STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS
FEDERAL AID PROJECT

X-A000(487)
N.H. PROJECT NO. 14747
N.H. ROUTE 12

INDEX OF SHEETS

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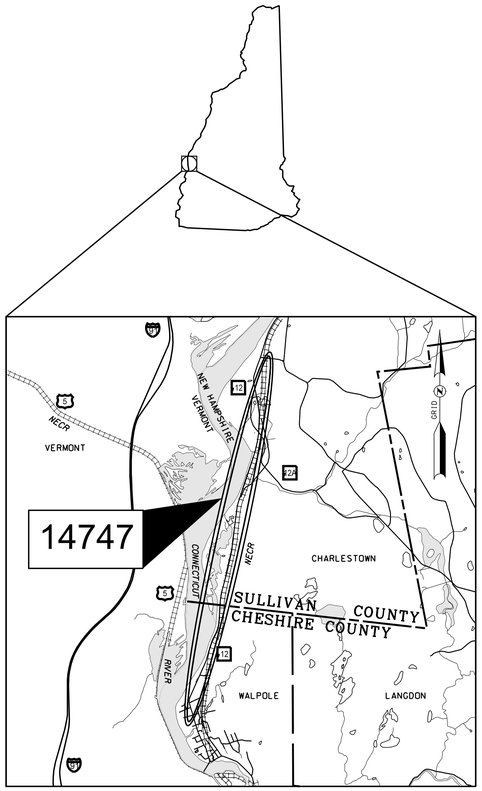
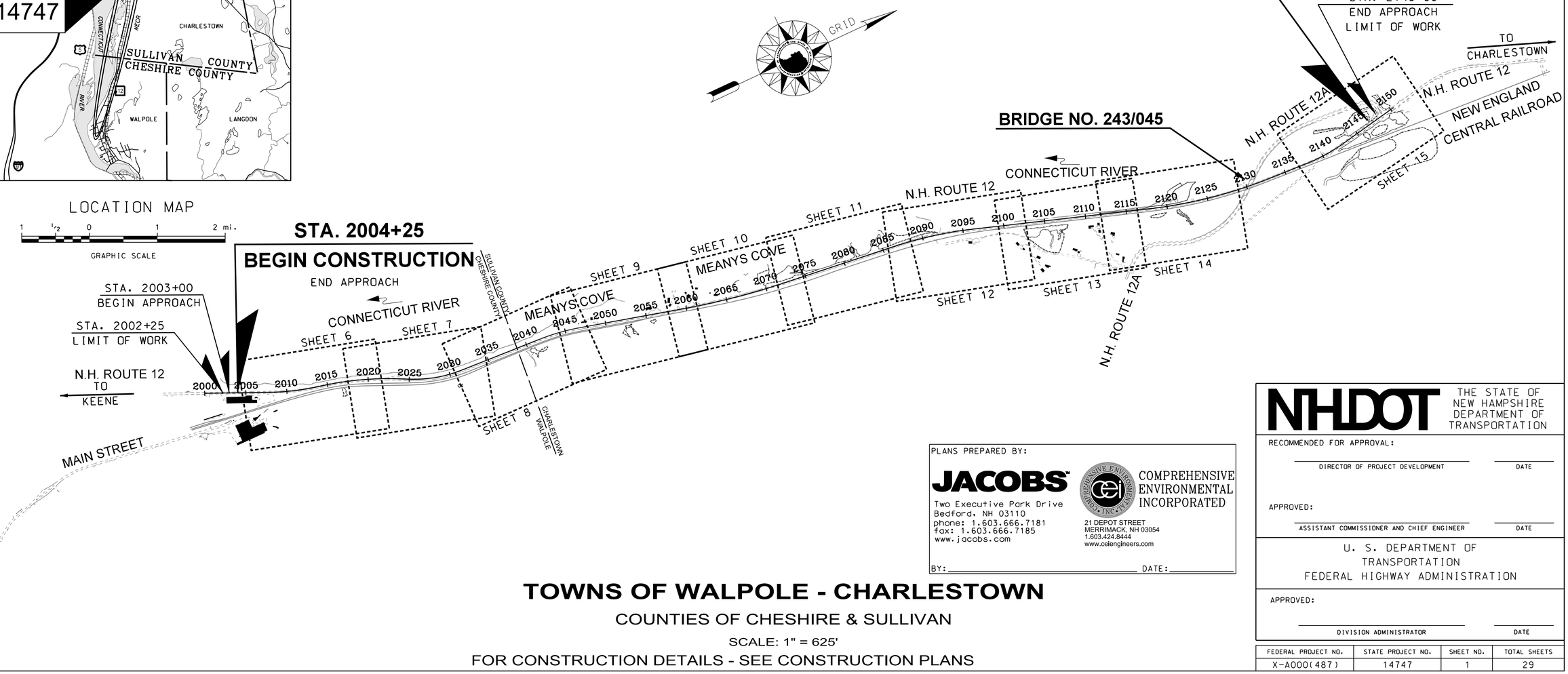


LOCATION MAP

1 ½ 0 1 2 mi.

GRAPHIC SCALE



PLANS PREPARED BY:

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BY: _____ DATE: _____

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A000(487)	14747	1	29

DRAWN BY S. GUNN DATE 5/4/2017
CHECKED BY C. MERCER DATE 5/4/2017

TOWNS OF WALPOLE - CHARLESTOWN

COUNTIES OF CHESHIRE & SULLIVAN

SCALE: 1" = 625'

FOR CONSTRUCTION DETAILS - SEE CONSTRUCTION PLANS

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DATE: 5/4/2017 TIME: 11:26:25 AM
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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
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	14747SYM	14747	2	29

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DRAINAGE

MANHOLE
CATCH BASIN — cb — (existing) — (PROPOSED)
DROP INLET — di
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

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 — HYD

MANHOLES

SEWER — MHS
TELEPHONE — MHT
ELECTRICAL — MHE
GAS — MHG
UNKNOWN

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 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

SHEET 2 OF 2

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	14747SYM	14747	3	29

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DATE: 5/4/2017 TIME: 11:26:28 AM
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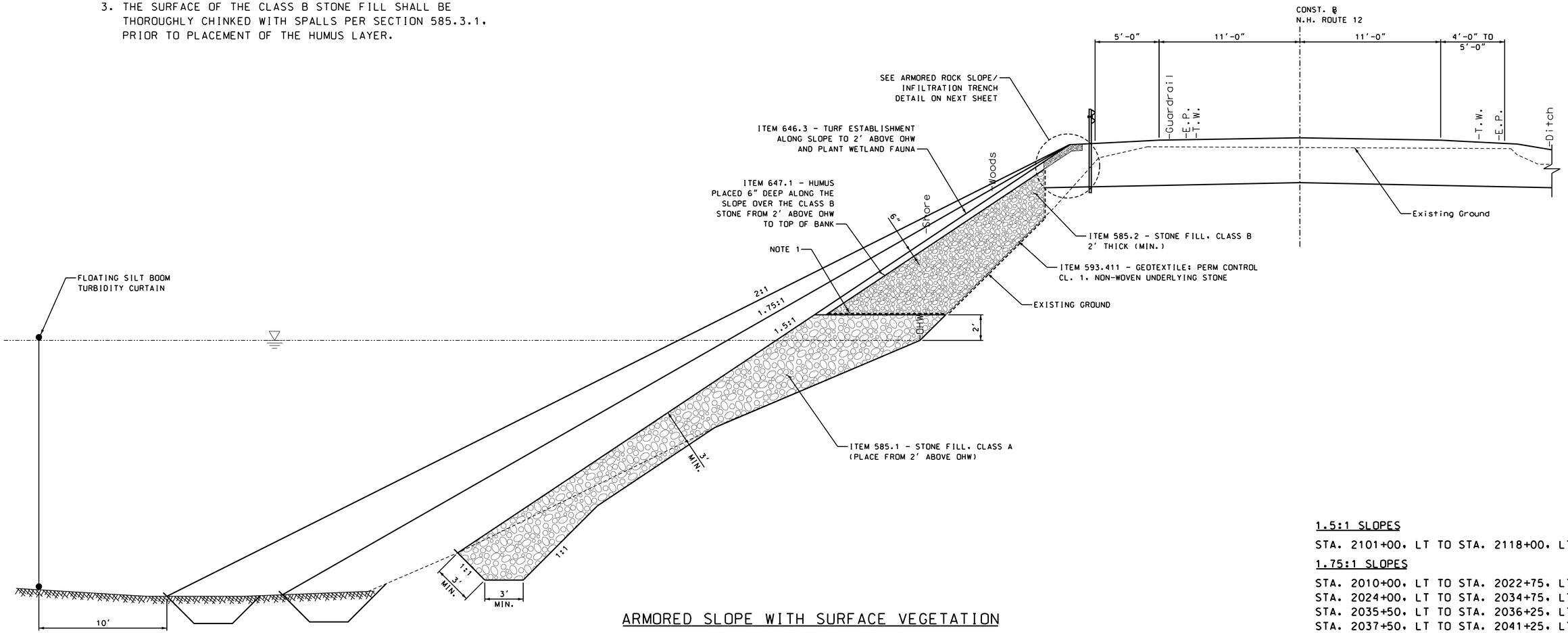
NOTES:

1. THE SURFACE OF CLASS A STONE FILL SHALL BE LOCATED A MINIMUM OF 2 FEET ABOVE THE OHW. THE CLASS A STONE FILL SURFACE SHALL BE CHINKED WITH SPALLS PRIOR TO THE PLACEMENT OF THE NON-WOVEN GEOTEXTILE.

2. CLASS A STONE FILL MAY BE SUBSTIUTED FOR THE CLASS B STONE FILL AT NO ADDITIONAL COST, SUBJECT TO APPROVAL.

3. THE SURFACE OF THE CLASS B STONE FILL SHALL BE THOROUGHLY CHINKED WITH SPALLS PER SECTION 585.3.1, PRIOR TO PLACEMENT OF THE HUMUS LAYER.



ARMORED SLOPE WITH SURFACE VEGETATION

STA. 2012+25 TO 2041+25, LT.
STA. 2101+00 TO 2118+00, LT.
SCALE: 1/4" = 1'-0"

1.5:1 SLOPES

STA. 2101+00, LT TO STA. 2118+00, LT

1.75:1 SLOPES

STA. 2010+00, LT TO STA. 2022+75, LT
STA. 2024+00, LT TO STA. 2034+75, LT
STA. 2035+50, LT TO STA. 2036+25, LT
STA. 2037+50, LT TO STA. 2041+25, LT

2:1 SLOPES

STA. 2022+75, LT TO STA. 2024+00, LT
STA. 2034+75, LT TO STA. 2035+50, LT
STA. 2036+25, LT TO STA. 2037+50, LT

NUMBER	DATE	STATION	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	S. GUNN	05-2017
NEW DESIGN	A. SEAMAN	05-2017
SHEET CHECKED	C. MERCER	05-2017

AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TYPICAL ARMORED SLOPE WITH SURFACE VEGETATION (1 OF 2)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14747DTL02	14747	4	29

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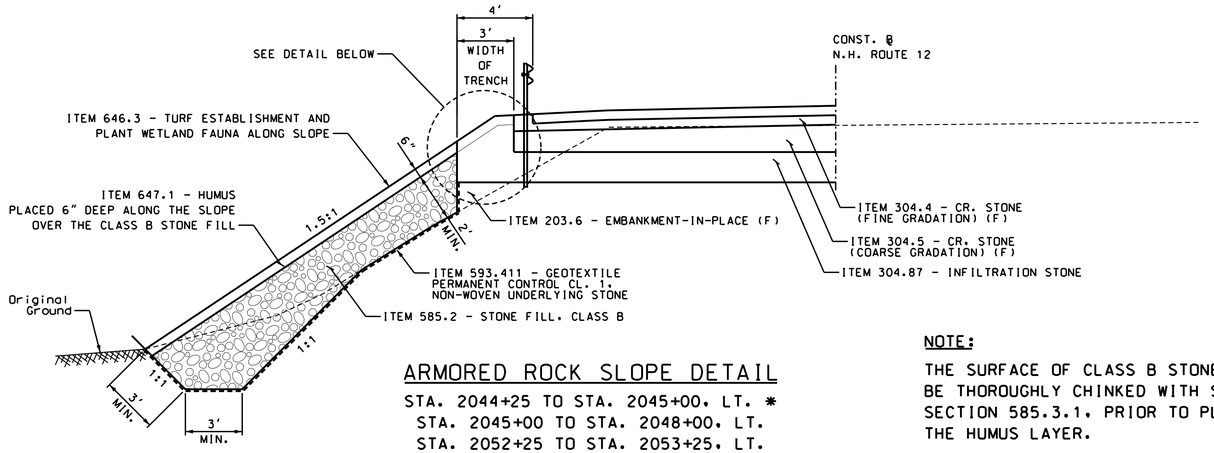


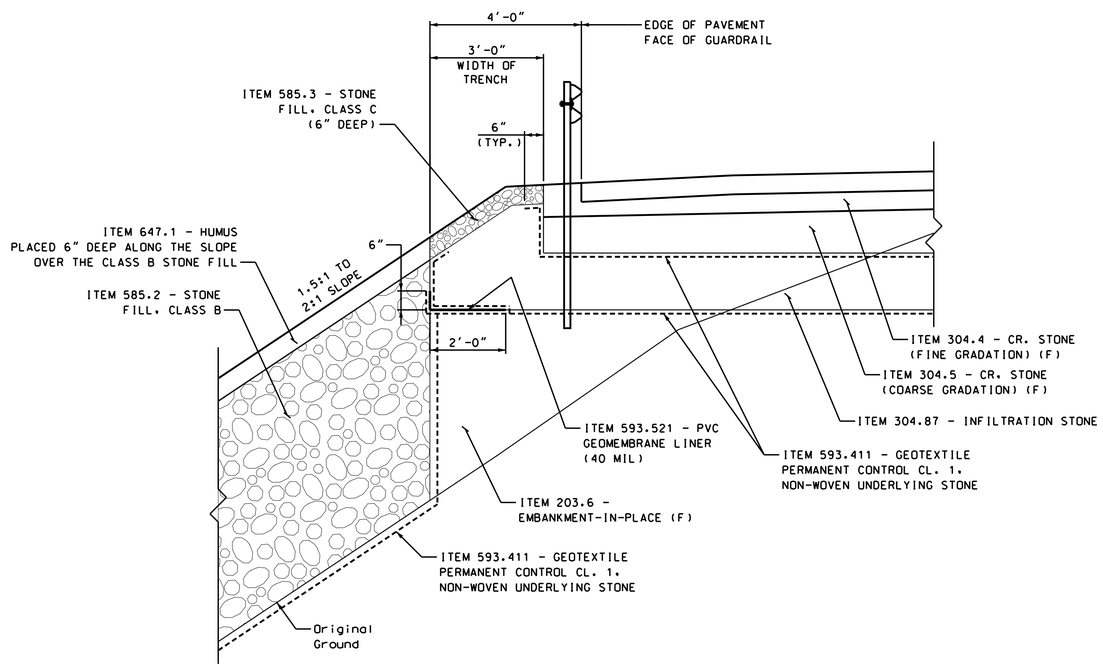
ARMORED ROCK SLOPE DETAIL

STA. 2044+25 TO STA. 2045+00, LT. *
STA. 2045+00 TO STA. 2048+00, LT.
STA. 2052+25 TO STA. 2053+25, LT.
STA. 2066+50 TO STA. 2067+00, LT.
STA. 2069+75 TO STA. 2072+50, LT.
STA. 2076+25 TO STA. 2083+25, LT.
STA. 2084+50 TO STA. 2086+75, LT.
STA. 2118+00 TO STA. 2121+50, LT.
SCALE: 1/4" = 1'-0"

NOTE:

THE SURFACE OF CLASS B STONE FILL SHALL BE THOROUGHLY CHINKED WITH SPALLS PER SECTION 585.3.1. PRIOR TO PLACEMENT OF THE HUMUS LAYER.

* TRANSITION FROM 1.75:1 AT STA. 2044+25 TO 1.5:1 AT STA. 2045+00, LT.



ARMORED ROCK SLOPE/INFILTRATION TRENCH DETAIL

STA. 2012+25 TO STA. 2022+56, LT.
STA. 2025+03 TO STA. 2041+25, LT.
STA. 2044+25 TO STA. 2048+00, LT.
STA. 2052+25 TO STA. 2053+25, LT.
STA. 2076+25 TO STA. 2083+25, LT.
STA. 2084+50 TO STA. 2086+75, LT.
STA. 2101+00 TO STA. 2121+50, LT.
SCALE: 1/2" = 1'-0"

NOTES:

1. CONTRACTOR SHALL PROVIDE SHALLOW WELLS IN THE ROCK SLOPE TO ACCOMODATE PROPOSED TREES. (REFER TO PLANS AND DETAILS)

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	S. GUNN	DATE 05-2017
NEW DESIGN	A. SEAMAN	DATE 05-2017
SHEET CHECKED	C. MERCER	DATE 05-2017
AS BUILT DETAILS		DATE

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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TYPICAL ARMORED SLOPE WITH SURFACE VEGETATION (2 OF 2)

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14747DTL03	14747	5	29

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

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	14747erosstrat	14747	6	29

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION		AREA PERMANENT IMPACTS N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	BANK LEFT	BANK CHANNEL	BANK RIGHT	TEMPORARY IMPACTS	COMMENTS
				SF	SF	LF	LF	LF	SF	
20	Bank	A	Walpole						9868	
1A	R2UB3	B	Walpole						12478	
20	Bank	C	Walpole	40883		1224				
1A	R2UB3	D	Walpole		48396		1239			
2	R4SB3	E	Walpole						183	
21	Bank	F	Walpole	63845		1502				
			Charlestown	16122		384				
1B	R2UB3	G	Walpole		72100		1475			
			Charlestown		7749		258			
1B	R2UB3	H	Walpole						14584	
			Charlestown						2654	
4	R4SB3	I	Walpole						349	
5A	R4SB3	J	Walpole						278	
7A	R4SB3	K	Walpole						699	
21	Bank	L	Charlestown						1318	
21	Bank	M	Charlestown						1328	
21	Bank	N	Charlestown	986		87				
8	R4SB3	O	Charlestown						115	
10B	PFO/PSS1E	P	Charlestown						1455	
10A	R4SB3	Q	Charlestown						579	
10C	PFO/PSS1E	R	Charlestown						280	
12	R4SB3	S	Charlestown						541	
12	R4SB3	T	Charlestown						217	
12	R4SB3	U	Charlestown		215	20	13	41		
1E	PF01E	V	Charlestown						3344	
1E	PF01E	W	Charlestown		111					
1E	PF01E	X	Charlestown		9058					
1E	PF01E	Y	Charlestown						1406	
1C	POW	Z	Charlestown						417	
1C	POW	AA	Charlestown						4011	
1C	POW	AB	Charlestown		867					
1E	PF01E	AC	Charlestown						32	
1C	POW	AD	Charlestown		2755					
1F	PSS1E	AE	Charlestown		1063					
1F	PSS1E	AF	Charlestown						2320	
1G	PSS1E	AG	Charlestown						420	
1G	PSS1E	AH	Charlestown		114					
1D	POW	AI	Charlestown						2134	
1D	POW	AJ	Charlestown		637					
1D	POW	AK	Charlestown						1454	
1D	POW	AL	Charlestown		1077					
1I	PSS/PF01E	AM	Charlestown						4149	
1I	PSS/PF01E	AN	Charlestown		41					
1I	PSS/PF01E	AO	Charlestown		1828					
1I	PSS/PF01E	AP	Charlestown		53					
1I	PSS/PF01E	AQ	Charlestown		20					
22	Bank	AR	Charlestown						511	
1A	R2UB3	AS	Charlestown						551	
22	Bank	AT	Charlestown	87		13				
1A	R2UB3	AU	Charlestown						378	
22	Bank	AV	Charlestown						2292	
22	Bank	AW	Charlestown	2438		206				
22	Bank	AX	Charlestown						651	
22	Bank	AY	Charlestown	6778		576				
1A	R2UB3	AZ	Charlestown						17843	
1A	R2UB3	BA	Charlestown		18734		1724			
13A	POW	BB	Charlestown						1096	
22	Bank	BC	Charlestown	8052		590				
22	Bank	BD	Charlestown	8791		553				
22	Bank	BE	Charlestown	340		68				
1J	PEM1E	BF	Charlestown						1305	
1J	PEM1E	BG	Charlestown		8					
1K	PF01E	BH	Charlestown		6444					
1K	PF01E	BI	Charlestown						2798	
15A	R2UB3	BJ	Charlestown						165	
15A	R2UB3	BK	Charlestown		485	37	36	37		
1K	PF01E	BL	Charlestown						1450	
15B	PEM1E	BM	Charlestown						138	
15A	R2UB3	BN	Charlestown						305	
15B	PEM1E	BO	Charlestown						186	
17B	PEM1F	BP	Charlestown						3805	
17B	PEM1F	BQ	Charlestown		155					
18A	PEM1E	BR	Charlestown						1372	
17D	POWH	BS	Charlestown						77	
17B	PEM1F	BT	Charlestown		891					

TOTAL IMPACTS FOR WETLANDS AND SHORELAND PERMITS

		WALPOLE	CHARLESTOWN	TOTAL
WETLAND IMPACTS				
PERMANENT NON-WETLAND IMPACTS:	148322 SF	104728	43594	148322
PERMANENT WETLAND IMPACTS:	172801 SF	120496	52305	172801
TEMPORARY IMPACTS:	101536 SF	38439	63097	101536
TOTAL IMPACTS:	422659 SF	263663	158996	422659
	9.70 AC.	6.05	3.65	9.70
STREAM IMPACTS				
PERMANENT IMPACTS TO LEFT BANKS:	5260 LF	2726	2534	5260
PERMANENT IMPACTS TO RIGHT BANKS:	78 LF	0	0	78
PERMANENT IMPACTS TO CHANNEL:	4745 LF	2714	2031	4745
TOTAL STREAM IMPACTS:	10083 LF	5440	4643	10083

THESE PLANS MEET THE REQUIREMENTS OF ENV-WT 404. CRITERIA FOR SHORELINE STABILIZATION

STATE OF NEW HAMPSHIRE · NICHOLAS CRISTOFORI · No. 13127 · LICENSED · PROFESSIONAL ENGINEER

SIGN: _____ DATE: 5-5-2017

WETLANDS DELINEATED BY WILLIAM KURIER, PHD, CWS

STATE OF NEW HAMPSHIRE · WILLIAM E. KURIGER · No. 069 · CERTIFIED WETLAND SCIENTIST

BY: _____ DATE: SUMMER 2016

STATE OF NEW HAMPSHIRE · CLINTON S. MERCER · No. 13140 · LICENSED · PROFESSIONAL ENGINEER

PLANS PREPARED BY:

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COMPREHENSIVE ENVIRONMENTAL INCORPORATED
21 DEPOT STREET
MERRIMACK, NH 03054
1.603.424.8444
www.celengineers.com

BY: _____ DATE: 5-5-2017

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT SUMMARY

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14747ES	14747	7	29

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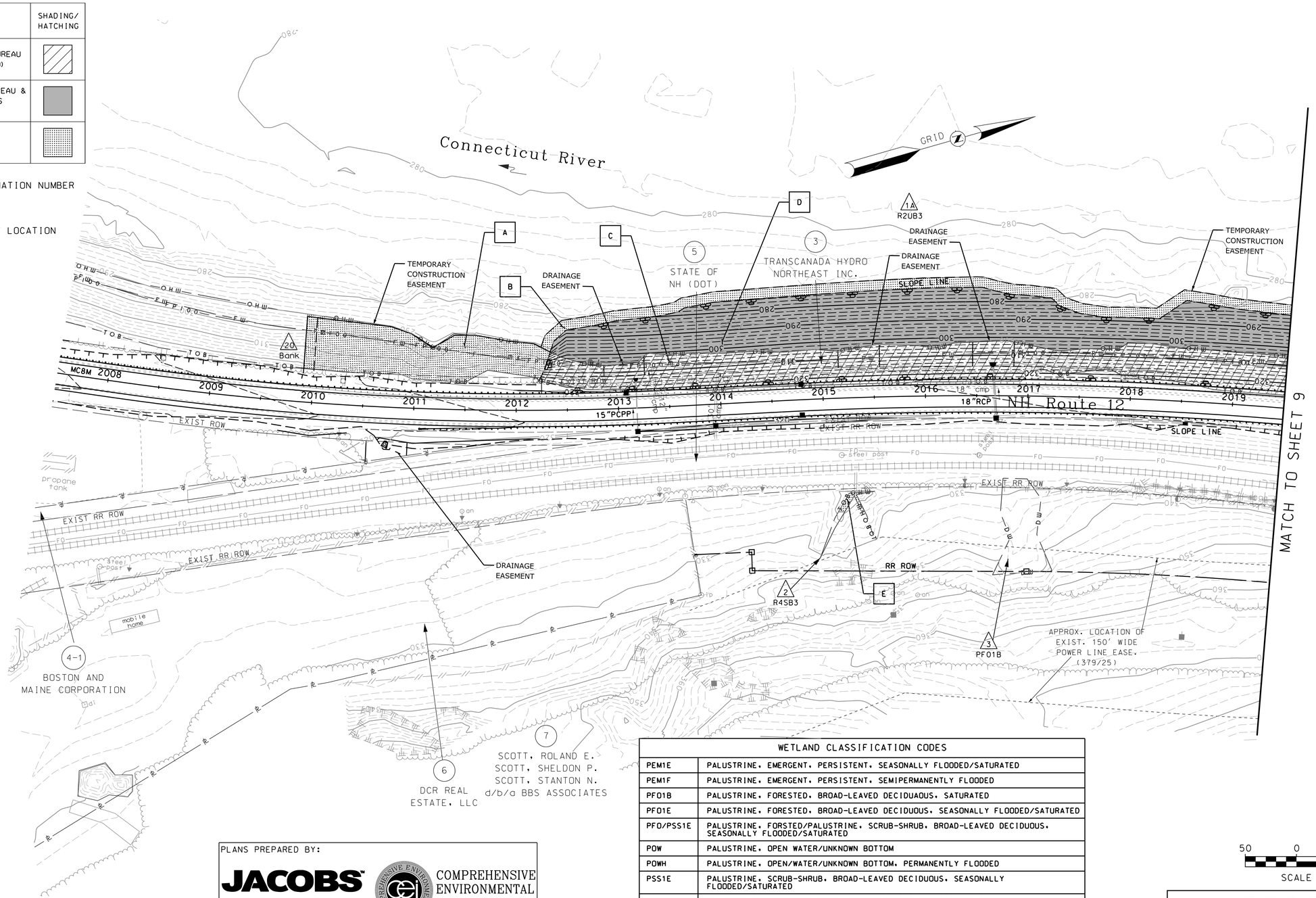
LEGEND

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

X WETLAND IMPACT LOCATION



WETLAND CLASSIFICATION CODES	
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED
PEM1F	PALUSTRINE, EMERGENT, PERSISTENT, SEMIPERMANENTLY FLOODED
PFO1B	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUAOUS, SATURATED
PFO1E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PFO/PSS1E	PALUSTRINE, FORSTED/PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
POW	PALUSTRINE, OPEN WATER/UNKNOWN BOTTOM
POWH	PALUSTRINE, OPEN/WATER/UNKNOWN BOTTOM, PERMANENTLY FLOODED
PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PSS/PEM1E	PALUSTRINE, SCRUB-SHRUB/PALUSTRINE EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED
PSS/PFO1E	PALUSTRINE, SCRUB-SHRUB/PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
R2UB3	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, MUD
R3UB1	RIVERINE, UPPER PERENNIAL, UNCONSOLIDATED BOTTOM, ALGAL
R4SB3	RIVERINE, INTERMITTENT, STREAMBED, COBBLE GRAVEL
BANK	BANK

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SCALE IN FEET

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BY:_____ DATE:_____

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

WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET02	14747wetplans	14747	8	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

		DATE
SOR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

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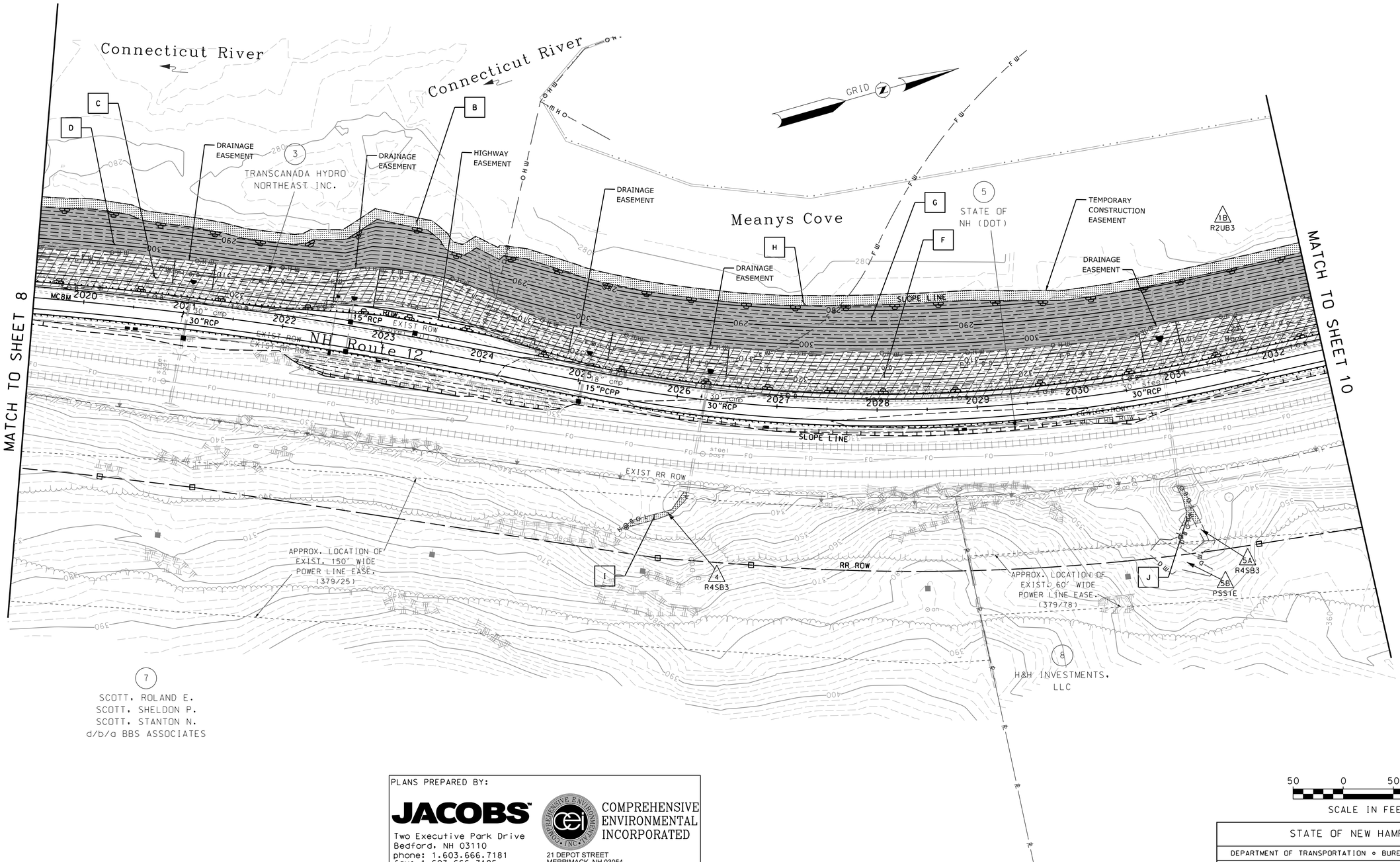

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BY: _____ DATE: _____

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SCALE IN FEET

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

WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET03	14747wetplans	14747	9	29

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION

SOR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017
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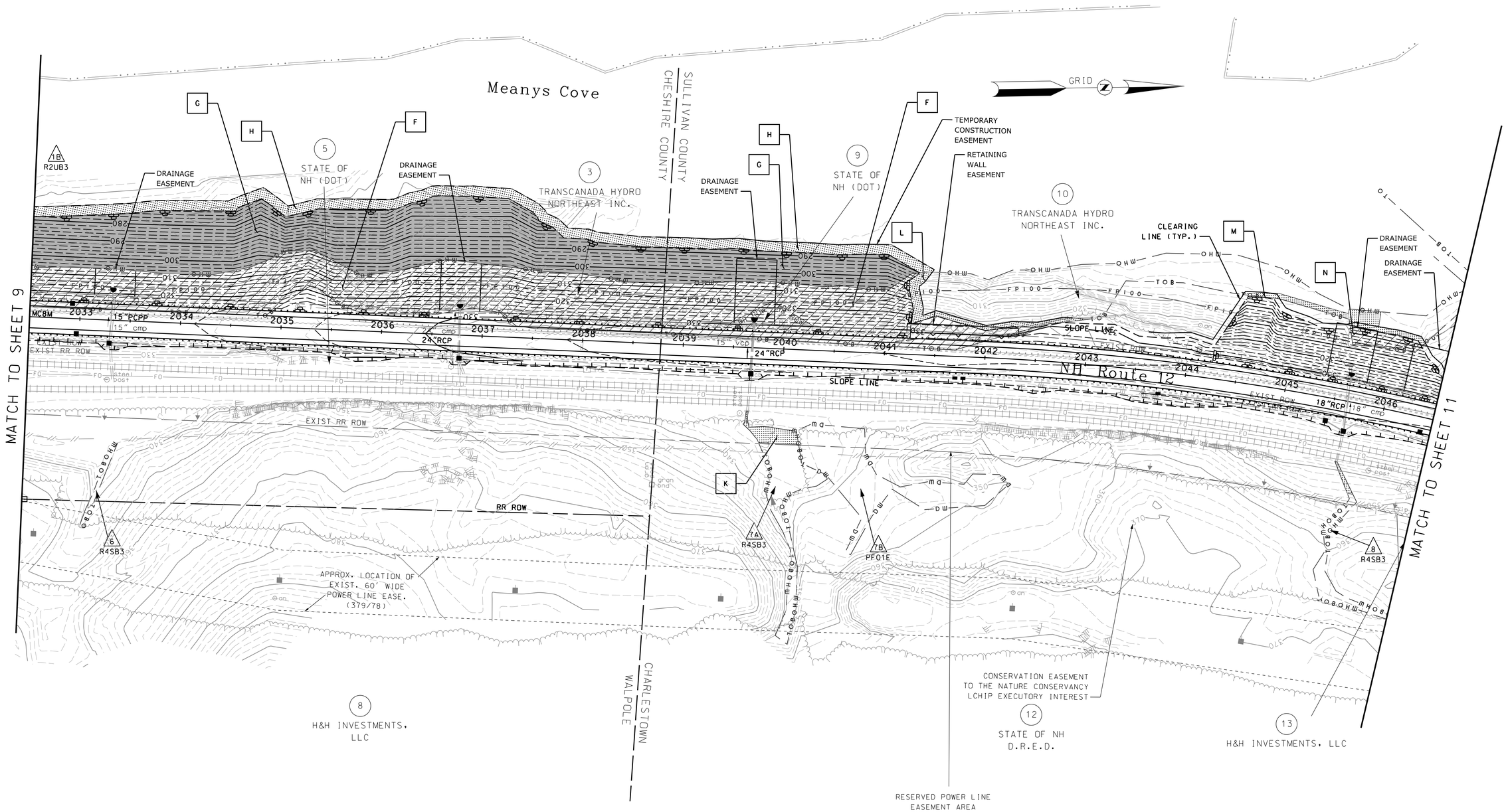

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BY: _____ DATE: _____

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET04	14747wetplans	14747	10	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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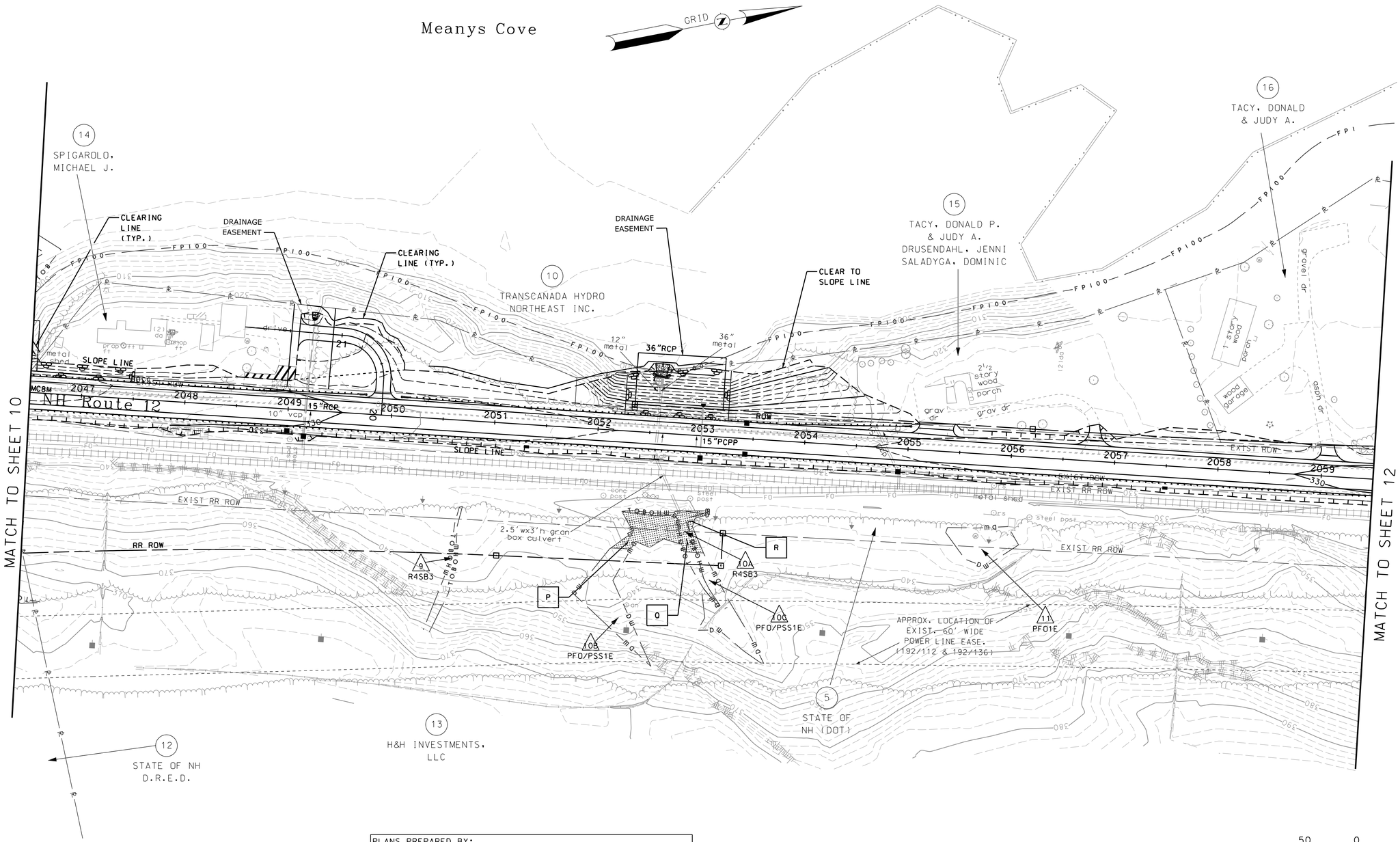

NUMBER	DATE	STATION	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017
AS BUILT DETAILS		DATE

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PLANS PREPARED BY:

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21 DEPOT STREET
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1.603.424.8444
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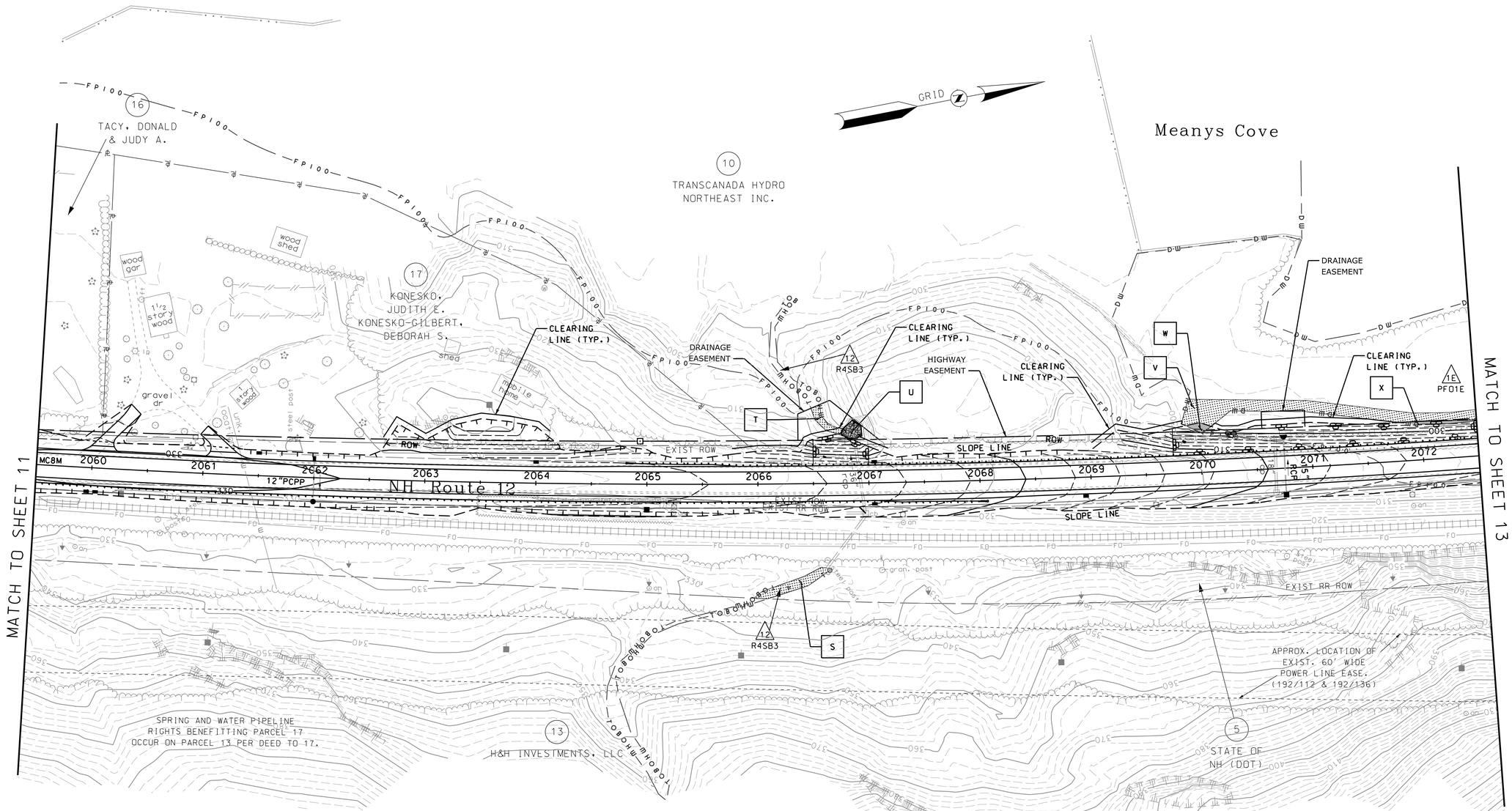
SCALE IN FEET

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

WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET05	14747wetplans	14747	11	29



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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET06	14747wetplans	14747	12	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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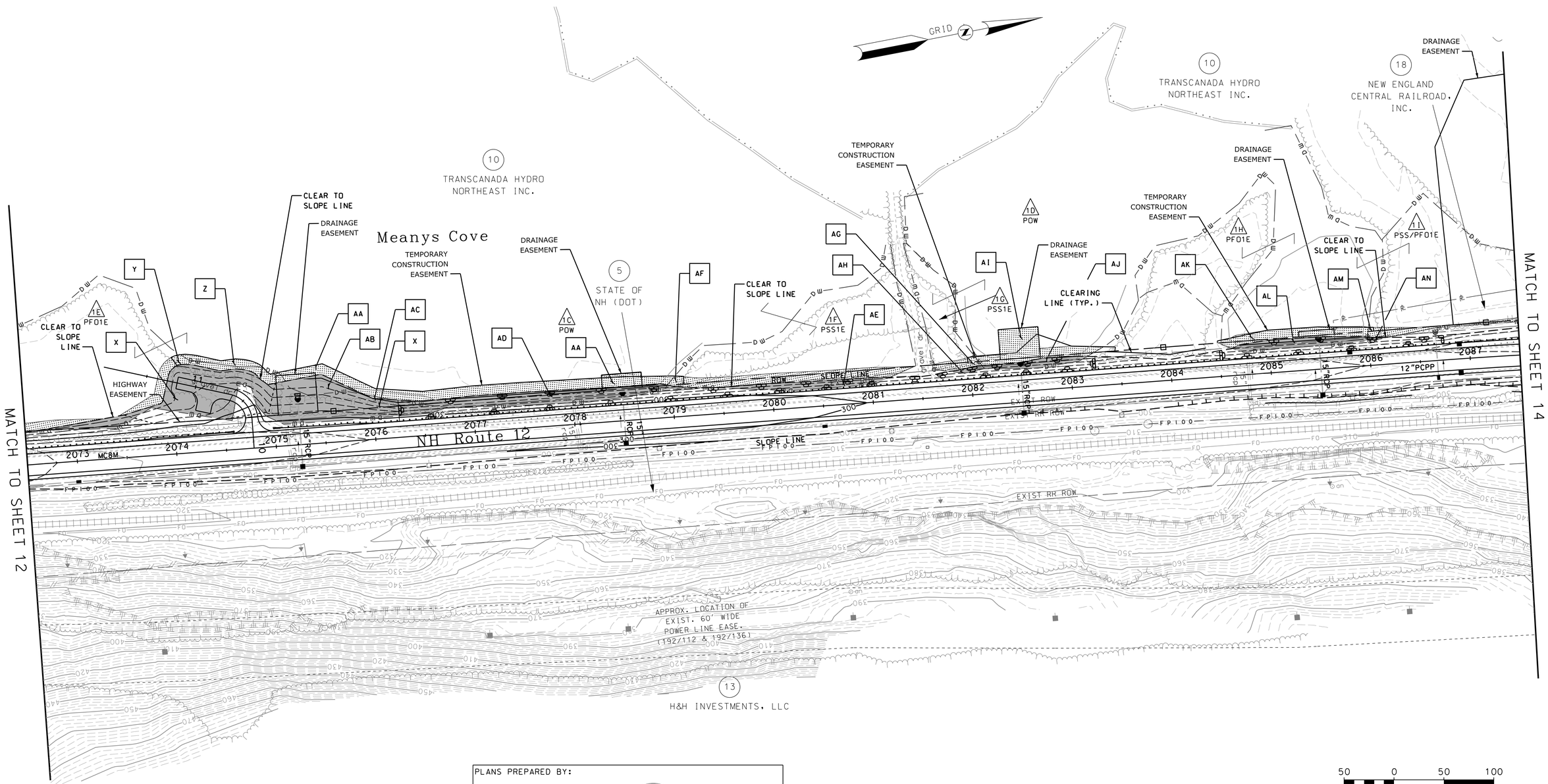

REVISIONS AFTER PROPOSAL			
STATION	STATION	DESCRIPTION	
		NUMBER	DATE

SDR PROCESSED	S. GUNN	DATE	5/4/2017
NEW DESIGN	A. SEAMAN	DATE	5/4/2017
SHEET CHECKED	C. MERCER	DATE	5/4/2017
AS BUILT DETAILS		DATE	

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DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET07	14747wetplans	14747	13	29

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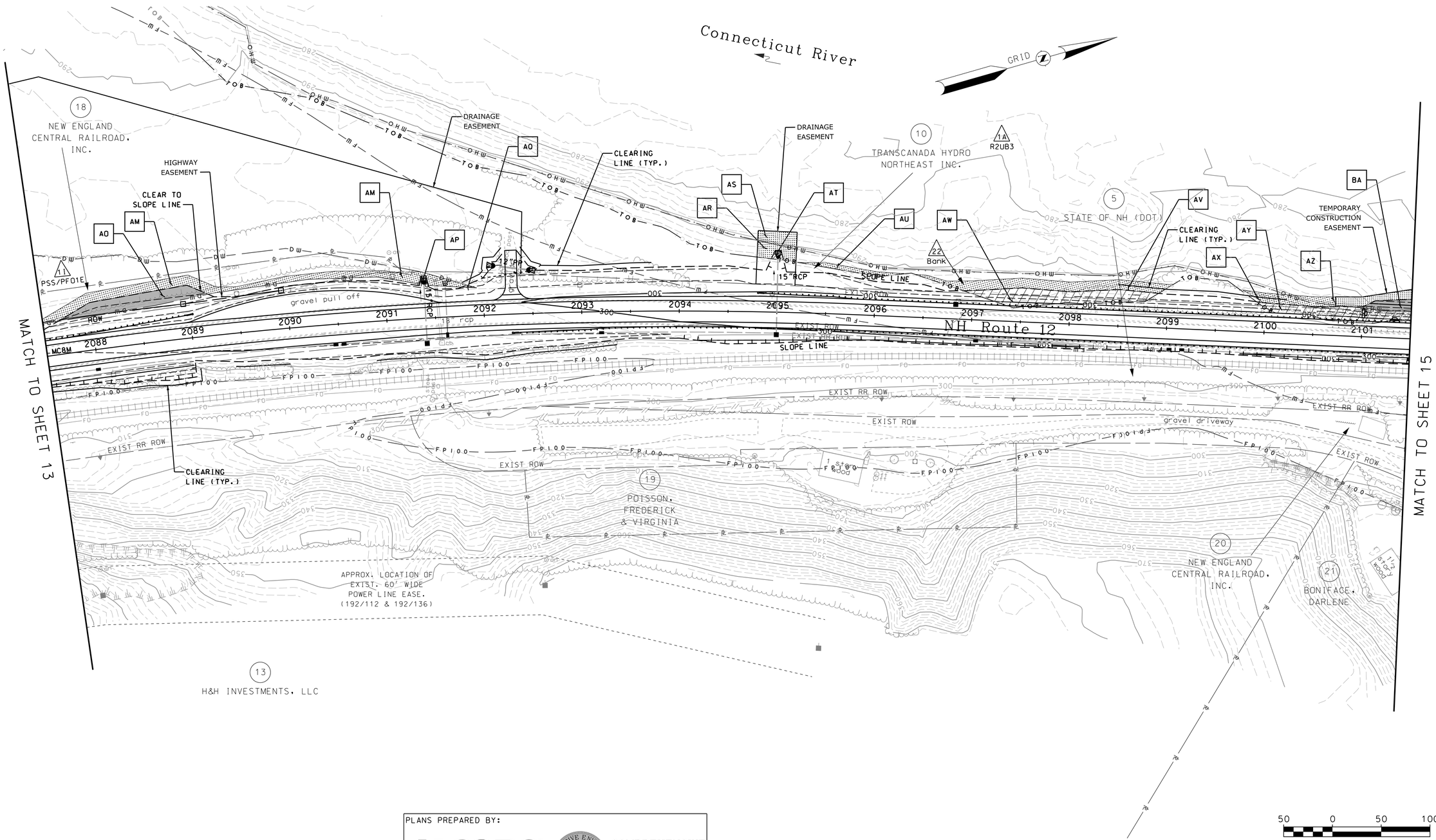

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WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET08	14747wetplans	14747	14	29

SDR PROCESSED	S. GUNN	DATE	5/4/2017
NEW DESIGN	A. SEAMAN	DATE	5/4/2017
SHEET CHECKED	C. MERCER	DATE	5/4/2017

AS BUILT DETAILS DATE

NUMBER	DATE	STATION	STATION

REVISIONS AFTER PROPOSAL

DESCRIPTION

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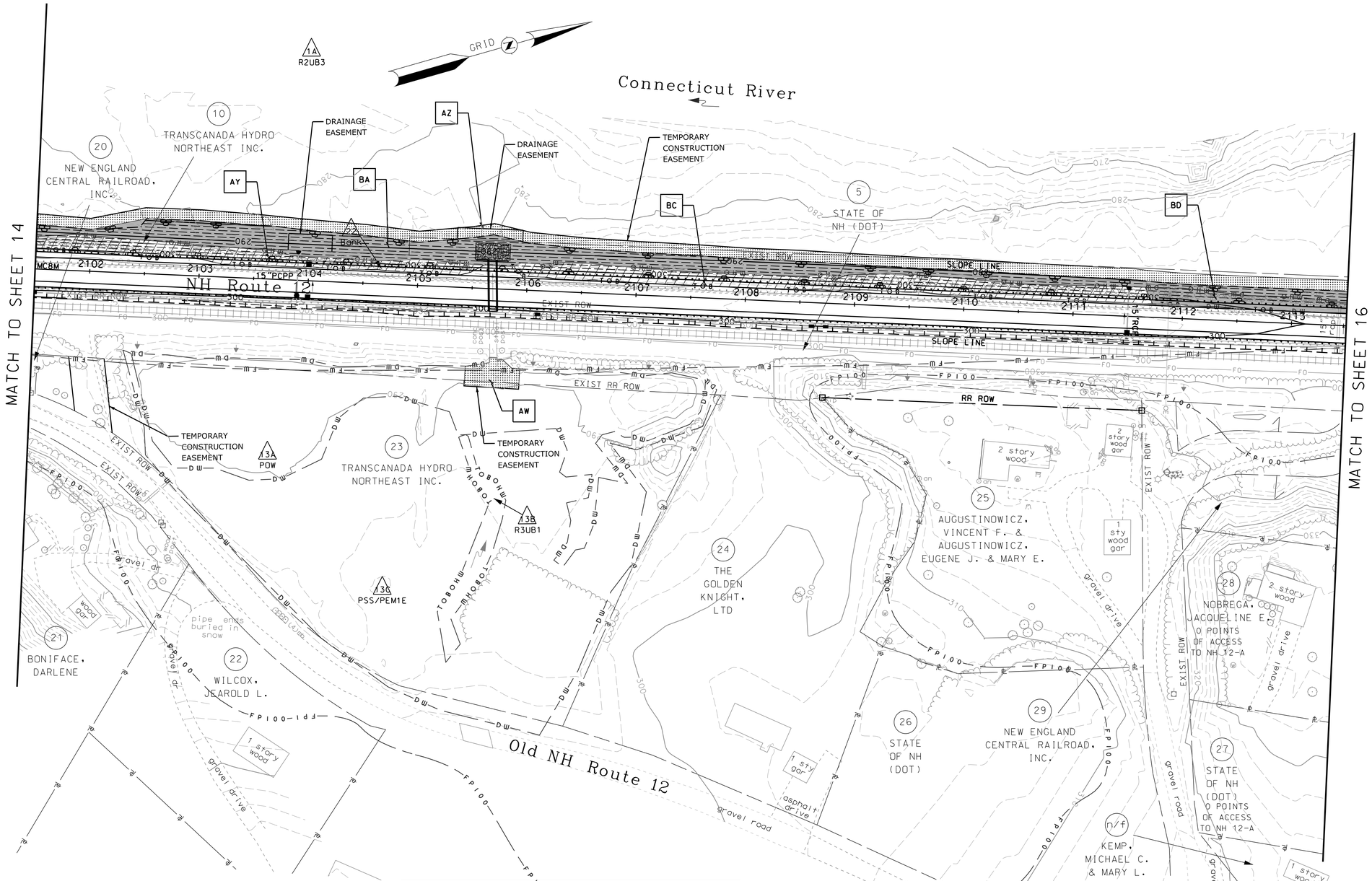

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WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET09	14747wetplans	14747	15	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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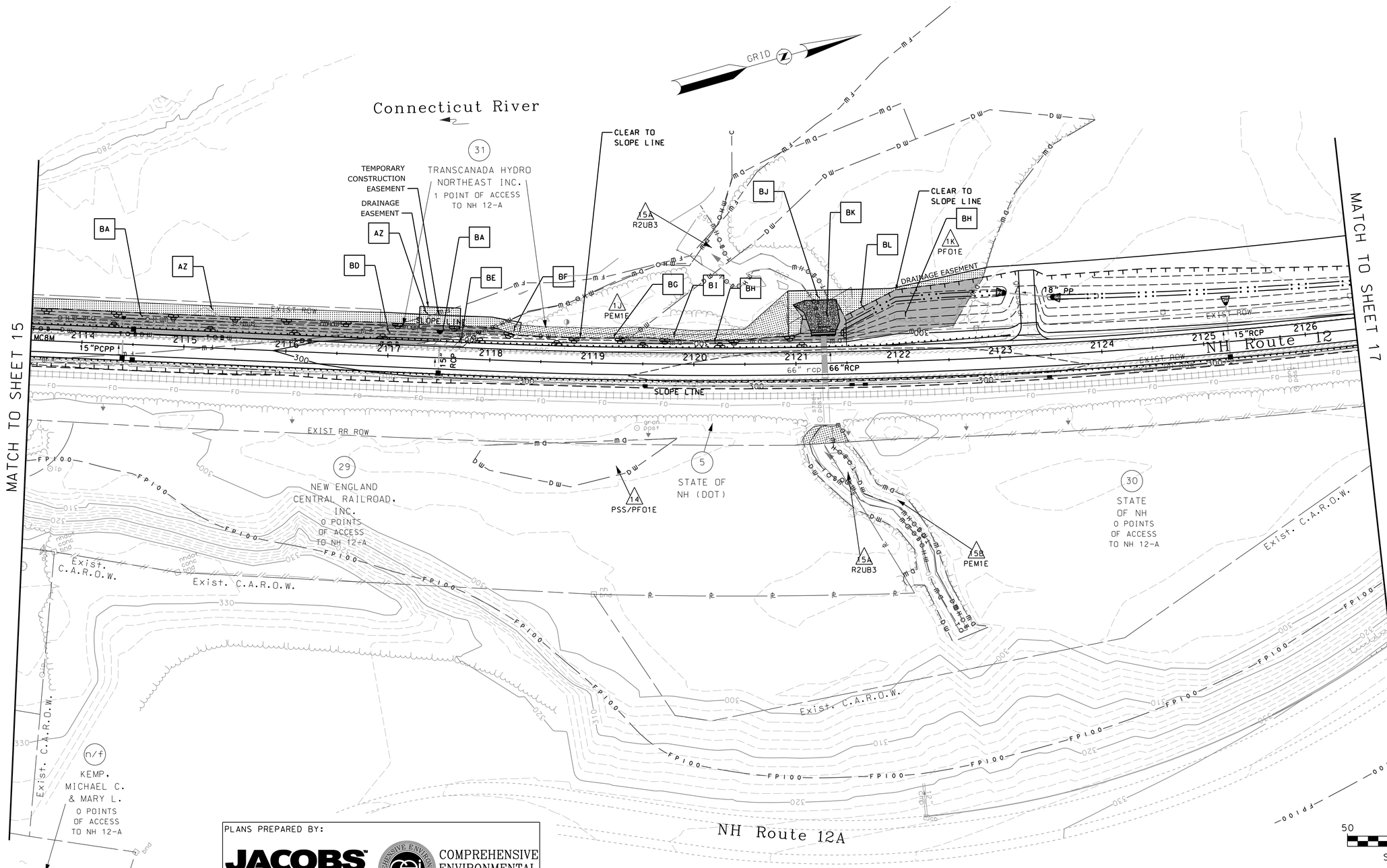

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WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET10	14747wetplans	14747	16	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION	STATION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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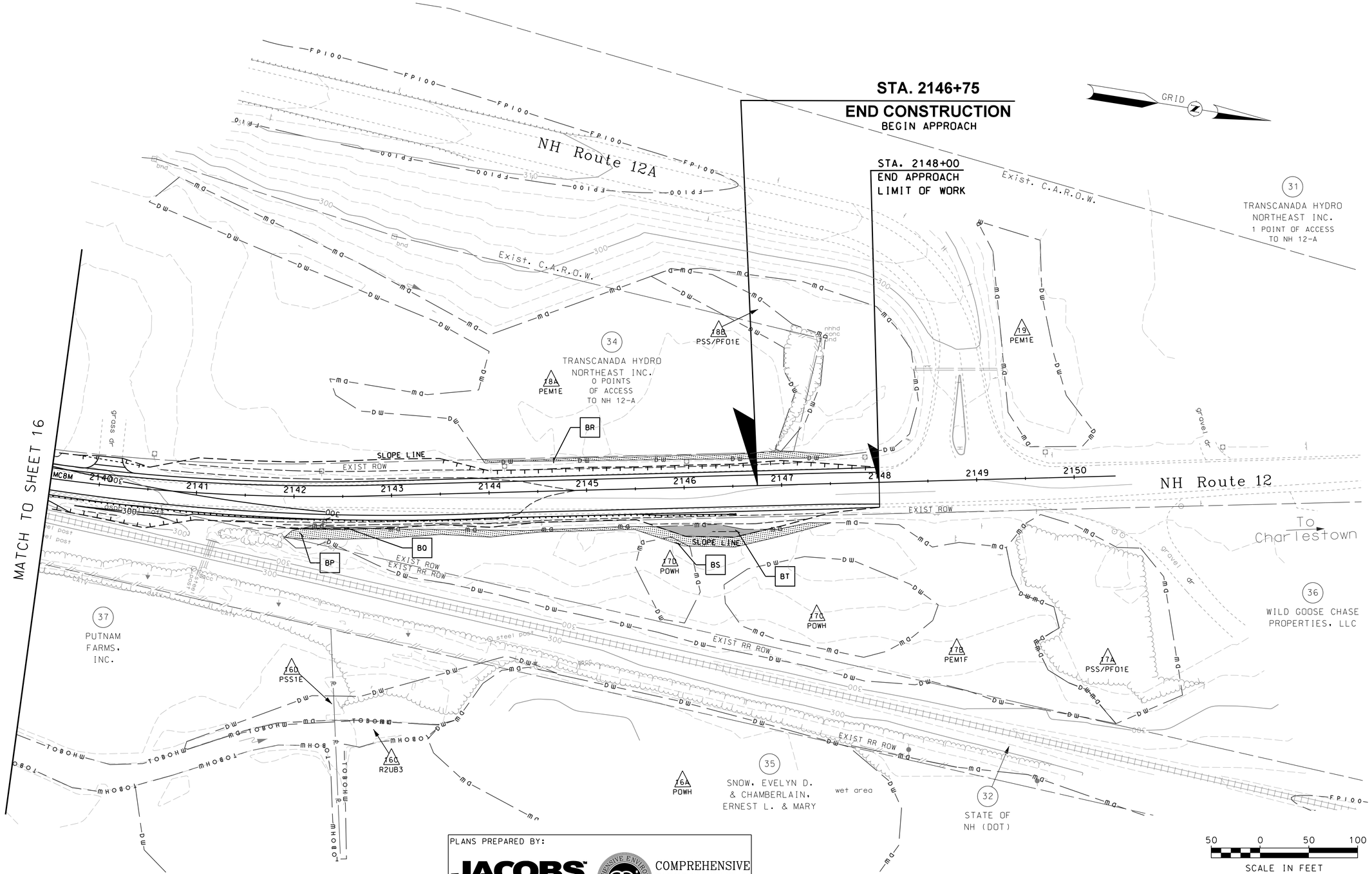

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WETLAND IMPACT PLAN

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET12	14747wetplans	14747	17	29

SOR PROCESSED	S. GUNN	DATE	5/4/2017
NEW DESIGN	A. SEAMAN	DATE	5/4/2017
SHEET CHECKED	C. MERCER	DATE	5/4/2017
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

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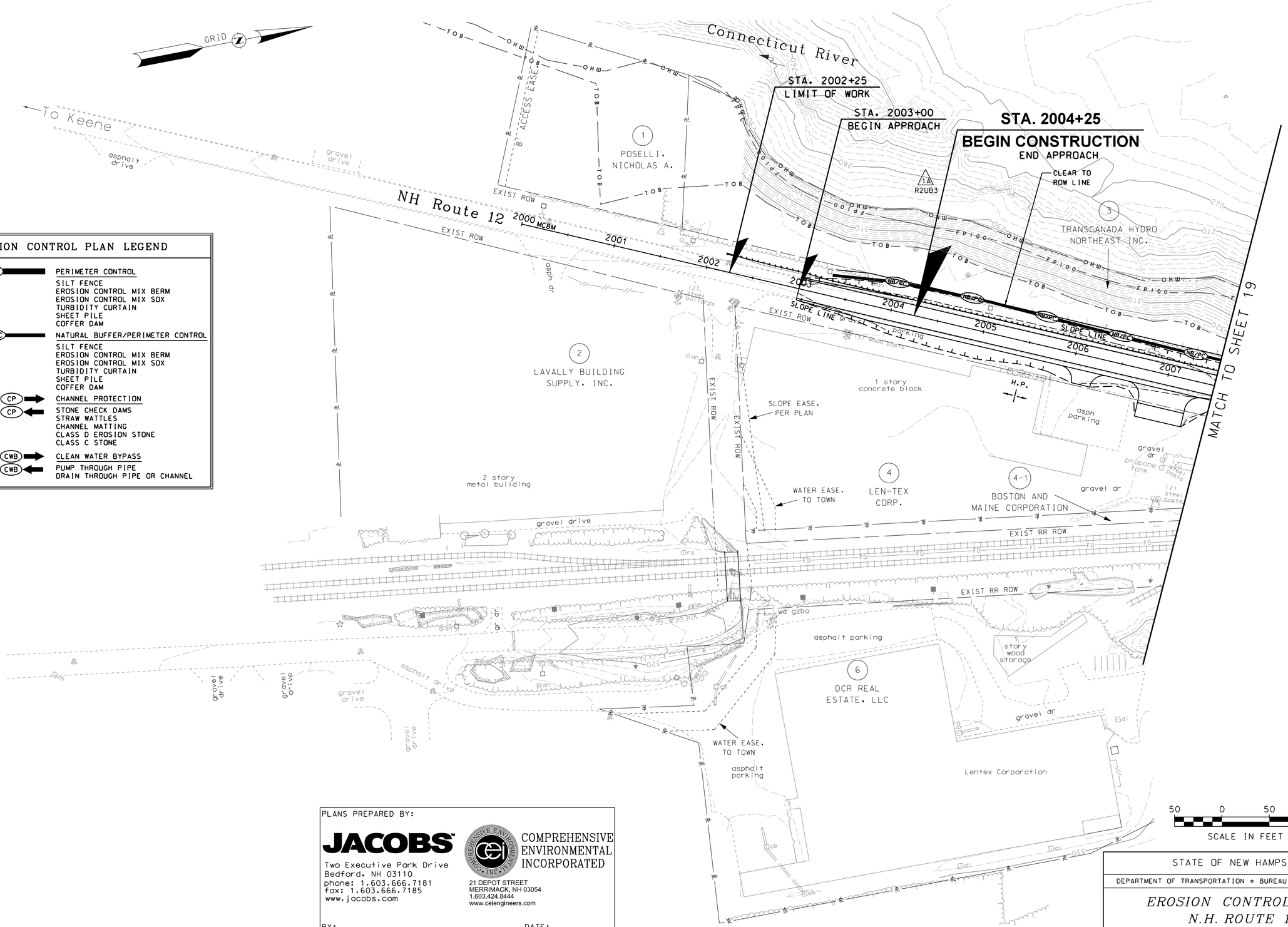

EROSION CONTROL PLAN LEGEND

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

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STATE OF NEW HAMPSHIRE
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EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC01	14747ecplans	14747	18	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
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NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017
AS BUILT DETAILS		DATE

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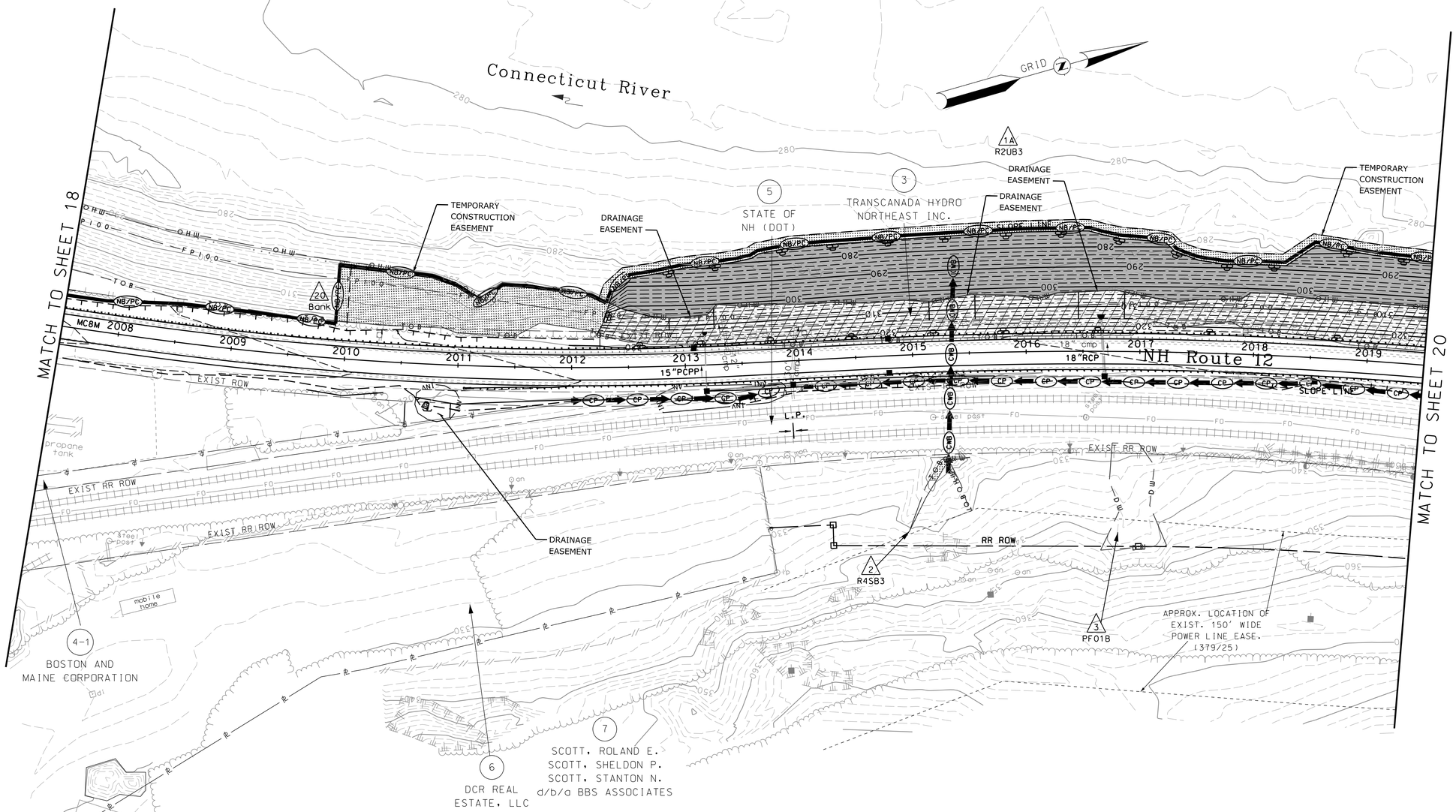

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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC02	14747ecplans	14747	19	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SOR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017

AS BUILT DETAILS DATE

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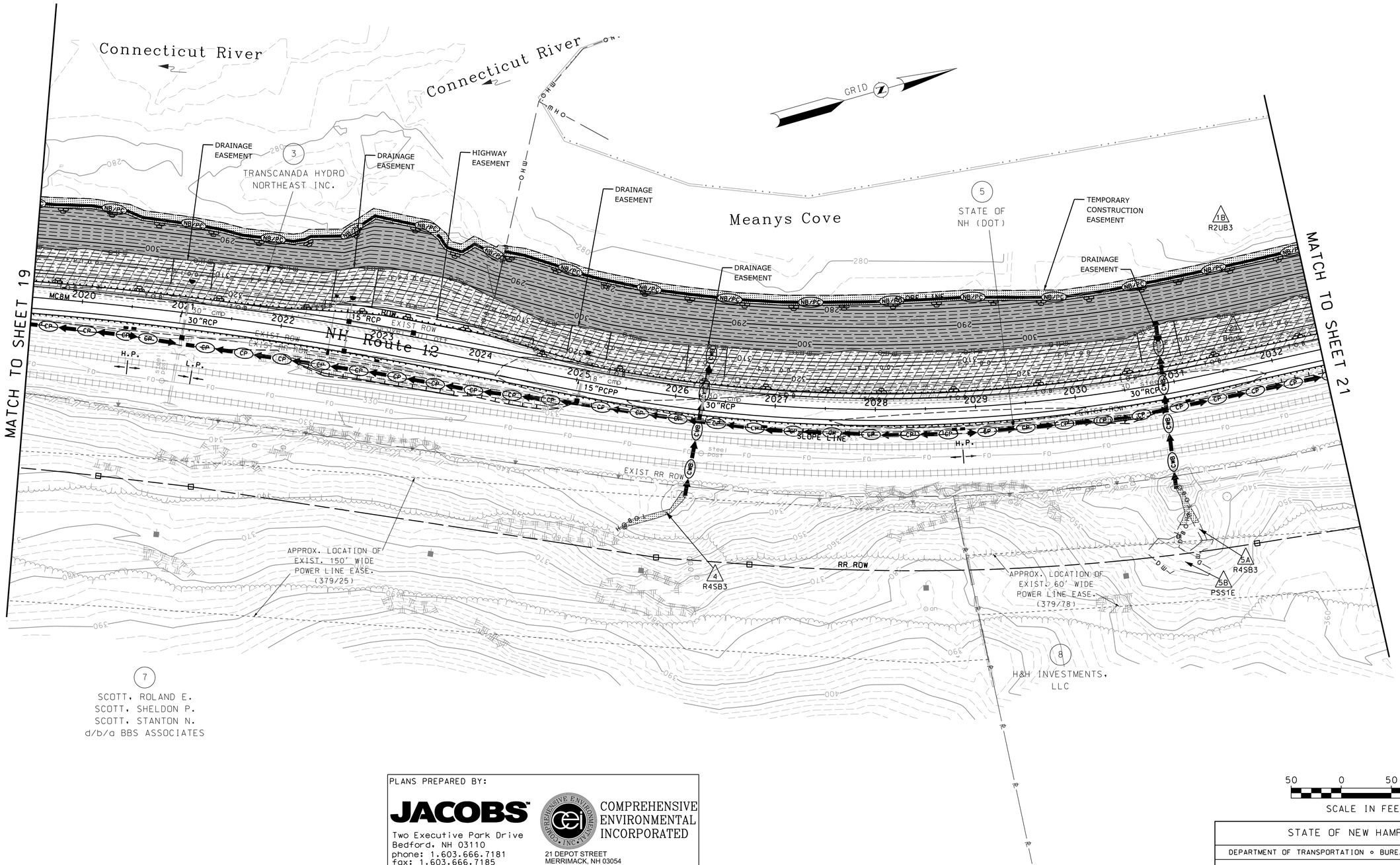

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EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC03	14747ecplans	14747	20	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SOR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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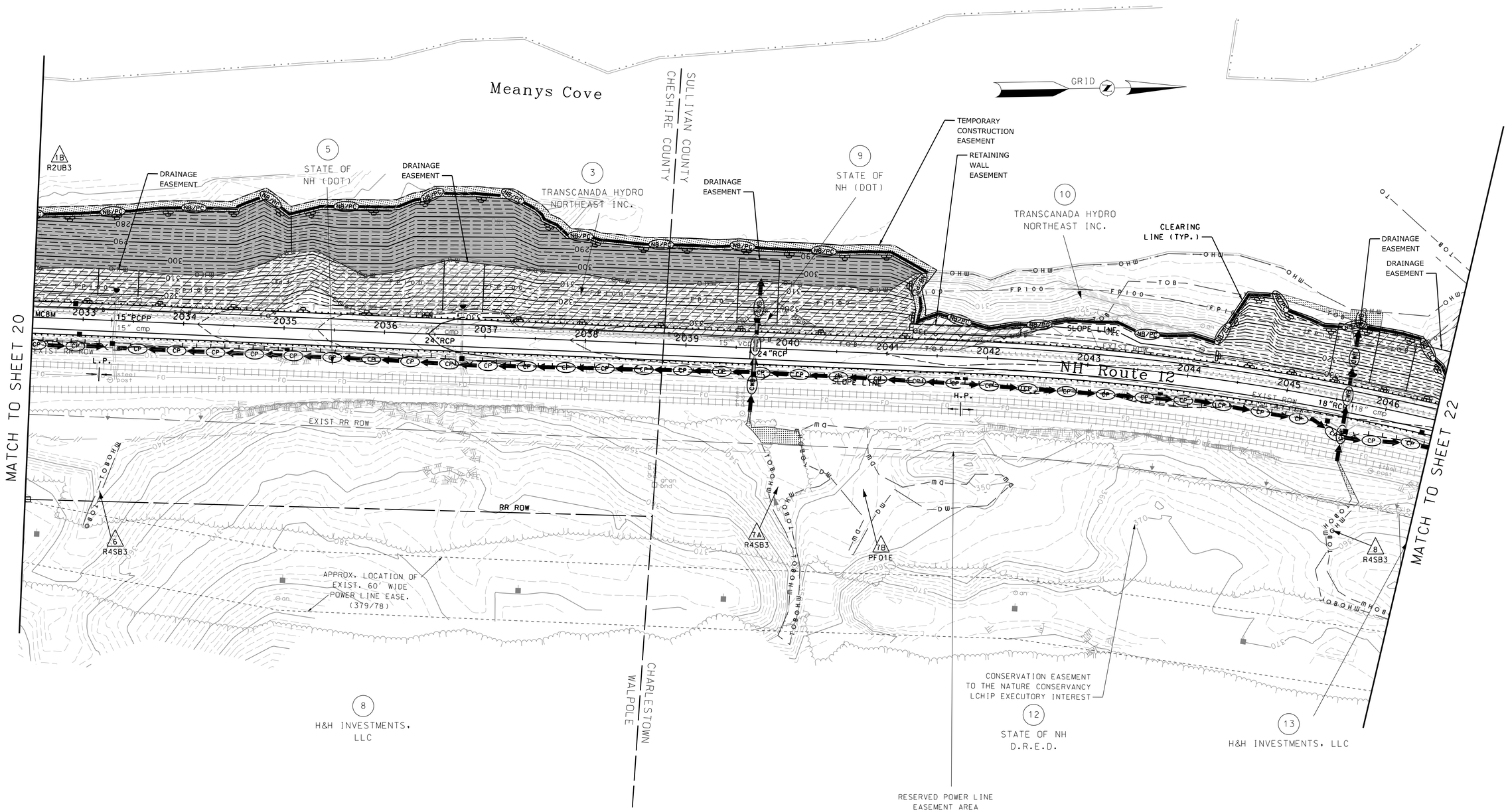

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SDR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017
AS BUILT DETAILS		DATE

NUMBER	DATE

REVISIONS AFTER PROPOSAL

STATION	STATION	DESCRIPTION

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC04	14747ecplans	14747	21	29

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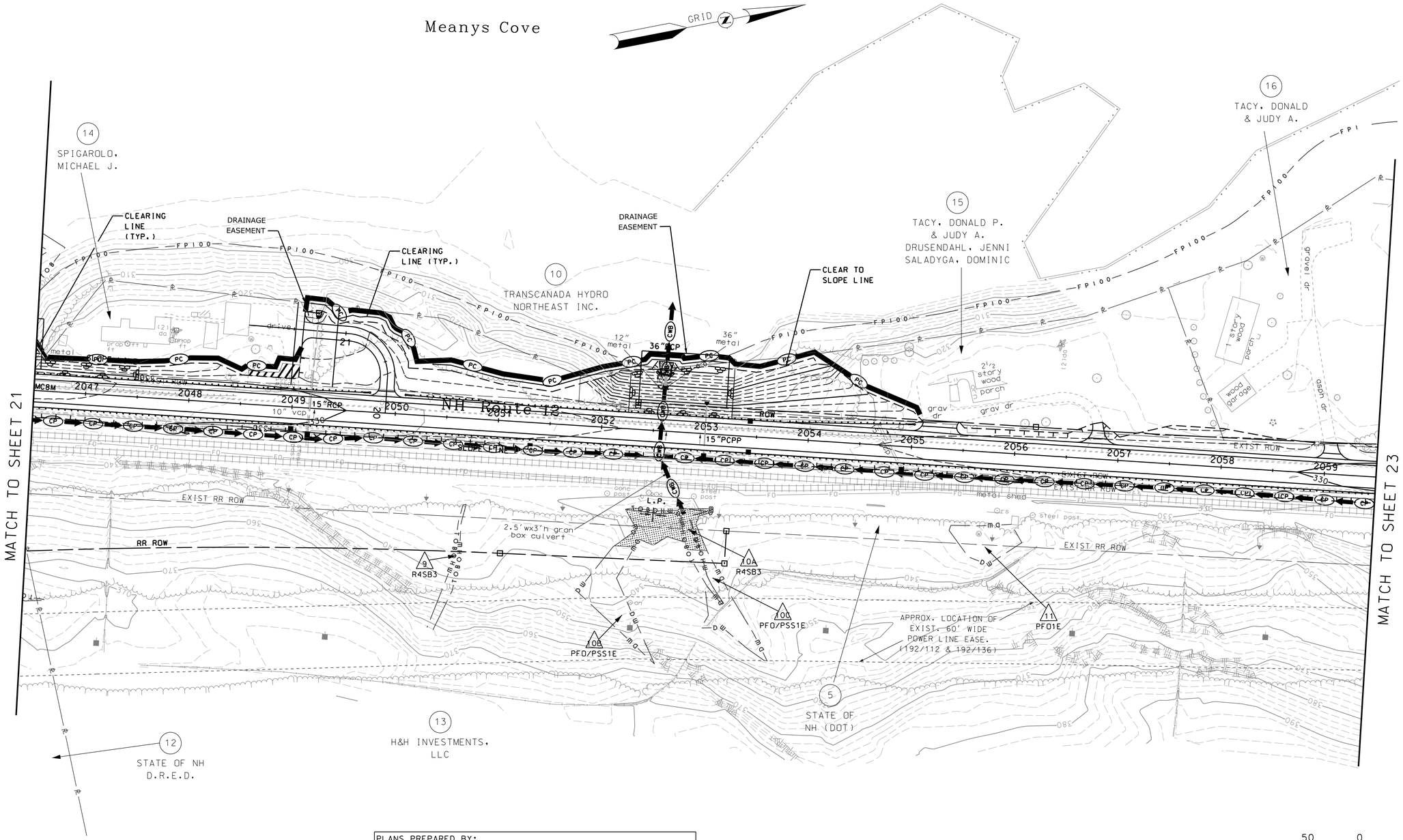

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EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC05	14747ecplans	14747	22	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017

AS BUILT DETAILS DATE

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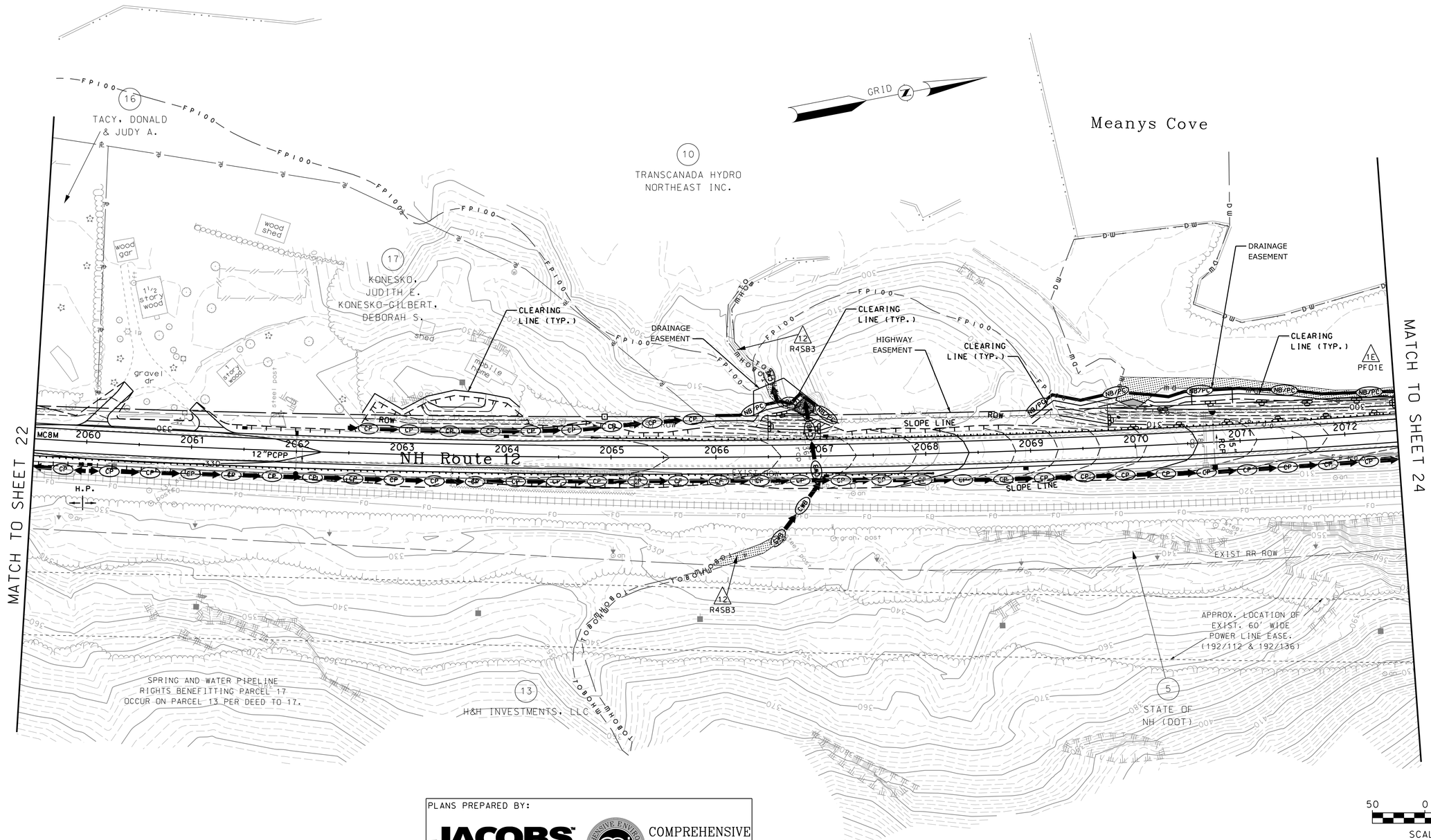

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EROSION CONTROL PLAN
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MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC06	14747ecplans	14747	23	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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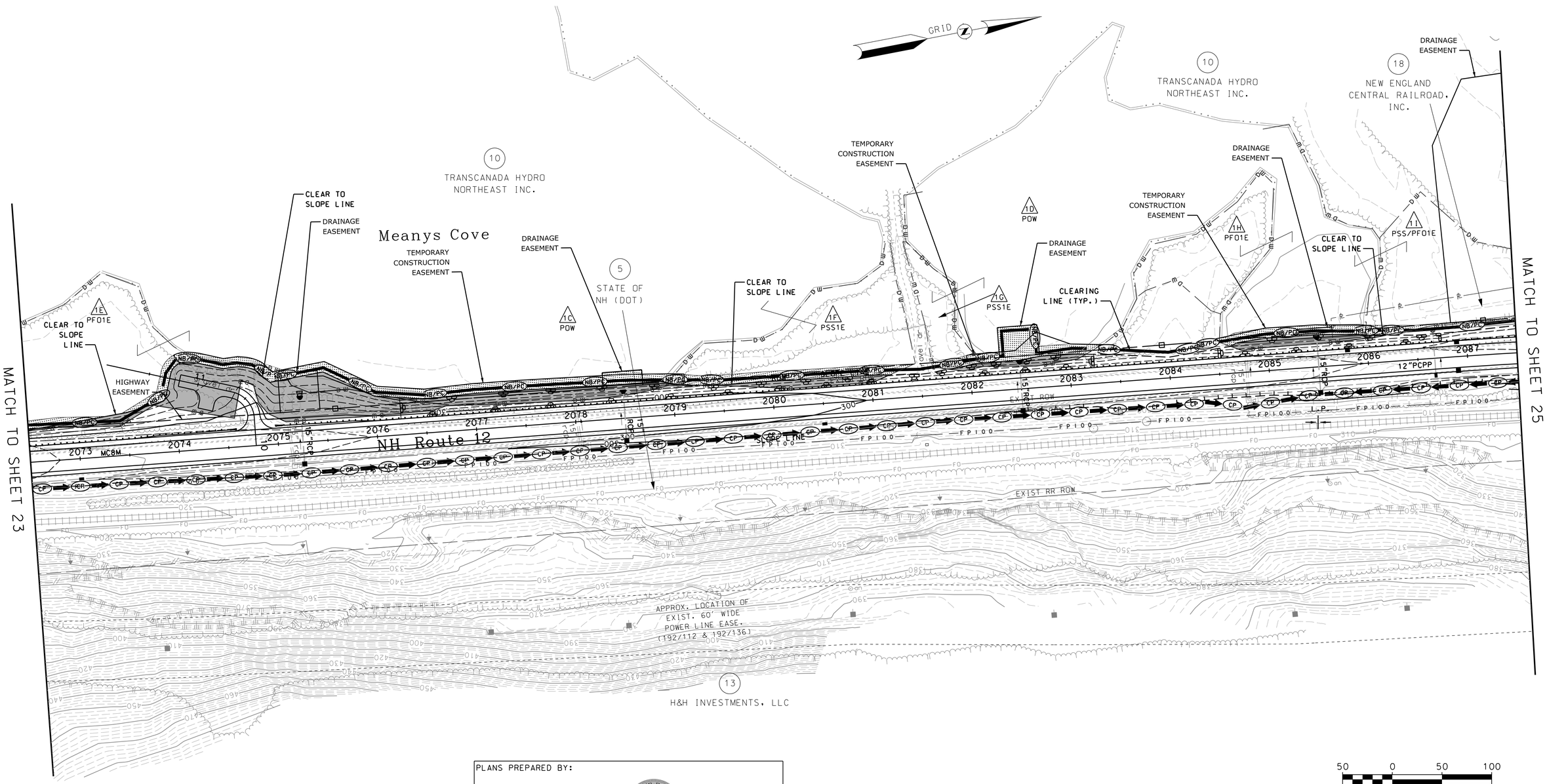

REVISIONS AFTER PROPOSAL			
STATION	STATION	DESCRIPTION	
		NUMBER	DATE

SDR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017
AS BUILT DETAILS		DATE

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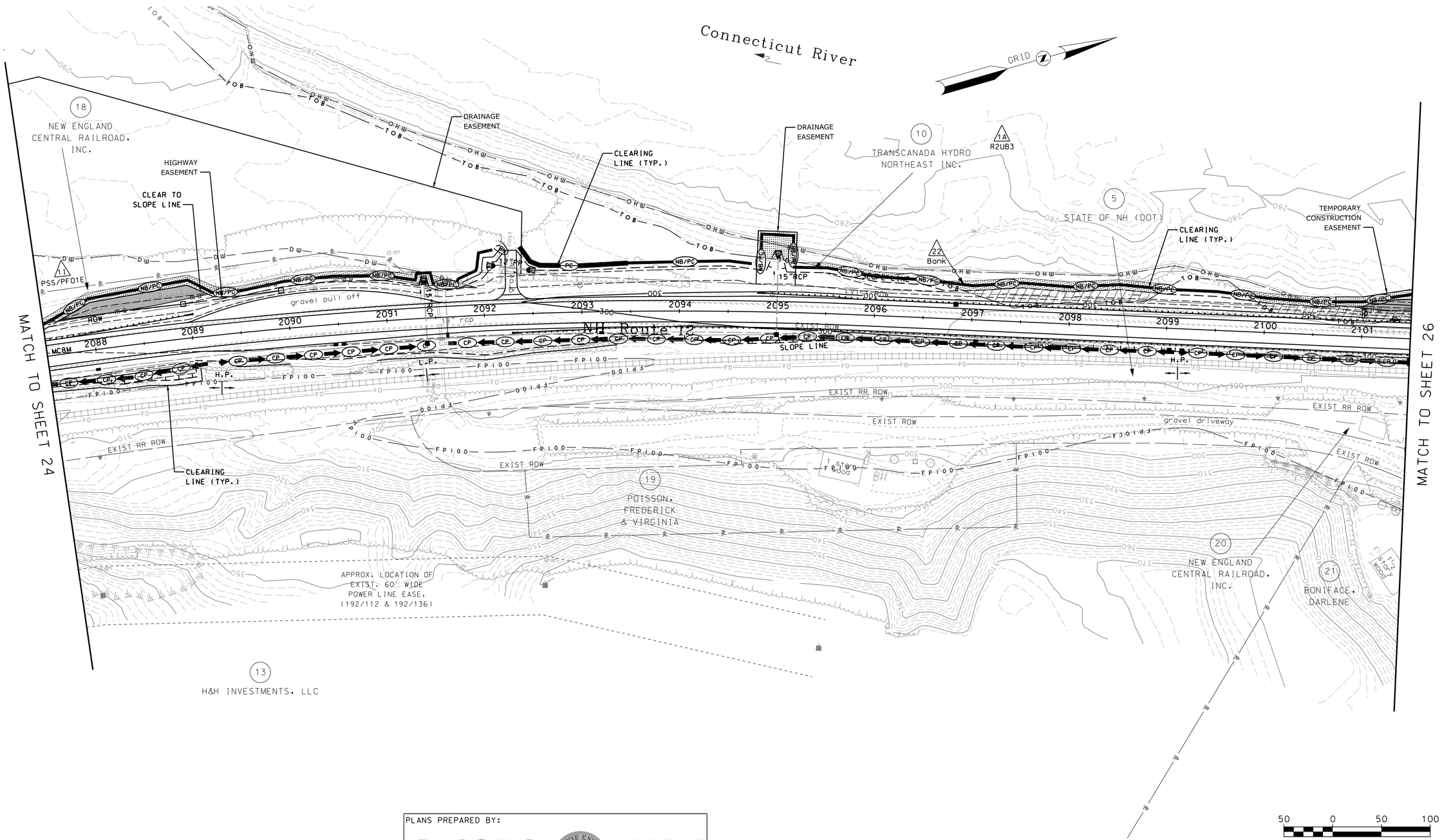
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC07	14747ecplans	14747	24	29



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EROSION CONTROL PLAN
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MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC08	14747ecplans	14747	25	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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DATE: 5/4/2017 TIME: 11:27:39 AM
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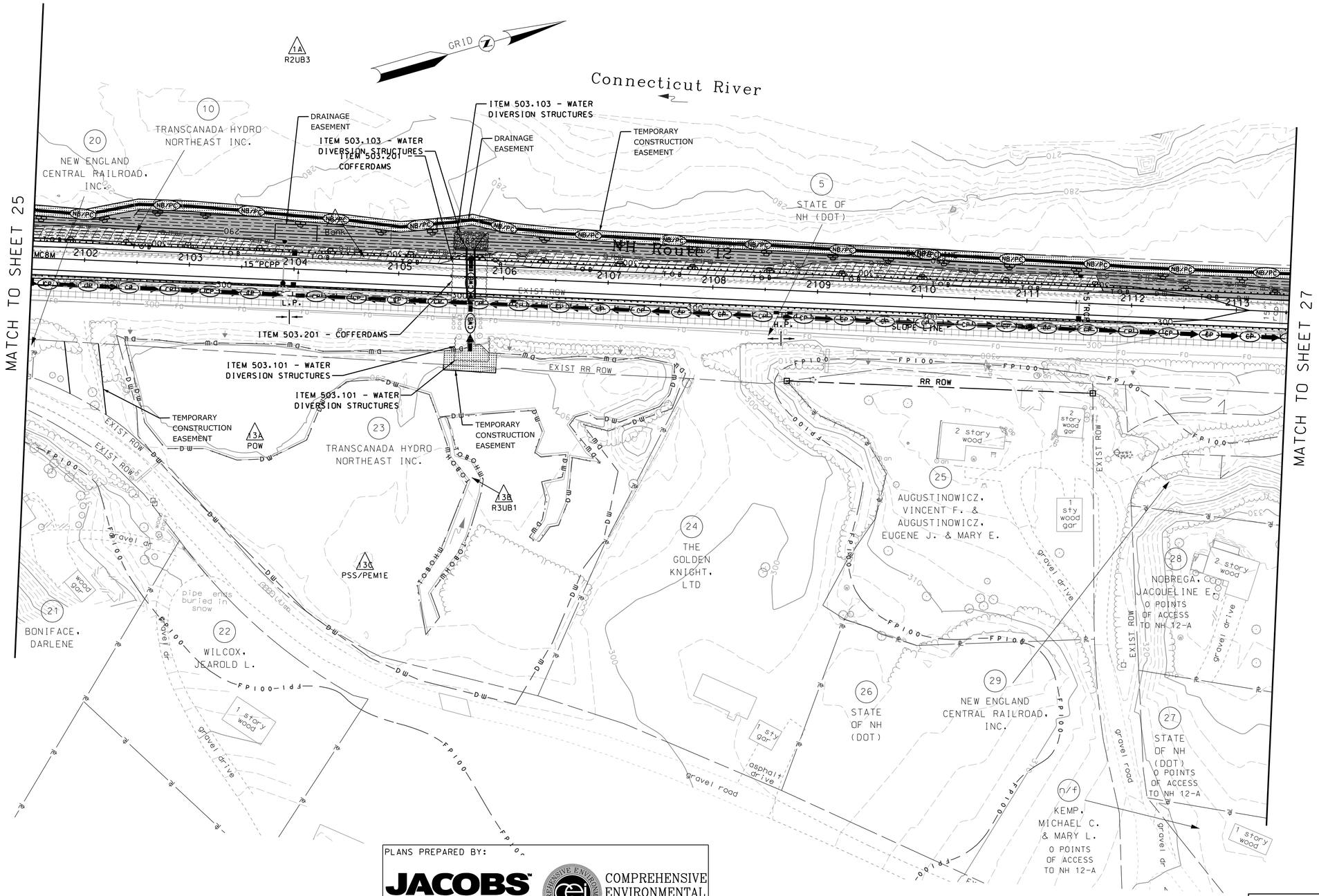

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COMPREHENSIVE ENVIRONMENTAL INCORPORATED

21 DEPOT STREET
MERRIMACK, NH 03054
1.603.424.8444
www.celengineers.com

BY: _____ DATE: _____

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC09	14747ecplans	14747	26	29

SDR PROCESSED	S. GUNN	DATE 5/4/2017
NEW DESIGN	A. SEAMAN	DATE 5/4/2017
SHEET CHECKED	C. MERCER	DATE 5/4/2017

AS BUILT DETAILS DATE

NUMBER	DATE	STATION	STATION

REVISIONS AFTER PROPOSAL DESCRIPTION

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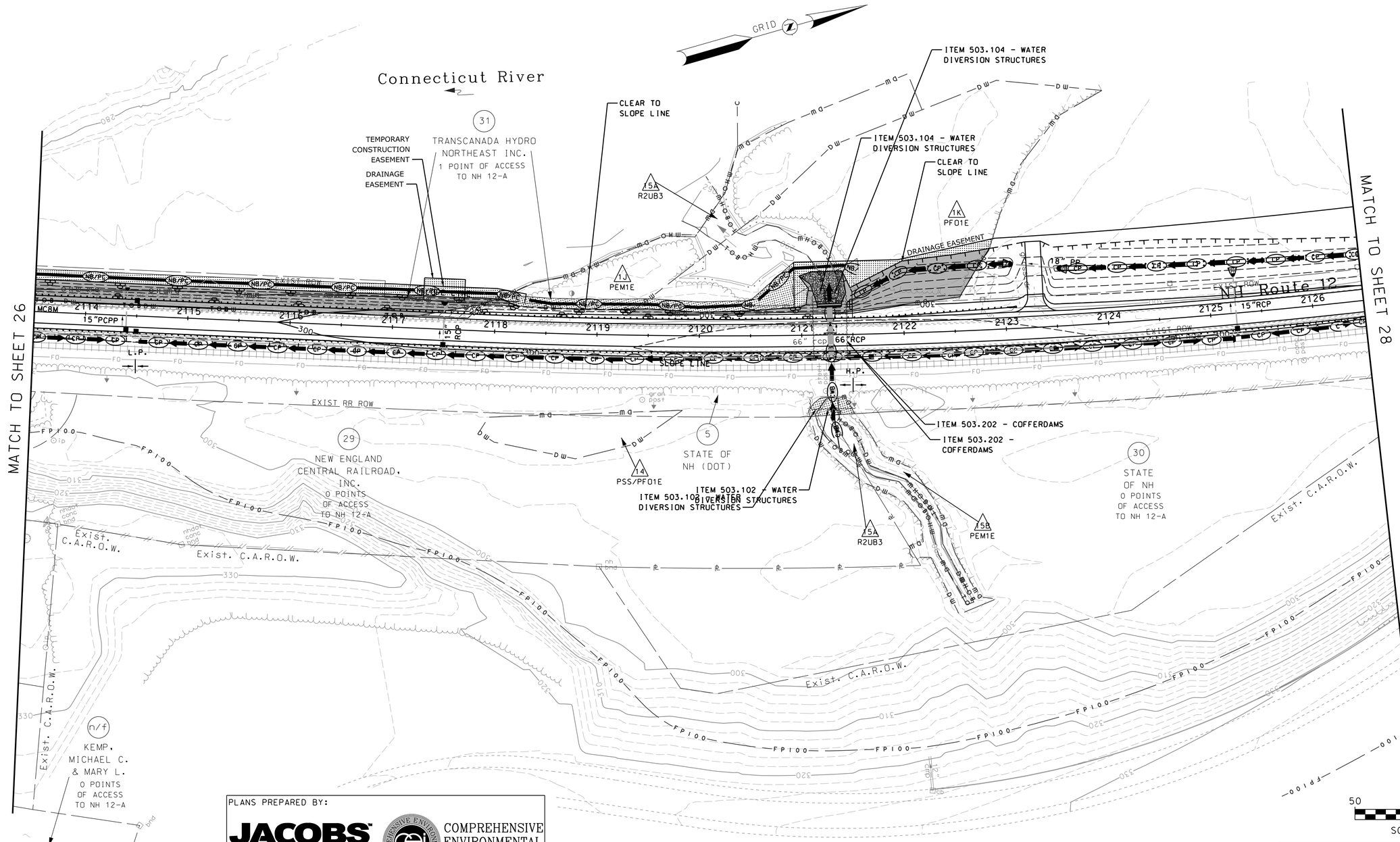

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BY: _____ DATE: _____

SDR PROCESSED	S. GUNN	DATE	5/4/2017
NEW DESIGN	A. SEAMAN	DATE	5/4/2017
SHEET CHECKED	C. MERCER	DATE	5/4/2017
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION	STATION

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC10	14747ecplans	14747	27	29

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DATE: 5/4/2017 TIME: 11:27:49 AM
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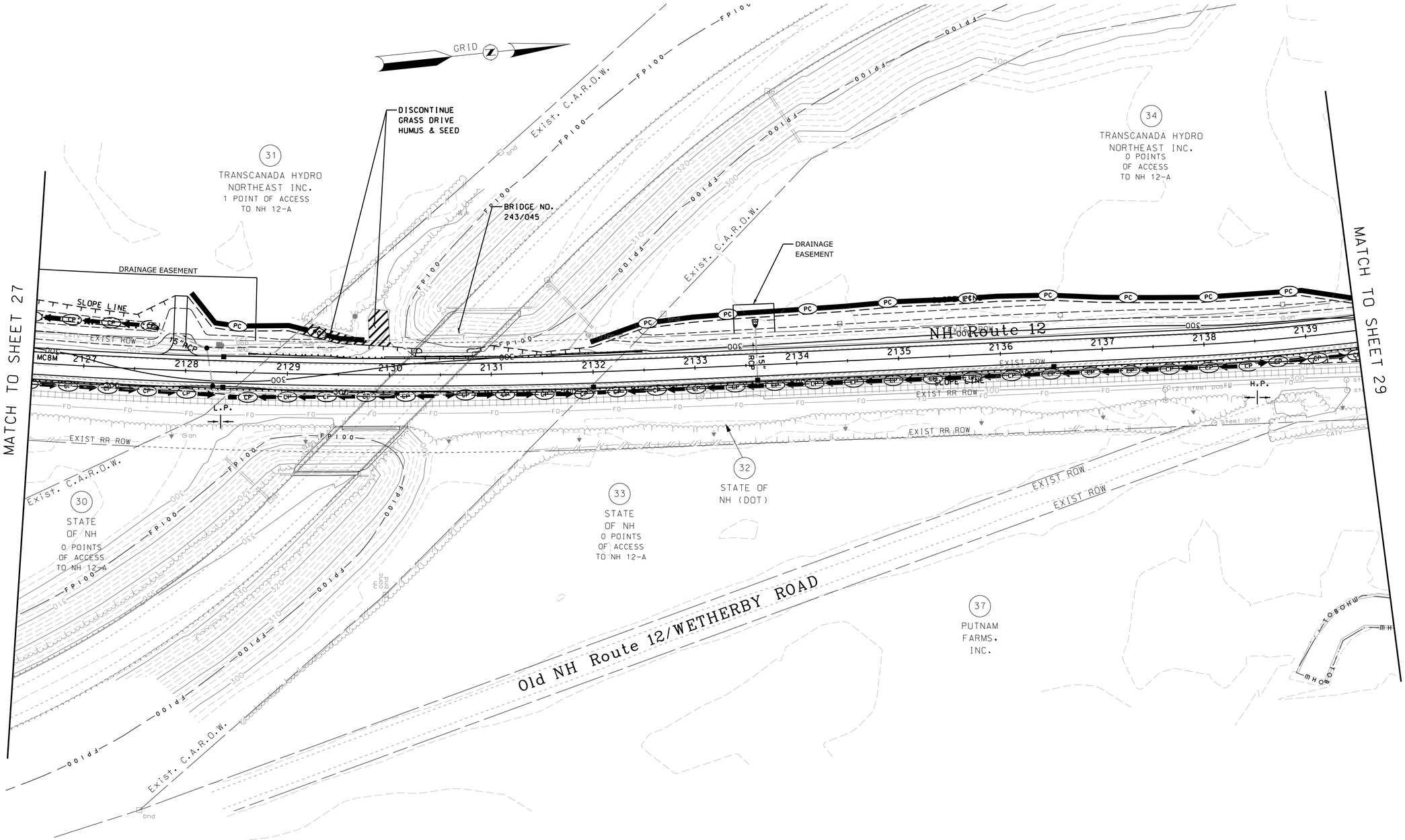

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50 0 50 100
SCALE IN FEET

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

EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC11	14747ecplans	14747	28	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

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DATE: 5/4/2017 TIME: 11:27:52 AM
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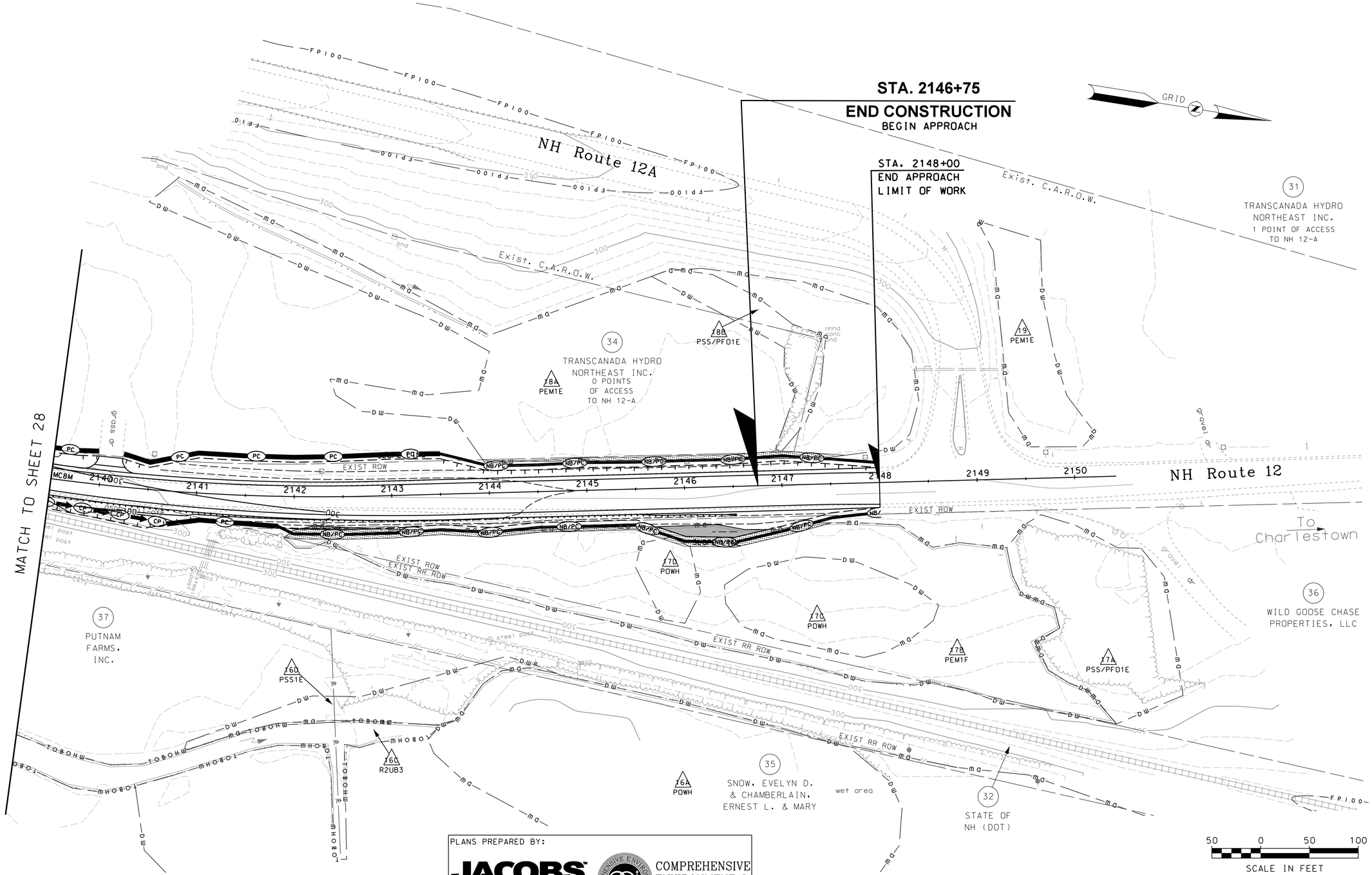

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BY: _____ DATE: _____

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLAN
N.H. ROUTE 12

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
EC12	14747ecplans	14747	29	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

		DATE
SDR PROCESSED	S. GUNN	5/4/2017
NEW DESIGN	A. SEAMAN	5/4/2017
SHEET CHECKED	C. MERCER	5/4/2017

AS BUILT DETAILS DATE

USER: NHDOT
DATE: 5/4/2017 TIME: 11:27:54 AM
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