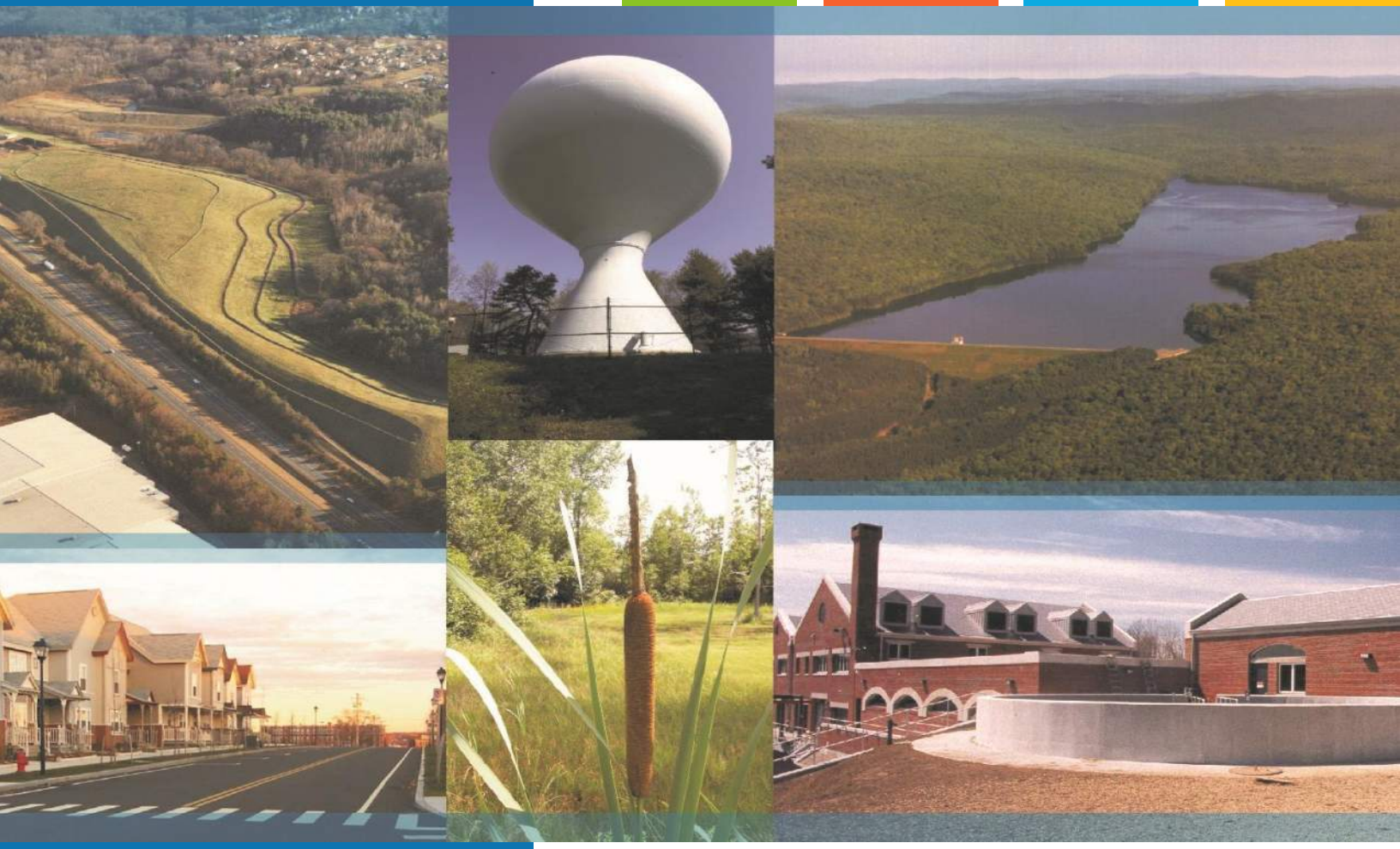

Saugatuck Reservoir Dam Streamflow Release
Weston, CT

Inland Wetlands and Watercourses Commission

Permitted Use as of Right Notification

Aquarion Water Company

January 2024

Tighe&Bond

100% Recyclable

TRANSMITTAL

Tighe&Bond

Project No.: A-1000-185
Date: January 22, 2024

Re: Weston Conservation Commission Permitted Use as of Right Notification for Saugatuck Reservoir Dam Release Project

To: Conservation Commission
56 Norfield Road
P.O. Box 1007
Weston, CT 06883

Copy:

☐ **FOR SIGNATURE** ☐ **FOR FILE** ☐ **AS REQUESTED** ☒ **FOR REVIEW** ☐ **PLEASE REPLY**

NO. COPIES	DESCRIPTION
1	Permitted Use as of Right Notification for work within a locally regulated watercourse for Saugatuck Reservoir Dam Streamflow Release Project located at Valley Forge Road, Weston, CT 06883.

Very truly yours,
Tighe & Bond, Inc.

Matthew Regan

Matthew Regan, PWS
Senior Environmental Scientist

A-1000-185

January 22, 2024

Conservation Commission
56 Norfield Road
P.O. Box 1007
Weston, Connecticut 06883

Re: **Aquarion Water Company – Saugatuck Reservoir Dam Streamflow Release Project**

Dear Commissioners:

On behalf of Aquarion Water Company (AWC), Tighe & Bond is notifying the Town of Weston Conservation Commission of an as of right activity. AWC will be installing a new stream flow release pipe and flow meter at the Saugatuck Reservoir Dam property owned by AWC at Valley Forge Road in Weston, Connecticut.

AWC proposes to install a new 16-inch tap on the 30-inch supply main downstream of the Lower Gatehouse. The new 16-inch tap will run parallel to the existing 16-inch stream flow release pipe and terminate immediately west of the existing 16-inch stream flow release pipe. An extension of the existing wing wall and additional rip rap for energy dissipation are anticipated. Work proposed will directly impact an inland watercourse. Construction will include erosion and sedimentation controls and will use construction Best Management Practices.

The proposed work is a permitted as of right activity as defined in the Town of Weston Inland Wetlands and Watercourses Regulations Section 4.1e (see also Connecticut General Statutes (CGS), Chapter 440 Sec 22a-40 (5)), where the activity is defined as the construction and operation, by water companies of facilities necessary to the impounding, storage, and withdrawal of water in connection with public water supplies.

If you have any questions or require project clarification, please do not hesitate to contact Daniel Valentine at (860) 704-4772 or DFValentine@tigheBond.com or me at (716) 949-9131 or MRegan@tighebond.com.

Very truly yours,

TIGHE & BOND, INC.

Matthew Regan

Matthew Regan, PWS
Senior Environmental Scientist

Enclosures
Copy: Bill Dwinells, Aquarion Water Company
Daniel Valentine, PE, Tighe & Bond

TOWN of WESTON, CONNECTICUT

Incorporated 1787

Conservation Commission

INLAND WETLANDS AND WATERCOURSES APPLICATION

This Application is for a five-year permit to conduct a regulated activity or activities pursuant to the Inland Wetlands and Watercourses Regulations of the Town of Weston ("The Regulations")

PROPERTY ADDRESS: Valley Forge Road, Weston, CT 06883

Assessor's Map # 9 **Block #** 3 **Lot #** 3

PROJECT DESCRIPTION *(general purpose)* Installation of a new stream flow release pipe with a discharge at the existing blow off pipe discharge apron and associated riprap in the Saugatuck River.

Total Acres 4.61 Total Acres of Wetlands and Watercourses 1.4

Acreage of Wetlands and Watercourses Altered 0.08 Upland Area Altered 0

Acres Linear Feet of Stream Alteration 30 Total Acres Proposed Open Space 0

OWNER(S) OF RECORD: *(Please list all owners, attach extra sheet if necessary)*

Name: Aquarion Water Company Phone: 203-337-5906

Address: 600 Lindley Street

Email: bdwinells@aquarionwater.com

APPLICANT/AUTHORIZED AGENT:

Name: Aquarion Water Company Phone: 203-337-5906

Address: 600 Lindley Street

Email: bdwinells@aquarionwater.com

CONSULTANTS: *(Please provide, if applicable)*

Engineer: Daniel Valentine, PE Phone: 860-704-4772

Address: 213 Court St. #1100, Middletown, CT 06457 Email: dfvalentine@tighebond.com

Soil Scientist: Matthew Regan Phone: 716-949-9131

Address: 213 Court St. #1100, Middletown, CT 06457 Email: mregan@tighebond.com

Legal Counsel: _____ Phone: 203-337-5906

Address: _____ Email: _____

Surveyor: _____ Phone: 203-337-5906

Address: _____ Email: _____

PROPERTY INFORMATION

Property Address: Valley Forge Road, Weston, CT 06883

Existing Conditions *(Describe existing property and structures)*: _____

The Saugatuck Reservoir Dam is primarily surrounded by forested and residential land. See attachments for more details.

Provide a detailed description and purpose of proposed activity *(attach sheet with additional information if needed):* Installation of a new stream flow release pipe and flow meter inside existing building.

See attachments for more details.

Is this property within a subdivision *(circle):* Yes or (No)
Square feet of proposed impervious surfaces *(roads, buildings, parking, etc.)*: _____

Subject property to be affected by proposed activity contains:

- ☐ wetlands soils
- ☐ swamp
- ☐ floodplain
- ☐ marsh
- ☐ bog
- ☐ lake or pond
- ☑ stream or river
- ☐ other _____

The proposed activity will involve the following within wetlands, watercourse, and/or review area:

- ☐ Alteration
- ☐ Discharge to
- ☐ Removal of Materials
- ☐ Construction
- ☐ Discharge from
- ☑ Deposition of Materials
- ☐ Pollution
- ☐ Bridge or Culvert
- ☐ Other _____

Amount, type, and location of materials to be removed, deposited, or stockpiled:

Approximately 46 cubic yards of rip rap to be deposited in the Saugatuck River. See attachments for more details.

Description, work sequence, and duration of activities:

See attachments for more details.

Describe alternatives considered and why the proposal described herein was chosen:

This is the least environmentally impactful option.

Does the proposed activity involve the installation and/or repair of an existing septic system(s) *(circle):* Yes or (No)

The Westport/Weston Health District Approval: _____

ADJOINING MUNICIPALITIES AND NOTICE:

If any of the situations below apply, the applicant is required to give written notice of his/her application to the Inland Wetlands Agency of the adjoining municipality, on the same day that he/she submits this application. Notification must be sent by Certified Mail with Return Receipt Requested.

The property is located within 500 feet of any town boundary line;
A significant portion of the traffic to the completed project will use streets within the adjoining municipality to enter or exit the site;

A portion of the water drainage from the project site will flow through and significantly impact the sewage system or drainage systems within the adjoining municipality; or
Water runoff from the improved site will impact streets or other municipal or private property within the adjoining municipality

AQUARION WATER COMPANY

Pursuant to Section 8.4 of the Weston regulations, the Aquarion Water Company must be notified of any regulated activity proposed within its watersheds. Maps showing approximate watershed boundaries are available at the office of the Commission. If the project site lies within these boundaries, send notice, site plan, and grading and erosion control plan via certified mail, return receipt requested, within seven (7) days of submitting application to the Commission, to:

George S. Logan, Director – Environmental Management
Aquarion Water Company
714 Black Rock Turnpike
Easton, CT 06612

The Commissioner of the Connecticut Department of Public Health must also be notified in the same manner in a format prescribed by that commissioner.

The undersigned, as owner(s) of the property, hereby consents to necessary and proper inspections of the above mentioned property by Commissioners and agents of the Conservation Commission, Town of Weston, at reasonable times, both before and after a final decision has been issued by the Commission.

The undersigned hereby acknowledges to have read the "Application Requirements and Procedures" in completing this application.

The undersigned hereby certifies that the information provided in this application, including its supporting documentation is true and he/she is aware of the penalties provided in Section 22a-376 of the Connecticut General Statues for knowingly providing false or misleading information.

Bill Dwinnell 1/19/2024

Signature of Owner(s) of Record Date

Signature of Authorized Agent Date

FOR OFFICE USE ONLY

Administrative Approval

Initials Date

Table of Contents

Appendices

J:\A\A1000 AWC\185 - Streamflow Releases\Permitting\Local Wetland\Saugatuck\Saugatuck IWWC Narrative_2.docx

Section 1 Introduction

This Inland Wetlands and Watercourses permitted use as of right application is being submitted on behalf of Aquarion Water Company (AWC) for the installation of a new stream flow release pipe and flow meter at the Saugatuck Reservoir Dam (the Project). Installation of the proposed system will occur at property owned by AWC on Valley Forge Road in Weston, Connecticut (the Project Site).

The proposed work is a permitted as of right activity as defined in the Town of Weston Inland Wetlands and Watercourses Regulations (effective March 16, 2011) Section 4.1e (see also Connecticut General Statutes (CGS), Chapter 440 § 22a-40(5)), where the activity is defined as the construction and operation, by water companies of facilities necessary to the impounding, storage and withdrawal of water in connection with public water supplies.

A USGS Site Location Map (Figure 1), an Orthophotograph (Figure 2), and a set of Project Drawings are provided in Appendix A. Photographs of the Project Site are provided in Appendix B with photos of the resource areas.

1.1 Purpose and Need

In 2005, the Connecticut General Assembly passed Public Act 05-142 (CGS Section 26-141a and b), which required the Connecticut Department of Energy and Environmental Protection (CTDEEP) to update standards for maintaining minimum flows in rivers and streams. The act required these standards to balance river and stream ecology and wildlife and recreation while also providing for public health, flood control, industry, public utilities, water supply, public safety, agriculture, and other lawful uses of water. This effort culminated in the adoption of the Stream Flow Standards and Regulations in December 2011. Stream and river classifications throughout Connecticut were completed in March 2019.

The Saugatuck Reservoir dam on the Saugatuck River has an approximately 300-foot-long spillway that discharges to the Saugatuck River. The reservoir level is currently recorded by a submersible level transducer and the signal is sent back to SCADA via cellular for use in calculating the flow over the spillway.

The 36-inch supply main from the Upper Gatehouse reduces to 30 inches in the basement of the Lower Gatehouse and then to 16 inches below grade, south of the Lower Gatehouse. The 16-inch water line is used as the current means for stream flow release and discharges at a concrete wing wall just west of the concrete blowoff headwall. There is a 16-inch butterfly valve near the outlet which serves as the flow control for the stream flow release. The combined spillway flow and stream flow release is measured and recorded by a USGS stream gauge approximately 600 feet downstream of the stream release location. However, there is a delay between the time the valve is adjusted and the time the USGS stream gauge reacts. The USGS stream gauge information is also unavailable while on site, so operators would need to go back to the office and check the value. AWC wishes to have a real-time means to adjust the stream flow release while on site.

The existing 16-inch stream flow release can supply more than enough flow for the maximum stream flow release (11,490 gallons per minute [gpm]) even if the reservoir

was 20 feet below the spillway elevation. However, the velocity through the 16-inch stream flow release is unacceptable for flows more than approximately 8,700 gpm which includes the required releases from March 1 – May 31. Therefore, AWC will need to make improvements to meet the future stream flow release requirements for the Habitat Forming and Clupeid Spawning bioperiods

Section 2 Existing Conditions

This section provides a site description of the project and resource areas.

2.1 Project Site

The Project Site is located at a 5-acre parcel east of Valley Forge Road in Weston, Connecticut. The Project location is shown on Figure 1.

The Saugatuck Reservoir Dam is primarily surrounded by forested and residential land. Valley Forge Road is located west of the Project Site. The Saugatuck River flows south through the Dam. Topography south of the dam is moderately steep.

2.2 Mapped Soil Types

Digitally available updated soil survey information was obtained from the Natural Resources Conservation Service (NRCS) as depicted on the attached soil map and detailed below.

Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony (52C)

The Sutton series consists of very deep, moderately well drained loamy soils formed in melt-out till. They are nearly level to strongly sloping soils on hills, low ridges, and ground moraines, typically on footslopes, lower backslopes and in slight depressions. These soils do not meet hydric criteria.

Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stoney (62D)

Both Canton and Charlton components are typically found on ridges, morraines, and hills. The parent material for Canton soils consists of coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist. The parent material for Charlton soils consists of coarse-loamy melt-out till derived from gneiss, granite, and/or schist. Both soils have a natural drainage class of well drained. These soils do not meet hydric criteria.

Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky (73C)

The Charlton component is typically found on hills and uplands, while the Chatfield component is typically found on bedrock-controlled ridges and hills, and uplands. The parent material for both soils consist of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss with a natural drainage class of well drained. These soils do not meet hydric criteria.

Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky (73E)

The Charlton component is typically found on hills and uplands, while the Chatfield component is typically found on bedrock-controlled ridges and hills, and uplands. The parent material for both soils consist of coarse-loamy melt-out till derived from granite

and/or schist and/or gneiss with a natural drainage class of well drained. These soils do not meet hydric criteria.

2.3 Resource Area Investigation

On June 22, 2023, a Tighe & Bond qualified soil scientist and Professional Wetland Scientist conducted wetland resource area delineations within the limits of the Project area. Tighe & Bond's wetland delineation was conducted in accordance with local, state, and federal guidelines, the Connecticut Inland Wetlands and Watercourses Act (§ 22a-36 to 22a-45), and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0, U.S. Army Corps of Engineers, January 2012).

2.4 Description of Resource Areas

One watercourse is described below.

2.4.1 Saugatuck River

Saugatuck River is approximately 18 feet wide and depth ranged from 3 to 36 inches. Riffles, pools, and runs were present. Saugatuck River is classified by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) as an unknown perennial riverine wetland with an unconsolidated bottom and a permanently flooded water regime (R5UBH) adjacent to an excavated palustrine wetland with an unconsolidated bottom wetland and a permanently flooded water regime (PUBHx).

2.3 Natural Diversity Database

Tighe & Bond conducted a CTDEEP Natural Diversity Database (NDDB) map review (map dated June 2023) for potential endangered, threatened, or special concern species or designated critical habitats within the Project area. According to CTDEEP NDDB, the Project work area is not within the vicinity of a recorded occurrence of an endangered, threatened, or special species of concern.

2.5 Floodplain

Based on the Federal Emergency Management Agency's (FEMA) Panel Number 09001C0401F (effective 6/18/2010), the Project Site is located within Zone AE and a regulatory floodway. The limits of floodplain and floodway are depicted on the project plans.

Section 3 Project Description

This section provides a description of the proposed new release flow meter and vault, proposed site stabilization measures along, and Best Management Practices (BMPs) included in the project construction to minimize disturbances.

3.1 Proposed Activities

AWC proposes to install a new 16-inch tap on the 30-inch supply main downstream of the Lower Gatehouse. The new 16-inch tap will run parallel to the existing 16-inch stream flow release pipe and terminate immediately west of the existing 16-inch stream flow release pipe. An extension of the existing wing wall and additional rip rap for energy dissipation are anticipated.

A strap-on flow meter will be installed on the 30-inch supply main in the basement of the Lower Gatehouse downstream of the 30-inch gate valve. The flow meter installed in this location will allow measurement of the combined streamflow release between the two 16-inch stream flow release pipes. The flow rate between each of the two stream flow release pipes will be controlled by the valves on the individual 16-inch lines. The flow rate should be split approximately the same between the two lines by opening each valve the same number of turns to maintain acceptable velocities through each pipe.

A flow meter transmitter will be installed on the second floor of the Lower Gatehouse to allow monitoring of the stream flow release flow rate and will allow operators to adjust the valves and observe the change in flow while on site. The flow rate from the strap-on ultrasonic flow meter will not be sent back to SCADA, rather, the combined spillway flow and stream flow release will be measured and recorded by the USGS stream gauge approximately 600 feet downstream of the stream release location as it is now.

3.2 Protective Measures

Wetland resource areas at the site will be protected by erosion control barriers consisting of compost filter sock, turbidity curtain, and temporary cofferdam if needed. The control measures are to be installed along the edge of the work areas. These protective measures will be placed in a fashion that restricts access to the wetlands and watercourse resource areas while allowing the contractor to conduct work within the limits of the Project. The locations of the protective measures are shown on the Project Drawings provided in this application. The Project Drawings also includes Erosion Control and Resource Area Notes on Sheet G-002 and details on Sheet C-201.

Section 4 Regulatory Information

Wetlands and watercourses are regulated by municipal, state, and federal laws and regulations, each with different definitions and regulatory requirements. Accordingly, the state and municipalities may regulate wetlands and waters that fall outside of federal jurisdiction; however, where Federal jurisdiction exists, concurrent state and municipal jurisdiction is almost always present.

Connecticut wetland determinations and municipal regulations are prepared and adopted in accordance with the Connecticut Inland Wetlands and Watercourse Act, § 22a-36 to 22a-45.

4.1 State Regulations

State wetland boundaries are based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land. Watercourses are defined as "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 state or any portion thereof." Intermittent watercourse determinations are made based on the presence of a defined permanent channel and bank, and two of the following characteristics: (1) evidence of scour or deposits of recent alluvium or detritus, (2) the presence of standing or flowing water for a duration longer than a particular storm incident, and (3) the presence of hydrophytic vegetation.

The proposed work is a permitted use as of right activity as defined in CGS Chapter 440 § 22a-40(5), where the activity is defined as the construction and operation, by water companies of facilities necessary to the impounding, storage and withdrawal of water in connection with public water supplies.

4.2 Municipal Regulations

The Town of Weston Inland Wetlands and Watercourse Regulations apply to activities within the following areas:

- the boundaries of wetlands and watercourses,
- within 100 feet of wetlands and watercourses.

The proposed work is a permitted use as of right activity as defined in the Town of Weston Inland Wetlands and Watercourse Regulations Section 4.1e, where the activity is defined as the construction and operation, by water companies of facilities necessary to the impounding, storage and withdrawal of water in connection with public water supplies.

4.3 Summary of Regulated Activities

Proposed activities are within the Saugatuck River. The Saugatuck will be temporarily impacted by the installation of a turbidity curtain to provide dry work conditions. Approximately 2,600 square feet (sf) of the Saugatuck River will be temporarily impacted by the installation of the turbidity curtain. Rip rap is necessary for energy dissipation. The placement of rip rap will result in approximately 835 sf / 46 cubic yards (cy) of permanent

fill in the Saugatuck River. There are no proposed disturbances within upland review area or wetlands. Refer to sheet C-103 for details of the regulated activities.

Section 5 Summary

AWC proposes approximately 3,425 sf / 46 cy of disturbance within the Saugatuck River for the installation of a new stream flow release pipe and flow meter. Disturbance to wetlands and upland review area is not proposed.

Appendix A

Figures
Project Drawings

Tighe&Bond

1. Based on USGS Topographic Map for Westport, CT
2. USGS Topographic Map for Botsford, CT
3. USGS Topographic Map for Norwalk North, CT
4. USGS Topographic Map for Bethel, CT
Contour Interval Equals 10 Feet.

1:24,000

0 1,000 2,000

Feet

N

FIGURE 1
SITE LOCUS AND DOWNSTREAM AREA MAP

Saugatuck Reservoir Dam
Valley Forge Road
Weston, Connecticut
Dam ID: 15701

January 2024

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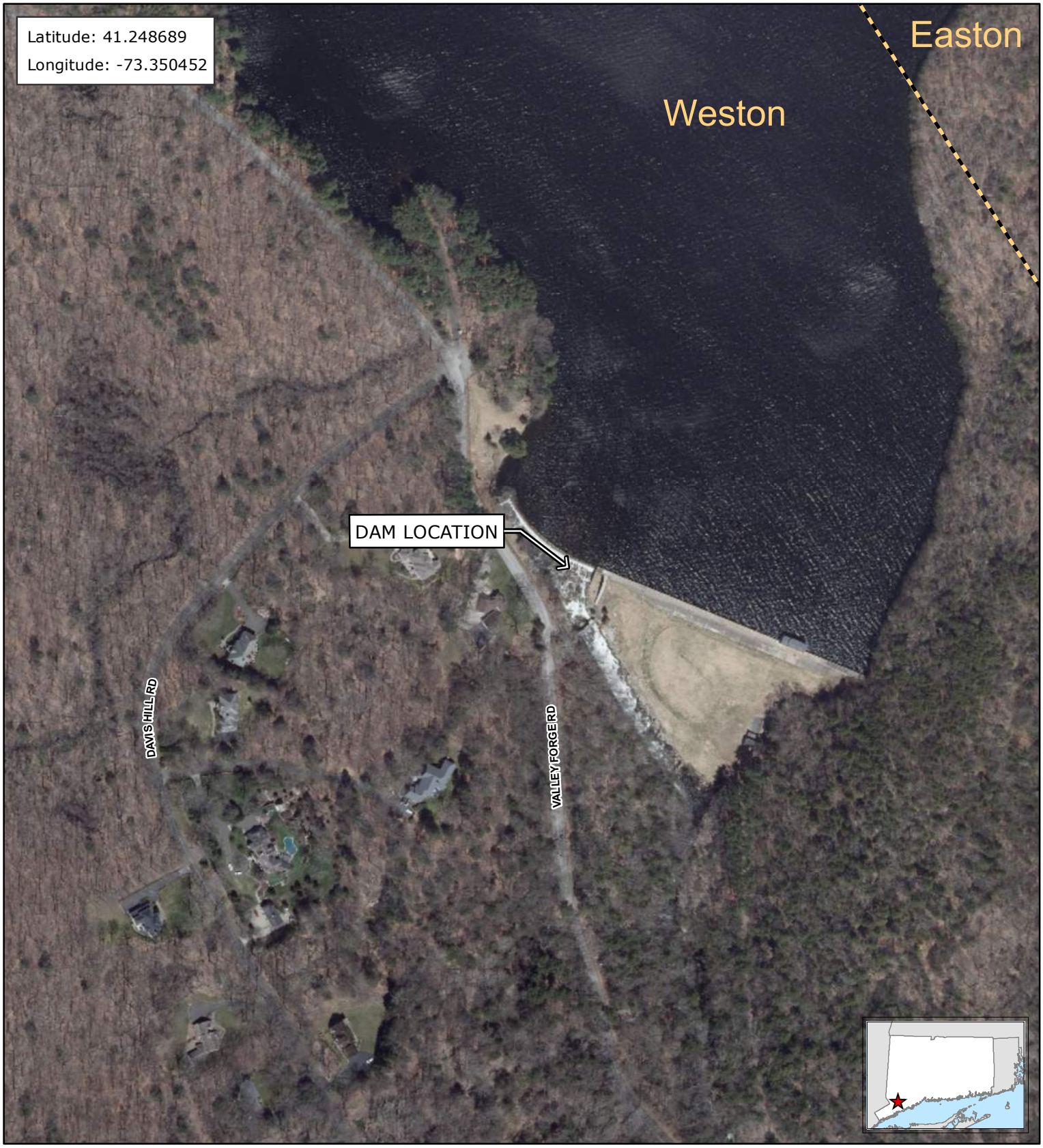
A-1000



Legend

CT Municipal Boundary

Tighe&Bond

Based on 2019 Statewide Leaf-Off Orthophotography, Courtesy of CTECO.

1:3,600

0 150 300

Feet

N

FIGURE 2
ORTHOPHOTOGRAPH

Saugatuck Reservoir Dam
Valley Forge Road
Weston, Connecticut
Dam ID: 15701

January 2024

G:\GIS\CT\SiteLocus\WestonCT\Saugatuck_Reservoir_Dam\Saugatuck_Reservoir_Dam_Weston_Aerial.mxd

A-1000

FIGURE 3
WETLAND DELINEATION SITE PLAN

LEGEND

- Culvert
- Stream Release
- Bank Flag
- Delineated Inland Bank
- 2-Foot Contour
- Saugatuck River

LOCUS MAP

N

0 50 100

Feet

1:1,200

NOTES

1. Based on 2019 Statewide Orthophotography, Courtesy of CTECO.
2. Contours derived from CTECO 2016 LiDAR

Saugatuck Reservoir Dam
Valley Forge Road
Weston, Connecticut
Dam ID: 15701

January 2024

Tighe&Bond

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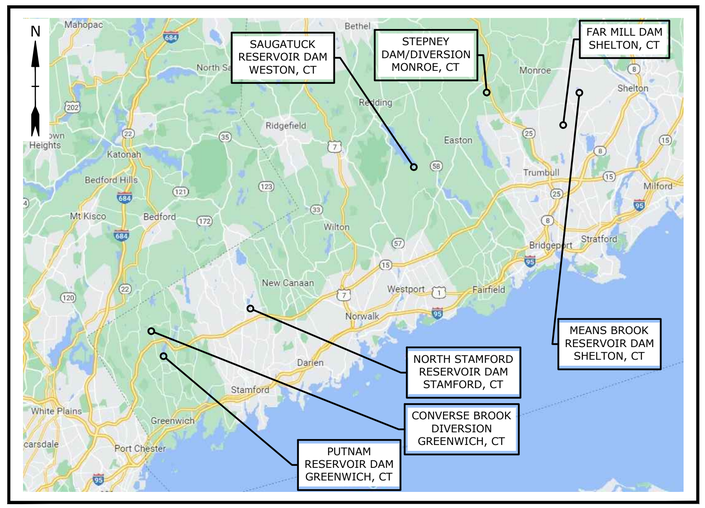
AQUARION WATER COMPANY

STREAM FLOW RELEASE MODIFICATIONS FOR VARIOUS DAMS AND DIVERSIONS

JANUARY 2024

LIST OF DRAWINGS		
SHEET NO.	DRAWING NO.	DRAWING TITLE
1	G-001	COVER SHEET
2	G-002	NOTES, ABBREVIATIONS, AND LEGEND
3	C-101	STEPNEY (WEST PEQUONNOCK) DAM/DIVERSION
4	C-102	NORTH STAMFORD RESERVOIR DAM
5	C-103	SAUGATUCK RESERVOIR DAM
6	C-104	FAR MILL RESERVOIR DAM
7	C-105	MEANS BROOK RESERVOIR DAM
8	C-106	PUTNAM RESERVOIR DAM
9	C-107	CONVERSE BROOK DIVERSION
10	C-201	CIVIL DETAILS I OF II
11	C-202	CIVIL DETAILS II OF II
12	S-001	STRUCTURAL NOTES
13	S-101	STRUCTURAL CONVERSE BROOK FLOW MONITORING WEIR PLAN & SECTIONS
14	E-001	ELECTRICAL NOTES, ABBREVIATIONS, AND LEGEND
15	E-101	STEPNEY (WEST PEQUONNOCK) DAM/DIVERSION - ELECTRICAL
16	E-102	NORTH STAMFORD RESERVOIR DAM - ELECTRICAL
17	E-103	SAUGATUCK RESERVOIR DAM - ELECTRICAL
18	E-104	MEANS BROOK RESERVOIR DAM - ELECTRICAL
19	E-105	PUTNAM RESERVOIR DAM - ELECTRICAL
20	E-201	ELECTRICAL WIRING DIAGRAMS, DETAILS, AND SCHEDULES



LOCATION MAP
NO SCALE

PREPARED BY:

Tighe&Bond

STATE OF CONNECTICUT
PETER GALANT
LICENSED
15970
PROFESSIONAL ENGINEER
01/19/2024

Digitally signed by Peter Galant
Date: 2024.01.19 10:55:51-05'00'

PETER B. GALANT, PE

STATE OF CONNECTICUT
DANIEL F. VALENTINE
LICENSED
29068
PROFESSIONAL ENGINEER
01/19/2024

Digitally signed by Daniel F. Valentine
Date: 2024.01.19 10:47:01-05'00'

DANIEL F. VALENTINE, PE

PREPARED FOR:
AQUARION WATER COMPANY

ISSUED FOR BIDDING

COMPLETE SET 20 SHEETS

Last Saved: 1/11/2024
Printed: Thursday, January 11, 2024 - 4:30pm By: KKortright
Tighe & Bond: J:\A\A1000 AWC\185 - Streamflow Releases\Drawings_Figures\AutoCAD\Sheet\A1000-185-G-001.dwg

CIVIL NOTES

1. NOTIFY "CALL BEFORE YOU DIG" AT 1-800-922-4455 AND OTHER UTILITY OWNERS IN THE AREA NOT ON THE "CALL BEFORE YOU DIG" LIST AT LEAST 72 HOURS PRIOR TO ANY DIGGING, TRENCHING, ROCK REMOVAL, DEMOLITION, BORING, BACKFILLING, GRADING, LANDSCAPING, OR ANY OTHER EARTH MOVING OPERATIONS.
2. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION. THE GRADES AND LOCATION OF EXISTING UNDERGROUND UTILITIES AND APPURTENANCES AS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER. THE EXACT SIZE, TYPE, LOCATION AND ELEVATION OF UNDERGROUND UTILITIES SHALL BE THOROUGHLY INVESTIGATED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL FIELD MEASURE TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGE WHICH MIGHT BE OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.
3. NOT ALL OF THE UTILITY SERVICES TO BUILDINGS ARE SHOWN. THE CONTRACTOR SHALL ANTICIPATE THAT EACH BUILDING HAS SERVICE CONNECTIONS FOR THE VARIOUS UTILITIES.
4. EXCAVATE TEST PITS TO LOCATE EXISTING UTILITIES AS SHOWN ON THE DRAWINGS AND AS DIRECTED OR APPROVED BY THE ENGINEER. TEST PITS TO BE PERFORMED UNDER PAY ITEM NO. 9, SECTION 01290.
5. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF FIELD CONDITIONS ARE OBSERVED THAT VARY SIGNIFICANTLY FROM THOSE SHOWN ON THE DRAWINGS, IMMEDIATELY NOTIFY THE ENGINEER IN WRITING FOR RESOLUTION OF THE CONFLICTING INFORMATION.
6. PROTECT AND MAINTAIN ALL UTILITIES IN THE AREAS UNDER CONSTRUCTION DURING THE WORK. LEAVE ALL PIPES AND STRUCTURES WITHIN THE LIMITS OF THE CONTRACT IN A CLEAN AND OPERABLE CONDITION AT THE COMPLETION OF THE WORK. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SAND AND SILT FROM DISTURBED AREAS FROM MIGRATING BEYOND THE WORK AREA.
7. NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICT, ERROR, AMBIGUITY, OR DISCREPANCY WITH THE PLANS OR BETWEEN THE PLANS AND ANY APPLICABLE LAW, REGULATION, CODE, STANDARD SPECIFICATION, OR MANUFACTURER'S INSTRUCTIONS.
8. NOTIFY THE ENGINEER OF ANY UTILITIES IDENTIFIED DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE DRAWINGS OR THAT DIFFER IN SIZE OR MATERIAL.
9. OBTAIN, PAY FOR AND COMPLY WITH PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK. ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE JURISDICTIONAL AUTHORITIES. PERMITS OBTAINED DURING DESIGN BY THE OWNER ARE INCLUDED IN THE PROJECT MANUAL FOR REFERENCE BUT ARE NOT NECESSARILY THE ONLY PERMITS REQUIRED BY THE WORK.
10. CONTRACTOR SHALL EMPLOY A SURVEYOR LICENSED IN THE STATE OF CONNECTICUT TO DETERMINE LINES AND GRADES.
11. SHORE UTILITY TRENCHES WHERE FIELD CONDITIONS DICTATE AND/OR WHERE REQUIRED BY LOCAL, STATE AND FEDERAL HEALTH AND SAFETY CODES.
12. THE CONTRACTOR IS RESPONSIBLE FOR SUPPORT OF EXISTING UTILITIES AND REPAIR OR REPLACEMENT COSTS OF UTILITIES DAMAGED DURING CONSTRUCTION, WHETHER ABOVE OR BELOW GRADE. REPLACE DAMAGED UTILITIES IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER AND AT NO COST TO THE PROPERTY OWNER.
13. TAKE NECESSARY MEASURES AND PROVIDE CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH TO PREVENT ACCESS TO ALL WORK AND STAGING AREAS AT THE COMPLETION OF EACH DAYS WORK.
14. NO OPEN TRENCHES WILL BE ALLOWED OVER NIGHT IN ACCESS ROADS WITHOUT APPROVAL OF THE OWNER. THE USE OF ROAD PLATES TO PROTECT THE EXCAVATION WILL BE CONSIDERED UPON REQUEST, BUT BACKFILLING IS PREFERRED.
15. RE-GRADE ALL AREAS DISTURBED BY THE WORK TO ORIGINAL CONTOURS IF NO PROPOSED CONTOURS ARE SHOWN, OR PROPOSED CONTOURS, AS REQUIRED BY THE DRAWINGS.
16. AREAS DISTURBED BY WORK NOT OTHERWISE INDICATED ON THE DRAWINGS SHALL BE RESTORED BY LOAM AND SEED PER SECTION 02920 OF THE PROJECT MANUAL.
17. ALL PAVEMENT DAMAGED OR REMOVED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE DRAWINGS AND PROJECT MANUAL. PROVIDE A SMOOTH, FLUSH TRANSITION BETWEEN ALL NEW AND EXISTING PAVEMENTS. SAWCUT SQUARE EDGES PRIOR TO PLACEMENT OF NEW PAVEMENT. REPLACEMENT PACEMENT THICKNESS AND MATERIAL TO MATCH EXISTING.
18. MAINTAIN EMERGENCY ACCESS TO ALL PROPERTIES AND BUILDINGS WITHIN THE PROJECT AREA AT ALL TIMES DURING CONSTRUCTION.
19. ALL STRUCTURES, UTILITIES, EQUIPMENT AND PIPING LAYOUT ELEVATIONS AND DIMENSIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH EQUIPMENT SUPPLIED, AND/OR EXISTING CONDITIONS. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AS REQUIRED, PRIOR TO BEGINNING DEMOLITION OF THE EXISTING EQUIPMENT AND/OR CONSTRUCTION OF ALL NEW FACILITIES, EQUIPMENT, OR PIPING THAT MAY BE AFFECTED.
20. THE CONTRACTOR SHALL PROVIDE AND INSTALL AT NO ADDITIONAL COST TO THE OWNER ALL SUPPORTS, FITTINGS, SLEEVES, NIPPLES, CONNECTORS, AND ACCESSORIES NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF PIPING AND EQUIPMENT COMPLETE AND OPERATIONAL.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITION THROUGHOUT CONSTRUCTION. NEITHER THE DRAWINGS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.

EROSION CONTROL AND RESOURCE AREA PROTECTION NOTES

1. PROVIDE ALL EROSION CONTROL MEASURES SHOWN, SPECIFIED, REQUIRED BY PERMIT, AND/OR REQUIRED BY THE ENGINEER PRIOR TO ANY CONSTRUCTION OR IMMEDIATELY UPON REQUEST. MAINTAIN SUCH CONTROL MEASURES UNTIL FINAL SURFACE TREATMENTS ARE IN PLACE AND/OR UNTIL PERMANENT VEGETATION IS ESTABLISHED. INSPECT AFTER EACH RAINSTORM AND DURING MAJOR STORM EVENTS TO CONFIRM THAT ALL SEDIMENTATION AND EROSION CONTROL MEASURES REQUIRED ARE IN PLACE AND EFFECTIVE.
2. PRIOR TO STARTING WORK, CLEARLY STAKE WORK LIMITS. DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE PROPOSED LIMITS. COORDINATE WITH THE ENGINEER FOR LOCATIONS OF TEMPORARY STOCKPILING OF TOPSOIL DURING CONSTRUCTION.
3. PROVIDE ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHOWN IN THE CONTRACT DOCUMENTS IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "2002, CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL," DEEP BULLETIN NO. 34, AND ALL AMENDMENTS AND ADDENDA THERETO AS PUBLISHED BY THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION. WHERE THE 2002 GUIDELINES AND THE DRAWINGS CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
4. INSTALL SILT SACKS OR OTHER APPROVED SEDIMENTATION BARRIERS IN/AT ALL CATCH BASINS IN THE PROJECT AREA.
5. COMPACT, STABILIZE, AND LOAM AND SEED SIDE SLOPES, SHOULDER AREAS AND DISTURBED VEGETATED AREAS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AS REQUIRED BY PERMITS. GRADE SIDE SLOPES, SHOULDER AREAS AND DISTURBED VEGETATED AREAS TO A MAXIMUM SLOPE OF 3 HORIZONTAL TO 1 VERTICAL (3H:1V), WHERE POSSIBLE. PROVIDE BIODEGRADABLE EROSION CONTROL BLANKETS TO PREVENT EROSION WHERE SLOPES ARE STEEPER THAN 3H:1V.
6. SETTLE OR FILTER ALL SILT-LADEN WATER FROM DEWATERING ACTIVITIES IN A SEDIMENTATION OR FILTER BAG TO REMOVE SEDIMENTS PRIOR TO RELEASE USING A SEDIMENTATION OR FILTER BAG LOCATED DOWN-GRADIENT OF THE DEWATERED AREA. DEWATERING SEDIMENTATION OR FILTRATION SHALL BE SIZED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
7. REMOVE AND PROPERLY DISPOSE OF SILT TRAPPED AT BARRIERS IN UPLAND AREAS OUTSIDE WETLAND BUFFER ZONES. REMOVE MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASINS AT THE COMPLETION OF THE PROJECT. RESTORE ALL DISTURBED AREAS TO THEIR PRE-CONSTRUCTION CONDITION.
8. SWEEP, COLLECT, REMOVE AND DISPOSE OF ANY SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS AT THE END OF EACH DAY.
9. LOAM AND SEED ALL DISTURBED VEGETATED AREAS TO ESTABLISH COVER AND STABILIZATION AS SOON AS POSSIBLE FOLLOWING DISTURBANCE.
10. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES ON-SITE FOR EMERGENCY REPAIRS.
11. STORE FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS IN A SECONDARY CONTAINER AND REMOVE TO A SECURE LOCKED AND COVERED AREA DURING NON-WORK HOURS.
12. PROVIDE A SUPPLY OF ABSORBENT SPILL RESPONSE MATERIALS SUCH AS BOOMS, BLANKETS, AND OIL ABSORBENT MATERIALS AT THE CONSTRUCTION SITE AT ALL TIMES TO CLEAN UP POTENTIAL SPILLS OF HAZARDOUS MATERIALS. IMMEDIATELY REPORT SPILLS OF HAZARDOUS MATERIALS TO THE OWNER AND ENGINEER.
13. VEHICLE PARKING, REFUELING, AND ROUTINE EQUIPMENT MAINTENANCE SHALL ONLY BE PERFORMED IN THE DESIGNATED STAGING AREAS. LONG TERM PARKING OF VEHICLES OR EQUIPMENT AND EQUIPMENT REFUELING SHALL NOT BE PERFORMED WITHIN THE RESERVOIR WATERSHEDS. MINOR SERVICING AND REFUELING OF EQUIPMENT SHALL BE COMPLETED ON A FUELING PAD WITH CONTAINMENT. ALL MAJOR EQUIPMENT REPAIRS MUST BE MADE OFF SITE. ONSITE FUEL STORAGE IS DISCOURAGED.
14. THE BURYING OF STUMPS AND CONSTRUCTION DEBRIS ON THE SITE(S) IS NOT PERMITTED.
15. CONTRACTOR SHALL MAKE SURE PORTABLE TOILETS ARE IN GOOD WORKING ORDER AND SHALL NOT BE PERMITTED WITHIN THE RESERVOIR WATERSHEDS. CHECK FREQUENTLY FOR LEAKS.

CONSTRUCTION IN WETLANDS

1. DURING PREPARATION OF WETLAND AREAS AFTER COMPLETION OF CLEARING AND GRUBBING, WETLAND BLOCKS AND/OR ORGANIC TOPSOIL THAT IS FREE OF INVASIVE PLANT SPECIES SHALL BE REMOVED AND SEGREGATED ON SITE FOR REUSE IN THE IN-SITU WETLAND RESTORATION. IF ADDITIONAL TOPSOIL IS REQUIRED, SUCH SHALL CONSIST OF A MIXTURE OF EQUAL VOLUMES OF CLEAN, WEED AND SEED FREE ORGANIC AND MINERAL MATERIALS. WELL-DECOMPOSED CLEAN LEAF COMPOST IS THE PREFERRED SOIL AMENDMENT TO ACHIEVE THE ORGANIC STANDARD. SUPPLEMENTAL TOPSOIL IN WETLAND REPLACEMENT AREAS SHALL HAVE A MINIMUM ORGANIC CARBON CONTENT OF 4-12% (7 TO 21 PERCENT ORGANIC MATTER) ON A DRY WEIGHT BASIS.
2. UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED WETLAND AREAS SHALL BE RESTORED IN ACCORDANCE WITH SECTION 02920 WITH A WETLAND SEED MIX CONTAINING ONLY PLANT SPECIES NATIVE TO NEW ENGLAND WHICH SHALL NOT CONTAIN ANY SPECIES LISTED IN THE "INVASIVE AND OTHER UNACCEPTABLE PLANT SPECIES" APPENDIX K IN THE "NEW ENGLAND DISTRICT COMPENSATORY MITIGATION STANDARD OPERATING PROCEDURES FOUND AT: https://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/Compensatory-Mitigation-SOP-2020.pdf?ver=EWhCrK70ZfmPr--8x0K5Jg%3d%3d

GENERAL NOTES

1. TOPOGRAPHY AND BASE MAP FEATURES FOR THE FAR MILLS RESERVOIR DAM, MEANS BROOK RESERVOIR DAM, AND PUTNAM RESERVOIR DAM SITES ARE BASED ON AVAILABLE RECORD DRAWINGS. HORIZONTAL DATUM REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. TOPOGRAPHY AND BASE MAP FEATURES FOR THE STEPNEY RESERVOIR DAM/DIVERSION SITE WERE COLLECTED BY WSP USA INC, IN FEBRUARY 2023. UNDERGROUND UTILITY BASE MAP FEATURES AT THE SITE ARE BASED ON DRAWINGS DEVELOPED BY ALBERT B. HILL CONSULTING ENGINEERS DATED SEPTEMBER 1926. HORIZONTAL DATUM REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. TOPOGRAPHY AND BASE MAP FEATURES AT THE NORTH STAMFORD RESERVOIR DAM SITE WERE COLLECTED BY MARTIN SURVEYING ASSOCIATES, LLC CONDUCTED JUNE THROUGH JULY 2023. UNDERGROUND UTILITY BASE MAP FEATURES AT THE SITE ARE BASED ON DRAWINGS DEVELOPED BY ROALD HAESTAD, INC. DATED JULY 2011. HORIZONTAL DATUM REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. TOPOGRAPHY AND BASE MAP FEATURES AT THE SAUGATUCK RESERVOIR DAM SITE WERE COLLECTED BY MARTIN SURVEYING ASSOCIATES, LLC CONDUCTED JUNE THROUGH JULY 2023. UNDERGROUND UTILITY BASE MAP FEATURES AT THE SITE ARE BASED ON RECORD DRAWINGS DEVELOPED BY TATA & HOWARD, INC. DATED MARCH 2014. HORIZONTAL DATUM REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
5. BOLD TEXT AND LINES INDICATE PROPOSED WORK. LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
6. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES, LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM TIGHE & BOND.
7. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY, COORDINATION WITH THE OWNER, ALL SUBCONTRACTORS, AND WITH OTHER CONTRACTORS WORKING WITHIN THE LIMITS OF WORK, AND THE MEANS AND METHODS OF CONSTRUCTING THE PROPOSED WORK.
8. REMOVE AND DISPOSE OF ALL CONSTRUCTION-RELATED WASTE MATERIALS AND DEBRIS IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS.
9. THE TERM "DEMOLISH" USED ON THE DRAWINGS MEANS TO REMOVE AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
10. THE TERM "ABANDON" USED ON THE DRAWINGS MEANS TO LEAVE IN PLACE AND TAKE APPROPRIATE MEASURES TO DECOMMISSION AS SPECIFIED OR NOTED ON THE DRAWINGS.
11. THE TERM "REMOVE AND REINSTALL" USED ON THE DRAWINGS MEANS TO DETACH ITEMS FROM EXISTING CONSTRUCTION, IN A MANNER TO PREVENT DAMAGE, PREPARE FOR REUSE, AND REINSTALL WHERE INDICATED.
12. THE TERM "REMOVE AND SALVAGE" USED ON THE DRAWINGS MEANS TO DETACH ITEMS FROM EXISTING CONSTRUCTION, IN A MANNER TO PREVENT DAMAGE AND DELIVER TO OWNER READY FOR STORAGE.
13. THE TERM "EXISTING TO REMAIN" USED ON THE DRAWINGS MEANS TO LEAVE EXISTING ITEMS THAT ARE NOT TO BE REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE SALVAGED OR REINSTALLED.
14. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH EXISTING CONDITIONS BY CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
15. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISRUPTED BY THE CONTRACTOR, EMPLOY A LICENSED SURVEYOR TO REPLACE IT.

WATER MAIN NOTES

1. HORIZONTAL AND VERTICAL LOCATION OF WATER MAINS MAY BE MODIFIED TO FIT EXISTING FIELD CONDITIONS, UPON APPROVAL OF THE ENGINEER.
2. MINIMUM DEPTH OF COVER OVER PROPOSED WATER MAIN SHALL BE 4'-6" FEET, UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
3. ALL BELOW GRADE VALVES AND FITTINGS SHALL HAVE MECHANICAL JOINT (MJ) ENDS. RESTRAIN ALL VALVE AND FITTING JOINTS WITH RETAINER GLANDS.
4. WHERE A COUPLING IS CALLED FOR ON THE DRAWINGS TO CONNECT A PROPOSED WATER MAIN TO AN EXISTING WATER MAIN PROVIDE A SOLID SLEEVE, IF POSSIBLE. RESTRAIN SOLID SLEEVE TO PIPES WITH RETAINER GLANDS. IF OUTSIDE DIAMETER OF EXISTING WATER MAIN DOES NOT ALLOW INSTALLATION OF SOLID SLEEVE, PROVIDE TRANSITION COUPLING.
5. SLEEVES, NIPPLES, AND ACCESSORIES NECESSARY FOR CONNECTION BETWEEN EXISTING AND PROPOSED PIPES MAY NOT BE SHOWN ON THE DRAWINGS. PROVIDE ITEMS NECESSARY FOR CONNECTING TO EXISTING MAINS AND MAKE CONNECTIONS AS INDICATED IN THE CONTRACT DOCUMENTS AT NO ADDITIONAL COSTS TO THE OWNER.
6. RESTRAIN PIPE JOINTS IN ACCORDANCE WITH "MINIMUM RESTRAINED LENGTHS FOR DI PIPE" TABLE ON THE DRAWINGS.
7. MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN THE PROPOSED WATER MAIN AND ANY EXISTING OR PROPOSED SANITARY SEWER OR STORM DRAIN. WHEN CONDITIONS PREVENT THIS, A LESSER DISTANCE WILL BE ALLOWED IF: A.) THE WATER MAIN IS IN A SEPARATE TRENCH OR B.) THE PROPOSED WATER MAIN IS LOCATED IN THE SAME TRENCH TO ONE SIDE ON A BENCH OF UNDISTURBED EARTH WITH AT LEAST 12 INCHES, AND PREFERABLY 18 INCHES, HORIZONTAL SEPARATION BETWEEN THE EDGES OF THE SEWER/DRAIN PIPE AND THE WATER MAIN. IN EITHER CASE, THE BOTTOM OF THE WATER MAIN SHALL BE 18 INCHES ABOVE THE CROWN OF THE SEWER/DRAIN PIPE.
8. WHERE THE PROPOSED WATER MAIN IS TO BE INSTALLED BELOW A DRAIN PIPE, MAINTAIN A MINIMUM OF 18 INCHES BETWEEN THE BOTTOM OF THE STORM DRAIN AND THE CROWN OF THE WATER MAIN.
9. OPERATION OF EXISTING VALVES AND FACILITIES SHALL BE BY THE OWNER, UNLESS OTHERWISE AUTHORIZED. COORDINATE OPERATION OF VALVES AND FACILITIES WITH THE OWNER.
10. THE OWNER DOES NOT GUARANTEE A TIGHT SHUTDOWN OF ITS EXISTING VALVES. THE CONTRACTOR IS RESPONSIBLE FOR CONTROL OF LEAKAGE AND DISPOSAL OF WATER UP TO 100 GALLONS PER MINUTE.
11. COORDINATE THE ACTIVATION AND DEACTIVATION OF WATER MAINS WITH THE OWNER.

LEGEND

DESCRIPTION	EXISTING	PROPOSED
INTERMEDIATE CONTOURS		
INDEX CONTOURS	25	25
STORM DRAIN	SD	SD
GRAVITY SANITARY SEWER	SS	SS
POTABLE WATER	PW	PW
UNDERGROUND ELECTRIC/COMM.	E	E
CURB		
EDGE OF PAVEMENT		
RETAINING WALL		
TREELINE		
PHOTO LOCATION		1
TURBIDITY CURTAIN		
COMPOST FILTER SOCK		
TEMPORARY COFFERDAM		
UTILITY TO BE ABANDONED		
UTILITY TO BE DEMOLISHED		
ITEM TO BE DEMOLISHED		
TEST PIT		

ABBREVIATIONS

ABDN('D)	ABANDON(ED)
AC	ASBESTOS CEMENT PIPE
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
BC	BITUMINOUS CURB
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BIT	BITUMINOUS
BL	BASELINE
BLDG	BUILDING
BM	BEAM
BOT	BOTTOM
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL
C	CONDUIT
CATV	CABLE TELEVISION
CB	CATCH BASIN
CI	CAST IRON PIPE
CL	CENTERLINE
CLF	CHAIN LINK FENCE
CO	CLEAN OUT
CONC	CONCRETE
CJ	CONSTRUCTION JOINT
CTJ	CONTROL JOINT
CY	CUBIC YARD
DH	DRILL HOLE
DI	DUCTILE IRON
DIA	DIAMETER
DEG	DEGREE
DMH	DRAIN MANHOLE
EF	EACH FACE
EG	EXISTING GRADE
EL/ELEV	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC
EMH	ELECTRIC MANHOLE
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXIST	EXISTING
FF	FINISH FLOOR
FLG	FLANGE
G	GAS
GV	GATE VALVE
H, HORZ	HORIZONTAL
HMA	HOT MIX ASPHALT
HYD	HYDRANT
IN	INCHES
INV	INVERT
IP	IRON PIN
L	LENGTH OF CURB
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MON	MONUMENT
MJ	MECHANICAL JOINT
N	NORTH
NITC	NOT IN THIS CONTRACT
NTS	NOT TO SCALE
N/A	NOT APPLICABLE
N/F	NOW OR FORMERLY
N.P.	NORMAL POOL
OC	ON CENTER
OCS	OUTLET CONTROL STRUCTURE
OH	OVERHEAD
OPNG	OPENING
PE	PLAIN END
PERF	PERFORATED
PI	POINT OF INTERSECTION
PMF	PROBABLE MAXIMUM FLOOD
PREP	PREPARE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYLCHLORIDE
PVMT	PAVEMENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REV	REVISION
ROW	RIGHT OF WAY
RT	RIGHT
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
S	SOUTH
SAN	SANITARY
SCH	SCHEDULE
SD	STORM DRAIN
SF	SQUARE FOOT
SMH	SEWER MANHOLE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STRM	STORM
TC	TOP OF CURB
TEL	TEL-DATA
TEMP	TEMPORARY
TP	TEST PIT
TW	TOP OF WALL
TYP	TYPICAL
UP	UTILITY POLE
V	VERTICAL
VERT	VERTICAL
W/	WITH
W	WATER
WG	WATER GATE
WV	WATER VALVE
XFMR	TRANSFORMER

LEGEND

RESOURCE AREAS	
VEGETATED WETLAND LIMIT	
WETLANDS WATER COURSE	
WETLAND FLAG	WF

Tighe&Bond

STATE OF CONNECTICUT — PETER GALANT — LICENSED PROFESSIONAL ENGINEER — 15970 — 01/19/2024

STATE OF CONNECTICUT — DANIEL F. VALENTINE — LICENSED PROFESSIONAL ENGINEER — 29068 — 01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-G-002.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	DFV
APPROVED BY:	PBG

NOTES, ABBREVIATIONS, AND LEGEND

SCALE: NO SCALE

G-002
SHEET 2 OF 20

Last Saved:1/11/2024
Plotted On:Jan 17, 2024-4:31pm By: KKortright
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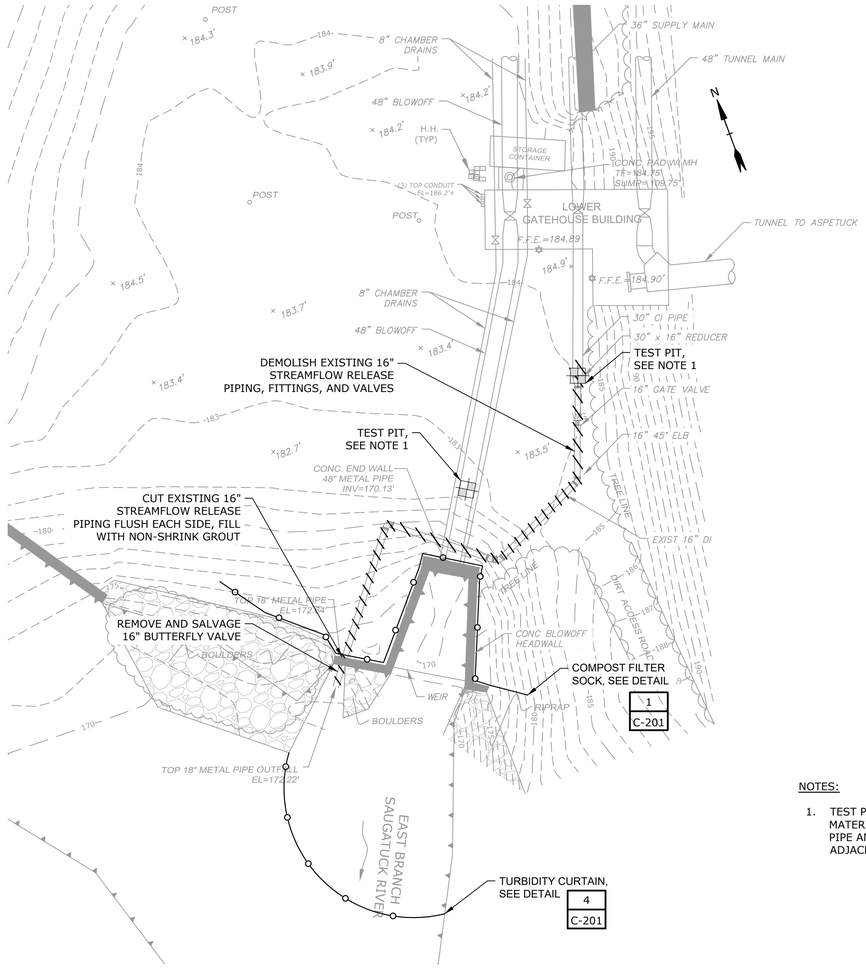
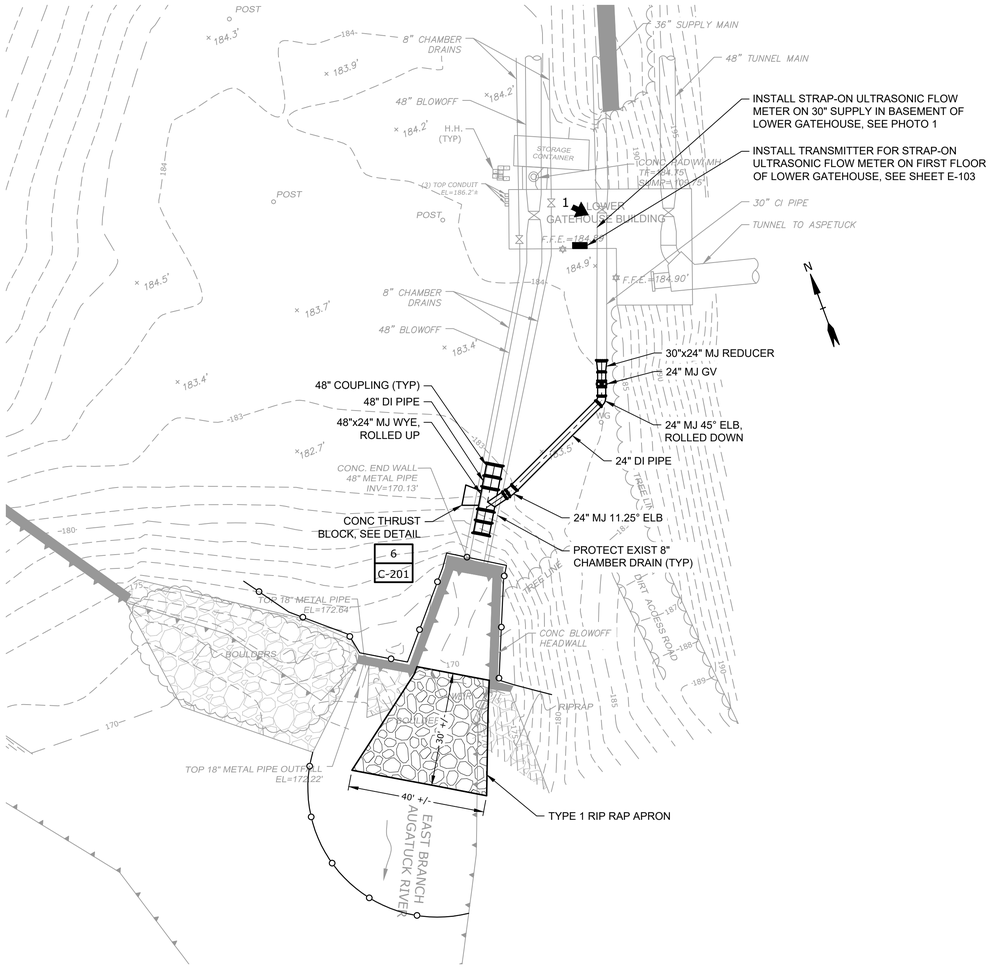


SITE PREPARATION PLAN
1" = 20'-0"

NOTES:

1. TEST PIT TO LOCATE THE OUTSIDE DIAMETER, MATERIAL, CONDITION, AND DEPTH OF EXISTING PIPE AND LOCATION OF ANY IMMEDIATELY ADJACENT BURIED PIPES.



PROPOSED SITE PLAN
1" = 20'-0"

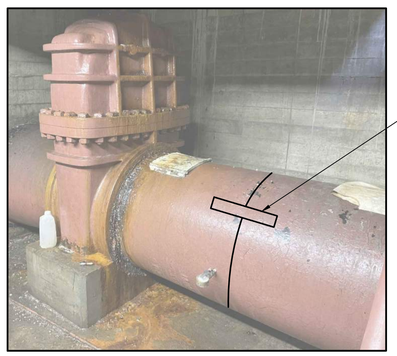


PHOTO 1

0 20' 40'
SCALE: 1" = 20'

Tighe&Bond

STATE OF CONNECTICUT
PETER GALLANT
15970
LICENSED PROFESSIONAL ENGINEER
01/19/2024

STATE OF CONNECTICUT
DANIEL F. VALENTINE
29068
LICENSED PROFESSIONAL ENGINEER
01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

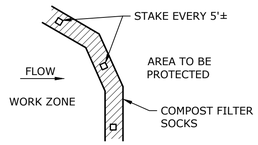
PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-C-103.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	DFV
APPROVED BY:	PBG

SAUGATUCK RESERVOIR DAM

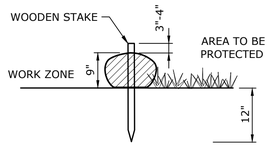
SCALE: AS SHOWN

C-103
SHEET 5 OF 20

Last Saved: 1/11/2024
Printed On: 1/12/2024 4:36pm By: KKortright
Tighe & Bond J:\AA\A1000 AWC\185 - Streamflow Releases\Drawings, Figures\AutoCAD\Sheet\A1000-185-C-103.dwg



PLAN



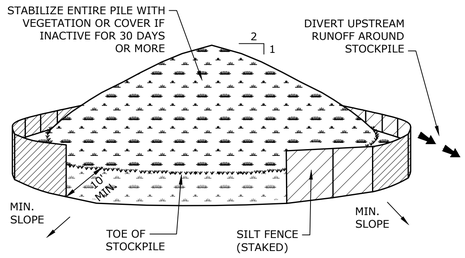
SECTION

NOTES:

1. SEGMENT BREAKS IN COMPOST FILTER SOCKS SHALL BE OVERLAPPED BY 3 FEET MINIMUM, WITH A STAKE AT EACH END OF THE OVERLAPPED SECTION OF BOTH FILTER SOCKS.

COMPOST FILTER SOCK

DETAIL	1
NO SCALE	-

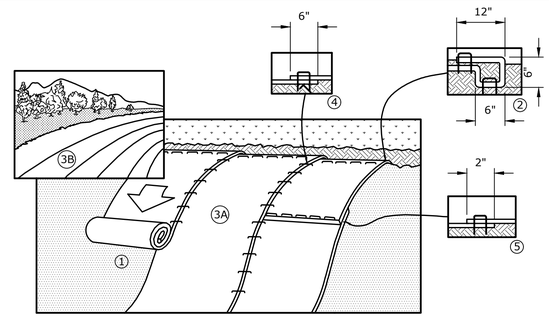


INSTALLATION NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2H:1V.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING, COMPOST FILTER SOCKS, OR HAYBALES, THEN STABILIZED WITH VEGETATION OR COVERED.

SOIL STOCKPILING

DETAIL	2
NO SCALE	-

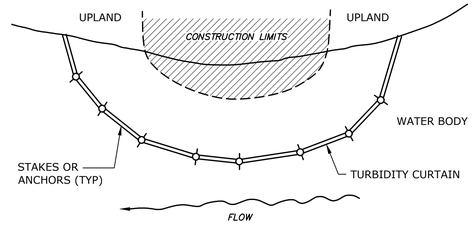


NOTES:

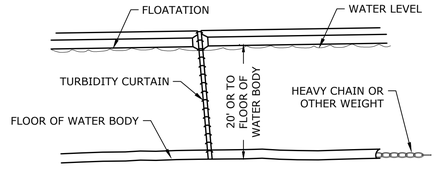
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAPLE PATTERN GUIDE.
4. STAPLE LENGTHS SHALL BE A MINIMUM OF 8 INCHES.

EROSION CONTROL BLANKET FOR SLOPE PROTECTION

DETAIL	3
NO SCALE	-



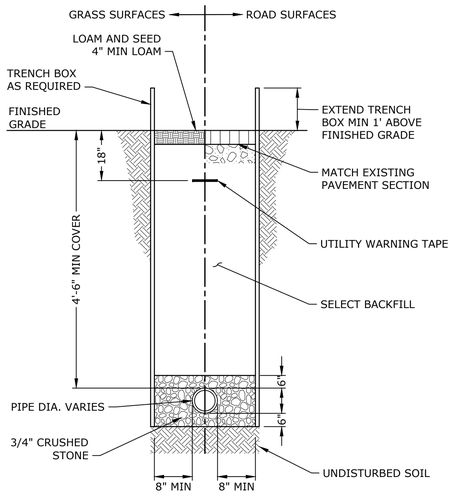
PLAN VIEW



DETAIL

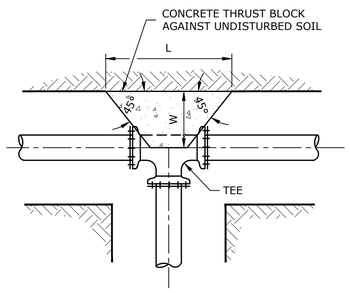
TYPICAL TURBIDITY CURTAINS

DETAIL	4
NO SCALE	-

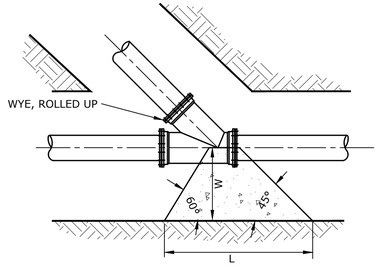


TYPICAL PIPE TRENCH

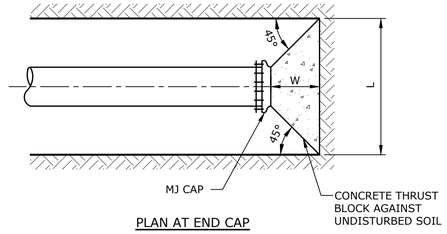
DETAIL	5
NO SCALE	-



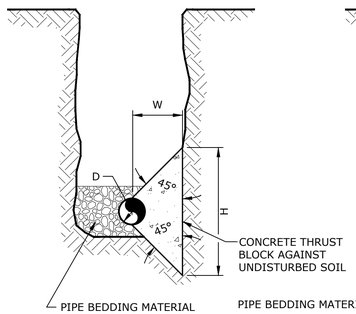
PLAN AT TEE



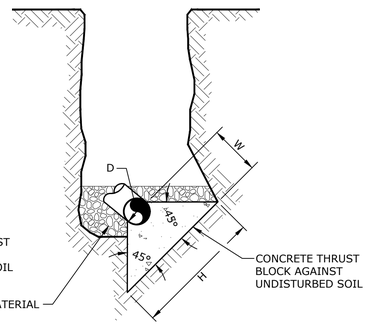
PLAN AT WYE



PLAN AT END CAP



SECTION AT TEE



SECTION AT WYE

CONCRETE THRUST BLOCK			
30" TEE (PUTNAM)			
BEARING AREA (S.F.)	"L" (FT)	"H" (FT)	"W" (FT)
10.45	4.0 MIN	2.6 MAX	1.3 MIN
36" TEE (NORTH STAMFORD)			
BEARING AREA (S.F.)	"L" (FT)	"H" (FT)	"W" (FT)
18.43	5.3 MIN	3.5 MAX	1.8 MIN
48" WYE (SAUGATUCK)			
BEARING AREA (S.F.)	"L" (FT)	"H" (FT)	"W" (FT)
70.58	10.2 MIN	6.9 MAX	3.5 MIN
12" END CAP (NORTH STAMFORD)			
BEARING AREA (S.F.)	"L" (FT)	"H" (FT)	"W" (FT)
12.87	4.4 MIN	2.9 MAX	1.5 MIN

NOTES:

1. ASSUMED MINIMUM SOIL BEARING CAPACITY OF 3,000 PSI (SAND SILT), DESIGN PRESSURE (2X SYSTEM PRESSURE), AND 1.5 SAFETY FACTOR. THRUST BLOCK BEARING AREA BASED ON DIPRA THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE, 7TH EDITION, 2016.
2. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF CONCRETE POURED AGAINST UNDISTURBED SOIL.
3. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS PROVIDED THE BEARING AREA REMAINS UNCHANGED.
4. THE HEIGHT OF THE BLOCK (H) SHALL BE LESS THAN OR EQUAL TO HALF THE TRENCH DEPTH.
5. POLYETHYLENE SHEETING SHALL BE PLACED OVER FITTINGS TO PREVENT DIRECT CONTACT BETWEEN CONCRETE AND FITTING.

CONCRETE THRUST BLOCKS

DETAIL	6
NO SCALE	-

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STATE OF CONNECTICUT · PETER GALVANY · 15970 · LICENSED PROFESSIONAL ENGINEER · 01/19/2024

STATE OF CONNECTICUT · DANIEL F. VALENTINE · 29068 · LICENSED PROFESSIONAL ENGINEER · 01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-C-201.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	DFV
APPROVED BY:	PBG

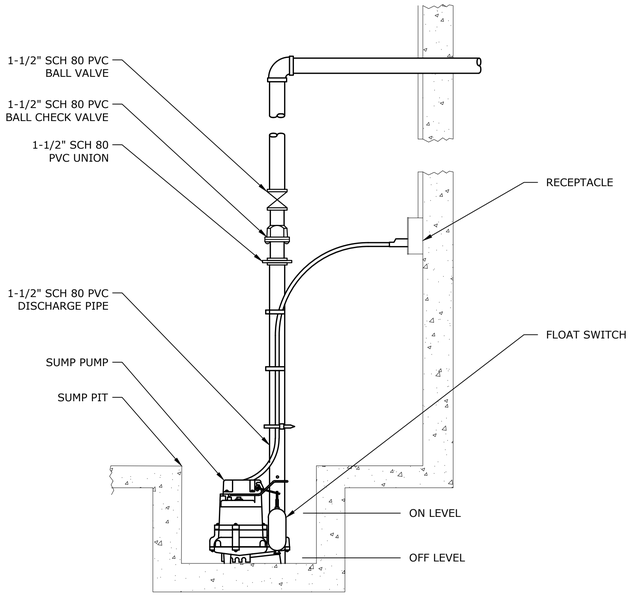
CIVIL DETAILS I OF II

SCALE: NO SCALE

C-201

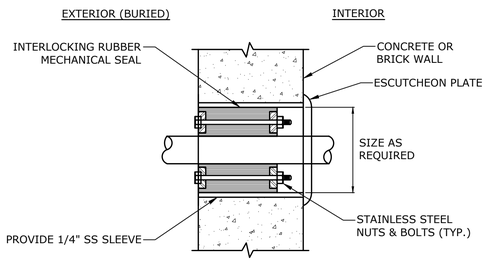
SHEET 10 OF 20

Last Saved: 1/11/2024
Plotted: Jan 19, 2024 - 4:41pm By: KKortright
Tighe & Bond: J:\AA\A1000 AWC\185 - Streamflow Releases\Drawings, Figures\AutoCAD\Sheet\A1000-185-C-201.dwg



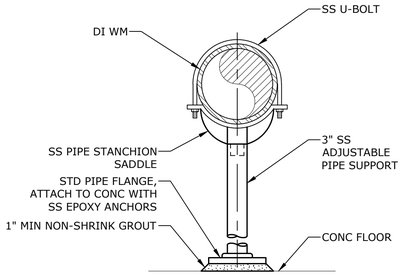
TYPICAL SUMP PUMP DETAIL

DETAIL	1
NO SCALE	-



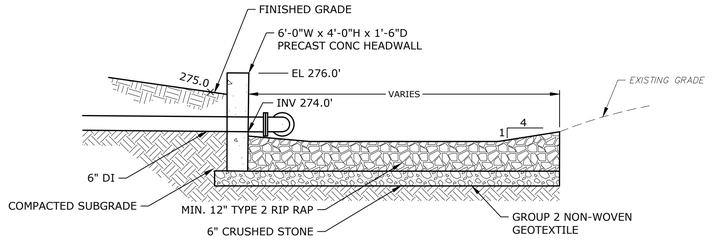
WALL PENETRATION DETAIL

DETAIL	2
NO SCALE	-



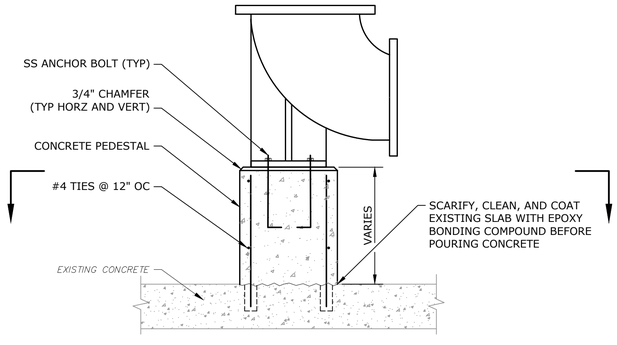
PIPE SADDLE SUPPORT

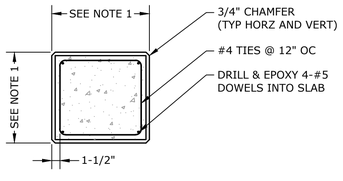
DETAIL	3
NO SCALE	-



CONCRETE HEADWALL & RIP RAP SWALE DETAIL

DETAIL	5
NO SCALE	-





SECTION

NOTES:

1. CONCRETE SUPPORT PAD SHALL BE MINIMUM 2" WIDER AND LONGER THAN DIMENSIONS OF EQUIPMENT.

CONCRETE PIPE SUPPORT DETAIL

DETAIL	4
NO SCALE	-

SITE	SIZE (IN.)	FITTING	MINIMUM * RESTRAINED LENGTH, FT.
PUTNAM	6"	11.25° BEND 22.5° BEND 45° BEND 90° BEND	0.2' 0.5' 1.0' 2.5'
NORTH STAMFORD	16"	11.25° BEND 22.5° BEND 45° BEND 90° BEND	0.7' 1.4' 3.4' 7.3'
SAUGATUCK	24"	11.25° BEND 22.5° BEND 45° BEND 90° BEND	2.8' 5.8' 12.0' 28.9'

* MINIMUM RESTRAINED LENGTH BASED ON DIPRA, "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE, SEVENTH EDITION"

FOLLOWING CONDITIONS APPLY TO THE VALUES IN THE TABLE:

BEND TYPE: HORIZONTAL BEND
PIPE MATERIAL: DUCTILE IRON
SOIL TYPE: SAND SILT
SAFETY FACTOR: 1.5
LAYING CONDITIONS: TYPE 5
DEPTH OF BURY: 4'-6"
DESIGN PRESSURE: 26 PSI @ PUTNAM, 32 PSI @ NORTH STAMFORD, 91 PSI @ SAUGATUCK

NOTES:

1. TABLE SUBJECT TO RECALCULATIONS BASED ON OBSERVED FIELD CONDITIONS AND DIRECTION OF THE ENGINEER.
2. THE TERM "BEND" AND "ELBOW" ARE USED INTERCHANGEABLY ON THE DRAWINGS AND SHALL MEAN THE SAME THING RELATIVE TO PIPE FITTINGS.

MINIMUM RESTRAINED LENGTH FOR DI PIPE

DETAIL	6
NO SCALE	-

Tighe&Bond

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29068
PROFESSIONAL ENGINEER
01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-C-202.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	DFV
APPROVED BY:	PBG

CIVIL DETAILS II OF II

SCALE: NO SCALE

C-202
SHEET 11 OF 20

Last Saved: 1/17/2024
Printed On: Jan 17, 2024 - 7:24pm By: KKortright
Tighe & Bond: J:\AA\A1000 AWC\185 - Streamflow Releases\Drawings_Figures\AutoCAD\Sheet\A1000-185-C-202.dwg

GENERAL

1. STRUCTURAL WORK SHALL CONFORM TO STATE BUILDING CODE (IBC 2021), LATEST EDITION, INCLUDING MOST RECENT ADDENDA, AND CONTRACT DOCUMENTS. IN CASE OF CONFLICT, MOST STRINGENT REQUIREMENT SHALL GOVERN.
2. CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS RELATED TO THIS PROJECT.
3. THE CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TESTING LABORATORY FOR CONCRETE AND SOILS TESTING. ALL TESTING COSTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

REINFORCEMENT

1. DETAILING, FABRICATION, AND ERECTION OF REINFORCEMENT, UNLESS OTHERWISE NOTED, SHALL CONFORM TO ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)" AND ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315)", LATEST EDITION.
2. STEEL REINFORCEMENT UNLESS OTHERWISE SHOWN SHALL CONFORM TO ASTM A615 GRADE 60 MINIMUM (YIELD STRENGTH - 60,000 PSI).
3. PROVIDE AND SCHEDULE ON SHOP DRAWINGS, ALL NECESSARY ACCESSORIES TO HOLD REINFORCEMENT SECURELY IN POSITION: MINIMUM REQUIREMENTS SHALL BE: HIGH CHAIRS, 4'-0" ON CENTER, #5 SUPPORT BAR FOR HIGH CHAIRS, SLAB BOLSTERS, 3'-6" ON CENTER, ALL WIRE CHAIRS AND BOLSTERS TO BE PLASTIC TIPPED.
4. THE CONCRETE PROTECTIVE COVERING FOR REINFORCEMENT SHALL BE 3 INCHES FOR CAST-IN-PLACE CONCRETE CAST AGAINST EARTH, OR EXPOSED TO WATER OR WEATHER AND 2 INCHES IF CAST-IN-PLACE IS NOT CAST AGAINST EARTH, OR EXPOSED TO WATER OR WEATHER, UNLESS OTHERWISE SHOWN.
5. WHERE CONTINUOUS BARS ARE CALLED FOR THEY SHALL BE RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. REINFORCEMENT SHALL BE SPLICED IN ACCORDANCE WITH THE REBAR SPLICE LENGTH SCHEDULE.
6. WHERE REINFORCEMENT IS NOT SHOWN ON DRAWINGS, PROVIDE REINFORCEMENT IN ACCORDANCE WITH APPLICABLE TYPICAL DETAILS OR SIMILAR TO THAT SHOWN FOR MOST NEARLY SIMILAR SITUATIONS, AS DETERMINED BY THE ENGINEER. IN NO CASE SHALL REINFORCEMENT BE LESS THAN MINIMUM REINFORCEMENT PERMITTED BY THE APPLICABLE CODES.
7. WHERE REINFORCEMENT IS CALLED FOR IN SECTION, REINFORCEMENT IS CONSIDERED TYPICAL WHEREVER THE SECTION APPLIES.
8. REINFORCEMENT SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
9. INSTALLATION OF REINFORCEMENT SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO SCHEDULED CONCRETE PLACEMENT. NOTIFY ENGINEER OF COMPLETION AT LEAST 24 HOURS PRIOR TO SCHEDULED COMPLETION OF REINFORCEMENT PLACEMENT.
10. REINFORCEMENT SHALL BE SET BEFORE PLACING CONCRETE. SETTING ANY REINFORCEMENT INTO WET CONCRETE IS PROHIBITED.

FOUNDATIONS

1. NO CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN GROUND.
2. BOTTOM OF FOUNDATION ELEVATIONS GIVEN ON DRAWINGS ARE TO BE CONSIDERED MINIMUM DEPTHS. CONTRACTOR SHALL HAVE FURTHER EXCAVATION AS REQUIRED TO REACH FIRM BEARING SURFACE AS DETERMINED BY ENGINEER.
3. ALL EXCAVATIONS FOR FOOTINGS SHALL BE FINISHED BY HAND FOR THE LAST 6".
4. ALL FINISHED EXCAVATIONS SHALL BE INSPECTED BY THE ENGINEER BEFORE ANY CONCRETE IS PLACED.
5. ALL BACKFILL UNDER OR ADJACENT TO ANY PORTION OF THE STRUCTURES SHALL BE COMPACTED IN 6" LIFTS.
6. REMOVE UNSUITABLE MATERIAL AND REPLACE WITH MATERIAL AS DIRECTED BY ENGINEER.
7. FROZEN MATERIAL MAY NOT BE USED AS BACKFILL.
8. ALL STOCKED MATERIALS SHALL BE PROTECTED FROM FREEZING.

BAR SIZE DESIGNATION		DEVELOPMENT LENGTH (INCHES)	SPLICE LENGTH (INCHES)	
ENGLISH	METRIC	Ld	CLASS B	CLASS B TOP BARS
#3	#10	15	19	25
#4	#13	19	25	33
#5	#16	24	31	40
#6	#19	29	37	48

REBAR SPLICE LENGTH SCHEDULE

NOTES:

1. IF CLEAR SPACING BETWEEN THE REBARS IS LESS THAN THREE BAR DIAMETERS, OR IF COVER IS LESS THAN TWO BAR DIAMETERS, INCREASE THE SPLICE LENGTH BY AN ADDITIONAL 50%.
2. IF EPOXY COATED REBAR IS USED, INCREASE THE SPLICE LENGTH BY AN ADDITIONAL 50%.
3. IF LIGHTWEIGHT CONCRETE IS USED, INCREASE THE SPLICE LENGTH BY AN ADDITIONAL 30%.
4. THE MINIMUM REBAR SPLICE LENGTH SCHEDULE IS BASED ON F'c= 4,000 PSI AND Fy= 60,000 PSI. ADJUST FOR OTHER STRENGTHS USING ACI-318.
5. FOR HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW, INCREASE THE DEVELOPMENT LENGTH BY AN ADDITIONAL 30%.
6. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED, THE SPLICE LENGTH SHALL BE THE LARGER OF EITHER THE DEVELOPMENT LENGTH OF THE LARGER BAR OR THE SPLICE LENGTH OF THE SMALLER BAR.

CONCRETE

1. CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318), AND SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING (ACI 301).
2. CONCRETE SHALL BE CONTROLLED CONCRETE, PROPORTIONED, MIXED, AND PLACED UNDER THE SUPERVISION OF AN APPROVED CONCRETE TESTING AGENCY OR THE ENGINEER.
3. CONCRETE SHALL BE NORMAL WEIGHT CONCRETE AND SHALL HAVE A COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS, SHALL BE AIR ENTRAINED BETWEEN 4.5 AND 7.5 PERCENT, SHALL HAVE A MAXIMUM WATER/CEMENT RATIO OF 0.42, AND SHALL HAVE A TOTAL CEMENTITIOUS MATERIAL IN THE MIX BETWEEN 635 LBS (MIN) AND 658 LBS (MAX) PER CUBIC YARD.
4. CONCRETE MATERIALS:
   - PORTLAND CEMENT: TYPE II, MEETING REQUIREMENTS OF ASTM C150
   - FLY ASH: CLASS F CONFORMING TO ASTM C618
   - GROUND GRANULATED BLAST SLAG: CONFORMING TO ASTM C989
   - FINE AGGREGATE: NATURAL SAND CONFORMING TO ASTM C33 WITH A FINENESS MODULUS = 2.75 (PLUS/MINUS 0.25)
   - COARSE AGGREGATE: 3/4" PROCESSED STONE CONFORMING TO ASTM C33,
   - WATER: SHALL BE CLEAN, POTABLE
   - MID-RANGE WATER REDUCING AGENT: CONFORMING TO ASTM C494 TYPE A
   - AIR-ENTRAINING AGENT: CONFORMING TO ASTM C260
5. CONCRETE FOOTING SHALL BE CAST SO THAT THE THICKNESS IS AT NO POINT LESS THAN THAT INDICATED ON THE DRAWINGS.
6. CONCRETE SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS EXCEPT WHERE SHOWN OR NOTED.
7. EXPOSED EDGES OF CONCRETE ELEMENTS SHALL HAVE CHAMFERED CORNERS, EXCEPT WHERE INDICATED ON THE DRAWINGS.
8. CONCRETE SLUMP SHALL BE BETWEEN 3 INCHES AND 5 INCHES AFTER ADDITION OF WATER REDUCER.
9. ACCELERATING ADMIXTURES WILL NOT BE ACCEPTED.
10. GROUND GRANULATED BLAST FURNACE SLAG MAY BE SUBSTITUTED FOR UP TO 40 PERCENT BY WEIGHT OF THE TOTAL CEMENTITIOUS MATERIAL. FOR BELOW GRADE STRUCTURES, FLY ASH SHALL BE SUBSTITUTED FOR A MINIMUM OF 15 PERCENT AND A MAXIMUM OF 25 PERCENT OF THE TOTAL CEMENTITIOUS MATERIAL, OR GROUND GRANULATED BLAST FURNACE SLAG SHALL BE SUBSTITUTED FOR A MINIMUM OF 25 PERCENT AND A MAXIMUM OF 40 PERCENT OF THE TOTAL CEMENTITIOUS MATERIAL.
11. FOR CONCRETE FLATWORK WITH A STEEL TROWEL FINISH, FLY ASH MAY BE SUBSTITUTED FOR UP TO 10 PERCENT BY WEIGHT AND GROUND GRANULATED IRON BLAST-FURNACE SLAG MAY BE SUBSTITUTED FOR UP TO 25 PERCENT BY WEIGHT OF THE TOTAL CEMENTITIOUS MATERIAL.
12. ALL CONCRETE SHALL BE CURED IMMEDIATELY AFTER FINISHING IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS: CURING SHALL BE ACCOMPLISHED BY A CONTINUOUS SOAKING PROCESS SUCH AS THE USE OF SOAKER HOSE OR SPRINKLERS, OR BY USE OF PLASTIC ROLL MATERIALS TO COVER THE CONCRETE, WHICH SHALL BE THOROUGHLY WETTED AT LEAST ONCE A DAY OR MORE OFTEN AS REQUIRED IN VERY HOT WEATHER. SUCH PLASTIC SHALL BE PLACED AS SOON AS POSSIBLE AFTER FINISHING OF CONCRETE AS IS PROPER SO THAT SCARRING OF THE SURFACE WILL NOT OCCUR. PLASTIC SHALL BE HELD IN PLACE ON THE SURFACE OF THE CONCRETE IN SUCH A MANNER AND MEANS AS WILL NOT ALLOW IT TO BE BLOWN OFF OR OTHERWISE DISLODGED FROM THE CONCRETE SURFACE. CURING PROCEDURES SHALL BE MAINTAINED CONTINUOUSLY FOR A PERIOD OF AT LEAST 7 DAYS.
13. CONCRETE SHALL NOT BE ALLOWED TO FLOW HORIZONTALLY OVER DISTANCES EXCEEDING 10 FEET OR DROPPED VERTICALLY OVER 6 FEET.
14. THOROUGHLY CONSOLIDATE EACH LAYER OF CONCRETE BY RODDING AND VIBRATING USING INTERNAL TYPE MECHANICAL VIBRATOR.
15. DO NOT USE VIBRATORS TO MOVE CONCRETE. VIBRATION SHALL BE SUPPLEMENTED BY SPADING TO REMOVE BUBBLES AND HONEYCOMBS ADJACENT TO VISIBLE SURFACES.
16. IMMEDIATELY AFTER THE END OF THE WET CURE PERIOD, REMOVE FORM TIES AND PATCH ALL TIE-HOLES, RAT HOLES AND OTHER SURFACE VOIDS WITH A NON-METALLIC, NON-SHRINK GROUT, WHICH MOST NEARLY MATCHES THE COLOR AND TEXTURE OF THE CONCRETE SURFACE. ALL PROTRUSIONS SHALL BE GROUND SMOOTH WITH AN APPROVED MECHANICAL GRINDER.
17. COLD WEATHER CONDITIONS SHALL BE IMPLEMENTED IN ACCORDANCE WITH ACI 306.1 WHEN THE AIR TEMPERATURE HAS FALLEN OR IS EXPECTED TO FALL BELOW 40°F DURING THE PROTECTION PERIOD.
18. DURING COLD WEATHER CONCRETE PROCEDURES, THE CONCRETE TEMPERATURE AT THE TIME OF PLACEMENT SHALL BE AS SPECIFIED:
    A. TABLE - CONCRETE TEMPERATURE DURING COLD WEATHER CONDITIONS

LEAST DIMENSION OF SECTION (INCHES)	MINIMUM TEMPERATURE OF CONCRETE AS PLACED AND MAINTAINED DURING PROTECTION PERIOD, °F	MAXIMUM GRADUAL DECREASE IN SURFACE TEMPERATURE DURING HOURS AFTER END OF PROTECTION, °F
LESS THAN 12	55	50
12 TO LESS THAN 36	50	40

19. THE INDEPENDENT TESTING LABORATORY SHALL BE ON SITE FOR THE CONCRETE PLACEMENT. THE TESTING LABORATORY SHALL FABRICATE 4 CYLINDERS FOR THE CONCRETE PLACEMENT. MIXES WITH FLY ASH OR SLAG REQUIRE 6 CYLINDERS. BREAK CYLINDERS AT THE FOLLOWING INTERVALS:
    - 1 AT 3 DAYS
    - 1 AT 7 DAYS
    - 1 AT 28 DAYS
    - 1 AT 56 DAYS (REQUIRED IF 28 DAY BREAKS ARE LOW)

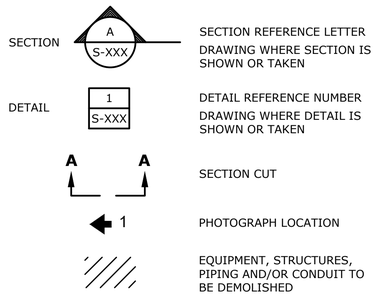
FORMWORK AND ACCESSORIES

1. FORM TIES:
   A. FORMS AND FORM SHORING SHALL NOT BE REMOVED UNTIL CONCRETE HAS ACHIEVED COMPRESSIVE STRENGTH OF 4000 PSI.
   B. TIES SHALL BE METAL AND DESIGNED WITH REMOVABLE SETBACK CONES SO THAT AFTER REMOVAL OF THE PROJECTING PART, NO METAL SHALL REMAIN WITHIN 1 1/2 INCHES OF THE FACE OF CONCRETE. FORM TIES SHALL HAVE A NEOPRENE WATER STOP WASHER PLACED ON EACH FORM TIE.
   C. SETBACK CONES SHALL BE WOOD OR PLASTIC TAPERED CONES 1 INCH DIAMETER AND 1 1/2 INCHES DEEP TO ALLOW FILLING AND PATCHING OF THE CONCRETE SURFACE AFTER REMOVAL.
   D. COMMON WIRE TIES SHALL NOT BE USED.
2. FORM RELEASE AGENT:
   A. NON-STAINING AND NON-EMULSIFIABLE TYPE WHICH WILL NOT STAIN CONCRETE OR ABSORB MOISTURE NOR INTERFERE WITH ADHERENCE OF ANY MATERIAL TO BE APPLIED TO CONCRETE SURFACES. FORM RELEASE AGENT FOR POTABLE WATER TANKS AND STRUCTURES SHALL BE VEGETABLE OIL BASED AND NSF 61 APPROVED.
3. CORNERS:
   A. CHAMFERED NO. 1 POPLAR WOOD STRIPS; 3/4 INCH BY 3/4 INCH; MAXIMUM POSSIBLE LENGTHS.

SUBMITTALS

1. SUBMIT A DETAILED LIST OF CONCRETE MATERIALS, AND CORRESPONDING SOURCES, PROPOSED FOR USE IN CONCRETE. IF CONVEYING CONCRETE BY PUMP IS REQUESTED, RELATED DATA REGARDING CONCRETE MATERIALS, PUMPING DEVICE AND METHODS SHALL BE SUBMITTED FOR APPROVAL THREE WEEKS PRIOR TO USE. TESTS FOR APPROVAL OF CONCRETE MIXTURES TO BE PUMPED SHALL BE PAID FOR BY CONTRACTOR. PROVIDE CERTIFIED MILL TEST REPORTS OF CEMENT, (INCLUDING NAMES AND LOCATIONS OF MILLS AND SHOPS, AND ANALYSES OF CHEMICAL AND PHYSICAL PROPERTIES), PROPERLY CORRELATED TO CONCRETE TO BE USED.
2. SUBMIT METHODS OF CONSTRUCTION THREE WEEKS PRIOR TO STARTING WORK, DESCRIBING METHODS, SEQUENCE OF CONSTRUCTION, MANPOWER AND TYPE OF EQUIPMENT PROPOSED FOR USE FOR PERFORMING CAST-IN-PLACE CONCRETE WORK AND EARTHWORK THIS SUBMISSION SHALL NOT RELIEVE CONTRACTOR OF HIS RESPONSIBILITY FOR PROVIDING PROPER METHODS, EQUIPMENT, WORKMANSHIP, AND SAFETY PRECAUTIONS.
3. SUBMIT DATA AND DESCRIPTIVE LITERATURE FOR CONCRETE CONSTITUENTS INCLUDING ADMIXTURES, AGGREGATE TESTS, FLOOR HARDENER, BOND BREAKER, BONDING AGENT, CHEMICAL GROUT FOAM, REPAIR GROUT, REPAIR MORTAR, JOINT SEALANT, CRACK SEALING MATERIAL, AND CONCRETE COATING.
4. SUBMIT DETAILED METHODS PROPOSED FOR CURING AND PROTECTION OF CONCRETE PRIOR TO THE PLACEMENT OF ANY CONCRETE.
5. SUBMIT A COLD WEATHER CONCRETE PLAN. COLD WEATHER CONCRETE PROCEDURES SHALL BE IN ACCORDANCE WITH ACI 306.1-90.
6. SUBMIT A TRUCK LOAD TICKET FOR EVERY CONCRETE DELIVERY. TICKET INFORMATION SHALL INCLUDE BATCH TIME AND DATE, WEIGHTS OF ALL CONSTITUENTS, QUANTITY OF ADMIXTURES, WATER ADDED AT THE BATCH PLANT AND MOISTURE CONTENT OF COARSE AND FINE AGGREGATES.
7. MAINTAIN AN ACCURATE DAILY RECORD OF THE LOCATIONS AND QUANTITY OF CONCRETE PLACED. SUBMIT A CERTIFIED COPY OF THIS RECORD WITH EACH PAY ESTIMATE.

GENERAL SYMBOLS



Tighe&Bond

STATE OF CONNECTICUT · PETER GALANT · 15970 · LICENSED PROFESSIONAL ENGINEER · 01/19/2024

STATE OF CONNECTICUT · DAVID SULLIVAN · 25792 · LICENSED PROFESSIONAL ENGINEER · 01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-S-001.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	DBS
APPROVED BY:	PBG

STRUCTURAL NOTES

SCALE: NO SCALE

S-001
SHEET 12 OF 20

GENERAL NOTES

1. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING E-001.
2. BOLD TEXT AND LINES INDICATE PROPOSED WORK, LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
3. PROVIDE TEMPORARY POWER AND EQUIPMENT AS REQUIRED TO KEEP SYSTEMS OPERATIONAL, SEE 16050 FOR SEQUENCING AND SCHEDULING.
4. FOR ELECTRICAL DETAILS, REFER TO DETAIL DRAWINGS
5. REFER TO PROCESS MECHANICAL DRAWINGS AND VENDOR DRAWINGS FOR COORDINATION OF EQUIPMENT LOCATIONS AND POWER REQUIREMENTS.
6. REFER TO ELECTRICAL DETAIL DRAWINGS FOR COORDINATION OF WALL MOUNTED DEVICES AND MOUNTING HEIGHTS.
7. ALL CONDUIT SHALL BE INSTALLED ATTACHED TO THE TOP OF STEEL (TOP CHORD OF JOIST/GIRDER).
8. COORDINATE ALL DEVICE LOCATIONS WITH GC AND/OR OWNER PRIOR TO ROUGH-IN.
9. COORDINATE ALL REQUIRED OPENINGS/PENETRATIONS THROUGH WALLS, FLOORS, AND CEILING WITH OTHER TRADES AND APPROVED EQUIPMENT SUBMITTALS.
10. ALL PIPES OR OTHER UTILITIES DAMAGED DURING THE CONTRACTOR'S OPERATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE AT NO COST TO THE OWNER.
11. SUPPORT ALL UTILITIES AND STRUCTURES DURING CONSTRUCTION AND MAKE REPAIRS IF DAMAGED.
12. THE LOCATIONS OF EXISTING UTILITIES AND EQUIPMENT ARE APPROXIMATE. DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES AND STRUCTURES BEFORE COMMENCING WORK. BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH MIGHT BE OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES AND STRUCTURES.
13. PREVENT DUST FROM BECOMING A NUISANCE OR HAZARD. CONTROL DUST DURING AND AFTER CONSTRUCTION.
14. ALL RECEPTACLES IN WET AND BELOW GRADE LOCATIONS SHALL HAVE WEATHER-PROOF WHILE-IN-USE COVERS AND SHALL BE GFI TYPE.
15. DEVICE TYPES SHALL BE SUITABLE FOR THE SPECIFIC AREA CLASSIFICATION SHOWN.
16. ALL WIRE SHALL UTILIZE CONDUITS TO SERVE ALL BUILDING AND PROCESS LOADS.
17. PROCESS DROPS SHALL BE SUPPORTED OFF CLOSEST WALL AND TRAVEL ALONG EQUIPMENT TO DEVICES WHERE POSSIBLE.
18. AQUARION WATER COMPANY ELECTRICAL SPECIFICATION STANDARDS ARE ATTACHED TO THE PROJECT MANUAL AS APPENDIX C. WHERE A CONFLICT OCCURS BETWEEN THE CONTRACT DRAWINGS OR DIVISION 16 SPECIFICATIONS, THE AQUARION WATER COMPANY ELECTRICAL SPECIFICATION STANDARDS SHALL GOVERN.

GENERAL SITE NOTES

1. ALL EXCAVATION, TRENCHING, BACK FILL AND COMPACTION OF DUCT BANKS, TRANSFORMER PADS, SITE LIGHTING BASE, BY THE GC.
2. WHERE ROUTING IS SPECIFICALLY INDICATED, CONDUITS SHALL BE ROUTED AS INDICATED ON THE DRAWING. NO EXCEPTION WITHOUT PRIOR WRITTEN PERMISSION FROM THE PROJECT ELECTRICAL ENGINEER.
3. ALL CONCRETE WORK SHALL BE BY THE GC.

GENERAL LIGHTING NOTES

1. FOR ELECTRICAL PANEL LOCATIONS, REFER TO RESPECTIVE FLOOR POWER PLAN.
2. REFER TO MECHANICAL AND CIVIL DRAWINGS FOR EQUIPMENT LOCATIONS.
3. COORDINATE THE LOCATION OF ALL EMERGENCY LIGHTING WITH EQUIPMENT. EMERGENCY LIGHTING SHALL NOT BE OBSTRUCTED.

GENERAL LOW VOLTAGE NOTES

1. COORDINATE THE LOCATION OF ALL LOW VOLTAGE DEVICES WITH THE GC AND OWNER PRIOR TO ROUGH-IN.
2. ALL LOW VOLTAGE DEVICE TYPES SHALL BE PER THE DRAWINGS AND SPECIFICATIONS.
3. PROVIDE ELECTRICAL CONNECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. COORDINATE LOCATION, QUANTITY WITH GC AND OWNER PRIOR TO INSTALLATION.
4. ALL LOW VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT.
5. REFER TO DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

GENERAL SYMBOLS

SECTION — A / E-XXX — SECTION REFERENCE LETTER; DRAWING WHERE SECTION IS SHOWN OR TAKEN

A A — SECTION

1 — PHOTOGRAPH LOCATION

EQUIPMENT, STRUCTURES, PIPING AND/OR CONDUIT TO BE DEMOLISHED.

GENERAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING ELECTRICAL PANELBOARDS, JUNCTION BOXES, BRANCH CIRCUITS, FEEDERS, RACEWAYS, DEVICES, ETC., AS REQUIRED TO ACCOMPLISH THE NEW WORK AS SHOWN OR REASONABLY IMPLIED. REFER TO THE MECHANICAL AND ELECTRICAL WORK SHOWN ON THE OTHER DRAWINGS OF THIS SET TO DETERMINE THE EXTENT OF THE DEMOLITION WORK REQUIRED.
2. EXISTING BRANCH CIRCUITS NO LONGER SERVING ANY EQUIPMENT OR DEVICES SHALL BE PULLED BACK TO AND DISCONNECTED FROM THE PANEL OF ORIGIN. RE-LABEL EXISTING CIRCUIT BREAKERS AS SPARE AND PROVIDE A NEW LABEL/NAMEPLATE OR TYPE-WRITTEN PANEL DIRECTORY.
3. BRANCH CIRCUITS SERVING EXISTING DEVICES TO REMAIN AND EXISTING DEVICES TO BE REPLACED SHALL BE MAINTAINED AND RECONNECTED AS REQUIRED AFTER REMOVAL OF THE EXISTING DEVICES, AS NECESSARY TO ACCOMMODATE THE ALTERATIONS.
4. COORDINATE WITH THE OWNER'S RESPECTIVE DEPARTMENTS FOR THE DISCONNECTION AND REMOVAL OF PROCESS, COMMUNICATIONS, AND SECURITY SYSTEM DEVICES, EQUIPMENT, AND CABLING.
5. COORDINATE WITH THE GC FOR EXISTING PARTITIONS TO BE REMOVED. DISCONNECT EXISTING BRANCH CIRCUITS SERVING DEVICES IN PARTITIONS TO BE REMOVED. MAINTAIN CONTINUITY OF EXISTING CIRCUITS SERVING EXISTING DEVICES IN OTHER AREAS TO REMAIN. PROVIDE ADDITIONAL CONDUIT AND WIRING AS REQUIRED.
6. COORDINATE WITH THE ENGINEER AND GENERAL CONTRACTORS FOR EXISTING EQUIPMENT TO BE DISCONNECTED AND REMOVED. DISCONNECT AND REMOVE THE ELECTRIC CONDUIT AND WIRING BACK TO THE POINT OF ORIGIN FOR EACH PIECE OF EQUIPMENT TO BE REMOVED.
7. REMOVE ALL WIRING/CABLING NO LONGER IN USE FROM EXISTING RACEWAYS/CONDUITS. RACEWAYS/CONDUITS NO LONGER IN USE THAT ARE EMBEDDED IN FLOOR SLABS SHALL BE CUT BACK AS REQUIRED AND CAPPED. SURFACE-MOUNTED RACEWAYS/CONDUITS NO LONGER IN USE SHALL BE REMOVED.
8. PROVIDE BLANK STAINLESS STEEL COVER PLATES FOR ALL JUNCTION/DEVICE BOXES NO LONGER IN USE THAT ARE EMBEDDED IN FLOOR SLABS OR MASONRY WALLS. ALL COVER PLATES SHALL BE PAINTED TO MATCH EXISTING CONDITIONS.
9. REFER TO SPECIFICATIONS FOR ADDITIONAL DEMOLITION CRITERIA.
10. THE EXISTENCE OF UTILITIES AND APPURTENANCES AS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. THOROUGHLY INVESTIGATE THE EXACT SIZE, TYPE, LOCATION AND ELEVATION PRIOR TO THE START OF CONSTRUCTION. FIELD MEASURE TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH MIGHT BE OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.
11. ASSUME MATERIALS TO BE DEMOLISHED ARE POSITIVE FOR HAZARDOUS MATERIALS AND DISPOSE OF AS NECESSARY IN ACCORDANCE WITH APPLICABLE REGULATIONS. REFER TO SPECIFICATIONS FOR MORE DETAILS.
12. OWNER RETAINS RIGHT OF FIRST REFUSAL FOR ALL ITEMS TO BE REMOVED OR DEMOLISHED. TAKE REASONABLE CARE TO AVOID DAMAGE TO ITEMS TO BE RETAINED BY OWNER. NO ADDITIONAL CHARGE WILL BE ALLOWED FOR REMOVAL OF SALVAGEABLE ITEMS.
13. FOR ITEMS BEING DEMOLISHED, REMOVE EXISTING SUPPORTS AND MOUNTING HARDWARE. FILL OPENINGS FROM ANCHOR HOLES AND CONDUIT/PIPE PENETRATIONS (UNLESS CONDUIT IS TO BE REUSED) WITH NON-SHRINK GROUT AND PAINT TO MATCH WALL OR FLOOR.
14. PATCH HOLES IN CONCRETE FROM OLD EQUIPMENT SUPPORTS, CONDUITS, PENETRATIONS, ETC. WITH NON-SHRINK GROUT. PAINT TO MATCH SURROUNDING SURFACE.
15. VOIDS CREATED BY THE REMOVAL OF CONDUIT/WIRE IN FLOORS OR WALLS ABOVE OR BELOW CEILINGS SHALL BE PATCHED AND SEALED WITH MATERIALS MATCHING THE EXISTING CONSTRUCTION.
16. PROPERLY DISPOSE OF DEMOLISHED EQUIPMENT IN COMPLIANCE WITH CODES, REGULATIONS, AND STATE STANDARDS.

AREA CLASSIFICATIONS

WET LOCATION — INDICATES THAT ALL ELECTRICAL MATERIALS AND EQUIPMENT INSTALLED IN THE ROOM OR DEMARCATED AREA SHALL BE OF WATERTIGHT OR NEMA 4 CONSTRUCTION SUITABLE FOR USE IN A WET LOCATION

RECEPTACLES

MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED. ALL RECEPTACLES IN AREAS LABELED "WET LOCATION" SHALL HAVE WEATHER-PROOF COVERS AND SHALL BE GFI TYPE.

NUMBERS/LETTERS SHOWN BESIDE RECEPTACLES SHALL INDICATED THE FOLLOWING: "2" (NUMBER OR PANELBOARD NAME AND NUMBER) INDICATES POWER CIRCUIT NUMBER.

- DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- SPECIAL PURPOSE RECEPTACLE, NEMA L5-20 INDICATES TYPE.

MISCELLANEOUS

LIT ### — INSTRUMENT OR CONTROL DEVICE. "LIT-###" INDICATES INSTRUMENT OR DEVICE ID/TAG.

J — JUNCTION BOX, SIZED PER NEC

HH — HANDHOLE

CIRCUIT BREAKER

TOGGLE SWITCHES

MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED.

S — SINGLE POLE TOGGLE SWITCH

RACEWAYS AND WIRING

HOMERUN TO EQUIPMENT. "L4A1" INDICATES EQUIPMENT ID, "1,3" INDICATES PANELBOARD CIRCUIT NUMBERS, (20A, 1P, UNLESS INDICATED OTHERWISE) SEE DRAWINGS FOR QUANTITY AND SIZE OF WIRE AND CONDUIT.

L4A1-1,3

L4A1-1,3 — 2#10,#10G,¾"C

CONDUIT, CONCEALED IN CONSTRUCTION IN FINISHED AREAS, EXPOSED IN UNFINISHED AREAS

E — UNDERGROUND POWER CONDUIT

C — UNDERGROUND COMMUNICATION/CONTROL CONDUIT

NOTES:

1. GREEN GROUND CONDUCTOR NOT INDICATED BUT SHALL BE INCLUDED IN EACH RACEWAY. SIZE SHALL BE #12AWG UNLESS INDICATED OTHERWISE.
2. HOMERUNS TO EQUIPMENT SHALL HAVE A MAXIMUM OF THREE (3) PHASE CONDUCTORS (ONE PER PHASE), (3) NEUTRALS AND (3) GROUND CONDUCTORS IN EACH CONDUIT.

BRANCH CIRCUIT WIRING NOTES

1. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
2. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
3. ALL SWITCH CONTROLS SHALL BE FURNISHED WITH WIRING AND CONDUIT AS REQUIRED.
4. ALTHOUGH ALL BRANCH CIRCUIT WIRING AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
5. A GREEN GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS. VERIFY CONDUIT SIZE TO ENSURE IT CAN ACCOMMODATE ALL PHASE, NEUTRAL AND GROUND CONDUCTORS.
6. ALL BRANCH CIRCUITS SHALL HAVE INDIVIDUAL NEUTRALS AND GROUNDS. BRANCH CIRCUITS SHALL NOT SHARE NEUTRALS OR GROUNDS.

LIGHTING FIXTURES

NUMBERS/LETTERS SHOWN BESIDE LIGHT FIXTURES SHALL INDICATE THE FOLLOWING: "F1" (CAPITAL LETTER(S) OR COMBINATION OF CAPITAL LETTER(S) AND NUMBERS) INDICATES FIXTURE TYPE.

F1 — LIGHTING FIXTURE, SURFACE, OR PENDANT MOUNTED

EMERGENCY BATTERY UNIT

POWER DISTRIBUTION EQUIPMENT

- DISTRIBUTION PANELBOARD
- PANELBOARD, SURFACE MOUNTED
- NON-FUSED DISCONNECT SWITCH
- T — DRY-TYPE DISTRIBUTION TRANSFORMER

SCHEMATIC SYMBOLS:

- R — PILOT LIGHT, PUSH TO TEST LED R=RED, G=GREEN, A=AMBER, W=WHITE, Y=YELLOW, B=BLUE
- FU — FUSE
- GROUND CONNECTION
- TEMPERATURE SWITCH, HEATING THERMOSTAT
- CR 1 — CONTROL RELAY OPERATING COIL 1=RELAY ID NUMBER
- CR-1 — CONTROL RELAY CONTACT (NORMALLY OPEN)
- HEATER
- STOP START — MOMENTARY CONTACT STOP/START PUSHBUTTONS
- WIRES CROSSING, NOT CONNECTED
- WIRES CONNECTED
- M — UTILITY METER

ABBREVIATIONS

#	WIRE SIZE OR IDENTIFICATION NUMBER	MC	MECHANICAL CONTRACTOR
A	AMPERES	MCB	MAIN CIRCUIT BREAKER
ABSCP	AIR BURST SYSTEM CONTROL PANEL	MCC	MOTOR CONTROL CENTER
AF	AMPERE FRAME (CIRCUIT BREAKER RATING)	MIN	MINIMUM
AFF	ABOVE FINISHED FLOOR	MISC	MISCELLANEOUS
AFG	ABOVE FINISHED GRADE	MFR	MANUFACTURER
AIC	AMPERE INTERRUPTING CAPACITY	MLO	MAIN LUGS ONLY
AL	ALUMINUM	MV	METER VAULT
AS	AMPERE SENSOR (CIRCUIT BREAKER RATING)	NC	NORMALLY CLOSED
AT	AMPERE TRIP (CIRCUIT BREAKER RATING)	NEC	NATIONAL ELECTRICAL CODE
ATS	AUTOMATIC TRANSFER SWITCH	NIC	NOT IN CONTRACT
AWG	AMERICAN WIRE GAUGE	NO	NORMALLY OPEN, NUMBER
BLDG	BUILDING	NTS	NOT TO SCALE
C	CONDUIT	OL	OVERLOAD
CB	CIRCUIT BREAKER	P	POLE
CIR, CKT	CIRCUIT	P, PH, Ø	PHASE
COMM	COMMUNICATION	PLC	PROGRAMMABLE LOGIC CONTROLLER
CP	CONTROL PANEL	PVC	POLYVINYL CHLORIDE
Δ	DELTA	R	RECESSED
CU	COPPER	RGS	RIGID GALVANIZED STEEL CONDUIT
DISC SW, DS	DISCONNECT SWITCH	ROM	REMOTE OPERATION MODE
DWG	DRAWING	RWPS	RAW WATER PUMP STATION
EC	ELECTRICAL CONTRACTOR	S	SURFACE
EF	ELECTRIC FAN	SCCR, SCR	SHORT CIRCUIT CURRENT INTERRUPTING RATING
ELEV	ELEVATION	SCH 40	SCHEDULE 40 PVC CONDUIT
EM	EMERGENCY	SO	SOLENOID VALVE
ERH	ELECTRIC RADIANT HEATER	SP	SPARE
FU	FUSE	SPD	SURGE PROTECTION DEVICE
FT	FEET	SS	STAINLESS STEEL
FTB	FORMER TREATMENT BUILDING	SW	SWITCH
FTBLP	FORMER TREATMENT BUILDING LIGHT PANEL	TEL	TELEPHONE
G	GROUND	TSP	TWISTED SHIELDED PAIR CABLE
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND, UPPER GATEHOUSE
HH	HANDHOLE	UGDP	UPPER GATEHOUSE DISTRIBUTION PANEL
HVCP	HVAC CONTROL PANEL	UGLP	UPPER GATEHOUSE LIGHTING PANEL
ID	IDENTIFICATION	UPS	UNINTERRUPTABLE POWER SUPPLY
KCMIL, MCM	ONE THOUSAND CIRCULAR MILS	V	VOLT
KVA	KILOVOLT-AMPERES	VFD	VARIABLE FREQUENCY DRIVE (ALSO REFERED TO AS ADJUSTABLE FREQUENCY DRIVE)
KVAR	KILOVOLT-AMPERES REACTIVE	Y	WYE
KW	KILOWATTS	W	WATT, WIRE
LG	LOWER GATEHOUSE	WP	WEATHERPROOF
LGLP	LOWER GATEHOUSE LIGHTING PANEL	XFMR	TRANSFORMER
LSI, LSIG	LONG/SHORT TIME, INSTANTANEOUS & GROUND FAULT SETTINGS (FOR CIRCUIT BREAKER)		

Tighe&Bond

STATE OF CONNECTICUT — PETER GALATI — 15970 — LICENSED PROFESSIONAL ENGINEER — 01/19/2024

STATE OF CONNECTICUT — MATTHEW ROMANO — 27315 — LICENSED PROFESSIONAL ENGINEER — 01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

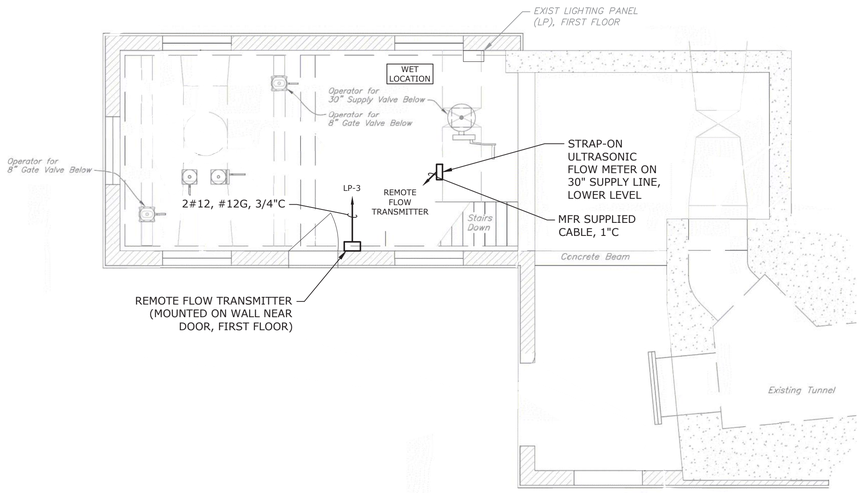
PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-E-001.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	MJR
APPROVED BY:	PBG

ELECTRICAL NOTES, ABBREVIATIONS, AND LEGEND

SCALE: AS SHOWN

E-001
SHEET 14 OF 20

Last Saved: 1/18/2024
Printed On: 1/18/2024 4:09:27pm By: COrosz
Tighe & Bond: J:\AA\A1000 AWC\185 - Streamflow Releases\Drawings, Figures\AutoCAD\Sheet\A1000-185-E-001.dwg



LOWER GATEHOUSE ELECTRICAL PLAN
3/16" = 1'-0"

0 4' 8' 12'
SCALE: 3/16"=1'-0"

Tighe&Bond

STATE OF CONNECTICUT
PETER GALANI
15970
LICENSED PROFESSIONAL ENGINEER
01/19/2024

STATE OF CONNECTICUT
MATTHEW ROMANO
27315
LICENSED PROFESSIONAL ENGINEER
01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

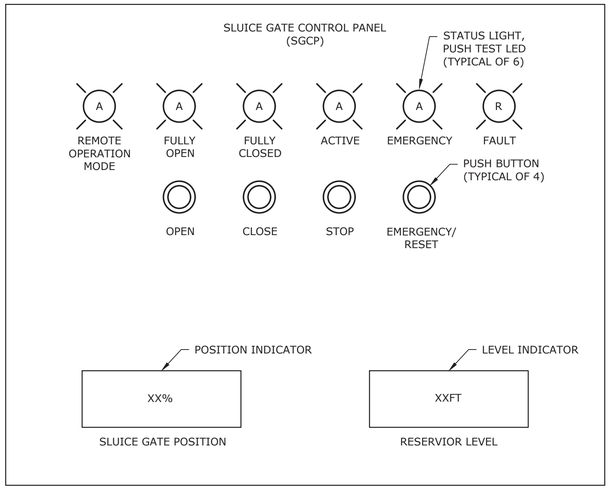
PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-E-103.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	MJR
APPROVED BY:	PBG

SAUGATUCK RESERVOIR DAM - ELECTRICAL

SCALE: AS SHOWN

E-103
SHEET 17 OF 20

Last Saved: 1/16/2024
Plotted On: 1/17/2024 - 5:00pm By: KKortright
Tighe & Bond: J:\AA1000 AWC\185 - Streamflow Releases\Drawings, Figures\AutoCAD\Sheet\A1000-185-E-103.dwg



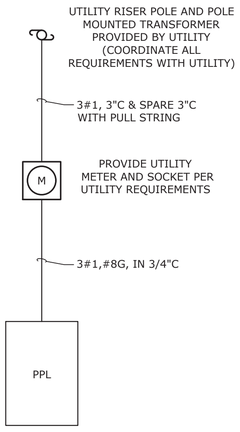
SLUICE GATE CONTROL PANEL (SGCP) DETAIL

ENCLOSURE SHALL BE NEMA4 WITH 1" OF INSULATION SEE SPECS FOR MORE DETAILS

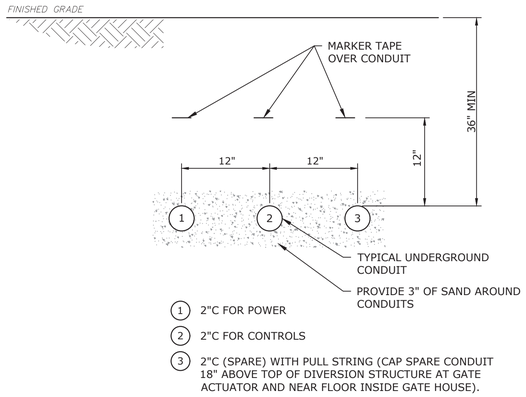
		VOLTAGE (L-L):	240	PHASE:	1	WIRE:	3	VA, L1	1,498	PANEL NO.	PPL								
		VOLTAGE (L-N):	120					VA, L2	300										
		MAIN BUS:	125	AMPS				VA, L3	598	LOCATION:	GATE HOUSE								
		MAIN BREAKER:	60	A FRAME	60	A TRIP				NOTES:	NEMA 4 ENCLOSURE								
		MOUNTING:	SURFACE		kAIC:	10		TOTAL VA	2,396										

WIRE SIZE	CONDUIT SIZE	DIRECTORY	VA LOAD L1	VA LOAD L2	VA LOAD L3	CKT.	AMPS		AMPS	CKT.	VA LOAD L1	VA LOAD L2	VA LOAD L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE
2#12 & 1#12G	3/4"	RECEPTACLES GATE HOUSE	400			1	20		20	2	500			SGCP	3/4"	2#12 & 1#12G
2#12 & 1#12G	3/4"	LEVEL TRANSDUCER		100		3	20		20	4		200		LIGHTS GATE HOUSE	-	-
2#12 & 1#12G	3/4"	SLUICE GATE ACTUATOR			588	5	20		30	6			10	SPD	3/4"	3#12 & 1#12G
-	-	|	588			7	20		|	8	10			|	-	-
2#12 & 1#12G	3/4"	SPARE				9	20		20	10				SPARE	-	-
2#12 & 1#12G	3/4"	SPARE				11	20		20	12				SPARE	-	-
		SUBTOTAL	988	100	588						510	200	10	SUBTOTAL		

PANELBOARD SCHEDULE

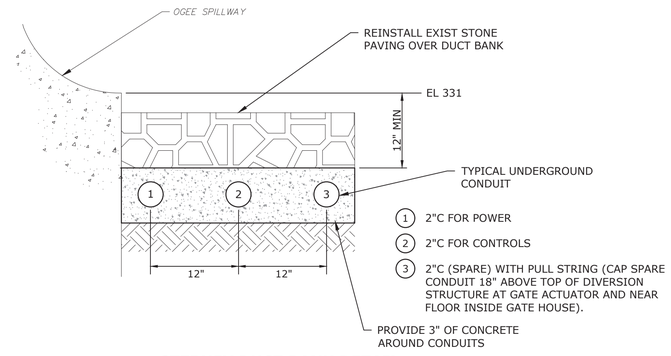


PROPOSED ONE-LINE DIAGRAM



TYPICAL UNDERGROUND DUCT BANK

NOTE: DUCT BANK SHALL BE CONCRETE ENCASED UNDER PAVED AREAS. CONCRETE SHALL EXTEND A MINIMUM OF 3" AROUND ALL CONDUITS.

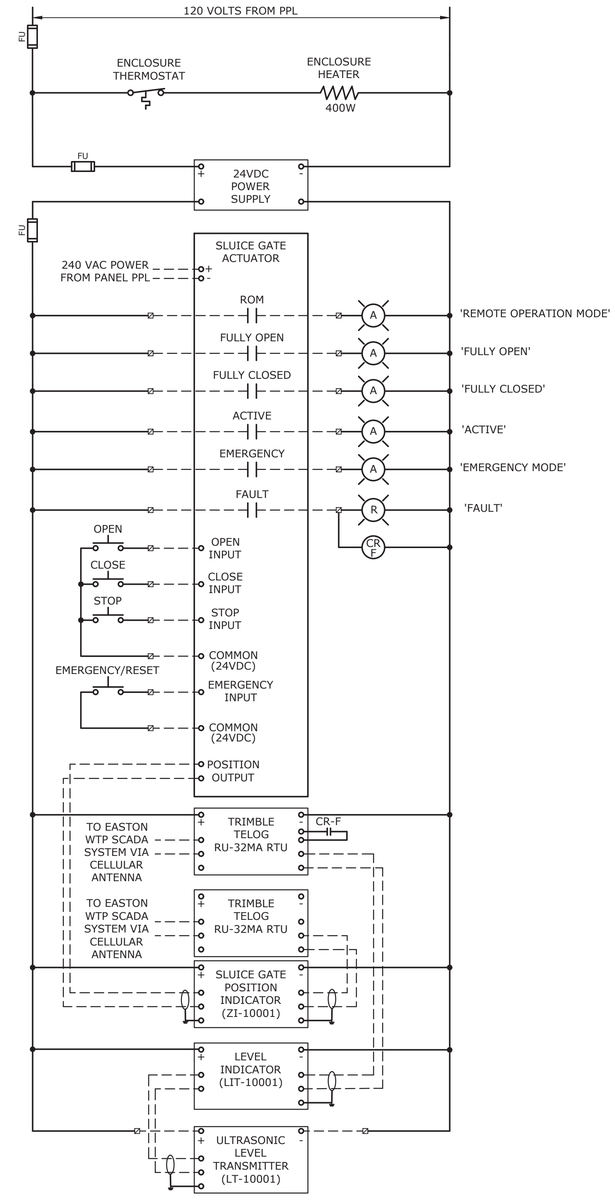


STEPNEY DUCT BANK DETAIL

DETAIL	1
NO SCALE	E-101

WIRING DIAGRAM SYMBOLS

- FIELD WIRING
- DEVICE TERMINAL
- LOCAL CONTROL PANEL TERMINAL



SLUICE GATE CONTROL PANEL (SGCP) WIRING DIAGRAM

PROVIDE TWO TRIMBLE TELOG RU-32MA RTU SYSTEMS MOUNTED IN THE SGCP AND TWO COMPATIBLE ANTENNAE WHERE SHOWN. INSTALL PER MFR RECOMMENDATIONS.

TYPE	FIXTURE DESCRIPTION	MANUFACTURER				LAMP DATA			
		MANUFACTURER	CATALOG NUMBER (LED FIXTURES)	EQUAL MFG #1	EQUAL MFG #2	WATTS	TYPE	K	VOLT
SA	SURFACE LED IP67 RATED STAINLESS STEEL HARDWARE	XTRALIGHT	VTE4-5000L-40K-SFA-SSL-SRG	KURTZON	MOBERN	42	LED	4000	120

LIGHTING SCHEDULE

Tighe&Bond

STATE OF CONNECTICUT PETER GALANT 15970 LICENSED PROFESSIONAL ENGINEER 01/19/2024

STATE OF CONNECTICUT MATTHEW ROMANO 27315 LICENSED PROFESSIONAL ENGINEER 01/19/2024

Stream Flow Release Modifications for Various Dams and Diversions

Aquarion Water Company

MARK	DATE	DESCRIPTION
0	01/2024	ISSUED FOR BIDDING

PROJECT NO:	A1000-185
DATE:	JANUARY 2024
FILE:	A1000-185-E-201.dwg
DRAWN BY:	KRK
DESIGNED/CHECKED BY:	MJR
APPROVED BY:	PBG

ELECTRICAL WIRING DIAGRAMS, DETAILS, AND SCHEDULES

SCALE: AS SHOWN

E-201
SHEET 20 OF 20

Last Saved: 1/19/2024
Printed: Jan 19, 2024 - 11:42am By: KKortright
Tighe & Bond: J:\A\A1000 AWC\185 - StreamFlow Releases\Drawings, Figures\AutoCAD\Sheet\A1000-185-E-201.dwg

Appendix B

Site Photographs

Photographic Log

Client: Aquarion Water Company
Saugatuck Reservoir Dam
Site: Weston, Connecticut

Job Number: A1000-185

Photograph No.: 1	**Date:** 6/22/2023	**Direction Taken:** South
Description: Saugatuck River and existing streamflow release facing south		

Photograph No.: 2	**Date:** 6/22/2023	**Direction Taken:** North
Description: Saugatuck River and existing streamflow release facing north		

Photographic Log

Client: Aquarion Water Company
Saugatuck Reservoir Dam
Site: Weston, Connecticut

Job Number: A1000-185

Photograph No.: 3	**Date:** 6/22/2023	**Direction Taken:** South
Description: Saugatuck River and existing streamflow release facing South		

Appendix C

Soil Survey Report
FEMA Firmette

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut, Western Part

Saugatuck Reservoir Dam

January 22, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Scale: 1:1,590 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

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, Western Part
Survey Area Data: Version 1, Sep 15, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	3.6	54.5%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	0.5	7.3%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	0.1	2.3%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	1.5	23.4%
W	Water	0.8	12.6%
Totals for Area of Interest		**6.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut, Western Part

52C—Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2xffj
Elevation: 10 to 760 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Sutton, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton, Extremely Stony

Setting

Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: fine sandy loam
Bw1 - 7 to 19 inches: fine sandy loam
Bw2 - 19 to 27 inches: sandy loam
C1 - 27 to 41 inches: gravelly sandy loam
C2 - 41 to 62 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B/D
Ecological site: F144AY008CT - Moist Till Uplands

Hydric soil rating: No

Minor Components

Woodbridge, extremely stony

Percent of map unit: 7 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Canton, extremely stony

Percent of map unit: 5 percent
Landform: Ridges, hills, moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester, extremely stony

Percent of map unit: 3 percent
Landform: Hills, drainageways, ground moraines, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

62D—Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w81r
Elevation: 0 to 1,640 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 55 percent
Charlton, extremely stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Extremely Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton, Extremely Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chatfield, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Hollis, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

73C—Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 2w698
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton, very stony, and similar soils: 50 percent
Chatfield, very stony, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

Hollis, very stony

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

73E—Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 9lql
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton and similar soils: 45 percent
Chatfield and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 7 inches: fine sandy loam
Bw2 - 7 to 19 inches: fine sandy loam
Bw3 - 19 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Chatfield

Setting

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 6 inches: gravelly fine sandy loam
Bw1 - 6 to 15 inches: gravelly fine sandy loam
Bw2 - 15 to 29 inches: gravelly fine sandy loam
2R - 29 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Rock outcrop
Percent of map unit: 10 percent
Hydric soil rating: No

Leicester
Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, very stony
Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hollis
Percent of map unit: 3 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Unnamed, sandy subsoil
Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, red parent material
Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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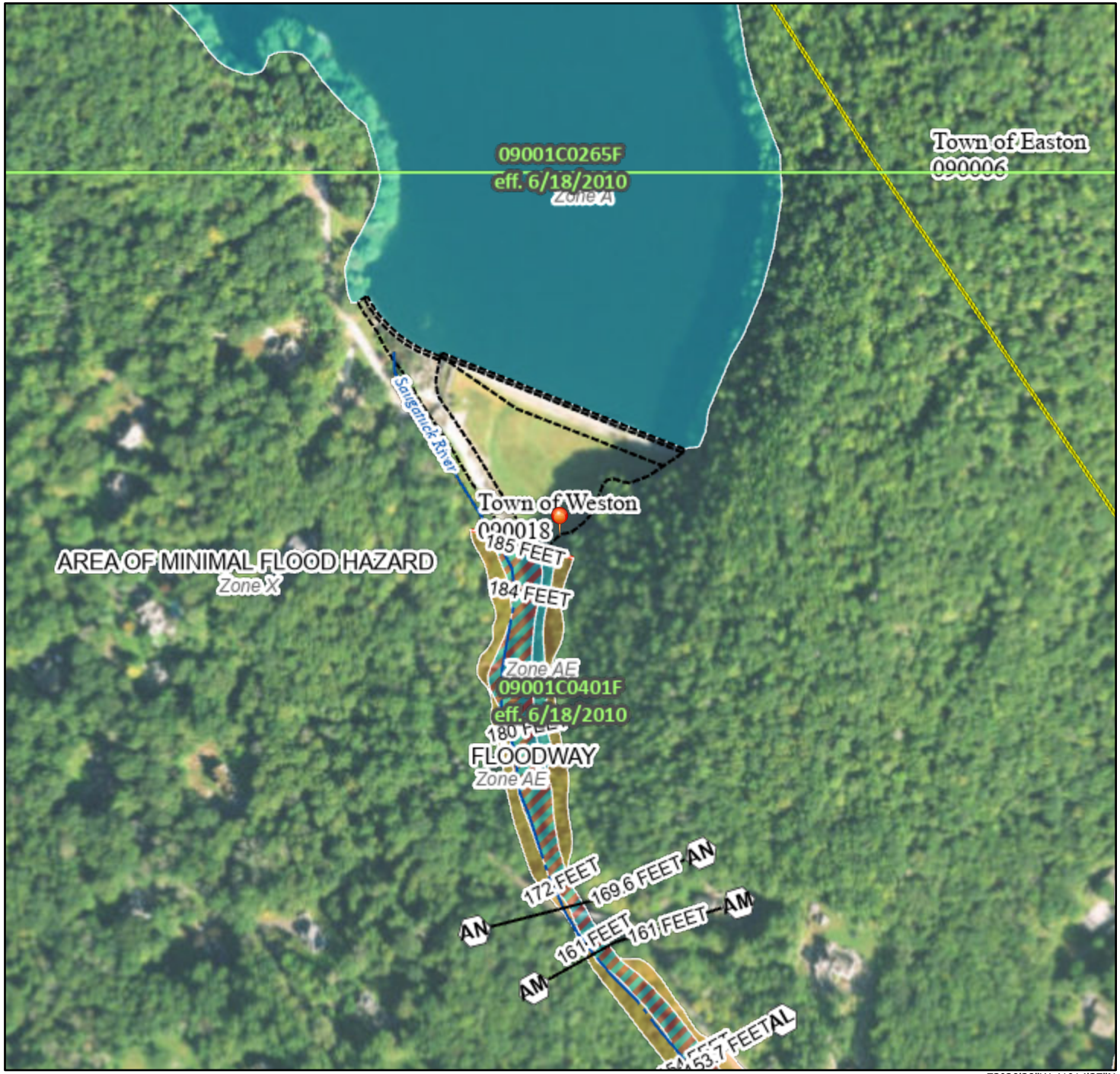
National Flood Hazard Layer FIRMette

FEMA

73°21'16"W 41°15'4"N



73°20'38"W 41°14'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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