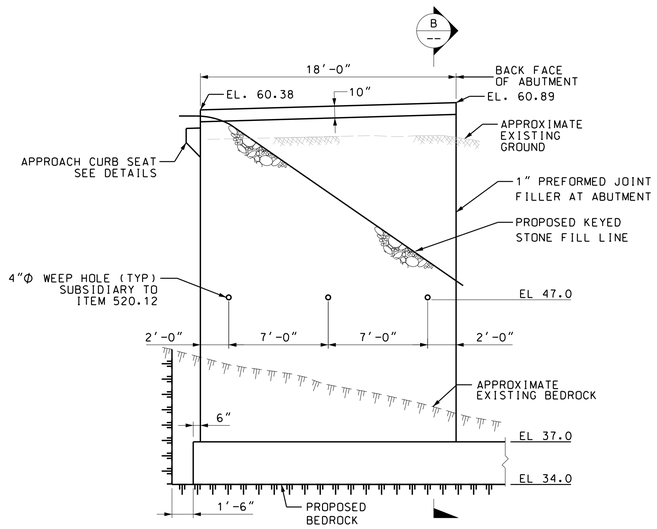
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	RWM	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
	ISSUE DATE	—		FEDERAL PROJECT NO.	SHEET NO.	
	REV. DATE			X-A002(794)	21	

BRIDGE SHEET 16 OF 35
FILE NUMBER
TOTAL SHEETS 58



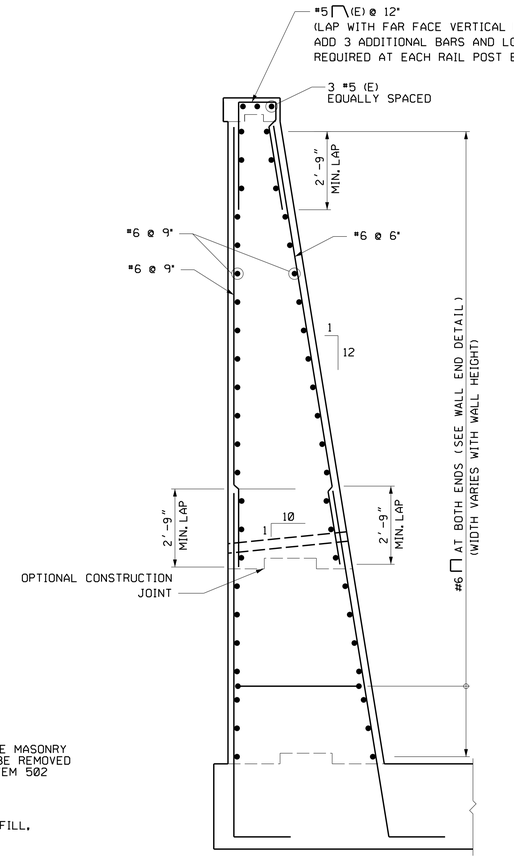
WINGWALL A - LEFT MASONRY

SCALE: 3/16" = 1'-0"



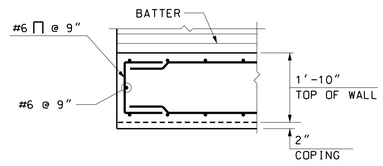
WINGWALL A - RIGHT MASONRY

SCALE: 3/16" = 1'-0"



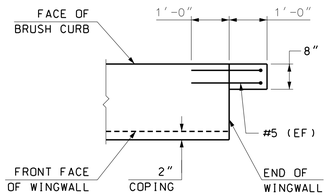
SECTION A - REINFORCING

(SECTION A SHOWN, SECTION B SIMILAR)
SCALE: 3/8" = 1'-0"

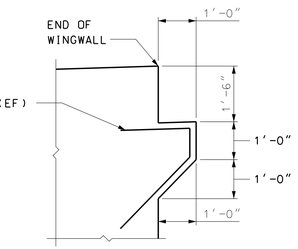


END OF WINGWALL REINFORCEMENT DETAIL

SCALE: 1/2" = 1'-0"

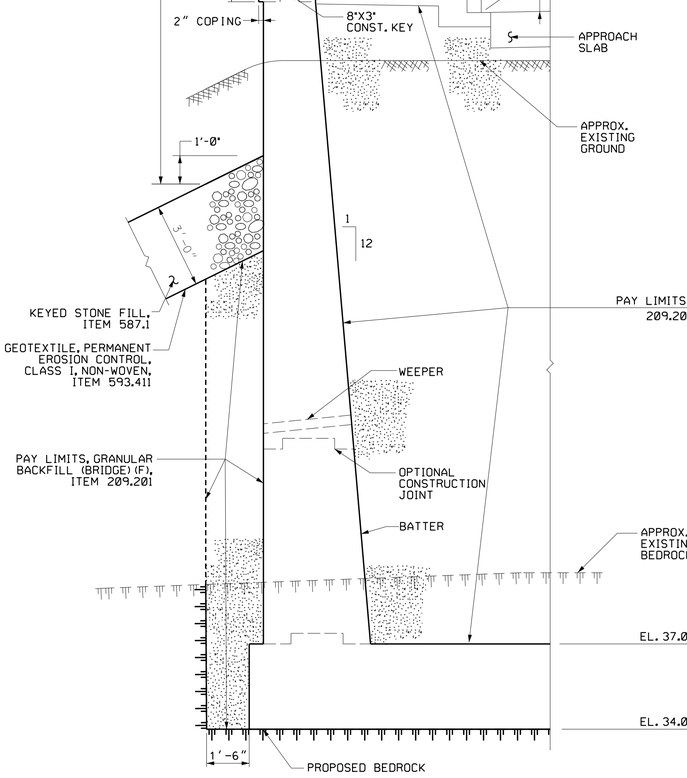


PLAN VIEW



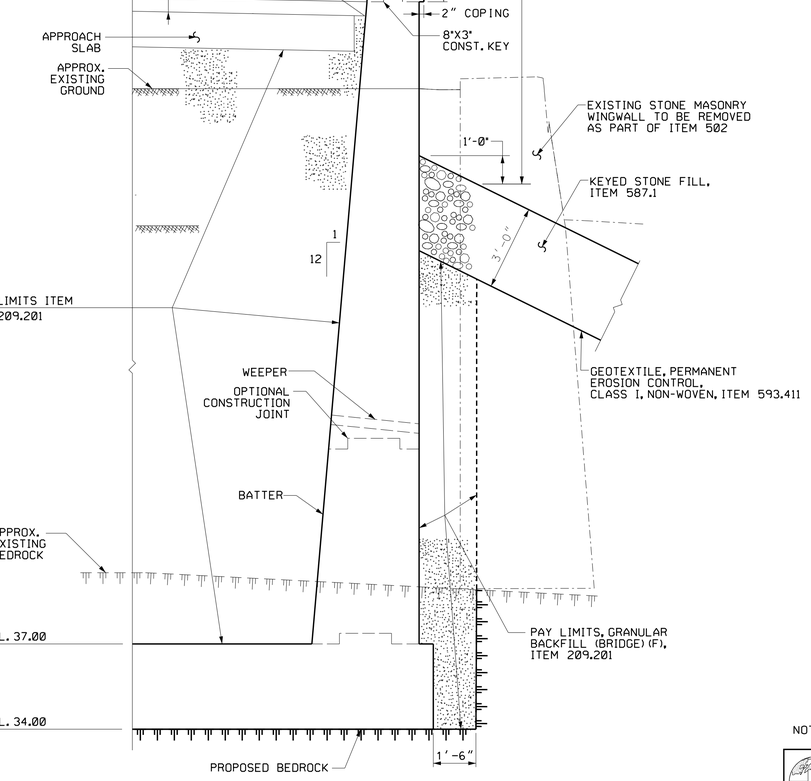
SECTION APPROACH CURB SEAT DETAILS AT TOP OF WINGWALL

SCALE: 1/2" = 1'-0"



SECTION A - MASONRY

SCALE: 3/8" = 1'-0"



SECTION B - MASONRY

SCALE: 3/8" = 1'-0"

NOTE: BRIDGE RAILS NOT SHOWN FOR CLARITY.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUT. A WINGWALL-MASONRY & REINFORCEMENT

BRIDGE SHEET 17 OF 35

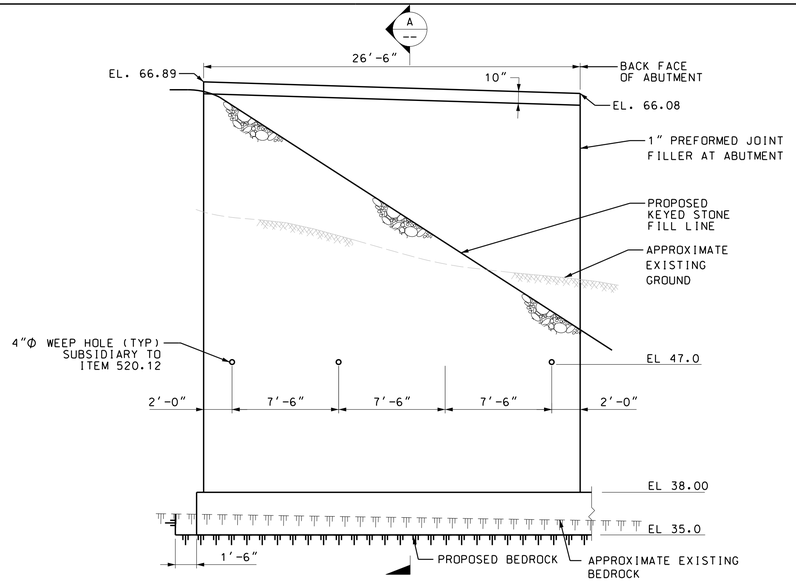
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	RWM	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
ISSUE DATE	—		FEDERAL PROJECT NO.		SHEET NO.
REV. DATE			X-A002(794)		22

FILE NUMBER

TOTAL SHEETS 58

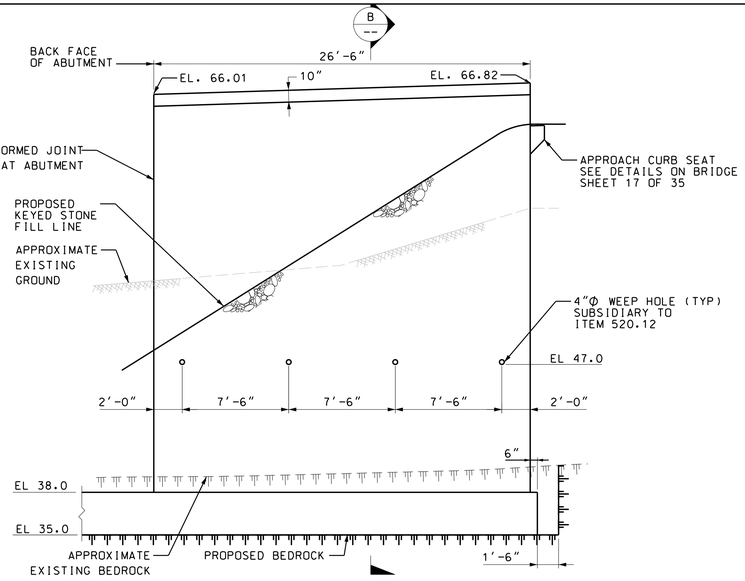
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174053	15402WingsDetls02	AS NOTED



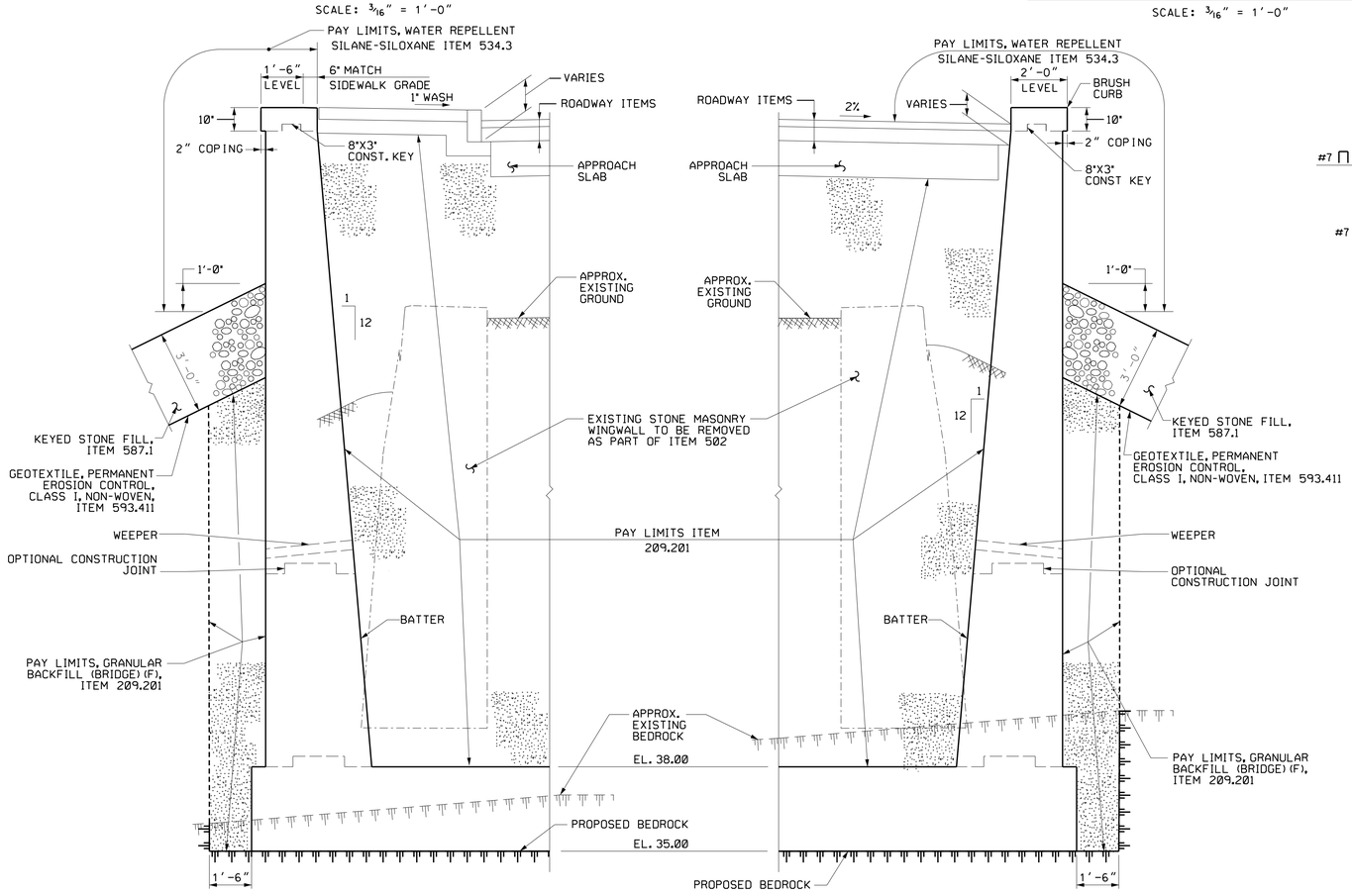
WINGWALL B - LEFT MASONRY

SCALE: 3/16" = 1'-0"



WINGWALL B - RIGHT MASONRY

SCALE: 3/16" = 1'-0"

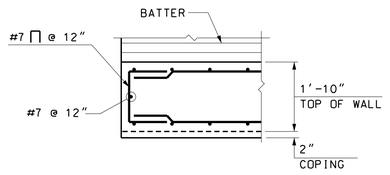


SECTION A - MASONRY

SCALE: 3/8" = 1'-0"

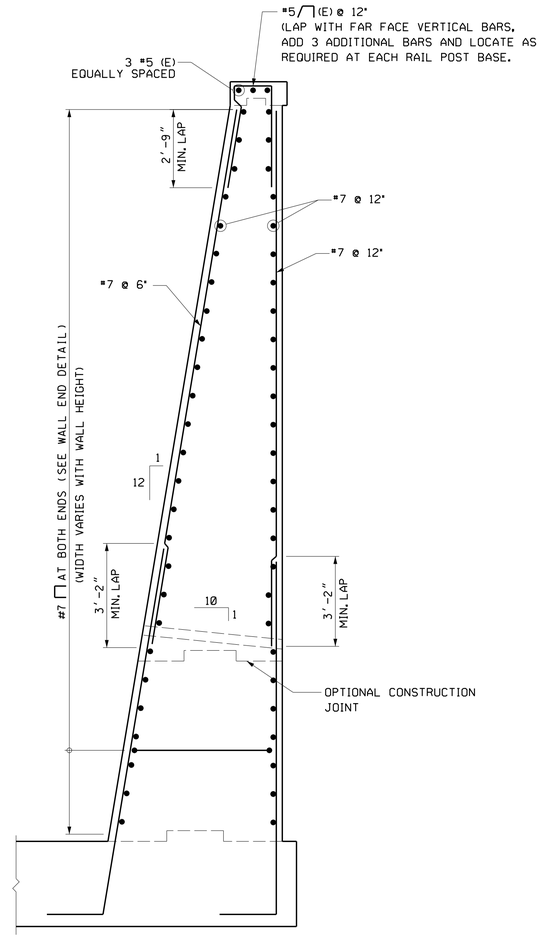
SECTION B - MASONRY

SCALE: 3/8" = 1'-0"



END OF WINGWALL REINFORCEMENT DETAIL

SCALE: 1/2" = 1'-0"



SECTION A - REINFORCING

(SECTION A SHOWN, SECTION B SIMILAR)
SCALE: 3/8" = 1'-0"

NOTE: BRIDGE RAILS NOT SHOWN FOR CLARITY.

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174053	15402WingsDetls02	AS NOTED

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

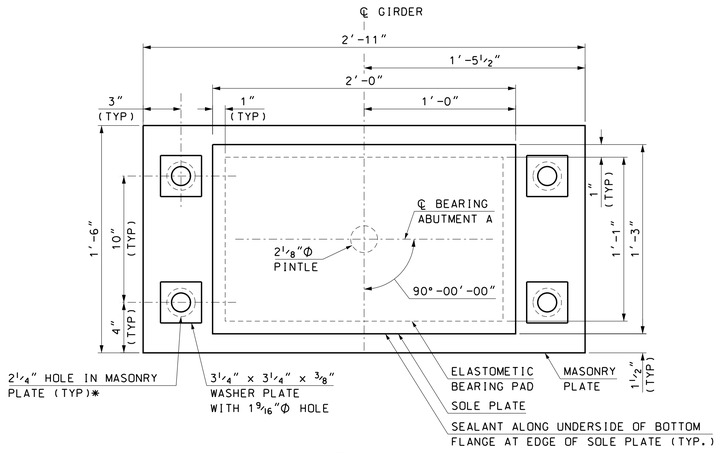
LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ABUT. B WINGWALL-MASONRY & REINFORCEMENT

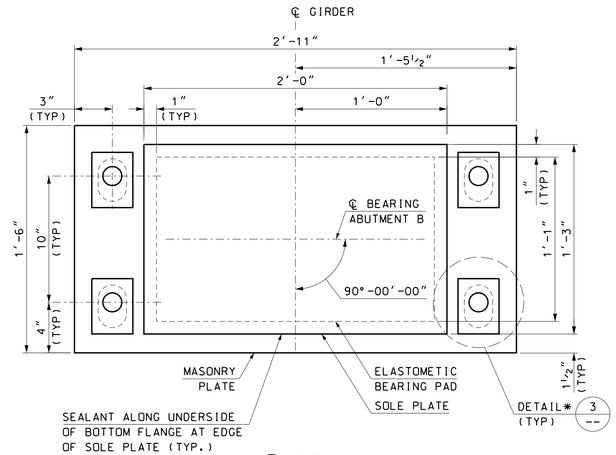
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	RWM	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
	ISSUE DATE	==	FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		X-A002(794)		23	58

BRIDGE SHEET 18 OF 35

FILE NUMBER

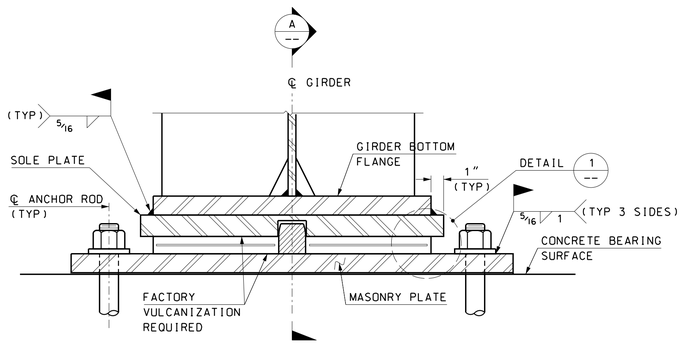


PLAN

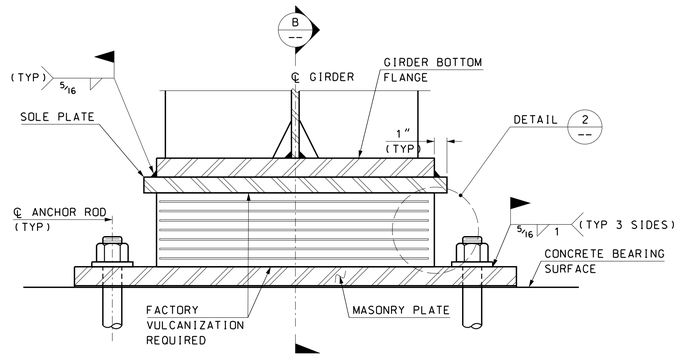


PLAN

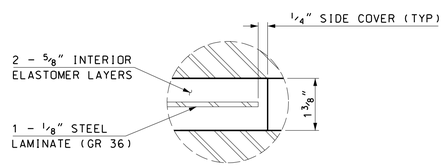
*ANCHOR RODS NOT SHOWN FOR CLARITY.



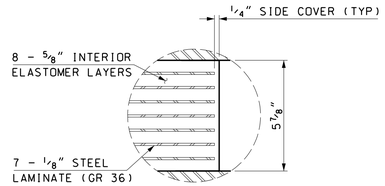
ELEVATION



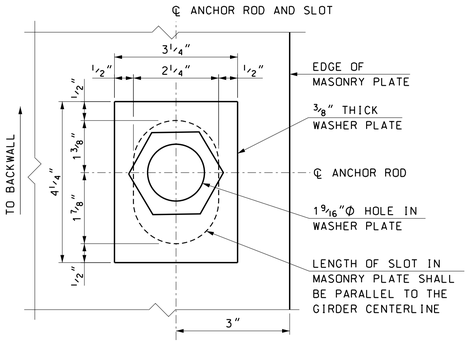
ELEVATION



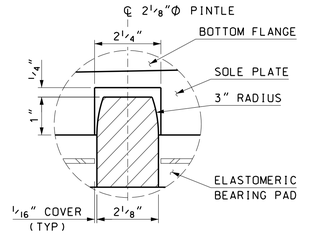
DETAIL 1 -- NOT TO SCALE



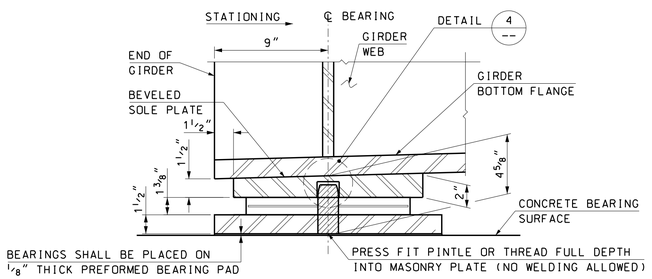
DETAIL 2 -- NOT TO SCALE



DETAIL 3 -- NOT TO SCALE



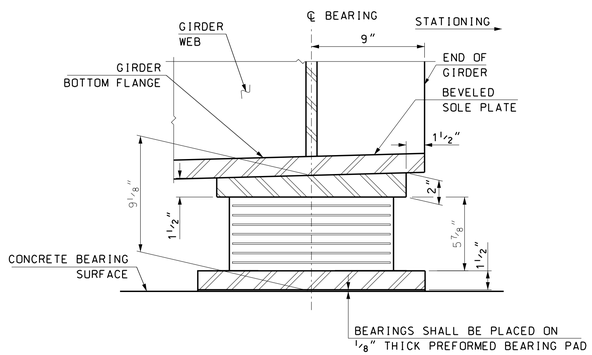
DETAIL 4 -- NOT TO SCALE



SECTION A --

FIXED BEARING - ABUTMENT A

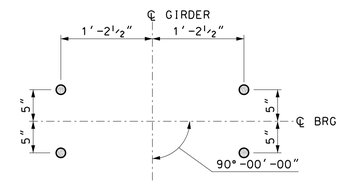
SCALE: 2 " = 1′-0"



SECTION B --

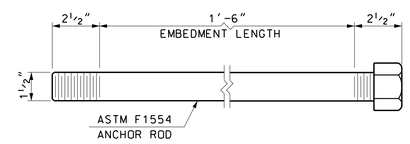
EXPANSION BEARING - ABUTMENT B

SCALE: 2 " = 1′-0"



ANCHOR ROD LAYOUT

NOT TO SCALE



ANCHOR ROD DETAIL

NOT TO SCALE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402Shoes	AS NOTED

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

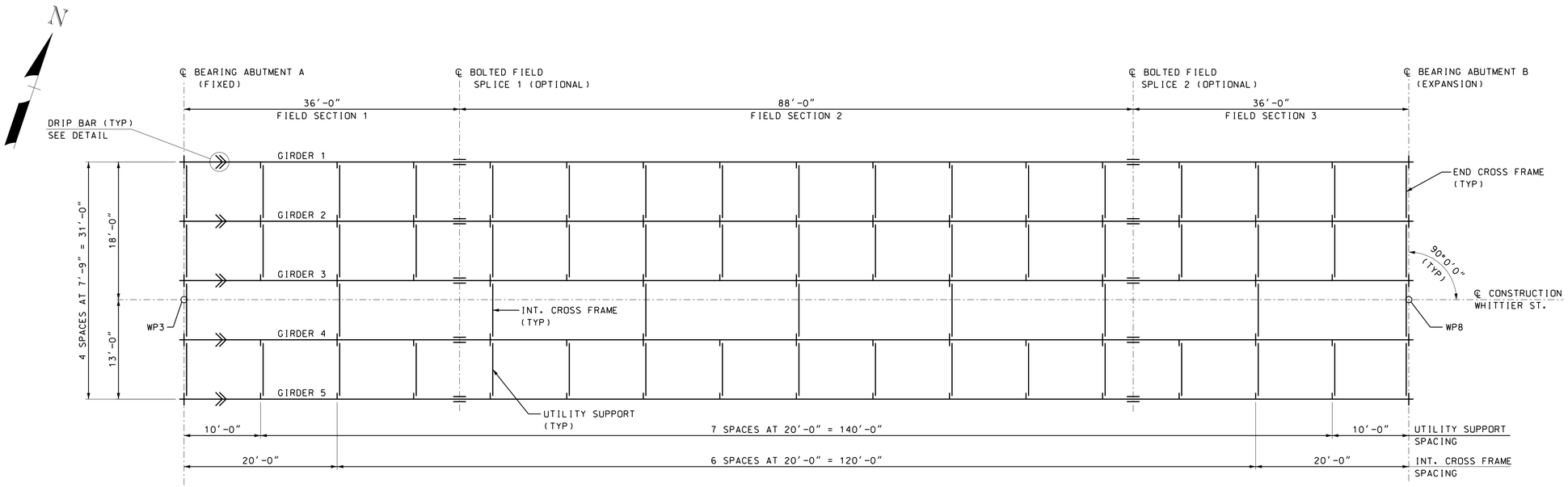
LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

ELASTOMERIC BEARINGS DETAILS

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	HNH	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

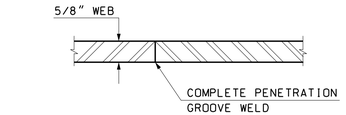
ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.
REV. DATE		X-A002(794)	24

BRIDGE SHEET 19 OF 35
FILE NUMBER
TOTAL SHEETS 58



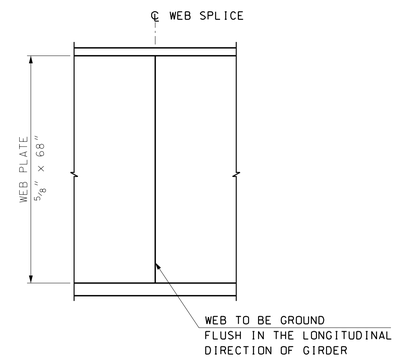
FRAMING PLAN

SCALE: 1/8" = 1'-0"



SECTION

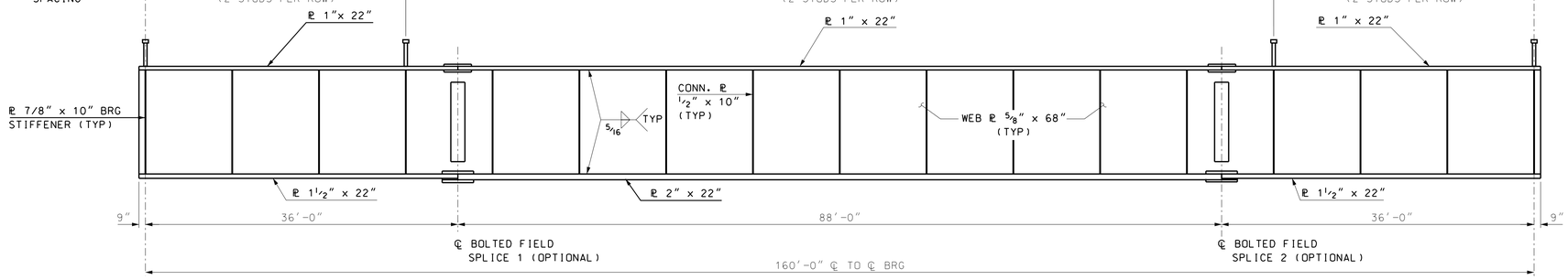
NOT TO SCALE



ELEVATION

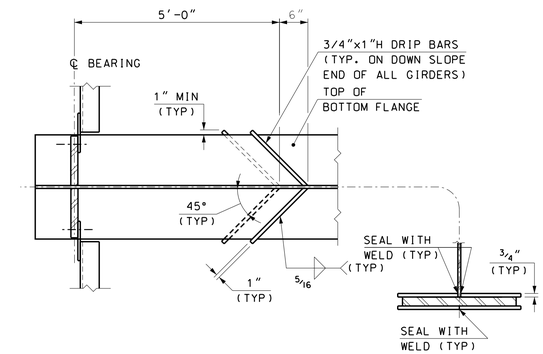
NOT TO SCALE

SHOP WEB SPLICE DETAILS



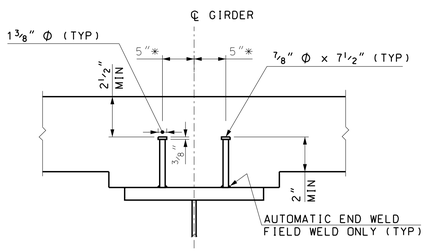
GIRDER ELEVATION & SHEAR CONNECTOR LAYOUT

NOT TO SCALE



DRIP BAR DETAILS

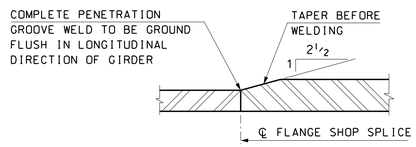
SCALE: 3/4" = 1'-0"



* 2 13/16" IF PRECAST PANELS ARE USED

SHEAR CONNECTOR DETAIL

NOT TO SCALE



SHOP SPLICE FLANGE TRANSITION DETAIL

NOT TO SCALE
REQ'D IF BOLTED FIELD OPTION IS NOT UTILIZED

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402FramPlan	AS NOTED

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

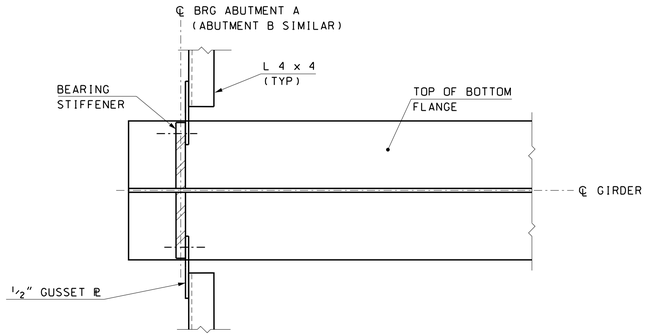
LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

FRAMING PLAN

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TWP	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

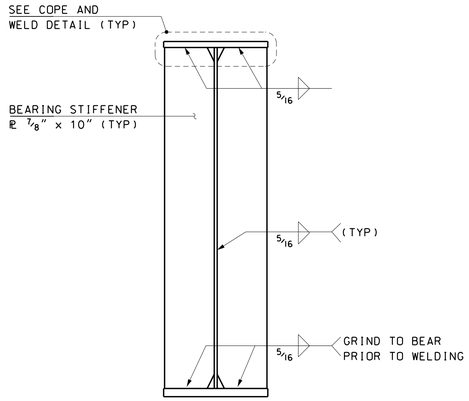
ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	25	58

BRIDGE SHEET 20 OF 35
FILE NUMBER



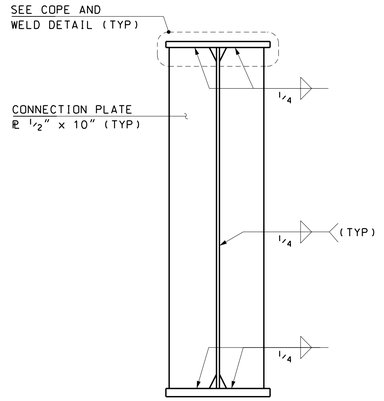
END CROSS FRAME CONNECTION DETAIL

SCALE: 1" = 1'-0"



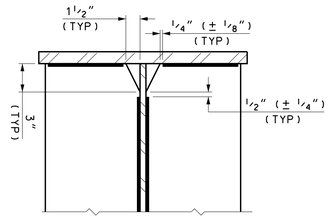
BEARING STIFFENER

SCALE: 3/4" = 1'-0"



CONNECTION PLATE

SCALE: 3/4" = 1'-0"

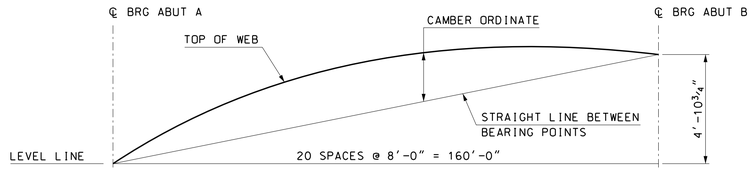


COPE AND WELD DETAIL

SCALE: 1 1/2" = 1'-0"

TABLE OF CAMBER AT 20TH POINTS (INCHES)

	POINT ALONG SPAN	CL BRG ABUT A	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	CL BRG ABUT B
GIRDER 1	STEEL DL DEFL	0.00	0.38	0.75	1.10	1.42	1.69	1.93	2.12	2.25	2.33	2.36	2.33	2.25	2.11	1.92	1.69	1.41	1.09	0.75	0.38	0.00
	CONC SLAB DEFL	0.00	0.67	1.32	1.92	2.48	2.96	3.37	3.70	3.93	4.08	4.12	4.08	3.93	3.70	3.37	2.96	2.48	1.92	1.32	0.67	0.00
	SUPERIMPOSED DL DEFL	0.00	0.47	0.92	1.34	1.73	2.06	2.35	2.58	2.74	2.84	2.87	2.84	2.74	2.58	2.35	2.06	1.73	1.34	0.92	0.47	0.00
	TOTAL DEFLECTION	0.00	1.52	2.99	4.37	5.62	6.72	7.65	8.39	8.92	9.25	9.35	9.24	8.92	8.38	7.64	6.71	5.61	4.36	2.98	1.52	0.00
	VC ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER	0.00	1.52	2.99	4.37	5.62	6.72	7.65	8.39	8.92	9.25	9.35	9.24	8.92	8.38	7.64	6.71	5.61	4.36	2.98	1.52	0.00
GIRDER 2	STEEL DL DEFL	0.00	0.45	0.89	1.30	1.67	2.00	2.28	2.50	2.66	2.75	2.78	2.75	2.65	2.49	2.27	1.99	1.66	1.29	0.88	0.45	0.00
	CONC SLAB DEFL	0.00	0.79	1.56	2.29	2.94	3.52	4.01	4.39	4.67	4.84	4.90	4.84	4.67	4.39	4.01	3.52	2.94	2.29	1.56	0.79	0.00
	SUPERIMPOSED DL DEFL	0.00	0.37	0.72	1.05	1.35	1.62	1.84	2.02	2.15	2.22	2.25	2.22	2.15	2.02	1.84	1.62	1.35	1.05	0.72	0.37	0.00
	TOTAL DEFLECTION	0.00	1.61	3.17	4.64	5.97	7.14	8.12	8.91	9.48	9.82	9.94	9.82	9.47	8.90	8.11	7.13	5.96	4.63	3.17	1.61	0.00
	VC ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER	0.00	1.61	3.17	4.64	5.97	7.14	8.12	8.91	9.48	9.82	9.94	9.82	9.47	8.90	8.11	7.13	5.96	4.63	3.17	1.61	0.00
GIRDER 3	STEEL DL DEFL	0.00	0.43	0.84	1.23	1.58	1.89	2.15	2.36	2.51	2.60	2.63	2.60	2.51	2.35	2.14	1.88	1.57	1.22	0.83	0.42	0.00
	CONC SLAB DEFL	0.00	0.79	1.56	2.29	2.94	3.52	4.01	4.39	4.67	4.84	4.90	4.84	4.67	4.39	4.01	3.52	2.94	2.29	1.56	0.79	0.00
	SUPERIMPOSED DL DEFL	0.00	0.25	0.50	0.73	0.93	1.12	1.27	1.39	1.48	1.54	1.55	1.54	1.48	1.39	1.27	1.12	0.93	0.73	0.50	0.25	0.00
	TOTAL DEFLECTION	0.00	1.48	2.90	4.24	5.46	6.53	7.43	8.15	8.67	8.98	9.09	8.98	8.66	8.14	7.42	6.52	5.45	4.23	2.90	1.47	0.00
	VC ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER	0.00	1.48	2.90	4.24	5.46	6.53	7.43	8.15	8.67	8.98	9.09	8.98	8.66	8.14	7.42	6.52	5.45	4.23	2.90	1.47	0.00
GIRDER 4	STEEL DL DEFL	0.00	0.40	0.78	1.14	1.47	1.76	2.00	2.19	2.33	2.42	2.44	2.41	2.33	2.18	1.99	1.75	1.46	1.13	0.78	0.39	0.00
	CONC SLAB DEFL	0.00	0.79	1.56	2.29	2.94	3.52	4.01	4.39	4.67	4.84	4.90	4.84	4.67	4.39	4.01	3.52	2.94	2.29	1.56	0.79	0.00
	SUPERIMPOSED DL DEFL	0.00	0.29	0.57	0.84	1.08	1.29	1.47	1.61	1.71	1.77	1.79	1.77	1.71	1.61	1.47	1.29	1.08	0.84	0.57	0.29	0.00
	TOTAL DEFLECTION	0.00	1.48	2.92	4.26	5.49	6.57	7.47	8.19	8.72	9.03	9.14	9.03	8.71	8.19	7.46	6.56	5.48	4.26	2.91	1.48	0.00
	VC ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER	0.00	1.48	2.92	4.26	5.49	6.57	7.47	8.19	8.72	9.03	9.14	9.03	8.71	8.19	7.46	6.56	5.48	4.26	2.91	1.48	0.00
GIRDER 5	STEEL DL DEFL	0.00	0.39	0.77	1.12	1.44	1.72	1.96	2.15	2.29	2.37	2.40	2.37	2.28	2.14	1.95	1.71	1.43	1.11	0.76	0.39	0.00
	CONC SLAB DEFL	0.00	0.67	1.32	1.92	2.48	2.96	3.37	3.70	3.93	4.08	4.12	4.08	3.93	3.70	3.37	2.96	2.48	1.92	1.32	0.67	0.00
	SUPERIMPOSED DL DEFL	0.00	0.23	0.45	0.65	0.84	1.00	1.14	1.25	1.33	1.38	1.39	1.38	1.33	1.25	1.14	1.00	0.84	0.65	0.45	0.23	0.00
	TOTAL DEFLECTION	0.00	1.28	2.53	3.69	4.75	5.68	6.47	7.09	7.55	7.82	7.91	7.82	7.54	7.09	6.46	5.67	4.74	3.68	2.52	1.28	0.00
	VC ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER	0.00	1.28	2.53	3.69	4.75	5.68	6.47	7.09	7.55	7.82	7.91	7.82	7.54	7.09	6.46	5.67	4.74	3.68	2.52	1.28	0.00



CAMBER DIAGRAM

NOT TO SCALE

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

GIRDER DETAILS (SHEET 1 OF 2)

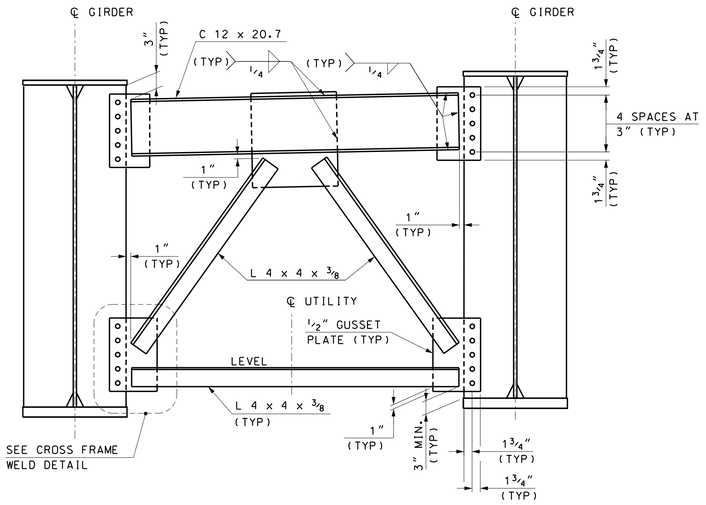
BRIDGE SHEET 21 OF 35

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	TWP	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

FILE NUMBER

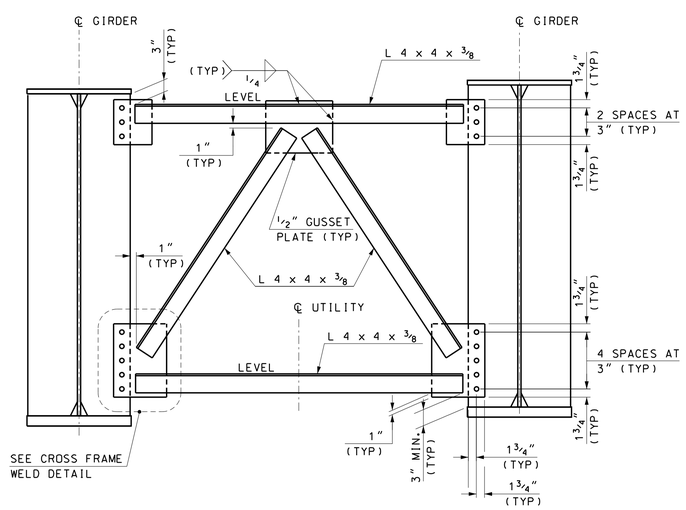
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174059	15402GirderDetls01	AS NOTED	REV. DATE		X-A002(794)	26	58



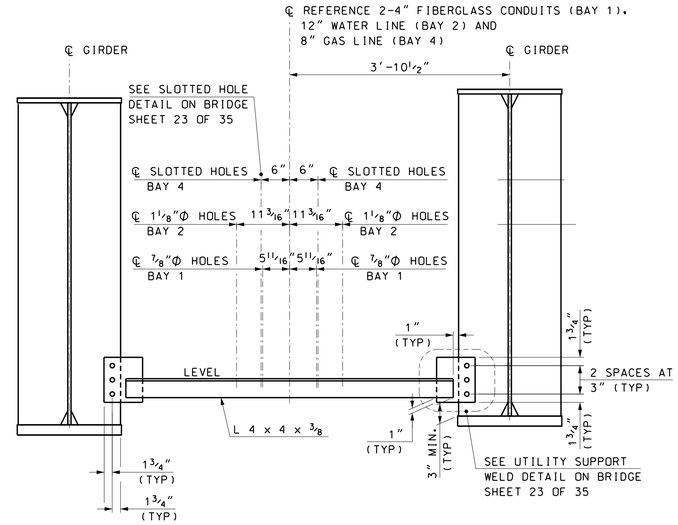
TYPICAL END CROSS FRAME

SCALE: 3/4" = 1'-0"



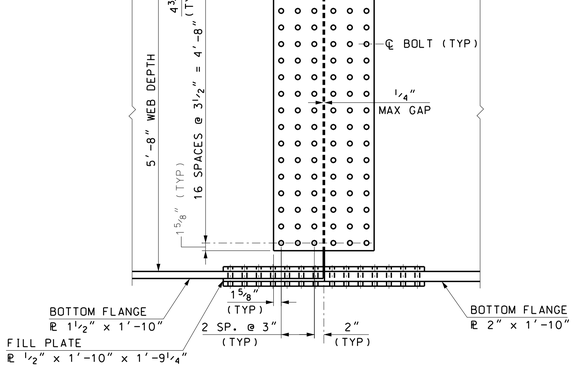
TYPICAL INTERMEDIATE CROSS FRAME

SCALE: 3/4" = 1'-0"

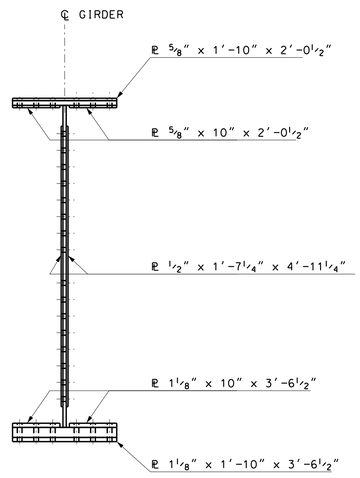


TYPICAL UTILITY SUPPORT

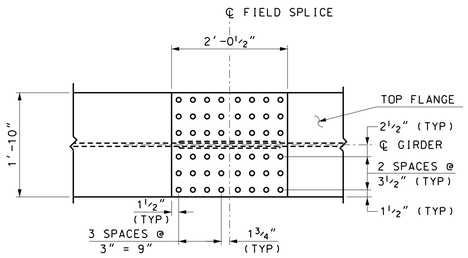
SCALE: 3/4" = 1'-0"



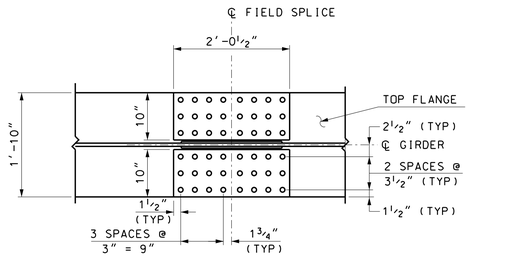
ELEVATION



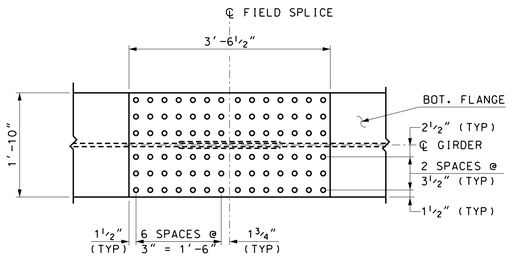
SECTION



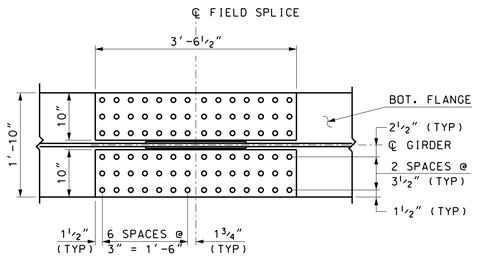
PLAN TOP FLANGE TOP SIDE



PLAN TOP FLANGE WEB SIDE



PLAN BOTTOM FLANGE BOTTOM SIDE



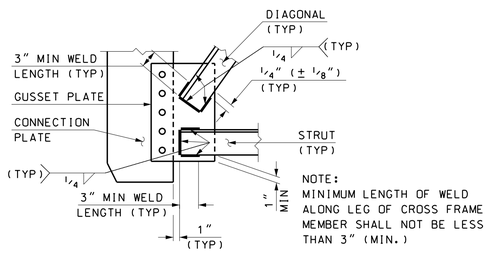
PLAN BOTTOM FLANGE WEB SIDE

FIELD SPLICE DETAILS

SCALE: 3/4" = 1'-0"

NOTE:

HOLES FOR FIELD SPLICES SHALL BE DRILLED IN THE SHOP WHILE GIRDERS ARE ASSEMBLED TO FIT BEARING ELEVATIONS.



CROSS FRAME WELD DETAIL

SCALE: 1" = 1'-0"

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402GirderDetls02	AS NOTED

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

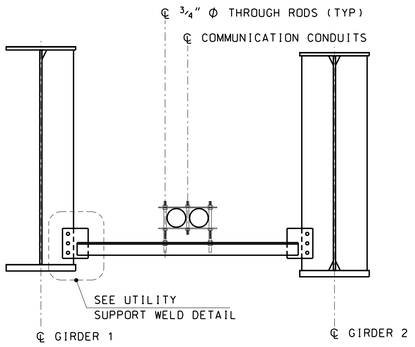
GIRDER DETAILS (SHEET 2 OF 2)

BRIDGE SHEET 22 OF 35

FILE NUMBER

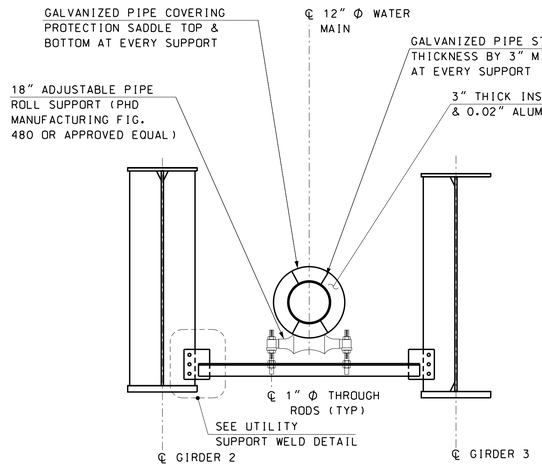
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TWP	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	27	58



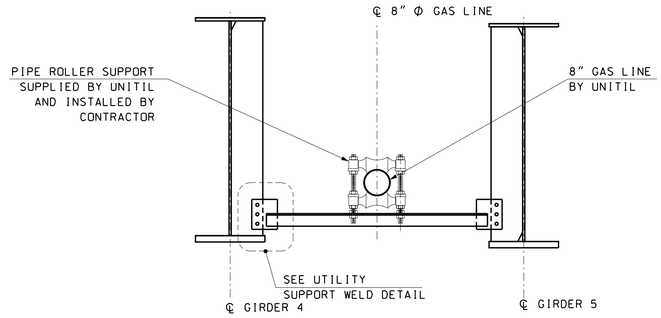
COMMUNICATION CONDUIT DETAILS

SCALE: 1/2" = 1'-0"



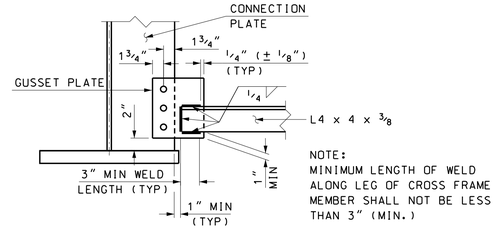
WATER MAIN DETAILS

SCALE: 1/2" = 1'-0"



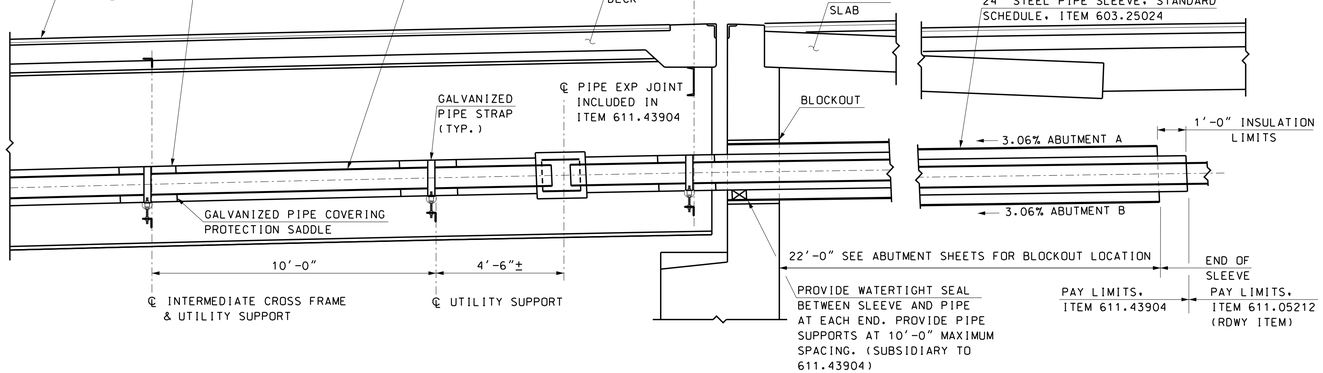
GAS LINE DETAILS

SCALE: 1/2" = 1'-0"



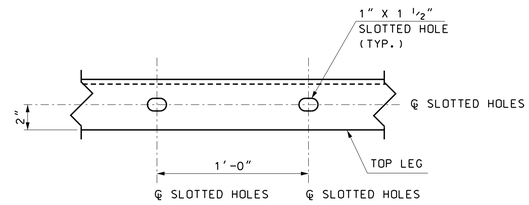
UTILITY SUPPORT WELD DETAIL

SCALE: 1" = 1'-0"



WATER MAIN DETAIL

SCALE: 3/8" = 1'-0"



SLOTTED HOLE DETAIL

NOT TO SCALE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

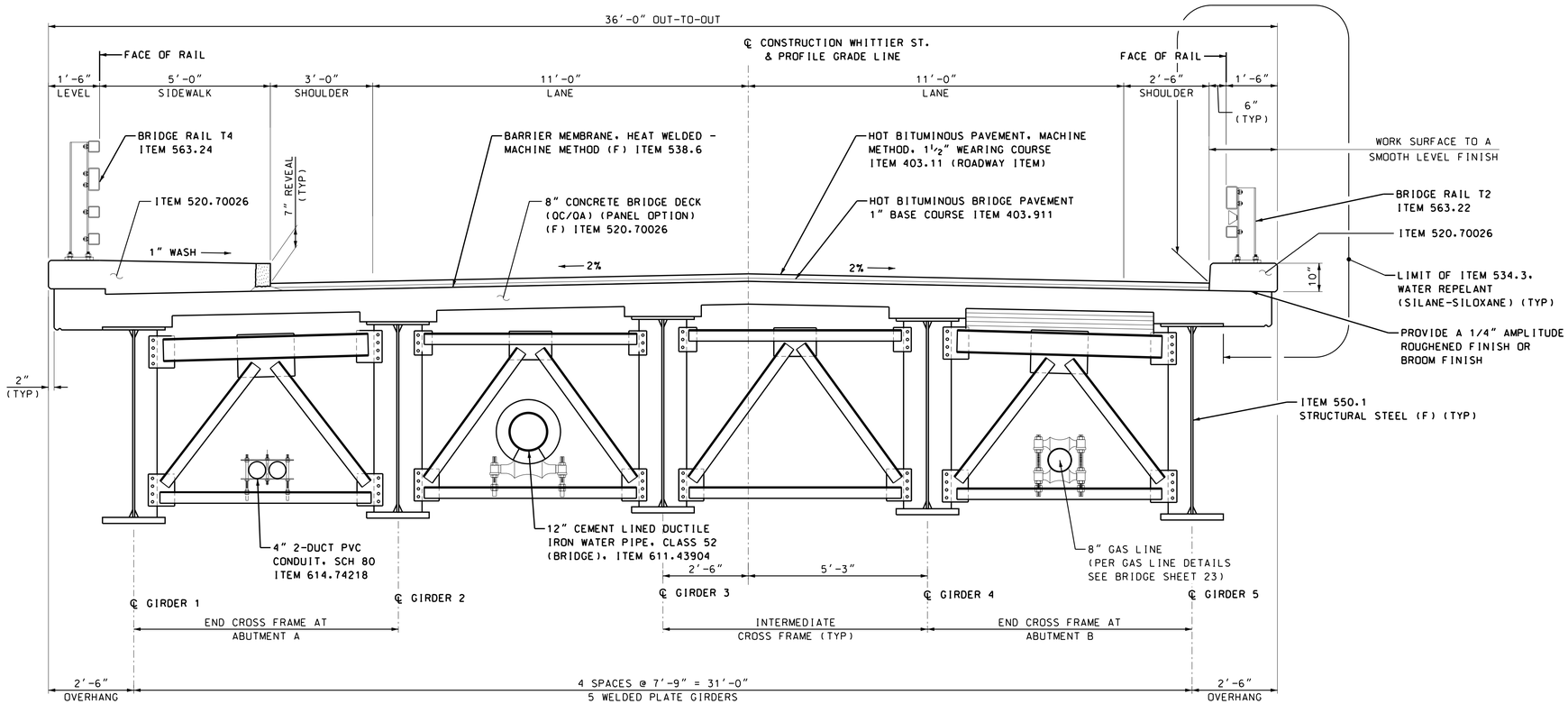
SUPERSTRUCTURE DETAILS

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TWP	11/15	CHECKED	KSW	11/15
	DRAWN	DWM	11/15	CHECKED	KSW	11/15
	QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174059	15402SuperDetls01	AS NOTED	REV. DATE		X-A002(794)	28	58

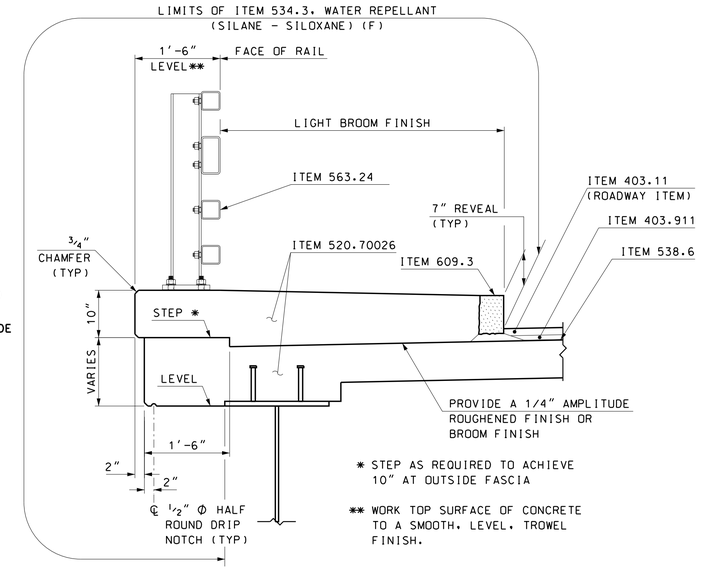
BRIDGE SHEET 23 OF 35

FILE NUMBER



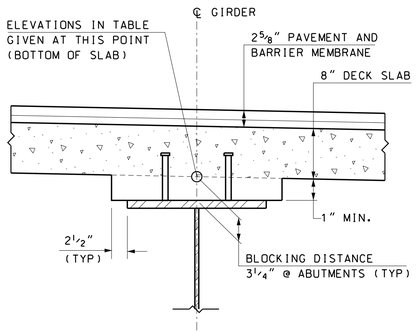
TYPICAL DECK SECTION

SCALE: 1/2" = 1'-0"



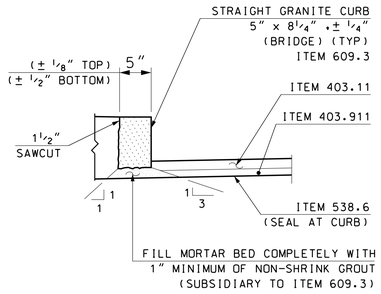
FASCIA DETAIL

SCALE: 3/4" = 1'-0"



HAUNCH DETAIL

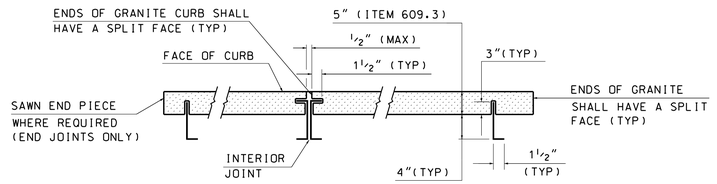
NOT TO SCALE



CURB DETAIL

NOT TO SCALE

NOTE:
CURB ANCHORS SHALL BE 1/4" Ø RODS, TWO PER STONE, STAGGERED IN ADJACENT STONES AND COUNTER SUNK. (SUBSIDIARY TO ITEM 609.3)



CURB ANCHOR DETAIL

NOT TO SCALE

ELEVATIONS AT BOTTOM OF CONCRETE DECK SLAB (FT)																						
LOCATION	CL BRG ABUT A	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	CL BRG ABUT B
CL GIRDER 1	59.45	59.79	60.12	60.45	60.78	61.09	61.39	61.68	61.96	62.23	62.48	62.72	62.94	63.15	63.35	63.54	63.71	63.88	64.04	64.19	64.34
CL GIRDER 2	59.60	59.94	60.28	60.61	60.94	61.25	61.56	61.85	62.13	62.39	62.65	62.88	63.11	63.32	63.52	63.70	63.88	64.04	64.20	64.35	64.50
CL GIRDER 3	59.76	60.09	60.42	60.74	61.06	61.37	61.66	61.95	62.23	62.49	62.74	62.98	63.21	63.42	63.62	63.81	64.00	64.17	64.33	64.49	64.65
CL GIRDER 4	59.70	60.04	60.37	60.70	61.02	61.33	61.63	61.92	62.19	62.46	62.71	62.95	63.17	63.38	63.58	63.77	63.95	64.12	64.29	64.44	64.60
CL GIRDER 5	59.55	59.87	60.18	60.50	60.80	61.10	61.39	61.67	61.94	62.20	62.45	62.69	62.92	63.14	63.35	63.55	63.74	63.92	64.10	64.27	64.44

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

TYPICAL SECTION AND DECK SLAB DETAILS

BRIDGE SHEET 24 OF 35

FILE NUMBER

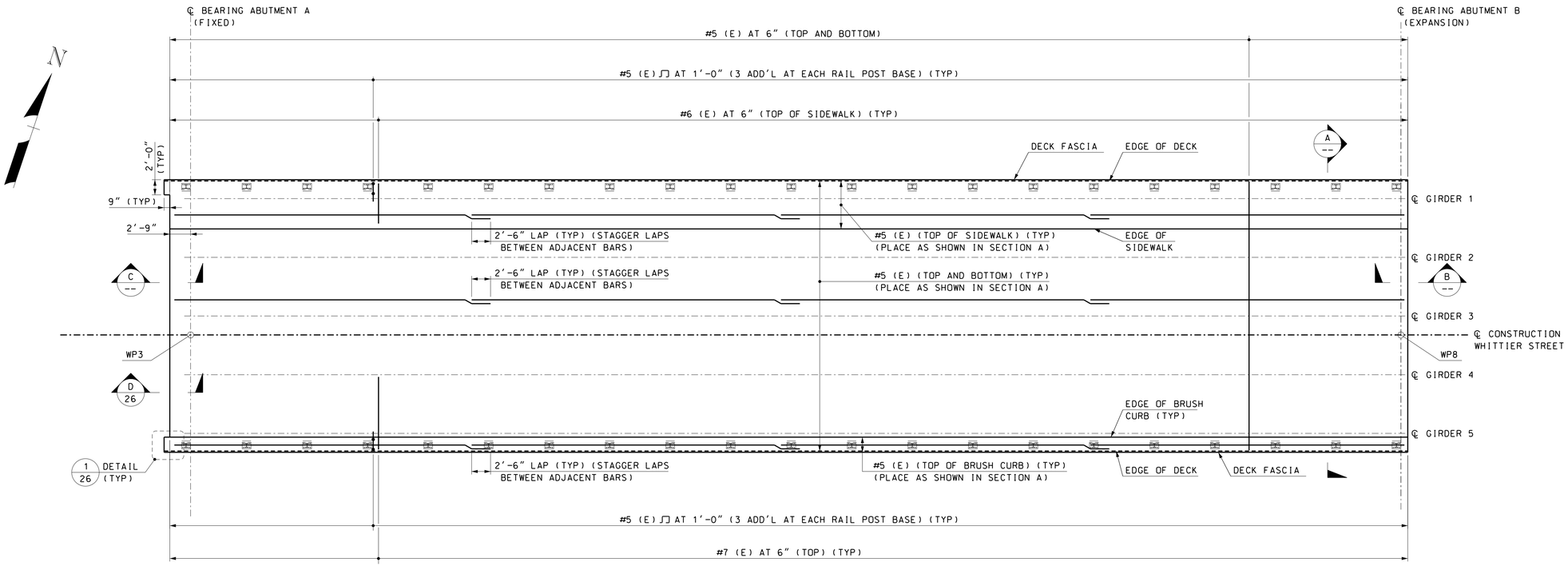
REVISIONS AFTER PROPOSAL			BY	DATE
		DESIGNED	TWP	11/15
		DRAWN	DWM	11/15
		QUANTITIES	TWP	11/15

	BY	DATE
CHECKED	KSW	11/15
CHECKED	KSW	11/15
CHECKED	HNH	11/15

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

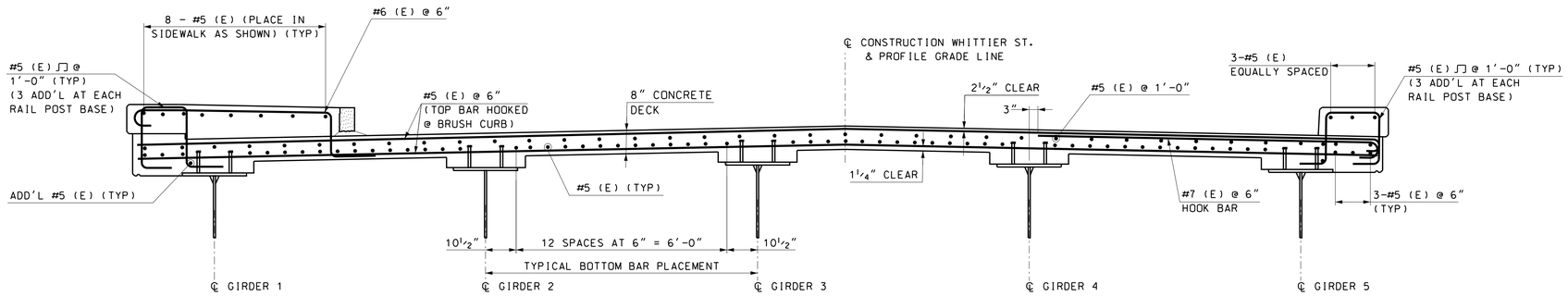
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402DeckSect	AS NOTED

ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	29	58



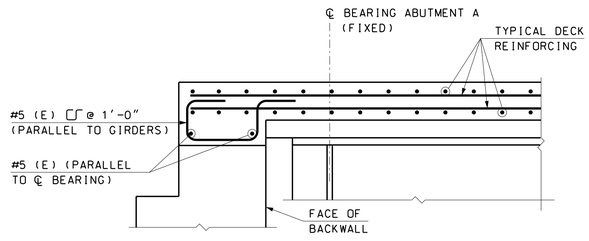
DECK PLAN

SCALE: 1/8" = 1'-0"



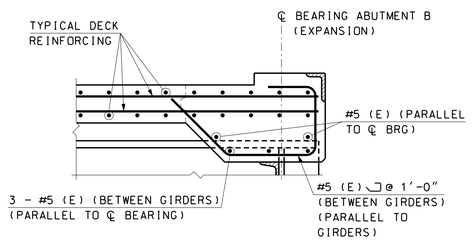
DECK REINFORCING SECTION A --

SCALE: 1/2" = 1'-0"



SECTION C --

SCALE: 3/4" = 1'-0"



SECTION B --

SCALE: 3/4" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

DECK PLAN AND SECTIONS

BRIDGE SHEET 25 OF 35

FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	TWP	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

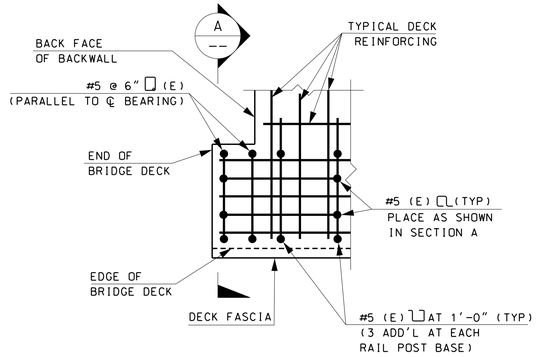
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402DeckBars	AS NOTED

ISSUE DATE —
REV. DATE

FEDERAL PROJECT NO. X-A002(794)

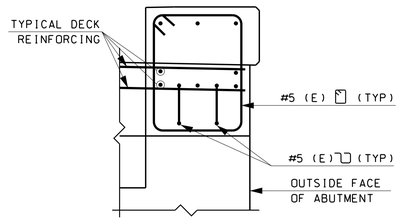
SHEET NO. 30

TOTAL SHEETS 58

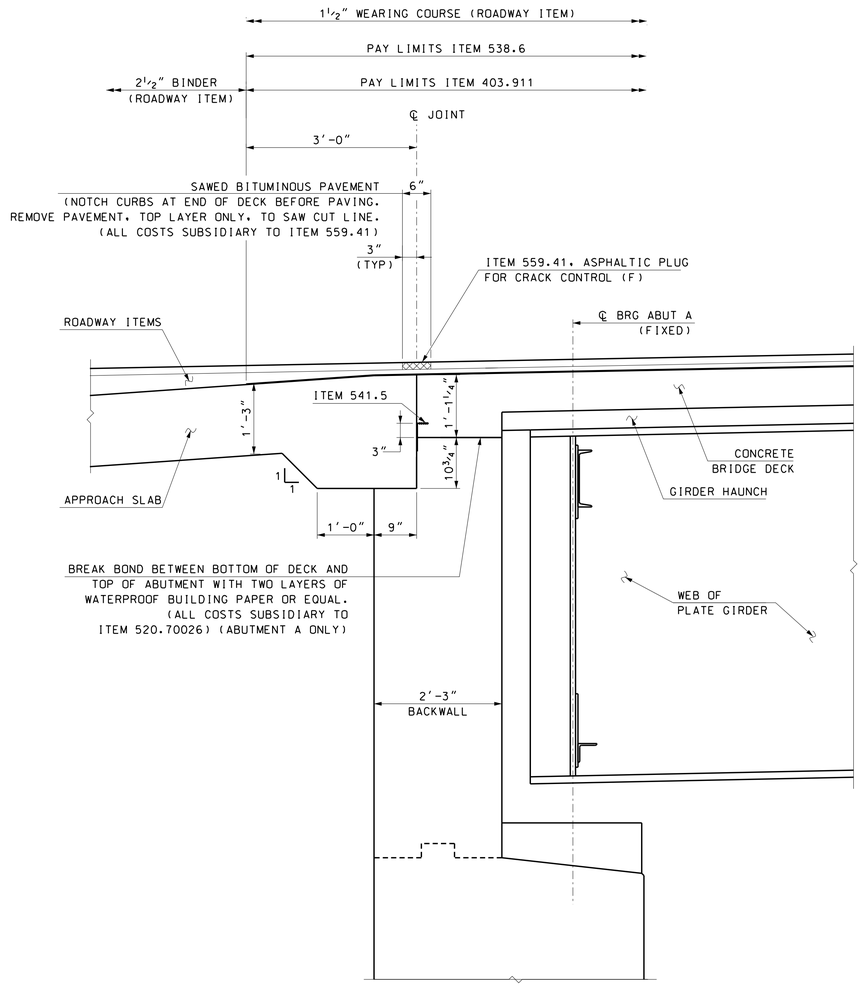


END OF DECK PLAN

DETAIL 1/25
SCALE: 3/4" = 1'-0"



SECTION A/--
SCALE: 3/4" = 1'-0"



SECTION D/25
SCALE: 3/4" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

DECK DETAILS 1

BRIDGE SHEET 26 OF 35

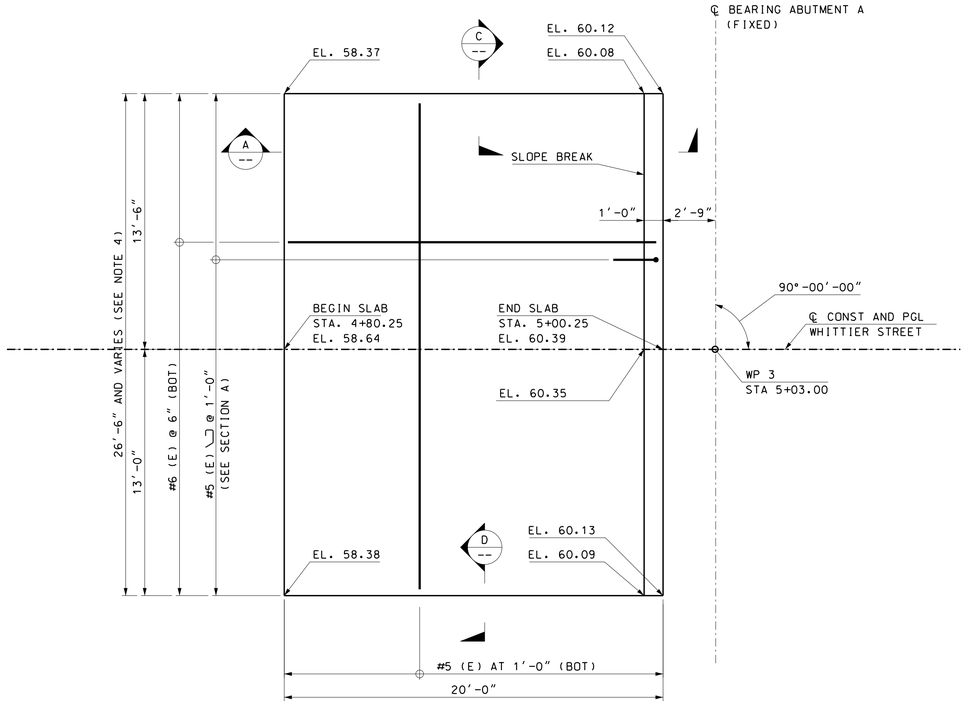
FILE NUMBER

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

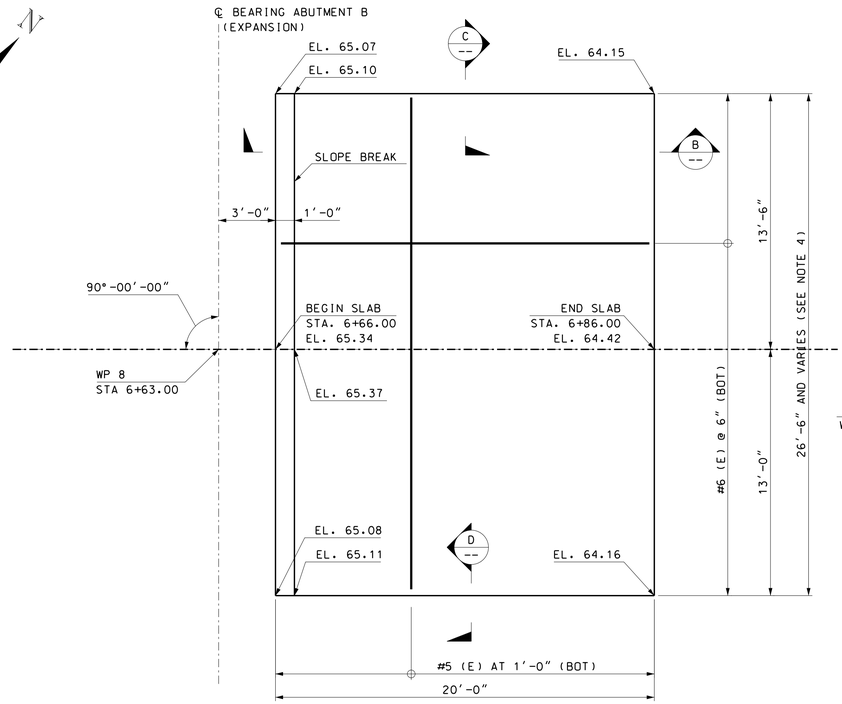
REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
		DESIGNED	TWP	11/15	CHECKED	KSW	11/15
		DRAWN	DWM	11/15	CHECKED	KSW	11/15
		QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402DeckDetls01	AS NOTED

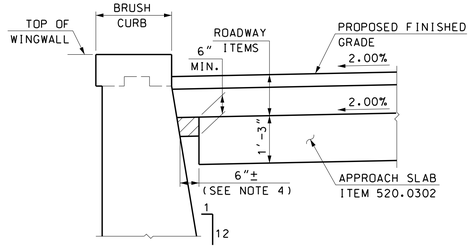
ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	31	58



ABUTMENT A



ABUTMENT B

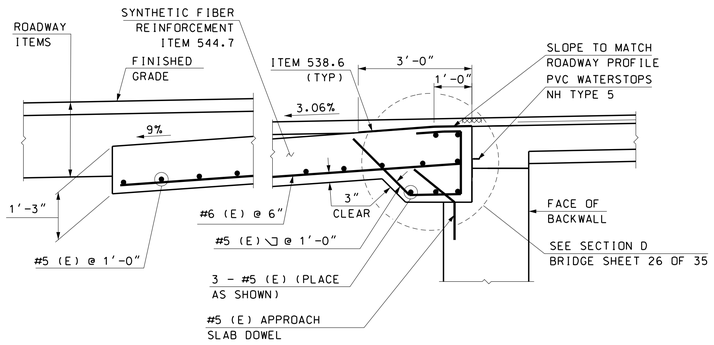


APPROACH SLAB AT WINGWALL

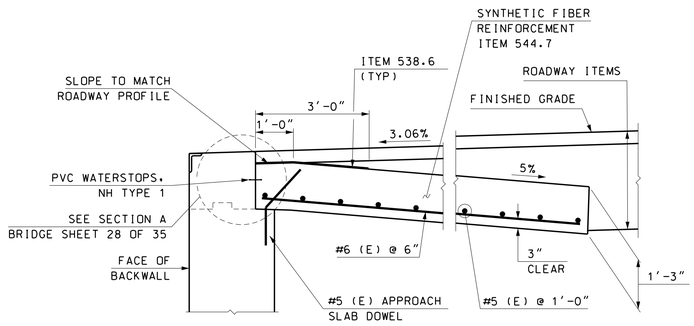
SECTION D
SCALE: 1/2" = 1'-0"

APPROACH SLAB PLAN

SCALE: 1/4" = 1'-0"



SECTION A
SCALE: 1/2" = 1'-0"



SECTION B
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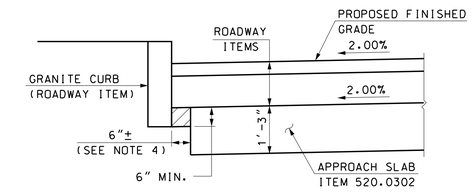


APPROACH SLAB AT GRANITE CURB

SECTION C
SCALE: 1/2" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

APPROACH SLABS

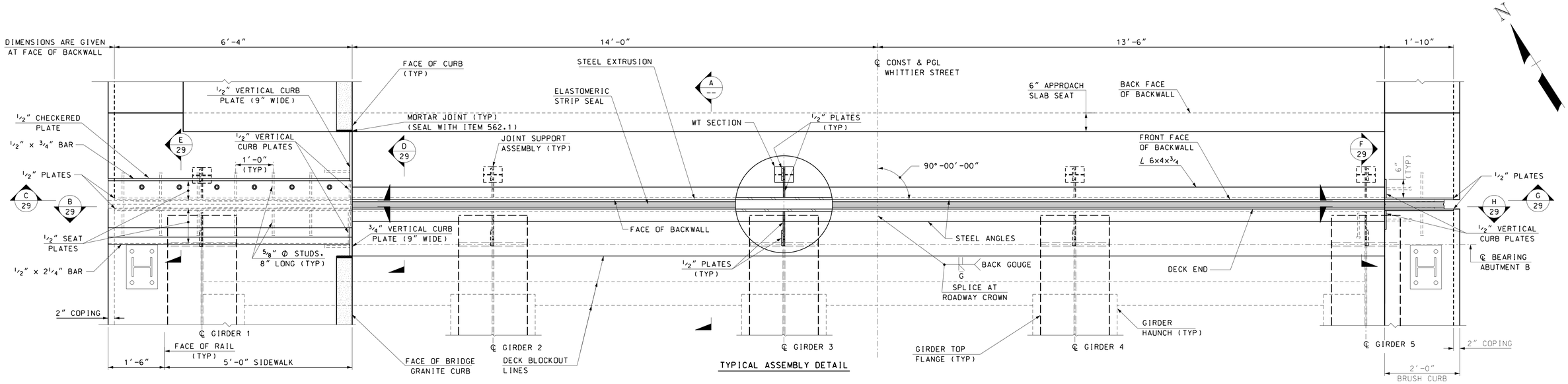
BRIDGE SHEET 27 OF 35

REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
		DESIGNED	RWM	11/15	CHECKED	KSW	11/15
		DRAWN	DWM	11/15	CHECKED	KSW	11/15
		QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

FILE NUMBER

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

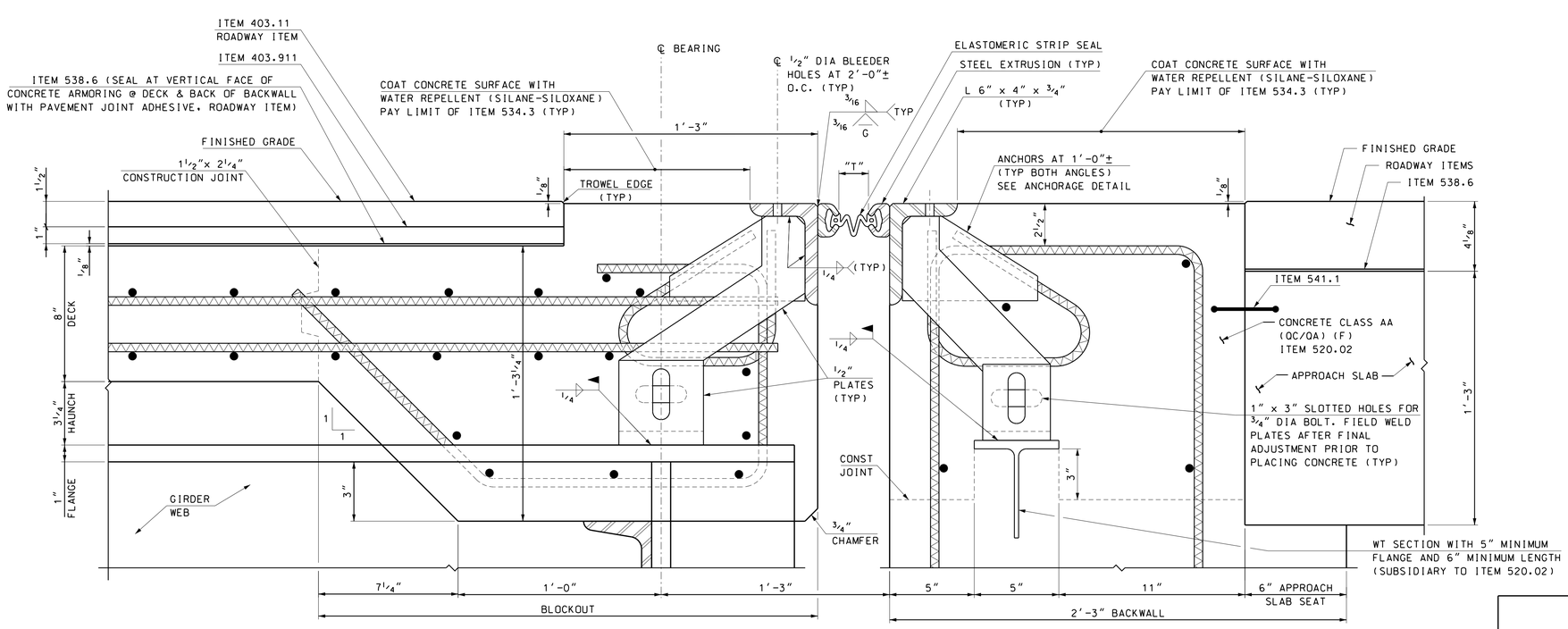
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174059	15402AppSlab	AS NOTED	REV. DATE		X-A002(794)	32	58



TYPICAL ASSEMBLY DETAIL

PLAN VIEW

SCALE: 3/4" = 1'-0"



SECTION A--

SCALE: 3" = 1'-0"

TEMPERATURE ADJUSTMENT TABLE

TEMPERATURE	A2R-400 "T"	SE-400 "T"
20°F	2.375"	2.125"
35°F	2.125"	1.875"
50°F	2.000"	1.625"
65°F	1.750"	1.500"
80°F	1.500"	1.375"
95°F	1.375"	1.125"

DIMENSION "T" IS MEASURED PERPENDICULAR TO ABUTMENT BACKWALL

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

EXPANSION JOINT DETAILS (SHEET 1 OF 2)

BRIDGE SHEET 28 OF 35

FILE NUMBER

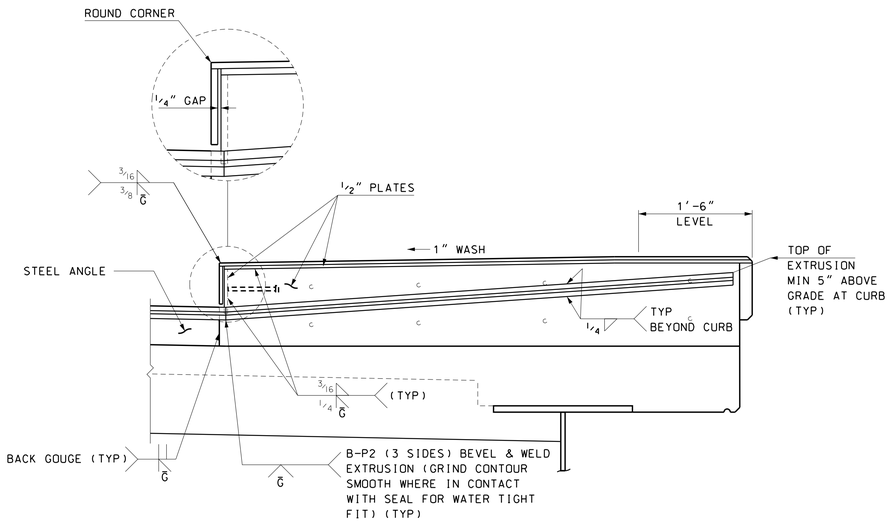
REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	HNH	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

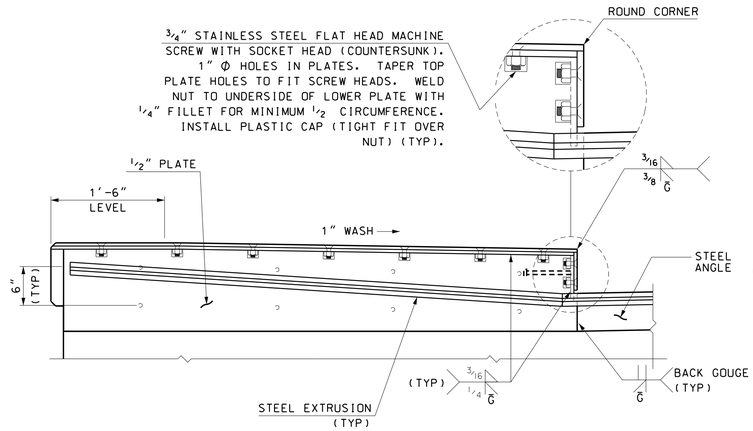
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	15402InDetls01	AS NOTED

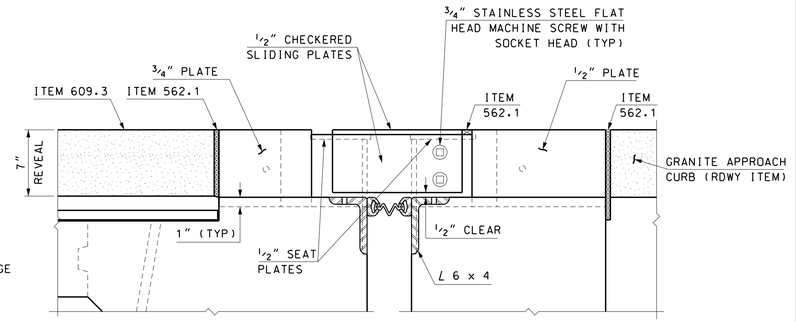
ISSUE DATE	==	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	33	58



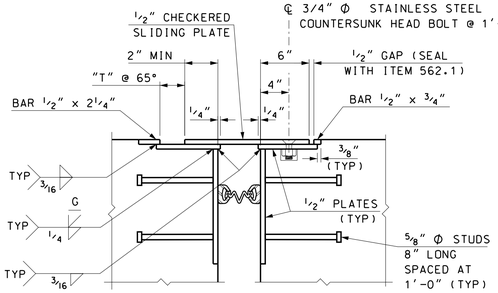
SECTION B
SCALE: 1" = 1'-0" 28



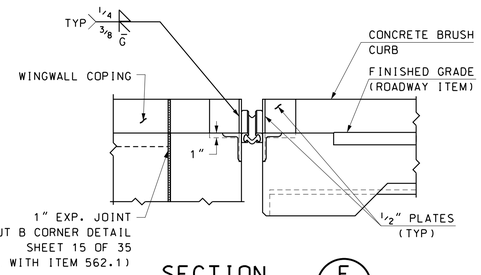
SECTION C
SCALE: 1" = 1'-0" 28



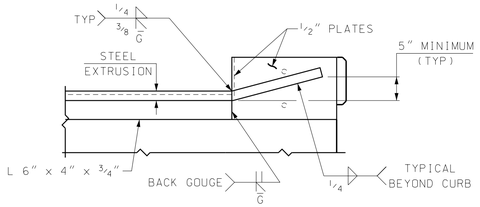
SECTION D
SCALE: 1 1/2" = 1'-0" 28



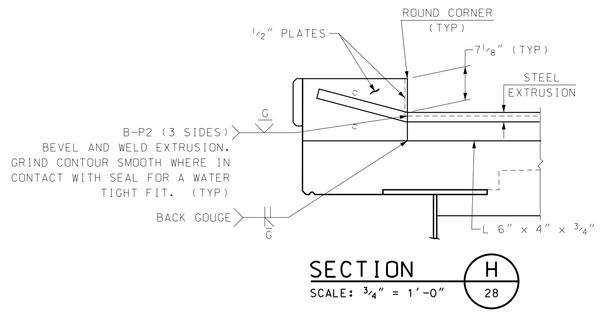
SECTION E
SCALE: 1 1/2" = 1'-0" 28



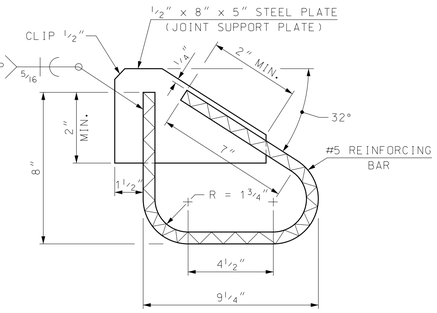
SECTION F
SCALE: 3/4" = 1'-0" 28



SECTION G
SCALE: 3/4" = 1'-0" 28



SECTION H
SCALE: 3/4" = 1'-0" 28



ANCHORAGE DETAIL
SCALE: 3" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

EXPANSION JOINT DETAILS (SHEET 2 OF 2)

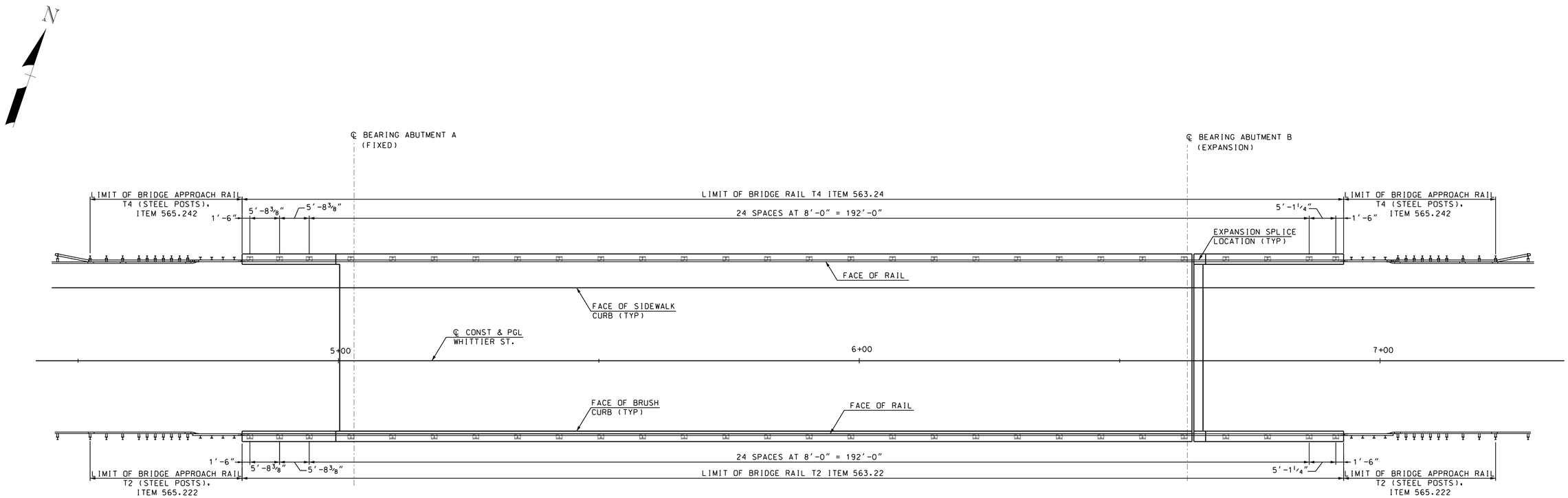
BRIDGE SHEET 29 OF 35

FILE NUMBER

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	HNH	11/15	CHECKED	KSW	11/15
DRAWN	DWM	11/15	CHECKED	KSW	11/15
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174059	15402\tDetls02	AS NOTED	REV. DATE		X-A002(794)	34	58



BRIDGE RAIL LAYOUT PLAN

SCALE: 1" = 10'-0"

NOTE:
RAIL EXPANSION SPLICES ARE REQUIRED OVER THE BRIDGE DECK EXPANSION JOINT.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

RAIL LAYOUT PLAN

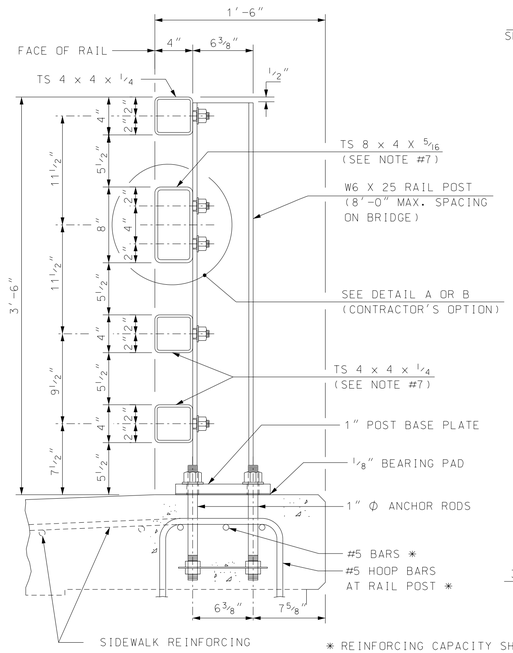
BRIDGE SHEET 30 OF 35

FILE NUMBER

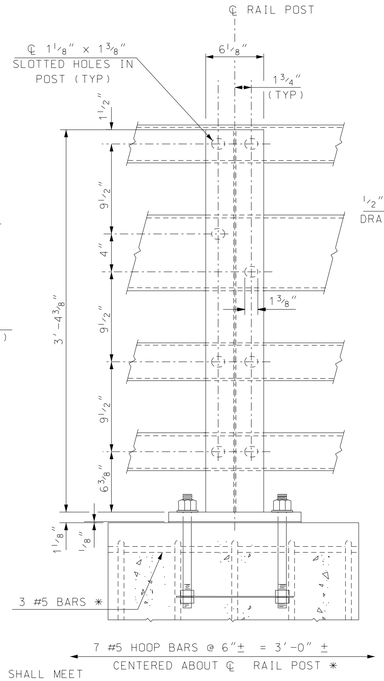
REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
			DESIGNED	TWP	11/15	CHECKED	KSW 11/15
			DRAWN	DWM	11/15	CHECKED	KSW 11/15
			QUANTITIES	TWP	11/15	CHECKED	HNH 11/15

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	—	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174055	15402RailLayout	AS NOTED	REV. DATE		X-A002(794)	35	58

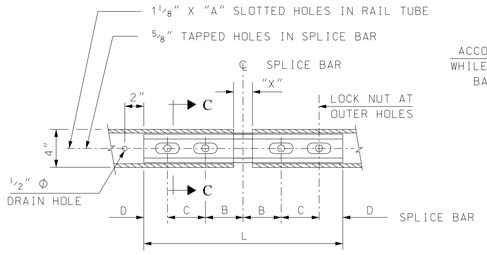


SECTION VIEW



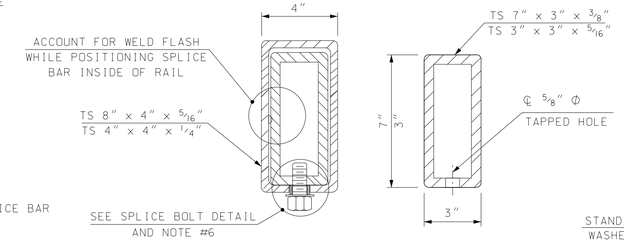
BACK ELEVATION VIEW

* REINFORCING CAPACITY SHALL MEET OR EXCEED THAT SHOWN



RAIL SPLICE (BOTTOM VIEW)

SCALE: 1 1/2" = 1'-0"



SECTION C-C

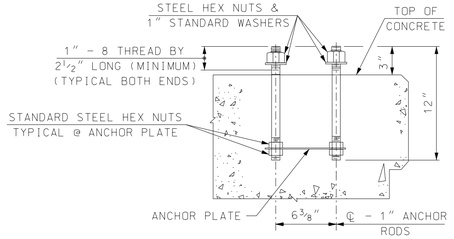
SPLICE BAR SECTION

RAIL SPLICE DETAILS

SCALE: 3" = 1'-0"

SPLICE BOLT DETAIL

SCALE: 6" = 1'-0"



POST ANCHOR ASSEMBLY

SCALE: 1 1/2" = 1'-0"

RAIL NOTES

(1) ITEM 563.24, BRIDGE RAIL T4, SHALL INCLUDE POSTS, BASE PLATES, ANCHOR PLATES, ANCHOR RODS, PREFORMED PADS, RAIL ASSEMBLY BOLTS, NUTS, WASHERS, STUDS, STRUCTURAL TUBING, SPLICE BARS, PIPE SPACERS, ALL APPURTENANCES, AND GALVANIZING.

(2) BRIDGE RAIL POSTS SHALL BE SET NORMAL (90 DEGREES) TO THE PROFILE GRADE, EXCEPT ON GRADES OVER 5% WHERE POSTS SHALL BE SET VERTICAL.

(3) ENDS OF RAIL TUBE SECTIONS SHALL BE SAWED OR MILLED AND SHALL BE TRUE AND SMOOTH. ALL CUT EDGES OF ALL MATERIAL SHALL BE GROUND SMOOTH.

(4) EACH PIECE OF RAIL TUBING SHALL BE ATTACHED TO A MINIMUM OF THREE (3) POSTS.

(5) BOLT HOLES SHALL BE DRILLED OR PUNCHED. FLAME CUTTING MAY BE USED TO FINISH SLOTTED HOLES IF MECHANICALLY GUIDED.

(6) AT INTERIOR SPLICES, PIPE SPACERS SHALL BE USED ON ONLY ONE SIDE OF THE SPLICE TO ALLOW MOVEMENT ON THAT SIDE. ALL RAILS IN A SPLICE SHALL RECEIVE THE SAME TREATMENT. AT END SPLICES AND INTERIOR SPLICES OVER DECK EXPANSION JOINTS, PIPE SPACERS SHALL BE USED ON BOTH SIDES OF THE SPLICE TO ALLOW MOVEMENT ON EACH SIDE.

(7) MILL OR SHOP TRANSVERSE WELDS SHALL NOT BE PERMITTED ON ANY RAIL ELEMENT. RAIL ELEMENTS USED ON CURVES SHALL USE 3/8" WALL TUBES AND SHALL BE SHOP FORMED TO THE REQUIRED CURVATURE.

(8) NO PUNCHING, DRILLING, CUTTING OR WELDING SHALL BE PERMITTED AFTER GALVANIZING, EXCEPT AS ALLOWED IN DETAILS A AND B. DAMAGED AREAS OF GALVANIZING SHALL BE THOROUGHLY CLEANED, PRETREATED, AND PAINTED WITH TWO COATS OF ORGANIC ZINC-RICH GALVANIZING REPAIR PAINT, HAVING MIN. 94% ZINC BY WEIGHT, TO A THICKNESS EQUAL TO THE ORIGINAL COATING ACCORDING TO THE STANDARD SPECIFICATIONS AND ASTM A780.

(9) NUTS FOR 1" Ø THREADED ANCHOR RODS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.

(10) THREADS FOR ANCHOR RODS MAY BE ROLLED OR CUT. IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, ROD DIAMETER SHALL NOT BE LESS THAN ROOT DIAMETER OF THREADS.

MATERIAL NOTES

(11) STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B, STRUCTURAL STEEL TUBING. RAIL TUBING SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH REQUIREMENTS OF 15 FT. LBS. AT 0° F. FOR ASTM A500, GRADE B, THE TEST SAMPLES SHALL BE TAKEN AFTER FORMING THE TUBES. CHARPY V-NOTCH IS NOT REQUIRED FOR SPLICE TUBES.

(12) RAIL POSTS AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GR 50, EXCEPT ANCHOR PLATES MAY BE ASTM A36.

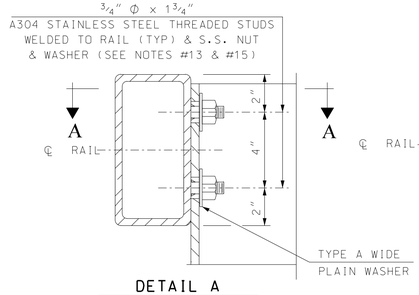
(13) THREADED STUDS AND MATCHING NUTS FOR RAIL-TO-POST ATTACHMENT (DETAIL A) SHALL CONFORM TO ASTM A276 TYPE 304, STAINLESS STEEL, AND SHALL BE TORQUE TESTED PER AWS D1.5, 7.7.1. DETAIL B BOLTS SHALL BE ASTM A325 OR A449. ALL OTHER BOLTS AND NUTS SHALL CONFORM TO ASTM A307 AND ASTM 563 GRADE A RESPECTIVELY OR BETTER, EXCEPT THAT ASTM A307 NUTS MAY BE USED ON THE BOTTOM OF ANCHOR ASSEMBLY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.22. ANCHOR RODS SHALL CONFORM TO ASTM A449.

(14) ALL STEEL COMPONENTS (EXCEPT STAINLESS) SHALL BE GALVANIZED AFTER FABRICATION IN CONFORMANCE TO AASHTO M232 (ASTM A153) AND AASHTO M111 (ASTM A123). THE GALVANIZING KETTLE SHALL HAVE 0.05 TO 0.09 PERCENT NICKEL. GALVANIZED SURFACES SHALL HAVE A UNIFORM APPEARANCE AND GALVANIZED MATERIAL SHALL BE PROPERLY STORED. IF PAINTING IS REQUIRED SEE SPECIAL PROVISIONS FOR 708.

(15) DETAIL A STUDS SHALL BE WELDED ON AFTER TUBES ARE GALVANIZED BY SPOT GRINDING OFF GALVANIZING, WELDING ON STUDS, THEN TOUCH UP GALVANING PER NOTE #8 ABOVE.

(16) PREFORMED BEARING PADS (1/8" THICK) SHALL CONFORM TO AASHTO M251.

(17) THIS BRIDGE RAIL SYSTEM WAS SUCCESSFULLY CRASH TESTED FOR AASHTO PL2 IN 1997 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM.

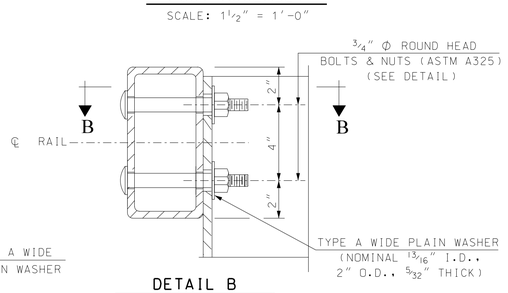


DETAIL A

SCALE: 3" = 1'-0"

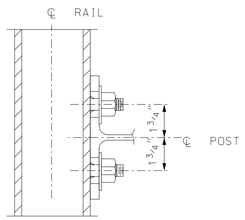
POST ASSEMBLY

SCALE: 1 1/2" = 1'-0"



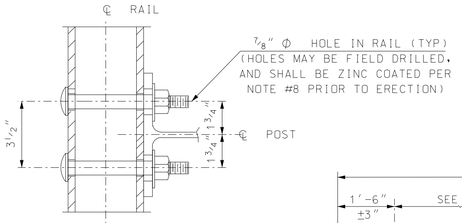
DETAIL B

SCALE: 3" = 1'-0"



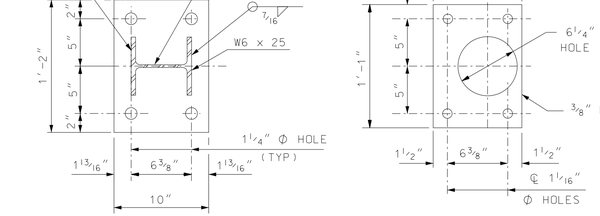
SECTION A-A

SCALE: 3" = 1'-0"



SECTION B-B

SCALE: 3" = 1'-0"

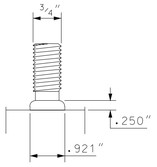


POST BASE PLATE

SCALE: 1 1/2" = 1'-0"

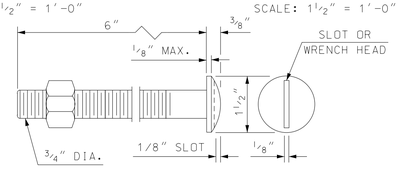
ANCHOR PLATE

SCALE: 1 1/2" = 1'-0"



STUD WELD DETAIL

SCALE: 6" = 1'-0"

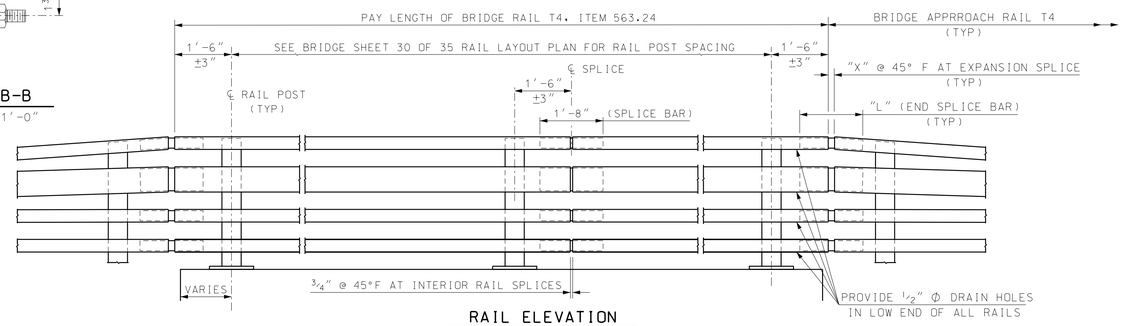


A325 ROUND HEAD BOLT DETAIL

SCALE: 6" = 1'-0"

SPLICE BAR DIMENSION TABLE							
T	A	B	C	D	X	L	
INTERIOR	2 1/2"	4"	4"	2"	3/4"	1'-8"	
≤ 3 1/4"	2 1/2"	4"	4"	2"	2"	1'-8"	*
3 1/4" <T≤ 5 1/4"	3 1/2"	5"	5"	2 1/2"	3"	2'-1"	*

T = TOTAL MOVEMENT OF BRIDGE
* = END SPLICE BAR



RAIL ELEVATION

SCALE: 1/2" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

T4 STEEL BRIDGE RAIL

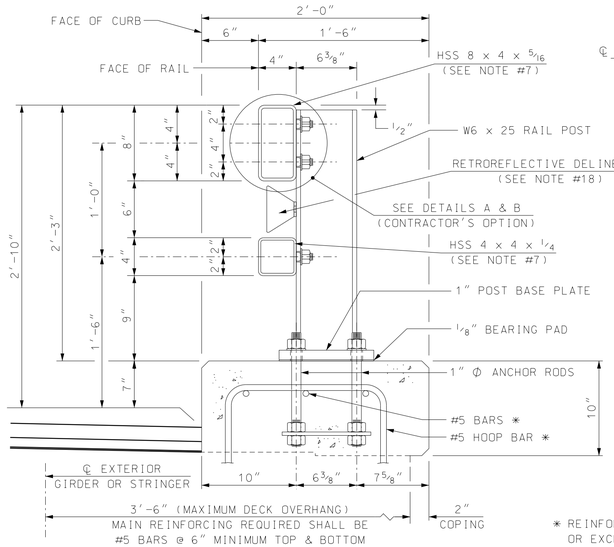
BRIDGE SHEET 31 OF 35

FILE NUMBER

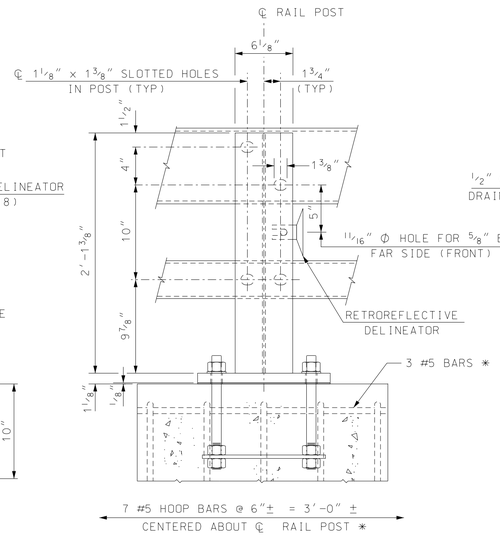
REVISIONS AFTER PROPOSAL	BY	DATE

DESIGNED	NETC/JSZ	3/02	CHECKED	NHDOT	
DRAWN	PJP	5/08	CHECKED	JSZ	10/05
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
ISSUE DATE					
REV. DATE					

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174059	t4_bt-rail	AS NOTED	X-A002(794)	36	58



SECTION VIEW

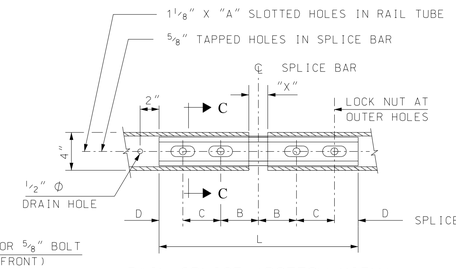


BACK ELEVATION VIEW

* REINFORCING CAPACITY SHALL MEET OR EXCEED THAT SHOWN

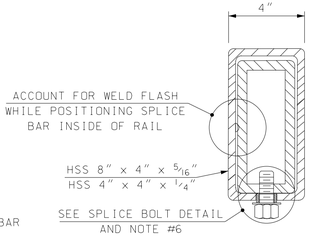
POST ASSEMBLY

SCALE: 1 1/2" = 1'-0"

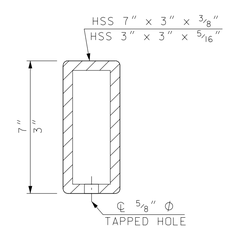


RAIL SPLICE (BOTTOM VIEW)

SCALE: 1 1/2" = 1'-0"



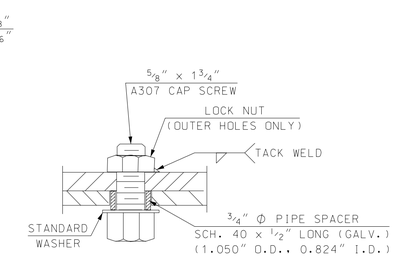
SECTION C-C



SPLICE BAR SECTION

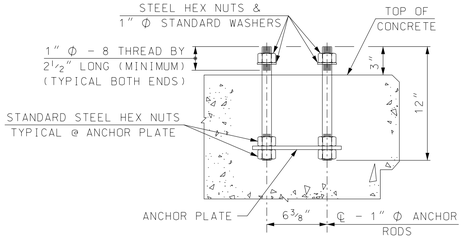
RAIL SPLICE DETAILS

SCALE: 3" = 1'-0"



SPLICE BOLT DETAIL

SCALE: 6" = 1'-0"



POST ANCHOR ASSEMBLY

SCALE: 1 1/2" = 1'-0"

RAIL NOTES

(1) ITEM 563.22, BRIDGE RAIL T2, SHALL INCLUDE POSTS, BASE PLATES, ANCHOR PLATES, ANCHOR RODS, PREFORMED PADS, RAIL ASSEMBLY BOLTS, NUTS, WASHERS, STUDS, STRUCTURAL TUBING, SPLICE BARS, PIPE SPACERS, ALL APPURTENANCES, AND GALVANIZING.

(2) BRIDGE RAIL POSTS SHALL BE SET NORMAL (90 DEGREES) TO THE PROFILE GRADE, EXCEPT ON GRADES OVER 5% WHERE POSTS SHALL BE SET VERTICAL.

(3) ENDS OF RAIL TUBE SECTIONS SHALL BE SAWED OR MILLED AND SHALL BE TRUE AND SMOOTH. ALL CUT EDGES OF ALL MATERIAL SHALL BE GROUND SMOOTH.

(4) EACH PIECE OF RAIL TUBING SHALL BE ATTACHED TO A MINIMUM OF THREE (3) POSTS.

(5) BOLT HOLES SHALL BE DRILLED OR PUNCHED. FLAME CUTTING MAY BE USED TO FINISH SLOTTED HOLES IF MECHANICALLY GUIDED.

(6) AT INTERIOR SPLICES, PIPE SPACERS SHALL BE USED ON ONLY ONE SIDE OF THE SPLICE TO ALLOW MOVEMENT ON THAT SIDE. THE TOP AND BOTTOM RAIL SHALL RECEIVE THE SAME TREATMENT. AT END SPLICES AND INTERIOR SPLICES OVER DECK EXPANSION JOINTS, PIPE SPACERS SHALL BE USED ON BOTH SIDES OF THE SPLICE TO ALLOW MOVEMENT ON EACH SIDE.

(7) MILL OR SHOP TRANSVERSE WELDS SHALL NOT BE PERMITTED ON ANY RAIL ELEMENT. RAIL ELEMENTS USED ON CURVES SHALL USE 3/8" WALL TUBES AND SHALL BE SHOP FORMED TO THE REQUIRED CURVATURE.

(8) NO PUNCHING, DRILLING, CUTTING OR WELDING SHALL BE PERMITTED AFTER GALVANIZING, EXCEPT AS ALLOWED IN DETAILS A AND B, AND FOR INSTALLATION OF DELINEATORS. DAMAGED AREAS OF GALVANIZING SHALL BE THOROUGHLY CLEANED, PRETREATED, AND PAINTED WITH TWO COATS OF ORGANIC ZINC-RICH GALVANIZING REPAIR PAINT, HAVING A MINIMUM 94% ZINC BY WEIGHT, TO A THICKNESS EQUAL TO THE ORIGINAL COATING ACCORDING TO THE STANDARD SPECIFICATIONS AND ASTM A780.

(9) NUTS FOR 1" Ø THREADED ANCHOR RODS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.

(10) THREADS FOR ANCHOR RODS MAY BE ROLLED OR CUT. IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, ROD DIAMETER SHALL NOT BE LESS THAN ROOT DIAMETER OF THREADS.

(11) THIS BRIDGE RAIL SYSTEM WAS SUCCESSFULLY CRASH TESTED FOR AASHTO PL2 IN 1994 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM AND ACCEPTED AS NCHRP 350 TL-4 PER FHWA LETTER HMHS-B50, MARCH 11, 1999.

MATERIAL NOTES

(12) STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B, STRUCTURAL STEEL TUBING. RAIL TUBING SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH REQUIREMENTS OF 15 FT. LBS. AT 0°F. FOR ASTM A500, GRADE B, THE TEST SAMPLES SHALL BE TAKEN AFTER FORMING THE TUBES. CHARPY V-NOTCH IS NOT REQUIRED FOR SPLICE TUBES.

(13) RAIL POSTS AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GR 50, EXCEPT ANCHOR PLATES MAY BE ASTM A36.

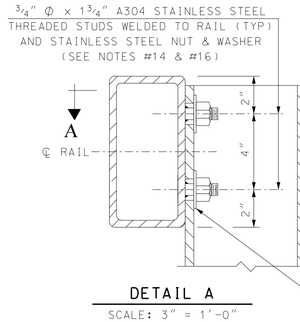
(14) THREADED STUDS AND MATCHING NUTS FOR RAIL-TO-POST ATTACHMENT (DETAIL A) SHALL CONFORM TO ASTM A276 TYPE 304, STAINLESS STEEL, AND SHALL BE TORQUE TESTED PER AWS D1.5, 7.7.1. DETAIL B BOLTS SHALL BE ASTM A325 OR A449. ALL OTHER BOLTS AND NUTS SHALL CONFORM TO ASTM A307 AND ASTM 563 GRADE A RESPECTIVELY OR BETTER, EXCEPT THAT ASTM A307 NUTS MAY BE USED ON THE BOTTOM OF ANCHOR ASSEMBLY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.22. ANCHOR RODS SHALL CONFORM TO ASTM A449.

(15) ALL STEEL COMPONENTS (EXCEPT STAINLESS) SHALL BE GALVANIZED AFTER FABRICATION IN COMPLIANCE WITH AASHTO M232 (ASTM A153) AND AASHTO M111 (ASTM A123). THE GALVANIZING KETTLE SHALL HAVE 0.05 TO 0.09 PERCENT NICKEL. GALVANIZED SURFACES SHALL HAVE A UNIFORM APPEARANCE AND GALVANIZED MATERIAL SHALL BE PROPERLY STORED. IF PAINTING IS REQUIRED SEE SPECIAL PROVISIONS FOR 708.

(16) DETAIL A STUDS SHALL BE WELDED ON AFTER TUBES ARE GALVANIZED BY SPOT GRINDING OFF GALVANIZING, WELDING ON STUDS, THEN TOUCH UP GALVANING PER NOTE #8 ABOVE.

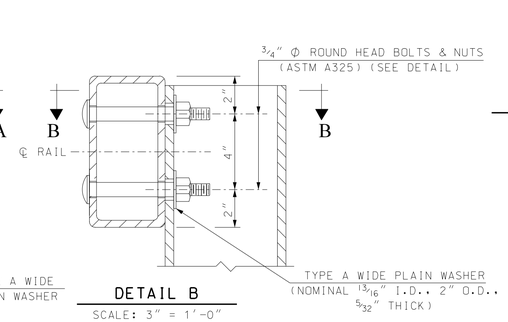
(17) PREFORMED BEARING PADS (1/8" THICK) SHALL CONFORM TO AASHTO M251.

(18) RETROREFLECTIVE DELINEATORS, BOLTS, NUTS, WASHERS AND FIELD DRILLING OF POSTS, INCLUDING GALVANIZING TOUCH-UP, SHALL BE SUBSIDIARY TO ITEM 563.22. SEE STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION (DL-1) FOR ADDITIONAL DETAILS AND SPACING.



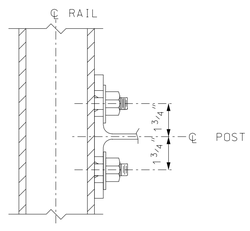
DETAIL A

SCALE: 3" = 1'-0"



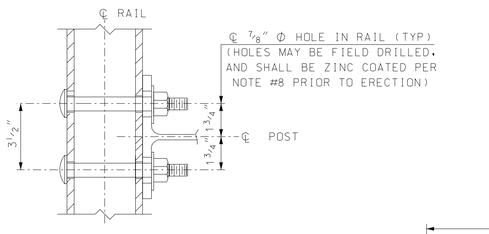
DETAIL B

SCALE: 3" = 1'-0"



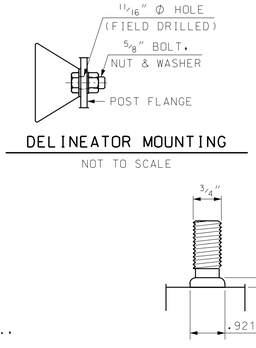
SECTION A-A

SCALE: 3" = 1'-0"



SECTION B-B

SCALE: 3" = 1'-0"

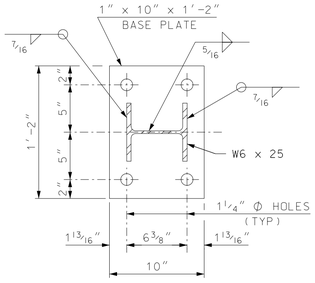


DELINEATOR MOUNTING

NOT TO SCALE

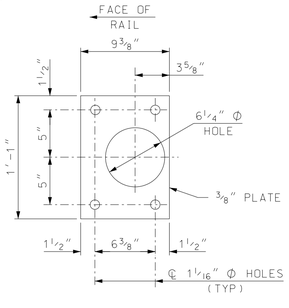
STUD WELD DETAIL

SCALE: 6" = 1'-0"



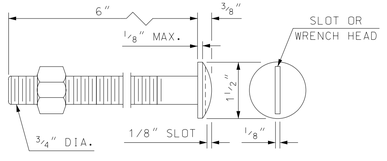
POST BASE PLATE

SCALE: 1 1/2" = 1'-0"



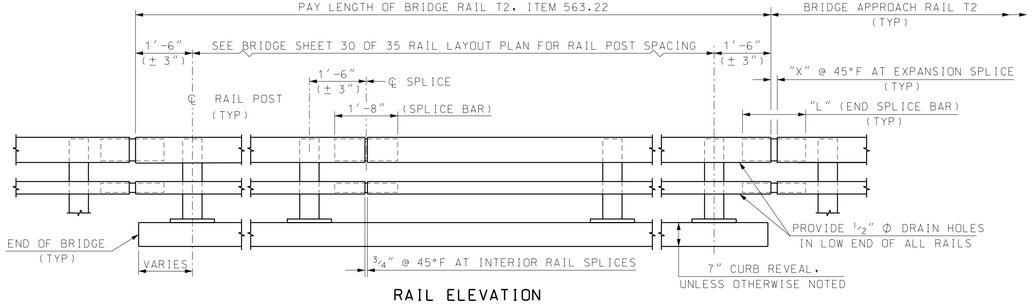
ANCHOR PLATE

SCALE: 1 1/2" = 1'-0"



A325 ROUND HEAD BOLT DETAIL

SCALE: 6" = 1'-0"



RAIL ELEVATION

SCALE: 1/2" = 1'-0"

SPLICE BAR DIMENSION TABLE							
	T	A	B	C	D	X	L
	INTERIOR	2 1/2"	4"	4"	2"	3/4"	1'-8"
**	≤ 3 1/4"	2 1/2"	4"	4"	2"	2"	1'-8"
**	3 1/4" < T ≤ 5 1/4"	3 1/2"	5"	5"	2 1/2"	3"	2'-1"

T = TOTAL MOVEMENT OF BRIDGE
** = END SPLICE BAR

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

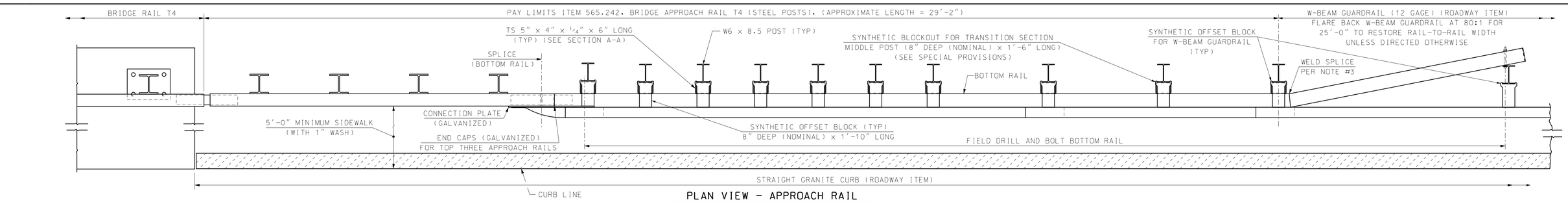
T2 STEEL BRIDGE RAIL

BRIDGE SHEET 32 OF 35

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	NETC/JSZ	3/02	CHECKED	NHDOT	
DRAWN	PJP	5/08	CHECKED	JSZ	10/05
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)		37	58

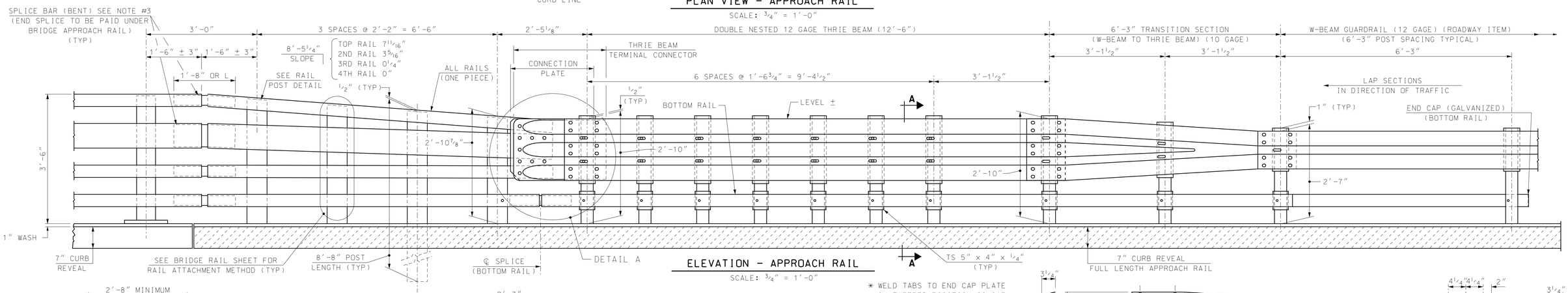
FILE NUMBER

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174059	T2_BR-RAIL	AS NOTED



PLAN VIEW - APPROACH RAIL

SCALE: 3/4" = 1'-0"

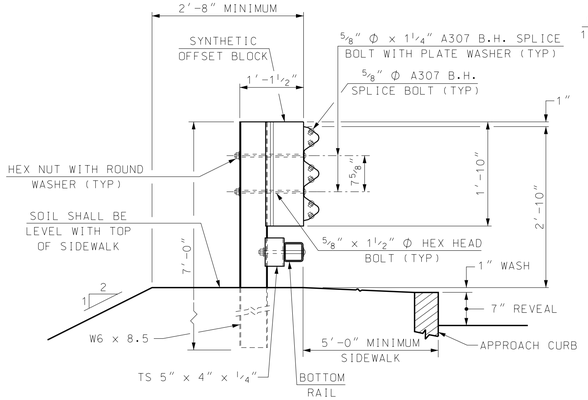


ELEVATION - APPROACH RAIL

SCALE: 3/4" = 1'-0"

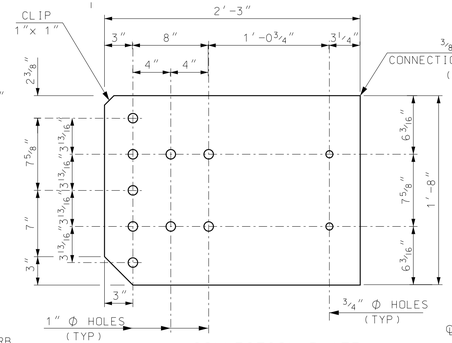
* WELD TABS TO END CAP PLATE IN TAPERED POSITION SO CAP CAN BE JAMMED INTO END OF RAIL TUBE

** SEE RAIL NOTES ON BRIDGE RAIL SHEET



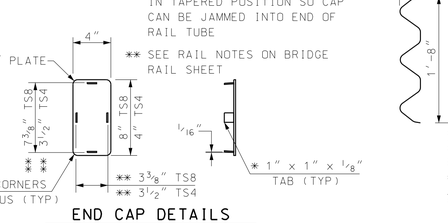
SECTION A-A (POST RAIL ASSEMBLY)

SCALE: 3/4" = 1'-0"



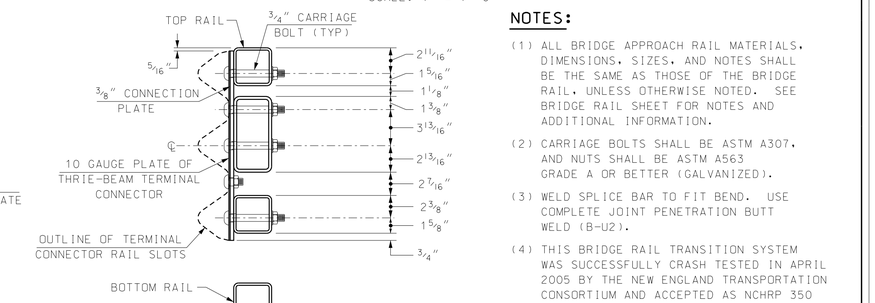
CONNECTION PLATE

SCALE: 1 1/2" = 1'-0"



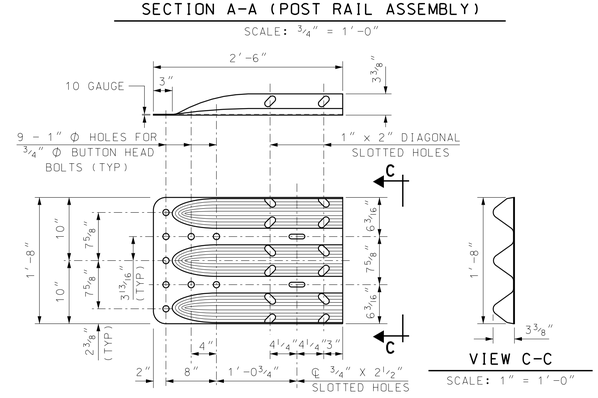
END CAP DETAILS

SCALE: 1 1/2" = 1'-0"



THRIE-BEAM TO W-BEAM TRANSITION SECTION

SCALE: 1" = 1'-0"

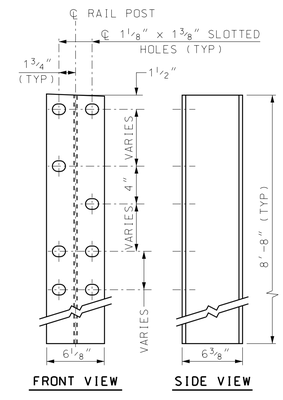


THRIE-BEAM TERMINAL CONNECTOR

SCALE: 1" = 1'-0"

VIEW C-C

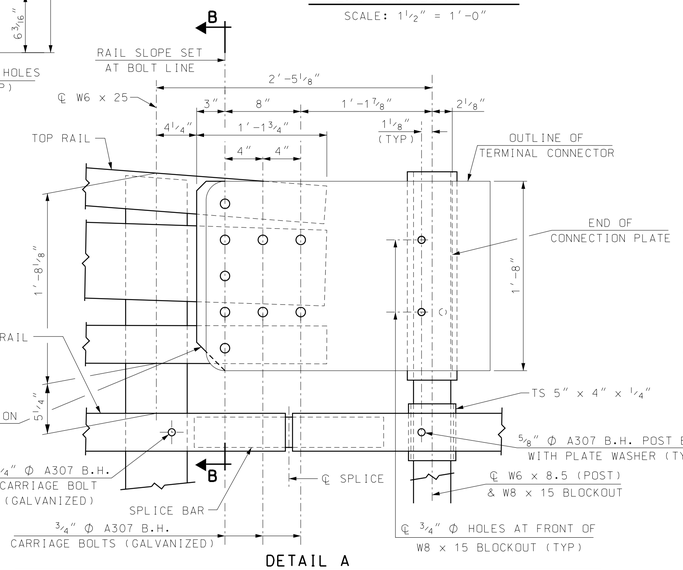
SCALE: 1" = 1'-0"



FRONT VIEW SIDE VIEW

RAIL POST (W6 x 25)

SCALE: 1 1/2" = 1'-0"



DETAIL A

OVERLAPPING OF DOUBLE NESTED THRIE-BEAM NOT SHOWN FOR CLARITY

SCALE: 1 1/2" = 1'-0"

SECTION B-B (CONNECTION PLATE)

SCALE: 1 1/2" = 1'-0"

NOTES:

(1) ALL BRIDGE APPROACH RAIL MATERIALS, DIMENSIONS, SIZES, AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED. SEE BRIDGE RAIL SHEET FOR NOTES AND ADDITIONAL INFORMATION.

(2) CARRIAGE BOLTS SHALL BE ASTM A307, AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED).

(3) WELD SPLICE BAR TO FIT BEND. USE COMPLETE JOINT PENETRATION BUTT WELD (B-U2).

(4) THIS BRIDGE RAIL TRANSITION SYSTEM WAS SUCCESSFULLY CRASH TESTED IN APRIL 2005 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM AND ACCEPTED AS NCHRP 350 TL-3 PER FHWA LETTER HSSD/B-146.

(5) ALL COMPONENTS, EXCEPT TUBULAR RAIL, SHALL CONFORM TO SECTION 606 OF NHDOT SPECIFICATIONS.

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

T4 STEEL BRIDGE APPROACH RAIL (STEEL POSTS)

BRIDGE SHEET 33 OF 35

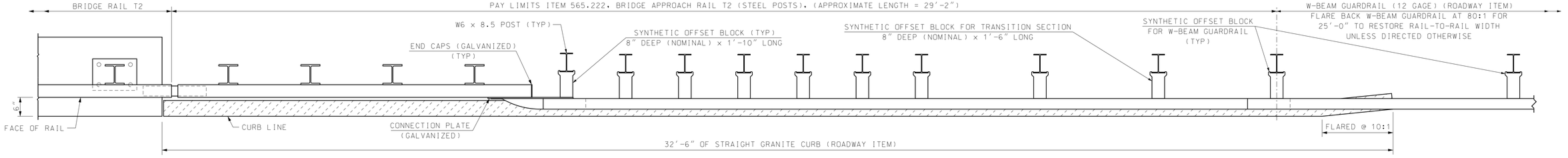
FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE

DESIGNED	NETC/JSZ	3/02	CHECKED	NHDOT		
DRAWN	PJP	5/08	CHECKED	JSZ	10/05	
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15	

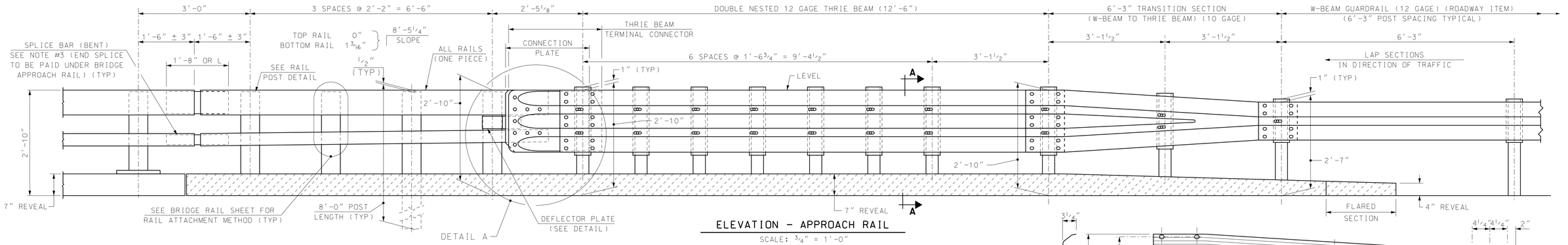
ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	38	58

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	T4SP_APPRAIL	AS NOTED



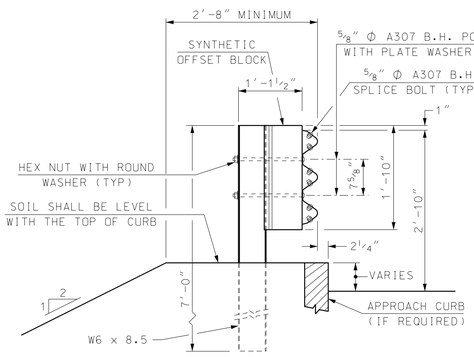
PLAN VIEW - APPROACH RAIL

SCALE: 3/4" = 1'-0"



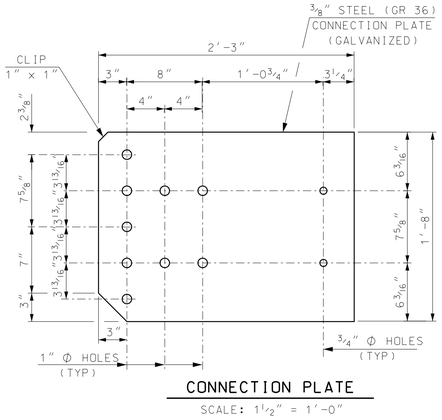
ELEVATION - APPROACH RAIL

SCALE: 3/4" = 1'-0"



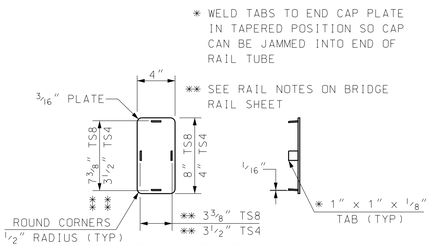
SECTION A-A (POST RAIL ASSEMBLY)

SCALE: 3/4" = 1'-0"



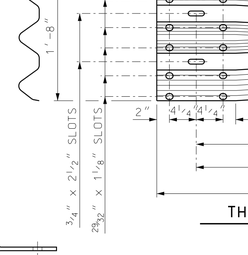
CONNECTION PLATE

SCALE: 1 1/2" = 1'-0"



END CAP DETAILS

SCALE: 1 1/2" = 1'-0"

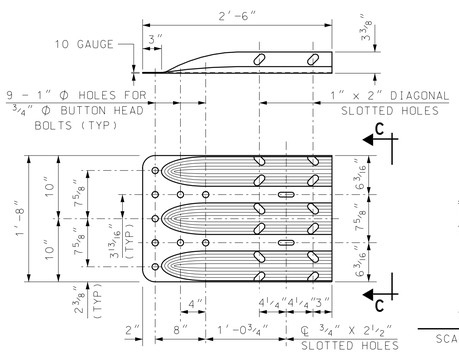


DEFLECTOR PLATE DETAIL

SCALE: 1 1/2" = 1'-0"

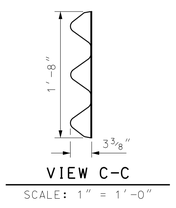
THRIE-BEAM TO W-BEAM TRANSITION SECTION

SCALE: 1" = 1'-0"



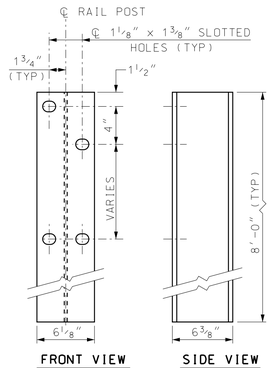
THRIE-BEAM TERMINAL CONNECTOR

SCALE: 1" = 1'-0"



VIEW C-C

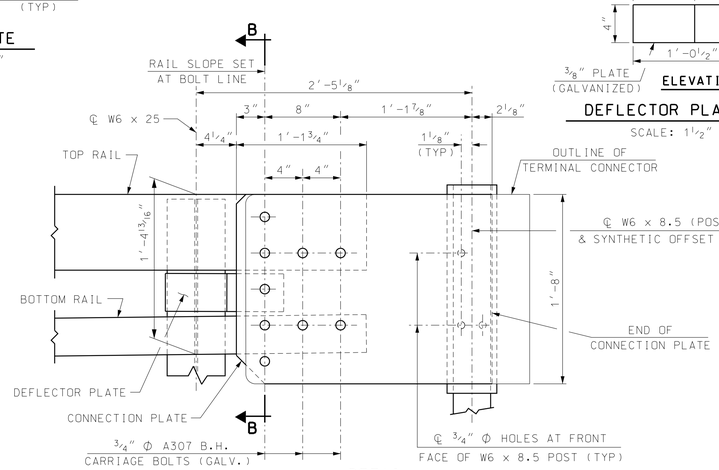
SCALE: 1" = 1'-0"



FRONT VIEW SIDE VIEW

RAIL POST (W6 x 25)

SCALE: 1 1/2" = 1'-0"



DETAIL A

OVERLAPPING OF DOUBLE NESTED THRIE-BEAM NOT SHOWN FOR CLARITY

SCALE: 1 1/2" = 1'-0"

SECTION B-B (CONNECTION PLATE)

SCALE: 1 1/2" = 1'-0"

NOTES:

(1) ALL BRIDGE APPROACH RAIL MATERIALS, DIMENSIONS, SIZES, AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED. SEE BRIDGE RAIL SHEET FOR NOTES AND ADDITIONAL INFORMATION.

(2) CARRIAGE BOLTS SHALL BE ASTM A307, AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED).

(3) WELD SPLICE BAR TO FIT BEND. USE COMPLETE JOINT PENETRATION BUTT WELD (B-U2).

(4) THIS BRIDGE RAIL TRANSITION SYSTEM WAS SUCCESSFULLY CRASH TESTED IN APRIL 2005 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM AND ACCEPTED AS NCHRP 350 TL-3 PER FHWA LETTER HSSD/B-146.

(5) ALL COMPONENTS, EXCEPT TUBULAR RAIL, SHALL CONFORM TO SECTION 606 OF NHDOT SPECIFICATIONS.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

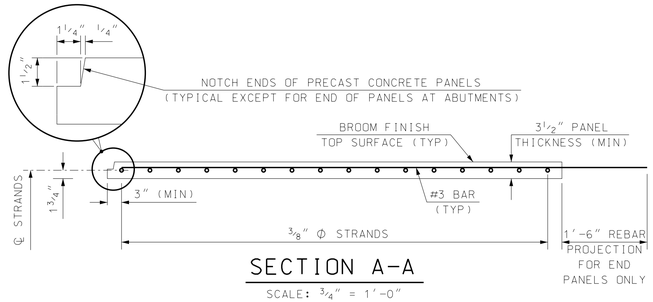
T2 STEEL BRIDGE APPROACH RAIL (STEEL POSTS)

BRIDGE SHEET 34 OF 35

FILE NUMBER

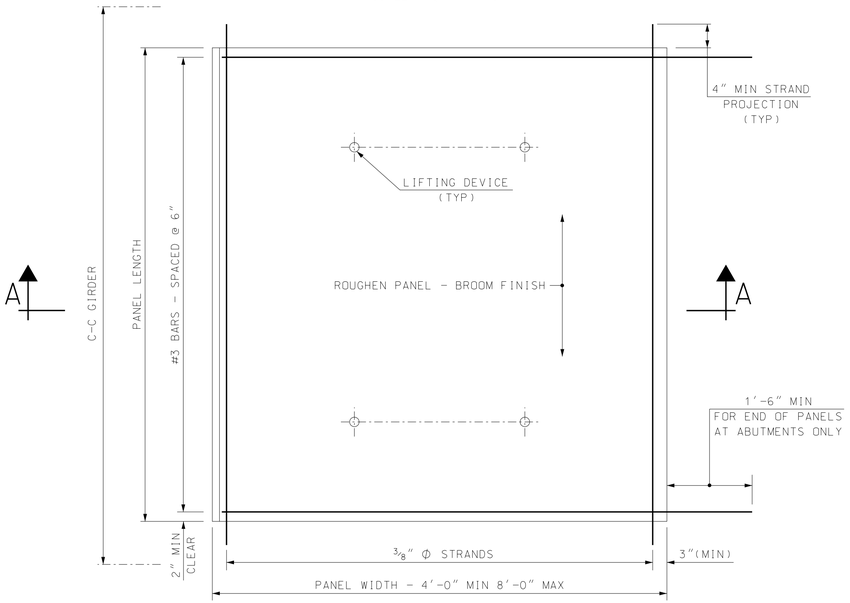
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED NETC/JSZ		3/02	CHECKED NHDOT		
DRAWN PJP		5/08	CHECKED JSZ		10/05
QUANTITIES TWP		11/15	CHECKED HNH		11/15
ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)		39	58

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
d0174055	T2SP_APPRAIL	AS NOTED



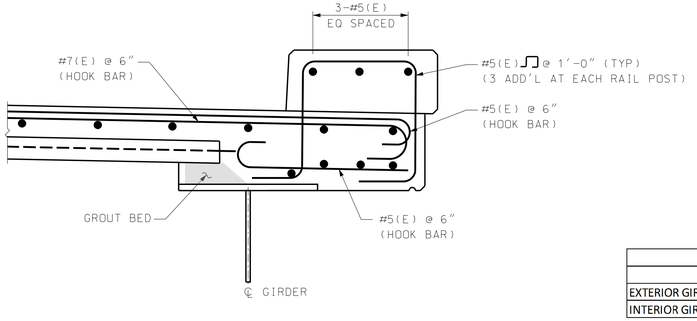
SECTION A-A

SCALE: 3/4" = 1'-0"



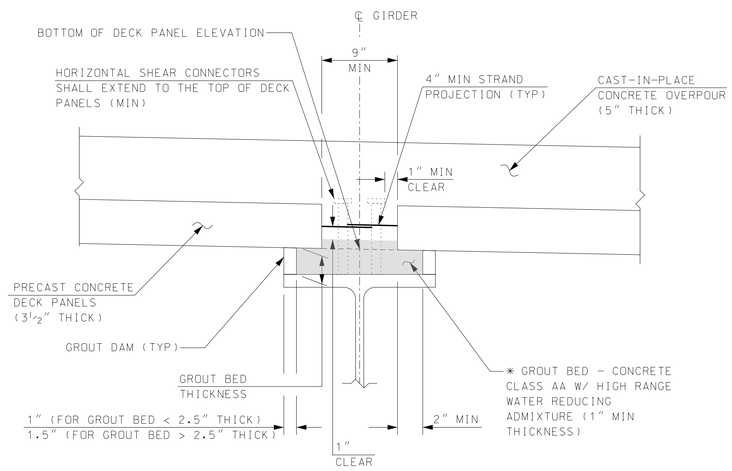
DECK PANEL DETAIL

SCALE: 3/4" = 1'-0"



DECK OVERHANG DETAIL

SCALE: 1" = 1'-0"



* ENSURE GROUT FLOWS UNDER PANEL FOR COMPLETE BEARING

STEEL GIRDER HAUNCH DETAIL

SCALE: 2" = 1'-0"

TABLE A - DECK PANEL DESIGN (STEEL-GIRDER)

C-C GIRDER SPACING	PANEL LENGTH	PANEL THICKNESS	f'ci (PSI)	f'c (PSI)	STRAND SPACING
5'-6"	5'-0"	3 1/2"	4000	6000	8"
6'-0"	5'-6"	3 1/2"	4000	6000	8"
6'-6"	6'-0"	3 1/2"	4000	6000	8"
7'-0"	6'-6"	3 1/2"	4000	6000	8"
7'-6"	7'-0"	3 1/2"	4000	6000	8"
8'-0"	7'-6"	3 1/2"	4000	6000	8"
8'-6"	8'-0"	3 1/2"	4000	6000	6"
9'-0"	8'-6"	3 1/2"	4000	6000	6"
9'-6"	9'-0"	3 1/2"	4000	6000	5"
10'-0"	9'-6"	3 1/2"	5000	6000	4 1/2"

TABLE C - GIRDER DEFLECTIONS DUE TO DECK PANEL DEAD LOAD (INCHES)

	ABUT A	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	ABUT B
EXTERIOR GIRDER (1 & 5)	0.00	-1.36	-2.57	-3.49	-4.07	-4.27	-4.07	-3.49	-2.57	-1.36	0.00
INTERIOR GIRDER (2 -4)	0.00	-1.63	-3.06	-4.16	-4.86	-5.10	-4.86	-4.16	-3.06	-1.63	0.00

PRESTRESSED CONCRETE DECK PANEL NOTES

(1) CONCRETE STRENGTH: f'c = 6,000 PSI MINIMUM AT 28 DAYS } SEE TABLE A & B
f'ci = 4,000 PSI MINIMUM } DECK PANEL DESIGN

(2) PRESTRESSING STRANDS SHALL BE 3/8 in. DIAMETER, GRADE 270 SEVEN WIRE LOW-RELAXATION TYPE, CONFORMING TO THE REQUIREMENTS OF ASTM A416. ALL STRANDS SHALL BE PULLED TO HAVE A NET TENSION OF 17.2 KIPS PER STRAND AFTER ALLOWING FOR CHUCK SLIPPAGE.

(3) THE TOP SURFACE OF THE DECK PANELS SHALL BE BROOMED TO A SURFACE ROUGHNESS OF 0.06 in. BROOM THE SURFACE PARALLEL TO THE STRAND.

(4) IF HIGH DENSITY EXPANDED POLYSTYRENE FOAM IS USED AS A TEMPORARY SUPPORT, IT SHALL BE CUT IN THE FIELD TO THE REQUIRED HEIGHT AND AFFIXED TO THE GIRDERS WITH AN APPROVED HIGH STRENGTH ADHESIVE.

(5) PANEL LIFTING LOCATIONS SHOWN ARE ADVISORY ONLY. ACTUAL LIFTING LOCATIONS SHALL BE DETERMINED BY THE FABRICATOR AND INDICATED ON THE SHOP DRAWINGS.

(6) CORROSION INHIBITOR (CALCIUM NITRITE) ADMIXTURE SHALL BE USED.

(7) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR SECTIONS 520 AND 528 FOR ADDITIONAL INFORMATION.

(8) IF LEVELING SCREWS ARE USED, THEY SHALL BE COMPLETELY REMOVED AFTER THE GROUTING OPERATIONS AND PRIOR TO DECK PLACEMENT. HOLES LEFT BY LEVELING SCREWS SHALL BE FILLED WITH AN APPROVED GROUT PRIOR TO DECK PLACEMENT.

(9) TEMPORARY BRACING BETWEEN ENDS OF PANELS SHALL BE SUPPLIED AS REQUIRED TO PREVENT PANEL MOVEMENT TRANSVERSE TO THE GIRDERS.

(10) THE FOLLOWING DECK PANEL DESIGN INFORMATION SHALL BE USED FOR THIS PROJECT:
C-C GIRDER SPACING = 7'-9"
PANEL LENGTH = 7'-0"
PANEL THICKNESS = 3 1/2"

CONCRETE STRENGTHS
f'ci = 4000 PSI
f'c = 6000 PSI

STRAND SPACING = 8"

(11) REINFORCING IN PANELS SHALL BE BLACK BAR EXCEPT FOR END PANELS AT ABUTMENTS WHICH SHALL HAVE EPOXY COATED REBAR. CAST-IN-PLACE OVERPOUR SHALL HAVE EPOXY COATED REBAR AND FOLLOW LAYOUT OF TOP MAT OF STEEL SHOWN ON THE DECK REINFORCING SHEET.

DESIGN CRITERIA:

- LIVE LOAD = HL-93
- ALLOWABLE TENSION IN CONCRETE = $0.19\sqrt{f'c}$
- MAXIMUM INITIAL COMPRESSION = 0.750 ksi (W/ f'ci = 4 ksi)
- C-I-P DECK THICKNESS = 5"
- PAVEMENT THICKNESS = 2 1/2"
- STEEL FLANGE WIDTH = 22"
- GROUT DAM WIDTH = 1 1/2"
- GROUT BED THICKNESS < 2 3/4"

DECK SLAB ELEVATION NOTES

1) AFTER THE GIRDERS ARE ERECTED AND BEFORE PRECAST DECK PANELS ARE SET, ELEVATIONS ON THE TOP FLANGE OF THE GIRDERS ARE TO BE OBTAINED AT THE POINTS INDICATED IN "BOTTOM OF SLAB ELEVATION TABLE" DETAILED IN THE PLANS AND GIRDER HAUNCH DETAILS ON THIS SHEET.

2) THE BOTTOM OF SLAB ELEVATIONS SHALL BE ADJUSTED BY THE DIFFERENCE BETWEEN THE CAST-IN-PLACE DECK THICKNESS AND THE TOTAL COMPOSITE DECK THICKNESS AND THE DIFFERENCE BETWEEN THE CAST-IN-PLACE SLAB DEFLECTION AND DECK PANEL DEAD LOAD DEFLECTION.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111\132 STATE PROJECT 15402

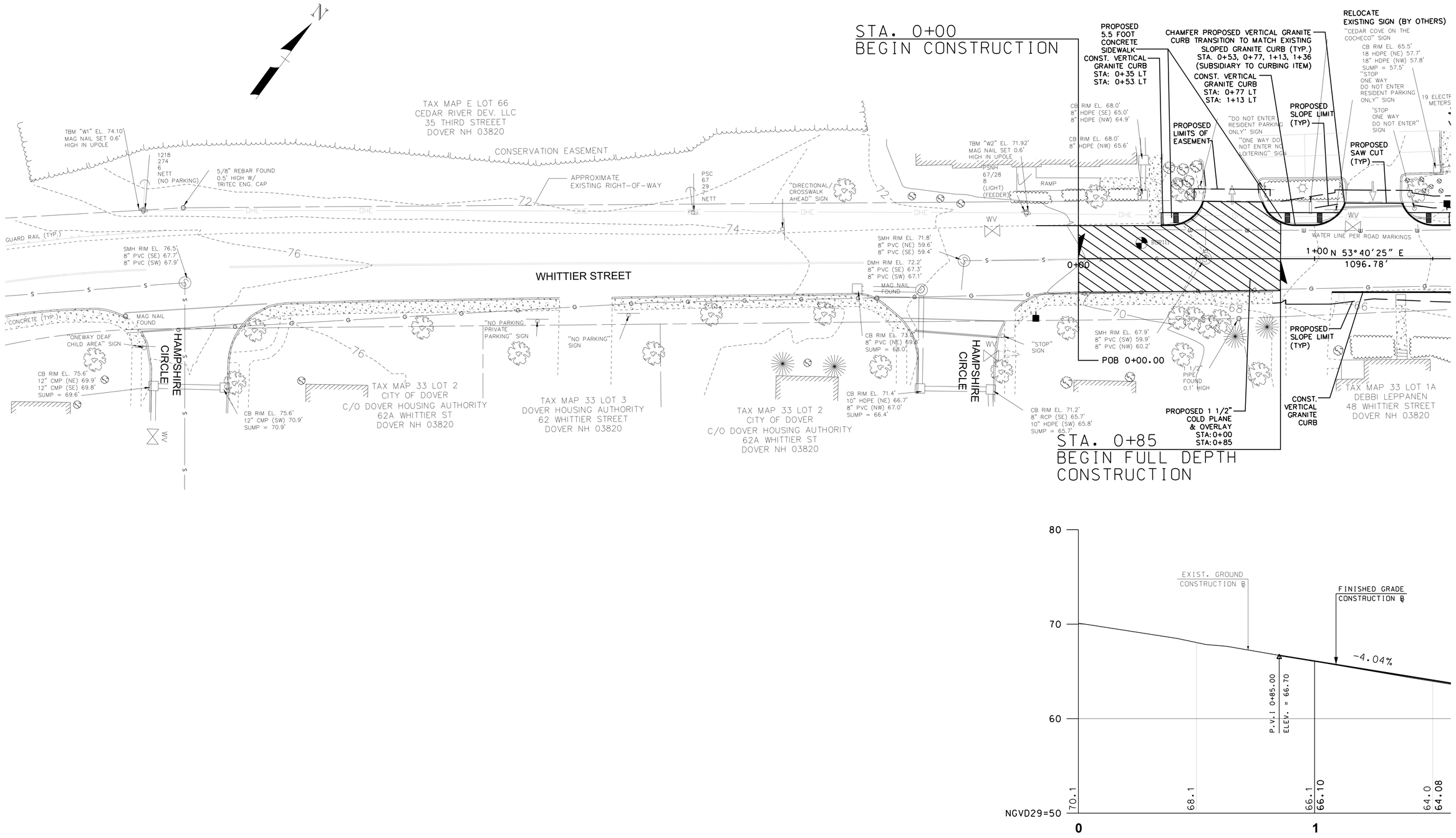
PRECAST CONCRETE DECK PANEL DETAILS

BRIDGE SHEET 35 OF 35

FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	NHDOT	3/02	CHECKED	NHDOT	
DRAWN	NHDOT	5/08	CHECKED	NHDOT	10/05
QUANTITIES	TWP	11/15	CHECKED	HNH	11/15
ISSUE DATE					
REV. DATE					

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
d0174059	15402DeckPanels	AS NOTED	X-A002(794)	40	58



SCALE IN FEET 20 0 20 40 HORIZONTAL

20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

GENERAL PLAN
AND
PROFILE (1 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
Roadway-1	15402	41	58

REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	NUMBER	DATE

		DATE
SDR PROCCESSED		
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

OTHERS)

PROPOSED 5.5 FOOT CONCRETE SIDEWALK (TYP)

CONST. VERTICAL GRANITE CURB STA: 1+36 LT STA: 5+00.25 LT

PROPOSED LIMITS OF EASEMENT

CONSERVATION EASEMENT

MAINTAIN EXISTING LARGE TREES. COORDINATE TREE REMOVAL WITH RESIDENT ENGINEER.

PROPOSED CONDUITS (2 DUCT 4") FOR FUTURE COMMUNICATIONS TO BE STUBBED INTO 18" CONCRETE PULLBOXES. TYP. BOTH SIDES OF BRIDGE.

MAINTAIN EXISTING LARGE TREES. COORDINATE TREE REMOVAL WITH RESIDENT ENGINEER.

CONST. VERTICAL GRANITE CURB STA: 6+66.0 LT STA: 9+62 LT

PROPOSED SLOPE LIMIT (TYP)

PROP G-2

PROP. 12" WATER MAIN

SLOPE EASEMENT

DRAINAGE EASEMENT

TBM "W3" EL. 58.18' MAG NAIL SET 0.6' HIGH IN UPOLE

PSNH 67 27 9FP (4 FEEDERS)

DMH RIM EL. 65.6' 18" HDPE (NE) 57.4' 15" HDPE (SE) 56.5' 18" HDPE (SW) 57.6'

18" HDPE INV. 55.2' (W/ FES)

RIPRAP (TYP.)

EX. CUT UTILITY POLES

PSNH 67 25 12/4 SP TT (TRANS) (LIGHT)

PSNH 67 24

PSNH 67 23

PSNH 67 22

DECK

RAMP

2+00 N 53°40'25" E 1096.78' 3+00 4+00 ℄ CONST AND PGL WHITTIER STREET 5+00 6+00 7+00

BDR110 BDR109 BDR108 BDR107 BDR106 BDR105 BDR104 BDR103 BDR102

EX. ROW OF BOULDERS

"NO PARKING THIS SIDE" SIGN

11 1/2" PINE FOUND 0.1' HIGH

CLEAR TO SLOPE LINE

MAINTAIN EXISTING LARGE TREE PER CITY STA. 1+90RT

PROPOSED SLOPE LIMIT (TYP)

CONST. DRIVEWAY LIP (TYP.)

PROPOSED SAW CUT (TYP)

CB RIM EL. 57.1' 2" HDPE (N) 52.4' SUMP = 50.3'

WOOD RAIL FENCE

PROP. 25' EAGRT

TERMINAL CURB TO 0" REVEAL

WEIGHT LIMIT 23 TONS SPEED LIMIT SIGN

GAS LINE PER MARKINGS

CLEAR TO SLOPE LINE. FIELD VERIFY SLOPE LIMIT TO MINIMIZE CLEARING

+39.82 BEGIN CURB TAPER RT 13.0'
+52.32 END CURB TAPER RT 12.5'

PROPOSED DARK AMERICAN ARBORVITAE, 6' B&B, 10' OC. 2 ROWS, STAGGERED, FIELD VERIFY LOCATION WITH RESIDENT ENGINEER. TOTAL 6 TREES REFER TO ITEM 650.2 SPEC. PROV.

CONST. VERTICAL GRANITE CURB STA: 1+07 RT STA: 2+82 RT

CONST. VERTICAL GRANITE CURB STA: 3+12 RT STA: 4+81.50 RT

PROPOSED 7 FT WIDE ISLAND VERTICAL GRANITE CURB 7" REVEAL TO STA. 3+68 RT LOAM AND SEED

SAWCUT & REMOVE EXISTING PAVEMENT ADJACENT TO CURB TO MATCH EXISTING

CONST. WOOD STOCKADE FENCE FIELD VERIFY LOCATION STA: 4+10 RT STA: 4+70 RT

TAX MAP 33 LOT 1
JEANNINE A. & ROBERT JR. GAGNON
46 WHITTIER STREET
DOVER NH 03820

COCHECO RIVER

CLEARING LINE

+22.18 BEGIN CURB TAPER RT 12.5'
+34.68 END CURB TAPER RT 13.0'

PROPOSED LIMITS OF EASEMENT

VC = 300
K = 43

VC = 300
K = 42

-4.04%

3.06%

P.V.C 2+00.00 ELEV. = 62.06

LOW POINT 3+70.58 ELEV. = 58.61

P.V.I 3+50.00 ELEV. = 56.00

P.V.T 5+00.00 ELEV. = 60.60

P.V.C 7+00.00 ELEV. = 66.72

EXIST. GROUND / CONSTRUCTION ℄

FINISHED GRADE / CONSTRUCTION ℄

Q_{100} EL. = 47.7
Q_{50} EL. = 46.8
Q_2 EL. = 41.6

70 60 50 40 30

64.0	62.0	60.2	58.7	57.8	57.3	57.3	57.4	57.7	58.1	58.4	60.2	64.4
64.08	62.06	60.33	59.20	58.66	58.72	59.36	60.60	62.13	63.66	65.19	66.72	68.54

2 3 4 5 6 7

SCALE IN FEET 20 0 20 40 HORIZONTAL

20 0 20 40 VERTICAL

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCCESSED DATE

NEW DESIGN NM/TH DATE 10/15

SHEET CHECKED TH DATE 10/15

AS BUILT DETAILS DATE

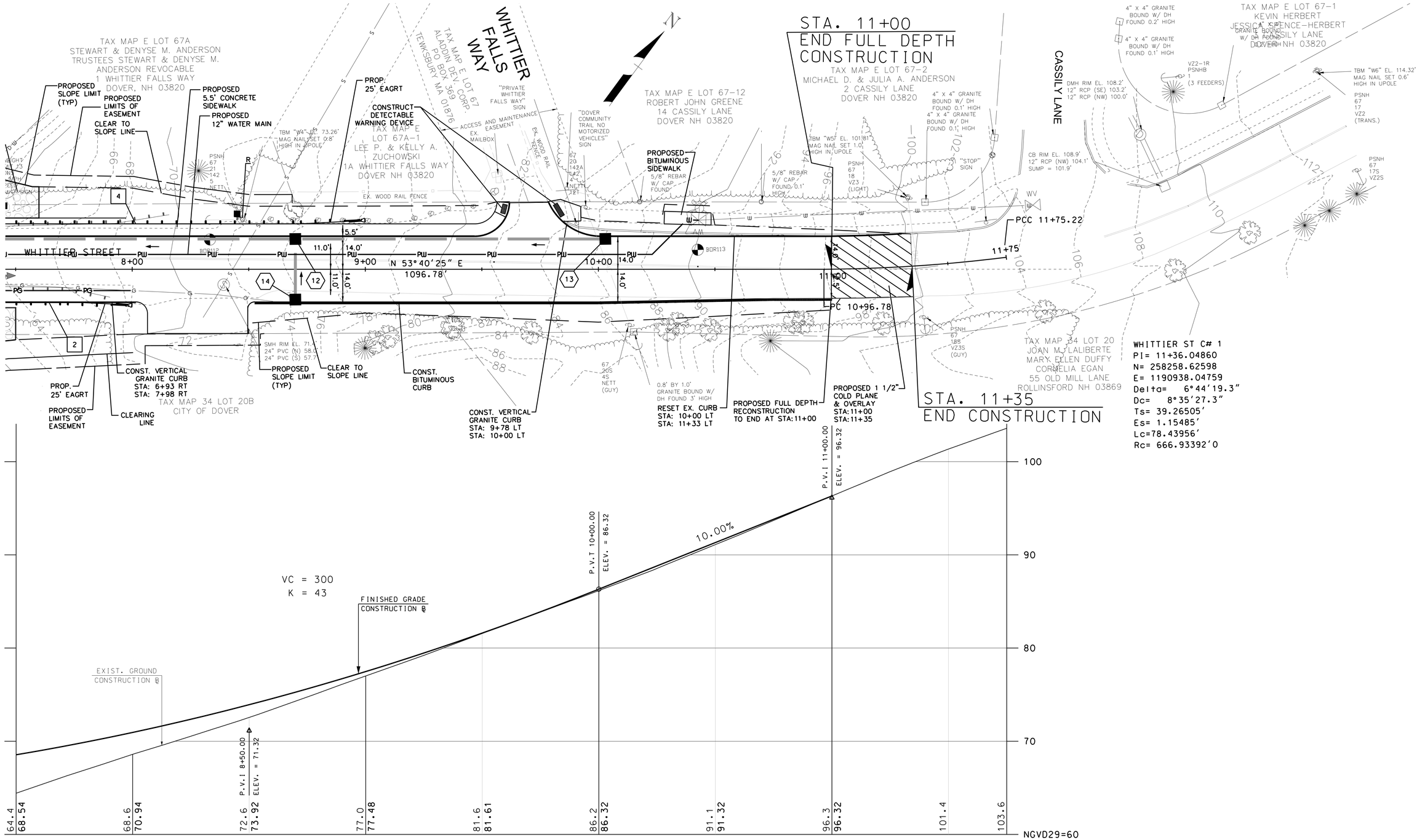
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

GENERAL PLAN AND PROFILE (2 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
Roadway-2	15402	42	58



REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	STATION	NUMBER	DATE

		DATE
SOR PROCCESSED		
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
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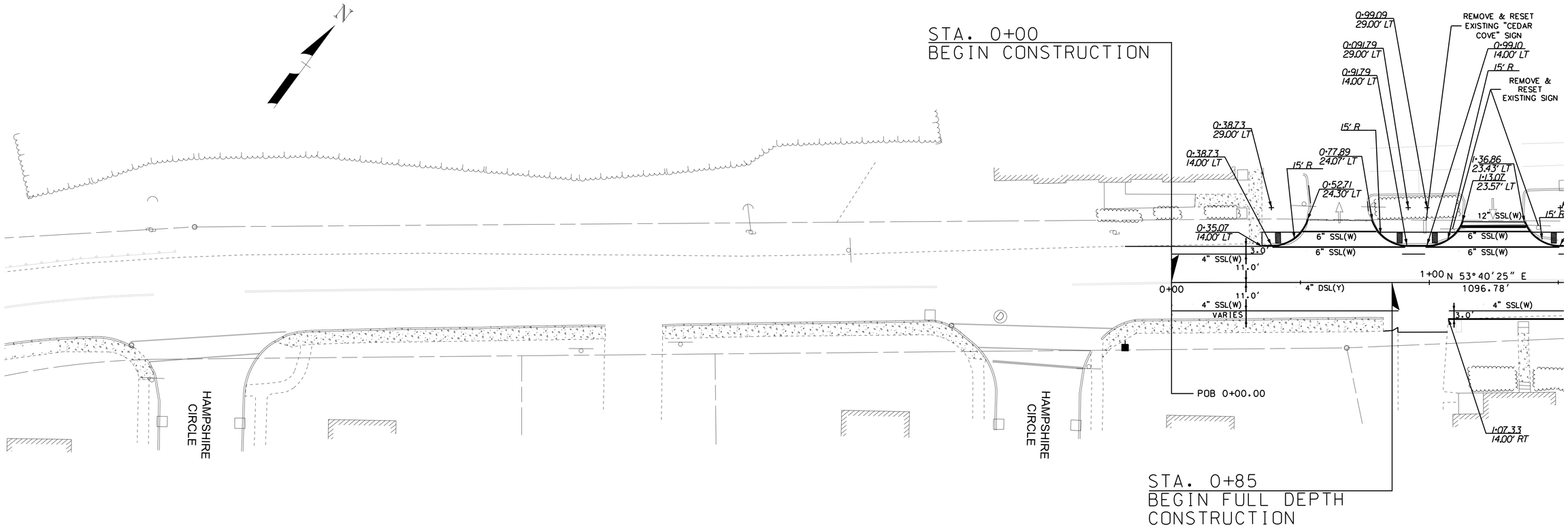
CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

GENERAL PLAN AND PROFILE (3 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
Roadway-3	15402	43	58



LEGEND
SSL - SINGLE SOLID LINE
DSL - DOUBLE SOLID LINE
(W) - WHITE
(Y) - YELLOW

SCALE IN FEET 20 0 20 40 HORIZONTAL
20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

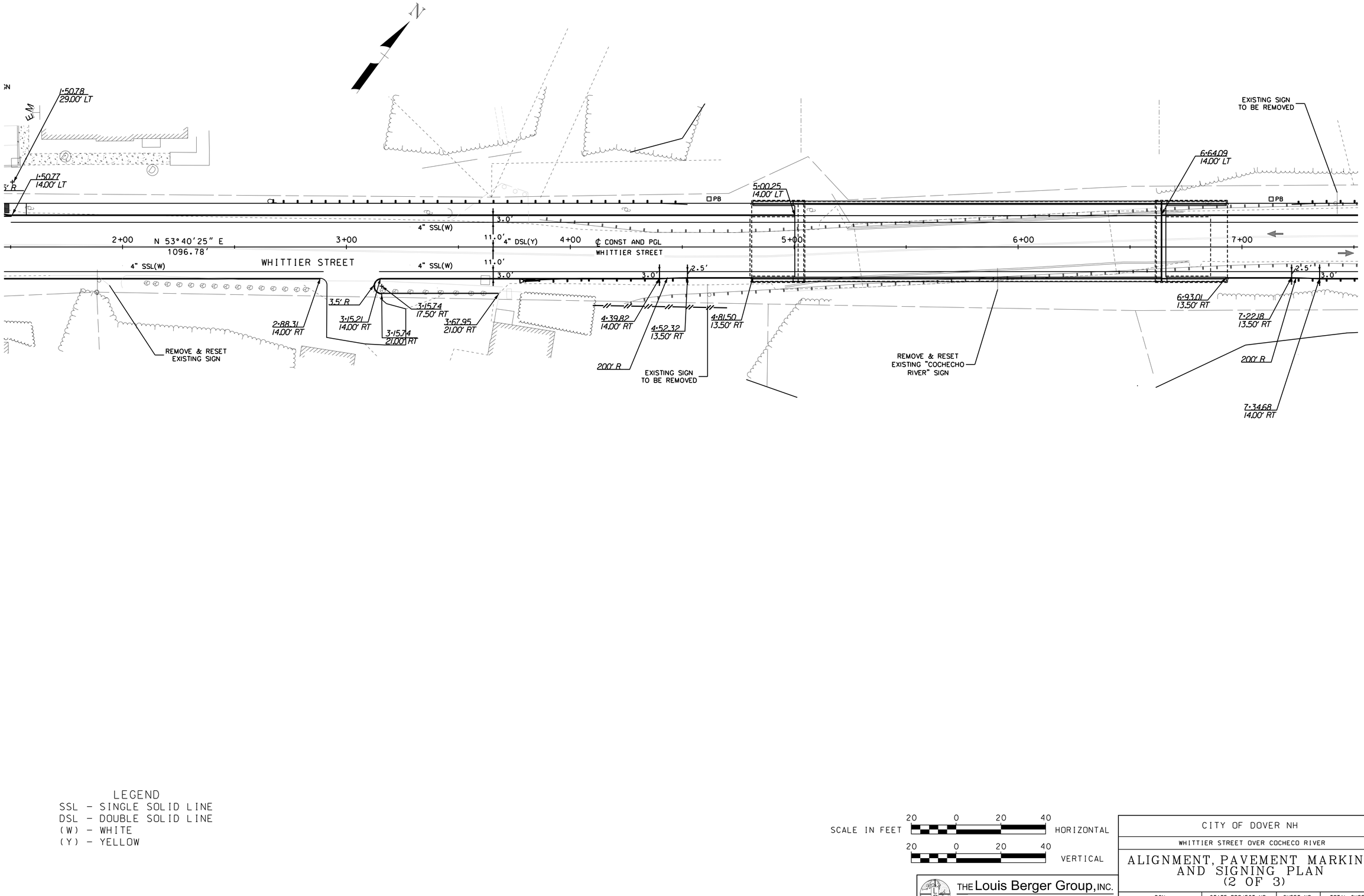
ALIGNMENT, PAVEMENT MARKING AND SIGNING PLAN (1 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ALIGN-1	15402	44	58

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCCESSED DATE
NEW DESIGN NM DATE 10/15
SHEET CHECKED TH DATE 10/15
AS BUILT DETAILS DATE



LEGEND
SSL - SINGLE SOLID LINE
DSL - DOUBLE SOLID LINE
(W) - WHITE
(Y) - YELLOW

SCALE IN FEET 20 0 20 40 HORIZONTAL
20 0 20 40 VERTICAL

REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	NUMBER	DATE

		DATE
SDR PROCCESSED		
NEW DESIGN	NM	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
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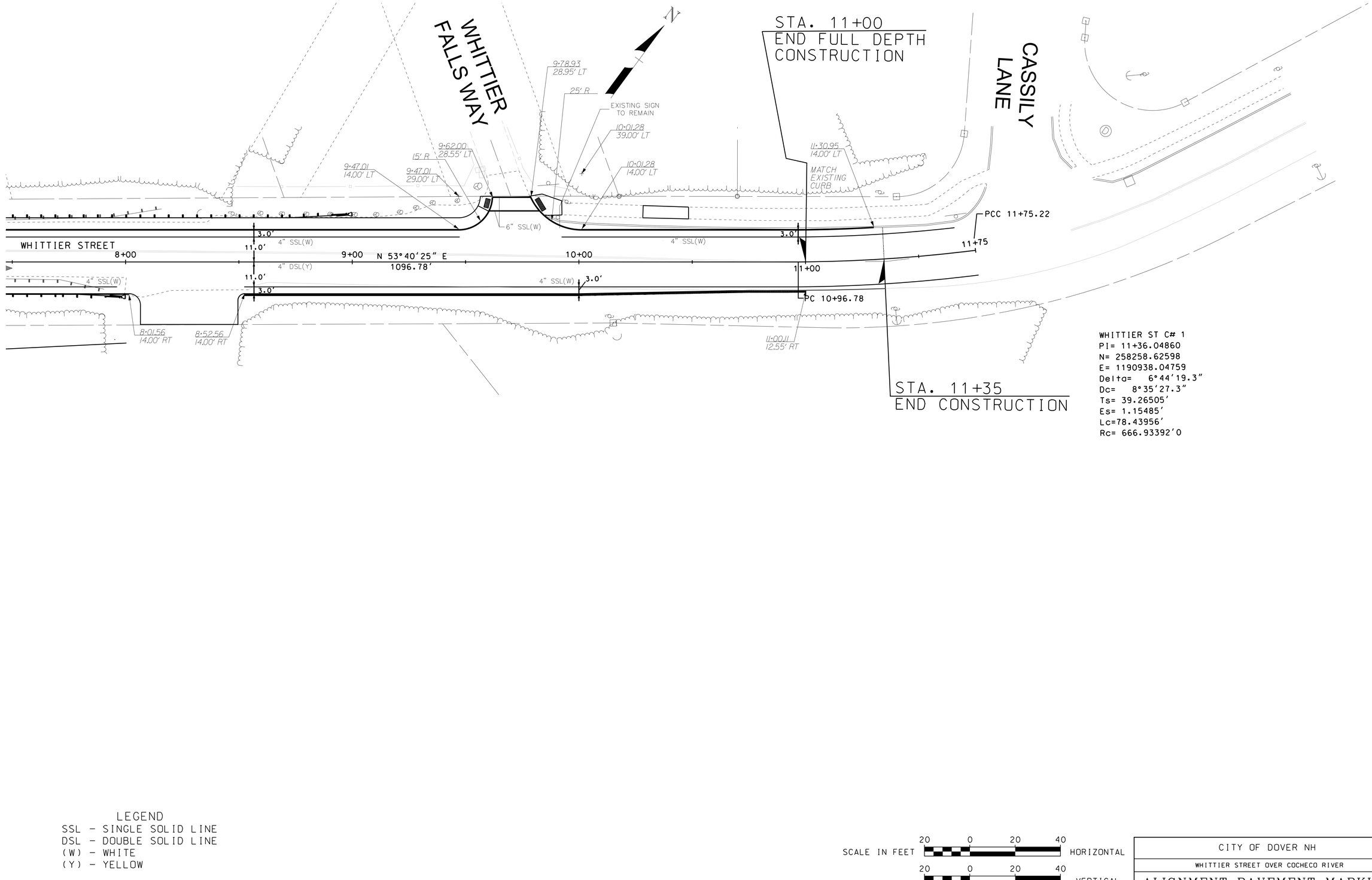
WHITTIER STREET OVER COCHECO RIVER

ALIGNMENT, PAVEMENT MARKING AND SIGNING PLAN (2 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ALIGN-2	15402	45	58



WHITTIER ST C# 1
PI= 11+36.04860
N= 258258.62598
E= 1190938.04759
Delta= 6°44'19.3"
Dc= 8°35'27.3"
Ts= 39.26505'
Es= 1.15485'
Lc=78.43956'
Rc= 666.93392'0

LEGEND
SSL - SINGLE SOLID LINE
DSL - DOUBLE SOLID LINE
(W) - WHITE
(Y) - YELLOW

SCALE IN FEET 20 0 20 40 HORIZONTAL
20 0 20 40 VERTICAL

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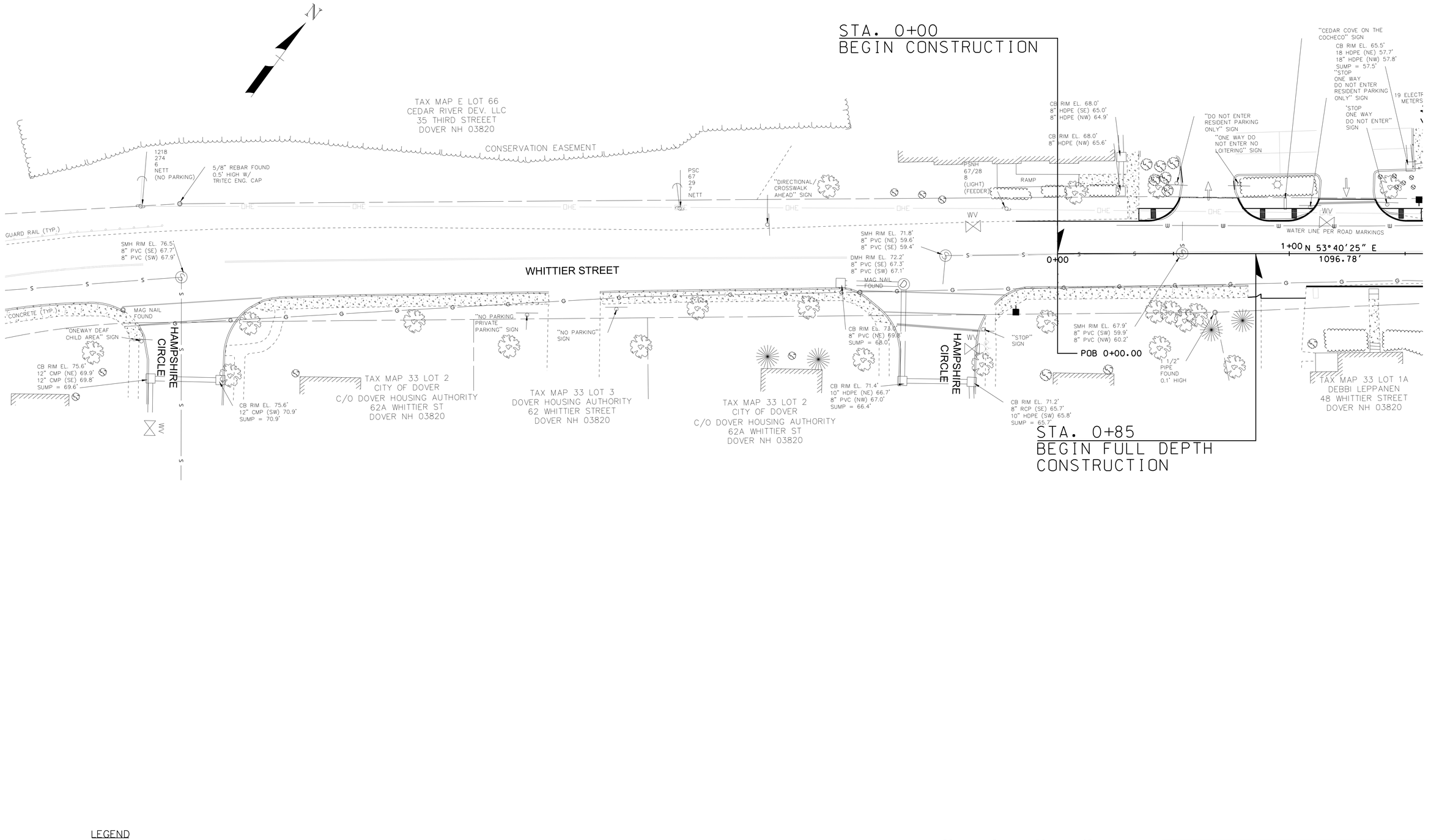
CITY OF DOVER NH
WHITTIER STREET OVER COCHECO RIVER
ALIGNMENT, PAVEMENT MARKING AND SIGNING PLAN (3 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ALIGN-3	15402	46	58

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCCESSED DATE
NEW DESIGN NM DATE 10/15
SHEET CHECKED TH DATE 10/15
AS BUILT DETAILS DATE



REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	STATION	NUMBER	DATE

		DATE
SDR PROCCESSED		
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

LEGEND

- PG — PROPOSED/TEMPORARY GAS
- PW — PROPOSED WATER
- PS — PROPOSED SEWER
- PS — TEMPORARY SEWER
- X UTILITY TO BE REMOVED

SCALE IN FEET 20 0 20 40 HORIZONTAL

20 0 20 40 VERTICAL

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Manchester, New Hampshire
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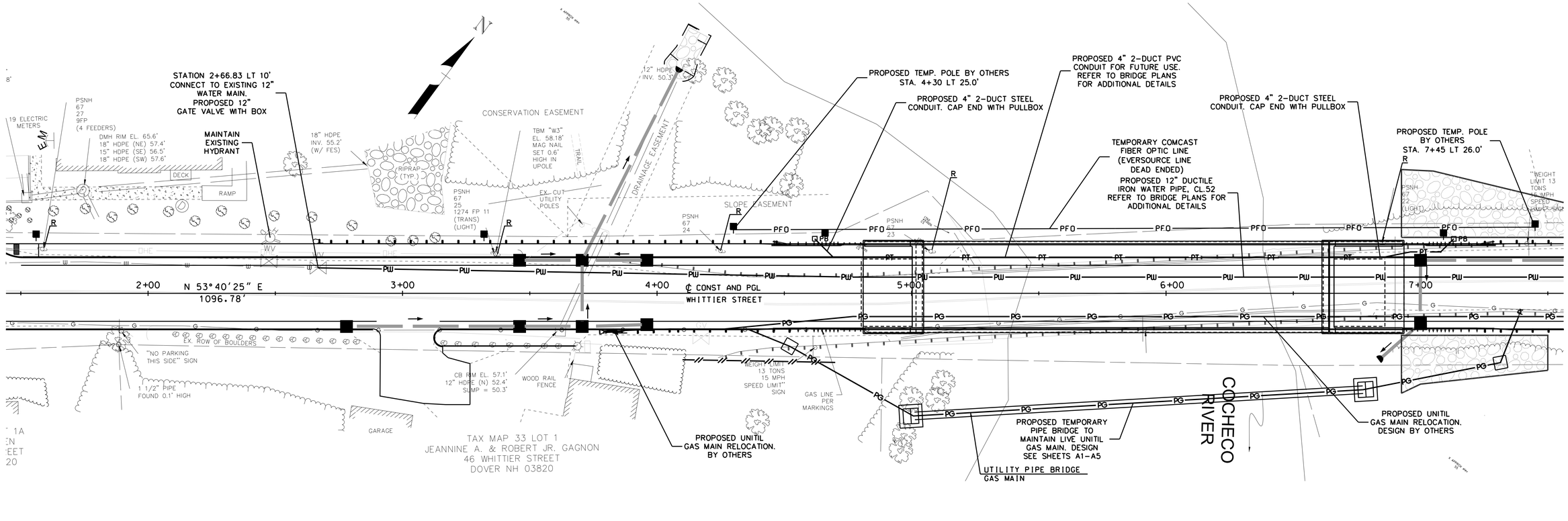
CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

UTILITY IMPROVEMENTS PLAN (1 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402UTILITY-1	15402	47	58



LEGEND

- PG — PROPOSED/TEMPORARY GAS
- PW — PROPOSED WATER
- PS — PROPOSED SEWER
- PS — TEMPORARY SEWER
- X UTILITY TO BE REMOVED

SCALE IN FEET 20 0 20 40 HORIZONTAL

20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH

WHITTIER STREET OVER COCHECO RIVER

UTILITY IMPROVEMENTS PLAN (2 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402UTILITY-2	15402	48	58

REVISIONS AFTER PROPOSAL

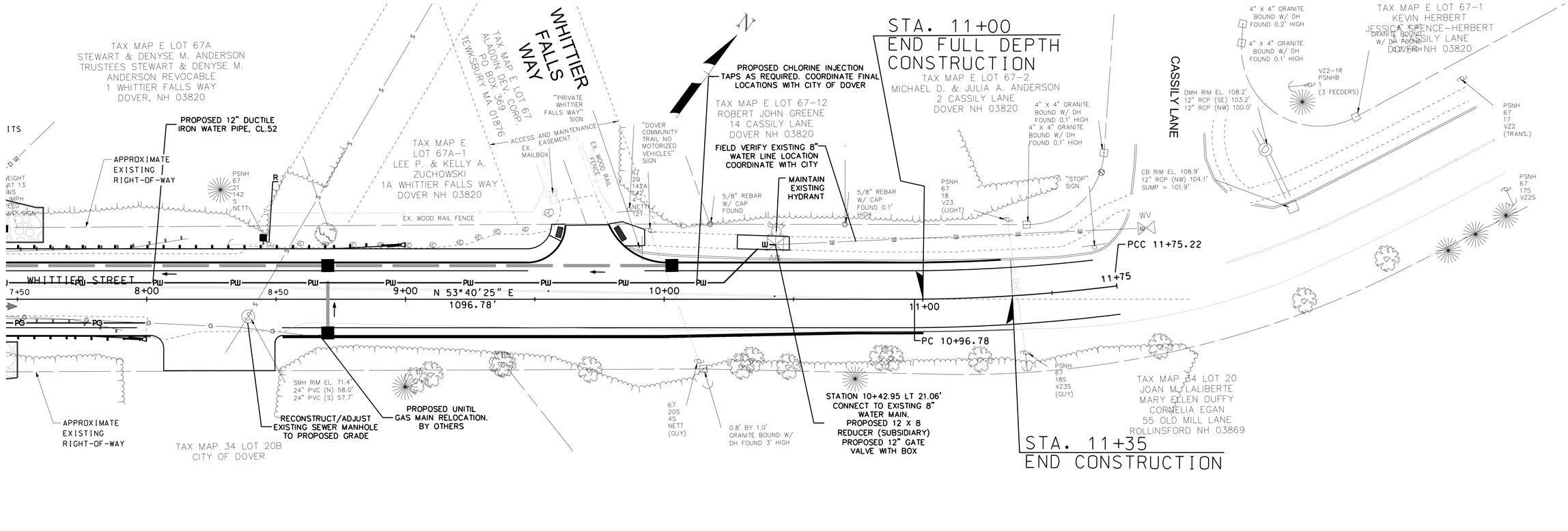
NUMBER	DATE	DESCRIPTION	STATION

SDR PROCCESSED DATE

NEW DESIGN NM/TH DATE 10/15

SHEET CHECKED TH DATE 10/15

AS BUILT DETAILS DATE



REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCCESSED	DATE	
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

LEGEND

- PG — PROPOSED/TEMPORARY GAS
- PW — PROPOSED WATER
- PS — PROPOSED SEWER
- PS — TEMPORARY SEWER
- X UTILITY TO BE REMOVED

SCALE IN FEET 20 0 20 40 HORIZONTAL

20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH

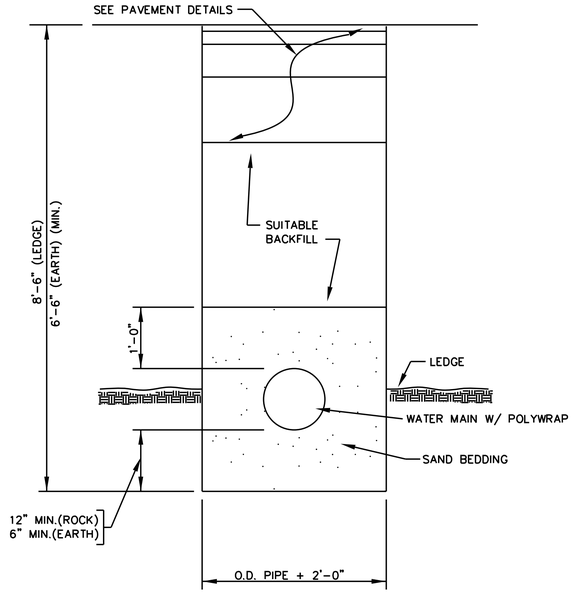
WHITTIER STREET OVER COCHECO RIVER

UTILITY IMPROVEMENTS PLAN (3 OF 3)

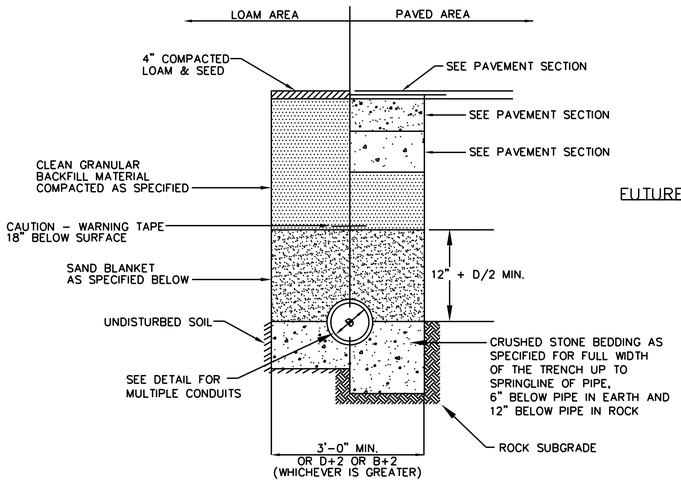
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402UTILITY-3	15402	49	58

GENERAL UTILITY NOTES:

1. PERMANENT RELOCATION OF OVERHEAD UTILITIES (ELECTRIC, TELEPHONE, CABLE, ALARM) TO BE PERFORMED BY OWNER COMPANIES, AND ARE NOT INCLUDED IN THE CONTRACT. ANY TEMPORARY RELOCATION OF OVERHEAD UTILITES FOR CONTRACTOR CONVENIENCE SHALL BE COORDINATED BY THE CONTRACTOR AND PERFORMED AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR TO COORDINATE WITH GAS COMPANY (UNITIL) FOR REMOVAL OF EXISTING GAS MAIN AND INSTALLATION OF PERMANENT GAS PIPING. GAS MAIN RELOCATION SHALL BE PERFORMED BY UNITIL, OR DULY ASSIGNED DESIGNEE.
3. CONTRACTOR TO PERFORM ALL WORK FOR SEWER FACILITIES IN ACCORDANCE WITH CITY OF DOVER SEWER SPECIFICATIONS AND CONSTRUCTION STANDARDS.
4. CONTRACTOR TO PERFORM ALL WORK FOR WATER FACILITIES IN ACCORDANCE WITH CITY OF DOVER WATER SPECIFICATIONS AND CONSTRUCTION STANDARDS.
5. REMOVAL OF EXISTING PIPES OR STRUCTURES WITHIN THE PAY LIMITS OF OTHER ITEMS SHALL BE INCLUDED IN THE RESPECTIVE ITEM. OTHER PIPES OR STRUCTURES MARKED FOR REMOVAL BUT NOT WITHIN THE PAY LIMITS OF ANY OTHER ITEM SHALL BE PAID UNDER THE APPROPRIATE 202 ITEM.
6. LIMITS OF ITEM 614.342 4" 2-DUCT STEEL CONDUITS SHALL BE FROM PULL BOXES TO ITEM 614.74218. STEEL CONDUIT SHALL EXTEND THROUGH THE ABUTMENT BACKWALLS AND CONNECT TO THE PVC CONDUIT. CONNECTION SHALL BE SUBSIDIARY.



TYPICAL WATER TRENCH
NOT TO SCALE



BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

CRUSHED STONE BEDDING *

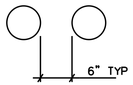
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	20 - 55
# 4	0 - 10
# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

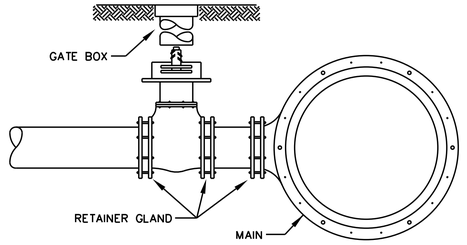
UTILITY TRENCH SECTION
NOT TO SCALE

DUCT SECTION

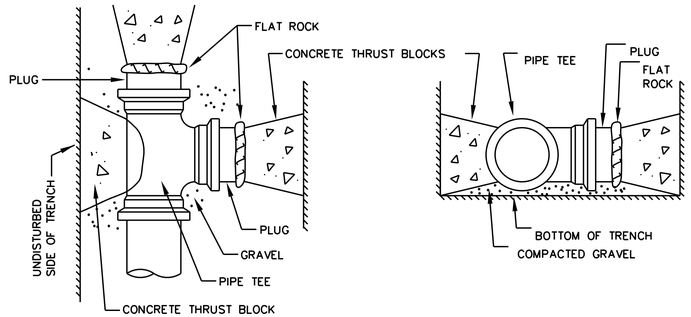
FUTURE TELEPHONE/COMMUNICATION/SPARES
2 - 4" DUCTS; STEEL



TYPICAL MULTIPLE CONDUIT DETAIL
SEE DUCT DETAILS FOR SPECIFIC CONFIGURATIONS

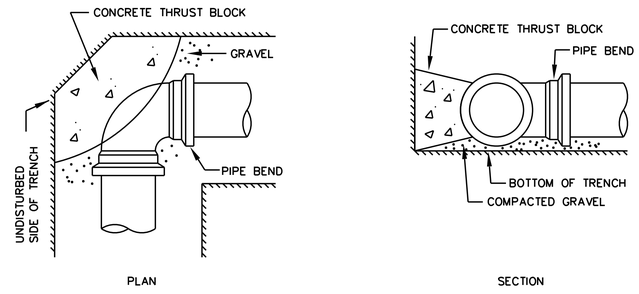


TYPICAL CONNECTION
NOT TO SCALE



PLAN SECTION

TYPICAL THRUST BLOCK PLACEMENT ON TEES & PLUGS
NOT TO SCALE



PLAN SECTION

TYPICAL THRUST BLOCK PLACEMENT ON BENDS
NOT TO SCALE

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION	DATE	NUMBER

		DATE
SDR PROCCESSED		
NEW DESIGN	NM	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

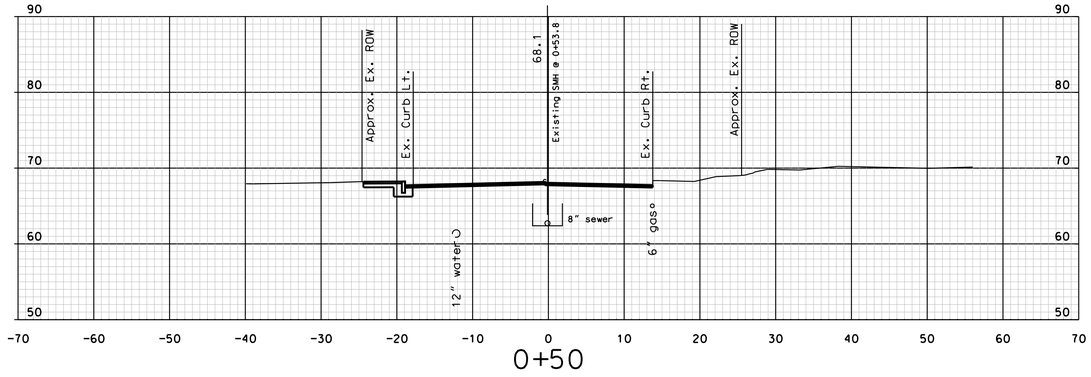
THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

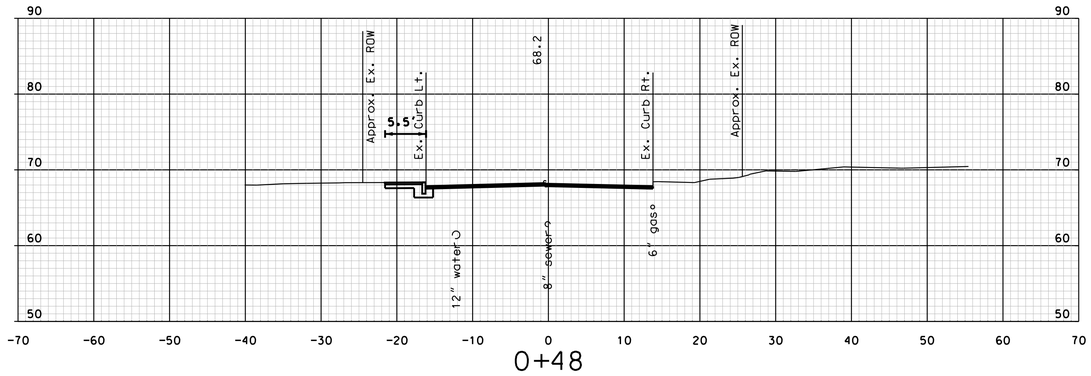
CITY OF DOVER NH

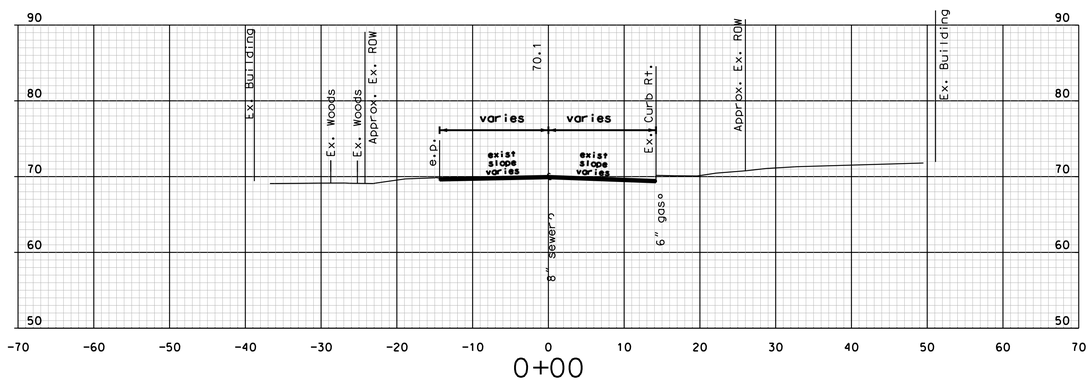
WHITTIER STREET OVER COCHECO RIVER

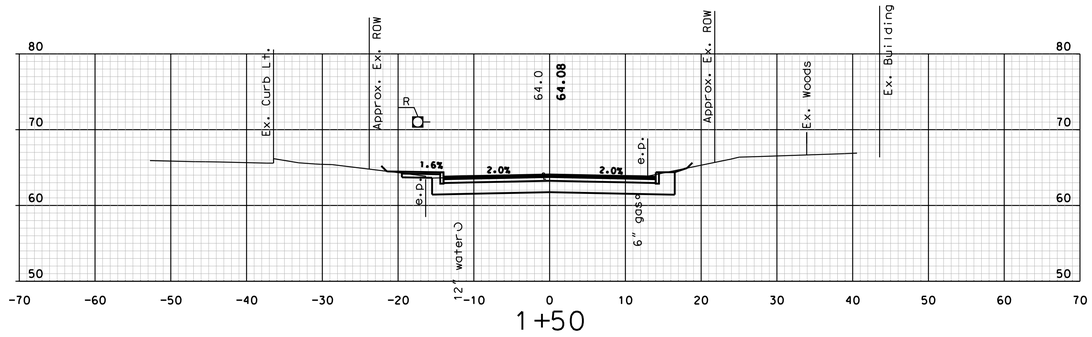
UTILITY DETAILS

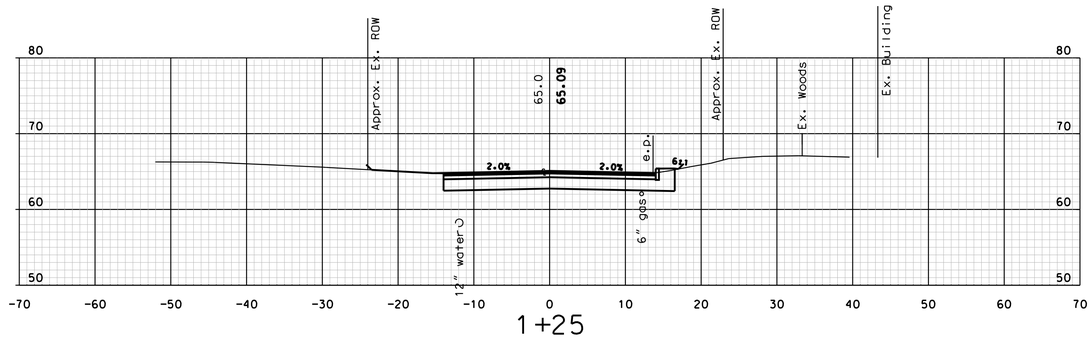
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402UTILITY-4	15402	50	58

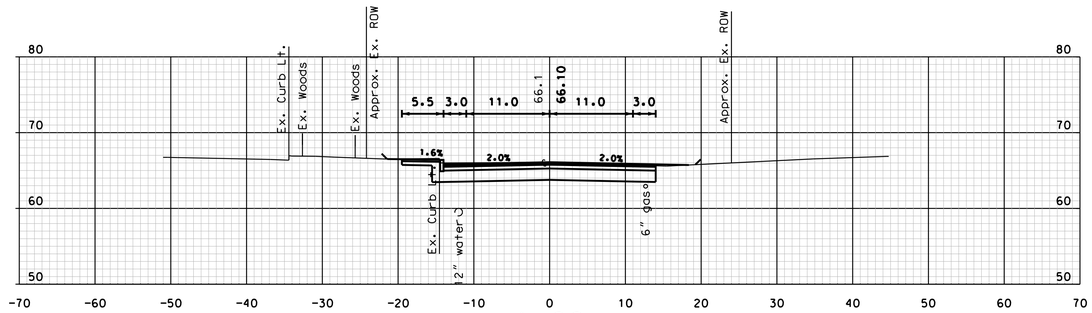


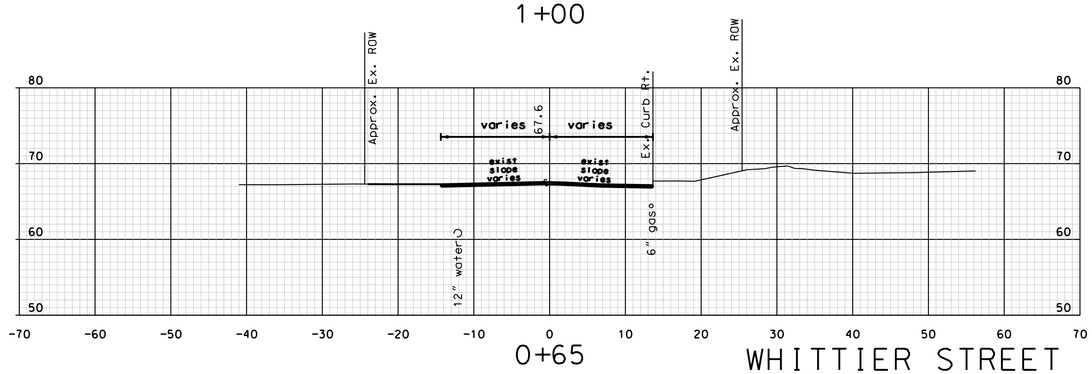












WHITTIER STREET

REVISIONS AFTER PROPOSAL			
DESCRIPTION	STATION	DATE	NUMBER

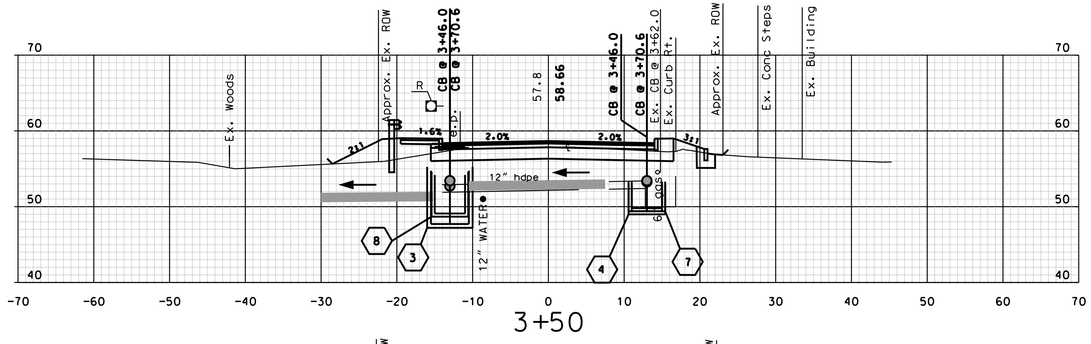
		DATE
SDR PROCCESSED		
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SHEET TOTALS

COMMON EXCAV.	188.81 C.Y.	ROCK EXCAV.	– C.Y.
FILL	0.52 C.Y.	MUCK EXCAV.	– C.Y.

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
XS00-XS01	15402	51	58



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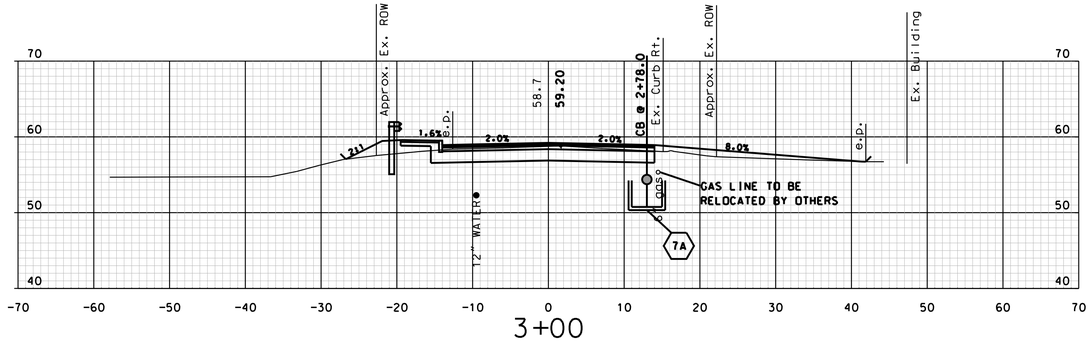

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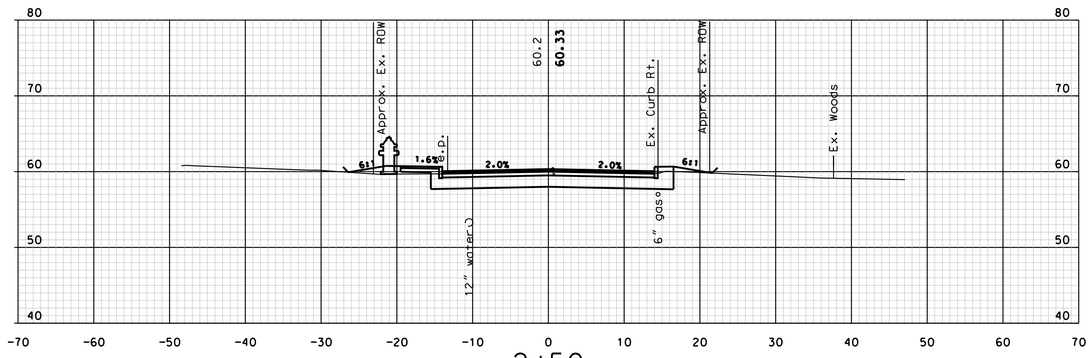

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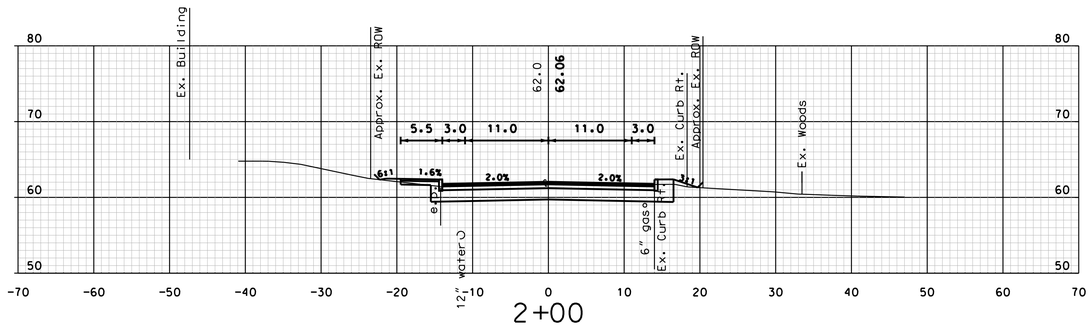

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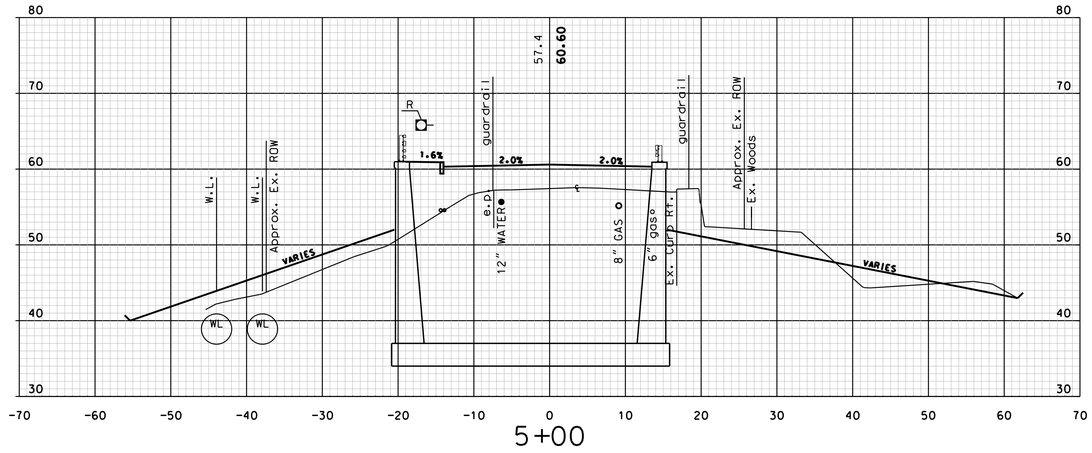
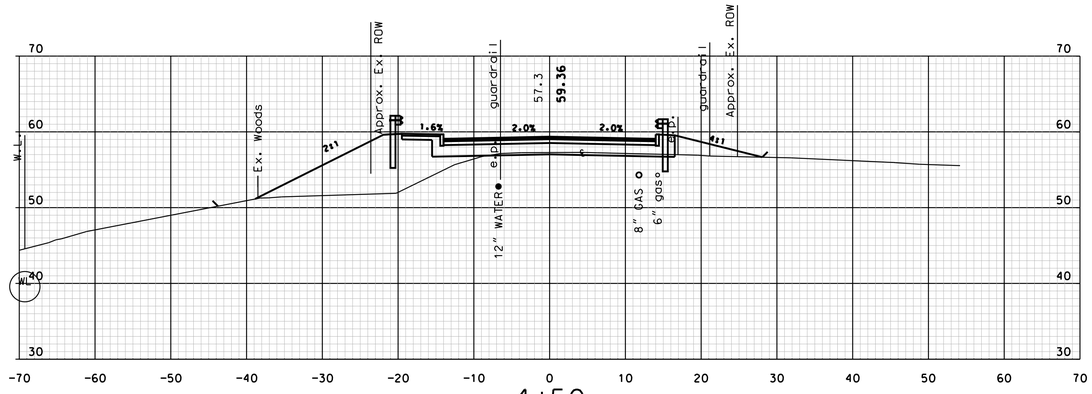
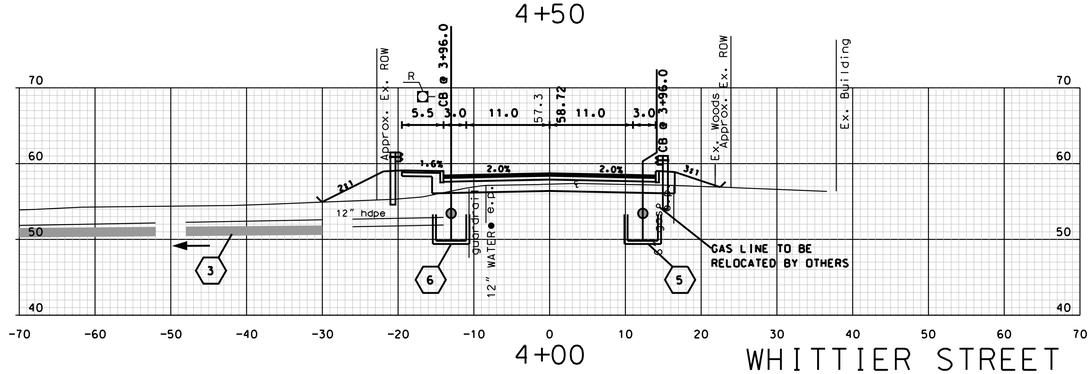


5+00



4+50



4+00

WHITTIER STREET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

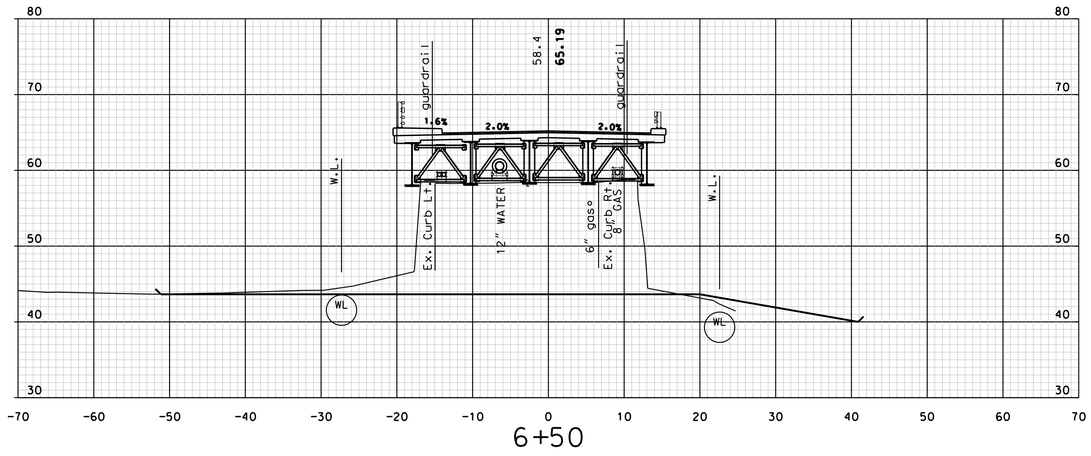
	DATE
SDR PROCCESSED	
NEW DESIGN	NM/TH DATE 10/15
SHEET CHECKED	TH DATE 10/15
AS BUILT DETAILS	DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SHEET TOTALS

COMMON EXCAV.	603.22 C.Y.	ROCK EXCAV.	– C.Y.
FILL	495.75 C.Y.	MUCK EXCAV.	– C.Y.

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
XS00-XS02	15402	52	58



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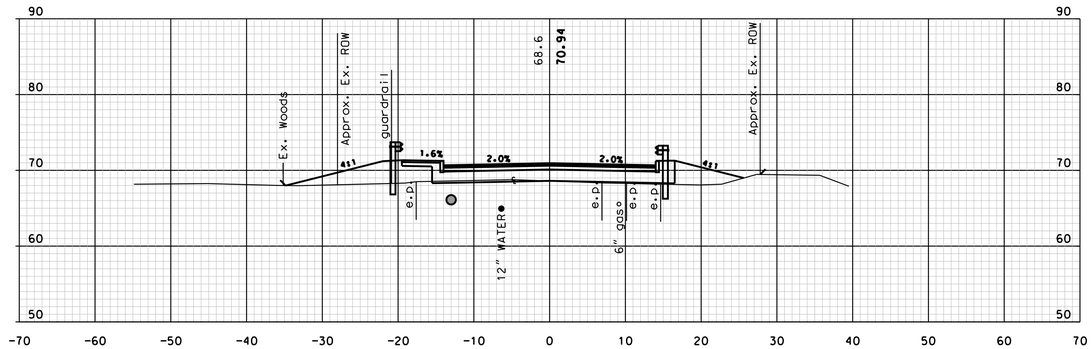
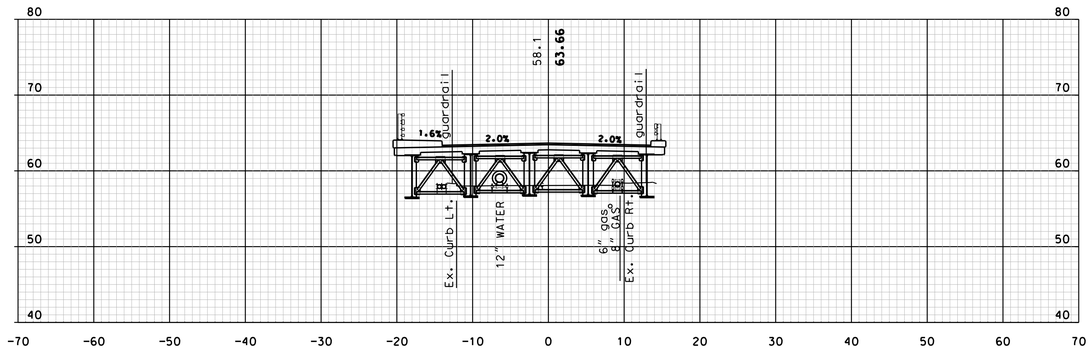


8+00



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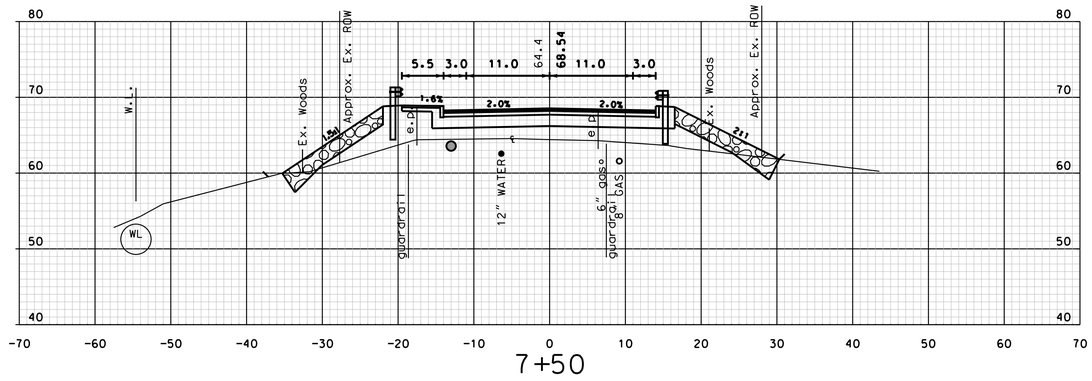

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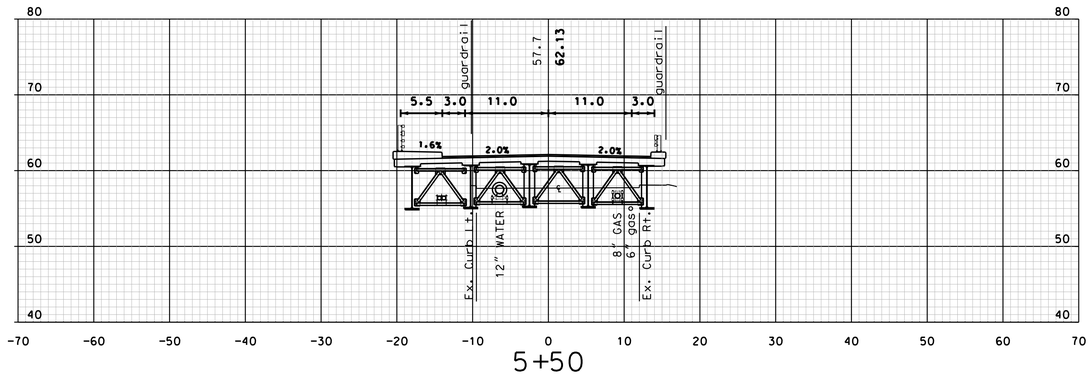
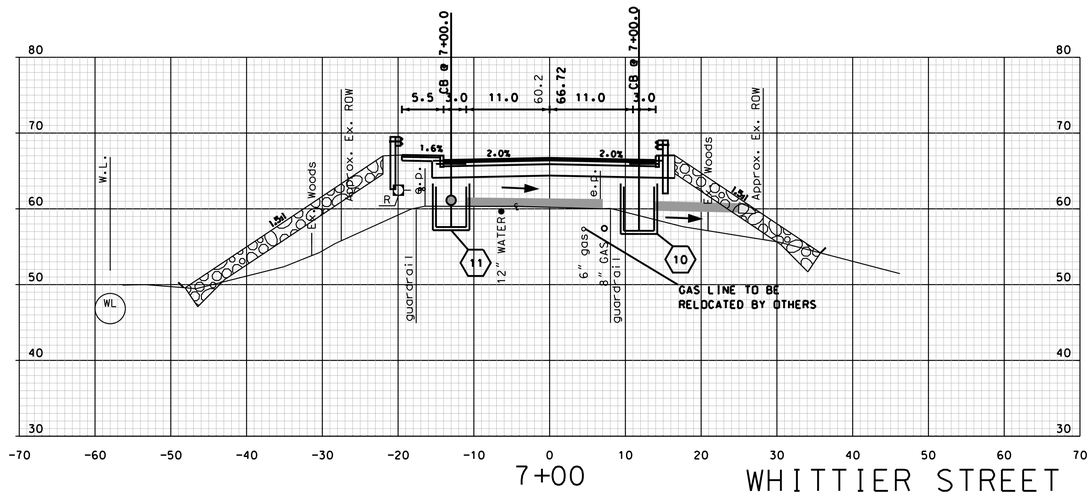


5+50



7+00

WHITTIER STREET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCCESSED		DATE
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

SHEET TOTALS

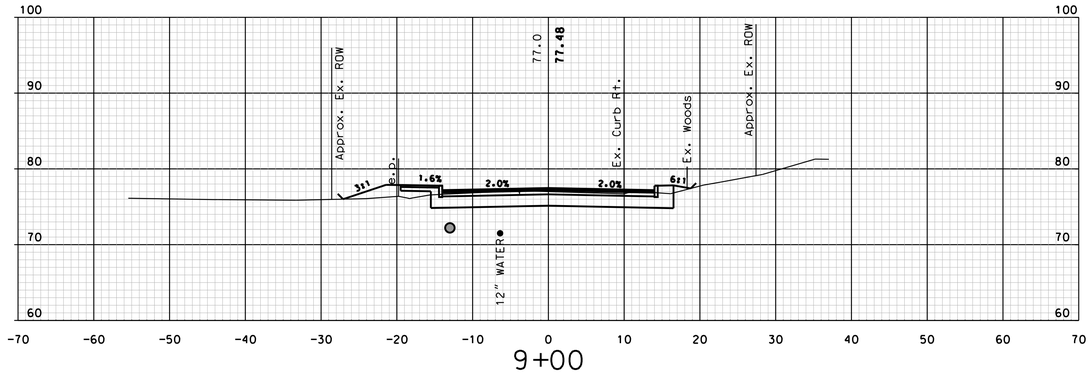
COMMON EXCAV.	105.42 C.Y.	ROCK EXCAV.	– C.Y.
FILL	742.74 C.Y.	MUCK EXCAV.	– C.Y.

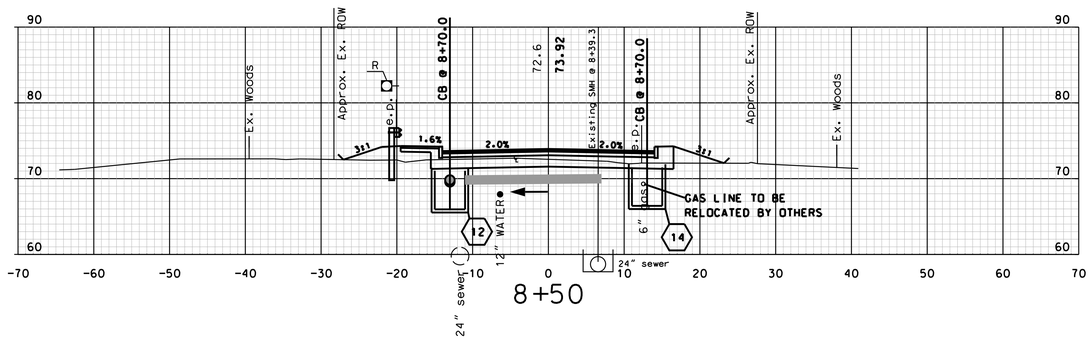
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
XS00-XS03	15402	53	58

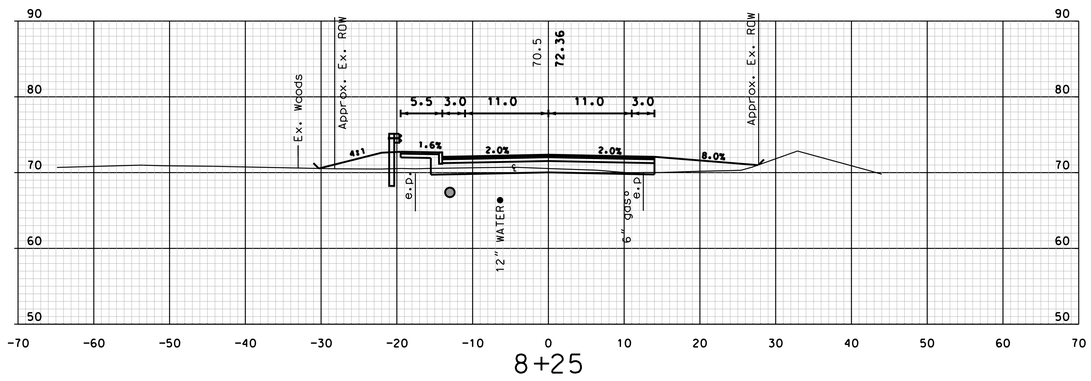
REVISIONS AFTER PROPOSAL

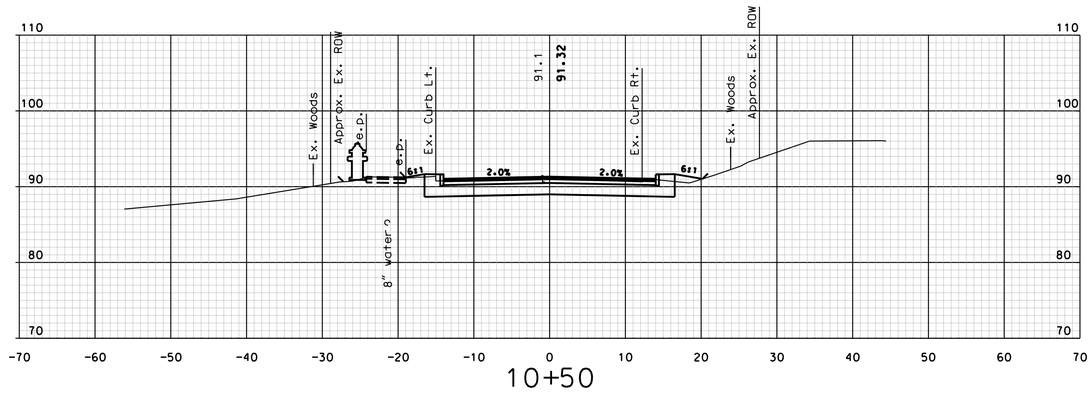
NUMBER	DATE	STATION	DESCRIPTION

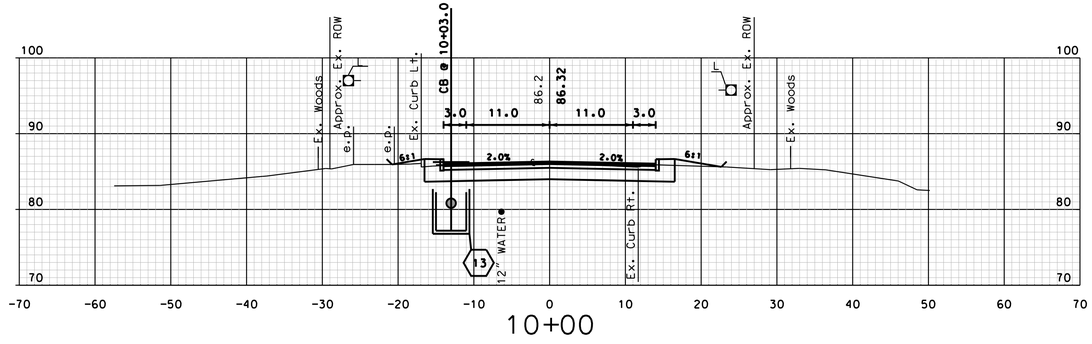
	DATE
SDR PROCCESSED	
NEW DESIGN NM/TH	DATE 10/15
SHEET CHECKED TH	DATE 10/15
AS BUILT DETAILS	DATE

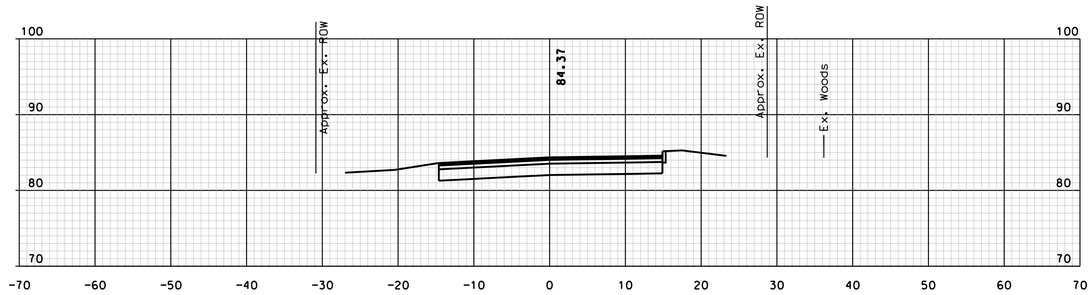


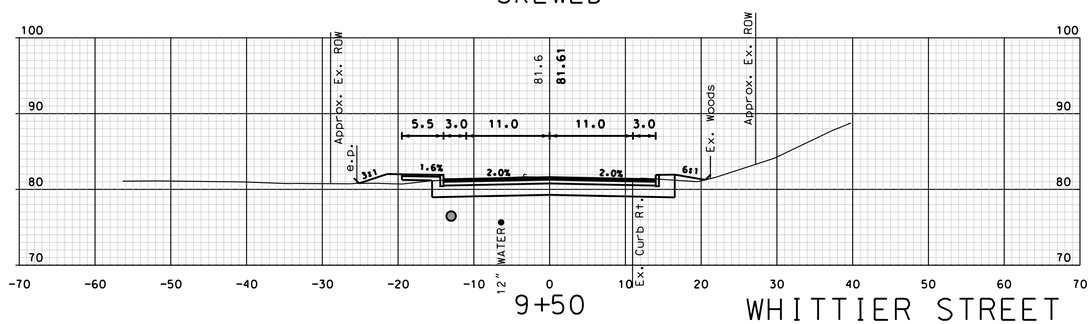












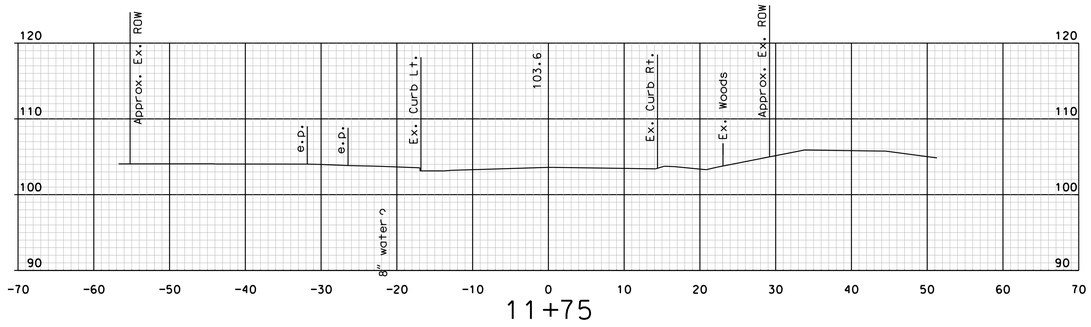
WHITTIER STREET

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

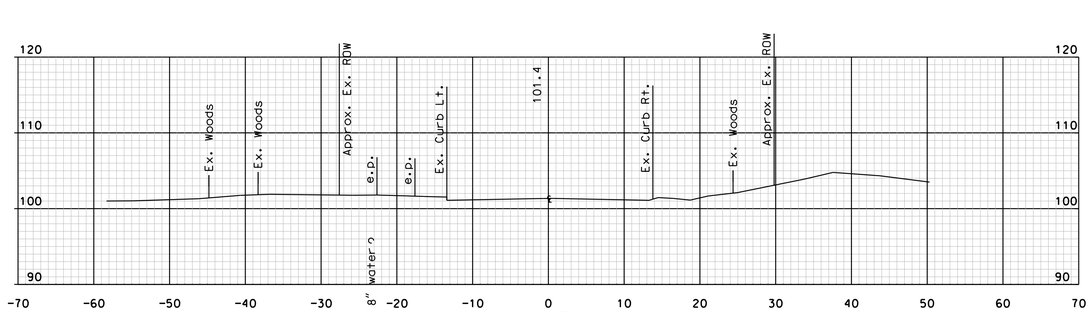
SHEET TOTALS

COMMON EXCAV.	518.50 C.Y.	ROCK EXCAV.	– C.Y.
FILL	152.67 C.Y.	MUCK EXCAV.	– C.Y.

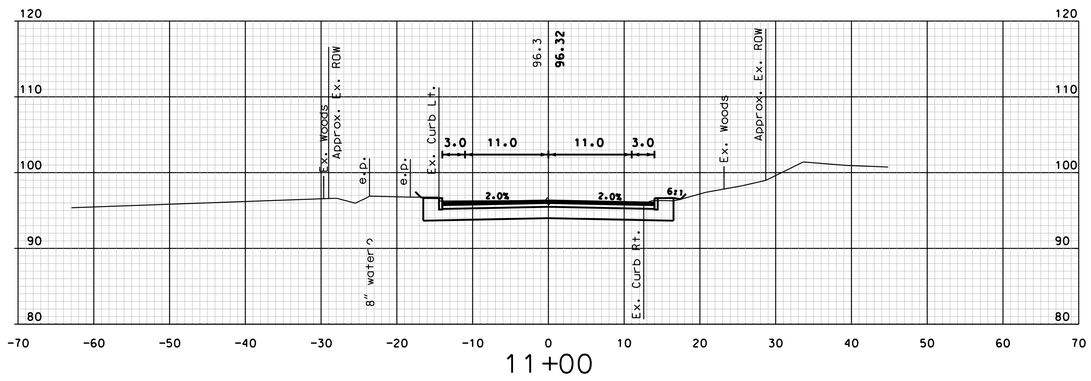
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
XS00-XS04	15402	54	58



11+75



11+50



11+00

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

		DATE
SDR PROCCESSED		
NEW DESIGN	NM/TH	DATE 10/15
SHEET CHECKED	TH	DATE 10/15
AS BUILT DETAILS		DATE

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

WHITTIER STREET

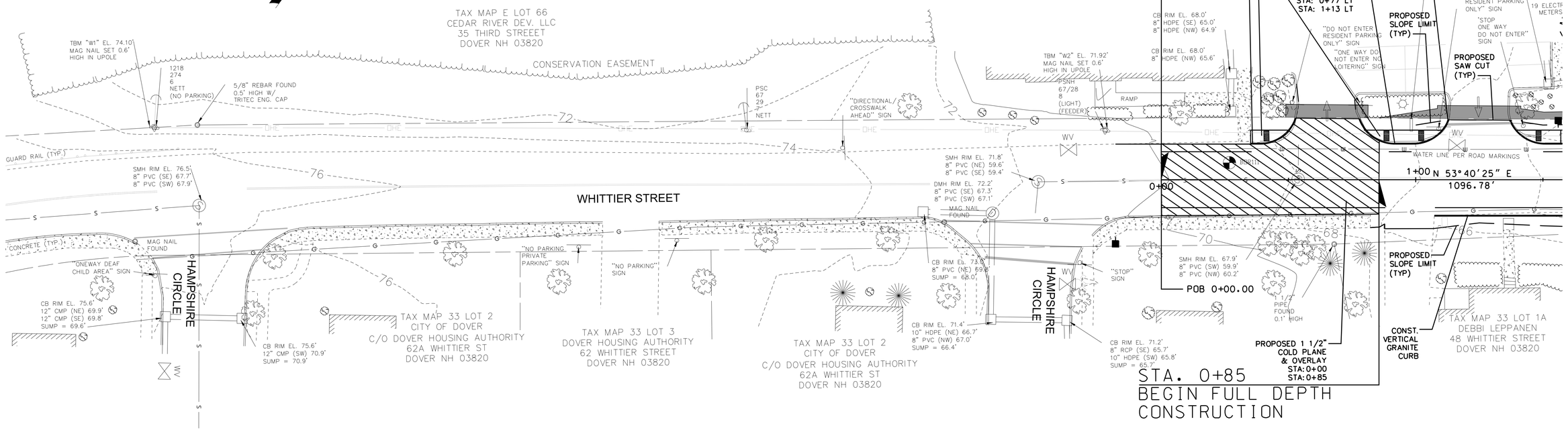
SHEET TOTALS

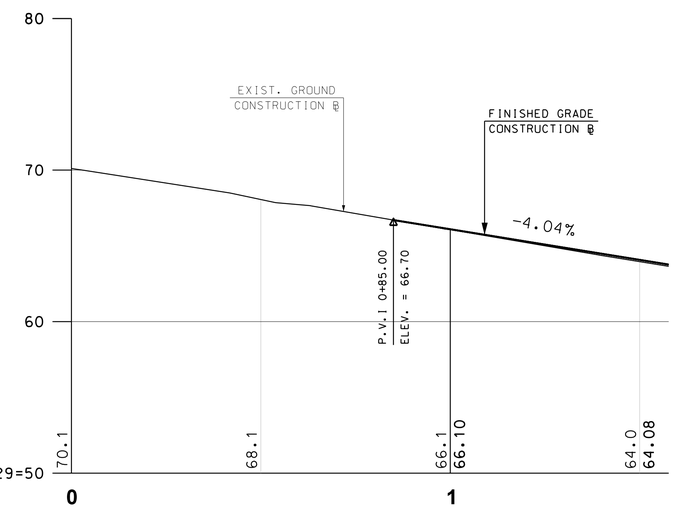
COMMON EXCAV. 138.26 C.Y. ROCK EXCAV. - C.Y.

FILL 3.06 C.Y. MUCK EXCAV. - C.Y.

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
XS00-XS05	15402	55	58

TAX MAP E LOT 66
CEDAR RIVER DEV. LLC
2127 SF PERMANENT EASEMENT
1733 SF PERMANENT DRAINAGE EASEMENT (WITHIN EXIST DRAIN EASEMENT)
1134 SF PERMANENT EASEMENT (WITHIN EXIST SLOPE EASEMENT)
2186 SF TEMPORARY EASEMENT
172 SF TEMPORARY EASEMENT (WITHIN EXIST SLOPE EASEMENT)





- ***ROW PERMANENT EASEMENT AREA***
- ***ROW TEMPORARY EASEMENT AREA***
- ***ROW PERMANENT DRAINAGE EASEMENT AREA (WITHIN EXIST DRAIN EASEMENT)***
- ***ROW PERMANENT EASEMENT AREA (WITHIN EXIST SLOPE EASEMENT)***
- ***ROW TEMPORARY EASEMENT AREA (WITHIN EXIST SLOPE EASEMENT)***

SCALE IN FEET 20 0 20 40 HORIZONTAL
20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH
WHITTIER STREET OVER COCHECO RIVER
RIGHT OF WAY IMPACT PLAN (1 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402ROW.dgn	15402	56	58

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

	DATE
SDR PROCCESSED	
NEW DESIGN TH	DATE 10/15
SHEET CHECKED TM	DATE 10/15
AS BUILT DETAILS	DATE


TAX MAP E LOT 66
CEDAR RIVER DEV. LLC
2127 SF PERMANENT EASEMENT
1733 SF PERMANENT DRAINAGE EASEMENT (WITHIN EXIST DRAIN EASEMENT)
1134 SF PERMANENT EASEMENT (WITHIN EXIST SLOPE EASEMENT)
2186 SF TEMPORARY EASEMENT
172 SF TEMPORARY EASEMENT
(WITHIN EXIST SLOPE EASEMENT)
PROPOSED 5.5 FOOT CONCRETE SIDEWALK (TYP)
CONST. VERTICAL GRANITE CURB STA: 1+36 LT STA: 5+00.25 LT
PROPOSED SLOPE LIMIT (TYP)
PROP G-2
CONSERVATION EASEMENT
PROP. 12" WATER MAIN
PROPOSED TEMP. POLE BY OTHERS STA. 4+30 LT 25.0'
MAINTAIN EXISTING LARGE TREES. COORDINATE TREE REMOVAL WITH RESIDENT ENGINEER.
PROPOSED CONDUITS (2 DUCT 4") FOR FUTURE COMMUNICATIONS TO BE STUBBED INTO 18" CONCRETE PULLBOXES. TYP. BOTH SIDES OF BRIDGE.
TEMPORARY COMCAST FIBER OPTIC LINE (EVERSOURCE LINE DEAD ENDED)
RIGHT-OF-WAY
PROPOSED TEMP. POLE BY OTHERS STA. 7+45 LT 26.0'
MAINTAIN EXISTING LARGE TREES. COORDINATE TREE REMOVAL WITH RESIDENT ENGINEER.
CONST. VERTICAL GRANITE CURB STA: 6+66.0 LT STA: 9+62 LT
N 53°40'25" E
1096.78'
℄ CONST AND PGL
WHITTIER STREET
2+00
3+00
4+00
5+00
6+00
7+00
14.0'
11.0'
5.5'
CONST. VERTICAL GRANITE CURB STA: 1+07 RT STA: 2+82 RT
CLEAR TO SLOPE LINE
MAINTAIN EXISTING LARGE TREE PER CITY STA. 1+90RT
PROPOSED SLOPE LIMIT (TYP)
CONST. DRIVEWAY LIP (TYP.)
PROPOSED SAW CUT (TYP)
SAWCUT & REMOVE EXISTING PAVEMENT PAVE ADJACENT TO CURB TO MATCH EXISTING
TERMINAL CURB TO 0" REVEAL
PROP. 25' EAGRT
CONST. VERTICAL GRANITE CURB STA: 3+12 RT STA: 4+81.50 RT
PROPOSED 7 FT WIDE ISLAND VERTICAL GRANITE CURB 7" REVEAL TO STA. 3+68 RT LOAM AND SEED
CLEAR TO SLOPE LINE. FIELD VERIFY SLOPE LIMIT TO MINIMIZE CLEARING
CONST. WOOD STOCKADE FENCE FIELD VERIFY LOCATION STA: 4+10 RT STA: 4+70 RT
+39.82 BEGIN CURB TAPER RT 13.0' +52.32 END CURB TAPER RT 12.5'
PROPOSED DARK AMERICAN ARBORVITAE, 6' B&B, 10' OC. 2 ROWS, STAGGERED. FIELD VERIFY LOCATION WITH RESIDENT ENGINEER. TOTAL 6 TREES REFER TO ITEM 650.2 SPEC. PROV.
RIGHT-OF-WAY
PROPOSED TEMPORARY PIPE BRIDGE TO MAINTAIN LIVE UNITIL GAS MAIN.
COCHECO RIVER
CLEARING LINE
+22.18 BEGIN CURB TAPER RT 12.5' +34.68 END CURB TAPER RT 13.0'
TAX MAP 33 LOT 1A
DEBBI LEPPANEN
NO IMPACT
TAX MAP 33 LOT 1
JEANNINE & ROBERT JR GAGNON
815 SF PERMANENT EASEMENT
2576 SF TEMPORARY EASEMENT
TAX MAP 33 LOT 1
JEANNINE A. & ROBERT JR. GAGNON
46 WHITTIER STREET
DOVER NH 03820
-4.04%
P.V.C 2+00.00 ELEV. = 62.06
VC = 300
K = 42
EXIST. GROUND CONSTRUCTION ℄
LOW POINT 3+70.58 ELEV. = 58.61
FINISHED GRADE CONSTRUCTION ℄
P.V.I 3+50.00 ELEV. = 56.00
3.06%
P.V.T 5+00.00 ELEV. = 60.60
VC = 300
K = 43
P.V.C 7+00.00 ELEV. = 66.72
70
60
50
40
30
64.0 64.08
62.0 62.06
60.2 60.33
58.7 59.20
57.8 58.66
57.3 58.72
57.3 59.36
57.4 60.60
57.7 62.13
58.1 63.66
58.4 65.19
60.2 66.72
64.4 68.54
2
3
4
5
6
7

- ROW PERMANENT EASEMENT AREA
- ROW TEMPORARY EASEMENT AREA
- ROW PERMANENT DRAINAGE EASEMENT AREA (WITHIN EXIST DRAIN EASEMENT)
- ROW PERMANENT EASEMENT AREA (WITHIN EXIST SLOPE EASEMENT)
- ROW TEMPORARY EASEMENT AREA (WITHIN EXIST SLOPE EASEMENT)

SCALE IN FEET 20 0 20 40 HORIZONTAL
20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

CITY OF DOVER NH
WHITTIER STREET OVER COCHECO RIVER

RIGHT OF WAY IMPACT PLAN (2 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402ROW.dgn	15402	57	58

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCCESSED		DATE
NEW DESIGN	TH	DATE 10/15
SHEET CHECKED	TM	DATE 10/15
AS BUILT DETAILS		DATE

TAX MAP E LOT 67A
STEWART & DENYSE M. ANDERSON
2363 SF PERMANENT EASEMENT
1593 SF TEMPORARY EASEMENT

TAX MAP E LOT 67A-1
LEE P. & KELLY A. ZUCHOWSKI
NO IMPACT

TAX MAP E LOT 67A
STEWART & DENYSE M. ANDERSON
TRUSTEES STEWART & DENYSE M.
ANDERSON REVOCABLE
1 WHITTIER FALLS WAY
DOVER, NH 03820

TAX MAP E LOT 67A-1
LEE P. & KELLY A.
ZUCHOWSKI
1A WHITTIER FALLS WAY
DOVER NH 03820

TAX MAP E LOT 67-12
ROBERT JOHN GREENE
14 CASSILY LANE
DOVER NH 03820

TAX MAP E LOT 67-2
MICHAEL D. & JULIA A. ANDERSON
2 CASSILY LANE
DOVER NH 03820

TAX MAP E LOT 67-1
KEVIN HERBERT
JESSICA A. FENCE-HERBERT
4 CASSILY LANE
DOVER NH 03820

TAX MAP 34 LOT 20B
CITY OF DOVER

TAX MAP 34 LOT 20
JOAN M LALIBERTE
MARY ELLEN DUFFY
CORNELIA EGAN
55 OLD MILL LANE
ROLLINSFORD NH 03869

WHITTIER FALLS WAY

CASSILY LANE

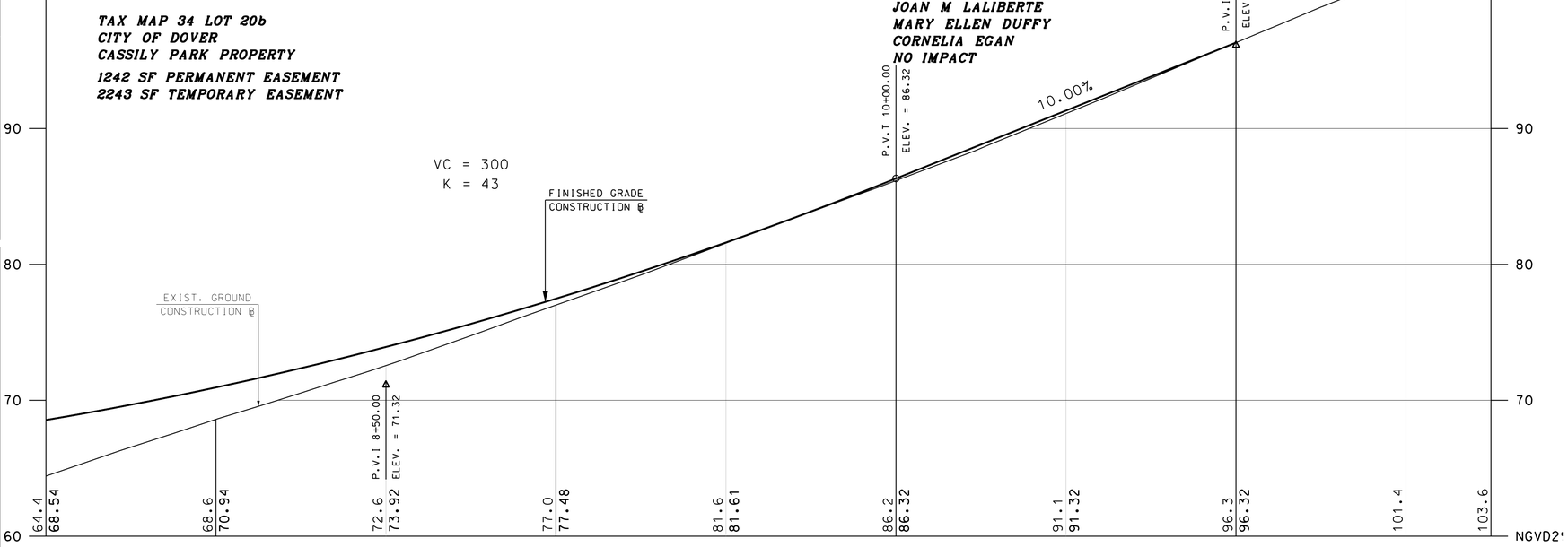
WHITTIER STREET

PROPOSED SLOPE LIMIT (TYP)
CLEAR TO SLOPE LINE
PROPOSED 5.5' CONCRETE SIDEWALK
PROPOSED 12" WATER MAIN
PROP. 25' EAGRT
CONSTRUCT DETECTABLE WARNING DEVICE
ACCESS AND MAINTENANCE EASEMENT
EX. MAILBOX
EX. WOOD RAIL FENCE
"PRIVATE WHITTIER FALLS WAY" SIGN
"DOVER COMMUNITY TRAIL NO MOTORIZED VEHICLES" SIGN
RIGHT-OF-WAY
PROPOSED BITUMINOUS SIDEWALK
5/8" REBAR W/ CAP FOUND
5/8" REBAR W/ CAP FOUND, 0.1' HIGH
"STOP" SIGN
CB RIM EL. 108.9'
12" RCP (NW) 104.1'
SUMP = 101.9'
DMH RIM EL. 108.2'
12" RCP (SE) 103.2'
12" RCP (NW) 100.0'
4" X 4" GRANITE BOUND W/ DH FOUND 0.2' HIGH
4" X 4" GRANITE BOUND W/ DH FOUND 0.1' HIGH
4" X 4" GRANITE BOUND W/ DH FOUND 0.1' HIGH
4" X 4" GRANITE BOUND W/ DH FOUND 0.1' HIGH
GRANITE BOUND W/ DH FOUND
TBM "W4" EL. 73.26' MAG NAIL SET 0.8' HIGH IN UPOLE
TBM "W57 EL. 101.81' MAG NAIL SET 1.0' HIGH IN UPOLE
TBM "W6" EL. 114.32' MAG NAIL SET 0.6' HIGH IN UPOLE
PSNH 67 21 142 5 NETT
PSNH 67 20 142A 12 NETT
PSNH 67 18 VZ3 (LIGHT)
PSNH 67 17S VZ2S
VZ2-1R PSNHB 1 (3 FEEDERS)
PSNH 67 17 VZ2 (TRANS.)
PSNH 67 18S VZ3S (GUY)
0.8' BY 1.0' GRANITE BOUND W/ DH FOUND 3' HIGH
67 20S 4S NETT (GUY)
SMH RIM EL. 71.1'
24" PVC (N) 58.0'
24" PVC (S) 57.7'
PROPOSED SLOPE LIMIT (TYP)
CLEAR TO SLOPE LINE
CONST. BITUMINOUS CURB
CONST. VERTICAL GRANITE CURB STA: 9+78 LT STA: 10+00 LT
RESET EX. CURB STA: 10+00 LT STA: 11+33 LT
PROPOSED FULL DEPTH RECONSTRUCTION TO END AT STA:11+00
PROPOSED 1 1/2" COLD PLANE & OVERLAY STA:11+00 STA:11+35
CONST. VERTICAL GRANITE CURB STA: 6+93 RT STA: 7+98 RT
PROP. 25' EAGRT
CLEARING LINE
RIGHT-OF-WAY
TBM "W6" EL. 114.32' MAG NAIL SET 0.6' HIGH IN UPOLE
PSNH 67 17 VZ2 (TRANS.)
PSNH 67 17S VZ2S
PCC 11+75.22
PC 10+96.78
STA. 11+00
END FULL DEPTH CONSTRUCTION
STA. 11+35
END CONSTRUCTION
N 53° 40' 25" E
1096.78'
11.0'
14.0'
5.5'
8+00
9+00
10+00
11+00
11+75
BDR112
BDR113

WHITTIER ST C# 1
PI= 11+36.04860
N= 258258.62598
E= 1190938.04759
Delta= 6°44'19.3"
Dc= 8°35'27.3"
Ts= 39.26505'
Es= 1.15485'
Lc=78.43956'
Rc= 666.93392'0

TAX MAP 34 LOT 20b
CITY OF DOVER
CASSILY PARK PROPERTY
1242 SF PERMANENT EASEMENT
2243 SF TEMPORARY EASEMENT

TAX MAP 34 LOT 20
JOAN M LALIBERTE
MARY ELLEN DUFFY
CORNELIA EGAN
NO IMPACT



- ROW PERMANENT EASEMENT AREA
- ROW PERMANENT EASEMENT AREA (WITHIN EXIST SLOPE EASEMENT)
- ROW TEMPORARY EASEMENT AREA
- ROW TEMPORARY EASEMENT AREA (WITHIN EXIST SLOPE EASEMENT)
- ROW PERMANENT DRAINAGE EASEMENT AREA (WITHIN EXIST DRAIN EASEMENT)

SCALE IN FEET 20 0 20 40 HORIZONTAL
20 0 20 40 VERTICAL

THE Louis Berger Group, INC.
Manchester, New Hampshire
(603) 644 5200

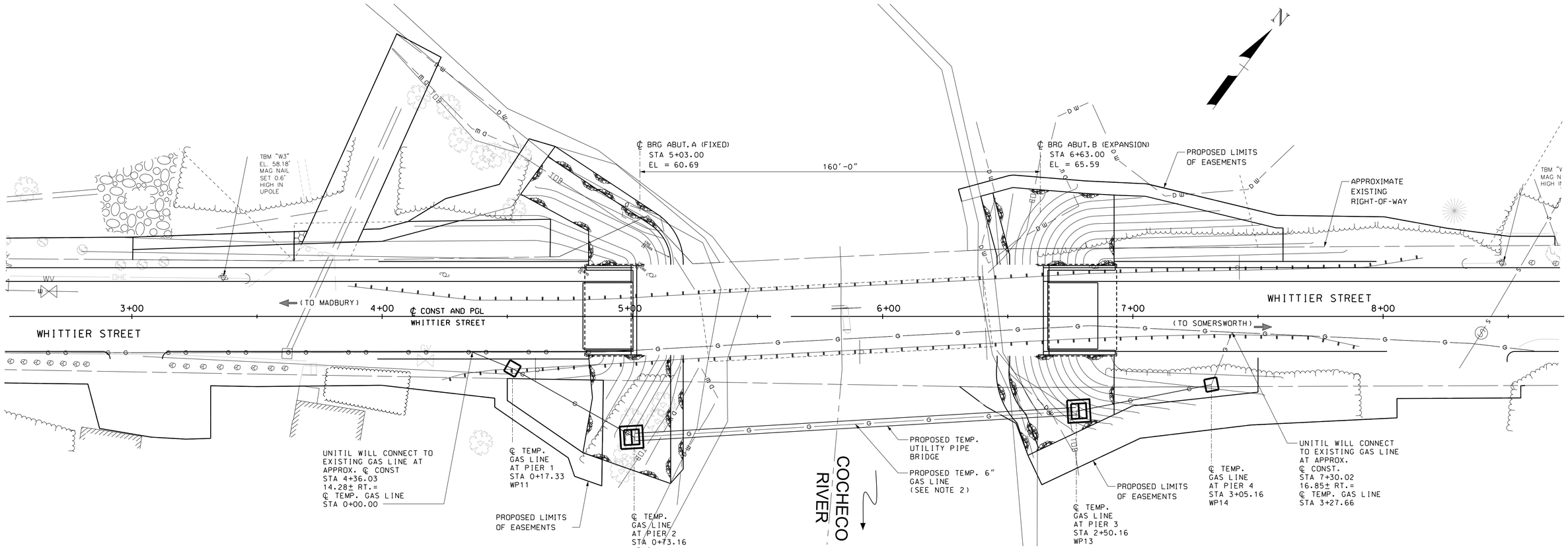
CITY OF DOVER NH
WHITTIER STREET OVER COCHECO RIVER
RIGHT OF WAY IMPACT PLAN (3 OF 3)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
15402ROW.dgn	15402	58	58

REVISIONS AFTER PROPOSAL

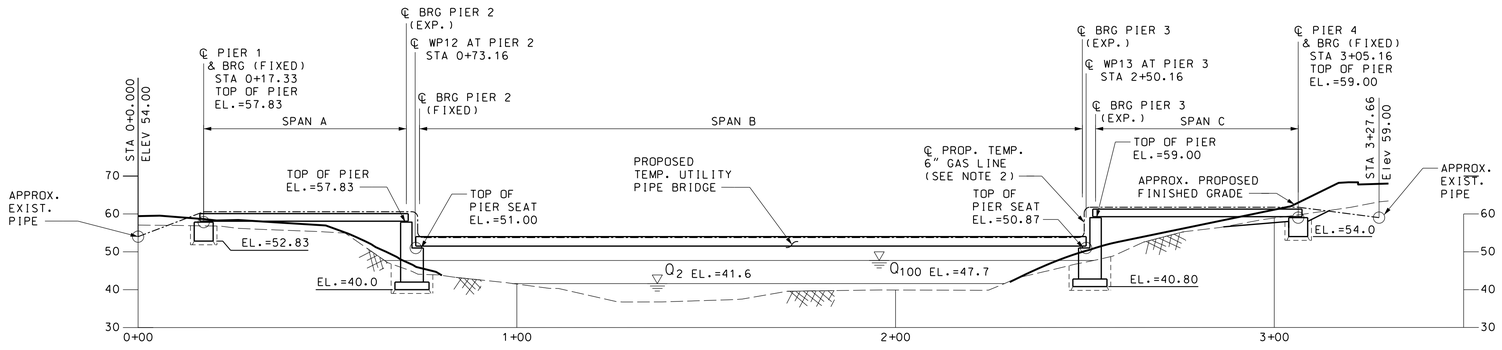
NUMBER	DESCRIPTION	STATION	DATE

		DATE
SDR PROCCESSED		
NEW DESIGN	TH	DATE 10/15
SHEET CHECKED	TM	DATE 10/15
AS BUILT DETAILS		DATE



PLAN

SCALE: 1" = 20'-0"



PROFILE

SCALE: 1" = 20'-0"

WORKING POINT COORDINATES		
WORKING POINT	NORTHING	EASTING
WP11	257836.47	1190399.49
WP12	257843.20	1190454.92
WP13	257956.21	1190591.15
WP14	257996.73	1190628.33

GENERAL NOTES:

1. THE CONTRACTOR SHALL SUPPLY ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO CONSTRUCT, AND AFTER CONSTRUCTION OF THE NEW WHITTIER STREET BRIDGE REMOVE, THE TEMPORARY UTILITY PIPE BRIDGE FOR THE TEMPORARY UNITIL GAS LINE AS SHOWN IN THESE PLANS AND IN ACCORDANCE WITH THE SPECIAL PROVISION. ALL COSTS FOR THE TEMPORARY UTILITY PIPE BRIDGE SHALL BE INCLUDED IN ITEM 612.99, UTILITY PIPE BRIDGE - GAS MAIN.
2. ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO CONSTRUCT THE TEMPORARY GAS LINE ITSELF AND CONNECT IT TO THE EXISTING GAS LINE ON THE BRIDGE APPROACHES WILL BE SUPPLIED BY UNITIL. THIS INCLUDES THE GAS PIPE, PIPE EXPANSION JOINTS, PIPE VALVES, PIPE ROLLERS, THREADED RODS AND NUTS SUPPORTING PIPE ROLLERS, AND CONNECTION TO THE EXISTING GAS LINE ON THE BRIDGE APPROACHES.
3. AT THE CONTRACTOR'S OPTION, THE CONTRACTOR MAY PROPOSE AN ALTERNATE TEMPORARY UTILITY PIPE SUPPORT SYSTEM TO UNITIL FOR REVIEW. ANY ALTERNATE SUPPORT SYSTEM MUST BE CONSTRUCTIBLE WITHIN THE LIMITS OF THE RIGHT-OF-WAY OR THE PROJECT'S CONSTRUCTION EASEMENTS. IF THE CONTRACTOR CHOOSES TO PROPOSE AN ALTERNATE TEMPORARY UTILITY PIPE SUPPORT SYSTEM, THE CONTRACTOR SHALL SUBMIT PLANS AND DESIGN CALCULATIONS FOR THE ALTERNATE SYSTEM STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN NEW HAMPSHIRE TO UNITIL FOR REVIEW.
4. AFTER THE PERMANENT GAS LINE IS OPERATIONAL ON THE NEW WHITTIER STREET BRIDGE, THE ENTIRE TEMPORARY UTILITY PIPE BRIDGE SHALL BE REMOVED BY THE CONTRACTOR AND SHALL BECOME THE PROPERTY OF THE CONTRACTOR. PORTIONS OF THE CONCRETE PIERS AND PIER FOOTINGS TWO FEET OR MORE BELOW PROPOSED FINISHED GRADE MAY BE LEFT IN PLACE.
5. ALL WORK SHALL BE IN CONFORMANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2010.
6. STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 50W (ASTM A709, GRADE 50W) UNPAINTED UNLESS OTHERWISE NOTED.
7. CONCRETE FOR PIERS AND PIER FOOTINGS SHALL BE CLASS A WITH A DESIGN COMPRESSIVE STRENGTH = 4000 PSI.
8. REINFORCING STEEL SHALL BE AASHTO M31 (ASTM A615), GRADE 60 UNCOATED.

STATE OF NEW HAMPSHIRE
TIMOTHY S. BRYANT
No. 8823
LICENSED
PROFESSIONAL ENGINEER

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
1/29/16	A1_PLAN_ELEV	AS NOTED

CITY OF DOVER, NEW HAMPSHIRE

DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER | BRIDGE NO. 111/132 | STATE PROJECT 15402

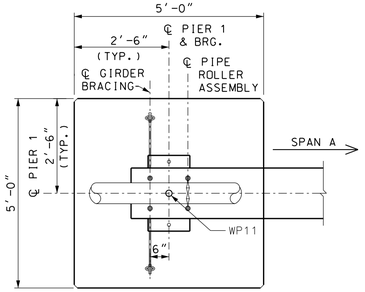
TEMP. GAS MAIN BRIDGE - PLAN AND PROFILE

BRIDGE SHEET: A1 OF 5

REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
		DESIGNED	JM/DPD	1/29	CHECKED	TSB	1/29
		DRAWN	DPD	1/29	CHECKED	TSB	1/29
		QUANTITIES			CHECKED		
		ISSUE DATE			FEDERAL PROJECT NO. X-A002(794)	SHEET NO. A1	TOTAL SHEETS 5
		REV. DATE					

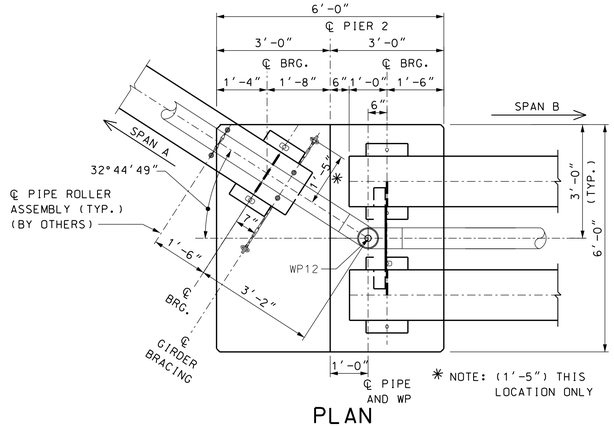
FILE NUMBER

SFILES



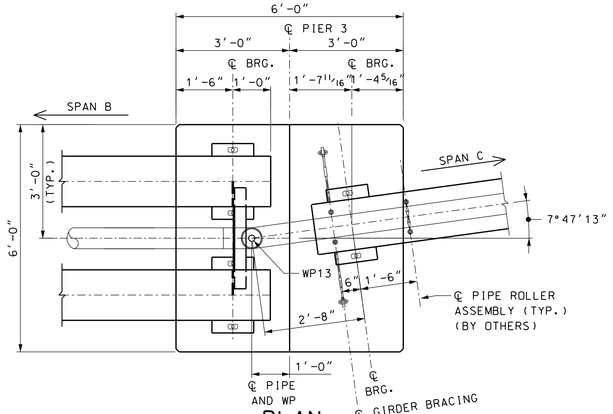
PLAN

SCALE: 1/2"=1'-0"



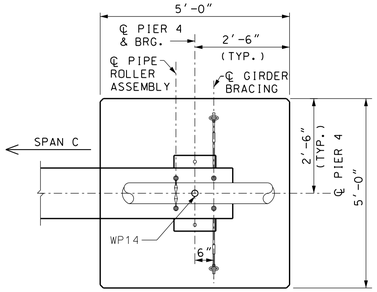
PLAN

SCALE: 1/2"=1'-0"



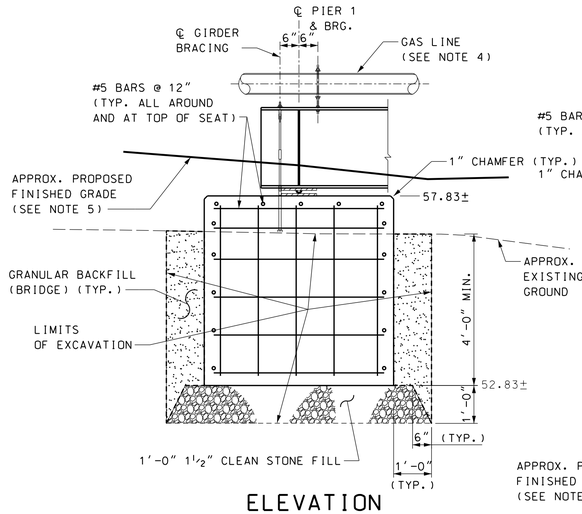
PLAN

SCALE: 1/2"=1'-0"



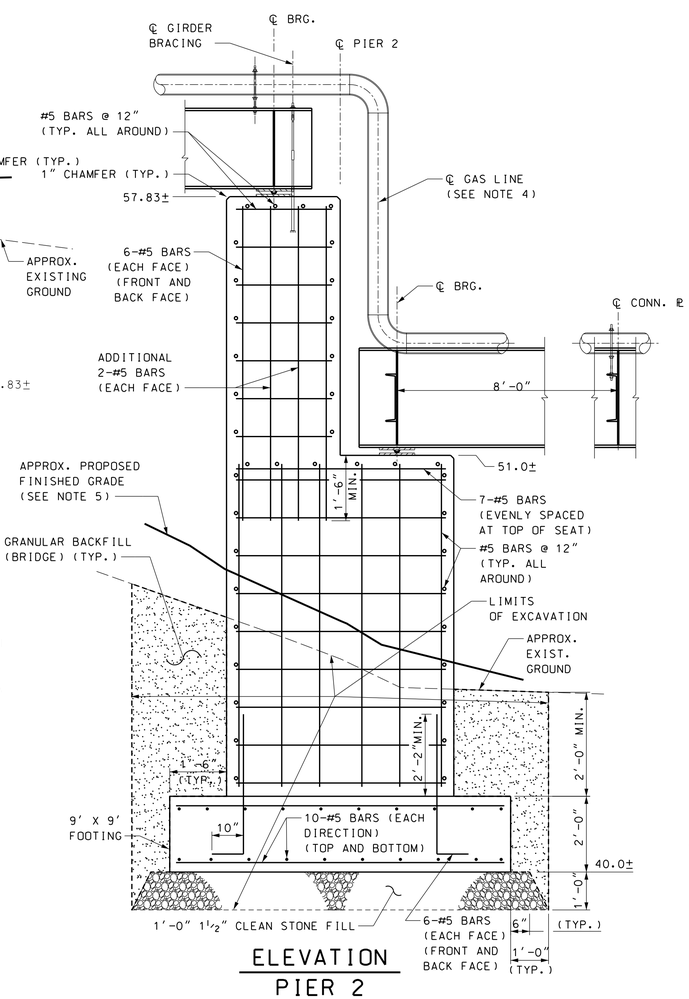
PLAN

SCALE: 1/2"=1'-0"



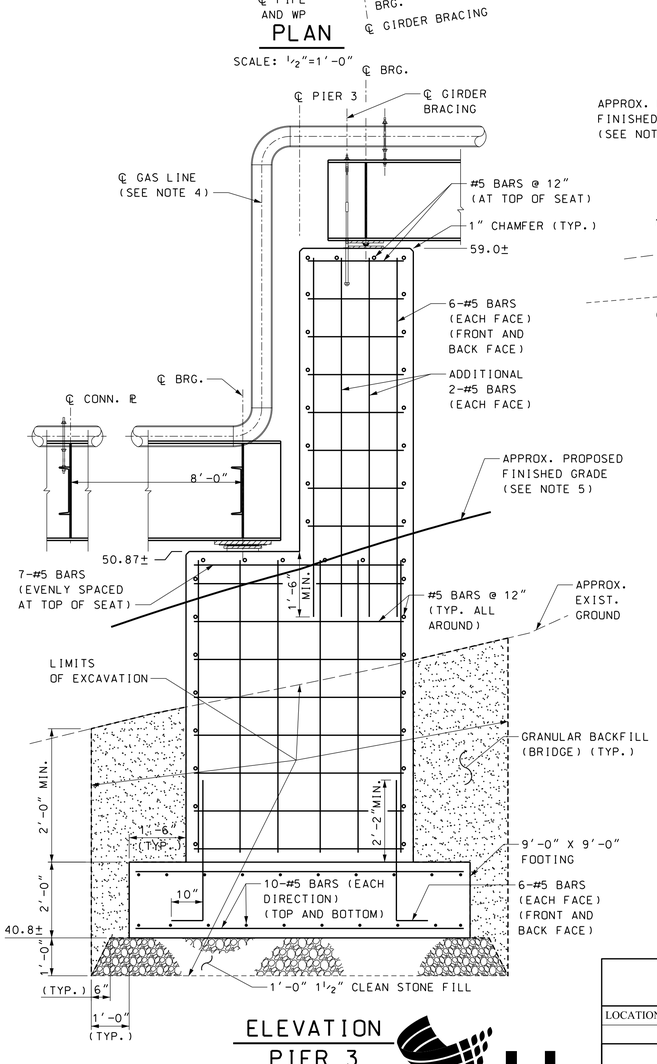
ELEVATION PIER 1

SCALE: 1/2"=1'-0"



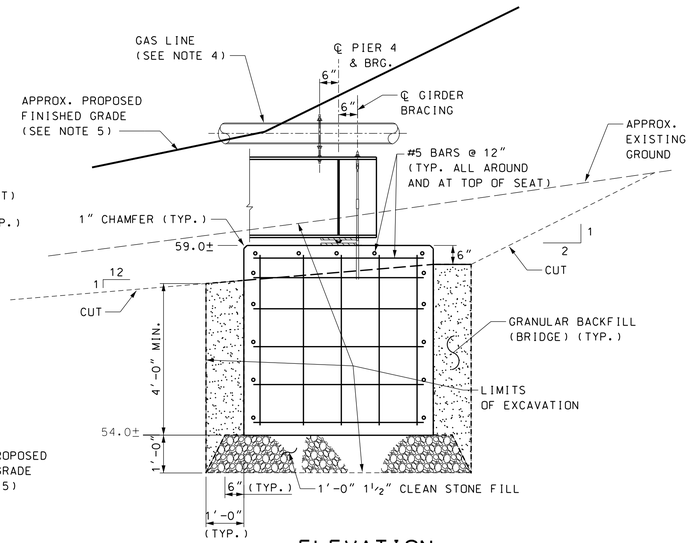
ELEVATION PIER 2

SCALE: 1/2"=1'-0"



ELEVATION PIER 3

SCALE: 1/2"=1'-0"



ELEVATION PIER 4

SCALE: 1/2"=1'-0"

PIER NOTES:

1. THE PIER AND PIER FOOTING DESIGN IS BASED ON A MAXIMUM DESIGN SOIL PRESSURE OF 1.5 TONS/SF. IF AFTER EXCAVATION FOR THE PIERS THE ENGINEER DETERMINES THAT THE SOILS ARE NOT CAPABLE OF A BEARING PRESSURE OF 1.5 TONS/SF THE RESIDENT ENGINEER SHALL CONTACT THE DESIGN ENGINEER FOR A REDESIGN. IF LEDGE IS ENCOUNTERED IN ANY OF THE PIER EXCAVATIONS CONTACT THE DESIGN ENGINEER.
2. THE CONTRACTOR SHALL PLACE ALL CONCRETE IN THE DRY.
3. ALL REINFORCING STEEL SHALL BE A MINIMUM OF 2.5 INCHES FROM CONCRETE SURFACES UNLESS OTHERWISE NOTED.
4. ALL COMPONENTS OF THE TEMPORARY GAS LINE INCLUDING THE PIPE, PIPE EXPANSION JOINTS, AND PIPE ROLLER ASSEMBLIES WILL BE SUPPLIED AND INSTALLED BY OTHERS.
5. APPROXIMATE PROPSED FINISHED GRADE SHOWN ON THIS SHEET IS THE FINAL GRADE THAT WILL BE ESTABLISHED AFTER THE TEMPORARY UTILITY PIPE BRIDGE IS REMOVED.

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER | BRIDGE NO. 111/132 | STATE PROJECT 15402

TEMP. GAS MAIN BRIDGE - PIER DETAILS

BRIDGE SHEET A2 OF 5

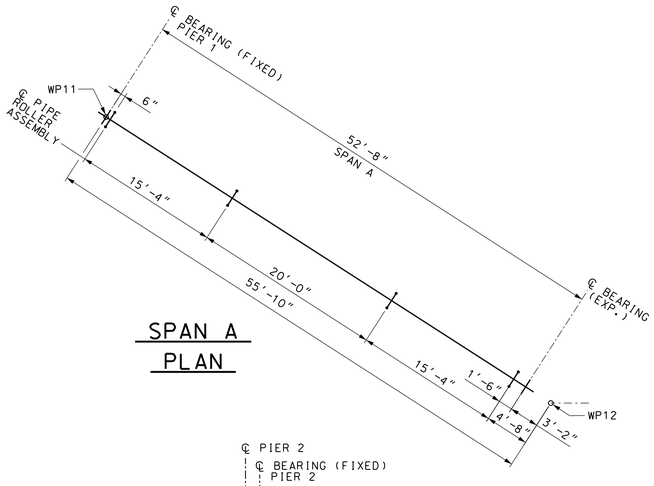
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	JM/DPD	1/29	CHECKED	TSB	1/29
	DRAWN	DPD	1/29	CHECKED	TSB	1/29
	QUANTITIES			CHECKED		
	ISSUE DATE			FEDERAL PROJECT NO. X-A002(794)		SHEET NO. A2
	REV. DATE					

FILE NUMBER

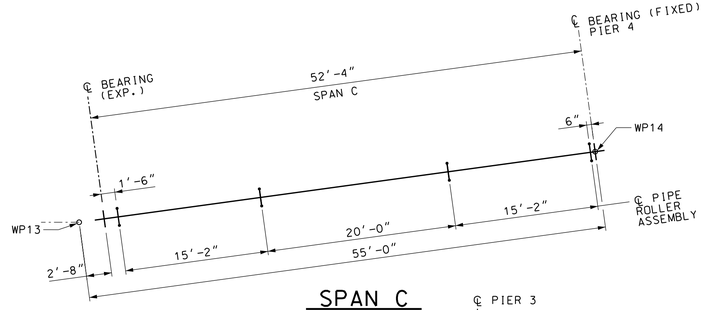
TOTAL SHEETS 5

PLOT DATE	DRAWING NAME	SHEET SCALE
1/29/16	A2_PIER_DETAILS	AS NOTED

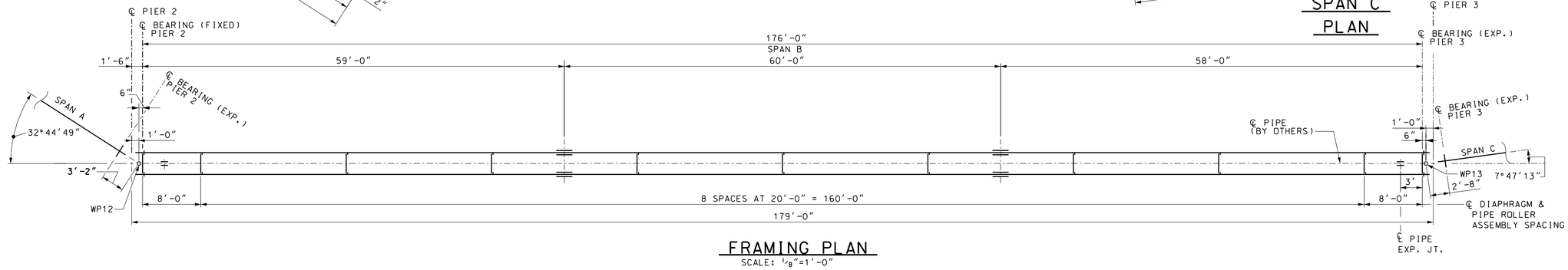
SFILES



SPAN A PLAN

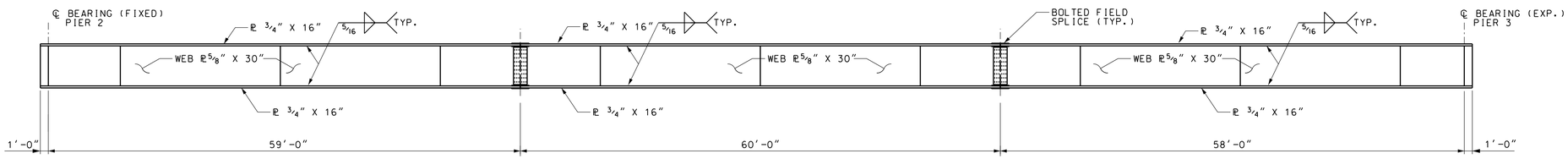


SPAN C PLAN



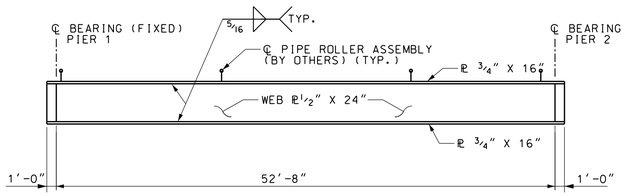
FRAMING PLAN

SCALE: 1/8"=1'-0"



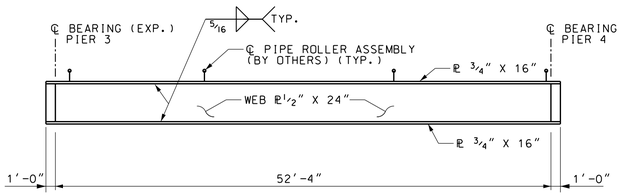
SPAN B GIRDER ELEVATION

SCALE: 1/8"=1'-0"



SPAN A GIRDER ELEVATION

SCALE: 1/8"=1'-0"



SPAN C GIRDER ELEVATION

SCALE: 1/8"=1'-0"

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
1/29/16	A3_FRAMING_PLN	AS NOTED

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER BRIDGE NO. 111/132 STATE PROJECT 15402

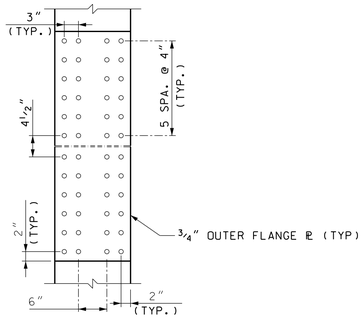
TEMP. GAS MAIN BRIDGE - FRAMING PLAN AND ELEV.

BRIDGE SHEET: A3 OF 5

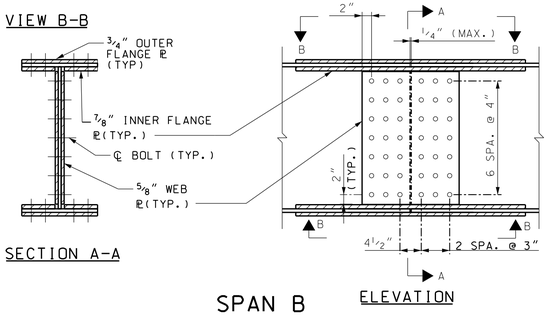
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	JM/DPD	1/29	CHECKED	TSB	1/29
DRAWN	DPD	1/29	CHECKED	TSB	1/29
QUANTITIES			CHECKED		
ISSUE DATE			FEDERAL PROJECT NO. X-A002(794)	SHEET NO. A3	TOTAL SHEETS 5
REV. DATE					

FILE NUMBER

SFILES



VIEW B-B

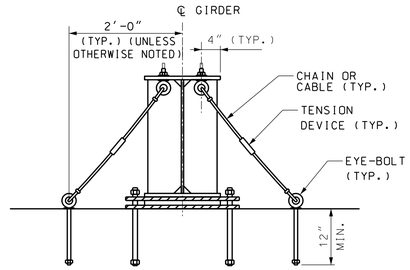


SECTION A-A

ELEVATION

SPAN B
BOLTED FIELD SPLICE

SCALE: 3/4" = 1'-0"



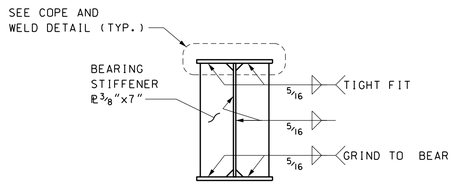
SPAN A & C
GIRDER BRACING

(PIPE AND ATTACHMENT NOT SHOWN)

SCALE: 3/4" = 1'-0"

SUPERSTRUCTURE NOTES

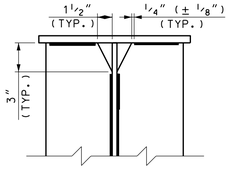
1. ALL STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF ITEM 550.108, STRUCTURAL STEEL (F), INCLUDING THE GIRDERS, CROSS FRAMES, DIAPHRAGMS, GUSSET PLATES, FILL PLATES, CONNECTION PLATES, SPLICE PLATES, STIFFENERS, AND FASTENERS.
2. NOTCH TOUGHNESS REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SHALL APPLY TO THE WEB AND FLANGES OF GIRDERS AND SPLICE PLATES.
3. ALL BOLTED CONNECTIONS SHALL BE SLIP-CRITICAL (CLASS-B) MADE WITH 7/8" Ø HIGH STRENGTH BOLTS IN 15/16" Ø HOLES. ALL FASTENERS SHALL CONFORM TO REQUIREMENTS FOR AASHTO M164 (ASTM A325) TYPE 3.
4. ALL BOLTS IN FIELD SPLICE SHALL HAVE THREADS EXCLUDED FROM THE THICK FLANGES.
5. DIRECT TENSION INDICATOR WASHERS SHALL BE INSTALLED WITH HIGH STRENGTH BOLTS.
6. GIRDERS SHALL BE CAMBERED FOR FULL DEAD LOAD DEFLECTION EQUAL TO:
   SPANS A & C = 1/2" AT MIDSPAN
   SPAN B = 21 1/2" AT MIDSPAN
7. BEARING STIFFENERS AND ENDS OF THE GIRDERS SHALL BE VERTICAL UNDER FULL DEAD LOAD DEFLECTION.
8. ALL WELDS SHALL HAVE CORROSION RESISTANCE AND WEATHERING APPEARANCE AS SPECIFIED FOR WEATHERING STRUCTURAL STEEL.
9. THE STRUCTURAL STEEL FABRICATOR SHALL ARRANGE FOR NON-DESTRUCTIVE TESTING OF THE WELDS.
10. SHOP DRAWINGS SHALL INDICATE THE METHOD AND SEQUENCE TO BE FOLLOWED IN WELDING THE GIRDER COMPONENTS.
11. LOCATION OF WELDED SHOP SPLICES SHALL BE: WEB SPLICES SHALL BE LOCATED A MINIMUM OF 9" FROM WELDED FLANGE SPLICES. WEB AND FLANGE SPLICES SHALL BE LOCATED A MINIMUM OF 6" FROM TRANSVERSE STIFFENERS OR CONNECTION PLATES.
12. ANY SHOP OR FIELD WELDING OF ATTACHMENTS TO ANY PORTION OF THE PLATE GIRDERS FOR CONSTRUCTION PURPOSES WILL NOT BE PERMITTED, UNLESS APPROVED BY THE ENGINEER.
13. THE CONTRACTOR SHALL SUBMIT A HANDLING AND ERECTION PROCEDURE TO THE ENGINEER PRIOR TO HANDLING THE STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 550.3.14 AND 550.3.15. THE ERECTION PROCEDURE SHALL INDICATE THE LOCATION AND NUMBER OF LIFTING POINTS AS DETERMINED BY CHECKING THE L/B RATIOS IN ACCORDANCE WITH SECTION 550.3.14.2.4 TO GUARD AGAINST LATERAL BUCKLING OF THE GIRDERS.
14. STEEL ERECTION SHALL NOT BE PERMITTED UNTIL THE PIERS HAVE BEEN BACKFILLED TO THE LEVEL OF THE EXISTING GROUND SHOWN IN THESE PLANS.
15. ALL WELDING AND FABRICATION SHALL BE PREFORMED IN CONFORMANCE WITH THE AASHTO/AWS D1.5-08 BRIDGE WELDING CODE, (INCLUDING ALL REVISIONS PUBLISHED BY AASHTO AS OF THE BID OPENING DATE) AND THE NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
16. THE CABLE OR CHAIN, TENSION DEVICE, AND ALL ATTACHMENTS USED IN THE GIRDER BRACING SYSTEM, SHALL BE CAPABLE OF WITHSTANDING A 8-KIP TENSILE LOAD.
17. THE CABLE OR CHAIN USED IN THE FLANGE SUPPORT SYSTEM SHALL HAVE APPROXIMATELY 2% SLACK UNDER THE NO-WIND CONDTION. THE CABLE OR CHAIN SHALL NOT BE TENSIONED SUCH THAT A DOWNWARD FORCE IS IMPOSED ON THE BEAM UNDER THE NO-WIND CONDITION.
18. THE FOLLOWING VERTICAL DEFLECTIONS DUE TO THE DESIGN PIPE LOAD AND ICE LOAD ARE ANTICIPATED ON THE GAS LINE:
   SPANS A & C = 1/8" AT MIDSPAN
   SPAN B = 3 3/4" AT MIDSPAN
19. THE FOLLOWING HORIZONTAL DEFLECTIONS DUE TO THE DESIGN WIND LOAD ARE ANTICIPATED ON THE GAS LINE:
   SPANS A & C = 1 5/8" AT MIDSPAN
   SPAN B = 2 7/8" AT MIDSPAN
20. HOLES IN THE SPAN A AND SPAN C GIRDER TOP FLANGES, AND THE SPAN B DIAPHRAGM TOP FLANGES, FOR THE THREADED RODS FOR THE PIPE ROLLERS SHALL BE SHOP DRILLED. CONTRACTOR SHALL COORDINATE FINAL LAYOUT AND SIZE OF THESE HOLES WITH UNITIL. THE HOLES SHALL BE SHOWN IN THE GIRDER SHOP DRAWINGS. ALL COSTS FOR THESE HOLES SHALL BE INCLUDED IN ITEM 612.99.



BEARING STIFFENER

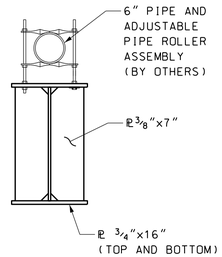
(SPAN A & C SHOWN, B SIMILAR)
(DIAPHRAM NOT SHOWN)

SCALE: 3/4" = 1'-0"



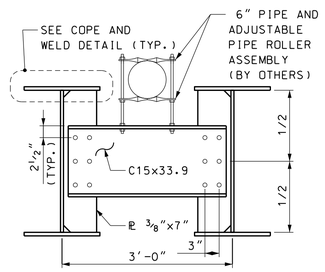
COPE AND WELD DETAIL

SCALE: 1 1/2" = 1'-0"



SPAN A & C
UTILITY SUPPORT DETAIL

SCALE: 3/4" = 1'-0"



SPAN B
UTILITY SUPPORT & DIAPHRAM

SCALE: 3/4" = 1'-0"

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER | BRIDGE NO. 111/132 | STATE PROJECT 15402

TEMP. GAS MAIN BRIDGE - GIRDER DETAILS AND NOTES

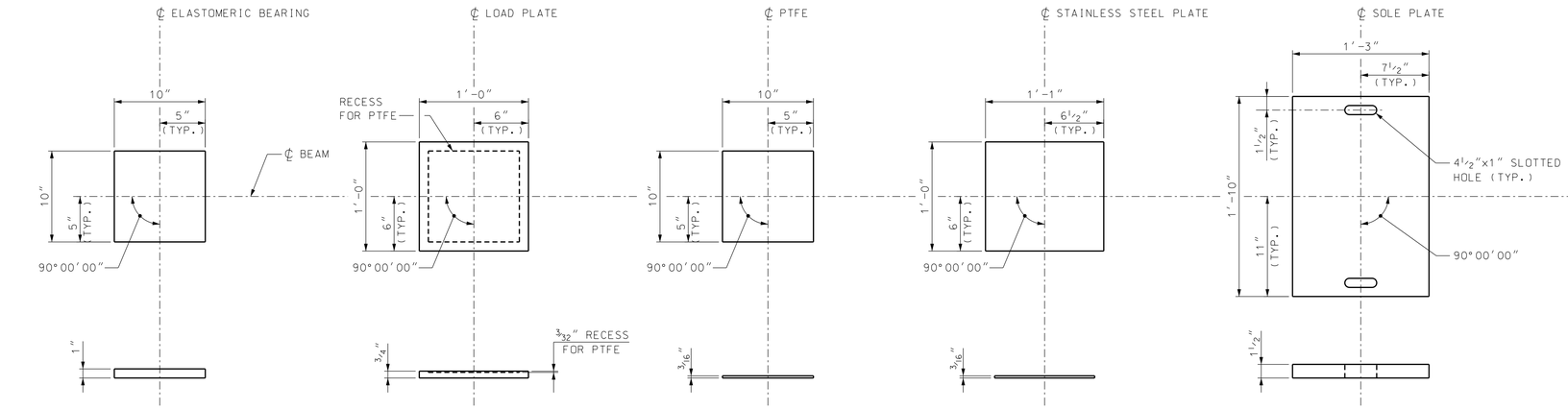
BRIDGE SHEET: A4 OF 5

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	JM/DPD	1/29	CHECKED	TSB	1/29
	DRAWN	DPD	1/29	CHECKED	TSB	1/29
	QUANTITIES			CHECKED		

FILE NUMBER

PLOT DATE	DRAWING NAME	SHEET SCALE	ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
1/29/16	A4_GIRDER_DETAILS	AS NOTED	REV. DATE	X-A002(794)	A4	5

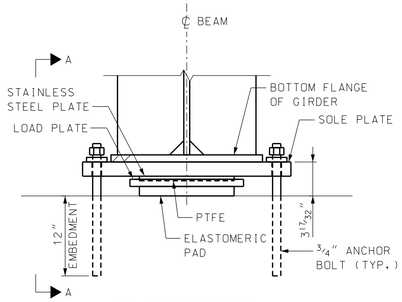
SFILES



ELASTOMERIC BEARING | LOAD PLATE | PTFE | STAINLESS STEEL PLATE | SOLE PLATE

SPAN B EXPANSION ELASTOMERIC BEARINGS

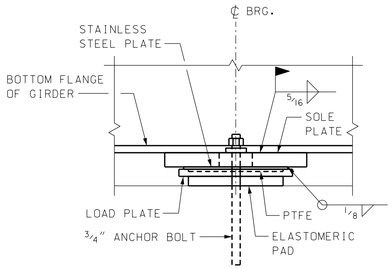
NOT TO SCALE



ELEVATION

ELASTOMERIC BEARING NOTES:

1. ELASTOMER SHALL EITHER BE NEOPRENE OR NATURAL RUBBER WITH A DUROMETER OF 55.
2. DESIGN SERVICE DEAD LOAD: 17 KIPS.
3. VULCANIZING OF THE ELASTOMER TO THE STEEL PLATES SHALL BE DONE DURING THE PRIMARY MOLDING PROCESS.
4. SOLE PLATES AND LOAD PLATES SHALL MEET THE REQUIREMENTS OF ASTM A709, GRADE 50W.
5. HORIZONTAL PTFE AT EXPANSION BEARINGS SHALL BE DIMPLED AND LUBRICATED. LUBRICATION SHALL BE SUPPLIED AND INSTALLED PER THE MANUFACTURES RECOMMENDATION TO ENSURE A COEFFICIENT OF FRICTION LESS THAN OR EQUAL TO 0.03 AT 68 DEGREES F.
6. THE BEARINGS ARE DESIGNED SO THAT THE SUPERSTRUCTURE MAY BE ERECTED WHEN THE AMBIENT AIR TEMPERATURE IS WITHIN A RANGE OF 30 DEGREES F AND 90 DEGREES F. IF THE AMBIENT AIR TEMPERATURE IS OUTSIDE THIS RANGE, THE BEARING SHALL BE RESET AS DIRECTED BY THE RESIDENT.
7. BEARINGS SHALL BE COVERED DURING TRANSIT.
8. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PROTECT BEARING COMPONENTS FROM FIELD WELD FLASH AND SPLATTER. HEAT FROM WELDING OPERATION SHALL BE CONTROLLED SUCH THAT STEEL ADJACENT TO THE ELASTOMER DOES NOT EXCEED 200 DEGREES F. THE TEMPERATURE SHALL BE VERIFIED BY THE USE OF TEMPERATURE INDICATING CRAYONS OR OTHER SUITABLE MEANS.



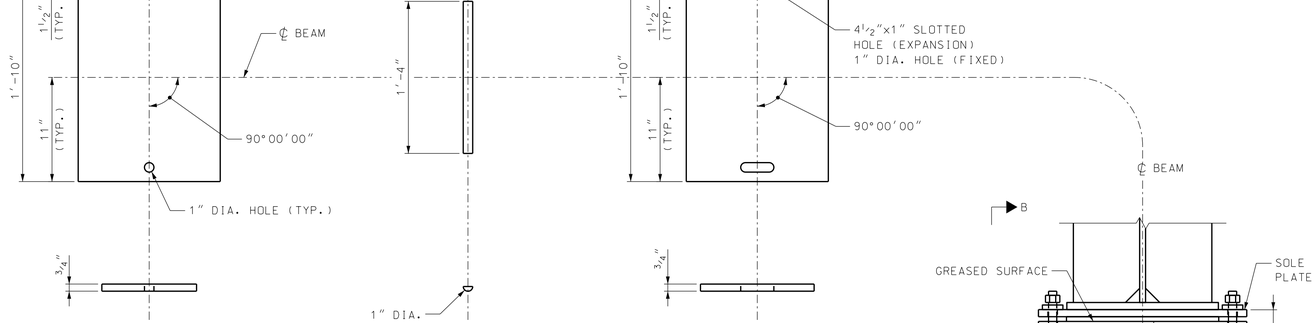
VIEW A-A

ANCHOR ROD NOTES:

1. ANCHOR RODS SHALL MEET THE REQUIREMENTS OF ASTM F1554, GRADE 55 AND SHALL BE SWEDGED ON THE EMBEDDED PORTION OF THE ROD.
2. ANCHOR RODS, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
3. LEAVE NUTS 1/4" ABOVE WASHERS TO ALLOW FOR GIRDER ROTATION. UPSET THE THREADS ON THE ANCHOR RODS AFTER THE TEMPORARY PLATE WASHER HAS BEEN REMOVED TO PREVENT NUT MOVEMENT. TOUCH UP DAMAGED GALVANIZED SURFACES WITH ZINC-RICH PAINT AS DIRECTED BY THE RESIDENT.
4. ANCHOR RODS SHALL BE SET BY TEMPLATE PRIOR TO POURING THE PIER.

STEEL BEARING NOTES:

1. SOLE PLATES AND MASONRY PLATES SHALL MEET THE REQUIREMENTS OF ASTM A709, GRADE 50W.
2. ROLLERS SHALL MEET THE REQUIREMENTS OF ASTM A668/A668M CLASS F OR CLASS G.
3. THE MASONRY PLATE AND ROLLER SHALL BE SMOOTH AND FREE OF NICKS, BURRS, GOUGES, AND DEBRIS BEFORE INSTALLATION.
4. MASONRY PLATE AND ROLLER SHALL BE LUBRICATED WITH A SILICONE GREASE WHICH SATISFIES SOCIETY OF AUTOMOTIVE ENGINEERS SPECIFICATION SAE-AS8660.
5. BEARINGS SHALL BE CHECKED TO ENSURE THEY ARE PROPERLY FUNCTIONING EVERY THREE MONTHS.

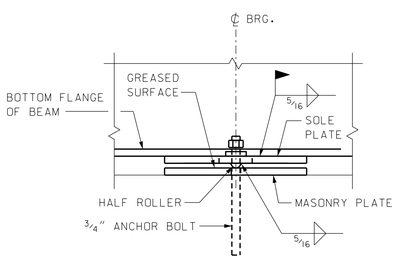


MASONRY PLATE | HALF ROLLER | SOLE PLATE

ELEVATION

SPAN A, SPAN B (FIXED ONLY), AND SPAN C STEEL BEARINGS

NOT TO SCALE



VIEW B-B

CITY OF DOVER, NEW HAMPSHIRE
DEPARTMENT OF COMMUNITY SERVICES

LOCATION WHITTIER STREET OVER COCHECO RIVER | BRIDGE NO. 111/132 | STATE PROJECT 15402

TEMP. GAS MAIN BRIDGE - BEARING DETAILS

BRIDGE SHEET: A5 OF 5

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	JM/DPD	1/29	CHECKED	TSB	1/29
	DRAWN	DPD	1/29	CHECKED	TSB	1/29
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FILE NUMBER

ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A002(794)	A5	5

PLOT DATE	DRAWING NAME	SHEET SCALE
1/29/16	A5_BEARING_DETAILS	AS NOTED

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