TOWN OF LEDYARD
CONNECTICUT

741 Colonel Ledyard Highway
Ledyard, Connecticut 06339

Inland Wetland and Water Courses Commission

~ AGENDA ~

Chairman
Justin DeBrodt

Tuesday, October 4, 2022 **7:00 PM** **Council Chambers -Hybrid Format**

REMOTE MEETING INFORMATION

Town Hall Annex - Council Chambers

Join Zoom Meeting
https://us06web.zoom.us/j/82770194586?pwd=TmRycFpYTVZlN0ViZjRQNndNdWlwQT09

Meeting ID: 827 7019 4586
Passcode: 665999

I. CALL TO ORDER

II. ROLL CALL

III. CITIZENS COMMENTS

IV. PRESENTATIONS / INFORMATIONAL ITEMS

V. OLD BUSINESS

Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

Attachments:
Narrative
Authorization
DEEP Form
ltr.City of Groton
ltr.CT DPH
Ian Cole Report
Plans - Submission Set
ltr.Town re submission
Application
Abutters

VI. NEW BUSINESS

Application IWWC#22-19 of Steve Masalin, DPW, Town of Ledyard, 741 Colonel Ledyard Hwy. Ledyard CT 06339 to replace the existing Lantern Hill Road Bridge No. 137-001 over Whitford Brook with a 33ft. clear span, precast concrete, 3-sided culvert.

Attachments: 2022 Proj. #9071-1371_Lantern Hill_Ledyard IW Permit Application

VII. STAFF REPORTS

Staff Report

Attachments: October 4 Wetlands Report

VIII. CORRESPONDENCE

XI. APPROVAL OF MINUTES

Draft Minutes September 6,2022

Attachments: IWWC Draft MeetingMinutes Sep-6 -2022

X. MEETING REVIEW

XI. ADJOURNMENT

DISCLAIMER: Although we try to be timely and accurate these are not official records of the Town.

File #: 22-360 **Agenda Date:** 10/4/2022 **Agenda #:**

APPLICATION

Subject/Application:
Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

Background:
This Application is associated with Application PZ#22-18SUB that was submitted the same day for a 36 Lot re-subdivision pursuant to CGS 8-30g (Affordable Housing). The parcel is 9.21 acres. Total Area of Wetlands is 5,600sf. The total area to be disturbed in the URA is 37,700sf. No wetlands will be filled.
Each of the 36 Lots will have individual wells and septic systems. The development will be derived by a private loop driveway. The property is with the Groton Utility Watershed Area.

Staff Comments:
(type text here)

APPLICATION OF AVERY BROOK HOMES, LLC TO
TOWN OF LEDYARD INLAND WETLANDS AND WATERCOURSES COMMISSION

NARRATIVE DESCRIPTION AND CONSTRUCTION SEQUENCE RELATIVE TO THE DEVELOPMENT OF A PROPOSED THIRTY-SIX (36) LOT RESIDENTIAL AFFORDABLE HOUSING SUBDIVISION AT 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214

PROJECT OVERVIEW:

The Applicant is the owner of four (4) certain contiguous tracts or parcels of land located on the northerly side of Stoddards Wharf Road A.K.A. Connecticut Route 214 in the Town of Ledyard, Connecticut comprising 9.21 acres, more or less. The properties are designated as 94, 96, 98 and 100 Stoddards Wharf Road and are more particularly delineated on Ledyard Assessor's Map 65. The Applicant's properties (hereinafter collectively referred to as the "Property") is abutted to the northwest, north, northeast and east by land of the City of Groton. The Property is comprised of well-drained soils as depicted on the "Boundary and Soils Map" (and as hereinafter described in the Soils section of this Narrative) as depicted on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown June 2022 Sheet 1 of 6 Dieter & Gardner Land Surveyors – Planners P.O. Box 335 1641 Connecticut Route 12 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

The Applicant is proposing to develop the Property for a thirty-six (36) lot single family residential subdivision under the Affordable Housing Act, Connecticut General Statutes §8-30g. The development scheme for the Property contemplates the development of a private loop road with two (2) access points on the northerly side of Stoddards Wharf Road. Due to the free draining nature of the soils prevalent throughout the site, no closed drainage system is proposed in the roadway system with the anticipation that stormwater runoff from improved portions of the project site will infiltrate into the existing well-drained soils throughout the site. This will eliminate any point source discharges resulting from the proposed development.

There are only peripheral areas of regulated inland wetlands located on the Property as depicted by Wetland Flags 1 – 6 (along the easterly periphery of Proposed Lots 2 and 3), Wetland Flags 1A – 8A (along the easterly periphery of Lot 6) and Wetland Flags 10B – 12B (along the northerly periphery of Lot 12) all as shown on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1" = 40' June 2022 Sheet 2 of 6 Dieter & Gardner Land Surveyors – Planners 1641 Connecticut Route 12 P.O. Box 335 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

Each of the proposed building lots in the affordable housing subdivision will contain a drilled potable water supply well and a subsurface sewage disposal system. The development scheme for the project is depicted on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route

214 Ledyard, Connecticut Scale: 1" = 40' June 2022 Sheet 3 of 6 Dieter & Gardner Land Surveyors – Planners 1641 Connecticut Route 12 P.O. Box 335 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com" (hereinafter, the "Plan").

As depicted on the Plan, the Applicant is not proposing any direct impacts to inland wetlands and watercourses. However, the Applicant is proposing construction activities, including the placement of subsurface sewage disposal systems, grading and portions of dwelling houses in upland review areas adjacent to inland wetlands on Proposed Lots 2, 3, 4, 5, 6, 10, 11, 12 and 13 as depicted on the Plan.

An evaluation of the wetland systems located along the periphery of the project site, the characteristics of those wetland systems and an evaluation of the lack of adverse impacts to those systems as a result of the proposed development is contained in a separate report submitted with this application to the Town of Ledyard Inland Wetlands and Watercourses Commission prepared by Ian Cole, Certified Soil Scientist and Wetland Ecologist.

SOILS:

UPLAND SOILS

Upland soils found on the Project site consist of the following:

Charlton-Hollis Soils (CrD). This series consists of well drained to somewhat excessively well drained, non-stony to extremely stony soils that formed in loamy glacial till. Charlton-Hollis Soils are found on upland hills, ridges and glacial till plains. Slopes range from 3 to 45 percent. Charlton-Hollis Soils are found in a drainage sequence on the landscape with moderately well drained Sutton Soils and poorly drained Leicester Soils. They are near well drained Canton, Narragansett, Agawam and Paxton Soils. These soils have finer textures in the C horizon than Canton and Narragansett Soils and a more friable C horizon than Paxton Soils. Soil characteristics are as follows:

0" – 2"	Very dark brown, fine sandy loam; weak medium granular structure; very friable; many fine roots; 5 percent rock fragment; strongly acid, clear wavy boundary.
2" – 5"	Dark brown, fine sandy loam; weak medium granular structure; very friable; common fine roots; 5 percent rock fragment; strongly acid; gradual wavy boundary.
5" – 12"	Dark yellowish-brown, fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 5 percent rock fragment; strongly acid; gradual wavy boundary.
12" – 17"	Dark yellowish-brown, fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 5 percent rock fragment; strongly acid.

17” – 24” Yellowish-brown, fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; clear wavy boundary.

24” – 29” Light olive-brown, fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent rock fragment; medium acid; clear wavy boundary.

29” – 60” Grayish-brown, fine sandy loam; massive; friable; 15 percent rock fragment; medium acid.

Canton and Charlton Very Stony Fine Sandy Loams 3 – 15 Percent Slopes (CdC). These gently sloping and sloping well-drained soils are found on glacial till upland hills, plains and ridges. Stones and boulders cover 8 – 25 percent of the surface. Mapped areas are dominantly irregular in shape and mostly 2 to 40 acres. The mapped acreage of this undifferentiated group is about 55 percent Canton soil, 25 percent Charlton soil and 20 percent other soils. Mapped areas consist of Canton soil or Charlton soil, or both. These soils were mapped together because there are no major differences in use or management. Canton soils are found near somewhat excessively drained Merrimack and Hollis soils, well-drained Charlton and Montauk soils, moderately well-drained Sutton soils and poorly drained Leicester soils.

The soil stratification of the Canton soil is as follows:

0” – 1” Black fine sandy loam; weak fine granular structure; very friable; common fine roots and medium; strongly acid; abrupt wavy boundary.

1” – 5” Dark yellowish-brown fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; 10 percent rock fragment; strongly acid; gradual wavy boundary.

5” – 15” Dark yellowish-brown sandy loam; weak medium granular structure; very friable; common fine and medium roots; 15 percent rock fragment; strongly acid; gradual wavy boundary.

15” –24” Dark yellowish-brown sandy loam; weak medium granular structure; very friable; few fine roots; 15 percent rock fragment; strongly acid; gradual wavy boundary.

24” – 60” Grayish brown gravelly sand; massive; friable; 20 percent rock fragment; strongly acid.

The Charlton soils are found in the drainage sequence on the landscape with moderately well-drained Sutton soils and poorly drained Leicester soils. They are near somewhat excessively

drained Hollis soils and well-drained Canton, Narragansett, Agawam and Paxton soils. The soil stratification of the Charlton soil is as follows:

0" – 8"	Very dark grayish-brown fine sandy loam; weak medium granular structure; friable; common fine and medium roots; 10 percent rock fragment; strongly acid; abrupt wavy boundary.
8" – 15"	Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; gradual wavy boundary.
15" – 24"	Yellowish-brown fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; clear wavy boundary.
24" –29"	Light olive brown fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent rock fragment; medium acid; clear wavy boundary
29" – 60"	Grayish brown fine sandy loam; massive; friable; 15 percent rock fragment; medium acid.

Agawam Fine Sandy Loam, 3 – 8 Percent Slopes (AfB). The Agawam soil consists of well-drained soils that formed in glacial outwash. Agawam soils are found on stream terraces and outwash plains. Slopes range from 0 to 8 percent. The Agawam soils are found in the drainage sequence on the landscape with moderately well-drained Ninigret soils. They are near excessively drained Hinckley soils, somewhat excessively drained Merrimack soils, well-drained Haven, Canton and Charlton soils and poorly drained Raypol and Walpole soils. The soil stratification of the Agawam soil is as follows:

0" – 9"	Dark brown fine sandy loam; weak medium granular structure; very friable; few fine roots; 5 percent coarse fragment; strongly acid; abrupt wavy boundary.
9" – 19"	Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent coarse fragment; strongly acid; gradual wavy boundary.
19" – 24"	Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent coarse fragment; medium acid; abrupt wavy boundary.
24" – 32"	Light olive brown sand; massive; very friable; few fine roots; 15 percent coarse fragment; medium acid; abrupt wavy boundary

32” – 60” Light olive brown very gravelly coarse sand; single grain; loose; 55 percent coarse fragment; medium acid.

Haven Silt Loam, 0 to 3 Percent Slopes (HcA). The Haven soil consists of well-drained soils that formed in glacial outwash. Haven soils are found on stream terraces and outwash plains. Slopes range from 0 to 3 percent. Haven soils are found in the drainage sequence on the landscape with moderately well-drained Tisbury soils and poorly drained Raypol soils. They are found near excessively drained Hinckley soils, well-drained Canton, Charlton, Narragansett and Agawam soils, and moderately well-drained Ninigret soils. The soil stratification of the Haven soil is as follows:

0” – 7” Dark brown silt loam; weak fine granular structure; very friable; common fine and medium roots; 5 percent coarse fragment; strongly acid; abrupt wavy boundary.

7” – 11” Brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent coarse fragment; strongly acid; gradual wavy boundary.

11” – 15” Dark yellowish-brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent coarse fragment; strongly acid; gradual wavy boundary.

15” – 23” Yellowish-brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent coarse fragment; strongly acid; clear wavy boundary

23” – 60” Light yellowish-brown very gravelly sand; single grain; loose; 55 percent coarse fragment; medium acid.

Hinckley Gravelly Sandy Loam, 3 to 15 Percent Slopes (HkC). This gently sloping and sloping, excessively drained soil is found on stream terraces, outwash plains, kames and eskers. Mapped areas are dominantly irregular in shape and mostly 2 to 25 acres. The Hinckley soils are found near excessively drained Windsor soils, somewhat excessively drained Merrimack soils, well-drained Agawam and Haven soils, moderately well-drained Sudbury soils, poorly drained Walpole soils and very poorly drained Scarboro soils. The soils stratification of the Hinckley soil is as follows:

0” – 7” Dark brown gravelly sandy loam; weak fine granular structure; very friable; many fine roots; 20 percent coarse fragment; medium acid; abrupt wavy boundary.

7” – 14” Yellowish-brown gravelly loamy sand; single grain; loose; few fine roots; 25 percent coarse fragment; medium acid; gradual wavy boundary.

14” – 22” Yellowish-brown gravelly loamy sand; single grain; loose; few fine roots; 40 percent coarse fragment; strongly acid; clear wavy boundary.

22" –60" Brownish-yellow very gravelly coarse sand; single grain; loose; 60 percent coarse fragment; medium acid.

Udorthents Urban Land Complex (Ud). Udorthents soils consist of excessively drained to moderately well-drained soils found on glacial till upland hills, ridges, till plans, drumlins and outwash plains and on stream terraces. They are found in areas where more than two feet of the upper part of the original soil has been removed, or in areas that have been covered by more than two feet of fill material. Udorthents are found in loamy or sandy glacial till and gravelly or very gravelly outwash. Slopes range from 0 to 15 percent. Mapped areas are mostly 5 to 40 acres. Included within this complex in mapping are small, intermingled areas of undisturbed soils. Due to the disturbed nature of this soil, this soil complex is not assigned to a capability subclass.

WETLAND SOILS:

Ridgebury-Leicester-Whitman Soils (3). These poorly drained and very poorly drained soils are found in drainageways and depressions on glacial till, upland hills, ridges, plains and drumloidal landforms. Stones and boulders cover 8-25% of the surface. Slopes range from 0-30%. The mapped acreage of this undifferentiated group is about 35% Ridgebury soil, 30% Leicester soil, 20% Whitman soil and 15% other soils. Some mapped areas consist of one of these soils, and other areas consist of two or three. These soils were mapped together because there are no major differences in use and management.

The soil stratification for the Ridgebury soil is as follows:

0" – 1" Partly decomposed leaves.

0" – 4" Black, fine sandy loam; weak medium granular structure; friable; common fine roots; 5% rock fragments; strongly acid; clear wavy boundary.

4" – 13" Gray fine sandy loam; common medium distinct strong brown mottles and common, medium faint yellowish brown mottles; massive; friable; 5% rock fragments; strongly acid; gradual wavy boundary.

13" – 20" Brown fine sandy loam; many medium distinct yellowish brown mottles and few fine faint grayish brown mottles; massive; friable; firm in place; 10% rock fragments; slightly acid; clear wavy boundary.

20" – 60" Grayish brown sandy loam; few fine faint yellowish brown mottles; massive; very firm, brittle; 5% rock fragment; slightly acid.

The soil stratification of the Leicester soil is as follows:

0" – 2" Decomposed leaves.

2” – 6” Very dark gray fine sandy loam; weak fine granular structure; very friable; few fine and medium roots; 5% rock fragments; very strongly acid; abrupt smooth boundary.

6” – 12” Dark grayish brown, fine sandy loam; few fine faint yellowish-brown mottles and many medium distinct light brownish gray mottles; weak medium subangular blocky structure; very friable; few medium roots; 5% rock fragments; strongly acid; clear wavy boundary.

12” – 24” Grayish brown, fine sandy loam; few medium distinct yellowish-brown and dark grayish brown mottles; weak medium subangular blocky structure; friable; 10% rock fragments; strongly acid; gradual wavy boundary.

24” – 32” Pale olive fine sandy loam; many course distinct yellowish brown mottles; weak medium subangular blocky structure; friable; 15% rock fragments; strongly acid; gradual wavy boundary.

32” – 60” Light olive gray gravelly fine sandy loam; many medium distinct yellowish-brown mottles; massive; friable; 25% rock fragment; strongly acid.

The soil stratification of the Whitman soil is as follows:

0” – 1” Decomposed leaf litter.

1” – 9” Black fine sandy loam; weak medium granular structure; friable; common fine and medium roots; strongly acid; abrupt wavy boundary.

9” – 16” Dark grayish brown fine sandy loam; few fine faint yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; 5% rock fragments; medium acid; clear wavy boundary.

16” – 22” Grayish brown, fine sandy loam; common medium distinct strong brown mottles and few medium light brownish gray mottles; moderate medium platy structure; very firm, brittle; 5% rock fragments; slightly acid; gradual wavy boundary.

22” – 60” Grayish brown fine sandy loam; common medium distinct strong brown mottles and few medium faint light brownish gray mottles; massive; firm, brittle; 5% rock fragments; slightly acid.

Included with these soils in mapping are small areas of moderately well drained Rainbow, Sutton and Woodbridge soils and very poorly drained Adrian and Palms soils. The Ridgebury soil

has a seasonal high water table at a depth of about 6". Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The Leicester soil has a seasonal high water table at a depth of about 6". Permeability is moderate or moderately rapid. The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum.

GENERAL PROCEDURES:

1. Prior to commencing construction of the Project, the Developer and the Developer's contractor shall meet with the Ledyard Wetlands Enforcement Officer (the "Preconstruction Meeting") to agree upon the method of installation and maintenance of erosion and sediment control measures during the development of the Project.

2. Subsequent to the Preconstruction Meeting, the Developer shall install all erosion and sediment control measures in accordance with the Plan. As development occurs on each individual building lot within the Project, additional erosion and sediment control measures as depicted on the Plan shall be installed to mitigate erosion and sediment migration on the particular lot being developed.

3. The Developer's contractor shall install an anti-tracking pad in accordance with the "Temporary Construction Entrance" detail depicted on Sheet 6 of 6 of the Plan at each point of access to the project site from Stoddards Wharf Road A.K.A. Connecticut Route 214.

4. Prior to conducting any construction activities at the Project, the Developer shall notify the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer that erosion and sediment control measures have been installed and request that the same be inspected and approved by the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer. This procedure shall be repeated as the development of each lot in the residential subdivision progresses.

5. All activities in conjunction with the development of the Project shall be conducted in accordance with the terms and provisions of the Plan and this Narrative. The Ledyard Wetlands Enforcement Officer shall have authority to modify any construction details or procedures hereinafter contained as warranted by field conditions during the duration of the development of the Project.

6. All erosion and sediment control measures shall be inspected at least weekly while construction is ongoing on each lot, and after every storm event resulting in a discharge, and repaired and maintained as necessary.

7. During the stabilization period (after the completion of development, but prior to the certification of approval by the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer for the removal of erosion and sediment control measures),

all erosion and sediment control measures shall be maintained in proper working order. Prior to the commencement of construction on each lot in the subdivision, the Developer shall certify, in writing, to the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer the name, address, telephone number and facsimile number of the person who will be primarily responsible for the installation and maintenance of sediment and erosion control measures on each lot in the subdivision. Such person shall be the designated representative of the Developer responsible for compliance with all erosion and sediment control measures in conjunction with the development of each lot. All erosion and sediment control measures shall be inspected and maintained and/or repaired, as necessary, on a weekly basis during the stabilization period and after each storm occurrence resulting in a discharge. Until notified otherwise, in writing, "Peter C. Gardner, a member of the Developer, 1641 Connecticut Route 12, Gales Ferry, Connecticut 06335; Telephone: (860) 464-7455; E-mail: dieter.gardner@yahoo.com" shall be the party responsible for compliance with the terms and provisions of the erosion and sediment control plan for the development of the Project.

8. At such time as stabilization has been achieved, and certification thereof received from the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer, erosion control measures shall be removed.

9. During the stabilization period, any erosion which occurs shall be immediately repaired by the Developer, reseeded with the seeding mixes set forth in the Construction Sequencing Section of this Narrative, and re-stabilized.

10. If any erosion and sediment control measures fail, or are not installed or maintained in accordance with this Narrative, the Plan, or the directives of the Ledyard Wetlands Enforcement Officer, the Developer, or its successors, shall be required to cease all development activities on such lot until such time as said erosion and sediment control measures have been installed in accordance with this Narrative, the Plan and the directives of the Ledyard Wetlands Enforcement Officer and approval of the same has been certified by the Ledyard Wetlands Enforcement Officer, in writing.

CONSTRUCTION SEQUENCING

LOT DEVELOPMENT (TYPICAL):

1. The Developer shall install erosion and sediment control measures in the location delineated on the Plan and in accordance with the detail depicted on the Plan.

2. An anti-tracking pad construction entrance shall be installed at the intersection of the driveway for each lot with Avery Brook Circle. The construction entrance shall be constructed in accordance with the "Temporary Construction Entrance" detail delineated on Sheet 6 of 6 of the Plan.

3. That portion of the lot designated for development for a single-family dwelling house and appurtenant facilities shall be cleared, grubbed and rough graded. All vegetated material shall be removed from the lot. Stumps shall either be (i) ground in place or (ii) removed to a location approved in advance by the Town of Ledyard Wetlands Enforcement Officer and the Town of Ledyard Zoning Enforcement Officer. No stumps shall be buried on the Project site.

4. The driveway serving the lot shall be installed at rough grade.

5. The foundation hole shall be excavated. Any stored or stockpiled material shall be encompassed by a single row of silt fence in the "Proposed Stockpile Area" for each lot. All topsoil on the project site shall be retained for the post-construction stabilization of the project area.

6. Footings and foundations shall be poured; and, after the application of water proofing and the passing of the curing period, backfilled with stockpiled material. Due to the pervious nature of the soils on the project site, footing drains are not required.

7. House construction shall commence and proceed to completion, including the installation of the onsite septic system.

8. The finished course, bearing surface, of the driveway shall be installed.

9. Final grading of the lot shall be completed.

10. Disturbed areas of the lot shall be stabilized by spreading surface soil over the same at a thickness of not less than 6 inches. Areas to be seeded will be prepared by spreading ground limestone equivalent to 50 percent calcium plus magnesium oxide applied at a rate of 100 pounds per 1,000 square feet. Fertilizer (10-10-10) is to be applied at a rate of 15 pounds per 1,000 square feet. All areas shall then be seeded with a seeding mix of Creeping Red Fescue applied at a rate of 20 pounds per acre, Kentucky Bluegrass applied at a rate of 20 pounds per acre and Perennial Ryegrass applied at a rate of 5 pounds per acre, for a total application of 45 pounds per acre. After the seeding, the area seeded shall be stabilized with hay mulch applied at a rate of 2 bales per 1,000 square feet, and anchored immediately after spreading by tracking. In the alternative, disturbed areas may be hydroseeded using a hydroseed mix containing similar cultivars. Seeding shall only occur between April 1 and June 15 and August 15 and October 1.

11. Once all seeded areas have been thoroughly stabilized and mowed with a minimum of two mowings, erosion control measures shall be removed.

AUTHORIZATION

AVERY BROOK HOMES, LLC hereby authorizes the law firm of Heller, Heller & McCoy, the land surveying – planning firm of Dieter & Gardner, Inc. and Ian Cole, Certified Soil Scientist and Wetland Ecologist to represent its interests in all proceedings before the Town of Ledyard Inland Wetlands and Watercourses Commission with respect to a permit application to conduct regulated activities in upland review areas in conjunction with the residential development of properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 in the Town of Ledyard, Connecticut in accordance with a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown June 2022 Sheets 1 of 6 to 6 of 6 Dieter & Gardner Land Surveyors – Planners P.O. Box 335 1641 Connecticut Route 12 Gales Ferry, CT 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

Dated at Montville, Connecticut this 26th day of August, 2022.

AVERY BROOK HOMES, LLC

By: _____
Peter C. Gardner, its Member

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

GIS CODE #: ___ ___ ___ ___ ___ ___ ___ ___ ___
For DEEP Use Only

Statewide Inland Wetlands & Watercourses Activity Reporting Form

Please complete this form in accordance with the instructions on pages 2 and 3 and mail to:
DEEP Land & Water Resources Division, Inland Wetlands Management Program, 79 Elm Street, 3rd Floor, Hartford, CT 06106
Incomplete or incomprehensible forms will be mailed back to the inland wetlands agency.

PART I: Must Be Completed By The Inland Wetlands Agency

1. DATE ACTION WAS TAKEN: year: _____ month: _____
2. ACTION TAKEN (see instructions - one code only): _____
3. WAS A PUBLIC HEARING HELD (check one)? yes ☐ no ☐
4. NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:
   (print name) _____ (signature) _____

PART II: To Be Completed By The Inland Wetlands Agency Or The Applicant

5. TOWN IN WHICH THE ACTIVITY IS OCCURRING (print name): Ledyard
   does this project cross municipal boundaries (check one)? yes ☐ no ☒
   if yes, list the other town(s) in which the activity is occurring (print name(s)): _____, _____
6. LOCATION (see instructions for information): USGS quad name: Uncasville or number: 87
   subregional drainage basin number: 3000-02
7. NAME OF APPLICANT, VIOLATOR OR PETITIONER (print name): Avery Brook Homes, LLC
8. NAME & ADDRESS OF ACTIVITY / PROJECT SITE (print information): Avery Brook Homes Affordable Housing Development
   briefly describe the action/project/activity (check and print information): temporary ☐ permanent ☒ description: Upland review area activities in conjunction with the development of single family residential lots
9. ACTIVITY *PURPOSE* CODE (see instructions - one code only): B
10. ACTIVITY *TYPE* CODE(S) (see instructions for codes): 12, 14, _____, _____
11. WETLAND / WATERCOURSE AREA ALTERED (see instructions for explanation, must provide acres or linear feet):
    wetlands: 0 acres open water body: 0 acres stream: 0 linear feet
12. UPLAND AREA ALTERED (must provide acres): 4.5 acres UPLAND REVIEW AREA ALTERED 37,700 square feet
13. AREA OF WETLANDS / WATERCOURSES RESTORED, ENHANCED OR CREATED (must provide acres): 0 acres

PART III: To Be Completed By The DEEP

DATE RECEIVED: DATE RETURNED TO DEEP:

FORM COMPLETED: YES NO FORM CORRECTED / COMPLETED: YES NO

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)
Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (bmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

August 22, 2022

VIA CERTIFIED MAIL
City of Groton Utilities
295 Meridian Street
Groton, CT 06340

Re: Avery Brook Homes, LLC – Application to the Town of Ledyard Inland Wetlands and Watercourses Commission for a permit to conduct regulated activities in upland review areas in conjunction with the development of a proposed affordable housing subdivision on properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214
Ledyard Assessor's Designation: Map 65, Lots 94, 96, 98 and 100

Gentleperson:

Please be advised that this office represents Avery Brook Homes, LLC, the owner of properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 in Ledyard, Connecticut. Our client is proposing to develop this property for thirty-six (36) individual single-family dwelling houses together with a loop road (private) which will provide access from Connecticut Route 214. In conjunction therewith, our client has submitted an application to the Town of Ledyard Inland Wetlands and Watercourses Commission for a permit to conduct regulated activities in the development of this project in upland review areas adjacent to inland wetlands on and adjacent to its properties.

Our client's properties are located within the watershed area of Groton Utilities as evidenced by the watershed map filed by Groton Utilities with the Ledyard Town Clerk. Therefore, in accordance with requirements of §8-3i of the Connecticut General Statutes, we are providing you with notice of the filing of this application with the Town of Ledyard Inland Wetlands and Watercourses Commission. A copy of this notice is also being provided contemporaneously herewith to the Commissioner of Public Health of the State of Connecticut.

I enclose herewith for your reference a copy of the permit application which is being filed contemporaneously herewith with the Ledyard Inland Wetlands and Watercourses Commission, a copy of our transmittal to the Town of Ledyard Inland Wetlands and Watercourses Commission delineating

the supplemental information which has been provided with the application, a copy of the site development plan which was submitted with the application and a copy of the supplemental information.

Should you have any questions or need any additional information, please feel free to contact the undersigned.

Very truly yours,

Harry B. Heller

HBH/rmb
Enclosures

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

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Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

August 22, 2022

VIA CERTIFIED MAIL
State of Connecticut Commissioner of Public Health
410 Capitol Avenue
Hartford, CT 06134

Re: Avery Brook Homes, LLC – Application to the Town of Ledyard Inland Wetlands and Watercourses Commission for a permit to conduct regulated activities in upland review areas in conjunction with the development of a proposed affordable housing subdivision on properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214
Ledyard Assessor's Designation: Map 65, Lots 94, 96, 98 and 100

Dear Commissioner:

Please be advised that this office represents Avery Brook Homes, LLC, the owner of properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 in Ledyard, Connecticut. Our client has filed an application with the Town of Ledyard Inland Wetlands and Watercourses Commission for a permit to conduct regulated activities in upland review areas adjacent to inland wetlands in conjunction with the development of this single-family residential project. The proposal is to develop the site with thirty-six (36) single-family dwelling homes which will obtain access from Connecticut Route 214 by virtue of a private road.

The land which is the subject of the inland wetland agency permit application is located within the watershed area of the City of Groton Utilities. We are providing notice to the City of Groton Utilities as well as the Commissioner of Public Health of the filing of this permit application in accordance with the requirements of §8-3i of the Connecticut General Statutes.

I enclose herewith for your reference a copy of the wetland permit application which has been filed with the Ledyard Inland Wetlands and Watercourses Commission, together with a copy of our transmittal to the Town of Ledyard Inland Wetlands and Watercourses Commission delineating the supplemental information which has been provided with the application, together with a set of the project plans and copies of the supplemental information.

Should you have any further information, please feel free to contact the undersigned.

Very truly yours,

Harry B. Heller

HBH/rmb
Enclosures

Ian T. Cole

Professional Registered Soil Scientist / Professional Wetland Scientist
PO BOX 619
Middletown, CT 06457
Itcole@gmail.com
860-514-5642

August 22, 2022

Mr. Peter Gardner P.L.S.
Dieter & Gardner, Inc.
Land Surveying Planning Engineering
P.O. Box 335
Gales Ferry, CT 06335

RE: WETLAND ASSESSMENT REPORT – AVERY BROOK HOMES, LLC; RESUBDIVISION OF 94,96, 98 and 100 STODDERS WHARF ROAD (aka ROUTE 214), LEDYARD, CONNECTICUT.

Dear Mr. Gardner:

On behalf of the applicant Avery Brook Homes, LLC I have completed a site review and wetland assessment of the above referenced Project for the construction of 36 new single-family affordable residential lots at 94, 96, 98, and 100 Stodders Wharf Road. I offer the following comments relative to assessing impacts to the inland wetlands and watercourses due to the proposed activities.

EXISTING CONDITIONS

The site combines 4-parcels totaling approximately 9.2 acres of vacant land. A home site previously occupied the 1.37-acre parcel 98. Parcels 94, 96 and 100 are abandoned agricultural lands that have reverted into unmanaged xeric early successional habitat dominated by dry upland grasses and eastern red cedar (Photo 1). The bulk of the property was used as agricultural crop and pasture lands and can be seen in various stages of use in CTDEEP's Historic Air Photos for 1934 (Figure 2), 1951 and 1970. Post agriculture abandonment the site has been idle for several decades and has subsequently revegetated with early successional colonizers that flavor the dry sandy soil conditions and open canopy habitat.

Three wetland resources were identified at the peripheral of the property positioned in the low-lying lands to the north and east. Billings-Avery Pond is located off-site to the north; single family residential lots are found to the west and south along the road frontage of Route 214; and vacant woodlands occupy the bulk of the undeveloped lands east and north of the site which are contiguous to the Billings-Avery Pond watershed.

Photo 1: Typical upland conditions that characterize the property – abandoned agricultural lands

Figure 1: 2019 AIR PHOTO – TOWN GIS PARCEL DATA & GENERAL REFERENCE LOCATIONS OF FLAGGED WETLANDS

Figure 2: CTDEEP 1934 AIR PHOTO – Documenting past agricultural land use practices – Note Billings Avery Pond north of site has not yet been constructed.

In March 2022, I completed a field delineation of the jurisdictional freshwater inland wetland and watercourses boundaries of the above referenced properties.

Delineation Methodology

The second order soil survey and wetland delineation were completed in accordance with the standards of the Natural Resources Conservation Services (NRCS) National Cooperative Soil Survey and the definitions of inland wetlands and watercourses as found in the Connecticut General Statutes, Chapter 440, Sections 22a-36 through 22a-45 as amended. Wetlands, as defined by the Statute are those soil types designated as poorly drained, very poorly drained, floodplain or alluvial in accordance with the NRCS National Cooperative Soil Survey. Such areas may also include disturbed areas that have been filled, graded, or excavated and which possess an aquic (saturated) soil moisture regime.

Watercourses means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, vernal, or intermittent, public, or private, which are contained within, flow through or border upon the Town of Ledyard or any portion thereof not regulated pursuant to sections 22a-28 through 22a-35, inclusive, of the Connecticut General Statutes. Intermittent watercourses are defined permanent channel and bank and the occurrence of two or more of the following characteristics: (a) evidence of scour or deposits of recent alluvium or detritus, (b) the presence of standing or flowing water for duration longer than a particular storm incident, and (c) the presence of hydrophytic vegetation.

Wetland Delineation Findings

The on-site wetland delineation examined the upper 20" of the soil profile for the presence of hydric soil conditions. Those areas meeting the wetland criteria noted above were marked in the field with sequentially numbered pink and blue wetland flagging and are correctly illustrated on the subject site development plans.

Wetland Resources

Three wetland boundaries were identified on the property. The wetlands partly have their origin tied to past agricultural and land management practices.

Wetland #1 is an unnamed intermittent watercourse that flows across the eastern property line (Photo 2). The watercourse is well-defined and is confined to the banks of the stream and its associated low-lying and level poorly drained soils. As the watercourse flows across the property line the channel takes an abrupt 90 degree turn to the north Alder, dogwood, spicebush, sweet pepperbush, and high bush blueberry shrubs characteristically define the shrub layer that line the banks of the stream channel. A herbaceous growth of tussock sedge, cinnamon fern and skunk cabbage carpets the wetland forest floor. These wetland conditions quickly give rise to upland vegetation and well-drained sandy soil conditions that define the adjacent abandoned fields.

Wetland #2 is a wetland pocket that formed in the bottom of an excavated borrow pit (Photo 3). Material was excavated to a point where it intercepted the groundwater table creating seasonal ponding that supported the development of ephemeral wetland conditions.

Wetland #3 is associated with the wetted perimeter and forested fringe of Billings-Avery Brook (Photo 4). The wetland boundary is well-defined and closely follows a distinct break in slope. The wetlands exhibit classic seasonally flooded palustrine forested red maple swamp vegetation common to the area.

Wetland Functions and Values

The assessment of wetland functions and values is based on the US Army Corps of Engineers' (USACE) Descriptive Approach (1995) methodology, and on best professional judgment.

The principal function of the regulated wetlands is groundwater discharge and recharge. Secondary functions include flood flow alteration (storage and desynchronization), water quality renovation properties (nutrient and sediment uptake and retention), and general wildlife habitat properties typically associated with undeveloped lands. Additionally, the short section of the intermittent watercourse channel adjacent to the development primarily functions to convey surface runoff down slope during the high seasonal water table period and after heavy rains.

Other wetland functions and services are somewhat limited due to the private ownership of the property, overall site setting, relatively small size (*specifically the wetland pocket on Lot #5*), association with an open channel, landscape position, intermittent hydro-period, lack of open standing deep water habitat, and presence of invasive and non-native species.

PHOTO 2: WETLAND #1 – Denoted by wetland flags 1 through 8 – Watercourse and Wetland that flows across eastern property line onto proposed lots #2 &#3.

Photo 3: Wetland Pocket in rear of proposed Lot #5. Ephemeral wetland is located in the bottom of a previously graveled-out "borrow pit".

Photo 4: Typical early emergent conditions along Billings-Avery Brook in early March 2022. Generally, the watercourse channel and adjacent wetland boundary is well-defined.

Soil Survey

The soils identified on-site are a refinement of the Natural Resources Conservation Service (NRCS) Websoil Soil Survey. The site occurs at the interface of the dense glacial till and bedrock-controlled landscape that characterizes the high elevations on the extreme westerly side of the site with the opposing glacial meltwater outwash sands and gravels that cover the Avery Brook watershed.

Wetland Soils

The primary wetlands soil series along the flagged wetland boundaries are classified as (3) Ridgebury, Leicester, and Whitman fine sandy loams. The poorly drained soils along the wetland boundary belong to the Ridgebury and Leicester soil series. Ridgebury and Leicester soils are found within drainageways and depressions on glacial till landscapes. Ridgebury and Leicester soils have a seasonal high-water table at a depth of about 6 inches. Very poorly drained Whitman soils are found in the lowest lying areas within the interior the wetlands where the water table is at the surface thought most of the growing season.

A typical soil profile along the wetland boundary consists of approximately 2"-0" of intermediately decomposed organic material (Oi), followed by 0"-8" of a thick dark topsoil horizon (A), underlain by 8-20" of a wet weakly developed grayish subsoil horizon (Bg) with common redoximorphic features (Common medium distinct strong brown mottles, masses) ranging from fine sandy loam to very fine sandy loam. This subsoil is underlain by a saturated sandy loam to fine sandy loam gray substratum (2Cg).

Upland Soils

The upland soils are located on a transition from the higher elevation till soils west and south of the proposed development to outwash material lower on the landscape. The bulk of the uplands are mapped as well drained – Agawam fine sandy loams. This stratified water sorted sands and gravels are well suited for development and are generally unrestricted. Along the property boundaries of the are notable pockets of excessively well-drained Hinckley loamy sands. These deep sands and gravels have rapid permeability and high infiltration rates. Surrounding the property are notable bands of mapped Udorthent soils. These mapping units occur in areas where material was previously mined, evidence of how useful the sandy soil material at the site is for building purposes.

Soil Map—State of Connecticut
(Stodders Wharf Rd)

Map Scale: 1:1,840 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29B	Agawam fine sandy loam, 3 to 8 percent slopes	6.2	47.1%
38C	Hinckley loamy sand, 3 to 15 percent slopes	2.0	15.4%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	0.8	6.4%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.1	0.5%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	1.1	8.1%
306	Udorthents-Urban land complex	2.5	19.3%
703A	Haven silt loam, 0 to 3 percent slopes	0.4	3.1%
Totals for Area of Interest		**13.2**	**100.0%**

PROPOSED ACTIVIITES

The proposed development of the site calls for the construction of 36 individual single-family homes. Lots range from .19 to .42 acres and are to be services by private well water and private on-site septic systems. The homes will be accessible by a private loop road to be named Avery Brook Circle.

IMPACT ASSESSMENT

There are no direct impacts to the wetlands due to the proposed activities.

Wetlands are found on 4 of the 36 lots.

1. Billings Avery Brook's associated forested wetland fringe (Photo 4) encroaches onto the northern limits of Lot #12

2. A wetland pocket (Photo 3) is found in the rear of Lot #5

3. The wetted perimeter of an intermittent watercourse (Photo 2) flows along the easterly property boundary and onto the easterly portion of Lot #2 and Lot #3.

The development and associated activities will maintain the holistic functions and value of the wetlands. The wetland including their existing functions as well as the on-site drainage patterns will be maintained. The beneficial and functional service of the neighboring wetlands is the conveyance of seasonal flow and groundwater recharge, which the development will be preserving by maintaining overall existing drainage patterns and flow dynamics.

INDIRECT IMPACTS

Indirect or secondary impacts to a wetland or watercourse can occur as a result of activities outside of the wetlands or watercourses. These impacts can be either short-term (*construction phase*) or long-term (*i.e., change in drainage patterns / whole-sale clear cutting)* and are typically associated with erosion and sedimentation during construction, removal or disturbance of vegetation in adjacent upland areas, alteration of ground / drainage patterns that could effect the flow regime of a watercourse, and the discharge of degraded or insufficiently treated surface or groundwater, which may adversely impact the water quality of the regulate resource.

The potential for any of these indirect impacts to occur at the site as a result of the development depends on the quality of the regulated resources, the sensitivity to said resources, the resource's physical and ecological characteristics, and the degree to which those resources provide recognized functions and values. These potential impacts are described in detail below:

EROSION AND SEDMIENTATION

To minimize potential impacts the design incorporates industry standard best management practices (BMPs) and guidelines for residential developments. A construction sequence is

provided on the site plans notes. Additional construction notes include details on the proposed earthwork and grading, site stabilization, and best management practices (BMPs) for protecting the environment. All construction activities will be completed in compliance with the standards and guidelines provided by the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. These controls as well as compliance with permit approvals will assure that no permanent adverse effects will impact the receiving wetlands.

The site risk or potential for adverse impacts from erosion and sedimentation is considered low-moderate because 1.) a detailed erosion and sediment control plan has been prepared and submitted, and 2) the site's in-situ undistrubed soils are for the most part low to moderately erosive. 3) the site is generally level and topography is easily managed, 4) no need for large scale tree removal as the land is open field habitat, and 5) there is a neighboring nearby stream channels which provide opportunity for offsite migration. Therefore, it is my professional opinion that with watchful monitoring and maintenance of erosion and sediment controls until construction is completed and restoration is stabilized that no adverse impacts to the regulated resources are expected.

VEGETATION REMOVAL AND HABITAT LOSS

Habitat loss associated with land clearing is a consequence of land development which has the potential of impacting wetlands and watercourses. The proposed development will kept clearing limits to a minimum by clearing what is physically needed for facilitating the construction of the homes and associated appurtenances. The past agricultural uses of the properties have maintained and promoted open conditions for a long time which will result in a reduction of whole-sale land clearing requirements to facilitate construction of the proposed development. The conversion of the vegetation cover within the development envelope will not change or diminish the ecological integrity of the surrounding forest and wetland communities.

POTENTIAL IMPACTS TO WETLAND HYDROLOGY AND STREAM DYANAMICS

The hydrologic and flow regime of Billings Avery Brook and the intermittent watercourse along the eastern property line are supported by off-site contributions from groundwater and surface water inputs. The proposed development will not impact drainage patterns either on-site or off-site. The wetlands baseflow will be recharged from the natural high infiltration rates as stormwater runoff freely drains back into the underlying sandy soil.

POTENTIAL WATER QUALITY IMPACTS

The proposed development has been reviewed by the Ledge Light Health District (LLHD) for the suitability of the proposal to support on-site septic service and provide adequate water supply. LLHD comments have been satisfied and LLHD has recommended that all 36 Lots are suitable for development in their current configuration with the caveat that no footing drains are required *(which given the demonstrated high soil permeability and high percolation test rates (generally > 5min/inch) footing drains are not needed and should not be required).*

Additionally, the project retained the professional engineering services of GEI Consultants Inc, to provide a water supply study "*Water Study Proposed Stoddard's Wharf Road Subdivision Ledyard, CT" July 6, 2022*. The study demonstrates the sites natural capacity to provide each lot with a private well that would produce an adequate quantity of water to service a 3-bedroom single family dwelling. The study concludes that the current ground water supply is adequate to support the subdivision as proposed. Additionally, the report points out that the proposed subdivision is partially surround by an undeveloped watershed area, allowing for sufficient and natural replenishment of the aquifer that would serve the wells.

The proposed development will not create any new point discharges. The site will be graded so stormwater runoff will sheet flow across the landscape to promote infiltration into the surrounding well drained soils. This infiltration into the ground will recharge the nearby wetland resource baseflow.

CONCLUSION

Due to the needs of the proposed development and proximity of the wetland resources the location of 5 homes on Lots #2-#6 will require activities within the 100' upland review area. Additionally, the septic systems for lots #9 – #13 will be located within the upland review area, leaving the bulk of the development outside of any regulated area.

The naturally occurring very well drained sandy soils will beneficially and promote infiltration to maintain and recharge baseflow to downstream resources.

Alterations within the URA will have some conversion of habitat. The activities in the uplands required to facilitate the development will not result in any loss of wetland function. Post development the wetlands and watercourse will still have the same ability to perform the existing functions they currently provide. As a result, environmental effects will be minor and highly localized. The applicant will mitigate such impacts by implementing standard construction BMPs and conforming to permit conditions.

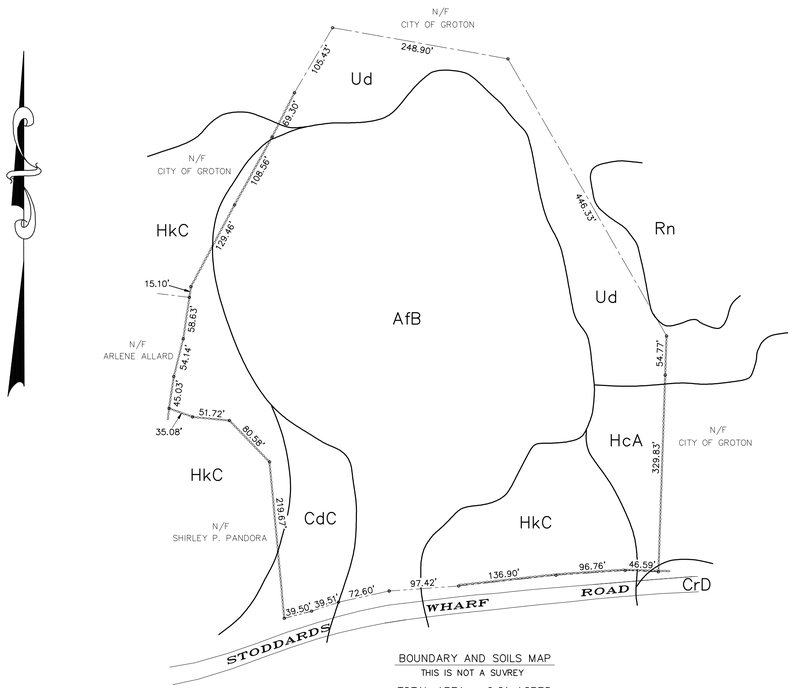
The design has minimized wetland disturbances by:

1. Avoidance of any direct wetland disturbance.
2. Providing and maintaining erosion and sediment controls during construction.
3. Commitment to adhering to permit conditions and construction industry standard best management practices (BMPs).

Please do not hesitate to contact me at; (860) 514-5642 or itcole@gmail.com if you have any questions or need any additional information.

Respectfully Submitted.

Ian T. Cole
Professional Registered Soil Scientist
Professional Wetland Scientist #2006



BOUNDARY AND SOILS MAP
THIS IS NOT A SUVREY

TOTAL AREA = 9.21 ACRES

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND.
ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE

_____ CHAIRMAN OR SECRETARY _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF – THE LEDYARD PLANNING AND ZONING COMMISSION ON DATE

LOT NUMBERS ASSIGNED BY THE ASSESSOR

_____ ASSESSOR _____ DATE

IWWC APPLICATION# _____

_____ APPROVED. _____

_____ NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

_____ NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

_____ WETLANDS OFFICER _____ DATE

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

_____ PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

_____ CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION DATE

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

_____ ZONING ENFORCEMENT OFFICER _____ DATE

THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF. AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY.

THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED

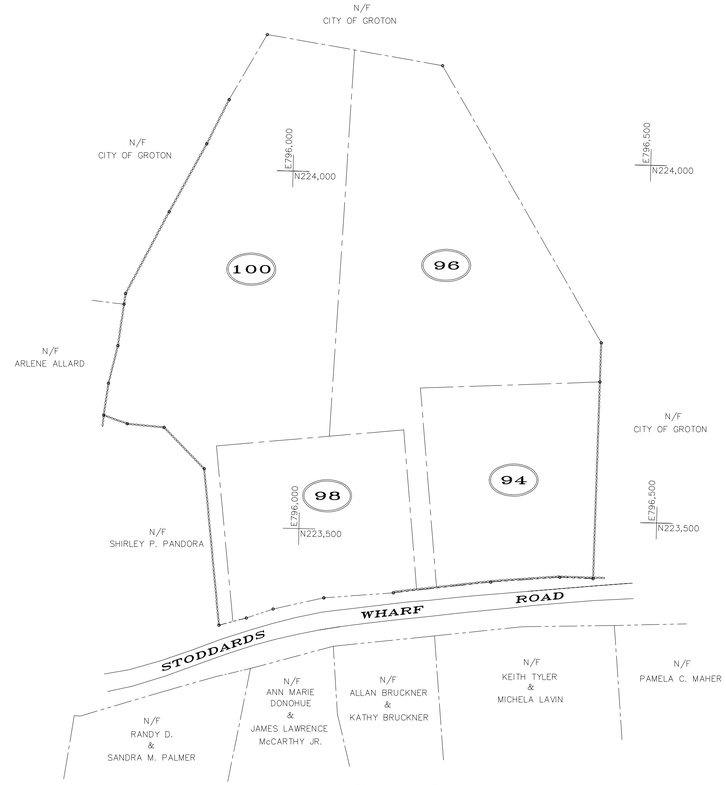
LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- 98 — STREET NUMBER

SOILS LEGEND

- AfB – AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- CdC – CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
- CrD – CHARLTON–HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
- HcA – HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
- HkC – HINCKLEY GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES
- Rn – RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
- Ud – UDORTHENTS–URBAN LAND COMPLEX

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.



PARCEL HISTORY MAP
THIS IS NOT A SUVREY

PARCEL HISTORY

TOTAL AREA ON MARCH 22, 1962 = 9.21 ACRES
TOTAL NUMBER OF LOTS CREATED FROM ORIGINAL TRACT = 4

GRAPHIC SCALE

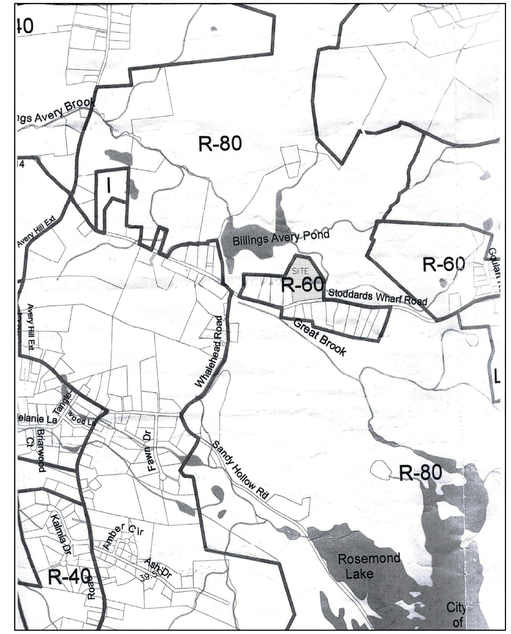
100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
P.O. BOX 335
1641 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

GENERAL NOTES:

1. MAP REFERENCES:
   A) SUBDIVISION PLAN PREPARED FOR AMER JAVAD 98 STODDARDS WHARF ROAD – (CONN. RTE #214) LEDYARD, CONNECTICUT BOUNDARY SURVEY MAP DATE: 9/12/11 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
   B) LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 98 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
2. CALL BEFORE YOU DIG AT 1–800–922–4455 BEFORE ANY CONSTRUCTION ACTIVITY.
3. ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
4. THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
5. HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
6. ZONING SETBACKS: LOTS SUBMITTED AS A SET–ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8–30g.
   MINIMUM FRONT YARD SETBACK 12' FROM COMMON DRIVE
   MINIMUM SIDE YARD SETBACK 6'
   MINIMUM REAR YARD SETBACK 15'
7. PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.



LOCATION MAP
ZONING DISTRICT: R–60

GRAPHIC SCALE

1000 0 500 1000 2000 4000

(IN FEET)
1 inch = 1000 ft.

SHEET INDEX

PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT

SCALES AS SHOWN

JULY 2022

SHEET 1 OF 7

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20–300b–1 THRU 20–300b–20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS 'D'. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208

DATE: JULY 7, 2022

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND.

ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE

_____ CHAIRMAN OR SECRETARY _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF – THE LEDYARD PLANNING AND ZONING COMMISSION ON DATE

LOT NUMBERS ASSIGNED BY THE ASSESSOR

_____ ASSESSOR _____ DATE

IWWC APPLICATION# _____

_____ APPROVED. _____

_____ NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

_____ NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

_____ WETLANDS OFFICER _____ DATE

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE

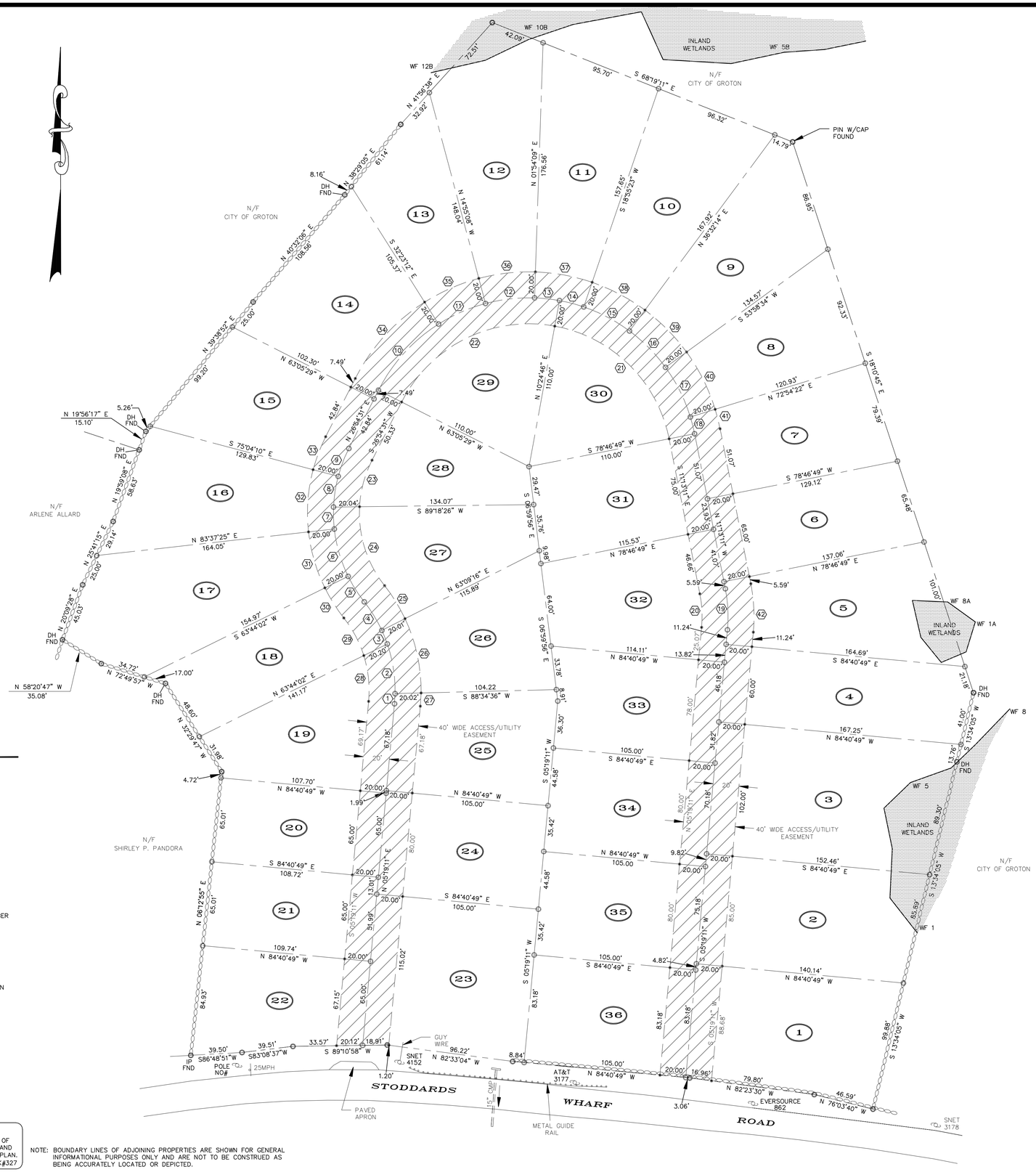
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

_____ CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION DATE

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

_____ ZONING ENFORCEMENT OFFICER _____ DATE

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
1641 CONNECTICUT ROUTE 12
P.O. BOX 335
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM



LOT NUMBER	TOTAL AREA
1	14,065 Sq. Ft. 0.32 ACRES
2	14,136 Sq. Ft. 0.32 ACRES
3	18,345 Sq. Ft. 0.42 ACRES
4	11,387 Sq. Ft. 0.26 ACRES
5	12,226 Sq. Ft. 0.28 ACRES
6	9,951 Sq. Ft. 0.23 ACRES
7	10,374 Sq. Ft. 0.24 ACRES
8	9,714 Sq. Ft. 0.22 ACRES
9	11,479 Sq. Ft. 0.26 ACRES
10	12,201 Sq. Ft. 0.28 ACRES
11	12,194 Sq. Ft. 0.28 ACRES
12	13,033 Sq. Ft. 0.30 ACRES
13	8,908 Sq. Ft. 0.20 ACRES
14	12,717 Sq. Ft. 0.29 ACRES
15	10,706 Sq. Ft. 0.25 ACRES
16	11,607 Sq. Ft. 0.27 ACRES
17	14,780 Sq. Ft. 0.34 ACRES
18	9,879 Sq. Ft. 0.23 ACRES
19	10,567 Sq. Ft. 0.24 ACRES
20	8,334 Sq. Ft. 0.19 ACRES
21	8,400 Sq. Ft. 0.19 ACRES
22	9,663 Sq. Ft. 0.22 ACRES
23	14,599 Sq. Ft. 0.35 ACRES
24	10,000 Sq. Ft. 0.23 ACRES
25	10,295 Sq. Ft. 0.24 ACRES
26	9,830 Sq. Ft. 0.23 ACRES
27	10,216 Sq. Ft. 0.23 ACRES
28	8,814 Sq. Ft. 0.20 ACRES
29	10,840 Sq. Ft. 0.25 ACRES
30	10,083 Sq. Ft. 0.23 ACRES
31	9,958 Sq. Ft. 0.23 ACRES
32	11,459 Sq. Ft. 0.26 ACRES
33	9,940 Sq. Ft. 0.23 ACRES
34	10,000 Sq. Ft. 0.23 ACRES
35	10,000 Sq. Ft. 0.23 ACRES
36	10,398 Sq. Ft. 0.24 ACRES

LOTS CURVE TABLE

CURVE #	Δ	R	L	T
1	04°04'40"	110.00'	3.92'	7.83'
2	20°15'56"	110.00'	38.91'	19.66'
3	05°51'25"	110.00'	11.24'	5.63'
4	13°29'23"	110.00'	25.90'	13.01'
5	12°06'15"	110.00'	23.24'	11.66'
6	19°53'23"	110.00'	38.19'	19.29'
7	08°49'57"	110.00'	16.96'	8.50'
8	12°28'28"	110.00'	23.95'	12.02'
9	11°58'41"	110.00'	23.00'	11.54'
10	30°42'17"	130.00'	69.67'	35.69'
11	17°28'04"	130.00'	39.63'	19.97'
12	16°49'17"	130.00'	38.17'	19.22'
13	08°30'37"	130.00'	19.31'	9.67'
14	08°30'37"	130.00'	19.31'	9.67'
15	17°36'51"	130.00'	39.97'	20.14'
16	17°26'20"	130.00'	39.57'	19.94'
17	18°55'48"	130.00'	42.95'	21.67'
18	05°52'28"	130.00'	13.33'	6.67'
19	16°32'22"	110.00'	31.75'	15.99'

EASEMENT CURVE TABLE

CURVE #	Δ	R	L	T
20	16°32'22"	90.00'	25.98'	13.08'
21	68°22'03"	110.00'	131.26'	74.71'
22	73°30'15"	110.00'	141.12'	82.15'
23	23°45'06"	90.00'	37.31'	18.93'
24	41°31'38"	90.00'	65.23'	34.12'
25	13°11'15"	130.00'	29.92'	15.03'
26	26°00'53"	130.00'	59.03'	30.03'
27	04°29'17"	130.00'	10.18'	5.09'
28	22°43'19"	90.00'	35.69'	18.08'
29	20°58'05"	90.00'	32.94'	16.65'
30	12°06'15"	130.00'	27.46'	13.78'
31	19°53'23"	130.00'	45.13'	22.79'
32	21°18'25"	130.00'	48.34'	24.45'
33	11°58'41"	130.00'	27.18'	13.64'
34	30°42'17"	150.00'	80.38'	41.18'
35	17°28'04"	150.00'	45.73'	23.04'
36	16°49'17"	150.00'	44.04'	22.18'
37	17°01'14"	150.00'	44.56'	22.45'
38	17°36'51"	150.00'	46.11'	23.24'
39	17°26'20"	150.00'	45.66'	23.01'
40	18°55'48"	150.00'	49.56'	25.01'
41	05°52'28"	150.00'	15.38'	7.70'
42	16°32'22"	130.00'	37.53'	18.89'

LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- DH FND — DRILL HOLE FOUND
- IP FND — IRON PIPE FOUND
- DRILL HOLE OR REBAR TO BE SET
- (7) — CURVE TABEL NUMBER
- UTILITY POLE
- WF 1 — EDGE OF WETLANDS & FLAG NUMBER
- ACCESS/UTILITY EASEMENT

I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

IAN COLE
SOIL SCIENTIST

THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF. AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY.

THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

JOB# 22-007.DWG FBK#327

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT

SCALE: 1"=40'

JULY 2022

SHEET 2 OF 7

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208

DATE: JULY 7, 2022

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE

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LOT NUMBERS ASSIGNED BY THE ASSESSOR

_____ ASSESSOR _____ DATE

IWWC APPLICATION# _____

_____ APPROVED, _____

_____ NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

_____ NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

_____ WETLANDS OFFICER _____ DATE

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

_____ PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE

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APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

_____ ZONING ENFORCEMENT OFFICER _____ DATE

LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WF 1 — EDGE OF WETLANDS & FLAG NUMBER
- BUILDING SETBACK LINE
- APPROXIMATE DEEP TEST PIT
- APPROXIMATE PERC TEST LOCATION
- UTILITY POLE
- H — CONCEPTUAL HOME
- P — CONCEPTUAL PRIMARY SEPTIC
- R — CONCEPTUAL RESERVE AREA
- W — CONCEPTUAL WELL
- TS — TOPSOIL STOCKPILE
- HAYBALES/SILT FENCE/WOODCHIPS
- S/T — PROPOSED SEPTIC TANK

I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

IAN COLE
SOIL SCIENTIST

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THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

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EMAIL: DIETER.GARDNER@YAHOO.COM

NOTE: FOOTING DRAINS NOT REQUIRED OR PROPOSED.

GRAPHIC SCALE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT

SCALE: 1"=40'

JULY 2022

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TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

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DEEP TEST PIT DATA

WITNESSED AND RECORDED BY WENDY BROWN-ARNOLD RS,/REHS AND ALEX WILBOUR LEDGE LIGHT HEALTH DISTRICT ON 5/2/22, 5/5/22 AND 5/23/2022 AND WENDY BROWN-ARNOLD RS,/REHS ON JUNE 14, 2022.

TP 1
0-45" FILL-DISTURBED
LOAM, ROCKS, BRICK

NO MOTTLING
NO WATER
LEDGE @ 45"

TP 2
0-16" DISTURBED SOIL & FILL
16-50" LIGHT TAN FINE SAND
W/GRAVEL & ROCKS

NO MOTTLING
NO WATER
LEDGE @ 50"

TP 3
0-10" TOPSOIL
10-28" LIGHT BROWN FINE SANDY LOAM
28-87" LIGHT TAN FINE SAND W/GRAVEL
COBBLES, LARGE STONES

NO MOTTLING
NO WATER
NO LEDGE

TP 4
0-11" TOPSOIL
11-34" LIGHT BROWN FINE SANDY LOAM
34-90" LIGHT TAN/GRAY FINE SAND W/
GRAVEL, SOME COBBLES

MOTTLING @ 64"
WATER @ 80"
NO LEDGE

TP 5
0-16" TOPSOIL
16-45" LIGHT BROWN SILT LOAM, SOME FINE SAND
45-94" TAN/GRAY FINE TO MED. SAND W/
GRAVEL,

MOTTLING @ 33"?
WATER @ 33"
NO LEDGE

TP 6
0-9" TOPSOIL
9-37" BROWN FINE TO VERY FINE SANDY LOAM
37-84" TAN/GRAY FINE TO MED. SAND W/
GRAVEL, FEW COBBLES

MOTTLING @ 46"
WATER @ 50"
NO LEDGE

TP 7
0-7" TOPSOIL
7-30" BROWN FINE TO MED. SANDY LOAM
30-77" TAN COARSE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 8
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-64" ORANGE/TAN COARSE SAND
W/GRAVEL
64-95" TAN/GRAY FINE TO MED. SAND

MOTTLING @ 73"
WATER @ 83"
NO LEDGE

TP 9
0-15" TOPSOIL
15-31" BROWN FINE SANDY LOAM
31-96" TAN MED. TO COARSE SAND AND
GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 10
0-11" TOPSOIL
11-23" BROWN FINE SANDY LOAM
23-84" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 11
0-11" TOPSOIL
11-34" BROWN FINE TO MED. SANDY LOAM
34-96" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 12
0-12" TOPSOIL
12-29" BROWN FINE TO MED. SANDY LOAM
29-95" BROWN TO TAN MED. TO COARSE SAND W/
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 13
0-13" TOPSOIL
13-25" BROWN FINE TO MED. SANDY LOAM
25-91" TAN TO BROWN MED. TO COARSE SAND AND
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 14
0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" TAN MED. TO FINE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 15
0-10" TOPSOIL
10-39" BROWN FINE SANDY LOAM
39-99" TAN TO OLIVE MED. TO COARSE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 16
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-96" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 17
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-89" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 18
0-9" TOPSOIL
9-29" YELLOW TO BROWN FINE SANDY LOAM
29-103" TAN TO OLIVE MED. TO COARSE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 19
0-14" TOPSOIL
14-36" BROWN FINE SANDY LOAM
W/SILT
36-84" TAN/GRAY COARSE SAND
W/GRAVEL

MOTTLING @ 40"
WATER @ 43"
NO LEDGE

TP 20
0-17" TOPSOIL
17-31" BROWN FINE SANDY LOAM
W/SILT
31-83" TAN/GRAY COARSE SAND
W/GRAVEL AND FEW COBBLES

MOTTLING @ 43"
WATER @ 46"
NO LEDGE

TP 21
0-17" SANDY FILL & DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN/BROWN FINE MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 22
0-19" FILL
19-32" TOPSOIL
32-53" BROWN MED. SANDY LOAM
53-103" TAN TO BROWN MED. TO FINE
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 23
0-17" SANDY FILL AND DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN TO BROWN MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 24
0-8" TOPSOIL
8-46" BROWN FINE TO MED. SANDY LOAM,
SOME COBBLES
46-92" TAN TO GRAY COARSE SAND
W/GRAVEL AND COBBLES

MOTTLING @ 60"
WATER 64" UPHILL, 32" DOWNHILL
NO LEDGE

TP 25
0-10" TOPSOIL
10-29" BROWN FINE TO MED. SANDY LOAM,
SOME SILT
29-75" BROWN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES

MOTTLING @ 33"
WATER 33", 30" DOWNHILL
NO LEDGE

TP 26
0-7" TOPSOIL
7-36" YELLOW TO BROWN FINE TO MED.
SILTY LOAM W/TRACE FINE SAND
36-82" BROWN TO GRAY FINE TO MED.
SAND W/GRAVEL AND COBBLES, SOME SILT

MOTTLING @ 26"
WATER @ 26"
NO LEDGE

TP 27
0-11" TOPSOIL
11-24" BROWN FINE TO MED. SANDY LOAM
24-39" TAN FINE TO MED. SAND
39-87" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 28
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO MED. SANDY LOAM
32-96" LIGHT TAN FINE TO MED. SAND W/
GRAVEL AND COBBLES STRATIFIED

NO MOTTLING
NO WATER
NO LEDGE

TP 29
0-12" TOPSOIL
12-32" BROWN FINE TO MED. SANDY LOAM
32-99" TAN TO GRAY MED. TO FINE SAND W/
GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 30
0-12" TOPSOIL
12-34" BROWN FINE SANDY LOAM (DEPTH VARIES)
34-98" TAN TO MED. TO FINE SAND W/GRAVEL AND
GRAVEL, STRATIFIED

NO MOTTLING
NO WATER
NO LEDGE

TP 31
0-7" TOPSOIL
7-31" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
31-100" TAN FINE TO MED. SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 32
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-82" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 33
0-10" TOPSOIL
10-34" BROWN FINE SANDY LOAM
34-75" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 34
0-12" TOPSOIL
12-44" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
44-89" TAN TO BROWN MED. SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 35
0-9" TOPSOIL
9-21" BROWN FINE SANDY LOAM
21-47" TAN TO BROWN MED. SAND W/GRAVEL,
FEW COBBLES
47-110" TAN TO BROWN, MED. SAND W/GRAVEL,
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 36
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-94" TAN TO GRAY MED. TO
FINE SAND W/GRAVEL
AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 37
0-9" TOPSOIL
9-39" LIGHT BROWN TO TAN,
FINE TO VERY FINE, SANDY LOAM
39-100" LIGHT TAN FINE TO MED.
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 38
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM

34-90" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 39
0-5" TOPSOIL
5-41" LIGHT BROWN FINE SANDY LOAM
41-83" TAN TO MED. SAND W/
GRAVEL AND COBBLES
83"-104" OLIVE TO BROWN FINE SAND,SOME GRAVEL

NO MOTTLING
NO WATER
NO LEDGE

TP 40
0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-58" TAN TO GRAY SILT WITH
PATCHY ORANGE REDOX INCONSISTENT AROUND
58-99" TAN TO GRAY MED. TO FINE SAND
NO MOTTLING W/GRAVEL AND COBBLES
NO WATER
NO LEDGE

TP 41
0-9" TOPSOIL
9-29" BROWN FINE TO MED. SANDY LOAM
29-52" TAN TO GRAY SILT FINE SAND,
STAINED
52-101" TAN TO GRAY, FINE TO MED. SAND
NO MOTTLING W/GRAVEL AND COBBLES
NO WATER
NO LEDGE

TP 42
0-5" TOPSOIL
5-14" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
14-50" ORANGE TO GRAY SILT, STAINED
50-105" TAN TO BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 43
0-8" TOPSOIL
8-33" BROWN FINE SANDY LOAM
33-45" TAN TO GRAY SILT INCONSISTENT
AROUND HOLE
45-83" TAN TO MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 44
0-6" TOPSOIL
6-14" BROWN FINE TO MED. SANDY LOAM
14-42" TAN TO GRAY SILT INCONSISTENT AROUND HOLE
42-102" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 45
0-13" TOPSOIL
13"-23 BROWN FINE TO VERY FINE SANDY LOAM
23-37" GRAY TO TAN VERY FINE SAND W/SILT
37-93" BROWN TO GRAY COARSE SAND W/
GRAVEL AND SOME COBBLES

MOTTLING @ 37"
NO WATER
NO LEDGE

TP 46
0-15" TOPSOIL
15-39" GRAY TO TAN VERY FINE SANDY W/SILT
39-51" GRAY FINE TO MED. SAND W/SILT & HEAVILY
MOTTLED THROUGHOUT
51-108" BROWN TO TAN COARSE SAND W/
GRAVEL AND SOME COBBLES
OLD FILTER FABRIC AND GRAVEL @ 20"
MOTTLING @ 39"
WATER @ 96"
NO LEDGE

TP 47
0-10" TOPSOIL
10-22" BROWN FINE TO MED. SANDY LOAM W/SILT
22-41" LIGHT BROWN TO ORANGE SILTY LOAM,
TRACE FINE SAND
41-98" BROWN TO GRAY COARSE SAND W/GRAVEL
AND SOME COBBLES

NO MOTTLING
WATER @ 96"
NO LEDGE

TP 48
0-10" TOPSOIL
10-28" BROWN FINE TO VERY FINE SANDY LOAM TO SILT
28-106" BROWN TO GRAY MED. TO COARSE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER-WET AT BOTTOM
NO LEDGE

TP 49
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-52" LIGHT YELLOW TO BROWN VERY
FINE SAND W/SILT
52-99" BROWN TO GRAY COARSE SAND WITH
GRAVEL, FEW COBBLES

POSSIBLE MOTTLING @ 52"
WATER @ 90"
NO LEDGE

TP 50
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-41" LIGHT YELLOW TO TAN VERY FINE SAND,
W/SILT
41-111" TAN TO BROWN COARSE SAND W/GRAVEL
AND SOME COBBLES

NO MOTTLING
WATER @ 106"
NO LEDGE

TP 51
0-10" TOPSOIL
10-20" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM
20-42" LIGHT YELLOW TO BROWN VERY FINE
SAND W/TRACE SILT
42-101" BROWN TO TAN COARSE SAND WITH
GRAVEL, SOME COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 52
0-13" TOPSOIL
13-38" BROWN FINE TO VERY FINE SANDY LOAM
38-90" BROWN TO TAN COARSE TO MED. SAND
WITH SOME GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 53
0-13" TOPSOIL
13-32" BROWN FINE TO MED. SANDY LOAM
W/GRAVEL AND COBBLES
32-92" BROWN TO TAN COARSE TO
MED. SAND W/GRAVEL AND MANY COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 54
0-11" TOPSOIL
11-32" BROWN FINE TO VERY FINE SANDY LOAM
32-95" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND SOME COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 55
0-14" TOPSOIL
14-22" BROWN FINE TO VERY FINE SANDY LOAM
22-37" LIGHT BROWN FINE TO VERY FINE SAND W/SILT
37-110" TAN MED. SAND W/GRAVEL, FEW COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 56
0-15" TOPSOIL
15-43" LIGHT BROWN SILT LOAM ,SOME FINE SAND
43-110" TAN MED. SAND SOME GRAVEL
FEW COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 57
0-8" TOPSOIL
8-27" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
27-104" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL, SOME COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 58
0-12" TOPSOIL
12"-32" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
32-98" TAN TO BROWN MED. TO COARSE
SAND WITH GRAVEL, SOME COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 59
0-11" TOPSOIL
11-23" BROWN FINE TO VERY FINE SANDY LOAM
23-93" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 60
0-10" TOPSOIL
10-23" BROWN FINE TO VERY FINE SANDY LOAM
23-97" BROWN TO TAN COARSE TO MED.
SAND WITH GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 61
0-8" TOPSOIL
8-28" BROWN VERY FINE SANDY LOAM
28-99" TAN TO BROWN COARSE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 62
0-9" TOPSOIL
9-24" LIGHT BROWN VERY FINE SANDY LOAM
24-96" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 63
0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" BROWN TO TAN COARSE TO MED. SAND,
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 64
0-10" TOPSOIL
10-31" BROWN FINE SANDY LOAM
31-91" BROWN TO TAN COARSE TO MED.
SAND W/SOME SILT GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 65
0-13" TOPSOIL
13-30" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
30-100" TAN TO BROWN COARSE SAND
WITH GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 66
0-10" TOPSOIL
10-28" BROWN FINE SANDY LOAM
28-90" TAN TO GRAY MED. TO COARSE
SAND W/SOME GRAVEL

NO MOTTLING
NO WATER
NO LEDGE

TP 67
0-14" TOPSOIL
14-25" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
25-108" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 68
0-11" TOPSOIL
11-29" BROWN FINE TO MED. SANDY LOAM
29-80" TAN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 69
0-12" TOPSOIL
12-36" YELLOW TAN FINE TO VERY FINE SANDY LOAM
36-93" TAN TO BROWN MED. TO FINE SAND
W/GRAVEL, SOME COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 70
0-14" TOPSOIL
14-36" BROWN FINE TO MED. SANDY LOAM
36-91" TAN MED. TO FINE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 71
0-8" TOPSOIL
8-36" BROWN FINE TO MED. SANDY LOAM
36-96" TAN TO GRAY MED. TO FINE
SAND W/ GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 72
0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-91" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 73
0-13" TOPSOIL
13-28" BROWN FINE SANDY LOAM
28-37" YELLOW TAN FINE TO VERY FINE
SANDY LOAM
37-90" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 74
0-6" TOPSOIL
6-39" BROWN FINE SANDY LOAM
39-99" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 75
0-10" TOPSOIL
10-29" LIGHT BROWN FINE SANDY LOAM
29-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 76
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
STRATIFIED

NO MOTTLING
NO WATER
NO LEDGE

TP 77
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE
SAND WITH GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 78
0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-106" BROWN TO TAN MED. FINE SAND
W/ SOME GRAVEL

NO MOTTLING
NO WATER
NO LEDGE

TP 79
0-11" TOPSOIL
11-38" BROWN FINE TO MED. SANDY LOAM
38-90" TAN TO GRAY MED. TO FINE
SAND WITH GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 80
0-12" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 81
0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
NO LEDGE

TP 82
0-9" SAND AND GRAVEL FILL
9-18" TOPSOIL
18-52" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM, SOME SILT
52-101" TAN TO BROWN FINE TO MED.
SAND, SOME GRAVEL

NO MOTTLING
NO WATER
NO LEDGE

TP 83
0-9" TOPSOIL
9-31" BROWN FINE SANDY LOAM
31-104" TAN-BROWN COARSE SAND
WITH GRAVEL AND COBBLES

NO MOTTLING
NO WATER
LEDGE-NONE TO 104"

TP 84
0-11" TOPSOIL
11-38" BROWN FINE SANDY LOAM
TRACE SILT
38-92" TAN TO BROWN MED-COARSE
SAND W/GRAVEL AND COBBLES

NO MOTTLING
WATER @ 79"
LEDGE-NONE TO 92"

TP 85
0-12" TOPSOIL
12-33" BROWN FINE SANDY LOAM
30-98" TAN COARSE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
LEDGE-NONE TO 98"

TP 86
0-8" TOPSOIL
8-30" BROWN FINE SANDY LOAM
30-89" TAN COARSE SAND
W/GRAVEL AND COBBLES

NO MOTTLING
NO WATER
LEDGE-NONE TO 89"

PLAN SHOWING
DEEP TEST PIT DATA
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022

PERCOLATION TESTS PERFORMED ON MAY 26 & 27, JUNE 3 AND JUNE 10, 2022 BY DIETER & GARDNER, INC. (JODY TERRY AND MATT EMILYTA)

LOT 1
27" DEEP

TIME	READING
8:59	2"
9:04	6 3/4"
9:09	9"
9:14	11"
9:19	12 1/2"
9:24	14"
9:29	15 1/2"
9:34	17"
9:39	18 1/4"
9:44	19 1/4"
9:49	20 1/4"

PERC RATE: 1"/5 MINS.

LOT 2
29" DEEP

TIME	READING
8:51	4"
8:56	10"
9:01	13 3/4"
9:06	16"
9:11	18"
9:16	20"
9:21	21"
9:26	22"
9:31	23"
9:36	24"
9:41	25"

PERC RATE: 1"/5 MINS.

LOT 3
30" DEEP

TIME	READING
9:00	2 1/2"
9:05	7 1/2"
9:10	11"
9:15	13 1/2"
9:20	16"
9:25	17 1/2"
9:30	19 1/2"
9:35	20 1/2"
9:40	21 1/2"
9:45	22 1/2"

PERC RATE: 1"/5 MINS.

LOT 4
26" DEEP

TIME	READING
9:02	2 1/4"
9:07	13 1/2"
9:12	19"
9:17	22 1/2"
9:22	24 1/2"
9:27	26"
9:32	DRY

PERC RATE: 1"/3.3 MINS.

LOT 5
26" DEEP

TIME	READING
9:55	2"
10:00	8 1/2"
10:05	13"
10:10	17"
10:15	19 1/2"
10:20	22"
10:25	24"
10:30	25"
10:35	26"
10:40	DRY

PERC RATE: 1"/ 5 MINS.

LOT 6
29" DEEP

TIME	READING
1:30	4"
1:35	20"
1:40	23"
1:45	24 1/2"
1:50	25 1/2"
1:55	26 1/2"
2:00	27 1/2"
2:05	28 1/2"
2:10	DRY

PERC RATE: 1"/5 MINS.

LOT 7
30" DEEP

TIME	READING
1:32	4"
1:37	13"
1:42	18"
1:47	20 1/2"
1:52	23"
1:57	24"
2:02	25"
2:07	25 3/4"
2:12	26 3/4"
2:17	27 3/4"

PERC RATE: 1"/5 MINS.

LOT 8
30" DEEP

TIME	READING
1:34	3"
1:39	9 1/2"
1:44	13"
1:49	15 1/2"
1:54	18"
1:59	20"
2:04	21 1/2"
2:09	23"
2:14	24 1/2"
2:19	26"

PERC RATE: 1"/3.3 MINS.

LOT 9
29" DEEP

TIME	READING
1:41	4"
1:46	10"
1:51	13"
1:56	15 1/2"
2:01	17 1/2"
2:06	19"
2:11	20 1/2"
2:16	22"
2:21	23 1/2"
2:26	25"
2:31	26 1/2"

PERC RATE: 1"/3.3 MINS.

LOT 10
27" DEEP

TIME	READING
9:13	4"
9:18	11 1/2"
9:23	16"
9:28	18"
9:33	20"
9:38	21 1/2"
9:43	22"
9:48	23 1/2"
9:53	24 1/2"
9:58	25 1/2"
10:03	DRY

PERC RATE: 1"/5 MINS.

LOT 11
27" DEEP

TIME	READING
9:10	4"
9:15	14 1/2"
9:20	17 1/2"
9:25	21"
9:30	22"
9:35	23"
9:40	24"
9:45	25"
9:50	26"
9:55	DRY

PERC RATE: 1"/5 MINS.

LOT 12
27" DEEP

TIME	READING
9:18	3"
9:23	7"
9:28	10"
9:33	11 3/4"
9:38	13"
9:43	14 1/4"
9:48	15 1/2"
9:53	16 1/2"
9:58	17 7/8"
10:03	19 1/2"

PERC RATE: 1"/3 MINS.

LOT 13
30" DEEP

TIME	READING
11:28	4"
11:33	10"
11:38	12 1/2"
11:43	14 1/2"
11:48	16 1/2"
11:53	17 1/4"
11:58	19"
12:03	20 1/2"
12:08	21 1/8"

PERC RATE: 1"/3 MINS.

LOT 14
32" DEEP

TIME	READING
11:24	3 1/2"
11:29	17 1/2"
11:34	21"
11:39	23 1/2"
11:44	25 1/2"
11:49	27 1/2"
11:54	29"
11:59	30 1/2"
12:04	DRY

PERC RATE: 1"/3.3 MINS.

LOT 15
30" DEEP

TIME	READING
10:41	9"
10:46	12 1/2"
10:51	15"
10:56	17"
11:01	19"
11:06	19 1/2"
11:11	20 1/2"
11:16	21 1/2"
11:21	22 1/2"
11:26	23 1/2"

PERC RATE: 1"/5 MINS.

LOT 16
30" DEEP

TIME	READING
10:39	7"
10:44	11"
10:49	15"
10:54	19 1/2"
10:59	20 1/2"
11:04	22"
11:09	23"
11:14	24"
11:19	25"
11:24	25 3/4"

PERC RATE: 1"/6.7 MINS.

LOT 17
28" DEEP

TIME	READING
10:45	3"
10:50	12"
10:55	14 1/4"
11:00	15 1/4"
11:05	17 1/4"
11:10	19 1/4"
11:15	21"
11:20	22 1/4"
11:25	23 1/4"
11:30	24 1/2"
11:35	25 3/4"

PERC RATE: 1"/4 MINS.

LOT 18
28" DEEP

TIME	READING
10:37	3"
10:42	6 3/4"
10:47	9 1/4"
10:52	12 1/2"
10:57	15"
11:02	17"
11:07	19"
11:12	20"
11:17	21"
11:22	22 1/8"
11:27	23 1/8"

PERC RATE: 1"/5 MINS.

LOT 19
27" DEEP

TIME	READING
8:48	2"
8:53	9"
8:58	14"
9:03	18"
9:08	20"
9:13	22"
9:18	23"
9:23	24"
9:28	25"
9:33	26"
9:38	DRY

PERC RATE: 1"/5 MINS.

LOT 20
30" DEEP

TIME	READING
8:41	4"
8:46	8 1/4"
8:51	10 1/4"
8:56	12 1/2"
9:01	15"
9:06	17"
9:11	18"
9:16	19"
9:21	20"
9:26	21"
9:31	22"

PERC RATE: 1"/5 MINS.

LOT 21
29" DEEP

TIME	READING
8:43	5"
8:48	10 3/4"
8:53	15"
8:58	17 1/2"
9:03	19 1/2"
9:08	21"
9:13	22"
9:18	23"
9:23	23 3/4"
9:28	24 1/2"
9:33	25 1/2"

PERC RATE: 1"/5 MINS.

LOT 22
26" DEEP

TIME	READING
8:40	5 1/2"
8:45	9 1/2"
8:50	11 1/2"
8:55	14"
9:00	15 1/2"
9:05	16 1/2"
9:10	17 3/4"
9:15	18 1/2"
9:20	19 1/2"
9:25	20 1/2"
9:30	21 1/2"

PERC RATE: 1"/5 MINS.

LOT 23
29" DEEP

TIME	READING
1:50	4 1/4"
1:55	11 7/8"
2:00	15 1/2"
2:05	18"
2:10	21"
2:15	23"
2:20	25"
2:25	27"
2:30	28 7/8"
2:35	DRY

PERC RATE: 1"/2.7 MINS.

LOT 24
30" DEEP

TIME	READING
1:30	2 1/2"
1:35	9 1/2"
1:40	13 1/2"
1:45	15"
1:50	17 1/2"
1:55	20"
2:00	21 1/2"
2:05	22 1/2"
2:10	23 1/2"
2:15	24 1/2"

PERC RATE: 1"/5 MINS.

LOT 25
28" DEEP

TIME	READING
10:42	3"
10:47	10"
10:52	14"
10:57	17"
11:02	19"
11:07	21"
11:12	23 1/2"
11:17	25"
11:22	26 1/2"

PERC RATE: 1"/3.3 MINS.

LOT 26
30" DEEP

TIME	READING
11:43	3 1/2"
11:48	8"
11:53	10"
10:58	13"
12:03	14 1/2"
12:08	16"
12:13	17"
12:18	18 1/2"
12:23	20"
12:28	21"

PERC RATE: 1"/5 MINS.

LOT 27
29" DEEP

TIME	READING
12:30	3"
12:35	12"
12:40	17 1/2"
12:45	20"
12:50	23"
12:55	25"
1:00	26 1/2"
1:05	28"
1:10	DRY

PERC RATE: 1"/3.3 MINS.

LOT 28
28" DEEP

TIME	READING
12:27	3"
12:32	7 1/2"
12:37	11 1/2"
12:42	14"
12:47	16"
12:52	18"
12:57	19"
1:02	20"
1:07	21"
1:12	22"

PERC RATE: 1"/5 MINS.

LOT 29
28" DEEP

TIME	READING
11:23	3"
11:28	11 3/4"
11:33	15"
11:38	18"
11:43	21 1/2"
11:48	24"
11:53	26"
11:58	DRY

PERC RATE: 1"/2.5 MINS.

LOT 30
29" DEEP

TIME	READING
11:45	3"
11:50	7 3/4"
11:55	11 1/2"
12:00	13 3/4"
12:05	16"
12:10	18"
12:15	20"
12:20	21"
12:25	22 1/4"
12:30	23 1/2"
12:35	25"

PERC RATE: 1"/4 MINS.

LOT 31
29" DEEP

TIME	READING
11:46	3"
11:51	6 1/2"
11:56	9"
12:01	12"
12:06	13 1/2"
12:11	14 1/2"
12:16	16"
12:21	17 1/2"
12:26	18 1/2"
12:31	19 1/2"
12:36	20 1/2"

PERC RATE: 1"/5 MINS.

LOT 32
28" DEEP

TIME	READING
10:15	3"
10:20	11 1/2"
10:25	16 1/2"
10:30	21"
10:35	24"
10:40	25 1/2"
10:45	27"
10:50	DRY

PERC RATE: 1"/3.3 MINS.

LOT 33
30" DEEP

TIME	READING
10:18	2 1/2"
10:23	12"
10:28	15 1/2"
10:33	19 1/2"
10:38	21"
10:43	22 1/2"
10:48	24"
10:53	25"
10:58	25 3/4"
11:03	26 3/4"

PERC RATE: 1"/6 MINS.

LOT 34
29" DEEP

TIME	READING
10:49	3"
10:54	11"
10:59	15"
11:04	18 1/2"
11:09	20 1/2"
11:14	22"
11:19	23 1/2"
11:24	25"
11:29	26 1/2"

PERC RATE: 1"/3.3 MINS.

LOT 35
30" DEEP

TIME	READING
1:27	2 1/2"
1:32	8 1/4"
1:37	13"
1:42	15 1/2"
1:47	18"
1:52	19 1/2"
1:57	21 1/2"
2:02	23"
2:07	24 1/2"
2:12	26"

PERC RATE: 1"/3.3 MINS.

LOT 36
28" DEEP

TIME	READING
1:38	5"
1:43	11"
1:48	13 1/2"
1:53	16"
1:58	18"
2:03	19"
2:08	20 1/8"
2:13	21 1/2"
2:18	22 1/2"
2:23	23 1/2"
2:28	24 1/2"

PERC RATE: 1"/5 MINS.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND.
ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE

_____ CHAIRMAN OR SECRETARY _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF – THE LEDYARD PLANNING AND ZONING COMMISSION ON DATE

LOT NUMBERS ASSIGNED BY THE ASSESSOR

_____ ASSESSOR _____ DATE

IWWC APPLICATION# _____

_____ APPROVED, _____

_____ NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

_____ NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

_____ WETLANDS OFFICER _____ DATE

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

_____ PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

_____ CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION DATE

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

_____ ZONING ENFORCEMENT OFFICER _____ DATE

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
1641 CONNECTICUT ROUTE 12
P.O. BOX 335
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

SANITARY DESIGN CRITERIA

A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.

B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/INCH OR LESS REQUIRES 495 S.F. OF EFFECTIVE LEACHING AREA.

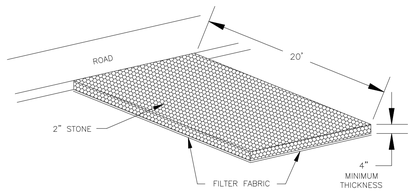
C. GST 6236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN. LOTS 2 & 3 WILL BE 45' MANTIS 536-8. CREDIT PER L.F. IS 26.2 S.F. MINIMUM REQUIRED AREA IS 495 S.F./ 26.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.

HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/INCH.

	MLSS TABLE							
LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	HF	FF	PF	MLSS	SYSTEM
1	3 & 4	*	*	*	1.5	1.0		20 L.F. GST 6236
2	5 & 6	8.1 TO 10.0%	30.1-36.0"	24	1.5	1.0	36	45' MANTIS 536-8
3	19 & 20	3.1 TO 4.0%	36.1-42.0"	26	1.5	1.0	42	45' MANTIS 536-8
4	7 & 8				1.5	1.0		20 L.F. GST 6236
5	9 & 10				1.5	1.0		20 L.F. GST 6236
6	11 & 12				1.5	1.0		20 L.F. GST 6236
7	13 & 14				1.5	1.0		20 L.F. GST 6236
8	15 & 16				1.5	1.0		20 L.F. GST 6236
9	17 & 18				1.5	1.0		20 L.F. GST 6236
10	21 & 22				1.5	1.0		20 L.F. GST 6236
11	85 & 86				1.5	1.0		20 L.F. GST 6236
12	83 & 84				1.5	1.0		20 L.F. GST 6236
13	27 & 28				1.5	1.0		20 L.F. GST 6236
14	29 & 30				1.5	1.0		20 L.F. GST 6236
15	31 & 32				1.5	1.0		20 L.F. GST 6236
16	33 & 34				1.5	1.0		20 L.F. GST 6236
17	35 & 36				1.5	1.0		20 L.F. GST 6236
18	37 & 38				1.5	1.0		20 L.F. GST 6236
19	81 & 82				1.5	1.0		20 L.F. GST 6236
20	39 & 40				1.5	1.0		20 L.F. GST 6236
21	41 & 42				1.5	1.0		20 L.F. GST 6236
22	43 & 44				1.5	1.0		20 L.F. GST 6236
23	51 & 52				1.5	1.0		20 L.F. GST 6236
24	53 & 54				1.5	1.0		20 L.F. GST 6236
25	59 & 60				1.5	1.0		20 L.F. GST 6236
26	64 & 66				1.5	1.0		20 L.F. GST 6236
27	71 & 72				1.5	1.0		20 L.F. GST 6236
28	73 & 74				1.5	1.0		20 L.F. GST 6236
29	77 & 78				1.5	1.0		20 L.F. GST 6236
30	76 & 79				1.5	1.0		20 L.F. GST 6236
31	69 & 75				1.5	1.0		20 L.F. GST 6236
32	67 & 68				1.5	1.0		20 L.F. GST 6236
33	61 & 62				1.5	1.0		20 L.F. GST 6236
34	57 & 58				1.5	1.0		20 L.F. GST 6236
35	50 & 55				1.5	1.0		20 L.F. GST 6236
36	47 & 48				1.5	1.0		20 L.F. GST 6236

NOTE: THE MLSS CRITERIA DOES NOT APPLY TO PITS NOTED BY *

PLAN SHOWING
PERCOLATION TEST DATA,
SEPTIC SYSTEM DESIGN CRITERIA
AND
MINIMUM LEACHING SYSTEM SPREAD
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022

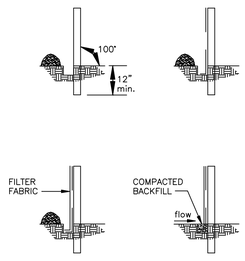


TEMPORARY CONSTRUCTION ENTRANCE

NOT TO SCALE

1. SET POSTS & EXCAVATE A 6" x 6" TRENCH. SET POSTS DOWNSLOPE. ANGLE UPSLOPE FOR STABILITY & SELF-CLEANING.

2. STAPLE THE WIRE MESH FENCING TO END POST.



3. ATTACH FILTER FABRIC TO THE WIRE FENCING & EXTEND IT INTO THE TRENCH.

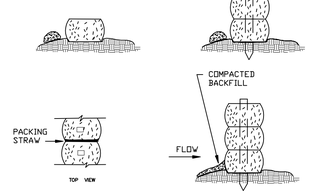
4. BACKFILL THE TRENCH & COMPACT WITH EXCAVATED SOIL.

FILTER FABRIC SEDIMENT BARRIER

NOT TO SCALE

1. EXCAVATE A TRENCH 4" DEEP & THE WIDTE OF A STRAW BALE

2. PLACE & STAKE STRAW BALES, TWO STAKES PER BALE.

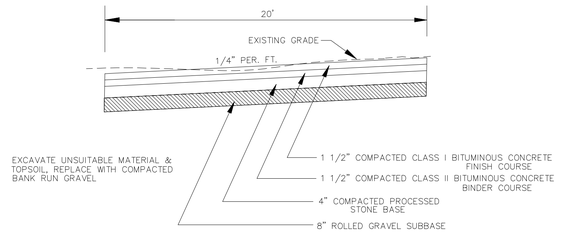


3. WEDGE LOOSE STRAW BETWEEN BALES TO CREATE A CONTINUOUS BARRIER.

4. BACKFILL & COMPACT THE EXCAVATED SOIL ON THE UPHILL SIDE OF THE BARRIER TO PREVENT PIPING.

CONSTRUCTION OF A STRAW BALE BARRIER

NOT TO SCALE



AVERY BROOK CIRCLE CROSS-SECTION

NOT TO SCALE

EROSION AND SEDIMENTATION CONTROL PLAN

THIS PLAN HAS BEEN DEVELOPED TO MINIMIZE EROSION AND SEDIMENTATION AND REDUCE THE IMPACT OF STORM WATER RUNOFF DURING CONSTRUCTION USING ENGINEERING PRINCIPALS DETAILED IN THE CONNECTICUT GUIDELINES FOR SOIL AND EROSION AND SEDIMENT CONTROL.

THE ACCOMPANYING PLANS PROVIDE THE FOLLOWING INFORMATION FOR THE IMPLEMENTATION OF THIS PLAN:

— LOCATION OF SEDIMENT CONTROL BARRIERS

— FINISHED GRADES TO BE ACHIEVED

— CONSTRUCTION SEQUENCE AND DETAILS

THIS PROJECT IS FOR THE DEVELOPMENT OF 36 LOT RESIDENTIAL SUBDIVISION.
THERE ARE INLAND WETLANDS ON THIS PROPERTY.

OWNER AT TIME OF CONSTRUCTION WILL SERVE AS CONTACT PERSON FOR IMPLEMENTING EROSION AND SEDIMENT CONTROL MEASURES ON THIS PLAN.

EROSION CONTROL NOT REQUIRED FOR AVERY BROOK CIRCLE.

CONSTRUCTION SEQUENCE: HOMES

1. STAKEOUT LIMITS OF CONSTRUCTION FOR THE DRIVEWAYS, HOMES AND SEPTIC SYSTEMS.
2. INSTALL SEDIMENTATION CONTROL BARRIERS AS SHOWN ON THE PLAN.
3. REMOVE EXISTING VEGETATION AND TOPSOIL WITHIN THE LIMITS OF CONSTRUCTION. STOCKPILE TOPSOIL AS SHOWN ON THE PLAN.
4. ROUGH GRADE THE DRIVEWAY AND HOUSE AREA.
5. INSTALL/CONNECT UTILITIES
6. FOLLOWING CONSTRUCTION OF THE HOME, FINISH GRADE ALL DISTURBED AREAS.
7. LOAM AND SEED ALL DISTURBED AREAS.

MAINTENANCE:

INSPECT SEDIMENT BARRIERS AFTER EACH STORM EVENT AND REPAIR OR REPLACE AS NECESSARY. CLEAN OUT OF ACCUMULATED SEDIMENT IS NECESSARY IF 1/2 OF THE ORIGINAL HEIGHT OF THE BARRIER BECOMES FILLED IN WITH SEDIMENT.

GENERAL NOTES:

1. MAINTAIN ALL SEDIMENT AND EROSION CONTROL FACILITIES UNTIL ALL AREAS HAVE BEEN STABILIZED.
2. LIMITS OF DISTURBANCE AND EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSIDERED AS TYPICAL MINIMUM STANDARDS. THE GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL AND FOR IMPLEMENTING ADDITIONAL MEASURES AS SITE CONDITIONS WARRANT.
3. SLOPES IN HIGH MAINTENANCE AREAS SHALL NOT EXCEED 3:1 (H:V).
4. NO DRIVEWAY SHALL BE GREATER THAN 15% SLOPE AT ANY POINT. ANY DRIVEWAY HAVING A GRADE OF 8% OR MORE, BUT NOT EXCEEDING 15%, SHALL BE PAVED FOR THAT PORTION OF DRIVEWAY THAT EXCEEDS 8%.
5. CONSTRUCTION EXPECTED TO BEGIN IN THE FALL OF 2022.

TEMPORARY SEEDING

USE A TEMPORARY VEGETATION COVER OF ANNUAL RYE GRASS AT A RATE OF 1.0 lbs./ 1000 S.F. APPLY 10-10-10 FERTILIZER, OR EQUIVALENT, AT A RATE OF 7.5 lbs./1000 S.F. AND LIMESTONE AT A RATE OF 90 lbs./1000 S.F. APPLY STRAW OR HAY MULCH AT A RATE OF 70 lbs./1000 S.F.

PERMANENT SEEDING

SEED BED PREPARATION: FINE GRADE AND RAKE SOIL SURFACE TO REMOVE STONES LARGER THAN 2" IN DIAMETER. APPLY LIMESTONE AT A RATE OF 90 lbs./1000 S.F. FERTILIZE WITH 10-10-10, OR EQUIVALENT, AT A RATE OF 7.5 lbs./1000 S.F. WORK LIMESTONE AND FERTILIZER INTO SOIL UNIFORMLY TO A DEPTH OF 4" WITH A HARROW OR EQUIVALENT. SEED APPLICATION: APPLY LAWN SEED BY HAND, CYCLONE SEEDER OR HYDROSEEDER. LIGHTLY DRAG OR ROLL THE SEED SURFACE TO COVER SEED. SEEDING SHOULD BE DONE BETWEEN APRIL 15 AND JUNE 15 OR BETWEEN AUGUST 15 AND SEPTEMBER 30.IF SEEDING CANNOT BE DONE DURING THESE TIMES, REPEAT MULCHING PROCEDURE BELOW UNTIL SEEDING CAN TAKE PLACE. NOTE: IF HYDROSEEDER IS USED, INCREASE SEED MIXTURE BY 10% MULCHING: IMMEDIATELY FOLLOWING SEEDING, MULCH THE SEEDED SURFACE WITH STRAW OR HAY AT A RATE OF 70 lbs./1000 S.F. SPREAD MULCH BY HAND OR MULCH BLOWER. PUNCH MULCH INTO SOIL SURFACE WITH TRACK MACHINE OR DISK HARROW.

CONSTRUCTION SEQUENCE: AVERY BROOK CIRCLE

1) STAKEOUT OFFSETS AND GRADE STAKES AT 50 FOOT STATIONS
2) REMOVE/DISPOSE OF ANY STUMPS/TREE DEBRIS.
3) STRIP/STOCKPILE TOPSOIL – LOCATION OF STOCKPILES TO BE DETERMINED. INSTALL EROSION CONTROL AT STOCKPILES.
4) EXCAVATE TO SUBGRADE, INSTALL 8" SUBBASE; 4" BASE AND BITUMINOUS CONCRETE.
5) INSTALL/GRADE/SEED TOPSOIL SHOULDERS OF AVERY BROOK CIRCLE.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND.

ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE

_____ CHAIRMAN OR SECRETARY _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF – THE LEDYARD PLANNING AND ZONING COMMISSION ON DATE

LOT NUMBERS ASSIGNED BY THE ASSESSOR

_____ ASSESSOR _____ DATE

IWWC APPLICATION# _____

_____ APPROVED, _____

_____ NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

_____ NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

_____ WETLANDS OFFICER _____ DATE

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

_____ PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

_____ CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION DATE

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

_____ ZONING ENFORCEMENT OFFICER _____ DATE

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
1641 CONNECTICUT ROUTE 12
P.O. BOX 335
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

PLAN SHOWING
EROSION AND SEDIMENT CONTROL
NARRATIVE AND DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022

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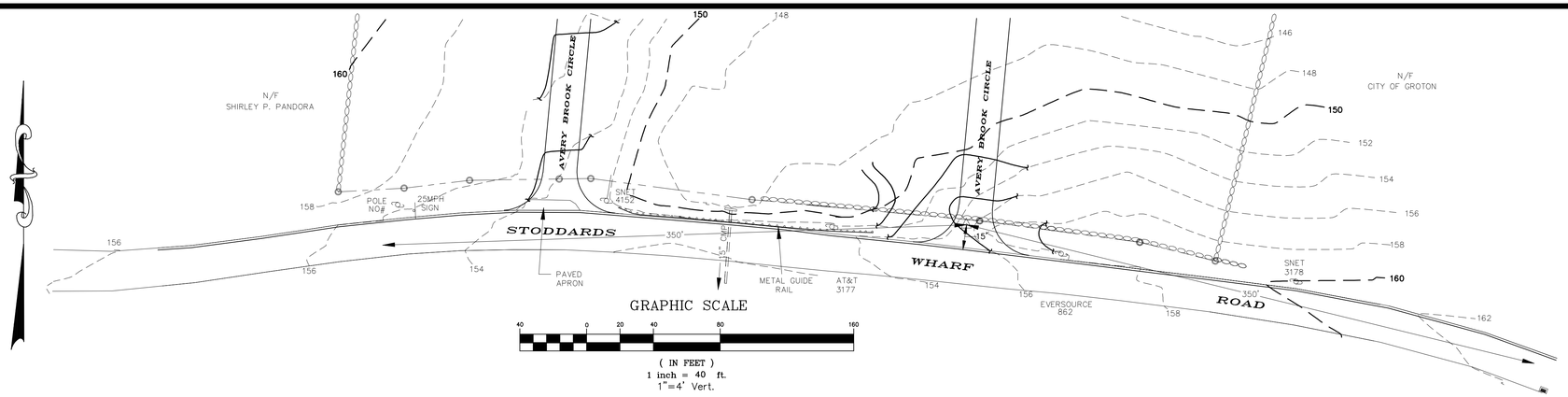
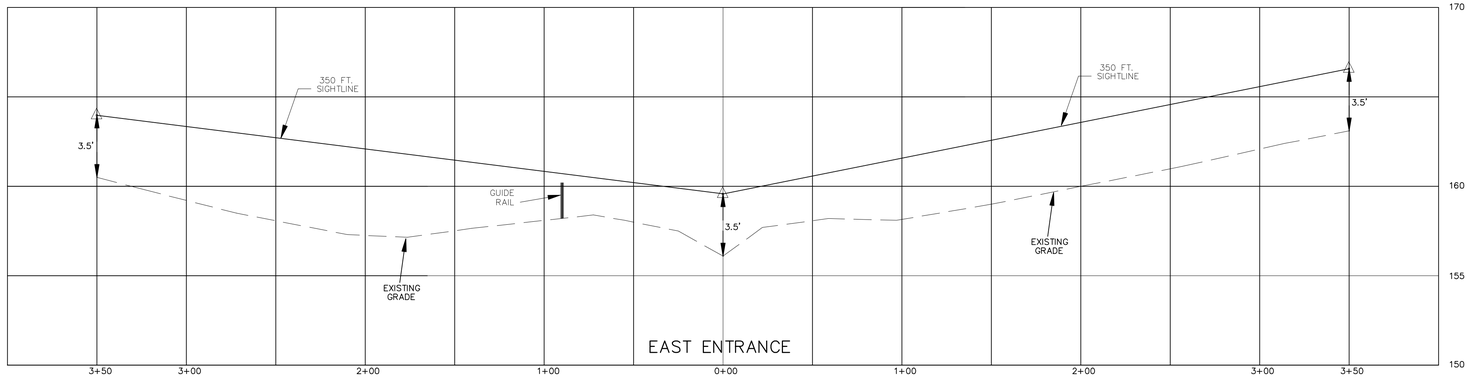
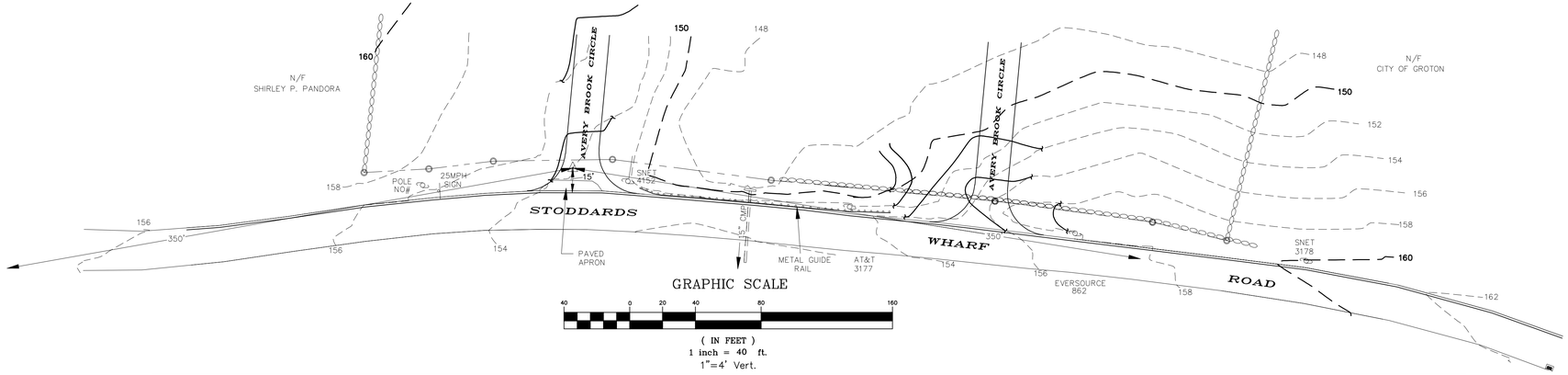


GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.
1"=4' Vert.





GRAPHIC SCALE

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1 inch = 40 ft.
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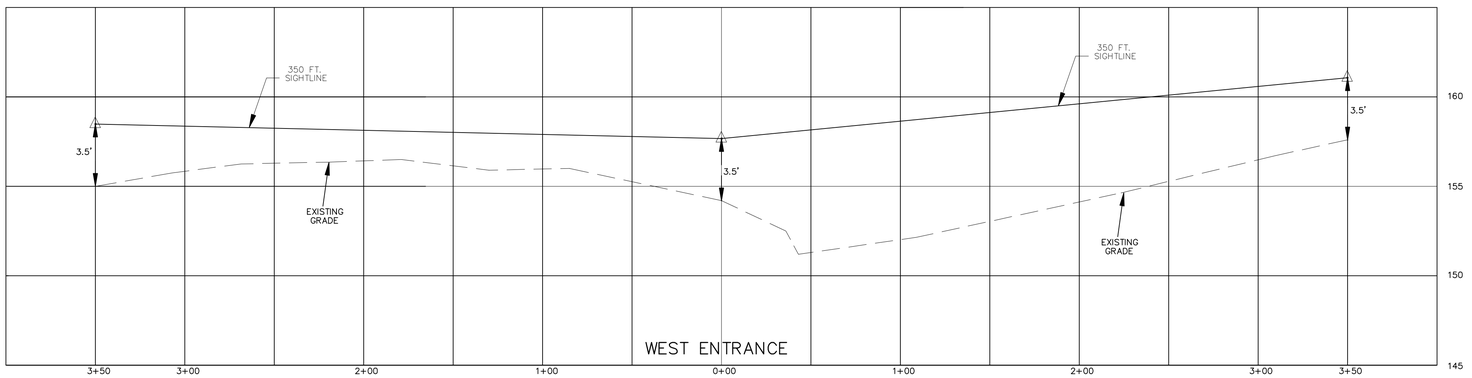

LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- UTILITY POLE

SIGHTLINE DEMONSTRATION PLAN PROPERTY OF AVERY BROOK HOMES LLC STODDARDS WHARF ROAD LEDYARD, CONNECTICUT

SCALE: 1"=40' HORIZ.
1"=4' VERT.
JULY 2022

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)
Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (bmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

August 22, 2022

Town of Ledyard Inland Wetlands and Watercourses Commission
Attn: Mr. John Herring, Wetlands Enforcement Officer
741 Colonel Ledyard Highway
Ledyard, CT 06339

RE: Application of Avery Brook Homes, LLC for an upland review area permit in conjunction with the development of a proposed 36 lot residential affordable housing development on properties at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214

Dear Mr. Herring:

Please be advised that this office represents Avery Brook Homes, LLC (Applicant and Owner) of real properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214, Ledyard, Connecticut. Our client is proposing to develop these adjacent parcels into a thirty-six (36) lot residential affordable housing subdivision with access being provided by way of a private loop road to be known as Avery Brook Circle. There are regulated inland wetlands located along the easterly and northerly periphery of the project site. The development of the project requires the applicant to conduct regulated activities in upland review areas adjacent to wetlands in these two (2) areas of the project site.

In furtherance thereof, I forward herewith an application to the Town of Ledyard Inland Wetlands and Watercourses Commission seeking a permit to conduct regulated activities in conjunction with the development of these contiguous properties. Submitted herewith and constituting the application to the Town of Ledyard Inland Wetlands and Watercourses Commission are the following:

1. Three (3) copies of the Application Form.

2. Three (3) copies of the list of abutting property owners and owners of property located immediately across the street from the application parcel.

3. Three (3) copies of the Project Narrative including the Project Overview, Soil Classifications, General Procedures and Construction Sequencing Narrative.

4. Authorization signed by Avery Brook Homes, LLC authorizing the law firm of Heller, Heller & McCoy, the land surveying firm of Dieter & Gardner, Inc. and Ian Cole, Certified Soil Scientist and Wetland Ecologist, to represent its interests in all proceedings before the Town of Ledyard Inland Wetlands and Watercourses Commission with respect to said application.

5. State of Connecticut Department of Energy and Environmental Protection Inland Wetlands and Watercourses Reporting Form.

6. Three (3) prints of the project plans entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown June 2022 Sheets 1 of 6 to 6 of 6 Dieter & Gardner Land Surveyors – Planners P.O. Box 335 1641 Connecticut Route 12 Gales Ferry, CT 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

7. A copy of our letter of even date herewith to the City of Groton Utilities.

8. A copy of our letter being forwarded contemporaneously herewith to the State of Connecticut Department of Public Health.

9. Our check in the amount of $1,960.00 representing payment of the application fee for this application, including the State of Connecticut surcharge, which fee is calculated as follows:

Base Fee:	$250.00
Thirty-Three (33) additional lots	$1,650.00
State Fee:	$60.00
TOTAL FEE:	**$1,960.00**

10. Three (3) originals of the project wetlands analysis and impact report for the proposed residential subdivision prepared by Ian Cole, C.S.S.

Request is hereby made that you place this matter on the agenda of the Town of Ledyard Inland Wetlands and Watercourses Commission for its regularly scheduled meeting of September 6, 2022.

Should you have any questions concerning the application, or need any additional information prior to the September 6, 2022 meeting, please feel free to call me to discuss the same.

Very truly yours,

Harry B. Heller

HBH/rmb
Enclosures

Cc: Avery Brook Homes, LLC
Mr. Peter C. Gardner
Mr. Conrad C. Gardner, Jr.
Mr. Anthony Bonafine

Street No./ Name:

TOWN OF LEDYARD
INLAND WETLANDS AND WATERCOURSES COMMISSION (IWWC)
APPLICATION FOR PERMIT (Or Commission ruling that a permit is not needed)

Application No. _____
Receipt Date _____

Date Submitted _____

Applicant/Agent Avery Brook Homes, LLC
Owner (if different) Avery Brook Homes, LLC

Address 1641 Connecticut Route 12, Gales Ferry, Connecticut 06335
Address of Owner Same as Applicant

Phones (860) 464-7455 / (860) 334-0081 cell
Phone (860) 464-7455

- **I have received information on the Army Corps of Engineers permit procedure.**
- **I have read and have included all the application and site plan requirements in Section 7 of the IWWC Regulations**

Avery Brook Homes, LLC
Its Member
Signature of Applicant/ Agent

Location of Property 94, 96, 98 and 100 Stoddards Wharf Road

Tax Assessor's Map No. 65
Zoning District R-60*
*Afford housin subdiv

Written Description of Proposed Activity Upland review area activities in conjunction with the siting of primary and reserve septic areas, grading and/or dwelling houses on proposed Lots 2, 3, 4, 5, 6 and primary and reserve septic areas on proposed lots 10, 11, 12 and 13 in upland review areas, all as depicted on a plan entitled "Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1" = 40' June 2022 Sheet 3 of 8" prepared by Dieter & Gardner, Inc. No direct impacts to inland wetlands or watercourses are proposed. See attached Narrative.

Proposed Erosion/ Sediment Control Measures: See attached Narrative

Total Area of Site 9.21 acres
Total Area of Wetlands per Official Inventory Map 5,600

Amount of Fill, in Cubic Yards 0
Disturbed Area, in Square Feet 37,700 or in Acres see square feet

Area Increase/Decrease in Wetlands _____ (For Map Amendment Only*)

Soil Types from USDA Soil Survey See attached Narrative

General Description of Vegetative Cover Successional growth.

Name and Address of Adjacent Property Owners
See attached list

Anticipated Start Date 4/2023 Completion Date 10/2027

List previous IWWC application #'s Unknown

IWW Commission Disposition: IWWC Regulations; Section _____ Classification _____

Signature of Chair

FEE: _____ + **$60.00 State Fee =** _____ **DATE PAID** _____ **RECEIPT #** _____

APPLICATION OF AVERY BROOK HOMES, LLC TO TOWN OF LEDYARD INLAND WETLANDS AND WATERCOURSES COMMISSION

94, 96, 98 AND 100 STODDARDS WHARF ROAD, LEDYARD, CONNECTICUT

LIST OF ABUTTING PROPERTY OWNERS

NORTH

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

EAST

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

SOUTH

Keith Tyler
Michela Lavin
89 Stoddards Wharf Road
Ledyard, CT 06339

Allan Bruckner
Kathy Bruckner
93 Stoddards Wharf Road
Ledyard, CT 06339

Ann Marie Donohue
James Lawrence McCarthy, Jr.
95 Stoddards Wharf Road
Ledyard, CT 06339

Randy D. Palmer
Sandra M. Palmer
101 Stoddards Wharf Road
Gales Ferry, CT 06335

WEST

Shirley P. Pandora Grantor Retained Income Trust U/A 12/13/2018
102 Stoddards Wharf Road
Ledyard, CT 06339

Arlene Allard
P.O. Box 94
Ledyard, CT 06339

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

File #: 22-548 **Agenda Date:** 10/4/2022 **Agenda #:**

IWWC APPLICATION

Subject/Application:
Application IWWC#22-19 of Steve Masalin, DPW, Town of Ledyard, 741 Colonel Ledyard Hwy. Ledyard CT 06339 to replace the existing Lantern Hill Road Bridge No. 137-001 over Whitford Brook with a 33ft. clear span, precast concrete, 3-sided culvert.

Background:
Project is being done with the Town of Stonington and was approved a little over 5 years ago. The permit was not renewed in time - prompting the resubmittal.

Street No./ Name:

TOWN OF LEDYARD
INLAND WETLANDS AND WATERCOURSES COMMISSION (IWWC)
APPLICATION FOR PERMIT (Or Commission ruling that a permit is not needed)

Application No.
Receipt Date

Date Submitted

Applicant/Agent Steve Masalin, DPW Director
Owner (if different) Town of Ledyard

Address 741 Col. Ledyard Hwy., Ledyard 06339
Address of Owner 741 Col. Ledyard Hwy., Ledyard 06339

Phones 860-464-3238 / _____ cell
Phone 860-464-3222

- **I have received information on the Army Corps of Engineers permit procedure.**
- **I have read and have included all the application and site plan requirements in Section 7 of the IWWC Regulations**

Steven E. Masalin
Signature of Applicant/ Agent

Location of Property Lantern Hill Road Bridge No. 137-001 over Whitford Brook

Tax Assessor's Map No. None
Zoning District R-80

Written Description of Proposed Activity

The Towns of Ledyard and Stonington propose to reconstruct the existing Lantern Hill Road Bridge over Whitford Brook. The existing bridge is in fair condition and replacement is recommended.

Proposed Erosion/ Sediment Control Measures: Refer to the attached design drawings.

Total Area of Site 0.293 acres
Total Area of Wetlands per Official Inventory Map 0.034 acres

Amount of Fill, in Cubic Yards 40
Disturbed Area, in Square Feet 850 or in Acres 0.020

Area Increase/Decrease in Wetlands 0.011 acre decrease (For Map Amendment Only*)

Soil Types from USDA Soil Survey Walpole, Scarboro, Ninigret & Tisbury, and Haven & Enfield

General Description of Vegetative Cover Within the project limits, the areas adjacent to the roadway are wooded.

Name and Address of Adjacent Property Owners

1. Stimpson Properties, 325 Macready Ave., Monroe, OH 45050
2. Grace & Bjorn Olson, 264 Wolf Neck Rd., Mystic, CT 06355
3. Nancy Howie, 28 Pheasant Run Dr., Gales Ferry, CT 06335

Anticipated Start Date 4/2022 Completion Date 12/2022

List previous IWWC application #'s _____

IWW Commission Disposition: IWWC Regulations; Section _____ Classification _____

_____

_____
Signature of Chair

FEE: _____ + **$60.00 State Fee =** _____ **DATE PAID** _____ **RECEIPT #** _____

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Project Summary for Town Inland Wetland Permit Applications
Lantern Hill Road over Whitford Brook
Bridge No. 137-001, Ledyard/Stonington
6/21/2017

Project Overview

Wengell, McDonnell and Costello Consulting Engineers (WMC) has been retained by the Town of Ledyard to perform design services for the reconstruction of Lantern Hill Road Bridge No. 137-001 over Whitford Brook. The roadway is a paved rural local road which carries two lanes of traffic but has a roadway width of less than 17 feet over the bridge. At the crossing, Whitford Brook forms the corporate limits between the Towns of Ledyard and Stonington. The bridge is located along the easterly border of Ledyard and situated in the most northwesterly corner of Stonington. North of the structure, Lantern Hill Road has a general north-south alignment but then turns to a northeasterly-southwesterly direction at the bridge. Upstream of the crossing, the brook flows in a southerly direction then flows southwesterly downstream of the bridge.

The existing bridge was reportedly built in 1950. The proposed replacement structure is a precast concrete, 3-sided culvert with a hydraulic clear span length of 33 feet (normal). The culvert will be supported by cast-in-place reinforced concrete abutments founded on spread footings with the top of abutment footings set below the elevation of total bridge scour for the 500 year discharge which causes the maximum computed scour depth for this crossing. The project will receive funding from the U.S. Department of the Interior Bureau of Indian Affairs and the Connecticut DOT Local Bridge Program with the remaining local share equally split between the Towns of Ledyard and Stonington.

According to the 2011New London County Flood Insurance Study (FIS), the bridge is located within an unnumbered "A" approximate flood zone with no regulatory discharges or Floodway adopted. The watershed area upstream of Bridge No. 137-001 is estimated to be 4.938 mi^2 which places the crossing in the DOT Intermediate Structure category (between 1 and 10 mi^2 drainage area). The DOT *Drainage Manual* recommends that Intermediate Structures should be designed for a minimum of one foot of both superstructure underclearance and roadway freeboard for the 100 year design discharge.

Estimated project impacts are as follows:

State Wetland Impacts (sf/acres)

	Wetland		Watercourse		Total	
	sf	acres	sf	acres	sf	acres
Permanent	178	0.004	289	0.007	467	0.011
Temporary	114	0.003	269	0.006	383	0.009
Total	292	0.007	558	0.013	850	0.020

100' Upland Review Area Impacts (sf/acres)
10,076 sf
0.231 acres

State Wetland Fill Volumes (cy)

Type	Concrete	Asphalt	Riprap/Stone	Earth	Total
Cut				20	20
Fill	5		12	3	18

Watercourse Fill Volumes (cy)

Type	Concrete	Asphalt	Riprap/Stone	Earth	Total
Cut	3			17	20
Fill			22		22

Upland Review Fill Volumes (cy)

Type	Concrete	Asphalt	Riprap/Stone	Earth	Total
Cut	32	70		1613	1715
Fill	265	270	441	447	1423

Floodplain Fill Volumes (cy)

Type	Concrete	Asphalt	Riprap/Stone	Earth	Total
Cut	20	40		1175	1235
Fill	250	120	375	210	955

The project requires inland wetlands approvals from both the Town of Ledyard and Stonington. It is expected that the project will be eligible for Section 404 General Permit approval by the U.S. Army Corps of Engineers as a Self-Verification project.

Existing Structure

The existing superstructure is reinforced concrete supported on reinforced concrete abutments. The foundations are assumed to be shallow spread footings. The hydraulic clear span length of the structure is 12.9 feet (normal) and is on a skew of approximately 31º to the roadway. The roadway width over the bridge is less than 17 feet which does not allow for two-way traffic over the crossing even though Lantern Hill Road is a two-lane roadway. Vehicular safety at the bridge is further compromised by a horizontal curve over the structure and a resulting poor sight distance. On either side of the bridge, there are low points in the roadway profile with the low point located 105 north of the existing northerly bridge abutment (Station 3+55) 0.2 feet lower than the southerly low point at Station 1+34. Note that the northerly low point is only 5 inches higher than the existing upstream bridge low chord elevations. During the March 30, 2010 flood, the northerly roadway approach was overtopped, refer to included Photos 11 and 12.

The main channel upstream of Lantern Hill Road is confined by concrete/stone walls for the first 30 feet upstream of the bridge. Within this short reach, the channel bottom consists of large boulders (see Photo 6) indicating that high channel velocities periodically move smaller substrate downstream. Upstream beyond this reach, a stone wall continues along the left (easterly) streambank. Along this reach, the streambed consists of coarse gravel and cobbles with overhanging brush within the channel. The floodplains are relatively flat with a moderately dense cover of trees and brush.

Downstream of the bridge, Whitford Brook transitions into a series of multiple channels flowing through a relatively wide and flat floodplain characterized as a deciduous wooded swamp community. Both the channels and floodplain are densely vegetated with trees and brush. A stone wall runs along the middle portion of the "main" channel, separating it into two sub-channels. During two different field visits in 2016, the channel immediately downstream of Lantern Hill Road was notably obstructed by several downed trees which likely impacts bridge hydraulics (see Photos 2 and 4).

The existing conditions hydraulic analysis indicates that relative to approach cross section 1374, the computed 100 year flood elevation is 1.6 feet above the bridge low chord on the upstream side which is inconsistent with the *Drainage Manual* recommended one foot of superstructure underclearance for intermediate size structures. At the northerly roadway low point, the 100 year flood elevation at the approach section is above the roadway by 1.2 feet. Existing roadway overtopping at the northerly low point is estimated to occur between the 2 and 10 year flood events which is considerably less than an ideal hydraulic performance.

Proposed Project

The project proposes to replace the existing bridge with a 33 foot (normal) clear span precast concrete, 3-sided culvert with open bottom. The span length was selected to satisfy the 1.2 times the bankfull width design criterion established by the U.S. Army Corps of Engineers for Section 404 general permits. To accommodate the longer span length, the proposed upstream low chord of the culvert will be 0.8 feet lower than that for the existing bridge. The 3-sided culvert will be supported by cast-in-place reinforced concrete abutments founded on spread footings with the tops of footings set below the maximum total computed scour depth. The proposed abutments will be skewed 30º to the roadway baseline and set back behind the existing bridge abutments which will remain in place but cut down to elevation 73 feet to provide riparian wildlife shelves on both sides. 73 feet is the approximate elevation of ordinary high water which typically is the preferred elevation for riparian shelves. To safely accommodate two-way vehicular traffic over the bridge, the travel way will be increased from the present less than 17 foot width to 26 feet.

The project includes 185 feet of associated road work to match the proposed bridge into the existing roadway geometry. Similar to the existing roadway, the proposed road will drain via sheet flow with no subsurface drainage facilities. The proposed extents of the project do not include the existing roadway low points on either side of the bridge at approximately Stations 1+34 and 3+55,

which limits potential improvements in roadway overtopping conditions. WMC recommends that intermediate size riprap be placed to protect the proposed wingwalls, riparian shelves and downstream roadway approach embankments from erosion during flood conditions. The proposed extents of riprap along the downstream roadway approaches will protect the embankments from erosion during an overtopping flood event such as that which occurred on March 30, 2010. The placement of riprap along the channel bottom has been limited to minimize impacts to fisheries resources. All riprap at elevation 73 feet and below will be top dressed with natural streambed material to provide a more inviting exposed surface for wildlife and aquatic resources.

The project hydraulic analyses indicate that roadway overtopping conditions will be somewhat improved compared to existing conditions but will still be inconsistent with the hydraulic design guidelines recommended in the *Drainage Manual* for intermediate structures. Computed roadway overtopping at the northerly low point will be improved from the present 2-10 year recurrence to approximately the 25 year frequency discharge. For the 100 year discharge, the computed flood elevation at approach cross section 1374 is 1.8 feet above the low chord of the proposed culvert and 0.5 feet above the northerly roadway low point. Since roadway overtopping is computed for the 100 year discharge, the roadway will be posted as prone to flooding in accordance with DOT typical practice.

Options to improve computed hydraulic conditions north of the bridge to satisfy the guidelines of the *Drainage Manual* would require that the proposed project limits be extended from 185 feet to approximately 365 feet, the roadway profile be raised approximately 1.5 feet at the existing northerly low point and retaining walls be constructed to minimize fill limits within the adjacent wetlands. Discussions between the Towns and WMC concluded that increasing the project scope as such would be beyond the original intent of the project and would not be pursued further.

The planned project schedule is to start construction in April 2018 and finish in November 2018. To minimize impacts to aquatic resources, unconfined instream activities are to be limited to the period June 1 to September 30. Construction is to be completed in as single stage with the roadway closed to traffic. In accordance with ConnDOT recommendations, the recommended water handling has been designed for the 2 year frequency discharge.

The following properties abut the proposed project limits:

1. Ledyard, 565 Lantern Hill Road, M89-B1210-L565, Owner- Stimpson Properties, 325 Macready Ave., Monroe, OH 45050
2. Stonington, 264 Wolf Neck Road, M143-B2-L1, Owner- Grace & Bjorn Olson, 264 Wolf Neck Rd., Mystic, CT 06355
3. Stonington, no property address, M142-B1-L1G, Owner- Nancy Howie, 28 Pheasant Run Dr., Gales Ferry, CT 06335

Hydraulic Results

The following hydraulic design criteria are applicable for the proposed project:

- **Existing versus Proposed Condition-** Upstream of Lantern Hill Road, the proposed project will improve computed 100 year flood elevations by up to 0.7 feet compared to existing conditions. For cross sections 1229 and 1275, located 53 feet and 8 feet downstream of the existing downstream bridge face, there are minor computed increases of 0.01 and 0.16 feet in the 100 year proposed flood profile compared to present conditions. Both of these increases are well below the one foot maximum increase allowed by the National Flood Insurance Program [Section 60.3(c)(10)] and would not affect any developed property.

- **Superstructure Underclearance and Roadway Freeboard-** Section 9.3.5 of the *Drainage Manual* recommends a minimum of one foot of both superstructure underclearance and roadway freeboard for the 100 year design discharge for Intermediate Structures (between 1 and 10 mi^2 drainage area). The proposed conditions hydraulic analysis indicates that the computed flood elevation at approach cross section 1374 is 1.8 feet above the low chord of the proposed culvert and 0.5 feet above the northerly roadway low point with an estimated roadway overtopping return frequency of approximately 25 years. These are inconsistent with the design guidelines of the *Drainage Manual*, however, local roads may be designed to lesser standards if :

  a. The road has low traffic volumes.
  b. Alternate routes are available.
  c. Flood discharges may be allowed to cross over roads that are at or close to the floodplain grade.
  d. Water surface elevations shall not be increased by more than one foot, nor allowed to cause damage to upstream properties.
  e. Provisions are made to barricade the road when overtopped.
  f. The road is posted as being subject to flooding.

  The proposed project satisfies each of the above, therefore, it is permissible for the proposed design to be inconsistent with the hydraulic guidelines of the *Drainage Manual*. As stated previously, options to improve proposed hydraulic conditions were discussed with the Towns and it was concluded that designing for such would be beyond the original intent of the project.

- **Natural Condition Analysis-** Section 9.3.5 of the *Drainage Manual* recommends, for Intermediate Structures, that the proposed 100 year water surface profile should be no more than 1 foot above the Natural profile. The hydraulic analyses indicates that the proposed profile would be within 0.4 feet of Natural at the bridge upstream approach cross section (1374) which is consistent with the intent of this design criterion.

- **Fisheries-** DEEP Fisheries has met with WMC at the project site and offers the following design recommendations (see enclosed emails), each of which has been incorporated into the project design:

    1. Inland Fisheries staff request pursuing bridge replacement options which least disturb and alter instream habitats. As such, we highly recommend replacement at this location with either a clear span bridge or 3 sided structure that does not contain an artificial bottom or floor.
    2. As design proceeds, please provide more detail regarding any future instream work associated with substructure rehabilitation and any installation of riprap. It is important to minimize the overall footprint and instream placement of riprap that might be required for scour protection. Mitigation may be required for excessive filling associated with scour protection activities.
    3. As a best management practice, any "unconfined" instream work within Whitford Brook should be restricted to the period from June 1 to September 30, inclusive.

Project Alternatives

The do nothing alternative or the rehabilitation of the existing bridge are not viable options due to its fair condition, concerns relative to bridge scour and inadequate width for two-way traffic. The original intent of the project was to replace the crossing with a four sided box culvert. However, DEEP Fisheries indicated that they would require an open bottom replacement structure which is the proposed recommended alternative. Options to raise the profile to improve roadway flooding were investigated but are not recommended because such would either increase wetland impacts or necessitate the construction of long and expensive retaining walls.

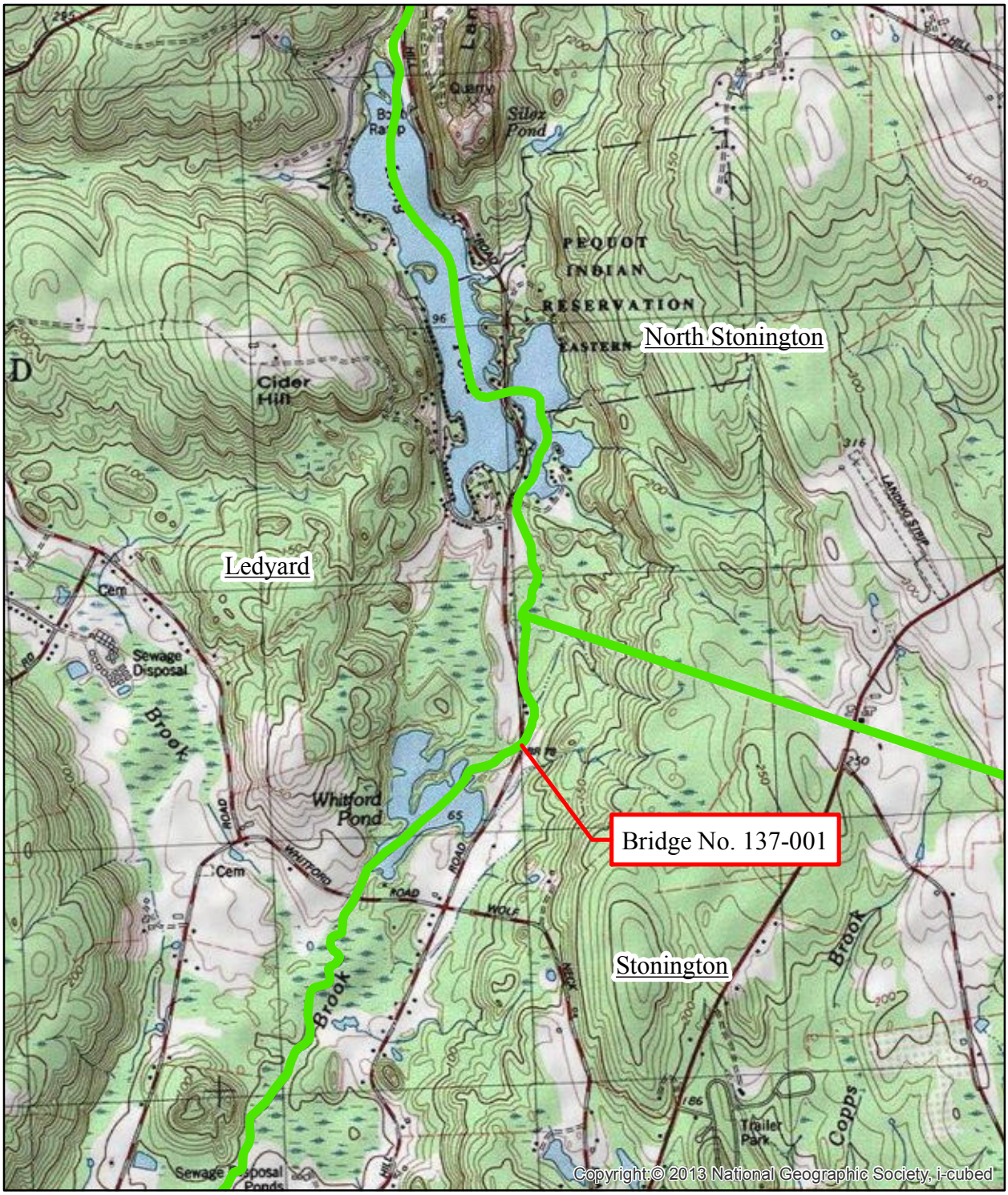
Supporting Documentation

The following documentation is enclosed in support of this permit application:

1. Project Summary for Town Inland Wetland Permit Applications, 6/21/2017
2. Project Location Map, Old Mystic USGS Quadrangle
3. Project Photos
4. Plans- "Replacement of Lantern Hill Road Bridge over Whitford Brook", WMC, 6/15/2017
5. Connecticut Inland Wetland Impact Plan, WMC, 4/10/2017
6. Wetland Delineation Report- Soil Science and Environmental Services, Inc., 2/4/2016
7. DEEP Fisheries Initial Review, 5/2016 emails
8. DEEP Natural Diversity Data Base Map, June 2017- Project site is within a NDDB identified area. Coordination with DEEP Wildlife is pending.
9. Map showing Northern Long-Eared Bat areas of concern in Connecticut, 2/1/2016- Project site is outside an area of concern
10. DEEP Aquifer Protection Area Map, 2/14/2017- Project site is outside any aquifer protection area

11. USDA Soil Survey, Web Soil Survey, 6/8/2017
12. DEEP Reporting Form

Project Location Map, Old Mystic USGS Quadrangle



0 1,000 2,000 4,000 Feet

1:24,000

1 inch equals 2,000 feet

N
W E
S

WMC Consulting Engineers
Newington, CT 06111
(860)667-9624

Photo Index

Photo 1- Looking Upstream from Bridge (3/8/2016)

Photo 2- Looking Downstream from Bridge (3/8/2016)
Note Downstream Channel Obstructions

Photo 3- Upstream Bridge Face (3/8/2016)

Photo 4- Downstream Bridge Face (3/8/2016)
Note Downstream Channel Obstructions

Photo 5- Downstream Bridge Face (10/16/2015)
Note Concrete Block Wingwall

Photo 6- Inlet Channel Typical Streambed Composition (3/8/2016)
Note Large Size of Streambed Material

Photo 7- Looking Downstream through Bridge Opening (8/24/2016)
Note Concrete Shelves both Sides

Photo 8- Looking Upstream through Bridge Opening (10/16/2015)
Note Concrete Shelves both Sides

Photo 9- Looking Northerly along Roadway (3/8/2016)

Photo 10- Looking Southerly along Roadway (3/8/2016)

Photo 11- Looking Southerly towards Bridge (3/30/2010)

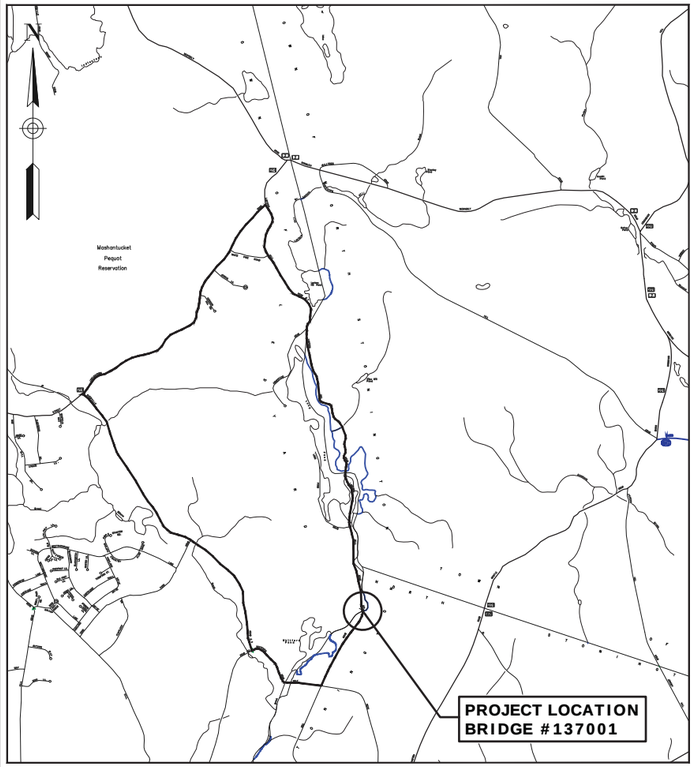
Photo 12- Looking Southerly towards Bridge (3/30/2010)

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	1	23

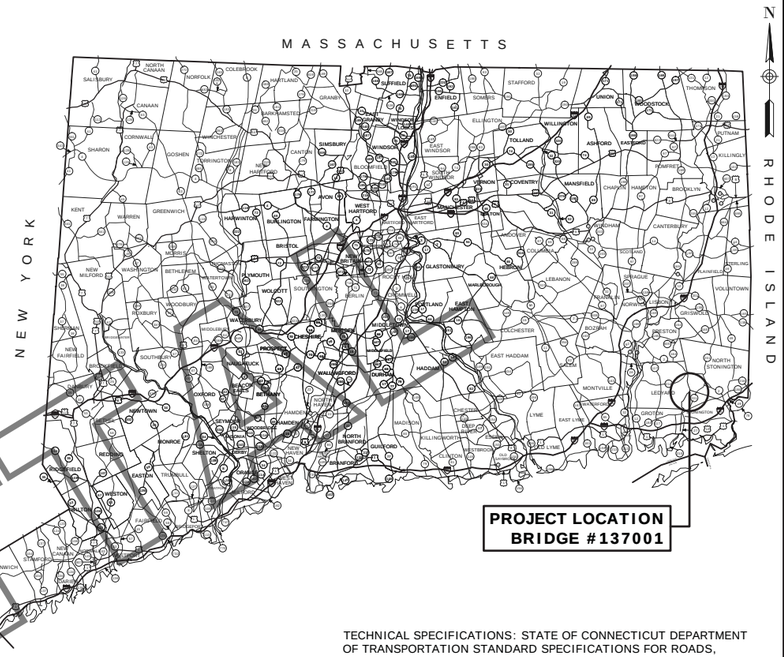
TOWN OF LEDYARD, CONNECTICUT

PLAN FOR
REPLACEMENT OF LANTERN HILL ROAD BRIDGE
OVER WHITFORD BROOK

FEDERAL AID NO. TBD
STATE PROJECT #TBD
BRIDGE #137001
ROADWAY RECONSTRUCTION
STATION 1+40.00 TO STATION 3+25.00
TO BE MAINTAINED BY THE TOWN OF LEDYARD



LOCATION MAP
SCALE: 1" = 2500'



ROAD CLASSIFICATION: LOCAL RURAL
DESIGN SPEED: 25 MPH
ADT (2016): 1,071 V.P.D.
ROADSIDE CLEAR ZONE: 7' MIN.

TECHNICAL SPECIFICATIONS: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION (FORM 817) AND ALL LATEST SUPPLEMENTAL SPECIFICATIONS THERETO, AS WELL AS ANY SPECIAL PROVISIONS BY THE TOWN OF LEDYARD.

DESIGN STANDARDS: AASHTO POLICY ON THE GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, DATED 2004 AND THE CONNECTICUT DEPARTMENT OF TRANSPORTATION HIGHWAY DESIGN MANUAL DATED 2003.

SURVEY: ALL COORDINATES ON THE PROJECT ARE BASED ON NAD 83. ALL ELEVATIONS ARE BASED ON NAVD 1988.

CONNECTICUT DEPARTMENT OF TRANSPORTATION OR TOWN OF LEDYARD BIDDING AND OTHER INFORMATION AND DOCUMENTS WHICH ARE OBTAINED THROUGH THE INTERNET, WORLD WIDE WEB SITES OR OTHER SOURCES ARE NOT TO BE CONSTRUED TO BE OFFICIAL INFORMATION FOR THE PURPOSES OF BIDDING OR CONDUCTING OTHER BUSINESS WITH THE TOWN OF LEDYARD.

IT IS THE RESPONSIBILITY OF EACH BIDDER AND ALL OTHER INTERESTED PARTIES TO OBTAIN ALL BIDDING RELATED INFORMATION AND DOCUMENTS FROM OFFICIAL SOURCES WITHIN THE TOWN OF LEDYARD.

PERSONS AND/OR ENTITIES WHICH REPRODUCE AND/OR MAKE SUCH INFORMATION AVAILABLE BY ANY MEANS ARE NOT AUTHORIZED BY THE TOWN OF LEDYARD TO DO SO AND MAY BE LIABLE FOR CLAIMS RESULTING FROM THE DISSEMINATION OF UNOFFICIAL, INCOMPLETE AND/OR INACCURATE INFORMATION.

LIST OF DRAWINGS

SHEET NO.	TITLE
1	TITLE SHEET
2	DETAILED ESTIMATE SHEET
3	DETOUR PLAN
4	EXISTING CONDITIONS PLAN
5	ROADWAY PLAN
6	ROADWAY PROFILE
7	ROADWAY DETAILS
8 - 9	ROADWAY SECTIONS
10	CONSTRUCTION SEQUENCE AND HANDLING WATER PLAN
11	HANDLING WATER DETAILS
12	EROSION AND SEDIMENTATION CONTROL DETAILS
13	STRUCTURE PLAN, ELEVATION AND SECTION
14	BORING LOGS
15	STRUCTURE LAYOUT PLAN
16	ABUTMENT #1 PLAN AND ELEVATION
17	ABUTMENT #2 PLAN AND ELEVATION
18 - 19	WINGWALL DETAILS
20	ABUTMENT AND WINGWALL DETAILS
21	APPROACH WALL DETAILS
22 - 23	3-TUBE CURB MOUNTED BRIDGE RAIL

STANDARD DRAWINGS

DWG. NO.	TITLE

STANDARD CONVENTIONS

North Arrow W/No. Coor. — Grid Arrow

- Edge Of Road
- Concrete Pavement
- Dirt Road
- B.C.L.C.
- Concrete Curb
- Guide Rail
- Concrete Median Barrier
- Bit. Walk
- Conc. Sidewalk
- Railroad Tracks
- Chain Link Fence
- Rustic Fence
- Pipe Fence
- Board Fence
- Water Edge
- Stream
- Ditch
- TOWN LINE
- Boring Location
- Limit Of Marsh
- Stone Wall
- Ledge Outcrop
- Connecticut Wetland Limits
- Federal Wetlands Limits
- STATE LINE
- Power Line
- Swamp
- Building
- Transmission Tower
- Riprap
- Hedge Row
- Tree Line
- Shrub
- Evergreen Tree
- Deciduous Tree
- Highway Line
- Street Line
- Property Line
- Lot Line
- Easement Line

LEGEND:

- Iron Pin (Found)
- Monument (Found)
- Sign
- Manhole
- "C" Catch Basin
- "C-L" Catch Basin
- Utility Pole
- Light Pole
- Metal Post
- Guy Anchor
- Water Gate
- Gas Valve
- Gas Meter
- Mail Box
- Underground Piping (San.,Stm.)
- E — U/G Elec. Line
- W — Water Line
- OHW — Overhead Utilities
- T — U/G Tele. Line
- Property Line
- 100 — Contour Line
- Wetlands Boundary
- WF #69 — Wetlands Flag
- WF #69 OHW — Ordinary High Water

DESIGNED BY WMC CONSULTING ENGINEERS

SUBMITTED BY _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER - TOWN OF LEDYARD

_____ DATE _____
STEVEN MASALIN, P.E.

DATE: 06/15/2017

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	2	23

THE INFORMATION INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE TOWN OF LEDYARD AND IS NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

WHEREVER THE PAY UNITS IN THE LEFT COLUMN APPEAR ON THE DETAILED ESTIMATE SHEET, THEY SHALL BE CONSTRUED TO MEAN THE EQUIVALENT PAY UNITS IN THE RIGHT COLUMN ON THE PROPOSAL FORM.

c.y.	C.Y.
l.f.	L.F.
ton	TON
s.y.	S.Y.
lb.	LB.
s.f.	S.F.
gal.	GAL.
c.f.	C.F.
c.i.	C.I.

FOR THE CONSTRUCTION OF REPLACEMENT OF BRIDGE NO.137001, LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK IN THE TOWN OF LEDYARD, CONNECTICUT

ROADWAY ITEMS

ITEM NUMBER	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X
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UNIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ROADWAY ITEMS

ITEM NUMBER	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X
ITEM DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION
UNIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BRIDGE ITEMS

ITEM NUMBER	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X	0000000X
ITEM DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION	DESCRIPTION DESCRIPTION DESCRIPTION
UNIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS

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87 HOLMES ROAD
NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD
741 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK
DETAILED ESTIMATE SHEET

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		2	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	3	23

LANTERN HILL ROAD / STREET BRIDGE REPLACEMENT / REHABILITATION CONSTRUCTION SIGNING

	SIGN	CONNDOT	DIMENSION	DESCRIPTION	NO. REQ.'D
*	A	80-9929	72" X 48"	LANTERN HILL ROAD CLOSED TO THRU TRAFFIC EFFECTIVE MONDAY (00/00)	2
	B	80-9078	60" X 30"	BRIDGE CLOSED 0.3 MILES AHEAD. LOCAL TRAFFIC ONLY	2
	C	80-9913	60" X 10"	LANTERN HILL ROAD	7
	D	80-9710	30" X 24"	DETOUR (RIGHT ARROW)	2
	E	80-9710	30" X 24"	DETOUR (LEFT ARROW)	2
	F	80-9710	30" X 24"	DETOUR (STRAIGHT ARROW)	1
**	G	80-9080	48" X 30"	ROAD CLOSED	2
**	H	31-0552	30"	STOP	2
	I	80-9708	24" X 18"	END DETOUR	2
**	J	80-9710	60" X 30"	LANTERN HILL ROAD CLOSED TO THRU TRAFFIC	3

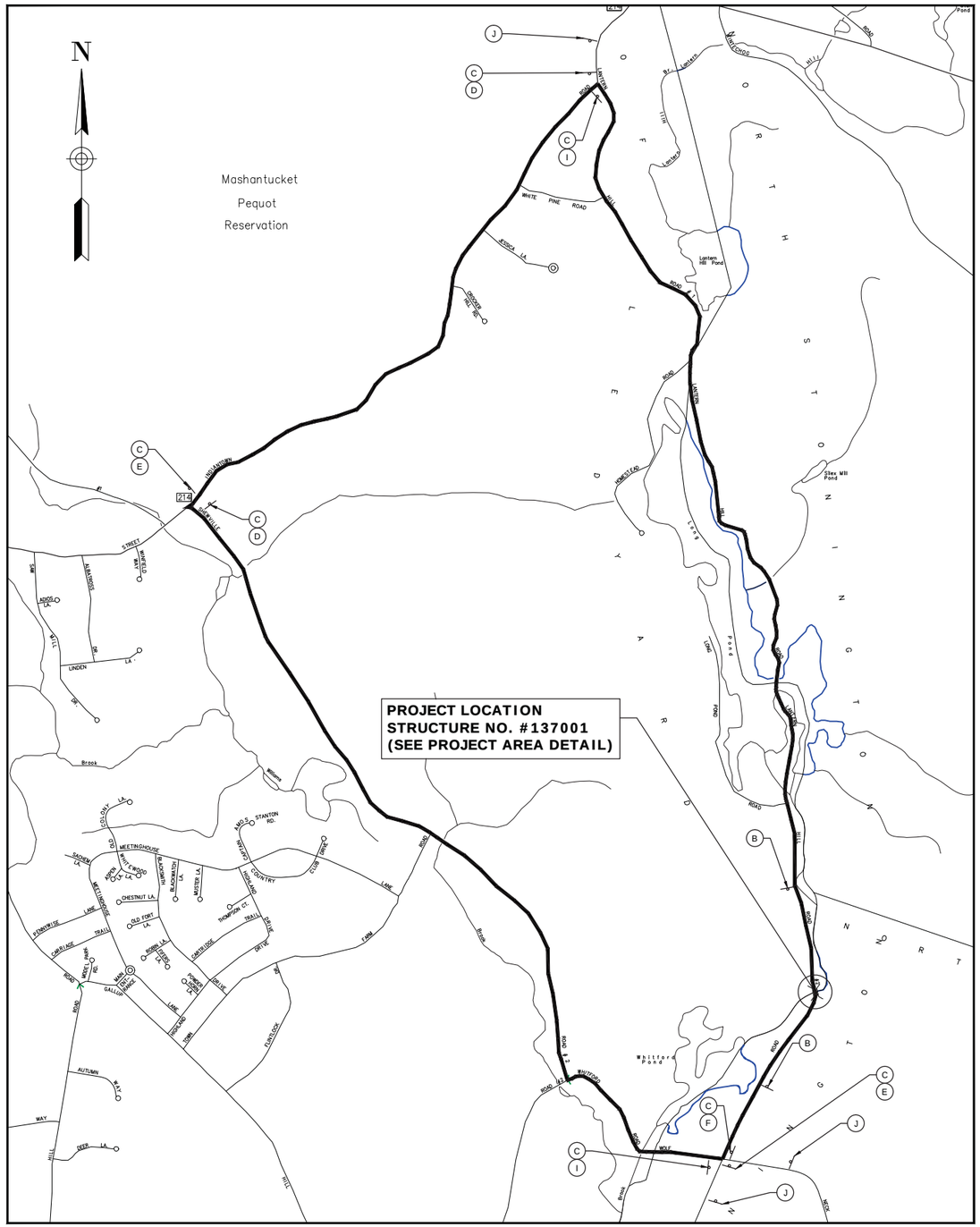
* INDICATES SIGNS TO BE VISIBLE AT LEAST 2 WEEKS PRIOR TO CONSTRUCTION AND THEN COVERED OR REMOVED DURING CONSTRUCTION (SEE NOTE 7, THIS SHEET)

** INDICATES SIGN THAT REQUIRE A BARRICADE WARNING LIGHT - HIGH INTENSITY

*** INDICATES SIGN TO ROTATED 90° (AS SHOWN)

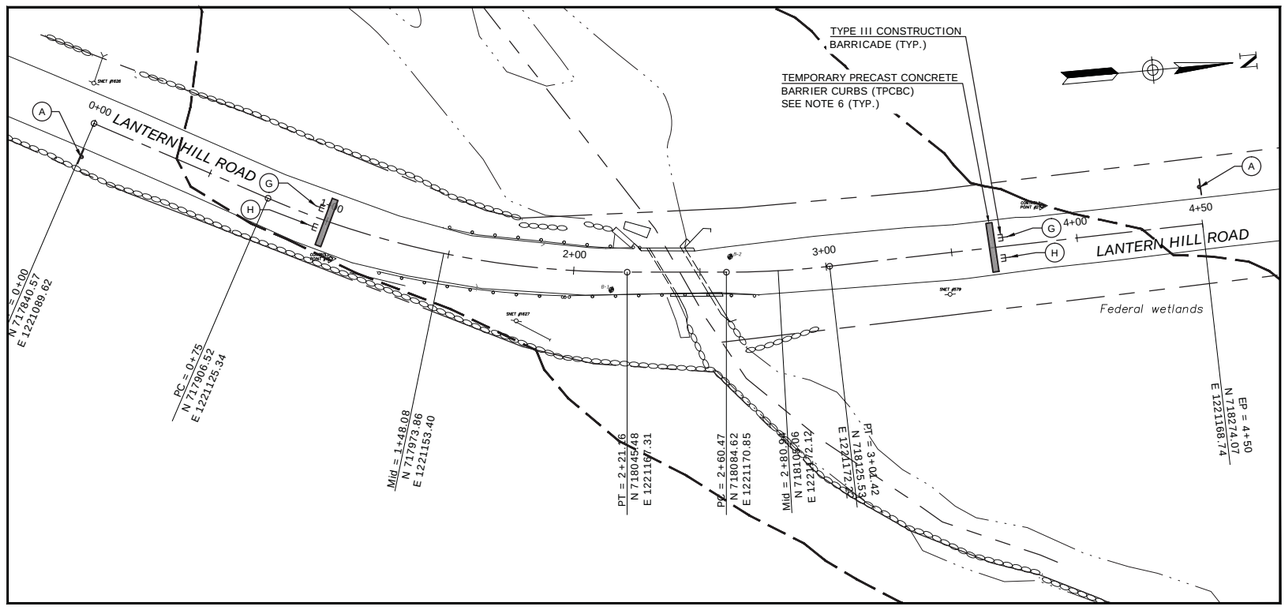
MAINTENANCE AND PROTECTION OF TRAFFIC NOTES

1. THE CONTRACTOR SHALL LOCATE AND PLACE ALL SIGNS AS INDICATED ON THIS SHEET OR AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL CLOSE LANTERN HILL ROAD FOR THE DURATION OF THE BRIDGE REPLACEMENT AND ROADWAY CONSTRUCTION.
3. ALL TRAFFIC OVER LANTERN HILL ROAD SHALL BE DETOURED TO WOLF NECK ROAD IN STONINGTON, SHEWVILLE ROAD, AND INDIANTOWN ROAD (ROUTE 214).
4. TEMPORARY PRECAST CONCRETE BARRIER CURBS (TPCBC) SHALL BE PROVIDED AT BOTH ENDS OF THE WORK AREA TO ADEQUATELY WARN, AND PROHIBIT MOTORISTS AND PEDESTRIANS FROM USING THE BRIDGE DURING CONSTRUCTION. THE TPCBC SHALL EXTEND ACROSS THE FULL WIDTH OF THE EXISTING ROADWAY AND BEYOND. THE CONTRACTOR SHALL ALSO PROVIDE MOVEABLE TYPE III CONSTRUCTION BARRICADE IN FRONT OF THE TPCBC, OR AS ORDERED BY THE ENGINEER, TO FURTHER INSURE MOTORIST AND PEDESTRIAN SAFETY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE UPRIGHT STABILITY OF THE TYPE III CONSTRUCTION BARRICADES AT ALL TIMES.
5. ALL TRAFFIC CONTROL AND PROTECTION DEVICES, INCLUDING PAVEMENT MARKINGS, SHALL BE IN PLACE BEFORE RESPECTIVE CONSTRUCTION OPERATION COMMENCES.
6. ALL TPCBC TO HAVE THREE (3) TYPE DE-7A DELINEATORS MOUNTED ON TOP (10' SPACING) AND REFLECTIVE TAPE ON TRAFFIC SIDE FOR THE ENTIRE LENGTH; COST TO BE INCLUDED IN THE COST OF TEMPORARY PRECAST CONCRETE BARRIER CURB.
7. THE CONTRACTOR SHALL POST THE ADVANCE NOTICE SIGNS AT LEAST 2 WEEKS PRIOR TO CLOSING THE ROAD. NOTICE TO PROCEED WILL BE GIVEN TO INSTALL THE ADVANCED NOTICE SIGNS, BUT THE ROAD MUST REMAIN OPEN UNTIL THE DATE ON THE ADVANCE NOTICE SIGNS.



DETOUR PLAN

SCALE : 1" = 1000'



PROJECT AREA DETAIL

SCALE : 1" = 30'

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NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

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PREPARED FOR

TOWN OF LEDYARD

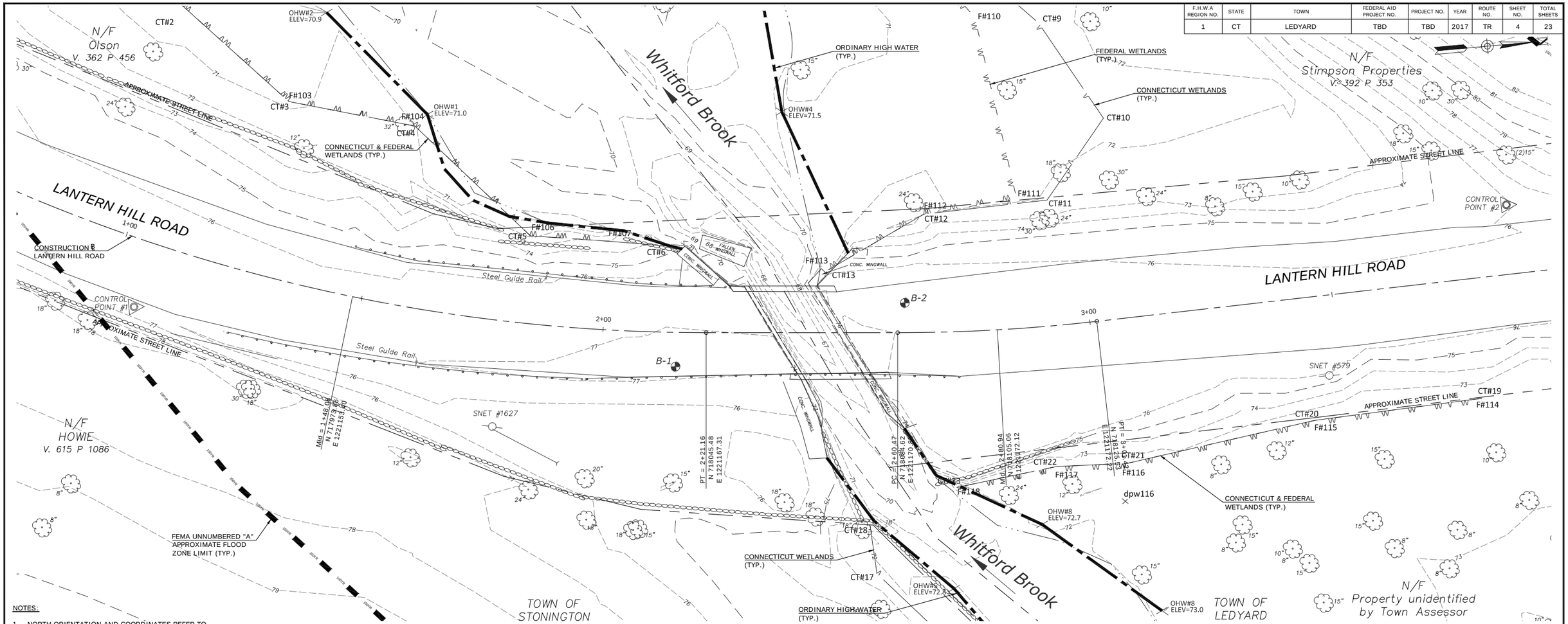
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK DETOUR PLAN

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		3	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	4	23



EXISTING ROADWAY PLAN

SCALE : 1" = 10'-0"

APPROXIMATE BORING LOCATIONS

NOTES:

1. NORTH ORIENTATION AND COORDINATES REFER TO CONNECTICUT GRID SYSTEM NAD 83/87.
2. ELEVATIONS BASED ON NAVD 1988.
3. SITE CONTROL CONFORM TO HORIZONTAL CLASS A-2 ACCURACY.
4. A PORTION OF THE SUBJECT PROPERTIES ARE WITHIN THE A ZONE AS PER FLOOD INSURANCE RATE MAP, NEW LONDON COUNTY, CONNECTICUT, PANEL 387 OF 554. MAP NUMBER 09011C0387G. EFFECTIVE DATE JULY 18, 2011.
5. PROPERTY AND STREETLINES SHOWN ARE APPROXIMATE AND CONFORM TO HORIZONTAL CLASS D ACCURACY.
6. LIMIT OF INLAND WETLANDS FLAGGED BY SOIL SCIENCE AND ENVIRONMENTAL SERVICES OF ROCKY HILL, CT. ON JANUARY 29, 2016.
7. SURVEY INCLUDING WETLAND FLAG LOCATIONS, PERFORMED BY WILLIAM HEARN, L.S., CHESTER, CT.

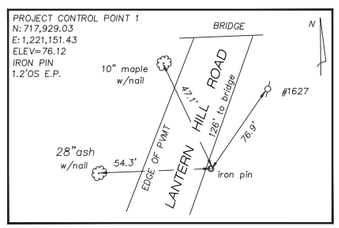
MAP REFERENCES:

1. "SUBDIVISION PLAN APPLICATION BY WHITEHALL PROPERTIES PROPERTY OF WHITEHALL -WOLF NECK ASSOCIATES WOLF NECK ROAD & LANTERN HILL ROAD STONINGTON, CONNECTICUT" 1"=100' 12-2-1984.

GRAPHIC SCALE

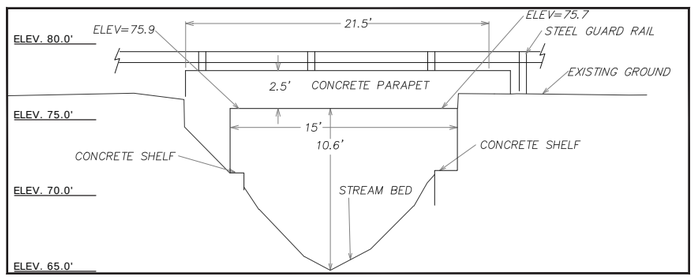
10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



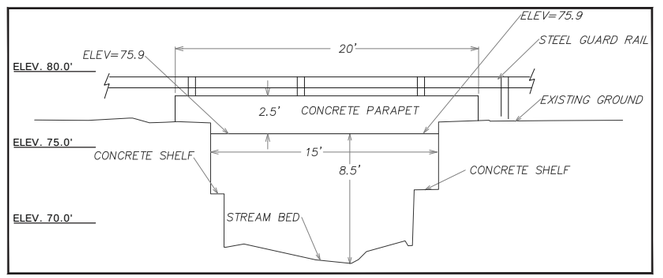
CONTROL POINT TIES

NOT TO SCALE



WEST ELEVATION (LOOKING DOWNSTREAM)

SCALE: 1" = 5'-0"



EAST ELEVATION (LOOKING DOWNSTREAM)

SCALE: 1" = 5'-0"

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NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

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PREPARED FOR

TOWN OF LEDYARD

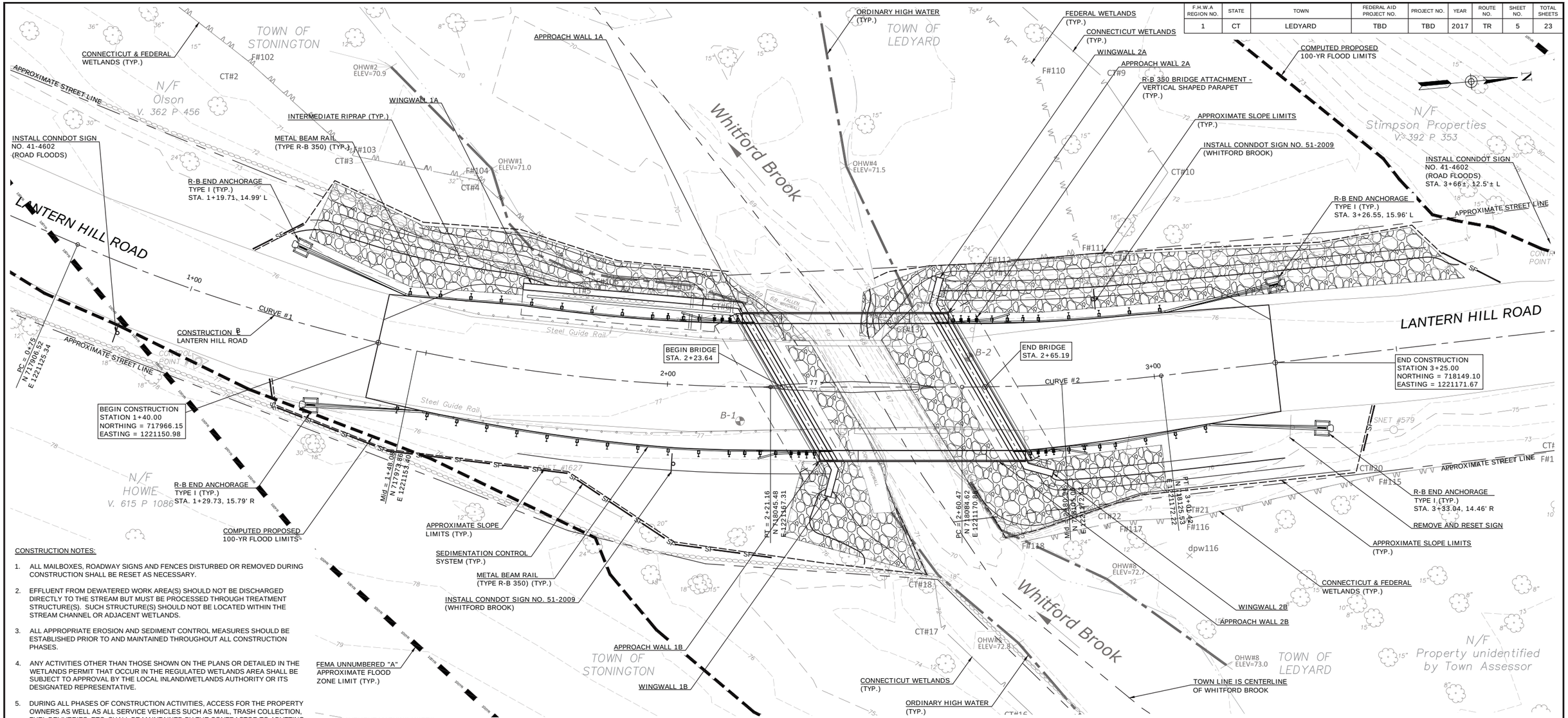
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK EXISTING CONDITIONS PLAN

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		4	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	5	23



PROPOSED ROADWAY PLAN

SCALE : 1" = 10'-0"

APPROXIMATE BORING LOCATIONS

CONSTRUCTION NOTES:

1. ALL MAILBOXES, ROADWAY SIGNS AND FENCES DISTURBED OR REMOVED DURING CONSTRUCTION SHALL BE RESET AS NECESSARY.
2. EFFLUENT FROM DEWATERED WORK AREA(S) SHOULD NOT BE DISCHARGED DIRECTLY TO THE STREAM BUT MUST BE PROCESSED THROUGH TREATMENT STRUCTURE(S). SUCH STRUCTURE(S) SHOULD NOT BE LOCATED WITHIN THE STREAM CHANNEL OR ADJACENT WETLANDS.
3. ALL APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE ESTABLISHED PRIOR TO AND MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES.
4. ANY ACTIVITIES OTHER THAN THOSE SHOWN ON THE PLANS OR DETAILED IN THE WETLANDS PERMIT THAT OCCUR IN THE REGULATED WETLANDS AREA SHALL BE SUBJECT TO APPROVAL BY THE LOCAL INLAND/WETLANDS AUTHORITY OR ITS DESIGNATED REPRESENTATIVE.
5. DURING ALL PHASES OF CONSTRUCTION ACTIVITIES, ACCESS FOR THE PROPERTY OWNERS AS WELL AS ALL SERVICE VEHICLES SUCH AS MAIL, TRASH COLLECTION, FUEL DELIVERIES, ETC. SHALL BE MAINTAINED BY THE CONTRACTOR TO ABUTTING PROPERTIES WITHIN THE LIMITS OF THE WORK.
6. LIMIT OF INLAND WETLANDS FLAGGED BY SOIL SCIENCE AND ENVIRONMENTAL SERVICES OF ROCKY HILL, CT. ON JANUARY 29, 2016.
7. SURVEY INCLUDING WETLAND FLAG LOCATIONS, PERFORMED BY WILLIAM HEARN, L.S., CHESTER, CT.

SURVEY NOTES:

HORIZONTAL DATUM:	NAD83/87
HORIZONTAL ACCURACY:	CLASS A-2
VERTICAL DATUM IS	NAVD88
VERTICAL ACCURACY:	CLASS T-2

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

1 inch = 10 ft.

PAVEMENT MARKING NOTES:

1. FINAL PAVEMENT MARKING SHALL BE EPOXY RESIN AND SHALL MATCH EXISTING MARKINGS AT CONSTRUCTION LIMITS.
2. PAVEMENT MARKINGS SHALL BE INSTALLED PER TRAFFIC STANDARD SHEET TR-1210_03 "SPECIAL DETAILS & TYPICAL PAVEMENT MARKINGS FOR TWO-WAY HIGHWAYS".

SIGNING NOTES:

1. ALL EXISTING SIGNS WITHIN THE SIGNING LIMITS ARE TO BE REMOVED UNLESS OTHERWISE NOTED ON THE PLAN OR DIRECTED BY THE ENGINEER.
2. THE PERMANENT REMOVAL OF EXISTING SIGNS SHALL BE PAID FOR UNDER ITEM NO. 1206013 "REMOVAL OF EXISTING SIGNING".
3. SIGNS TO BE INSTALLED PER TRAFFIC STANDARD SHEETS TR-1208_01 "SIGN SUPPORT & PLACEMENT DETAILS, GORE EXIT SIGN" AND TR-1208_02 "METAL SIGN POSTS AND SIGN MOUNTING DETAILS", EXCEPT AS NOTED.
4. EXACT SIGN LOCATIONS TO BE VERIFIED BY THE ENGINEER.
5. SIGNS SHALL BE PLACED NO CLOSER THAN 10 FEET FROM UTILITY POLES.

DESIGN DATA

ROAD CLASS	LOCAL RURAL
DESIGN SPEED	25 MPH
ADT (2014)	1,071 VPD
RADIUS (MIN.)	155 FT.
e	N/A
MAXIMUM GRADE	1.13%
CROSS SLOPE	2.08%
K (SAG MIN.)	N/A
K (CREST MIN.)	12

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PREPARED FOR

TOWN OF LEDYARD

741 COLONEL LEDYARD HIGHWAY

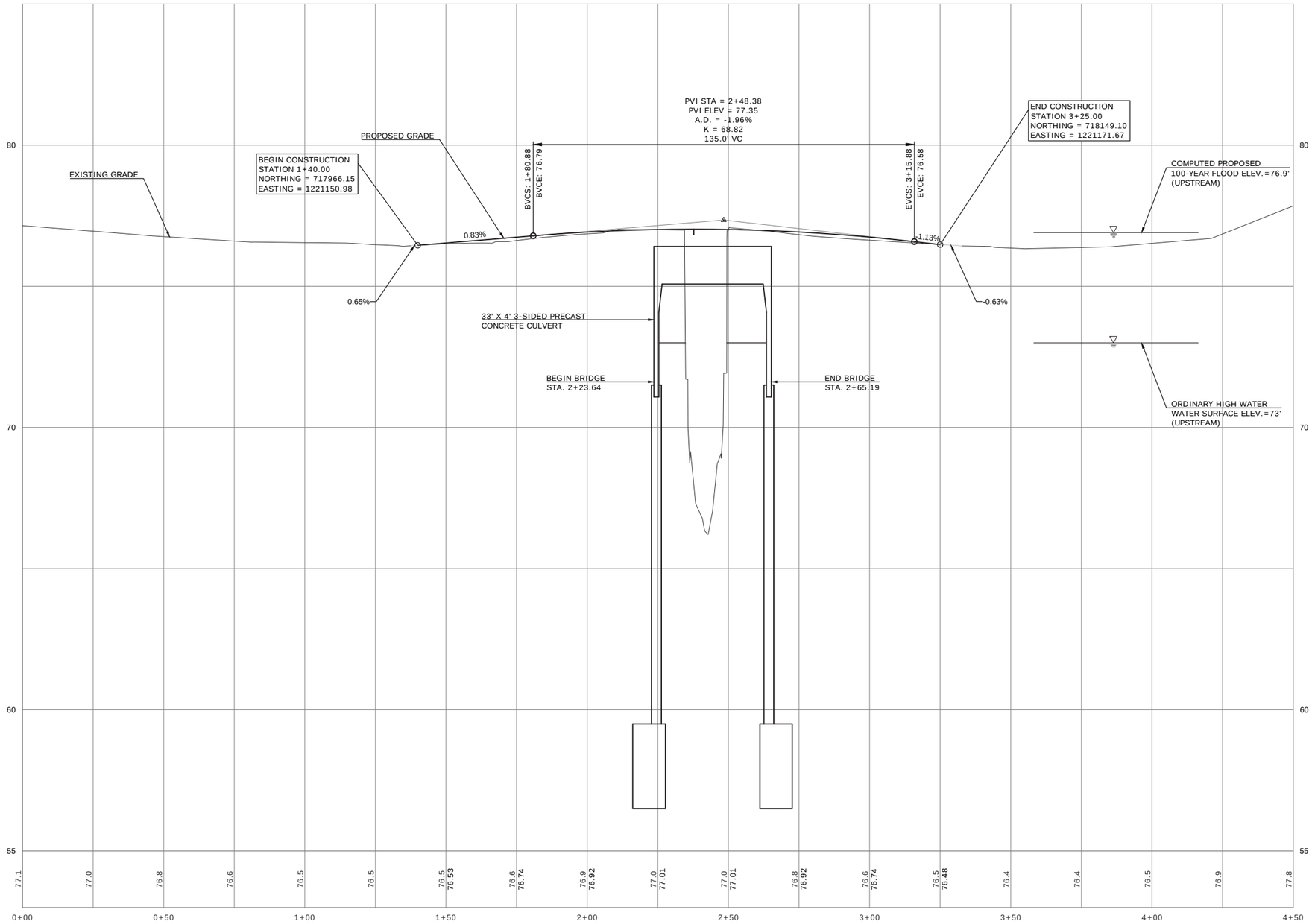
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ROADWAY PLAN

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		5	23

69

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	6	23



DESIGN DATA	
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DESIGN SPEED	25 MPH
ADT (2014)	1,071 VPD
RADIUS (MIN.)	155 FT.
e	N/A
MAXIMUM GRADE	1.13%
CROSS SLOPE	2.08%
K (SAG MIN.)	N/A
K (CREST MIN.)	12

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROPOSED ROADWAY PROFILE

HORIZONTAL SCALE : 1" = 20'-0"
VERTICAL SCALE : 1" = 2'-0"

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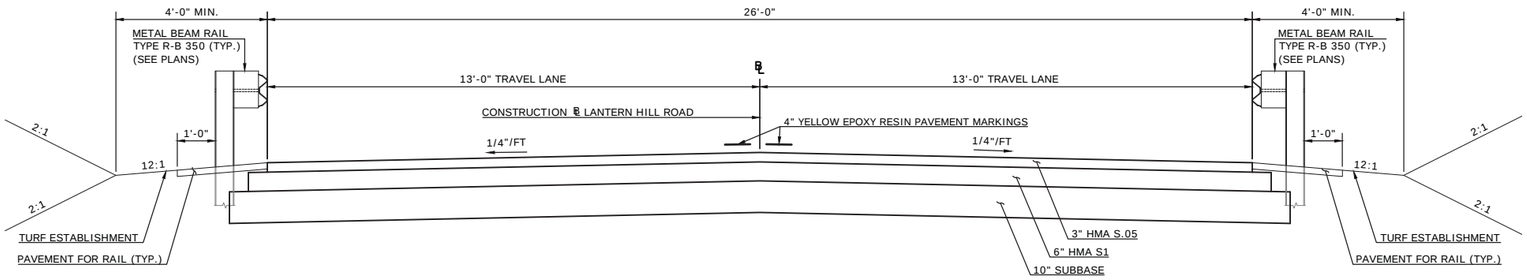
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ROADWAY PROFILE

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		6	23

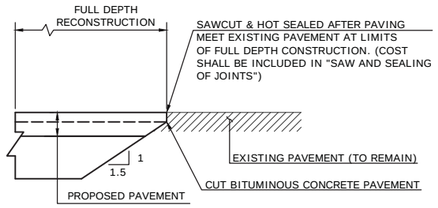
70

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	7	23



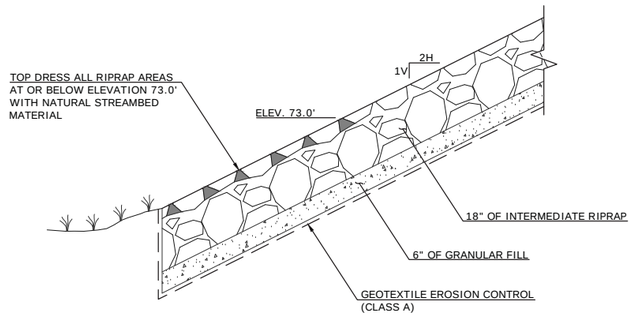
TYPICAL ROADWAY SECTION

SCALE: 1" = 2'-0"



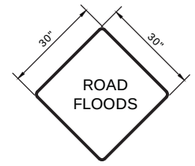
ROADWAY PAVEMENT TRANSITION DETAIL AT CONSTRUCTION LIMITS

SCALE: N.T.S.



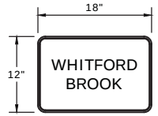
RIPRAP SLOPE DETAIL

SCALE: NOT TO SCALE.



CONNDOT SIGN NO. 41-4602

NOT TO SCALE



CONNDOT SIGN NO. 51-2009

NOT TO SCALE

SCHEDULE OF SIGNS							
CONNDOT SIGN NO.	SIZE	LEGEND	LOCATION	ALUM. THK.	POSTS	BACKGROUND COLOR	LEGEND COLOR
51-2009	18" X 12"	WHITFORD BROOK	STA. 2+02±, 16.3'± R	0.080	2	GREEN	WHITE
51-2009	18" X 12"	WHITFORD BROOK	STA. 2+88±, 17.0' ± L	0.080	2	GREEN	WHITE
41-4602	30" X 30"	ROAD FLOODS	STA. 0+89±, 13.8' ± R	0.080	2	YELLOW	BLACK
41-4602	30" X 30"	ROAD FLOODS	STA. 3+99±, 12.5' ± L	0.080	2	YELLOW	BLACK

* NOTE: ALL COLORS SHALL BE TYPE IV RETROREFLECTIVE WITH THE EXCEPTION OF BLACK WHICH SHALL BE OPAQUE.

NOTES:
1. FOR SPECIFIC SIGN DESIGN CONTACT CONN. D.O.T., DIVISION OF TRAFFIC ENGINEERING FOR BOLT HOLE PATTERN REFER TO FHWA PUBLICATION "STANDARD HIGHWAY SIGNS". SIGNS OF DIFFERENT DIMENSIONS TO BE ERECTED ON THE SAME POSTS, OR SPAN/MAST ARM MOUNTED, MAY REQUIRE SPECIAL BOLT HOLE PATTERS.
2. POSTS - SEE TYP. SHEET (SHT #9) - "TYPICAL METAL SIGN POSTS AND SIGN MOUNTING DETAILS."
3. POSTS - TYPE A (EXCEPT WHERE NOTED WITH A "B" FOR TYPE B)
4. SIGNS SHALL BE FABRICATED OF ONE CONTINUOUS PIECE OF SHEET ALUMINUM. SPLICING OF SHEET ALUMINUM WILL NOT BE ACCEPTED.

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NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS

• WENGELL, McDONNELL & COSTELLO •
87 HOLMES ROAD
NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD

741 COLONEL LEDYARD HIGHWAY

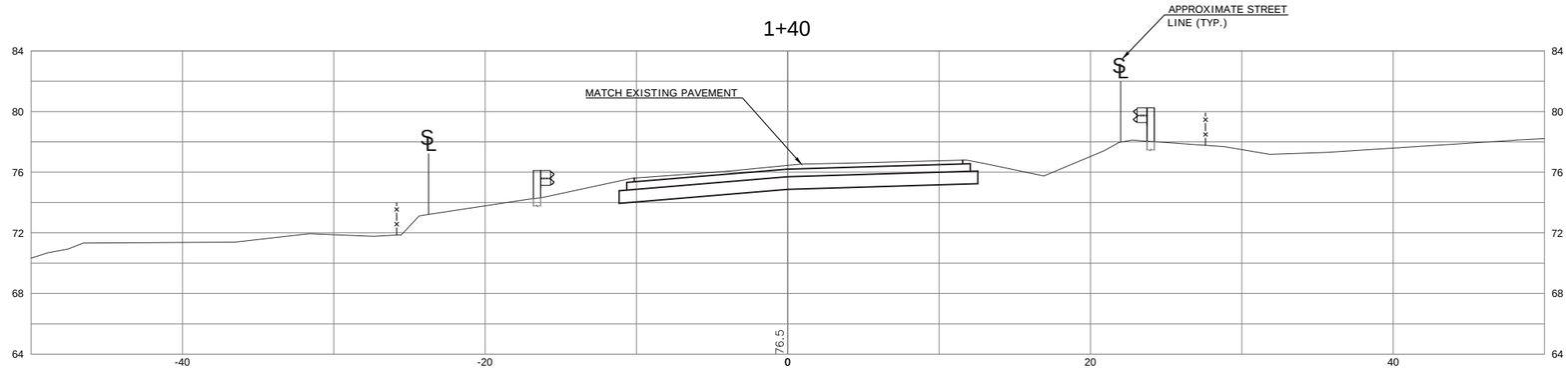
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ROADWAY PLAN

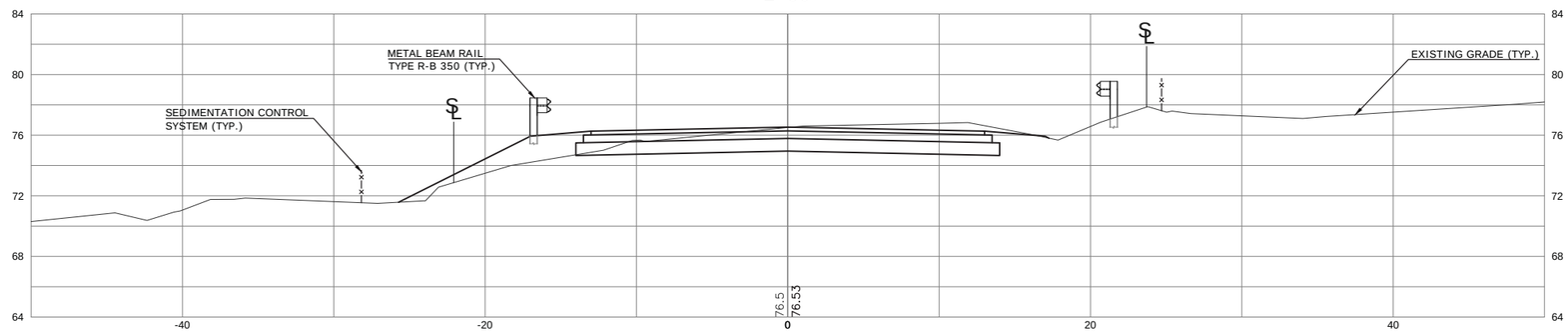
SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		7	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	8	23

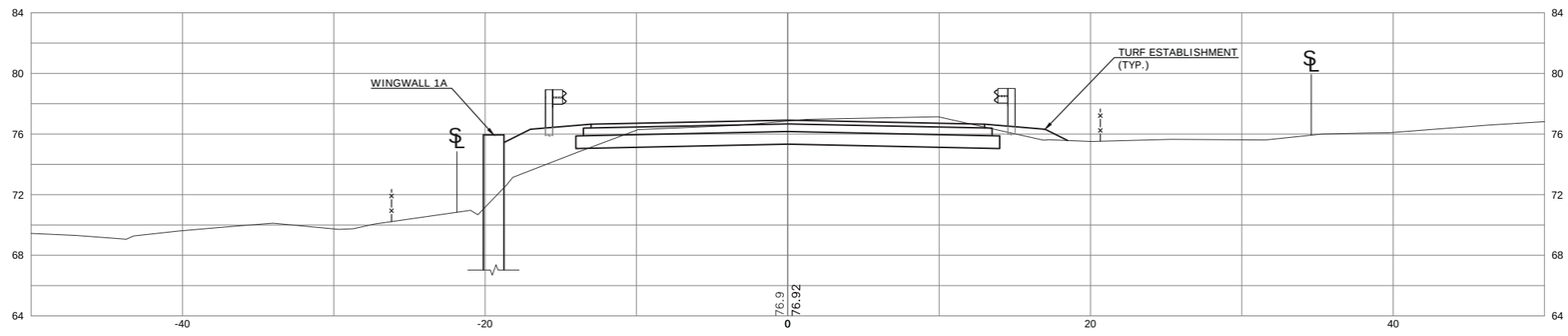
1+40



1+50



2+00



ROADWAY SECTIONS

SCALE: 1" = 5'-0"

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741 COLONEL LEDYARD HIGHWAY

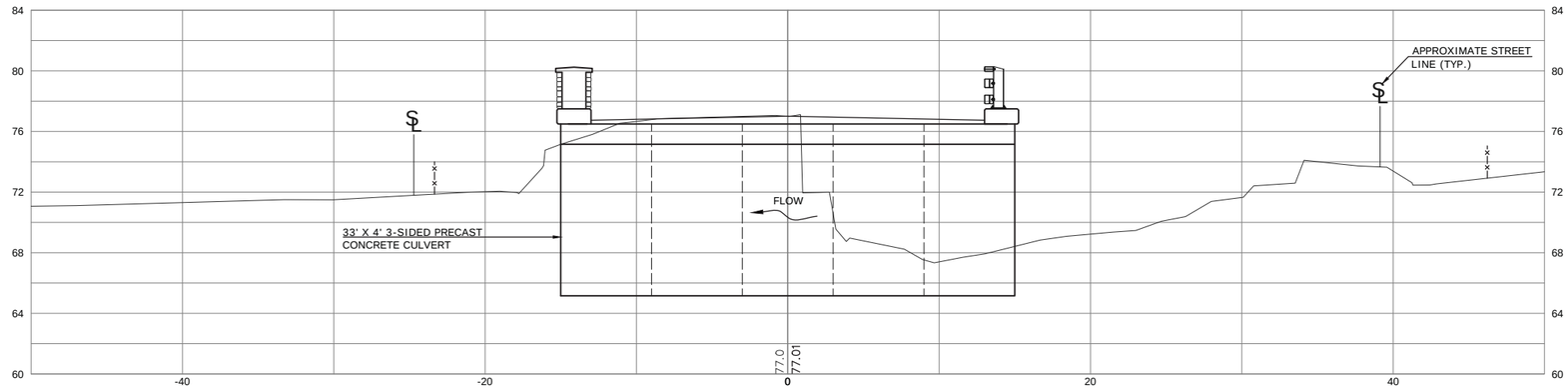
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ROADWAY CROSS SECTIONS

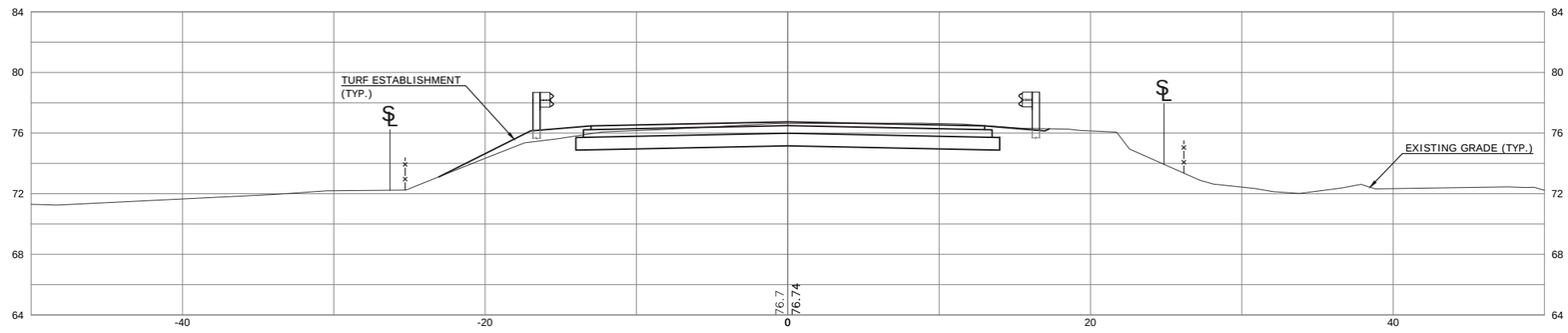
SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		8	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	9	23

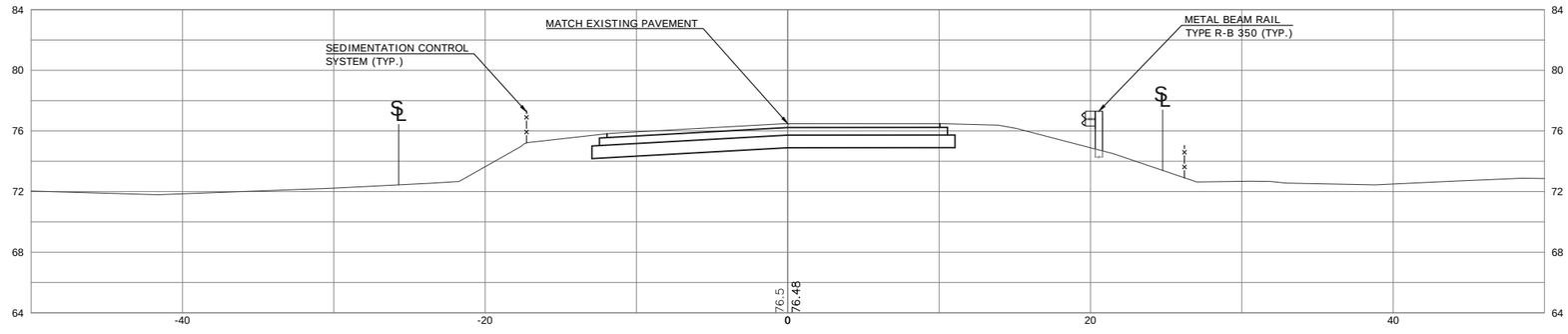
2+50



3+00



3+25



ROADWAY SECTIONS

SCALE: 1" = 5'-0"

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REVISIONS

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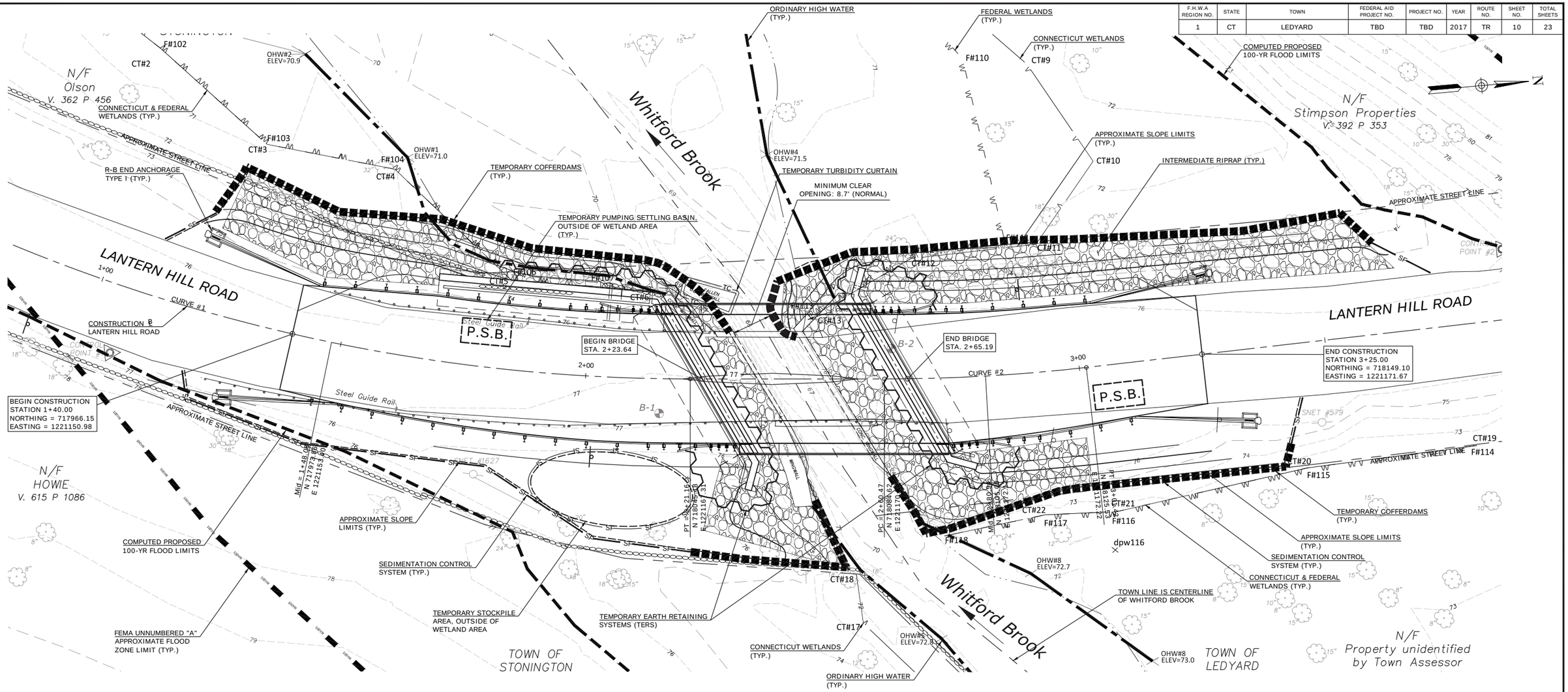
REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ROADWAY CROSS SECTIONS

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	LANTERN HILL RD	SFD	15097.10		9 OF 23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	10	23



CONSTRUCTION SEQUENCE PLAN

SCALE: 1" = 10'-0"

1. INSTALL AND MAINTAIN EFFECTIVE EROSION AND SEDIMENTATION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT, IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED PLAN OR AS DIRECTED BY THE ENGINEER.
2. INSTALL TEMPORARY PRECAST BARRIER CURBING, CLOSING LANTERN HILL ROAD TO THROUGH TRAFFIC.
3. REMOVE EXISTING BRIDGE SUPERSTRUCTURE, PROTECTING THE BROOK FROM FALLING DEBRIS DURING THE REMOVAL. ANY DEBRIS WHICH FALLS INTO THE BROOK SHALL BE IMMEDIATELY REMOVED. KEEP THE EXISTING BRIDGE ABUTMENTS IN PLACE TO A TOP ELEVATION OF 74.5'.
4. INSTALL TEMPORARY EARTH RETAINING SYSTEMS (TERS) FOR THE INSTALLATION OF THE NEW BRIDGE ABUTMENTS, TOP OF TERS ELEVATION 74.5'.
5. CONSTRUCT THE NEW BRIDGE ABUTMENTS AND WINGWALLS.
6. REMOVE EXISTING "FALLEN WINGWALL" LOCATED ALONG THE BOTTOM OF THE STREAM CHANNEL AT THE SOUTHWESTERLY CORNER OF THE EXISTING BRIDGE. THE "FALLEN WINGWALL" SHALL BE TEMPORARILY ENCIRCLED BY A TURBIDITY CURTAIN TO PROTECT THE BROOK DURING SUCH REMOVAL.
7. INSTALL COFFERDAMS AT ENDS OF REMAINING EXISTING ABUTMENTS TO ELEVATION 74.5'.
8. BACKFILL ABUTMENTS AND REMOVE TERS.
9. INSTALL RIPRAP ALONG THE PROPOSED HORIZONTAL RIPARIAN SHELVES LOCATED BETWEEN THE EXISTING AND PROPOSED ABUTMENT FACES AND TOP DRESS WITH NATURAL STREAMBED MATERIAL TO ELEVATION 73.0'.
10. CUT REMAINING PORTIONS OF THE EXISTING BRIDGE ABUTMENTS DOWN TO ELEVATION 73.0'.
11. INSTALL THE THREE-SIDED PRECAST BOX SECTIONS AND PERFORM THE REMAINING CULVERT BACKFILL.
12. INSTALL THE REMAINING AREAS OF RIPRAP AS SHOWN ON THE PLANS AND TOP DRESS ALL AREAS AT OR BELOW ELEVATION 73.0' WITH NATURAL STREAMBED MATERIAL.
13. REMOVE THE REMAINING SECTIONS OF COFFERDAMS.
14. PAVE ROADWAY, FINALIZE GRADING AND INSTALL GUIDERAIL.
15. PERFORM FINAL SITE STABILIZATION AND CLEANUP AND REMOVE REMAINING EROSION AND SEDIMENTATION CONTROLS.

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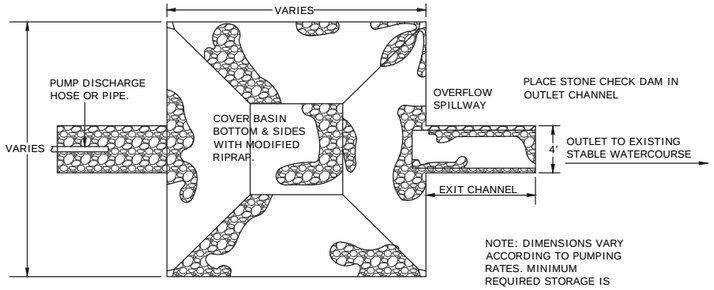
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK CONSTRUCTION SEQUENCE AND HANDLING WATER PLAN

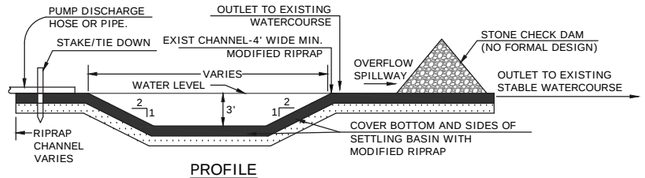
SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	LANTERN HILL RD	SFD	15097.10		10 OF 23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	11	23



NOTE: DIMENSIONS VARY ACCORDING TO PUMPING RATES. MINIMUM REQUIRED STORAGE IS CALCULATED FROM SPILLWAY WEIR.

PLAN VIEW



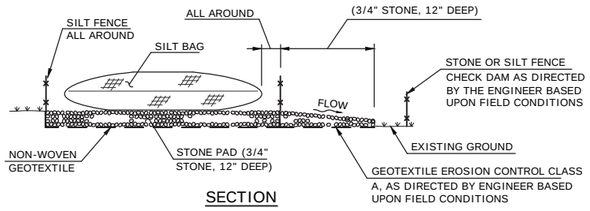
PROFILE

REFER TO PAGE 5-13-7 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL".

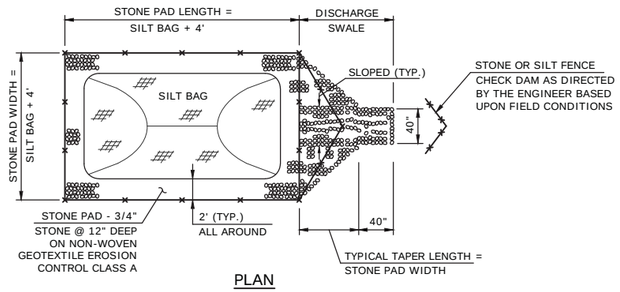
TYPE III PUMPING SETTLING BASIN

N.T.S.

PUMPING SETTLING BASIN NOTES:
1. LOCATION AS DIRECTED BY ENGINEER. REMOVE WHEN PUMPING IS COMPLETED.
2. PUMP DISCHARGE PAD HALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST THE GENERAL WORK.
3. STORAGE VOLUME BASED UPON PUMP DISCHARGE, LARGER PAD DIMENSIONS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. (MINIMUM REQUIRED STORAGE, CUBIC FEET) = 16 x (PUMP DISCHARGE RATE, GPM)
4. TYPE II PUMPING SETTLING BASIN TO BE USED WHEN THE EXPECTED DURATION OF USE IS LESS THAN 3 MONTHS. TYPE III PUMPING SETTLING BASIN TO BE USED WHEN THE EXPECTED DURATION OF USE IS LONGER THAN 3 MONTHS.
5. SETTLING BASIN AND EXIT CHANNEL TO BE BACKFILLED AT COMPLETION OF WORK. AREA SHALL BE GRADED AND STABILIZED ACCORDING TO PLANS OR AS DIRECTED BY THE ENGINEER.

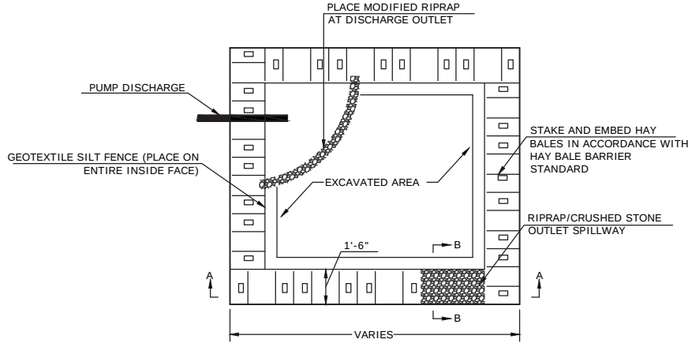


SECTION

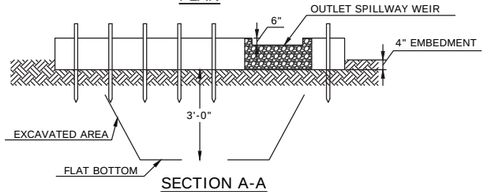


PLAN

SILT BAG INSTALLATION

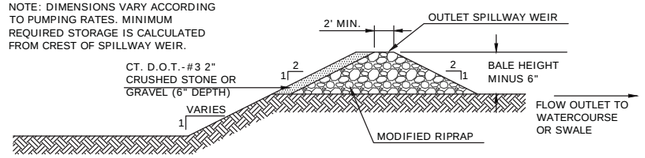


PLAN



SECTION A-A

NOTE: DIMENSIONS VARY ACCORDING TO PUMPING RATES. MINIMUM REQUIRED STORAGE IS CALCULATED FROM CREST OF SPILLWAY WEIR.

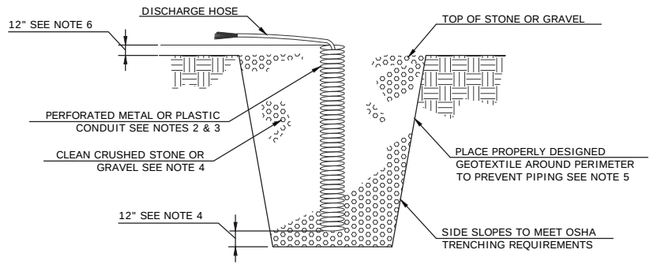


SECTION B-B

REFER TO PAGE 5-13-7 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL".

TYPE II PUMPING SETTLING BASIN

N.T.S.



REFER TO PAGE 5-13-3 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL".

NOTE:
1. OVERALL SUMP PIT DIMENSIONS SHALL BE COMPATIBLE WITH ANTICIPATED SEEPAGE RATES AND PUMP SIZE TO BE USED.
2. THE STANDPIPE DIAMETER AND NUMBER OF PERFORATIONS SHALL BE COMPATIBLE WITH THE PUMP SIZE BEING USED.
3. PERFORATIONS IN THE STANDPIPE SHALL BE EITHER CIRCULAR OR SLOTS. PERFORATION SIZE SHALL NOT EXCEED 1/2" IN DIAMETER.
4. CRUSHED STONE OR GRAVEL SHALL BE NO SMALLER THAN CT DOT #8 SIZE NOR LARGER THAN CT DOT #3 SIZE. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.
5. IF EXCESSIVE MOVEMENT OF FINE SOIL PARTICLES FROM THE SURROUNDING EXISTING SOILS IS ANTICIPATED, A PROPERLY DESIGNED GEOTEXTILE SHALL BE PLACED BETWEEN THE EXISTING SOILS AND THE CRUSHED STONE OR GRAVEL BACKFILL.
6. THE STANDPIPE SHALL EXTEND A MINIMUM OF 12" ABOVE THE SURROUNDING GROUND.

PUMP INTAKE

TYPICAL SECTION OF SUMP PIT

N.T.S.

GENERAL
EFFLUENT FROM DEWATERED WORK AREA(S) SHOULD NOT BE DISCHARGED DIRECTLY TO THE STREAM BUT BE PROCESSED THROUGH TREATMENT STRUCTURE(S). SUCH STRUCTURES SHOULD NOT BE LOCATED WITHIN THE STREAM CHANNEL OR ADJACENT WETLANDS.

THE PROJECT SHOULD NOT BE CONDUCTED IN A MANNER WHICH IMPEDES STREAM FLOW.

COFFERDAM NOTES
1. A CONSTRUCTION SEQUENCING PLAN AND A WATER HANDLING PLAN INCLUDING A CONTINGENCY PLAN FOR FLOOD EVENTS MUST BE SUBMITTED IN WRITING TO THE ENGINEER AND APPROVED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION IN A WATERWAY.

2. TEMPORARY COFFERDAM AND PUMPING NOT PAID SEPARATELY. COST TO BE INCLUDED IN THE PAY ITEM "COFFERDAM AND DEWATERING".

3. WATER HANDLING PLAN IS EXAMPLE ONLY.

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NO.	DATE	DESCRIPTION

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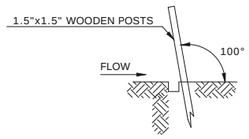
LEDYARD, CT 06339

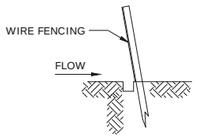
REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK HANDLING WATER DETAILS

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	LANTERN HILL RD	SFD	15097.10		11 OF 23

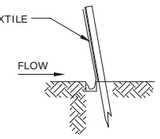
F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	12	23



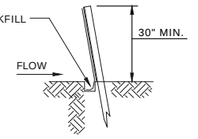
1. SET POSTS AND EXCAVATE A 6"x6" TRENCH. SET POSTS DOWN SLOPE. ANGLE 10° UPSLOPE FOR STABILITY AND SELF CLEANING.



2. ATTACH THE WIRE MESH FENCING TO POST.



3. ATTACH GEOTEXTILE TO THE WIRE FENCING AND EXTEND IT TO THE TRENCH.



4. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.

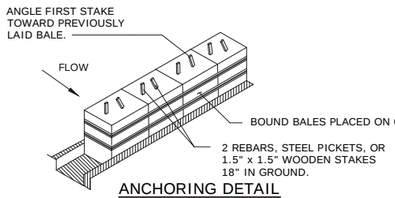
* WHEN INSTALLATION OF TRENCH IS IMPRACTICAL, ALTERNATE INSTALLATION SHALL BE TO LAY 6" FLAP HORIZONTALLY ON GROUND AND BURY FLAP BY RAMP SOIL OR STONE UP TO CONTROL FENCE. DEPTH OF RAMP SHALL BE AS REQUIRED TO HOLD DOWN FLAP WITHOUT LEAKAGE UNDER CONTROL FENCE WHILE MAINTAINING MINIMUM HEIGHT.

GEOTEXTILE FENCE SYSTEM

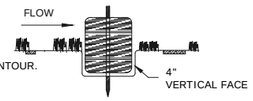
REFER TO PAGE 5-11-35 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" AND PAGE 55 "ON-SITE MITIGATION FOR CONSTRUCTION ACTIVITIES".

SEDIMENTATION CONTROL SYSTEM INSTALLATION

N.T.S.



ANCHORING DETAIL



BEDDING DETAIL

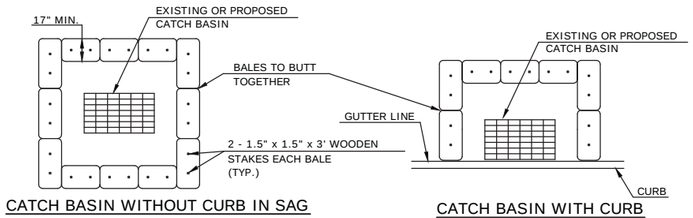
HAY BALE CONSTRUCTION SPECIFICATIONS:

1. HAY BALES SHALL BE PLACED AROUND NEWLY INSTALLED CATCH BASINS IN SAGS AND DROP INLETS TO PREVENT SEDIMENTATION AND OTHER DEBRIS FROM ACCUMULATING ON THE GRATE OR IN THE SUMP. HAY BALES SHOULD BE KEPT CLEAN AND FREE OF DEBRIS TO FACILITATE FLOW.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4", AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR REBARS DRIVEN THROUGH THE BALE. THE FIRST STAKE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

REFER TO PAGE 5-11-30 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" AND PAGE 53 "ON-SITE MITIGATION FOR CONSTRUCTION ACTIVITIES".

HAY BALE DETAIL

N.T.S.



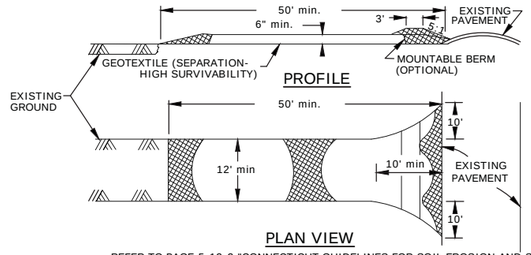
CATCH BASIN WITHOUT CURB IN SAG

CATCH BASIN WITH CURB

REFER TO PAGE 5-11-33 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" AND PAGE 40 "ON-SITE MITIGATION FOR CONSTRUCTION ACTIVITIES".

SEDIMENTATION CONTROL DETAILS

N.T.S.



PLAN VIEW

REFER TO PAGE 5-12-2 "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" AND PAGE 50 "ON-SITE MITIGATION FOR CONSTRUCTION ACTIVITIES".

CONSTRUCTION SPECIFICATION:

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FT (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN 6".
4. WIDTH - 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. GEOTEXTILE WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SETTLING AREA SIZED TO HOLD THE VOLUME OF WATER USED DURING ANY 2-HOUR PERIOD.
9. PERIODIC INSPECTION AND NECESSARY MAINTENANCE SHALL BE PROVIDED AFTER EACH RAINFALL.
10. THE COST OF CONSTRUCTING THE STABILIZED CONSTRUCTION ENTRANCE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE GENERAL WORK.

STABILIZED CONSTRUCTION ENTRANCE

N.T.S.

GENERAL

THIS PLAN PROPOSES EROSION CONTROL MEASURES TO HELP CONTROL ACCELERATED EROSION AND SEDIMENTATION AND REDUCE THE DANGER FROM STORM WATER RUNOFF AT THE SITE. THE RUNOFF SHALL BE CONTROLLED BY THE INTERCEPTION, DIVERSION, AND SAFE DISPOSAL OF PRECIPITATION. RUNOFF SHALL ALSO BE CONTROLLED BY STAGING CONSTRUCTION ACTIVITY AND PRESERVING NATURAL VEGETATION WHENEVER POSSIBLE. EXISTING VEGETATION SHALL BE PROTECTED AND ONLY THAT CLEARING AND GRUBBING ABSOLUTELY NECESSARY FOR THE PROPOSED CONSTRUCTION SHALL BE PERFORMED. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND CONTOUR, UNLESS OTHERWISE INDICATED ON THE PLANS. THE CONTRACTOR SHALL TAKE SPECIAL CARE WITH HIS CONSTRUCTION METHODS AND SHALL COMPLY WITH THE FOLLOWING GUIDELINES. REFERENCE IS MADE TO THE "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" (2002), AS AMENDED. THE GUIDELINES ARE OBTAINABLE FROM THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION, 79 ELM STREET, HARTFORD, CONNECTICUT 06106, AND SHOULD BE USED AS A REFERENCE IN CONSTRUCTING THE EROSION AND SEDIMENTATION CONTROLS INDICATED ON THESE PLANS. AN ADDITIONAL REFERENCE IS THE 1994 CONNDOT PUBLICATION "ON-SITE MITIGATION FOR CONSTRUCTION ACTIVITIES".

EROSION CONTROL

ALL AREAS SHALL BE PROTECTED FROM EROSION DURING AND AFTER CONSTRUCTION, PARTICULARLY THE STORAGE OF EXCAVATED OR STOCKPILED MATERIAL. THE CONTRACTOR SHALL CAREFULLY STRIP ALL TOPSOIL, LOAM, OR ORGANIC MATTER PRIOR TO TRENCHING OR OTHER OPERATIONS AND SHALL STORE THEM SEPARATELY FROM ALL OTHER MATERIALS DURING EXCAVATION. EACH STOCKPILE MUST BE ADEQUATELY RINGED WITH SEDIMENTATION CONTROL SYSTEM (I.E. HAY BALES AND/OR GEOTEXTILE FENCE). DEBRIS AND OTHER WASTE RESULTING FROM EQUIPMENT MAINTENANCE AND CONSTRUCTION WILL NOT BE DISCARDED ON SITE. STABILIZING OF SLOPES SHALL BE DONE IMMEDIATELY AFTER CONSTRUCTION OF SLOPES. SLOPES STEEPER THAN 4:1 SHALL BE PROTECTED WITH EROSION CONTROL MATTING. THIS MATTING IS MANUFACTURED COMBINATIONS OF MULCH AND NETTING AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL OTHER AREAS SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 2 TO 3 TONS PER ACRE. STRAW OR HAY MULCH MUST BE ANCHORED IMMEDIATELY AFTER SPREADING TO PREVENT WINDBLOWING. THE METHODS RECOMMENDED BY THE "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL" SHALL BE USED FOR THE ANCHORING OF MULCH OR NETTING.

EROSION AND SEDIMENTATION CONTROL PLAN

AN EROSION AND SEDIMENTATION CONTROL PLAN MUST BE SUBMITTED IN WRITING TO THE ENGINEER AND APPROVED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.
SEDIMENTATION CONTROL SYSTEM - THE SEDIMENTATION CONTROL SYSTEM SHALL CONSIST OF A GEOTEXTILE BARRIER FENCE. THE SEDIMENTATION CONTROL SYSTEM SHALL BE INSTALLED IMMEDIATELY AFTER A CUT SLOPE HAS BEEN GRADED, BEFORE A FILL SLOPE HAS BEEN CREATED AND AS INDICATED ON THE PLANS. THE SYSTEM IS DESIGNED TO INTERCEPT SILT AND SEDIMENT BEFORE IT REACHES THE WETLANDS OR WATERCOURSES. DEPOSITS OF SEDIMENT AND SILT ARE TO BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDE OF THE FENCE. THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. THE SEDIMENTATION CONTROL SYSTEM IS TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE SYSTEM IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE FENCE ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.

STACKED HAY BALES - HAY OR STRAW BALES USED FOR EROSION CONTROL SHALL BE STACKED AT CATCH BASINS WHERE SEDIMENT MAY ENTER THE CATCH BASIN OR AS DIRECTED BY THE RESIDENT ENGINEER. DEPOSITS OF SEDIMENT AND SILT ARE TO BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDE OF THE EROSION CHECKS. THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. HAY OR STRAW BALES ARE TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE SYSTEM IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE EROSION CHECKS ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.

IN ALL AREAS, REMOVAL OF TREES, BUSHES, AND OTHER VEGETATION, AND DISTURBANCE OF THE SOIL, IS TO BE KEPT TO AN ABSOLUTE MINIMUM WHILE ALLOWING PROPER DEVELOPMENT OF THE SITE.

DURING CONSTRUCTION, AS SMALL AN AREA OF SOIL AS POSSIBLE SHOULD BE EXPOSED FOR AS SHORT A TIME AS POSSIBLE. AFTER CONSTRUCTION, GRADE, RESPREAD TOPSOIL, AND STABILIZE SOIL BY SEEDING AND MULCHING AS TO PREVENT EROSION.

EROSION AND SEDIMENTATION CONTROL MAINTENANCE PROCEDURES

ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED DURING CONSTRUCTION ON A DAILY BASIS AND FOLLOWING ALL STORMS BY THE RESIDENT ENGINEER. THE CONTRACTOR SHALL MAINTAIN AND MAKE REPAIRS AND REMOVE SEDIMENT AS REQUESTED BY THE RESIDENT ENGINEER. THIS WORK SHALL BE PERFORMED WITHIN 24 HOURS OF THE REQUEST AND THERE SHALL BE NO SEPARATE PAYMENT FOR THIS WORK.

THE CONTRACTOR SHALL CLEAN SEDIMENT AND DEBRIS FROM ALL DRAINAGE STRUCTURES, AND PIPES AT THE COMPLETION OF CONSTRUCTION, AND AS REQUESTED BY THE RESIDENT INSPECTOR TO KEEP THE SYSTEM FUNCTIONING PROPERLY DURING CONSTRUCTION.

FOLLOWING COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL REPAIR ALL ERODED AREAS AND ENSURE A GOOD STAND OF TURF IS ESTABLISHED THROUGHOUT. THE CONTRACTOR SHALL REPAIR ALL ERODED OR DISPLACED RIPRAP, AND CLEAN SEDIMENT COVERED STONES.

ALL APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE ESTABLISHED PRIOR TO AND BE MAINTAINED THROUGH ALL CONSTRUCTION PHASES.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE TOWN AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

REVISIONS

SUPV. J.A.C.
DESIGN S.M.M.
DRAWN S.M.M.
CHECKED K.O.E.
DATE 06/15/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS
• WENGELL, McDONNELL & COSTELLO •
87 HOLMES ROAD
NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD

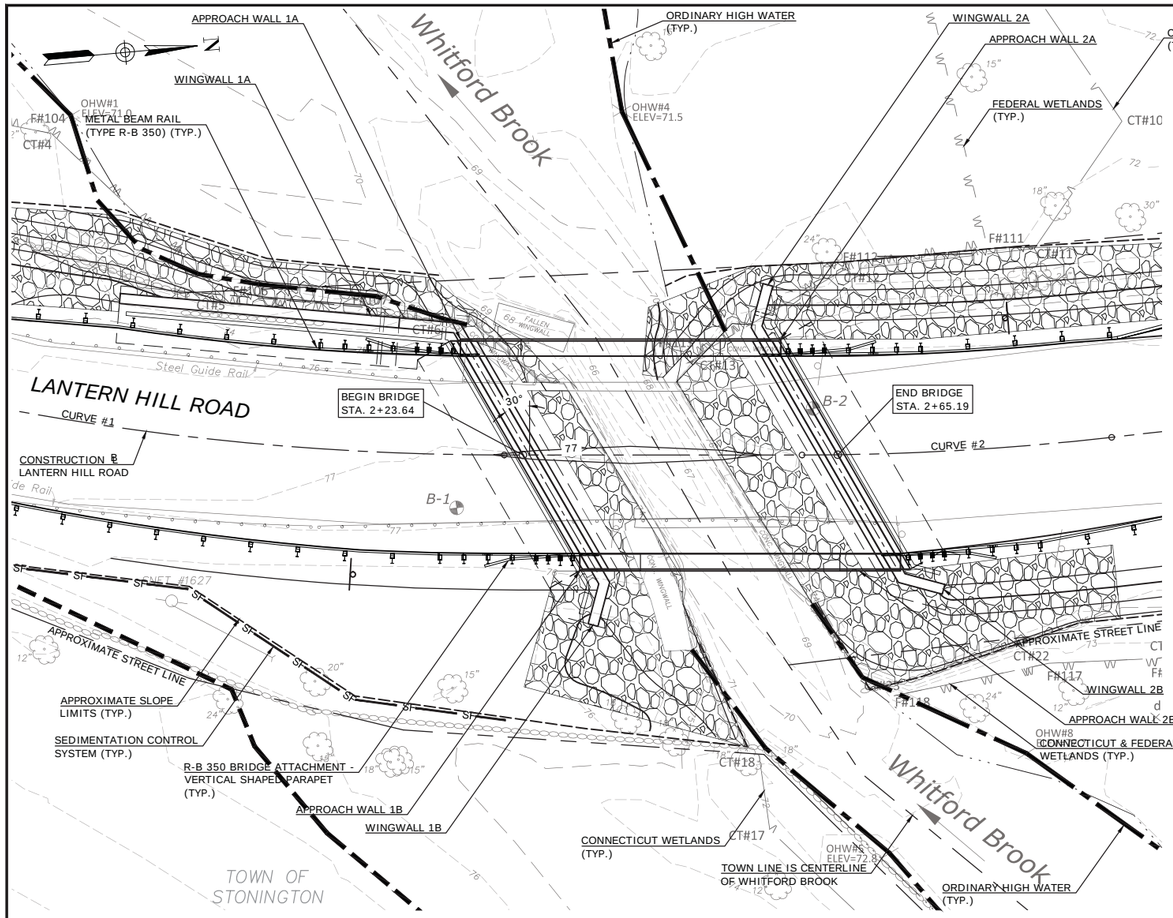
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK EROSION AND SEDIMENTATION CONTROL DETAILS

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	– LANTERN HILL RD –	SFD –	15097.10 –		12 23

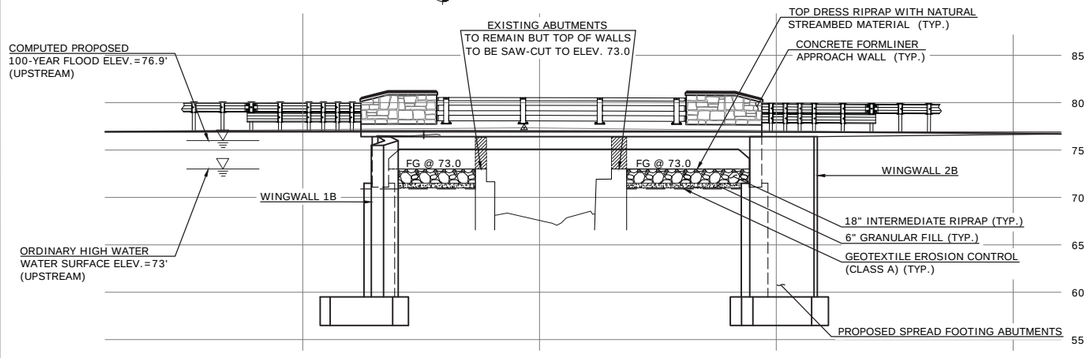
F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	13	23



STRUCTURE PLAN

SCALE: 1" = 10'-0"

APPROXIMATE BORING LOCATIONS



UPSTREAM STRUCTURE ELEVATION (LOOKING DOWNSTREAM)

SCALE: 1/8" = 1'-0"

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE TOWN AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

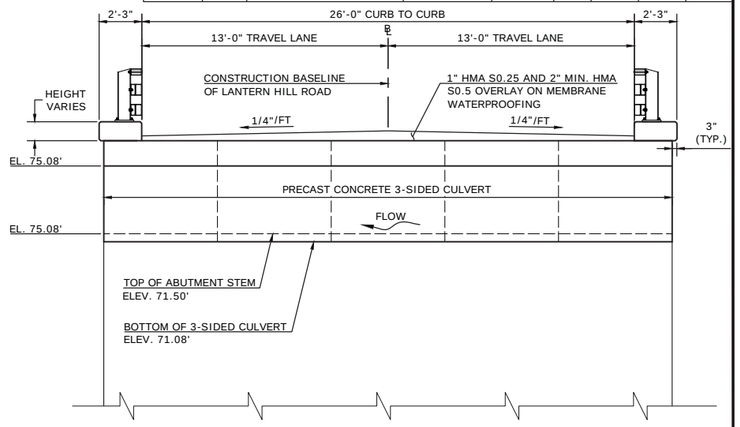
QUANTITIES

ITEM	UNIT	QTY
STRUCTURE EXCAVATION - EARTH (EXCLUDING COFFERDAM AND DEWATERING)	C.Y.	680
COFFERDAM AND DEWATERING	L.F.	490
GRANULAR FILL	C.Y.	130
PERVIOUS STRUCTURE BACKFILL	C.Y.	550
1/2" PREFORMED JOINT FILLER	S.F.	110
HMA S0.5	TON	30
HMA S0.25	TON	10
MATERIAL FOR TACK COAT	GAL.	35
REMOVAL OF SUPERSTRUCTURE	L.S.	1
CLASS "A" CONCRETE	C.Y.	270
CLASS "F" CONCRETE	C.Y.	30
PRECAST CONCRETE 3-SIDED CULVERT	L.F.	34.75
DEFORMED STEEL BARS	LBS	37100
DEFORMED STEEL BARS - EPOXY COATED	LBS	5000
CONCRETE FORM LINERS	S.F.	895
MEMBRANE WATERPROOFING (WOVEN GLASS FABRIC)	S.Y.	255
DAMPROOFING	S.Y.	130
TEMPORARY EARTH RETAINING SYSTEM	S.F.	5200
6" C.C.M.P. STRUCTURE UNDERDRAIN	L.F.	140
6" C.C.M. OUTLETS FOR UNDERDRAIN	L.F.	7
3 TUBE CURB MOUNTED BRIDGE RAIL	L.F.	60
REMOVAL OF EXISTING MASONRY	C.Y.	35

NOTICE TO BRIDGE INSPECTORS

THE DEPARTMENT'S BRIDGE SAFETY PROCEDURES REQUIRE THIS BRIDGE TO BE INSPECTED FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS (THE LISTING OF COMPONENTS FOR SPECIAL ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF THE INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE). THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER OF BRIDGES AND STRUCTURES, OR NOTED BELOW.

COMPONENT OR DETAIL	BRIDGE SHEET REF.
NONE	NONE



BRIDGE SECTION (NORMAL TO BASELINE)

SCALE: 1/4" = 1"-0"

GENERAL NOTES:

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817 (2016).

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (AASHTO 2014, SEVENTH EDITION), AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL (2003).

ALLOWABLE DESIGN STRESSES:
CLASS "A" CONCRETE: BASED ON f'c = 3000 P.S.I.
CLASS "F" CONCRETE: BASED ON f'c = 4000 P.S.I.
REINFORCEMENT: (ASTM A615 GRADE 60) fy = 60,000 P.S.I.

CONCRETE:
THE SPECIFIED CONCRETE STRENGTH USED IN DESIGN (f'c) OF THE CONCRETE COMPONENTS IS NOTED ABOVE. THE MINIMUM COMPRESSIVE STRENGTH OF THE CONCRETE IN THE CONSTRUCTED COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF 'SECTION 6.01 CONCRETE FOR STRUCTURES'.

LIVE LOAD: HL-93, CT-L73.0, CT-L3S2, CT-P76.5, CT-P204, CT-P380 & CT-TLC

FUTURE PAVING ALLOWANCE: NONE

HMA OVERLAY: THIS SHALL CONSIST OF 2" MIN. OF HMA S0.5 ON TOP OF 1" OF HMA S0.25 ON MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC).

DIMENSIONS: ALL DIMENSIONS SHOWN ON THE PLANS ARE IN FEET AND INCHES EXCEPT IF NOTED OTHERWISE. ALL ELEVATIONS ARE GIVEN IN FEET. WHEN ELEVATIONS AND ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZEROS.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY OF THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

SUPERSTRUCTURE REMOVAL: BEFORE INITIATING CONSTRUCTION, CONTRACTOR SHALL SUBMIT A PLAN FOR APPROVAL DEFINING METHOD FOR PROTECTION OF THE STREAM AREA DURING REMOVAL OF EXISTING BRIDGE SUPERSTRUCTURE. COST TO BE INCLUDED IN THE COST OF REMOVAL OF SUPERSTRUCTURE.

COFFERDAMS AND DEWATERING: BEFORE INITIATING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A PLAN FOR APPROVAL THAT DEFINES METHODS AND MATERIALS FOR CONTROLLING STREAM WATER (COFFERDAMS, ETC.), DEWATERING, STRUCTURE EXCAVATION AND PROTECTING THE STREAM DURING VARIOUS STAGES OF CONSTRUCTION. THE COST OF THIS WORK SHALL BE INCLUDED IN THE COST OF "COFFERDAM AND DEWATERING".

UTILITY RELOCATIONS: OVERHEAD OR UNDERGROUND UTILITY LINES MAY BE IN CONFLICT WITH TEMPORARY SHEETING OR COFFERDAMS, SETTING OF PRECAST CULVERT UNITS OR OTHER CONSTRUCTION. DEPENDING UPON THE CONTRACTOR'S CONSTRUCTION OPERATIONS, THESE UTILITIES MAY NEED TO BE RELOCATED TO TEMPORARY LOCATIONS FOR PORTIONS OF THE CONSTRUCTION OPERATIONS AND THEN MOVED BACK TO PERMANENT LOCATIONS WHICH MAY BE OTHER THAN CURRENT LOCATIONS. THE ACTUAL UTILITY RELOCATIONS (PERMANENT OR TEMPORARY) WILL BE THE RESPONSIBILITY OF THE INDIVIDUAL UTILITY OWNER, HOWEVER THE CONTRACTOR WILL BE REQUIRED TO COORDINATE ALL UTILITY RELOCATIONS WITH EACH UTILITY OWNER AND TO PHASE HIS WORK AS REQUIRED TO ACCOMMODATE TEMPORARY AND PERMANENT UTILITY RELOCATION WORK. THE CONTRACTOR SHALL HAVE NO RIGHT TO CLAIM EXTRA COMPENSATION FOR DELAYS OR STAGING AND PHASING OF HIS WORK DUE TO UTILITY RELOCATION WORK.

UNCONFINED IN-STREAM: ACTIVITIES MUST BE LIMITED TO THE TIME PERIOD JUNE 1 THROUGH SEPTEMBER 30.

CONCRETE NOTES:

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR WINGWALLS AND ABUTMENTS UNLESS NOTED OTHERWISE.

CLASS "F" CONCRETE: CLASS "F" CONCRETE SHALL BE USED FOR BRIDGE PARAPETS AND APPROACH WALLS.

JOINT SEAL: SEE SPECIAL PROVISIONS.

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE MIN. 2" COVER UNLESS DIMENSIONED OTHERWISE.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

EPOXY COATED REINFORCING BARS: ALL REINFORCEMENT IN THE BRIDGE PARAPETS AND TOPS OF APPROACH WALLS SHALL BE EPOXY COATED UNLESS NOTED OTHERWISE. THESE BARS SHALL BE INCLUDED IN THE PAY ITEM FOR "DEFORMED STEEL BARS (EPOXY COATED)"

CONSTRUCTION JOINTS: CONSTRUCTION JOINTS, OTHER THAN THOSE SHOWN ON THE PLANS, WILL NOT BE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1"X1" UNLESS DIMENSIONED OTHERWISE

PRECAST THREE SIDED RIGID FRAME: FABRICATORS OF PRECAST THREE SIDED RIGID FRAME SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS PREPARED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS
• WENGELL, McDONNELL & COSTELLO •
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(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD

741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK STRUCTURE PLAN, ELEVATION AND SECTION

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		13	23

77

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	14	23

Jaime Lloret
DRILLER
Sebghatullah Abdullah
INSPECTOR

TEST BORING REPORT
ASSOCIATED BORINGS CO., INC.
119 MARGARET CIRCLE, NAUGATUCK, CT 06770
Tel (203) 729-5435 Fax (203) 729-5116

SHEET 1 OF 1

CME-55
DRILLING EQUIPMENT
Wengall McDonnell Costello
CLIENT

SOILS ENGINEER

PROJECT NAME: Lantern Hill Road Bridge
PROJECT NUMEER: WMC Ref # 15097
LOCATION: Ledyard, Connecticut

Surface Elevation:
Date Started: 2/12/2016
Date Finished: 2/12/2016
Groundwa:er Observations
AT 6 'AFTER 0 HRS
AT 'AFTER HRS

	Auger	Casing	Sampler	Core Bar
Type	HSA		SS	
Size I. D.	3 1/4 in		2 in	
Hammer			140 lb	Bit
Fall			30 in	

Hole No. **B-1**
Line & Station
Offset
N Coordinate
E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. INCH	REC. INCH	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0 - 6	6 - 12	12-18	18-24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		1.5 - 3.0	1	18	5	D	6	7	7	X	5"	Bituminous Concrete
												Br. C-F Sand and C-F Gravel, (Fill)
5		5.0 - 7.0	2	24	6	D	12	14	15	20	5	
											7	Br. M-F Silty Sand, Tr. Organics
												Br. C-F Sand and C-F Gravel, Continious Cobbles and Boulders
10		10.0 - 10.3	3	3	0	D	50/3"	X	X	X		Very Difficult Drilling
15		15.0 - 16.0	4	12	6	D	32	50	X	X		
20		20.0 - 21.5	5	18	10	D	25	36	50	X		
25		24.0 - 26.0	6	24	7	D	21	31	45	70	26	End of Boring - 26.0
30												
35												
40												

From Ground Surface to Feet Used Inch Casing Then Inch Casing For Feet

Footage in Earth 26.0 Footage in Rock 0.0 No. of Samples 6 Hole No. B-1

SAMPLE TYPE CODING: D = DRIVEN C = CORE A = AUGER UP = UNDISTURBED PISTON
PROPORTIONS USED: TRACE = 1-10% LITTLE = 10-20% SOME = 20-35% AND = 35-50%

B-1
STATION=2+15.01
OFFSET=7.03'R
NORTHING=718038.60
EASTING=1221173.69
ELEV.=77.10'

Jaime Lloret
DRILLER
Sebghatullah Abdullah
INSPECTOR

TEST BORING REPORT
ASSOCIATED BORINGS CO., INC.
119 MARGARET CIRCLE, NAUGATUCK, CT 06770
Tel (203) 729-5435 Fax (203) 729-5116

SHEET 1 OF 1

CME-55
DRILLING EQUIPMENT
Wengall McDonnell Costello
CLIENT

SOILS ENGINEER

PROJECT NAME: Lantern Hill Road Bridge
PROJECT NUMEER: WMC Ref # 15097
LOCATION: Ledyard, Connecticut

Surface Elevation:
Date Started: 2/12/2016
Date Finished: 2/12/2016
Groundwa:er Observations
AT 6 'AFTER 0 HRS
AT 'AFTER HRS

	Auger	Casing	Sampler	Core Bar
Type	HSA		SS	
Size I. D.	3 1/4 in		2 in	
Hammer			140 lb	Bit
Fall			30 in	

Hole No. **B-2**
Line & Station
Offset
N Coordinate
E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. INCH	REC. INCH	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0 - 6	6 - 12	12-18	18-24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		1.5 - 3.0	1	18	4	D	25	30	30	X	5"	Bituminous Concrete
												Br. C-F Sand and C-F Gravel, (Fill)
5		5.0 - 7.0	2	24	3	D	17	17	25	30	5	
											7	Br. M-F Silty Sand, Tr. Organics
												Br. C-F Sand and C-F Gravel, Continious Cobbles and Boulders
10		10.0 - 10.3	3	3	0	D	50/3"	X	X	X		Very Difficult Drilling
15		15.0 - 17.0	4	24	12	D	60	21	27	30		
20		20.0 - 20.2	5	2	0	D	50/2"	X	X	X		
25		25.0 - 27.0	6	24	8	D	15	30	28	31	27	End of Boring - 27.0
30												
35												
40												

From Ground Surface to Feet Used Inch Casing Then Inch Casing For Feet

Footage in Earth 27.0 Footage in Rock 0.0 No. of Samples 6 Hole No. B-2

SAMPLE TYPE CODING: D = DRIVEN C = CORE A = AUGER UP = UNDISTURBED PISTON
PROPORTIONS USED: TRACE = 1-10% LITTLE = 10-20% SOME = 20-35% AND = 35-50%

B-2
STATION=2+61.97
OFFSET=6.12'L
NORTHING=718086.64
EASTING=1221164.89
ELEV.=76.80'

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE TOWN AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

REVISIONS

SUPV. J.A.C.
DESIGN S.M.M.
DRAWN S.M.M.
CHECKED K.O.E.
DATE 06/15/2017

SFD SUBMITTAL

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PREPARED FOR
TOWN OF LEDYARD
741 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK BORING LOGS

D – LANTERN HILL RD – SFD – 15097.10 –
SIZE PROJECT FILE NAME NUMBER REV.

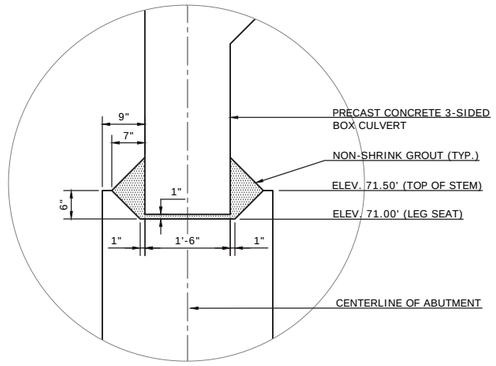
SHEET 14
OF 23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	15	23

WORKING POINTS		
W.P. #	NORTHING	EASTING
1	718075.94	1221185.18
2	718068.65	1221169.41
3	718061.35	1221153.64

TYPICAL ABUTMENT SECTION

SCALE: 1/2" = 1'-0"



DETAIL "A"

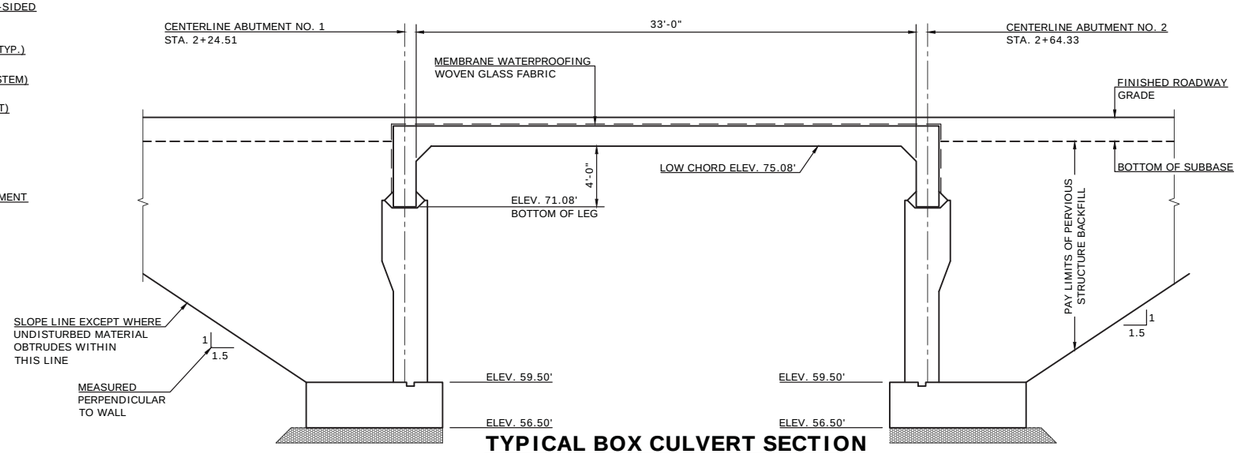
SCALE: 3/4" = 1'-0"

STRUCTURE LAYOUT

SCALE: 1" = 5'-0"

NOTES:

1. SEE ABUTMENT PLAN AND ELEVATION SHEETS FOR ELEVATION VIEWS OF ABUTMENT AND WINGWALLS.
2. SEE STRUCTURE DETAILS SHEETS FOR WINGWALL AND BRIDGE PARAPET SECTIONS AND DETAILS.
3. SEE APPROACH WALL DETAILS SHEET FOR APPROACH WALL SECTIONS AND DETAILS.



TYPICAL BOX CULVERT SECTION

(NORMAL TO BOX)
SCALE: 1" = 5'-0"

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NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS

• WENGELL, McDONNELL & COSTELLO •
87 HOLMES ROAD
NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD

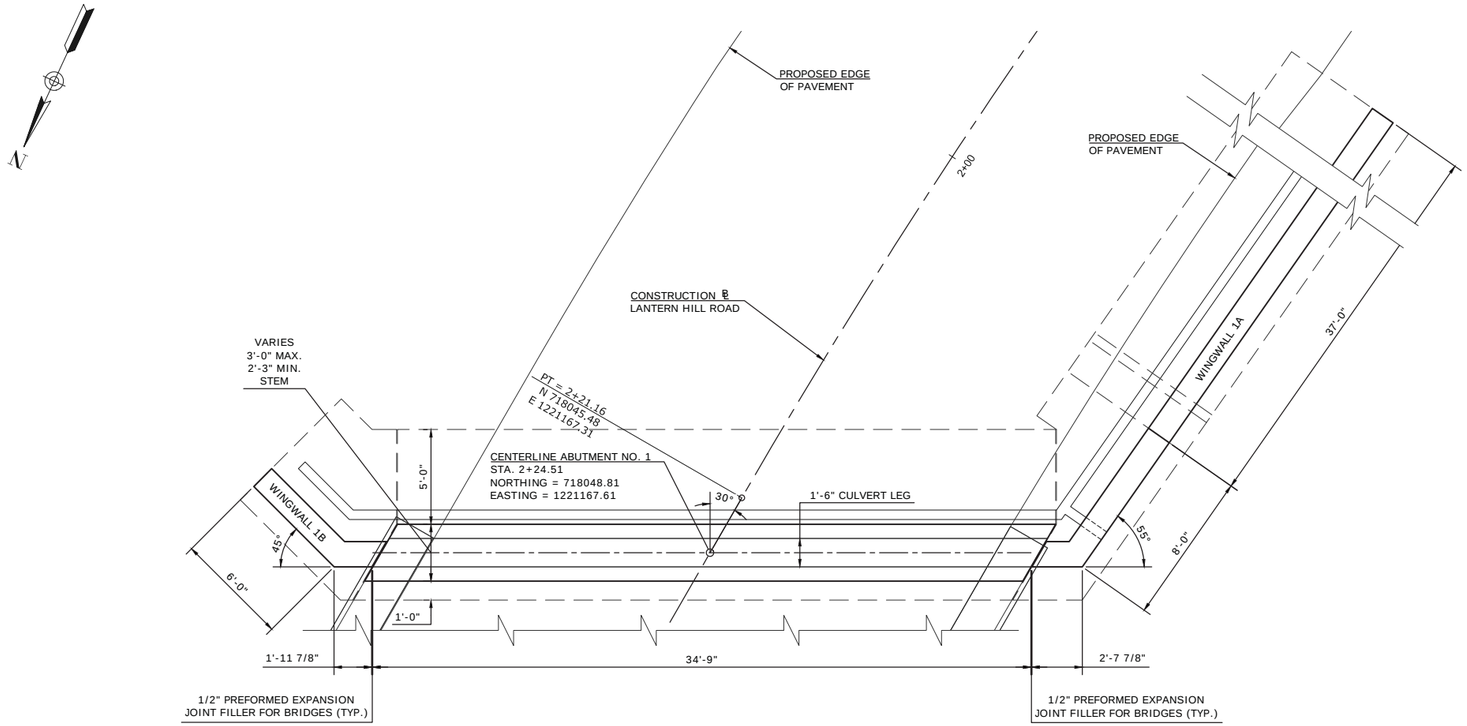
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK STRUCTURE LAYOUT PLAN

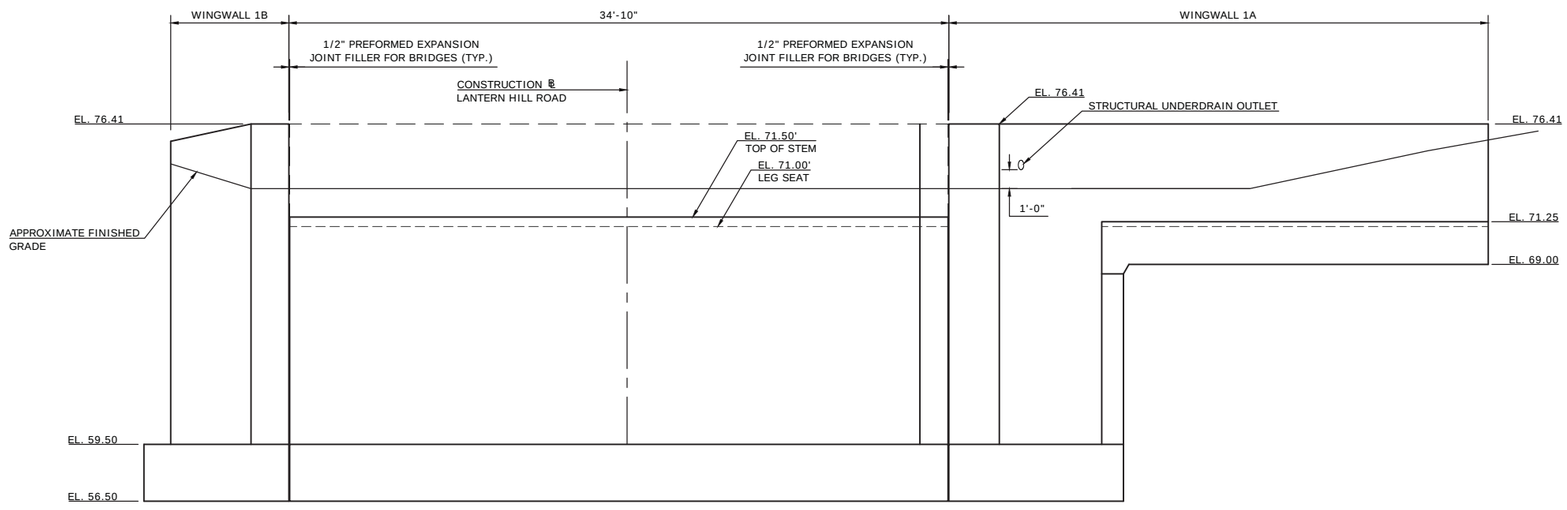
SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		15	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	16	23



ABUTMENT NO. 1 PLAN VIEW

SCALE: 1/4" = 1'-0"



ABUTMENT NO. 1 ELEVATION VIEW

SCALE: 1/4" = 1'-0"

NOTE:
INSTALL 1/2" PREFORMED EXPANSION JOINT FILLER BETWEEN WINGWALL STEM AND BOX CULVERT AND BETWEEN WINGWALL FOOTING AND CUTOFF/RETURN WALL.

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REVISIONS

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TOWN OF LEDYARD

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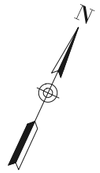
LEDYARD, CT 06339

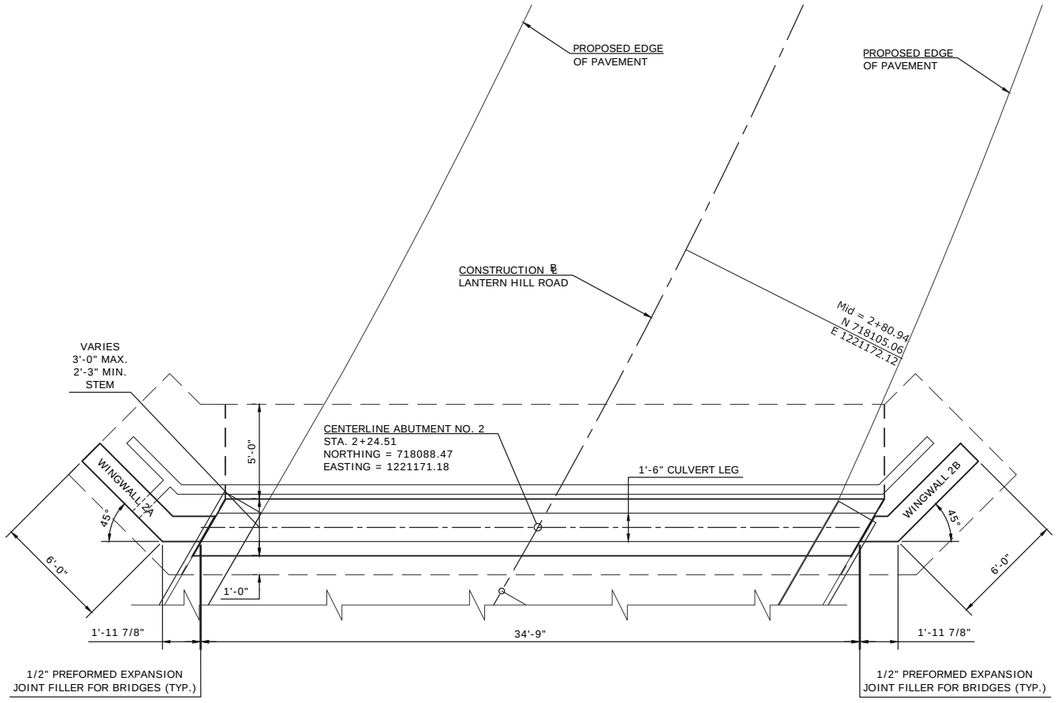
REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ABUTMENT #1 PLAN AND ELEVATION

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	– LANTERN HILL RD –	SFD –	15097.10 –		16	23

80

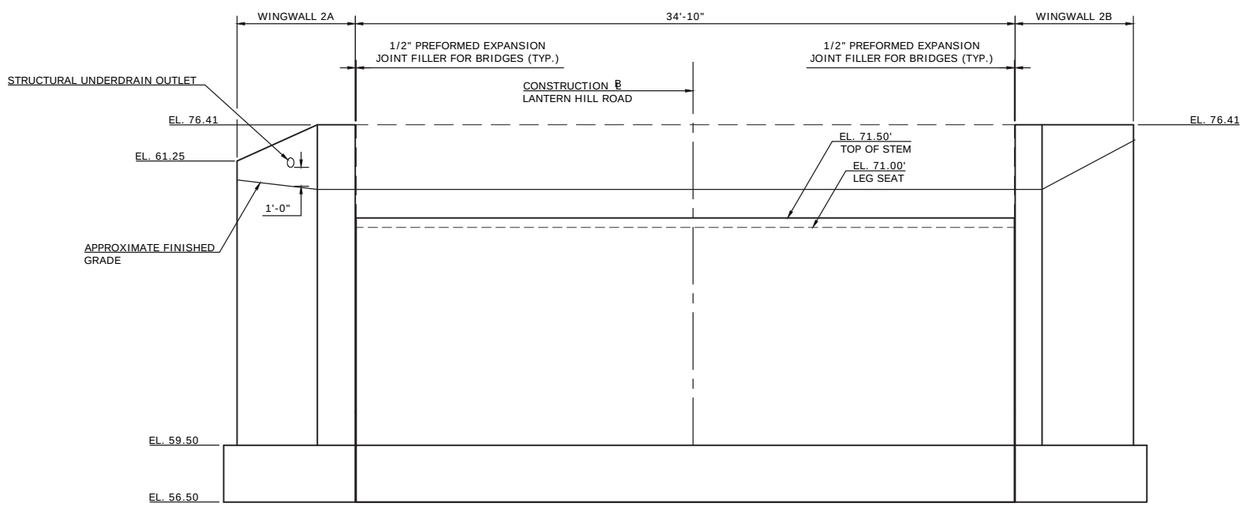
F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	17	23





ABUTMENT NO. 2 PLAN VIEW

SCALE: 1/4" = 1'-0"



ABUTMENT NO. 2 ELEVATION VIEW

SCALE: 1/4" = 1'-0"

NOTE:
INSTALL 1/2" PREFORMED EXPANSION JOINT FILLER BETWEEN WINGWALL STEM AND BOX CULVERT AND BETWEEN WINGWALL FOOTING AND CUTOFF/RETURN WALL.

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REVISIONS

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CHECKED	K.O.E.
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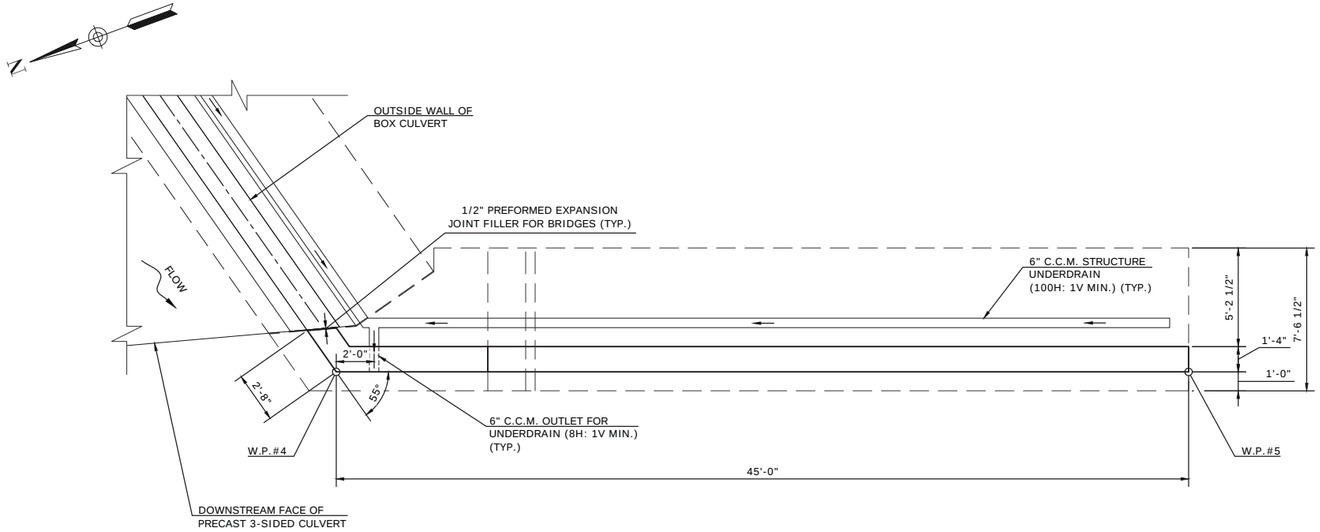
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ABUTMENT #2 PLAN AND ELEVATION

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	– LANTERN HILL RD	– SFD	– 15097.10	–	17 OF 23

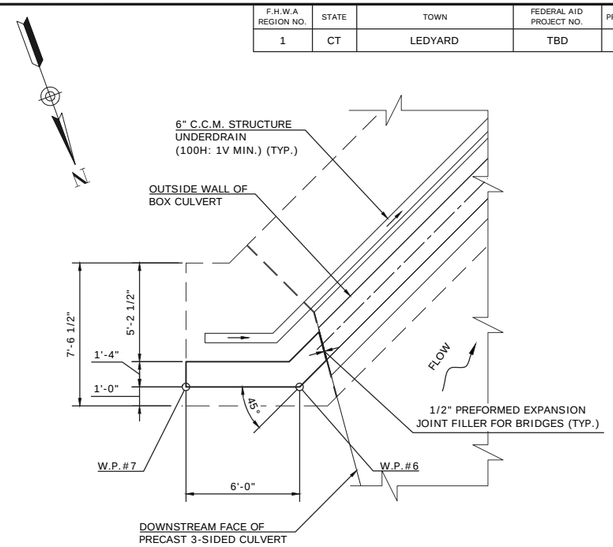
F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	18	23



WORKING POINTS		
W.P. #	NORTHING	EASTING
4	718041.24	1221149.46
5	717996.95	1221141.51
6	718057.82	1221185.31
7	718055.76	1221190.95

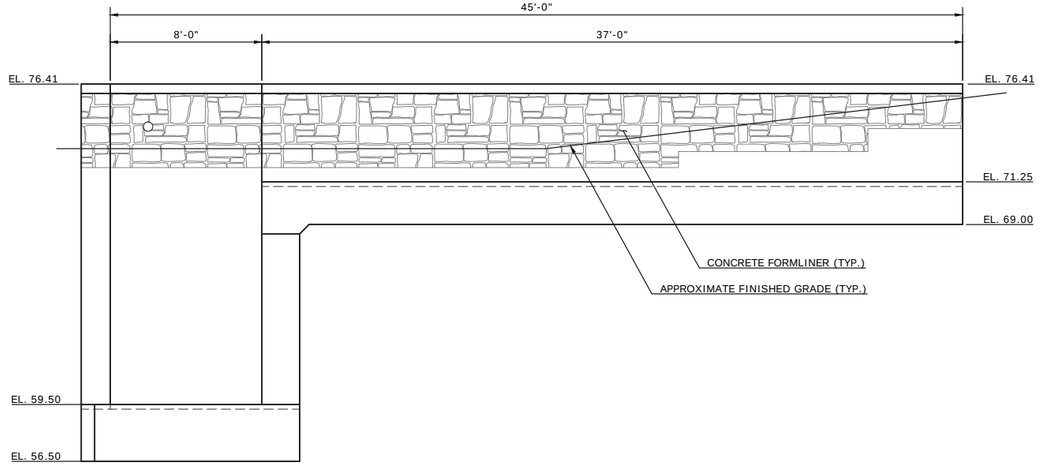
WINGWALL 1A PLAN

SCALE: 1/4" = 1'-0"



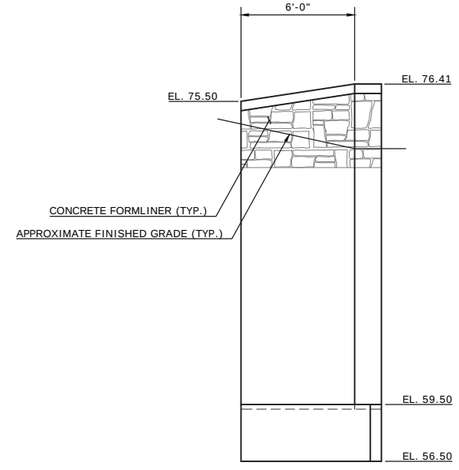
WINGWALL 1B PLAN

SCALE: 1/4" = 1'-0"



WINGWALL 1A ELEVATION VIEW

SCALE: 1/4" = 1'-0"



WINGWALL 1B ELEVATION VIEW

SCALE: 1/4" = 1'-0"

NOTE:
INSTALL 1/2" PREFORMED EXPANSION JOINT FILLER BETWEEN WINGWALL STEM AND BOX CULVERT AND BETWEEN WINGWALL FOOTING AND CUTOFF/RETURN WALL.

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TOWN OF LEDYARD

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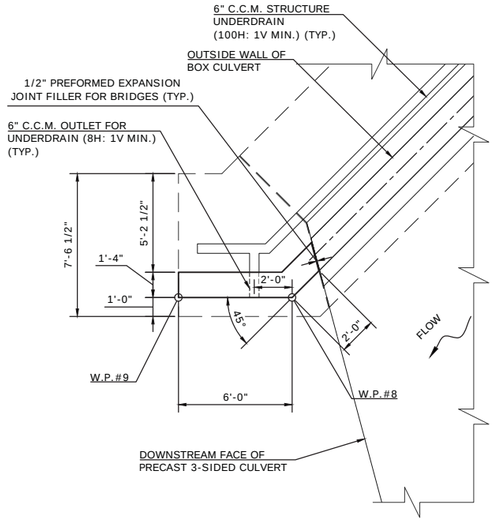
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK WINGWALL DETAILS (1 OF 2)

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	LANTERN HILL RD	SFD	15097.10		18 OF 23

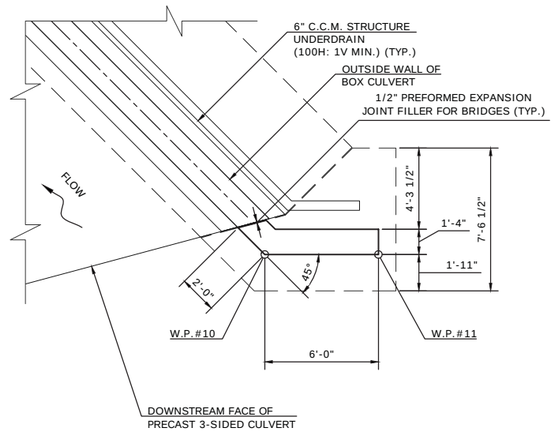
F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	19	23



WINGWALL 2A PLAN

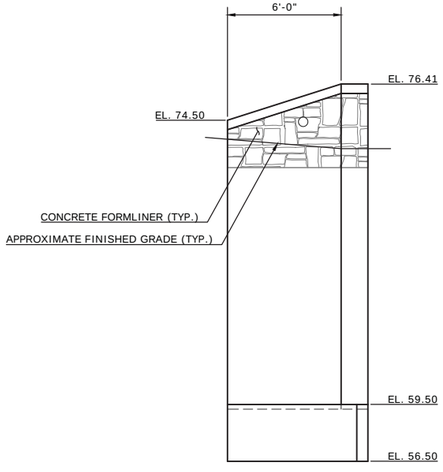
SCALE: 1/4" = 1'-0"

WORKING POINTS		
W.P. #	NORTHING	EASTING
8	718079.47	1221153.50
9	718081.54	1221147.87
10	718095.77	1221188.75
11	718101.41	1221190.82



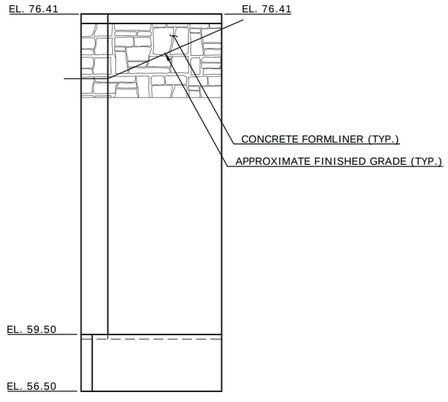
WINGWALL 2B PLAN

SCALE: 1/4" = 1'-0"



WINGWALL 2A ELEVATION VIEW

SCALE: 1/4" = 1'-0"



WINGWALL 2B ELEVATION VIEW

SCALE: 1/4" = 1'-0"

NOTE:
INSTALL 1/2" PREFORMED EXPANSION JOINT FILLER BETWEEN WINGWALL STEM AND BOX CULVERT AND BETWEEN WINGWALL FOOTING AND CUTOFF/RETURN WALL.

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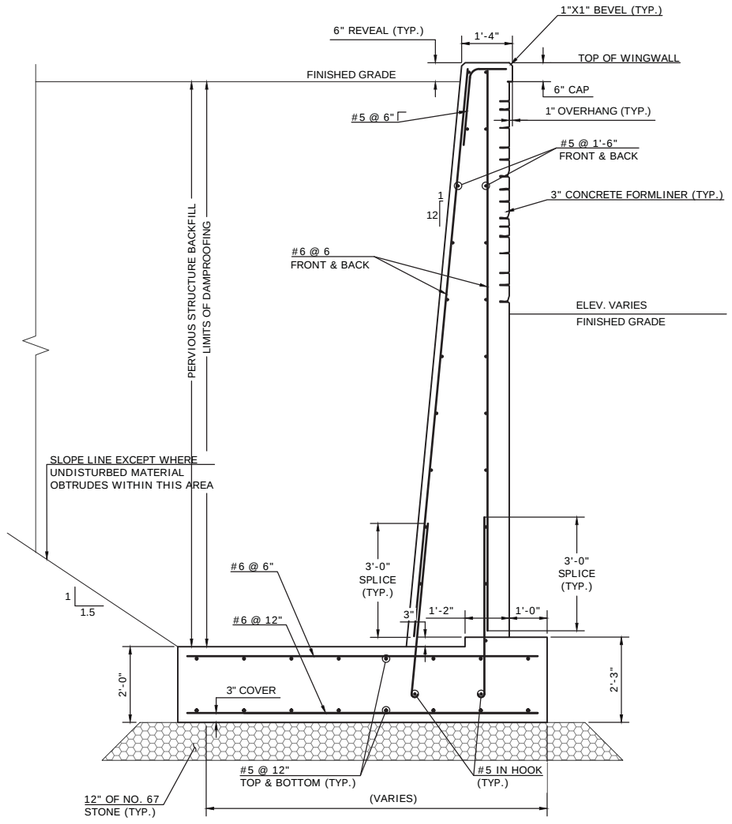
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK WINGWALL DETAILS (2 OF 2)

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	– LANTERN HILL RD	– SFD	– 15097.10	–	19 23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	20	23



TYPICAL WINGWALL SECTION

SCALE: 1/2" = 1'-0"

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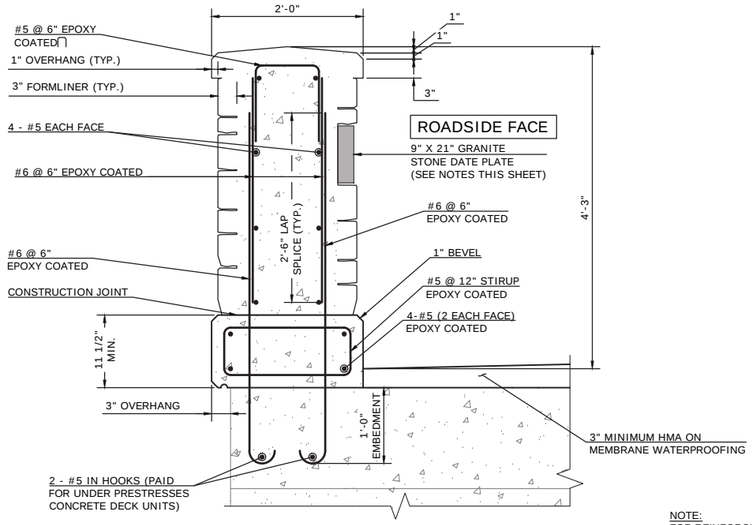
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK ABUTMENT AND WINGWALL DETAILS

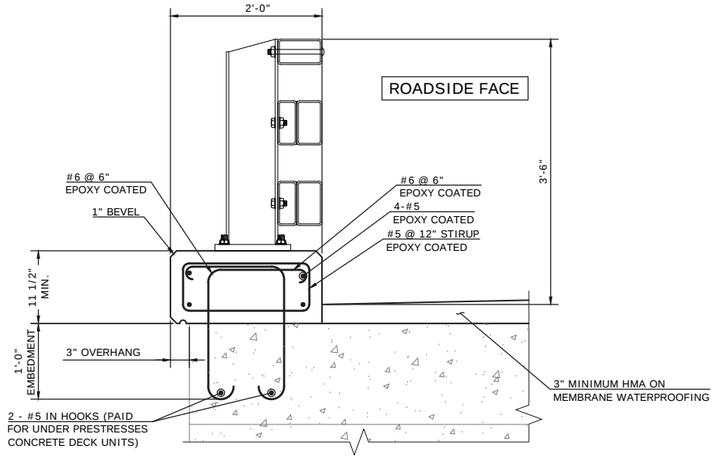
SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET OF
D	LANTERN HILL RD	SFD	15097.10		20 23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	21	23



TYPICAL PARAPET SECTION (OTHER THAN MIDSPAN)

SCALE: 1" = 1'-0"



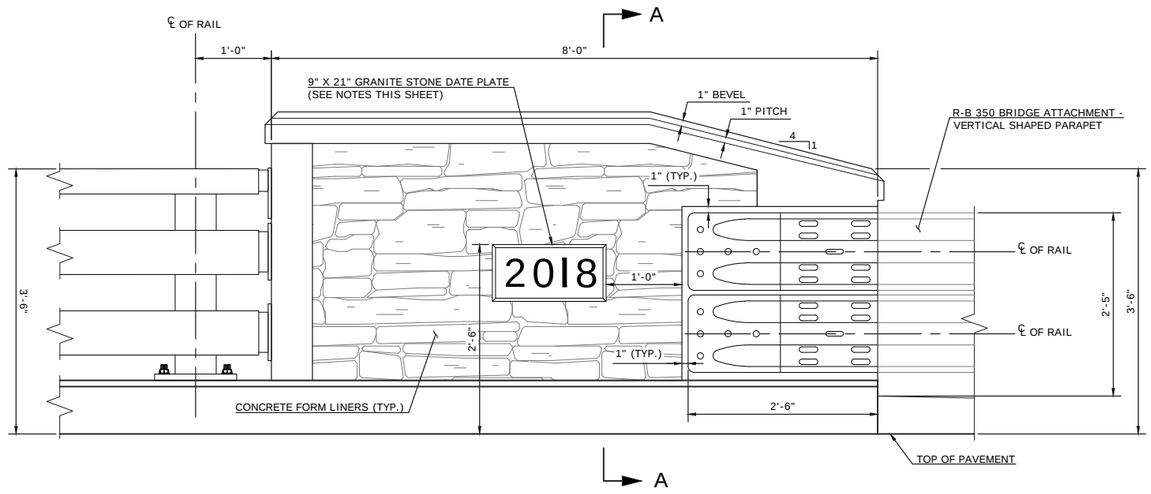
NOTE:
FOR REINFORCING WITHIN NEXT BEAMS, SEE "NEXT BEAM DETAILS" SHEET.

TYPICAL PARAPET SECTION (AT MIDSPAN)

SCALE: 1" = 1'-0"

NOTES:
GRANITE DATE PLATE

1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF STONE DATE PLATE. DATE PLATE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE ITEM "ASHLAR STONE MASONRY".
2. DATE PLATE SHALL BE LOCATED AT EACH LEADING APPROACH WALL, 1B & 2A.
3. DATE SHALL INDICATE CONSTRUCTION COMPLETION DATE.
4. LETTERING SHALL BE 5" HIGH BY 3" WIDE.



TYPICAL END BLOCK ELEVATION (VERTICAL GUIDERAIL - BRIDGE ATTACHMENT)

SCALE: 1" = 1'-0"

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PREPARED FOR

TOWN OF LEDYARD

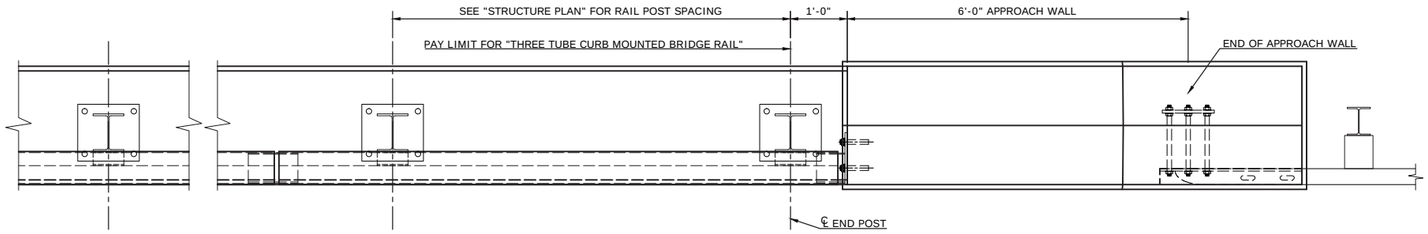
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

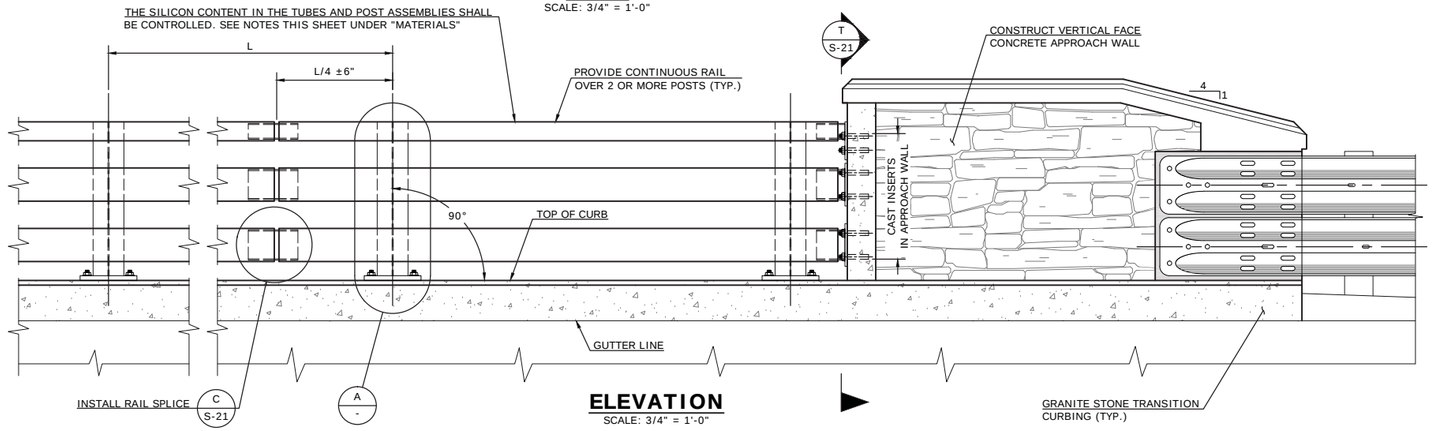
REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK APPROACH WALL DETAILS

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	– LANTERN HILL RD –	SFD	– 15097.10 –		21	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	22	23



PLAN
SCALE: 3/4" = 1'-0"



ELEVATION
SCALE: 3/4" = 1'-0"

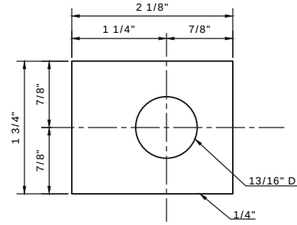


PLATE WASHER DETAIL
SCALE: 1" = 1'-0"

GENERAL NOTES:

THIS SHEET IS BASED ON A DESIGN DEVELOPED BY THE OREGON DEPARTMENT OF TRANSPORTATION WHICH MET ALL THE EVALUATION CRITERIA FOR AN NCHRP REPORT 350 BRIDGE RAIL AT TEST LEVEL 4 (TL-4). THIS DESIGN WAS TESTED BY THE TEXAS TRANSPORTATION INSTITUTE TO NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 TEST LEVEL 4 (TL-4) AND DOCUMENTED IN THREE SEPARATE REPORTS, ALL DATED MAY 2000, ENTITLED "NCHRP REPORT 350 TEST 4-10 OF THE OREGON 3-TUBE BRIDGE RAIL", "NCHRP REPORT 350 TEST 4-11 OF THE OREGON 3-TUBE BRIDGE RAIL", AND "NCHRP REPORT 350 TEST 4-12 OF THE OREGON 3-TUBE BRIDGE RAIL", RESPECTIVELY. THIS SYSTEM WAS ACCEPTED FOR USE ON THE NATIONAL HIGHWAY SYSTEM (NHS) BY THE FHWA BY MEMORANDUM DATED APRIL 22, 2003.

THIS RAIL SYSTEM IS ACCEPTABLE FOR USE AS A TL-4 RAIL SYSTEM AS A TRAFFIC RAIL (ADJACENT TO VEHICULAR TRAFFIC) AND ALSO AS A COMBINATION BARRIER (ALONG OUTER EDGES OF BRIDGE SIDEWALKS) AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

FABRICATE RAILS TO THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE STRUCTURE. INSTALL POSTS NORMAL TO GRADE.

WEIGHT: WEIGHT OF SYSTEM IS 75 POUNDS PER LINEAR FOOT. THIS INCLUDES WEIGHT OF THE POSTS AT AN ASSUMED SPACING OF 8' BUT NOT THE WEIGHT OF THE CONCRETE CURB.

MATERIALS:

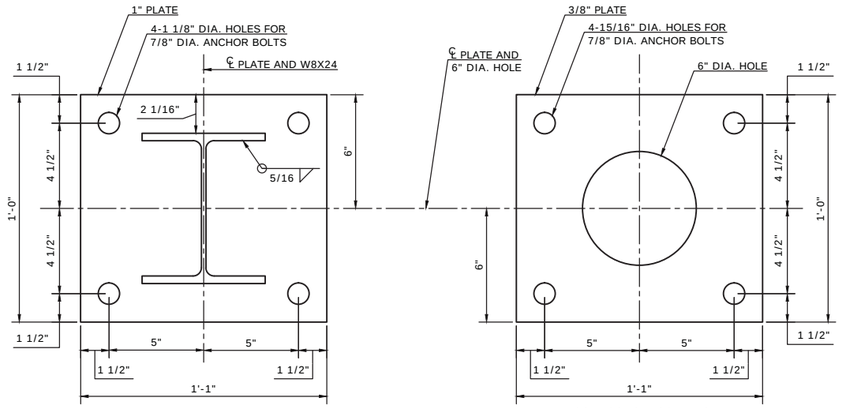
7/8" DIA. THREADED ANCHOR BOLTS FOR USE AS ANCHORAGES IN CONCRETE SHALL CONFORM TO ASTM A449. ANCHOR BOLTS SHALL BE BOLTED TO THE BASE PLATES USING 2 LEVELING NUTS AND WASHERS BELOW THE BASE PLATE AND STANDARD NUTS ABOVE THE BASE PLATE. ALL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

BOLTS USED FOR ATTACHING THE LOWER TUBES TO POSTS SHALL CONFORM TO ASTM A325. NUTS SHALL CONFORM TO ASTM A563 GRADES DH, DH3, C, C3, AND D OR A194 GRADES 2 OR 2H. WASHERS SHALL CONFORM TO ASTM F436. DOME HEAD BOLTS WITH WRENCH SLOTS USED FOR THE TOP RAIL SHALL CONFORM TO ASTM A307. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

TUBULAR MEMBERS SHALL CONFORM TO ASTM A500 GRADE B OR A501. STEEL CONFORMING TO A513 OR A618 MAY BE SUBSTITUTED IN ACCORDANCE WITH THE SPECIAL PROVISION

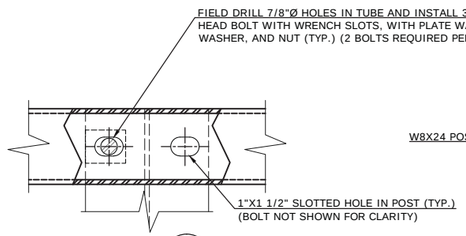
ALL OTHER STEEL SHALL CONFORM TO ASTM A572, GRADE 50 UNLESS NOTED OTHERWISE.

HOT-DIP GALVANIZE STRUCTURAL STEEL INCLUDING FASTENERS AFTER FABRICATION, SILICON CONTENT CONTENT OF DENOTED STEEL SHALL BE LIMITED TO BETWEEN 0 TO 0.04% OR 0.15% TO 0.25%.

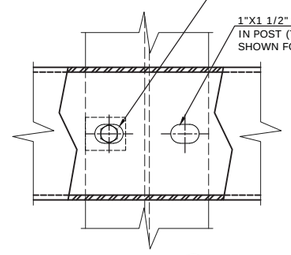


BASE PLATE DETAIL
SCALE: 3" = 1'-0"

ANCHORAGE PLATE DETAIL
SCALE: 3" = 1'-0"

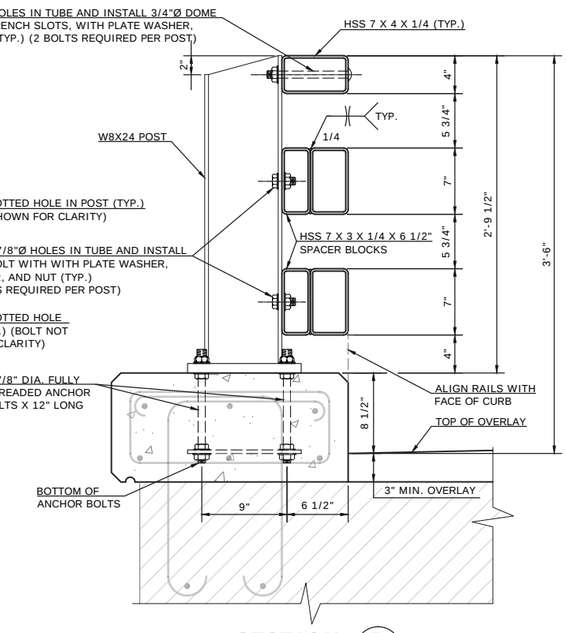


DETAIL F
SCALE: 3" = 1'-0"
(CUT-AWAY VIEW)

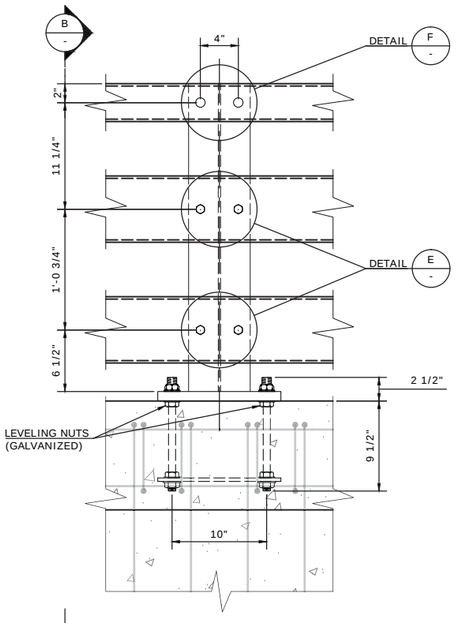


DETAIL E
SCALE: 3" = 1'-0"
(CUT-AWAY VIEW)

CURB AND POST DETAILS
SCALE: AS NOTED



SECTION B
SCALE: 1 1/2" = 1'-0"



SECTION A
SCALE: 1 1/2" = 1'-0"

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NO.	DATE	DESCRIPTION

REVISIONS

SUPV.	J.A.C.
DESIGN	S.M.M.
DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS

• WENGELL, McDONNELL & COSTELLO •
87 HOLMES ROAD
NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD

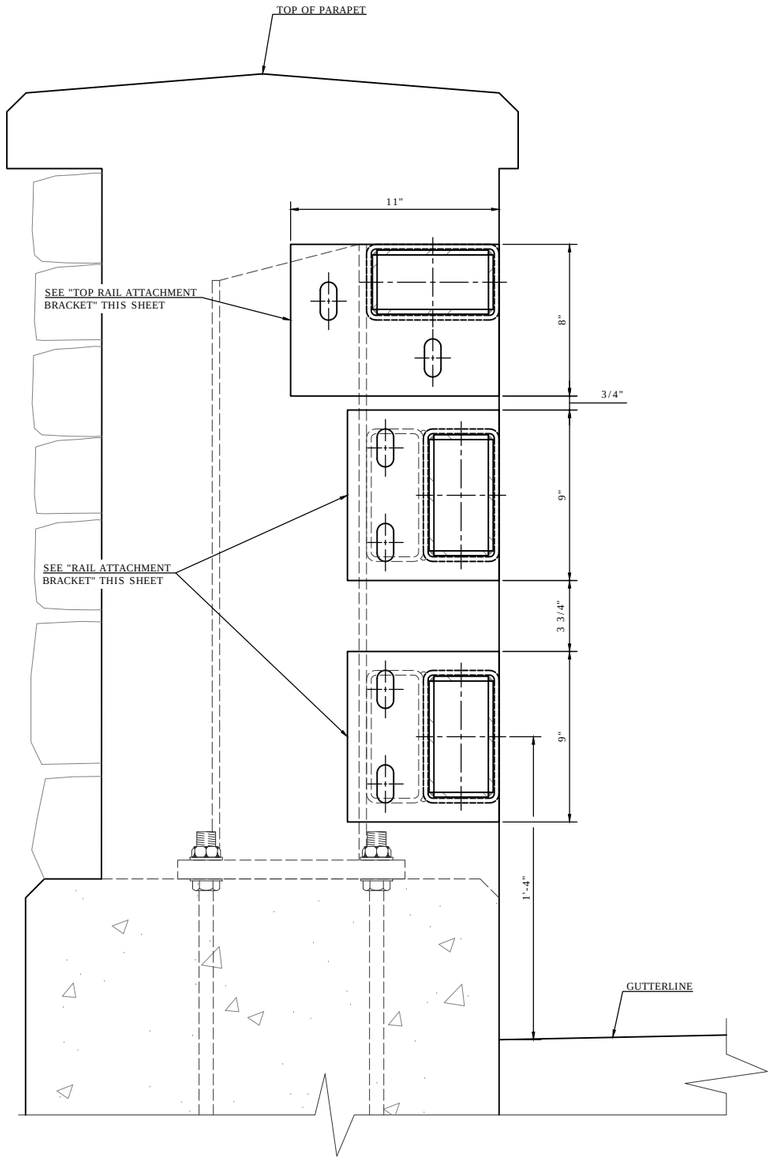
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

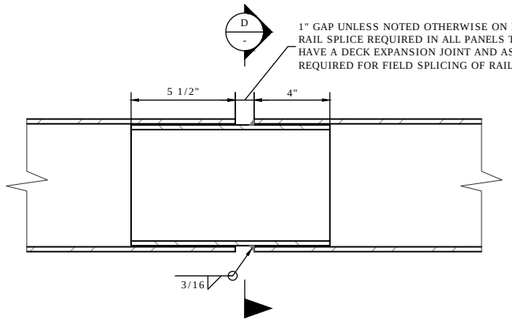
REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK 3-TUBE CURB MOUNTED BRIDGE RAIL

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		22	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	S
1	CT	LEDYARD	TBD	TBD	2017	TR	23	23



SECTION T
SCALE: 3" = 1'-0"



SECTION C
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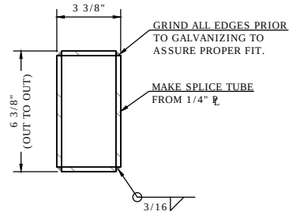
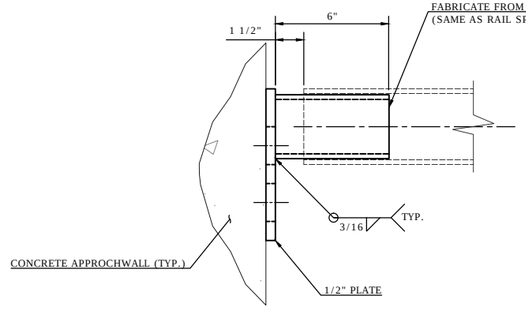
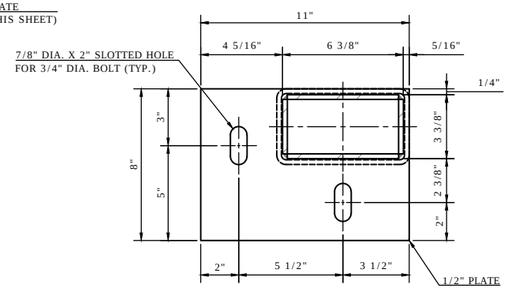


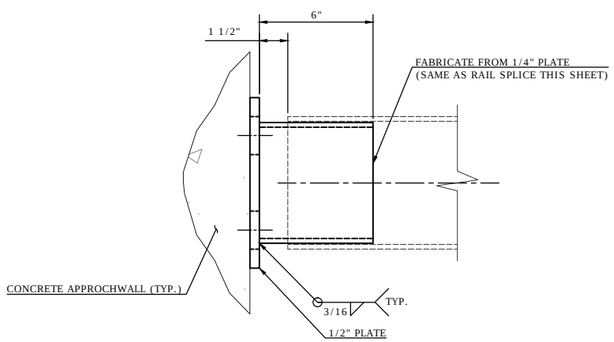
SECTION D
SCALE: 3" = 1'-0"



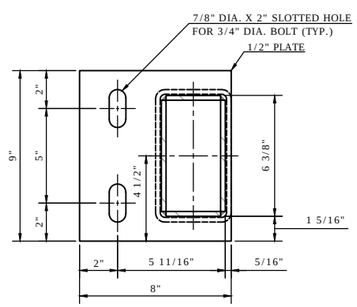
TOP RAIL ATTACHMENT BRACKET DETAIL ELEVATION
SCALE: 3" = 1'-0"



TOP RAIL ATTACHMENT BRACKET DETAIL PLAN
SCALE: 3" = 1'-0"



RAIL ATTACHMENT BRACKET DETAIL ELEVATION
SCALE: 3" = 1'-0"



RAIL ATTACHMENT BRACKET DETAIL PLAN
SCALE: 3" = 1'-0"

NOTES FOR GUIDE RAIL ATTACHMENTS:

THE 7/8" DIAMETER ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A449.

NUTS SHALL BE HEAVY HEX AND CONFORM TO THE REQUIREMENTS OF ASTM A563, PROPERTY CLASS 10S.

WASHERS SHALL BE CIRCULAR, HARDENED WASHERS CONFORMING TO THE REQUIREMENTS OF ASTM F436.

ALL ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

ANCHOR PLATES SHALL CONFORM TO ASTM A36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

ALL ANCHORAGE MATERIALS-INCLUDING THE ANCHOR PLATES, ANCHOR BOLTS AND HARDWARE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM "R-B 350 BRIDGE ATTACHMENT - VERTICAL SHAPED PARAPET" (ROADWAY ITEM)

CONCRETE INSERTS: *

HOT-DIP GALVANIZED EXPANDED COIL CONCRETE INSERTS WITH CLOSED-BACK INSERTS THREADED TO RECEIVE 3/4" DIA. ASTM A307 BOLTS.
MINIMUM INSERT LENGTH = 4"
MINIMUM SAFE WORKING LOAD IN TENSION = 4000 LBS.

*

AS AN ALTERNATIVE TO CAST IN INSERTS, THE CONTRACTOR MAY FIELD DRILL HOLES IN THE COMPLETED APPROCHWALLS AND INSTALL A THREADED ROD/NUT SYSTEM TO SECURE THE BRACKETS. DRILLING METHODS SHALL BE BY CORE DRILLING AND SHALL NOT DAMAGE THE CONCRETE. IF THE CONTRACTOR ELECTS TO USE A DRILLED IN SYSTEM HE/SHE SHALL SUBMIT HIS/HER METHODS AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION OF THE APPROCHWALLS. ALL MATERIALS SHALL MEET OR EXCEED THE REQUIREMENTS INDICATED FOR THE CONCRETE INSERTS.

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DRAWN	S.M.M.
CHECKED	K.O.E.
DATE	06/15/2017

SFD SUBMITTAL

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NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD

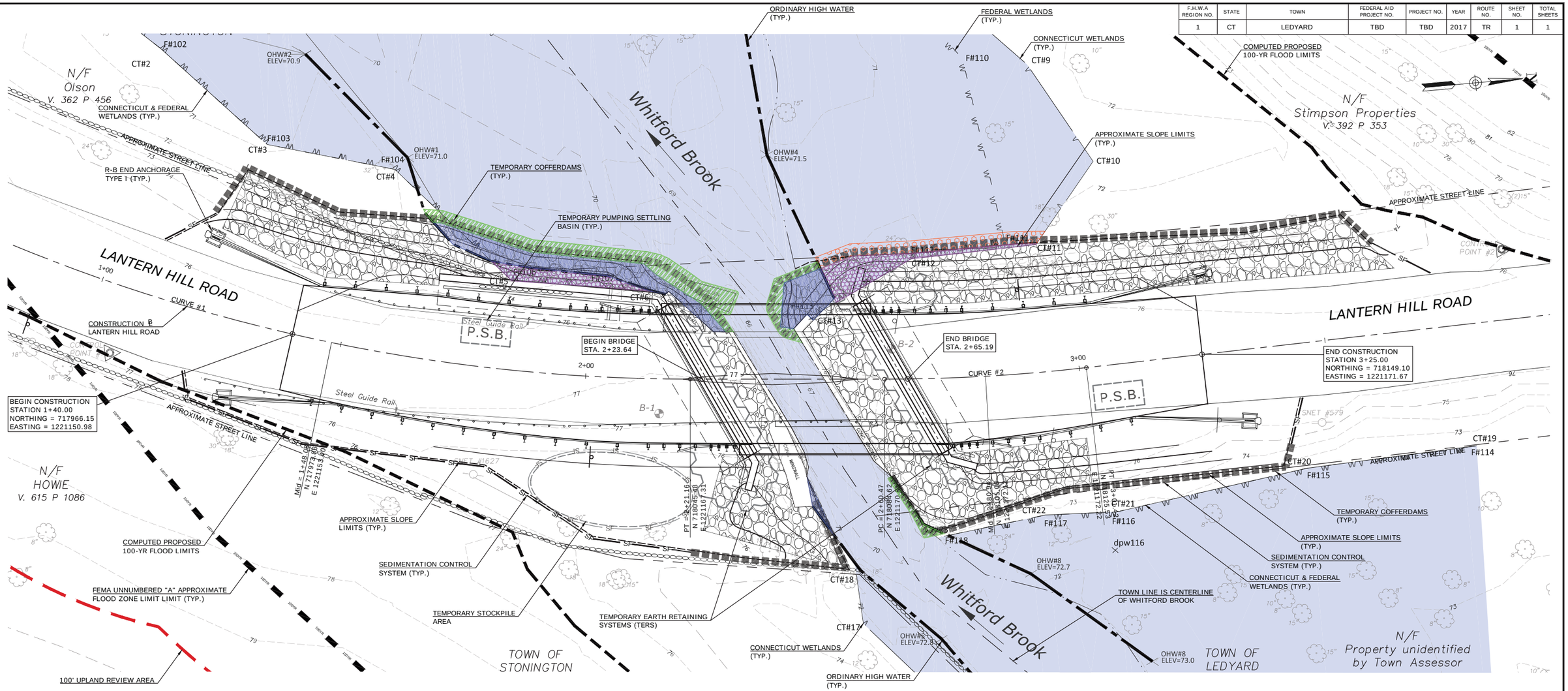
741 COLONEL LEDYARD HIGHWAY

LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK THREE TUBE CURB MOUNTED BRIDGE RAIL

SIZE	PROJECT	FILE NAME	NUMBER	REV.	SHEET	OF
D	LANTERN HILL RD	SFD	15097.10		23	23

F.H.W.A REGION NO.	STATE	TOWN	FEDERAL AID PROJECT NO.	PROJECT NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CT	LEDYARD	TBD	TBD	2017	TR	1	1



LEGEND

- TEMPORARY WATERCOURSE IMPACT
- PERMENANT WATERCOURSE IMPACT
- TEMPORARY WETLAND IMPACT
- PERMENANT WETLAND IMPACT
- SF—— SF—— SEDIMENTATION CONTROL SYSTEM
- 100YR 100YR FEMA UNNUMBERED "A" APPROXIMATE FLOOD ZONE LIMIT
- ORDINARY HIGH WATER (OHW)
- CONNECTICUT WETLANDS LINE
- FEDERAL WETLANDS LINE
- CONNECTICUT/FEDERAL WETLANDS LINE
- 100' UPLAND REVIEW BOUNDARY

CONNECTICUT INLAND WETLAND IMPACT PLAN

SCALE: 1" = 10'-0"

WETLAND IMPACTS

	WETLAND IMPACTS	WATERCOURSE IMPACTS	TOTAL
PERMANENT IMPACTS	178 S.F. (0.004 AC.)	289 S.F. (0.007 AC.)	467 S.F. (0.011 AC.)
TEMPORARY IMPACTS	114 S.F. (0.003 AC.)	269 S.F. (0.006 AC.)	383 S.F. (0.009 AC.)
TOTAL IMPACTS	292 S.F. (0.007 AC.)	558 S.F. (0.013 AC.)	850 S.F. (0.020 AC.)

UPLAND REVIEW AREA IMPACTS

TOTAL IMPACTS	10,076 S.F. (0.231 AC.)

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NO.	DATE	DESCRIPTION

REVISIONS

SUPV. J.A.C.
DESIGN S.M.M.
DRAWN S.M.M.
CHECKED K.O.E.
DATE 04/10/2017

SFD SUBMITTAL

WMC CONSULTING ENGINEERS
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87 HOLMES ROAD
NEWINGTON, CT 06111
(860) 667-9624

PREPARED FOR

TOWN OF LEDYARD
741 COLONEL LEDYARD HIGHWAY
LEDYARD, CT 06339

REPLACEMENT OF LANTERN HILL ROAD BRIDGE OVER WHITFORD BROOK
CONNECTICUT INLAND WETLAND IMPACT PLAN

D – LANTERN HILL RD – SFD – 15097.10 –
SIZE PROJECT FILE NAME NUMBER REV.

SHEET 1
OF 1

88

From: Scott Stevens <ssesinc@yahoo.com>
Sent: Thursday, August 11, 2022 9:41 AM
To: Michael Fanning
Subject: Sketch - Lantern Hill Road, Ledyard
Attachments: Sketch Lantern Hill Road Ledyard _000226.pdf

Good morning Mike,

We re-flagged the wetland boundaries in the Lantern Hill Road over Whitford Brook project area yesterday. Our 2022 wetland boundary delineation appears substantially the same as our wetland boundary delineation completed in 2016. We found several of our old flags still tied to vegetation, several old pink flags with our 2016 flag numbers, several that had fallen on the ground, and a few that were missing. We had to re-set all of the OHW flags since they were missing, on broken vegetation, and one appeared slightly low for the existing conditions. See attached sketch map.

Thanks and have a great day,

~Jenn
Jennifer Beno, Biologist/Wetland Scientist
Soil Science And Environmental Services, Inc.
95 Silo Drive
Rocky Hill, CT 06067
(203) 272-7837 phone
www.ssesinc.net

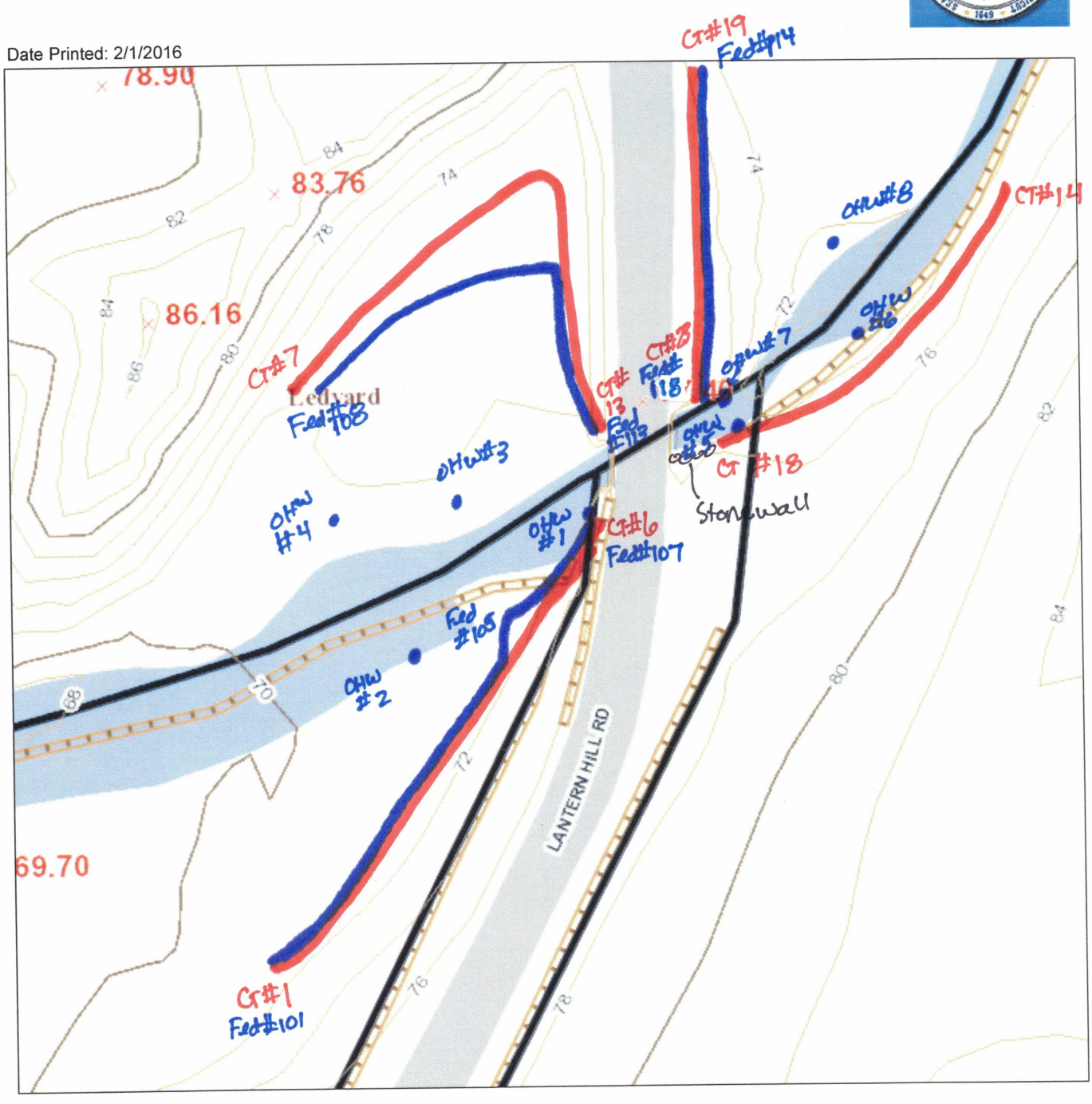
8/10/2022
Sketch

Town of Stonington

Geographic Information System (GIS)

orange CT# 1-6; 7-13; 14-18; 19-23
blue Fed # 101-107; 108-113; 114-118
blue OHW @ 8 locations
(elevation @ the Knot)

Date Printed: 2/1/2016



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Stonington and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 50 feet

0 50 Feet

N W E S

SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.

Wetland Delineations Ecological Studies Site Assessments Project Planning Soil Testing

February 4, 2016

ATTN: Seb Abdullah
WMC Consulting Engineers
87 Holmes Road
Newington, CT 06111

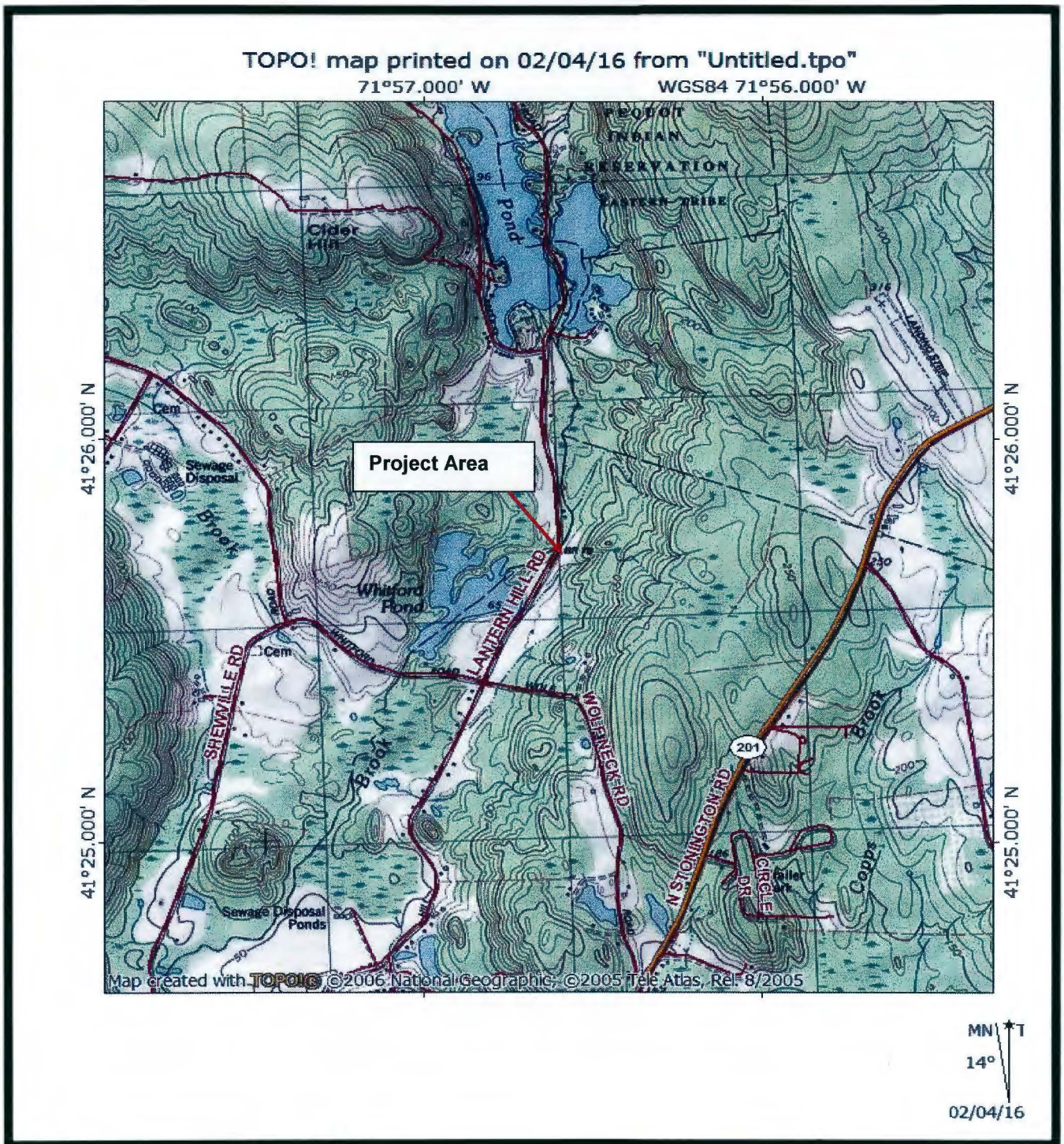
Re: Federal Wetland Delineation
Lantern Hill Road Bridge Over Whitford Brook, Ledyard, CT

Dear Mr. Abdullah:

In accordance with your request, Scott D. Stevens, Registered Professional Soil Scientist and Jennifer L. Beno, Biologist/Wetland Scientist, with Soil Science And Environmental Services, Inc. (SSES) inspected the Lantern Hill Road bridge over Whitford Brook project area in Ledyard, CT on January 29, 2016. The project area included approximately 100 feet up- and down-stream of the Lantern Hill Road bridge along Whitford Brook. The purpose of the inspection was to identify regulated wetlands and waters in the vicinity of the bridge project area.

The Lantern Hill Road bridge over Whitford Brook project area is located in the southeastern portion of the Town of Ledyard within a sparely developed residential area near the Stonington line (Figure 1). Regulated wetlands and watercourses are present in and near the project area, including CT Inland Wetlands, Federal Wetlands and a perennial watercourse. Definitions of waters and wetlands that are regulated by the State of Connecticut and Federal Government are presented in Appendix I. Rivers and streams are regulated by the State of CT as watercourses according to the Inland Wetlands and Watercourses Act. Rivers and streams are regulated by the Federal Government as "Waters of the U.S." Wetlands are defined differently by the State of CT and the Federal Government. CT Inland Wetlands are defined by soil types that are either poorly drained, very poorly drained, floodplain or alluvial. Federal Wetlands consist of areas that are inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

95 Silo Drive · Rocky Hill · Connecticut · 06067 · (203) 272-7837 · ssesinc@yahoo.com



SOIL SCIENCE and ENVIRONMENTAL SERVICES, INC.	U.S.G.S. Topography Map Lantern Hill Road Bridge Over Whitford Brook, Ledyard, CT	Date 2/4/16 Figure No. 1

A spade and auger were used to dig test holes for soils identification during the investigation. The vegetation communities and any physical indicators of hydrology on the site were also examined. The limits of the CT Inland Wetlands and the Federal Wetlands were determined to differ within the limits of the project area. The CT Inland Wetland boundaries were delineated with consecutively numbered orange survey tapes, while Federal Wetland boundaries were delineated with consecutively numbered blue survey tapes. Sketch maps of the delineated wetland boundaries are included as Figures 2 and 3.

CONNECTICUT INLAND WETLANDS & SOIL TYPES

CT inland wetlands were delineated within the project area approximately 100 feet up- and down-stream of the bridge along Whitford Brook within the bridge replacement project area. See Figure 2. The wetland soils within the project area include:

13 Walpole sandy loam (Aeric Endoaquepts)- This is a deep, poorly drained, friable, coarse-loamy textured soil that developed over sandy and gravelly, glacial outwash. Outwash soils occur in valleys, outwash plains and terraces.

15 Scarboro muck (Histic Humaquepts) - This is a deep, very poorly drained soil with a thin (less than 15 inches thick) mucky surface that is underlain by sandy and gravelly, glacial outwash. The outwash was derived from schist, gneiss and granite. Outwash soils occur in valleys, outwash plains and terraces.

109 Fluvaquents-Udifluvents This soil map unit consists of well drained to very poorly drained, nearly level soils that formed in very recent alluvium deposited by rivers and streams. The soils are occasionally to frequently flooded, which often results in stream scouring, lateral erosion and shifting of soil from place to place. Soil characteristics, such as texture and stoniness, are usually highly variable within short distances.

The non-wetland soils within the project area include:

21 Ninigret and Tisbury soils (Aquic Dystrudepts) – These are deep, moderately well drained, friable, coarse-loamy and loamy textured soils that developed over sandy and gravelly, glacial outwash derived from schist, gneiss and granite. Outwash soils occur in valleys, outwash plains and terraces.

32 Haven and Enfield soils (Typic Dystrudepts) – These are deep, well drained, friable, loamy textured soil that developed over sandy and gravelly, glacial outwash derived from schist, gneiss and granite. Outwash soils occur in valleys, outwash plains and terraces.

308 Udorthents, smoothed This is a well drained to moderately well drained soil area that has had two or more feet of the original soil surface altered by filling, excavation or grading activities. Udorthents, smoothed soils commonly occur on leveled land and fill landforms.

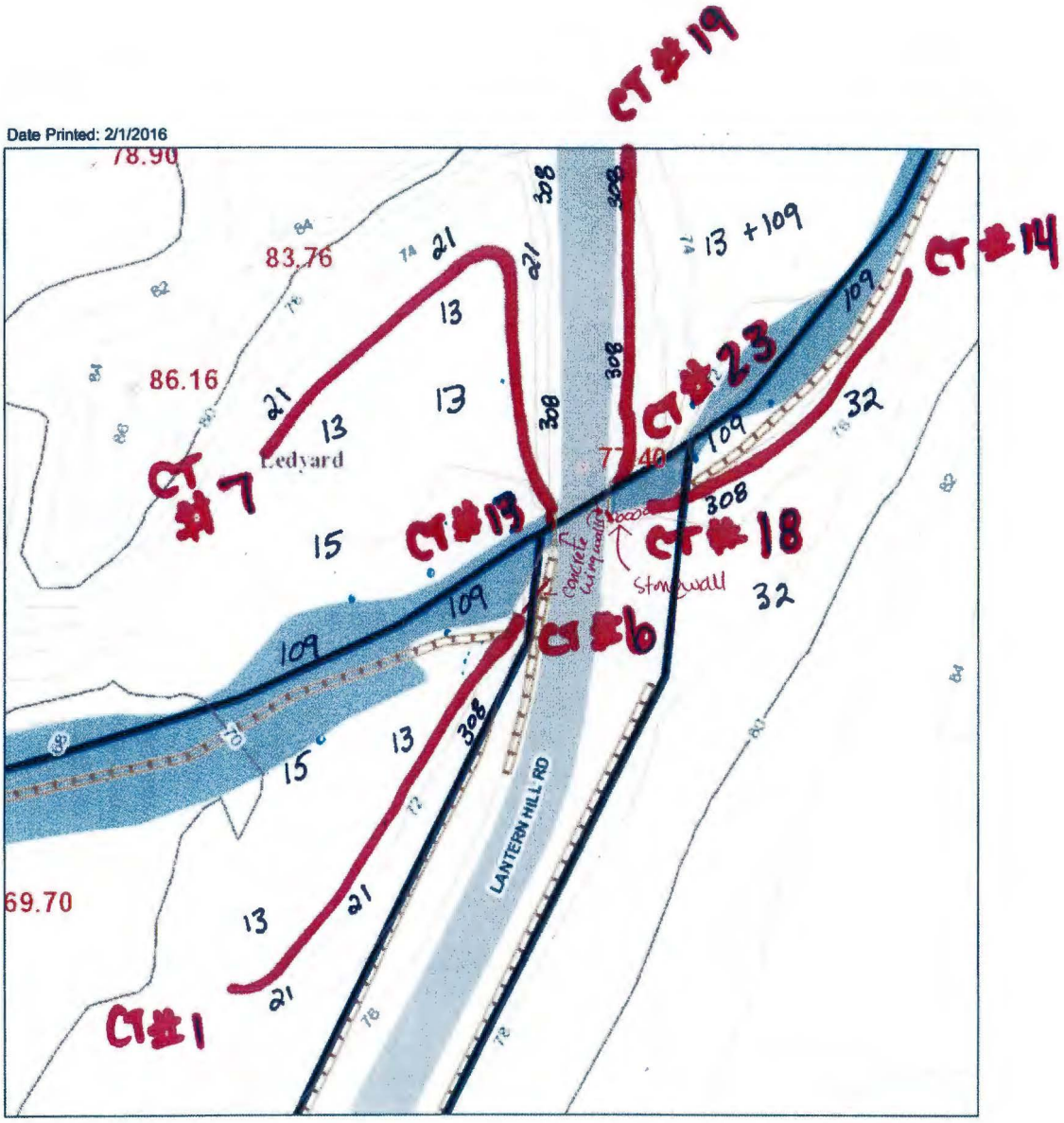


Figure 2 – CT Wetland Boundary Sketch Map (approximate)

FEDERAL WETLANDS

Federal wetlands were delineated within the Lantern Hill Road bridge over Whitford Brook project area. See Figure 3. The Federal wetlands consist of a deciduous wooded swamp community. One transect with two Federal Wetland Data Plots was established within the wooded swamp (Data Plot 116-W and 116-U). The approximate location of the transect and data plots are shown in Figure 3. The information gathered from each data plot was recorded on Federal Wetland Data Sheets. These sheets are included with this report.

Federal Wetland along Whitford Brook within Lantern Hill Road bridge project area (1/29/16).

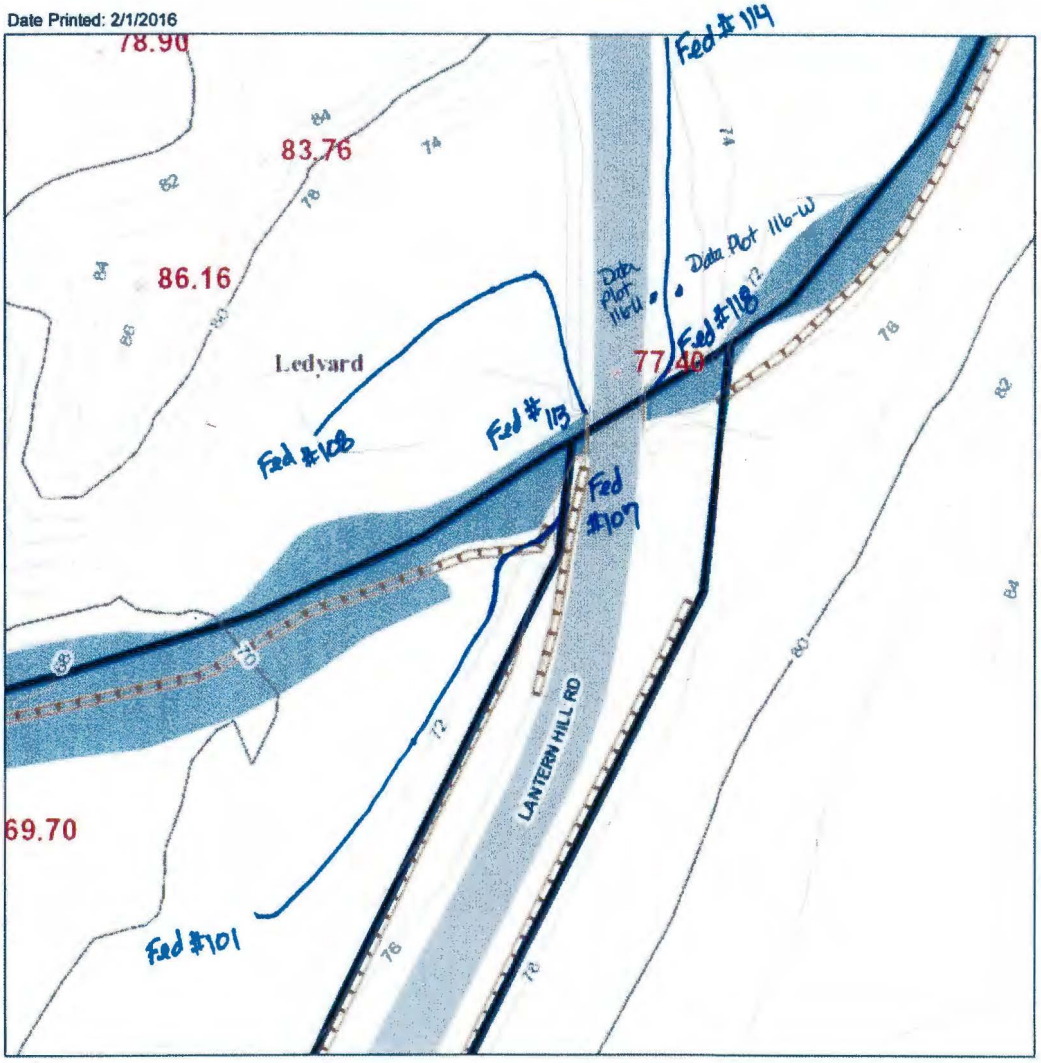


Figure 3 - Sketch of Federal Wetland Boundary (approximate)

ORDINARY HIGH WATER MARK IDENTIFICATION

The lateral limits of U.S. Army Corps jurisdiction for non-tidal rivers, streams and water bodies extends to the ordinary high water mark (OHW), in the absence of adjacent wetlands. The Corps defines the term "ordinary high water mark" as the following: "means the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." 33 CFR 328.3(e). The Corps recommends that whenever possible the investigator should consider the former indicators along with a number of others, that include: wracking; vegetation matted down, bent or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; beds and banks; water staining; and change in plant community.

The above-listed indicators were utilized during the January 29, 2016 investigation to determine the ordinary high water along the Whitford Brook watercourse within the Lantern Hill Road bridge project area. Blue survey tapes were tied onto branches and plant stems at several locations upstream and downstream of the bridge along the river banks to identify the OHW elevation. The knot of the tied survey tape marks the OHW elevation. A sketch showing locations of the OHW boundary survey tapes is presented in Figure 3.

Respectfully submitted,

SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.

Scott D. Stevens

Jennifer L. Beno

Scott D. Stevens
Registered Professional Soil Scientist

Jennifer L. Beno
Biologist/Wetland Scientist

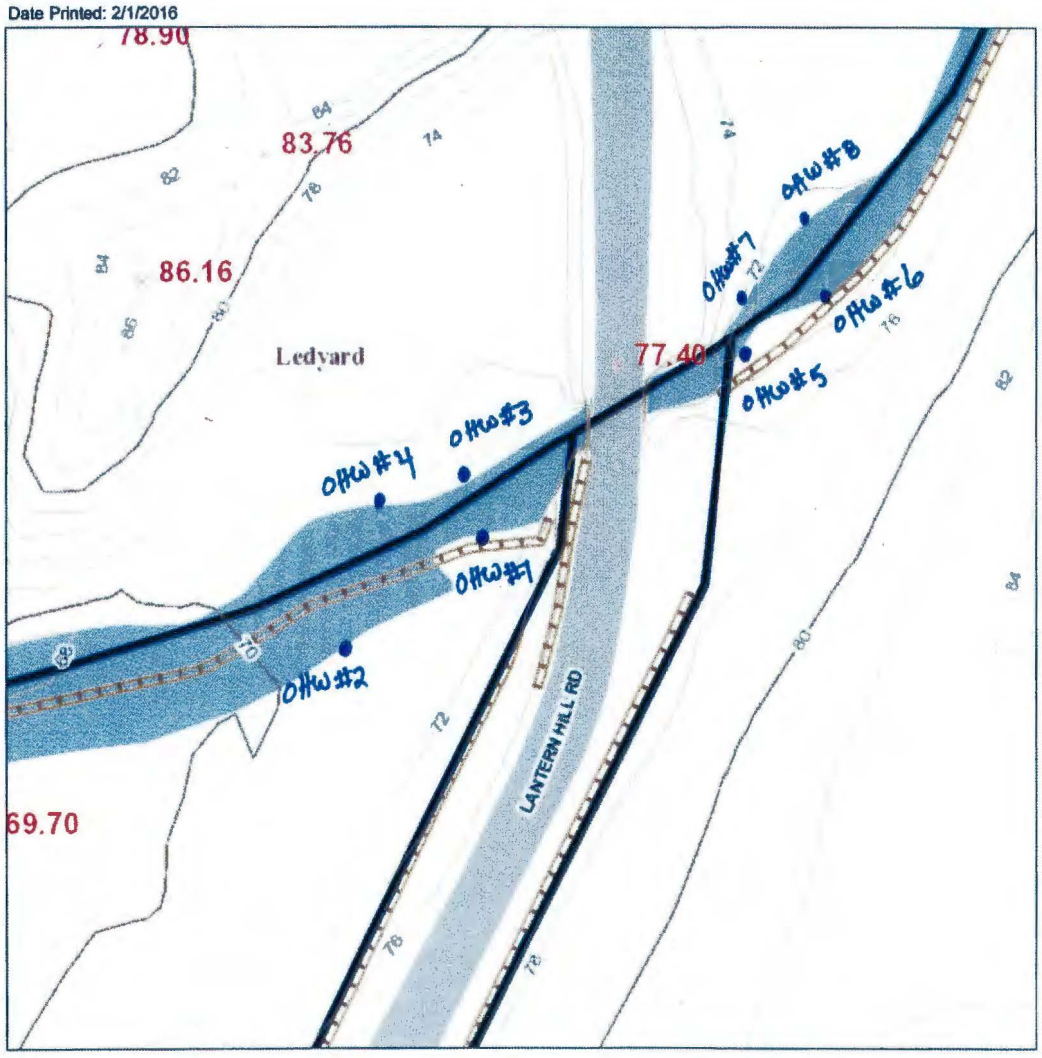


Figure 4 - Sketch of Ordinary High Water Flag Locations (approximate)

APPENDIX I

REGULATED WATERS AND WETLANDS BY THE STATE OF CT AND FEDERAL GOVERNMENT

I. State of Connecticut

Wetlands and watercourses are regulated in the State of Connecticut by the Connecticut General Statutes, Chapter 440, section 22a-28 to 22a-45. These Statutes are divided into the Inland Wetlands and Watercourses Act (sections 22a-36 to 22a-45) and the Tidal Wetlands Act (sections 22a-28 to 22a-35). Definitions of the resources are provided in the statutes.

Inland Wetlands, "means land, including submerged land, not regulated pursuant to sections 22a-28 to 22a-35, inclusive, which consist of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the Natural Resources Conservation Service of the United States Department of Agriculture" section 22a-38(15).

Watercourses "means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private which are contained within, flow through or border upon this state or any portion thereof, not regulated pursuant to sections 22a-28 to 22a-35, inclusive. Intermittent watercourses shall be delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) Evidence of scour or deposits of alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation" section 22a-38(16).

Tidal Wetlands are defined as "those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water; and upon which may grow or be capable of growing some but not necessarily all, of the following:" (includes plant list) section 22a-29(2).

II. Federal Government

The Federal Government regulates waters and wetlands in accordance with the Code of Federal Regulations, Title 33, Parts 320 through 330 (33 CFR parts 320 to 330). Regulated areas include navigable waters; interstate waters; tributaries to navigable and interstate waters, including adjacent wetlands; and certain other waters and wetlands of the U.S. The United States Army Corps of Engineers has been authorized to regulate these waters and wetlands by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Definitions of wetlands and watercourses that are regulated by the Corps are found in Parts 328 and 329 of the Code.

Waters of the United States as defined in Part 328 means, " (1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U.S. under the definition; (5) tributaries of waters indentified in 1 thru 4; (6) territorial seas; and (7) wetlands adjacent to waters that were identified in 1 thru 6. Waters of the United States do not include prior converted cropland" (33 CFR Part 328.3 (a)).

Wetlands are a subset of waters of the United States and are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33CFR Part 328.3(b)). The 1987 U.S. Corps of Engineers Delineation Manual and the Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (dated July 2008) provide information and procedures for conducting Federal Wetland delineation. The methodology established by the Federal Government uses a three parameter approach utilizing hydrologic indicators, hydrophytic vegetation and hydric soils for identifying Federal Wetlands.

Navigable waters of the United States as defined in Part 329 mean "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33CFR Part 329.2).

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lantern Hill Rd over Whitford Brook City/County: Ledyard / New London Sampling Date: 1/29/16

Applicant/Owner: WMC / Town of Ledyard State: CT Sampling Point: W6-U

Investigator(s): Scott Stevens + Jenn Bine - SSES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): LRR Lat: ±41°25'44.94" Long: ±-71°56'36.32" Datum: _____

Soil Map Unit Name: Udorthents NWI classification: PIA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? yes Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 111c-U

Tree Stratum (Plot size: ±30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	Y	FAC
2. Fraxinus americana	30	Y	FACU
3. Ulmus rubra	20	N	FAC
4.			
5.			
6.			
7.			
	80%	= Total Cover	

Sapling/Shrub Stratum (Plot size: ±5')			
1. Rosa multiflora	10	Y	FACU
2. Acer saccharum	10	Y	FACU
3. Lindera benzoin	5	N	FACW
4.			
5.			
6.			
7.			
	25%	= Total Cover	

Herb Stratum (Plot size: ±5')			
1. Eurybia divaricata	5	Y	FACU
2. Vitis labrusca	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10%	= Total Cover	

Woody Vine Stratum (Plot size: ±30')			
1. Vitis labrusca	10	Y	FACU
2.			
3.			
4.			
	10%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: 111e-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	10YR3/2						Stony loamy sand - fill	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lantern Hill Rd over Whitford Brook City/County: Ledyard / New London Sampling Date: 1/29/16

Applicant/Owner: UMC / Town of Ledyard State: CT Sampling Point: 116-W

Investigator(s): Scott Stevens + Glenn Bero - SSES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR or MLRA): LRR Lat: ± 41°25'44.91" Long: ± -71°56'36.13" Datum: _____

Soil Map Unit Name: Walpole sandy loam + Fluvaquents-Udifluvents NWI classification: PFO1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): ± 10
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): ± 8

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Data plot 116-W is situated at an elevation which is within approximately 12" of Whitford Brook and periodically gets flooded.

VEGETATION – Use scientific names of plants.

Sampling Point: 116-W

Tree Stratum (Plot size: ±30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50	Y	FAC
2. Ulmus rubra	30	Y	FAC
3. Fraxinus americana	10	N	FACU
4.			
5.			
6.			
7.			
	90%	= Total Cover	

Sapling/Shrub Stratum (Plot size: ±15')			
1. Lindera benzoin	50	Y	FACW
2. Rosa multiflora	40	Y	FACU
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	

Herb Stratum (Plot size: ±5')			
1. Glyceria striata	25	Y	OBL
2. Rosa multiflora	25	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50%	= Total Cover	

Woody Vine Stratum (Plot size: ±30')			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 116-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2						Stony sandy loam	
10-12	10YR4/3		10YR4/6				stony loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ✓ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

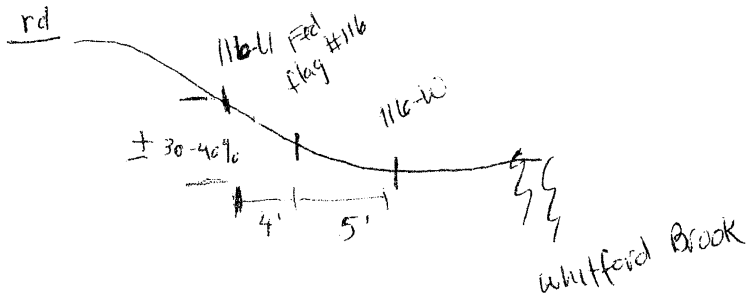
Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:



Subject:	RE: Lantern Hill Road Over Whitford Brook, Ledyard, BNI 37001, Initial Fisheries Coordination
From:	Murphy, Brian (Brian.Murphy@ct.gov)
To:	KElder@WMCENGINEERS.COM;
Cc:	Robert.Gilmore@ct.gov; Jeff.Caiola@ct.gov; Steve.Gephard@ct.gov; Mindy.Barnett@ct.gov; JCostello@WMCENGINEERS.COM; SMcdonnell@WMCENGINEERS.COM; Sdeledda@stonington-ct.gov; public.works.director@ledyardct.org; standrzejewski@sbcglobal.net;
Date:	Friday, May 20, 2016 1:41 PM

Hi Keegan,

Appreciate the additional information. I agree that fish passage will not be an issue with a box culvert dropped 2 ft. below grade, however instream habitat features that are very unique at this location would be eliminated and could not be replicated with the installation of a box culvert. I'd suggest investigating a 3 sided rigid frame structure, basically box culvert without a floor for this location which would preserve and protect instream habitat features. That being said, there are other state/federal regulatory staff that would review this project thus soliciting pre-application comments from those folks may provide some further insight into what type of structure would be allowed to be permitted. Thanks.

Regards,

Brian D. Murphy, Senior Fisheries Habitat Biologist

Inland Fisheries Division

Habitat Conservation and Enhancement Program

Connecticut Department of Energy and Environmental Protection
Eastern District Headquarters

209 Hebron Road

Marlborough, CT 06447
P: 860.295-9523|F: 860.295.8175|brian.murphy@ct.gov

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

On Thursday, May 12, 2016 1:27 PM, "Murphy, Brian" <Brian.Murphy@ct.gov> wrote:

Hi Steve,

Per your request, I have had an opportunity to provide preapplication comments relative to the replacement of Lantern Hill Road Bridge #137001 spanning Whitford Brook in Ledyard. Per your March 9, 2016 email correspondence, preliminary design concepts involve replacement of the existing clear span bridge with either single or twin box culverts. Enclosed are my preliminary comments regarding fish passage and habitat needs.

Fisheries Resources

Whitford Brook supports a diversity of resident and diadromous fish that includes: native brook trout, wild brown trout, longnose dace, tessellated darter, redbreast sunfish, hatchery reared adult trout and American eel. Whitford Brook and nearby Whitford Pond also support bridle shiner (Notropis bifrenatus) which is a State-listed Fish Species of Special Concern. Bridle shiner presence is commonly associated with open water patches surrounded by dense submergent/emergent aquatic vegetation. These habitats are just downstream of this road crossing closer to the inlet of Whitford Pond. Whitford Brook is also undergoing the restoration of anadromous river herring (alewife and blueback herring). With the removal of the Hyde Pond Dam in 2015, herring can now penetrate as far as the base of the Whitford Pond Dam. The long term restoration goal is to restore fish upstream into Lantern Hill Pond, the dam of which was repaired in 2012 and incorporated a concrete pool and weir fishway.

Current conditions at Lantern Hill Road Bridge #137001 provide for unrestricted fish passage at this crossing. The channel ranges from 3 to 5 feet deep in this area supporting a gravel/cobble substrate base interspersed with small to large boulders. Existing narrow, deep waters provide a diverse mixture of microhabitats providing good cover, velocity refugia and feeding stations for the fish community.

Recommendations

1. Inland Fisheries staff request pursuing bridge replacement options which least disturb and alter instream habitats. As such, we highly recommend replacement at this location with either a clear span bridge or 3 sided structure that does not contain an artificial bottom or floor.

2. As design proceeds, please provide more detail regarding any future instream work associated with substructure rehabilitation and any installation of riprap. It is important to minimize the overall footprint and instream placement of riprap that might be required for scour protection. Mitigation may be required for excessive filling associated with scour protection activities.

3. As a best management practice, any "unconfined" instream work within Whitford Brook should be restricted to the period from June 1 to September 30, inclusive. A June 1 through September 30 timeframe can be utilized as an effective mitigation measure for construction related disturbances due to the following reasons: (1) timeframe will serve to protect the spawning, egg incubation, and fry development of resident fishes, (2) timeframe does not interfere with seasonal migratory behaviors, and (3) timeframe coincides with historic low rainfall levels in Connecticut a period in which instream construction activities such as dewatering, excavation, trenching, and cofferdam placement are most effective.

Let me know if you have any further questions/concerns with these comments. Thanks.

Regards,
Brian D. Murphy, Senior Fisheries Habitat Biologist
Inland Fisheries Division
Habitat Conservation and Enhancement Program
Connecticut Department of Energy and Environmental Protection
Eastern District Headquarters
209 Hebron Road
Marlborough, CT 06447
P: 860.295-9523|F: 860.295.8175|brian.murphy@ct.gov

Natural Diversity Data Base Areas

LEDYARD, CT

June 2022

State and Federal Listed Species

Critical Habitat

Town Boundary

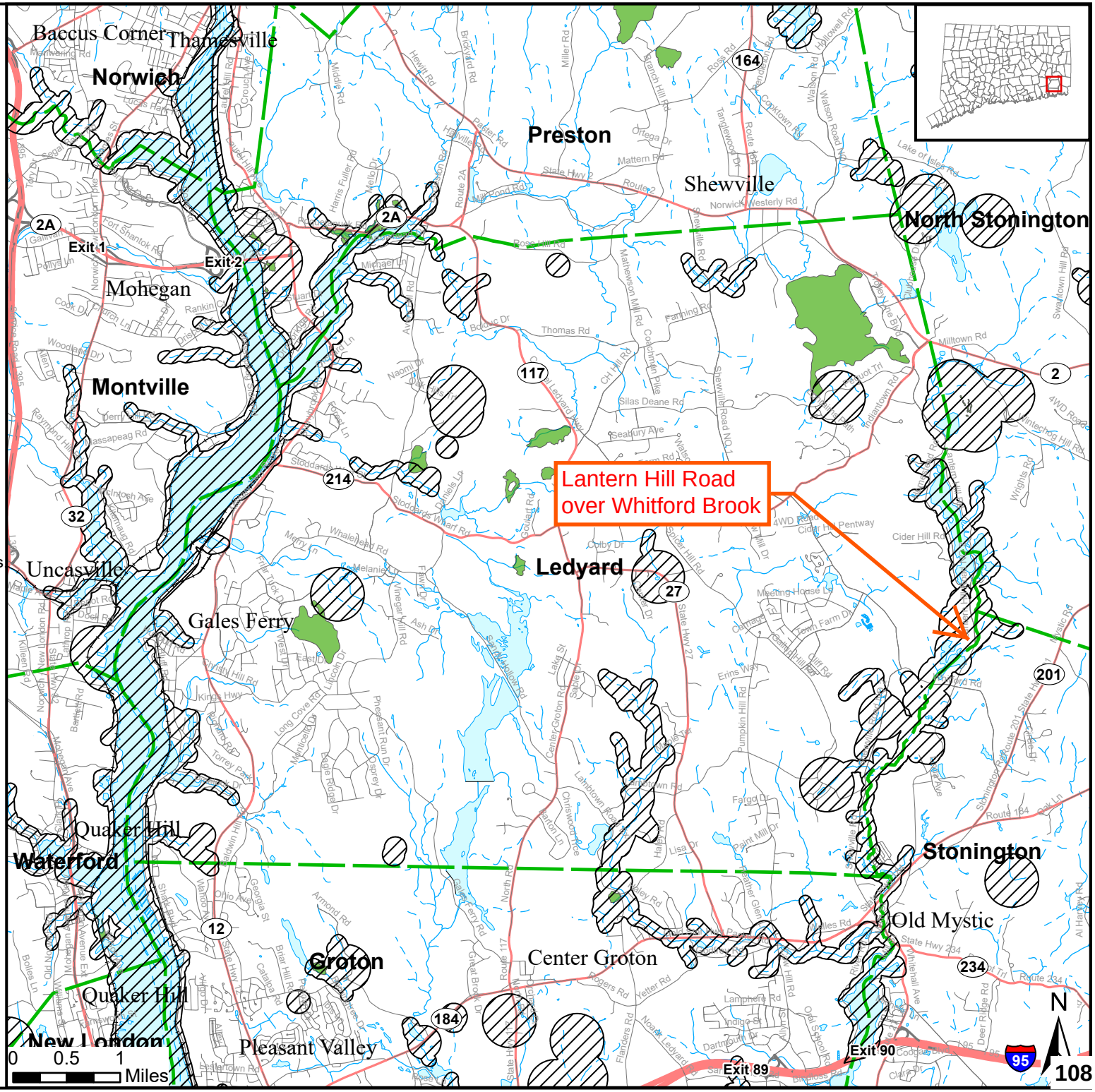
NOTE: This map shows general locations of State and Federal Listed Species and Critical Habitats. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a variety of data sources . Exact locations of species have been buffered to produce the generalized locations.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas If the project is within a hatched area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.
https://portal.ct.gov/deep-nddbrequest

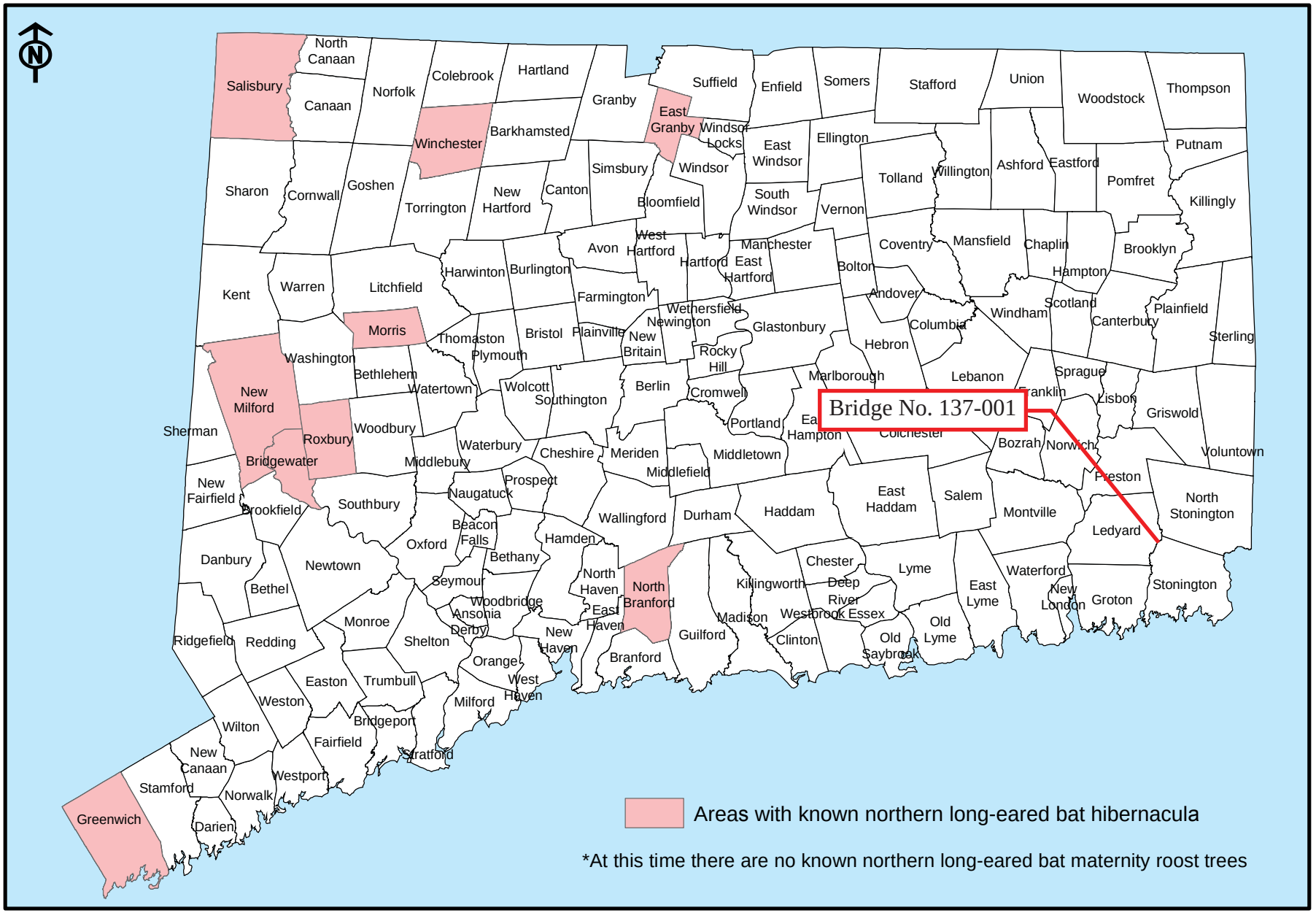
Use the CTECO Interactive Map Viewers at http://cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St, Hartford, CT 06106
email: deep.nddbrequest@ct.gov
Phone: (860) 424-3011

Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division



Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance



February 1, 2016

For information on federal requirements visit http://www.fws.gov/midwest/endangered/mammals/nleb/

AQUIFER PROTECTION AREAS

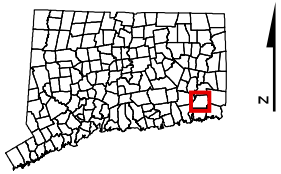
Ledyard, CT

December 23, 2021

- Level A APA (Final Adopted)
- Level A APA (Final)
- Level B APA (Preliminary)
- Town Boundary

NOTE: The Aquifer Protection Areas were delineated through Connecitcut's Level A and Level B Mapping Processes. Aquifer Protection Areas are delineated for active public water supply wells in stratified drift that serve more than 1000 people, in accordance with Sections 22a-354c and 22a-354z of the Connecticut General Statutes. Level B Mapping delineates a preliminary aquifer protection area, providing an estimate of the land area from which the well draws its water. Level A Mapping delineates the final Aquifer Protection Area, which becomes the regulatory boundary for land use controls designed to protect the well from contamination. As Level A Mapping is completed for each well field and approved by DEEP, it replaces the Level B Mapping. Final Adopted Level A Areas are those where towns have land use regulations for them.
Masschusetts and Rhode Island Wellhead Protection Areas may be shown for informational purposes.

QUESTIONS:
Bureau of Water Protection and Land Reuse
Planning and Standards Division
Phone: (860) 424-3020
www.ct.gov/deep/aquiferprotection



STATE OF CONNECTICUT
DEPARTMENT OF
ENERGY & ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127

North Stonington

Lantern Hill Road over Whitford Brook

Ledyard

A 116
Tower Division
04/01/2009

A 152
Loftus Site
04/03/2007

A 34
Lantern Hill

A 34
Lantern Hill
04/20/2010

Stonington

Soil Map—State of Connecticut
(Lantern Hill Road Bridge No. 137-001)

Map Scale: 1:1,910 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 15, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2011—May 1, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
15	Scarboro muck, 0 to 3 percent slopes	3.5	24.8%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	0.1	0.9%
32A	Haven and Enfield soils, 0 to 3 percent slopes	0.0	0.2%
32B	Haven and Enfield soils, 3 to 8 percent slopes	7.2	51.4%
38E	Hinckley loamy sand, 15 to 45 percent slopes	0.9	6.3%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	2.3	16.2%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	0.0	0.1%
Totals for Area of Interest		**13.9**	**100.0%**

Connecticut Department of
ENERGY &
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79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

STATEWIDE INLAND WETLANDS & WATERCOURSES ACTIVITY REPORTING FORM

Pursuant to section 22a-39(m) of the General Statutes of Connecticut and section 22a-39-14 of the Regulations of Connecticut State Agencies, inland wetlands agencies must complete the Statewide Inland Wetlands & Watercourses Activity Reporting Form for **each** action taken by such agency.

This form may be made part of a municipality's inland wetlands application package. If the municipality chooses to do this, it is recommended that a copy of the Town and Quadrangle Index of Connecticut and a copy of the municipality's subregional drainage basin map be included in the package.

Please remember, the inland wetlands agency is responsible for ensuring that the information provided is **accurate** and that it reflects the **final** action of the agency. Incomplete or incomprehensible forms will be mailed back to the agency. Instructions for completing the form are located on the following pages.

The inland wetlands agency shall mail completed forms for actions taken during a calendar month no later than the 15th day of the following month to the Department of Energy and Environmental Protection (DEEP). Do **not** mail this cover page or the instruction pages. Please mail **only** the **completed** reporting form to:

DEEP Land & Water Resources Division
Inland Wetlands Management Program
79 Elm Street, 3rd Floor
Hartford, CT 06106

Questions may be directed to the DEEP's Inland Wetlands Management Program at (860) 424-3019.

INSTRUCTIONS FOR COMPLETING

THE STATEWIDE INLAND WETLANDS & WATERCOURSES ACTIVITY REPORTING FORM

Use a separate form to report EACH action taken by the Agency. Complete the form as described below.
Do NOT submit a reporting form for withdrawn actions.

PART I: Must Be Completed By The Inland Wetlands Agency

1. Choose the year and month the Inland Wetlands Agency took the action being reported. If multiple actions were taken regarding the same project or activity then multiple forms need to be completed.

2. Choose ONE code letter to describe the final action or decision taken by the Inland Wetlands Agency. Do NOT submit a reporting form for withdrawn actions. Do NOT enter multiple code letters (for example: if an enforcement notice was given and subsequent permit issued - two forms for the two separate actions are to be completed).

   A = A Permit Granted by the Inland Wetlands Agency (not including map amendments, see code D below)
   B = Any Permit Denied by the Inland Wetlands Agency
   C = A Permit Renewed or Amended by the Inland Wetlands Agency
   D = A Map Amendment to the Official Town Wetlands Map - or -
   An Approved/Permitted Wetland or Watercourse Boundary Amendment to a Project Site Map
   E = An Enforcement Action: Permit Revocation, Citation, Notice of Violation, Order, Court Injunction, or Court Fines
   F = A Jurisdictional Ruling by the Inland Wetlands Agency (i.e.: activities "permitted as of right" or activities considered non-regulated)
   G = An Agent Approval pursuant to CGS 22a-42a(c)(2)
   H = An Appeal of Agent Approval Pursuant to 22a-42a(c)(2)

3. Check "yes" if a public hearing was held in regards to the action taken; otherwise check "no".

4. Enter the name of the Inland Wetlands Agency official verifying that the information provided on this form is accurate and that it reflects the FINAL action of the agency.

PART II: To Be Completed By The Inland Wetlands Agency Or The Applicant - If Part II is completed by the applicant, the applicant MUST return the form to the Inland Wetlands Agency. The Inland Wetlands Agency MUST ensure that the information provided is accurate and that it reflects the FINAL action of the Agency.

5. Enter the name of the municipality for which the Inland Wetlands Agency has jurisdiction and in which the action/project/activity is occurring.

   Check "yes" if the action/project/activity crosses municipal boundaries and enter the name(s) of the other municipality(ies) where indicated. Check "no" if it does not cross municipal boundaries.

6. Enter the USGS Quad Map name or number (1 through 115) as found on the Connecticut Town and Quadrangle Index Map (the directory to all USGS Quad Maps) that contains the location of the action/project/activity. Click on the following website for USGS Quad Map information:
   http://ct.gov/deep/lib/deep/gis/resources/Index_NamedQuadTown.pdf

   ALSO enter the four-digit identification number of the corresponding Subregional Drainage Basin in which the action/project/activity is located. If the action/project/activity is located in more than one subregional drainage basin, enter the number of the basin in which the majority of the action/project/activity is located. Town subregional drainage basin maps can be found at UConn – CLEAR's website: http://clear.uconn.edu/data/map_set/index.htm

7. Enter the name of the individual applying for, petitioning, or receiving the action.

8. Enter the name and address or location of the action/project/activity. Check if the action/project/activity is TEMPORARY or PERMANENT in nature. Also provide a brief DESCRIPTION of the action/project/activity. It is always best to provide as much information as possible (i.e., don't just state "forestry", provide details such as "20 acre forestry harvest, permit required for stream crossing".)

9. Carefully review the list below and enter ONLY ONE code letter which best characterizes the action/project/activity. All state agency projects must code "N".

A = Residential Improvement by Homeowner
B = New Residential Development for Single Family Units
C = New Residential Development for Multi-Family / Condos
D = Commercial / Industrial Uses
E = Municipal Project
F = Utility Company Project
G = Agriculture, Forestry or Conservation
H = Wetland Restoration, Enhancement, Creation
I = Storm Water / Flood Control
J = Erosion / Sedimentation Control
K = Recreation / Boating / Navigation
L = Routine Maintenance
M = Map Amendment
N = State Agency Project
P = Other (this code includes the approval of concept plans with no-on-the-ground work)

10. Enter between one and four code numbers to best characterize the project or activity being reported. Enter "NA" if this form is being completed for the action of map amendment. You MUST provide code 12 if the activity is located in an established upland review area. You MUST provide code 14 if the activity is located beyond the established upland review area or no established upland review area exists.

1 = Filling
2 = Excavation
3 = Land Clearing / Grubbing (no other activity)
4 = Stream Channelization
5 = Stream Stabilization (includes lakeshore stabilization)
6 = Stream Clearance (removal of debris only)
7 = Culverting (not for roadways)
8 = Underground Utilities Only (no other activities)
9 = Roadway / Driveway Construction
10 = Drainage Improvements
11 = Pond, Lake Dredging / Dam Construction
12 = Activity in an Established Upland Review Area
14 = Activity in Upland

Examples: Jurisdictional ruling allowing construction of a parking lot in an upland where the municipality does not have an established upland review area must use code 14, other possible codes are 2 and 10. Permitted construction of a free standing garage (residential improvement by homeowner) partially in an established upland review area with the remainder in the upland must use code 12 and 14, other possible codes are 1 and 2.

11. Leave blank for TEMPORARY alterations but please indicate action/project/activity is temporary under question #8 on the form. For PERMANENT alterations, enter in acres the area of wetland soils or watercourses altered. Include areas that are permanently altered, or are proposed to be, for all agency permits, denials, amendments, renewals, jurisdictional rulings, and enforcement actions. For those activities that involve filling or dredging of lakes, ponds or similar open water bodies enter the acres filled or dredged under "open water body". For those activities that involve directly altering a linear reach of a brook, river, lakeshore or similar linear watercourse, enter the total linear feet altered under "stream". Remember that these figures represent only the acreage altered not the total acreage of wetlands or watercourses on the site. You MUST provide all information in ACRES (or linear feet as indicated) including those areas less than one acre. To convert from square feet to acres, divide square feet by the number 43,560. If this report is being completed for an agency jurisdictional ruling and detailed information is not available, provide an estimate. Enter zero if there is no alteration.

12. Enter in acres the area of upland altered as a result of an ACTIVITY REGULATED BY the inland wetlands agency, or as a result of an AGENT APPROVAL pursuant to CGS section 22a-42a(c)(2). Leave blank for TEMPORARY alterations but please indicate action/project/activity is temporary under question #8 on the form. Include areas that are permanently altered, or proposed to be permanently altered, for all agent approvals, agency permits, denials, amendments, renewals, jurisdictional rulings, and enforcement actions. You MUST provide all information in ACRES including those areas less than one acre. See directions above (#11) for conversion factor. If this report is being completed for an agent approval or an agency jurisdictional ruling and detailed information is not available, provide an estimate. Enter zero if there is no alteration.

13. Enter the acres that are, or are proposed to be, restored, enhanced or created for all agency permits, denials, amendments, renewals, jurisdictional rulings and enforcement actions. NOTE restored or enhanced applies to previously existing wetlands or watercourses. Created applies to a non-wetland or non-watercourse area which is converted into wetlands or watercourses (question #10 must provide 12 and/or 14 as an answer, and question #12 must also be answered). You MUST provide all information in ACRES including those areas less than one acre. See directions above (#11) for conversion factor. Enter zero if there is no restoration, enhancement or creation.

PART III: To Be Completed By The DEEP - Please leave this area blank. Incomplete or incomprehensible forms will be mailed back to the inland wetlands agency.

Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

GIS CODE #: ___ ___ ___ ___ ___ ___ ___ ___ ___
For DEEP Use Only

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Statewide Inland Wetlands & Watercourses Activity Reporting Form

Please complete and mail this form in accordance with the instructions on pages 2 and 3 to:
DEEP Land & Water Resources Division, Inland Wetlands Management Program, 79 Elm Street, 3rd Floor, Hartford, CT 06106
Incomplete or incomprehensible forms will be mailed back to the inland wetlands agency.

PART I: Must Be Completed By The Inland Wetlands Agency

1. DATE ACTION WAS TAKEN: year: _____ month: _____
2. ACTION TAKEN (see instructions, only use one code): _____
3. WAS A PUBLIC HEARING HELD (check one)? yes ☐ no ☐
4. NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:
   (print name) _____ (signature) _____

PART II: To Be Completed By The Inland Wetlands Agency Or The Applicant

5. TOWN IN WHICH THE ACTION IS OCCURRING (print name): Ledyard and Stonington
   does this project cross municipal boundaries (check one)? yes ☑ no ☐
   if yes, list the other town(s) in which the action is occurring (print name(s)): Ledyard, Stonington
6. LOCATION (see instructions for information): USGS quad name: Old Mystic or number: 88
   subregional drainage basin number: 2104
7. NAME OF APPLICANT, VIOLATOR OR PETITIONER (print name): Towns of Ledyard and Stonington
8. NAME & ADDRESS / LOCATION OF PROJECT SITE (print information): Lantern Hill Rd Bridge #137-001 over Whitford Brook
   briefly describe the action/project/activity (check and print information): temporary ☐ permanent ☑ description:
   Existing bridge replacement
9. ACTIVITY *PURPOSE* CODE (see instructions, only use one code): E
10. ACTIVITY *TYPE* CODE(S) (see instructions for codes): 9, 1, 2, 12
11. WETLAND / WATERCOURSE AREA ALTERED (must provide acres or linear feet):
    wetlands: 0.007 acres open water body: 0.013 acres stream: 70 linear feet
12. UPLAND AREA ALTERED (must provide acres): 0.231 acres
13. AREA OF WETLANDS / WATERCOURSES RESTORED, ENHANCED OR CREATED (must provide acres): 0 acres

DATE RECEIVED: **PART III: To Be Completed By The DEEP** DATE RETURNED TO DEEP:

FORM COMPLETED: YES NO FORM CORRECTED / COMPLETED: YES NO

File #: 22-552 **Agenda Date:** 10/4/2022 **Agenda #:**

TOWN OF LEDYARD

Wetlands Official's Office

Len Johnson, Wetlands Official

741 Colonel Ledyard Highway, Ledyard, CT 06339

Phone: (860) 303-2879

Wetlands@LedyardCT.Org

Wetlands Official's Report: IWWC Regular Meeting October 4, 2022

URA Permits:

Permit IWWC#22-16URA – Multi-Use Pathway – Town of Ledyard

- Property owner/Applicant: Weston & Sampson/Fred Allyn, III
- Proposed construction of a multi-use pathway along Colonel Ledyard Highway
- There will be storm drainage improvements along the highway significantly improving water quality measures.
- All catch basins will have two-foot sumps, outfalls will have riprap splash pads, and a hydrodynamic separator before proposed outfall into the wetlands.

Permit IWWC#22-19URA – Lantern Hill Rd. Bridge – Town of Ledyard

- Property owner/Applicant: Town of Ledyard
- Previously approved application that has expired
- New application has funding from Federal, State, and Local (Ledyard, Stonington) governments.

Site Walks

Sept 12

- Pumpkin Hill Rd.- Check on report of logging operation. We drove all around the area and didn't see any evidence of logging or and heavy equipment use.

- 10 Arrowhead Lane- Met with David LaChapelle who was cited by DEEP for work that he had done in the tidal wetlands review area without a permit. He needed help in filling out forms required by DEEP as part of his remediation. Even though this is not in our jurisdiction, we looked at the work he did which consisted of capping off an existing stone wall along Poquetanuck Cove. If this were in an upland area, it would be considered maintenance but DEEP is being aggressive in their actions and levied a hefty fine as well.

- 94, 96, 98 Stoddard's Wharf Rd. - Met with Peter Gardner and Harry Heller who are developing the property with 36 three-bedroom houses on 9.21 acres. This is affordable housing which overrides zoning regulations. The houses all have wells and septic systems with at least three of them being within 30' of a watercourse owned by the Town of Groton. They have been notified but as yet have not responded.

Sept 15

- 615 Shewville Rd. I had previously approved the new house as shown on the plan which was all outside of the URA. When Tom went to the site to check on a zoning issue, he noticed a wet area in the road over an old crossing. We both agreed that it looked like a wetland crossing and contacted Peter Gardner. He agreed to meet us there at a later date.

- 97 Lambtown Rd. -Tom and I met with the Lamb family who are dairy farmers. They have a rather large farm pond that is overgrown with vegetation and is restricting their operations. They would like to dredge the pond and make an area where the cows water more accessible to them. Right now, it's very muddy. This is an allowed use for a farming operation but still requires IWWC approval. They had a recent plan of the property that showed boundaries and had the wetlands delineated. They will be applying for an as-of-right permit.

Sept 23

- 615 Shewville Rd. – I met with Peter Gardner, Ian Cole, and Michael Bliven, property owner, to look at the crossing. Ian Explained why the crossing should not be called a wetlands and showed some historic aerial photos showing the crossing. Also Mr. Bliven said that his family has owned the property for 200 years and flooding was never an issue. Peter suggested using riprap to widen the rode to the required 12' and fill in the swale to make the road level. Everyone agreed that this was a sensible alternative. Peter will update the plan to show this.

Sept 26

- Jordan Sostre, 8 Clark Lane asked me to look at his property to see if had any suggestions on how he could prevent water from his neighbors pond from flooding his land. The neighbor has a small pond that overflows under heavy rain. We agreed that digging a sump and placing a pipe along his driveway and emptying into an existing storm drain should solve the problem. No work will be done within the 100' URA.

Len Johnson
Ledyard IWWC Official

File #: 22-550 **Agenda Date:** 10/4/2022 **Agenda #:**

TOWN OF LEDYARD

Inland Wetland and Water Courses Commission

Meeting Minutes - Draft Minutes

741 Colonel Ledyard Highway
Ledyard, Connecticut 06339

Chairman Justin DeBrodt

Regular Meeting

Tuesday, September 6, 2022 **7:00 PM** **Council Chambers -Hybrid Format**

I CALL TO ORDER

Chairman Debrodt called the Regular Meeting of the Inland Wetlands and Watercourses Commission to order at 7:00pm in the Town Hall Annex Council Chambers and via Zoom.

Present Chair Justin DeBrodt
Vice Chair Paul Maugle
Commissioner Dan Pealer
Commissioner Lynmarie Thompson
Commissioner Beth E. Ribe
Alternate Member Gary St. Vil

Absent Alternate Member Glen Graebner

II ROLL CALL

In addition to the Commission Members, the following staff were present: Juliet Hodge, Director of Planning and Development, Wetlands Enforcement Officials Len Johnson and Wetlands and Zoning Official, Thomas Thomas, III.

Present Chair Justin DeBrodt
Vice Chair Paul Maugle
Commissioner Dan Pealer
Commissioner Lynmarie Thompson
Commissioner Beth E. Ribe

Excused Alternate Member Gary St. Vil

Absent Alternate Member Glen Graebner

III. CITIZENS COMMENTS

None

IV. PRESENTATIONS / INFORMATIONAL ITEMS

None

V. OLD BUSINESS

A. IWWC#22-16URA for installation of a multi-use pathway and sidewalk extensions that will

provide connectivity between the Town Center and Ledyard High School.

Steve Masalin, Town Public Works Director introduced the project to the IWWC. Nick DePalmero from Weston & Sampson was also present to provide details about the project. The project is being funded in part with a LOTCIP grant and Town ARPA funds.

The multi-use path will be 10ft wide and run along Colonel Ledyard Highway from Rte. 117 to the High School. There are two areas of wetlands along the route. Some wetlands impacts are caused by sleep slopes along the trail in the vicinity of wetlands. There will be three sites with retaining walls to reduce impact on wetlands in these areas with steep slopes. There will be improvements made to Holdridge Circle, a pedestrian crossing at the light at Rte. 117 and the intersection of Gallup Hill and CLH will be realigned. The path will be bituminous concrete to make maintenance easier.

The total project area of disturbance is 3.65 acres. Regulated area disturbance is approximately 18,000sf. Only .82% of total project area impacts wetlands, with only 120sf of permanent Wetlands impact at the first crossing, and 570sf of permanent impact at the second crossing area - mostly related to grading. Mr. DePalmero stated there would be 30cy of fill within the wetlands along Gallup Hill.

Commission members asked about adjacent owners and if any permissions are required to do the work. Mr. DePalmero said the impact to abutting properties will be minimal. Some screening may be needed and regrading etc.

Mr. Gardner asked question about the width of the sidewalks that are being extended.

Mr. Masalin stated there was a public meeting to solicit comments and concerns.

With respect to water quality and potential impact to the wetlands from run-off, there will be new catch basins and a hydrodynamic separator to filter out sediment and other substances. These will be maintained by the town. Detention/Infiltration basins are also proposed to naturally filter the water.

Commissioner Thompson asked about other permits/approvals needed.
Mr. DePalmero stated that the NDDB review was completed. One protected species was found and measures will be taken to protect it during construction. They are waiting on a letter from the Historic Society and Army Corps of Engineers. No Stormwater permits are needed.

Commissioner Pealer asked about the relation of the trail project to the proposed installation of the sewer line, and Commissioners discussed whether there would be additional impact caused by the sewer line being installed in the same area.
WEO Len Johnson provided input. He feels the water quality would be improved with the drainage infrastructure proposed and the impact to the wetlands would not be significant.

MOTION made to classify Application IWWC#22-16URA as a Class B (Non-significant Activity)
Motion Passed unanimously.

MOVER Beth E.Ribe
SECONDER Lynmarie Thompson
RESULT APPROVED AND SO DECLARED

Commission discussed the increase of water volume going into the Wetlands and the increased impact.
Commissioners reviewed the criteria for making a decision.

MOTION made and seconded to Approve Application IWWC#22-16URA. Motion Passed unanimously.

RESULT:	APPROVED AND SO DECLARED	
MOVER:	Beth E. Ribe	
SECONDER:	Lynmarie Thompson	
AYE	5	DeBrodt Maugle Pealer Thompson Ribe
EXCUSED	1	St. Vil
ABSENT	1	Graebner

VI. NEW BUSINESS

A. Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

Andrew McCoy and Peter Gardner and were present for the Application on behalf of the owners. Mr. McCoy stated that all proposed work is outside of the wetlands themselves. There are three areas of wetlands, one of which was manmade due to excavation activity.
Soil Scientist Ian Cole provided a report stating there would be no negative impacts to the wetlands. Mr. Gardner described the work being conducted in the upland review area. He stated that he has been working on this project for a year including work with LLHD and a Hydrologist. Both have indicated that the project is feasible. The site is surrounded by land owned by the City of Groton and 2 residences. Mr. Gardner has notified Groton Utilities but has not received comments yet. There are no stormwater systems or footing drains proposed.

Planner Juliet Hodge explained the 8-30g process and relief from dimensional requirements.

The applicant submitted the LLHD review and the Hydrologist report for the record.

WEO Len Johnson commented that he read all the reports submitted, and admitted that the development is intense given the size of the lot and proximity to the Wetlands.

Commission members asked whether the location of the wells and septic systems could be reversed, and indicated that they would like to take some time to review the reports and go on a site walk.

A revised plan was submitted to LLHD and no comments have been received.
Commission tabled the application until the October Meeting. Commission members and staff scheduled a Site Walk on Monday 12th at 4:00. Only 2 Commission members will attend.

RESULT: CONTINUE

VII. STAFF REPORTS

A. WEO Report August 2022

WEO Len Johnson went over his report. The affordable housing subdivision application had not been received at the time of the report.
Commission asked staff about the status of the CACIWC membership and asked that the newsletters be forwarded to the Commission.

RESULT: COMPLETED

VIII. CORRESPONDENCE

None

IX. APPROVAL OF MINUTES

A. IWWC Regular Meeting Minutes: August 2, 2022

Motion was made and seconded to approve the minutes of the August , 2022 meeting. Motion Passes unanimously.

RESULT: APPROVED AND SO DECLARED
MOVER: Lynmarie Thompson
SECONDER: Beth E. Ribe

AYE 5 DeBrodt Maugle Pealer Thompson Ribe

X. MEETING REVIEW

Commission members stated that they appreciated the shared screens. They talked about the lack of staff and issues about taking minutes.

XI. ADJOURNMENT

Motion made and seconded to adjourn the meeting at 9:04pm. Motion Passed Unanimously.

A motion was made by Commissioner Pealer, seconded by Commissioner Ribe, that this be Approved and so declared. The motion carried by the following vote:

RESULT: APPROVED AND SO DECLARED
MOVER: Dan Pealer
SECONDER: Beth E. Ribe

AYE 5 DeBrodt Maugle Pealer Thompson Ribe