STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION MEMORANDUM	Subject: Date:	Project Number 106-126 Geotechnical Roadway Report Intersection Improvements at Route 34 and Baldwin Road Town of Orange April 25, 2016
to: Susan M. Libatique Trans. Principal Engineer Bureau of Engineering and Construction	from:	Leo L. Fontaine Trans. Principal Engineer Bureau of Engineering and Construction

1.	 Transmitted are the following: ☑ Roadway Geotechnical Report ☑ Structure Geotechnical Report ☑ Plans: ☑ Correspondence:
2.	This transmittal is being made:
3.	Comments:
4.	 Please take the following action: ➢ Please review and forward to ➢ Please review for incorporation into the design of the project ➢ For your use and information

Attachment

Sara Ghatee/SG

cc: Sohrab Afrazi Mary Baier Sabastian A. Cannamela – Meredith Andrews Michael McDonnell – Robert A. Pion

Geotechnical Roadway Report-Transmittal Format

Project Description: The purpose of this project is to address safety concerns at the intersection of Route 34 and Baldwin Road in Town of Orange. The existing intersection at Route 34 and Baldwin road is a three legged unsignalized intersection. The proposed safety improvements include minor widening of the Route 34 westbound approach and Baldwin road in order to provide right turn lanes; and providing a longer taper and additional storage length for vehicles turning left onto Route 34 eastbound by revising the existing raised median.

The information provided for our use in preparation of this report is Aerial Concept Plan, and the Environmental Review of the project.

Geotechnical Information and Site Conditions:

Surficial Geology: USGS mapping indicates that the surficial soil at the project location consist of predominantly glacial till overlying bedrock. Refer to Appendix 4 for USGS Mapping.

Bedrock Geology: USGS mapping shows that bedrock geology in the vicinity of the project is mapped as Schist. Refer to Appendix 4 for USGS Mapping.

Existing Plans: The original Route 34 construction plans (project number 36-43) show that the existing grade, at the time of construction, was elevated between 0 to 4 feet. The ground surface prior to construction of Route 34 is generally described as meadow and farmland.

Observations:

 Site evaluation, aerial photos and boring logs indicate that the existing elevation of Route 34 is about 10 feet higher than the natural grade. The natural grade in the vicinity of the project is around elevation 220±, near to elevation of the open field on north side of Route 34.

Subsurface Conditions:

All soil samples were visually classified in the field. Subsurface conditions generally consist of miscellaneous fill, bearing on glacial till.

Thickness(ft) Description

- 0-12 **Miscellaneous Fill** Medium dense to very dense sand gravel in varying percentages with little to trace silt.
- 0-2 **Topsoil** Very loose sand and silt (Boring R-4)
- 3-10 **Glacial Till** Dense to very dense sand, with lesser percentages of gravel and little to trace silt

Based upon moisture content of the soil samples ground water may be encountered approximately 12 to 15 feet below ground surface. This places the groundwater at approximate elevation 215. So the groundwater is not expected to be encountered during roadway excavation.

Refer to Appendix 2 for Boring Location Plan and Appendix 3 for Finalized Boring Logs.

Subsurface Exploration and Testing Data:

 \boxtimes Boring logs and location plan attached.

Pavement Core results and location plan attached.

Bar Sounding/Pipe Probe/Test Pit logs attached.

Laboratory test data attached.

Rock core data sheet attached.

Recommendations:

Fill Slopes:

- Maximum fill slope rates: 2(h) to 1(v).
- Slope treatment for slope surface: use standard turf establishment for slopes 2(h) to 1(v) or flatter.
- A global stability analysis was performed for the proposed embankments. The proposed embankment is stable.
- Immediate settlement is expected to be less than ½ inch and post construction settlement will be negligible.

Earth Cut Slopes:

- Maximum cut slope rates: 2(h) to 1(v).
- Treatment for slope surface: use standard turf establishment.
- Earth excavation shrink value: 10%
- Rock excavation: neither rock excavation nor payment sized boulders are anticipated during roadway excavation.

Construction Considerations:

- Reuse (or non-reuse) of excavated material requirements: the non-organic excavated material should be suitable for re-use as subgrade.
- Subgrade stabilization requirements: no yielding or over-excavation of the subgrade soil is anticipated. Subgrade soil, prepared in accordance with the Standard Specification Form 816, shall provide a firm stable base for the placement of the pavement structure.

Appendix Information:

- 1. Project Location Plan
- 2. Boring Location Plan
- 3. Final Edited Boring Logs
- 4. USGS Bedrock and Surficial Mapping

Appendices Table of Contents

Appendix 1 Proj	ect Location Plan
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Appendix 2 Boring Location Plan

- Appendix 3 Final Edited Boring Logs
- Appendix 4 USGS Bedrock and Surficial Mapping

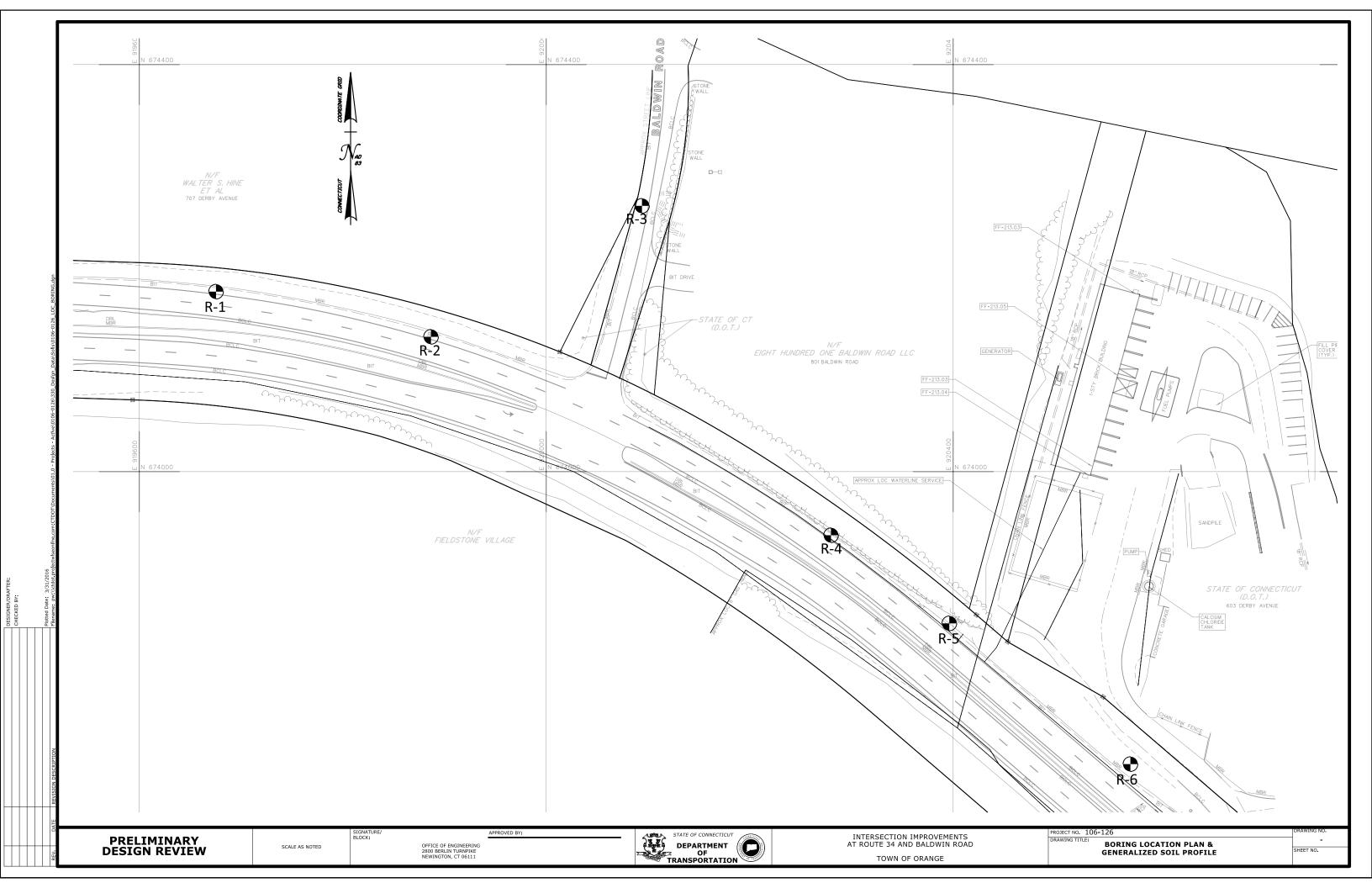
Project Location Plan

PROJECT LOCATION PLAN



PROJECT NUMBER: 106-126 ROUTE NUMBER: 34 INTERSECTION IMPROVEMENTS AT ROUTE 34 AND BALDWIN ROAD IN TOWN OF ORANGE

Boring Location Plan



Finalized Boring Logs

Driller:	J	ason [Doroi	J		Co	onne	cticu	ut DOT Bori	ng Report	Hole No.:	R-1	
Inspect		lenn l			Т	Fown:		Oran	ge		Stat./Offset:		
Engine		ara G	hatee	e	F	Project			-0126		Northing:	674176.9	
Start Da	ate: 1	-6-16			F	Route N	lo.:	34			Easting:	919675.4	
Finish [Date: 1	-6-16			E	Bridge N	No.:	NA			Surface Elev	ration: 226.8	
Project	Descript	ion: I	nters	ectio	n Imp	rovem	ents a	at Rou	ite 34 and Balo	dwin Road	·		
Casing	Size/Typ	be: 4in	HS/	4	5	Sample	r Type	/Size:	2in SS		Core Barrel	Гуре:	
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	-	-											-220
10-													
	S-2	5	4	11	27	24	15			Brown - C/F SAN	ID AND F/C G	RAVEL, trace Silt	_ 215
									GLACIAL TILL				- 215
15-		-											-
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Total P	enetratio								She				
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No. of		Ν	o. of		•	-							
Soil Sa	mples: 3	s C	ore R	uns: (U							SM-001-M F	REV. 1/02

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Inspect	or: G	lenn L	. Arz	t	-	Town:		Oran	ge		Stat./Offset:				
Engine	er: S	ara Gl	hatee	9		Project I	No.:	0106	-0126		Northing:	674132	.5		
Start D	ate: 1-	6-16				Route N	Route No.: 34 Easting: 919886.7						.7		
Finish [Date: 1-	6-16				Bridge N	ridge No.: NA Surface Elevation: 229.5								
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No. of	mples: 3		o. of ore Ri	uns: (C							s	M-001-M R	EV. 1/02	

Driller: Jason Dorou	Co	nne	cticu	ut DOT Bori	ng Report Hole No.:	R-3			
Inspector: Glenn L. Arzt	Town:		Oran	ge	Stat./Offset:				
Engineer: Sara Ghatee	Project N			-0126	Northing:	674261.2			
Start Date: 1-7-16	Route No		34		Easting:	920094.1			
Finish Date: 1-7-16	Bridge N	0.:	ition: 219.4						
Project Description: Intersection In	nproveme	ents a	t Rou	ite 34 and Balo	lwin Road				
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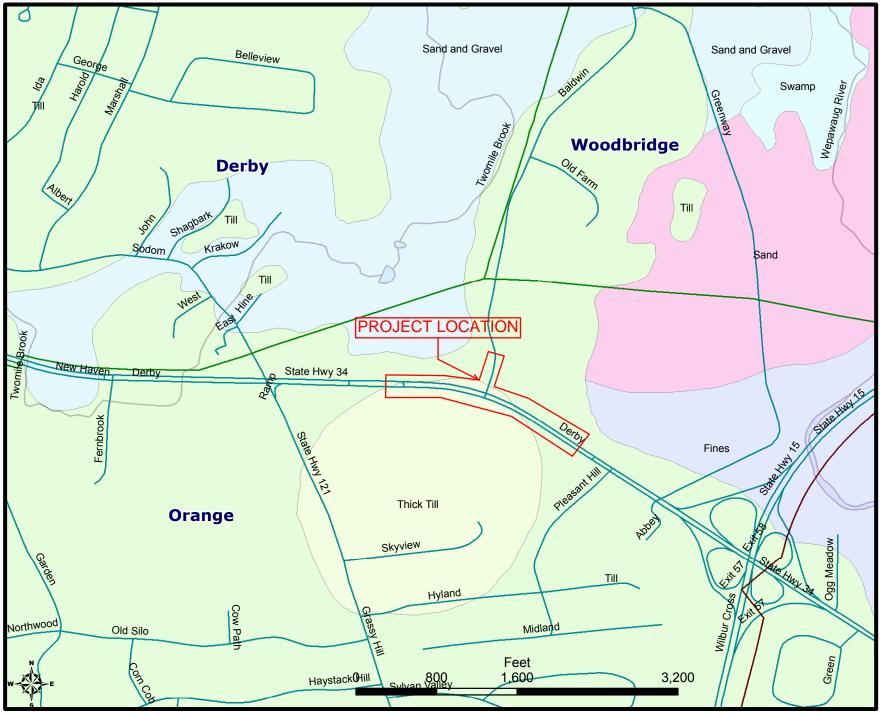
Driller:	J	ason [Doroi	J		Co	onne	cticu	ut DOT Bori	ng Report	Hole No.:	R-4		
Inspect		Slenn L			Т	own:		Oran	ge		Stat./Offset:			
Engine		ara G			F	Project			-0126		Northing:	673937.5		
Start Da		-6-16				Route N		34			Easting:	920279.9		
Finish D	Date: 1	-6-16			E	Bridge N	ridge No.: NA Surface Elevation: 230.5							
Project	Descript	ion: li	nters	ectio	n Imp	rovem	ents a	at Rou	ite 34 and Balo	dwin Road				
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Driller:	Ja	ason [Doroi	1		Co	onne	cticu	ut DOT Bori	ng Report	Hole No.:	R-5		
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Engine		ara Gl				Project			-0126		Northing:	673850.9		
Start Da		-6-16				Route N		34			Easting:	920396.2		
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Project	Descript	ion: Ir	nters	ectio				at Rou	ite 34 and Balo	dwin Road				
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	S-1	7	13	12	16	24	3			Brown - F/C SAN	ID, AND C/F C	GRAVEL, trace Silt	-220	
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Inspect		lenn l			ר	Town:		Oran	ge	Stat./Offset:			
Engine	er: S	ara G	hatee	e	F	Project	No.:	0106	-0126		Northing: 6	73712.6	
Start Da	ate: 1	-7-16			F	Route N	lo.:	34			Easting: 92	20574.2	
Finish [Date: 1	-7-16			E	Bridge N	No.:	NA			Surface Elevation	on: 218.7	
Project	Descript	ion: I	nters	ectio	n Imp	rovem	ents a	at Rou	ite 34 and Bal	dwin Road			
Casing	Size/Typ	e: 4in	HSA	۹	5	Sample	r Type	/Size:	2in SS		Core Barrel Type	e:	
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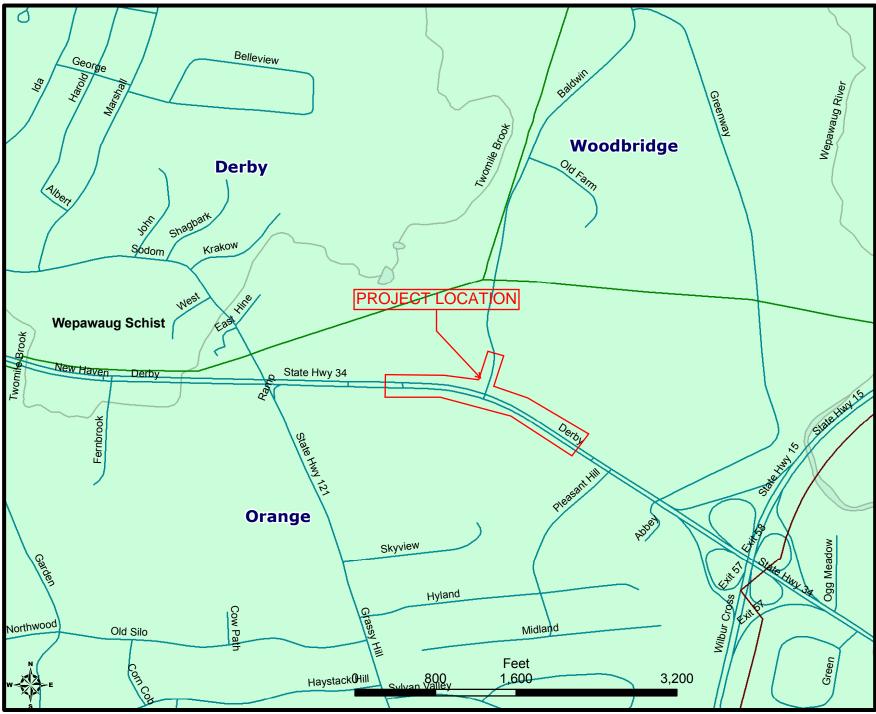
USGS Bedrock and Surficial Mapping

Surfical Soil Geology



Project No 106-126 Intersection Improvements at Route 34 and Baldwin Road

Bedrock Geology



Project No 106-126 Intersection Improvements at Route 34 and Baldwin Road