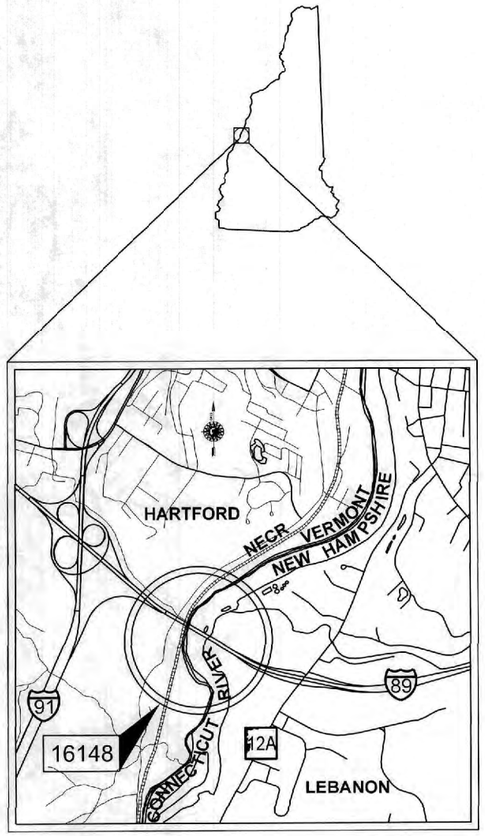
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS
FEDERAL AID PROJECT
OF PROPOSED BRIDGE REHABILITATION
BRIDGE NO. 044/103 AND BRIDGE NO. 044/104
ON INTERSTATE 89
A001(154)
NH PROJECT NO.16148

DESIGN DATA

INTERSTATE 89

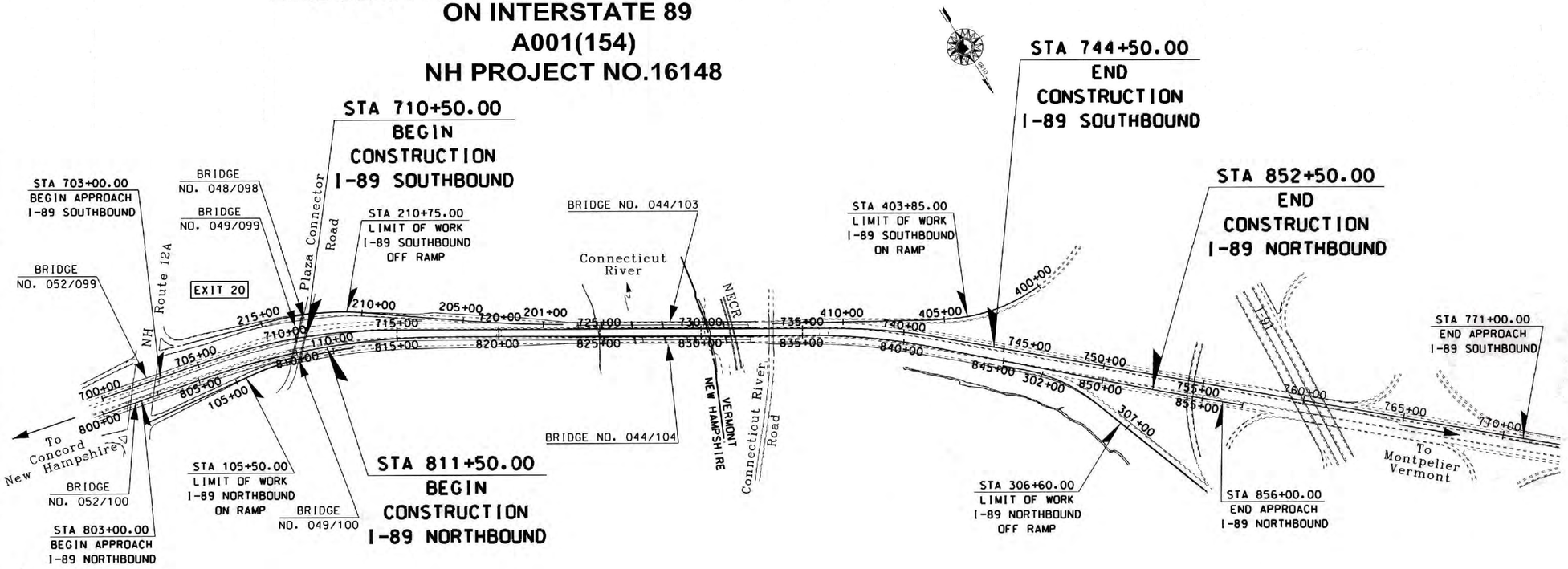
AVERAGE DAILY TRAFFIC	2019	39,900 (NB & SB)
AVERAGE DAILY TRAFFIC	2039	43,600 (NB & SB)
PERCENT OF TRUCKS		10.2%
DESIGN SPEED		70 MPH - NH (NB)
		65 MPH - NH (SB)
		70 MPH - VT (NB & SB)
LENGTH OF PROJECT		0.78 MILES (NB)
		0.64 MILES (SB)



LOCATION MAP

1 1/2 0 1 mi.

GRAPHIC SCALE



CITY OF LEBANON, NEW HAMPSHIRE
COUNTY OF GRAFTON

AND

TOWN OF HARTFORD, VERMONT
COUNTY OF WINDSOR

SCALE = 1" = 300'

DRAWN BY MAL DATE 04/2016
CHECKED BY BRC DATE 06/2019

ROADWAY PLANS PREPARED BY
McFarland Johnson
McFARLAND JOHNSON
CONCORD, N.H.
BY: Brian R. Colburn

STATE OF NEW HAMPSHIRE BRIAN R. COLBURN No. 11917 LICENSED PROFESSIONAL ENGINEER

BRIDGE PLANS PREPARED BY
McFarland Johnson
McFARLAND JOHNSON
CONCORD, N.H.
BY: Joshua Aaron Lund

STATE OF NEW HAMPSHIRE JOSHUA AARON LUND No. 10547 LICENSED PROFESSIONAL ENGINEER

ITS PLANS PREPARED BY
AECOM Imagine it. Delivered.
AECOM
BY:

STATE OF NEW HAMPSHIRE CHRISTOPHER CHAFFEE No. 14998 LICENSED PROFESSIONAL ENGINEER

THESE PLANS HAVE BEEN REDUCED DIGITALLY TO APPROXIMATELY ½ SCALE

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:
DIRECTOR OF PROJECT DEVELOPMENT — DATE 8/19/19

APPROVED:
ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE 8/19/19

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	1	600

INDEX OF SHEETS

GENERAL NOTES

1. FOR STANDARD PLANS, SEE DEPARTMENT OF TRANSPORTATION WEBSITE AT: WWW.NH.GOV/DOT/ORG/PROJECTDEVELOPMENT/HIGHWAYDESIGN/STANDARDPLANS/INDEX.HTM.
2. HIGH TENSION OVERHEAD TRANSMISSION LINES ARE LOCATED THROUGHOUT THE PROJECT WITH CROSSINGS AT VARIOUS LOCATIONS AND RUNNING ALONG THE ROAD THROUGHOUT THE PROJECT EVEN ON REGULAR POLES. THE CONTRACTOR IS ADVISED THAT EXTREME CAUTION WILL BE REQUIRED IN THE OPERATION OF EQUIPMENT, ESPECIALLY CRANES AND PILE DRIVING EQUIPMENT.
3. MODIFY SUPERELEVATION ON EXISTING CURVES BY THE USE OF A LEVELING COURSE TO THE RATES INDICATED ON THE PLANS OR AS ORDERED.
4. EXISTING DELINEATORS AND WITNESS MARKERS THAT ARE REMOVED AND DETERMINED BY THE ENGINEER TO BE IN ACCEPTABLE CONDITION SHALL BE RESET (SUBSIDIARY). ADDITIONAL DELINEATORS AND WITNESS MARKERS ORDERED WILL BE PAID UNDER THE APPROPRIATE ITEMS OF THE CONTRACT.
5. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
6. PERFORM ALL WORK WITHIN THE EXISTING RIGHT-OF-WAY, UNLESS OTHERWISE SHOWN ON THE PLANS OR AS ORDERED BY THE ENGINEER.
7. REMOVE UNPROTECTED PROJECT MARKERS (SUBSIDIARY).
8. SURVEY DATA FOR THIS PROJECT WAS COLLECTED BY SDR AND THE FIELD NOTES CAN BE FOUND IN THE FIELD BOOK(S) 13455, 13457, AND 13458. COORDINATES ARE NEW HAMPSHIRE STATE PLANE COORDINATES OF NAD83, 1986 ADJUSTMENT AND THE BEARINGS ARE GRID. ELEVATIONS ARE REFERENCED TO NGVD 1988.
9. QUANTITIES FOR EMBANKMENT AND EXCAVATION FOR SLOPE ROUNDINGS AS SHOWN ON THE TYPICALS HAVE NOT BEEN CALCULATED AND ARE NOT INCLUDED IN THE QUANTITY SUMMARIES, AND ARE CONSIDERED SUBSIDIARY TO THE APPROPRIATE 203 ITEMS.

THE FOLLOWING GENERAL NOTES WILL BE USED ON THIS PROJECT:											
1	2	3	4	5	6	7	8	9			

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

INDEX OF SHEETS AND GENERAL NOTES

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	16148ind	16148	2	600

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway — (pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)
(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)

TREE OR STUMP (CROSS-SECTIONS) — (show station, circumference in feet & type)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing — PROPOSED — bgr — cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 PUB2E

DELINEATED WETLAND — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 31 32

PC, PT, POT (ON CONST BASELINE)

PI (IN CONSTRUCTION BASELINES)

INTERSECTION OR EQUATION OF TWO LINES

ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)

PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)

CLEARING LINE — SLOPE LINE

SLOPE LINE

SLOPE LINE (FILL)

SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	16148sym	16148	3	600

DRAINAGE

MANHOLE

CATCH BASIN — cb

DROP INLET — di

(existing) (PROPOSED)

DRAINAGE PIPE (existing) — (label size & type)

DRAINAGE PIPE (PROPOSED)

UNDERDRAIN (existing) W/ FLUSHING BASIN — fb — (label size & type)

UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN

show direction of flow

HEADER (existing & PROPOSED) — (with stone outlet protection)

END SECTION (existing & PROPOSED) — METAL or PLASTIC; RCP

OPEN DITCH (PROPOSED)

EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE — (label type)

RR RIGHT-OF-WAY LINE

PROPERTY LINE

PROPERTY LINE (COMMON OWNER) — Z

TOWN LINE — BOW / CONCORD

COUNTY LINE — COOS / GRAFTON

STATE LINE — MAINE / NEW HAMPSHIRE

NATIONAL FOREST

CONSERVATION LAND — LC

BENCH MARK / SURVEY DISK

BOUND — bnd — (PROPOSED)

STATE LINE/ TOWN LINE MONUMENT — S/L — T/L

NHDOT PROJECT MARKER

IRON PIPE OR PIN — ip

DRILL HOLE IN ROCK — dh

TAX MAP AND LOT NUMBER — 156 / 14 — 1642/341 — 6.80 Ac.±

PROPERTY PARCEL NUMBER — 12

HISTORIC PROPERTY — H

UTILITIES

existing PROPOSED

TELEPHONE POLE

POWER POLE

JOINT OCCUPANCY

MISCELLANEOUS/UNKNOWN POLE

GUY POLE OR PUSH BRACE

(plot point at face not center of symbol)

LIGHT POLE

LIGHT ON POWER POLE

LIGHT ON JOINT POLE

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:

R L — P+04 25.0' — T+04 25.0'

RAILROAD — (label ownership)

RAILROAD SIGN

RAILROAD SIGNAL

UTILITY JUNCTION BOX — jb — JB

OVERHEAD WIRE — OW — (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) — W — PW

SEWER — S — PS

TELEPHONE — T — PT

ELECTRIC — E — PE

GAS — G — PG

LIGHTING — L — PL

INTELLIGENT TRANSPORTATION SYSTEM — ITS — PITS

FIBER OPTIC — FO — PFO

WATER SHUT OFF — WSO — WS

GAS SHUT OFF — GSO — GS

HYDRANT — HYD

MANHOLES

SEWER — S — MHS

TELEPHONE — T — MHT

ELECTRICAL — E — MHE

GAS — G — MHG

UNKNOWN — U

TRAFFIC SIGNALS / ITS

	existing	PROPOSED
MAST ARM (existing)		30' MA (NOTE ANGLE FROM ℄)
OPTICOM RECEIVER		
OPTICOM STROBE		
TRAFFIC SIGNAL		
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT		
SIGNAL CONDUIT	C C C	PC PC PC
CONTROLLER CABINET	cc	CC
METER PEDESTAL	mp	MP
PULL BOX	pb	PB
LOOP DETECTOR (QUADRUPOLE)		(label size)
LOOP DETECTOR (RECTANGULAR)		(label size)
CAMERA POLE (CCTV)		
FIBER OPTIC DELINEATOR	fod	FOD
FIBER OPTIC SPLICE VAULT		SVF
ITS EQUIPMENT CABINET	its	ITS
VARIABLE SPEED LIMIT SIGN		
DYNAMIC MESSAGE SIGN		
ROAD AND WEATHER INFO SYSTEM		

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	A
DRAINAGE NOTE	1
EROSION CONTROL NOTE	A
FENCING NOTE	A
GUARDRAIL NOTE	1
ITS NOTE	1
LIGHTING NOTE	A
TRAFFIC SIGNAL NOTE	1

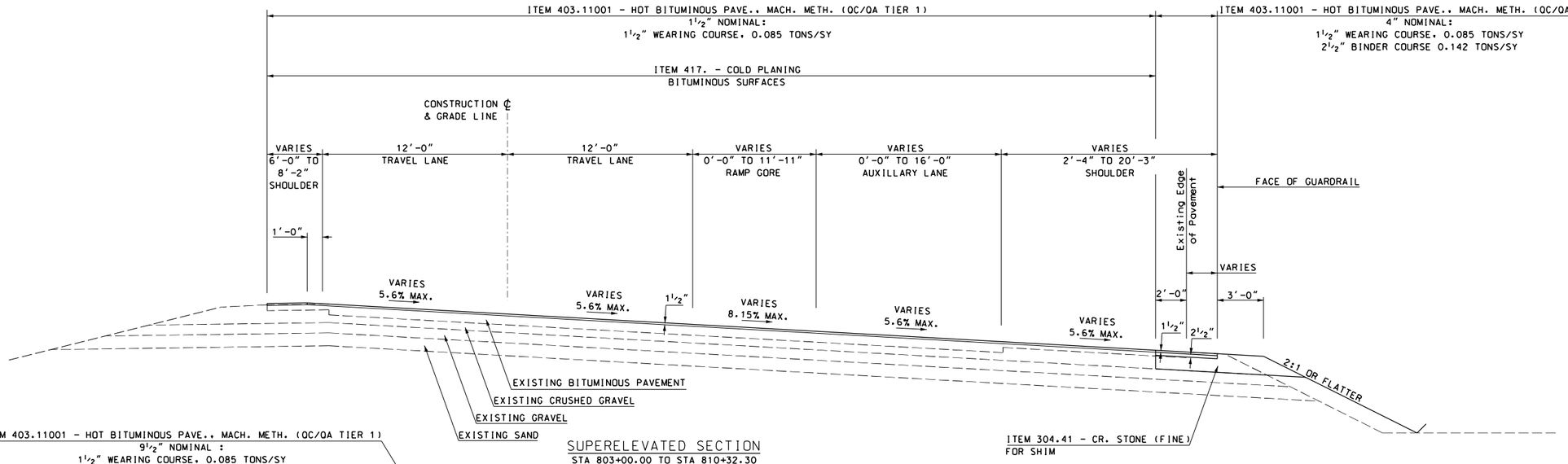
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	16148sym	16148	4	600

INTERSTATE 89 NORTHBOUND

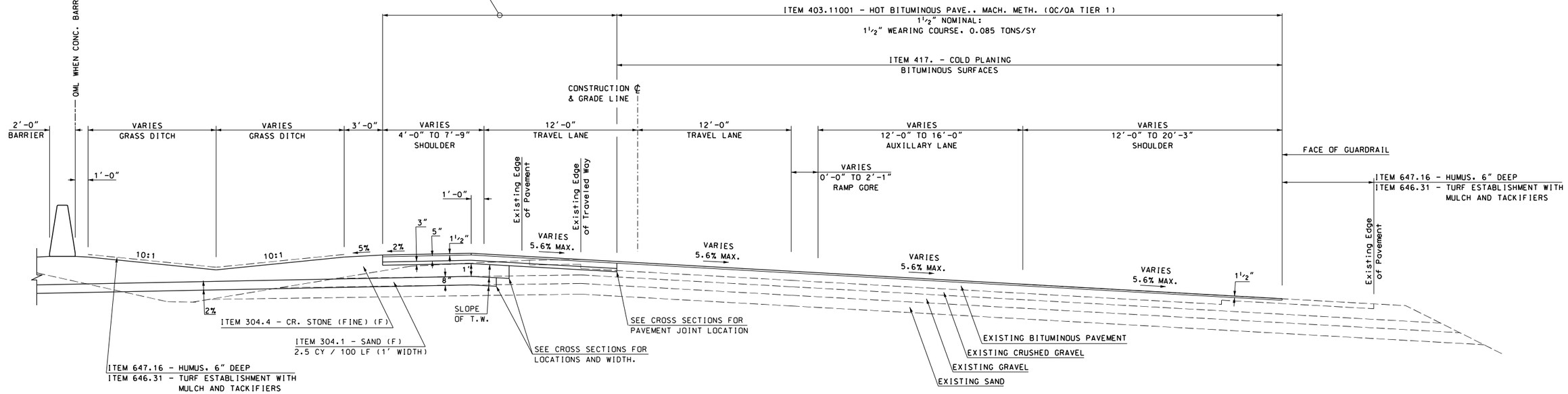


SUPERELEVATED SECTION
STA 803+00.00 TO STA 810+32.30

ITEM 403.11001 - HOT BITUMINOUS PAVE.. MACH. METH. (QC/QA TIER 1)
9½" NOMINAL :
1½" WEARING COURSE, 0.085 TONS/SY
5" BINDER COURSE, 0.283 TONS/SY
3" BASE COURSE, 0.170 TONS/SY

ITEM 304.41 - CR. STONE (FINE)
FOR SHIM

OML WHEN CONC. BARRIER IS USED



SUPERELEVATED SECTION
STA 810+32.30 TO STA 814+50.00

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 810+56.1 TO STA 844+91.7 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 813+53.6 TO STA 842+70.0. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ01	16148	5	600

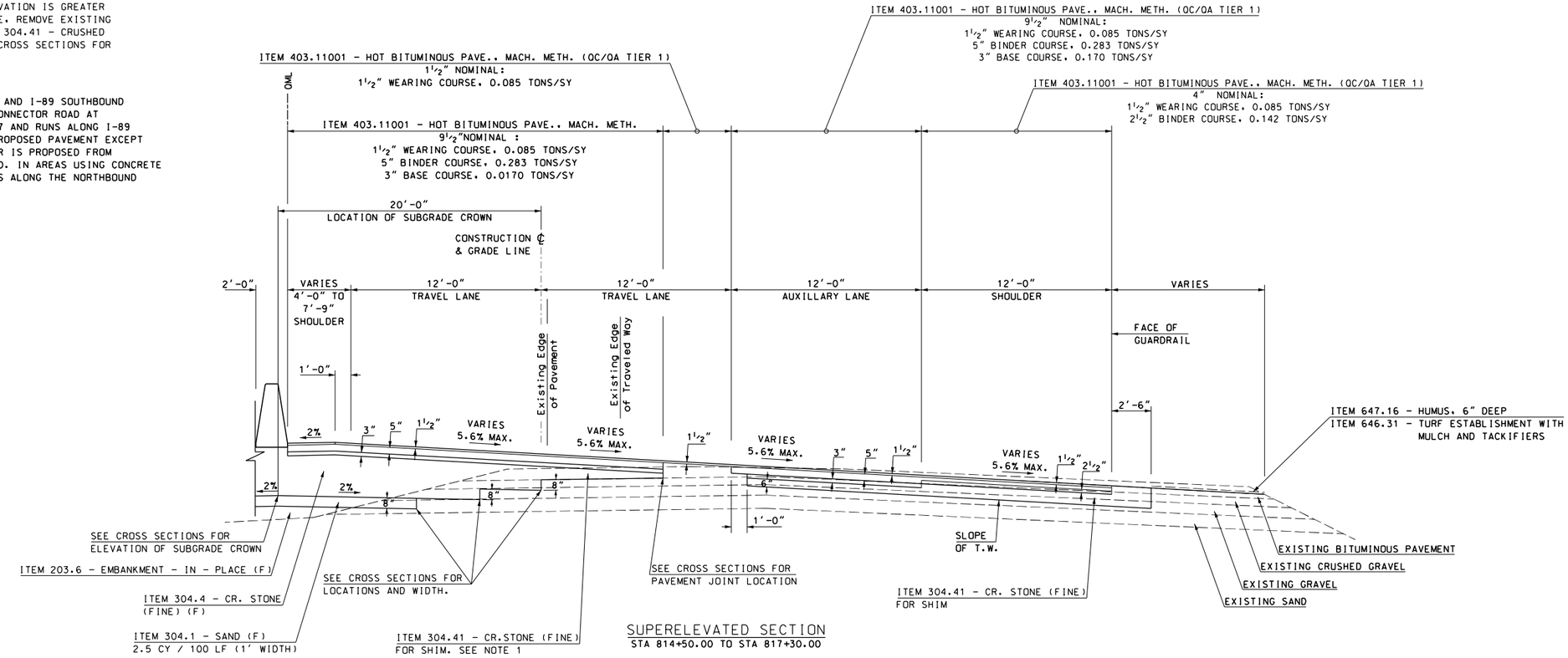
INTERSTATE 89 NORTHBOUND

NOTE:

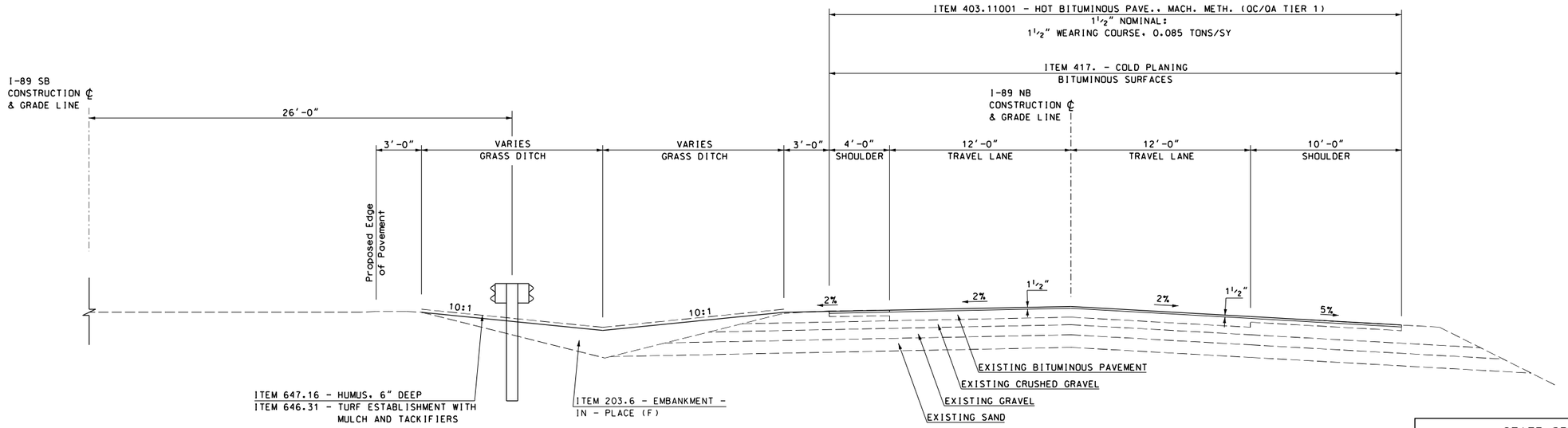
1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 810+56.1 TO STA 844+91.7 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 813+53.6 TO STA 842+70.0. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.



SUPERELEVATED SECTION
STA 814+50.00 TO STA 817+30.00



NORMAL CROWN SECTION
STA 853+00.00 TO STA 854+00.00

NUMBER	DESCRIPTION	STATION	STATION	DATE
	REVISIONS AFTER PROPOSAL			

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

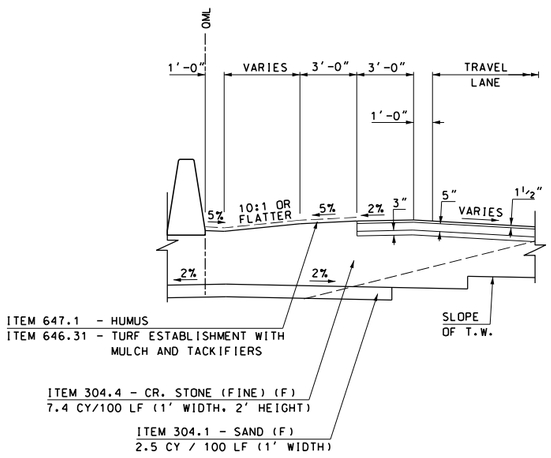
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

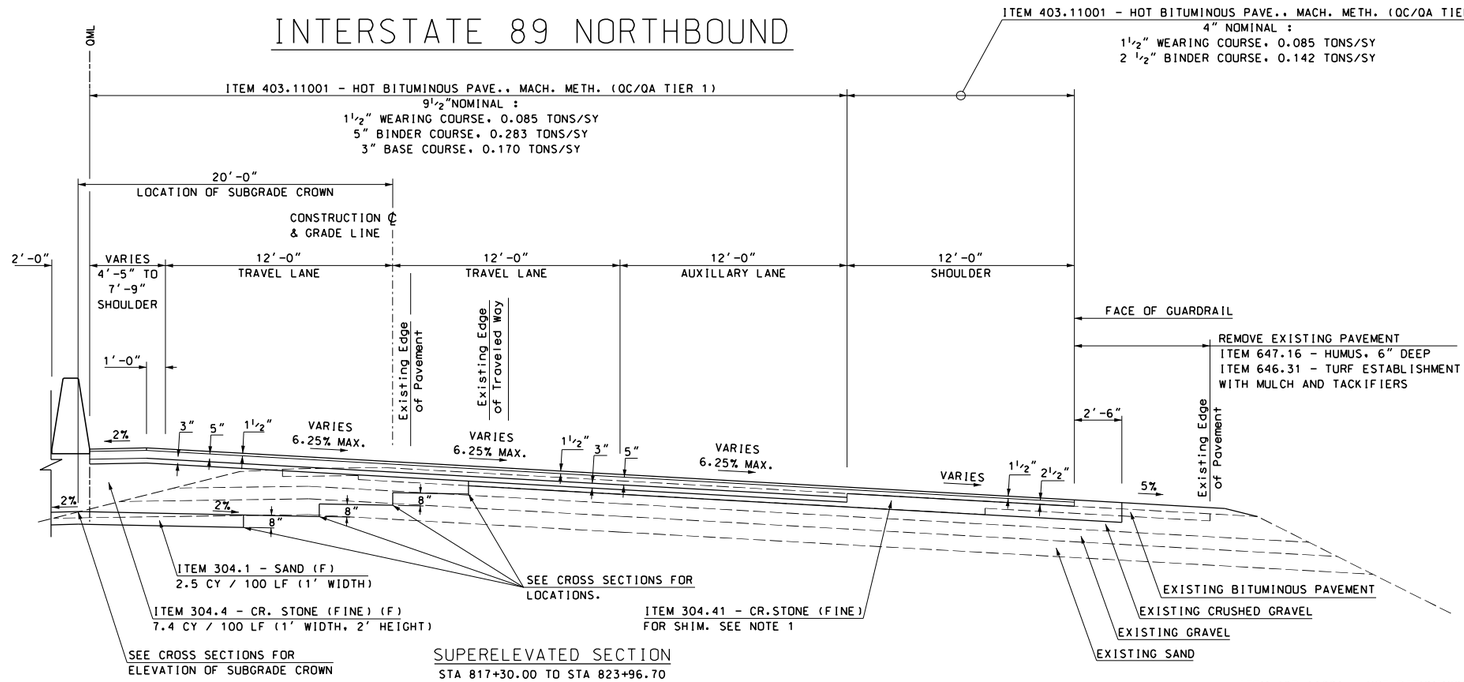
TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ03	16148	6	600

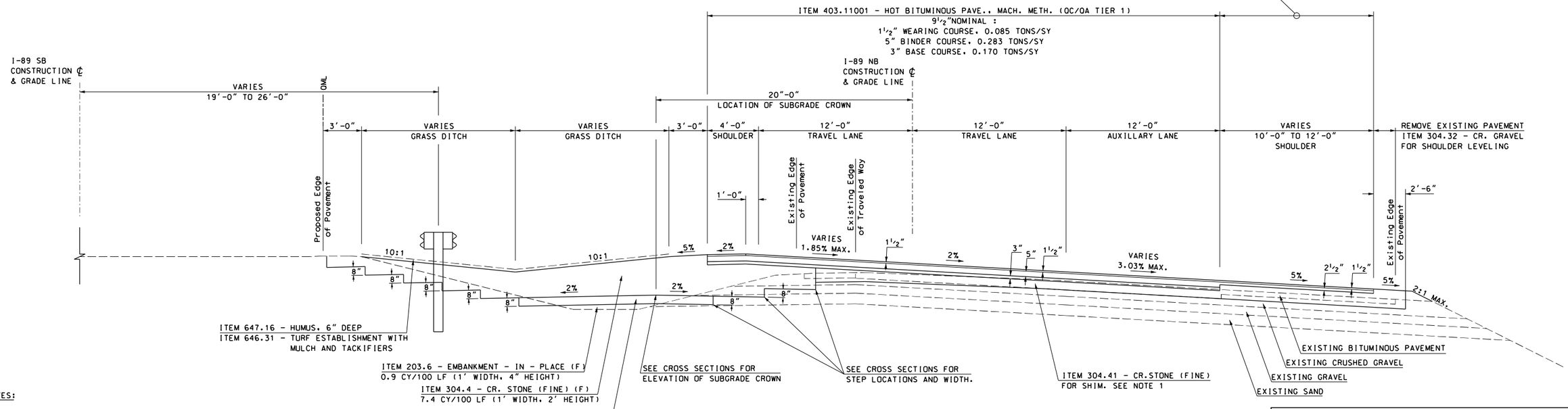
INTERSTATE 89 NORTHBOUND



STA 837+00.00 TO STA 842+89.90



SUPERELEVATED SECTION
STA 817+30.00 TO STA 823+96.70
STA 832+43.30 TO STA 842+89.90



SUPERELEVATED SECTION
STA 842+89.90 TO STA 846+00.00

NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE. REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 810+56.1 TO STA 844+91.7 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 813+53.6 TO STA 842+70.0. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	NHDOT	04-2015
NEW DESIGN	MJ	04-2016
SHEET CHECKED	BRC	02-2018
AS BUILT DETAILS		DATE

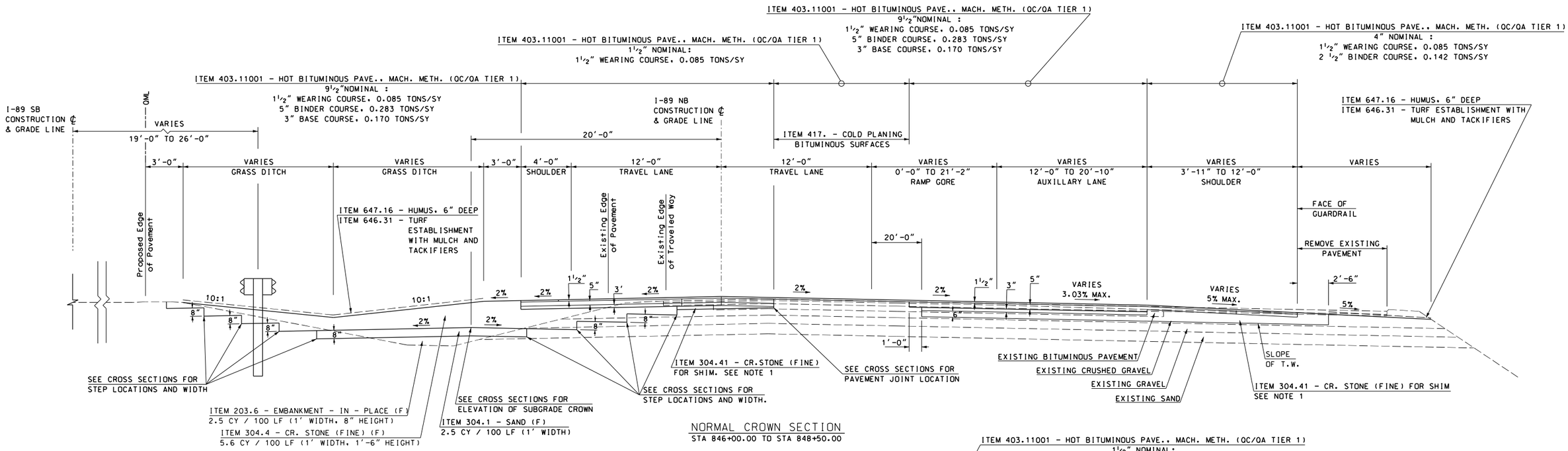
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

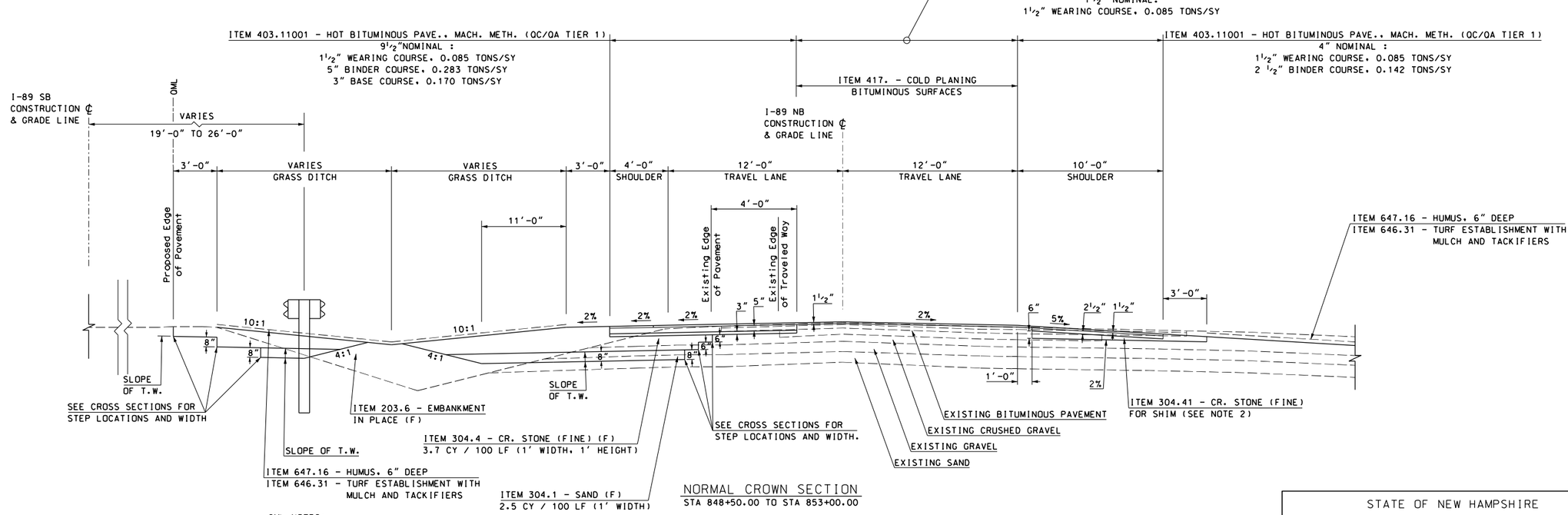
TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ04	16148	7	600

INTERSTATE 89 NORTHBOUND



NORMAL CROWN SECTION
STA 846+00.00 TO STA 848+50.00



NORMAL CROWN SECTION
STA 848+50.00 TO STA 853+00.00

NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)
2. PAVEMENT REMOVAL AND SHIMMING FROM STA 848+50.00 TO STA 849+50.00, STA 849+50.00 TO STA 853+00.00 COLD PLANE SHOULDER AND PLACE 2½" BINDER AND 1½" WEARING COURSE.

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 810+56.1 TO STA 844+91.7 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 813+53.6 TO STA 842+70.0. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.

NUMBER	DESCRIPTION	DATE	STATION
	REVISIONS AFTER PROPOSAL		

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

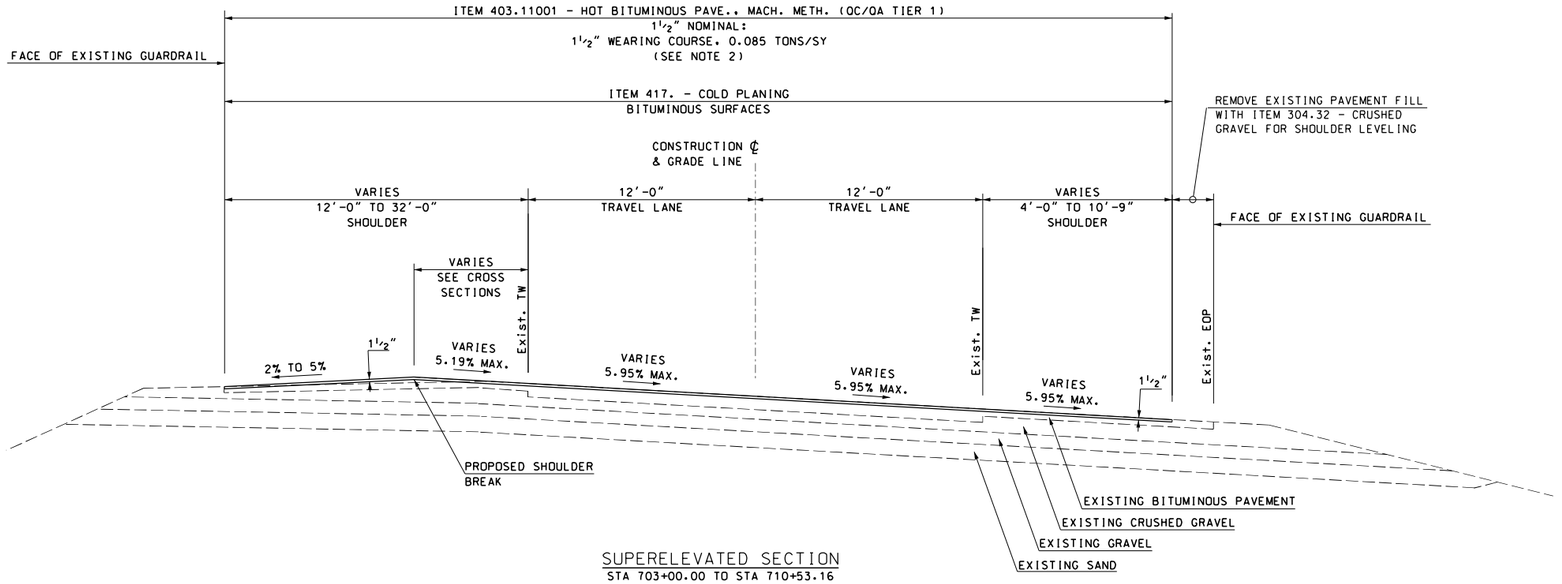
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

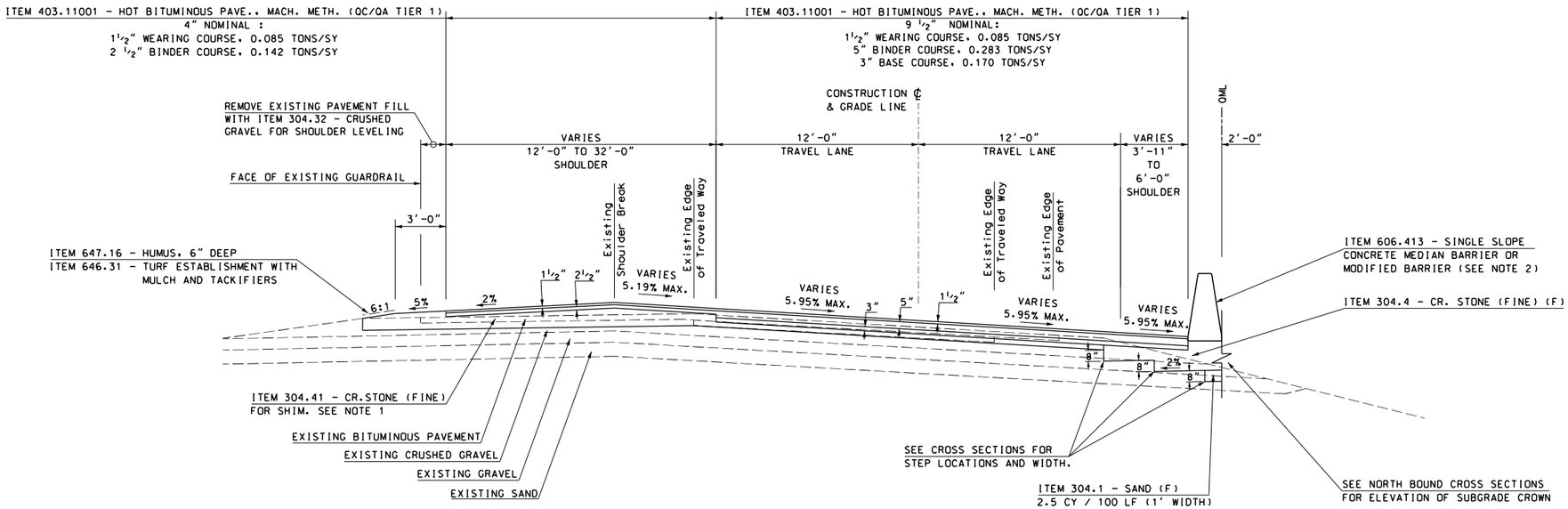
TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ05	16148	8	600

INTERSTATE 89 SOUTHBOUND



SUPERELEVATED SECTION
STA 703+00.00 TO STA 710+53.16



SUPERELEVATED SECTION
STA 710+53.16 TO STA 716+74.29

NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 710+46.4 TO STA 745+00.0 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 713+50.0 TO STA 742+77.5. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.

NUMBER	DATE	STATION

REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	NHDOT	04-2015
NEW DESIGN	MJ	04-2016
SHEET CHECKED	BRC	02-2018
AS BUILT DETAILS		DATE

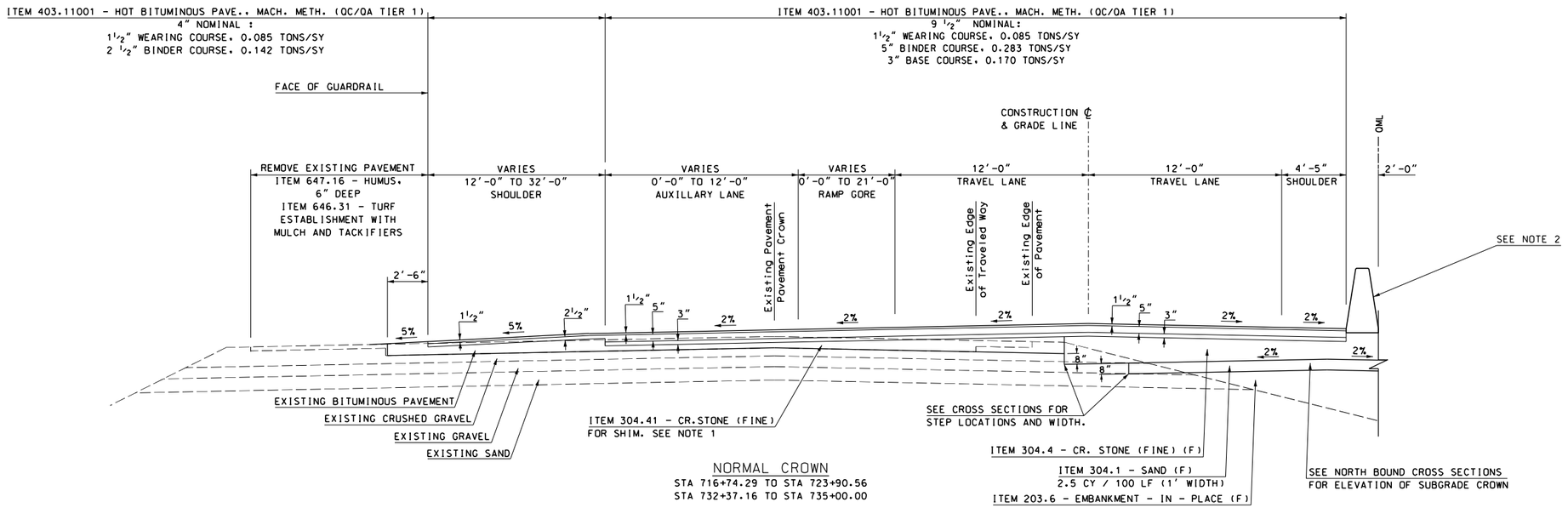
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

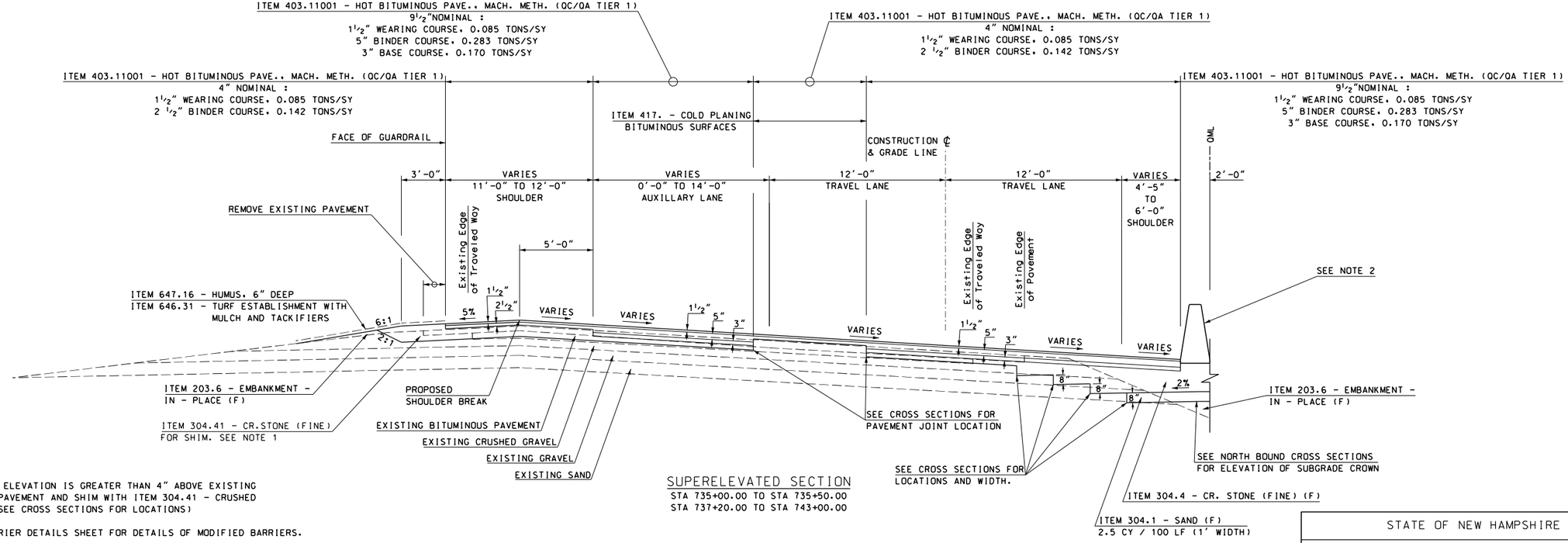
TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tyO7	16148	9	600

INTERSTATE 89 SOUTHBOUND



NORMAL CROWN
STA 716+74.29 TO STA 723+90.56
STA 732+37.16 TO STA 735+00.00



SUPERELEVATED SECTION
STA 735+00.00 TO STA 735+50.00
STA 737+20.00 TO STA 743+00.00

NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)
2. SEE CONCRETE MEDIAN BARRIER DETAILS SHEET FOR DETAILS OF MODIFIED BARRIERS.

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 710+46.4 TO STA 745+00.0 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 713+50.0 TO STA 742+77.5. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

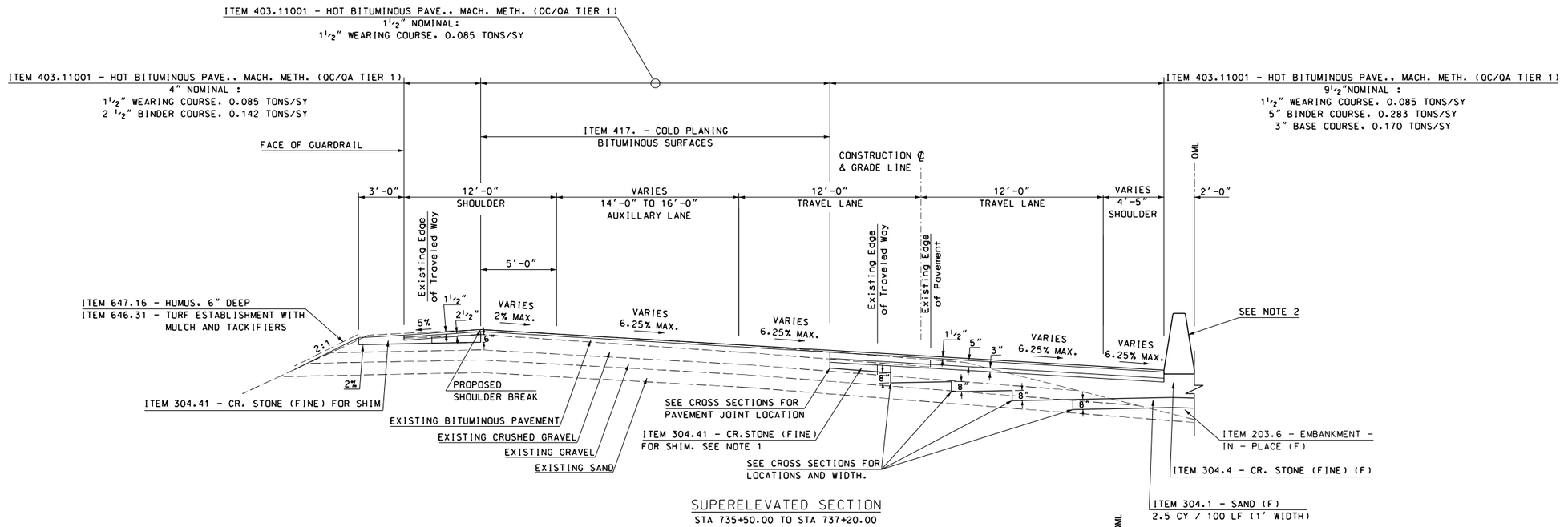
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

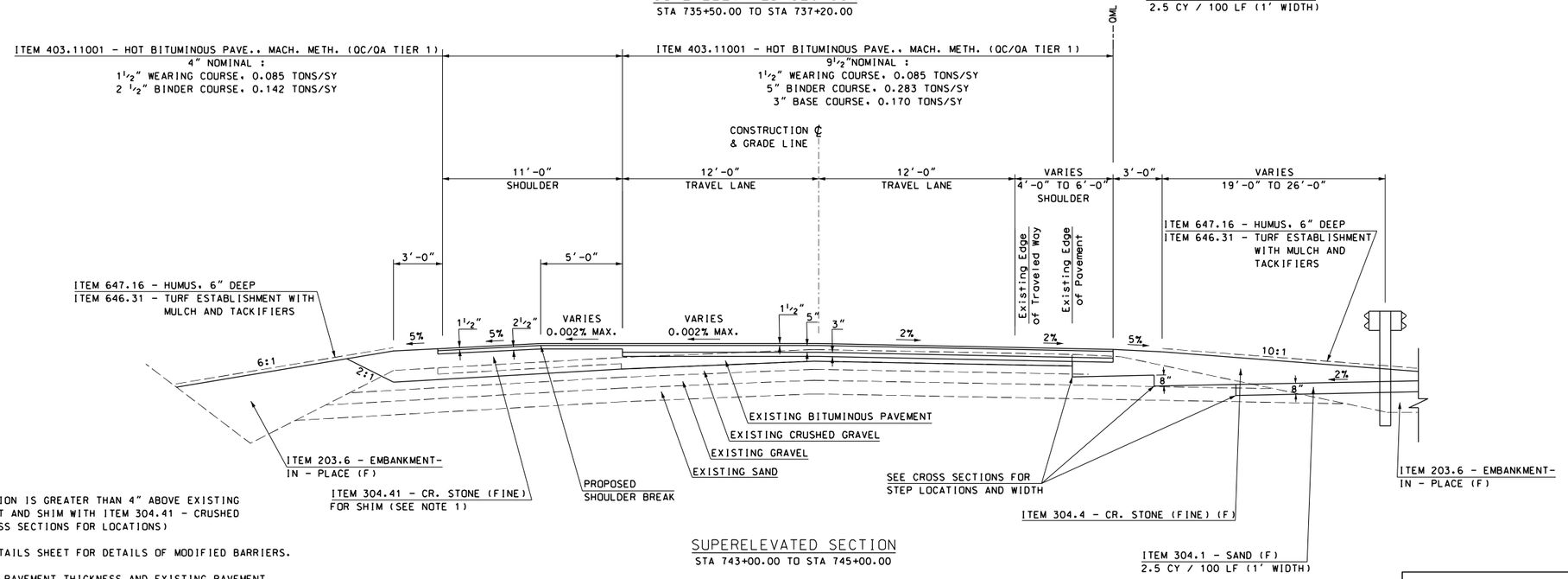
TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ08	16148	10	600

INTERSTATE 89 SOUTHBOUND



SUPERELEVATED SECTION
STA 735+50.00 TO STA 737+20.00



SUPERELEVATED SECTION
STA 743+00.00 TO STA 745+00.00

NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)
2. SEE CONCRETE MEDIAN BARRIER DETAILS SHEET FOR DETAILS OF MODIFIED BARRIERS.
3. STA 744+50.00 TO STA 745+00.00 PAVEMENT THICKNESS AND EXISTING PAVEMENT REMOVAL VARY. SEE CROSS SECTIONS FOR LOCATIONS

OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 710+46.4 TO STA 745+00.0 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 713+50.0 TO STA 742+77.5. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER.

NUMBER	DESCRIPTION	DATE	STATION
	REVISIONS AFTER PROPOSAL		

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

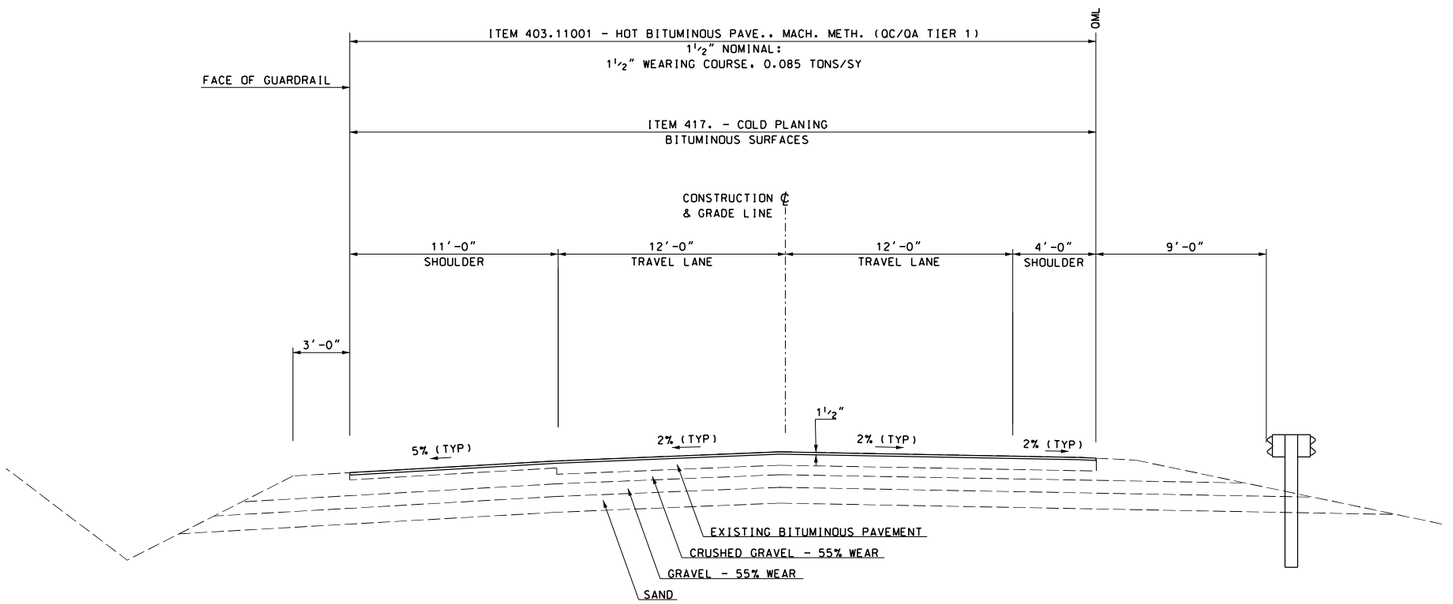
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ09	16148	11	600

INTERSTATE 89 SOUTHBOUND



NORMAL CROWN SECTION

STA 745+00.00 TO STA 771+00.00

(NO CROSS SECTIONS FROM STA 755+00 TO STA 771+00)

NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)

2. SEE CONCRETE MEDIAN BARRIER DETAILS SHEET FOR DETAILS OF MODIFIED BARRIERS.

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

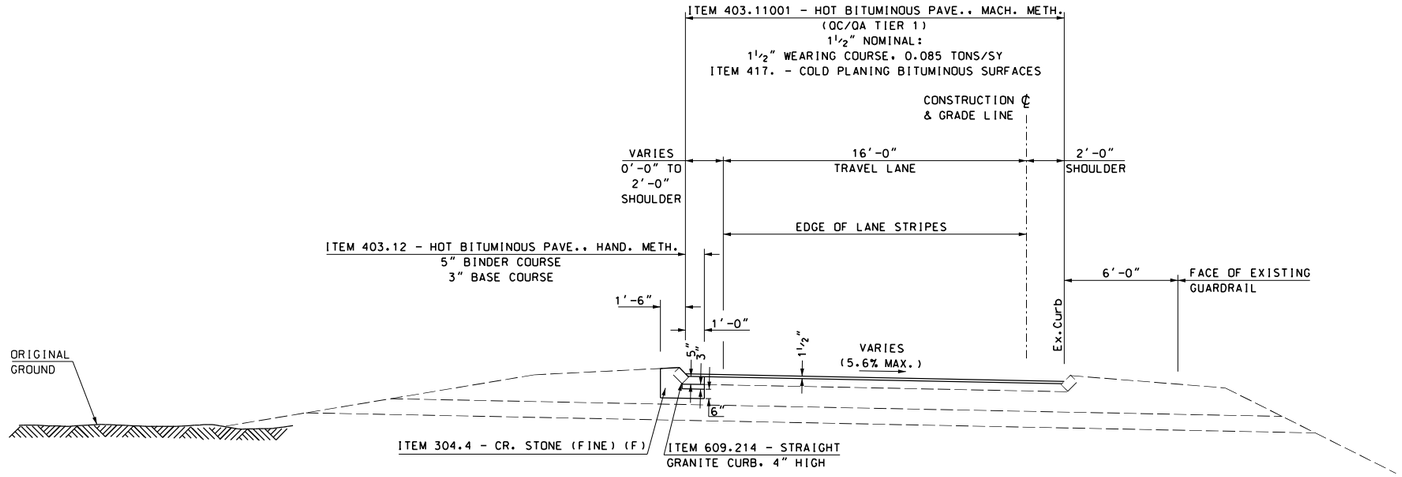
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TYPICAL SECTION

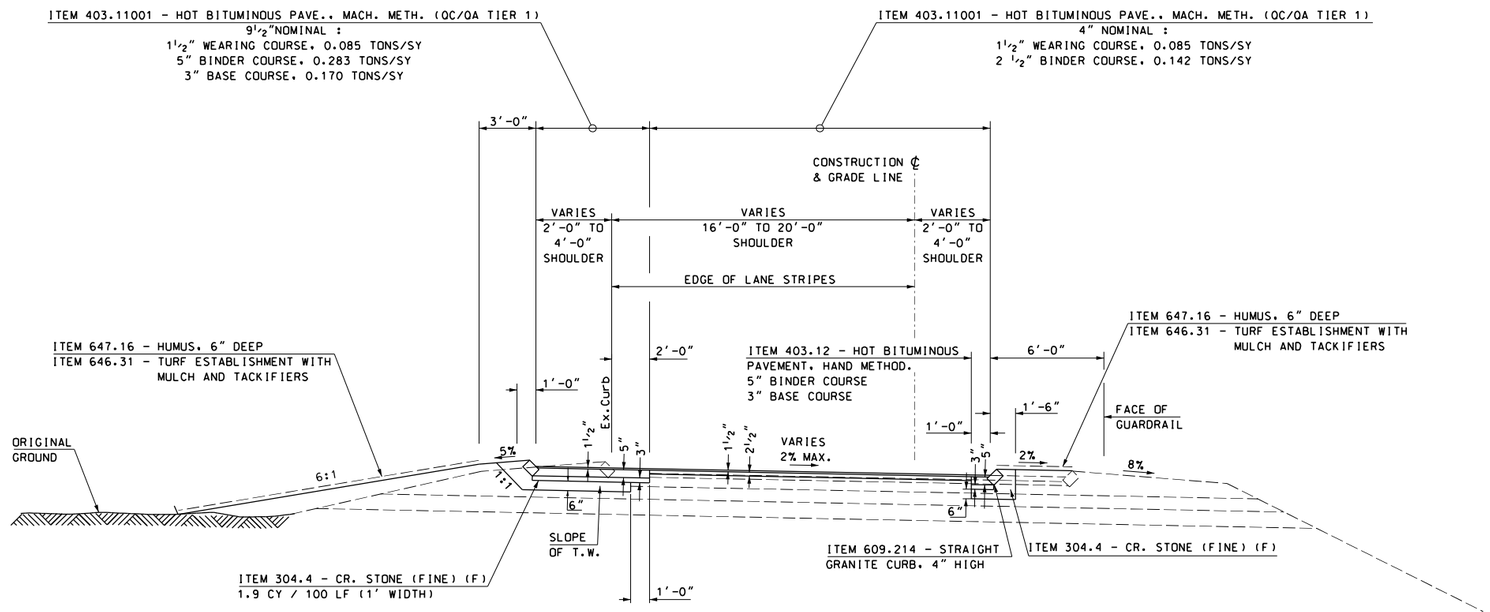
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148ty10	16148	12	600

I-89 NB ON-RAMP



SUPERELEVATED SECTION
STA 105+50.00 TO STA 107+03.30

I-89 SB OFF-RAMP



SUPERELEVATED SECTION
STA 205+99.71 TO STA 210+75.00

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

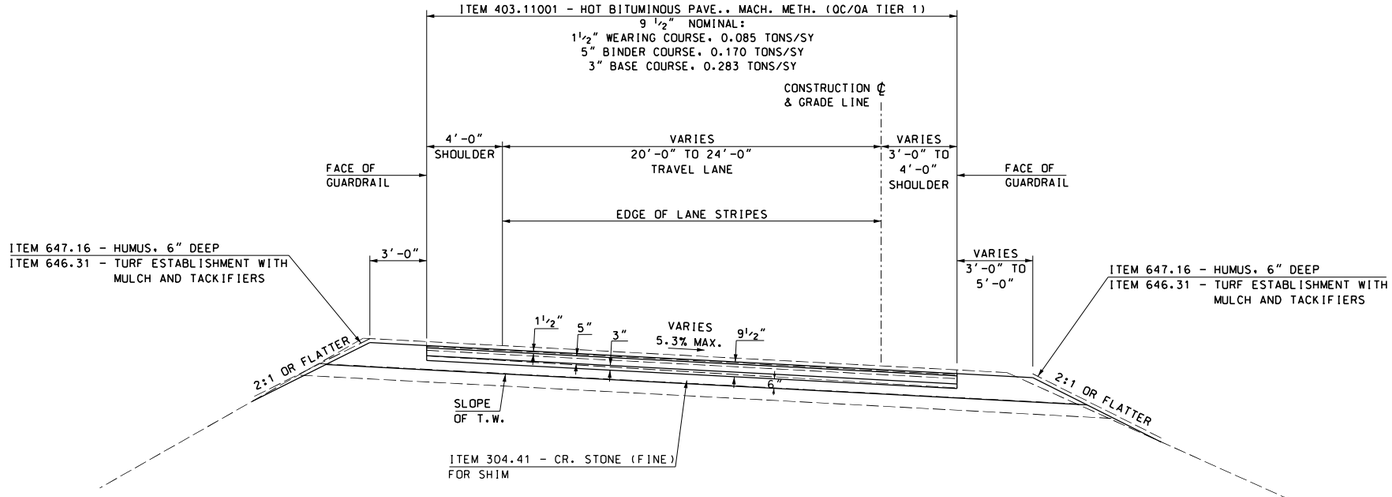
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148typ11	16148	13	600

I-89 NB OFF-RAMP

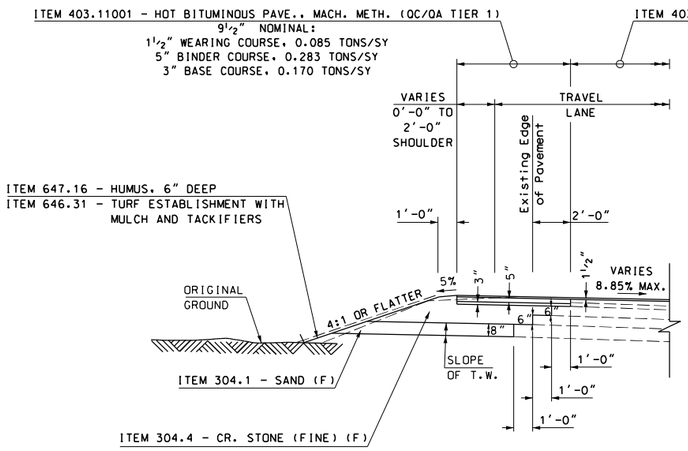


SUPERELEVATED SECTION
STA 303+29.00 TO STA 306+60.00

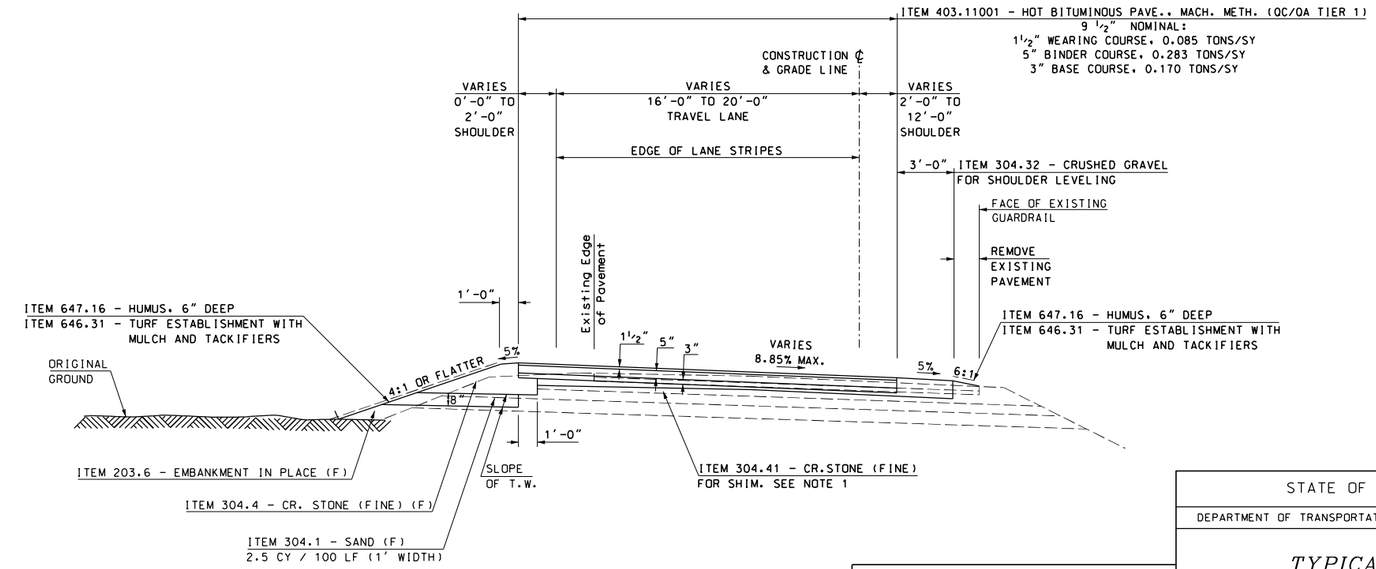
NOTES:

1. WHERE PROPOSED PAVEMENT ELEVATION IS GREATER THAN 4" ABOVE EXISTING GRADE, REMOVE EXISTING PAVEMENT AND SHIM WITH ITEM 304.41 - CRUSHED STONE (FINE) FOR SHIM (SEE CROSS SECTIONS FOR LOCATIONS)
2. SB ON-RAMP STA 403+85.00 TO STA 405+00.00 COLD PLANE AND PLACE 1 1/2" WEARING COURSE.

I-89 SB ON-RAMP



STA 405+00.00 TO STA 405+50.00



SUPERELEVATED SECTION
STA 405+00.00 TO STA 408+60.70
(SEE NOTE 2)

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148ty12	16148	14	600

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

SURFACING MATERIALS

ITEM NO.	304.1	304.32	304.35	304.4	304.41	403.11001	403.12	403.4	403.6	403.99	410.22	417.	417.416	417.53	628.2
DESCRIPTION	SAND (F)	CRUSHED GRAVEL FOR SHOULDER LEVELING	CRUSHED GRAVEL FOR DRIVES	CRUSHED STONE (FINE GRADATION) (F)	CRUSHED STONE (FINE GRADATION) FOR SHIM	HOT BIT. PVT., MACHINE METHOD (QC\QA-TIER 1)	HOT BIT. PAVEMENT, HAND METHOD	MATERIAL TRANSFER VEHICLE (MTV)	PAVEMENT JOINT ADHESIVE	TEMPORARY BITUMINOUS PAVEMENT	ASPHALT EMULSION FOR TACK COAT	COLD PLANING BITUMINOUS SURFACES (F)	RUMBLE STRIPS, 16" WIDE	REMOVE AND INLAY EXISTING RUMBLE STRIPS	SAWED BITUMINOUS PAVEMENT
UNIT	CY	T	CY	CY	CY	T	T	T	LF	T	GAL	SY	LF	LF	LF
NEW HAMPSHIRE															
I-89 NORTHBOUND	352.2	48.4		1,258.1	1,247.8	3,369.2	4.3	3,369.2	33,894.0	1,231.6	1,108.5	6,075.8	3,625.0		42.0
I-89 SOUTHBOUND	326.8	163.6		1,044.0	1,716.5	3,926.3	4.6	3,926.3	30,644.0	1,231.6	1,136.9	4,574.4	3,207.0		54.5
I-89 EXIT 20 NORTHBOUND ON RAMP				17.1		17.5	15.3	17.5	1,208.0		30.1	376.2			20.0
I-89 EXIT 20 SOUTHBOUND OFF RAMP		31.3		110.1		235.3	52.6	235.3	3,784.0		124.1	918.5			20.0
PHASE II														1,600.0	
PHASE IV														800.0	
NH CURB PATCH															
NORTH BOUND BMP (DRIVEWAY)			286												
NORTHBOUND BRIDGE WEARING						318.6		318.6							
SOUTHBOUND BRIDGE WEARING						317.3		317.3							
NH SUB-TOTAL	679.0	243.3	286.0	2,429.3	2,964.3	8,184.2	76.8	8,184.2	69,530.0	2,463.2	2,399.6	11,944.9	6,832.0	2,400.0	136.5
ROUNDING	1.0	7.7	4.0	2.7	135.7	113.8	2.2	113.8	170.0	36.8	161.4	55.1	168.0	0.0	0.5
NH TOTAL	680	251	290	2,432	3,100	8,298	79	8,298	69,700	2,500	2,561	12,000	7,000	2,400	137
VERMONT															
I-89 NORTHBOUND	788.9	107.4		4,123.0	972.1	4,469.7	1.6	4,469.7	31,216.0	1,505.3	2,346.1	5,346.2	4,440.0		38.0
I-89 SOUTHBOUND	191.9	105.2		841.5	865.0	3,732.8	3.1	3,732.8	31,746.0	1,505.3	1,697.7	14,182.2	5,197.0		107.0
I-89 NORTHBOUND OFF RAMP		9.7			313.7	574.2	3.7	574.2	2,632.0		131.0	36.8			31.0
I-89 SOUTHBOUND ON RAMP	70.6	66.6		108.1	130.9	405.1	8.1	405.1	3,784.0		117.7	423.3			24.0
PHASE II														3,238.0	
PHASE IV														47.0	
VT CURB PATCH															
NORTH BOUND BMP (DRIVEWAY)			172												
NORTHBOUND BRIDGE WEARING						101.7		101.7							
SOUTHBOUND BRIDGE WEARING						103.0		103.0							
VT SUB-TOTAL	1,051.4	288.9	172.0	5,072.6	2,281.7	9,386.5	16.5	9,386.5	69,378.0	3,010.6	4,292.5	19,988.5	9,637.0	3,285.0	200.0
ROUNDING	0.6	8.1	3.0	1.4	28.3	123.5	2.5	123.5	222.0	39.4	67.5	78.5	63.0	62.0	3.0
VT TOTAL	1,052	297	175	5,074	2,310	9,510	19	9,510	69,600	3,050	4,360	20,067	9,700	3,347	203
PROJECT TOTAL	1,732	548	465	7,506	5,410	17,808	98	17,808	139,300	5,550	6,921	32,067	16,700	5,747	340

REVISIONS AFTER PROPOSAL

NO.	DATE	STATION	DESCRIPTION

NOTEBOOKS

BOOK NO.	PAGE NO.
BOOK NO.	PAGE NO.
BOOK NO.	PAGE NO.
BOOK NO.	PAGE NO.

PLAN TRACED		DATE
PLAN CHECKED		DATE
PROFILE TRACED		DATE
PROFILE CHECKED		DATE
INKED	SVO	DATE 02/18
CHECKED	BRC	DATE 02/18

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND JOHNSON

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	15	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

CLEARING AND GRUBBING

ITEM NO.						201.1
DESCRIPTION						CLEARING AND GRUBBING (F)
UNIT						A
LOCATION					DESIGNATED AREA	
NEW HAMPSHIRE						
NORTHBOUND BMP	2002+54.3	TO	2005+75.6	RT	A	0.05
NORTHBOUND BMP	816+31.5	TO	824+94.5	RT	B	0.29
SOUTHBOUND BMP	3001+91.2	TO	3003+15.7	RT	C	0.02
SOUTHBOUND BMP	3003+49.5	TO	3003+80.2	LT/RT	D	0.01
FROM ITS EQUIPMENT & CONDUIT SUMMARY						0.07
				NH TOTAL		0.44
VERMONT						
I-89 NORTHBOUND	830+63.6	TO	841+33.1	RT	E	0.20
I-89 NORTHBOUND	729+92.2	TO	730+95.5	LT	F	0.13
I-89 NORTHBOUND	1000+06.1	TO	1002+47.7	RT	G	0.35
I-89 NORTHBOUND	843+68.0	TO	844+00.7	RT	H	0.01
I-89 NORTHBOUND	847+57.1	TO	847+94.0	RT	I	0.01
I-89 SOUTHBOUND	849+39.0	TO	849+73.5	RT	J	0.01
				VT TOTAL		0.71
				PROJECT TOTAL		1.15

SALVAGE ITEMS

- CURBING (DISTRICT)
- DRAINAGE GRATES AND FRAMES (DISTRICT)

NEW HAMPSHIRE EARTHWORK SUMMARY

	DESCRIPTION		QUANTITY	UNITS
1.	Common Excavation in Sections, Including Boulders and Pavement		6,217.6	CY
2a.	Bituminous Pavement in Fill Sections		712.1	CY
5.	Common Excavation in Sections, Excl. Bldrs. & Conc. Pvmt. [1-(22+23)]		4,557.8	CY
8a.	Topsoil Removed Beneath Fill Sections (Part of 203.11)		603.0	CY
8b.	Topsoil Removed on Cut Sections (Part of 203.11)		1,597.8	CY
10a.	Limited Re-Use Soil (203.11)		2,200.8	
	COMMON EXCAVATION - LRS FOR ESTIMATE	ITEM 203.11	2,240	
11.	Total Common Excavation (Sum of (2a + 5))		5,269.9	CY
	COMMON EXCAVATION FOR ESTIMATE	ITEM 203.1	5,400	CY
22.	Boulders in Sections (1 x 1.0 %)		62.0	CY
29.	Total Rock Excavation (Item 203.2) (Sum of 20 thru 28)		62.0	CY
	ROCK EXCAVATION FOR ESTIMATE	ITEM 203.2	62	CY
34.	Sections Fill		1,059.8	CY
35a.	Limited Re-Use Soil Replacement (8a)		603.0	CY
41.	Replace Pavement Removal with Fill Material		712.1	CY
42.	Embankment-In-Place (Item 203.6) (Sum of 34 thru 41)		2,374.9	CY
	EMBANKMENT-IN-PLACE FOR ESTIMATE	ITEM 203.6	2,375	CY

VERMONT EARTHWORK SUMMARY

	DESCRIPTION		QUANTITY	UNITS
1.	Common Excavation in Sections, Including Boulders and Pavement		5,358.7	CY
2a.	Bituminous Pavement in Fill Sections		193.9	CY
5.	Common Excavation in Sections, Excl. Bldrs. & Conc. Pvmt. [1-(22+23)]		3,347.2	CY
8a.	Topsoil Removed Beneath Fill Sections		1,157.6	CY
8b.	Topsoil Removed on Cut Sections		1,958.1	CY
10a.	Limited Re-Use Soil (203.11)		3,115.7	
	COMMON EXCAVATION - LRS FOR ESTIMATE	ITEM 203.11	3,210	
11.	Total Common Excavation (Sum of (2a + 5))		3,541.1	CY
	COMMON EXCAVATION FOR ESTIMATE	ITEM 203.1	3,600	CY
22.	Boulders in Sections (1 x 1.0 %)		53.4	CY
29.	Total Rock Excavation (Item 203.2) (Sum of 20 thru 28)		54.0	CY
	ROCK EXCAVATION FOR ESTIMATE	ITEM 203.2	54	CY
34.	Sections Fill		2,429.1	CY
35a.	Limited Re-Use Soil Replacement		1,157.6	CY
41.	Replace Pavement Removal with Fill Material		193.9	CY
42.	Embankment-In-Place (Item 203.6) (Sum of 34 thru 41)		3,780.6	CY
	EMBANKMENT-IN-PLACE FOR ESTIMATE	ITEM 203.6	3,781	CY

SIGNING

ITEM NO.	ITEM DESCRIPTION	UNIT	NH QUANTITY	VT QUANTITIY	PROJECT TOTAL
615.01201	TRAFFIC SIGN TYPE A, BREAKAWAY MOUNTS	SF	0	39	39
615.013	REMOVING TRAFFIC SIGN TYPE A	U	2	4	6
615.014	RELOCATING TRAFFIC SIGN TYPE A	U	4	4	8
615.0201	TRAFFIC SIGNS TYPE B	SF	142	346	488
615.02201	TRAFFIC SIGN TYPE B, BREAKAWAY MOUNTS	SF	0	42.5	42.5
615.023	REMOVING TRAFFIC SIGN TYPE B	U	2	4	6
615.024	RELOCATING TRAFFIC SIGN TYPE B	U	6	7	13
615.033	REMOVING TRAFFIC SIGN TYPE C	U	4	21	25
615.034	RELOCATING TRAFFIC SIGN TYPE C	U	0	12	12
615.0401	TRAFFIC SIGN TYPE AA	SF	665	1010	1675
615.0501	TRAFFIC SIGN TYPE BB	SF	25	50	75

REMOVING SMALL TREES

201.21

STATE	STATION	OFFSET	QUANTITY
			EA
NH	824+85.9	RT	3
		NH ROUNDING	0
		NH TOTAL	3
VT	730+29.2	RT	3
		VT ROUNDING	0
		VT TOTAL	3
		PROJECT TOTAL	6

REVISIONS AFTER PROPOSAL (USE BOTTOM LINES FIRST)

NO.	DATE	STATION	DESCRIPTION

NOTEBOOKS

PAGE NO.		PAGE NO.		PAGE NO.	
BOOK NO.		BOOK NO.		BOOK NO.	

DATE		DATE	2/18
DATE		DATE	2/18
DATE			
DATE			
	SVO		
	BRC		

PLAN TRACED
PLAN CHECKED
PROFILE TRACED
PROFILE CHECKED
INKED
CHECKED

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND JOHNSON

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	16	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

GUARDRAIL - NEW HAMPSHIRE

REF - NO.	ITEM NO.					202.7	203.5561	520.421	565.802	606.1254	606.127	606.18001	606.28001	606.322	606.41231	606.413	606.4139	606.4239	621.1	621.2
	ITEM DESCRIPTION					REMOVAL OF GUARDRAIL	EAGRT PLATFORM PREFERRED	CONCRETE CLASS F, FLOWABLE FILL, EXCAVATABLE	ADJUSTING BRIDGE APPROACH RAIL	*BEAM GUARDRAIL (TERMINAL UNIT TYPE EGART, TL 3) (STEEL POST)	BEAM GUARDRAIL (TERMINAL UNIT TYPE G-2) (STEEL POST)	*31" W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (STEEL POST)	*31" DOUBLE FACED W-BEAM GUARD W/ 8" OFFSET BLOCKS (STEEL POST)	DOUBLE FACED TRANSITION RAIL, STEEL POST	TRANSITION SINGLE SLOPE CONCRETE BARRIER, PRECAST	SINGLE SLOPE CONCRETE MEDIAN BARRIER, PRECAST	SINGLE SLOPE CONCRETE MEDIAN BARRIER (MODIFIED), PRECAST	MODIFIED SINGLE SLOPE CONCRETE MEDIAN BARRIER, CAST-IN-PLACE	RETROFEFLECTIVE MEDIAN BARRIER DELINEATOR	RETROREFLECTIVE BEAM GUARDRAIL DELINEATOR
	UNIT					LF	U	CY	U	U	U	LF	LF	U	U	LF	LF	LF	EA	EA
	NEW HAMPSHIRE																			
1	I-89 NB	810+06.9	to	823+82.4	RT	1365.4														
2	I-89 NB	810+41.2	to	810+83.3	LT	42.3														
3	I-89 NB	820+26.6	to	823+76.3	LT	349.7														
4	I-89 NB	810+41.6	to	810+70.6	LT				1.0											
5	I-89 NB	810+70.6	to	810+95.4	LT							25.0								1.0
6	I-89 NB	810+95.4	to	811+07.8	LT						1.0									
7	I-89 NB	810+06.7	to	810+36.3	RT				1.0											
8	I-89 NB	810+36.3	to	823+53.3	RT							1325.0								14.0
9	I-89 NB	823+53.3	to	823+82.4	RT															
10	EXIT 20 OFF	205+98.6	to	210+75.0	LT	476.4														
11	I-89 SB	710+46.2	to	719+64.2	LT	917.5														
12	EXIT 20 OFF	205+98.6	to	210+75.0	LT							487.5								5.0
13	I-89 SB	723+38.0	to	723+67.2	LT															
14	I-89 SB	710+46.2	to	710+75.7	RT				1.0											
15	I-89 SB	710+75.7	to	712+96.6	LT								225.0							6.0
16	I-89 SB	712+96.6	to	713+30.0	RT									1.0						
17	I-89 SB	713+30.0	to	713+50.0	RT										1.0					
18	I-89 SB	713+50.0	to	719+50.0	RT			15.8									600.0		6.0	
19	I-89 SB	719+50.0	to	723+73.8	RT			10.9								440.0			5.0	
BRIDGE	I-89 SB	723+73.8	to	730+33.1	RT											608.0			7.0	
34	I-89 SB	717+27.6	TO	723+38.0	LT							612.5								7.0
45	I-89 NB	805+00.0	to	808+02.6	RT	301.0														
46	I-89 NB	805+00.0	to	807+65.0	RT							275.0								3.0
47	I-89 NB	807+65.0	to	807+76.0	RT						1.0									
52	I-89 NB	717+27.6		723+67.2		639.6														
					NH SUB-TOTAL	4091.9	0.0	26.7	3.0	0.0	2.0	2725.0	225.0	1.0	1.0	1048.0	600.0	0.0	18.0	36.0
					NH ROUNDING	8.1		0.3				25.0	25.0							
					NH TOTAL	4100	0	27	3	0	2	2750	250	1	1	1048	600	0	***	***

*** SEE DELINEATOR TABLE FOR PROJECT TOTALS

TRAFFIC CONTROL DIVERSIONS

ITEM NO.	670.04501	670.04502	670.04503	670.04504	670.04505	*	*	*	*
Roadway	CONSTRUCT AND REMOVE DIVERSION	CONSTRUCT AND REMOVE DIVERSION	CONSTRUCT AND REMOVE DIVERSION	CONSTRUCT AND REMOVE DIVERSION	CONSTRUCT AND REMOVE DIVERSION	COMMON EXCAVATION	EMBANKMENT-IN-PLACE	CRUSHED STONE (FINE GRADATION)	SAND
UNIT	U	U	U	U	U	CY	CY	CY	CY
PHASE 2 I-89 SB DIVERSION NH	1.0					214.6	0.0	214.6	0.0
PHASE 2 I-89 SB DIVERSION VT		1.0				542.7	29.7	502.6	10.4
PHASE 2 I-89 SB ON-RAMP VT			1.0			116.2	17.7	72.4	26.1
PHASE 4 I-89 NB DIVERSION NH				1.0		86.8	0.0	86.8	0.0
PHASE 4 I-89 NB DIVERSION VT					1.0	168.5	0.0	168.5	0.0
NH TOTAL	0.45	0.45	0.45	0.45	0.45	301.4	0.0	301.4	0.0
VT TOTAL	0.55	0.55	0.55	0.55	0.55	827.4	47.4	743.5	36.5
PROJECT TOTAL	1.0	1.0	1.0	1.0	1.0	1,128.8	47.4	1,044.9	36.5

* QUANTITIES IN THIS TABLE ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT INCLUDED IN SPECIFIC ITEM TOTALS. THEY ARE SUBSIDIARY TO ITEMS 670.04501, 670.04502, 670.04503, 670.04504, AND 645.04505

THE SURFACING MATERIALS TABLE CONTAINS THE TEMPORARY BITUMINOUS PAVEMENT ITEMS REQUIRED FOR THE CONSTRUCTION OF THE DIVERSIONS.

TRAFFIC CONTROL

ITEM NO.	ITEM	UNIT	NH - 45%	VT - 55%	TOTAL - 100%
606.417 *	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL	LF	3320	4960	8280
				(SEE NOTE 1)	
606.9523 **	TEMP. IMPACT ATTENUATION DEVICE (NON-REDIRECTIVE), TEST LEVEL 3	U	1.8	2.2	4
606.9612	TEMP. GUARDRAIL TO BARRIER TRANSISTION (STEEL POST)	U	5.85	7.15	13
606.9632	TEMP. BARRIER TO BRIDGE RAIL TRANSITION (STEEL POST)	U	2.25	2.75	5
631.024	MODULAR GLARE SCREEN	LF	2520	3080	5600

* PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL WILL BE MEASURED BY THE TOTAL LENGTH DELIVERED TO THE PROJECT SITE. RELOCATING PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL WILL NOT BE MEASURED.

** TEMPORARY IMPACT ATTENUATORS WILL BE MEASURED BY THE UNIT DELIVERED TO THE PROJECT SITE. RELOCATING TEMPORARY IMPACT ATTENUATORS WILL NOT BE MEASURED.

NOTES:

1.) QUANTITY INCLUDES 900 LF FOR BRIDGE CONSTRUCTION ACCESS - RAILROAD CORRIDOR (SEE BRIDGE PLANS)

REVISIONS AFTER PROPOSAL (USE BOTTOM LINES FIRST)

NO.	DESCRIPTION	STATION	STATION	DATE

NOTEBOOKS

	PAGE NO.	BOOK NO.	DATE
INKED	SVO	2/18	2/18
CHECKED	BRC		

	DATE
PLAN TRACED	
PLAN CHECKED	
PROFILE TRACED	
PROFILE CHECKED	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND JOHNSON

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	17	600

(USE BOTTOM LINES FIRST)

REVISIONS AFTER PROPOSAL

NO.	DATE	STATION	DESCRIPTION

NOTEBOOKS

PAGE NO.	BOOK NO.
PAGE NO.	BOOK NO.
PAGE NO.	BOOK NO.

	DATE
PLAN TRACED	
PLAN CHECKED	DATE
PROFILE TRACED	DATE
PROFILE CHECKED	DATE
INKED	SVO DATE 2/18
CHECKED	BRC DATE 2/18

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

GUARDRAIL - VERMONT

REF - NO.	ITEM NO.	202.7	203.5561	520.421	565.802	606.1254	606.127	606.18001	606.28001	606.322	606.41231	606.413	606.4139	606.4239	621.1	621.2
	ITEM DESCRIPTION	REMOVAL OF GUARDRAIL	EAGRT PLATFORM PREFERRED	CONCRETE CLASS F, FLOWABLE FILL, EXCAVATABLE	ADJUSTING BRIDGE APPROACH RAIL	*BEAM GUARDRAIL (TERMINAL UNIT TYPE EGART, TL 3) (STEEL POST)	BEAM GUARDRAIL (TERMINAL UNIT TYPE G-2) (STEEL POST)	*31" W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (STEEL POST)	*31" DOUBLE FACED W-BEAM GUARD W/ 8" OFFSET BLOCKS (STEEL POST)	DOUBLE FACED TRANSITION RAIL, STEEL POST	TRANSITION SINGLE SLOPE CONCRETE BARRIER, PRECAST	SINGLE SLOPE CONCRETE MEDIAN BARRIER, PRECAST	SINGLE SLOPE CONCRETE MEDIAN BARRIER (MODIFIED), PRECAST	MODIFIED SINGLE SLOPE CONCRETE MEDIAN BARRIER, CAST-IN-PLACE	RETROFEFLECTIVE MEDIAN BARRIER DELINEATOR	RETRO REFLECTIVE BEAM GUARDRAIL DELINEATOR
	UNIT	LF	U	CY	U	U	U	LF	LF	U	U	LF	LF	LF	EA	EA
	VERMONT															
20	I-89 NB 832+70.8 to 306+60.0 RT	1877.1														
21	I-89 NB 832+65.2 to 832+91.8 RT	26.6														
22	I-89 SB 732+64.1 to 735+51.7 RT	291.5														
23	I-89 SB 732+52.2 to 406+32.5 LT	816.3														
24	I-89 NB 832+70.8 to 832+99.9 RT															
25	I-89 NB 832+99.9 to 839+74.9 RT							675.0								7.0
26	I-89 NB 839+74.9 to 839+87.4 RT						1.0									
27	I-89 NB 839+89.7 to 840+02.2 RT						1.0									
28	I-89 NB 840+02.2 to 306+60.0 RT							1162.5								16.0
29	NB OFF RAMP 304+32.3 to 304+92.7 LT		1.0			1.0										
30	NB OFF RAMP 304+92.7 to 306+60.0 LT							175.0								2.0
31	I-89 SB 732+52.2 to 732+81.4 LT															
32	I-89 SB 732+81.4 to 406+99.9 LT							725.0								8.0
33	SB ON RAMP 406+99.9 to 406+37.4 LT		1.0			1.0										
BRIDGE	I-89 SB 730+33.1 to 732+60.0 RT											192.0			3.0	
35	I-89 SB 732+60.0 to 735+25.0 RT			13.4									280.0		3.0	
50	I-89 SB 735+25.0 to 740+25 RT			12.2										500.0	5.0	
51	I-89 SB 740+25.0 to 741+50.0 RT												140.0		2.0	
36	I-89 SB 741+50.0 to 742+70.0 RT			3.1								120.0			2.0	
37	I-89 SB 842+70.0 to 842+90.0 RT										1.0					
38	I-89 NB 842+90.0 to 843+23.3 RT									1.0						
39	I-89 NB 843+23.3 to 854+50.0 RT								1125.0							24.0
40	I-89 SB 745+49.5 to 745+62.0 RT						1.0									
41	I-89 SB 745+62.0 to 747+99.5 RT							237.5								3.0
42	I-89 SB 747+99.5 to 748+62.8 RT		1.0			1.0										
43	NB OFF RAMP 304+34.1 to 306+60.0 LT	228.5														
44	I-89 NB 844+88.4 to 854+00.0 LT	911.4														
48	I-89 NB 850+87.2 to 851+49.7 LT		1.0			1.0										
49	I-89 NB 851+49.7 to 854+00.0 LT							250.0								3.0
	VT SUB-TOTAL	4151.4	4.0	28.7	0.0	4.0	3.0	3225.0	1125.0	1.0	1.0	312.0	420.0	500.0	15.0	63.0
	VT ROUNDING	28.6		0.3				25.0	25.0							
	VT TOTAL	4180	4	29	0	4	3	3250	1150	1	1	312	420	500	15*	63*
	NH TOTAL (FROM PREVIOUS SHEET)	4100	0	27	3	0	2	2750	250	1	1	1048	600	0	***	***
	PROJECT TOTAL	8280	4	56	3	4	5	6000	1400	2	2	1360	1020	500	33*	99*

*** SEE DELINEATOR TABLE FOR PROJECT TOTALS

McFARLAND JOHNSON

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	18	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

CURBING

ITEM NO.			609.01	609.214	609.234	609.811
ITEM DESCRIPTION	MARK NUMBER	RADIUS	STRAIGHT GRANITE CURB	STRAIGHT GRANITE SLOPE CURB, 4" HIGH	CURVED GRANITE SLOPE CURB, 4" HIGH	BITUMINOUS CURB, TYPE B (4" REVEAL)
LOCATION			LF	LF	LF	LF
NEW HAMPSHIRE						
I-89 NORTHBOUND NH 807+81.2 RT 22.8 808+00.0 RT 22.0	G-1			18.7		
I-89 NORTHBOUND NH 808+00.0 RT 22.0 808+78.1 RT 22.0	G-2	3548		77.6		
I-89 NORTHBOUND NH 808+71.1 RT 42.6 808+96.0 RT 44.1	G-9	85		24.7		
I-89 NORTHBOUND NH 808+96.0 RT 44.1 809+16.8 RT 48.2	G-10			21.0		
I-89 NORTHBOUND NH 809+16.8 RT 48.2 809+50.4 RT 49.3	G-11		33.2			
I-89 NORTHBOUND NH 810+07.2 RT 50.2 810+40.0 RT 50.4	G-12		32.3			
I-89 NORTHBOUND NH 823+49.9 RT 36.0 823+82.4 RT 35.5	G-13		32.5			
I-89 NORTHBOUND NH 810+41.1 LT 20.2 810+73.4 LT 20.2	G-19		32.5			
I-89 NORTHBOUND NH 803+00.0 RT 24.0 807+81.2 RT 22.8	B-1					479.6
I-89 NORTHBOUND NH 810+40.0 RT 50.4 823+49.9 RT 36.0	B-2					1303.5
I-89 SOUTHBOUND NH 709+57.5 RT 17.1 709+90.3 RT 17.1	G-20		32.5			
I-89 SOUTHBOUND NH 710+46.4 RT 16.0 710+79.1 RT 16.6	G-21		32.5			
I-89 SOUTHBOUND NH 716+75.0 LT 22.5 716+79.4 LT 22.0	G-22	20		4.5		
I-89 SOUTHBOUND NH 716+79.4 LT 22.0 717+23.4 LT 22.0	G-23			44.0		
I-89 SOUTHBOUND NH 723+30.7 LT 36.0 723+63.2 LT 35.5	G-30		32.5			
I-89 SOUTHBOUND NH 703+00.0 RT 30.5 709+57.5 RT 17.2	B-5					655.2
I-89 SOUTHBOUND NH 710+79.1 RT 16.6 713+80 RT 18.0	B-6					299.0
I-89 SOUTHBOUND NH 205+11.1 LT 12.0 723+30.7 LT 36.0	B-7					516.3
I-89 NB ON-RAMP NH 107+02.3 LT 16.0 808+78.1 RT 22.0	G-3	1			3.1	
I-89 NB ON-RAMP NH 106+02.3 LT 18.0 107+02.3 LT 16.0	G-4	1250		101.7		
I-89 NB ON-RAMP NH 105+94.9 LT 18.0 106+02.3 LT 18.0	G-5	975		7.6		
I-89 NB ON-RAMP NH 105+50 LT 18.0 105+94.9 LT 18.0	G-6			44.9		
I-89 NB ON-RAMP NH 105+50 RT 2.0 105+94.9 RT 2.0	G-7			44.9		
I-89 NB ON-RAMP NH 105+94.9 RT 2.0 106+93.9 RT 2.0	G-8	955		98.8		
I-89 SB OFF RAMP NH 209+00.0 LT 18.0 206+00.0 LT 24.0	G-24			300.1		
I-89 SB OFF RAMP NH 209+74.3 LT 18.0 209+00.0 LT 24.0	G-25			74.3		
I-89 SB OFF RAMP NH 210+75.0 LT 18.0 209+74.3 LT 18.0	G-26	1412.4		99.5		
I-89 SB OFF RAMP NH 210+75.0 RT 2.0 209+74.3 RT 2.0	G-27	1432.4		100.9		
I-89 SB OFF RAMP NH 209+74.3 RT 2.0 206+72.1 RT 2.0	G-28			302.2		
I-89 SB OFF RAMP NH 206+72.1 RT 2.0 205+11.1 RT 12.0	G-29	1300		161.4		
NH AMOUNT NEEDED			228.0	1526.8	3.1	3253.6
MINUS CURBING TO BE RESET IN NH			-215.0	-982.0	0.0	0.0
NH SUBTOTAL			13.0	544.8	3.1	3253.6
NH ROUNDING			1.0	4.2	0.9	46.4
NH TOTALS			14	549	4	3300
VERMONT						
I-89 NORTHBOUND VT 832+73.6 RT 35.5 833+06.1 RT 36.0	G-14		32.5			
I-89 NORTHBOUND VT 848+32.8 RT 22.0 848+95.6 RT 22.0	G-15			62.7		
I-89 NORTHBOUND VT 848+95.6 RT 22.0 849+00.0 RT 22.5	G-16	20		4.5		
I-89 NORTHBOUND VT 833+06.1 RT 36.0 306+60.0 RT 3.0	B-3					1844.0
I-89 SOUTHBOUND VT 732+54.5 LT 35.5 732+87.0 LT 36.0	G-31		32.5			
I-89 SOUTHBOUND VT 738+39.2 LT 22.0 408+59.7 LT 16.0	G-34	1			3.1	
I-89 SOUTHBOUND VT 738+39.2 LT 22.0 739+50.0 LT 22.0	G-35	3022		111.6		
I-89 SOUTHBOUND VT 739+50.0 LT 22.0 740+00.0 LT 23.0	G-36			50.4		
I-89 SOUTHBOUND VT 732+87.0 LT 36.0 734+50.0 LT 51.9	B-8					163.0
I-89 NB OFF RAMP VT 303+29.0 LT 24.0 303+95.8 LT 25.3	G-17	850		68.8		
I-89 NB OFF RAMP VT 303+95.8 LT 25.3 304+00.0 LT 25.9	G-18	20		4.4		
I-89 SB ON RAMP VT 407+59.7 LT 18.0 407+00.0 LT 18.0	G-32			59.7		
I-89 SB ON RAMP VT 408+59.7 LT 16.0 407+59.7 LT 18.0	G-33			100.0		
I-89 NB OFF RAMP VT 306+30.0 LT 28.0 306+60.0 LT 28.0	B-4					30.0
VT AMOUNT NEEDED			65.0	462.1	3.1	2037.0
MINUS CURBING TO BE RESET IN VT			-35.0	0.0	0.0	0.0
VT SUBTOTAL			30.0	462.1	0.9	2037.0
VT ROUNDING			1.0	9.9	3.1	63.0
VT TOTALS			31	472	4	2100
PROJECT TOTALS			45	1021	8	5400

Curb Removal Quantity Calculation

Roadway Name	Beginning Station	Offset		Ending Station	Offset		Radius (ft) (1)	609.5 Length of Vertical Curb (ft)	Length of Sloped Curb (ft)
I-89 NB NH	808+02.6	RT	21.6	809+51.1	RT	19.3			147.7
I-89 NB NH	810+41.0	LT	19.9	810+72.0	LT	19.9		31.1	
I-89 NB NH	809+16.8	RT	48.2	809+50.7	RT	49.4		33.5	
I-89 NB NH	810+07.2	RT	50.3	810+41.4	RT	50.4		33.8	
I-89 NB NH	823+25.4	RT	35.7	823+82.4	RT	34.6		57.0	
I-89 NB NH	823+49.9	RT	4.07	823+76.6	RT	4.6		26.8	
I-89 NB VT	832+67.5	RT	4.8	832+77.6	RT	4.1		10.1	
I-89 NB VT	832+73.4	RT	34.4	832+83.4	RT	36.4		10.2	
I-89 SB NH	709+58.2	RT	17.1	709+90.4	RT	16.9		32.0	
I-89 SB NH	710+46.3	RT	15.9	710+78.5	RT	14.7		32.0	
I-89 SB NH	715+83.1	LT	42.2	716+22.3	LT	42.6			39.2
I-89 SB NH	723+32.0	LT	34.6	723+63.2	LT	34.5		31.2	
I-89 SB NH	723+38.8	LT	2.9	723+69.3	LT	4.4		30.7	
I-89 SB VT	732+54.4	LT	34.5	732+71.3	LT	36.8		17.2	
I-89 SB VT	732+60.4	LT	4.6	732+74.6	LT	3.8		14.2	
I-89 NB ON RAMP NH	105+50.0	LT	18.0	107+73.7	LT	13.2			226.1
I-89 NB ON RAMP NH	105+50.0	RT	2.3	107+38.6	RT	11.1			189.2
I-89 SB OFF RAMP NH	210+75.0	RT	1.7	206+44.8	RT	27.6			430.2
I-89 SB OFF RAMP NH	210+75.0	LT	12.5	207+02.0	LT	12.5			373.0
CURB TO BE REMOVED NH								308.1	1405.4
- 30% BREAKAGE NH								93.1	423.4
**CURB AVAILABLE TO BE RESET NH								215.0	982.0
NH SUBTOTAL								1197.0	
CURB TO BE REMOVED VT								51.7	0.0
- 30% BREAKAGE VT								16.7	0.0
**CURB AVAILABLE TO BE RESET VT								35.0	0.0
VT SUBTOTAL								35.0	
PROJECT TOTAL								1232.0	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

McFARLAND JOHNSON

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	19	600

(USE BOTTOM LINES FIRST) DESCRIPTION | REVISIONS AFTER PROPOSAL | STATION | STATION | DATE | NO.

NOTEBOOKS | PAGE NO. | BOOK NO. | DATE

PLAN TRACED | PLAN CHECKED | PROFILE TRACED | PROFILE CHECKED | INKED SVO 2/18 | CHECKED BRC 2/18

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

SMART WORK ZONE

ITEM NO.		UNIT	NH - 45%	VT - 55%	TOTAL
203.55261	INSTALLATION AND REMOVAL OF SWZ - PORTABLE QUEUE TRAILER PLATFORM	U	0.45	0.55	1
203.55262	INSTALLATION AND REMOVAL OF SWZ - PORTABLE CHNANGEABLE MESSAGE SIGN PLATFORM	U	0.45	0.55	1
203.55264	INSTALLATION AND REMOVAL OF SWZ - MOBILE VIDEO TRAILER PLATFORM	U	0.9	1.1	2
619.502	WORK ZONE ITS OPERATIONAL COSTS (WINTER)	MO	9	11	20
619.503	WORK ZONE ITS OPERATIONAL COSTS (SUMMER)	MO	18	22	40
619.51	PORTABLE QUEUE TRAILER / SENSOR (PQT)	MO	108	132	240
619.52	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	MO	189	231	420
619.54	MOBILE VIDEO TRAILER WITH PAN TILT ZOOM (PTZ)	MO	54	66	120
619.91	RELOCATE WORK ZONE ITS DEVICE	U	1.8	2.2	4

INCIDENTAL ITEMS

ITEM NO.		UNIT	NH	VT	TOTAL	
201.881	INVASIVE SPECIES CONTROL TYPE I	SY	620	1660	2,280	
201.882	INVASIVE SPECIES CONTROL TYPE II	SY	1951	930	2,881	
203.5525	PORTABLE CHANGEABLE MESSAGE SIGN PLATFORM	U	3.15	3.85	7	
206.19	COMMON STRUCTURE EXCAVATION EXPLORATORY	CY	80	80	160	
214.	FINE GRADING	U	0.43	0.57	1	
618.61	UNIFORMED OFFICERS WITH VEHICLE	$	180,000	220,000	400,000	*
618.7	FLAGGERS	HR	540	660	1,200	
619.1	MAINTENANCE OF TRAFFIC	U	0.45	0.55	1	
619.25	PORTABLE CHANGEABLE MESSAGE SIGN	U	3.15	3.85	7	
619.279	AUTOMATED TRAILER-MOUNTED SPEED LIMIT SIGN	U	0.45	0.55	1	
619.63	TRUCK-MOUNTED IMPACT ATTENUATOR, TEST LEVEL 3	U	0.9	1.1	2	
645.7	STORMWATER POLLUTION PREVENTION PLAN	U	0.45	0.55	1	
645.71	MONITORING SWPPP AND EROSION AND SEDIMENT CONTROLS	HR	450	550	1,000	
670.104	TEMPORARY PORTABLE LIGHTING	U	1.8	2.2	4	
670.822	GNSS CONSTRUCTION INSPECTION EQUIPMENT	U	0.45	0.55	1	
670.95	TEMPORARY SAFETY FENCE	LF	530	0	530	
693.	ON-THE-JOB TRAINING OF UNSKILLED WORKERS	$	540	660	1,200	*
697.11	INVASIVE SPECIES MANAGEMENT PLAN	U	0.45	0.55	1	
697.31	PROJECT OPERATIONS PLAN	U	0.45	0.55	1	
697.41	CRITICAL PATH METHOD (CPM) ELECTRONIC SCHEDULE	U	0.45	0.55	1	
698.12	FIELD OFFICE TYPE B	MONTH	26.1	31.9	58	
698.2	PHYSICAL TESTING LABORATORY	MONTH	25.2	30.8	56	
699.	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	$	60000	60000	120,000	*
1010.15	FUEL ADJUSTMENT	$	112500	137500	250,000	*
1010.2	ASPHALT CEMENT ADJUSTMENT	$	22500	27500	50,000	*
1010.3	QUALITY CONTROL/QUALITY ASSURANCE (QC/QA) FOR ASPHALT	$	28768	35000	63,768	*

* NOT A BID ITEM

OVERHEAD SIGN STRUCTURES

ITEM	206.1	503.208	503.209	503.210	503.211	503.212	508.	520.2	544.1	615.10001	615.10002	615.10301	615.20001
DESCRIPTION	COMMON STRUCTURE EXCAVATION	COFFERDAMS	COFFERDAMS	COFFERDAMS	COFFERDAMS	COFFERDAMS	STRUCTURAL FILL	CONCRETE CLASS B	REINFORCING STEEL (ROADWAY)	FULL TRAFFIC SIGN STRUCTURE	FULL TRAFFIC SIGN STRUCTURE	REMOVING FULL TRAFFIC SIGN STRUCTURE	CANTILEVER TRAFFIC SIGN STRUCTURE
UNIT	CY	U	U	U	U	U	CY	CY	LB	U	U	U	U
LOCATION													
NH													
822+00	200	1	1				65	120	10,200	1			
BRIDGE QUANTITY							26						
NH SUB TOTAL	200	1	1				91	120	10,200	1			
NH ROUNDING							1						
NH TOTAL	200	1	1				92	120	10,200	1			
VT													
845+50	200				1	1	65	120	10,200		1		
848+17												1	
734+50	100			1			20	48	2,750				1
BRIDGE QUANTITY							52						
VT SUB TOTAL	300			1	1	1	137	168	12,950		1	1	1
VT ROUNDING							1	2	50				
VT TOTAL	300	0	0	1	1	1	138	170	13,000	0	1	1	1
PROJECT TOTAL	*	1	1	1	1	1	230	290	23,200	1	1	1	1

* NOT AN ITEM TOTAL SEE DRAINAGE DETAIL SUMMARY SHEET

SUBSIDIARY ITEMS

DESCRIPTION	UNIT	QUANTITY
REMOVAL OF EXISTING PIPES	LF	450
REMOVAL OF EXISTING CB's, DI's AND DMH's	EA	6
REMOVAL OF END SECTIONS	EA	4
PLUG AND ABANDON PIPE	EA	10
CONNECT TO EXISTING PIPE	EA	19
CONNECT TO EXISTING CB, DI AND DMH	EA	8
STEEL WATER DIVERSION PLATES	U	1
REMOVAL OF EROSION STONE WHERE ORDERED	TON	1680
REMOVAL OF SILT FENCE WHERE ORDERED	LF	10590
TEMPORARY PAVEMENT FILLET	TON	13

NOTE - THIS LIST OF SUBSIDIARY ITEMS SHOULD NOT BE CONSIDERED AS A COMPLETE LISTING OF THE SUBSIDIARY WORK PRESENT ON THIS PROJECT. REFER TO PLANS, PROPOSAL, SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS.

(USE BOTTOM LINES FIRST)

REVISIONS AFTER PROPOSAL — NO. / DATE / STATION / STATION / DESCRIPTION

NOTEBOOKS — BOOK NO. / PAGE NO.

PLAN TRACED — PLAN CHECKED — PROFILE TRACED — PROFILE CHECKED — INKED SVO — CHECKED BRC

DATE 2/18

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND JOHNSON

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	20	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

SIDEWALK

ITEM NO.	608.28
DESCRIPTION	8" CONCRETE SIDEWALK (F)
UNIT	SY
LOCATION	
NEW HAMPSHIRE	
NB ON RAMP 106+08.4 RT TO 107+03.3 RT	63.3
I-89 SOUTHBOUND 205+99.7 LT TO 206+30.2 LT	28.6
NH SUBTOTAL	91.9
NH ROUNDING	1.1
NH TOTAL	93
VERMONT	
I-89 NORTHBOUND 303+28.1 RT TO 303+59.2 RT	36.8
I-89 SOUTHBOUND 407+60.1 LT TO 408+60.7 LT	63.3
VT SUBTOTAL	100.1
VT ROUNDING	0.9
VT TOTAL	101
PROJECT TOTAL	194

DELINEATORS

ITEM NO.	621.1	621.2	621.31	621.32
ITEM DESCRIPTION	RETRO-REFLECTIVE MEDIAN BARRIER DELINEATOR	RETRO-REFLECTIVE BEAM GUARDRAIL DELINEATOR	SINGLE DELINEATOR WITH POST	DOUBLE DELINEATOR WITH POST
UNIT	EA	EA	EA	EA
COLOR				
NEW HAMPSHIRE				
YELLOW	18	7	10	
WHITE		29	25	
RED				
GREEN			2	
NH SUB-TOTAL	18	36	37	0
NH ROUNDING	0	0	0	0
TOTAL	18	36	37	0
VERMONT				
YELLOW	15	29		
WHITE		34	29	
RED				4
GREEN			3	
SUB-TOTAL	15	63	32	4
ROUNDING	0	0	0	0
TOTAL	15	63	32	4
PRJECT TOTAL	33	99	69	4

LANDSCAPING AND SLOPE PROTECTION

ITEM NO.	643.21	645.3	645.44	645.45	645.512	645.531	646.31	647.16	647.22	647.29
DESCRIPTION	FERTILIZER FOR REFERT.	EROSION STONE	TEMPORARY SLOPE MATTING TYPE D (WILDLIFE FRIENDLY)	PERMANENT CHANNEL STABILIZATION TYPE A	COMPOST SOCK FOR PERIMETER BERM	SILT FENCE	TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS	HUMUS - 6" DEEP	HUMUS, INTERMIXED, 2" DEEP	WETLAND HUMUS
UNIT	LB	TON	SY	SY	LF	LF	SY	CY	CY	CY
LOCATION										
NEW HAMPSHIRE										
I-89 NORTHBOUND	874.2		493.8		2,681.9	2,681.9	4856.7	1011.8		
I-89 SOUTHBOUND	364.4				1,498.8	1,498.8	2024.6	421.8		
I-89 EXIT 20 NORTHBOUND ON RAMP	8.2						45.4	9.5		
I-89 EXIT 20 SOUTHBOUND OFF RAMP	153.8				860.2	860.2	854.5	178.0		
NH INFILTRATION BASIN	448.9		316.5				2494.0	458.2		98.3
NH VEGETATED SWALE	275.4			1,265.7	358.5	358.5	1530.2	52.1	71.1	
VEHICLE TRACKING PADS/ CHECK DAMS		831.6								
NH SUB-TOTAL	2124.9	831.6	810.3	1,265.7	5,399.4	5,399	11805.4	2131.4	71.1	98.3
NH ROUNDING	24.1	8.4	9.7	34.3	30.6	31.0	200.6	101.6	0.9	0.7
NH TOTAL	2149.0	840.0	820.0	1,300.0	5,430.0	5,430	12006.0	2233.0	72,000	99,000
VERMONT										
I-89 NORTHBOUND	1214.7				1,950.9	1,950.9	6748.6	1780.9		
I-89 SOUTHBOUND	282.1				1,220.8	1,220.8	1567.5	413.6		
I-89 NORTHBOUND OFF RAMP	113.0		350.0		637.9	637.9	627.7	165.7		
I-89 SOUTHBOUND ON RAMP	168.1				757.5	757.5	934.1	246.5		
VT INFILTRATION BASIN	338.7				450.4	450.4	1881.7	431.7		81.9
VEHICLE TRACKING PADS/ CHECK DAMS		831.6								
VT SUB-TOTAL	2116.6	831.6	350.0	0.0	5,017.5	5,017.5	11759.6	3038.4	0.0	81.9
VT ROUNDING	103.4	8.4	0.0	0.0	142.5	142.5	110.4	41.6	0.0	0.1
VT TOTAL	2,220	840	350	0	5,160	5,160	11,870	3,080	0	82
PROJECT TOTAL	4,369	1,680	1,170	1,300	10,590	10,590	23,876	5,313	72	181

(USE BOTTOM LINES FIRST)

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CHECKED — DATE 2/18 — BRC

McFARLAND JOHNSON

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	21	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

PERMANENT CONSTRUCTION SIGNS AND WARNING DEVICES
(INCLUDED IN ITEM NO. 619.1)

SIGN NO.	DESCRIPTION	SIZE (ft)	S.F.	NO. REQ.	TOTAL AREA	POSTS	PORTABLE SIGN SUPPORTS	REMARKS
CS-01	I-89 (SHIELD) SOUTH ROAD WORK 1 MILE	6.5X5.5	35.8	4	143	12		BLACK/ORANGE/WHITE/RED/BLUE (REFER TO VTRANS STANDARD T-45 FOR MOUNTING DETAILS)
CS-02	I-89 (SHIELD) SOUTH ROAD WORK 1/2 MILE	6.5X5.5	35.8	4	143	12		BLACK/ORANGE/WHITE/RED/BLUE (REFER TO VTRANS STANDARD T-45 FOR MOUNTING DETAILS)
CS-03	EXIT 20 CLOSED DETOUR AHEAD	4X4	16	4		4		BLACK/ORANGE (PHASE 2)
CS-04	RAMP CLOSED	6.5X1.5	9.75	4	39			BLACK/ORANGE, MOUNT BELOW CS-02 (I-91 NB TO I-89 SB RAMP CLOSURE)
CS-05	USE DETOUR	6.5X1.5	9.75	4	39			BLACK/ORANGE, MOUNT ABOVE CS-02 (I-91 NB TO I-89 SB RAMP CLOSURE)
CS-06	I-91 NB EXIT CLOSED USE DETOUR EXIT 20	4X4	16	2	32	2		BLACK/ORANGE/WHITE/RED/BLUE (I-91 NB TO I-89 SB RAMP CLOSURE)
CS-07	THRU TRAFFIC KEEP LEFT	4X4	16	6	96	12		BLACK/ORANGE
CS-08	I-89 SHIELD KEEP LEFT/I-91 SHIELD KEEP RIGHT	6X6	36	2	72	4		BLACK/ORANGE (REFER TO VTRANS STANDARD T-45 FOR MOUNTING DETAILS)
E5-2a	EXIT CLOSED	4X2.5	10	3	30			BLACK/ORANGE (MOUNT DIAGONALLY ACROSS EXIT 10A O.H. ACTION & GORE SIGNS AND EXIT 20 SB EXIT GORE SIGN)
G20-5aP	WORK ZONE	4X3	12	1	12			BLACK ORANGE, MOUNT ABOVE R2-1 (MAY OR MAY NOT BE REQUIRED)
OM3-L	OBJECT MARKER	1X3	3	1	3			BLACK ORANGE, MOUNT ON CONCRETE BARRIER AS PER VTRANS STANDARD DETAIL T-13
R2-1(55)	SPEED LIMIT 55 MPH	4X5	20	1	20			BLACK/WHITE COVER EXISTING SPEED LIMIT SIGN TOGETHER WITH G20-5aP ON NB APPROACH BEYOND MM 58.8 (MAY OR MAY NOT BE REQUIRED)
R11-2	ROAD CLOSED	4X2.5	10	3	30			BLACK/ORANGE (MOUNT ON TYPE 3 BARRICADES)
R200-S(1)	UNAUTHORIZED TRAVEL PROHIBITED	4X2	8	2	16			BLACK/WHITE (MOUNT ON TYPE 3 BARRICADES
R200-S(2)	UNAUTHORIZED TRAVEL PROHIBITED	4X2	8	2	16	4		BLACK/WHITE (MOUNT AT TEMPORARY CONSTRUCTION ROAD ENTRANCES)
R50-1	NH LAW WORK ZONE	4X6	24	8	192	16		BLACK/WHITE
W1-4bL	REVERSE CURVE LEFT (2 LANES)	4X4	16	4	64	8		BLACK/ORANGE (PHASE 1)
W1-4bR	REVERSE CURVE RIGHT (2 LANES)	4X4	16	4	64	8		BLACK/ORANGE (PHASE 1, 2)
W4-2R	LANE ENDS (RIGHT)	4X4	16	2	32	4		BLACK/ORANGE (PHASE 1, 2, 5B)
W4-2L	LANE ENDS (LEFT)	4X4	16	4	64	8		BLACK/ORANGE (PHASE 1, 5B)
W13-1	ADVISORY SPEED (PLAQUE)	2.5X2.5	6.25	4	25			BLACK/ORANGE (PHASE 1), MOUNT BELOW W1-4L
W20-1a	ROAD WORK AHEAD	4X4	16	10	160	20		FLUORESCENT ORANGE/BLACK
W20-1e	ROAD WORK 1/2 MILE	4X4	16	4	64	8		FLUORESCENT ORANGE/BLACK
W20-1f	ROAD WORK 1 MILE	4X4	16	4	64	8		FLUORESCENT ORANGE/BLACK
W20-5R(.5M)	RIGHT LANE CLOSED 1/2 MILE	4X4	16	2	32	4		BLACK/ORANGE (PHASE 1, 2, 5B)
W20-5L(.5M)	LEFT LANE CLOSED 1/2 MILE	4X4	16	10	160	20		BLACK/ORANGE (PHASE 1, 5B)
W20-5R(1M)	RIGHT LANE CLOSED 1 MILE	4X4	16	10	160	20		BLACK/ORANGE (PHASE 1, 2, 5B)
W20-5L(1M)	LEFT LANE CLOSED 1 MILE	4X4	16	10	160	20		BLACK/ORANGE (PHASE 1, 5B)
	DETOUR SIGNS (REFER TO DETOUR PLANS)							
M1-1(89)	INTERSTATE ROUTE SHIELD (89)	2X2	4	10	40	1		WHITE/RED/BLUE
M1-1(89)I	INTERSTATE ROUTE SHIELD (89)	3x3	9	16	144	2		WHITE/RED/BLUE
M1-1(91)	INTERSTATE ROUTE SHIELD (91)	2X2	4	9	36	1		WHITE/RED/BLUE
M1-5(12A)	STATE ROUTE SHIELD (12A)	2X2	4	5	20	1		BLACK/WHITE
M1-5(12A)I	STATE ROUTE SHIELD (12A)	3X3	9	5	45	2		BLACK/WHITE
M3-1	CARDINAL DIRECTION (NORTH)	2X1	2	10	20			WHITE/BLUE, MOUNT ABOVE M1-1(89), M1-1(91)
M3-1I	CARDINAL DIRECTION (NORTH)	3X1.5	4.5	1	4.5			WHITE/BLUE, MOUNT ABOVE M1-1(89)I, M1-1(91)I
M3-3I	CARDINAL DIRECTION (SOUTH)	3X1.5	4.5	15	67.5			WHITE/BLUE, MOUNT ABOVE M1-1(89)I
M4-8	DETOUR	2X1	2	13	26			BLACK/ORANGE, MOUNT ABOVE M3-1 & M1-5(12A)
M4-8I	DETOUR	2.5x1.25	3.13	20	62.5			BLACK/ORANGE, MOUNT ABOVE M3-1I, M3-3I & M1-5(12A)I
M4-8a	END DETOUR	2X1.5	3	3	9			BLACK/ORANGE, MOUNT ABOVE M3-1, M3-3 & M1-5(12A)
M6-1L	DIRECTIONAL ARROW LEFT	1.75X1.25	2.19	4	8.75			WHITE/BLUE, MOUNT ABOVE M1-1(89) & M1-1(91)
M6-1R	DIRECTIONAL ARROW RIGHT (45 DEG)	1.75X1.25	2.19	1	2.1875			WHITE/BLUE, MOUNT BELOW M1-1(89) & M1-1(91)
M6-1Li	DIRECTIONAL ARROW LEFT	2.5X1.75	4.38	2	8.75			WHITE/BLUE, MOUNT BELOW M1-1(89)I, M1-1(91)I, M1-5(12A)I
M6-2R	DIRECTIONAL ARROW RIGHT (45 DEG)	1.75X1.25	2.19	4	8.75			WHITE/BLUE, MOUNT BELOW M1-1(89), M1-1(91), M1-5(12A)
M6-2Ri	DIRECTIONAL ARROW RIGHT (45 DEG)	2.5X1.75	4.38	5	21.875			WHITE/BLUE, MOUNT ABOVE M1-1(89)I, M1-1(91)I & M1-5(12A)I
M6-3	DIRECTIONAL ARROW UP	1.75X1.25	2.19	4	8.75			WHITE/BLUE, MOUNT BELOW M1-1(89), M1-1(91)
M6-3i	DIRECTIONAL ARROW UP	2.5X1.75	4.38	13	56.875			WHITE/BLUE, MOUNT BELOW M1-1(89)I, M1-5(91)I
M4-10L	DETOUR (LEFT ARROW)	4X1.5	6	2	12			BLACK/ORANGE, MOUNT ON TYPE 3 BARRICADE
M4-10R	DETOUR (LEFT ARROW)	4X1.5	6	1	6			BLACK/ORANGE, MOUNT ON TYPE 3 BARRICADE

PAVEMENT MARKINGS

ITEM NO.	632.0106	632.0112	632.1104	632.3112	632.911
ITEM DESCRIPTION	RETRO-REFLECTIVE PAINT PAVEMENT MARKING, 6" LINE	RETRO-REFLECTIVE PAINT PAVEMENT MARKING, 12" LINE	PREFORMED RETRORELECTIVE TAPE, TYPE I (REMOVABLE) 4" LINE	RETRO-REFLECTIVE THERMOPLAS. PAVE. MARKING, 12" LINE	OBLITERATE PAVEMENT MARKING LINE, 12" AND UNDER
UNIT	LF	LF	LF	LF	LF
LOCATION					
NEW HAMPSHIRE					
I-89 NORTHBOUND	15,540.4		1299.4	405.9	
I-89 SOUTHBOUND	15,018.5		1061.4	5.0	
I-89 EXIT 20 NORTHBOUND ON RAMP	2,603.2			578.9	
I-89 EXIT 20 SOUTHBOUND OFF RAMP	3,892.4			5.5	
TEMPORARY	140,283.0	8,865.0	5,883.8		41,625.0
NEW HAMPSHIRE SUBTOTAL	177337.5	8865.0	8244.6	995.3	41625.0
ROUNDING	30.5	0.0	14.4	5.7	0.0
NEW HAMPSHIRE TOTAL	177368	8865	8259	1001	41625
VERMONT					
I-89 NORTHBOUND	14,598.2		1188.5	206.5	
I-89 SOUTHBOUND	21,493.2		1447.1	5.9	
I-89 NORTHBOUND OFF RAMP	3,315.8			1,071.5	
I-89 SOUTHBOUND ON RAMP	3,892.8			5.0	
TEMPORARY	171,457.0	10835	7191		50,875.0
VERMONT SUBTOTAL	214757.0	10835.0	9826.6	1288.9	50875.0
ROUNDING	75.0	0.0	14.4	32.1	0.0
VERMONT TOTAL	214832	10835	9841	1321	50875
PROJECT TOTAL	392,200	19,700	18,100	2,322	92,500

The estimated quantities of "Permanent Controls" are hereby listed.
The Contractor is responsible for all "Operational Controls" required under section 619 of the NHDOT Specifications and the Manual on Uniform Traffic Control Devices (MUTCD), Part VI.

REVISIONS AFTER PROPOSAL (USE BOTTOM LINES FIRST)

NO.	DATE	STATION	STATION	DESCRIPTION

NOTEBOOKS

	BOOK NO.	PAGE NO.

	DATE
PLAN TRACED	
PLAN CHECKED	
PROFILE TRACED	
PROFILE CHECKED	
INKED	SVO
CHECKED	BRC

	BOOK NO.	PAGE NO.	DATE
	2/18	2/18	

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND JOHNSON

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	16148	22	600

SUMMARY OF QUANTITIES (ESTIMATED)

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ITS EQUIPMENT AND CONDUIT

STR.	ITEM	201.1 CLEARING AND GRUBBING (F)	614.3429 4" 2-DUCT STEEL CONDUIT (BRIDGE)	614.51822 CONCRETE FIBER OPTIC SPLICE VAULT 48"X72"X48"	614.523 MOLDED PULL BOX 17" X 30"	614.73114 3" PVC CONDUIT, SCHEDULE 40	614.73118 3" PVC CONDUIT, SCHEDULE 80	614.74221 4" 2-DUCT HDPE CONDUIT, SDR 13.5	677.1201 PERMANENT FIXED LOCATION DYNAMIC MESSAGE SIGN (DMS)	677.4201 ROAD WEATHER INFORMATION STATION (RWIS) SYSTEM	677.46501 MVDS WITHOUT POLE	677.6301 METER AND DISCONNECT PEDESTAL	677.67101 SOLAR POWER SYSTEM (GROUND MOUNTED)	677.67201 SOLAR POWERED SYSTEM (POLE MOUNTED)	677.9302 3 - CONDUCTOR #2 AWG CABLE	677.9308 3 - CONDUCTOR #8 AWG CABLE
		AC	LF	EA	EA	LF	LF	LF	U	U	LF	U	U	U	LF	LF
	LOCATION															
	FUTURE ITS ON BRIDGE 044/103		887.0								1.0	1		1		
I1	STA 723+20.0 LT 41.0				1											
I2	STA 723+20.0 LT 41.0 TO STA 723+66.0 LT 27.1		48.7													
I3	STA 732+52.2 LT 27.1 TO STA 733+10.0 LT 41.0		62.1													
I4	STA 733+10.0 LT 41.0			1												
I5	STA 733+10.0 LT 41.0 TO STA 737+97.0 LT 53.8							491.3								
I6	STA 737+97.0 LT 53.8				1											
I7	STA 737+97.0 LT 53.8 TO STA 747+88.8 LT 26.9							998.9								
I8	STA 747+88.8 LT 26.9				1											
I9	STA 747+88.8 LT 26.9 TO STA 747+89.4 RT 46.2							74.5								
I10	STA 747+89.4 RT 46.2			1												
	DMS I-89 NORTHBOUND															
	STA 794+43.0 RT 39 TO STA 798+84.0 RT 61	0.07														
	CONTRACT 15880 ALIGNMENT															
	DMS SOLAR PANEL TO BATTERY BOX					8.0										
	DMS BATTERY BOX TO DMS					11.0										
	(LAT,LONG) 943.646747, -72.266822)								1.0							
	JUST NORTH OF DMS												1			
	RWIS I-89 SOUTHBOUND															
	STA 709+87 LT 82				1											20.0
	STA 709+87 LT 126				1											20.0
	STA 710+54 LT 156				1										20.0	
	STA 212+80 LT 47 TO STA 212+95.0 LT 46					15.0									15.0	
	STA 212+95 LT 46 TO STA 213+07.0 LT 48					12.0									12.0	
	STA 213+07 LT 48 TO STA 709+87.0 LT 126					60.0										60.0
	STA 709+87 LT 126 TO STA 709+71.0 LT 55					27.0										27.0
	STA 709+87 LT 126 TO STA 709+87.0 LT 82						45.0									45.0
	STA 703+61 RT 31									1.0						
	NH SUB-TOTAL	0.07	997.8		4	133.0	45.0		1.0	1.0	1.0	1	1	1	47.0	172.0
	NH ROUNDING		7.2			17.0	15.0		0.0	0.0	0.0	0	0	0	13.0	28.0
	NH TOTAL	0.07*	1005		4	150*	60*		1	1	1	1	1	1	60	200
	VT SUB-TOTAL			2	2			1564.7								
	VT ROUNDING							35.3								
	VT TOTAL			2	2			1600								
	PROJECT TOTAL	0.07*	1005	2	6	150*	60*	1600	1	1	1	1	1	1	60	200

PULL BOX, CONDUIT, AND LIGHT POLE BASES

STR.	LINE	TYPE	ITEM	614.522 MOLDED PULL BOX 13"X24"	614.73114 3" PVC CONDUIT, SCHEDULE 40	614.73118 3" PVC CONDUIT, SCHEDULE 80	625.2 CONC. LIGHT POLE BASES, TYPE B	REMARKS
			UNIT	EA	LF	LF	EA	
NH I-89 SOUTHBOUND OFF RAMP								
L1		PB	STA 207+62.6 RT 18.2					EXISTING PB
	L1-L2		STA 207+62.6 RT 18.2 TO STA 206+83.7 RT 17.3		79.0			
L2		PB	STA 206+83.7 RT 17.3	1				
	L2-L3		STA 206+83.7 RT 17.3 TO STA 716+40.0 RT 29.6			50.0		
L3		PB	STA 716+40.0 RT 29.6	1	16.5		1	
	L2-L4		STA 206+83.7 RT 17.3 TO STA 206+83.7 RT 17.3		210.5			
L4		PB	STA 206+83.7 RT 17.3	1	7.5		1	
			ITS		150.0	60.0		
			SUB-TOTAL	3	463.5	110.0	2	
			ROUNDING	0	6.5	5.0	0	
			TOTAL	3	470	115	2	

* NOT A PROJECT TOTAL

REVISIONS AFTER PROPOSAL

NO.	DATE	STATION	STATION

NOTEBOOKS

PAGE NO.	PAGE NO.	PAGE NO.	PAGE NO.
BOOK NO.	BOOK NO.	BOOK NO.	BOOK NO.

	DATE	DATE	DATE	DATE	DATE	DATE
					02/18	02/18

PLAN TRACED					
PLAN CHECKED					
PROFILE TRACED					
PROFILE CHECKED					
INKED	SVO				
CHECKED	BRC				

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND JOHNSON

SUMMARY OF QUANTITIES

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A001(154)	16148	23	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

DRAINAGE SUMMARY (NEW HAMPSHIRE)

REF NO.	202.31 FILL ABANDONED PIPE	202.32 FILL AND ABANDON STRUCTURE	202.41 REMOVAL OF EXISTING PIPE 0-24" DIAMETER	202.5 REMOVAL OF CATCH BASINS, DROP INLETS, AND MANHOLES	206.1 COMMON STRUCTURE EXCAVATION	206.2 ROCK STRUCTURE EXCAVATION	585.2 STONE FILL, CLASS B	585.3 STONE FILL, CLASS C	593.421 GEOTEXTILE, PERMANENT CONTROL, CLASS 2, NON-WOVEN	603.0001 VIDEO INSPECTION	603.00212 REINFORCED CONCRETE PIPE, 2000D 12	603.00215 REINFORCED CONCRETE PIPE, 2000D 15	603.00218 REINFORCED CONCRETE PIPE, 2000D 18	603.00224 REINFORCED CONCRETE PIPE, 2000D 24	603.30115 15" R.C. END SECTION	603.30118 18" R.C. END SECTION	603.30124 24" R.C. END SECTION	603.80124 24" PLASTIC PIPE (CORRUGATED INTERIOR)	603.80218 PLASTIC PIPE (SMOOTH INTERIOR) 18	603.99015 15" TEMPORARY DRAINAGE PIPE
	CY	CY	LF	EA	CY	CY	CY	CY	SY	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF
1					2.8					127.2				127.2						
2					1.1					208.7			208.7							
3										194.1			194.1							
4					0.1					4.8	4.8									
5										5.8		5.8								
6										162.1		162.1								
7										5.8		5.8								
8										116.0		116.0								
9										60.2		60.2								
10					0.2					211.3		211.3								
11					1.4					56.9				56.9						
12					12.9					17.8								17.8		
13										50.8		50.8								
14										293.1		293.1								
15					4.3					16.7								16.7		
16					17.4			17.4	62.6	83.1				83.1			1			
17										290.8				290.8						
18										295.0				295.0						
19					4.6			4.6	19.3	299.9				300.4			1			
20										16.7		16.7								
21										68.3		68.3								
22					2.7					70.3		70.3								
23					7.0					129.0		129.0								
24					1.3					143.2		143.2								
25										133.1		133.1								
26					1.8					129.4		129.4								
27										276.0			276.0							
28					5.4			5.4	22.0	12.0			12.0			1				
29					4.6					203.9		203.9								
30										9.5		9.5								
31					1.2					10.3		10.3								
32										50.0	50.0									
33																				
40										14.7		14.7								
41										63.7		63.7								
42										4.8		4.8								
43												0.0								
44					4.2							0.0								
45										6.9		6.9								
46										150.4		150.4								
47					1.1					156.4		156.4								
48										46.3		46.3								
49										41.1		41.1								
					74.1			27.4	103.9	4236.1	54.8	2303.1	690.8	1153.4	0	1	2	34.5	0.0	0

REF NO.	604.0007 POLYETHYLENE LINER	604.124 CATCH BASINS TYPE B, 4-FOOT DIAMETER ACT	604.124 EST	604.125 CATCH BASINS TYPE B, 5-FOOT DIAMETER ACT	604.125 EST	604.154 CATCH BASINS TYPE E, 4-FOOT DIAMETER ACT	604.154 EST	604.155 CATCH BASINS TYPE E, 5-FOOT DIAMETER ACT	604.155 EST	604.156 CATCH BASINS TYPE E, 6-FOOT DIAMETER ACT	604.156 EST	604.2249 TEMPORARY DROP INLETS TYPE B, 4 FOOT DIAMETER ACT	604.2249 EST	604.324 DRAINAGE MANHOLE, 4-FOOT DIAMETER ACT	604.324 EST	604.325 DRAINAGE MANHOLE, 5-FOOT DIAMETER ACT	604.325 EST	604.3249 TEMPORARY DRAINAGE MANHOLE, 4-FOOT DIAMETER ACT	604.3249 EST	604.4 RECONSTRUCTING/ADJUSTING CATCH BASIN & DROP INLET	604.62 DRAINAGE MANHOLE COVERS AND FRAMES	604.9101 OUTLET CONTROL STRUCTURE	604.9102 OUTLET CONTROL STRUCTURE	605.506 6" PERFORATED CORRUGATED POLYETHYLENE PIPE UNDERDRAIN	605.79 UNDERDRAIN FLUSHING BASIN	622.1 STEEL WITNESS MARKERS	REMARKS
	EA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	LF	LF	U	U	LF	EA	EA	
1	1			1	1.14																						ECCENTRIC CONE
2	1	1	1.05																								ECCENTRIC CONE
3	1	1	1.05																								ECCENTRIC CONE
4	1	1	1.00																								
5	1	1	1.00																								
6	1	1	1.02																								
7	1	1	1.02																								
8	1	1	1.02																								
9	1	1	1.02																								
10	1	1	1.02																								ECCENTRIC CONE
11	1			1	1.09																						ECCENTRIC CONE
12	1			1	1.71																						ECCENTRIC CONE
13	1	1	1.02																								
14	1	1	1.00																								
15																1	1.23									1	SLAB TOP
16																1	1.00									2	SLAB TOP
17																						1		337.5	1	2	SLAB TOP
18																1	1.00									1	SLAB TOP
19																1	1.00									2	SLAB TOP
20	1	1	1.00																								
21	1	1	1.00																								
22	1	1	1.23																								
23	1	1	1.57																								
24	1	1	1.11																								
25	1	1	1.00																								
26	1	1	1.14																								
27														1	1.00											1	SLAB TOP
28														1	1.00											2	SLAB TOP
29														1	1.40											1	
30	1	1	1.02																								
31	1	1	1.08																		1						
32	1	1	1.00																								
33														1	1.00											1	
40	1	1	1.00																								
41		1	1.00																							1	SLAB TOP
42		1	1.00																							1	
43	1	1	1.03																								
44	1	1	1.30																								
45	1	1	1.00																								
46	1	1	1.00																							1	
47	1	1	1.11																								
48	1	1	1.00																								
49	1	1	1.00																								
	32	31	32.81		3.94		0		0		0		0		4.40		4.23		0		1	1		337.5	1	16	SUB-TOTALS (THIS SHEET)

(USE BOTTOM LINES FIRST) DESCRIPTION

REVISIONS AFTER PROPOSAL: NO. | DATE | STATION | STATION

NOTEBOOKS: BOOK NO | PAGE NO

PLAN TRACED	PLAN CHECKED	PROFILE TRACED	PROFILE CHECKED	INKED	CHECKED
				SVO	BRC
DATE	DATE	DATE	DATE	DATE 2/18	DATE 2/18

McFARLAND-. JOHNSON, INC

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	24	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

DRAINAGE SUMMARY (NEW HAMPSHIRE)

REF NO.	FILL ABANDONED PIPE	FILL AND ABANDON STRUCTURE	REMOVAL OF EXISTING PIPE 0-24" DIAMETER	REMOVAL OF CATCH BASINS, DROP INLETS, AND MANHOLES	COMMON STRUCTURE EXCAVATION	ROCK STRUCTURE EXCAVATION	STONE FILL, CLASS B	STONE FILL, CLASS C	GEOTEXTILE, PERMANENT CONTROL, CLASS 2, NON-WOVEN	VIDEO INSPECTION	REINFORCED CONCRETE PIPE, 2000D				15" R.C. END SECTION	18" R.C. END SECTION	24" R.C. END SECTION	24" PLASTIC PIPE (CORRUGATED INTERIOR)	PLASTIC PIPE (SMOOTH INTERIOR)	15" TEMPORARY DRAINAGE PIPE	POLYETHYLENE LINER	CATCH BASINS TYPE B, 4-FOOT DIAMETER		CATCH BASINS TYPE B, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 4-FOOT DIAMETER		CATCH BASINS TYPE E, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 6-FOOT DIAMETER		TEMPORARY DROP INLETS TYPE B, 4 FOOT DIAMETER		DRAINAGE MANHOLE, 4-FOOT DIAMETER		DRAINAGE MANHOLE, 5-FOOT DIAMETER		TEMPORARY DRAINAGE MANHOLE, 4-FOOT DIAMETER		RECONSTRUCTING/ADJUSTING CATCH BASIN & DROP INLET	DRAINAGE MANHOLE COVERS AND FRAMES	OUTLET CONTROL STRUCTURE	OUTLET CONTROL STRUCTURE	6" PERFORATED CORRUGATED POLYETHYLENE PIPE UNDERDRAIN	UNDERDRAIN FLUSHING BASIN	STEEL WITNESS MARKERS	REMARKS
	202.31	202.32	202.41	202.5	206.1	206.2	585.2	585.3	593.421	603.0001	603.00212	603.00215	603.00218	603.00224	603.30115	603.30118	603.30124	603.80124	603.80218	603.99015	604.0007	604.124		604.125		604.154		604.155		604.156		604.2249		604.324		604.325		604.3249		604.4	604.62	604.9101	604.9102	605.506	605.79	622.1	
											12	15	18	24					18			ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST								
	CY	CY	LF	EA	CY	CY	CY	CY	SY	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	LF	LF	U	U	LF	EA	EA	
R1	2.3			1																																									
R2			35.0	1																																									
R3			85.0	1																																									
R4			32.0	1																																									
R5			243.0	1																																									
R6			96.0	1																																									
R7			20.0	1																																									
R8			8.0	1																																									
R9	2.9																																													
R10			17.0																																											
R11	4.4			1																																										
R12			298.0	1																																										
R13			295.0	1																																										
R14		3.9																																												
R15		3.9																																												
R16		3.3																																												
R17		3.9																																												
R18		3.5																																												
R19		3.4																																												
A1																					1																			1						
A2																					1																			1						
A3																					1																			1						
A4																					1																			1						
A5																					1																			1						
A6																					1																			1						
T100																																	1	1.21												
T101					3.9															21.2												1	1.34												
T102					4.3															6.5												1	1.37												
T103					0.5															35.8												1	1.00												
T104																				46.4																										
**								510																																					BRIDGE QUANTITY
						25.0																																							BOULDERS
*					200.0																																								NH SIGN STRUCTURES
	9.6	21.9	1129.0	11	208.7	25.0		510												109.9	6											4	4.92							6						SUB-TOTALS (THIS SHEET)
	9.6	21.9	1129.0	11	282.8	25.0	0.0	537.4	103.9	4236.1	54.8	2303.1	690.8	1153.4	0	1	2	34.5	0.0	109.9	38.0	31.0	32.81	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.9	0.0	4.4	0.0	4.2	0.0	0.0	6.0	1.0	1.0	0.0	337.5	1.0	16.0	NEW HAMPSHIRE SUB-TOTALS

* FROM OVERHEAD SIGN STRUCTURE SUMMARY (NH)

** FROM BRIDGE SUMMARY

REVISIONS AFTER PROPOSAL (USE BOTTOM LINES FIRST)

NO.	DATE	STATION	DESCRIPTION

NOTEBOOKS

	PAGE NO	BOOK NO

	DATE
PLAN TRACED	
PLAN CHECKED	
PROFILE TRACED	
PROFILE CHECKED	
INKED	2/18
CHECKED	2/18

SVO

BRC

McFARLAND-JOHNSON, INC

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	25	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

DRAINAGE SUMMARY (VERMONT)

REF NO.	202.31	202.32	202.41	202.5	206.1	206.2	585.2	585.3	593.421	603.0001	603.00212	603.00215	603.00218	603.00224	603.30115	603.30118	603.30124	603.80124	603.80218	603.99015	604.0007	604.124		604.125		604.154		604.155		604.156		604.2249		604.324		604.325		604.3249		604.4	604.62	604.9101	604.9102	605.506	605.79	622.1	REMARKS
	FILL ABANDONED PIPE	FILL AND ABANDON STRUCTURE	REMOVAL OF EXISTING PIPE 0-24" DIAMETER	REMOVAL OF CATCH BASINS, DROP INLETS, AND MANHOLES	COMMON STRUCTURE EXCAVATION	ROCK STRUCTURE EXCAVATION	STONE FILL, CLASS B	STONE FILL, CLASS C	GEOTEXTILE, PERMANENT CONTROL, CLASS 2, NON-WOVEN	VIDEO INSPECTION	REINFORCED CONCRETE PIPE, 2000D				15" R.C. END SECTION	18" R.C. END SECTION	24" R.C. END SECTION	24" PLASTIC PIPE (CORRUGATED INTERIOR)	PLASTIC PIPE (SMOOTH INTERIOR)	15" TEMPORARY DRAINAGE PIPE	POLYETHYLENE LINER	CATCH BASINS TYPE B, 4-FOOT DIAMETER		CATCH BASINS TYPE B, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 4-FOOT DIAMETER		CATCH BASINS TYPE E, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 6-FOOT DIAMETER		TEMPORARY DROP INLETS TYPE B, 4 FOOT DIAMETER		DRAINAGE MANHOLE, 4-FOOT DIAMETER		DRAINAGE MANHOLE, 5-FOOT DIAMETER		TEMPORARY DRAINAGE MANHOLE, 4-FOOT DIAMETER		RECONSTRUCTING/ADJUSTING CATCH BASIN & DROP INLET	DRAINAGE MANHOLE COVERS AND FRAMES	OUTLET CONTROL STRUCTURE	OUTLET CONTROL STRUCTURE	6" PERFORATED CORRUGATED POLYETHYLENE PIPE UNDERDRAIN	UNDERDRAIN FLUSHING BASIN	STEEL WITNESS MARKERS	
											12	15	18	24					18			ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST								
	CY	CY	LF	EA	CY	CY	CY	CY	SY	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	LF	LF	U	U	LF	EA	EA	
101										46.4			46.4								1					1	1.00																				
102										6.3			6.3								1					1	1.13																				
103										45.2			45.2								1							1	1.21																		
104					6.1			4.9	20.1	18.7			18.7			1					1					1	1.17																			1	
105										7.8			7.8								1					1	1.00																				
106										86.1			86.1								1					1	1.13																				
109										23.0									23		1					1	1.00																				
110										110.5			110.5								1					1	1.00																				
111										96.1			96.1								1					1	1.00																				
120										35.3			35.3								1					1	1.00																				
121										5.5			5.5								1					1	1.00																				SLAB TOP
122										79.5			79.5								1					1	1.00																				
123					2.6					6.5			6.5								1					1	1.55																				
124					5.1			5.1	20.9	41.1			41.1			1					1					1	1.03																			1	
125					6.1					46.8			46.8								1							1	1.93																	1	
126					1.3					45.5				45.5														1	1.03																		
128										39.2			39.2								1					1	1.02																				
129										247.4			247.4													1	1.00																			1	SLAB TOP
131					0.7					146.1			146.1								1					1	1.00																				
132					3.5					246.0			246.0								1					1	1.30																				
133					8.2					245.0			245.0								1					1	1.24																				
134					6.4					242.0			242.0								1					1	1.20																				
135					27.6			12.4	44.1	55.7				55.7			1				1									1	1.66															1	
136					2.7			2.7	12.2	47.8		47.8			1																												1	116.7	1	3	SLAB TOP
137										245.6			245.6													1	1.02																			1	
138					30.9		30.9		64.8	30.9				30.9			1																			1	1.00									2	
140					0.8					207.1				207.1														1	1.02																	1	
141					0.1					35.2				35.2														1	1.00																	1	SLAB TOP
142										64.7						1			64.7																											1	
143					14.9			12.1	44.9	105.3				105.3			1											1	1.28																	1	
144					9.2			9.2	35.0	154.3			154.3			1										1	1.00																			2	SLAB TOP
145					4.3			4.3	17.9	19.2			19.2			1					1					1	1.00																			1	
146										65.5				65.5														1	1.00																	1	SLAB TOP
A101																					1																			1							
A102																																								3						1	
**								190																																							BRIDGE QUANTITY
					130.5	0.0	30.9	240.7	259.9	2897.3	0.0	47.8	2216.6	545.2	1	5	3	0	87.7	0	23	0	0	0	0	22	23.80	7	8.47	1	1.7	0	0	0	0	1	1.00	0	0	4	0	0	1	116.7	1	20	SUB-TOTALS (THIS SHEET)

** FROM BRIDGE SUMMARY

(USE BOTTOM LINES FIRST) DESCRIPTION

REVISIONS AFTER PROPOSAL: NO. | DATE | STATION | STATION

NOTEBOOKS: BOOK NO | PAGE NO (×4)

PLAN TRACED	PLAN CHECKED	PROFILE TRACED	PROFILE CHECKED	INKED	CHECKED
				SVO	BRC
DATE	DATE	DATE	DATE	DATE 2/18	DATE 2/18

McFARLAND-JOHNSON, INC

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	26	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

DRAINAGE SUMMARY (VERMONT)

REF NO.	202.31	202.32	202.41	202.5	206.1	206.2	585.2	585.3	593.421	603.0001	603.00212	603.00215	603.00218	603.00224	603.30115	603.30118	603.30124	603.80124	603.80218	603.99015	604.0007	604.124		604.125		604.154		604.155		604.156		604.2249		604.324		604.325		604.3249		604.4	604.62	604.9101	604.9102	605.506	605.79	622.1	REMARKS
	FILL ABANDONED PIPE	FILL AND ABANDON STRUCTURE	REMOVAL OF EXISTING PIPE 0-24" DIAMETER	REMOVAL OF CATCH BASINS, DROP INLETS, AND MANHOLES	COMMON STRUCTURE EXCAVATION	ROCK STRUCTURE EXCAVATION	STONE FILL, CLASS B	STONE FILL, CLASS C	GEOTEXTILE, PERMANENT CONTROL, CLASS 2, NON-WOVEN	VIDEO INSPECTION	REINFORCED CONCRETE PIPE, 2000D				15" R.C. END SECTION	18" R.C. END SECTION	24" R.C. END SECTION	24" PLASTIC PIPE (CORRUGATED INTERIOR)	PLASTIC PIPE (SMOOTH INTERIOR)	15" TEMPORARY DRAINAGE PIPE	POLYETHYLENE LINER	CATCH BASINS TYPE B, 4-FOOT DIAMETER		CATCH BASINS TYPE B, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 4-FOOT DIAMETER		CATCH BASINS TYPE E, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 6-FOOT DIAMETER		TEMPORARY DROP INLETS TYPE B, 4 FOOT DIAMETER		DRAINAGE MANHOLE, 4-FOOT DIAMETER		DRAINAGE MANHOLE, 5-FOOT DIAMETER		TEMPORARY DRAINAGE MANHOLE, 4-FOOT DIAMETER		RECONSTRUCTING/ADJUSTING CATCH BASIN & DROP INLET	DRAINAGE MANHOLE COVERS AND FRAMES	OUTLET CONTROL STRUCTURE	OUTLET CONTROL STRUCTURE	6" PERFORATED CORRUGATED POLYETHYLENE PIPE UNDERDRAIN	UNDERDRAIN FLUSHING BASIN	STEEL WITNESS MARKERS	
											12	15	18	24					18			ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST								
	CY	CY	LF	EA	CY	CY	CY	CY	SY	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	LF	LF	U	U	LF	EA	EA	
R101			52.0	1																																											
R102				1																																											
R103			14.0	1																																											
R104			40.0	1																																											
R105		2.3																																													
R106		4.4																																													
R107	3.7			1																																											
R108	4.2			1																																											
R109			70.0	1																																											
R110																																															
R111	4.6			1																																											
R112	5.0			1																																											
R113	8.5			1																																											
R114	11.6			1																																											
R115		2.3																																													
R116		2.7																																													
R117		2.4																																													
T105					4.8																											1	1.42														
T106					3.3																											1	1.29														
T107					1.8																											1	1.14														
T108																				207.1												1	1.00														
T109					2.8															12.4												1	1.24														
T110																				4.0												1	1.00														
T111																																						1.0	1.0								
T112					2.4																											1	1.19														
T113					2.7																											1	1.23														
T114					3.4																											1	1.29														
T201					1.8																											1	1.14														
T202					3.6																											1	1.31														
T203					3.2															13.0												1	1.27														
T204					3.3																											1	1.28														
T205					3.4																											1	1.28														
T206					3.8																											1	1.33														
T300					11.4															13.0												1	1.76														
T301					6.3																											1	1.55														
T302					4.6																											1	1.40														
T303					4.9																											1	1.43														
T304																																1	1.00														
T305					7.2																											1	1.64														
						25.0																																									BOULDERS
*					300.0																																										VT SIGN STRUCTURES
	38	14	176	11	374.7	25.0														249.5												21	27.19					1	1								SUB-TOTALS (THIS SHEET)
	38	14	176	11	505.2	25.0	30.9	240.7	259.9	2897.3	0.0	47.8	2216.6	545.2	1	5	3	0	87.7	249.5	23	0	0	0	0	22	23.8	7	8.47	1	1.7	21	27.19	0	0	1	1	1	1	4	0	0	1	116.7	1	20	VERMONT SUB-TOTALS

* FROM OVERHEAD SIGN STRUCTURE SUMMARY (VT)

(USE BOTTOM LINES FIRST) DESCRIPTION
REVISIONS AFTER PROPOSAL: NO. | DATE | STATION | STATION
NOTEBOOKS: BOOK NO / PAGE NO
PLAN TRACED DATE | PLAN CHECKED DATE | PROFILE TRACED DATE | PROFILE CHECKED DATE | INKED SVO DATE 2/18 | CHECKED BRC DATE 2/18

McFARLAND-JOHNSON, INC

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	27	600

SUMMARY OF QUANTITIES (ESTIMATED)

THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

DRAINAGE SUMMARY (VERMONT)

REF NO.	202.31	202.32	202.41	202.5	206.1	206.2	585.2	585.3	593.421	603.0001	603.00212	603.00215	603.00218	603.00224	603.30115	603.30118	603.30124	603.80124	603.80218	603.99015	604.0007	604.124		604.125		604.154		604.155		604.156		604.2249		604.324		604.325		604.3249		604.4	604.62	604.9101	604.9102	605.506	605.79	622.1	REMARKS
	FILL ABANDONED PIPE	FILL AND ABANDON STRUCTURE	REMOVAL OF EXISTING PIPE 0-24" DIAMETER	REMOVAL OF CATCH BASINS, DROP INLETS, AND MANHOLES	COMMON STRUCTURE EXCAVATION	ROCK STRUCTURE EXCAVATION	STONE FILL, CLASS B	STONE FILL, CLASS C	GEOTEXTILE, PERMANENT CONTROL, CLASS 2, NON-WOVEN	VIDEO INSPECTION	REINFORCED CONCRETE PIPE, 2000D				15" R.C. END SECTION	18" R.C. END SECTION	24" R.C. END SECTION	24" PLASTIC PIPE (CORRUGATED INTERIOR)	PLASTIC PIPE (SMOOTH INTERIOR)	15" TEMPORARY DRAINAGE PIPE	POLYETHYLENE LINER	CATCH BASINS TYPE B, 4-FOOT DIAMETER		CATCH BASINS TYPE B, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 4-FOOT DIAMETER		CATCH BASINS TYPE E, 5-FOOT DIAMETER		CATCH BASINS TYPE E, 6-FOOT DIAMETER		TEMPORARY DROP INLETS TYPE B, 4 FOOT DIAMETER		DRAINAGE MANHOLE, 4-FOOT DIAMETER		DRAINAGE MANHOLE, 5-FOOT DIAMETER		TEMPORARY DRAINAGE MANHOLE, 4-FOOT DIAMETER		RECONSTRUCTING/ADJUSTING CATCH BASIN & DROP INLET	DRAINAGE MANHOLE COVERS AND FRAMES	OUTLET CONTROL STRUCTURE	OUTLET CONTROL STRUCTURE	6" PERFORATED CORRUGATED POLYETHYLENE PIPE UNDERDRAIN	UNDERDRAIN FLUSHING BASIN	STEEL WITNESS MARKERS	
											12	15	18	24					18			ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST								
	CY	CY	LF	EA	CY	CY	CY	CY	SY	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	LF	LF	U	U	LF	EA	EA	
	9.6	21.9	1129.0	11	282.8	25.0	0.0	537.4	103.9	4236.1	54.8	2303.1	690.8	1153.4	0	1	2	34.5	0.0	163.8	38.0	31.0	32.81	0.0	3.94	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.9	0.0	4.4	0.0	4.2	0.0	0.0	6.0	1.0	1.0	0.0	337.5	1.0	16.0	NEW HAMPSHIRE SUB-TOTAL
	1.4	1.1	11	0	14.2	0.0	0.0	0.6	0.1	110.9	0.2	77.9	15.2	6.6	0	0	0	0.5	0.0	0.0	0		1.19		0.06		0.00		0.00	0.00	0.00		1.08		0.60		0.80		0	0		0	0	2.5	0	0	NEW HAMPSHIRE ROUNDING
	11	23.0	1140	11	297	25	0.0	538.0	104.0	4347.0	55.0	2381.0	706.0	1160.0	0	1	2	35.0	0.0	163.8	38.0	31.0	34.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	6.0	0.0	5.0	0.0	5.0	0.0	0.0	6.0	1.0	1.0	0.0	340.0	1.0	16.0	NEW HAMPSHIRE TOTAL
	37.6	14.1	176.0	11	505.2	25.0	30.9	240.7	259.9	2897.3	0.0	47.8	2216.6	545.2	1	5	3	0	87.7	200.2	23.0	0.0	0.0	0.0	0.0	22.0	23.8	7.0	8.5	1.0	1.7	21.0	27.2	0.0	0.0	1.0	1.0	1.0	1.0	4.0	0.0	0.0	1.0	116.7	1.0	20.0	VERMONT SUB-TOTAL
	1.4	0.9	4.0	0.0	8.8	0.0	0.1	6.3	2.1	75.7	0.0	2.2	15.4	15.8	0.0	0.0	0.0		0.3	0.0	0.0		0.0		0.0		2.2		1.5	0.0	0.0		0.8		0.0		0.0		0.0	0.0		0.0	0.0	3.3	0.0	0.0	VERMONT ROUNDING
	39.0	15.0	180.0	11	514.0	25.0	31.0	247.0	262.0	2973.0	0.0	50.0	2232.0	561.0	1	5	3	0	88.0	200.2	23.0	0.0	0.0	0.0	0.0	22.0	26.0	7.0	10.0	1.0	1.7	21.0	28.0	0.0	0.0	1.0	1.0	1.0	1.0	4.0	0.0	0.0	1.0	120.0	1.0	20.0	VERMONT TOTAL
	50	38.0	1320	22	811	50	31	785	366	7320	55	2431	2938	1721	1	6	5	35.0	88	364.0	61.0		34.0		4.0		26.0		10.0		1.7		34.0		5.0		6.0		1.0	10.0	1.0	1.0	1.0	460.0	2.0	36.0	PROJECT TOTALS

*SEE NOTE 1

1. ITEM 603.99015 IS A TEMPORARY ITEM AND THEREFORE THE TOTAL QUANTITY IS SPLIT 45% NH AND 55% VT.

REVISIONS AFTER PROPOSAL (USE BOTTOM LINES FIRST)

NO.	DATE	STATION	STATION	DESCRIPTION

NOTEBOOKS: BOOK NO / PAGE NO

PLAN TRACED	PLAN CHECKED	PROFILE TRACED	PROFILE CHECKED	INKED	CHECKED
				SVO	BRC
DATE	DATE	DATE	DATE	DATE 2/18	DATE 2/18

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

McFARLAND-JOHNSON, INC

SUMMARY OF QUANTITIES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	28	600

ITEM #	IDENT #	SIGN SIZE WIDTH (inch)	SIGN SIZE HEIGHT (inch)	TEXT	TEXT DIMENSIONS LETTER HEIGHT (inch) UC	LC	CAPS	SHIELD SIZE (inch)	ARROW (inch)	NUMERAL (inch)	# SIGNS REQ'D	SIGN AREA (SQ. FT.) NOM AREA	SIGN AREA (SQ. FT.) TOTAL AREA	POSTS PER SIGN BREAKAWAY	STEEL I-BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL-GALV.	REMARKS
615.0401	GO-01	96	30	EXIT			10EM				3	20.00	60.00						WHITE /GREEN MOUNT ABOVE GO-02, GO-05, & GO-06 ON RIGHT
615.0401	GO-02	228	114	91 NORTH White River Jct 1/2 MILE	16EM	12EM	15EM/ 12EM 12EM	36X36		15D 15E	1	180.50	180.50						WHITE/BLUE/RED WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-03	228	36	EXIT ONLY			12EM		32X22		1	57.00	57.00						BLACK/YELLOW MOUNT BELOW GO-02
615.0401	GO-04	168	90	89 NORTH Montpelier	16EM	12EM	15EM/ 12EM	36X36		15D	1	105.00	105.00						WHITE/BLUE/RED WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-05	174	114	91 SOUTH Brattleboro 1/4 MILE	16EM	12EM	15EM/ 12EM 12EM	36X36		15D 15E	1	137.75	137.75						WHITE/BLUE/RED WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-06	228	90	91 NORTH White River Jct	16EM	12EM	15EM/ 12EM	36X36		15D	1	142.50	142.50						WHITE/BLUE/RED WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-07	228	36	EXIT ONLY			12EM		18X30		1	57.00	57.00						BLACK/YELLOW MOUNT BELOW GO-06
615.0401	GO-08	114	30	EXIT 20			10EM			15EM	3	23.75	71.25						WHITE /GREEN MOUNT ABOVE GO-09, GO-11, & GO-13 ON RIGHT
615.0401	GO-09	210	114	12A W Lebanon NH Claremont NH	8D 16EM 16EM	12EM 12EM			36X36	16B	1	166.25	166.25						BLACK/WHITE WHITE/GREEN MOUNT ON NEW CANTILEVER SIGN STRUCTURE
615.0401	GO-10	210	36	EXIT ONLY			12EM		18X30		1	52.50	52.50						BLACK/YELLOW MOUNT BELOW GO-09 ON RIGHT
615.0401	GO-11	210	138	12A W Lebanon NH Claremont NH 1/2 MILE	8D 16EM 16EM	12EM 12EM	12E	36X36		16B 15E	1	201.25	201.25						BLACK/WHITE WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-12	174	114	91 SOUTH Brattleboro 3/4 MILE	16EM	12EM	15EM/ 12EM 12EM	36X36		15D 10EM	1	137.75	137.75						WHITE/BLUE/RED WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-13	210	138	12A W Lebanon NH Claremont NH 1/4 MILE	8D 16EM 16EM	12EM 12EM	12E	36X36		16B 15E	1	201.25	201.25						BLACK/WHITE WHITE/GREEN MOUNT ON NEW OVERHEAD SIGN STRUCTURE
615.0401	GO-14	210	36	EXIT ONLY			12EM		32X22		1	52.50	52.50						BLACK/YELLOW MOUNT BELOW GO-13

GENERAL NOTES

1. REFER TO THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION PUBLISHED BY THE NHDOT.
2. NOTE NEW REFLECTIVITY REQUIREMENTS IN THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 718 PUBLISHED BY THE NHDOT.
3. REFER TO THE 2016 STANDARD PLANS FOR ROAD CONSTRUCTION AS PUBLISHED BY THE NHDOT FOR EXACT DETAILS OF PERMANENT SIGNING STANDARDS AND NHDOT SPECIFIC SIGNS.
4. REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SIGN TEXT LAYOUT

EXCEL FILE NAME	STATE PROJECT NO.	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
SGNTXT1	16148	A001(154)	29	600

ITEM #	IDENT #	SIGN SIZE WIDTH (inch)	SIGN SIZE HEIGHT (inch)	TEXT	TEXT DIMENSIONS LETTER HEIGHT (inch) UC	LC	CAPS	SHIELD SIZE (inch)	ARROW (inch)	NUMERAL (inch)	# SIGNS REQ'D	SIGN AREA (SQ. FT.) NOM AREA	TOTAL AREA	POSTS PER SIGN BREAKAWAY	STEEL I-BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL-GALV.	REMARKS
615.0201	GA-02	132	132	JUNCTION INTERSTATE 91 1/2 MILE			15E 12E	48		18E	1	121.00	121.00		2	2			WHITE/BLUE/RED WHITE/GREEN
615.02201	GA-04	60	102	NORTH INTERSTATE 91			10E/8E	36	18X30		1	42.50	42.50	X			2		WHITE/BLUE/RED WHITE/GREEN
615.0201	VR-128	72	72	SAFETY BELTS REQUIRED			8C (50%) 8D (50%)				1	36.00	36.00				2		BLACK/WHITE
615.0201	VD-421	60	48	Welcome To VERMONT THE GREEN MOUNTAIN STATE	9		9 3				1	20.00	20.00				2		BLACK/GREEN/WHITE "Welcome To" USE GERBER FONT MURRAY HILL BOLD "OTHER TEXT USE GERBER FONT SOUVENIR
615.0201	VR-654	36	36								1	9.00	9.00					2	BLACK/RED/WHITE
615.0201	R2-4a	48	96	SPEED LIMIT 55 MINIMUM 40			8E 8E 8C			16E 14D	3	32.00	96.00				2		BLACK/WHITE
615.0201	I-22(M)1	12	60	LEBANON NEW HAMPSHIRE			3D				1	5.00	5.00					1	WHITE/GREEN POST MOUNTED SIGN TO BE BOLTED OR MOUNTED TO BRIDGE RAIL
615.0201	W4-3R	48	48								2	16.00	32.00				2		BLACK/YELLOW
615.0201	W13-3	48	60	RAMP 30 MPH			8E 6E			16E	1	20.00	20.00				1		BLACK/YELLOW
615.01201	GA-07	78	72	Lebanon Municipal Airport EXIT 20	10E 10E 10E	10E 10E 10E	8E			12E	1	39.00	39.00	2			2		WHITE/GREEN

ITEM #	IDENT#	SIGN SIZE WIDTH (inch)	SIGN SIZE HEIGHT (inch)	TEXT	TEXT DIMENSIONS LETTER HEIGHT (inch) UC	LC	CAPS	SHIELD SIZE (inch)	ARROW (inch)	NUMERAL (inch)	# SIGNS REQ'D	SIGN AREA (SQ. FT.) NOM AREA	TOTAL AREA	POSTS PER SIGN BREAKAWAY	STEEL I-BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL-GALV.	REMARKS
615.0401	SP-01	90	36	Vietnam Veterans MEMORIAL BRIDGE	8C (50%)	8C (50%)	5C	11*			2	22.50	45.00				2		YELLOW/BLUE * NEW HAMPSHIRE STATE SHIELD
615.0201	D9-18(M)	96	108	EXIT 20 24 HR 24 HR			10E (81%)			15E (177%)	2	72.00	144.00	2		2			WHITE/BLUE
615.0501	I-3	90	36	Connecticut River	8EM 8EM	8EM 8EM					2	22.50	45.00						WHITE/GREEN MOUNT BELOW SP-01
615.0501	D5-6(M)	60	48	WELCOME CENTER 10 MILES			8D 8D 8D			10D	1	20.00	20.00						WHITE/BLUE MOUNT BELOW VD-421
615.0201	I-22(M)2	12	60	HARTFORD VERMONT			3D				1	5.00	5.00					1	WHITE/GREEN POST MOUNTED SIGN TO BE BOLTED OR MOUNTED TO BRIDGE RAIL
615.0501	R10-19(M)	36	24	STRICTLY ENFORCED			6C 6C (75%)				1	6.00	6.00						BLACK/WHITE MOUNT BELOW VR-654

GENERAL NOTES

1. REFER TO THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION PUBLISHED BY THE NHDOT.
2. NOTE NEW REFLECTIVITY REQUIREMENTS IN THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 718 PUBLISHED BY THE NHDOT.
3. REFER TO THE 2016 STANDARD PLANS FOR ROAD CONSTRUCTION AS PUBLISHED BY THE NHDOT FOR EXACT DETAILS OF PERMANENT SIGNING STANDARDS AND NHDOT SPECIFIC SIGNS.
4. REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

SIGN TEXT LAYOUT

EXCEL FILE NAME	STATE PROJECT NO.	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
SGNTXT1	16148	A011(154)	30	600

ITEM #	IDENT #	SIGN SIZE WIDTH (inch)	SIGN SIZE HEIGHT (inch)	TEXT	TEXT DIMENSIONS LETTER HEIGHT (inch) UC	LC	CAPS	SHIELD SIZE (inch)	ARROW (inch)	NUMERAL (inch)	# SIGNS REQ'D	SIGN AREA (SQ. FT.) NOM AREA	SIGN AREA (SQ. FT.) TOTAL AREA	POSTS PER SIGN BREAKAWAY	STEEL I-BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL-GALV.	REMARKS
619.1	CS-01	78	66				2.5C/8C 8C 8C 8C	24		10D	4	35.75	143.00						BLACK/ORANGE WHITE/RED/BLUE (REFER TO VTRANS STANDARD T-45 FOR MOUNTING DETAILS)
619.1	CS-02	78	66				2.5C/8C 8C 8C	24		10D	4	35.75	143.00					2	BLACK/ORANGE WHITE/RED/BLUE (REFER TO VTRANS STANDARD T-45 FOR MOUNTING DETAILS)
619.1	CS-03	48	48				8C 8C 8C 8C				4	16.00	64.00					2	BLACK/ORANGE
619.1	CS-04	78	18				8C				4	9.75	39.00						BLACK/ORANGE MOUNT ABOVE CS-02 DURING I-91 'EXIT 10S' RAMP CLOSURE
619.1	CS-05	78	18				8C				4	9.75	39.00						BLACK/ORANGE MOUNT BELOW CS-02 DURING I-91 'EXIT 10S' RAMP CLOSURE
619.1	CS-06	48	48				6C 6C 6C 6C				2	16.00	32.00					2	BLACK/ORANGE
619.1	CS-07	48	48				7C 7C 7C 7C				6	16.00	96.00					2	BLACK/ORANGE
619.1	CS-08	72	72				8C 8C	24			2	36.00	72.00						BLACK/ORANGE WHITE/RED/BLUE (REFER TO VTRANS STANDARD T-45 FOR MOUNTING DETAILS)
619.1	E5-2a	48	36				8E 8E				3	12.00	36.00						BLACK/ORANGE MOUNT DIAGONALLY ACROSS EXIT 10A O.H. ACTION & GORE SIGNS AND EXIT 20 SB EXIT GORE SIGN
619.1	M1-1 (89)	24	24				2.5C			10D	10	4.00	40.00					1	WHITE/RED/BLUE

ITEM #	IDENT#	SIGN SIZE WIDTH (inch)	SIGN SIZE HEIGHT (inch)	TEXT	TEXT DIMENSIONS LETTER HEIGHT (inch) UC	LC	CAPS	SHIELD SIZE (inch)	ARROW (inch)	NUMERAL (inch)	# SIGNS REQ'D	SIGN AREA (SQ. FT.) NOM AREA	SIGN AREA (SQ. FT.) TOTAL AREA	POSTS PER SIGN BREAKAWAY	STEEL I-BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL-GALV	REMARKS
619.1	M1-1 (89)i	36	36				4C			15D	16	9.00	144.00					2	WHITE/RED/BLUE
619.1	M1-1(91)	24	24				2.5C			10D	9	4.00	36.00					1	WHITE/RED/BLUE
619.1	M1-5 (12A)	24	24				11D 6D				5	4.00	20.00					1	BLACK/WHITE
619.1	M1-5 (12)Ai	36	36				16D 8D				5	9.00	45.00					2	BLACK/WHITE
619.1	M3-1	24	12				7C/6C				10	2.00	20.00						WHITE/BLUE MOUNT ABOVE M1-1(89) M1-1(91)
619.1	M3-1i	36	18				10C/8C				1	4.50	4.50						WHITE/BLUE MOUNT ABOVE M1-1(89)i M1-1(91)i

GENERAL NOTES

1. REFER TO THE 2010 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION PUBLISHED BY THE NHDOT.
2. NOTE NEW REFLECTIVITY REQUIREMENTS IN THE 2010 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 718 PUBLISHED BY THE NHDOT.
3. REFER TO THE 2010 STANDARD PLANS FOR ROAD CONSTRUCTION AS PUBLISHED BY THE NHDOT FOR EXACT DETAILS OF PERMANENT SIGNING STANDARDS AND NHDOT SPECIFIC SIGNS.
4. REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.
5. THE ALUMINUM OR U-CHANNEL POST SHALL BE FLUSH WITH THE TOP OF THE SIGN ON ALL SINGLE POST ASSEMBLIES
6. REFER TO 'ROUTE MARKER POST ASSEMBLY DETAIL' FOR SIDE BY SIDE ROUTE MARKER SIGN INSTALLATIONS.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

CONSTRUCTION SIGN TEXT LAYOUT

EXCEL FILE NAME	STATE PROJECT NO.	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	A001(154)	31	600

ITEM #	IDENT #	SIGN SIZE WIDTH (inch)	SIGN SIZE HEIGHT (inch)	TEXT	TEXT DIMENSIONS LETTER HEIGHT (inch) UC	LC	CAPS	SHIELD SIZE (inch)	ARROW (inch)	NUMERAL (inch)	# SIGNS REQ'D	SIGN AREA (SQ. FT.) NOM AREA	TOTAL AREA	POSTS PER SIGN BREAKAWAY	STEEL I-BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL-GALV.	REMARKS
619.1	M3-3i	36	18	SOUTH			10C/8C				15	4.50	67.50						WHITE/BLUE MOUNT ABOVE M1-1(89)i
619.1	M4-8	24	12	DETOUR			6B				13	2.00	26.00						BLACK/ORANGE M3-1 M1-5(12)A
619.1	M4-8i	30	15	DETOUR			8B				20	3.13	62.50						BLACK/ORANGE MOUNT ABOVE M1-5(12A)i M3-1i M3-3i
619.1	M4-8a	24	18	END DETOUR			4D 4D				3	3.00	9.00						BLACK/ORANGE MOUNT ABOVE M3-1 M3-3 M1-5(12A)
619.1	M6-1Li	30	21						20.375 x10		2	4.38	8.75						WHITE/BLUE MOUNT BELOW M1-1(89)i M1-1(91)i M1-5(12A)i
619.1	M6-1L	21	15						14.625 x7		4	2.19	8.75						WHITE/BLUE MOUNT BELOW M1-1(89) M1-1(91)
619.1	M6-1R	21	15						14.625 x7		1	2.19	2.19						WHITE/BLUE MOUNT BELOW M1-1(89) M1-5(91)
619.1	M6-2Ri	30	21						20.375x10 @45deg		5	4.38	21.88						WHITE/BLUE MOUNT BELOW M1-1(89)i M1-1(91)i M1-5(12A)i
619.1	M6-2R	21	15						14.625 x7 @45deg		4	2.19	8.75						WHITE/BLUE MOUNT BELOW M1-1(89) M1-1(91) M1-5(12A)
619.1	M6-3i	30	21						10x14		13	4.38	56.88						WHITE/BLUE MOUNT BELOW M1-1(89)i M1-5(12A)i
619.1	M6-3	21	15						7x9.75		4	2.19	8.75						WHITE/BLUE MOUNT BELOW M1-1(89) M1-1(91)

GENERAL NOTES

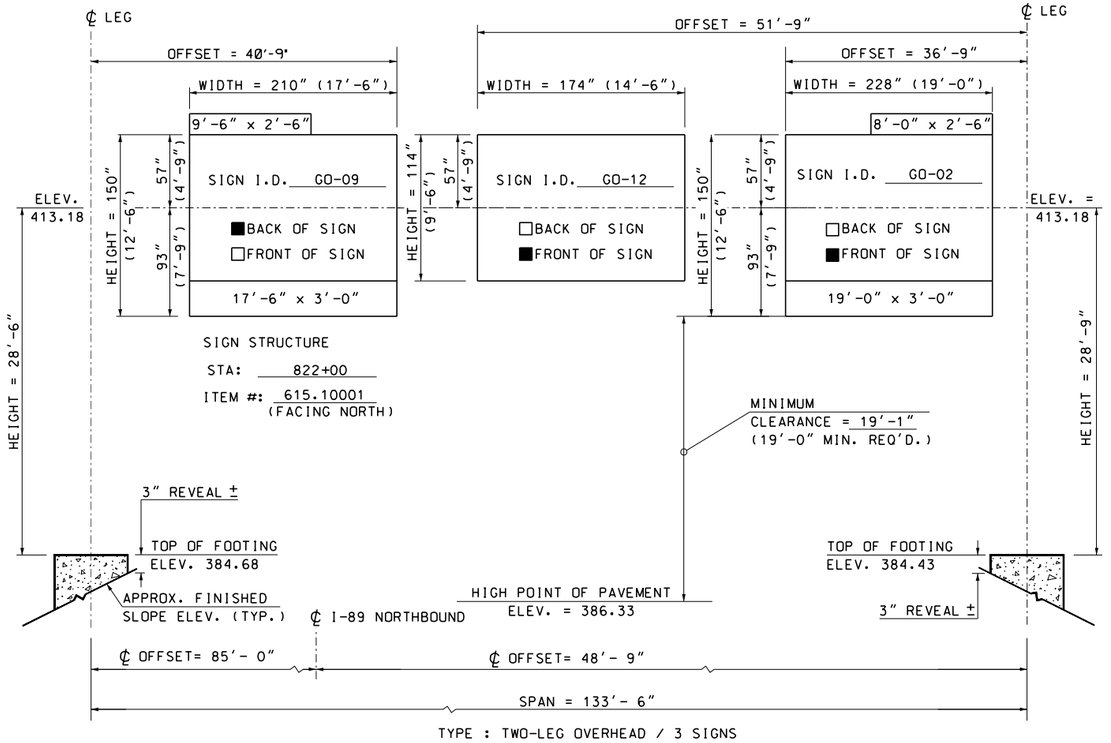
1. REFER TO THE 2010 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION PUBLISHED BY THE NHDOT.
2. NOTE NEW REFLECTIVITY REQUIREMENTS IN THE 2010 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 718 PUBLISHED BY THE NHDOT.
3. REFER TO THE 2010 STANDARD PLANS FOR ROAD CONSTRUCTION AS PUBLISHED BY THE NHDOT FOR EXACT DETAILS OF PERMANENT SIGNING STANDARDS AND NHDOT SPECIFIC SIGNS.
4. REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.
5. THE ALUMINUM OR U-CHANNEL POST SHALL BE FLUSH WITH THE TOP OF THE SIGN ON ALL SINGLE POST ASSEMBLIES
6. REFER TO 'ROUTE MARKER POST ASSEMBLY DETAIL' FOR SIDE BY SIDE ROUTE MARKER SIGN INSTALLATIONS.

STATE OF NEW HAMPSHIRE

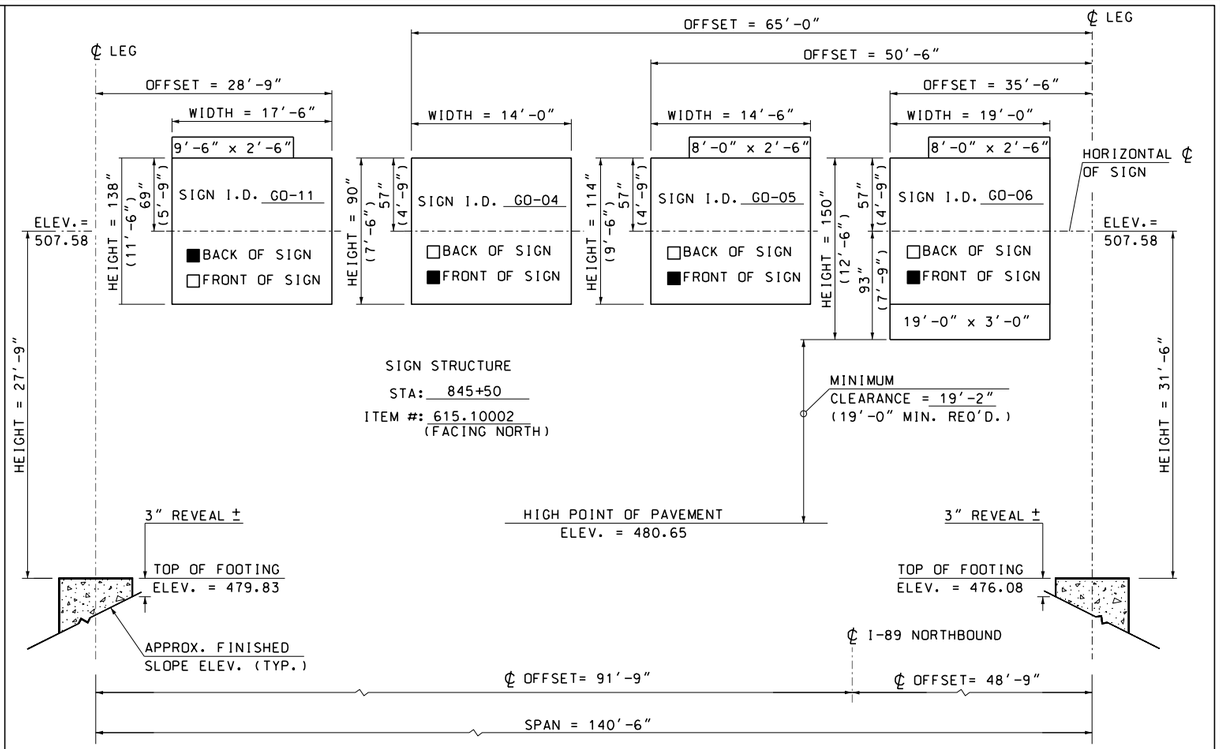
DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DESIGN

CONSTRUCTION SIGN TEXT LAYOUT

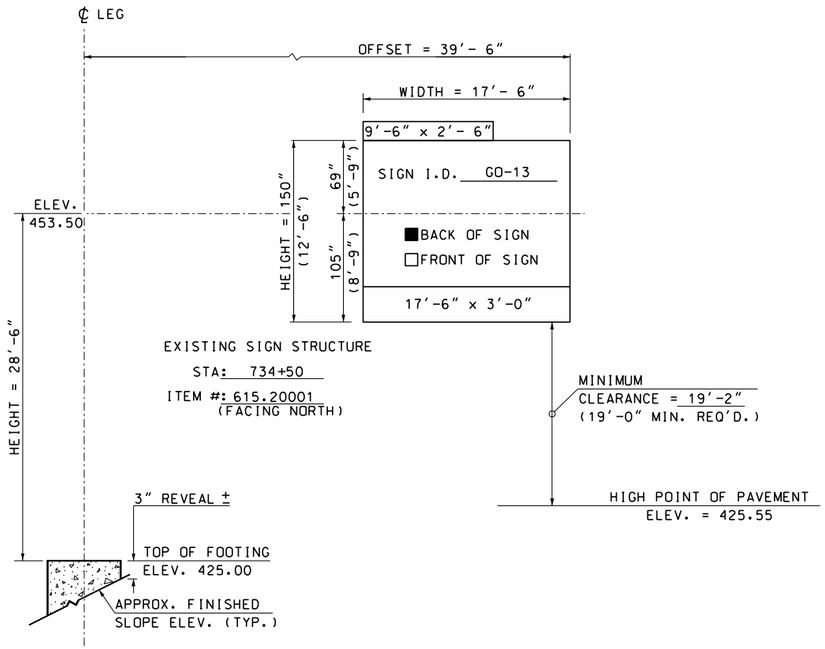
EXCEL FILE NAME	STATE PROJECT NO.	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
	16148	A001(154)	32	600



TYPE : TWO-LEG OVERHEAD / 3 SIGNS



TYPE : TWO-LEG OVERHEAD / 4 SIGNS



TYPE : ONE-LEG OVERHEAD / 1 SIGNS

NUMBER	DATE	DESCRIPTION	STATION	STATION
		REVISIONS AFTER PROPOSAL		

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

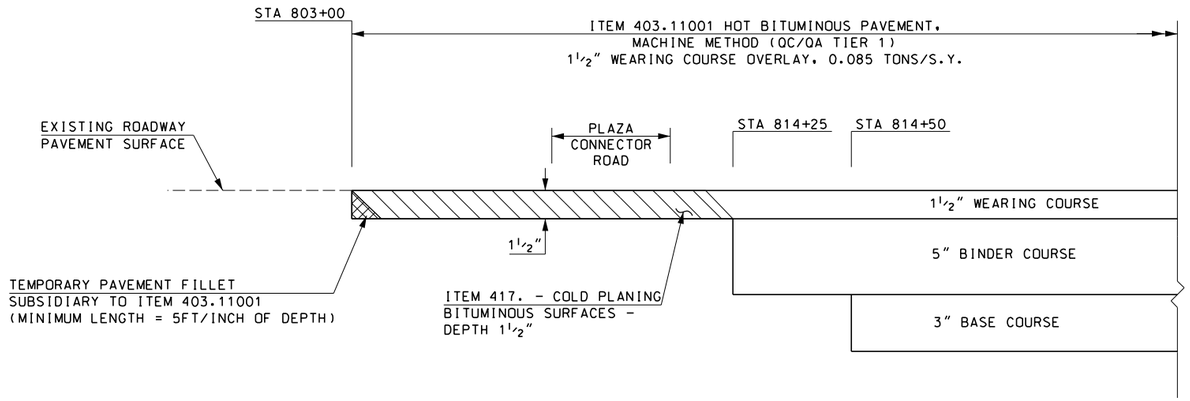
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

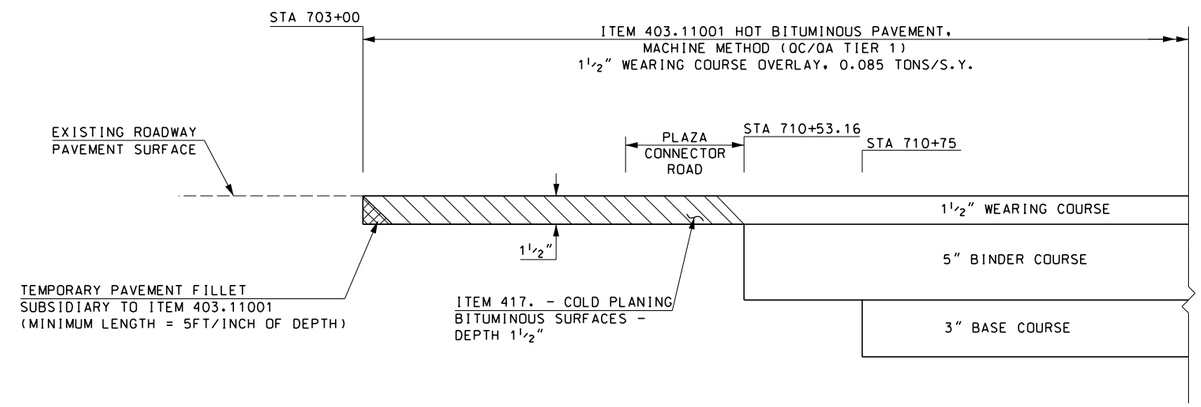
SIGN STRUCTURE DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148det5	16148	33	600



I-89 NORTHBOUND PAVEMENT MATCH DETAIL (SOUTH)

NOT TO SCALE



I-89 SOUTHBOUND PAVEMENT MATCH DETAIL (SOUTH)

NOT TO SCALE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

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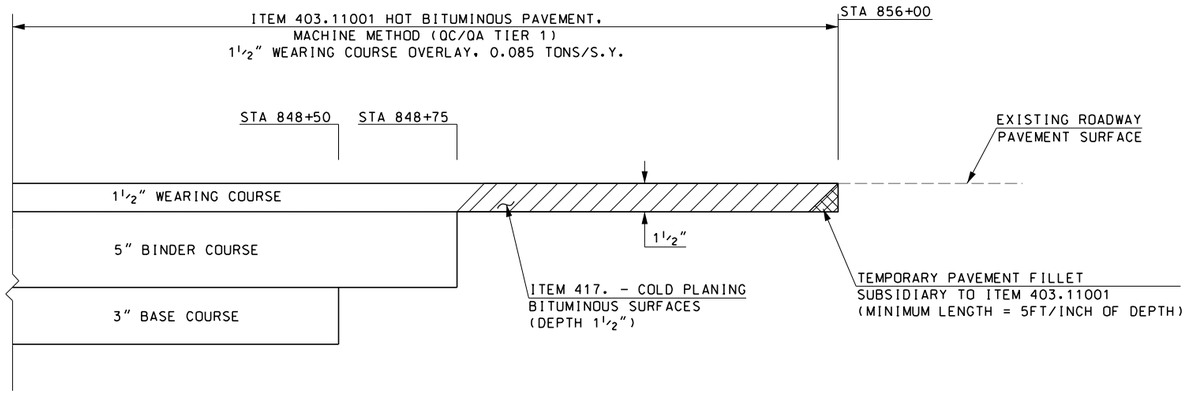
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

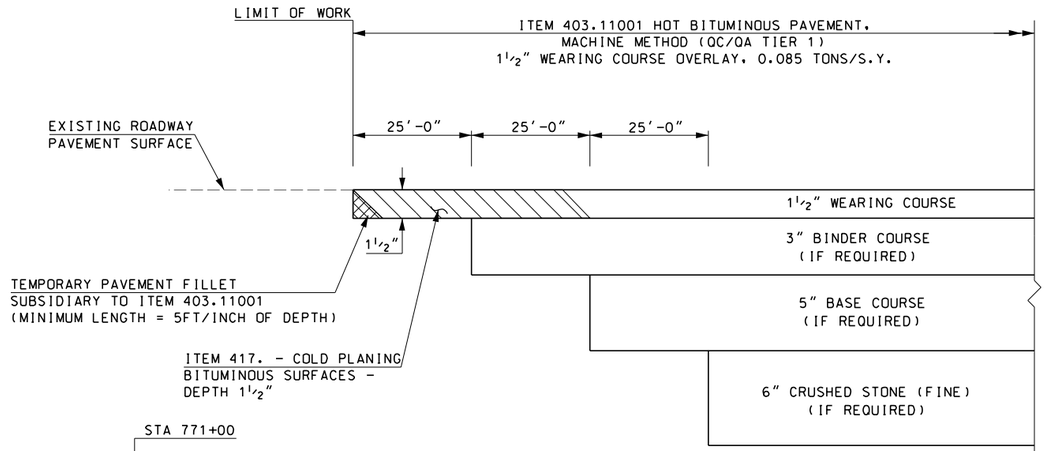
PAVEMENT TRANSITION DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148det8	16148	34	600



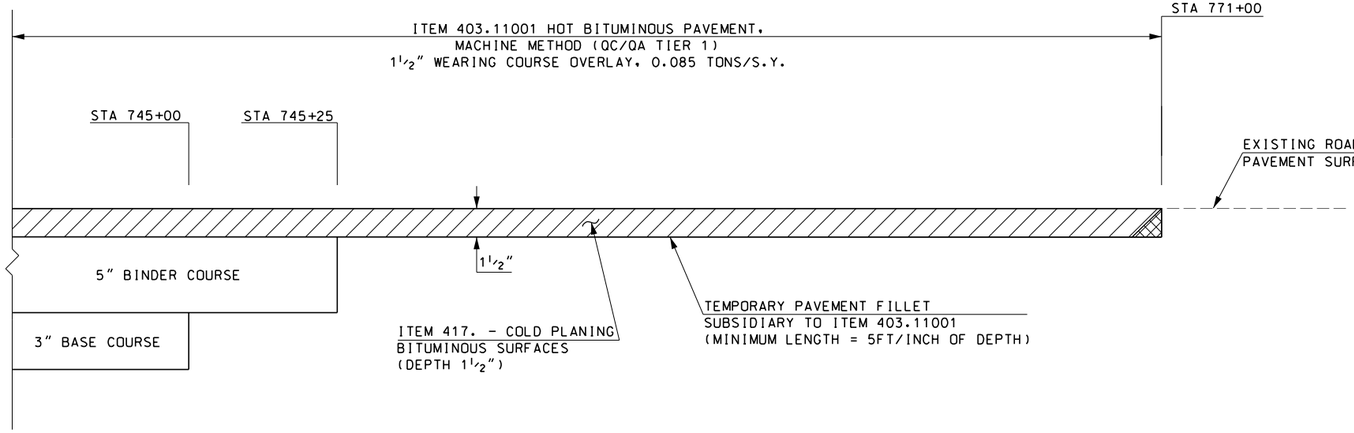
I-89 NORTHBOUND PAVEMENT MATCH DETAIL (NORTH)

NOT TO SCALE



I-89 RAMPS PAVEMENT MATCH DETAIL

NOT TO SCALE



I-89 SOUTHBOUND PAVEMENT MATCH DETAIL (NORTH)

NOT TO SCALE

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

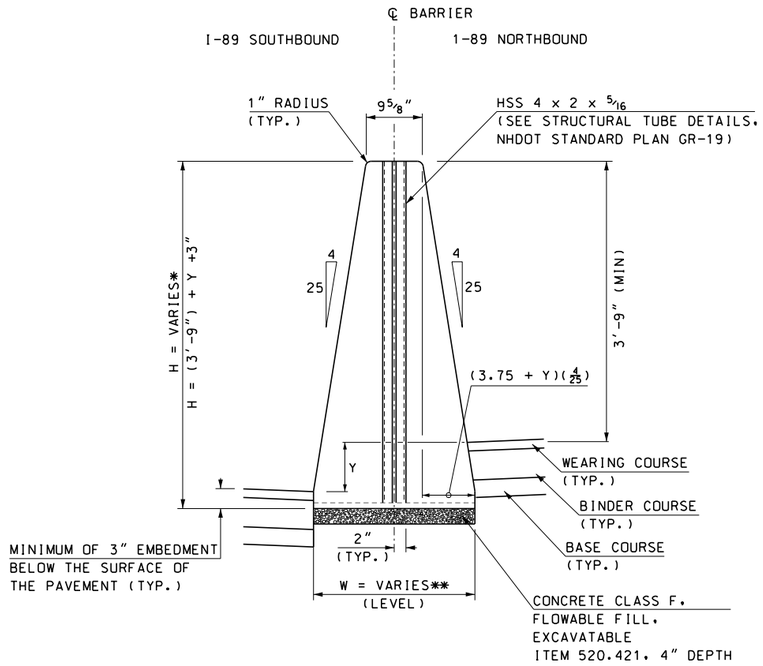
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PAVEMENT TRANSITION DETAILS

McFarland Johnson

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148det7	16148	35	600



ITEM 606.4139
SINGLE SLOPE CONCRETE MEDIAN BARRIER
(MODIFIED), PRECAST
STA 713+50 TO STA 719+50,
STA 732+60 TO STA 735+25 AND
STA 740+25 TO 741+50

ITEM 606.4239
MODIFIED CONCRETE MEDIAN BARRIER,
(CAST-IN-PLACE)
STA 735+25 TO STA 740+25

NOT TO SCALE

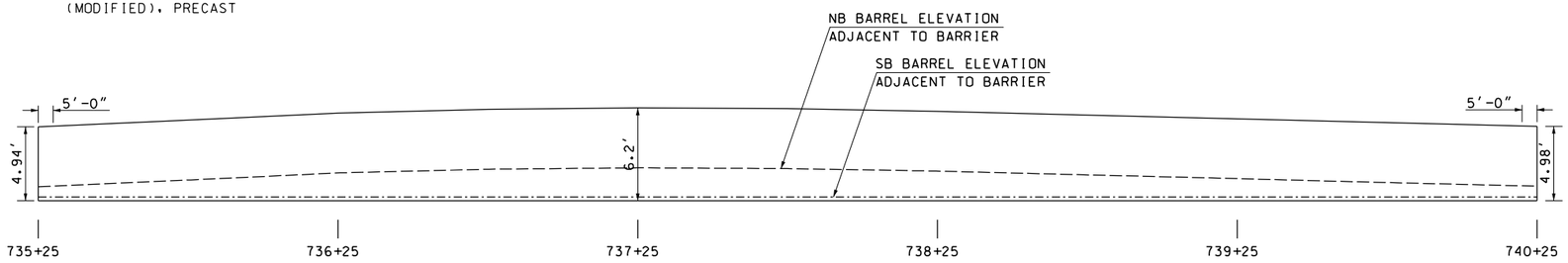
* H =3"+Y+(45")
(Y IS ABSOLUTE VALUE)
** W=[(H"-3")(4/25)]2+9 5/8"

NOTES:

1. "Y" = DIFFERENCE IN ELEVATION BETWEEN THE RIGHT SIDE AND THE LEFT SIDE AT FACE OF BARRIER. REINFORCE ITEM 606.4139 SIMILAR TO STANDARD PLAN NO. GR-19 OF THE NHDOT STANDARD PLANS FOR ROAD & BRIDGE CONSTRUCTION.

2. SEE THIS SHEET FOR CROSS SECTIONAL REINFORCING DETAILS FOR ITEM 606.4239 - MODIFIED CONCRETE BARRIER (CAST-IN-PLACE).

DETAIL AND REINFORCE BOTH ENDS OF THE CAST-IN-PLACE BARRIER (5 LF) SIMILAR TO THE STANDARD SINGLE SLOPE BARRIER (SEE NHDOT STANDARD PLAN GR-19) TO ALLOW FOR A CONNECTION TO ITEM 606.4139 - SINGLE SLOPE CONCRETE MEDIAN BARRIER (MODIFIED), PRECAST

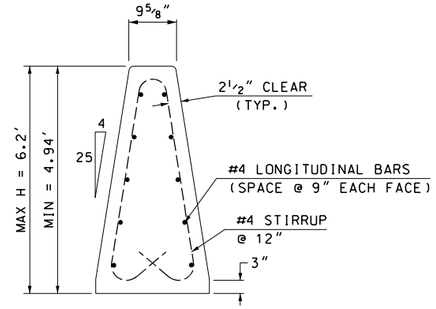


PROFILE FOR ITEM 606.4239 - MODIFIED CONCRETE MEDIAN BARRIER (CAST-IN-PLACE)

NOT TO SCALE

STA	Y (FT)
713+50.00	0.00
713+75.00	0.07
714+00.00	0.18
714+25.00	0.29
714+50.00	0.39
714+75.00	0.49
715+00.00	0.56
715+25.00	0.66
715+50.00	0.75
715+75.00	0.83
716+00.00	0.91
716+25.00	0.89
716+50.00	0.84
716+75.00	0.78
717+00.00	0.71
717+25.00	0.63
717+50.00	0.58
717+75.00	0.50
718+00.00	0.42
718+25.00	0.35
718+50.00	0.28
718+75.00	0.21
719+00.00	0.13
719+25.00	0.06
719+50.00	0.00

STA	Y (FT)
732+60.00	0.00
732+75.00	0.04
733+00.00	0.11
733+25.00	0.19
733+50.00	0.26
733+75.00	0.33
734+00.00	0.40
734+25.00	0.48
734+50.00	0.58
734+75.00	0.68
735+00.00	0.81
735+25.00	0.94
735+50.00	1.15
735+75.00	1.39
736+00.00	1.63
736+25.00	1.86
736+50.00	2.02
736+75.00	2.11
737+00.00	2.19
737+25.00	2.20
737+50.00	2.19
737+75.00	2.15
738+00.00	2.11
738+25.00	1.98
738+50.00	1.86
738+75.00	1.73
739+00.00	1.61
739+25.00	1.48
739+50.00	1.35
739+75.00	1.22
740+00.00	1.09
740+25.00	0.98
740+50.00	0.85
740+75.00	0.69
741+00.00	0.51
741+25.00	0.27
741+50.00	0.00



CROSS SECTIONAL REINFORCING DETAIL FOR ITEM 606.4239 - MODIFIED CONCRETE MEDIAN BARRIER (CAST-IN-PLACE) STA 735+25 TO STA 740+25

NOT TO SCALE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

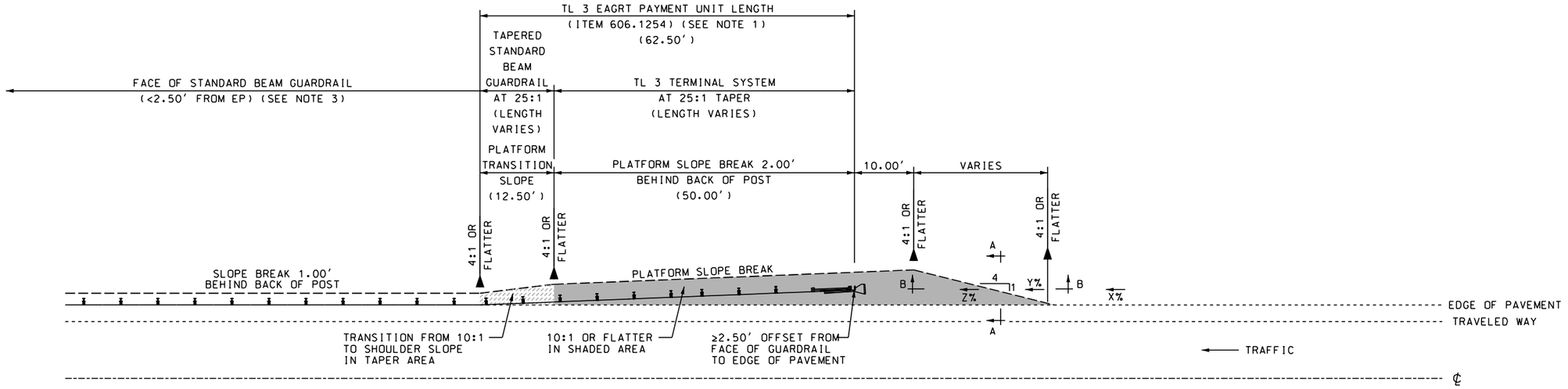
		DATE
SDR PROCESSED	NHDOT	04-2015
NEW DESIGN	MJ	04-2016
SHEET CHECKED	BRC	02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

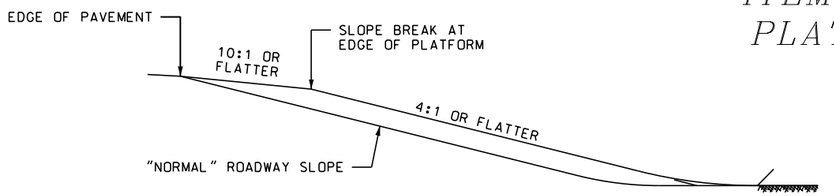
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

CONCRETE MEDIAN BARRIER DETAILS

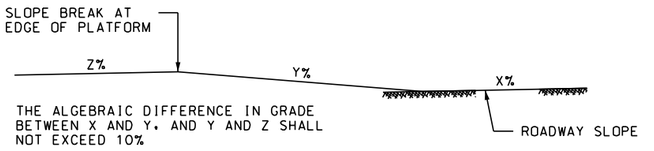
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148det2	16148	36	600



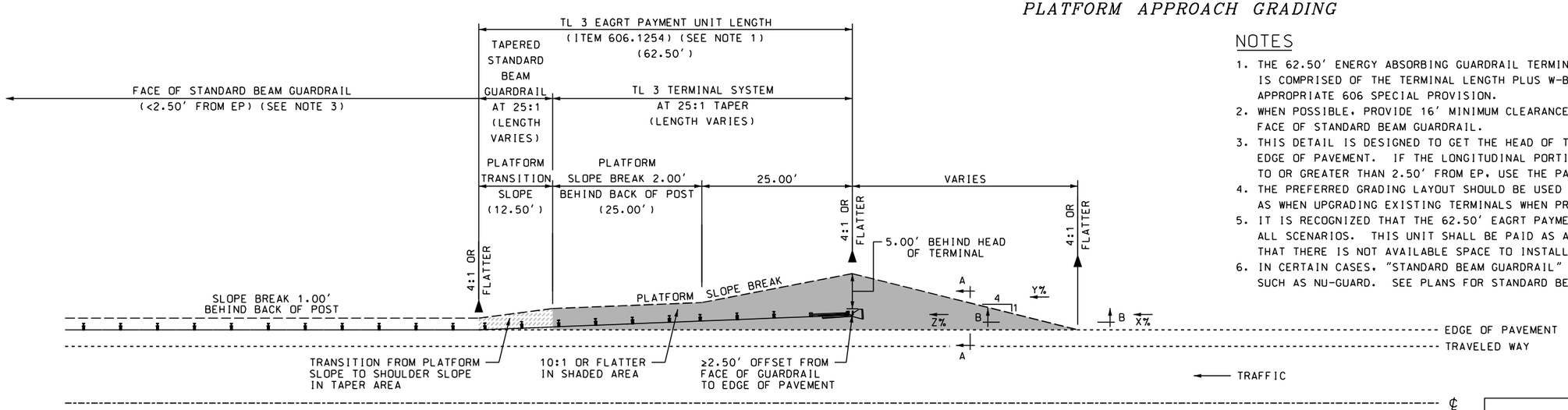
ITEM 203.5562 - EAGRT PLATFORM ALTERNATE



SECTION A-A
PLATFORM SLOPE GRADING



SECTION B-B
PLATFORM APPROACH GRADING



ITEM 203.5561 - EAGRT PLATFORM PREFERRED

NOTES

1. THE 62.50' ENERGY ABSORBING GUARDRAIL TERMINAL (EAGRT) PAYMENT UNIT LENGTH IS COMPRISED OF THE TERMINAL LENGTH PLUS W-BEAM RAIL AS DESCRIBED IN THE APPROPRIATE 606 SPECIAL PROVISION.
2. WHEN POSSIBLE, PROVIDE 16' MINIMUM CLEARANCE BETWEEN ROADWAY CENTERLINE AND FACE OF STANDARD BEAM GUARDRAIL.
3. THIS DETAIL IS DESIGNED TO GET THE HEAD OF THE TERMINAL UNIT AWAY FROM THE EDGE OF PAVEMENT. IF THE LONGITUDINAL PORTION OF THE GUARDRAIL RUN IS EQUAL TO OR GREATER THAN 2.50' FROM EP, USE THE PARALLEL EAGRT DETAIL
4. THE PREFERRED GRADING LAYOUT SHOULD BE USED ON ALL NEW CONSTRUCTION, AS WELL AS WHEN UPGRADING EXISTING TERMINALS WHEN PRACTICAL.
5. IT IS RECOGNIZED THAT THE 62.50' EAGRT PAYMENT UNIT LENGTH MAY NOT FIT ALL SCENARIOS. THIS UNIT SHALL BE PAID AS A COMPLETE INSTALLATION IN THE EVENT THAT THERE IS NOT AVAILABLE SPACE TO INSTALL PER THIS DETAIL.
6. IN CERTAIN CASES, "STANDARD BEAM GUARDRAIL" MAY BE A PROPRIETARY ITEM SUCH AS NU-GUARD. SEE PLANS FOR STANDARD BEAM GUARDRAIL TYPE.

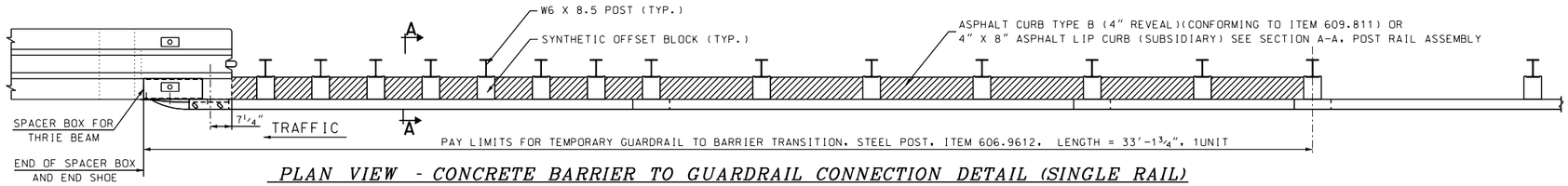
NOT TO SCALE

STATE OF NEW HAMPSHIRE

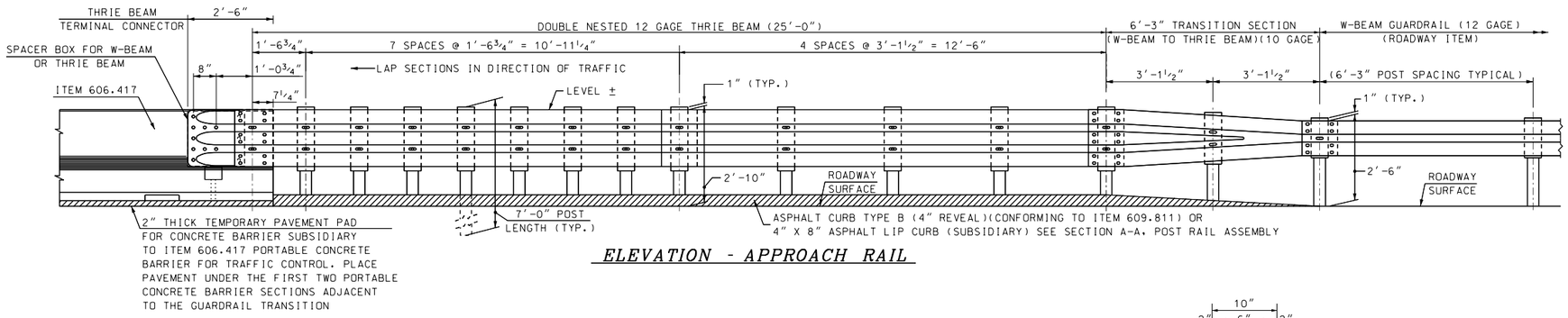
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TL 3 TAPERED EAGRT PLATFORM DETAILS FOR GUARDRAIL < 2.50' FROM EP

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
01/22/19	tl3_tap_ep	16148	37	600



PLAN VIEW - CONCRETE BARRIER TO GUARDRAIL CONNECTION DETAIL (SINGLE RAIL)



ELEVATION - APPROACH RAIL

GENERAL NOTES

(1) ALL THRIE BEAM RAIL, INCLUDING TRANSITION SECTION, SHALL BE GALVANIZED 12 GAUGE. ALL TERMINAL CONNECTORS SHALL BE GALVANIZED 10 GAUGE.

(2) CONNECTIONS TO CONCRETE BARRIER SHALL BE APPROVED 7/8" Φ GALVANIZED HIGH STRENGTH THROUGH BOLTS IN CORE DRILLED HOLES. CHECK ACTUAL HOLE SPACING BEFORE CORING BOLT HOLES.

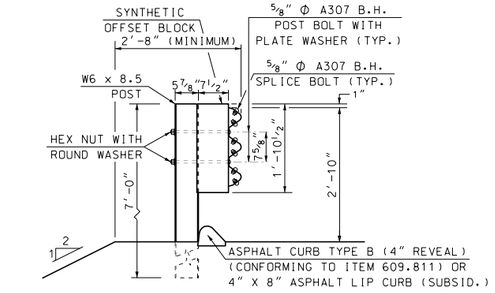
(3) ALL CONNECTIONS FOR THE THRIE BEAM RAIL AND TERMINAL CONNECTOR SHALL LAP IN THE DIRECTION OF TRAFFIC.

(4) ALL STEEL PLATES FOR SPACER BOX SHALL BE 1/4" GALVANIZED STEEL PLATES (TYP.), ASTM A709 GRADE 36 (AASHTO M270 GRADE 36).

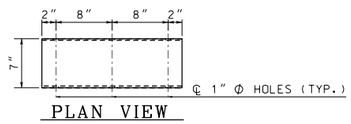
(5) ALL HOLE DIAMETERS FOR SPACER BOXES SHALL BE 1" Φ.

(6) RECTANGULAR AND TRIANGULAR COVER PLATES SHALL BE WELDED TOGETHER WITH A 3 3/16" CONTINUOUS BACK WELD ON BOTH SIDES.

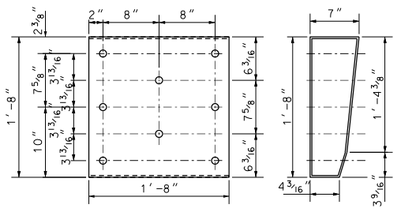
(7) THE FIRST TWO PORTABLE CONCRETE BARRIER SECTIONS, ADJACENT TO THE GUARDRAIL TRANSITION CONNECTION SHALL BE AFFIXED TO THE GROUND. TO PREVENT THE BARRIER FROM SLIDING. EACH SEGMENT IS STAKED WITH FOUR ANCHORS. THE ANCHORS SHALL BE 1 1/4" X 3'-4" LONG GALVANIZED STEEL PINS.



SECTION A-A (POST RAIL ASSEMBLY)



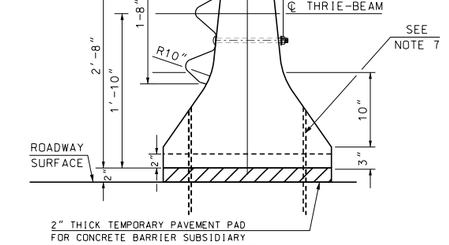
PLAN VIEW



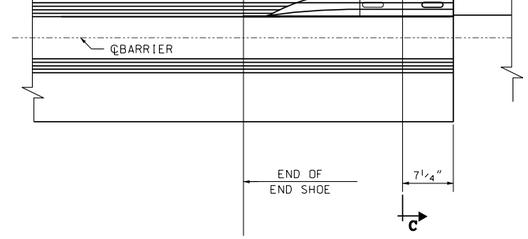
ELEVATION END VIEW

1/4" GALVANIZED STEEL PLATES (TYP.)
ASTM A709 GRADE 36 (AASHTO M270 GRADE 36)

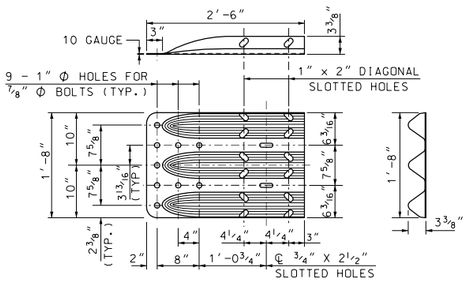
THRIE BEAM TO CONCRETE BARRIER SPACER BLOCK DETAILS



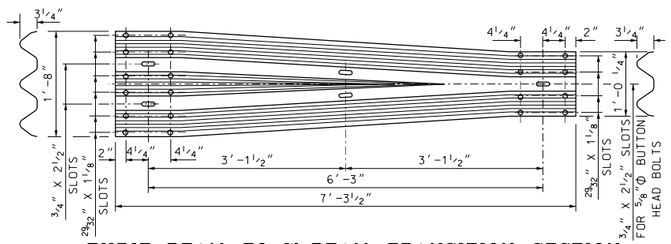
SECTION C-C APPROACH END CONNECTION



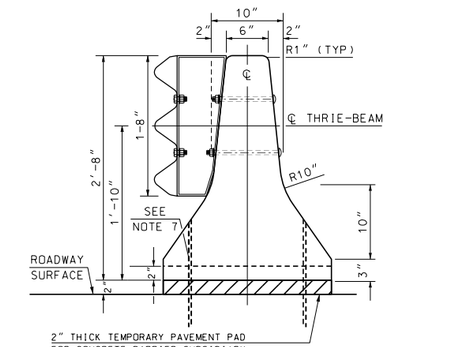
PLAN VIEW - CONCRETE BARRIER TO GUARDRAIL CONNECTION DETAIL (APPROACH END)



THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM TO W-BEAM TRANSITION SECTION



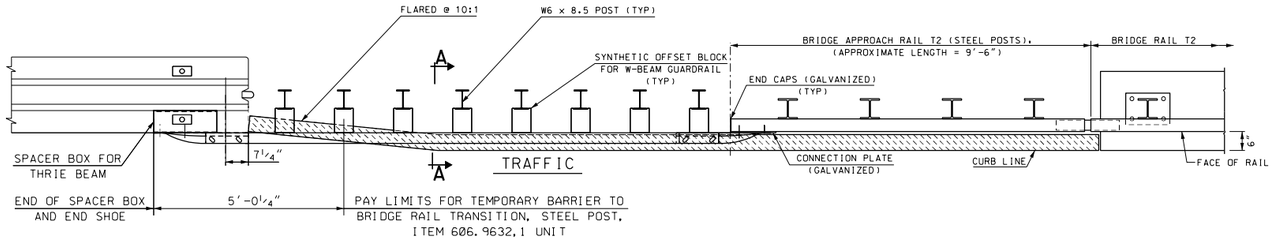
SECTION DEPARTURE END CONNECTION

STATE OF NEW HAMPSHIRE

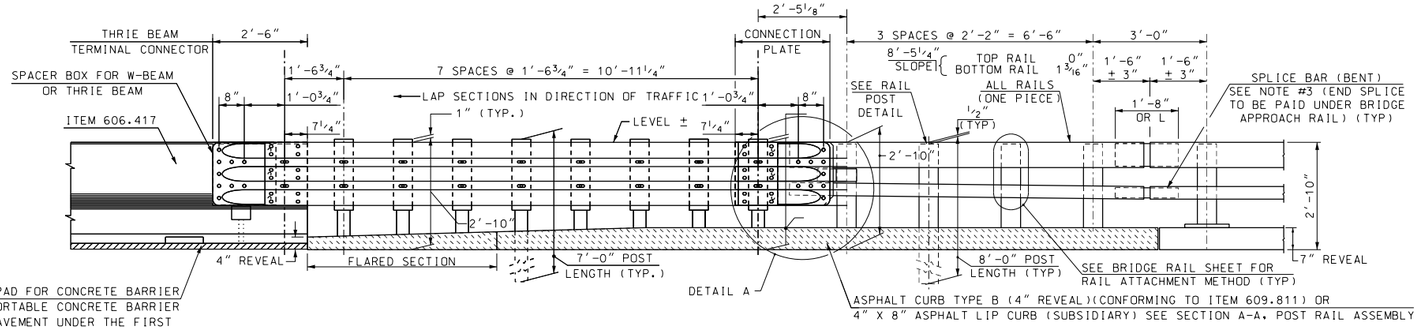
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TEMPORARY GUARDRAIL TO BARRIER TRANSITION, STEEL POST

NOT TO SCALE				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
07-10-15	tbg-pcb.dgn	16148	38	600



PLAN VIEW - CONCRETE BARRIER TO GUARDRAIL CONNECTION DETAIL (SINGLE RAIL)



2" THICK TEMPORARY PAVEMENT PAD FOR CONCRETE BARRIER SUBSIDIARY TO ITEM 606.417 PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL. PLACE PAVEMENT UNDER THE FIRST TWO PORTABLE CONCRETE BARRIER SECTIONS ADJACENT TO THE GUARDRAIL TRANSITION

ELEVATION - APPROACH RAIL

GENERAL NOTES

(1) ALL THRIE BEAM RAIL, INCLUDING TRANSITION SECTION, SHALL BE GALVANIZED 12 GAUGE. ALL TERMINAL CONNECTORS SHALL BE GALVANIZED 10 GAUGE.

(2) CONNECTIONS TO CONCRETE BARRIER SHALL BE APPROVED 7/8" Φ GALVANIZED HIGH STRENGTH THROUGH BOLTS IN CORE DRILLED HOLES. CHECK ACTUAL HOLE SPACING BEFORE CORING BOLT HOLES.

(3) ALL CONNECTIONS FOR THE THRIE BEAM RAIL AND TERMINAL CONNECTOR SHALL LAP IN THE DIRECTION OF TRAFFIC.

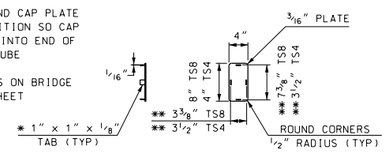
(4) ALL STEEL PLATES FOR SPACER BOX SHALL BE 1/4" GALVANIZED STEEL PLATES (TYP.), ASTM A709 GRADE 36 (AASHTO M270 GRADE 36).

(5) ALL HOLE DIAMETERS FOR SPACER BOXES SHALL BE 1" Φ.

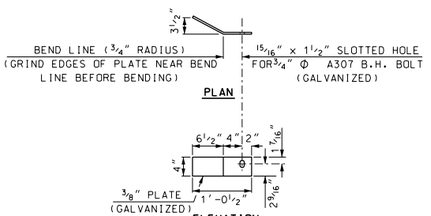
(6) RECTANGULAR AND TRIANGULAR COVER PLATES SHALL BE WELDED TOGETHER WITH A 3 3/16" CONTINUOUS BACK WELD ON BOTH SIDES.

(7) THE FIRST TWO PORTABLE CONCRETE BARRIER SECTIONS, ADJACENT TO THE GUARDRAIL TRANSITION CONNECTION SHALL BE AFFIXED TO THE GROUND, TO PREVENT THE BARRIER FROM SLIDING. EACH SEGMENT IS STAKED WITH FOUR ANCHORS. THE ANCHORS SHALL BE 1 1/4" X 3'-4" LONG GALVANIZED STEEL PINS.

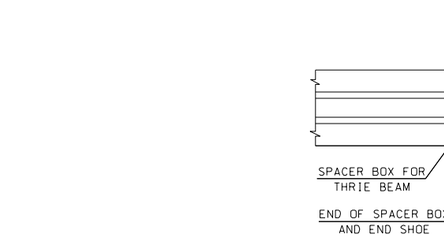
(8) ALL WORK, HARDWARE, AND/OR ALTERATIONS ORDERED BY THE ENGINEER NEEDED TO MAKE CONNECTION TO EXISTING/PROPOSED BRIDGE RAIL/STRUCTURE IS SUBSIDIARY. A SITE VISIT AND ACQUISITION OF AS-BUILT BRIDGE PLANS ARE RECOMMENDED.



END CAP DETAIL

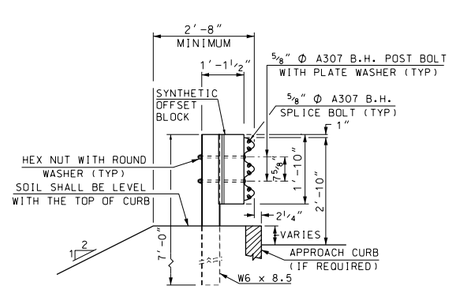


DEFLECTOR PLATE DETAIL

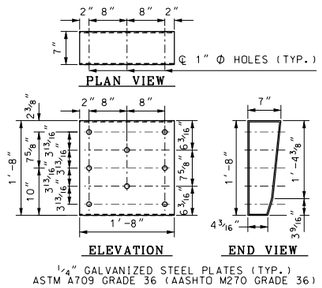


2" THICK TEMPORARY PAVEMENT PAD FOR CONCRETE BARRIER SUBSIDIARY TO ITEM 606.417 PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL

APPROACH END CONNECTION

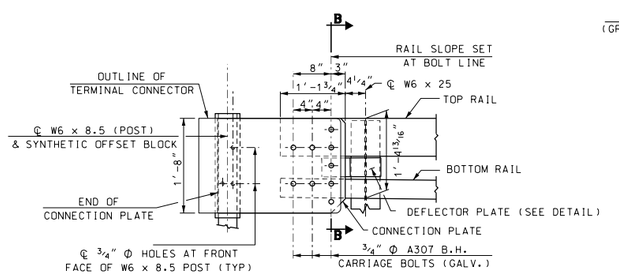


SECTION A-A (POST RAIL ASSEMBLY)

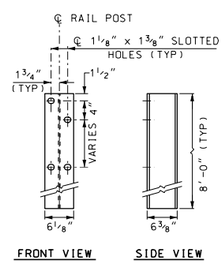


1/4" GALVANIZED STEEL PLATES (TYP.) ASTM A709 GRADE 36 (AASHTO M270 GRADE 36)

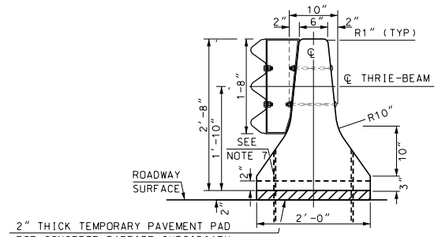
THRIE BEAM TO CONCRETE BARRIER SPACER BLOCK DETAILS



DETAIL A

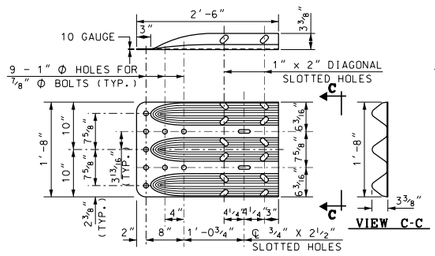


RAIL POST (W6 X 25)

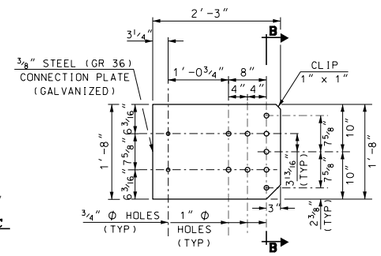


2" THICK TEMPORARY PAVEMENT PAD FOR CONCRETE BARRIER SUBSIDIARY TO ITEM 606.417 PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL

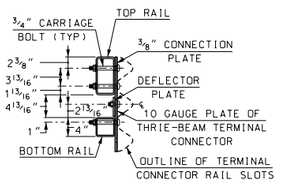
DEPARTURE END CONNECTION



THRIE BEAM TERMINAL CONNECTOR

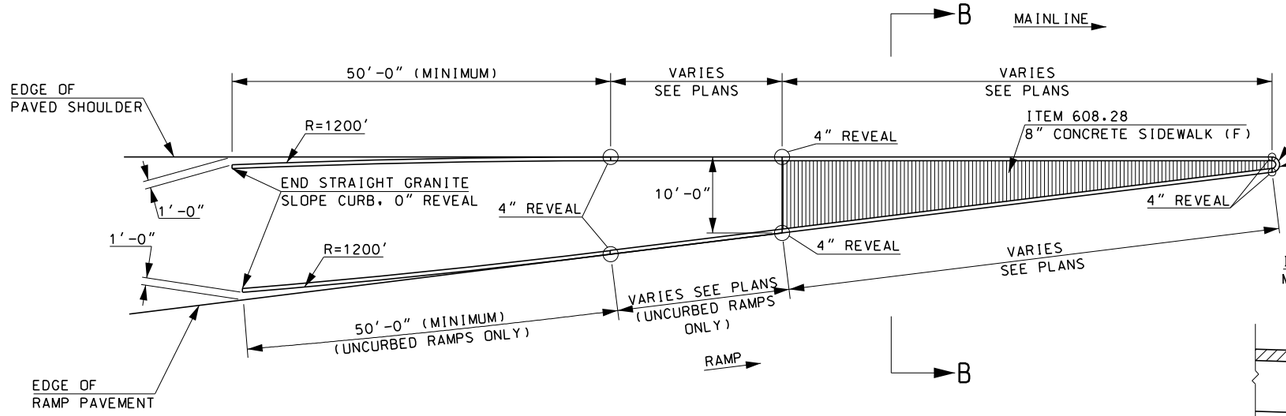


CONNECTION PLATE DETAIL

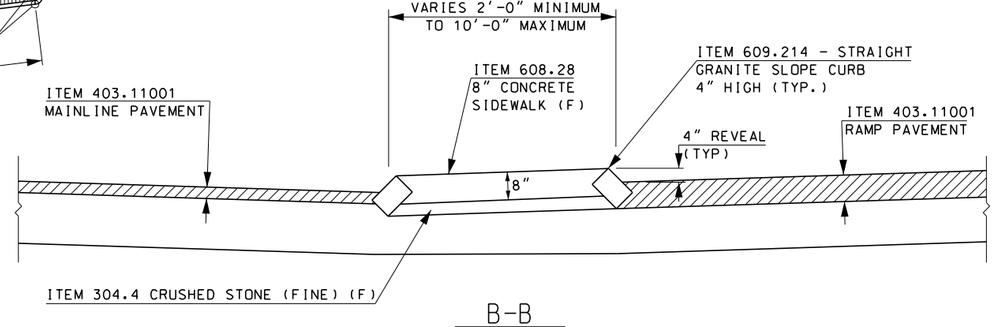


SECTION B-B (CONNECTION PLATE)

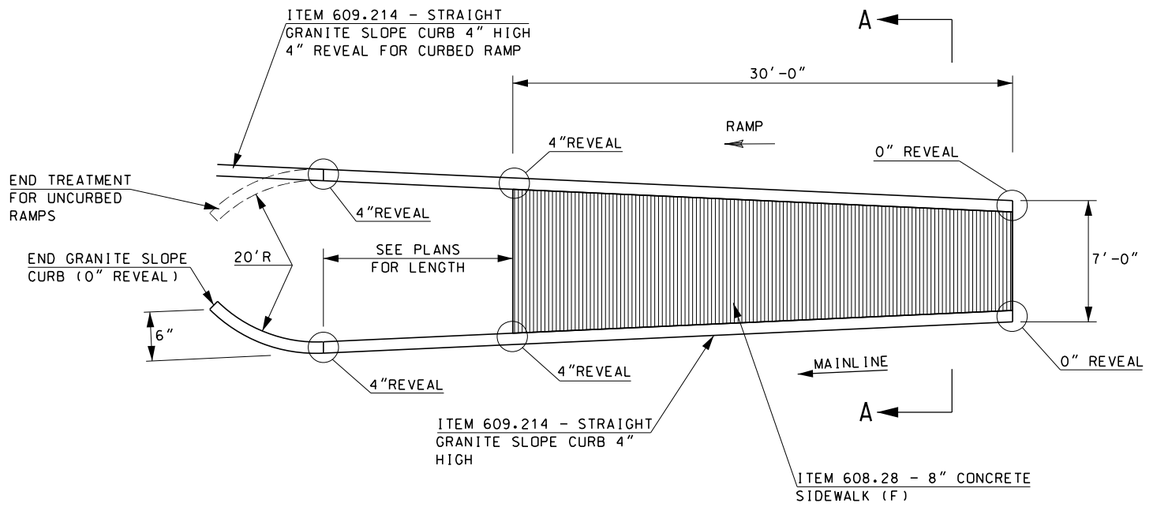
STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN			
TEMPORARY BARRIER TO BRIDGE RAIL TRANSITION, STEEL POST			
NOT TO SCALE			
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
07-10-15	tbg-t2rail.dgn	16148	39	600



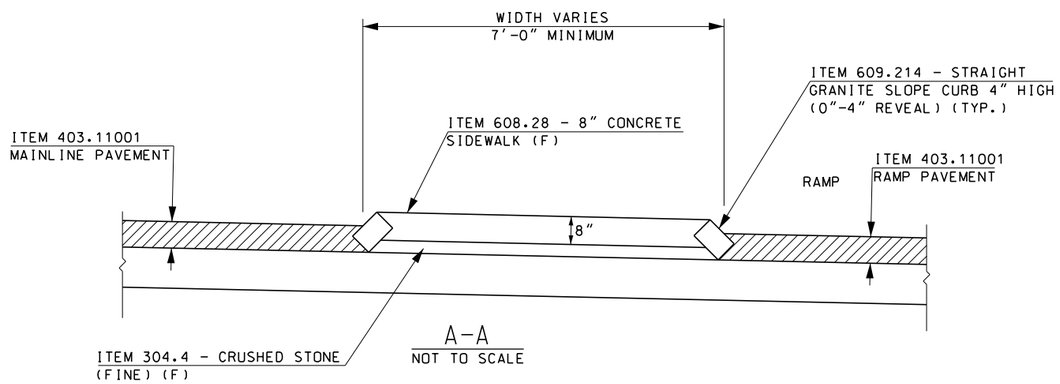
DETAIL OF 8" CONCRETE
SIDEWALK AND CURBING
AT ON-RAMP NOSE
NOT TO SCALE



B-B
NOT TO SCALE



DETAIL OF 8" CONCRETE
SIDEWALK AND CURBING
AT OFF-RAMP NOSE
NOT TO SCALE



A-A
NOT TO SCALE

NUMBER	DESCRIPTION	STATION	DATE

REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	NHDOT	04-2015
NEW DESIGN	MJ	04-2016
SHEET CHECKED	BRC	02-2018

AS BUILT DETAILS — DATE

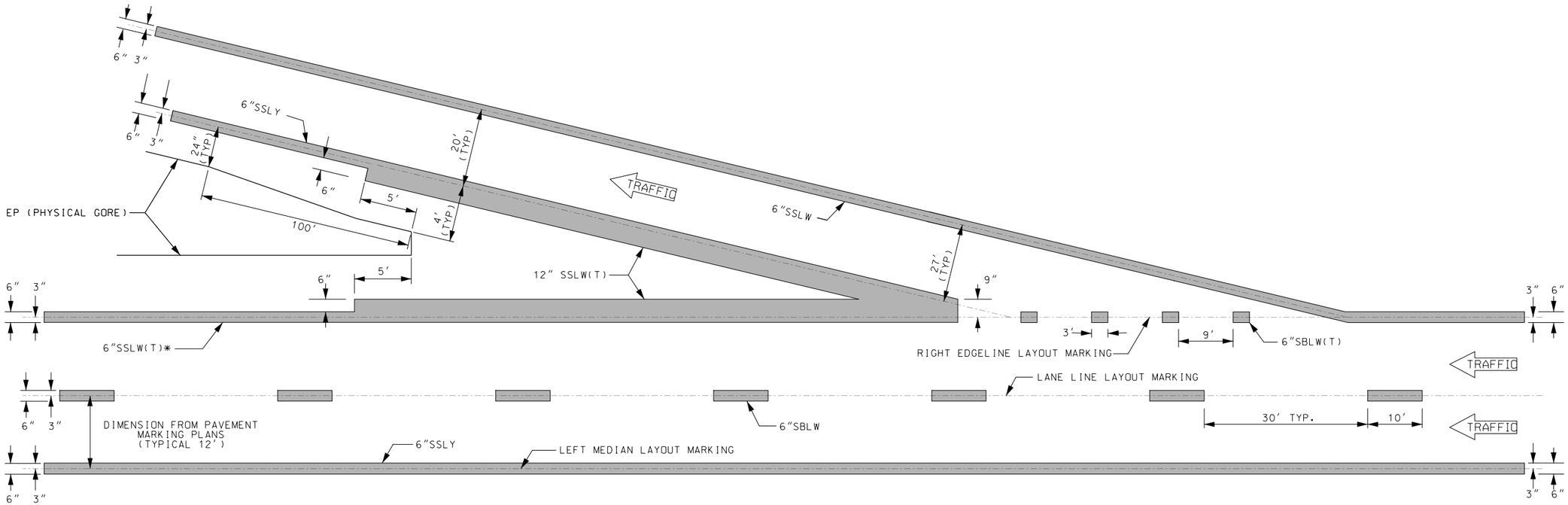
McFarland Johnson

STATE OF NEW HAMPSHIRE

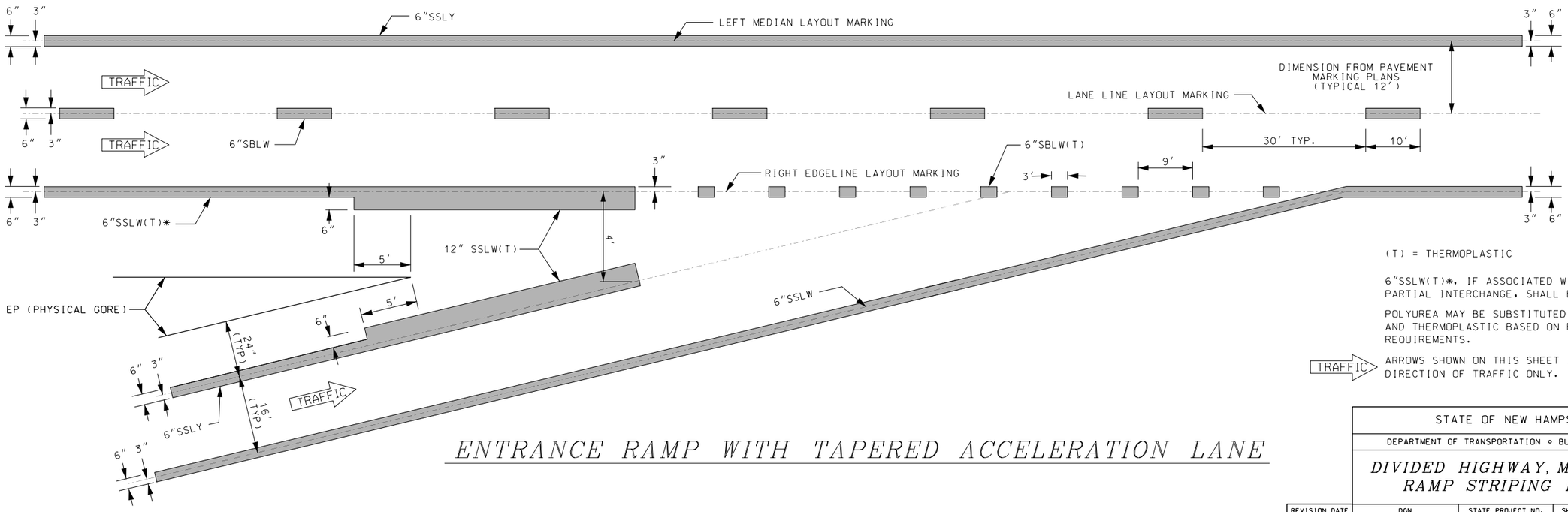
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

RAMP NOSE ISLAND DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148det1	16148	40	600



EXIT RAMP WITH TAPERED DECELERATION LANE



ENTRANCE RAMP WITH TAPERED ACCELERATION LANE

(T) = THERMOPLASTIC

6"SSLW(T)*, IF ASSOCIATED WITH A PARTIAL INTERCHANGE, SHALL BE PAINT.

POLYUREA MAY BE SUBSTITUTED FOR PAINT AND THERMOPLASTIC BASED ON PROJECT REQUIREMENTS.

TRAFFIC — ARROWS SHOWN ON THIS SHEET INDICATE DIRECTION OF TRAFFIC ONLY.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

		DATE
SDR PROCESSED		
NEW DESIGN	KFD	01/15/2016
SHEET CHECKED	BRC	02-2018
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF TRAFFIC

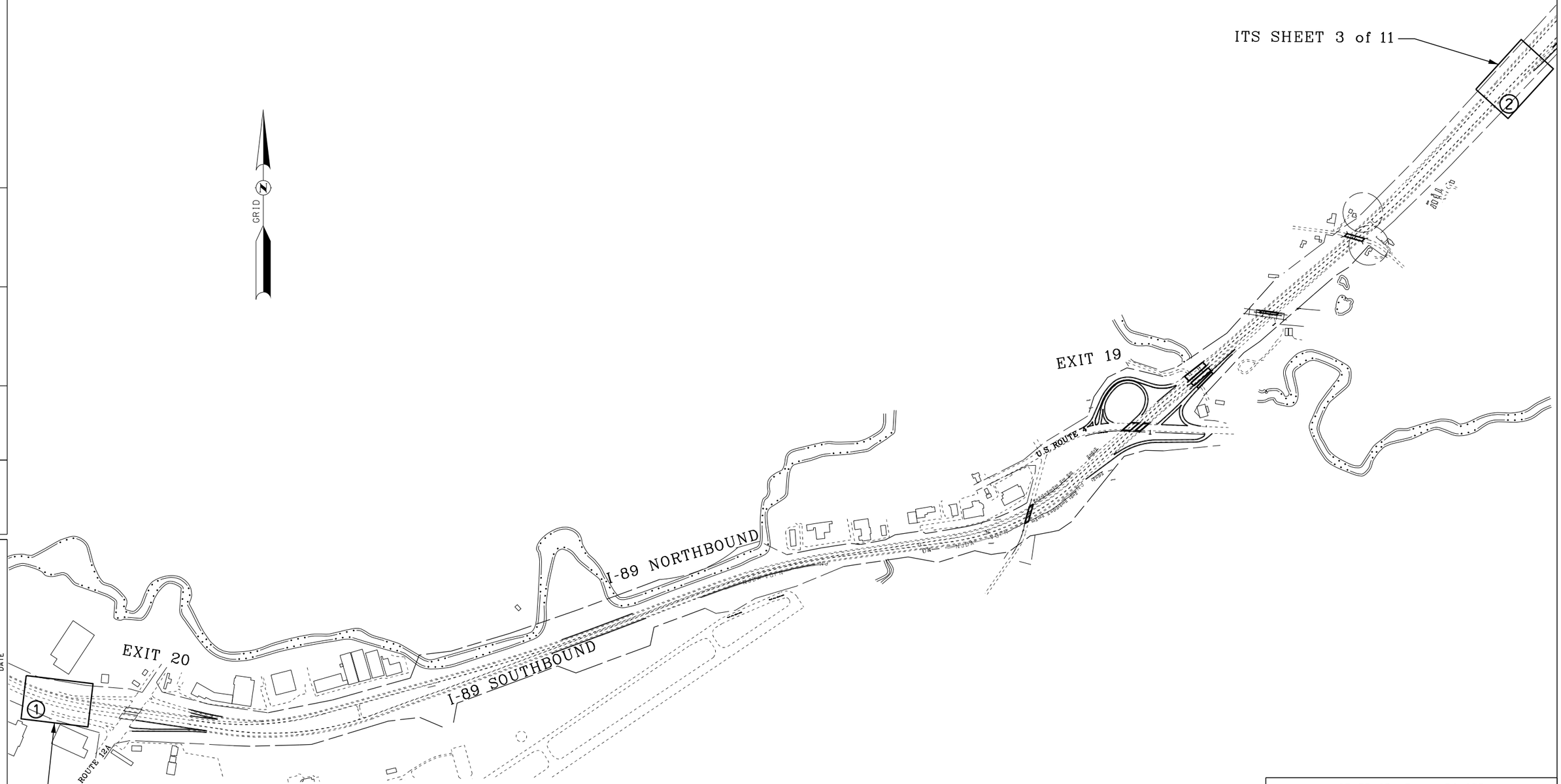
DIVIDED HIGHWAY, MULTI-LANE RAMP STRIPING LAYOUT

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
03-21-17	2017_dh_rs.dgn	16148	41	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE



① RWIS LOCATION

② DMS LOCATION

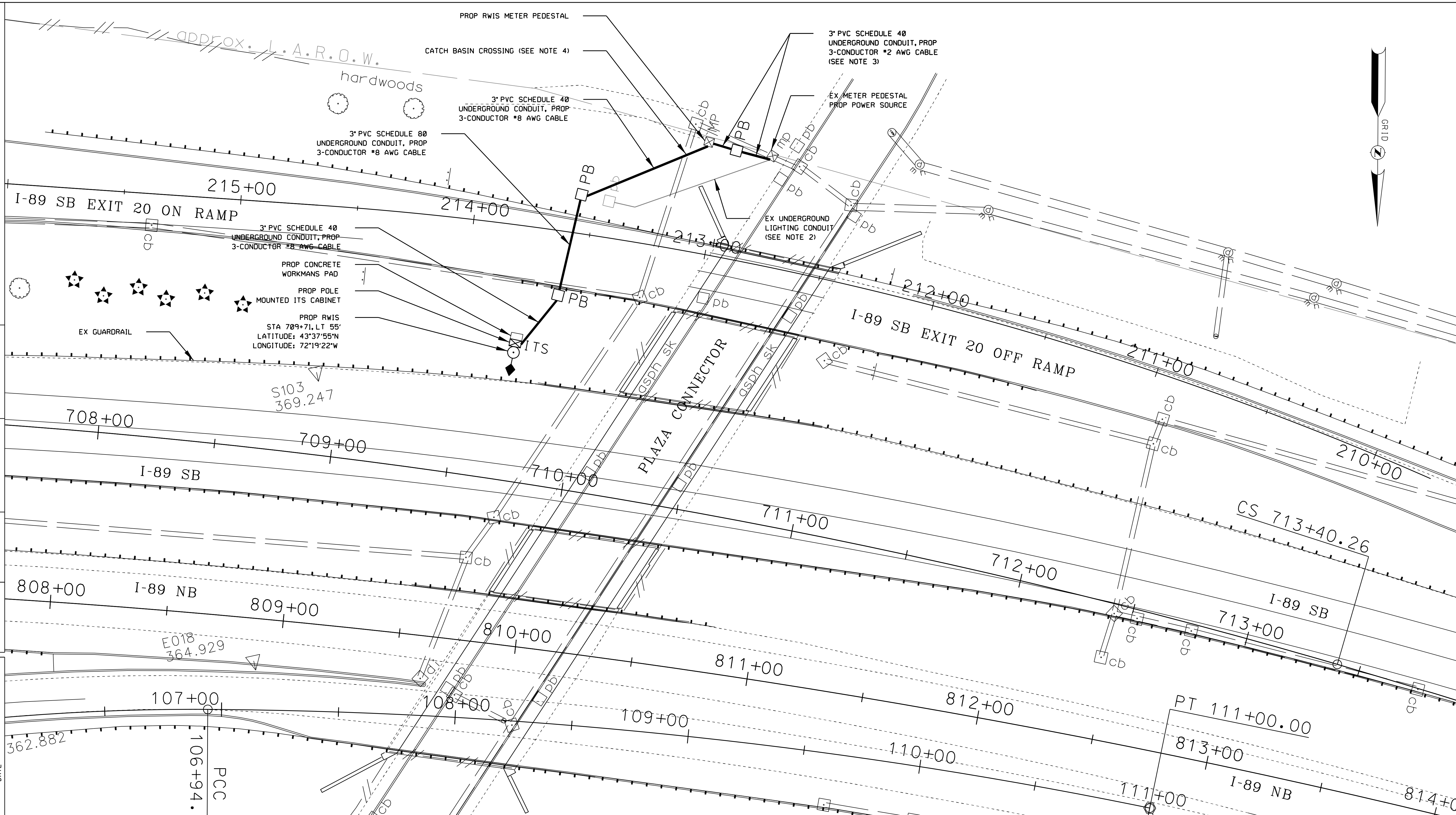
AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

ITS EQUIPMENT KEY PLAN
ITS SHEET 1 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 ITS LOC	16148	42	600



NOTES

1. EXISTING UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST INFORMATION AVAILABLE AND ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CORRECTNESS AND COMPLETENESS OF THIS INFORMATION IS NOT GUARANTEED.

2. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL UTILIITIES PRIOR TO STARTING WORK AND CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPACTION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

3. POWER TO THE PROPOSED METER PEDESTAL SHALL BE CONNECTED DIRECTLY FROM THE POWER SOURCE AND NOT PASSED THROUGH THE EXISTING METER TO AVOID DOUBLE METERING/DOUBLE CHARGING.

4. CONTRACTOR SHALL PROVIDE ADEQUATE CLEARANCE BETWEEN PROPOSED CONDUIT AND EXISTING CATCH BASIN.

20 0 20 40

SCALE IN FEET

LEGEND

◆⊙ ROAD AND WEATHER INFO SYSTEM (RWIS)

⊠ITS ITS EQUIPMENT CABINET

AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

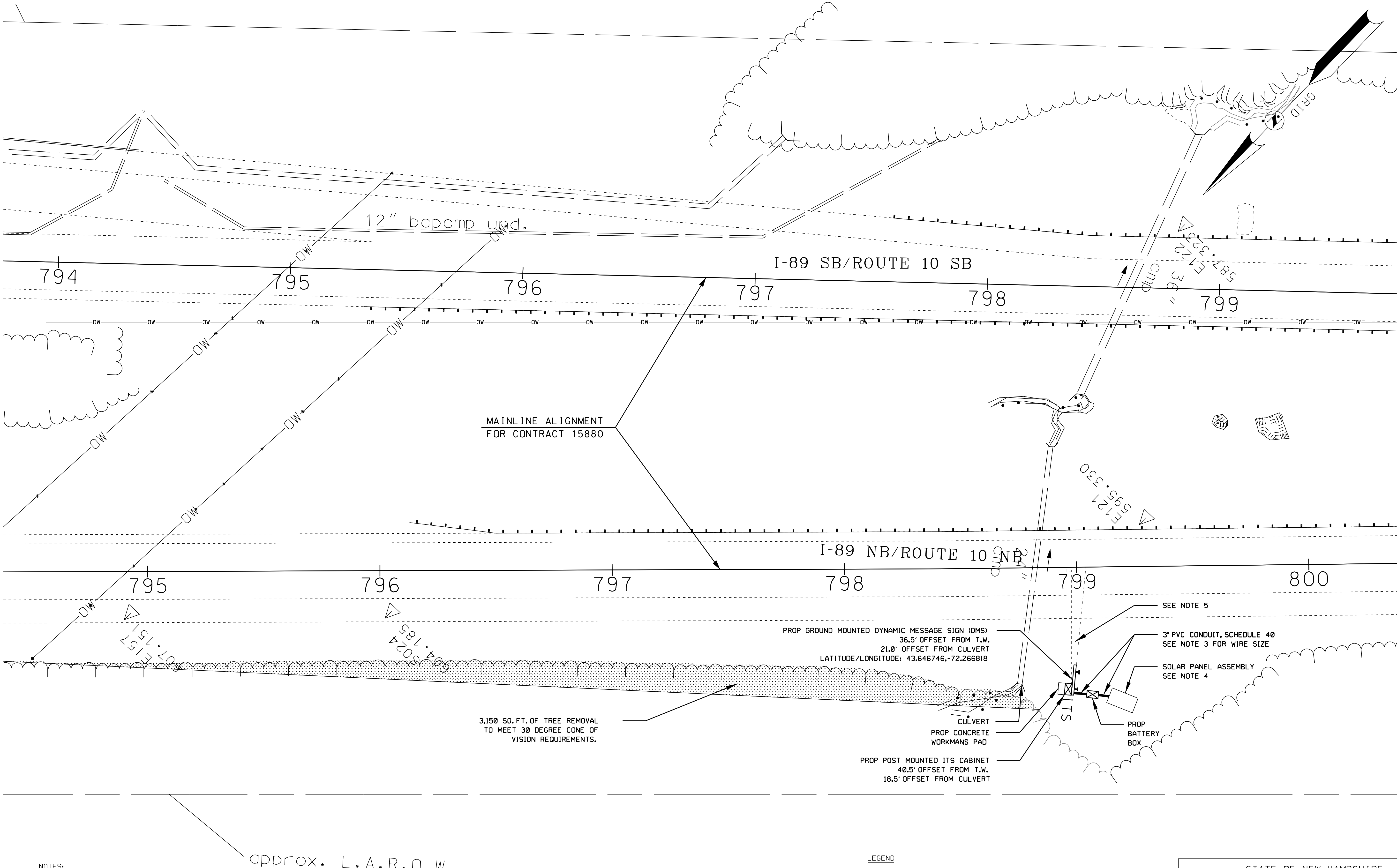
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

RWIS PLAN
ITS SHEET 2 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 rwis plan	16148	43	600

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED AECOM	DATE 07/2017	
NEW DESIGN AECOM	DATE 07/2017	
SHEET CHECKED CC	DATE 07/2017	
AS BUILT DETAILS	DATE	



NOTES:

1. CONTRACTOR SHALL PROVIDE SOLAR PANEL ARRAY AS PER SPECIAL PROVISION SECTION 677.
2. SOLAR ARRAY TO BE POSITIONED TO FACE A BEARING OF 180 DEGREES WITH AN ANGLE OF 58 DEGREES FROM VERTICAL FOR MAXIMUM SOLAR EXPOSURE.
3. WIRE SIZE TO BE DETERMINED BY SOLAR POWER MANUFACTURER.
4. CONTRACTOR SHALL NOT CONSTRUCT SOLAR PANEL ARRAY OR DMS WITHIN 30 FEET FROM EDGE OF TRAVEL WAY.
5. CONTRACTOR SHALL ROTATE DMS 2 DEGREES CLOCKWISE FROM ROADWAY TANGENT LINE.

20 0 20 40

SCALE IN FEET

LEGEND

(symbol)	GROUND MOUNTED DYNAMIC MESSAGE SIGN (DMS)
⊠ITS	ITS EQUIPMENT CABINET
⊠	BATTERY BOX

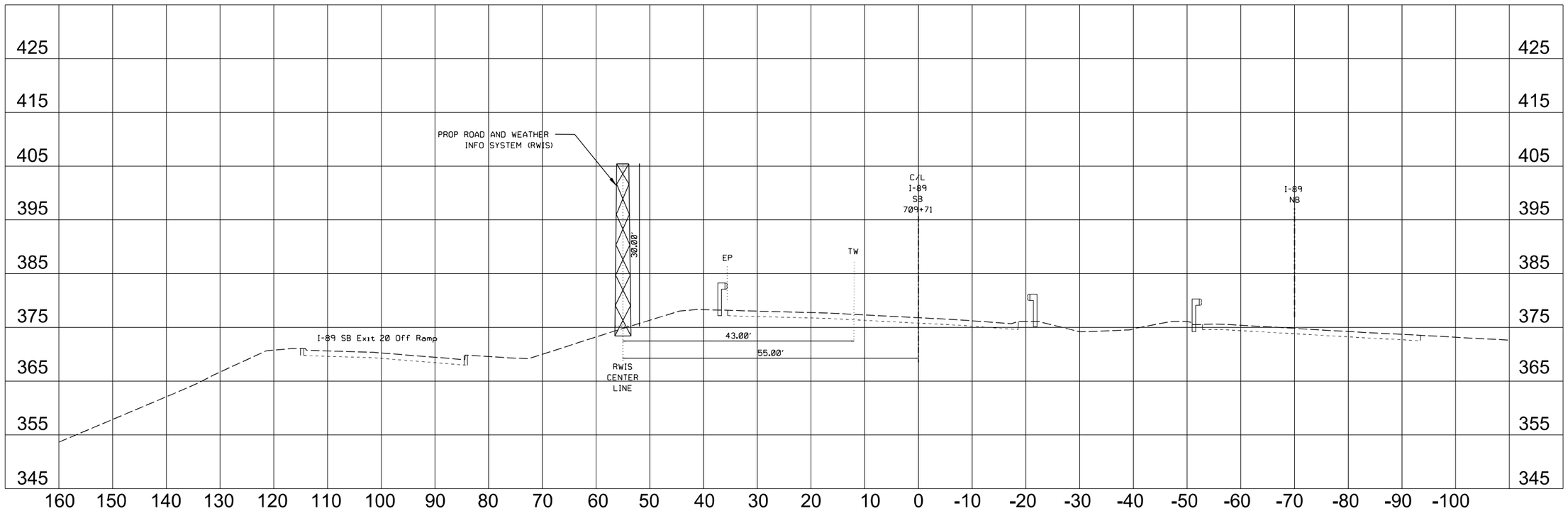
AECOM Imagine it. Delivered.

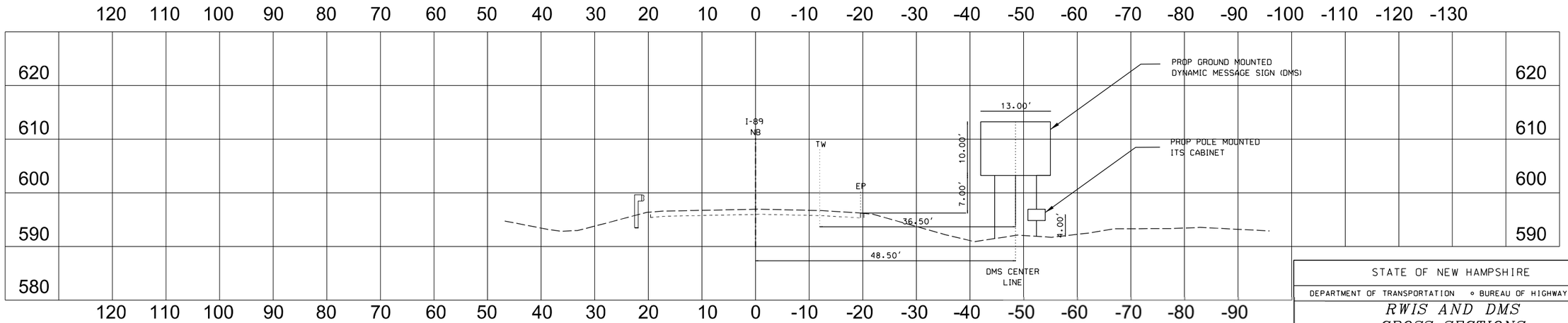
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

DMS PLAN
ITS SHEET 3 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 DMS PLAN	16148	44	600





REVISIONS AFTER PROPOSAL

DESCRIPTION	STATION	STATION	DATE	NUMBER

SDR PROCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE

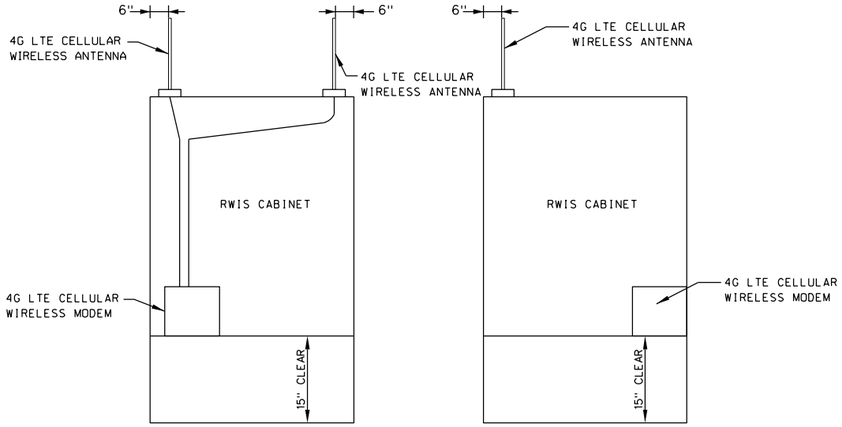
AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

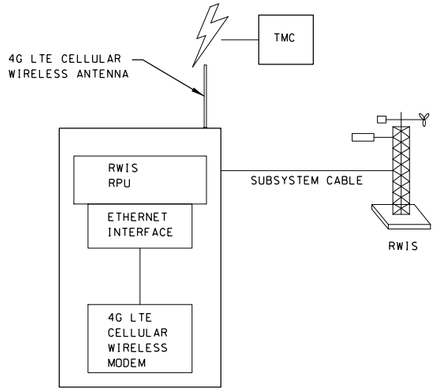
RWIS AND DMS CROSS SECTIONS ITS SHEET 4 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 ITS XS	16148	45	600



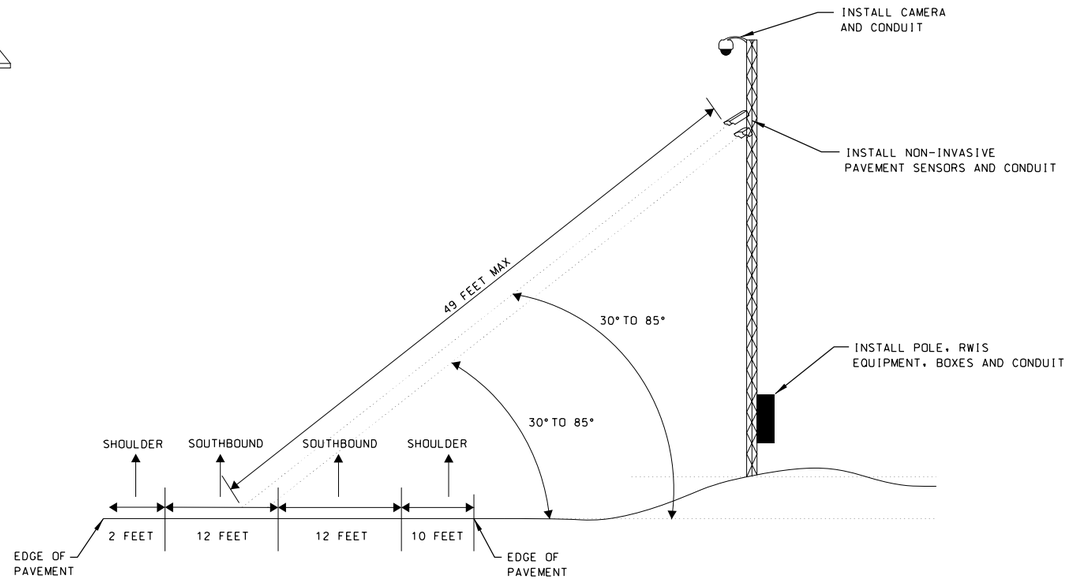
WIRELESS ANTENNA MOUNTING

N.T.S.



SYSTEM BLOCK DIAGRAM

N.T.S.



RWIS INSTALLATION DETAIL

N.T.S.

RWIS GENERAL NOTES:

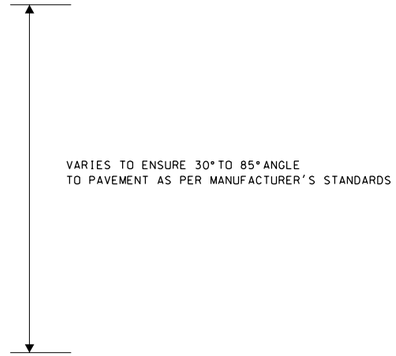
1. THE MOUNTING HEIGHTS FOR ATMOSPHERIC SENSORS, AND REMOTE PROCESSING UNIT MUST BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY NHDOT.
2. SUBMIT SHOP DRAWINGS OF RWIS STRUCTURE AND FOUNDATION FOR REVIEW AND APPROVAL.
3. INSTALL ROADWAY SENSORS AS SHOWN, AND AS PER MANUFACTURER'S RECOMMENDATION.
4. RPU MOUNTING LOCATION TO VARY AS TO NOT INTERFERE WITH HINGED TOWER ACCESS BASED ON SITE CONDITIONS, TOWER MUST FOLD DOWN PARALLEL TO ROADWAY.
5. PROVIDE STANDARD AND WEATHERPROOF SERVICE ENTRANCES FOR THE CABINET, AND SENSORS/OTHER EQUIPMENT AS PER NEMA 4X REQUIREMENTS.
6. DIRECTION OF TRAVEL RELATIVE TO RWIS IS DEPENDENT ON RWIS LOCATION (ROADSIDE OR MEDIAN).
7. DISTANCE FROM TRAVEL WAY MUST BE IN ACCORDANCE WITH THE PROJECT DESIGN DOCUMENTS AND GREATER THAN OR EQUAL TO MINIMUM CLEAR ZONE REQUIREMENTS PER ROADSIDE DESIGN GUIDE.

RWIS INSTALLATION NOTES:

1. TREES NEED TO BE REMOVED TO PROVIDE A CLEAR LINE OF SIGHT FOR THE CCTV, UP TO 1000' IN EACH DIRECTION.
2. LOCATIONS ARE APPROXIMATE. ALL STRUCTURES SHALL BE VERIFIED BY THE ENGINEER PRIOR TO CONSTRUCTION.
3. POWER SOURCE AS LOCATED ON THE PLANS.
4. ALL INSTALLATIONS SHALL BE IN CONFORMANCE WITH NHDOT STANDARDS.
5. ELECTRICAL SUPPLY SYSTEM SHALL BE FURNISHED AND INSTALLED ACCORDING TO THE ELECTRICAL LAYOUT AND ALL CALCULATIONS AND DESIGNS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

WIRELESS ANTENNA MOUNTING NOTES:

1. MOUNT THE 4G LTE CELLULAR WIRELESS ANTENNAE ON TOP OF RWIS CABINET. MOUNT THE MODEM WITHIN THE CABINET.
2. LOCATE THE ANTENNAE SO AS NOT TO INTERFERE WITH CABINET FAN/LIGHT.
3. SUBMIT RWIS CABINET LAYOUT WITH ANTENNAE/MODEM FOR APPROVAL.
4. PRE-DRILL HOLES FOR ANTENNAE MOUNTING DURING FABRICATION.
5. HOLES SHALL BE SEALED AND MADE WATER TIGHT.
6. HOLES DRILLED ONLY ON SIDES OR BOTTOM OF CABINET (PER ITS SPECS).



REVISIONS AFTER PROPOSAL			
STATION	DATE	NUMBER	DESCRIPTION

SDR PROCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE

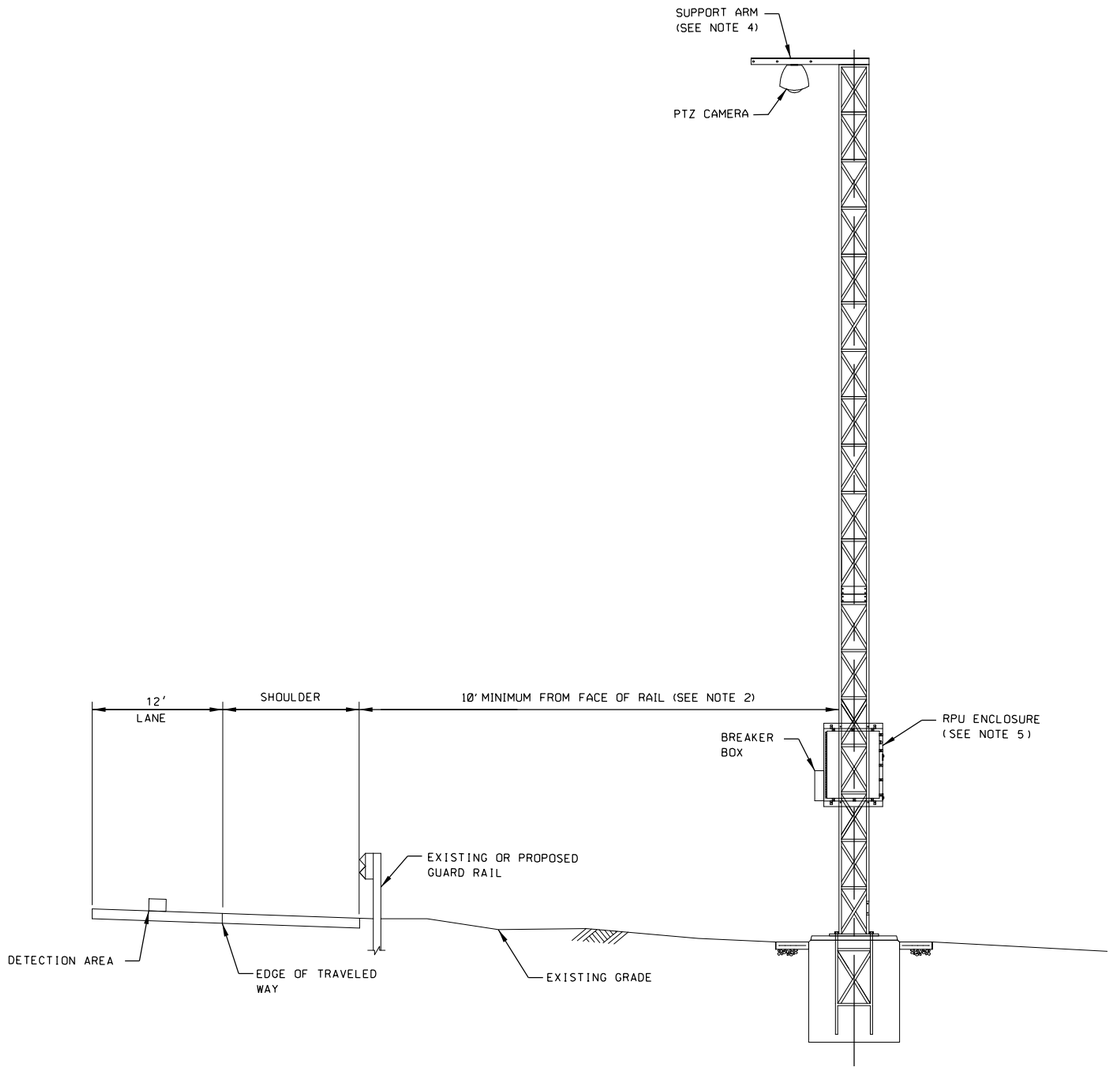
AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ○ TRAFFIC BUREAU

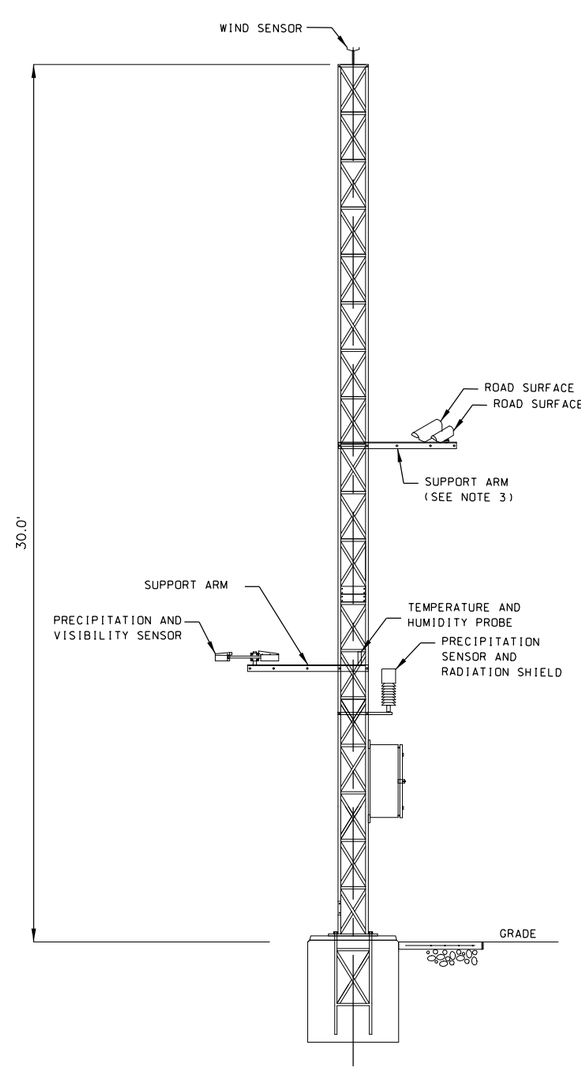
RWIS GENERAL DETAIL
ITS SHEET 5 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 RWIS DET	16148	46	600



ELEVATION VIEW

N.T.S.



SIDE VIEW

N.T.S.

NOTES:

1. TOWER SHALL BE CONSTRUCTED TO FOLD DOWN PARALLEL TO THE ROADWAY WITH THE DIRECTION OF TRAVEL.
2. ADJUST LOCATION OF TOWER AND FOUNDATION TO MEET SETBACK REQUIREMENT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, AND CLEAR ZONE REQUIREMENTS.
3. LOCATE SUPPORT ARM FOR ROAD SURFACE TEMPERATURE SENSOR AND ROAD SURFACE CONDITION SENSOR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. LOCATE SUPPORT ARM FOR CCTV CAMERA TO MAXIMIZE VIEW.
5. OPTIONALLY, RPU ENCLOSURE CAN BE GROUND-MOUNTED.
6. SUBMIT RPU ENCLOSURE AND BATTERY LAYOUT AND WIRING FOR APPROVAL BY THE NHDOT PRIOR TO INSTALLATION.
7. DETAILS AND NOTES PROVIDED ON THIS SHEET MAY BE USED FOR THE DELIVERY AND INSTALLATION OF THESE SYSTEMS. THESE DRAWINGS ARE NOT INTENDED TO REPLACE STANDARD PRACTICES, THE NTCIP PROTOCOLS, ENGINEERING PRACTICES, AND DEVICE MANUFACTURES RECOMMENDATION IN THE DESIGN OF THESE SYSTEMS.

NUMBER	DATE	STATION	DESCRIPTION	STATION
			REVISIONS AFTER PROPOSAL	

SDR PROCCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE

AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ○ TRAFFIC BUREAU

RWIS TOWER DETAIL
ITS SHEET 6 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 RWIS DET1	16148	47	600

DRILLED SHAFT FOUNDATION

QUANTITIES			
ITEM NO.*	ITEM DESCRIPTION	UNIT	QUANTITY
520.1	CONCRETE CLASS A	CY	1.6
534.3	WATER REPELLENT (SILANE-SILOXANE)	GAL	1
544.	REINFORCING STEEL	LB	65

* ITEM NUMBERS ARE FOR SPECIFICATION REFERENCE ONLY.
NO SEPARATE PAYMENT WILL BE MADE FOR THESE ITEMS.

NOTES:

1. THE FOUNDATION DESIGN IS PRELIMINARY AND IS BASED ON ESTIMATED TOWER LOADS AS CALCULATED PER THE SPECIFICATIONS LISTED IN NOTE 11, BELOW. THE CONTRACTOR SHALL SUBMIT THE TOWER DESIGN WITH LRFD DESIGN LOADS IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR ITEM 677.4201. WHEN THE DESIGN LOADS ARE RECEIVED, NHDOT WILL VERIFY OR MODIFY THE PRELIMINARY FOUNDATION DESIGN FOR FINAL DESIGN IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CURRENT EDITION.

2. THE CIRCULAR SHAFT FOUNDATION SHALL BE CONSTRUCTED IN A DRILLED HOLE IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR ITEM 677.4201, AND THE CONTRACT PLANS. ALL WORK AND MATERIALS SHALL BE PAID UNDER ITEM 677.4201, RWIS FOUNDATION, AND SHALL COMPLY WITH THE SPECIFICATIONS FOR THE FOLLOWING ITEMS, AS APPLICABLE:
   - ITEM 520.1, CONCRETE CLASS A
   - ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE)
   - ITEM 544, REINFORCING STEEL

3. WHERE FILL EMBANKMENT IS TO BE CONSTRUCTED ABOVE THE EXISTING GROUND, THE EMBANKMENT SHALL BE BUILT PRIOR TO CONSTRUCTING THE SHAFTS. PLACEMENT AND COMPACTION OF THE FILL SHALL BE IN ACCORDANCE WITH SECTION 203.

4. WHERE BEDROCK IS ENCOUNTERED WITHIN THE SPECIFIED SHAFT LENGTH, THE SHAFT SHALL EXTEND A MINIMUM OF 4 FEET INTO SOUND BEDROCK. IT IS NOT NECESSARY TO EXTEND THE SHAFT IN BEDROCK BEYOND THE SPECIFIED SOIL-BASED LENGTH GIVEN ON THIS PLAN.

5. THE FOUNDATION SHALL HAVE AN EXPOSED LENGTH NO GREATER THAN 4 INCHES MEASURED ON THE HIGH GROUND SIDE OF THE SHAFT.

6. CAST-IN-PLACE CONCRETE SHALL BE IN ACCORDANCE WITH ITEM 677.4201 SPECIAL PROVISION. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER FOR VISUAL INSPECTION OF THE REINFORCING BARS AND ANCHOR BOLTS PRIOR TO CONCRETE PLACEMENT.

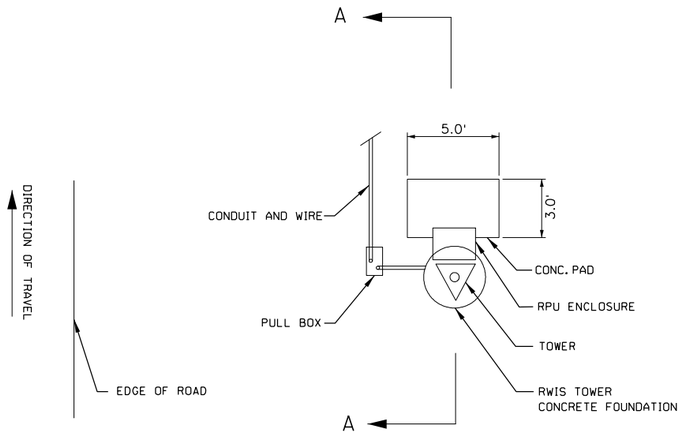
7. COAT ALL SURFACES OF THE DRILLED SHAFT AND WORK PAD TO 1'-0" BELOW FINISHED GRADE WITH WATER REPELLENT (SILANE-SILOXANE) IN ACCORDANCE WITH SECTION 534.

8. TRENCHES FOR THE CONDUITS SHALL BE HAND DUG NEAR THE PROPOSED FOUNDATION, DISTURBING AS LITTLE SOIL AS POSSIBLE IN PLACING OF THE CONDUITS (APPROXIMATELY 2.5 FT MAXIMUM DOWN FROM THE GROUND SURFACE). CONDUIT SHALL BE IN PLACE BEFORE POURING CONCRETE. THE RESULTING TRENCHES SHALL BE BACKFILLED WITH STRUCTURAL FILL CONFORMING TO SECTION 508.

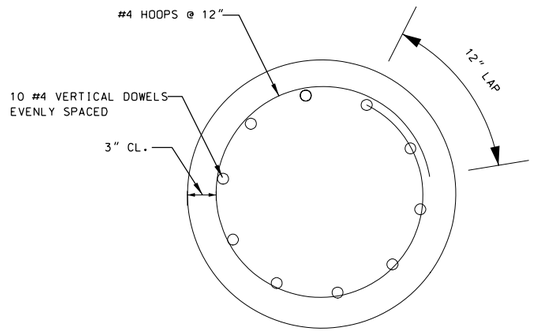
9. ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31/M31M, GRADE 60 (420), AND SHALL HAVE CLEAR COVER AS NOTED ON DETAILS.

10. THE EXPOSED LENGTH OF THE ANCHOR ROD BETWEEN THE TOP OF THE FOUNDATION AND THE BOTTOM OF THE LEVELING NUT SHOULD NOT EXCEED ONE ROD DIAMETER (MAXIMUM) OR 1-INCH (PREFERRED).

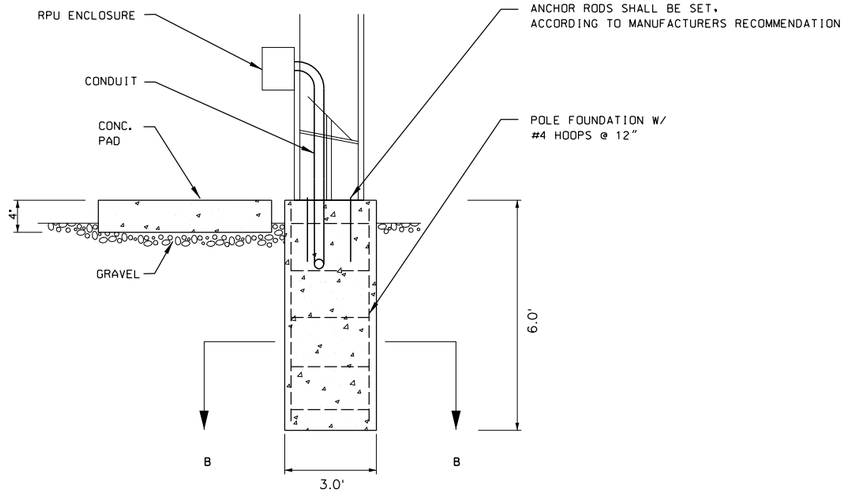
11. SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, CURRENT EDITION; AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CURRENT EDITION; NHDOT STANDARD SPECIFICATIONS CURRENT EDITION; AND THE SPECIAL PROVISIONS FOR ITEM 677.4201



PAD PLAN - TYPICAL
N.T.S.



SECTION B-B
N.T.S.



SECTION A-A
N.T.S.

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

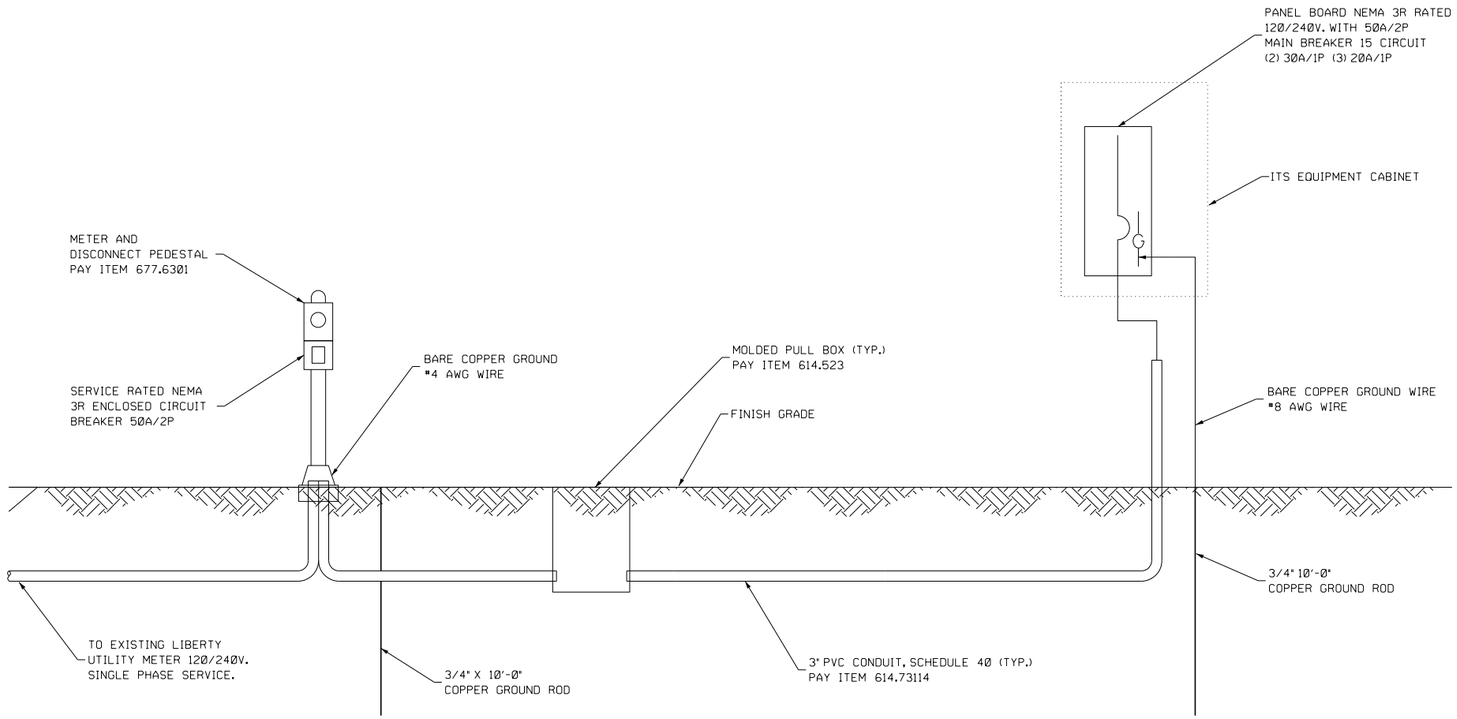
SDR PROCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE

AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ TRAFFIC BUREAU

RWIS FOUNDATION DETAIL
ITS SHEET 7 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 RWIS DET2	16148	48	600



ONE-LINE DIAGRAM

N.T.S.

NOTES:

1. UNLESS OTHERWISE NOTED, ITEMS PAID FOR UNDER ITEM 677.4201

REVISIONS AFTER PROPOSAL

DESCRIPTION	STATION	STATION	DATE	NUMBER

SDR PROCCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE

AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ○ TRAFFIC BUREAU

RWIS UTILITY SERVICE DETAIL
ITS SHEET 8 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 RWIS UTIL	16148	49	600

MATERIALS, SPECIFICATIONS, AND DESIGN ASSUMPTIONS

1. MATERIALS
   - FOUNDATION: CONCRETE CLASS A
   - POSTS: ASTM A992 STEEL, GALVANIZED IN ACCORDANCE WITH SECTION 550.2.9
   - SIGN-MOUNTING BRACKETS: 6061-T6 ALUMINUM
   - POST-MOUNTING HARDWARE: STAINLESS STEEL (SEE GENERAL NOTE #5)

2. SPECIFICATIONS
   - AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, CURRENT EDITION
   - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CURRENT EDITION
   - NHDOT 2016 STANDARD SPECIFICATIONS AS AMENDED
   - SPECIAL PROVISION FOR ITEM 677.120X

3. DESIGN ASSUMPTIONS
   - WIND: 300-YEAR MRI, 110 MPH BASIC WIND SPEED
   - DEFLECTION: $\frac{1}{2}$" MAXIMUM AT TOP OF FOUNDATION
   - WATER TABLE: 1'-0" BELOW FINISHED GRADE

GENERAL NOTES

1. SIGNS SHALL BE PROVIDED FOR LOCATIONS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. DIMENSIONS, ELEVATIONS, SLOPES, AND SITUATIONS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL CASES WILL DEPEND ON FIELD CONDITIONS.

2. THE MINIMUM HORIZONTAL CLEARANCE TO THE NEAR EDGE OF THE DMS SHALL BE 7'-0" FROM FACE OF BEAM GUARDRAIL. OTHER TYPES OF GUARDRAIL OR BARRIER MAY REQUIRE A DIFFERENT OFFSET.

3. POST LENGTH TO BE DETERMINED BY SIGN SIZE AND LOCATION. EXACT FIELD LOCATION TO BE DETERMINED BY THE ENGINEER. POSTS SHALL BE FLUSH WITH TOP OF DMS.

4. ALL WORK AND MATERIALS SHALL BE PAID UNDER ITEM 677.120X, PERMANENT FIXED LOCATION DYNAMIC MESSAGE SIGN (DMS), AND SHALL COMPLY WITH THE SPECIFICATIONS FOR THE APPLICABLE ITEMS.

5. MOUNTING BRACKETS SHALL BE CONNECTED TO POSTS WITH TWO BOLT ASSEMBLIES PER BRACKET-POST INTERSECTION. BOLT ASSEMBLIES SHALL CONSIST OF THE FOLLOWING:
   - $\frac{1}{2}$" ASTM F593C OR F593G HEX HEAD BOLT
   - $\frac{1}{2}$" STAINLESS WASHERS, ONE EACH SIDE OF ASSEMBLY
   - $\frac{1}{2}$" ASTM F594 GROUP 1 OR GROUP 2 HEX LOCK NUT

FOUNDATION NOTES

1. THE CIRCULAR SHAFT FOUNDATION SHALL BE CONSTRUCTED IN A DRILLED OR EXCAVATED HOLE.

2. WHERE FILL EMBANKMENT IS TO BE CONSTRUCTED ABOVE THE EXISTING GROUND, THE EMBANKMENT SHALL BE BUILT PRIOR TO CONSTRUCTING THE SHAFTS. PLACEMENT AND COMPACTION OF THE FILL SHALL BE IN ACCORDANCE WITH SECTION 203.

3. WHERE BEDROCK IS ENCOUNTERED WITHIN THE SPECIFIED SHAFT LENGTH, THE SHAFT SHALL EXTEND A MINIMUM OF 4 FEET INTO SOUND BEDROCK. IT IS NOT NECESSARY TO EXTEND THE SHAFT IN BEDROCK BEYOND THE SPECIFIED SOIL-BASED LENGTH GIVEN ON THIS PLAN.

4. THE FOUNDATION SHALL HAVE AN EXPOSED LENGTH NO GREATER THAN 4 INCHES MEASURED ON THE HIGH GROUND SIDE OF THE SHAFT.

5. AS AN ALTERNATIVE TO A DRILLED HOLE, THE CIRCULAR FOUNDATION MAY BE CONSTRUCTED IN AN EXCAVATED HOLE. THE FOUNDATION SHALL BE CAST IN PLACE USING FORMS (WHICH MUST BE REMOVED). THE EXCAVATED HOLE SHALL BE AT LEAST 3 FT CLEAR OF THE FOUNDATION SIDES AND 1 FT DEEPER THAN THE FOUNDATION. ANY BEDROCK ENCOUNTERED SHALL BE REMOVED TO THESE SAME LIMITS. IF THIS IS NOT POSSIBLE, THE ENGINEER SHALL REQUEST A REDESIGN. THE EXCAVATED HOLE SHALL BE BACKFILLED TO THE LIMITS OF EXCAVATION WITH STRUCTURAL FILL IN ACCORDANCE WITH SECTION 508. NO PAYMENT SHALL BE MADE FOR EXCAVATION OR BACKFILL.

6. IF THE CONTRACTOR PROPOSES TO USE A DMS THAT EXCEEDS THE DIMENSIONS SHOWN, THE CONTRACTOR SHALL SUBMIT TO THE DEPARTMENT FOR APPROVAL A FOUNDATION AND SUPPORT POST DESIGN, STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE, FOR THE PROPOSED DMS AND CONTROL BOX SYSTEM.

PROCEDURE FOR SELECTING POST SECTIONS

1. DETERMINE VALUES FOR W, H, & L AS INDICATED IN DRAWING
   W = MAXIMUM WIDTH OF DMS
   H = MAXIMUM HEIGHT OF DMS
   L = MAXIMUM DISTANCE BETWEEN TOP OF FOOTING AND BOTTOM OF DMS. (SEE GENERAL NOTE NO. 3)

2. FOR DMS SIZES BETWEEN THOSE VALUES IN THE TABLE, USE NEXT HIGHEST FOOT VALUE.

3. ENTER TABLE WITH MAXIMUM VALUE OF "L" AND REQUIRED VALUES OF "W" AND "H" FOR SELECTION OF APPROPRIATE POST SECTION.

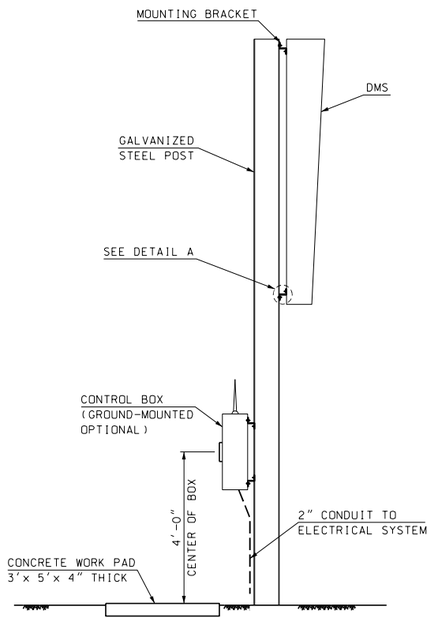
STEEL POST SELECTION

W	L	H						
		4'	5'	6'	7'	8'	9'	10'
6'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	12'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	14'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18
	16'	W6x15	W6x15	W6x15	W6x15	W8x18	W8x21	W8x21
7'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	12'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	14'	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18
	16'	W6x15	W6x15	W6x15	W6x15	W8x18	W8x21	W8x21
8'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	12'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18
	14'	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18	W8x21
	16'	W6x15	W6x15	W8x18	W8x18	W8x21	W8x21	W10x22
9'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	12'	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18
	14'	W6x15	W6x15	W6x15	W8x18	W8x18	W8x21	W8x21
	16'	W6x15	W6x15	W8x18	W8x21	W8x21	W10x22	W10x26
10'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18
	12'	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18	W8x18
	14'	W6x15	W6x15	W6x15	W8x18	W8x21	W8x21	W8x21
	16'	W6x15	W8x18	W8x21	W8x21	W10x22	W10x26	W10x26
11'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18
	12'	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18	W8x21
	14'	W6x15	W6x15	W8x18	W8x18	W8x21	W8x21	W10x22
	16'	W6x15	W8x18	W8x21	W8x21	W10x22	W10x26	W10x26
12'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18
	10'	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18
	12'	W6x15	W6x15	W6x15	W8x18	W8x18	W8x21	W8x21
	14'	W6x15	W6x15	W8x18	W8x18	W8x21	W10x22	W10x22
	16'	W6x15	W8x18	W8x21	W10x22	W10x26	W10x26	W12x26
13'	8'	W6x15	W6x15	W6x15	W6x15	W6x15	W6x15	W8x18
	10'	W6x15	W6x15	W6x15	W6x15	W8x18	W8x18	W8x18
	12'	W6x15	W6x15	W6x15	W8x18	W8x18	W8x21	W8x21
	14'	W6x15	W6x15	W8x18	W8x21	W8x21	W10x22	W10x26
	16'	W8x18	W8x21	W8x21	W10x22	W10x26	W10x26	W12x26

FOOTING QUANTITIES

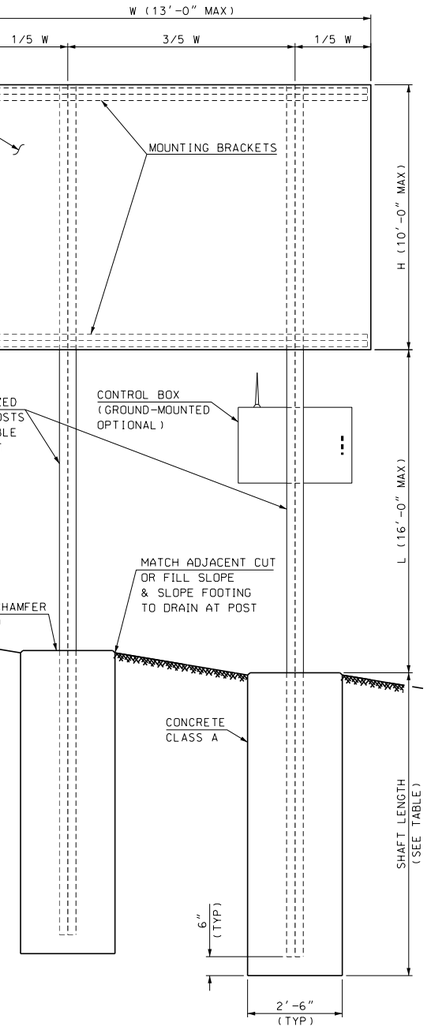
ITEM NO.*	ITEM DESCRIPTION	UNIT	QUANTITY (BY POST SIZE)					
			W6x15	W8x18	W8x21	W10x22	W10x26	W12x26
520.1	CONCRETE CLASS A	CY	3.1	3.5	3.7	3.7	3.9	4.0

* ITEM NUMBERS ARE FOR SPECIFICATION REFERENCE ONLY. NO SEPARATE PAYMENT WILL BE MADE FOR THESE ITEMS.



DMS SIDE ELEVATION

SCALE: $\frac{1}{2}$" = 1'-0"

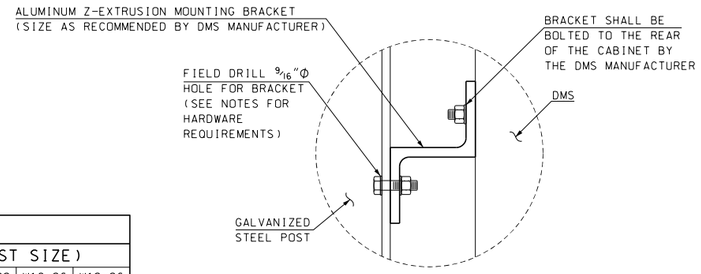


DMS FRONT ELEVATION

SCALE: $\frac{1}{2}$" = 1'-0"

SHAFT LENGTH

POST	LENGTH
W6x15	8'-6"
W8x18	9'-6"
W8x21	10'-0"
W10x22	10'-0"
W10x26	10'-6"
W12x26	11'-0"



DETAIL A

SCALE: 6" = 1'-0"

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

		DATE
SDR PROCCESSED	AECOM	07/2017
NEW DESIGN	AECOM	07/2017
SHEET CHECKED	CC	07/2017
AS BUILT DETAILS		DATE

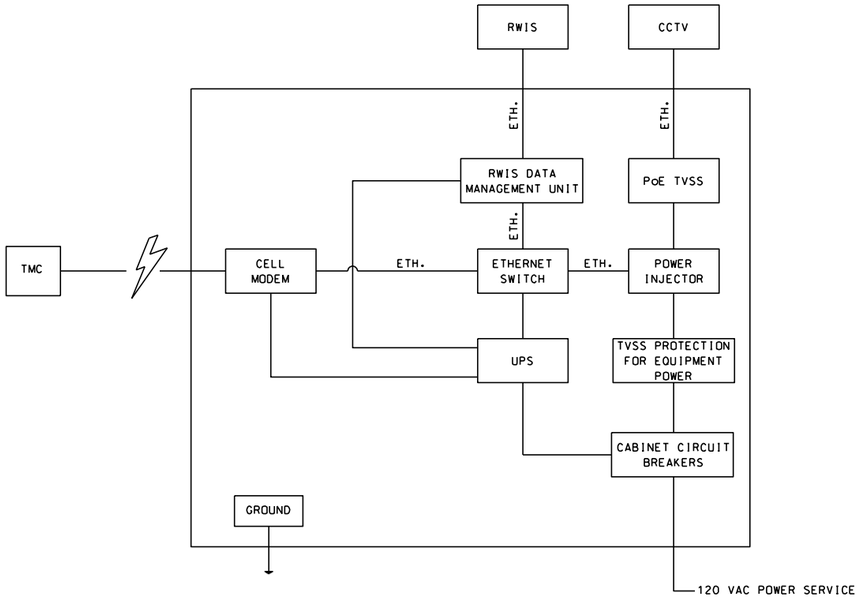
AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

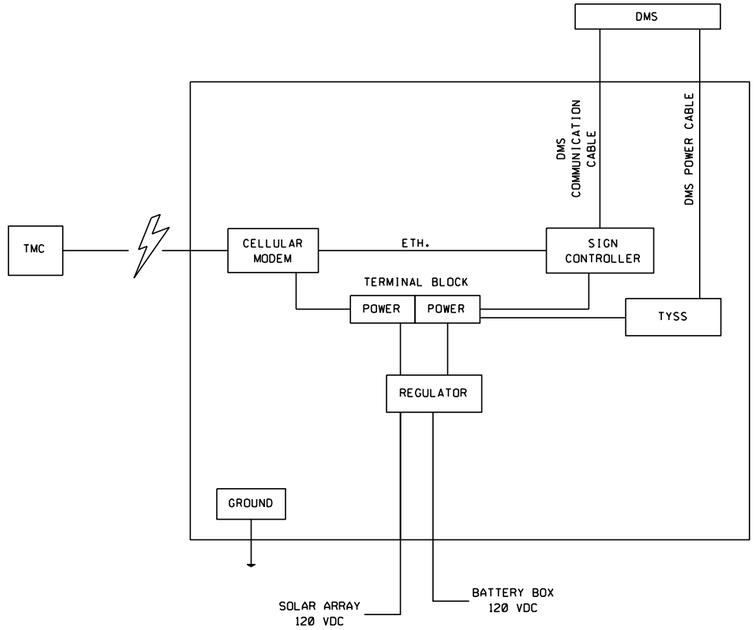
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

DMS DETAIL
ITS SHEET 9 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 DMS STD	16148	50	600



RWIS



DMS

NOTES:

1. ALL POWER CABLES FROM DMS, SOLAR ARRAY, AND BATTERY BOX TO BE PROPERLY SIZED AND PROVIDEDCONTRACTOR TO MEET NEC STANDARDS AND LOCAL CODES.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 07/2017
AS BUILT DETAILS		DATE

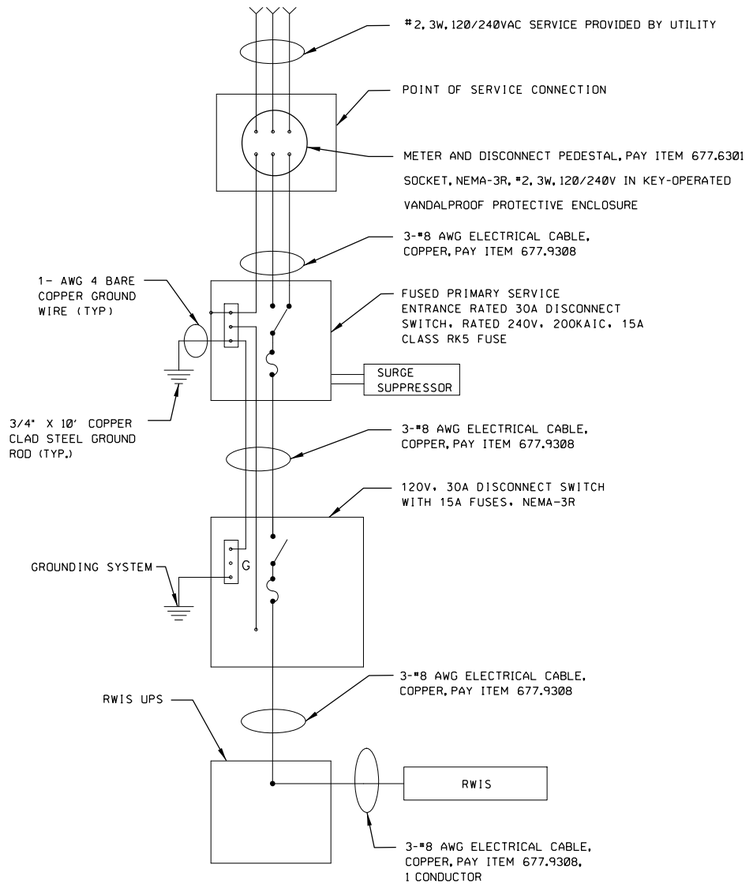
AECOM Imagine it. Delivered.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ TRAFFIC BUREAU

ITS COMMUNICATION SCHEMATICS
ITS SHEET 10 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 ITS COM	16148	51	600

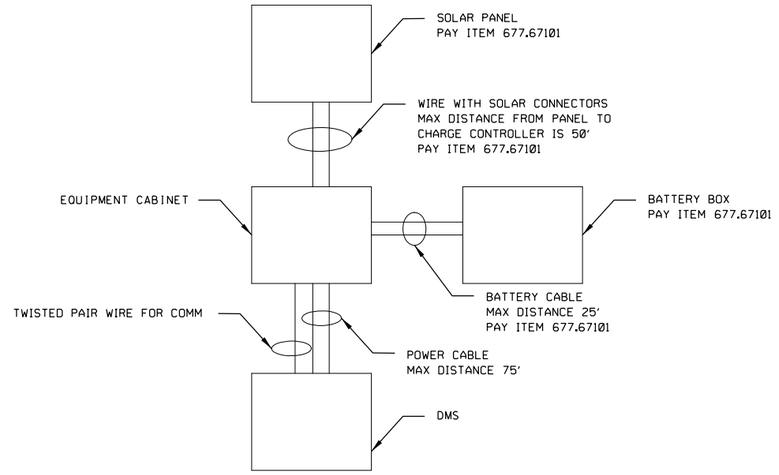


RWIS ELECTRIC SERVICE SCHEMATIC

N.T.S.

RWIS NOTES:

1. UNLESS OTHERWISE NOTED, ITEMS PAID FOR UNDER 677.4201



DMS ELECTRIC SERVICE SCHEMATIC

N.T.S.

DMS NOTES:

1. UNLESS OTHERWISE NOTED, ITEMS PAID FOR UNDER 677.1201
2. WIRE SIZE TO BE DETERMINED BY CONTRACTOR PER MANUFACTURERS RECOMMENDATION.

LEGEND

SWITCH FUSE GROUND

REVISIONS AFTER PROPOSAL

DESCRIPTION	STATION	STATION	NUMBER	DATE

SDR PROCESSED	AECOM	DATE 07/2017
NEW DESIGN	AECOM	DATE 07/2017
SHEET CHECKED	CC	DATE 01/2017
AS BUILT DETAILS		DATE

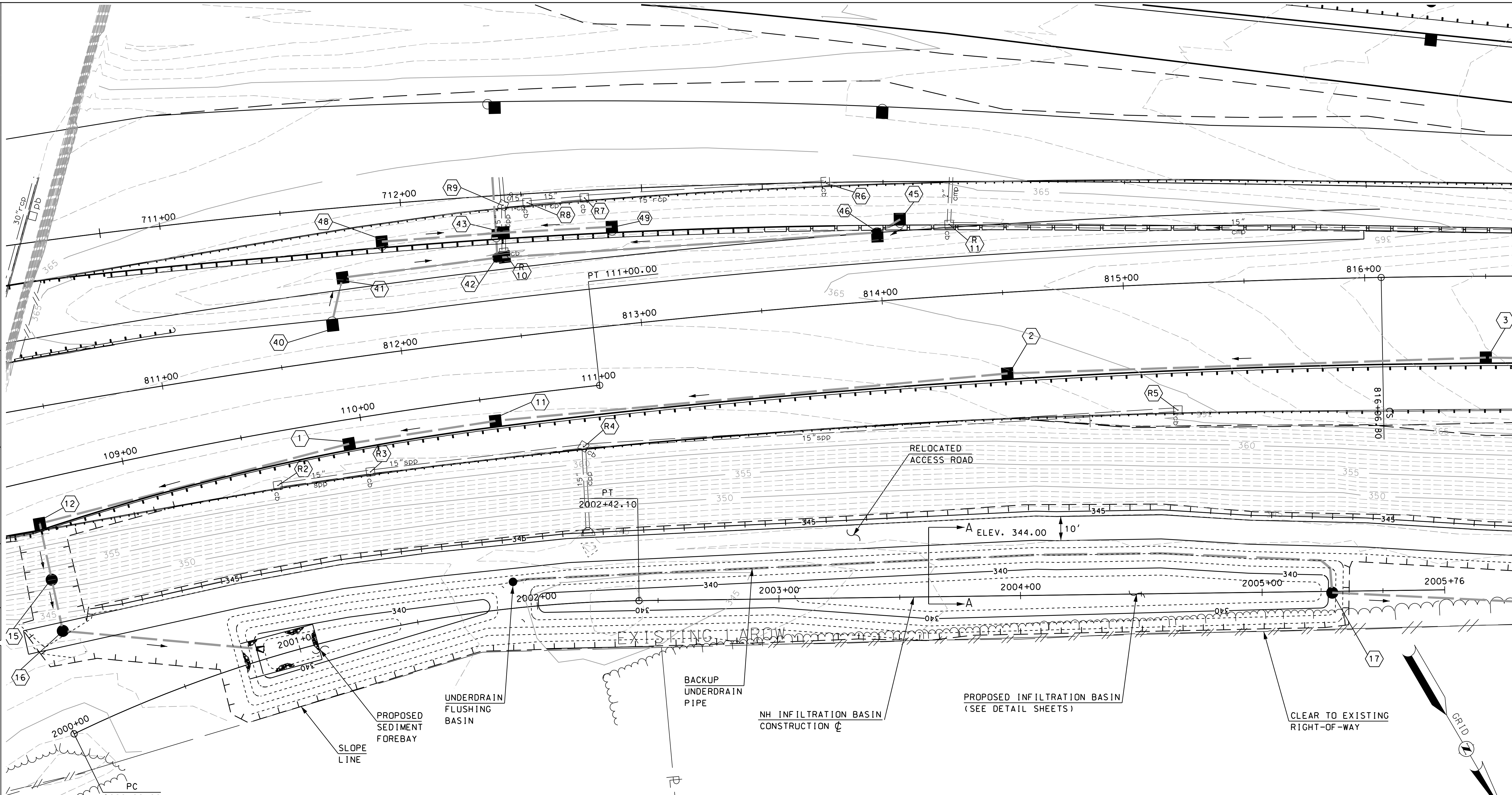
AECOM Imagine it. Delivered.

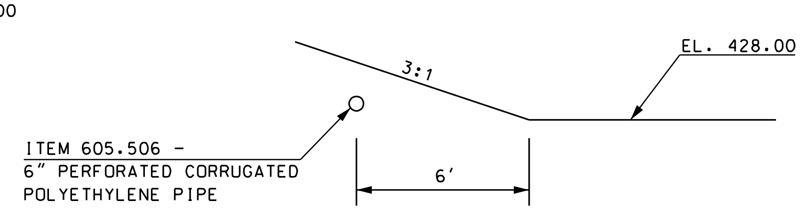
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ TRAFFIC BUREAU

ELECTRIC SCHEMATIC DETAIL
ITS SHEET 11 OF 11

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148 ITS ELEC	16148	52	600





SECTION A-A
NTS

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED NHDOT	DATE 04-2015	
NEW DESIGN MJ	DATE 04-2016	
SHEET CHECKED BRC	DATE 02-2018	
AS BUILT DETAILS	DATE	

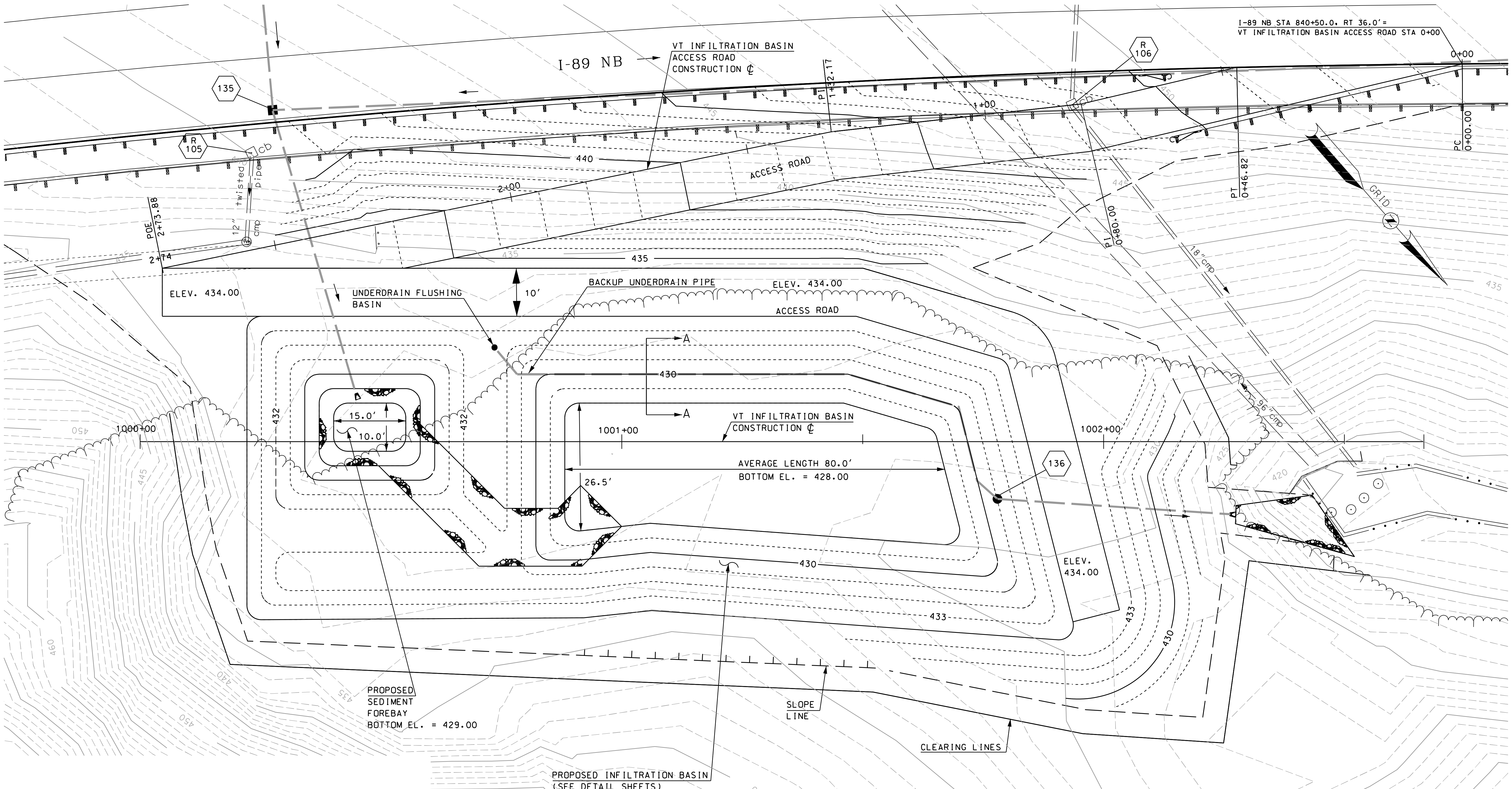
McFarland Johnson

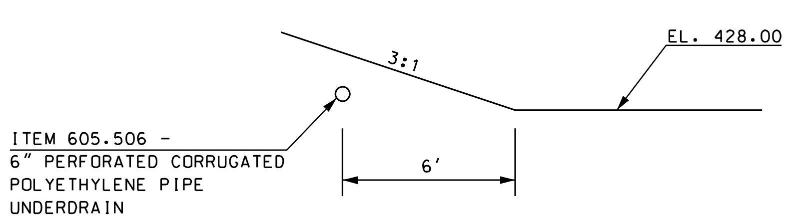
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH INFILTRATION BASIN GRADING PLAN 01

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148grd01	16148	53	600





SECTION A-A
NTS

20 0 10 20
SCALE IN FEET

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

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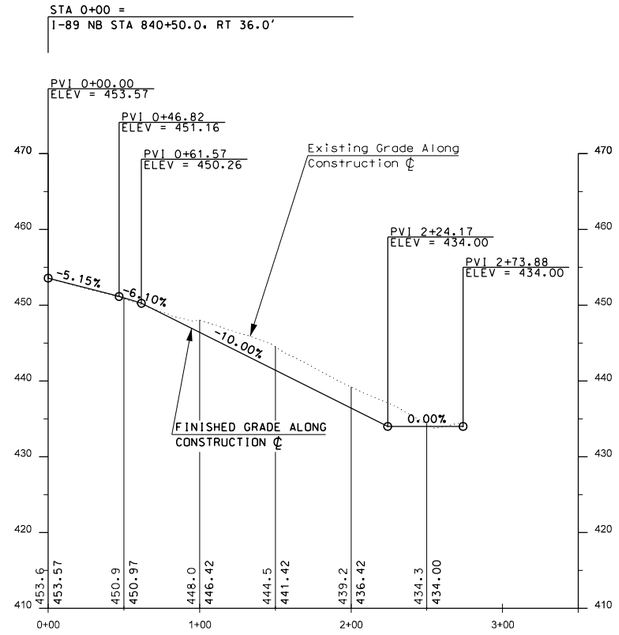
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

VT INFILTRATION BASIN
GRADING PLAN 02

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148grd02	16148	54	600



VT INFILTRATION BASIN ACCESS ROAD

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE

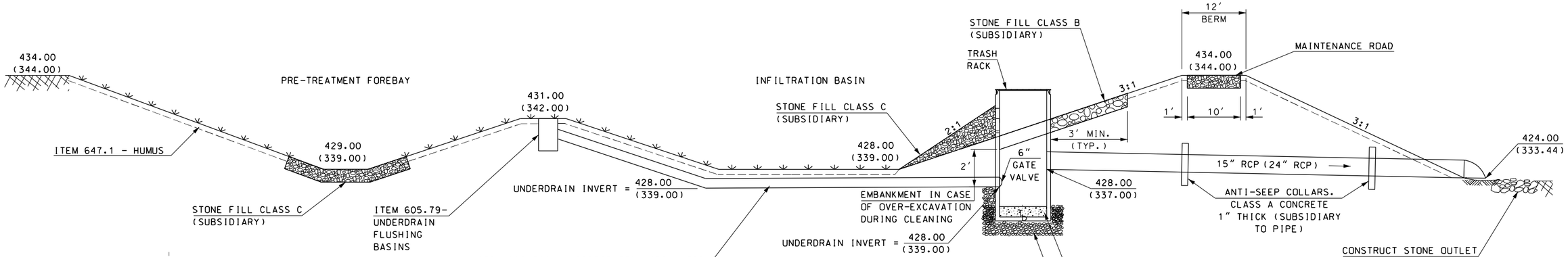
SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

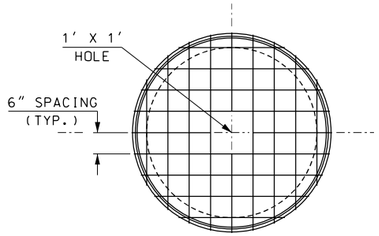
PROFILE - VT INFILTRATION BASIN ACCESS ROAD

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	55	600

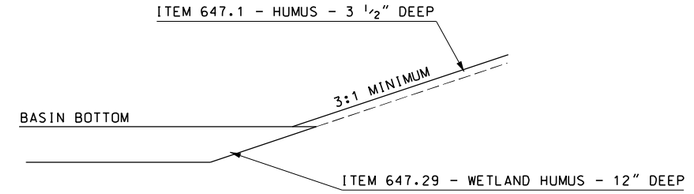


DESIGN STORM DISCHARGE ELEVATIONS				
	WQV	Q02	Q10	Q50
VT INFILTRATION BASIN	430.09	431.56	431.92	432.74
NH INFILTRATION BASIN	340.50	340.77	340.90	341.00

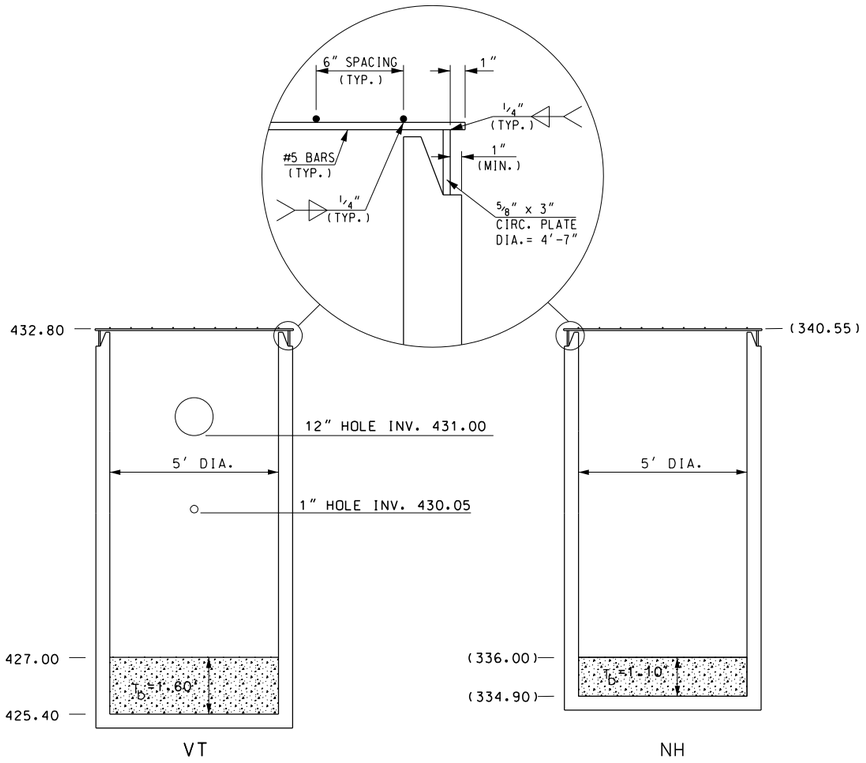
INFILTRATION BASIN TYPICAL SECTION
NOT TO SCALE



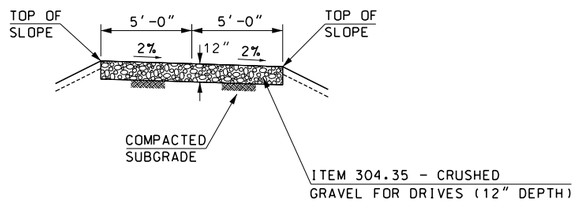
TRASH RACK
NOT TO SCALE



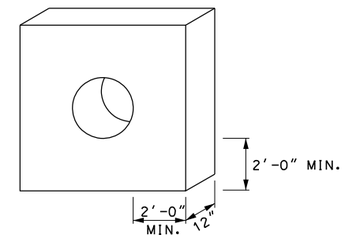
DETENTION EXCAVATION TYPICAL SECTION
NOT TO SCALE



OUTLET CONTROLL STRUCTURE
NOT TO SCALE



BMP MAINTENANCE ROAD TYPICAL SECTION
NOT TO SCALE



CAST-IN-PLACE
CONCRETE CLASS 'A' COLLAR
(SUBSIDIARY TO PIPE)

ANTI-SEEP COLLAR
NOT TO SCALE

GENERAL NOTES (INFILTRATION BASIN ONLY):

1. XXX.XX VT INFILTRATION BASIN
   (XXX.XX) NH INFILTRATION BASIN

2. AUDIT USE OF HEAVY MACHINERY IN INFILTRATION BED BOTTOM TO MINIMIZE COMPACTION OF SUBSOILS. IN CASE OF OVERCOMPACTION, RAKE OR ROTOTILL SUBGRADE TO A DEPTH OF 4" AND SMOOTH PRIOR TO SPREADING HUMUS.

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

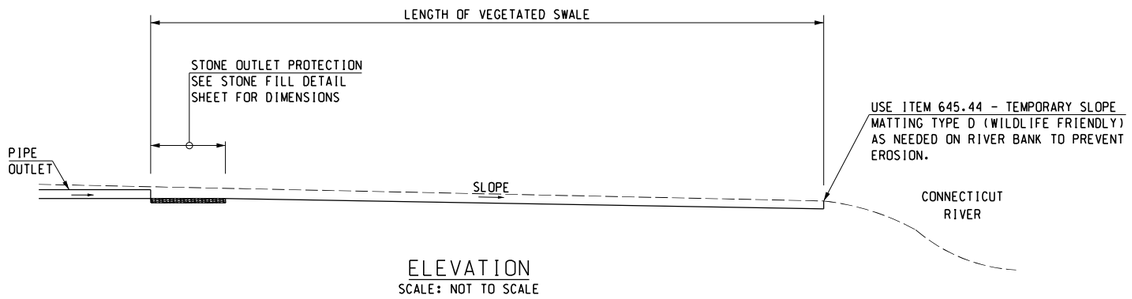
McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

INFILTRATION BASIN DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148grw	16148	56	600

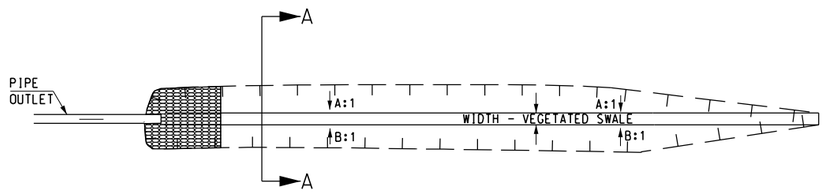
		VEGETATED SWALE						
NUMBER	LOCATION	LENGTH (ft)	WIDTH (ft)	UPSTREAM INVERT	DOWNSTREAM INVERT	SLOPE	A	B
28	SB I-89 STA 721+12.4, LT	300	7	339.0	334.5	1.5%	3	3



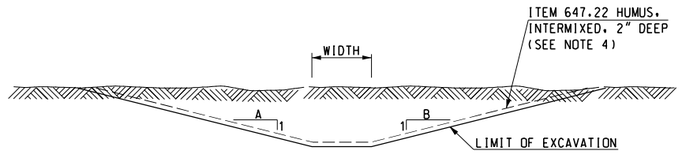
ELEVATION
SCALE: NOT TO SCALE

NOTES:

1. CONTRACTOR MAY, AS REQUIRED, AND WITH APPROVAL OF ENGINEER, ADJUST THE PIPE OUTLET INVERTS AND SWALE INVERTS SHOWN ON THE PLANS TO ALLOW PROPER EROSION CONTROL PROTECTION AS SHOWN ON SHEETS.
2. ITEM 647.22 - HUMUS, INTERMIXED, 2" DEEP TO BE USED ON THE BOTTOM AND INNER SLOPES OF VEGEATED SWALES. ITEM 647.1 - HUMUS TO BE USED ON TOP OF BERMS AND OUTER SLOPES.
3. CONFORMING TO ITEM 644.82 - SALT-TOLERANT GRASS SEED TYPE 82 (PAID UNDER ITEM 646.31). SLOPES TO BE SEEDED IN ACCORDANCE WITH THE LANDSCAPING & SLOPE PROTECTION SUMMARY.



PLAN
SCALE: NOT TO SCALE



SECTION A-A
SCALE: NOT TO SCALE

VEGETATED TREATMENT SWALE

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN
VEGETATED SWALE DETAILS

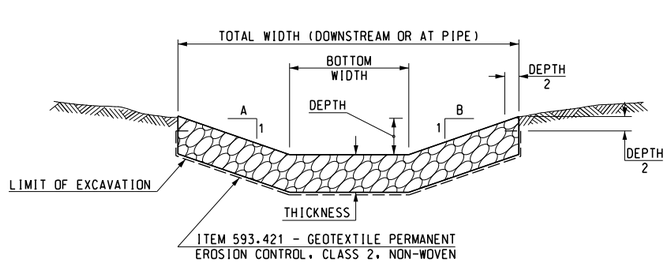
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148vswl	16148	57	600

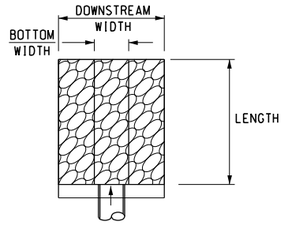
REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE

STONE FILL CHANNEL

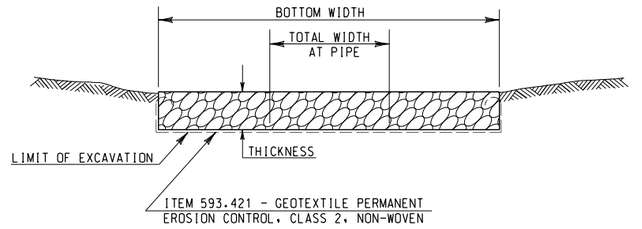


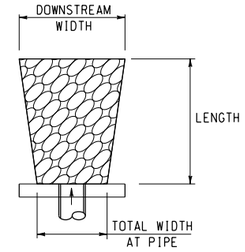


NUMBER	LOCATION	LENGTH	TOTAL WIDTH	A	B	BOTTOM WIDTH	DEPTH	STONE CLASS	THICKNESS (ft)	REMARKS
16	STA 811+27.0, RT 114.7'	31'	15.1'	3	3	15.1'	0.5'	C	1	
28	STA 721+26.3, LT 154.2'	16'	VARIES	3	3	VARIES	0.5'	C	1	SEE PLANS - CONFORMED TO CONTOURS

EXCAVATION FOR STONE FILL CHANNELS SHALL BE ITEM 206.1, COMMON STRUCTURE EXCAVATION, OR AS INDICATED IN THE DRAINAGE SUMMARY SHEETS.

STONE FILL PAD





NUMBER	LOCATION	LENGTH	TOTAL WIDTH AT PIPE	DOWNSTREAM WIDTH	STONE CLASS	THICKNESS	REMARKS
19	STA 824+87.0, RT 161.7'	12'	6'	14.8'	C	1.0	
104	STA 732+80.9, LT 55.3'	16.7'	4.5'	11.1'	C	1.0	
124	STA 408+54.6, RT 32.3'	12.6'	4.5'	17.1'	C	1.0	
135	STA 838+12.0, RT 92.5'	21.8'	16.0'	16.0'	C	1.0	
136	STA 1002+27.4, RT 15.1'	15.7'	3.8'	10.1'	C	1.0	
138	STA 407+70.3, RT 42.1'	VARIES	6.0'	VARIES	B	2.0	SEE PLANS - CONFORMED TO CONTOURS
143	STA 847+92.4, RT 35.6'	20.2'	6.0'	26.2'	C	1.0	
144	STA 744+04.0, LT 40.4'	17.3'	4.5'	21.8'	C	1.0	
145	STA 304+82.6, RT 22.8'	13.5'	4.5'	18.0'	C	1.0	

EXCAVATION FOR STONE FILL CHANNELS SHALL BE ITEM 206.1, COMMON STRUCTURE EXCAVATION, OR AS INDICATED IN THE DRAINAGE SUMMARY SHEETS.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

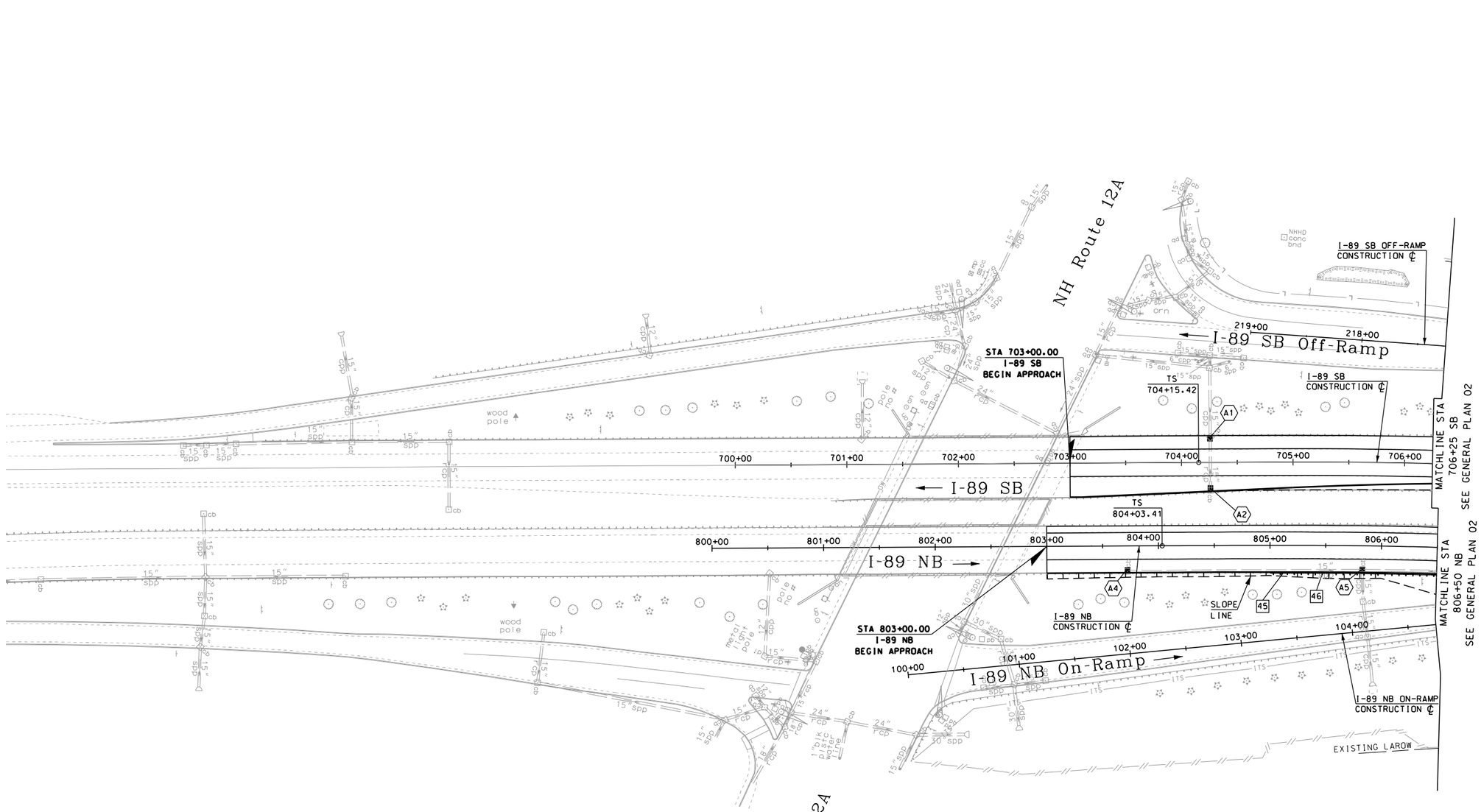
DRAINAGE DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148stfl	16148	58	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



OML NOTES:

1. OML BETWEEN I-89 NORTHBOUND AND I-89 SOUTHBOUND BEGINS NORTH OF THE PLAZA CONNECTOR ROAD AT STA 710+53.6 TO STA 745+00.00 AND RUNS ALONG I-89 SOUTHBOUND MEDIAN EDGE OF PROPOSED PAVEMENT EXCEPT WHEN CONCRETE MEDIAN BARRIER IS PROPOSED FROM STA 713+50 TO STA 742+78. IN AREAS USING CONCRETE MEDIAN BARRIER, THE OML RUNS ALONG THE NORTHBOUND SIDE OF THE BARRIER. (OML LINE NOT SHOWN FOR CLARITY)

50 0 50 100

SCALE IN FEET

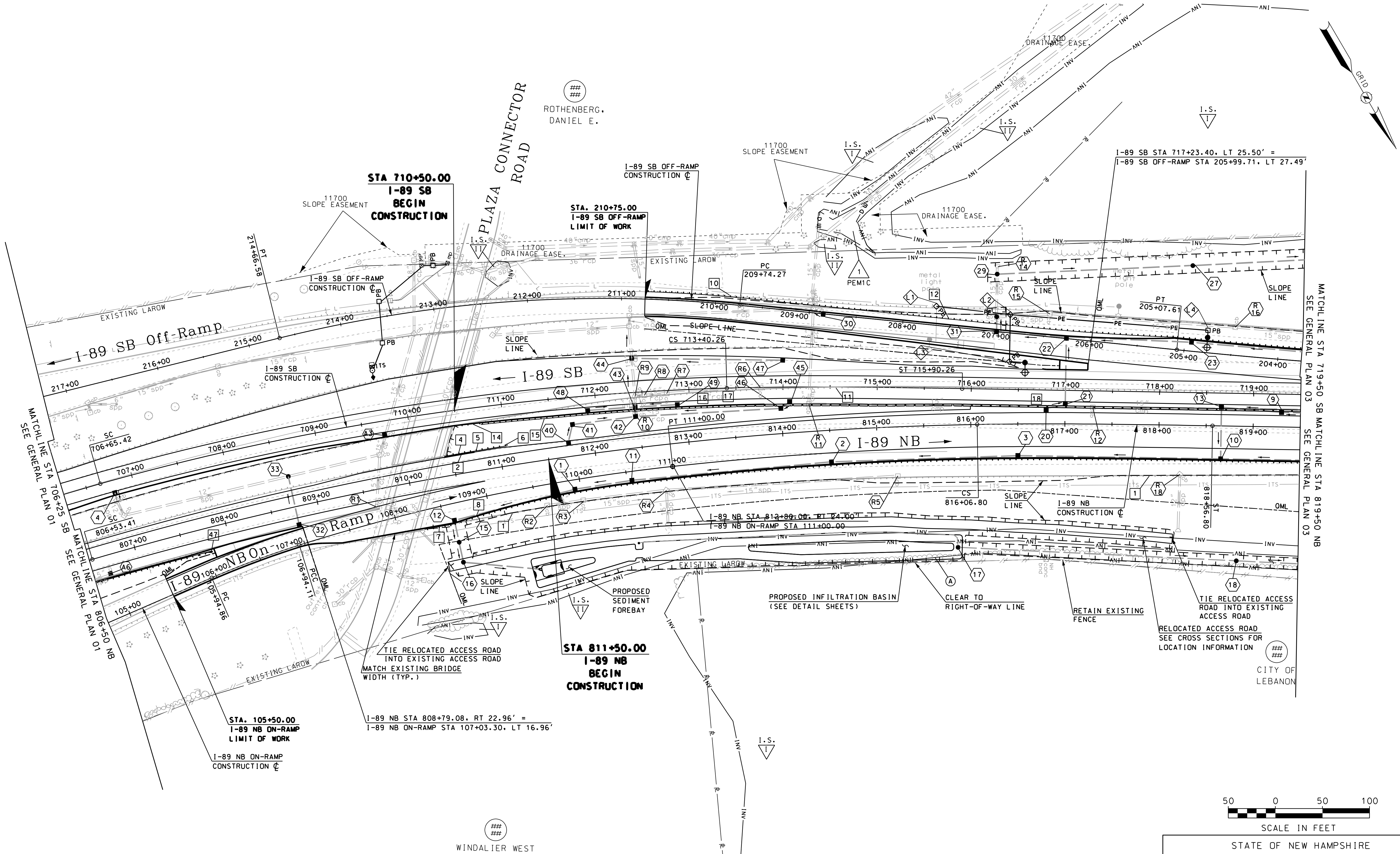
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

GENERAL PLAN 01

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148genplans	16148	59	600


STA 710+50.00
I-89 SB
BEGIN
CONSTRUCTION
PLAZA CONNECTOR ROAD
ROTHENBERG,
DANIEL E.
11700
SLOPE EASEMENT
11700
DRAINAGE EASE.
I-89 SB OFF-RAMP
CONSTRUCTION ℄
STA. 210+75.00
I-89 SB OFF-RAMP
LIMIT OF WORK
EXISTING LAROW
PC
209+74.27
PEM1C
I-89 SB STA 717+23.40, LT 25.50' =
I-89 SB OFF-RAMP STA 205+99.71, LT 27.49'
PT
214+66.58
I-89 SB Off-Ramp
SLOPE LINE
CS 713+40.26
I-89 SB
I-89 SB
CONSTRUCTION ℄
ST 715+90.26
PT
205+07.61
MATCHLINE STA 719+50 SB MATCHLINE STA 819+50 NB
SEE GENERAL PLAN 03
MATCHLINE STA 706+25 SB
SEE GENERAL PLAN 01
SC
706+65.42
SC
806+53.41
PT 111+00.00
I-89 NB
CS
816+06.80
ST
818+56.80
I-89 NB
CONSTRUCTION ℄
I-89 NB STA 812+80.00, RT 24.00' =
I-89 NB ON-RAMP STA 111+00.00
Ramp
I-89 NB On
MATCHLINE STA 806+50 NB
SEE GENERAL PLAN 01
PCC
106+94.11
PC
105+94.86
PROPOSED
SEDIMENT
FOREBAY
PROPOSED INFILTRATION BASIN
(SEE DETAIL SHEETS)
CLEAR TO
RIGHT-OF-WAY LINE
RETAIN EXISTING
FENCE
TIE RELOCATED ACCESS
ROAD INTO EXISTING
ACCESS ROAD
RELOCATED ACCESS ROAD
SEE CROSS SECTIONS FOR
LOCATION INFORMATION
CITY OF
LEBANON
TIE RELOCATED ACCESS ROAD
INTO EXISTING ACCESS ROAD
MATCH EXISTING BRIDGE
WIDTH (TYP.)
STA 811+50.00
I-89 NB
BEGIN
CONSTRUCTION
STA. 105+50.00
I-89 NB ON-RAMP
LIMIT OF WORK
I-89 NB STA 808+79.08, RT 22.96' =
I-89 NB ON-RAMP STA 107+03.30, LT 16.96'
I-89 NB ON-RAMP
CONSTRUCTION ℄
WINDALIER WEST
LEBANON, LLC
GRID
50 0 50 100
SCALE IN FEET

OML NOTES:

1. OML LOCATED ON INTERSTATE SIDE OF CONCRETE RAMP NOSE.

2. OML EXTENDS ACROSS RAMP AT END OF RAMP NOSE.

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

GENERAL PLAN 02

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148genplans	16148	60	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED NHDOT	DATE 04-2015	
NEW DESIGN MJ	DATE 04-2016	
SHEET CHECKED BRC	DATE 02-2018	
AS BUILT DETAILS	DATE	

CITY OF LEBANON

MOUNT ITEM 677.46501 - MVDS WITHOUT POLE & ITEM 677.67201 - SOLAR POWERED SYSTEM (POLE MOUNTED) TO I-89 SB OHSS LEG

PROPOSED VEGETATED SWALE (SEE DETAIL SHEET)

CLEARING LINE

EXISTING LAROW

SLOPE LINE

APPROXIMATE COFFERDAM LIMITS ITEM 503.204

OML

CLEARING LINE

I-89 SB STA 723+21.07, LT 24.00' = I-89 SB OFF-RAMP STA 200+03.43

200+03.43 RC

Connecticut River

3 R2UBH

ARCHEOLOGICAL SENSITIVE AREA (TYP.)

APPROX. STATE LINE

NEW HAMPSHIRE

VERMONT

NEW ENGLAND

CENTRAL RAILROAD

INTERSTATE 89 SB CONSTRUCTION ℄

REMOVE TREES

I-89 SB

I-89 NB

INTERSTATE 89 NB CONSTRUCTION ℄

DO NOT DISTURB EXISTING MONUMENT

OVERHEAD SIGN

APPROXIMATE COFFERDAM LIMITS ITEM 503.205

2 BANK

CLEAR TO RIGHT-OF-WAY LINE

1 C.V. PROPERTIES, INC. JOINED BY NEW ENGLAND CENTRAL RAILROAD, INC. STATE OF VERMONT

N/F STATE OF VERMONT

APPROXIMATE LOCATION OF UNDERGROUND FIBER OPTIC LINE

APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC LINE

MATCHLINE STA 719+50 SB SEE GENERAL PLAN 02

MATCHLINE STA 819+50 NB SEE GENERAL PLAN 02

MATCHLINE STA 732+50 SB SEE GENERAL PLAN 04

MATCHLINE STA 832+50 NB SEE GENERAL PLAN 04

GRID N

50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

GENERAL PLAN 03

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148genplans	16148	61	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

ARCHEOLOGICAL SENSITIVE AREA (TYP.)

I-89 SB STA 733+50.00, LT 24.00' = I-89 SB ON-RAMP STA 413+50.00

I-89 SB STA 738+38.21, LT 22.96' = I-89 SB ON-RAMP STA 408+60.70, LT 16.96'

I-89 SB ON-RAMP CONSTRUCTION ℄

STA. 403+85.00 I-89 SB ON-RAMP LIMIT OF WORK

PT 405+63.91

PCC 403+87.55

PC 400+00.00

EXISTING LAROW

GRID N

I-89 SB On Ramp

STA 744+50.00 I-89 SB END CONSTRUCTION

I-89 SB CONSTRUCTION ℄

APPROXIMATE COFFERDAM LIMITS ITEM 503.206

APPROXIMATE COFFERDAM LIMITS ITEM 503.207

OVERHEAD SIGN

SLOPE LINE

PC 736+47.14

PT 741+68.59

I-89 SB

I-89 NB

MATCHLINE STA 732+50 SB SEE GENERAL PLAN 03

MATCHLINE STA 746+50 SB SEE GENERAL PLAN 05

MATCHLINE STA 832+50 NB SEE GENERAL PLAN 03

MATCHLINE STA 846+50 NB SEE GENERAL PLAN 05

MATCHLINE STA 301+50 NB SEE GENERAL PLAN 05

I-89 NB CONSTRUCTION ℄

PT 841+33.28

CLEARING LINE

I-89 NB STA 845+00.00, RT 24.00' = I-89 NB OFF-RAMP STA 300+00.00

APPROXIMATE COFFERDAM LIMITS ITEM 503.208

I-89 NB OFF-RAMP CONSTRUCTION ℄

PC 301+17.49

PROPOSED INFILTRATION BASIN ACCESS ROAD (SEE INFILTRATION BASIN GRADING PLAN)

PC 855+50.00

PROPOSED SEDIMENT FOREBAY

PROPOSED INFILTRATION BASIN (SEE DETAIL SHEETS)

R3UB1 (VTCLASS II)

PfO1/4C (VTCLASS II)

CONNECTICUT RIVER ROAD

OML NOTES:

1. OML LOCATED ON INTERSTATE SIDE OF CONCRETE RAMP NOSE.
2. OML EXTENDS ACROSS RAMP AT END OF RAMP NOSE.

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

GENERAL PLAN 04

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148genplans	16148	62	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

MATCHLINE STA 746+50 SB
SEE GENERAL PLAN 04

MATCHLINE STA 846+50 NB
MATCHLINE STA 301+50 NB OFF RAMP
SEE GENERAL PLAN 04

MATCHLINE STA 757+50 SB
SEE GENERAL PLAN 06

I-89 SB CONSTRUCTION ℄

REMOVE EXISTING OVERHEAD SIGN STRUCTURE

STA 852+50.00
I-89 NB
END
CONSTRUCTION

DO NOT DISTURB EXISTING
BRIDGE ABUTMENT STONE
(I-91 NB ON RAMP BRIDGE)

DO NOT DISTURB EXISTING
BRIDGE PIER

Vermont Highway Dept BM (Disk 191-1) (25.)

I-89 SB

I-89 NB

SLOPE LINE

I-89 NB CONSTRUCTION ℄

STA 856+00.00
I-89 NB
END APPROACH

DO NOT DISTURB EXISTING
BRIDGE ABUTMENT STONE
(I-91 NB ON RAMP BRIDGE)

I-89 NB OFF-RAMP CONSTRUCTION ℄

CLEARING LINE

SLOPE LINE

I-89 NB STA 848+32.83, RT 25.50' =
I-89 NB OFF-RAMP STA 303+28.11, LT 27.38'

I-89 NB Off Ramp

STA. 306+60.00
I-89 NB OFF-RAMP
LIMIT OF WORK

Pf01/4C
(VTCLASS II)

EXISTING LAROW

OML NOTES:

1. OML LOCATED ON INTERSTATE SIDE OF CONCRETE RAMP NOSE.
2. OML EXTENDS ACROSS RAMP AT END OF RAMP NOSE.

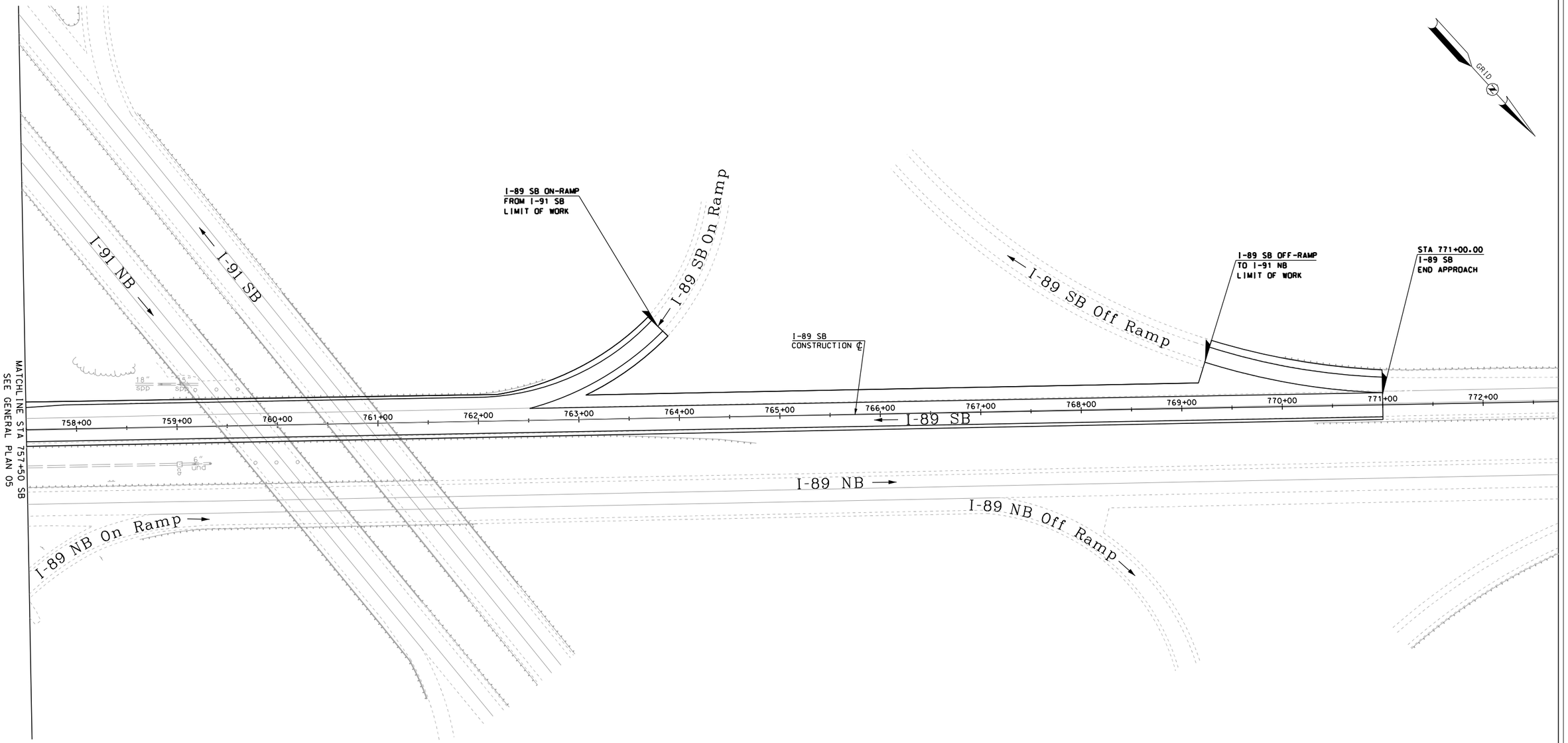
50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

GENERAL PLAN 05

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148genplans	16148	63	600



50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

GENERAL PLAN 06

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148genplans	16148	64	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

NOTEBOOKS

	BOOK	PAGE

	DATE
EXISTING DETAIL	
PROPOSED DESIGN	MAH DATE 2/18
SHEET CHECKED	BRC DATE 2/18
AS BUILT DETAILS	DATE

NEW HAMPSHIRE

1 STA 810+40.0, RT 49.3 TO STA 811+73.3, RT 36.6
CONSTRUCT 127.2 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. ECCENTRIC CONE CB-B @ 811+73.3, RT 36.6
24 IN INV. IN = 355.42
24 IN INV. OUT = 355.16
GRATE ELEV. = 361.50

2 STA 812+35.2, RT 35.0 TO STA 814+50.0, RT 35.0
CONSTRUCT 208.7 FT X 18 IN RCP
CONSTRUCT ECCENTRIC CONE CB-B @ 814+50.0, RT 35.0
18 IN INV. IN = 358.20
18 IN INV. OUT = 357.95
GRATE ELEV. = 363.70

3 STA 814+50.0, RT 35.0 TO STA 816+50.0, RT 35.0
CONSTRUCT 194.1 FT X 18 IN RCP
CONSTRUCT ECCENTRIC CONE CB-B @ 816+50.0, RT 35.0
15 IN INV. IN = 362.67
18 IN INV. OUT = 362.42
GRATE ELEV. = 368.17

4 STA 706+77.7, RT 22.8 TO STA 706+78.0, RT 15.0
CONSTRUCT 4.8 FT X 12 IN RCP
CONSTRUCT CB-B @ STA 706+78.0, RT 15.0
12 IN INV. OUT = 365.00
GRATE ELEV. = 370.01
CONNECT TO EXIST. CB @ STA 706+77.7, RT 22.8 (SUBSIDIARY)
12 IN INV. IN = 364.97

5 STA 722+25.0, RT 15.4 TO STA 822+34.0, LT 15.4
CONSTRUCT 5.8 FT X 15 IN RCP
CONSTRUCT CB-B @ 822+34.0, LT 15.4
15 IN INV. OUT = 381.65
GRATE ELEV. = 386.90

6 720+59.0, RT 15.4 TO STA 722+25.0, RT 15.4
CONSTRUCT 162.1 FT X 15 IN RCP
CONSTRUCT CB-B @ 722+25.0, RT 15.4
15 IN INV. IN = 381.38
15 IN INV. OUT = 381.13
GRATE ELEV. = 386.63

7 STA 820+50.0, LT 15.4 TO STA 720+59.0, RT 15.4
CONSTRUCT 5.8 FT X 15 IN RCP
CONSTRUCT CB-B @ 720+59.0, RT 15.4
15 IN INV. IN = 376.42
15 IN INV. OUT = 376.17
GRATE ELEV. = 381.67

8 STA 819+30.0, LT 15.4 TO STA 820+50.0, LT 15.4
CONSTRUCT 116.0 FT X 15 IN RCP
CONSTRUCT CB-B @ 820+50.0, LT 15.4
15 IN INV. IN = 376.14
15 IN INV. OUT = 375.89
GRATE ELEV. = 381.40

9 STA 718+66.0, RT 15.4 TO STA 819+30.0, LT 15.4
CONSTRUCT 60.2 FT X 15 IN RCP
CONSTRUCT CB-B @ 819+30.0, LT 15.4
15 IN INV. IN = 372.60
15 IN INV. OUT = 372.35
GRATE ELEV. = 377.85

10 STA 816+50.0, RT 35.0 TO STA 818+66.0, RT 35.0
CONSTRUCT 211.3 FT X 15 IN RCP
CONSTRUCT ECCENTRIC CONE CB-B @ 818+66.0, RT 35.0
15 IN INV. IN (SW) = 369.89
15 IN INV. IN (NW) = 369.89
15 IN INV. OUT (SE) = 369.64
GRATE ELEV. = 375.14

11 STA 811+73.3, RT 36.6 TO STA 812+35.2, RT 35.0
CONSTRUCT 56.9 FT X 24 IN RCP
CONSTRUCT 5 FT DIA ECCENTRIC CONE CB-B @ 812+35.2, RT 35.0
18 IN INV. IN = 356.19
24 IN INV. OUT = 355.70
GRATE ELEV. = 361.69

12 STA 810+40.9 RT 71.4 TO STA 810+40.0, RT 49.3
CONSTRUCT 17.8 FT X 24 IN CPP
CONSTRUCT 5 FT DIA ECCENTRIC CONE CB-B @ 810+40.0, RT 49.3
24 IN INV. IN = 354.52
24 IN INV. OUT = 350.33
GRATE ELEV. = 361.28

13 816+66.0, RT 35 TO STA 718+66.0, RT 15.4
CONSTRUCT 50.8 FT X 15 IN RCP
CONSTRUCT CB-B @ 718+66.0, RT 15.4
15 IN INV. IN = 370.64
15 IN INV. OUT = 370.39
GRATE ELEV. = 375.89

14 STA 818+66.0, RT 35.0 TO STA 821+63.0, RT 35.0
CONSTRUCT 293.1 FT X 15 IN RCP
CONSTRUCT CB-B @ 821+63.0, RT 35.0
15 IN INV. OUT = 378.78
GRATE ELEV. = 384.03

15 STA 810+41.7, RT 93.1 TO STA 810+40.9, RT 71.4
CONSTRUCT 16.7 FT X 24 IN CPP
CONSTRUCT 5 FT DIA. DMH (SLAB TOP) @ 810+40.9 RT 71.4
24 IN INV. IN = 346.17
24 IN INV. OUT = 341.94
COVER ELEV. = 352.05

16 STA 811+27.0, RT 114.7 TO STA 810+41.7, RT 93.1
CONSTRUCT 83.1 FT X 24 IN RCP
CONSTRUCT 5 FT DIA DMH (SLAB TOP) @ 810+41.7, RT 93.1
24 IN INV. IN = 339.82
24 IN INV. OUT = 339.52
COVER ELEV. = 344.39
24 IN INV. @ OUTLET = 339.10
CONSTRUCT 24 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

17 STA 818+84.5, RT 142.9 TO STA 815+83.40, RT 130.0
CONSTRUCT 290.8 FT X 24 IN RCP
CONSTRUCT SPECIAL OUTLET STRUCTURE @ 815+79.1, RT 129.7
24 IN INV. OUT = 337.00
SEE INFILTRATION BASIN DETAIL SHEET
CONSTRUCT 337.5 FT X 6 IN UNDERDRAIN WITH FLUSHING BASIN

18 STA 821+84.4, RT 152.4 TO STA 818+84.5, RT 142.9
CONSTRUCT 295.0 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. DMH (SLAB TOP) @ 818+84.50, RT 142.9
24 IN INV. IN = 335.83
24 IN INV. OUT = 335.83
COVER ELEV. = 339.85

19 STA 824+87.0, RT 161.7 TO STA 821+84.4, RT 152.4
CONSTRUCT 299.9 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. DMH (SLAB TOP) @ 821+84.4, RT 152.4
24 IN INV. IN = 334.64
24 IN INV. OUT = 334.64
COVER ELEV. = 339.12
24 IN INV. @ OUTLET = 333.44
CONSTRUCT 24 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

20 STA 717+00.0, RT 15.4 TO 816+80.0, LT 16.45
CONSTRUCT 16.7 FT X 15 IN RCP
CONSTRUCT CB-B @ 816+80.0, LT 16.45
15 IN INV. OUT = 366.04
GRATE ELEV. = 371.05

21 STA 717+00.0, LT 56.9 TO STA 717+00.0, RT 15.4
CONSTRUCT 68.3 FT X 15 IN RCP
CONSTRUCT CB-B @ 717+00.0, RT 15.4
15 IN INV. IN = 365.83
15 IN INV. OUT = 365.58
GRATE ELEV. = 370.93

22 STA 718+33.0, LT 54.9 TO STA 717+00.0, LT 56.9
CONSTRUCT 70.3 FT X 15 IN RCP
CONSTRUCT CB-B @ STA 717+00.0, LT 56.9
15 IN INV. IN (SE) = 363.14
15 IN INV. IN (NE) = 364.93
15 IN INV. OUT = 362.89
GRATE ELEV. = 370.10

23 STA 718+33.0, LT 105.1 TO STA 718+33.0, LT 54.9
CONSTRUCT 129.0 FT X 15 IN RCP
CONSTRUCT CB-B @ 718+33.0, LT 54.9
15 IN INV. IN (SE) = 364.03
15 IN INV. OUT (NW) = 363.78
GRATE ELEV. = 373.68

24 STA 719+66.0, LT 45.5 TO STA 721+13.0, LT 38.6
CONSTRUCT 143.2 FT X 15 IN RCP
CONSTRUCT CB-B @ 721+13.0, LT 38.6
15 IN INV. IN = 377.15
15 IN INV. OUT = 376.15
GRATE ELEV. = 382.43

25 STA 721+13.0, LT 38.6 TO STA 722+50.0, LT 35.4
CONSTRUCT 133.1 FT X 15 IN RCP
CONSTRUCT CB-B @ 722+50.0, LT 35.4
15 IN INV. OUT = 381.62
GRATE ELEV. = 386.61

26 STA 718+33.0, LT 54.9 TO STA 719+66.0, LT 45.5
CONSTRUCT 129.4 FT X 15 IN RCP
CONSTRUCT CB-B @ 719+66.0, LT 45.5
15 IN INV. IN = 371.58
15 IN INV. OUT = 371.33
GRATE ELEV. = 377.86

27 STA 721+12.4, LT 154.1 TO STA 718+33.0, LT 134.8
CONSTRUCT 276.0 FT X 18 IN RCP
CONSTRUCT DMH @ 718+33.0, LT 134.8 (SLAB TOP)
15 IN INV. IN = 340.44
18 IN INV. OUT = 340.44
COVER ELEV. = 344.00

28 STA 721+26.3, LT 154.2 TO STA 721+12.4, LT 154.1
CONSTRUCT 12.0 FT X 18 IN RCP
CONSTRUCT DMH (SLAB TOP) @ 721+12.4, LT 154.1
18 IN INV. IN = 339.06
18 IN INV. OUT = 339.06
COVER ELEV. = 343.00
18 IN INV. @ OUTLET = 339.00
CONSTRUCT 18 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET
CONSTRUCT VEGETATED SWALE
SEE DETAIL SHEET

29 STA 718+33.0, LT 134.8 TO STA 716+25.4, LT 122.2
CONSTRUCT 203.9 FT X 15 IN RCP
CONSTRUCT DMH (SLAB TOP) @ 716+25.4, LT 122.2
EX. 15 IN INV. IN = 348.19
15 IN INV. OUT = 343.25
COVER ELEV. = 351.84
CONNECT TO EXIST. 15" CPP (SUBSIDIARY).
ADD STEEL WATER DIVERSION PLATES IN DMH (SUBSIDIARY)

30 STA 208+96.0, RT 4.53 TO STA 208+85.0, RT 1.0
CONSTRUCT 9.5 FT X 15 IN RCP
CONSTRUCT CB-B @ 208+85.0, RT 1.0
15 IN INV. OUT = 360.27
GRATE ELEV. = 365.77
CONNECT TO EXISTING CB @ STA 208+96.0, RT 4.53 (SUBSIDIARY)
15 IN INV. IN = 360.18

31 STA 716+25.6, LT 76.9 TO STA 207+00.0, RT 1.0
CONSTRUCT 10.3 FT X 15 IN RCP
CONSTRUCT CB-B @ 207+00.0, RT 1.0
15 IN INV. IN = 362.53
15 IN INV. OUT = 362.28
GRATE ELEV. = 368.31
CONNECT TO EXIST. CB AND CONVERT TO MH @ 716+26.6, RT 76.9
15 IN INV. IN = 362.23

32 STA 808+76.0, LT 33.0 TO STA 808+76.00, RT 21.0
CONSTRUCT 50.0 FT X12 IN RCP
CONSTRUCT CB-B @ 808+76.00, RT 21.0
12 IN INV. OUT = 360.00
GRATE ELEV. = 364.95

33 STA 808+76.0, LT 33.0
CONSTRUCT DMH @ STA 808+76.0, LT 33.0
GRATE ELEV. = 364.50
CONNECT TO EXIST. 12 IN SMOOTH PLASTIC PIPE (SUBSIDIARY)
EXIST. 12 IN INV. IN = 359.24
12 IN INV. IN = 359.75
EXIST. 12 IN INV. OUT = 359.17

34 TO 39 NOT USED

40 STA 811+80.0, LT 33.3 TO STA 811+73.3, LT 15.8
CONSTRUCT 14.7 FT X 15 IN RCP
CONSTRUCT CB-B @ 811+73.3, LT 15.8
15 IN INV. OUT = 359.12
GRATE ELEV. = 364.26

41 STA 812+47.1, LT 33.1 TO STA 811+80.0, LT 33.3
CONSTRUCT 63.7 FT X 15 IN RCP
CONSTRUCT CB-B (SLAB TOP) @ 811+80.0, LT 33.3
15 IN INV. IN = 358.64
15 IN INV. OUT = 358.41
GRATE ELEV. = 362.87

42 STA 712+41.7, RT 17.0 TO STA 812+47.1, LT 33.1
CONSTRUCT 4.8 FT X 15 IN RCP
CONSTRUCT CB-B @ 812+47.1, LT 33.1
15 IN INV. IN (W) = 358.56
15 IN INV. IN (E) = 358.09
15 IN INV. OUT = 357.81
GRATE ELEV. = 363.00

43 STA 712+41.7, RT 17.0
CONNECT TO EXISTING 15 IN CPP (SUBSIDIARY)
CONSTRUCT ECCENTRIC CONE CB-B @ 712+41.7, RT 17.0
15 IN INV. IN (E)= 357.79
15 IN INV. IN (N)= 357.79
15 IN INV. IN (W) = 357.79
EX. 15 IN INV. OUT = 356.43
GRATE ELEV. = 363.45

44 STA 712+41.6, LT 36.6
CONNECT TO EXISTING 15 IN RCP (SUBSIDIARY)
CONSTRUCT CB-B @ 712+41.6, LT 36.6
EX. 15 IN INV. IN (N) = 355.95
15 IN INV. IN (W) = 359.28
EX. 15 IN INV. OUT = 355.86
GRATE ELEV. = 365.13

45 STA 814+00.0, LT 26.0 TO STA 714+07.0, RT 17.0
CONSTRUCT 6.9 FT X 15 IN RCP
CONSTRUCT CB-B @ 714+07.0, RT 17.0
15 IN INV. OUT = 359.59
GRATE ELEV. = 364.63

46 STA 812+47.1, LT 33.1 TO STA 814+00.0, LT 26.0
CONSTRUCT 150.4 FT X 15 IN RCP
CONSTRUCT CB-B @ 814+00.0, LT 26.0
15 IN INV. IN = 359.56
15 IN INV. OUT = 359.31
GRATE ELEV. = 364.72

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

DRAINAGE NOTES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148drainnotes	16148	65	600

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47 STA 712+41.6, LT 36.6 TO STA 714+00.0, LT 30.1
CONSTRUCT 156.4 FT X 15 IN RCP
CONSTRUCT CB-B @ 714+00.0, LT 30.1
15 IN INV. OUT = 360.07
GRATE ELEV. = 366.30

48 STA 712+41.7, RT 17.0 TO STA 711+91.0, RT 17.0
CONSTRUCT 46.3 FT X 15 IN RCP
CONSTRUCT CB-B @ 711+91.0, RT 17.0
15 IN INV. OUT = 358.16
GRATE ELEV. = 363.52

49 STA 712+41.7, RT 17.0 TO STA 712+87.0, RT 17.0
CONSTRUCT 41.1 FT X 15 IN RCP
CONSTRUCT ECCENTRIC CONE CB-B @ 712+87.0, RT 17.0
15 IN INV. OUT = 358.17
GRATE ELEV. = 363.52

A1 STA 704+26.4, LT 22.6
ADJUST GRATE ELEV. = 373.60

A2 STA 704+25.8, RT 25.1
ADJUST GRATE ELEV. = 373.56

A3 STA 709+73.0, RT 16.1
ADJUST GRATE ELEV. = 365.75

A4 STA 803+72.2, RT 23.0
ADJUST GRATE ELEV. = 373.82

A5 STA 805+83.1, RT 23.0
ADJUST GRATE ELEV. = 370.15

A6 STA 806+67.8, RT 23.0
ADJUST GRATE ELEV. = 368.39

R1 STA 809+74.5, LT 35.4 TO STA 809+60.9, RT 18.3
FILL AND ABANDON 50 FT X15 IN RCP
REMOVE DI @ STA 809+60.9, RT 18.3

R2 STA 811+80.5, RT 47.9 TO STA 811+41.2, RT 48.0
REMOVE 35 FT X SMOOTH PLASTIC PIPE
REMOVE CB @ STA 811+41.2, RT 48

R3 STA 812+70.4, RT 48.4 TO STA 811+80.5, RT 47.9
REMOVE 85 FT X 15 IN SMOOTH PLASTIC PIPE
REMOVE CB @ STA 811+80.5, RT 47.9

R4 STA 812+68.2, RT 85.4 TO STA 812+70.4, RT 48.4
REMOVE 32 FT X CORRUGATED PLASTIC PIPE
REMOVE CB @ STA 812+70.4, RT 48.4
REMOVE END SECTION @ OUTLET (SUBSIDIARY)

R5 STA 812+68.2, RT 85.4 TO STA 815+20.5, RT 52.3
REMOVE 243 FT X 15 IN SMOOTH PLASTIC PIPE
REMOVE CB @ STA 815+20.5, RT 52.3

R6 STA 712+76.2, RT 3.0 TO STA 713+76.4, RT 0.4
REMOVE 96 FT X 15 IN RCP
REMOVE CB @ STA 713+76.4, RT 0.4

R7 STA 712+52.4, RT 3.7 TO STA 712+76.2, RT 3.0
REMOVE 20 FT X 15 IN RCP
REMOVE CB @ STA 712+76.2, RT 3.0

R8 STA 712+42.4, RT 4.1 TO STA 712+52.4, RT 3.7
REMOVE 8 FT X 15 IN RCP
REMOVE CB @ STA 712+52.4, RT 3.7

R9 STA 712+40.9, LT 70.4 TO STA 712+42.4, RT 4.1
FILL AND ABANDON 64 FT X 15 IN RCP
REMOVE CB @ STA 712+42.4, RT 4.1 (SUBSIDIARY)

R10 STA 712+42.4, RT 4.1 TO STA 712+41.5, RT 23.6
REMOVE 17 FT X 15 IN RCP
REMOVE CB @ STA 712+41.5, RT 23.6 (SUBSIDIARY)

R11 STA 208+96.0, RT 4.5 TO STA 714+27.4, RT 17.8
FILL AND ABANDON 97 FT X 15 IN RCP
REMOVE CB @ STA 714+27.4, RT 17.8

R12 STA 714+27.4, RT 17.8 TO STA 717+29.3, RT 17.6
REMOVE 298 FT X 15 IN CMP
REMOVE CB @ STA 717+29.3, RT 17.6

R13 STA 717+29.3, RT 17.6 STA 720+29.2, RT 15.7
REMOVE 295 FT X 15 IN CMP
REMOVE CB @ STA 720+29.2, RT 15.7

R14 STA 207+06.4, RT 70.5 TO STA 207+05.2, RT 57.1
REMOVE 8 FT X 15 IN CORRUGATED PLASTIC PIPE
REMOVE END SECTION @ OUTLET (SUBSIDIARY)

R15 STA 207+01.5, RT 15.1 TO STA 206+45.6, RT 24.3
PLUG AND ABANDON 15 SMOOTH PLASTIC PIPE (SUBSIDIARY)
FILL AND ABANDON CB @ STA 206+45.6, RT 24.3

R16 STA 206+45.6, RT 24.3 TO STA 204+47.9, RT 29.9
PLUG AND ABANDON 15 IN SMOOTH PLASTIC PIPE (SUBSIDIARY)
FILL AND ABANDON CB STA 204+47.9, RT 29.9

R17 STA 204+47.9, RT 29.9 TO STA 201+84.0, RT 26.7
PLUG AND ABANDON 15 IN SMOOTH PLASTIC PIPE (SUBSIDIARY)
FILL AND ABANDON CB @ STA 201+84.0, RT 26.7

R18 STA 818+22.0, RT 113.2 TO STA 818+22.9, RT 52.2
PLUG AND ABANDON 15 IN CORRUGATED PLASTIC PIPE (SUBSIDIARY)
FILL AND ABANDON CB @ STA 818+22.9, RT 52.2
REMOVE END SECTION @ OUTLET (SUBSIDIARY)

R19 STA 821+22.5, RT 127.7 TO STA 821+20.9, RT 42.8 (SUBSIDIARY)
PLUG AND ABANDON 15 IN CORRUGATED PLASTIC PIPE (SUBSIDIARY)
FILL AND ABANDON CB @ STA 821+20.9, RT 42.8
REMOVE END SECTION @ OUTLET (SUBSIDIARY)

T100 STA 712+42.2, LT 0.6'
CONSTRUCT TEMP DI-B @ STA 712+42.2, LT 0.6'
CONNECT TO EXIST. 15 IN RCP @ INV. = 356.83
GRATE ELEV. = 363.86
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T101 STA 712+41.5, RT 23.6' TO STA 712+42.1, RT 46.1'
CONSTRUCT 21.2 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA 712+42.1, RT 46.1'
15 IN INV. OUT = 356.23
GRATE ELEV. = 364.29
CONNECT TO EXIST. CB @ STA 712+41.5, RT 23.6' (SUBSIDIARY TO PIPE)
15 IN INV. @ EXIST CB = 356.12
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T102 STA 814+29.8, LT 29.6' TO STA 814+29.4, LT 21.6'
CONSTRUCT 6.5 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA 814+229.4, LT 21.6'
15 IN INV. OUT = 355.92
CONNECT TO EXIST. CB @ 814+29.8, LT 29.6 (SUBSIDIARY TO PIPE)
15 IN INV. @ CB = 355.88
GRATE ELEV. = 364.27
TO BE CONSTRUCTED IN PHASE I AND REMOVED IN PHASE 2

T103 STA 718+33.0, LT 54.9 TO STA STA 204+53.7, RT 11.8'
CONSTRUCT 35.8 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA 204+53.7, RT 11.8'
15 IN INV. OUT = 369.50
CONNECT TO CB @ STA 718+33.0, LT 54.9 (SUBSIDIARY TO PIPE)
15 IN INV. @ EXIST CB = 364.30
GRATE ELEV. = 374.69
TO BE CONSTRUCTED IN PHASE I AND REMOVED BEFORE PHASE 3

T104 STA 818+22.9, RT 52.2 TO STA 818+66.0, RT 35.0
CONSTRUCT 46.4 FT X 15 IN TEMP PIPE
CONNECT TO CB @ STA 818+66.0, RT 35.0 INV OUT =369.00 (SUBSIDIARY TO PIPE)
CONNECT TO EXIST. CB @ STA 818+22.9, RT 52.2 INV OUT = 368.16 (SUBSIDIARY T
TO BE CONSTRUCTED IN PHASE I AND REMOVED BEFORE PHASE 3

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

DRAINAGE NOTES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148drainnotes	16148	66	600

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VERMONT

101 STA 832+75.0, LT 15.4 TO STA 832+75.0, RT 35.0
CONSTRUCT 46.4 FT X 18 IN RCP
CONSTRUCT CB-E @ 832+75.0, RT 35.0
18 IN INV. OUT = 412.35
GRATE ELEV. = 417.48

102 STA 732+85.0, RT 15.4 TO STA 832+75.0, LT 15.4
CONSTRUCT 6.3 FT X 18 IN RCP
CONSTRUCT CB-E @ 832+75.0, LT 15.4
18 IN INV. IN = 412.12
18 IN INV. OUT = 411.87
GRATE ELEV. = 418.28

103 STA 732+85.0, LT 35.0 TO STA 732+85.0, RT 15.4
CONSTRUCT 45.2 FT X 18 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 732+85.0, RT 15.4
18 IN INV. IN (S) = 411.84
18 IN INV. IN (N) = 414.38
18 IN INV. OUT = 411.59
GRATE ELEV. = 418.58

104 STA 732+80.9, LT 55.3 TO STA 732+85.0, LT 35.0
CONSTRUCT 18.7 FT X 18 IN RCP
CONSTRUCT CB-E @ 732+85.0, LT 35.0
18 IN INV. IN (E) = 411.36
18 IN INV. OUT = 411.15
GRATE ELEV. = 417.84
18 IN INV. @ OUTLET = 411.06
CONSTRUCT 18 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

105 STA 834+90, LT 12.4 TO STA 735+00.0, RT 15.4
CONSTRUCT 7.8 FT X 18 IN RCP
CONSTRUCT CB-E @ 735+00.0, RT 15.4
18 IN INV. IN = 422.16
18 IN INV. OUT = 421.91
GRATE ELEV. = 427.27

106 STA 734+00, RT 15.4 TO STA 834+90.0, LT 12.4
CONSTRUCT 86.1 FT X 18 IN RCP
CONSTRUCT ECCENTRIC CONE CB-E @ 834+90.0, LT 12.4
18 IN INV. IN = 421.42
18 IN INV. OUT = 421.23
GRATE ELEV. = 427.63

107 AND 108 NOT USED

109 STA 834+94.3, RT 59.1 TO STA 835+00.0, RT 35.0
CONSTRUCT 23.0 FT X 18 IN PLASTIC PIPE (SMOOTH INTERIOR)
CONSTRUCT CB-E @ 835+00.0, RT 35.0
18 IN INV. OUT = 421.43
GRATE ELEV. = 426.34
CONNECT TO EXIST. CB @ STA 834+94.3, RT 59.1 (SUBSIDIARY)
18 IN INV. IN = 418.02

110 STA 732+85, RT 15.4 TO STA 734+00.0, RT 15.4
CONSTRUCT 110.5 FT X 18 IN RCP
CONSTRUCT CB-E @ 734+00.0, RT 15.4
18 IN INV. IN = 417.87
18 IN INV. OUT = 417.62
GRATE ELEV. = 422.98

111 STA 735+00, RT 15.4 TO STA 736+00.0, RT 15.4
CONSTRUCT 96.1 FT X 18 IN RCP
CONSTRUCT CB-E @ 736+00.0, RT 15.4
18 IN INV. OUT = 426.58
GRATE ELEV. = 431.67

112 TO 119 NOT USED

120 STA 737+10, RT 15.4 TO STA 836+70.0, LT 14.7
CONSTRUCT 35.3 FT X 18 IN RCP
CONSTRUCT ECCENTRIC CONE CB-E @ 836+70.0, LT 14.7
18 IN INV. OUT = 432.29
GRATE ELEV. = 436.95

121 STA 408+57, LT 15.1 TO STA 738+50.0, LT 21.0
CONSTRUCT 5.5 FT X 18 IN RCP
CONSTRUCT CB-E @ 738+50.0, LT 21.0 (SLAB TOP)
18 IN INV. OUT = 442.24
GRATE ELEV. = 445.96

122 STA 737+94, RT 16.9 TO STA 737+10.0, RT 15.4
CONSTRUCT 79.5 FT X 18 IN RCP
CONSTRUCT CB-E @ 737+10.0, RT 15.4
18 IN INV. IN = 432.11
18 IN INV. OUT = 431.86
GRATE ELEV. = 436.78

123 STA 838+00, LT 20.3 TO STA 737+95.0, RT 16.7
CONSTRUCT 6.5 FT X 18 IN RCP
CONSTRUCT CB-E @ 737+94.0, RT 16.9
18 IN INV. IN = 431.46
18 IN INV. OUT = 431.24
GRATE ELEV. = 440.97

124 STA 408+54.8, RT 28.0 TO STA 408+57.0, LT 15.1
CONSTRUCT 41.1 FT X 18 IN RCP
CONSTRUCT CB-E @ 408+57.0, LT 15.1
18 IN INV. IN = 440.80
18 IN INV. OUT = 440.50
GRATE ELEV. = 446.05
18 IN INV. @ OUTLET = 440.05
CONSTRUCT 18 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

125 STA 838+00, RT 35.0 TO STA 838+00.0, LT 17.3
CONSTRUCT 46.8 FT X 18 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 838+00.0, LT 17.3
18 IN INV. IN (S) = 431.21
18 IN INV. IN (N) = 438.00
18 IN INV. OUT = 430.96
GRATE ELEV. = 443.70

126 STA 739+50.0, LT 25.2 TO STA 740+00.0, LT 27.6
CONSTRUCT 45.5 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 740+00.0, LT 27.6
24 IN INV. IN = 447.77
24 IN INV. OUT = 447.48
GRATE ELEV. = 452.94

127 NOT USED

128 STA 840+50.0, LT 25.1 TO STA 741+00.0, RT 17.0
CONSTRUCT 39.6 FT X 18 IN RCP
CONSTRUCT CB-E @ 741+00.0, RT 17.0
18 IN INV. IN = 451.61
18 IN INV. OUT = 451.36
GRATE ELEV. = 456.86

129 STA 838+00, LT 20.3 TO STA 840+50.0, LT 25.1
CONSTRUCT 247.4 FT X 18 IN RCP
CONSTRUCT CB-E @ 840+50.0, LT 25.1 (SLAB TOP)
18 IN INV. IN = 451.31
18 IN INV. OUT = 450.81
GRATE ELEV. = 455.64

130 NOT USED

131 STA 845+50, RT 35.0 TO STA 847+00.0, RT 39.3
CONSTRUCT 146.1 FT X 18 IN RCP
CONSTRUCT CB-E @ 847+00.0, RT 39.3
18 IN INV. OUT = 481.10
GRATE ELEV. = 486.23

132 STA 843+00, RT 35.0 TO STA 845+50.0, RT 35.0
CONSTRUCT 246.0 FT X 18 IN RCP
CONSTRUCT CB-E @ 845+50.0, RT 35.0
18 IN INV. IN = 472.00
18 IN INV. OUT = 471.75
GRATE ELEV. = 479.45

133 STA 840+50, RT 35.0 TO STA 843+00.0, RT 35.0
CONSTRUCT 245.0 FT X 18 IN RCP
CONSTRUCT CB-E @ 843+00.0, RT 35.0
18 IN INV. IN = 460.68
18 IN INV. OUT = 460.00
GRATE ELEV. = 467.23

134 STA 838+00, RT 35.0 TO STA 840+50.0, RT 35.0
CONSTRUCT 242.0 FT X 18 IN RCP
CONSTRUCT CB-E @ 840+50.0, RT 35.0
18 IN INV. IN = 447.00
18 IN INV. OUT = 446.50
GRATE ELEV. = 453.45

135 STA 838+12.0, RT 92.5 TO STA 838+00.0, RT 35.0
CONSTRUCT 55.7 FT X 24 IN RCP
CONSTRUCT 6 FT DIA. CB-E @ 838+00.0, RT 35.0
18 IN INV. IN (W) = 430.71
18 IN INV. IN (N) = 433.06
24 IN INV. OUT = 430.20
GRATE ELEV. = 440.73
24 IN INV. @ OUTLET = 429.92
CONSTRUCT 24 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

136 STA 1002+27.4, RT 15.1 TO STA 1001+28.0, RT 11.9
CONSTRUCT 47.8 FT X 15 IN RCP
CONSTRUCT SPECIAL DRAINAGE STRUCTURE @ 1001+28.0, RT 11.9
18 IN INV. OUT = 428.00
CONSTRUCT 15 IN CONCRETE END SECTION @ OUTLET
18 IN INV. OUTLET = 424.00
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET
SEE INFILTRATION BASIN DETAILS SHEET
CONSTRUCT 116.7 FT 6" UNDERDRAIN WITH FLUSHING BASIN

137 STA 741+00, RT 17.0 TO STA 843+42, LT 30.1
CONSTRUCT 245.6 FT X 18 IN RCP
CONSTRUCT CB-E @ 843+42, LT 30.1
18 IN INV. OUT = 463.75
GRATE ELEV. = 469.25

138 STA 407+70.3, RT 42.1 TO STA 407+52.5, RT 13.8
CONSTRUCT 30.9 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. DMH @ STA 407+52.5, RT 13.8
24 IN INV. IN = 445.57
24 IN INV. OUT = 445.32
COVER ELEV. = 451.50
24 IN INV. @ OUTLET = 443.67
CONSTRUCT 24 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

139 NOT USED

140 STA 740+00.0, LT 27.6 TO STA 742+10.0, LT 39.3
CONSTRUCT 207.1 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 742+10.0, LT 39.3
24 IN INV. IN = 456.25
24 IN INV. OUT = 456.00
GRATE ELEV. = 461.42

141 STA 407+52.5, RT 13.8 TO STA 739+50.0, LT 25.2
CONSTRUCT 35.2 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 739+50.0, LT 25.2 (SLAB TOP)
24 IN INV. IN = 446.06
24 IN INV. OUT = 445.75
GRATE ELEV. = 450.88

142 STA 742+10.0, LT 39.3 TO STA 742+65.5, LT 77.3
CONSTRUCT 64.7 FT X 18 IN PLASTIC PIPE (SMOOTH INTERIOR)
18 IN INV. IN = 468.62
CONSTRUCT 18 IN CONCRETE END SECTION AT INLET

143 STA 847+76.8, RT 71.1 TO STA 847+92.4, LT 35.6
CONSTRUCT 105.3 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 847+92.4, LT 35.6
24 IN INV. IN = 482.65
24 IN INV. OUT = 482.44
GRATE ELEV. = 490.37
CONSTRUCT 24 IN CONCRETE END SECTION AT OUTLET
24 IN INV. @ OUTLET = 477.87
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

144 STA 843+83.8, RT 59.8 TO STA 744+04.0, LT 40.4
CONSTRUCT 154.3 FT X 18 IN RCP
CONSTRUCT CB-E @ 744+04.0, LT 40.4 (SLAB TOP)
18 IN INV. OUT = 464.94
GRATE ELEV. = 469.85
18 IN INV. @ OUTLET = 461.51
CONSTRUCT 18 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET

145 STA 304+82.6, RT 22.8 TO STA 304+84.0, RT 2.0
CONSTRUCT 19.2 FT X 18 IN RCP
CONSTRUCT CB-E @ 304+84.0, RT 2.0
18 IN INV. OUT = 495.09
GRATE ELEV. = 500.33
18 IN INV. @ OUTLET = 491.22
CONSTRUCT 18 IN CONCRETE END SECTION AT OUTLET
CONSTRUCT STONE PAD @ OUTLET
SEE STONE FILL DRAINAGE DETAILS SHEET
REMOVE 19 FT X 12 IN CMP (SUBSIDIARY)
REMOVE CB @ STA 304+84.0, RT 2.0 (SUBSIDIARY)

146 STA 847+92.4, LT 35.6 TO STA 747+99.9, LT 38.5
CONSTRUCT 63.3 FT X 24 IN RCP
CONSTRUCT 5 FT DIA. CB-E @ 747+99.9, LT 38.5 (SLAB TOP)
24 IN INV. OUT = 482.98
GRATE ELEV. = 487.81

A101 STA 306+33.3, LT 28.2
ADJUST GRATE ELEV. = 508.84

A102 STA 851+42.0, LT 35.9
ADJUST GRATE ELEV. = 506.31

R101 STA 832+88.5, LT 17.1 TO STA 832+88.6, RT 37.4
REMOVE 52 FT X 18 CMP
REMOVE DI @ STA 832+88.6, RT 37.4

R102 STA 732+96.5, LT 63.1 TO STA 832+88.5, LT 17.1
REMOVE 78 FT X 18 IN CMP (SUBSIDIARY)
REMOVE CB STA 832+88.5, LT 17.1

R103 STA 834+93.8, RT 61.0 TO STA 834+90.5, RT 40.5
REMOVE 14 FT X 12 IN CMP
REMOVE CB @ STA 834+90.5, RT 40.5

R104 STA 735+23.1, RT 15.8 TO STA 736+45.0, RT 15.7
REMOVE 120 FT X 18 IN SMOOTH PLASTIC PIPE (80 FT SUBSIDIARY)
REMOVE DI @ STA 736+45.0, RT 15.7

R105 STA 837+91.9, RT 60.2 TO STA 837+94.7, RT 41.9
PLUG AND ABANDON 12 IN CMP (SUBSIDIARY)
FILL AND ABANDON CB @ STA 837+94.7, RT 41.9

R106 STA 840+26.2, RT 119.1 TO STA 839+67.7, RT 42.8
PLUG AND ABANDON 18 IN CMP (SUBSIDIARY)
FILL AND ABANDON CB @ STA 839+67.7, RT 42.8

R107 STA 839+67.7, RT 42.8 TO STA 839+72.7, RT 14.1
FILL AND ABANDON 56 FT X 18 IN CMP
REMOVE DI @ STA 839+72.7, RT 14.1

R108 STA 407+70.3, RT 42.1 TO STA 407+27.8, LT 42.8
REMOVE 36 FT X 24 IN CMP (SUBSIDIARY)
FILL AND ABANDON 36 FT X 24 IN CMP
REMOVE CB @ STA 407+27.8, LT 42.8

R109 STA 407+27.8, LT 42.8 TO STA 742+00.1, LT 34.4
REMOVE 230 FT X 24 IN CMP (160 SUBSIDIARY)
REMOVE DI @ STA 742+00.1, LT 34.4

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

DRAINAGE NOTES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148drainnotes	16148	67	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

NOTEBOOKS

BOOK PAGE

BOOK PAGE

EXISTING DETAIL DATE

PROPOSED DESIGN MAH DATE

SHEET CHECKED BRC DATE 2/18

AS BUILT DETAILS DATE 2/18

R110 STA 742+00.1, LT 34.4 TO STA 742+65.8, LT 77.3
REMOVE 77 FT X 18 IN CMP (SUBSIDIARY)

R111 STA 843+94.4, LT 20.2 TO STA 744+04.0, LT 35.8
FILL AND ABANDON 70 FT X 18 IN CMP
REMOVE CB @ STA 744+04.0, LT 35.8 (SUBSIDIARY)

R112 STA 843+93.1, RT 59.3 TO STA 843+94.4, LT 20.2
FILL AND ABANDON 77 FT X 18 IN CMP
REMOVE CB @ STA 843+94.4, LT 20.20

R113 STA 847+92.6, LT 28.8 TO STA 747+99.9, LT 38.5
FILL AND ABANDON 73 FT X 24 IN CMP
REMOVE CB @ STA 747+99.9, LT 38.5 (SUBSIDIARY)

R114 STA 847+76.8, RT 71.0 TO STA 847+92.6, LT 28.8
FILL AND ABANDON 100 FT X 24 IN CMP
REMOVE CB @ STA 847+92.6, LT 28.8 (SUBSIDIARY)

R115 STA 844+94.5, RT 54.4 TO STA 844+94.3, RT 36.7
PLUG AND ABANDON 12 IN CMP (SUBSIDIARY)
FILL AND ABANDON CB @ STA 844+94.3, RT 36.7

R116 STA 847+38.2, RT 65.7 TO STA 847+40.7, RT 43.7
PLUG AND ABANDON 12 IN CMP (SUBSIDIARY)
FILL AND ABANDON CB @ STA 847+40.7, RT 43.7

R117 STA 842+43.8, RT 59.4 TO STA 842+44.9, RT 40.4
PLUG AND ABANDON 12 IN CMP (SUBSIDIARY)
FILL AND ABANDON CB @ STA STA 842+44.9, RT 40.4

T105 STA 732+90.1, LT 1.1
CONSTRUCT DI-B @ STA 732+90.1, LT 1.1
18 IN INV. IN = 415.35
CONNECT TO EXIST. 18" CMP @ INV. = 409.29 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 418.00
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T106 STA 732+85.2, RT 5.7
CONSTRUCT TEMP DI-B @ STA 732+85.2, RT 5.7'
CONNECT TO PROPOSED 15" RCP @ INV. = 411.56
GRATE ELEV. = 419.46
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T107 STA 832+88.4, RT 3.5
CONSTRUCT TEMP DI-B @ STA 832+88.4, RT 3.5'
CONNECT TO EXIST. 18" CMP @ INV. = 411.44 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 417.89
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T108 STA 732+90.1, LT 1.1 TO STA 735+01, LT 6.3
CONSTRUCT 207.1 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA STA 735+01, LT 6.3'
15 IN INV. OUT = 422.85
GRATE ELEV. = 427.05
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T109 STA 832+94.9, LT 13.9 TO STA 832+88.5, LT 4.6
CONSTRUCT 12.4 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA STA 832+88.5, LT 4.6'
15 IN INV. OUT = 412.18
GRATE ELEV. = 419.46
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T110 STA 740+50.7, LT 31.9' TO STA 740+50, LT 24.2
CONSTRUCT 4.0 FT X 12 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA STA 740+50, LT 24.2
12 IN INV. OUT = 453.94
GRATE ELEV. = 455.60
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T111 STA 740+50.7, LT 31.9'
CONSTRUCT TEMP DMH @ STA 740+50.7, LT 31.9'
24 IN INV. IN = 453.92
CONNECT TO EXIST. 24" CMP @ INV. = 453.92 (SUBSIDIARY TO PIPE)
COVER ELEV. = 458.97
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T112 STA 839+71.7', RT 1.4'
CONSTRUCT TEMP DI-B @ STA 839+71.7, RT 1.4'
CONNECT TO EXIST. 18" CMP @ INV. = 442.68 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 449.56
TO BE CONSTRUCTED IN PHASE I AND REMOVED BEFORE PHASE 3

T113 STA 744+03.8, LT 22.0
CONSTRUCT TEMP DI-B @ STA 744+03.8, LT 22
CONNECT TO EXIST. 18" CMP @ INV. = 464.84 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 472.02
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T114 STA 744+03.1, RT 4.0
CONSTRUCT TEMP DI-B @ STA 744+03.1, RT 4.0
CONNECT TO EXIST. 18" CMP @ INV. = 464.41 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 472.06
TO BE CONSTRUCTED BEFORE PHASE I AND REMOVED BEFORE PHASE 2

T201 STA 532+85.1, LT 16.0 TO STA 532+85.1, LT 14.0
CONSTRUCT TEMP DI-B @ STA 532+85.1, LT 16.0'
CONNECT TO PROPOSED 18" RCP @ INV. = 411.54 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 418.00
TO BE CONSTRUCTED BEFORE IN PHASE 2 AND REMOVED BEFORE PHASE 5

T202 STA 532+85.1, LT 14.0
CONSTRUCT TEMP DI-B @ STA 532+85.1, LT 16.0'
CONNECT TO PROPOSED 18" RCP @ INV. = 411.57
GRATE ELEV. = 419.40
TO BE CONSTRUCTED BEFORE IN PHASE 2 AND REMOVED BEFORE PHASE 5

T203 STA 532+88.4, RT 14.0 TO STA 735+85.0 RT 15.4
CONSTRUCT 13.0 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA 532+85.1, RT 16.0'
15 IN INV. OUT = 412.19
CONNECT TO EXIST. 18" CMP @ INV. = 410.9
GRATE ELEV. = 419.42
TO BE CONSTRUCTED BEFORE IN PHASE 2 AND REMOVED BEFORE PHASE 5

T204 STA 532+88.4, RT 21.0
CONSTRUCT TEMP DI-B @ STA 532+88.4, RT 14.0
CONNECT TO EXIST. 18" CMP @ INV. = 410.30 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 417.89
TO BE CONSTRUCTED BEFORE IN PHASE 2 AND REMOVED BEFORE PHASE 5

T205 STA 544+00, RT 14.0
CONSTRUCT TEMP DI-B @ STA 544+00, RT 14.0
CONNECT TO EXIST. 18" CMP @ INV. = 464.45 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 472.07
TO BE CONSTRUCTED BEFORE PHASE 2 AND REMOVED BEFORE PHASE 3

T206 STA 544+00, LT 16.0
CONSTRUCT TEMP DI-B @ STA 544+00, LT 16.0
CONNECT TO EXIST. 18" CMP @ INV. = 464.65 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 472.63
TO BE CONSTRUCTED BEFORE PHASE 2 AND REMOVED BEFORE PHASE 3

T300 STA 738+01.1, LT 0.5 TO STA 738+01.1, LT 0.5
CONSTRUCT 13.0 FT X 15 IN TEMP PIPE
CONSTRUCT TEMP DI-B @ STA 738+01.1, LT 0.5'
15 IN INV. OUT = 431.06
CONNECT TO CB @ STA 737+94.0, RT 16.9
15 IN INV. IN = 431.00
GRATE ELEV. = 442.43
TO BE CONSTRUCTED BEFORE PHASE 3 AND REMOVED BEFORE PHASE 4

T301 STA 838+00.0, LT 11.8
CONSTRUCT TEMP DI-B @ STA 838+00.0, LT 11.8
CONNECT TO 18" RCP @ INV. = 430.80 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 440.57
TO BE CONSTRUCTED BEFORE PHASE 3 AND REMOVED BEFORE PHASE 4

T302 STA 843+94.1, LT 48.8
CONSTRUCT TEMP DI-B @ STA 843+94.1, LT 48.8
CONNECT TO 18" RCP @ INV. = 464.53 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 473.06
TO BE CONSTRUCTED BEFORE PHASE 3 AND REMOVED BEFORE PHASE 5

T303 STA 843+94.0, LT 1.0
CONSTRUCT TEMP DI-B @ STA 843+94.0, LT 1.0
CONNECT TO EXIST. 18" CMP @ INV. = 463.30 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 472.06
TO BE CONSTRUCTED BEFORE PHASE 3 AND REMOVED BEFORE PHASE 5

T304 STA 847+92.0, LT 49.0
CONSTRUCT TEMP DI-B @ STA 847+92.0, LT 49.0
CONNECT TO EXIST. 24" CMP @ INV. = 488.41 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 492.55
TO BE CONSTRUCTED BEFORE PHASE 3 AND REMOVED BEFORE PHASE 4

T305 STA 843+94.0, LT 1.0
CONSTRUCT TEMP DI-B @ STA 843+94.0, LT 1.0
CONNECT TO EXIST. 24" CMP @ INV. = 482.31 (SUBSIDIARY TO PIPE)
GRATE ELEV. = 492.67
TO BE CONSTRUCTED BEFORE PHASE 3 AND REMOVED BEFORE PHASE 4

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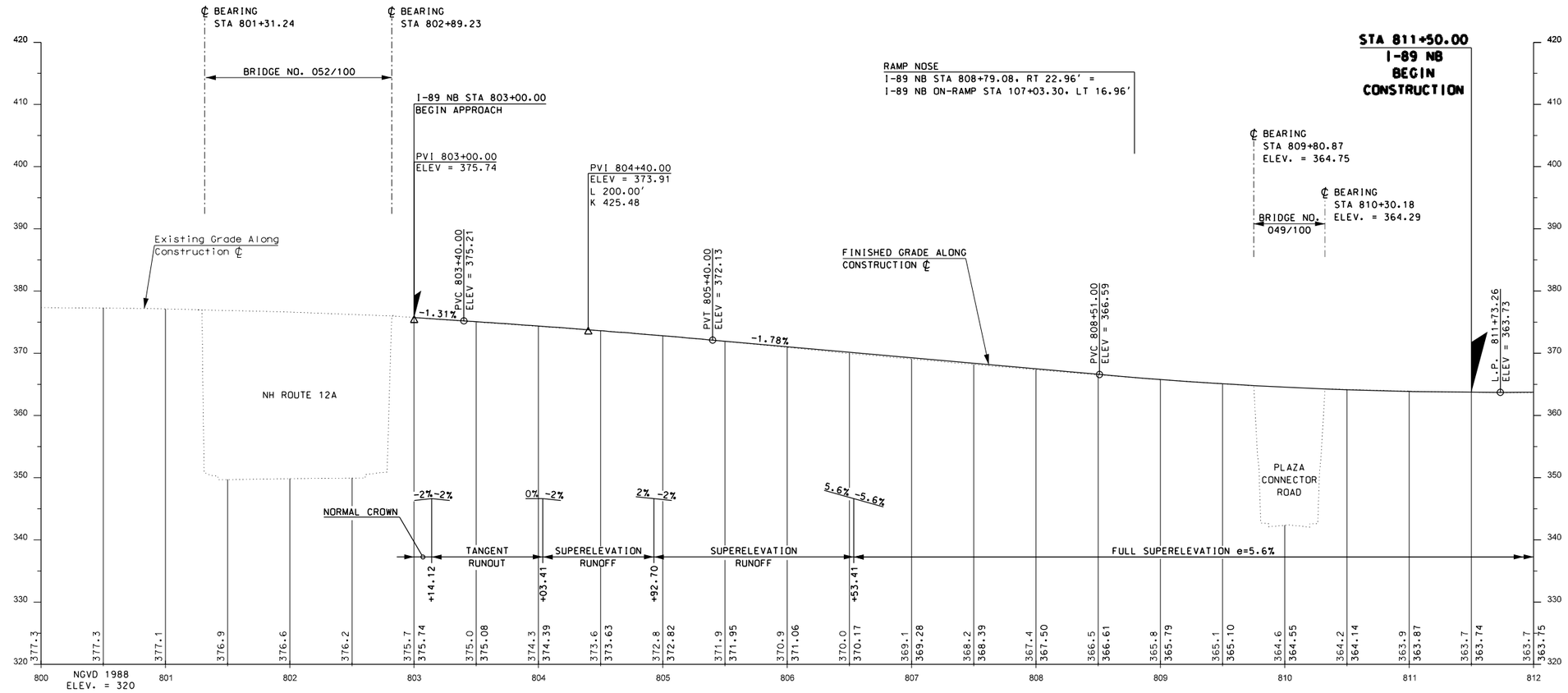
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

DRAINAGE NOTES

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148drainnotes	16148	68	600



I-89 NORTHBOUND

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

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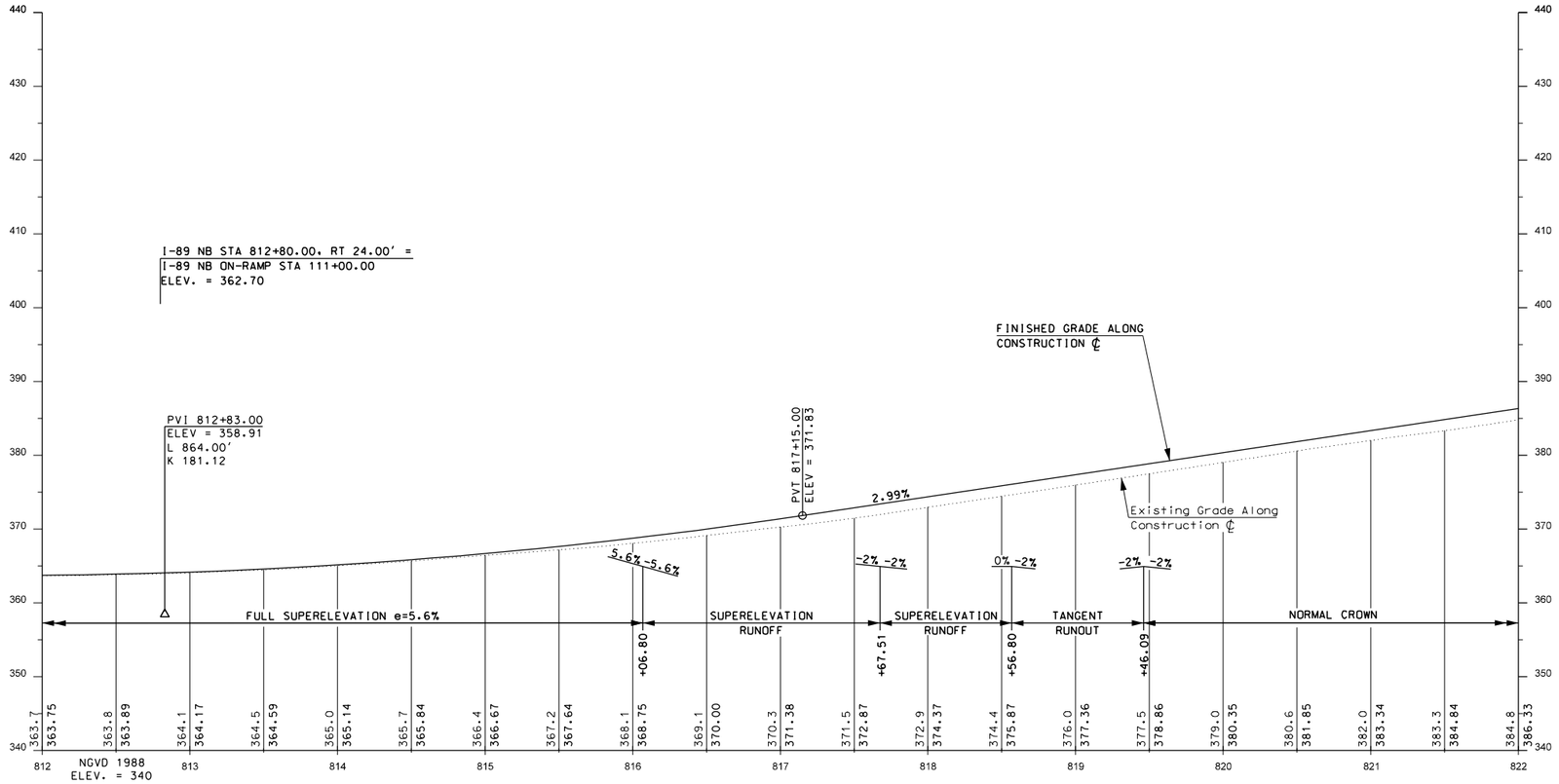
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	69	600



I-89 NORTHBOUND

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
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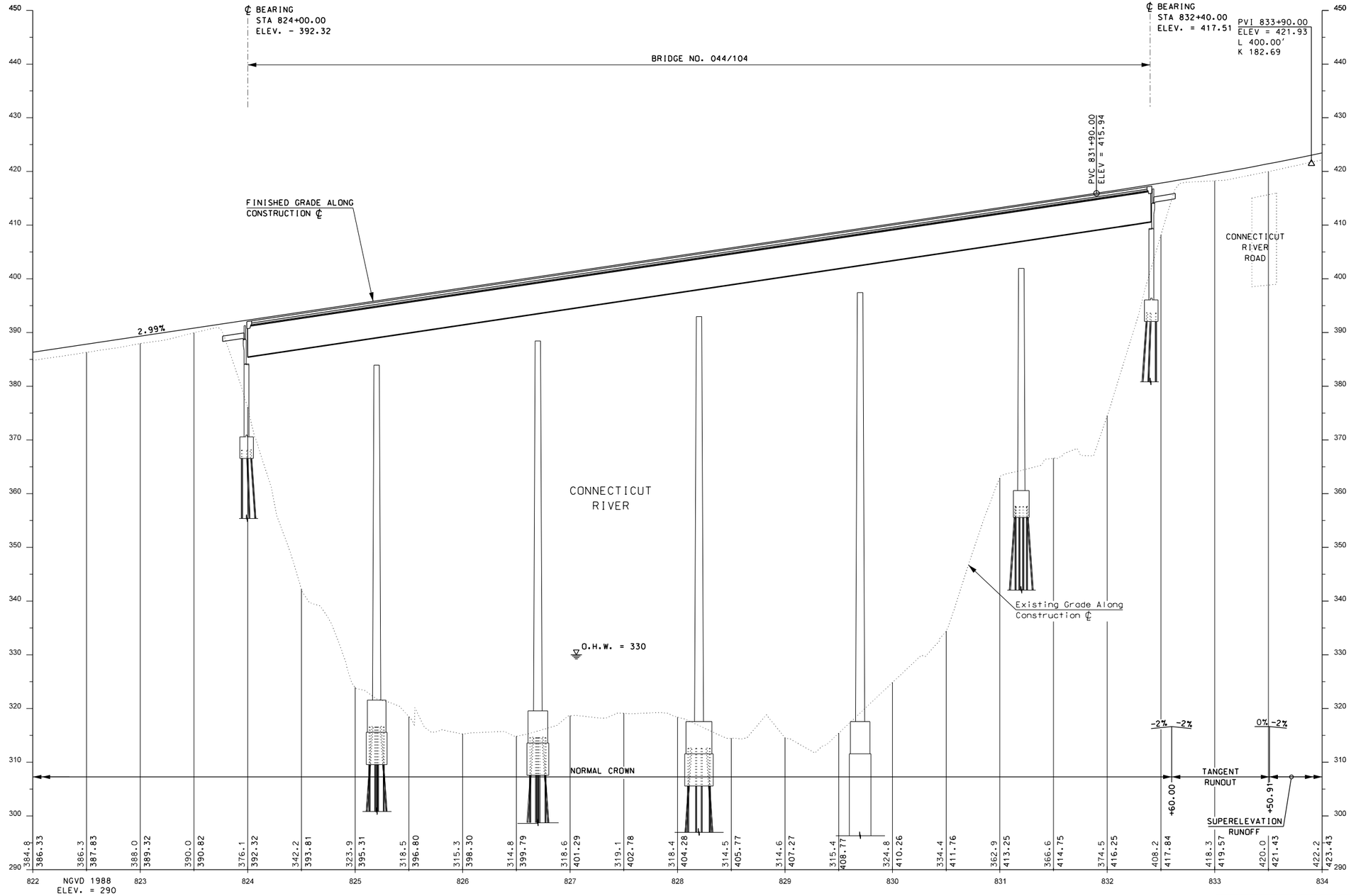
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	70	600



I-89 NORTHBOUND

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
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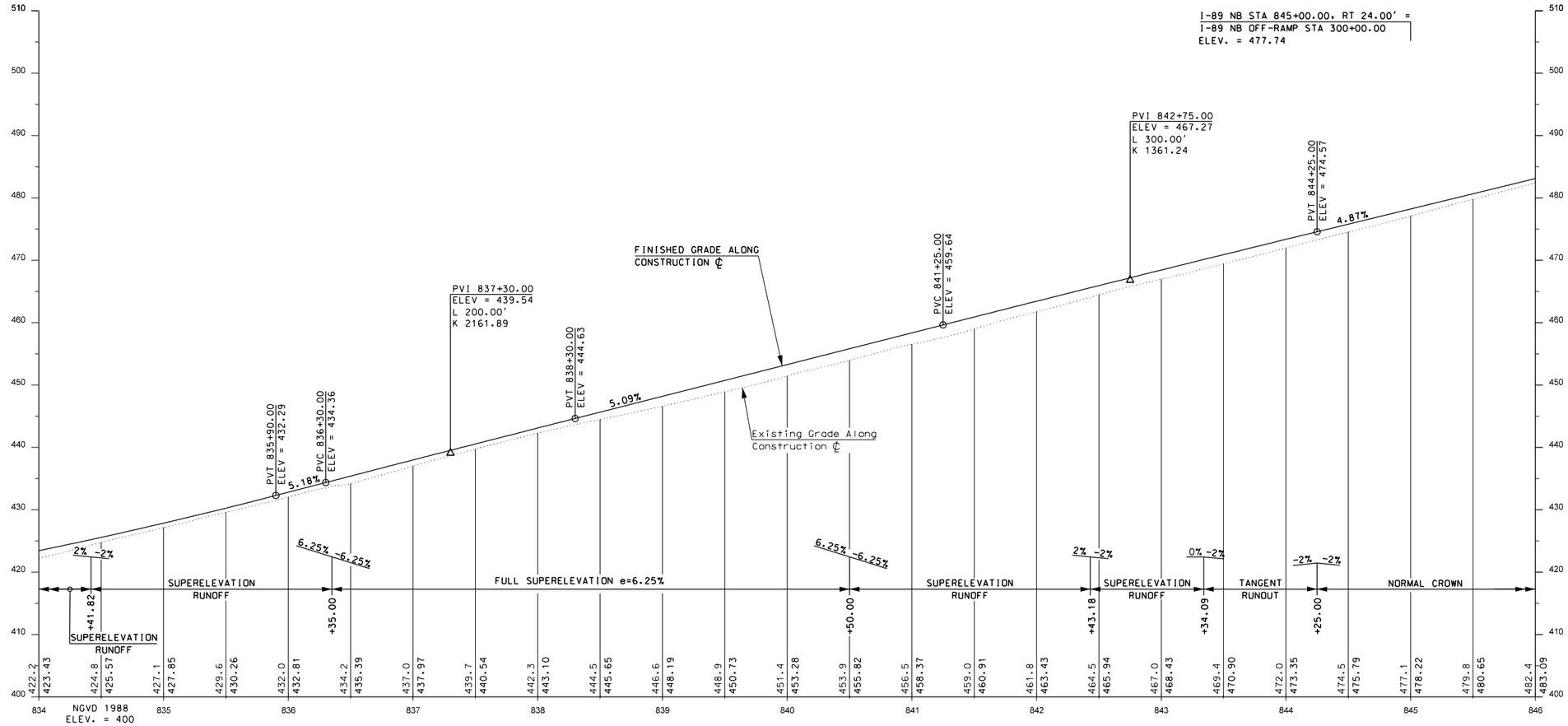
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	71	600



I-89 NORTHBOUND

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

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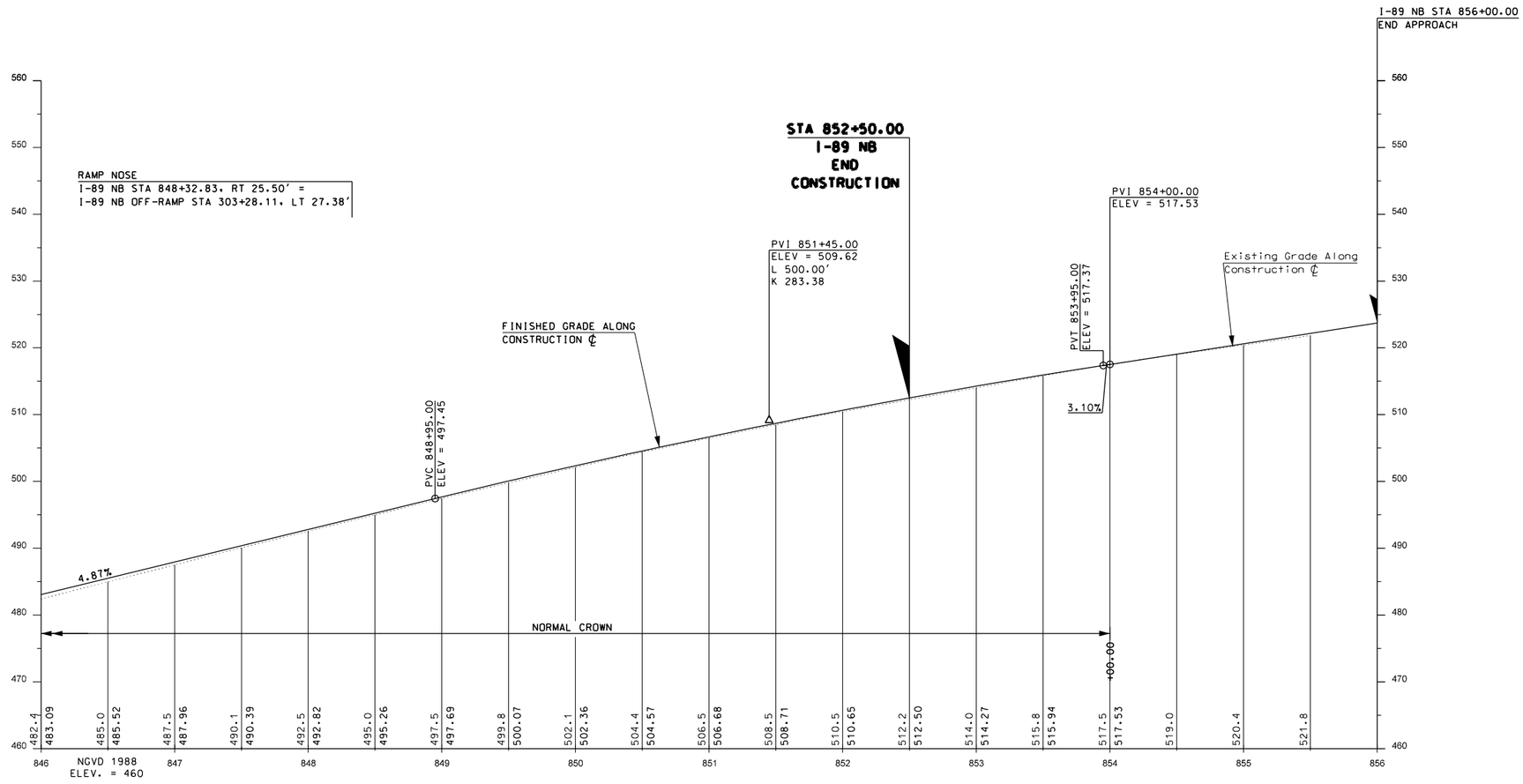
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	72	600



I-89 NORTHBOUND

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

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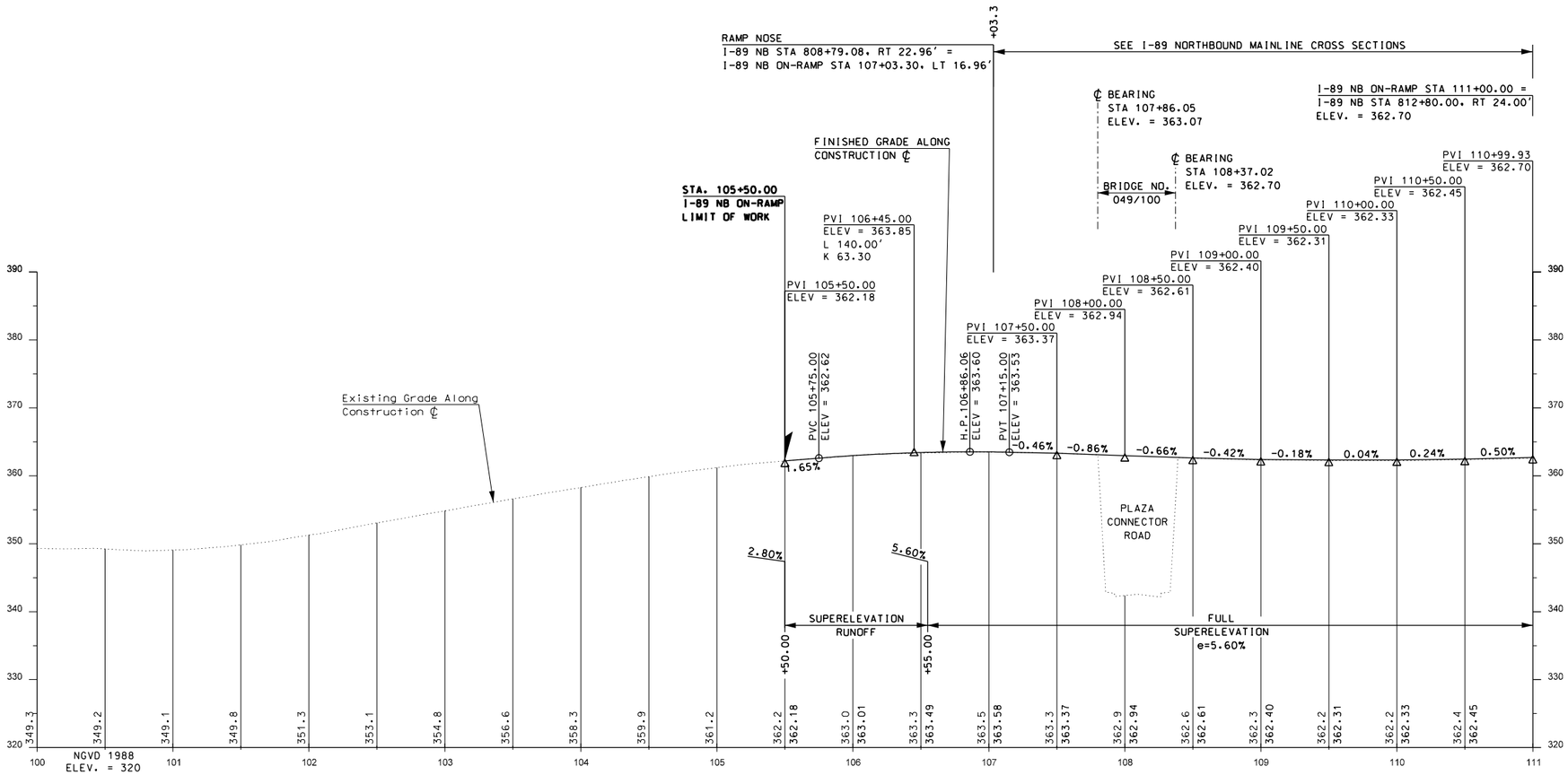
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	73	600



I-89 NORTHBOUND ON-RAMP

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

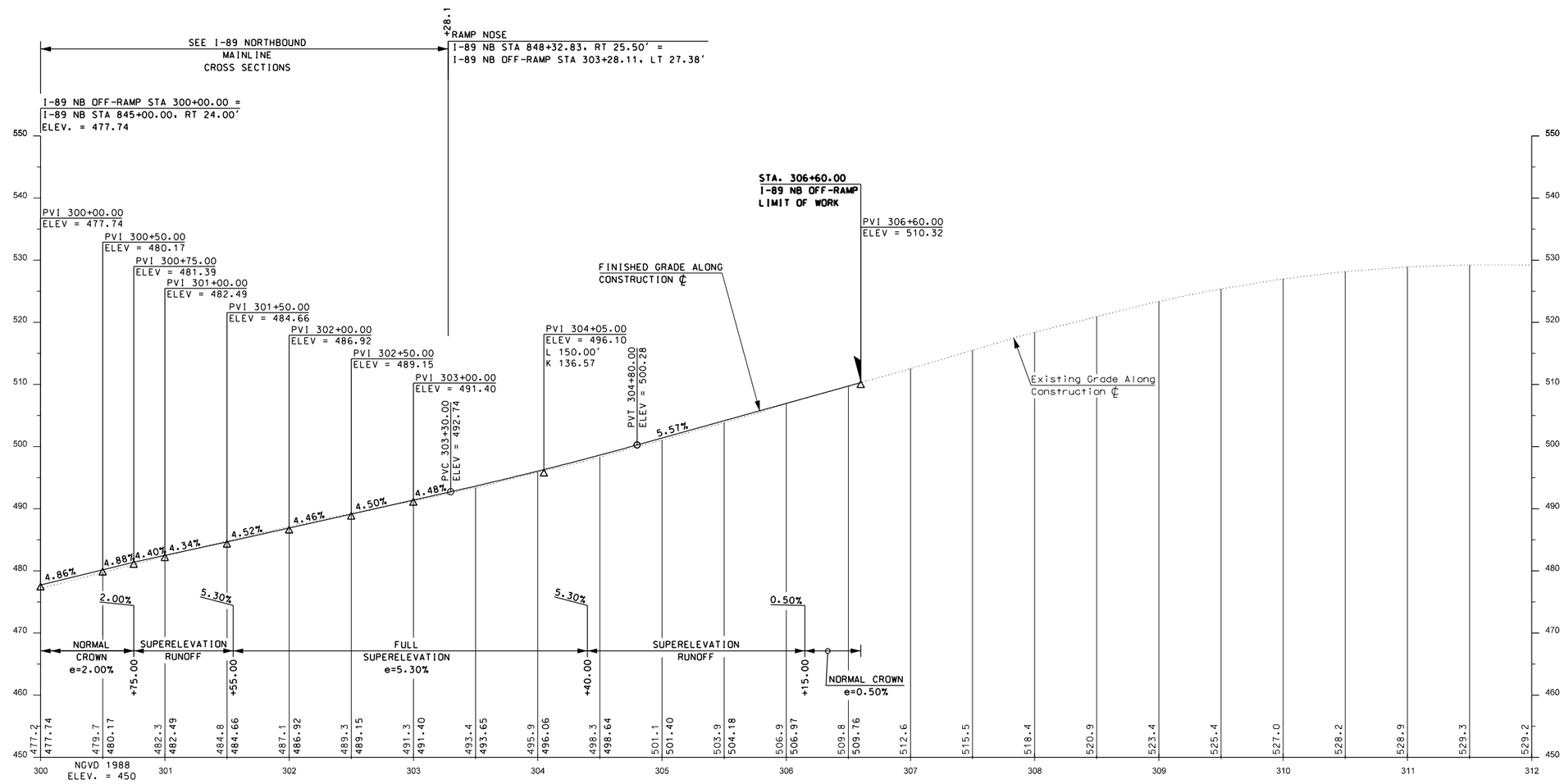
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND ON-RAMP

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	74	600



I-89 NORTHBOUND OFF-RAMP

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 NORTHBOUND OFF-RAMP

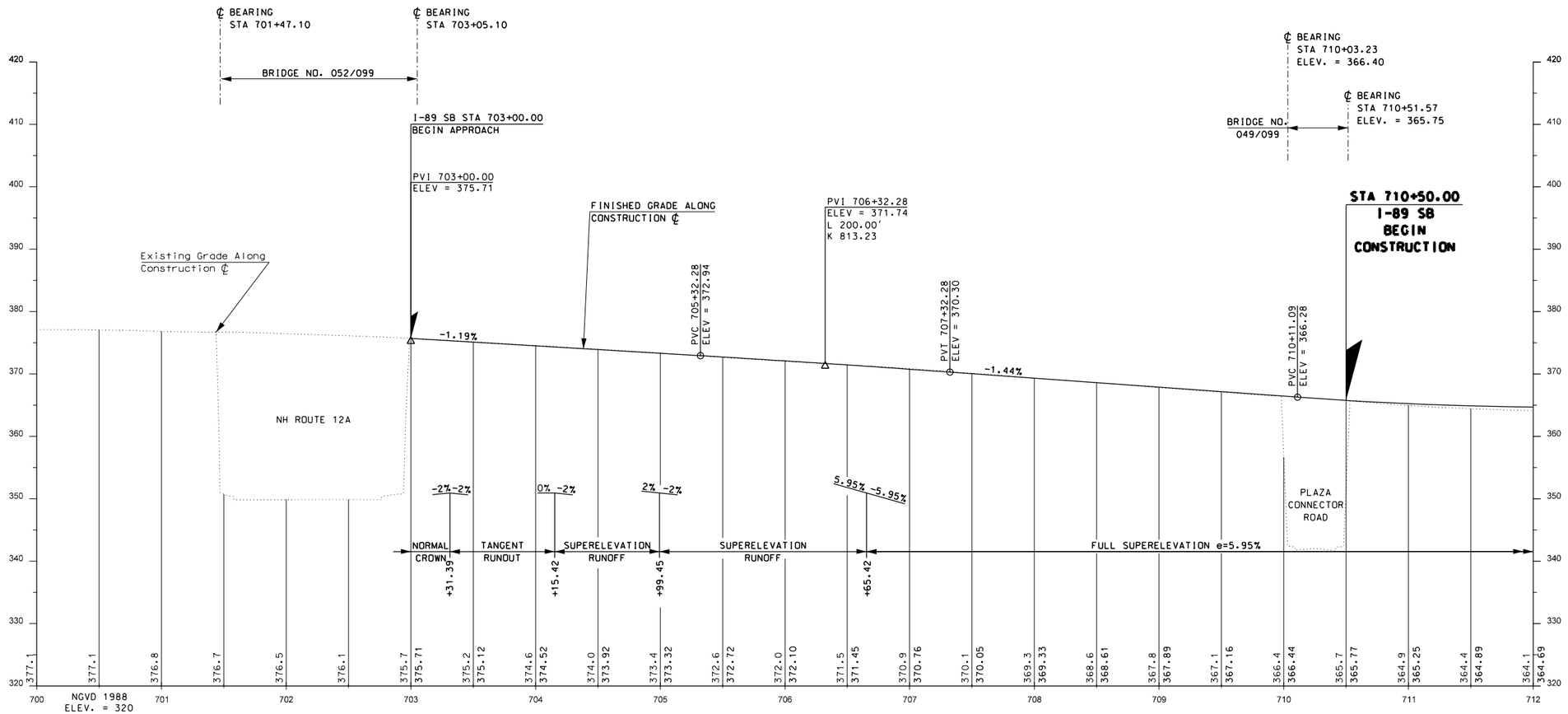
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	75	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN WJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE



I-89 SOUTHBOUND

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	76	600

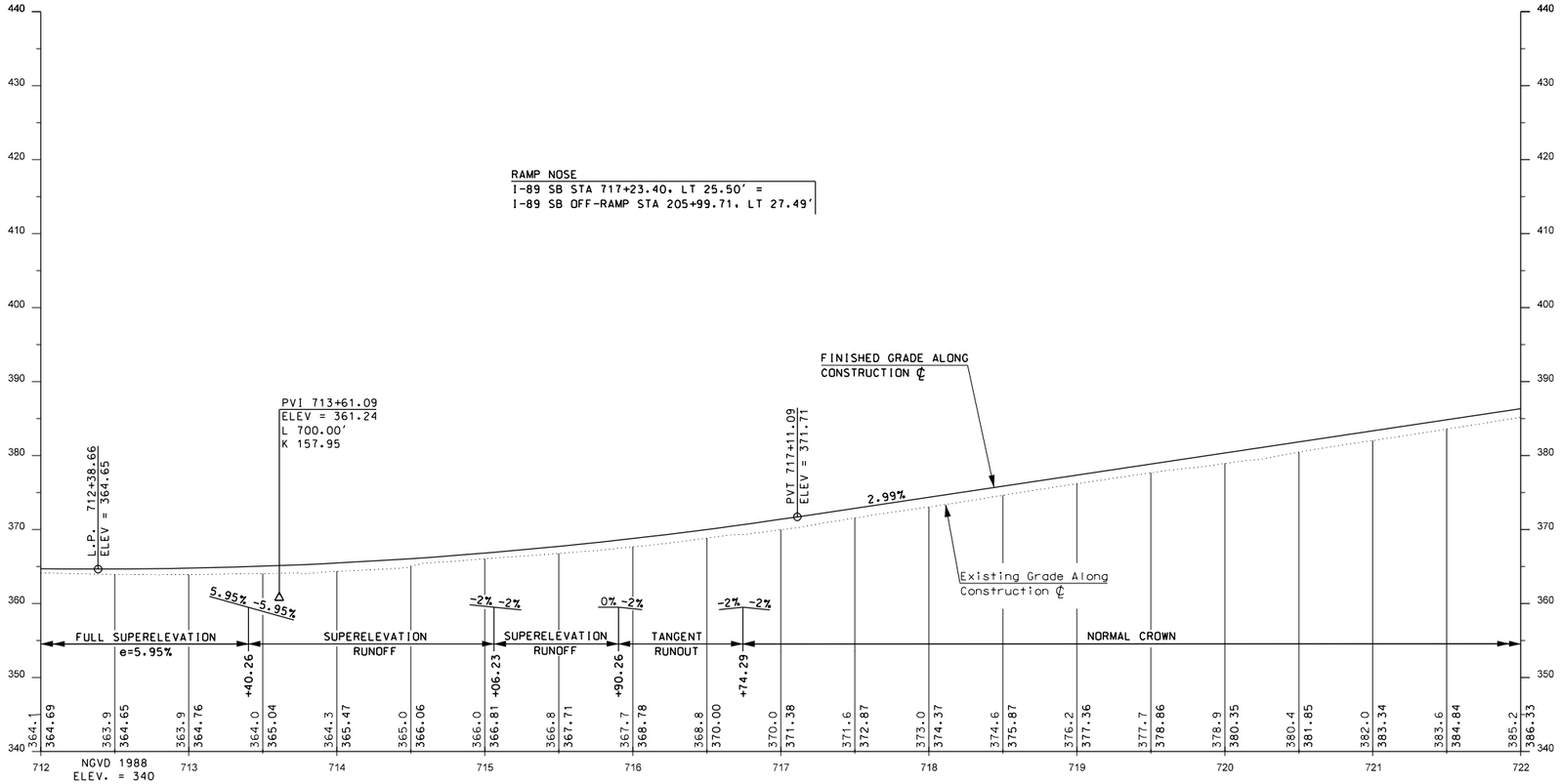
REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION



I-89 SOUTHBOUND

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

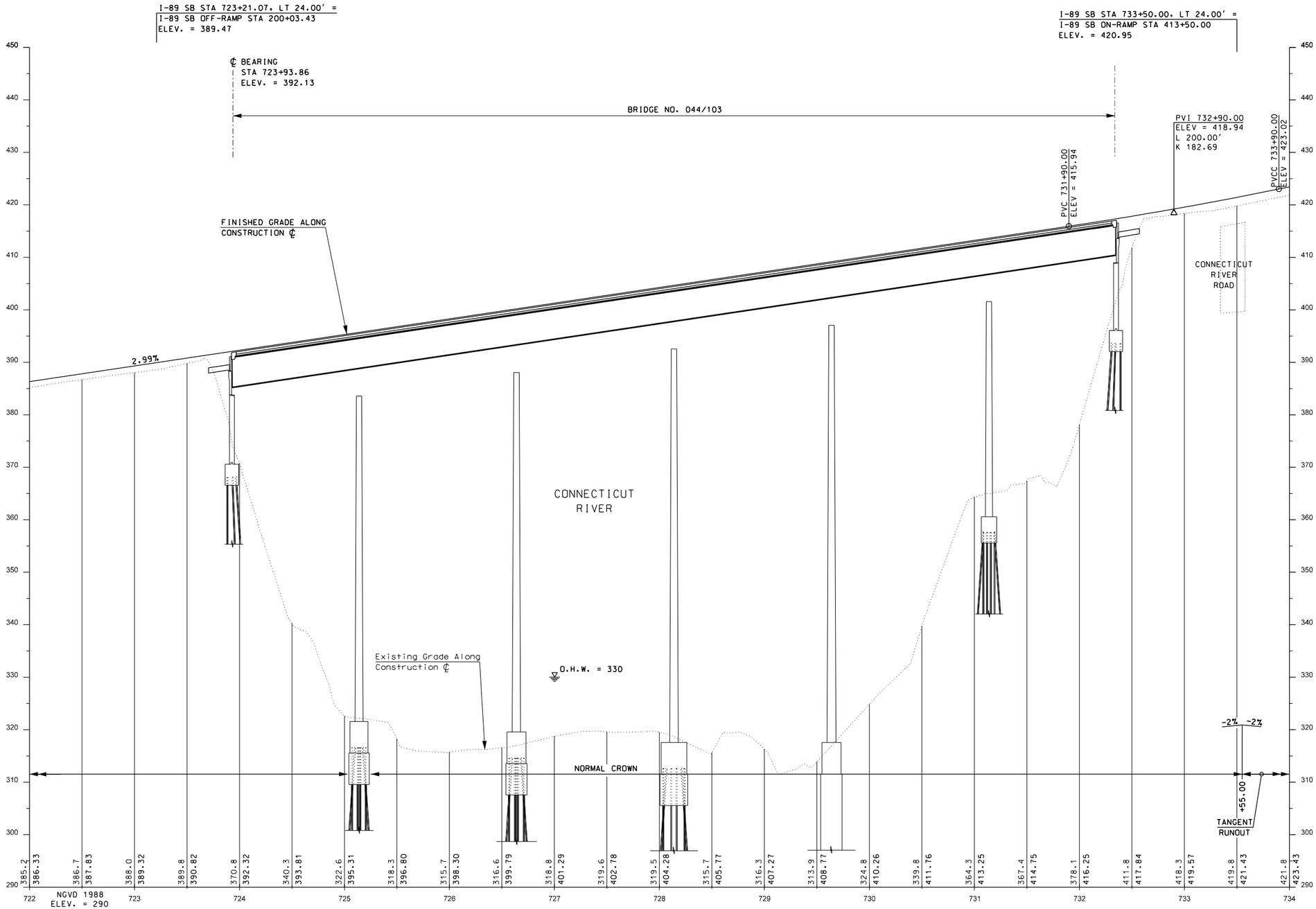
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	77	600



I-89 SOUTHBOUND

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

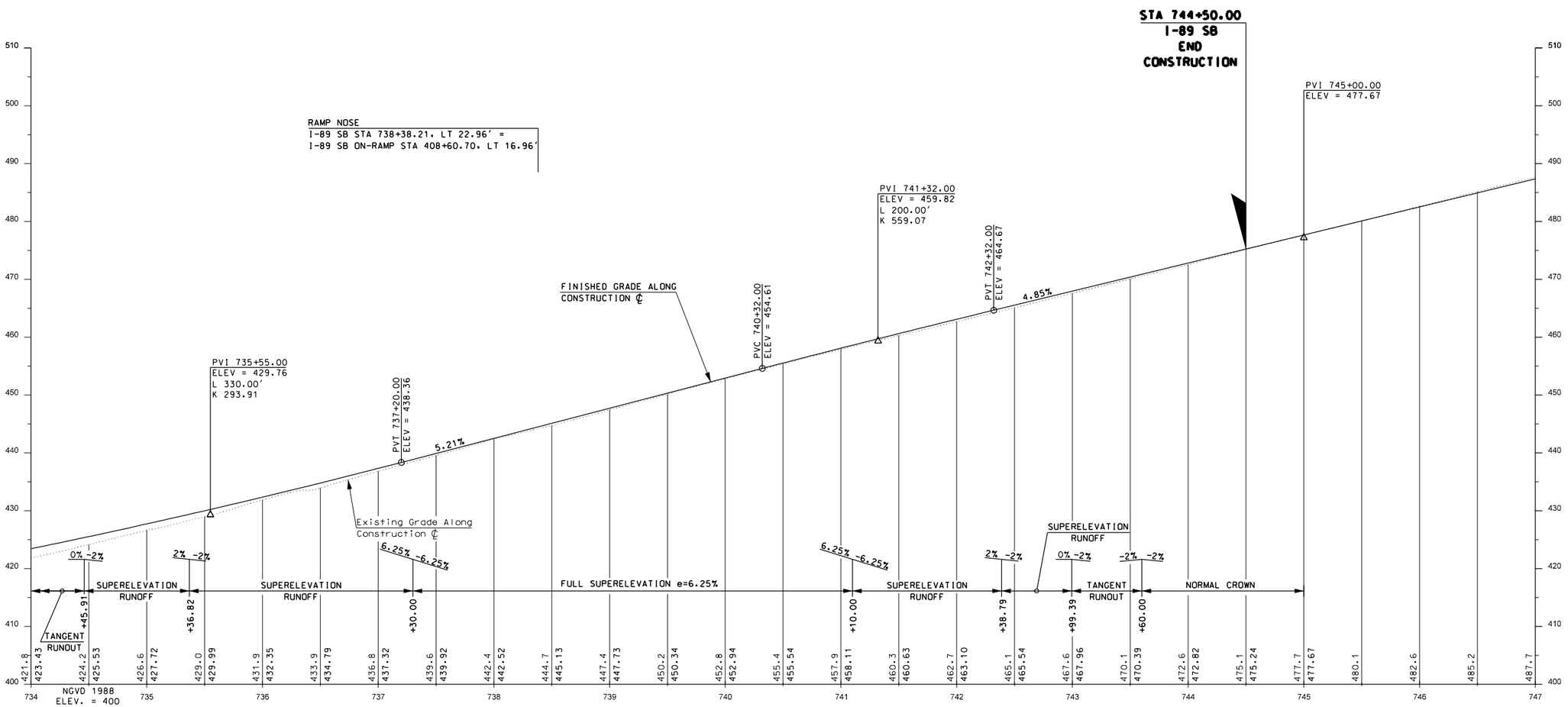
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	78	600

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



I-89 SOUTHBOUND

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION
DESCRIPTION			

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

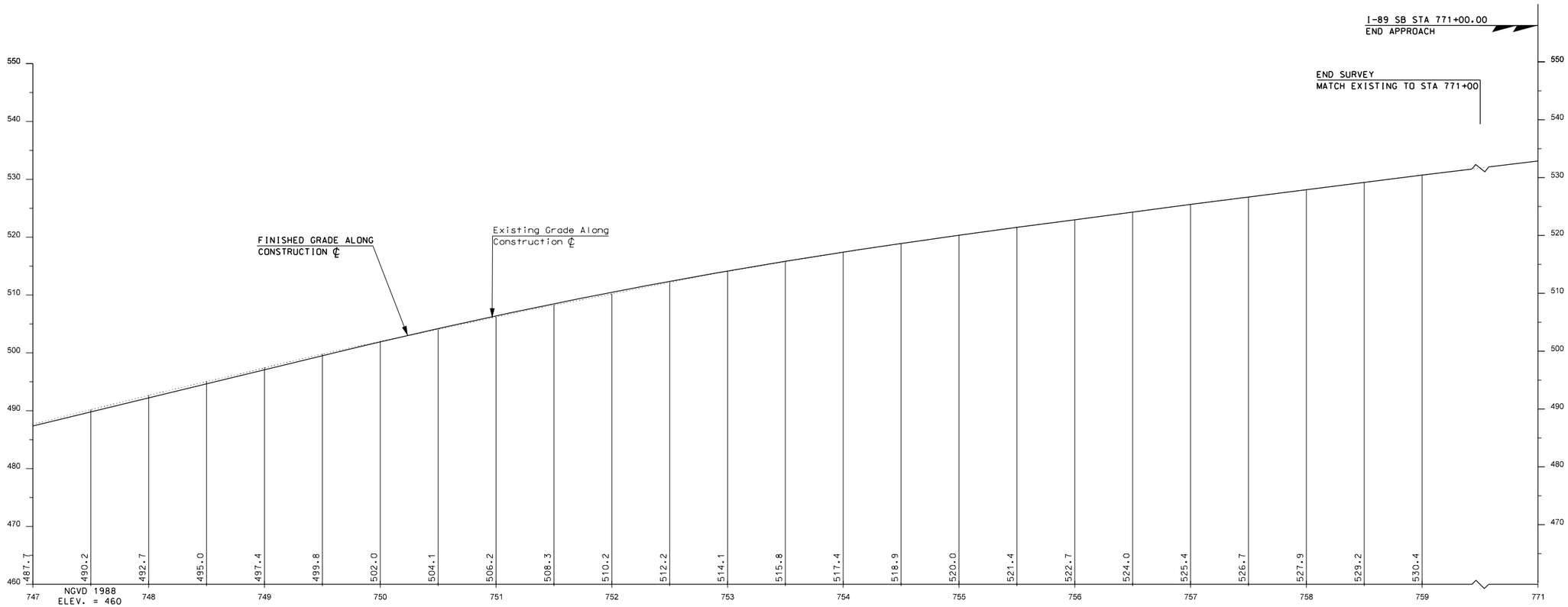
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	79	600



I-89 SOUTHBOUND

REVISIONS AFTER PROPOSAL			
DESCRIPTION	NUMBER	DATE	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

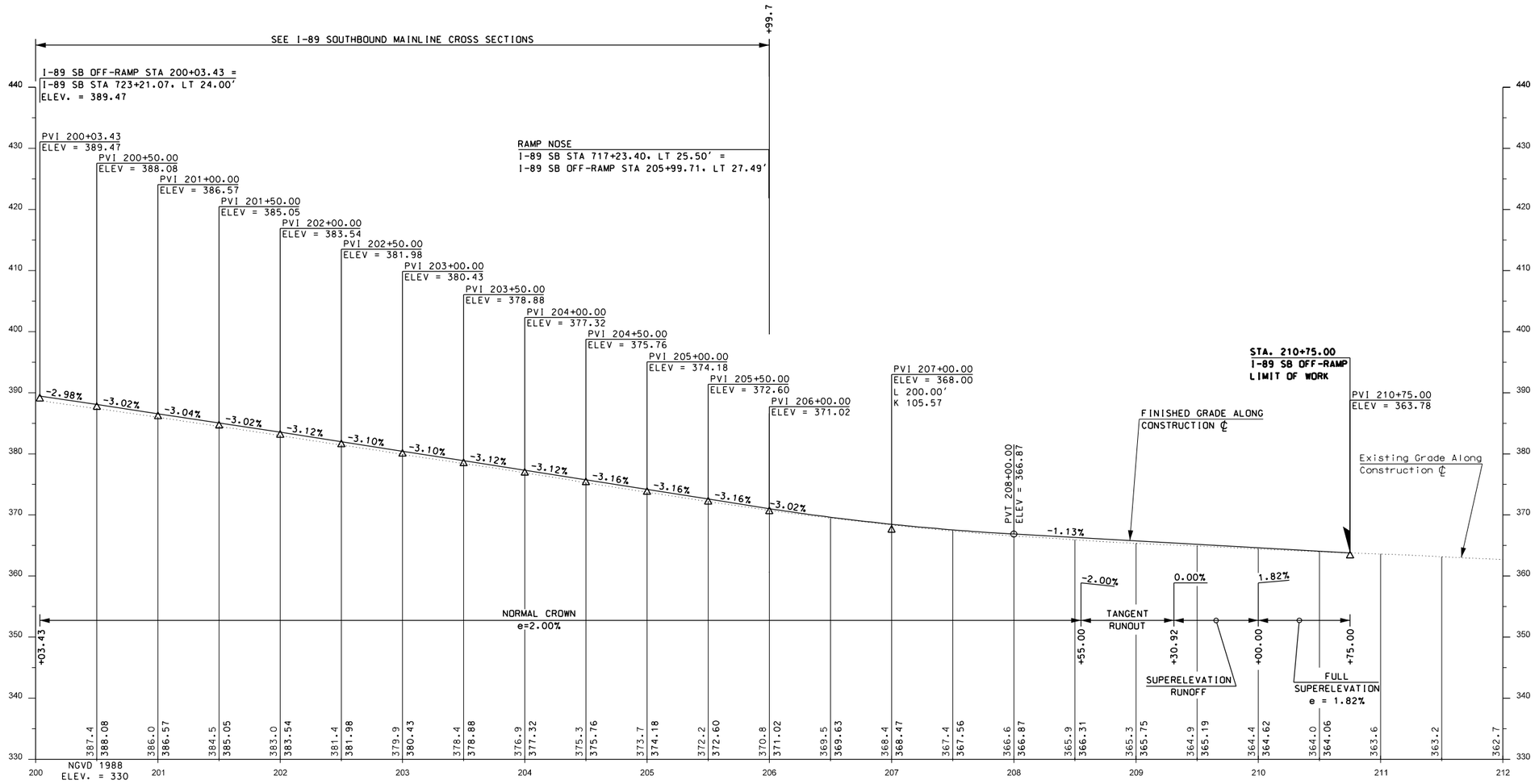
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	80	600



I-89 SOUTHBOUND OFF-RAMP

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

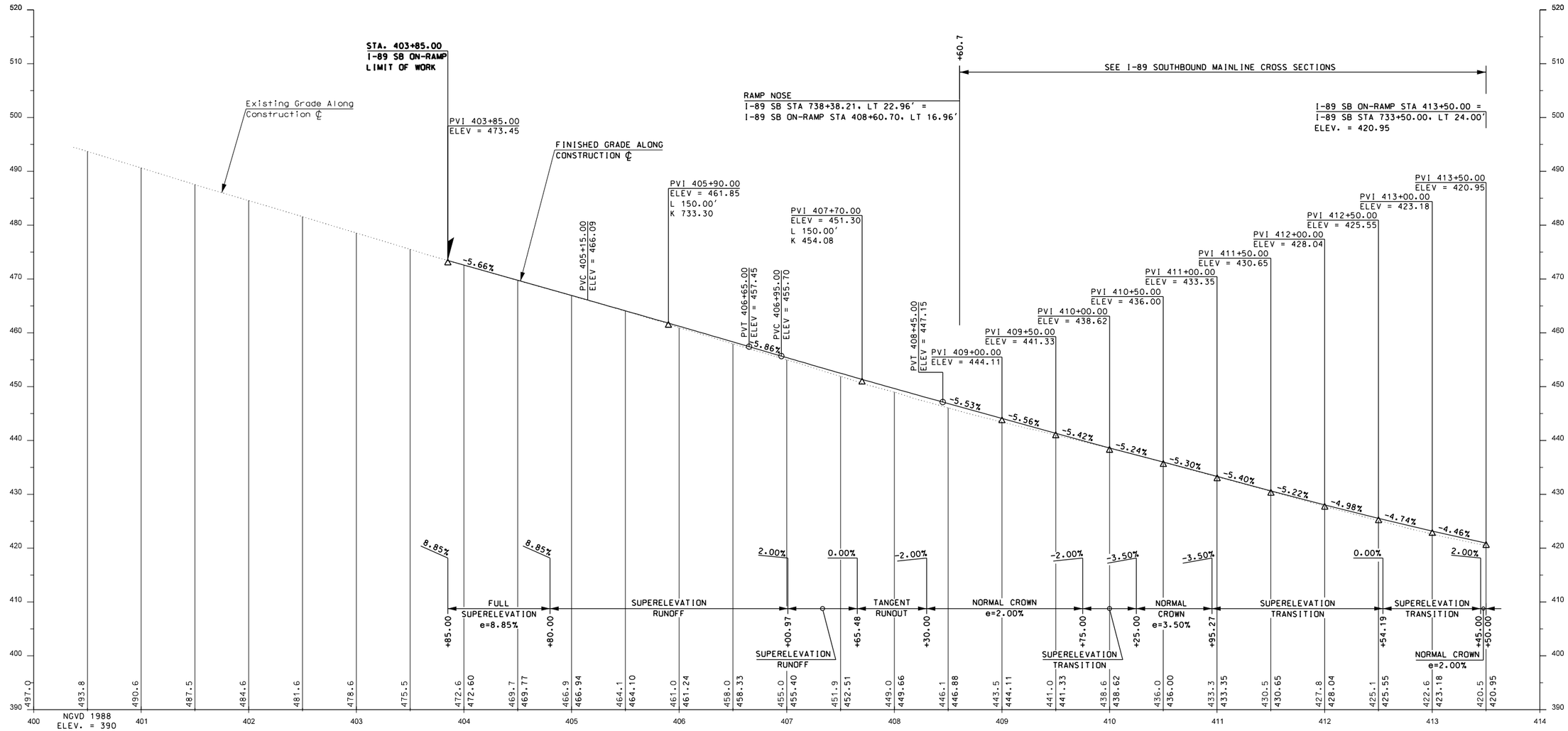
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND OFF-RAMP

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	81	600



I-89 SOUTHBOUND ON-RAMP

REVISIONS AFTER PROPOSAL			
DESCRIPTION	STATION	DATE	NUMBER

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE

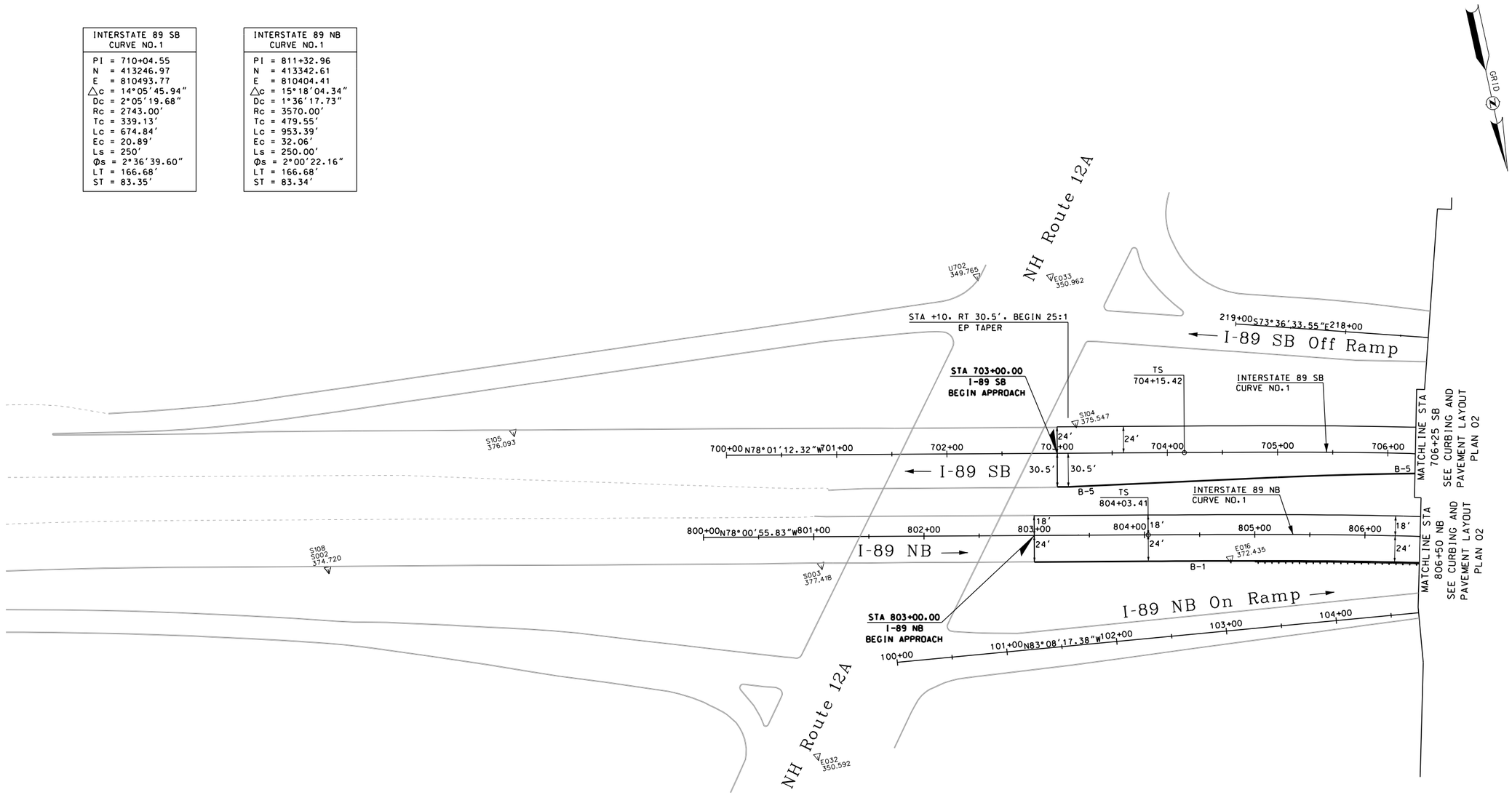
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PROFILE
I-89 SOUTHBOUND ON-RAMP

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148profiles	16148	82	600

INTERSTATE 89 SB CURVE NO.1	
PI	= 710+04.55
N	= 413246.97
E	= 810493.77
△c	= 14°05'45.94"
Dc	= 2°05'19.68"
Rc	= 2743.00'
Tc	= 339.13'
Lc	= 674.84'
Ec	= 20.89'
Ls	= 250'
Φs	= 2°36'39.60"
LT	= 166.68'
ST	= 83.35'

INTERSTATE 89 NB CURVE NO.1	
PI	= 811+32.96
N	= 413342.61
E	= 810404.41
△c	= 15°18'04.34"
Dc	= 1°36'17.73"
Rc	= 3570.00'
Tc	= 479.55'
Lc	= 953.39'
Ec	= 32.06'
Ls	= 250.00'
Φs	= 2°00'22.16"
LT	= 166.68'
ST	= 83.34'



50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

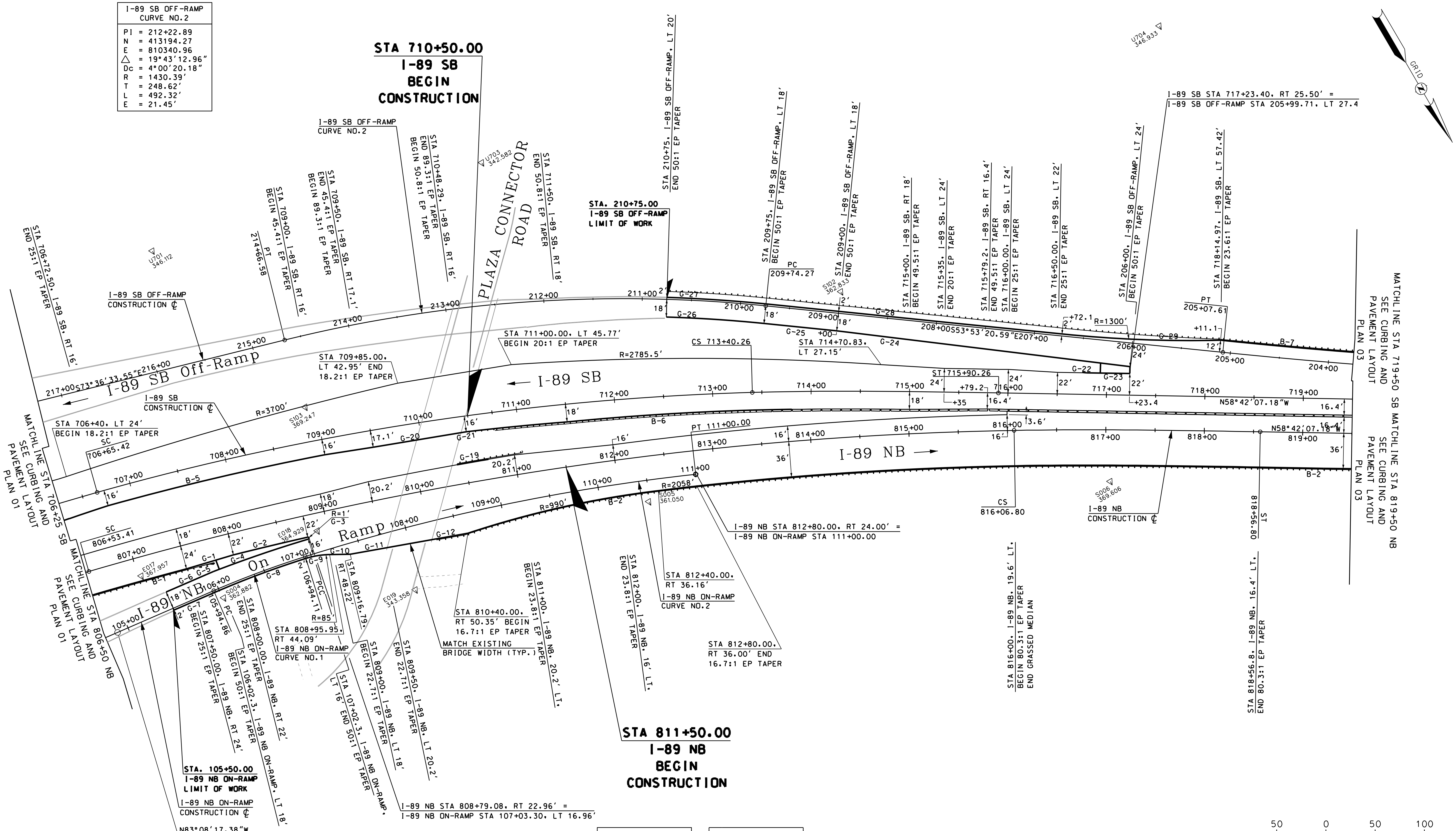
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

CURBING AND PAVEMENT LAYOUT PLAN 01

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148crbplans	16148	83	600



I-89 SB OFF-RAMP CURVE NO.2	
PI	= 212+22.89
N	= 413194.27
E	= 810340.96
Δ	= 19°43'12.96"
Dc	= 4°00'20.18"
R	= 1430.39'
T	= 248.62'
L	= 492.32'
E	= 21.45'

I-89 NB ON-RAMP CURVE NO.1	
PI	= 106+44.53
N	= 413313.45
E	= 810720.79
Δ	= 5°56'31.74"
Dc	= 5°59'13.27"
R	= 957.00'
T	= 49.67'
L	= 99.25'
E	= 1.29'

I-89 NB ON-RAMP CURVE NO.2	
PI	= 108+97.71
N	= 413369.58
E	= 810473.82
Δ	= 11°14'04.99"
Dc	= 2°46'04.48"
R	= 2070.00'
T	= 203.60'
L	= 405.89'
E	= 9.99'

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

McFarland Johnson

CURBING AND PAVEMENT LAYOUT PLAN 02

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148crbplans	16148	84	600

I-89 SB OFF-RAMP CURVE NO.1
PI = 202+55.67
N = 413764.47
E = 809559.32
△ = 4°48'46.59"
Dc = 0°57'16.60"
R = 6002.00'
T = 252.24'
L = 504.18'
E = 5.30'

9'

GRID

STA 723+21.07, I-89 SB, LT 36'
BEGIN 23.6:1 EP TAPER

I-89 SB STA 723+21.07, LT 24.00' =
I-89 SB OFF-RAMP STA 200+03.43

I-89 SB OFF-RAMP
CURVE NO.1

PC
200+03.43

I-89 SB
CONSTRUCTION ℄

Connecticut River

MATCHLINE STA 719+50 SB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 02

MATCHLINE STA 819+50 NB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 02

MATCHLINE STA 732+50 SB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 04

MATCHLINE STA 832+50 NB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 04

I-89 SB

I-89 NB

I-89 NB
CONSTRUCTION ℄

Connecticut River

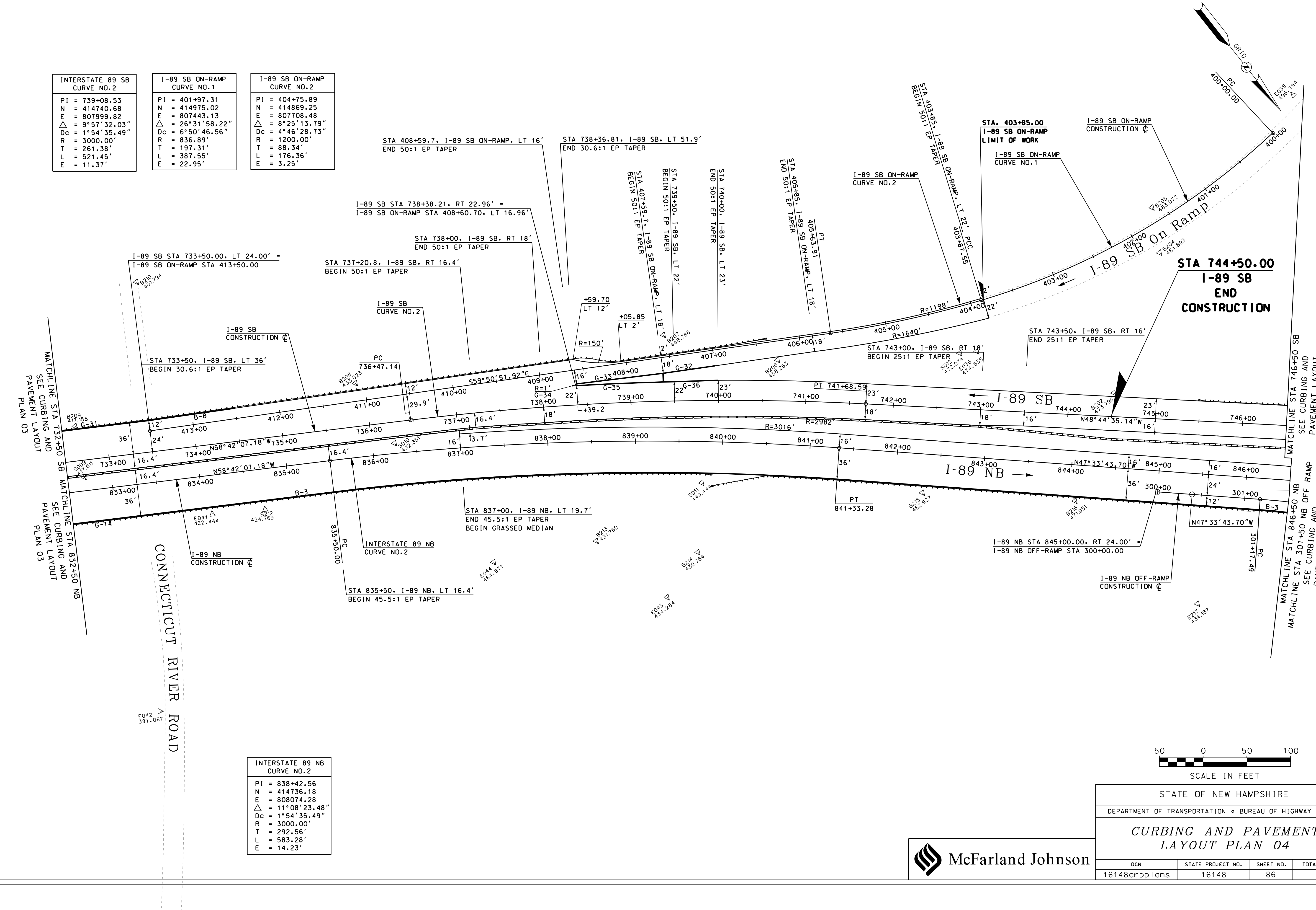
50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN			
CURBING AND PAVEMENT LAYOUT PLAN 03			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148crbplans	16148	85	600

REVISIONS AFTER PROPOSAL			
STATION	DESCRIPTION		
	NUMBER	DATE	
STATION			

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



STA 408+59.7, I-89 SB ON-RAMP, LT 16'
END 50:1 EP TAPER
STA 738+36.81, I-89 SB, LT 51.9'
END 30.6:1 EP TAPER
I-89 SB STA 738+38.21, RT 22.96' =
I-89 SB ON-RAMP STA 408+60.70, LT 16.96'
STA 738+00, I-89 SB, RT 18'
END 50:1 EP TAPER
STA 737+20.8, I-89 SB, RT 16.4'
BEGIN 50:1 EP TAPER
I-89 SB STA 733+50.00, LT 24.00' =
I-89 SB ON-RAMP STA 413+50.00
STA 407+59.7, I-89 SB ON-RAMP, LT 18'
BEGIN 50:1 EP TAPER
STA 739+50, I-89 SB, LT 22'
BEGIN 50:1 EP TAPER
STA 740+00, I-89 SB, LT 23'
END 50:1 EP TAPER
STA 405+85, I-89 SB ON-RAMP, LT 18'
END 50:1 EP TAPER
STA 403+85, I-89 SB ON-RAMP, LT 22', PCC
BEGIN 50:1 EP TAPER
STA. 403+85.00
I-89 SB ON-RAMP
LIMIT OF WORK
I-89 SB ON-RAMP
CONSTRUCTION ℄
I-89 SB ON-RAMP
CURVE NO.1
I-89 SB ON-RAMP
CURVE NO.2
GRID
PC
400+00.00
I-89 SB On Ramp
STA 744+50.00
I-89 SB
END
CONSTRUCTION
I-89 SB
CURVE NO.2
I-89 SB
CONSTRUCTION ℄
STA 733+50, I-89 SB, LT 36'
BEGIN 30.6:1 EP TAPER
PC
736+47.14
S59°50'51.92"E
R=150'
R=1198'
R=1640'
R=3016'
R=2982'
STA 743+00, I-89 SB, RT 18'
BEGIN 25:1 EP TAPER
STA 743+50, I-89 SB, RT 16'
END 25:1 EP TAPER
PT 741+68.59
I-89 SB
N48°44'35.14"W
N58°42'07.18"W
MATCHLINE STA 732+50 SB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 03
MATCHLINE STA 832+50 NB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 03
MATCHLINE STA 746+50 SB
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 05
MATCHLINE STA 846+50 NB
MATCHLINE STA 301+50 NB OFF RAMP
SEE CURBING AND
PAVEMENT LAYOUT
PLAN 05
I-89 NB
N47°33'43.70"W
PT
841+33.28
STA 837+00, I-89 NB, LT 19.7'
END 45.5:1 EP TAPER
BEGIN GRASSED MEDIAN
INTERSTATE 89 NB
CURVE NO.2
I-89 NB
CONSTRUCTION ℄
PC
835+50.00
STA 835+50, I-89 NB, LT 16.4'
BEGIN 45.5:1 EP TAPER
I-89 NB STA 845+00.00, RT 24.00' =
I-89 NB OFF-RAMP STA 300+00.00
I-89 NB OFF-RAMP
CONSTRUCTION ℄
PC
301+17.49
CONNECTICUT RIVER ROAD
50 0 50 100
SCALE IN FEET

INTERSTATE 89 SB CURVE NO.2
PI = 739+08.53
N = 414740.68
E = 807999.82
△ = 9°57'32.03"
Dc = 1°54'35.49"
R = 3000.00'
T = 261.38'
L = 521.45'
E = 11.37'

I-89 SB ON-RAMP CURVE NO.1
PI = 401+97.31
N = 414975.02
E = 807443.13
△ = 26°31'58.22"
Dc = 6°50'46.56"
R = 836.89'
T = 197.31'
L = 387.55'
E = 22.95'

I-89 SB ON-RAMP CURVE NO.2
PI = 404+75.89
N = 414869.25
E = 807708.48
△ = 8°25'13.79"
Dc = 4°46'28.73"
R = 1200.00'
T = 88.34'
L = 176.36'
E = 3.25'

INTERSTATE 89 NB CURVE NO.2
PI = 838+42.56
N = 414736.18
E = 808074.28
△ = 11°08'23.48"
Dc = 1°54'35.49"
R = 3000.00'
T = 292.56'
L = 583.28'
E = 14.23'

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

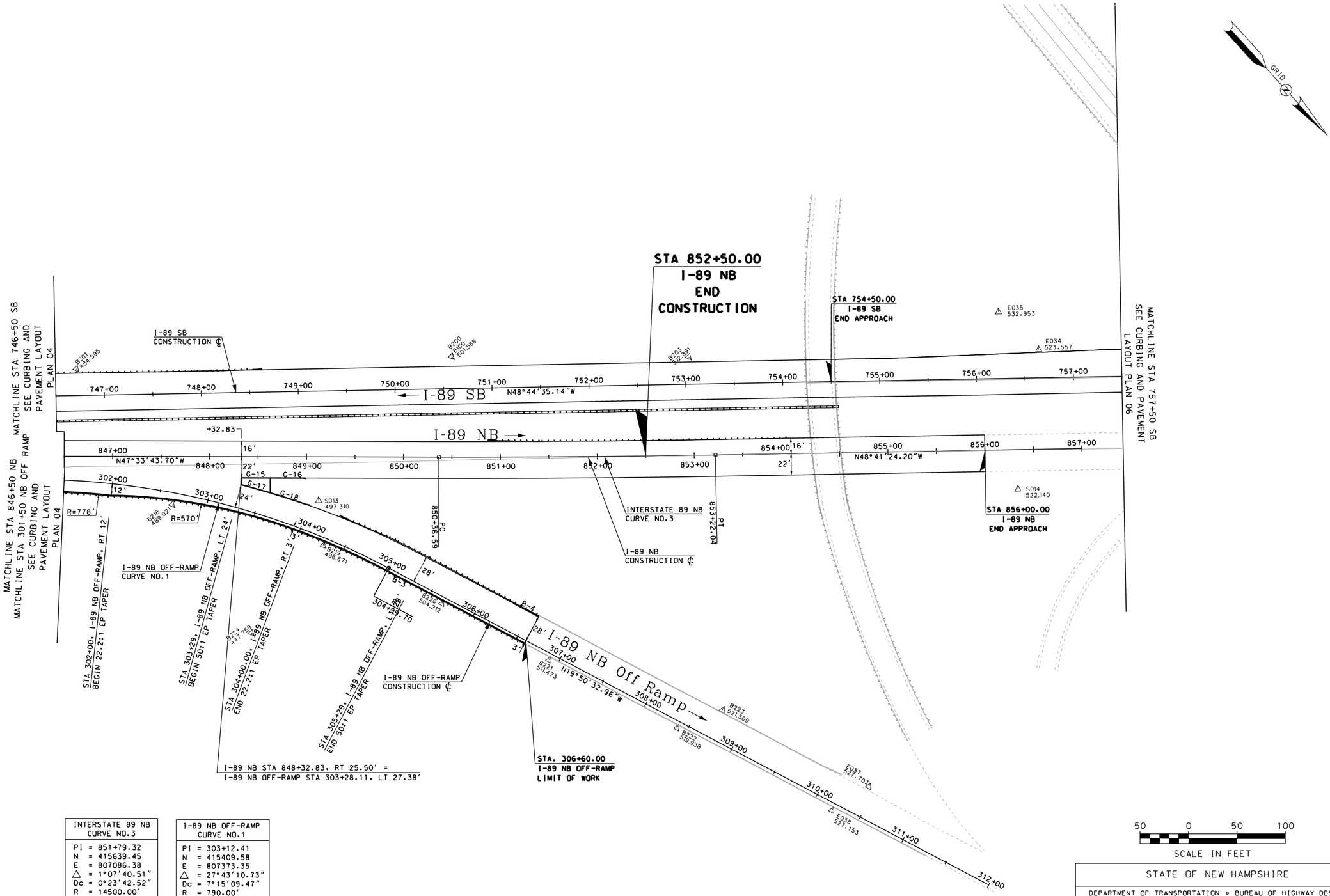
CURBING AND PAVEMENT LAYOUT PLAN 04

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148crbplans	16148	86	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



INTERSTATE 89 NB CURVE NO.3	
PI	= 851+79.32
N	= 415639.45
E	= 807086.38
△	= 1°07'40.51"
Dc	= 0°23'42.52"
R	= 14500.00'
T	= 142.73'
L	= 285.45'
E	= 0.70'

I-89 NB OFF-RAMP CURVE NO.1	
PI	= 303+12.41
N	= 415409.58
E	= 807373.35
△	= 27°43'10.73"
Dc	= 7°15'09.47"
R	= 790.00'
T	= 194.92'
L	= 382.20'
E	= 23.69'

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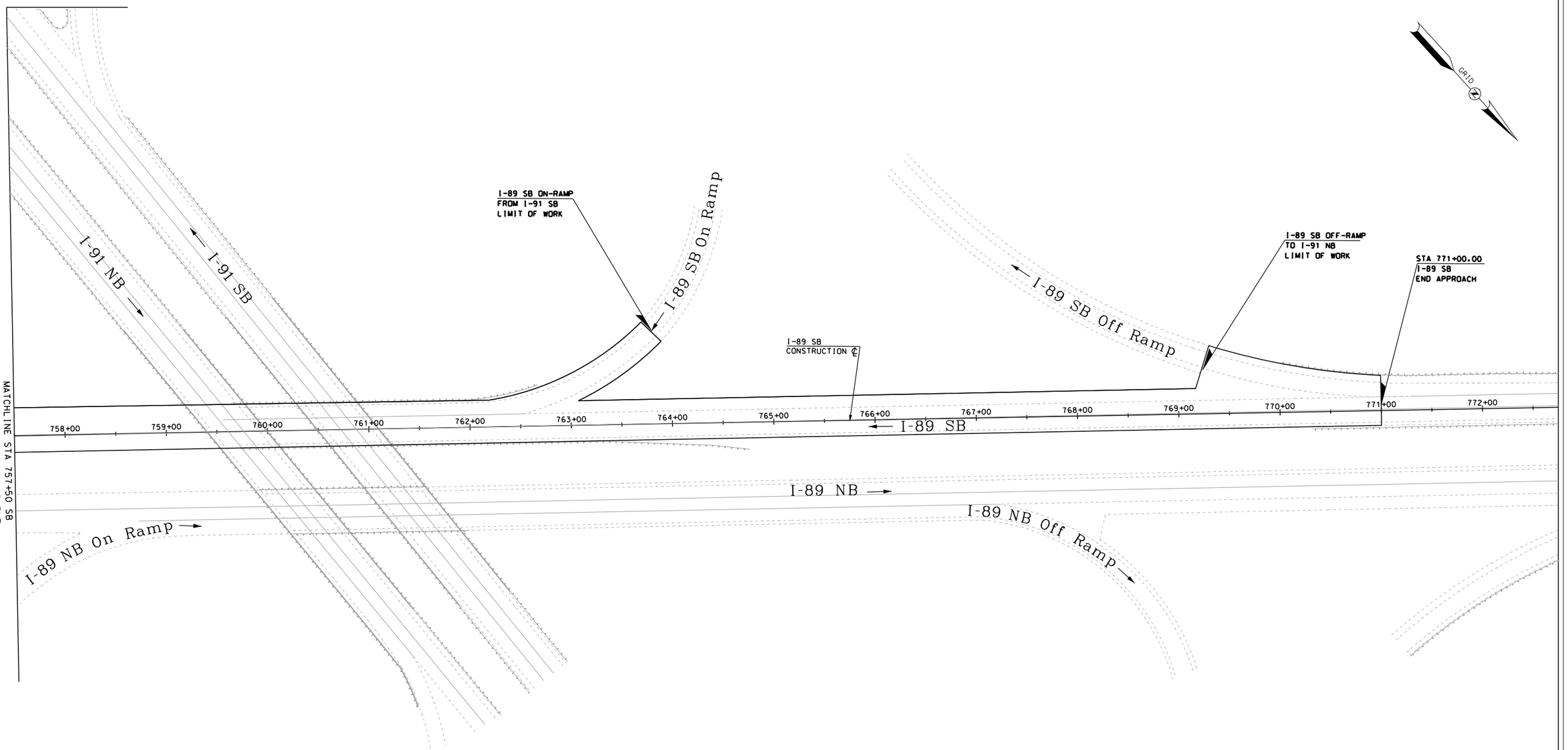
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

CURBING AND PAVEMENT LAYOUT PLAN 05

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148crbplans	16148	87	600



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

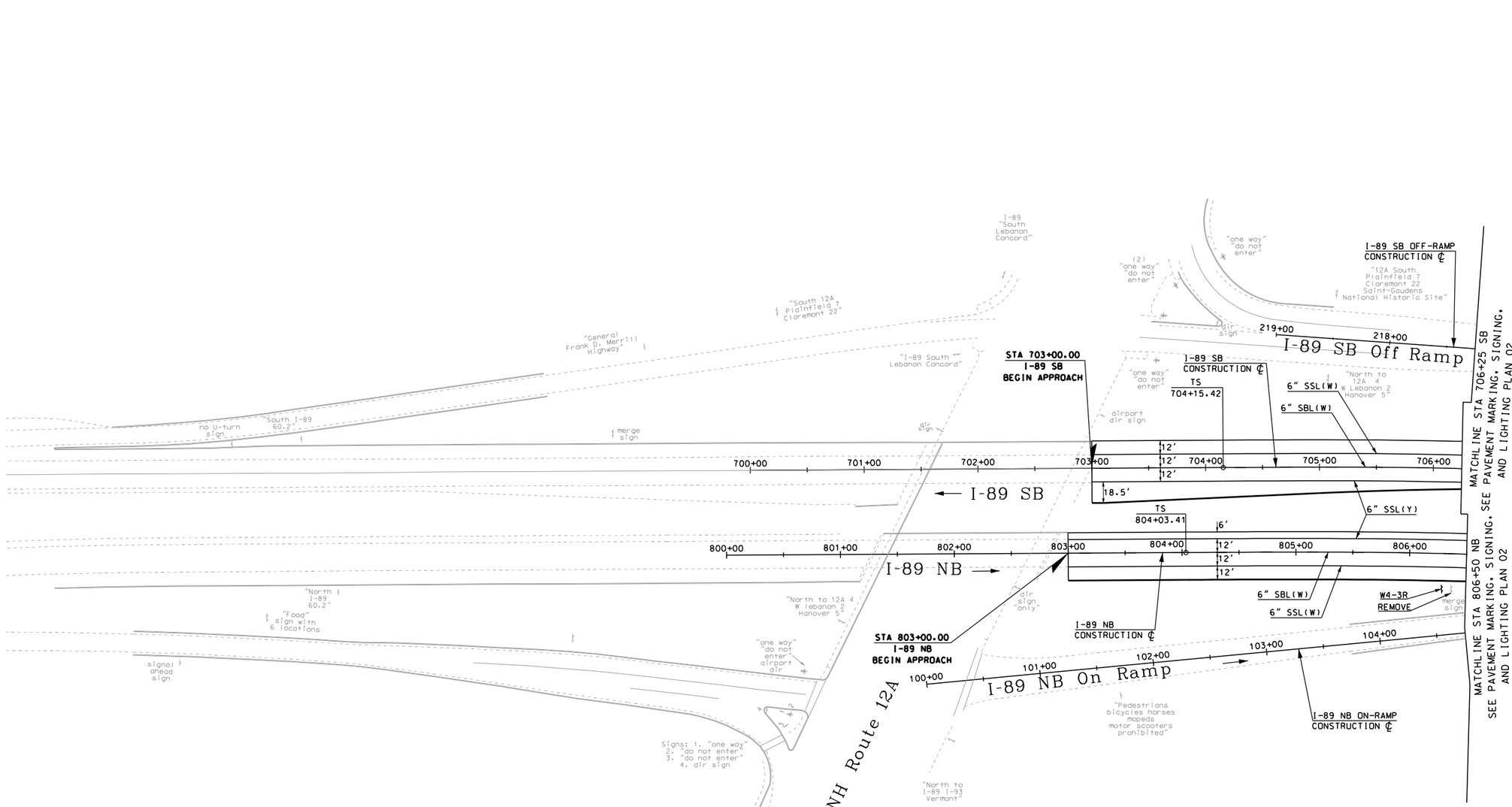
CURBING AND PAVEMENT LAYOUT PLAN 06

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148crbplans	16148	88	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE



PAVEMENT MARKING NOTES

1. ALL SYMBOLS, WORDS AND TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, RAILROAD SYMBOLS) LANE LINES AND ALL OTHERS NOTED WITH (T) SHALL BE THERMOPLASTIC.
2. CONTACT BUREAU OF TRAFFIC TO REVIEW ALL PASSING ZONES PRIOR TO STRIPING OR INSTALLING W14-3 SIGNS.
3. THE CONTRACTOR SHALL CONTACT JULIE MATTHWS AT THE NHDOT BUREAU OF TRAFFIC AT (603) 271-8011 ONE WEEK PRIOR TO PAVEMENT MARKING.
4. REPLACE ANY WORDS/SYMBOLS PER LATEST NHDOT STANDARD PLAN SHEETS.
5. PAVEMENT MARKINGS SHALL EXTEND BEYOND PROJECT PAVING LIMITS TO OVERLAP EXISTING MARKINGS DISTURBED BY CONSTRUCTION.

PAVEMENT MARKING LEGEND

[ ] SSL ( ) = [SIZE IN INCHES] SINGLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)

[ ] DSL ( ) = [SIZE IN INCHES] DOUBLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)

[ ] SSB ( ) = [SIZE IN INCHES] SINGLE SOLID W/BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

[ ] SBL ( ) = [SIZE IN INCHES] SINGLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

[ ] DBL ( ) = [SIZE IN INCHES] DOUBLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

T = THERMOPLASTIC

50 0 50 100

SCALE IN FEET

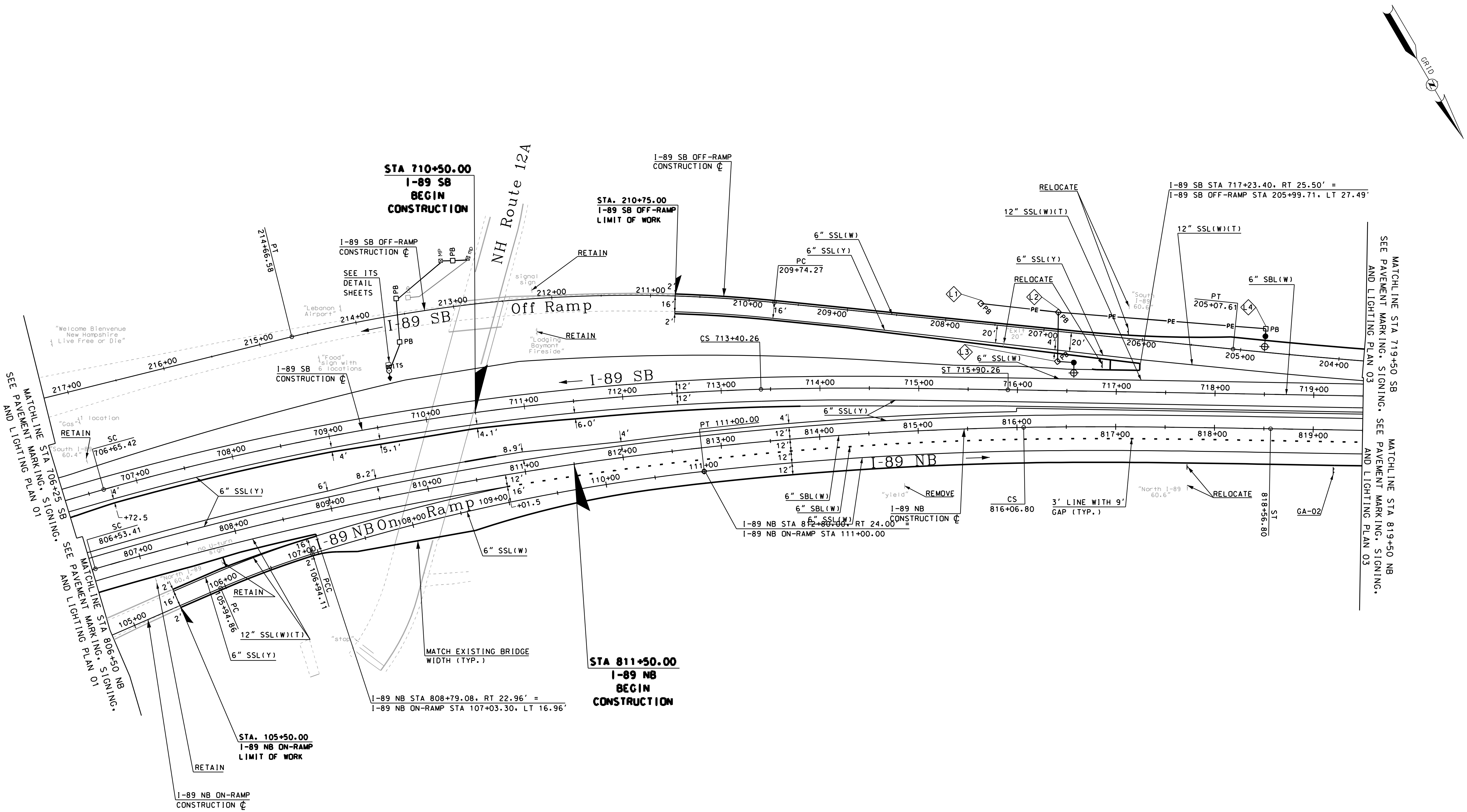
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PAVEMENT MARKING, SIGNING, LIGHTING, AND UTILITY PLAN 01

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148pavplans	16148	89	600



REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE

50 0 50 100
SCALE IN FEET

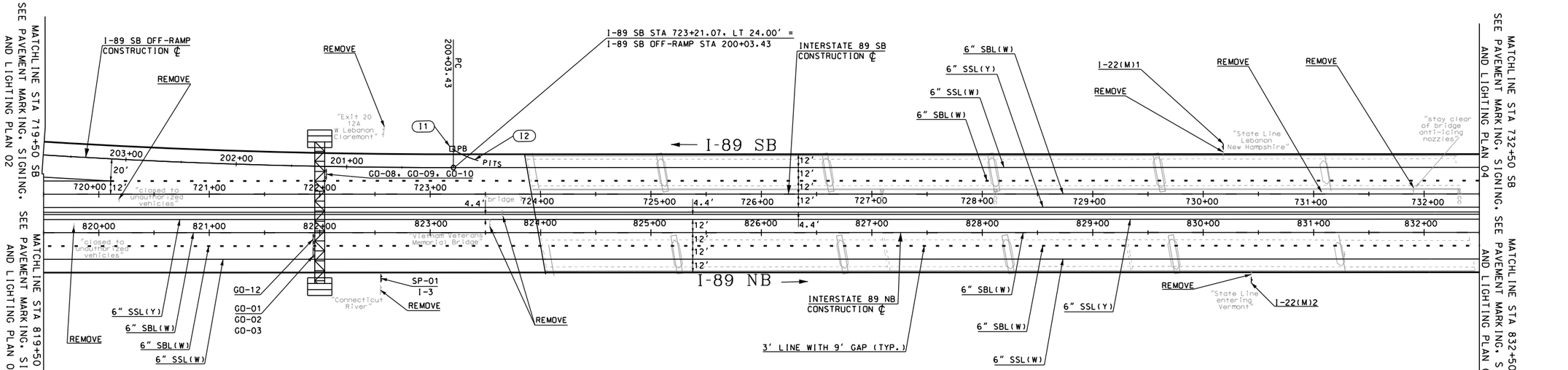
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PAVEMENT MARKING, SIGNING, LIGHTING, AND UTILITY PLAN 02

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148pavplans	16148	90	600



50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL			
NUMBER	STATION	DESCRIPTION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PAVEMENT MARKING, SIGNING, LIGHTING, AND UTILITY PLAN 03

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148pvtplans	16148pavplans	91	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN WJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE

I-89 SB STA 733+50.00, LT 24.00' =
I-89 SB ON-RAMP STA 413+50.00

I-89 SB STA 738+38.21, RT 22.96' =
I-89 SB ON-RAMP STA 408+60.70, LT 16.96'

I-89 SB ON-RAMP
CONSTRUCTION ℄

I-89 SB
CONSTRUCTION ℄

I-89 NB
CONSTRUCTION ℄

I-89 NB OFF-RAMP
CONSTRUCTION ℄

I-89 NB STA 845+00.00, RT 24.00' =
I-89 NB OFF-RAMP STA 300+00.00

STA. 403+85.00
I-89 SB ON-RAMP
LIMIT OF WORK

STA 744+50.00
I-89 SB
END
CONSTRUCTION

MATCHLINE STA 732+50 SB
SEE PAVEMENT MARKING, SIGNING,
AND LIGHTING PLAN 03

MATCHLINE STA 832+50 NB
SEE PAVEMENT MARKING, SIGNING,
AND LIGHTING PLAN 03

MATCHLINE STA 746+50 SB
SEE PAVEMENT MARKING, SIGNING,
AND LIGHTING PLAN 05

MATCHLINE STA 846+50 NB
SEE PAVEMENT MARKING, SIGNING,
AND LIGHTING PLAN 05

MATCHLINE STA 301+50 NB
SEE PAVEMENT MARKING, SIGNING,
AND LIGHTING PLAN 05

I-89 SB On Ramp

I-89 SB

I-89 NB

CONNECTICUT RIVER ROAD

50:1 TAPER

3' LINE WITH 9' GAP (TYP.)

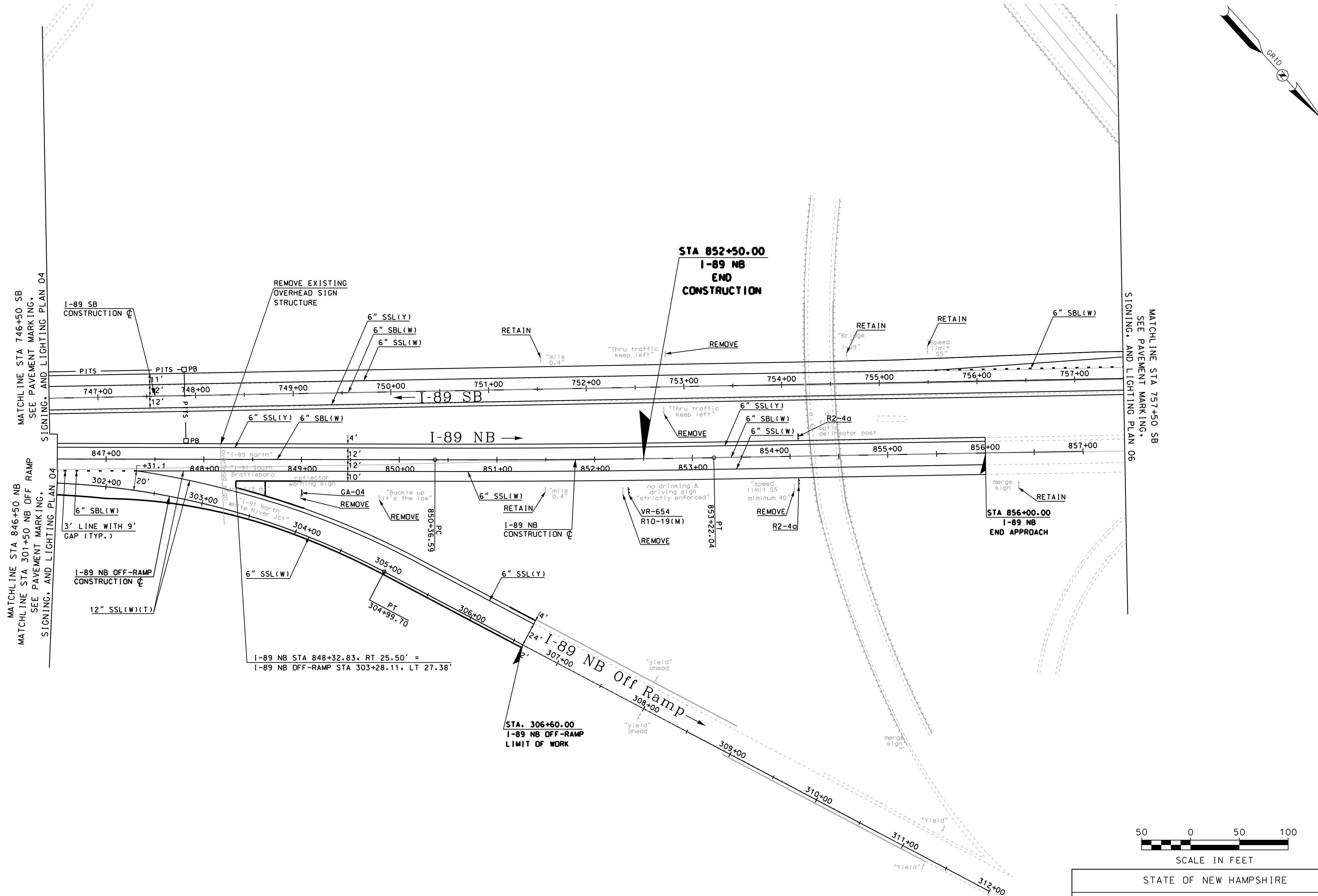
50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

PAVEMENT MARKING, SIGNING, LIGHTING, AND UTILITY PLAN 04

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148pavplans	16148	92	600



REVISIONS AFTER PROPOSAL		
NUMBER	DATE	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PAVEMENT MARKING, SIGNING, LIGHTING, AND UTILITY PLAN 05

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148pavplans	16148	93	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

MATCHLINE STA 757+50 SB
SEE PAVEMENT MARKING, SIGNING, AND LIGHTING PLAN 05

I-91 NB

I-91 SB

I-89 SB ON-RAMP
FROM I-91 SB
LIMIT OF WORK

I-89 SB On Ramp

6" SSL(Y)
6" SSL(W)
12" SSL(W)(T)
6" SSL(W)
6" SBL(W)
6" SSL(W)
6" SBL(W)
6" SSL(Y)

I-89 SB
CONSTRUCTION ℄

I-89 SB Off Ramp

I-89 SB OFF-RAMP
TO I-91 NB
LIMIT OF WORK

STA 771+00.00
I-89 SB
END APPROACH

6" SSL(W)
12" SSL(W)(T)

758+00 759+00 760+00 761+00 762+00 763+00 764+00 765+00 766+00 767+00 768+00 769+00 770+00 771+00 772+00

12' 12' 12' 12' 12'

I-89 SB

I-89 NB

I-89 NB Off Ramp

I-89 NB On Ramp

RETAIN
RETAIN "One Way"
RETAIN chevron
RETAIN no left turn sign

NOTE:

1. RETAIN ALL SIGNS UNLESS OTHERWISE NOTED.

50 0 50 100
SCALE IN FEET

SDR PROCESSED	NHDOT	DATE 04-2015
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AS BUILT DETAILS		DATE

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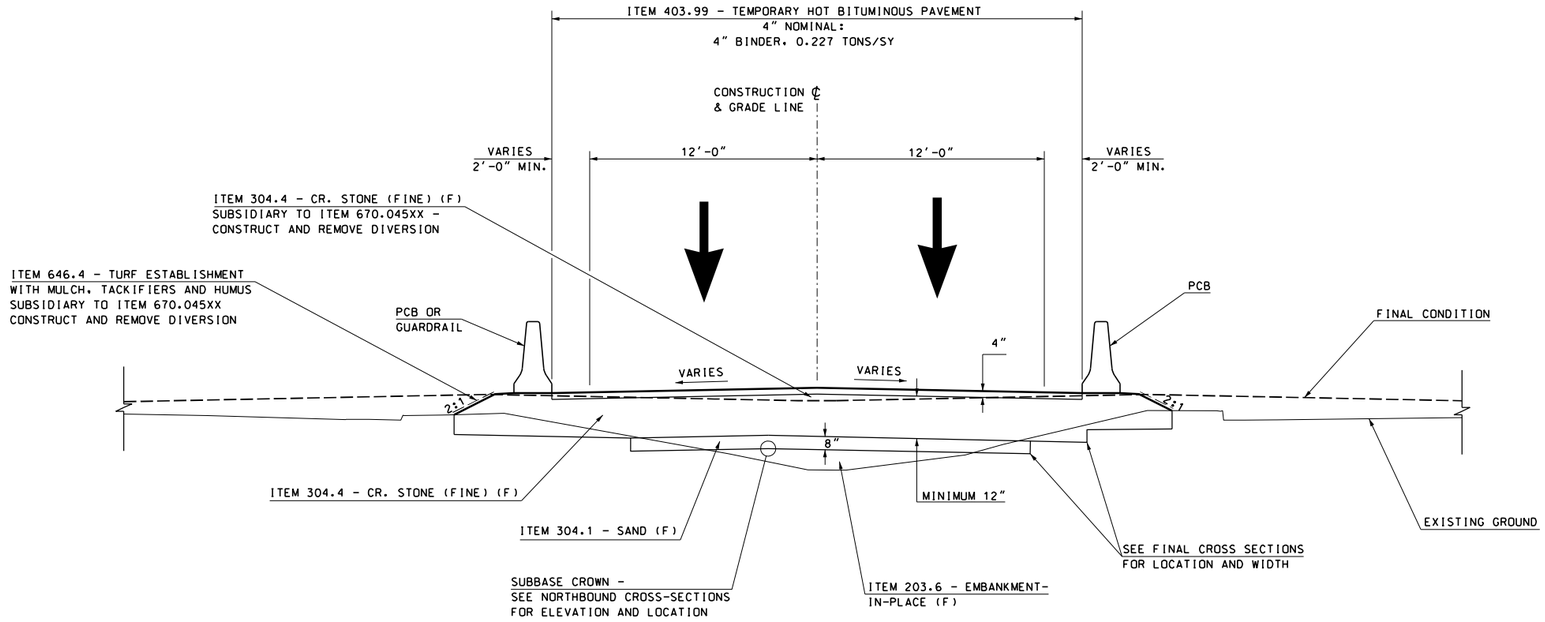
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

PAVEMENT MARKING, SIGNING, LIGHTING, AND UTILITY PLAN 06

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148pavplans	16148	94	600

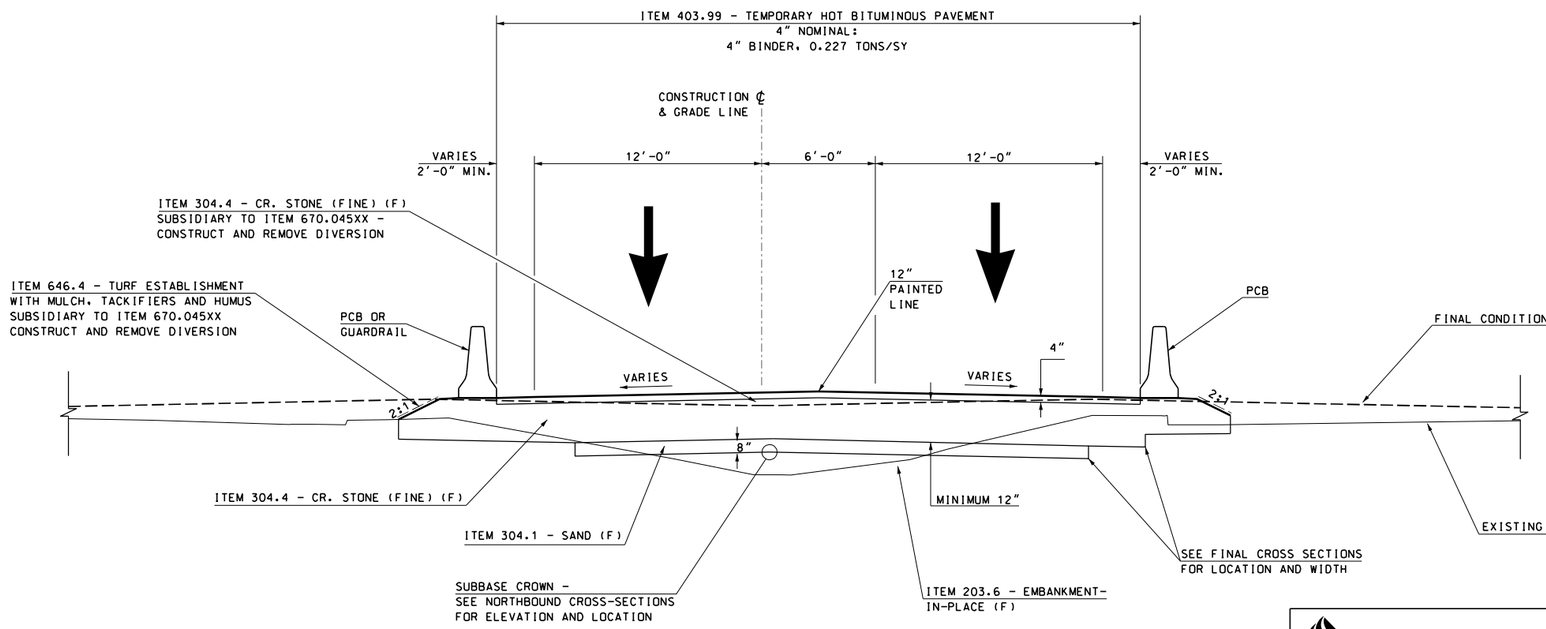
I-89 SB DIVERSION - NH

PHASE 2



I-89 SB DIVERSION - VT

PHASE 2



NOTE:

1. SEE BRIDGE PLANS FOR TEMPORARY PAVING ON BRIDGE DETAILS.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
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STATE OF NEW HAMPSHIRE

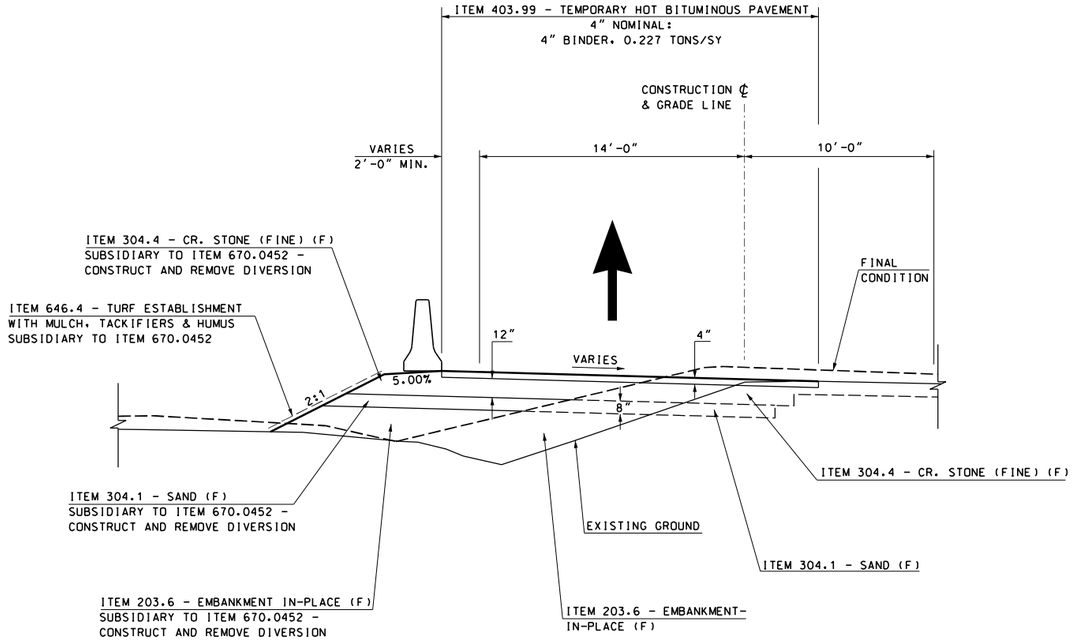
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL
TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148ty13	16148	95	600

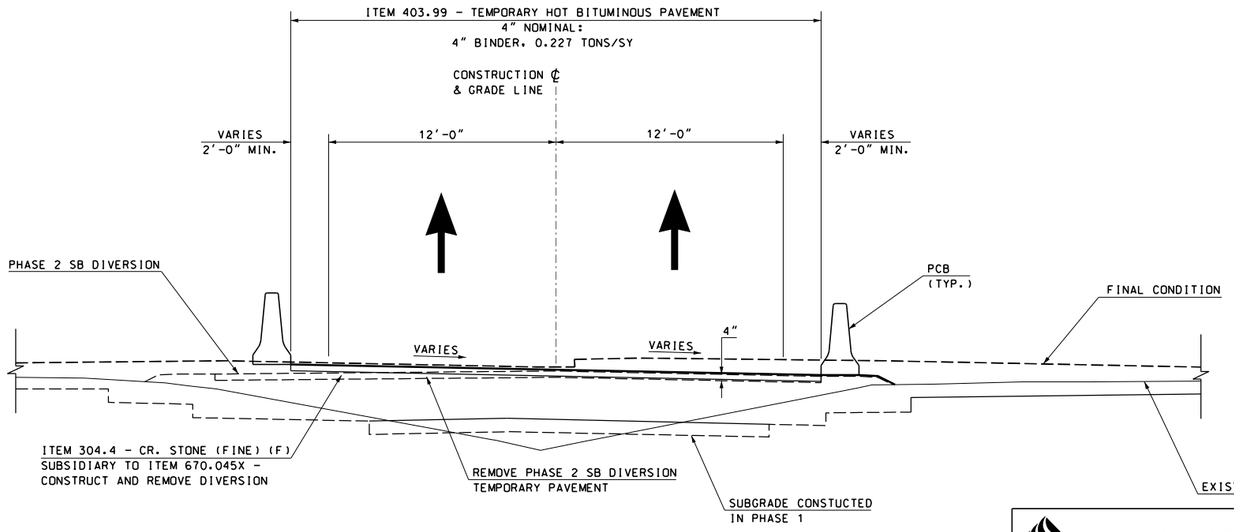
I-89 SB ON RAMP DIVERSION

PHASE 2



I-89 NB DIVERSION

PHASE 4



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STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN			
TRAFFIC CONTROL TYPICAL SECTION			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148ty14	16148	96	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
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TRAFFIC CONTROL NOTES - PHASE 1

MAINTENANCE OF TRAFFIC

1. NORTHBOUND I-89 TRAFFIC TO REMAIN IN EXISTING CONFIGURATION.

2. SOUTHBOUND I-89 TRAFFIC TO REMAIN IN EXISTING CONFIGURATION. SOUTHBOUND TRAFFIC LANES WILL NEED TO BE SHIFTED IN SOME AREAS TO ACCOMMODATE PHASE 1 CONSTRUCTION.

3. ALL EXIT 20 AND INTERSTATE 91 RAMPS TO REMAIN IN EXISTING CONFIGURATION. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY CLOSE THE I-89 SOUTHBOUND ON-RAMP FROM I-91 TO PERFORM WORK ON THE RAMP. INFORMATION ON LANE CLOSURES, RAMP CLOSURES, AND DETOURS CAN BE FOUND IN THE TRAFFIC CONTROL PLAN CONTAINED IN THE PROPOSAL.

4. WHEN TRAFFIC IS SHIFTED TO THE SHOULDER OF A SUPERELEVATED SECTION, THE SHOULDER SHALL BE SHIMMED TO MATCH THE CROSS SLOPE OF THE TRAVELED WAY.

AREA OF CONSTRUCTION

1. CONSTRUCT THE NEW PORTION OF THE I-89 BRIDGE OVER THE CONNECTICUT RIVER BETWEEN THE EXISTING I-89 NORTHBOUND AND SOUTHBOUND BRIDGES.

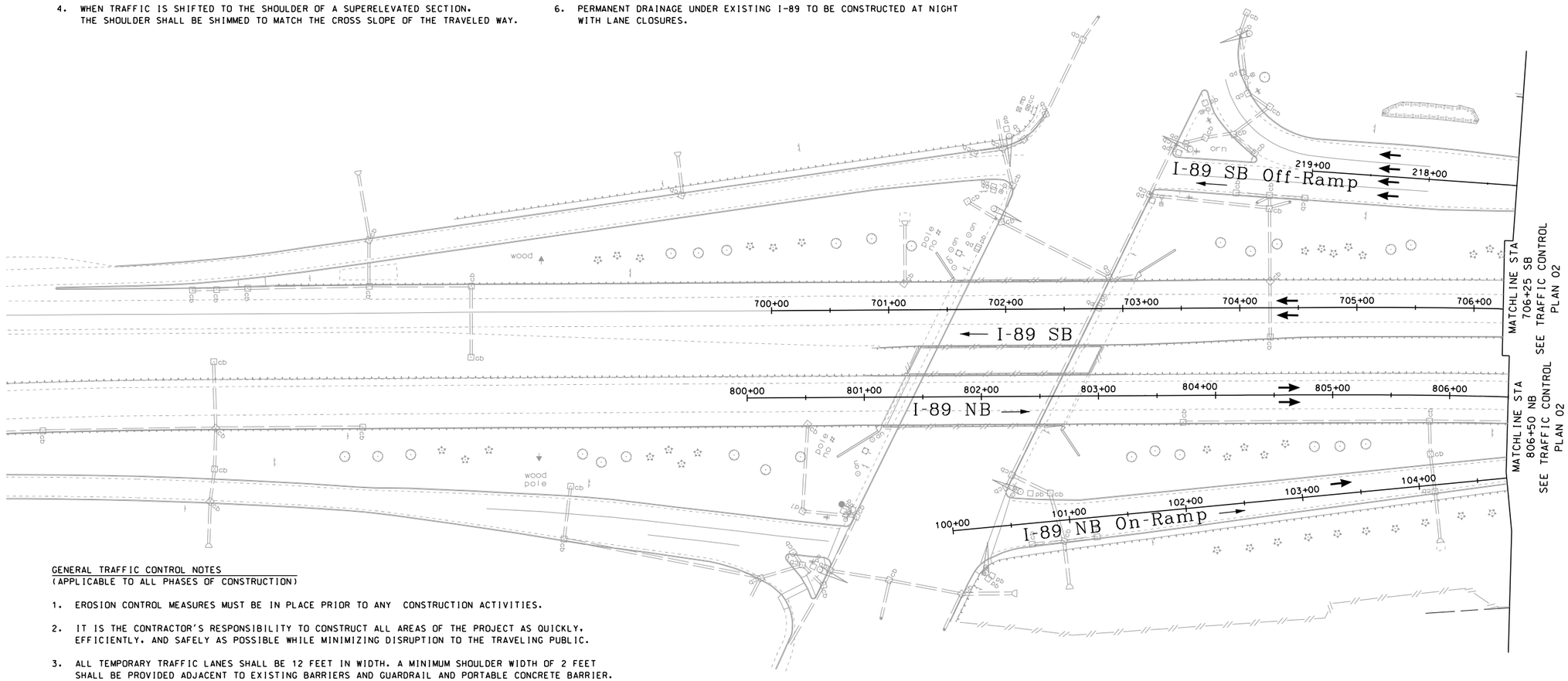
2. CONSTRUCT THE SOUTHBOUND DIVERSION IN THE I-89 MEDIAN NORTH AND SOUTH OF THE NEW BRIDGE. IT IS ASSUMED THAT THE PERMANENT SUBGRADE IS CONSTRUCTED DURING THIS PHASE.

3. CONSTRUCT THE NEW HAMPSHIRE VEGETATED SWALE.

4. CONSTRUCT THE VERMONT INFILTRATION BASIN.

5. PERMANENT DRAINAGE STRUCTURES CONSTRUCTED IN THE I-89 MEDIAN MAY NEED TO BE COVERED IN ORDER TO CARRY TRAFFIC IN PHASES 2 THROUGH 4.

6. PERMANENT DRAINAGE UNDER EXISTING I-89 TO BE CONSTRUCTED AT NIGHT WITH LANE CLOSURES.



GENERAL TRAFFIC CONTROL NOTES
(APPLICABLE TO ALL PHASES OF CONSTRUCTION)

1. EROSION CONTROL MEASURES MUST BE IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITIES.

2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONSTRUCT ALL AREAS OF THE PROJECT AS QUICKLY, EFFICIENTLY, AND SAFELY AS POSSIBLE WHILE MINIMIZING DISRUPTION TO THE TRAVELING PUBLIC.

3. ALL TEMPORARY TRAFFIC LANES SHALL BE 12 FEET IN WIDTH. A MINIMUM SHOULDER WIDTH OF 2 FEET SHALL BE PROVIDED ADJACENT TO EXISTING BARRIERS AND GUARDRAIL AND PORTABLE CONCRETE BARRIER. WIDER SHOULDERS SHOULD BE PROVIDED WHEN POSSIBLE.

4. SEE TYPICAL SECTIONS FOR APPROXIMATE DIMENSIONS OF TRAVELED WAY, PROPOSED CONSTRUCTION, AND TEMPORARY PAVEMENT IN EACH PHASE.

5. ALL ROADWAY PAVING SHALL BE PLACED ONLY TO BINDER COURSE IN PHASES 1 THROUGH 4. A TEMPORARY WEARING COURSE MUST BE PLACED ON THE BRIDGE DECK FOR PHASES 1 THROUGH 4 (USE ITEM 403.99). FINAL TRAFFIC PATTERNS CAN BE IMPLEMENTED AFTER PHASE 4 OR AS DIRECTED BY THE ENGINEER. ONCE THE CONTRACTOR IS READY TO IMPLEMENT THE FINAL TRAFFIC PATTERNS, THE PERMANENT MEDIAN BARRIER CAN BE CONSTRUCTED.

6. ANY CLOSINGS OF ACTIVE TRAFFIC LANES SHALL BE DONE DURING OFF-PEAK HOURS, UNLESS OTHERWISE DIRECTED. AT LEAST ONE LANE MUST REMAIN OPEN IN EACH DIRECTION AT ALL TIMES. PEAK HOURS (TIMES WHEN NO LANE CLOSURES ARE ALLOWED) ARE AS DEFINED IN THE TRAFFIC CONTROL PLAN CONTAINED IN THE PROPOSAL. WHEN LANES NEED TO BE CLOSED FOR LONGER THAN A STANDARD WORK DAY, 24 HOUR CONSTRUCTION DAYS SHALL BE IMPLEMENTED UNTIL THE LANE IS REOPENED.

7. THE PLACEMENT OF TEMPORARY PAVEMENT UNDER TRAFFIC WILL BE REQUIRED PRIOR TO THE START OF CERTAIN PHASES OF CONSTRUCTION. THESE AREAS CANNOT BE CONSTRUCTED DURING THE PRIOR PHASE DUE TO CONFLICTS WITH ACTIVE TRAFFIC.

8. PLACE ALL TEMPORARY PAVEMENT MARKINGS, SYMBOLS AND WORDS IN ACCORDANCE WITH NHDOT STANDARD PLANS STANDARD NO. PM-1 THROUGH PM-10 AND AS SHOWN ON THE PLANS.

9. TEMPORARY IMPACT ATTENUATORS AT END OF PORTABLE CONCRETE BARRIER AND CHANNELIZATION DEVICES MUST BE ILLUMINATED AT ALL TIMES.

10. EXISTING MEDIAN GUARDRAIL, PORTABLE CONCRETE BARRIER, OR PERMANENT MEDIAN BARRIER MUST SEPARATE NORTHBOUND AND SOUTHBOUND TRAFFIC AT ALL TIMES.

11. SEE NHDOT WORKZONE TRAFFIC CONTROL STANDARD PLANS FOR LANE DROP DETAILS.

12. WHEN TRAFFIC IS PLACED ON THE SHOULDER FOR AN EXTENDED PERIOD, A MINIMUM PAVEMENT THICKNESS OF 4" SHALL BE PROVIDED.

LEGEND

PHASE 1 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 01
PHASE 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph1	16148	97	600

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
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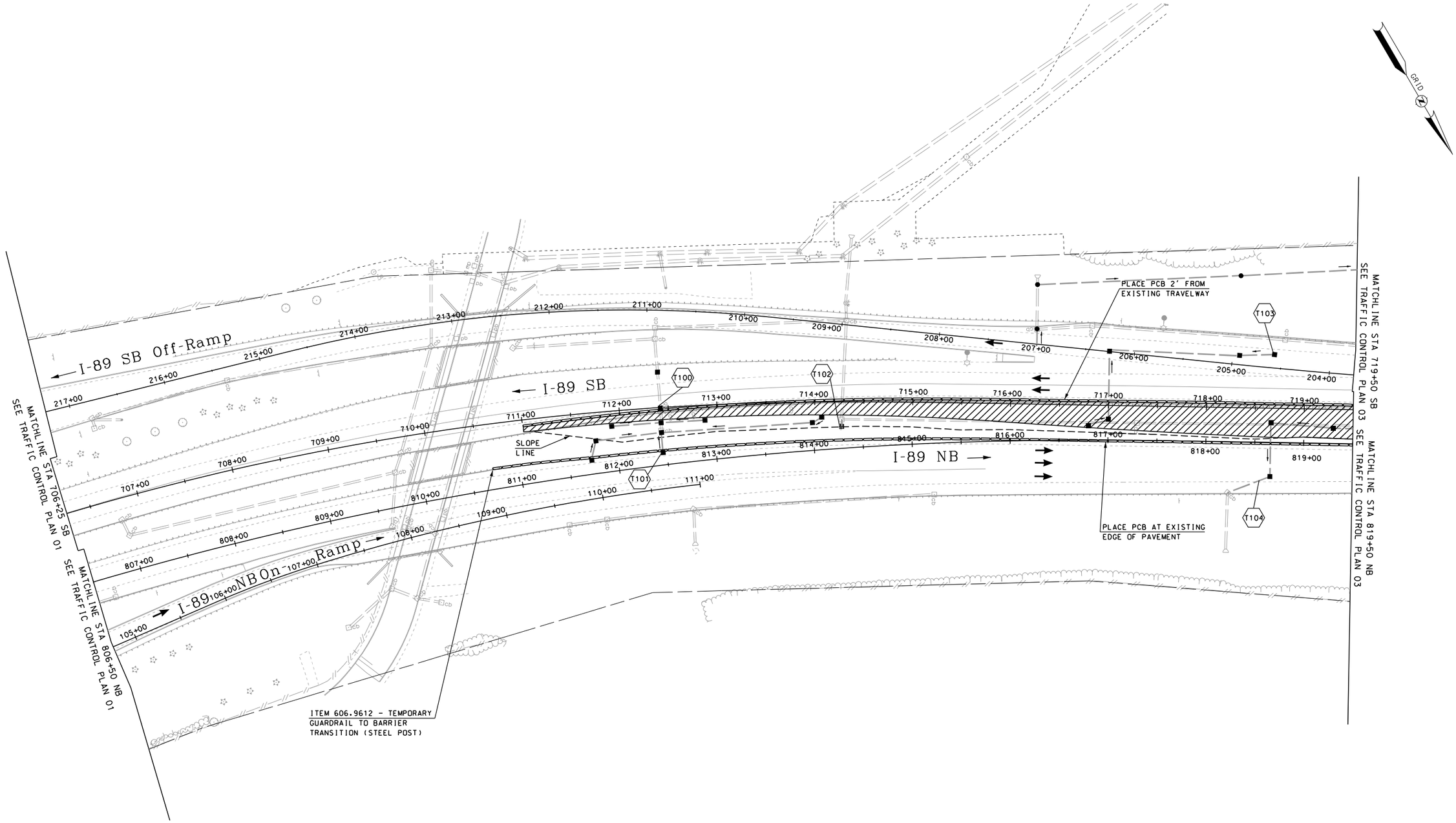


50 0 50 100

SCALE IN FEET

LEGEND

PHASE 1 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02
PHASE 1

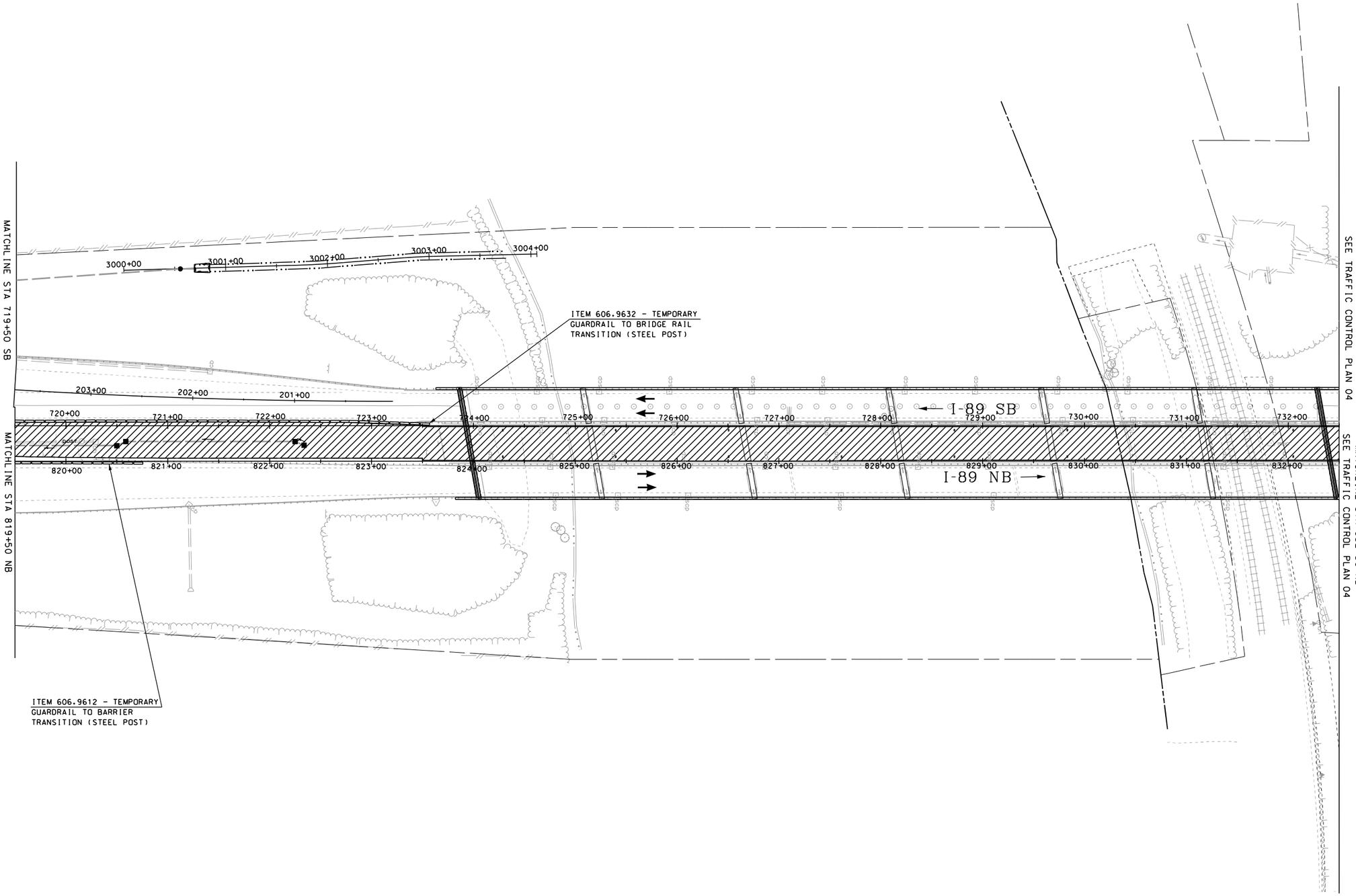
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph1	16148	98	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE



LEGEND

PHASE 1 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

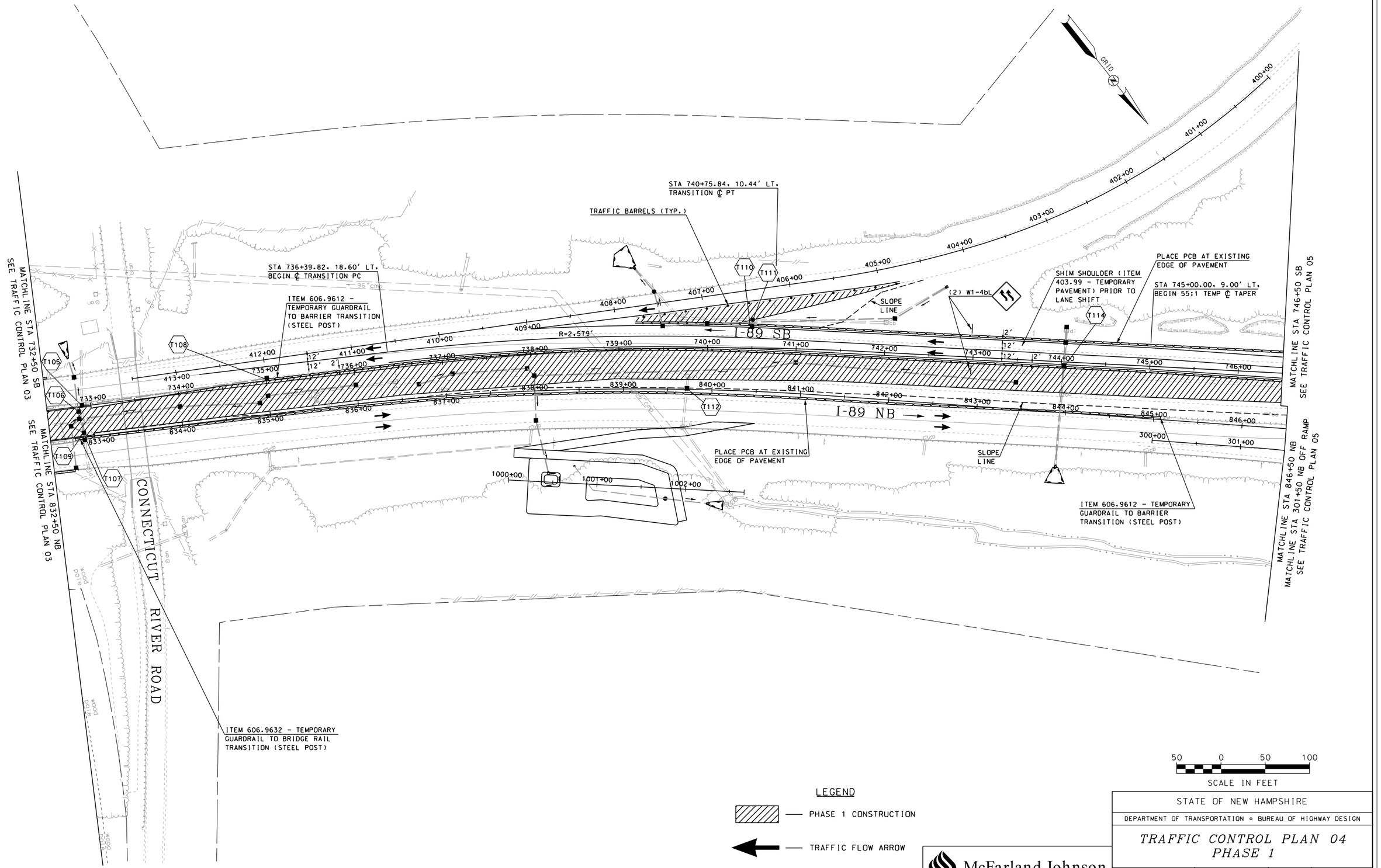
TRAFFIC CONTROL PLAN 03
PHASE 1

OGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph1	16148	99	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



50 0 50 100

SCALE IN FEET

LEGEND

PHASE 1 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 04
PHASE 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph1	16148	100	600

NUMBER	DESCRIPTION	STATION	STATION	DATE

REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
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