C0.01
SHEET 1 OF 43

Construction Drawings

for

Randolph Hill Road Reconstruction

located in and prepared for the

Town of Randolph, New Hampshire

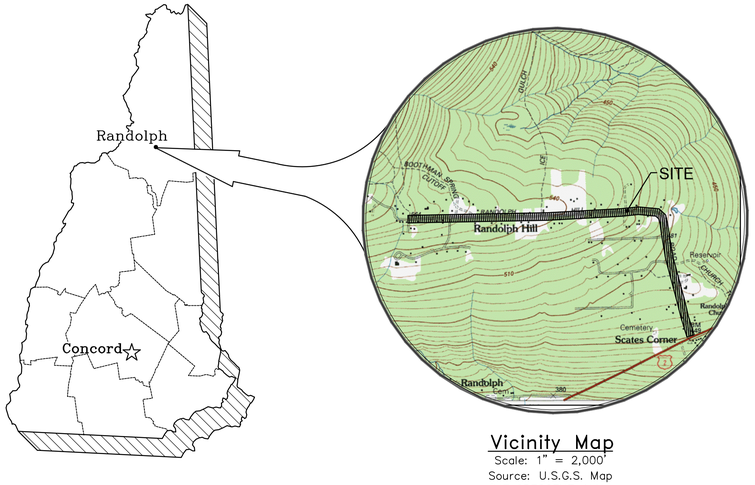
NHDOT Project # 16098

Issued: April 18, 2011

HEB Project #: 2010-062

2010-062
Cover Sheet
Randolph Hill Road Reconstruction

Owner: Town of Randolph
130 Durand Road
Randolph, NH 03593



Vicinity Map
Scale: 1" = 2,000'
Source: U.S.G.S. Map
(MT CRESCENT, N.H.)

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Engineer/Surveyor

STATE OF NEW HAMPSHIRE · JAY J. POULIN No. 10863 · LICENSED PROFESSIONAL ENGINEER

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STATE OF NEW HAMPSHIRE · No. 520 · DOUGLAS C. BURNELL · LICENSED LAND SURVEYOR
SIGNATURE

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General Construction Requirements:

1. Contractor is responsible for all work shown on the drawings, unless otherwise noted. Provide and install all materials required to complete project.
2. All work shall conform to the latest edition of the NHDOT Standard Specifications for Road & Bridge Construction, and shall comply with requirements of the NHDOT District Engineer.
3. Perform all work in compliance with federal, state, and local permit approvals. Copies of all permit approvals shall be maintained at the project site.
4. Site security and job safety are the sole responsibility of the Contractor. All construction activities shall comply with OSHA standards and local requirements.
5. The location of existing utilities are approximate and have not been independently verified. Contact "Dig Safe" 72 hours prior to any excavation at 1-888-344-7233 and any other utility owners for accurate utility marking. Pay for all damages which may occur by the failure to locate and preserve any utilities.
6. At least one week prior to site clearing/demolition, request Owner's Representative to identify features to remain.
7. Field-verify the location, size, inverts and types of existing pipes at all proposed points of connection prior to ordering materials. Where an existing utility is found to be in conflict with the proposed work, the location, elevation and size of the utility shall be accurately determined without delay, and the information furnished in writing to the Owner's Representative for resolution of the conflict.
8. Rim elevations of proposed drainage structures are approximate in paved areas. Final elevations are to be set flush and consistent with the grading plan. Adjust all other rim elevations to finished grade within the limit of work.
9. All traffic control, site signage and pavement markings shall conform to the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD) and N.H. Department of Transportation Standards.
10. Provide traffic control and flaggers (if required) complying with the State Department of Transportation requirements.
11. Contractor shall contact NHDOT District 1 two weeks prior to commencing work in or near the intersection of US Route 2 and Randolph Hill Road. Contractor shall provide a traffic control plan to the Town and NHDOT for review. Construction equipment and material shall be out of the US Route 2 clear zone during non-working hours.
12. Contractor shall review the condition of the US Route 2 drainage elements with NHDOT District 1 prior to construction. Contractor shall fix any damage during construction to NHDOT drainage elements to the satisfaction of the NHDOT District 1 Engineer at the Contractor's expense.
13. Contractor shall remove and replace or repair all curbs, sidewalk, pavement and other items damaged by construction activities to (at a minimum) their original condition, to the satisfaction of the Owner and Engineer.
14. Contractor shall remove and dispose of all debris and excess excavated material from within the construction limit of work, to a suitable site provided by the Contractor, in compliance with all state and local regulations. Any excess suitable material may remain on site at the request of the Town.
15. When power or telephone pole support is required, the Contractor shall provide a minimum 48-hour notification to Public Service of New Hampshire or Fairpoint Communications, respectively.
16. Open trenches in the roadway must be backfilled at the end of the workday. Open trenches outside of the roadway may be left open if the Contractor provides adequately safe barricades and lights.
17. All existing sewer, storm drain lines, culverts, gas and water lines encountered during construction are to remain in service unless otherwise noted in drawings. Any lines damaged during construction shall be repaired by the Contractor at no additional cost to the Owner, except when in direct conflict with the new service or when not shown or indicated. NHDOT culverts damaged during construction shall be replaced from the damage area to the outlet.
18. All structures and pipelines located adjacent to the trench excavation shall be protected and firmly supported by the contractor until the trench is backfilled. Injury to such structures caused by, or resulting from, the Contractor's operations shall be repaired at the Contractor's expense. All utilities requiring repair, relocation or adjustment as a result of the project shall be coordinated through the respective utility.
19. Severing existing utilities for abandonment or removal of a segment from service shall be performed in such a manner as to allow the remaining active segment to continue in its intended service. Cap active segments with appropriate fittings, joint restraint, etc., to ensure their integrity. Plug ends of abandoned pipe segments with concrete, unless special circumstances dictate plugging abandoned pipes with blind flanges, restrained mechanical joint plugs, etc. as appropriate.
20. All disturbed areas, which are not covered by structures or paving, shall be properly seeded or replanted by the contractor.
21. Vehicle access to driveways shall be maintained during construction.
22. The Contractor shall provide a construction schedule to the Owner and NHDOT prior to commencing work and shall update the schedule as necessary.

Material Testing:

1. It is anticipated the following material testing program will be implemented and be the responsibility of the Owner.
2. Contractor shall notify Owner's Representative at least 48 hours prior to placement of materials noted below.
3. Contractor is responsible for supplying and installing construction materials that meet NHDOT Specifications.
4. Testing program outlined below assumes phased construction.

NHDOT Item	Description	Test Location & Frequency	
203.6	Embankment-In-Place	Compaction	– In Place 1/2,000 CY
304.3	Crushed Gravel	Compaction	– In Place 1/250 LF of road
		Gradation	– 1/4,000 CY (Minimum 1 per construction phase)
304.33	Crushed Aggregate for Shoulders	Compaction	– 1/500 LF of road
		Gradation	– 1/4,000 CY
304.4	Crushed Stone	Gradation	– 1/source
306.21	Reclaimed Stabilized Base	Compaction	– In Place 1/500 LF of road
		Gradation	– Waive gradation requirements
403.11	Hot Bituminous Pavement	Compaction	– In place 1/500 LF of road (binder & wearing)
		Gradation	– At plant 1/750 Tons (Minimum 1 per construction phase)
		Asphalt Content	– At plant 1/750 Tons (Minimum 1 per construction phase)

Construction Sequence:

In addition to complying with the "General Erosion-Control Requirements", the construction sequence is based on construction beginning in the Spring 2011 and completed in the Fall of 2011. Should the construction take longer than anticipated, the contractor shall stabilize the site in accordance with the Winter Construction Standards, and the Owner's Representative shall be contacted to determine if additional measures are needed.

Spring/Fall 2011:

1. Install temporary erosion control measures.
2. Cut trees and remove stumps.
3. Install underdrains where identified.
4. Remove existing and install new roadway and driveway culverts.
5. Install new drainage controls where identified.
6. Reclaim roadway to a depth of 12".
7. Compact reclaimed roadway base for temporary stabilization.
8. Remove reclaimed base while maintaining one-way traffic.
9. Scarify subgrade to remove cobbles within 2' of subgrade surface.
10. Shape subgrade to promote positive drainage.
11. Proof roll & compact subgrade.
12. Construct ditches and associated drainage measures.
13. Install erosion control measures to stabilize ditches and slopes.
14. Reinstall and compact reclaimed base material over completed subgrade.
15. Install 6" (min.) of crushed gravel over reclaimed base material.
16. Fine grade base gravels and complete installation of bituminous pavement binder course.
17. Loam, seed and mulch all disturbed areas. Install erosion control measures as indicated.
18. Complete the bituminous pavement wearing course once all phases have been completed.
19. Install shoulder gravels along pavement shoulders.
20. After vegetation is sufficiently established in the opinion of the owners representative, remove the temporary erosion control measures.
21. Site must be Stabilized prior to October 2011.

Winter Construction Standards:

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th 2011, or which are disturbed after October 15th 2011, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melts.
2. All ditches or swales which do not exhibit 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
3. After November 15th, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.
4. Contractor shall coordinate with NHDOT District 1 for winter shut downs and cold weather paving limitations on the US Route 2 approach.

As-Built Measurements and Record Drawings:

1. Record as-built dimensions on a daily basis and review with the Owner's Representative on a weekly basis. Submit complete record information on a clean set of drawings to Owner's Representative(s) upon substantial completion of work.
2. As-built dimensions shall include locations of all surface features and subsurface utility systems including, but not limited to:
   a. Location, size, depths, rims, angle points, and invert elevations of buried pipes, utilities, vaults, etc.
   b. Field changes of dimension and detail.
   c. Details not on original drawings.

Approvals Received:

NHDES Wetlands Permit: #2011-00402
NHDES Alteration of Terrain Permit: #AoT-0227

Legend

Existing		Proposed
1800	Major Contour	100
1798	Minor Contour	98
	Vegetation Line	
	Stump	
	Water shut-off	
	Iron pipe/rebar found	
	Boulder	
339	Mailbox	
	Stone wall	
	Earth Berm	
	Silt Fence	
	Edge of Pavement	
	Edge of Gravel	
	Utility Pole/Light	
	Manhole	
	Stormwater Drain/Catch Basin	
	Sewerline/Access Hole	
	Waterline/Shut-off Valve	
	Underdrain	UD
794	Spot Shot	794.6
	Delineated Wetland	
	Underground Utility Wires	UGU
OHU	Overhead Utility Wires/Pole	
	Sloped Granite Curb	
	Signs	
	Erosion Control Matting	
	Stone Lined Ditch	
B1	Boring	
P1	Ledge probe	
C1	Cores	
	Temporary Stone Check Dam	
	Drainage Easement	
	Temporary Driveway Agreement	
	Slope Easement	

Summary Of Quantities:

NHDOT Item #	Description	Unit	Quantity
	Demolition / Earthwork		
201.1	Clearing and grubbing (F)	AC	2
202.31	Fill Abandoned Pipe	CY	10
202.41	Removal of existing pipe 0-24" diameter	LF	1,100
202.5	Removal of catchbasins, drop inlets, and manholes	EA	4
203.1	Common excavation	CY	3,450
203.2	Rock excavation/ ledge removal	CY	100
	Rock rake subgrade	SY	22,300
203.6	Embankment-in-place	CY	500
209.4	Granular backfill (gravel)	CY	650
214	Fine grading	SY	22,300
	Base Courses		
304.3	Crushed gravel (F)	CY	6,775
304.33	Crushed Aggregate for Shoulders (F)	Ton	300
304.4	Crushed Stone	CY	300
306.21	Relaimed Stabilized Base Removed & Rehandled, 12" Deep (F)	SY	19,800
	Pavements		
403.11	Hot bituminous pavement, machine method	Ton	4,000
	Structures		
	Concrete Inlet headwall (class A concrete)	LS	1
	Concrete Outlet Headwall	LS	1
572.2	Stone wall relocation	LF	375
583.3	Rip rap stone (class c)	CY	700
	Incidential Construction		
593.121	Geotextile	SY	3,000
603.338	HDPE end section, 8" diameter	EA	2
603.3312	HDPE end section, 12" diameter	EA	4
603.3315	HDPE end section, 15" diameter	EA	5
603.3318	HDPE end section, 18" diameter	EA	1
603.3324	HDPE end section, 24" diameter	EA	10
603.3330	HDPE end section, 30" diameter	EA	4
603.3336	HDPE end section, 36" diameter	EA	4
603.83208	Storm drain 8" HDPE pipe	LF	35
603.83212	Storm drain 12" HDPE pipe	LF	80
603.83215	Storm drain 15" HDPE pipe	LF	320
603.83218	Storm drain 18" HDPE pipe	LF	240
603.83224	Storm drain 24" HDPE pipe	LF	420
603.83213	Storm drain 30"HDPE pipe	LF	420
603.83236	Storm drain 36" HDPE pipe	LF	160
604.124	Catch basin 4' diameter	EA	8
604.125	Catch basin 5' diameter	EA	6
604.194	Inlet structure 4' diameter	EA	14
604.196	Inlet structure 6' diameter	EA	2
604.325	Drainage manhole 5' diameter	EA	2
605.512	Perf. storm drain 12" HDPE pipe	LF	1,400
605.518	Perf. storm drain 18" HDPE pipe	LF	200
605.524	Perf. storm drain 24" HDPE pipe	LF	300
605.506	6" Perforated HDPE underdrain	LF	6,000
605.79	Underdrain flushing basins	EA	20
607.06	Mailbox relocation	EA	40
609.21	Straight granite slope curb	LF	3,400
615.034	Relocate sign	EA	7
619.1	Maintenance of traffic	LS	1
628.2	Sawed bituminous pavement	LF	325
641	Loam	CY	2,250
645.2	Erosion control matting	SY	6,400
645.531	Silt fence	LF	2,500
	Relocate Guy Wires	EA	2
	Temporary stone check dams	EA	65
645.7	SWPPP	LS	1
646.31	Turf Establishment with mulch	SY	20,250
692	Mobilization/Demobilization	Unit	1
698.14	Field Office Type D	Month	5

ADDITIVE ALTERNATE #1

Install two catch basins for winter drainage near Boothman Lane intersection

NHDOT Item #	Description	Unit	Quantity
	Incidental Construction		
604.126	Catch basin 6' diameter	EA	2

ADDITIVE ALTERNATE #2

Install two catch basins and associated piping for winter drainage near Sta. 70+00

NHDOT Item #	Description	Unit	Quantity
	Incidental Construction		
603.83212	Storm drain 12" HDPE pipe	LF	60
604.124	Catch basin 4' diameter	EA	2

ADDITIVE ALTERNATE #3

Install underground electrical conduits at specified locations

NHDOT Item #	Description	Unit	Quantity
	Incidental Construction		
614.74318	3-Duct Schedule-80 PVC Conduit	LF	825

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE · JAY J. POULIN No. 10953 · LICENSED PROFESSIONAL ENGINEER

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SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	NTS
DATE	04/18/2011

General Notes, Quantities & Legend
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C0.02
SHEET 2 OF 43

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B-1

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					Dark brown topsoil with some gravel
2'	1D	0-2'	3-7-4-2	8"	Brown silt and sand with small cobble
7'	2D	5-7'	6-12-12-14	14"	Wet fine light brown to black sand with trace of gravel
					BOE @ 7'

B-2

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					Asphalt
2'	1D	0-2'	3-4-4-5	7"	Black dry fine to medium sand and gravel
7'	2D	5-7'	12-15-15-15	24"	Light brown fine to medium sand with some gravel
					BOE @ 7'

B-3

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					Asphalt
2'	1D	0-2'	8-9-2-2	9"	Brown sand and gravel
7'	2D	5-7'	12-16-14-12	22"	Fine brown sand with gravel and with trace of silt
					BOE @ 7'

B-4

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					Brown medium sand and gravel
2'	1D	0-2'	4-4-2-4	10"	Brown fine sand and gravel with trace of silt
					BOE @ 4.5'
					Auger refusal, rock

B-5

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					Asphalt
0.5'	1D	0-2'	9-7-3-3	11"	Reclaimed asphalt
0.7'					Brown sand and asphalt
1.3'					Dark brown fine sand with some gravel and trace of organics
4.9'	2D		50	0	
					BOE @ 4.9'
					Auger refusal @ 4.9'

B-6

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					
2'	1D	0-2'	24-24-14-15	13"	Brown dry sand and gravel
6'					Brown sand and gravel with cobbles
7'	2D	5'-7'	10-12-15-10	8"	Brown fine sand with some gravel and some silt
					BOE @ 7'

B-7

DEPTH IN FEET	SAMP. NO.	SAMPLE DEPTH	SAMPLE BLOWS PER 6 INCHES	RECOV.	SOIL DESCRIPTION
0'					
2'	1D	0-2'	15-15-14-16	11"	Brown fine sand and gravel with reclaimed asphalt
5.6'	2D	5'-5.6'	25-50	6"	Brown fine sand and gravel with weathered rock
					BOE @ 5.6'
					Auger refusal @ 5.6'

Ledge Probes

Hole #	Asphalt	Depth		Notes
P1	4"	5.1'	Refusal	
P2	5"	8.0'	No Refusal	
P3	5"	5.8'	Refusal	
P4	5"	8.0'	No Refusal	
P5	4"	8.0'	No Refusal	
P6	Grass	8.0'	No Refusal	
P7	5"	8.0'	No Refusal	
P8	4"	5.9'	Refusal	
P9	Grass	8.0'	No Refusal	
P10	Grass	6.1'	Refusal	
P11	Grass	8.0'	No Refusal	
P12	Grass	8.0'	No Refusal	
P13	Grass	8.0'	No Refusal	
P14	4"	8.0'	No Refusal	Till @ 7.5'
P15	Grass	4.7'	Refusal	
P16	Grass	4.5'	Refusal	Hard @ 4.0'
P17	5"	6.7'	Refusal	
P18	Grass	6.0'	Refusal	
P19	4"	8.0'	No Refusal	Till with cobbles @ 5.5'
P20	3"	5.7'	Refusal	
P21	4"	4.9'	Refusal	
P22	Grass	8.0'	No Refusal	
P23	3"	6.7'	Refusal	
P24	4"	8.0'	No Refusal	Till
P25	2"	8.0'	No Refusal	Till
P26	3"	7.9'	Refusal	Cobbley till @ 5.0'
P27	3"	5.0'	Refusal	Offset due to overhead lines
P28	4"	8.0'	No Refusal	Cobbley till from 5.0' to 8.0'
P29	Grass	9.0'	No Refusal	
P30	5"	5.4'	Refusal	

Notes:

1. See Sheets V1.11, V1.12, V1.13, and V1.14 for boring locations.
2. Ledge probes were conducted with a 4" solid stem auger.
3. Borings were conducted with a 1 3/8" inside diameter split spoon driven by a 140lb hammer dropped from a height of 30".

2010-062
Boring Logs
Randolph Hill Road Reconstruction

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NO.	REVISION	DATE	BY

JAY J. POULIN No. 10953 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

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NORTH CONWAY, NH
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SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	NONE
DATE	04/18/2011

Boring Logs
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C0.03
SHEET 3 OF 43

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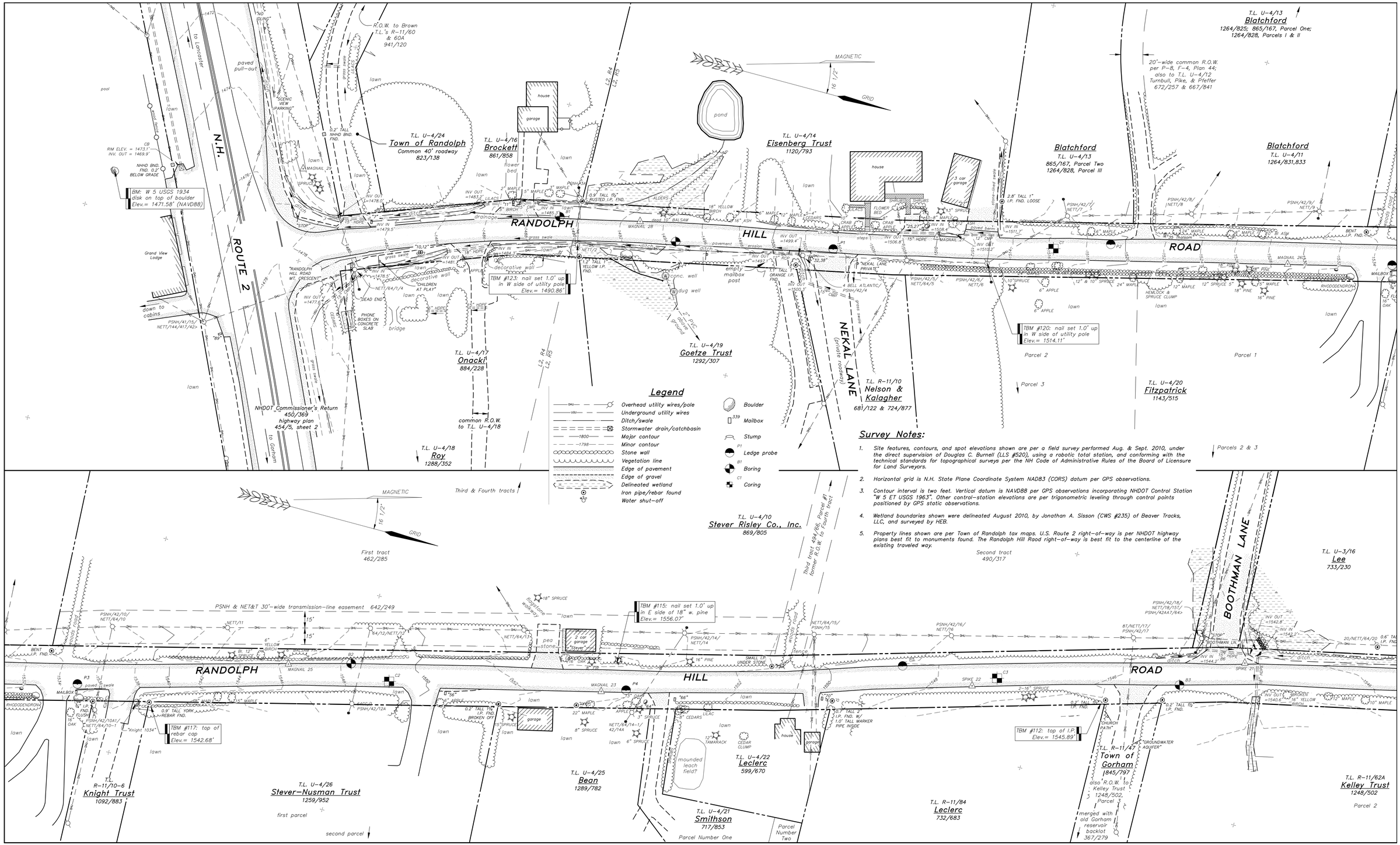

Survey Notes:

1. Site features, contours, and spot elevations shown are per a field survey performed Aug. & Sept. 2010, under the direct supervision of Douglas C. Burnell (LLS #520), using a robotic total station, and conforming with the technical standards for topographical surveys per the NH Code of Administrative Rules of the Board of Licensure for Land Surveyors.
2. Horizontal grid is N.H. State Plane Coordinate System NAD83 (CORS) datum per GPS observations.
3. Contour interval is two feet. Vertical datum is NAVD88 per GPS observations incorporating NHDOT Control Station "W 5 ET USGS 1963". Other control-station elevations are per trigonometric leveling through control points positioned by GPS static observations.
4. Wetland boundaries shown were delineated August 2010, by Jonathan A. Sisson (CWS #235) of Beaver Tracks, LLC, and surveyed by HEB.
5. Property lines shown are per Town of Randolph tax maps. U.S. Route 2 right-of-way is per NHDOT highway plans best fit to monuments found. The Randolph Hill Rood right-of-way is best fit to the centerline of the existing traveled way.

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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NO.	REVISION	DATE	BY
1	REVISED PER NHDOT COMMENTS	03/08/2011	DBH

STATE OF NEW HAMPSHIRE — No. 520 — DOUGLAS C. BURNELL — LICENSED LAND SURVEYOR — SIGNATURE

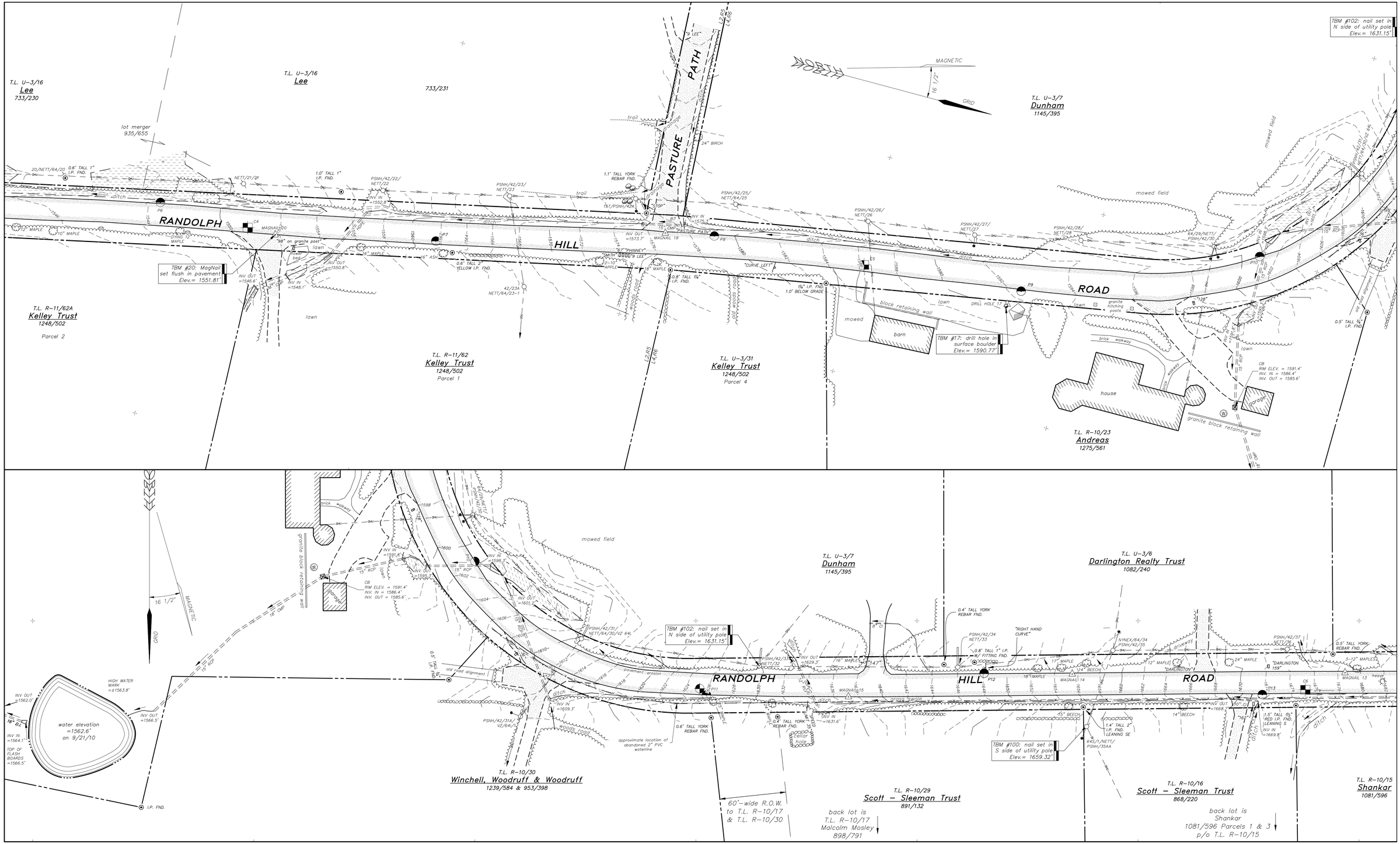
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	KLT/JLT/SEB
CHECKED BY	DCB
FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Existing-Features Plan
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
V1.11
SHEET 5 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\V1.01 Existing Features Plan.dwg, V1.11, 5/2/2011 10:45:04 AM, rblumell



V1.12
SHEET 6 OF 43

2010-062
Existing-Features Plan
Randolph Hill Road Reconstruction

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft

8 0 20 40 m

1 inch = 40 feet

(1 : 480)

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STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 520 DOUGLAS C. BURNELL SIGNATURE

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P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

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DRAWN BY	DBH/KLT
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FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Existing-Features Plan

for the

Randolph Hill Road Reconstruction

located in and prepared for the

Town of Randolph, New Hampshire

2010-062

V1.12

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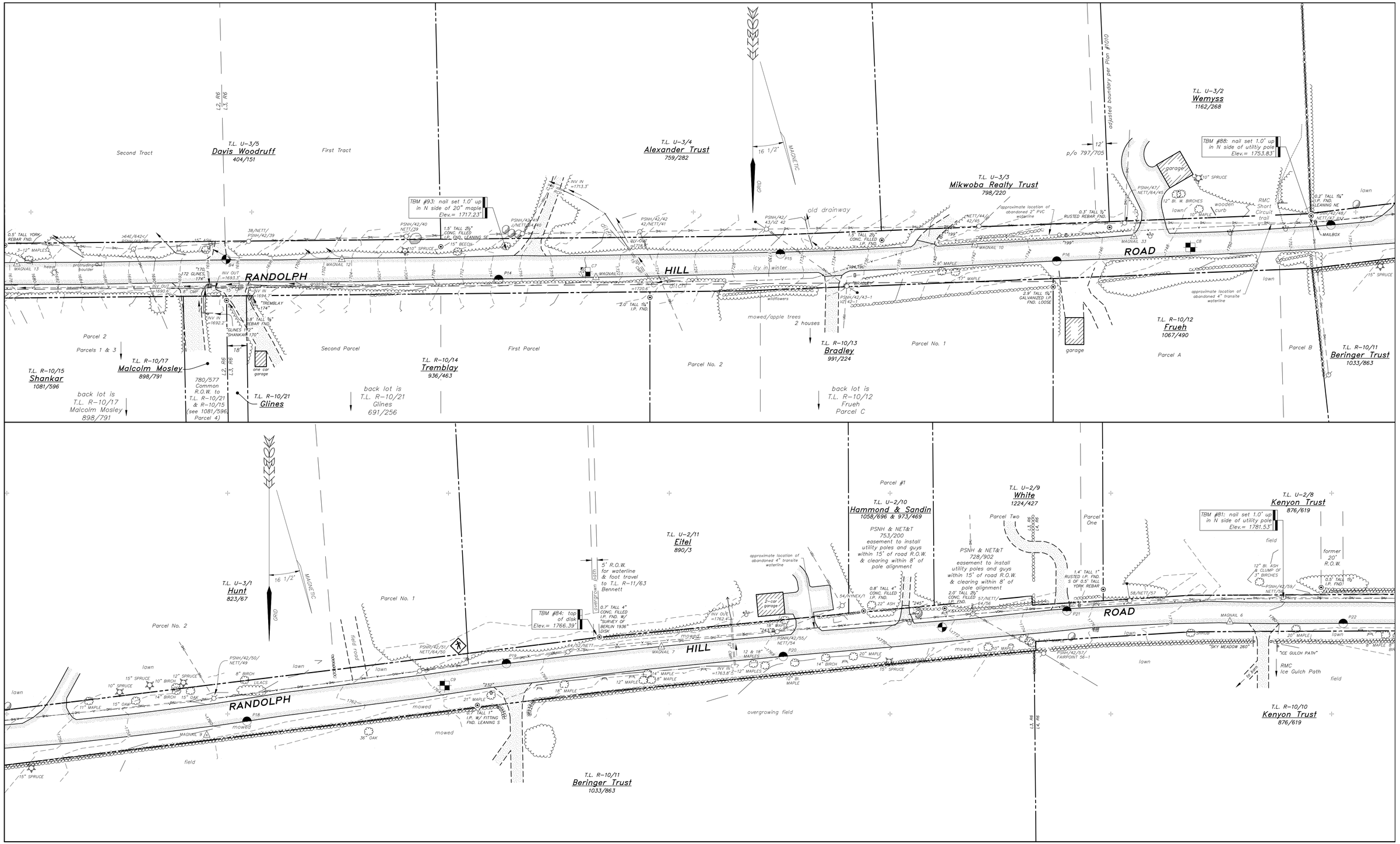
V1.13
SHEET 7 OF 43

2010-062
Existing-Features Plan
Randolph Hill Road Reconstruction



DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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SIGNATURE

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P.O. BOX 440
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03860 · (603) 356-6936

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DRAWN BY	DBH/KLT
CHECKED BY	DCB
FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Existing-Features Plan
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
V1.13
SHEET 7 OF 43

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2010-062
Existing-Features Plan
Randolph Hill Road Reconstruction

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8 0 20 40 m

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FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Existing-Features Plan

for the

Randolph Hill Road Reconstruction

located in and prepared for the

Town of Randolph, New Hampshire

2010-062

V1.14

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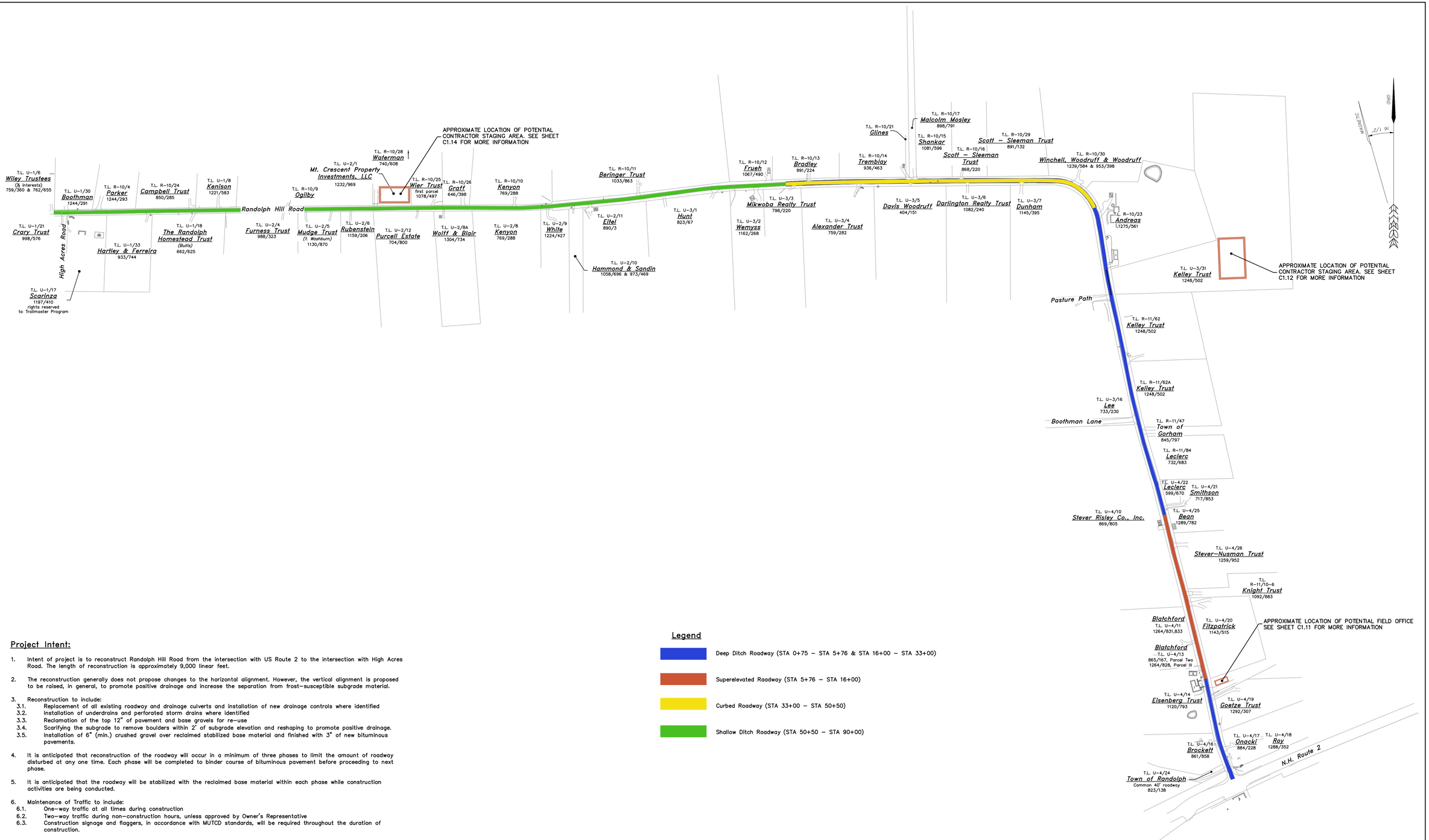
C1.01
SHEET 4 OF 43

2010-062
Overall Project Plan
Randolph Hill Road Reconstruction



Project Intent:

1. Intent of project is to reconstruct Randolph Hill Road from the intersection with US Route 2 to the intersection with High Acres Road. The length of reconstruction is approximately 9,000 linear feet.

2. The reconstruction generally does not propose changes to the horizontal alignment. However, the vertical alignment is proposed to be raised, in general, to promote positive drainage and increase the separation from frost-susceptible subgrade material.

3. Reconstruction to include:
   - 3.1. Replacement of all existing roadway and drainage culverts and installation of new drainage controls where identified
   - 3.2. Installation of underdrains and perforated storm drains where identified
   - 3.3. Reclamation of the top 12" of pavement and base gravels for re-use
   - 3.4. Scarifying the subgrade to remove boulders within 2' of subgrade elevation and reshaping to promote positive drainage.
   - 3.5. Installation of 6" (min.) crushed gravel over reclaimed stabilized base material and finished with 3" of new bituminous pavements.

4. It is anticipated that reconstruction of the roadway will occur in a minimum of three phases to limit the amount of roadway disturbed at any one time. Each phase will be completed to binder course of bituminous pavement before proceeding to next phase.

5. It is anticipated that the roadway will be stabilized with the reclaimed base material within each phase while construction activities are being conducted.

6. Maintenance of Traffic to include:
   - 6.1. One-way traffic at all times during construction
   - 6.2. Two-way traffic during non-construction hours, unless approved by Owner's Representative
   - 6.3. Construction signage and flaggers, in accordance with MUTCD standards, will be required throughout the duration of construction.

Legend

- Deep Ditch Roadway (STA 0+75 – STA 5+76 & STA 16+00 – STA 33+00)
- Superelevated Raadway (STA 5+76 – STA 16+00)
- Curbed Roadway (STA 33+00 – STA 50+50)
- Shallow Ditch Roadway (STA 50+50 – STA 90+00)

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

250 0 250 500 1,000ft
50 0 125 250 m

1 inch = 250 feet
(1 : 3,000)

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03860 · (603) 356-6936

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CHECKED BY	JJP
FIELD BOOK	339
SCALE	1"=250'
DATE	04/18/2011

Overall Project Plan
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C1.01
SHEET 4 OF 43

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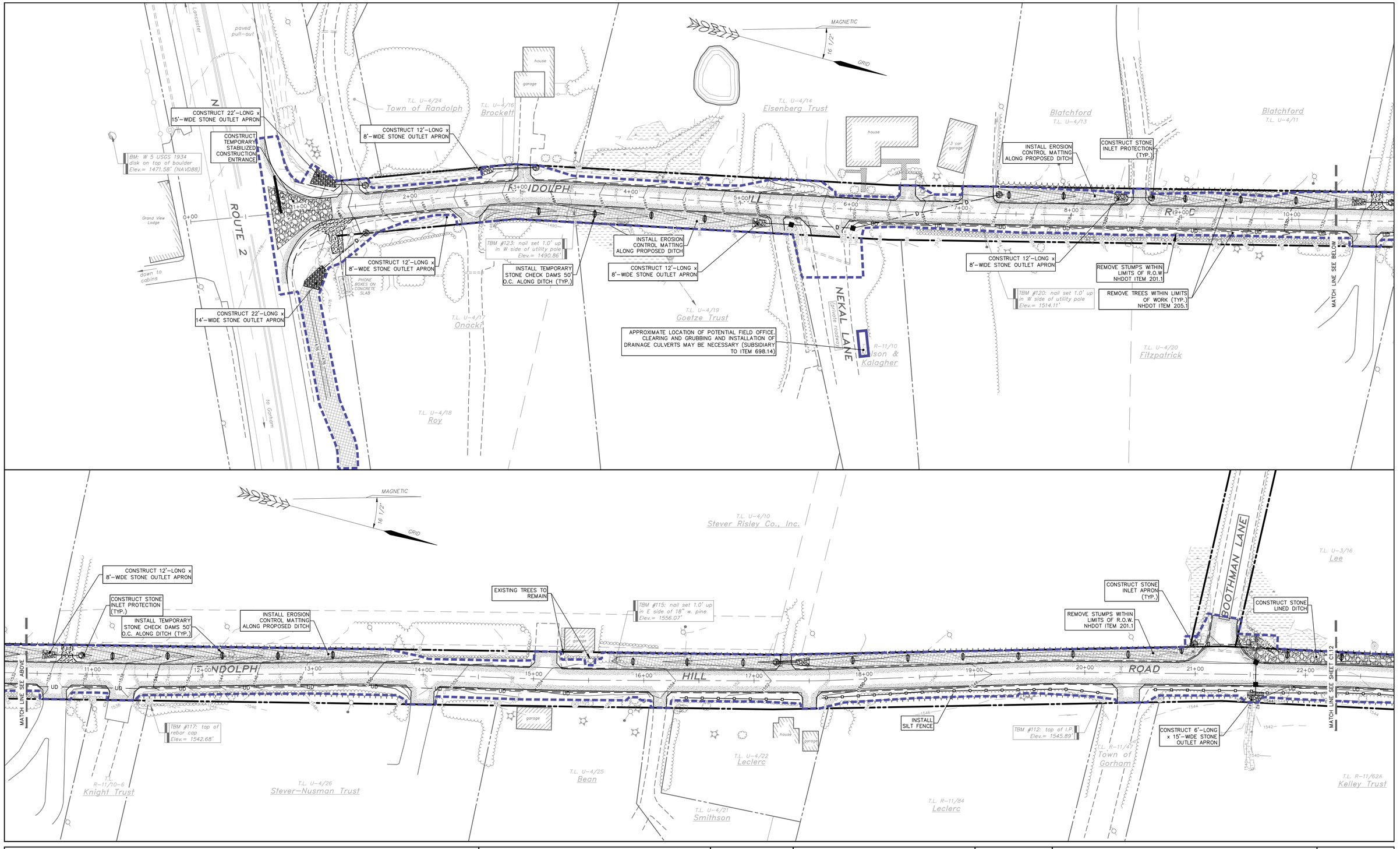
C1.11
SHEET 9 OF 43

2010-062
Erosion & Sediment Control Plan
Randolph Hill Road Reconstruction



DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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DATE	04/18/2011

Erosion & Sediment Control Plan
for the
Randolph Hill Road Reconstruction
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2010-062
C1.11
SHEET 9 OF 43

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C1.12
SHEET 10 OF 43

2010-062
Erosion & Sediment Control Plan
Randolph Hill Road Reconstruction

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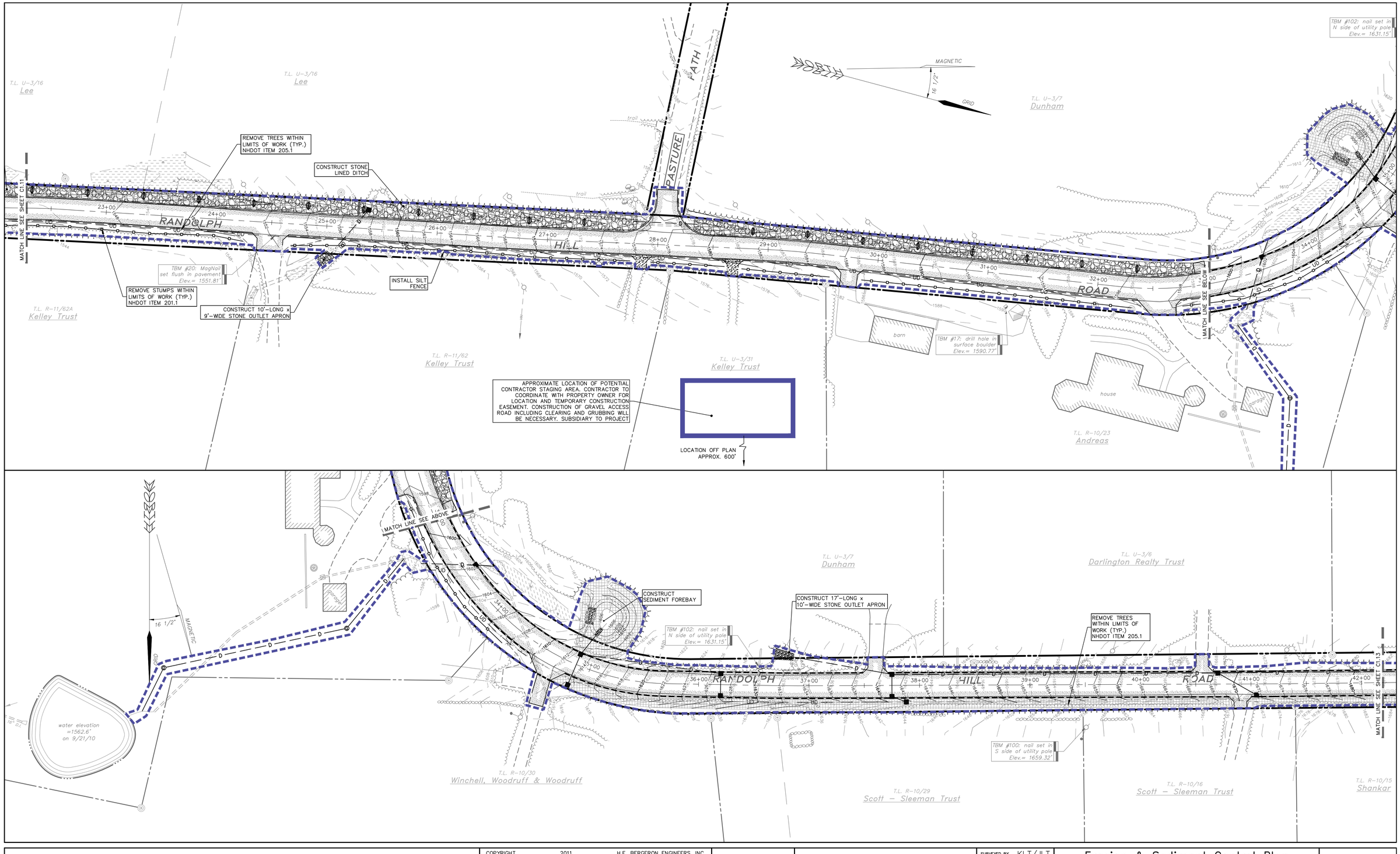

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DATE	04/18/2011

Erosion & Sediment Control Plan
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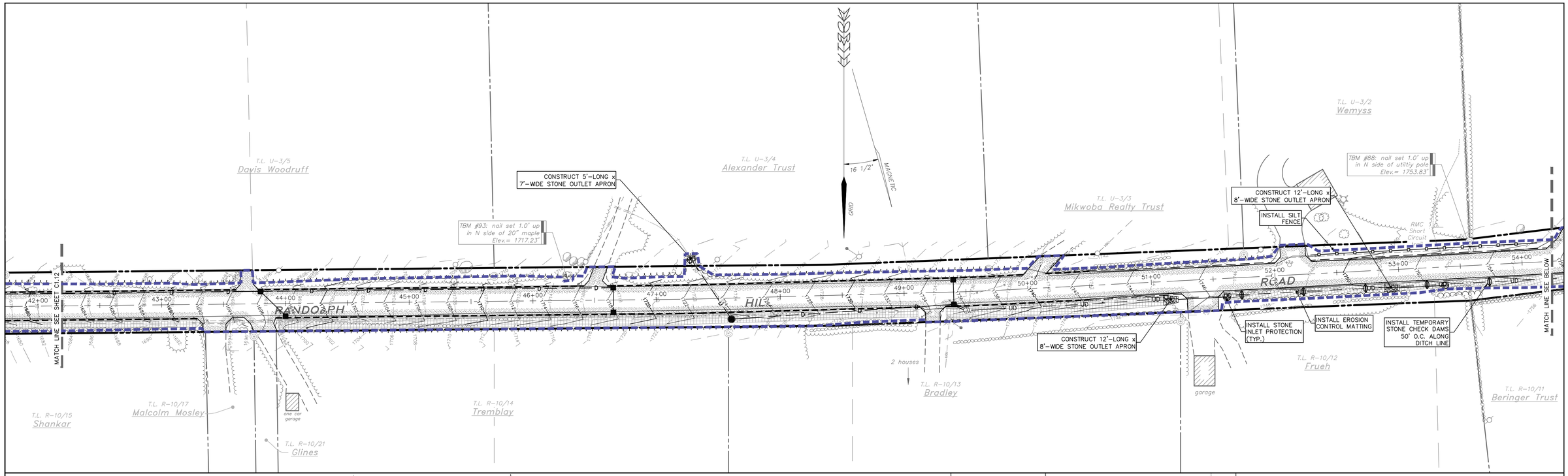
2010-062
C1.12
SHEET 10 OF 43

C1.13
SHEET 11 OF 43

2010-062
Erosion & Sediment Control Plan
Randolph Hill Road Reconstruction



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SCALE	1"=40'
DATE	04/18/2011

Erosion & Sediment Control Plan
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C1.13
SHEET 11 OF 43

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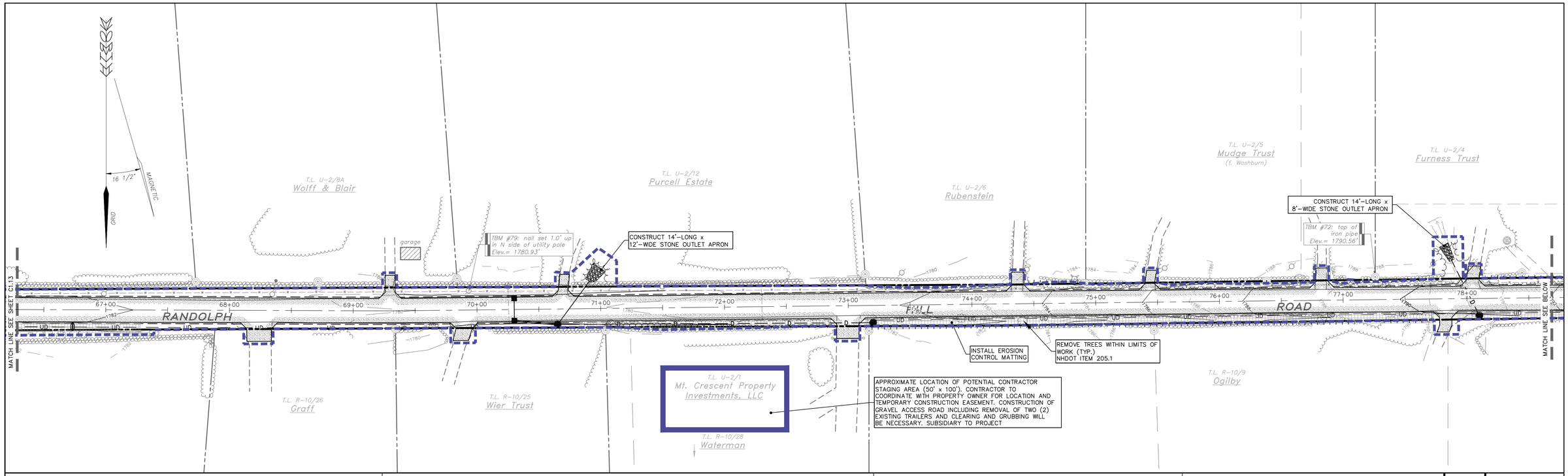
C.14
SHEET 12 OF 43

2010-062
Erosion & Sediment Control Plan
Randolph Hill Road Reconstruction



DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft

8 0 20 40 m

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CHECKED BY	JJP
FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Erosion & Sediment Control Plan

for the

Randolph Hill Road Reconstruction

located in and prepared for the

Town of Randolph, New Hampshire

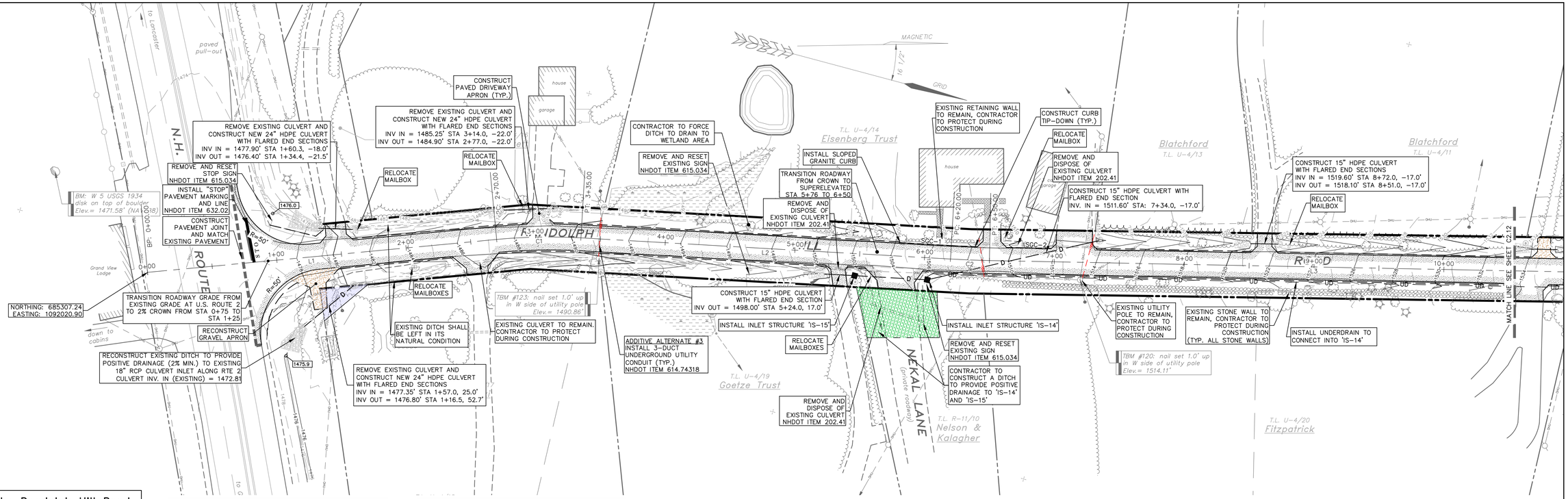
2010-062

C1.14

SHEET 12 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C1.11 Erosion & Sediment Control Plan.dwg, C1.14, 5/2/2011 10:47:24 AM, sburrell

2010-062
Plan & Profile (STA 0+00 – 10+50)
Randolph Hill Road Reconstruction



Line Table: Randolph Hill Road

Line	Bearing	Length
L1	N20°23'05"W	270.00'
L2	N11°43'26"W	285.00'
L3	N13°52'21"W	500.00'

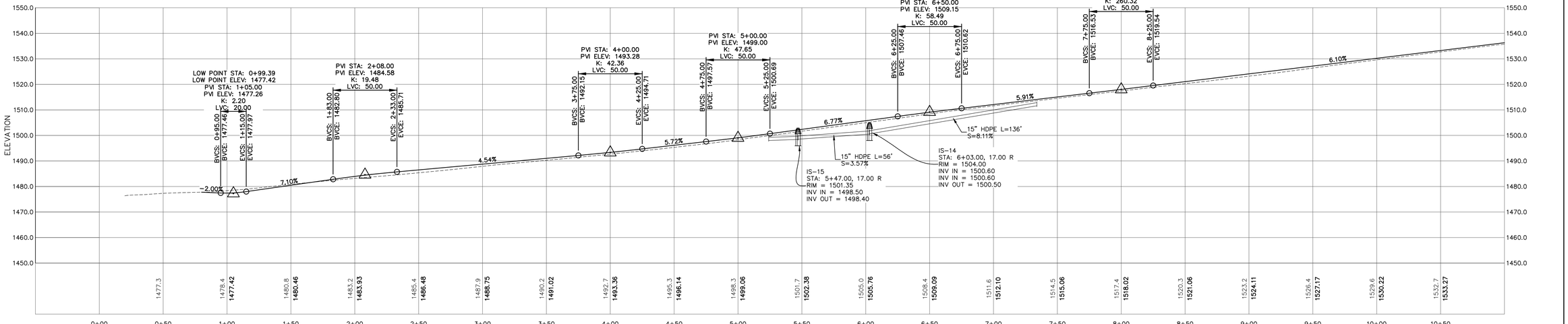
Curve Table: Randolph Hill Road

Curve	Radius	Length	Chord
C1	430.00'	65.00'	N16°03'15"W 64.94'
C2	800.00'	30.00'	N12°47'53"W 30.00'

Curb Table: Randolph Hill Road

Description	Begin Station	End Station
SGC-1	5+80 L	6+40 L
SGC-2	6+63 L	6+97 L

Randolph Hill Road Plan
Scale: 1"=40'



Randolph Hill Road (STA 0+00 – 10+50)
Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

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40 0 40 80 160 ft
8 0 20 40 m

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(1 : 480)

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SCALE	1"=40'
DATE	04/18/2011

Plan & Profile (STA 0+00 – 10+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
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2010-062
C2.11
SHEET 13 OF 43

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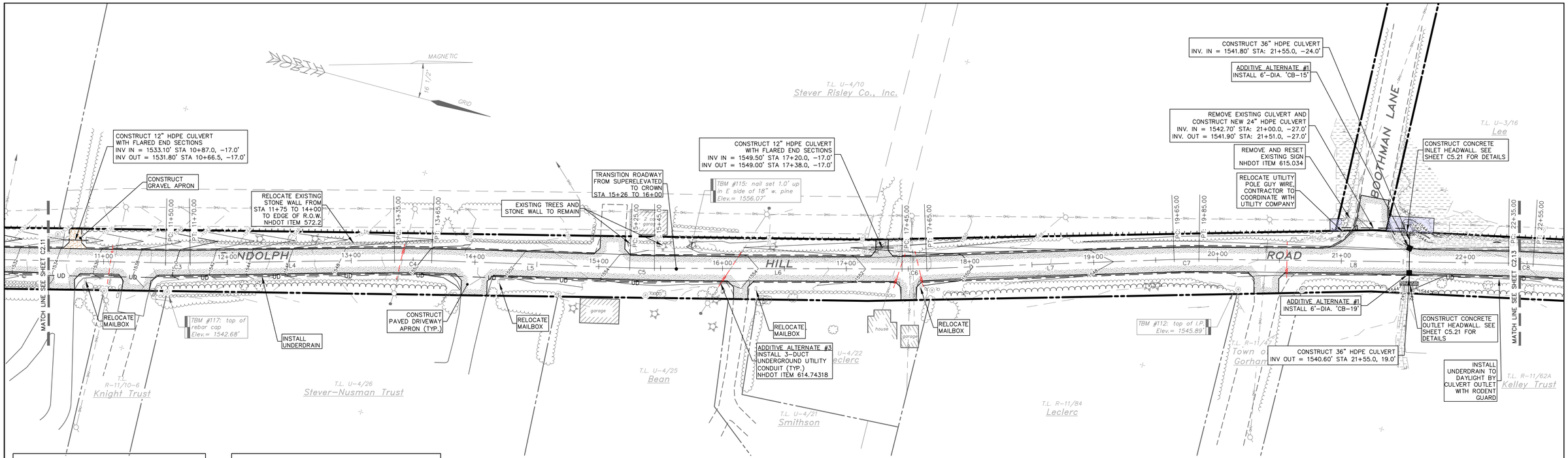
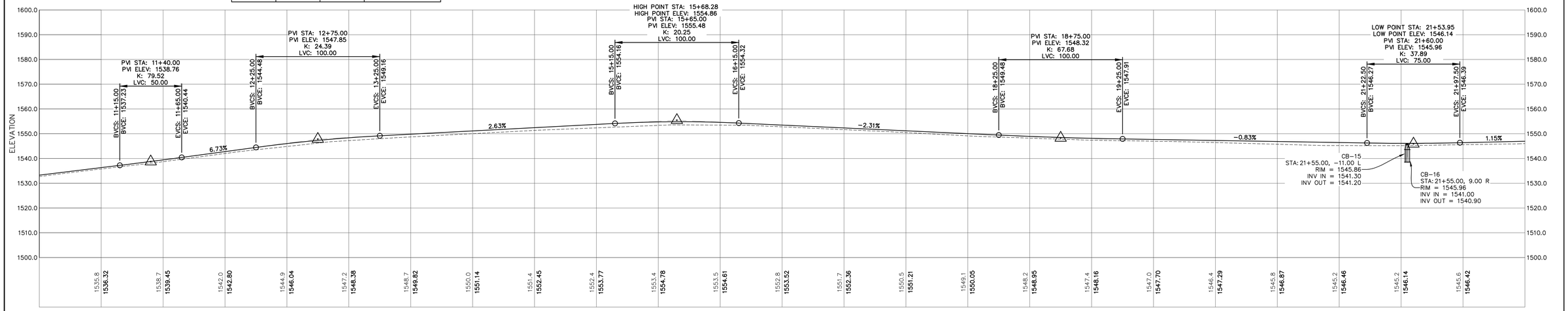


Randolph Hill Road Plan
Scale: 1"=40'

Line Table: Randolph Hill Road		
Line	Bearing	Length
L4	N15°46'56"W	165.00'
L5	N12°55'03"W	160.00'
L6	N14°49'38"W	200.00'
L7	N17°07'09"W	200.00'
L8	N14°15'16"W	250.00'

Curve Table: Randolph Hill Road			
Curve	Radius	Length	Chord
C3	600.00'	20.00'	N14°49'38"W 20.00'
C4	600.00'	30.00'	N14°21'00"W 30.00'
C5	600.00'	20.00'	N13°52'21"W 20.00'
C6	500.00'	20.00'	N15°58'24"W 20.00'
C7	400.00'	20.00'	N15°41'12"W 20.00'
C8	400.00'	20.00'	N12°49'19"W 20.00'



Randolph Hill Road (STA 10+50 – 22+00)
Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

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DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Plan & Profile (STA 10+50 – 22+00)
for the
Randolph Hill Road Reconstruction
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2010-062
C2.12
SHEET 14 OF 43

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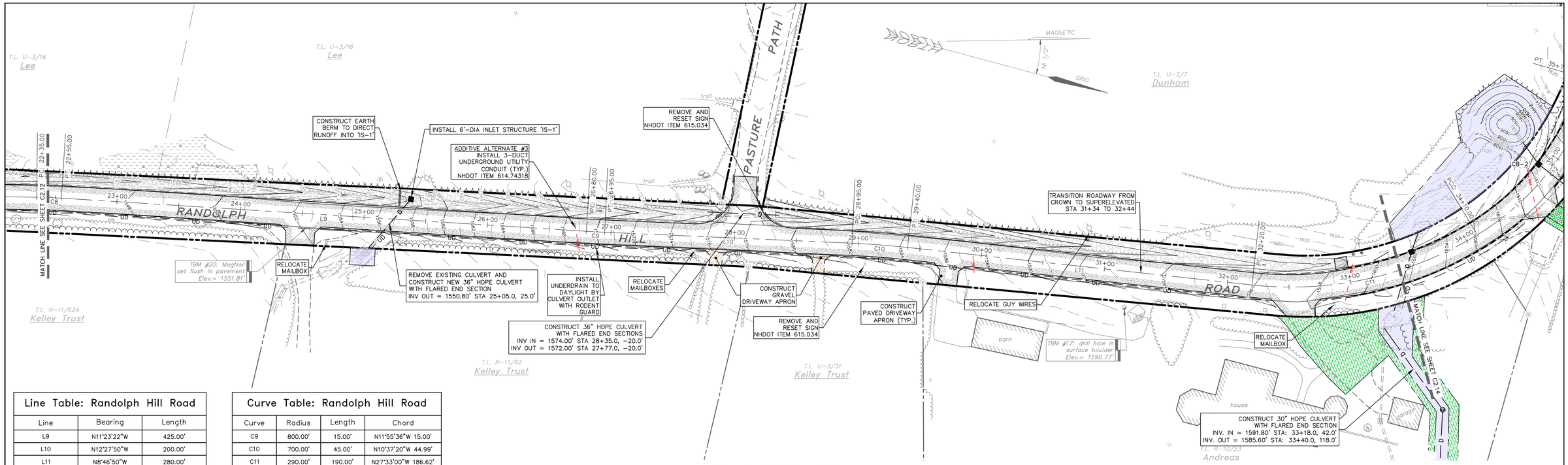
C2.13
SHEET 15 OF 43

2010-062
Plan & Profile (STA 22+00 – 33+50)
Randolph Hill Road Reconstruction



Line Table: Randolph Hill Road

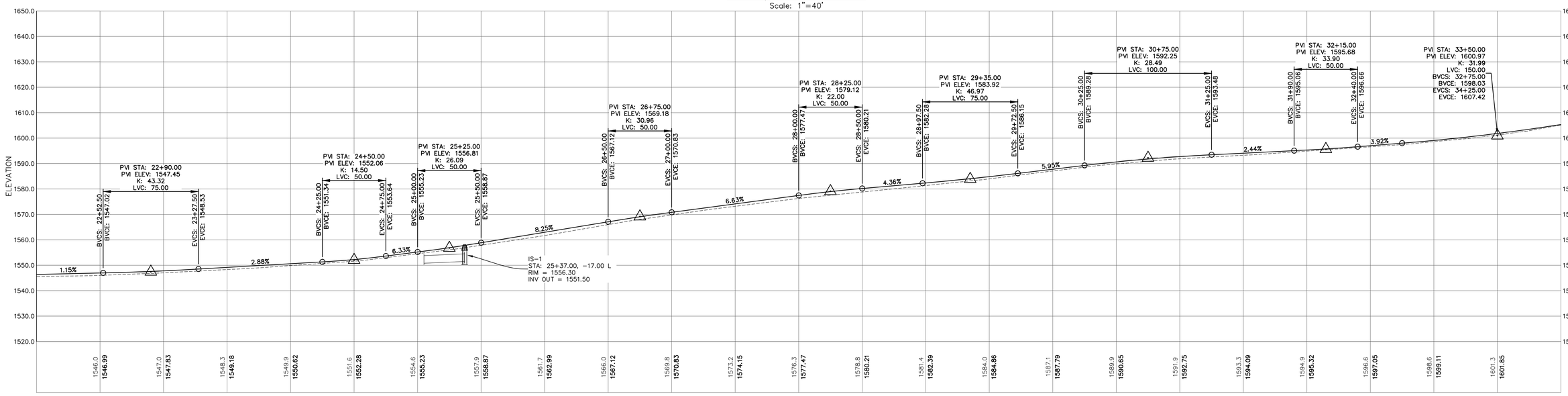
Line	Bearing	Length
L9	N11°23'22"W	425.00'
L10	N12°27'50"W	200.00'
L11	N8°46'50"W	280.00'

Curve Table: Randolph Hill Road

Curve	Radius	Length	Chord
C9	800.00'	15.00'	N11°55'36"W 15.00'
C10	700.00'	45.00'	N10°37'20"W 44.99'
C11	290.00'	190.00'	N27°33'00"W 186.62'

Randolph Hill Road Plan

Scale: 1"=40'



Randolph Hill Road (STA 22+00 – 33+50)

Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

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(1 : 480)

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Plan & Profile (STA 22+00 – 33+50)
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2010-062
C2.13
SHEET 15 OF 43

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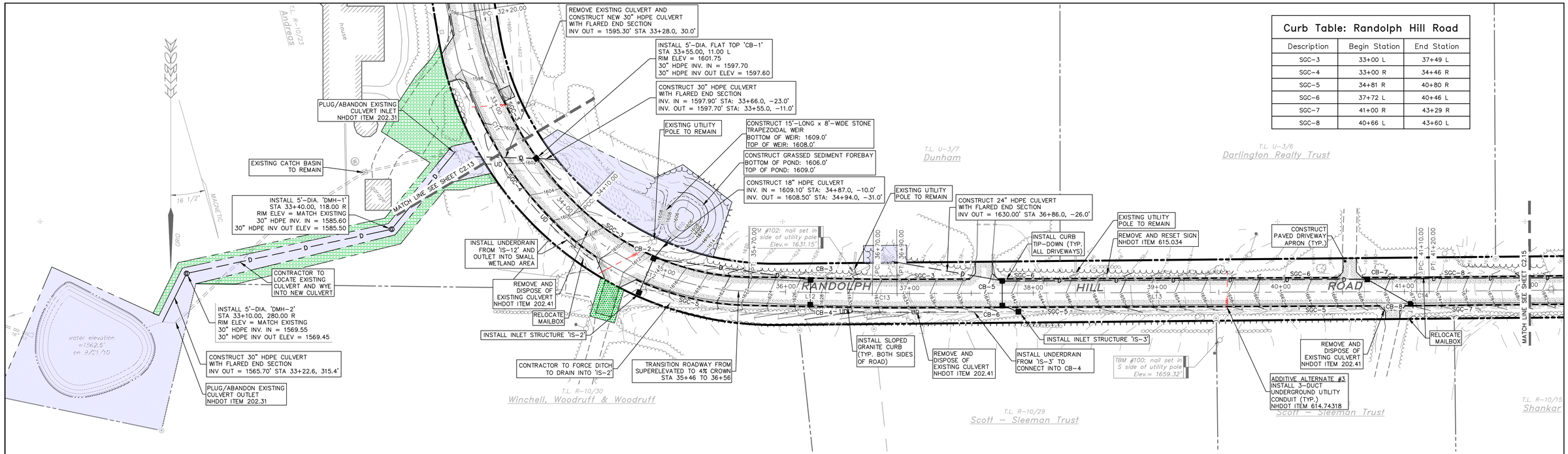
C2.14
SHEET 16 OF 43

2010-062
Plan & Profile (STA 33+50 - 42+25)
Randolph Hill Road Reconstruction

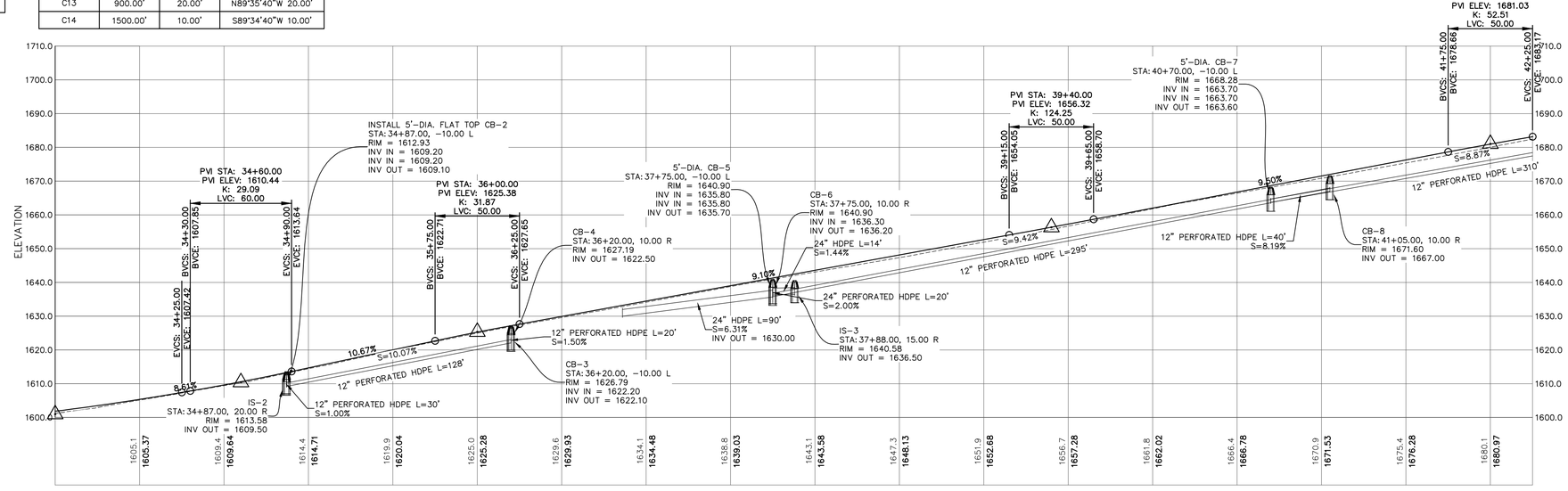
Curb Table: Randolph Hill Road		
Description	Begin Station	End Station
SGC-3	33+00 L	37+49 L
SGC-4	33+00 R	34+46 R
SGC-5	34+81 R	40+80 R
SGC-6	37+72 L	40+46 L
SGC-7	41+00 R	43+29 R
SGC-8	40+66 L	43+60 L



Line Table: Randolph Hill Road		
Line	Bearing	Length
L12	N88°57'28"W	100.00'
L13	S89°46'08"W	420.00'

Curve Table: Randolph Hill Road			
Curve	Radius	Length	Chord
C12	215.00'	160.00'	N67°38'19"W 156.33'
C13	900.00'	20.00'	N89°35'40"W 20.00'
C14	1500.00'	10.00'	S89°34'40"W 10.00'

Randolph Hill Road Plan
Scale: 1"=40'



Randolph Hill Road (STA 33+50 - 42+25)
Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

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NO.	REVISION	DATE	BY

JAY J. POULIN No. 10953 · STATE OF NEW HAMPSHIRE · LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	1"=40'
DATE	04/18/2011

Plan & Profile (STA 33+50 - 42+25)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C2.14
SHEET 16 OF 43

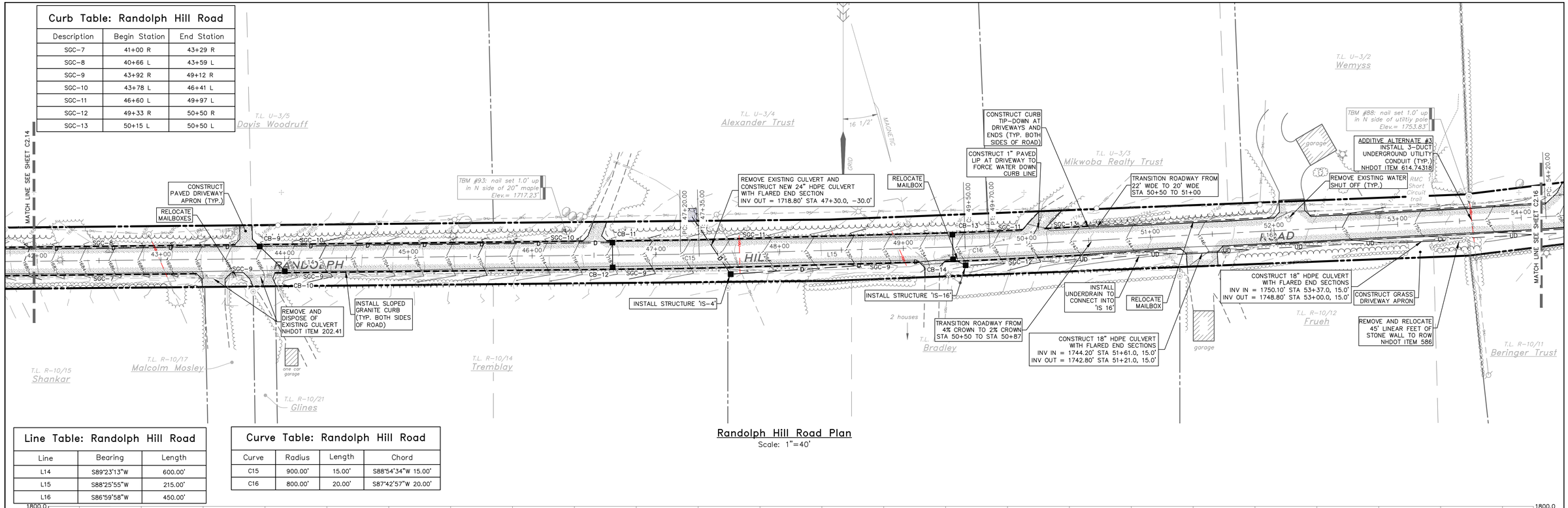
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C2.21 Plan & Profile.dwg, C2.14, 5/2/2011 10:49:22 AM, dbarrett

C2.15
SHEET 17 OF 43

2010-062
Plan & Profile (STA 42+25 – 54+25)
Randolph Hill Road Reconstruction

Curb Table: Randolph Hill Road

Description	Begin Station	End Station
SGC-7	41+00 R	43+29 R
SGC-8	40+66 L	43+59 L
SGC-9	43+92 R	49+12 R
SGC-10	43+78 L	46+41 L
SGC-11	46+60 L	49+97 L
SGC-12	49+33 R	50+50 R
SGC-13	50+15 L	50+50 L



Line Table: Randolph Hill Road

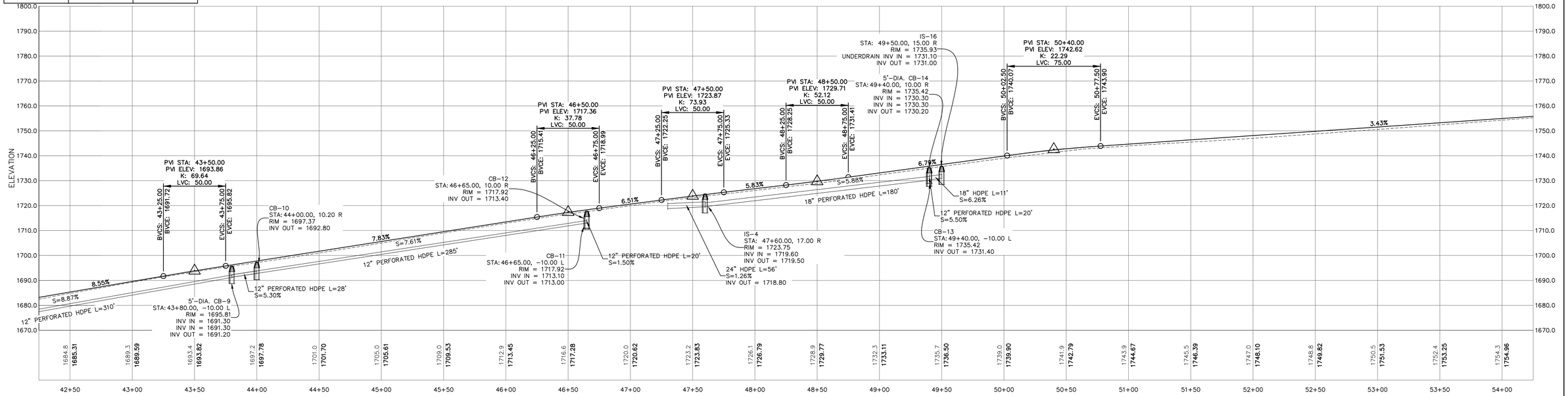
Line	Bearing	Length
L14	S89°23'13"W	600.00'
L15	S88°25'55"W	215.00'
L16	S86°59'58"W	450.00'

Curve Table: Randolph Hill Road

Curve	Radius	Length	Chord
C15	900.00'	15.00'	S88°54'34"W 15.00'
C16	800.00'	20.00'	S87°42'57"W 20.00'

Randolph Hill Road Plan

Scale: 1"=40'



Randolph Hill Road (STA 42+25 – 54+25)

Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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Plan & Profile (STA 42+25 – 54+25)
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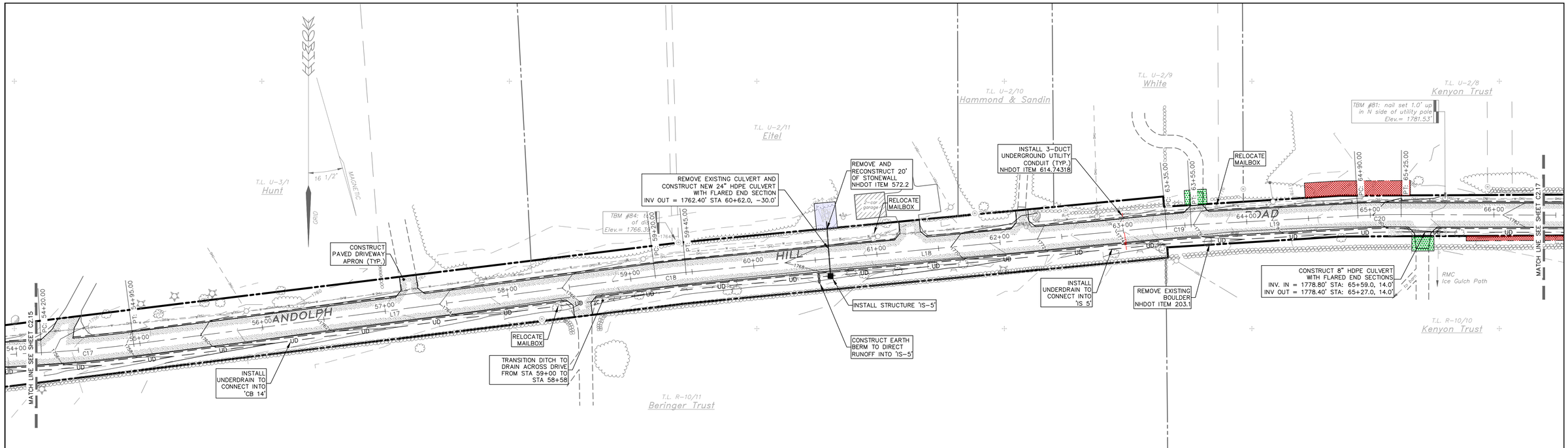
2010-062
C2.15
SHEET 17 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Design Development\Sheet Files\C2.21 Plan & Profile.dwg, C2.15, 5/2/2011 10:49:41 AM, Journal

C2.16
SHEET 18 OF 43

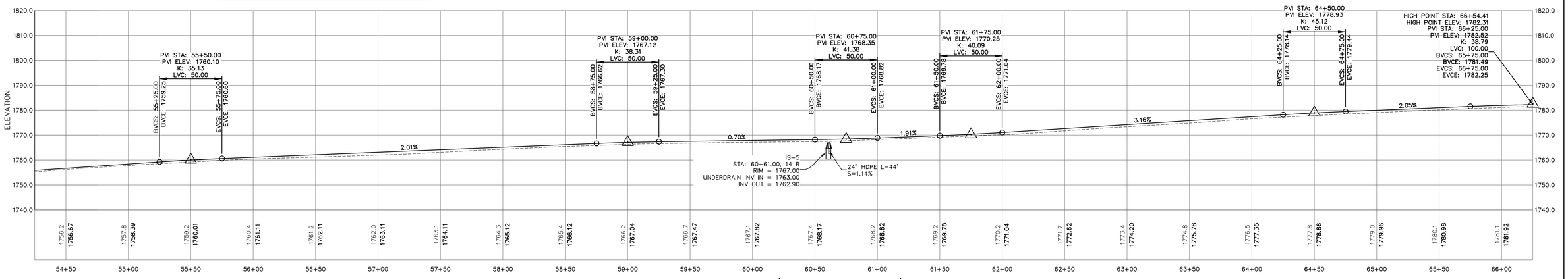
2010-062
Plan & Profile (STA 54+25 – 66+25)
Randolph Hill Road Reconstruction



Randolph Hill Road Plan
Scale: 1"=40'

Line Table: Randolph Hill Road		
Line	Bearing	Length
L17	S82°31'24"W	425.00'
L18	S84°34'11"W	390.00'
L19	S86°51'41"W	135.00'

Curve Table: Randolph Hill Road			
Curve	Radius	Length	Chord
C17	960.00'	75.00'	S84°45'41"W 74.98'
C18	700.00'	25.00'	S83°32'47"W 25.00'
C19	500.00'	20.00'	S85°42'56"W 20.00'
C20	600.00'	35.00'	S88°31'57"W 35.00'



Randolph Hill Road (STA 54+25 – 66+25)
Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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Plan & Profile (STA 54+25 – 66+25)
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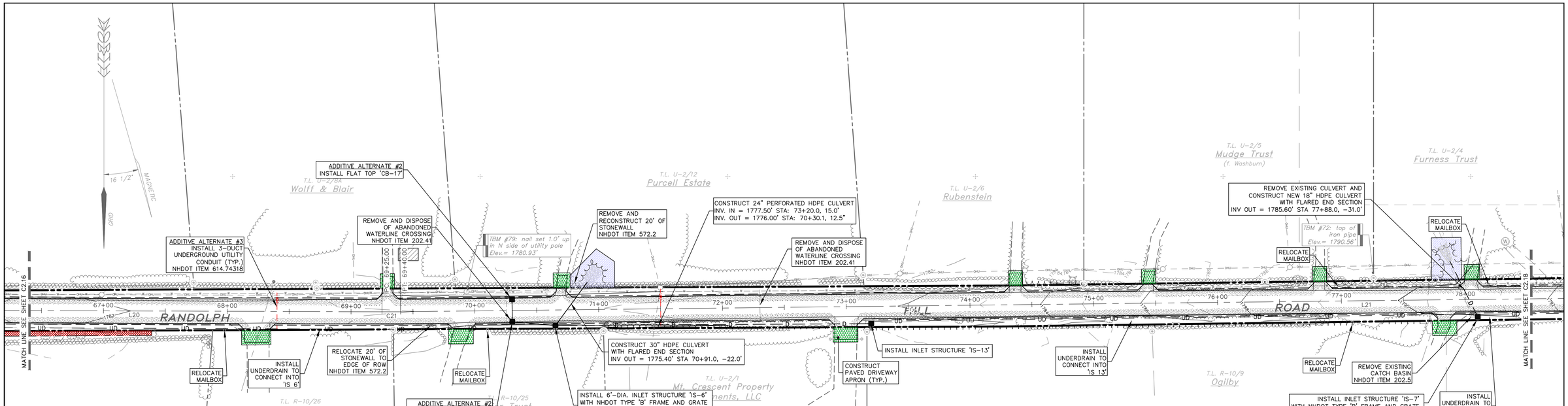
2010-062
C2.16
SHEET 18 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C2.2.1 Plan & Profile.dwg, C2.16, 5/2/2011 10:50:09 AM, sburrell

C2.17
SHEET 19 OF 43

2010-062
Plan & Profile (STA 66+25 – 78+25)
Randolph Hill Road Reconstruction



Line Table: Randolph Hill Road

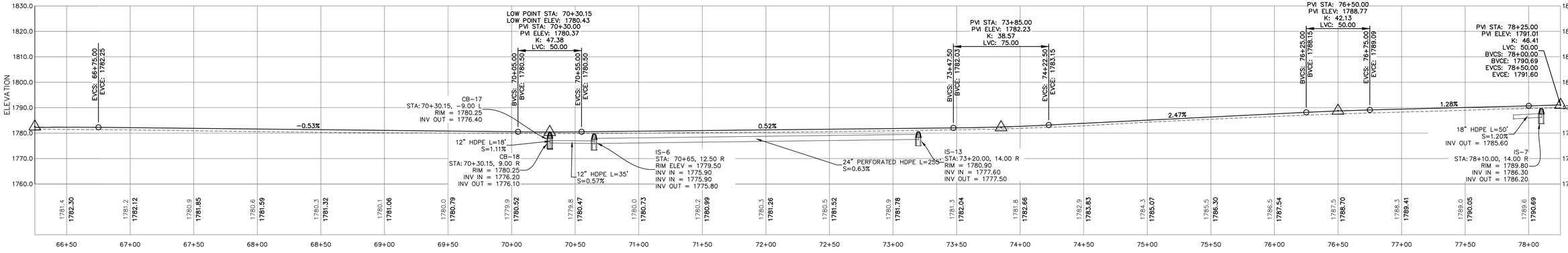
Line	Bearing	Length
L20	N89°47'47"W	400.00'
L21	S89°20'39"W	1560.00'

Curve Table: Randolph Hill Road

Curve	Radius	Length	Chord
C21	1000.00'	15.00'	S89°46'26"W 15.00'

Randolph Hill Road Plan

Scale: 1"=40'



Randolph Hill Road (STA 66+25 – 78+25)

Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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SCALE	1"=40'
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Plan & Profile (STA 66+25 – 78+25)
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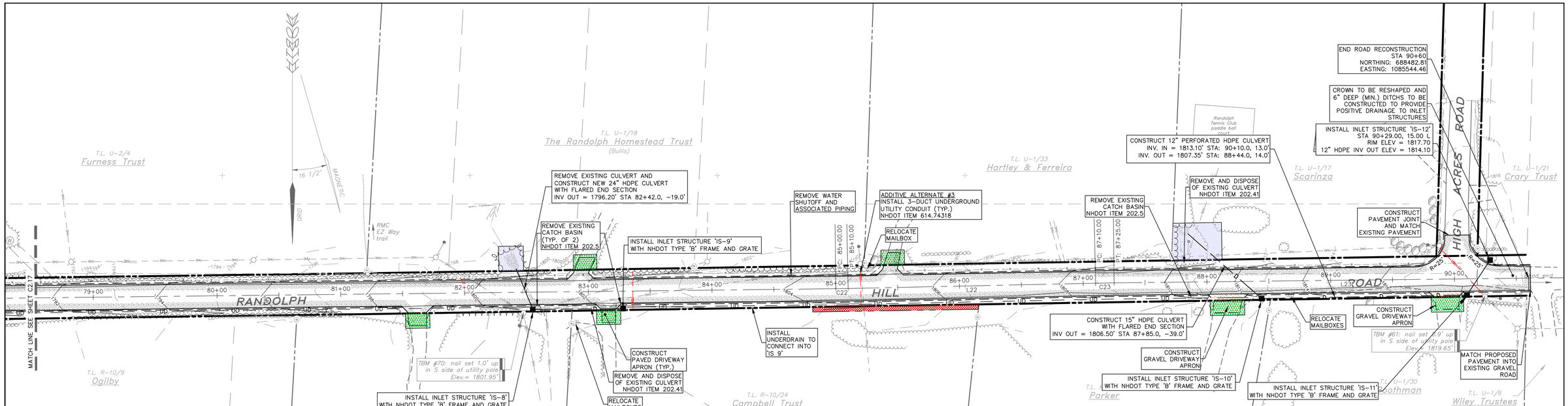
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C2.17
SHEET 19 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C2.21 Plan & Profile.dwg, C2.17, 5/2/2011 10:50:32 AM, dbarrett

C2.18
SHEET 20 OF 43

2010-062
Plan & Profile (STA 78+25 - 90+00)
Randolph Hill Road Reconstruction



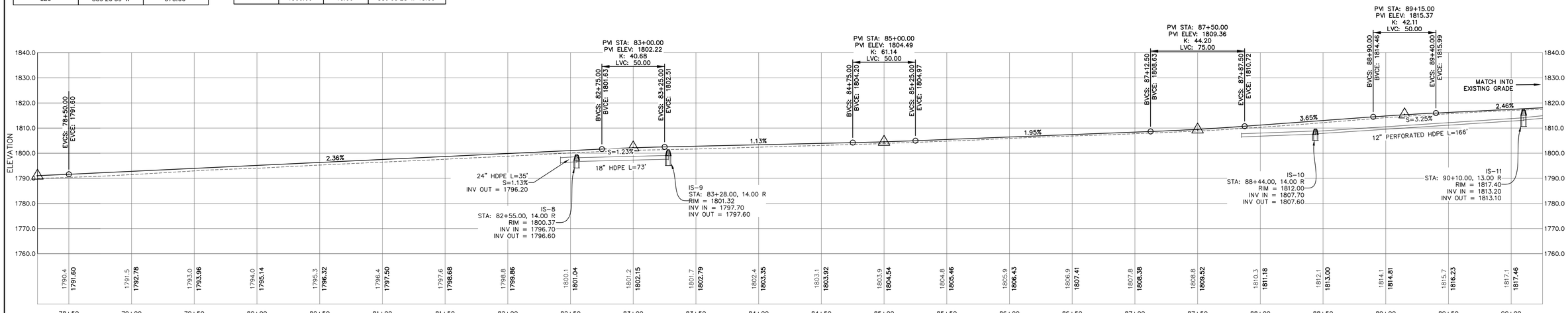
Randolph Hill Road Plan
Scale: 1"=40'

Line Table: Randolph Hill Road

Line	Bearing	Length
L22	S88°46'17"W	200.00'
L23	S89°20'39"W	375.00'

Curve Table: Randolph Hill Road

Curve	Radius	Length	Chord
C22	1000.00'	10.00'	S89°03'28"W 10.00'
C23	1500.00'	15.00'	S89°03'28"W 15.00'



Randolph Hill Road (STA 78+25 - 90+00)
Scale:
Horizontal: 1"=40'
Vertical: 1"=20'

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17

40 0 40 80 160 ft
8 0 20 40 m

1 inch = 40 feet
(1 : 480)

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DATE	04/18/2011

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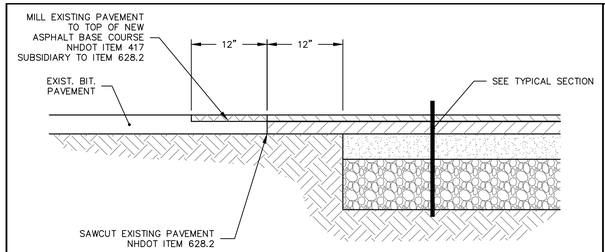
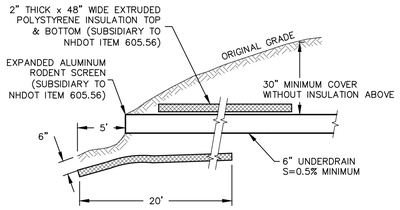
2010-062
C2.18
SHEET 20 OF 43

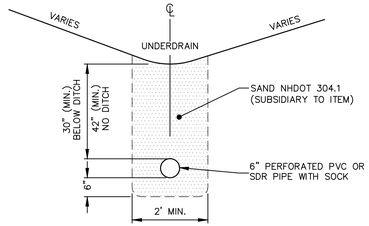
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C2.21 Plan & Profile.dwg, C2.18, 5/2/2011 10:50:51 AM, dbarrett



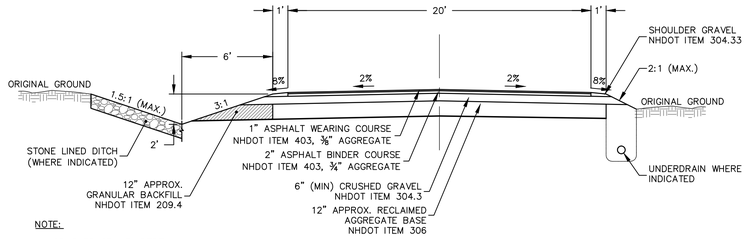
PAVEMENT JOINT
SCALE: 1" = 1'-0"



NHDOT ITEM 605.5
UNDERDRAIN OUTLET
N.T.S.

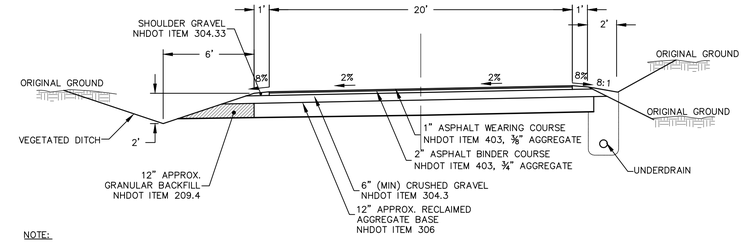


NHDOT ITEM 605.506
UNDERDRAIN DETAIL
SCALE: 1" = 2'-0"



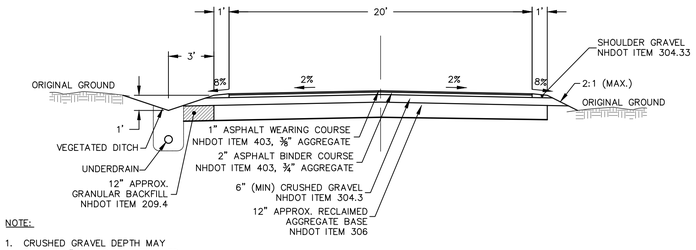
NOTE:
1. CRUSHED GRAVEL DEPTH MAY EXCEED 6" TO ACHIEVE FINISHED ROADWAY GRADE.

TYPICAL DEEP DITCH ROADWAY SECTION
SCALE: 1" = 5'-0"



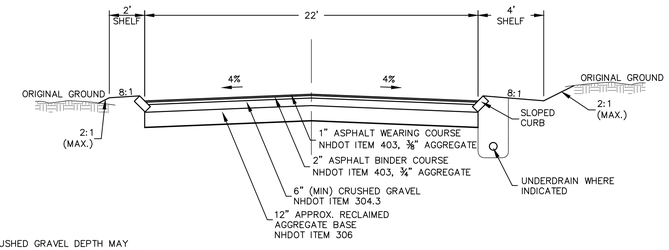
NOTE:
1. CRUSHED GRAVEL DEPTH MAY EXCEED 6" TO ACHIEVE FINISHED ROADWAY GRADE.

TYPICAL SUPERELEVATED ROADWAY SECTION
SCALE: 1" = 5'-0"



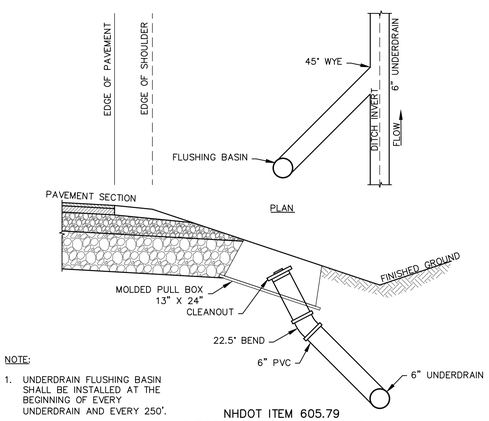
NOTE:
1. CRUSHED GRAVEL DEPTH MAY EXCEED 6" TO ACHIEVE FINISHED ROADWAY GRADE.

TYPICAL SHALLOW DITCH ROADWAY SECTION
SCALE: 1" = 5'-0"



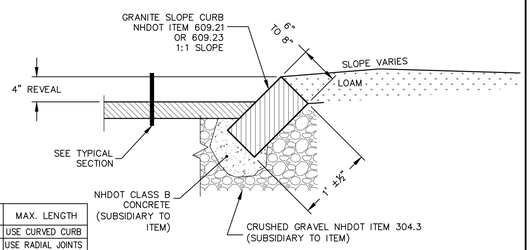
NOTE:
1. CRUSHED GRAVEL DEPTH MAY EXCEED 6" TO ACHIEVE FINISHED ROADWAY GRADE.

TYPICAL CURBED ROADWAY SECTION
SCALE: 1" = 5'-0"



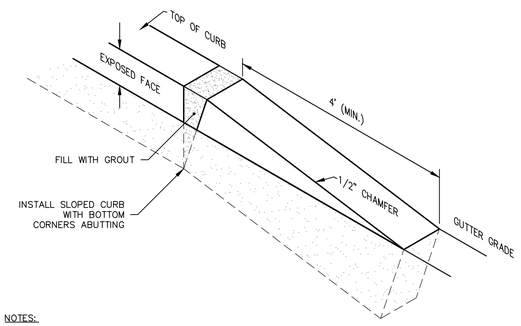
NOTE:
1. UNDERDRAIN FLUSHING BASIN SHALL BE INSTALLED AT THE BEGINNING OF EVERY UNDERDRAIN AND EVERY 250'.

NHDOT ITEM 605.79
UNDERDRAIN FLUSHING BASIN
N.T.S.



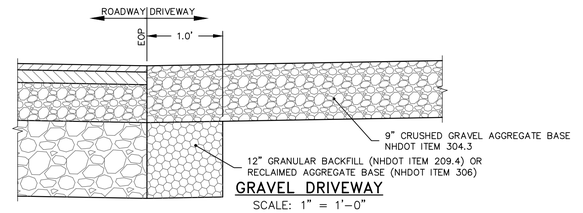
RADIUS	MAX. LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
OVER 110	8'

NHDOT ITEM 609.2
SLOPED GRANITE CURB
SCALE: 1" = 1'-0"

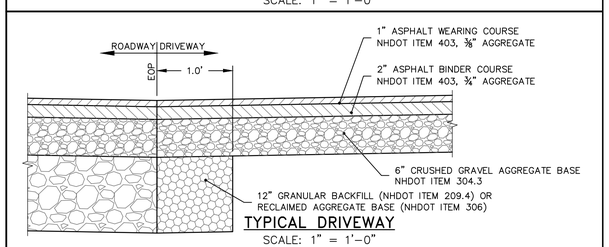


NOTES:
1. INSTALL IN ACCORDANCE WITH SLOPED GRANITE CURB DETAIL.
2. GRANITE CURB "TIP-DOWNS" TO BE PROVIDED AT BEGINNING AND END OF ALL SLOPED GRANITE CURBING.
3. GRANITE CURB "TIP-DOWNS" TO BE PROVIDED AT ALL A.D.A. ACCESS RAMPS.

GRANITE CURB "TIP-DOWN"
(ISOMETRIC)



GRAVEL DRIVEWAY
SCALE: 1" = 1'-0"



TYPICAL DRIVEWAY
SCALE: 1" = 1'-0"

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NO.	REVISION	DATE	BY
1	REVISED PER NHDOT COMMENTS	03/08/2011	DBH

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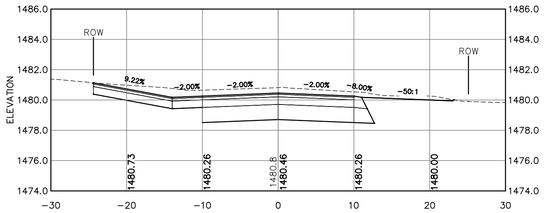
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

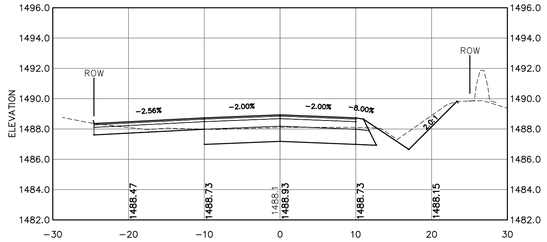
Typical Roadway Sections
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.00
SHEET 21 OF 43

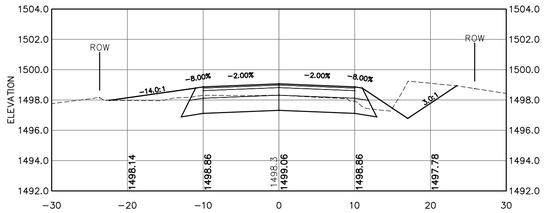
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.00 Typical Roadway Sections.dwg, C3.00, 5/2/2011 10:53:05 AM, sburrell



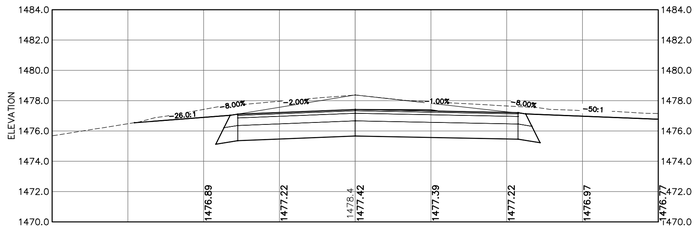
Station 1+50.00
(Driveway Left)



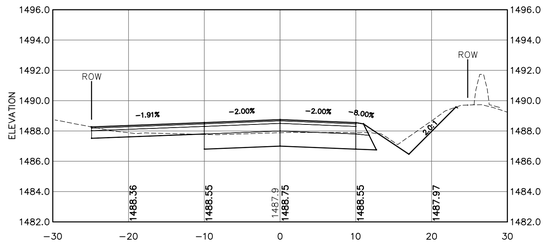
Station 3+04.00
(Driveway Left)



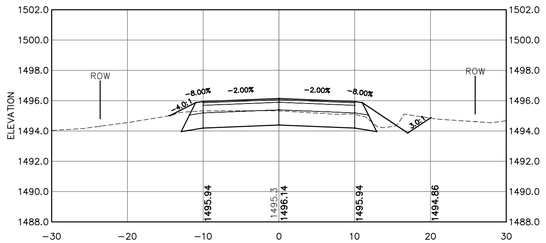
Station 5+00.00



Station 1+00.00



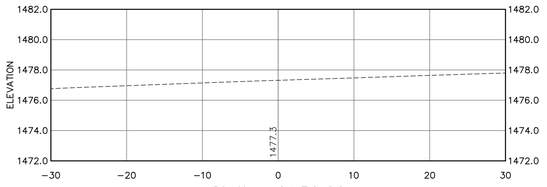
Station 3+00.00
(Driveway Left)



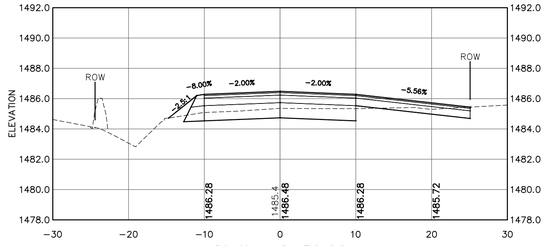
Station 4+50.00

NOTE:

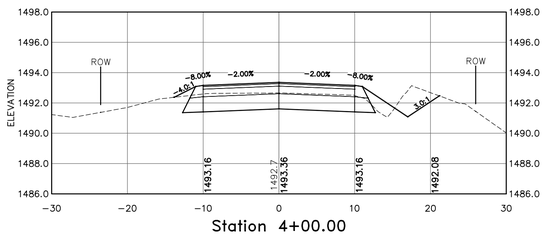
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



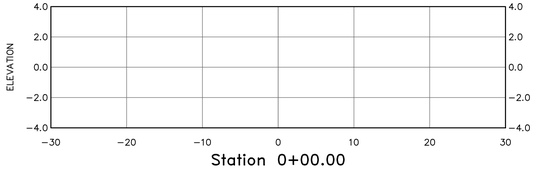
Station 0+50.00
(N.H. Route 2 Centerline)



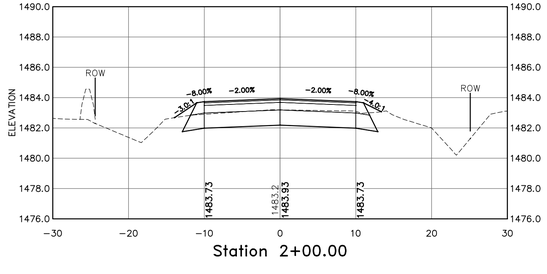
Station 2+50.00
(Driveway Right)



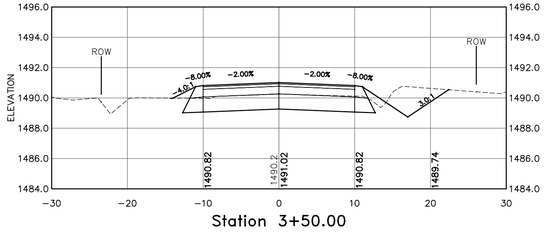
Station 4+00.00



Station 0+00.00



Station 2+00.00



Station 3+50.00

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Engr\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.11, 5/2/2011 10:52:36 AM, sburnell

Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

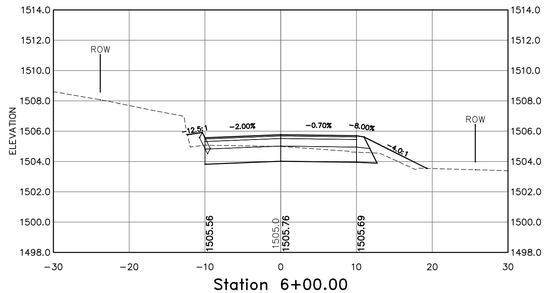
STATE OF NEW HAMPSHIRE - JAY J. POULIN No. 10953 - LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

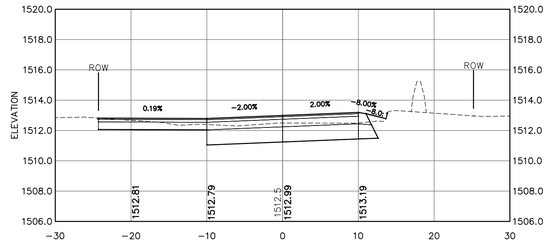
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 0+00 - 5+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

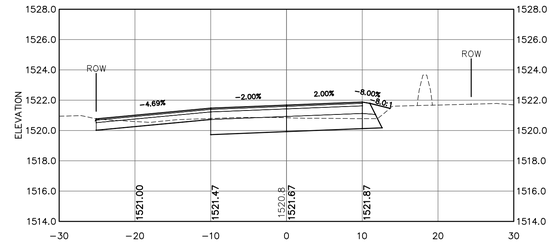
2010-062
C3.11
SHEET 22 OF 43



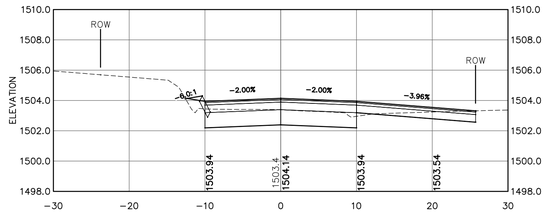
Station 6+00.00



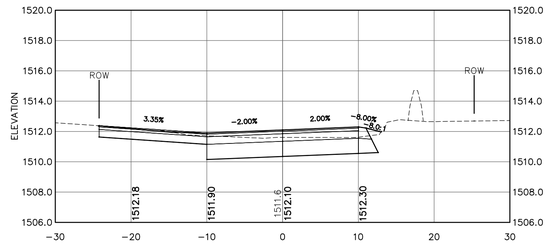
Station 7+15.00
(Driveway Left)



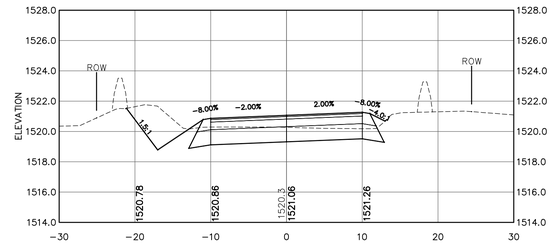
Station 8+60.00
(Driveway Left)



Station 5+76.00
(Nekal Lane Right/Begin Superelevation Transition)



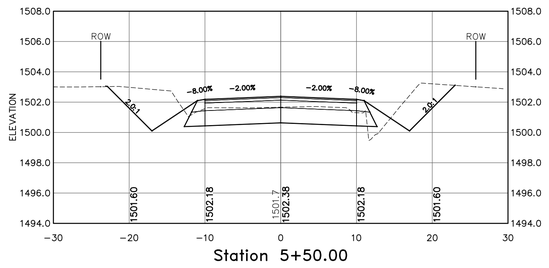
Station 7+00.00
(Driveway Left)



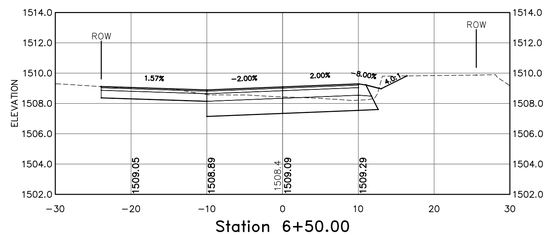
Station 8+50.00

NOTE:

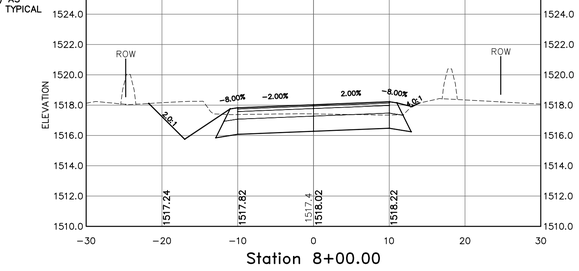
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



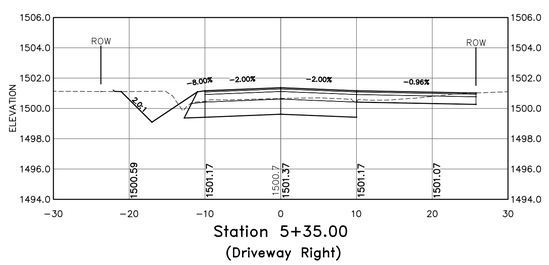
Station 5+50.00



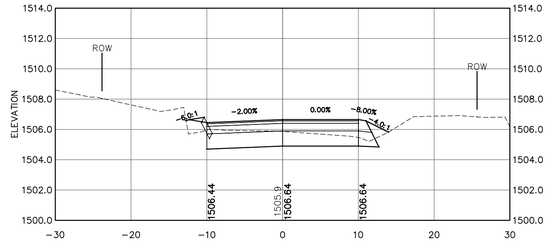
Station 6+50.00
(Driveway Left/Full Superelevation)



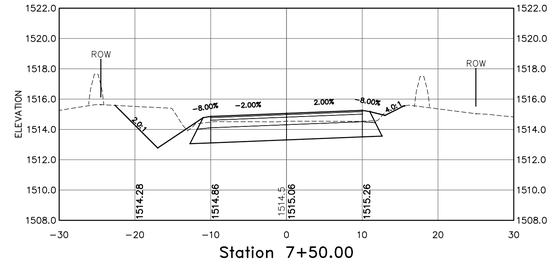
Station 8+00.00



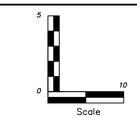
Station 5+35.00
(Driveway Right)



Station 6+13.00
(Remove Adverse Slope Right)



Station 7+50.00



Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE
JAY J. POULIN
No. 10953
LICENSED
PROFESSIONAL ENGINEER

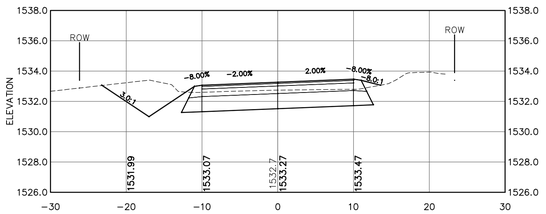
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

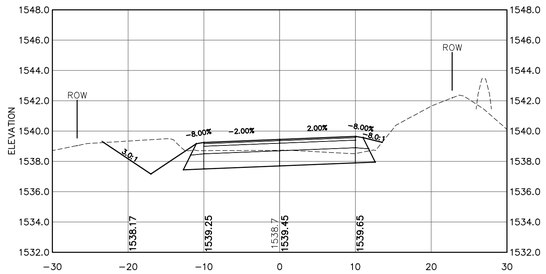
Roadway Cross Sections (STA 5+35 - 8+60)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.12
SHEET 23 OF 43

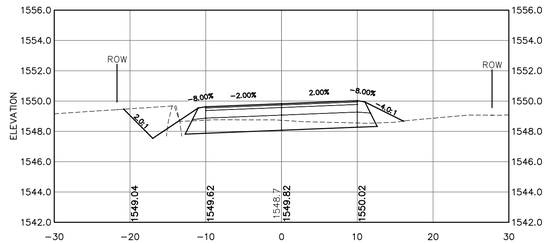
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg C3.12, 5/2/2011 10:53:41 AM, dhartnett



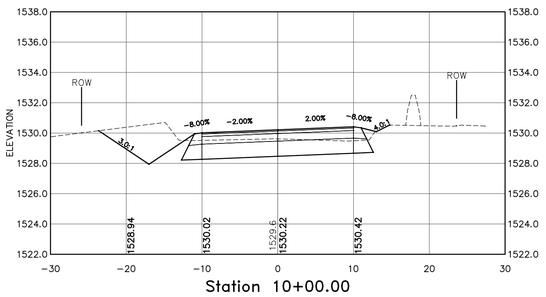
Station 10+50.00



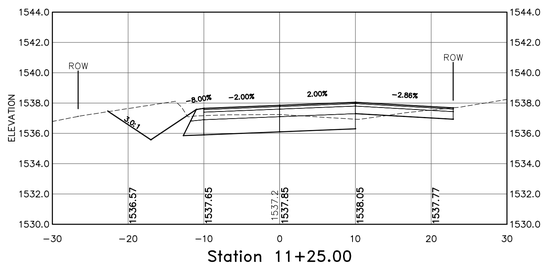
Station 11+50.00



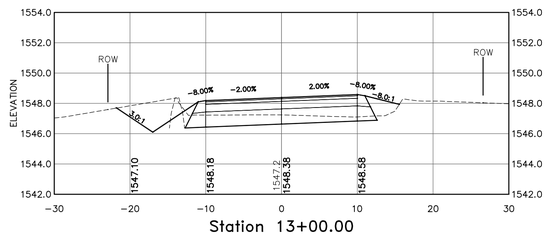
Station 13+50.00



Station 10+00.00



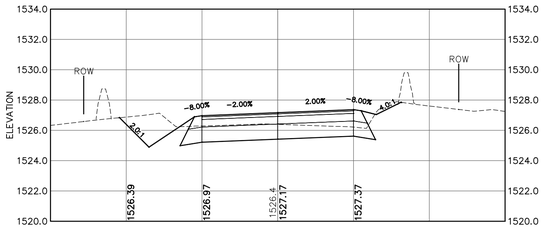
Station 11+25.00
(Driveway Right)



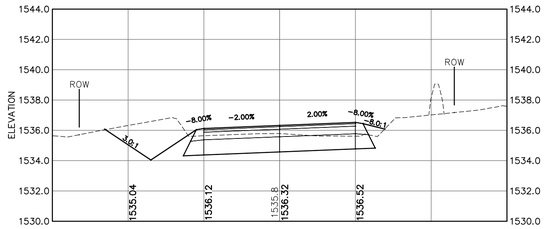
Station 13+00.00

NOTE:

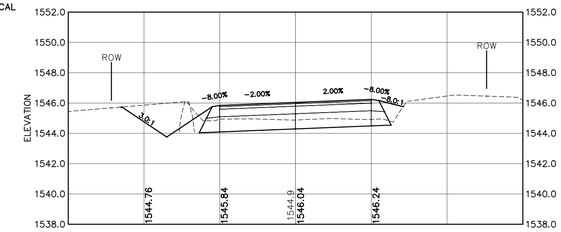
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



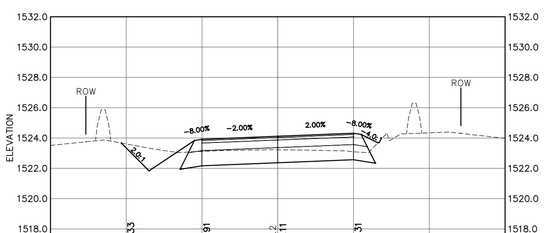
Station 9+50.00



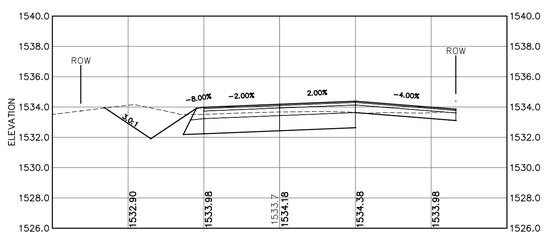
Station 11+00.00



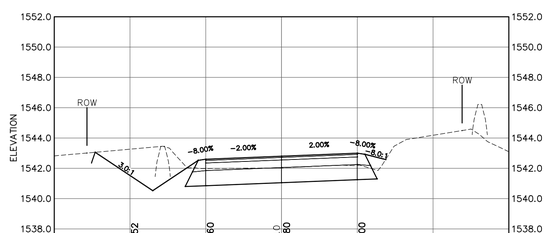
Station 12+50.00



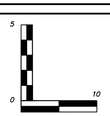
Station 9+00.00



Station 10+65.00
(Driveway Right)



Station 12+00.00



Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

JAY J. POULIN No. 10953 STATE OF NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

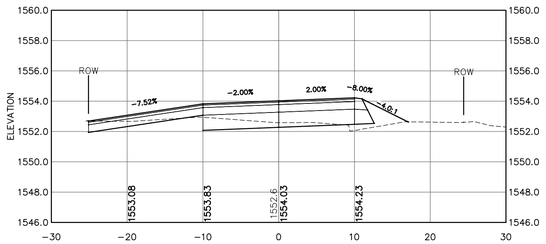
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 9+00 – 13+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

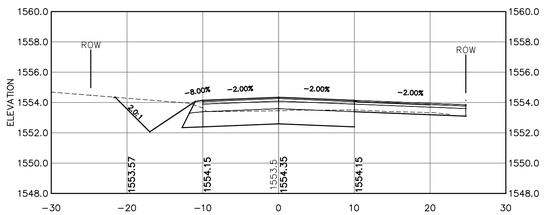
2010-062
C3.13
SHEET 24 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.13, 5/27/2011 10:52:46 AM, dburnell

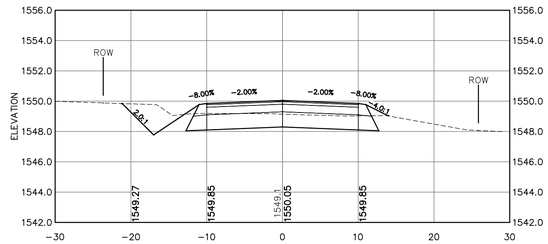
2010-062
Roadway Cross Sections (STA 14+00 - 18+00)
Randolph Hill Road Reconstruction



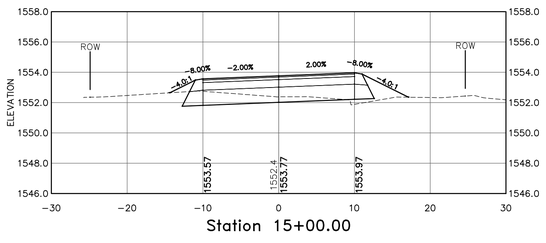
Station 15+10.00
(Driveway Left)



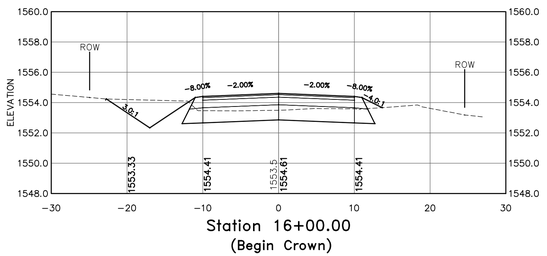
Station 16+14.00
(Driveway Right)



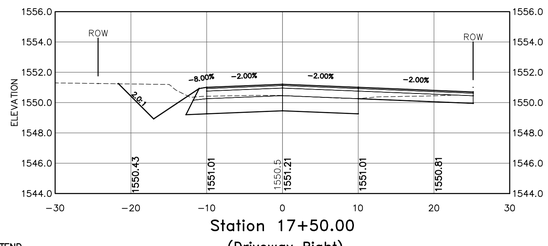
Station 18+00.00



Station 15+00.00



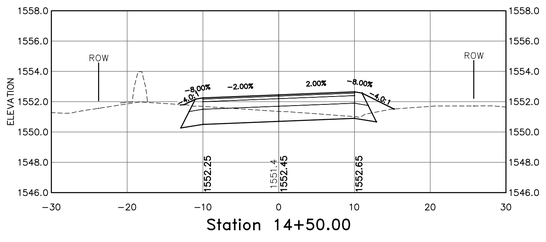
Station 16+00.00
(Begin Crown)



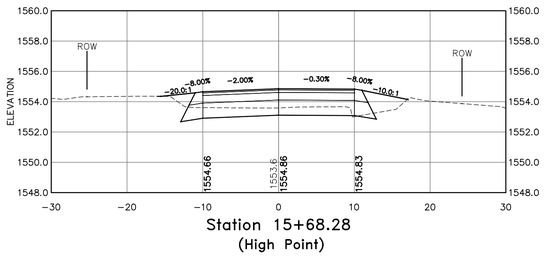
Station 17+50.00
(Driveway Right)

NOTE:

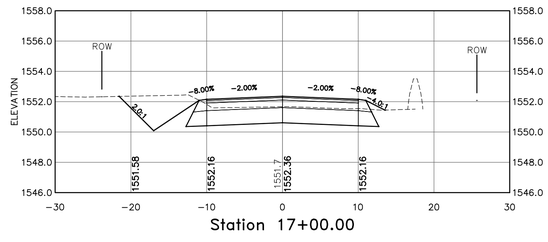
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



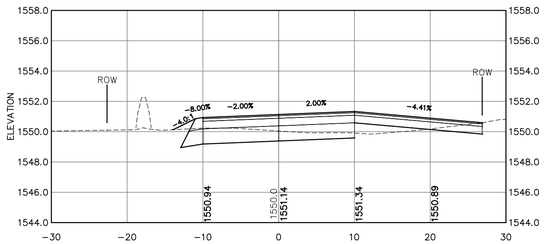
Station 14+50.00



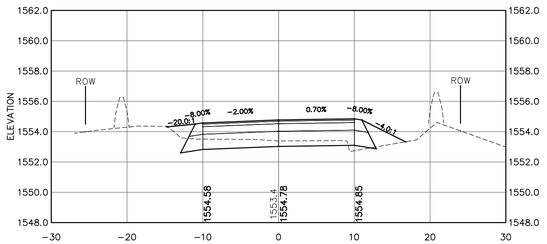
Station 15+68.28
(High Point)



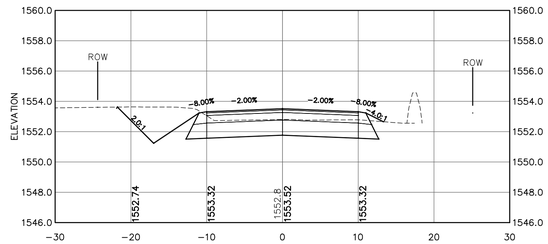
Station 17+00.00



Station 14+00.00
(Driveway Right)



Station 15+50.00



Station 16+50.00

Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE · JAY J. POULIN No. 10953 · LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

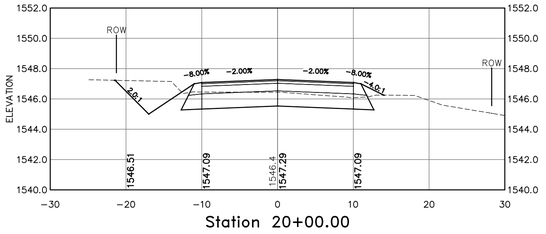
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 14+00 - 18+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

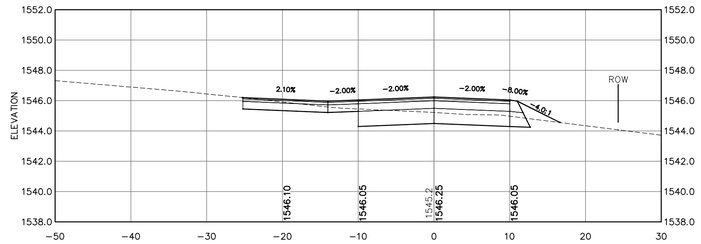
2010-062
C3.14
SHEET 25 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.14, 5/2/2011 10:55:51 AM, sburrell

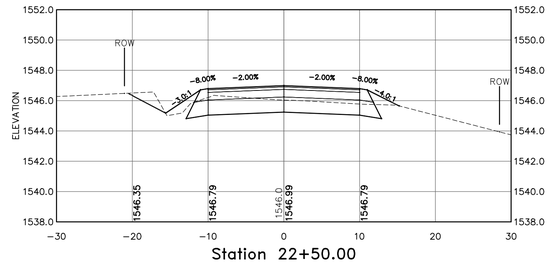
2010-062
Roadway Cross Sections (STA 18+50 - 22+50)
Randolph Hill Road Reconstruction



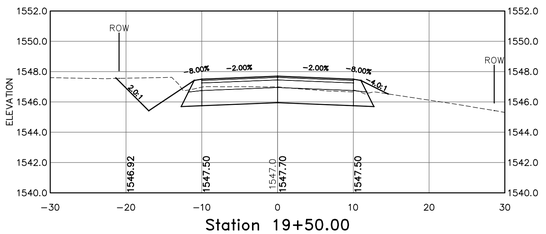
Station 20+00.00



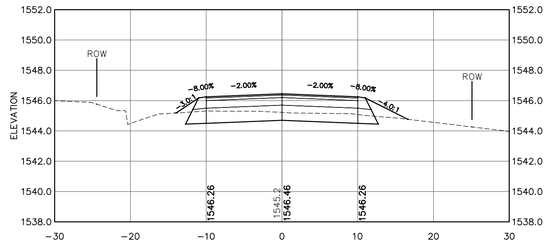
Station 21+25.00
(Boothman Lane Left)



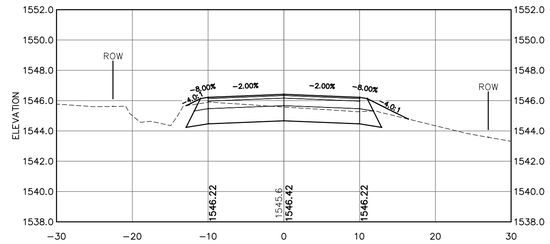
Station 22+50.00



Station 19+50.00



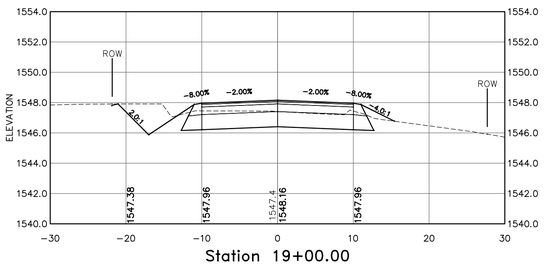
Station 21+00.00



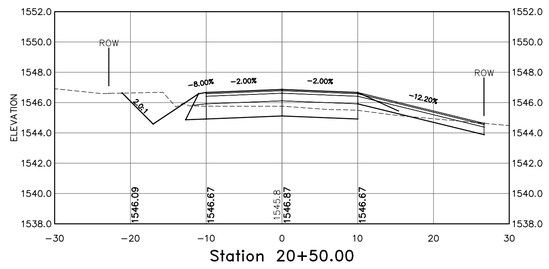
Station 22+00.00

NOTE:

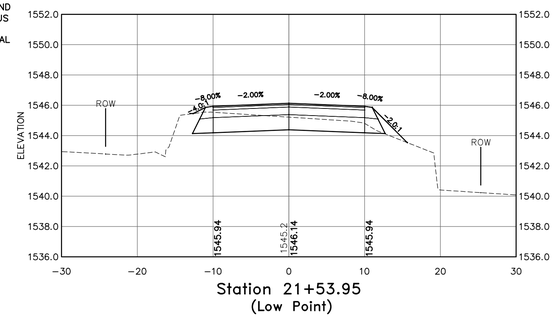
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



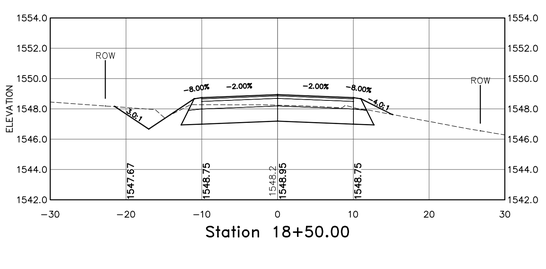
Station 19+00.00



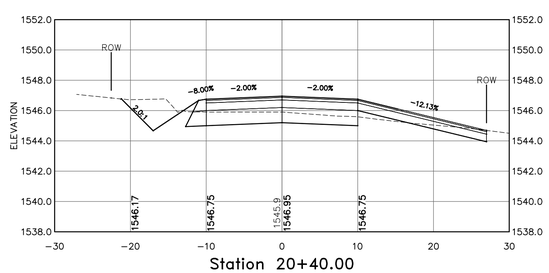
Station 20+50.00
(Driveway Right)



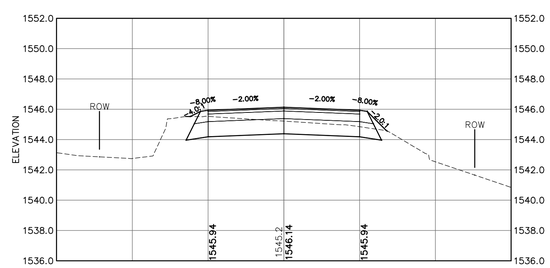
Station 21+53.95
(Low Point)



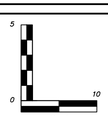
Station 18+50.00



Station 20+40.00
(Driveway Right)



Station 21+50.00



Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE
JAY J. POULIN No. 10953
LICENSED PROFESSIONAL ENGINEER

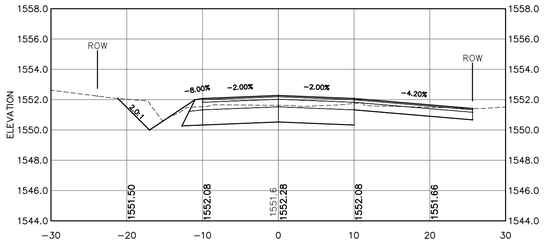
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

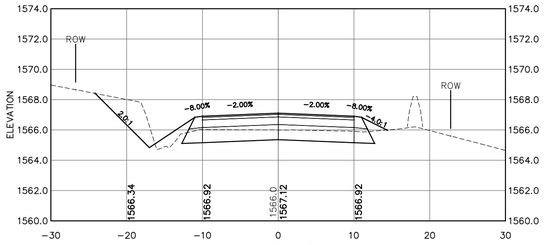
Roadway Cross Sections (STA 18+50 - 22+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.15
SHEET 26 OF 43

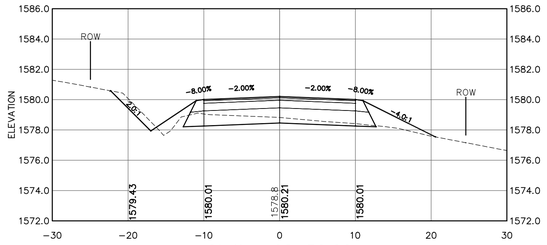
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.15, 5/2/2011 10:56:56 AM, sburnell



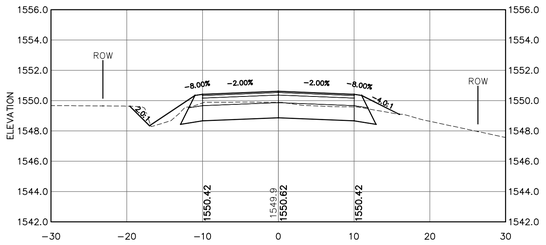
Station 24+50.00
(Driveway Right)



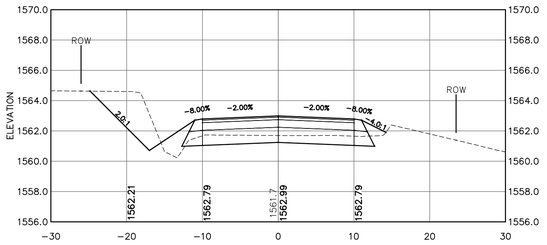
Station 26+50.00



Station 28+50.00



Station 24+00.00



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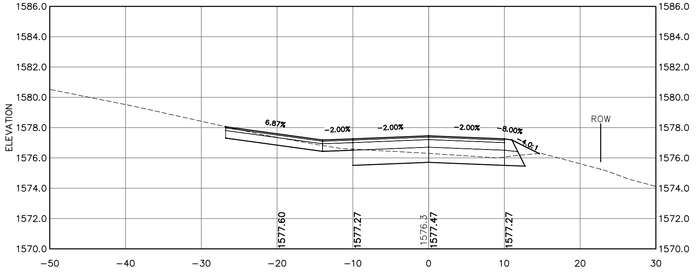
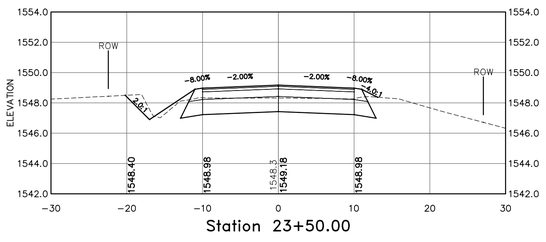
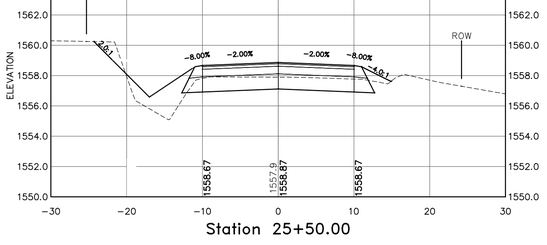


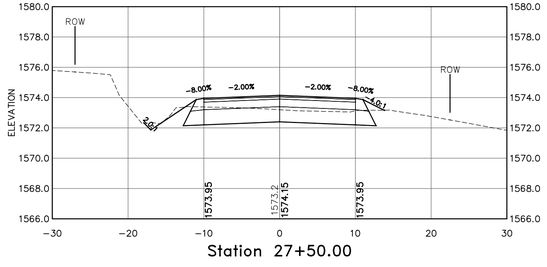
Station 28+00.00
(Pasture Path Left)



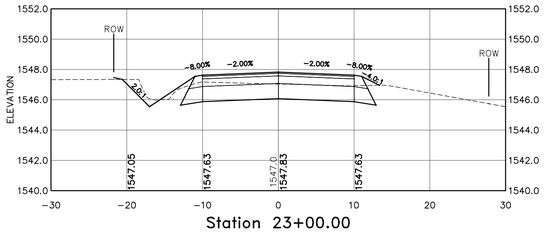
Station 23+50.00



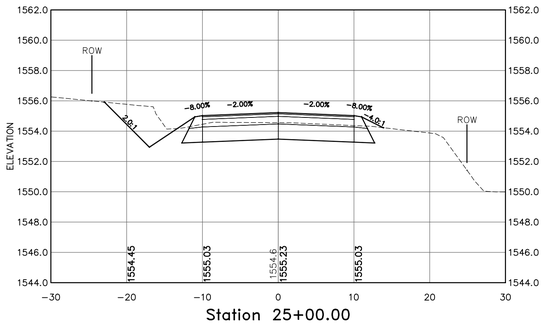
Station 25+50.00



Station 27+50.00



Station 23+00.00



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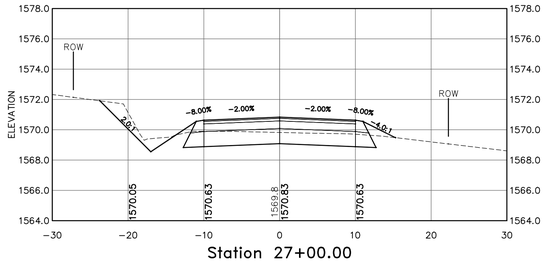

Station 27+00.00

NOTE:

1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.

C3.16
SHEET 27 OF 43

2010-062
Roadway Cross Sections (STA 23+00 - 28+50)
Randolph Hill Road Reconstruction

P:\Jobs\2010\2010-062- Town of Randolph - Randolph Hill Rd\Engr Development\Sheet Files\C3.11 Cross Sections.dwg, C3.16, 5/2/2011 10:58:02 AM, sburrell

Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

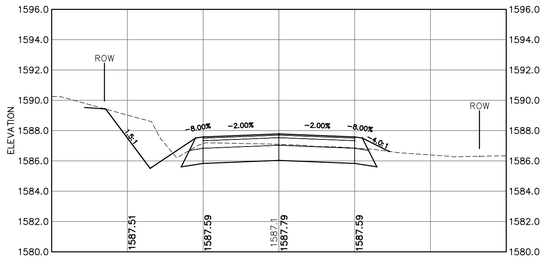
STATE OF NEW HAMPSHIRE - JAY J. POULIN No. 10953 - LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

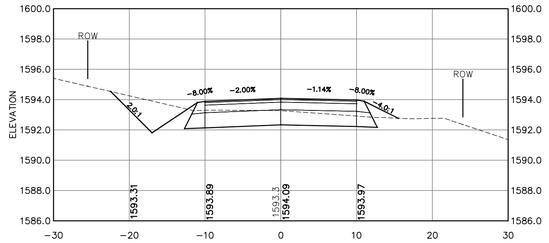
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 23+00 - 28+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

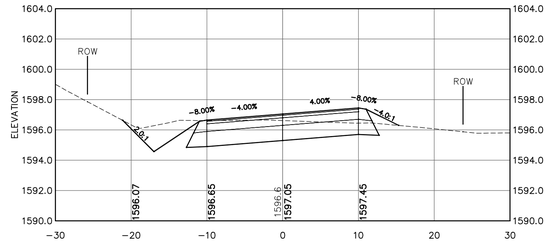
2010-062
C3.16
SHEET 27 OF 43



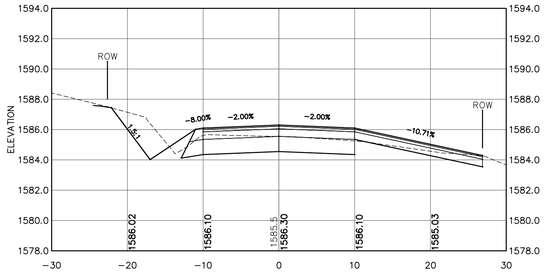
Station 30+00.00



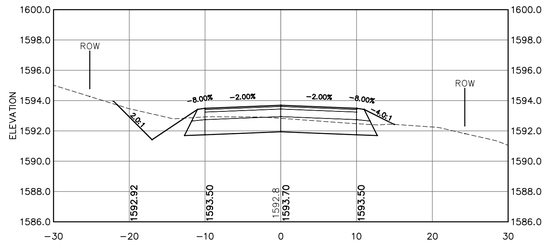
Station 31+50.00



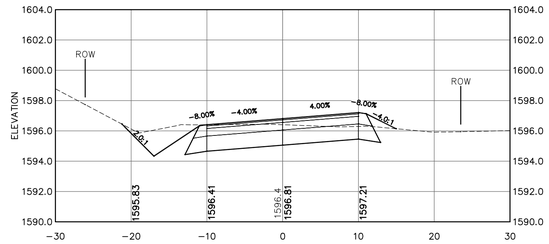
Station 32+50.00



Station 29+75.00
(Driveway Right)



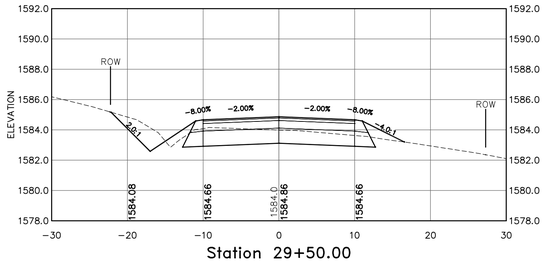
Station 31+34.00
(Begin Superelevation Transition)



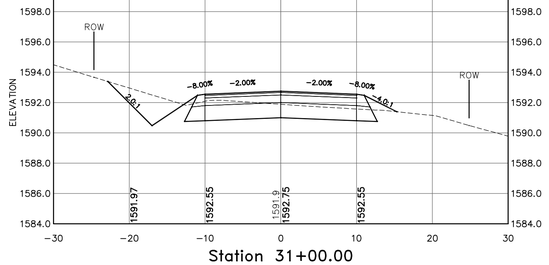
Station 32+44.00
(Full Superelevation)

NOTE:

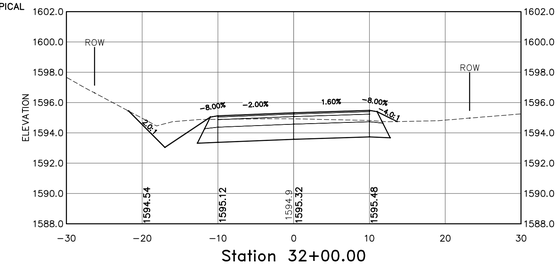
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



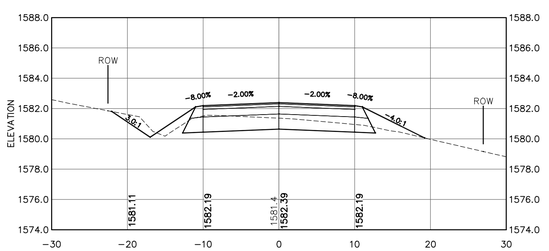
Station 29+50.00



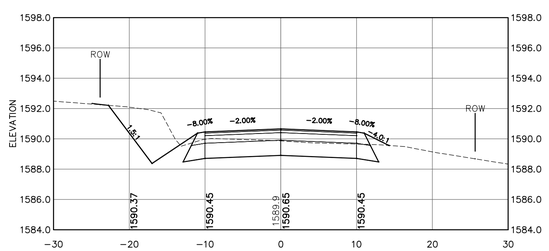
Station 31+00.00



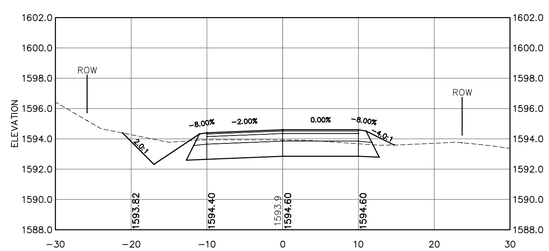
Station 32+00.00



Station 29+00.00



Station 30+50.00



Station 31+71.00
(Remove Adverse Slope Right)

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.17, 5/2/2011 10:59:13 AM, sburrell

5
0
10
Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

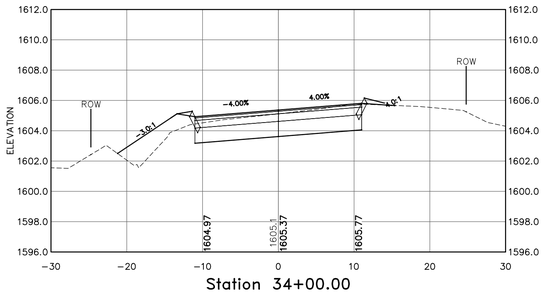
STATE OF NEW HAMPSHIRE · JAY J. POULIN No. 10953 · LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

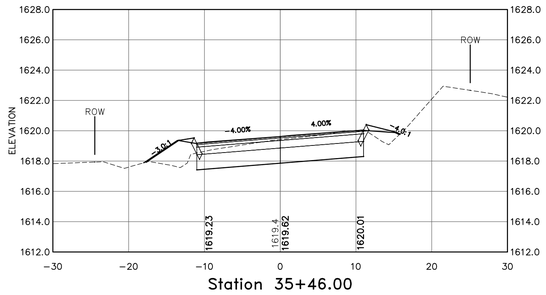
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 29+00 - 32+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

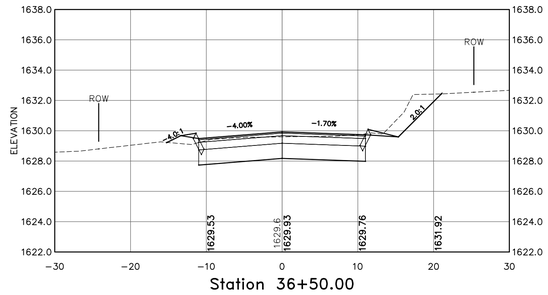
2010-062
C3.17
SHEET 28 OF 43



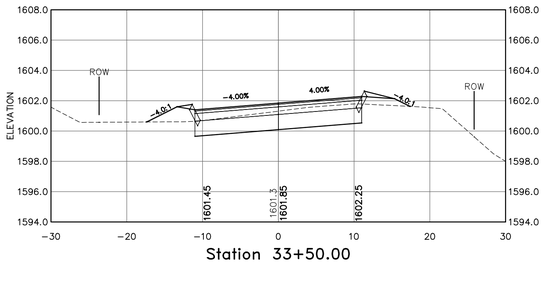
Station 34+00.00



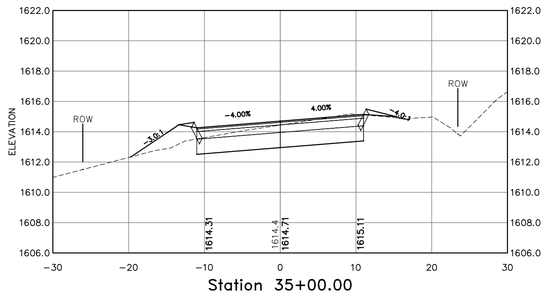
Station 35+46.00
(Begin Crown Transition)



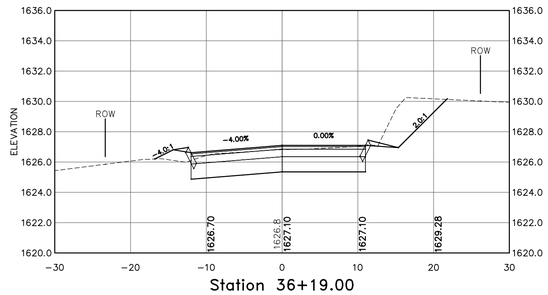
Station 36+50.00



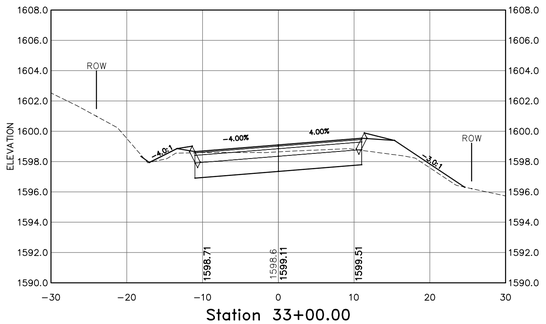
Station 33+50.00



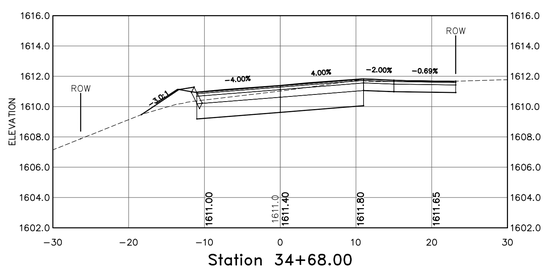
Station 35+00.00



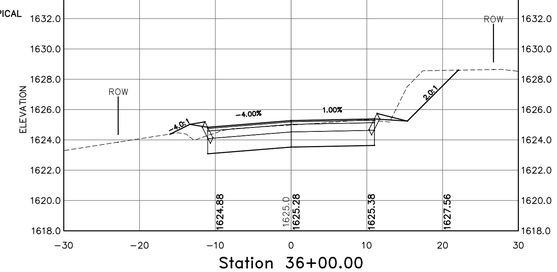
Station 36+19.00
(Remove Adverse Slope Right)



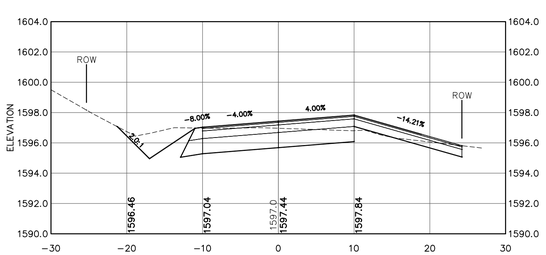
Station 33+00.00



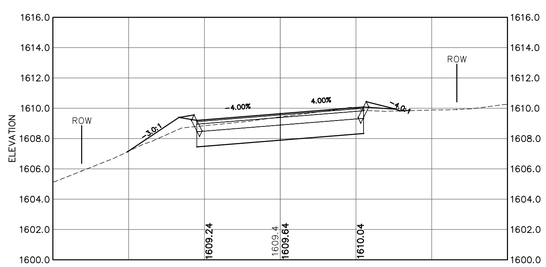
Station 34+68.00



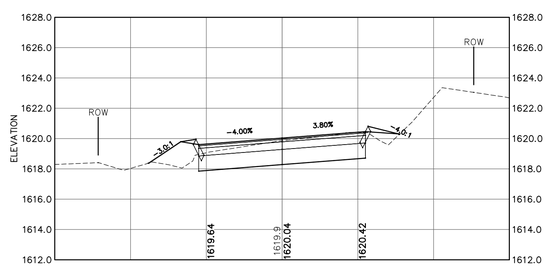
Station 36+00.00



Station 32+60.00
(Driveway Right)



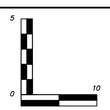
Station 34+50.00



Station 35+50.00

NOTE:

1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE
JAY J. POULIN No. 10953
LICENSED PROFESSIONAL ENGINEER

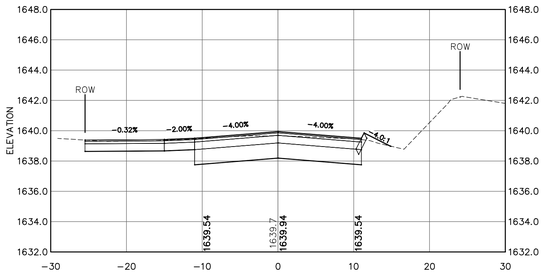
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

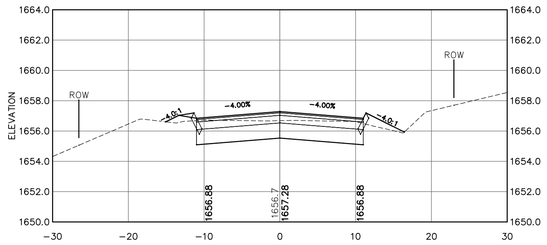
Roadway Cross Sections (STA 32+60 - 36+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.18
SHEET 29 OF 43

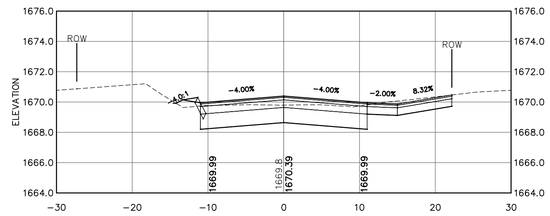
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.18, 5/2/2011 11:00:23 AM, dhurrell



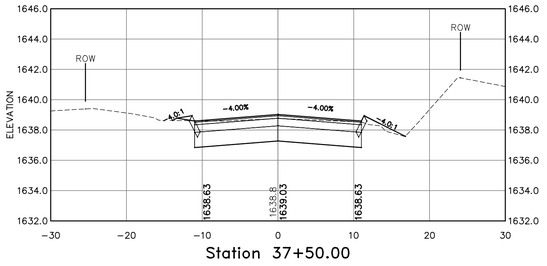
Station 37+60.00
(Driveway Left)



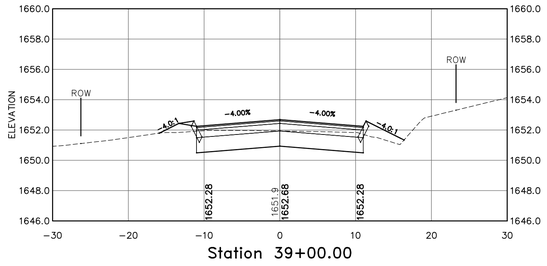
Station 39+50.00



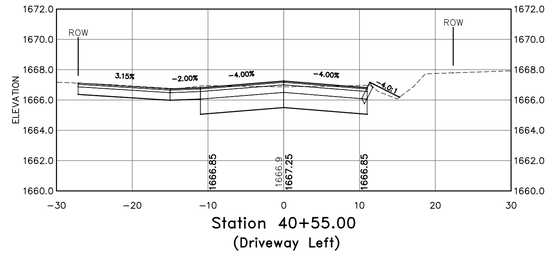
Station 40+88.00
(Driveway Right)



Station 37+50.00



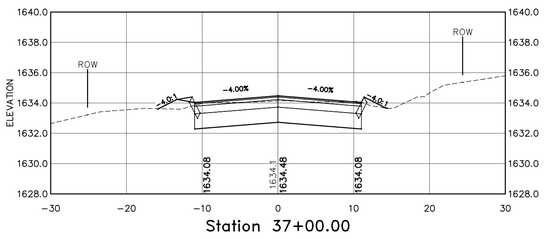
Station 39+00.00



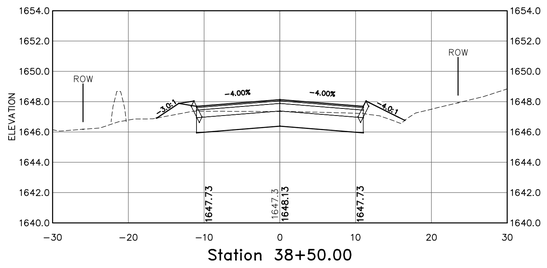
Station 40+55.00
(Driveway Left)

NOTE:

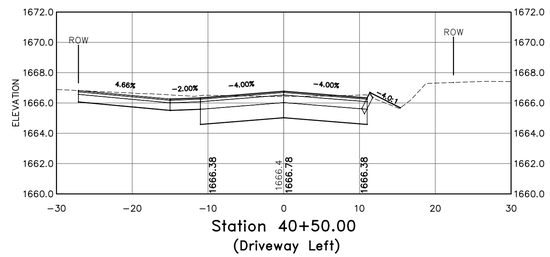
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



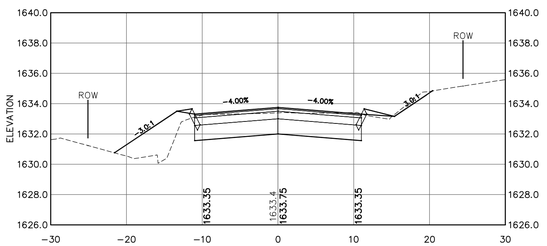
Station 37+00.00



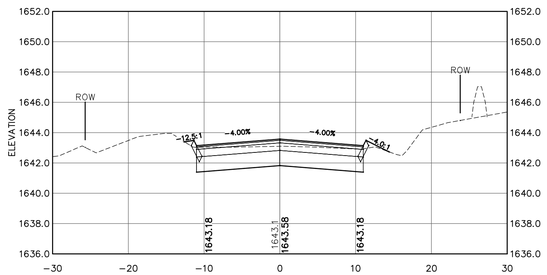
Station 38+50.00



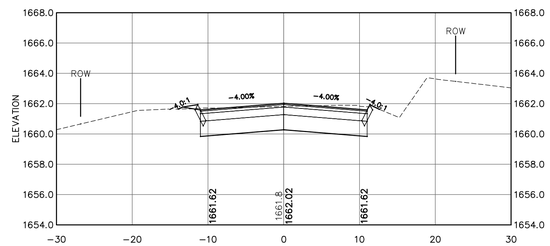
Station 40+50.00
(Driveway Left)



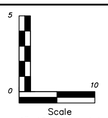
Station 36+92.00
(Begin Crown)



Station 38+00.00



Station 40+00.00



Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE
JAY J. POULIN
No. 10953
LICENSED
PROFESSIONAL ENGINEER

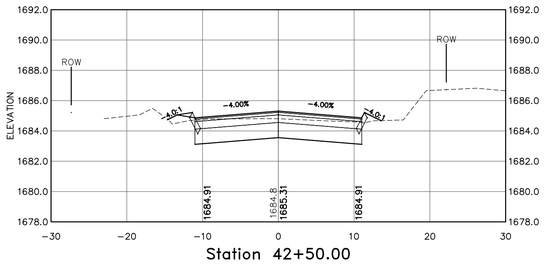
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

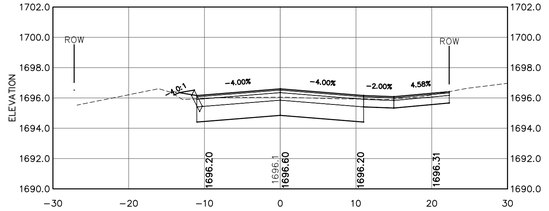
Roadway Cross Sections (STA 36+92 - 40+88)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.19
SHEET 30 OF 43

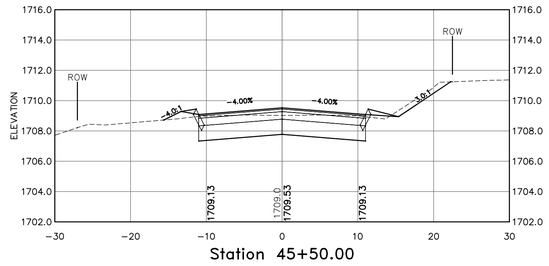
P:\Jobs\2010\2010-062- Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.19, 5/2/2011 11:01:34 AM, stunnell



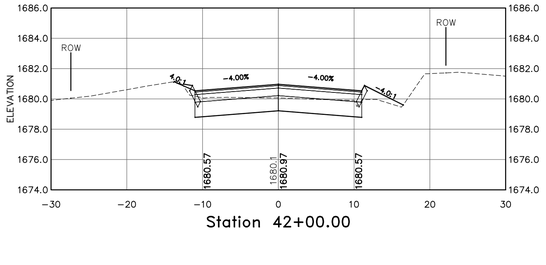
Station 42+50.00



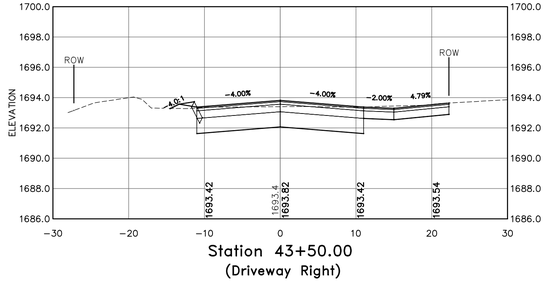
Station 43+85.00
(Driveway Right)



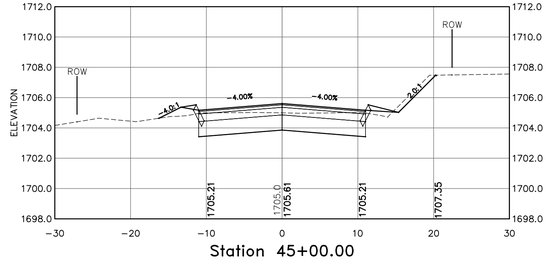
Station 45+50.00



Station 42+00.00



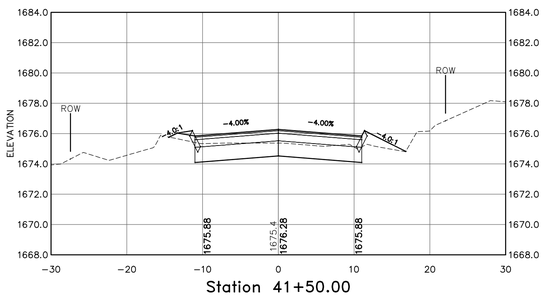
Station 43+50.00
(Driveway Right)



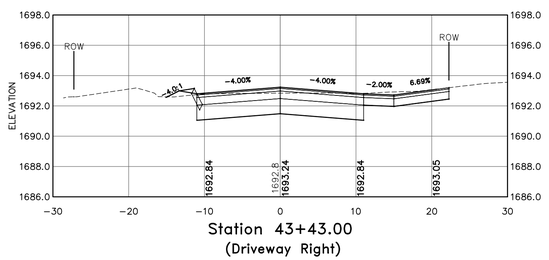
Station 45+00.00

NOTE:

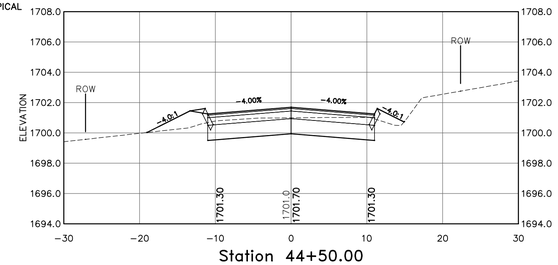
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



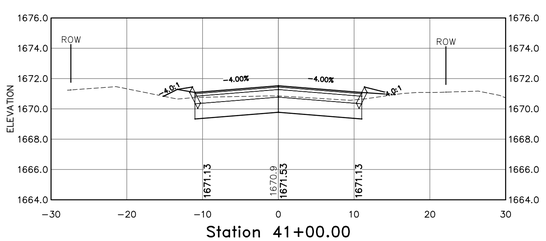
Station 41+50.00



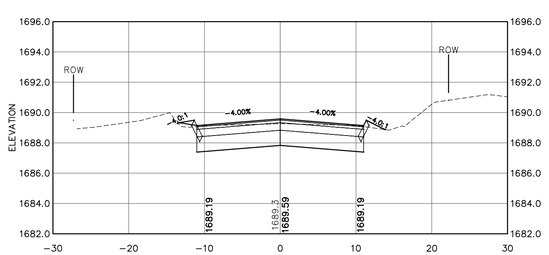
Station 43+43.00
(Driveway Right)



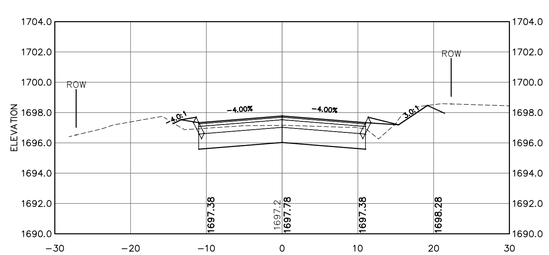
Station 44+50.00



Station 41+00.00



Station 43+00.00



Station 44+00.00

C3.20
SHEET 31 OF 43

2010-062
Roadway Cross Sections (STA 41+00 - 45+50)
Randolph Hill Road Reconstruction

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg C3.20, 5/2/2011 11:02:44 AM, dhurrell

Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

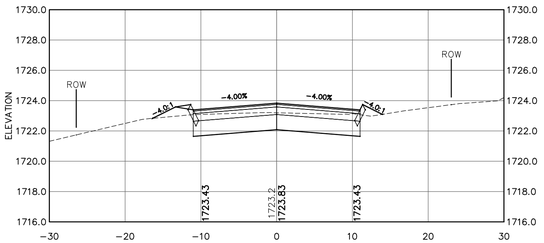
STATE OF NEW HAMPSHIRE - JAY J. POULIN No. 10953 - LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

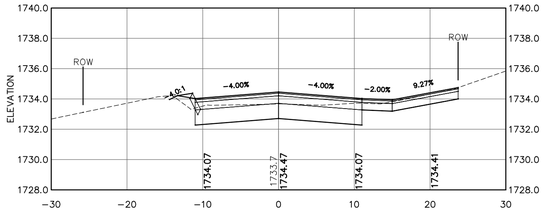
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 41+00 - 45+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

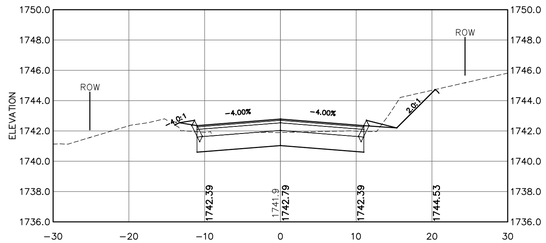
2010-062
C3.20
SHEET 31 OF 43



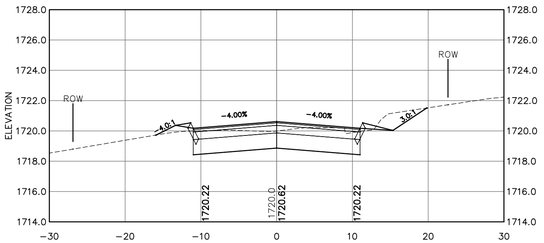
Station 47+50.00



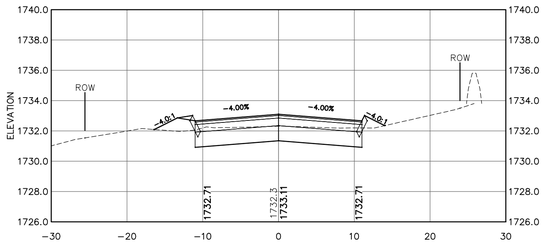
Station 49+20.00
(Driveway Right)



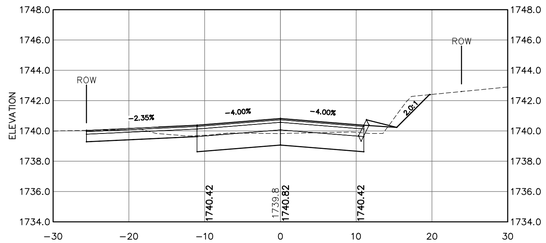
Station 50+50.00
(Begin Transition to 2% Crown)



Station 47+00.00



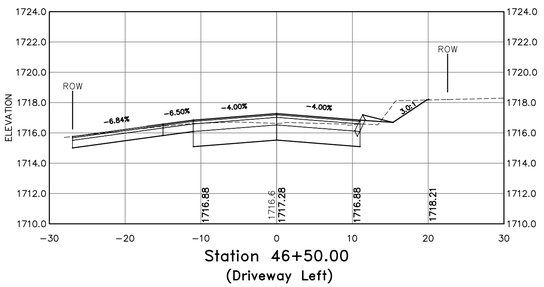
Station 49+00.00



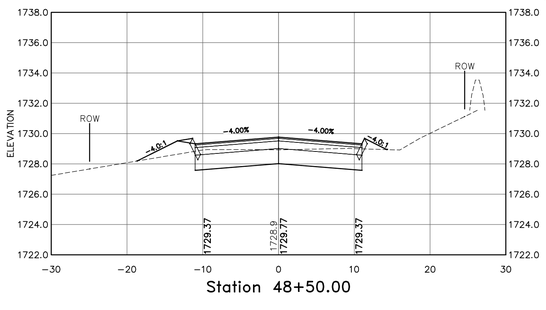
Station 50+14.00
(Driveway Left)

NOTE:

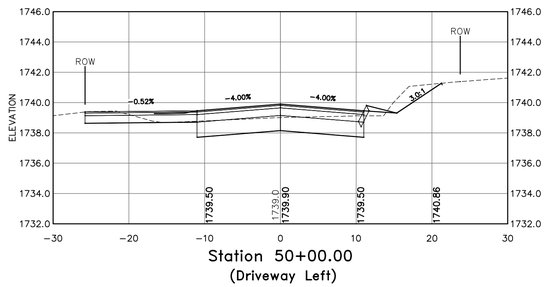
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



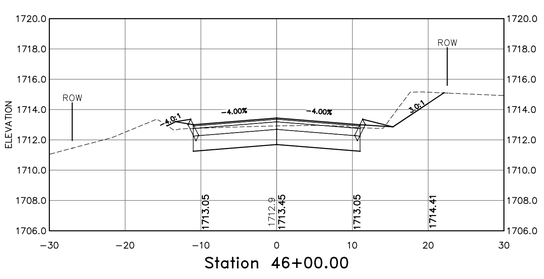
Station 46+50.00
(Driveway Left)



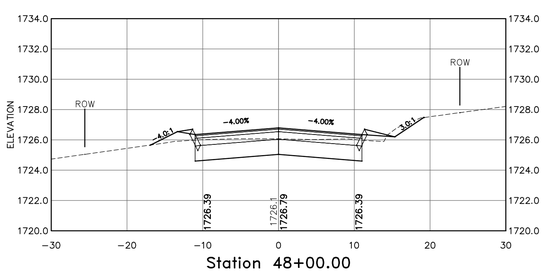
Station 48+50.00



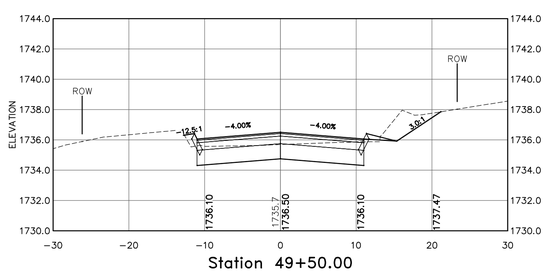
Station 50+00.00
(Driveway Left)



Station 46+00.00



Station 48+00.00



Station 49+50.00

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5
0
10
Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

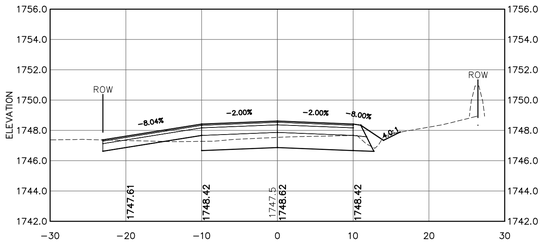
STATE OF NEW HAMPSHIRE
JAY J. POULIN No. 10953
LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

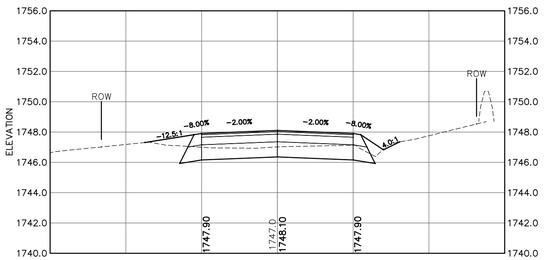
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 46+00 - 50+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

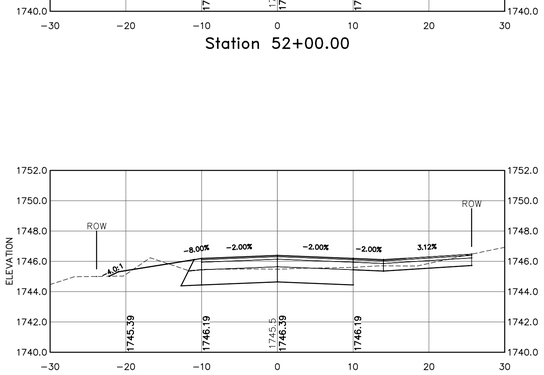
2010-062
C3.21
SHEET 32 OF 43



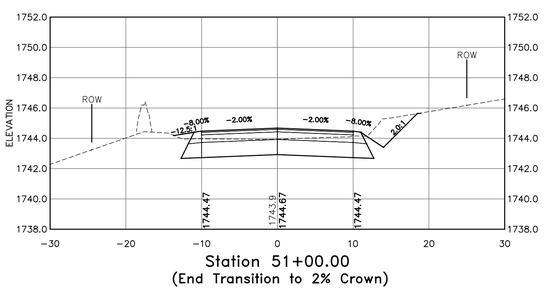
Station 52+15.00
(Driveway Left)



Station 52+00.00



Station 51+50.00
(Driveway Right)



Station 51+00.00
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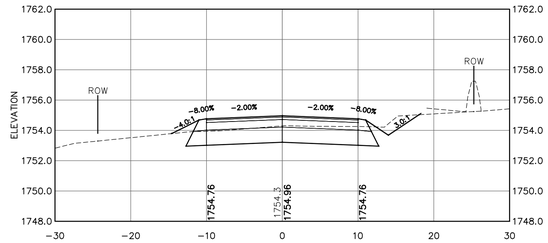
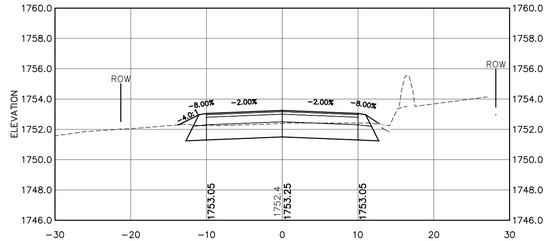
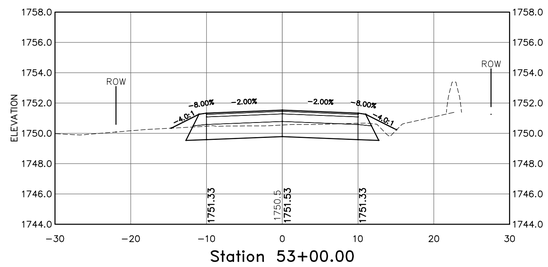


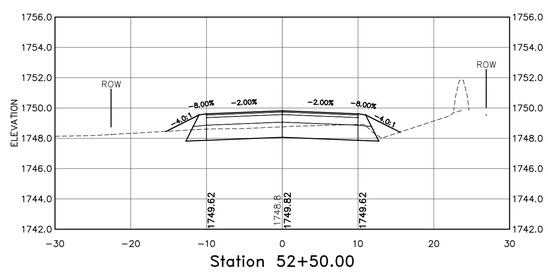
Station 54+00.00



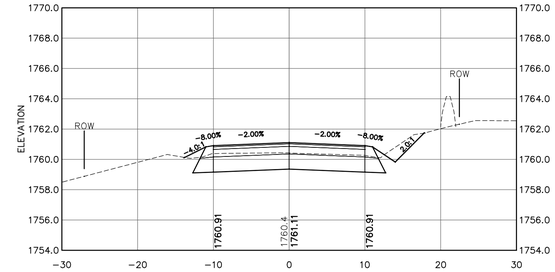
Station 53+50.00



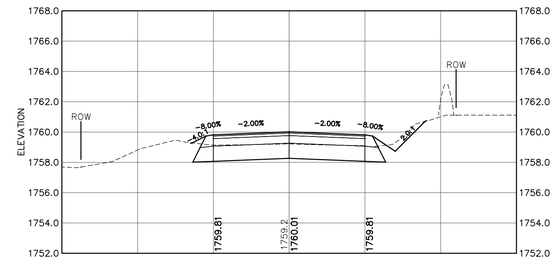
Station 53+00.00



Station 52+50.00



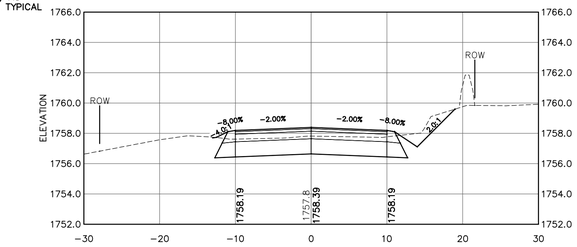
Station 56+00.00



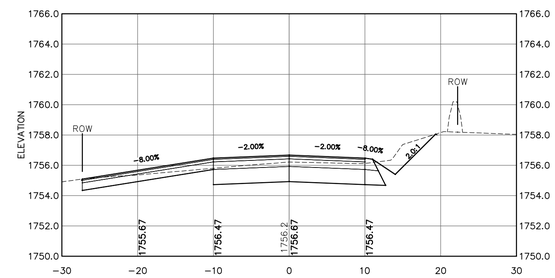
Station 55+50.00

NOTE:

1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



Station 55+00.00



Station 54+50.00
(Driveway Left)

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.22, 5/2/2011 11:04:54 AM, sburnell

Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

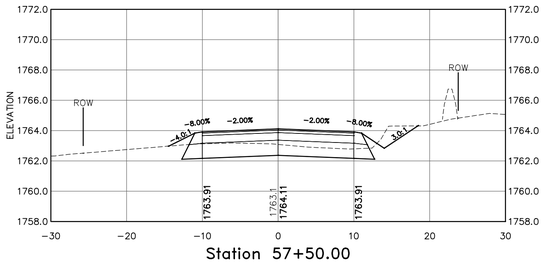
JAY J. POULIN No. 10953 - STATE OF NEW HAMPSHIRE - LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

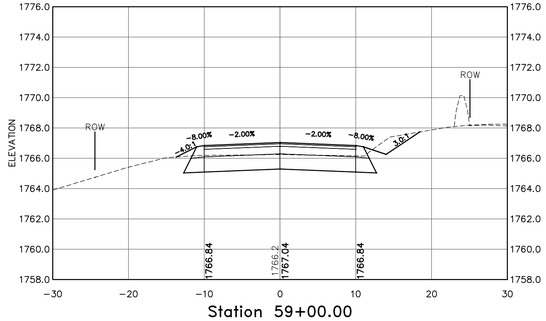
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 51+00 - 56+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

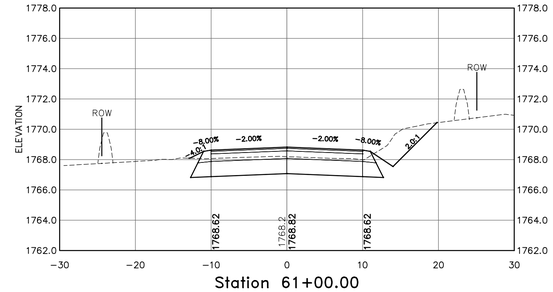
2010-062
C3.22
SHEET 33 OF 43



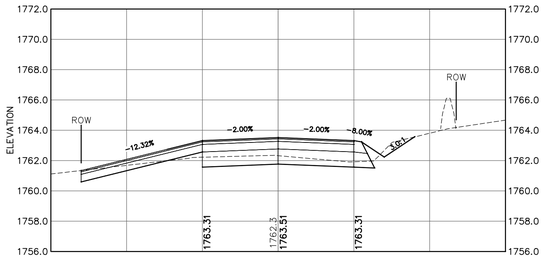
Station 57+50.00



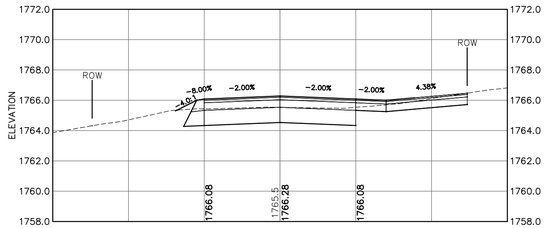
Station 59+00.00



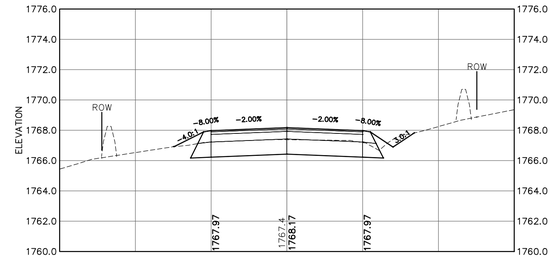
Station 61+00.00



Station 57+20.00
(Driveway Left)



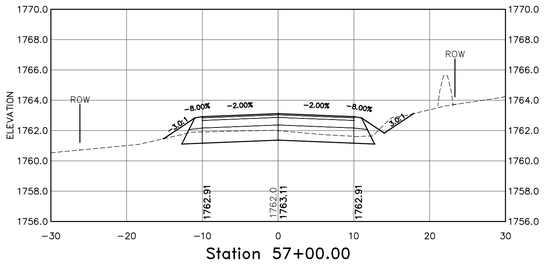
Station 58+58.00
(Driveway Right)



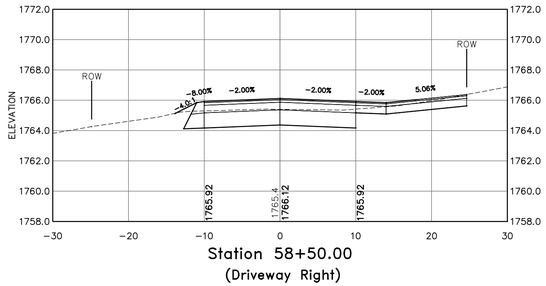
Station 60+50.00

NOTE:

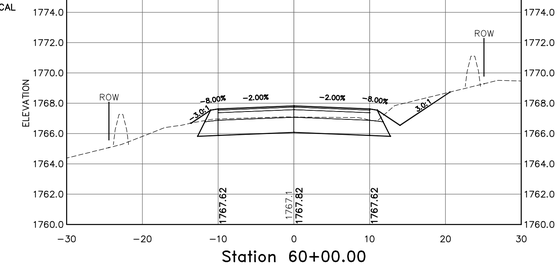
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



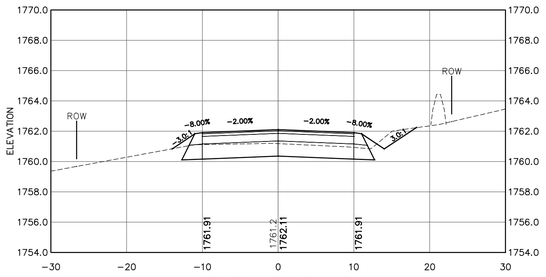
Station 57+00.00



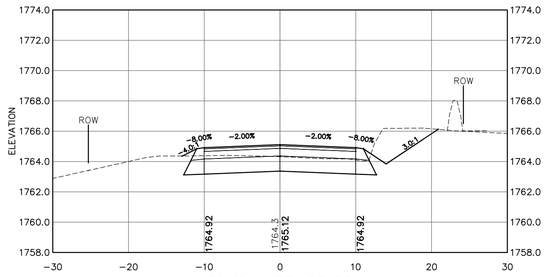
Station 58+50.00
(Driveway Right)



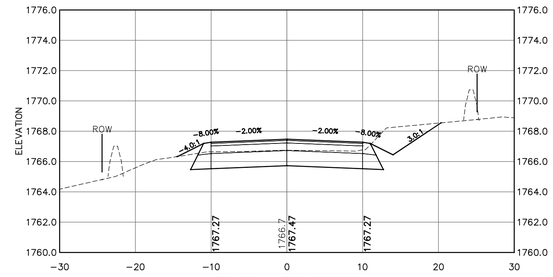
Station 60+00.00



Station 56+50.00



Station 58+00.00



Station 59+50.00

Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE
JAY J. POULIN No. 10953
LICENSED PROFESSIONAL ENGINEER

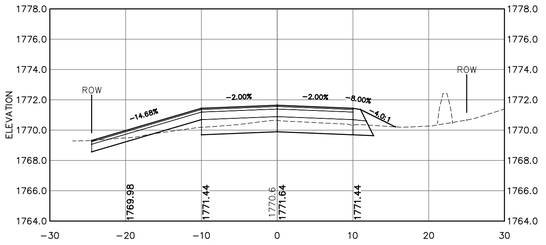
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

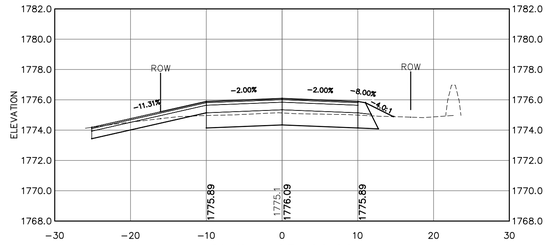
Roadway Cross Sections (STA 56+50 - 61+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.23
SHEET 34 OF 43

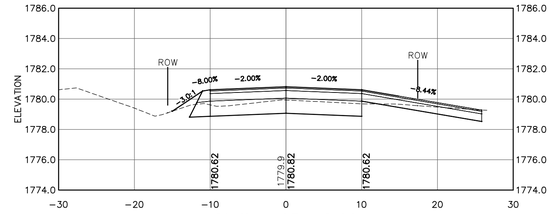
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.23, 5/27/2011 11:06:59 AM, dburnell



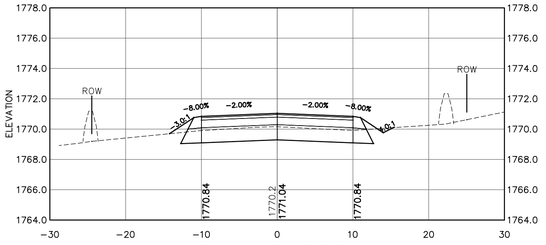
Station 62+19.00
(Driveway Left)



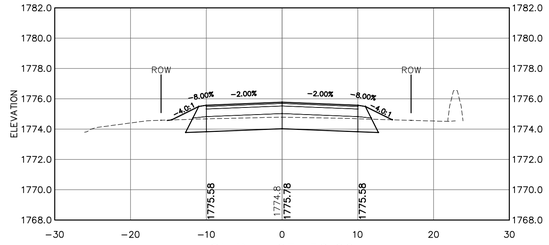
Station 63+60.00
(Driveway Left)



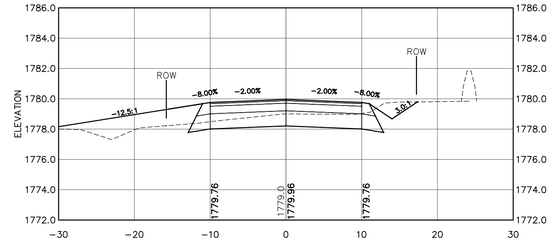
Station 65+42.00
(Driveway Right)



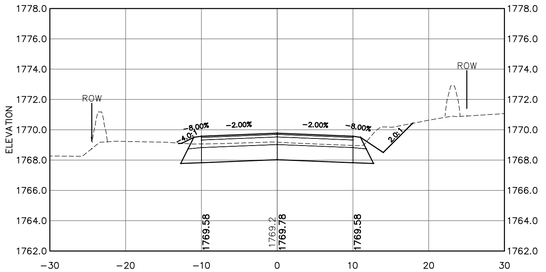
Station 62+00.00



Station 63+50.00



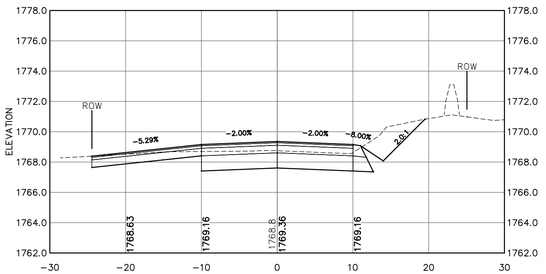
Station 65+00.00



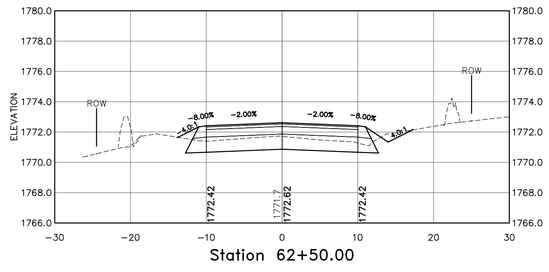
Station 61+50.00

Station 63+00.00

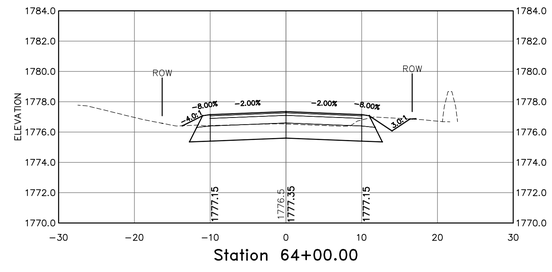
Station 64+50.00



Station 61+28.00
(Driveway Left)



Station 62+50.00



Station 64+00.00

NOTE:

1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.

C3.24
SHEET 35 OF 43

2010-062
Roadway Cross Sections (STA 61+28 - 65+42)
Randolph Hill Road Reconstruction

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Design Development\Sheet Files\C3.11 Cross Sections.dwg C3.24, 5/2/2011 11:07:04 AM, sburnell

Scale
1"=10' Horizontal
1"=5' Vertical

NO.	REVISION	DATE	BY

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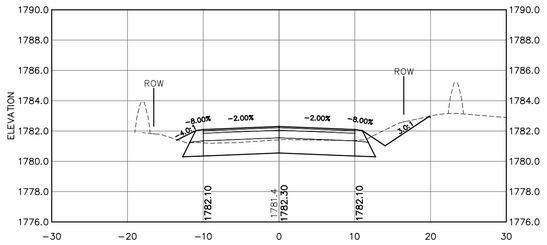
STATE OF NEW HAMPSHIRE - JAY J. POULIN No. 10953 - LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

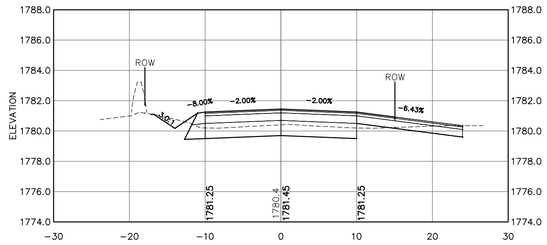
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 61+28 - 65+42)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

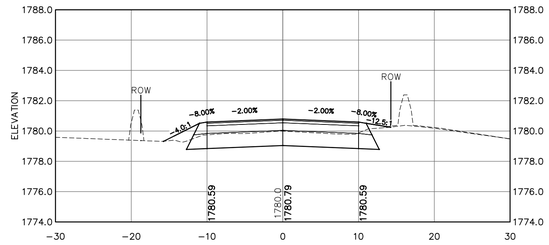
2010-062
C3.24
SHEET 35 OF 43



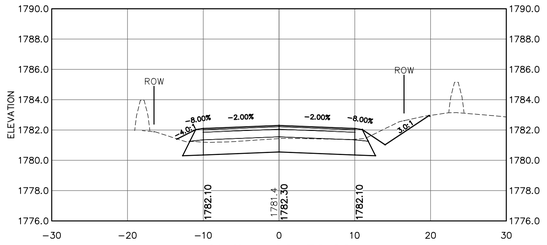
Station 66+54.41
(High Point)



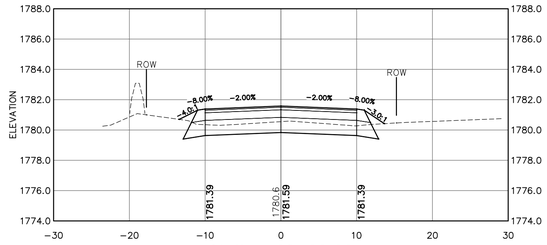
Station 68+25.00
(Driveway Right)



Station 69+50.00



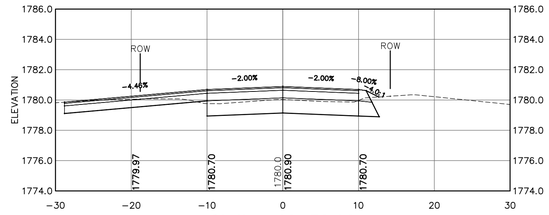
Station 66+50.00



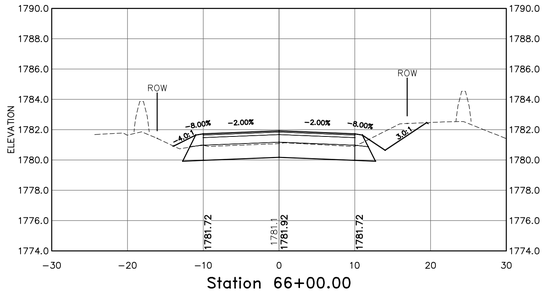
Station 68+00.00

NOTE:

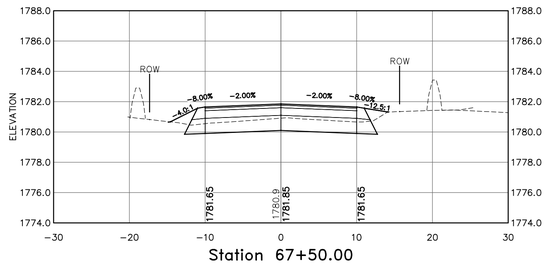
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



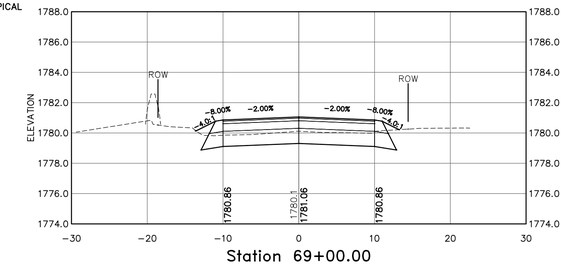
Station 69+30.00
(Driveway Left)



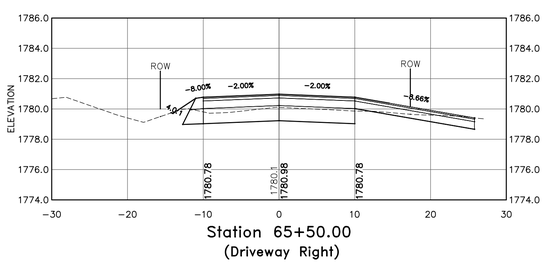
Station 66+00.00



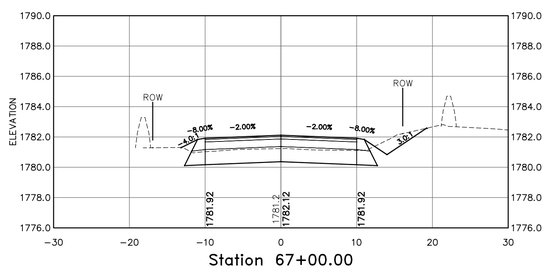
Station 67+50.00



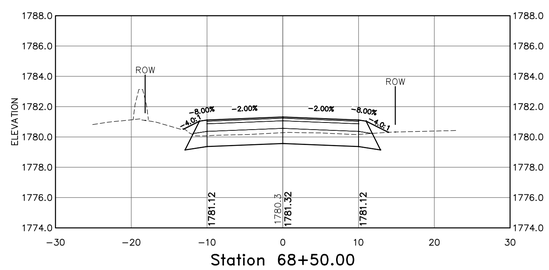
Station 69+00.00



Station 65+50.00
(Driveway Right)



Station 67+00.00



Station 68+50.00

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Scale
1"=10' Horizontal
1"=5' Vertical

STATE OF NEW HAMPSHIRE - JAY J. POULIN No. 10953 - LICENSED PROFESSIONAL ENGINEER

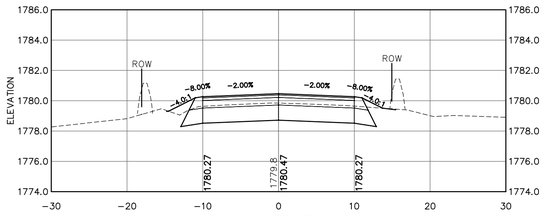
H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

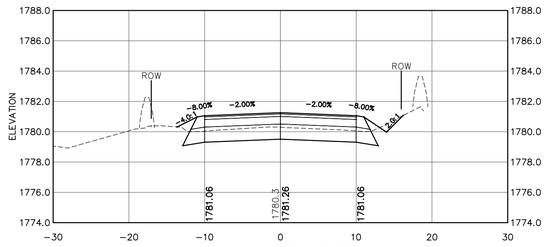
Roadway Cross Sections (STA 65+50 - 69+50)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.25
SHEET 36 OF 43

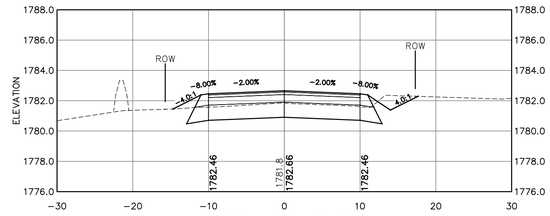
P:\Jobs\2010\2010-062- Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.25, 5/2/2011 11:08:10 AM, sturnell



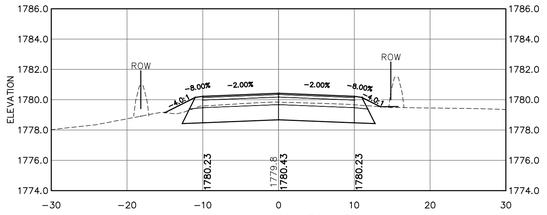
Station 70+50.00



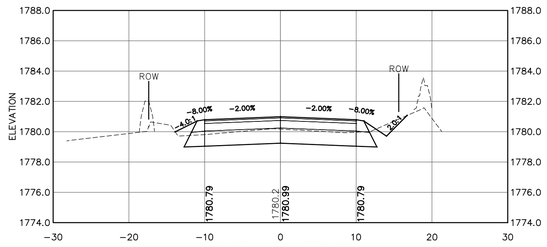
Station 72+00.00



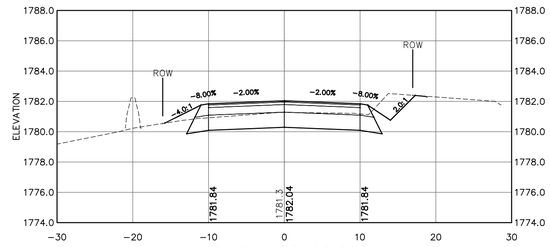
Station 74+00.00



Station 70+30.15
(Low Point)



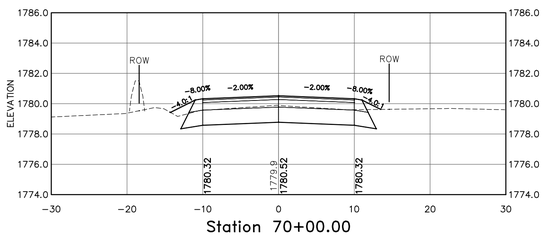
Station 71+50.00



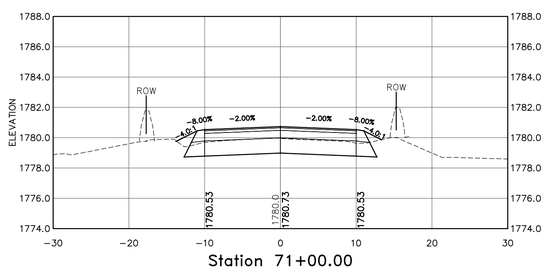
Station 73+50.00

NOTE:

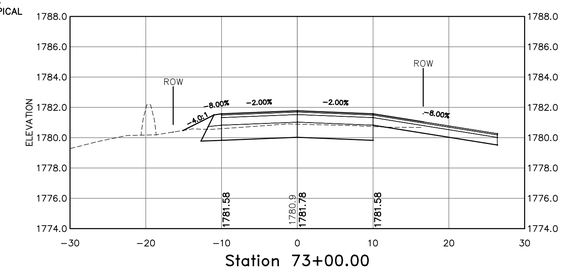
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



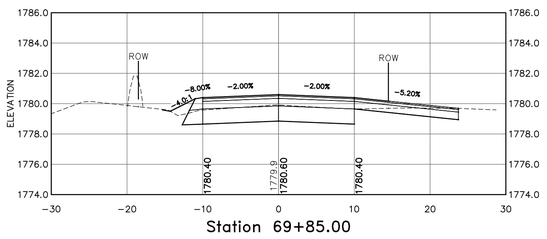
Station 70+00.00



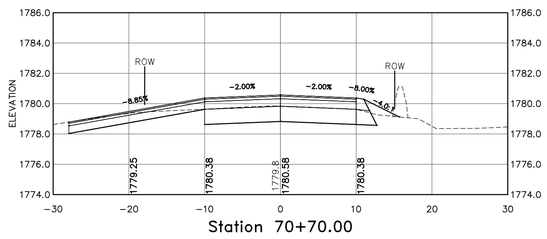
Station 71+00.00



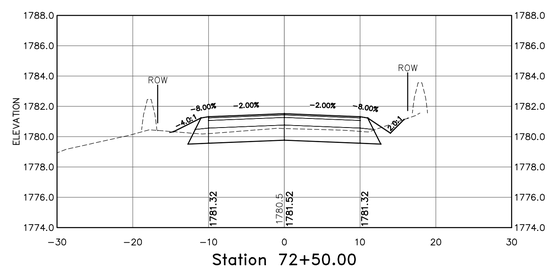
Station 73+00.00
(Driveway Right)



Station 69+85.00
(Driveway Right)



Station 70+70.00
(Driveway Left)



Station 72+50.00

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg C3.26, 5/2/2011 11:09:21 AM, sburrell

5
0
10
Scale
1"=10' Horizontal
1"=5' Vertical

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NO.	REVISION	DATE	BY

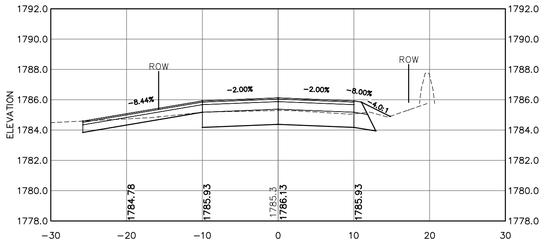
STATE OF NEW HAMPSHIRE
JAY J. POULIN
No. 10953
LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

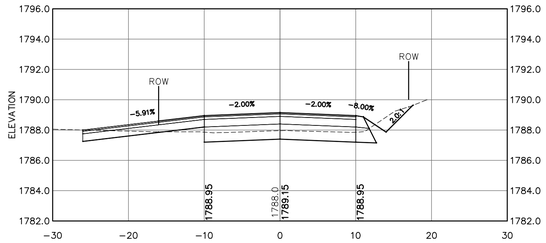
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 69+85 - 74+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

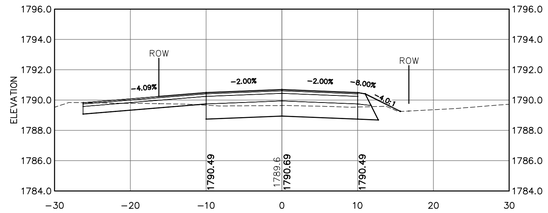
2010-062
C3.26
SHEET 37 OF 43



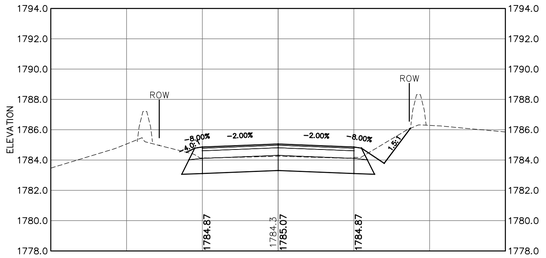
Station 75+43.00
(Driveway Left)



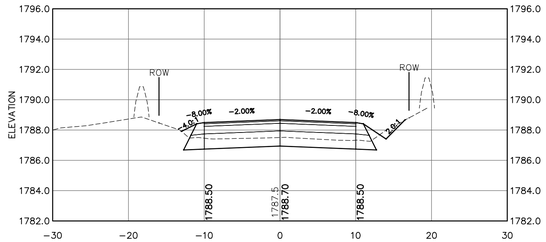
Station 76+80.00
(Driveway Left)



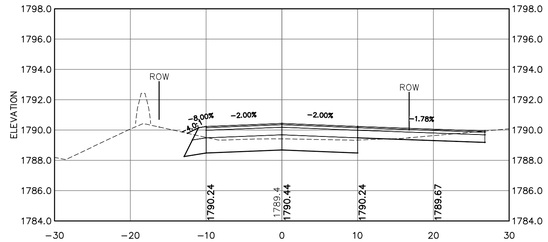
Station 78+00.00
(Driveway Left)



Station 75+00.00



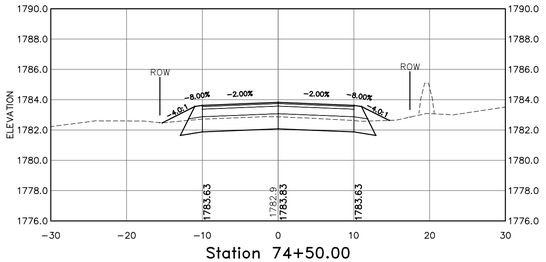
Station 76+50.00



Station 77+80.00
(Driveway Right)

NOTE:

1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



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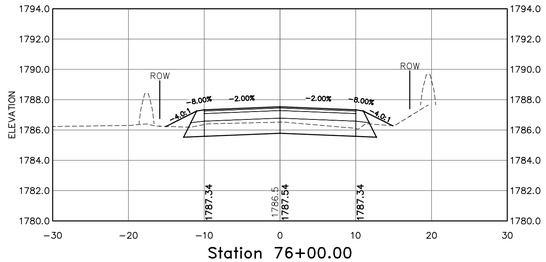

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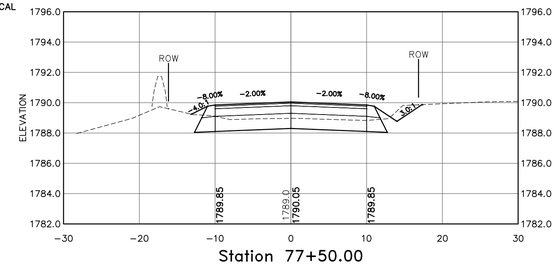
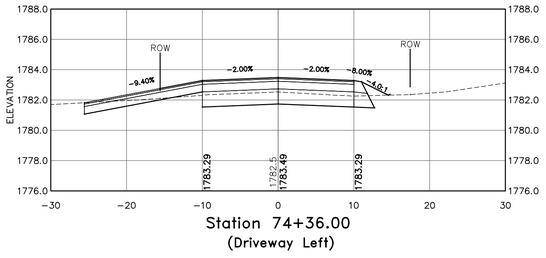
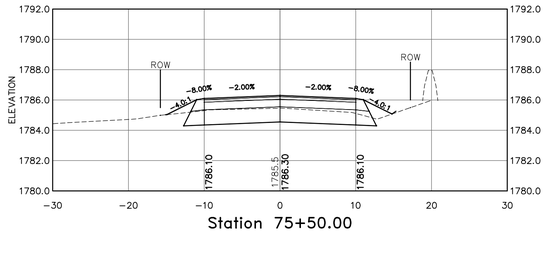


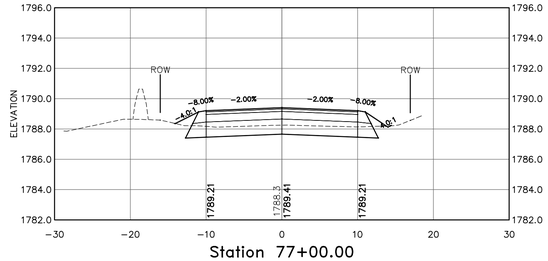
Station 77+50.00



Station 74+36.00
(Driveway Left)



Station 75+50.00



Station 77+00.00

C3.27
SHEET 38 OF 43

2010-062
Roadway Cross Sections (STA 74+36 - 78+00)
Randolph Hill Road Reconstruction

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.27, 5/2/2011 11:19:32 AM, sburrell

Scale
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1"=5' Vertical

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JAY J. POULIN No. 10953 · STATE OF NEW HAMPSHIRE · LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
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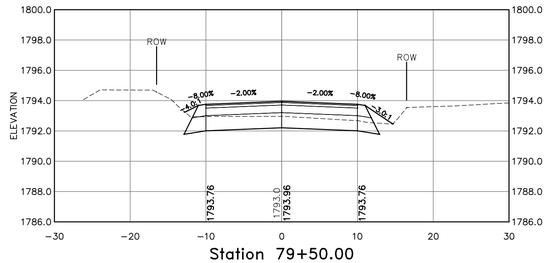
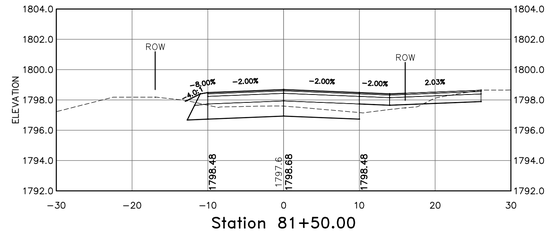
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 74+36 - 78+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

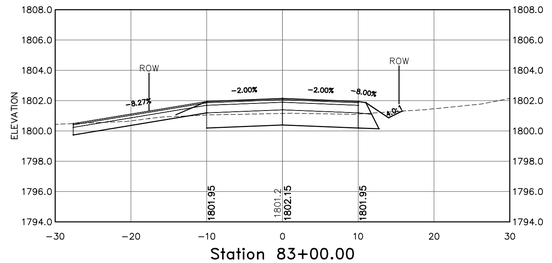
2010-062
C3.27
SHEET 38 OF 43



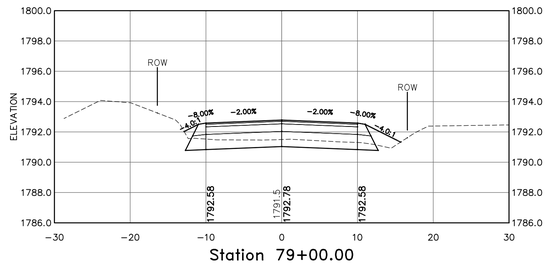
Station 79+50.00



Station 81+50.00
(Driveway Right)



Station 83+00.00
(Driveway Left)



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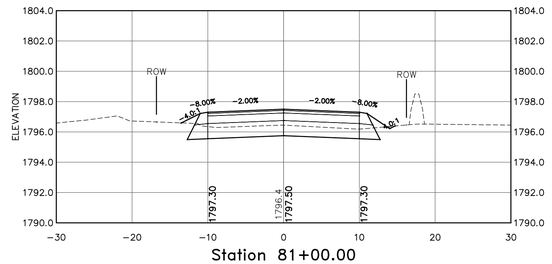
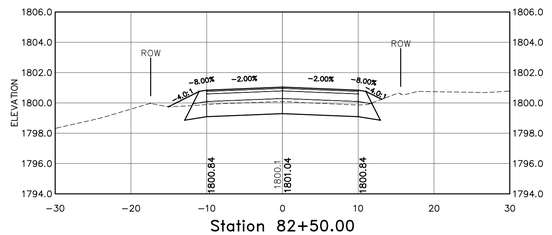


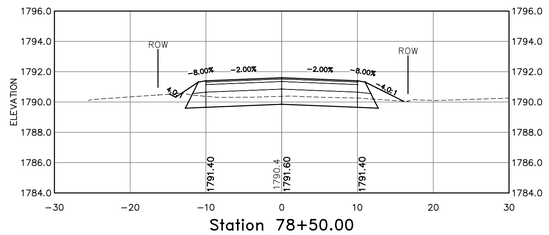
Station 81+00.00

NOTE:

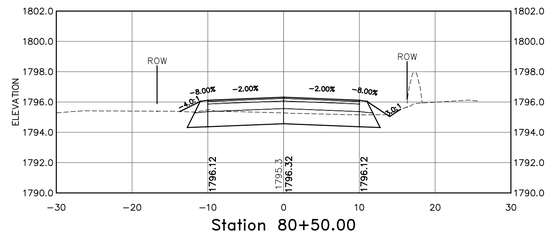
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



Station 82+50.00



Station 78+50.00



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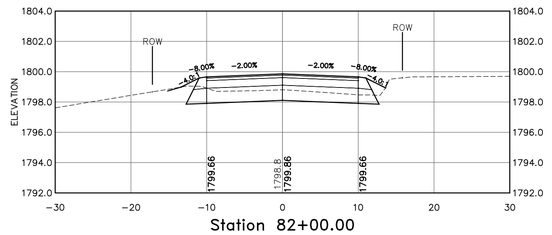

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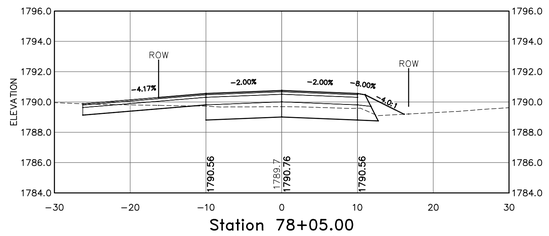
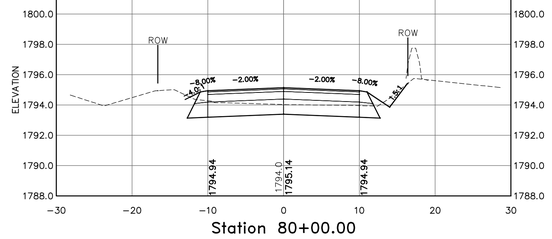


Station 78+05.00
(Driveway Left)



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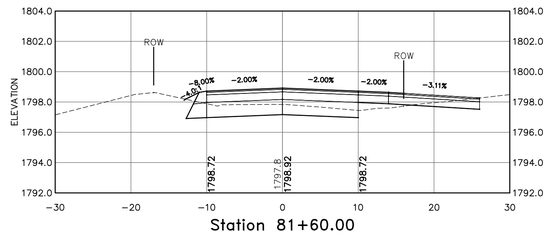

Station 81+60.00
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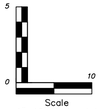

Scale
1"=10' Horizontal
1"=5' Vertical

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P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

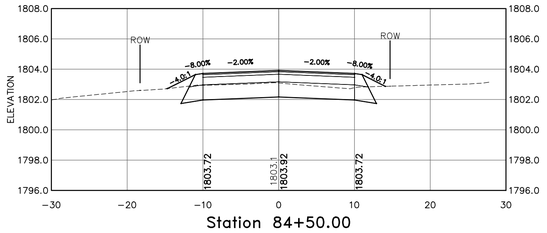
SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Roadway Cross Sections (STA 78+05 - 83+00)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

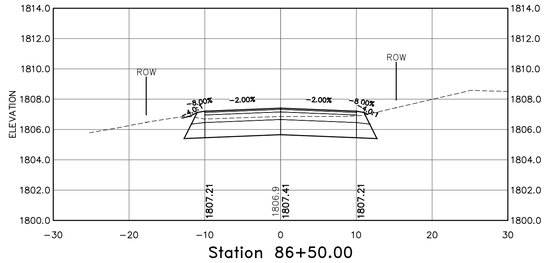
2010-062
C3.28
SHEET 39 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.28, 5/2/2011 11:11:42 AM, sburrell

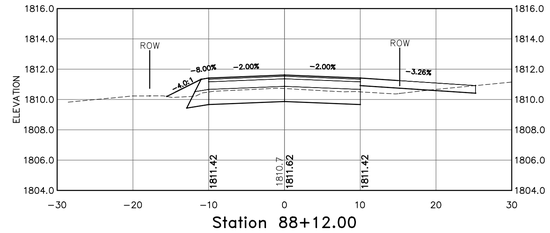
2010-062
Roadway Cross Sections (STA 83+15 - 88+12)
Randolph Hill Road Reconstruction



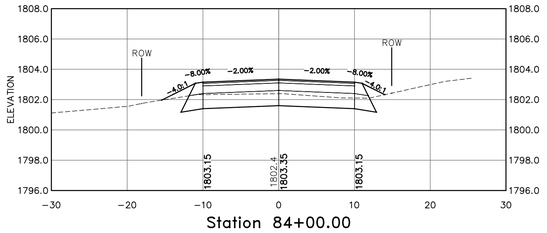
Station 84+50.00



Station 86+50.00



Station 88+12.00
(Driveway Right)



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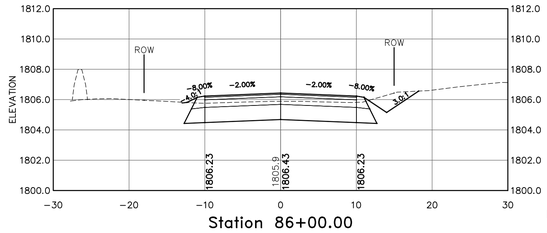
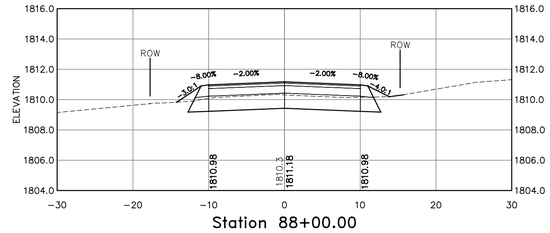


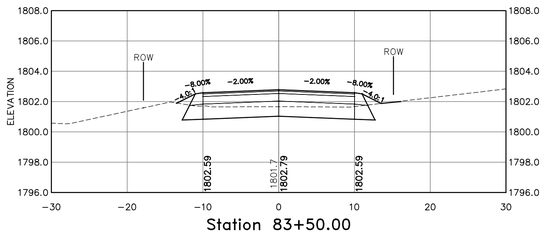
Station 86+00.00

NOTE:

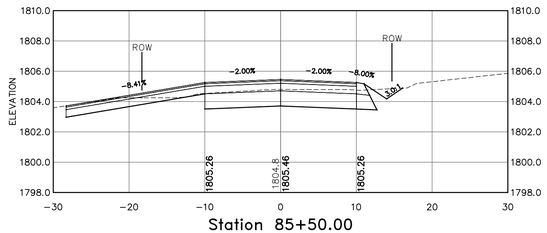
1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.



Station 88+00.00



Station 83+50.00



Station 85+50.00
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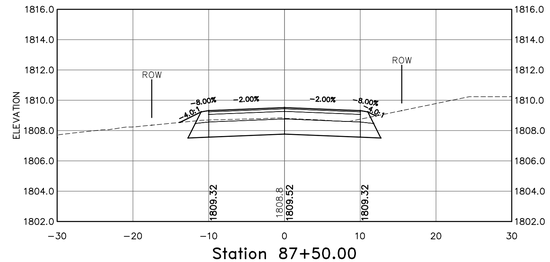
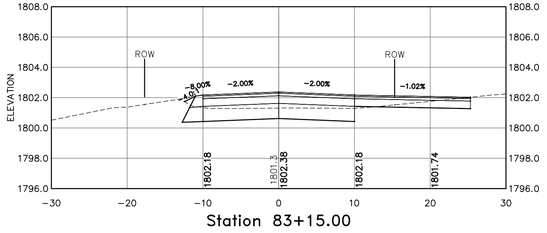


Station 87+50.00



Station 83+15.00
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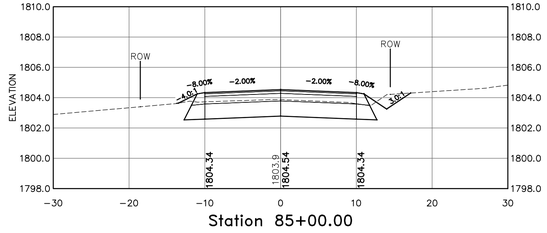

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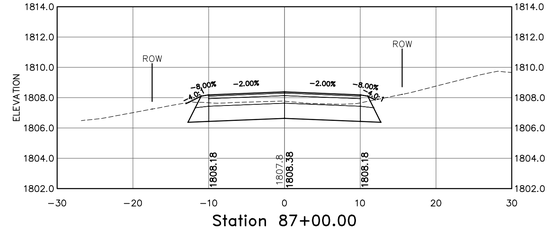

Station 87+00.00

Scale
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1"=5' Vertical

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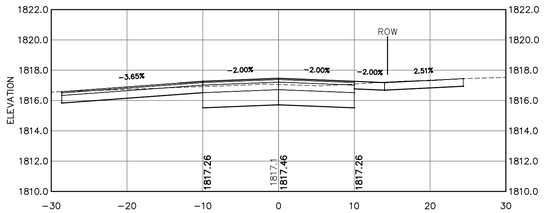
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

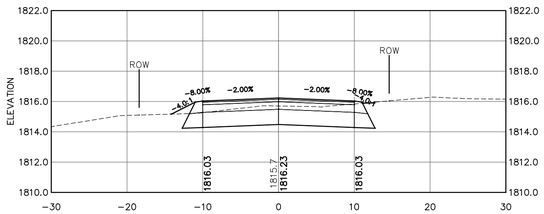
Roadway Cross Sections (STA 83+15 - 88+12)
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C3.29
SHEET 40 OF 43

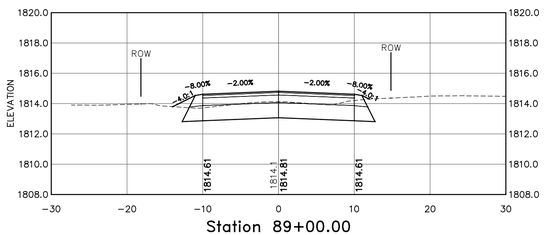
P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\C3.11 Cross Sections.dwg, C3.29, 5/2/2011 11:12:48 AM, sburrell



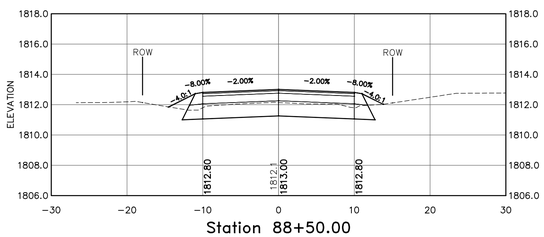
Station 90+00.00
(High Acres Road Left/Driveway Right)



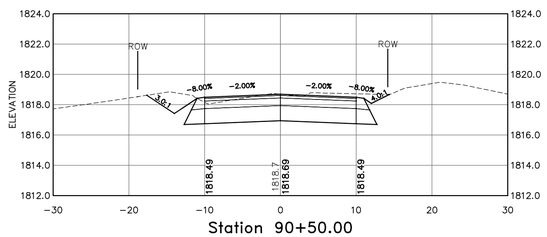
Station 89+50.00



Station 89+00.00



Station 88+50.00



Station 90+50.00

NOTE:

1. AGGREGATE BASE COURSES SHALL EXTEND TO SLOPE LINES (MINUS LOAM SURFACE) AS SHOWN ON THE TYPICAL SECTION.

C3.30
SHEET 41 OF 43

2010-062
Roadway Cross Sections (STA 88+50 - 90+50)
Randolph Hill Road Reconstruction

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Roadway Cross Sections (STA 88+50 - 90+50)
for the
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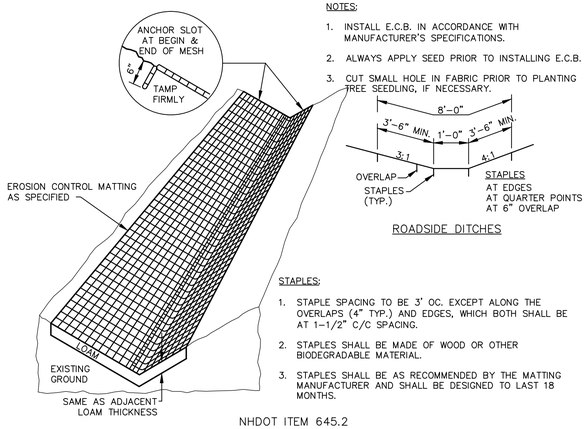
Town of Randolph, New Hampshire

2010-062
C3.30
SHEET 41 OF 43



NOTES:

1. INSTALL E.C.B. IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. ALWAYS APPLY SEED PRIOR TO INSTALLING E.C.B.
3. CUT SMALL HOLE IN FABRIC PRIOR TO PLANTING TREE SEEDLING, IF NECESSARY.

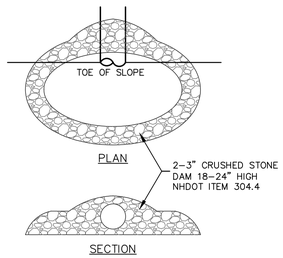
STAPLES:

1. STAPLE SPACING TO BE 3' OC. EXCEPT ALONG THE OVERLAPS (4" TYP.) AND EDGES, WHICH BOTH SHALL BE AT 1-1/2" C/C SPACING.
2. STAPLES SHALL BE MADE OF WOOD OR OTHER BIODEGRADABLE MATERIAL.
3. STAPLES SHALL BE AS RECOMMENDED BY THE MATTING MANUFACTURER AND SHALL BE DESIGNED TO LAST 18 MONTHS.

NHDOT ITEM 645.2

EROSION CONTROL MATTING (DITCH)

N.T.S. (ISOMETRIC)



INLET PROTECTION DETAIL

N.T.S.

General Erosion-Control Requirements:

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

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

1. Erosion-Control Definitions:

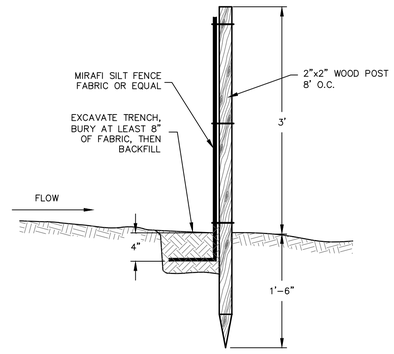
   "Strip topsoil": Excavate topsoil, screen, and stockpile.

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

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

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

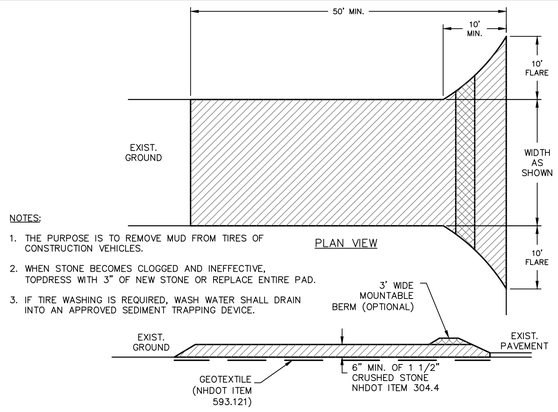
2. Install all erosion-control measures prior to earthwork operation and maintain all erosion-control measures and seeded embankments during construction. Erosion-control shall be removed only upon the establishment of all vegetated areas.
3. All drainage structure inlets shall be protected using inlet protection or catch basin inserts.
4. Erosion-control measures shall be implemented complying with Best Management Practices (BMPs) of the "Stormwater Management and Erosion- and Sediment-Control Handbook for Urban and Developing Areas in New Hampshire" by the NHDES, USDA SCS, and Rockingham County Conservation District, latest edition.
5. Do not disturb areas outside the limits of proposed work. Areas disturbed by the contractor's operations shall be restored to their original condition at the contractor's expense. All areas disturbed during construction not covered with buildings, structures or pavement shall receive four (4) inches of loam and seed.
6. The downhill side of all stockpiles shall be encircled with silt fence.
7. All ditches, swales, and other areas of concentrated flow shall be stabilized prior to directing flow to them. Catch basin inserts to be installed on all catch basins until the project is fully established.
8. Before weekends, and if a significant rainfall event is anticipated during the construction of the cut/fill embankments, a temporary berm shall be constructed along the top of the fill embankments, and temporary slope drains (pipes) with temporary stone outlet aprons shall be installed at the base of the slopes.
9. The maximum time that any disturbed areas shall be left unstabilized shall be 14 days.
10. The smallest practical area shall be disturbed to complete the required construction, but no more than 5 acres at any one time.
11. All cut and fill slopes shall be seeded and mulched within 72 hours after their construction.
12. 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; or
    D. Erosion control blankets have been properly installed.
14. Throughout the construction period, all erosion-control measures shall be inspected at the end of each week and before anticipated significant rainfall events and repaired, if deficient. Extra attention shall be given to the critical areas listed separately.
15. All erosion control measures shall be inspected weekly and after every 0.5" or greater rainfall within a 24 hour period.
16. All roadways and cut and fill slopes shall be stabilized within 72 hours of achieving finished grade.



NHDOT ITEM 645.531

SILT FENCE INSTALLATION

SCALE: 1" = 1'-0"



NOTES:

1. THE PURPOSE IS TO REMOVE MUD FROM TIRES OF CONSTRUCTION VEHICLES.
2. WHEN STONE BECOMES CLOGGED AND INEFFECTIVE, TOPDRESS WITH 3" OF NEW STONE OR REPLACE ENTIRE PAD.
3. IF TIRE WASHING IS REQUIRED, WASH WATER SHALL DRAIN INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION ENTRANCE

SCALE: 1" = 10'-0"

Seeding Notes:

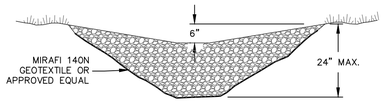
1. Seed mixture: Prior to construction, submit certification from seed supplier that the mixture complies with the requirements. Include the requirements on the certification.
2. Prepare subsoil by eliminating uneven areas; removing foreign materials, weeds, and other undesirable plants and their roots; scarifying subsoil to a depth of 3 inches.
3. Spread loam to yield a minimum depth of 4-inches after rolling. Rake smooth to remove stones and roots. Loam shall consist of loose friable topsoil with no admixture of refuse or material toxic to plant growth. Loam shall be generally free from stones, lumps, stumps, subsoil, roots, and weeds or similar objects larger than 2 inches in greatest diameter. The term as used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The minimum and maximum pH value shall be from 5.5 to 7.6. Loam shall contain a minimum of 3 percent and a maximum of 10 percent of organic matter as determined by loss by ignition. Not more than 65 percent shall pass a No. 200 sieve as determined by the wash test in accordance with ASTM D 1140. In no instance shall more than 20 percent of that material passing the No. 4 sieve consist of clay size particles.
4. Apply agricultural limestone at a rate of 100 lbs, per 1000 sf.
5. Apply commercial grade 10-10-10 fertilizer at a rate of 10 lbs, per 1000 sf.
6. Sow uniformly with last year's crop of the local natural resource conservation service's "conservation mix" at a rate of 0.5lbs/1000 sf. Mixture is to have a germination rate of not less than 80% and a purity of not less than 85%.
7. Roll seeded area with hand roller.
8. Mulch with seedless hay, oak, or straw mulch at a rate of 2 bales per 1000 sf.
9. All ditches shall receive erosion control matting.

Temporary

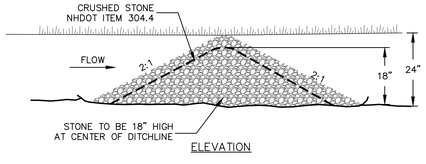
1. Bedding: Remove stones and trash that will interfere with seeding the area. Where feasible, till the soil to a depth of about 3 inches to prepare a seedbed and mix fertilizer into the soil. The seedbed should be left in a firm and smooth condition. The last tillage operation should be performed across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

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

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



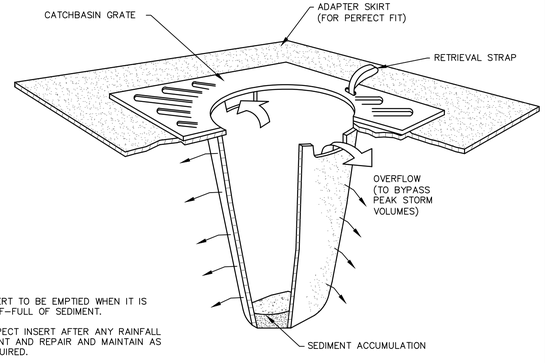
CROSS SECTION



ELEVATION

STONE CHECK DAM

SCALE: 1" = 2'-0"

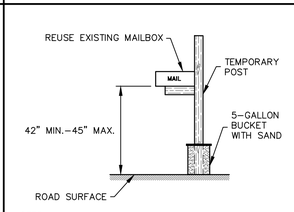


NOTES:

1. INSERT TO BE EMPTIED WHEN IT IS HALF-FULL OF SEDIMENT.
2. INSPECT INSERT AFTER ANY RAINFALL EVENT AND REPAIR AND MAINTAIN AS REQUIRED.

SEDIMENTATION CATCHBASIN INSERT

N.T.S.



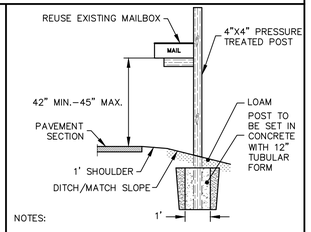
NOTES:

1. CONTRACTOR TO COORDINATE WITH RESIDENT ENGINEER TO IDENTIFY WHICH MAILBOXES NEED TO BE RELOCATED.
2. EXISTING POST MAY BE USED FOR TEMPORARY PURPOSES.
3. CONTRACTOR TO LOCATE TEMPORARY MAILBOX ASSEMBLY IN A SAFE LOCATION FOR MAIL DELIVERY AND PICK-UP. POST TO BE LOCATED ON THE RIGHT-HAND SIDE OF THE ROAD IN THE MAIL CARRIER'S DIRECTION OF TRAVEL.

NHDOT ITEM 645.531

TEMPORARY MAILBOX RELOCATION DETAIL

SCALE: 1" = 3'-0"



NOTES:

1. CONTRACTOR TO COORDINATE WITH RESIDENT ENGINEER AND LOCAL POSTMASTER FOR PERMANENT LOCATION.
2. CONTRACTOR TO LOCATE POST IN A SAFE LOCATION FOR MAIL DELIVERY AND PICK-UP. POST TO BE LOCATED ON THE RIGHT-HAND SIDE OF THE ROAD IN THE MAIL CARRIER'S DIRECTION OF TRAVEL.
3. CONTRACTOR TO EXCAVATE TO DEPTH REQUIRED TO ACHIEVE DIMENSIONS SHOWN (SUBSIDIARY TO ITEM).
4. CONTRACTOR TO SET POST IN CONCRETE WITH 12" TUBULAR FORM (SUBSIDIARY TO ITEM).
5. CONTRACTOR TO BACKFILL AND COMPACT USING GRANULAR BACKFILL, NHDOT ITEM 209.1 (SUBSIDIARY TO ITEM).

NHDOT ITEM 645.531

PERMANENT MAILBOX RELOCATION DETAIL

SCALE: 1" = 3'-0"

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NO.	REVISION	DATE	BY

STATE OF NEW HAMPSHIRE - JAY J. POULIN No. 10953 - LICENSED PROFESSIONAL ENGINEER

H.E. BERGERON ENGINEERS, INC.
P.O. BOX 440
NORTH CONWAY, NH
03860 · (603) 356-6936

SURVEYED BY	KLT/JLT
DESIGNED BY	DBH/EJG
DRAWN BY	DBH/EJG
CHECKED BY	JJP
FIELD BOOK	339
SCALE	AS NOTED
DATE	04/18/2011

Construction Details - Erosion & Sediment Control
for the
Randolph Hill Road Reconstruction
located in and prepared for the
Town of Randolph, New Hampshire

2010-062
C5.11
SHEET 42 OF 43

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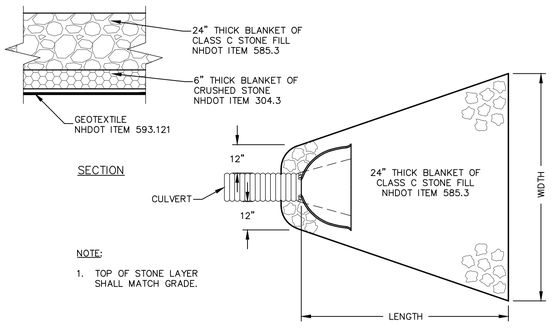
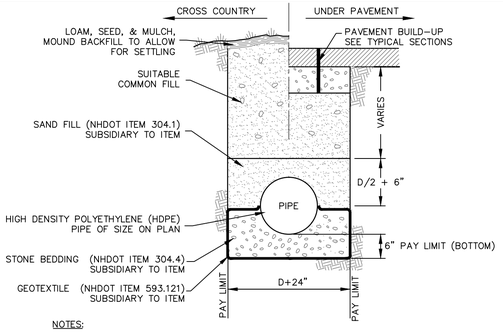


NOTE:

1. TOP OF STONE LAYER SHALL MATCH GRADE.

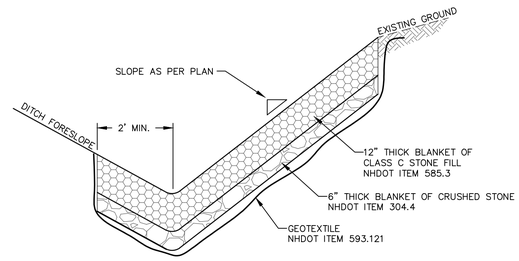
STONE OUTLET APRON
N.T.S.



NOTES:

1. SUITABLE COMMON FILL SHALL BE MATERIAL FROM EITHER ON-SITE OR OFF-SITE THAT IS FREE OF FROZEN MATERIAL, FOREIGN DEBRIS, CLAY, PEAT, ORGANIC MATTER, PERISHABLE RUBBISH, OTHER DELETERIOUS MATERIALS, AND STONES GREATER THAN 6" IN THEIR LARGEST DIMENSION.
2. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE RESPONSIBILITY OF THE CONTRACTOR.

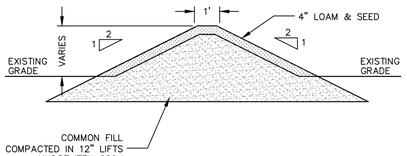
NHDOT ITEM 603.83212
TYPICAL STORM DRAIN TRENCH
SCALE: 1" = 2'-0"



NOTE:

1. TO BE USED AS AN ALTERNATE TO THE EROSION CONTROL BLANKET (SLOPE) IF EARTH BEGINS TO SLOUGH

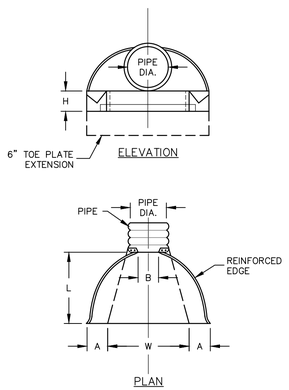
STONE SLOPE PROTECTION
SCALE: 1" = 2'-0"

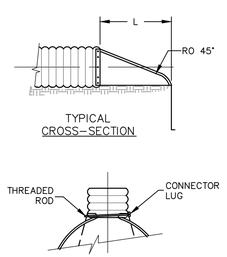


NOTE:

1. INTENT OF EARTH BERM IS TO DIVERT ALL STORMWATER RUNOFF INTO INLET STRUCTURE.

EARTH BERM
SCALE: 1" = 3'-0"

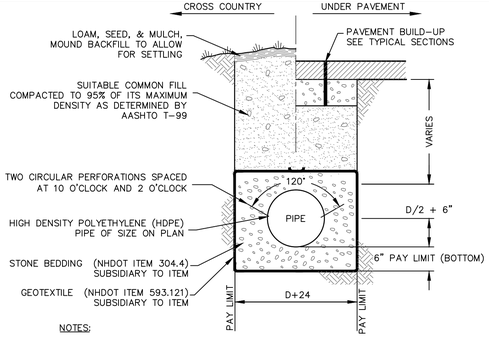




PIPE DIA.	DIMENSIONS A 1"TOL.	A MAX.	B	H* 1"TOL.	L 1/2" TOL.	W 2"TOL.
12"	6.5"	10"	6.5"	25"	29"	
15"	6.5"	10"	6.5"	25"	29"	
18"	7.5"	15"	6.5"	32"	35"	
24"	7.5"	18"	6.5"	36"	45"	
30"	10.5"	N/A	7.0"	53"	68"	

* PLUS EXTENSION

NHDOT ITEM 603.3
HDPE END SECTION
N.T.S.



NOTES:

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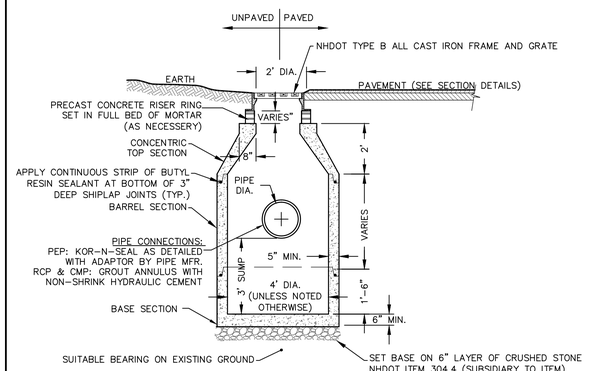
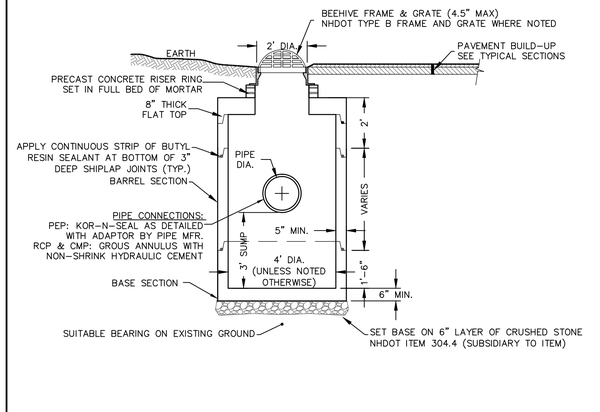
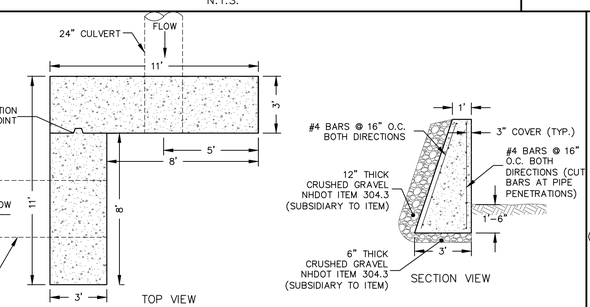
PERFORATED STORM DRAIN TRENCH
SCALE: 1" = 2'-0"



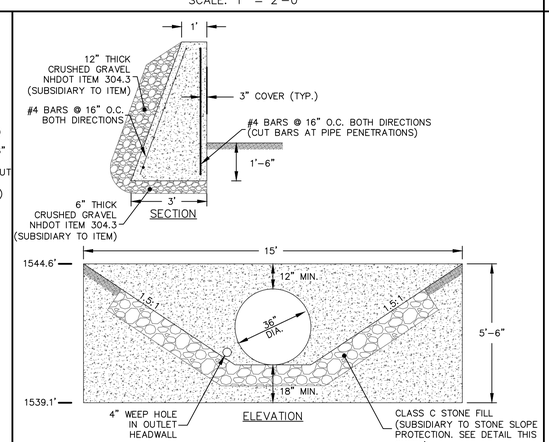
NHDOT ITEM 604.124
4' DIA. CONE-TOP CATCH BASIN
SCALE: 1" = 3'-0"



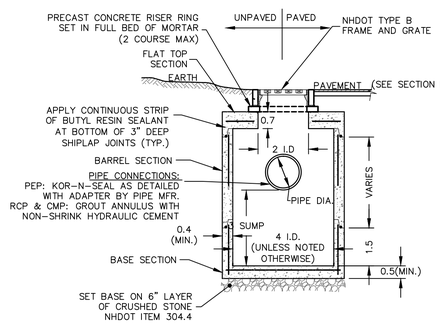
NHDOT ITEM 604.194
INLET STRUCTURE
SCALE: 1" = 3'-0"



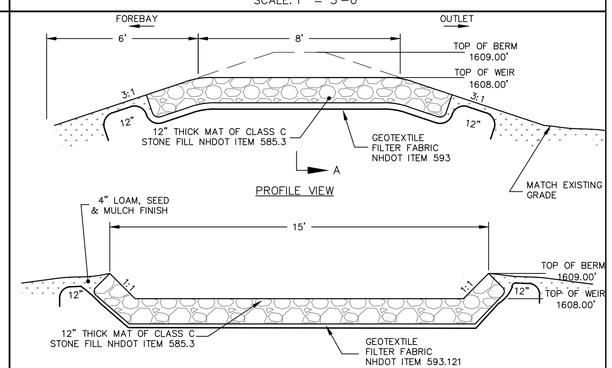
CONCRETE INLET HEADWALL DETAIL
SCALE: 1" = 4'-0"



CONCRETE OUTLET HEADWALL DETAIL
SCALE: 1"=3'-0"



4' DIA. FLAT-TOP CATCH BASIN
SCALE: 1" = 3'



SEDIMENT FOREBAY OUTLET CONTROL WEIR
SCALE: 1" = 3'-0"

NO.	REVISION	DATE	BY

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2010-062
C5.21
SHEET 43 OF 43

P:\Jobs\2010\2010-062 Town of Randolph - Randolph Hill Rd\Dwg\Design Development\Sheet Files\CS.10 Details.dwg, CS.21, 5/2/2011 11:14:44 AM, sburrell