PUBLIC NOTICE

US Army Corps of Engineers ®
New England District
696 Virginia Road
Concord, MA 01742-2751

Comment Period Begins: September 6, 2022
Comment Period Ends: October 6, 2022
File Number: NAE-2022-01963
In Reply Refer To: Michael Hicks
Phone: (978) 318-8157
E-mail: michael.c.hicks@usace.army.mil

The District Engineer has received a permit application to conduct work in waters of the United States from the New Hampshire Department of Transportation, P.O. Box 483, Concord, NH 03302 ATTN: Timothy Dunn (NHDOT Project No. 16304B, NH 16 Roadway Realignment Project, in Cambridge, NH). This work is proposed along an approximate 1.3 mile stretch of RT 16 beginning approximately 1,000 east of the Dummer-Cambridge Town Line and continuing north for approximately 1.3 miles in Cambridge, NH. The project is partially Federally-funded and the Federal Highway Administration is the Lead Federal agency. The site coordinates are: Latitude: North 44.67645, Longitude: West -71.17978

The work involves the placement of approximately 5.72 acres of fill and performance of work within waters of the United States in conjunction with roadway improvement that includes an alignment shift of NH Route 16 from 15 feet to 385 feet to the west away from the Androscoggin River along a 1.3 mile stretch in Cambridge, NH. This work permanently impacts approximately 5.28 acres of waters of the United States, and impacts approximately 2,700 cubic yards within the 100-yr. floodplain. A detailed description and a set of plans of the activity are attached.

The Applicant's project purpose is to address the poor condition of the pavement and road base and provide a sustainable roadway that maintains the connectivity of the corridor, minimizes long-term maintenance and risk resulting from the proximity of the Androscoggin River, and preserves the scenic quality of the surrounding area.

The work is shown on the attached plans entitled, "USGS Location Map (NHDOT DUMMER-CAMBRIDGE-ERROL 16304B), dated December 2021, and State of New Hampshire Department of Transportation "WETLAND PLANS FEDERAL AID PROJECT" X-A004(699), N.H. PROJECT NO. 16304B, NH ROUTE 16, TOWNSHIP OF CAMBRIDGE, dated April 1, 2022, (Sheets 1-35) for a total of 36 pages.

The project has been designed using the best available measures to avoid and minimize adverse impacts and mitigation for the project will include In Lieu Fee Payment into the New Hampshire Aquatic Resource Fund.

AUTHORITY
Permits are required pursuant to:
____ Section 10 of the Rivers and Harbors Act of 1899
__X_Section 404 of the Clean Water Act
____ Section 103 of the Marine Protection, Research and Sanctuaries Act.

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization

of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972, as amended.

ESSENTIAL FISH HABITAT
The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). This proposed action, will not adversely affect Essential Fish Habitat (EFH).

NATIONAL HISTORIC PRESERVATION ACT
Based on his initial review, the District Engineer has determined that the proposed action will not affect any historic properties.

ENDANGERED SPECIES CONSULTATION
The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the project site. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect any Federally listed endangered or threatened species or their designated critical habitat. By this Public Notice, we are requesting that the appropriate Federal Agency concur with our determination.

The following authorizations have been applied for, or have been, or will be obtained:

(X) Permit, License or Assent from State.
(X) Permit from Local Wetland Agency or Conservation Commission.
(X) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. Comments should be submitted in writing by the above date. If you have any questions, please contact Michael Hicks at (978) 318-8157, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

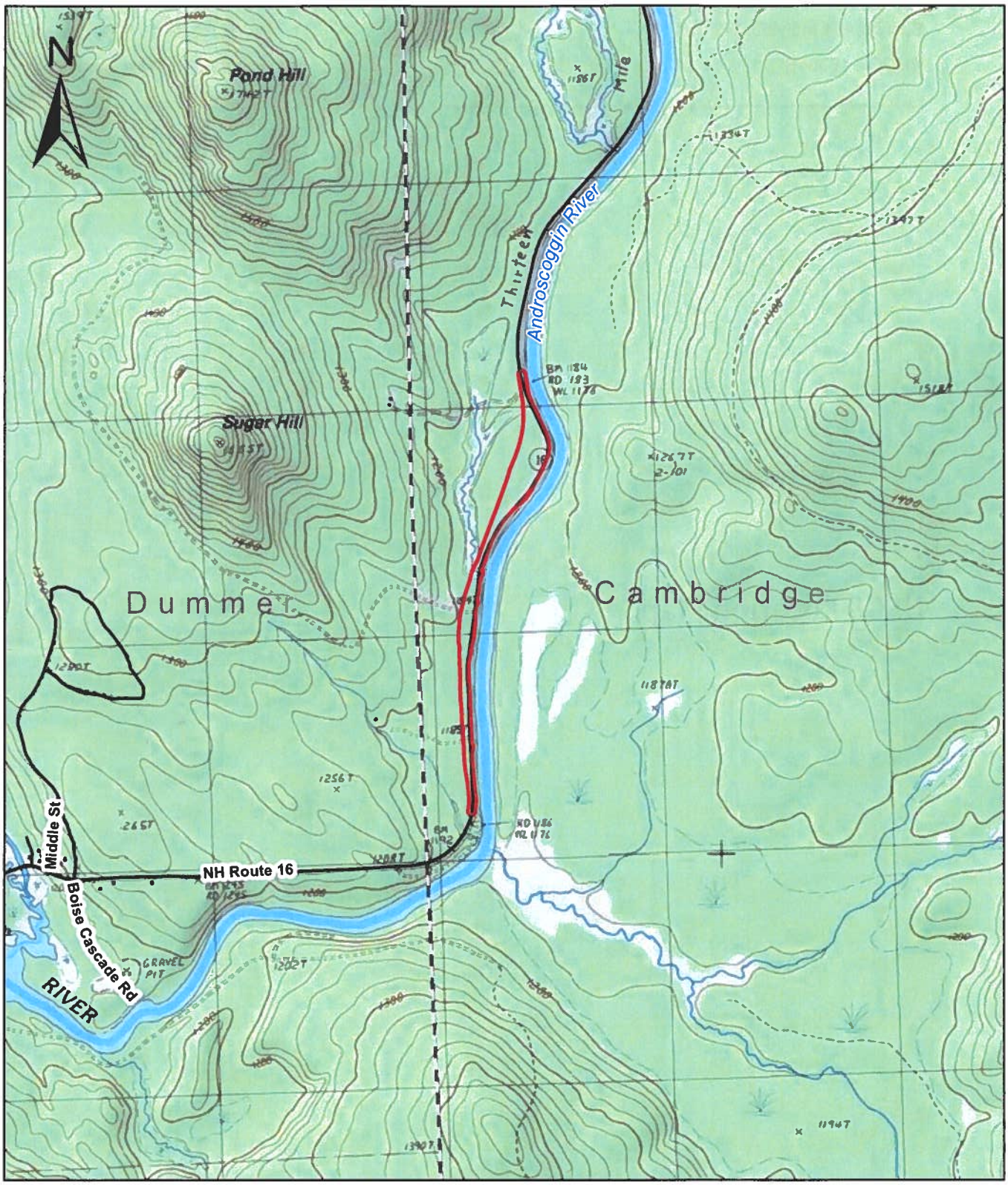
THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

Frank J Del Giudice
Digitally signed by Frank J Del Giudice
Date: 2022.08.30 10:22:11 -04'00'

Frank J. DelGiudice
Chief, Permits & Enforcement Branch
Regulatory Division

If you would prefer not to continue receiving Public Notices by email, please contact Ms. Leslie Martin at (978) 318-8688 or e-mail her at Leslie.Martin@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Leslie Martin, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____
PHONE: _____



16304B Project Area
Towns
Roads
Rivers & Streams

0 2,000 4,000
Feet

NHDOT DUMMER-CAMBRIDGE-ERROL 16304B
CAMBRIDGE, NEW HAMPSHIRE

USGS LOCATION MAP

SCALE :	DATE :	FIGURE :
1 inch = 2,000 feet	DECEMBER 2021	1

McFarland Johnson

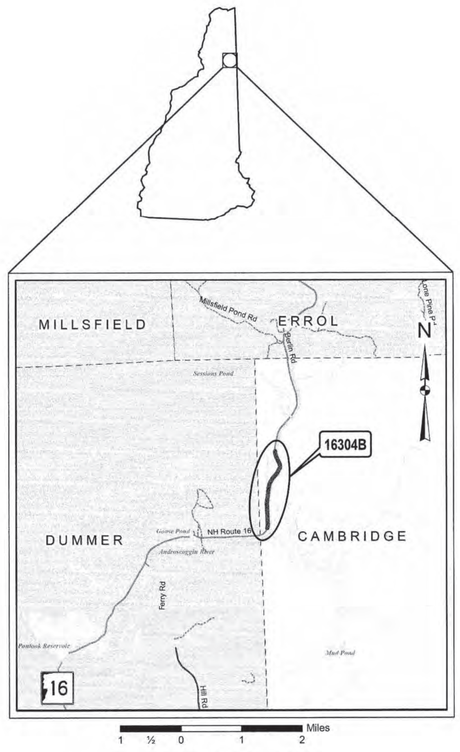
J:\18805.01 Dummer Permitting\Draw\GIS\Dummer Permitting - USGS Location Map 8.5x11.mxd

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS
FEDERAL AID PROJECT

X-A004(699)
N.H. PROJECT NO. 16304B
NH ROUTE 16

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 22	1,300
AVERAGE DAILY TRAFFIC 20 42	1,580
PERCENT OF TRUCKS	14
DESIGN SPEED	50
LENGTH OF PROJECT	1.34



LOCATION MAP

TOWNSHIP OF CAMBRIDGE

COUNTY OF COOS

SCALE: 1" = 300'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

INDEX OF SHEETS

WETLANDS DELINEATED BY MCFARLAND JOHNSON, INC. BETWEEN 2018 - 2019 IN ACCORDANCE WITH THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTH EAST REGION, VERSION 2.0, JANUARY 2012, US ARMY CORPS OF ENGINEERS.

STATE OF NEW HAMPSHIRE — CHRISTINE J. PERRON — NHDOT 16304B — No. 204 — CERTIFIED WETLAND SCIENTIST

Per Wetland Plans Rule(s) Env-Wt 311.05 For Engineering

STATE OF NEW HAMPSHIRE — JAMES A. MARSHALL No. 8232 LICENSED PROFESSIONAL ENGINEER — 3/30/22

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

WETLAND IMPACT PLANS
4/01/2022

NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bfsw	X-A004(699)	16304B	1	35

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

	NAME!	DATE
SDR PROCESSED		DATE!
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

SHEET 1 OF 2

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

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	stdsymb1-2	16304B	2	35

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)

METAL or PLASTIC

END SECTION (existing & PROPOSED)

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 — 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

GAS SHUT OFF — GSO

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 — 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/OR 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

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

SHEET 2 OF 2

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

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	stdsymb1-2	16304B	3	35

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

MATCH TO SHEET EXIST02

GRID

BEGIN APPROACH
STATION 516+00

BEGIN CONSTRUCTION
STATION 517+00

existing scenic easement

existing C.A.R.O.W.

PLUM CREEK MAINE
TIMBERLANDS, LLC

TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

DUMMER
CAMBRIDGE

NH Route 16

Old Route 16

Androscoggin River

Berlin

CONST. R

PEM1Ex

PFO1E

R2UBH

PFO1E

PFO1E

PSS1E

R2UBH

BANK

Mixed woods

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22

AS BUILT DETAILS — DATE

50 0 50 100
SCALE IN FEET

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

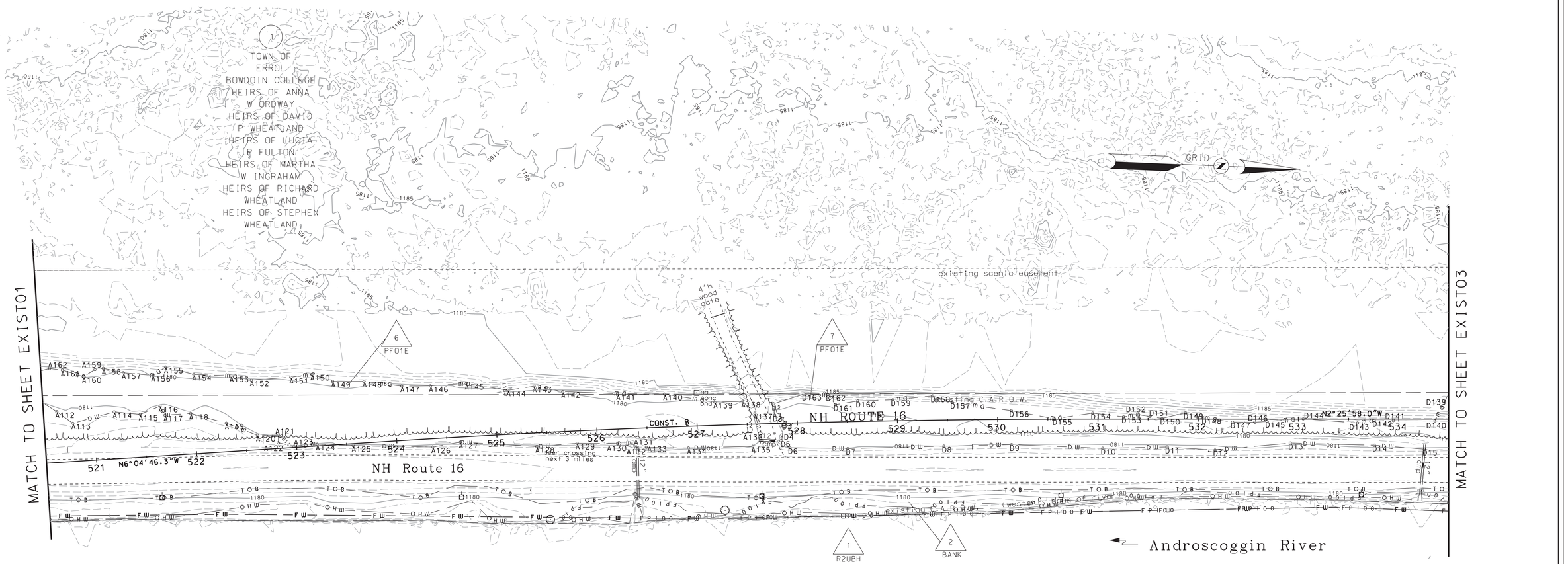
EXISTING DETAIL PLANS
SHEET 1 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EXIST01	16304Bexistplans	16304B	4	35

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION

SDR PROCESSED NAME1 DATE DATE1
NEW DESIGN M. HLUSHUK DATE 04/01/22
SHEET CHECKED K. KOZLOWSKI DATE 04/01/22
AS BUILT DETAILS DATE



50 0 50 100
SCALE IN FEET

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

EXISTING DETAIL PLANS
SHEET 2 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EXIST02	16304Bexistplans	16304B	5	35

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION
			STATION

MATCH TO SHEET EXIST02

TOWN OF ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA W ORDWAY
HEIRS OF DAVID P WHEATLAND
HEIRS OF LUCIA P FULTON
HEIRS OF MARTHA W INGRAHAM
HEIRS OF RICHARD WHEATLAND
HEIRS OF STEPHEN WHEATLAND

NH ROUTE 16

NH Route 16

Androscoggin River

existing scenic easement

existing C.A.R. Northwesterly right of way

GRID

1 R2UBH

2 BANK

5 PF01E

7 PF01E

11 R3UB2H

13 PF01E

MATCH TO SHEET EXIST04

	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22

AS BUILT DETAILS — DATE

50 0 50 100
SCALE IN FEET

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

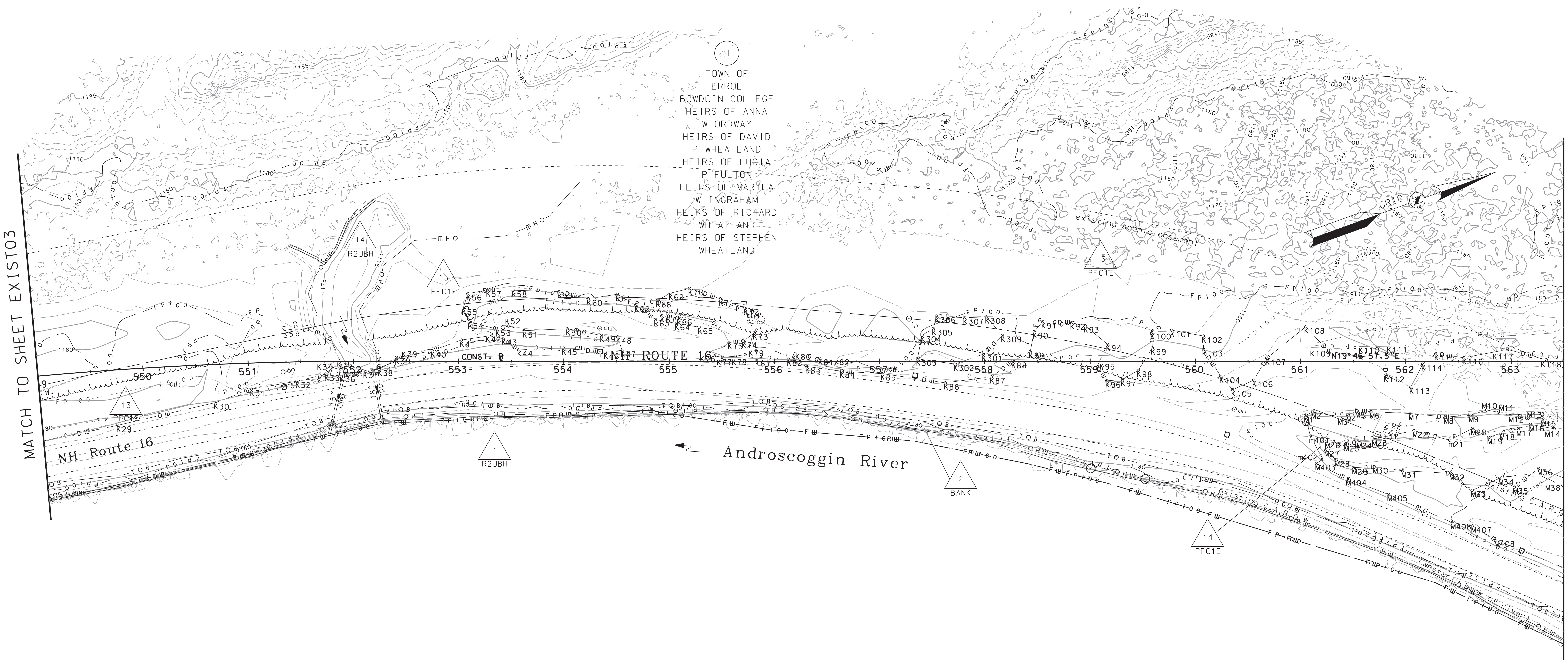
EXISTING DETAIL PLANS
SHEET 3 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EXIST03	16304Bexistplans	16304B	6	35

NUMBER	DATE	STATION	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUHSUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/022
AS BUILT DETAILS		DATE	



50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING DETAIL PLANS
SHEET 4 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EXIST04	16304Bexistplans	16304B	7	35

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING DETAIL PLANS
SHEET 5 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EXIST05	16304Bexistplans	16304B	8	35

MATCH TO SHEET EXIST05

Deer Mt. Road

NH ROUTE 16

existing scenic easement

GRID

1
TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

CONST. B

N8°41'30.4"W

N12°33'34.2"E

NH Route 16

to Errol

Androscoggin River

1 R2UBH

2 BANK

PSS1E/PF01E

PSS4E

END CONSTRUCTION
STATION 582+00

END APPROACH
STATION 583+00

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22
AS BUILT DETAILS		DATE	

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

EXISTING DETAIL PLANS
SHEET 6 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EXIST06	16304Bexistplans	16304B	9	35

WETLAND NUMBER	WETLAND PLANS SHEET NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION			VERNAL POOL IMPACTS	
				PERMANENT				TEMPORARY		PERMANENT				
				N.H.W.B. (NON-WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)				BANK LEFT	CHANNEL	BANK RIGHT	PERMANENT	TEMPORARY
				SF	LF	SF	LF	SF	LF	LF	LF	LF	SF	SF
6	11	PFO1E	A	--	--	--	--	1496	--	--	--	--	--	--
9	11	PEM1Ex	A2	--	--	88	--	573	--	--	--	--	--	--
1, 2	11	R2UBH/BANK	B	163	73	--	--	387	--	--	--	73	--	--
1, 2	11	R2UBH/BANK	B2	213	67	--	--	512	29	--	--	67	--	--
10	11	PEM1Ex	C	--	--	440	--	--	--	--	--	--	--	--
6	12	PFO1E	D	--	--	25068	--	1452	--	--	--	--	--	--
d	12	R2UBH/BANK	E	354	17	--	--	365	25	--	--	17	--	--
1, 2	12	R2UBH/BANK	F	99	14	7	11	184	21	--	11	14	--	--
7	12, 13	PFO1E	G	--	--	60367	--	67	--	--	--	--	--	--
1, 2	12	R2UBH/BANK	H	167	16	23	26	246	27	--	26	16	--	--
2	13	BANK	I	210	17	--	--	234	13	--	--	17	--	--
1, 2	13	R2UBH/BANK	J	283	36	44	19	263	33	--	19	36	--	--
11	13	R3UB2H	K	--	--	607	210	19	10	--	210	--	--	--
5	13	PFO1E	L	--	--	24650	--	535	--	--	--	--	--	--
1, 2	13	R2UBH/BANK	M	26	12	8	9	126	24	--	9	12	--	--
1, 2	13	R2UBH/BANK	N	17	11	0.1	1	80	25	--	1	11	--	--
2	13	BANK	O	26	8	--	--	113	10	--	--	8	--	--
13	13, 14	PFO1E	P	--	--	46885	--	2947	--	--	--	--	--	--
14	14	R2UBH	Q	--	--	3024	202	282	11	--	202	--	--	--
13	14	PFO1E	R	--	--	6332	--	474		--	--	--	--	--
1, 2	14	R2UBH/BANK	S	215	46	144	34	306	30	--	34	46	--	--
1, 2	14	R2UBH/BANK	T	65	12	22	7	174	21	--	7	12	--	--
13	14	PFO1E	U	--	--	9	--	29	--	--	--	--	--	--
13	14	PFO1E	V	--	--	10211	--	1185	--	--	--	--	--	--
1, 2	14	R2UBH/BANK	W	182	16	38	12	266	21	--	12	16	--	--
14	14	PFO1E	X	--	--	244	--	251	--	--	--	--	--	--
13	14	PFO1E	Y	--	--	6245	--	1154	--	--	--	--	--	--
13	14, 15	PFO1E	Z	--	--	22971	--	3197	--	--	--	--	--	--
1, 2	15	R2UBH/BANK	AA	222	22	99	37	307	23	--	37	22	--	--
14	15	PFO1E	AB	--	--	5	--	71	--	--	--	--	--	--
15	15	PFO1E	AC	--	--	757	--	266	--	--	--	--	--	45
13	15	PFO1E	AD	--	--	--	--	2	--	--	--	--	--	--
16	15	PFO1E	AE	--	--	1274	--	--	--	--	--	--	--	--
14	15	PFO1E	AF	--	--	436	--	387	--	--	--	--	--	--
13	15	PFO1E	AG	--	--	17	--	110	--	--	--	--	--	--
13	15	PFO1E	AH	--	--	--	--	72	--	--	--	--	--	--
13	15	PFO1E	AI	--	--	52	--	247	--	--	--	--	--	--
14	15	PFO1E	AJ	--	--	2443	--	624	--	--	--	--	--	--
14	15	PFO1E	AK	--	--	16196	--	1128	--	--	--	--	3273	--
1, 2	15	R2UBH/BANK	AL	105	15	--	--	180	26	--	--	15	--	--
17	15, 16	PSS1E/PFO1E	AM	--	--	1254	--	765	--	--	--	--	--	--
1, 2	16	R2UBH/BANK	AN	789	223	--	--	1224	88	--	--	223	--	--
17	16	PSS1E/PFO1E	AO	--	--	9	--	--	--	--	--	--	--	--
TOTALS:				**3136**	**605**	**229969**	**568**	**22300**	437	**0**	**568**	**605**	**3273**	**45**

TOTAL PROJECT IMPACTS:

PERMANENT IMPACTS:	233,105	SF
TEMPORARY IMPACTS:	22,300	SF
TOTAL IMPACTS:	255,405	SF

TOTAL VERNAL POOL IMPACTS:

PERMANENT IMPACTS:	3,273	SF
TEMPORARY IMPACTS:	45	SF
TOTAL IMPACTS:	3,318	SF

WETLANDS CLASSSIFICATION CODES	
PEM1Ex	PALUSTRINE EMERGENT PERSISTENT SEASONALLY FLOODED/SATURATED, EXCAVATED
PFO1E	PALUSTRINE FORESTED BROAD-LEAVED DECIDUOUS SEASONALLY FLOODED/SATURATED
PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PSS4E	PALUSTRINE, SCRUB-SHRUB, NEEDLE-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
R2UBH	RIVERINE LOWER PERENNIAL UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED
R3UB2H	RIVERINE UPPER PERENNIAL UNCONSOLIDATED BOTTOM SAND PERMANENTLY FLOODED
BANK	BANK

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT SUMMARY

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bwetplans	16304B	10	35

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

P# PLANTINGS - SEE LANDSCAPING DETAILS FOR MORE INFORMATION

GRID

MATCH TO SHEET WET02

BEGIN APPROACH
STATION 516+00

BEGIN CONSTRUCTION
STATION 517+00

existing scenic easement

existing C.A.R.O.W.

N/F
PLUM CREEK MAINE
TIMBERLANDS, LLC

1
TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

DUMMER
CAMBRIDGE

Berlin

NH Route 16

Old Route 16

Androscoggin River

chevron

504 505 506 507 508 509 510 511 512 513 514 515 516 517 518

CONST. R

A A2 B B2 C P1

1 R2UBH
2 BANK
4 PFO1E
5 PFO1E
6 PFO1E
7 R2UBH
8 PSS1E
9 PEM1Ex
10 PEM1Ex

50 0 50 100
SCALE IN FEET

NOTE: FOR PLANTING NOTES P1-P7. REFER TO PLANTING DETAILS.

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION
		STATION
		STATION

SDR PROCESSED NAME1 DATE DATE1
NEW DESIGN M. HLUSHUK DATE 04/01/22
SHEET CHECKED K. KOZLOWSKI DATE 04/01/22
AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

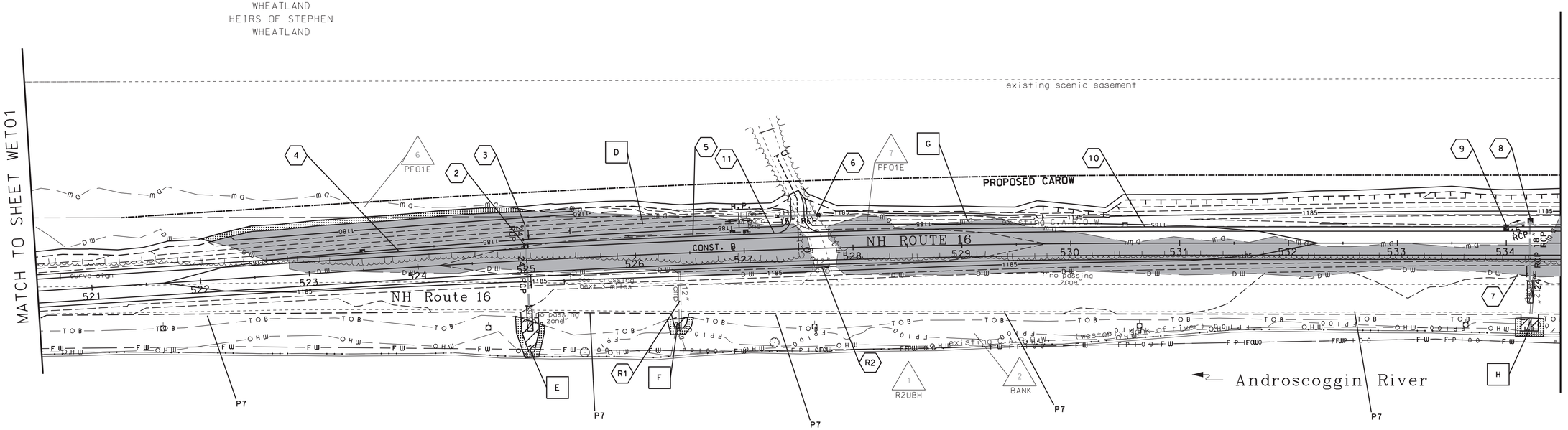
WETLAND IMPACT PLANS
SHEET 1 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET01	16304Bwetplans	16304B	11	35

1

TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

GRID



50 0 50 100
SCALE IN FEET

NOTE: FOR PLANTING NOTES P1-P7, REFER TO PLANTING DETAILS.

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS
SHEET 2 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET02	16304Bwetplans	16304B	12	35

REVISIONS AFTER PROPOSAL			
DESCRIPTION	DATE	NUMBER	
STATION			

1

TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

GRID

MATCH TO SHEET WET02

MATCH TO SHEET WET04

existing scenic easement

PROPOSED CAROW

NH ROUTE 16

NH Route 16

CONST. B

PERM. DRAIN.

TEMP. DRIVE EASE.

WILDLIFE CROSS. (SEE DETAIL)

existing scenic easement

Androscoggin River

7 PFO1E

5 PFO1E

11 R3UB2H

1 R2UBH

2 BANK

13 PFO1E

P6

P7

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22
AS BUILT DETAILS		DATE	

50 0 50 100
SCALE IN FEET

NOTE: FOR PLANTING NOTES P1-P7, REFER TO PLANTING DETAILS.

STATE OF NEW HAMPSHIRE

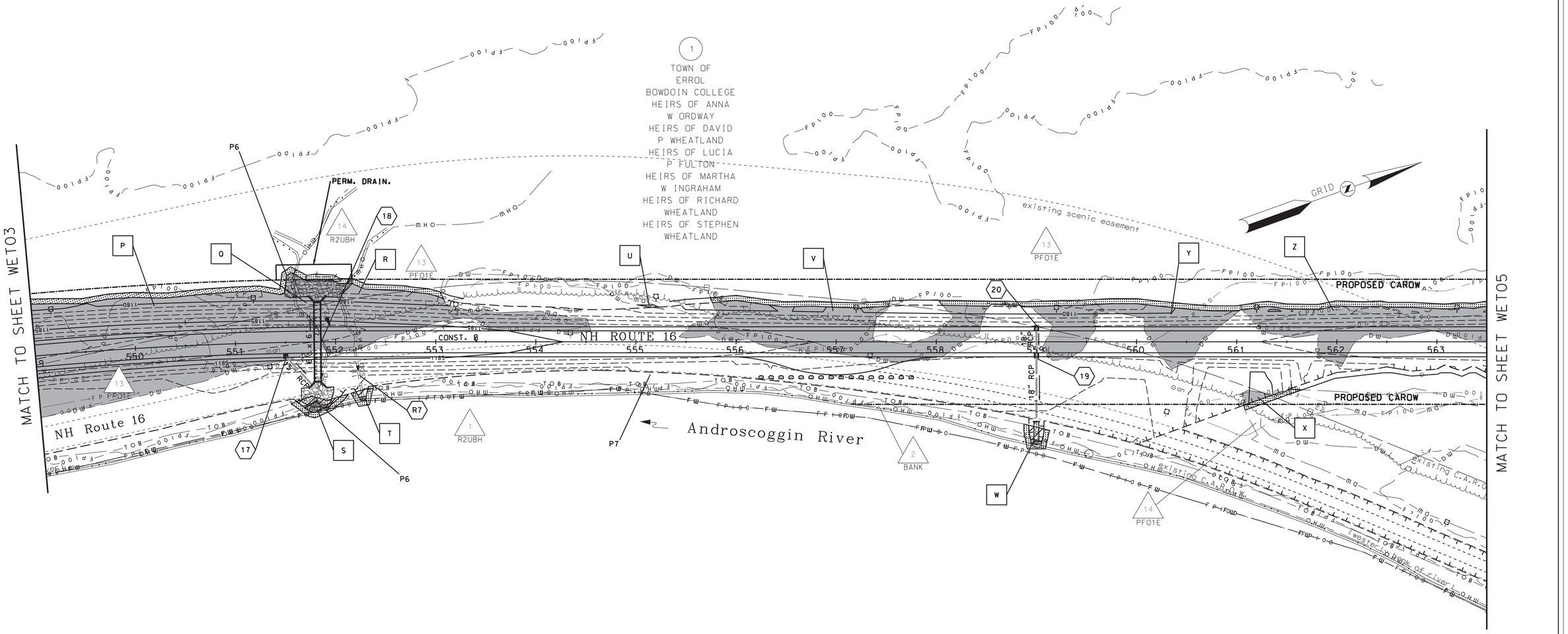
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS
SHEET 3 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET03	16304Bwetplans	16304B	13	35

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION



50 0 50 100
SCALE IN FEET

NOTE: FOR PLANTING NOTES P1-P7. REFER TO PLANTING DETAILS.

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS
SHEET 4 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET04	16304Bwetplans	16304B	14	35

MATCH TO SHEET WET04

MATCH TO SHEET WET06

TOWN OF ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA W ORDWAY
HEIRS OF DAVID P WHEATLAND
HEIRS OF LUCIA P FULTON
HEIRS OF MARTHA W INGRAHAM
HEIRS OF RICHARD WHEATLAND
HEIRS OF STEPHEN WHEATLAND

NH ROUTE 16

CONST. ℄

PROPOSED CAROW

PERM. DRAIN.

existing C.A.R.D.W.

left curve 35 mph

left curve 40 mph

Androscoggin River

NH Route 16

GRID

SCALE IN FEET 50 0 50 100

NOTE: FOR PLANTING NOTES P1-P7. REFER TO PLANTING DETAILS.

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE1
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

WETLAND IMPACT PLANS
SHEET 5 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET05	16304Bwetplans	16304B	15	35

NOTE: FOR PLANTING NOTES P1-P7, REFER TO PLANTING DETAILS.

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS
SHEET 6 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET06	16304Bwetplans	16304B	16	35

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

1
STA. 520+00, RT 35.0' TO STA. 520+00, LT 14.0'
CONST. 47.0' X 18" R.C. PIPE
CONST. PC-3 CONC. HEADWALL @ STA.+00, RT 35.0'
18" INV. OUT = 1177.70'
CONST. CB-B @ STA.+00, LT 14.0'
W/ POLYETHYLENE LINER
18" INV. OUT = 1177.95'
GRATE ELEV. = 1184.00'
CONST. STONE FILL, CLASS B AT OUTLET (5' W X 15' L X 2' D)
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

2
STA. 525+00, RT 42.0' TO STA. 525+00, LT 14.0'
CONST. 54.0' X 24" R.C. PIPE
CONST. PC-3 CONC. HEADWALL @ STA.+00, RT 42.0'
24" INV. OUT = 1178.35'
CONST. CB-B @ STA.+00, LT 14.0'
W/ POLYETHYLENE LINER
24" INV. IN = 1179.80'
24" INV. OUT = 1179.00'
GRATE ELEV. = 1185.90'
CONST. STONE FILL, CLASS B AT OUTLET (5' W X 22' L X 2' D)
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

3
STA. 525+00, LT 14.0' TO STA. 525+00, LT 33.0'
CONST. 17.0' X 24" R.C. PIPE
CONST. PC-3 CONC. HEADWALL @ STA.+00, LT 33.0'
24" INV. IN = 1180.00'

4
STA. 525+00, LT 14.0' TO STA. 523+50, LT 18.0'
CONST. 152.0' X 6" UNDERDRAIN
CONST. FLUSHING BASIN @ STA.+50, LT 18.0'
6" INV. OUT = 1180.90'

5
STA. 525+00, LT 14.0' TO STA. 526+90, LT 18.0'
CONST. 192.0' X 6" UNDERDRAIN
CONST. FLUSHING BASIN @ STA.+90, LT 18.0'
6" INV. OUT = 1180.90'

6
STA. 527+32.5, LT 30.8' TO STA. 527+67.5, LT 30.8'
CONST. 35.0' X 15" R.C. PIPE
CONST. 15" CONC. END SECTION @ STA.+32.5, LT 30.8'
CONST. 15" CONC. END SECTION @ STA.+67.5, LT 30.8'
15" INV. IN = 1182.75'
15" INV. OUT = 1182.25'

7
STA. 534+22, RT 35.0' TO STA. 534+22, RT 14.0'
CONST. 19.0' X 24" R.C. PIPE
CONST. PC-3 CONCRETE HEADWALL @ STA.+22, RT 35.0'
24" INV. OUT = 1177.85'
REMOVE EXISTING 50.0' X 12" CMP (SUBSIDIARY)
CONST. CB-B @ STA.+22, RT 14.0'
W/ POLYETHYLENE LINER
18" INV. IN = 1178.30'
24" INV. OUT = 1178.05'
GRATE ELEV. = 1184.15'
CONST. STONE FILL, CLASS B AT OUTLET (5' W X 20' L X 2' D)
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

8
STA. 534+22, RT 14.0' TO STA. 534+22, LT 20.5'
CONST. 30.5' X 18" R.C. PIPE
CONST. CB-G @ STA.+22, LT 20.5'
15" INV. IN = 1178.60'
6" INV. IN = 1181.25'
18" INV. OUT = 1178.45'
GRATE ELEV. = 1183.00'

9
STA. 534+22, LT 20.5' TO STA. 534+00, LT 14.0'
CONST. 19.0' X 15" R.C. PIPE
CONST. CB-B @ STA.+00, LT 14.0'
W/ POLYETHYLENE LINER
15" INV. OUT = 1178.70'
GRATE ELEV. = 1184.10'

10
STA. 534+00, LT 14.0' TO STA. 530+50, LT 18.0'
CONST. 352.0' X 6" UNDERDRAIN
CONST. FLUSHING BASIN @ STA.+50, LT 18.0'
6" INV. OUT = 1179.15'

11
STA. 530+50, LT 18.0' TO STA. 527+02, LT 18.0'
CONST. 350.0' X 6" UNDERDRAIN
CONST. FLUSHING BASIN @ STA.+02, LT 18.0'

12
STA. 538+50, RT 37.0' TO STA. 538+50, RT 14.0'
CONST. 21.0' X 18" R.C. PIPE
CONST. PC-3 CONCRETE HEADWALL @ STA.+50.0, RT 37.0'
18" INV. OUT = 1179.26'
CONST. CB-B @ STA.+50, RT 14.0'
W/ POLYETHYLENE LINER
18" INV. IN = 1179.65'
18" INV. OUT = 1179.40'
GRATE ELEV. = 1185.65'
CONST. STONE FILL, CLASS B AT OUTLET (5' W X 15' L X 2' D)
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

13
STA. 538+50, RT 14.0' TO STA. 538+50, LT 21.0'
CONST. 31.0' X 18" R.C. PIPE
CONST. 433.0' X 6" UNDERDRAIN (TO DN 8)
CONST. CB-G @ STA.+50, LT 21.0'
18" INV. OUT = 1179.80'
6" INV. OUT = 1179.15'
GRATE ELEV. = 1185.37'

14
STA. 538+50, LT 21.0' TO STA. 542+50, LT 18.0'
CONST. 405.0' X 6" UNDERDRAIN
CONST. FLUSHING BASIN @ STA.+50, LT 18.0'
6" INV. OUT = 1179.15'

15
STA. 542+67.5, RT 33.9' TO STA. 542+92.2, LT 33.7'
CONST. 72.0' X 5' X 4' CONCRETE BOX CULVERT
CONST. SPECIAL CONC. WINGWALL @ STA.+92.2, LT 33.7'
CONST. SPECIAL CONC. WINGWALL @ STA.+67.5, RT 33.9'
(SEE BOX CULVERT DETAILS)
INV. IN = 1177.00' (CULVERT BOTTOM)
INV. OUT = 1175.00' (CULVERT BOTTOM)
6" INV. OUT (UNDERDRAIN)= 1182.00'
CONST. STONE FILL, CLASS B AT INLET/OUTLET
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

16
STA. 542+92.2, LT 33.7' TO STA. 545+00, LT 18.0'
CONST. 214.0' X 6" UNDERDRAIN
CONST. FLUSHING BASIN @ STA.+00, LT 18.0'
6" INV. OUT = 1183.70'

17
STA. 551+75.9, RT 42.5' TO STA. 551+50, RT 14.0'
CONST. 36.5' X 15" R.C. PIPE
CONST. CB-B @ STA.+50, RT 14.0'
W/ POLYETHYLENE LINER
15" INV. OUT = 1179.00'
GRATE ELEV. = 1185.50'

18
STA. 551+82.0, RT 40.0' TO STA. 551+82.0, LT 40.0'
REMOVE EXISTING 63.4' X 15" CMP
CONST. 80.0' X 6' X 6' CONCRETE BOX CULVERT
CONST. SPECIAL CONC. WINGWALL @ STA.+82.0, LT 40.0'
CONST. SPECIAL CONC. WINGWALL @ STA.+82.0, RT 40.0'
(SEE BOX CULVERT DETAILS)
INV. IN = 1175.50' (CULVERT BOTTOM)
INV. OUT = 1175.00' (CULVERT BOTTOM)
15" INV. OUT (DN 11) = 1178.00'
CONST. STONE FILL, CLASS B AT INLET/OUTLET
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

19
STA. 559+00, RT 80.0' TO STA. 559+00, RT 14.0'
CONST. 64.0' X 18" R.C. PIPE
CONST. PC-3 CONC. HEADWALL @ STA.+00.0, RT 80.0'
18" INV. OUT = 1178.15'
CONST. CB-B @ STA.+00, RT 14.0'
18" INV. IN = 1178.75'
18" INV. OUT = 1178.50'
GRATE ELEV. = 1182.90'
CONST. STONE FILL, CLASS B AT OUTLET (5' W X 20' L X 2' D)
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

20
STA. 559+00, RT 14.0' TO STA. 559+00, LT 14.0'
CONST. 24' X 18" R.C. PIPE 3000D
CONST. CB-B @ STA.+00, LT 14.0'
W/ POLYETHYLENE LINER
18" INV. OUT = 1179.00'
GRATE ELEV. = 1182.90'

21
STA. 564+31.8, RT 304.4' TO STA. 564+57.4, RT 243.7'
CONST. 66.0' DITCH (SEE TYPICAL SECTION)
CHANNEL INV. IN = 1177.25'
CHANNEL INV. OUT = 1177.00'

22
STA. 569+00, LT 32.0' TO STA. 569+00, RT 32.0'
CONST. 64.0' X 24" R.C. PIPE 3000D
CONST. 24" CONC. END SECTION @ STA.+00, RT 32.0'
24" INV. IN = 1180.00'
CONST. 24" CONC. END SECTION @ STA.+00, LT 32.0'
24" INV. OUT = 1180.00'

23
STA. 572+00, LT 24.0' TO STA. 572+00, RT 30.0'
CONST. 54.0' X 24" R.C. PIPE 3000D
CONST. 24" CONC. END SECTION @ STA.+00, RT 30.0'
24" INV. IN = 1180.00'
CONST. 24" CONC. END SECTION @ STA.+00, LT 24.0'
24" INV. OUT = 1180.00'

24
STA. 577+50, RT 80.0' TO STA. 577+50, LT 14.0'
CONST. 92.0' X 18" R.C. PIPE 3000D
CONST. PC-3 CONC. HEADWALL @ STA.+50.0, RT 80.0'
18" INV. OUT = 1177.10'
CONST. CB-B @ STA.+50, LT 14.0'
W/ SLAB TOP AND POLYETHYLENE LINER
18" INV. OUT = 1177.60'
GRATE ELEV. = 1181.80'
CONST. STONE FILL, CLASS B AT OUTLET (5' W X 15' L X 2' D)
CONST. GEOTEXTILE, CLASS 1, NON-WOVEN

R1
STA. 526+38.5, RT 69.6' TO STA. 526+39.6, RT 17.8'
REMOVE EXISTING 52.0' X 12" CMP

R2
STA. 527+60.9, RT 16.3' TO STA. 527+78.9, RT 17.4'
REMOVE EXISTING 20.0' X 12" CMP

R3
STA. 542+33.7, RT 132.8' TO STA. 542+40.0, RT 76.9'
REMOVE EXISTING 56.1' X 24" CMP

R4
STA. 543+62.3, RT 134.1' TO STA. 543+63.3, RT 88.2'
REMOVE EXISTING 45.7' X 15" R.C. PIPE

R5
STA. 544+45.3, RT 133.8' TO STA. 544+49.1, RT 87.0'
REMOVE EXISTING 47.1' X 15" R.C. PIPE

R6
STA. 547+60.0, RT 122.8' TO STA. 547+60.0, RT 82.8'
REMOVE EXISTING 42.8' X 18" R.C. PIPE

R7
STA. 552+27.8, RT 58.8' TO STA. 552+19.3, RT 7.7'
REMOVE EXISTING 51.8' X 18" SPP

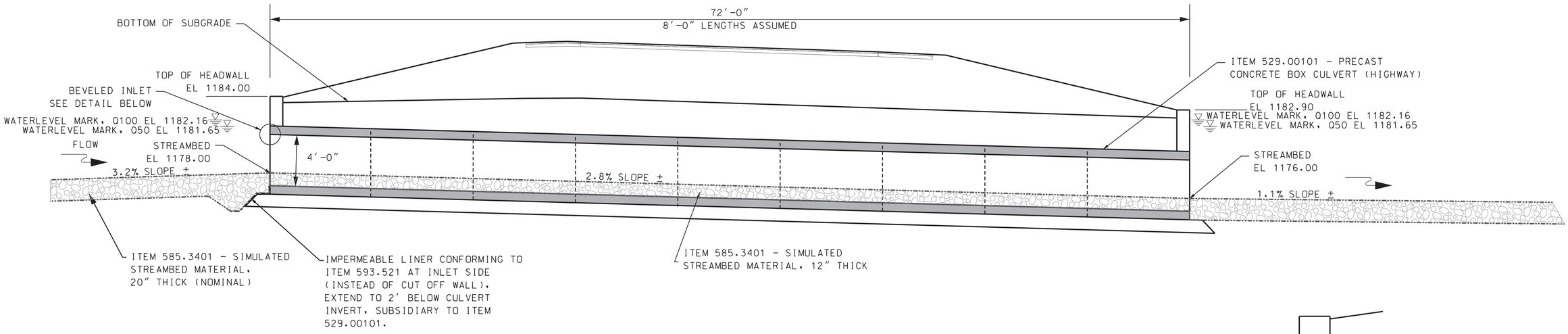
R8
STA. 564+41.1, RT 286.9' TO STA. 564+59.9, RT 247.6'
REMOVE EXISTING 43.6' X 15" R.C. PIPE

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22
AS BUILT DETAILS		DATE	

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

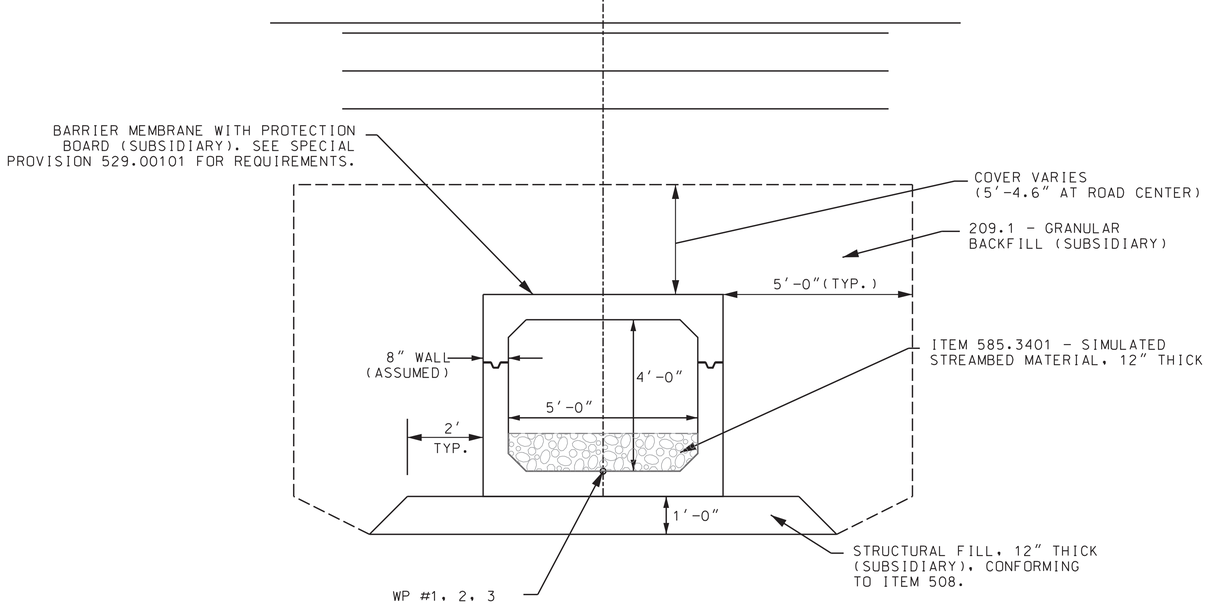
DRAINAGE NOTES

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bdns	16304B	17	35



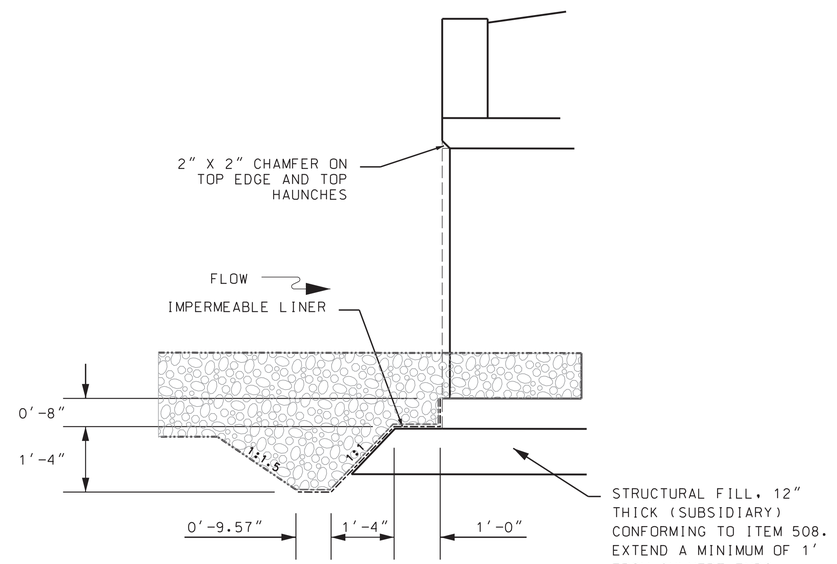
CULVERT PROFILE

1" = 4'



CROSS SECTION

1" = 2'



INLET/OUTLET DETAIL

NOT TO SCALE

REVISIONS AFTER PROPOSAL

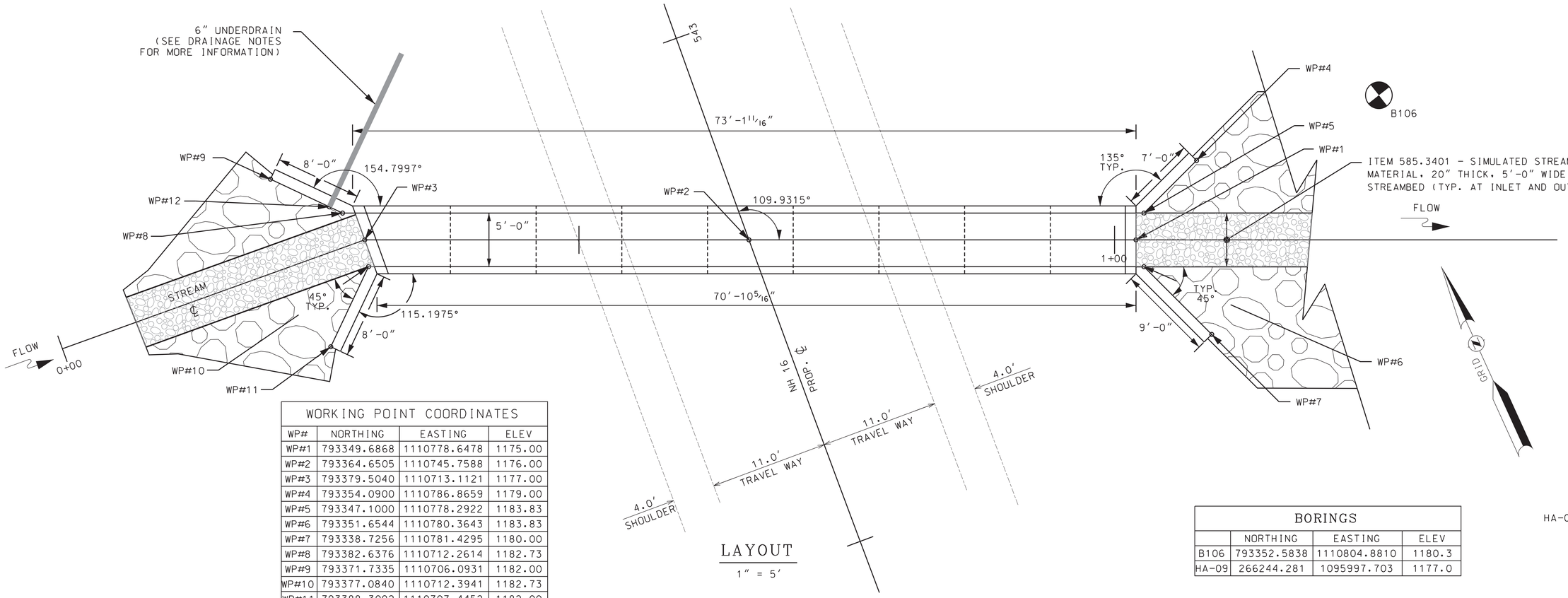
NUMBER	DESCRIPTION	DATE	STATION

		DATE
SDR PROCESSED		
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

BOX CULVERT DETAILS STA 542+80

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert54280	16304B	18	35



LAYOUT

1" = 5'

WORKING POINT COORDINATES			
WP#	NORTHING	EASTING	ELEV
WP#1	793349.6868	1110778.6478	1175.00
WP#2	793364.6505	1110745.7588	1176.00
WP#3	793379.5040	1110713.1121	1177.00
WP#4	793354.0900	1110786.8659	1179.00
WP#5	793347.1000	1110778.2922	1183.83
WP#6	793351.6544	1110780.3643	1183.83
WP#7	793338.7256	1110781.4295	1180.00
WP#8	793382.6376	1110712.2614	1182.73
WP#9	793371.7335	1110706.0931	1182.00
WP#10	793377.0840	1110712.3941	1182.73
WP#11	793388.3092	1110707.4452	1182.00
WP#12	793388.6719	1110711.3830	1182.00

WP#1 - #3 ELEV's ARE AT CULVERT FLOOR
WP#4 - #11 ELEV's ARE AT TOP OF WING
WP#12 ELEV AT INVERT OF PIPE

BORINGS			
	NORTHING	EASTING	ELEV
B106	793352.5838	1110804.8810	1180.3
HA-09	266244.281	1095997.703	1177.0

HA-09

FOUNDATION & EXCAVATION NOTES:

1. FOUNDATION DATA: PRECAST CONCRETE BOX CULVERT AND HEADWALLS SHALL BE SUPPORTED ON SOIL WITH 12" (NOMINAL) THICKNESS OF STRUCTURAL FILL (SUBSIDIARY TO ITEM 529.00101), OR AS SHOWN ON THE PLANS OR AS DIRECTED. NOMINAL BEARING RESISTANCE OF 40 KSF WITH 0.45 RESISTANCE FACTOR. FOR PRECAST CONCRETE FOOTINGS NOMINAL SLIDING RESISTANCE OF 0.58 WITH A 0.9 RESISTANCE FACTOR. SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
2. THE CULVERT SECTIONS AND WINGWALL FOOTINGS SHALL BE ON A NOMINAL 1' THICK LAYER OF STRUCTURAL FILL. STRUCTURAL FILL SHALL EXTEND A MINIMUM 2' LATERALLY FROM THE BOTTOM EDGES OF CULVERT AND FOOTINGS. CLEAN STONE FILL AS A PLACEMENT FOR STRUCTURAL FILL SHALL NOT BE ALLOWED.
3. THE AT-REST LATERAL EARTH PRESSURE COEFFICIENT (k_o) SHALL BE USED FOR CULVERT AND HEADWALL DESIGN ASSUMING AN EFFECTIVE ANGLE OF INTERNAL FRICTION (Φ') OF 34° AND UNIT WEIGHT (γ_s) OF 120 POUNDS PER CUBIC FOOT FOR BACKFILL SOIL PROPERTIES. THE ACTIVE LATERAL EARTH PRESSURE COEFFICIENT (k_a) SHALL BE USED FOR WINGWALL DESIGN.
4. THE FOUNDATION EXCAVATION AND EXCAVATION OF THE CULVERT CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH SECTIONS 503 AND 504 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. PROTRUDING COBBLES AND BOULDERS ENCOUNTERED AT THE FINAL EXCAVATION LEVEL SHOULD BE EITHER REMOVED AND REPLACED WITH STRUCTURAL FILL OR SPLIT TO PROVIDE A LEVEL SURFACE.
5. THE EXCAVATION TO FINAL GRADE AND THE CONTROL OF WATER SHALL BE COMPLETED IN A MANNER AS TO PREVENT DISTURBANCE OF THE FOUNDATION MATERIALS. PUMPING EQUIPMENT SHALL BE PROPERLY FILTERED TO PREVENT LOSS OF FINES. ANY DISTURBED AREAS SHALL BE OVER-EXCAVATED AND REPLACED WITH STRUCTURAL FILL AT THE CONTRACTOR'S EXPENSE. SUMP AREAS SHALL BE LOCATED OUTSIDE A 1H:2V SUPPORT LIMIT BELOW THE WINGWALL FOOTINGS AND THE EDGES OF THE BOX CULVERT.

SITE SPECIFIC NOTES:

1. BORING LOGS ARE INCLUDED IN THE PLANS FOR REFERENCE.SEE THE GEOTECHNICAL REPORT FOR ADDITIONAL PROJECT SPECIFIC INFORMATION.
2. MASONRY DIMENSIONS ARE BASED ON THE ASSUMPTION THAT THE CONCRETE BOX CULVERT WALLS ARE 8" THICK AND HEADWALLS ARE 12" THICK.
3. THE CONTRACTOR HAS THE OPTION TO PLACE THE BOX CULVERT IN "C-SECTIONS" (WITH A REMOVABLE TOP SLAB) TO FACILITATE PLACEMENT OF STREAMBED MATERIAL WITHIN THE CULVERT. IF DESIGNED WITH C-SECTIONS, THE JOINTS SHALL BE AT THE TOP OF THE BOX CULVERT WALL AS SHOWN IN THE PROJECT PLANS. THE BOX CULVERT MAY FLOW FULL AT TIMES. THEREFORE, THE TOP SLAB SHALL BE DESIGNED FOR BUOYANT FORCES.
4. THE CONTRACTOR MAY SUBSTITUTE AN IMPERMEABLE LINER MEETING THE REQUIREMENTS OF ITEM 593.521 40 MIL PVC GEOMEMBRANE FOR THE TYPICAL 2'-0" DEEP INLET SIDE. AN IMPERMEABLE LINER IS NOT REQUIRED ON THE OUTLET SIDE.
5. THE CULVERT WALLS AND WING WALLS SHALL BE DESIGNED WITH STANDARD WEEP HOLES TO PREVENT UNBALANCED HYDROSTATIC PRESSURE FROM ACTING BEHIND THE WALLS. SEE THE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

PRECAST CONCRETE CULVERT AND HEADWALL DETAILS:

1. THE QUALITY OF MATERIALS, PROCESS OF MANUFACTURE, AND COMPLETED BOX CULVERT AND WINGWALLS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER (SEE SPECIAL PROVISION).
2. CONCRETE SHALL BE PRECAST UNLESS OTHERWISE AUTHORIZED.
3. SHOP DRAWINGS FOR ITEM 529.00101 SHALL BE SUBMITTED FOR APPROVAL IN ACCORDANCE WITH 105.02 FOR ALL COMPONENTS. THESE DRAWINGS SHALL INCLUDE DETAILS CORRESPONDING TO ALL OF THE STRUCTURE'S JOINTS AS WELL AS THE REINFORCEMENT TYPE, SIZE, AND LOCATION. DRAWINGS SHALL BE STAMPED BY A NH LICENSED PROFESSIONAL ENGINEER AND BE ACCOMPANIED BY ALL DESIGN CALCULATIONS. LOAD AND RESISTANCE FACTOR DESIGN SHALL BE APPLIED. ALSO SEE SPECIAL PROVISION. SHOP DRAWINGS SHALL BE SUBMITTED TO THE BUREAUS OF BRIDGE DESIGN, MATERIALS AND RESEARCH, AND HIGHWAY DESIGN FOR APPROVAL.
4. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION
		STATION	
		STATION	

		DATE
SDR PROCESSED		
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

BOX CULVERT DETAILS
STA 542+80

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert54280	16304B	19	35

HAND AUGER REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION

PROJECT **DUMMER-CAMBRIDGE-ERROL 10634B**
DESCRIPTION Cambridge - NH Route 16 Roadway Improvements

COORDINATES	GROUNDWATER		
EAST/NORTH 1110805/793307	TIME	7:45 am	
	DEPTH (ft)	1.9	
	NOT ENCOUNTERED (if marked)		

HOLE NO. **HA09**
SHEET NO. 1 OF 1
STATION 127+40
OFFSET LT 40
BASELINE NH Route 16 CL
ELEVATION (ft) 1177.0
DATE 9/25/2018
CLASSIFIER Doug Rogers

DEPTH (ft)	STRATA CHANGE (ft)	ELEV. (ft)	STRATA SYMBOL	DESCRIPTION OF MATERIALS AND REMARKS
0	0.4	1176.6		Dark brown, loamy TOPSOIL
1.0				Dark greyish brown and dark grey, SILT, trace organic, slight trace fine sand, slight odor of decay
2.0				-ALLUVIUM-
3.0	3.3	1173.7		Grey, SILT and fine sandy SILT
4.0				Bottom of Exploration @ 3.8 ft (EL. 1173.2 ft)
5.0				
6.0				
7.0				
8.0				
9.0				

AUGER DIGGING TOOL Screw Bit — ENGLISH

HA-06 S:\MATERIALS-RESEARCH\GINTW\PROJECTS\DUMMER\16304B\HAND AUGERS.GPJ 10/26/2018 2:12:00 PM HA-06

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION

PROJECT NAME **DUMMER-CAMBRIDGE-ERROL 16304B** BRIDGE NO. N/A
DESCRIPTION Cambridge - NH Route 16 Roadway Improvements

GROUNDWATER					
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE
9/20/18	7:15 am	3.6	1176.7	9.0	10.7

EQUIPMENT	SAMPLER	CASING	CORE
TYPE:	S	NW	
SIZE I.D. (in):	1.375	3	
HAMMER WT. (lb):	140	DRILL RIG	
HAMMER FALL (in):	30	CME 45-C Track rig	
HAMMER TYPE:	Automatic		

BORING NO. **B106**
SHEET NO. 1 OF 1
STA. 127+80 OFF. LT 45
BASELINE NH Route 16 CL
ELEVATION (ft) 1180.3
START/END 9/19/18 / 9/19/18
DRILLER R. Bennett (NHDOT)
INSPECTOR Doug Rogers
CLASSIFIER DRR
EAST/NORTH (ft) 1110805/793353

DEPTH (ft)	STRATUM CHANGE (ft) DEPTH	STRATUM CHANGE (ft) ELEVATION	BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
0	0.5	1179.8	1 1 1	S1	1.5 [75]	0.0 – 2.0	Dark brown-very dark greyish brown, fibrous TOPSOIL Dark yellowish brown, silty FINE SAND, occasional root fiber -SUBSOIL- Yellowish brown and greyish brown, fine sandy SILT	
	1.1	1179.2	2 2 2	S2	1.7 [85]	2.0 – 4.0	Very loose, yellowish brown w/ traces of greyish brown, fine sandy SILT -ALLUVIUM- (Recent)	
5			3 3 5	S3	1.1 [55]	4.0 – 6.0	Loose, brownish grey and yellowish brown, fine sandy SILT	
	7.1	1173.2	2 1 2	S4	1.4 [70]	6.0 – 8.0	Grey, SILT to fine sandy SILT Dark brownish grey-dark greyish brown, SILT, trace organic	
			1 2 2	S5	1.1 [55]	8.0 – 10.0	Very loose, dark grey and dark greyish brown, SILT, trace organic, slight trace fine sand -ALLUVIUM- (Old)	
10	11.0	1169.3	WOH 2 3	S6	1.3 [65]	10.0 – 12.0	Dark greyish brown, SILT, little-trace fine sand, trace organic	
			4				Grey, clayey SILT, some-little coarse-medium sand, little fine gravel -GLACIAL TILL-	
			12 20 19 34	S7	0.9 [45]	13.0 – 15.0	Dense, olive-olive grey, silty FINE SAND, some gravel, little coarse-medium sand, occasional weathered rock fragment	
15							Bottom of Exploration @ 15.0 ft (El. 1165.3)	
20								
25								

Sampler	Identification
S	Standard Split Spoon
SL	Large Spoon (O.D.= 3 in)
T	Thin Wall Tube
U	Undisturbed Piston
O	Open End Rod
A	Auger Flight
C	Core Barrel
NR	Not Recorded

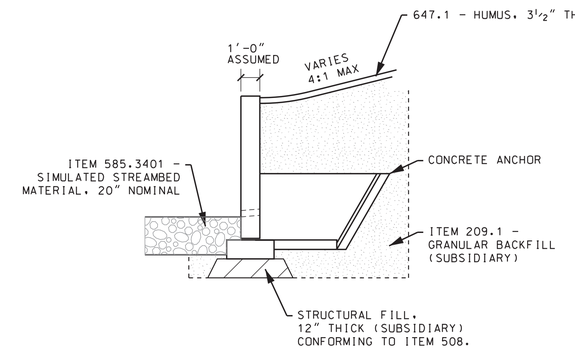
COHESIVE SOILS	
Blows/foot (N)	Consistency
0 - 1	Very Soft
2 - 4	Soft
5 - 8	Medium Stiff
9 - 15	Stiff
16 - 30	Very Stiff
> 30	Hard

NON-COHESIVE SOILS	
Blows/foot (N)	Apparent Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
> 50	Very Dense
WOR - Weight of Rod	
WOH - Weight of Hammer	

Soil Descriptions	Proportion
Capitalized Soil Name	Major Component
Lower Case Adjective	35% - 50%
Some	20% - 35%
Little	10% - 20%
Trace	1% - 10%

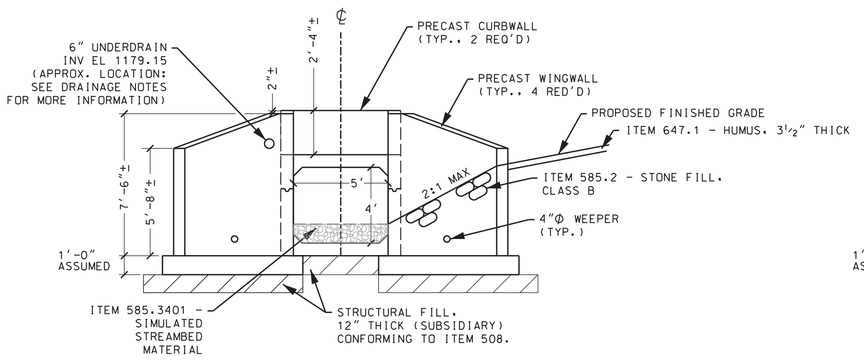
ENGLISH

TB-12 S:\MATERIALS-RESEARCH\GINTW\PROJECTS\DUMMER\16304B\16304B-TEST BORINGS.GPJ 10/26/2018 2:39:47 PM TB-12



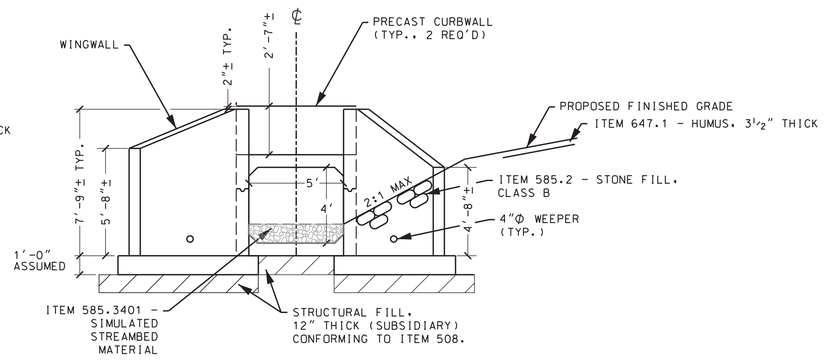
TYPICAL WING SECTION

1" = 4'



TYPICAL INLET END ELEVATION

1" = 4'



TYPICAL OUTLET END ELEVATION

1" = 4'

REVISIONS AFTER PROPOSAL

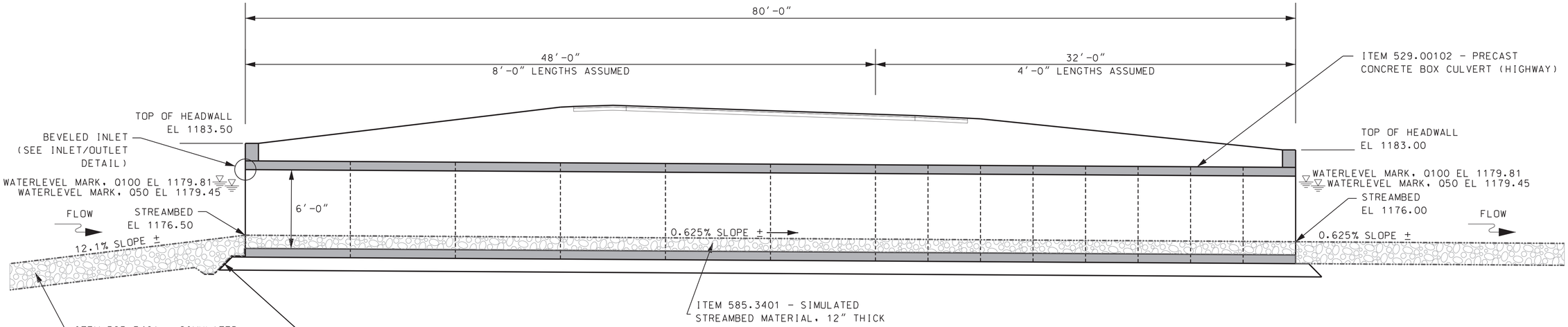
NUMBER	DESCRIPTION	DATE	STATION

		DATE
SDR PROCESSED		
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		

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

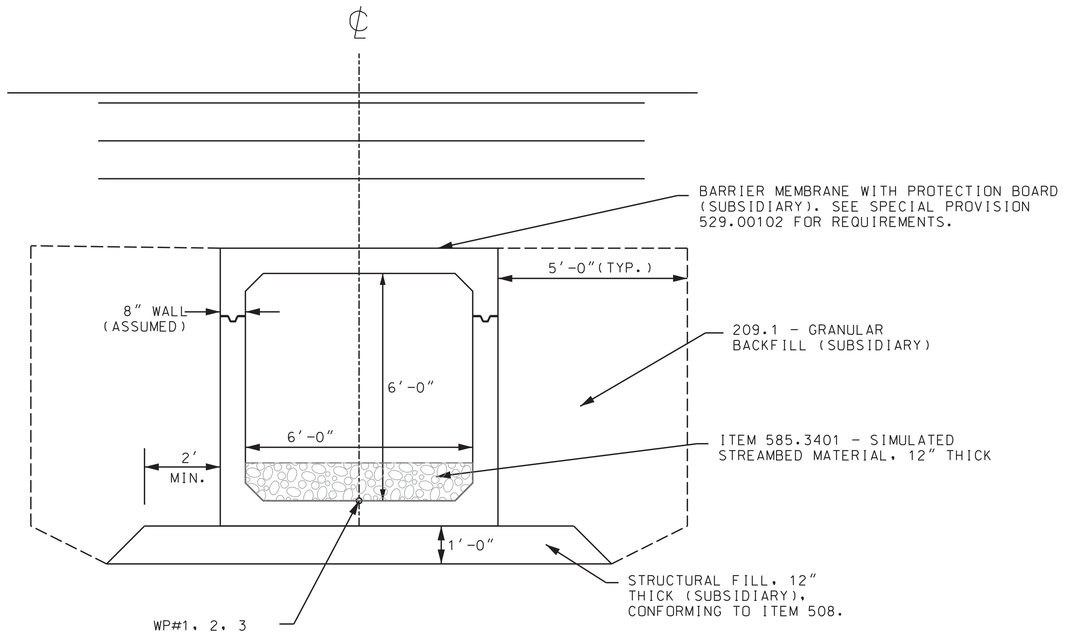
BOX CULVERT DETAILS
STA 542+80

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert54280	16304B	20	35



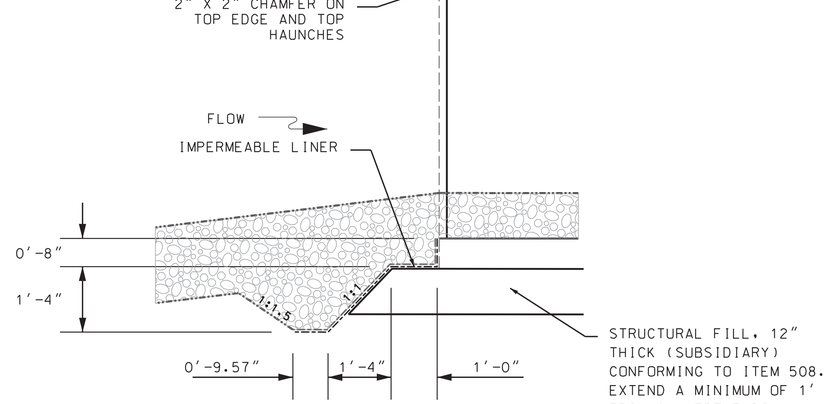
CULVERT PROFILE

1″ = 4′



CROSS SECTION

1″ = 2′



INLET/OUTLET DETAIL

NOT TO SCALE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

		DATE
SDR PROCESSED		
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

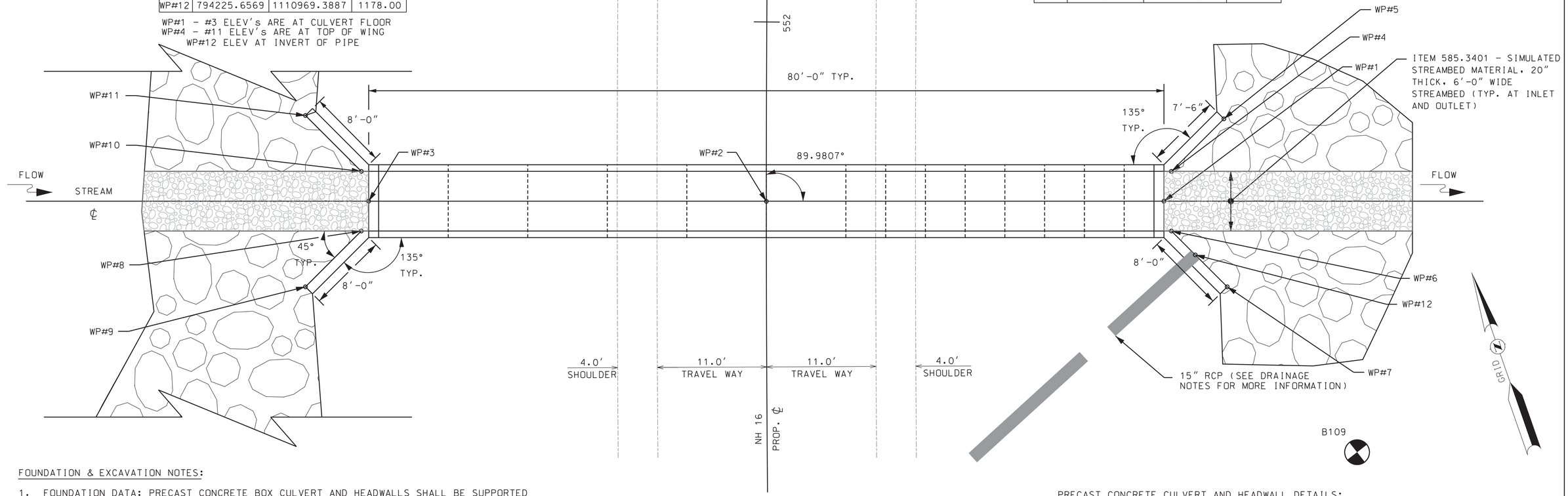
BOX CULVERT DETAILS
STA 551+82

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert55182	16304B	21	35

WORKING POINT COORDINATES			
WP#	NORTHING	EASTING	ELEV
WP#1	794231.7987	1110968.1922	1175.50
WP#2	794244.9729	1110930.4239	1175.25
WP#3	794258.1472	1110892.6557	1175.00
WP#4	794234.3866	1110969.8819	1182.83
WP#5	794237.6334	1110976.6144	1179.00
WP#6	794228.7199	1110967.9099	1182.83
WP#7	794221.5671	1110971.3632	1179.00
WP#8	794255.5608	1110890.9618	1183.33
WP#9	794252.1075	1110883.8089	1179.50
WP#10	794261.2260	1110892.9379	1183.33
WP#11	794268.3788	1110889.4847	1179.50
WP#12	794225.6569	1110969.3887	1178.00

WP#1 - #3 ELEV's ARE AT CULVERT FLOOR
WP#4 - #11 ELEV's ARE AT TOP OF WING
WP#12 ELEV AT INVERT OF PIPE

BORINGS			
	NORTHING	EASTING	ELEV
B109	794196.3838	1110975.5687	1181.7



LAYOUT

1" = 5'

FOUNDATION & EXCAVATION NOTES:

1. FOUNDATION DATA: PRECAST CONCRETE BOX CULVERT AND HEADWALLS SHALL BE SUPPORTED ON SOIL WITH 12" (NOMINAL) THICKNESS OF STRUCTURAL FILL (SUBSIDIARY TO ITEM 529.00102), OR AS SHOWN ON THE PLANS OR AS DIRECTED. NOMINAL BEARING RESISTANCE OF 40 KSF WITH 0.45 RESISTANCE FACTOR. FOR PRECAST CONCRETE FOOTINGS NOMINAL SLIDING RESISTANCE OF 0.58 WITH A 0.9 RESISTANCE FACTOR. SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

2. THE CULVERT SECTIONS AND WINGWALL FOOTINGS SHALL BE ON A NOMINAL 1' THICK LAYER OF STRUCTURAL FILL. STRUCTURAL FILL SHALL EXTEND A MINIMUM 2' LATERALLY FROM THE BOTTOM EDGES OF CULVERT AND FOOTINGS. CLEAN STONE FILL AS A PLACEMENT FOR STRUCTURAL FILL SHALL NOT BE ALLOWED.

3. THE AT-REST LATERAL EARTH PRESSURE COEFFICIENT (K_o) SHALL BE USED FOR CULVERT AND HEADWALL DESIGN ASSUMING AN EFFECTIVE ANGLE OF INTERNAL FRICTION (Φ') OF 34° AND UNIT WEIGHT (γ_s) OF 120 POUNDS PER CUBIC FOOT FOR BACKFILL SOIL PROPERTIES. THE ACTIVE LATERAL EARTH PRESSURE COEFFICIENT (K_a) SHALL BE USED FOR WINGWALL DESIGN.

4. THE FOUNDATION EXCAVATION AND EXCAVATION OF THE CULVERT CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH SECTIONS 503 AND 504 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. PROTRUDING COBBLES AND BOULDERS ENCOUNTERED AT THE FINAL EXCAVATION LEVEL SHOULD BE EITHER REMOVED AND REPLACED WITH STRUCTURAL FILL OR SPLIT TO PROVIDE A LEVEL SURFACE.

5. THE EXCAVATION TO FINAL GRADE AND THE CONTROL OF WATER SHALL BE COMPLETED IN A MANNER AS TO PREVENT DISTURBANCE OF THE FOUNDATION MATERIALS. PUMPING EQUIPMENT SHALL BE PROPERLY FILTERED TO PREVENT LOSS OF FINES. ANY DISTURBED AREAS SHALL BE OVER-EXCAVATED AND REPLACED WITH STRUCTURAL FILL AT THE CONTRACTOR'S EXPENSE. SUMP AREAS SHALL BE LOCATED OUTSIDE A 1H:2V SUPPORT LIMIT BELOW THE WINGWALL FOOTINGS AND THE EDGES OF THE BOX CULVERT.

SITE SPECIFIC NOTES:

1. BORING LOGS ARE INCLUDED IN THE PLANS FOR REFERENCE. SEE THE GEOTECHNICAL REPORT FOR ADDITIONAL PROJECT SPECIFIC INFORMATION.

2. MASONRY DIMENSIONS ARE BASED ON THE ASSUMPTION THAT THE CONCRETE BOX CULVERT WALLS ARE 8" THICK AND HEADWALLS ARE 12" THICK.

3. THE CONTRACTOR HAS THE OPTION TO PLACE THE BOX CULVERT IN "C-SECTIONS" (WITH A REMOVABLE TOP SLAB) TO FACILITATE PLACEMENT OF STREAMBED MATERIAL WITHIN THE CULVERT. IF DESIGNED WITH C-SECTIONS, THE JOINTS SHALL BE AT THE TOP OF THE BOX CULVERT WALL AS SHOWN IN THE PROJECT PLANS. THE BOX CULVERT MAY FLOW FULL AT TIMES. THEREFORE, THE TOP SLAB SHALL BE DESIGNED FOR BUOYANT FORCES.

4. THE CONTRACTOR MAY SUBSTITUTE AN IMPERMEABLE LINER MEETING THE REQUIREMENTS OF ITEM 593.521 40 MIL PVC GEOMEMBRANE FOR THE TYPICAL 2'-0" DEEP INLET SIDE. AN IMPERMEABLE LINER IS NOT REQUIRED ON THE OUTLET SIDE.

5. THE CULVERT WALLS AND WING WALLS SHALL BE DESIGNED WITH STANDARD WEEP HOLES TO PREVENT UNBALANCED HYDROSTATIC PRESSURE FROM ACTING BEHIND THE WALLS. SEE THE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

PRECAST CONCRETE CULVERT AND HEADWALL DETAILS:

1. THE QUALITY OF MATERIALS, PROCESS OF MANUFACTURE, AND COMPLETED BOX CULVERT AND WINGWALLS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER (SEE SPECIAL PROVISIONS).

2. CONCRETE SHALL BE PRECAST UNLESS OTHERWISE AUTHORIZED.

3. SHOP DRAWINGS FOR ITEM 529.00102 SHALL BE SUBMITTED FOR APPROVAL IN ACCORDANCE WITH 105.02 FOR ALL COMPONENTS. THESE DRAWINGS SHALL INCLUDE DETAILS CORRESPONDING TO ALL OF THE STRUCTURE'S JOINTS AS WELL AS THE REINFORCEMENT TYPE, SIZE, AND LOCATION. DRAWINGS SHALL BE STAMPED BY A NH LICENSED PROFESSIONAL ENGINEER AND BE ACCOMPANIED BY ALL DESIGN CALCULATIONS. LOAD AND RESISTANCE FACTOR DESIGN SHALL BE APPLIED. ALSO SEE SPECIAL PROVISION. SHOP DRAWINGS SHALL BE SUBMITTED TO THE BUREAUS OF BRIDGE DESIGN, MATERIALS AND RESEARCH, AND HIGHWAY DESIGN FOR APPROVAL.

4. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".

REVISIONS AFTER PROPOSAL			
DESCRIPTION	DATE	NUMBER	
STATION			
STATION			

		DATE
SDR PROCESSED		
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

BOX CULVERT DETAILS
STA 551+82

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert55182	16304B	22	35

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION

PROJECT NAME **DUMMER-CAMBRIDGE-ERROL 16304B** BRIDGE NO. N/A
DESCRIPTION Cambridge - NH Route 16 Roadway Improvements

BORING NO. B109
SHEET NO. 1 OF 1
STA. 136+50 OFF. RT 15
BASELINE NH Route 16 CL
ELEVATION (ft) 1181.7
START/END 9/19/18 / 9/19/18
DRILLER R. Bennett (NHDOT)
INSPECTOR Doug Rogers
CLASSIFIER DRR
EAST/NORTH (ft) 1110978/794202

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	NW	
						SIZE I.D. (in):	1.375	3	
9/19/18	12:00 pm	6.1	1175.6	10	12.8	HAMMER WT. (lb):	140	DRILL RIG	
9/19/18	12:15 pm	6.0	1175.7	10	12.8	HAMMER FALL (in):	30	CME 45-C Track rig	
9/19/18	12:30 pm	6.0	1175.7	10.0	12.8	HAMMER TYPE:	Automatic		

DEPTH (ft)	STRATUM CHANGE (ft) DEPTH	STRATUM CHANGE (ft) ELEVATION	BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
0			2 5 6 4	S1	0.8 [40]	0.0 – 2.0	Medium dense, greyish brown and dark greyish brown, MEDIUM-FINE SAND, some gravel, some-little coarse sand, some-little silt -FILL-	
			3 2 2 2	S2	0.4 [20]	2.0 – 4.0	Very loose, greyish brown, SILT, mixed w/ dark greyish brown, MEDIUM-FINE SAND, little gravel, little coarse sand	
			4 2 1 1	S3	1.0 [50]	4.0 – 6.0	Greyish brown and dark greyish brown, MEDIUM-FINE SAND, some gravel, some coarse sand, little silt Very loose, greyish brown and yellowish brown, SILT, trace fine sand -ALLUVIUM- (Recent)	
5	4.4	1177.3						
			1 2 1 2	S4	1.4 [70]	6.0 – 8.0	Greyish brown and yellowish brown, SILT Dark grey and dark greyish brown, SILT, slight trace organic	
			2 2 2 1	S5	1.4 [70]	8.0 – 10.0	Very loose, dark brownish grey-dark grey, fine sandy SILT, trace organic	
10	6.7	1175.0	2 1 2 1	S6	1.2 [60]	10.0 – 12.0	Very loose, grey-dark grey, silty FINE SAND to fine sandy SILT, trace organic -ALLUVIUM- (Old)	
15			4 4 3 5	S7	1.0 [50]	15.0 – 17.0	Loose, dark grey, MEDIUM-FINE SAND, little silt, little-trace coarse sand	
20	18.0	1163.7	4 2 2 3	S8	1.3 [65]	20.0 – 22.0	Very loose, grey, SILT and fine sandy SILT, occasional thin clayey silt layer -GLACIAL LACUSTRINE-	
25	25.0	1156.7	15 12 16 28	S9	0.7 [35]	25.0 – 27.0	Medium dense, grey, silty FINE SAND, some gravel, some-little medium sand, little-trace coarse sand -GLACIAL TILL-	
			45 50/0.2	S10	0.5 [71]	28.0 – 28.7	Grey, silty FINE SAND, some gravel, little-trace coarse-medium sand Bottom of Exploration @ 28.7 ft (El. 1153.0)	

Sampler	Identification
S	Standard Split Spoon
SL	Large Spoon (O.D.= 3 in)
T	Thin Wall Tube
U	Undisturbed Piston
O	Open End Rod
A	Auger Flight
C	Core Barrel
NR	Not Recorded

COHESIVE SOILS	
Blows/foot (N)	Consistency
0 - 1	Very Soft
2 - 4	Soft
5 - 8	Medium Stiff
9 - 15	Stiff
16 - 30	Very Stiff
> 30	Hard

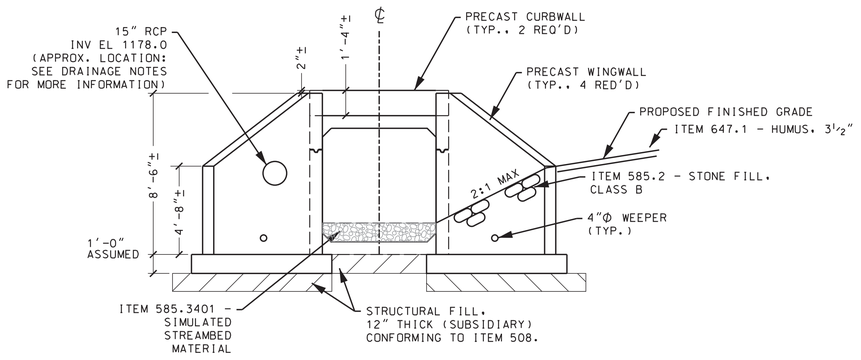
NON-COHESIVE SOILS	
Blows/foot (N)	Apparent Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
> 50	Very Dense

WOR - Weight of Rod
WOH - Weight of Hammer

Soil Descriptions	Proportion
Capitalized Soil Name	Major Component
Lower Case Adjective	35% - 50%
Some	20% - 35%
Little	10% - 20%
Trace	1% - 10%

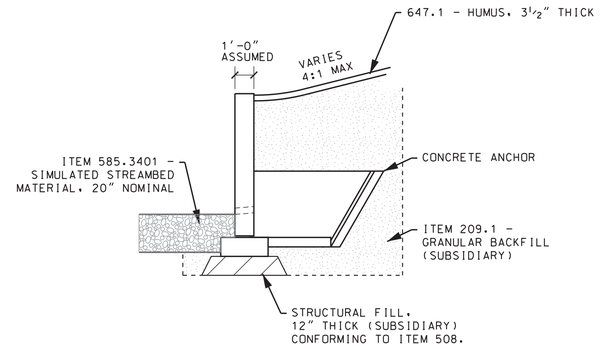
ENGLISH

TB-12 S:\MATERIALS-RESEARCH\GINT\PROJECTS\DUMMER\16304B-TEST BORINGS.GPJ 10/29/2018 2:39:51 PM TB-12



TYPICAL END ELEVATION

1" = 4'



TYPICAL WING SECTION

1" = 4'

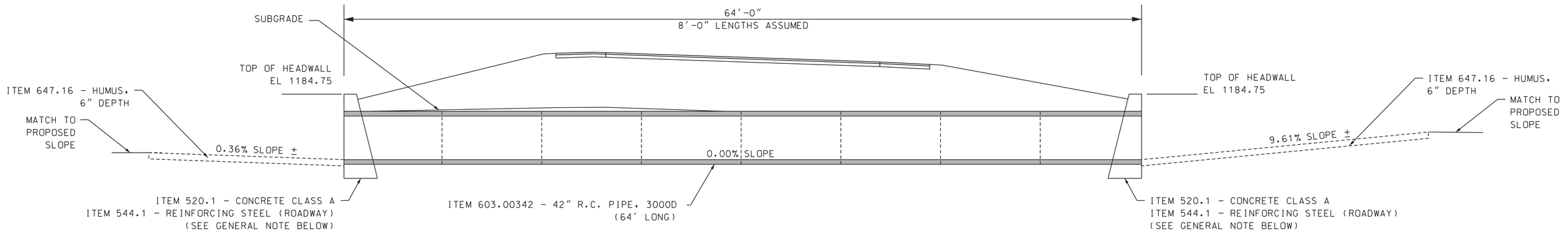
NUMBER	DESCRIPTION	DATE	STATION
	REVISIONS AFTER PROPOSAL		

		DATE
SDR PROCESSED		
NEW DESIGN	M. HLUSHIUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

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

BOX CULVERT DETAILS
STA 551+82

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert+55182	16304B	23	35



CULVERT PROFILE

1″ = 4′

GENERAL NOTES

1. HEADWALLS SHALL CONFORM TO NHDOT STANDARDS FOR PC-3, CONCRETE HEADWALL. SEE NHDOT STANDARD NO. HW-2 FOR MORE INFORMATION.

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED DATE

NEW DESIGN M. HLUSHUK DATE 04/01/22

SHEET CHECKED K. KOZLOWSKI DATE 04/01/22

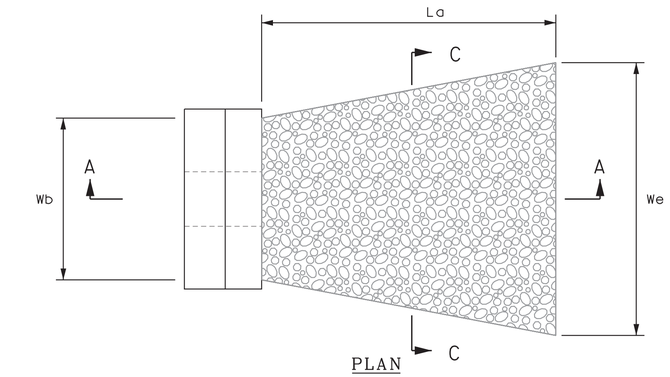
AS BUILT DETAILS DATE

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

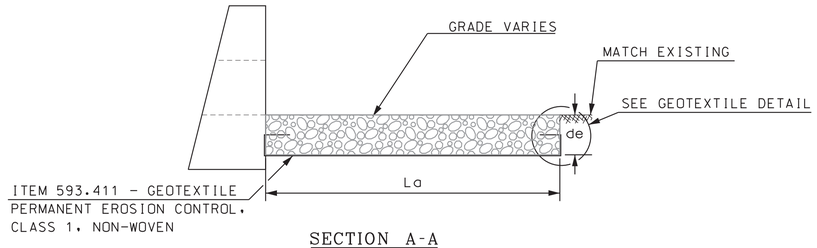
WILDLIFE CROSSING DETAILS
STA 547+50

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bculvert54750	16304B	24	35

DRAINAGE NOTE		LOCATION	STONE CLASS	La (ft)	Wb (ft)	We (ft)	de (ft)
1		OUTLET	B	15.0	5.0	5.0	2.0
3		OUTLET	B	23.0	5.0	5.0	2.0
7		OUTLET	B	20.0	5.0	5.0	2.0
12		OUTLET	B	15.0	5.0	5.0	2.0
15	✳	INLET	B	23.0	5.3	6.5	2.0
15	✳	OUTLET	B	95.0	5.0	12.7	2.0
18	✳	INLET	B	29.6	50.7	60.8	2.0
18	✳	OUTLET	B	25.0	32.1	13.1	2.0
19		OUTLET	B	20.0	5.0	5.0	2.0
24		OUTLET	B	15.0	5.0	5.0	2.0



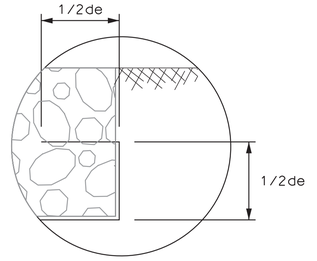
PLAN



SECTION A-A

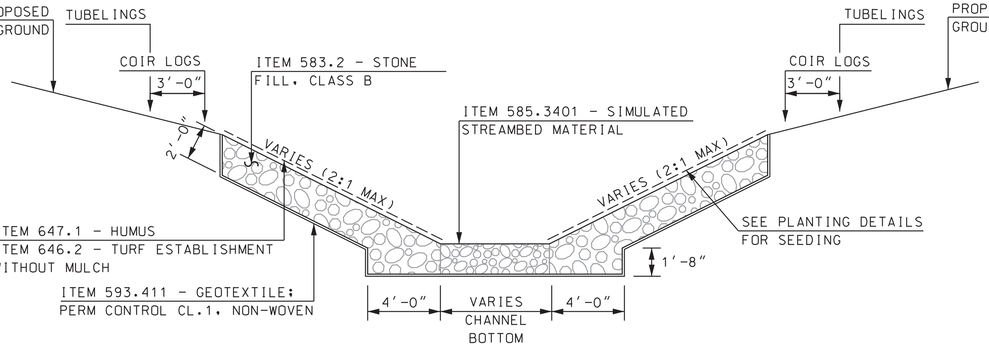
PIPE OUTLET TO DEFINED CHANNEL

N.T.S.



GEOTEXTILE DETAIL

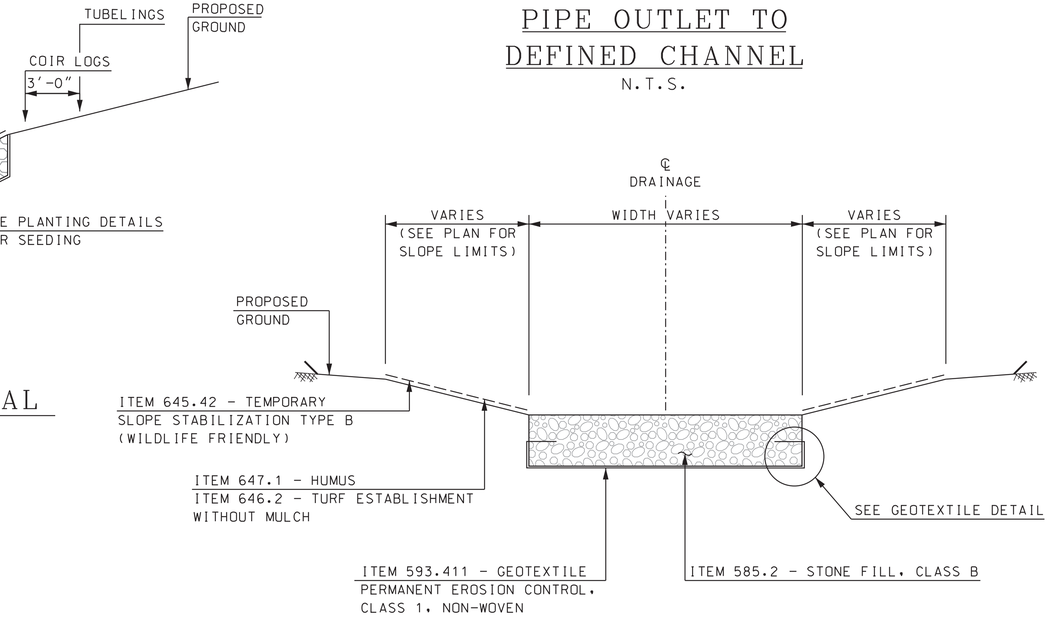
N.T.S.



INLET/OUTLET TO CHANNEL TYPICAL FOR BOX CULVERT

STA. 542+80 & 551+82

N.T.S.



SECTION C-C

OUTLET TO CHANNEL TYPICAL

N.T.S.

LEGEND:

We = APRON WIDTH AT END
Wb = APRON WIDTH AT PIPE OUTLET
La = APRON LENGTH
de = DEPTH OF STONE

NOTES:

1. ✳ STONE APRON DIMENSIONS HAVE BEEN MODIFIED TO FIT INTO EXISTING CONDITIONS. SEE PLAN FOR STONE LAYOUT.

PRELIMINARY PLANS
SUBJECT TO CHANGE
DATE 6/6/2022

REVISIONS AFTER PROPOSAL

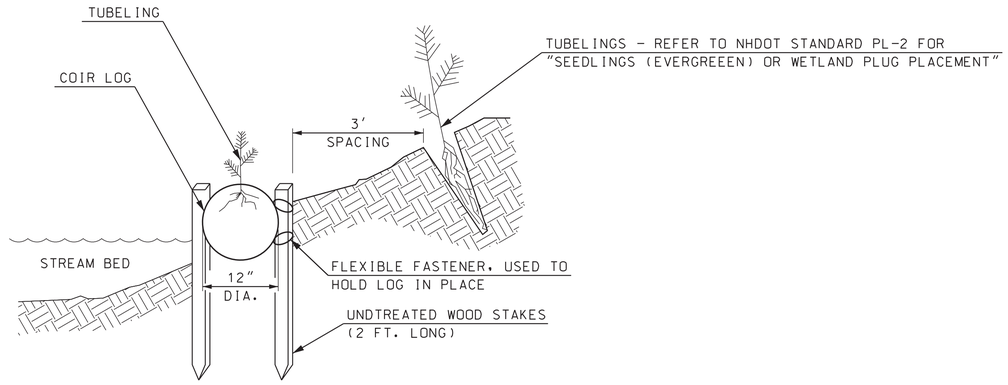
NUMBER	DATE	STATION	DESCRIPTION

	NAME!	DATE	DATE!
SDR PROCESSED			
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22
AS BUILT DETAILS		DATE	

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

OUTLET PROTECTION DETAILS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
Outlet Channel	16304Boutdetails	16304B	25	35



ELEVATION VIEW

PLANTING NOTES

P1. COIR LOGS SHALL BE INSTALLED PARALLEL TO THE TOP OF BANK OF RIVER FROM STA 517+85 RT TO 519+85 RT AND STA 580+00 RT TO STA 582+00 RT. SEE DETAIL FOR INSTALLATION REQUIREMENTS. TUBELINGS SHALL BE INSTALLED IN THE COIR LOGS, CONSISTING OF A SINGLE SPECIES, EITHER SHINING WILLOW (SALIX LUCIDA) OR RED-OSIER DOGWOOD (CORNUS STOLONIFERA).

P2. EXCAVATED MUCK SHALL BE REUSED WITHIN THE VEGETATED BUFFER BETWEEN THE REALIGNED ROADWAY AND THE RIVER.

P3. NHDOT SLOPE SEED TYPE 44 WILL BE USED EXCEPT WHERE NOTED.

P4. WETLAND MEADOW SEED MIX (ERNST MIX 122 OR SIMILAR MIX APPROVED BY THE ENGINEER) SHALL BE USED FROM STA 567+50 TO STA 579+50, RT AND LT.

P5. SIX (6) RED MAPLE BARE ROOT SEEDLINGS, MINIMUM 6' HEIGHT, SHALL BE PLANTED ALONG EDGE OF CUT SLOPE BETWEEN STA 567+00 RT AND 568+00 RT. TREES SHALL BE SPACED APPROXIMATELY 15' APART ALONG THE EDGE OF THE CUT SLOPE.

P6. STREAM CHANNELS AT STA 551+82 AND 542+80 - SEE CHANNEL TYPICAL,SECTION C-C.

A. COIR LOGS SHALL BE INSTALLED PARALLEL TO THE TOP OF BANK OF EACH STREAM CHANNEL WITHIN CONSTRUCTION LIMITS. TUBELINGS SHALL BE INSTALLED IN THE COIR LOGS, CONSISTING OF A SINGLE SPECIES, EITHER SHINING WILLOW (SALIX LUCIDA) OR PUSSY WILLOW (SALIX DISOLOR).

B. TUBELINGS SHALL BE PLANTED IN A SINGLE ROW PARALLEL TO AND 3 FEET FROM THE COIR LOGS. TUBELINGS SHALL BE SPACED 2' APART AND CONSIST OF A SINGLE SPECIES, EITHER RED-OSIER DOGWOOD (CORNUS STOLONIFERA) OR SILKY DOGWOOD (CORNUS AMOMUM).

P7. TEN GROUPINGS EACH CONSISTING OF 30 TUBELINGS SHALL BE PLANTED IN LOCATIONS SHOWN ON PLANS, SEE DETAIL FOR INSTALLATION REQUIREMENTS.

A. TWO STAGGERED ROWS, 15 TUBELINGS PER ROW, 2' APART.

B. EACH GROUPING SHALL CONSIST OF A SINGLE SPECIES, WITH 2 GROUPINGS OF ELDERBERRY (SAMBUCUS CANADENSIS), 4 GROUPINGS OF SHINING WILLOW (SALIX LUCIDA), AND 4 GROUPINGS OF RED-OISER DOGWOOD (CORNUS STOLONIFERA).

PRELIMINARY PLANS
SUBJECT TO CHANGE
DATE 6/6/2022

COIR LOGS

1. COIR LOGS SHALL CONSIST OF 100% COCONUT FIBER WITH BIODEGRADABLE NETTING.
2. COIR LOGS SHALL HAVE A DIAMETER OF 12" AND A MINIMUM DENSITY OF 7 LB/FT3
3. COIR LOGS AND TUBELINGS SHALL BE OBTAINED FROM SOURCES APPROVED BY THE ENGINEER.
4. A TRENCH SHALL BE DUG WITH A DEPTH APPROXIMATELY 2/3 THE DIAMETER OF THE COIR LOG. THE COIR LOG SHALL BE PLACED IN THE TRENCH. WHERE ENDS MEET IN THE TRENCH, THE LOGS SHALL OVERLAP BY 12". THE END OF EACH RUN OF COIR LOGS SHALL BEND IN TOWARD THE BANK AND BE EMBEDDED INTO THE BANK.
5. UNTREATED HARDWOOD STAKES SHALL BE INSTALLED FLUSH TO THE TOP OF THE COIR LOG ON EITHER SIDE EVERY 3' TO 5' ALONG THE LENGTH OF THE LOGS.
6. A PILOT HOLE IS REQUIRED TO ENSURE THAT THE TUBELING IS NOT DAMAGED WHEN PLANTED IN SOIL OR COIR LOG. ACCESS SHALL BE MADE THROUGH THE USE OF A DIBBLE BAR OR SIMLIAR TOOL.
7. TUBELINGS SHALL BE PLANTED THROUGH THE CENTER OF THE COIR LOGS APPROXIMATELY EVERY 3'.
8. THE TRENCH SHALL BE BACKFILLED WITH TOPSOIL AROUND THE COIR LOGS AND STAKES.

LIVE TUBELINGS

1. TUBELINGS SHALL BE OBTAINED FROM SOURCES APPROVED BY THE ENGINEER.
2. CARE SHALL BE TAKEN NOT TO DAMAGE TUBELINGS DURING INSTALLATION. THOSE DAMAGED SHALL BE LEFT IN PLACE AND SUPPLEMENTED WITH AN INTACT TUBELING.
3. A PILOT HOLE IS REQUIRED TO ENSURE THAT THE TUBELING IS NOT DAMAGED WHEN PLANTED IN SOIL OR COIL LOG. ACCESS SHALL BE MADE THROUGH THE USE OF A DIBBLE BAR OR SIMILAR TOOL.
5. SEE PLANTING NOTES FOR SPECIES, SPACING, AND LOCATION.
7. TUBELINGS SHALL BE INSERTED BY HAND INTO PILOT HOLES. SOIL SHOULD BE TAMPED AROUND TUBELINGS ONCE INSERTED INTO PILOT HOLES.

REVISIONS AFTER PROPOSAL

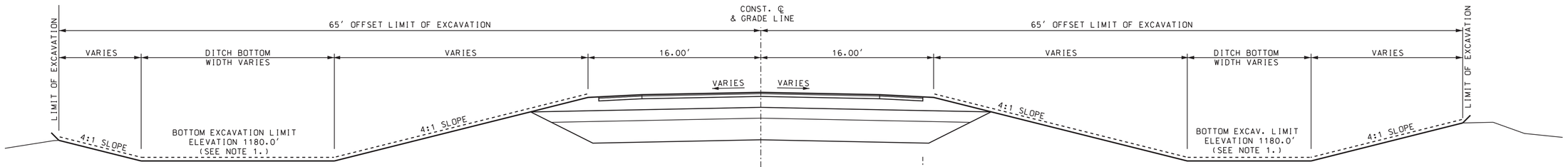
NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/02/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/02/22
AS BUILT DETAILS		DATE	

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

LANDSCAPING DETAILS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
PlantDetails	16304Bplantdetails	16304B	26	35



FLOOD STORAGE ELEVATION DETAIL

STA. 568+00 - 577+00

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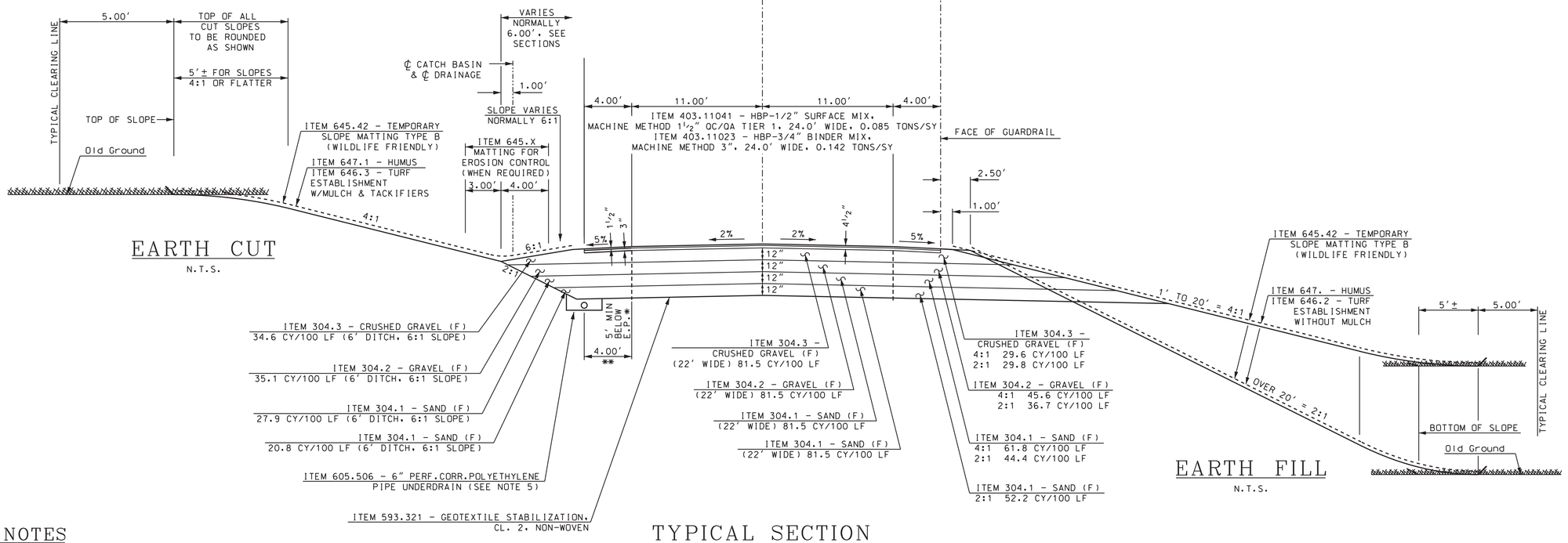


EARTH CUT

N.T.S.

EARTH FILL

N.T.S.

TYPICAL SECTION

STA. 517+00 - 582+00

N.T.S.

GENERAL NOTES

1. THE STORAGE ELEVATION IS SET AT 1180 - 1FT BELOW THE FLOOD PLAIN ELEVATION.
2. ITEM 403.4-MATERIAL TRANSFER VEHICLE (MTV) SHALL BE USED FOR ALL PAVEMENT COURSES.
3. UTILIZE ITEM 403.16-PAVEMENT JOINT ADHESIVE FOR LONGITUDINAL JOINTS ASSOCIATED WITH ALL PAVEMENT LAYERS.
4. UTILIZE ITEM 410.22-ASPHALT EMULSION FOR TACK COAT FOR ALL PAVEMENT COURSES.
5. REFER TO DRAINAGE NOTES FOR SPECIFIC LOCATIONS

* - VARIES, NORMALLY 5' BELOW TOP OF PAVEMENT (T.O.P.)
** - VARIES, NORMALLY 4' OFFSET FROM TRAVELWAY

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

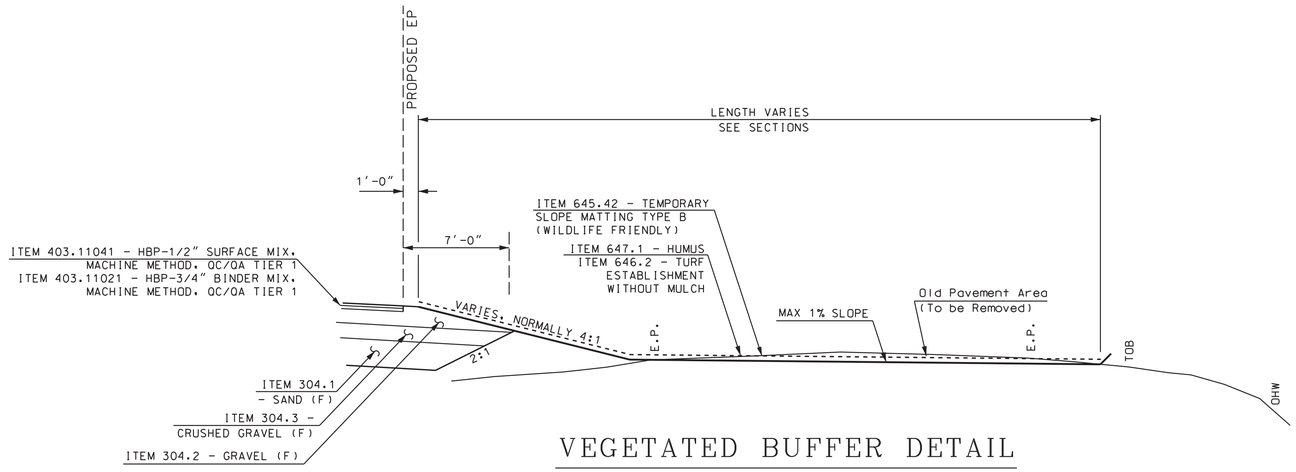
	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

FLOOD STORAGE AREA TYPICAL
SHEET 1 OF 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bfloodtyp	16304B	27	35

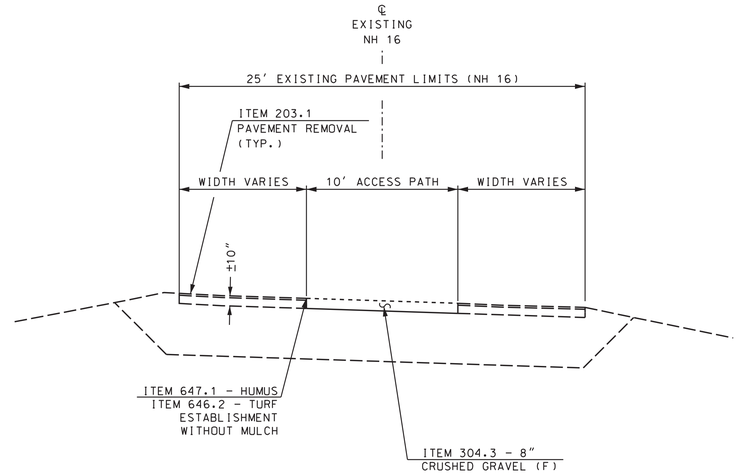


VEGETATED BUFFER DETAIL

STA. 525+00 - 551+00 RT

STA. 559+00 - 562+00 RT&LT

N.T.S.



ACCESS DETAIL

STA. 556+80 - 564+56 RT

N.T.S.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

FLOOD STORAGE AREA TYPICAL
SHEET 2 OF 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16304Bfloodtyp	16304B	28	35

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM)
   1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.

2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
   2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
   2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
   2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
   2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
      (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
      (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
      (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
      (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
   2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
   2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
   2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
   2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30" AND MAY 1" OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
      (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
      (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
      (C) AFTER NOVEMBER 30" INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
      (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WQ 1505.02 AND ENV-WQ 1505.05.
      (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
   3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
   3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
   3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
   3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
   3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
   4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
   4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
   4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1" THROUGH NOVEMBER 30", OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
   5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
   5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
   5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
   5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
   5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:
   6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
   6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
   6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
   6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
   7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
   7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:
   8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
   8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
   8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
   8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:
   9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
   9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
   9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
   9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
    10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
    10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
    10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
    11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
    11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
    11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
    11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
    11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
    11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
    11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
    11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
    11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
    12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
    12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
    12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
    12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
    12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
    12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
    12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
    13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
    13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
    13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
    13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.

14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
    14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
    14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
    14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1

GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES'	YES'	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

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

EROSION CONTROL STRATEGIES

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	16304B	29	35

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22
AS BUILT DETAILS		DATE	

MATCH TO SHEET ER002

BEGIN APPROACH
STATION 516+00

BEGIN CONSTRUCTION
STATION 517+00

HUMUS AND SEED

BANK GRAVEL REMOVAL

existing scenic easement

existing C.A.R.O.W.

PLUM CREEK MAINE
TIMBERLANDS, LLC

TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

DUMMER
CAMBRIDGE

Androscoggin River

EROSION CONTROL PLAN LEGEND

PC	PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
NB/PC	NATURAL BUFFER/PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
CP	CHANNEL PROTECTION
	STONE CHECK DAMS
	STRAW WATTLES
	CHANNEL MATTING
	CLASS D EROSION STONE
	CLASS C STONE
CWB	CLEAN WATER BYPASS
	PUMP THROUGH PIPE
	DRAIN THROUGH PIPE OR CHANNEL

50 0 50 100
SCALE IN FEET

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

EROSION CONTROL PLANS
SHEET 1 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ER001	16304Beroplans	16304B	30	35

TOWN OF ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA W ORDWAY
HEIRS OF DAVID P WHEATLAND
HEIRS OF LUCIA P FULTON
HEIRS OF MARTHA W INGRAHAM
HEIRS OF RICHARD WHEATLAND
HEIRS OF STEPHEN WHEATLAND

GRID

existing scenic easement

MATCH TO SHEET ER001

MATCH TO SHEET ER003

PROPOSED CAROW

PI 0+46.00

CONST. B

N6°04'46.3"W 522

N2°25'58.0"W

S61°57'23.7"E

R1

R2

E

F

H

1 R2UBH

2 BANK

6 PF01E

7 PF01E

SCALE IN FEET
50 0 50 100

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

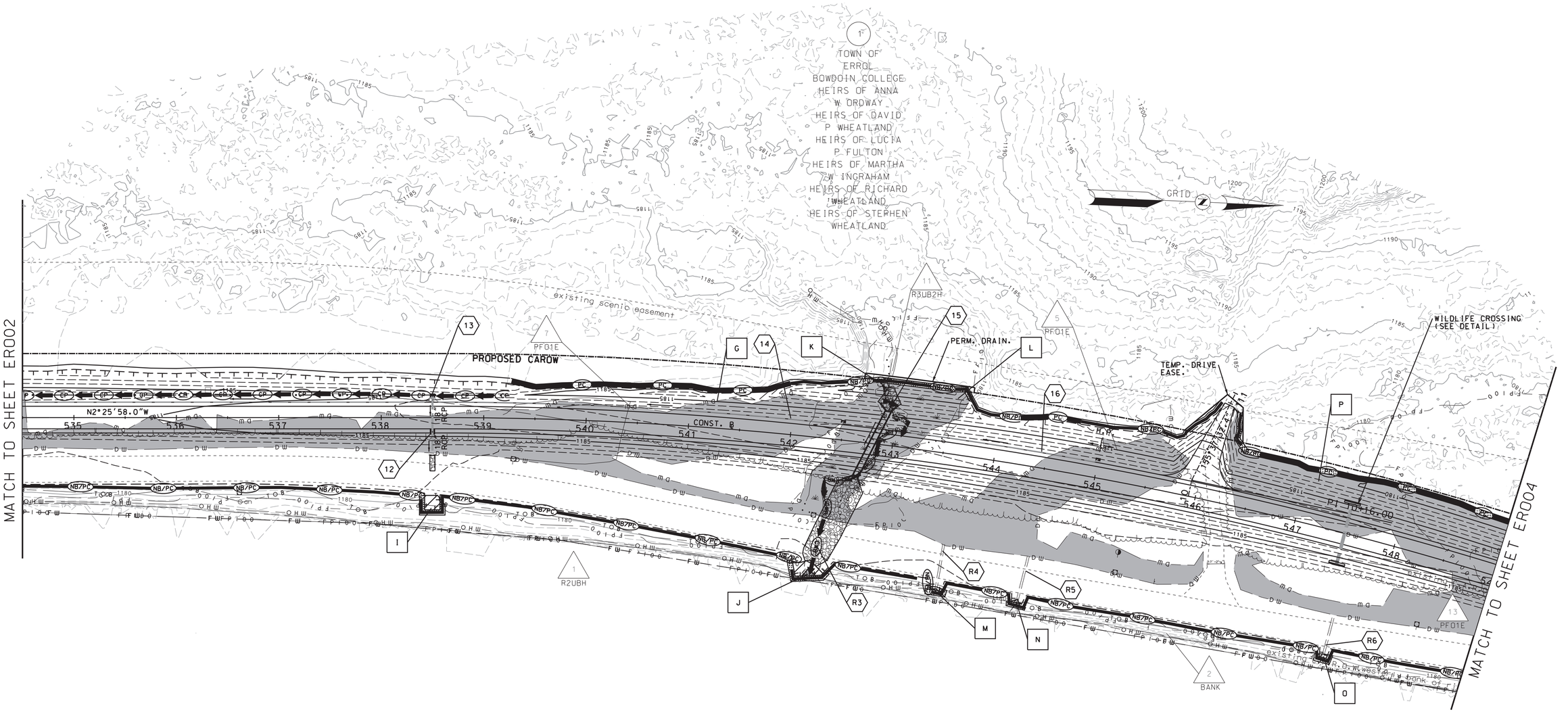
EROSION CONTROL PLANS
SHEET 2 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ER002	16304Beroplans	16304B	31	35

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	M. HLUSHUK	04/01/22
SHEET CHECKED	K. KOZLOWSKI	04/01/22
AS BUILT DETAILS		DATE



50 0 50 100
SCALE IN FEET

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

EROSION CONTROL PLANS
SHEET 3 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ER003	16304Beroplans	16304B	32	35

MATCH TO SHEET ER003

MATCH TO SHEET ER005

TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

PERM. DRAIN.

existing scenic easement

PROPOSED CAROW

CONST. ℄

N19°46'57.5"E

18" RCP

existing C.A.R.D.

existing C.A.R.D.

existing C.A.R.D.

western bank of river

HUMUS AND SEED

P O R U V Y Z X W S T

1 R2UBH

2 BANK

13 PF01E

14 R2UBH

14 PF01E

17 PF01E

18 R7

19 PC PT PS

20

REVISIONS AFTER PROPOSAL	NUMBER	DATE
DESCRIPTION		
STATION		
STATION		
STATION		

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS
SHEET 4 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ER004	16304Beroplans	16304B	33	35

MATCH TO SHEET ER004

MATCH TO SHEET ER006

TOWN OF
ERROL
BOWDOIN COLLEGE
HEIRS OF ANNA
W ORDWAY
HEIRS OF DAVID
P WHEATLAND
HEIRS OF LUCIA
P FULTON
HEIRS OF MARTHA
W INGRAHAM
HEIRS OF RICHARD
WHEATLAND
HEIRS OF STEPHEN
WHEATLAND

PROPOSED CAROW

PERM. DRAIN.

CONST. ℄

HUMUS AND SEED

existing C.A.R.D.W.

GRID N

SCALE IN FEET
50 0 50 100

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION
NUMBER	DATE	STATION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	M. HLUSHUK	DATE 04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE 04/01/22
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS SHEET 5 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ER005	16304Beroplans	16304B	34	35

50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL				
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	M. HLUSHUK	DATE	04/01/22
SHEET CHECKED	K. KOZLOWSKI	DATE	04/01/22
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS
SHEET 6 OF 6

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ER006	16304Beroplans	16304B	35	35