CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, January 27, 2022**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for the City of Dover, Assessor's Map D, Lot 1, zoned R-40, located at 40-42 Smith Well Road. (Proposal is for an additional water storage tank) (P22-02)

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: June 4, 2019]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: City of Dover Telephone # 603 516-6450

Address of Applicant: 288 Central Avenue, Dover NH 03820

E-Mail Address: j.storer@dover.nh.gov

Name of Property Owner (*if different from applicant*): (Same) Telephone #

Address of Property Owner:

PROPERTY INFORMATION

Address of Property: 40-42 Smith Well Road

Assessor's Map # D1 Lot(s) # 0

Zoning District(s) R-40 Overlay District(s) Conservation, Groundwater protection

Size of Parcel: 1,969,783 sq. ft. 45.22 ac. Property Deed: Book 599 Page: 387

Existing Use of Property: Municipal water supply aquifer

SITE PLAN INFORMATION

Describe Proposed Use: Water storage tank

Area of Parcel to be Developed: < 30% sq. ft.

If Multi-family Residential, Specify Number of Units & Buildings Proposed: N/A

Number of Parking Spaces: Existing Proposed

Highway Access (check where applicable): x City Street ____ State Highway

Number of Employees Total: 1 water operator In Maximum Shift: 1 water operator

Disposition of Parcel:

Building Footprint 1134 sq. ft.

Total Building Area 8100 sq. ft.

Paved Area 615 sq. ft.

Building Setbacks:

Front Yard 260 ft.

Rear Yard 1890 ft.

Side Yard: Right 510 ft. Left 60.5 ft.

City Water? X Yes ___ No How far is city water from the property? On property

City Sewer? ___ Yes X No How far is city sewer from the property? Abutting (Smith Well Rd)

BUILDING INFORMATION

Type of Building to be Built: Composite Elevated Water Storage Tank

Height of Building: 113 ft Finished Floor Elevation: 197.5 ft MSL

Number of Seats (where applicable) N/A

Estimated value of construction: $6.1 M Refuse removal: Public/Private (circle one)
(includes new water distribution mains on parcel)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: 170 - 28.3 Groundwater Protection

Justification for waiver request(s) (*attach additional sheets as needed*):

The City of Dover's main water pressure zone depends on a single 4.0 MG concrete water storage tank (Garrison Hill Reservoir), that is need of rehabilitation due to age. An additional water storage tank is required to maintain water service for drinking and fire suppression while the existing tank is taken offline during rehabilitation. The new tank will facilitate future maintenance and improve reliability with additional and redundant storage.

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Matt Fagginger-Auer / Doucet Survey

Address 102 Kent Place, Newmarket, NH 03857 Telephone #: 603 659-6560

Professional License #: 989 E-mail address: matt@doucetsurvey.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Thomas Page, Project Manager / Underwood Engineers

Address 25 Vaughan Mall, Portsmouth, NH 03801 Telephone #: 603 436-6192

Professional License #: 10959 E-mail address: tpage@underwoodengineers.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) N/A

Address ___ Telephone #: ___

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) N/A

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) Marc Grenier / R. W. Gillespie & Associates, Inc

Address 20 Pormeleau Street, Suite 100, Biddeford, ME 04005 Telephone #: 207 286-8008

Professional License #: 10615 E-mail address: mgrenier@rwg-a.com

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

Attachments:

- **A.** Narrative
- **B.** Aerial Figure
- **C.** Work Plan
- **D.** Visibility Check Memo
- **E.** FAA Review
- **F.** Design Drawings

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ J. Michael Joyal, Jr. City Manager 2021.12.30 02:38:58 -05'00' Date: _____

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: Thomas L. Page Underwood Engineers Date: 12/20/21

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ J. Michael Joyal, Jr. City Manager 2021.12.30 02:39:39 -05'00' Date: _____

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ J. Michael Joyal, Jr. City Manager 2021.12.30 02:40:16 -05'00' Date: _____

Signature of Applicant (*if different from owner*): _____ Date: _____

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ J. Michael Joyal, Jr City Manager 2021.12.30 02:40:46 -05'00' Date: _____

Signature of Applicant (*if different from owner*): _____ Date: _____

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE

(Revised September 17, 2020)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan review fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☐ CONDITIONAL USE PERMIT Application fee $200.00 x # _____ per Application = $_____
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

SUB TOTAL= $_____

AND

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee $200.00 + $.07 sq. ft. x # _____ = **$_____**

TOTAL PLAN REVIEW FEE= $_____

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will need to review the list and provide to this office the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

SUB TOTAL= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

TOTAL NOTICE FEE= $_____

The above amount must be paid 28 hours prior to the Planning Board meeting, to be heard.

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: City of Dover File Number: _____

PROJECT TITLE: Water Storage Improvements - Contract 1

PROPERTY LOCATION: Smith Well off Webb Place and Smith Well Road Tax Map: D01 Lot: 0

	Where/How Provided	Reviewed
1. Completed and signed Application form	By City	
2. Plan Review Fees are provided	N/A	
3. Electronic copy of the engineered/surveyed plan layout	Link provided for download	
4. Electronic copy of supplementary materials and application	Link provided for download	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	See narrative (Attachment A)	
6. Waiver requests to the Site Plan Review Regulations, with written justification	See narrative (Attachment A)	
7. Conditional Use Permit applications	N/A	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	Renderings in Visibility Check Memo (Attachment D)	
9. A colored architectural plan showing all sides of buildings	Sheet C9 (Attachment F)	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:		
Location map at appropriate scale	Sheet C1 (Attachment F)	
Proposed Project name and title and Planning File #	Cover and title blocks (Attach. F)	
Date, north arrow and scale	✓	
Names of all abutting property owners	Sheets C2 to C8 (Attachment F)	
Name and address of owners and/or applicants	Cover (Attachment F)	
Signature & stamp of NH licensed land surveyor and/or engineer	Pending 100% drawings	
Zoning District boundaries, including any special or overlay districts	✓	
Location of Conservation District areas	✓	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	✓	
Location and widths of existing & proposed easements & right of ways	N/A	
Location and width of existing and proposed access/egress ways	✓	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	N/A	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	✓	
Existing and proposed topographic information at two foot intervals	✓	
Existing and proposed buildings and structure locations	Sheets C2 to C8 (Attachment F)	
Minimum building setbacks or build to lines on all lots	✓	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	Sheets C2 to C8 (Attachment F)	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	Sheets C2 to C8 (Attachment F)	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	Sheet C8, No new load (Attachment F)	
Existing and proposed stormwater lines and facilities	Sheets C4 and C8 (Attachment F)	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	Electrical Drawings (Attachment F)	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	✓	
Location of wetlands and buffers	✓	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	Attachment B	
Existing natural features and/or significant vegetation on property	✓	
Depict existing contours up to 100 ft. beyond project limits	✓	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	See site plan (Attachment F)	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	N/A	
Location, material and size of existing and proposed pavement area	Sheets C2 to C8 (Attachment F)	
Location of proposed fire lanes	Sheet C2, Access Road (Attach. F)	
Specify finished floor elevations of buildings	Sheet C2 (Attachment F)	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	N/A	
Depict all service, storage, loading bays and utility areas	Sheet C2 (Attachment F)	
All applicable Dover Common Site Plan notes	Sheets G2 and G3 (Attachment F)	
11. Additional Information if appropriate	See Narrative (Attachment A)	
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis		
Stormwater Management System Operation and Maintenance Plan		
Letter to Serve from Public and Private Utilities		
Erosion and Sedimentation Control Plan		
Landscape Operation and Maintenance Plan		
Proposed restrictive covenants or homeowners association documents		
Dates and permit numbers of all required state and federal permits		
If wetland buffer, indicate placards locations, as applicable		
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs		
Location of proposed drive-in facilities		
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required		

REVIEWED BY: _____ DATE_____ TRC DATE_____

Attachment A
Narrative for Local Review

Water Storage Improvements
Dover, NH
December 16, 2021

Project Background

The City of Dover's main water pressure zone depends on a single 4.0 MG concrete water storage tank (Garrison Hill Reservoir). The existing tank was built in 1968 and is in need of rehabilitation due to age. However, the tank cannot be removed from service under current conditions. An additional water storage tank is required to maintain water service for drinking and fire suppression while the existing tank is rehabilitated. The new tank will also facilitate future maintenance, improve reliability and provide additional emergency/fire storage. The new tank provides critical redundancy in the event the Garrison Hill Tank has to be taken offline.

Per the request of the City to evaluate storage alternatives, Underwood Engineers (UE) prepared technical memorandum (February 4, 2020) to evaluate locations for a new tank and a preferred site was identified on City land currently used for water supply near the existing Smith Well (*Attachment B - Aerial Plan*).

Existing Conditions

The proposed site is located in a parcel owned by the City of Dover, near Smith Well Road. The area is already developed for water facilities (Smith and Cummings wells and well house). Existing electrical and SCADA systems at well house will be extended to the tank.

The access to the tank will be through the existing gravel road on the site. The entrance to the gravel road is located at Webb Place.

The planned construction area is partially wooded. Limited clearing is required. The proposed tank is at the highest area on the property to minimize the required tank height. The subsurface conditions consist of topsoil over naturally deposited silty sand over sand with varying amounts of silt and gravel.

Wetlands were located and delineated in the drawings during the Survey conducted by Doucet Survey in April, 2021. The proposed building and structures are located outside the 50 ft Wetland buffer.

Test boring locations, groundwater elevations and soil profiles can be found on the Geotechnical Report provided by R. W. Gillespie on May 28, 2021.

Summary of Improvements

The proposed water storage facility is a Composite Elevated Tank (CET) consisting of a concrete pedestal supporting a welded steel tank. The concrete pedestal will have a rustication pattern per the City's preference. The tank will be painted a color approved by the City. A rendering of the proposed structure is attached. The visibility of the tank was evaluated and found to be relatively insignificant except from Webb Place (*Attachment D - Visibility Check Memorandum)*.

The new tank will provide 1.0 MG of storage, including 0.5 MG for equalization and 0.5 MG for fire flows. The proposed approximate dimensions of the tank are a pedestal diameter of 38 ft, a tank diameter of ± 74 ft , a head range of ± 35 ft and a total height to the top of the tank dome of around 110 ft. The pedestal will be used as storage for City equipment and a heated control room. A future booster pump station that connects to the North End Pressure Zone (NEPZ) can be located in the heated room in the pedestal, if needed to provide additional turnover of the tank or booster pump capacity.

A waiver to the maximum height of 35 ft allowed for the Zoning Requirements for Zone R-40 is requested, due to the need to match the proposed tank height with the existing hydraulic grade line.

Two construction contracts are anticipated (*Attachment C - Work Plan*):

- Contract 1: Composite Elevated Water Storage Tank
- Contract 2: Water Distribution Main

The project includes pipe line and utility connections as follows:

- 2,500 LF of 16" DI from the Tank to Glenwood Avenue
- 1,660 LF of 12" DI Raw Water main to replace existing main (Add-Alt)
- 400 LF of 12" DI from Tank to Webb Place-High Pressure Zone (Add-Alt)
- 6 water services on Smith Well Road to be replaced
- Sewer relocation/replacement and service connections on Smith Well Road (Add-Alt)
- Electrical service from existing Well House on site
- Communications with City's existing SCADA system

Related Permits

The following permits and approvals are related to this project and are being provided under separate cover:

- Groundwater Discharge Registration: A registration for emergency discharge of the tank overflow is being prepared by UE.
- NHDES Design Approval: The design drawings and specifications will be submitted to NHDES for approval prior to bidding.
- FAA Review: The response issued on June 3, 2021, stated that no action is required regarding marking and lighting of the tank (*Attachment E - FAA Review*).

Traffic Impact Assessment

The new tank will cause no significant impact to the traffic on Webb Place. The only reoccurring access to the tank will typically be a City water operator in one vehicle. Therefore a traffic impact assessment is not necessary.

Stormwater Management Plan

Runoff from the tank will be directed to the surrounding coarse stone or paved surfaces below the tank. The tank site will be graded to direct runoff to the surrounding wooded terrain. The access road will be graded to direct runoff to the adjacent roadside soils. No new discharge off site is planned.

Erosion and Sedimentation Control Plan

The Contractor will be responsible for Erosion and Sedimentation Control as described in the Notes on Sheet G2 of the Drawings (*Attachment F - Design Drawings*).

Related Attachments:

B - Aerial Figure
C - Work Plan
D - Visibility Check
E - FAA Review
F - Design Drawings

Water Storage Improvements - Contract 1

Property Information

Property ID	D0001-000000
Location	40 42 SMITH WELL RD
Owner	CITY OF DOVER
Land Use	903

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 5/3/2021
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PROPOSED 400 LF
12" WATER MAIN TO
HIGH PRESSURE ZONE
(ADD-ALT)

INDIAN BROOK ROAD

WEBB PLACE

SMITH WELL

725' UNDERGROUND
UTILITY

CONNECT TO
EXISTING POWER

SMITH/CUMMINGS
WELL HOUSE

CUMMINGS
WELL

PROPOSED
TANK ACCESS
DRIVE

EXISTING 10"
WATER MAIN

PROPOSED ELEVATED TANK
(112' HIGH, 38' DIA.
PEDESTAL, 74' DIA. TANK)

BOOSTER STATION
IN PEDESTAL
(ADD-ALT)

D0001-00
CITY OF DOVER
40-42 SMITH WELLS ROAD
288 CENTRAL AVENUE
DOVER, NH 03820

PROPOSED 2500 LF
16" WATER MAIN TO
DISTRIBUTION

EXISTING 12"
RAW WATER MAIN

REPLACE 1660LF
OF RAW WATER MAIN
(ADD-ALT)

BARRY STREET

GLENNWOOD AVE.

12" MAIN

SMITH WELL ROAD

REPLACE/RELOCATE 435 LF
OF SEWER MAIN
(ADD-ALT)

MORIN STREET

CENTRAL AVE.

200 0 200

DATE DEC 2021 PROJECT 2575	UNDERWOOD engineers 25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733	PROPOSED WATER STORAGE TANK CITY OF DOVER DOVER, NEW HAMPSHIRE	FIG. 2

UNDERWOOD engineers

Technical Memorandum

To: John Storer, Director of Community Services

From: Thomas Page, P.E., Project Manager and Anna Alegria, E.I.T. Project Engineer

Date: 10/7/2021

Subject: Visibility Check - New Composite Elevated Tank

Introduction

The purpose of this memo is to summarize the visibility of the proposed composite elevated water storage tank based on the Balloon Test and drone flight performed by Underwood Engineers.

Drone Flight

On May 14, 2021, Underwood Engineers performed a drone flight at the new tank site located at Webb Place, Dover, NH. The drone was positioned at about 110 ft above grade, representing the overflow elevation of the tank. The flight was performed from 8 am to 9 am and a 360º video was recorded. The streets that can be seen in the video represent locations from which the tank would be visible.

The link to the video is as follows: http://gofile.me/2RfIJ/mf3zVoC5r

Balloon Test

On September 30, 2021, Underwood Engineers conducted a Balloon Test at the new tank site located at Webb Place, Dover, NH. The test was conducted from 8 am to 11 am.

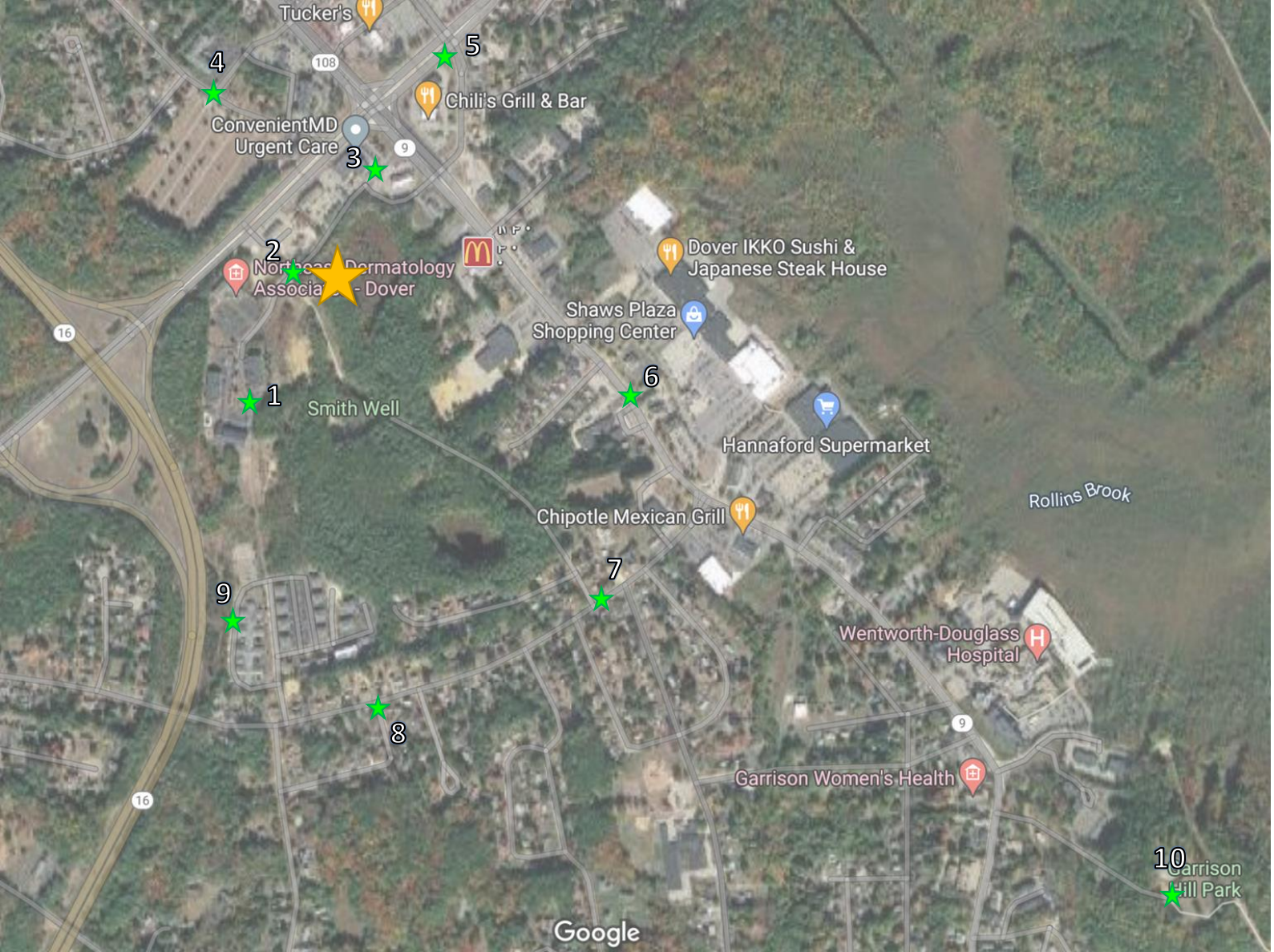
A 350g weather balloon was inflated with helium and floated to 113 ft above grade elevation of ± 197 ft. to simulate the height of the top of the proposed tank. The diameter of the inflated balloon was around 5 ft.

While the balloon was aloft, visibility was checked at the following locations and pictures were taken where visible (see attached map):

- Windshire Apartments at Webb Place
- Tank Site Access Road at Webb Place
- MD Urgent Care (not visible)
- Microtel Hotel
- St Charles Cemetery (not visible)
- Chilli's at Weeks Traffic Circle
- Shaws Plaza at Central Ave (not visible)
- Smith Well Road (not visible)
- Bartlett Street (not visible)
- Princeton Apartments at Princeton Way (not visible)
- Garrison Hill Park

Renderings of the proposed tank at selected locations based on the height of the balloon in photos taken are attached.

In summary, the results show the visibility of the proposed tank is limited depending on the location. The results of the balloon test obtained on September 30 are consistent with the 360º Drone video performed on May 14.



2575 – Dover New Water Storage Tank Balloon Test

1 – Windshire Apartments
2 – Tank Site
3 – MD Urgent Care
4 – St Charles Cemetery
5 – Weeks Traffic Circle
6 – Shaws Plaza
7 – Smith Well Road
8 – Bartlett Street
9 – Princeton Apartments
10 – Garrison Hill Park

2575 – Dover New Water Storage Tank Balloon Test

Tank Site Access Road at Webb Place

2575 – Dover New Water Storage Tank Balloon Test

Tank Site Access Road at Webb Place

2575 – Dover New Water Storage Tank Balloon Test

Webb Place – Microtel Hotel

2575 – Dover New Water Storage Tank Balloon Test

Webb Place – Microtel Hotel

2575 – Dover New Water Storage Tank Balloon Test

Windshire Apartments

2575 – Dover New Water Storage Tank Balloon Test

Windshire Apartments

2575 – Dover New Water Storage Tank Balloon Test

Garrison Hill Park

2575 – Dover New Water Storage Tank Balloon Test

Garrison Hill Park

2575 – Dover New Water Storage Tank Balloon Test

Weeks Traffic Circle – Chili's

2575 – Dover New Water Storage Tank Balloon Test

Weeks Traffic Circle – Chili's

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2021-ANE-2604-OE

Issued Date: 06/03/2021

Thomas Page
Underwood Engineers
25 Vaughan Mall
Portsmouth, NH 03801

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Water Tank Dover's New Water Tank
Location:	Dover, NH
Latitude:	43-13-09.80N NAD 83
Longitude:	70-53-21.80W
Heights:	195 feet site elevation (SE) 110 feet above ground level (AGL) 305 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 12/03/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (718) 553-2611, or angelique.eersteling@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2021-ANE-2604-OE.

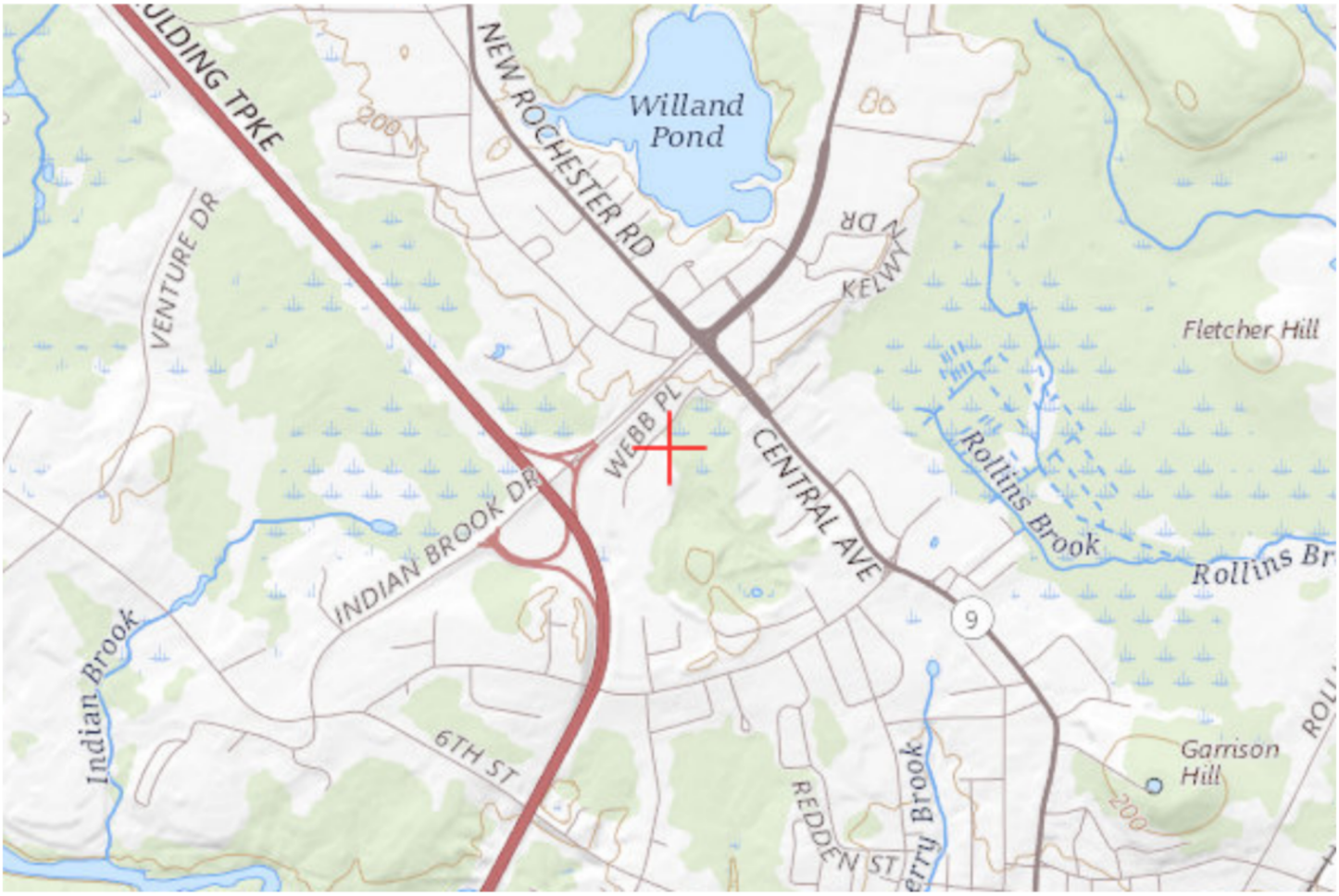
Signature Control No: 479521556-483602940 (DNE)
Angelique Eersteling
Technician

Attachment(s)
Case Description
Map(s)

Construction of a new 1.0 MG water tank to increase the City of Dover water storage capacity. The tank will also help with water distribution in the City while the existing Garrison Hill Tank is under rehabilitation.

Verified Map for ASN 2021-ANE-2604-OE

TOPO Map for ASN 2021-ANE-2604-OE



Sectional Map for ASN 2021-ANE-2604-OE

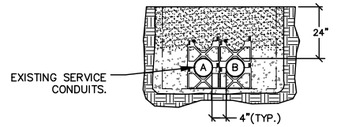
Attachment F - Foot Candle Diagram

ELECTRICAL DUCT BANK SCHEDULE

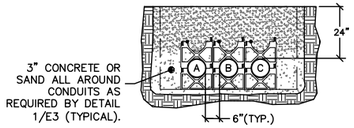
DUCT BANK SECTION NO.	CONDUIT	EQUIPMENT	WIRE	CONNECTION
A / E2	EXIST (A) 4" C	SERVICE DISCONNECT SWITCH	EXISTING 4#4/0	EXISTING SERVICE CONDUITS FROM EXISTING POLE MOUNTED TRANSFORMERS TO NEW SERVICE DISCONNECT SWITCH AND NEW UTILITY METER
	EXIST (B) 4" C	SERVICE DISCONNECT SWITCH	NEW 4#4/0	EXISTING SERVICE CONDUITS FROM EXISTING POLE MOUNTED TRANSFORMERS TO NEW SERVICE DISCONNECT SWITCH AND NEW UTILITY METER
B / E2	(A) 4" C	PANEL PPB	4#250 KCMIL, & 1#2G	FEEDER CONDUIT FROM MCC-A INSIDE SMITH/CUMMINGS WELL BUILDING TO PANEL PPB INSIDE STORAGE TANK VIA HANDHOLES.
	(B) 4" C	SPARE	PULL ROPE	SPARE CONDUIT FROM SMITH/CUMMINGS WELL BUILDING TO 12" AFF UNDET PANEL PPB INSIDE STORAGE TANK VIA HANDHOLES.
	(C) 3" C	RTU-2A	FIBER OPTIC CABLE	FIBER OPTIC CONDUIT FROM RTU-2 INSIDE SMITH/CUMMINGS WELL BUILDING TO RTU-2A PANEL INSIDE STORAGE TANK VIA HANDHOLES.

UNDERGROUND CONDUIT NOTES:

1. PROVIDE RIGID GALVANIZED SWEEPS ON ALL 90° TURNS.
2. PROVIDE RIGID GALVANIZED STEEL CONDUIT & SWEEPS AT ALL 90° TURNS AS REQUIRED.
3. COORDINATE NEW UNDERGROUND CONDUIT LOCATION WITH EXISTING UNDERGROUND ELECTRIC CONDUIT, PROCESS PIPING AND STRUCTURES PRIOR TO EXCAVATION.
4. REPAIR EXISTING PAVED AND GRASSED AREAS TO CONDITION EXISTING PRIOR TO EXCAVATION.
5. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
6. REFER TO DETAIL 1/E3 FOR TYPICAL TRENCHING DETAIL FOR ELECTRICAL/SIGNAL CONDUITS.
7. CONTRACTOR SHALL FURNISH AND INSTALL POLYESTER PULLING TAPE IN ALL SPARE CONDUITS RATED @ 2500 LBS, WITH FOOTAGE MARKINGS AS MANUFACTURED BY NEPT CO., MODEL# WP2500 OR APPROVED EQUAL.

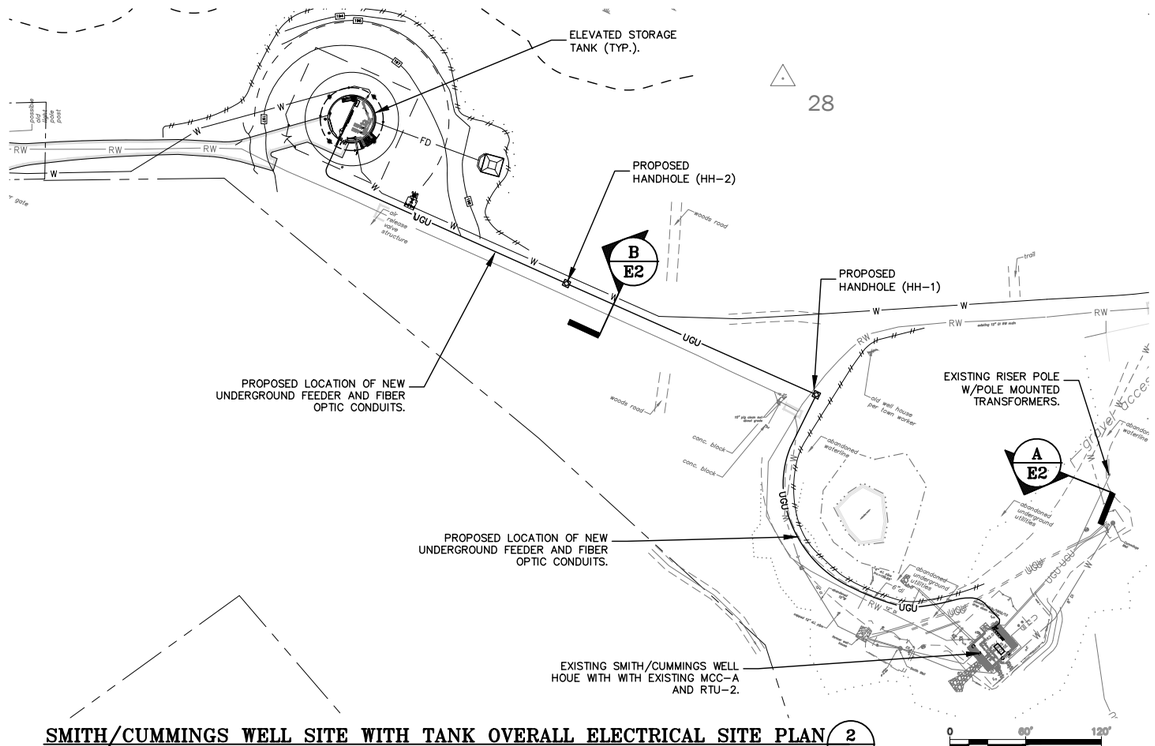


DUCT BANK SECTION A / E2
SCALE: NONE



DUCT BANK SECTION B / E2
SCALE: NONE

ELECTRICAL DUCT BANK SCHEDULE WITH DUCT BANK SECTIONS 1 / E3
SCALE: NONE

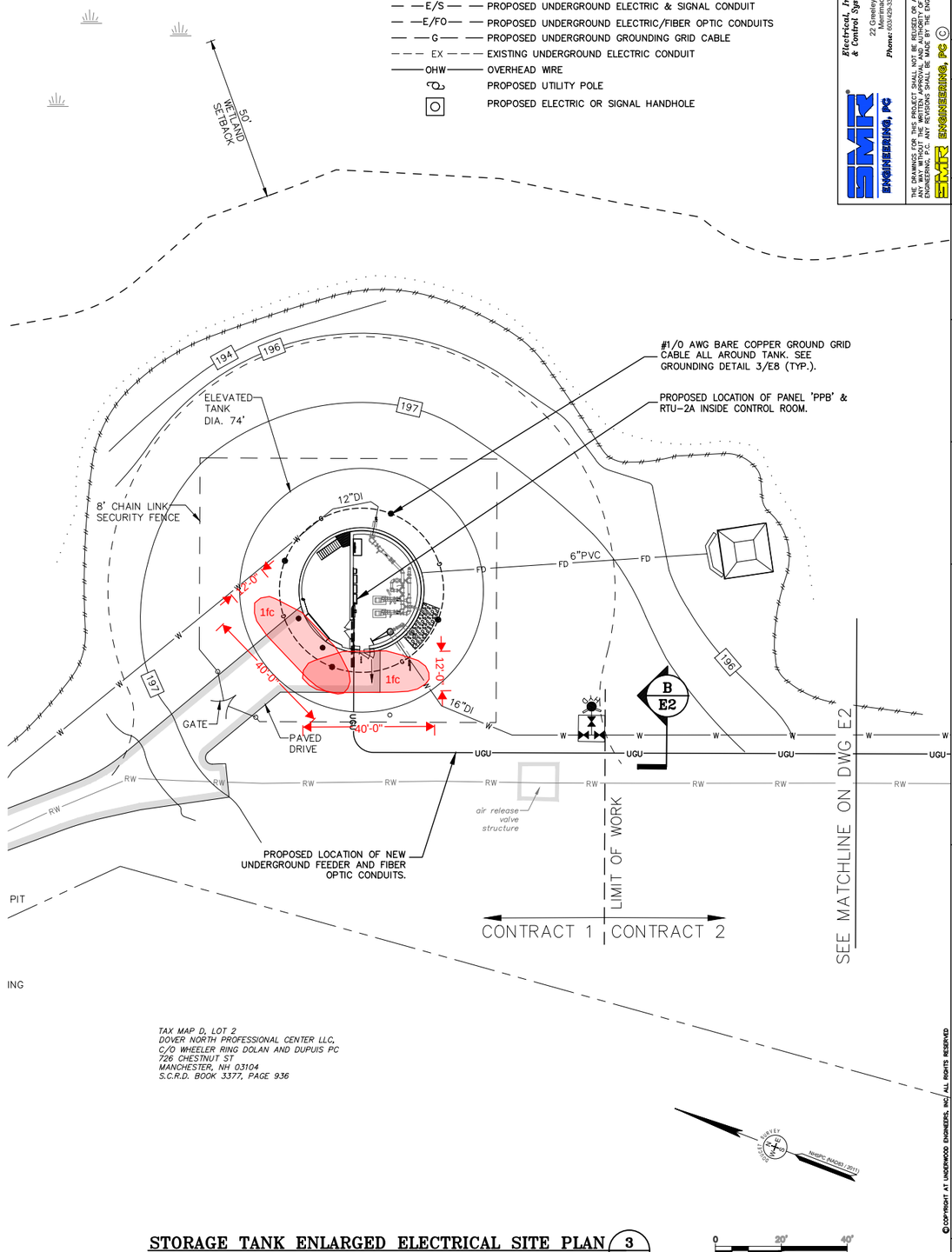


28

SMITH/CUMMINGS WELL SITE WITH TANK OVERALL ELECTRICAL SITE PLAN 2 / E8
SCALE: 1"=60'-0"

ELECTRICAL SITE LEGEND

- —ES/T— PROPOSED UNDERGROUND ELECTRICAL SERVICE & TELEPHONE CONDUIT
- —E— PROPOSED UNDERGROUND ELECTRICAL CONDUIT
- —S— PROPOSED UNDERGROUND SIGNAL CONDUIT
- —E/S— PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
- —E/FO— PROPOSED UNDERGROUND ELECTRIC/FIBER OPTIC CONDUITS
- —G— PROPOSED UNDERGROUND GROUNDING GRID CABLE
- EX EXISTING UNDERGROUND ELECTRIC CONDUIT
- OHW OVERHEAD WIRE
- PROPOSED UTILITY POLE
- PROPOSED ELECTRIC OR SIGNAL HANDHOLE



STORAGE TANK ENLARGED ELECTRICAL SITE PLAN 3 / E3
SCALE: 1"=20'-0"

Electrical, Instrumentation, & Control Systems Engineering
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603-429-3313 Fax: 603-429-3486
SMR ENGINEERING, PC

THE DRAWINGS FOR THIS PROJECT SHALL NOT BE REUSED OR ALTERED IN ANY WAY BY ANYONE WITHOUT THE EXPRESSED WRITTEN CONSENT OF SMR ENGINEERING, P.C. ANY REVISIONS SHALL BE MADE BY THE ENGINEER.

NO.	REVISIONS	APP'D	Date
	ISSUE FOR BIDDING	By	Date -
	CONSTRUCTION	By	Date -
	RECORD DRAWING	By	Date -

Drawn/Chk.
Designed
Checked
Approved TGP
Date 12/14/21
Book No. -
Project No. 2575
Dwg. ID 2575_prbase
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

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STORAGE TANK ELECTRICAL SITE PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO E2 | SHEET OF X

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City of Dover, New Hampshire

Project # _____

PROGRESS DRAWINGS

COMPOSITE ELEVATED WATER STORAGE TANK

PREPARED BY

UNDERWOOD ENGINEERS

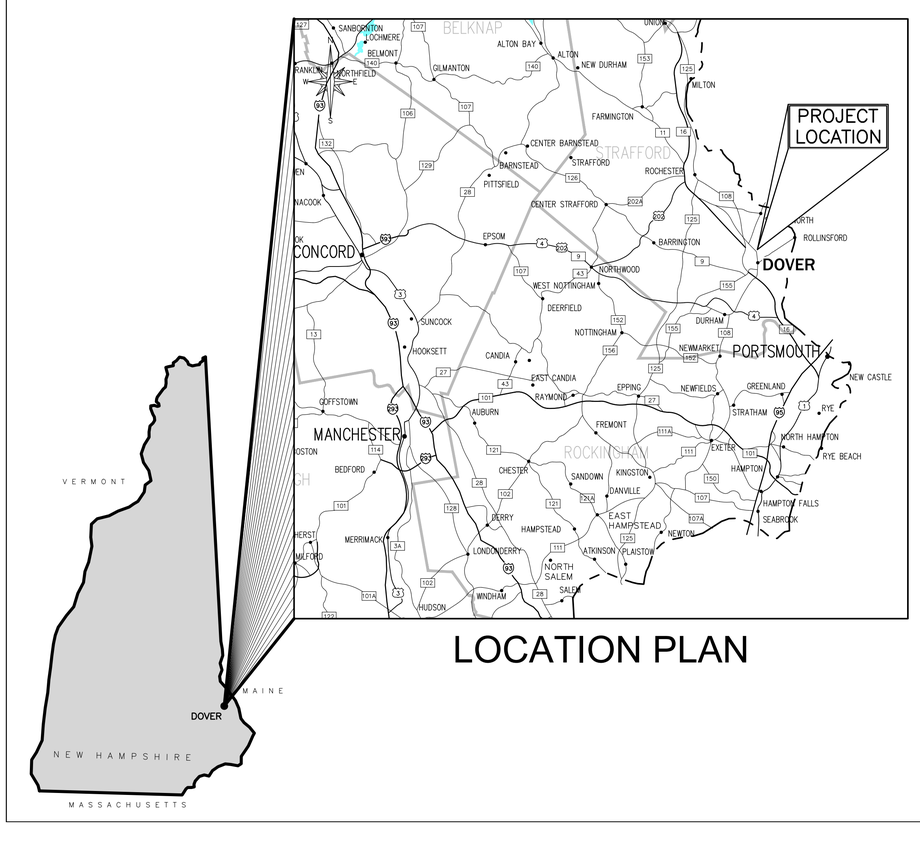
PORTSMOUTH, NEW HAMPSHIRE

DECEMBER 2021

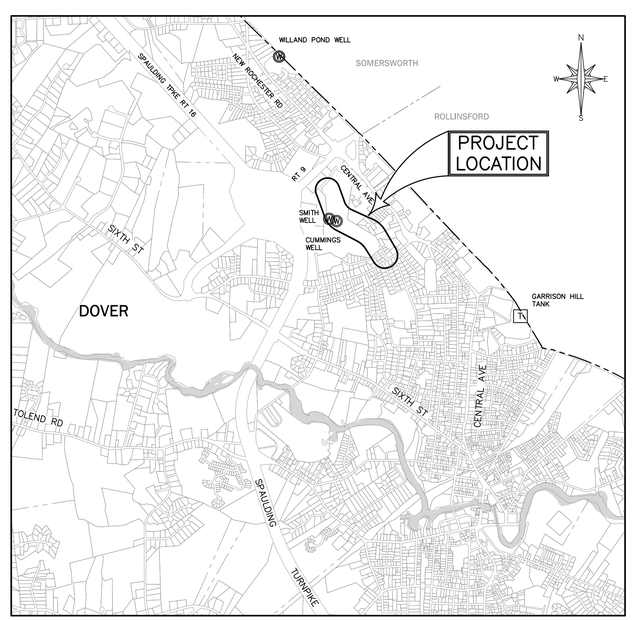
Draft

December 14, 2021

"Not for Construction"



LOCATION PLAN



VICINITY MAP

UE #2575

UNDERWOOD engineers

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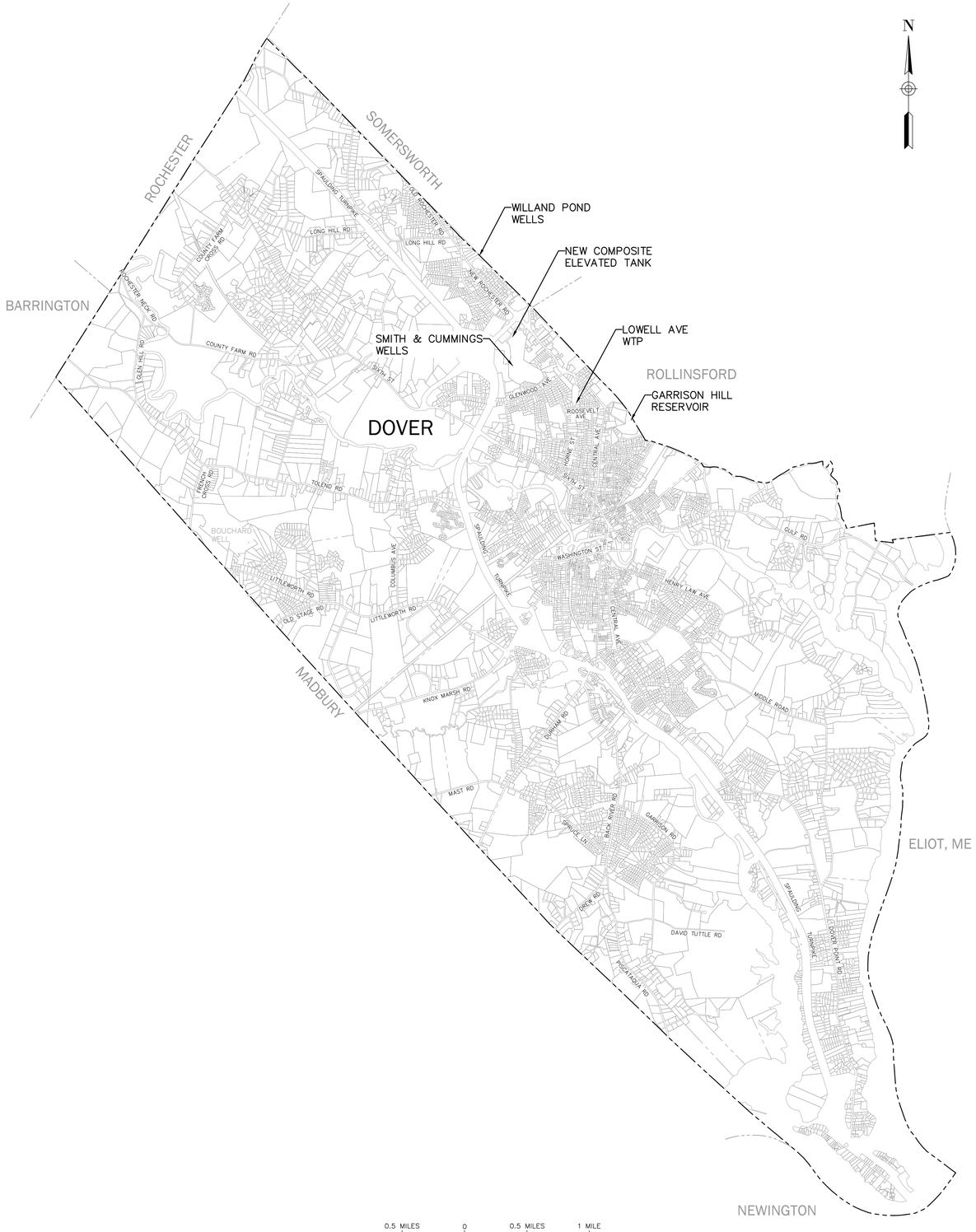
DWG#	SHEET TITLE	SHEET
GENERAL		
–	COVER SHEET	–
G1	INDEX & LOCATION PLAN	1
G2	GENERAL NOTES I	2
G3	GENERAL NOTES II	3
G4	LEGEND & ABBREVIATIONS	4
CIVIL		
C1	INDEX SHEETS	5
C2	TANK SITE PLAN	6
C3	WELL HOUSE SITE PLAN	7
C4	PLAN AND PROFILE	8
C5	PLAN AND PROFILE	9
C6	PLAN AND PROFILE	10
C7	PLAN AND PROFILE	11
C8	PLAN AND PROFILE	12
C9	TANK DETAILS I	13
C10	TANK DETAILS II	14
C11	WATER DETAILS	15
C12	EROSION CONTROL	16
C13	DRAINAGE DETAILS	17
C14	ROADWAY AND SITE DETAILS I	18
C15	ROADWAY AND SITE DETAILS II	19
C16	SEWER DETAILS	20
CROSS SECTIONS		
X1	CROSS SECTIONS	21
X2	CROSS SECTIONS	22

DWG#	SHEET TITLE	SHEET
PROCESS		
P1	PROCESS PIPING LEGEND AND NOTES	23
P2	TANK PEDESTAL FLOOR PLAN (PUMP STATION)	24
P3	PROCESS DETAILS	25
MECHANICAL		
M1		X
ELECTRICAL		
E1	GENERAL ELECTRICAL NOTES & LEGEND	X
E2	STORAGE TANK ELECTRICAL SITE PLAN	X
E3	STORAGE TANK WITH WELL HOUSE ELECTRICAL SITE PLAN CONTINUATION	X
E4	SMITH/CUMMINGS ONE-LINE DIAGRAM	X
E5	STORAGE TANK/BPS POWER PLAN	X
E6	STORAGE TANK/BPS LIGHTING PLAN	X
E7	SMITH/CUMMINGS WELL BUILDING MODIFIED POWER PLAN	X
E8	ELECTRIC PANEL & LIGHTING FIXTURE SCHEDULES WITH DETAILS	X
E9	LIGHTING FIXTURE MOUNTING DETAILS	X
E10	ELECTRICAL DETAILS	X
E11	ELECTRICAL DETAILS	X
E12	LOOP, WIRE, AND CONDUIT SCHEDULE	X



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Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

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INDEX & LOCATION PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

DWG NO G1

SHEET 1 OF X

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GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR (IF DAMAGED) OF ALL EXISTING UTILITIES AND SERVICES. THE APPROXIMATE LOCATIONS OF UTILITIES AND SERVICES ARE SHOWN ON THE DRAWINGS. NOT ALL UTILITIES ARE SHOWN ON THE PLANS. NOTIFY DIG-SAFE PRIOR TO COMMENCING CONSTRUCTION (1-888-DIG-SAFE) AT THE REQUIRED FREQUENCY DICTATED BY LAW. CONTRACTOR SHALL GIVE ADEQUATE NOTICE TO THE ENGINEER OF CONFLICTS OF PROPOSED WORK WITH MARKED UTILITIES PRIOR TO CONSTRUCTING THE PROPOSED WORK.
2. THE SURFACE EVIDENCE OF THE UTILITIES SHOWN HAVE BEEN LOCATED BY FIELD SURVEY. THE LINE WORK REPRESENTING THE UNDERGROUND STRUCTURES AND PIPES SHOWN ARE BASED ON SURVEY AND PLANS AVAILABLE. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING CONSTRUCTION DEWATERING PERMIT, IF NECESSARY.
4. CONTRACTOR IS RESPONSIBLE FOR OBTAINING CITY OF DOVER EXCAVATION PERMITS.
5. THIS SET OF PLANS HAS BEEN CREATED TO BE USED IN CONJUNCTION WITH A TECHNICAL SPECIFICATION ENTITLED "WATER STORAGE IMPROVEMENTS – CONTRACT 1 – COMPOSITE ELEVATED WATER STORAGE TANK" AND "CONTRACT 2 – WATER TANK DISTRIBUTION MAIN". SEE PLANS FOR LIMITS OF WORK FOR EACH CONTRACT.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL SURPLUS EARTH, TREES, LEDGE, PIPE AND SEWER OR DRAIN STRUCTURES EXCAVATED DURING CONSTRUCTION, UNLESS OTHERWISE INDICATED IN THE PROJECT MANUAL OR THE DRAWINGS OR UNLESS MATERIALS ARE CLAIMED BY THE OWNER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROPERTY RESTORATION BOTH PUBLIC AND PRIVATE. UTILITIES DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
8. NOT ALL OVERHEAD WIRE DROPS TO BUILDINGS ARE SHOWN. THE CONTRACTOR SHALL ANTICIPATE THEIR EXISTENCE IN ALL OPERATIONS.
9. CONTRACTOR IS RESPONSIBLE FOR SITE SECURITY AND SAFETY.
10. CONSTRUCTION SEQUENCE (GENERAL): PERFORM WORK IN GENERAL IN THIS SEQUENCE:
    A. PRIOR TO START OF CONSTRUCTION, PROVIDE A WRITTEN NARRATIVE OF CONSTRUCTION METHODS TO BE USED AND A PRELIMINARY SCHEDULE OF KEY MILESTONES.
    B. PREPARE SITE WHERE CONSTRUCTION IS PROPOSED.
    C. CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT CONSTRUCTION.
    D. INSTALL PIPE IN DRY CONDITIONS TO ELEVATIONS SHOWN ON THE DRAWINGS. STABILIZE DISTURBED AREAS IMMEDIATELY AFTER PIPE INSTALLATION.
    E. BEGIN SEEDING AND MULCHING IMMEDIATELY AFTER FINAL GRADING.
    F. FINISH GRADING, SEEDING, AND MULCHING OF SHOULDERS, DITCHES, AND DISTURBED AREAS.
    G. AFTER ALL DISTURBED AREAS HAVE ESTABLISHED VEGETATIVE COVER, (APPROVED BY THE ENGINEER) REMOVE TEMPORARY EROSION CONTROL MEASURES.
11. REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE AND SOIL CONDITIONS. (TECHNICAL SPECIFICATIONS, APPENDIX A).
12. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.

WATER DISTRIBUTION SYSTEM NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF ALL NEW WATER LINES. THE INTENT IS TO INSTALL THE NEW WATER LINE IN THE APPROXIMATE LOCATION AS SHOWN ON THE PLANS. EXISTING WATER LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF EXISTING MAINS THAT ARE REMOVED.
2. MAINTAIN A MINIMUM 10 FEET HORIZONTAL DISTANCE BETWEEN WATER MAIN AND SEWER PIPING. MAINTAIN A MINIMUM 6 FEET HORIZONTAL DISTANCE (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) BETWEEN WATER MAIN AND STORM DRAIN. NOTIFY ENGINEER OF ANY DISCREPANCIES.
3. MINIMUM DEPTH OF COVER SHALL BE 5' UNLESS SHOWN OTHERWISE ON THE DRAWINGS. THE NEW MAINS SHALL GENERALLY FOLLOW THE GROUND CONTOUR AND INSTALLED AT A CONTINUOUS RISING SLOPE TO AVOID HIGH POINTS. ABRUPT CHANGES IN GRADE SHALL BE AVOIDED.
4. ALL NEW MAINS SHALL BE POLY WRAPPED CLASS 52 DOUBLE CEMENT LINE DUCTILE IRON OR SDR HDPE, WHICH SHALL BE HDPE DR-11, AS SHOWN ON THE DRAWINGS. ALL JOINTS FOR DUCTILE IRON PIPE SHALL BE PUSH-ON JOINTS UNLESS SHOWN OTHERWISE ON THE DRAWINGS. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT CLASS 350, UNLESS OTHERWISE SHOWN ON THE DRAWINGS. ALL HDPE PIPE TO BE FUSED.
5. ALL FITTINGS, HYDRANTS AND VALVES SHALL BE RESTRAINED BY USING PRECAST CONCRETE THRUST BLOCKS AND RETAINER GLANDS. MECHANICAL JOINT ADAPTERS SHALL BE USED TO JOIN GATE VALVES TO FITTINGS AND SHALL BE MECHANICAL JOINT FOSTER ADAPTERS, OR APPROVED EQUAL. 6" BRANCHES SHALL USE ANCHOR TEES. 8" AND 12" BRANCHES SHALL USE MECHANICAL JOINTS WITH FOSTER ADAPTERS WHERE APPLICABLE.
6. TEST PRESSURE FOR THE COMBINED PRESSURE AND LEAKAGE TEST SHALL BE 150 PSI OR 150% OF NORMAL OPERATING PRESSURE WHICHEVER IS GREATER. TEST SHALL BE PERFORMED IN ACCORDANCE WITH AWWA C-600.
7. TRENCHES SHALL NOT BE LEFT OPEN DURING NON-WORKING HOURS. ALL OPEN PIPES SHALL BE SECURED WITH A WATERTIGHT PLUG WHEN THE PIPE IS TEMPORARILY BACKFILLED AND WHEN PIPE LAYING IS NOT IN PROCESS.
8. A NEW WATER MAIN MUST CROSS ABOVE A SANITARY SEWER BUT MAY CROSS ABOVE OR BELOW A STORM SEWER. A FULL LENGTH OF WATER MAIN SHALL BE CENTERED AT THE CROSSING. MAINTAIN A MINIMUM CLEAR SEPARATION DISTANCE OF 18 INCHES.
9. NO VALVES, VALVE BOXES, FITTINGS, PIPE, ETC. SHALL BE RE-USED IN THE WORK. ALL ITEMS MEASURED FOR PAYMENT SHALL BE NEW, UNLESS SPECIFICALLY NOTED.
10. NOT ALL REQUIRED FITTINGS SUCH AS BENDS AND COUPLINGS ARE INDICATED. SOME FITTINGS MAY NOT BE REQUIRED DEPENDING ON THE FINAL LAYOUT. REQUIRED NUMBER, LOCATION, AND SIZE OF FITTINGS SHALL BE DETERMINED IN THE FIELD.
11. ALL EXISTING SYSTEM VALVES SHALL BE OPERATED ONLY BY CITY PERSONNEL. THE CONTRACTOR SHALL NOTIFY THE OWNER IF VALVE OPERATION IS REQUIRED.
12. ALL EXISTING WATER PIPE IDENTIFIED AS ABANDONED SHALL BE DEMOLISHED AS FOLLOWS: PIPE: CAP AT EACH END AND ABANDON IN PLACE UNLESS IT NEEDS TO BE REMOVED BECAUSE OF OTHER INTERFERENCES (INCIDENTAL), UNLESS NOTED OTHERWISE.
13. ALL GATE VALVES SHALL HAVE RESTRAINED MECHANICAL JOINTS AND BE JOINED DIRECTLY TO FITTINGS WITH FOSTER-ADAPTORS AND OPEN LEFT.
14. ASBESTOS CEMENT (AC) PIPE INDICATED TO BE DEMOLISHED SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS PAID AS ITEM 6. UNDAMAGED ABANDONED AC PIPE SHALL BE LEFT IN PLACE.

SEWER AND DRAIN NOTES

1. ALL EXISTING STORM DRAINAGE SHALL BE PROTECTED BY CONTRACTOR. ANY EXISTING DRAINAGE DAMAGED WHILE COMPLETING THE WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.

REFERENCE PLANS:

1. "CITY OF DOVER, NEW HAMPSHIRE, CITY PROJECT #B14074, WATER FACILITY IMPROVEMENTS – PHASE 2, CONTRACT 1, TRANSMISSION MAIN, RECORD DRAWINGS" BY UNDERWOOD ENGINEERS, INC. PORTSMOUTH, NH, DATED APRIL, 2020.
2. "CITY OF DOVER, NEW HAMPSHIRE, CITY PROJECT #B19024, DWSRF PROJECT #0651010-04, WATER FACILITY IMPROVEMENTS – PHASE 2, CONTRACT 3, FACILITIES, RECORD DRAWINGS" BY UNDERWOOD ENGINEERS, INC. PORTSMOUTH, NH, DATED APRIL, 2020.

STORMWATER MANAGEMENT, EROSION & SEDIMENTATION CONTROL NOTES

1. A NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES IS REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO PREPARE AND SUBMIT BOTH A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND A NOTICE OF INTENT (NOI) TO FULFILL PROJECT REQUIREMENTS. THE SWPPP MUST BE PREPARED IN ACCORDANCE WITH THE EPA'S REQUIREMENTS. NO WORK IS TO PROCEED UNTIL THE SWPPP AND THE NOI ARE SUBMITTED AND ACCEPTED BY THE OWNER AND THE ENGINEER.
2. THE CONTRACTOR SHALL SUBMIT, FOR REVIEW AND APPROVAL, A SCHEDULE TO INCLUDE ALL EARTHWORK ACTIVITIES IN ACCORDANCE WITH SECTION 01310 OF THE PROJECT MANUAL.
3. EXCAVATION AND EARTHWORK SHALL BE CONDUCTED IN A MANNER THAT WILL MINIMIZE EFFECTS OF EROSION THROUGHOUT CONSTRUCTION.
4. THE CONTRACTOR SHALL, TO THE EXTENT POSSIBLE, PHASE EARTH WORK ACTIVITIES SO THAT THE SMALLEST PRACTICAL LAND AREA IS EXPOSED AT ANY GIVEN TIME.
5. THE CONTRACTOR SHALL LOAM, SEED AND MULCH ALL CUT SLOPES IMMEDIATELY FOLLOWING FINAL GRADING. TEMPORARY SEEDING AND MULCH SHALL BE APPLIED AT ALL UNVEGETATED AREAS THAT WILL BE EXPOSED FOR A PERIOD EXCEEDING TWENTY (20) DAYS.
6. HAYBALES, SILT FENCING AND EROSION STONE SHALL BE INSTALLED WHERE NECESSARY TO MINIMIZE THE EFFECTS OF EROSION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED WHERE NECESSARY TO OBTAIN THE OBJECTIVES DESCRIBED HEREIN. ALL WORK SHALL BE COMPLETED IN CONFORMANCE WITH THE LATEST EDITION OF "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE." PREVENT THE DEGRADATION OF DOWNSTREAM PROPERTIES AND DRAINAGE.
7. DRAINAGE SWALES SHALL BE MONITORED AND MAINTAINED THROUGHOUT CONSTRUCTION. SILT SHALL BE PERIODICALLY REMOVED FROM SWALES AS NECESSARY TO PREVENT MIGRATION.
8. HAY BALE BARRIERS SHALL BE INSTALLED ALONG SWALES AT 100 FOOT INTERVALS, AROUND CATCH BASINS AND AT ALL AREAS WHERE STORMWATER OR TRENCHWATER ARE CONCENTRATED.
9. HAY BALE BARRIERS AND SEDIMENT TRAPS ARE TO BE MAINTAINED AND KEPT CLEAN UNTIL ALL EXPOSED AREAS HAVE A HEALTHY STAND OF GROUND COVER, AT WHICH TIME TEMPORARY MEASURES ARE TO BE REMOVED. CONTRACTOR IS RESPONSIBLE FOR PROPER DISPOSAL OF SILT AND TEMPORARY MATERIALS REMOVED.
10. DISTURBED AREAS SHALL BE LOAMED AND SEEDED. MINIMUM DEPTH OF LOAM SHALL BE 4 INCHES.
11. PROVIDE SEED (PARK MIXTURE), LIME, FERTILIZER AND MULCH PER SECTION 02935 OF THE PROJECT MANUAL. PROVIDE CONSERVATION MIX ON CROSS-COUNTRY/CITY PROPERTY.

SURVEY NOTES

1. FIELD SURVEY PERFORMED BY DOUCET SURVEY DURING APRIL, 2021 USING A TRIMBLE S7 TOTAL STATION, A TRIMBLE R10 SURVEY GRADE GPS UNIT AND A TRIMBLE DINI DIGITAL LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
2. VERTICAL DATUM FOR SMITH WELL SITE IS BASED NGVD29 PER DISK 125-0800 WITH A PUBLISHED ELEVATION OF 183.84'.
3. VERTICAL DATUM FOR GARRISON TANK SITE IS BASED ON NGVD29 PER NHDOT CONTROL DISK D 50 RESET 1977 HAVING A PUBLISHED ELEVATION OF 23.33'.
4. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
5. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 2' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY, INC. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.
6. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON A COMBINATION OF OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.
7. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
8. JURISDICTIONAL WETLANDS WITHIN THE AREA-OF-INTEREST DEPICTED WERE DELINEATED IN MARCH 2021 BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST NUMBER 090, ACCORDING TO THE STANDARDS OF THE US ARMY CORPS OF ENGINEERS – WETLANDS DELINEATION MANUAL; THE 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION AND THE CODE OF ADMINISTRATIVE RULES, NH DEPARTMENT OF ENVIRONMENTAL SERVICES – WETLANDS BUREAU – ENV WT 100-900. SOILS WERE EVALUATED UTILIZING THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4, APRIL 2017 AND THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8, 2016. THE INDICATOR STATUS OF VEGETATION AS HYDROPHYTIC WAS DETERMINED ACCORDING TO THE U.S. ARMY CORPS OF ENGINEERS – NORTHCENTRAL AND NORTHEAST 2016 REGIONAL WETLAND PLANT LIST. COPIES OF SITE PLANS WHICH HAVE BEEN REVIEWED BY THE WETLAND SCIENTIST ARE INDIVIDUALLY STAMPED, SIGNED AND DATED. THIS NOTE HAS BEEN CUSTOMIZED FOR THIS PROJECT.
9. NO WETLAND INVESTIGATION WAS PERFORMED ON GARRISON TANK SITE.
10. ZONING REQUIREMENTS:

REQUIRED	PROVIDED
a. DISTRICT: **R-40**	
b. MIN. LOT SIZE: 40,000 SF	> 40,000 SF
c. MIN. LOT FRONTAGE: 150 FT.	> 150 FT.
d. MIN. YARD SETBACKS: FRONT: 40 FT. SIDE: 25 FT. REAR: 30 FT. ABUT-A-STREET: 40 FT.	 > 40 FT. > 25 FT. > 30 FT. > 40 FT.
e. MAX. LOT COVERAGE: 10%	< 10%
f. MAX. BUILDING HEIGHT: 35 FT.	113 FT.

THE PROPERTY FALLS WITHIN THE CONSERVATION DISTRICT AND GROUNDWATER PROTECTION ZONE.

SETBACK REQUIREMENTS CONSIDER THE SITE FRONTAGE AS WEBB PLACE.

BUILDING HEIGHT BASED ON TOP OF TANK DOME.

NO.	REVISIONS	APP'D
	RECORD DRAWING Date By –	
	CONSTRUCTION Date By	
	BIDDING Date By –	
	ISSUE FOR	

Drawn/Chk. RMG
Designed ALA
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25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

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GENERAL NOTES I

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO G2

SHEET 2 OF X

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SITE PLAN NOTES

1. THE INTENT OF THIS PLAN SET IS TO OBTAIN LOCAL APPROVAL FOR THE PROPOSED COMPOSITE ELEVATED WATER STORAGE TANK.
2. THERE ARE NO ANTICIPATED SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE.
3. PROPERTY LINE INFORMATION SHOWN HAS BEEN OBTAINED FROM THE PLAN REFERENCED IN THE SURVEY NOTES, PREPARED BY DOUCET SURVEY.
4. RECORD DRAWINGS SHALL BE SUBMITTED ON PAPER AND IN DIGITAL AUTOCAD DWG FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. RECORD DRAWINGS WILL BE PREPARED BY A LICENSED P.E. AND WILL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES.
5. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
6. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER.
7. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED, IF ANY, PRIOR ANY EARTH DISTURBING ACTIVITY OCCURS.
8. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
9. RETAINAGE WITHHELD FROM THE CONTRACTOR SHALL INCLUDE THE COSTS FOR REVEGETATING ALL DISTURBED AREAS, IF REQUIRED, AND REQUIRED CONSTRUCTION SIGNS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES.
10. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD WITH THE CONTRACTOR, ENGINEER AND THE CITY ENGINEER PRIOR TO ANY EARTH DISTURBING ACTIVITY.
11. SITE CONSTRUCTION WORK HOURS SHALL BE AS DEFINED IN THE PROJECT MANUAL.
12. BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
13. THE PROPOSED USE FOR THE SITE (STRUCTURE) IS A COMPOSITE ELEVATED WATER STORAGE TANK.
14. THE FOLLOWING FEDERAL AND STATE PERMITS ARE ANTICIPATED FOR THE PROJECT:
    a. GROUNDWATER DISCHARGE REGISTRATION.
    b. NHDES DESIGN REVIEW.
15. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
16. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. HTTPS://WWW.UNH.EDU/UNHSC/PTAPP
17. FIRE DEPARTMENT ACCESS ROADS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
18. ADEQUATE PARKING IS PROVIDED FOR CITY STAFF, NO PUBLIC PARKING IS PROPOSED.
19. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
20. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER.
21. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
22. FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
23. THE SITE LAYOUT SHALL COMPLY WITH APPLICABLE ACCESSIBILITY REGULATIONS. SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBILITY REGULATIONS FOR THE STRUCTURE.
24. SUBJECT PARCEL IS NOT LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA (COMMUNITY PANEL NMBER 33017C0310E, EFFECTIVE DATE: SEPTEMBER 30, 2015.
25. BUILDING ADDRESSES OF TANK SITE SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

SITE PLAN NOTES (CONT.)

KEY NOTES

(TP) TP. EXPLORATORY EXCAVATION WITH ENGINEER IN ADVANCE OF WATER INSTALLATION TO IDENTIFY POTENTIAL UTILITY CROSSING CONFLICTS AND CONFIRM DESIGN ELEVATIONS. REPORT ELEVATION TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

(CT) CUT TREE, ITEM#

(1) CUT-IN 12" X12" TEE & 12" GATE VALVE, CONNECT GATE VALVE TO TEE USING FOSTER ADAPTOR. CONNECT TO EXISTING 12" DI MAIN USING SOLID SLEEVE COUPLINGS.

(2) CONSTRUCT HYDRANT ASSEMBLY, INCLUDING ANCHOR TEE, GATE VALVE & 6" BRANCH PIPE.

(3) UNDERGROUND UTILITIES, TELEPHONE, ELECTRIC, GAS, LIGHTING, SEWER, DRAIN, & WATER SYSTEMS EXIST THROUGHOUT THE PROJECT AREA. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE & PROTECT UTILITIES PRIOR TO AND DURING THEIR CONSTRUCTION OPERATIONS, SUBSIDIARY TO ITEM

(4) INSTALL SILT FENCE. SEE PLAN. SUBSIDIARY TO ITEM . SEE DETAIL (1/C12)

(5) REMOVE EXISTING HYDRANT AND SALVAGE TO OWNER. SUBSIDIARY

(6) MAINTAIN EXISTING WATER SYSTEM DURING CONSTRUCTION OF NEW MAIN. CAP AND ABANDON EXISTING WATER MAIN UPON COMPLETION OF NEW MAIN.

(7) INSTALL NEW 1" WATER SERVICE FROM NEW 16" DI MAIN WITH NEW CURB STOP, CONNECT TO EXISTING WATER SERVICE. LOCATE PER OWNER AND ENGINEER IN FIELD.

(8) INSTALL RIGID INSULATION, SEE TRENCH DETAIL (2/C11)

(9) CONSTRUCT NEW 4" DIA. SMH, LOCATE PER OWNER AND ENGINEER IN FIELD. DETAIL (1/C16)

(10) INSTALL NEW 8" SDR 35 PVC SEWER.

(11) MAINTAIN EXISTING SEWER UNTIL SEWER SERVICES MOVED TO NEW SEWER. THEN CAP AND ABANDON OR REMOVE AND DISPOSE OF WHERE NECESSARY.

(12) REMOVE AND DISPOSE OF EXISTING SMH CONNECT EXISTING SEWER FROM BARRY STREET TO NEW SMH.

(13) THE COD WILL DETERMINE APPROXIMATE LOCATION OF EXISTING SEWER SERVICES. INSTALL NEW SEWER SERVICE AND MAKE CONNECTIONS AT APPROVED LOCATIONS.

(14) INSTALL NEW 12" DI RAW WATER OR FINISHED WATER MAIN **(ADD-ALT).**

(15) INSTALL NEW 16" DI WATER MAIN.

(16) REMOVE EXISTING 6" GATE VALVE. INSTALL NEW 16"X16"X16" TEE. INSTALL TWO 16" HORIZONTAL BEVELED-GEARED GATE VALVES AND REDUCERS, AND 12" GATE VALVE & TWO SOLID SLEEVE COUPLINGS.

(17) INSTALL 16" X 16" X 8" TEE, 8" GATE VALVE, 8" X 6" REDUCER AND SOLID SLEEVE COUPLING.

(18) INSTALL 16" HORIZONTAL BEVELED-GEARED GATE VALVE.

(19) MAINTAIN 1 FT. MINIMUM BETWEEN TOP OF WATER MAIN AND INVERT OF DRAIN PIPE.

(20) ROAD EMBANKMENT EXCAVATION & FILL (EMBANKMENT IN PLACE) IS SUBSIDIARY TO FINE GRADING, ITEM

(21) TURF ESTABLISHMENT WILL BE PAID TO THE LIMITS SHOWN ON SECTIONS AND SCHEDULE.

(22) RESTORE DISTURBED AREAS WITH 4" LOAM AND CONSERVATION SEED MIX.

(23) PROTECT & RETAIN EXISTING GRAVEL ROADWAY. GRADE & SHIM WITH CRUSHED STONE (FINE GRADATION) FOLLOWING CONSTRUCTION, SUBSIDIARY.

(24) WHERE ROAD IS BEING WIDENED ADDITIONAL CRUSHED GRAVEL FOR ROAD BASE SHALL BE PAID UNDER ITEM 304.3.

(25) ADDITIONAL CRUSHED GRAVEL FOR SHOULDER LEVELING, ITEM 304.32.

(26) REMOVE AND DISPOSE OF AC PIPE ONLY WHERE NECESSARY & APPROVED BY ENGINEER.

(27) FULL DEPTH RECONSTRUCTION STA. 3+00 TO 3+35 TO ACHIEVE FINAL GRAVEL DEPTH OF 12" & NOMINAL PAVEMENT DEPTH OF 4" BELOW FINISH GRADES SHOWN **(ADD ALT.)**.

(28) STA 2+50 TO STA 3+35 ADD 1 FT. X 1 FT. GRAVEL SHOULDER NHDOT ITEM 403.3 **(ADD-ALT)**.

(29) LIMIT OF 12" MAIN IS JUST OUTSIDE FENCE. CAP IF BID ALTERNATIVE FOR 12" CONNECTION TO HIGH PRESSURE ZONE IS NOT INSTALLED. HYDRANT AND 12" GV SHALL BE UNDER **(ADD-ALT)**.

(30) RELOCATE EXISTING RW MAIN UNDER 16" MAIN IF NEW 12" RW NOT INSTALLED (INCIDENTAL)

TEMPORARY WATER NOTES – SMITH WELL ROAD

1. PROVIDE 4" MINIMUM TEMPORARY WATER LINE FROM NEW HYDRANT AT GLENWOOD AVE TO BARRY STREET WATER MAIN.
2. PROVIDE TEMPORARY WATER SERVICE LINES TO CUSTOMERS ON SMITH WELL ROAD.
3. EXISTING 6" AC MAY THEN BE TAKEN OUT OF SERVICE TO INSTALL THE PROPOSED 16" MAIN.
4. TEMPORARY WATER SHALL BE COVERED, INCLUDED UNDER BID ITEM FOR 16" WATER MAIN, WITH NO ADDITIONAL COST TO OWNER.

NO.	REVISIONS	APP'D

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CONSTRUCTION By – Date –
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25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

GENERAL NOTES II

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO G3

SHEET 3 OF X

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LEGEND:

EXISTING	PROPOSED	
		STRUCTURES/BUILDINGS
		APPROXIMATE PROPERTY LINE (PER GIS)
		PAVED ROAD/DRIVE
		EDGE OF GRAVEL
sgc		SLOPED GRANITE CURB
S		GRAVITY SEWER
W	W	WATER LINE
W		ABANDONED WATER LINE
D		DRAIN LINE
G		GAS LINE
UGU		UNDERGROUND UTILITIES
UGU		ABANDONED UNDERGROUND UTILITIES
OHW		ELECTRIC LINE
OHW		OVERHEAD WIRE
126		MINOR CONTOUR ELEVATION
130		MAJOR CONTOUR ELEVATION
126x		SPOT ELECTION
O	O	CHAIN LINK FENCE
		SPLIT RAIL FENCE
		GUARD RAIL
		RETAINING WALL
		WETLAND
		EDGE OF WETLAND
		EDGE OF VEGETATION
		DECIDUOUS TREE
		BUSH
		BUSH LINE
		STUMP
		CONCRETE
		LANDSCAPED AREA
		BRICK
		RIP-RAP/STONE
		CONCRETE/GRANITE BOUND
I.P.F. I.R.F.		IRON PIPE - IRON ROD
D.H.F.		DRILL HOLE
FP		FLAG POLE
		LIGHT POLE
		GUY WIRE
		UTILITY POLE
		UTILITY POLE W/ LIGHTS
		SIGN
W		WATER MANHOLE
		HYDRANT
WV		WATER SHUT-OFF
		WATER VALVE
		FITTING/BEND-THRUST RESTRAINT
S		SEWER MANHOLE
		CATCH BASIN SQUARE
MW		MONITORING WELL
B		BORING
		CONTROL POINT
		STATE FOUND WITH LABELING
W		WELL
ES		ELECTRIC ?????
EM		ELECTRIC METER
		ELECTRIC ?????
GR		?????

LEGEND (CONT.):

EXISTING	PROPOSED	
E		?????
		SILT FENCE

ABBREVIATIONS:

AB	ABANDONED
AER	AEROBIC (AERATION)
AVE	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
AN	ANAEROBIC
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AVG	AVERAGE
AX	ANOXIC
BFP	BACKFLOW PREVENTOR
BIT	BITUMINOUS
BL	BASELINE
BLDG	BUILDING
CB	CATCH BASIN
CCT	CHLORINE CONTACT TANK
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CI	CAST IRON PIPE
CL	CENTERLINE
CL2	CHLORINE LINE
CMH	CHEMICAL MANHOLE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CONST	CONSTRUCT
CONT	CONTINUOUS, CONTINUATION
CP	POST CHLORINE PIPE
CRA	CHLORINE RESIDUAL ANALYZER
CS	CAUSTIC SODA
D	DRAIN
DI	DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
DN	DOWN
DO	DISSOLVED OXYGEN
EL	ELEVATION
ELEC	ELECTRIC
EMER	EMERGENCY
ENGR	ENGINEER
ENT	ENTRANCE
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
FDN	FOUNDATION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FLG	FLANGE
FM	FORCE MAIN
FT	FOOT OR FEET
FW	FINISHED WATER
GALV	GALVANIZED
GAS	PROPANE GAS
G.C.	GENERAL CONTRACTOR
GEN	GENERATOR
GHWC	GAS & HOT WATER CONDUIT
GND	GROUND
GPM	GALLONS PER MINUTE
GRD	GRIT DISCHARGE
GRO	GRIT OVERFLOW
HDPE	HIGH DENSITY POLYETHYLENE
HPS	HIGH PRESSURE SODIUM
HW	HEADWATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IN	INCH
INV	INVERT ELEVATION
LB	POUND
LF	LINEAR FEET
LGT	LIGHT
LPA	LOW PRESSURE AIR
MANUF	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MJ	MECHANICAL JOINT
MON	MONUMENT
MW	MUNICIPAL WATER
NA	NOT APPLICABLE
NGVD	NATIONAL GEODETIC VERTICAL DATUM
N/F	NOW OR FORMERLY
NO.	NUMBER
N.O.	NORMALLY OPEN
N.S.	NORMALLY SHUT
OC	ODOR CONTROL
OD	OUTSIDE DIAMETER
OS	OUTLET STRUCTURE
PB	PRIMARY BYPASS
PCF	POUNDS PER CUBIC FOOT
PL	PROPERTY LINE
PLE	PLANT EFFLUENT
PO	POLYMER SOLUTION
PP	POTASSIUM PERMANGANATE
PS	PRIMARY SLUDGE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSNH	PUBLIC SERVICE OF NEW HAMPSHIRE
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
PVCL	PVC CHLORINE LINE (VACUUM TUBE CASING)
PVCU	PVC UNDERDRAIN
PVDR	PVC DRAIN RETURN
PVMT	PAVEMENT
PVSA	PVC SAMPLE LINE
PVSL	PVC SUCTION LINE
PW	PLANT WATER
PYCL	POLYETHYLENE CHLORINE LINE (VACUUM TUBING CASING)
R (RAD)	RADIUS
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RD	ROAD
REM	REMOVE
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
REF	REFER OR REFERENCE
REQD	REQUIRED
RS	RAW SEWAGE
ROW	RIGHT OF WAY
RW	RAW WATER
S	MUNICIPAL SEWER
S	SLOPE
SA	SAMPLE LINE
SB	SODIUM BISULFITE
SC	SCUM
SCH	SCHEDULE
SD	SUMP DISCHARGE
SE	SECONDARY EFFLUENT
SED	SEDIMENTATION
SEP	SEPTAGE
SEW	SEWAGE
SF	SQUARE FEET
SHC	SODIUM HYPOCHLORITE
SHD	SODIUM HYDROXIDE
SHT	SHEET
SI	SECONDARY INFLUENT
SMH	SEWER MANHOLE
S.S.	STAINLESS STEEL
SQ	SQUARE
ST	STEEL
STA	STATION
STD	STANDARD
STRS	STAIRS
STRUCT	STRUCTURAL
SUP	SUPERNATANT
SW	SEAL WATER
SYMM	SYMMETRICAL
TBM	TEMPORARY BENCH MARK
TD	TANK DRAIN
TEMP	TEMPORARY
THK	THICKNESS
TOC	TOP OF CONCRETE
TOP	TOP OF PIPE
TOW	TOP OF WALL
TP	TEST PIT
TRANS	TRANSFORMER
TWAS	THICKENED WASTE ACTIVATED SLUDGE
TYP	TYPICAL
UE	UNDERGROUND ELECTRICAL
UGU	UNDERGROUND UTILITIES
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VIF	VERIFY IN FIELD
VC	VERTICAL CURVE
VCD	VC DRAIN
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
W	WATER
WAS	WASTE ACTIVATED SLUDGE
WD	WOOD
WI	WROUGHT IRON
W/	WITH
(E)	EAST
(N)	NORTH
(S)	SOUTH
(W)	WEST
@	AT (SPACING)
ø	DIAMETER
#	NUMBER
℄	CENTER LINE
&	AND

NOTE:

1. THIS IS A STANDARD LEGEND SHEET, THEREFORE SOME ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE DRAWINGS.

NO.	REVISIONS	APP'D

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Date –
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Date –

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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

LEGEND & NOTES

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO	SHEET
G4	X OF X

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CONTROL DATA				
CONTROL POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
28	REBAR SET	262777.438	1191793.191	178.67
32	REBAR SET	263243.207	1191336.593	184.66
124	MAG NAIL SET	261333.066	1193094.686	168.12
126	MAG NAIL SET	261525.634	1192939.430	170.92

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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

INDEX SHEETS

COMPOSITE ELEVATED WATER STORAGE TANK

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SHEET OF X

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PLAN VIEW

SCALE: 1 INCH = 20 FT.

KEY NOTES:

(TP) TP. EXPLORATORY EXCAVATION WITH ENGINEER IN ADVANCE OF WATER INSTALLATION TO IDENTIFY POTENTIAL UTILITY CROSSING CONFLICTS AND CONFIRM DESIGN ELEVATIONS. REPORT ELEVATION TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

(2) CONSTRUCT HYDRANT ASSEMBLY, INCLUDING ANCHOR TEE, GATE VALVE & 6" BRANCH PIPE.

(4) INSTALL SILT FENCE. SEE PLAN. SUBSIDIARY TO ITEM . SEE DETAIL (1/C12)

(18) INSTALL 16" HORIZONTAL BEVELED-GEARED GATE VALVE.

(29) LIMIT OF 12" MAIN IS JUST OUTSIDE FENCE PER BASE BID. CAP IF BID ALTERNATIVE FOR 12" CONNECTION TO HIGH PRESSURE ZONE IS NOT INSTALLED.

LAYOUT TABLE

ID	DESCRIPTION	NORTHERN	EASTERN
POINT A	TANK CENTER	262996.1876	1191529.1331
POINT B	TANK PEDESTAL WALL	262988.5897	1191511.7184

TBM 4699AC
MAG NAIL SET IN ROOT COLLAR
OF 16" OAK
ELEV.=198.11'

TBM 4699AB
MAG NAIL SET IN ROOT COLLAR
OF 18" HEMLOCK
ELEV.=199.20'

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

TAX MAP D, LOT 2
DOVER NORTH PROFESSIONAL CENTER LLC,
C/O WHEELER RING DOLAN AND DUPUIS PC
726 CHESTNUT ST
MANCHESTER, NH 03104
S.C.R.D. BOOK 3377, PAGE 936

50' WETLAND SETBACK

INSTALL CRUSHED STONE DETAIL WITHIN FENCED AREA NOT PAVED (2/C14)

INSTALL AND GRADE CRUSHED GRAVEL AROUND TANK, 4" DEPTH

PROPOSED TREE LINE REVIEW LIMITS W/ OWNER PRIOR TO CLEARING

RESTORE DISTURBED AREAS W/ 4" LOAM & CONSERVATION SEED MIX.

DRAIN OUTLET HEADWALL (CONTRACT 1) (6/C13)

PLUNGE POOL (CONTRACT 1) (2/C13)

ELEVATED TANK DIA. 74'

PEDESTAL DIA. 38'± FF=198.0'

FOUNDATION DRAIN AROUND COMPLETE PERIMETER

8' CHAIN LINK SECURITY FENCE (3/C14)

PAVED DRIVE (6/C14)

RIP RAP (1/C13)

12" GV

6"PVC

15" CPE

OVERFLOW CATCH BASIN (1/C13)

10' DOOR

3' DOOR

197.96

194.5

GATE

LIMIT OF PAVING BASE BID

ADD ALT. B

22.5° BEND

45° BEND (TYP.)

STAGING AREA RESTORE AS REQUIRED FOLLOWING CONSTRUCTION

ROAD REPAIRS, SEE PLAN & PROFILE DWG C4

TEST PIT

(ADD -ALT)
INSTALL 12" WATER LINE TO HIGH PRESSURE ZONE (CONTRACT 1)
SEE PLAN & PROFILE DWG C4

UNDERGROUND ELECTRICAL SERVICE (CONTRACT 1) SEE ELECTRICAL SITE PLANS

CONTRACT 1 | LIMIT OF 16" MAIN | CONTRACT 2

SEE DWG C3 & C5

WEBB PLACE

existing 10" DI RW main from Willand Pond

existing 12" water main (high pressure zone)

cb #5308

cb #5309

5/8" REBAR SET FLUSH W/DIT

(pvmt el.=183.4)
top 10" rw=178.10
tp 15" pe = 177.1±

possible old light pole post

6' vinyl fence

bar gate

"windshear gardens" wooden sign

5/8" REBAR UP 2" W/CAP

air release valve structure

ISSUE FOR BIDDING Date – By –

CONSTRUCTION Date – By –

RECORD DRAWING Date – By –

NO.	REVISIONS	APP'D

Drawn/Chk RMG
Designed ALA
Checked TGP
Approved
Date 12/17/21
Book No. –
Project No. 2575
Dwg. ID 2575_prbase
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

TANK SITE PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C2 | SHEET OF X

C:\Users\mg\Desktop\desktop working files\Rail Numbers\Dover\2575 - Garrison Hl Water Storage Facilities\Drawings\2575_prbase.dwg, C2, 12/17/2021 6:17:33 AM, mg

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

SEE DWG C2 & C5

RESTORE DISTURBED AREAS W/ 4" LOAM & CONSERVATION MIX.

INSTALL 16" DI WATER MAIN

CONSTRUCT CHECK DAMS ON SLOPE AS REQUIRED

TBM 4699AD
'X' IN BOLT OVER MAIN OUTLET
ON HYDRANT
ELEV.=164.36'

TBM 4113A
MAG NAIL SET UP 6" IN
UTILITY POLE PSNH64/12BFP/102/13
ELEV.=162.02'

TAX MAP D, LOT 2
DOVER NORTH PROFESSIONAL CENTER LLC,
C/O WHEELER RING DOLAN AND DUPUIS PC
726 CHESTNUT ST
MANCHESTER, NH 03104
S.C.R.D. BOOK 3377, PAGE 936

KEY NOTES:

(4) INSTALL SILT FENCE. SEE PLAN. SUBSIDIARY TO ITEM . SEE DETAIL 1/C12

(15) INSTALL NEW 16" DI WATER MAIN.

(23) PROTECT & RETAIN EXISTING GRAVEL ROADWAY. GRADE & SHIM WITH CRUSHED STONE (FINE GRADATION) FOLLOWING CONSTRUCTION, SUBSIDIARY.

PLAN VIEW

SCALE: 1 INCH = 20 FT.

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25 Vaughan Mall, Portsmouth, N.H. 03801
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WELL HOUSE SITE PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C3

SHEET OF X

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TBM 4699AC
MAG NAIL SET IN ROOT COLLAR
OF 16" OAK
ELEV.=198.11'

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

SEE DWG C2

15" CPE

2 INSTALL 16" DI WATER MAIN

16"DI WATER MAIN

LIMIT OF PAVING BASE BID

ADD ALT. B

air release valve structure

TBM 4699AB
MAG NAIL SET IN ROOT COLLAR
OF 18" HEMLOCK
ELEV.=199.20'

CONTRACT 1 | CONTRACT 2

LIMIT OF WORK

SEE DWG C5

existing 10" DI RW main from Willand Pond

cb #5308

WEBB PLACE

5/8" REBAR SET FLUSH W/DIT

(pvmt. el.=183.4)
top 10" rwe=178.10
tp 15" pe = 177.1±

possible old light pole post

existing 12" water main (high pressure zone)

REMOVE/REPLACE FENCE AS REQUIRED

6' vinyl fence

5/8" REBAR UP 2" W/CAP

tbm 4699aa
chiseled box in conc.
light pole base
elev.=184.96'

RESET GRANITE CURB & RESTORE SIDEWALK 5 C15 6 C15 (ADD ALT)

(ADD ALT) 1

TP

PERMANENT ROAD REPAIRS SEE 9 C14 (ADD ALT)

"windshear gardens" wooden sign

bar gate

REMOVE/REPLACE GATE AS REQUIRED (INCIDENTAL)

(ADD ALT) 6 C14

(ADD ALT) 14

22

27

28

23

4

8

1

TP

PLAN VIEW

SCALE: 1 INCH = 20 FT.

TAX MAP D, LOT 2
DOVER NORTH PROFESSIONAL CENTER LLC,
C/O WHEELER RING DOLAN AND DUPUIS PC
726 CHESTNUT ST
MANCHESTER, NH 03104
S.C.R.D. BOOK 3377, PAGE 936

KEY NOTES:

TP EXPLORATORY EXCAVATION WITH ENGINEER IN ADVANCE OF WATER INSTALLATION TO IDENTIFY POTENTIAL UTILITY CROSSING CONFLICTS AND CONFIRM DESIGN ELEVATIONS. REPORT ELEVATION TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

1 CUT–IN 12" X12" TEE & 12" GATE VALVE, CONNECT GATE VALVE TO TEE USING FOSTER ADAPTOR. CONNECT TO EXISTING 12" DI MAIN USING SOLID SLEEVE COUPLINGS.

2 CONSTRUCT HYDRANT ASSEMBLY, INCLUDING ANCHOR TEE, GATE VALVE & 6" BRANCH PIPE.

4 INSTALL SILT FENCE. SEE PLAN. SUBSIDIARY TO ITEM . SEE DETAIL 1 C12

8 INSTALL RIGID INSULATION, SEE TRENCH DETAIL 2 C11

14 INSTALL NEW 12" DI RAW WATER OR FINISHED WATER MAIN **(ADD ALT.)**.

22 RESTORE DISTURBED AREAS WITH 4" LOAM AND CONSERVATION MIX SEED.

23 PROTECT & RETAIN EXISTING GRAVEL ROADWAY. GRADE & SHIM WITH CRUSHED STONE (FINE GRADATION) FOLLOWING CONSTRUCTION, SUBSIDIARY.

27 FULL DEPTH RECONSTRUCTION STA. 3+00 TO 3+35 TO ACHIEVE FINAL GRAVEL DEPTH OF 12" & NOMINAL PAVEMENT DEPTH OF 4" BELOW FINISH GRADES SHOWN **(ADD ALT.)**.

28 STA 2+00 TO STA 3+35 ADD 1 FT. x 1 FT. GRAVEL SHOULDER NHDOT ITEM 403.3 **(ADD–ALT)**.

PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

PVI STA = 1+74.00
PVI ELEV = 186.80
HP: STA = 1+99.00
HP: ELEV = 187.33
A.D. = −2.82%
K = 17.76
50' VC

PVI STA = 2+31.00
PVI ELEV = 188.00
LP: STA = 2+11.00
LP: ELEV = 187.58
A.D. = 8.29%
K = 4.82
40' VC

PVI STA = 3+06.00
PVI ELEV = 195.80
HP: STA = 3+21.00
HP: ELEV = 196.21
A.D. = −7.64%
K = 3.93
30' VC

PVI STA = 1+11
PVI ELEV = 183.70

BVCS: 1+49
BVCE: 185.57

EVCS: 1+99
EVCE: 187.33

BVCS: 2+11
BVCE: 187.58

EVCS: 2+51
EVCE: 190.08

BVCS: 2+91
BVCE: 194.24

EVCS: 3+21
EVCE: 196.21

PVI STA = 3+35
PVI ELEV = 196.60

4.92%
2.11%
10.40%
2.76%

TANK PEDESTAL
38' LEFT
FF EL. 198.0

air release manhole

PROPOSED 12" WATER

CONTINUES TO TANK
SEE SITE PLAN &
TANK DETAILS

10" di water

16" WATER MAIN

INSULATE WHERE COVER < 5'

existing 12" water top=178±

4'–0" MIN.

5'–6" TYP.

1' MIN.

1'

drain pipe top=176.4±

DATUM ELEV
175.00

0+23.33	1+00	2+00	3+00	4+00	5+00	5+25
	183.4	185.0 / 185.62	186.5 / 187.35	189.0 / 189.98	194.4 / 195.07	196.9	197.2	197.4	196.7	195.2

190 / 180 / 175

NO.	REVISIONS	APP'D
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Scale AS SHOWN

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25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PLAN & PROFILE

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C4

SHEET OF X

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SEE DWG C4

RESTORE DISTURBED AREAS W/ 4" LOAM & CONSERVATION MIX. (SUBSIDIARY)

CONSTRUCT CHECK DAMS ON SLOPE AS REQUIRED

woods road

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

CROSS UNDER HYDRANT CONNECTIONS 16" TOP ELEV. 156.5

SEE DWG C6

trail

SMITH WELL RD

existing 12" DI RW main

psnh 64/12

old well house per town worker

conc. block
10" pig clean out about grade

TBM 4699AD
'X' IN BOLT OVER MAIN OUTLET ON HYDRANT
ELEV.=164.36'

10" cip inv.=162.9'

SEE DWG C3

abandoned waterline

SEE DWG C3

PLAN VIEW

20 0 20 40
SCALE: 1 INCH = 20 FT.

KEY NOTES:

4. INSTALL SILT FENCE. SEE PLAN. SUBSIDIARY TO ITEM . SEE DETAIL 1/C12
15. INSTALL NEW 16" DI WATER MAIN.
22. RESTORE DISTURBED AREAS WITH 4" LOAM AND CONSERVATION MIX.
23. PROTECT & RETAIN EXISTING GRAVEL ROADWAY. GRADE & SHIM WITH CRUSHED STONE (FINE GRADATION) FOLLOWING CONSTRUCTION, SUBSIDIARY.

16" WATER MAIN

CONTINUE 5'-6" COVER IN CROSS COUNTRY SECTION (TYP) WITH NO INTERMEDIATE HIGH POINTS

10" di water

pig cleanout

PROFILE VIEW

20 0 20 40
4 0 4 8
HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

5'-6"

6" hydrant pipe

12" water main

16" WATER MAIN

DATUM ELEV 150.00

5+25	6+00	7+00	8+00	9+00	10+00	11+00
195.2	192.4	185.4	178.8	171.6	163.5	161.5
					161.4	160.5	159.8	159.7	159.7	161.5

190 180 170 160 150

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PLAN & PROFILE

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C5
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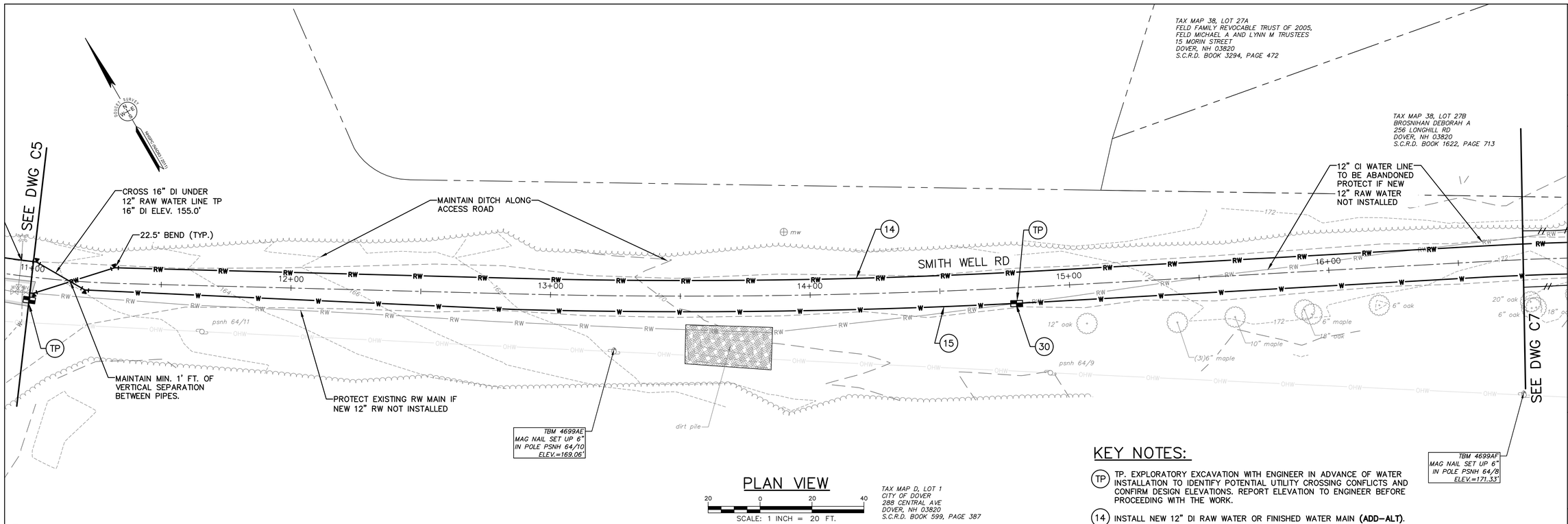


PLAN VIEW

SCALE: 1 INCH = 20 FT.

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

KEY NOTES:

(TP) TP. EXPLORATORY EXCAVATION WITH ENGINEER IN ADVANCE OF WATER INSTALLATION TO IDENTIFY POTENTIAL UTILITY CROSSING CONFLICTS AND CONFIRM DESIGN ELEVATIONS. REPORT ELEVATION TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

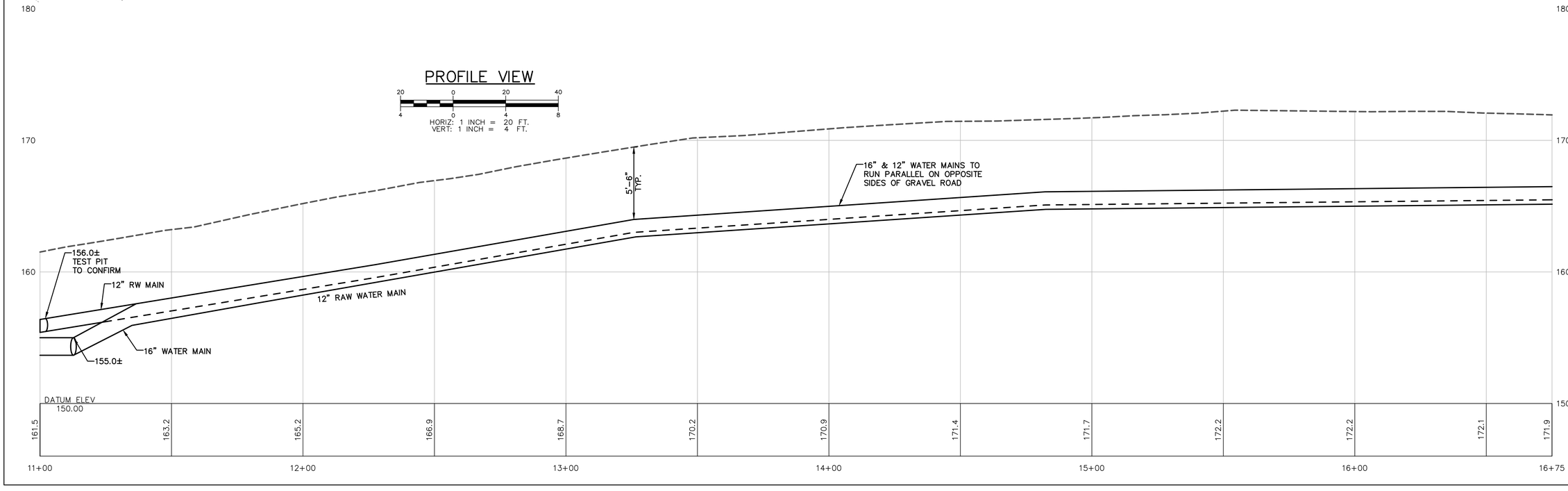
(14) INSTALL NEW 12" DI RAW WATER OR FINISHED WATER MAIN **(ADD-ALT)**.

(15) INSTALL NEW 16" DI WATER MAIN.

(30) RELOCATE EXISTING RW MAIN UNDER 16" MAIN IF NEW 12" RW NOT INSTALLED (INCIDENTAL)

PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



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PLAN & PROFILE

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C6
SHEET OF X

C:\Users\mng\Desktop\desktop working files\Real Numbers\Dover\2575 - Garrison Hill Water Storage Facilities\Drawings\2575_prbase.dwg, C6, 12/17/2021 6:17:53 AM, mng

TAX MAP 38, LOT 27B
BROSNIHAN DEBORAH A
256 LONGHILL RD
DOVER, NH 03820
S.C.R.D. BOOK 1622, PAGE 713

TAX MAP 38, LOT 25B
SWENSON SCOTT J &, SWENSON DEBRA M
18 MORIN ST
DOVER, NH 03820
S.C.R.D. BOOK 2818, PAGE 423

(INCIDENTAL TO ADD-ALT ITEM FOR 12" WATERMAIN) RELOCATE EXISTING MANHOLE STRUCTURE & AIR RELEASE VALVE TO 12" DI RW HIGH POINT

TAX MAP 38, LOT 30
FRIENDS FIDUCIARY CORPORATION
PO BOX 98
DOVER, NH 03820
S.C.R.D. BOOK 2594, PAGE 359

SMITH WELL RD

AIR RELEASE MANHOLE FOR 16" DI WATER MAIN INSTALLED AT HIGH POINT (4 / C11)

SEE DWG C6

SEE DWG C8

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

area infested w/invasive japanese knotweed

TBM 4699AG
'X' IN BOLT OVER MAIN OUTLET ON HYDRANT
ELEV.=173.82'

PLAN VIEW

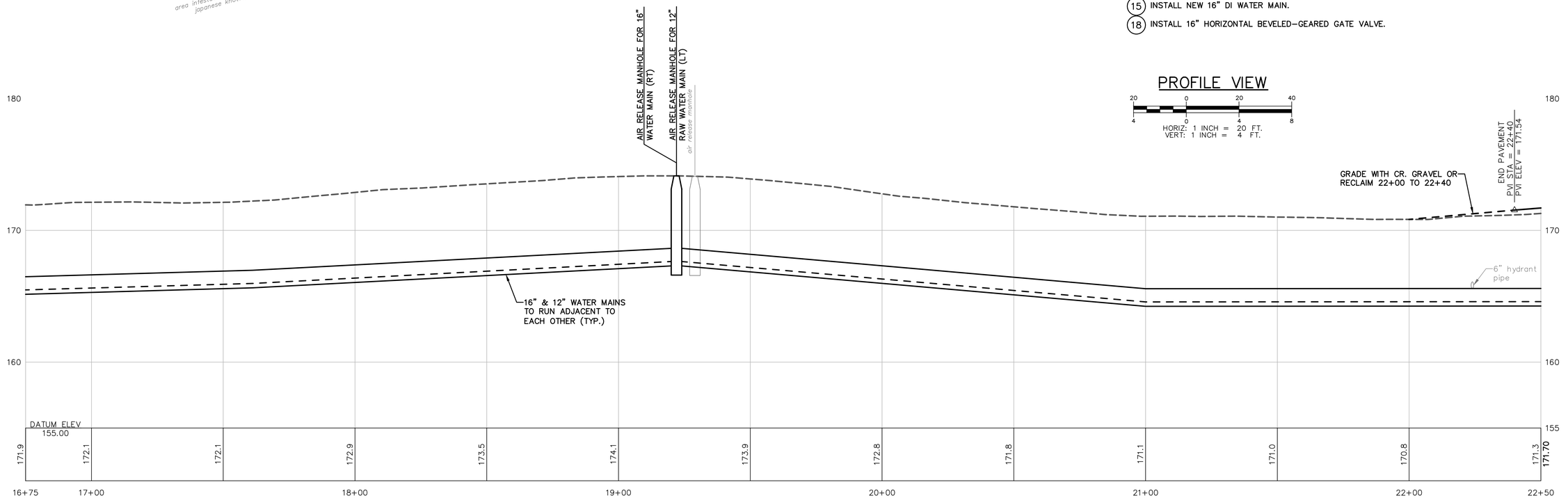
20 0 20 40
SCALE: 1 INCH = 20 FT.

KEY NOTES:

(2) CONSTRUCT HYDRANT ASSEMBLY, INCLUDING ANCHOR TEE, GATE VALVE & 6" BRANCH PIPE.
(4) INSTALL SILT FENCE. SEE PLAN. SUBSIDIARY TO ITEM . SEE DETAIL (1 / C12)
(5) REMOVE EXISTING HYDRANT AND SALVAGE TO OWNER. SUBSIDIARY
(14) INSTALL NEW 12" DI RAW WATER OR FINISHED WATER MAIN **(ADD-ALT)**.
(15) INSTALL NEW 16" DI WATER MAIN.
(18) INSTALL 16" HORIZONTAL BEVELED-GEARED GATE VALVE.

PROFILE VIEW

20 0 20 40
4 0 4 8
HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



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PLAN & PROFILE

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C7
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TAX MAP 38, LOT 32E
RANDALL ROSS &, RANDALL ALEXA
4 SMITH WELL ROAD
DOVER, NH 03820
S.C.R.D. BOOK 4869, PAGE 623

TAX MAP 38, LOT 32
LITTLEFIELD ERIC P &, LITTLEFIELD DENISE A
4 A SMITH WELL ROAD
DOVER, NH 03820
S.C.R.D. BOOK 4709, PAGE 337

TAX MAP 38, LOT 32E
RANDALL ROSS &,
RANDALL ALEXA
4 SMITH WELL ROAD
DOVER, NH 03820
S.C.R.D. BK. 4869, PG. 623

TAX MAP 38, LOT 32D
STICKLES DARLENE,
STICKLES PETER L.
2 SMITH WELL ROAD
DOVER, NH 03820
S.C.R.D. BK. 1129, PG. 711

TAX MAP 38, LOT 32
CLARK RICHARD SR & JUNE TRUSTEES,
CLARK RICHARD AND JUNE TRUST OF 2001
15 GLENWOOD AVENUE
DOVER, NH 03820
S.C.R.D. BOOK 3401, PAGE 636

TAX MAP 36, LOT 34
LYONS GALE C TRUSTEE,
LYONS GALE C REVOCABLE TRUST
102 HORNE ST
DOVER, NH 03820
S.C.R.D. BOOK 2444, PAGE 4494

3 / C15 SEE TYPICAL ROADWAY SECTION

4 / C14 SEE TYPICAL MILL & OVERLAY SECTION

PROVIDE TEMPORARY WATER TO SMITH WELL ROAD AND BARRY STREET. SEE NOTES DWG G3.

TBM 4699AH
'X' IN BOLT OVER MAIN OUTLET ON HYDRANT
ELEV.=169.94'

SEE DWG C7

SMH#1

CB#2

SMH#2

8" PVC SDR 35 x 20' @ S=TBD

TP CONNECT TO EXISTING 12" CI

MAINTAIN 10 FT. SEPARATION BETWEEN SEWER PIPE AND 16" DI WATER MAIN

8" PVC SDR35

SMITH WELL RD

BARRY ST.

GLENWOOD AVE

REMOVE AND DISPOSE OF EXISTING HYDRANT AND CONNECT NEW HYDRANT TO PROPOSED 16" DI MAIN

LOCATE 16" DI 5.5 FT. BELOW GRADE

CONNECT 16" WATER MAIN TO EXISTING 12" DI WATER MAIN

WATER MAIN TO CROSS 1.5 FT. ABOVE SEWER MAIN

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

TAX MAP D, LOT 62
VALERIE E SNOWDON
3 SMITH WELL RD
DOVER, NH 03820
S.C.R.D BOOK 4699, PAGE 399

TAX MAP 38, LOT 32C
BRAGG MICHAEL S &
HAWKES DIANE
1 SMITH WELL RD
DOVER, NH 03820
S.C.R.D BK. 2893, PG. 785

TAX MAP 38, LOT 1B
GALLANT ROBERT E &
GALLANT SARIANNE L
17 GLENWOOD AV
DOVER, NH 03820
S.C.R.D. BOOK 4018, PAGE 140

TAX MAP 36, LOT 33
DUNBAR JASON C &,
DUNBAR CHRISTINA M
14 GLENWOOD AV
DOVER, NH 03820
S.C.R.D. BOOK 4759, PAGE 298

TAX MAP 36, LOT 32
LAZAR LAURIE A TRUSTEE
LAZAR LAURIE A
REVOCABLE TRUST
16 GLENWOOD AV
DOVER, NH 03820
S.C.R.D. BOOK 4582, PAGE 142

16" DI TO BE LOCATED MIN. 1.5 FT ABOVE 8" SEWER MAIN. (T.O.P. 165.49)

PVI STA = 25+00.00
PVI ELEV = 171.20
LP: STA = 25+05.88
LP: ELEV = 171.28
A.D. = 1.70%
K = 23.53
40' VC

SMH#3
RIM=171.20
8" INV IN=MATCH EXISTING SLOPE (SMH#9696)
8" INV OUT=161.60 (SMH#2)

PLAN VIEW

SCALE: 1 INCH = 20 FT.

KEY NOTES:

(TP) TP. EXPLORATORY EXCAVATION WITH ENGINEER IN ADVANCE OF WATER INSTALLATION TO IDENTIFY POTENTIAL UTILITY CROSSING CONFLICTS AND CONFIRM DESIGN ELEVATIONS. REPORT ELEVATION TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

(CT) CUT TREE, ITEM# PO BID SCHEDULE

(2) CONSTRUCT HYDRANT ASSEMBLY, INCLUDING ANCHOR TEE, GATE VALVE & 6" BRANCH PIPE.

(5) REMOVE EXISTING HYDRANT AND SALVAGE TO OWNER. SUBSIDIARY

(6) MAINTAIN EXISTING WATER SYSTEM DURING CONSTRUCTION OF NEW MAIN. CAP AND ABANDON EXISTING WATER MAIN UPON COMPLETION OF NEW MAIN.

(7) INSTALL NEW 1" WATER SERVICE FROM NEW 16" DI MAIN WITH NEW CURB STOP, CONNECT TO EXISTING WATER SERVICE. LOCATE PER OWNER AND ENGINEER IN FIELD. SEE DETAIL 7 / C11

(8) INSTALL RIGID INSULATION, SEE TRENCH DETAIL 2 / C11

(9) CONSTRUCT NEW 4' DIA. SMH, LOCATION WILL DEPEND ON SERVICE LOCATION FOR #4. LOCATE PER OWNER AND ENGINEER IN FIELD. DETAIL 1 / C16

(10) INSTALL NEW 8" SDR 35 PVC SEWER.

(11) MAINTAIN EXISTING SEWER UNTIL SEWER SERVICES MOVED TO NEW SEWER. THEN CAP AND ABANDON OR REMOVE AND DISPOSE OF WHERE NECESSARY.

(12) REMOVE AND DISPOSE OF EXISTING SMH CONNECT EXISTING SEWER FROM BARRY STREET TO NEW SMH.

(13) THE COD WILL DETERMINE APPROXIMATE LOCATION OF EXISTING SEWER SERVICES. INSTALL NEW SEWER SERVICE TO PROPERTY LINE AND MAKE CONNECTIONS AT APPROVED LOCATIONS.

(14) INSTALL NEW 12" DI RAW WATER OR FINISHED WATER MAIN.

(15) INSTALL NEW 16" DI WATER MAIN.

(16) REMOVE EXISTING 6" GATE VALVE. INSTALL NEW 16"X16"X16" TEE. INSTALL TWO 16" HORIZONTAL BEVELED-GEARED GATE VALVES AND REDUCERS, AND 12" GATE VALVE & TWO SOLID SLEEVE COUPLINGS.

(17) INSTALL 16" X 16" X 8" TEE, 8" GATE VALVE, 8" X 6" REDUCER AND SOLID SLEEVE COUPLING.

(20) MAINTAIN 1 FT. MINIMUM BETWEEN TOP OF WATER MAIN AND INVERT OF DRAIN PIPE. SEE DETAIL 6 / C11

(26) REMOVE AND DISPOSE OF AC PIPE ONLY WHERE NECESSARY & APPROVED BY ENGINEER.

PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

SMH#1
STA 23+29
RIM=171.77
8" INV OUT=162.80 (SE)

PVI STA = 24+50
PVI ELEV = 171.75

CB#2
STA 25+05
RIM=170.8
12" INV OUT=166.82 (S)

BVCS: 24+80
BVCE: 171.42

12" INV IN=166.40 (N)

EVCS: 25+20
EVCE: 171.32

SMH#2
STA 25+55
RIM=171.0
8" INV IN=161.50 (NW)
8" INV IN=161.50 (SW)
8" INV OUT=161.40 (SE)

PVI STA = 25+50
PVI ELEV = 171.50

(REMOVE) EXISTING MANHOLE

PVI STA = 26+50
PVI ELEV = 170.50

PVI STA = 27+55
PVI ELEV = 168.29

8" INV IN=160.40 (NW)

1.60% −0.50% −1.10% 0.60% −0.60% −1.40% −2.10% 2.00%

12" PVC x 43' @ S=0.010 FT/FT

8" PVC SDR35 x 222' @ S=0.006 FT/FT

8" PVC SDR35 x 206' @ S=0.005 FT/FT

16" & 12" WATER MAINS TO RUN ADJACENT TO EACH OTHER (TYP.)

INSULATE WHEN THE WATER MAIN IS LESS THAN 5' FROM GRADE

WATER MAIN TO CROSS 12" BELOW DRAIN PIPE

RECLAIM STABILIZED BASE IN PLACE (8" DEEP)
STA 22+40 TO 27+55

MILL & OVERLAY
STA 27+55 TO STA 27+84

DATUM ELEV 155.00

22+50	23+00	24+00	25+00	26+00	27+00	27+98.22
171.3 / 171.70	171.7 / 172.50	171.7 / 172.25	171.5 / 172.00	171.2 / 171.75	170.9 / 171.28	171.1 / 171.50	170.8 / 171.20	170.2 / 170.50	169.1 / 169.45	168.3 / 168.40

ISSUE FOR	Date	By
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed ALA
Checked TGP
Approved –
Date 12/17/21
Book No. –
Project No. 2575
Dwg. ID 2575_prbase
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PLAN & PROFILE

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C8

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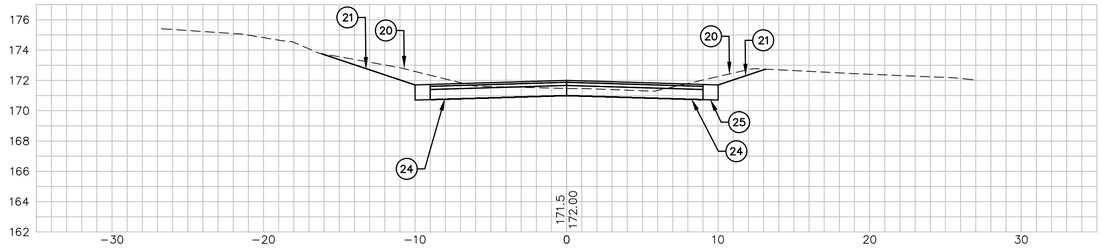

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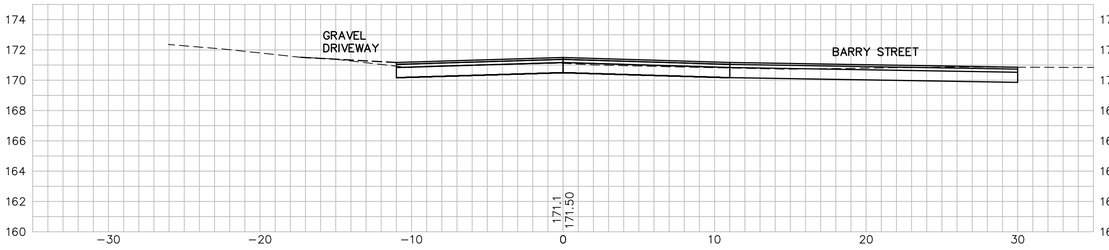

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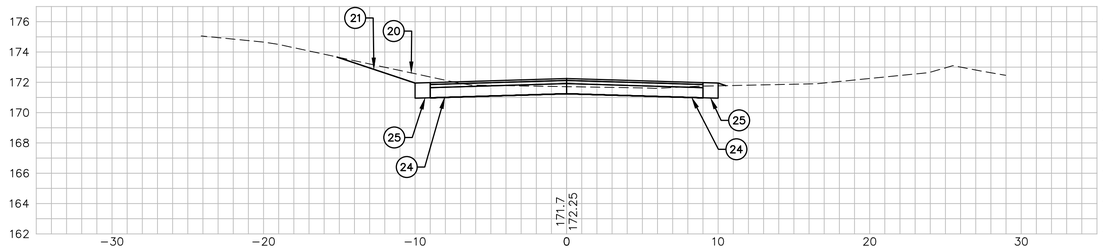

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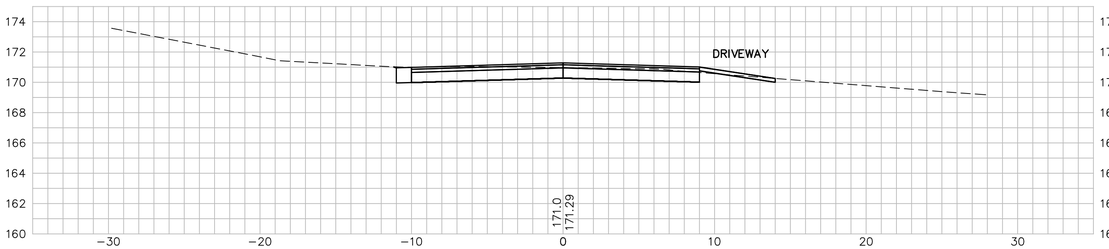

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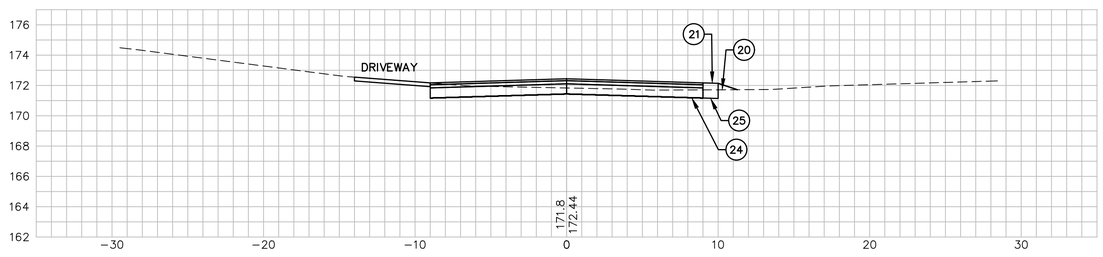

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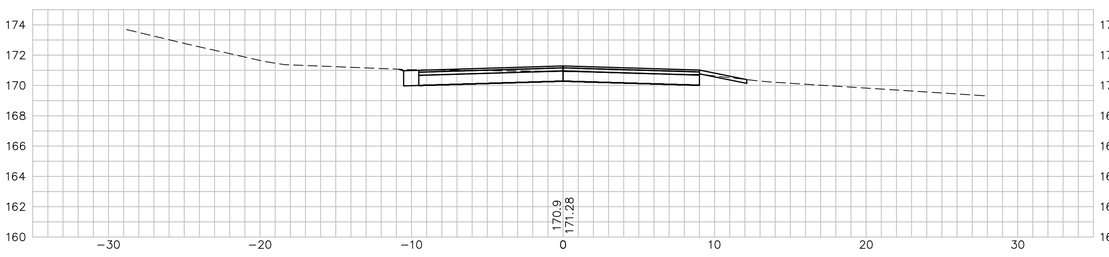

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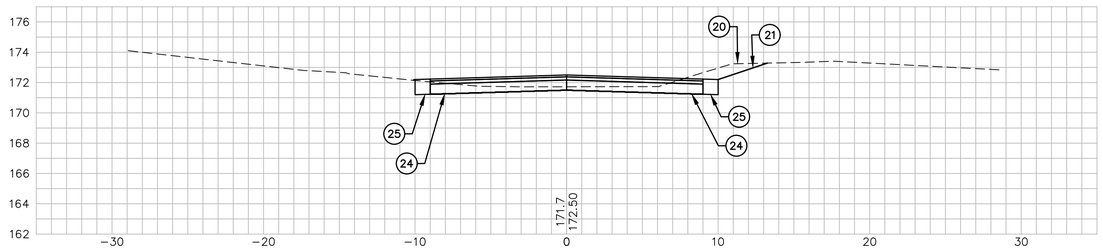

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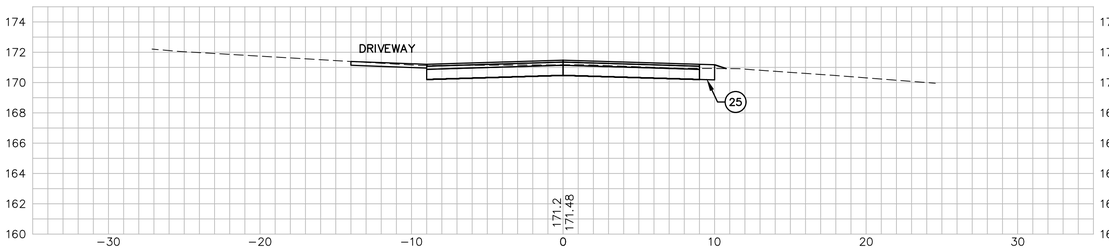

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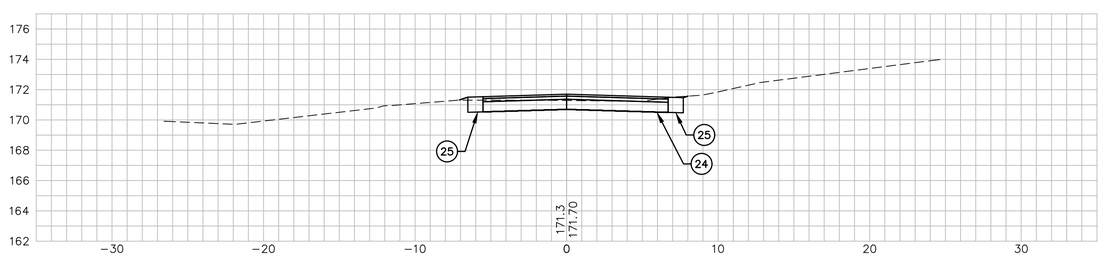

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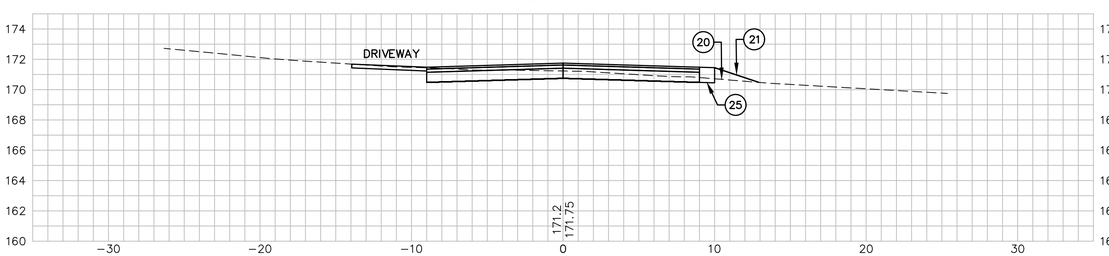

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NO.	REVISIONS	APP'D

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Designed ALA
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Date 12/17/21
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DEC. 17, 2021
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

CROSS SECTIONS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO X1

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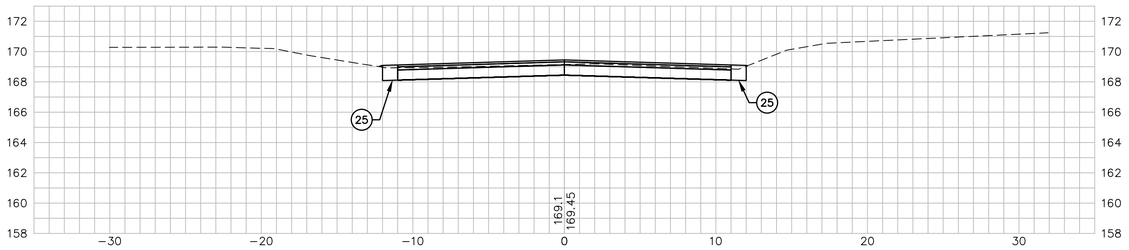

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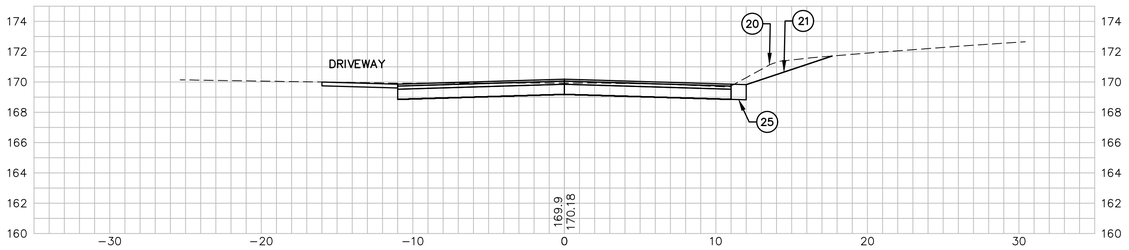

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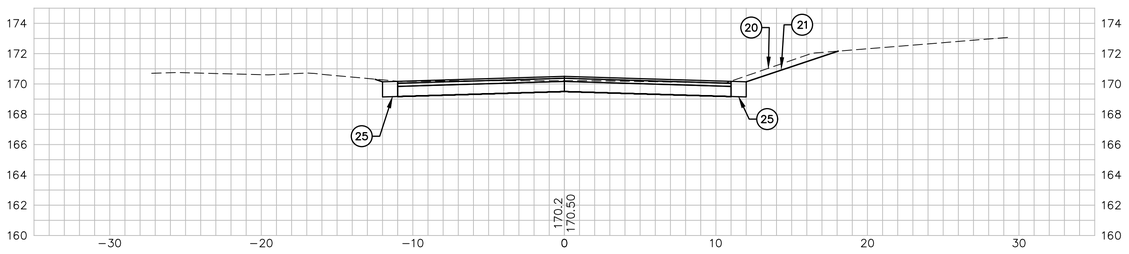

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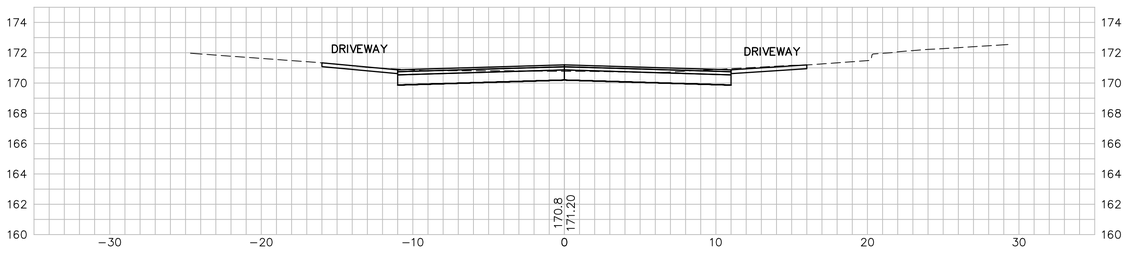

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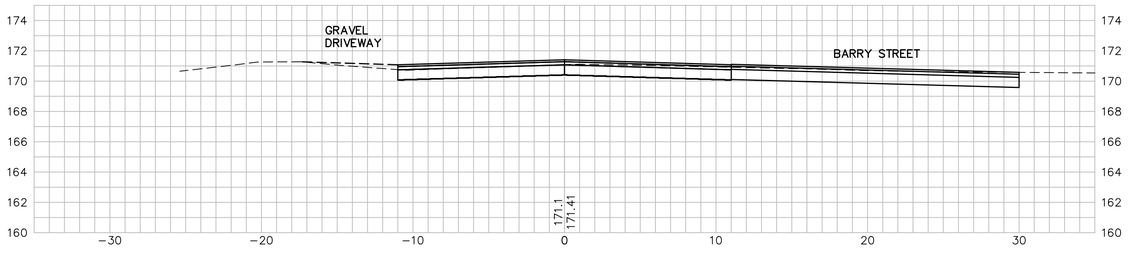

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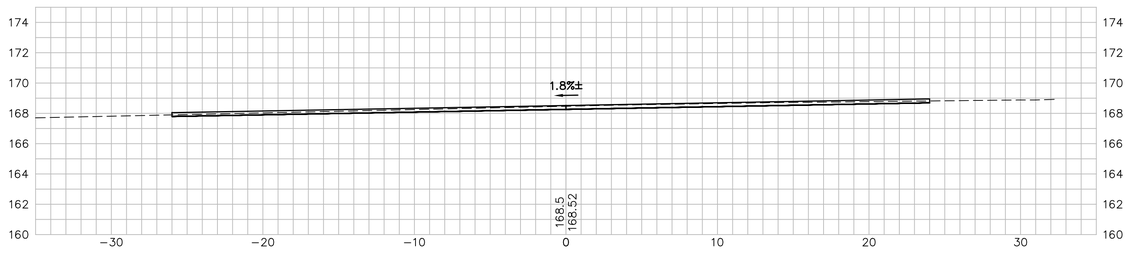

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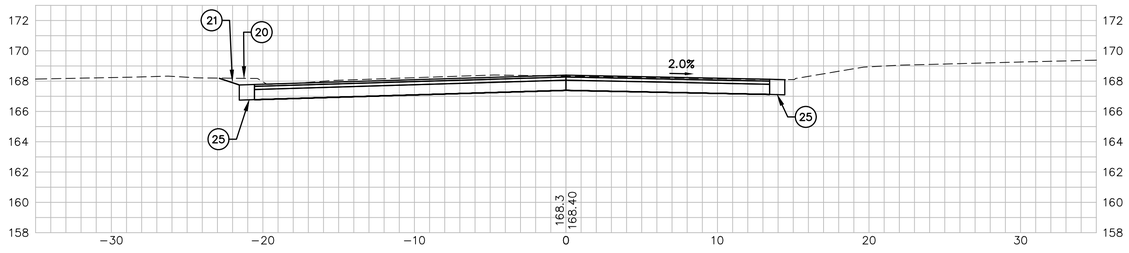

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Drawn/Chk RMG
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Draft
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

CROSS SECTIONS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO X1

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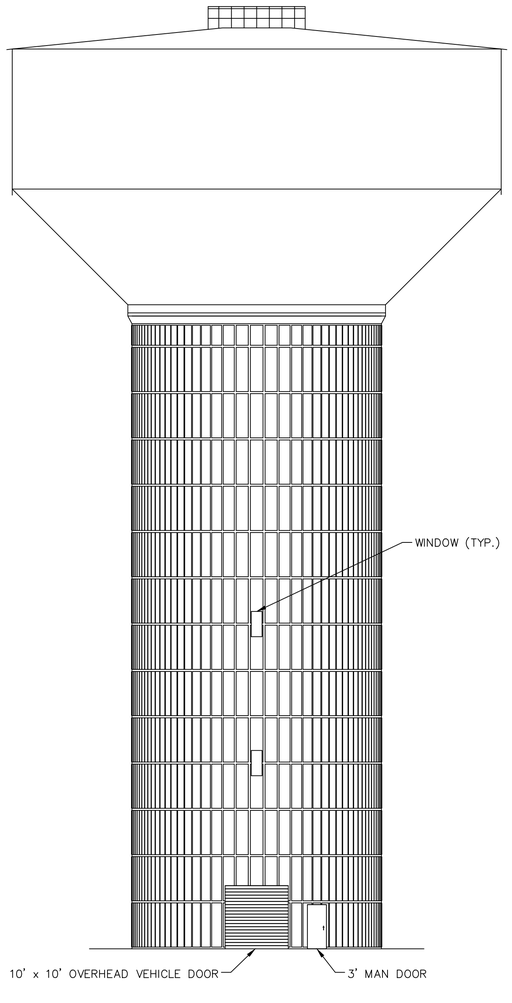

ELEVATION
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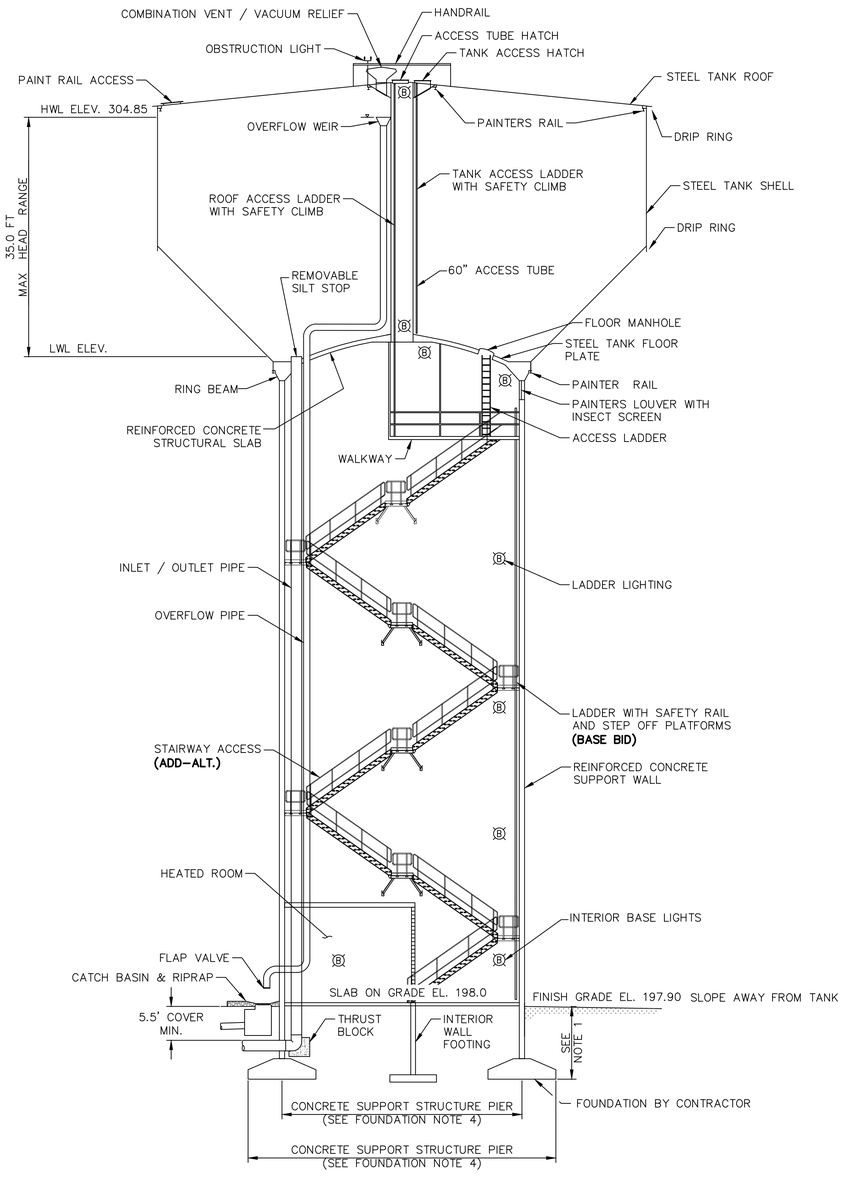

SECTION
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NOTES:

GENERAL:

1. SEE CONTRACT SPECIFICATIONS FOR DESIGN CRITERIA AND DETAILS. APPLICABLE ELEVATED TANK SPECIFICATIONS ARE AWWA D107 AND ACI 318, MOST RECENT VERSION.
2. STEEL TANK FLOOR WITHIN THE PERIMETER OF THE CONCRETE SUPPORT PEDESTAL SHALL BE SUPPORTED BY A STRUCTURAL CONCRETE SLAB.
3. PROVIDE ADEQUATE FREEBOARD TO ENSURE ROOF PROJECTIONS AND PAINTER RAIL REMAIN ABOVE THE HIGH WATER LEVEL.
4. CONCRETE PEDESTAL EXTERIOR SHALL INCORPORATE HORIZONTAL AND VERTICAL RUSTICATIONS TO CREATE A SYMMETRICAL ARCHITECTURAL PATTERN. SEE CONTRACT SPECIFICATIONS.
5. SEE CONTRACT SPECIFICATIONS FOR STEEL TANK COATING REQUIREMENTS.
6. TANK APPURTENANCES ARE ROTATED FOR CLARITY.
7. AS-BUILT DRAWINGS TO BE PROVIDED BY TANK CONTRACTOR.

FOUNDATION:

1. REFER TO THE GEOTECHNICAL REPORT FOR RECOMMENDATIONS REGARDING ALLOWABLE BEARING CAPACITY.
2. DESIGN LOADS IN ACCORDANCE WITH AWWA D107 (LATEST VERSION).
3. DESIGN CONCRETE FOUNDATION IN ACCORDANCE WITH ACI 318 (LATEST VERSION).
4. CONCRETE SUPPORT STRUCTURE DIAMETER AND DIMENSIONS OF FOUNDATION SHALL BE DETERMINED BY THE TANK CONTRACTOR BASED UPON THE SOIL BEARING SPECIFIED AND THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.

MECHANICAL:

1. INLET / OUTLET AND OVERFLOW PIPING WITHIN THE CONCRETE PEDESTAL SHALL BE TYPE 304L STAINLESS STEEL.
2. PROVIDE HANGERS, BRACKETS, AND THRUST RESTRAINT AS REQUIRED.
3. OVERFLOW SYSTEM SHALL BE DESIGNED TO ACCOMMODATE MAXIMUM FILL RATE. SEE CONTRACT SPECIFICATION.
4. REMOVABLE SILT STOP SHALL BE 6 INCHES ABOVE TANK FLOOR.
5. HIGH PRESSURE ZONE CONNECTION/FUTURE BOOSTER PUMP SUCTION SUPPLY SHALL BE SEPERATE 8" SS PIPE FROM TANK TO PUMP SYSTEM (NOT SHOWN IN SECTION).

MISCELLANEOUS IRON:

1. ALL STAIRS, LADDERS AND LANDINGS SHALL BE GALVANIZED.
2. PROVIDE ALUMINUM SAFETY RAILS ON ALL STAIRS AND LADDERS.
3. ROOF ACCESS TUBE AND TANK ACCESS HATCHES SHALL BE 30" SQUARE.
4. A REMOVABLE ALUMINUM LOUVER SHALL BE INSTALLED AT THE UPPER LANDING FOR ACCESS TO THE EXTERIOR PAINTER RAIL.
5. COORDINATE STAIR DESIGN TO PROVIDE ACCESS TO HEATED ROOM ROOF.
6. LADDER TO UPPER WALKWAY SHALL HAVE STEP OFF PLATFORMS (30' MAX. SPACING AND SAFETY RAIL)

ELECTRICAL:

1. MOUNT BASE LIGHTS 10 FEET ABOVE SLAB ON GRADE.
2. STAIRS AND LADDER LIGHTS SHALL BE AT 25 FEET MAXIMUM SPACING.
3. OBSTRUCTION LIGHT TO BE LOCATED 12 INCHES ABOVE HIGHEST POINT ON TANK, IF NECESSARY.

NO.	REVISIONS	APP'D

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Designed ALA
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TANK DETAILS I

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C9

SHEET 13 OF X

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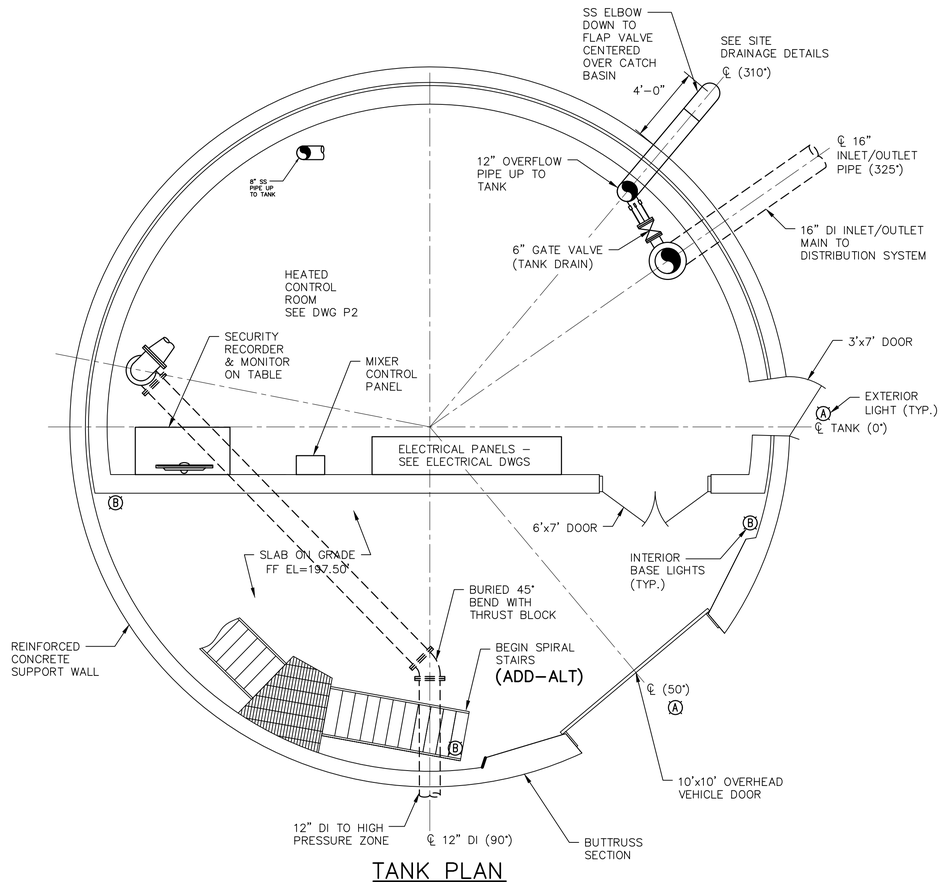
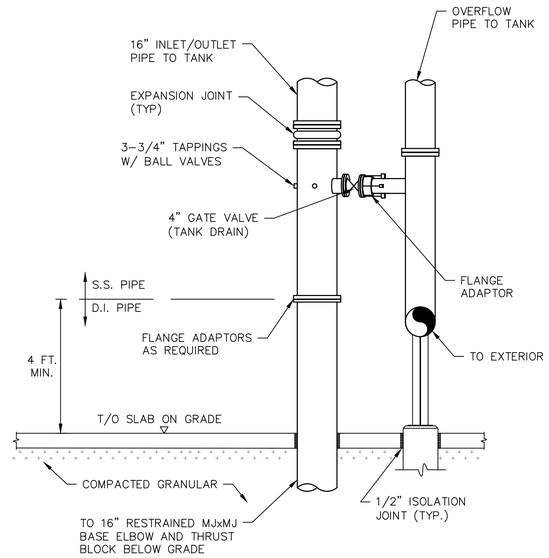


TANK PLAN

SCALE: 1/4"=1'–0"



MECHANICAL PIPING SECTION VIEW

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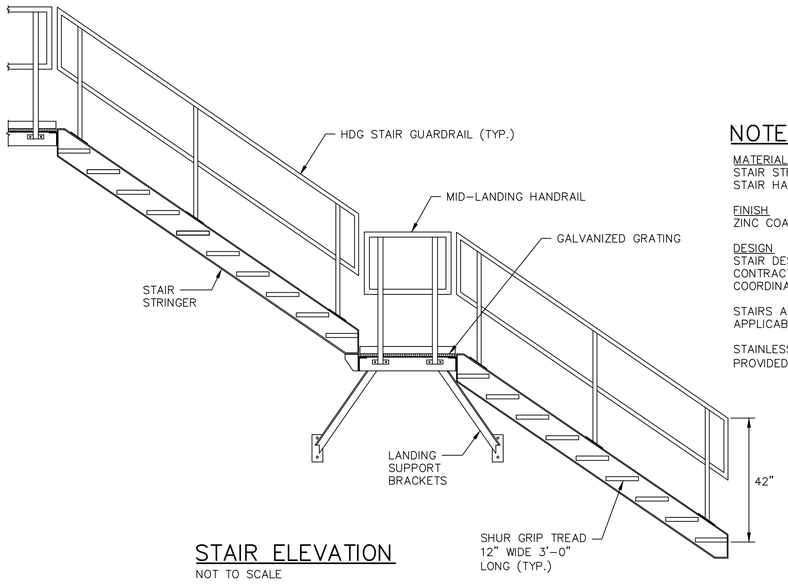


STAIR ELEVATION

NOT TO SCALE

NOTES:

MATERIAL SPECIFICATIONS
STAIR STRINGER – ASTM A36 OR EQUAL
STAIR HANDRAIL – ASTM A53 OR A500 OR EQUAL

FINISH
ZINC COATING – ASTM A123

DESIGN
STAIR DESIGN TO BE COMPLETED BY TANK CONTRACTOR AND LOCATED AS NEEDED TO COORDINATE WITH HEATED ROOM

STAIRS AND GUARDRAILS TO COMPLY WITH APPLICABLE OSHA AND IBC REQUIREMENTS.

STAINLESS STEEL CONTINUOUS HANDRAILS TO BE PROVIDED 34" ABOVE TREND NOSING.

STAIRS SHALL BE **ADD–ALT** IF INCLUDED IN BID SCHEDULE

NOTES:

GENERAL:

1. MAN DOOR – 3' WIDE X 7' HIGH, INSULATED METAL DOOR WITH 16 GA. FRAME AND HEAVY DUTY CLOSURE.
2. VEHICLE DOOR – 10' WIDE X 10' HIGH ROLLING STEEL WITH 22 GA. GALVANIZED SLATS AND MANUAL CHAIN OPERATOR.
3. PROVIDE MONOLITHIC REINFORCED CONCRETE INTERNAL BUTTRESS SECTION ON EACH SIDE OF VEHICLE DOOR. BUTTRESS TO BE MINIMUM 3'–6" WIDE AND 6" THICKER THAN NOMINAL WALL DIMENSION.

SLAB ON GRADE:

1. PROVIDE A 6" THICK 4000 PSI CONCRETE FLOOR ON COMPACTED GRANULAR FILL REINFORCED WITH #4 BARS AT 12" CENTERS EACH WAY.
2. PROVIDE 1/2" ISOLATION JOINT BETWEEN FLOOR AND WALL AND AT ALL FLOOR PENETRATIONS. CAP WITH SELF LEVELING SEALANT.
3. SAWCUT CONTROL JOINTS 1 1/2" DEEP AT 20 FEET MAXIMUM CENTERS.
4. SLOPE SLAB MINIMUM 0.5% TO VEHICLE DOOR FOR DRAINAGE.

MECHANICAL:

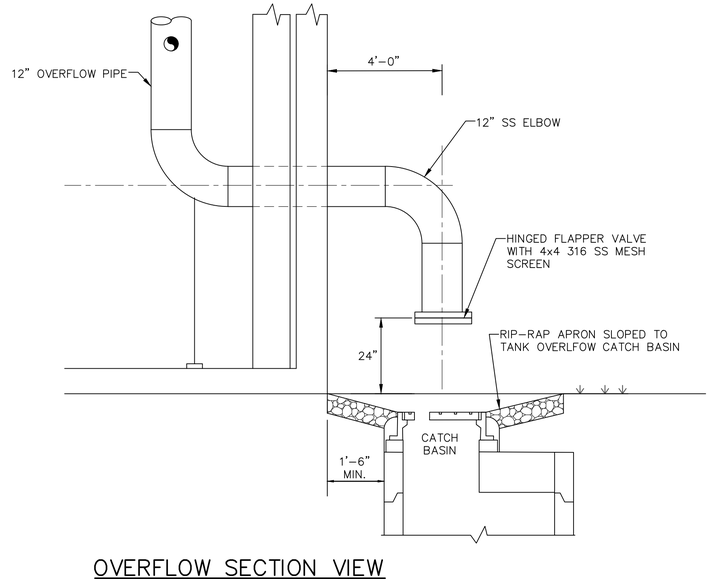
1. PROVIDE EXPANSION JOINT ON INLET/OUTLET RISER OVERFLOW, AND PUMP SUCTION RISER TO ACCOMMODATE MAXIMUM POTENTIAL DIFFERENTIAL MOVEMENT.
2. CONNECT RISER AND OVERFLOW WITH A VALVED LATERAL FOR TANK DRAINING.
3. PROVIDE THRUST RESTRAINT AND SUPPORT AS REQUIRED.
4. INSTALL 3 PC. 3/4" TAPPINGS COMPLETE WITH BRONZE BALL VALVE AND PLUG ON INLET/OUTLET PIPE.
5. ALL INLET/OUTLET PIPES TO BE INSULATED AND CLAD WITH ALUMINUM JACKET WHERE REQUIRED FOR FREEZE PROTECTION. SEE SPECIFICATION.

ELECTRICAL:

1. MOUNT EXTERIOR DOOR LIGHTS 10' ABOVE GRADE.
2. MOUNT INTERIOR PEDESTAL BASE LIGHTS 10' ABOVE SLAB ON GRADE.
3. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

CONTROL ROOM:

1. SEE PROCESS DRAWINGS FOR CONTROL ROOM PLAN AND DETAILS.
2. SEE SPECIFICATIONS FOR HEATED ROOM REQUIREMENTS. TANK VENDOR TO SUBMIT DESIGN FOR HEATED ROOM WALLS & CEILING FOR APPROVAL.



OVERFLOW SECTION VIEW

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Tel. 603–436–6192 Fax. 603–431–4733

TANK DETAILS II

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C10 | SHEET 14 OF X

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NOTES:

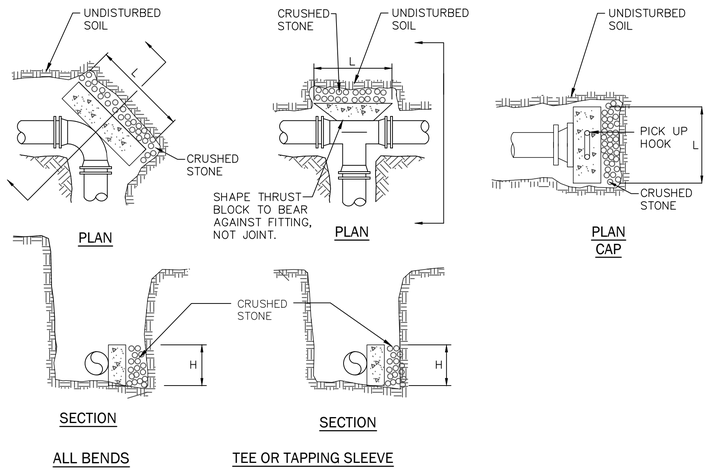
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE.
2. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 100 PSI. IF THE SYSTEM PRESSURE IS ABOVE 100 PSI, INCREASE THE NOTED AREAS PROPORTIONAL TO THE ACTUAL SYSTEM PRESSURE. FOR EXAMPLE, IF THE ACTUAL SYSTEM PRESSURE IS 160 PSI, MULTIPLY THE ABOVE VALUES BY 160%.
3. SELECT THRUST BLOCKS SUCH THAT THE LENGTH (L) OF THE BLOCK IS APPROX. TWICE AS LONG AS THE DEPTH (H).
4. PLACE CRUSHED STONE BEHIND THRUST BLOCKS AGAINST UNDISTURBED SOIL.
5. PLACE THRUST BLOCKS ALONG THE FULL LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
6. PLACE 2 LAYERS OF POLYETHYLENE OR ROOFING PAPER AROUND FITTINGS AS PROTECTION AGAINST DAMAGE FROM CONCRETE BLOCK.
7. PLACE A 12" LONG STEEL HORSESHOE-SHAPED PICKUP HOOK IN ALL PLUG AND CAP THRUST BLOCKS. DIAMETER OF HOOK SHALL BE A MINIMUM OF 5/8".
8. COAT ALL THREADED RODS, NUTS, AND BOLTS WITH BITUMINOUS PAINT.
9. PLACE ANTI-SEIZE LUBRICANT ON ALL BOLTS.
10. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
11. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS. ALL VALVES AND FITTINGS SHALL BE RESTRAINED MJ.

THRUST BLOCK SCHEDULE

MINIMUM BEARING AREA (SQUARE FEET)

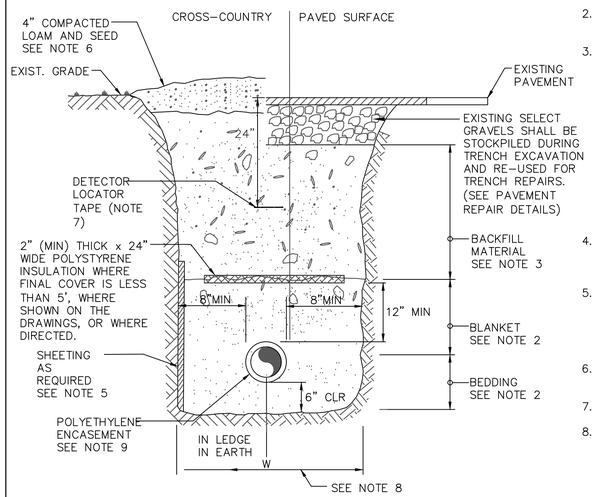
	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Tees, Caps, Plugs, & Tapping Sleeves	1.05	2.32	4.15	6.37	9.15	16.23
90 Degree Bends	1.48	3.29	5.86	9.01	12.93	22.96
45 Degree Bends	0.80	1.78	3.17	4.88	7.00	12.42
22-1/2 Degree Bends	0.41	0.91	1.62	2.49	3.57	6.33
11-1/4 Degree Bends	0.21	0.46	0.81	1.25	1.79	3.18

System Pressure: 100 psi
Safety Factor: 1.5
Soil Bearing Capacity: 2,000 psf



1/C11 PRECAST CONCRETE THRUST BLOCKS AND ANCHORS

NOT TO SCALE



2/C11 TRENCH - WATER

NOT TO SCALE

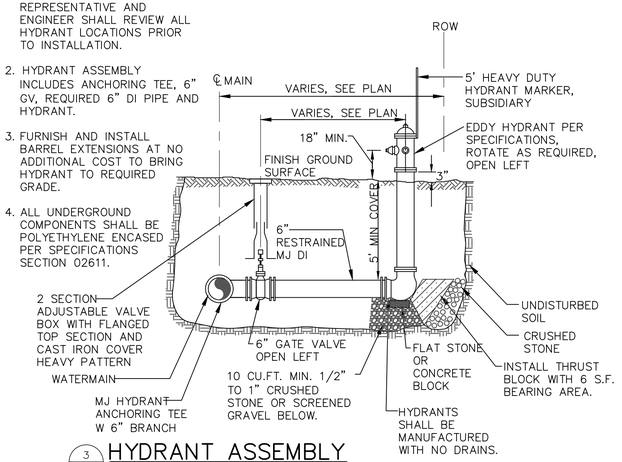
WATER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.
2. BEDDING AND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER (SECTION 02200). COMPACT PER SPECIFICATIONS.
3. BACKFILL MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

   IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF ENGINEER IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE LINE, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.
4. MINIMUM COVER NOT LESS THAN 5 FEET, AND TO AVOID EXISTING AND PROPOSED STRUCTURES. PIPE TO BE DEEPER THAN 5' IF NECESSARY TO AVOID CONFLICTS WITH EXISTING AND PROPOSED DRAINAGE OR OTHER UTILITIES.
5. SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
6. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. LOCATOR TAPE TO BE TERRA TAPE SENTRY LINE 1350 OR EQUAL.
8. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 16 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 16 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)
9. ALL DUCTILE IRON WATER MAIN, FITTINGS AND GATE VALVES SHALL BE ENCASED IN POLYETHYLENE IN ACCORDANCE WITH SPECIFICATIONS SECTION 02611. SHEETS OR TUBES SHALL BE TIGHTLY WRAPPED AROUND THE PIPE & SECURED AT 2' INTERVALS.

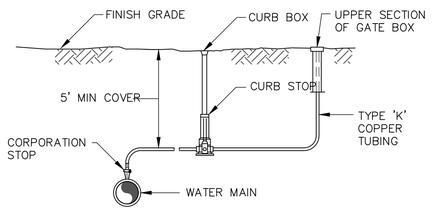
NOTES:

1. CONTRACTOR WITH OWNER'S REPRESENTATIVE AND ENGINEER SHALL REVIEW ALL HYDRANT LOCATIONS PRIOR TO INSTALLATION.
2. HYDRANT ASSEMBLY INCLUDES ANCHORING TEE, 6" GV, REQUIRED 6" DI PIPE AND HYDRANT.
3. FURNISH AND INSTALL BARREL EXTENSIONS AT NO ADDITIONAL COST TO BRING HYDRANT TO REQUIRED GRADE.
4. ALL UNDERGROUND COMPONENTS SHALL BE POLYETHYLENE ENCASED PER SPECIFICATIONS SECTION 02611.



3/C11 HYDRANT ASSEMBLY

NOT TO SCALE

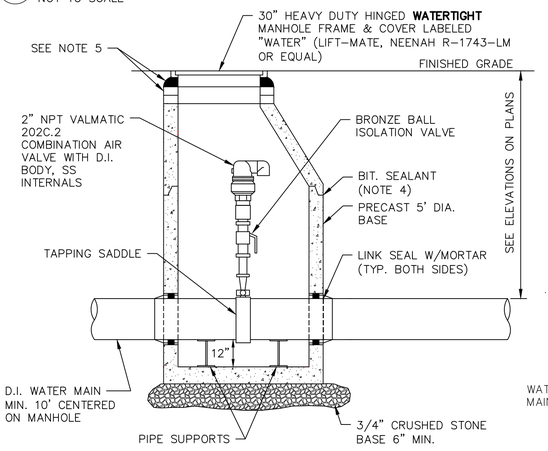


NOTES:

1. DIRECT PIPING AWAY FROM ROADWAY.
2. CHLORINE INJECTION AND MANUAL AIR RELEASE ASSEMBLIES ARE TO BE REMOVED IMMEDIATELY FOLLOWING A SUCCESSFUL BACTERIA TEST. LEAVE THE CORPORATION STOP AND 12" LENGTH OF TUBING (WITH A CRIMPED END) IN PLACE.
3. SIZE AS NOTED ON PLAN OR 1" MINIMUM.
4. INCIDENTAL TO WATER MAIN PAY ITEM.

5/C11 TYPICAL CHLORINE INJECTION TAP AND/OR MANUAL AIR RELEASE ASSEMBLY

NOT TO SCALE

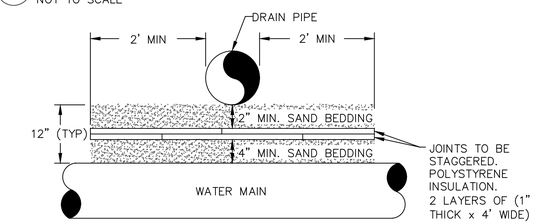


NOTE:

1. TAP AND ISOLATION VALVE TO BE SAME SIZE AS AIR VALVE.
2. ALL PIPE AND FITTINGS IN THE MANHOLE SHALL BE NSF 61 BRASS OR BRONZE UNLESS NOTED.
3. INSTALL WATER MAIN AT DEPTH AND LOCATION OF HIGH POINT AS SHOWN ON THE DRAWINGS UNLESS APPROVED OTHERWISE.
4. BITUMATIC SEALANT SHALL FILL 75% OF JOINT CAVITY.
5. ADJUST TO GRADE WITH A MINIMUM OF 2 COURSES OF BRICK AND FRAME SET ON A FULL BED OF MORTAR (MAX. ADJUSTMENT SHALL BE 12"). PARGE EXTERIOR OF BRICK PRIOR TO BACKFILL.

4/C11 AIR RELEASE MANHOLE

NOT TO SCALE

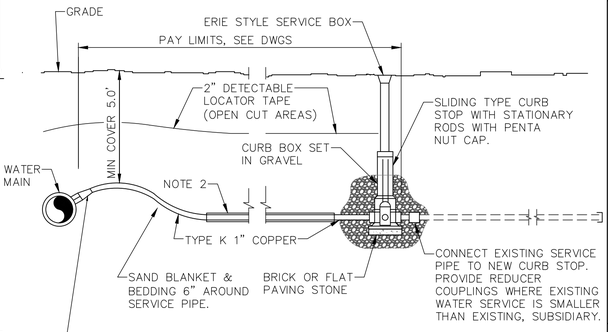


NOTES:

1. INSULATION TO BE USED WHERE PIPE SEPARATION IS LESS THAN 12", SUBSIDIARY.

6/C11 DRAIN PIPE CROSSING DETAIL

NOT TO SCALE



NEW SERVICE CONNECTION NOTES:

1. INSTALL NEW CURB STOP AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER. CONNECT TEMP. WATER SYSTEM TO NEW CURB STOP AFTER DISINFECTION. CONNECT NEW SERVICE LINE TO NEW CURB STOP AFTER PRESSURE TESTING AND DISINFECTION OF NEW MAIN.
2. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF SERVICE TUBING. COUPLINGS ARE NOT ALLOWED BETWEEN CORPORATION AND CURB STOP WITHOUT APPROVAL OF ENGINEER.
3. TAPS TO BE MADE AT APPROX. 2:00 AND 10:00.
4. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
5. PROVIDE 5' MINIMUM COVER, UNLESS DIRECTED OTHERWISE.
6. BLANKET AROUND SERVICE PIPE TO BE SAND ONLY.
7. ALL SERVICES SHALL BE 1" MINIMUM. PROVIDE REDUCER COUPLINGS WHERE EXISTING SERVICES ARE LESS THAN SPECIFIED SIZES. CONFIRM SIZE AND LOCATION WHERE DESIGNATED.
8. PROVIDE SERVICE SADDLES FOR SERVICES EXCEEDING 1" DIA. SADDLES SHALL HAVE DOUBLE STAINLESS STEEL STRAPS.

7/C11 NEW SERVICE CONNECTION

NOT TO SCALE

NO.	REVISIONS	APP'D

ISSUE FOR BIDDING Date - By -
CONSTRUCTION Date - By -
RECORD DRAWING Date - By -

Drawn/Chk RMG
Designed ALA
Checked TGP
Approved
Date 12/17/21
Book No. -
Project No. 2575
Dwg. ID 2575_details
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

WATER DETAILS
COMPOSITE ELEVATED WATER STORAGE TANK
CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C11
SHEET 15 OF X

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EROSION & SEDIMENTATION CONTROL NOTES:

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED:

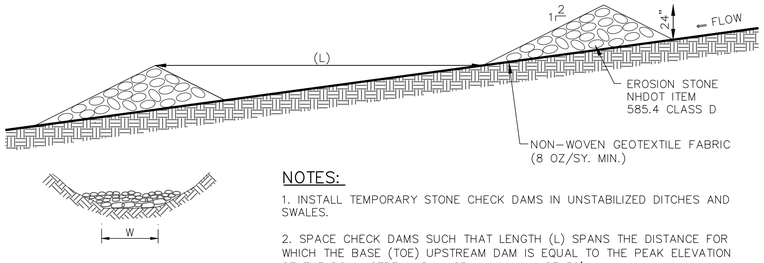
1. EXTENT OF CLEARING IS SHOWN ON THE GRADING PLANS.
2. INITIAL EROSION CONTROL MEASURES TO BE INSTALLED PRIOR TO START OF CONSTRUCTION
   - PROVIDE A STABILIZED CONSTRUCTION ENTRANCE
   - DEFINE CLEARING LIMITS IN FIELD AS SHOWN ON THE DRAWINGS.
   - INSTALL SILT FENCE IN LOCATIONS SHOWN ON THE DRAWINGS (AFTER CLEARING) OR AS DIRECTED BY THE ENGINEER.
3. THE SMALLEST PRACTICABLE AREA OF LAND SHALL BE EXPOSED FOR THE SHORTEST PRACTICAL PERIOD AT ANY GIVEN TIME DURING CONSTRUCTION. EXPOSED AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 48 HOURS OF FINISH GRADING.
4. CLEAR, GRUB AND STRIP TOPSOIL. REMOVE TREES, STUMPS, VEGETATION, ROOTS, OR OTHER OBJECTIONABLE MATERIAL. TOPSOIL WILL BE STOCKPILED. USING PERIMETER SILT FENCE AND SHALL BE SEEDED AND MULCH WEEKLY AS SOIL IS ADDED TO IT. ESTABLISH A STAGING, EQUIPMENT AND STORAGE AREA WITHIN THE LIMITS OF WORK.
5. EXCAVATION AND EARTHWORK SHALL BE CONDUCTED IN A MANNER THAT WILL MINIMIZE EFFECTS OF EROSION THROUGHOUT CONSTRUCTION.
6. CONSTRUCT SITE IMPROVEMENTS AND DRAINAGE STRUCTURES AS SHOWN ON THE DRAWINGS. REFER TO DRAINAGE AND EROSION DETAILS FOR ADDITIONAL INFORMATION.
7. AS DRAINAGE ELEMENTS ARE CONSTRUCTED, INSTALL STONE CHECK DAMS IN DRAINAGE SWALES. SEED AND MULCH AREAS AS REQUIRED BELOW.
8. SEEDING AND MULCHING:
   A. TEMPORARY SEEDING AND MULCHING:
      - TEMPORARILY SEED WITCH ANNUAL RYEGRASS AND MULCH DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR MORE THAN 21 DAYS.
      - TEMPORARILY MULCH DISTURBED AREAS, INCLUDING STOCKPILES, WHICH WILL NOT BE WORKED FOR 7 TO 21 DAYS WITH CHOPPED HAY AND NETTING
      - SLOPES STEEPER THAN 3:1 PROVIDE EROSION CONTROL BLANKET.
   B. PERMANENT SEEDING AND MULCHING:
      - ALL DISTURBED AREAS TO BE VEGETATED SHALL BE COVERED WITH A MINIMUM OF 4 INCHES OF SCREENED TOPSOIL, SEEDED, FERTILIZED AND MULCHED AS REQUIRED TO PROVIDE A PERMANENT, DENSE, HEALTHY GROWTH OF GRASS.
      - FERTILIZER IS NOT PERMITTED WITHIN 400' WELL PROTECTIVE RADIUS.
      - ALL AREAS TO BE TOP SOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 4 INCHES PRIOR TO PLACEMENT OF TOPSOIL.
      - SLOPES FLATTER THAN 3:1 PROVIDE CHOPPED HAY MULCH WITH NETTING.
      - SLOPES EXCEEDING 3:1 PROVIDE EROSION CONTROL BLANKET.
9. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF TWO BALES PER 1,000 SQUARE FEET (OR APPROXIMATELY TWO TONS PER ACRE).
10. TEMPORARY EROSION CONTROL MEASURES ARE TO BE MAINTAINED AND KEPT CLEAN UNTIL ALL EXPOSED AREAS HAVE ESTABLISHED VEGETATION, AT WHICH TIME TEMPORARY MEASURES ARE TO BE REMOVED.
11. THE EROSION CONTROL SPECIFIED AND DETAILED ON THE PLANS SHALL BE CONSIDERED THE MINIMUM REQUIRED AND IS TO BE USED AS A GUIDELINE ONLY. ADDITIONAL MEASURES MAY BE DICTATED BY FIELD CONDITIONS. PROVIDE ADDITIONAL EROSION CONTROL AS REQUIRED BY THE TOWN, STATE OR THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING EROSION CONTROL DURING CONSTRUCTION AND UNTIL PERMANENT VEGETATION IS ESTABLISHED.
12. HAY BALES, SILT FENCING AND EROSION STONE SHALL BE INSTALLED WHERE NECESSARY TO MINIMIZE THE EFFECTS OF EROSION. ALL WORK SHALL BE COMPLETED IN CONFORMANCE WITH THE LATEST EDITION OF "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE" TO PREVENT THE DEGRADATION OF DOWNSTREAM PROPERTIES AND DRAINAGE.
13. DRAINAGE SWALES SHALL BE MONITORED AND MAINTAINED THROUGHOUT OPERATION. SILT SHALL BE PERIODICALLY REMOVED FROM SWALES AS NECESSARY TO PREVENT SOIL MIGRATION.
14. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED: FINISHED COURSE GRAVELS HAVE BEEN INSTALLED; A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED; A MINIMUM OF 3" OF NON-EROSIVE MATERIALS SUCH AS STONE OR RIP RAP HAS BEEN PROPERLY INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
15. WINTER CONSTRUCTION NOTES:
   A. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
   C. AFTER NOVEMBER 15TH, INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT ITEM 304.3).
16. THE CONTRACTOR IS RESPONSIBLE FOR STORMWATER MANAGEMENT DURING ALL PHASES OF CONSTRUCTION. NO WORK SHALL BE PERMITTED IN FLOWING WATER. DIVERSION SHALL BE ACCOMPLISHED BY THE USE OF SAND BAGS, BERMS, TEMPORARY CULVERTS, OR PUMPING. ALL DIVERTED WATER SHALL BE DISCHARGED TO DIRT BAGS, STONE FILL OR OTHER SUITABLE EROSION CONTROL STRUCTURE.
17. THE CONTRACTOR MAY NOT REMOVE EROSION CONTROL MEASURES UNTIL TURF IS VIGOROUSLY ESTABLISHED. ANY DISTURBED AREAS REMAINING AFTER OR AS A RESULT OF THE REMOVAL OF TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LOAMED, SEEDED AND MULCHED.
18. STABILIZE ALL DITCHES AND SWALES PRIOR TO DIRECTING FLOW TO THEM.
19. PERMITS: THE PROPOSED PROJECT IS SUBJECT TO A NPDES CONSTRUCTION GENERAL PERMIT ISSUED BY EPA. NHDES PERSONNEL AND THE ENGINEER MAY MODIFY THE EROSION CONTROL PRACTICES AND THE APPROVED PLAN AT ANY TIME BASED ON SITE CONDITIONS.
20. WETLANDS: WETLANDS AREAS ARE IDENTIFIED ON THE PLANS. THE CONTRACTOR SHALL NOT IMPACT ANY WETLANDS.
21. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

EROSION CONTROL MATERIALS:

1. SILT FENCE: SILT FENCE SHALL INCLUDE PREFABRICATED 48-INCH WOOD POSTS OR APPROVED EQUIVALENT INSTALLED IN ACCORDANCE WITH THE DRAWINGS (OR AS DIRECTED BY THE ENGINEER).
2. RIP RAP: SEE DETAILS
3. MULCH: MULCH SHALL BE DRY MOWINGS OR ACCEPTABLE HERBACEOUS GROWTH, FREE OF NOXIOUS WEED OR WOODY STEMS. NO SALT HAY SHALL BE USED.
4. MULCH NETTING: NETTING USED TO HOLD MULCH IN PLACE SHALL BE AN APPROVED PAPER, TWINE, PLASTIC OR PLASTIC AND WOOD FIBER NETTING.
5. EROSION CONTROL MATTING (BLANKET): MATTING SHALL BE INSTALLED ON ANY SLOPES STEEPER THAN 3(H) TO 1(V). MATTING SHALL BE NORTH AMERICAN GREEN S75 OR APPROVED EQUIVALENT.
6. TEMPORARY SEED MIXTURE (OR EROSION CONTROL SEED MIXTURE): SEE SPECIFICATION SECTION 02935. 7. PERMANENT SEED MIXTURE: SEE SPECIFICATION SECTION 02935.

MAINTENANCE OF EROSION CONTROL STRUCTURES:

1. SILT FENCES ARE TO BE MAINTAINED AND CLEANED UNTIL SLOPES HAVE HEALTHY STAND OF GRASS. WHEN SEDIMENT ACCUMULATION REACHES A DEPTH OF 12" BEHIND THE SILT FENCE, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
2. REPAIR ALL DAMAGES CAUSED BY SOIL EROSION OR CONSTRUCTION EQUIPMENT AT OR BECOME THE END OF EACH WORKING DAY.
3. KEEP ALL DRAINAGE ENTRANCES FREE OF DEBRIS DURING CONSTRUCTION.
4. CLEAN STONE CHECK DAMS AND TEMPORARY DIVERSION DITCHES WHEN THEY BECOME FULL TO 50% OF THEIR ORIGINAL VOLUME OR AS DIRECTED BY THE ENGINEER.
5. VISUAL OBSERVATION OF ALL EROSION CONTROL MEASURES, AND ALL CLEARED AND GRADED AREAS ON THE CONSTRUCTION SITE SHOULD BE PERFORMED ONCE EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM WITH RAINFALL AMOUNTS GRATER THAN 0.5 INCHES. CONTRACTOR TO USE FORMS CONTAINED IN THE STORMWATER POLLUTION PREVENTION PLAN PERMIT AS APPROPRIATE.



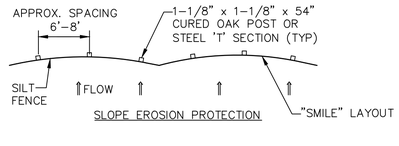
NOTES:

1. INSTALL TEMPORARY STONE CHECK DAMS IN UNSTABILIZED DITCHES AND SWALES.
2. SPACE CHECK DAMS SUCH THAT LENGTH (L) SPANS THE DISTANCE FOR WHICH THE BASE (TOE) UPSTREAM DAM IS EQUAL TO THE PEAK ELEVATION OF THE DOWN STREAM DAM OR A MINIMUM OF 50'.

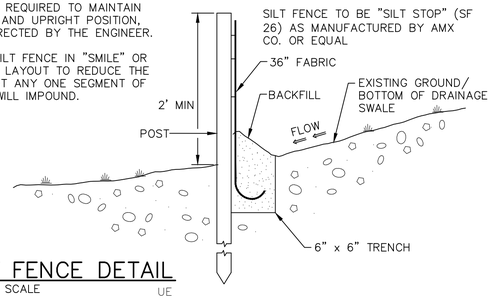
3 / C12 STONE CHECK DAM (EROSION CONTROL)
NOT TO SCALE

SILT FENCE CONSTRUCTION NOTES:

1. SILT FENCE TO BE CONSTRUCTED AT LOCATIONS SHOWN ON THE PLANS BEFORE CONSTRUCTION PROCEEDS. FENCE SHALL BE MAINTAINED THROUGHOUT ENTIRE DURATION OF CONSTRUCTION UNTIL GROUND COVER IS ESTABLISHED.
2. PLACE HAY BALES BEHIND SILT FENCE AS REQUIRED TO MAINTAIN FENCE IN AND UPRIGHT POSITION, OR AS DIRECTED BY THE ENGINEER.
3. INSTALL SILT FENCE IN "SMILE" OR "J-HOOK" LAYOUT TO REDUCE THE AREA THAT ANY ONE SEGMENT OF FENCING WILL IMPOUND.



SLOPE EROSION PROTECTION



1 / C12 SILT FENCE DETAIL
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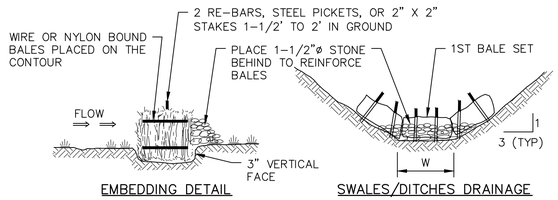
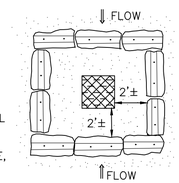


EMBEDDING DETAIL SWALES/DITCHES DRAINAGE

HAY BALE BARRIER CONSTRUCTION SPECIFICATIONS:

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY BUTTED.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 3".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKE OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED, WHEN THEY HAVE SERVED THEIR PURPOSE, SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. BARRIERS SHALL BE SPACED AT 100' ALONG DRAINAGE SWALES/ DITCHES.



CATCH BASIN
EROSION PROTECTION

2 / C12 HAY BALE DETAIL
NOT TO SCALE UE

NO.	REVISIONS	APP'D
	ISSUE FOR BIDDING Date - By -	
	CONSTRUCTION Date - By -	
	RECORD DRAWING Date - By -	

Drawn/Chk RMG
Designed ALA
Checked TGP
Approved
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Scale AS SHOWN

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DEC. 17, 2021
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

EROSION COTNROL DETAILS
COMPOSITE ELEVATED WATER STORAGE TANK
CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C12
SHEET 16 OF X

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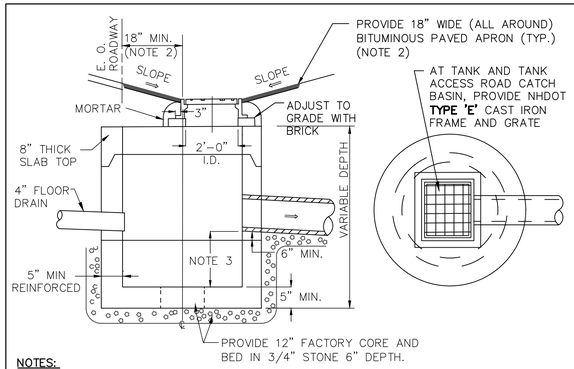
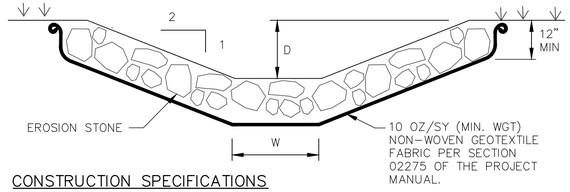


NOTES:

1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H – 20 LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. AT TANK PROVIDE 3' WIDE (ALL AROUND) BY 6" DEEP RIP–RAP APRON.
3. PROVIDE 24" MIN. SUMP FOR SMITH WELL ROAD DRAINAGE CATCH BASIN. PROVIDE 6" SUMP FOR TANK OVERFLOW CATCH BASIN.

1/C13 CATCH BASIN DETAIL @ TANK

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS. REFER TO DWG P–1 FOR D (DEPTH) AND W (WIDTH).

2. EROSION STONE USED FOR THE STABILIZED OUTLET SHALL MEET THE FOLLOWING GRADATION:

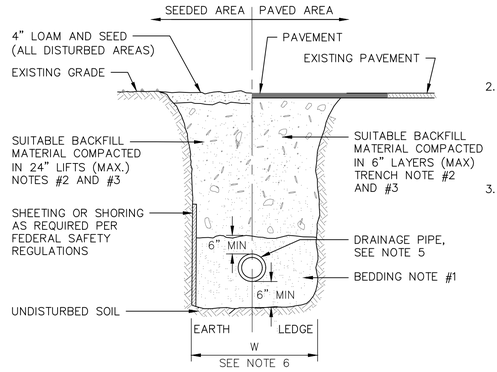
SIZE	PERCENT PASSING BY WEIGHT
18"	100
12"	90–100
4"	0–15

3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PEICE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.

4. THE EROSION STONE MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

4/C13 RIP–RAP CHANNEL

NOT TO SCALE



5/C13 TRENCH DETAIL – STORM DRAIN

NOT TO SCALE

UE

TRENCH NOTES – STORM DRAIN:

1. BEDDING: BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED GRAVEL (NHDOT ITEM 304.3) OR CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS.
2. COMPACTION: ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T99, METHOD C (STANDARD PROCTOR).
3. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6 INCHES IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN SEEDED AREAS, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, ROCKS UNDER 12", FROZEN EARTH OR CLAY, IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE WILL BE PRESERVED.
4. BASE COURSE AND PAVEMENT: SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
5. DRAINAGE PIPE: PIPE MATERIALS SHALL BE EITHER POLYVINYL CHLORIDE (PVC) REINFORCED CONCRETE (RC) OR CORRUGATED POLYETHYLENE (CPE). THE OWNER RESERVES THE RIGHT TO DETERMINE WHICH PIPE MATERIALS ARE USED FOR THE PROJECT.
6. W=MAXIMUM ALLOWABLE TRENCH WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

PLAN

CONSTRUCTION SPECIFICATIONS:

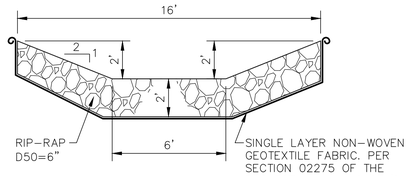
1. CONSTRUCT PLUNGE POOL TO THE WIDTHS AND LENGTHS SHOWN ON THIS DETAIL AND THE PLAN.

2. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS. NOTIFY ENGINEER OF ANY DISCREPANCIES.

3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.

4. EROSION STONE USED FOR THE STABILIZED OUTLET SHALL CONFORM TO THE FOLLOWING GRADATION:

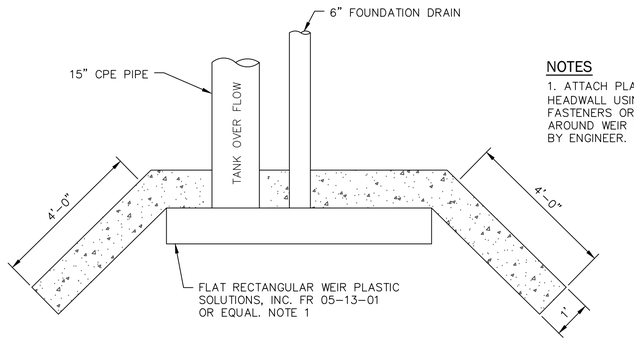
SIZE	PERCENT PASSING BY WEIGHT
18"	100
12"	90–100
4"	0–15



SECTION

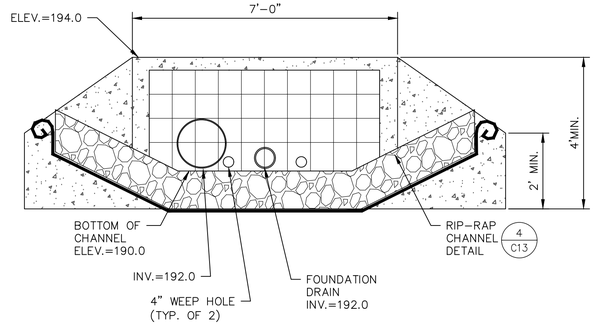
2/C13 PLUNGE POOL DETAIL

SCALE: 1"=4'



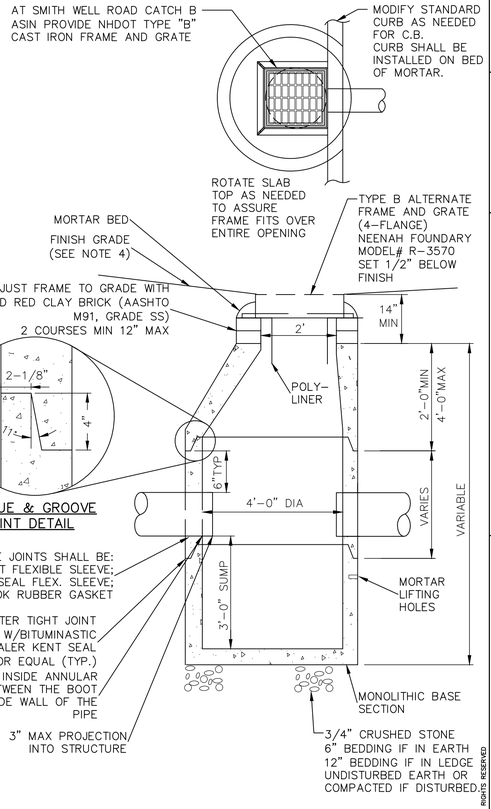
NOTES

1. ATTACH PLASTIC WEIR HEADWALL USING 1 5/8 H FASTENERS OR EQUAL, 3 I AROUND WEIR PERIMETER, BY ENGINEER.



6/C13 TANK OVERFLOW & DRAIN OUTLET HEAD WALL

SCALE: 1/2"=1'–0"



NOTES:

1. REFERENCE GENERAL DRAIN STRUCTURE NOTES, NHDOT SECTION 604, AND SUPPLEMENTAL SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE NHDOT TYPE "B" CAST IRON FRAME AND GRATE.
3. SEPARATE CONSTRUCTION SPECIFICATIONS ARE ATTACHED OR INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD DRAWINGS ARE NOT COMPLETE WITHOUT SPECIFICATIONS.
4. PROVIDE 18" WIDE (ALL AROUND) BITUMINOUS PAVED APRON (TYP.)

7/C13 PRE–CAST REINFORCED CATCH BASIN @ SMITH WELL ROAD

NOT TO SCALE

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	CONSTRUCTION Date –	By –
	RECORD DRAWING Date –	By –

Drawn/Chk. RMG
Designed ALA
Checked TGP
Approved
Date 12/17/21
Book No. –
Project No. 2575
Dwg. ID 2575_details
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–6192 Fax. 603–431–4733

DRAINAGE DETAILS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C13

SHEET 17 OF X

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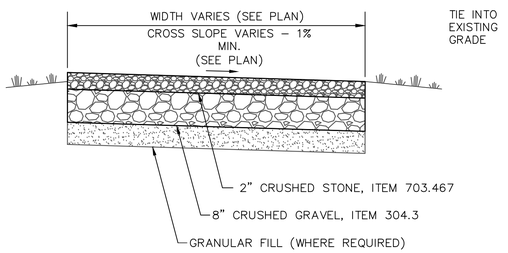
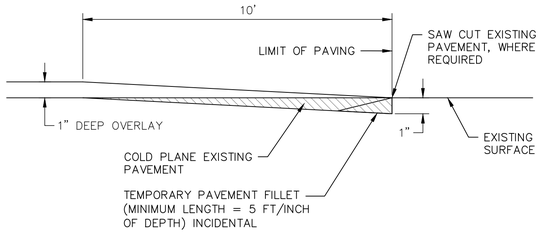


TYPICAL GRAVEL DRIVE AND ACCESS AREA SECTION AROUND THE TANK PEDESTAL

2/C14 NOT TO SCALE

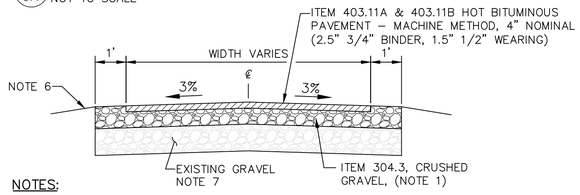


NOTES:

THE LENGTH OF THE TAPER MAY BE ADJUSTED AS ORDERED TO PROVIDE FOR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

OVERLAY PAVEMENT MATCH @ GLENWOOD AVE.

4/C14 NOT TO SCALE

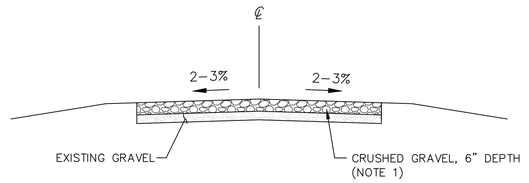


NOTES:

1. INSTALL 4" MIN. CRUSHED GRAVEL OVER EXISTING 8" GRAVEL BASE, STA. 1+10 TO STA 3+00, GRADE & COMPACT, PAY AS ITEM 304.3.
2. INTENT IS TO PAVE TANK ACCESS ROAD FROM STA 1+11 TO STA 3+34 AND TO TANK PEDESTAL.
3. UNIFORMLY GRADE ROADWAY AS SHOWN ON PLANS UNLESS DIRECTED OTHERWISE. PROVIDE A POSITIVE GRADIENT AWAY FROM THE PAVEMENT SO THAT THE PAVED SURFACE IS FREE DRAINING. TYPICAL ROAD CROSS SLOPE=3% UNLESS OTHERWISE DIRECTED.
4. LOAM, SEED & MULCH ROADSIDE SLOPES. TURF ESTABLISHMENT IS SUBSIDIARY AND WILL NOT BE MEASURED FOR PAYMENT. THE CONTRACTOR SHALL LIMIT DISTURBANCE TO THE EXTENT POSSIBLE. ADDITIONAL DISTURBANCE MUST FIRST BE COORDINATED WITH THE ENGINEER FOR APPROVAL.
5. ALL SEAMS AND JOINTS SHALL BE RAKED AND LUTED PRIOR TO COMPACTION AND ROLLING.
6. FINE GRADE, LOAM, SEED & MULCH SHOULDERS TO BLEND WITH EXISTING TERRAIN (BOTH SIDES), SUBSIDIARY.
7. EXISTING GRAVEL ROAD BASE OR INSTALL ITEM 304.2 12" DEPTH AS DIRECTED.

TANK ACCESS ROAD PAVEMENT AND PAVED AREA AROUND TANK PEDESTAL

6/C14 NOT TO SCALE

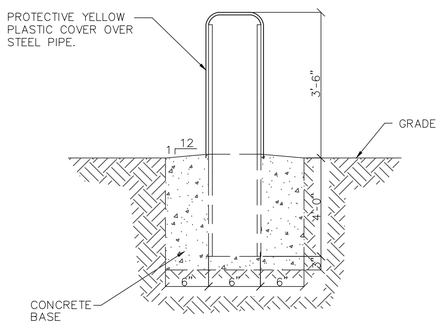


NOTES:

1. INSTALL CRUSHED GRAVEL OVER EXISTING GRAVEL BASE AS SHOWN AND WHERE DIRECTED, GRADE & COMPACT, PAY AS ITEM 304.3.
2. INTENT IS TO RESTORE SMITH WELL ROAD FROM STA 9+00 TO STA 22+40.
3. SEE TRENCH WATER DETAIL 2/C11
4. CONTRACTOR SHALL SEPARATE EXISTING GRAVELS, FINAL RESTORATION 6".
5. REPLACE CONTAMINATED GRAVEL AT CONTRACTORS EXPENSE.

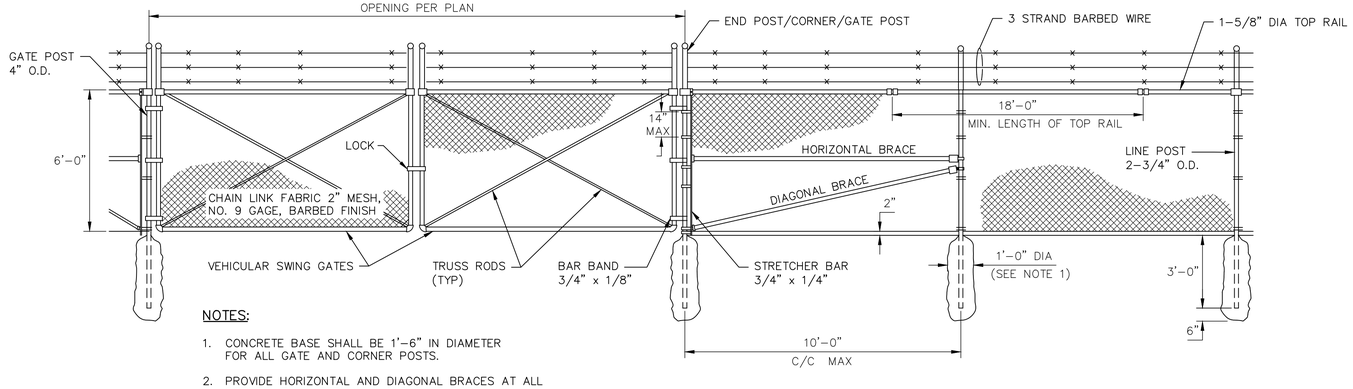
SMITH WELL GRAVEL ROAD RESTORATION

5/C14 NOT TO SCALE



STEEL BOLLARD DETAIL

7/C14 NOT TO SCALE



NOTES:

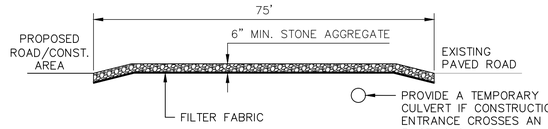
1. CONCRETE BASE SHALL BE 1'–6" IN DIAMETER FOR ALL GATE AND CORNER POSTS.
2. PROVIDE HORIZONTAL AND DIAGONAL BRACES AT ALL CORNER, PULL, TERMINAL, AND GATE POST.
3. POSTS SHALL BE SPACED AT A MAXIMUM OF 10'–0".

CHAIN LINK FENCE & GATE DETAIL

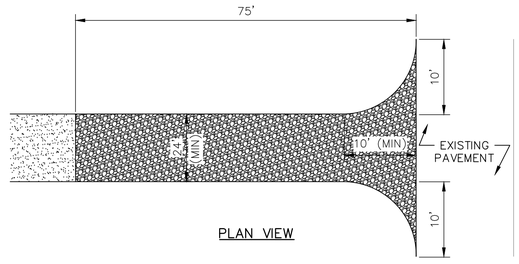
3/C14 NOT TO SCALE

STABILIZED CONSTRUCTION ENTRANCE SPECIFICATIONS:

1. THE TEMPORARY STABILIZED CONSTRUCTION ENTRANCE SHALL CONSIST OF PLACING 1"–2" STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT, AT THE LOCATION WHERE CONSTRUCTION VEHICLES EXIT THE SITE IN ORDER TO MINIMIZE MIGRATION OF DIRT ONTO THE ADJOINING PAVED ROADS.
2. STONE SHALL BE 1" TO 2" FRACTURED ROCK.
3. STONE SHALL BE PLACED OVER GEOTEXTILE FABRIC.
4. THE MINIMUM STONE DEPTH SHALL BE 6 INCHES.
5. THE MIN. DIMENSIONS OF THE STABILIZED ENTRANCE SHALL BE 24 FEET WIDE BY 75 FEET LONG.
6. SURFACE WATER RUNOFF FROM THE PAVED ROAD SHALL NOT BE PERMITTED TO COME IN CONTACT WITH THE STONE ENTRANCE. USE A CROSS CULVERT UNDER THE NEW ENTRANCE OR CONSTRUCT A BERM ALONG THE EDGE OF EXISTING PAVEMENT TO DIVERT WATER AWAY FROM THE STONE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC ROADWAYS. TOP DRESS OR REPLACE STONE AS NEEDED. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAYS SHALL BE IMMEDIATELY REMOVED.
8. THE ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE CONDITIONS WARRANT ITS REMOVAL.



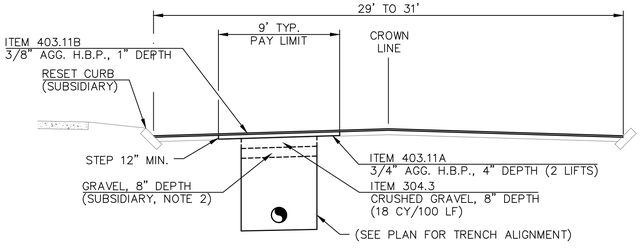
PROFILE VIEW



PLAN VIEW

STABILIZED CONSTRUCTION ENTRANCE

8/C14 NOT TO SCALE



NOTES:

1. TEMPORARY PAVEMENT SHALL BE INSTALLED WITHIN 24 HOURS FOLLOWING PIPE INSTALLATIONS. PERMANENT ROAD REPAIRS WILL PROCEED FOLLOWING EXPOSURE TO TRAFFIC LOADING AND COMPLETION OF PIPE INSTALLATION.
2. CONTRACTOR MAY SALVAGE & INCORPORATE GRAVEL EXCAVATED BENEATH THE PAVEMENT FOR BACKFILL COMPACT IN 8" LIFTS.
3. MILL TO CROWN AT CONSTRUCTION BASELINE.
4. THE EXISTING CROSS SLOPE: THE INTENT IS TO MILL ROADWAY TO 3% CROSS SLOPE, FOLLOWING ONE FREEZE–THAW CYCLE. REVIEW MILLING LIMITS AND CROSS SLOPES WITH ENGINEER AND OWNER'S REPRESENTATIVE PRIOR TO THE TRENCH REPAIR.

PERMANENT ROAD REPAIRS WEBB PLACE FROM STA 0+39 TO 1+11 AND GLENWOOD AVE

9/C14 NOT TO SCALE

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RECORD DRAWING	By –	Date –		

Drawn/Chk RMG
Designed ALA
Checked TGP
Approved
Date 12/17/21
Book No. –
Project No. 2575
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DEC. 17, 2021
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

ROADWAY AND SITE DETAILS I
COMPOSITE ELEVATED WATER STORAGE TANK
CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C14
SHEET 18 OF X

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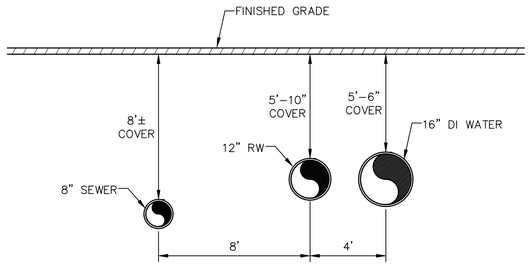


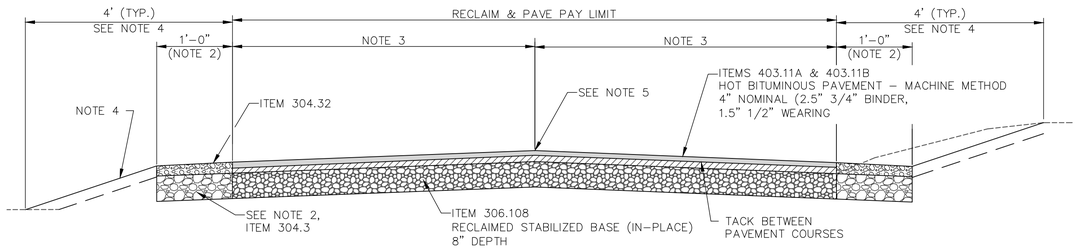
NOTES:

1. SEWER MAIN DEPTH PER PROFILE.
2. CONTRACTOR MAY INSTALL 12" & 16" WATER MAINS IN SAME TRENCH.
3. 16" FINISH WATER MAIN & 8" SEWER MAIN SHALL MAINTAIN 10' SEPARATION MIN.
4. REVIEW FINAL ALIGNMENT WITH OWNER & ENGINEER IN THE FIELD.

TYPICAL ALIGNMENT OF WATER & SEWER ON SMITH WELL ROAD

1 / C15

NOT TO SCALE



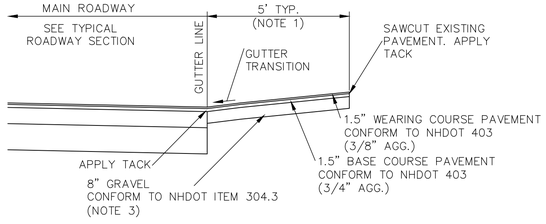
ROAD RE-CONSTRUCTION NOTES:

1. SAWCUT DRIVEWAYS AND CONSTRUCT DRIVEWAY APRON FOLLOWING CONSTRUCTION OF PAVEMENT BINDER COURSE (SEE DRIVEWAY APRON DETAILS, THIS DRAWING).
2. SPREAD RECLAIMED ASPHALT PRODUCT 1 FOOT BEYOND EDGE OF PAVEMENT & GRADE FLUSH WITH PAVEMENT, SUBSIDIARY. RECLAIM MAY BE USED FOR SHOULDER MATERIAL (SUBSIDIARY) WHERE ROAD IS BEING WIDENED (STA. 22+50 TO STA 25+66) ADDITIONAL CRUSHED GRAVEL FOR ROAD BASE SHALL BE PAID UNDER ITEM 304.3. ADDITIONAL CRUSHED GRAVEL FOR SHOULDER LEVELING ITEM 304.32.
3. UNIFORMLY GRADE ROADWAY AS SHOWN ON PLANS UNLESS DIRECTED OTHERWISE. PROVIDE A POSITIVE GRADIENT AWAY FROM THE PAVEMENT SO THAT THE PAVED SURFACE IS FREE DRAINING. TYPICAL ROAD CROSS SLOPE=3% UNLESS OTHERWISE DIRECTED.
   9 FT LANES FROM STA 22+50 TO STA 25+37.
   11 FT LANES FROM STA 25+37 TO GLENWOOD DRIVE
4. LOAM, SEED & MULCH ROADSIDE SLOPES. TURF ESTABLISHMENT IS SUBSIDIARY AND WILL NOT BE MEASURED FOR PAYMENT. THE CONTRACTOR SHALL LIMIT DISTURBANCE TO THE EXTENT POSSIBLE. ADDITIONAL DISTURBANCE MUST FIRST BE COORDINATED WITH THE ENGINEER FOR APPROVAL. CONFIRM SEED MIX W/ OWNER & ENGINEER.
5. ALL SEAMS AND JOINTS SHALL BE RAKED AND LUTED PRIOR TO COMPACTION AND ROLLING.

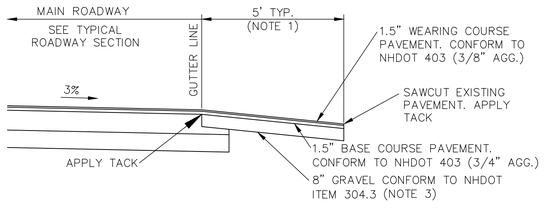
TYPICAL ROADWAY SECTION - SMITH WELL ROAD

3 / C15

NOT TO SCALE



DRIVEWAY APRON ABOVE ROAD GRADE



DRIVEWAY APRON BELOW ROAD GRADE

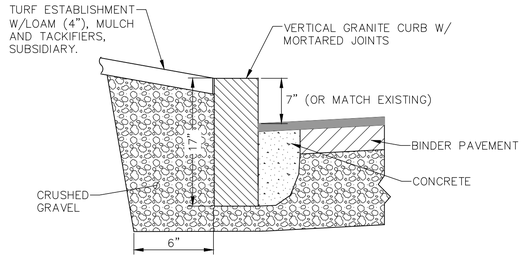
NOTES:

1. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, PAVED APRONS SHALL EXTEND 5' BEYOND THE ROADWAY. ANY DIMENSION GREATER THAN 5 FEET SHALL FIRST BE COORDINATED WITH THE OWNERS REPRESENTATIVE.
2. TACK COAT SHALL BE APPLIED TO THE JOINTS AND BETWEEN PAVEMENT COURSES AND SHALL BE SUBSIDIARY TO UNIT ITEM COST.
3. REMOVAL OF PAVEMENT AND UNDERLYING MATERIAL FOR CONSTRUCTION OF DRIVEWAY APRONS SHALL BE SUBSIDIARY. WHERE EXISTING DRIVEWAY GRAVELS EXIST, GRAVEL REPLACEMENT WILL NOT BE REQUIRED.
4. ALL PAVEMENT MATCHES AT DRIVEWAY SHALL BE SAWCUT & KEYED FOR SMOOTH TRANSITION (SUBSIDIARY).

TYPICAL DRIVEWAY APRON PROFILE DETAILS

4 / C15

NOT TO SCALE

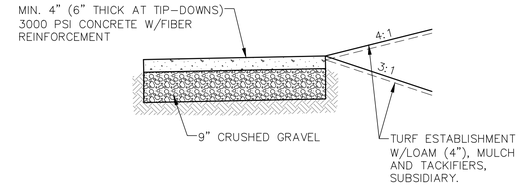


RADUIS	MAX LENGTH
<21'	USE CURVED CURB
12'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
OVER 60'	10'

CITY OF DOVER-STANDARD CURBING DETAILS VERTICAL GRANITE CURB

5 / C15

NOT TO SCALE



NOTES:

1. MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS SPECIFICATIONS
2. SIDEWALK AND DRIVEWAY WIDTHS SHALL BE EQUAL TO EXISTING WIDTHS OR AS APPROVED AND SHALL MATCH EXISTING ELEVATIONS.
3. BASE FOR THE SIDEWALKS AND DRIVEWAYS SHALL BE 9 INCHES OF CRUSHED GRAVEL.
4. DETECTABLE WARNING STRIPS SHALL BE CAST IRON.

CITY OF DOVER-STANDARD SIDEWALK DETAIL

6 / C15

NOT TO SCALE

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DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

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ROADWAY AND SITE DETAILS II

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C15

SHEET 19 OF X

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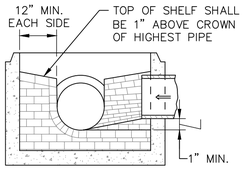
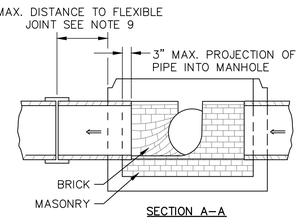
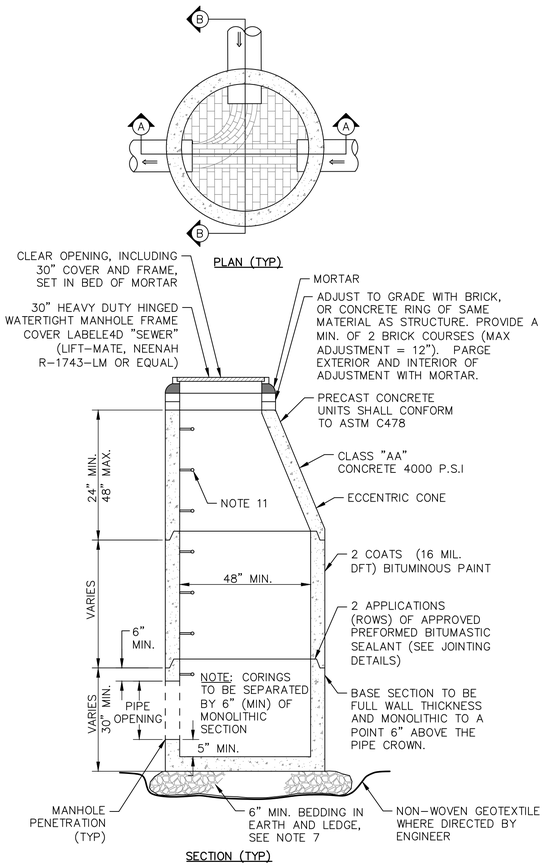


SECTION B–B



SECTION A–A



SECTION (TYP)

STANDARD MANHOLE NOTES:

1. IT IS THE INTENTION: THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH, AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES) FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H–20 LOADING) WITHOUT FAILURE, AND TO PROVIDE A WATER TIGHT SEAL CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE.
2. BARRELS AND CONE SECTIONS: SHALL BE PRECAST REINFORCED CONCRETE.
3. PRECAST CONCRETE: BARREL SECTIONS, CONES, GRADE ADJUSTMENT RING AND BASES SHALL CONFORM TO ASTM C478.
4. VACUUM TEST: SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST. REPAIRS SHALL BE MADE TO THE OUTSIDE OF THE STRUCTURE.
5. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1" ABOVE THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
6. FRAMES AND COVERS: PROVIDE HINGED MANHOLE COVERS, SEE SPECIFICATIONS. MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN, MANUFACTURED IN USA, AND PROVIDE A 30–INCH CLEAR OPENING. A 3–INCH LETTER "S" FOR SEWERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
7. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.

PERCENT PASSING	SCREEN SIZE
100%	1 INCH
90 –100%	3/4 INCH
20 – 55%	3/8 INCH
0 – 10%	#4 SIEVE
0 – 5%	#8 SIEVE

   WHERE ORDERED BY THE ENGINEER, FOR STRUCTURES UNDER 6' OR TO STABILIZE THE BASE, SCREENED GRAVEL OR 1–1/2 INCH CRUSHED STONE MAY BE USED.
8. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS MAY BE USED.
9. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:

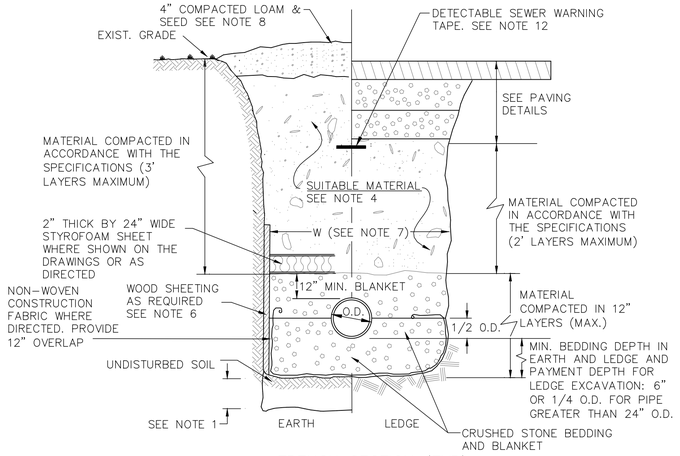
   DI PIPE – NONE REQUIRED
   PVC (ASTM 3034) – UP THROUGH 15" DIA. – NONE REQUIRED
   PVC (ASTM F679) – LARGER THAN 15" DIA. – 48" TO 60"
   RCP PIPE – 48"
10. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.
11. MANHOLE LADDER:

    ALIGN LADDER RUNGS ALONG VERTICAL/PLUM WALL OF MANHOLE, SEE SPECIFICATIONS.

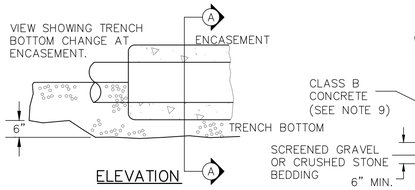
1 C16 SEWER MANHOLE DETAILS
NOT TO SCALE

GRAVITY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.
2. BEDDING AND BLANKET: SEE NOTE 7 OF STANDARD MANHOLE NOTES. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1–1/2 INCH SHALL BE USED.
3. NOT USED
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.
5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
6. WOOD SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID–DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
7. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED COMTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 520, NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
10. CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
11. GRAVEL DRIVEWAY AND SHOULDER RESTORATION: CRUSHED GRAVEL IN DRIVEWAYS AND ROAD SHOULDERS SHALL MATCH EXISTING WITH A MINIMUM OF 12". GRAVEL REPLACEMENT SHALL BE INCIDENTAL TO SEWER CONSTRUCTION AND WILL NOT BE MEASURED FOR PAYMENT.
12. LOCATOR TAPE SHALL BE TERRA TAPE SENTRY LINE 1350, OR EQUAL.

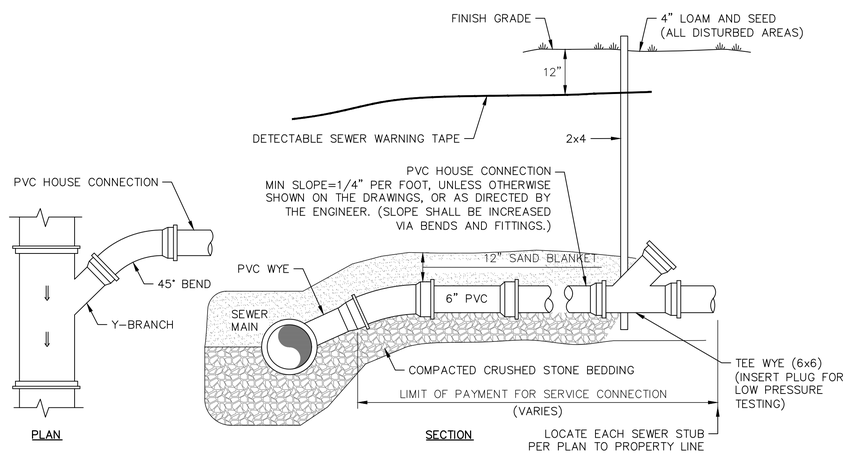


TRENCH SECTION (TYP)



TRENCH SECTION WITH CONCRETE ENCASEMENT

2 C16 TRENCH – GRAVITY SEWER
NOT TO SCALE



4 C16 SEWER SERVICE REPAIR, RE–ALIGNMENT & RE–CONNECTION
NOT TO SCALE

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Drawn/Chk RMG
Designed ALA
Checked TGP
Approved
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–6192 Fax. 603–431–4733

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SEWER DETAILS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
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PIPE AND FITTING SYMBOLS

(SEE GENERAL ABBREVIATIONS FOR PIPE MATERIAL IDENTIFICATION)

1. ALL PIPE SIZES ARE SHOWN AS NOMINAL SIZES
2. PIPE SIZES 2 1/2" AND LESS ARE SHOWN AS SINGLE LINES
3. PIPE SIZES 3" AND ABOVE ARE ARE SHOWN AS DOUBLE LINES

DOUBLE LINE	SINGLE LINE	
		EXISTING PIPE
		NEW PIPE
		FLANGED JOINT
		MECHANICAL JOINT
		SOLVENT WELDED JOINT
		PUSH-ON JOINT
		FLANGED COUPLING ADAPTER
		ELBOW 90
		ELBOW 90 UP
		ELBOW 90 DOWN
		ELBOW 45
		ELBOW 45 UP
		ELBOW 45 DOWN
		TEE
		TEE UP
		TEE DOWN
		WYE
		WYE UP
		WYE DOWN
		CROSS
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		UNION
		CAP (BLIND FLANGE)
		ANCHOR

ABBREVIATIONS

AL	ALUMINUM
AR	AIR RELEASE
BV	BUTTERFLY VALVE
CI	CAST IRON
CU	COPPER
CV	CONTROL VALVE
DI	DUCTILE IRON
EQ	EQUAL
FD	FLOOR DRAIN
FEXT	FIRE EXTINGUISHER
FL	FLANGED
FRP	FIBERGLASS REINFORCED PLASTIC
H	HIGH
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
LG	LONG
LP	LOW POINT
MJ	MECHANICAL JOINT
MPZ	MAIN PRESSURE ZONE
NEPZ	NORTH END PRESSURE ZONE
O.C.	ON CENTER
PE	PLAIN END
PVC	POLYVINYL CHLORIDE
R	RISER
R&D	REMOVE & DISPOSE
R&R	REMOVE & RELOCATE
RES	RESERVED
R.O.	ROUGH OPENING
SCH	SCHEDULE
SM	STATIC MIXER
SP	SPACE
SQ	SQUARE
SS	STAINLESS STEEL
STL	STEEL
T	TREAD
TU	TURBIDIMETER

FLOW STREAM IDENTIFICATION

BW	BACKWASH
CHEM	CHEMICAL FEED SYSTEMS YARD PIPING CONDUIT/SLEEVES
CLS	CHLORINE SOLUTION LINE
CS	CAUSTIC SODA (SODIUM HYDROXIDE)
CW	POTABLE COLD WATER (INTERIOR ONLY)
D	DRAIN
F	FILTRATE
FB	FILTER BACKWASH
FC	FLUSHING CONNECTIONS
FTW	FILTER TO WASTE
FW	FINISHED WATER
HW	POTABLE HOT WATER (INTERIOR ONLY)
INF	INFLUENT
LPA	LOW PRESSURE AIR
LPD	LOWER PRESSURE DIFFUSER LINES
PE	PLANT EFFLUENT
PF	PRE-FILTER (AFTER CHLORINE ADDITION)
PP	BLENDED PHOSPHATE
PW	PROCESS WASTE (FILTRATE)
RW	RAW WATER
S	SANITARY SEWER
SA	SAMPLE LINE
SD	SUMP PUMP DISCHARGE
SH	SODIUM HYPOCHLORITE
SW	SEAL WATER
SWS	SERVICE WATER SUPPLY
TD	TANK DRAIN
V	VENT (INTERIOR VENTS ONLY)

VALVE SYMBOLS

(SEE GENERAL ABBREVIATIONS FOR PIPE MATERIAL IDENTIFICATION)

DOUBLE LINE	SINGLE LINE	
		AIR/VACUUM RELEASE
		BALL
		(VEE) BALL
		BUTTERFLY
		(BALL) CHECK
(FLANGED - TOP&SIDE)		(SWING) CHECK
		DIAPHRAGM
		FLUSHING CONNECTION
(FLANGED - SIDE) (FLANGED - TOP)		GATE
	M	MOTOR OPERATED VALVE
	HO	(HAND OPERATED) GATE
	K	(KNIFE) GATE
		GLOBE
		HOSE BIBB
		MULTI-PORT
		NEEDLE
		PINCH
		PINCH TYPE CHECK VALVE
(FLANGED - TOP&SIDE)		(ECCENTRIC) PLUG
		PRESSURE CONTROL
PRV		PRESSURE RELIEF
		QUICK CONNECTION
	S	SAMPLE
	S	SOLENOID OPERATED VALVE
	V_{104}	VALVE TYPE DESIGNATION (SEE SPECIFICATION 15100)
(FLANGED - SIDE) (FLANGED - TOP)		WATER OPERATED CONTROL VALVE

GATE SYMBOLS

ELEV	PLAN	
		FLAP
		SLIDE
		SLUICE

PUMP SYMBOLS

CENTRIFUGAL PUMP	xx
CHEMICAL FEED PUMP	
COMPRESSOR	
DIAPHRAGM PUMP	xx
PISTON PUMP	xx
PROGRESSING CAVITY PUMP	xx
SUBMERSIBLE SUMP PUMP	xx
SAMPLE PUMP	
POSITIVE DISPLACEMENT BLOWERS	
TRANSFER PUMP	

GENERAL NOTES

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. FINAL PIPE SUPPORT REQUIREMENTS SHALL BE DETERMINED IN THE FIELD AND REVIEWED BY THE ENGINEER PRIOR TO INSTALLATION. MAXIMUM SPACING SHALL BE 10' AND AT ALL BENDS AND TEES. PIPE ANCHORS TRUSS RODS AND SUPPORTS TO BE INSTALLED PER SPECIFICATION 15094.
4. ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES OR SLEEVES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO EARTH. SMALL (LESS THAN 3") WALL PENETRATIONS ARE NOT SHOWN.
5. SYMBOLS, LEGENDS, AND PIPE IDENTIFICATION SHOWN UNDER THE PROCESS DISCIPLINE SHALL ALSO BE FOLLOWED THROUGHOUT OTHER DISCIPLINES IN THE PROJECT PLANS. NOT ALL OF THE VARIOUS PIPING COMPONENTS SHOWN IN THE LEGEND ARE NECESSARILY USED IN THIS PROJECT.
6. PROVIDE UNIONS TO FACILITATE CONVENIENT REMOVAL OF VALVES, PIPING, AND MECHANICAL EQUIPMENT FOR SMALL DIAMETER CHEMICAL FEED AND WATER PIPING SYSTEMS.
7. SIZES OF EQUIPMENT FOUNDATIONS INDICATED ON THE DRAWINGS ARE APPROXIMATE. EXACT DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FOR THE EQUIPMENT FURNISHED. ALL FLOOR MOUNTED EQUIPMENT SHALL BE SET ON CONCRETE PADS CONFORMING TO DETAILS SHOWN ON THE STRUCTURAL AND/OR PROCESS DRAWINGS.
8. ALL MATERIALS USED IN THE PROJECT SHALL BE NEW. ALL EXISTING VALVES, PIPE, AND EQUIPMENT SHOWN TO BE DEMO'D SHALL BE DISPOSED OF BY THE CONTRACTOR OR SALVAGED TO DOVER COMMUNITY SERVICES PER THE DEMOLITION DRAWINGS.
9. CONTRACTOR TO USE SHOP DRAWINGS FOR ACTUAL DIMENSIONS OF EQUIPMENT AND ADJUST LAYOUT ACCORDINGLY.
10. CONTRACTOR SHALL FURNISH SHOP DRAWINGS OF PIPE LAYOUTS PRIOR TO INSTALLATION.
11. ALL PVC PIPE SHALL BE SCHEDULE 80 WITH 316 S.S. BOLTS WHERE SHOWN AS FLANGED.
12. ALL PIPE PENETRATIONS THROUGH WALLS SHALL BE SEALED WITH MECHANICAL RUBBER TYPE WALL SEALS.
13. ALL CONNECTIONS BETWEEN DISSIMILAR METALS SHALL BE GASKETED WITH NEOPRENE OR OTHER APPROVED METHOD.
14. DUCTILE IRON PIPE TO HAVE DUCTILE IRON FITTINGS.
15. ALL INTERIOR PIPING SHALL BE FLANGED DUCTILE IRON UNLESS NOTED OTHERWISE.

ANNOTATION SYMBOLS

- A / P-7 — SECTION CUT NUMBER ID; SHEET UPON WHICH SECTION APPEARS
- 1 / P-8 — DETAIL NUMBER ID; SHEET UPON WHICH DETAIL APPEARS
- 8 — KEY NOTE

LEGEND

- DEMOLITION
- STATIC MIXER
- PRESSURE TRANSDUCER
- MAGNETIC FLOW METER
- PRESSURE GAUGE

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	CONSTRUCTION	By - Date -
	RECORD DRAWING	By - Date -

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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PROCESS PIPING LEGEND & NOTES

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO P1

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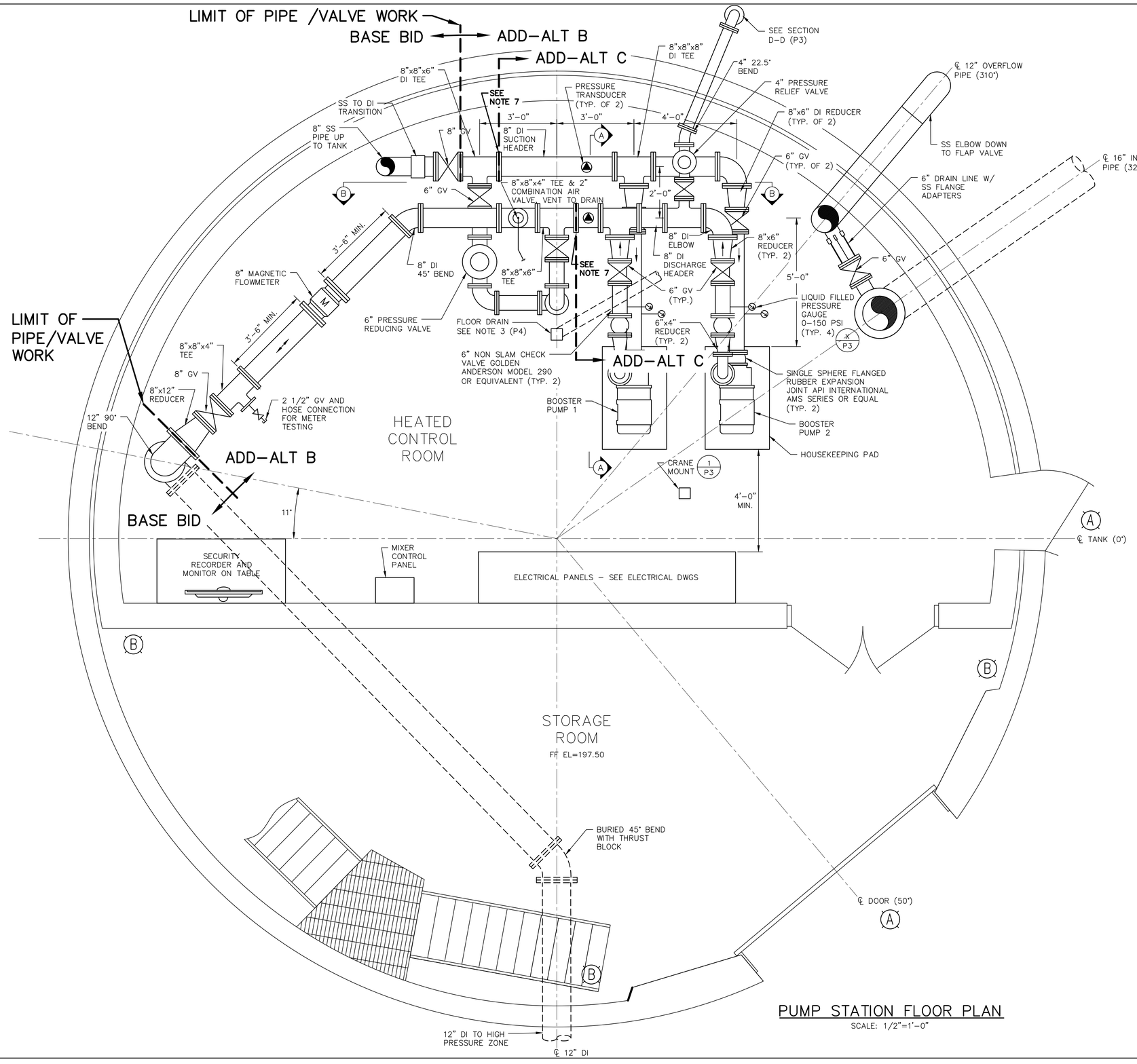

PUMP STATION FLOOR PLAN

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

NOTES:

1. THREADED FLANGE ADAPTER, BALL VALVE, AND 2 1/2" HOSE COUPLING. ORIENT IN FIELD PER OWNER FOR ACCESS FOR FLOWMETER TESTING.
2. 1/2" TAP, BALL VALVE AND 0-150 PSI PRESSURE GAUGE. ORIENT IN FIELD PER ENGINEER.
3. INSTALL MAGNETIC FLOW METERS W/MIN. 5 PIPE DIAMETERS STRAIGHT RUN UPSTREAM AND DOWNSTREAM, OR AS RECOMMENDED BY MANUFACTURER, FOR FLOW BOTH DIRECTIONS.
4. CONTRACTOR RESPONSIBLE TO VERIFY DIMENSIONS AND ELEVATIONS IN FIELD. EQUIPMENT AND PIPING LAYOUTS SHALL BE COORDINATED WITH EQUIPMENT SUPPLIED AND/OR EXISTING CONDITIONS.
5. ALL BURIED PIPE CONNECTIONS TO STRUCTURES SHALL HAVE FLEXIBLE CONNECTIONS APPROX. 4 FEET OUTSIDE THE STRUCTURE. COUPLINGS SHALL BE RESTRAINED ON PRESSURE PIPES.
6. PROVIDE PIPE SUPPORTS FOR ALL PIPE PER SPECIFICATIONS.
7. LIMIT OF WORK UNDER ADD-ALT B, INCLUDES FLOWMETER, PRESSURE REDUCING VALVE, AND ASSOCIATED PIPING. INSTALL BLIND FLANGES FOR NEW BOOSTER PUMP STATION IF NOT INSTALLED.
8. BOOSTER PUMP STATION (ADD-ALT C) INCLUDES BOOSTER PUMPS, VFD'S, PRESSURE TRANSDUCERS, PRESSURE GAUGES, AND ASSOCIATED PIPING AND VALVES.

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HEATED CONTROL ROOM FLOOR PLAN
COMPOSITE ELEVATED WATER STORAGE TANK
CITY OF DOVER, NEW HAMPSHIRE

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DWG NO P2 | SHEET X OF X

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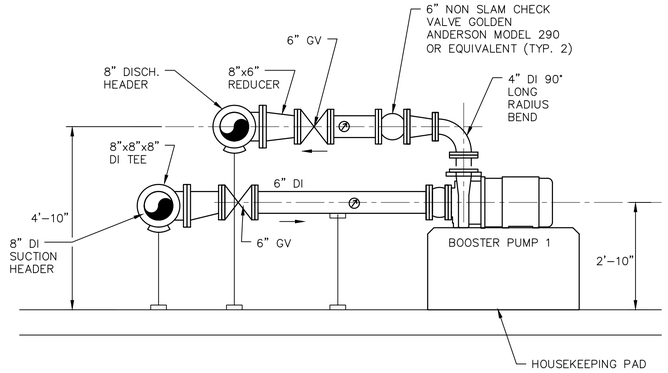
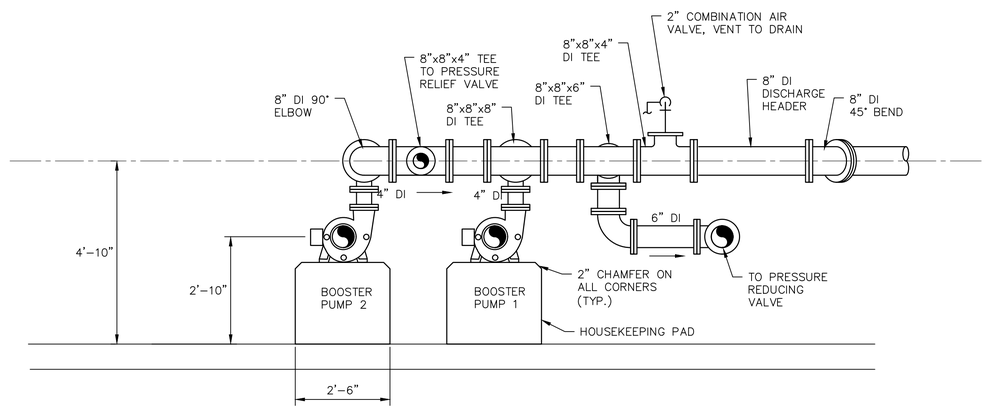


SECTION A-A

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



SECTION B-B

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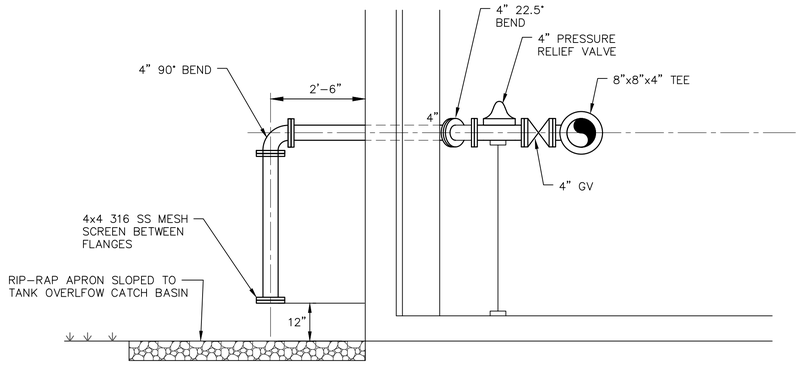


SECTION D-D

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

BOOSTER PUMPING STATION NOTES:

1. NORMAL OPERATION: RAISE WATER PRESSURE FROM EXISTING MAIN PRESSURE ZONE HGL TO THE DOVER NORTH END PRESSURE ZONE, MAINTAINED BY THE PROPOSED NORTH END STORAGE TANK.

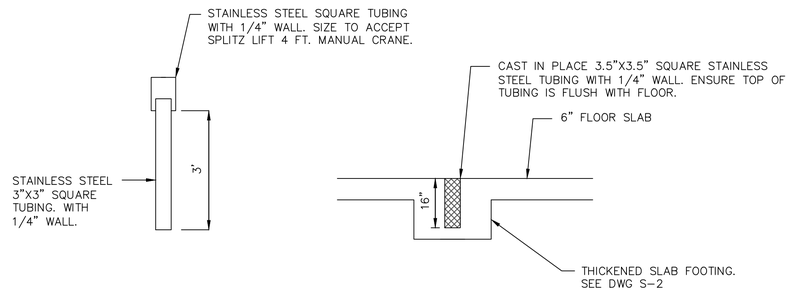
2. ALT. OPERATION: FLOW FROM THE NORTH END PRESSURE ZONE TO THE MAIN PRESSURE ZONE.

3. 12" X 12" HEAVY DUTY FLOOR DRAIN DURA COATED CAST IRON BODY AND TOP WITH INTERNAL TRAP. ZURN Z-645 OR EQUAL. SLOPE FLOOR TO DRAIN. SLOPE 4" PVC OUTLET 1/2" PER FOOT (MIN.) TO CATCH BASIN.

4. THE FOLLOWING SURFACES SHALL BE PAINTED: TRIM, CEILING, PIPING, PIPE SUPPORTS, DOORS & FRAMES. SEE SECTION 09912 OF PROJECT MANUAL.

5. PIPE SUPPORTS MUST BE INSTALLED ON SUCTION AND DISCHARGE HEADERS SUCH THAT THE WEIGHT OF THE PIPES DOES NOT BEAR ON THE PUMPS.

6. PROVIDE SPITZ LIFT 4 FT. PORTABLE MANUAL CRANE WITH BOLT ON/WELD ON KIT, TO BE USED AS PUMP HOIST.



1/P3 STEEL & CONCRETE FLOOR SLEEVE SUPPORT FOR PUMP HOIST

SCALE: NOT TO SCALE

ISSUE FOR
BIDDING Date - By -
CONSTRUCTION Date - By -
RECORD DRAWING Date - By -

NO.	REVISIONS	APP'D

Drawn/Chk RMG
Designed ALA
Checked TGP
Approved
Date 12/17/21
Book No. -
Project No. 2575
Dwg. ID 2575_details
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

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PUMP STATION SECTION & DETAILS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P3

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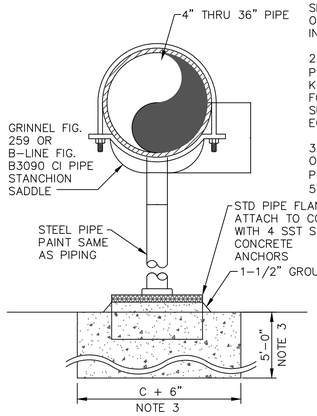


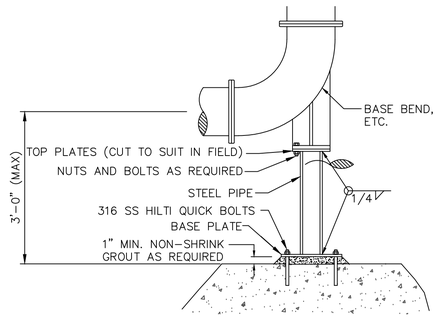
PIPE SUPPORT
N.T.S.

NOTES:

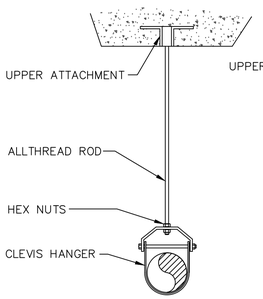
1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO GRINNELL FIGURE 167 OR ELCEN FIGURE 219, WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. WHERE PIPE HAS TO BE SUPPORTED OVER EARTH, A TYPE A CONCRETE PEDESTAL EQUAL IN WIDTH TO C+6" AND 5' DEEP SHALL BE USED.

DIMENSION TABLE

PIPE SIZE	A	B	C
3"	3"	3-9/16"	9"
4"	3"	4-3/16"	9"
5"	3"	4-13/16"	9"
6"	3"	5-7/16"	9"
8"	3"	6-15/16"	9"
10"	3"	8-7/16"	9"
12"	3"	9-15/16"	9"
14"	4"	10-15/16"	11"
16"	4"	12-3/8"	11"
18"	4"	13-7/8"	11"
20"	6"	15-3/8"	13-1/2"
22"	6"	16-5/8"	13-1/2"
24"	6"	17-15/16"	13-1/2"
28"	6"	19-1/8"	13-1/2"
30"	6"	21-5/16"	13-1/2"
32"	6"	22-1/2"	13-1/2"
36"	8"	24-1/2"	16"



BASE ANCHOR PIPE SUPPORT
N.T.S.



PIPE SUPPORT
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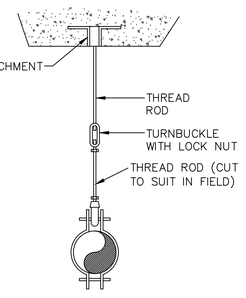

PIPE SUPPORT
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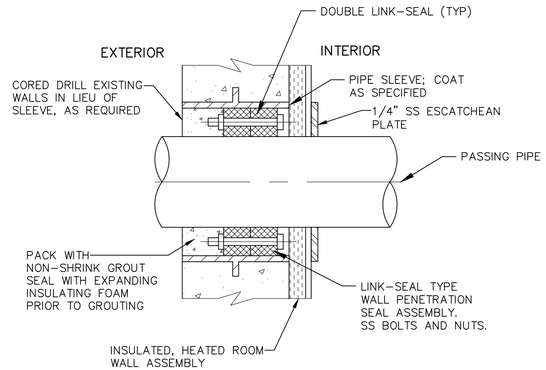
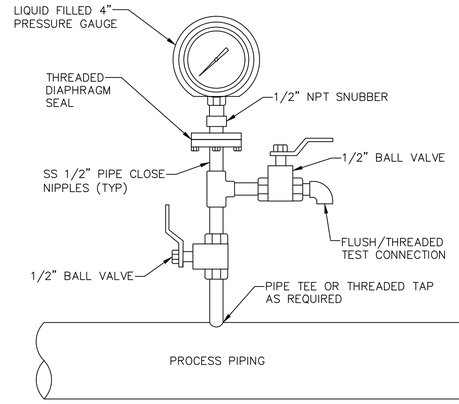


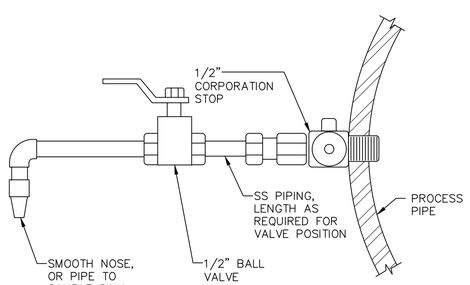
TYPICAL CONCRETE WALL PENETRATION
N.T.S.
(WHERE DESIGNATED)



GAUGE ASSEMBLY
N.T.S.

NOTES:

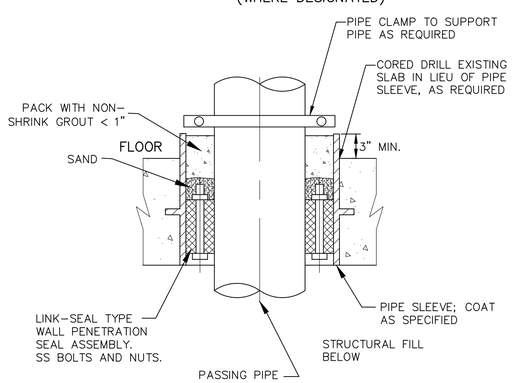
1. SEE DIV. 15 FOR ADDITIONAL SPECIFICATIONS.
2. MINIMIZE HEIGHT OF ASSEMBLY.
3. DIAPHRAGM SEAL NOT REQUIRED FOR FINISHED WATER.



NOTES:

1. LOCATE IN FIELD PER ENGINEER.

SAMPLE PORT DETAIL
N.T.S.



TYPICAL CONCRETE FLOOR PENETRATION
N.T.S.
(WHERE DESIGNATED)

ISSUE FOR
BIDDING Date - By -
CONSTRUCTION Date - By -
RECORD DRAWING Date - By -

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"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PROCESS DETAILS - II
COMPOSITE ELEVATED WATER STORAGE TANK
CITY OF DOVER, NEW HAMPSHIRE

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DWG NO P4
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POWER LEGEND

RECEPTACLE OUTLETS – NUMERAL BY THE SIDE OF THE SYMBOL INDICATES CIRCUIT NUMBER

- DUPLEX CONVENIENCE OUTLET MOUNTED AT +18" OR AS NOTED.
- DOUBLE DUPLEX OUTLET (FOURPLEX) RECEPTACLE MOUNTED AT +18" OR AS NOTED.
- DUPLEX CONVENIENCE OUTLET MOUNTED ABOVE COUNTER. VERIFY EXACT MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS.
- SPECIAL OUTLET AS NOTED ON DRAWINGS.
- DEDICATED OUTLET AT +18" OR AS NOTED. 'HUBBELL' #IG5262 (ORANGE) RECEPTACLE WITH ISOLATED GROUND.
- CAT-5 DATA JACK MOUNTED AT +18" OR AS NOTED.
- TELEPHONE JACK MOUNTED AT +18" OR AS NOTED.
- MULTI-OUTLET ASSEMBLY
- FLUSH MOUNTED PANELBOARD AND CABINET. MOUNT 6'-6" TO TOP
- SURFACE MOUNTED PANELBOARD AND CABINET. MOUNT 6'-6" TO TOP
- PB — PULL BOX
- 4X — COMBINATION MOTOR CONTROLLER – FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. SIZE AS NOTED. NUMBER INDICATES NEMA TYPE CONSTRUCTION.
- 1 — MOTOR – SIZE AS INDICATED ON DRAWINGS.
- DISCONNECT SWITCH – SIZE AND FUSES AS PER MANUFACTURER'S RECOMMENDATIONS (WEATHERPROOF WHERE OUTSIDE).
- J — JUNCTION BOX IN ACCESSIBLE LOCATION.
- J — JUNCTION BOX IN ACCESSIBLE LOCATION WITH FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT AS NOTED.
- PE — PHOTOCELL ON ROOF (AIM NORTH).
- SEALING FITTING
- VS, 12 — MOTOR CONTROLLER OR VFD – INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. NUMBER INDICATES NEMA TYPE CONSTRUCTION, VS INDICATES VENDOR SUPPLIED.
- EQUIPMENT SHOWN LIGHT & DASHED INDICATES EXISTING EQUIPMENT EXCEPT, FOR UNDERGROUND CONDUITS AND/OR AS OTHERWISE NOTED.
- EQUIPMENT SHOWN LIGHT, DASHED, & HATCHED INDICATES EXISTING EQUIPMENT TO BE REMOVED. EXCEPT UNDERGROUND CONDUITS
- UTILITY POLE

RACEWAYS AND CONDUCTORS

- INDICATES HOMERUN TO PANELBOARD OR AS NOTED.
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- —OHP— PROPOSED OVERHEAD PRIMARY CABLE
- —EX— EXISTING UNDERGROUND ELECTRICAL CONDUIT
- —E— PROPOSED UNDERGROUND ELECTRICAL CONDUIT
- —EP— PROPOSED UNDERGROUND PRIMARY ELEC CONDUIT
- —S— PROPOSED UNDERGROUND SIGNAL CONDUIT
- —T— PROPOSED UNDERGROUND TELEPHONE CONDUIT

LIGHTING

LIGHTING FIXTURES – CAPITAL LETTER INDICATES THE FIXTURE TYPE AS SHOWN ON FIXTURE SCHEDULE. NUMERAL INDICATES CIRCUIT NO. AND SMALL LETTER DESIGNATES THE CONTROL SWITCH. EXACT MOUNTING PER SCHEDULE.

CEILING	WALL	DESCRIPTION
		SURFACE OR PENDANT INCANDESCENT, HID OR SIMILAR LAMP FIXTURE.
		SURFACE OR PENDANT INDIVIDUAL FLUORESCENT FIXTURE.
		SURFACE OR PENDANT CONTINUOUS
		BARE LAMP FLUORESCENT STRIP.
		SURFACE OR PENDANT EXIT LIGHT. ARROWS INDICATE ROUTE OF EGRESS.
		EMERGENCY LIGHTING FIXTURE BATTERY OPERATED. ARROWS INDICATE AIMING DIRECTION.
		POLE MOUNTED LIGHT FIXTURE, SINGLE POLE W/SINGLE AND/OR DOULBLE FIXTURE.

SWITCHED OUTLET

SMALL LETTER BY THE SIDE OF SYMBOLS INDICATES THE PARTICULAR SWITCH.
SAMPLE: S^{a} = SWITCH "a"

- S — SINGLE POLE SWITCH MOUNTED AT +48" ℄ OR AS NOTED.
- S_2 — TWO POLE SWITCH MOUNTED AT +48" ℄ OR AS NOTED.
- S_3 — THREE WAY SWITCH MOUNTED AT +48" ℄ OR AS NOTED.
- S_4 — FOUR WAY SWITCH MOUNTED AT +48" ℄ OR AS NOTED.
- S_P — SINGLE POLE SWITCH WITH PILOT LIGHT MOUNTED AT +48" ℄ OR AS NOTED.
- S_K — SINGLE POLE KEY OPERATED SWITCH MOUNTED AT +48" ℄ OR AS NOTED.
- S_M — H.P. RATED MANUAL MOTOR STARTER (WEATHERPROOF WHERE OUTSIDE).
- S_D — INCANDESCENT SLIDE CONTROL DIMMER AT +48" ℄ OR AS NOTED (1500 WATT UNLESS OTHERWISE NOTED).
- S_T — 0-60 MINUTE TIMER SWITCH MOUNTED AT +48" ℄ OR AS NOTED.

PROJECT GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (N.E.C.) LATEST EDITION.
2. COORDINATE ALL ELECTRICAL EQUIPMENT LOCATIONS AND MECHANICAL APPURTENANCES WITHIN THE EXISTING CONDITIONS TO PROVIDE ADEQUATE WORKING AND ACCESS PER N.E.C. REQUIREMENTS.
3. WHERE EXISTING ELECTRICAL DEVICES AND PROCESS DEVICES ARE INDICATED THOSE LOCATIONS ARE APPROXIMATE AND NOT ALL ELECTRICAL DEVICES MAY BE INDICATE. (FIELD VERIFY ALL ELECTRICAL ITEMS WHERE POSSIBLE.)
4. CONDUITS, RACEWAYS AND CABLES SHALL BE PROPERLY AND SECURELY ATTACHED TO BUILDING STRUCTURAL COMPONENTS AS REQUIRED BY N.E.C. ALL FASTENERS AND HARDWARE SHALL BE APPROVED FOR THE INSTALLATION AND THE CONDITIONS ENCOUNTERED.
5. EACH JUNCTION IN ANY OF THE WIRING SYSTEMS SHALL BE MADE IN AN APPROVED JUNCTION BOX. SUCH BOX SHALL BE SUITABLE FOR THE SIZE AND NUMBER OF CONDUCTORS AND DEVICES TO BE INSTALLED, AS WELL AS THE CONDITION ENCOUNTERED. ALL SPLICES SHALL BE MADE WITH APPROVED, MECHANICAL CONNECTORS.
6. CONTRACTOR SHALL VERIFY ALL STRUCTURAL, PROCESS AND MECHANICAL CONDITIONS PRIOR TO ROUGH-IN FOR ELECTRICAL WIRING AND EQUIPMENT.
7. ALL ELECTRICAL WORK SHALL BE CAREFULLY COORDINATED WITH THE ON-SITE CONDITIONS. WHERE CUTTING, DRILLING OR ALTERATION TO THE WORK OF OTHERS IS NECESSARY FOR THE PROPER INSTALLATION OF ELECTRICAL EQUIPMENT, SUCH WORK SHALL BE PLANNED IN ADVANCE AND SHALL BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDINGS OR EQUIPMENT SHALL BE REPAIRED BY PROPERLY TRAINED PERSONNEL TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
8. DURING ROUGH-IN AND FINISHED STAGES OF CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND KEEP CLEAN ALL ELECTRICAL EQUIPMENT, PANELS, FIXTURES AND DEVICES AS WELL AS ALL EXISTING EQUIPMENT AND RELATED WORK AREAS.
9. THE CONTRACTOR SHALL PROVIDE ALL INFORMATION ABOUT EQUIPMENT WHICH HE/SHE IS FURNISHING TO THE ENGINEER/OWNER FOR REVIEW PURPOSES. THE CONTRACTOR SHALL PROVIDE ALL INSTALLATION DETAILS AND SUPPORT COMPONENTS SO THAT THESE MAY BE BUILT INTO THE CONSTRUCTION IN A TIMELY MANNER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF THE FINAL LOCATIONS OF INSTRUMENTATION, CONTROL AND POWER CONNECTION DETAILS SO THAT THE ASSOCIATED ELECTRICAL WORK WILL BE PROPERLY COORDINATED AND INSTALLED.
11. EQUIPMENT LAYOUT AND EXACT LAYOUT OF NEW ELECTRICAL EQUIPMENT AND INSTRUMENTATION SHALL BE COORDINATED WITH PROCESS AND MECHANICAL EQUIPMENT.
12. DRAWINGS SHOW A LAYOUT OF ELECTRICAL/INSTRUMENTATION SYSTEMS AND EQUIPMENT DIAGRAMMATICALLY. EXACT LOCATION OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE DETERMINED BY FIELD CONDITIONS AND DIRECTION BY ENGINEER AND OWNER. BY SUBMITTING A BID, CONTRACTOR WARRANTS THAT HE HAS VISITED THE SITE WHERE WORK IS TO BE PERFORMED, AND HAS EXAMINED THE EXISTING CONDITIONS AND EXTENT OF LABOR AND MATERIALS TO BE PROVIDED. COORDINATION WITH ALL TRADES, UTILITIES, ETC. SHALL BE PROVIDED. THE ENGINEER SHOULD BE NOTIFIED OF ANY DISCREPANCIES, OMISSIONS, CONFLICTS OR INTERFERENCES WHICH OCCUR BETWEEN VARIOUS DRAWINGS AND SPECIFICATIONS. IF SUCH NOTIFICATION IS NOT RECEIVED, THE INSTALLING CONTRACTOR(S) SHALL BE RESPONSIBLE FOR THEIR INTERPRETATIONS.

DEMOLITION GENERAL NOTES:

1. REMOVE AND DISCONNECT EXISTING ELECTRICAL EQUIPMENT, PANELS, MCC'S, LIGHTING WIRING DEVICES, SWITCHES, ETC. AND RELATED ELECTRICAL DEVICES, WIRING / CONDUIT AS INDICATED ON DEMOLITION PLANS.
2. ANY DEMOLITION INDICATED ON THESE DRAWINGS IS SHOWN IN GENERAL TO INDICATE THE EXTENT OF DEMOLITION AND IS NOT TO BE CONSIDERED AS A RECORD DRAWING OF EXISTING CONDITIONS. ACCORDINGLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE DEMOLITION OF ELECTRICAL WORK INDICATED INCLUDING ANY BURIED ITEMS OR EXISTING ITEMS NOT SHOWN ON THESE DRAWINGS. BEFORE DEMOLITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO CONDUCT APPROPRIATE FIELD TESTING TO DETERMINE THE NATURE OF THE EXISTING WORK TO BE DEMOLISHED TO PROTECT EXISTING WORK REMAINING IN PLACE AND TO PROTECT THE PUBLIC.
3. REPAIR AND RESTORE TO ORIGINAL CONDITION ALL ITEMS OR PORTIONS OF ELECTRICAL WORK WHICH ARE NOT NOTED TO BE DEMOLISHED, BUT ARE DAMAGED BY WORK UNDER THIS CONTRACT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROTECT AND RETAIN POWER TO ALL EXISTING ACTIVE EQUIPMENT WHICH SHALL REMAIN. ELECTRICAL CONTRACTOR SHALL RECONNECT ANY EQUIPMENT BEING DISTURBED BY THIS RENOVATION.
4. WHERE WORK BY THE GENERAL CONTRACTOR (WALL REMOVAL, NEW OR RELOCATED WALL OPENINGS), REQUIRES THE REMOVAL, RELOCATION, OR REFEEDING OF ELECTRICAL DEVICES OR LIGHTING FIXTURES, THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE SAFE OR RECONNECT AS REQUIRED ALL ACTIVE DEVICES REMAINING ON THAT CIRCUIT.
5. CONTRACTOR SHALL VERIFY CIRCUITS IN EXISTING PANEL AFFECTED BY THIS ALTERATION. WHERE ADDITIONAL CIRCUITS ARE NEEDED, USE AVAILABLE SPARE BREAKERS IN THE PANEL. TIGHTEN ALL CONNECTIONS AS REQUIRED.
6. DO NOT PROCEED WITH DEMOLITION WITHOUT WRITTEN AUTHORITY TO PROCEED. PROCEED WITH DEMOLITION IN A SYSTEMATIC MANNER AND COORDINATE WITH ALL TRADES INVOLVED. COORDINATE AND SEQUENCE DEMOLITION SO AS NOT TO CAUSE A SHUTDOWN OF OPERATION OF SURROUNDING AREAS.
7. DISCONNECT OR SHUT OFF SERVICE TO AREAS WHERE ELECTRICAL WORK IS TO BE REMOVED. REMOVE ALL ELECTRICAL PANELS, EQUIPMENT, AND RELATED CONDUIT, AND WIRING WHICH ARE NOT A PART OF THE FINAL PROJECT IN ALL AREAS WHERE WORK OF THIS CONTRACT ARE TO BE PERFORMED. ALL REMOVED EQUIPMENT SHALL BE DISPOSED OF BY THIS CONTRACTOR UNLESS DIRECTED TO DO OTHERWISE BY THE OWNER. REMOVE ALL CONDUIT, WIRE, BOXES, AND FASTENING DEVICES AS REQUIRED TO AVOID ANY INTERFACE WITH NEW INSTALLATIONS. ABANDONED CIRCUITS TO BE CAPPED AT BOTH ENDS. REMOVE THE EXISTING WIRE NO LONGER IN USE FROM DEVICE LOCATION BACK TO PANEL.
8. ARRANGE TIMING SHUTDOWN PERIODS OF ALL-INSERVICE PANELS WITH OWNER OR HIS/HER REPRESENTATIVE. DO NOT SHUT DOWN ANY UTILITY WITHOUT PRIOR WRITTEN APPROVAL.
9. WHERE EXISTING CIRCUITS ARE INDICATED TO BE REUSED, CONTRACTOR TO USE SENSING MEASURING DEVICES TO VERIFY THAT CIRCUITS FEEDING PROJECTS ARE OR ARE NOT IN USE.
10. EXISTING ELECTRICAL EQUIPMENT NECESSARY FOR EXISTING INSTALLATION TO REMAIN OPERATIONAL WILL HAVE TO BE PROTECTED DURING CONSTRUCTION.
11. THE ELECTRICAL CONTRACTOR SHALL TAKE INTO ACCOUNT IN FILING HIS/HER BID HIS/HER OBLIGATION TO PROVIDE FOR THE DISMANTLING AND REMOVAL OR MODIFICATION OF EXISTING ELECTRICAL EQUIPMENT, CONDUIT, WIRING AND RELATED ITEMS FOR THEIR REPLACEMENT OR MODIFICATION AS SPECIFIED.
12. CONTRACTOR SHALL COORDINATE WITH OWNER FOR POSSIBLE SALVAGE OF OF ANY OF THE ABOVE LISTED EQUIPMENT INCLUDING BUT NOT LIMITED TO MCC, STARTERS, GENERATORS, INSTRUMENTATION, PANELS, WIRING & CONDUIT.
13. THE CONTRACTOR SHALL UTILIZE EXISTING BRANCH CIRCUITS WHEREVER POSSIBLE. DISCONNECT CIRCUITS BACK TO LAST DEVICE (FIXTURE OR OUTLET) UNAFFECTED BY THE DEMOLITION. EXTEND CIRCUITS FROM LAST DEVICE TO NEW DEVICE LOCATIONS AND CIRCUIT AS SHOWN ON FLOOR PLAN.
14. THE ELECTRICAL DEVICES AND PROCESS EQUIPMENT INDICATED ON THIS DRAWING REPRESENT EQUIPMENT TAKEN FROM EXISTING PLANS FURNISHED BY THE OWNER AND SITE VISITS BY THE ENGINEER AND DO NOT REPRESENT ALL EQUIPMENT AND WIRING WITHIN THE DEMOLITION AREA. THESE DOCUMENTS HAVE BEEN PREPARED TO ASSIST THE CONTRACTOR IN PRICING DEMOLITION WORK. CONTRACTOR IS TO VISIT THE SITE AND EXAMINE ALL EXISTING CONDITIONS. NO EXTRA COMPENSATION OR TIME EXTENSION WILL BE PERMITTED BECAUSE OF LACK OF COMPLIANCE WITH THIS REQUIREMENT.

ABBREVIATIONS

ACB	AIR CIRCUIT BREAKER
ALT	ALTERNATE
AC	ALTERNATING CURRENT
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
A	AMPERE(S)
ATS	AUTOMATIC TRANSFER SWITCH
BW	BUSWAY
CLG	CEILING
CKT	CIRCUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
COND	CONDUCTOR
C	CONDUIT (SEE RACEWAYS)
CONN	CONNECT
CC	CONTROL CABINET
CP	CONTROL PANEL
CU	COPPER
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DIM	DIMENSION
DISC	DISCONNECT
DMC	DIMMER CONTROL
DPP	DISTRIBUTION POWER PANEL
DP	DOUBLE POLE
DT	DOUBLE THROW
E	ELECTRIC
E.C.	ELECTRICAL CONTRACTOR
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EMT	ELECTRICAL METALLIC TUBING
EM	EMERGENCY
ELR	END LINE RESISTOR
EXIST	EXISTING
FDR	FEEDER
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
F.P.C.	FIRE PROTECTION CONTRACTOR
FLUOR	FLUORESCENT
FL	FLOOR
F.S.C.	FOOD SERVICE CONTRACTOR
HZ	FREQUENCY IN CYCLES PER SECOND
F	FUSE
FS	FUSIBLE SWITCH
GEN	GENERATOR
G.C.	GENERAL CONTRACTOR
GRD	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
H.I.D.	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HOA	HAND-OFF-AUTO
H.P.S.	HIGH PRESSURE SODIUM
IMC	INTERMEDIATE METALLIC CONDUIT
INC	INCANDESCENT
IC	INTERCOM
ISO	ISOLATED NEUTRAL
JB	JUNCTION BOX
K	KEY OPERATED
KVAR	KILOVAR(S)
KVA	KILOVOLT AMPERE(S)
KW	KILOWATT(S)
LP	LIGHTING PANEL
L.P.S.	LOW PRESSURE SODIUM
LV	LOW VOLTAGE
MCB	MAIN CIRCUIT BREAKER
MGST	MAGNETIC STARTER
MLO	MAIN LUGS ONLY
MH	MANHOLE
MTS	MANUAL TRANSFER SWITCH
MC	MECHANICAL CONTRACTOR
MIKE	MICROPHONE
MTR	MOTOR
MCC	MOTOR CONTROL CENTER
KCMIL	THOUSAND CIRCULAR MIL(S)
NF	NON-FUSED
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
N.I.C.	NOT IN CONTRACT
OL	OVERLOAD ELEMENT
OC	OVER COUNTER
PNL	PANEL
PB	PULL BOX
P	PILOT INDICATOR
PVC	POLYVINYL CHLORIDE
PLG.C	PLUMBING CONTRACTOR
PT	POTENTIAL TRANSFORMER
PF	POWER FACTOR
PP	POWER PANEL
PRI	PRIMARY
PS	PULL SWITCH
RECP	RECEPTACLE
R	RELAY
RC	REMOTE CONTROL
RGS	RIGID GALVANIZED STEEL CONDUIT
RWT	REFECTED WAVE TRAP
S	SIGNAL
SEC	SECONDARY
SP	SINGLE POLE
ST	SINGLE THROW
SPK	SPEAKER
SMR	SURFACE METAL RACEWAY
S.S.	SOLID STATE
SW	SWITCH
SWBD	SWITCHBOARD
T.C.C.	TEMPERATURE CONTROL CONTRACTOR
TEMP	TEMPORARY
T	TELEPHONE
TV	TELEVISION
TB	TERMINAL BOX
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UG	UNDERGROUND
UH	UNIT HEATER
UNG	UNGROUNDED
UNP	UNGROUNDED PRIMARY
UPS	UNINTERRUPTED POWER SYSTEM
US	UNDERGROUND SIGNAL
VP	VAPORPROOF
VAR	REACTIVE VOLT AMPERES
V	VOLT(S)
VA	VOLTAMP(S)
VFD	VARIABLE FREQUENCY DRIVE
W	WATT(S)
WP	WEATHERPROOF

DIAGRAM SYMBOLS

- FUSED SWITCH
- CIRCUIT BREAKER
- LINE REACTOR
- DISCONNECT SWITCH
- TRANSFER SWITCH
- SOLID-STATE SOFT STARTER
- POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- VFD
- M — METER: X INDICATES TYPE
  - V = VOLTMETER
  - A = AMMETER
  - W = WATT METER
  - H = KILOWATT HOUR METER
  - D = KILOWATT HOUR DEMAND METER
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- DMM — DIGITAL MULTI METER
- PM — PHASE MONITOR
- GFI — GROUND FAULT INTERRUPTER
- K — KIRK KEY INTERLOCK
- XX — MOTOR CONTROLLER: XX INDICATES TYPE:
  - SS = SOLID STATE STARTER
  - AF = ADJUSTABLE FREQUENCY STARTER
  - AT = AUTO TRANSFORMER STARTER
  - PW = PART WINDING STARTER
  - Y-Δ= WYE-DELTA STARTER
  - WR = WOUND ROTOR STARTER
  - 22 = TWO SPEED TWO WINDING
  - 21 = TWO SPEED ONE WINDING
  - FVNR = FULL VOLTAGE NON REVERSING STARTER
  - FVR = FULL VOLTAGE REVERSING STARTER
  - LC = LIGHTING CONTACTOR
  - VFD = VARIABLE FREQUENCY DRIVE
- CAPACITOR
- TVSS/LIGHTNING ARRESTER
- EARTH GROUND
- TRANSFORMER
- PLUG OR DRAWOUT DEVICE AND RECEPTACLE
- X — MOTOR
- G — GENERATOR
- X — GENERAL LOADS

X – INDICATES HORSEPOWER OR KILOWATTS

ABBREVIATED LIST OF NEMA ENCLOSURE TYPES

TYPE 1: GENERAL PURPOSE. INDOOR.
TYPE 2: DRIP-PROOF. NONCORROSIVE. INDOOR.
TYPE 3: DUST-TIGHT. RAINTIGHT. OUTDOOR.
TYPE 3R: RAINPROOF. OUTDOOR.
TYPE 4: WATERTIGHT AND DUST-TIGHT. NONCORROSIVE. INDOOR AND OUTDOOR.
TYPE 4X: WATERTIGHT AND DUST-TIGHT. CORROSION RESISTANT. INDOOR AND OUTDOOR.
TYPE 6: WATERTIGHT. DUST-TIGHT. SHORT-TIME SUBMERSIBLE. INDOOR AND OUTDOOR.
TYPE 6P: WATERTIGHT. DUST-TIGHT. LONG-TIME SUBMERSIBLE. INDOOR AND OUTDOOR.
TYPE 7: CLASS 1, GROUPS A, B, C, OR D. INDOOR.
TYPE 8: CLASS 1, GROUPS A, B, C, OR D. INDOOR OR OUTDOOR.
TYPE 9: CLASS II, GROUPS E OR G. INDOOR.
TYPE 12: DUST-TIGHT. WATERTIGHT. NONCORROSIVE LIQUID. INDOOR.
TYPE 13: WATERTIGHT. DUST-TIGHT. OILTIGHT. NONCORROSIVE LIQUID INDOOR.

DETAIL & SECTION MARK LEGEND

- 2 / E-3 — DETAIL NUMBER; SHEET NUMBER – WHERE DETAIL IS LOCATED
- A / E-1 — DIRECTION SECTION IS BEING CUT; SECTION LETTER; SHEET NUMBER – WHERE SECTION IS LOCATED

DIRECTION OF NORTH

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22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603-429-3313 Fax: 603-429-3466
SMR ENGINEERING, PC

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Dwg. ID 2474-E1-GN
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GENERAL ELECTRICAL NOTES & LEGEND

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO E1

SHEET 54 OF X

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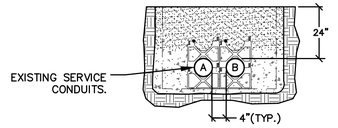
ELECTRICAL DUCT BANK SCHEDULE

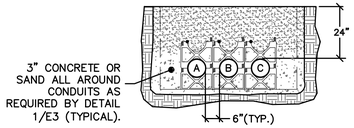
DUCT BANK SECTION NO.	CONDUIT	EQUIPMENT	WIRE	CONNECTION
A / E2	EXIST (A) 4" C	SERVICE DISCONNECT SWITCH	EXISTING 4#4/0	EXISTING SERVICE CONDUITS FROM EXISTING POLE MOUNTED TRANSFORMERS TO NEW SERVICE DISCONNECT SWITCH AND NEW UTILITY METER
	EXIST (B) 4" C	SERVICE DISCONNECT SWITCH	NEW 4#4/0	EXISTING SERVICE CONDUITS FROM EXISTING POLE MOUNTED TRANSFORMERS TO NEW SERVICE DISCONNECT SWITCH AND NEW UTILITY METER
B / E2	(A) 4" C	PANEL PPB	4#250 KCMIL, & 1#2G	FEEDER CONDUIT FROM MCC-A INSIDE SMITH/CUMMINGS WELL BUILDING TO PANEL PPB INSIDE STORAGE TANK VIA HANDHOLES.
	(B) 4" C	SPARE	PULL ROPE	SPARE CONDUIT FROM SMITH/CUMMINGS WELL BUILDING TO 12" AFF UNDET PANEL PPB INSIDE STORAGE TANK VIA HANDHOLES.
	(C) 3" C	RTU-2A	FIBER OPTIC CABLE	FIBER OPTIC CONDUIT FROM RTU-2 INSIDE SMITH/CUMMINGS WELL BUILDING TO RTU-2A PANEL INSIDE STORAGE TANK VIA HANDHOLES.

UNDERGROUND CONDUIT NOTES:

1. PROVIDE RIGID GALVANIZED SWEEPS ON ALL 90° TURNS.
2. PROVIDE RIGID GALVANIZED STEEL CONDUIT & SWEEPS AT ALL 90° TURNS AS REQUIRED.
3. COORDINATE NEW UNDERGROUND CONDUIT LOCATION WITH EXISTING UNDERGROUND ELECTRIC CONDUIT, PROCESS PIPING AND STRUCTURES PRIOR TO EXCAVATION.
4. REPAIR EXISTING PAVED AND GRASSED AREAS TO CONDITION EXISTING PRIOR TO EXCAVATION.
5. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
6. REFER TO DETAIL 1/E3 FOR TYPICAL TRENCHING DETAIL FOR ELECTRICAL/SIGNAL CONDUITS.
7. CONTRACTOR SHALL FURNISH AND INSTALL POLYESTER PULLING TAPE IN ALL SPARE CONDUITS RATED @ 2500 LBS, WITH FOOTAGE MARKINGS AS MANUFACTURED BY NEPT CO., MODEL# WP2500 OR APPROVED EQUAL.



DUCT BANK SECTION A / E2
SCALE: NONE



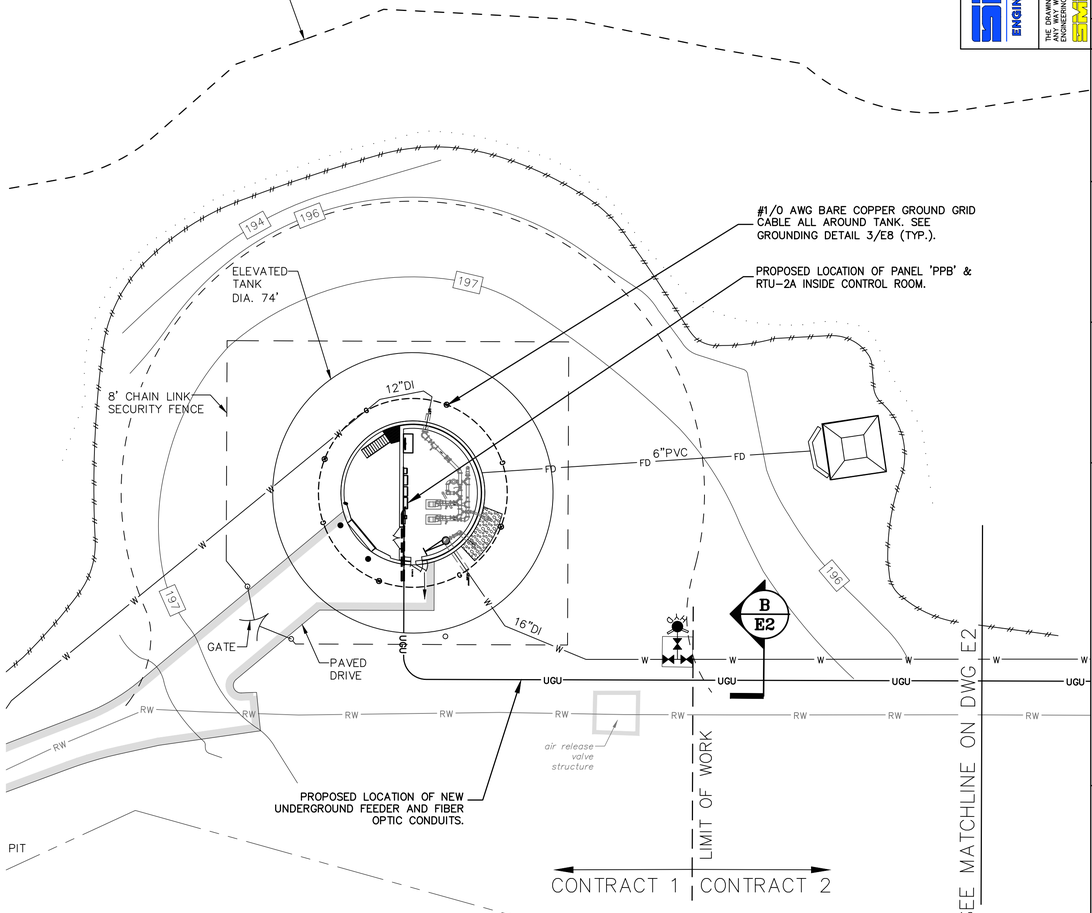
DUCT BANK SECTION B / E2
SCALE: NONE

ELECTRICAL DUCT BANK SCHEDULE WITH DUCT BANK SECTIONS 1 / E3

SCALE: NONE

ELECTRICAL SITE LEGEND

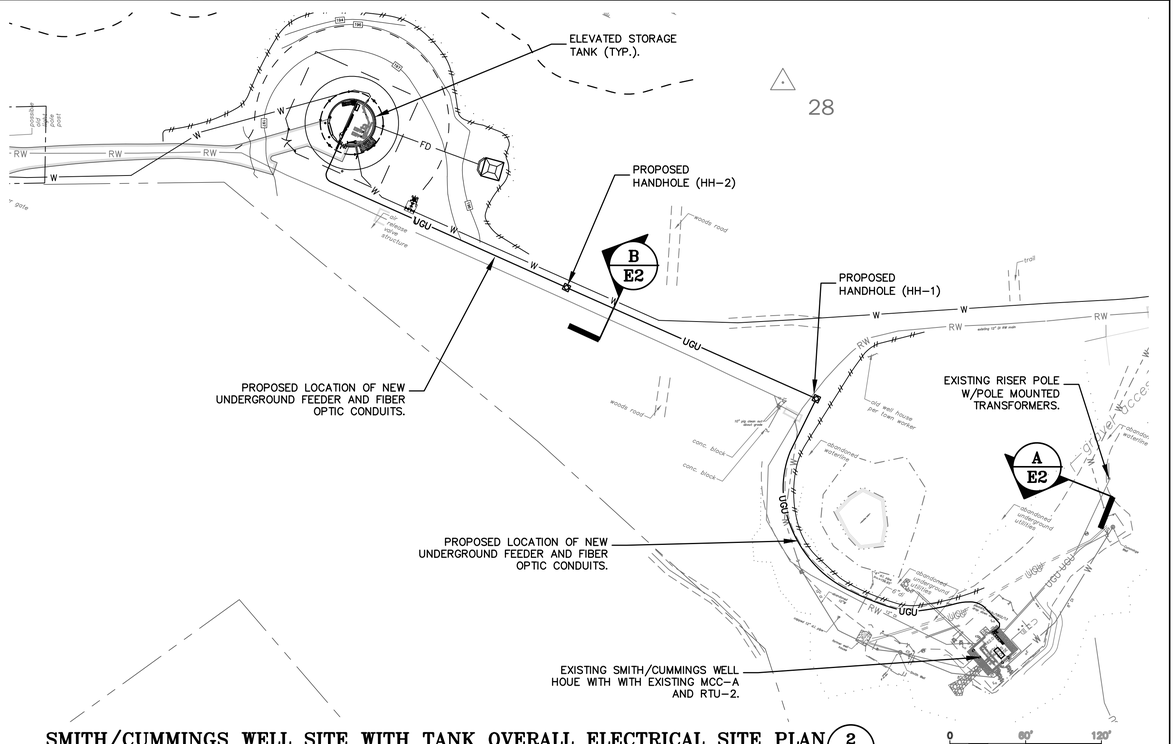
- —ES/T— PROPOSED UNDERGROUND ELECTRICAL SERVICE & TELEPHONE CONDUIT
- —E— PROPOSED UNDERGROUND ELECTRICAL CONDUIT
- —S— PROPOSED UNDERGROUND SIGNAL CONDUIT
- —E/S— PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
- —E/FO— PROPOSED UNDERGROUND ELECTRIC/FIBER OPTIC CONDUITS
- —G— PROPOSED UNDERGROUND GROUNDING GRID CABLE
- EX EXISTING UNDERGROUND ELECTRIC CONDUIT
- OHW OVERHEAD WIRE
- PROPOSED UTILITY POLE
- PROPOSED ELECTRIC OR SIGNAL HANDHOLE



STORAGE TANK ENLARGED ELECTRICAL SITE PLAN 3 / E3

SCALE: 1"=20'-0"

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



SMITH/CUMMINGS WELL SITE WITH TANK OVERALL ELECTRICAL SITE PLAN 2 / E8

SCALE: 1"=60'-0"

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STORAGE TANK ELECTRICAL SITE PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
E2	OF X

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ELECTRICAL SITE LEGEND

- —ES/T— PROPOSED UNDERGROUND ELECTRICAL SERVICE & TELEPHONE CONDUIT
- —E— PROPOSED UNDERGROUND ELECTRICAL CONDUIT
- —S— PROPOSED UNDERGROUND SIGNAL CONDUIT
- —E/S— PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
- —RC— PROPOSED UNDERGROUND RADIO CABLE CONDUIT
- —G— PROPOSED UNDERGROUND GROUNDING GRID CABLE
- EX EXISTING UNDERGROUND ELECTRIC CONDUIT
- OHW OVERHEAD WIRE
- PROPOSED UTILITY POLE
- PROPOSED ELECTRIC OR SIGNAL HANDHOLE

TAX MAP D, LOT 1
CITY OF DOVER
288 CENTRAL AVE
DOVER, NH 03820
S.C.R.D. BOOK 599, PAGE 387

SEE MATCHLINE ON DWG E1

PROPOSED LOCATION OF HANDHOLE (HH-2). SEE DETAIL 2/E3 (TYP.).

INSTALL 16" DI WATER MAIN

PROPOSED LOCATION OF NEW UNDERGROUND FEEDER AND FIBER OPTIC CONDUITS.

PROPOSED LOCATION OF HANDHOLE (HH-1). SEE DETAIL 2/E3 (TYP.).

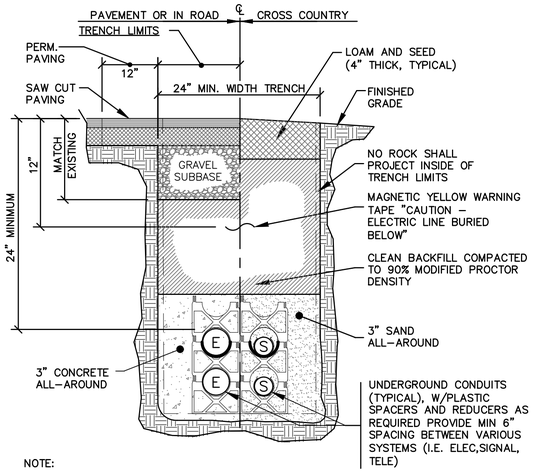
PROPOSED LOCATION OF NEW UNDERGROUND FEEDER AND FIBER OPTIC CONDUITS.

APPROXIMATE LOCATION OF EXISTING RISER POLE WITH POLE MOUNTED TRANSFORMERS.

APPROXIMATE LOCATION OF EXISTING UNDERGROUND SERVICE CONDUIT WITH NEW SERVICE CONDUCTORS IN SPARE CONDUIT.

EXISTING SMITH/CUMMINGS WELL HOUE WITH WITH EXISTING MCC-A AND RTU-2.

woods road
old well house per town worker
gravel access road
abandoned waterline
abandoned underground utilities
conc. block
10" pig clean out about grade
standing water
Cummings Well
Smith Well
former well house
vertical 8" d.i. pipe
capped 12" d.i. pipe
6" d.i. pipe inv.=156.65'
12" D
6"di
12" CI
8" DI
Ø8nh64/Ø8nh/1802/13 drop down utilities
existing 12" DI RW main
NHSPC-2002NJ-1911

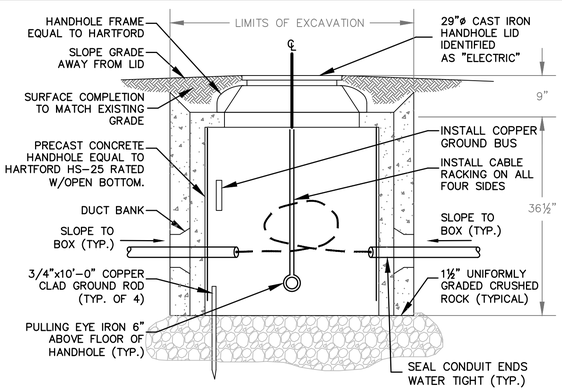


NOTE:
REFER TO ELECTRICAL SITE PLAN & DUCT BANK SCHEDULE FOR SPECIFIC REQUIREMENTS.

SUBSURFACE WORK NOTE:

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIG SAFE" AT 1(888)344-7233 (1(888)DIG-SAFE) AND COORDINATE ACTIVITIES PRIOR TO ANY EXCAVATIONS.

TYPICAL ELECTRICAL TRENCHING DETAIL 1/E3
SCALE: NONE



ELECTRIC HANDHOLE SCHEDULE

HANDHOLE DESIGNATIONS	QUANTITIES	SIZE
HH-1 (ELECTRIC)	1	48" x 48" x 36" DEEP (OPEN BOTTOM)
HH-2 (ELECTRIC)	1	48" x 48" x 36" DEEP (OPEN BOTTOM)

NOTE:

1. CONTRACTOR SHALL NOT MAKE SPLICES IN HANDHOLES, EXCEPT FOR TEMPORARY CONNECTIONS. (TYPICAL).
2. PROVIDE METAL BARRIER BETWEEN POWER AND SIGNAL CABLES WITHIN MANHOLE WHERE APPLICABLE.
3. THE MANHOLE DESIGN LOADING SHALL BE: AASHTO – HS-25.

TYPICAL HANDHOLE INSTALLATION DETAIL 2/E3
SCALE: NONE

STORAGE TANK/WELL HOUSE ENLARGED ELECTRICAL SITE PLAN CONTINUATION 3/E3
SCALE: 1"=20'-0"

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

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STORAGE TANK WITH WELL HOUSE
ELECTRICAL SITE PLAN CONTINUATION

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO E3
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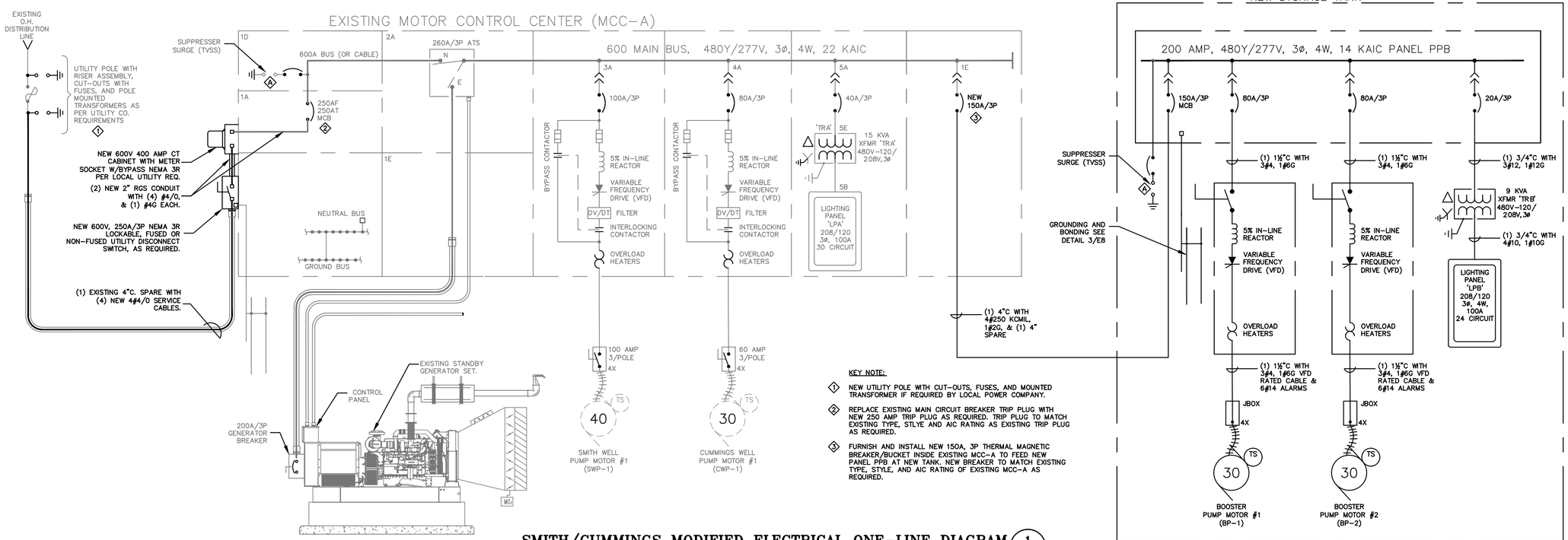
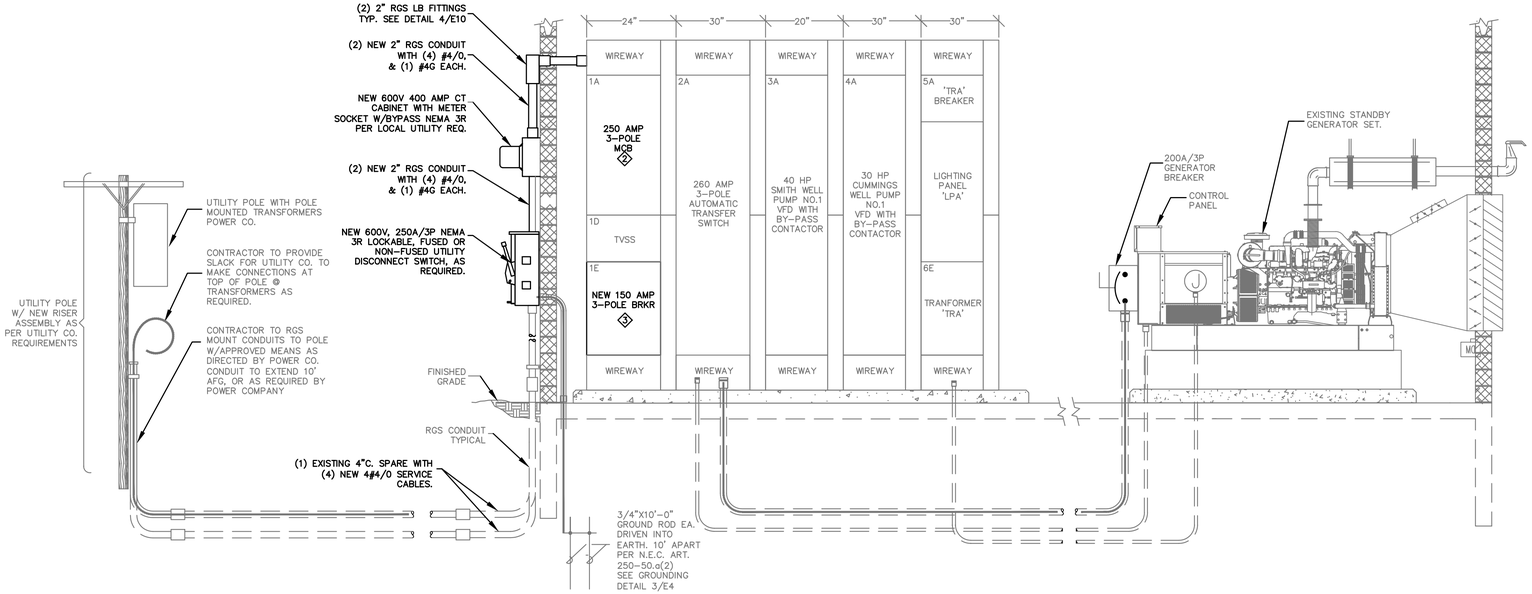


KEY NOTE:

1. NEW UTILITY POLE WITH CUT-OUTS, FUSES, AND MOUNTED TRANSFORMER IF REQUIRED BY LOCAL POWER COMPANY.
2. REPLACE EXISTING MAIN CIRCUIT BREAKER TRIP PLUG WITH NEW 250 AMP TRIP PLUG AS REQUIRED. TRIP PLUG TO MATCH EXISTING TYPE, STLYE AND AIC RATING AS EXISTING TRIP PLUG AS REQUIRED.
3. FURNISH AND INSTALL NEW 150A, 3P THERMAL MAGNETIC BREAKER/BUCKET INSIDE EXISTING MCC-A TO FEED NEW PANEL PPB AT NEW TANK. NEW BREAKER TO MATCH EXISTING TYPE, STYLE, AND AIC RATING OF EXISTING MCC-A AS REQUIRED.

SMITH/CUMMINGS MODIFIED ELECTRICAL ONE-LINE DIAGRAM — 1/E4

SCALE: NONE



SMITH/CUMMINGS MODIFIED ELECTRICAL EQUIPMENT ELEVATION — 2/E4

SCALE: NONE

TRANSIENT VOLTAGE SURGE SUPPRESSER (TVSS) SCHEDULE:

	LOCATION	MODEL NO.	SYSTEM VOLTAGE	PEAK SURGE CURRENT
A	PPB	PTE160-3Y201-D	480, 3Ø,4W	160,000 AMPS PER Ø

NOTE:

1. SURGE PROTECTORS SHALL BE MANUFACTURED BY INNOVATIVE TECHNOLOGY OR APPROVED EQUAL.
2. UNIT SHALL HAVE: 10 MODE MOV DESIGN, SINE-WAVE TRACKING, 20 YEAR WARRANTY, & SURGE COUNTER, AND INTERNAL BREAKER

TVSS SCHEDULE — 3/E4

SCALE: NONE

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SMITH/CUMMINGS ONE-LINE DIAGRAM
COMPOSITE ELEVATED WATER STORAGE TANK
CITY OF DOVER, NEW HAMPSHIRE

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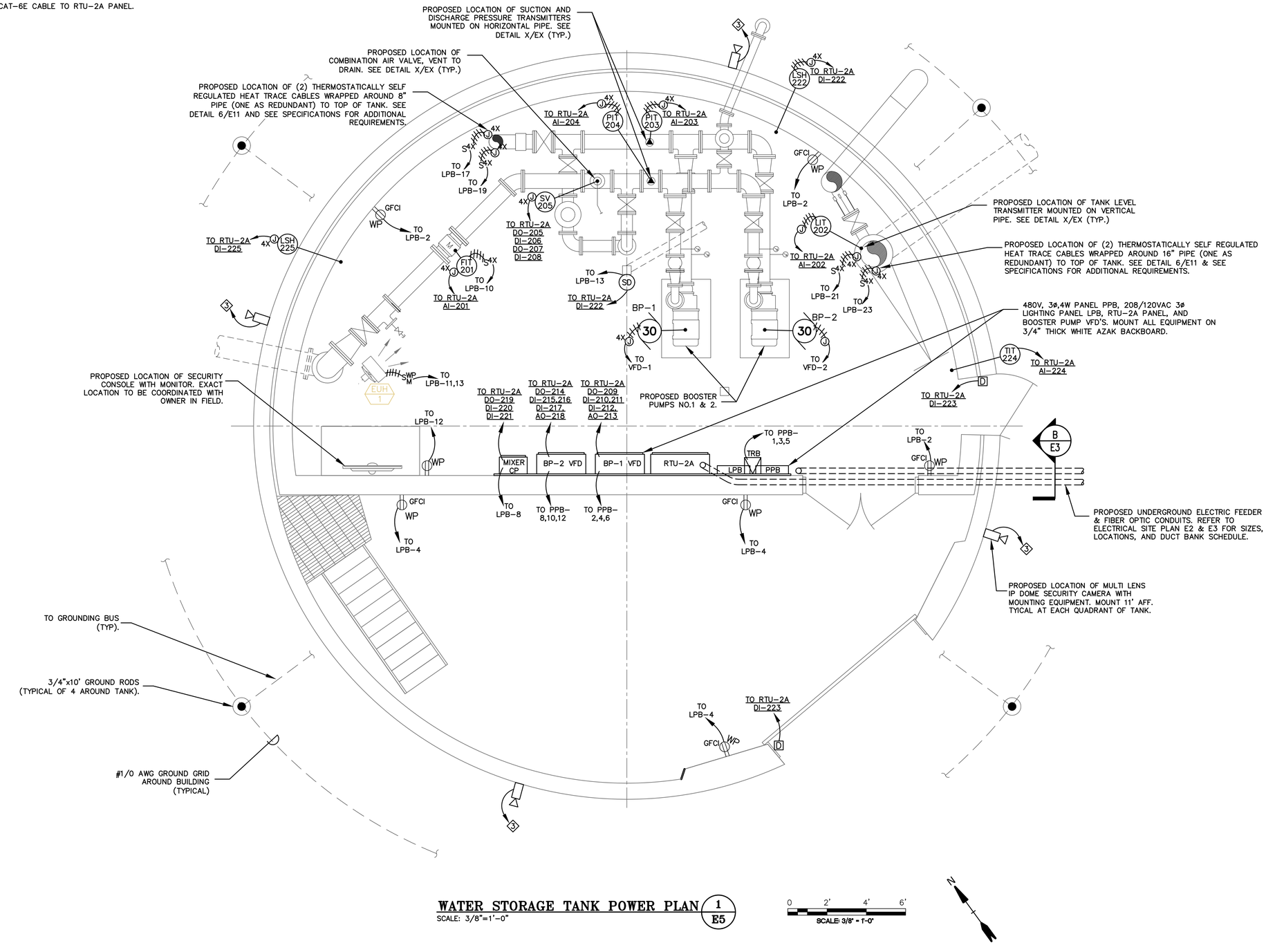
KEY NOTES:

1. PROVIDE 3/4" THICK WHITE AZAK BACKBOARD FOR ALL PANELS, CABINETS ETC. AS REQUIRED.
2. ALL WIRING IN ALL TANK AREAS SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL CONDUIT HANGING HARDWARE SHALL BE STAINLESS STEEL CONSTRUCTION.
3. (1) NEW 3/4" CONDUIT WITH VIDEO CAMERA CABLE & CAT-6E CABLE TO SECURITY CONSOLE/PANEL PANEL.
4. (1) NEW 3/4" CONDUIT WITH (1) CAT-6E CABLE TO RTU-2A PANEL.



WATER STORAGE TANK POWER PLAN 1/E5

SCALE: 3/8"=1'-0"

SCALE: 3/8" = 1'-0"

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STORAGE TANK/BPS
POWER PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
E5	OF X

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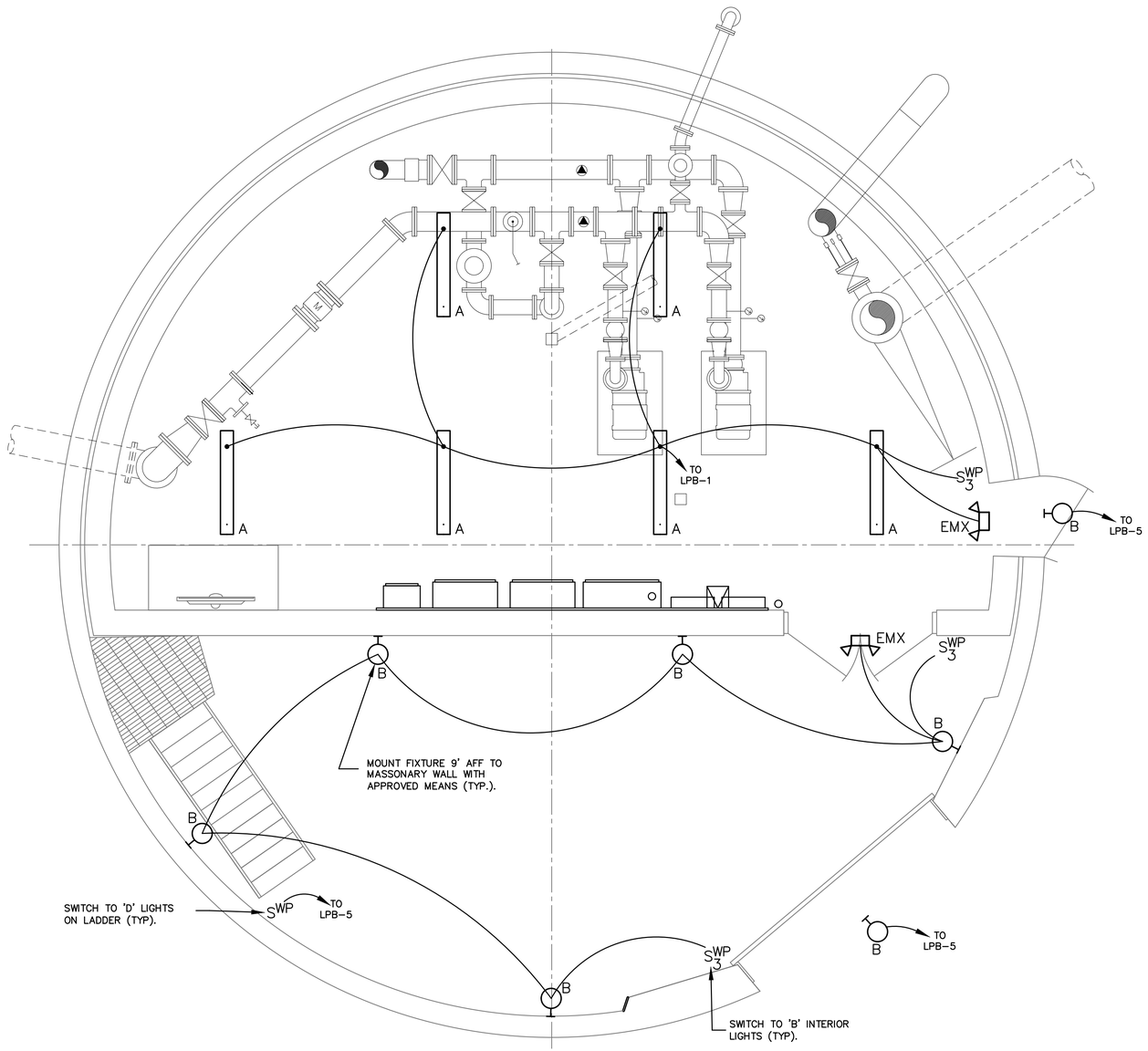
KEY NOTES:

1. PROVIDE 3/4" THICK WHITE AZAK BACKBOARD FOR ALL PANELS, CABINETS ETC. AS REQUIRED.
2. ALL WIRING IN ALL TANK AREAS SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL CONDUIT HANGING HARDWARE SHALL BE STAINLESS STEEL CONSTRUCTION.
3. (1) NEW 3/4" CONDUIT WITH VIDEO CAMERA CABLE & CAT-6E CABLE TO SECURITY CONSOLE/PANEL PANEL.
4. (1) NEW 3/4" CONDUIT WITH (1) CAT-6E CABLE TO RTU-2A PANEL.



WATER STORAGE TANK LIGHTING PLAN 1/E6
SCALE: 3/8"=1'-0"

0 2' 4' 6'
SCALE: 3/8" = 1'-0"

N

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STORAGE TANK/BPS
LIGHTING PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

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DWG NO E6
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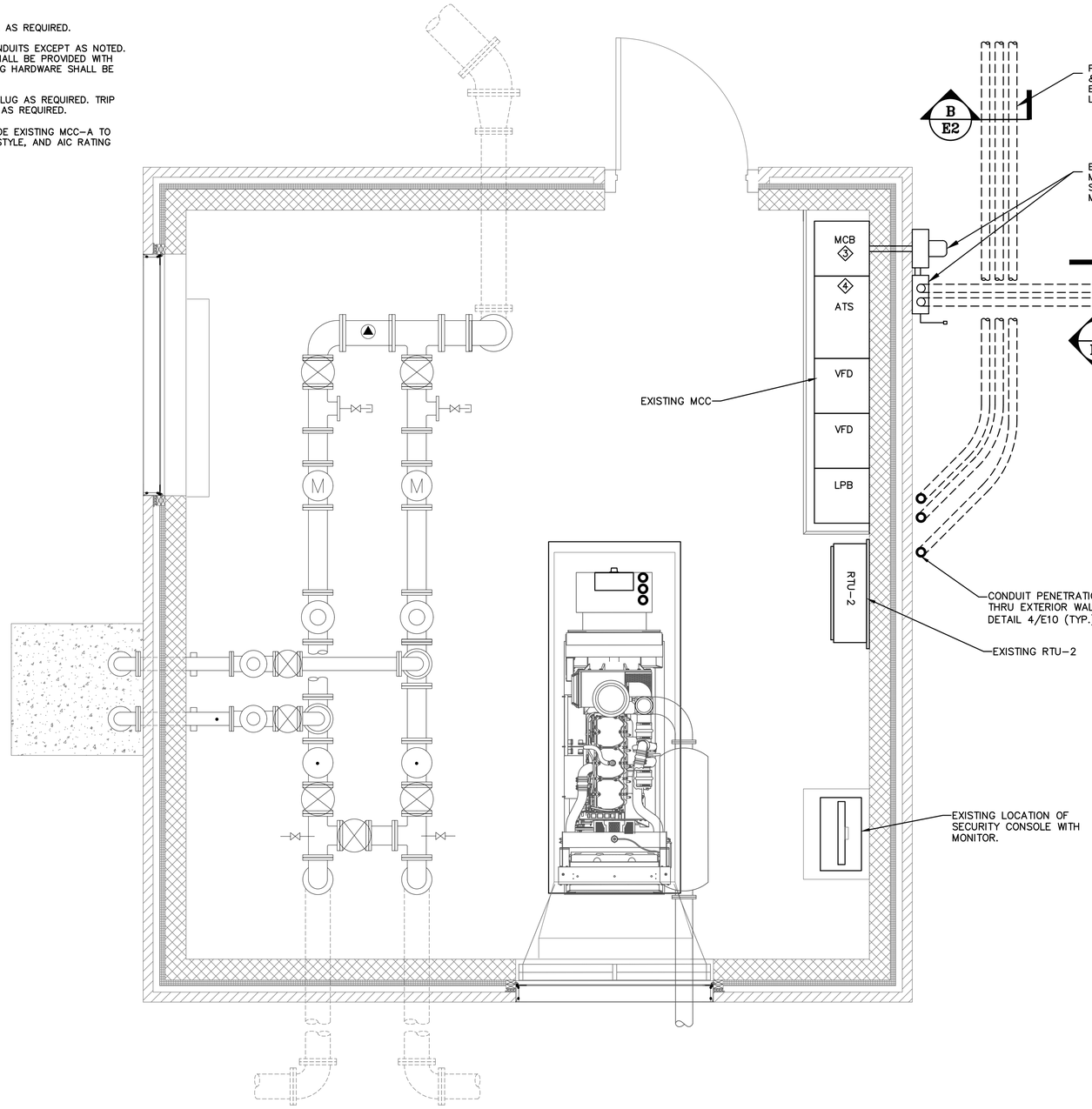
KEY NOTES:

1. PROVIDE 3/4" THICK WHITE AZAK BACKBOARD FOR ALL PANELS, CABINETS ETC. AS REQUIRED.
2. ALL WIRING INSIDE PUMP STATION SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL CONDUIT HANGING HARDWARE SHALL BE STAINLESS STEEL CONSTRUCTION.
3. REPLACE EXISTING MAIN CIRCUIT BREAKER TRIP PLUG WITH NEW 250 AMP TRIP PLUG AS REQUIRED. TRIP PLUG TO MATCH EXISTING TYPE, STLYE AND AIC RATING AS EXISTING TRIP PLUG AS REQUIRED.
4. FURNISH AND INSTALL NEW 150A, 3P THERMAL MAGNETIC BREAKER/BUCKET INSIDE EXISTING MCC-A TO FEED NEW PANEL PPB AT NEW TANK. NEW BREAKER TO MATCH EXISTING TYPE, STYLE, AND AIC RATING OF EXISTING MCC-A AS REQUIRED.



SMITH/CUMMINGS WELL BUILDING MODIFIED POWER PLAN 1/E7
SCALE: 1/2"=1'-0"

0 1' 2' 4'
SCALE: 1/2" = 1'-0"

N

Electrical, Instrumentation, & Control Systems Engineering
SMR ENGINEERING, PC
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603-429-3313 Fax: 603-429-3466

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			CONSTRUCTION Date - By -
			RECORD DRAWING Date - By -

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 12/14/21
Book No. -
Project No. 2575
Dwg. ID 2575-E7-PP
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

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SMITH/CUMMINGS WELL BUILDING
MODIFIED POWER PLAN

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO E7

SHEET OF X

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Dover Tank\2575-E5-Tank-Power-Lighting Plans.dwg Dec 17, 2021 - 1:43pm

PANEL No. PPB

BUS 200 AMPERE
PANEL RATING 14 KAIC
SUPPLY VAC 480Y/277V
SERVICE 3-PHASE, 4W W/GND BUS

LOCATION INSIDE TANK
MOUNTING SURFACE
DWG No.

WIRING # OF WIRES	WIRING CONDUIT	DESCRIPTION	VA OR W øA	VA OR W øB	VA OR W øC	BREAKER POLE	BREAKER AMPS	CKT. NO	BUS A	BUS B	BUS C	CKT. NO	BREAKER POLE	BREAKER AMPS	VA OR W øA	VA OR W øB	VA OR W øC	DESCRIPTION	WIRING CONDUIT	WIRING # OF WIRES
3#12, 1#12G	3/4"	9 KVA TRANSFORMER TRB				3	20	1	X			2	3	80				BOOSTER PUMP NO.1 (BP-1) VFD	1-1/2"	3#4, 1#6G
								3		X		4								
								5			X	6								
		SPARE				2	30	7	X			8	3	80				BOOSTER PUMP NO.2 (BP-2) VFD	1-1/2"	3#4, 1#6G
								9		X		10								
		SPARE				3	30	11			X	12								
								13	X			14	1	20						
								15		X		16	1	20						
		SPARE				2	20	17			X	18	1	20						
								19	X			20	1	20						
		SPARE				2	20	21		X		22	1	20						
								23			X	24								
								19	X			26								
								21		X		28								
								23			X	30								
												TOTAL 2								
		TOTAL 1																		
		TOTAL 2																		
		TOTAL 1 + 2																		
		TOTAL CONNECTED LOAD AMPERES																		

MAIN BREAKER 150/3P
FEEDER ENTRANCE TOP
FEEDER SIZE 4#250 KCMIL, 1#2G, 4"C
SOURCE MCC-B @ SMITH/CUMMINGS WH
PANEL TYPE BOLT-ON

MAIN LUGS N/A
ENCL. TYPE NEMA 1
ACCRIES

PANEL No. LPB

BUS 100 AMPERE
PANEL RATING 10 KAIC
SUPPLY VAC 208Y/120V
SERVICE 3 PHASE, 4W W/GND BUS

LOCATION INSIDE TANK
MOUNTING SURFACE
DWG No.

WIRING # OF WIRES	WIRING CONDUIT	DESCRIPTION	VA OR W øA	VA OR W øB	VA OR W øC	BREAKER POLE	BREAKER AMPS	CKT. NO	BUS A	BUS B	BUS C	CKT. NO	BREAKER POLE	BREAKER AMPS	VA OR W øA	VA OR W øB	VA OR W øC	DESCRIPTION	WIRING CONDUIT	WIRING # OF WIRES
2#12, 1#12G	3/4"	INTERIOR LIGHTING				1	20	1	X			2	1	20				RECEPTACLES - INTERIOR	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	INTERIOR LIGHTING				1	20	3		X		4	1	20				RECEPTACLES - INTERIOR	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	EXTERIOR LIGHTING				1	20	5			X	6	1	20				RTU-2A PANEL	3/4"	2#12, 1#12G
2#10, 1#10G	3/4"	LADDER LIGHTS				2	30	7	X			8	1	20				MIXER MOTOR	3/4"	2#12, 1#12G
								9		X		10	1	20				MAG METER		
2#10, 1#10G	3/4"	ELECTRIC UNIT HEATER NO.1				2	30	11			X	12	1	20				SECURITY CONSOLE/PANEL	3/4"	2#12, 1#12G
								13	X			14	1	20				OVERHEAD DOOR OPENER MOTOR	3/4"	2#12, 1#12G
						1	20	15		X		16	1	20					3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HEAT TRACE CABLE				1	20	17			X	18	1	20					3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HEAT TRACE CABLE				1	20	19	X			20	1	20					3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HEAT TRACE CABLE				1	20	21		X		22	1	20					3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HEAT TRACE CABLE				1	20	23			X	24								
		TOTAL 1										TOTAL 2								
		TOTAL 2																		
		TOTAL 1 + 2																		
		TOTAL CONNECTED LOAD AMPERES																		

MAIN BREAKER 30/3P
FEEDER ENTRANCE TOP
FEEDER SIZE 4#10, 1#10G, 3/4"C
SOURCE 9-KVA TRANSFORMER - TRB
PANEL TYPE BOLT-ON

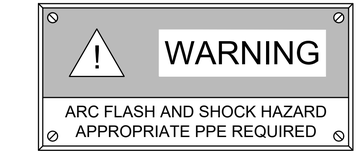
MAIN LUGS N/A
ENCL. TYPE NEMA 1
ACCRIES

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	TYPE	COLOR	MOUNTING	VOLTAGE	LAMPS	REMARKS	TOTAL WATTS
A	COLUMBIA	LCS4-40-HL-EU-SSL	LED	WHITE	CEILING SURFACE	120	LED	MOUNT FLUSH TO CEILING OR WALL MOUNTED AS SHOWN ON DWGS.	200
B	PHILIPS	121-16L-1200-WW-G3-2-120-F1-BZ	LED	BRONZE	WALL 9'-4"	120	LED	W/WIRE GUARD.	16
EMX	HUBBELL	N4X7-12V	EMERG.	GRAY	WALL@ 8'	120	(2) 9W	MOUNT FLUSH ON WALL ABOVE DOOR @ 8' A.F.F.	23
D	HUBBELL	LBLV15-VL15LG	LED	GRAY	WALL MOUNT	120	LED	WITH VW1/VX1 VAPOR TIGHT WITH GLOBE & WIRE GUARD.	100
EX	HUBBELL	LN4XRW	EXIT	GRAY	WALL@ 8' ABOVE DOOR	120	LED	MOUNT FLUSH ON WALL ABOVE DOOR @ 8' A.F.F.	-

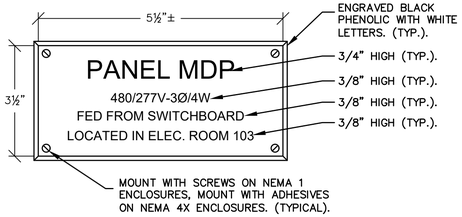
ELECTRIC PANEL & LIGHTING FIXTURE SCHEDULES 1/E8
SCALE: NONE

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Dover Tank\2575-E8-E12-WD.dwg Dec 17, 2021 - 1:43pm

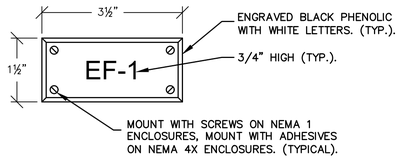


INSTALL ON ALL METER SOCKETS, SWITCHBOARDS, MOTOR CONTROL CENTERS, PANELBOARDS IN ACCORDANCE TO NEC ART 110.16 (TYPICAL).

TYPICAL FLASH PROTECTION WARNING LABEL
NO SCALE



TYPICAL PANEL NAMEPLATE
NO SCALE

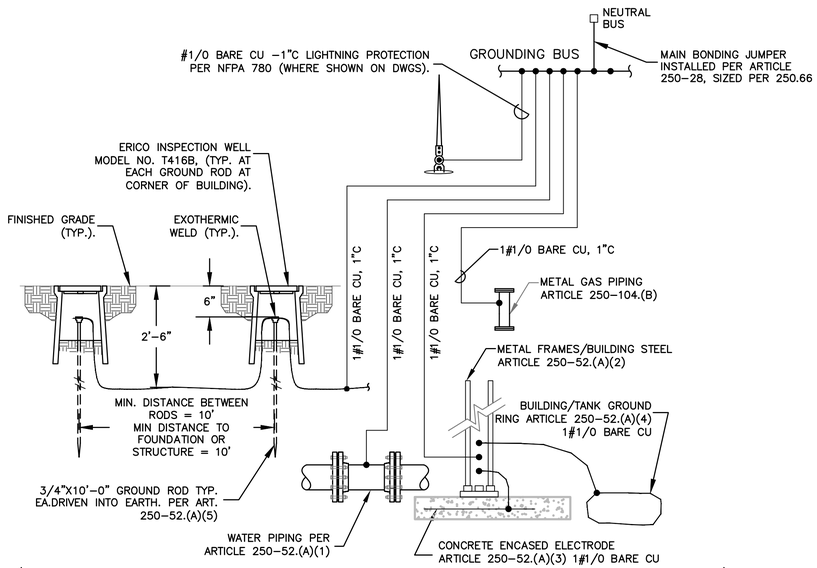


TYPICAL EQUIPMENT OR DISC. SWITCH NAMEPLATE
NO SCALE

GENERAL NOTE:

1. NAMEPLATES ARE REQUIRED TO BE INSTALLED ON ALL ELECTRICAL EQUIPMENT FURNISHED ON PROJECT INCLUDING BUT NOT LIMITED TO: DISCONNECT SWITCHES, STARTERS, MOTOR CONTROL CENTERS, CONTROL STATIONS, SWITCHGEAR, SWITCHBOARDS, PANELBOARDS, ELECTRICAL CONTROL CENTERS (PROCESS PANELS) AND RELATED ITEMS.
2. REFER TO SPECIFICATIONS FOR NAMEPLATE REQUIREMENTS.
3. ALL NAMEPLATES TO BE 1/16" THICK PHENOLIC WITH WHITE CENTER LAMINATION

SMITH/CUMMINGS ELECTRICAL ONE-LINE DIAGRAM 2/E8
SCALE: NONE



GROUNDING ELECTRODE & BONDING
CONDUCTORS WHERE APPLICABLE PER ARTICLE 250 OF N.E.C.

GROUNDING AND BONDING INSTALLATION DETAIL AT TANK 3/E8
SCALE: NONE

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Electrical, Instrumentation, & Control Systems Engineering
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603-429-3313 Fax: 603-429-3466

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Designed JMC
Checked SMR
Approved TGP
Date 12/14/21
Book No. -
Project No. 2575
Dwg. ID 2575-E8-WD
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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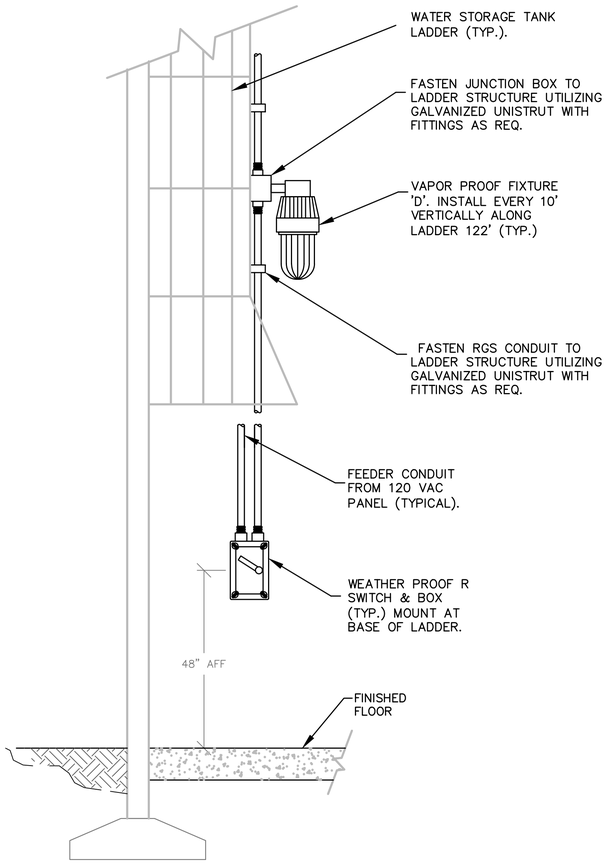
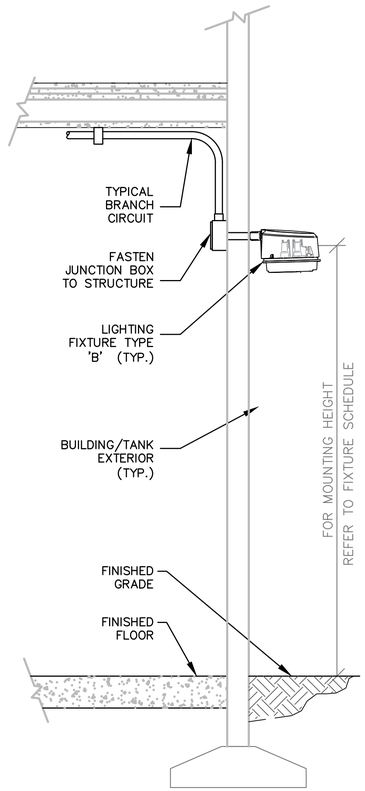
ELECTRIC PANEL & LIGHTING FIXTURE SCHEDULES WITH DETAILS

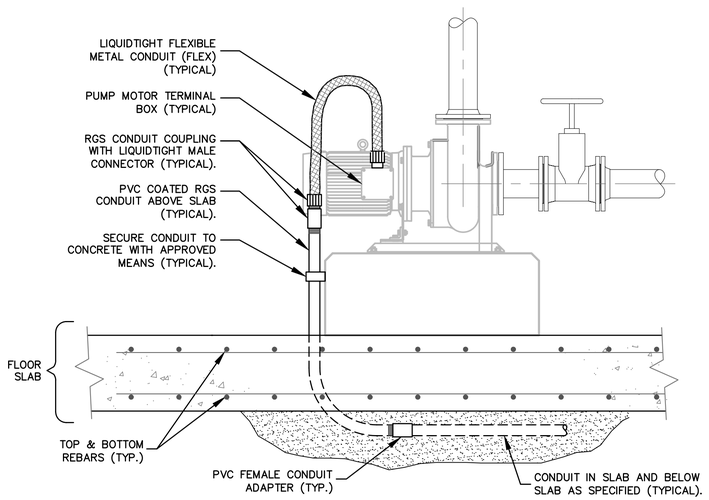
COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

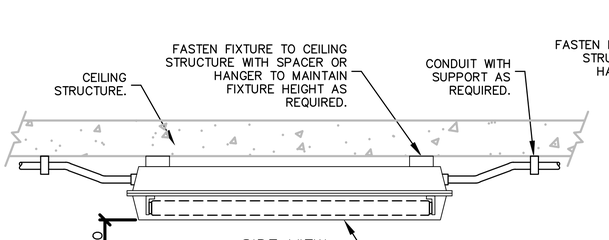
DWG NO E8
SHEET OF X

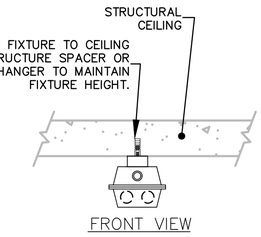


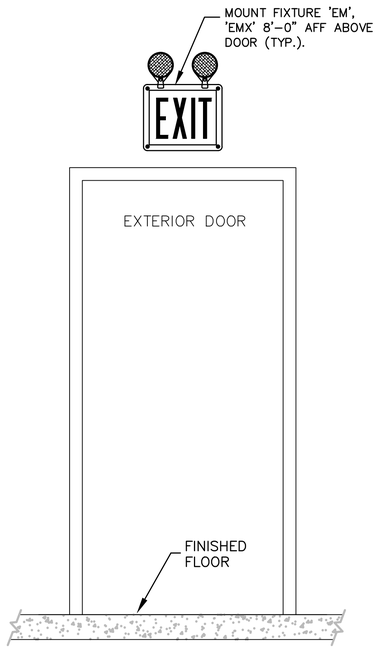


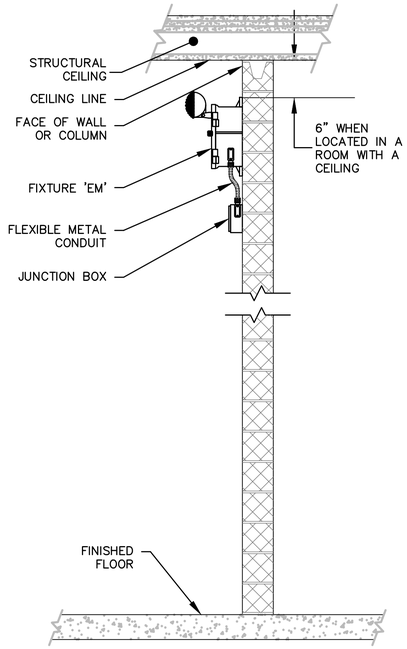


ELECTRICAL CONNECTION AT MOTOR (TYP.) 2/E9
SCALE: NONE









LIGHTING FIXTURE MOUNTING DETAILS 1/E9
SCALE: NONE

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Checked SMR
Approved TGP
Date 12/14/21
Book No. –
Project No. 2575
Dwg. ID 2575-E9-WD
Scale AS SHOWN

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25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

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LIGHTING FIXTURE MOUNTING DETAILS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO E9 | SHEET OF X

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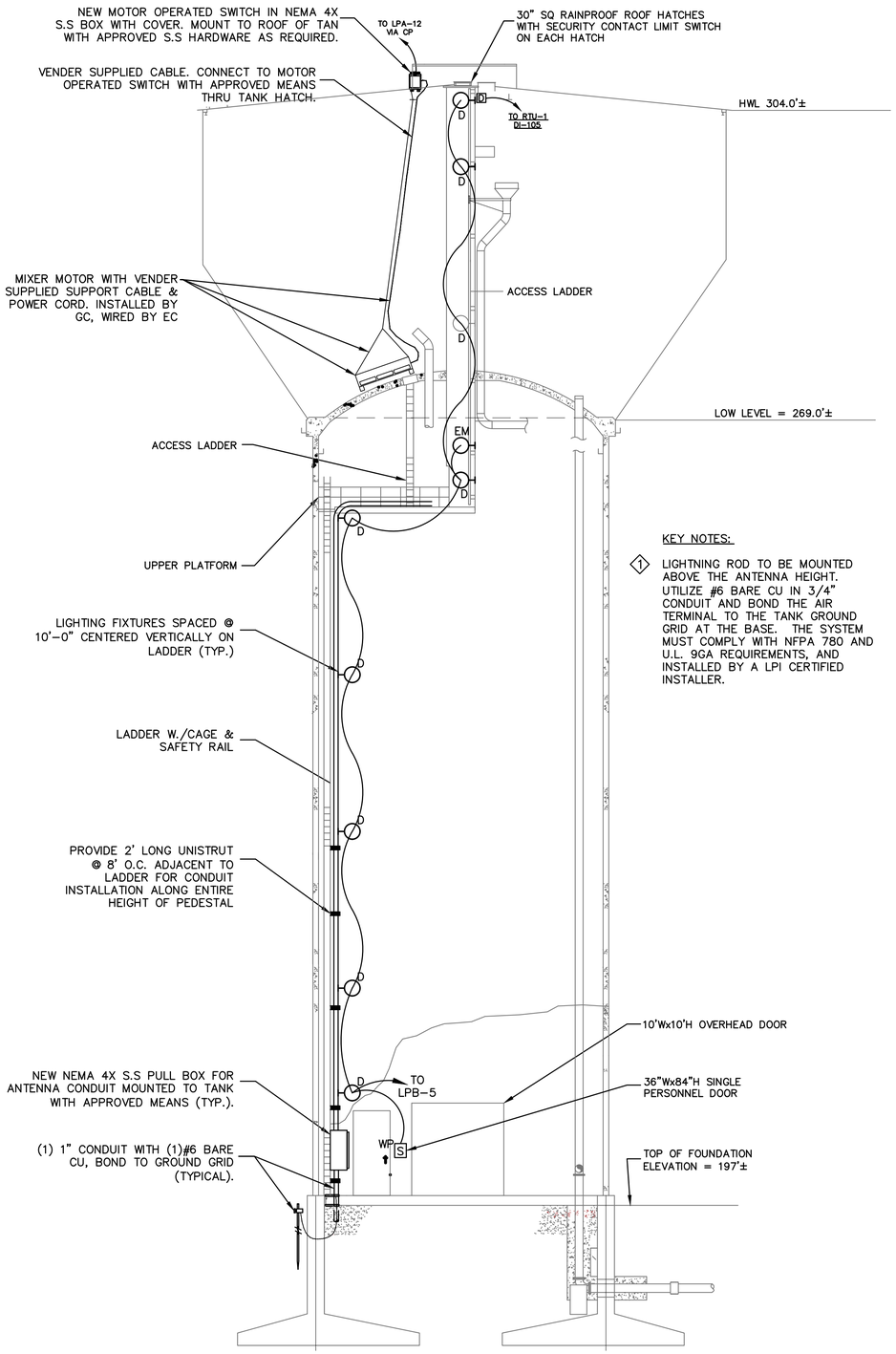
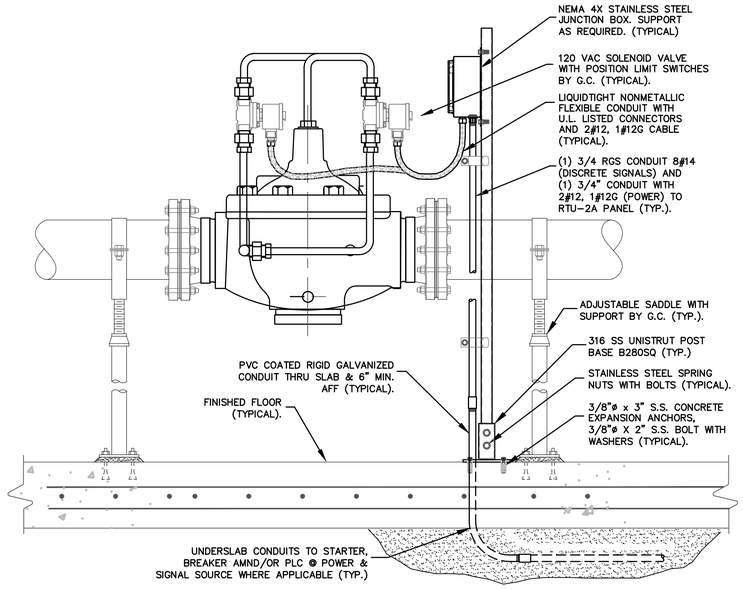


KEY NOTES:

1. LIGHTNING ROD TO BE MOUNTED ABOVE THE ANTENNA HEIGHT. UTILIZE #6 BARE CU IN 3/4" CONDUIT AND BOND THE AIR TERMINAL TO THE TANK GROUND GRID AT THE BASE. THE SYSTEM MUST COMPLY WITH NFPA 780 AND U.L. 9GA REQUIREMENTS, AND INSTALLED BY A LPI CERTIFIED INSTALLER.

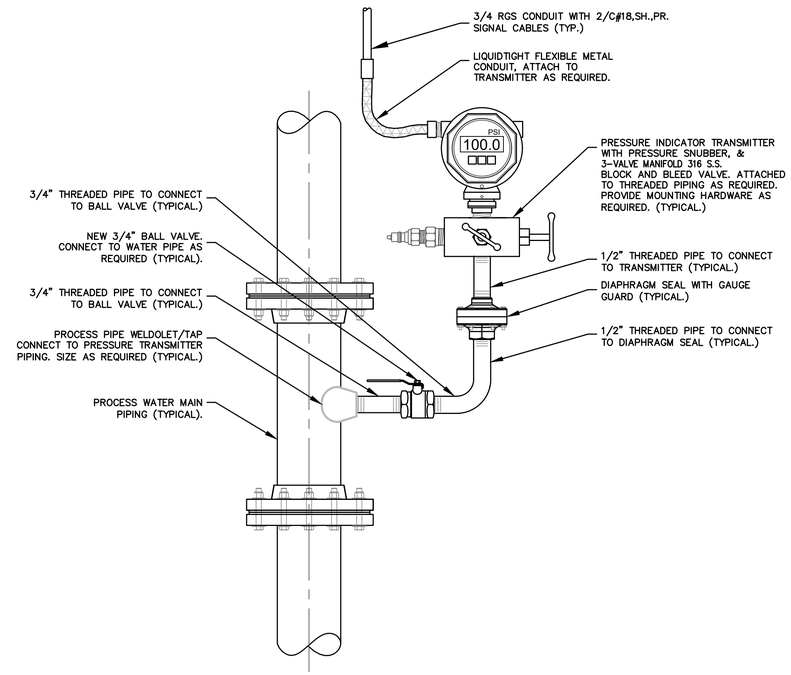
LIGHTING FIXTURE MOUNTING & MIXER MOTOR CONNECTIONS INSIDE TANK (1/E10)

SCALE: NONE



ELECTRICAL/SIGNAL CONNECTION AT CLAY VALVE (TYP.) (2/E10)

SCALE: NONE



ELECTRICAL CONNECTION AT TANK LEVEL TRANSMITTER (3/E10)

SCALE: NONE

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ELECTRICAL DETAILS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
E10	OF X

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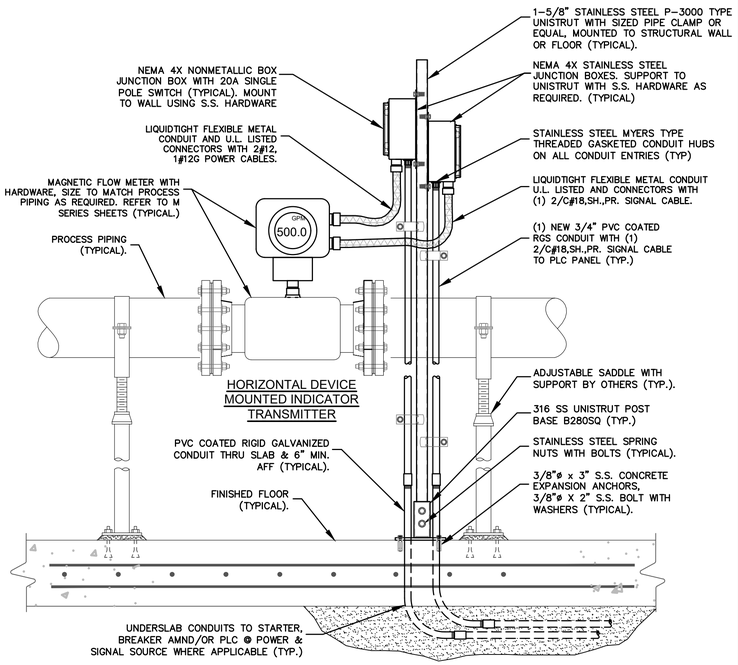
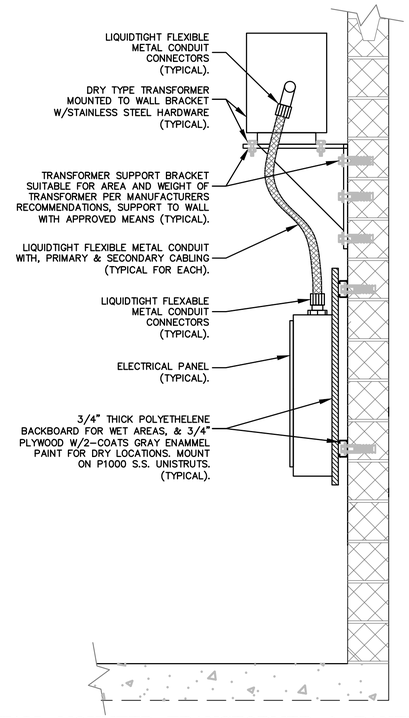


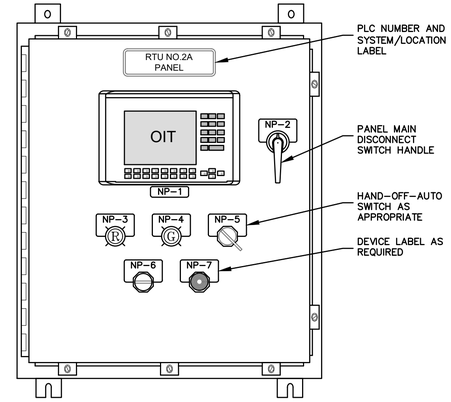
ELECTRICAL/SIGNAL CONNECTION AT MAG METER (TYP.) 1/E11

SCALE: NONE



WALL MOUNTED TRANSFORMER & PANEL (TYP.) 3/E11

SCALE: NONE



TYPICAL PANEL NAMEPLATE SCHEDULE:

NP-1	OPERATOR INTERFACE TERMINAL (OIT)
NP-2	PANEL DISCONNECT SWITCH
NP-3	COMMUNICATION FAIL
NP-4	POWER ON
NP-5	H-O-A SWITCH (TYP. AS NEEDED)
NP-6	RESET
NP-7	SONALERT AUDIBLE ALARM HORN

TYPICAL CONTROL PANEL SYMBOLS:

GPM 150.0 — LCD, 3-1/2 LARGE DIGIT INDICATOR

(R) — INDICATING LIGHTS
A: AMBER
B: BLUE
G: GREEN
R: RED
W: WHITE
Y: YELLOW

SELECTOR SWITCH, TWO OR THREE POSITION

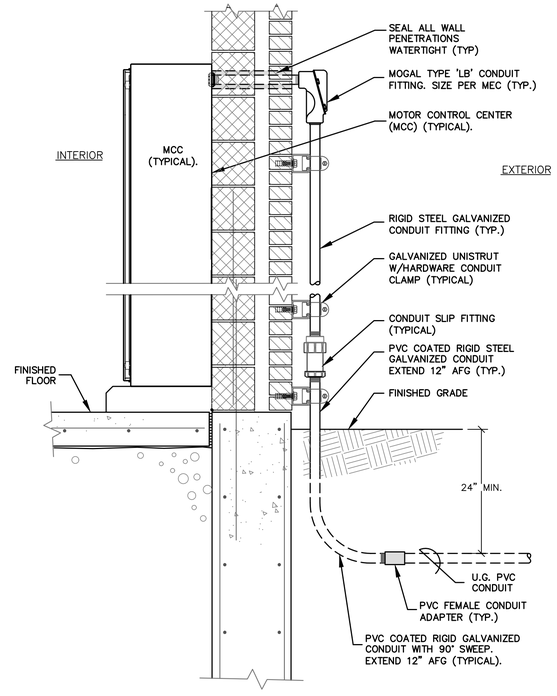
PUSHBUTTON STATION – MOMENTARY

METERING PUMP SPEED POT

SONALERT

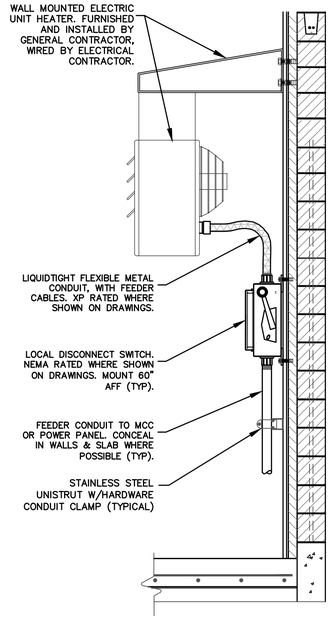
RTU-2A PANEL ELEVATION (TYP.) 5/E11

SCALE: NONE



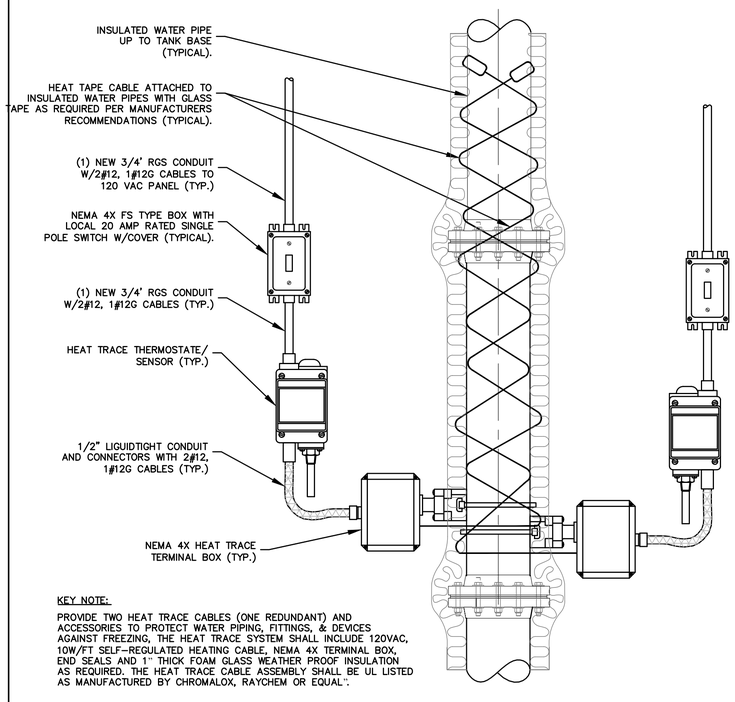
CONDUIT PENETRATION THRU EXTERIOR WALLS (TYP.) 2/E11

SCALE: NONE



ELECTRICAL CONNECTION AT ELECTRIC UNIT HEATER (TYP.) 4/E11

SCALE: NONE



KEY NOTE:

PROVIDE TWO HEAT TRACE CABLES (ONE REDUNDANT) AND ACCESSORIES TO PROTECT WATER PIPING, FITTINGS, & DEVICES AGAINST FREEZING, THE HEAT TRACE SYSTEM SHALL INCLUDE 120VAC, 10W/FT SELF-REGULATED HEATING CABLE, NEMA 4X TERMINAL BOX, END SEALS AND 1" THICK FOAM GLASS WEATHER PROOF INSULATION AS REQUIRED. THE HEAT TRACE CABLE ASSEMBLY SHALL BE UL LISTED AS MANUFACTURED BY CHROMALOX, RAYCHEM OR EQUAL".

HEAT TAPE CABLE CONNECTION AT WIPER PIPE (TYP.) 6/E11

SCALE: NONE

Electrical, Instrumentation, & Control Systems Engineering
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603-429-3313 Fax: 603-429-3466
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NO.	REVISIONS	APP'D	Date
	ISSUE FOR BIDDING	By	-
	CONSTRUCTION	By	-
	RECORD DRAWING	By	-

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 12/14/21
Book No. -
Project No. 2575
Dwg. ID 2575-E11-WD
Scale AS SHOWN

Draft
DEC. 17, 2021
"Not for Construction"

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

ELECTRICAL DETAILS

COMPOSITE ELEVATED WATER STORAGE TANK

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO E11 | SHEET OF X

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DESCRIPTION				DESCRIPTION	FUNCTION	HARDWARE												SOFTWARE																								REMARKS
						WIRE				INPUT/OUTPUT				OUTPUT FUNCT.				STATUS			LOGGING						SCHEDULING				APPLICATION PROGRAM			ALARMS									MISC.			
										DIGITAL		ANALOG		DIGITAL		ANALOG																														
LOOP NUMBER	INPUT/OUTPUT LOCATION	EQUIPMENT TAG ID	EQUIPMENT/STARTER LOCATION	TO		2#14 AWG – 3/4"C	3#14 AWG – 3/4"C	2/C #18 SH. PR. – 3/4"C	CAT–5E – 1"C	DI (DIGITAL INPUT)	DO (DIGITAL OUTPUT)	AI (ANALOG INPUT)	AO (ANALOG OUTPUT)	PULSE – POSITION	START/STOP	OPEN/CLOSE	PACING	MODULATING	@ GUI	LOCAL INDICATOR	LOCAL OPERATOR INTERFACE	DAILY	WEEKLY	MONTHLY	CHANGE OF STATE	HISTORICAL	MANUAL @ G.U.I.	TOTALIZATION	MAINTENANCE TIME REM.	PEAK SHAVING	RES. @ PLC	P.I.D.	HIGH ALARM	LOW ALARM	FAIL ALARM	OFF NORMAL	ANNUNCIATE @ GUI	ANNUNCIATE @ PRINTER	ANNUNCIATE TO MODEM	SET POINT ADJ. @ PLC	TREND LOG	CALCULATION NO.	
DOVER, NH – COMPOSITE ELEVATED WATER STORAGE TANK PROJECT																																										
REMOTE TERMINAL PANEL NO.1 (RTU–2A) @ TANK																																										
201	RTU–2A	FIT–201		Mag Meter – System Flow	System – Flow			X				X							X	X	X	X	X	X	X		X	X		X		X	X			X	X	X		X		X	
202	RTU–2A	LIT–202		Storage Tank – Level Transmitter	Storage Tank – Level			X				X							X	X	X	X	X	X	X		X	X		X		X	X			X	X	X		X		X	
203	RTU–2A	PIT–203		Suction – Pressure Transmitter	Suction – Pressure Level			X				X							X	X	X	X	X	X	X			X		X		X	X	X	X	X	X	X	X		X	X	
204	RTU–2A	PIT–204		Discharge – Pressure Transmitter	Discharge – Pressure Level			X				X							X	X	X	X	X	X	X			X		X		X	X	X	X	X	X	X	X		X	X	
205	RTU–2A	SV–205		Combination Air to Vent Control Valve No.205	Valve – Open Signal	X					X				X				X	X	X	X	X	X	X			X	X						X	X	X		X				
206	RTU–2A	SV–205		Combination Air to Vent Control Valve No.205	Valve – Open Status	X				X									X	X	X					X		X		X					X								
207	RTU–2A	SV–205		Combination Air to Vent Control Valve No.205	Valve – Close Signal	X					X				X				X	X	X	X	X	X	X			X	X						X	X	X		X				
208	RTU–2A	SV–205		Combination Air to Vent Control Valve No.205	Valve – Close Status	X				X									X	X	X					X		X		X					X								
209	RTU–2A	BP–1	VFD	Booster Pump Motor No.1 – VFD	Pump Motor – Start/Stop	X					X				X				X	X	X	X	X	X	X			X	X		X				X	X	X		X				
210	RTU–2A	BP–1	VFD	Booster Pump Motor No.1 – VFD	Pump Motor – Status	X				X									X	X	X					X		X		X					X								
211	RTU–2A	BP–1	VFD	Booster Pump Motor No.1 – VFD	Pump Motor – Fail Alarm	X				X												X	X	X						X			X		X	X	X					
212	RTU–2A	BP–1	VFD	Booster Pump Motor No.1 – VFD	Pump Motor – Not in Auto	X				X												X	X	X						X		X			X	X	X					
213	RTU–2A	BP–1	VFD	Booster Pump Motor No.1 – VFD	Pump Motor – Speed Signal			X					X			X			X	X	X									X	X								X		X	
214	RTU–2A	BP–2	VFD	Booster Pump Motor No.2 – VFD	Pump Motor – Start/Stop	X					X				X				X	X	X	X	X	X	X			X	X		X				X	X	X		X				
215	RTU–2A	BP–2	VFD	Booster Pump Motor No.2 – VFD	Pump Motor – Status	X				X									X	X	X					X		X		X					X								
216	RTU–2A	BP–2	VFD	Booster Pump Motor No.2 – VFD	Pump Motor – Fail Alarm	X				X												X	X	X						X			X		X	X	X					
217	RTU–2A	BP–2	VFD	Booster Pump Motor No.2 – VFD	Pump Motor – Not in Auto	X				X												X	X	X						X		X			X	X	X					
218	RTU–2A	BP–2	VFD	Booster Pump Motor No.2 – VFD	Pump Motor – Speed Signal			X					X			X			X	X	X									X	X								X		X	
219	RTU–2A	MCP–1		Mixer Control Panel	Mixer – Start/Stop	X					X				X				X	X	X	X	X	X	X			X	X		X				X	X	X		X				
220	RTU–2A	MCP–1		Mixer Control Panel	Mixer – Status	X				X									X	X	X					X		X		X					X								
221	RTU–2A	MCP–1		Mixer Control Panel	Mixer – Fail Alarm	X				X												X	X	X						X			X		X	X	X					
222	RTU–2A	SD		Tank Fire Alarm – Smoke Detector	Tank – Fire Alarm	X				X												X	X	X						X		X			X	X	X					
223	RTU–2A	D		Tank – Security Alarm	Tank – Security Alarm	X				X												X	X	X						X		X			X	X	X					
224	RTU–2A	TIT–224		Temperature Transmitter – Tank	Tank – Temperature							X							X	X	X	X	X	X	X			X	X		X		X	X			X	X	X	X	X	X	
225	RTU–2A	LSH–225		Tank Flood Alarm – Float Switch	Tank Flood – Alarm					X												X	X	X						X		X			X	X	X					

Electrical, Instrumentation, & Control Systems Engineering
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603/429-3313 **Fax:** 603/429-3466

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LOOP, WIRE, AND CONDUIT SCHEDULE

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