

FINAL

THIRD TAXING DISTRICT

of the City of Norwalk

Special Joint Meeting

Third Taxing District, Norwalk Harbor Management and Shellfish Commissions

March 29, 2018

The Marvin, 60 Gregory Boulevard, E. Norwalk, CT

ATTENDANCE: Commissioners: David Brown, Chair; Debora Goldstein;

STAFF: Kevin Barber, General Manager

OTHERS: John Pinto, Chairman, NHMC Application Review Committee
Geoffrey Steadman, Consultant to the NHMC
Peter Johnson, Chairman, Shellfish Commission & Ratepayer
Representative, TTD
Steve Bartush, Commissioner, Shellfish Commission

PUBLIC: Tony D'Andrea

CALL TO ORDER

Chairman Brown of the TTD noted that there was a quorum of the Third Taxing District and convened the meeting. Noting that there was not a quorum of either the NHMC or the Shellfish Commission, those Commissions were not formally convened. Chairman Brown asked Commissioner Goldstein to serve as Acting Chairman for the meeting.

PUBLIC COMMENT

Mr. D'Andrea spoke during public comment. He said that he represented Norwalk Harbor Keeper, whose concerns with the undergrounding of the Eversource transmission cable were that the mitigation of the environmental impact of the project was not adequate. He indicated that the spoils from the drilling needed to be handled correctly to preserve the vitality of the Shellfish Industry.

**DISCUSSION OF EXPECTED APPLICATION BY EVERSOURCE FOR A
DECLARATORY RULING FROM THE CONNECTICUT SITING COUNCIL
FOR THE RELOCATION OF A 115kv TRANSMISSION LINE WITH A
PROPOSED ROUTING UNDER THE VISITOR'S DOCK AT VETERAN'S PARK**

Commissioner Johnson raised the issue of the related project to run a temporary submarine and communications cable under the harbor in connection with the Walk Bridge project, which requires using barge mounted equipment, dredging a channel, installing the line and backfilling

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the trench. He indicated that the safety measures being taken when dredging this area would possibly indicate that the materials needed extra care to ensure that hazardous materials don't go into the harbor. Commissioner Pinto cautioned that the measures described could relate to higher levels of certain substances (such as zinc) that shouldn't be difficult to handle.

Discussion of the handling of the dredged materials suggested that both the NHMC and Shellfish Commission understood the materials will be dewatered in barges, and the dry materials would be transported up to the Devine site for further transfer to appropriate disposal sites. Upon closer examination of the application (#2017-08-100), it was found that the application does not, in fact, specify that plan, but uses generic language.

The DEEP notice, application and the draft plan for #2017-08-100 is attached to these minutes as Exhibits A-1, A-2 and A-3 respectively). Commissioner Pinto explained that the NHMC was going to support the Shellfish Commission's recommendation on the application, which was to do water quality monitoring in connection with the process. Commissioner Johnson expressed a desire to know exactly what materials are being disturbed.

Discussion moved to the two 115kv transmission lines intended to go under the visitor's docks and Veteran's Memorial Park's parking area, per the plans proposed by Eversource, due to the Walk Bridge project. Mr. Steadman explained the path and identified the "sending" and "receiving" sites for the horizontal drilling under the harbor, including the "threading" of the drill path between two pilings of the Visitor's Docks with a clearance of 5'9" from each piling. The drilling requires that a pit be dug on each site to accumulate the oils and other materials required for the drilling process. The pit on the west side would be 3,600 sq ft and the pit on the east side would be 2,700 sq ft.

Commissioner Pinto expressed concern that the permanent right of way created in connection with the undergrounding of a transmission line would preclude any alteration, expansion and possibly repair work on the docks in the future, because work would be prevented in a right of way 15" on either side of the transmission line. Commissioner Johnson agreed that this was a very serious concern. They discussed examples in the past where work was prevented due to such restrictions. Mr. Steadman and Commissioner Pinto explained that the NHMC was fortunate to have a highly-qualified expert (Mr. Mailman) on horizontal drilling to do a pro-bono peer review of the proposed plan. Mr. Mailman's qualifications and his report are attached as exhibits B-1 and B-2 respectively.

The approval process was discussed, with the Connecticut Siting Council (CSC) having absolute say, but approvals also required by Connecticut's Department of Energy and Environmental Protection (DEEP) and the Army Corps of Engineers. The Army Corps actually approves two items: one is a permit for a public works project in a federal navigation channel and the other is a general permit for work in a coastal waterway. One requires a letter from the chief elected official of the City to proceed. Eversource is pursuing a pre-application review process to secure approval from DEEP in advance of the application to the siting council. This is voluntary, and premature, given that CSC could object to the proposed site and the process would have to start from scratch.

Commissioner Goldstein observed that the TTD was also a municipality and that part of the proposed site was within the TTD's district. Mr. Barber observed that part of the project was also in the SNEW district, which is also a municipality. Commissioner Goldstein commented that it was unlikely that the status of "municipality" would be met for the chief elected official's letter for the DEEP approval, but that the status as a municipality, as well as an electric utility was likely to carry some weight with the Connecticut Siting Council (CSC). There are various mechanism for public hearings on both projects, but it is likely that only a public hearing by the CSC would be triggered, though it was reported that Mayor Rilling suggested that he was in favor of advocating for a public hearing.

Discussion moved on to highlight some of Mr. Mailman's findings, which were: that the main environmental concern is the handling of the drill material, that Eversource's assertion that they could not drill at right angles was not consistent with industry practice, and the fact that the precision required to thread the drilling channel between the pilings with the necessary clearance was unlikely. The margin of error could be as much as three feet.

Commissioner Brown observed that it should be clear what the "ask" should be, and what mechanism would be used, and to whom the ask should be made.

The group also discussed the fact that the undergrounding project had not received environmental scrutiny under the Environmental Assessment (EA) done for the Walk Bridge, and was now under consideration for exemption from a full environmental review. The DOT has taken the position that exclusion from the EA was proper because it met the definition of a project that has "independent utility".

Commissioner Pinto reported that the NHMC was working on the response to the pre-application to DEEP, and Commissioner Johnson reported that the Shellfish Commission would be similarly engaged at their next meeting on April 5th. Commissioner Goldstein observed that the next regular TTD meeting would normally have been held on April 2nd, but that it had been rescheduled to April 9th, so that members of the Commission could attend the public hearing continuation on 230 East Avenue—a project that was controversial in the district.

Commissioner Pinto reiterated that the NHMC does not have the qualifications to recommend an alternate path, but has grave concerns about the existing path. Commissioner Goldstein observed that the TTD might pursue retention of its own experts to advise them on any safety concerns with the proximity of steel pilings near a high-voltage transmission line, including stresses that might occur under extreme weather condition, especially if the clearances were below the proposed 5'9". Commissioner Johnson observed that the Shellfish Commission has not yet received the pre-application for DEEP, despite being one of the required sign-offs.

FINAL

ADJOURN

Commissioner Goldstein moved to adjourn, and Mr. Brown seconded. The motion to adjourn passed unanimously.

The meeting adjourned at 9:10 p.m.

Respectfully submitted,

Debora Goldstein
Commissioner, TTD

Connecticut Department of Energy & Environmental Protection

Notice of Tentative Determination to Approve Structures, Dredging & Fill and Tidal Wetlands and Water Quality Certificate And Intent to Waive Public Hearing

Applicant: CT Department of Transportation
Application No. 201708100
City: Norwalk

The Department of Energy & Environmental Protection ("DEEP") hereby gives notice that a tentative determination has been reached to approve the following application submitted under Section 401 of the Federal Clean Water Act, as amended, for a Water Quality Certificate and Sections 22a-32 and 22a-361 of the Connecticut General Statutes ("CGS") for a permit to conduct work waterward of the coastal jurisdiction line in tidal, coastal or navigable waters of the state and in tidal wetlands for infrastructure improvements.

The Commissioner also gives notice that a hearing may be held on this application if a written request is received from the applicant, or if the Commissioner determines that the public interest will best be served thereby. The Commissioner shall hold a hearing pursuant to CGS Sections 22a-361(b) and 22a-32 on receipt of a petition signed by twenty-five or more persons.

Applicant's Name and Address: Kimberly Lesay, Assistant Planning Director, State of Connecticut
Department of Transportation, 2800 Berlin Turnpike, P.O. Box
317546, Newington, CT 06131

Contact Name/Phone/Email: Christian Brown, HNTB Corporation, 913-221-3327,
CBrown@HNTB.com

Site Location: Norwalk River Bridge (Bridge No. 04288R), Norwalk

PROPOSED ACTIVITY

The proposed activity includes the installation of a temporary submarine signal and communications cable and will affect aquatic and coastal resources and tidal wetlands.

INFORMATION REQUESTS/PUBLIC COMMENT

Interested persons may obtain a copy of the application from the above contacts or by sending a request for an electronic copy to DEEP at micheal.grzywinski@ct.gov. The application is available for inspection at the DEEP Land and Water Resources Division, 79 Elm Street, Hartford, from 8:30 - 4:30 Monday through Friday. Additional surveys, plans or other materials may be available with the original application file at DEEP. All interested parties are invited to express their views on the tentative determination concerning this application. Written comments on the application should be directed to Micheal Grzywinski, DEEP Land & Water Resources Division, 79 Elm Street, Hartford, CT 06106-5127, no later than forty (40) days from the publication date of this notice. Comments regarding this application may be submitted via electronic mail to: micheal.grzywinski@ct.gov.

PETITIONS FOR HEARING

Petitions for a hearing should include the application number noted above and also identify a contact person to receive notifications. Petitions may also identify a person who is authorized to engage in discussions regarding the application and, if resolution is reached, withdraw the petition. Original signed petitions may be scanned and sent electronically to deep.adjudications@ct.gov or may be mailed or delivered to: DEEP Office of Adjudications, 79 Elm Street, 3rd floor, Hartford, CT 06106-5127. All petitions must be received within the comment period noted above. If submitted electronically, original signed petitions must also be mailed or delivered to the address above within ten (10) days of electronic submittal. For additional information visit www.ct.gov/deep/adjudications.

/s/ Brian P. Thompson

Brian P. Thompson, Director

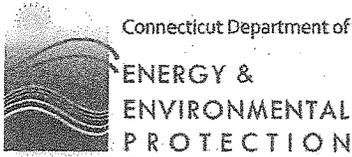
Published in The Hour on March 13, 2018

ADA PUBLICATION STATEMENT

The Connecticut Department of Energy & Environmental Protection is an Affirmative Action and Equal Opportunity Employer that is committed to complying with the Americans with Disabilities Act. To request an accommodation contact us at (860) 418-5910 or deep.accommodations@ct.gov.

[Draft Permit \(PDF\)](#)

[Draft Plans \(PDF\)](#)



Draft

Bureau of Water Protection and Land Reuse
Land & Water Resources Division

79 Elm Street • Hartford, CT 06106-5127

www.ct.gov/deep

Affirmative Action/Equal Opportunity Employer

Connecticut Department of Energy and Environmental Protection License*

Structures, Dredging & Fill and Tidal Wetlands Permit
Section 401 Water Quality Certification

Licensee(s): State of Connecticut,
Department of Transportation

Licensee Address(s): 2800 Berlin Turnpike P.O. Box
317546
Newington, CT 06131

License Number(s): 201708100-SDFTW & 401

Municipality: City of Norwalk

Project Description: Install a temporary submarine signal and communication cable for infrastructure improvements

Project Address/Location: Immediately upstream of Metro North Railroad Bridge No. 04288R

Waters: Norwalk River

Authorizing CT Statute(s) and/or Federal Law: CGS Section 22a-28 to 35; CGS Section 22a-359 to 363g; CGS Section 22a-90 to 112; Section 401 CWA (33 USC 1341)

Applicable Regulations of CT State Agencies: 22a-426-1 to 9

Agency Contact: Land & Water Resources Division,
Bureau of Water Protection & Land Reuse, 860-424-3019

License Expiration: Five (5) years from the date of issuance of this license.

Project Site Plan Set: One location map and thirteen (13) sheets of plans dated May 9, 2017

License Enclosures: Compliance Certification Form, Coastal Dredging Conditions, Site Plan Set, WQC CT GP Conditions, Work Commencement Form, LWRD General Conditions

Authorized Activities:

1. remove several existing timber piles at the existing pivot pier and rest pier fender systems;

*Connecticut's Uniform Administrative Procedure Act defines License to include, "the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . ."

2. install floating turbidity curtains around the trench area;
3. using barge-mounted equipment, mechanically remove existing sediment to a depth not less than -18' MLLW or seven (7) feet below the existing substrate and place the sediment in hopper barges with appropriate dewatering measures;
4. place a temporary static line within the excavated trench identified above and using divers, install 260 linear feet two (2) armored inner conduits housing fiber optics, two (2) armored signal cables and one spare 4" diameter high density polyethylene (HDPE) conduit using hand-held hydro-fluidization techniques;
5. backfill the excavated trench, using suitable backfill material located on a barge to pre-existing grades using either a clamshell bucket or a tremie tube only during incoming and slack tides;
6. install cable mounting brackets, associated terminal cabinets or access ladders on the existing railroad bridge piers hand-held rock drills; and
7. using mechanical equipment, reinstall the timber pivot pier and rest pier fender piles identified above.

Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

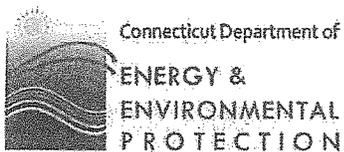
1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. The Licensee shall restore the intertidal areas located on the eastern and western shorelines to pre-existing grades using organic material with the same grain size as the existing sediment.
3. The Licensee shall install and maintain floating turbidity curtains around the work area.
4. All unconfined in-water work shall be prohibited between February 1st through September 30th, inclusive, of any calendar year in order to protect anadromous fish, spawning winter flounder and spawning shellfish unless otherwise authorized in writing from the Commissioner.
5. The Licensee shall maintain navigation access in the Norwalk River during the work authorized herein unless Coast Guard approval for temporary channel closures is received.
6. All work authorized herein shall be conducted during incoming and slack tides.
7. Within one hundred twenty (120) days following the completion of the work authorized herein the Licensee shall conduct an as-built survey of the new submarine cables. The survey shall include the depth of installation, location and horizontal alignment of the cables.
8. The Licensee shall place the approximately 462 cubic yards of excavated sediment back in the trench authorized herein.

9. The Licensee shall mechanically remove the top four (4) feet of existing sediment, properly manage the material and dispose the material at an approved upland location in accordance with state and federal regulations.
10. The Licensee shall utilize the previously approved Peregrine Falcon Protocol dated March 8, 2016.
11. Prior to the commencement of the work authorized herein the Licensee shall obtain all necessary local, state and federal authorizations.
- 12.

Issued by the Commissioner of Energy and Environmental Protection on:

Date

Robert E. Kaliszewski
Deputy Commissioner
Department of Energy & Environmental Protection



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

**Bureau of Water Protection & Land Reuse
Land & Water Resources Division**

79 Elm Street • Hartford, CT 06106-5127

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Work Commencement Form

To: Regulatory Section
Department of Energy and Environmental Protection
Land & Water Resources Division
79 Elm Street
Hartford, CT 06106-5127

Licensee Name: _____

Licensee Address: _____

License No(s): 201708100

CONTRACTOR(s):

1 Name: _____
Address: _____
Telephone: _____
E-mail: _____

2 Name: _____
Address: _____
Telephone: _____
E-mail: _____

3 Name: _____
Address: _____
Telephone: _____
E-mail: _____

Date Contractor(s) received a copy
of the license and approved plans: _____

EXPECTED DATE OF COMMENCEMENT OF WORK: _____

EXPECTED DATE OF COMPLETION OF WORK: _____

LICENSEE: _____
(Signature)

(Date)



Coastal Dredging Conditions for Land & Water Resource Division Licenses

1. **Time-of-Year Restriction.** Unless otherwise noted in the License, unconfined in-water excavation, dredging, filling or removal of debris or other material is prohibited, inclusive, in any year from June 1 through September 30 in order to protect spawning shellfish in the area unless otherwise authorized in writing by the Commissioner.
2. **Dredging Report.** Not later than two (2) weeks subsequent to the completion of any dredging activity authorized herein, the Certificate Holder shall submit to the Commissioner a completed Dredging Report. A separate form shall be submitted by the Permittee for each distinct dredging activity conducted pursuant to this license.
3. **Bottom Disturbance.** Dragging the bottom with a spoil barge, scow, vessel, beam or similar equipment outside of any authorized area is prohibited.
4. **Material Handling.** Sidecasting or in-water rehandling of dredged or excavated material is prohibited.
5. **Barge Control.** Spoil scows or barges shall be loaded and navigated in a manner which prevents uncontrollable motion or spillage and washout of dredged or excavated materials.
6. **Sale of Sediment.** Sediment dredged pursuant to the license shall not be sold nor shall any fee for its use be charged without the express prior written authorization of the Commissioner and payment of a \$4.00 per yard royalty to the state of Connecticut Department of Environmental Protection, pursuant to CGS section 22a-361(e).
7. **Sediment Disposal.** The Licensee shall dispose of aquatic sediments in accordance with the terms and conditions of the license.

Open Water Disposal, if authorized in Project Description

1. **Material Disposal.** The Licensee shall dispose of dredged or excavated material in accordance with the requirements of the United States Army Corps of Engineers-New England District, except that if the authorized disposal site is modified, the Licensee shall submit a request for modification of the location to the Commissioner and shall not dispose of the material until such location modification has been approved in writing by the Commissioner.
2. **Disposal Site / Use Modification.** The Commissioner may modify the authorized disposal site and direct dredged sediment to an alternate site for use as cap material, provided that no modification will take effect if such modification imposes uncompensated additional costs solely attributable to such modification on the Licensee.
3. **Disposal Monitoring.** The Licensee shall not dispose of dredged or excavated material unless said disposal is supervised and witnessed by an on-board inspector or documented by

an automated disposal monitoring program approved by the United States Army Corps of Engineers-New England District.

4. **Barge Navigation.** Spoil scows or barges used by the Licensee for disposal of dredged or excavated material shall travel to and from the authorized disposal site utilizing sea lanes defined by the United States Army Corps of Engineers-New England District.
5. **Point Dumping.** The Licensee shall point-dump dredged or excavated materials at a specified buoy or set of coordinates identified by United States Army Corps of Engineers-New England District within the authorized disposal site.



General Conditions for Land & Water Resources Division Licenses

1. **Land Record Filing (for Structures Dredging & Fill, Tidal Wetlands, Certificate of Permission, and Long Island Sound General Permit Licenses only).** The Licensee shall file the Land Record Filing on the land records of the municipality in which the subject property is located not later than thirty (30) days after license issuance pursuant to Connecticut General Statutes (CGS) Section 22a-363g. A copy of the Notice with a stamp or other such proof of filing with the municipality shall be submitted to the Commissioner no later than sixty (60) days after license issuance. If a Land Record Filing form is not enclosed and the work site is not associated with an upland property, no filing is required.
2. **Contractor Notification.** The Licensee shall give a copy of the license and its attachments to the contractor(s) who will be carrying out the authorized activities prior to the start of construction and shall receive a written receipt for such copy, signed and dated by such contractor(s). The Licensee's contractor(s) shall conduct all operations at the site in full compliance with the license and, to the extent provided by law, may be held liable for any violation of the terms and conditions of the license. At the work site, the contractor(s) shall, whenever work is being performed, have on site and make available for inspection a copy of the license and the authorized plans.
3. **Work Commencement¹.** Not later than two (2) weeks prior to the commencement of any work authorized herein, the Licensee shall submit to the Commissioner, on the Work Commencement Form attached hereto, the name(s) and address(es) of all contractor(s) employed to conduct such work and the expected date for commencement and completion of such work, if any.
 - For water diversion activities authorized pursuant to 22a-377(c)-1 of the Regulations of Connecticut State Agencies, the Licensee shall also notify the Commissioner in writing two weeks prior to initiating the authorized diversion.
 - For emergency activities authorized pursuant Connecticut General Statutes Section 22a-6k, the Licensee shall notify the Commissioner, in writing, of activity commencement at least one (1) day prior to construction and of activity completion no later than five (5) days after conclusion.
4. **For Coastal Licenses Only - License Notice.** The Licensee shall post the first page of the License in a conspicuous place at the work area while the work authorized therein is undertaken.
5. **Unauthorized Activities.** Except as specifically authorized, no equipment or material, including but not limited to, fill, construction materials, excavated material or debris, shall be

¹ The Work Commencement condition and the need for a Work Commencement Form is not applicable to Flood Management Certification approvals.

deposited, placed or stored in any wetland or watercourse on or off-site. The Licensee may not conduct work within wetlands or watercourses other than as specifically authorized, unless otherwise authorized in writing by the Commissioner. Tidal wetlands means "wetland" as defined by section 22a-29 and "freshwater wetlands and watercourses" means "wetlands" and "watercourses" as defined by section 22a-38.

6. **Unconfined Instream Work.** Unless otherwise noted in a condition of the license, the following conditions apply to projects in non-coastal waters:
 - Unconfined instream work is limited to the period June 1 through September 30.
 - Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year. The removal of such confinement devices is allowed any time of the year.
 - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
 - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
7. **For State Actions Only - Material or Equipment Storage in the Floodplain.** Unless approved by a Flood Management Exemption, the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five-hundred (500) year flood is prohibited. Any other material or equipment stored at the site below said elevation by the Licensee or the Licensee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day. In accordance with the licensee's Flood Contingency Plan, the Licensee shall remove equipment and materials from the floodplain during periods when flood warnings have been issued or are anticipated by a responsible federal, state or local agency. It shall be the Licensee's responsibility to obtain such warnings when flooding is anticipated.
8. **Temporary Hydraulic Facilities for Water Handling.** If not reviewed and approved as a part of the license application, temporary hydraulic facilities shall be designed by a qualified professional and in accordance with the *Connecticut Guidelines for Soil Erosion and Sediment Control*, the *2004 Connecticut Stormwater Quality Manual*, or the *Department of Transportation's ConnDOT Drainage Manual*, as applicable. Temporary hydraulic facilities may include channels, culverts or bridges which are required for haul roads, channel relocations, culvert installations, bridge construction, temporary roads, or detours.
9. **Excavated Materials.** Unless otherwise authorized, all excavated material shall be staged and managed in a manner which prevents additional impacts to wetlands and watercourses.
10. **Best Management Practices.** The Licensee shall not cause or allow pollution of any wetlands or watercourses, including pollution resulting from sedimentation and erosion. In constructing

or maintaining any authorized structure or facility or conducting any authorized activity, or in removing any such structure or facility, the Licensee shall employ best management practices to control storm water discharges, to prevent erosion and sedimentation, and to otherwise prevent pollution of wetlands and other waters of the State. For purposes of the license, "pollution" means "pollution" as that term is defined by CGS section 22a-423. Best Management Practices include, but are not limited, to practices identified in the *Connecticut Guidelines for Soil Erosion and Sediment Control* as revised, *2004 Connecticut Stormwater Quality Manual*, Department of Transportation's *ConnDOT Drainage Manual* as revised, and the Department of Transportation Standard Specifications as revised.

11. **Work Site Restoration.** Upon completion of any authorized work, the Licensee shall restore all areas impacted by construction, or used as a staging area or accessway in connection with such work, to their condition prior to the commencement of such work.
12. **Inspection.** The Licensee shall allow any representative of the Commissioner to inspect the project location at reasonable times to ensure that work is being or has been conducted in accordance with the terms and conditions of this license.
13. **Change of Use. (Applies only if a use is specified within the License "Project Description")**
 - a. The work specified in the license is authorized solely for the purpose set forth in the license. No change in purpose or use of the authorized work or facilities as set forth in the license may occur without the prior written approval of the Commissioner. The Licensee shall, prior to undertaking or allowing any change in use or purpose from that which is authorized by this license, request permission from the Commissioner for such change. Said request shall be in writing and shall describe the proposed change and the reason for the change.
 - b. A change in the form of ownership of any structure authorized herein from a rental/lease commercial marina to a wholly-owned common interest community or dockominium may constitute a change in purpose as specified in paragraph (a) above.
14. **De Minimis Alteration.** The Licensee shall not deviate from the authorized activity without prior written approval from the Commissioner. The Licensee may request a de minimis change to any authorized structure, facility, or activity. A de minimis alteration means a change in the authorized design, construction or operation that does not increase environmental impacts or substantively alter the construction of the project as authorized.
 - For diversion activities authorized pursuant to 22a-377(c)-2 of the Regulations of Connecticut State Agencies, a de minimis alteration means an alteration which does not significantly increase the quantity of water diverted or significantly change the capacity to divert water.
15. **Extension Request.** The Licensee may request an extension of the license expiration date. Such request shall be in writing and shall be submitted to the Commissioner at least thirty (30) days prior to the license expiration. Such request shall describe the work done to date, what work still needs to be completed, and the reason for such extension. It shall be the Commissioner's sole discretion to grant or deny such request.

16. **Compliance Certification.** Not later than 90 days after completion of the authorized work, the Licensee shall prepare and submit to the Commissioner the attached Compliance Certification Form. Such Compliance Certification shall be completed, signed, and sealed by the Licensee and a Connecticut Licensed Design Professional. If non-compliance is indicated on the form, or the Commissioner has reason to believe the activities and/or structures were conducted in non-compliance with the license, the Commissioner may require the Licensee to submit as-built plans as a condition of this license.
17. **Maintenance.** The Licensee shall maintain all authorized structures or work in optimal condition or shall remove such structures or facility and restore the affected waters to their pre-work condition. Any such maintenance or removal activity shall be conducted in accordance with applicable law and any additional approvals required by law.
18. **No Work After License Expiration.** Work conducted after the license expiration date is a violation of the license and may subject the licensee to enforcement action, including penalties, as provided by law.
19. **License Transfer.** The license is not transferable without prior written authorization of the Commissioner. A request to transfer a license shall be submitted in writing and shall describe the proposed transfer and the reason for such transfer. The Licensee's obligations under the license shall not be affected by the passage of title to the license site to any other person or municipality until such time as a transfer is approved by the Commissioner.
20. **Document Submission.** Any document required to be submitted to the Commissioner under the license or any contact required to be made with the Commissioner shall, unless otherwise specified in writing by the Commissioner, be directed to:
Regulatory Section
Land & Water Resources Division
Department of Energy and Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127
860-424-3019
21. **Date of Document Submission.** The date of submission to the Commissioner of any document required by the license shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under the license, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three (3) days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in the license, the word "day" as used in the license means calendar day. Any document or action which is required by the license to be submitted or performed by a date which falls on a Saturday, Sunday or a Connecticut or federal holiday shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or a Connecticut or federal holiday.
22. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under the license shall be signed by the Licensee and by the individual or individuals responsible for actually preparing such

document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense."

- 23. Accuracy of Documentation.** In evaluating the application for the license, the Commissioner has relied on information and data provided by the Licensee and on the Licensee's representations concerning site conditions, design specifications and the proposed work, including but not limited to representations concerning the commercial, public or private nature of the work or structures, the water-dependency of said work or structures, its availability for access by the general public, and the ownership of regulated structures or filled areas. If such information proves to be false, deceptive, incomplete or inaccurate, the license may be modified, suspended or revoked, and any unauthorized activities may be subject to enforcement action.
- 24. Limits of Liability.** In granting the license, the Commissioner has relied on all representations of the Licensee, including information and data provided in support of the Licensee's application. Neither the Licensee's representations nor the issuance of the license shall constitute an assurance by the Commissioner as to the structural integrity, the engineering feasibility or the efficacy of such design.
- 25. Reporting of Violations.** In the event that the Licensee becomes aware that they did not or may not comply, or did not or may not comply on time, with any provision of this license or of any document incorporated into the license, the Licensee shall immediately notify the agency contact specified within the license and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the agency contact, the Licensee shall provide, for the agency's review and written approval, a report including the following information:
- a. the provision(s) of the license that has been violated;
 - b. the date and time the violation(s) was first observed and by whom;
 - c. the cause of the violation(s), if known;
 - d. if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - e. if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - f. steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented; and
 - g. the signatures of the Licensee and of the individual(s) responsible for actually preparing such report.

If the violation occurs outside of normal business hours, the Licensee shall contact the Department of Energy and Environmental Protection Emergency Dispatch at 860-424-3333. The Licensee shall comply with any dates which may be approved in writing by the

Commissioner.

26. **Revocation/Suspension/Modification.** The license may be revoked, suspended, or modified in accordance with applicable law.
27. **Other Required Approvals.** License issuance does not relieve the Licensee of their obligations to obtain any other approvals required by applicable federal, state and local law.
28. **Rights.** The license is subject to and does not derogate any present or future property rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the property or activity affected hereby.
29. **Condition Conflicts.** In the case where a project specific special condition listed on the license differs from, or conflicts with, one of the general conditions listed herein, the project specific special condition language shall prevail. It is the licensee's responsibility to contact the agency contact person listed on the license for clarification if needed prior to conducting any further regulated activities.

**Section 401 Water Quality Certification Conditions for Department of the Army (Corps of Engineers)
General Permits for the State of Connecticut**

1. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.
2. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.
3. **Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.
4. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.
5. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.
6. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:
 - a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
 - b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
 - c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
 - d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.
- h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers at (978) 318-8879, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:
 - (i) the provision(s) of this certificate that has been violated;
 - (ii) the date and time the violation(s) was first observed and by whom;
 - (iii) the cause of the violation(s), if known
 - (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
 - (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
 - (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
 - (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 7 of this certificate.

For information and technical assistance, contact the DEEP Land and Water Resources Division at (860) 424-3019.

- 7. Unconfined Instream Work; Installation and Removal of Confining Structures.**
- Unconfined instream work is limited to the period June 1 through September 30.
 - Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.

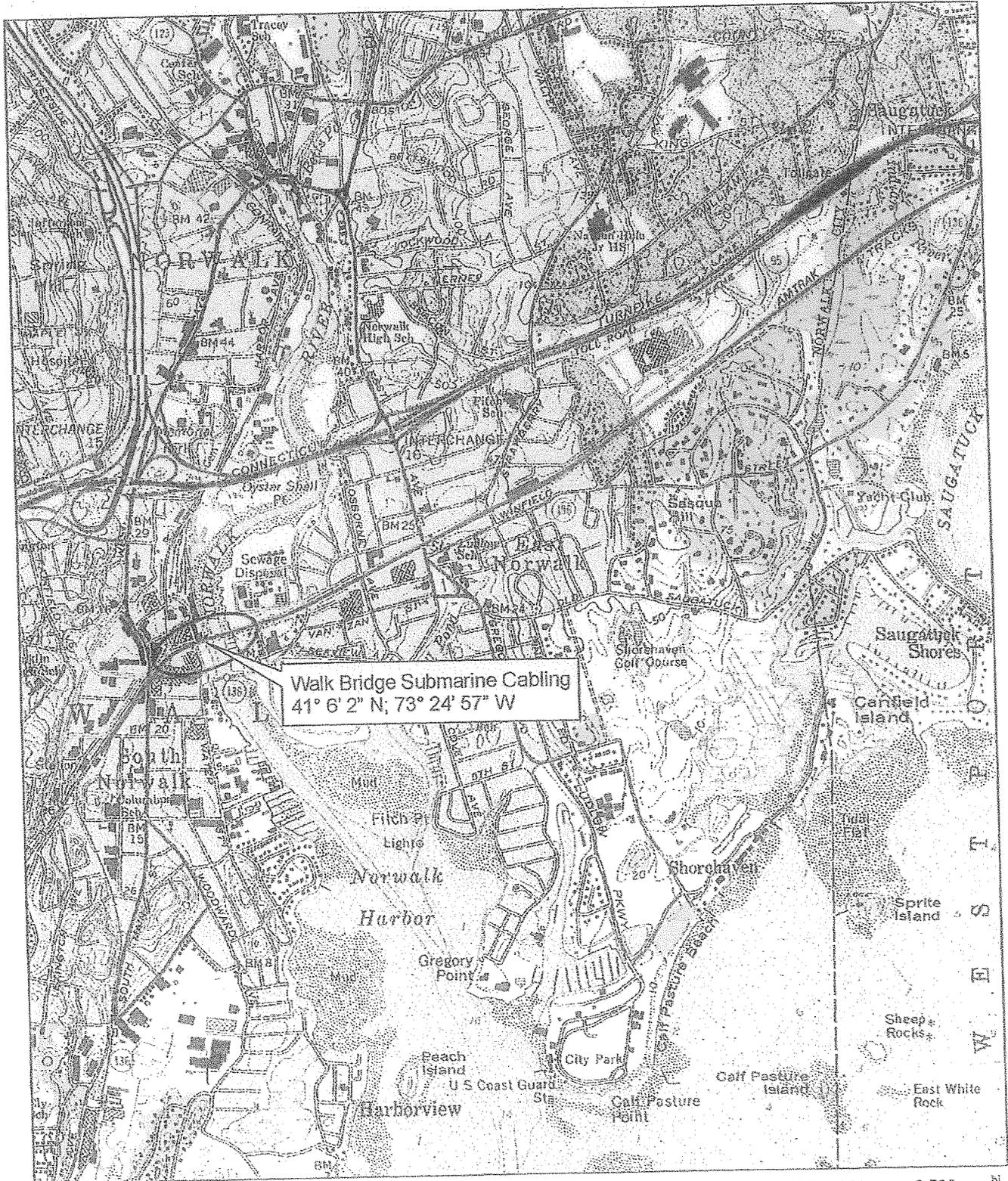
- The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition.
 - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.
 - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director, Land and Water Resources Division
Bureau of Water Protection and Land Reuse
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127

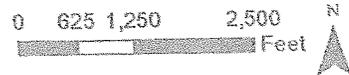


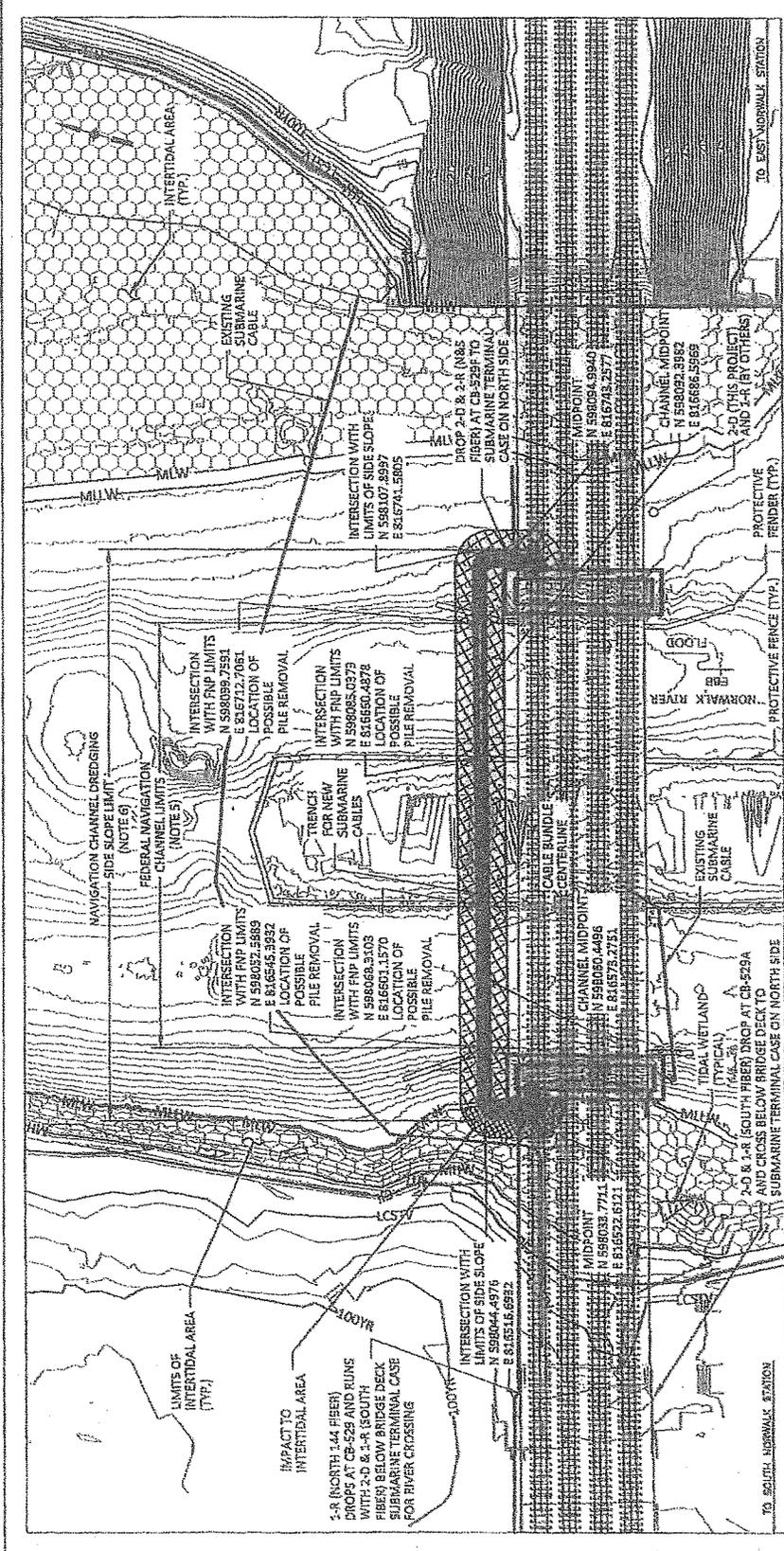
Walk Bridge Submarine Cabling
 41° 6' 2" N; 73° 24' 57" W

Norwalk South Quadrangle
 Connecticut - Fairfield County
 7.5 Minute Series
 41073-A4-TF-024

CP 243 Signal Work Limits

CP243 Interlocking
 Norwalk/Westport, Connecticut
 Bridge No. 04288R
 Connecticut Department of Transportation
 Project No. 0301-0181





DATUMS:
 HORIZONTAL DATUM IS NAD 83.
 VERTICAL DATUM IS MVD 88.

LEGEND:

HYDROFLUIDIZATION TECHNIQUE:	5.587 SF
TOTAL PERMANENT IMPACT	860 SF
IMPACT TO INTERTIDAL AREA	0.5F
TEMPORARY IMPACT	

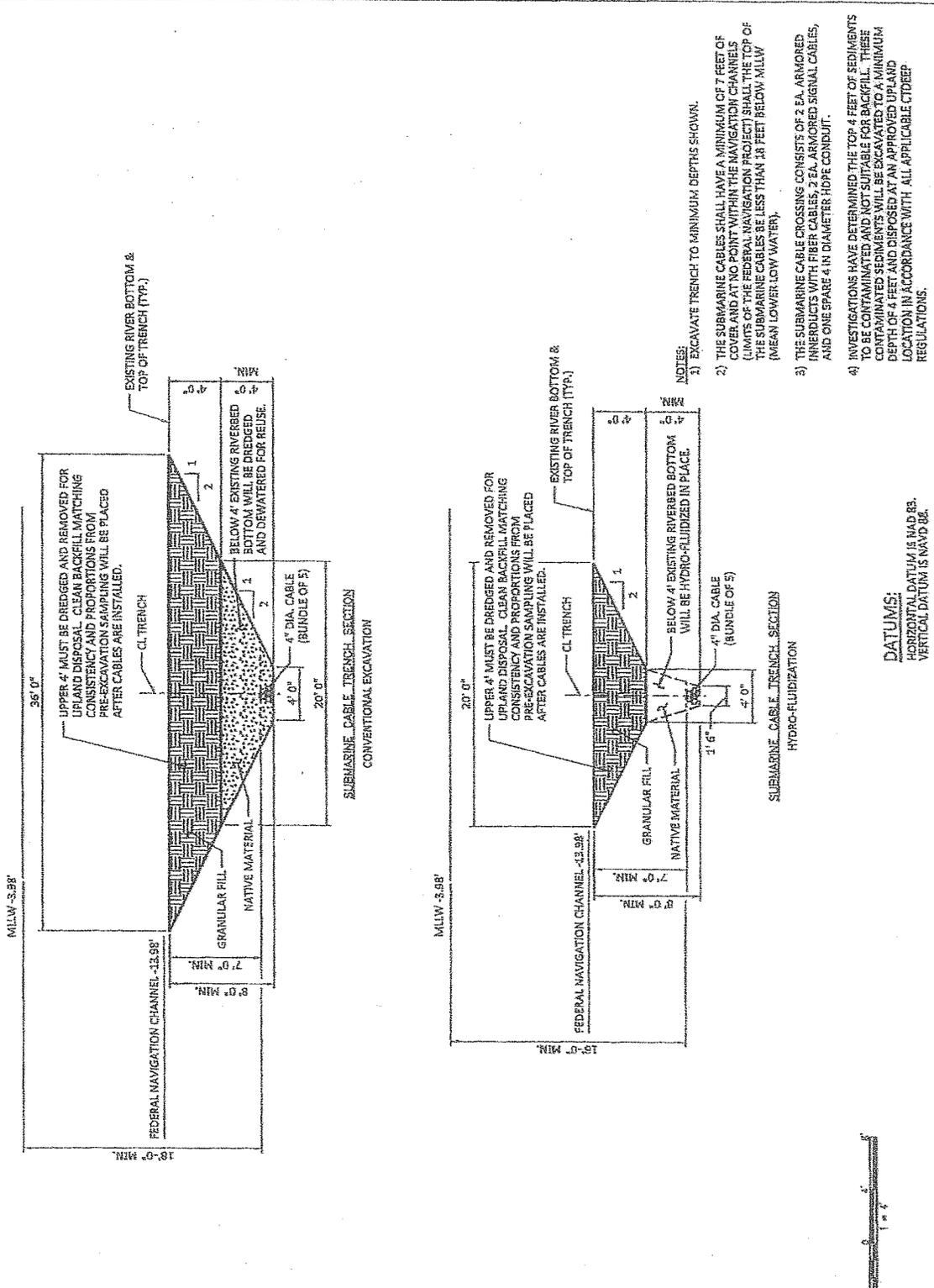
NOTES:

- EXCAVATE TRENCH TO HYDROFLUIDIZATION DEPTH AS SHOWN ON BNV-04.
- THE SUBMARINE CABLES SHALL HAVE A MINIMUM OF 7 FEET OF COVER AND AT NO POINT WITHIN THE NAVIGATION CHANNELS (LIMITS OF THE FEDERAL NAVIGATION PROJECT) SHALL THE TOP OF THE SUBMARINE CABLES BE LESS THAN 18 FEET BELOW MLLW (MEAN LOWER LOW WATER).
- THE SUBMARINE CABLE CROSSING CONSISTS OF 2 EA. ARMORED INNERBUCKETS WITH FIBER CABLES, 2 EA. ARMORED SIGNAL CABLES, AND ONE SPARE 4 IN DIAMETER HDPE CONDUIT.
- CONTOURS SHOWN ON THIS DRAWING REFLECT SURVEY CONDUCTED FOR CONNECTICUT DOT. THE REQUIREMENTS FOR PRE AND POST CONSTRUCTION SURVEYS AND SOUNDINGS TO BE PERFORMED BY THE CONTRACTOR ARE PROVIDED IN THE SPECIFICATIONS.

NOTES:

- NAVIGATION CHANNEL LIMITS PROVIDED BY THE U.S. ARMY CORPS OF ENGINEERS FEDERAL NAVIGATION PROJECT FOR NORWALK HARBOR, U.S. ARMY CORPS OF ENGINEERS, AFTER DREDGE SURVEY, SUPPLEMENTAL PROJECT DRAWING 4/11/2014.
- 30 FT OFFSET SHOREWARD OF THE NAVIGATION CHANNEL IDENTIFIES THE LIMIT OF SIDE SLOPE DURING FEDERAL NAVIGATION CHANNEL DREDGING.
- INVESTIGATIONS HAVE DETERMINED THE TOP 4 FEET OF SEGMENTS TO BE CONTAMINATED AND NOT SUITABLE FOR BACKFILL. THESE CONTAMINATED SEDIMENTS WILL BE EXCAVATED TO A MINIMUM DEPTH OF 4 FEET AND DISPOSED AT AN APPROVED UPLAND LOCATION IN ACCORDANCE WITH ALL APPLICABLE CT DEEP REGULATIONS.

DESIGNED BY	DATE	CONTRACT NO.
CHECKED BY	10-08-17	
APPROVED BY	DRAWING NO.	BNV-01
SUBMARINE CABLE DESIGN WALK BRIDGE LOCATION AND RESOURCE IMPACTS - HYDROFLUIDIZATION METHOD		
TITLE Hydrofluidization Rehabilitation New York, N.Y. 10017		
PROJECT NO. 10017 CONTRACT NO. 10017		
REVISIONS		



UPPER 4" MUST BE DREDGED AND REMOVED FOR UPLAND DISPOSAL. CLEAN BACKFILL MATCHING CONSISTENCY AND PROPORTIONS FROM PRE-EXCAVATION SAMPLING WILL BE PLACED AFTER CABLES ARE INSTALLED.

EXISTING RIVER BOTTOM & TOP OF TRENCH (TYP.)

CL TRENCH

BELOW 4" EXISTING RIVERBED BOTTOM WILL BE DREDGED AND DEWATERED FOR REUSE.

4" DIA. CABLE (BUNDLE OF 5)

GRANULAR FILL

NATIVE MATERIAL

FEDERAL NAVIGATION CHANNEL -13.98'

8" 0" MIN.

7' 0" MIN.

36" 0"

20" 0"

4" 0"

4" 0"

CONVENTIONAL EXCAVATION

UPPER 4" MUST BE DREDGED AND REMOVED FOR UPLAND DISPOSAL. CLEAN BACKFILL MATCHING CONSISTENCY AND PROPORTIONS FROM PRE-EXCAVATION SAMPLING WILL BE PLACED AFTER CABLES ARE INSTALLED.

EXISTING RIVER BOTTOM & TOP OF TRENCH (TYP.)

CL TRENCH

BELOW 4" EXISTING RIVERBED BOTTOM WILL BE HYDRO-FLUIDIZED IN PLACE.

4" DIA. CABLE (BUNDLE OF 5)

GRANULAR FILL

NATIVE MATERIAL

FEDERAL NAVIGATION CHANNEL -13.98'

8" 0" MIN.

7' 0" MIN.

20" 0"

4" 0"

1' 6"

4" 0"

HYDRO-FLUIDIZATION

NOTES:

- 1) EXCAVATE TRENCH TO MINIMUM DEPTHS SHOWN.
- 2) THE SUBMARINE CABLES SHALL HAVE A MINIMUM OF 7 FEET OF COVER AND AT NO POINT WITHIN THE NAVIGATION CHANNELS (LIMITS OF THE FEDERAL NAVIGATION PROJECT) SHALL THE TOP OF THE SUBMARINE CABLES BE LESS THAN 48 FEET BELOW MLW (MEAN LOWER LOW WATER).
- 3) THE SUBMARINE CABLE CROSSING CONSISTS OF 2 EA. ARMORED INNERDUCTS WITH FIBER CABLES, 2 EA. ARMORED SIGNAL CABLES, AND ONE SPARE 4 IN DIAMETER HOPE CONDUIT.
- 4) INVESTIGATIONS HAVE DETERMINED THE TOP 4 FEET OF SEDIMENTS TO BE CONTAMINATED AND NOT SUITABLE FOR BACKFILL. THESE CONTAMINATED SEDIMENTS WILL BE EXCAVATED TO A MINIMUM DEPTH OF 4 FEET AND DISPOSED AT AN APPROVED UPLAND LOCATION IN ACCORDANCE WITH ALL APPLICABLE CTDREP REGULATIONS.

DATUMS:
HORIZONTAL DATUM IS NAVD 83.
VERTICAL DATUM IS NAVD 88.

DESIGNED BY	DATE	APPROVED BY	DATE

NO.	DATE	BY	REVISIONS

PROJECT NO.	104-05-17
DRAWING NO.	
DATE	
SCALE	

TITLE: SUBMARINE CABLE DESIGN
WALK BRIDGE
TRENCH SECTIONS
BOTH METHODS

CONTRACT NO. 104-05-17

DESIGNED BY: J.S.

DRAWN BY: C.K.

APPROVED BY: M.K.

DATE:

SCALE:

PROJECT NO.: 104-05-17

DRAWING NO.:

DATE:

SCALE:

DESIGNED BY: J.S.

DRAWN BY: C.K.

APPROVED BY: M.K.

DATE:

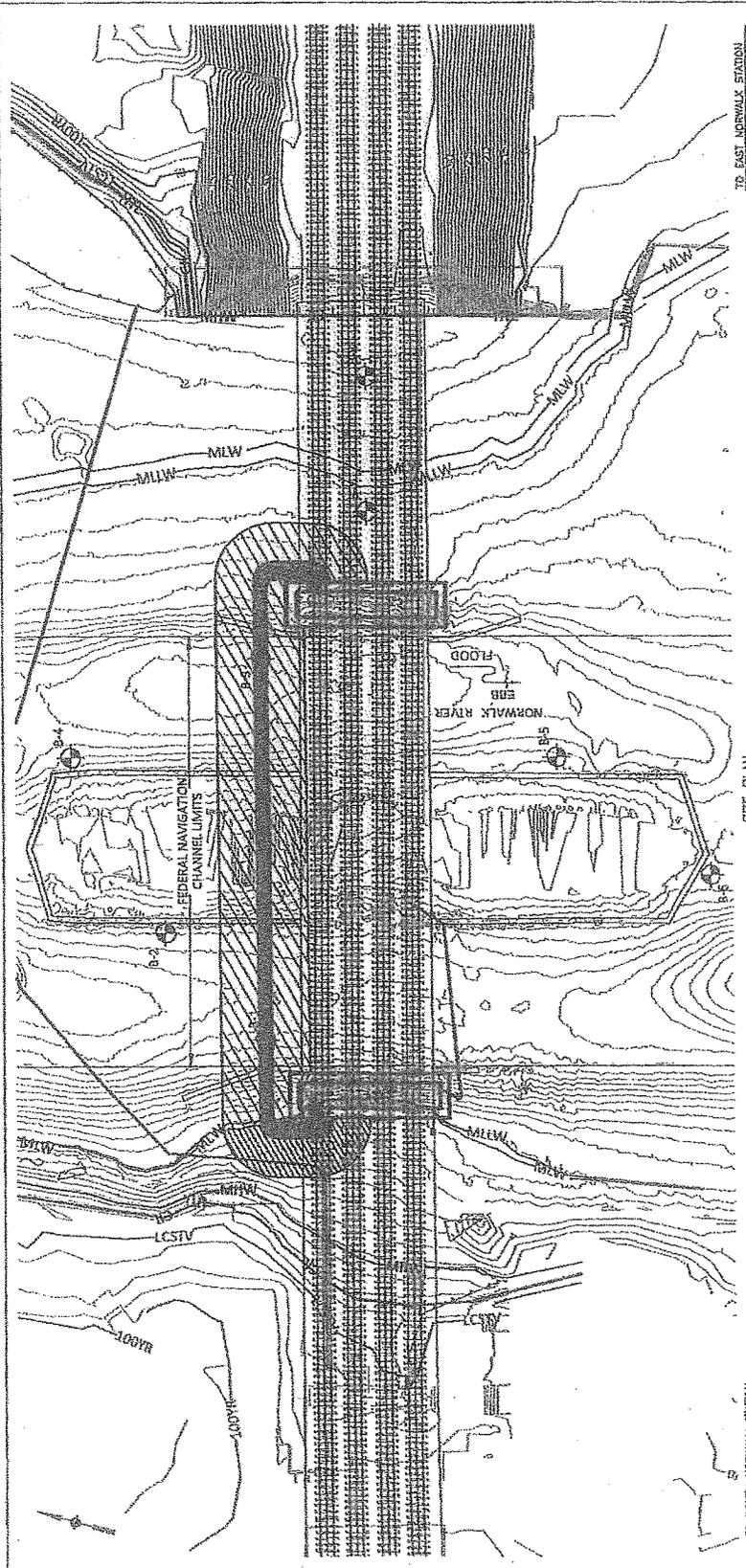
SCALE:

PROJECT NO.: 104-05-17

DRAWING NO.:

DATE:

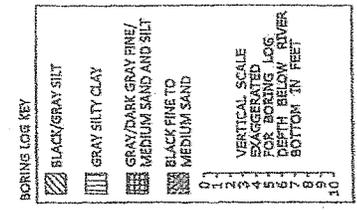
SCALE:



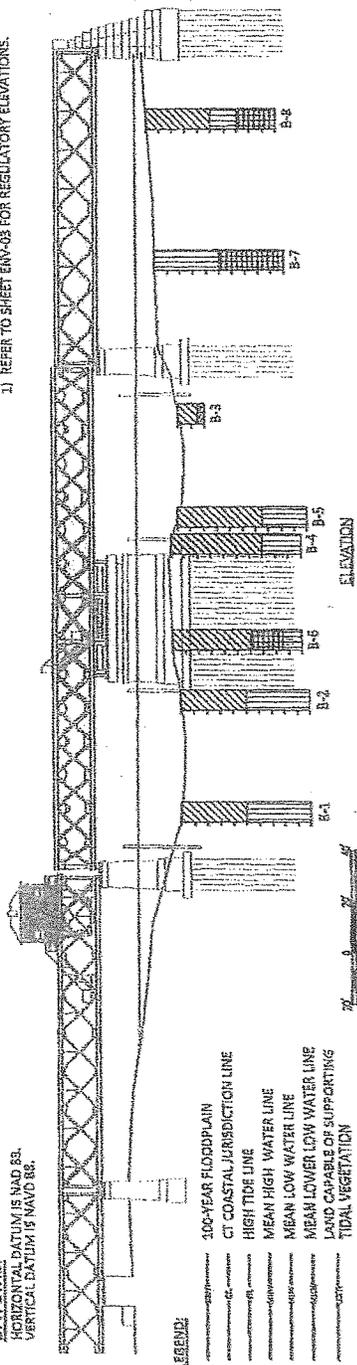
TO EAST NORWALK STATION

SITE PLAN

TO SOUTH NORWALK STATION

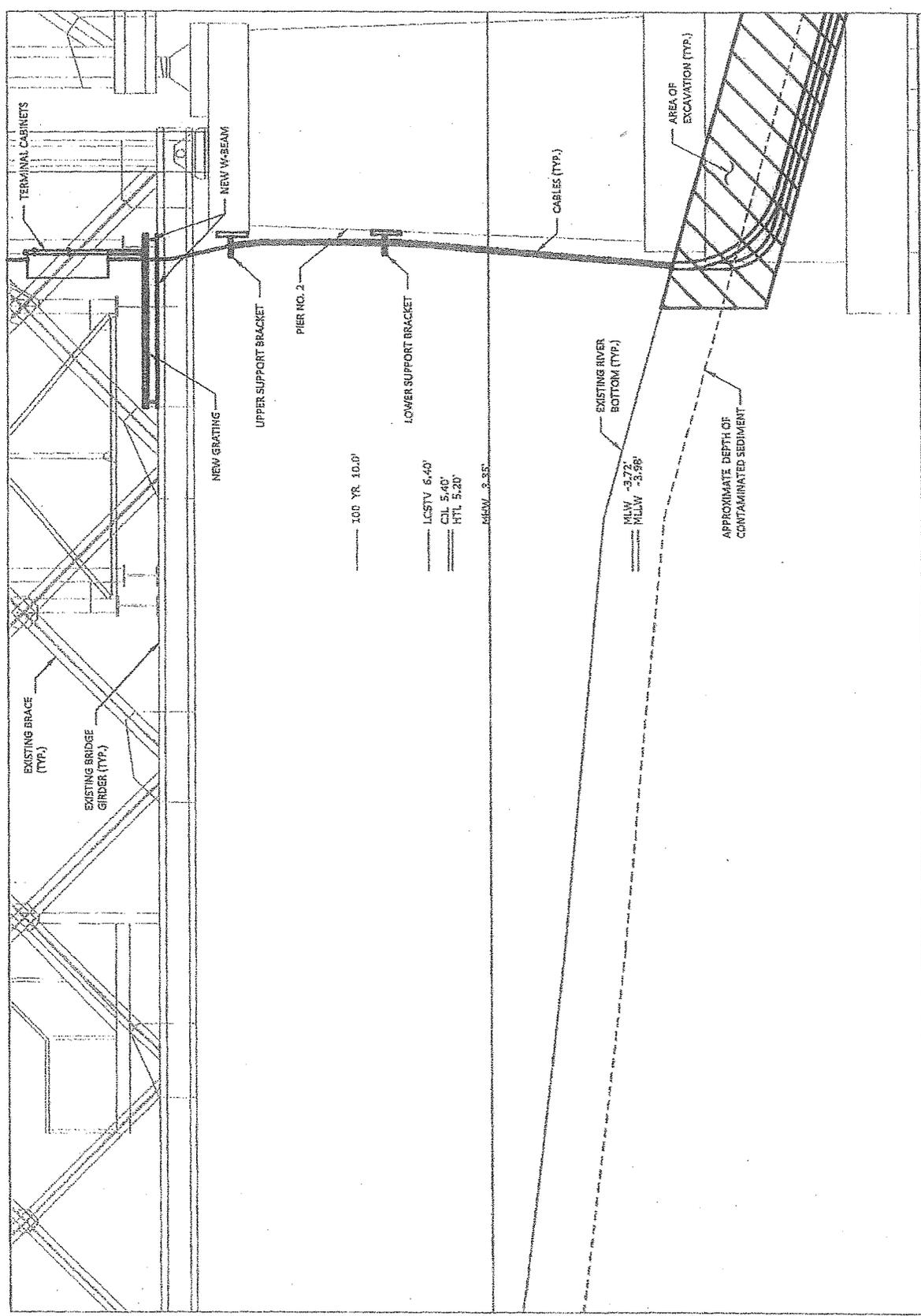


NOTES:
1) REFER TO SHEET ENV-08 FOR REGULATORY ELEVATIONS.



- LEGEND:**
- 100-YEAR FLOODPLAIN
 - CT COASTAL JURISDICTION LINE
 - HIGH TIDE LINE
 - MEAN HIGH WATER LINE
 - MEAN LOWER LOW WATER LINE
 - LAND CAPABLE OF SUPPORTING TIDAL VEGETATION
 - TIDAL WETLAND

CONTRACT NO. DATE SCALE DRAWING NO.	TITLE SUBSIDIARY CABLE DESIGN WALK BRIDGE SEDIMENT SAMPLER	PROJECT NO. DATE SCALE DRAWING NO.
CONTRACT NO. DATE SCALE DRAWING NO.	TITLE Bridge-18118 Walk Bridge 347 Madison Avenue New York, N.Y. 10017	PROJECT NO. DATE SCALE DRAWING NO.
CONTRACT NO. DATE SCALE DRAWING NO.	TITLE Bridge-18118 Walk Bridge 347 Madison Avenue New York, N.Y. 10017	PROJECT NO. DATE SCALE DRAWING NO.
CONTRACT NO. DATE SCALE DRAWING NO.	TITLE Bridge-18118 Walk Bridge 347 Madison Avenue New York, N.Y. 10017	PROJECT NO. DATE SCALE DRAWING NO.



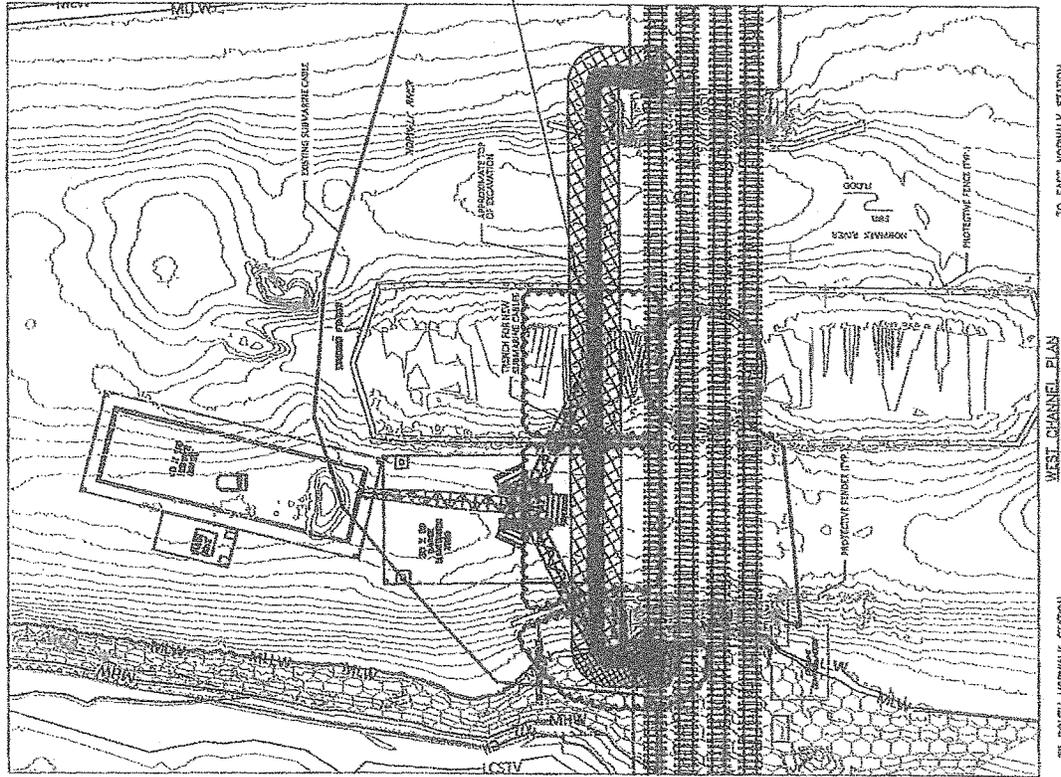
TO SOUTH SIDEWALK STATION		TO EAST SIDEWALK STATION	
DESIGNED	DATE	DESIGNED	DATE
DRAWN	SCALE	DRAWN	SCALE
CHECKED	PROJECT NO.	CHECKED	PROJECT NO.
APPROVED	CONTRACT NO.	APPROVED	CONTRACT NO.
SUBMARINE CABLE DESIGN		SUBMARINE CABLE DESIGN	
WALK BRIDGE		WALK BRIDGE	
LOCATION 1 ELEVATION		LOCATION 1 ELEVATION	
TITLE		TITLE	
2010 317 Madison Avenue New York, N.Y. 10017 PERKINS+WILL ARCHITECTS 1000 North Dearborn Street Chicago, Illinois 60610 TEL: 312.344.4000 FAX: 312.344.4001 WWW.PW.COM		2010 317 Madison Avenue New York, N.Y. 10017 PERKINS+WILL ARCHITECTS 1000 North Dearborn Street Chicago, Illinois 60610 TEL: 312.344.4000 FAX: 312.344.4001 WWW.PW.COM	
REVISIONS	REVISIONS	REVISIONS	REVISIONS

CONSTRUCTION PHASING:

- 1) MOBILIZE TO THE BRIDGE WITH CRANE BARGE, HOPPER BARGE AND SUPPORT EQUIPMENT.
- 2) SPUD DOWN BOTH BARGES ON THE NORTH SIDE OF WALK BRIDGE TO EXCAVATE WEST CHANNEL. PLACE TURBIDITY CURTAIN AROUND EXCAVATION AREA.
- 3) EXCAVATE USING CLAM BUCKET, DUMP ON HOPPER BARGE TO DEWATER. ADJUST BARGE AND TURBIDITY CURTAIN PLACEMENT AS NEEDED FOR EXCAVATION ACCESS.
- 4) MOVE BOTH BARGES TO NORTH SIDE EAST CHANNEL. PLACE TURBIDITY CURTAIN AROUND EXCAVATION AREA.

NOTE:

EXCAVATED MATERIAL WILL BE DISPOSED OF OFF SITE AT AN APPROVED LOCATION.
EAST CHANNEL OPEN TO BOAT TRAFFIC WHILE WORK TAKES PLACE IN THE WEST CHANNEL.



WEST CHANNEL PLAN
TO EAST WALK BRIDGE
TO EAST NORMALY STATION

- LEGEND:**
- 100-YEAR FLOODPLAIN
 - CT COASTAL JURISDICTION LINE
 - HIGH TIDE LINE
 - MEAN HIGH WATER LINE
 - MEAN LOW WATER LINE
 - MEAN LOWER LOW WATER LINE
 - LAND CAPABLE OF SUPPORTING TIDAL VEGETATION
 - TIDAL WETLAND
 - INTERTIDAL AREA
 - TURBIDITY CURTAIN (TYP.)

KEY

HYDROFLUIDIZATION TECHNIQUE:

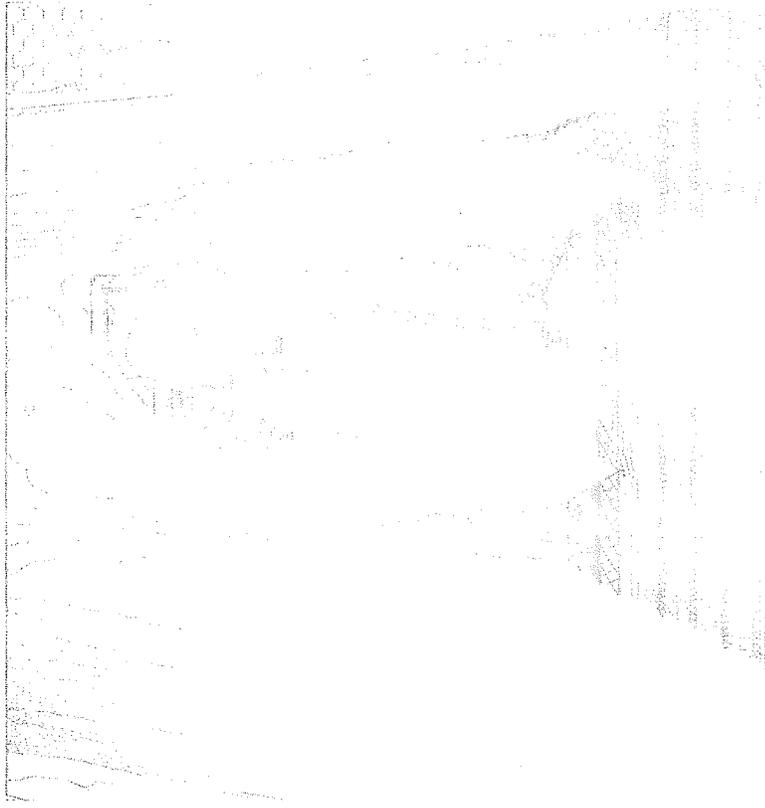
- TOTAL PERMANENT IMPACT
- IMPACT TO INTERTIDAL AREA

DESIGNED BY	DATE	SCALE	CONTRACT NO.
DRAWN BY	DATE	SCALE	CONTRACT NO.
CHECKED BY	DATE	SCALE	CONTRACT NO.
APPROVED BY	DATE	SCALE	CONTRACT NO.
PROJECT TITLE		SUBMERGED CHANNEL REGION WALK BRIDGE	
DRAWING TITLE		BARGE STAGING AND EXCAVATION PHASE 1 - HYDROFLUIDIZATION METHOD	
DESIGNER		M&E CONSULTANTS INC. 247 Madison Avenue New York, N.Y. 10017	
CLIENT		STATE OF CONNECTICUT	
DATE		REVISONS	
DATE		REVISONS	

CONSTRUCTION PHASING:

1. EXCAVATE USING CLAW SOCKET, DUMP ON HOPPER BARGE TO DEWATER. ADJUST SHEET PILE POSITION AS NEEDED FOR EXCAVATION ACCESS.

2. EXCAVATE TO 10' BELOW EXISTING GRADE. PLACE 18" CURB CURB ON EXCAVATION.



10/1/2011

10/1/2011

CONSTRUCTION PHASING:

- 1) MOBILIZE TO THE BRIDGE WITH CRANE BARGE, HOPPER BARGE AND SUPPORT EQUIPMENT.
- 2) SPUD DOWN BOTH BARGES ON THE NORTH SIDE OF WALK BRIDGE TO EXCAVATE WEST CHANNEL. PLACE TURBIDITY CURTAIN AROUND EXCAVATION AREA.
- 3) EXCAVATE USING CLAM BUCKET, DUMP ON HOPPER BARGE TO DEWATER. ADJUST BARGE AND TURBIDITY CURTAIN PLACEMENT AS NEEDED FOR EXCAVATION ACCESS.
- 4) MOVE BOTH BARGES TO NORTH SIDE EAST CHANNEL. PLACE TURBIDITY CURTAIN AROUND EXCAVATION AREA.

NOTE:

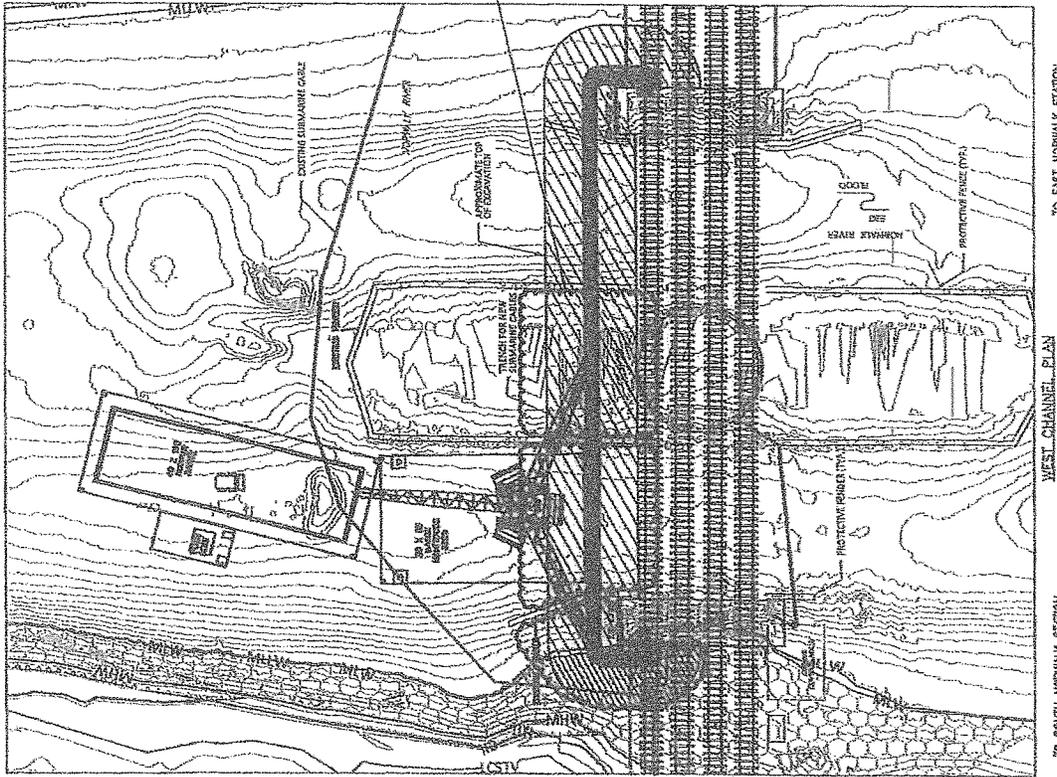
EXCAVATED MATERIAL WILL BE DISPOSED OF OFF SITE AT AN APPROVED LOCATION.
EAST CHANNEL OPEN TO BOAT TRAFFIC WHILE WORK TAKES PLACE IN THE WEST CHANNEL.

- LEGEND:**
- 100-YEAR FLOODPLAIN
 - CT COASTAL JURISDICTION LINE
 - HIGH TIDE LINE
 - MEAN HIGH WATER LINE
 - MEAN LOW WATER LINE
 - LANDS CAPABLE OF SUPPORTING TIDAL VEGETATION
 - TIDAL WETLAND
 - INTERTIDAL AREA
 - TURBIDITY CURTAIN (TYP.)

KEY

FULL EXCAVATION TECHNIQUE:

- TOTAL PERMANENT IMPACT
- IMPACT TO INTERTIDAL AREA



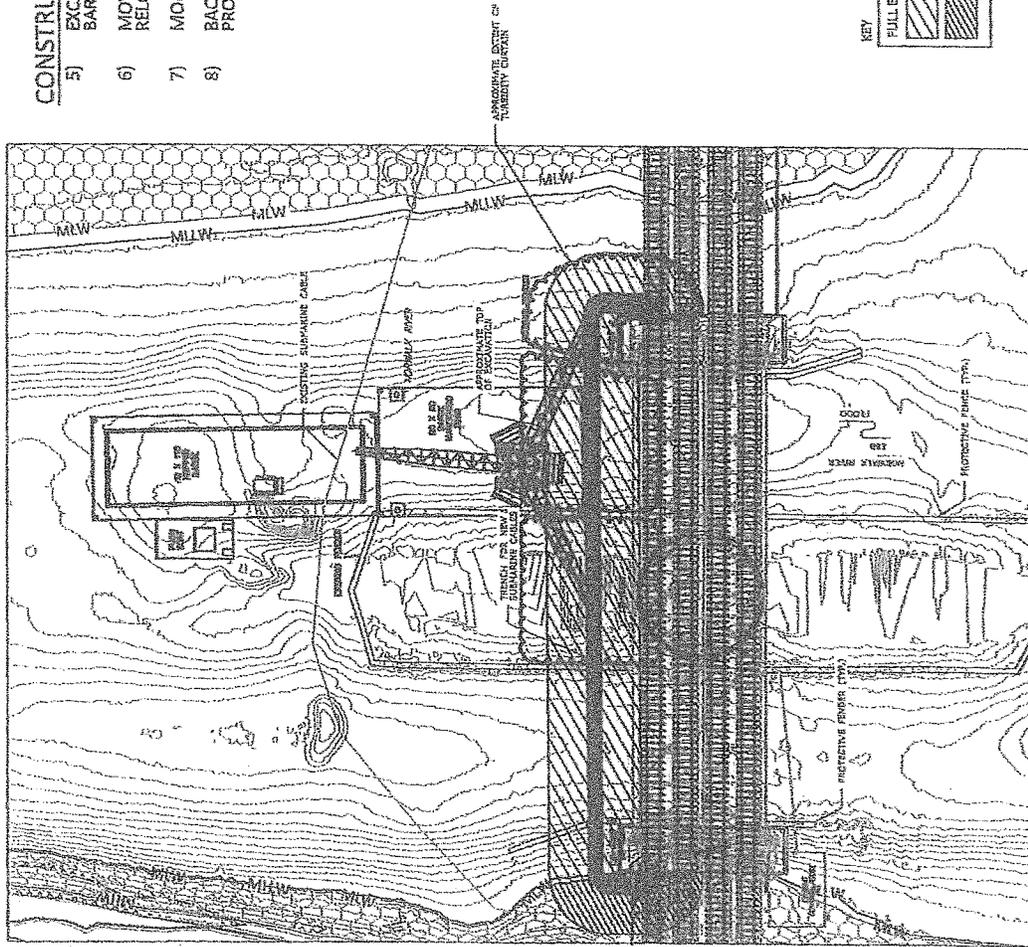
DESIGNED BY	DATE	CONTRACT NO.
DRAWN BY	SCALE	SIZE
CHECKED BY	DATE	09-03-17
APPROVED BY	PROJECT NO.	200996 NO.
		REV-10
TITLE SUBMARINE CABLE DENISE WALK BRIDGE BARGE STAGING AND RESCUENCE 1 - FULL EXCAVATION METHOD		
ENGINEER HNTB-ARCHITECT-PLANNERS NEW YORK, N.Y. 10017		
PROJECT NO. 10017		
DRAWN BY J. L. BROWN		
CHECKED BY J. L. BROWN		
APPROVED BY J. L. BROWN		
REVISIONS		

CONSTRUCTION PHASING:

- 5) EXCAVATE USING CLAM BUCKET, DUMP ON HOPPER BARGE TO DEWATER. ADJUST BARGE AND TURBIDITY CURTAIN PLACEMENT AS NEEDED FOR EXCAVATION ACCESS.
- 6) MOVE HOPPER BARGE OFF STATION AND OFFLOAD MATERIAL FOR PROPER DISPOSAL. RELOAD THE BARGE WITH CLEAN BACKFILL.
- 7) MOBILIZE EQUIPMENT TO PLACE CABLES, PLACE CABLES USING DIVERS.
- 8) BACKFILL TRENCH WITH SEDIMENT MIXTURE THAT MEETS CONSISTENCY AND PROPORTIONS OF THAT IDENTIFIED DURING PRE-EXCAVATION SAMPLING.

NOTE:

EXCAVATED MATERIAL WILL BE DISPOSED OF OFF-SITE AT AN APPROVED LOCATION. WEST CHANNEL OPEN TO BOAT TRAFFIC WHILE WORK TAKES PLACE IN THE EAST CHANNEL.



- LEGEND:**
- 100-YEAR FLOODPLAIN
 - COASTAL JURISDICTION LINE
 - HIGH TIDE LINE
 - MEAN HIGH WATER LINE
 - MEAN LOW WATER LINE
 - MEAN LOWER LOW WATER LINE
 - LAND CAPABLE OF SUPPORTING TIDAL VEGETATION
 - TOTAL WETLAND
 - INTERTIDAL AREA
 - TURBIDITY CURTAIN (TYP.)

KEY

FULL EXCAVATION TECHNIQUE:

- TOTAL PERMANENT IMPACT
- IMPACT TO INTERTIDAL AREA

SHEET NO. 100000000 SCALE 1" = 20' DATE 05-09-17 DRAWING NO. BR411		TITLE SUBMERGIBLE CABLE DESIGN WALK BRIDGE BARGE STAGING AND SEQUENCE 2 - FULL EXCAVATION METHOD	
PROJECT NO. 100000000 CONTRACT NO. 100000000		DESIGNER WATKINS ENGINEERING CONSULTANTS 547 Hudson Avenue New York, N.Y. 10017	
CHECKED BY DRAWN BY DATE		REVISIONS NO. 1 DATE DESCRIPTION	



Mitchell E. Mailman

Mr. Mailman has been the General Manager of Electric Lines Division of Welsbach Electric, since 1990. During that time, crews under his auspices have logged hundreds of thousands of man hours, working for over fifty utilities and municipal electric entities, in twenty states, all without a fatality or catastrophic injury. They have completed projects at both transmission and distribution voltages; building substations and generation facilities; running circuits: overhead, underground and underwater. A Journeyman Lineman for over forty years, and a certified cable splicer up through 345 Kv. He also holds multiple Bachelor and Master's degrees from Columbia University, which he attended for eight years. He is a Professional Engineer and Licensed Architect.

In addition to be hired by utility concerns, the Electric Lines Division has worked for manufacturers, acting as their in house installation arm for "turnkey" projects where they have been engaged to "furnish and install." On transmission cable installation jobs, these have included, Okonite, Kerite, Brugg; for electrical equipment projects, Southern States, Areva, S&C, Haefely Trench, ABB. He regularly is contacted by utilities in the planning and design stages of projects for expertise in construction feasibility and to devise implementation strategies. He has vast experience working on installations in environmentally sensitive areas and is fully conversant with the unique requirements of the US Army Corps of Engineers. He has experience working within major metropolitan areas such as New York, Boston, Washington DC, and Pittsburgh.

Mr. Mailman maintains a strong relationship with executives at the National Electrical Contractors Association and the International Brotherhood of Electrical Workers. He is a Director of the Northeastern Line Constructors Chapter of NECA, presides over the NEAT Apprenticeship Committee for the State of New Jersey and the same entity for IBEW Local 3 in New York City. He has twice chaired the joint Steering Committee of the IBEW and NECA responsible for the drafting of the "Safety Rules for the Outside Electrical Industry."

During his tenure, the Electric Lines Division has undertaken several large scale and highly complex substation projects. They expanded the 345 Kv, Sprain Brook Substation belonging to Con Edison, installing the largest Series Reactors ever manufactured. To prevent a shortage of available electrical capacity, the New York Power Authority, built five gas turbine generation facilities within four of the five boroughs of New York City requiring the construction of five 13 Kv to 138 Kv substations, as well as the expansion of Con Edison's Fox Hills, Gowanus, Hell Gate and Ravenswood substations, all in a five month period. He has overseen the installation of GIS equipment up through 345 Kv in substations belonging to the New York Power Authority, Rochester Gas and Electric, and Con Edison.

He is adroit at interfacing with utilities on substation projects where they are the approval body, though not necessarily the contracting entity. For the municipal electric company in Milltown, New Jersey, he oversaw Welsbach's design and construction building of a new 34.5 to 13 kv Substation, on the Public Service Electric and Gas system. For the Village of Freeport, Welsbach completed a "design/build" of their municipal 69 kv to 13 Kv substation, on the Long Island Power Authority's network that also included a three mile, 69 solid dielectric feeder.

The Welsbach Electric Lines Division is one of only a few electrical contractors in America who install and maintain pipe type cables and fluid filled feeders. As the prime contractor, they have placed new circuits beneath the streets of New York City, Boston and Pittsburgh for Con Edison, NStar, and Duquesne Light. They have worked on similar projects for Orange & Rockland, Florida Power and Light, the New York Power Authority, New York State Electric and Gas, Public Service Electric and Gas, Entergy, Long Island Lighting Company. They have also installed hundreds of circuit miles of solid dielectric, underground transmission cables within the territories of Atlantic City Electric, PPL, Con Edison, Rochester Gas and Electric, PEPCo, New York Power Authority.



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March 26, 2018

Dr. John Pinto
Chairman, Application Review Committee
Norwalk Harbor Management Commission
City Hall
125 East Avenue
Norwalk, Connecticut 06856

Subject: Proposal by Eversource Energy to relocate electric transmission lines under Norwalk Harbor

Dear Dr. Pinto,

At your request, I have carefully reviewed the various drawings you forwarded me describing a project Eversource is contemplating. It involves undergrounding a section of their 115 Kv overhead transmission feeders that presently occupy the Metro North Right of Way in Norwalk. This would be a permanent reroute, only brought about by the eventual replacement of the Railroad Bridge over the Norwalk River.

A feature of this design is the directional drilling of two, thirty inch casings beneath the Norwalk River, to the south of the existing vehicle/pedestrian bridge on Washington Street. Within these two casings would be individual conduits that would house solid dielectric cables. Essentially what is being created is an underground "dip".

At some point, west of the Railroad Bridge (near Elizabeth Street), the overhead circuits would transition onto a set of tall, tubular steel poles, known as "riser" or "transition" structures. These must be fitted out with terminations for the underground cables, along with lightning arresters to protect the underground cables. Although there are numerous design options as to how this can be accomplished, none of them are particularly aesthetically attractive. The existing overhead wires from the current structures are terminated, or in engineering parlance, "dead-ended" on the poles. Similarly, the underground cables emerge from being buried underground and are mounted to the poles as they extend vertically upward. The overhead wires are then connected to the underground cables by means of short sections of wire, called "taps".

Another set of riser structures would be needed somewhere to the east of the Railroad Bridge (near Fort Point Street) to bring the new sections of underground cable back up vertically to connect to the existing overhead wires. Once both new riser structures would be completed, the existing overhead wires between the structures would be rendered superfluous and could come down.

Since overhead transmission wires are not insulated, thus the significant air space between each of the various wires, they can be very thin relative to the amount of electricity they can carry. Not so, underground wires. These must be significantly thicker, owing to their being

1

insulated. (An overhead wire that may be 1.302 inches in overall diameter (1192.5 kc mil, ACSR, "Bunting"), would be equivalent in ampacity to a 4-inch diameter, 2000 kc mil, cross linked polyethylene insulated, underground feeder.) Of course, the insulation of the underground cable allows it to be buried underground safely and allows these cables to be positioned in close proximity one to the other.

Underground cables are negatively impacted by heat. As any cable carries electricity it gets hot. The hotter a cable, the less efficiently it operates. In any underground cable system, the designer's task is to devise means by which the heat can be dissipated off the cable and shed onto the surrounding subterranean environment. While this is achievable, it is vastly more complex with two sets of feeders. Whereas the individual cables of one circuit can be placed close together, there has to be significant space between each feeder when there are two or more sets of feeders. In this case, there are indeed two sets of feeders.

Physically placing transmission cables underground is a not very complex operation. A set of pipes are run prescribed distances between manholes. The manholes are where the various sections of cable are spliced together. Considering the overall diameter of underground cable and its weight, a typical 4-inch cross linked polyethylene insulated cable may weigh as much as twelve pounds per foot; there are, therefore, manufacturing, shipping and installation concerns relative to the cable that will dictate the spacing between manholes.

For cables of the nature needed for this project, the typical spacing is about 1800 feet, though stretches up to 2500+ feet are conceivable. The more bends in the route of the piping, both in the horizontal and vertical planes, the shorter the permissible spacing between splicing vaults.

When cables are run through streets, burying the pipes beneath the ground is not difficult. Common techniques applied to the construction of water mains, gas mains, communication ductbanks, and other buried electrical facilities are employed. These primarily are "open cut" excavations; where a piece of excavating equipment merely digs through the pavement and earth to create a trench. Once the piping is placed in the trench, the earth gets put back in the trench, "backfilled," and the work progresses. When the pipe and manholes have been installed, the cable can be pulled into the ducts.

Crossing a body of water requires entirely different construction methodologies. For many years, cables, be them electrical or communications, were simply placed on the bottom of the seabed, lake, river or whatever the body of water was. This did not afford the cables much mechanical protection. Cables were repeatedly damaged by anchors, dredging, shellfish gathering operations, and often were left "hanging in midair" if the contours of the sea bottom changed owing to tidal forces.

The next iteration of underwater cable crossings featured burying the facilities. In very rare instances, excavating equipment mounted on floating barges dug a trench through the water into the seabed into which the cables were then placed. A version of this technique involved building parallel cofferdams to hold back the water. The material in between the cofferdams would be removed and the cables or pipes are then able to be placed and backfilled, much like if this was on land.

Another common means of "burying" underwater cables involves "plowing" the cable under the bottom. Instead of digging a furrow, a plow, using water jets, can neatly dislodge the seabed to create a trench into which the cable could be set right after the slit was created in the sea floor. This also ensures that there would be material covering the cable to act as protection from mechanical hazards.

Plowing can reach formidable depths but poses difficulties for short water crossings. It entails sufficiently large equipment, tug boats and barges, which cannot operate in shallow waters. Furthermore, like the excavation methods, it has proved to be very harmful to marine biology owing to the disruption it causes to the sea floor and the turbidity it produces.

The current, most preferable, means of traversing a body of water with a pipe or cable involves some form of "trenchless technology", most commonly directional drilling. For longer crossings, those in excess of a mile, plowing remains the preferred technique. Virtually every shorter crossing today now employs, horizontal directional drilling. Since all the work can be accomplished from both shores, there is no need for deep draft vessels and barges. The pipes and/or cables can be drilled very deeply, so as to almost eliminate the risk of them being damaged once installed. If managed properly, the underground drilling activities have virtually no impact on marine life or water quality.

The terminology, "Directional Boring" and "Horizontal Directional Drilling" are used synonymously. Directional Boring is usually reserved for smaller diameter drills. For this project, the proposed drill is of the larger diameter category, exceeding 30 inches.

The technology is not very different from what is employed to drill oil wells. Oil well drilling involves vertical drilling; thus the tall, upright, steel structures whose purpose is to support the extensions attached to the drill head. Empirically, if you took an oil drilling rig and placed it on its side, you would be able to drill horizontally. That is not precisely what is done, however, the concept of directional drilling is just that.

Prior to commencing the drilling operation, there needs to be two large pits constructed at either end of the prescribed drill; one is the "launching pit", the other is the "receiving pit". The drill progresses from the launching pit to the receiving pit. These pits are substantially large in area and quite deep as well. Their main purposes are to provide an entry point (or exit point) for the drill head and to contain the "drilling mud". No differently than in the drilling of a deep oil well, the action of the drill head, owing to friction, gets quite hot, particularly when penetrating rock. The drill mud, lubricates and cools the head.

The drill head is always larger in diameter than the "drill steel"—the rods that are continuously spliced together to rotate the drill head from the "drill motor" which is on the drill rig, positioned near the drill hole. The drill mud is a slurry, usually composed of water and bentonite. In addition to lubricating and cooling the drill head, this slurry stabilizes the drilled hole. It "lines" the hole, keeping it from collapsing on the drill steel once the drill head advances.

Copious amounts of drill mud are required for any drill. It is constantly pumped into the drill hole. It is present in the launch pit all during the drilling. The "tailings", or the byproduct of the drilling, (sawdust, if one was drilling wood), get mixed in with the slurry. The slurry from the drill head eventually works its way back into the launch pit where it is "recycled" for reuse, by having the tailings removed.

The need for this drill mud is the greatest single environmental concern associated with directional drilling. It is a highly dense, chalky substance and one that readily becomes mixed with the petroleum-based lubricants employed with the various drilling components. Very often it is not properly controlled and spills well beyond the launch pit. It also has leached out subterraneously through the pit walls and bottoms. There are also numerous instances where underground estuaries or abandoned conduits have crossed the path of the drilled hole, or been adjacent to it, and the mud has found its way into these, which in turn has carried the mud substantial distances from the drilling location. Even the most carefully monitored projects cannot ameliorate the mess that accompanies the drilling mud, especially during the reaming procedure.

Horizontal Directional Drilling is a three-step process once the pits are constructed and the drill rig placed. Customarily it is a continuous operation, running around the clock, out of a fear that the drilled hole may collapse during a lull. Initially, a small diameter pilot hole is drilled from the launching pit to the receiving pit. Once the drill head emerges into the receiving pit, it is removed and replaced with a "reaming head". Whereas the drill head was "pushed" across to the other side of the crossing, the reaming head is "pulled" back to the drill rig situated by the launching pit. The reamer enlarges the pilot hole. Attached to the reaming head as it is retracted back to the drill rig are more lengths of drill steel. That way, there is a continuous "ribbon" from pit to pit.

For this particular project, the "casing", which is the pipe that is going to be placed within the final reamed out bore, is 30 inches in diameter. Depending on the wall thickness of the pipe, its overall outside diameter can vary. It will be necessary to ream a hole which is several inches larger than the pipe's overall diameter. This helps reduce the friction of the pipe coming in contact with the side walls of the reamed hole as it is pulled back and can "smooth out" some minor deviations in the routing of the drill.

Once the reaming has been completed, the casing pipe can be "pulled back" to the drill rig, in the same fashion the reamer was, employing the steel that had been attached to the reamer at the receiving pit. As measured orthographically, the length of the proposed crossing here is about 900 feet. A safe rule of thumb is to add between 2 and 5 percent to the orthographic distance to account for the parabolic configuration of the drill, to figure how long the actual length of the casing will be.

Before the casing can be "pulled back", it needs to be spliced together to form its total length. Most often, casings feature High Density Polyethylene pipe, (HDPE). The lengths are joined together by "heat fusion". The respective ends of the pipe are heated until they become molten and then they are forced together under great pressure and allowed to cool. This fusion will go on successively until the entire desired length is assembled. Very often the deciding factor as to

which side of the crossing becomes the "receiving" end, is whether or not there exists an ample stretch to lay out the entire run of casing. For this drill, Eversource proposed to assemble the pipe on the eastern shore of the river.

Horizontal Directional Drilling is constantly being perfected. Lengths and diameters of crossings have been increasing steadily. The pullback and thrust forces of drill rigs are now measurable in the millions of pounds. However, it remains by no means an "exact science." In order to properly direct the drill head, its exact location has to be known at all times. Data from its underground location, which in this case would be underwater as well, has to be received by the drill rig to allow the rig to exert the proper force directionally to keep the drill head on the predetermined course.

Many factors impact the ability of the drill rig to guide the drill. Data transmission is but one. The soil strata is another determinant. Encountering voids in the strata potentially creates deviations. Buried obstructions, including cobbles, rip rap, and buried debris) also pose problems for the drill head to navigate through while remaining "on course". Some drills cannot penetrate schists and other dense rocks. It is impossible for any driller to "guarantee" the precise path of the final bore. Deviations will vary. A drill within three feet of the desired exit point is deemed to be "spot on".

Just as the drill route cannot be assured to follow its prescribed path, the accuracy of the subterranean location of the casing once it is placed cannot be considered to be 100% accurate. Again, the data used to "locate" the bored hole can be impacted as it is transmitted. We have on several occasions needed to locate a cable that had been installed by directional drilling and failed to find it using the "as built" data we were furnished. In one instance we found the circuit a lateral distance of twelve feet from where it was "shown" to be.

After the casing is installed, the smaller diameter "inner ducts" need to be placed within the larger pipe. For this project, it will be within these smaller ducts that the eventual electrical cables will be placed.

While I am convinced that horizontal directional drilling is a viable means to install conduits and cables beneath bodies of water, I feel the present design, as depicted on a drawing bearing the title block, "Darien-Fitch and Sono-Sherwood 115 Kv Transmission Lines 1028 and 1146 HDD Plan and Profile" and labeled "Dwg. No. 01191-10005 PG 1", is very much, ill conceived.

Since 1990, I have been the General Manager of an entity that constructs and maintains facilities for electric utilities. This includes distribution and transmission circuits, substations and generation facilities. During that tenure, we have worked for fifty power concerns, located in twenty states. While we are highly skilled at building overhead lines, we are renowned for our work on underground and underwater, transmission circuits. This includes both solid dielectric feeders and pipe-type cable feeders.

Presently, we are working on a 4000+ foot crossing of the Mississippi River at Belle Chasse, Louisiana; near New Orleans. We have installed submarine feeders across the Great South Bay to Fire Island National Seashore on Long Island; beneath Barnagat Bay to power Long Beach.

Island, New Jersey; underneath The Race to power Plum Island from Long Island; crossed underneath the East River to connect Rikers Island to Queens in New York City; among other installations. We have worked on Circuits Y-49 and Y-50, which go underneath Long Island Sound from New Rochelle to Sands Point, connecting Westchester County to Nassau County, both in New York; and feeders 1385 A and 1385 B which was a link between Norwalk, Connecticut and Suffolk County, New York, also beneath Long Island Sound. We have installed submarine crossings across the Intercoastal Waterway in numerous spots. We are currently working with Florida Power and Light to locate a leak in a high pressure, gas filled, pipe-type cable that feeds Cape Canaveral and the Kennedy Space Center beneath the Indian River. In December 2017; we completed the installation of a new segment of 345 Kv submarine cable run below the bottom of the Hudson River, between Edgewater, New Jersey and West 52nd Street in Manhattan.

I am highly regarded among underground transmission cable manufacturers and designers, and utility engineers, as being one of the pre-eminent authorities on constructability and implementation, for all types of buried and submarine cable systems.

The problem of this Eversource design, as I perceive it, has to do with the location of the route. It is shown as going through an active public dock and boat launching facility which, we understand, is intended not only to serve local boaters, but also visitors to city attractions such as the Maritime Aquarium and SONO area. Docks are held in place with pilings, be they steel, wood or concrete. These get driven vertically by pile-driving equipment into the seabed. Attempting to drill the new pipe casings and thread them horizontally between pilings that now are under construction and will be in place at the time of the Eversource project is an iffy proposition.

While it is possible that someone may get lucky and be able to stay close to the desired route skirting these pilings, my greatest concern deals with the future. Having the new underground 115 Kv feeders running beneath the docks will clearly limit any expansion or modification to the facility in the future. It will be virtually impossible to drive new pilings anywhere within fifteen feet of what will be the presumed location of the new feeders. The utility would simply not permit such an encroachment on the undisturbed area they would demand to protect their asset.

Even if a rearrangement of the dock configuration is not contemplated for the currently foreseeable future, pilings deteriorate and require replacement, storms dislodge them and they need to be reinforced with new pilings. I, for one, cannot recall ever seeing a buried electric line that was routed underneath any existing facility, either on land, or underwater. Surely, in streets, lines crisscross existing utilities and go under storm water culverts; but this would be akin to routing a new feeder beneath the existing basement of someone's home.

Which begs the obvious questions, "Why even attempt this?" and, "Is there no other option?"

Horizontal Directional Drilling is a highly specialized and expensive undertaking. In New Jersey, we recently completed two "underbridge" crossings, each linking two land masses separated by water. We did not opt to drill. To get across the Atlantic City inlet and to feed Brigantine Island,

we installed fiberglass conduits beneath the Brigantine Bridge, a combination causeway and fixed span bridge. We did essentially the same thing on the Long Beach Island Bridge, connecting Shipbottom to Manahawkin. What differentiates those situations from the Washington Street Bridge is that those bridges are inoperable.

There are overhead crossings of estuaries. Maybe one of the longest is across the Hudson River outside of the Indian Point Power Plant in Buchanan, New York. Those 345 Kv lines extend almost four hundred feet above the river, between Buchanan in Westchester County and Stony Point in Rockland County. Each of the towers on the edge of the shores are 600 feet tall.

To reroute these lines away from the Railroad Bridge over the Norwalk River employing overhead feeders would require new steel poles to be set along fairly narrow and active streets. While this may seem undesirable aesthetically, it is done throughout New Orleans, including in the French Quarter and the historic Garden District.

It seems as if the route of the underground of these proposed underground/underwater feeders was chosen simply because it is fairly straight and aligns in an uncomplicated fashion with the present overhead lines. As stated earlier, bends in a ductbank configuration directly impact the installation of the cable. A phenomenon known as "sidewall pressure" must be addressed. As a cable negotiates any bend, it becomes forced up against the inside radius of the bend. This force is in a direction perpendicular to the cable and if too great can crush the cable insulation. The sharper a bend, the more force is generated on the cable. The closer a bend is to end of a cable pull, the greater the "sidewall pressure".

Employing larger diameter bends can mitigate "sidewall pressures". Historically, the minimum bending radius for this type of solid dielectric cable would be 12 times the outside diameter of one of the single cables. Standard bends for a duct bank for this cable would feature 48-inch radii bends, but bends with radii in the hundreds of feet are readily achievable and very commonplace in every underground transmission cable installation.

Bends in a conduit run also will impact the overall pulling tension; in other words, how much tension can be put on the cable while it is being pulled in. For circuits such as this one, only a single cable is installed in one pipe. To complete the feeder, one pulls three cables, in three, separate pipes. The larger the overall diameter of the conductor (the current carrying component of the cable, often copper, as opposed to the insulation), the more tension it is allowed to have imparted in it. The conductor sizing for this project is unlikely to be less than 2500 kc mil and may more likely be 3500 kc mil. A 3500 kc mil conductor can be pulled in tension upwards to 28,000 pounds, whereas the smaller 2500 kc mil conductor can be tensioned to 20,000. It is highly unlikely those ultimate pulling tension limits would preclude introducing any series of horizontal or vertical bends into any cable route involving these cables.

We believe it is both prudent and practical to reorient the proposed route of the underground cable beginning at the western shore of the Norwalk River. There is ample landing area along the eastern shore of the river to employ Horizontal Directional Drilling in order to cross the river and in no way impact the public dock and boating facility. Clearly this would necessitate

7

routing the crossings to the south to keep them away from the public facilities. Doing so, would introduce a new bend, or sets of bends, within the park to have the ducts get back to Fort Point Street. That might necessitate an additional splice vault, but it would leave the city's public dock and boating facility thoroughly unencumbered both permanently and during construction.

On face, this seems to be one of many possible new routes across the river, but the one that makes the most use of the existing design. Another possibility is to come down Elizabeth Street as is currently shown, but to run north on Water Street toward the Washington Street Bridge and then head across the river slightly south of the bridge. But while the drills might miss the public boating facility on the east bank of the river, there is a marina directly in the vicinity on the western bank. There is the possibility of crossing the river just to the north of the Washington Street Bridge and coming up in Constitution Park. This would then allow the new ducts to reunite with the existing overhead lines via Goldstein Place, or continue along Fort Point Street as presently depicted.

We recognize the pressing need to remove the current 115 Kv overhead lines from the existing railroad bridge crossing the Norwalk River, however, we cannot endorse the current route of the replacement underground feeders. The design is impractical in its thinking that Horizontal Directional Drilling can be accurate to within the tolerances it is showing, and moreover, it is irresponsible in limiting in perpetuity the functionality of a vital resource to the City of Norwalk—that being its principal public dock and boating facility. Even if there existed no plausible alternative to the current design, to which we feel strongly there are many, we would label the current design, "short sighted" and likely the result of an ill-conceived, hasty effort.

Thank you for the opportunity to assist the Harbor Management Commission. I trust that the foregoing analysis will be helpful. Please let me know if you have any questions or wish to discuss this matter further.

Sincerely,

A handwritten signature in cursive script, appearing to read "Mitchell Mailman".

Mitchell Mailman