CITY OF DOVER

CITY COUNCIL - AGENDA

Meeting Type: **Regular Meeting**
Meeting Location: **City Hall, Council Chambers**
Meeting Date: **Wednesday, December 8, 2021**
Meeting Time: **7:00 pm**

1. **CALL TO ORDER**
2. **MOMENT OF SILENCE**
3. **PLEDGE OF ALLEGIANCE**
4. **ROLL CALL ATTENDANCE**
5. **PROCLAMATIONS/AWARDS**
6. **APPROVAL OF AGENDA**
7. **PUBLIC HEARINGS**
   - A. **CHAPTER 13 – CITY COUNCIL, SECTION 5**
     SPONSORED BY MAYOR CARRIER BY REQUEST
   - B. **CHAPTER 141: VEHICLES AND TRAFFIC, SECTIONS 27, 30, AND 31.**
     SPONSORED BY MAYOR CARRIER BY REQUEST
8. **CITIZEN'S FORUM**

   Taxpayers, Business owners, and Residents are invited to speak on any issue pertaining to the business of the City of Dover. Statements shall be limited to five minutes.
9. **CITY MANAGER'S REPORT**
10. **APPROVAL OF MINUTES**
    - A. **November 10, 2021 – Regular Meeting**
    - B. **December 1, 2021 – Workshop Session**
11. **MAYOR'S REPORT**
12. **UNFINISHED BUSINESS**
    - A. **ORDINANCES IN THE 2nd READING**
      1. **CHAPTER 13 – CITY COUNCIL, SECTION 5**
         SPONSORED BY MAYOR CARRIER BY REQUEST
      2. **CHAPTER 141: VEHICLES AND TRAFFIC, SECTIONS 27, 30, AND 31.**
         SPONSORED BY MAYOR CARRIER BY REQUEST
    - B. **ORDINANCES IN THE 3RD READING**

C. RESOLUTIONS

1. **REPROGRAM UNEXPENDED BOND PROCEEDS FROM COCHECO PUMP STATION PROJECT TO VARNEY BROOK PUMP STATION PROJECT AND ISSUE CHANGE ORDER ONE TO WRIGHT-PIERCE FOR CONSTRUCTION OVERSIGHT (REQUIRES A 2/3 MAJORITY VOTE OF THE COUNCIL)**
   SPONSORED BY MAYOR CARRIER BY REQUEST

13. NEW BUSINESS

A. CONSENT CALENDAR

1. **B22026 HIGH PERFORMANCE COLD PATCH AND/OR HOT PATCH**
   SPONSORED BY MAYOR CARRIER BY REQUEST

2. **B22028 2021 F350 4X4 WITH DUMP BODY**
   SPONSORED BY MAYOR CARRIER BY REQUEST

3. **B22029 2022 NISSAN LEAF SV PLUS**
   SPONSORED BY MAYOR CARRIER BY REQUEST

4. **B22030 MATERIAL REPAIR & OPERATION AND INDUSTRIAL SUPPLIES – STATE OF NH CONTRACT WITH GRAINGER INC.**
   SPONSORED BY MAYOR CARRIER BY REQUEST

5. **CANVASS OF VOTES-NOVEMBER 2, 2021**
   SPONSORED BY MAYOR CARRIER BY REQUEST

6. **B22018 LABOR NEGOTIATION SERVICES**
   SPONSORED BY MAYOR CARRIER BY REQUEST

COMMITTEE REPORTS

1. School Board
2. Planning Board
3. **Appointments Committee**
4. Arena Commission
5. Arts Commission
6. Conservation Commission
7. Downtown TIF Advisory Board
8. Energy Commission
9. Heritage Commission
10. Legislative Liaison
11. Library Board of Trustees
12. McConnell Center Advisory Committee
13. Ordinance Committee
14. Parking Commission
15. Pool Advisory Committee
16. Racial Equity and Inclusion Ad-Hoc Committee
17. Recreation Advisory Board
18. Solid Waste Advisory Commission
19. **Stormwater and Flood Resilience Funding Ad-Hoc Committee**
20. **Transportation Advisory Commission**
21. **Waterfront TIF Advisory Board**
22. **City Council / School Board Collaborative Committee**
23. **Joint Building Committee – Dover High School and Regional Career Technical Center**
24. **COAST**
25. **Cocheco Waterfront Development Advisory Committee**
26. **Dover Main Street**
27. **Strafford Regional Planning Commission**

B. RESOLUTIONS

1. **APPROVAL OF RED'S GOOD VIBES FOOD SERVICE TRAILER PROPOSAL**
   SPONSORED BY MAYOR CARRIER BY REQUEST

2. **PROFESSIONAL ENGINEERING SERVICES FOR THE PUDDING HILL WATER TREATMENT FACILITY - UNDERWOOD ENGINEERS**
   SPONSORED BY MAYOR CARRIER BY REQUEST

3. **COCHECO RIVER OUTFALL STORMWATER MASTER PLAN - KLEINFELDER NORTHEAST INC**
   SPONSORED BY MAYOR CARRIER BY REQUEST

4. **APPROVAL AND AUTHORIZATION OF (I) SETTLEMENT AND FUNDING AGREEMENT BETWEEN CITY OF DOVER AND NEW ENGLAND METAL RECYCLING, LLC, AND (II) THIRD PARTY GUARANTY AGREEMENT**
   SPONSORED BY MAYOR CARRIER BY REQUEST

C. ORDINANCES IN 1ST READING

14. COUNCIL CORRESPONDENCE

A. Letter from Comcast dated 11/18/2021.

15. COUNCIL MATTERS OF INTEREST

16. ADJOURN

CITY MANAGER'S REPORT

December 8, 2021

Reporting On:
November 2021

By: J. Michael Joyal, Jr.
City Manager

Legal Department

Joshua Wyatt, City Attorney

The Office of General Legal Counsel provides legal support to the City Council, City Manager, city staff and volunteers on boards, commissions and committees of the City of Dover to assist efforts in providing services to our constituents and/or customers. In addition, legal support is also provided to the Dover School Board and Superintendent of Schools.

For the month of October:

	For Month	FY22	FY21	FY20	FY19
Legal Matters/Questions Handled	47	229	703	466	342
Review Existing Legal Contracts & Draft Memo	14	65	-	-	-
Legal Contracts/Memo Created	13	73	350	256	269
Right to Know Requests Processed	7	30	51	49	41
Resolutions	3	27	73	75	53
Ordinances	0	10	19	10	18
Leases	0	7	-	-	-
Primex Auto Claims Handled	1	12	-	-	-
Primex Liability Claims Handled	0	25	-	-	-
Primex Property Claims Handled	2	17	-	-	-

Customer Focused Outcomes: Right to Know

Pursuant to RSA 91-A, the following Right to Know requests were received this month:

- → Bureau Veritas – Information request regarding Dover Fire Department safety checks at Langdon Place of Dover.
- → Edwina Hastings – All classroom and library reading materials that focus on gender issues.
- → Sandra Panek – Past voter registration card information.
- → Lisa Corman – Vehicle accident at 2 Wilbrod Avenue, Dover.
- → Greenman-Pederson – Proposal information on Bid #B21048, RFP 22.001
- → Auditing America – Dover Police Department completed internal affairs investigations.
- → SOS Recovery Community – Award made to Dover Mental Health Alliance and/or Community Partners

Product & Process Outcomes: Assistance to City Departments

City Council & City Boards	Attention to resolutions and ordinances as needed or requested by City Council;
Community Services	Assistance with code enforcement issues; assistance with construction contract administration questions; assistance with Great Bay Municipal Alliance for Adaptive Management; assistance with real estate questions; assistance with Pudding Hill aquifer remediation efforts; assistance with public road acceptance issues;
Executive	No assistance required.
Fire & Rescue	Assistance with code interpretation and code enforcement issues; assistance with contracts; assistance with RSA 91-A requests; assistance with HIPAA compliance;
Finance	Assistance with election-related questions; assistance with trust administration; track and file City claims with Primex; assistance with labor negotiation request for proposal; assistance with auditor letter;
Planning	Assistance with conservation commission purchase of land; assistance with waterfront development issues and real estate research; assistance with code enforcement; assistance with development agreement administration; assistance with CDBG administration and compliance; assistance with general questions and public inquiries;
Police	Assistance with general inquiries and research; assistance with parking code questions;
Public Library	No assistance required.
Public Welfare	No assistance required.
Recreation	No assistance required.
School	Assistance with RSA 91-A requests; assistance with Dover High School/Regional CTC matters; assistance with review of and revision to various contracts; assistance with face covering policy issues; assistance with review of potential new policies; assistance with labor matters as requested; assistance with other matters as requested;

Financial Outcomes: Litigation

-**Maloney v. City of Dover** – Case now pending with Rockingham Superior Court; City accepted service. Case is undergoing discovery. The City recently filed a motion to continue the trial and re-establish discovery deadlines, as well as a motion for conditional default for overdue discovery requests.

-**Opioid Epidemic Litigation** – retained services of Robbins Geller of Boca Raton, Florida for fraudulent marketing practices of pharmaceutical manufacturers. Suit filed in USDC in Concord. Case has been transferred to federal court in Ohio as part of a multi-district litigation consolidation. Earlier this year, the City received its first payment from the State of New Hampshire pursuant to RSA 126-A:83, II, by virtue of an opioid-related settlement entered into by the State of New Hampshire. Settlements or other payments in satisfaction of City claims may be forthcoming from other defendants, but would be required to be tendered to the State's Opioid Abatement Trust Fund per RSA 126-A:83, I. Certain of the City's opioid claims have become part of bankruptcy proceedings. A national settlement as to certain defendants is currently under consideration.

-**Mary Hebbard v. City of Dover, John & Karen Brough and Ryan Colbath** - served on City of Dover on April 17, 2019. Discovery is complete. Partial summary judgment rulings received in February 2021. The case was tried by the City Attorney, Deputy City Attorney, and outside counsel in the Strafford County Superior Court on September 15, 17, 20, 21, and 22, as well as October 20th and 22nd of 2021. The case is now in a post-trial briefing stage, with post-trial briefs due in December 2021. Once fully briefed, the trial court will decide the remaining issues on the merits.

-**City of Dover v. Mary and Rick Hebbard** - Complaint filed in October 2019 concerning drainage in the Tanglewood Subdivision. Partial summary judgment rulings were received in February 2021. Case was tried by City Attorney, Deputy City Attorney, and outside counsel on April 7, 8 and 9 of April 2021. The post-trial briefing was divided into two areas: (1) injunctive relief concerning removal of a berm, and (2) remaining issues, including enforcement of a stipulated Court-Order for an underground drainage system. In May 2021, the Court issued an order granting an injunction and requiring removal of the berm and restoration of surface drainage. In September 2021, the Court issued a final Order on the remaining issues, finding the defendants to be in contempt of a prior stipulation and requiring that the defendants complete construction of the drainage project within 90 days of receiving additional materials from the City. The defendants did not appeal. The parties are currently in the process of resuming the construction of the drainage system. The City has engaged an engineer and delivered materials on site. Most of the drainage system has now been built, but there is a dispute over the responsibility for completing the connection.

-**Stergiou et. al. v. City of Dover** - Planning Board appeal filed in August 2020 by certain abutters. The City accepted service in September 2020. This case was dismissed on jurisdictional grounds. An appeal to New Hampshire Supreme Court has been filed by the intervening abutter. The appeal is in the briefing stage. The appellants filed their brief in September 2021. The City recently filed a memorandum of law stating its position in the appeal. The plaintiffs before the trial court filed no brief. The appeal is currently awaiting either the scheduling of oral argument or a decision.

-**Barufaldi v. City of Dover** - A city employee has filed an action in Strafford County Superior Court requesting declaratory judgment concerning the employee's ability to, and cost of, participation in the New Hampshire Retirement System. The trial court granted the City's motion to dismiss. The Plaintiff has appealed. The appeal is in the briefing stage. The appellant's brief has been filed. The City filed its brief in October 2021. Oral argument has been scheduled in January 2022.

-**Parents Unite for Kids Health, Inc. v. Dover School District et al.** - A nonprofit corporation has sued eight school districts (predominantly in Strafford County), including the Dover School District, with respect to the districts' face mask policies. The plaintiff has filed several claims challenging the authority and constitutionality of the policies. The plaintiff is asking the Court to issue an injunction stopping enforcement of the policies during the pendency of the case. The Dover School District has filed a Joint Motion to Dismiss along with the other districts, as well as an objection to the request for an injunction. An injunction hearing was held on November

3, 2021. The Court has not yet issued a decision on the merits as to either the injunction request or the motion to dismiss

The use of outside counsel to handle specialty matters continues and consists of environmental matters and labor negotiations. There are a small number of attorneys hired on a variety of smaller matters.

Dover Business & Industrial Development Authority

by Daniel Barufaldi

Leadership & Governance Outcomes:

Summary:

Economic activity continued to expand in most sectors in Dover through November with the exception of stand-alone leased office space. The downtown restaurants that reopened with outside seating, the relaxation of indoor capacity utilization with social distancing and barriers continue to limit open days and hours due to severe worker shortages. The current pandemic resurgence has prolonged the business loss as customers continue to be wary of public closed spaces. This limits restaurant, retail and hotel business. Efforts continue with Senators Shaheen, Hassen and Representative Pappas to expand the temporary work visas being offered to foreign hospitality and accommodation workers beyond the tourism season. Senatorial offices have so far not been successful in influencing the Secretary of Labor to change the allocation of temporary workforce visas before next year. Colder weather and the threat of snow limited outside seating during November. This is important to all downtown businesses as the restaurants attract customers to all other downtown merchants. The Dover unemployment rate, in steady decline since last August, now stands at 2.2% October with Dover schools reopening. The number of people employed in November has still not fully returned to pre-pandemic levels as many have left the workforce due to a variety of reasons. Among them lack of childcare facilities capacity and their high cost keeping parents out of active employment. Many remote workers have elected to change their work life balance or start their own businesses. Dover's hotels are doing better than expected enjoying an average occupancy rate of 88% and are struggling at that occupancy level due to lack of workers. The corporate guest market has declined but the trades, utilities and traveling medical staffing requirements continue to buoy demand. While retail space has continued to cost more, office space lease rates are beginning to decline but are still hovering at about $17.00 triple net per square foot. These vacancies are due to the realization that remote working works for some large firms and the overhead expense of office space can be eliminated.

The stock market, has continued to advance with high oil prices and high tech growth and earnings in the fourth quarter. High inflation rates not seen in the last two decades weigh on the prospects for continued consumerism in a consumer based economy. It is anticipated that some volatility will continue through the last month of 2021 into 2022. Sensor shortages continue to curtail new car production of several brands at present. Dealerships are trying to sell cars on line and are experiencing some success even with substantially higher pricing for used cars. Commercial real estate activity continues strong despite very high labor and materials costs for projects. Lumber costs have declined 70% from the peak but steel costs remain at twice the 2019 levels. A number of new commercial/ industrial projects were greenlighted in the first two quarters with other projects surfacing and being initiated for late fall and spring starts. Residential real estate markets saw some minor decreases in closed single family home sales at sustained high prices and multifamily residential apartment projects continue strong for the moment. One recently completed mixed use new build was put up for sale in June. Most recently the US economy was growing at a record pace. It is now projected to reach a 6.4% GDP growth in the last quarter. Mortgage interest rates most recently decreased again to 2.2%. Lending rates are still a great value but bank lending restrictions have tightened. Most recent predictions are that inflation is here to stay and will continue to rise going forward.

Selected Business Services:

Demand for consulting and advertising is down sharply over last year at this time. Software and IT services providers are experiencing a pause in activity. Some consolidation is now being experienced in the institutional healthcare sector. Wentworth-Douglass Hospital's merger with Mass General is part of an overall consolidation trend in institutional healthcare. This is expanding the range of medical specialties available to the Dover market. WDH has another Urgent Care Center planned on a Dover Point Rd. site. Tele-med service is expanding and will become a more permanent segment of medical services after the pandemic abates. Increased health insurance costs remain a concern with the uncertainty of the future reform of the Affordable Care Act and the challenge of being able to increase pricing to cover the increased cost.

Predictions for 2021 annual revenue growth in the services sector are now slightly less sanguine.

Commercial Real Estate:

Non-residential commercial real estate sales activity is at about 100% of the previous rate locally, and with flat activity in the Portland markets and declines in Connecticut, Boston and Rhode Island markets in this period. New build costs for needed 20,000 SF – 30,000 SF manufacturing/ assembly/ warehouse/ office spaces at Enterprise Park are causing sticker shock for several prospects and delaying project initiation but with three breakthrough projects beginning to be initiated this coming month. The lack of at site utilities on Innovation Way and road access to other Enterprise Park parcels has limited the developments considering those locations. We are now working with American Durafilm that is building a 15,000 SF building on Innovation Way at Venture Drive. They have closed on the property and are anticipating groundbreaking this winter. Trading City-owned land for project financed utility development is now also being considered to develop projects with no City cash outlays where practical. Accelerator units of 1,200 – 2,500 SF are sorely needed to house small post startup companies to get underway and to grow in Dover. The Orpheum co-worker space is fully booked and has a waiting list. Office leasing was non-existent this month. The lending environment remains highly favorable to brave borrowers, with historically low but rising interest rates but with somewhat tighter lending standards. Leverage ratios are on the rise among some investors, but remain low in absolute terms. Local multi-family and mixed-use construction remains active so far with local inventory in this category rising rapidly. Forecasts call for more uncertainty in fundamentals moving forward. Fiscal policy and uncertainty around the business and employment effects of the pandemic uncertainty at both the state and federal levels are causing some limited reluctance to commit assets until things calm down. See Local Major Development Projects at end of report.

Residential Real Estate:

Residential real estate markets are now contributing strong performance on the Seacoast. Completed sales of single family homes decreased year-over-year in Q3 with Strafford County single family home inventory increasing by 1.4 % for the first time in the last few years. 2020 unit sales declined slightly due to lack of inventory. Rising prices are convincing sellers to put homes on the market. Median selling prices continue to rise locally and single family home prices are up 18.9% year-over-year 2020 - 2021. Condo sales though somewhat mixed regionally, are up locally as well as condo pricing and pending sales. Median sale prices in NH and in Dover increased again in the period for single family

homes to the $413,000+ median price range. Pending sales suggest the markets for high-end single family houses and condo's will continue, though slightly abated, through the rest of 2021 with a probable pause in growth in early 2022. Realtors are having more luck trying to sell homes online.

Manufacturing & Related Services:

Most local manufacturers supplying domestic and international markets are now reporting expanding sales results. Exceptions are aerospace and commercial airplane and parts suppliers. Measured Progress has been sold and will be moved to the buyer's HQ in the South. The property will be occupied by a German plastics packaging machinery firm specializing in medical packaging. Most contacts in the manufacturing sector indicate that both staffing levels and wage growth have now started to stabilize and are once again growing. Capital investment is stable locally and we have several expansion projects either underway or about to get underway. The Silver Square development is now making Phase II progress and has completed their CVS building.

Regional manufacturers are now gaining in confidence and are again contemplating expansions due to business growth.

Labor demand has been strong in IT and software, electronics, engineering, quality assurance tech and legal skills. Entry level jobs are not being filled even as wage rates continue to rise. Talks regarding student apprenticeships with the Chamber of Commerce Education Committee, Dover High School CTC, Great Bay Community College, Somersworth High School CTC and UNH for BIZEDConnect are about to resume. New Hampshire has the 6th best total tax burden in the U.S. and is better than the other New England states.

Retail & Tourism:

Due to the limits on gatherings necessitated by the pandemic and the fear surrounding the resurgence, local retail and tourism activities are once again beginning to see some decline in demand and are still limited by a lack of sufficient workforce and supply chain glitches. Online shopping continues to prosper due to the brick and mortar retail closings and customers' continuing fears/uncertainty regarding exposure to others. Many regional malls are being repurposed to other uses and many national/international retail chains have closed in the U.S., Canada, and worldwide. Many large retailers are making infrastructure investments to participate more fully in online sales with on-site drive through pick up points and deliveries to your door. It is anticipated that some of the big box medium sized chain stores in neighboring municipalities may close when their leases expire. Large big box chains with highly developed online sales/highly developed delivery systems are expected to continue to do well.

Local retailers and all local businesses have been informed of the recent SBA Emergency loans and grants programs, SELF Program and most recently, the Build Back Better grants, GAP Program, and NH Chamber Relief Program as well as the DoverCARES Emergency Loan Fund and grant programs. All have now been informed of the available programs including the latest landlord notifications to provide delinquent renter relief under PPP 2.0 and the American Rescue Plan. The eviction moratorium is scheduled to end shortly, alleviating financial pressures on local small landlords but may once again be saved by Executive Order.

Employment and Wages:

Local labor market pressure that initially collapsed with the widespread business closures and layoffs brought on by the pandemic has now increased to pre-pandemic levels.

In the higher skill set categories, doctors, paramedics, physician's assistants and nurses are once again in short supply as elective procedures suspended in anticipation of COVID-19 surges that didn't materialize, are once again resumed and a resurgence of COVID-19, hospitalizations have hospitals at capacity locally. NH hospitals are in financial deficit.

Local Major Development Projects:

- The new owner (Index Packaging) of the Fosters building, on Venture Drive, is expanding the building by 67,000 SF.
- Harmony Homes is putting in a 44 unit tiny homes project, 35 of which will be HUD priced.
- American Durafilm 15,000 SF building on Innovation Way, Enterprise Park, closed.
- Several mixed use and multi-family residential projects are at the TRC stage and heading for Planning Board approval, including some workforce housing.

Parking Division

October	Oct-21	Oct-20	Oct-19	Fiscal YTD 2022	Fiscal Year 2021	Fiscal Year 2020
Meter Activity - Total						
Meter Transactions	38,627	35,443	50,460	164,818	385,006	442,999
Income from Meters	$71,254	$63,320	$93,509	$299,876	$676,715	$836,199
Active Meter Days	25	26	25	102	302	292
Average Daily Meter Transactions	1,545	1,363	2,018	1,616	1,275	1,517
Meter Activity - Parking Garage						
Meter Transactions	2,663	1,749	4,275	10,114	11,463	36,219
Income from Meters	$7,248	$4,453	$10,221	$27,076	$62,637	$88,142
Active Meter Days	25	26	25	102	302	292
Average Daily Meter Transactions	107	67	171	99	74	124
Parking Permit Activity						
Total Parking Permits Issued	836	720	599	3,352	8,756	6,809
Residential Permits Issued	35	38	30	154	473	441
Business Permits Issued	801	682	569	3,198	8,283	6,499
Permit Income	$22,512	$14,424	$22,489	$133,192	$265,168	$246,485
Parking Ticket Activity						
Total Parking Tickets Issued	592	543	848	5,293	6,644	7,862
Accessible Space Tickets Issued	4	3	6	11	23	48
Winter Restriction Tickets Issued	0	0	0	0	381	164
Parking Ticket Income	$13,554	$11,910	$17,331	$52,167	$160,519	$180,148
Electric Vehicle Charging Stations						
Number of times Stations Used	28	11	60	89	100	233
Charging Station Income	$173	$39	$313	$583	$571	$952

COAST

Ridership Activity

New Coast routes began end of June 2020. Those pertaining to Dover are below:

Month	**Route 1** Dover/Somersworth/ Berwick	**Route 13** Dover/Somersworth	**Route 33** Downtown Dover/County Complex/Portland Ave	**Route 34** Downtown Dover/Knox Marsh Rd
October 2020	3,331	2,700	1,148	266
November 2020	2,942	2,148	1,121	327
December 2020	3,003	2,254	1,119	451
January 2021	2,927	2,126	979	325
February 2021	2,706	2,216	861	315
March 2021	3,367	2,833	1,240	505
April 2021	3,464	2,702	1,183	318
May 2021	3,235	2,999	1,088	225
June 2021	3,245	3,513	1,157	261
July 2021	3,274	3,717	1,203	255
August 2021	3,210	3,799	1,275	368
September 2021	3,191	3,165	1,144	338
October 2021	3,356	3,082	1,254	318

J. MICHAEL JOYAL, JR.
CITY MANAGER

CITY OF DOVER

CITY COUNCIL - MINUTES

Meeting Type: **Regular Meeting**
Meeting Location: **City Hall, Council Chambers**
Meeting Date: **Wednesday, November 10, 2021**
Meeting Time: **7:00 pm**

1. CALL TO ORDER

2. MOMENT OF SILENCE

3. PLEDGE OF ALLEGIANCE

Deputy Mayor Ciotti led the Pledge of Allegiance.

4. ROLL CALL ATTENDANCE

Present: Mayor Carrier, Deputy Mayor Ciotti, Councilor Gasses, Councilor Muffett-Lipinski, Councilor Thibodeaux, and Councilor Williams. Councilor Cullen arrived at 7:40 pm.
Absent: Councilor O'Connor and Councilor Shanahan.
Also Present: City Manager Joyal, City Attorney Wyatt, and City Clerk Mistretta.

5. PROCLAMATIONS/AWARDS

Mayor Carrier read a proclamation for Small Business Saturday.

6. APPROVAL OF AGENDA

Deputy Mayor Ciotti moved to add the School Board resolution, which was passed on November 8, 2021, to Item 13.B.3. He move add a resolution, *Approval of Amendment to Tri-City Agreement with Community Action Partnership for Warming Center Staffing*, as Item 13.B.4, and asked that it be moved up on the Agenda to this point of the Agenda.
Deputy Mayor Ciotti moved to approve the Agenda as amended; seconded by Councilor Thibodeaux.
Vote: 6/0.

13.B.4. *Approval of Amendment to Tri-City Agreement with Community Action Partnership for Warming Center Staffing*
Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Thibodeaux.
City Manager Joyal gave an overview of the Resolution to the Council.
Roll Call Vote: 6/0.

7. PUBLIC HEARINGS

A. CHAPTER 9: BOARDS, COMMISSION, AND COMMITTEES – SECTION 9, BOARD OF HEALTH

SPONSORED BY MAYOR CARRIER BY REQUEST

Mayor Carrier, seeing no one wishing to speak, closed the Public Hearing.

B. CHAPTER 53: BICYCLES AND PLAY VEHICLES, SECTION 2
SPONSORED BY MAYOR CARRIER BY REQUEST

Mayor Carrier, seeing no one wishing to speak, closed the Public Hearing.

C. CHAPTER 141: VEHICLES AND TRAFFIC, SECTIONS 13, 18, 30, AND 42
SPONSORED BY MAYOR CARRIER BY REQUEST

Mayor Carrier, seeing no one wishing to speak, closed the Public Hearing.

D. REPROGRAM UNEXPENDED BOND PROCEEDS FROM COCHECO PUMP STATION PROJECT TO VARNEY BROOK PUMP STATION PROJECT AND ISSUE CHANGE ORDER ONE TO WRIGHT-PIERCE FOR CONSTRUCTION OVERSIGHT (REQUIRES A 2/3 MAJORITY VOTE OF THE COUNCIL) (CITY COUNCIL VOTE OCCURRING ON DECEMBER 8, 2021)
SPONSORED BY MAYOR CARRIER BY REQUEST

Mayor Carrier, seeing no one wishing to speak, closed the Public Hearing.

8. CITIZEN'S FORUM

Taxpayers, Business owners, and Residents are invited to speak on any issue pertaining to the business of the City of Dover. Statements shall be limited to five minutes.

Michael Lessard, 18 Chapel Street: He thanked the Council for voting in favor of Item 13.B.4.

Julie, Dover Resident: She asked that the closing be 9:00 am instead of 8:00 am.

Anthony McManus, 3 Renaud Avenue: He spoke about the budget process and the impact on the Schools.

Karen Weston, 42 French Cross Road: She spoke about the budget process and the impact on the City. She referred to the Warming Center resolution and said she was concerned that the building is planned to be sold next year.

Nathaniel Stewart, 5 Redden Street: He spoke in support of Item 13.B.4.

Pam Lessard, 62 Glenwood Avenue: She spoke in support of Item 13.B.4.

Jessica Nyby, 2 Crestview Avenue: She spoke in support of Item 13.B.4.

Jodi Langellotti, 435 Sixth Street: She spoke in favor of Item 13.B.4.

Mayor Carrier, seeing no one else wishing to speak, closed the Citizen's Forum.

9. CITY MANAGER'S REPORT

City Manager Joyal submitted his report in writing. He invited Dana Lynch, Chairperson for Cocheco Waterfront Development Advisory Committee to give an overview to the Council.

Mr. Lynch gave a Cocheco Waterfront Development project update to the Council.
City Manager Joyal spoke about Atlantic Broadband's new efforts to inform the public about their work in the City. He said the City has not received a tax rate at this time. He gave a COVID update, and vaccination options for children at the Schools. He said there will be no holiday parade. He said the Fire department will help Santa Claus around the City. He said this Saturday the Energy Commission will be holding a Electric Vehicle display.

Deputy Mayor Ciotti recognized Steve Bird for his work on the Cocheco Waterfront Development project.

Deputy Mayor Ciotti asked if the City would be receiving any of the $22 million grant money the State has received.
City Manager Joyal said he doesn't know how much the City will be receiving, but it will help with vaccinating the children.

Deputy Mayor Ciotti asked for the Local Major Development Projects be updated.

Deputy Mayor Ciotti moved to accept the City Manager's Report; seconded by Councilor Muffett-Lipinski.
Vote: 7/0.

10. APPROVAL OF MINUTES

A. October 27, 2021 – Regular Meeting
B. November 3, 2021 – Workshop Session
C. November 3, 2021 – Joint Workshop with School Board

Deputy Mayor Ciotti moved to approve the Minutes; seconded by Councilor Muffett-Lipinski.
Vote: 7/0.

11. MAYOR'S REPORT

Mayor Carrier invited Scott Johnson, Dover Business and Industrial Development Authority Chairperson to speak to the Council.
Mr. Johnson gave an overview to the Council of DBIDA's work.

Mayor Carrier listed the events he attended the past couple weeks. He said the City is hosting a Veterans' Day ceremony tomorrow morning.
Deputy Mayor Ciotti thanked all the Veterans on behalf of the entire Council.
Mayor Carrier gave an overview of the upcoming Dover Main Street events.

Deputy Mayor Ciotti moved to accept the Mayor's Report; seconded by Councilor Thibodeaux. Vote: 7/0.

12. UNFINISHED BUSINESS

A. ORDINANCES IN THE 2nd READING

B. ORDINANCES IN THE 3RD READING

1. CHAPTER 9: BOARDS, COMMISSION, AND COMMITTEES – SECTION 9, BOARD OF HEALTH
SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Thibodeaux.
Roll Call Vote: 7/0.

2. CHAPTER 53: BICYCLES AND PLAY VEHICLES, SECTION 2
SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Muffett-Lipinski.
Roll Call Vote: 7/0.

3. CHAPTER 141: VEHICLES AND TRAFFIC, SECTIONS 13, 18, 30, AND 42
SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Muffett-Lipinski.
Roll Call Vote: 7/0.

C. RESOLUTIONS

1. REPROGRAM UNEXPENDED BOND PROCEEDS FROM THE GARRISON ELEMENTARY SCHOOL IMPROVEMENT PROJECT TO DOVER HIGH SCHOOL PROJECT (REQUIRES A 2/3 MAJORITY VOTE OF THE COUNCIL)
SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Muffett-Lipinski.
Deputy Mayor Ciotti gave an overview of the Resolution to the Council.
Roll Call Vote: 7/0.

2. ADOPTION OF FISCAL YEAR 2023 – 2028 CAPITAL IMPROVEMENTS PROGRAM (CIP)
SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Williams.
City Manager Joyal gave an overview of the Resolution and CIP to the Council.
Roll Call Vote: 7/0.

3. **APPROPRIATION FOR FISCAL YEAR 2023 CAPITAL IMPROVEMENTS PROGRAM (CIP) – NON-DEBT FINANCED PROJECTS (REQUIRES A 2/3 MAJORITY VOTE OF THE COUNCIL)**
   SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Muffett-Lipinski.
City Manager Joyal gave an overview of the Resolution to the Council.
Roll Call Vote: 7/0.

4. **APPROPRIATION FOR FISCAL YEAR 2023 CAPITAL IMPROVEMENTS PROGRAM (CIP) AND AUTHORIZATION FOR BONDING (REQUIRES A 2/3 MAJORITY VOTE OF THE COUNCIL)**
   SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Muffett-Lipinski.
City Manager Joyal gave an overview of the Resolution to the Council.
Roll Call Vote: 7/0.

13. NEW BUSINESS

A. CONSENT CALENDAR

1. **B19064 OPEB ACTUARIAL SERVICES – THE HOWARD E. NYHART COMPANY, INC**
   SPONSORED BY MAYOR CARRIER BY REQUEST

2. **B22011 DESIGN-BUILD SERVICES FOR THE FIRST FLOOR CITY HALL RESTROOMS**
   SPONSORED BY MAYOR CARRIER BY REQUEST

3. **B22021 CONSUMABLE OFFICE SUPPLIES – STATE OF NH CONTRACT WITH W.B. MASON**
   SPONSORED BY MAYOR CARRIER BY REQUEST

COMMITTEE REPORTS

1. School Board
2. Planning Board
3. Appointments Committee
4. Arena Commission
5. Arts Commission
6. Conservation Commission
7. Downtown TIF Advisory Board
8. Energy Commission
9. Heritage Commission
10. Legislative Liaison
11. Library Board of Trustees
12. McConnell Center Advisory Committee
13. **Ordinance Committee**
14. Parking Commission
15. Pool Advisory Committee
16. Racial Equity and Inclusion Ad-Hoc Committee
17. Recreation Advisory Board
18. Solid Waste Advisory Commission
19. Stormwater and Flood Resilience Funding Ad-Hoc Committee
20. Transportation Advisory Commission
21. Waterfront TIF Advisory Board
22. City Council / School Board Collaborative Committee
23. Joint Building Committee – Dover High School and Regional Career Technical Center
24. COAST
25. Cocheco Waterfront Development Advisory Committee
26. Dover Main Street
27. Strafford Regional Planning Commission

Councilor Muffett-

Deputy Mayor Ciotti moved for the adoption of the Consent Calendar; seconded by Councilor Williams.
Mayor Carrier asked the Council if they had items they would like pulled for further discussion.
Councilor Thibodeaux pulled Item 13.A.2.
Mayor Carrier asked for a roll call vote on the remaining items on the Consent Calendar.
Roll Call Vote: 6/0.

Deputy Mayor Ciotti moved for the adoption of the Consent Calendar; seconded by Councilor Williams.
Roll Call Vote: 6/0.

Councilor Williams gave an overview of the Ordinance Committee Report to the Council.

B. RESOLUTIONS

1. **DIRECTING THE CITY COUNCIL'S ORDINANCE COMMITTEE TO (I) REVIEW ANY NEED FOR WARD REDISTRICTING AND (II) PREPARE A DRAFT ORDINANCE SETTING FORTH WARD BOUNDARIES**
   SPONSORED BY COUNCILOR SHANAHAN, COUNCILOR CULLEN AND COUNCILOR WILLIAMS.

   Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Williams.
   Vote: 6/0.

2. **B22013 CONSTRUCTION OF THE PUDDING HILL WATER TREATMENT FACILITY**
   SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Gasses.
City Manager Joyal gave an overview of the Resolution to the Council.
Roll Call Vote: 6/0.

3. **ESTABLISHMENT OF THE KATE CROWELL SCHOLARSHIP TRUST FUND**
   SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved for its adoption; seconded by Councilor Thibodeaux.
Mayor Carrier gave an overview of the Resolution to the Council.
Roll Call Vote: 6/0.

4. **APPROVAL OF AMENDMENT TO TRI-CITY AGREEMENT WITH COMMUNITY ACTION PARTNERSHIP (CAP) FOR WARMING CENTER STAFFING**
   SPONSORED BY MAYOR CARRIER BY REQUEST

Moved up on the Agenda to follow Item 6.

C. ORDINANCES IN 1ST READING

1. **CHAPTER 13 – CITY COUNCIL, SECTION 5**
   (TO BE REFERRED TO A PUBLIC HEARING ON DECEMBER 8, 2021.)
   SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved to refer to a public hearing on December 8, 2021; seconded by Councilor Thibodeaux.
Vote: 6/0.

2. **CHAPTER 141: VEHICLES AND TRAFFIC, SECTIONS 27, 30, AND 31.**
   (TO BE REFERRED TO A PUBLIC HEARING ON DECEMBER 8, 2021.)
   SPONSORED BY MAYOR CARRIER BY REQUEST

Deputy Mayor Ciotti moved to refer to a public hearing on December 8, 2021; seconded by Councilor Thibodeaux.
Vote: 6/0.

14. COUNCIL CORRESPONDENCE

15. COUNCIL MATTERS OF INTEREST

16. ADJOURN

Deputy Mayor Ciotti moved to adjourn; seconded by Councilor Williams
Vote: 6/0.

CITY OF DOVER

CITY COUNCIL - MINUTES

Meeting Type: Workshop Session
Meeting Location: Council Chambers, City Hall
Meeting Date: **Wednesday, December 1, 2021**
Meeting Time: **7:00 pm**

1. CALL TO ORDER

2. MOMENT OF SILENCE

3. PLEDGE OF ALLEGIANCE

Councilor Cullen led the Pledge of Allegiance.

4. ROLL CALL ATTENDANCE

Present: Mayor Carrier, Councilor Cullen, Councilor Muffett-Lipinski, Councilor O'Connor, Councilor Shanahan, Councilor Thibodeaux, and Councilor Williams.
Absent: Deputy Mayor Ciotti and Councilor Gasses.
Also Present: City Manager Joyal, Deputy City Attorney Perez, and City Clerk Mistretta.

5. CITIZEN'S FORUM

Citizens are invited to speak on the subject matter of the Workshop. Statements shall be limited to five minutes.

Mayor Carrier, seeing no one wishing to speak, closed the Citizen's Forum.

6. DISCUSSIONS

A. PROPOSAL TO UTILIZE CITY OWNED FOOD TRAILER TO ASSIST IN ADDRESSING REGIONAL FOOD INSECURITY

City Manager Joyal gave an overview of the proposal, and showed a short WMUR Channel 9 video showing the Red's Good Vibes food truck in action.

Caitlin McGrath-Levesque of Red's Good Vibes, gave in depth details of what they do, how to support them at www.redsgoodvibes.com, and how the additional trailer loaned by the City will enable them to provide up to 6,000 meals per week. She urged the Council to allow them to use the City's trailer.

City Manager Joyal said there will be a resolution on the December 8, 2021 Agenda for the Council to approve the lease of the food truck to Red's Good Vibes.

B. TRI-CITY HOMELESS TASKFORCE GOAL STATUS PRESENTATION

City Manager Joyal and Assistant City Manager Parker gave an overview of the Tri-City Homeless status presentation.

Councilor Muffett-Lipinski left the meeting at 9:05 pm.

7. ADJOURNMENT

Councilor O'Connor moved to adjourn; seconded by Councilor Thibodeaux.
Vote: 6/0.

CITY OF DOVER	CITY OF DOVER - ORDINANCE
	Agenda Item#: 12.A.1.
	Ordinance Number: **O – 2021.11.10 – 010**
	Ordinance Title: Remove the Requirement to Record and Broadcast the Council Orientation
	Chapter: 13 City Council
	Section: 13-5 Video and Audio Recording

The City of Dover Ordains:

1. **PURPOSE**
   The purpose of this ordinance is to remove the requirement to record and broadcast the Council Orientation.

2. **AMENDMENT**
   Chapter 13 entitled "City Council" is hereby amended by revising Section 13-5, "Video and Audio Recording" as follows:

§ 13-5 ~~Video and audio recording.~~(Reserved)

~~City Council orientation segments shall be video recorded and broadcast.~~

3. **TAKES EFFECT**
   This ordinance shall take effect upon passage and publication of notice as required by RSA 47:18.

REQUIRES A PUBLIC HEARING

AUTHORIZATION

Approved as to Funding:	Daniel R. Lynch Finance Director	Sponsored by:	Mayor Robert Carrier By request
Approved as to Legal Form and Compliance:	Joshua M. Wyatt City Attorney		
Recorded by:	Susan Mistretta City Clerk		

CITY OF DOVER

CITY OF DOVER - ORDINANCE

Agenda Item#: 12.A.1.

Ordinance Number:	**O – 2021.11.10 – 010**
Ordinance Title:	Remove the Requirement to Record and Broadcast the Council Orientation
Chapter:	13 City Council
Section:	13-5 Video and Audio Recording

DOCUMENT HISTORY:

First Reading Date:	11/10/2021	Public Hearing Date:	12/08/2021
Approved Date:		Effective Date:	

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Dennis Ciotti, Ward 2		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

ORDINANCE BACKGROUND MATERIAL:

This is to remove the requirement that the City Council orientation be recorded and broadcasted.

CITY OF DOVER

CITY OF DOVER - ORDINANCE

Agenda Item#: 12.A.2.

Ordinance Number:	**O – 2021.11.10 – 011**
Ordinance Title:	Vehicles and Traffic
Chapter:	141
Section:	27
	30
	31

The City of Dover Ordains:

1. **PURPOSE**
   The purpose of this ordinance is to amend Chapter 141 of the City of Dover's Code, entitled "Vehicles and Traffic," and specifically sections 27, 30, and 31 as set forth below.

2. **AMENDMENT**
   Chapter 141 entitled "Vehicles and Traffic" is hereby amended by revising Section 141-27, "Definitions", as follows:

§ 141-27 **Definitions.**
As used in this article the following terms mean:

IN-VEHICLE PARKING METER
An electronic device that displays the City and zone for which parking fees are being paid for through the device.

METERED ON-STREET PARKING SPACE
A portion of a public highway consisting of a section of a public right-of-way in which the parking of a vehicle is controlled by a parking meter.

METERED PARKING GARAGE
A portion of a public highway consisting of a parking garage, deck or structure in which the parking of a vehicle is controlled by a parking meter.

METERED PARKING LOT
A portion of a public highway consisting of a parking lot in which the parking of a vehicle is controlled by a parking meter.

MULTI-SPACE PARKING METER
A parking meter that controls vehicle parking for more than one space in a parking meter zone.

PARKING METER
A mechanical device located upon a public highway or sidewalk in a place regularly designated as a parking meter zone, as hereinafter defined, which shall record a certain number of minutes by the use of a clock mechanism determining the period of time for which parking privileges may be extended to the person so depositing a coin, or any device that produces a ticket upon which the amount of time parking privileges are extended may be printed.

PARKING METER ZONE

Any designated section of the public highway within which a vehicle may be temporarily parked and allowed to remain for such period of time as indicated upon the parking meter or multi-space parking meter attached therein.

PAY-BY-PLATE APPLICATION:

A telephone or other electronic application to pay for parking.

3. AMENDMENT

Chapter 141 entitled "Vehicles and Traffic" is hereby amended by revising Section 141-31, "Unlawful acts; separate violations", as follows:

§ 141-31 **Unlawful acts; separate violations.**

A. The following shall be considered violations of this article:

(1) It shall be unlawful for any person to park or allow any vehicle registered in his/her name to be parked in a parking meter zone so that the vehicle is not entirely within the area designated or delineated by lines or markings.

(2) It shall be unlawful for any person to park or allow any vehicle registered in his/her name to be parked in excess of 19 feet in overall length in a multi-space parking meter zone except as provided in § **141-32**.

(3) Multi-space parking meters.

(a) It shall be unlawful for any person to park or allow any vehicle registered in his/her name to be parked or left standing in any area where parking is controlled by a multi-space parking meter:

[1] Without purchasing a receipt from said multi-space parking meter for such parking or standing time.

[2] Without displaying any receipt so purchased from a multi-space parking meter in a position on the dashboard of the vehicle in order that the time printed on said receipt is clearly visible from outside the vehicle, except in a metered parking garage when the proper space number is entered into the pay-by-space parking meter, wherein such receipt display is not required.

[3] After parking or standing time which has been purchased has expired.

[4] Displaying an altered or falsified receipt or any receipt that has not been purchased from the multi-space parking meter controlling the parking space in which the vehicle displaying the receipt is parked. Violators will be subject to Table B fines under § **141-23** as set forth in the Fine Schedule as adopted by City Council.

[5] In excess of the posted time limits.

(b) Exception. No multi-space parking meter receipt is required for a vehicle parked in a parking meter zone for less than 15 minutes; this exception does not apply to metered parking lots or a metered parking garage.

(c) Each violation of the acts described in Subsection **A(3)(a)[1]** to **[5]** shall constitute a separate violation and additional violation.

(d) Use of a pay-by-plate application to pay for parking is permitted notwithstanding the provisions of Subsection A(3)(a)[1] under the following conditions:

[1] The pay-by-plate application is authorized for use in the City of Dover.

[2] The pay-by-plate application is activated for the proper zone the vehicle is parked in.

[3] The fee has been paid for the specific vehicle and license plate using or occupying the parking.

(4) It shall be unlawful for any person to park or allow any vehicle registered in his/her name to remain parked in a parking meter zone when time purchased on the parking meter for that space has expired, except as provided in § **141-30**.

(5) It shall be unlawful for any person to park or allow any vehicle registered in his/her name to be parked or left standing on any public highway or part of a public highway within the City in a parking meter zone without conforming to the provisions of this article.

(6) It shall be unlawful for any person to park in a metered on-street parking space with a receipt from a multi-space parking meter in a metered parking lot or a metered parking garage.

(7) The City's print-at-home permit program provides permits specific to the single vehicle associated with each such permit. It shall be unlawful for any person to forge, falsify, or print multiple copies of print-at-home permits for use by others, or in any other way assist, facilitate, aid, or abet the use of a print-at-home permit by or for any other vehicle other than the permitted vehicle. Violators will be subject to Table B fines under § **141-23** as set forth in the Fine Schedule as adopted by City Council.

B. Where a violation of this article is found, each additional one hour that a vehicle is so parked in violation shall constitute a separate additional violation.

C. The previous provisions of this article shall not apply to City-owned vehicles or to persons who are disabled and have obtained permission to park from the Chief of Police.

D. Chronic offenders. Any person with five violations of any subsection of § **141-31A(3)**, **(4)** and **(6)** or § **141-37** in a calendar year for any metered on-street parking space shall be fined as set forth in the Fine Schedule as adopted by City Council for each subsequent offense.

4. AMENDMENT

Chapter 141 entitled "Vehicles and Traffic" is hereby amended by revising Section 141-30, "Hours of operation and rates", as follows:

§ 141-30 **Hours of operation and rates.**

A. Paid parking shall be required daily between the hours of 9:00 a.m. and 8:00 p.m., except on Sundays, with the exception of:

(1) The Orchard Street Parking Garage where designated as metered or paid parking shall also be required as paid parking at all times, 24 hours a day and seven days a week.

(2) The following holidays: January 1; the third Monday in January, known as Martin Luther King, Jr. Civil Rights Day; the third Monday in February, known as Washington's Birthday; the last Monday in May, known as Memorial Day, or on a date to coincide with the federal observance if it is held on a different day; July 4; the first Monday in September, known as Labor Day; the second Monday in October, known as Columbus Day; November 11, known as Veterans Day; Thanksgiving Day; the Friday after Thanksgiving; and Christmas Day. When one of the listed holidays falls on a Sunday, the Monday after shall be observed as a holiday.

(3) Any vehicle bearing the following special New Hampshire license plates and in use by the person qualifying for said special plates shall be entitled to free parking in metered spaces for no

more than three hours each day: Purple Heart (including Purple Heart-Vanity), Gold Star, Prisoner of War, and Pearl Harbor Survivor (including Pearl Harbor Survivor-Vanity). Any vehicle with license plates from another state or United States territory bearing substantially equivalent governmental license plates shall, provided the vehicle is in use by the person qualifying for said special license plates, likewise be entitled to no more than three hours each day of free parking in metered spaces.

B. Parking meter rates shall be set forth in the annual Fee Schedule adopted by the City Council.

C. For good cause, the Chief of Police, upon recommendation of the Parking Commission, shall have the authority to temporarily suspend the provisions of this section for specified dates and times.

5. TAKES EFFECT

This ordinance shall take effect upon passage and publication of notice as required by RSA 47:18.

REQUIRES A PUBLIC HEARING

AUTHORIZATION

Approved as to Funding:	Daniel R. Lynch Finance Director	Sponsored by:	Mayor Robert Carrier By request
Approved as to Legal Form and Compliance:	Joshua M. Wyatt City Attorney		
Recorded by:	Susan Mistretta City Clerk		

CITY OF DOVER	CITY OF DOVER - ORDINANCE
	Agenda Item#: 12.A.2.
	Ordinance Number: **O – 2021.11.10 – 011**
	Ordinance Title: Vehicles and Traffic
	Chapter: 141
	Section: 27
	30
	31

DOCUMENT HISTORY:

First Reading Date:	11/10/2021	Public Hearing Date:	12/08/2021
Approved Date:		Effective Date:	

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Dennis Ciotti, Ward 2		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

ORDINANCE BACKGROUND MATERIAL:

Sections 141-27 and 141-31: These two proposed changes are interrelated. City staff are proposing these amendments to formally codify that pay-by-plate is an authorized means of paying for parking.

Section 141-30: On October 19, 2021, the Parking Commission considered a proposal to exempt certain special plates from parking fees, including veteran plates. At that meeting, the Parking Commission voted to exempt the special plates for parking by individuals with special license plates for Purple Heart (including Purple Heart-Vanity), Gold Star, Prisoner of War, and Pearl Harbor Survivor (including Pearl Harbor Survivor-Vanity). For reference, RSA 265:73 enables the City Council to provide free parking for "any motor vehicle used for a purpose, or by a person, designated" by the City Council so long as the vehicle is "under the direct control of the owner." *See also* RSA 47:17, VII.

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 12.C.1.

Resolution Number: **R – 2021.10.27 – 181**

Resolution Re: **Reprogram Unexpended Bond Proceeds from Cocheco Pump Station project to Varney Brook Pump Station project and Issue Change Order One to Wright-Pierce for Construction Oversight**

WHEREAS: On an annual basis the City Council adopts the Capital Improvements Program (CIP), which includes the Debt Financing authorization for certain CIP projects; and

WHEREAS: There is $41,293.89 of unexpended bond proceeds from the Cocheco Pump Station project, where the project is complete and remaining funds are available for other Sewer Fund projects, and the City has identified additional funding is needed to complete the Varney Brook Pump Station project; and

WHEREAS: In September 2017, City staff sought and received approval via resolution R-2017.12.13-174 to award bid #B18015 to Wright-Pierce for professional design services for upgrades to the Varney Brook Pump Station in the amount of $282,119.00; and

WHEREAS: A subsequent proposal for construction oversight of the Varney Brook Pump Station was received from Wright-Pierce in the amount of $376,500.00 with a contract executed following approval via resolution R-2019.06.26-083. Wright-Pierce has submitted change order one in the amount of $50,000.00 for additional engineering construction services related to this project; and

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The amount of $41,293.89 of unexpended bond proceeds is hereby reprogrammed from the Cocheco Pump Station project to the Varney Brook Pump Station project as follows:

Project Number	Project Description	Available Balance	Reprogram Adjustment	Adjusted Balance
5320.1.300.43250.4757.04578.19	Cocheco Pump Station	41,293.89	(41,293.89)	0.00
5320.1.300.43250.4741.04542.19	Varney Brook Pump Station	0.00	41,293.89	41,293.89
	Total Available Funding	41,293.89	0.00	41,293.89

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 12.C.1.

Resolution Number: **R – 2021.10.27 – 181**

Resolution Re: **Reprogram Unexpended Bond Proceeds from Cocheco Pump Station project to Varney Brook Pump Station project and Issue Change Order One to Wright-Pierce for Construction Oversight**

AND FURTHER BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

Upon receipt of approval by the NH Department of Environmental Services, the Purchasing Agent is hereby authorized to issue a Purchase Order to Wright-Pierce of Portsmouth, NH for additional engineering construction services for the Varney Brook Pump Station in the amount not to exceed $50,000.00. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
5320.1.300.43250.4741.04542.19	Varney Brook Pump Station	2,000,000.00	41,293.89
5320.1.300.43250.4757.04573.07	Sewer - Pump Station Equip Replacemnt	545,693.26	13,344.47

NOTE: This resolution reprograms unexpended bond proceeds and therefore requires a duly advertised public hearing and a 2/3 favorable vote of all members for passage with the vote deferred until at least three (3) days after the public hearing.

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By Request

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

Document Created by: Purchasing
Document Posted on: December 3, 2021

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 12.C.1.

Resolution Number: **R – 2021.10.27 – 181**

Resolution Re: **Reprogram Unexpended Bond Proceeds from Cocheco Pump Station project to Varney Brook Pump Station project and Issue Change Order One to Wright-Pierce for Construction Oversight**

DOCUMENT HISTORY:

First Reading Date:	10/27/2021	Public Hearing Date:	11/10/2021
Approved Date:		Effective Date:	

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 12.C.1.

Resolution Number: **R – 2021.10.27 – 181**

Resolution Re: **Reprogram Unexpended Bond Proceeds from Cocheco Pump Station project to Varney Brook Pump Station project and Issue Change Order One to Wright-Pierce for Construction Oversight**

RESOLUTION BACKGROUND MATERIAL:
This resolution does not authorize any additional appropriation. The City Council previously authorized the appropriation for the Cocheco Pump Station project. This resolution does not authorize an increase in the indebtedness of the City. The City Council previously authorized debt financing the identified Cocheco Pump Station project. This resolution reprograms funding from the identified Cocheco Pump Station project to Varney Brook Pump Station project.

On December 13, 2017 the Dover City Council approved the FY19-FY24 six-year Capital Improvements Program (CIP) and Authorization for Bonding for FY19 CIP projects including the Cocheco Pump Station project and Varney Brook Pump Station project.

City administration identified reprogramming appropriations from the Cocheco Pump Station project because that project is completed and there are available unexpended appropriations.

The funding to be reprogrammed is needed for additional engineering construction services related to the Varney Brook Pump Station Upgrade project. There have been various modifications to the design and delays in equipment (primarily due to COVID) and coordination with local utility companies leading to the project being extended beyond the original substantial completion date of September 15, 2020 to April 20, 2021.

Bid Information:
A Sealed Request for Bid #B18015 was issued and received for Professional Design Services for upgrades to the Varney Brook Pump Station on September 14, 2017 at 2:00 p.m.

Award Information:
A purchase order will be issued to Wright-Pierce to authorize expenditures as outlined in this resolution.

Purchasing Information:

Type:	Purchase Order	**Advertised:**	Yes
Invitations Mailed:	330	**Number of Responses:**	3
Warranty:	None	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	Yes
Prices will hold for:	Until Complete	**Estimated Delivery:**	As Needed
Recommended Award to:	Wright-Pierce	**Fund:**	CIP
Other Approvals Required:	Yes, NHDES	**References Checked:**	Satisfactory
Previously Worked for City:	Yes	**Reason for Council Approval:**	Purchase to exceed the $25,000 amount requiring Council approval subsequent to a bid solicitation.

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.1.

Resolution Number: **R – 2021.12.08 – 189**
Resolution Re: B22026 High Performance Cold Patch and/or Hot Patch

WHEREAS: A sealed Request for Proposal #B22026 was issued and received for as-needed High Performance Cold Patch and/or Hot Patch on November 30, 2021 at 1:00 p.m. with rates to hold for the 2021-2022 winter season; and

WHEREAS: The City received three bid replies, including one non-responsive bid. It is the recommendation to accept the two proposals meeting specifications submitted by Brox Industries, Inc. of Dracut, MA for as-needed high performance cold patch at $129.00/ton picked up and $142.00/ton delivered and hot patch at $102.50/ton picked up; and to Pike Industries, Inc. of Belmont, NH for as-needed high performance cold patch at $123.00/ton picked up and $132.20/ton delivered.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Purchasing Agent is hereby authorized to issue purchase orders to Brox Industries, Inc. of Dracut, MA and Pike Industries, Inc. of Belmont, NH at rates provided in conjunction with Request for Proposal #B22026 for as-needed high performance cold patch and/or hot patch. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
1000.1.300.43121.4652.00000.00	Streets - Maint Supplies - Impr o/t Building	49,739	25,918
5300.1.300.43320.4612.00000.00	CS-Water - Operating Supplies	130,000	73,025
5320.1.300.43250.4652.00000.00	CS-Sewer-Maint Supplies	27,000	5,222

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By Request

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.1.

Resolution Number: **R – 2021.12.08 – 189**
Resolution Re: B22026 High Performance Cold Patch and/or Hot Patch

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.1.

Resolution Number: **R – 2021.12.08 – 189**
Resolution Re: B22026 High Performance Cold Patch and/or Hot Patch

RESOLUTION BACKGROUND MATERIAL:
The City spent an estimated $30,000.00 on the acquisition of hot patch and high performance, long lasting asphalt cold patch during the 2020-2021 winter season. Through the bid solicitation, the City identified two vendors from whom to acquire the desired hot patch and high performance cold patch on an as-needed basis for the 2021-2022 winter season at rates indicated below.

Pricing per ton, picked up by the City:

Vendor	High Performance Cold Patch	Hot Patch
Brox Industries, Inc.	$129.00 per ton	$102.50 per ton
Pike Industries, Inc.	$123.00 per ton	No Bid

Pricing per ton, delivered by the Vendor:

Vendor	High Performance Cold Patch	Hot Patch
Brox Industries, Inc.	$142.00 per ton	No Bid
Pike Industries, Inc.	$132.20 per ton	No Bid

As the estimated expense may exceed the $25,000.00 threshold, Council approval is required.

Bid Information:
A sealed Request for Proposal #B22026 was issued and received for as-needed High Performance Cold Patch and/or Hot Patch on November 30, 2021 at 1:00 p.m.

Award Information:
A purchase order will be issued to the vendors selected to authorize expenditures as outlined in this resolution.

Purchasing Information:

Type:	Purchase Order	**Advertised:**	Yes
Invitations Mailed:	146	**Number of Responses:**	3
Warranty:	Per Manufacturer	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	Yes
Prices will hold for:	2021-2022 winter season	**Estimated Delivery:**	As Needed
Recommended Award to:	Brox Industries, Inc. and Pike Industries, Inc.	**Fund:**	Various
Other Approvals Required:	No	**References Checked:**	Satisfactory
Previously Worked for City:	Yes	**Reason for Council Approval:**	Purchase to exceed the $25,000 amount requiring Council approval subsequent to a bid solicitation.

B22026 Bid Documents

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.2.

Resolution Number: **R – 2021.12.08 – 190**
Resolution Re: B22028 2021 Ford F350 4X4 Truck with Super Hauler Dump Body

WHEREAS: A sealed Request for Bid #B22028 was issued for one (1) 2021 Ford F350 4X4 Truck with Super Hauler Dump Body for the Community Services Department on November 30, 2021 at 3:00 p.m. There were no responses received for this solicitation; and

WHEREAS: Due to the urgent need to have this truck added to the fleet for City-wide snow removal services, the City contacted a local vendor known to have one truck on their lot meeting bid specifications. It is the recommendation to accept the quote provided by Robert H. Irwin Motors, Inc. of Laconia, NH in the amount of $54,345.00; and

WHEREAS: Per 5-28B, Competitive bidding purchases; waiver of the Dover Purchasing Procedure, competitive bidding may be waived by a majority vote of the City Council.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Purchasing Agent is hereby authorized to issue a Purchase Order to Robert H. Irwin Motors, Inc. of Laconia, NH for one (1) 2021 Ford F350 4X4 Truck with Super Hauler Dump Body for the Community Services Department in the amount not to exceed $54,345.00. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Account	Description	Appropriation	Balance
4022.1.300.43121.4743.03110.22	Public Works Heavy Equipment	155,684.00	155,684.00

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

Sponsored by: Mayor Robert Carrier, By Request

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.2.

Resolution Number: **R – 2021.12.08 – 190**
Resolution Re: B22028 2021 Ford F350 4X4 Truck with Super Hauler Dump Body

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.2.

Resolution Number: **R – 2021.12.08 – 190**
Resolution Re: B22028 2021 Ford F350 4X4 Truck with Super Hauler Dump Body

RESOLUTION BACKGROUND MATERIAL:

A sealed bid was released for pricing and a delivery timeline for one (1) 2021 Ford F350 4X4 Truck with Super Hauler Dump Body for the Community Services Department with options as outlined in the bid solicitation. The truck is an essential piece of equipment required for City-wide snow removal services.

No responses were received to this solicitation and due to the urgent need to acquire, the City contacted a local dealer known to have one truck available. The vendor provided a quote on November 30, 2021 and agreed to reserve pending Council approval.

There are currently nationwide manufacturer production delays which have also had an impact on the State of NH finalizing their annual bid that the City will typically use to purchase vehicles from. Under normal circumstances, the State bid would have contracts in place in early October, however, they have had to navigate those manufacturer production delays and last minute cancellations from dealers bidding on their vehicle specifications and currently have no contracts in place.

Bid Information:

A sealed Request for Bid #B22028 was issued for one (1) 2021 Ford F350 4X4 Truck with Super Hauler Dump Body for the Community Services Department on November 30, 2021 at 3:00 p.m.

Award Information:

A purchase order will be issued to Robert H. Irwin Motors, Inc. to authorize expenditures as outlined in this resolution.

Purchasing Information:

Type:	Purchase Order	**Advertised:**	Yes
Invitations Emailed:	135	**Number of Responses:**	0
Warranty:	Per Manufacturer	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	No
Prices will hold for:	Until Complete	**Estimated Delivery:**	December 2021
Recommended Award to:	Robert H. Irwin Motors, Inc.	**Fund:**	CIP
Other Approvals Required:	No	**References Checked:**	Satisfactory
Previously Worked for City:	Yes	**Reason for Council Approval:**	Purchase to exceed the $25,000 amount requiring Council approval subsequent to a bid solicitation.

B22028 Bid Documents

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.3.

CITY OF DOVER

Resolution Number: **R – 2021.12.08 – 191**
Resolution Re: B22029 2022 Nissan Leaf SV Plus

WHEREAS: A sealed Request for Bid #B22029 was issued and received for one (1) 2022 Nissan Leaf SV Plus for the Community Services Department on November 30, 2021 at 1:30 p.m.; and

WHEREAS: Two bid responses were received and reviewed for meeting bid specifications and cost. The low bid meeting specifications was submitted by Amaru Motors 3 LLC d/b/a Charlie Clark Nissan El Paso of El Paso, TX; and

WHEREAS: It is the recommendation to award to Amaru Motors 3 LLC d/b/a Charlie Clark Nissan El Paso at the rates provided in conjunction with Bid #B22029 in the amount not to exceed $35,233.83.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Purchasing Agent is hereby authorized to issue a Purchase Order to Amaru Motors 3 LLC d/b/a Charlie Clark Nissan El Paso of El Paso, TX for one (1) 2022 Nissan Leaf SV Plus for the Community Services Department in the amount not to exceed $35,233.83. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
1000.1.190.41991.4529.00000.00	Misc Gen Govt - Insurance Deductible Payment	27,175	27,175
5300.1.300.43320.4742.00000.00	CS - Water - Light Vehides	15,000	15,000
5320.1.300.43250.4742.00000.00	CS - Sewer - Light Vehides	15,000	15,000

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By Request

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.3.

Resolution Number: **R – 2021.12.08 – 191**
Resolution Re: B22029 2022 Nissan Leaf SV Plus

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.3.

Resolution Number: **R – 2021.12.08 – 191**
Resolution Re: B22029 2022 Nissan Leaf SV Plus

RESOLUTION BACKGROUND MATERIAL:

A sealed bid was released for pricing and delivery timeline for one (1) 2022 Nisan Leaf SV Plus for the Community Services Department with options as outlined in the bid solicitation.

This is a replacement vehicle and partially funded by way of insurance claim proceeds. The vendor has the vehicle in stock and is holding pending Council approval. The vehicle will be shipped by the vendor within ten calendar days from issuance of a purchase order to the Community Services Department on Mast Road in Dover, NH.

Bid Information:

A sealed Request for Bid #B22029 was issued and received for one (1) 2022 Nissan Leaf SV Plus for the Community Services Department on November 30, 2021 at 1:30 p.m.

Award Information:

A purchase order will be issued to the vendor selected to authorize expenditures as outlined in this resolution.

Purchasing Information:

Type:	Purchase Order	**Advertised:**	Yes
Invitations Emailed:	135	**Number of Responses:**	2
Warranty:	Per Manufacturer	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	No
Prices will hold for:	Until Complete	**Estimated Delivery:**	December 2021
Recommended Award to:	Amaru Motors 3 LLC d/b/a Charlie Clark Nissan El Paso	**Fund:**	Insurance Deductible/CIP
Other Approvals Required:	No	**References Checked:**	Satisfactory
Previously Worked for City:	No	**Reason for Council Approval:**	Purchase to exceed the $25,000 amount requiring Council approval subsequent to a bid solicitation.

B22029 Bid Documents

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.4.

CITY OF DOVER

Resolution Number: **R – 2021.12.08 – 192**
Resolution Re: B22030 Material Repair & Operation and Industrial Supplies - State of NH Contract with Grainger, Inc.

WHEREAS: There are several State of New Hampshire contract pricing schedules available for municipal use with various vendors that participate. Grainger, Inc. in Manchester, NH is an authorized vendor with the State of New Hampshire for (MRO) material repair & operation and industrial supplies with whom the City does a significant amount of business; and

WHEREAS: Grainger, Inc. offers various discounts between 12% - 35% off regular list prices where any non-profit, county, city, town, school district or any other governmental organization is eligible to participate. The City has been very pleased with the availability, service and pricing structure offered by this vendor; and

WHEREAS: The discounted pricing schedule for Grainger, Inc. is March 25, 2019 through June 30, 2023 for MRO and industrial supplies, it seems to be financially prudent for the City to take advantage of the discounts that shall remain firm for the entire term of the contract; and

WHEREAS: Per 5-29B, Exemptions to Competitive Bidding of the Dover Purchasing Procedure, the Purchasing Agent may, with approval of the City Manager, waive bidding procedures when purchasing through the State of New Hampshire or at State bid prices.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Purchasing Agent is hereby authorized to issue Purchase Orders to Grainger, Inc. in Manchester, NH for the purchase of MRO and industrial supplies at discounted rates. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
xxxx.1.xxx.xxxxx.4612.xxxxx.xx	Operating Supplies	827,737	208,361
xxxx.1.xxx.xxxxx.4651.xxxxx.xx	Maintenance Supplies - Building	82,242	37,138
xxxx.1.xxx.xxxxx.4652.xxxxx.xx	Maintenance Supplies - Improv o/t Building	388,100	108,276

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By Request

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.4.

Resolution Number: **R – 2021.12.08 – 192**
Resolution Re: B22030 Material Repair & Operation and Industrial Supplies - State of NH Contract with Grainger, Inc.

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.4.

Resolution Number: **R – 2021.12.08 – 192**
Resolution Re: B22030 Material Repair & Operation and Industrial Supplies - State of NH Contract with Grainger, Inc.

RESOLUTION BACKGROUND MATERIAL:

There are several State of New Hampshire contract pricing schedules available for municipal use with various vendors that participate. Grainger, Inc. in Manchester, NH is an authorized vendor with the State of New Hampshire, contract #8002347 for (MRO) material repair and operation and industrial supplies with whom the City does a significant amount of business.

The City has been very pleased with the availability, service and pricing structure offered by this vendor and wishes to continue with their current discounted pricing schedules. The pricing and terms and conditions are extended to non-profits, counties, cities, towns, school districts, special district or precinct, or any other governmental organization, but does not lock them into only purchasing from Grainger, Inc. Total City expenditures for FY2021 were approximately $25,000.00.

Per 5-29B Exemptions to Competitive Bidding of the Dover Purchasing Procedure, the Purchasing Agent may, with approval of the City Manager, waive bidding procedures when purchasing through the State of New Hampshire or at State bid prices. As the estimated expense may exceed the $25,000.00 threshold, Council approval is required.

PURCHASING INFORMATION:

Type:	Purchase Order	**Advertised:**	No
Invitations Mailed:	N/A	**Number of Responses:**	N/A
Warranty:	Per Manufacturer	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	Yes/State of NH
Prices will hold for:	Through 06/30/2023	**Estimated Delivery:**	As needed
Recommended Award to:	Grainger, Inc.	**Fund:**	Various
Other Approvals Required:	State of NH Contract No. 8002347 through NASPO agreement #8496, approved 3/25/19-6/30/23	**References Checked:**	Satisfactory
Previously Worked for City:	Yes	**Reason for Council Approval:**	Purchase may exceed the $25,000 amount requiring Council approval.

B22030 - State of NH Contracts

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.5.

Resolution Number: **R – 2021.12.08 – 193**
Resolution Re: **Canvass of Votes-November 2, 2021**

WHEREAS: In accordance with City Charter Section 2-11, the Board of the Supervisors of the Elections met in session to canvass the votes cast at the Municipal Election on November 2, 2021 and have declared and certified the results.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL:

A summary of votes cast in all wards of the City of Dover is shown in the attached Canvass of the Votes for the Municipal election held on November 2, 2021.

AUTHORIZATION

Approved as to Funding:	Daniel R. Lynch Finance Director	Sponsored by:	Mayor Karen Weston By Request
Approved as to Legal Form and Compliance:	Joshua M. Wyatt City Attorney		
Recorded by:	Susan M. Mistretta City Clerk		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.5.

Resolution Number: **R – 2021.12.08 – 193**
Resolution Re: **Canvass of Votes-November 2, 2021**

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti, Ward 2		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

RESOLUTION BACKGROUND MATERIAL:

See attached.

CITY OF DOVER, NH
CANVASS OF VOTES
MUNICIPAL ELECTION
NOVEMBER 2, 2021

A recap of votes cast in all wards of the City of Dover as declared by all six (6) Ward Moderators of the City of Dover is shown below for the Municipal Election held on November 2, 2021.

TOTAL NUMBER OF REGISTERED VOTERS PER WARD

	Current	New Registrations	Total Voters
Ward One (1):	3451	39	3490
Ward Two (2):	3548	27	3575
Ward Three (3):	4177	39	4216
Ward Four (4):	3667	34	3701
Ward Five (5):	2952	25	2977
Ward Six (6):	2798	36	2834
TOTAL	20593	200	20793

TOTAL VOTES CAST

Ward	REGULAR	ABSENTEE	TOTALS
1	664	15	679
2	795	23	818
3	1008	58	1066
4	861	23	884
5	662	28	690
6	940	43	983
TOTALS:	4930	190	5120

Turnout Percentage

Ward 1: 19%
Ward 2: 23%
Ward 3: 25%
Ward 4: 24%
Ward 5: 23%
Ward 6: 35%

TOTAL VOTER TURNOUT: = 25%

CITY OF DOVER, NH
CANVASS OF VOTES
MUNICIPAL ELECTION
NOVEMBER 2, 2021

MAYOR	1	2	3	4	5	6	Totals
Robert Carrier	**558**	**653**	**860**	**722**	**560**	**767**	**4120**
At-Large Councilor							
Linnea Nemeth	**466**	**515**	**664**	**600**	**451**	**508**	**3204**
Lindsey Williams	**466**	**547**	**714**	**633**	**461**	**599**	**3420**
At- Large School Board							
Kathleen Cintavey	146	182	379	229	173	356	1465
Kathleen Morrison	**488**	**583**	**679**	**590**	**466**	**534**	**3340**
	1	2	3	4	5	6	Totals

WARD	CITY COUNCIL	TOTAL VOTES		WARD	CITY COUNCIL	TOTAL VOTES
1	**Michele Muffett-Lipinski**	**469**		**4**	**Debra Hackett**	**723**
1	Madeline O'Reilly	177				
2	Timothy Casey	191		**5**	**Dennis Shanahan**	**554**
2	**Robert Hinkel**	**575**				
3	**Deborah Thibodeaux**	**825**		**6**	**Fergus Cullen**	**559**
				6	Jodi Langellotti	416

WARD	SCHOOL BOARD	TOTAL VOTES		WARD	SCHOOL BOARD	TOTAL VOTES
1	**Maggie Fogarty**	**565**		4	Jaime Berggren	193
				4	**Micaela Demeter**	**664**
2	Laura Morreale	130		5	Carolyn Carr	163
2	**Robin Trefethen**	**552**		**5**	**Jessica Rozzo**	**500**
2	Ryan Christenbury	103				
3	**Carolyn Mebert**	**679**		**6**	**Michelle Clancy**	**566**
3	Sally Staude	349		6	Emily Lyon	358

CITY OF DOVER, NH
CANVASS OF VOTES
MUNICIPAL ELECTION
NOVEMBER 2, 2021
WARD OFFICIALS

WARD ONE (1)	CANDIDATE	TOTAL
MODERATOR	Christopher Haugen	458
SELECTMAN	Steven Lafargue	441
	Stephen Fournier	14
WARD CLERK		
SUPERVISOR OF THE CHECKLIST	Ellen Leighton	479
WARD TWO (2)	**CANDIDATE**	**TOTAL**
MODERATOR	Elizabeth Fischer	592
SELECTMAN	Patrick Horan	598
WARD CLERK	Laura Horan	606
SUPERVISOR OF THE CHECKLIST	Nancy J. Champagne	606
WARD THREE (3)	**CANDIDATE**	**TOTAL**
MODERATOR	Gary Gilmore	761
SELECTMAN	Philip Hatcher	735
		0
WARD CLERK	Dorothy Wagner	768
SUPERVISOR OF THE CHECKLIST	Richard Spence	247

CITY OF DOVER, NH
CANVASS OF VOTES
MUNICIPAL ELECTION
NOVEMBER 2, 2021
WARD OFFICIALS

WARD Four (4)	CANDIDATE	TOTAL
MODERATOR	Kate Hill	679
SELECTMAN	Colin Frost	562
	Thomas Southworth	565
	Trapper White	540
WARD CLERK	Colleen DeGrandpre	630
SUPERVISOR OF THE CHECKLIST	Pamela Giguere	684
WARD Five (5)	**CANDIDATE**	**TOTAL**
MODERATOR	Seth Miller	483
SELECTMAN	Steve Brown	3
WARD CLERK	Catherine Cheney	492
SUPERVISOR OF THE CHECKLIST	Linnea Hartsuyker	485
WARD SIX (6)	**CANDIDATE**	**TOTAL**
MODERATOR	Betsey Andrews Parker	681
SELECTMAN	Jessica Bolker	530
	Maurice Olivier	486
	Lisa Garcia	3
WARD CLERK	Luz Bay	684
SUPERVISOR OF THE CHECKLIST	Jonathan Otterson Kirt Schuman	357 407

BALLOT QUESTIONS

	1	2	3	4	5	6	Totals
Question #1 - Yes	**500**	**607**	**785**	**629**	**458**	**684**	**3663**
Question #1 - No	93	106	156	130	109	128	722
Question #2 - Yes	**579**	**681**	**875**	**718**	**539**	**790**	**4182**
Question #2 - No	43	62	109	72	71	85	442
Question #3 - Yes	**587**	**706**	**893**	**735**	**553**	**812**	**4286**
Question #3 - No	34	44	90	56	55	53	332
Question #4 - Yes	**581**	**673**	**862**	**715**	**531**	**774**	**4136**
Question #4 - No	49	69	111	82	73	89	473
Question #5 - Yes	**519**	**617**	**777**	**669**	**489**	**715**	**3786**
Question #5 - No	57	74	123	85	66	86	491
Question #6 - Yes	**549**	**648**	**850**	**703**	**501**	**749**	**4000**
Question #6 - No	51	65	112	78	71	84	461
Question #7 - Yes	**546**	**668**	**854**	**706**	**512**	**751**	**4037**
Question #7 - No	59	55	107	69	67	78	435
Question #8 - Yes	**536**	**659**	**831**	**704**	**500**	**753**	**3983**
Question #8 - No	64	65	124	75	76	82	486
Question #9 - Yes	**533**	**632**	**818**	**679**	**478**	**733**	**3873**
Question #9 - No	61	78	123	80	79	89	510
Question #10 - Yes	**564**	**686**	**883**	**716**	**528**	**780**	**4157**
Question #10 - No	39	33	76	55	45	50	298
Question #11 - Yes	**560**	**688**	**868**	**712**	**534**	**777**	**4139**
Question #11- No	41	44	84	60	53	60	342
Question #12 - Yes	**555**	**682**	**827**	**701**	**515**	**734**	**4014**
Question #12 - No	65	64	151	93	88	124	585
Question #13 - Yes	**577**	**704**	**902**	**741**	**549**	**800**	**4273**
Question #13 - No	32	30	59	38	41	47	247
Question #14 - Yes	**581**	**697**	**902**	**739**	**548**	**797**	**4264**
Question #14 - No	31	32	59	41	45	47	255
Question #15 - Yes	**574**	**697**	**900**	**734**	**551**	**794**	**4250**
Question #15 - No	35	32	61	41	40	51	260
Question #16 - Yes	**578**	**698**	**905**	**747**	**540**	**794**	**4262**
Question #16 - No	30	29	53	41	34	39	226
Question #17 - Yes	**571**	**694**	**898**	**735**	**532**	**791**	**4221**
Question #17 - No	34	33	50	48	36	40	241
Question #18 - Yes	**557**	**680**	**863**	**715**	**513**	**765**	**4093**
Question #18 - No	42	39	87	60	56	65	349
Question #19 - Yes	**555**	**675**	**834**	**699**	**506**	**741**	**4010**
Question #19 - No	50	51	114	79	64	94	452
Question #20 - Yes	**575**	**692**	**887**	**741**	**537**	**791**	**4223**
Question #20 - No	31	37	62	43	39	46	258

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.6.

Resolution Number: **R – 2021.12.08 – 194**
Resolution Re: B22018 Labor Negotiation Services

WHEREAS: The City and the Dover School District have jointly been seeking to engage one professional labor negotiator or negotiation team to provide services to the City and Dover School District, thereby standardizing labor negotiations across all City departments; and

WHEREAS: On November 22, 2021 at 2:00 p.m., a sealed Request for Proposal #B22018 was solicited and received for Labor Negotiation Services for City departments, including the Dover School District, on an as-needed basis. The contract term will be for a two-year period to begin as soon as possible and no later than on or about January 1, 2022 with the provision of two, one-year extensions, contingent upon satisfactory performance and funding availability; and

WHEREAS: One bid response was received and reviewed for necessary qualifications, experience, possession of a satisfactory record of performance, and cost. It is the recommendation to award to Drummond Woodsum of Manchester, NH, a vendor with whom the City and the Dover School District currently have a working relationship with for specialized municipal legal services; and

WHEREAS: The contract with Drummond Woodsum is intended to be a joint contract whereby both the City and the Dover School District engage Drummond Woodsum, with each party paying invoiced amounts for that party's individual usage of the Drummond Woodsum firm; and

WHEREAS: The Drummond Woodsum law firm has demonstrated that it can provide a professional labor negotiation team led by a designated attorney to assist with the goals of standardizing and professionalizing labor negotiations across all City departments, as well as the ability to do so at competitive hourly rates.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

Provided the Dover School District also approves awarding a joint contract for labor negotiation services to Drummond Woodsum, the Purchasing Agent is hereby authorized to issue a Purchase Order to Drummond Woodsum for labor negotiation services on an as-needed basis at rates provided in conjunction with bid #B22018. The City Manager, or designee, is hereby authorized to jointly contract with the vendor and the Dover School District, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
1000.1.130.41530.4334.00000.00	Legal Services	50,000	50,000

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.6.

Resolution Number: **R – 2021.12.08 – 194**
Resolution Re: B22018 Labor Negotiation Services

AUTHORIZATION

Approved as to Funding:	Daniel R. Lynch Finance Director	Sponsored by:	Mayor Robert Carrier By Request
Approved as to Legal Form and Compliance:	Joshua Wyatt City Attorney		
Recorded by:	Susan Mistretta City Clerk		

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.A.6.

Resolution Number: **R – 2021.12.08 – 194**
Resolution Re: B22018 Labor Negotiation Services

RESOLUTION BACKGROUND MATERIAL:

The City requested proposals from qualified consultants, groups and firms to represent the City departments, including the Dover School District, in negotiating City and or School collective bargaining agreements, amendments, extensions and other similar agreements or adjustments on an as-needed basis. One vendor responded who has prior experience with both City departments and the Dover School District.

Despite only one bid being received for this solicitation, the hourly rates proposed by Drummond Woodsum are in line with normal hourly rates for engaging legal services in New Hampshire. In addition, the Drummond Woodsum firm has offices in New Hampshire and is familiar with the City's and Dover School District's labor matters. Lastly, Drummond Woodsum has demonstrated experience with servicing the labor needs of various municipalities and school districts in New Hampshire.

The Dover School District has an immediate need for labor negotiation services due to one of their three collective bargaining agreements expiring on August 31, 2022.

The City's collective bargaining agreements are all due to expire on June 30, 2024. While an immediate need for the City may not exist at this time for negotiation services, the City may utilize services for other as-needed amendments, memoranda of understanding or other similar agreements or adjustments over the course of the contract period.

Award Information:

A purchase order will be issued to Drummond Woodsum to authorize expenditures as outlined in this resolution.

Purchasing Information:

Type:	Purchase Order	**Advertised:**	Yes
Invitations emailed:	37	**Number of Responses:**	1
Warranty:	N/A	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	Yes
Prices will hold for:	One Year	**Estimated Delivery:**	As needed
Recommended Award to:	Drummond Woodsum	**Fund:**	Various
Other Approvals Required:	No	**References Checked:**	Satisfactory
Previously Worked for City:	Yes	**Reason for Council Approval:**	Purchase to exceed the $25,000 amount requiring Council approval subsequent to a bid solicitation.

B22018 Bid Documents

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.1.

Resolution Number: **R - 2021.12.08 – 195**
Resolution Re: Approval of Red's Good Vibes Food Service Trailer Proposal

WHEREAS: Red's Good Vibes is a nonprofit organization whose mission is to provide meals to those experiencing food insecurities in the region; and

WHEREAS: Red's Good Vibes is looking to expand their operations to increase impact in the Strafford County area; and

WHEREAS: The City of Dover owns an Outfitted Food Trailer and wishes to enter an Agreement with Red's Good Vibes for use of this trailer to expand their operations.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The City Manager is hereby authorized to enter into an agreement with Red's Good Vibes for the leasing and use of the City's Outfitted Food Trailer to expand their operations.

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Approved as to Legal Form and Compliance: Joshua M. Wyatt, City Attorney

Recorded by: Susan M. Mistretta, City Clerk

Sponsored by: Mayor Robert Carrier, By request

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.1.

Resolution Number: **R - 2021.12.08 – 195**
Resolution Re: Approval of Red's Good Vibes Food Service Trailer Proposal

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.1.

Resolution Number: **R - 2021.12.08 – 195**
Resolution Re: Approval of Red's Good Vibes Food Service Trailer Proposal

RESOLUTION BACKGROUND MATERIAL:

Red's Good Vibes ("RGV") is a nonprofit organization whose mission id to provide meals to those with food insecurity. RGV has a New Hampshire State food truck permit for operation in non-self-inspect cities and a separate license in Rochester. RGV operates in the Seacoast area providing an average of over 1,000 meals per week. RGV is seeking to expand their operations to double the impact in the Strafford County area. Attached is the proposal from RGV further detailing their operations and projected growth. The proposal would form part of a formal contract/agreement between the City and RGV, a draft of which is also attached.

The agreement will allow for RGV to use the City's Outfitted Food Trailer for non-commercial food preparation and delivery serving those experiencing food insecurity. RGV will circulate throughout the region preparing and serving food to individuals in need. RGV will be responsible for the registration and maintenance of the trailer and for ensuring they are adequately supplied to achieve their mission. RGV will insure the trailer naming the City of Dover as additional insured in addition to providing other insurances with min coverages as required by City of Dover. RGV will be subject to providing regular reporting and accounting of operations of overall organization including specific trailer operations as required by City of Dover or grant agencies. Additionally, RGV will adhere to all food safety and public health requirements incumbent on mobile food trailer operators, and volunteers, employee, and vendors involved with preparing and serving food in trailer shall be properly trained and certified in safe food handling practices including ServSafe certification. The City of Dover will continue to own the trailer and the agreement will serve as a lease. Upon termination of the agreement, the trailer will be returned to City of Dover, at location determined by City of Dover, in good working order.

The draft agreement and proposal from RGV are each attached for reference.

2021

RED'S GOOD VIBES FOOD TRAILER SERVICE EXPANSION PROPOSAL

PROPOSED TO:
City of Dover, NH

PROPOSED BY:
Red's Good Vibes Inc

SERVICE
EXPANSION
PROPOSAL

WHO WE ARE:

CAITLIN, MEGHAN, & MIKE
SIBLINGS AND CO-FOUNDERS OF RED'S GOOD VIBES

It was always a dream of the brother we lost to one day own a food truck that would serve free meals to those in need. It is fitting that the story of Red's Good Vibes starts with his idea, and would be a way to continue to spread the good vibes that he cannot.

We took a leap of faith, created a nonprofit from the ground up based upon a noticed need for a local mobile soup kitchen. We achieved 501c3 status, and with amazing support, raised funds to build our food truck. We have worked hard on our mission to provide services with a kind heart and no judgement.

The City of Dover was our first permitted city. City officials, Jamie Donovan, and David Balian provide needed advice, our mentor Christine Sieks gives us the guidance needed to build mutually beneficial relationships, the parking bureau and police department help us find easily accessible locations for events, and countless other services of the city have supported us throughout our journey. Our NH state food truck permit allows operation in non-self- inspect cities, such as Somersworth, and we have a separate license in Rochester. We are familiar with state and city guidelines for permitting and are ready to expand RGV.

RGV provides an average of **over 1,000 meals per week** to neighbors in need. Our business model ensures efficiency, success, sustainability, and scalability. Partnerships with the NH Food Bank, Gather, and Seacoast Eat Local help us to provide fresh, quality food items at minimal cost to our organization.

Our entire staff is volunteer keeping our operational costs low. We have a strong, ever growing list of qualified volunteers being trained to be able to swiftly transition into action if needed. We work with welfare officers, Seacoast Mental Health, SOS Recovery Services, and the team at Connections for Health (formerly the IDN) to create strategic site maps of those with housing and/or food insecurity. Our organization provides a needed service with a fun, food truck flare that creates lasting memories for patrons. Providing choice from a menu, never accepting donations at a Free Food Truck Event, asking **NO** questions, all help to further break down the walls of stigma surrounding reaching out for help.

We all dine together at the Big Red Food Truck!

SERVICE
EXPANSION
PROPOSAL

FUTURE PLANS

Red's Good Vibes is currently working on a service expansion plan to double our impact in the Strafford County area by acquiring an additional food trailer. Our timeline has been set for one calendar year and a fundraising plan is being created. Volunteer teams have been formed and are being trained in operations including ServSafe, maintenance, equipment use, and food service. Our current successful business model has laid the ground work to easily double operations with minimal effort. We are primed and ready to grow but acquiring the new trailer will be our largest obstacle.

THE BIG IDEA

It has come to our attention that the City of Dover has purchased an outfitted food trailer and is considering transferring the asset to another organization for use. We at Red's Good Vibes propose that the City of Dover consider donating the underutilized food trailer to RGV, allowing us to support the city's effort to provide hunger assistance to the residents of Dover as well as surrounding cities. Our current business model and mission run parallel to the City's intent to provide fresh, quality, made to order meals to those in need using this trailer. The acquisition of this trailer would allow us to fulfill this intent and would greatly impact those in need in Strafford County.

OUR COMMITMENT

In exchange for the City of Dover's trailer Red's Good Vibes would pledge that 50% of its service time will be utilized to serve the City of Dover. We will also work closely with the city to target service populations within this area. We would take on all liability associated with staffing, equipment maintenance, ownership and food service operations safety implementation.

SERVICE
EXPANSION
PROPOSAL

CURRENT SERVICE NUMBERS

- Average of **450** made to order meals per event
- **2-3 Events per week** averaging between **900-1350** made to order meals per week
- Average of **50 additional** "grab & go" meals or shelf stable extras provided per event to patrons in need

RECENT TRI-CITY EVENT TOTALS

- Dover 10/03/2021- **498** Meals served with **71** additional Grab&Go.
- Rochester 10/09/2021- **315** Meals served with **31** additional Grab&Go
- Dover 10/10/2021 - **502** Meals served with **52** additional Grab&Go.
- Rochester 10/20/2021- **472** Meals served with **68** additional Grab&Go

PROJECTED SERVICE NUMBERS

****WITH ADDITIONAL TRAILER****

- **1,000 meals per event day** by running 2 events simultaneously in different locations (could be within same city)
- Increase events to **5-6 per week** creating a potential to serve **3,000 meals per week**
- Increase "grab & go" services per event
- Increase access to those who can not travel to our current locations.

SERVICE
EXPANSION
PROPOSAL

CONCLUSION

- Red's Good Vibes has a proven successful business model that is sustainable, and easily scaled that is serving targeted populations throughout multiple counties.
- Red's Good Vibes current strategic plan to expand operations requires an additional food trailer. This will double the organizations impact and provide expanded access to nutritious, made-to-order meals , Grab & Go needs, and outdoor survival gear for those who are food and/or housing insecure.
- Red's Good Vibes can use its known brand and presence to increase the connection of other community services to these vulnerable populations.
- The City of Dover owns an outfitted food truck and may be considering a third-party organization to work with the City to devise a usage plan for it.
- Red's Good Vibes is proposing The City of Dover consider a plan to allow Red's Good Vibes to acquire this trailer and immediately begin food service under their existing successful business plan and increase number of meals/services provided to the Tri-City area.
- Red's Good Vibes proposes that the City of Dover consider allowing Red's Good Vibes to acquire this trailer and begin service under their existing business model to increase the number of meals/services by an **additional 1,500-2000 meals** per week in the Tri-City area. **Every week without a second trailer is a net loss of these meals for patrons.**
- Red's Good Vibes would be pleased to open a discussion about Tri-City service area commitments and address any concerns the City of Dover may have to ensure the plan is beneficial for those in need as well as the City of Dover.

OUR SUPPORTERS

- **Connections for Health (Formerly IDN)** has supported RGV from the beginning and provided a $60,000 grant to ensure operations continued for the next calendar year at current service numbers
- **Foundation for Seacoast Health**- has pledged support to our mission and has provided small operational grants to fund food truck events
- **Senator Jeanne Shaheen**- advocate of Red's Good Vibes and vocal media supporter. She has attended a food truck event to participate and showcase her support. Madison Lightfoot her Special Assistant for Policy & Projects, remains a direct contact to RGV for support and guidance.
- **NH Food Bank**- RGV has been a partnering agency with the NH Food Bank since 2020. The current food trailer is also licensed through the NH Food Bank as a commercial kitchen
- **Gather**- Red's Good Vibes is supported by Gather, for a hunger free community and partners to create multi service events where those in need can obtain a made to order meal from RGV as well as shop a Gather mobile market. This allows for the opportunity for each guest to leave the event with that day's meals as well as grocery items for the week.
- **Community Partners**- RGV works consistently with many community partners including but not limited to, Seacoast Eat Local, Food Provider's Network, GoodWork, SVDP, Seacoast Mental Health, Goodwin Health, Families First, Waypoint, SOS, and Strafford County CAP
- **Commercial Partners**- RGV commercial supporters include but are not limited to, Whole Foods Markets, T-Mobile, McKinnon's Supermarkets, Lowe's, Lark Hotels, and many other local businesses

SERVICE
EXPANSION
PROPOSAL

"Sundays have a new meaning for our family. We go to the park, and then hit our favorite food truck Red's Good Vibes. The kids have so much fun, get an amazing meal and have no idea that the food provided is free. What that does for me as a parent is priceless. Thank you for the good food and for not making us feel different."

"Without Red's I would not have a hot meal all week. They are all so kind and even let me take an extra sandwich for tomorrow. "

"GLAD TO VISIT RED'S GOOD VIBES IN DOVER AND HEAR MORE ABOUT IT'S WORK DURING THIS PANDEMIC HELPING TO FEED VULNERABLE SEACOAST FAMILIES. CHARITIES AND NONPROFITS LIKE RED'S SERVE OUR COMMUNITIES ON THE FRONTLINES....." –J.S.

"These people are here all the time. Even when it snows. Giving us food, smiling and playing music. It's great ."

PRESS LINKS

- https://www.unionleader.com/news/human_interest/reds-good-vibes-providing-free-hot-meals-with-new-food-truck/article_771b016e-f02b-570d-acf9-5d5e264cffd0.html
- https://www.seacoastonline.com/story/news/local/2021/02/17/big-reds-free-food-truck-provides-meals-hampton/6772516002/
- https://www.seacoastonline.com/story/news/local/hampton-union/2020/12/29/reds-good-vibes-food-truck-serve-free-meals-seacoast/4068126001/

CITY OF DOVER

288 CENTRAL AVENUE
DOVER, NH 03820
WWW.DOVER.NH.GOV
603.516.6000

AGREEMENT

THE CITY OF DOVER, a municipal corporation, 288 Central Avenue, Dover, New Hampshire 03820 and **RED'S GOOD VIBES, INC.**, (the "Vendor"), a New Hampshire domestic nonprofit corporation, 70 Constitution Avenue, Unit 227, Portsmouth, NH 03801 who on this _____ day of _____, 2021, for valuable consideration agree as follows (the "Agreement"):

1. **Purpose**. This Agreement refers to and incorporates the provisions of a Request for Proposal entitled "Red's Good Vibes Food Trailer Service Expansion Proposal". Specifically, this Agreement is for expansion plan to double the impact in the Strafford County area by acquiring an additional food trailer.

2. **Agreement Documents**. The Agreement shall include and consist of the following documents (the "Agreement Documents"):

   a. Agreement (6 pages)
   b. Proposal of Vendor dated November 15, 2021 (6 pages)

3. **Scope of Services**. The Vendor shall perform all work specified and required by the Agreement Documents listed in Section 2 above. Should there be inconsistencies between the terms of any of the Agreement Documents, precedence shall be as follows: 1) the Agreement; 2) Proposal of the Vendor; and 3) any attachments.

   The City shall provide an Outfitted Food Trailer to be used by Vendor for non-commercial food preparation and delivery serving those experiencing food insecurity. The trailer shall be utilized regularly for preparing and serving food in locations approved or permitted in writing by individual municipalities in the region; including but not exclusive to those in Strafford, Rockingham, York counties. The trailer and equipment affixed to trailer is to be maintained and supplied by Vendor. Vendor is responsible for securing vendors and partners to maintain and supply the trailer and for all related costs of operation including transportation and storage.

   The Vendor shall not make any changes to the configuration of trailer, including adding or removing equipment affixed to trailer, graphics or logos without prior approval of the City. The City shall be responsible for registration of the trailer.

   Vendor shall adhere to all food safety and public health requirements incumbent on mobile food trailer operators. Vendor's volunteers, employees, and vendors involved with preparing and serving food in the trailer shall be properly trained and certified in safe food handling practices including ServSafe, maintenance, equipment use, and food service.

Vendor shall provide monthly reports and accounting of operations, overall organization, and/or specific trailer operations as required by City of Dover and/or grant agencies.

4. **Changes in the Cost of the Work and the Scope of Services**. Changes to the cost of the work and the Scope of Services shall be made in writing by mutual agreement prior to the performance of the work.

5. **Term**. The Vendor shall commence work upon the execution of this Agreement. All services to be performed under this Agreement shall become effective upon the signing of the Agreement and continue for one year. After the initial term, Parties shall have the option to renew this Agreement for two additional years. Any renewal must be mutually agreed to in writing.

6. **Cost and Payment**. The City of Dover shall lease the Trailer to Vendor for one dollar per year for use in services within the Scope of Services.

7. **Insurance.**

   a. The Vendor shall secure and maintain for the duration of this Agreement a General Liability Insurance policy or policies at no cost to the City of Dover. The coverage of said insurance policy shall be in an amount of not less than One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) in the aggregate. An insurance certificate shall be supplied to the City of Dover by the Vendor, as well as proof of an endorsement or policy additional insured provisions confirming the City of Dover's additional insured status. The City of Dover shall be named as an additional insured on the Vendor's general liability insurance policy, which coverage shall apply on a primary and noncontributory basis, and, subject to the dollar amounts specified above, cover the City of Dover with the same scope of coverage provided to the Vendor under the general liability policy without subjecting the City of Dover to any different or additional terms, conditions, limitations or exclusions. A condition of the insurance coverage shall be thirty (30) days' notice to the City of Dover prior to cancellation of the policy. The Vendor shall also provide the City of Dover certificates of renewal and, if requested, proof of an endorsement or policy additional insured provisions for any applicable insurance policy no later than ten (10) business days prior to the expiration of said policy.
   b. The Vendor shall secure and maintain for the duration of this Agreement Automobile Liability Insurance covering the operation of all motor vehicles, including those hired and borrowed, used by the Vendor in connection with this Agreement at no cost to the City of Dover. The coverage of said insurance policy shall be in the amount of not less than Five Hundred Thousand Dollars ($500,000) for all damages arising out of bodily injuries to or death of one person and subject to that limit for each person, a total limit of at least One Million Dollars

($1,000,000) for all damages arising out of bodily injuries to or death of two or more persons in any one accident or occurrence. This insurance shall also include collision insurance to cover repair and replacement of the Trailer, as well as liability coverage with a total limit of at least One Million Dollars ($1,000,000) for all damages arising out of, or in relation to use of, or damage to the Trailer regardless of fault in any one accident or occurrence. An insurance certificate shall be supplied to the City of Dover by the Vendor. The Vendor shall also provide the City of Dover certificates of renewal for any applicable insurance policy no later than ten (10) business days prior to the expiration of said policy.

c. By signing this Agreement, the Vendor agrees, certifies, and warrants that the Vendor is in compliance with, or exempt from, the requirements of New Hampshire RSA Chapter 281-A, regarding workers' compensation insurance. The Vendor shall maintain statutory workers' compensation insurance coverage for all of its employees as required by said law.

8. **Indemnification.** To the fullest extent permitted by law, the Vendor agrees to defend (with counsel acceptable to the City), indemnify, and hold harmless the City of Dover from and against any claims, losses, damages or expense (including reasonable attorneys' fees) arising out of the death or, injuries, or damages to any person, or damage or destruction of any property, in connection with or in relation to the Vendor's services, in whole or in part, under this Agreement to the extent caused by, and/or alleging, the negligent acts, errors, or omissions of the Vendor or its officers, directors, employees, agents or independent professional associates, or any of them. This covenant shall survive the termination of this Agreement.

9. **Warranty:** The Vendor shall perform the work within the Scope of Services commensurate with the standard of the trade/industry involved in the performance of this Agreement. In connection with the performance of the Scope of Services, the Vendor shall comply with all statutes, laws, regulations, and applicable orders, whether federal, state, or local.

10. **Ownership of Trailer**. The City of Dover shall retain ownership of the Trailer and equipment affixed to the trailer. Upon termination of agreement, trailer is to be returned to City of Dover at location determined by City of Dover in good working order.

11. **Dispute resolution**. Both parties are entitled to all available legal and equitable remedies within the jurisdiction of the courts of the State of New Hampshire. All parties consent to venue and personal jurisdiction in the State of New Hampshire. Venue shall be Strafford County.

12. **Termination**. The City of Dover may terminate this Agreement without cause upon thirty (30) days written notice subject to an obligation to pay for services satisfactorily rendered. Warranties shall not be subject to termination.

13. **Binding.** This Agreement shall be binding upon all parties, their heirs, executors, administrators, successors and assigns.

14. **Waiver of breach.** No failure by the City of Dover to enforce any provisions of this Agreement shall be deemed a waiver of its rights under this Agreement.

15. **Applicable law**. This Agreement shall be deemed to have been entered into in the State of New Hampshire and shall be construed in accordance with the laws of the State of New Hampshire.

16. **Third parties.** Nothing in this Agreement, expressed or implied, is intended to or shall be construed to confer upon or to give to any person or entity other than the City of Dover and the Vendor any rights, remedies or claims under or by reason of this Agreement or any covenants, conditions or stipulations hereof, and all covenants, conditions, promises and agreements in this Agreement contained by or on behalf of the City of Dover or the Vendor shall be for the sole and exclusive benefit of the City of Dover and the Vendor.

17. **Review.** The parties to this Agreement acknowledge that they enter into this Agreement voluntarily and have had the opportunity to review this Agreement with legal counsel prior to signing.

18. **Personnel.** The Vendor shall at its own expense provide all personnel necessary to perform the work under this Agreement. The Vendor warrants that all personnel shall be qualified to perform the work under the Scope of Services and shall be properly licensed and otherwise authorized to do so under all applicable laws.

19. **Assignment/Delegation/Subcontracts.** The Vendor shall not assign, or otherwise transfer, any interest in this Agreement without the prior written consent of the City of Dover. None of the services shall be subcontracted by the Vendor without the prior written consent of the City of Dover.

20. **Contractor's Relation to the City of Dover.** In the performance of this Agreement the Vendor is in all respects an independent contractor and is neither an agent, joint venture, partner, nor employee of the City of Dover. Entities must be in good standing with the Secretary of State's Office in the state of incorporation and registered to conduct business in the State of New Hampshire to the extent required by law.

21. **Confidentiality.** Confidentiality of any and all information/data held by the City of Dover under or related to this Agreement shall be governed by New Hampshire RSA Chapter 91-A.

22. **Amendment.** This Agreement may be amended, waived, or discharged only by an instrument in writing signed by the parties hereto.

23. **Construction and Headings.** The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party. The headings throughout this Agreement are for reference purposes only, and the words contained therein shall in no way be used to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this Agreement.

24. **Notice.** Any notice by a party hereto to the other party to this Agreement shall be provided as follows:

City of Dover	Red's Good Vibes, Inc.
Michael Joyal, Jr., City Manager	Caitlin McGrath-Levesque, Incorporator
288 Central Avenue	70 Constitution Ave, Unit 227
Dover, NH 03820	Portsmouth, NH 03801

25. **Severability.** In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement shall remain in full force and effect. The parties agree to reform this Agreement to replace any such invalid or unenforceable provision with a valid enforceable provision that comes as close as possible to the intention of the stricken provision.

26. **Appropriations**: Continuation of the Agreement is contingent upon the appropriation of funds. All obligations of the City of Dover stated in this agreement, including, but not limited to, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds by the Dover City Council and in no event will the City of Dover be liable for any payments or obligation hereunder in excess of such appropriated funds. The City of Dover shall not be required to transfer funds from any other account to satisfy payments hereunder. Vendor will have the right to terminate this agreement immediately upon receiving notice of such termination due to the non-appropriation of funds.

27. **Immunity**: Nothing within this Agreement shall be deemed to constitute a waiver of any immunity of the City of Dover, which immunities are hereby reserved to the City of Dover. This covenant shall survive the termination of this contract's conclusion.

28. **Entire Agreement.** This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire Agreement and understanding between the parties and supersedes all prior agreements and understandings relating hereto.

Signatures to Follow

RED'S GOOD VIBES, INC.

_____ _____

Caitlin McGrath-Levesque, Incorporator
Duly Authorized

Date

CITY OF DOVER

_____ _____

J. Michael Joyal, Jr., City Manager

Date

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.2.

Resolution Number: **R – 2021.12.08 – 196**

Resolution Re: Professional Engineering Services for the Construction of the Pudding Hill Water Treatment Facility – Underwood Engineers

WHEREAS: Underwood Engineers completed the final design for the construction of the Pudding Hill water treatment facility that was bid (#B22013) by the City on September 21, 2021; and

WHEREAS: The City received a scope of work from Underwood Engineers for professional engineering services for the construction of the Pudding Hill water treatment facility. The construction phase includes construction administration, resident project representative services, startup services, preparation of an operation and maintenance manual, record drawings, as well as funding assistance and field testing in the total amount of $1,125,000.00; and

WHEREAS: The City Council approved the capital project appropriation for the construction of the Pudding Hill water treatment facility via resolution R-2021.09.22-163 in the amount of $17,400,000.00. The work of this project includes the construction of a new water treatment facility which will treat the Griffin, Ireland and DPH-1 wells. It is the recommendation to accept the proposal received from Underwood Engineers for professional engineering services for the construction of the Pudding Hill water treatment facility in the total amount of $1,125,000; and

WHEREAS: Per 5-28B, Competitive bidding purchases; waiver of the Dover Purchasing Procedure, competitive bidding may be waived by a majority vote of the City Council.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Purchasing Agent is hereby authorized to issue a purchase order to Underwood Engineers of Portsmouth, NH for professional engineering services for the construction of the Pudding Hill water treatment facility in the amount of $1,125,000.00. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
5300.1.300.43320.4720.03595.22	Water - Pudding Hill Water Treatment Plant	17,400,000	3,472,090

Document Created by: Purchasing
Document Posted on: December 3, 2021

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.2.

Resolution Number: **R – 2021.12.08 – 196**
Resolution Re: Professional Engineering Services for the Construction of the Pudding Hill Water Treatment Facility – Underwood Engineers

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By Request

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

RESOLUTION BACKGROUND MATERIAL:

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.2.

Resolution Number: **R – 2021.12.08 – 196**

Resolution Re: Professional Engineering Services for the Construction of the Pudding Hill Water Treatment Facility – Underwood Engineers

The Pudding Hill water treatment facility will be new construction which will treat the Griffin, Ireland and DPH-1 wells. The construction contract includes, but is not limited to, a new CMU and steel building including plumbing, HVAC, and electrical systems; new process including piping and chemical feed systems; new instrumentation and SCADA, including integration with the City's existing SCADA system; site improvements to accommodate new facility including yard piping, driveway, grading, drainage, relocation of existing utilities and fencing; and concrete basins below grade.

The building at the Ireland Well will be demolished and the existing well will be connected to the new treatment facility including new controls and transmission main. The building at the DPH-1 Well will remain and the existing well will be connected to the new treatment facility including new controls and transmission main, as well as new electrical service from the new treatment facility. The Griffin Well will be connected to the new treatment facility and cleaned.

The City received a scope of work from Underwood Engineers for professional engineering services for the construction of the Pudding Hill water treatment facility. The construction phase includes construction administration, resident project representative services, startup services, preparation of an operation and maintenance manual, record drawings, as well as funding assistance and field testing in the total amount of $1,125,000.00.

Underwood Engineers has provided their fixed professional engineering labor rate sheet for the primary engineering team members for 2022 and their anticipated average annual rate increase for 2023 of 4%. Direct expenses and subconsultants will be passed on to the City at cost with no mark-up to the City.

Award Information:
A purchase order will be issued to Underwood Engineers to authorize expenditures as outlined in this resolution.

Purchasing Information:

Type:	Purchase Order	**Advertised:**	No
Invitations Mailed:	N/A	**Number of Responses:**	N/A
Warranty:	N/A	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	Yes
Prices will hold for:	Until Completed	**Estimated Delivery:**	780 Calendar days from NTP for Final Completion
Recommended Award to:	Underwood Engineers	**Fund:**	Fund 5300
Other Approvals Required:	No	**References Checked:**	Satisfactory
Previously Worked for City:	Yes	**Reason for Council Approval:**	Competitive bidding waiver.

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.3.

CITY OF DOVER

Resolution Number: **R – 2021.12.08 – 197**
Resolution Re: Cocheco River Outfall Stormwater Master Plan Agreement with Kleinfelder Northeast, Inc

WHEREAS: The City Council desires to make public improvements and to finance these improvements through the New Hampshire Clean Water State Revolving Fund Program. The Cocheco River Outfall Stormwater project loan is available through the (NHDES) New Hampshire Department of Environmental Services, and is eligible for 50% principal forgiveness for stormwater work; and

WHEREAS: The City Council approved appropriating this capital project via R-2021.04.14-054 in the amount of $150,000.00. The City seeks to enter into an agreement with Kleinfelder Northeast, Inc in the amount of $150,000.00. NHDES has submitted written confirmation of approval to move forward with selected vendor as this is the same consultant used for the Broadway Rail Road culvert Project and the Chapel Street Ravine Stormwater Treatment Planning Study; and

WHEREAS: Per 5-28.B. Competitive bidding may be waived by the majority vote of the City Council.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Purchasing Agent is hereby authorized to issue a Purchase Order to Kleinfelder Northeast, Inc of Cambridge MA for the Cocheco River Outfall Stormwater Master Plan in the amount of $150,000.00. The City Manager, or designee, is hereby authorized to contract with the vendor, consistent with the Purchase Order authorized herein.

The amount of this authorization shall be limited so as not to exceed available funding.

Financing

Account	Description	Appropriation	Balance
4022.1.300.43155.4715.03205.22	Cocheco River Outfall Stormwater-Land Improv	150,000	150,000

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By Request

Approved as to Legal Form and Compliance: Joshua Wyatt, City Attorney

Recorded by: Susan Mistretta, City Clerk

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.3.

Resolution Number: **R – 2021.12.08 – 197**
Resolution Re: Cocheco River Outfall Stormwater Master Plan Agreement with Kleinfelder Northeast, Inc

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Dennis Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.3.

Resolution Number: **R – 2021.12.08 – 197**
Resolution Re: Cocheco River Outfall Stormwater Master Plan Agreement with Kleinfelder Northeast, Inc

RESOLUTION BACKGROUND MATERIAL:

A prior resolution makes an appropriation of $150,000.00 for a FY2022 Capital Improvements Program project financed by a loan from NH DES Clean Water State Revolving Fund, with up to $75,000.00 principal forgiveness for the planning loan, and authorizes the city to enter into the loan agreement with NH DES.

The drainage basin for the Cocheco River Outfall includes the area of the City approximately bounded by Central Avenue to the west, Garrison Hill Park to the north, the B&M Railroad tracks and portions of Portland Avenue and Cocheco Street to the east, and parts of the downtown area to the south. The drainage area totals over 270 acres. Stormwater runoff from areas to the west of the B&M Railroad tracks drain to the intersection of Broadway between New York Street and Ham Street, where it enters the Broadway Railroad Culvert, which is currently under construction. The Broadway Railroad Culvert conveys stormwater flow under the B&M Railroad tracks. From there, stormwater is conveyed through the Chapel Street Ravine and eventually discharges to the Cocheco River near 11 Cocheco Street. Approximately 218 acres of the tributary drainage area is located upstream of the Broadway Railroad Culvert, with the remaining 50+ acres located between the railroad tracks and the Cocheco River.

This project includes development of a stormwater master plan for the tributary area that will guide the city's decision-making with respect to future stormwater infrastructure improvements and maintenance activities within the drainage basin. There are two SRF-funded projects located within the drainage basin, including the Broadway Railroad Culvert Reconstruction Project (SRF# CS-330200-09) and the Chapel Street Ravine Stormwater Treatment Study (SRF# CS-330200-17). However, these are projects focusing on isolated areas of the drainage basin, including replacement of a critical stone box culvert under the railroad tracks and a study to focus on potential stormwater treatment in a ravine adjacent to the culvert. There are other significant drainage issues throughout the entire drainage basin that warrant careful evaluation and correction, including century-old drainage infrastructure that is deteriorating and severely under capacity, numerous stone box culvert trunk lines located on private property that are not easily accessible for maintenance, and street flooding during moderate storm events. The location and accessibility-related issues restrict the ability to route all of the stormwater runoff to deep-sump catch basins prior to entering the drainage system. Due to the magnitude of needs in this large drainage basin, it is not feasible that all of these issues may be corrected with a single project. It is anticipated that correcting many of these issues will need to occur over time in a cost-effective manner. Therefore, a master plan is necessary to guide the City in implementing a phased approach to correcting stormwater related issues in the drainage basin.

The Cocheco River Outfall Stormwater Master Plan is complimentary to the Chapel Street Ravine Stormwater Treatment Planning Study and the Broadway Culvert Reconstruction Project.

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.3.

Resolution Number: **R – 2021.12.08 – 197**
Resolution Re: Cocheco River Outfall Stormwater Master Plan Agreement with Kleinfelder Northeast, Inc

Purchasing Information:

Type:	Purchase Order	**Advertised:**	No
Invitations Mailed:	N/A	**Number of Responses:**	N/A
Warranty:	NA	**Terms:**	Net 30, FOB Dover
Work Bonded:	No	**Contract:**	Yes
Prices will hold for:	Until Complete	**Estimated Delivery:**	As needed
Recommended Award to:	Kleinfelder Northeast, Inc	**Fund:**	CIP
Previously Worked for City:	Yes	**Reason for Council Approval:**	Waive bidding per purchasing code 5-28.B.

CITY OF DOVER

CITY OF DOVER - RESOLUTION

Agenda Item#: 13.B.4.

Resolution Number: **R - 2021.12.08 – 198**

Resolution Re: Approval and Authorization of (i) Settlement and Funding Agreement Between City of Dover and New England Metal Recycling, LLC, and (ii) Third Party Guaranty Agreement

WHEREAS: The City is the owner and operator of municipal water supply wells, specifically, the Griffin, Ireland and DPH-1 Wells, each of which draw public drinking water from the Pudding Hill Aquifer; and

WHEREAS: New England Metal Recycling, LLC ("NEMR") is the owner of certain property located at 290 Knox Marsh Road in Madbury, NH; and

WHEREAS: Well samples have detected certain per- and polyfluoroalkyl substances ("PFAS"), 1,4 dioxane, and methyl tertiary-butyl ether ("MtBE"), as well as iron and manganese; and

WHEREAS: City staff and NEMR have negotiated a Settlement and Funding Agreement concerning the construction of a new treatment facility to ensure the City can meet its drink water demands with safe public drinking water drawn from the Pudding Hill Aquifer; and

WHEREAS: City staff have also negotiated a related Guaranty Agreement between the City of Dover and Schnitzer Steel Industries, Inc., which in general terms guarantees NEMR's performance of its obligations.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND DOVER CITY COUNCIL THAT:

The Settlement and Funding Agreement between NEMR and the City of Dover is approved. The City Manager is authorized to sign the Settlement and Funding Agreement, administer and oversee the Settlement and Funding Agreement's administration, perform the City's obligations stated therein, and ensure all parties perform their obligations stated therein.

AND, FURTHER BE IT RESOLVED THAT:

The City Manager is authorized to accept, and the City Manager and Purchasing Agent are hereby authorized to expend, all funds to be provided to the City as set forth in the Settlement and Funding Agreement between NEMR and the City of Dover, consistent with the Settlement and Funding agreement's terms, the duties and responsibilities of Dover Code Chapter 5, Purchasing Procedure, and the existing appropriation established by R-2021-09.22-163.

AND, FURTHER BE IT RESOLVED THAT:

The Guaranty Agreement between the City of Dover and Schnitzer Steel Industries, Inc. is approved. The City Manager is authorized to sign the Guaranty Agreement between the City of Dover and Schnitzer Steel Industries, Inc., , administer and oversee the Guaranty

Agreement's administration, perform the City's obligations stated therein, and ensure all parties perform their obligations stated therein.

AUTHORIZATION

Approved as to Funding: Daniel R. Lynch, Finance Director

Sponsored by: Mayor Robert Carrier, By request

Approved as to Legal Form and Compliance: Joshua M. Wyatt, City Attorney

Recorded by: Susan M. Mistretta, City Clerk

DOCUMENT HISTORY:

First Reading Date:	Public Hearing Date:
Approved Date:	Effective Date:

DOCUMENT ACTIONS:

VOTING RECORD Date of Vote:	YES	NO
Mayor Robert Carrier		
Deputy Mayor Ciotti		
Councilor Michelle Muffett-Lipinski, Ward 1		
Councilor Deborah Thibodeaux, Ward 3		
Councilor Marcia Gasses, Ward 4		
Councilor Dennis Shanahan, Ward 5		
Councilor Fergus Cullen, Ward 6		
Councilor John O'Connor, At Large		
Councilor Lindsey Williams, At Large		
Total Votes:		
Resolution does | does not pass.		

CITY OF DOVER	CITY OF DOVER - RESOLUTION
	Agenda Item#: 13.B.4.
	Resolution Number: **R - 2021.12.08 – 198**
	Resolution Re: Approval and Authorization of (i) Settlement and Funding Agreement Between City of Dover and New England Metal Recycling, LLC, and (ii) Third Party Guaranty Agreement

RESOLUTION BACKGROUND MATERIAL:

Attached for reference are: (1) the Settlement and Funding Agreement between the City of Dover and New England Metal Recycling, LLC; and (2) the Guaranty Agreement between Schnitzer Steel Industries, Inc. and the City of Dover.

Three water supply wells for the City are located in the Pudding Hill Aquifer: the Griffin Well, Ireland Well, and DPH-1 Well. The Pudding Hill aquifer has a permitted withdrawal capacity of 780 gallons per minute, or 1.12 million gallons per day, while operating any combination of the wells. This volumetric capacity exceeds 40% of the City's annual average daily demand.

Due to concerns over emerging contamination, the Griffin Well was voluntarily taken offline in December 2015, due to the presence of PFAS. Ongoing water quality testing also noted the presence of iron, manganese, 1,4 Dioxane and MtBE. The Ireland Well was voluntarily taken offline June 2018, after monitoring well samples indicated rising levels of PFAS. DPH-1 has also remained voluntarily offline, for fear of pulling or introducing possible contamination to the well point.

New England Metal Recycling, LLC ("NEMR") has been identified as a responsible party by the New Hampshire Department of Environmental Services (DES). DES has approved a Remedial Action Plan ("RAP") submitted by NEMR, with certain conditions. The RAP provides, among other things, that NEMR is obligated provide wellhead treatment to the City of Dover to ensure impacted public supply wells can continue to produce safe drinking water below the state regulatory standards. There are certain costs unrelated to contamination that NEMR views as beyond its responsibility, such as fluoridation, corrosion control adjustment, disinfection, and all or a portion of metals removal.

The City has worked with NEMR to fund the design of a treatment facility, the plans for which are attached to the Settlement and Funding Agreement as Exhibit A. The state-of-the-art water treatment plant has been designed to address contamination and make the water safe and potable for public consumption. The treatment plant design was peer-reviewed by faculty at the University of New Hampshire, which validated the recommended treatment processes of Greensand-Plus filtration, advance oxidation (peroxide & UV light) and carbon adsorption. The recommended treatment processes were also validated via an extended pilot study.

The proposed treatment plant will be constructed on City-owned property off Mast Road, in relatively close proximity to the Bellamy River. The City's planning board has approved the site review.

SETTLEMENT AND FUNDING AGREEMENT

This Settlement and Funding Agreement ("Agreement") is made and entered into as of the ____ day of December, 2021 ("Effective Date") by and between the City of Dover, a New Hampshire municipal corporation with an address of 288 Central Avenue, Dover, NH 03820 ("City"), and New England Metal Recycling, LLC, a Massachusetts limited liability company with an address of 69 Rover Street, Everett, MA 02149 ("NEMR") (collectively the "Parties").

WHEREAS, the City is the owner and operator of municipal water supply wells, specifically, the Griffin, Ireland and DPH-1 Wells that draw from the Pudding Hill Aquifer. Hereinafter in this Agreement, the Ireland and DPH-1 Wells, but not the Griffin Well, are collectively referred to as the "City Wells"; and

WHEREAS, NEMR is the owner of certain property owned at 290 Knox Marsh Road in Madbury, NH (the "NEMR Property"); and

WHEREAS, Griffin Well samples and City Wells samples taken by the City's consultants have detected certain Per- and Polyfluoroalkyl substances ("PFAS"), 1,4 Dioxane, and methyl tertiary-butyl ether ("MtBE") (collectively "the Identified Pollutants"), in the Griffin Well and the City Wells; and

WHEREAS, drinking water requirements mandate identification and implementation of treatment for the Identified Pollutants in concentrations exceeding drinking water standards in order to allow City use of the City Wells; and

WHEREAS, the City also believes treatment for iron and manganese ("Metals") in the City Wells is necessary and NEMR denies same; and

WHEREAS, the City alleges that NEMR is liable, in part, for the Identified Pollutants detected in the City Wells and the need for treatment of drinking water by way of one or a combination of (i) Automobile Shredding Residue that is or was on the NEMR Property ("ASR") and/or (ii) metal and automobile recycling operations, including but not limited to processing, handling, transport and/or storage of metals, chemicals, regulated pollutants or substances, or other substances of concern or potential concern occurring on the NEMR Property (collectively hereinafter "NEMR operations"), and NEMR denies the City's allegations; and

WHEREAS, in or around April 27, 1998, the City executed a Covenant Not to Sue NEMR for "any claims it may have relating to environmental conditions [then] existing . . . on the [NEMR] Property," and the Parties dispute whether this Covenant Not to Sue would bar an action by the City against NEMR relating to the Identified Pollutants in the City Wells; and

WHEREAS, NEMR has cooperated with the City and provided funding in support of the City's investigation of the source(s), occurrence and remediation of Identified Pollutants in the City Wells, including NEMR's payment for groundwater investigation to assess the Identified Pollutants by the City's consultant, Emery & Garrett Groundwater Investigations, a division of GZA; and

WHEREAS, NEMR, by virtue of separate agreements dated October 19, 2016, April 14, 2017, and December 2, 2019, funded the City's consultant, Underwood Engineers, to undertake an engineering design for treatment facilities to address adverse water quality impacts due to the presence of the Identified Pollutants in the City Wells, and that engineering design is now 100% complete and attached as Exhibit A, reflecting specifications for the treatment facilities ("Treatment Facilities"); and

WHEREAS, the Parties now wish to cooperate to fund the completed design, installation, start-up and initial operation of the Treatment Facilities, without the time and expense of litigation;

NOW, THEREFORE, in consideration of the foregoing recitals, together with other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. CITY'S OBLIGATIONS

The City will, either through its own employees or through duly qualified and licensed professionals (including engineers), consultants, and contractors (any one a "Contractor" and collectively "Contractors"), provide for all labor, services, materials, and equipment required to design, install, operate and maintain the Treatment Facilities in accordance with the 100% design specifications set forth in Exhibit A. Without limiting the foregoing, the City shall:

(a) Enter into written contracts ("Contracts") with the Contractor(s) with respect to the provision of all services, labor, materials and equipment required for the design, engineering, installation, construction, operation and maintenance of the Treatment Facilities;

(b) Pay the Contractor(s) in accordance with the terms of the Contracts using the funds described in Section 2 herein, and then, to the extent additional funds are required, using its own funds or funds obtained from third parties other than NEMR or its affiliates;

(c) Apply for and obtain all required permits and government approvals necessary for the design, construction, operation and maintenance of the Treatment Facilities;

(d) Supervise, administer, coordinate and oversee the design, construction and installation of the Treatment Facilities; and

(e) Supervise any required testing, inspections, or other activities required for the start-up, operation and maintenance of the Treatment Facilities.

2. NEMR'S OBLIGATIONS

NEMR shall fund and authorize payment for the design, construction, operation and maintenance of the Treatment Facilities as follows:

(a) In order to fund the design, installation and construction of the Treatment Facilities, NEMR shall, within thirty days of City Council approval of this Agreement, provide to the City, to hold as escrow agent and disburse only to cover amounts due for design, installation and construction of the Treatment Facilities, funds in the amount of $11,053,212.80 ("Construction Funds"). The Parties agree that the City, by virtue of this Agreement, owns and holds legal title to the Construction Funds once the Construction Funds are tendered to the City, subject to the limitations on use specified in this paragraph. The City may, but is not required to, place the Construction Funds on deposit with a third party in an interest-bearing account. The Construction Funds may be drawn and expended by the City only for payment of the design, installation and construction of the Treatment Facilities, but only seven (7) business days after the City provides a copy of the applicable invoice(s) to NEMR and NEMR has not objected. NEMR shall not unreasonably object to the payment of any invoice. Subject to NEMR's prior approval, not to be unreasonably withheld, NEMR shall also fund 80% of the cost of any construction change orders initiated by Contractor performing the installation and construction of the Treatment Facilities that are allowable and approved in accordance with the Contract for such installation and construction, but only to the extent such change orders become necessary due to delays or cost increase/escalation arising out of or related to the unavailability of materials or supplies due to supply chain disruptions, provided however that in no event shall NEMR's obligation to fund construction change orders exceed $450,000.00 in the aggregate (any such amount subject to such cap, the "Supply Chain Change Order Amount"). Otherwise, NEMR shall have no obligation to fund any change orders or similar amendments that may reasonably be required in relation to construction of the Treatment Facilities. To the extent that total costs for the installation and construction phase of the Treatment Facilities exceed the sum of the Construction Funds and the Supply Chain Change Order Amounts, the City shall be responsible for paying such excess costs through use of its own funds or funds it obtains from third parties other than NEMR or its affiliates, and NEMR shall have no further liability to the City for the Treatment Facilities, other than as set forth in Sections 2(b), 2(c), 2(d), and 2(f) below and Section 5(a) below. Upon the completion of the construction of the Treatment Facilities and the City's acceptance of the Treatment Facilities as compliant with the 100% design specifications set forth in Exhibit A, as altered by any authorized change orders and similar amendments, and the City's satisfaction of all amounts due in relation to same except retainage or other such withholdings, the retainage amount (or other withholdings) shall be held by the City for the period specified in the Contracts, during which the City may use such funds as allowed by the

Contracts, and after which said retainage and/or other remaining amounts shall be paid to the Contractor(s) in any amounts due. In the event that total costs for the final design, installation and construction of the Treatment Facilities are less than the sum of the Construction Funds and the Supply Chain Change Order Amounts, the City shall retain and use any funds remaining solely for future operation and maintenance of the Treatment Facilities.

(b) NEMR shall also fund 100% of the Construction Phase Engineering Costs through reimbursement payments to the City of Dover as invoiced by and due to the engineer, subject to NEMR's prior review and approval of said invoice, such approval not to be unreasonably withheld. As used in this Agreement, the term "Construction Phase Engineering Costs" means the contract and scope(s) of work identified in a forthcoming agreement between the City of Dover and Underwood Engineers, Inc. of near date ("Underwood Agreement"). NEMR shall not be obligated to fund change orders or amendments to the Underwood Agreement unless NEMR gives prior written consent to same, which consent is not to be unreasonably withheld. In no event shall NEMR be obligated to pay in excess of $1,050,000 under this subparagraph 2(b).

(c) In addition to the Construction Funds in Paragraph 2(a) above, NEMR shall also separately provide the City payment intended to fund the anticipated operation and maintenance of the system for the first three (3) years following start-up of the Treatment Facilities stated herein. In order to do so, within thirty (30) days of issuance of a fully executed Certificate of Substantial Completion pursuant to the Contract for installation and construction of the Treatment Facilities, NEMR shall provide the amount of $885,000 to the City ("O&M Funds"). The City shall solely own and hold title to the O&M Funds once tendered. The City may, but is not required to, place the O&M Funds on deposit with a third party in an interest-bearing account. The City shall use the O&M Funds for the sole purpose of operating and maintaining the Treatment Facilities which operation and maintenance specifically includes any monitoring, assessment, evaluation or review of the status of adverse impacts from the NEMR property to water quality at the City Wells. In the event that actual costs of operating and maintaining the Treatment Facilities for the specified period exceed $885,000, the City shall be responsible for paying for such excess costs through the use of its own funds or funds it obtains from third parties other than NEMR or its affiliates. NEMR shall not be responsible for any operation or maintenance costs associated with the Treatment Facilities other than the amount specified above, the Future Payments called for in subparagraphs 2(f), and/or amounts, if any, that may become due with respect to subparagraph 5(c) below. If any of the O&M Funds are remaining after the period for which they are intended to cover, as stated above, then the City shall retain and use such remaining funds for future years of operating and maintaining the Treatment Facilities.

(d) In addition to the Construction Funds in Paragraph 2(a) above and the O&M Funds in Paragraph 2(c) above, within thirty (30) days of City Council approval of this Agreement, NEMR shall also separately provide the amount of $25,000 to the City ("Administrative Funds") as a lump sum payment intended to reimburse the City for its past and future oversight, administrative and legal fees and costs incurred in relation to this matter. The City shall solely own and hold title to the Administrative Funds once tendered. The City may, but is not required to, place the Administrative Funds on deposit with a third party in an interest-bearing account. The City shall use the Administrative Funds for the sole purpose of reimbursing past or future oversight, administrative or legal costs with respect to this matter. No additional expenses of the kind addressed by this subparagraph (d) shall be reimbursed by NEMR.

(e) The payment of all Construction Funds (through City acceptance of the Treatment Facilities), the O&M Funds, and the Administrative Funds shall be referred to collectively hereinafter as the "Payments."

(f) Separate from the Payments, NEMR shall also be responsible for funding annual operations and maintenance costs to the City following the third year of operation in the event and to the extent provided in the City Well – Sampling and Analysis Plan set forth in Exhibit C ("Future Payments").

(g) The Parties understand and agree that NEMR is a funding source only for the Payments and the Future Payments, but is not responsible for the performance or manner of performance of any of the work required under the Contracts, the management of any parties performing any work relating to the Treatment Facilities, or the performance of the Treatment Facilities.

(h) Should alternative, governmental grant or similar funding sources become available to any party, and provided the applicable grant or funding source's rules or applicable law allows, the Parties agree that, first, the City shall be entitled to recoup 100% of any amounts the City has expended for construction and installation of the Treatment Facilities, second, NEMR shall be entitled to recoup 100% of any amounts it has funded to the City for construction and installation of the Treatment Facilities, and third, any remaining funds will be shared proportionately between the Parties in the amount of their respective expenditures or funding for other items set forth in this Agreement (e.g., design, engineering, start-up, operation and/or maintenance costs). By way of example, if the City funds $1,000,000 in construction costs and later becomes eligible for a grant or funding source of $2,000,000, then the City shall first recoup its $1,000,000 and NEMR shall thereafter recoup its $1,000,000. Should the City become eligible for a grant or funding source in excess of the construction and installation costs of the parties, the Parties shall share such excess funds proportionate to their

respective share of other costs for items set forth in this agreement. Nothing in this paragraph shall obligate the City to seek or accept any such grants or funds in excess of the amount it has expended or is obligated to expend for construction and installation of the Treatment Facilities absent NEMR's election, at its sole discretion, to fund such efforts, which funding will include costs of the City's staff time.

(i) NEMR's ultimate parent company shall, either prior to the execution of this Agreement or contemporaneous therewith, execute and contractually agree to guarantee to the City the full performance of all of NEMR's obligations under this Agreement by way of a Guaranty, to be executed separately from this Agreement.

3. THE GRIFFIN WELL

The City may, but is not required to, connect the Griffin Well to the Treatment Facilities. The City may, but is not required to, operate the Griffin Well from time to time as deemed necessary or advisable by the City. The City's connection of the Griffin Well to the Treatment Facilities and/or operation of the Griffin Well shall be at the City's sole risk and expense.

4. ACCESS TO DOCUMENTATION

To the extent permitted by law, the City shall provide NEMR with copies of the fully executed Contracts and documentation evidencing the completion of work under each Contract. Upon request of NEMR, the City shall also provide copies of all water testing reports, all inspection reports, and all other documents related to the design, engineering, construction, installation, start-up, operation or maintenance of the Treatment Facilities.

5. RELEASE AND COVENANT NOT TO SUE

Contingent and conditioned upon NEMR making payment of the Construction Funds, the following Release and Covenant Not to Sue provisions in Paragraph 5(a) and (b) shall take effect.

Release and Covenant Not to Sue:

(a) In consideration of the commitments made by NEMR under this Agreement, the City for itself and anyone asserting the City's rights in an official capacity, and its current and former parents, subsidiaries, affiliates, and its successors and assigns, hereby release, acquit, covenant not to sue and forever discharge NEMR and its current and former parents, subsidiaries, affiliates and its and their current and former servants, employees, officers, directors, agents, representatives, managers, members, owners, shareholders, successors and assigns (collectively the "NEMR Releasees") for any and all claims which the City now has, or might have in the future, whether in law or in equity, against the NEMR Releasees relating to the Identified Pollutants in the City Wells and/or the Griffin Well or any other City

property or public water supply well impacted or affected by the ASR and/or NEMR operations. However, the releases and covenants contained in this paragraph shall not apply in the event that a change in applicable law or regulation enacted, amended, or adopted after the Effective Date results in more stringent federal or State drinking water quality standards for the Identified Pollutants and the levels of any Identified Pollutant in the finished water from the City Wells following treatment by the Treatment Facilities exceeds such standards due to the increased stringency of such standards as a result of such change in law or regulation: (i) to the extent such exceedances are caused by NEMR operations or the NEMR Property; and (ii) provided such exceedances are not attributable, whether in whole or in part, to the improper design, construction, maintenance, or operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities. In addition, the releases and covenants contained in this paragraph shall not apply in the event, and to the extent, that a newly identified, newly emerging, and/or newly regulated pollutant or contaminant under a State or federal law enacted, amended, or adopted after the Effective Date of this Agreement (collectively "Emerging Contaminant") impacts or affects the City Wells or any other City property or public water supply well impacted or affected by the ASR and/or NEMR operations (other than the Griffin Well) requiring new or additional forms of treatment in accordance with State or federal drinking water standards, or any other applicable federal or State water regulatory standard(s): (i) to the extent such exceedances are caused by NEMR operations or the NEMR Property; and (ii) provided such exceedances are not attributable, whether in whole or in part, to the improper design, construction, maintenance, or operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities. The releases and covenants contained in this paragraph shall likewise not apply in the event that, during the period in which NEMR is funding annual operations and maintenance costs, a change in applicable law or regulation enacted, amended, or adopted after the Effective Date results in more stringent federal or State standards governing spent media for the treatment of Identified Pollutants and/or Emerging Contaminants resulting in increased disposal costs for the spent media required by said State or federal standards: (i) to the extent such increased costs are caused by NEMR operations or the NEMR Property; and (ii) provided such increased costs are not attributable, whether in whole or in part, to the improper design, construction, maintenance, or operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities. Further, the releases and covenants contained in this paragraph do not prevent the City from bringing claims against the NEMR Releasees to enforce the terms of this Agreement, including but not limited to the indemnity provisions below, or any City claims unrelated to the Treatment Facilities and the Identified Pollutants, or any claim to enforce the third-party guaranty from NEMR's ultimate parent. In the event that the City is named as a defendant in a lawsuit brought by a third-party, the releases and covenants contained in this Paragraph also do not prevent the City from bringing any contribution claims against NEMR even if such claims relate to the Identified Pollutants and/or the City Wells.

(b) In consideration of the commitments made by the City under this Agreement, NEMR and its current and former parents, subsidiaries, affiliates, successors and assigns hereby release, acquit, covenant not to sue and forever discharge the City of Dover and its current and former officials, commissioners, servants, employees, directors, representatives, parents, subsidiaries, affiliates, successors and assigns (collectively the "City Releasees") for any and all claims which NEMR now has, or might have in the future, whether in law or in equity, against the City Releasees relating to the Identified Pollutants in the City Wells and/or the Griffin Well or any other City property or public water supply well impacted or affected by the ASR and/or NEMR operations. However, the releases and covenants contained in this paragraph shall not apply in the event that a change in applicable law or regulation enacted or adopted after the Effective Date results in more stringent federal or State drinking water quality standards for the Identified Pollutants and the levels of any Identified Pollutant in the finished water from the City Wells following treatment by the Treatment Facilities exceeds such standards due to the increased stringency of such standards as a result of such change in law or regulation: (i) to the extent such exceedances are not caused by NEMR operations or the NEMR Property; or (ii) such exceedances are attributable, whether in whole or in part, to the improper design, construction, maintenance, or operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities. In addition, the releases and covenants contained in this paragraph shall not apply in the event, and to the extent, that an Emerging Contaminant as defined above impacts or affects the City Wells or any other City property or public water supply well impacted or affected by the ASR and/or NEMR operations (other than the Griffin Well) requiring new or additional forms of treatment in accordance with State or federal drinking water standards or any other applicable federal or State water regulatory standard(s): (i) to the extent such exceedances are not caused by NEMR operations or the NEMR Property; or (ii) such exceedances are attributable, whether in whole or in part, to the improper design, construction, maintenance, or operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities. The releases and covenants contained in this paragraph shall likewise not apply in the event that, during the period in which NEMR is funding annual operations and maintenance costs, a change in applicable law or regulation enacted, amended, or adopted after the Effective Date results in more stringent federal or State standards governing spent media for the treatment of Identified Pollutants and/or Emerging Contaminants resulting in increased disposal costs for the spent media required by said State or federal standards: (i) to the extent such increased costs are caused by NEMR operations or the NEMR Property; and (ii) provided such increased costs are not attributable, whether in whole or in part, to the improper design, construction, maintenance, or operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities. Further, the releases and covenants contained in this paragraph do not prevent NEMR from bringing claims against the City Releasees to enforce the terms of this Agreement, including but not limited to the indemnity provisions below, or any claims unrelated to the

Treatment Facilities and the Identified Pollutants. In the event that NEMR is named as a defendant in a lawsuit brought by a third-party, the releases and covenants contained in this Paragraph also do not prevent NEMR from brining any contribution claims against the City even if such claims relate to the Identified Pollutants and/or the City Wells.

(c) If at any point in the future the exceptions to the Release and Covenant Not to Sue in Section 5(a) above pertaining to either Emerging Contaminants and/or changes in applicable law apply, then the parties shall promptly meet and confer in good faith to discuss what further treatment or other action is reasonably necessary, for how long, any additional operations and maintenance costs involved, and a fair and equitable proportion of NEMR's obligation (if any) to fund any additional treatment and related operations and maintenance costs. Failing agreement of the parties on any issue, either party may avail itself of all legal remedies. Any future event or circumstance giving rise to the applicability of the exceptions to the Release and Covenant Not to Sue in Section 5(a) or Section 5(b) above shall give rise to, and constitute, new claims and/or causes action by the City concerning the ASR, NEMR operations, and/or the NEMR Property or by NEMR as the case may be, but only to the extent of the exceptions to the Release and Covenant Not to Sue in Section 5(a) or Section 5(b) above.

6. INDEMNITY

The indemnity provisions set forth below in this Section 6 shall survive termination of this Agreement and remain binding thereafter.

(a) To the fullest extent permitted by law, the City shall indemnify and hold harmless the NEMR Releasees from all claims, damages, losses and expenses, including but not limited to legal fees and costs, arising out of the failure of the Treatment Facilities to achieve federal or State drinking water quality standards (as in effect on the Effective Date of this Agreement) to the extent attributable to the improper design, engineering, installation, start-up, operation and maintenance of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities, including third party claims, damages, losses or expenses for bodily injury, sickness, disease or death, or injury to, or destruction of, tangible property damage. The indemnity obligation set forth in this subparagraph 6(a) in no way obligates the City to indemnify the NEMR Releasees for clean-up or remediation of the NEMR Property, the ASR, or the NEMR operations. In addition, the indemnity obligation set forth in this subparagraph 6(a) shall not apply to any claims, damages, losses or expenses, including but not limited to legal fees and costs, arising out of the resumption after the Effective Date of NEMR operations or arising out of the operations of any successor or assign of NEMR or of any person or entity that acquires the NEMR Property after the Effective Date whether by sale, divestiture or other transfer.

(b) To the fullest extent permitted by law, the City shall indemnify and hold harmless the NEMR Releasees from all claims, damages, losses and expenses, including but not limited to legal fees and costs, resulting from connecting the Griffin Well to the Treatment Facilities and/or operation of the Griffin Well, should the City elect to so connect or operate the Griffin Well in accordance with paragraph 3 above. The indemnity obligation set forth in this subparagraph 6(b) shall not apply to any claims, damages, losses or expenses, including but not limited to legal fees and costs, arising out of the resumption after the Effective Date of NEMR operations or arising out of the operations of any successor or assign of NEMR or of any person or entity that acquires the NEMR Property after the Effective Date whether by sale, divestiture or other transfer.

(c) The Parties agree that each will indemnify and hold harmless the other (and in the case (x) where NEMR is the indemnifying Party, the City Releasees, and (y) where the City is the indemnifying Party, the NEMR Releasees) from all claims, damages, losses and expenses, including but not limited to legal fees and costs, arising from third party claims for property damage, personal injury or bodily injury or death to the extent caused by any negligent, willful, reckless or otherwise tortious act or omission of the indemnifying Party arising out of its performance of this Agreement other than operation of the Treatment Facilities or the decision to cease operating the Treatment Facilities at any time. This paragraph shall not apply to any third party claims concerning any operation of the Treatment Facilities or the City's decision to cease operation of the Treatment Facilities at any time, which are addressed in section 6(a) above.

(d) Neither Party's indemnification obligation shall be restricted by a limitation on amount or type of damages, compensation or benefits payable by, or for, workers' compensation acts, disability benefit acts or other employee benefit acts. In addition, the Parties agree that the indemnity obligations in this Agreement are valid and enforceable and shall not be abrogated by worker's compensation insurance coverage.

7. INSURANCE

The City agrees that it shall, or shall require its contractors to, maintain all necessary insurance for themselves and their personnel of at least the kinds and limits set forth in Exhibit B, with reputable and financially strong independent insurance or risk pooling companies licensed or permitted to do business in the jurisdiction(s) where the work, products or services will be provided.

8. MUTUAL REPRESENTATIONS AND WARRANTIES

Each of the parties to this Agreement represents and warrants to the other that: (a) all recitals and representations made by it or in respect of it in this Agreement are true and correct; (b) it is duly formed or organized, validly existing, and in good standing under applicable law; (c) all requisite company or corporate action has been taken to permit it to enter into this Agreement and carry out the terms hereof; (d) the officers, commissioners, or employees signing this Agreement for it are authorized to do so; and (e) to the best of its knowledge, neither its execution of this Agreement nor the consummation of the transactions contemplated hereby will: (i) violate any provision of law or tariff or any judgment, writ, injunction, order, or decree of any court of competent authority applicable to it or any enabling document or by-law applicable to it, (ii) result in or constitute a breach or default (or an occurrence that, by lapse of time or the giving of notice, or both, would constitute a breach or default) under any indenture, contract, or other commitment or restriction to which it is a party or by which it is bound; or (iii) require any consent, vote, or approval that, at any time of the transaction involved, has not been obtained.

9. ACCESS TO DATA FROM THE SITE

NEMR agrees to promptly provide the City with any and all monitoring data collected from the date of this Agreement moving forward in NEMR's possession and/or the possession of NEMR's consultants from: (i) the NEMR Property, (ii) the Groundwater Management Zone related to the NEMR Property ("Groundwater Management Zone"), and/or (iii) such other areas as state and/or federal regulators may require monitoring and reporting. NEMR (and its consultant(s)) shall also copy the City on all correspondence that is not privileged or confidential or sent in anticipation of potential litigation to state and/or federal regulators concerning the NEMR property, the Groundwater Management Zone, and/or NEMR's Remedial Action Plan. Unless prohibited by law, the City agrees to promptly provide NEMR with any and all monitoring and operating data collected and related public reports of such data from the date of this Agreement moving forward in the City's possession and/or the possession of the City's consultants from: (i) the City Wells, (ii) the Groundwater Management Zone, (iii) the Griffin Well, (iv) the City's artificial recharge program concerning recharge of the Pudding Hill Aquifer with water from the Bellamy River, and/or (v) such other areas as state and/or federal regulators may require monitoring and reporting. The City shall also copy NEMR on all correspondence that is not privileged or confidential or sent in anticipation of potential litigation to state and/or federal regulators concerning the City Wells, the Groundwater Management Zone, and/or any applicable Remedial Action Plan for the NEMR Property.

10. NO ADMISSION OF LIABILITY

The Parties enter into this Agreement for settlement purposes only, in order to avoid the time and expense associated with litigation. Nothing herein shall be deemed or interpreted to be (a) an admission or finding of liability, fault, wrongdoing, or violation of any kind whatsoever by either Party; (b) an acknowledgment that there has been a release or threatened release of the Identified Pollutants or any hazardous waste or substances at or from any site or any other facilities now or formerly owned or operated by any Party, either identified or unidentified and/or (c) an acknowledgment that a release or threatened release of the Identified Pollutants or any hazardous waste or substance at or from any sites now or formerly owned or operated by any

Party constitutes a threat to the public health or environment. Nor shall anything herein be deemed an admission of acknowledgment by NEMR that the Treatment Facilities or any other treatment system is necessary or should be installed on the City Wells or the Griffin Well. The Parties reserve all rights and claims they may have in law or equity except as specifically provided in this Agreement.

11. ENTIRETY OF AGREEMENT

The terms and conditions set forth herein, including information incorporated herein by reference, constitute the entire agreement between the Parties and supersede any communications of previous agreements with respect to the subject matter of this Agreement, except: (i) the Parties' continuing obligations pursuant to the Memoranda of Agreement between them and the final Memorandum of Understanding referenced in Exhibit C to this Agreement; (ii) the third-party guarantee of NEMR's ultimate parent referenced in Section 2(i) above; (iii) the Covenant Not to Sue entered into between NEMR and the City on or around April 27, 1998 if and to the extent still applicable; and (iv) the Agreement entered into between NEMR, the City, and others on or around May 29, 1998 if and to the extent still applicable. There are, otherwise, no written or oral understandings directly or indirectly related to this Agreement that are not set forth herein.

12. AMENDMENTS

No change can be made to this Agreement other than in writing and signed by all Parties.

13. NO RIGHTS OR POWERS OF ASSIGNMENT

Neither this Agreement, nor any obligation, duty, or right (including but not limited to rights to claims and remedies) thereunder, may be assigned by any of the Parties to another without the prior written agreement of all the Parties. Any attempt to assign this Agreement, or any obligation, duty, or right (including but not limited to rights to claims and remedies) thereunder, shall be void and invalid. In the event of a sale of the NEMR Property, the City shall not unreasonably withhold consent to an assignment of this Agreement or NEMR's obligations, duties, or rights (including but not limited to rights to claims and remedies) thereunder, provided such assignment renders the rights and obligations stated herein binding on the assignee, transferee, and/or recipient, and the assignment expressly so states.

14. GOVERNING LAW/VENUE/COLLECTION COSTS

This Agreement shall be construed and enforced according to the laws of the State of New Hampshire and any dispute under this agreement must be brought in the Strafford County Superior Court and/or the United States District Court for the District of New Hampshire and no other. NEMR expressly consents to and acknowledges personal jurisdiction in the State of New Hampshire. In any action to enforce any provision within this Agreement, the prevailing party shall be entitled to the recovery of reasonable attorney's fees and costs from the non-prevailing party.

15. NO WAIVER

The waiver or failure of any of the Parties to exercise in any respect any right provided in this Agreement shall not be deemed a waiver of any other right or remedy to which the Parties may be entitled.

16. NOTICES

All notices required to be provided by any Party to another hereunder shall be provided by first class mail, as follows:

If to the City,

To: J. Michael Joyal, Jr.
City Manager
288 Central Avenue
Dover, NH 03820

If to NEMR,

To: New England Metal Recycling, LLC
Attn: Legal
69 Rover Street
Everett, MA 02149

Copy: Gregory H. Smith, Esq.
McLane Middleton, Professional Association
11 South Main Street
Concord, NH 03301

17. HEADINGS IN THIS AGREEMENT

The headings in this Agreement are for convenience only, confirm no rights or obligations in either party, and do not alter any terms of this Agreement.

18. THIRD PARTIES

Except as specifically provided in this Agreement with respect to any City Releasees or any NEMR Releasees, nothing contained in this Agreement shall be deemed to create any rights or obligations in persons or third parties that are not a party to this Agreement; provided, however, that NEMR's ultimate parent company, which company is obligated by Section 2(i) above to execute and contractually agree to guarantee to the City the full performance of all of NEMR's obligations, shall be entitled to the benefits of and to enforce NEMR's rights under this Agreement.

19. EXECUTED IN COUNTERPARTS

This Agreement may be executed electronically in one or more counterparts, each of which when executed will be deemed to be an original, and all of which when taken together will constitute one and the same agreement.

20. CITY COUNCIL APPROVAL CONTINGENCY

This Agreement is contingent on and subject to the approval of the City Council before or within thirty (30) days of the date of the signing of this Agreement. This Agreement shall not become effective unless so approved by the City Council.

21. IMMUNITIES

Nothing within this Agreement shall be deemed to constitute a waiver of any tort immunity of the City of Dover and/or statutory limitation set forth in N.H. Rev. Stat. 507-B, as against unaffiliated third parties, which immunities and statutory limitation on damages are hereby reserved to the City of Dover. This covenant shall survive the termination or this Agreement's conclusion.

22. N.H. RSA CHAPTER 91-A

The Parties acknowledge that this Agreement is a public record and is subject to public inspection as required by N.H. RSA 91-A:4, VI or other provisions of RSA chapter 91-A.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed as of the date first written above.

[SIGNATURE PAGES FOLLOW]

Accepted and Agreed To:

New England Metal Recycling, LLC

BY: _____
_____

TITLE: _____,
duly authorized

DATE: _____

Accepted and Agreed To:

CITY OF DOVER, NH

By: _____
J. Michael Joyal, Jr.

TITLE: City Manager, Duly Authorized

DATE: _____

Exhibit A
(100% Engineering Drawings)

CITY OF DOVER, New Hampshire

City Project No. B22013

FOR CONSTRUCTION

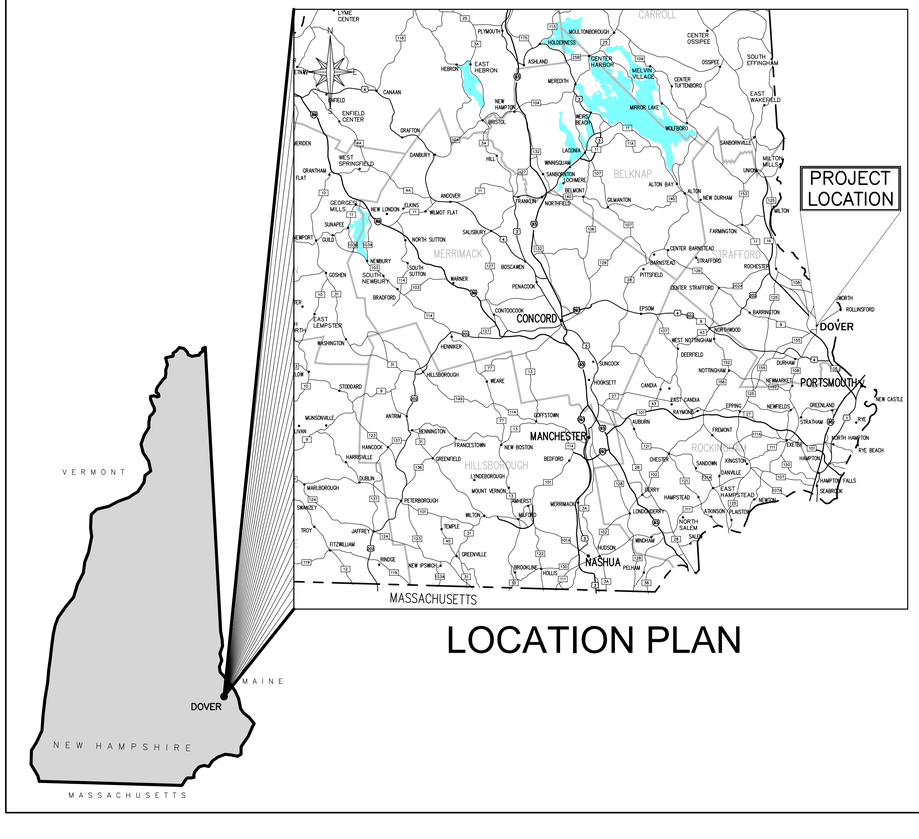
PUDDING HILL WATER TREATMENT FACILITY

PREPARED BY

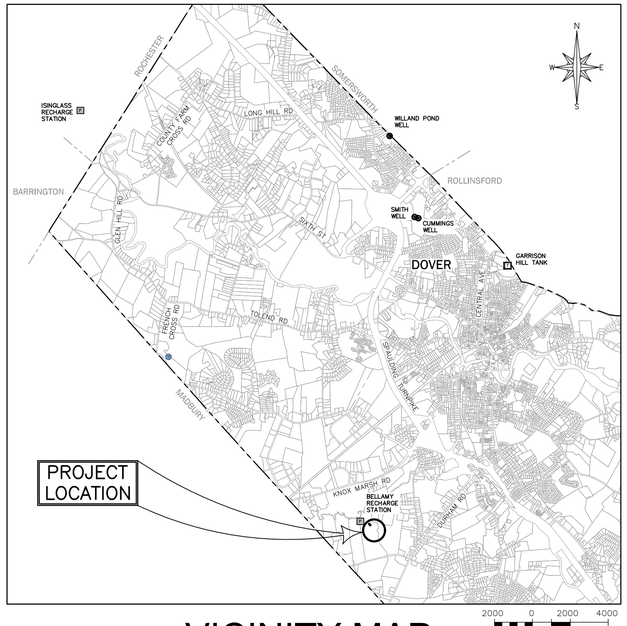
UNDERWOOD ENGINEERS

PORTSMOUTH, NEW HAMPSHIRE

JUNE 28, 2021



LOCATION PLAN



VICINITY MAP

(Planning File No. P21-31)

UE #2509

UNDERWOOD engineers

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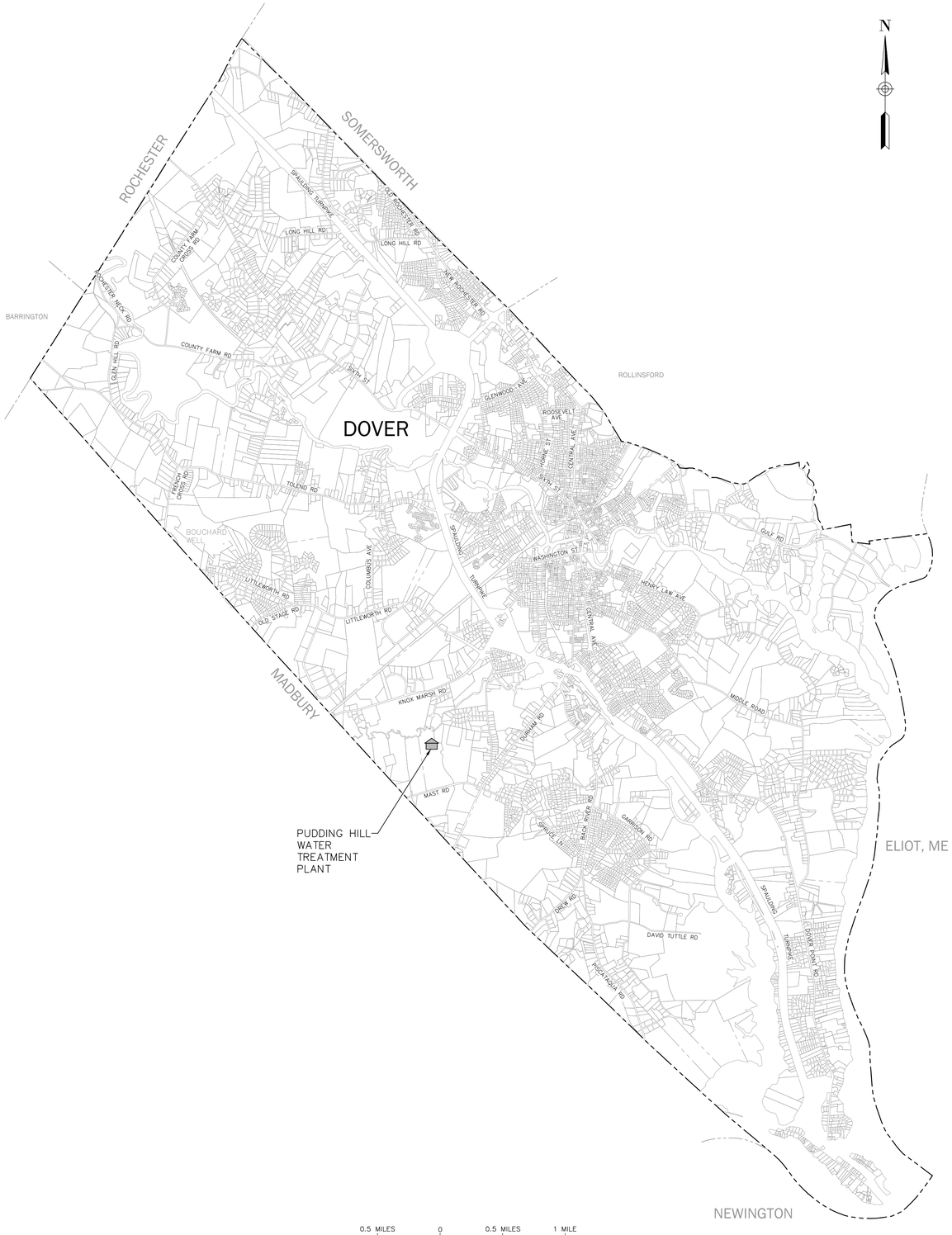

ISSUE FOR
APPROVAL — By TGP — Date 5/21/21
CONSTRUCTION — By TGP — Date 6/28/21
RECORD DRAWING — By – — Date –

NO.	REVISIONS	APP'D

Drawn/Chk RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 1889-Index..
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — TIMOTHY G. PAGE — No. 15562 — LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE — THOMAS G. PAGE — No. 10961 — LICENSED PROFESSIONAL ENGINEER

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

INDEX & LOCATION PLAN

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

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DWG NO G1
SHEET 1 OF 122

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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 (811) 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 "PUDDING HILL WATER TREATMENT FACILITY".
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, NHDES SITE #1984-01044 198, PROJECT #B17009 PUDDING HILL AQUIFER INTERIM IMPROVEMENTS, RECORD DRAWINGS" BY UNDERWOOD ENGINEERS, INC. PORTSMOUTH, NH, DATED JANUARY 30, 2018.
2. "CITY OF DOVER, NEW HAMPSHIRE, CITY PROJECT #B20039, NHDES SWSRF #0651010-04, WATER FACILITY IMPROVEMENTS – PHASE 2, CONTRACT 4, BELLAMY RECHARGE, FOR CONSTRUCTION" BY UNDERWOOD ENGINEERS, INC. PORTSMOUTH, NH, DATED APRIL 3, 2020.
3. "STONEWALL DRIVE SEWER PUMP STATION, SITE REVIEW PLANS" BY ALTUS ENGINEERING, INC. PORTSMOUTH, NH, DATED APRIL 1, 2015.
4. "AS-BUILT ROADWAY PLAN OF STONEWALL DRIVE INFRASTRUCTURE" BY McENEANEY SURVEY ASSOCIATES, INC. DATED MAY 25, 2016.

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.

SURVEY NOTES

1. SURVEY PERFORMED BY MCENEANEY SURVEY
2. HORIZONTAL DATUM NAD83
   VERTICAL DATUM NGVD29
3. REFERENCE: TAX MAP H, LOT 58

   OWNER OF RECORD:

   CITY OF DOVER, NH
   288 CENTRAL AVENUE
   DOVER, NEW HAMPSHIRE 03820
   S.C.R.D. VOLUME 648, PAGE 271
   S.C.R.D. VOLUME 648, PAGE 272
   S.C.R.D. VOLUME 4312, PAGE 615
   S.C.R.D. VOLUME 4719, PAGE 59
4. H / 58 – DENOTES TAX MAP AND PARCEL NUMBER.
5. THE ELEVATIONS AND EXISTING CONDITIONS DEPICTED ON THIS PLAN ARE THE RESULT OF ON THE GROUND FIELD SURVEY METHODS DURING APRIL 2018, WITH ADDITIONAL FIELD SURVEY DURING JANUARY 2020, SEPTEMBER 2020 AND JUNE 2021.
6. UNDERWOOD ENGINEERS COMPLETED SUPPLEMENTAL SURVEY ON MAY 2021 TO CONFIRM ELEVATION OF EXISTING STONEWALL DRIVE PUMPING STATION WET WELL INLET ELEVATION.
7. REFERENCE IS MADE TO LOT LINE ADJUSTMENT LOCATED ON THE SUBJECT PARCELS, ENTITLED "PLAN OF LOT LINE ADJUSTMENTS PREPARED FOR THE CITY OF DOVER, NH AND CANDIA SOUTH BRANCH BROOK HOLDINGS, LLC, TAX MAP H, LOT NOS. 58 & 59, MAST ROAD, CITY OF DOVER, COUNTY OF STRAFFORD, STATE OF NEW HAMPSHIRE". SCALE: 1" = 100'; DATED: JUNE 25, 2019, REVISED THROUGH 8/8/19; BY: MCENEANEY SURVEY ASSOCIATES, INC. DOVER PLANNING FILE 19-53. RECORDED S.C.R.D. PLANS 119-58 & 119-59. REFERENCE IS ALSO MADE TO AN EASEMENT PLAN RECORDED AT S.C.R.D. AS PLAN 120-19.
8. ZONING REQUIREMENTS:

REQUIRED	PROVIDED
a. DISTRICT: IT	
b. MIN. LOT SIZE: 2 ACRES	57.28 ACRES
c. MIN. LOT FRONTAGE: 200 FT.	1,140 FT
d. MIN. YARD SETBACKS: FRONT: 50 FT. SIDE: 50 FT. REAR: 50 FT. ABUT-A-STREET: 50 FT.	 1,740 FT. 560 FT. 140 FT. 400 FT.
e. MAX. LOT COVERAGE: 33%	< 33% TBD
f. MAX. BUILDING HEIGHT: 55 FT.	29 FT.

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

ISSUE FOR					
APPROVAL	Date 5/21/21	By TDP			
CONSTRUCTION	Date 6/28/21	By TDP			
RECORD DRAWING	Date –	By –			
			REVISIONS	APP'D	NO.

Drawn/Chk. RMG
Designed JMC
Checked TDP
Approved KAP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509_G_Notes
Scale AS SHOWN

STATE OF NEW HAMPSHIRE – JEFFREY L. PEASE – No. 15562 – LICENSED PROFESSIONAL ENGINEER

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GENERAL NOTES I

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO G2

SHEET 2 OF 122

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SITE PLAN NOTES

1. THE INTENT OF THIS PLAN SET IS TO OBTAIN LOCAL APPROVAL FOR THE PROPOSED WATER TREATMENT FACILITY.

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 SURVEY NOTE 7, PREPARED BY MCENEANEY SURVEY.

4. THE 100-YEAR FLOOD ELEVATION OF 87.04 FEET AMSL (NAVD 88) WAS INTERPOLATED FROM DATA ON FEMA FLOOD MAPS BY ASSUMING CONSTANT SLOPE BETWEEN AVAILABLE CROSS SECTIONS. THE ELEVATION WAS CONVERTED TO NGVD 29 TO MATCH THE PLANS FOR A FLOOD ELEVATION OF 87.8 FEET.

5. THE SHORELAND REFERENCE LINE IS DEFINED BY NHDES AS THE ORDINARY HIGH-WATER MARK. THE TOP OF THE RIVER BANK IS USED ON THESE DRAWINGS AS A CONSERVATIVE SHORELAND REFERENCE LINE. SETBACK DISTANCES ARE BASED OFF THE TOP OF THE RIVER BANK.

6. CONTRACTOR SHALL INSTRUCT ALL WORKERS ONSITE TO BE AWARE OF THE POSSIBLE PRESENCE OF THE NORTHERN BLACK RACER SNAKES AND SPOTTED TURTLES. ALL OBSERVATIONS OF NORTHERN BLACK RACER SNAKES ENCOUNTERED FROM THE END OF SEPTEMBER THROUGH THE MONTH OF APRIL MUST BE IMMEDIATELY REPORTED TO THE NHFG DEPARTMENT MELISSA DOPERALSKI (603-479-1129) OR BRENDAN CLIFFORD (603-944-0885) AS THIS INDICATES A POTENTIAL HIBERNACULUM IN THE AREA. PLEASE ATTEMPT TO PHOTOGRAPH THIS SPECIES IF POSSIBLE.

7. IF SPOTTED, WOOD OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN A WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI (603-479-1129 CELL) OR JOSH MEGYESY (978-578-0802 CELL) FOR FURTHER INSTRUCTION.

8. WETLANDS AND I.D. FLAGS SHOWN WERE AS DELINEATED BY DAMON BURT, N.H.C.W.S. #163 OF FRAGGLE ROCK ENVIRONMENTAL SERVICES.

   a. FLAGS A1 THROUGH A22 DELINEATED MAY 7, 2017, AND FIELD LOCATED BY MCENEANY SURVEY ON MAY 9, 2017.

   b. FLAGS A30 THROUGH A38 DELINEATED APRIL 27, 2018, AND FIELD LOCATED BY MCENEANY SURVEY ON APRIL 30, 2018.

   c. FLAGS NO. A1 AND A30 ARE THE COMMON CONNECTION POINT.

   d. FLAGS A40 THROUGH A54 DELINEATED JANUARY 10, 2020, AND FIELD LOCATED BY MCENEANY SURVEY ON JANUARY 10, 2020.

   e. FLAGS NO. A39 AND A40 ARE THE COMMON CONNECTION POINT.

9. 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.

10. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.

11. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.

12. 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 PRIOR ANY EARTH DISTURBING ACTIVITY OCCURS.

13. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.

14. 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.

15. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD WITH THE CONTRACTOR, ENGINEER AND THE CITY ENGINEER PRIOR TO ANY EARTH DISTURBING ACTIVITY.

16. SITE CONSTRUCTION WORK HOURS SHALL BE AS DEFINED IN THE PROJECT MANUAL.

17. BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

18. THE PROPOSED USE FOR THE SITE (STRUCTURE) IS A MUNICIPAL WATER TREATMENT FACILITY.

19. THE FOLLOWING FEDERAL AND STATE PERMITS ARE ANTICIPATED FOR THE PROJECT:

   a. INDUSTRIAL USER PERMIT.

   b. SHORELANDS PERMIT.

   c. ALTERATION OF TERRAIN WAIVER: RECEIVED FROM NHDES ON MAY 6, 2016.

   d. GROUNDWATER DISCHARGE REGISTRATION.

   e. ARTIFICIAL RECHARGE.

   f. NHDES DESIGN REVIEW.

20. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

21. 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

22. FIRE DEPARTMENT ACCESS ROADS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.

SITE PLAN NOTES (CONT.)

23. ADEQUATE PARKING IS PROVIDED FOR CITY STAFF, NO PUBLIC PARKING IS PROPOSED.

24. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

25. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45-2 OF THE CODE OF THE CITY OF DOVER.

26. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.

27. THE PROPOSED STRUCTURE SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81- 30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.

28. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.

29. 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.

30. THE SITE LAYOUT SHALL COMPLY WITH APPLICABLE ACCESSIBILITY REGULATIONS. SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBILITY REGULATIONS FOR THE STRUCTURE.

ISSUE FOR
APPROVAL — Date 5/21/21 — By TDP
CONSTRUCTION — Date 6/28/21 — By TDP
RECORD DRAWING — Date – — By –

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed JMC
Checked TDP
Approved KAP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509_G_Notes
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — JEFFREY M. LABONTE — No. 15506 — LICENSED PROFESSIONAL ENGINEER

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GENERAL NOTES II

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO G3

SHEET 3 OF 122

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LEGEND:

EXISTING	PROPOSED	
		STRUCTURES/BUILDINGS
		CITY GIS LOT LINE
		RIGHT OF WAY (SEE SURVEY NOTE#13)
		FLOOD LINE
		SHORELAND BUFFER/SETBACK
		PAVED ROAD/DRIVE
		VERTICAL GRANITE CURB
		GRAVEL ROAD/DRIVE/TRAIL
S		GRAVITY SEWER
XS		GRAVITY SEWER (PER PAINT MARKINGS)
FM		FORCE MAIN SEWER
W	W	WATER LINE
	RW	RAW WATER LINE
D	D	DRAIN LINE
		FITTING BENDS 90°/45°/22.5°/11.25°
		FITTING TEE
		THRUST BLOCK
		REDUCER
		COUPLING
G	G	GAS LINE
OHW		OVERHEAD WIRE
UGU	UGU	UNDERGROUND UTILITY
126	126	2' CONTOUR ELEVATION
130	130	10' CONTOUR ELEVATION
	126.00	SPOT ELEVATION
		STOCKADE FENCE
		CHAINLINK FENCE
		GUARDRAIL
		RETAINING WALL
		EDGE OF VEGETATION
		EDGE OF WETLAND
		WETLAND FLAG
		WETLANDS
		CONIFER TREE
		DECIDUOUS TREE
		BUSH
		BUSH LINE
		DRAINAGE DITCH
		CONCRETE
		RIP RAP
		GRAVEL / CRUSHED STONE
40043-A00000		CITY OF DOVER PARCEL ID
X ff=25.54		THRESHOLD ELEVATION
		CONCRETE/GRANITE BOUND
	I.P.F. I.R.F.	IRON PIPE - IRON ROD
	D.H.S.	DRILL HOLE SET (CONTROL POINT)
		LIGHT POLE
		LIGHT POLE (ONE ARM)
		LIGHT POLE (TWO ARM)
		GUY POLE
		GUY WIRE
	HH	HANDHOLE
	TB	TELEPHONE BOX
	T	TELEPHONE MANOLE
		TRAFFIC SIGNAL
		TRAFFIC SIGNAL MAST ARM POLE

EXISTING	PROPOSED	
		UTILITY POLE
		UTILITY POLE W/ LIGHTS
		FLARED END SECTION
GM		GAS METER
E		ELECTRIC BOX
SWL		SINGLE WHITE LINE
DYL		DOUBLE YELLOW LINE
		SIGN
		BOLLARD
M		MANHOLE MISC.
		ROAD REFLECTOR POST
		PIPE
		POST
W		WELL
		HYDRANT
WV		WATER SHUT-OFF
		WATER VALVE
		IRRIGATION CONTROL VALVE
S		SEWER MANHOLE
		CATCH BASIN SQUARE
		CATCH BASIN ROUND
		DROP INLET
D		DRAIN MANHOLE
GV		GAS VALVE
AC		AIR CONDITION UNIT
MB		MAILBOX
MW		MONITORING WELL
typ.		TYPICAL
i.r.s.		IRON ROD SET
swl		EDGE OF PAVEMENT
syl		SINGLE WHITE LINE
dyl		SINGLE YELLOW LINE
dswl		DOUBLE YELLOW LINE
		DASHED SINGLE WHITE LINE
vgc		VERTICAL GRANITE CURB
sgc		SLOPED GRANITE CURB
		DEMOLITION
		TEST PIT
B-401		BORING

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
TOW	TOP OF WALL
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.

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Drawn/Chk. RMG
Designed JMC
Checked TDP
Approved KAP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509_G_Notes
Scale AS SHOWN

STATE OF NEW HAMPSHIRE – JEFFREY A. MARSHALL – No. 15062 – LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE – THOMAS G. PAGE – No. 10906 – LICENSED PROFESSIONAL ENGINEER

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LEGEND AND ABBREVIATIONS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO G4

SHEET 4 OF 122

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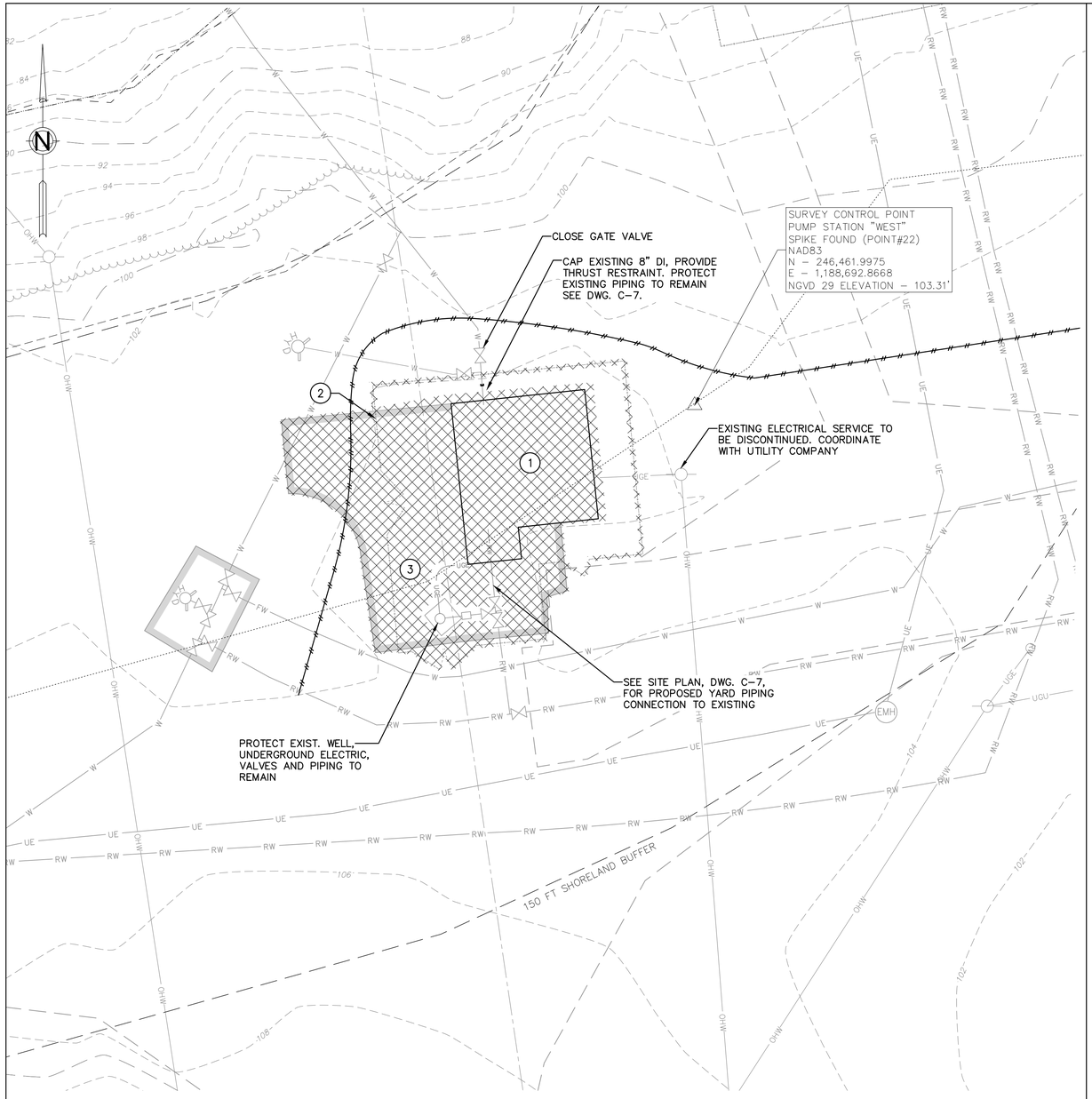


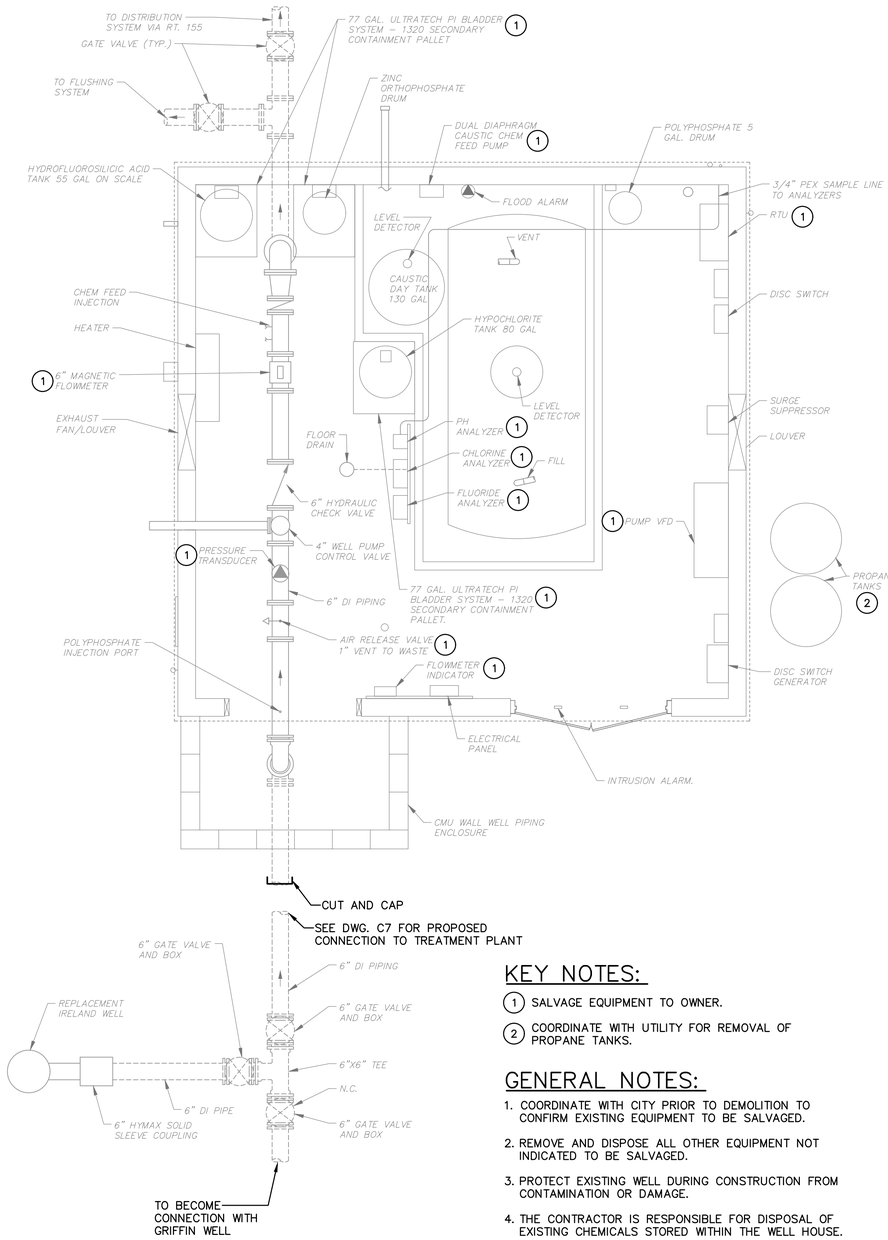
DEMOLITION SCHEDULE:

1	EXISTING WELL HOUSE	DEMO STRUCTURE TO A DEPTH 2 FEET BELOW GRADE MIN. AND BACKFILL WITH SUITABLE MATERIAL.
2	CHAIN LINK FENCE	REMOVE AND DISPOSE
3	ASPHALT PAVEMENT	REMOVE AND DISPOSE
4	ELECTRICAL SERVICE	DISCONTINUE. COORDINATE WITH UTILITY COMPANY.

IRELAND WELL SITE DEMO PLAN

10 0 10 20

SCALE: 1 INCH = 10 FT.



KEY NOTES:

1. SALVAGE EQUIPMENT TO OWNER.
2. COORDINATE WITH UTILITY FOR REMOVAL OF PROPANE TANKS.

GENERAL NOTES:

1. COORDINATE WITH CITY PRIOR TO DEMOLITION TO CONFIRM EXISTING EQUIPMENT TO BE SALVAGED.
2. REMOVE AND DISPOSE ALL OTHER EQUIPMENT NOT INDICATED TO BE SALVAGED.
3. PROTECT EXISTING WELL DURING CONSTRUCTION FROM CONTAMINATION OR DAMAGE.
4. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF EXISTING CHEMICALS STORED WITHIN THE WELL HOUSE.

IRELAND WELL PROCESS DEMO PLAN

0 1'-4" 2'-8" 5'-4"

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

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Dwg. ID 2509 pbase_pc29
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STATE OF NEW HAMPSHIRE – JEFFREY S. MACKEY No. 15662 – PROFESSIONAL ENGINEER

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IRELAND WELL SITE DEMOLITION PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO D1

SHEET 5 OF 122

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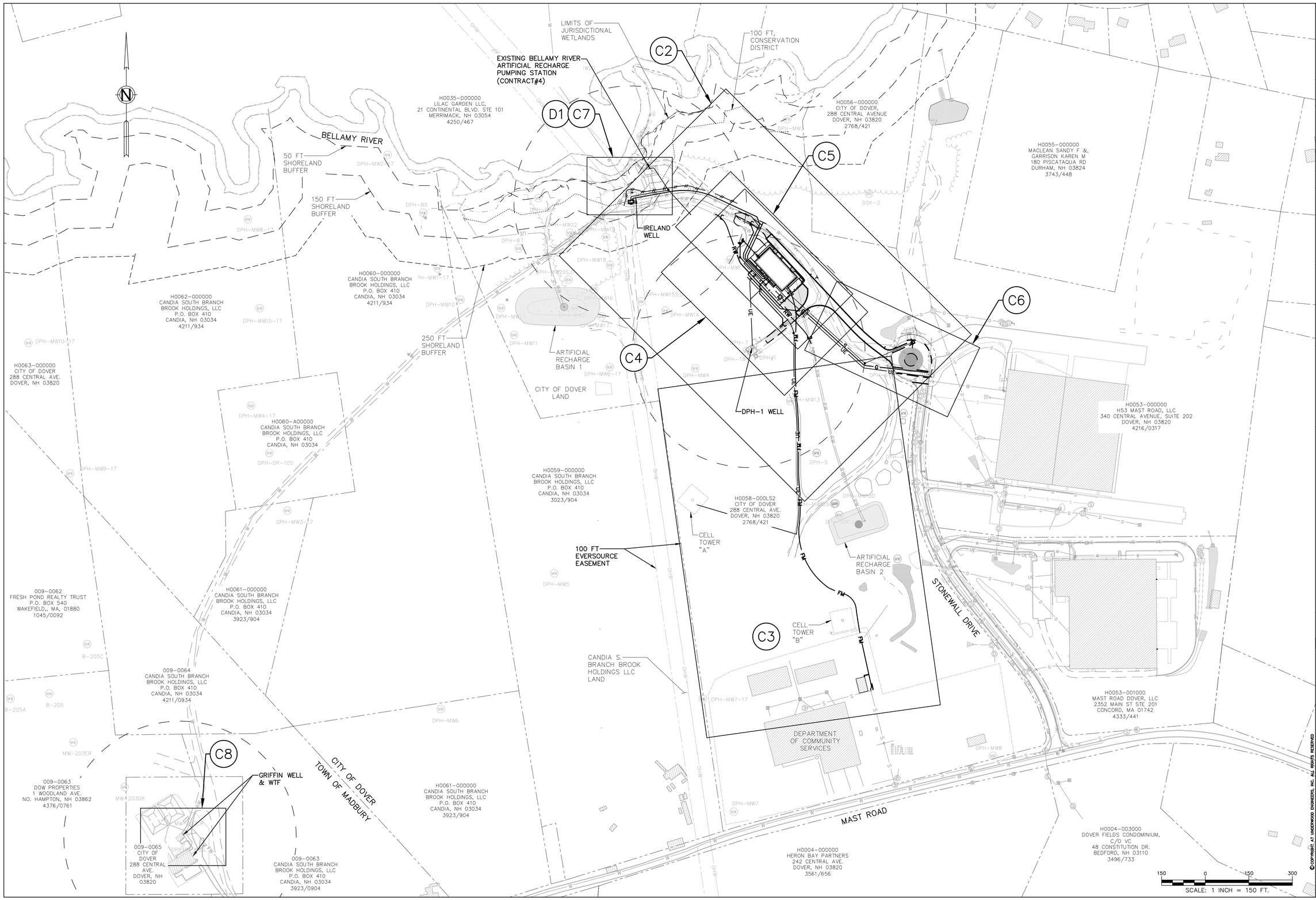

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Dwg. ID 2509_pbase_pg29
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JEFFREY T. PAGE No. 15662 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

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OVERALL SITE PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C1

SHEET 6 OF 122

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100 FT. CONSERVATION DISTRICT

150 FT. SHORELAND SETBACK

TBM CORNER CONCRETE TRANSFORMER PAD ELEV. = 102.48

TBM CORNER CONCRETE PAD ELEV. = 89.81

PAD TRANSFORMER

8" DI RAW WATER FROM IRELAND WELL

INSTALL SILT FENCE

CUT, CAP & ABANDON EXIST. 8" HDPE

TO WTP

RELOCATE EXIST. 8" DR11 x 570 LF HDPE RECHARGE RAW WATER MAIN

RAIN GARDEN, FILTER SURFACE AREA (BOTTOM OF BASIN)=1,275 S.F. SEE DETAIL, DWG C-13

250 FT. SHORELAND SETBACK – (SEE SHORELAND PERMIT REQUIREMENTS, APPENDIX B)

D1 C7

CAP & ABANDON EXIST. 8" DI

8" S.S. COUPLING

8" HDPE DR11

12" F.E.S. INV. EL. 97.50

12" CPE x 43 LF @ S=0.00698 FT/FT

DMH#2, 4' DIA. RIM=100.0 12" INV. IN=97.8 (E) 12" INV. OUT=97.8 (W)

12" CPE x 126 LF @ S=0.00556 FT/FT

UE TO WELLS SEE ELECTRICAL SITE PLANS

12" DI TOP OF PIPE = 94.5' AT DRAIN CROSSING

DMH#1, 4' DIA. RIM=101.4 6" INV. IN=99.0 (N) 12" INV. OUT=98.5 (W)

8" DI FROM GRIFFIN WELL

PUDDING HILL WATER TREATMENT FACILITY

SMH#1

6" PVC

8"DI FROM DPH-1 WELL

POWER, SIGNAL TO DPH-1 WELL

CAP & ABANDON EXIST. 12" DI

8" S.S. COUPLING

LEVEL SIGNAL FROM AR#2 TO REMAIN

DPH-1 WELL

EXISTING TRANSFORMER AND SERVICE TO BE DISCONTINUED, SEE ELECTRICAL DWGS

CUT, CAP AND ABANDON EXISTING 8" HDPE

MATCH EXIST. GRAVEL DRIVE

TBM FLANGE BOLT ON HYDRANT #1219 ELEV. = 102.33

TBM CORNER CONCRETE TRANSFORMER PAD ELEV. = 101.20

CONSTRUCT SCADA COMMUNICATIONS CONDUIT SEE ELECTRICAL DRAWINGS

CONSTRUCT 6" HDPE DR11 x 1,500 LF FORCE MAIN PROCESS FLOWS RESIDUALS

RETAIN LEVEL SIGNAL FROM AR BASIN#2

existing waste water pump station

50' SETBACK

TBM CORNER CONCRETE ELEV. = 105.28

TBM FLANGE BOLT ON HYDRANT #1192 ELEV. = 106.53

RELOCATE EXISTING 4" FORCE MAIN (SDR 21)

SMH#3

NOTE 1

8" PVC SDR35

SMH#2

LOCATION UNKNOWN (LOCATE AND REVIEW LOCATION OF UNDERGROUND ELECTRIC IN ADVANCE OF SEWER CONSTRUCTION, REVIEW WITH ENGINEER. ADJUST SEWER TO PROVIDE 8 FT OF SEPARATION BETWEEN UTILITIES.)

INSTALL CABLE, TELEPHONE TO STONEWALL DRIVE, SEE ELECTRICAL DWGS.

CONSTRUCT GAS SERVICE

MATCH LINE SEE DWG C3

SEWER PROFILE

HORIZ: 1 INCH = 40 FT.
VERT: 1 INCH = 4 FT.

PROCESS AREA

F.F. ELEV. 102.0 (UPPER LEVEL)

F.F. ELEV. 90.0 (LOWER LEVEL)

PIPE GALLERY

SMH#1 STA 10+20 RIM=101.8 6" INV IN=95.55 (NW) 8" INV OUT=95.45 (SE)

EXCAVATE TEST PIT CONFIRM DEPTH OF EXIST. ELECTRICAL CONDUITS PRIOR TO SEWER CONSTRUCTION

6" INV. OUT = 96.0 AT BLDG

6" HDPE FORCE MAIN

NOTE 8

2" RIGID INSULATION NOTE 7

6" SDR35 x 18' @ S=0.025 FT/FT

8" PVC SDR35 x 353' @ S=0.005 FT/FT

exist. 8" DI RW (CUT, CAP AND ABANDON)

SMH#2 STA 13+77 RIM=101.5 8" INV IN=93.67 (NW) 8" INV OUT=93.57 (NE)

SMH#3 STA 15+52 RIM=104.5 (MATCH EX. GND) 8" INV IN=92.72 (SW) 8" INV IN=92.72 (S) 8" INV OUT=92.71 (N)

existing 4" pvc elec. conduits

exist. elec. conduits size unknown

existing 15" HDPE

existing 12" DI F.W.

18" MIN. CLEARANCE

8" PVC SDR35 x 171' @ S=0.005 FT/FT

DATUM ELEV 90.00

98.8	102.00	98.2	101.43	99.3	100.61	99.6	100.03	99.5	99.84	99.8		100.1		100.6		102.2	102.28	102.9	103.79	104.7	104.8	104.7	

10+00 11+00 12+00 13+00 14+00 15+00 15+70

NOTES:

1. CONTRACTOR SHALL EXCAVATE TEST PITS TO CONFIRM DEPTH AND LOCATION OF EXISTING UTILITY PRIOR TO CONSTRUCTION. REPORT LOCATIONS AND DEPTHS TO ENGINEER IN ADVANCE.
2. ALL BURIED CONNECTIONS TO ALL STRUCTURES SHALL HAVE A MECHANICAL JOINT OR SLEEVE TYPE FLEXIBLE COUPLING WITH JOINT RESTRAINT WITHIN APPROXIMATELY 4 FEET OF STRUCTURES.
3. REFER TO DEMOLITION, STRUCTURAL AND ELECTRICAL PLANS.
4. PROVIDE RODENT SCREENS ON DRAIN LINES.
5. ALL UTILITY LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. NO WORK SHALL BE PERFORMED ON-SITE PRIOR TO CONTACTING DIG-SAFE AT 1-888-DIG-SAFE.
6. EXISTING & PROPOSED CONTOURS ARE SHOWN ON THIS PLAN FOR REFERENCE ONLY, REFER TO ROAD PLAN AND PROFILE SHEETS FOR MORE PROPOSED GRADING DETAIL.
7. INSULATE SEWER MAIN WHERE COVER IS LESS THAN 5 FT BETWEEN STATIONS 10+50 AND 13+00.
8. MINIMUM COVER OVER CROSS-COUNTRY SEWER IS 4 FT.
9. THRUST BLOCKS ARE REQUIRED AT ALL WATER AND FORCEMAIN BENDS, SEE DETAIL DWG. C-9.
10. PROTECT EXISTING GROUNDWATER MONITORING WELLS FROM DAMAGE.

SCALE: 1 INCH = 40 FT.

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UTILITY PLAN I

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C2

SHEET 7 OF 122

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STATE OF NEW HAMPSHIRE JEFFREY T. MARSH No. 15582 LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE THOMAS G. PAGE No. 10858 LICENSED PROFESSIONAL ENGINEER

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(LOCATION APPROX.)
B-2 (LOCATION APPROX.)
PILE
CATTAILS
RIPRAP DRAINAGE POND
SMH#2
8" PVC SDR35
B-4 (OW) EL. 99.6
P-2 EL. 99.4
P-1 EL. 99.6
B-3 EL. 99.5
ARTIFICIAL RECHARGE BASIN 2
DPH-MW12D
DPH-MW12
DPH-MW12S
DPH-5
DPH-MW13
RIPRAP DRAINAGE SWALE
RIPRAP DRAINAGE
EROSIONAL SWALE
CHAINLINK FENCE
CONNECT FM TO EXISTING SMH
CONSTRUCT PERMANENT TRENCH PAVEMENT REPAIRS AS REQUIRED
SMH
Rim=141.85
8" inv. in=135.48
8" Inv. out=135.43
6" INV. IN=135.45
NOTE 2
REMOVE AND REPLACE FENCING AS REQUIRED
EXISTING UGU (E/T) TESTPIT TO CONFIRM EXISTING LOCATION
CELL TOWER "B"
TRANSFORMER
CONSTRUCT 6" HDPE DR11 FORCE MAIN x 1,500 L.F. PROCESS FLOWS RESIDUALS
MATCH LINE SEE DWG C2
SCADA COMMUNICATIONS CONDUIT SEE ELECTRICAL DRAWINGS
FENCE
CELL TOWER "A"
EXISTING CITY SCADA COMMUNICATIONS
PROPERTY LINE
DPH-MW14

NOTES:

1. REVIEW FINAL LOCATION OF FORCE MAIN & SCADA CONDUIT IN FIELD WITH ENGINEER.
2. CONTRACTOR SHALL PERFORM A TEST PIT TO CONFIRM DEPTH AND LOCATION OF EXISTING UTILITY PRIOR TO CONSTRUCTION.
3. THRUST BLOCKS ARE REQUIRED AT ALL WATER AND FORCE MAIN BENDS, SEE DETAIL DWG, C-9.
4. CONTACT CITY TO LOCATE EXISTING BURIED UTILITIES NOT SHOWN INCLUDING FIBER OPTIC IN VICINITY OF CELL TOWER PRIOR TO EXCAVATION.

40 0 40 80
SCALE: 1 INCH = 40 FT.

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Book No. –
Project No. 2509
Dwg. ID 2509 pbase pg29
Scale AS SHOWN

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25 Vaughan Mall, Portsmouth, N.H. 03801
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UTILITY PLAN II

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C3
SHEET 8 OF 122

H:\Real Numbers\Down\2509 - Pudding Hill Aquifer Recharge\Design\2509_C_Phase_NOVO 29.dwg, C3, 6/30/2021 3:17:44 PM, mng

12" TEE
12" GATE VALVES (TYP. OF 3), RESTRAINED TO TEE W/ FOSTER ADAPTERS
12" SOLID SLEEVE COUPLING (TYP. OF 2), RESTRAINED

NO PARKING/FIRE LANE SIGN

DOCK LIFT, PIN AND SLEEVE ANCHORING SYSTEM, SEE SPECIFICATIONS

12"x12"x6" TEE
6" GATE VALVE RESTRAINED TO TEE W/ FOSTER ADAPTER (TYP.)
12" SOLID SLEEVE COUPLING (TYP. 2) RESTRAINED

8'x15' EQUIPMENT PAD PER MANUF. REQUIREMENTS, 12" THICK, SEE DETAIL ON DWG. C-12.

16' WIDE DOUBLE GATE

8' WIDE SIDEWALK, 6" THICK CONCRETE (4,000 PSI, CLASS A) REINFORCED

CHAINLINK FENCE

12 FT. x 16 FT. EXTERIOR PAD - SEE STRUCTURAL (TYP.)

12' WIDE GATE

12"x12"x6" TEE
6" GATE VALVE RESTRAINED TO TEE W/ FOSTER ADAPTER (TYP.)

5' CONCRETE SIDEWALK, SEE DETAIL

FLUSHING HYDRANT

FIRE DEPARTMENT CONNECTION - SEE MECHANICAL

5' WIDE CONCETE SIDEWALK, SEE DETAIL

CHAIN LINK FENCE

12" GATE VALVE

7 FT. x 8 FT. EXTERIOR PAD - SEE STRUCTURAL

PUDDING HILL WATER TREATMENT FACILITY FF EL. 102.0

5 FT. x 7 FT. EXTERIOR PAD - SEE STRUCTURAL

INSTALL 6" DI TO HDPE TRANSITION

HANDICAPPED PARKING SIGN

5' GATE

NOTE 4

NOTE 1

12"x12"x6" TEE
6" GATE VALVE RESTRAINED TO TEE W/ FOSTER ADAPTER (TYP.)

SMH#1

GRAVEL PARKING AREA

8" PVC SDR35

8" HDPE

INSTALL AND GRADE CRUSHED GRAVEL AROUND BUILDING AND RAIN GARDEN, 4" DEPTH

UE TO WELLS SEE ELECTRICAL

8" DI

TRANSFORMER SEE ELECTRICAL DRAWINGS

DI BEND AS REQUIRED (TYP.)

6" HDPE

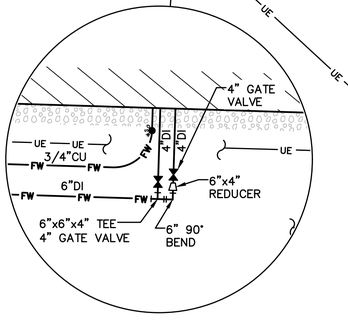
CUT, CAP AND ABANDON EXIST. 8" DI

INSTALL 8" S.S. COUPLING

8" HDPE RECHARGE

GRAVEL DRIVE, SEE DETAIL ON DWG. C-13.

SCALE: 1 INCH = 20 FT.



PIPE SCHEDULE

KEY NOTE	SIZE & MATERIAL	DESCRIPTION	PIPE ℄ AT BLDG
(1)	12" DI	FINISH WATER	95.0
(2)	8" DI	IRELAND WELL RAW WATER	92.5
(3)	12" DI	CLEARWELL OVERFLOW	98.25
(4)	8" DI	GRIFFIN WELL RAW WATER	92.5
(5)	8" DI	DPH-1 WELL RAW WATER	92.5
(7)	6" PVC	SANITARY SEWER	96.33
(8)	6" HDPE	PROCESS RESIDUALS	92.5
(9)	4" DI	PLANT WATER SERVICE	95.0
(10)	3/4" CU	SAMPLE LINE (NOTE 1)	95.0
(11)	6" PVC	ROOF LEADER DRAIN	99.5
(12)	4" DI	FIRE SERVICE	95.0

NOTES:

1. INSTALL 3/4" WATER SERVICE CONNECTION 75 FT. MIN. FROM OUTSIDE FACE OF FOUNDATION WALL MEASURED ALONG 12" FINISHED WATER MAIN FOR SAMPLE LINE.
2. RELOCATE EXISTING 8" HDPE RAW WATER MAIN. REVIEW TIE-IN LOCATIONS AND PIPE ELEVATIONS IN FIELD WITH ENGINEER. PROVIDE CONSTANT SLOPE WITH NO INTERMEDIATE DIPS.
3. EXISTING CONTOURS ARE SHOWN ON THIS PLAN. REFER TO WTP ROAD PLAN & PROFILE FOR PROPOSED GRADING.
4. INSTALL 12" TIDE FLEX TF-1 CHECK VALVE ON 12" DI CLEARWELL OVERFLOW, INVERT EL. 97.5 WITH 3/4" STONE APRON.
5. GRADE DISTURBED AREAS W/ CRUSHED GRAVEL, REVIEW IN FIELD WITH ENGINEER.
6. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY EXCAVATION SUPPORT AS REQUIRED WHETHER SHOWN ON DRAWINGS OR NOT.

ISSUE FOR	By	Date
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CONSTRUCTION	TGP	6/28/21
RECORD DRAWING	-	-

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509_pbase_pg29
Scale AS SHOWN

STATE OF NEW HAMPSHIRE - RICHARD M. GOLDSMITH - No. 15552 - LICENSED PROFESSIONAL ENGINEER

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WTP SITE PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C4

SHEET 9 OF 122

H:\Real Numbers\Dover\2509 - Pudding Hill Aquifer Recharge\Dwgs\2509_C_Phase_IV\DVD 29.dwg, C4, 6/30/2021 3:13:49 PM, rmg

GRAVEL DRIVE, SEE DETAIL

PC: 2+24.04

PT: 3+32.19

GRADE SWALE TO DRAIN (12" DEPTH)

PAVED DRIVE, SEE DETAIL

MATCHLINE SEE DWG C6

L=108.15
R=290.00

S64°36'42"E
124.04'

S43°14'36"E
430.24'

GRADE CHANGE

PUDDING HILL WATER TREATMENT FACILITY
FF ELEV. 102.0

R75'

N46°45'24"E
146.66'

GRAVEL PARKING AREA

PT: 21+64.70

GRAVEL DRIVE, SEE DETAIL

LAYOUT TABLE:

POINT	DESCRIPTION	NORTHING	EASTING
A	NW BLDG CORNER	246274.3343	1189135.2230
B	NE BLDG CORNER	246173.8083	1189229.7668

NOTES:

1. GENERALLY SLOPE FINISHED GRADE 2% AWAY FROM BUILDING AS SHOWN.

WTP ROAD PLAN VIEW

20 0 20 40

SCALE: 1 INCH = 20 FT.

WTP ROAD PROFILE VIEW

20 0 20 40

2 0 2 4

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

PVI STA = 2+00
PVI ELEV = 102.14

PVI STA = 2+49
PVI ELEV = 102.39

END OF PAVEMENT
STA 3+36
℄ EL. = 101.78

PVI STA = 3+80
PVI ELEV = 101.47

PVI STA = 5+31
PVI ELEV = 101.47

BVCS: 6+00
BVCE: 101.12

EVCS: 6+50
EVCE: 101.25

0.50% −0.70% 0.00% −0.50% +1.0%

18" 22"

100 100

SEE TYPICAL GRAVEL DRIVE AND ACCESS AREA SECTION ON DWG. NO. C13

BOTTOM OF EXCAVATION

SEE TYPICAL PAVED DRIVE SECTION ON DWG. NO. C13

BOTTOM OF EXCAVATION

PVI STA = 6+25.18
PVI ELEV = 101.00
LP: STA = 6+16.85
LP: ELEV = 101.08
A.D. = 1.50%
K = 33.33
50' VC

DATUM ELEV 90.00																							
102.1	102.14	102.0	102.38	101.5	102.03	100.9	101.68	100.8	101.47	100.9	101.47	100.9	101.47	100.7	101.38	100.6	101.12	100.2	101.25	100.3	101.50		90
2+00		3+00		4+00		5+00		6+00		6+75													

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WTP ROAD PLAN & PROFILE I

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

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DWG NO C5

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MATCH LINE
SEE DWG C5

TBM
CORNER CONCRETE
ELEV. = 105.28

TBM
FLANGE BOLT ON
HYDRANT #1192
ELEV. = 106.53

EXISTING STONEWALL
DRIVE SEWER PUMP
STATION

EXISTING 8' DIA.
WETWELL

TRANSFORMER

RAIN GARDEN

NO PARKING/FIRE
FIRE LANE SIGN

SMH#3

INSTALL 12"
CRUSHED GRAVEL

LOAM AND SEED
DISTURBED AREA

PERMANENT TRENCH
REPAIR (TYP.), SEE
DETAIL

EXISTING
8" SEWER

REMOVE & DISPOSE
OF EXIST. SECTION
OF GUARDRAIL, 40 LF

CATV

ELECTRIC
VAULT

TELECOMM

ADJUST STRUCTURE TO
FINISHED GRADE (TYP.)

DMH 8

EXISTING UG
E/T/TV

SMH 5

CB 11

REMOVE EXISTING
GATE AND SALVAGE
TO CITY

SLEEVE FOR
UNDERGROUND
ELECTRIC
LINES

CONSTRUCT 1" OVERLAY
(ENTIRE CUL-DE-SAC), BLEND
INTO EXISTING PAVEMENT WITH
MILLED KEYWAY, SEE DETAIL
DWG. C12.

CB 9

DMH 7

EXISTING 4"
FM (SDR21)

6"PVC

STONEWALL DR.

SMH#2

8" HDPE RECHARGE

NOTES:

1. EXISTING UTILITIES AT STONEWALL DRIVE BASED ON STONEWALL DRIVE AS-BUILT ROADWAY PLAN (REFERENCE PLANS, NOTE 4, DRAWING G-3)

WTP ROAD PLAN VIEW

20 0 20 40

SCALE: 1 INCH = 20 FT.

PVI STA = 9+31
PVI ELEV = 104.06

1.00%

SEE TYPICAL PAVED DRIVE
SECTION ON DWG. NO. C13

BOTTOM OF
EXCAVATION

	7+00	8+00	9+00	10+00	10+70
	100.3	100.8	101.3	101.5	102.8	104.2	103.4	103.0	103.1
	101.75	**102.25**	**102.75**	**103.25**	**103.75**				

DATUM ELEV
90.00

100

90

WTP ROAD PROFILE VIEW

20 0 20 40

2 0 2 4

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

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Scale AS SHOWN

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WTP ROAD PLAN & PROFILE II

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

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DWG NO C6

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INTAKE STRUCTURE

BELLAMY RIVER

WETLANDS DELINEATION

100 YEAR FLOOD EL 87.8 FT.

ARTIFICIAL RECHARGE PUMP STATION

100 FT, CONSERVATION DISTRICT

150 FT, SHORELAND SETBACK

50 FT, SHORELAND SETBACK

SURVEY CONTROL POINT
PUMP STATION "WEST"
SPIKE FOUND (POINT#22)
NAD83
N – 246,461.9975
E – 1,188,692.8668
NGVD 29 ELEVATION – 103.31'

CAP EXIST. 8" DI, PROVIDE THRUST RESTRAINT

8" DI BENDS AS REQUIRED (TYP.). PROVIDE THRUST RESTRAINT.

8" DI TO TREATMENT PLANT

NEMA 4X ELECTRICAL CABINET (SEE ELECTRICAL DWGS)

NEW CHAIN LINK FENCE AND GATE AROUND WELL AFTER DEMO AND GRADING

6"x8" REDUCER AND 8" SOLID SLEEVE COUPLING, RESTRAINED

EXISTING 6" GV CLUSTER (TYP. OF 3)

12" GATE VALVE – CLOSE VALVE AND WELD VALVE BOX COVER ON

6" GATE VALVE NORMALLY CLOSED

12' GATE

8" GATE VALVE NORMALLY OPEN

PAVE INSIDE FENCE, 1' OFFSET FROM FENCE, SEE DETAIL ON DWG. C-13.

FROM GRIFFIN WELL

AIR RELEASE MANHOLE

D1

SCALE: 1 INCH = 10 FT.

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IRELAND WELL SITE PLAN

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C7

SHEET 12 OF 122

H:\Real Numbers\Dover\2509 - Pudding Hill Aquifer Recharge\Design\2509_C_Phase_NGVD 29.dwg, C7, 6/30/2021 3:14:09 PM, mng

NOTES:

1. THIS DRAWING IS INTENDED TO SHOW FINAL VALVE POSITIONS SHOWN FOR GRIFFIN WELL TO PROVIDE RAW WATER TO NEW TREATMENT FACILITY. COORDINATE WITH CITY OF DOVER OPERATORS.
2. N.C. = NORMALLY CLOSED
   N.O. = NORMALLY OPEN
3. CLOSE EXISTING VALVE AND WELD VALVE BOX COVER ON.

12" CI TO PUDDING HILL WTP

EXISTING GRIFFIN WELL HOUSE

EXISTING GRIFFIN WTP

N.C.

N.O.

NOTE 3

W.S.C.W.

SCALE: 1 INCH = 10 FT.

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GRIFFIN WTP SITE PLAN – VALVE CLUSTER

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

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NOTES:

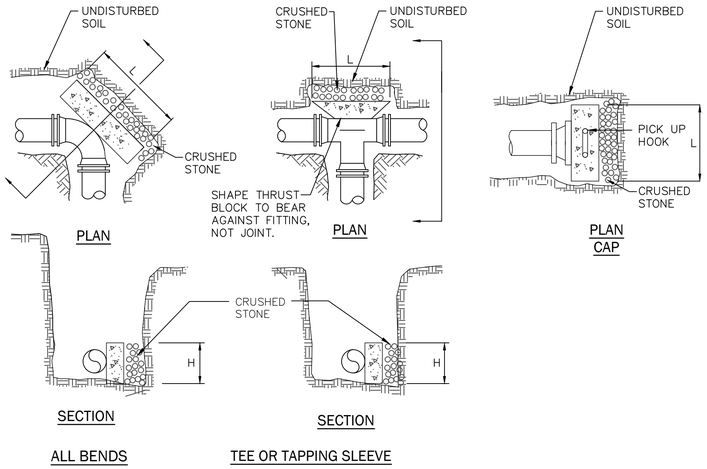
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE.
2. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 100 PSI. IF THE SYSTEM PRESSURE IS ABOVE 100 PSI, INCREASE THE NOTED AREAS PROPORTIONAL TO THE ACTUAL SYSTEM PRESSURE. FOR EXAMPLE, IF THE ACTUAL SYSTEM PRESSURE 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

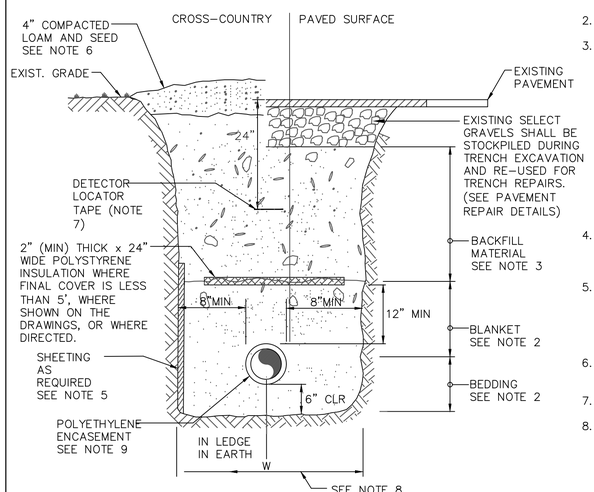
MINIMUM BEARING AREA (SQUARE FEET)

	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

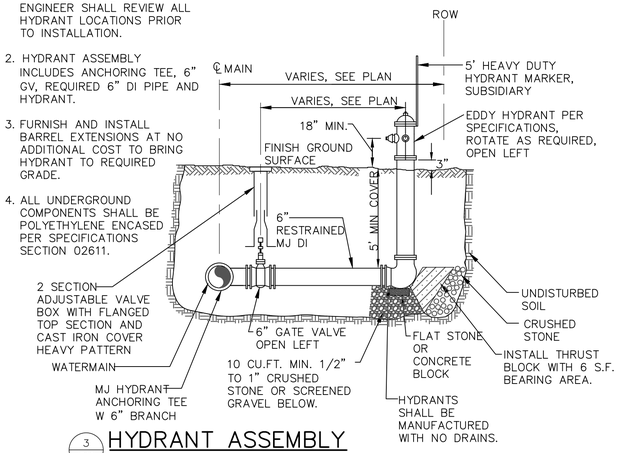
WATER TRENCH NOTES:

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).
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.

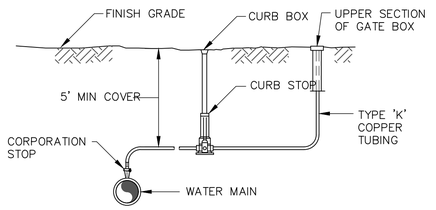
   IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF ENGINEER IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE LINE, FOR MAINTENANCE 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.



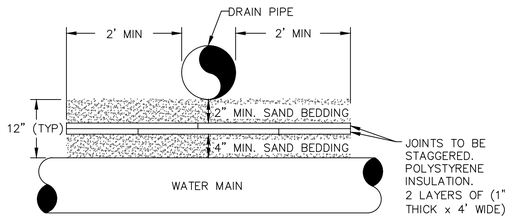
3/C11 HYDRANT ASSEMBLY
NOT TO SCALE



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.

6/C11 TYPICAL CHLORINE INJECTION TAP AND/OR MANUAL AIR RELEASE ASSEMBLY
NOT TO SCALE



NOTES:

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

7/C11 DRAIN PIPE CROSSING DETAIL
NOT TO SCALE

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WATER DETAILS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO C9

SHEET 14 OF 122

H:\Real Numbered\Dover\2509 - Pudding Hill Aquifer Redesign\Design\2509_C_DETAILS.dwg, C9, 6/29/2021 5:02:08 PM, rmg

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:

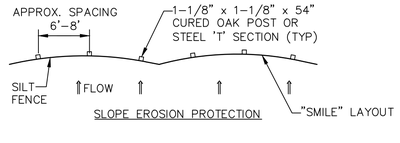
1. SILT FENCE: SILT FENCE SHALL INCLUDE PREFABRICATED 48-INCH WOOD POSTS OR APPROVED EQUIVALENT INSTALLED IN ACCORDANCE WITH THE DRAWINGS (OR AS DIRECTED BY THE ENGINEER).
2. RIP RAP: SEE DETAILS
3. MULCH: MULCH SHALL BE DRY MOWINGS OR ACCEPTABLE HERBACEOUS GROWTH, FREE OF NOXIOUS WEED OR WOODY STEMS. 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:

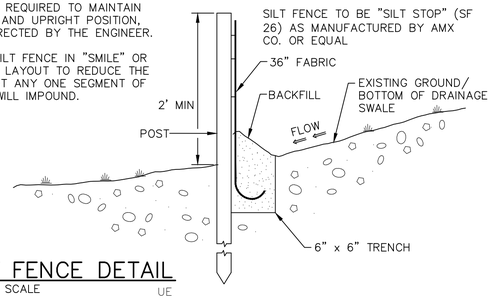
1. SILT FENCES ARE TO BE MAINTAINED AND CLEANED UNTIL SLOPES HAVE HEALTHY STAND OF GRASS. WHEN SEDIMENT ACCUMULATION REACHES A DEPTH OF 12" BEHIND THE SILT FENCE, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
2. REPAIR ALL DAMAGES CAUSED BY SOIL EROSION OR CONSTRUCTION EQUIPMENT AT OR BECOME 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.

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



SILT FENCE DETAIL
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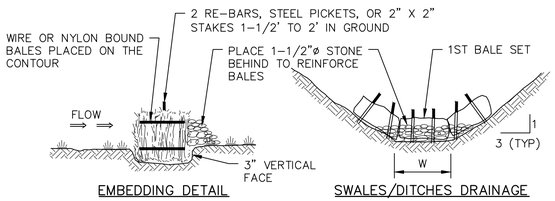
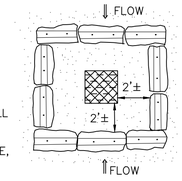


EMBEDDING DETAIL SWALES/DITCHES DRAINAGE

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.

HAY BALE DETAIL
NOT TO SCALE UE



CATCH BASIN EROSION PROTECTION

NO.	REVISIONS	APP'D
	ISSUE FOR APPROVAL By TGP Date 5/21/21	
	CONSTRUCTION By TGP Date 6/28/21	
	RECORD DRAWING By - Date -	

Drawn/Chk RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509_C_details
Scale AS SHOWN

STATE OF NEW HAMPSHIRE TIMOTHY G. PAGE No. 15562 LICENSED PROFESSIONAL ENGINEER

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UNDERWOOD engineers
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EROSION COTNROL DETAILS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C10
SHEET 15 OF 122

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STANDARD SEWER 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: 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"

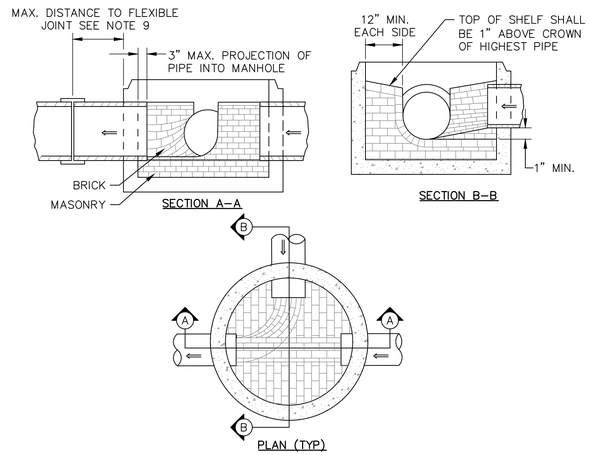
10. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.

11. MANHOLE FILL:

    A. GRANULAR FILL OPTION: INSTALL APPROPRIATE BULKHEAD. INSTALL APPROVED FILL IN 12" LIFTS COMPACTED TO 95% STANDARD PROCTOR.
    B. FLOW FILL OPTION: INSTALL APPROPRIATE BULKHEAD TO SUPPORT FLOW FILL INSTALL MACHINE EXCAVATABLE (2000#) FLOW FILL. DO NOT REMOVE CONE AND SLAB TOP UNTIL FLOW FILL IS SET.
    C. MANHOLE FILL IS INCIDENTAL TO THE WORK, OR INCIDENTAL TO THE ABANDON STRUCTURE PAY ITEM IF INCLUDED IN BID SCHEDULE.

STANDARD SEWER MANHOLE DETAILS

NOT TO SCALE UE



SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

   A. BEDDING: SEE SPECIFICATION SECTION 02229 FOR MATERIAL AND COMPACTION REQUIREMENTS.

   B. SAND BLANKET: SEE SPECIFICATION SECTION 02229 FOR MATERIAL AND COMPACTION REQUIREMENTS.

   C. SUITABLE BACKFILL MATERIAL: SEE SPECIFICATION SECTION 02229 FOR MATERIAL AND COMPACTION REQUIREMENTS.

2. FOR CROSS COUNTRY CONSTRUCTION: BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE

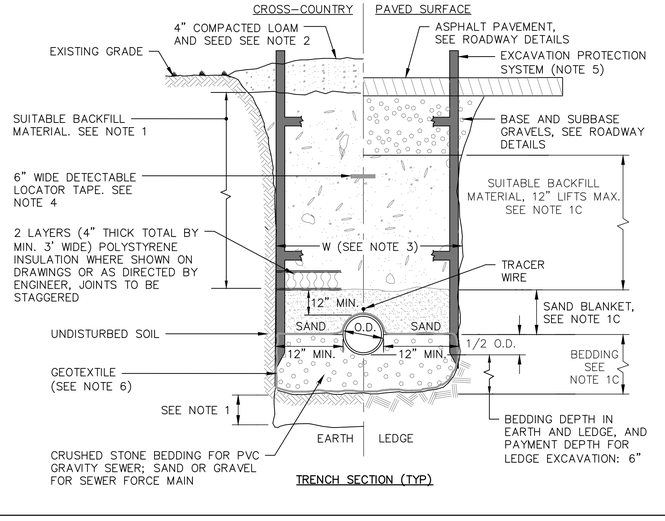
3. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE, AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

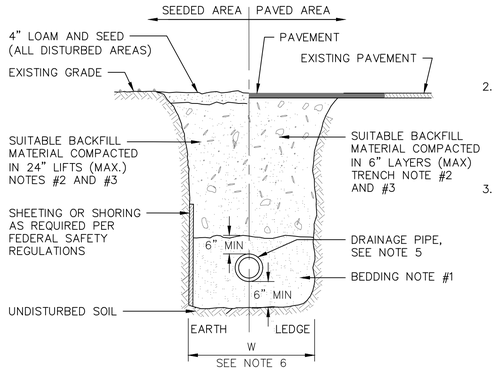
4. LOCATOR TAPE: SEE SPECIFICATION SECTION 02610. TAPE TO BE INSTALLED 18" BELOW FINISH GRADE, OR IMMEDIATELY BELOW GRAVEL LAYER.

5. THRUST BLOCKS: SHALL BE INSTALLED ALONG ALL FORCE MAIN PIPING. THRUST BLOCKS SHALL BE OF THE SAME SIZE AND SHALL BE USED IN THE SAME LOCATIONS IDENTIFIED FOR WATER MAINS. SEE WATER DETAILS.

TRENCH DETAIL

NOT TO SCALE UE





TRENCH DETAIL - STORM DRAIN

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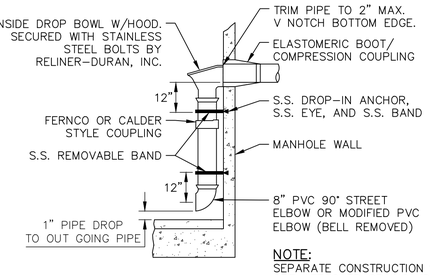


NOTE:
SEPARATE CONSTRUCTION SPECIFICATIONS ARE ATTACHED OR INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.

SIZE GUIDE

No. OF DROPS	PIPE DIA.	REQUIRED MANHOLE
1	≤10"	4'-0" DIA. MH
2	≤10"	4'-0" DIA. MH
1	≥12"	5'-0" DIA. MH

DROP MANHOLE

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.)

STANDARD DRAIN MANHOLE NOTES:

1. IT IS THE INTENTION: THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE AND STRENGTH CONSIDERED NECESSARY BY THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) 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, AS SPECIFIED IN SPECIFICATION SECTION 02431. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE.

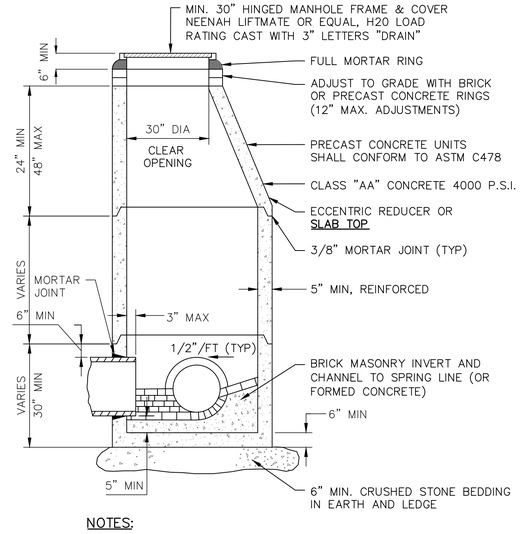
2. PRECAST CONCRETE: BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO SPECIFICATION SECTION 02431.

3. FRAMES AND COVERS: DRAIN MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH (MINIMUM HEIGHT) LETTERS STATING "DRAIN" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.

4. BEDDING: SEE DETAIL AND SPECIFICATION SECTION 02229. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.

5. 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, AS APPROVED BY THE ENGINEER.

6. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE PROJECT MANUAL. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.



NOTES:

1. ENTIRE STRUCTURE TO BE REINFORCED FOR H-20 LOADING.

TYPICAL DRAINAGE MANHOLE

NOT TO SCALE UE

ISSUE FOR	APPROVAL	CONSTRUCTION	RECORD DRAWING	
	By TGP	By TGP	By -	APP'D
	Date 5/21/21	Date 6/28/21	Date -	REVISIONS
				NO.

Drawn/Chk RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509_C_details
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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SEWER & DRAINAGE DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C11
SHEET 16 OF 122

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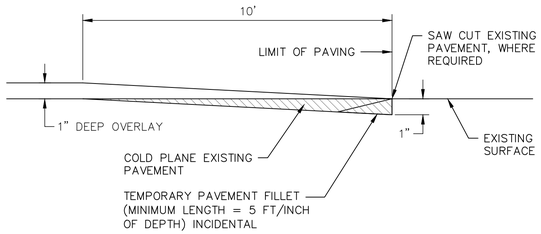
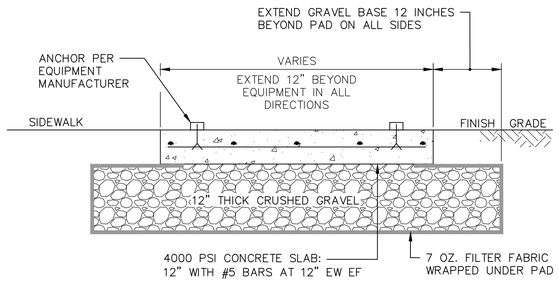


NOTES:

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

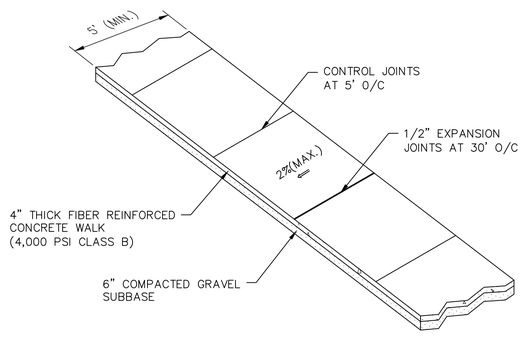
OVERLAY PAVEMENT MATCH
NOT TO SCALE



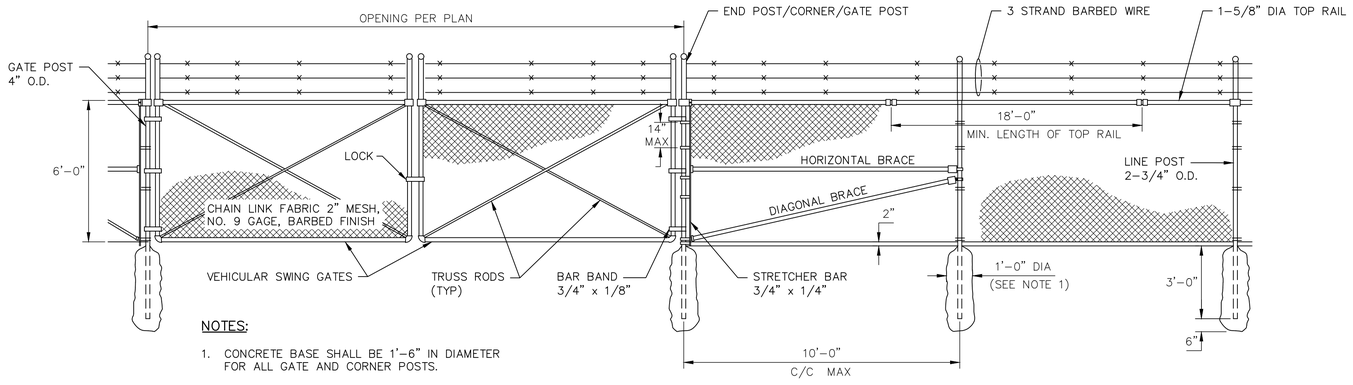
EQUIPMENT PAD DETAIL
NOT TO SCALE

CURB RAMP NOTES:

1. CURB RAMP AND FLARES SHALL BE CONSTRUCTED USING 6" THICK REINFORCED CONCRETE (4000 PSI, CLASS A), SUBBASE SHALL CONSIST OF 6" THICK OF CRUSHED GRAVEL.
2. RAMP WIDTH EQUALS WIDTH OF SIDEWALK, (5' WIDTH).
3. MAX. SLOPE OF CURB RAMP SHALL BE 1:12.
4. LANDING SHALL HAVE A MAX. SLOPE OF 2% IN ANY DIRECTION. LANDINGS SHALL BE 5' LONG (MIN.) BY WIDTH OF SIDEWALK (4' MIN.).
5. MAX. CROSS SLOPE ON SIDEWALK, SHALL BE 2%.
6. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
7. INTERCEPT DRAINAGE ALONG THE CURB BEFORE CURB RAMP. CATCH BASINS, MANHOLES, ETC. SHALL NOT BE LOCATED AT BASE OF CURB RAMP OR IN LANDING.
8. PROVIDE ANY ADDITIONAL STATE AND LOCAL CURB RAMP REQUIREMENTS.



SIDEWALK DETAIL
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
NOT TO SCALE

ISSUE FOR
APPROVAL — By TGP — Date 5/21/21
CONSTRUCTION — By TGP — Date 6/28/21
RECORD DRAWING — By – — Date –

NO.	REVISIONS	APP'D

Drawn/Chk RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509_C_details
Scale AS SHOWN

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ROADWAY AND SITE DETAILS I

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C12
SHEET 17 OF 122

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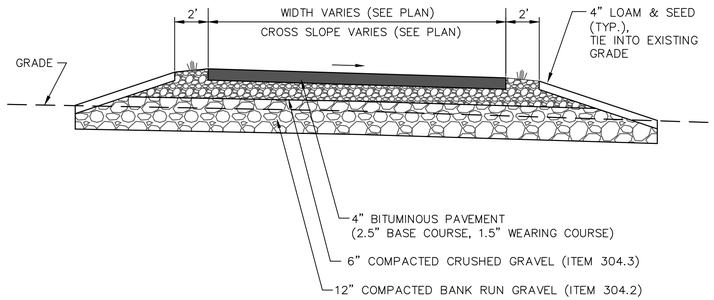
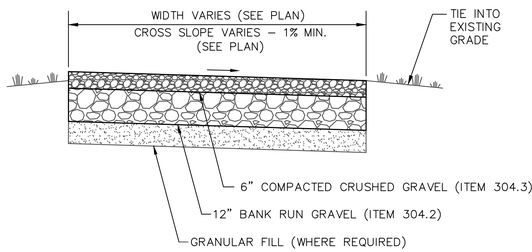


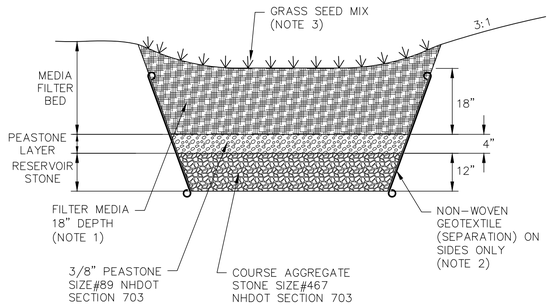
NOTES:

1. EXCAVATION, GRADING AND FILL ARE INCIDENTAL TO BID ITEM 1.

TYPICAL PAVED DRIVE SECTION
NOT TO SCALE



TYPICAL GRAVEL DRIVE AND ACCESS AREA SECTION
NOT TO SCALE



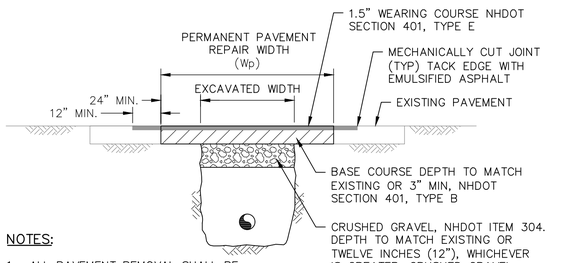
NOTES:

1. MEDIA FILTER MIX SHALL CONSIST OF THOROUGHLY MIXING THE FOLLOWING MATERIALS MEASURED BY VOLUME:
   - 50%–60% COARSE SAND (ASTM C33 OR EQUAL)
   - 15%–25% SHREDDED WOOD CHIPS (TUB GRINDINGS OR EQUAL)
   - 15%–25% SANDY LOAMY SOIL (<5% CLAY CONTENT)
2. NON–WOVEN GEOTEXTILE SHALL BE CLASS 3, 6 OZ/SY, 0.70 MINIMUM PERMITTIVITY SUCH AS MIRAFI 140N OR EQUIVALENT.
3. MEDIA FILTER TO BE SEEDED W/ NATIVE PERENNIAL GRASS SEED MIX WITH HIGH FESCUE CONTENT.

   ACCEPTABLE SEED MIXES:
   a. JONATHAN BLACK BEAUTY ORIGINAL GRASS SEED
   b. SCOTT'S CLASSIC GRASS SEED
   c. SCOTT'S EZ SEED
   d. OR APPROVED EQUAL
4. DO NOT COMPACT NATIVE SUB SOILS DURING CONSTRUCTION.
5. RAIN GARDEN DESIGN SPECIFICATIONS FOR PROPOSED PUDDING HILL WATER TREATMENT PLANT.

DESIGN CHARACTERISTIC	SPECIFICATION	ELEVATION
TOP AREA	2,640 FT²	100
BOTTOM AREA	1,275 FT²	97.5
SIDE SLOPES	3:1	–
POND DEPTH	2.5 FT	–
BASIN VOLUME (25 –YEAR DESIGN STORM)	4,700 FT3	–
FILTER MEDIA STORAGE VOLUME	1,100 FT3	–
TOTAL STORAGE VOLUME (50 –YEAR DESIGN STORM)	5,800 FT3	–
18" MEDIA FILTER (COMPONENTS MIXED BY VOLUME)		
COARSE SAND (ASTM –C33 OR EQUAL)	50%–60%	
SHREDDED WOOD CHIPS (TUB GRINDINGS OR SIMILAR)	15%–25%	
SANDY LOAMY SOIL	15%–25%	
4" FILTER BLANKET	PEASTONE LAYER (⅜" STONE)	
12" RESERVOIR STONE	RESERVOIR LAYER (¾" STONE)	

RAIN GARDEN DETAIL
NOT TO SCALE



NOTES:

1. ALL PAVEMENT REMOVAL SHALL BE PRECEDED BY MACHINE CUTTING.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES (SEE DETAIL) SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.

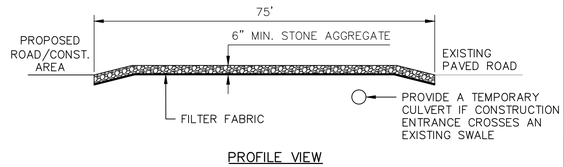
PIPE I.D.	Wt (INCHES)	Wp (INCHES)
1–21 INCHES	72	108
24–30 INCHES	84	120
> 30 INCHES	96	132

MINIMUM TRENCH PAVEMENT WIDTHS

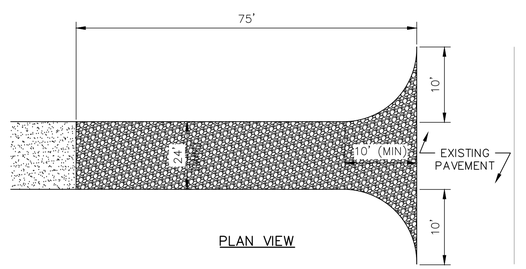
PERMANENT TRENCH PAVEMENT REPAIRS (INCIDENTAL)
NOT TO SCALE

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
NOT TO SCALE

ISSUE FOR			
APPROVAL	Date 5/21/21	By TGP	
CONSTRUCTION	Date 6/28/21	By TGP	
RECORD DRAWING	Date –	By –	

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ROADWAY AND SITE DETAILS II

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO C13

SHEET 18 OF 122

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DRAWING SYMBOLS

BRICK

CMU

CONCRETE

EARTH

GRAVEL

MORTAR

RIGID INSULATION

BATT INSULATION

STEEL

ALUMINUM

WOOD FRAMING

WOOD BLOCKING

WOOD PANEL

COMPOSITE WOOD

ROOM LABEL — ROOM NAME / Rm#

WINDOW TYPE — 10

WALL TYPE — 11

DOOR LABEL — #A

KEY NOTE — 12

REVISION NO. — 12

SPOT ELEVATION — 0' - 0"

FLOOR LEVEL / ELEVATION — FLOOR LEVEL - 1 / 0' - 0"

BUILDING ELEVATION — Drwg No. - TYP; 01 / A-123; Sheet No. - TYP

INTERIOR ELEVATIONS — 1 / 2 A-123 4 / 3

INTERIOR ELEVATION — 1 / A-123

COLUMN GRID — 3

BUILDING SECTION — A-123

SECTION DETAIL

DETAIL MARK — 01

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	LLH	LONG LEG HORIZONTAL
ALUM	ALUMINUM	LLV	LONG LEG VERTICAL
ALT	ALTERNATE	MAS	MASONRY
ARCH	ARCHITECT / ARCHITECTURAL	MIN	MINIMUM
BLDG	BUILDING	MTD	MOUNTED
BM	BEAM	MO	MASONRY OPENING
BOT	BOTTOM	NTS	NOT TO SCALE
BP	BEARING PLATE	OC	ON CENTER
BRG	BEARING	OH	OPPOSITE HAND
C-C	CENTER TO CENTER	OHD	OVERHEAD DOOR
CJ	CONTROL JOINT	O-O	OUT TO OUT
CL	CENTER LINE	PL	PLATE
CLR	COLOR	PLF	POUNDS PER LINEAR FOOT
CMU	CONCRETE MASONRY UNIT	PND	POUND
CNTR	CENTER	PNT	POINT
CI	CAST IRON	PR	PAIR
COL	COLUMN	PSF	POUNDS PER SQUARE FOOT
CONC	CONCRETE	PT	PRESSURE TREATED
CONT	CONTINUOUS	RD	ROOF DRAIN
CPR	COPPER	RFG	ROOFING
CTL	CONTROL	RECD	RECIEVED
DI	DUCTILE IRON	REINF	REINFORCING
DIA	DIAMETER	RENO	RENOVATION
DIM	DIMENSION	RND	ROUND
DR	DOOR	RQD	REQUIRED
DTL	DETAIL	SF	SQUARE FEET
DWG	DRAWING	SOG	SLAB ON GRADE
DWL	DOWEL	SECT	SECTION
EA	EACH	SHT	SHEET
ELE	ELEVATION	SIM	SIMILAR
ELEV	ELEVATOR	SS	STAINLESS STEEL
EQ	EQUAL	STD	STANDARD
EW	EACH WAY	STL	STEEL
EXTG	EXISTING	STRCT	STRUCTURAL
FD	FLOOR DRAIN	T & B	TOP & BOTTOM
FF	FINISH FLOOR	TEMP	TEMPORARY
FIN	FINISH	TOG	TOP OF GROUT
FLR	FLOOR	TOS	TOP OF SLAB
FND	FOUNDATION	TOSTL	TOP OF STEEL
FTG	FOOTING	TOW	TOP OF WALL
GA	GAUGE	TEMP	TEMPORARY
GALV	GALVANIZED	TYP	TYPICAL
GRND	GROUND	UNO	UNLESS NOTED OTHERWISE
HDG	HOT DIPPED GALVANIZED	VER	VERIFY
HGR	HANGER	VIF	VERIFY IN FIELD
HOR	HORIZONTAL	VERT	VERTICAL
JST	JOIST	W/	WITH
JNT	JOINT	WD	WOOD

@	AT	&	AND
#	NUMBER	±	PLUS or MINUS
Ø	DIAMETER	℄	CENTER LINE

CODE SUMMARY

APPLICABLE CODES:
NH State Fire Code: NFPA 1, 101 2015
NH State Building Code: 2015 IBC, IECC
NEC 2017
NH Architectural Barrier Free Code
2010 ADA

INTERNATIONAL BUILDING CODE

Gross Square Footage:

Lower Level	Mech Epmt	1460 s.f.
	(Water tanks)	5000 s.f.)
Main Level		9936 s.f.
Total s.f.		11396 s.f.
Building Height		28'
Stories Above Grade Plane		1

SECTION 306 – Factory Group F
.1: Factory Industrial Group F
.3: F2 Factory Low-Hazard Occupancy

SECTION 307 – High Hazard Group H
.1: ...processing & storage of materials that constitute a physical or health hazard in excess of Section 414 & Table 307.1(1) & 307.1(2) – H4.

TABLE 307.1(1)
MAX ALLOWABLE QUANT'Y/CONTROL AREA

	Class	Group	Solid	Liquid
Oxidizer	1	NA	4000 lb	4000 gal

TABLE 307.1(2)
MAX ALLOWABLE QUANT'Y/CONTROL AREA

	Solid	Liquid
Corrosives	5000 lb	500 gal

.6: Group H-4: corrosives, highly toxic, toxic

SECTION 311 – Storage S
.1.1 Accessory Storage < 100sf
.3: Low-Hazard Storage, S-2

SECTION 414 – Hazardous Materials
.2 - Control Areas
.1 Separated by 1 hr. Fire Barriers
.3 Ventilation of spaces required
.4 Fail Safe ventillation Controls design req'd.
.5.2 Haz Mat systems emergency power / 2702. Storage & use / 6004.2.2.8 & 6004.3.4.2 IFC.
.5.2.1 Exempt: Class 1 Oxidizer ventilation E power.
.5.3 Spill Containment of spillage, & fire protection water discharge.

TABLE 414.2.2
DESIGN & NUMBER OF CONTROL AREAS
Floor Level 1 – 100% Max Allowed Quantity
Control Areas / Floor – 4
Fire Rating – 1 Hr.

TABLE 414.2.5(1)
MAX QUANTITY/C.A. USE GROUP-S
(nonflammable/noncombustible solids-liquids)

Material	Class	Solids	Liquids
Corrosives	N/A	9750 lbs	975 gal
Oxidizers	3	1150 lbs*	115 gal
	2	2250 lbs**	225 gal
	1	18,000 lbs***	1800 gal

* Increase allowed to 2250 in sealed pack'g
** Increase allowed to 4500 in sealed pack'g
***quantities not limited w/ auto sprinkler
See Chemical Use Summary

SECTION 415 – GROUP H-4
.3 Provide Auto Fire Detection system.
.4 Auto Sprinkler req'd w/ quantities > 307.
.5.1 Manual Emergency alarm @ Storage rooms.
SECTION 504 -BUILDING HEIGHT & STORIES

TABLE 504.3
ALLOWABLE BUILDING HEIGHT

F-2 / S	VB.....60 ft
H4 / S	VB.....60 ft

TABLE 504.4
ALLOWABLE NUMBER of STORIES

F2 / S	VB.....3
H4 / S	VB.....3

SECTION 506 BUILDING AREA

TABLE 506.2
ALLOWABLE FLOOR AREA*

F-2 / Story: S1	52,000 s.f.
H4 / Story: S1	26,000 s.f.

.2 Mixed Occupancy, one-story bldgs. / 508.1
.3 Frontage Increase – not utilized.

SECTION 508 - Mixed Use & Occupancies
.1 Individually Classified / 302.1
.2.1 Accessory Occupancies / 302.1
.2.4 Separation of Occupancies / 508.4
.4 Considered as Separate Occupancies

TABLE 508.4
REQ'D SEPARATION OF OCCUPANCIES
F-2, H-4: (S) 2 hr. separation.

.4.2 Allowable building area: sum of ratios of each separated occupancy/allowable bldg. area of each separated occupancy ≤ 1.

TABLE 601
FIRE-RESISTANCE RATINGS RQMT OF BLDG ELE'MTS
W/ TABLE 602 Fire Separation Distance

Construction Type:	V (B)
Structural Frame:	0 hr.
Bearing Walls:	
Exterior: (602 & 704)	0 hr.
Interior:	0 hr.
Non-Bearing Walls/Partitions:	
Exterior:	0 hr.
Interior:	0 hr.
Floor Construction:	0 hr.
Roof Construction:	0 hr.

TABLE 602
CONSTRUCTION CLASSIFICATION
Exterior Wall Rating for Fire Separation Distance.
GROUP H: > 30 ft – 0 hr.
GROUP F-2: > 30 ft – 0hr.
.5 Type V: structure, exterior wall, interior walls of any code permitted material.

SECTION 720 – Thermal/Sound Insulating Materials:
.1 Exception 2. Foam Plastic Insulation Chpt 26.
.2 Concealed installation – Flame/Smoke 25/450.
.2.1 Flame/Smoke do not apply behind unexps'd surface of ceil'g, wall, floor finish.
.3 Exposed Installation – Flame/Smoke 25/450

TABLE 803.11
INTERIOR WALL & CL'G FINISH RQMTS
F-2 S: Exit Passageways, Corridors, Rms – C

SECTION 903 – Automatic Sprinkler Systems:
.2.5.1 Group H: required.
.2 Group F-2: Not Listed / 508.4. Not required.
.2.11.4 Hazardous Exhaust Ducts < 10" exempt.
.3.1.1 NFPA 13 sprinkler
.3.1.1.1 Exemption 1: water suppression areas.

SECTION 906 – Portable Fire Extinguishers
.1 Required Group F & H.
.2 Selected/Installed / NFPA 10.
.3 Light Hazard – 75 ft max distance, 2A min rat'g.
SECTION 907 – Fire Alarm & Detection Systems
.2.4 Group F: manual not req'd w/ Auto sprinkler.
.2.5 Group H: auto detection (oxidizers).
.5.2.2 Emergency voice/alarm communication system.

SECTON 908 – Emergency Alarm Systems
.1 Emergency alarm / 415.5

SECTION 1003 – General Means of Egress
.3.3 Protruding Objects – max 4" into circulation.

TABLE 1004.1.2
MAX FLOOR AREA ALLOWANCE/OCCUPANT
Mechanical Equipment:
11,086 s.f. @ 300 s.f./occ = 37 occ
Business Areas:
310 s.f. @ 100 s.f./occ = 4 occ
TOTAL 41 occ

.6 Multiple Occupancies to meet more stringent requirements.

SECTION 1005 - Egress Width:
.3.1 Excpt'n 1 Stairways: 41 occ x .2"/occ = 8.20" Stairway width provided = 60"
.3.2 Excpt'n 1 Doors: 41 occ x .15"/occ = 6.15" Exit doors provided: 2 @ 36" = 72"
.5 Exit / access capacity > 50% required.

TABLE 1006.2.1
SPACES W/ ONE EXIT or EXIT ACCESS DOORWAY
Occupancy F / Sprinklered
Max Occupant Load – 49;
Max Common Path Egress Travel - 100 ft.
Occupancy H-4 / Sprinklered
Max Occupant Load – 10
Max Common Path Egress Travel – 75 ft.

.3.2.1 Mixed Occupancies w/ one exit access permitted to serve individual stories.

TABLE 1006.3.2(2)
STORIES W/ ONE EXIT or ACCESS TO ONE EXIT
Use-Occupancy F / Sprinklered,
Max Occupant Load - 49
Max Common Path Egress Travel - 100 ft.

SECTION 1007 – Exit & Exit Access Doorway Config
.1.1: 1 -1/2 Overall bldg diagonal; 155'/3 = ≥ 52'

SECTION 1009 – Accessible Means of Egress
.1 Accessible spaces provided w/ aces'ble MOE.
.1 Exempt: see 1103.2.9 Equipment Spaces.

SECTION 1010 - Doors, Gate, Turnstiles:
.1.1 – Min clear door opening width: 32".
.1.2 – Door swing in direction of Egress Group H.
.1.5 – Floor landing each side of door.
.1.6 – Landings ≥ 44" in direction of travel.
.1.9 – Door Hardware 34" – 48".
.1.10 – Panic/Fire Exit Hardware: Doors serving Group H.

SECTION 1011 – Stairways
.2 Min width ≥ 44"
Exception 1 ≥ 36" w/ occ load < 50.
.5.2: 7" max riser (4" min), 11" min tread.
.5.5 Nosings 1/16 – 9/16 bevel/curvature. Solid Riser w/max 30 Degree angle.
.5.5.1 Max 1-1/4" tread to tread projection.
.5.5.3 Solid riser not req'd Group F & H (non-public).
.7.1 Exception 2: 1-1/8" open'g in tread allowed.
.8 Max 12 ft continuous rise.
.11 Handrails on each side.
.13 Guards provided along stairways / 1015.

SECTION 1014 – Handrails
.2 (Tread nosing) height 34" min – 38" max.
.3.1 Circular1-1/4" min dia. – 2" max dia.
.4 Continuous gripping surface.
.6 Return to wall, guard or walking surface, continuous to adjacent stairs. 12" Horizontal extension at Top, slope 11" bottom.
.7 Min 1-1/2" handrail/wall clearance.
.8 Max 4-1/2" projection into Stairs req'd width at/ below handrail height

SECTION 1015 – Guards
.2 Required at open walkways, stairs >30" AFF.
.3 Min 42" at Walking surface, Tread nosing.
.4 Exception 4 Guard openings, 21".
SECTION 1016 - Exit Access
.2.2 Exception: Means of Egress (Group F) allowed thru adjoining spaces w/ the same or lesser hazard occupancy group.

TABLE 1017.2 EXIT ACCESS TRAVEL DISTANCE
Sprinkler System:
F-2: 400 ft.
H-4: 175 ft.

SECTION 1018 – Aisles
.1 - Aisles shall be provided from all occupied portions of the egress access...Min width shall be unobstructed.
.5 – Width shall be not less than 1020.2.

SECTION 1019.3 - Occupancies other than I-2, I-3: Floor Openings w/exit access stairways...
1. Serve or atmospherically communicate w/ only two stories, NOT REQ'D to be enclosed.

TABLE 1020.2 MIN CORRIDOR WIDTH
Occupant load <50: 36".

SECTION 1022 – Exits
.1 – Exits shall not be used for any purpose that interferes w/ function as a Means of Egress.
.2 – Min of one req'd exterior door / 1010.1.

SECTION 1024 – Exit Passageways
.2: ≥ 36" w/ occ load < 50.

SECTION 1028 – Exit Discharge
.1 Exits shall discharge directly to the exterior at grade.
.5 Provide a direct & unobstructed path to a pubic way.

SECTION 1103 Accessibility
.1 Bldgs shall be accessible.
.2 General Exceptions - .9 Eqmt Spaces: exempt from required accessibility site/bldg. features.

SECTION 1210 – Toilet & Bathroom Rqmts
.1 - Per Chapter 29.

SECTION 1404 Exterior Wall Materials
.4 ,Masonry / Chpt 21.
.5 Metals / Chpt 20 & 22
.11 Exterior insulation w/ drainage /1408.
.13 Foam Plastic / Chpt 26.

SECTION 1405 Installation of Wall Coverings
.3.1 Class I II V.B. Req'd in Frame wall.
.3.2 Class III Vapor Barrier / TABLE 1405.3.2.
.3.3 Class I, II, III class specs.

SECTION 1705 Req'd Special Inspection & Tests
1705.3 Concrete Construction
1705.4 Masonry Construction
1705.5 Wood Construction
1705.6 Soils
1705.12 Plumb'g, Mech., Elec. Equipment

SECTION 2603 – Foam Plastic Insulation
.3 Surface-burning Characteristics Flame Spread 75 max. Smoke-developed index 450 max.
.4 Interior separation by Thermal barrier equiv'nt: 6" masonry
.4.1.6 Thermal barrier Attic: min protective separation - 1/4" wood structural panel.
.4.1.7 Thermal barrier allowed as HM door core.
.5. Exterior walls, Type V construction, in compliance w/ .2, .3, .4.

TABLE 2902.1
MINIMUM NO. REQ'D PLUMBING FIXTURES
Occupancy F2: WC: 1/125 m, 1/65 f
Lav: 1/200.
Drinking Fountain: 1/500
Service Sink: 1

NFPA 1

TABLE 40.2.5.1
ARRANNGEMENT – MEANS OF EGRESS
Common Path of Travel: w/ sprinkler
General Industrial – 100 ft.

NFPA 101

CHAPTER 6 OCCUPANCY & HAZARDS
6.1.12.2 Industrial / Chpt 40
6.1.14.1.2 Exit access traverses another occupancy
6.1.14.1.3 Incidental to another occupancy w/ < occupancy
6.1.14.2.1 Multiple Occupancies
.3 Separated / Fire Rated Assemblies
6.2.2.2 Low Hazard Contents

CHAPTER 7 ARRANGEMENT MEANS OF EGRESS
TABLE 7.3.1.2
OCCUPANT LOAD FACTOR
Industrial – 100 sf / occupant
11,396 sf / 100 = 114
7.5.1.1.4 Common Path of Travel / Chpt 40
.1.3.3 Remoteness: 1/3 Diagonal w/ sprinkler
7.12.1(1) Mech Eqmt Room: 100 ft Common Path of Travel w. sprinkler
.12.2 Stories for mech eqmt permitted single means of egress, common path of travel 100' w/ sprinkler

CHAPTER 40 INDUSTRIAL
.1.1.4 Industrial Occupancy
.1.2.1.1 General
.1.5 Classification of Hazards / 6.2 (Low Hazard)
.1.7 Occup't Load / 7.3.1.2: Gen Inds 100 sf/ occ

TABLE 40.2.5.1
COMMON PATH OF TRAVEL: 100 ft w/ Sprinkler

TABLE 40.2.6.1
MAX TRAVEL DISTANCE to EXITS
General Industrial: 250/400 ft w/ sprinkler

NFPA 110

7.2.1.1 2-Hour separation
.4 Rooms designed to minimize damage from:
Flooding from Fire Fighting
Sewer back-up
Other disasters / Occurrences
.6 Min 36" Access space for Equipment

NFPA 400

3.3.60.2 Corrosive ...living tissue destruction by chemical action
.3.60.3 Hazard
.3.60.3.1 Health
.3.60.3.2 Physical
.3.60.4 Hazardous: physical or health hazard
.3.60.7 Noncombustible
.3.60.9 Toxic

3.3.68 Occupancy
.7 Industrial

3.3.72 Oxidizer
Class 1 does not moderately increase burning rate of combustibles
Class 2 moderate increase - combustibles
Class 3 severe increase – combustibles
Class 4 explosive reaction

4.1 Hazardous Materials Classification / Chpt 3
(1) Corrosive solid, liquid, gas
(8) Oxidizers solid, liquid
(12) Toxic solid, liquid, gas

4.2 Classification of High-Hazard Contents
.2.1.2.1 High Hazard **Level 1**:
Detonation Hazard
.2.1.2.2 High Hazard **Level 2**:
Accelerated Burning/Deflagration
.2.1.2.3 High Hazard **Level 3:**
Readily supports Combustion
.2.1.2.4 High Hazard **Level 4:**
Acute Health Hazards
(1) Corrosives
(2) Highly Toxic
(3) Toxic

CHPT 5 PERMISSABLE USE & STORAGE
5.1.1 Control Areas or Special Protection - Haz Materials stored / used in:
(1) Control Areas / 5.2
(2) Protection Levels 1-4 / 5.3
.1.3 High Hazard Occupancy / Chpt 6
5.2 Control Areas
.2.1 Haz materials permitted stored/used in C.A.
.2.1.1.2 Q'nty / CA < MAQ for specific occupancy
.2.1.1.3 Table 5.2.1.1.3 for MAQ haz materials not covered 5.2.1.1.2

TABLE 5.2.1.1.3
MAQ Haz Mat /Control Area
Oxidizer CLASS 1:

Protection Level -	N/A	
Use (Closed System)*	Solid	4000 lb
	Liquid	4000 gal

Corrosive, CLASS N/A:

Protection Level	4	
Use (Closed System)*	Solid	5000 lb
	Liquid	500 gal

Toxic, CLASS N/A

Protection Level	4	
Use (Closed System)*	Solid.	500 lb
	Liquid	500 gal

*: Quantity increase 100% per approved enclosure

5.2.1.11 Industrial Occupancy: Max Allow Qnty per TABLE 5.2.1.1.3, increase / 5.2.1.13 storage areas

TABLE 5.2.1.13.3(a) MAQ (Industrial)
Oxidizers*

CLASS 3**	1 350 lb	135 gal
CLASS 2**	2 250 lb	225 gal
CLASS 1***	18 000 lb	1 800 gal

*: Quantity increase 100% w/ sprinkler
**: Quantity increase 100% when stored in approved containers
***: NL quantity w/ sprinkler

TABLE 5.2.2.1
DESIGN & NUMBER OF CONTROL AREAS
Floor Level 1 – 100% Max Allowed Quantity
Control Areas / Floor – 4
Fire Rating – 1 Hr.

5.3.1.Haz Mat'l qnty exceed C.A. limits, occ shall comply with Protection Level 4.
5.3.6.1 Comply w/ Protection Level 4 / Chpt 6

6.2 Haz Mat'l Exceeding MAQ limits / C.A.
.2.1.1 Fire Sprinkler req'd
.2.1.1.1 Ordinary Haz Group 2 min
.2.1.1.4 Rooms of noncombustible construction w/ wholly noncombustible contents shall Not Be Req'd to comply.

TABLE 6.2.1.3
REQ'D SEPARATION OF OCCUPANCIES w/ HIGH HAZARD CONTENTS
Industrial General – Protection Level 4 – 1 HR

6.2.1.4.1 Travel Distance (Protect'n Level 4) 175 ft
.2.1.4.2 MOE capacity (High Hazard)
.7" / occ (stairs): .7"x 15 occ = 10.5" Stairway Width Provided: 60"
.4" / occ (level components): .4"x 114 occ = 45.6" Exit Doors Provided: 2 @ 36" = 72"
.2.1.4.5 Door Hardware: fire exit
6.2.1.5.11 Ventilation System Emergency Shutoff signage at emergency shutoff

2015 IECC

SECTION 402 Building Envelop Requirements
TABLE 402.1.3
THERMAL ENVELOPE INSULATION MIN RQMT'S

Roof – above deck	R 30 ci
Mass Wall	R 9.5 ci
Metal Framed	R 13 + R 7.5 ci*
Foundation (Wall Below Grade)	R 10 ci
SOG Floors	R 10 ci
Doors	R 3
Non-Swinging Doors	R 4.75

*: 402.1.4.1 Steel Stud Wall Assemblies Correction

TABLE C402.4 BLDG ENVELOPE FRNESTRATION MAX. U- FACTOR
NA – Max 30% Wall Area.

.5 Air Leakage, Thermal Envelope : ≤ .40 cfm/ft² .

TABLE C402.5.2 MAX AIR LEAKAGE RATES
Swinging Doors: 0.20 cfm/ft²
.5.5 Air Intakes/Exhaust: Dampers /403.2.4.3.

2010 ADA

203 General Exceptions
.1 ...exempt from compliance requirements...
.5 Machinery Spaces - Spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment shall not be required to comply...or be on an accessible route. Machinery spaces include...water...pump rooms & stations...

CHEMICAL USE SUMMARY: NFPA Table 5.2.1.1.3 Max Allowable Quantity & 5.2.1.13.3(a) Max Allowable Quantity- INDUSTRIAL Occupancy

BUILDING AREA NFPA	CHEMICAL	DESCRIPTION	TYPE	QTY STORED	QTY ALLOWED
INDUSTRIAL LOW HAZ CONTROL AREAS	ZINC ORTHOPHOSPHATE	50% LIQUID	CORROSIVE TOXIC	300 GAL 300 GAL	500 GAL (Level 4) 500 GAL (x2 w/ sprinkler)
	CALCIUM HYPOCHLORITE	75% SOLID	OXIDIZER Class 1 CORROSIVE	1320 LB	18 000 LB (UL w/ sprinkler)
5.3 PROTECTION LEVELS LEVEL 4	SODIUM HYDROXIDE	25% LIQUID	CORROSIVE	6000 GAL	NOT LIMITED
	HYDROGEN PEROXIDE	27% or 50%	OXIDIZER, TOXIC CORROSIVE	3000 GAL	NOT LIMITED
	SODIUM FLUORIDE	97% SOLID	TOXIC	2220 LB	NOT LIMITED

CHEMICAL USE SUMMARY - IBC TABLE 307.1 (1) & (2)

BUILDING AREA: IBC	CHEMICAL	DESCRIPTION	TYPE	QTY STORED	QTY ALLOWED
F-2 CONTROL AREAS	ZINC ORTHOPHOSPHATE	50% LIQUID	CORROSIVE	300 GAL	500 GAL
	CALCIUM HYPOCHLORITE	75% SOLID	OXIDIZER Class 1 CORROSIVE	1320 LB	4000 LB
H-4	SODIUM HYDROXIDE	25% LIQUID	CORROSIVE	6000 GAL	NOT LIMITED
	HYDROGEN PEROXIDE	27% or 50%	OXIDIZER, TOXIC CORROSIVE	3000 GAL	NOT LIMITED
	SODIUM FLUORIDE	97% SOLID	TOXIC	2220 LB	NOT LIMITED

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PROJECT DESIGN DATA

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 01

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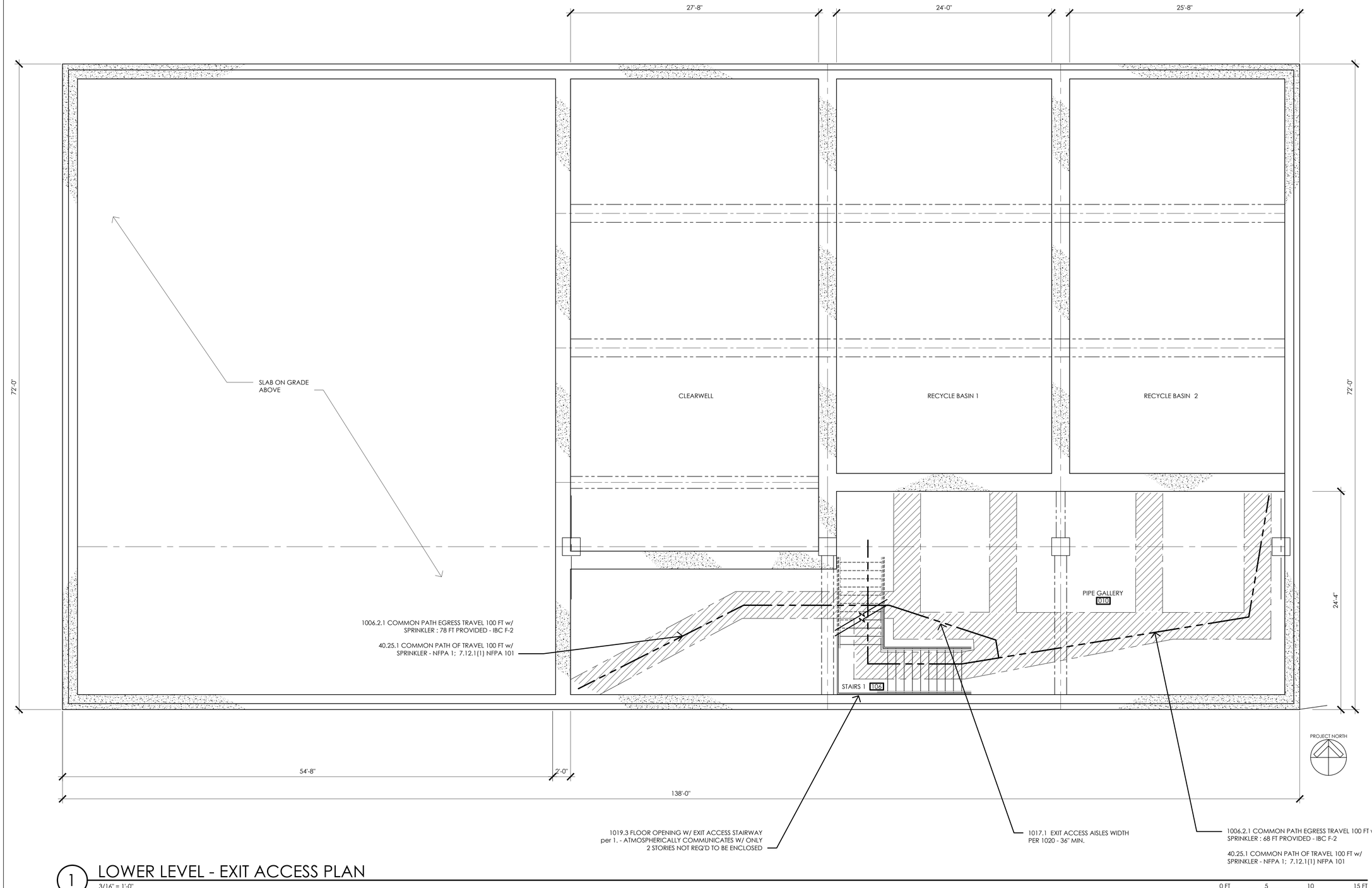

1 LOWER LEVEL - EXIT ACCESS PLAN

3/16" = 1'-0"

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EXIT ACCESS PLAN – LOWER LEVEL

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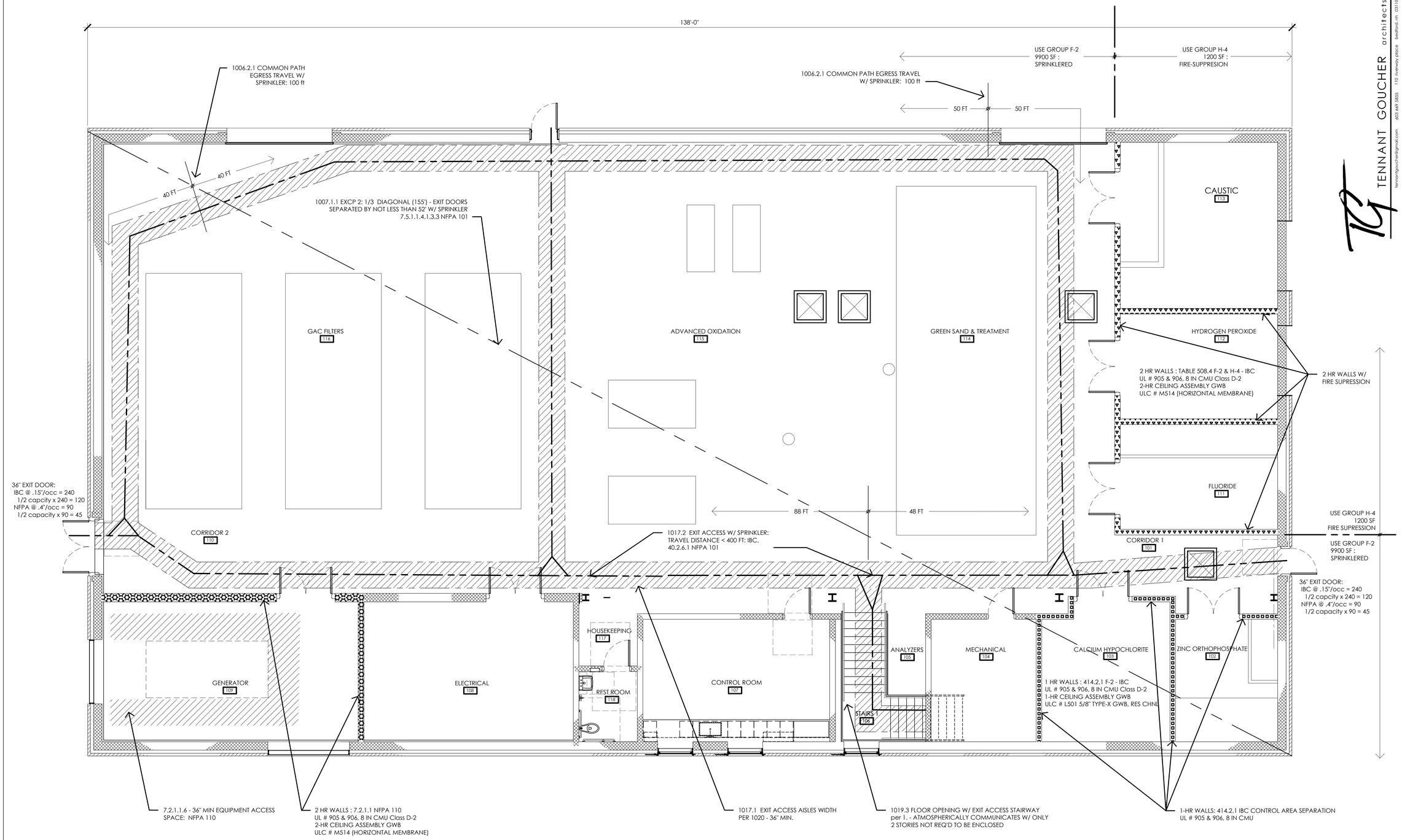

1 MAIN LEVEL - EXIT ACCESS PLAN

3/16" = 1'-0"

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EXIT ACCESS MAIN LEVEL PLAN

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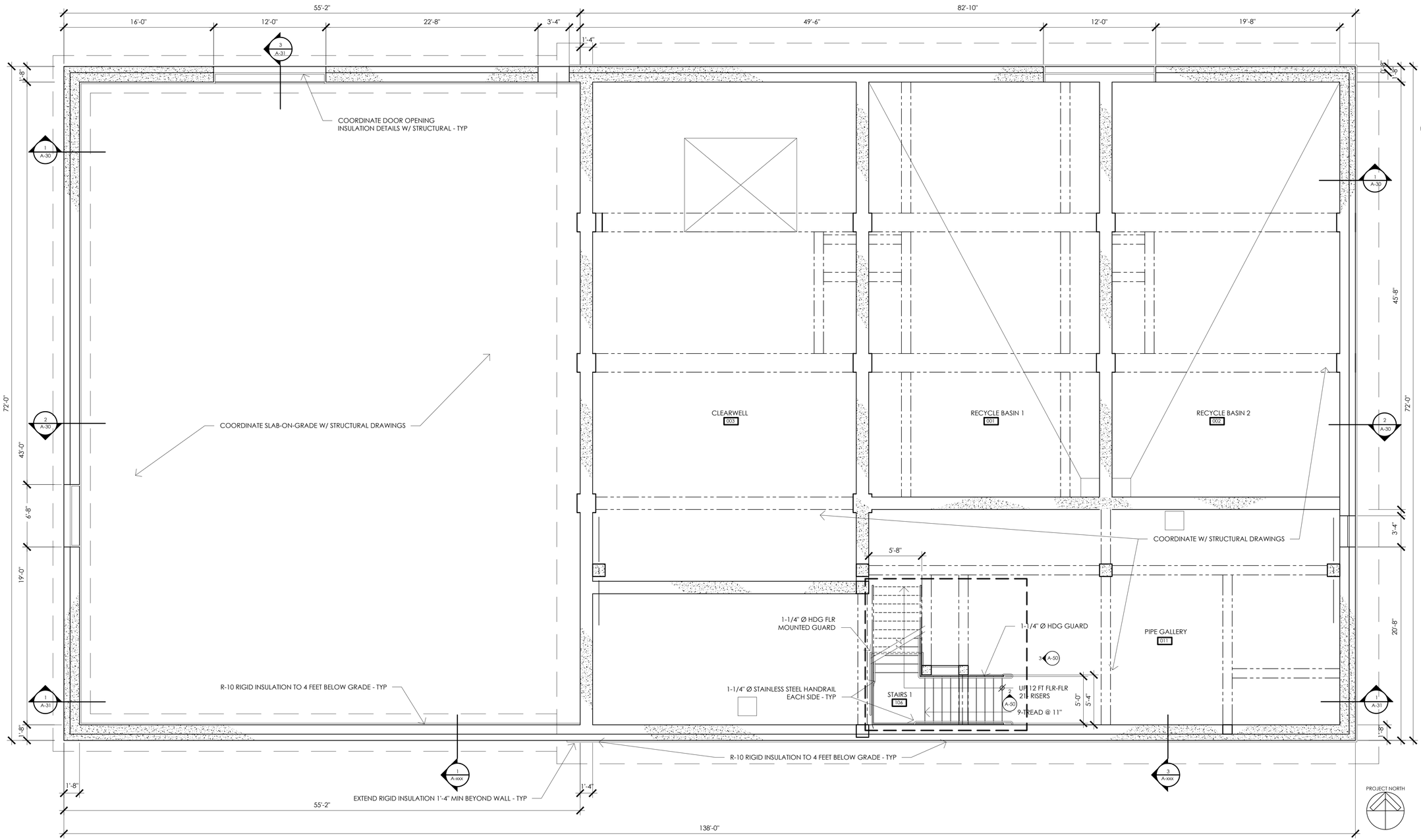

1 FOUNDATION PLAN

3/16" = 1'-0"

0 FT 5 10 15 FT

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FND / LOWER LEVEL PLAN

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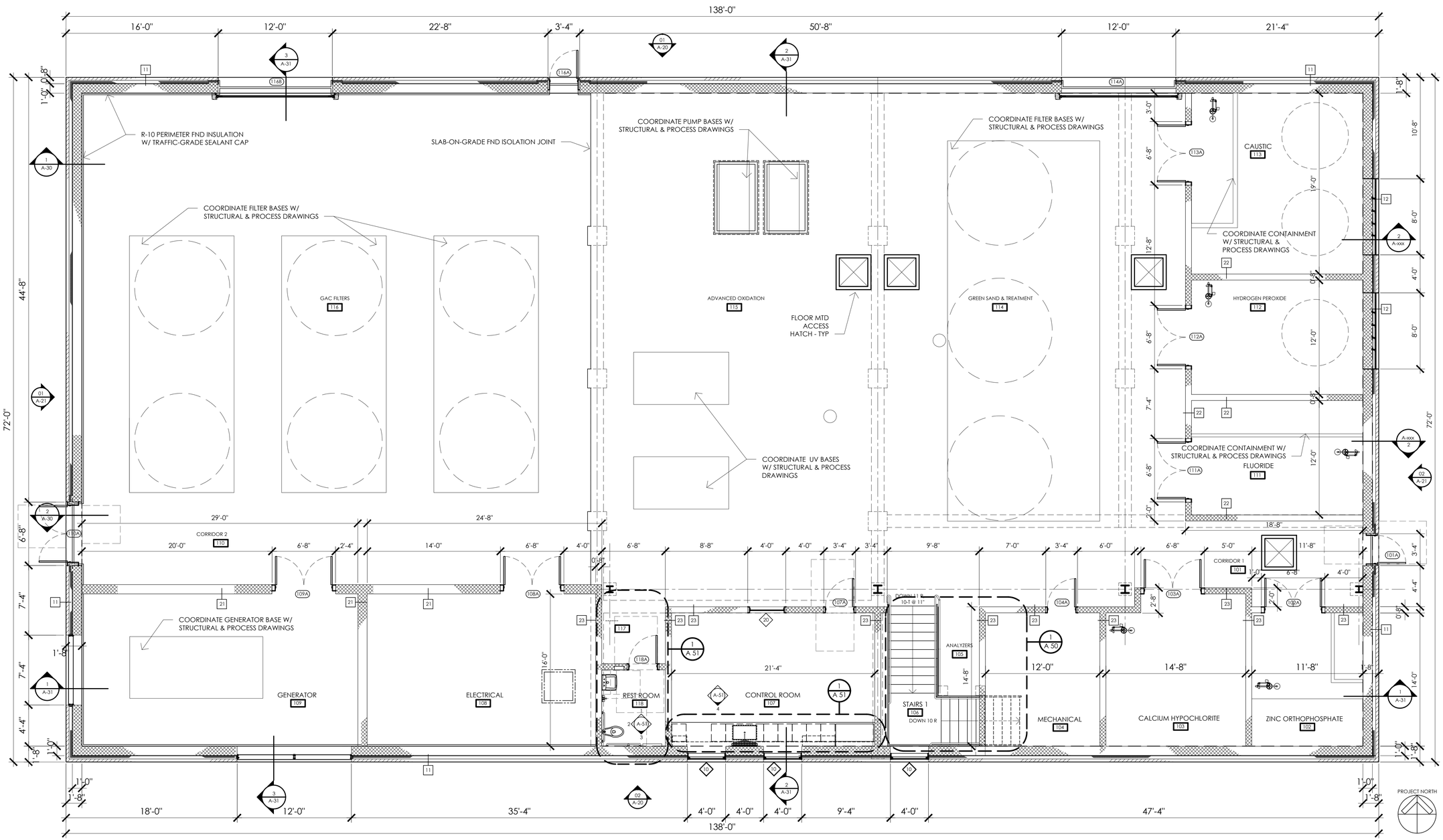

1 MAIN LEVEL - PLAN

3/16" = 1'-0"

0 FT 5 10 15 FT

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MAIN LEVEL PLAN

PUDDING HILL WATER TREATMENT FACILITY
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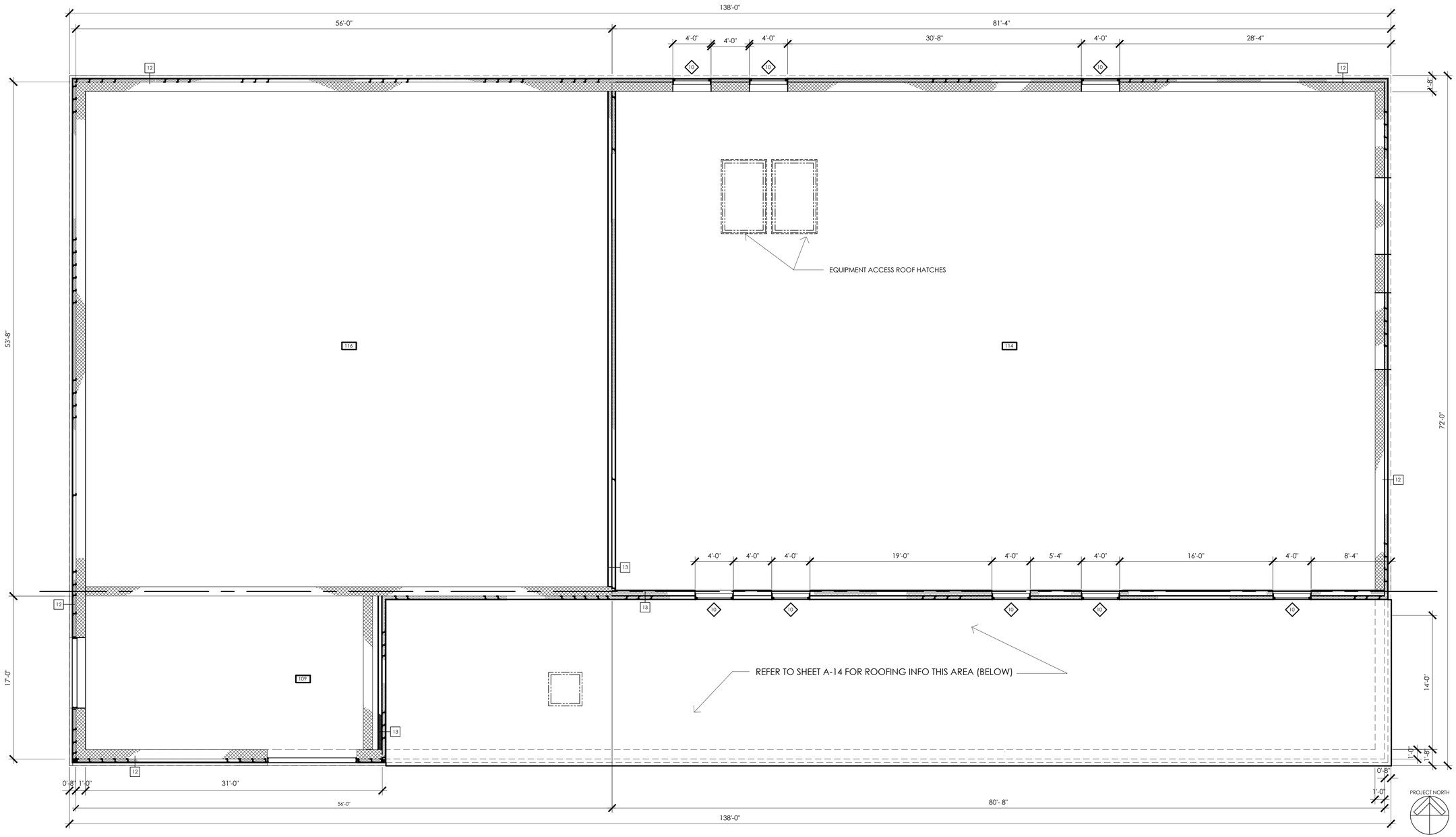

1 UPPER LEVEL - GENERATOR & GREEN FILTERS PLAN

3/16" = 1'-0"

0 FT 5 10 15 FT

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UPPER LEVEL GENER/GREEN PLAN

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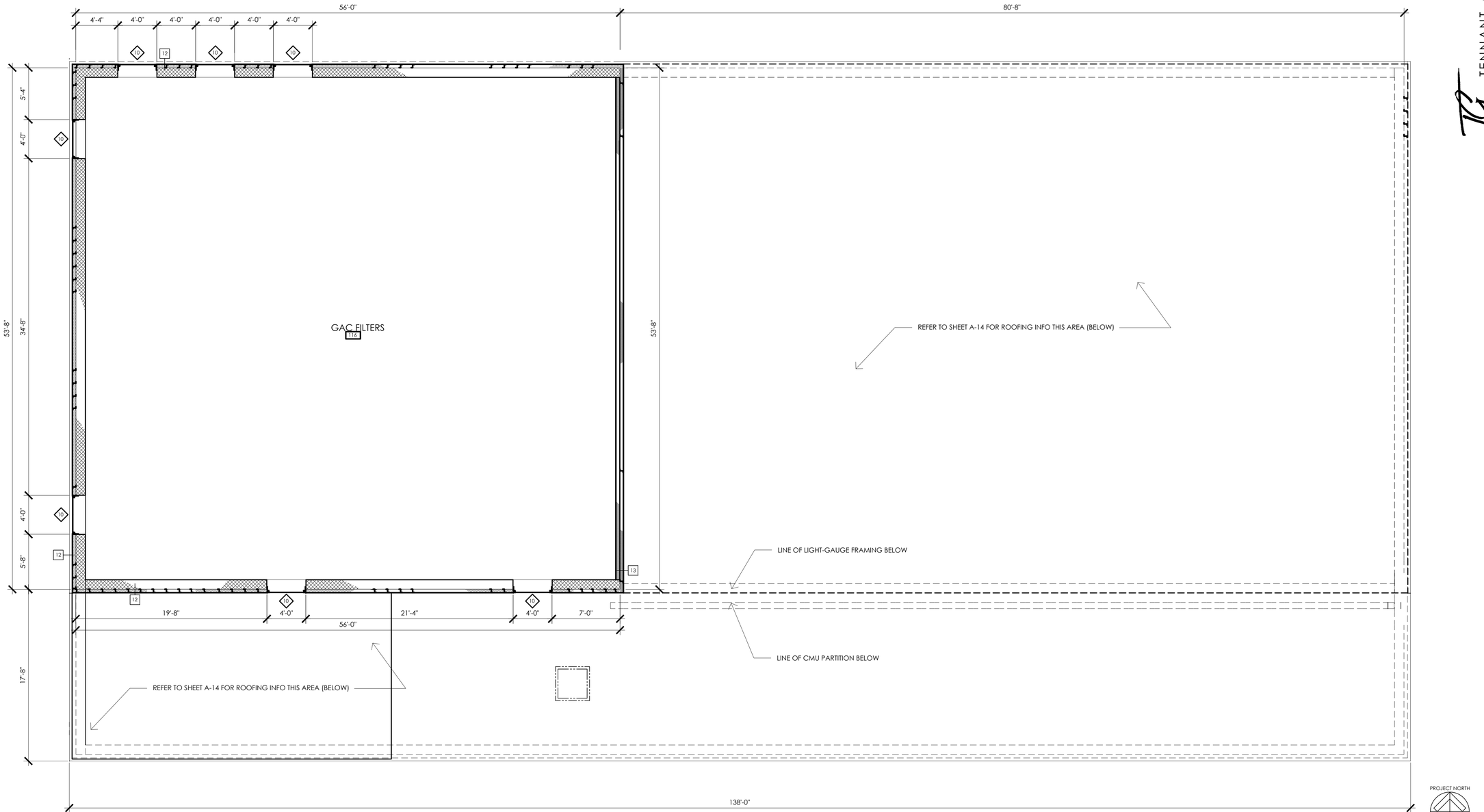

1 UPPER LEVEL - GAC FILTERS PLAN

3/16" = 1'-0"

0 FT 5 10 15 FT

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UPPER LEVEL GAC FILTERS PLAN

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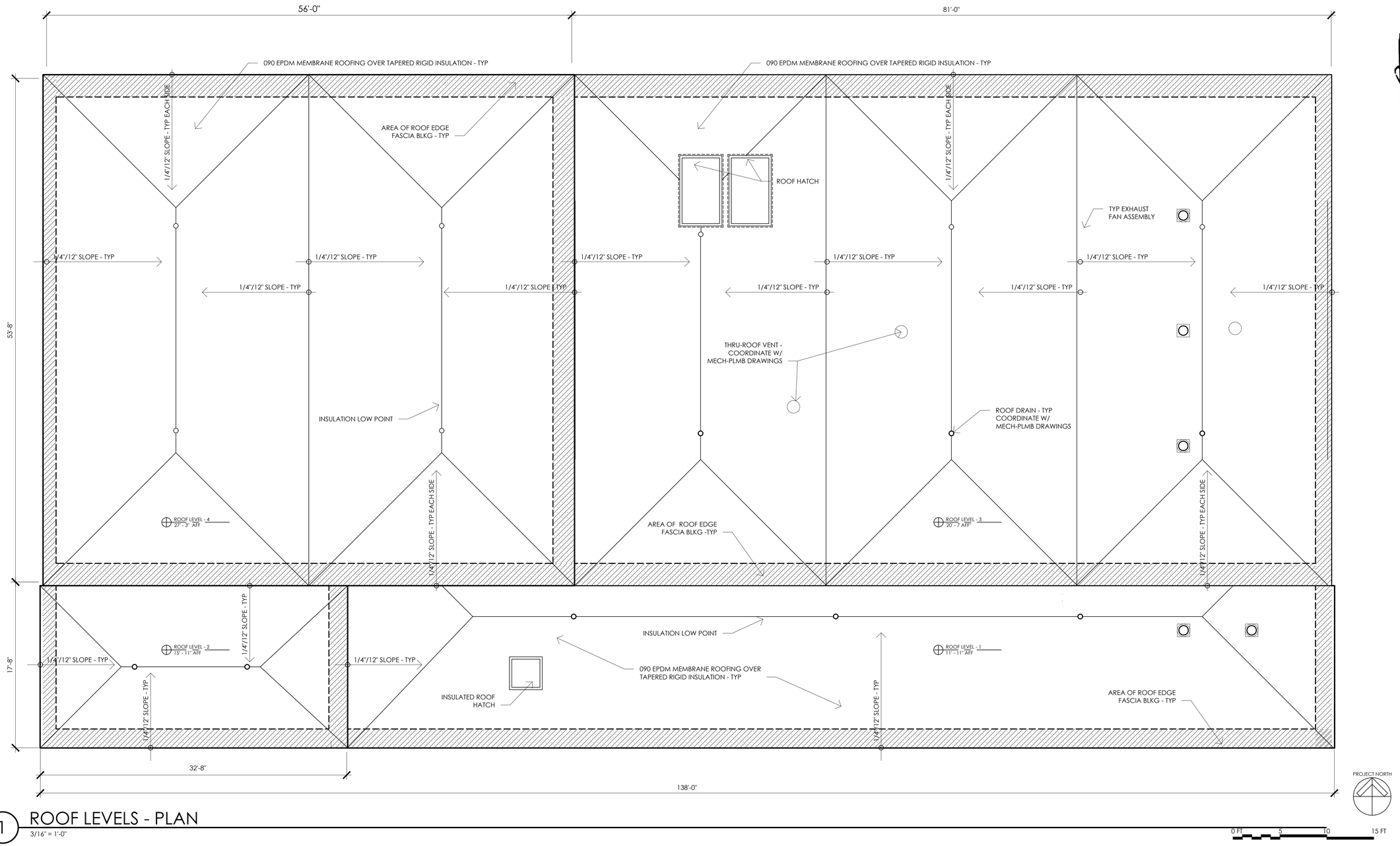

1 ROOF LEVELS - PLAN

3/16" = 1'-0"

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ROOF LEVELS PLAN

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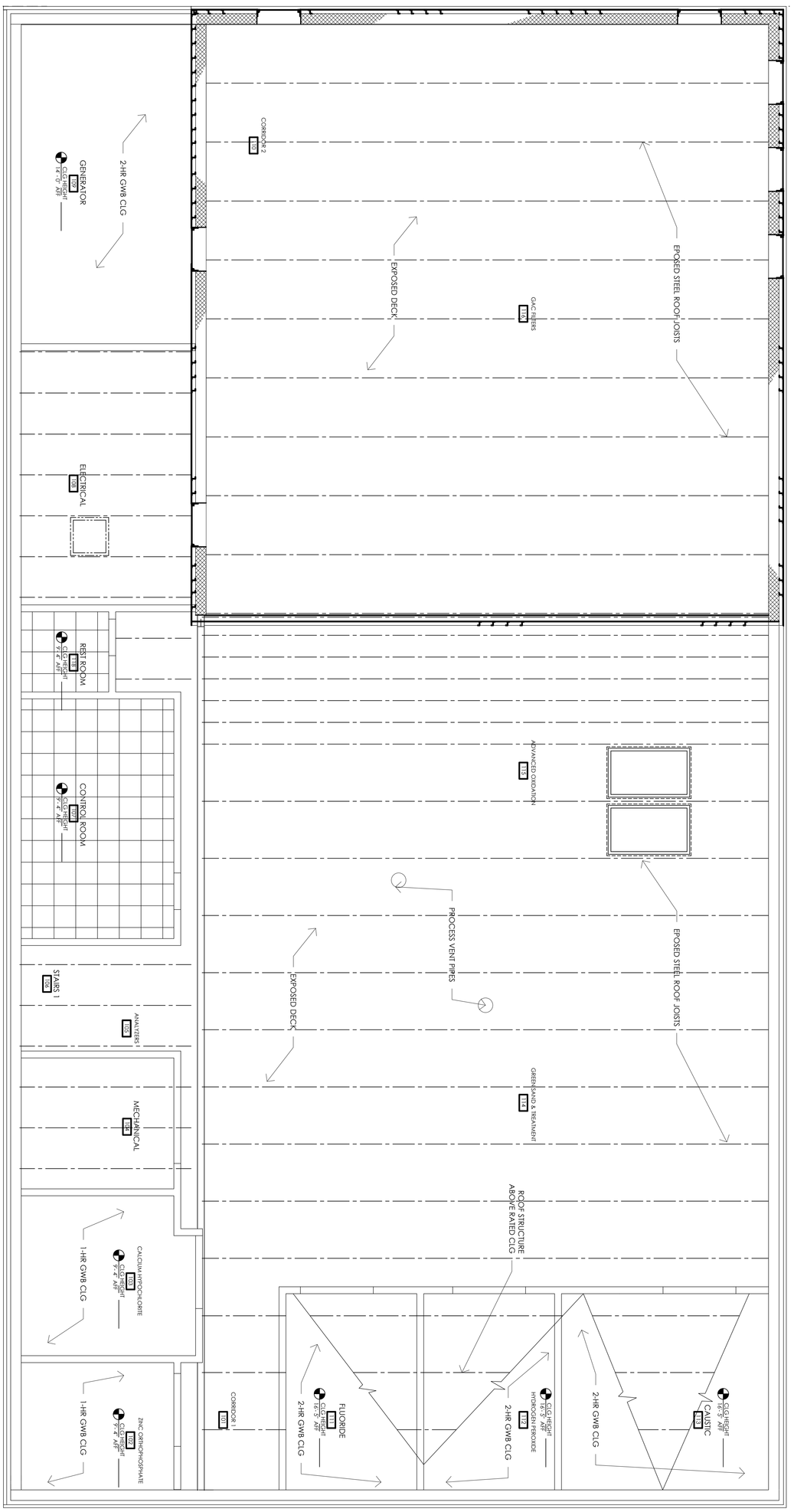
1 REFLECTED LEVELS - PLAN

3/16" = 1'-0"



0 FT 5 10 15 FT

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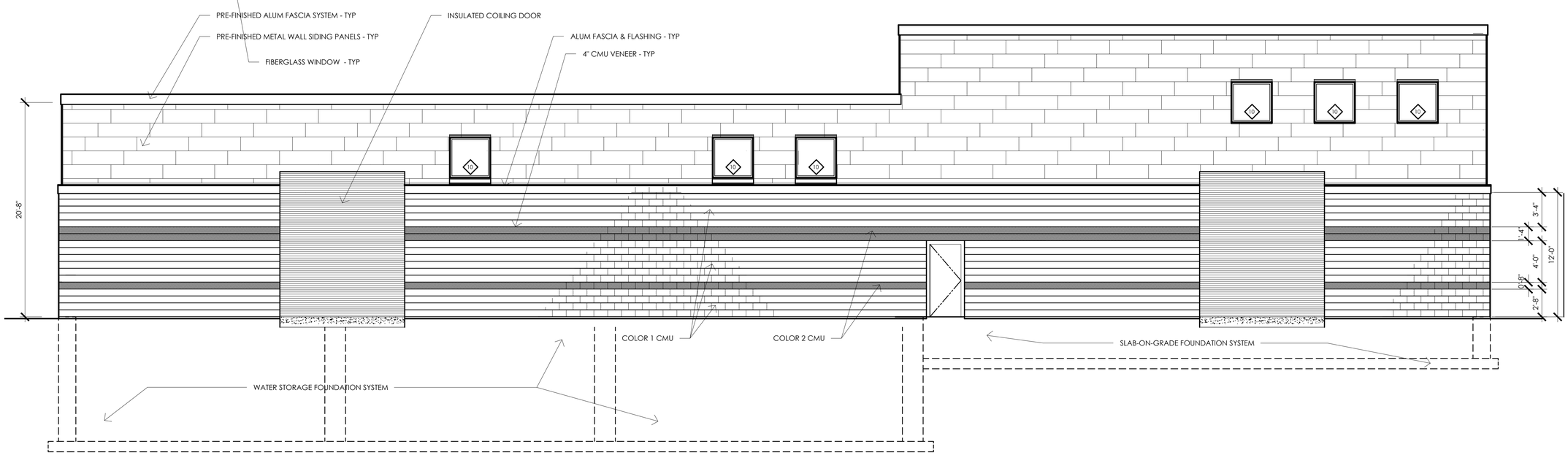

1 NORTH - BUILDING ELEVATION

3/16" = 1'-0"

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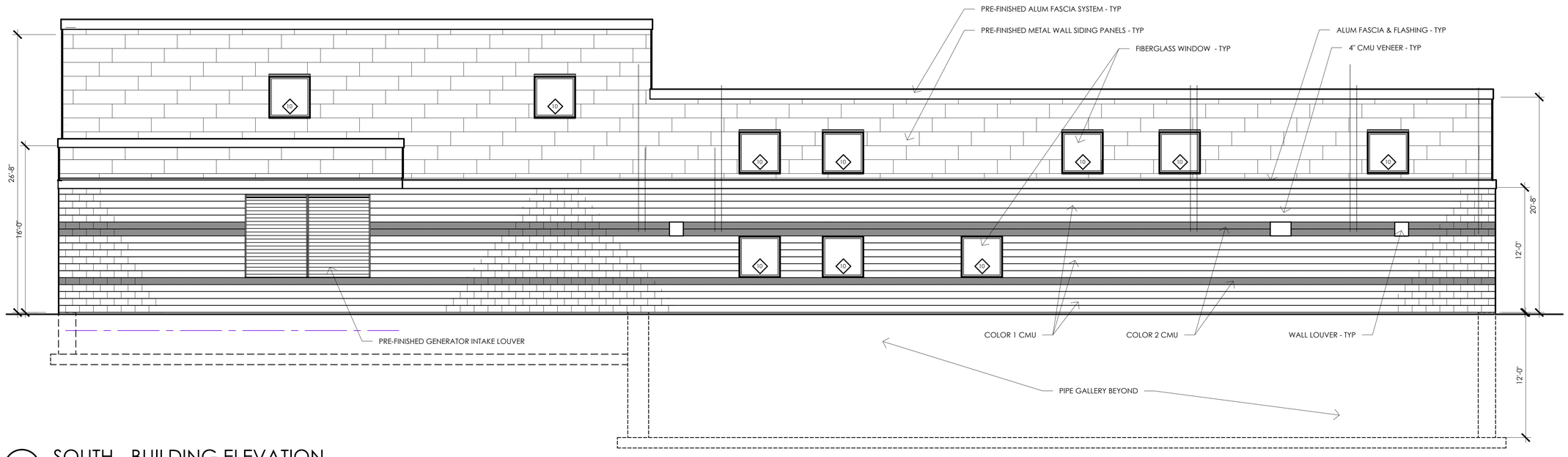

2 SOUTH - BUILDING ELEVATION

3/16" = 1'-0"

0 FT 5 10 15 FT

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BUILDING ELEVATIONS

PUDDING HILL WATER TREATMENT FACILITY
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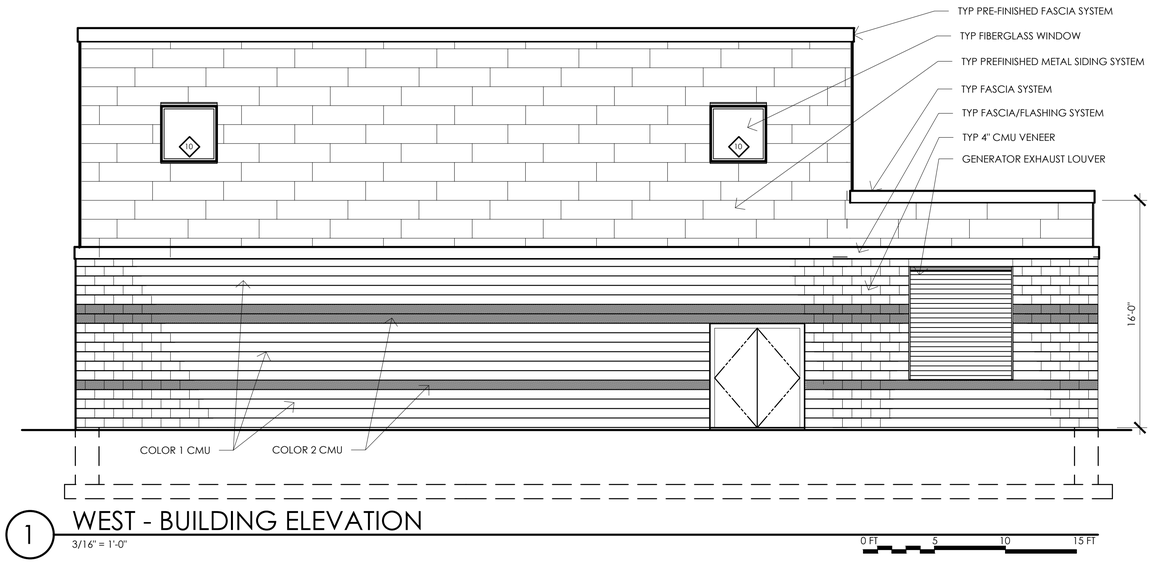

1 WEST - BUILDING ELEVATION

3/16" = 1'-0"

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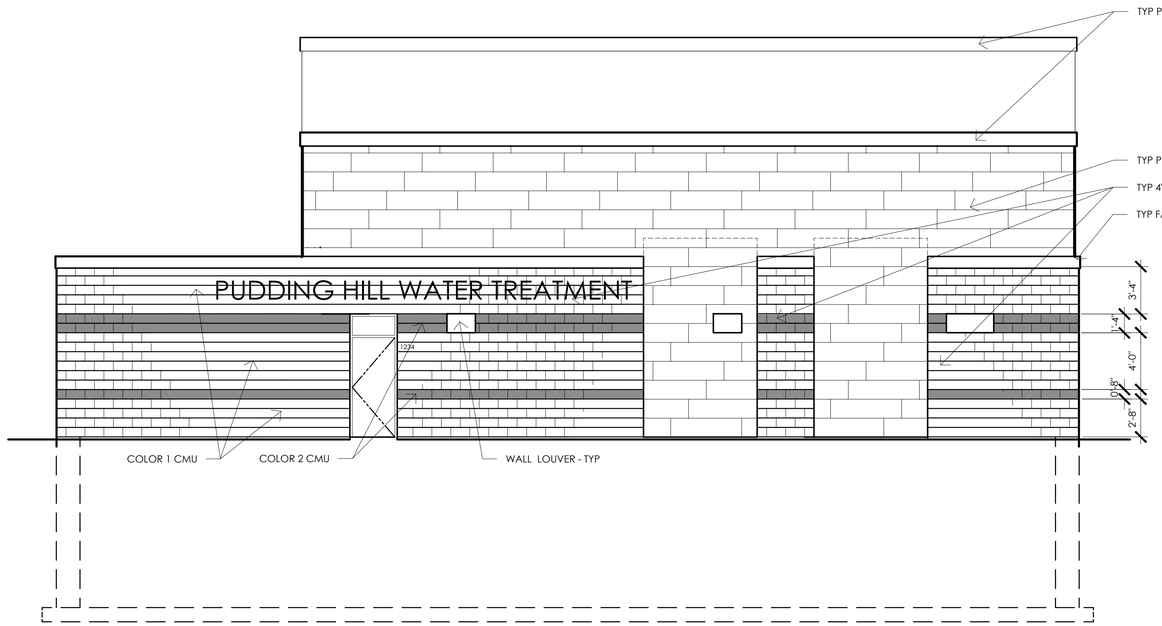

2 EAST - BUILDING ELEVATION MAIN LEVEL

3/16" = 1'-0"

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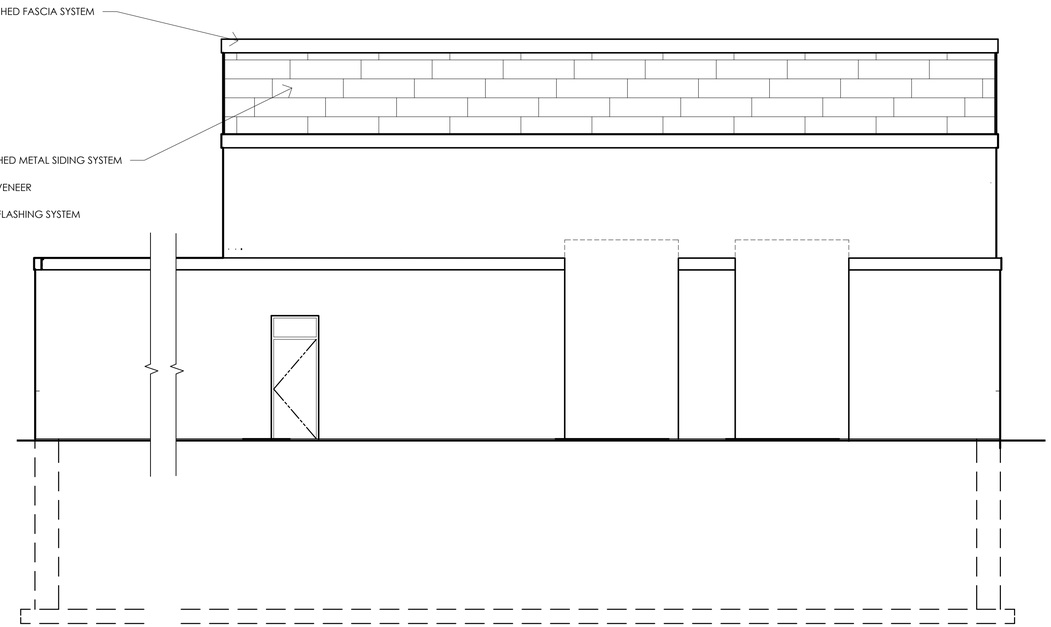

3 EAST - BUILDING ELEVATION UPPER LEVEL

3/16" = 1'-0"

0 FT 5 10 15 FT

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BUILDING ELEVATIONS

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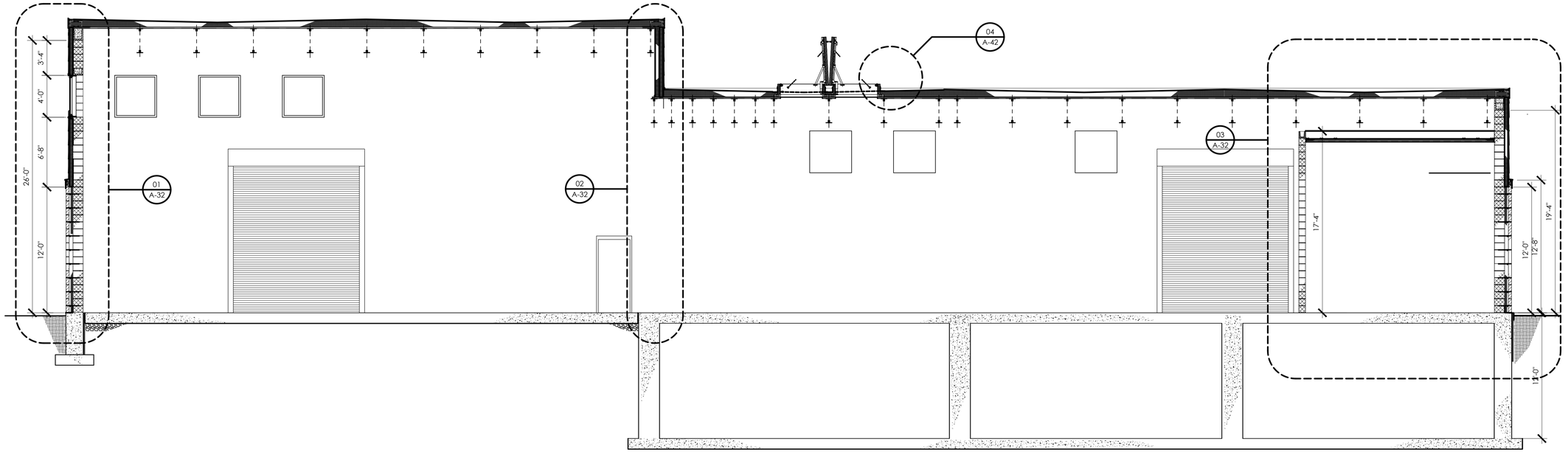
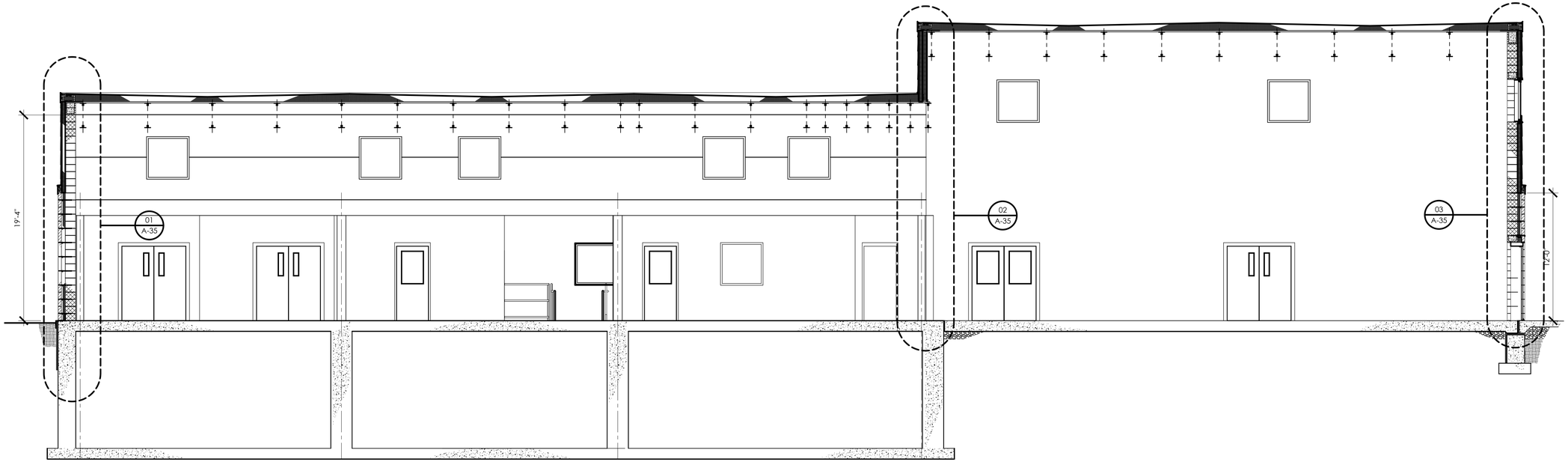


1 BUILDING SECTION

3/16" = 1'-0"

0 FT 5 10 15 FT



2 BUILDING SECTION

3/16" = 1'-0"

0 FT 5 10 15 FT

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Project No.
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LICENSED ARCHITECT GREGORY T. GOUCHER No. 1952 STATE OF NEW HAMPSHIRE

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

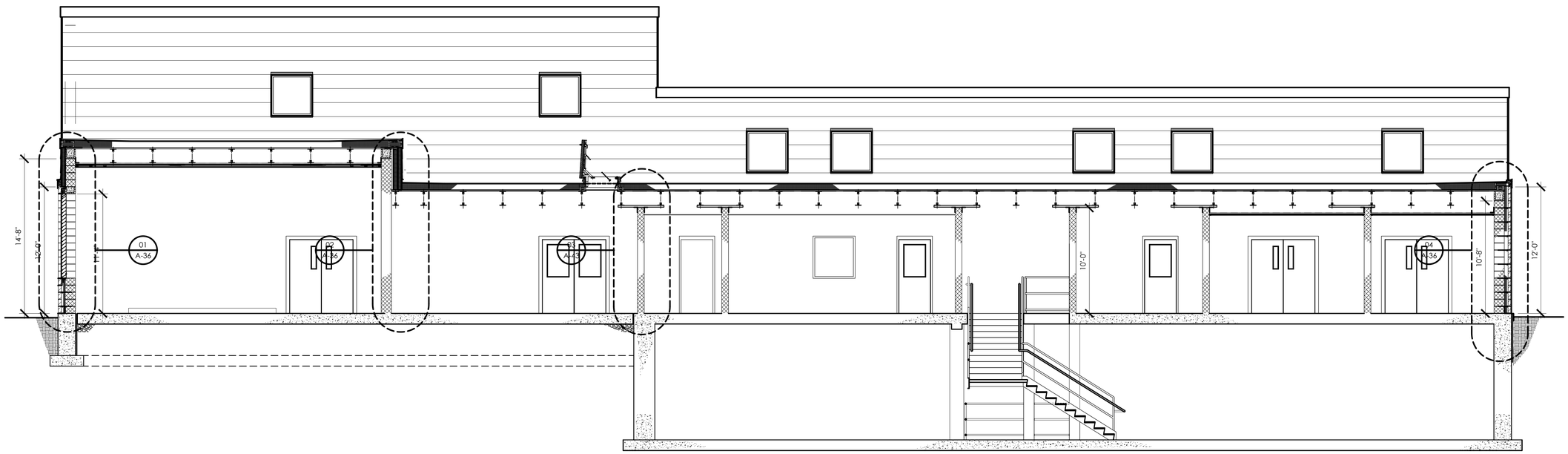
BUILDING SECTIONS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

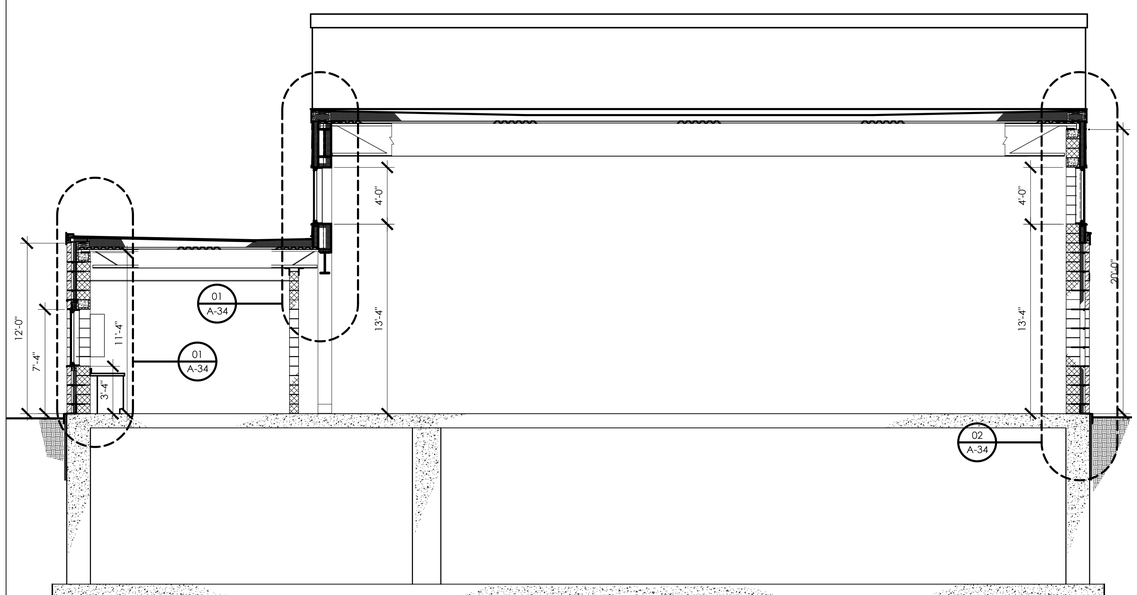
DWG NO A 30

SHEET 30 OF 122



1 BUILDING SECTION

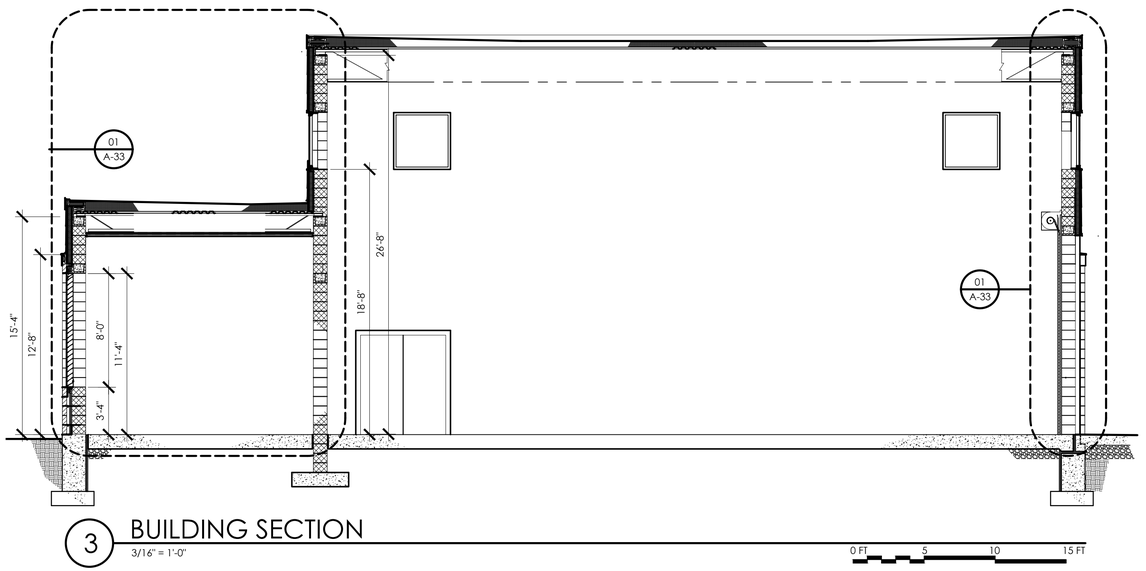
3/16" = 1'-0"



2 BUILDING SECTION

3/16" = 1'-0"

0 FT 5 10 15 FT



3 BUILDING SECTION

3/16" = 1'-0"

0 FT 5 10 15 FT

0 FT 5 10 15 FT

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hennantgoucher@gmail.com 603.669.3855 110 Fremont place Bedford, nh 03110

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LICENSED ARCHITECT GREGORY T. GOUCHER No. 1982 STATE OF NEW HAMPSHIRE

UNDERWOOD engineers
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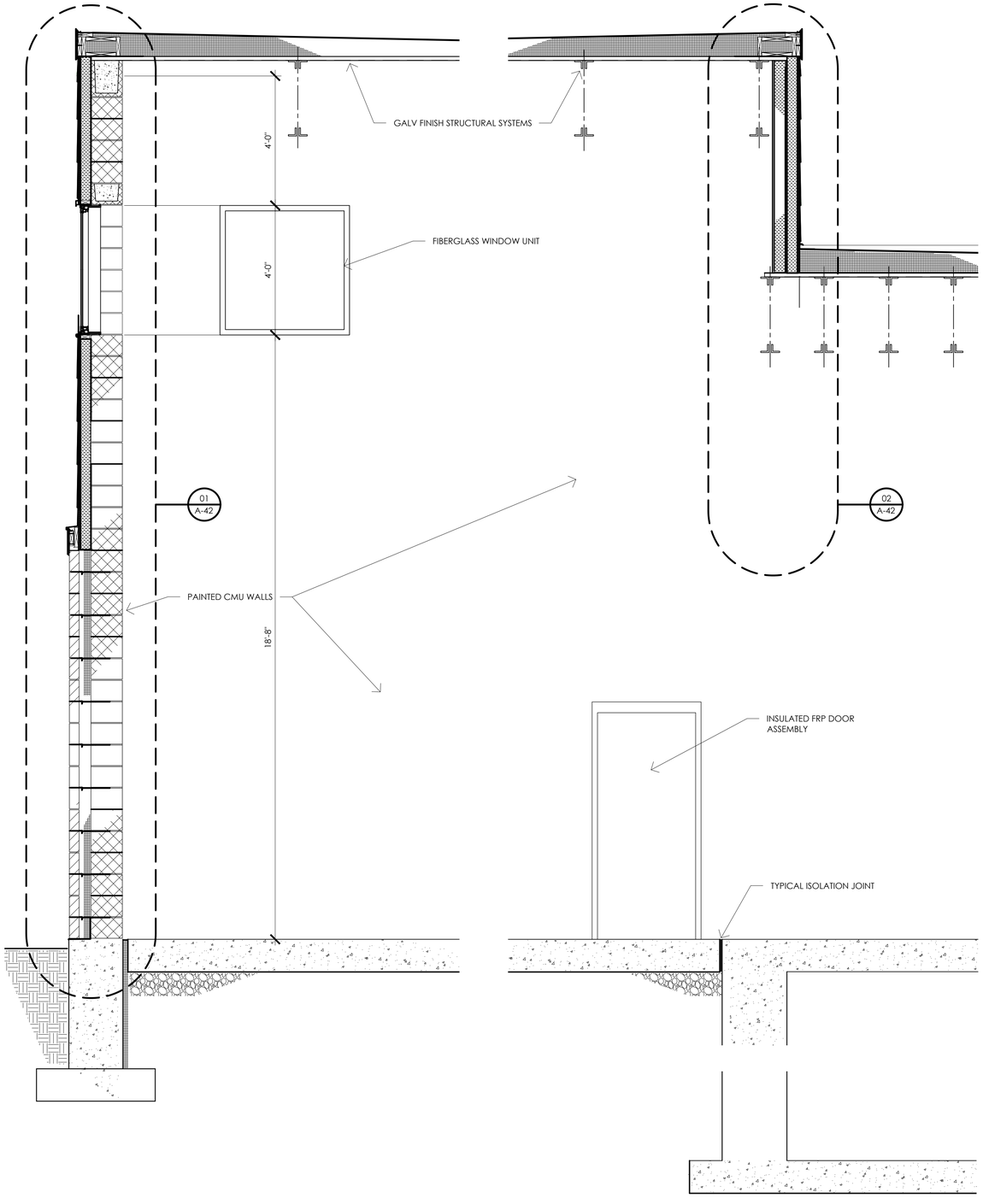
BUILDING SECTIONS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

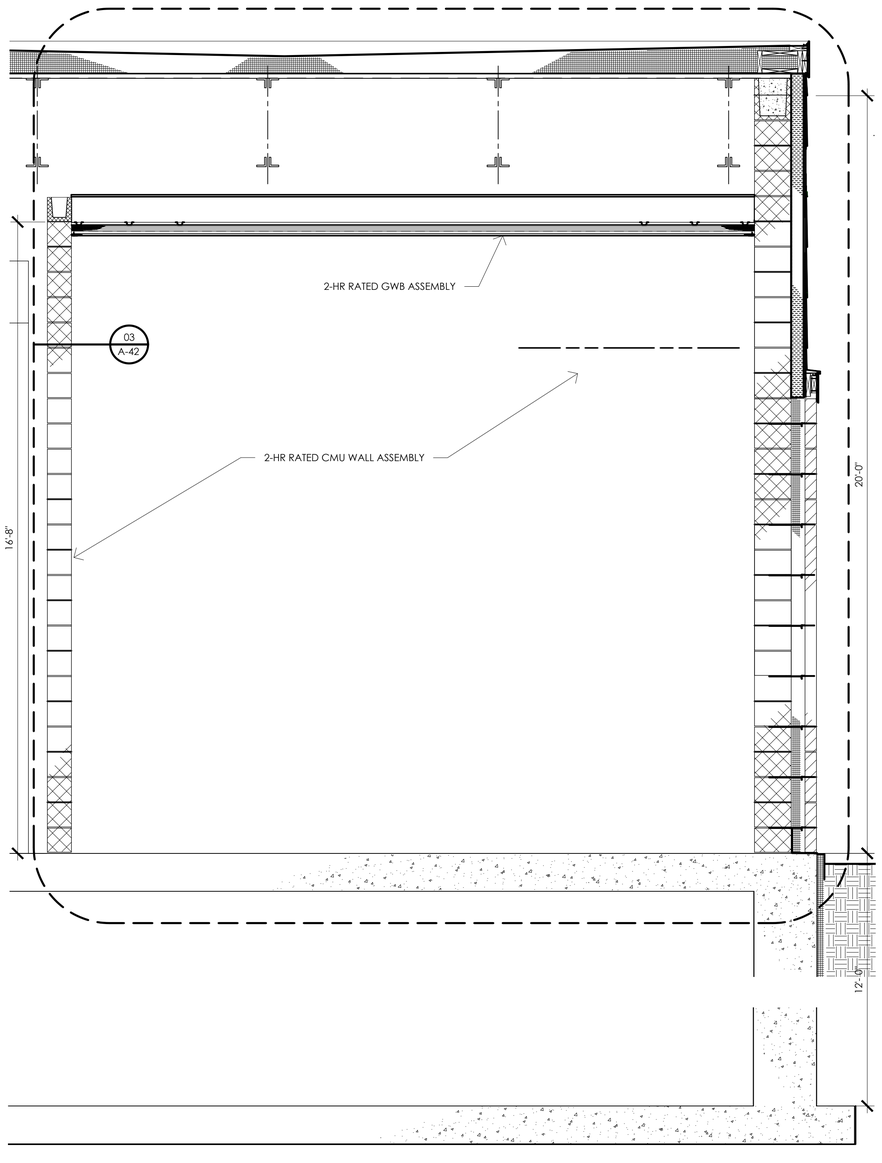
DWG NO A 31

SHEET 31 OF 122



1 SECTION
1/2" = 1'-0"

2 SECTION
1/2" = 1'-0"



3 SECTION
1/2" = 1'-0"

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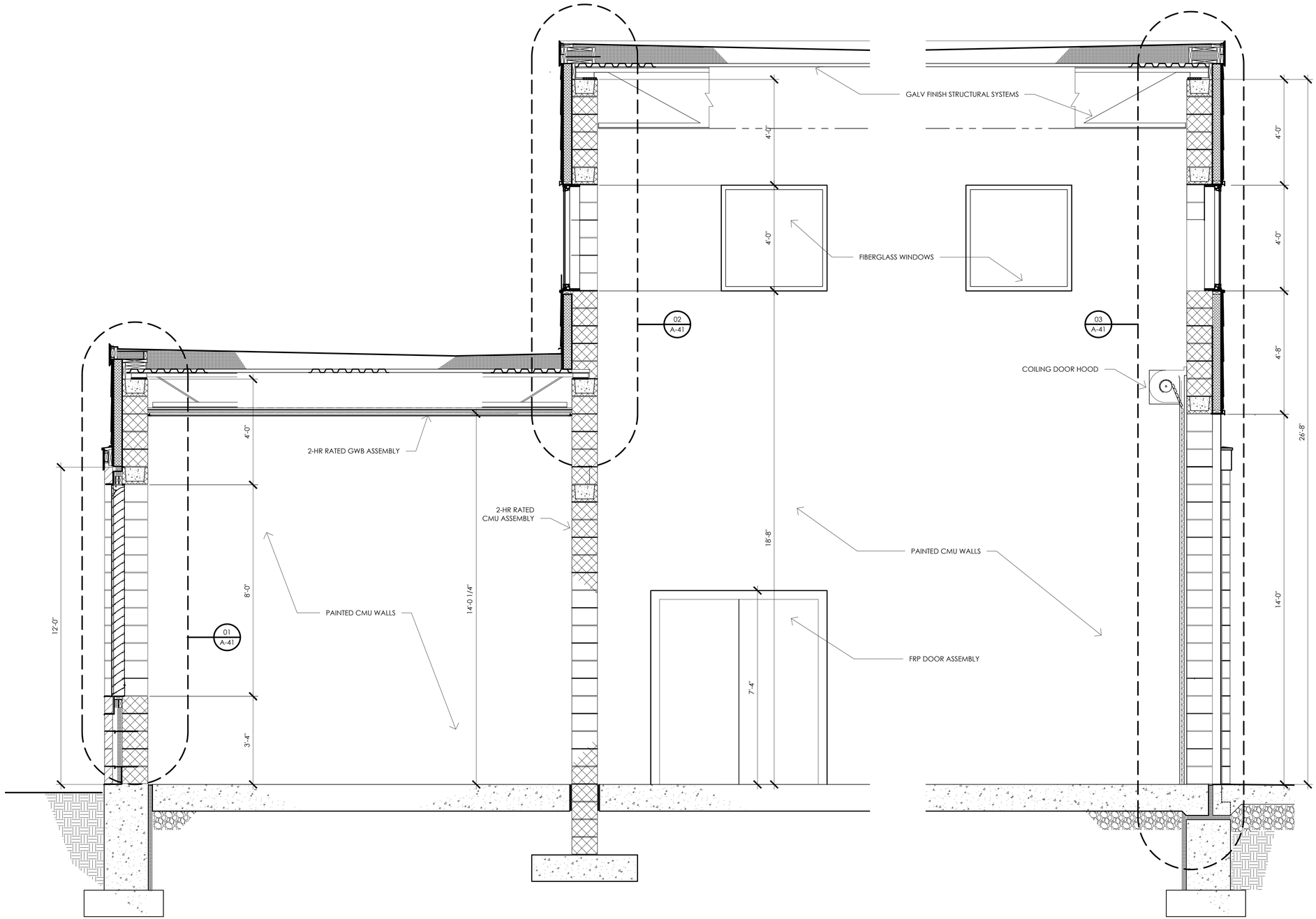
BLDG SECTION: LOWER/MAIN LEVELS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 32
SHEET 32 OF 122



1 SECTION
1/2" = 1'-0"

2 SECTION
1/2" = 1'-0"

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hencen@gouchertw@gmail.com 603.669.3855 110 Fremency place Bedford, nh 03110

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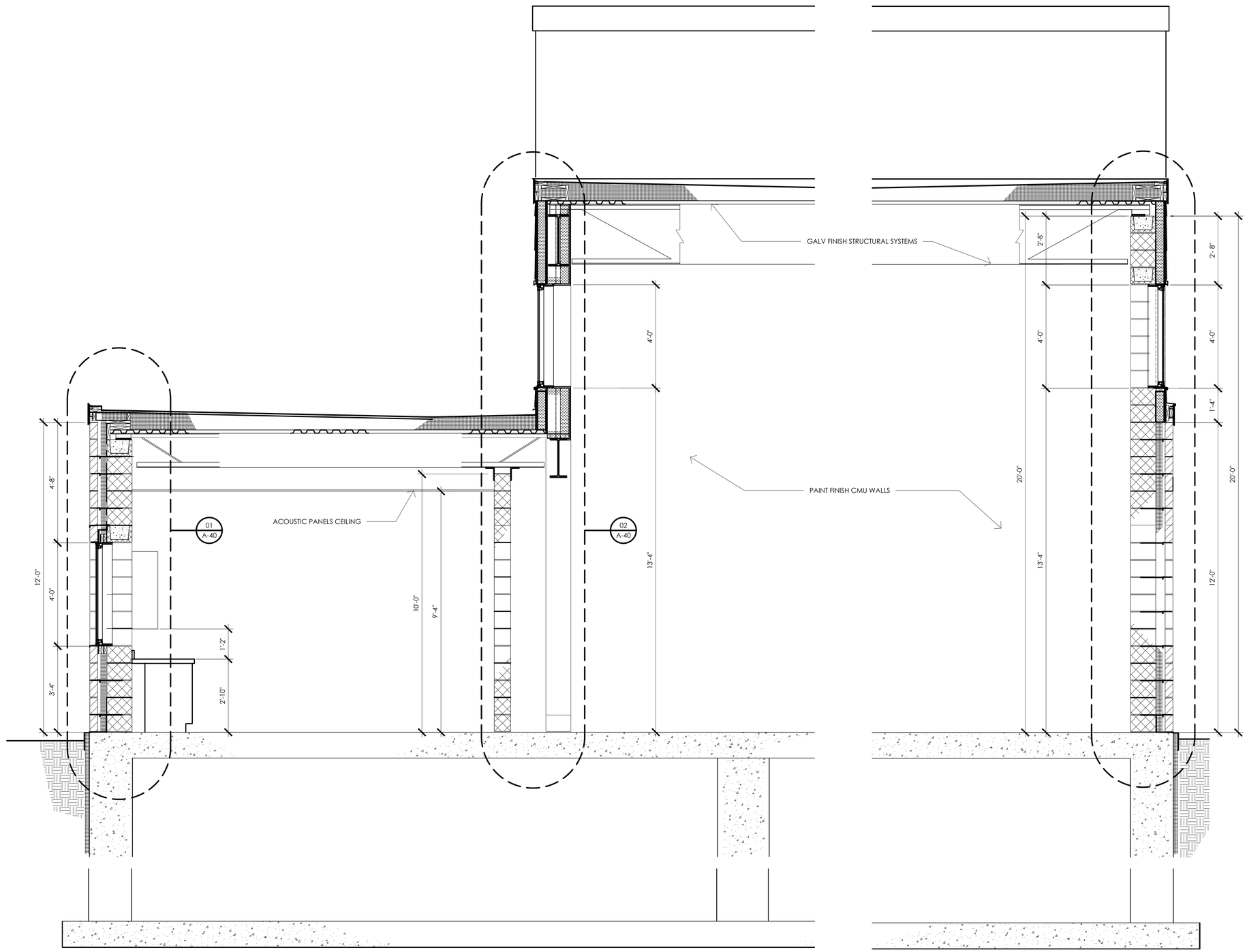
BLDG SECTION: MAIN LEVEL

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 33

SHEET 33 OF 122



1 BUILDING SECTION - LOWER & MAIN LEVELS

1/2" = 1'-0"

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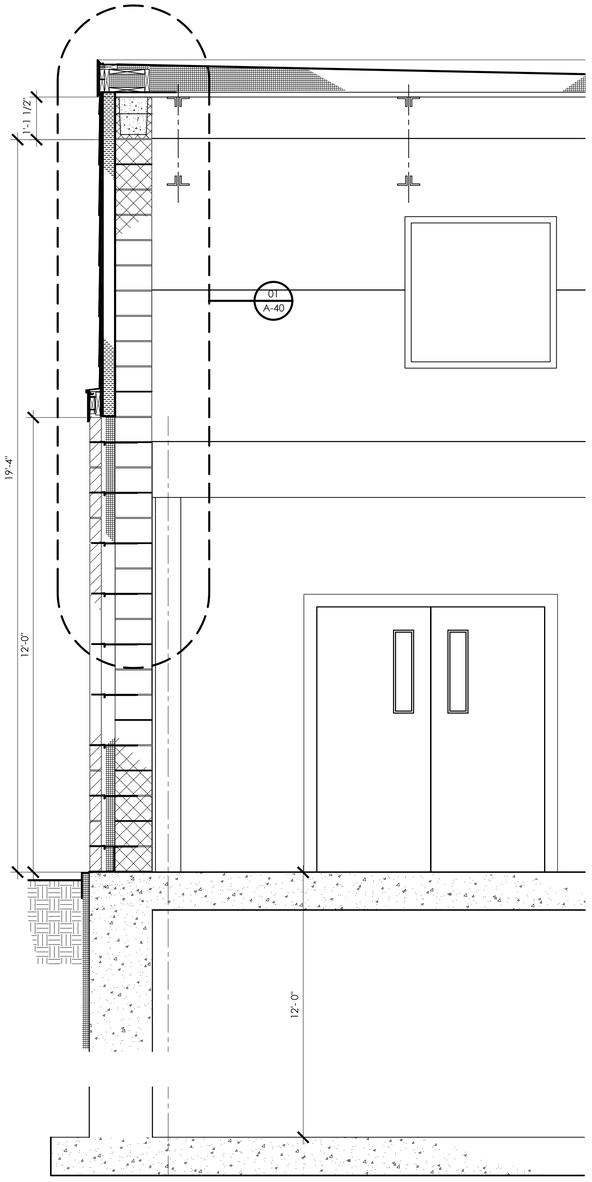
BLDG SECTIONS: LOWER/MAIN LEVELS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

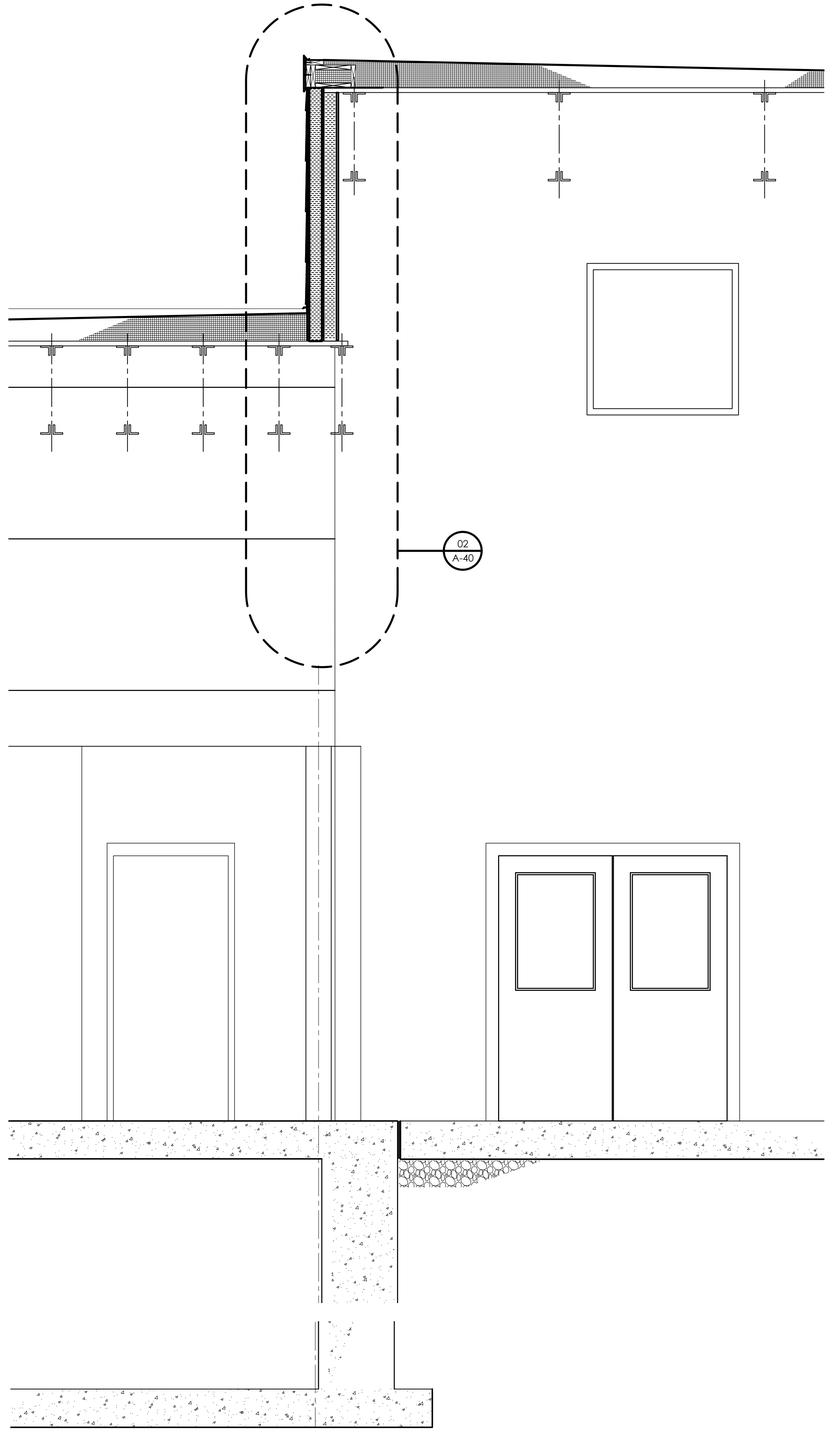
CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 34

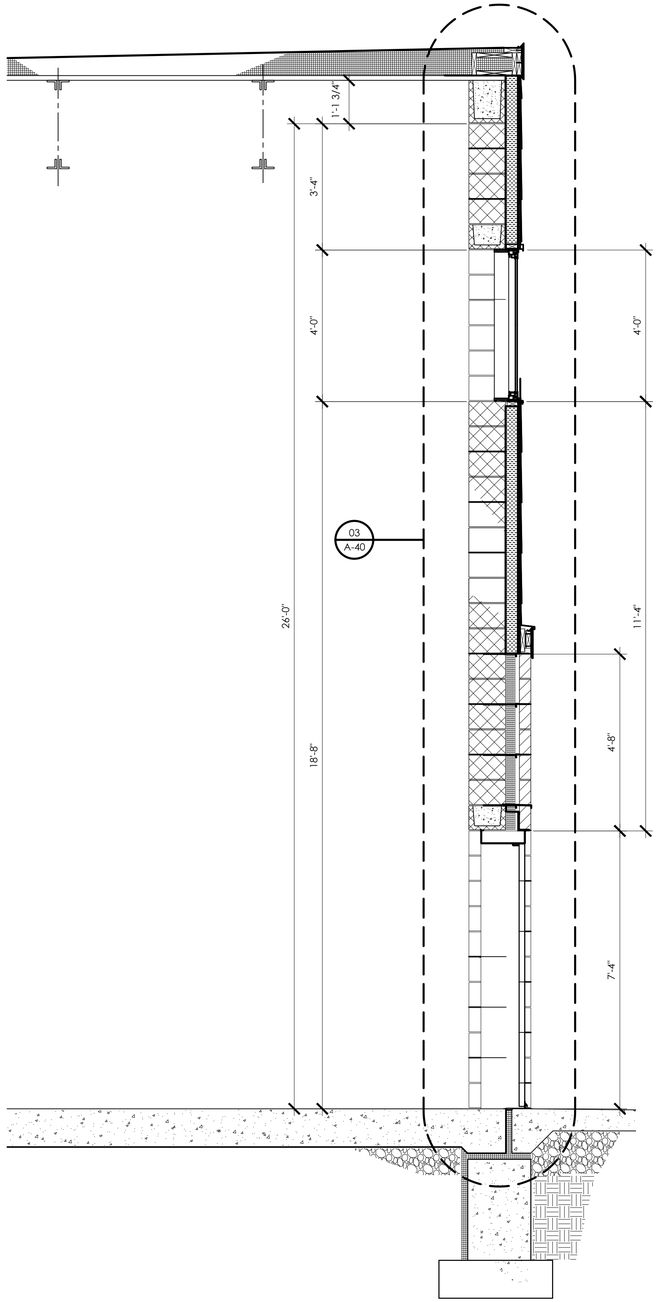
SHEET 34 OF 122



1 SECTION
1/2" = 1'-0"



2 SECTION
1/2" = 1'-0"



3 SECTION
1/2" = 1'-0"

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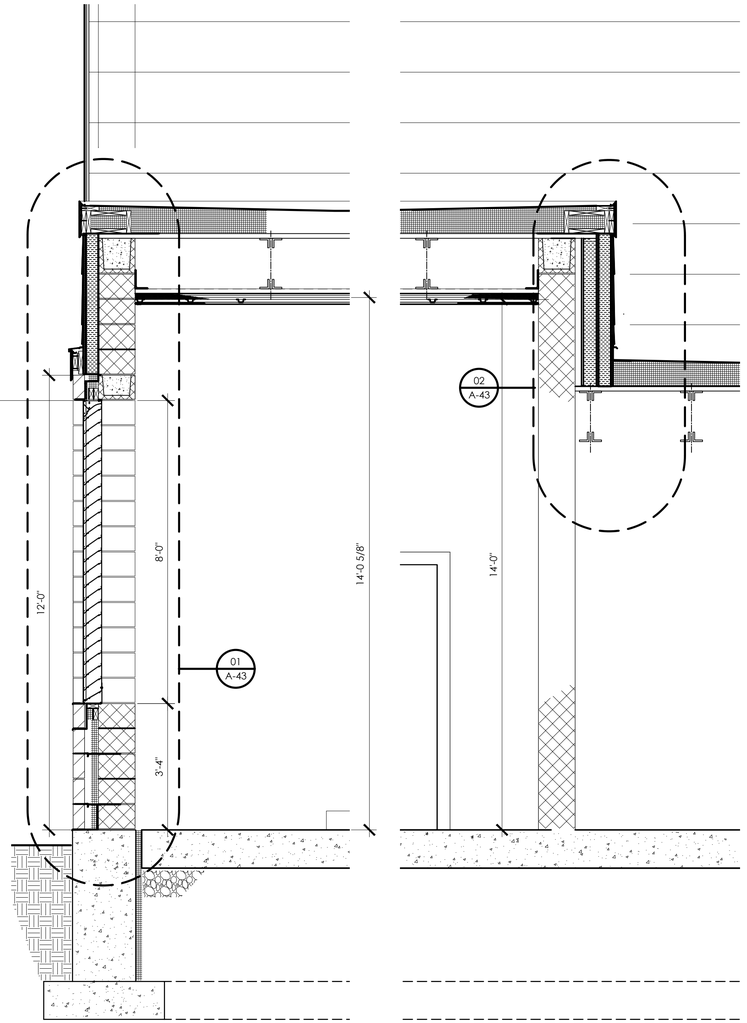
BLDG SECTION: LOWER/MAIN LEVELS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

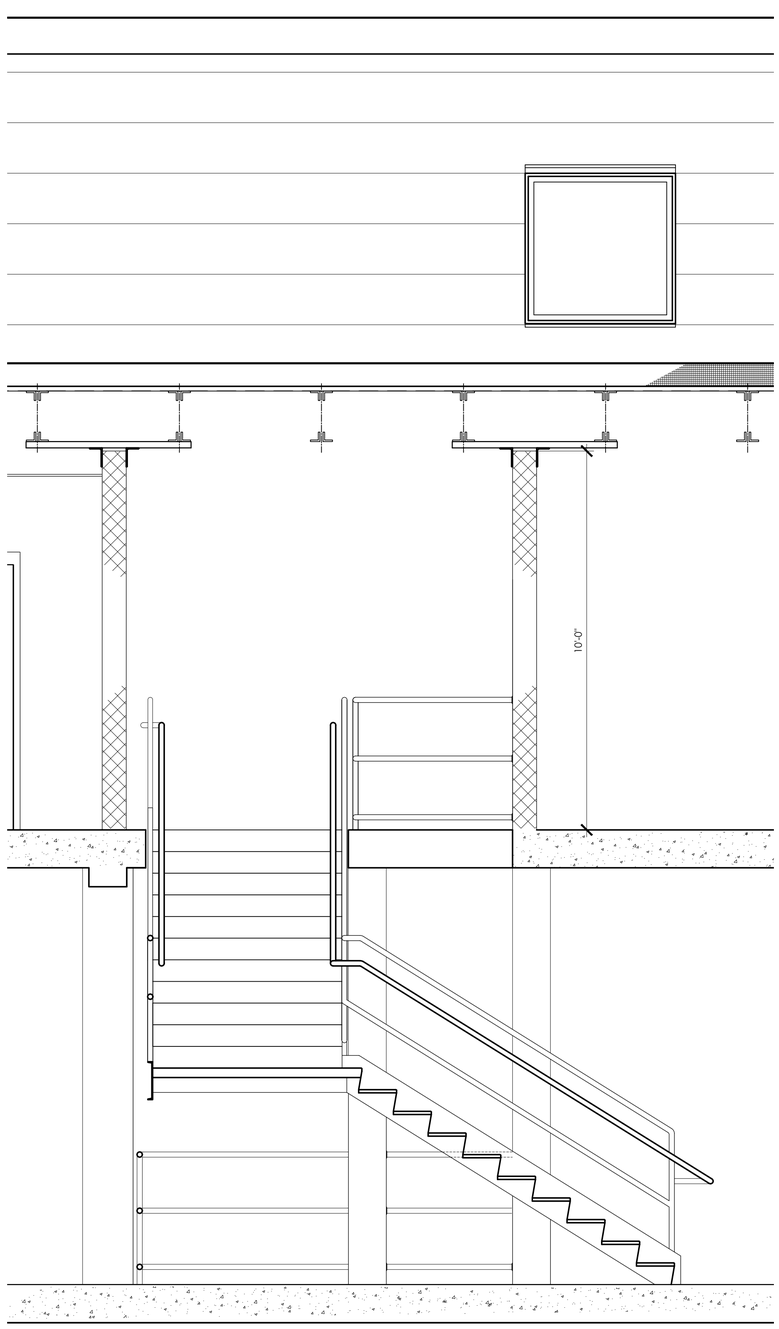
DWG NO A 35

SHEET 35 OF 122

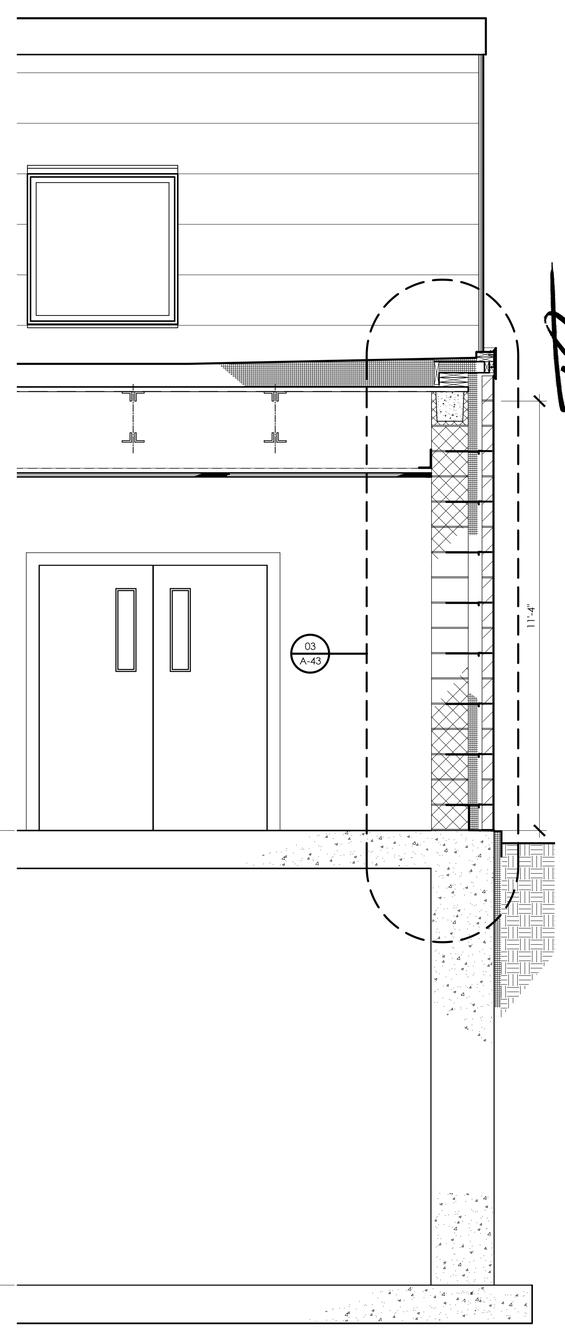


1 SECTION
1/2" = 1'-0"

2 SECTION
1/2" = 1'-0"



3 SECTION
1/2" = 1'-0"



4 SECTION
1/2" = 1'-0"

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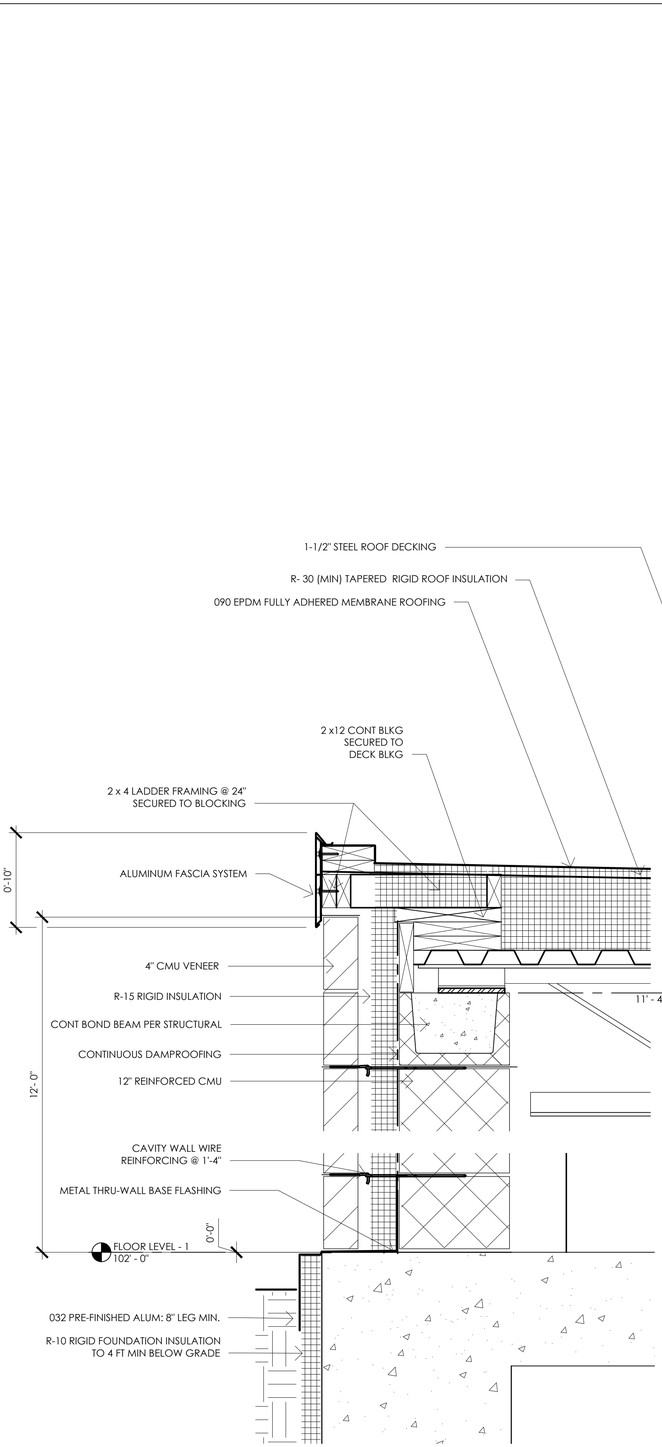
SECTION: LOWER & MAIN LEVELS

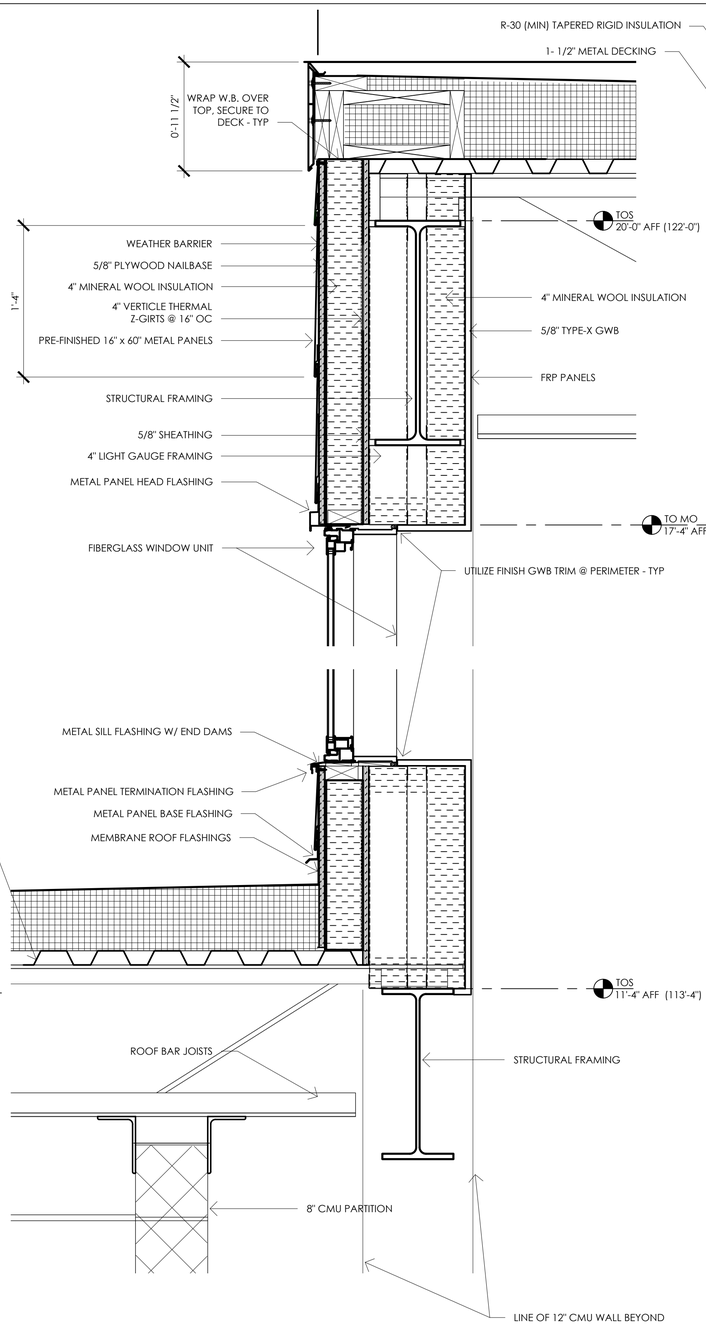
PUDDING HILL WATER TREATMENT FACILITY
(FILE NO.P21-31)

CITY OF DOVER, NEW HAMPSHIRE

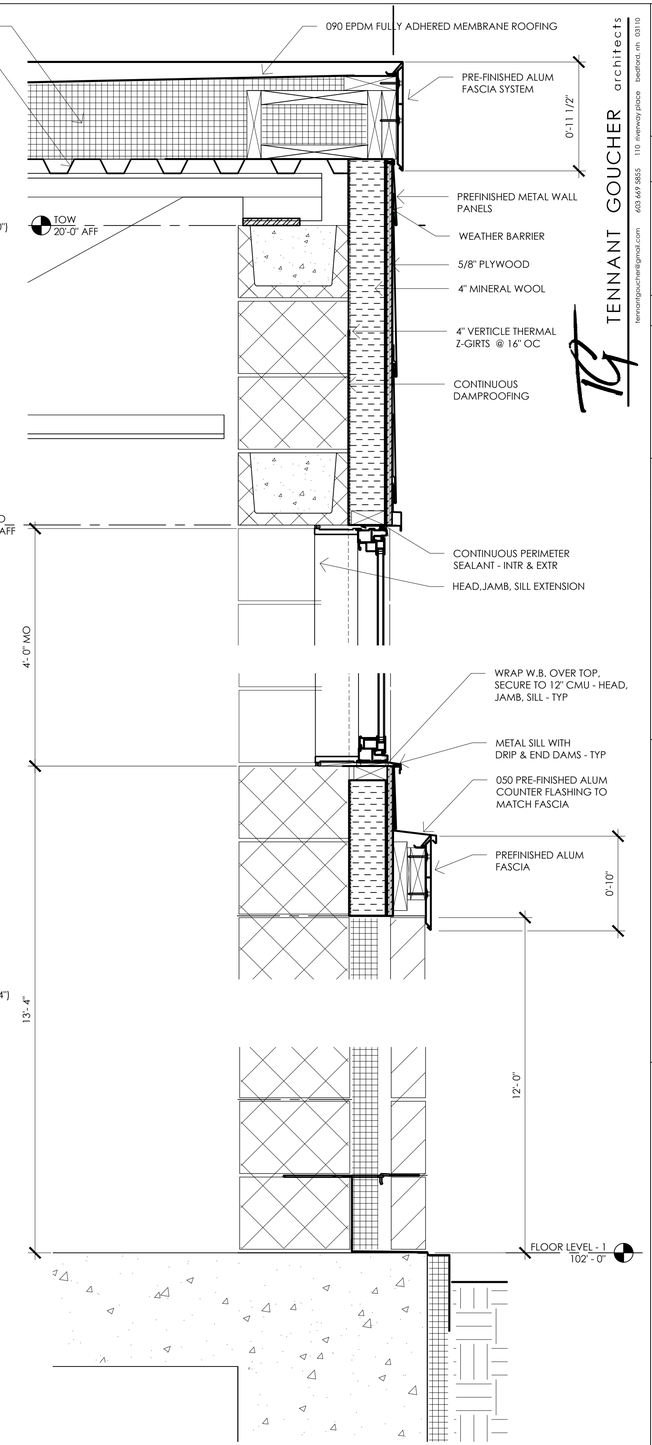
DWG NO A 36
SHEET 36 OF 122



1 SECTION DETAIL
1- 1/2" = 1'-0"



2 SECTION DETAIL
1- 1/2" = 1'-0"



3 SECTION DETAIL
1- 1/2" = 1'-0"

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LICENSED PROFESSIONAL ENGINEER GREGORY S. GOUCHER No. 13932 STATE OF NEW HAMPSHIRE

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SECTION DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 40
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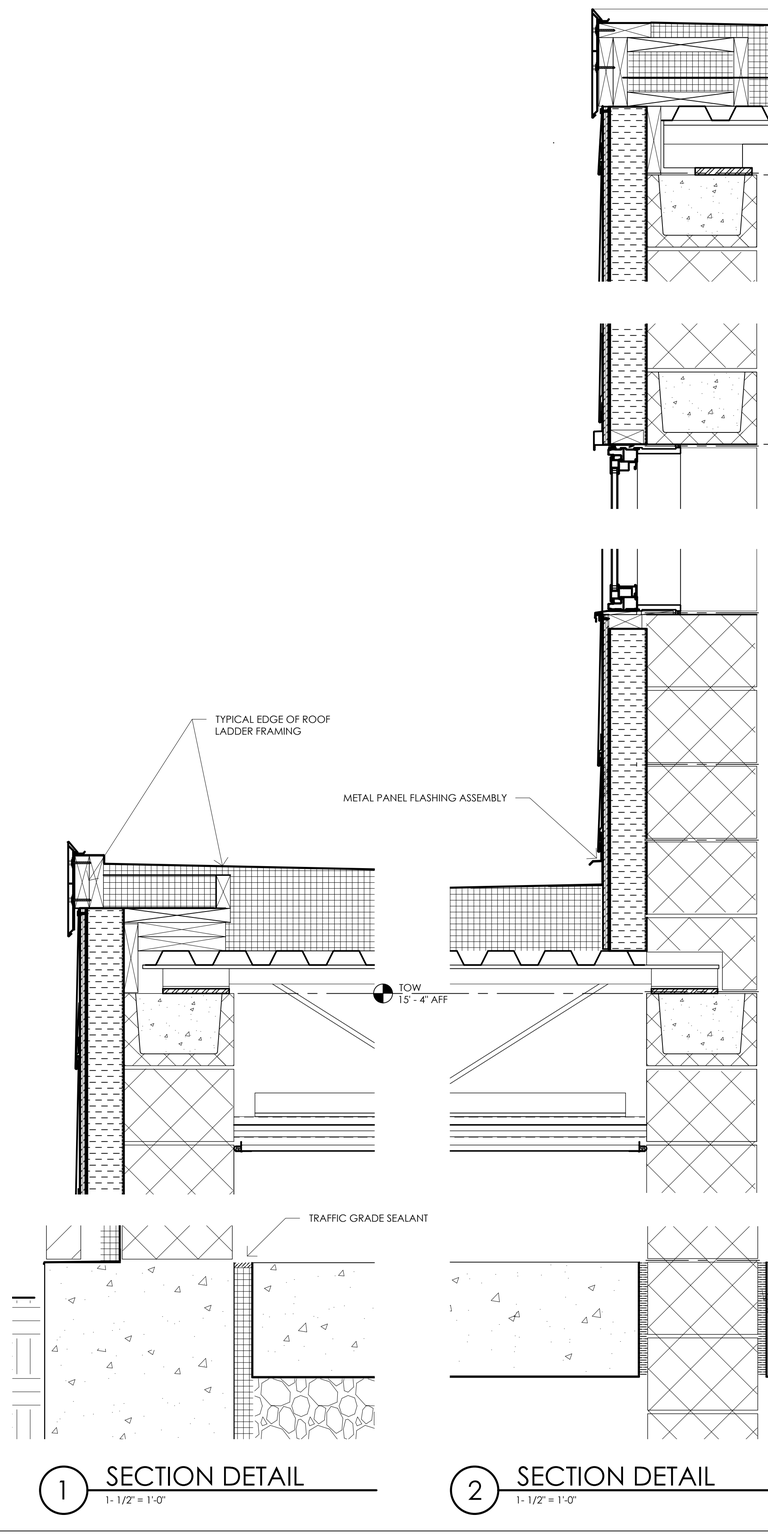
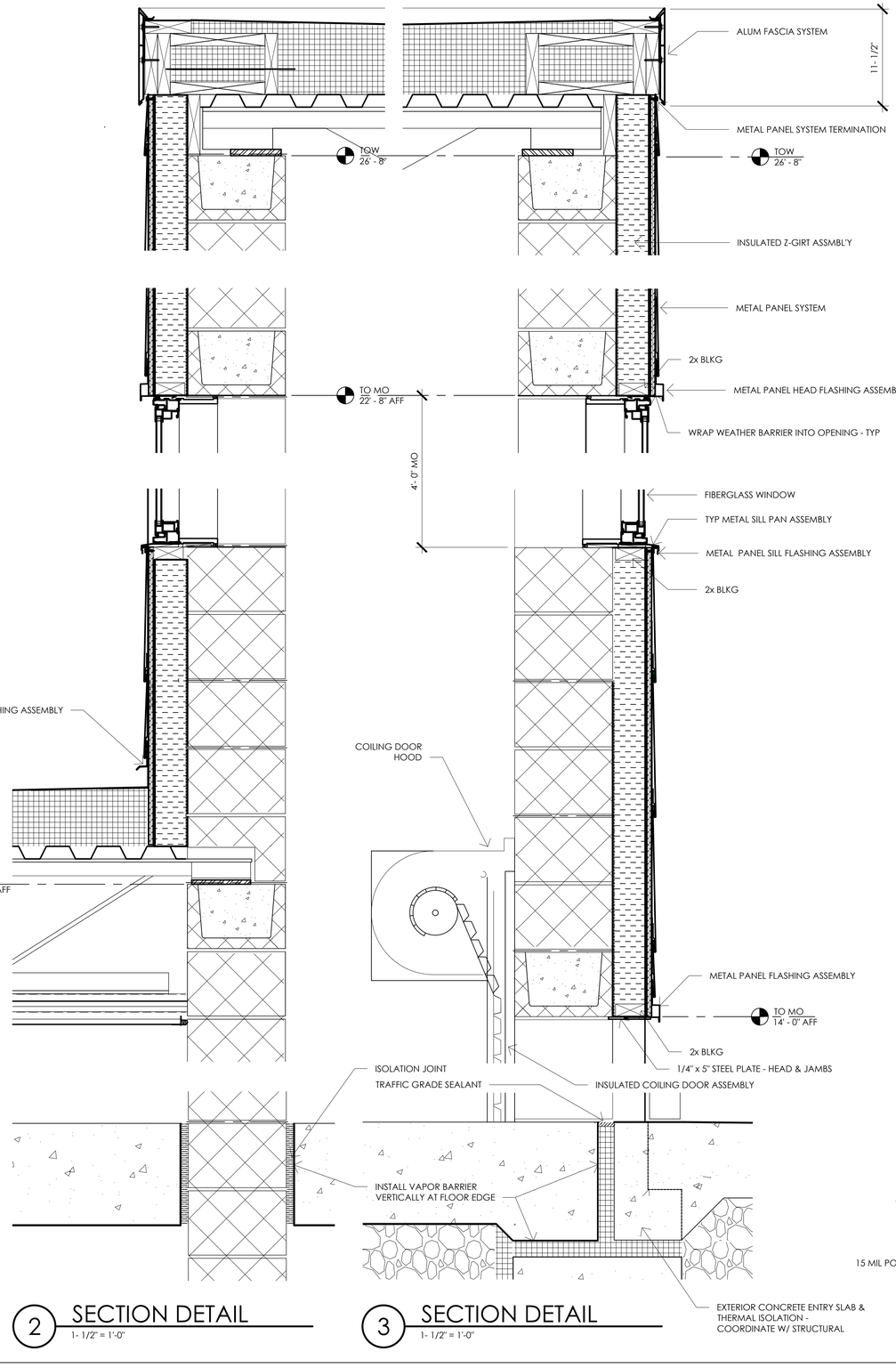
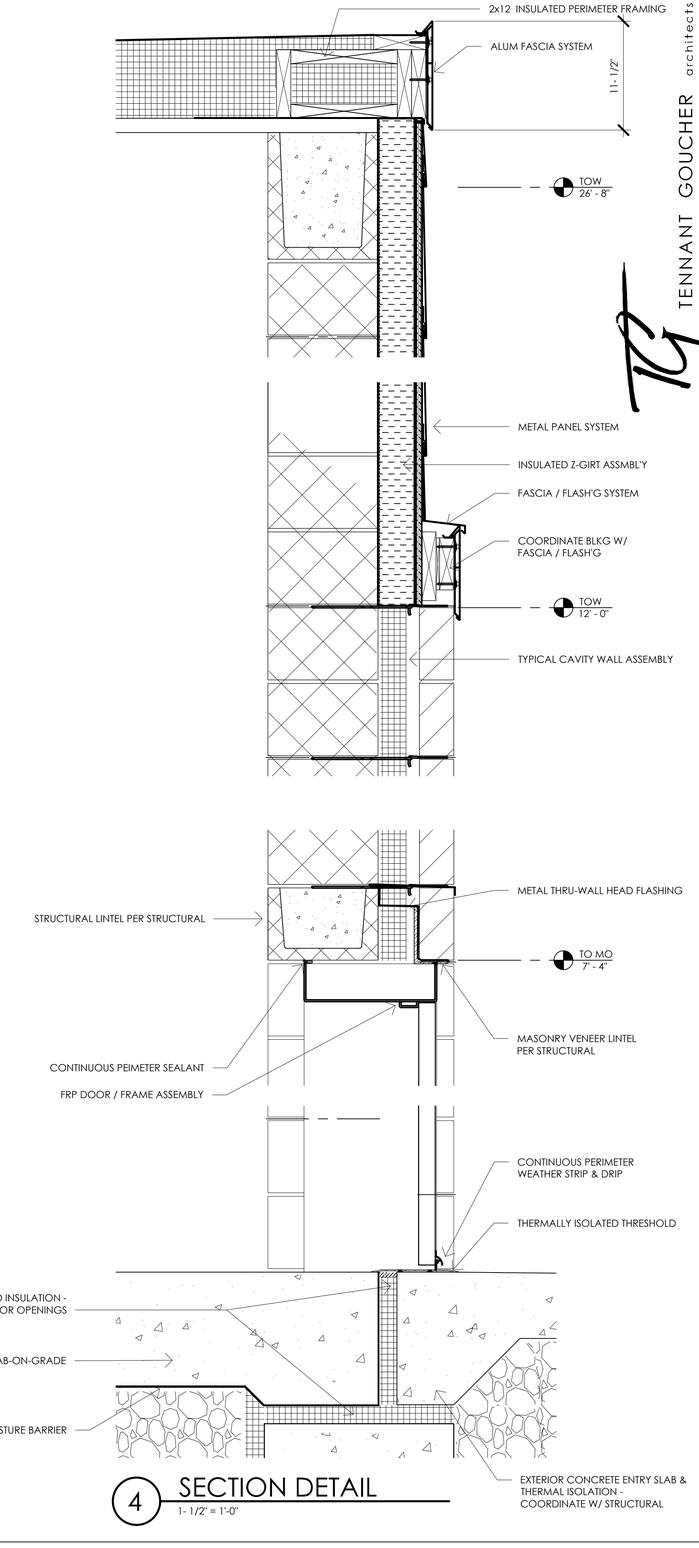


1 SECTION DETAIL
1- 1/2" = 1'-0"



2 SECTION DETAIL
1- 1/2" = 1'-0"

3 SECTION DETAIL
1- 1/2" = 1'-0"



4 SECTION DETAIL
1- 1/2" = 1'-0"

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SECTION DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 41
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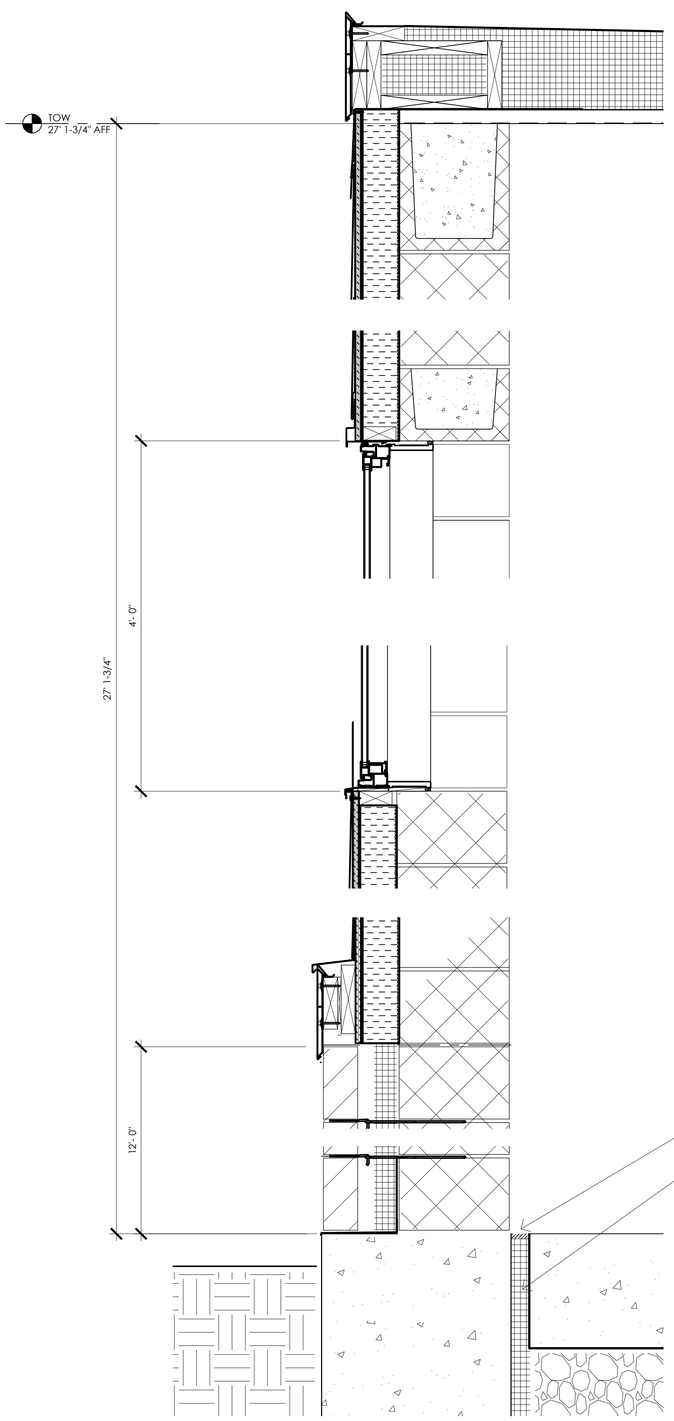
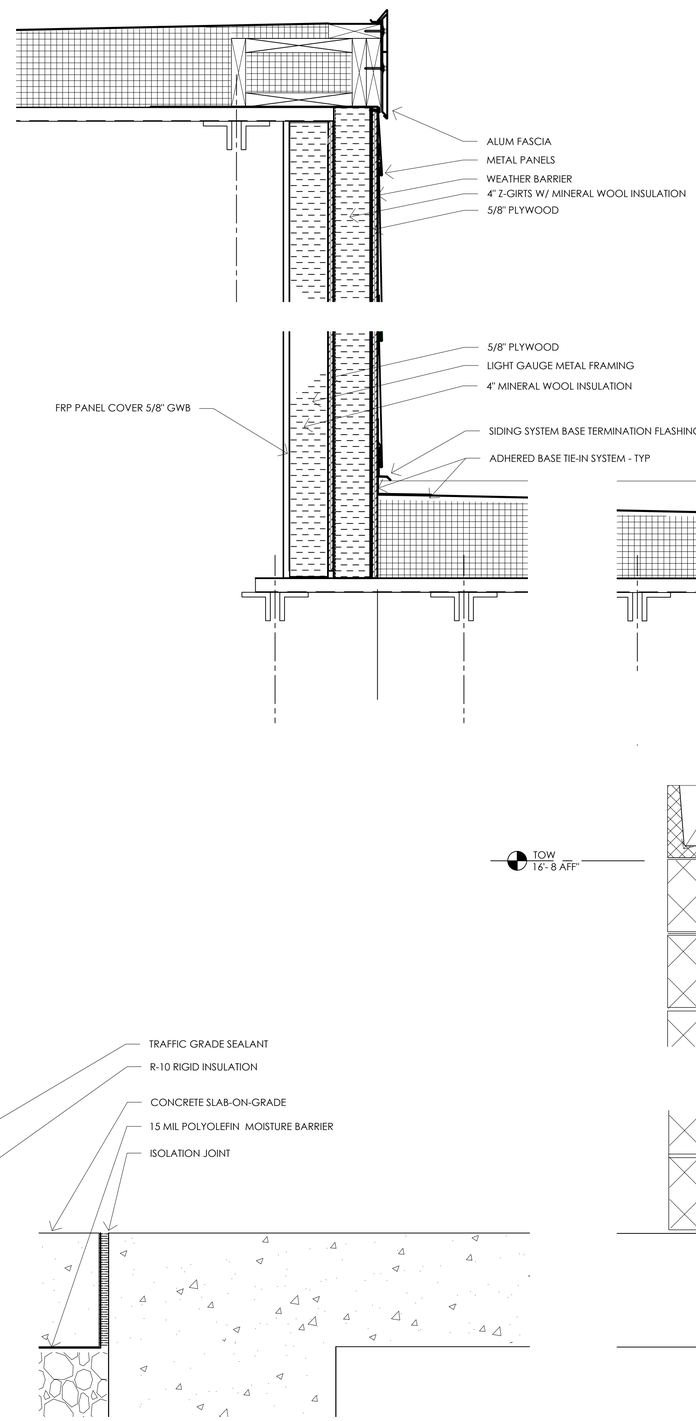
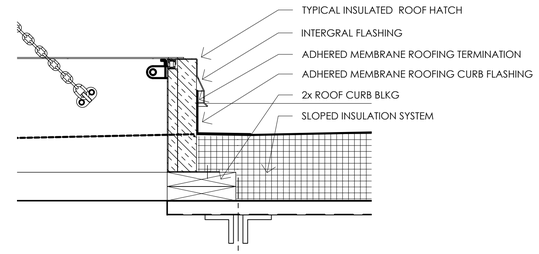


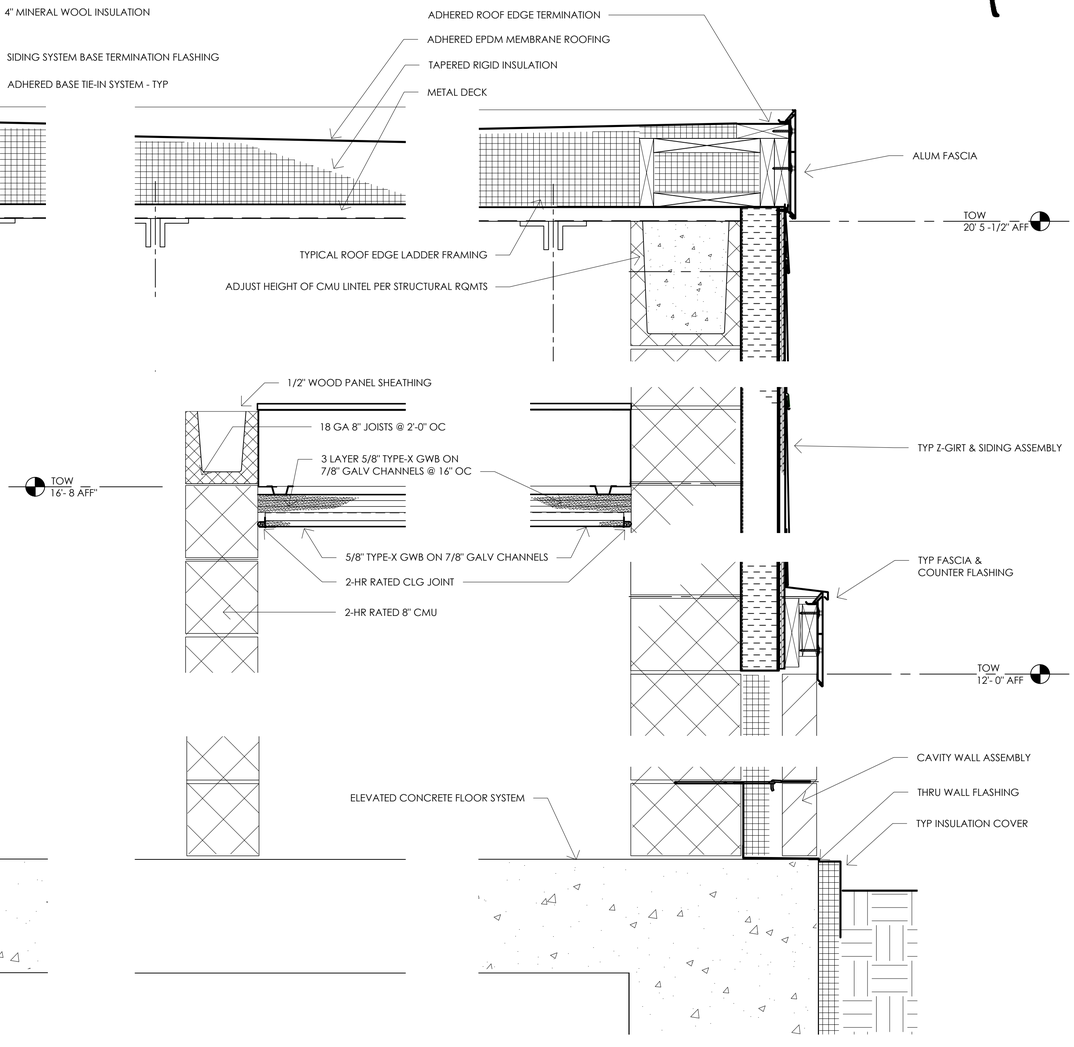
1 SECTION DETAIL
1- 1/2" = 1'-0"



2 SECTION DETAIL
1- 1/2" = 1'-0"



4 SECTION DETAIL - ROOF HATCH
1- 1/2" = 1'-0"



3 SECTION DETAIL
1- 1/2" = 1'-0"

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SECTION DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 42

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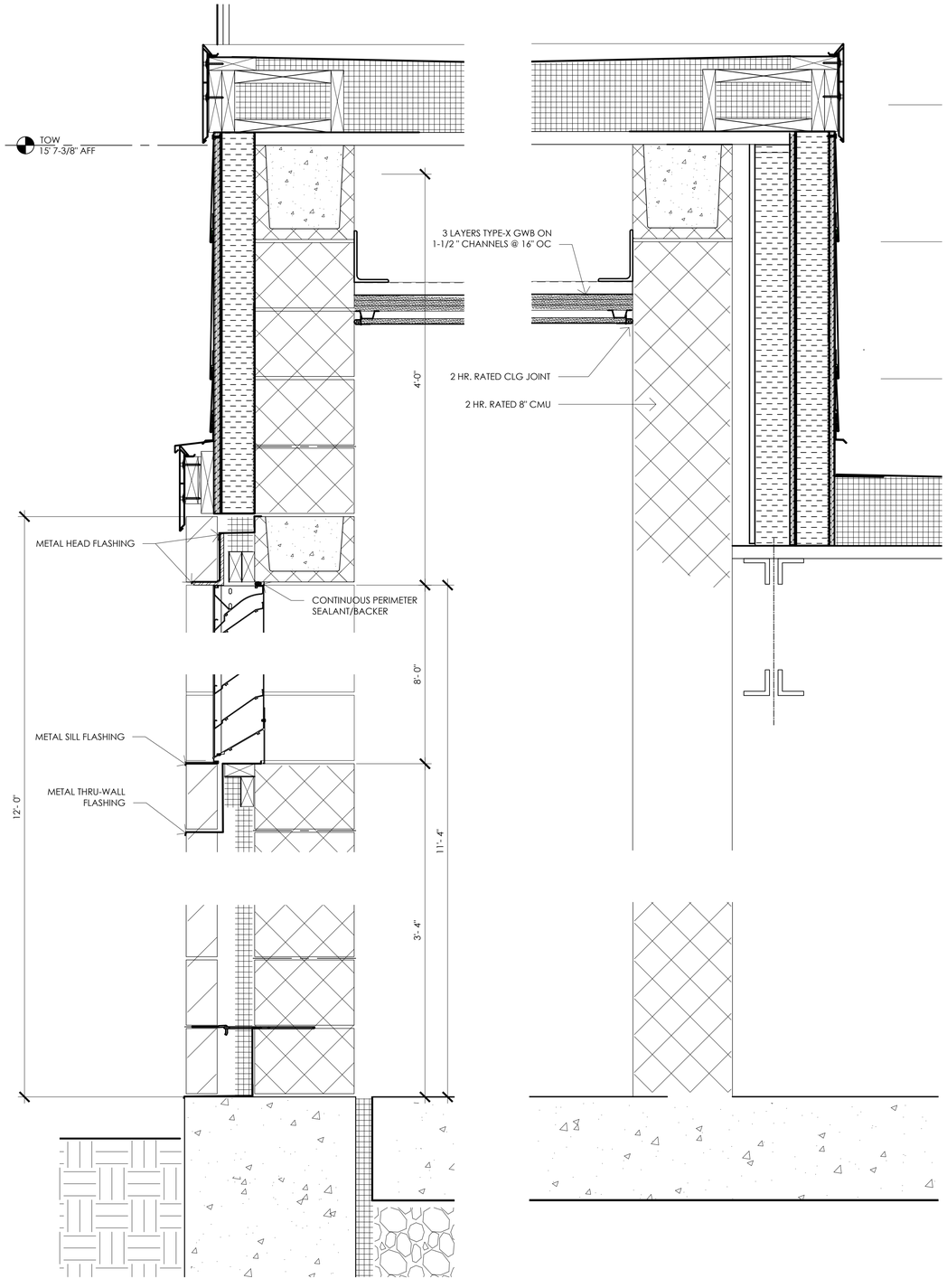
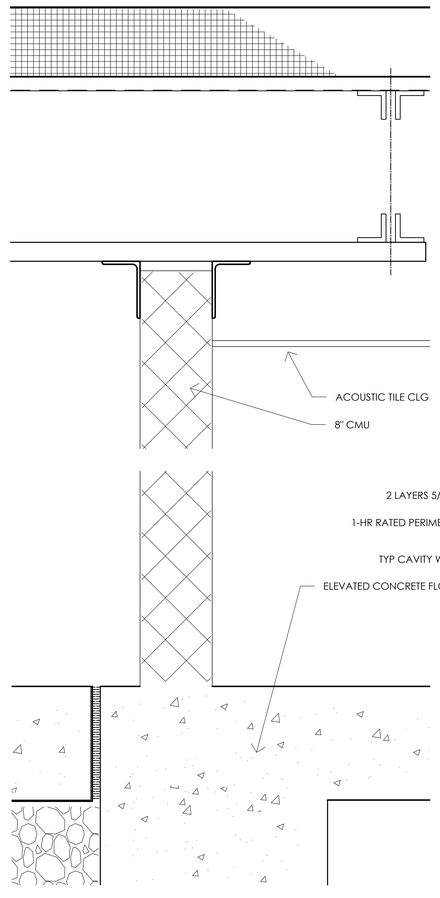
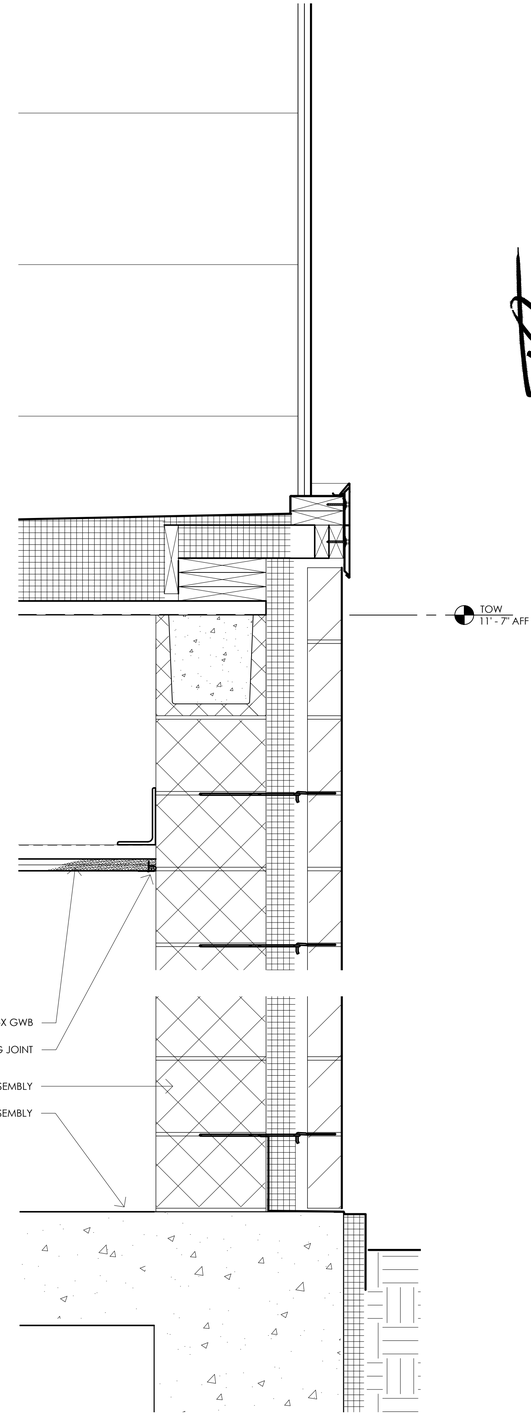


1 SECTION DETAIL
1- 1/2" = 1'-0"

2 SECTION DETAIL
1- 1/2" = 1'-0"



3 SECTION DETAIL
1- 1/2" = 1'-0"



4 SECTION DETAIL
1- 1/2" = 1'-0"

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SECTION DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 43

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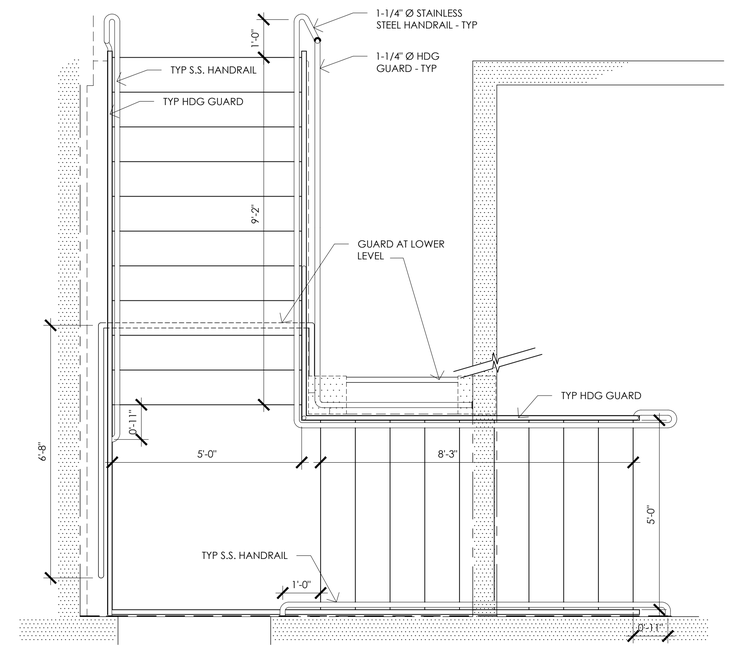
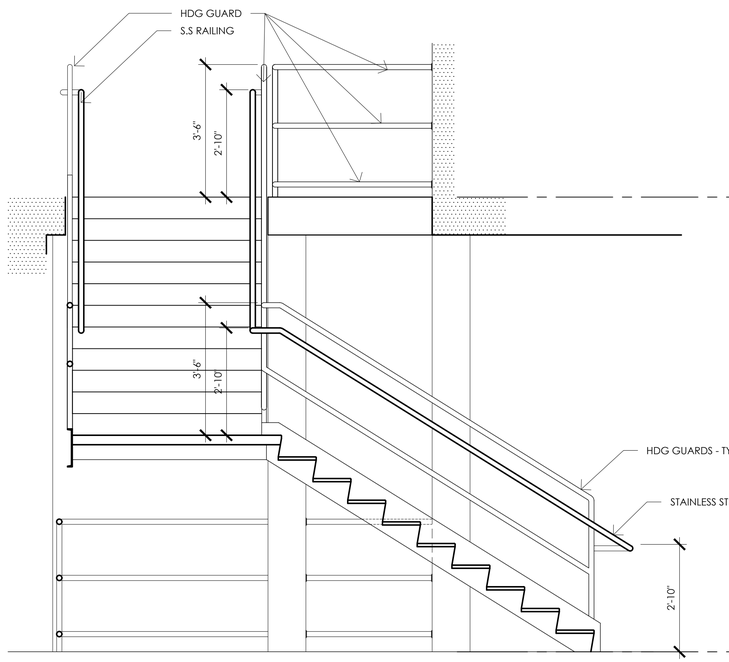
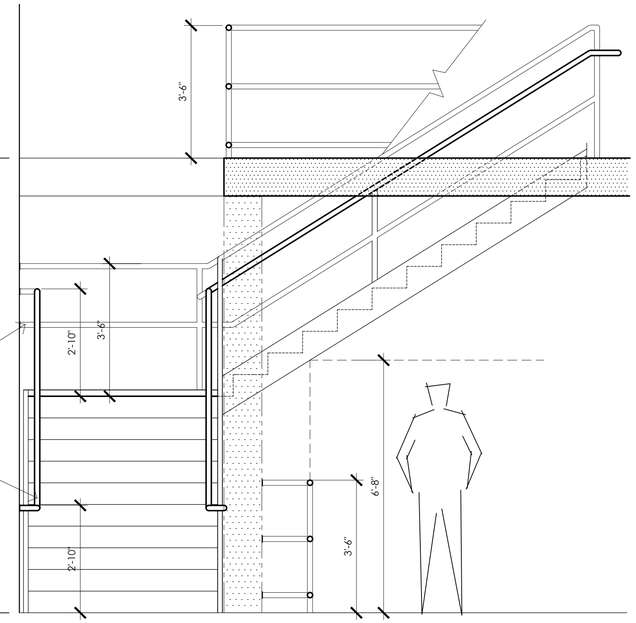


1 STAIR 1 - PLAN
1/2" = 1'-0"



3 STAIR 1 - ELEVATION / SECTION
1/2" = 1'-0"



2 STAIR 1 - ELEVATION
1/2" = 1'-0"

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LICENSED ARCHITECT GREGORY TENNANT GOUCHER No. 3982 STATE OF NEW HAMPSHIRE

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STAIR DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 50

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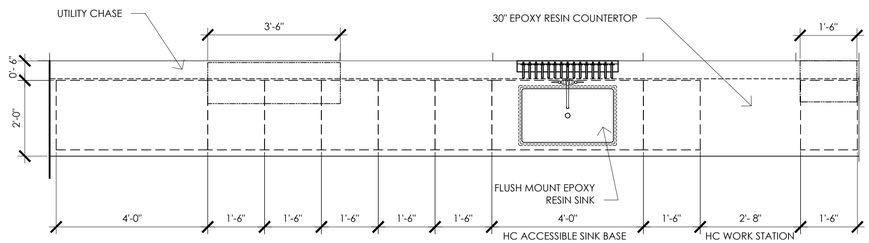
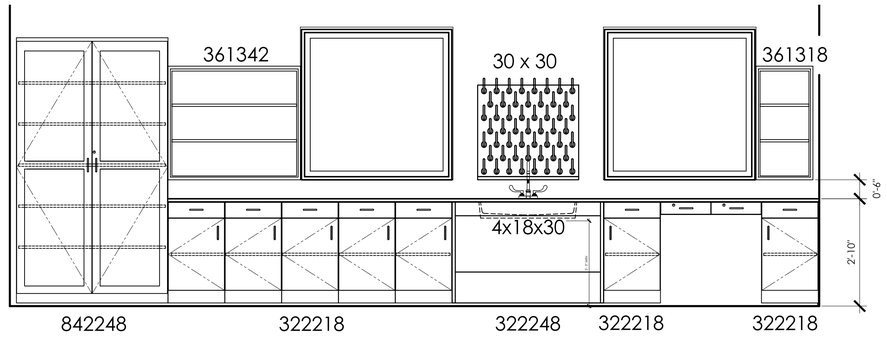
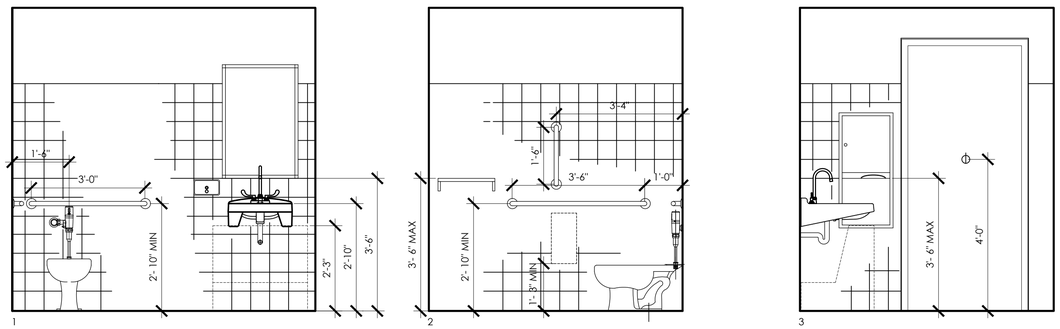


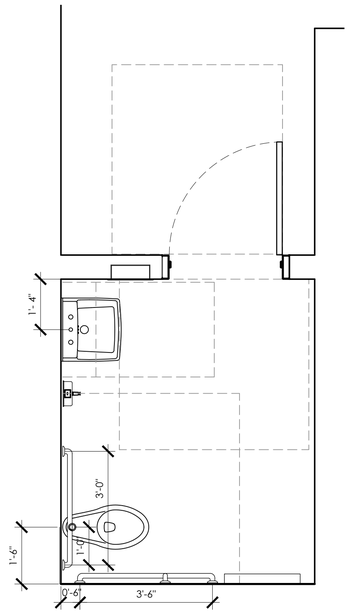
1 CASEWORK - PLAN
1/2" = 1'-0"



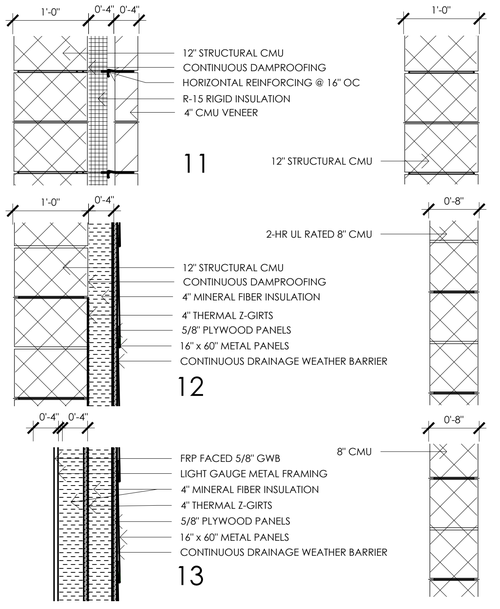
2 CASEWORK - ELEVATION
1/4" = 1'-0"



3 REST ROOM - ELEVATIONS
1/4" = 1'-0"



4 REST ROOM - PLAN
1/4" = 1'-0"



8 WALL TYPES
1" = 1'-0"

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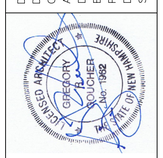

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INT'R ELEV, WALL TYPES, DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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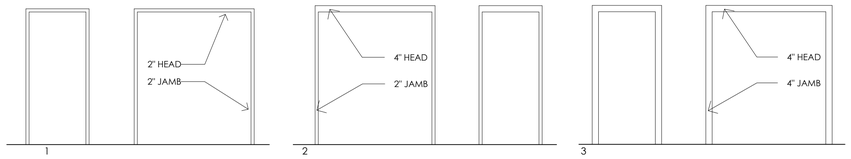
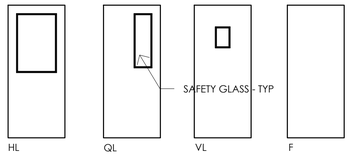
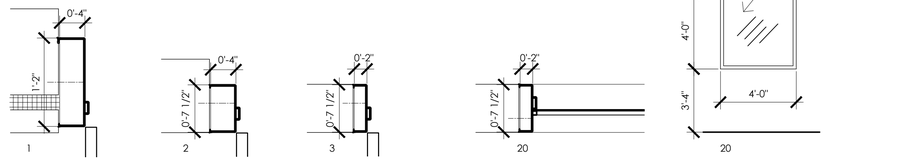


1 FRP DOOR FRAMES
1/4" = 1'-0"

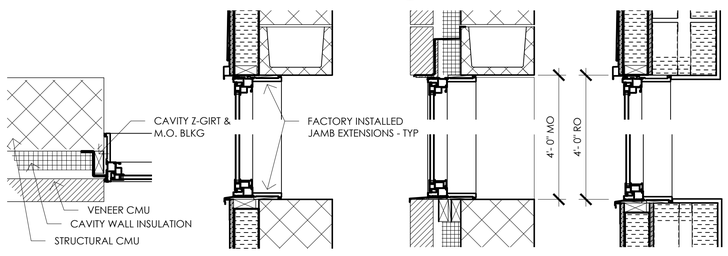


2 DOOR TYPES
1/4" = 1'-0"

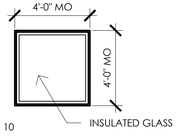


3 FRP FRAME TYPES
1" = 1'-0"

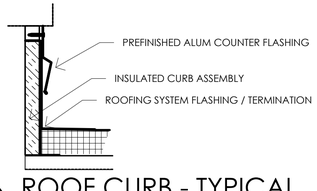
4 FRP FIXED LITE FRAME
1" = 1'-0"



5 WINDOW FRAME DETAILS
1" = 1'-0"



6 WINDOW ELEVATION
1" = 1'-0"



7 ROOF CURB - TYPICAL
1-1/2" = 1'-0"

DOOR HARDWARE SCHEDULE
COORDINATE WITH 087000 FOR HARDWARE SCHEDULE

HDWR SET NO.	LOCKSET TYPE	HINGES	CLOSER	WTHRSTP'G	DOOR BOT'M	THRESH'D	FLUSH BOLTS	TACTILE WARNING		NOTES
01	EXIT	X	X	X	X	X				
02	EXIT	X	X	X	X	X	X			
03	OFFICE	X								
04	OFFICE	X	X				X			
05	PANIC	X	X				X	X		
06	PRIVACY	X								

DOOR - FRAME SCHEDULE

DOOR No.	DOOR SIZE	DOOR RATING	DOOR MATERIAL	DOOR TYPE	HRDW SET No.	DOOR FINISH	FRAME MATERIAL	FRAME TYPE	FRAME RATING	FRAME FINISH		NOTES
101-A	3-0 x 7-0		FRP	FLUSH/INSUL	0#	FACTORY	FRP	02		FACTORY		
102-A	2: 3-0 x 7-0	60 MIN		QL				03	60 MIN			RATED SAFETY GLZ
103-A	2: 3-0 x 7-0	60 MIN		QL				03	60 MIN			RATED SAFETY GLZ
104-A	3-0 x 7-0			F				02				
107-A	3-0 x 7-0			HL				02				SAFETY GLZ
108-A	2: 3-0 x 7-0			HL				03				
109-A	2: 3-0 x 7-0	120 MIN		QL				03	120 MIN			RATED SAFETY GLZ
110-A	2: 3-0 x 7-0			FLUSH/INSUL				03				
111-A	2: 3-0 x 7-0	120 MIN		QL				03	120 MIN			
112-A	2: 3-0 x 7-0	120 MIN		QL				03	120 MIN			RATED SAFETY GLZ
113-A	2: 3-0 x 7-0	120 MIN		QL				03	120 MIN			RATED SAFETY GLZ
114-A	12-0 x 14-0		INSUL STL	OH DOOR								
116-A	3-0 x 7-0			FLUSH/INSUL				02	120 MIN			RATED SAFETY GLZ
116-B	12-0 x 14-0		INSUL STL	OH DOOR								
118-A	3-0 x 7-0			F				02				

ROOM FINISH SCHEDULE
COORDINATE FINISH TYPE WITH 099000-PART 2 & 099000-PART 3 PAINTING SCHEDULE

ROOM No.	ROOM NAME	FLOOR'G TYPE	BASE FINISH/TYPE				WALL FINISH/TYPE				CEILING FINISH/ TYPE				NOTES
			N	E	S	W	N	E	S	W	Structure	ACT	GWB	Decking*	
010	PIPE GALLERY	H-1: SEALER									CONC*				*: NO FIELD APPLIED FINISH
101	CORRIDOR 1	I-1: EPOXY					A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU	GALV*			GALV*	*: NO FIELD APPLIED FINISH
102	ZINC ORTHOPHOSPHATE	↓					A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU	↓		D-1	↓	
103	CALCIUM HYPOCHLORITE						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU			D-1		
104	MECANICAL						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
105	ANALYZERS						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
106	STAIRS	H-1: SEALER					A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
107	CONTROL ROOM	I-1: EPOXY					A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU		Type -1			
108	ELECTRICAL	↓					A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
109	GENERATOR						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU			D-1		
110	CORRIDOR 2						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
111	FLUORIDE						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU			D-1		
112	HYDROGEN PEROXIDE						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU			D-1		
113	CAUSTIC						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU			D-1		
114	GREEN SAND TREATMENT						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
115	ADVANCED OXIDATION						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
116	GAC FILTERS						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
117	HOUSE KEEPING						A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU					
118	REST ROOM	↓					A-1: CMU	A-1: CMU	A-1: CMU	A-1: CMU	↓	Type -1		↓	

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Scale AS SHOWN

LICENSED ARCHITECT GREGORY M. GOUCHER No. 3962 STATE OF NEW HAMPSHIRE

UNDERWOOD engineers
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SCHEDULES

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO A 60

SHEET 43 OF 122

GENERAL NOTES:

1. ALL MATERIALS, WORKMANSHIP, AND DETAILS SHALL CONFORM TO THE NEW HAMPSHIRE STATE BUILDING CODE AND BY REFERENCE THE INTERNATIONAL BUILDING CODE 2015 ED. WITH AMENDMENTS, AND ITS APPLICABLE REFERENCED STANDARDS. THESE INCLUDE, BUT ARE NOT LIMITED TO:

ASCE 7–10	MINIMUM LIVE LOADS FOR BUILDINGS AND OTHER STRUCTURES
ACI 318–14	BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 301–05	SPECIFICATIONS FOR STRUCTURAL CONCRETE
ACI 350–06	CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES AND COMMENTARY
AISC 303–10	CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
AISC 360–10	SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
TMS 402–13	BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
TMS 602–13	SPECIFICATIONS FOR MASONRY STRUCTURES

2. ALL WORK SHALL BE MONITORED AND INSPECTED BY AN INDEPENDENT TESTING AGENCY EITHER CONTINUOUSLY OR PERIODICALLY PER THE SCHEDULE OF SPECIAL INSPECTIONS AND THE BUILDING CODE.

3. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONTRACT DRAWINGS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH THE AFFECTED WORK. ANY VARIATIONS OR SUBSTITUTIONS OF MATERIALS OR DETAILS, FROM THOSE INDICATED ON THE DRAWINGS MAY ONLY BE MADE WITH PRIOR APPROVAL.

4. ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING, PROCESS, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS. VERIFY LOCATION AND DIMENSIONS OF CHASES, INSERTS, OPENINGS, SLEEVES, WASHES, DRIPS, REVEALS, DEPRESSIONS, AND OTHER PROJECT REQUIREMENTS NOT SHOWN ON THE STRUCTURAL DRAWINGS. VERIFY AND COORDINATE ALL DIMENSIONS RELATED TO THIS PROJECT.

5. STRUCTURAL CONTRACT DOCUMENTS ARE COMPLEMENTARY WITH THOSE OF OTHER DESIGN DISCIPLINES. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DOCUMENTS TO SUBCONTRACTORS SO THAT THEY MAY REFER TO OTHER DISCIPLINES AS REQUIRED FOR COORDINATION.

6. ALL OPENINGS, SLEEVES, SLOTS, ETC. NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS MUST BE APPROVED IN THE FIELD BY THE ENGINEER'S REPRESENTATIVE. HOLES LARGER THAN 8" SHALL NOT BE FORMED OR CUT IN ANY BEARING WALL UNLESS THE EXACT SIZE, LOCATIONS, AND FRAME DETAILS HAVE BEEN SUBMITTED IN WRITING TO THE STRUCTURAL ENGINEER AND BEEN APPROVED BY THE STRUCTURAL ENGINEER.

7. THE CONTRACTOR AND SUBCONTRACTOR SHALL REVIEW ALL ADDITIONAL DRAWINGS FOR PITS AND ROOF OPENINGS AND OTHER SPECIFIC ITEMS NOT CALLED OUT FOR ON THE STRUCTURAL DRAWINGS. SPECIFIC ATTENTION TO THE ARCHITECTURAL AND MECHANICAL PLANS REQUIRED TO COVER ALL ITEMS IN BIDDING.

8. MEANS AND METHODS ARE THE CONTRACTOR'S RESPONSIBILITY.

9. THE DRAWINGS REPRESENT THE COMPLETED PROJECT WHICH HAS BEEN DESIGNED FOR THE WEIGHTS OF THE MATERIAL INDICATED ON THE DRAWINGS AND FOR THE SUPERIMPOSED LOADS INDICATED IN THE CODE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING SHEETING, SHORING, ETC. ANY APPROVAL BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR SHORING AND/OR BRACING.

10. ALL COSTS OF ENGINEERING INVESTIGATION AND/OR REDESIGN, DUE TO NON–CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS, SHALL BE AT THE CONTRACTOR'S EXPENSE.

SUBMITTALS:

1. THE FOLLOWING MATERIALS REQUIRE SUBMITTALS (SHOP DRAWINGS) FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO FABRICATION OR ORDERING MATERIAL FOR CONSTRUCTION:

   STRUCTURAL FILL SIEVE ANALYSIS AND PROCTOR RESULTS
   CONCRETE REINFORCING (INCLUDING ALL ACCESSORIES)
   CONCRETE MIX DESIGNS (INCLUDING ALL ADDITIVES)
   MASONRY REINFORCING (INCLUDING ALL ACCESSORIES)
   MASONRY BLOCK
   MASONRY MORTAR AND GROUT MIX DESIGNS AND STRENGTH TESTS
   STRUCTURAL STEEL (INCLUDING P.E. STAMPED CONNECTION CALCULATIONS)
   STRUCTURAL STEEL MILL CERTIFICATIONS
   MISCELLANEOUS METALS (INCLUDING P.E. STAMPED CALCULATIONS)
   COLD–FORMED STEEL
   METAL DECK
   STEEL JOIST
   WATERSTOPS
   VAPOR BARRIERS

2. SUBMITTALS SHALL BEAR THE CONTRACTOR'S REVIEW STAMP INDICATING THAT THE SUBMITTAL HAS BEEN REVIEWED AND IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. SUBMITTED SHOP DRAWINGS WHICH HAVE NOT BEEN REVIEWED AND APPROVED BY THE CONTRACTOR SHALL BE RETURNED UNCHECKED TO THE CONTRACTOR FOR THEIR REVIEW AND APPROVAL.

3. THE STRUCTURAL ENGINEER SHALL BE ALLOWED THE NUMBER OF WORKING DAYS TO REVIEW SHOP DRAWINGS STIPULATED IN THE CONTRACT. THE CONTRACTOR SHALL ALLOW FOR THE POSSIBILITY OF REVISIONS AND RE–SUBMITTALS WHEN SCHEDULING SUBMITTALS.

4. FAILURE TO SUBMIT SHOP DRAWINGS FOR THE REQUIRED MATERIALS SHALL RELIEVE THE ENGINEER OF RESPONSIBILITY AND LIABILITY FOR THOSE PARTS OF THE STRUCTURE AND ANY OTHER PART AFFECTED BY THESE ITEMS.

5. STRUCTURAL DESIGN DRAWINGS MAY NOT BE USED AS THE SHOP DRAWINGS AND WILL BE IMMEDIATELY REJECTED AD RETURNED IF SO SUBMITTED.

FOUNDATIONS AND GEOTECHNICAL REQUIREMENTS:

1. ALL FOOTINGS SHALL BE CARRIED DOWN TO NATURAL, UNDISTURBED SOIL COMPACTED TO 95% MAX DRY–DENSITY. ALLOWABLE NET SOIL BEARING CAPACITY IS 2000 PSF PER GEOTECHNICAL REPORT, PREPARED BY R.W. GILLESPIE & ASSOCIATES, INC (REPORT #0515–177, DATED JULY 13, 2020).

2. BOTTOM OF FOOTING ELEVATIONS SHOWN ON THE CONTRACT DOCUMENTS ARE MINIMUM DEPTHS AND ARE NOT TO BE CONSTRUED AS LIMITING IN ANY WAY THE AMOUNT OF EXCAVATION NECESSARY TO REACH A SUFFICIENT BEARING STRATUM. DETERMINATION OF FINAL BEARING ELEVATIONS AND FIELD VERIFICATION OF ALLOWABLE BEARING PRESSURE SHALL BE MADE BY GEOTECHNICAL ENGINEER IDENTIFIED IN NOTE 1.

3. THE SIZES, LOCATIONS, AND DEPTHS OF EXISTING UTILITIES ARE NOT KNOWN EXACTLY AND MAY VARY SIGNIFICANTLY FROM THAT INDICATED. OTHER UNKNOWN UTILITIES MAY BE PRESENT. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES WHICH MAY BE AFFECTED BY THE CONSTRUCTION PROCESS, AND PROTECTING THEM WHETHER THEY ARE INDICATED IN THE DRAWINGS OR NOT.

4. ALL SHORING, SHEETING, AND DEWATERING SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND BE DESIGNED BY THE CONTRACTOR'S REGISTERED PROFESSIONAL ENGINEER. ALL SUBMITTALS SHALL BEAR THE ENGINEER'S SEAL AND SIGNATURE.

5. ALL EXTERIOR CONSTRUCTION SHALL BE CARRIED DOWN TO A MINIMUM 4–FT BELOW FINISHED ADJACENT EXTERIOR GRADE. IN CASE OF CONFLICT, NOTIFY THE STRUCTURAL ENGINEER IN ADVANCE OF ANY CONSTRUCTION TO ALLOW FOR RESOLUTION.

6. UTILITY LINES SHALL NOT BE PLACED THROUGH, OR BELOW, FOUNDATIONS WITHOUT THE STRUCTURAL ENGINEER'S WRITTEN APPROVAL.

7. CONTINUOUS FOOTINGS SHALL BE STEPPED WHERE NECESSARY.

8. CONCRETE FOR FOUNDATIONS SHALL BE PLACED ON THE SAME DAY SUBGRADE APPROVAL IS GIVEN.

9. WATER SHALL NOT BE ALLOWED TO STAND IN TRENCHES BEFORE OR AFTER CONCRETE IS PLACED.

10. SPECIAL CARE SHALL BE TAKEN IN BACKFILLING WALLS, PIERS, AND UTILITY TRENCHES TO COMPACT SOIL AS DENSELY AS ADJACENT MATERIALS OR TO PROVIDE A UNIFORM BED FOR SLABS. BACKFILL MATERIAL SHALL BE COMPACTED IN 12" LAYERS MAXIMUM WITH POWER TAMPERS OR BY OTHER APPROVED EQUIPMENT, OR AS REQUIRED BY GEOTECH.

CONCRETE AND REINFORCEMENT:

1. ALL CONCRETE WORK SHALL CONFORM TO THE BUILDING CODE AND THE LATEST EDITIONS: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350), AND SPECIFICATIONS FOR STRUCTURAL CONCRETE (ACI 301).

2. CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGN TO THE ENGINEER FOR APPROVAL.

3. CONCRETE MIXES SHALL CONFORM TO ASTM C94 WITH THE FOLLOWING:

PORTLAND CEMENT	ASTM C150, TYPE II
NORMAL WEIGHT AGGREGATES	ASTM C33
POTABLE WATER	
AIR–ENTRAINING ADMIXTURES	ASTM C260
WATER–REDUCING ADMIXTURES	ASTM C494 (MID–RANGE TYPE A, HIGH–RANGE TYPE F OR G)
ACCELERATOR AND RETARDER	ASTM C494, TYPE C AND D, RESP.
CORROSION INHIBITOR	ASTM C494, TYPE C
PERMEABLE REDUCING ADMIXTURES	ASTM C494, TYPE S

4. SLABS AND WALLS LOCATED IN PART OR IN WHOLE AT OR BELOW ELEVATION 100'–0" INCLUDE INTEGRAL WATERPROOFING ADMIXTURE, COORDINATE WITH SPECIFICATIONS. EXCLUDES FROST WALLS.

5. SCHEDULE OF CONCRETE 28–DAY STRENGTHS

LOCATION	28–DAY STRENGTH
SLABS ON GRADE, ELEVATED SLABS	5000 PSI
PIERS, WALLS, FOOTINGS, BEAMS, COLUMNS	5000 PSI
EXTERIOR SLABS SUBJECT TO DE–ICERS	4500 PSI

6. CALCIUM CHLORIDE IS PROHIBITED IN CONCRETE MIXES.

7. CONCRETE MIX DESIGN SHALL CONSIST OF THE FOLLOWING:

MIN. AIR ENTRAINMENT (CONC EXPOSED TO FREEZE/THAW ONLY)	5% +/– 1.0%
SLUMP LIMIT PRIOR TO ADDITION OF HIGH–RANGE WATER REDUCER	4 INCHES
SLUMP LIMIT AFTER THE ADDITION OF HIGH–RANGE WATER REDUCER	6 INCHES

8. STEEL REINFORCEMENT SHALL BE PLACED WITH THE FOLLOWING MIN. CONCRETE CLEAR COVER:

SURFACES CAST AGAINST OR BACKFILLED WITH EARTH	3"
EXPOSED CONCRETE	
#6 – #18 BARS	2"
#3 – #5 BARS	1½"
OTHER CONC. NOT EXPOSED TO WEATHER	2"
CONCRETE	
SLABS, WALLS, JOISTS	1–1/2"
BEAMS, COLUMNS	1–1/2"

9. CONCRETE SHALL BE PROTECTED FROM HOT OR COLD WEATHER AS REQUIRED BY ACI 305 AND 306, RESPECTIVELY.

10. CONCRETE SHALL BE CURED BY AN APPROVED ACI METHOD.

11. ALL CONCRETE TO HAVE A W/C RATIO OF 0.42 OR BETTER.

12. NO CONCRETE SHALL BE PLACED ON OR IN WET OR FROZEN GROUND.

13. FIBER REINFORCEMENT FOR CONCRETE SLAB CRACK CONTROL SHALL BE "GRACE FIBERS" CONFORMING TO ASTM C1116, TYPE 3. FIBERS SHALL BE ADDED AT A DOAGE RATE OF 1.5–LBS PER CUBIC YARD OF CONCRETE FOR ALL CONCRETE THAT WILL BE IN CONTACT WITH EFFLUENT LIQUID.

14. PROPERLY BRACE AND SHORE FORMWORK TO MAINTAIN ALIGNMENT AND TOLERANCES IN ACCORDANCE WITH ACI 347.

15. FRAMED CONCRETE SLABS SHALL BE SHORED, AND/OR RESHORED, UNTIL THE CONCRETE HAS ATTAINED ITS 28–DAY COMPRESSIVE STRENGTH, AS DETERMINED BY TESTING. IT IS RECOMMENDED THAT THE CONTRACTOR CAST ADDITIONAL CONCRETE CYLINDERS THAT MAY BE REQUIRED FOR TESTING TO ESTABLISH STRENGTHS BEFORE THE 28–DAY TIME PERIOD.

16. REINFORCEMENT SHALL BE PLACED IN REQUIRED POSITION, SECURING FROM DISPLACEMENT WITH PROPER CHAIRS OR WIRE TIRES.

17. CONDUITS NOT PERMITTED IN ELEVATED SLABS OR IN SLABS ON GRADE.

STRUCTURAL STEEL:

1. STEEL GRADE BY TYPE (UNLESS OTHERWISE NOTED):

ROLLED WIDE–FLANGE SHAPES	A992	Fy = 50 ksi
ANGLES, CHANNELS, PLATES	A36	Fy = 36 ksi
STRUCTURAL STEEL WELD ELECTRODES	LOW–HYDROGEN, E70XX	
STRUCTURAL STEEL DECK	E60XX	
BOLTS – SHOP AND FIELD	ASTM F1852, 3/4" DIA 'TC' TYPE (A325)	
BOLTS – ADJUSTABLE PIECES	ASTM F3125, 3/4" DIA (A325)	
EPOXY ANCHORS	AS NOTED ON DRAWINGS	
EXPANSION ANCHORS	AS NOTED ON DRAWINGS	

2. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE 'CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES' (AISC 303) EXCEPT WHERE NOTED OTHERWISE.

3. FRAMING DETAILS SHOWN ON THE DRAWINGS REPRESENT THE COMPLETED CONDITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTION SEQUENCES, MEANS, AND METHODS; AND FOR THE DESIGN OF TEMPORARY LATERAL AND VERTICAL BRACING. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL THE COMPLETE VERTICAL AND LATERAL FORCE RESISTING SYSTEMS HAVE BEEN INSTALLED.

4. STEEL FABRICATOR SHALL BE A QUALIFIED FABRICATOR WHO PARTICIPATES IN THE AISC CERTIFICATION PROGRAM AND IS DESIGNATED AN AISC CERTIFIED PLANT, CATEGORY 'BU'.

5. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER OF ANY FABRICATION OR ERECTION ERRORS OR DEVIATIONS AND SHALL RECEIVE WRITTEN APPROVAL BEFORE ANY FIELD CORRECTIONS ARE MADE.

6. SAMPLE STEEL OPENINGS FOR ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND OTHER ITEMS HAVE BEEN SHOWN TO ASSIST THE CONTRACTOR IN UNDERSTANDING THE GENERAL SCOPE OF WORK, BUT ARE NOT INTENDED TO REPRESENT EXACT LOCATIONS, QUANTITIES, OR COMPLETE EXTENT OF REQUIRED COORDINATION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF ALL OTHER TRADES. THE CONTRACTOR SHALL PROVIDE STEEL FRAMES FOR ALL OPENINGS REQUIRED BY ALL TRADES PER THE TYPICAL FRAMED OPENING DETAIL IN THE DRAWINGS. STEEL–FRAMED OPENINGS IN ROOF SHALL BE FRAMED FLUSH WITH TOPS OF PURLINS/JOISTS.

7. ALL STRUCTURAL STEEL SHALL BE HOT–DIPPED GALVANIZED, UNLESS OTHERWISE INDICATED.

8. WELDERS SHALL BE CERTIFIED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) STANDARD QUALIFICATION PROCEDURES FOR THE SPECIFIC WELD–TYPE PERFORMED. THE ENGINEER MAY REQUEST EVIDENCE OF SUCH CERTIFICATION AT ANY TIME.

9. THE FABRICATOR SHALL EMPLOY A PROFESSIONAL ENGINEER TO BE IN RESPONSIBLE CHARGE OF THE DEVELOPMENT OF FABRICATION AND ERECTION DRAWINGS. CALCULATIONS SHALL BE PREPARED BY AN ENGINEER LICENSED IN THE STATE THE PROJECT IS LOCATED. THE ENGINEER SHALL CARRY A MINIMUM PROFESSIONAL LIABILITY INSURANCE POLICY OF $500,000. A COPY OF AN INSURANCE CERTIFICATE SHALL BE INCLUDED IN THE CALCULATION SUBMITTAL PACKAGE.

10. ALL CONNECTIONS, SPLICES, SHOP STANDARDS, AND TEMPORARY SUPPORT SHALL BE DESIGNED BY THE FABRICATOR'S ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION IN ACCORDANCE WITH THE GOVERNING AISC SPECIFICATION. CALCULATIONS AND SHOP STANDARDS SHALL BE SUBMITTED BEARING THE ENGINEER'S SEAL AND SIGNATURE PRIOR TO, OR ALONG WITH, PIECE DETAILS.

MASONRY:

1. ALL MASONRY CONSTRUCTION SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (TMS 402) AND SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 602), REFERENCED STANDARDS.

2. ALL MASONRY UNITS SHALL CONFORM TO ASTM C–90, MIN. f'cu = 3250 psi.

3. MORTAR SHALL BE ASTM C270 TYPE S.

4. COURSE GROUT, MAX AGGREGATE 1/2" F'c = 3000 psi.

5. REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60, DEFORMED. REINFORCING SHALL BE SPLICED A MINIMUM OF (48) BAR DIAMETERS.

6. ALL CORES OF MASONRY CONTAINING REINFORCING BARS SHALL BE FILLED SOLID WITH GROUT. FILLING SUCH CORES WITH MORTAR IS PROHIBITED. CARE SHALL BE EXERCISED IN KEEPING CORES FREE FROM MORTAR DROPPINGS.

7. GROUT SHALL BE PLACED USING LOW–LIFT GROUTING PROCEDURES CONFORMING TO NCMA REQUIREMENTS. THE MAXIMUM GROUT LIFT SHALL NOT EXCEED 4'–8". ALTERNATE GROUT POURS 2" BELOW TOP COURSE OF POUR.

8. DO NOT OVERLAY MASONRY IN FREEZING WEATHER UNLESS SUITABLE MEANS ARE PROVIDED TO HEAT MATERIALS. PROTECT WORK FROM COLD AND FROST TO ENSURE THAT MORTAR WILL SET TO STRENGTH WITHOUT FREEZING. NO CHLORIDE ANTIFREEZE INGREDIENT SHALL BE USED.

9. PROTECT FACING MATERIAL AGAINST STAINING. KEEP TOP OF WALLS COVERED WITH NON–STAINING WATERPROOF COVERING WHEN WORK IS NOT IN PROGRESS.

10. PROVIDE 'DUR–O–WALL' TRUSS TYPE WELDED WIRE REINFORCING IN ALTERNATIVE BLOCKING COURSE. PROVIDE FACTORY MADE CORNER REINFORCING, SIDE WIRES, DIAGONAL WIRES, AND CROSS WIRES (#9 WIRE). DIAGONAL AND CROSS WIRES SHALL BE ATTACHED TO EACH SIDE WIRE NOT OVER 16" O/C.

11. NEW CONCRETE MASONRY WALLS SHALL HAVE BOND BEAMS AT FLOOR LEVELS AND TOP OF WALL ELEVATION WITH (2) #5 BARS CONTINUOUS UNLESS NOTED OTHERWISE.

12. PROVIDE 6" MIN BEARING EACH END OF LINTEL, BUT NOT LESS THAN 1" PER FOOT OF SPAN, SEE LINTEL SCHEDULE, PLANS, AND DETAILS FOR ADDITIONAL REQUIREMENTS. SOLIDLY GROUT (3) COURSES OF MASONRY BELOW BEARING. INSTALL ANGLES WITH LONG–LEG VERTICAL (LLV). LINTELS IN EXTERIOR WALLS SHALL BE HOT–DIPPED GALVANIZED.

13. UNITS SHALL BE LAID IN RUNNING BOND UNLESS OTHERWISE NOTED. PROVIDE FULL MORTAR BED FOR FIRST COURSE. PROVIDE MORTAR ON WEBS OF CORES CARRYING GROUT TO PREVENT LEAKAGE. ALL EXPOSED JOINTS SHALL BE TOOLED CONCAVE. UNEXPOSED JOINTS SHALL BE STRUCK FLUSH.

14. PROVIDE (1) VERTICAL BAR EACH SIDE OF WALL OPENINGS. PLACE (2) HORIZONTAL BARS (SAME SIZE AS VERTICAL REINFORCING) ABOVE AND BELOW WALL OPENINGS. PLACE (1) VERTICAL BAR IN CORES EACH SIDE OF CONTROL JOINTS. GROUT CELLS CONTAINING BARS SOLID.

15. REINFORCEMENT SHALL BE PLACED IN REQUIRED POSITION, SECURING FROM DISPLACEMENT WITH PROPER CHAIRS OR WIRE TIES.

16. CONTROL JOINTS IN MASONRY SHALL BE AS SHOWN ON THE DRAWINGS.

METAL DECK:

1. PRODUCTS – GENERAL REQUIREMENTS:
   – MANUFACTURERS: 'PRODUCT NAMES INDICATED ARE BASED ON NUCOR CORP. VULCRAFT GROUP. SUBJECT TO DEMONSTRATION OF EQUIVALENCE AND COMPLIANCE WITH PROJECT REQUIREMENTS, ALTERNATE MAY BE SUBMITTED FOR REVIEW AND APPROVAL.
   – AISI SPECIFICATIONS: COMPLY WITH CALCULATED STRUCTURAL CHARACTERISTICS OF STEEL DECK ACCORDING TO AISI's 'NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD–FORMED STEEL STRUCTURAL MEMBERS'.
   – SPAN CONDITIONS: DETAIL DECK MULTIPLE SPAN CONDITION, WHERE POSSIBLE. PROVIDE SHORING IF REQUIRED AT SINGLE–SPAN FLOOR CONDITIONS DURING SLAB POURS.

2. ACCESSORIES – PROVIDE THE FOLLOWING:
   – FLEXIBLE CLOSURE STRIPS: VULCANIZED CLOSED–CELL SYNTHETIC RUBBER. MISC SHEET METAL DECK ACCESSORIES: STEEL SHEET, MINIMUM YIELD STRENGTH OF 33,000 PSI (230 MPA), NOT LESS THAN 0.0359–INCH (0.91–MM) DESIGN, UNCOATED THICKNESS, OF SAME MATERIAL AND FINISH AS DECK; OF PROFILE INDICATED OR REQUIRED FOR APPLICATION.
   – POUR STOPS AND GIRDER FILLERS: SHEET STEEL, MINIMUM YIELD STRENGTH OF 33,000 PSI (230 MPA), NOT LESS THAN 0.0359–INCH (0.91–MM) DESIGN UNCOATED THICKNESS, OF SAME MATERIAL AND FINISH AS DECK, AND OF THICKNESS RECOMMENDED BY SDI PUBLICATION NO. 31 FOR OVERHANG AND SLAB DEPTH.
   – GALVANIZING REPAIR PAINT.

3. INSTALLATION, GENERAL:
   – FASTEN FLOOR DECK PANELS TO STEEL SUPPORTING MEMBERS WITH 3/4" NOMINAL DIA ARC SPOT (PUDDLE) WELDS IN EACH FLUTE (36/7). FASTEN SIDE LAPS AND PERIMETER EDGES OF PANELS BETWEEN SUPPORTS WITH (7) #14 FASTENERS PER SPAN.
   – END BEARING: INSTALL DECK ENDS OVER SUPPORTING FRAME WITH A MINIMUM END BEARING OF 1–1/2 INCHES WITH END JOINTS LAPPED OR BUTTED AT CONTRACTOR'S OPTION.
   – POUR STOPS AND GIRDER FILLERS: WELD STEEL SHEET POUR STOPS AND GIRDER FILLERS TO SUPPORTING STRUCTURE ACCORDING TO SDI RECOMMENDATIONS UNLESS OTHERWISE INDICATED.
   – FLOOR DECK CLOSURES: WELD STEEL SHEET COLUMN CLOSURES, CELL CLOSURES, AND Z–CLOSURES TO DECK, ACCORDING TO SDI RECOMMENDATIONS, TO PROVIDE TIGHT–FITTING CLOSURES AT OPEN ENDS OF RIBS AND SIDES OF DECK.

STEEL JOISTS:

1. COMPLY WITH STEEL JOIST INSTITUTE STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOISTS.

2. STEEL JOISTS SHALL BE STANDARD K SERIES AND LH SERIES WITH A YIELD STRESS OF 50 KSI MANUFACTURED IN ACCORDANCE WITH SJI RECOMMENDATIONS.

3. BRIDGING AND MISCELLANEOUS STEEL ITEMS SHALL CONFORM TO ASTM A36.

4. STEEL JOISTS SHALL BE HOT–DIPPED GALVANIZED, UNLESS OTHERWISE INDICATED.

5. MINIMUM BEARING LENGTH ON STEEL BEAMS SHALL BE 2 1/2" FOR K–SERIES JOISTS AND 4" FOR LH SERIES JOISTS. MINIMUM BEARING LENGTH ON MASONRY WALLS SHALL BE 4" FOR K–SERIES JOISTS AND 6" FOR LH SERIES JOISTS.

6. STEEL JOIST SHOP DRAWINGS SHALL INCLUDE A SCHEDULE OF ALL JOISTS AS WELL AS ERECTION PLANS AND CONNECTION DETAILS. SHOP DRAWINGS WHICH ARE SUBMITTED WITHOUT THE SCHEDULE SHALL NOT BE REVIEWED UNTIL THE SCHEDULE IS RECEIVED.

7. THE STEEL JOIST MANUFACTURER SHALL COORDINATE ALL CONNECTIONS TO STRUCTURAL STEEL WITH THE STRUCTURAL STEEL FABRICATOR PRIOR TO SUBMITTAL OF SHOP DRAWINGS.

8. SEE INDIVIDUAL BUILDING ROOF PLANS FOR WIND UPLIFT REQUIREMENTS.

COLD FORMED STEEL FRAMING:

1. ALL COLD–FORMED STEEL STUDS, JOISTS, TRACK, AND ACCESSORIES SHALL MEET ASTM A1003 REQUIREMENTS FOR STRUCTURAL GRADE, TYPE H MATERIAL, WITH THE FOLLOWING PROPERTIES.

   Fy=33,000 PSI 20, AND 18–GAUGE
   Fy=50,000 PSI 16, 14, AND 12–GAUGE

2. ALL COLD–FORMED STEEL SHALL BE HOT–DIPPED GALVANIZED TO A MINIMUM OF G–60 COATING THICKNESS.

3. INDIVIDUAL STUDS AND TRACKS SHALL BE CLEARLY MARKED FOR DEPTH, FLANGE WIDTH, AND THICKNESS.

4. REFER TO DIETRICH PUBLICATION "CURTAIN WALL/LIGHT GAUGE STRUCTURAL FRAMING PRODUCTS" FOR ADDITIONAL TECHNICAL INFORMATION, AND ERECTION AND BRACING PROCEDURES.

5. ALL SELF–TAPPING SCREW FASTENERS SHALL CONFORM TO ASTM C1513. FASTENERS SHALL HAVE A CORROSION RESISTANT COATING. MIN. FASTENER SPACING IS 1/2".

6. POWER DRIVEN FASTENERS SHALL BE INSTALLED WITH A MINIMUM 3" DISTANCE TO THE EDGE OF CONCRETE AND 1/2" TO THE EDGE OF STEEL. MIN. FASTENER SPACING IS 1–1/2" FOR STEEL AND 3" FOR CONCRETE. MIN. CONCRETE EMBEDMENT DEPTH IS 1–1/8".

7. WALL STUDS MUST BE LATERALLY BRACED ON BOTH SIDES BY WALL SHEATHING OR SPECIAL BRACING AT 4–FEET O/C.

8. CARE SHOULD BE TAKEN TO AVOID WALL STUD KNOCKOUTS WITHIN 3–INCHES OF STUD ENDS AND/OR CONNECTIONS. USE MATERIAL FREE OF KNOCKOUTS WHERE NECESSARY.

9. GAPS BETWEEN THE DEFLECTION TRACK AND TOP OF STUDS ARE SPECIFIED IN THE DRAWING DETAILS. THESE VALUES REPRESENT THE GAP THAT SHOULD BE PRESENT AFTER THE INSTALLATION OF CONCRETE FLOORS OR ROOF FRAMING. CONTACT SUMMIT ENGINEERING IF WALL FRAMING IS TO BE INSTALLED PRIOR TO FLOOR/ROOF PLACEMENT.

10. TORCH CUTTING OF MEMBERS OR HOLES IS NOT PERMITTED.

11. ALL TRACK AND STUDS THAT ARE DETAILED IN THE FABRICATION OF BUILT–UP HEADERS, BEAMS, SILLS, JAMBS, AND TRUSSES SHALL BE CONTINUOUS PIECES, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

12. COLD–FORMED STEEL FABRICATOR SHALL PROVIDE SHOP FABRICATION DRAWINGS & CALCULATIONS TO THE STRUCTURAL ENGINEER FOR REVIEW. THE FABRICATION DRAWINGS & CALCULATIONS SHALL BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE THE PROJECT IS LOCATED.

MISC METALS:

1. ALL MISC METALS, INCLUDING STAIRS, HANDRAIL/GUARDRAIL, FIXED LADDERS, HOIST BEAMS, PLATFORMS, ETC., SHALL BE DESIGNED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE THE PROJECT IS LOCATED.

2. SHOP DRAWINGS AND CALCULATIONS, INCLUDING CONNECTION CALCULATIONS, BEARING THE SEAL OF A STRUCTURAL ENGINEER LICENSED IN THE STATE THE PROJECT IS LOCATED, SHALL BE SUBMITTED TO THE ENGINEER/ARCHITECT OF RECORD FOR APPROVAL.

3. SHOP DRAWINGS AND FABRICATION DRAWINGS SHALL INDICATE THE MAGNITUDE, DIRECTION, AND LOCATION OF ALL LOADS IMPOSED ON THE BUILDING STRUCTURE.

4. FRAMING AND CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH THE APPROVED STATE BUILDING CODE. ADDITIONALLY, STAIRWAYS AND HANDRAILS/GUARDRAIL SHALL BE DESIGNED IN ACCORDANCE WITH THE ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS METAL STAIRS MANUAL, AMP 510–92, AISC STEEL DESIGN GUIDE 34 (STEEL–FRAMED STAIRWAY DESIGN), AND STEEL DESIGN GUIDE 27 (STRUCTURAL STAINLESS STEEL), AND ALUMINUM DESIGN MANUAL (ALUMINUM DESIGN MANUAL).

5. HOIST BEAMS AND CONNECTIONS, INCLUDING STOP PLATES, TO BE DESIGNED PER AISC 360, AISC STEEL DESIGN GUIDE 7, AND CRANE MANUFACTURERS ASSOCIATION OF AMERICA (CMAA) SPECIFICATION #74–2010.

6. STEEL HOIST BEAMS TO BE EPOXY PAINTED PER SPECS., PAINT HOIST BEAM WITH MAXIMUM LIFTING LOAD (SEE PLAN).

7. ALUMINUM MATERIAL GRADE BY TYPE (UNLESS OTHERWISE NOTED):

DIAMOND TREAD PLATE	6061–T6	Fy = 35 ksi
ANGLES, CHANNELS, PLATES, BARS	6061–T6	Fy = 35 ksi

8. STAINLESS STEEL GRADE BY TYPE (UNLESS OTHERWISE NOTED):

ANGLES	ASTM 316	Fy = 25 ksi

FIBERGLASS REINFORCED PLASTIC (FRP):

1. THE DESIGN BASIS FOR THIS PROJECT IS SHOWN ON THE PLANS USING PRODUCTS MANUFACTURED BY STRONGWELL AND MCHNICHOLS. IF FRP STRUCTURAL SHAPES, GRATING, AND CONNECTIONS DIFFER FROM THE PRESENTED DESIGN AND DETAILS, THE CONTRACTOR SHALL PREPARE AND SUBMIT FRP DRAWINGS, CALCULATIONS AND SPECIFICATIONS SEALED BY AN ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. THESE PLANS, CALCULATIONS AND SPECIFICATIONS SHOWING ALL NECESSARY CHANGES ARE TO BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE. REDESIGN, COORDINATION, AND CONSTRUCTION CHANGES SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER AND ARE THE RESPONSIBILITY OF CONTRACTOR.

2. THE FRP GRATING STRUCTURAL SUPPORT AND CONNECTIONS SHALL BE DESIGNED FOR HEAVY STORAGE LOAD OF 250 PSF WITH A MAXIMUM DEFLECTION OF L/240.

3. STRUCTURAL SHAPES AND PULTRUDED GRATING SHALL BE VINYL ESTER RESIN WITH FIRE RETARDANT ADDITIVES TO MEET A FLAME SPREAD OF LESS THAN 25 PER ASTM E–84. THE FLAMMABILITY CHARACTERISTICS OF UL94V0 AND MEET SELF EXTINGUISHING REQUIREMENTS OF ASTM D–635.

ABBREV

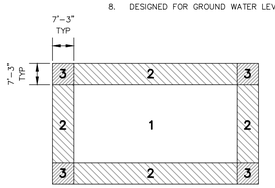
DESIGN LOADS:

1. RISK CATEGORY — IV
2. FLOOR LIVE LOADS
   - HEAVY–STORAGE — 250 PSF
   - MAINTENANCE — 40 PSF / 300–LB
3. ROOF LIVE LOADS — 20 PSF
4. SNOW LOADS
   - PROJECT LOCATION — DOVER, NH
   - GROUND SNOW LOAD, Pg — 50 PSF
   - FLAT–ROOF SNOW LOAD, Pf — 46.2 PSF
   - EXPOSURE FACTOR, Ce — 1.0
   - THERMAL FACTOR, Ct — 1.1
   - IMPORTANCE FACTOR, Is — 1.2
5. WIND LOADS
   - BASIC WIND SPEED (3–SEC), V — 130 MPH
   - NOMINAL DESIGN WIND SPEED, V_{nd} — 100.7 MPH
   - WIND EXPOSURE (ALL DIRECTIONS) — B
   - INTERNAL PRESSURE COEFF, GCpi — +/– 0.18

   MAIN WIND FORCE RESISTING SYSTEM (MWFRS) AND COMPONENTS AND CLADDING (CC) PRESSURES FOR DEFERRED DESIGN SUBMITTALS THAT ARE DELEGATED TO THE CONTRACTOR:

   WIND PRESSURES SHALL BE CALCULATED IN ACCORDANCE WITH THE PROVISIONS OF THE GOVERNING BUILDING CODE LISTED ABOVE, FOR COMPONENT–SPECIFIC EFFECTIVE AREAS AND COEFFICIENTS, AND THE DESIGN CRITERIA LISTED ABOVE AND BELOW:

   - WIND DIRECTIONALITY FACTOR, Kd — 0.85
   - TOPOGRAPHIC FACTOR, Kzt — 1.0
   - MEAN ROOF HEIGHT, h — 18.0 FT
   - EFFECTIVE AREA — (PER ELEMENT)
6. SEISMIC LOADS
   - SEISMIC IMPORTANCE FACTOR, Ie — 1.5
   - SPECTRAL RESPONSE ACCELERATIONS — Ss=0.275, S1=0.082
   - SITE CLASS — D
   - SPECTRAL RESPONSE COEFFICIENT — Sds=0.289, Sd1=0.131
   - SEISMIC DESIGN CATEGORY — B
   - SEISMIC FORCE–RESISTING SYSTEM: INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
   - RESPONSE MODIFICATION FACTOR
     - NORTH–SOUTH — R = 3.5
     - EAST–WEST — R = 3.5
   - SEISMIC RESPONSE COEFFICIENT
     - NORTH–SOUTH — Cs = 0.124
     - EAST–WEST — Cs = 0.124
   - ANALYSIS PROCEDURE: — EQUIVALENT LATERAL FORCE
7. FLOOD DESIGN DATA
   BUILDING IS NOT LOCATED IN WHOLE OR IN PART IN A "FLOOD HAZARD AREA" AS DEFINED BY THE GOVERNING BUILDING CODE.
8. DESIGNED FOR GROUND WATER LEVEL AT EL. 97'–0"



COMPONENTS AND CLADDING WIND LOADS (ROOF)

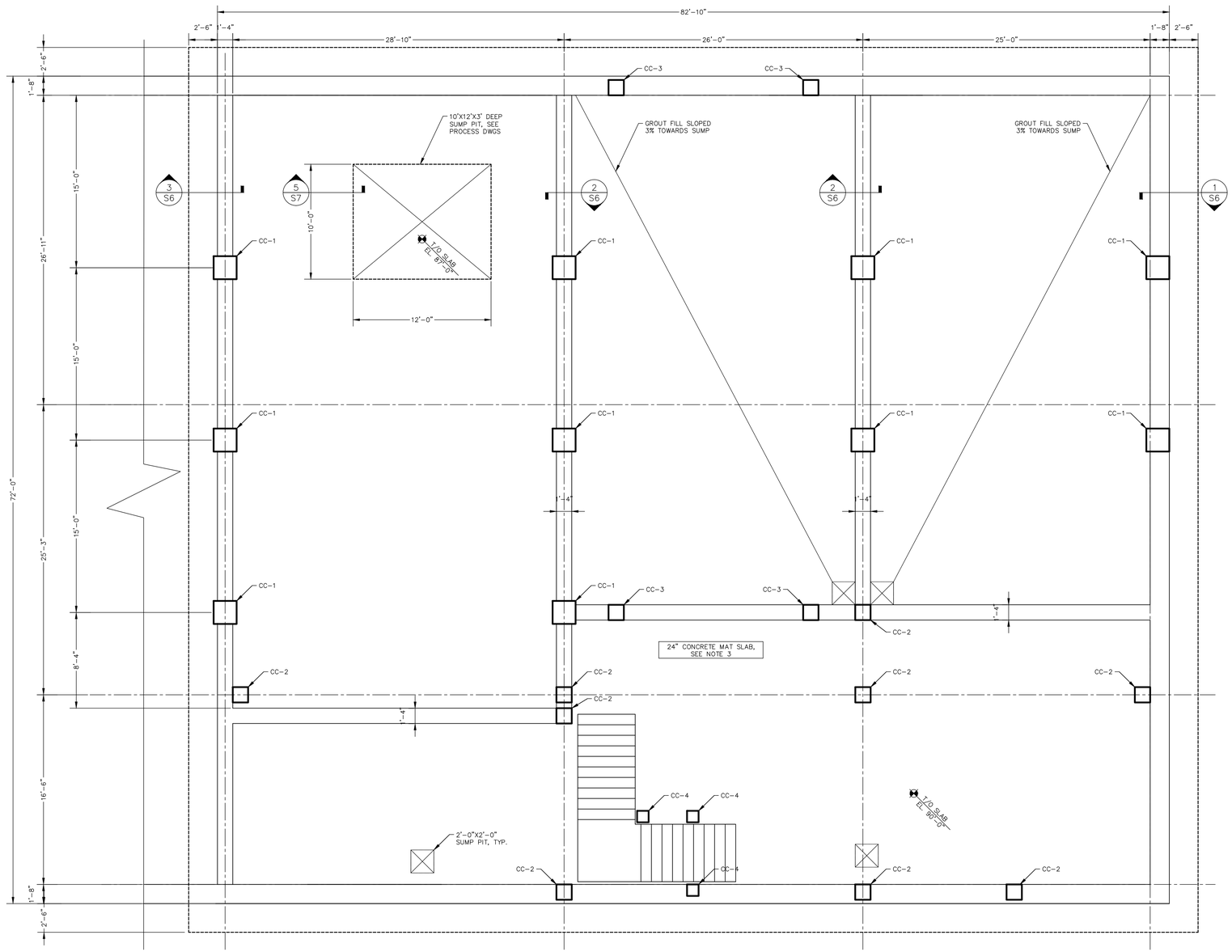
ZONE	COMPONENT AREA (s.f.)	PRESSURE POS. (psf)	PRESSURE NEG. (psf)
1	< 10	12.4	–30.4
1	25	11.3	–29.4
1	50	10.6	–28.6
1	> 100	9.8	–28.6
2	< 10	12.4	–51.0
2	25	11.3	–43.8
2	50	10.6	–38.4
2	> 100	9.8	–32.9
3	< 10	12.4	–76.7
3	25	11.3	–59.3
3	50	10.6	–46.1
3	> 100	9.8	–32.9

REINFORCING LAP/SPLICE SCHEDULE

BAR SIZE	f'c = 4000 psi (N/W CONCRETE)		f'c = 5000 psi (N/W CONCRETE)	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	1'–9"	1'–4"	1'–6"	1'–2"
#4	2'–4"	1'–10"	2'–1"	1'–7"
#5	3'–0"	2'–3"	2'–7"	2'–0"
#6	3'–7"	2'–11"	3'–1"	2'–4"
#7	5'–2"	4'–0"	4'–6"	3'–6"
#8	5'–11"	4'–7"	5'–2"	4'–1"
#9	6'–8"	5'–2"	5'–10"	4'–6"
#10	7'–6"	5'–10"	6'–6"	5'–0"
#11	8'–5"	6'–6"	7'–4"	5'–7"

LAP/SPLICE SCHEDULE NOTES:

1. TOP BARS ARE BARS WITHIN 12" OF FRESH CONCRETE BELOW SPLICE.
2. MINIMUM CLEAR SPACING OF BARS OR WIRES BEING DEVELOPED OR SPLICED SHALL NOT BE LESS THAN (2) BAR DIAMETERS.
3. STIRRUPS OR TIES THROUGHOUT DEVELOPMENT LENGTH SHALL NOT BE LESS THAN THE ACI 318 CODE MINIMUM.
4. MINIMUM CLEAR COVER SHALL NOT BE LESS THAN (1) BAR DIAMETER. THE MINIMUM CLEAR COVER IS LISTED IN THE CONTRACT DOCUMENTS AND THE ACI 318 CODE. REPORT ANY DISCREPANCIES TO THE ENGINEER OF RECORD IMMEDIATELY.
5. SPLICES INDICATED ARE CLASS B LAP SPLICES. PROVIDE CLASS B LAP SPLICES AT ALL SPLICE LOCATIONS U.N.O.
6. WHERE SPLICED BARS OF A DIFFERENT DIAMETER, USE THE LAP/SPLICE LENGTH ASSOCIATED WITH THE LARGER BAR DIAMETER.
7. WHERE REQUIREMENTS ARE NOT MET PROVIDE LAP AS REQUIRED PER ACI 318.



NOTES:

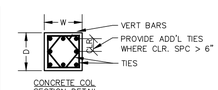
1. 'CC' DENOTES CONCRETE COLUMN, 'CB' DENOTES CONCRETE BEAM
2. ALL CONSTRUCTION JOINTS SHALL HAVE 6" PVC WATERSTOPS AS SHOWN IN THE TYPICAL DETAILS.
3. 2'–0" CONCRETE MAT SLAB ON GRADE REINFORCED WITH #8 AT 12" TOP AND BOTTOM BOTH DIRECTIONS. THE TOP OF 2'–0" BASE MAT ELEVATION IS 90'–0" UNLESS NOTED OTHERWISE.
4. COORDINATE ALL WALL SLEEVE AND FLOOR OPENINGS WITH PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS. SEE TYPICAL DETAIL SHEET. NOT ALL WALL AND FLOOR PENETRATIONS ARE SHOWN ON THE STRUCTURAL DRAWINGS..

FOUNDATION & MAT SLAB PLAN

SCALE: 3/16"=1'–0"

COLUMN SCHEDULE

MARK	SIZE (WxD)	VERT BARS	TIES	BEAM DOWELS	SLAB DOWELS	TOP ELEVATION	CAP PLATE TOP ELEVATION	BOT ELEVATION	BASE PLATE BOT ELEVATION	BASE PLATE
CC–1	24"x24"	8–#9	#4 @ 10"	SEE DETAILS	8 #9	100'–0"	–	90'–0"	–	–
CC–2	16"x16"	4–#8	#4 @ 16"	SEE DETAILS	4 #8	100'–8"	–	90'–0"	–	–
CC–3	16"x16"	4–#8	#4 @ 16"	SEE DETAILS	4 #8	100'–0"	–	90'–0"	–	–
CC–4	12"x12"	4–#6	#4 @ 12"	SEE DETAILS	4 #6	101'–0"	–	90'–0"		
W8x35	–	–	–	–	–	–	122'–0"	–	102'–0"	BP–1
W10x49	–	–	–	–	–	–	122'–0"	–	102'–0"	BP–2



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NO.	REVISIONS	APP'D

ISSUE FOR
APPROVAL — By LKP — Date 5/21/21
CONSTRUCTION — By LKP — Date 6/28/21
RECORD DRAWING — By – — Date –

Drawn/Chk. BAM
Designed BAM
Checked LKP
Approved LKP
Date 6/26/2021
Book No. –
Project No. 2509
Dwg. ID –
Scale AS SHOWN

STATE OF NEW HAMPSHIRE – LINDA K. McNAIR-PERRY No. 6276 (VOLUNTARY) – PROFESSIONAL ENGINEER

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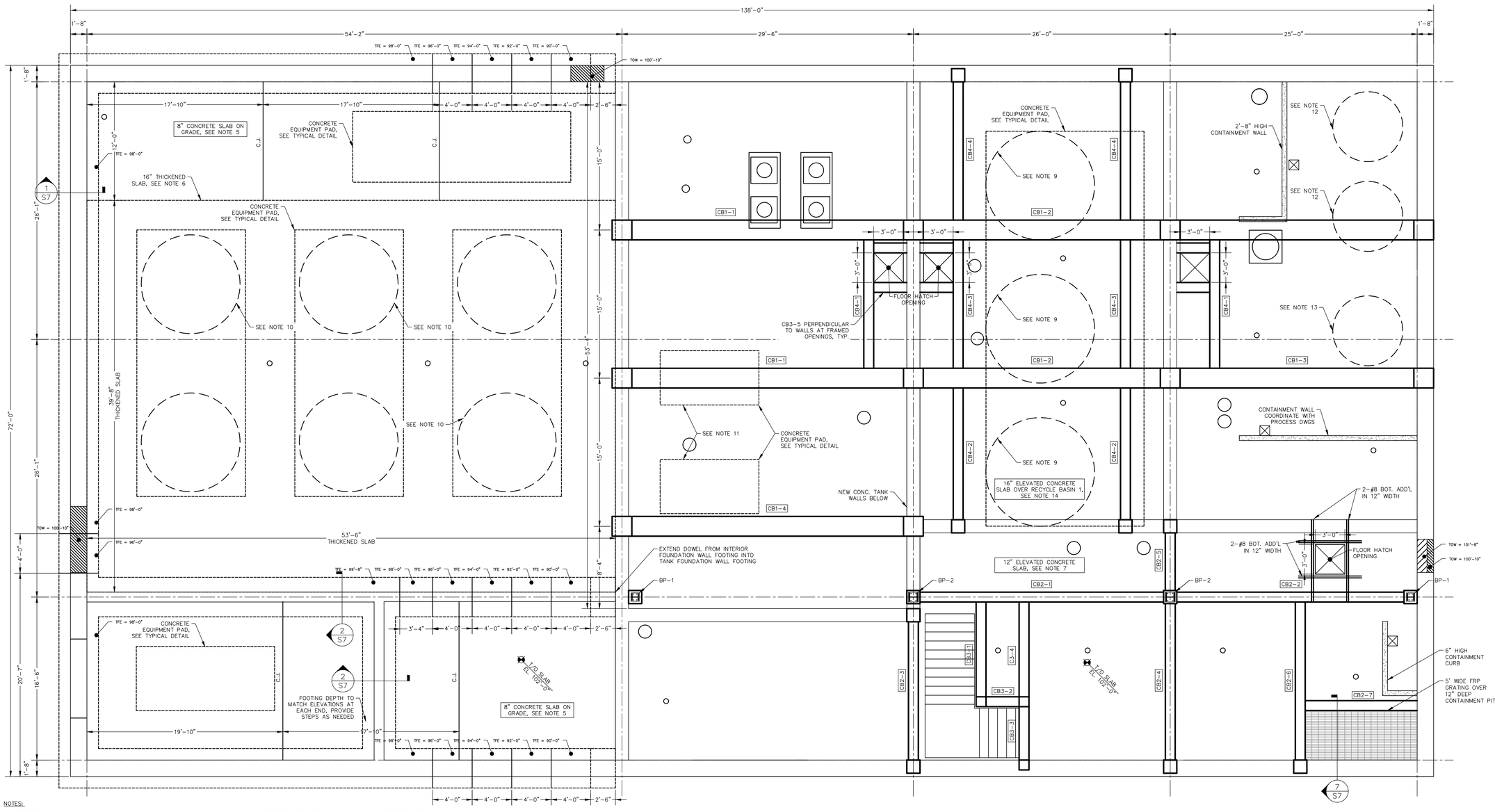
FOUNDATION AND MAT SLAB PLANS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO S–2

SHEET 45 OF 122



NOTES:

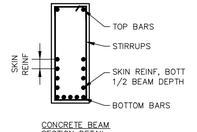
1. CB-# INDICATES CONCRETE BEAM. SEE CONCRETE BEAM DETAILS FOR SIZE AND REINFORCING REQS.
2. CC-# INDICATES CONCRETE COLUMN. SEE CONCRETE COLUMN DETAILS FOR SIZE AND REINFORCING REQS.
3. STAIRS AND RAILS ARE A DELEGATED DESIGN ITEM, BY OTHERS.
4. EXTERIOR PAD: 4'X4' EXTERIOR CONCRETE PAD WITH #4 AT 12" O.C. BOTH DIRECTIONS AT MID-DEPTH OF PAD.
5. SLAB ON GRADE: 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTH DIRECTIONS.
6. THICKENED SLAB ON GRADE: 16" CONCRETE SLAB WITH #6 @ 12" O.C. TOP AND BOTTOM IN BOTH DIRECTIONS.
7. ELEVATED SLAB: 12" CONCRETE SLAB WITH #8 @ 12" O.C. TOP AND BOTTOM BOTH DIRECTIONS U.N.O.
8. COORDINATE ALL WALL SLEEVE AND FLOOR OPENINGS WITH PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS. SEE TYPICAL DETAIL SHEET. NOT ALL WALL AND FLOOR PENETRATIONS ARE SHOWN ON THE STRUCTURAL DRAWINGS.
9. GREENSAND FILTER WITH TANK WITH A WEIGHT OF 145 KIPS PER TANK
10. GAC TRAIN WITH A WEIGHT OF 215 KIPS PER TRAIN.
11. UV SYSTEM WITH A WEIGHT OF 12.1 KIPS PER TRAIN.
12. CAUSTIC BULK STORAGE TANK WITH A WEIGHT OF 10 KIPS PER TANK.
13. PEROXIDE BULK STORAGE TANK WITH A WEIGHT OF 8.5 KIPS PER TANK.
14. ELEVATED SLAB: 16" CONCRETE SLAB WITH #8 @ 12" O.C. TOP AND BOTTOM BOTH DIRECTIONS OVER RECYCLE BASIN 1.
15. DEWATERING OF FOUNDATION NOT TO BE STOPPED UNTIL ELEVATED SLAB AND BEAMS ARE FULLY IN PLACE.

MAIN LEVEL FRAMING PLAN
SCALE: 3/16"=1'-0"

CONCRETE BEAM SCHEDULE		
MARK	SIZE (WxD)	NOTES
CB1	24"x24"	
CB2	12"x18"	
CB3	12"x12"	
CB4	12"x24"	

NOTES:

1. COORD. WITH PLANS AND DETAILS, PROVIDE DOWELS FROM T/O BEAMS INTO WALLS WHERE APPLICABLE, USE WALL REINF. SIZE AND SPACING



CONCRETE BEAM SECTION DETAIL

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-	CONSTRUCTION Date 6/28/21	By LKP
-	RECORD DRAWING Date -	By -

Drawn/Chk. BAM
Designed BAM
Checked LKP
Approved LKP
Date 6/26/2021
Book No. -
Project No. 2509
Dwg. ID -
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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MAIN LEVEL FRAMING PLAN
PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

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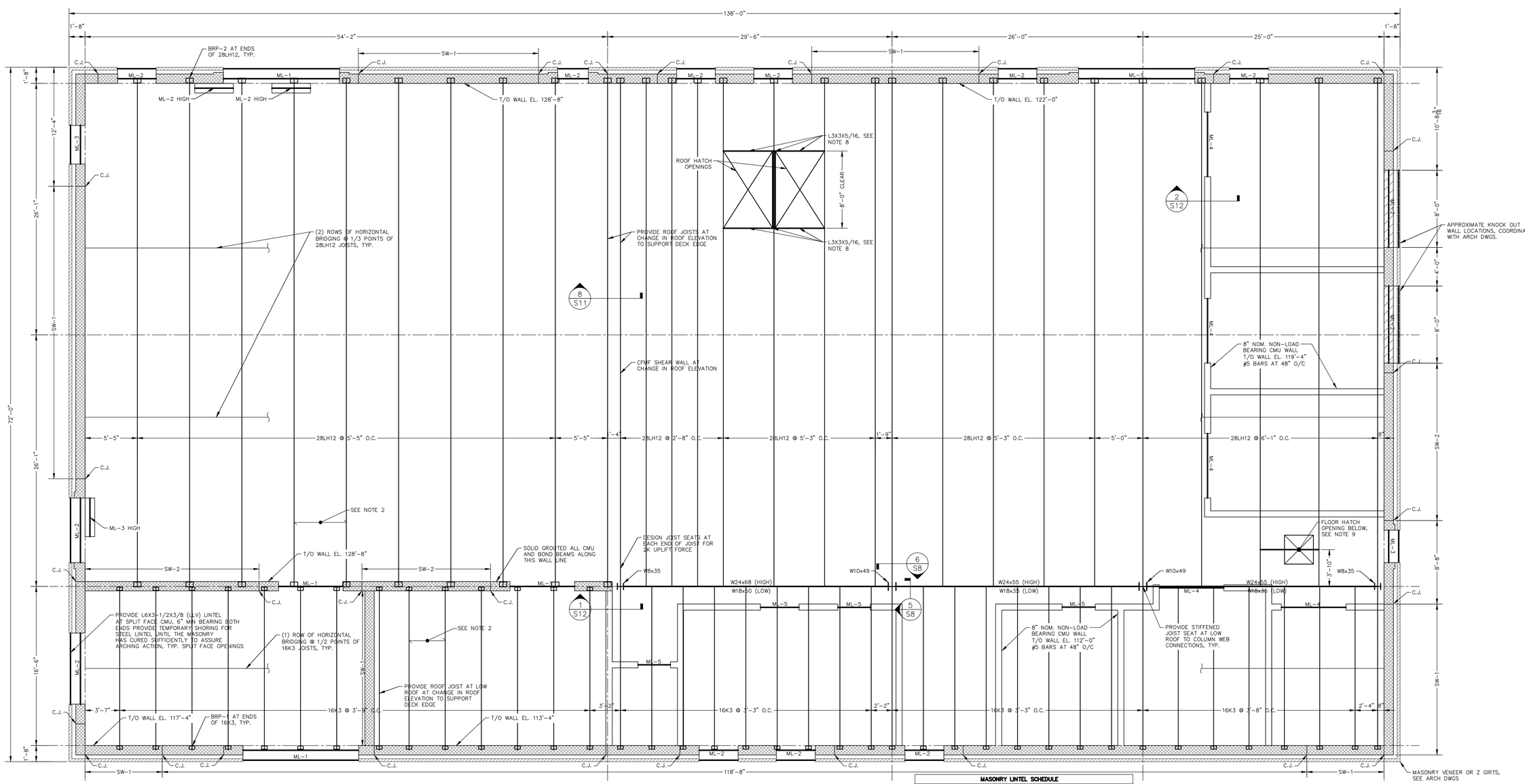
STATE OF NEW HAMPSHIRE — LINDA K. McNAIR-PERRY No. 6276 — LICENSED PROFESSIONAL ENGINEER — 6/28/21



NOTES:

1. 12" NOMINAL CMU WALL AT EXTERIOR, SEE PLAN/COORD. WITH ARCH. DWGS FOR TOP OF WALL ELEVATION. CMU WALL REINFORCING SHALL BE #6 VERT BARS AT 24" O/C AT MIDDLE OF CELL, CELLS WITH BARS TO BE GROUTED SOLID. SEE GENERAL NOTES FOR HORIZONTAL JOINT WIRE REINF. GROUT FIRST COURSE SOLID. 8" MIN. CMU BOND BEAM AT T/O WALL WITH (2) #5 HORIZ BARS CONT., EXTEND HEIGHT AS NEEDED.
2. ⟷ INDICATES SPAN DIRECTION OF 1 1/2" X 16 GA. TYPE B METAL DECK. FASTEN FLOOR DECK PANELS TO STEEL SUPPORTING MEMBERS WITH 3/4" NOMINAL DIA ARC SPOT (PUDDLE) WELDS IN EACH FLUTE (36/7). FASTEN SIDE LAPS AND PERIMETER EDGES OF PANELS BETWEEN SUPPORTS WITH (7) #14 FASTENERS PER SPAN.
3. ML-# INDICATES MASONRY LINTEL. SEE LINTEL SCHEDULE THIS SHEET FOR SIZE AND REINFORCING REQS. SEE ARCH AND MEP DWGS FOR OPENING SIZES REQUIRED.
4. COORDINATE HOLES IN METAL DECK FOR ROOF DRAINS AND MECH EQUIPMENT WITH ARCH AND MEP DWGS.
5. BRP-# INDICATES STEEL BEARING PLATE. SEE BEARING PLATE SCHEDULE ON THIS SHEET FOR PLATE SIZE AND ANCHORING REQS.
6. C.J. = CONTROL JOINT IN 12" CMU. CONTROL JOINTS TO BE 2'-0" FROM OPENINGS (TYP) UNLESS OTHERWISE NOTED. SEE TYPICAL CMU WALL ELEVATION ON S10.
7. SW = SHEAR WALL
   - SW1 – REFER TO TYPICAL DETAILS AND STD. WALL REINFORCEMENT
   - SW2 – REINFORCING BAR IN EACH CELL AND SOLID GROUTED
8. INSTALL L3X3 WITH THE OUTSTANDING HORIZONTAL LEG BEARING ON THE JOIST TOP CHORD FLANGE AND WITH THE VERTICAL LEG POINTING DOWN. COPE THE VERTICAL LEG 1/2" FROM THE JOIST TOP CHORD FLANGE. FIELD WELD THE L3X3 TO THE JOIST WITH 1/4" FILLET WELDS PARALLEL TO THE SPAN OF THE JOIST. COORDINATE THE LOCATION OF THE L3X3 WITH THE ROOF HATCH OPENING, WHICH SHALL BE CENTERED ON THE PUMPS BELOW. SEE ARCH. DWGS FOR ROOF HATCH DIMENSIONS.
9. APPLY HSS3X3X3/16 CROSS MEMBER BETWEEN TRUSSES FOR HOIST SUPPORT LOCATED ABOVE FLOOR HATCH. DESIGN THESE TRUSS BOTTOM CHORDS FOR APPLIED CONCENTRATED LOAD OF 500 LBS EACH. USE TYPICAL FIELD INSTALLED REINFORCEMENT BETWEEN THE APPLIED LOAD AT THE BOTTOM CHORD AND THE TOP CHORD PANEL POINT PER TYPICAL DETAIL.

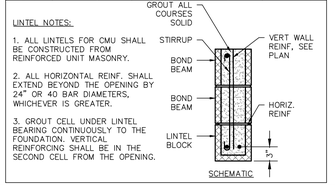
ROOF AND WALL FRAMING PLAN
SCALE: 3/16"=1'-0"

MASONRY LINTEL SCHEDULE

MARK	MASONRY OPENING LENGTH	SIZE (WxD)	BOTTOM REINFORCING	STIRRUPS
ML-1	COORD. W/ ARCH	12"x32"	2-#7	NONE REQ'D
ML-2	COORD. W/ ARCH	12"x16"	2-#5	NONE REQ'D
ML-3	COORD. W/ ARCH	12"x8"	2-#5	NONE REQ'D
ML-4	COORD. W/ ARCH	8"x16"	2-#5	NONE REQ'D
ML-5	COORD. W/ ARCH	8"x8"	2-#5	NONE REQ'D

LINTEL NOTES:

1. ALL LINTELS FOR CMU SHALL BE CONSTRUCTED FROM REINFORCED UNIT MASONRY.
2. ALL HORIZONTAL REINF. SHALL EXTEND BEYOND THE OPENING BY 24" OR 40 BAR DIAMETERS, WHICHEVER IS GREATER.
3. GROUT CELL UNDER LINTEL BEARING CONTINUOUSLY TO THE FOUNDATION. VERTICAL REINFORCING SHALL BE IN THE SECOND CELL FROM THE OPENING.



SCHEMATIC

BEARING PLATE SCHEDULE

MARK	SIZE (LxWxT)	ANCHOR RODS
BRP-1	4x7x1/2	2-$\frac{3}{4}$"ø
BRP-2	6x9x3/4	2-$\frac{3}{4}$"ø

NOTE: LONG DIMENSION OF PLATE SHALL RUN PARALLEL TO WALLS UNLESS NOTED OTHERWISE. PLATE EDGE SHALL BE SET BACK 1/2" FROM INSIDE OF CMU WALL UNLESS NOTED OTHERWISE.

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ROOF AND WALL FRAMING PLAN
PUDDING HILL WATER TREATMENT FACILITY
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CITY OF DOVER, NEW HAMPSHIRE

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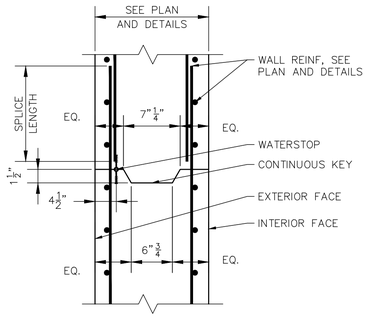
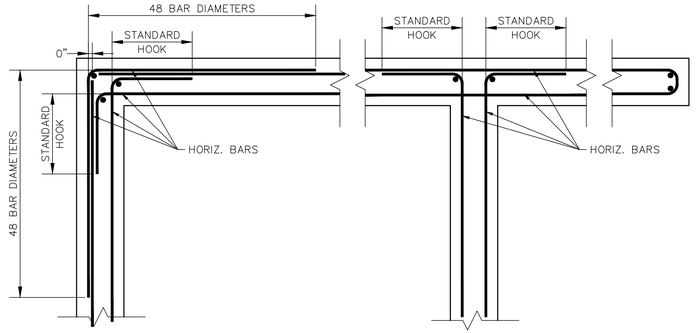
SHEET 47 OF 122

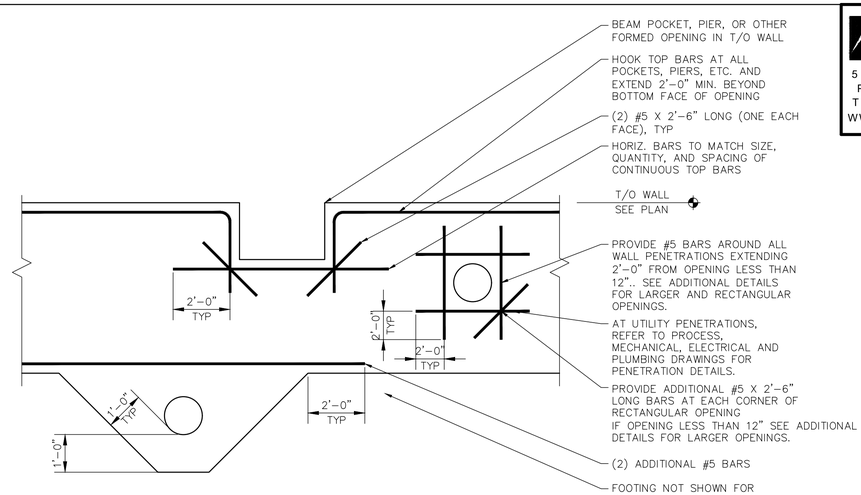




AT CORNERS AT INTERSECTIONS AT ENDS

A CONCRETE WALL CONSTRUCTION JOINT

SCALE: N.T.S.

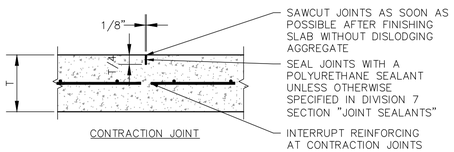


B CONCRETE WALL REINFORCING PLAN WALLS 10" OR GREATER IN THICKNESS

SCALE: N.T.S.

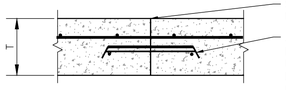
C TYPICAL WALL REINFORCING DETAILS AT POCKETS, PIERS, AND PENETRATIONS

SCALE: N.T.S.



CONTRACTION JOINT

WHEN CONTRACTION JOINT LOCATIONS ARE NOT SPECIFIED ON PLANS, PROVIDE JOINTS AS FOLLOWS:
1. AT MOVEMENT JOINT LOCATIONS FOR FINISH FLOORING.
2. AT RE-ENTRANT CORNERS.
3. ON COLUMN GRIDLINES
4. AT MAXIMUM SPACING OF 12'

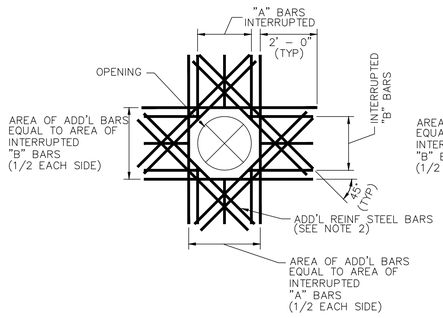


CONSTRUCTION JOINT

NOTE: CONSTRUCTION JOINTS MAY BE USED IN PLACE OF CONTRACTION JOINTS

D TYPICAL JOINTS FOR CONCRETE SLAB ON GRADE

SCALE: N.T.S.

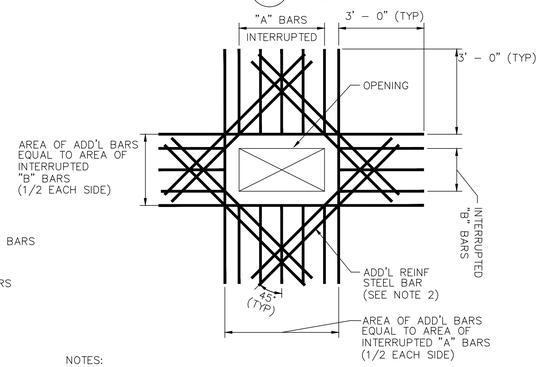


NOTES:
1. DETAILS ARE FOR OPENINGS 12" OR LARGER. SEE C/S9 FOR SMALLER OPENINGS

2. PROVIDE ADDITIONAL 4'-0" LONG BARS AS FOLLOWS :
   2.1 CONCRETE LESS THAN 10" THICK: 2-#5 BARS CENTERED IN WALL/SLAB
   2.2 CONCRETE GREATER THAN OR EQUAL TO 10": 2-#5 BARS AT EACH FACE

E REINFORCEMENT AT ROUND OPENING >12"

SCALE: N.T.S.

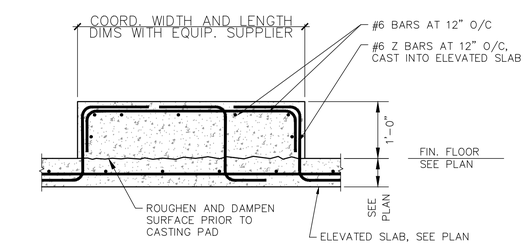


NOTES:
1. DETAILS ARE FOR OPENINGS 12" OR LARGER. SEE C/S9 FOR SMALLER RECTANGULAR OPENINGS

2. PROVIDE ADDITIONAL 4'-0" LONG BARS AS FOLLOWS :
   2.1 CONCRETE LESS THAN 10" THICK: 2-#5 BARS CENTERED IN WALL/SLAB
   2.2 CONCRETE GREATER THAN OR EQUAL TO 10": 2-#5 BARS AT EACH FACE

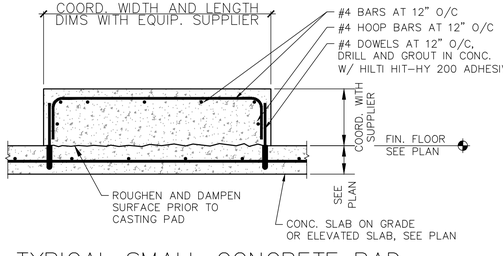
F REINFORCEMENT AT RECTANGULAR OPENING >12"

SCALE: N.T.S.



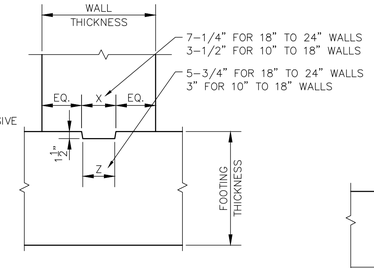
G TYPICAL GREENSAND FILTER CONCRETE PAD DETAIL

SCALE: N.T.S.



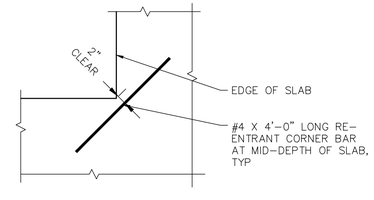
H TYPICAL SMALL CONCRETE PAD DETAIL

SCALE: N.T.S.



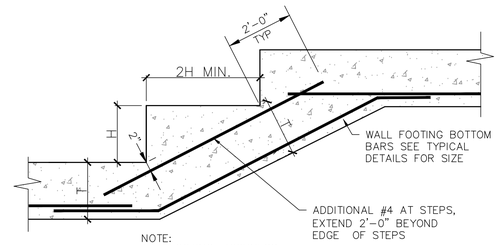
I FOUNDATION WALL BEVELED KEY, WALLS 10"+ THICK

SCALE: N.T.S.



J TYPICAL RE-ENTRANT CORNER BAR DETAIL

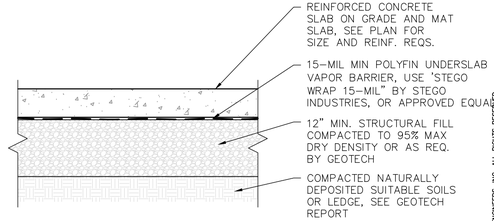
SCALE: N.T.S.



NOTE:
T = FOOTING THICKNESS
H = STEP HEIGHT (MAX 24")

K STEP FOOTING DETAIL

SCALE: N.T.S.



L TYPICAL SLAB ON GRADE SUBGRADE PREPARATION WITHOUT INSULATION

SCALE: N.T.S.

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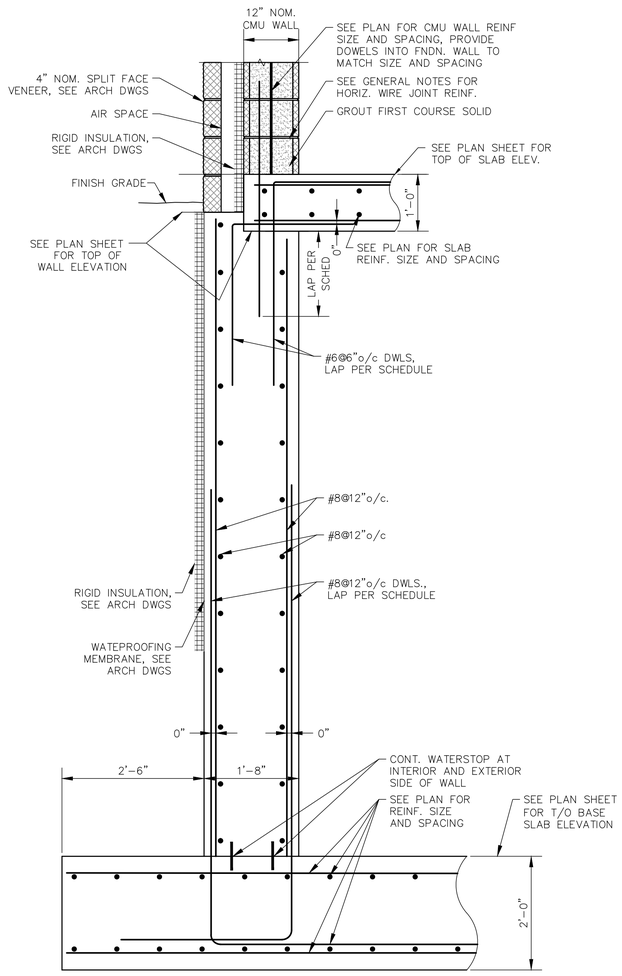
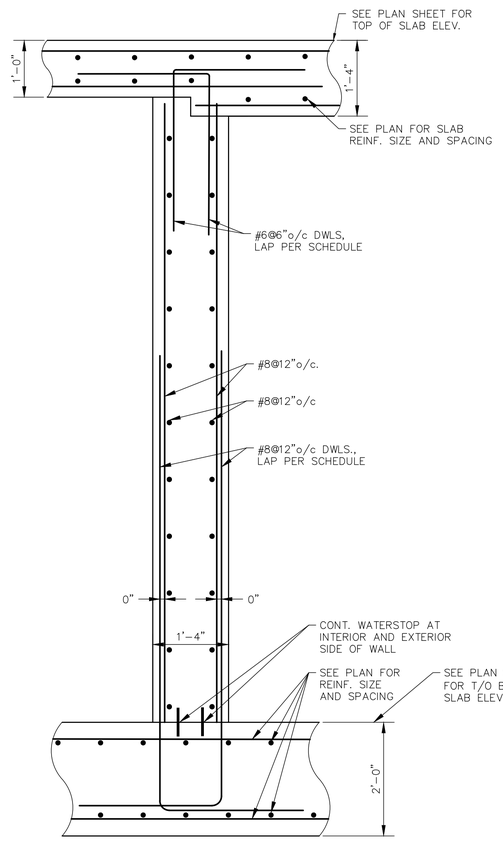
CONCRETE TYPICAL DETAILS
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

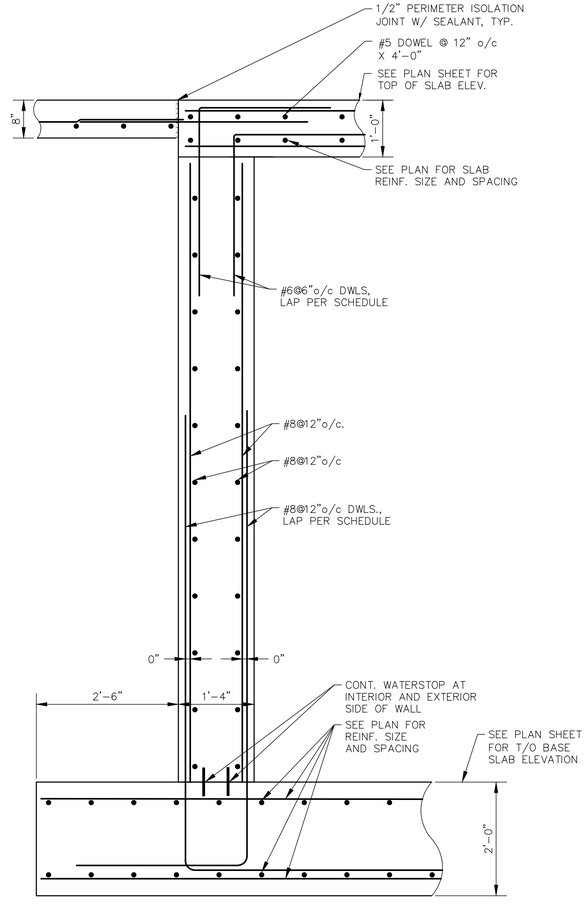
DWG NO S-5
SHEET 48 OF 122



1 FOUNDATION AND ELEVATED SLAB DETAIL, 102'-0" T/O SLAB
SCALE: 3/4" = 1'-0"



2 FOUNDATION DETAIL AT INTERIOR CONC. WALL
SCALE: 3/4" = 1'-0"



3 FOUNDATION, SLAB ON GRADE AND ELEVATED SLAB DETAIL, 102'-0" T/O SLAB
SCALE: 3/4" = 1'-0"

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

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4/18/24

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FOUNDATION AND WALL DETAILS

PUDDING HILL WATER TREATMENT FACILITY
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CITY OF DOVER, NEW HAMPSHIRE

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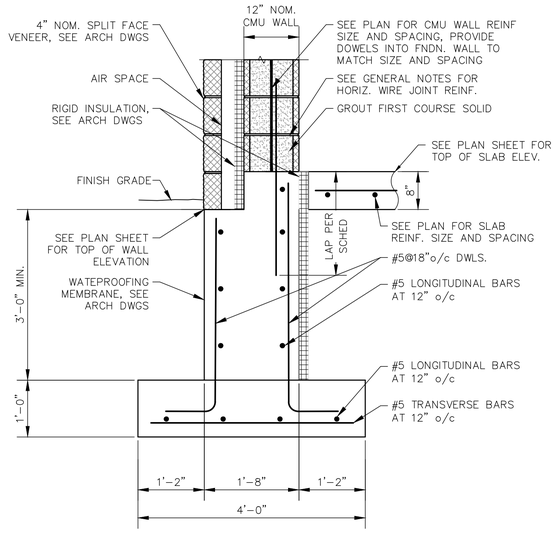
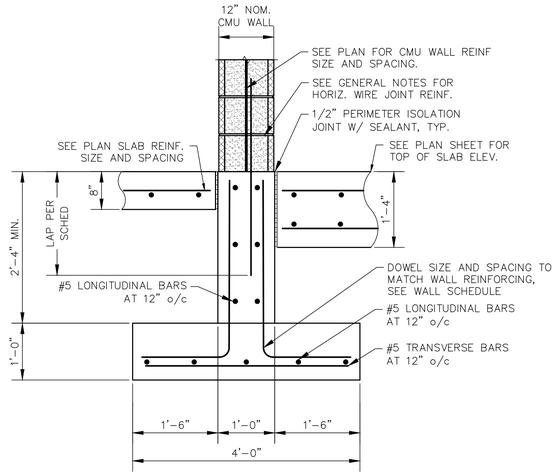
SHEET 49 OF 122



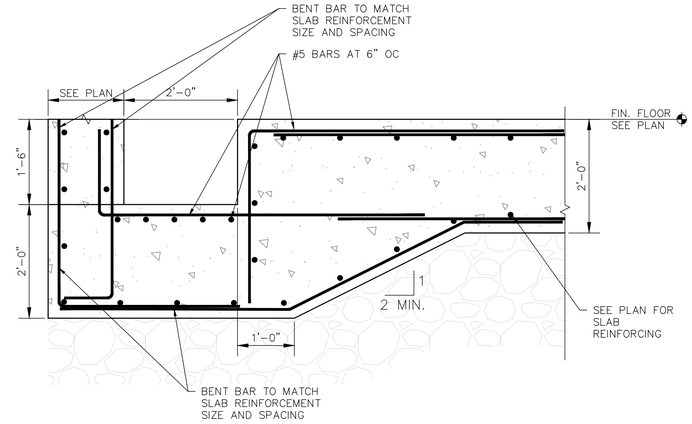
1 TYPICAL FROST WALL DETAIL

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



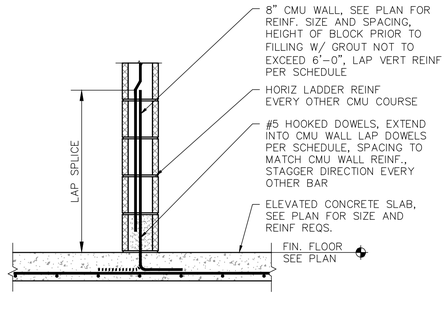
2 FOUNDATION DETAIL AT 12" INTERIOR LB WALL

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



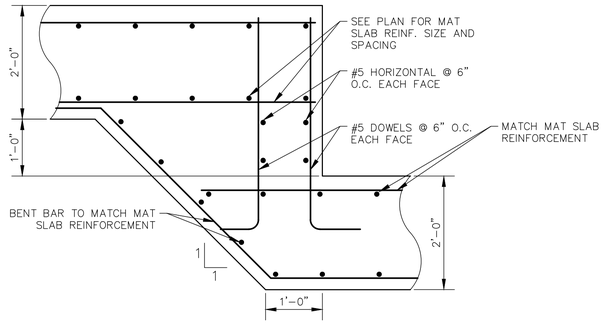
3 TYPICAL DETAIL AT RECYCLE BASIN SUMP/WALL

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



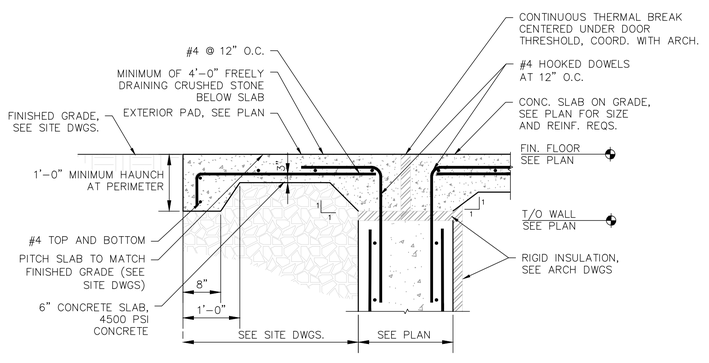
4 CMU WALL TO ELEVATED SLAB

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



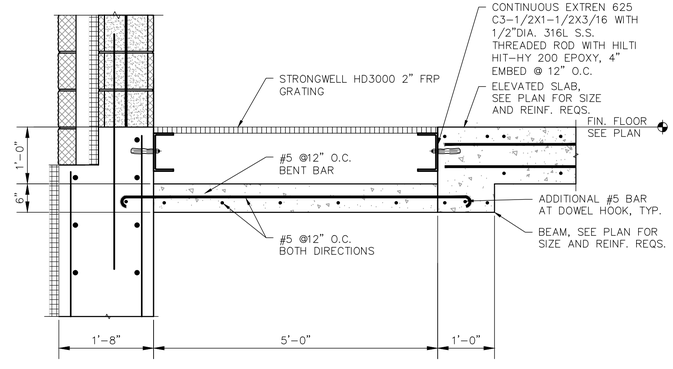
5 FOUNDATION DETAIL AT CLEARWELL SUMP PIT

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



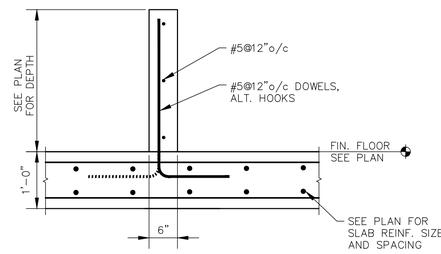
6 FOUNDATION DETAIL AT OPENING

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



7 TYPICAL DETAIL AT CONTAINMENT PIT/FND WALL

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



TYPICAL DETAIL AT CONTAINMENT WALL

8

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

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

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Dwg. ID -
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — LINDA K. McNAB-PERRY No. 6276 — LICENSED PROFESSIONAL ENGINEER — 6/28/21

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

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FOUNDATION AND WALL DETAILS CONT.

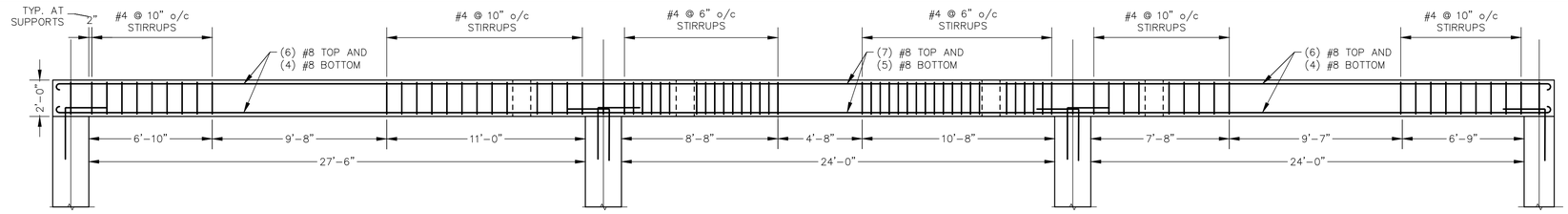
PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

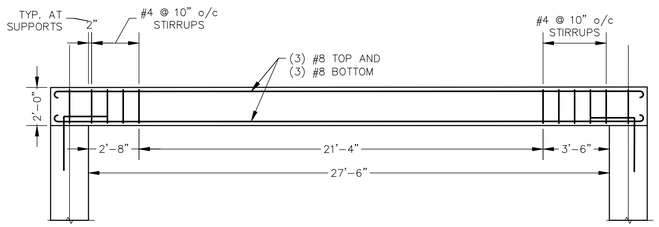
DWG NO S-7

SHEET 50 OF 122

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



1 CB1–1, CB1–2 AND CB1–3 REINFORCEMENT ELEVATIONS
SCALE: 1/4" = 1'–0"



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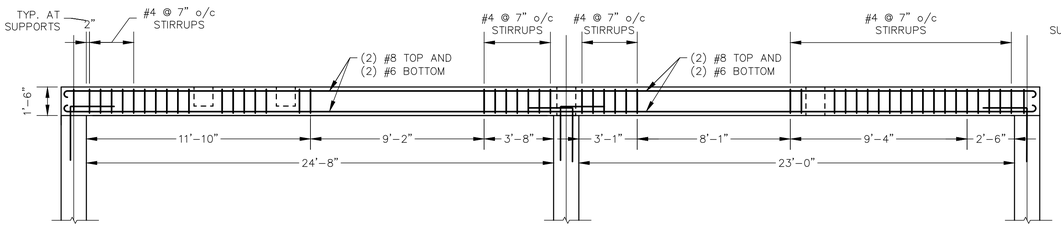
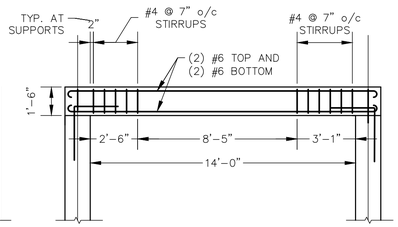


3 CB2–1 AND CB2–2 REINFORCEMENT ELEVATIONS
SCALE: 1/4" = 1'–0"



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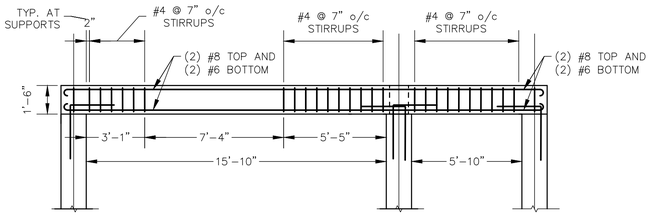
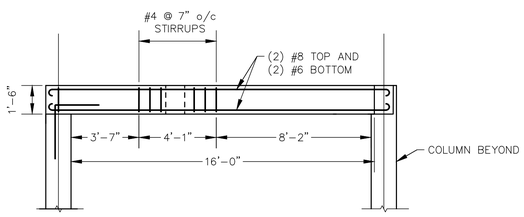


5 CB2–4 AND CB2–5 REINFORCEMENT ELEVATION
SCALE: 1/4" = 1'–0"



6 CB2–6 REINFORCEMENT ELEVATION
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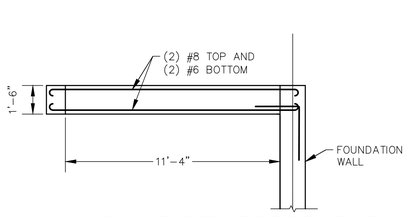
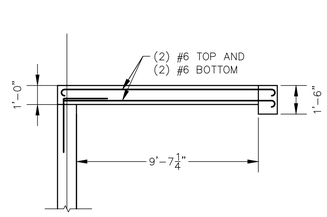
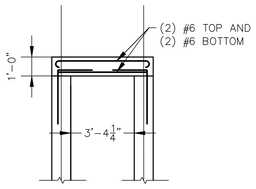


7 CB2–7 REINFORCEMENT ELEVATION
SCALE: 1/4" = 1'–0"



8 CB3–1 REINFORCEMENT ELEVATION
SCALE: 1/4" = 1'–0"



9 CB3–2 REINFORCEMENT ELEVATION
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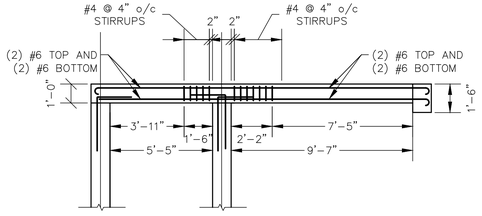
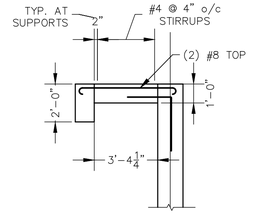


10 CB3–3 AND CB3–4 REINFORCEMENT ELEVATION
SCALE: 1/4" = 1'–0"



11 CB3–5 REINFORCEMENT ELEVATION
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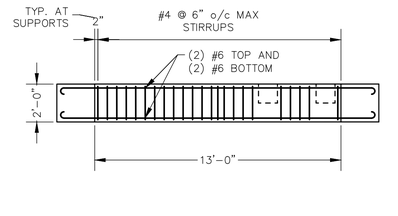
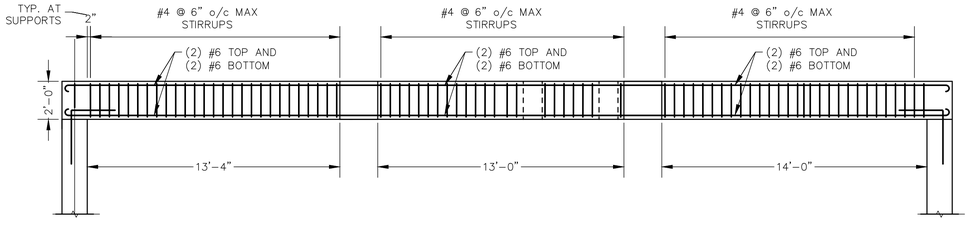
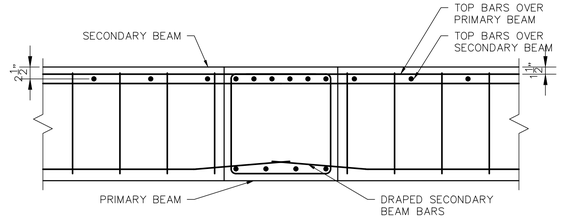


12 CB4–1 REINFORCEMENT ELEVATION
SCALE: 1/4" = 1'–0"



13 CB4–2, CB4–3 AND CB4–4 REINFORCEMENT ELEVATION
SCALE: 1/4" = 1'–0"



A TYPICAL GIRDER SECTION AT SUPPORT
SCALE: 3/4" = 1'–0"

NOTES:

1. BEAM TOP AND BOTTOM REINFORCEMENT TO BE CONTINUOUS. PROVIDE LAP SPLICES PER SCHEDULE.
2. PROVIDE #4 CLOSED STIRRUPS, TYP.
3. SEE WALL SECTIONS FOR TYPICAL BEAM TO COLUMN CONNECTION.

0 1' 2' 4'
SCALE: 3/4" = 1'–0"

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

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NO.	REVISIONS	APP'D
	ISSUE FOR APPROVAL Date 5/21/21	By LKP
	CONSTRUCTION Date 6/28/21	By LKP
	RECORD DRAWING Date –	By –

Drawn/Chk. BAM
Designed BAM
Checked LKP
Approved LKP
Date 6/26/2021
Book No. –
Project No. 2509
Dwg. ID –
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STATE OF NEW HAMPSHIRE – LINDA K. McNAIR-PERRY No. 6276 – PROFESSIONAL ENGINEER – 6/28/21

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BEAM SECTIONS AND DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

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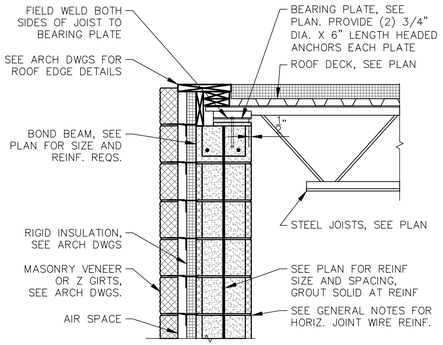
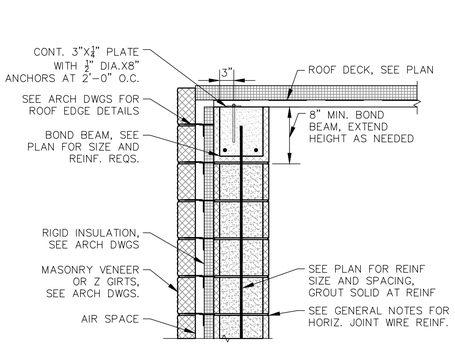
DWG NO S-8
SHEET 51 OF 122



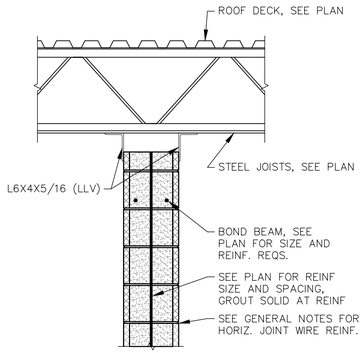
1 STEEL JOIST TO EXTERIOR CMU WALL

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



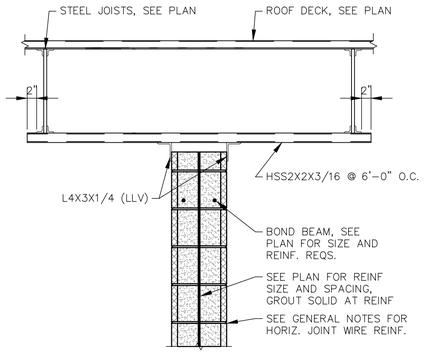
2 ROOF DECK TO EXTERIOR CMU WALL

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



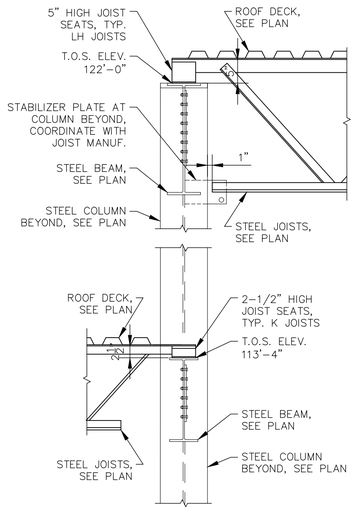
3 STEEL JOIST PERPENDICULAR TO INTERIOR NLB CMU WALL

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



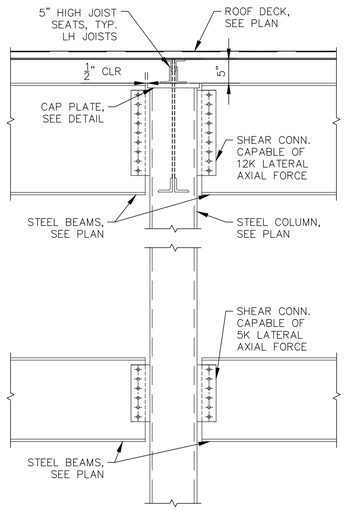
4 STEEL JOIST TO PARALLEL INTERIOR NLB CMU WALL

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



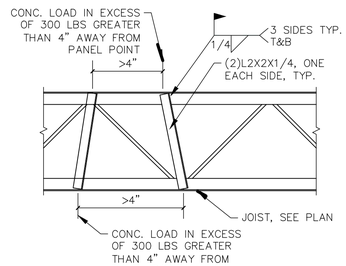
5 STEEL JOIST PERPENDICULAR TO STEEL BEAM DETAIL 1

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



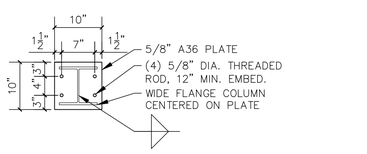
6 STEEL JOIST PERPENDICULAR TO STEEL BEAM DETAIL 2

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



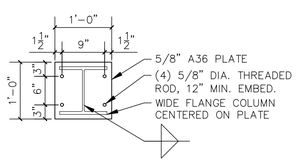
7 JOIST REINF. FOR CONC. LOADS

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



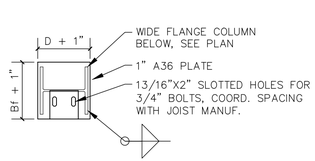
8 BP-1 DETAIL

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



9 BP-2 DETAIL

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



10 CAP PLATE DETAIL

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

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4	ISSUE FOR	

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Approved LKP
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LINDA K. McNAIR-PERRY No. 6276 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE 6/28/21

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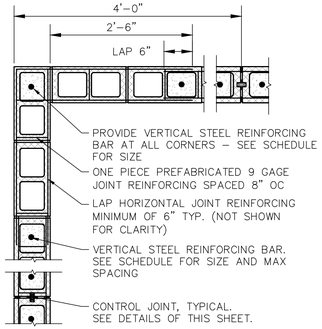
0 1' 2' 4'
SCALE: 3/4" = 1'-0"

WALL AND ROOF FRAMING DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

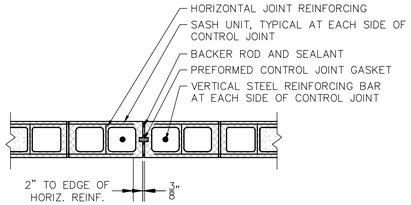
CITY OF DOVER, NEW HAMPSHIRE

DWG NO S-9
SHEET 52 OF 122



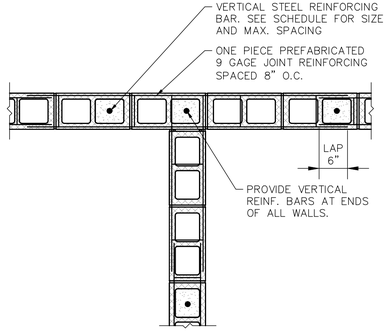
TYPICAL CORNER JOINT REINFORCING

(A) SCALE: N.T.S.



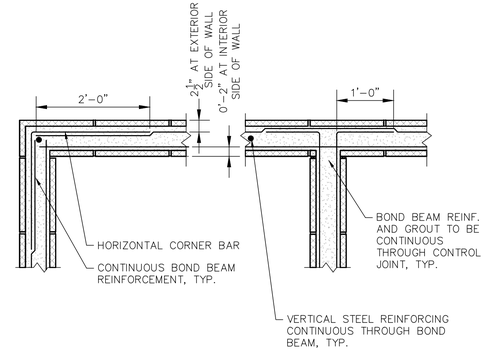
TYPICAL CONTROL JOINT DETAIL AT EXTERIOR WALL

(B) SCALE: N.T.S.



(C) TYPICAL WALL INTERSECTION DETAIL

SCALE: N.T.S.

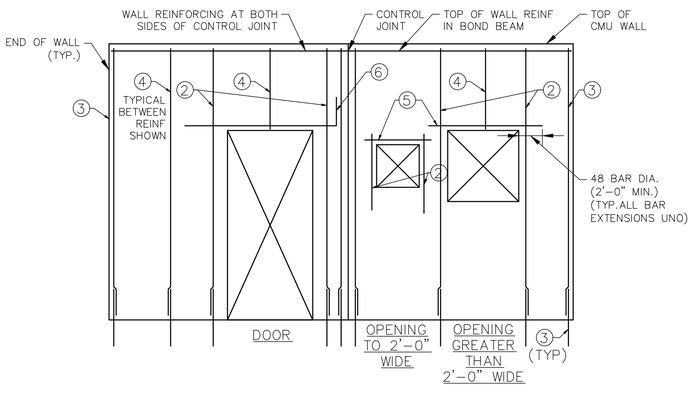


TYPICAL BOND BEAM REINF. AT CORNERS AND INTERSECTIONS

(D) SCALE: N.T.S.

LEGEND

1. SEE TYPICAL CMU WALL OPENING DETAIL ON THIS SHEET
2. 1–#5 EACH SIDE
3. SEE TYPICAL CMU WALL CORNER REINFORCING DETAIL ON S9
4. BETWEEN BARS SHOWN, PROVIDE WALL REINFORCING PER TYPICAL CMU WALL REINFORCING DETAILS
5. SEE TYPICAL CMU LINTEL DETAIL AND SCHEDULE ON S4, AND THE ARCHITECTURAL DRAWINGS
6. IF FULL LENGTH IS NOT AVAILABLE, EXTEND AS FAR AS POSSIBLE, HOOK 90°. THEN EXTEND, BEYOND BEND, REMAINDER OF LENGTH REQUIRED (BUT NOT LESS THAN 1'–0")



TYPICAL CMU WALL ELEVATION

(E) SCALE: N.T.S.

4' 3' 2' 1' 0' 4' 8'

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

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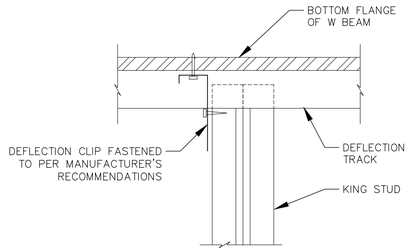
TYPICAL MASONRY WALL DETAILS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

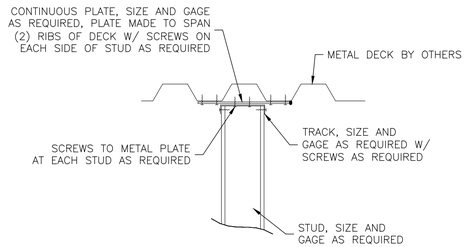
DWG NO S–10

SHEET 53 OF 122



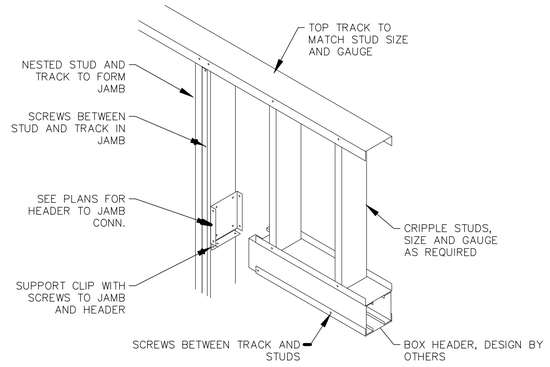
1 KING STUD CONNECTION AT BEAM FLANGE

SCALE: N.T.S.



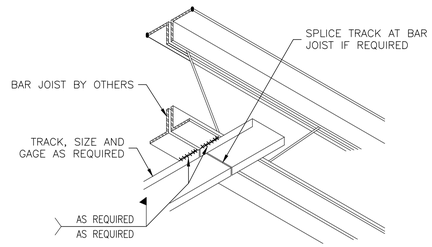
2 STUD CONNECTION AT METAL DECK

SCALE: N.T.S.



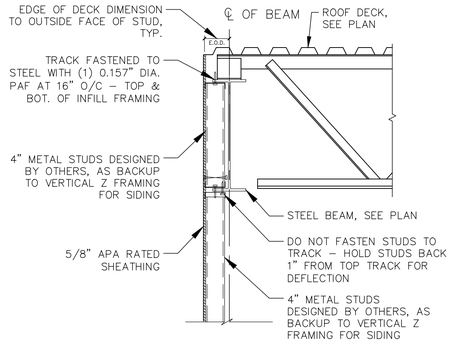
3 CFMF HEADER CONNECTION DETAIL

SCALE: N.T.S.



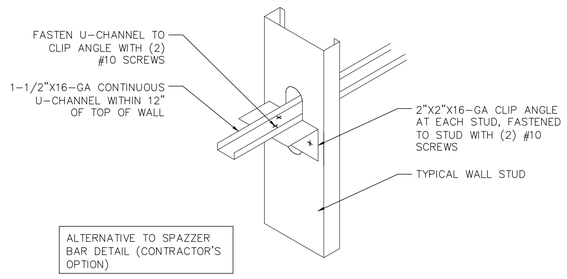
4 TRACK CONNECTION AT JOIST

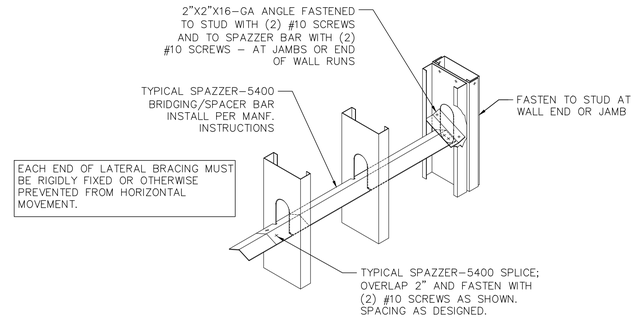
SCALE: N.T.S.

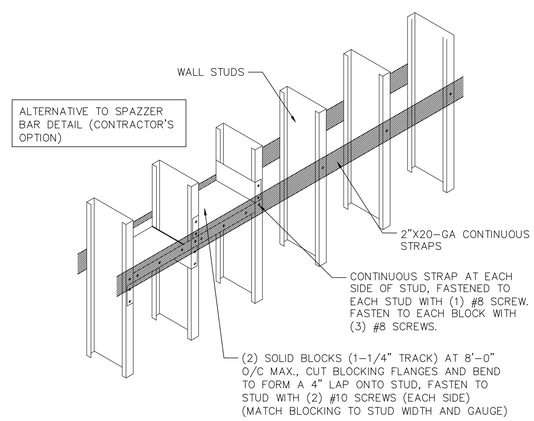


5 TYPICAL TOP TRACK DETAIL

SCALE: N.T.S.

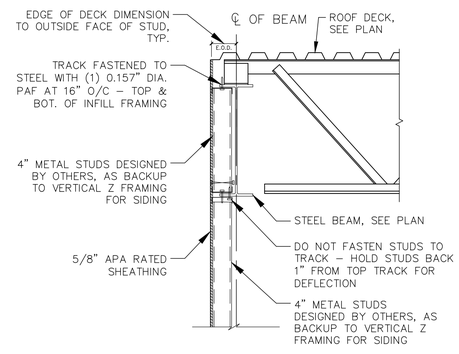






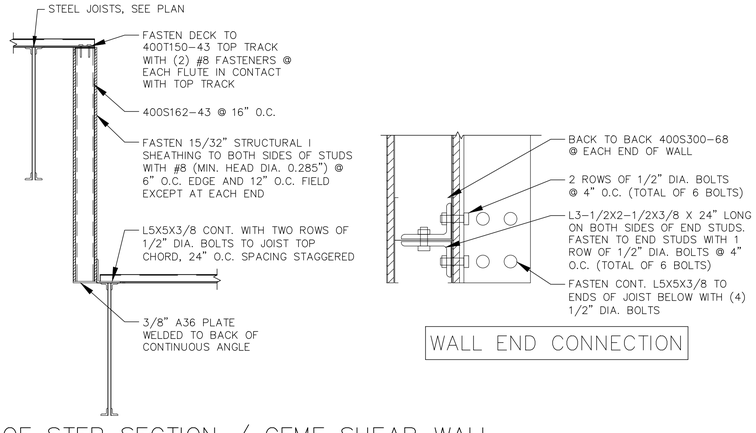
6 STUD BRACING DETAILS (CONTRACTOR OPTION)

SCALE: N.T.S.



7 TYPICAL TOP TRACK DETAIL

SCALE: N.T.S.



8 ROOF STEP SECTION / CFMF SHEAR WALL

SCALE: N.T.S.

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NO.	REVISIONS	APP'D

ISSUE FOR
APPROVAL — By LKP — Date 5/21/21
CONSTRUCTION — By LKP — Date 6/28/21
RECORD DRAWING — By – — Date –

Drawn/Chk. BAM
Designed BAM
Checked LKP
Approved LKP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID –
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — LINDA K. McNAIR-PERRY No. 6276 — PROFESSIONAL ENGINEER — 6/28/21

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CFMF DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

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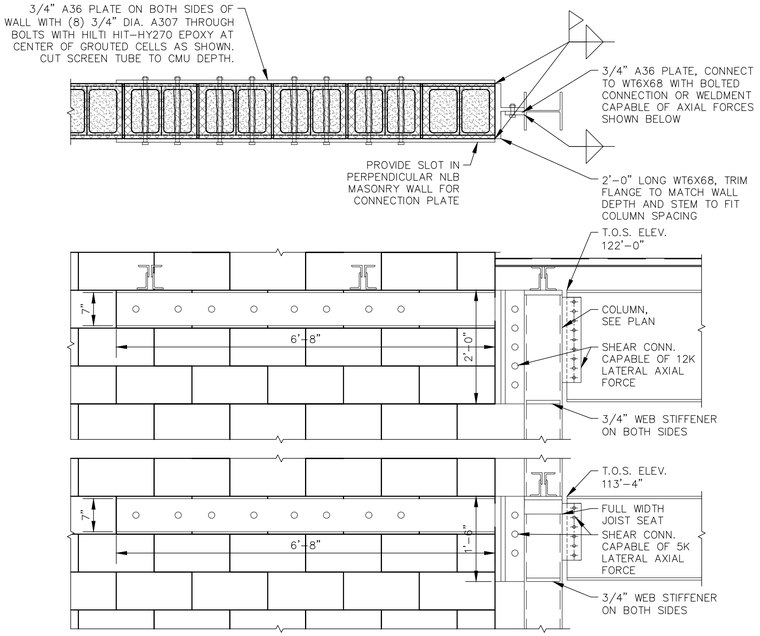
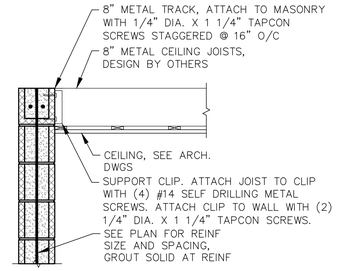
DWG NO S–11
SHEET 54 OF 122



1 STEEL TO MASONRY WALL CONNECTION DETAIL

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



2 CEILING FRAMING AT INTERIOR NLB CMU WALL

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

0 1' 2' 4'

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

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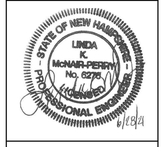

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STEEL AND CFMF FRAMING DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO S-12

SHEET 55 OF 122

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
AOP	ADVANCED OXIDATION PROCESS
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
GAC	GRANULAR ACTUATED CARBON
GSP	GREENSAND PLUS
H	HIGH
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
IX	ION EXCHANGE
LG	LONG
LP	LOW POINT
MJ	MECHANICAL JOINT
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)

ABBREVIATIONS - UV SYSTEM

AC	AIR CONDITIONER
CPP	HYDRAULIC SYSTEM CENTER
HSC	CONTROL POWER PANEL
SCC	SYSTEM CONTROL CENTER
UV	ULTRAVIOLET
UVT	ULTRAVIOLET LIGHT TRANSMITTANCE

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

PIPING COLOR CODE

	RAW WATER (GSP INFLUENT)
	GSP FILTERED
	UV TREATED (GAC INFLUENT)
	GAC EFFLUENT
	BACKWASH SUPPLY
	BACKWASH WASTE
	RECYCLE
	FINISHED WATER
	FILTER TO WASTE (FTW)
	RESIDUALS

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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PROCESS PIPING LEGEND & NOTES

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P1

SHEET 56 OF 122

H:\Real Numbers\Dover\2509 - Pudding Hill Aquifer Recharge\Design\2509_P_Divider.dwg, P1, 6/30/2021 10:00:04 AM, mg

PUDDING HILL WATER TREATMENT PLANT

PROCESS BASIS OF DESIGN:

Flow

Griffin Well	0 to 500 gpm
Ireland Well	0 to 500 gpm
DPH-1 Well	0 to 500 gpm
Total Permitted Aquifer Yield	780 gpm (1,123,200 gpd) in any 24-hour period
Plant Design Average Flow	**800 gpm for 24hr/day operation**
Plant Design Maximum Flow	**1,000 gpm (2 wells at 500 gpm each)**

Water Quality

Basis of Design: Based on worst case observed in aquifer and as recommended by EGGI/GZA

	Raw Water Quality		Finished Water Quality Targets
	Griffin Well	*Ireland/DPH-1 Wells*	
Iron	0.40 mg/L	0.40 mg/L	<0.3 mg/L (SMCL)
Manganese	0.30 mg/L	0.30 mg/L	<0.05 mg/L (SMCL)
PFHxS	315 ng/L	174 ng/L	ND (MCL = 18 ng/L)
PFOA	850 ng/L	522 ng/L	ND (MCL = 12 ng/L)
PFNA	49.9 ng/L	13.3 ng/L	ND (MCL = 11 ng/L)
PFOS	720 ng/L	641 ng/L	ND (MCL = 15 ng/L)
MtBE	12 ug/L	12 ug/L	<1 ug/L (MCL = 13 ug/L)
1,4 Dioxane	4.1 ug/L	4.1 ug/L	<0.32 ug/L (MCL)
pH	5.9	5.9	7.2
Chlorine residual			0.3 to 0.6 mg/L
Fluoride			0.7 mg/L

Greensand Plus Filtration System

Basis of Design	1. 24-hour min. filter run time between backwashes at design flow with all filters in service 2. Typical filter run time up to 72-hours between backwashes at design flow with all filters in service 3. 24-hour filter run time between backwashes at 50% design flow with one filter out of service	
Manufacturer	Roberts Filter Group	
Media	Greensand Plus, 24 inches deep Anthracite, 12 inches deep	
# Filters	3	
Nominal Diameter	11 feet	
Flow Rate per Filter at 1,000 gpm Plant Flow	500 gpm with 1 filter out of service 333 gpm with all filters in service	
Filter Flux at 1,000 gpm Plant Flow	5.26 gpm/sq.ft. with 1 filter out of service 3.51 gpm/sq.ft. with all filters in service	Target < 6 gpm/sq.ft. per Pilot Study Target < 4 gpm/sq.ft. per Pilot Study

Advanced Oxidation System

Basis of Design	1.11 log removal of 1,4 Dioxane at design flow and concentration
UVT	96% minimum
Scavenging Demand	50 k/s
Log Removal	1.11
Peroxide Dose	12 mg/l
Manufacturer	Trojan
Model	UV Flex 100
Number of Units	2
Capacity per unit at Design flow	500 gpm (1000 gpm with one unit and lamps at 100% and maximum peroxide dose)
Number of Banks, per unit	2
Reactor Type	High output, low pressure

PFAS Filtration System

Basis of Design	PFAS levels below detection limits based on current NH limits (4 compounds)	
Manufacturer	Calgon Carbon	
System	Model 10	
Media	Calgon F400	
Number of Filter Trains	3	
Flow per Train	333 GPM	(500 GPM one train off line)
Total Number of Filter Vessels	6	
Nominal Diameter	10 feet	
Empty Bed Contact Time (EBCT) per vessel	15 min	(10 min minimum one train off line)
Lbs of GAC per vessel	20,000	

Recycle Tanks

Basis of Design		
1. Size for 1 day's GSP backwash volume (all filters, 1 cycle), gal.	52,000	Daily flow from GSP, based on Roberts Water Proposal
2. Size to provide storage for backwashing new 'GAC media, gal. per vessel	23,200	Based on 10ft. Dia. Vessels with Calgon F400 Media.
3. Provide equalization storage for 1 vessel of GAC media filter-to-waste for media startup/conditioning, gal.	50,000	Based on one 10ft. Vessel x 10 bed volumes (5,000 gal. ea.) for Calgon F400 media.
4. Provide 2 tanks, each sized to handle daily flow requirements (full redundancy).		Both tanks required for GSP operation concurrent with GAC media startup

Recycle Tank 1

Dimensions, nominal	44'-4" long x 24'-8" wide x 10' side water depth (to overflow)	
Operating band provided in basin, ft.	7	7 to 8 ft depending on pump setpoints
Volume per Vertical Foot, gal.	8,070	
Volume provided in operating band, gal.	56,485	
Residuals volume daily, gal.	16,000	Depending on residual pump setpoints and spray volume
Residuals Storage Operating Band	1.0 to 2.0 feet	"Recycle Pump Off" to "Residuals Pump Off"
Design Residuals Pump Capacity, gpm	300	Pump down in reasonable time while not exceeding sewer capacity
Time to Pump Down Residuals Storage, min.	53	

Recycle Tank 2

Dimensions, nominal	44'-4" long x 24'-4" wide x 10' side water depth (to overflow)	
Operating band provided in basin, ft.	7	7 to 8 ft depending on pump setpoints
Volume per Vertical Foot, gal.	8,180	
Volume provided in operating band, gal.	57,280	
Residuals volume daily, gal.	16,000	Depending on residual pump setpoints and spray volume
Residuals Storage Operating Band	1.0 to 2.0 feet	"Recycle Pump Off" to "Residuals Pump Off"
Design Residuals Pump Capacity, gpm	300	Pump down in reasonable time while not exceeding sewer capacity
Time to Pump Down Residuals Storage, min.	53	

PROCESS BASIS OF DESIGN: (cont.)

Clearwell

Basis of Design		
1. Size for 1 day's GSP backwash volume (all filters, 1 cycle) between min. pump submergence backwash enable setpoint, gal.	45,600	
2. Size to provide backwashing volume per vessel of GAC media, gal.	23,200	Clearwell has a connection to distribution system to provide additional volume required to refill clearwell for backwashing other vessels.
Dimensions, nominal	53'-4"' Length x 28'-2" Width x 10' Sidewater Depth	
Operating band provided in clearwell, gal.	5	El 92 to El 97, minimum band
Volume per Vertical Foot, gal.	11,237	
Volume provided in operating band, gal.	56,186	Typical volume available for backwash, depending on setpoints
Overflow Level	10.0 ft.	
Finished Water Pump Start Level	7.0 ft.	
Operating Band for Finished Water Pumps	2.0 ft.	
Low level alarm	1.0 ft	set above min. Pump submergence

Pumps

Backwash Pumps	
Type	Vertical turbine
Number	2 (Duty/Standby)
Design Point	1,425 gpm @ 80' TDH
Nominal Motor HP	40 hp
Finished Water Pumps	
Type	Vertical turbine
Number	2 (Duty/Standby)
Design Point	1,000 gpm @ 252' TDH- Garrison Tank at overflow level
Nominal Motor HP	100 hp
Supernatant Recycle Pumps	
Type	End-suction centrifugal
Number	2 (Duty/Standby)
Design Point	100 gpm @ 165' TDH
Nominal Motor HP	10 hp
Residual Pumps	
Type	Self-priming centrifugal
Number	2 (Duty/Standby)
Design Point	300 gpm @ 90' TDH
Nominal Motor HP	20 hp

Air Scour Blower for Greensand Plus Filters

Backwash	
Type	PD
Number	1
Design Point	150 scfm @ 6 psi
Nominal Motor HP	7.5 hp

Chemical Feed

Sodium Hydroxide, 25% (Caustic Soda) - General

Bulk Storage # of Tanks	2
Bulk Storage Tank Size	3,000 gal.
Total Bulk Storage Volume	6,000 gal.
Bulk Storage Time	48 days at design flow and dose
Day Tank Size	260 gal.
Day Tank Storage Time	49 hours at design flow and dose
Transfer pump design point	25 gpm at 21 ft TDH

Sodium Hydroxide, 25% (Caustic Soda) - Pre-Filtration

Purpose	pH adjustment prior to filtration
Target pH	7.2 to 7.6
Est. dose	21.4 mg/L as NaOH
Chemical Flow	3.1 gph at design flow and dose

Sodium Hydroxide, 25% (Caustic Soda) - Post-Clearwell

Purpose	pH adjustment prior to distribution (if needed after filters)
Target pH	7.2 to 7.6
Est. dose	15.0 mg/L as NaOH
Chemical Flow	2.2 gph at design flow and high range dose

Calcium Hypochlorite Tablet Chlorination - General

Chlorinator rated feed rate	0.3-2.0 lb./hr as Cl2
Number of chlorinators	2
Weight of Tablets Stored per Pallet	1,320 lb.
Design # of Pallets Stored	1
Design Weight of Tablets Stored	3,960 lb.
Storage Time for 1 Pallet	54 days at design flow and dose

Calcium Hypochlorite Tablet Chlorination - Pre-Filtration

Purpose	oxidize Fe/Mn for precipitation
Typical Solution Strength	200 mg/L as Cl2
Est. dose	1.1 mg/L as Cl2
Chlorinator Feed Rate	0.66 lb./hr as Cl2 at design flow and dose
Chlorinator Flow Rate	4.3 gpm at design flow and dose
Chlorinator Hopper Capacity	75 pounds of tablets (less depending number of stacks used)
Time between Hopper Fills	5 days at design flow and dose

PROCESS BASIS OF DESIGN: (cont.)

Calcium Hypochlorite Tablet Chlorination - Post-Clearwell

Purpose	distribution system disinfectant residual
Typical Solution Strength	200 mg/L as Cl2
Est. dose	0.6 mg/L as Cl2
Chlorinator Feed Rate	0.36 lb./hr as Cl2 at design flow and dose
Chlorinator Flow Rate	2.3 gpm at design flow and dose
Chlorinator Hopper Capacity	75 pounds of tablets (less depending number of stacks used)
Time between Hopper Fills	9 days at design flow and dose

Zinc Orthophosphate

Location	Post-clearwell
Purpose	corrosion control
Est. dose	1.3 mg/L as PO4
Chemical Flow	0.11 gph at design flow and dose
Storage	270 gallon IBC tote
Storage Time, per Tote	107 days at design flow and dose
Day Tank Size	30 gal
Day Tank Storage Time	284 hours at design flow and high range doses
Transfer pump design point	14 gpm at 15 ft TDH

Sodium Fluoride

Location	Post-clearwell
Purpose	prevention of dental cavities
Est. dose	0.7 mg/L as F
Saturator Feed Rate	1.8 gph at design flow and dose
Saturator Tank Size, gal.	110
Weight of Sodium Fluoride Powder per Pallet, lb.	2,200
Design # of Pallets Stored	1
Storage Time per Pallet	143 days at design flow and dose
Time for 1 Bag to Dissolve	3.2 days at design flow and dose

Hydrogen Peroxide

Location	Post GSP filtration, Pre-UV
Purpose	Advanced oxidation process
Ext. dose	12.0 mg/L max
Typical solution strength	27%, 35% or 50%
Feed rate, gpd	45 gpd with 27% at design average flow
Storage	3,000 gal bulk tank, based on min delivery volume
Storage time, days	67 days at design average flow

Existing wells

Griffin Well

Top of casing, ft MSL	135	Per EGGI reports
Depth of well, ft	101	Per EGGI reports
Bottom of screen, ft MSL	34	
Length of screen, ft	20 assumed	
Drawdown elevation at 500 gpm, ft MSL	66	estimated based on 2016 pump test data
Pump model and type	Layne and Bowler 12RL, 4 stage, rebuilt in 2016	
Design Points (based on new WTP)	140 ft TDH at 500 gpm through WTP; 152 ft TDH at 1000 gpm through WTP	
Nominal Motor HP	60	

Ireland Well

Top of casing, ft MSL	105	approx., per EGGI report
Depth of well, ft	101	per EGGI report and well completion report
Bottom of screen, ft MSL	5	
Length of screen, ft	20	per well completion report
180 day drawdown, ft MSL	59	46' below TOC per EGGI report
Pump model and type	Sulzer CS-8L submersible	
Design Points (based on new WTP)	144 ft TDH at 500 gpm through WTP; 156 ft TDH at 1000 gpm through WTP	
Nominal Motor HP	60 HP	

DPH-1 Well

Top of casing, ft MSL	102.5	approx., per EGGI report
Depth of well, ft	72	per EGGI report and well completion report
Bottom of screen, ft MSL	30.5	
Length of screen, ft	15	
180 day drawdown, ft MSL	50.5	52' below TOC per EGGI report
Pump model and type	Sulzer CS-8L submersible	
Design Points (based on new WTP)	150 ft TDH at 500 gpm through WTP; 162 ft TDH at 1000 gpm through WTP	
Nominal Motor HP	60 HP	

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STATE OF NEW HAMPSHIRE – TIMOTHY G. PAGE No. 10862 – LICENSED PROFESSIONAL ENGINEER

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DESIGN DATA SUMMARY

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P2

SHEET 57 OF 122

H:\Real Numbers\Dover\2509 - Pudding Hill Aquifer Recharge\Design\2509_P_Design\Data.dwg, P2, 6/30/2021 2:35:21 PM, img

PUDDING HILL WATER TREATMENT FACILITY

TO SINK "RAW WATER" SAMPLE TAP
SODIUM HYDROXIDE
CALCIUM HYPOCHLORITE
PIT 0200
10"
TO SINK "PRE-TREATED" SAMPLE TAP
pH
AE 0201
AIT 0201 pH
CHLORINE
AIT 0202 CL RES.
3" 304 SS SCH 10 AIR
PS 0302
AIR SCOUR BLOWER
AIR INTAKE FILTER
INTAKE SILENCER
10" DI PRE-TREATED
10" DI BACKWASH SUPPLY
FUTURE CARTRIDGE FILTERS
PFAS TREATMENT
GAC 1A
GAC 1B
VALVE RACK
FTW LOOP
FE-0501
GAC 2A
GAC 2B
FE-0502
GAC 3A
GAC 3B
FE-0503
GAC (6) x 10' DIA. (FUTURE RESIN)
FE 0200
FIT 0200
FILTER 1
FILTER 2
FILTER 3
FE-0310
FE-0320
FE-0330
GREENSAND PLUS FILTRATION SYSTEM (SEE TYPICAL FILTER DETAIL (3)x11' DIA.
FIT 0401
FE 0401
"POST AOP WATER"
HYDROGEN PEROXIDE
UV REACTOR 1
STATIC MIXER
"PRE AOP WATER"
FIT 0402
FE 0402
UV REACTOR 2
ADVANCED OXIDATION PROCESS
UVT
AIT 0400
BYPASS (NS)
10" DI FILTERED
"GSP FILTERED WATER"
10" DI BW WASTE
BW SUPPLY
FTW AND BW WASTE
TO RECYCLE TANKS
10" DI BACKWASH SUPPLY
10" FW TO CLEARWELL
"GAC FILTERED WATER"
10% OF RW FLOW (80 GPM MAX.) 3" DI RECYCLE
1000 GPM
10" DI RAW WATER
3"
FE 0600
FIT 0600
PLANT WATER
CV-0601
AIR GAP
LIT 0601
LSH 0601
LE 0601
PLANT WATER
CV-0602
AIR GAP
LIT 0602
LE 0602
LSH 0602
WASHDOWN, TYP
RCP-1
RCP-2
RECYCLE PUMPS (2)
RECYCLE TANK 1
RECYCLE TANK 2
RSP-1
RSP-2
RESIDUALS PUMPS (2)
FIT 0700
FE 0700
4"
6" DI RESIDUAL WASTE
6" HDPE FM TO SEWER AT MAST ROAD
RW TO WASTE - RECYCLE TANK 1
FE 0201
FE 0202
FE 0203
FIT 0201
FIT 0202
FIT 0203
8"
8" RAW WATER (TYP.)
500 GPM FROM DPH-1 WELL
500 GPM FROM IRELAND WELL
500 GPM FROM GRIFFIN WELL
10"
FIT 0900
FE 0900
PIT 0900
BACKWASH PUMPS (2)
BWP-1
BWP-2
FINISHED WATER PUMPS (2)
FWP-1
FWP-2
CLEARWELL FILL
PRESSURE RELIEF VALVE
FIT 0800
FE 0800
PIT 0800
LE 0800
LIT 0800
CLEARWELL
10" DI FINISHED
STATIC MIXER
75' FROM WTP EXIT
12" DI
TO DISTRIBUTION SYSTEM
CALCIUM HYPOCHLORITE
SODIUM HYDROXIDE
SODIUM FLUORIDE
ZINC ORTHOPHOSPHATE
PLANT WATER SEE PLUMBING DWGS
4" DI
FIRE SPRINKLERS
4" DI
AIT 0802
AIT 0801 CL RES.
AE 0802 pH
AIT 0803 FL
TO SINK "FINISHED WATER" SAMPLE TAP
CHLORINE
pH
FLUORIDE
3/4" CU FINISHED WATER RETURN

LEGEND:

- STATIC MIXER
- PRESSURE RELIEF VALVE
- PRESSURE TRANSDUCER
- FLOW METER
- PUMP
- MP METERING PUMP
- DP DRUM PUMP (MANUAL OPERATION)
- TP TRANSFER PUMP
- ORIFICE PLATE
- GATE VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- BALL CHECK VALVE
- REDUCER
- M MOTOR CONTROL VALVE
- S SOLENOID CONTROL VALVE
- PRESSURE GAUGE
- S SILENCER
- HYDRAULIC CONTROL VALVE
- AIR RELEASE VALVE
- DIRECTION OF FLOW
- pH ONLINE PH ANALYZER
- CHLORINE ONLINE CHLORINE RESIDUAL ANALYZER
- FLUORIDE ONLINE FLUORIDE ANALYZER
- WATER SHUT-OFF VALVE (CURB STOP)
- DEMOLITION
- S SAMPLE FAUCET
- LEVEL TRANSMITTER
- FTW FILTER TO WASTE
- BW BACKWASH
- UVT UV TRANSMITTANCE ANALYZER

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Scale AS SHOWN

STATE OF NEW HAMPSHIRE – TIMOTHY G. PAGE No. 15552 – LICENSED PROFESSIONAL ENGINEER

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PROCESS FLOW DIAGRAM

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO P3
SHEET 58 OF 122

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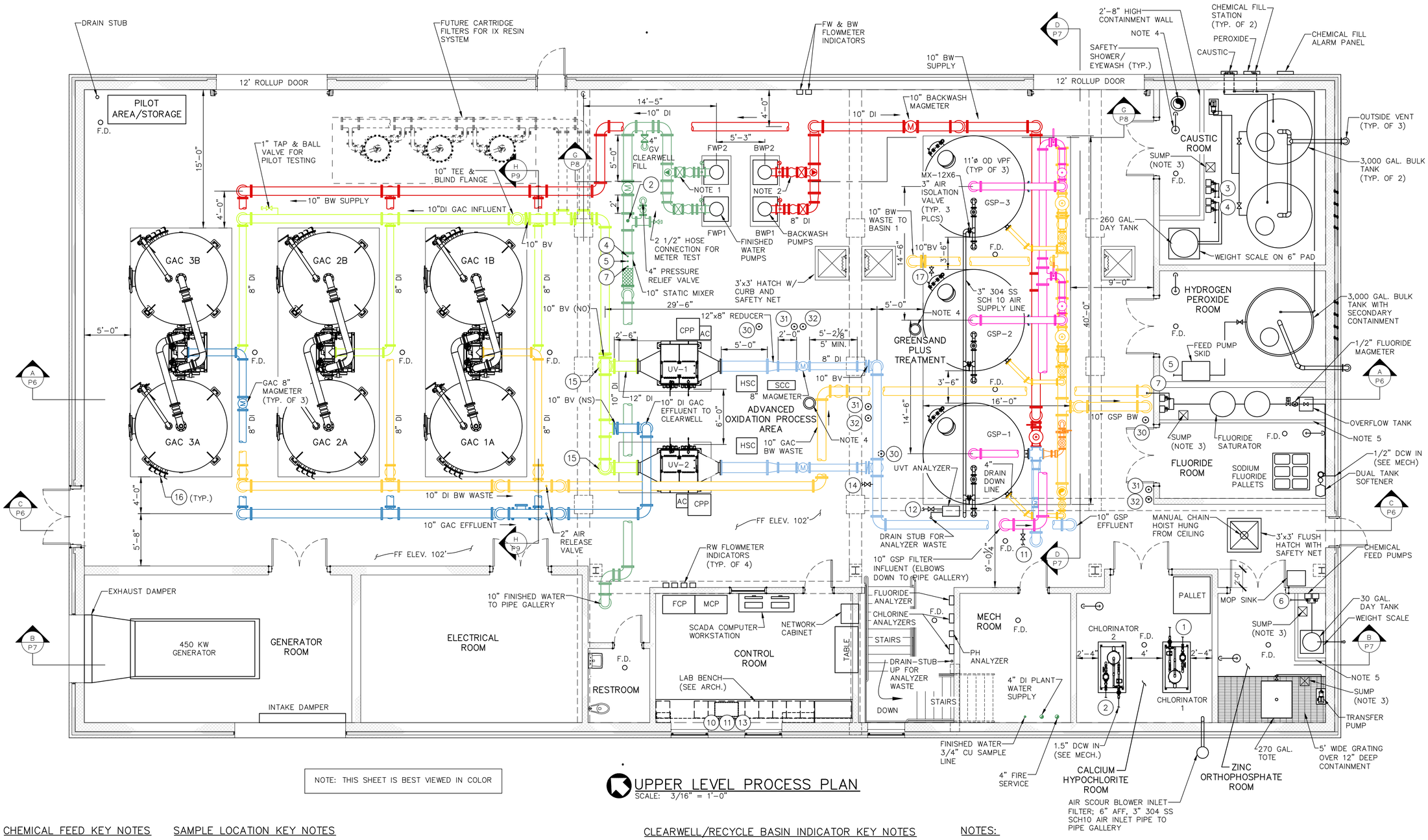

NOTE: THIS SHEET IS BEST VIEWED IN COLOR

UPPER LEVEL PROCESS PLAN
SCALE: 3/16" = 1'-0"

CHEMICAL FEED KEY NOTES
1. PRE-FILTER CHLORINE
2. POST-FILTER CHLORINE
3. PRE-FILTER CAUSTIC
4. POST-FILTER CAUSTIC
5. HYDROGEN PEROXIDE
6. ZINC ORTHO PHOSPHATE
7. FLUORIDE

SEE INJECTION DETAILS DWG P12

SAMPLE LOCATION KEY NOTES
10. RAW WATER; 1/2" COPPER TO CONTROL ROOM SINK
11. PRETREATED WATER; 1/2" COPPER TO ONLINE ANALYZERS & CONTROL ROOM SINK ROUTE PIPING 12 FT. MAX ABOVE FLOOR.
12. GSP FILTERED WATER; 1/2" COPPER TO UVT ANALYZER & LOCAL SAMPLE FAUCET
13. FINISHED WATER; 1/2" COPPER TO ONLINE ANALYZERS AND CONTROL ROOM SINK
14. PRE-AOP SAMPLE FAUCET
15. POST-AOP UV-1 AND UV-2 SAMPLE FAUCETS
16. GAC VESSELS – EACH 20%, 50%, 75%, 100% BY GAC VENDOR. MOUNT GAC SAMPLE TAPS TO PVC BOARD.
17. GSP BACKWASH; SAMPLE FAUCET (EACH RECYCLE BASIN)
18. RECYCLE WATER; SAMPLE FAUCET
19. RESIDUAL WASTE; SAMPLE FAUCET
20. GAC EFFLUENT COMBINED; SAMPLE FAUCET
21. GAC BACKWASH; SAMPLE FAUCET

CLEARWELL/RECYCLE BASIN INDICATOR KEY NOTES
30. ULTRASONIC LEVEL TRANSDUCER
31. HIGH LEVEL FLOAT SWITCH
32. LOW LEVEL FLOAT SWITCH

FIELD LOCATE WITH ENGINEER'S APPROVAL

NOTES:
1. 2" AIR RELEASE VALVE, PIPED TO DRAIN
   PRESSURE GAUGE + 8" RUBBER EXPANSION JOINT
   8" SILENT CHECK VALVE
   8" SPOOL PIECE AS REQ'D
   8" GATE VALVE
   (TYP. FOR 2 FW PUMPS)
2. 2" AIR RELEASE VALVE, PIPED TO DRAIN
   PRESSURE GAUGE + 8" RUBBER EXPANSION JOINT
   8" SILENT CHECK VALVE
   8" SPOOL PIECE AS REQ'D
   8" GATE VALVE
   (TYP. FOR 2 BW PUMPS)
3. EACH CONTAINMENT AREA SHALL BE GROUT FILLED AND SLOPE TO A 12"x12"X2" DEEP SUMP. INSTALL EPOXY MAT COATING PER SPECIFICATIONS.
4. 12" BASIN VENT THROUGH ROOF; SEE DETAIL, DWG P10.
5. 12" HIGH CONTAINMENT CURB.

SCALE: 3/16" = 1'-0"

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UPPER LEVEL PROCESS PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P4

SHEET 59 OF 122

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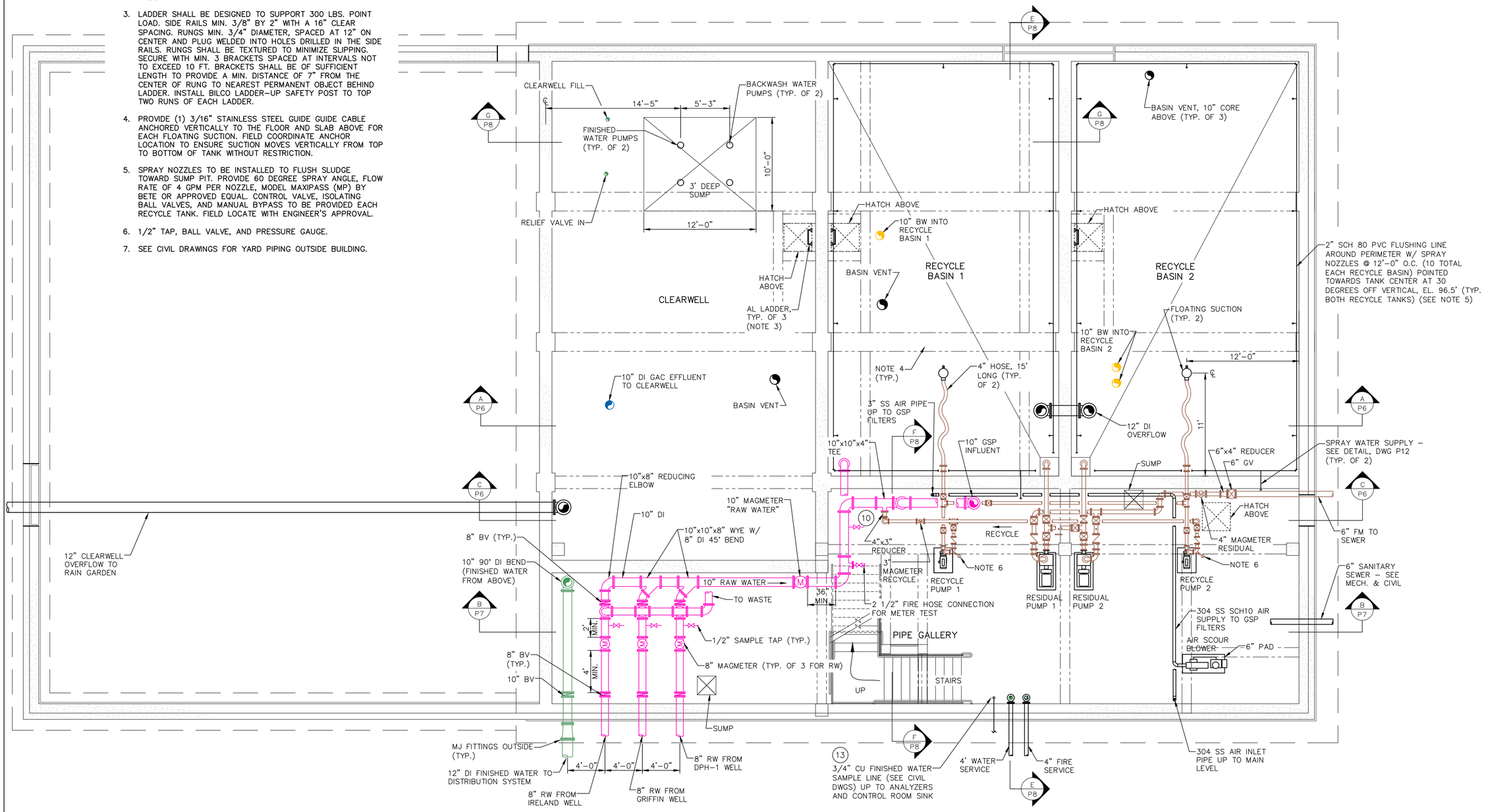
NOTES:

1. INSTALL MAGNETIC FLOW METERS W/ MIN. 5 PIPE DIAMETERS STRAIGHT RUN UPSTREAM AND 3 PIPE DIAMETERS DOWNSTREAM, OR AS RECOMMENDED BY MANUFACTURER.
2. RESIDUALS PUMPS AND RECYCLE PUMPS TO BE INSTALLED ON 6" HIGH MIN. OR AS REQUIRED CONCRETE HOUSEKEEPING PADS.
3. LADDER SHALL BE DESIGNED TO SUPPORT 300 LBS. POINT LOAD. SIDE RAILS MIN. 3/8" BY 2" WITH A 16" CLEAR SPACING. RUNGS MIN. 3/4" DIAMETER, SPACED AT 12" ON CENTER AND PLUG WELDED INTO HOLES DRILLED IN THE SIDE RAILS. RUNGS SHALL BE TEXTURED TO MINIMIZE SLIPPING. SECURE WITH MIN. 3 BRACKETS SPACED AT INTERVALS NOT TO EXCEED 10 FT. BRACKETS SHALL BE OF SUFFICIENT LENGTH TO PROVIDE A MIN. DISTANCE OF 7" FROM THE CENTER OF RUNG TO NEAREST PERMANENT OBJECT BEHIND LADDER. INSTALL BILCO LADDER-UP SAFETY POST TO TOP TWO RUNS OF EACH LADDER.
4. PROVIDE (1) 3/16" STAINLESS STEEL GUIDE GUIDE CABLE ANCHORED VERTICALLY TO THE FLOOR AND SLAB ABOVE FOR EACH FLOATING SUCTION. FIELD COORDINATE ANCHOR LOCATION TO ENSURE SUCTION MOVES VERTICALLY FROM TOP TO BOTTOM OF TANK WITHOUT RESTRICTION.
5. SPRAY NOZZLES TO BE INSTALLED TO FLUSH SLUDGE TOWARD SUMP PIT. PROVIDE 60 DEGREE SPRAY ANGLE, FLOW RATE OF 4 GPM PER NOZZLE, MODEL MAXIPASS (MP) BY BETE OR APPROVED EQUAL. CONTROL VALVE, ISOLATING BALL VALVES, AND MANUAL BYPASS TO BE PROVIDED EACH RECYCLE TANK. FIELD LOCATE WITH ENGINEER'S APPROVAL.
6. 1/2" TAP, BALL VALVE, AND PRESSURE GAUGE.
7. SEE CIVIL DRAWINGS FOR YARD PIPING OUTSIDE BUILDING.



LOWER LEVEL PROCESS PLAN
SCALE: 3/16" = 1'-0"

NOTE: THIS SHEET IS BEST VIEWED IN COLOR

0 2'-8" 5'-4" 10'-8"
SCALE: 3/16" = 1'-0"

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LOWER LEVEL PROCESS PLAN
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

DWG NO P5
SHEET 60 OF 122

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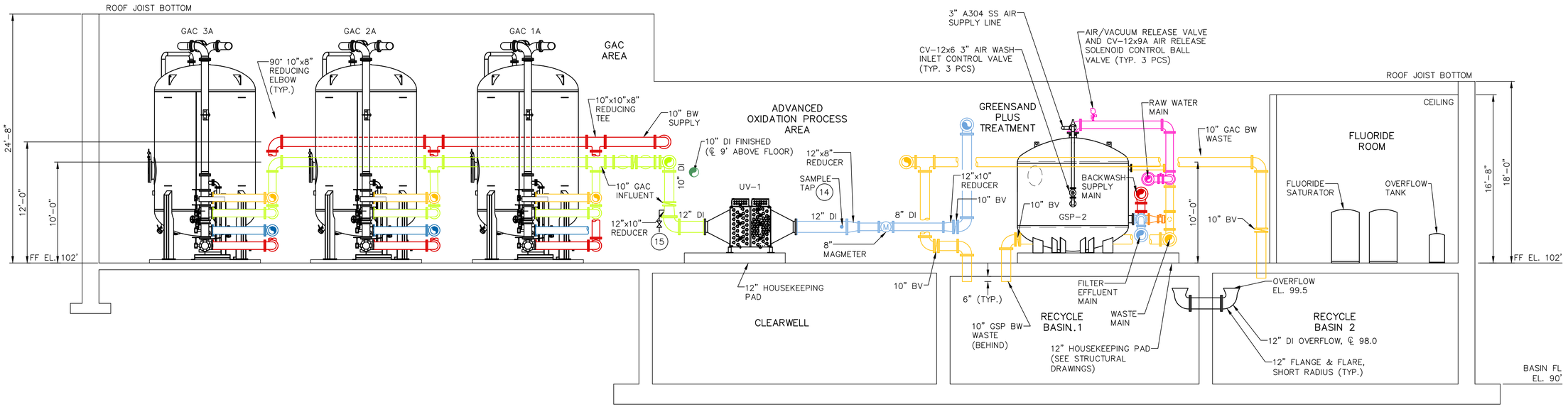
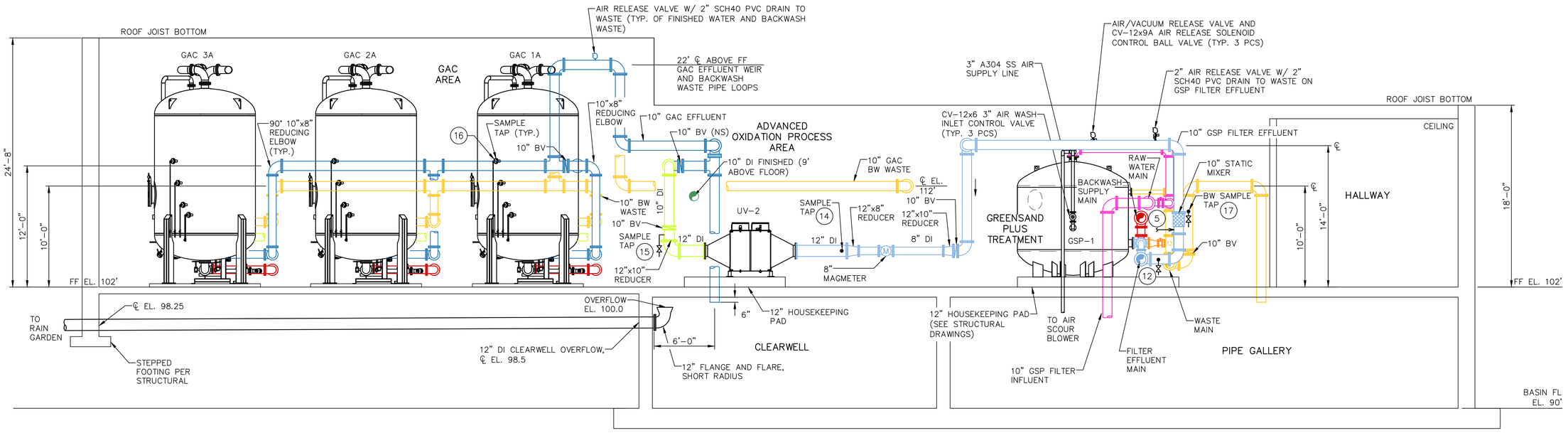


A/P4/P5 SECTION A–A
SCALE: 3/16" = 1'-0"



C/P4,P5 SECTION C–C
SCALE: 3/16" = 1'-0"

NOTE: THIS SHEET IS BEST VIEWED IN COLOR

0 2'-8" 5'-4" 10'-8"
SCALE: 3/16" = 1'-0"

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PROCESS SECTIONS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P6

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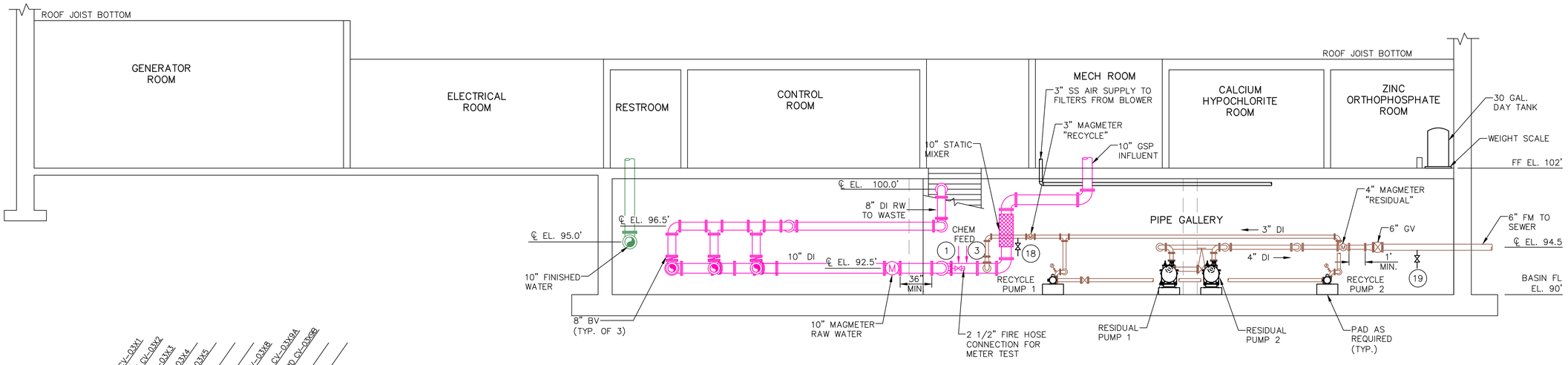


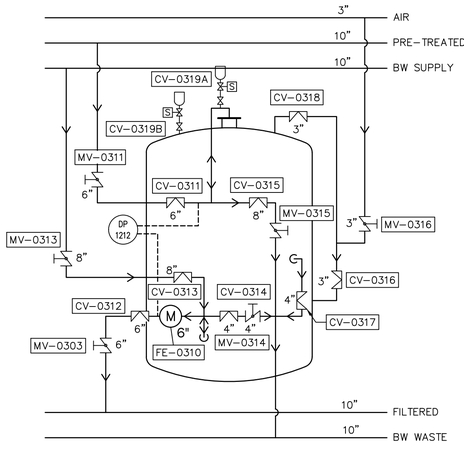
B / P4/P5 SECTION B–B
SCALE: 3/16" = 1'–0"

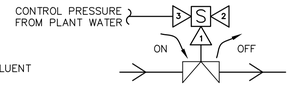
	RAW WATER INFLUENT CV–03X1	FILTERED WATER EFFLUENT CV–03X2	BACKWASH SUPPLY CV–03X3	FILTER–TO–WASTE CV–03X4	BACKWASH WASTE CV–03X5	AIR WASH CV–03X6	DRAIN DOWN CV–03X7	AIR PRESSURIZATION CV–03X8	AIR RELEASE SOLENOID CV–03X9A	TANK AIR RELEASE SOLENOID CV–03X9B	BLOWER	BACKWASH PUMP
IN SERVICE			X	X	X	X	X	X				
ISOLATE	X	X	X	X	X	X	X					
DRAIN DOWN	X	X	X	X	X	X			X	X	E	
AIR WASH	X	X	X	X			X	X			E	
AIR–WATER WASH	X	X		X			X	X			E	LS
REFILL	X	X		X	X	X	X	X				LS
BACKWASH	X	X		X		X	X	X				HS
BED SETTLE	X	X	X	X	X	X	X	X				
FILTER TO WASTE		X	X		X	X	X	X				

FILTER CONTROL SEQUENCE

LEGEND:

- ☐ VALVE OPEN
- X VALVE CLOSED
- E BLOWER ENERGIZED
- HS PUMP ON HIGH SPEED (VFD)
- LS PUMP ON LOW SPEED (VFD)





TYPICAL DIAPHRAGM VALVE CONTROL

CONTROL VALVE SUMMARY

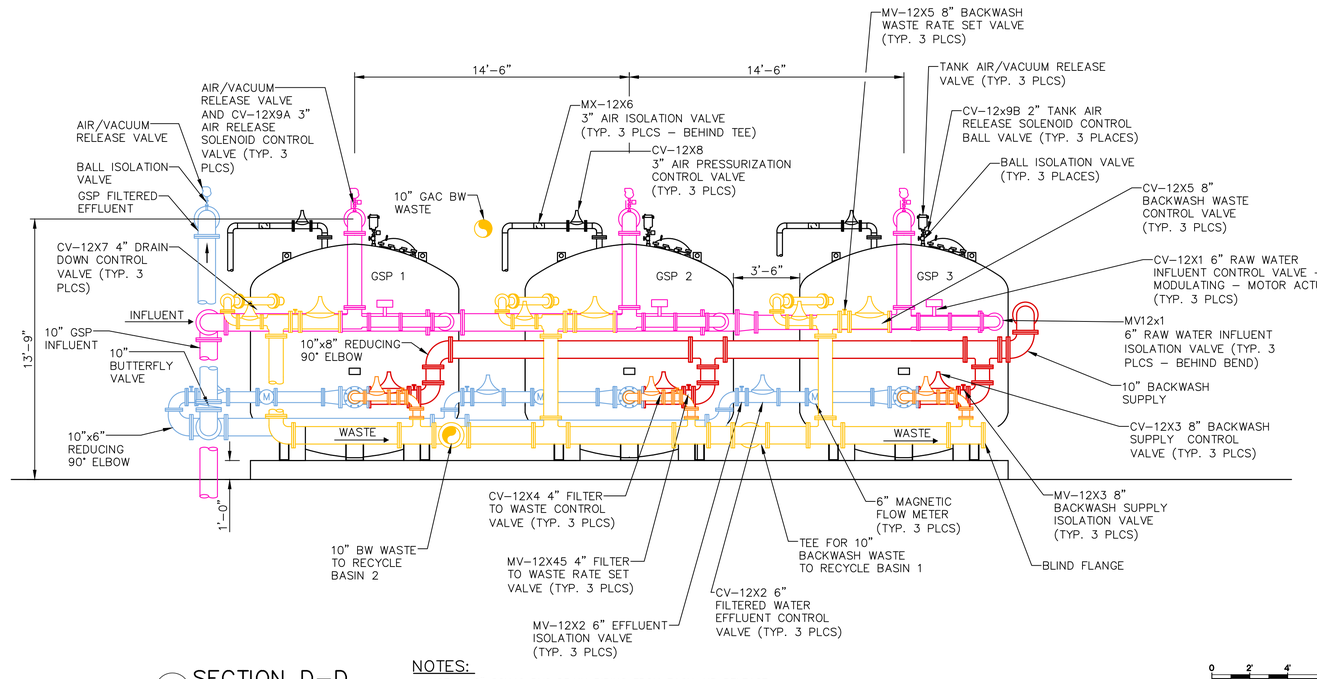
TAG	DESCRIPTION	SIZE
CV–03X1	RAW WATER INFLUENT (MODULATING)	6"
CV–03X2	FILTERED WATER EFFLUENT	6"
CV–03X3	BACKWASH SUPPLY	8"
CV–03X4	FILTER TO WASTE	4"
CV–03X5	BACKWASH WASTE	8"
CV–03X6	AIR WASH INLET	3"
CV–03X7	DRAIN DOWN	4"
CV–03X8	AIR PRESSURIZATION	3"
CV–03X9A	AIR RELEASE SOLENOID VALVE (PIPE) *	2"
CV–03X9B	AIR RELEASE SOLENOID VALVE (TANK) *	2"

NOTE: "X" = FILTER NUMBER (1, 2, OR 3)
ALL FILTER CONTROL VALVES ARE WATER–OPERATED DIAPHRAGM VALVES WITH SOLENOIDS UNLESS NOTED OTHERWISE
* INDICATES ELECTRIC SOLENOID OPERATED BALL VALVE
MODULATING VALVES ARE MOTOR OPERATED

MANUAL BUTTERFLY ISOLATION & RATE SET VALVE SUMMARY

TAG	DESCRIPTION	SIZE
MV–03X1	RAW WATER INFLUENT ISOLATION	6"
MV–03X2	FILTERED WATER EFFLUENT ISOLATION	6"
MV–03X3	BACKWASH SUPPLY ISOLATION	8"
MV–03X4	FILTER TO WASTE RATE SET	4"
MV–03X5	BACKWASH WASTE RATE SET	8"
MV–03X6	AIR ISOLATION	3"

TYPICAL GREEN SAND PLUS FILTER DETAIL
N.T.S.
(FILTER 1 SHOWN)



D / P4 SECTION D–D
SCALE: 1/4" = 1'–0"

NOTES:

1. INSTALL 2" SCH40 PVC DRAIN PIPING FROM EACH AIR RELEASE VALVE ON THE GSP FILTER TANKS, FILTER INLET PIPES, AND COMBINED FILTER EFFLUENT HEADER TO THE FILTER PAD FLOOR DRAINS. PROVIDE A PVC TRUE UNION AT EACH AIR RELEASE VALVE TO FACILITATE MAINTENANCE.

NOTE: THIS SHEET IS BEST VIEWED IN COLOR

0 2' 4' 8'
SCALE: 1/4" = 1'-0"
0 2'-8" 5'-4" 10'-8"
SCALE: 3/16" = 1'-0"

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PROCESS SECTIONS
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21–31)
CITY OF DOVER, NEW HAMPSHIRE

DWG NO P7
SHEET 62 OF 122

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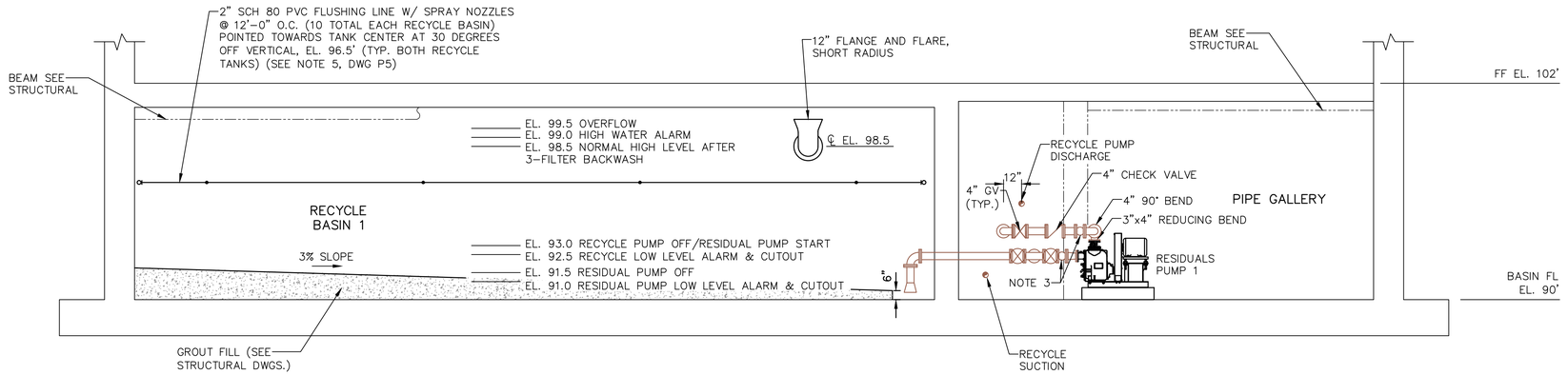
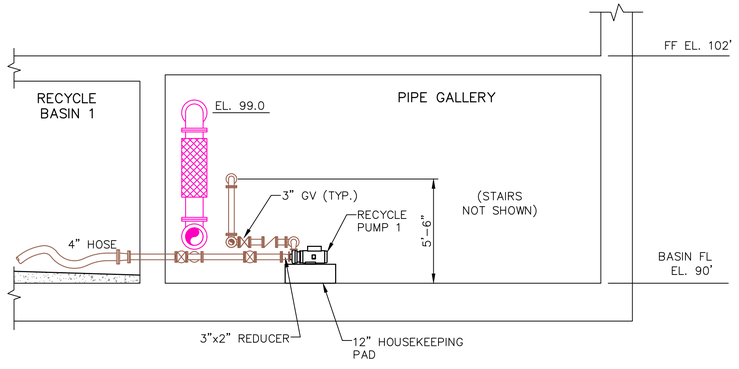


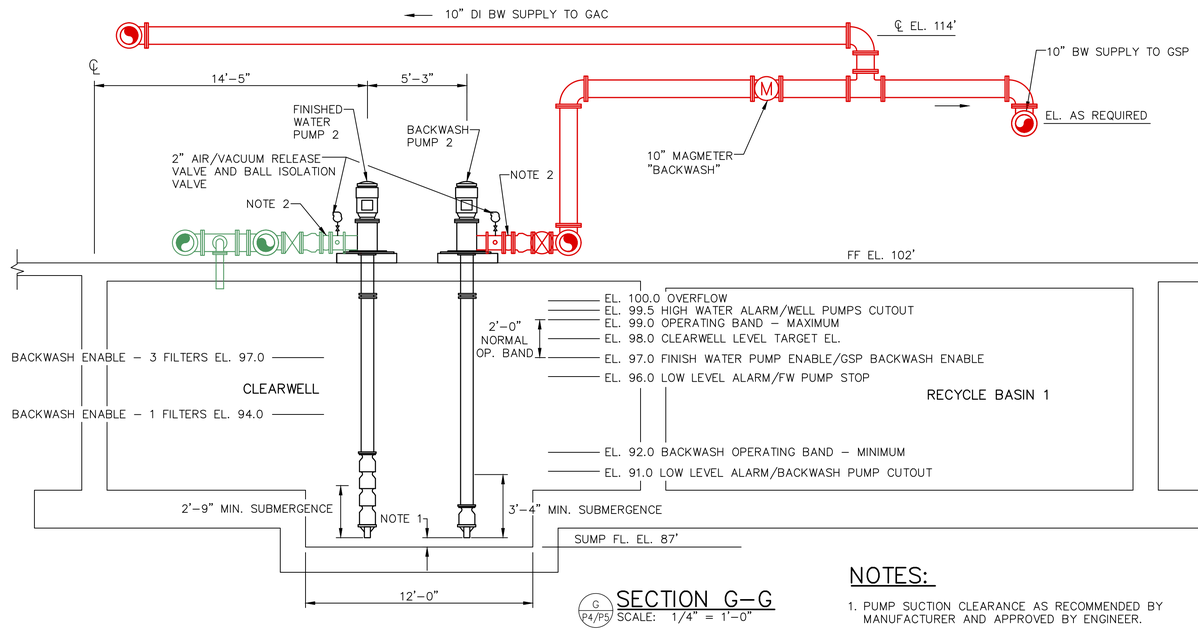
NOTES:

1. ELEVATION SET POINTS TYPICAL FOR BOTH RECYCLE BASINS.

E/P5 SECTION E-E
SCALE: 1/4" = 1'-0"



F/P5 SECTION F-F
SCALE: 1/4" = 1'-0"



G/P4/P5 SECTION G-G
SCALE: 1/4" = 1'-0"

NOTES:

1. PUMP SUCTION CLEARANCE AS RECOMMENDED BY MANUFACTURER AND APPROVED BY ENGINEER.
2. 8" SINGLE SPHERE FLANGED RUBBER EXPANSION JOINT, API INTERNATIONAL AMS SERIES OR EQUAL.
3. 4" SINGLE SPHERE FLANGED RUBBER EXPANSION JOINT, API INTERNATIONAL AMS SERIES OR EQUAL.

NOTE: THIS SHEET IS BEST VIEWED IN COLOR

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

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PROCESS SECTIONS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P8

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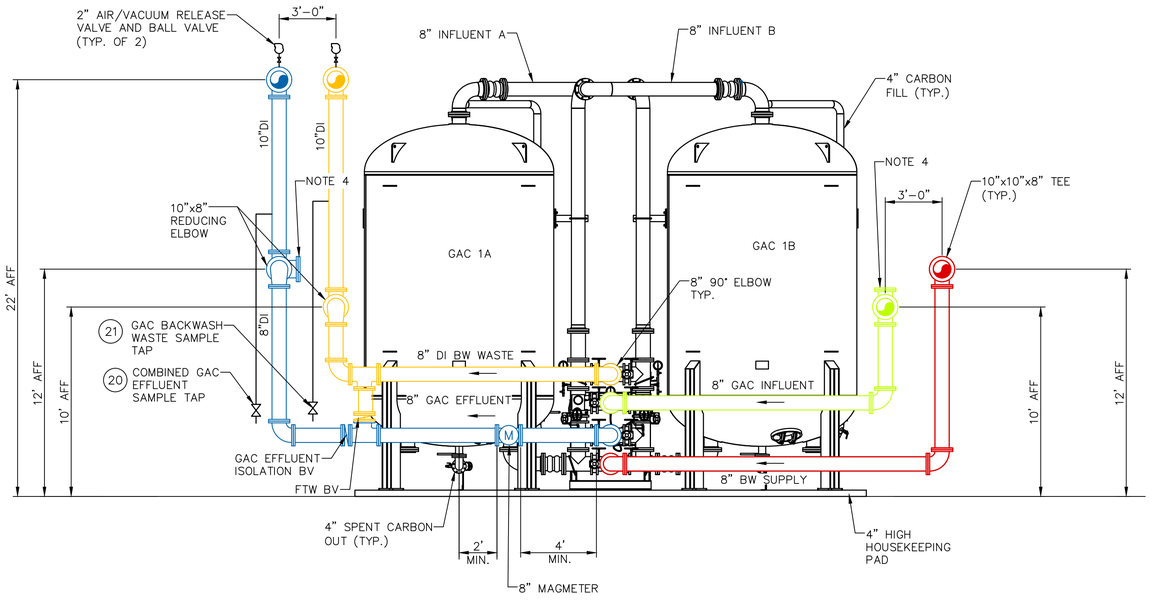

H/P4 SECTION H–H – GAC FILTER SECTION
SCALE: 1/4" = 1'–0"

NOTES:

1. TYPICAL FOR THREE TRAINS OF GAC FILTERS.
2. PROVIDE PIPE SUPPORTS PER MANUFACTUER'S RECOMMENDATIONS.
3. LOCATE SAMPLE FAUCETS (BALL VALVES) AT REACH FROM STANDING LEVEL, MOUNTED TO 1/2" PVC BOARD SUPPORTED BY UNI–STRUTS LOCATED IN FIELD. PROVIDE 4" PVC FUNNELS UNDER, WITH 2" SCH40 PVC DRAIN PIPES TO NEAREST FLOOR DRAIN.
4. TEE & BLIND FLANGE PROVIDED FOR FUTURE PIPING TO PLACE GAC TRAIN 1 IN SERIES BEFORE GAC TRAINS 2 & 3, IF RESIN INSTALLED.

PROCESS NOTES:

1. PIPING FROM PLANT WATER SUPPLY TO GSP FILTER CONTROL VALVES SHALL BE 3/4" COPPER, OR SIZE AS RECOMMENDED BY VALVE SUPPLIER. FIELD LOCATE WITH ENGINEER'S APPROVAL. PROVIDE SUPPORT PER SPECIFICATIONS. PROVIDE A 3/4" MANIFOLD AT EACH FILTER WITH INDIVIDUAL 1/2" BALL ISOLATION VALVES FOR EACH CONTROL VALVE CONNECTION. ROUTE 1/2" COPPER DRAIN LINES FROM EACH VALVE TO COMMON 2" SCH40 PVC DRAIN LINES WHICH LEAD TO THE GSP PAD FLOOR DRAINS.
2. PIPING FROM AIR BLOWER TO FILTERS SHALL BE AS REQUIRED BY EQUIPMENT SUPPLIER. FIELD LOCATE AIR PIPING WITH ENGINEER'S APPROVAL. PROVIDE SUPPORTS PER SPECIFICATIONS.
3. CHEMICAL FEED PUMPS TO BE WALL MOUNTED NEAR TOP OF CONTAINMENT WALLS WITH MANUFACTURER'S NON–CORROSIVE BRACKETS DESIGNED FOR THAT PURPOSE. FRP SUPPORTS SHALL BE PROVIDED FOR VALVES AND OTHER APPURTENANCES. REVIEW LAYOUT WITH OWNER AND ENGINEER IN FIELD PRIOR TO INSTALLATION.
4. ALL CHEMICAL TRANSFER PUMPS TO BE INSTALLED ON PADS. SEE PROCESS DETAILS.
5. BULK STORAGE TANKS TO BE INSTALLED ON MANUFACTURER SUPPLIED PADS, OR 4" HIGH CONCRETE PADS.
6. NOT ALL CHEMICAL FEED PIPING FROM CHEM FEED METERING PUMPS IS SHOWN. CHEMICAL FEED PIPING TO BE RUN ALONG WALLS OR OVERHEAD. FINAL LOCATION TO BE DETERMINED IN FIELD WITH ENGINEER APPROVAL. TUBING SIZE AND MATERIAL TO BE AS SHOWN ON PROCESS DETAILS.
7. FOR CHEMICAL FEED PUMPS, VALVES, AND CONNECTORS AND SIZES SEE PROCESS DETAILS.
8. EFFLUENT FLANGE ON EACH FILTER VESSEL SHALL BE TAPPED WITH A 2" COPPER PIPE WITH BALL VALVE TO BE USED TO DRAIN EACH VESSEL.
9. INSTALL MAGNETIC FLOW METERS W/ MIN. 5 PIPE DIAMETERS STRAIGHT RUN UPSTREAM AND 3 PIPE DIAMETER DOWNSTREAM, OR AS RECOMMENDED BY MANUFACTURER.
10. CHEMICAL CONTAINMENT AREA TO HOLD 100% OF VOLUME STORED, PLUS SPRINKLER VOLUME FOR 20 MINUTE DURATION, PLUS FREEBOARD AT TOP OF CONTAINMENT WALL.
11. FOR PIPE GALLERY PROVIDE MANUAL CHAIN HOIST EQUAL TO CM SERIES 622: 1/2 TON, MIN 40' LIFT.
12. CONTRACTOR RESPONSIBLE TO VERIFY DIMENSIONS AND ELEVATIONS IN FIELD. EQUIPMENT AND PIPING LAYOUTS SHALL BE COORDINATED WITH EQUIPMENT SUPPLIED.
13. ALL BURIED PIPE CONNECTIONS TO STRUCTURES SHALL HAVE FLEXIBLE CONNECTIONS APPROX. 4 FEET OUTSIDE THE STRUCTURE. COUPLINGS SHALL BE RESTRAINED ON PRESSURE PIPES.
14. PROVIDE PIPE SUPPORTS FOR ALL PIPE PER SPECIFICATIONS.
15. COPPER PROCESS PIPE SHALL BE INSULATED TO MITIGATE CONDENSATION, INCLUDING
    - DCW SUPPLY LINES TO CHLORINATORS
    - HYPOCHLORITE FEED LINES TO PROCESS
    - DCW SUPPLY LINE TO FLUORIDE SATURATOR/SOFTENER
    - SAMPLE LINES TO LAB SINK.

NOTE: THIS SHEET IS BEST VIEWED IN COLOR

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

NO.	REVISIONS	APP'D

ISSUE FOR
APPROVAL By TGP Date 5/21/21
CONSTRUCTION By TGP Date 6/28/21
RECORD DRAWING By – Date –

Drawn/Chk. RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509_P_#P
Scale AS SHOWN

STATE OF NEW HAMPSHIRE – TIMOTHY E. PAGE – No. 10656 – LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE – THOMAS G. PAGE – No. 10656 – LICENSED PROFESSIONAL ENGINEER

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PROCESS SECTIONS & NOTES

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO P9
SHEET 64 OF 122

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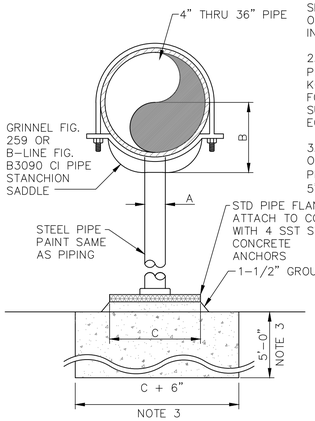


NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO GRINNELL FIGURE 167 OR ELCEN FIGURE 219, WHERE PIPING IS INSULATED.

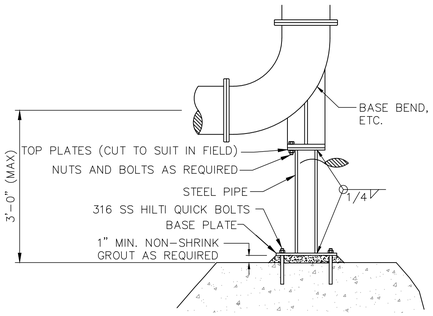
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.

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"
26"	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"

PIPE SUPPORT
N.T.S.



BASE ANCHOR PIPE SUPPORT
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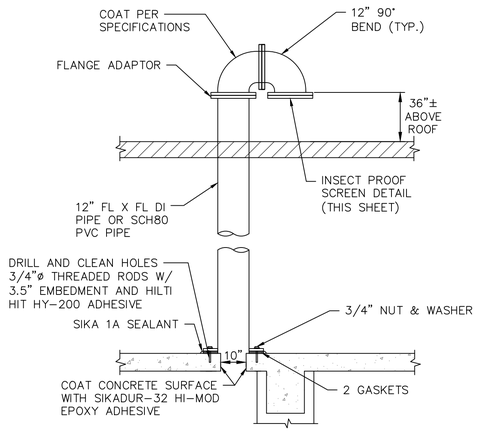
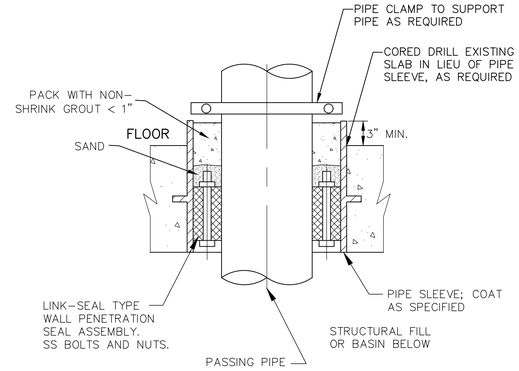
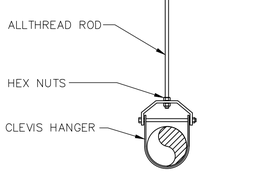


RECYCLE BASIN AND CLEARWELL VENT DETAIL
N.T.S.



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



PIPE SUPPORT
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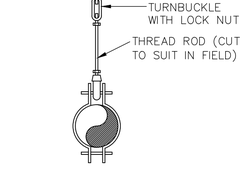

PIPE SUPPORT
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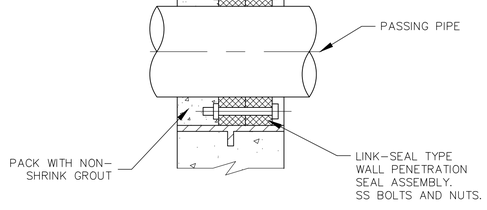
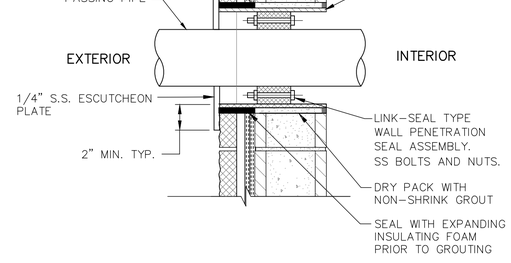


TYPICAL CONCRETE WALL PENETRATION
N.T.S.
(WHERE DESIGNATED)



TYPICAL EXTERIOR WALL PENETRATION
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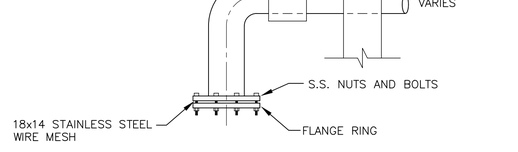
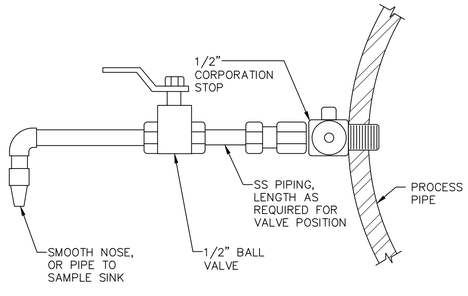


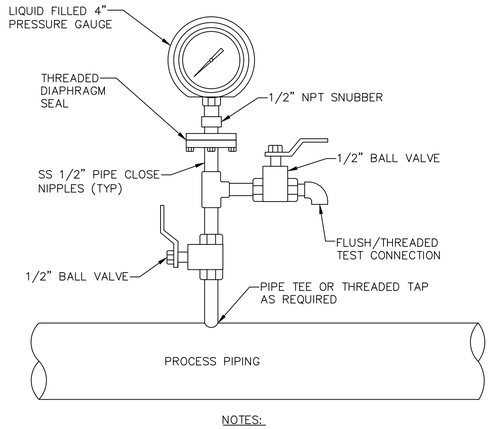
INSECT PROOF SCREEN DETAIL AT CHEMICAL BULK TANK VENTS
N.T.S.



NOTES:

1. LOCATE IN FIELD PER ENGINEER.

SAMPLE PORT DETAIL
N.T.S.



NOTES:

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

GAUGE ASSEMBLY
N.T.S.

ISSUE FOR
APPROVAL — By TGP — Date 5/21/21
CONSTRUCTION — By TGP — Date 6/28/21
RECORD DRAWING — By - — Date -

NO.	REVISIONS	APP'D

Drawn/Chk. RMC
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509_P_details
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — JEFFREY M. CLEMENT — No. 15582 — LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE — THOMAS G. PAGE — No. 10801 — LICENSED PROFESSIONAL ENGINEER

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PROCESS DETAILS - I

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO P10

SHEET 65 OF 122

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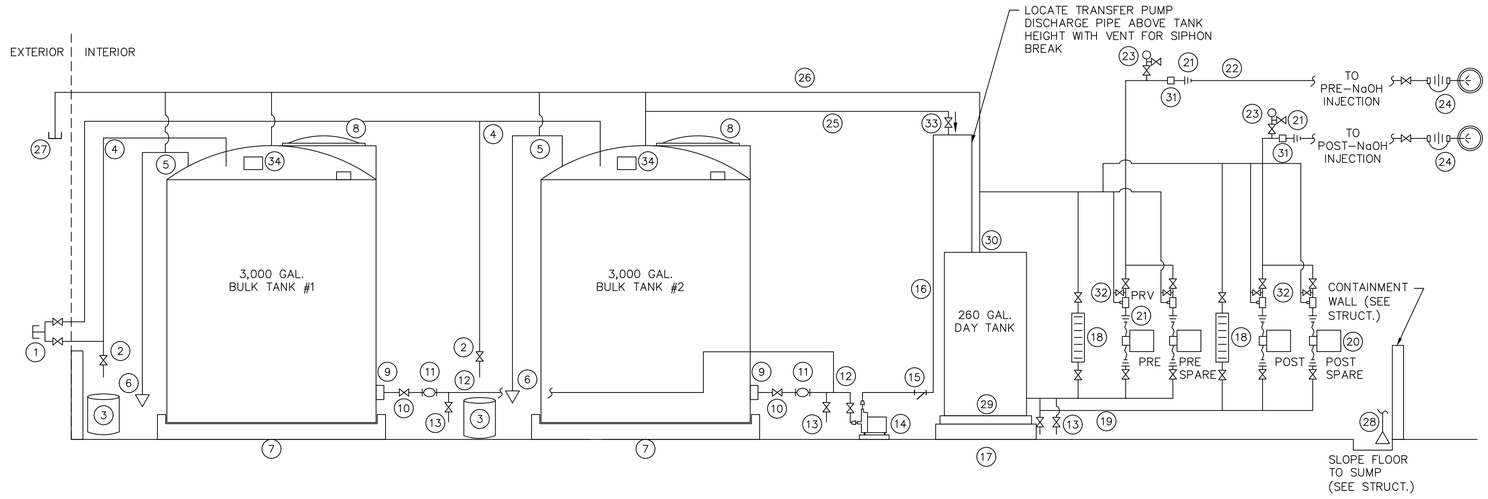
LEGEND

1. CHEMICAL FEED FILL (SEE DETAIL)
2. 2" PVC SCH 80 BALL VALVE DRAIN
3. 5 GALLON HDPE CONTAINMENT BUCKET WITH HANDLE
4. 2" PVC SCH 80 FILL LINE
5. 3" PVC SCH 80 OVERFLOW LINE
6. RUBBER DUCKBILL CHECK VALVE
7. TANK PAD AS SUPPLIED BY TANK MANUFACTURER
8. MANWAY
9. TANK IMFO FITTING. PROVIDE TRANSITION FROM IMFO WITH 3" TO 2" REDUCER.
10. 2" TRUE UNION BALL VALVE, TYP OF ALL BALL VALVES
11. EXPANSION JOINT 2"
12. 2" PVC SCH 80, BULK TANK TO TRANSFER PUMP.
13. 1/2" BALL VALVE DRAIN, ROUTE TO SUMP.
14. TRANSFER PUMP ON HOUSEKEEPING PAD.
15. Y-STRAINER
16. 1.5" PVC SCH 80, TRANSFER PUMP TO DAY TANK.
17. CONCRETE PAD
18. CALIBRATION COLUMN. INSTALL CENTER OF CALIBRATION COLUMN APPROX. EVEN WITH CENTER OF PUMP HEAD.
19. 1/2" PVC SCH 80, DAY TANK TO CHEM FEED PUMPS AND VENTS TO DAY TANKS.
20. DOUBLE DIAPHRAGM FEED METERING PUMP, TYP. MOUNT TO CONTAINMENT WALL WITH NON-CORROSIVE SUPPORTS/SHELF.
21. TUBING ADAPTER, TYP.
22. 3/8" PE TUBING INSIDE 1-1/2" PVC SCH 40 SLEEVE, CHEM FEED PUMPS TO INJECTION POINTS. INSTALL GROMMETS AT ENDS OF PVC SLEEVE.
23. PRESSURE GAUGE, DIAPHRAGM, AND ISOLATION BALL VALVE WITH DRAIN.
24. INJECTION ASSEMBLY (SEE DETAIL), TYP.
25. 1" PVC SCH 80 ANTI-SIPHON LINE
26. 4" PVC SCH 80 VENT
27. INSECT SCREEN (SEE VENT DETAIL)
28. FLOOD ALARM
29. WEIGHT SCALE
30. BUNG FITTING
31. BACKPRESSURE/ANTI-SIPHON VALVE
32. DRAIN VALVE, TYP.
33. 1" BALL CHECK VALVE
34. ULTRASONIC LEVEL DETECTOR (SEE ELECTRICAL/INSTRUMENTATION DRAWINGS)

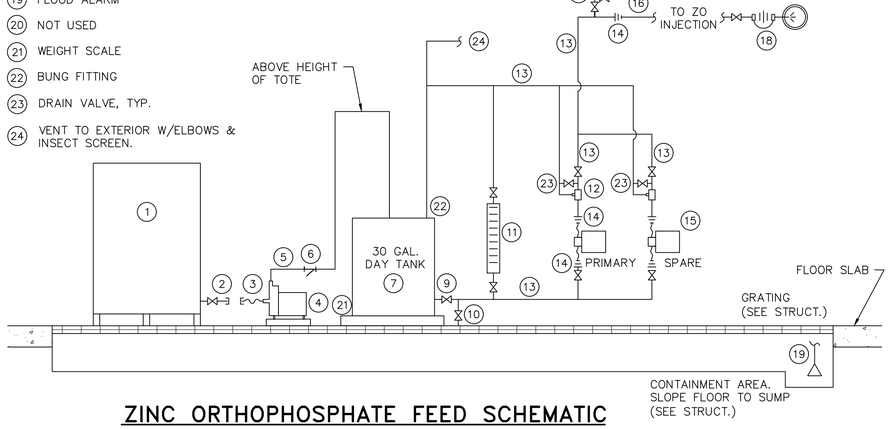


SODIUM HYDROXIDE CHEMICAL FEED SCHEMATIC

N.T.S.

LEGEND

1. 275 GAL. ZINC ORTHOPHOSPHATE IBC TOTE AS PROVIDED BY SUPPLIER, WITH INTEGRAL ISOLATION VALVE.
2. TRANSITION TO 1-INCH QUICK DISCONNECT
3. 1-INCH PE HOSE, REINFORCED. SUFFICIENT LENGTH TO REACH FROM TRANSFER PUMP TO IBC TOTE W/ SLACK. CONNECT SECURELY TO CHEMICAL TRANSFER PUMP AT ONE END. INSTALL QUICK DISCONNECT TO FREE END TO CONNECT TO IBC OUTLET.
4. CHEMICAL TRANSFER PUMP ON PVC BOARD. FASTEN BOARD SECURELY TO GRATING W/ SS CLAMPS.
5. 1" PVC SCH 80, TRANSFER PUMP TO DAY TANK.
6. Y-STRAINER, TYP.
7. DAY TANK
8. NOT USED
9. TRUE UNION BALL VALVE, TYP OF ALL BALL VALVES
10. 1/2" BALL VALVE DRAIN
11. CALIBRATION COLUMN. INSTALL CENTER OF CALIBRATION COLUMN APPROX. EVEN WITH CENTER OF PUMP HEAD.
12. PRESSURE RELIEF VALVE.
13. 1/2" PVC SCH 80, DAY TANK TO CHEM FEED PUMPS, AND VENTS TO DAY TANK.
14. TUBING ADAPTER, TYP.
15. PERISTALTIC CHEMICAL FEED METERING PUMP, TYP. MOUNT TO WALL WITH NON-CORROSIVE SUPPORT/SHELF.
16. 1/2" SCH 80 PVC, CHEM FEED PUMPS TO INJECTION POINTS.
17. PRESSURE GAUGE AND ISOLATION BALL VALVE WITH DRAIN.
18. INJECTION ASSEMBLY (SEE PROCESS DETAILS), TYP.
19. FLOOD ALARM
20. NOT USED
21. WEIGHT SCALE
22. BUNG FITTING
23. DRAIN VALVE, TYP.
24. VENT TO EXTERIOR W/ELBOWS & INSECT SCREEN.



ZINC ORTHOPHOSPHATE FEED SCHEMATIC

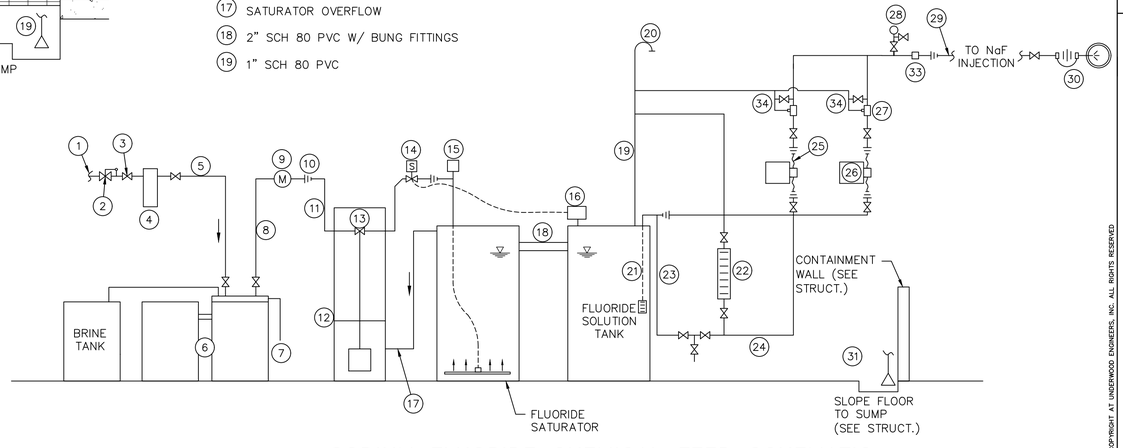
N.T.S.

NOTE:

LOCATE ALL VALVES AND GAUGES WITHIN REACH AT STANDING LEVEL. REVIEW ARRANGEMENT WITH ENGINEER IN FIELD.

LEGEND

1. TREATED PRESSURE WATER W/ BACKFLOW PREVENTER (SEE MECH.)
2. PRESSURE REDUCING VALVE 50 PSI (NOT REQUIRED)
3. TRUE UNION BALL VALVE, TYP.
4. WALL MOUNTED 10" GAC FILTER
5. 3/4" COPPER
6. DUAL TANK WATER SOFTENER
7. REGENERATION WASTE LINE (TO DRAIN)
8. 1/2" SCH 80 PVC
9. 1/2" MAGMETER
10. TUBING ADAPTER
11. 1/2" ID PE TUBING
12. OVERFLOW TANK
13. MECHANICAL FLOAT VALVE
14. SOLENOID VALVE, WALL MOUNTED
15. VACUUM BREAKER
16. MECH. FLOAT SWITCH
17. SATURATOR OVERFLOW
18. 2" SCH 80 PVC W/ BUNG FITTINGS
19. 1" SCH 80 PVC
20. VENT TO EXTERIOR W/ ELBOWS AND INSECT SCREEN
21. PUMP SUCTION W/ STRAINER INSIDE SLOTTED DROP TUBE
22. CALIBRATION COLUMN
23. 1/2" ID PE TUBING
24. 1/2" SCH 80 PVC
25. 3/8" ID PE TUBING
26. DUAL DIAPHRAGM METERING PUMP
27. PRESSURE RELIEF VALVE
28. PRESSURE GAUGE AND ISOLATION BALL VALVE WITH DRAIN
29. 1/2" SCH 80 PVC, CHEM FEED PUMPS TO INJECTION POINTS.
30. INJECTION ASSEMBLY, SEE DETAIL
31. FLOOD ALARM
32. NOT USED
33. BACKPRESSURE/ANTI-SIPHON VALVE
34. DRAIN VALVE, TYP.



SODIUM FLUORIDE CHEMICAL FEED SCHEMATIC

N.T.S.

ISSUE FOR	By	Date
APPROVAL	TGP	5/21/21
CONSTRUCTION	TGP	6/28/21
RECORD DRAWING	-	-

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed JMC
Checked TGP
Approved KAP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509_P_details
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — JEFFREY M. CLEMENT No. 15582 — PROFESSIONAL ENGINEER

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PROCESS DETAILS - II

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

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DWG NO P11

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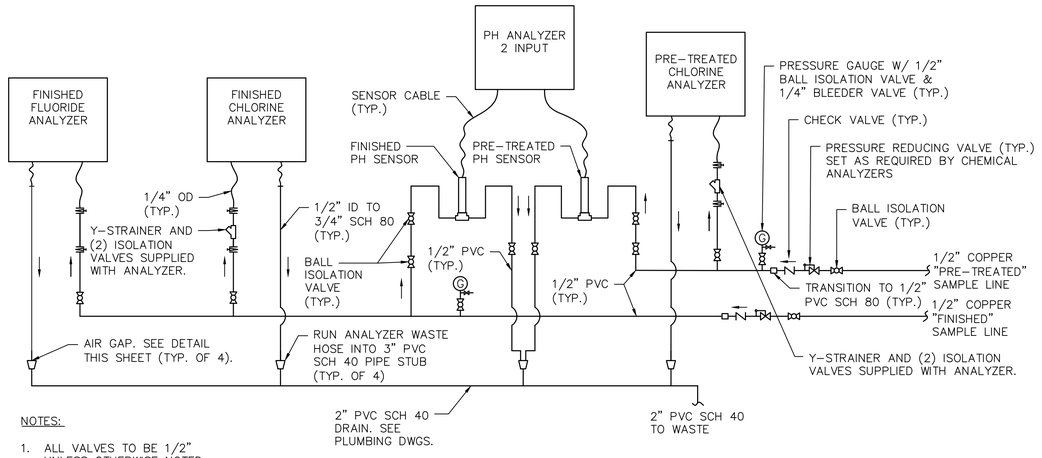


NOTES:

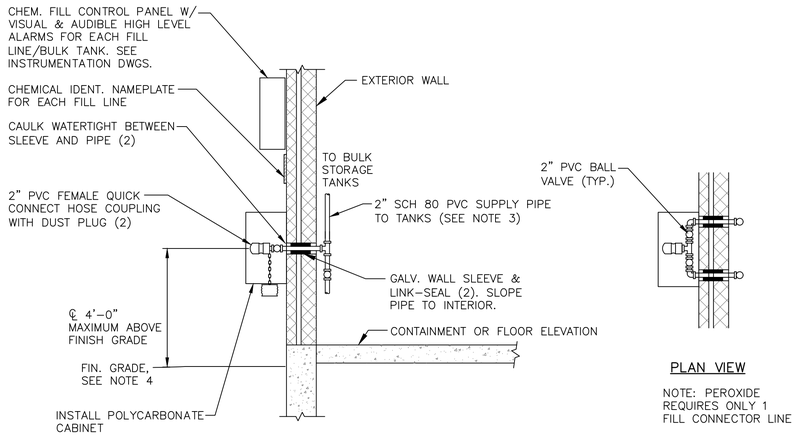
1. ALL VALVES TO BE 1/2" UNLESS OTHERWISE NOTED.

ONLINE ANALYZERS SCHEMATIC

N.T.S.

NOTES:

1. SECURE ALL PIPING TO WALL AND/OR CEILING TO ELIMINATE PIPE MOVEMENT.
2. SEE PLANS FOR FILL STATION LOCATIONS.
3. SEE PLANS FOR FILL PIPE ROUTING.
4. SEE PLANS FOR FILL STATION ELEVATIONS.

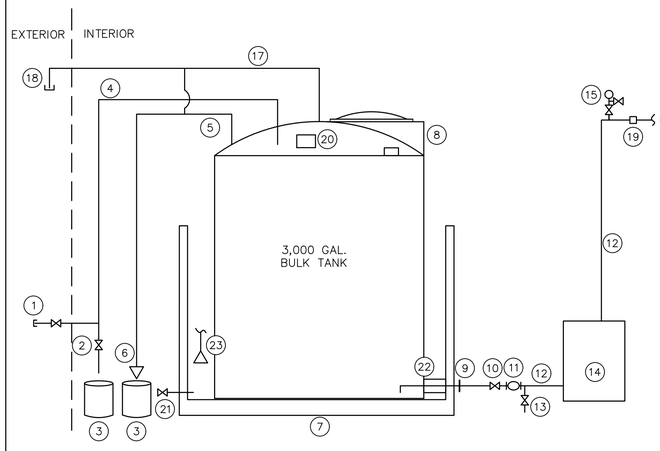


PLAN VIEW

NOTE: PEROXIDE REQUIRES ONLY 1 FILL CONNECTOR LINE

CHEMICAL FEED FILL STATION DETAIL

N.T.S. TYPICAL FOR SODIUM HYDROXIDE AND HYDROGEN PEROXIDE



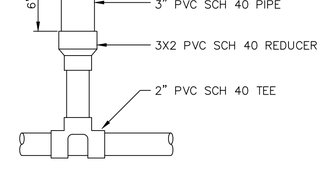
HYDROGEN PEROXIDE SCHEMATIC

N.T.S.

LEGEND

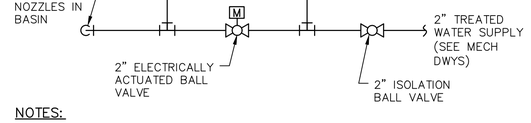
1. CHEMICAL FEED FILL (SEE DETAIL)
2. 2" PVC SCH 80 BALL VALVE DRAIN
3. 5 GALLON HDPE CONTAINMENT BUCKET
4. 2" PVC SCH 80 FILL LINE
5. 3" PVC SCH 80 OVERFLOW LINE
6. RUBBER DUCKBILL CHECK VALVE AND 5 GAL HDPE BUCKET
7. OPEN TOP SECONDARY CONTAINMENT TANK
8. MANWAY
9. 2" PVC FLANGED FITTING
10. 2" TRUE UNION BALL VALVE, TYP OF ALL BALL VALVES*
11. 2" EXPANSION JOINT*
12. 1/2" PASSIVATED SS PIPING PROVIDED BY UV SYSTEM VENDOR*
13. 1/2" BALL VALVE DRAIN, ROUTE TO SUMP*
14. FEED PUMP SKID, PROVIDED BY UV SYSTEM VENDOR*
15. PRESSURE GAUGE, DIAPHRAGM AND ISOLATION BALL VALVE WITH DRAIN*
16. TO PRE-UV SYSTEM INJECTION, PROVIDED BY THE UV SYSTEM VENDOR*
17. 4" PVC SCH 80 VENT
18. INSECT SCREEN (SEE VENT DETAIL)
19. BACK PRESSURE/ANTI-SIPHON VALVE*
20. ULTRASONIC LEVEL DETECTOR (SEE ELECTRICAL/INSTRUMENTATION DETAIL)
21. 1.5" FLANGED OUTER TANK DRAIN AND BALL VALVE
22. 2" BELLOWS TRANSITION FITTING
23. FLOOD ALARM

NOTE: *TO BE AS RECOMMENDED BY THE UV SYSTEM VENDOR



AIR GAP DETAIL

N.T.S.

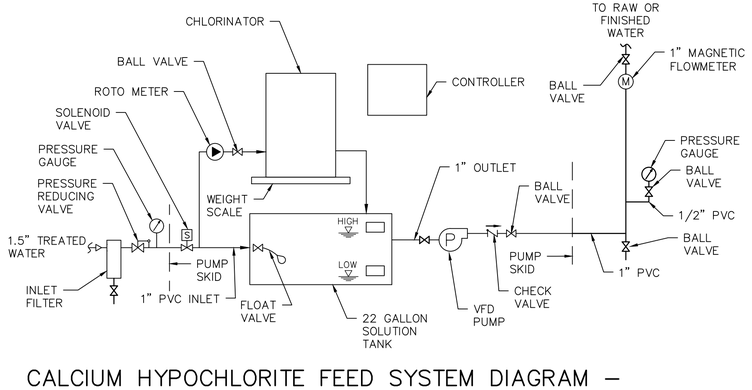


NOTES:

1. TYP. FOR EACH RECYCLE BASIN.
2. FIELD LOCATE VALVES AT WORKING HEIGHT ON PIPE GALLERY WALL.

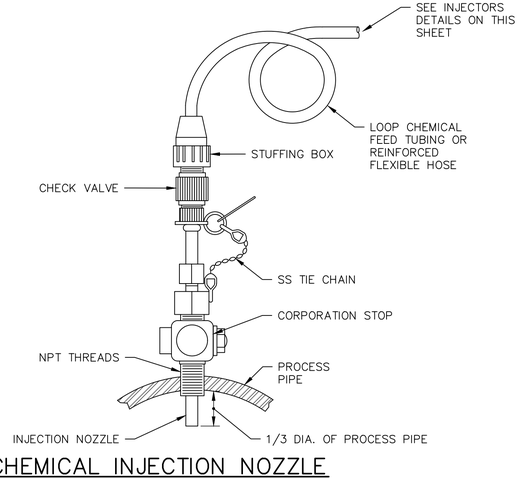
SPRAY SYSTEM VALVE DETAIL

N.T.S.



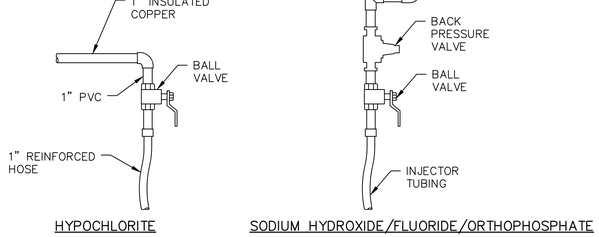
CALCIUM HYPOCHLORITE FEED SYSTEM DIAGRAM – TYPICAL OF RAW AND FINISHED WATER

N.T.S.



CHEMICAL INJECTION NOZZLE

N.T.S.



HYPOCHLORITE

SODIUM HYDROXIDE/FLUORIDE/ORTHOPHOSPHATE

NOTE: HYDROGEN PEROXIDE INJECTION DETAILS SHALL BE AS RECOMMENDED BY THE UV SYSTEM VENDOR, INCLUDING PASSIVATED SS PIPING, VALVES AND INJECTOR

CHEMICAL INJECTION DETAIL DIAGRAM

N.T.S.

NO.	REVISIONS	APP'D

ISSUE FOR
APPROVAL By TGP Date 5/21/21
CONSTRUCTION By TGP Date 6/28/21
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Drawn/Chk. RMC
Designed JMC
Checked TGP
Approved KAP
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Book No. –
Project No. 2509
Dwg. ID 2509_P_details
Scale AS SHOWN

STATE OF NEW HAMPSHIRE – JEFFREY A. LEE No. 15582 – PROFESSIONAL ENGINEER
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PROCESS DETAILS – III

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO P12

SHEET 67 OF 122

H:\Real Numbers\Dover\2509 - Pudding Hill Aquifer Recharge\Design\2509_P_Details.dwg, P12, 6/30/2021 9:25:55 AM, mg

HVAC LEGEND

CIRCULATOR PUMP		SUPPLY AIR	LAT	LEAVING AIR TEMPERATURE	COP	COEFFICIENT OF PERFORMANCE
BALL VALVE		RETURN OR EXHAUST AIR	LF	LINEAL FOOT	EER	ENERGY EFFICIENCY RATIO
PRESSURE GAUGE		SUPPLY & RETURN AIR TURN DOWN	LWT	LEAVING WATER TEMPERATURE	FLA	FULL LOAD AMPS
CHECK VALVE	BD	MANUAL BALANCING DAMPER	MCA	MINIMUM CIRCUIT AMPACITY	FO	FLAT OVAL DUCT
PRV SAFETY RELIEF VALVE		SUPPLY AIR FLOW	RA	RETURN AIR	CFF	CAPPED FOR FUTURE
THERMOMETER		RETURN/EXHAUST AIR FLOW	SA	SUPPLY AIR	AWT	AVERAGE WATER TEMPERATURE
THERMOSTAT / AQUASTAT		CONNECT TO EXISTING	EA	EXHAUST AIR	VFD	VARIABLE FREQUENCY DRIVE
OCCUPANCY SENSOR		POINT OF DEMOLITION	OA	OUTDOOR AIR	CAR	CONSTANT AIRFLOW REGULATOR
TEMPERATURE SENSOR		FLEX CONNECTOR	SC	SENSIBLE COOLING CAPACITY	AD	ACCESS DOOR
DIFFERENTIAL PRESSURE SENSOR		PIPE TEE AND 90 ELBOW	TC	TOTAL COOLING CAPACITY	C.M.	CONSTRUCTION MANAGER
WALL SWITCH		MECHANICAL EQUIPMENT	WPD	WATER PRESSURE DROP	A.H.J.	AUTHORITY HAVING JURISDICTION
METHANE SENSOR		MANUAL BALANCING VALVE	BDD	BACKDRAFT DAMPER	FPF	FINS PER FOOT
HYDROGEN SULFIDE SENSOR		2-WAY CONTROL VALVE	A.F.F.	ABOVE FINISHED FLOOR	G.C.	GENERAL CONTRACTOR
OXYGEN SENSOR		3-WAY CONTROL VALVE	APD	AIR PRESSURE DROP	M.C.	MECHANICAL CONTRACTOR
PIPE RISE & PIPE DROP		PRESSURE RELIEF VALVE	S.L.	SKYLIGHT	P.C.	PLUMBING CONTRACTOR
PIPE OR DUCT REDUCER	TMV	THERMOSTATIC MIXING/ DIVERTING VALVE	SD	SMOKE DAMPER	(E)	EXISTING
FIRE DAMPER		BUTTERFLY VALVE	ACV	AUTOMATIC CONTROL VALVE	UH	UNIT HEATER
SMOKE DAMPER	CS	CIRCUT SENSOR	SCV	SELF CONTAINED CONTROL VALVE	CUH	CABINET UNIT HEATER
MOTORIZED CONTROL DAMPER		FLOW SENSOR	HWS/R	HOT WATER SUPPLY & RETURN	NTS	NOT TO SCALE
BACK DRAFT DAMPER		AUTOMATIC BALANCING VALVE	ACD	AUTOMATIC CONTROL DAMPER		
RETURN UNDER ENCLOSURE	XX-1	EQUIPMENT TAG	B.F.C.	BELOW FINISHED CEILING		
REMOVE/DEMOLISH EQUIPMENT/PIPING SHOWN HATCHED ON DEMO PLANS	A 46x12 1000	RGD TAG, NECK SIZE, CFM	BHP	BRAKE HORSE POWER		
	FTR-1 14'-0" 0.5	FINNED TUBE RADIATOR TAG, LENGTH, GPM	CD	CONDENSATE DRAIN		
			EAT	ENTERING AIR TEMPERATURE		
			ESP	EXTERNAL STATIC PRESSURE		
			EWT	ENTERING WATER TEMPERATURE		

VENTILATION SUMMARY

DOVER PUDDING HILL WTP – VENTILATION BASIS OF DESIGN PER IMC-2015

SPACE TYPE	AREA	CEILING	VOLUME	REQUIRED EXHAUST	REQUIRED EXHAUST	REQUIRED EXHAUST	AS DESIGNED EXHAUST	AS DESIGNED EXHAUST	AS DESIGNED EXHAUST	AS DESIGNED FRESH
	[SF]	HEIGHT [FT]	[CF]	[CFM/SF]	[ACH]	[CFM]	[CFM/SF]	[ACH]	[CFM]	[CFM]
EF-1										
102 ZINC ORTHOPHOSPHATE ROOM	159	13.5	2,147	1.5	6.0	239	1.6	7.0	250	250
EF-2										
103 CALCIUM HYPOCHLORITE ROOM	228	13.5	3,078	1.5	6.0	342	1.5	6.8	350	350
EF-3										
111 FLOURIDE ROOM	217	15.5	3,364	1.5	6.0	336	1.6	6.1	340	340
EF-4										
112 HYDROGEN PEROXIDE ROOM	216	15.5	3,348	1.5	6.0	335	1.6	6.3	350	350
EF-5										
113 CAUSTIC ROOM	343	15.5	5,317	1.5	6.0	532	1.6	6.2	550	550

LOAD SUMMARY

DOVER PUDDING HILL – LOADS

SPACE TYPE	HEATING SENSIBLE[2] [BTUH]	COOLING ENVELOPE SENSIBLE[1] [BTUH]	COOLING ENVELOPE LATENT[1] [BTUH]	COOLING ENVELOPE SEN+LAT[1] [BTUH]
ZINC ORTHOPHOSPHATE	20,800	–	–	–
CALCIUM HYPOCHLORITE	26,900	–	–	–
MECH ROOM	3,900	–	–	–
ANALYZERS	400	–	–	–
STAIR	2,300	–	–	–
CONTROL ROOM	7,600	6,900	800	7,700
ELECTRICAL	7,700	42,900	800	43,700
GENERATOR	14,300	–	–	–
FLOURIDE	27,800	–	–	–
HYDROGEN PEROXIDE	31,400	–	–	–
CAUSTIC ROOM	59,900	–	–	–
GREEN SAND & TREATMENT	38,800	–	–	–
ADVANCED OXIDATION	28,900	–	–	–
GAC FILTERS	78,500	–	–	–
HOUSINGKEEPING	600	–	–	–
REST ROOM	1,600	–	–	–
PIPE GALLERY	19,000	–	–	–
TOTAL	370,400	49,800	1,600	51,400

1 INCLUDES 5% PICKUP / SAFETY FACTOR

2 INCLUDES 10% PICKUP / SAFETY FACTOR

CODES & STANDARDS

THE FOLLOWING CODES APPLY TO THE DESIGN OF THE MECHANICAL SYSTEM:

BUILDING CODE:	2015 INTERNATIONAL BUILDING CODE (IBC)
MECHANICAL CODE:	2015 INTERNATIONAL MECHANICAL CODE (IMC)
PLUMBING CODE:	2015 INTERNATIONAL PLUMBING CODE (IPC)
VENTILATION:	2015 INTERNATIONAL MECHANICAL CODE (IMC)
ENERGY CODE:	2015 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

CLIMATE

HEATING AND COOLING LOADS HAVE BEEN PERFORMED USING THE FOLLOWING CURRENT CLIMATE DATA FROM THE 2013 ASHRAE HANDBOOK FOR PORTSMOUTH, NH:

WINTER DESIGN CONDITIONS:	OUTDOOR AIR DB:	2.2°F (99.6% VALUE)
	INDOOR AIR DB:	GAC FILTER, ADVANCED OXIDATION AND GREENSAND & TREATEMENT AREAS WILL BE MAINTAINED AT GROUND WATER TEMPERATURE 70°F (CONTROL ROOM, SODIUM HYDROXIDE ROOM) 60°F (ALL OTHER CONDITIONED SPACES)
SUMMER DESIGN CONDITIONS:	OUTDOOR AIR DB:	89.6°F (0.4% VALUE)
	OUTDOOR AIR MCWB:	72.8°F (0.4% VALUE)
	INDOOR AIR DB:	75–85°F (70°F IN CONTROL ROOM & BATHROOM)
	INDOOR DEW POINT:	50°F

SPACE & SYSTEMS DESCRIPTION

HEATING/COOLING:

- HEATING HOT WATER IS GENERATED BY A GAS-FIRED, CONDENSING BOILER SYSTEM IN THE MECHANICAL ROOM.
- PUMPING SYSTEM DISTRIBUTES HEATING HOT WATER TO UNIT HEATERS LOCATED IN THE GAC FILTER ROOM, ADVANCED OXIDATION ROOM, GREENSAND & TREATMENT ROOM, CAUSTIC ROOM, HYDROGEN PEROXIDE ROOM, FLUORIDE ROOM, ZINC ORTHOPHOSPHATE ROOM, CALCIUM HYPOCHLORITE ROOM, PIPE GALLERY, CORRIDOR, AND MECHANICAL ROOM AND FINNED TUBE RADIATORS IN THE REST ROOM.
- HEATING AND COOLING FOR THE CONTROL ROOM IS PROVIDED BY A NON-DUCTED AIR-SOURCE HEAT PUMP (ASHP) SYSTEM CONSISTING OF (1) INDOOR INDOOR WALL CASSETTE CONNECTED TO (1) OUTDOOR UNIT. REFRIGERANT PIPING CONNECTS INDOOR AND OUTDOOR UNITS. A THERMOSTAT IS PROVIDED FOR THE INDOOR UNIT.
- HEATING AND COOLING FOR THE ELECTRICAL ROOM IS PROVIDED BY A NON-DUCTED AIR-SOURCE HEAT PUMP (ASHP) SYSTEM CONSISTING OF (2) INDOOR WALL CASSETTES CONNECTED TO (1) OUTDOOR UNIT. REFRIGERANT PIPING CONNECTS INDOOR AND OUTDOOR UNITS. A SINGLE THERMOSTAT IS PROVIDED FOR BOTH INDOOR UNITS.
- HEATING AND COOLING FOR THE GENERATOR ROOM IS PROVIDED BY A NON-DUCTED AIR-SOURCE HEAT PUMP (ASHP) SYSTEM CONSISTING OF (1) INDOOR INDOOR WALL CASSETTE CONNECTED TO (1) OUTDOOR UNIT. REFRIGERANT PIPING CONNECTS INDOOR AND OUTDOOR UNITS. A THERMOSTAT IS PROVIDED FOR THE INDOOR UNIT.

VENTILATION:

- CONTINUOUS VENTILATION IS PROVIDED TO THE CAUSTIC, HYDROGEN PEROXIDE, FLUORIDE, ZINC ORTHOPHOSPHATE AND CALCIUM HYPOCHLORITE ROOMS BY DEDICATED EXHAUST FANS. LOUVER/DAMPER ASSEMBLIES ARE PROVIDED FOR OUTDOOR AIR INTAKE. INTAKE AND EXHAUST AIRFLOWS ARE BALANCED.
- THE BATHROOM IS EXHAUSTED BY A DEDICATED EXHAUST FAN.
- THE CONTROL ROOM IS NATURALLY VENTILATED VIA OPERABLE WINDOWS.

DEHUMIDIFICATION:

- DEHUMIDIFICATION FOR THE GAC FILTER ROOM, ADVANCED OXIDATION ROOM, GREENSAND & TREATMENT ROOM AND PIPE GALLERY IS PROVIDED BY PORTABLE PLUG-IN TYPE DEHUMIDIFICATION UNITS.

DOMESTIC HOT WATER:

- DOMESTIC HOT WATER IS GENERATED BY A GAS-FIRED, INSTANTANEOUS WATER HEATER IN THE MECHANICAL ROOM. THE WATER HEATER SERVES THE BATHROOM LAVATORY, SERVICE SINK, SAMPLE SINK, AND EMERGENCY EYEWASH/SHOWERS.

ENVELOPE AND ASSEMBLY THERMAL DATA		
ASSEMBLY	R-VALUE	NOTE
WALL	R-10	–
ROOF	R-30	–
UNDERSLAB	R-1	–
SLAB EDGE	R-15	–
DOORS	R-2	–
WINDOWS	U-1	SHGC-0.4
INFILTRATION	–	0.50 ACH

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Checked SC
Approved JFP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID AS SHOWN
Scale AS SHOWN

STATE OF NEW HAMPSHIRE JAMES F. PETERSEN No. 9139 LICENSED PROFESSIONAL ENGINEER

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25 Vaughan Mall, Portsmouth, N.H. 03801
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HVAC BASIS OF DESIGN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

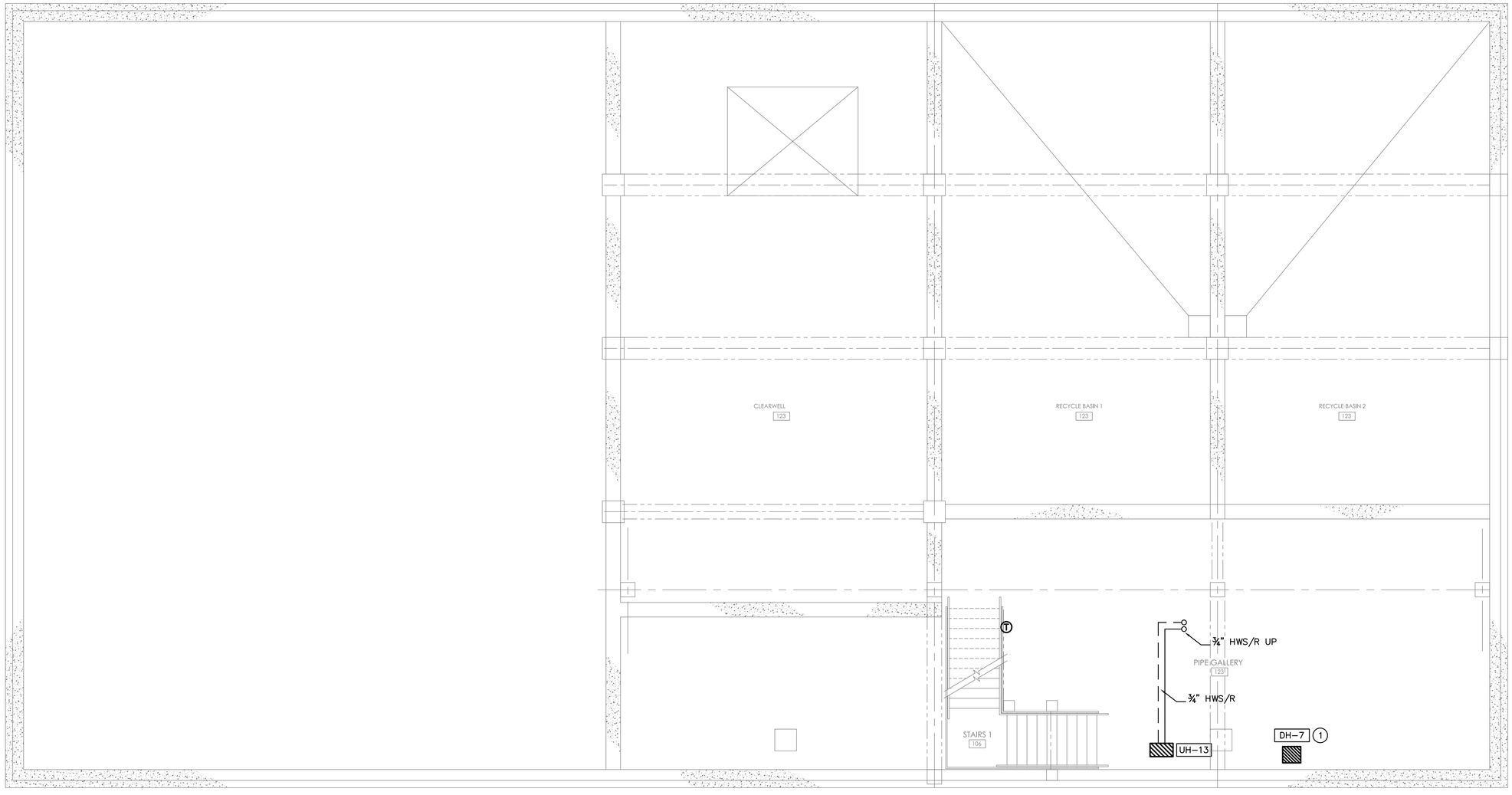
CITY OF DOVER, NEW HAMPSHIRE

SHEET NOTES:

(1) ROUTE CONDENSATE TO SUMP.

GENERAL NOTES:

1. –



HVAC LOWER LEVEL PLAN

SCALE: 3/16"=1'–0"

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HVAC LOWER LEVEL PLAN

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

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

DWG NO M–2

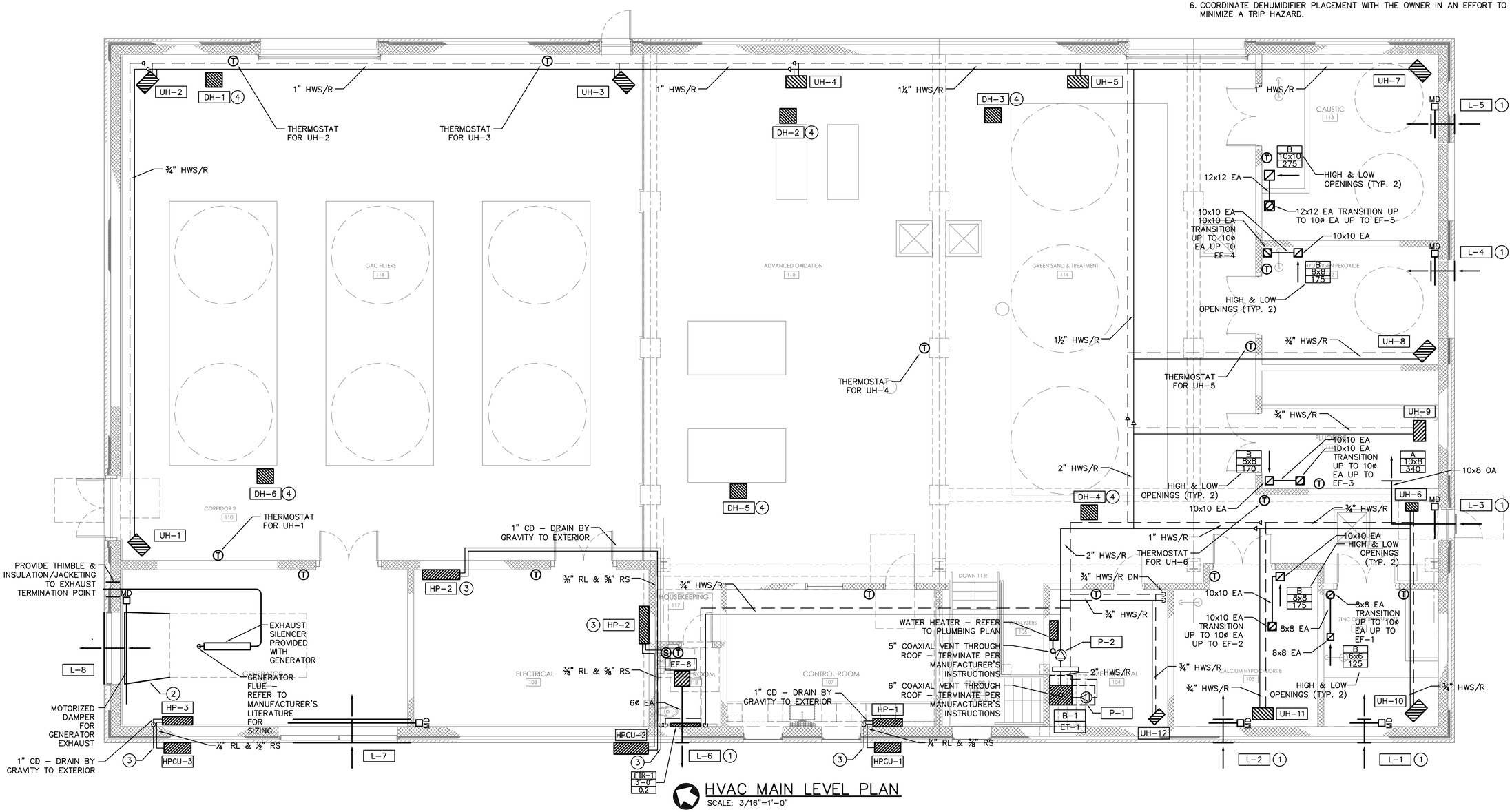
SHEET 69 OF 122

SHEET NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR LOUVER ELEVATIONS.
2. PROVIDE DUCTWORK CONNECTING RADIATOR TO LOUVER.
3. ROUTE CONDENSATE DRAIN PIPING FROM HEAT PUMP TO EXTERIOR WITH A 1" ELBOW DOWN TERMINATION WITH INSECT SCREEN LOCATED 24" ABOVE GRADE.
4. ROUTE CONDENSATE DRAIN PIPING FROM DEHUMIDIFIER TO NEAREST FLOOR DRAIN.

GENERAL NOTES:

1. LOCATE TWO-WAY MOTORIZED VALVES, ISOLATION VALVES, AND OTHER PIPE ACCESSORIES, SHOWN ON DETAIL 2 OF SHEET M-8, OUTSIDE OF THE CHEMICAL AREAS.
2. A SINGLE LINE IS SHOWN ON THIS DRAWING TO INDICATE BOTH THE REFRIGERANT SUCTION (RS) AND REFRIGERANT LIQUID (RL) PIPING FOR CLARITY. PROVIDE BOTH RS & RL PIPING TO CONNECT EQUIPMENT AS SHOWN.
3. REFRIGERANT PIPING IS SHOWN WITH CONCEPTUAL ROUTING ONLY. FIELD VERIFY AND OPTIMIZE EXACT ROUTING PER MANUFACTURER'S LITERATURE.
4. SILENCER AND EXHAUST PIPE FOR GENERATOR SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS, INCLUDING FLEXIBLE CONNECTOR TO ENGINE, WELDED STEEL EXHAUST PIPE AND HIGH TEMPERATURE INSULATION WITH ALUMINUM JACKETING.
5. COORDINATE PLACEMENT OF PROCESS WATER PIPING TO AVOID LOCATING IN FRONT OF INTAKE LOUVERS IN THE CHEMICAL ROOMS.
6. COORDINATE DEHUMIDIFIER PLACEMENT WITH THE OWNER IN AN EFFORT TO MINIMIZE A TRIP HAZARD.



HVAC MAIN LEVEL PLAN
SCALE: 3/16"=1'-0"

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HVAC MAIN LEVEL PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO M-3

SHEET 70 OF 122

SHEET NOTES:

(1) –

GENERAL NOTES:

1. –

HVAC ROOF PLAN
SCALE: 3/16"=1'-0"

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HVAC ROOF PLAN

PUDDING HILL WATER TREATMENT FACILITY
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DWG NO M-4

SHEET 71 OF 122

AIR SOURCE HEAT PUMP – OUTDOOR UNIT SCHEDULE

TAG	MAKE	MODEL	COOLING CAP. (BTU/H)	HEATING CAP. (MBH) 47F/5F	REF. TYPE	VOLT/PH/CY	MCA (AMPS)	MAX FUSE SIZE (AMPS)	WEIGHT (LBS)	DIMENSIONS (HxWxD)	REFRIG. LINE CONN.	NOTES
HPCU-1	MITSUBISHI	MUZ-FS12NAH	12,000	21,000/14,600	R410A	208/1/60	10	15	83	22x32x12	¼" RL & ⅜" RS	1, 3
HPCU-2	MITSUBISHI	PUMY-P48NKMU3	48,000	54,000/30,000	R410A	208/1/60	29	30	271	53x42x14	⅜" RL & ⅝" RS	1, 2, 4
HPCU-3	MITSUBISHI	MUZ-FS18NAH	18,000	30,000/23,000	R410A	208/1/60	18	20	118	35x33x13	¼" RL & ½" RS	1, 3

1. PROVIDE STEEL WALL BRACKETS FOR EXTERIOR WALL MOUNTING, MITSUBISHI MODEL CWMB1, AND MOUNT TO BE ABOVE SNOW.
2. NON HYPER HEAT MODEL.
3. HYPER HEAT MODEL.
4. PROVIDE WIND BAFFLE FOR LOW-AMBIENT COOLING OPERATION.

AIR SOURCE HEAT PUMP – INDOOR UNIT SCHEDULE

TAG	MAKE	MODEL	COOLING CAP. (BTU/H)	HEATING CAP. (MBH) 47F/5F	REF. TYPE	TOTAL AIR FLOW (CFM)	VOLT/PH/CY	MCA (AMPS)	WEIGHT (LBS)	TYPE	REFRIG. LINE CONN.	NOTES
HP-1	MITSUBISHI	MSZ-FS12NA	12,000	21,000/14,600	R410A	275	208/1/60	1.0	29	WALL CASSETTE	¼" RL & ⅜" RS	1-3
HP-2	MITSUBISHI	PKFY-P24NKMU-E	24,000	27,000/15,000	R410A	600	208/1/60	0.37	46	WALL CASSETTE	⅜" RL & ⅝" RS	1-3
HP-3	MITSUBISHI	MSZ-FS18NA	18,000	30,000/23,000	R410A	350	208/1/60	1.0	29	WALL CASSETTE	¼" RL & ½" RS	1-3

1. INCLUDE WALL MOUNTED THERMOSTAT/CONTROLLER, MITSUBISHI MODEL MHK-1 REMOTE CONTROLLER (1 PER ZONE) – PROVIDE ON-SITE PROGRAMMING AS DESIRED BY THE OWNER TO LOCK OUT THERMOSTAT FUNCTIONS.
2. INCLUDE DRAIN LEVEL PAN SENSOR (DLPS).
3. INDOOR UNIT IS POWERED DIRECTLY FROM OUTDOOR UNIT.

EXHAUST FAN SCHEDULE

TAG	MAKE	MODEL	CFM	ESP	BHP	MOTOR HP	MOTOR RPM	FAN RPM	VOLTAGE/ ϕ	FAN TYPE	WEIGHT	ZONE SERVED	FUNCTION	NOTES
EF-1	GREENHECK	CUE-080-VG	250	0.3	0.03	1/10	1,725	1,725	120/1	CENTRIFUGAL	34	ZINC ORTHOPHOSPHATE ROOM	EXHAUST	1, 2
EF-2	GREENHECK	CUE-090-VG	350	0.3	0.04	1/10	1,725	1,725	120/1	CENTRIFUGAL	34	CALCIUM HYPOCHLORITE ROOM	EXHAUST	1, 2
EF-3	GREENHECK	CUE-090-VG	340	0.3	0.04	1/10	1,725	1,725	120/1	CENTRIFUGAL	34	FLOURIDE ROOM	EXHAUST	1, 2
EF-4	GREENHECK	CUE-090-VG	350	0.3	0.04	1/10	1,725	1,725	120/1	CENTRIFUGAL	34	HYDROGEN PEROXIDE ROOM	EXHAUST	1, 2
EF-5	GREENHECK	CUE-090-VG	550	0.3	0.06	1/10	1,725	1,725	120/1	CENTRIFUGAL	31	SODIUM HYDROXIDE ROOM	EXHAUST	1, 2
EF-6	GREENHECK	SP-B70	70	0.15	–	45 WATTS	675	675	120/1	CEILING	9	BATHROOM	EXHAUST	3

1. VARI-GREEN EC MOTOR WITH WALL-MOUNTED POTENTIOMETER DIAL.
2. PROVIDE WITH DISCONNECT SWITCH AND BACKDRAFT DAMPER.
3. PROVIDE STANDARD GRILLE ("DESIGNER"), BACKDRAFT DAMPER, AND ON/OFF WALL SWITCH.

LOUVER SCHEDULE

TAG	MAKE	MODEL	SIZE (WxH)	CFM	FREE AREA (SQ. FT.)	CONSTRUCTION	LOCATION	FINISH	FUNCTION	NOTES
L-1	GREENHECK	ESD-603	16x16	250	0.62	ALUMINUM	ZINC ORTHOPHOSPHATE ROOM	SEE NOTE 1	INTAKE	1, 2, 3
L-2	GREENHECK	ESD-603	24x16	350	0.98	ALUMINUM	CALCIUM HYPOCHLORITE ROOM	SEE NOTE 1	INTAKE	1, 2, 3
L-3	GREENHECK	ESD-603	24x16	340	0.98	ALUMINUM	FLOURIDE ROOM	SEE NOTE 1	INTAKE	1, 2, 3
L-4	GREENHECK	ESD-603	24x16	350	0.98	ALUMINUM	HYDROGEN PEROXIDE ROOM	SEE NOTE 1	INTAKE	1, 2, 3
L-5	GREENHECK	ESD-603	24x24	550	1.64	ALUMINUM	SODIUM HYDROXIDE ROOM	SEE NOTE 1	INTAKE	1, 2, 3
L-6	GREENHECK	ESD-603	16x16	70	0.62	ALUMINUM	REST ROOM	SEE NOTE 1	EXHAUST	1, 2, 3
L-7	GREENHECK	ESD-603	144x96	25,100	50.2	ALUMINUM	GENERATOR ROOM	SEE NOTE 1	INTAKE	1, 2, 3
L-8	GREENHECK	ESD-603	88x96	25,100	27.9	ALUMINUM	GENERATOR ROOM	SEE NOTE 1	EXHAUST	1, 2, 3

1. COLOR AND FINISH TO BE SPECIFIED BY ARCHITECT.
2. PROVIDE GREENHECK ICD-45 THERMALLY BROKEN, INSULATED BLADE DAMPER WITH 115V ACTUATOR AND FACTORY JACKSHAFTING. SIZE TO MATCH LOUVER.
3. PROVIDE BIRDSCREEN, CLIP ANGLES AND SILL EXTENSIONS.

REGISTER, GRILLE & DIFFUSER SCHEDULE

TAG	MAKE	MODEL	TYPE	FUNCTION	MATERIAL	NECK SIZE	GRILLE SIZE	NOTES
A	METAL-AIRE	V4002-AF-1	GRILLE	SUPPLY	STAINLESS STEEL	SEE NOTE 2	SEE NOTE 2	1, 2
B	METAL-AIRE	RH	GRILLE	EXHAUST	STAINLESS STEEL	SEE NOTE 2	SEE NOTE 2	1, 2

1. COORDINATE COLOR WITH ARCHITECT
2. SEE PLAN VIEWS FOR SIZES AND LOCATIONS

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STATE OF NEW HAMPSHIRE JAMES F. PETERSEN No. 9139 LICENSED PROFESSIONAL ENGINEER

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HVAC SCHEDULES

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO M-5

SHEET 72 OF 122

BOILER SCHEDULE

TAG	MAKE	MODEL	TYPE	FLUID	FUEL	INPUT (MBH)	OUTPUT (MBH)	FLOW (GPM)	EWT (F)	LWT (F)	COMBUSTION EFFICIENCY	FLUE GAS VENT (IN.)	AIR INLET VENT (IN.)	WATER CONTENT (GAL.)	VOLTAGE/ ϕ	NOTES
B-1	VIESSMANN	VITODENS 200-W B2HA-530	WALL	WATER	NATURAL GAS	113-530	103-495	33	130	160	94%	6 (COAXIAL)	N/A	4.0	120/1	1

1. PROVIDE WITH BOILER CONDENSATE NEUTRALIZATION KIT, LOW-LOSS HEADER, COAXIAL VENT KIT, AND VITOTRONIC 200 HO1B CONTROLLER.

PUMP SCHEDULE

TAG	MAKE	MODEL	TYPE	SYSTEM	FLUID	FLOW (GPM)	HEAD (FT.)	EFF. (%)	IMPELLER DIA.	SUCTION (IN.)	DISCHARGE (IN.)	BHP	MOTOR WATTS	RPM	VOLTAGE/ ϕ	NOTES
P-1	TACO	VR20-3	INLINE	BOILER PRIMARY	WATER	33	20	-	-	2	2	-	800	3700	208/1	1
P-2	TACO	VR20-3	INLINE	BUILDING DISTRIBUTION	WATER	33	25	-	-	2	2	-	800	3700	208/1	1

1. EC MOTOR WITH INTEGRAL VARIABLE SPEED CONTROL.

EXPANSION TANK SCHEDULE

TAG	MAKE	MODEL	SYSTEM	FLUID	TANK VOLUME (GALLON)	ACCEPTANCE VOLUME (GALLON)	PRECHARGE (PSI)	RELIEF VALVE SETTING (PSIG)	NOTES
ET-1	TACO	CBX84	HEATING	WATER	22	12	12	30	

HOT WATER UNIT HEATER SCHEDULE

TAG	MAKE	MODEL	ARRANGEMENT	HEAT OUTPUT BTU/HR	CFM	GPM	EWT (°F)	LWT (°F)	WATER P.D. (FT)	BLOWER QTY.	MOTOR HP	VOLTAGE/ PHASE	AMPS	DIMENSIONS (WxDxH)	LOCATION	NOTES
UH-1	VULCAN	HV-60	HORIZONTAL	27,900	900	1.9	160	130	0.07	1	1/20	115/1/60	1.4	18"x11"x21"	GAC FILTER ROOM	1, 2, 3
UH-2	VULCAN	HV-60	HORIZONTAL	27,900	900	1.9	160	130	0.07	1	1/20	115/1/60	1.4	18"x11"x21"	GAC FILTER ROOM	1, 2, 3
UH-3	VULCAN	HV-60	HORIZONTAL	27,900	900	1.9	160	130	0.07	1	1/20	115/1/60	1.4	18"x11"x21"	GAC FILTER ROOM	1, 2, 3
UH-4	VULCAN	HV-72	HORIZONTAL	33,500	1,100	2.2	160	130	0.09	1	1/20	115/1/60	1.4	19"x11"x22"	ADVANCED OXIDATION	1, 2, 3
UH-5	VULCAN	HV-60	HORIZONTAL	27,900	900	1.9	160	130	0.07	1	1/20	115/1/60	1.4	18"x11"x21"	GREEN SAND AND TREATMENT	1, 2, 3
UH-6	VULCAN	HV-36	HORIZONTAL	16,700	550	1.1	160	130	0.04	1	25 WATT	115/1/60	1.2	15"x10"x15"	GREEN SAND AND TREATMENT	1, 2, 3
UH-7	VULCAN	HV-132	HORIZONTAL	61,300	2000	4.0	160	130	0.16	1	1/3	115/1/60	4.5	24"x14"x28"	SODIUM HYDROXIDE ROOM	1, 2, 3
UH-8	VULCAN	HV-72	HORIZONTAL	33,500	1,100	2.2	160	130	0.09	1	1/20	115/1/60	1.4	19"x11"x22"	HYDROGEN PEROXIDE ROOM	1, 2, 3
UH-9	VULCAN	HV-72	HORIZONTAL	33,500	1,100	2.2	160	130	0.09	1	1/20	115/1/60	1.4	19"x11"x22"	FLOURIDE ROOM	1, 2, 3
UH-10	VULCAN	HV-48	HORIZONTAL	22,300	750	1.5	160	130	0.05	1	1/20	115/1/60	1.4	17"x12"x21"	ZINC ORTHOPHOSPHATE ROOM	1, 2, 3
UH-11	VULCAN	HV-60	HORIZONTAL	27,900	900	1.9	160	130	0.07	1	1/20	115/1/60	1.4	18"x11"x21"	CALCIUM HYPOCHLORITE ROOM	1, 2, 3
UH-12	VULCAN	HV-108A	HORIZONTAL	5,100	245	0.3	160	130	0.03	1	16 WATT	115/1/60	0.8	18"x10"x16"	MECHANICAL ROOM	1, 3
UH-13	VULCAN	HV-48	HORIZONTAL	22,300	750	1.5	160	130	0.05	1	1/20	115/1/60	1.4	17"x12"x21"	PIPE GALLERY	1, 2, 3

1. OPTIONS: INTEGRAL DISCONNECT SWITCH AND AQUASTAT.
2. CABINET SHALL BE 20 GA. DIE FORM STEEL AND APPLIED WITH PHENOLIC COATING.
3. EQUIPMENT SELECTIONS ACCOUNT FOR A 0.64 CORRECTION FACTOR FOR ENTERING HOT WATER TEMPERATURE AND 30F WATER DROP.

FINNED TUBE RADIATION SCHEDULE

TAG	MAKE	STYLE	MODEL	TUBE SIZE	FIN SIZE	FIN PER FT	FIN THICKNESS	NO. TIERS	ENCL HEIGHT	AWT (°F)	CAPACITY (BTU/LF)	NOTES
FTR-1	VULCAN	BASEBOARD	JV3-ARS11	¾"	3¼"x3¼"	50	0.020"	1	11"	145	560	

PORTABLE DEHUMIDIFIER SCHEDULE

TAG	MAKE	MODEL	BLOWER CFM	WATER REMOVAL (GALLON)	VOLTAGE/ PHASE	FLA (AMPS)	POWER (KW)	DIMENSIONS WxDxH (IN.)	UNIT WEIGHT (LB.)	NOTES
DH-1	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2
DH-2	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2
DH-3	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2
DH-4	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2
DH-5	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2
DH-6	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2
DH-7	QUEST	HI-E DRY 195	540	24 @ 80°F, 60% RH	115/1	12	1.25 @ 80°F, 60% RH	37x19x40	180	1, 2

1. POWERED BY A FACTORY INSTALLED POWER CORD.
2. PROVIDE WITH PLEATED MEDIA MERV-8 FILTERS (AND THREE ADDITIONAL SETS OF SPARE FILTERS) FOR EACH UNIT AND INTEGRAL CONDENSATE PUMP.

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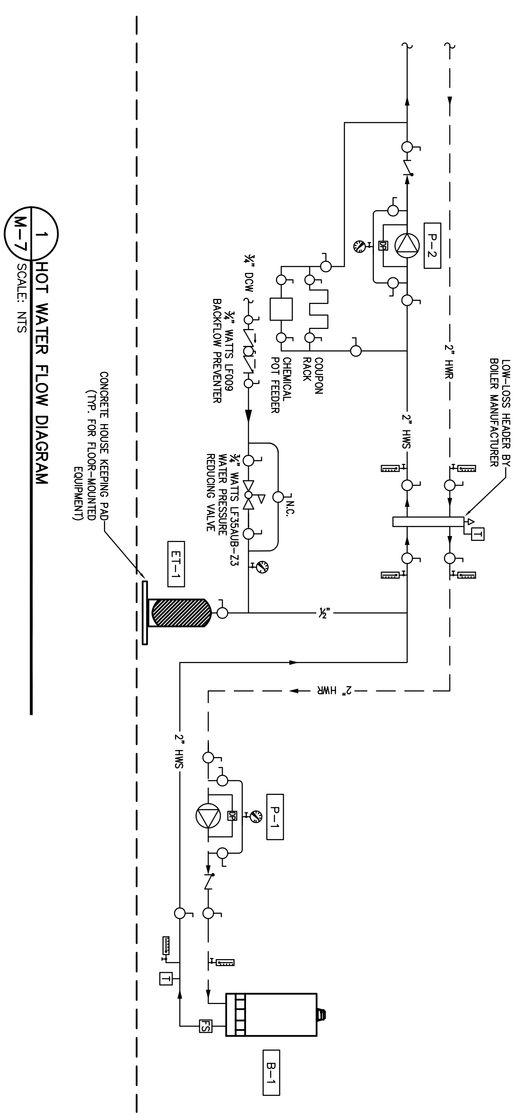
HVAC SCHEDULES
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

DWG NO M-6
SHEET 73 OF 122



1 M-7 HOT WATER FLOW DIAGRAM
SCALE: NTS

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DWG NO M-7
SHEET 74 OF 122

HVAC FLOW SCHEMATICS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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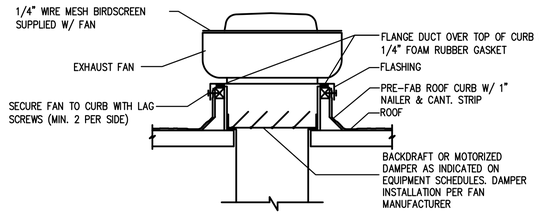
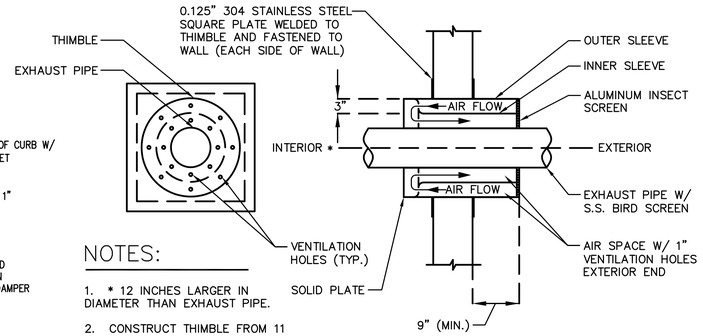


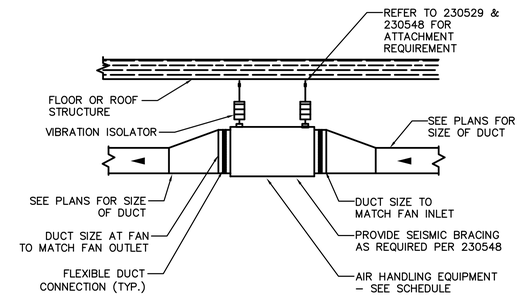
9 M-8 UPBLAST EXHAUST FAN DETAIL
SCALE: NTS



NOTES:

1. * 12 INCHES LARGER IN DIAMETER THAN EXHAUST PIPE.
2. CONSTRUCT THIMBLE FROM 11 GA. 304 STAINLESS STEEL.

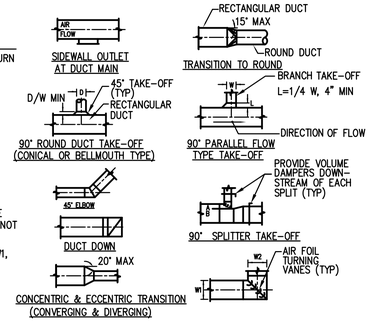
8 M-8 WALL THIMBLE DETAIL FOR GENERATOR EXHAUST
SCALE: NTS



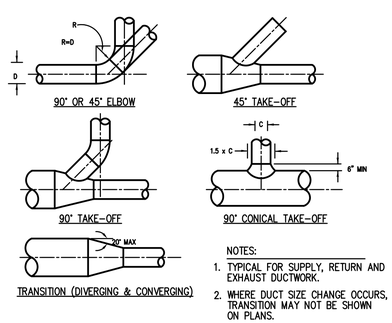
7 M-8 SUSPENDED EQUIPMENT SUPPORT DETAIL
SCALE: NTS

NOTES:

1. TYPICAL FOR SUPPLY, RETURN AND EXHAUST DUCTWORK.
2. LOCATE THE CENTER OF TAKE-OFFS FROM DUCT MAINS AT THE MIDPOINT OF THE SIDE OF DUCT MAIN ("HEIGHT"/2)
3. SIZE A & B DIMENSIONS ARE PROPORTIONAL TO AIR QUANTITIES IN EACH LEG SPLIT
4. WHERE DUCT SIZE CHANGE OCCURS TRANSITION MAY NOT BE SHOWN ON PLANS
5. IF W2 DOES NOT EQUAL W1, MODIFY SHAPE OF VANE EDGES TO PROJECT TANGENTS PARALLEL TO DUCT SIDES



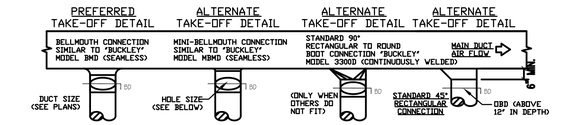
6 M-8 RECTANGULAR DUCT FITTING DETAIL
SCALE: NTS



NOTES:

1. TYPICAL FOR SUPPLY, RETURN AND EXHAUST DUCTWORK.
2. WHERE DUCT SIZE CHANGE OCCURS, TRANSITION MAY NOT BE SHOWN ON PLANS.

5 M-8 ROUND DUCT FITTING DETAIL
SCALE: NTS



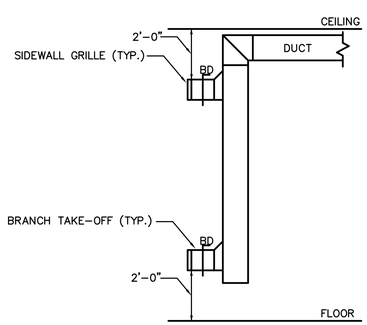
DUCT SIZE	HOLE SIZE	MINIMUM DUCT HT.	DUCT SIZE	HOLE SIZE	MINIMUM DUCT HT.	DUCT SIZE	HOLE SIZE	MINIMUM DUCT HT.
5"	8"	9"	5"	–	–	5"	5"x10"	–
6"	9"	10"	6"	7"	9"	6"	6"x12"	9"
7"	10"	11"	7"	–	–	7"	6"x12"	–
8"	11"	12"	8"	9"	11"	8"	6½"x12"	11"
9"	12"	13"	9"	–	–	9"	6½"x12"	–
10"	13"	14"	10"	11"	13"	10"	6½"x12"	13"
12"	15"	16"	12"	–	–	12"	6½"x12"	–
14"	17"	18"	14"	–	–	14"	10"x20"	–
15"	19"	20"	15"	–	–	15"	–	–

THIS DETAIL APPLIES TO SINGLE TAKEOFFS TO DIFFUSER AS WELL AS BRANCH TAKEOFFS. IT ALSO APPLIES TO TAKEOFFS IN THE HORIZONTAL AS WELL AS VERTICAL DIRECTION.

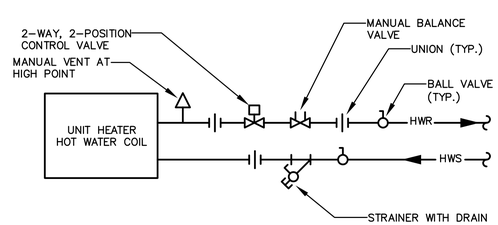
ALTERNATE FITTINGS SHALL BE USED WHEN DUCT HEIGHT DOES NOT PERMIT THE USE OF THE PREFERRED FULL SIZE BELLMOUTH.

SUBMIT FITTINGS FOR REVIEW BY ENGINEER PRIOR TO INSTALLATION.

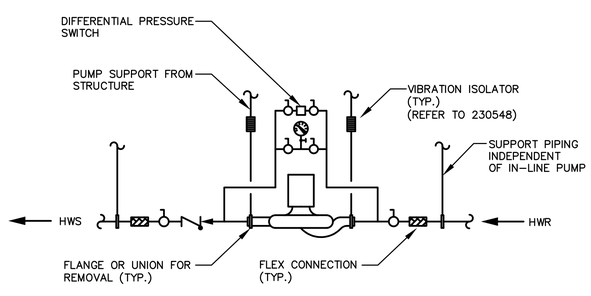
4 M-8 DUCT TAKEOFFS
SCALE: NTS



3 M-8 HIGH & LOW DUCT OPENINGS
SCALE: NTS



2 M-8 TYPICAL UNIT HEATER COIL PIPING DIAGRAM
SCALE: NTS



1 M-8 IN-LINE CIRCULATOR PUMP DETAIL
SCALE: NTS

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HVAC DETAILS
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

DWG NO M-8
SHEET 75 OF 122

NATURAL GAS SUMMARY

DOVER PUDDING HILL – NATURAL GAS REQUIREMENTS

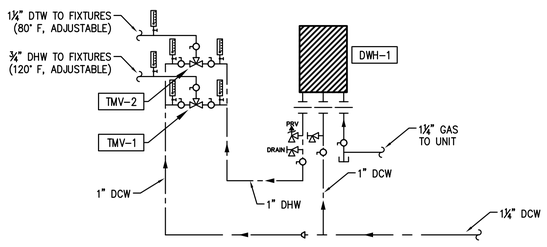
EQUIPMENT LOCATION	EQUIPMENT TYPE & TAG	QTY	CFH INPUT	TOTAL CFH	LINE SIZE
MECH ROOM	DHW HEATER WH-1	1	199	199	1-1/4"
MECH ROOM	BOILER B-1	1	530	530	2"
GENERATOR ROOM	GENERATOR	1	5420	8130	5"
	TOTAL			8859	
	SERVICE PRESSURE (UPSTREAM OF SECOND STAGE REGULATOR)	2 PSI			
	SERVICE PRESSURE (DOWNSTREAM OF SECOND STAGE REGULATOR)	7-11 IN WC			
	PRESSURE DROP	0.3 IN WC			
	MAX LENGTH	225 FT			

SOURCE: PIPE SIZING PER 2015 NFPA 54 TABLE 6.2(a) FROM NFPA CODES ONLINE

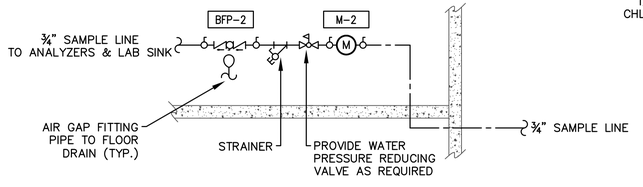
PLUMBING LEGEND

—S—	UNDERSLAB SANITARY DRAIN PIPING
—S—	ABOVE GROUND SANITARY DRAIN PIPING
—SD—	STORM DRAIN PIPING
—OV—	OVERFLOW DRAIN PIPING
—V—	SANITARY VENT PIPING
—DHW—	DOMESTIC HOT WATER SUPPLY PIPING
—DCW—	DOMESTIC COLD WATER SUPPLY PIPING
—DHWR—	DOMESTIC HOT WATER RECIRCULATION PIPING
—DTW—	DOMESTIC TEPID WATER SUPPLY PIPING
—G—	NATURAL GAS PIPING
	DIRECTION OF FLOW
	DIRECTION OF PITCH
	DROP IN PIPE
	RISE IN PIPE
	PIPE TEE DOWN
	PIPE TEE UP
	PIPE CONTINUATION
WCO/CO	WALL/END CLEANOUT
FCO	FLOOR CLEANOUT
	CHECK VALVE
	BALL VALVE/ ISOLATION VALVE
	BACKFLOW PREVENTION VALVE
	PIPE UNION
	DRAIN VALVE, GATE VALVE
	BUTTERFLY VALVE
	BALANCE VALVE
	DRAIN VALVE, GATE VALVE

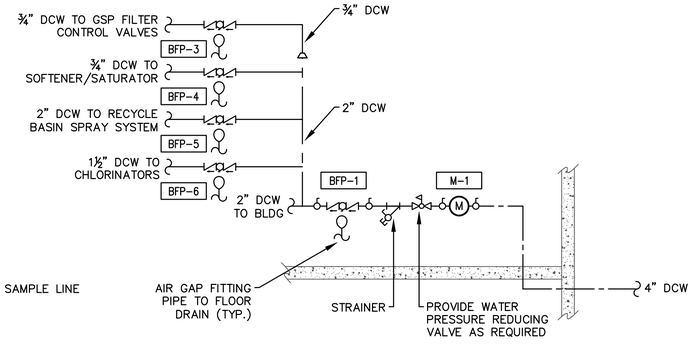
	MECHANICAL EQUIPMENT
	PUMP
	PIPE REDUCER
M	WATER/GAS METER
	PRESSURE REDUCING VALVE
	SAFETY RELIEF VALVE
	MIXING VALVE
	THERMOMETER
	STRAINER
	VENT THROUGH ROOF
	ROOF DRAIN
	FLOOR DRAIN
CFF	PIPE CAP FOR FUTURE CONNECTION
	PIPE CONNECTION TO FIXTURE
	PRESSURE GUAGE
	TEMPERATURE SENSOR
CD	CONDENSATE DRAIN
RD / SD	ROOF DRAIN
S	SANITARY SEWER
VTR	VENT THROUGH ROOF
I.E.	INVERT ELEVATION
FP	FIRE PROTECTION PIPING
U.O.N.	UNLESS OTHERWISE NOTED
SGV	SOIL GAS VENT
DTW	DOMESTIC TEMPERED WATER
DTWR	DOMESTIC TEMPERED WATER RETURN
W.C.	WATER COLUMN
(E)	EXISTING



3 / M-9 DOMESTIC HOT WATER FLOW DIAGRAM NTS



2 / M-9 SAMPLE LINE ENTRANCE DETAIL NTS



1 / M-9 DOMESTIC COLD WATER ENTRANCE DETAIL NTS

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PLUMBING BASIS OF DESIGN & DETAILS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

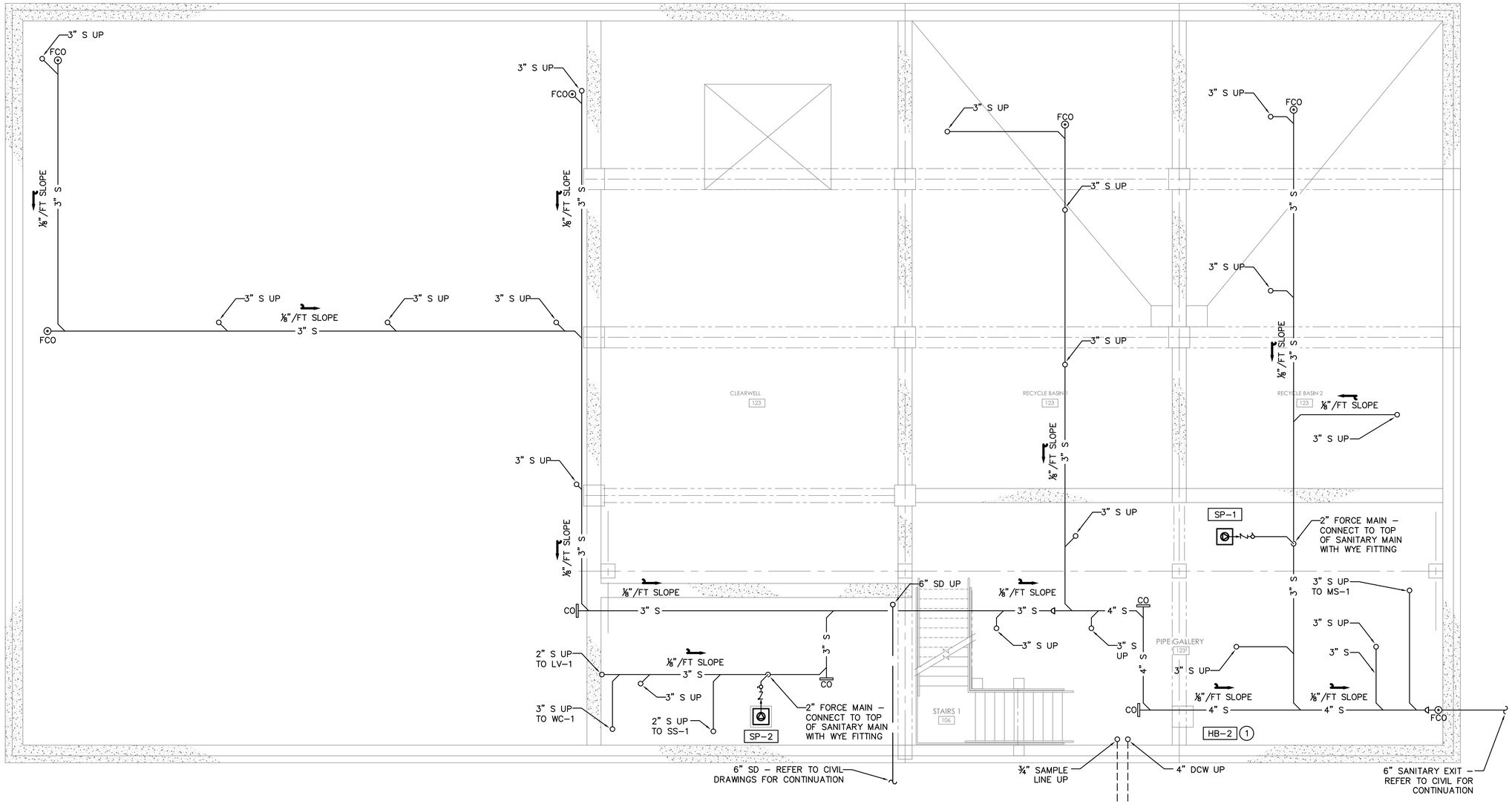
CITY OF DOVER, NEW HAMPSHIRE

DWG NO M-9

SHEET 76 OF 122

SHEET NOTES:

1. CONNECT TO DCW PIPING ON MAIN LEVEL.



PLUMBING LOWER LEVEL PLAN

SCALE: 3/16"=1'-0"

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Scale AS SHOWN

STATE OF NEW HAMPSHIRE
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PLUMBING LOWER LEVEL PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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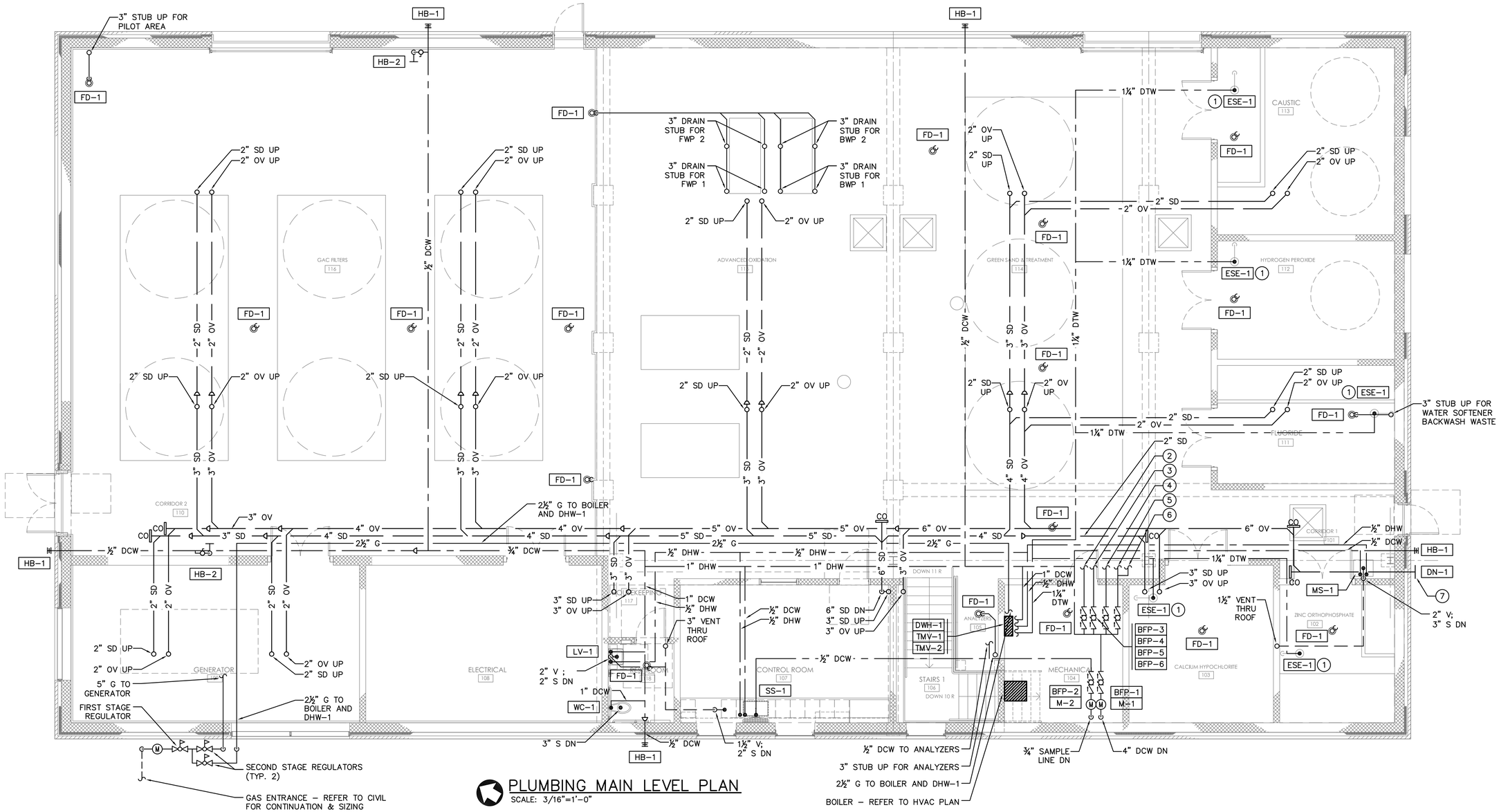
SHEET NOTES:

1. INDIRECTLY DISCHARGE TO THE NEAREST FLOOR DRAIN
2. 2" DCW TO FIXTURES
3. ¾" DCW TO GSP FILTER CONTROL VALVES – REFER TO PROCESS DRAWINGS FOR CONTINUATION
4. ¾" DCW TO SOFTENER/FLUORIDE SATURATOR – REFER TO PROCESS DRAWINGS FOR CONTINUATION
5. 2" DCW TO RECYCLE BASIN SPRAY SYSTEM – REFER TO PROCESS DRAWINGS FOR CONTINUATION
6. 1½" DCW TO CHLORINATORS (TYP. OF 2) WITH WATER HAMMER ARRESTOR LOCATED AT END OF BRANCH LINE – REFER TO PROCESS DRAWINGS FOR CONTINUATION
7. DISCHARGE 3" OV WITH DN–1 24" ABOVE FINISHED GRADE



PLUMBING MAIN LEVEL PLAN
SCALE: 3/16"=1'–0"

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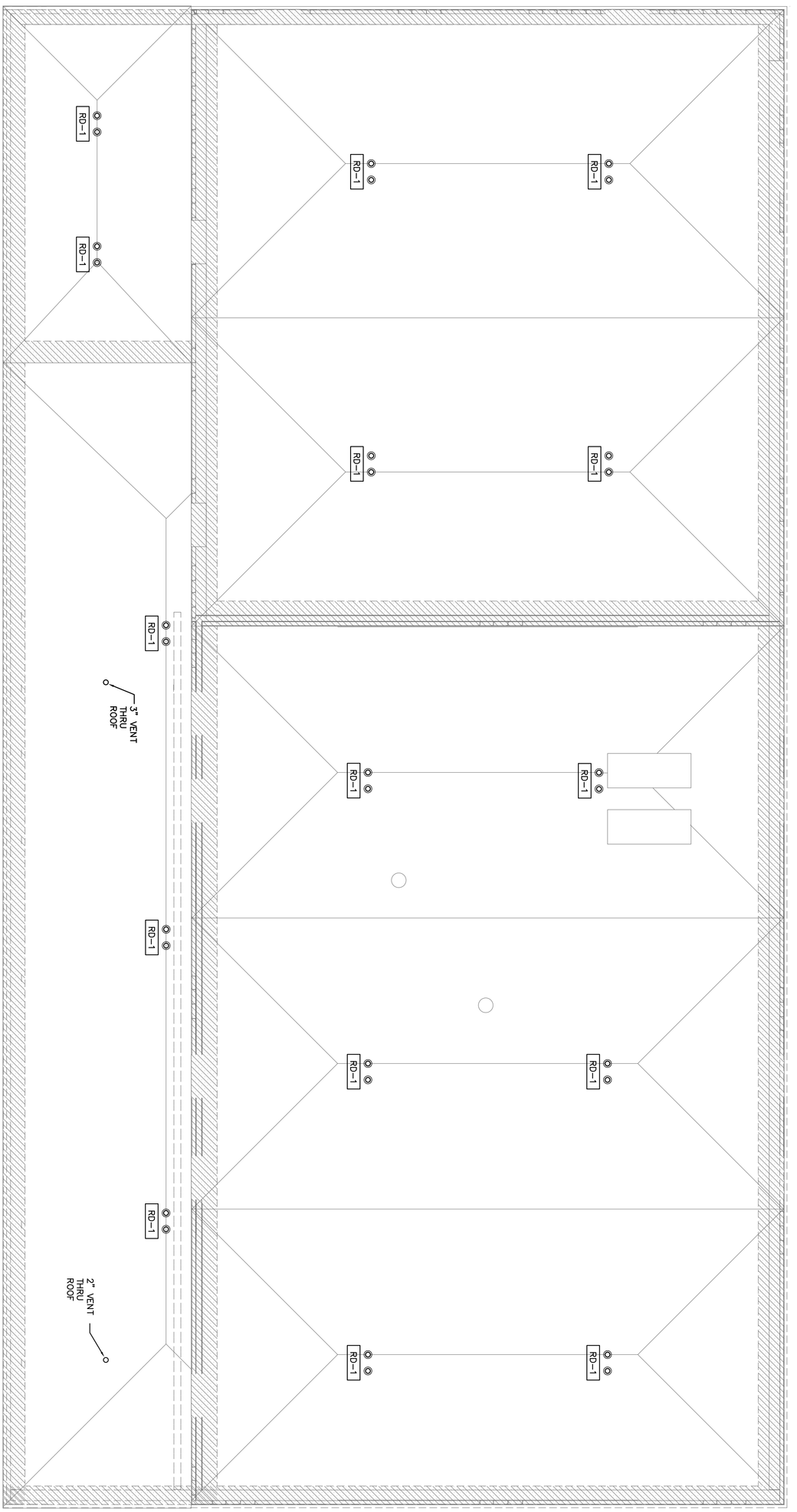

PLUMBING ROOF PLAN
SCALE: 3/16"=1'-0"

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PLUMBING ROOF PLAN

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PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE TYPE	MAKE	MODEL	PIPE CONNECTION SIZES				FITTINGS / ACCESSORIES	WATER USED	ADA COMPLIANT	NOTES
				SOIL	CW	HW	TRAP				
LV–1	WALL–HUNG LAVATORY	KOHLER	K–1728	1¼"	⅜"	⅜"	1¼"	PROVIDE WITH 3–HOLE FAUCET PATTERN (4" CENTERSET), GRID STRAINER, P–TRAP, STOPS AND SUPPLY PROTECTORS. FAUCET: ZURN Z81101–XL WITH 1.5 GPM AERATOR	1.5 GPM	YES	1
WC–1	FLOOR–MOUNTED WATER CLOSET	ZURN	Z5665–BWL	3"	1"	–	–	INCLUDE ZURN Z5955SS–EL ELONGATED OPEN FRONT TOILET SEAT AND ZURN Z6000AV–HET MANUAL FLUSH VALVE	1.28 GPF	YES	1
SS–1	SAMPLE SINK W/4 FAUCETS	REFER TO ARCHITECTURAL DRAWINGS	REFER TO ARCHITECTURAL DRAWINGS	2"	½"	½"	2"	PROVIDE DRAIN, P–TRAP AND STOPS. FAUCET: (1) ZURN Z826B4–XL & (3) ZURN Z825B4–XL WITH 1.5 GPM AERATOR & SWING GOOSENECK SPOUT	1.5 GPM	NO	1
MS–1	MOP SINK	STERN WILLIAMS	MTB–2424	3"	½"	½"	3"	PROVIDE STERN WILLIAMS T–10–VB FAUCET WITH ADJUSTABLE WALL BRACE, SPRING CHECKS, INTEGRAL STOPS, VACUUM BREAKER, AND BUCKET HOOK. INLETS 8" ON CENTER, CHROME FINISH.	2.5 GPM	NO	1
HB–1	EXTERIOR HOSE BIB	ZURN	Z1300–CL	–	½"	–	–	NON–FREEZE, ANTI–SIPHONING WALL HYDRANT; PROVIDE WITH CYLINDER LOCK. PROVIDE DEDICATED SHUT–OFF VALVE ON COLD WATER PIPING.	–	–	–
HB–2	INTERIOR HOSE BIB	ZURN	Z1341–XL	–	½"	–	–	WALL FAUCET WITH BACKFLOW PREVENTER. PROVIDE DEDICATED SHUT–OFF VALVE ON COLD WATER PIPING. PROVIDE WITH 50–FOOT HOSE AND HANGER.	–	–	–
FD–1	FLOOR DRAIN	ZURN	Z520	3"			3"	FIXTURE RECEIVES WEEKLY WASHDOWN FROM SPACE, TRAP PRIMER NOT REQUIRED.	–	–	–
RD–1	COMBINATION ROOF DRAIN & OVERFLOW DRAIN	ZURN	Z127	SEE PLANS	–	–	–	CAST IRON BODY WITH POLY–DOME	–	–	–
SP–1	SUMP PUMP IN CONCRETE SUMP PIT	ZOELLER	N53	1½"	–	–	–	ELECTRICAL DATA: 120V/1PH/60HZ, ⅗ HP, 9.7 AMPS PERFORMANCE: 19 GPM @ 15 FT HEAD INCLUDE UNICHECK VALVE, SIMPLEX PUMP CONTROLLER 10–1037, & THREE VARIABLE FLOAT SWITCHES ("OFF", "RUN", & "ALARM") COORDINATE WITH STRUCTURAL ENGINEER FOR SUMP DIMENSIONS	–	–	–
SP–2	SUMP PUMP IN CONCRETE SUMP PIT	ZOELLER	N53	1½"	–	–	–	ELECTRICAL DATA: 120V/1PH/60HZ, ⅗ HP, 9.7 AMPS PERFORMANCE: 19 GPM @ 15 FT HEAD INCLUDE UNICHECK VALVE, SIMPLEX PUMP CONTROLLER 10–1037, & THREE VARIABLE FLOAT SWITCHES ("OFF", "RUN", & "ALARM") COORDINATE WITH STRUCTURAL ENGINEER FOR SUMP DIMENSIONS	–	–	–
DN–1	DOWNSPOUT NOZZLE COVER	ZURN	Z–199–SS	SEE PLAN	–	–	–	PROVIDE WITH REMOVABLE STAINLESS STEEL SCREEN. TERMINATE AT 3'–0" ABOVE FINISHED GRADE, UNLESS NOTED OTHERWISE			
ESE–1	CORROSION RESISTANT EMERGENCY SHOWER & EYEWASH UNIT	GUARDIAN	G1991	1¼"	1"	1"	1¼"	ALL STAINLESS STEEL CONSTRUCTION, CORROSION RESISTANT PROVIDE WITH GUARDIAN FC20 TO REGULATE SHOWER FLOW RATE TO 20 GPM PROVIDE WITH GUARDIAN AP275–105 FLOW SWITCH WITH REMOTE ALARM TO SCADA SYSTEM.	–	–	–
DHW–1	GAS–FIRED INSTANTANEOUS HOT WATER HEATER	RINNAI	RL94i	–	¾"	¾"	–	NATURAL GAS, 120V/1PH, FUSE SIZE: 10 AMP 199,000 BTU/HR INPUT	–	–	–
BFP–1	BACKFLOW PREVENTER	WATTS	LF009	–	4"	–	–	REDUCED PRESSURE ZONE ASSEMBLY. PROVIDE WITH QUARTER–TURN BALL VALVES AND AIR GAP FITTINGS. LEAD–FREE MODEL.	–	–	2
BFP–2	BACKFLOW PREVENTER	WATTS	LF009	–	¾"	–	–	REDUCED PRESSURE ZONE ASSEMBLY. PROVIDE WITH QUARTER–TURN BALL VALVES AND AIR GAP FITTINGS. LEAD–FREE MODEL.	–	–	2
BFP–3	BACKFLOW PREVENTER	WATTS	LF009	–	¾"	–	–	REDUCED PRESSURE ZONE ASSEMBLY. PROVIDE WITH QUARTER–TURN BALL VALVES AND AIR GAP FITTINGS. LEAD–FREE MODEL.	–	–	2
BFP–4	BACKFLOW PREVENTER	WATTS	LF009	–	¾"	–	–	REDUCED PRESSURE ZONE ASSEMBLY. PROVIDE WITH QUARTER–TURN BALL VALVES AND AIR GAP FITTINGS. LEAD–FREE MODEL.	–	–	2
BFP–5	BACKFLOW PREVENTER	WATTS	LF009	–	2"	–	–	REDUCED PRESSURE ZONE ASSEMBLY. PROVIDE WITH QUARTER–TURN BALL VALVES AND AIR GAP FITTINGS. LEAD–FREE MODEL.	–	–	2
BFP–6	BACKFLOW PREVENTER	WATTS	LF009	–	1½"	–	–	REDUCED PRESSURE ZONE ASSEMBLY. PROVIDE WITH QUARTER–TURN BALL VALVES AND AIR GAP FITTINGS. LEAD–FREE MODEL.	–	–	2
M–1	WATER METER	NEPTUNE TECHNOLOGY GROUP	T–10 METER	–	2"	–	–	PRIOR TO ORDERING, COORDINATE WITH OWNER FOR REMOTE READING REQUIREMENTS.	–	–	–
M–2	WATER METER	NEPTUNE TECHNOLOGY GROUP	T–10 METER	–	¾"	–	–	PRIOR TO ORDERING, COORDINATE WITH OWNER FOR REMOTE READING REQUIREMENTS.	–	–	–
TMV–1	THERMOSTATIC MIXING VALVE	LEONARD	370–LF	–	¾"	¾"	–	LEAD–FREE MODEL. MODEL ¾" OUTLET TEMPERATURE 120F (ADJUSTABLE).	–	–	–
TMV–2	THERMOSTATIC MIXING VALVE	LEONARD	TM–5100–LF	–	1"	1"	–	LEAD–FREE MODEL. MODEL 1¼" OUTLET TEMPERATURE 80F (ADJUSTABLE).			

1. COORDINATE WITH ARCHITECT TO COLORS AND FINISHES.
2. PIPE DRAIN TO UNDERSLAB DRAIN LINE VIA AIR GAP FITTING.

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PLUMBING SCHEDULES

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO M–13

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FIRE PROTECTION LEGEND

⊗	DRY PENDENT SPRINKLER HEAD
⊕	UPRIGHT PENDENT SPRINKLER HEAD
	BACKFLOW PREVENTER WITH OS&Y GATE VALVES
	GATE VALVE
o——	PIPE DROP
——o	PIPE RISE
—o—	PIPE TEE DOWN
—o—	PIPE TEE UP
BOR	HYDRAULIC REFERENCE POINT
FCV	FLOOR CONTROL VALVE
FDC	FIRE DEPARTMENT CONNECTION
FP	FIRE PROTECTION PIPING
BFP	BACKFLOW PREVENTER
F.F.E.	FINISHED FLOOR ELEVATION
A.F.F.	ABOVE FINISH FLOOR
A.H.J.	AUTHORITY HAVING JURISDICTION

NOTES

1. SYSTEM SHALL BE DESIGNED TO THE REQUIREMENTS OF THE CITY OF DOVER, NH, STATE OF NEW HAMPSHIRE AND NFPA 13 (2013 EDITION).
2. ALL PIPING SHOULD BE ARRANGED, WHERE PRACTICABLE, TO DRAIN TO THE MAIN DRAIN VALVE.
3. READILY REMOVABLE FITTINGS SHALL BE PROVIDED AT THE END OF ALL CROSS MAINS TO PROVIDE FOR FLUSHING SYSTEM.
4. HANGERS AND PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13 (2013 EDITION).
5. ALL PIPE LOCATIONS TO BE FIELD MEASURED PRIOR TO FABRICATION AND INSTALLATION.
6. HIGH TEMPERATURE HEADS TO BE FIELD LOCATED WHERE REQUIRED.
7. SINGLE HEADS IN ROOMS WITHOUT MEASUREMENTS ARE TO BE CENTERED IN ROOM – COORDINATE WITH ARCHITECT/OWNER FOR EXACT HEAD LOCATIONS THROUGHOUT THE BUILDING..
8. PIPE 2" AND UNDER SHALL BE SCH. 40 GALVANIZED STEEL WITH CLASS 125 THREADED FITTINGS. PIPE 2½" AND LARGER SHALL BE SCH. 10 GALVANIZED STEEL WITH ROLL-GROOVED FITTINGS.

GENERAL PROJECT NOTES

1) THE FOLLOWING PLANS ARE A CONCEPTUAL CONFIGURATION OF PROPOSED SPRINKLER HEAD LOCATIONS AND PREFERRED PIPING ARRANGEMENT, PREPARED UNDER THE GUIDELINES OF NFPA 13 AND ARE ONLY APPROVED AS SUCH BY THE AUTHORITY(S) HAVING JURISDICTION. IT IS THE INTENT OF THE DRAWINGS TO IDENTIFY THE MAIN SYSTEM REQUIREMENTS AND REPRESENTATIVE SPRINKLER LAYOUTS. DETAILED LAYOUTS FOR ALL SPACES ARE THE RESPONSIBILITY OF THE FIRE SUPPRESSION CONTRACTOR.

2) THE INSTALLING CONTRACTOR SHALL PROVIDE FULLY ENGINEERED SHOP/INSTALLATION DRAWINGS AND HYDRAULIC CALCULATIONS, BASED ON THIS PREFERRED LAYOUT TO OBTAIN ALL NECESSARY APPROVALS.

3) THE INSTALLING CONTRACTOR SHALL PREPARE AND SUBMIT A COMPLETE SUBMITTAL PACKAGE TO OBTAIN PLAN CHECK APPROVALS PRIOR TO FABRICATION, DELIVERY OF MATERIALS AND INSTALLATION. A SET OF APPROVED PLANS SHALL BE KEPT ON-SITE AT ALL TIMES DURING THE INSTALLATION SHALL BE MADE AVAILABLE DURING ALL REQUIRED/SCHEDULED INSPECTIONS.

4) THE INSTALLING CONTRACTOR SHALL PERFORM ALL REQUIRED ACCEPTANCE TESTS, COMPLETELY FILL OUT THE CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR "OVERHEAD PIPING" AND FORWARD A COPY TO THE OWNER/ARCHITECT/GENERAL CONTRACTOR & THE AUTHORITY(S) HAVING JURISDICTION.

5) THIS DRY AUTOMATIC FIRE SPRINKLER SYSTEM SHALL BE HYDROSTATICALLY TESTED AT 50 PSI ABOVE STATIC PRESSURE BUT NOT LESS THAN 200 PSI FOR A MINIMUM PERIOD OF TWO (2) HOURS AT THE ROUGH PLUMBING STAGE.

6) ALL DESIGN AND INSTALLATION SHALL BE PERFORMED BY A QUALIFIED FIRE SPRINKLER CONTRACTOR LICENSED BY ALL FEDERAL, STATE AND LOCAL AUTHORITY(S), AS APPLICABLE. QUALIFICATIONS SHALL INCLUDE A SUCCESSFUL IN-SERVICE RECORD OF FIVE (5) YEARS FOR THE SAME SIZE AND SCOPE OF WORK AS DEPICTED IN THESE DRAWINGS.

7) THE INSTALLING CONTRACTOR SHALL PROVIDE ALL NECESSARY, LABOR AND MATERIALS REQUIRED FOR THE DESIGN, COORDINATION, DELIVERY/STAGING OF MATERIALS INSITE, INSTALLATION AND CERTIFICATION OF ALL SYSTEM PIPING AND COMPONENTS TO THE COMPLETE SATISFACTION OF THE ARCHITECT/OWNER AND THE AUTHORITY(S) HAVING JURISDICTION.

8) IT IS THE INSTALLING CONTRACTOR'S SOLE RESPONSIBILITY TO COMPLETE THE DESIGN AS NECESSARY TO THE COMPLETE SATISFACTION OF THE AUTHORITY(S) HAVING JURISDICTION, INCLUDING ALL RESUBMITTALS FOR DESIGN ELEMENTS FOUND NOT CODE COMPLIANT DURING PLAN REVIEW AT NO ADDITIONAL COST TO THE OWNER.

9) ANY DISCREPANCIES FOUND IN THESE DRAWINGS SHALL BE INCLUDED IN THE CONTRACTORS BID PROPOSAL. ANY ADDITIONAL COSTS PRESENTED TO THE ARCHITECT/OWNER AFTER SIGNED CONTRACT SHALL BE AT THE INSTALLING CONTRACTOR'S EXPENSE.

10) THE INSTALLING CONTRACTOR SHALL COORDINATE HIS/HER WORK WITH ALL OTHER CONSTRUCTION TRADES PRIOR TO FABRICATION AND SHALL MAKE ALL NECESSARY ADJUSTMENTS IN THE DESIGN AND INSTALLATION TO AVOID SUCH CONFLICTS AT NO ADDITIONAL COST TO THE ARCHITECT/OWNER.

11) THESE PLANS ARE INTENDED TO BE A COMPLETE SET OF DRAWINGS. ANY ITEM SHOWN ON ANY PORTION OF THIS SET OF PLANS SHALL APPLY TO ALL DRAWING SHEETS.

12) THIS SET OF FIRE SPRINKLER DRAWINGS INDICATES THE SCOPE OF WORK FOR THE OVERHEAD SYSTEM INSTALLATION BEGINNING AT 6" ABOVE FINISHED FLOOR. IF THE INSTALLING CONTRACTOR IS TO INSTALL THE UNDERGROUND PIPING AS WELL, IT SHALL BE THE INSTALLING CONTRACTORS RESPONSIBILITY TO PROVIDE THE PROPER DESIGN AND INSTALLATION PER NFPA 24 AND THE AUTHORITY(S) HAVING JURISDICTION – INSTALLING CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE GENERAL CONTRACTOR FOR THIS WORK. THE DESIGN SHALL INCLUDE THE FOLLOWING STIPULATIONS. (1) MINIMUM UNDERGROUND PIPE SIZE OF 4", (2) MAXIMUM VELOCITY THROUGH UNDERGROUND MAINS SHALL NOT EXCEED 16 FEET PER SECOND, (3) BACKFLOW PREVENTION DEVICE(S) AS APPLICABLE, (4) PROPERLY SIZED THRUST BLOCK(S) OR OTHER APPROVED METHOD OF RESTRAINT, (5) POST INDICATOR VALVES, SECTIONAL OR MAIN SHUT OFF, (6) ON-SITE HYDRANTS, AS REQUIRED, (7) FIRE DEPARTMENT CONNECTION(S) DOWN STREAM OF MAIN SHUT OFF VALVE FOR SPRINKLER SYSTEM, (8) FIRE DEPARTMENT CONNECTION LOCATION(S) WITHIN FIRE DEPT REQUIRED HOSE LAY DISTANCES, (9) PRESSURE CLASS 350 DUCTILE IRON PIPE UNDER ALL CONCRETE SLABS, CITY RIGHT OF WAYS AND IN ALL STREETS/PARKING LOTS WHERE SURFACE LOADS ARE EXPECTED, (10) ALL REQUIRED ACCEPTANCE TESTS INCLUDING CHLORINATION (AS REQ'D), HYDROSTATIC TEST & FLUSHING OF ALL UNDERGROUND MAINS PRIOR TO CONNECTION TO OVERHEAD SPRINKLER SYSTEM PIPING.

13) ALL OVERHEAD SPRINKLER SYSTEM COMPONENTS SHALL BE UL LISTED AND/OR FM APPROVED FOR AUTOMATIC FIRE SPRINKLER INSTALLATIONS. THE INSTALLING CONTRACTOR SHALL PROVIDE MANUFACTURER'S CUT SHEETS FOR ALL MATERIALS UTILIZED IN THE INSTALLATION.

14) ALL OVERHEAD SPRINKLER SYSTEM COMPONENTS SHALL BE UL LISTED AND/OR FM APPROVED FOR AUTOMATIC FIRE SPRINKLER INSTALLATIONS. THE INSTALLING CONTRACTOR SHALL PROVIDE MANUFACTURER'S CUT SHEETS FOR ALL MATERIALS UTILIZED IN THE INSTALLATION.

   A) MAINS (2-1/2" – 4") SHALL BE SCHEDULE 10, GALVANIZED STEEL, SHOP WELDED WITH ROLL-GROOVED ENDS, JOINED WITH COMPATIBLE RIGID MECHANICAL GROOVED COUPLINGS AND GROOVED FITTINGS.

   B) BRANCH LINES (1" – 2") SHALL BE SCHEDULE 40, GALVANIZED STEEL, SHOP OR FIELD THREADED, JOINED WITH CLASS 125 CAST OR DUCTILE IRON THREADED FITTINGS.

   C) APPROVED LIGHTWALL TUBING SUITABLE FOR ROLL GROOVING OR THREADING, WITH A CORROSION RESISTANCE RATIO (CRR) OF 1.0 MAY BE SUBSTITUTED IN LIEU OF SCHEDULE 10 & 40 IF APPROVED BY THE ARCHITECT/OWNER PRIOR TO FABRICATION.

   D) LISTED FLEXIBLE COUPLINGS SHALL BE INSTALLED AT ALL LOCATIONS AS REQUIRED BY NFPA 13.

   E) SHOP WELDING SHALL BE PERFORMED BY QUALIFIED PERSON(S) WITH A MINIMUM LEVEL AR-3 WELDING CERTIFICATION FOR WATER-BASED FIRE PROTECTION PIPING.

   F) MECHANICAL TEES ARE PROHIBITED UNLESS OTHERWISE APPROVED BY THE ARCHITECT/OWNER PRIOR TO INSTALLATION.

   G) ALL PIPING EXPOSED TO WEATHER CONDITIONS SHALL BE GALVANIZED SCHEDULE 40, PRIMERED & PAINTED TO PREVENT CORROSION.

   H) DROPS TO PENDENT SPRINKLERS SHALL BE SUPPLIED WITH NO LESS THAN 1" DIAMETER PIPING WITH CONCENTRIC (BELL) REDUCING COUPLINGS. ADJUSTABLE DROP NIPPLES ARE PROHIBITED UNLESS PRE-APPROVED BY THE ARCHITECT/OWNER.

   I) ALL FABRICATION METHODS SHALL BE IN STRICT ACCORDANCE WITH NFPA 13. WELD INSPECTIONS MAY BE REQUIRED BY THE AUTHORITY(S) HAVING JURISDICTION. IF SUCH INSPECTION IS REQUIRED, IT SHALL BE FOR ALL WELDED PIPING AT ONCE, PRIOR TO INSTALLATION.

   J) THIS SYSTEM IS DESIGNED DRY.

15) HYDRAULIC CALCULATION DESIGN CRITERIA SHALL BE AS FOLLOWS:

   A) 0.20 GPM/SQFT DENSITY OVER THE MOST REMOTE AND/OR DEMANDING 1,950 SQFT AREA.

   B) QUICK RESPONSE SPRINKLERS ARE REQUIRED IN ALL AREAS.

   C) INCLUDE REQUIRED HOSE ALLOWANCE OF 250 GPM FOR ORDINARY HAZARD OCCUPANCIES AT THE CITY CONNECTION OR ONSITE FIRE HYDRANT (IF REQUIRED), WHICHEVER IS CLOSEST TO THE SYSTEM RISER.

   D) PIPE SIZES SHOWN ON PIPING PLANS IS FOR THE STRUCTURAL ENGINEER'S REFERENCE ONLY AND ARE BASED ON WORST CASE SCENARIO. THE ACTUAL PIPE SIZE WILL BE DETERMINED BY HYDRAULIC CALCULATIONS PERFORMED BY THE INSTALLING CONTRACTOR.

   E) THE INSTALLING CONTRACTOR SHALL VERIFY CURRENT WATER FLOW TEST INFORMATION WITNESSED BY THE LOCAL WATER PURVEYOR OR FIRE DEPARTMENT AND SHALL INCLUDE A 10% MARGIN BELOW AVAILABLE STATIC AND RESIDUAL PRESSURES TO ENSURE AN ADEQUATE SAFETY CUSHION AND ALLOW FOR SEASONAL FLUCTUATIONS IN THE WATER SUPPLY. PIPING SHALL BE SIZED ADEQUATELY TO CONTROL PRESSURE DROP AND AVOID THE NECESSITY FOR A FIRE PUMP.

   F) CALCULATION METHODS SHALL BE IN STRICT ACCORDANCE WITH NFPA 13, CHAPTER 23.

   G) HYDRAULIC CALCULATIONS SHALL BE PERFORMED BY COMPUTER PROGRAM WITH NFPA STYLE PRINTOUTS. HAND CALCULATIONS SHALL NOT BE ACCEPTABLE.

   H) THIS SYSTEM SHALL HAVE A PERMANENTLY INSTALLED HYDRAULIC DESIGN PLACARD DEPICTING THE MOST DEMANDING AREA FOR EACH HAZARD CALCULATED AND SHALL BE MOUNTED ON THE SYSTEM RISER.

16) ALL SPRINKLER HEADS SHALL BE OF THE LISTED QUICK RESPONSE PENDENT, SIDEWALL & UPRIGHT TYPE AS CONDITIONS REQUIRE, WITH SMALL FRAME AND 3MM GLASS BULBS. MINIMUM TEMPERATURE RATING PER NFPA 13.

17) ALL SPRINKLER HEADS & ESCUTCHEONS SHALL BE OF BRASS CONSTRUCTION. CONCEALED HEAD ESCUTCHEONS SHALL BE PART OF THE LISTED ASSEMBLY WITH THE SPRINKLER. ALL SPRINKLER AND ESCUTCHEON FINISHES SHALL BE APPROVED BY THE ARCHITECT/OWNER. ALL SPECIAL ORNAMENTAL FINISHES SHALL BE FACTORY APPLIED ONLY BY THE MANUFACTURER.

18) A MINIMUM OF TWO (2) SPRINKLERS OF EACH TYPE AND TEMP RATING INSTALLED SHALL BE PROVIDED UNTIL THE MINIMUM NO. OF REQUIRED SPARE SPRINKLERS IS ACHIEVED. THE CABINET SHALL CONTAIN A MINIMUM OF SIX SPARE SPRINKLERS AND SHALL BE SO LOCATED THAT IT WILL NOT BE EXPOSED TO MOISTURE, DUST, CORROSION, OR A TEMPERATURE EXCEEDING 100°F.

19) SPRINKLERS LOCATED IN CEILINGS WITHIN 7'-0" OF FINISHED FLOORS SHALL BE EQUIPPED WITH LISTED WIRE GUARDS OR CONCEALED HEADS, WHICHEVER IS APPROVED BY THE ARCHITECT/OWNER PRIOR TO INSTALLATION.

20) SPRINKLERS LOCATED IN ACOUSTIC TILE CEILINGS SHALL BE QUARTER-POINTED IN THE 4'-0" DIRECTION AT 1'-0" INCREMENTS AND SHALL BE CENTERED IN THE 2'-0" DIRECTION. USE PIPE OFFSETS WHERE NECESSARY TO PROVIDE SYMMETRICAL ARRANGEMENT ALIGNED IN BOTH DIRECTIONS ON A TRUE AXIS LINE WITH A MAXIMUM DEVIATION OF PLUS OR MINUS \" INCHES.

21) ALL OVERHEAD PIPING SHALL BE INSTALLED CONCEALED ABOVE FINISHED CEILINGS (WHERE PRESENT) AND AS TO PROVIDE ADEQUATE HEAD ROOM.

22) ALL PIPE SUPPORTS, HANGERS, AND SEISMIC BRACING SHALL BE IN STRICT ACCORDANCE WITH NFPA 13. ALL HANGING METHODS AND EARTHQUAKE BRACE CONNECTIONS TO THE BUILDING STRUCTURE SHALL BE VERIFIED BY THE JOIST/TRUSS MANUFACTURER PRIOR TO INSTALLATION. BRACE PIPING SHALL NOT BE LESS THAN 1" SCHEDULE 40 FOR LENGTHS UP TO 7'-0" LONG, 1" FOR LENGTHS UP TO 9'-0" LONG, AND 1-1/2" FOR LENGTHS OVER 9'-0" LONG. BRACES SHALL BE EQUIPPED WITH LISTED CLAMPS, SWIVEL FITTINGS & ATTACHED TO THE BUILDING STRUCTURE WITH PROPERLY SIZED FASTENERS. ALL HANGER COMPONENTS THAT ATTACH DIRECTLY TO THE PIPE OR STRUCTURE SHALL BE LISTED. THE BENDING OF THREADED RODS IS PROHIBITED.

23) THIS SPRINKLER SYSTEM LAYOUT HAS BEEN ARRANGED TO BE DRAINED BACK THROUGH THE MAIN DRAIN LOCATED AT THE SYSTEM RISER. TRAPPED PORTIONS OF THE SYSTEM DUE TO OFFSETS IN PIPING DURING INSTALLATION TO AVOID CONFLICTS WITH OTHER TRADES SHALL BE EQUIPPED WITH A 1/2" NIPPLE AND CAP FOR TRAPPED SECTIONS OF 5 GALS OR LESS, A 1" VALVE WITH PLUG FOR TRAPPED SECTIONS OF OVER 5 GALS BUT NOT MORE THAN 50 GALS, AND A 1" VALVE, IN AN ACCESSIBLE LOCATION PIPED TO THE ATMOSPHERE FOR TRAPPED SECTIONS WITH OVER 50 GALS.

24) ALL DISCHARGE PIPING DOWNSTREAM FROM DRAIN AND INSPECTION TEST VALVES SHALL BE GALVANIZED SCHEDULE 40 PIPE.

25) ALL MAIN CONTROL VALVES (INSIDE AND OUT) SHALL BE SUPERVISED WITH APPROVED TAMPER SWITCHES AND WIRED TO THE FIRE ALARM PANEL.

26) ALL SYSTEM TAMPER SWITCHES, FLOW SWITCHES, AND ALARM BELL(S) SHALL BE PROVIDED AND INSTALLED BY THE SPRINKLER CONTRACTOR AND WIRED BY OTHERS UNDER THE ELECTRICAL DIVISION PER NEC.

27) ALL FIRE ALARM DESIGN, WIRING, COMPONENTS AND INSTALLATION BY OTHERS AND IS NOT PART OF THIS CONTRACT.

28) SPRINKLER SYSTEMS EQUIPPED WITH 100 OR MORE SPRINKLERS, SHALL BE SUPERVISED BY A UL LISTED CENTRAL OR OFFSITE STATION DESIGNED, PROVIDED AND INSTALLED BY OTHERS.

29) PAINTING, PAINT PREP INCLUDING THE BAGGING OF SPRINKLERS IS NOT A PART OF THIS CONTRACT.

30) CUTTING AND PATCHING IS NOT A PART OF THIS CONTRACT.

31) CONCRETE SPLASH BLOCKS FOR INSPECTOR'S TEST AND AUXILIARY DRAINS IS NOT A PART OF THIS CONTRACT.

32) FLOOR DRAINS AND UNDERGROUND MAIN DRAIN DISCHARGE PIPING BELOW GRADE TO SIDEWALK CURB IS NOT PART OF THIS CONTRACT.

33) NOTCHING, DRILLING OR OTHERWISE PENETRATING STRUCTURAL MEMBERS IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM THE PROJECT'S STRUCTURAL ENGINEER, JOIST/TRUSS MANUFACTURER AND THE AUTHORITY(S) HAVING JURISDICTION OVER THE PROJECT.

34) THE INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR: FIELD FIT OF SPRINKLER SYSTEM AND OTHER RELATED EQUIPMENT, ACCURACY OF PREFABRICATED PIPE, LOCATION OF FINISHED SPRINKLERS, FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO FABRICATION, PIPE ELEVATIONS, BEAM PENETRATIONS AND THE GENERAL WORKMANSHIP OF THE SYSTEM AS TO PROVIDE A COMPLETE INTEGRATED SYSTEM TO THE SATISFACTION OF THE OWNER, ARCHITECT, AND THE AUTHORITY(S) HAVING JURISDICTION.

35) THE CONSULTANT (ARCHITECT/ENGINEER) IS NOT RESPONSIBLE, IN ANY WAY, FOR THE INSTALLATION OR WORKMANSHIP OF THE FIRE PROTECTION SYSTEM(S) OR LIABLE FOR IMPROPERLY INSTALLED SYSTEMS. ANY CHANGE TO THE DESIGN CONCEPT OF THIS SYSTEM WITHOUT WRITTEN CONSENT OF THE CONSULTANT & OWNER WILL VOID THIS SET OF PRELIMINARY DRAWINGS.

36) PROVIDE AN INSPECTOR TEST CONNECTION AT THE HYDRAULICALLY MOST REMOTE PART OF THE SPRINKLER SYSTEM PIPED FROM THE END OF THE MOST REMOTE BRANCH LINE TO DISCHARGE IN AN AREA WHERE THE FLOW CAN BE READILY OBSERVED.

37) FIRE PROTECTION CONTRACTOR SHALL COORDINATE WITH OWNER AND OWNER'S INSURANCE COMPANY TO PROVIDE WATER TEST DATA AND FULL DESIGN DOCUMENTS FOR REVIEW AND APPROVAL.

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Designed AP
Checked SC
Approved JFP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID –
Scale AS SHOWN

STATE OF NEW HAMPSHIRE JAMES F. PETERSEN No. 9139 LICENSED PROFESSIONAL ENGINEER

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

FIRE PROTECTION BASIS OF DESIGN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

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DWG NO M-14

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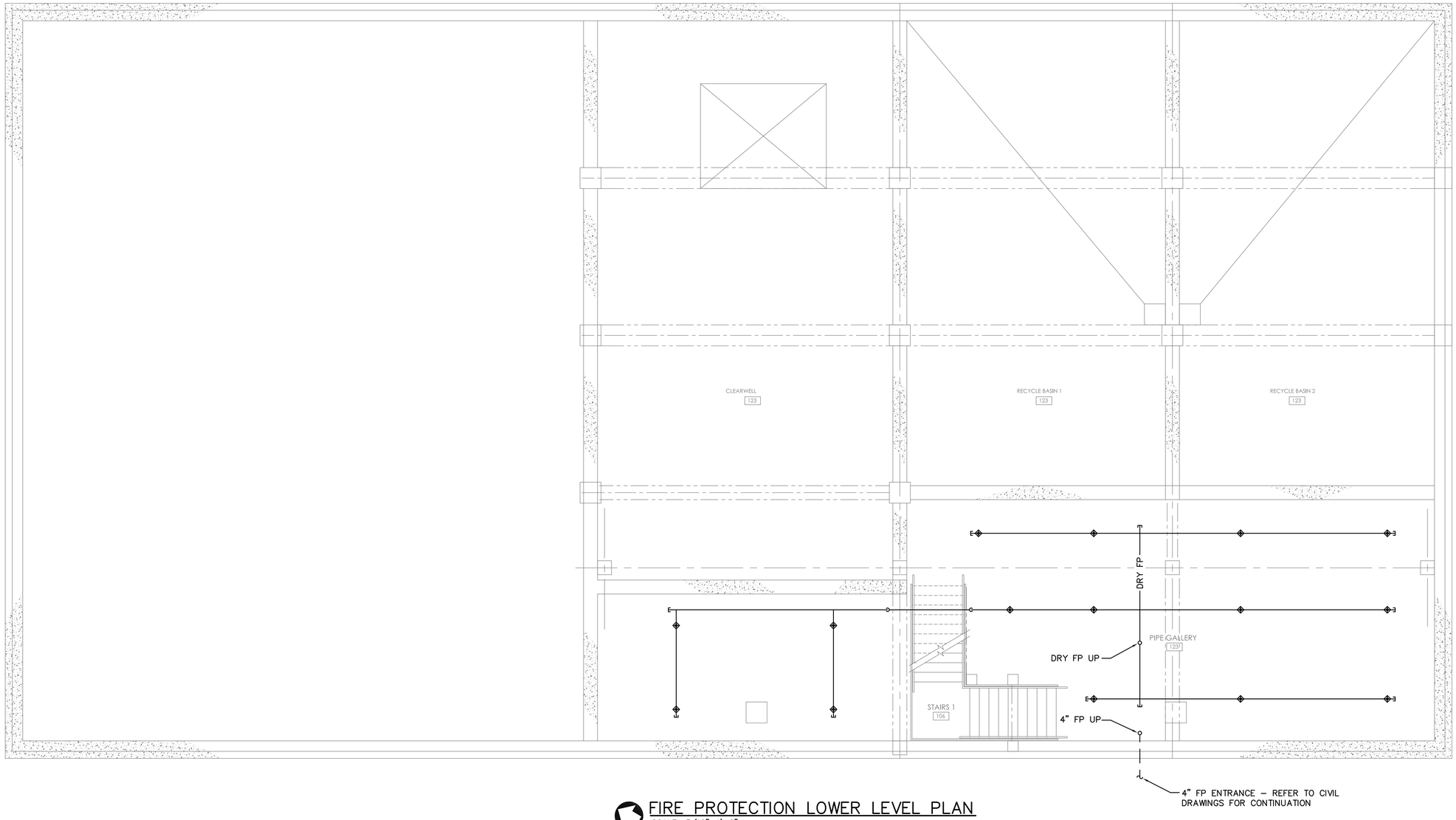
GENERAL NOTES:

1. FIRE SUPPRESSION PIPING AND EQUIPMENT ARE SHOWN FOR CONCEPTUAL LAYOUT ONLY. COMPLETE DETAILED AND COORDINATED PIPING AND EQUIPMENT LAYOUTS SHALL BE DESIGNED AND PROVIDED BY THE FIRE PROTECTION CONTRACTOR.
2. PROVIDE DRY SPRINKLER COVERAGE TO ALL SPACES IN ACCORDANCE WITH NFPA 13.
3. FIRE PROTECTION SHOP DRAWINGS AND HYDRAULIC CALCULATIONS TO BE STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW HAMPSHIRE.



FIRE PROTECTION LOWER LEVEL PLAN
SCALE: 3/16"=1'-0"

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FIRE PROTECTION LOWER LEVEL PLAN

PUDDING HILL WATER TREATMENT FACILITY
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GENERAL NOTES:

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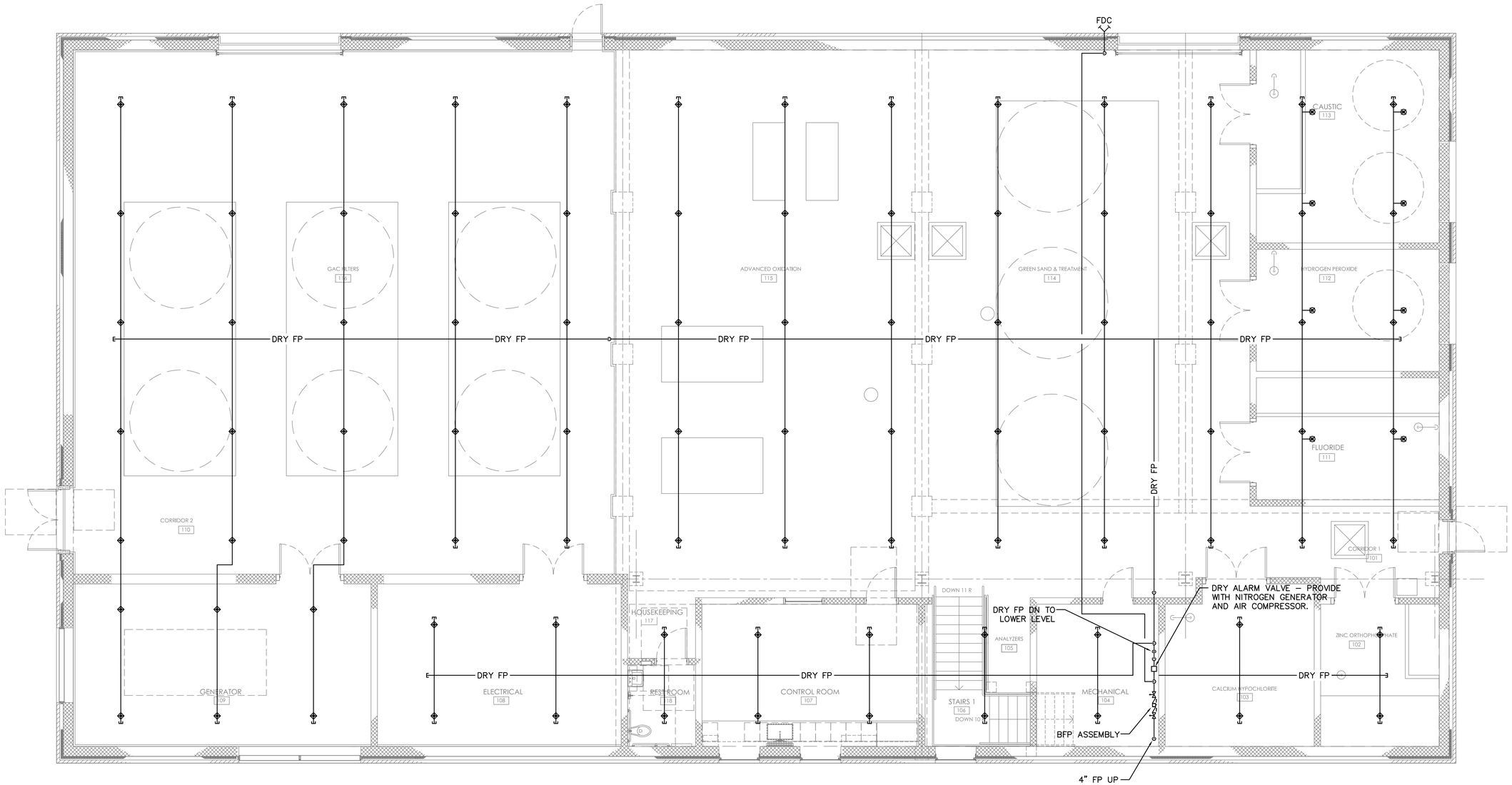

FIRE PROTECTION MAIN LEVEL PLAN
SCALE: 3/16"=1'-0"

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FIRE PROTECTION MAIN LEVEL PLAN

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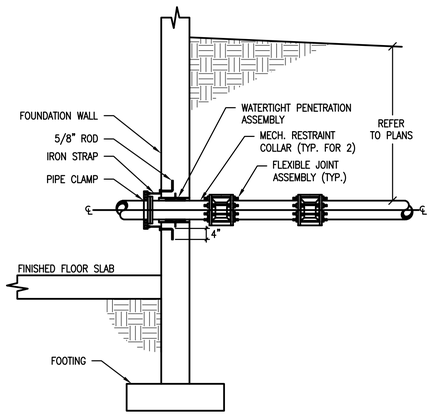


8 M-17 NTS WATER SERVICE THRU FOUNDATION WALL

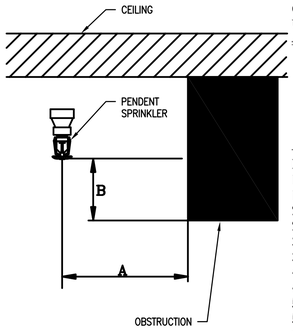
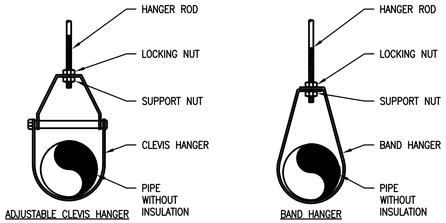


Table 8.6.5.1.2 Positioning of Sprinklers to Avoid Obstructions to Discharge [Standard Spray Upright/Standard Spray Pendent (SSU/SSP)]

Distance from Sprinklers to Side of Obstruction *(A)*	Maximum Allowable Distance of Deflector Above Bottom of Obstruction *(B)* (in.)
Less than 1 ft	0
1 ft to less than 1 ft 6 in.	2½
1 ft 6 in. to less than 2 ft	3½
2 ft to less than 2 ft 6 in.	5½
2 ft 6 in. to less than 3 ft	7½
3 ft to less than 3 ft 6 in.	9½
3 ft 6 in. to less than 4 ft	12
4 ft to less than 4 ft 6 in.	14
4 ft 6 in. to less than 5 ft	16½
5 ft to less than 5 ft 6 in.	18
5 ft 6 in. to less than 6 ft	20
6 ft to less than 6 ft 6 in.	24
6 ft 6 in. to less than 7 ft	30
7 ft to less than 7 ft 6 in.	35

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.
Note: For *A* and *B*, refer to Figure 8.6.5.1.2(a).

7 M-17 NTS OBSTRUCTION DISCHARGE DETAIL

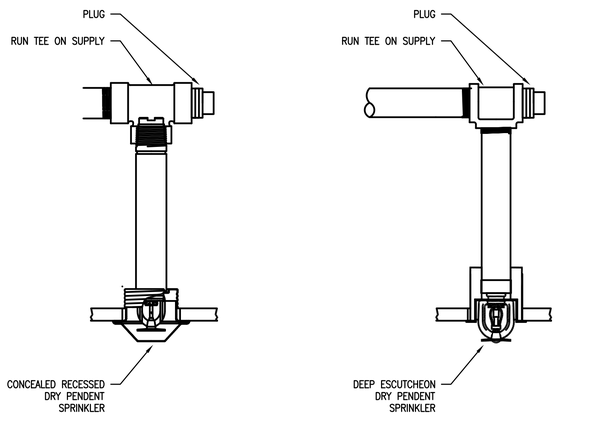


MAXIMUM PIPE/TUBING SUPPORT SPACING (FEET)

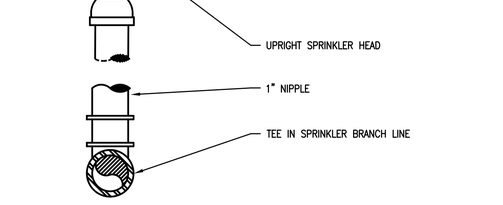
NOMINAL SIZE	THRU 3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
PIPE	7 FT	7 FT	7 FT	9 FT	10 FT	11 FT	12 FT	14 FT
TUBING	5 FT	6 FT	7 FT	8 FT	8 FT	9 FT	10 FT	12 FT

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE

6 M-17 NTS TYPICAL HANGER DETAIL

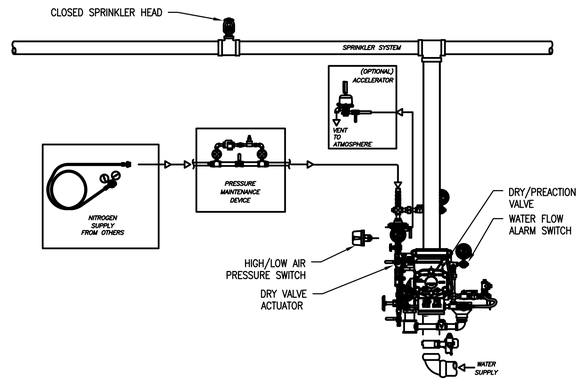


5 M-17 NTS TYPICAL DRY PENDENT SPRINKLER

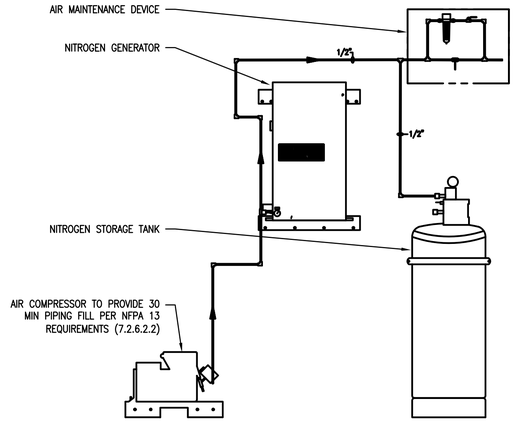


NOTES:
1. UPRIGHT SPRINKLERS TO BE INSTALLED UNDER OBSTRUCTIONS THAT ARE 48" OR GREATER IN WIDTH.

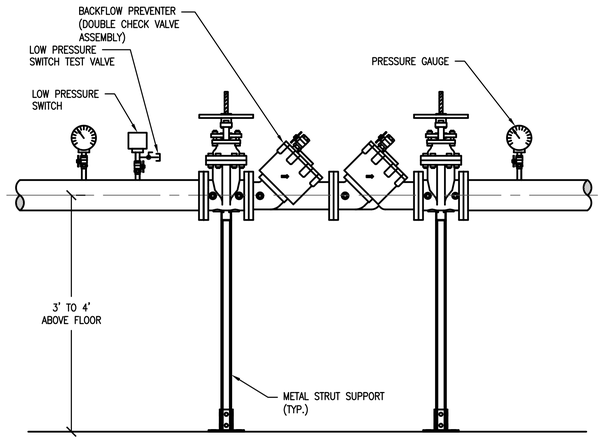
4 M-17 NTS TYPICAL UPRIGHT



3 M-17 NTS DRY VALVE DETAIL



2 M-17 NTS NITROGEN GENERATOR



NOTES:
1. PROVIDE SPARE PARTS KIT INCLUDING GASKETS, MAIN SPRINGS AND ASSEMBLIES.

1 M-17 NTS DOUBLE CHECK VALVE ASSEMBLY

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FIRE PROTECTION DETAILS
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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.
- OC — 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^{O} = SWITCH "o"

- 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 INDICATED. (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
- X — 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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Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
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Project No. 2509
Dwg. ID 2474-E1-GN
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — TIMOTHY G. ROBERTS — 10793 — PROFESSIONAL ENGINEER — 6-28-21

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GENERAL ELECTRICAL NOTES & LEGEND

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO E1

SHEET 85 OF 122

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EXISTING WASTE WATER PUMP STATION

EXISTING PRIMARY TERMINATION BOX TO REMAIN. CONNECT NEW PRIMARY CABLE TO EXISTING SOURCE AS REQUIRED.

EXISTING TRANSFORMER TO REMAIN.

EXISTING RECHARGE PUMP STATION.

NEW PUDDING HILL WATER TREATMENT FACILITY

PAD TRANSFORMER

GAS SERVICE

PROPOSED LOCATION OF NEW HANDHOLE (HH-1 & HH-2). SEE DETAIL 2/E4

PROPOSED CABLE, TELEPHONE FROM STONEWALL DRIVE

PROPOSED NEW UNDERGROUND PRIMARY CONDUITS FROM EXISTING TERMINATION BOX.

POWER, SIGNAL TO EXISTING IRELAND WELL, AND RECHARGE PUMP STATION.

PROPOSED LOCATION OF NEW UNDERGROUND SECONDARY CONDUITS

PROPOSED LOCATION OF NEW UTILTY PAD MOUNT TRANSFORMER. SEE DETAIL 1/E9.

EXISTING UNDERGROUND PRIMARY CONDUIT WITH CABLE TO BE DISCONNECTED AND REMOVED

EXISTING IRELAND WELL HOUSE TO BE DEMOLISHED

EXISTING IRELAND WELL PUMP AND MOTOR TO REMAIN.

EXISTING TRANSFORMER AND SERVICE TO BE DISCONTINUED

POWER, SIGNAL TO DPH-1 WELL

DPH-1 WELL

PROPOSED LOCATION OF NEW HANDHOLE (HH-3). SEE DETAIL 2/E4

EXISTING LEVEL SIGNAL FROM AR BASIN#2

PROPOSED LOCATION OF UNDERGROUND FIBER OPTIC CONDUIT FOR SCADA COMMUNICATIONS

ARTIFICIAL RECHARGE BASIN 2

PROPOSED LOCATION OF NEW HANDHOLE (HH-4). SEE DETAIL 2/E4

EXISTING CELL TOWER 'A'

FENCE

EXISTING CITY SCADA COMMUNICATIONS

ELECTRICAL SITE LEGEND

OHP/T/FC	PROPOSED OVERHEAD PRIMARY, TELEPHONE & FIRE ALARM CABLE
EP	PROPOSED UNDERGROUND ELECTRICAL PRIMARY CONDUIT
ES	PROPOSED UNDERGROUND ELECTRICAL SERVICE LATERAL CONDUIT
E	PROPOSED UNDERGROUND ELECTRICAL CONDUIT
FO	PROPOSED UNDERGROUND FIBER OPTIC CONDUIT
S	PROPOSED UNDERGROUND SIGNAL CONDUIT
RC	PROPOSED UNDERGROUND RADIO CONDUIT
E/S	PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
T	PROPOSED UNDERGROUND TELEPHONE CONDUIT
UE/T	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE CONDUIT
EX	EXISTING UNDERGROUND ELECTRIC CONDUIT
EXOHC	EXISTING OVERHEAD CABLES
	PROPOSED UTILITY AND/OR RADIO ANTENNA POLE
	PROPOSED ELECTRIC OR SIGNAL HANDHOLE

PUDDING HILL WTF OVERALL ELECTRICAL SITE PLAN

SCALE: 1"=50'-0"

1/E2

SCALE: 1 INCH = 50 FT.

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PROPOSED WATER TREATMENT FACILITY

CHAINLINK FENCE

PROPOSED LOCATION OF PORTABLE DOCK LIFT. SEE DETAIL 5/E25.

EXISTING PRIMARY TERMINATION BOX TO REMAIN. CONNECT NEW PRIMARY CABLE TO EXISTING SOURCE AS REQUIRED.

4X

TO MCC-A (1)

25' WIDE ROLLER GATE

FIRE SERVICE

NEW PUDDING HILL WATER TREATMENT FACILITY

5' GATE

GRAVEL PARKING AREA

PROPOSED NEW UNDERGROUND PRIMARY CONDUITS FROM EXISTING TERMINATION BOX.

GAS SERVICE

PROPOSED CABLE, TELEPHONE FROM STONEWALL DRIVE

PROPOSED LOCATION OF NEW HANDHOLE (HH-1). SEE DETAIL 2/E8.

POWER, SIGNAL TO EXISTING IRELAND WELL, AND RECHARGE PUMP STATION.

PROPOSED LOCATION OF NEW UNDERGROUND SECONDARY CONDUITS

PROPOSED LOCATION OF NEW UTILITY PAD MOUNT TRANSFORMER. SEE DETAIL 1/E9.

POWER, SIGNAL TO DPH-1 WELL BUILDING

PROPOSED LOCATION OF NEW UNDERGROUND FIBER OPTIC CONDUIT TO CELL TOWER 'A'

EXISTING UNDERGROUND PRIMARY CONDUIT WITH CABLE TO BE DISCONNECTED AND REMOVED

EXISTING DPH-1 WELL BUILDING

EXISTING DPH-1 WELL

EXISTING TRANSFORMER AND SERVICE TO BE DISCONTINUED

ELECTRICAL SITE LEGEND

OHP/T/FC	PROPOSED OVERHEAD PRIMARY, TELEPHONE & FIRE ALARM CABLE
EP	PROPOSED UNDERGROUND ELECTRICAL PRIMARY CONDUIT
ES	PROPOSED UNDERGROUND ELECTRICAL SERVICE LATERAL CONDUIT
E	PROPOSED UNDERGROUND ELECTRICAL CONDUIT
FO	PROPOSED UNDERGROUND FIBER OPTIC CONDUIT
S	PROPOSED UNDERGROUND SIGNAL CONDUIT
RC	PROPOSED UNDERGROUND RADIO CONDUIT
E/S	PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
T	PROPOSED UNDERGROUND TELEPHONE CONDUIT
UE/T	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE CONDUIT
EX	EXISTING UNDERGROUND ELECTRIC CONDUIT
EXOHC	EXISTING OVERHEAD CABLES
	PROPOSED UTILITY AND/OR RADIO ANTENNA POLE
	PROPOSED ELECTRIC OR SIGNAL HANDHOLE

KEY NOTES:

(1) PROVIDE (1) 1" UNDERGROUND CONDUIT WITH 3#10, 1#10G & 4#14 TO MCC-A INSIDE ELECTRICAL ROOM TO FEED DOCK LIFT. REFER TO SPECIFICATIONS FOR CONNECTION TO UNIT AS REQUIRED.

PUDDING HILL WTF ENLARGED ELECTRICAL SITE PLAN

SCALE: 1"=20'-0"

1/E3

SCALE: 1 INCH = 20 FT.

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	APPROVAL	
	Date 5/21/21	By TGP

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Designed JWC
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Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-E3-SP
Scale AS SHOWN

6-28-21

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WTP ENLARGED SITE PLAN

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

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DWG NO E3

SHEET 87 OF 122

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ELECTRICAL SITE LEGEND

——OHP/T/FC——	PROPOSED OVERHEAD PRIMARY, TELEPHONE & FIRE ALARM CABLE
– – – EP – – –	PROPOSED UNDERGROUND ELECTRICAL PRIMARY CONDUIT
– – – ES – – –	PROPOSED UNDERGROUND ELECTRICAL SERVICE LATERAL CONDUIT
– – – E – – –	PROPOSED UNDERGROUND ELECTRICAL CONDUIT
– – – FO – – –	PROPOSED UNDERGROUND FIBER OPTIC CONDUIT
– – – S – – –	PROPOSED UNDERGROUND SIGNAL CONDUIT
– – – RC – – –	PROPOSED UNDERGROUND RADIO CONDUIT
– – – E/S – – –	PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
– – – T – – –	PROPOSED UNDERGROUND TELEPHONE CONDUIT
– – – UE/T – – –	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE CONDUIT
– – – EX – – –	EXISTING UNDERGROUND ELECTRIC CONDUIT
– – – EXOHC – – –	EXISTING OVERHEAD CABLES
	PROPOSED UTILITY AND/OR RADIO ANTENNA POLE
	PROPOSED ELECTRIC OR SIGNAL HANDHOLE

EXISTING TRANSFORMER TO REMAIN.

EXISTING RECHARGE PUMP STATION.

PROPOSED LOCATION OF NEW UNDERGROUND FIBER OPTIC CONDUIT TO EXISTING RTU PANEL INSIDE EXISTING RECHARGE PUMP STATION.

PROPOSED LOCATION OF NEW UNDERGROUND FEEDER & SIGNAL CONDUITS TO EXISTING IRELAND WELL & RECHARGE PUMP STATION.

PROPOSED LOCATION OF NEW HANDHOLE HH-21. SEE DETAIL 2/E8.

PROPOSED LOCATION OF NEW HANDHOLE HH-1. SEE DETAIL 2/E8.

PROPOSED LOCATION OF NEW UNDERGROUND FEEDER & SIGNAL CONDUITS TO EXISTING IRELAND WELL.

EXISTING IRELAND WELL HOUSE TO BE DEMOLISHED

LOCATION OF EXISTING WELL MOTOR WITH PITLESS ADAPTER AND LEVEL TRANSMITTER SEE DETAIL 1/E8 (TYP.).

EXISTING OVERHEAD CABLES WITH RISER POLES TO BE DISCONNECTED AND REMOVED. EXISTING UTILITY POLES TO REMAIN (TYP.).

TO MCP AI-102

TO MCC-A

IREL AND WELL ENLARGED ELECTRICAL SITE PLAN 1/E4

SCALE: 1"=20'-0"

20 0 20 40

SCALE: 1 INCH = 20 FT.

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ELECTRICAL SITE LEGEND

——OHP/T/FC——	PROPOSED OVERHEAD PRIMARY, TELEPHONE & FIRE ALARM CABLE
— — — EP — — —	PROPOSED UNDERGROUND ELECTRICAL PRIMARY CONDUIT
— — — ES — — —	PROPOSED UNDERGROUND ELECTRICAL SERVICE LATERAL CONDUIT
— — — E — — —	PROPOSED UNDERGROUND ELECTRICAL CONDUIT
— — — FO — — —	PROPOSED UNDERGROUND FIBER OPTIC CONDUIT
— — — S — — —	PROPOSED UNDERGROUND SIGNAL CONDUIT
— — — RC — — —	PROPOSED UNDERGROUND RADIO CONDUIT
— — — E/S — — —	PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
— — — T — — —	PROPOSED UNDERGROUND TELEPHONE CONDUIT
— — —UE/T— — —	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE CONDUIT
— — — EX — — —	EXISTING UNDERGROUND ELECTRIC CONDUIT
— — —EXOHC— — —	EXISTING OVERHEAD CABLES
	PROPOSED UTILITY AND/OR RADIO ANTENNA POLE
	PROPOSED ELECTRIC OR SIGNAL HANDHOLE

EXISTING WASTE WATER PUMP STATION

EXISTING PRIMARY TERMINATION BOX TO REMAIN. CONNECT NEW PRIMARY CABLE TO EXISTING SOURCE AS REQUIRED.

EXISTING CABLE, TELEPHONE COMMUNICATIONS CABINET

PROPOSED NEW UNDERGROUND PRIMARY CONDUITS FROM EXISTING TERMINATION BOX.

PROPOSED CABLE, TELEPHONE FROM STONEWALL DRIVE

PROPOSED CABLE, TELEPHONE FROM STONEWALL DRIVE

8" HDPE RECHARGE

PROPOSED LOCATION OF NEW UNDERGROUND FIBER OPTIC CONDUIT TO CELL TOWER 'A'

COMMUNICATIONS ENLARGED ELECTRICAL SITE PLAN

SCALE: 1"=20'-0"

1
E5

SCALE: 1 INCH = 20 FT.

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ELECTRICAL SITE LEGEND

——OHP/T/FC——	PROPOSED OVERHEAD PRIMARY, TELEPHONE & FIRE ALARM CABLE
– – – EP – – –	PROPOSED UNDERGROUND ELECTRICAL PRIMARY CONDUIT
– – – ES – – –	PROPOSED UNDERGROUND ELECTRICAL SERVICE LATERAL CONDUIT
– – – –E– – – –	PROPOSED UNDERGROUND ELECTRICAL CONDUIT
– – – FO – – –	PROPOSED UNDERGROUND FIBER OPTIC CONDUIT
– – – –S– – – –	PROPOSED UNDERGROUND SIGNAL CONDUIT
– – – RC – – –	PROPOSED UNDERGROUND RADIO CONDUIT
– – – E/S– – –	PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
– – – –T– – – –	PROPOSED UNDERGROUND TELEPHONE CONDUIT
– – –UE/T– – –	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE CONDUIT
– – – EX – – –	EXISTING UNDERGROUND ELECTRIC CONDUIT
– – –EXOHC– – –	EXISTING OVERHEAD CABLES
	PROPOSED UTILITY AND/OR RADIO ANTENNA POLE
	PROPOSED ELECTRIC OR SIGNAL HANDHOLE

PROPOSED LOCATION OF NEW HANDHOLE (HH-3). SEE DETAIL 2/E8.

PROPOSED LOCATION OF NEW UNDERGROUND FIBER OPTIC CONDUIT TO CELL TOWER 'A'

PROPOSED LOCATION OF NEW UNDERGROUND FIBER OPTIC CONDUIT TO CELL TOWER 'A'

F E8

G

CELL TOWER 'A' ENLARGED ELECTRICAL SITE PLAN 1/E6

SCALE: 1"=20'-0"

SCALE: 1 INCH = 20 FT.

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Dwg. ID 2509-E5-SP
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CELL TOWER 'A' SITE PLAN

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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ELECTRICAL SITE LEGEND

—— OHP/T/FC ——	PROPOSED OVERHEAD PRIMARY, TELEPHONE & FIRE ALARM CABLE
– – – EP – – –	PROPOSED UNDERGROUND ELECTRICAL PRIMARY CONDUIT
– – – ES – – –	PROPOSED UNDERGROUND ELECTRICAL SERVICE LATERAL CONDUIT
– – – – E – – – –	PROPOSED UNDERGROUND ELECTRICAL CONDUIT
– – – FO – – –	PROPOSED UNDERGROUND FIBER OPTIC CONDUIT
– – – – S – – – –	PROPOSED UNDERGROUND SIGNAL CONDUIT
– – – RC – – –	PROPOSED UNDERGROUND RADIO CONDUIT
– – – E/S – – –	PROPOSED UNDERGROUND ELECTRIC & SIGNAL CONDUIT
– – – – T ———	PROPOSED UNDERGROUND TELEPHONE CONDUIT
– – – UE/T – – –	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE CONDUIT
– – – EX – – –	EXISTING UNDERGROUND ELECTRIC CONDUIT
– – – EXOHC – – –	EXISTING OVERHEAD CABLES
	PROPOSED UTILITY AND/OR RADIO ANTENNA POLE
	PROPOSED ELECTRIC OR SIGNAL HANDHOLE

KEY NOTES:

1. CONTRACTOR TO CONTACT CITY TO LOCATE EXISTING BURIED UTILITIES PRIOR TO EXCAVATION IN VICINITY OF CELL TOWER.

F/E8

PROPOSED LOCATION OF NEW UNDERGROUND FIBER OPTIC CONDUIT TO CELL TOWER 'A'

PROPOSED LOCATION OF NEW HANDHOLE (HH-4). SEE DETAIL 2/E8 (TYP.).

EXISTING CELL TOWER 'A'

EXISTING CITY SCADA COMMUNICATIONS

FO

FM

CELL TOWER 'A' ENLARGED ELECTRICAL SITE PLAN CONTINUATION 1/E7

SCALE: 1"=20'-0"

20 0 20 40

SCALE: 1 INCH = 20 FT.

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NEW HAMPSHIRE STATE OF SADEK M. ZAHR 8765 LICENSED PROFESSIONAL ENGINEER

6-28-21

UNDERWOOD engineers
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CELL TOWER 'A' SITE PLAN CONTINUATION

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
E7	91 OF 122

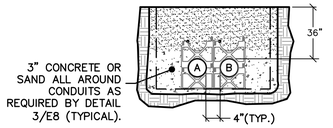
FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-E2-E5-SP.dwg Jul 09, 2021 - 2:48pm

ELECTRICAL DUCT BANK SCHEDULE

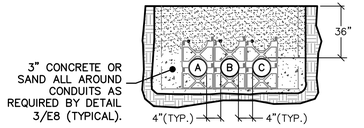
DUCT BANK SECTION NO.	CONDUIT	EQUIPMENT	WIRE	CONNECTION
A E8	(A) 4" PVC	TELEPHONE EQUIPMENT	TELEPHONE/ CABLE TV	TELEPHONE CONDUIT FROM EXISTING COMMUNICATION CABINET TO TELEPHONE MOUNTING BOARD (TMB) IN ELECTRIC ROOM @ NEW WTF.
	(B) 4" PVC	SPARE	PULL ROPE	SPARE CONDUIT FROM EXISTING COMMUNICATION CABINET TO TELEPHONE MOUNTING BOARD (TMB) IN ELECTRIC ROOM @ NEW WTF.
B E8	(A) 5" PVC	PAD MOUNT TRANSFORMER	PRIMARY CABLE	PRIMARY CONDUIT FROM EXISTING UTILITY PRIMARY TERMINATION BOX TO NEW PAD MOUNT TRANSFORMER.
	(B) 5" PVC	SPARE	PULL ROPE	SPARE CONDUIT FROM EXISTING PRIMARY TERMINATION BOX TO NEW PAD MOUNT TRANSFORMER.
C E8	(A) 4" PVC	MAIN CIRCUIT BREAKER (MCB)	4#500 KCMIL	SERVICE CONDUIT FROM UTILITY PAD MOUNTED TRANSFORMER TO MAIN CIRCUIT BREAKER (MCB) IN ELECTRICAL ROOM OF NEW WTF.
	(B) 4" PVC	MAIN CIRCUIT BREAKER (MCB)	4#500 KCMIL	SERVICE CONDUIT FROM UTILITY PAD MOUNTED TRANSFORMER TO MAIN CIRCUIT BREAKER (MCB) IN ELECTRICAL ROOM OF NEW WTF.
	(C) 4" PVC	SPARE	PULL ROPE	SPARE CONDUIT FROM UTILITY PAD MOUNTED TRANSFORMER TO 24" AFG OUTSIDE BUILDING UNDER METER SOCKET.
D E8	(A) 4" PVC	IRELAND WELL PUMP MOTOR	3#4/0 KCMIL, 1#4G VFD RATED CABLE	FEEDER CONDUIT FROM VFD IN NEW WTF ELEC. ROOM TO EXISTING IRELAND WELL PUMP MOTOR VIA U.G. CONDUITS, HANDHOLES, AND DISCONNECT SWITCH.
	(B) 2" PVC	IRELAND WELL LEVEL TRANSMITTER	2/C#16 SH.,PR. CABLE	SIGNAL CONDUIT FROM EXISTING IRELAND WELL LEVEL TRANSMITTER TO MCP IN WTF VIA UNDERGROUND CONDUITS & HANDHOLES.
	(C) 3" PVC	EXISTING RTU PANEL	FIBER OPTIC CABLE CABLE	FIBER OPTIC CONDUIT FROM NETWORK PANEL IN WTF CONTROL ROOM TO EXISTING RTU PANEL @ EXISTING RECHARGE PUMP STATION VIA U.G. CONDUITS & HANDHOLES.
E E8	(A) 4" PVC	EXISTING DPH1 BUILDING	4#250 KCMIL, & 1#4G	FEEDER CONDUIT FROM MCC-A IN WTF ELEC. ROOM TO EXISTING MCB IN EXISTING DPH1 BLD VIA U.G. CONDUITS, HANDHOLES.
	(B) 4" PVC	EXISTING RTU PANEL	FIBER OPTIC CABLE	FIBER OPTIC CONDUIT FROM NETWORK PANEL IN WTF CONTROL ROOM TO EXISTING RTU PANEL @ DPH1 VIA UNDERGROUND CONDUITS & HANDHOLES.
	(C) 4" PVC	SPARE	PULL ROPE	SPARE CONDUIT FROM EXISTING DPH1 BUILDING TO ELECTRIC ROOM IN WTF VIA UNDERGROUND CONDUITS & HANDHOLES.
F E8	(A) 4" PVC	EXISTING COMMUNICATIONS PANEL	FIBER OPTIC CABLE CABLE	FIBER OPTIC CONDUIT FROM NETWORK PANEL IN WTF CONTROL ROOM TO EXISTING COMMUNICATIONS PANEL @ TOWER NO.1 VIA UNDERGROUND CONDUITS & HANDHOLES.
	(B) 4" PVC	SPARE	PULL ROPE	SPARE CONDUIT FROM EXISTING COMMUNICATIONS PANEL @ TOWER NO.1 TO MCP IN WTF VIA UNDERGROUND CONDUITS & HANDHOLES.
G E8	(A) 3" PVC	EXISTING RTU PANEL	FIBER OPTIC CABLE CABLE	FIBER OPTIC CONDUIT FROM NETWORK PANEL IN WTF CONTROL ROOM TO EXISTING RTU PANEL @ EXISTING RECHARGE PUMP STATION VIA U.G. CONDUITS & HANDHOLES.
H E8	(A) 4" PVC	IRELAND WELL PUMP MOTOR	3#4/0 KCMIL, 1#4G VFD RATED CABLE	FEEDER CONDUIT FROM VFD IN NEW WTF ELEC. ROOM TO EXISTING IRELAND WELL PUMP MOTOR VIA U.G. CONDUITS, HANDHOLES, AND DISCONNECT SWITCH.
	(B) 2" PVC	IRELAND WELL LEVEL TRANSMITTER	2/C#16 SH.,PR. CABLE	SIGNAL CONDUIT FROM EXISTING IRELAND WELL LEVEL TRANSMITTER TO MCP IN WTF VIA UNDERGROUND CONDUITS & HANDHOLES.

UNDERGROUND CONDUIT NOTES:

1. PROVIDE RIGID GALVANIZED SWEEPS ON ALL 90° TURNS.
2. COORDINATE NEW UNDERGROUND CONDUIT LOCATION WITH EXISTING UNDERGROUND ELECTRIC CONDUIT, PROCESS PIPING AND STRUCTURES PRIOR TO EXCAVATION.
3. REPAIR EXISTING PAVED AND GRASSED AREAS TO CONDITION EXISTING PRIOR TO EXCAVATION.
4. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, (SEE NEW HAMPSHIRE GENERAL LAWS) PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
5. REFER TO DETAIL 2/E2 FOR TYPICAL TRENCHING DETAIL FOR ELECTRICAL/TELEPHONE/FIREALARM/CABLE CONDUITS.
6. 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 E8 B E8
SCALE: NONE



DUCT BANK SECTION C E8
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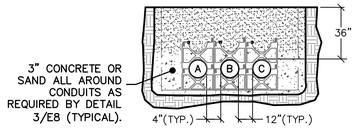

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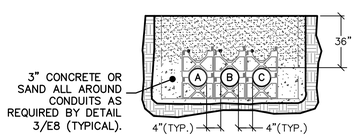

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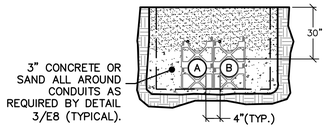

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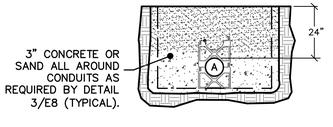
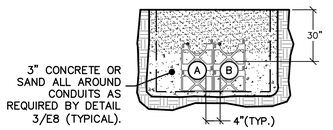
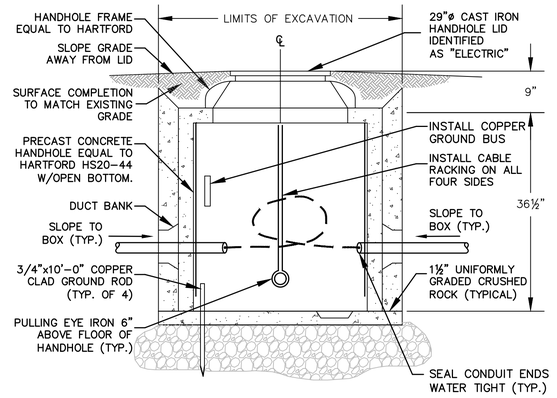


DUCT BANK SECTION G E8
SCALE: NONE



DUCT BANK SECTION H E8
SCALE: NONE

DUCT BANK SCHEDULE WITH DUCT BANK SECTIONS 1 E8
SCALE: NONE



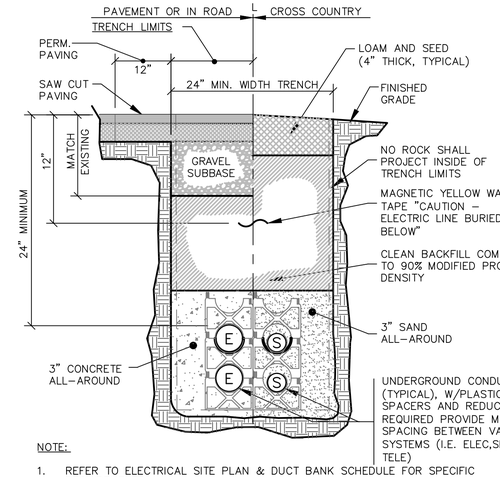
HANDHOLE SCHEDULE

HANDHOLE DESGINATIONS	QUANTITIES	SIZE
HH-1 (ELECTRIC)	1	48" x 48" x 48" DEEP
HH-2 (ELECTRIC)	1	48" x 48" x 48" DEEP
HH-3 (ELECTRIC)	1	48" x 48" x 48" DEEP
HH-4 (ELECTRIC)	1	48" x 48" x 48" DEEP

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.
3. THE MANHOLE DESIGN LOADING SHALL BE: AASHTO – HS20-44.

TYPICAL HANDHOLE INSTALLATION DETAIL 2 E8
SCALE: NONE



NOTE:

1. REFER TO ELECTRICAL SITE PLAN & DUCT BANK SCHEDULE FOR SPECIFIC REQUIREMENTS.
2. SEE TYPICAL TRENCH SECTION FOR WATER, SEE SHEET C6 FOR BINDER AND WEARING COURSE INFO.

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 3 E8
SCALE: NONE

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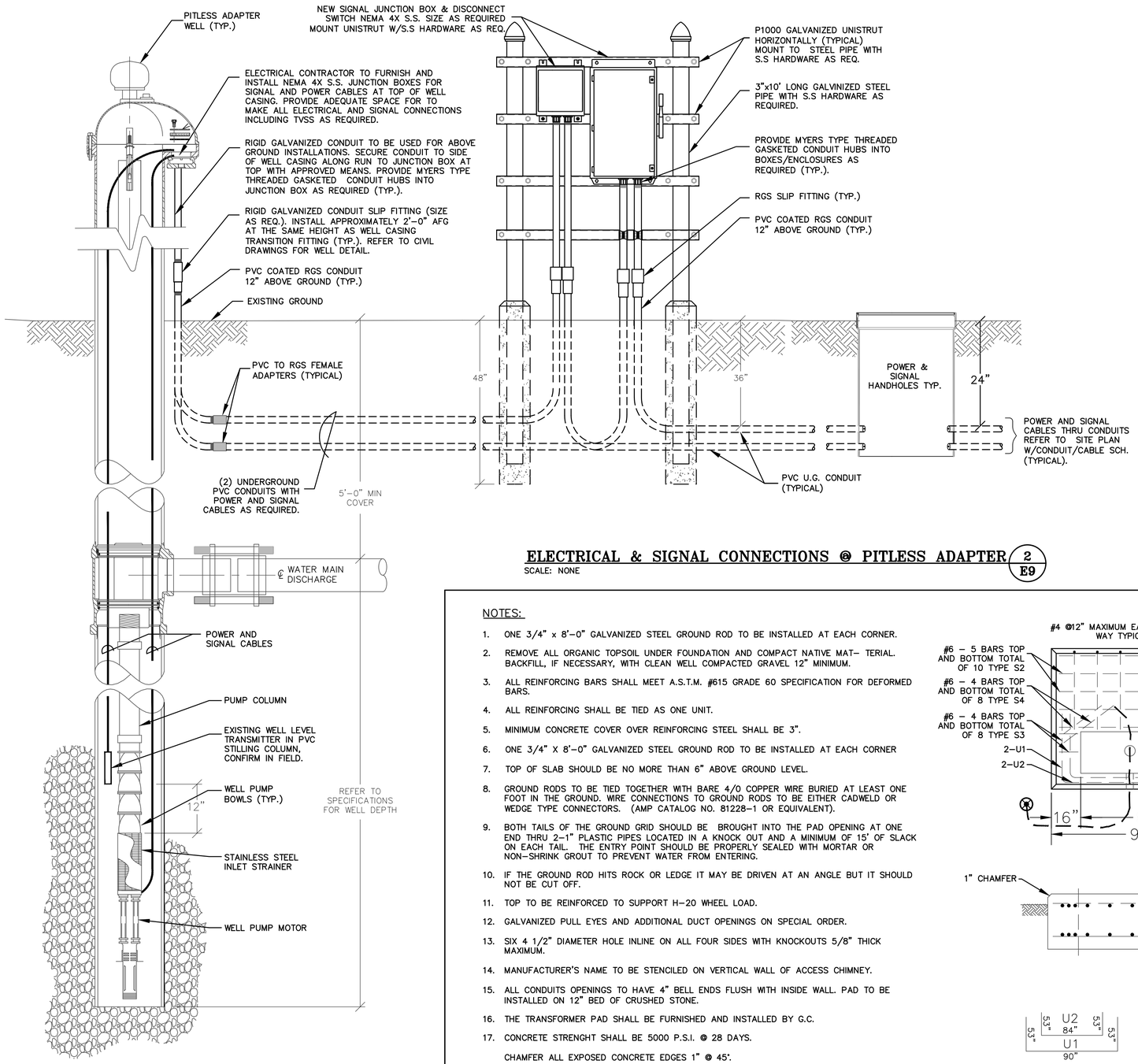
NO.	REVISIONS	APP'D	Date



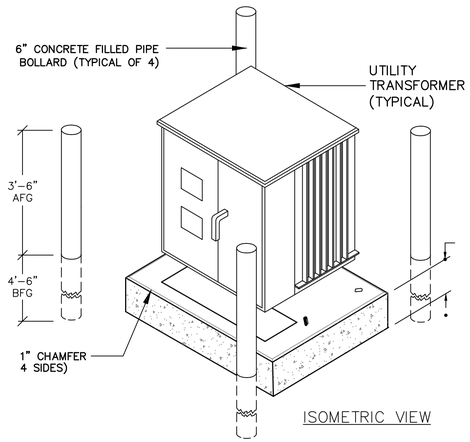
ELECTRICAL & SIGNAL CONNECTIONS @ PITLESS ADAPTER (2/E9)

SCALE: NONE

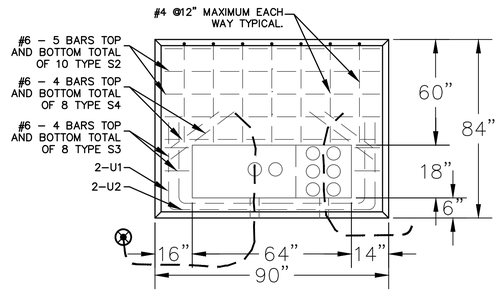
NOTES:

1. ONE 3/4" x 8'-0" GALVANIZED STEEL GROUND ROD TO BE INSTALLED AT EACH CORNER.
2. REMOVE ALL ORGANIC TOPSOIL UNDER FOUNDATION AND COMPACT NATIVE MAT- TERIAL. BACKFILL, IF NECESSARY, WITH CLEAN WELL COMPACTED GRAVEL 12" MINIMUM.
3. ALL REINFORCING BARS SHALL MEET A.S.T.M. #615 GRADE 60 SPECIFICATION FOR DEFORMED BARS.
4. ALL REINFORCING SHALL BE TIED AS ONE UNIT.
5. MINIMUM CONCRETE COVER OVER REINFORCING STEEL SHALL BE 3".
6. ONE 3/4" X 8'-0" GALVANIZED STEEL GROUND ROD TO BE INSTALLED AT EACH CORNER
7. TOP OF SLAB SHOULD BE NO MORE THAN 6" ABOVE GROUND LEVEL.
8. GROUND RODS TO BE TIED TOGETHER WITH BARE 4/0 COPPER WIRE BURIED AT LEAST ONE FOOT IN THE GROUND. WIRE CONNECTIONS TO GROUND RODS TO BE EITHER CADWELD OR WEDGE TYPE CONNECTORS. (AMP CATALOG NO. 81228-1 OR EQUIVALENT).
9. BOTH TAILS OF THE GROUND GRID SHOULD BE BROUGHT INTO THE PAD OPENING AT ONE END THRU 2-1" PLASTIC PIPES LOCATED IN A KNOCK OUT AND A MINIMUM OF 15' OF SLACK ON EACH TAIL. THE ENTRY POINT SHOULD BE PROPERLY SEALED WITH MORTAR OR NON-SHRINK GROUT TO PREVENT WATER FROM ENTERING.
10. IF THE GROUND ROD HITS ROCK OR LEDGE IT MAY BE DRIVEN AT AN ANGLE BUT IT SHOULD NOT BE CUT OFF.
11. TOP TO BE REINFORCED TO SUPPORT H-20 WHEEL LOAD.
12. GALVANIZED PULL EYES AND ADDITIONAL DUCT OPENINGS ON SPECIAL ORDER.
13. SIX 4 1/2" DIAMETER HOLE INLINE ON ALL FOUR SIDES WITH KNOCKOUTS 5/8" THICK MAXIMUM.
14. MANUFACTURER'S NAME TO BE STENCILED ON VERTICAL WALL OF ACCESS CHIMNEY.
15. ALL CONDUITS OPENINGS TO HAVE 4" BELL ENDS FLUSH WITH INSIDE WALL. PAD TO BE INSTALLED ON 12" BED OF CRUSHED STONE.
16. THE TRANSFORMER PAD SHALL BE FURNISHED AND INSTALLED BY G.C.
17. CONCRETE STRENGHT SHALL BE 5000 P.S.I. @ 28 DAYS.

    CHAMFER ALL EXPOSED CONCRETE EDGES 1" @ 45°.
18. STEEL REINFORCEMENT - ASTM - A615 - GRADE 60, 1" MINIMUM COVER.
19. DESIGN LOADING - AASHTO - HS20-44
20. THE TRANSFORMER PAD SHOWN IS INFORMATIONAL ONLY. ACTUAL PAD AND REQUIREMENTS AND LOCATION AS DIRECTED BY THE LOCAL POWER COMPANY.

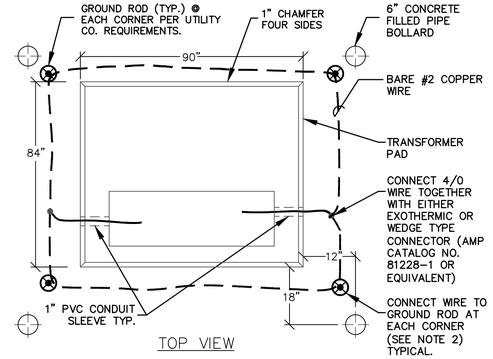


TRANSFORMER PAD PROTECTION



REINFORCING SCHEDULE			
TYPE	NO.	LENGTH	TOTAL
S1	16	4'-6"	72'-0"
S2	10	7'-6"	75'-0"
S3	8	0'-6"	4'-0"
S4	8	2'-0"	16'-0"
CONC. VOLUME - 4.44 c.y. TOP SECTION ONLY			

30 PAD MOUNTED TRANSFORMER SLAB DETAIL



NOTES:

1. ONE 3/4" x 8'-0" COPPER GROUND ROD TO BE INSTALLED AT EACH CORNER.
2. GROUND RODS TO BE TIED TOGETHER WITH BARE #4/0 COPPER WIRE BURIED AT LEAST ONE FOOT IN THE GROUND. WIRE CONNECTIONS TO GROUND RODS TO BE EITHER CADWELD OR WEDGE TYPE CONNECTORS. (AMP CATALOG NO. 81228-1 OR EQUIVALENT).
3. BOTH TAILS OF THE GROUND GRID SHOULD BE BROUGHT INTO THE PAD OPENING AT ONE END THRU 2-1" PLASTIC PIPES LOCATED IN A KNOCK OUT AND A MINIMUM OF 15' OF SLACK ON EACH TAIL. THE ENTRY POINT SHOULD BE PROPERLY SEALED WITH MORTAR OR NON-SHRINK GROUT TO PREVENT WATER FROM ENTERING.
4. IF THE GROUND ROD HITS ROCK OR LEDGE IT MAY BE DRIVEN AT AN ANGLE BUT IT SHOULD NOT BE CUT OFF.

TYPICAL FOR ALL TRANSFORMER PAD GROUND GRID DETAIL (PLAN VIEW)

UTILITY PAD MOUNT TRANSFORMER INSTALLATION DETAIL (1/E9)

SCALE: NONE

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NO.	REVISIONS	APP'D
△		
△		
△		
△	RECORD DRAWING Date 6/28/21	TGP
△	CONSTRUCTION Date 5/21/21	TGP
△	APPROVAL Date -	By -

ISSUE FOR

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-E3-SP
Scale AS SHOWN

STATE OF NEW HAMPSHIRE TIMOTHY GLADE RAINEAR 9765 REGISTERED PROFESSIONAL ENGINEER
6-28-21

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

SITE PLAN DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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E9	93 OF 122

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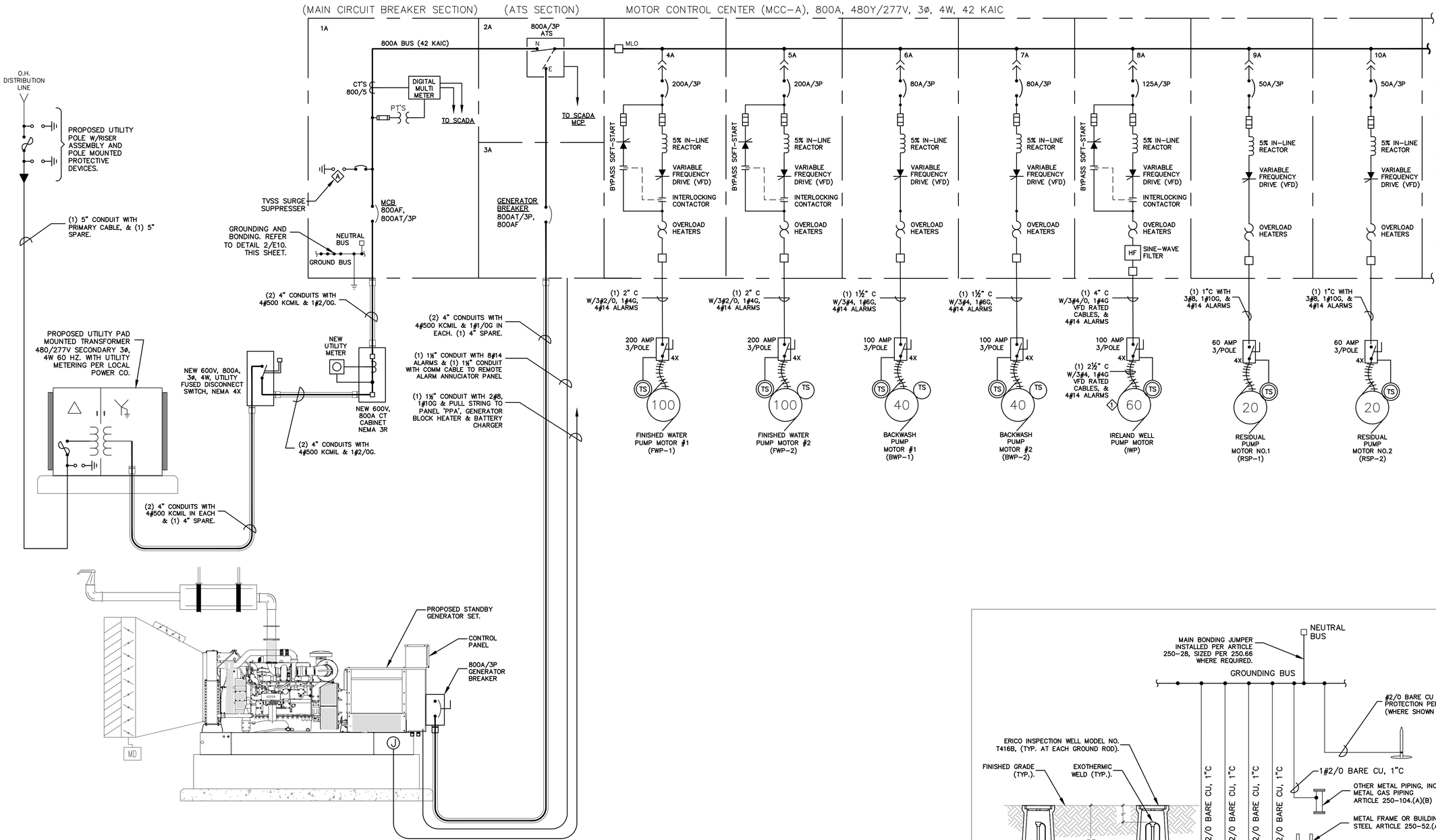


PARTIAL SYMBOLS LEGEND:

- DMM : DIGITAL MULTI-METER
- ES : EMERGENCY SHUTDOWN
- ST : SHUNT TRIP
- GFP : GROUND FAULT PROTECTION
- CT'S : CURRENT TRANSFORMER
- CT'S : CURRENT TRANSFORMER
- PT'S : POTENTIAL TRANSFORMER
- SP : SURGE PROTECTOR (TVSS)
- SST : SOLID STATE TRIP
- RWT : REFLECTOR WAVE TRAP

TRANSIENT VOLTAGE SURGE SUPPRESSER (TVSS) SCHEDULE:

	LOCATION	MODEL NO.	SYSTEM VOLTAGE	PEAK SURGE CURRENT
A	MAIN BRKR (MCB)	PTE300-3Y201-D	480Y/277V, 3ø,4W	300,000 AMPS PER ø
B	480/277 VAC, 3ø,4W PANELS	PTE160-3Y201-L	480Y/277V, 3ø,4W	160,000 AMPS PER ø
C	208/120 VAC, 3ø,4W PANELS	PTE080-3Y101-L	480Y/277V, 3ø,4W	80,000 AMPS PER ø

NOTE:

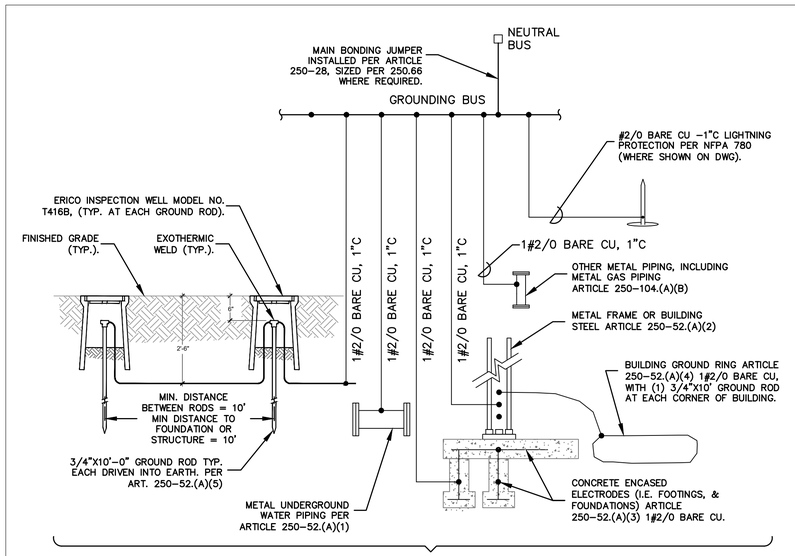
1. SURGE PROTECTORS SHALL BE MANUFACTURED BY INNOVATIVE TECHNOLOGY OR APPROVED EQUAL.
2. UNIT SHALL HAVE: 10 MODE MOV DESIGN, SINE-WAVE TRACKING, 20 YEAR WARRANTY, & SURGE COUNTER.

KEY NOTES:

1. SIZE VFD/S.S STARTER FOR 75 HP PUMP.

WATER TREATMENT FACILITY ONE-LINE DIAGRAMS 1/E10

SCALE: NONE



GROUNDING AND BONDING INSTALLATION DETAIL 2/E10

SCALE: NONE

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APPROVAL	By	TGP	
Date 5/21/21			
CONSTRUCTION	By	TGP	
Date 6/28/21			
RECORD DRAWING	By	-	
Date -			

NO.	REVISIONS	APP'D

Drawn/Chk.	JWC
Designed	JWC
Checked	SMR
Approved	TGP
Date	6/28/2021
Book No.	-
Project No.	2509
Dwg. ID	2398-E10-1L
Scale	AS SHOWN

UNDERWOOD engineers
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WTF ELECTRICAL ONE-LINE DIAGRAM

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

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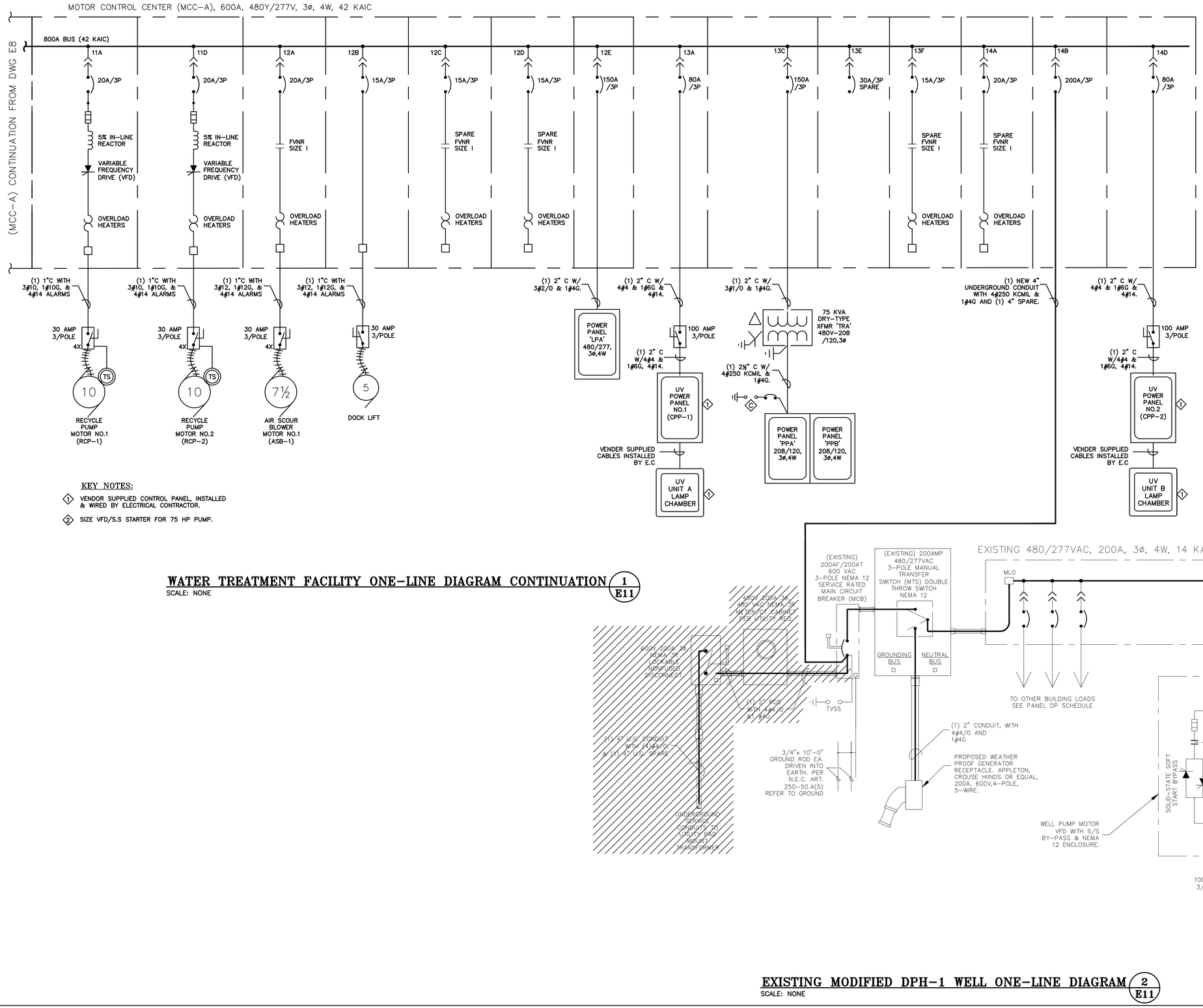
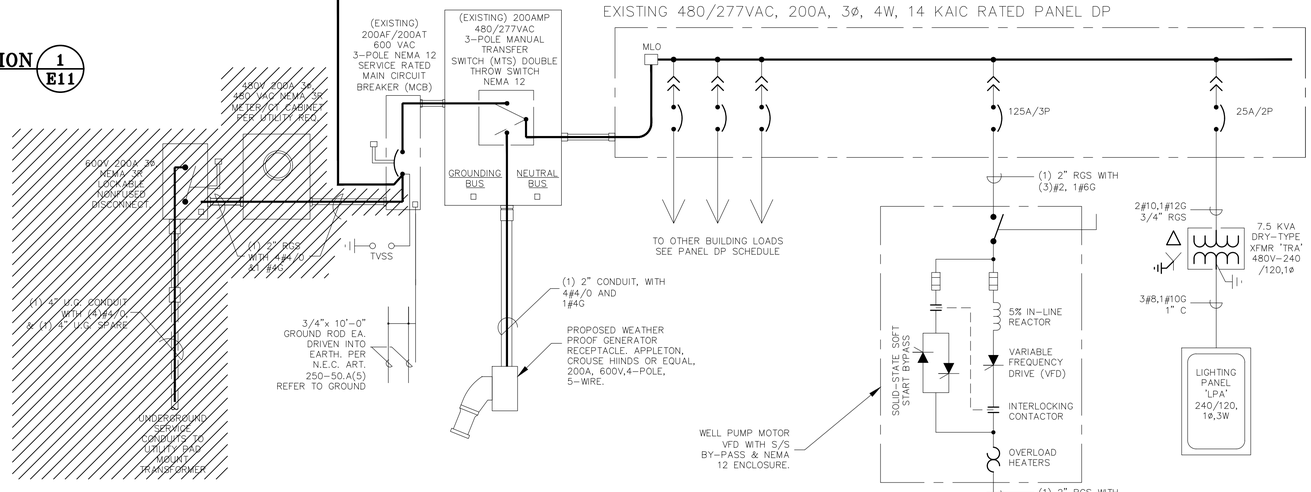


KEY NOTES:

1. VENDOR SUPPLIED CONTROL PANEL, INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
2. SIZE VFD/S.S STARTER FOR 75 HP PUMP.

WATER TREATMENT FACILITY ONE-LINE DIAGRAM CONTINUATION (1/E11)

SCALE: NONE



EXISTING MODIFIED DPH-1 WELL ONE-LINE DIAGRAM (2/E11)

SCALE: NONE

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Dwg. ID 2298-E11-11
Scale AS SHOWN

STATE OF NEW HAMPSHIRE TIMOTHY G. PUCKETT 13579 REGISTERED PROFESSIONAL ENGINEER
6-28-21

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

WTF ONE-LINE DIAGRAM CONTINUATION

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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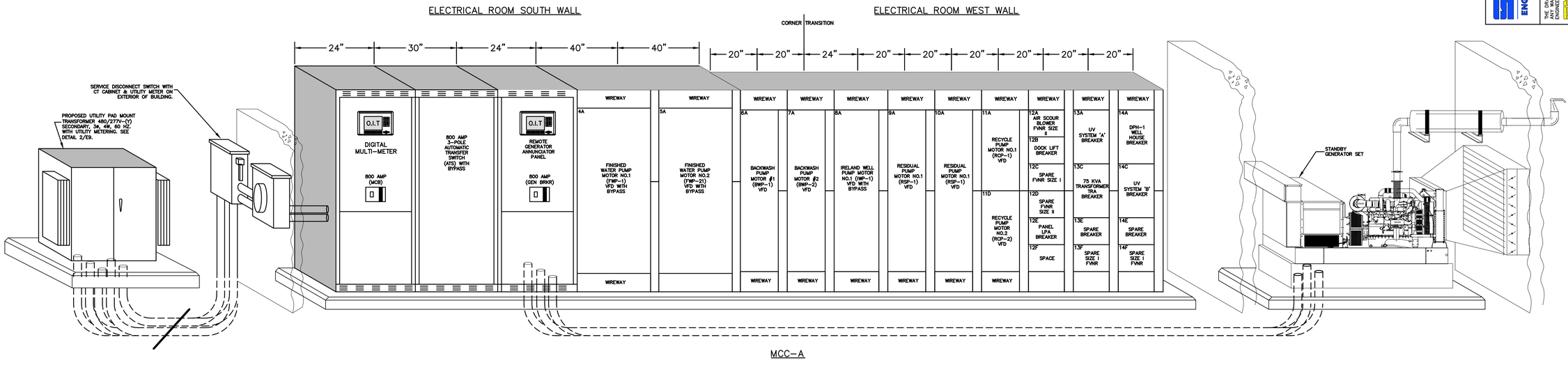
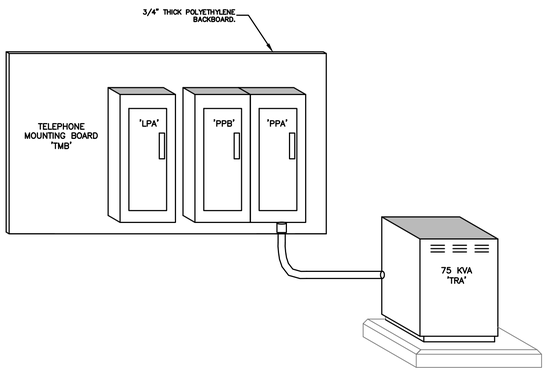
DWG NO	SHEET
E11	95 OF 122

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-E10-E12-1L.dwg Jul 09, 2021 - 2:48pm





ELECTRICAL EQUIPMENT ELEVATIONS (1/E12)
SCALE: NONE

SMR ENGINEERING, PC
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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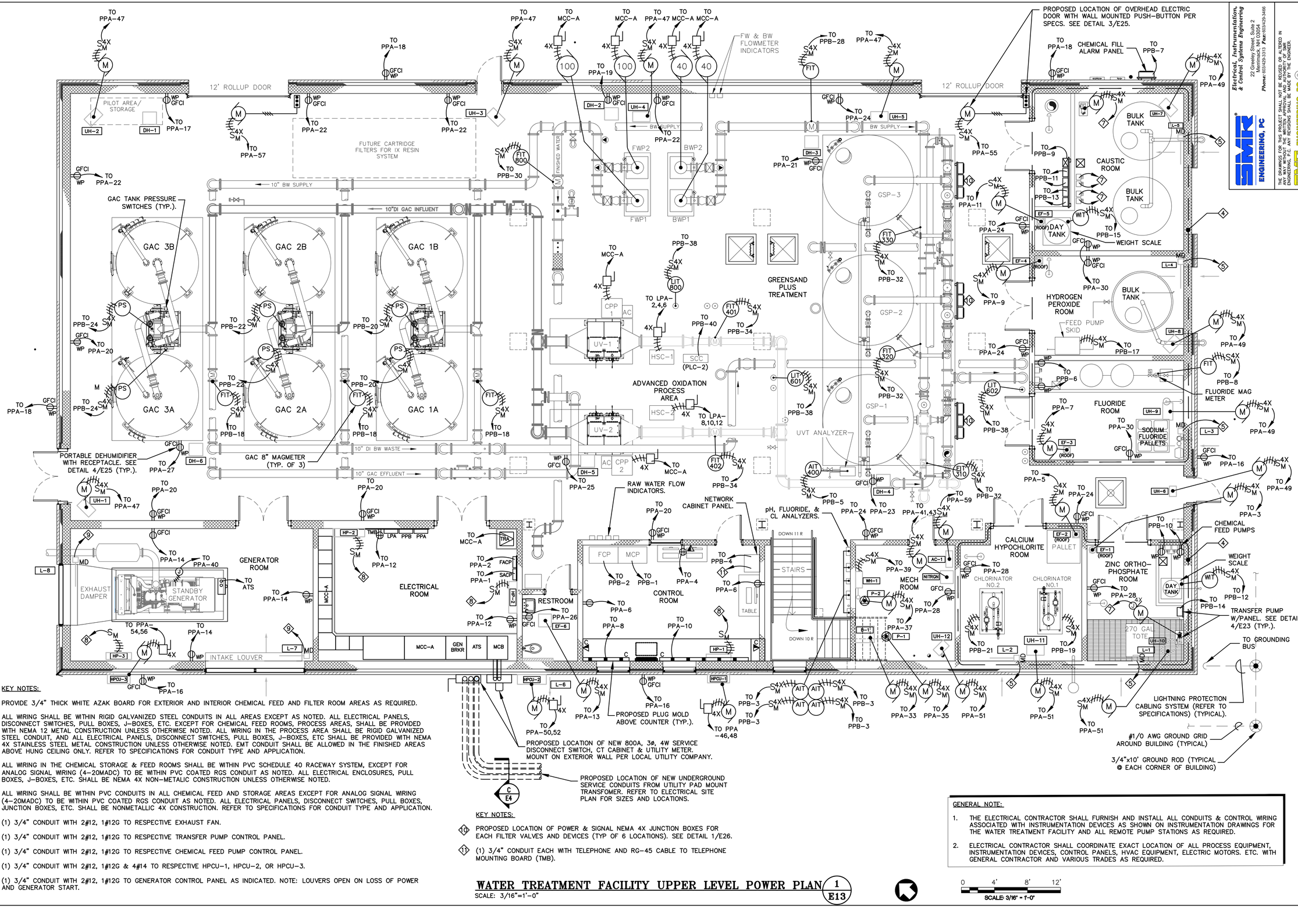

KEY NOTES:

1. PROVIDE 3/4" THICK WHITE AZAK BOARD FOR EXTERIOR AND INTERIOR CHEMICAL FEED AND FILTER ROOM AREAS AS REQUIRED.
2. ALL WIRING SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS IN ALL AREAS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. EXCEPT FOR CHEMICAL FEED ROOMS, PROCESS AREAS, SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL WIRING IN THE PROCESS AREA SHALL BE RIGID GALVANIZED STEEL CONDUIT, AND ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC SHALL BE PROVIDED WITH NEMA 4X STAINLESS STEEL METAL CONSTRUCTION UNLESS OTHERWISE NOTED. EMT CONDUIT SHALL BE ALLOWED IN THE FINISHED AREAS ABOVE HUNG CEILING ONLY. REFER TO SPECIFICATIONS FOR CONDUIT TYPE AND APPLICATION.
3. ALL WIRING IN THE CHEMICAL STORAGE & FEED ROOMS SHALL BE WITHIN PVC SCHEDULE 40 RACEWAY SYSTEM, EXCEPT FOR ANALOG SIGNAL WIRING (4-20MADC) TO BE WITHIN PVC COATED RGS CONDUIT AS NOTED. ALL ELECTRICAL ENCLOSURES, PULL BOXES, J-BOXES, ETC. SHALL BE NEMA 4X NON-METALIC CONSTRUCTION UNLESS OTHERWISE NOTED.
4. ALL WIRING SHALL BE WITHIN PVC CONDUITS IN ALL CHEMICAL FEED AND STORAGE AREAS EXCEPT FOR ANALOG SIGNAL WIRING (4-20MADC) TO BE WITHIN PVC COATED RGS CONDUIT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, JUNCTION BOXES, ETC. SHALL BE NONMETALLIC 4X CONSTRUCTION. REFER TO SPECIFICATIONS FOR CONDUIT TYPE AND APPLICATION.
5. (1) 3/4" CONDUIT WITH 2#12, 1#12G TO RESPECTIVE EXHAUST FAN.
6. (1) 3/4" CONDUIT WITH 2#12, 1#12G TO RESPECTIVE TRANSFER PUMP CONTROL PANEL.
7. (1) 3/4" CONDUIT WITH 2#12, 1#12G TO RESPECTIVE CHEMICAL FEED PUMP CONTROL PANEL.
8. (1) 3/4" CONDUIT WITH 2#12, 1#12G & #14 TO RESPECTIVE HPCU-1, HPCU-2, OR HPCU-3.
9. (1) 3/4" CONDUIT WITH 2#12, 1#12G TO GENERATOR CONTROL PANEL AS INDICATED. NOTE: LOUVERS OPEN ON LOSS OF POWER AND GENERATOR START.

KEY NOTES:

10. PROPOSED LOCATION OF POWER & SIGNAL NEMA 4X JUNCTION BOXES FOR EACH FILTER VALVES AND DEVICES (TYP OF 6 LOCATIONS). SEE DETAIL 1/E26.
11. (1) 3/4" CONDUIT EACH WITH TELEPHONE AND RG-45 CABLE TO TELEPHONE MOUNTING BOARD (TMB).

GENERAL NOTE:

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS & CONTROL WIRING ASSOCIATED WITH INSTRUMENTATION DEVICES AS SHOWN ON INSTRUMENTATION DRAWINGS FOR THE WATER TREATMENT FACILITY AND ALL REMOTE PUMP STATIONS AS REQUIRED.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL PROCESS EQUIPMENT, INSTRUMENTATION DEVICES, CONTROL PANELS, HVAC EQUIPMENT, ELECTRIC MOTORS. ETC. WITH GENERAL CONTRACTOR AND VARIOUS TRADES AS REQUIRED.

WATER TREATMENT FACILITY UPPER LEVEL POWER PLAN

1 / E13

SCALE: 3/16"=1'-0"

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

Electrical, Instrumentation, & Control Systems Engineering
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Merrimack, NH 03054
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	CONSTRUCTION	By	TGP
		Date	6/28/21
	APPROVAL	By	TGP
		Date	5/21/21
	ISSUE FOR		

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-E13-ULPP
Scale AS SHOWN

STATE OF NEW HAMPSHIRE TIMOTHY G. SADEK NUMBER 9757 REGISTERED PROFESSIONAL ENGINEER
6-28-21

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

UPPER LEVEL POWER PLAN
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

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E13	97 OF 122

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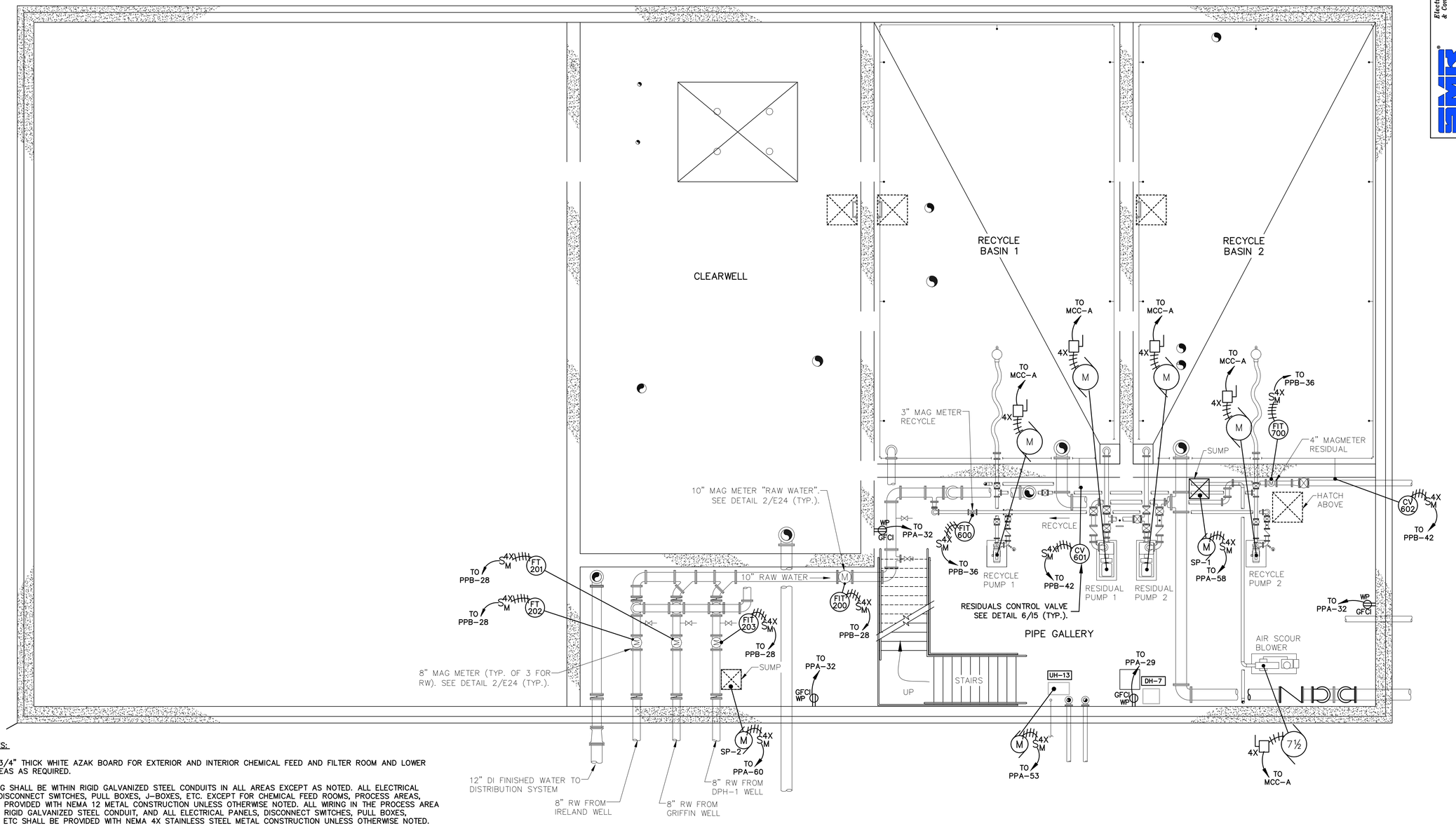

KEY NOTES:

1. PROVIDE 3/4" THICK WHITE AZAK BOARD FOR EXTERIOR AND INTERIOR CHEMICAL FEED AND FILTER ROOM AND LOWER LEVEL AREAS AS REQUIRED.
2. ALL WIRING SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS IN ALL AREAS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. EXCEPT FOR CHEMICAL FEED ROOMS, PROCESS AREAS, SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL WIRING IN THE PROCESS AREA SHALL BE RIGID GALVANIZED STEEL CONDUIT, AND ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC SHALL BE PROVIDED WITH NEMA 4X STAINLESS STEEL METAL CONSTRUCTION UNLESS OTHERWISE NOTED. EMT CONDUIT SHALL BE ALLOWED IN THE FINISHED AREAS ABOVE HUNG CEILING ONLY. REFER TO SPECIFICATIONS FOR CONDUIT TYPE AND APPLICATION.

WATER TREATMENT FACILITY LOWER LEVEL POWER PLAN

SCALE: 3/16"=1'-0"

1 / E14

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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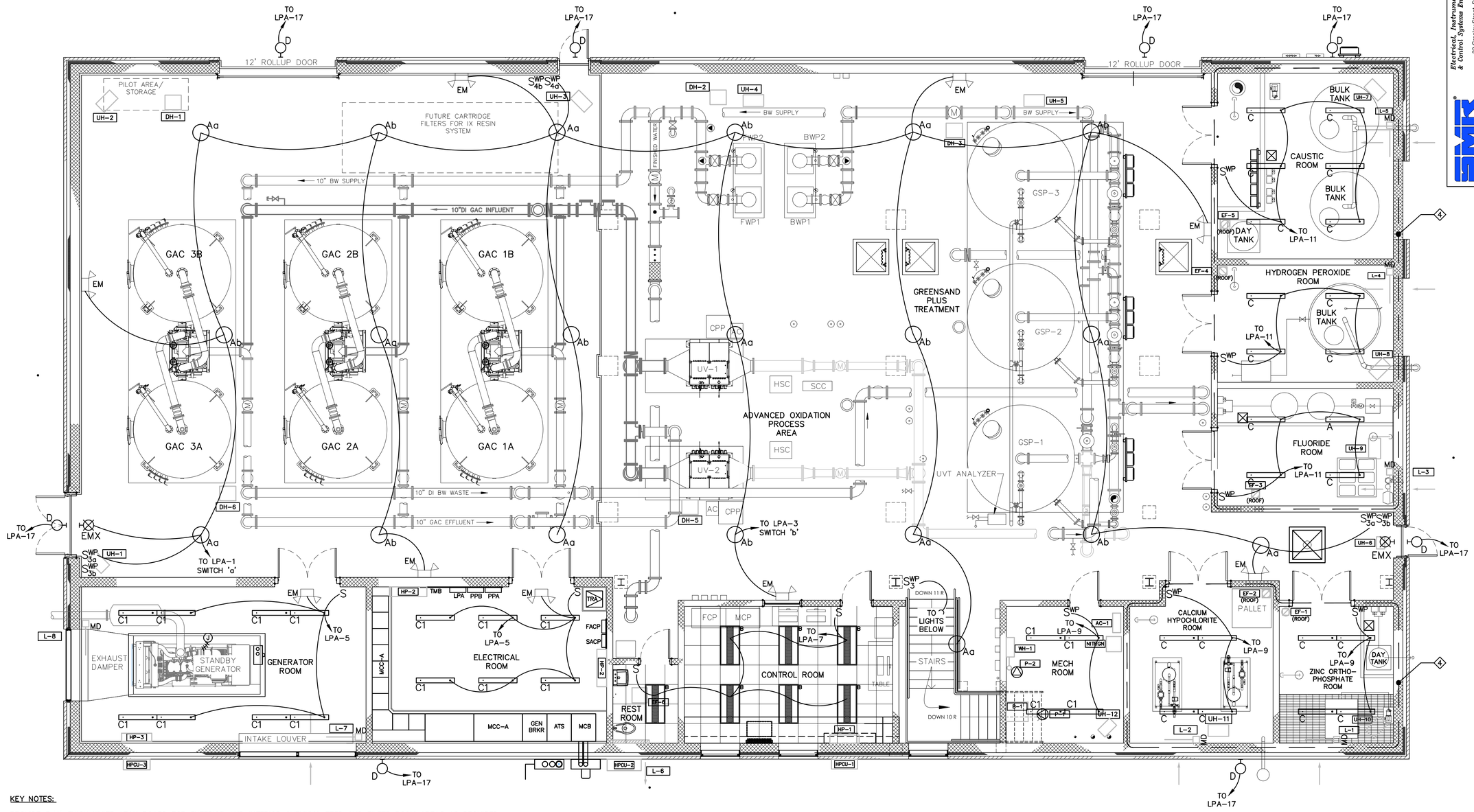

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WATER TREATMENT FACILITY UPPER LEVEL LIGHTING PLAN

1 / E15

SCALE: 3/16"=1'-0"

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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NO.	REVISIONS	APP'D

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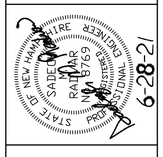
APPROVAL By TGP Date 5/21/21
CONSTRUCTION By TGP Date 6/28/21
RECORD DRAWING By - Date -

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-15-ULP
Scale AS SHOWN



6-28-21

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Tel. 603-436-6192 Fax. 603-431-4733

UPPER LEVEL LIGHTING PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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E15	99 OF 122

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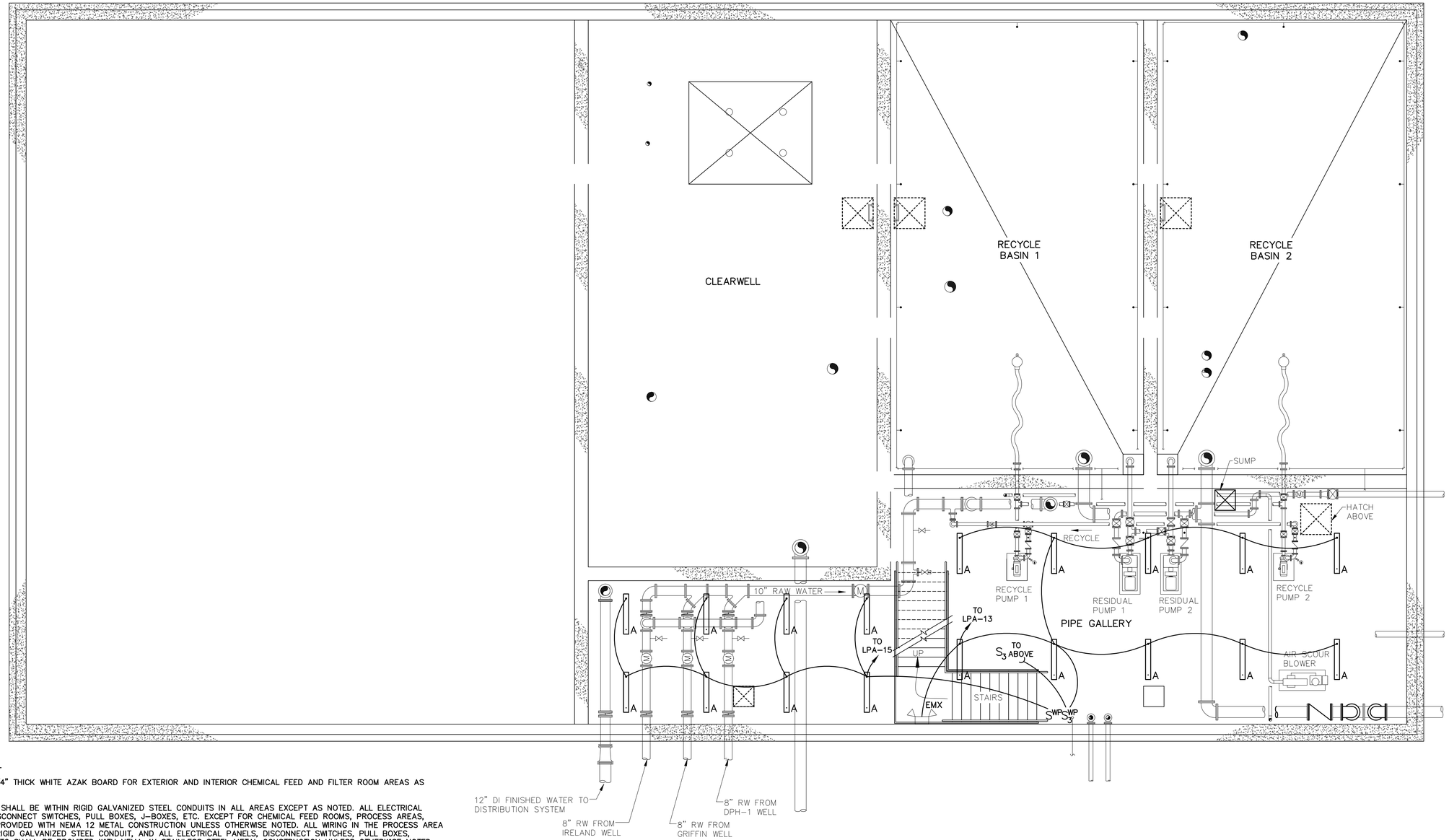

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WATER TREATMENT FACILITY LOWER LEVEL POWER PLAN (1 / E16)

SCALE: 3/16"=1'-0"

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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Merrimack, NH 03054
Phone: 603-429-3313 *Fax:* 603-429-3466

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	CONSTRUCTION Date 6/28/21	By TGP
	RECORD DRAWING Date –	By –

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509-E16-LLP
Scale AS SHOWN

NEW HAMPSHIRE STATE OF REGISTERED PROFESSIONAL ENGINEER MICHAEL SADECKI RADIAR 6-28-21

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

LOWER LEVEL LIGHTING PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

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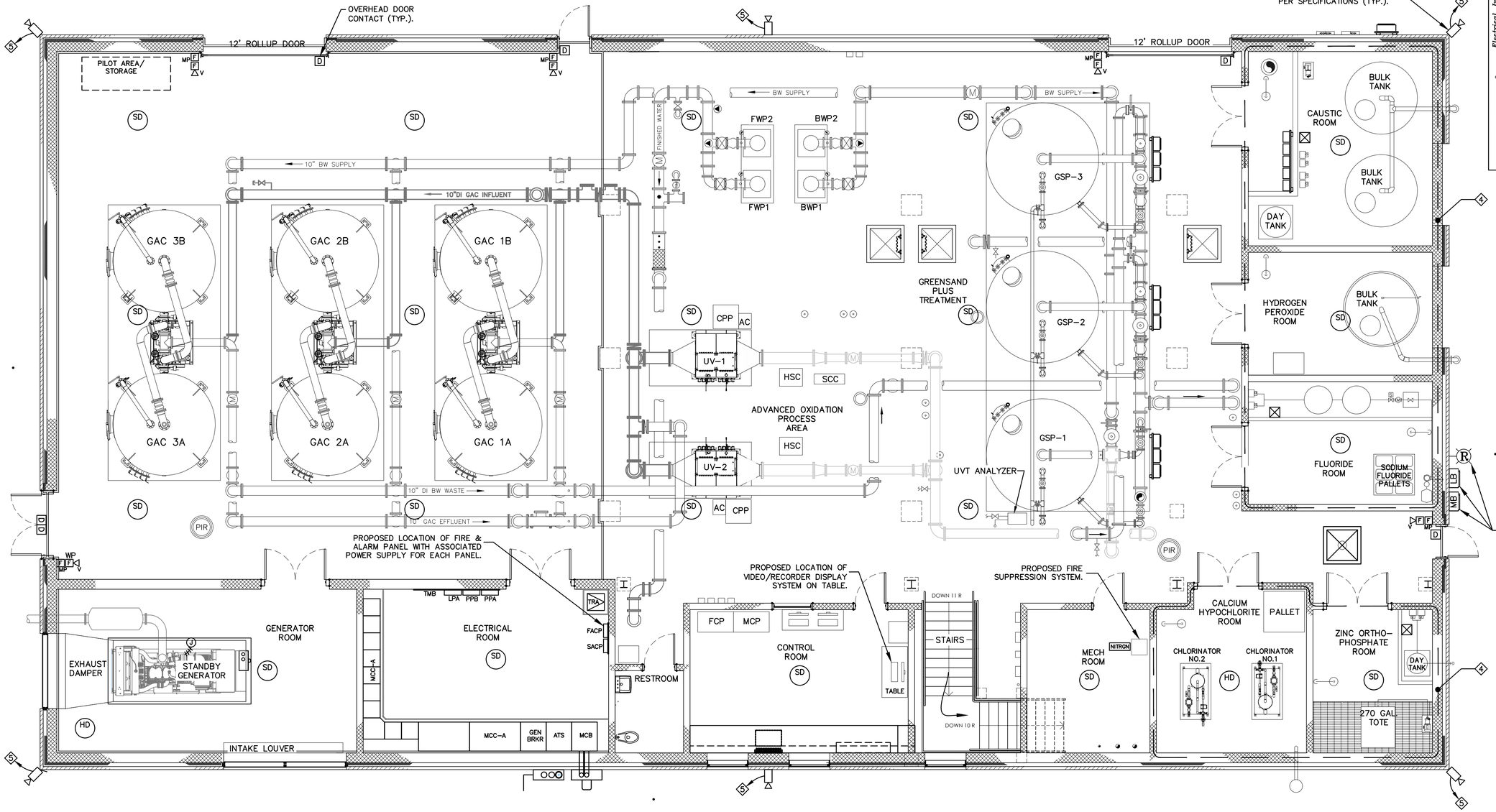

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KEY NOTES:

5. PROVIDE (1) 1" CONDUIT WITH SPECIFIED VIDEO CABLE FROM CAMERA TO VIDEO/RECORDER DISPLAY IN CONTROL ROOM.

WATER TREATMENT FACILITY UPPER LEVEL FIRE & SECURITY ALARM PLAN

1 / E17

SCALE: 3/16"=1'-0"

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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Designed JWC
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Approved TGP
Date 6/28/2021
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Dwg. ID 2509-17-ULFA
Scale AS SHOWN

NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER TIMOTHY G. SADEK NO. 9576 REGISTERED 6-28-21

UNDERWOOD engineers
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UPPER LEVEL FIRE AND SECURITY ALARM PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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E17	101OF 122

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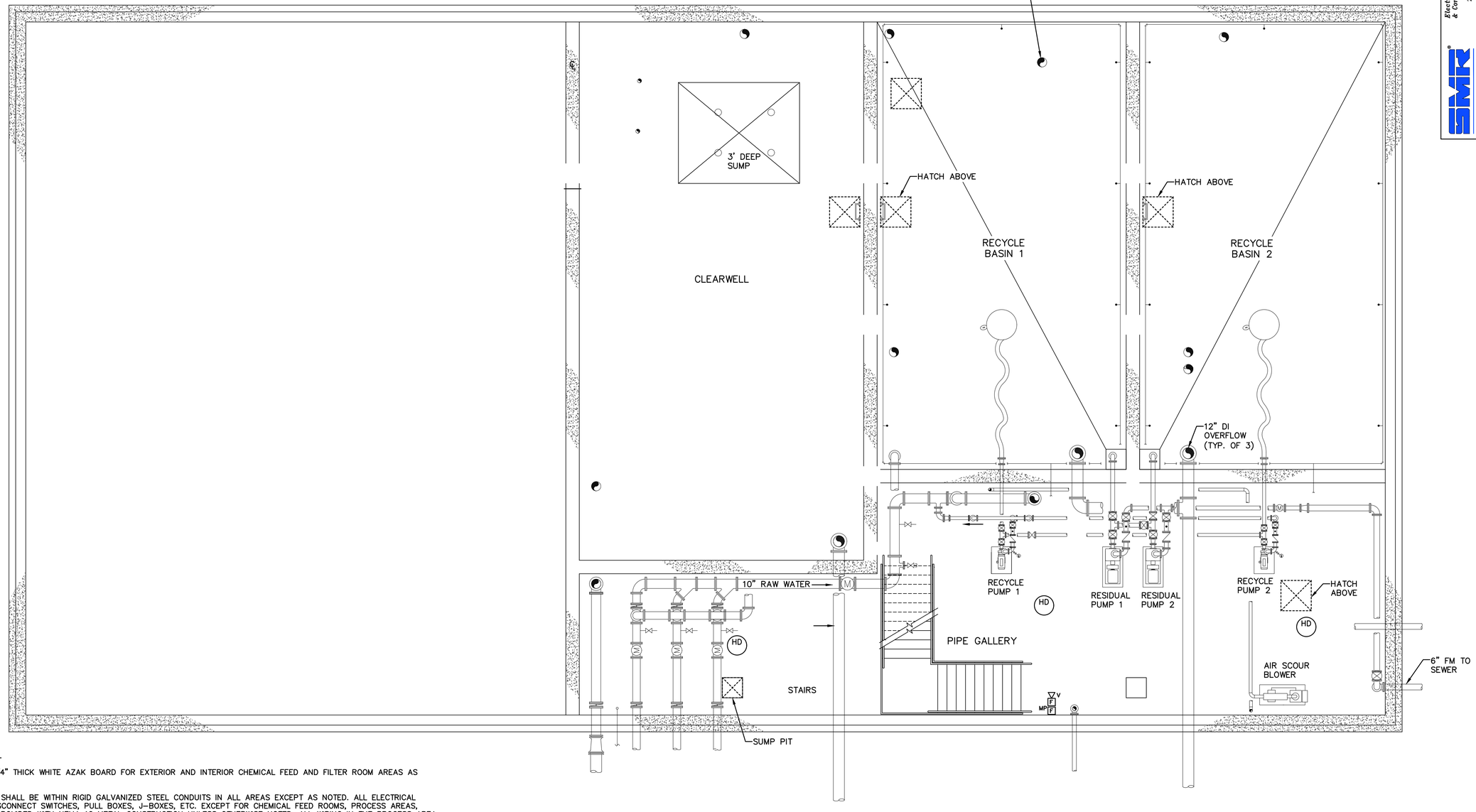

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WATER TREATMENT FACILITY LOWER LEVEL FIRE & SECURITY ALARM PLAN (1 / E18)

SCALE: 3/16"=1'-0"

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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Electrical, Instrumentation, & Control Systems Engineering
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Dwg. ID 2509-E18-ULFA
Scale AS SHOWN

NEW HAMPSHIRE — RALPH G. SADEK — 9775 — REGISTERED PROFESSIONAL ENGINEER — 6-28-21

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

LOWER LEVEL FIRE AND SECURITY ALARM PLAN

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

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PANEL No. LPA

BUS 100 AMPERE
PANEL RATING 14 KAIC
SUPPLY VOLTAGE 480Y/277V
SERVICE 3 PHASE, 4W, W/ GND BUS

LOCATION ELECTRICAL ROOM
MOUNTING SURFACE
DRAWING 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"	LIGHTING – FILTER ROOM – SW 'a'				1	20	1	X			2	3	15				HYDRAULIC SYSTEM CENTER NO.1	3/4"	3#12, 1#12G
2#12, 1#12G	3/4"	LIGHTING – FILTER ROOM – SW 'b'				1	20	3		X		4								
2#12, 1#12G	3/4"	LIGHTING – GEN/ELECTRIC ROOMS				1	20	5			X	6								
2#12, 1#12G	3/4"	LIGHTING – CONTROL ROOM				1	20	7	X			8	3	15				HYDRAULIC SYSTEM CENTER NO.2	3/4"	3#12, 1#12G
2#12, 1#12G	3/4"	LIGHTING – CHEMICAL ROOM				1	20	9		X		10								
2#12, 1#12G	3/4"	LIGHTING – CHEMICALL ROOM				1	20	11			X	12								
2#12, 1#12G	3/4"	LIGHTING – LOWER LEVEL				1	20	13	X			14	3	60				SPARE		
2#12, 1#12G	3/4"	LIGHTING – LOWER LEVEL				1	20	15		X		16								
2#10, 1#10G	3/4"	LIGHTING – EXTERIOR				1	20	17			X	18								
		SPARE				3	30	19	X			20	3	20				SPARE	3/4"	2#12, 1#12G
								21		X		22								
								23			X	24								
		SPARE				3	15	25	X			26						SPACE		
								27		X		28						SPACE		
								29			X	30						SPACE		
		SPACE						31	X			32						SPACE		
		SPACE						33		X		34						SPACE		
		SPACE						35			X	36						SPACE		
		SPACE						37	X			38						SPACE		
		SPACE						39		X		40						SPACE		
		SPACE						41			X	42						SPACE		
		TOTAL 1										TOTAL 2								
		TOTAL 2																		
		TOTAL 1 + 2																		
		TOTAL CONNECTED LOAD AMPERES																		

MAIN BREAKER N/A
FEEDER ENTRANCE TOP
FEEDER SIZE 4#2, 1#4G, 1-1/2"C
SOURCE MCC-A
PANEL TYPE BOLT-ON

MAIN LUGS 125 AMP
ENCLOSURE TYPE NEMA 1
ACCESSORIES

* GFCI BREAKER
** PROVIDE LOCKOUT DEVICE

PANEL No. PPA

BUS 250 AMPERE
PANEL RATING 10 KAIC
SUPPLY VOLTAGE 208Y/120V
SERVICE 3 PHASE, 4W, W/ GND BUS

LOCATION ELECTRICAL ROOM
MOUNTING SURFACE
DRAWING 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"	SECURITY ALARM PANEL				1	**20	1	X			2	1	**20				FIRE ALARM PANEL	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	EXHAUST FAN (EF-1)				1	20	3		X		4	1	20				RECEPTACLES – COMPUTERS	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	EXHAUST FAN (EF-2)				1	20	5			X	6	1	20				RECEPTACLES – CONTROL ROOM	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	EXHAUST FAN (EF-3)				1	20	7	X			8	1	* 20				RECEPTACLES – PLUG MOLD	3/4"	2#12, 1#12G
2#10, 1#10G	3/4"	EXHAUST FAN (EF-4)				1	20	9		X		10	1	* 20				RECEPTACLES – PLUG MOLD	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	EXHAUST FAN (EF-5)				1	20	11			X	12	1	20				RECEPTACLES – ELECTRICAL ROOM	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	EXHAUST FAN (EF-6)				1	20	13	X			14	1	20				RECEPTACLES – GENERATOR ROOM	3/4"	2#12, 1#12G
		SPARE				1	20	15		X		16	1	20				RECEPTACLES – EXTERIOR	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.1 (DH-1)				1	20	17			X	18	1	20				RECEPTACLES – EXTERIOR	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.2 (DH-2)				1	20	19	X			20	1	20				RECEPTACLES – GAC FILTER AREA	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.3 (DH-3)				1	20	21		X		22	1	20				RECEPTACLES – GAC FILTER AREA	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.4 (DH-4)				1	20	23			X	24	1	20				RECEPTACLES – GSP FILTER AREA	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.5 (DH-5)				1	20	25	X			26	1	20				RECEPTACLES – RESTROOM	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.6 (DH-6)				1	20	27		X		28	1	20				RECEPTACLES – MECH/CHEM ROOMS	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	DEHUMIDIFIER NO.7 (DH-7)				1	20	29			X	30	1	20				RECEPTACLES – CHEM ROOMS	3/4"	2#12, 1#12G
		SPARE				1	20	31	X			32	1	20				RECEPTACLES – LOWER LEVEL	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	BOILER (B-1)				1	20	33		X		34	1	20				SPARE		
2#12, 1#12G	3/4"	BOILER PUMP (P-1)				1	20	35			X	36	1	20				SPARE		
2#12, 1#12G	3/4"	BOILER PUMP (P-2)				1	20	37	X			38	1	20				SPARE		
2#12, 1#12G	3/4"	WATER HEATER				1	20	39		X		40	1	20				GENERATOR – BATTERY CHARGER	3/4"	2#10, 1#10G
2#12, 1#12G	3/4"	NITRON FIRE SYSTEM				1	20	41			X	42	2	30				GENERATOR – BLOCK HEATER	3/4"	2#10, 1#10G
2#12, 1#12G	3/4"	SUPRESSION AIR COMPRESSOR				1	20	43	X			44								
2#12, 1#12G	3/4"	FIRE SURPRESSION ALARM PANEL				1	**20	45		X		46	2	30				HPCU-1/HP-1	3/4"	2#8, 1#10G
2#12, 1#12G	3/4"	UNIT HEATERS (UH-1,2,3,4,5)				1	20	47			X	48								
2#12, 1#12G	3/4"	UNIT HEATERS (UH-6,7,8,9)				1	20	49	X			50	2	30				HPCU-2/HP-2	3/4"	2#10, 1#10G
2#12, 1#12G	3/4"	UNIT HEATERS (UH-10,11,12)				1	20	51		X		52								
2#12, 1#12G	3/4"	UNIT HEATERS (UH-13)				1	20	53			X	54	2	30				HPCU-3/HP-3	3/4"	2#10, 1#10G
2#12, 1#12G	3/4"	ROLLUP DOOR				1	20	55	X			56								
2#12, 1#12G	3/4"	ROLLUP DOOR				1	20	57		X		58	1	20				SUMP PUMP NO.1 (SP-1)	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	AIR COMPRESSOR (AC-1)				1	20	59			X	60	1	20				SUMP PUMP NO.2 (SP-2)	3/4"	2#12, 1#12G
		TOTAL 1										TOTAL 2								
		TOTAL 2																		
		TOTAL 1 + 2																		
		TOTAL CONNECTED LOAD AMPERES																		

MAIN BREAKER 250A 3/P
FEEDER ENTRANCE TOP
FEEDER SIZE 4#250, 1#4G, 2-1/2"C
SOURCE 75 KVA XFMR 'TRA'
PANEL TYPE BOLT-ON

MAIN LUGS N/A
ENCLOSURE TYPE NEMA 1
ACCESSORIES

* GFCI BREAKER
** PROVIDE LOCKOUT DEVICE

PANEL No. PPB

BUS 250 AMPERE
PANEL RATING 10 KAIC
SUPPLY VOLTAGE 208Y/120V
SERVICE 3 PHASE, 4W, W/ GND BUS

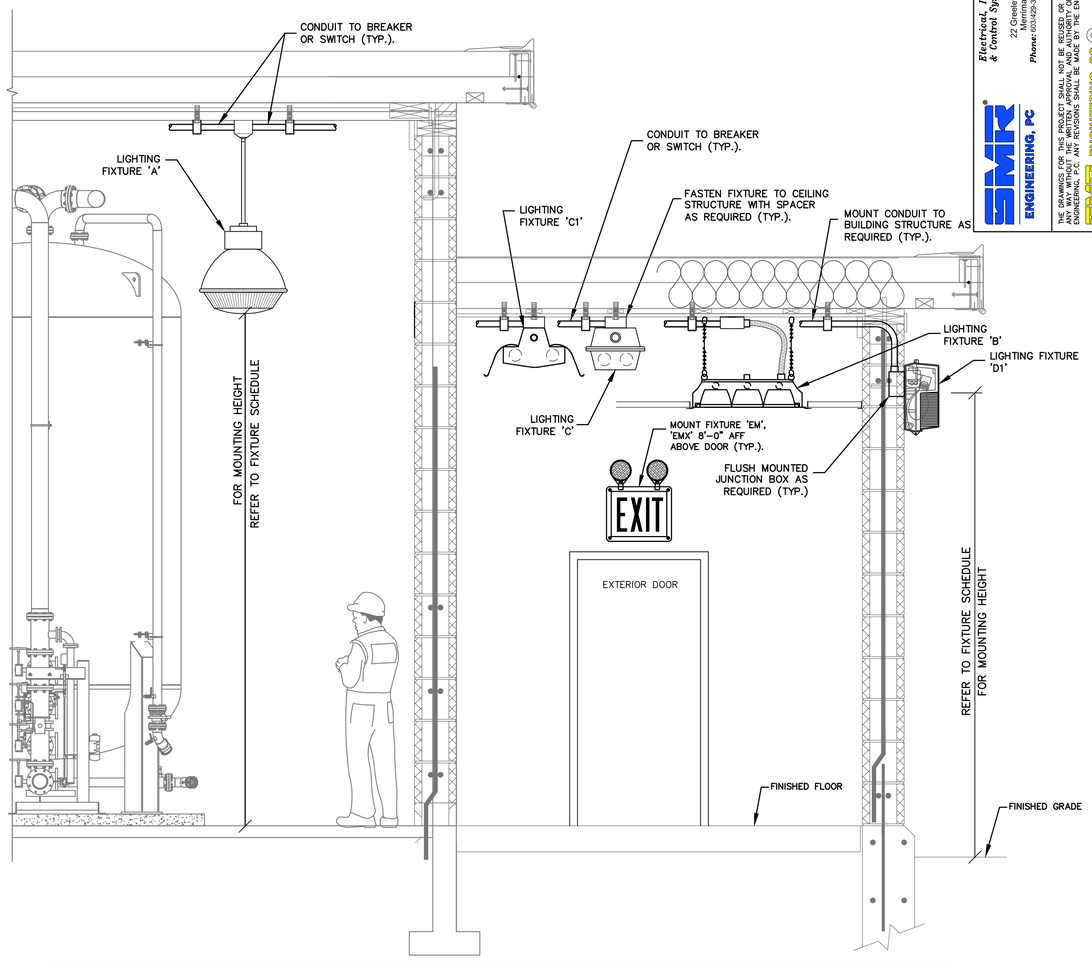
LOCATION ELECTRICAL ROOM
MOUNTING SURFACE
DRAWING No.

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"	MAIN CONTROL PANEL				1	**20	1	X			2	1	**20				FILTER CONTROL PANEL	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	pH/CL/FLOURIDE ANALYZERS				1	20	3		X		4	1	20				NETWORK CABINET	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	UVT ANALYZER				1	20	5			X	6	1	20				FLUORIDE CHEM PUMPS	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	CHEM FILL ALARM PANEL				1	20	7	X			8	1	20				FLUORIDE MAG METER	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HYDROXIDE – TRANSFER PUMP				1	20	9		X		10	1	20				ZINC ORTHO – CHEM FEED PUMPS–	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HYDROXIDE – PRE–CHEM PUMPS				1	20	11			X	12	1	20				ZINC ORTHO – WEIGHT SCALE	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HYDROXIDE – POST–CHEM PUMPS				1	20	13	X			14	1	20				ZINC ORTHO – TRANSFER PUMP	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HYDROXIDE – WEIGHT SCALE				1	20	15		X		16	1	20				SPARE	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	PEROXIDE – FEED SYSTEM				1	20	17			X	18	1	20				GAC FILTER MAG METERS	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HYPO – CHLORITATOR NO.1				1	20	19	X			20	1	20				GAC 1A&1B PRESSURE SWITCHES	3/4"	2#12, 1#12G
2#12, 1#12G	3/4"	HYPO – CHLORITATOR NO.2				1	20	21		X		22	1	20				GAC 2A&2B PRESSURE SWITCHES	3/4"	2#12, 1#12G
		SPARE				1	20	23			X	24	1	20				GAC 3A&3B PRESSURE SWITCHES	3/4"	2#12, 1#12G
		SPARE				1	20	25	X			26	1	20				SPARE	3/4"	2#12, 1#12G
		SPARE				1	20	27		X		28	1	20				RAW WATER – MAG METERS	3/4"	2#12, 1#12G
		SPARE				1	20	29			X	30	1	20				FINISHED WATER – MAG METERS	3/4"	2#12, 1#12G
		SPARE				1	20	31	X			32	1	20				GREENSAND – MAG METERS	3/4"	2#12, 1#12G
		SPARE				1	20	33		X		34	1	20				UV – MAG METERS	3/4"	2#12, 1#12G
		SPARE				1	20	35			X	36	1	20				RESIDUAL/RECYLE – MAG METERS	3/4"	2#12, 1#12G
		SPARE				1	20	37	X			38	1	20				WET WELL – LEVEL TRANSMITTERS	3/4"	2#12, 1#12G
		SPARE				1	20	39		X		40	1	20				UV–SCC–PLC3 PANEL	3/4"	2#12, 1#12G
		SPARE				1	20	41			X	42	1	20				RESIDUAL CONTROL VALVES	3/4"	2#12, 1#12G
		SPARE				1	20	43	X			44	1	20				SPARE		
		SPARE				1	20	45		X		46	1	20				SPARE		
		SPARE				1	20	47			X	48	1	20				SPARE		
		SPARE				1	20	49	X			50	1	20				SPARE		
		SPARE				1	20	51		X		52	1	20				SPARE		
		SPARE				1	20	53			X	54	1	20				SPARE		
		SPARE				1	20	55	X			56	1	20				SPARE		
		SPARE				1	20	57		X		58	1	20				SPARE		
		SPARE				1	20	59			X	60	1	20				SPARE		
		TOTAL 1										TOTAL 2								
		TOTAL 2																		
		TOTAL 1 + 2																		
		TOTAL CONNECTED LOAD AMPERES																		

MAIN BREAKER
FEEDER ENTRANCE TOP
FEEDER SIZE 4#250, 1#4G, 2-1/2"C
SOURCE 75 KVA XFMR 'TRA'
PANEL TYPE BOLT-ON

MAIN LUGS 250 A
ENCLOSURE TYPE NEMA 1
ACCESSORIES

* GFCI BREAKER
** PROVIDE LOCKOUT DEVICE



PROJECT LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	MODEL NO.	COLOR	LAMPS	MOUNTING	TYPE	VOLTAGE	REMARKS
A	HUBBELL	HBL-72LU-A2-4K-W-070-GR-ENCG OR APPROVED EQUAL	BRONZE	LED	SURFACE 16'-0" AFF	LED	277	MOUNT 16'-0" ABOVE FINISHED FLOOR
B	FINELITE	HPR-A-2X4-DCO-LED-HO-3500K-120-SC-C1-1 OR APPROVED EQUAL	WHITE	LED	RECESSED	LED	277	MOUNT IN DROP CEILING PROVIDE GRID AS REQUIRED
C	HUBBELL	LXEM-440-VL-RFA-E-U-SSL OR APPROVED EQUAL	WHITE	LED	SURFACE	LED	277	(1) 4' FIXTURE (CORROSIVE AND WET LOCATIONS) COORDINATE WITH MECHANICAL, PROCESS, EQ.
C1	HUBBELL	LCS4-40-VL-EU-CSWG4 OR APPROVED EQUAL	WHITE	LED	PENDANT	LED		(1) 4' FIXTURE (DRY LOCATIONS) COORDINATE WITH MECHANICAL, PROCESS, EQ.
D	SPAULDING	LMC-30LU-4K-3-2-PC4 OR APPROVED EQUAL	BRONZE	LED	SURFACE	LED		PROVIDE WITH PHOTO CELL, & MANUAL SWITCH. MOUNT SURFACE ON WALL 12" ABOVE DOOR A.F.G.
EMX	CARPENTER	NXLED-EX-2H OR APPROVED EQUAL	GRAY	LED	WALL AT 8'-0"	EXIT WITH EMERGENCY		MOUNT SURFACE ON WALL ON SIDE OF DOOR AT 8' A.F.F. PROVIDE AN ADDITIONAL REMOTE HEAD.
EM	CARPENTER	NX12-36-E-N1 OR APPROVED EQUAL	GRAY	LED	WALL AT 8'-0"	EMERGENCY		MOUNT SURFACE ON WALL ON SIDE OF DOOR AT 8' A.F.F. PROVIDE AN ADDITIONAL REMOTE HEAD.

LIGHTING FIXTURE MOUNTING DETAILS & LIGHTING FIXTURE SCHEDULE (TYP.)

SCALE: NONE

2
E19

SMR ENGINEERING, PC
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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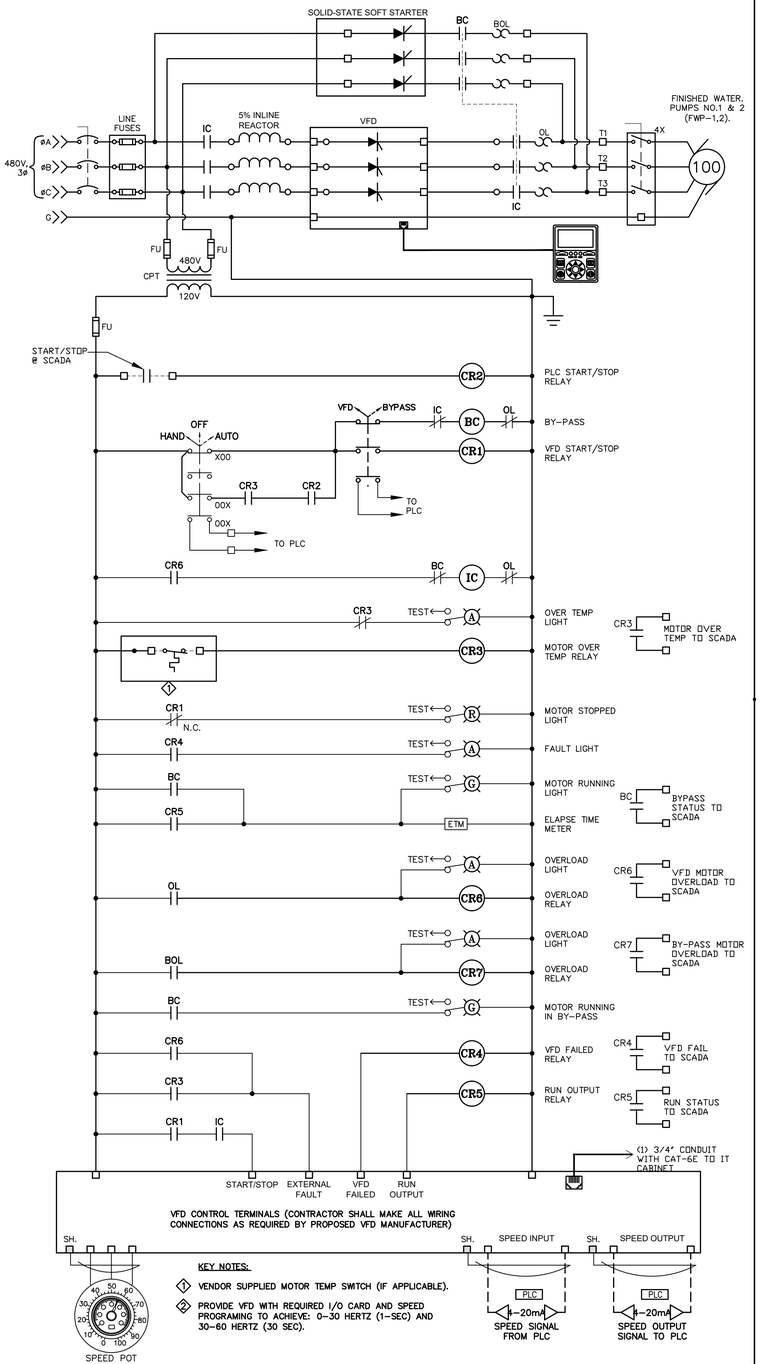
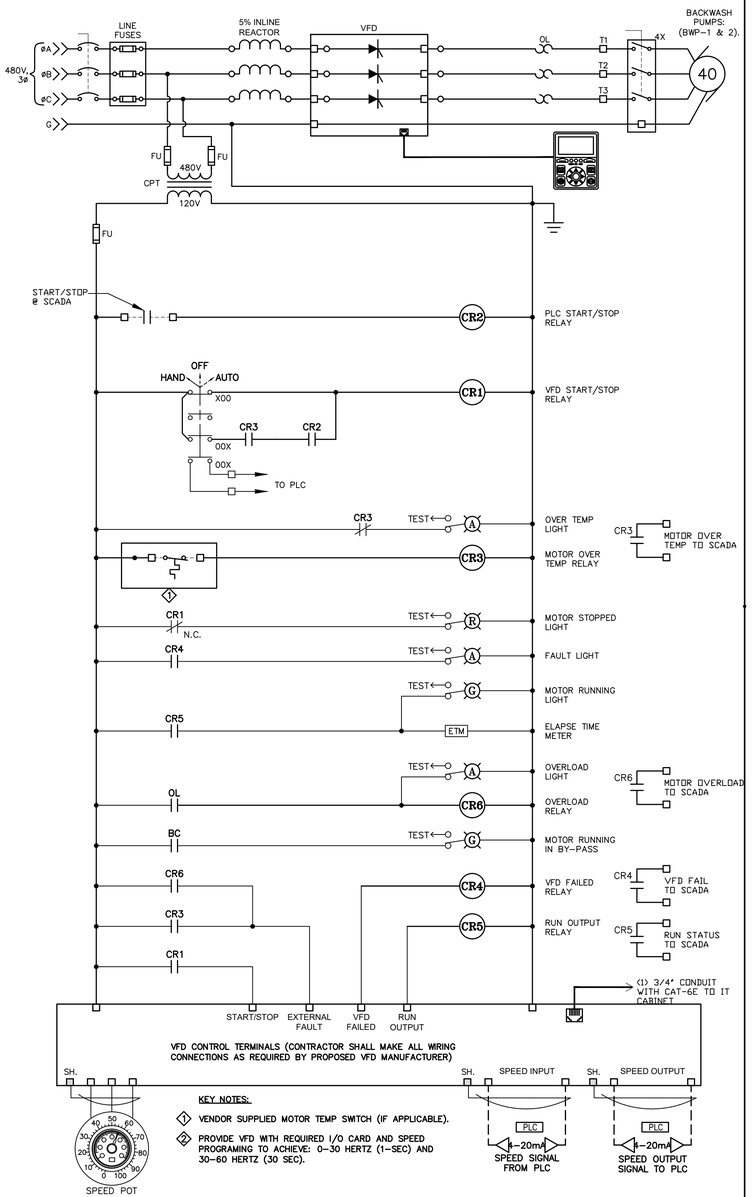
NO.	REVISIONS	APP'D	Date



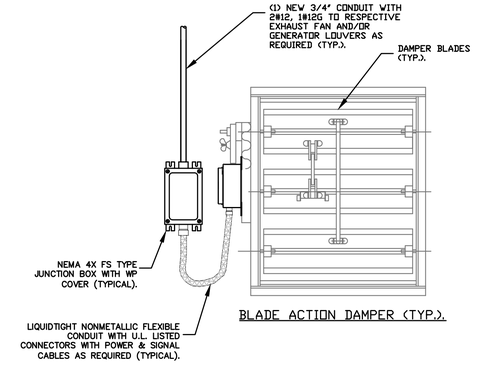
FINISHED WATER PUMP MOTOR #1 & 2 VFD W.D. (TYP. OF 2) 1 E20

SCALE: NONE

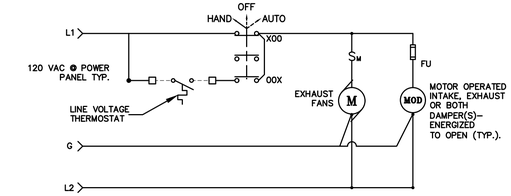


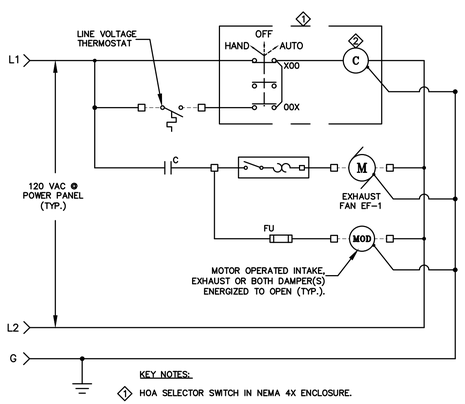
BACKWASH PUMP MOTOR #1 & 2 VFD W.D. (TYP. OF 2) 2 E20

SCALE: NONE



BLADE ACTION DAMPER (TYP.).





EXHAUST FAN W.D. WITH MOTOR OPERATED DAMPER (TYP.) 3 E20

SCALE: NONE

Electrical, Instrumentation, & Control Systems Engineering
22 Greeley Street, Suite 2
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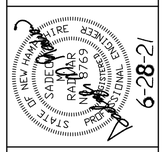
NO.	REVISIONS	APP'D
	ISSUE FOR APPROVAL Date 5/21/21	By TGP
	CONSTRUCTION Date 6/28/21	By TGP
	RECORD DRAWING Date -	By -

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-E20-M02
Scale AS SHOWN



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

WIRING DIAGRAMS AND DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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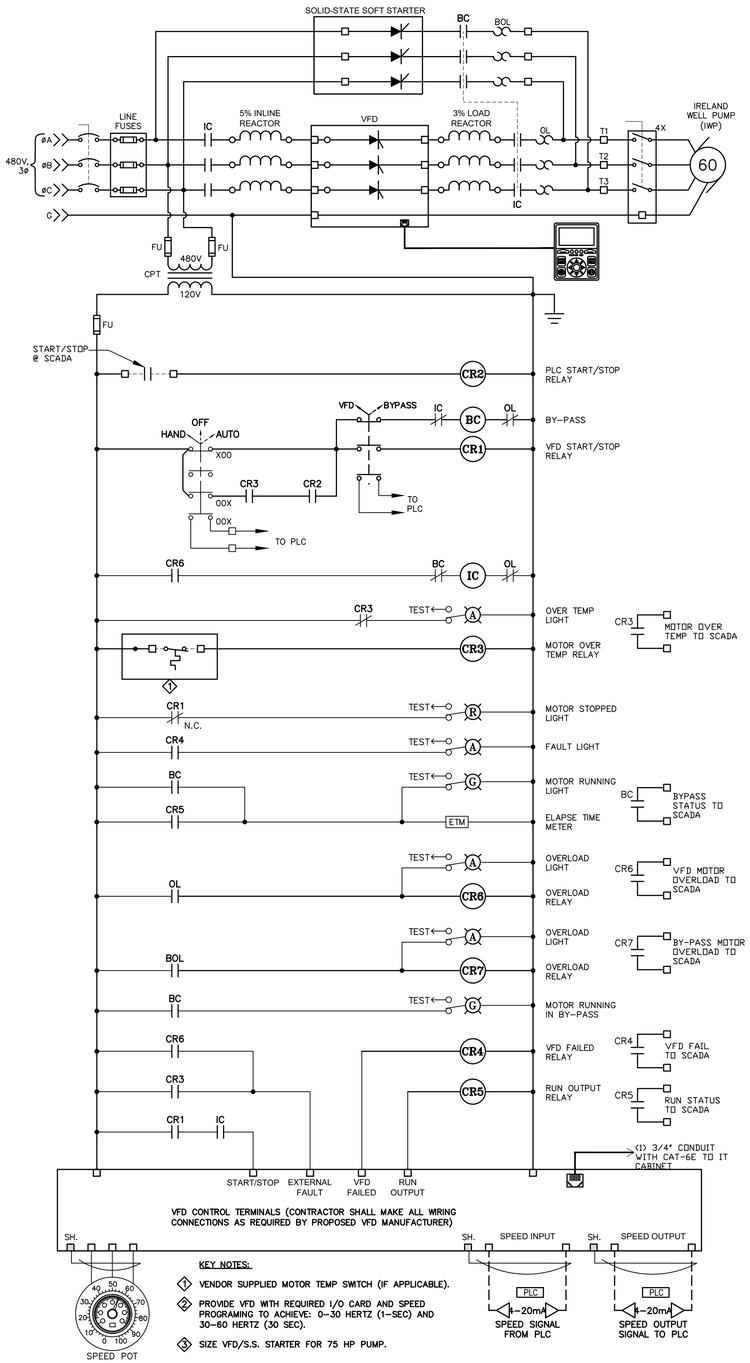
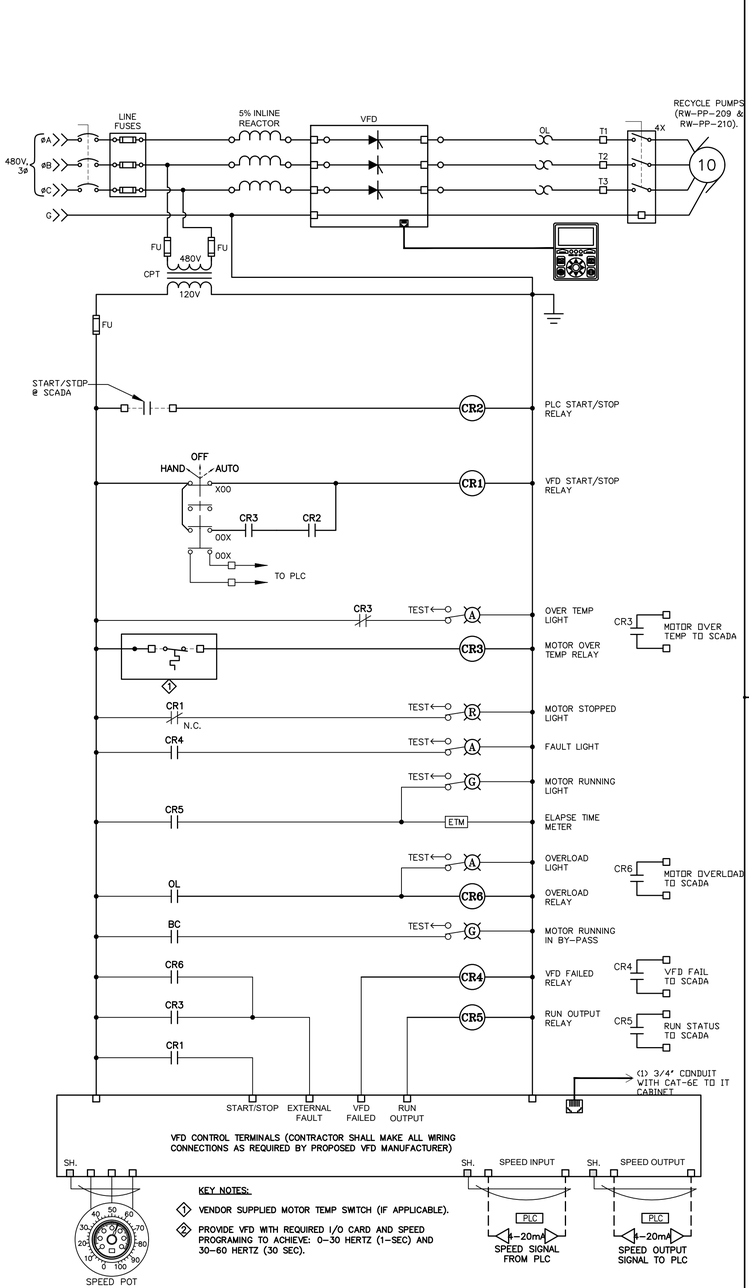
DWG NO	SHEET
E20	104OF 122

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-E20-E25 Schedules & WD.dwg Jul 09, 2021 - 2:48pm



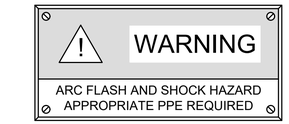
IRELAND WELL & DPH-1 WELL PUMP VFD W.D. (TYP. OF 2) 1/E21

SCALE: NONE



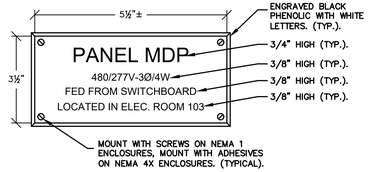
RECYCLE PUMP MOTOR #1 & 2 VFD W.D. (TYP. OF 2) 2/E21

SCALE: NONE

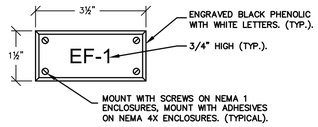


INSTALL ON ALL METER SOCKETS, SWITCHBOARDS, MOTOR CONTROL CENTERS, PANELBOARDS IN ACCORDANCE TO NEC ART 110.16 (TYPICAL).

TYPICAL FLASH PROTECTION WARNING LABEL
NO SCALE



TYPICAL PANEL NAMEPLATE
NO SCALE



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

ELECTRICAL IDENTIFICATION OF EQUIPMENT (TYP.) 3/E21

SCALE: NONE

Electrical, Instrumentation, & Control Systems Engineering
22 Crawley Street, Suite 2
Merrimack, NH 030054
Phone: 603-429-3313 *Fax:* 603-429-3466
SMR ENGINEERING, PC

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STAMP ENGINEERING, PC

NO.	REVISIONS	APP'D

ISSUE FOR
APPROVAL Date 5/21/21 By TGP
CONSTRUCTION Date 6/28/21 By TGP
RECORD DRAWING Date - By -

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-E21-WD2
Scale AS SHOWN

STATE OF NEW HAMPSHIRE TIMOTHY G. PADELFORD 10 STATES REGISTERED PROFESSIONAL ENGINEER 6-28-21

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

WIRING DIAGRAMS AND DETAILS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO E21
SHEET 105OF 122

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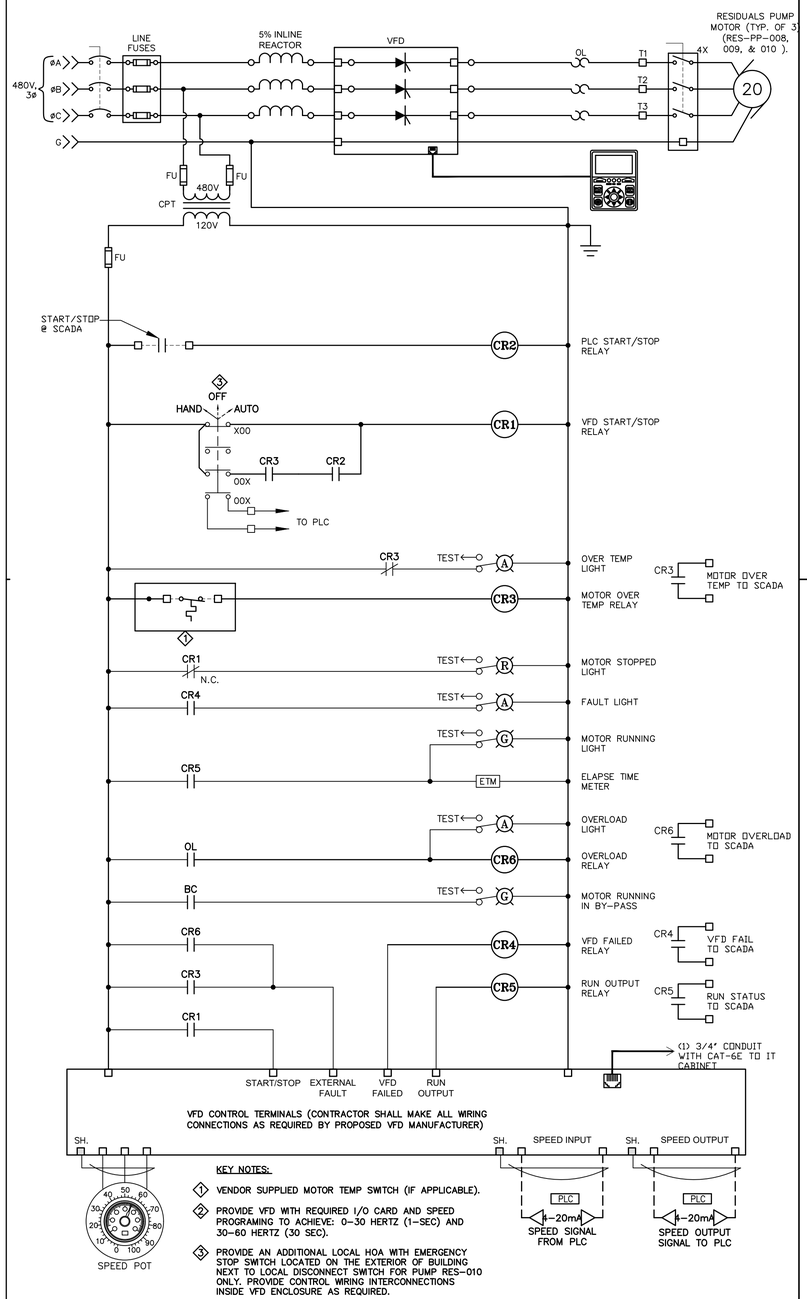
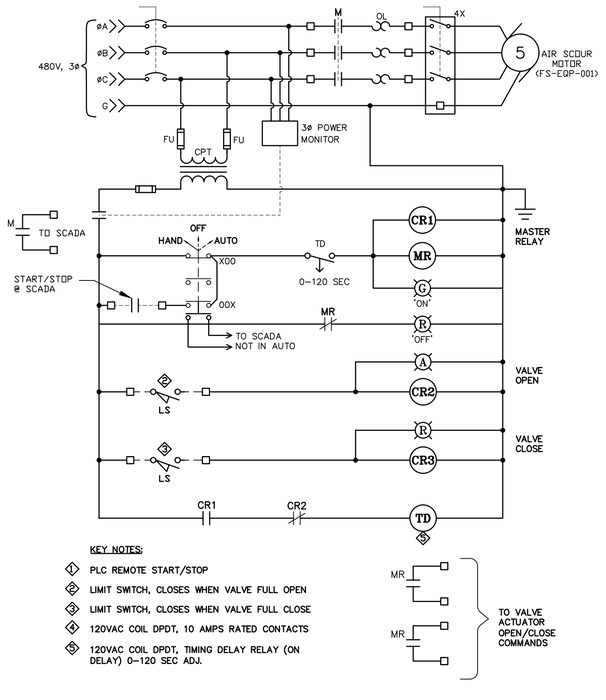


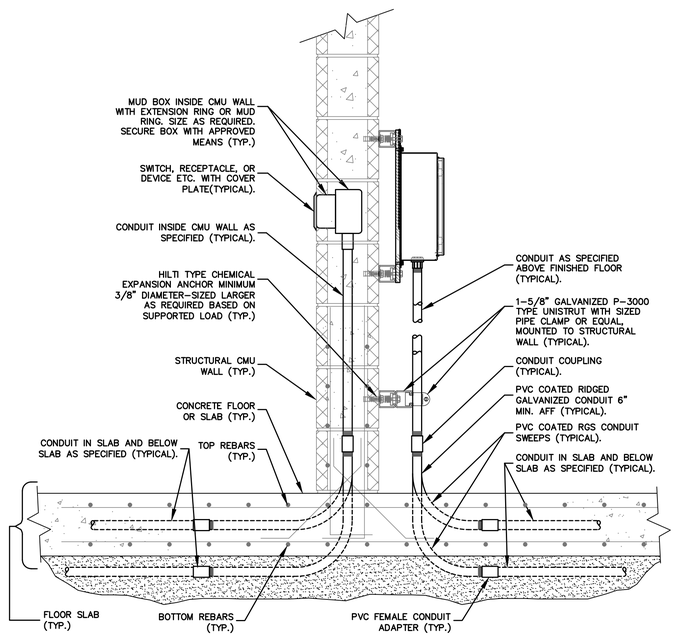
RESIDUALS PUMP MOTOR VFD W.D. (TYP. OF 2) 1/E22

SCALE: NONE



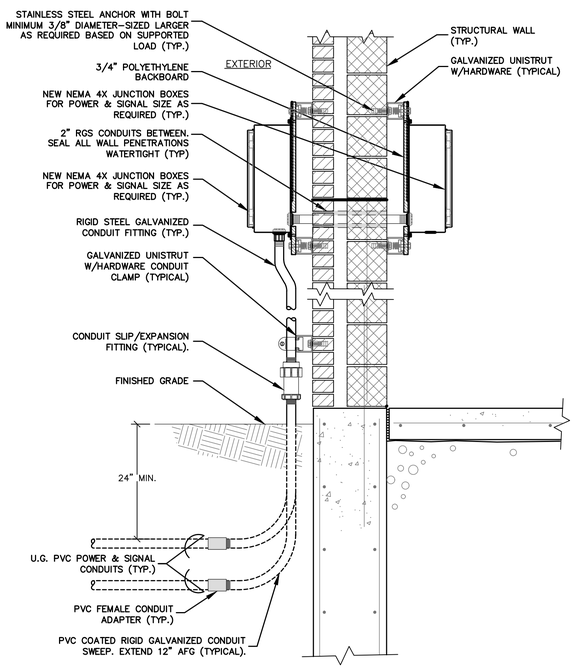
AIR SCOUR BLOWER MOTOR WIRING DIAGRAM (TYP.) 3/E22

SCALE: NONE



CONDUIT IN AND BELOW SLAB INSTALLATION DETAIL (TYP.) 4/E22

SCALE: NONE



CONDUIT PENETRATION INSTALLATION DETAIL (TYP.) 6/E22

SCALE: NONE

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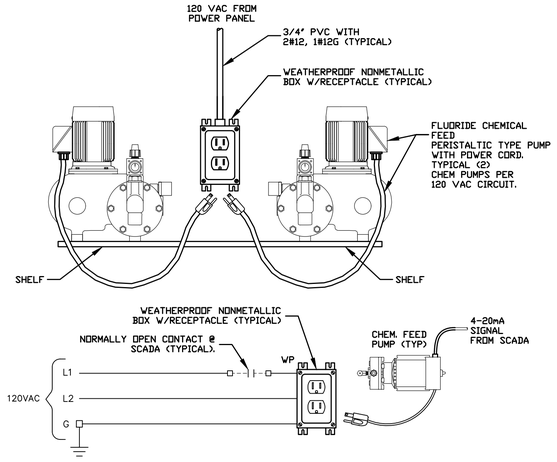
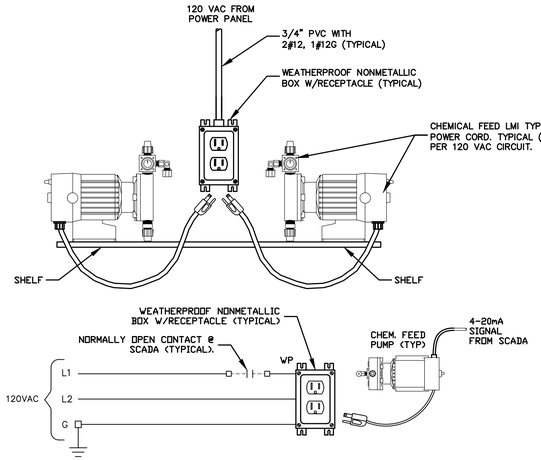


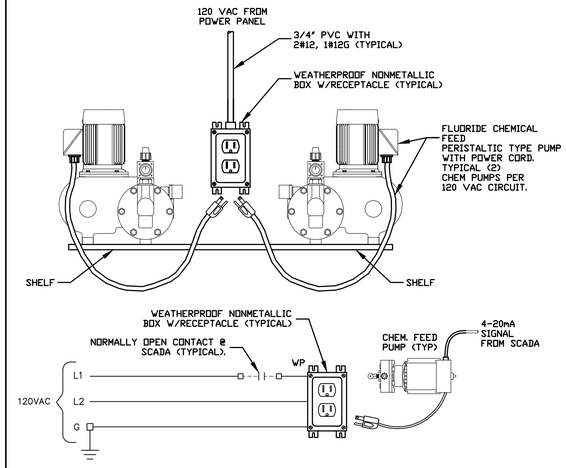
SODIUM HYDROXIDE CHEMICAL FEED PUMP W.D. (TYP.OF 4) 1 E23

SCALE: NONE



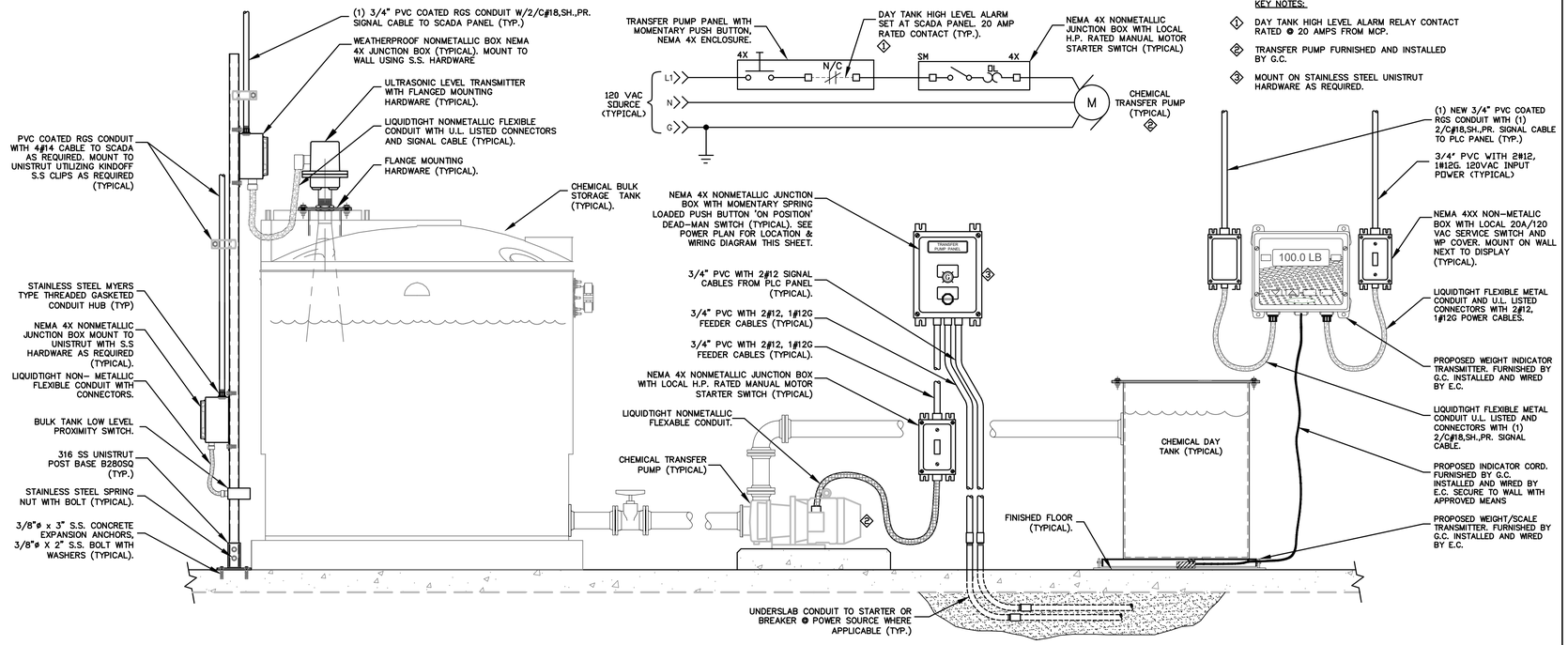
SODIUM FLUORIDE CHEMICAL FEED PUMP W.D. (TYP.OF 2) 2 E23

SCALE: NONE



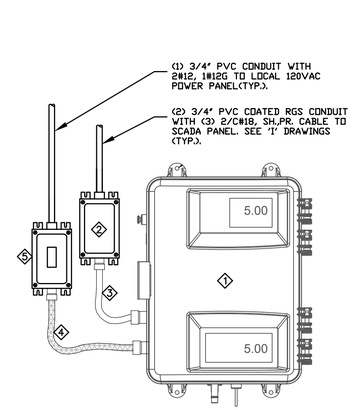
ZINC-ORTHO CHEMICAL FEED PUMP W.D. (TYP. OF 2) 3 E23

SCALE: NONE



ELECTRICAL & SIGNAL CONNECTION AT CHEMICAL TRANSFER PUMP (TYP. OF 2) 4 E23

SCALE: NONE



POWER & SIGNAL CONNECTION @ ANALYZER (TYP.) 5 E23

SCALE: NONE

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Dwg. ID 2509-E23-MS4
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NEW HAMPSHIRE STATE LICENSED PROFESSIONAL ENGINEER RALPH K. PRIMER 6-28-21

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WIRING DIAGRAMS AND DETAILS

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

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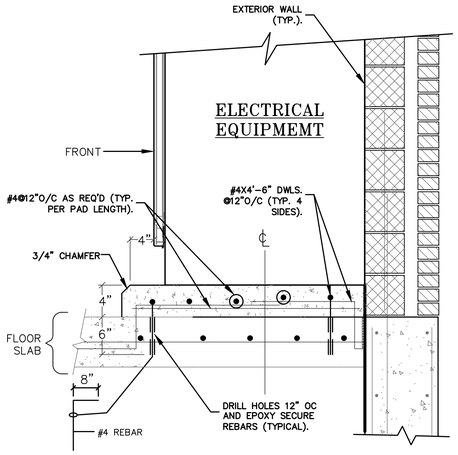
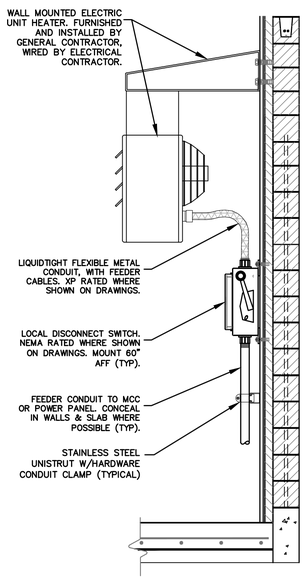


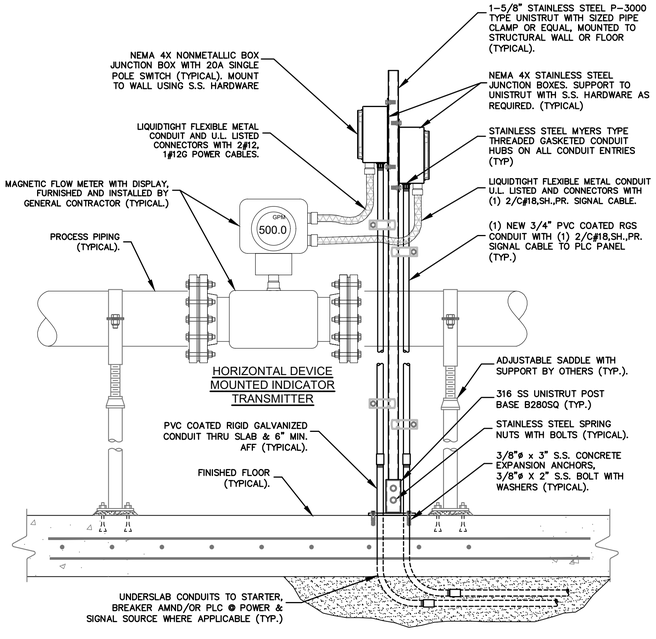
4" THICK HOUSEKEEPING PAD (TYP.) 1 E24

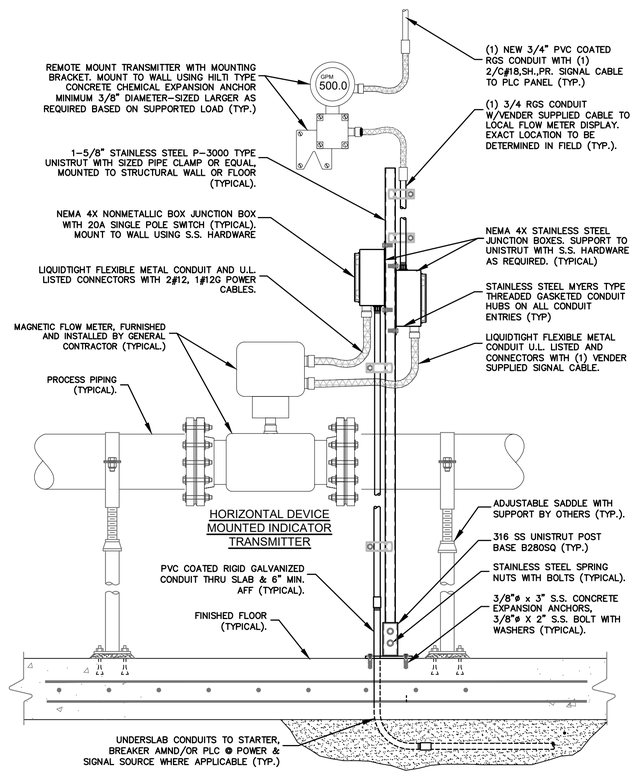
SCALE: NONE



ELECTRICAL CONNECTION @ UNIT HEATERS (TYP.) 3 E24

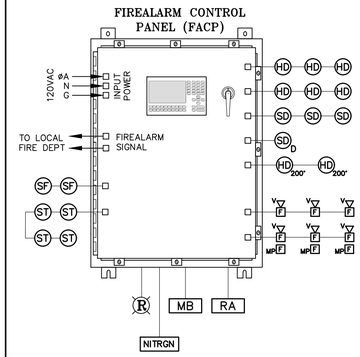
SCALE: NONE





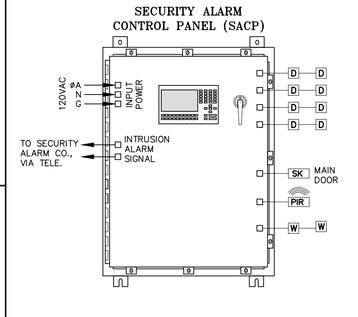
ELECTRICAL & SIGNAL CONNECTION @ MAG METER WITH & WITHOUT REMOTE DISPLAY MOUNTING (TYP.) 2 E24

SCALE: NONE



FIRE ALARM SYSTEM LEGEND:

FACP	FIRE ALARM CONTROL PANEL
SD	SMOKE DETECTOR
SD_D	DUCT TYPE SMOKE DETECTOR
HD 135°	HEAT DETECTOR FIXED TEMPERATURE DETECTOR
HD 200°	HEAT DETECTOR W/TEMPERATURE RISE OF 200°F
F_{MP}	FIRE ALARM – MANUAL PULL STATION WITH LUMINOUS STYLE 3 DIMENSIONAL FIRE ALARM MARKER
F^{V}	FIRE ALARM – AUDIBLE/VISUAL SIGNAL
EOLD	END OF LINE DEVICE
FS	SPRINKLER FLOW SWITCH
TS	SPRINKLER TAMPER SWITCH
MB	MASTER BOX
RA	REMOTE ANNUCIATOR PANEL
LB	REMOTE LOCK BOX
NITRGN	FIRE SUPPRESSION SYSTEM
R	RED BEACON ALARM LIGHT, LOCATION PER LOCAL FIRE DEPARTMENT.



SECURITY SYSTEM LEGEND:

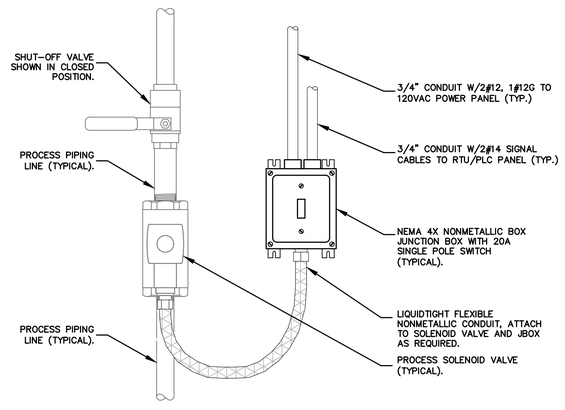
D	DOOR CONTACT
W	PASSIVE GLASS BREAK DETECTOR
RA	REMOTE ANNUNCIATOR PANEL (MTD @ 48" A.F.F.)
SK	SECURITY COMMUNICATOR 'KEY PAD' (MTD @ 48" A.F.F.)
KEY	KEYLESS 'KEY PAD' (MTD @ 48" A.F.F.)
SACP	SECURITY ALARM CONTROL PANEL
PIR	PASSIVE INFRARED MOTION DETECTOR
PIR	360° PASSIVE INFRARED MOTION DETECTOR
	CCTV CAMERA MOUNT ON CORNER OF BUILDING AT HEIGHT PER SPECIFICATIONS

SYSTEM NOTES:

1. EACH RISER DIAGRAM IS GENERIC AND DOES NOT SHOW ALL DEVICES REFER TO FLOOR PLANS FOR ALL EXACT LOCATIONS AND NUMBER OF FIRE ALARM & SECURITY DEVICES REQUIRED FOR COMPLETE SYSTEM.
2. FINAL LOCATION AND EXACT NUMBER OF DETECTION AND INDICATING DEVICES SHALL BE DETERMINED BY THE LOCAL AUTHORITY HAVING JURISDICTION CONTRACTOR SHALL COORDINATE WITH LOCAL FIRE DEPARTMENT PRIOR TO SUBMITTAL. PROVIDE ALL NECESSARY HARDWARE AND WIRING AS REQUIRED.
3. EACH ROOM AND SPACE WITHIN FACILITY SHALL BE PROVIDED WITH SEPARATE ZONE.
4. PROVIDE MASTER BOX WITH HARDWIRED OR WIRELESS COMMUNICATIONS INCLUDING BUT NOT LIMITED TO RADIO ANTENNA ASSEMBLY ETC. AS PER LOCAL FIRE DEPARTMENT REQUIREMENTS. EXACT LOCATION OF MASTER BOX SHALL BE DETERMINED BY LOCAL FIRE DEPARTMENT.

FIRE AND SECURITY ALARM RISER DIAGRAMS (TYP.) 4 E24

SCALE: NONE



SAMPLE LINE SOLENOID VALVE CONNECTION DETAIL (TYP.) 5 E24

SCALE: NONE

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Dwg. ID 2509-E24-WD5
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WIRING DIAGRAMS AND DETAILS

PUDDING HILL WATER TREATMENT FACILITY
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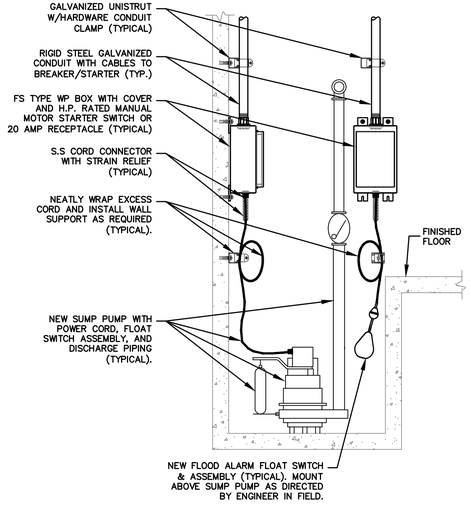
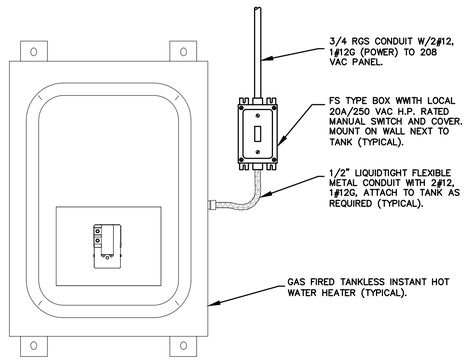


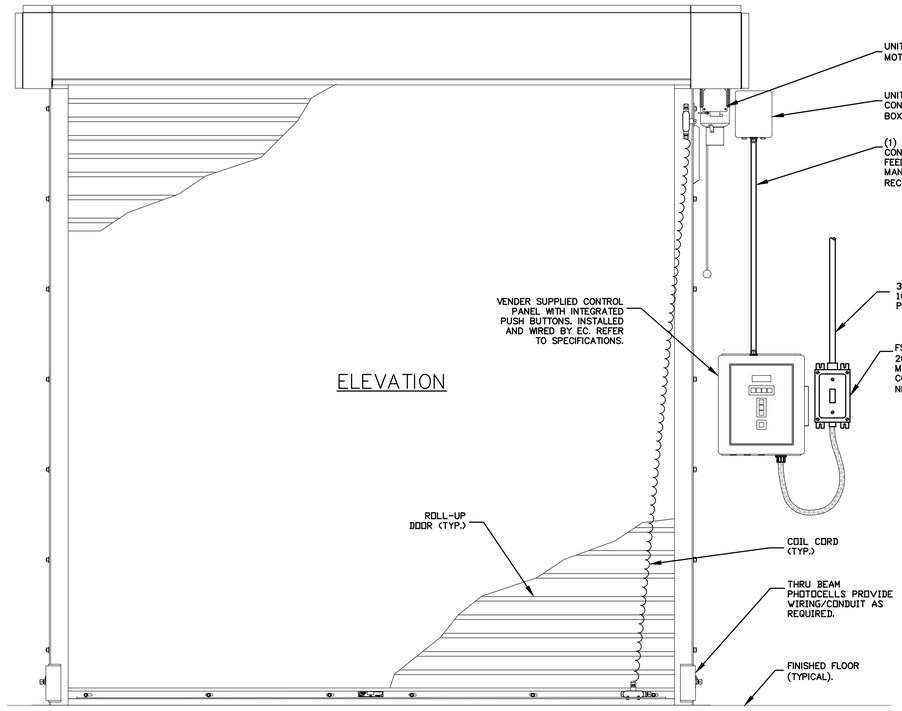
ELEC. CONNECTION @ SUMP PUMP (TYP.) 1/E25

SCALE: NONE



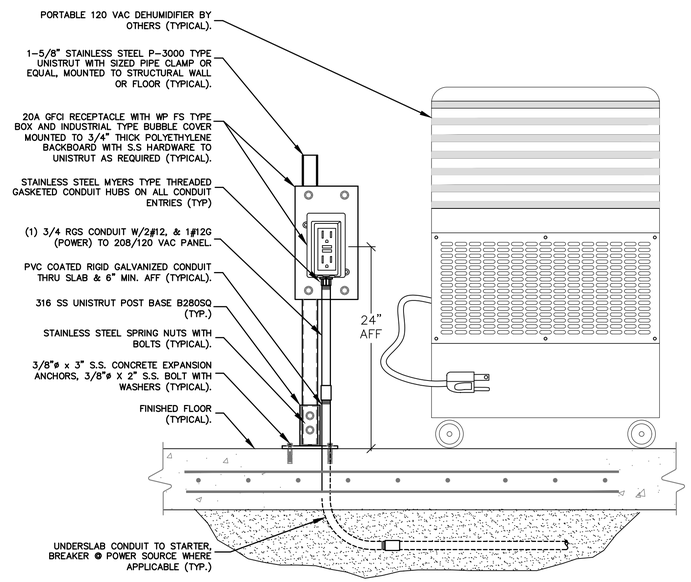
ELEC. CONNECTION @ WATER HEATER (TYP.) 2/E25

SCALE: NONE



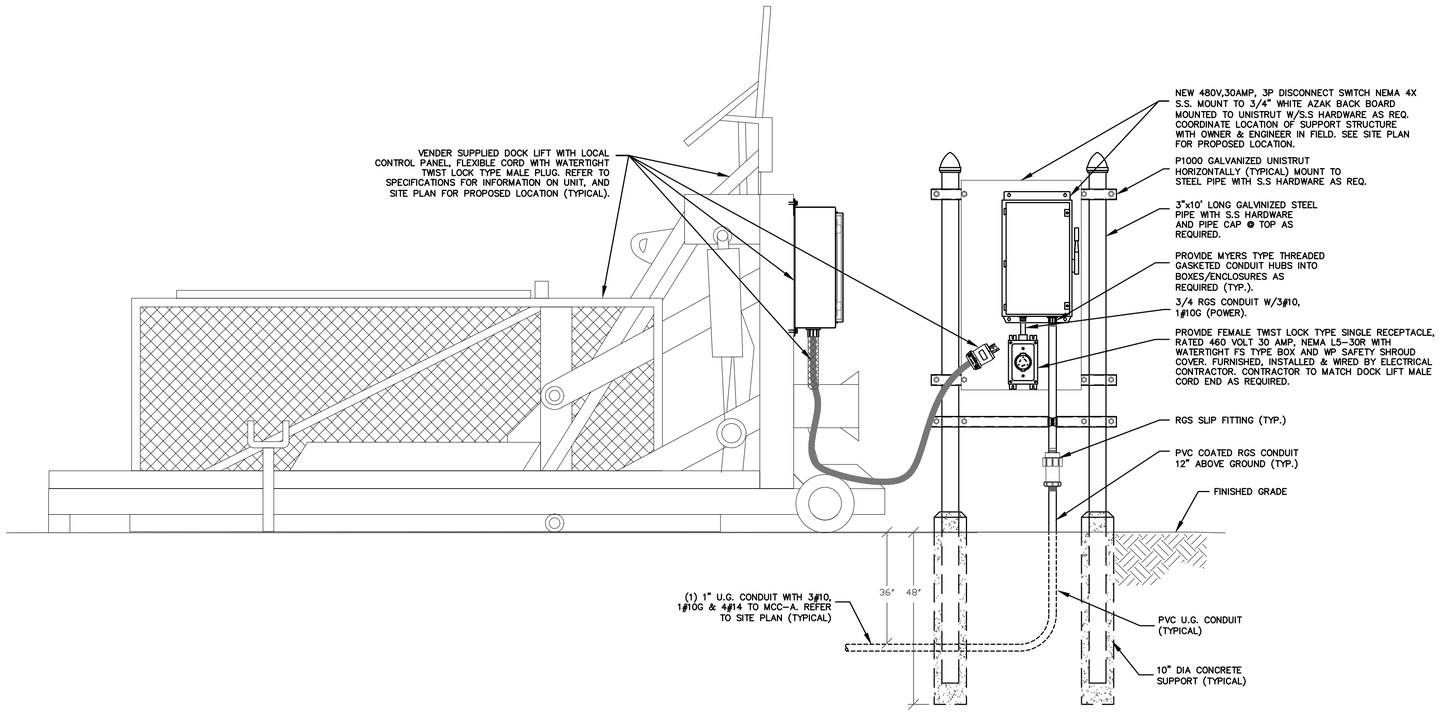
ELECTRICAL CONNECTION @ OVERHEAD DOOR (TYP. OF 2) 3/E25

SCALE: NONE



ELECTRICAL CONNECTION @ DEHUMIDIFIER RECEPTACLE (TYP.) 4/E25

SCALE: NONE



ELECTRICAL CONNECTION @ DOCK LIFT (TYP.) 5/E25

SCALE: NONE

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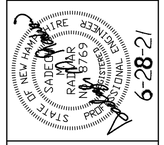

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Tel. 603-436-6192 Fax. 603-431-4733

WIRING DIAGRAMS AND DETAILS

PUDDING HILL WATER TREATMENT FACILITY
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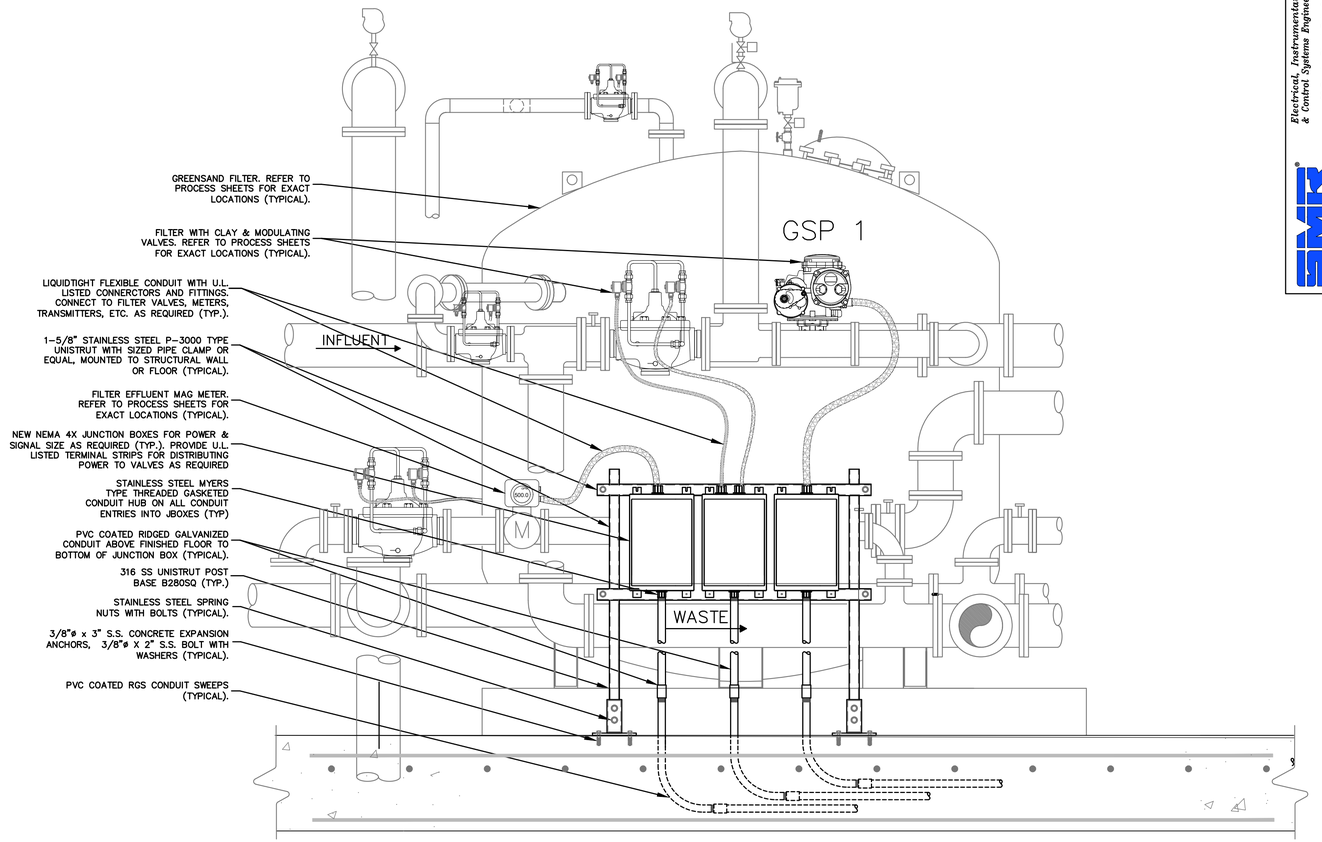

ELECTRICAL AND SIGNAL CONNECTION @ FILTERS (TYP.) (1 / E26)
SCALE: NONE

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6-28-21

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INSTRUMENTATION NOTES:

1. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY POWER AND SIGNAL WIRING WITH CONDUITS AS SHOWN ON ELECTRICAL AND MECHANICAL DRAWINGS FOR BETWEEN POWER PANELS, PLC'S, CONTROL PANELS, AND FIELD INSTRUMENTS AS REQUIRED.
2. MINIMUM SIZE CONDUIT TO BE 3/4".
3. MINIMUM SIZE CONTROL WIRING TO BE #14 AWG. SHIELDED CABLE TO BE 2/C#16 FOR LOOP POWERED DEVICES. 4/C#16 FOR 4-WIRE DEVICES.
4. WIRING MAY BE COMBINED IN SINGLE RACEWAYS FOR EACH OF THE FOLLOWING CATEGORIES. DO NOT MIX CATEGORIES IN A SINGLE CONDUIT:
   A. 120V POWER WIRING
   B. CONTROL AND DISCRETE OUTPUT SIGNALS (24VAC)
   C. DISCRETE INPUT SIGNALS (24VDC)
   D. ANALOG SIGNAL WIRING
5. LOCATION OF PROCESS EQUIPMENT, MOTORS, VALVES, INSTRUMENTS, ETC. SHOWN ON THE DRAWINGS ARE APPROXIMATE. REFER TO PROCESS AND MECHANICAL DRAWINGS FOR EXACT LOCATIONS. FINAL LOCATIONS TO BE DETERMINED IN FIELD TO MATCH EQUIPMENT SUPPLIED BY CONTRACTOR.
6. REFER TO POWER PLANS FOR INSTRUMENTATION POWER REQUIREMENTS.
7. IT IS THE INTENT OF DRAWINGS AND SPECIFICATIONS TO OBTAIN A COMPLETE AND SATISFACTORY INSTALLATION. AN ATTEMPT HAS BEEN MADE TO SEPARATE AND COMPLETELY DEFINE THE WORK OF THE CONTRACTOR. DRAWINGS ARE DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION OF THE FACILITY AND THE WORK OF OTHER TRADES WILL PERMIT. THE DRAWINGS OF NECESSITY UTILIZE SYMBOLS AND SCHEMATIC DIAGRAMS TO INDICATE VARIOUS ITEMS OF WORK. THEREFORE, NO INTERPRETATION WILL BE MADE FROM THE LIMITATION OF SYMBOLS AND DIAGRAMS THAT ANY ELEMENTS NECESSARY FOR A COMPLETE INSTALLATION ARE EXCLUDED. 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.
8. DURING ROUGH IN AND FINISHED STAGES OF CONSTRUCTION, THE INSTRUMENTATION SUBCONTRACTOR 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. ELECTRICAL CONTRACTOR AND/OR SUBCONTRACTOR TO OBTAIN ALL PERMITS AND INSPECTIONS.
11. CONTROL CIRCUITS SHALL BE ARRANGED TO USE SUPERVISED CONTACTS WHEREVER POSSIBLE. THIS MEANS THAT NORMALLY CLOSED CONTACTS WILL BE USED AND THE CONTACTS WILL OPEN WHEN A PROCESS TRANSITION OCCURS (E.G. HIGH LEVEL, LOW LEVEL, HIGH PRESSURE, ETC.)
12. REFER TO ELECTRICAL SERIES DRAWINGS FOR ADDITION DETAILS FOR CONDUIT, DEVICE LOCATIONS, AND POWER CIRCUITS.
13. DRAWINGS SHOW A LAYOUT OF SCADA/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.

INSTRUMENTATION GROUNDING

1. SHIELDED CONDUCTORS SHALL HAVE THEIR SHIELD WIRE CONNECTED TO GROUND AT ONE END ONLY.
2. CONTROL CABINETS SHALL BE PROVIDED WITH AN ISOLATED INSTRUMENT GROUND BUS FOR INSTRUMENTATION GROUND WIRE. THIS BUS SHALL BE TIED TO FACILITY GROUND AT A SINGLE POINT (BONDED).
3. EQUIPMENT & INSTRUMENT GROUNDS SHALL NOT BE INTERMIXED.
4. WHERE ANALOG SIGNALS ARE LACED FROM ONE DEVICE TO ANOTHER, THE SHIELD/DRAIN WIRE SHALL BE CONTINUOUS AND ONLY TIED TO GROUND AT ONE POINT.

PROCESS SIGNAL SCALING & CALIBRATION

1. ALL INSTRUMENTS SHALL BE PROPERLY CALIBRATED BY THE INSTALLING CONTRACTOR. A CALIBRATION STICKER SHALL BE ATTACHED INDICATING CALIBRATION DATE AND THE INITIALS OF THE INDIVIDUAL WHO PERFORMED THE CALIBRATION.
2. ALL PROCESS ANALOG LOOPS SHALL BE PROPERLY CALIBRATED AND SCALED TO THE EXTENT POSSIBLE AND PRACTICAL. ANALOG INSTRUMENTS SHALL BE CALIBRATED TO READ THE ENTIRE OPERATING RANGE FOR THE PARAMETER BEING MONITORED.
3. THE INSTRUMENT CALIBRATION SHALL BE DOCUMENTED IN "AS-BUILT" INFORMATION SUBMITTED TO THE OWNER.

INSTRUMENTATION PIPING & MOUNTING

1. DIRECT READING INSTRUMENTS SHALL BE MOUNTED AT EYE HEIGHT, ~5 FT ABOVE FINISHED FLOOR, UNLESS PROCESS RESTRAINTS NECESSITATE OTHER MOUNTING ARRANGEMENTS, OR UNLESS OTHERWISE NOTED.
2. INSTRUMENTS SHALL BE SECURELY ANCHORED TO THE STRUCTURES OR MONITORED EQUIPMENT. PROPER MOUNTING HARDWARE SHALL BE UTILIZED. (BOLTS, NUTS, UNISTRUT, ETC.)
3. ALL INSTRUMENT TUBING SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED. TUBING INSTALLATION SHALL PROVIDE ADEQUATE PROTECTION AND SUPPORT WHERE APPROPRIATE. TUBING AND PIPING ARRANGEMENTS SHALL BE PROPERLY SLOPED AND INSTALLED FOR THE FLUID BEING MONITORED.
4. ALL INSTRUMENT TAPS INTO PROCESS PIPING SHALL BE PROVIDED WITH AN ISOLATION VALVE. (NOMINAL 1/2" OR 3/4" BALL VALVE). ISOLATION VALVES SHALL BE CONSTRUCTED OF MATERIAL COMPATIBLE WITH THE MONITORED PROCESS FLUID.
6. ALL INSTRUMENTS WHICH REQUIRE PERIODIC CALIBRATION SHALL BE PROVIDED WITH MEANS TO CALIBRATE IN PLACE (E.G. CALIBRATION BLOCK AND/OR CALIBRATION VALVING.)
7. VENTS AND DRAINS SHALL BE PROVIDED ON PROCESS EQUIPMENT AND INSTRUMENTATION AS REQUIRED TO SUPPORT ROUTINE AND MAINTENANCE OPERATIONS.

CONTROL SYSTEM HIERARCHY

SCHEME. THE FACILITY IS DESIGNED TO USE A FOUR LEVEL CONTROL

1. A PLANT PC BASED SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM (SCADA) PROVIDES OVERALL PROCESS MONITORING AND CONTROL ADJUSTMENTS. (LEVEL 3).
2. PLANT PROCESS CONTROL PROGRAMMABLE LOGIC CONTROLLERS (PLC) TO MONITOR AND CONTROL VARIOUS PLANT PROCESSES AND PARAMETERS (LEVEL 2).
3. INDIVIDUAL PROCESSES AND PIECES OF EQUIPMENT HAVE DEDICATED PLCS (LEVEL 1).
4. INDIVIDUAL SENSORS AND OTHER DEVICES MONITOR SPECIFIC PLANT PROCESS PARAMETERS (LEVEL 0).

INPUT/OUTPUT SIGNALS

1. THE VARIOUS EQUIPMENT AND CONTROL SYSTEM SUPPLIERS SHALL COORDINATE THEIR RESPECTIVE INPUT/OUTPUT SIGNALS BETWEEN THEMSELVES, THE SYSTEM INTEGRATOR AND THE ENGINEER.
2. WHERE ONE CONTROL SYSTEM REQUIRES A SIGNAL (DIGITAL INPUT OR DIGITAL OUTPUT) FROM AN EXTERNAL DEVICE OR OTHER CONTROL SYSTEM, IT SHALL BE PROVIDED BY INDEPENDENT DRY CONTACT.
3. WHERE CONTROL VOLTAGES OR SIGNALS ARE NOT COMPATIBLE, INTERPOSING RELAYS SHALL BE PROVIDED.

CONTROL SYSTEM ALARMS

1. THE VARIOUS EQUIPMENT AND CONTROL SYSTEM SUPPLIERS SHALL COORDINATE THEIR RESPECTIVE ALARM LISTS AND POINTS SO THAT AN INTEGRATED ALARM LIST IS PREPARED FOR THE PROJECT.
2. THE SYSTEM INTEGRATOR SHALL PREPARE AND PROVIDE A SUMMARY OF ALL PLANT ALARMS.

CONTROL SYSTEM VOLTAGES

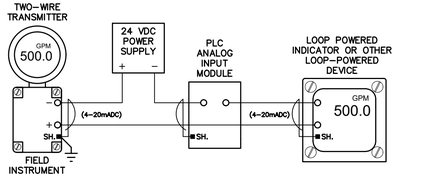
1. THE PREFERRED CONTROL VOLTAGES ARE 24 VAC AND 24 VDC FOR SAFETY CONSIDERATIONS.
2. 120 VAC MAY BE USED FOR CONTROL WHERE NECESSARY.
3. 24 VDC SHOULD BE USED INSIDE CABINETS AND WHERE THE POSSIBILITY OF INDUCTIVE COUPLING WILL PRODUCE ERRONEOUS SIGNALS.
4. CONTROL CIRCUITS SHALL BE PROPERLY FUSED.
5. 4-20 ma EXTERNAL LOOPS SHOULD BE FUSED WITH A SERIES 217,0.032A FAST ACTING FUSE.

CONTROL DIAGRAM SYMBOLS

NOTE:
ALL CONTROL SYMBOLS ARE DRAWN ASSUMING DEENERGIZED CIRCUITS, EMPTY TANKS, UNPRESSURIZED LINES, ETC.

OPEN ON INCREASE	CLOSE ON INCREASE	
		PRESSURE SWITCH
		LEVEL SWITCH
		FLOW SWITCH
		TEMPERATURE SWITCH
		SOLENOID VALVE
NORMALLY CLOSED	**NORMALLY OPEN**	
		PUSH BUTTON
		INSTANTANEOUS CONTACT
		TIMED CLOSE CONTACT
		TIMED OPEN CONTACT
		LIMIT SWITCH
XO / OX		SELECTOR SWITCH: QUANTITY OF ARROWS INDICATES NUMBER OF POSITIONS. XO INDICATES UPPER CONTACT CLOSED IN LEFT POSITION AND OPEN IN RIGHT POSITION

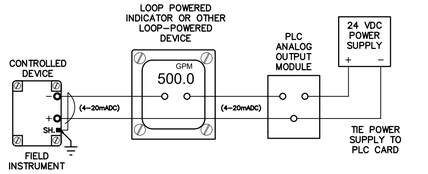
TYPICAL 4-20mA ANALOG INPUT LOOP



NOTE:

LOOP FAN OUT CONSIDERATIONS MUST BE EVALUATED. ACTUAL WIRING CONNECTION AT PLC MAY VARY DEPENDING ON DC SUPPLY AND PLC AI CARD WIRING ARRANGEMENT. OTHER LOOP WIRING ARRANGEMENT MAY BE REQUIRED (E.G. 3 WIRE, 4 WIRE, ETC.) DEPENDING ON INSTRUMENT TYPE.

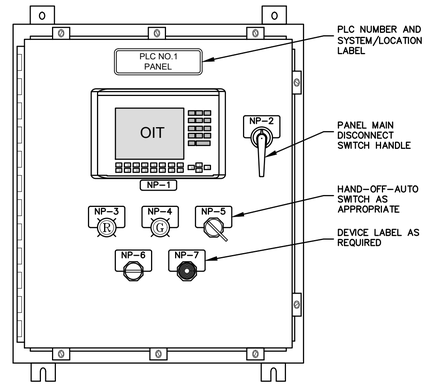
TYPICAL 4-20mA ANALOG OUTPUT LOOP



NOTE:

LOOP FAN OUT CONSIDERATIONS MUST BE EVALUATED. ACTUAL WIRING CONNECTION AT PLC MAY VARY DEPENDING ON DC SUPPLY AND PLC AO CARD WIRING ARRANGEMENT. OTHER LOOP WIRING ARRANGEMENT MAY BE REQUIRED (E.G. 3 WIRE, 4 WIRE, ETC.) DEPENDING ON INSTRUMENT TYPE.

PLC PANEL ELEVATION



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

INSTRUMENTATION SYMBOLS WITH ABBREVIATIONS

AE	ANALYTICAL ELEMENT	PB	PUSH BUTTON SWITCH
AIT	ANALYTICAL INDICATOR TRANSMITTER	PIT	PRESSURE INDICATOR TRANSMITTER
FE	FLOW ELEMENT	PT	PRESSURE TRANSMITTER
FIT	FLOW INDICATOR TRANSMITTER	PS	PRESSURE SWITCH
FT	FLOW TRANSMITTER	SC	SPEED CONTROLLER (POTENTIOMETER)
FLS	FLOW SWITCH	SD	SMOKE DETECTOR
FS	FLOAT SWITCH	SSL	ZERO SPEED DETECTOR
GS	GAS SENSOR	SV	SOLINOID VALVE
HOA	HAND-OFF-AUTO SWITCH	TE	TEMPERATURE ELEMENT
HD	HEAT DETECTOR	TQS	TORQUE LIMIT SWITCH
IA	INTRUSION ALARM	TIT	TEMPERATURE INDICATOR TRANSMITTER
IR	CURRENT MONITOR RELAY	TS	TEMPERATURE SWITCH
IS	CURRENT SENSOR	TT	TEMPERATURE TRANSMITTER
LE	LEVEL ELEMENT	VS	VIBRATION SWITCH
LIT	LEVEL INDICATOR TRANSMITTER	ZS	PROXIMITY SWITCH
LKS	LEAK SENSOR	FS	FIELD MOUNTED INSTRUMENT: NEW DENOTES FURNISHED & INSTALLED UNDER BASE BID
LS	LEVEL SWITCH	FS	FIELD MOUNTED INSTRUMENT: EXISTING
LSH	LEVEL SWITCH HIGH	FS	VENDER SUPPLIED INSTRUMENT INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
LSL	LEVEL SWITCH LOW		
LT	LEVEL TRANSMITTER		
MOV	MOTORIZED OPERATED VALVE		
MTD	METHANE DETECTOR		

FS 101 — INSTRUMENT IDENTIFICATION LETTER & IDENTIFICATION #; DESTINATION & LOOP IDENTIFICATION #; TO PLC# DO-XXX

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NO.	REVISIONS	APP'D

ISSUE FOR
APPROVAL — Date 5/21/21 — By TGP
CONSTRUCTION — Date 6/28/21 — By TGP
RECORD DRAWING — Date - — By -

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. -
Project No. 2509
Dwg. ID 2509-I1-GN
Scale AS SHOWN

NEW HAMPSHIRE — STATE OF — TIMOTHY GLENN CHRISTENSEN — 9879 — REGISTERED PROFESSIONAL ENGINEER — 6-28-21

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GENERAL ELECTRICAL NOTES & LEGEND

PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO I1

SHEET 111 OF 122

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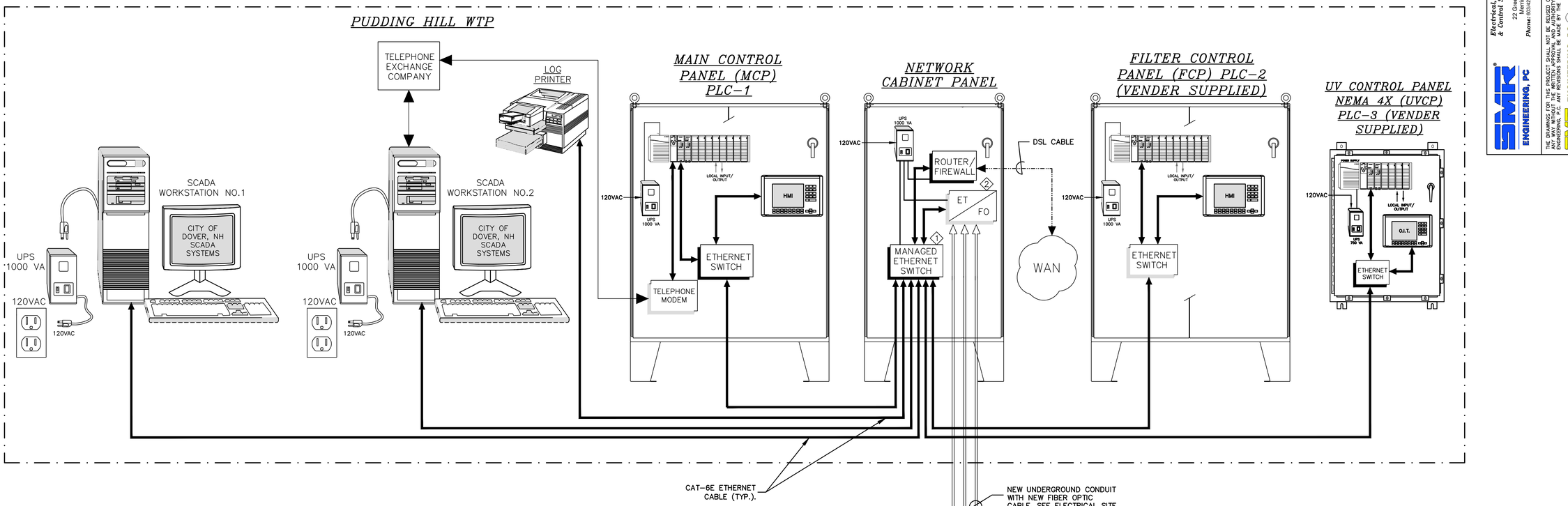

COMMUNICATIONS LEGEND

- NEW DIALUP ANALOG TELEPHONE LINE
- ANALOG/DIGITAL PHONE LINE OR WIRELESS BROADBAND
- NEW FIBER OPTIC CABLING
- NEW ETHERNET (CAT-5E) CABLE
- NEW HIGH SPEED INTERNET (DSL)

ABBREVIATIONS LIST:

CPU	CENTRAL PROCESS UNIT
ET/FO	ETHERNET/FIBER OPTIC CONVERTER
FO/ET	FIBER OPTIC/ETHERNET CONVERTER
HMI	HUMAN-MACHINE INTERFACE
I/O	INPUT - OUTPUT
OIT	OPERATOR INTERFACE TERMINAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
PS	POWER SUPPLY

KEY NOTES:

1. PROVIDE MANAGED 16 CHANNEL ETHERNET SWITCH TO BE MOUNTED INSIDE NETWORK CABINET PANEL/ENCLOSURE AS REQUIRED (UPS POWERED).
2. NEW STRATIX SWITCH MANAGED ETHERNET-FIBER CONVERTER INSTALLED INSIDE NETWORK CABINET PANEL. PROVIDE UPS 120 VAC POWER AS REQUIRED.
3. DISCONNECT AND REMOVE EXISTING YAGI RADIO ANTENNA ASSEMBLY, CONDUIT, CABLE, SURGE ARRESTOR, RADIO MODEM AT EXISTING STATION AS REQUIRED.

CITY OF DOVER, NH
PUDDING HILL WTP SCADA ARCHITECTURE

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ISSUE FOR
APPROVAL Date 5/21/21 By TGP
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Project No. 2509
Dwg. ID 2241-12-BD
Scale AS SHOWN

NEW HAMPSHIRE STATE LICENSED PROFESSIONAL ENGINEER RALPH SADLER 9769 6-28-21

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SCADA BLOCK DIAGRAM
PUDDING HILL WATER TREATMENT FACILITY (FILE NO. P21-31)
CITY OF DOVER, NEW HAMPSHIRE

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DWG NO I2
SHEET 112 OF 122

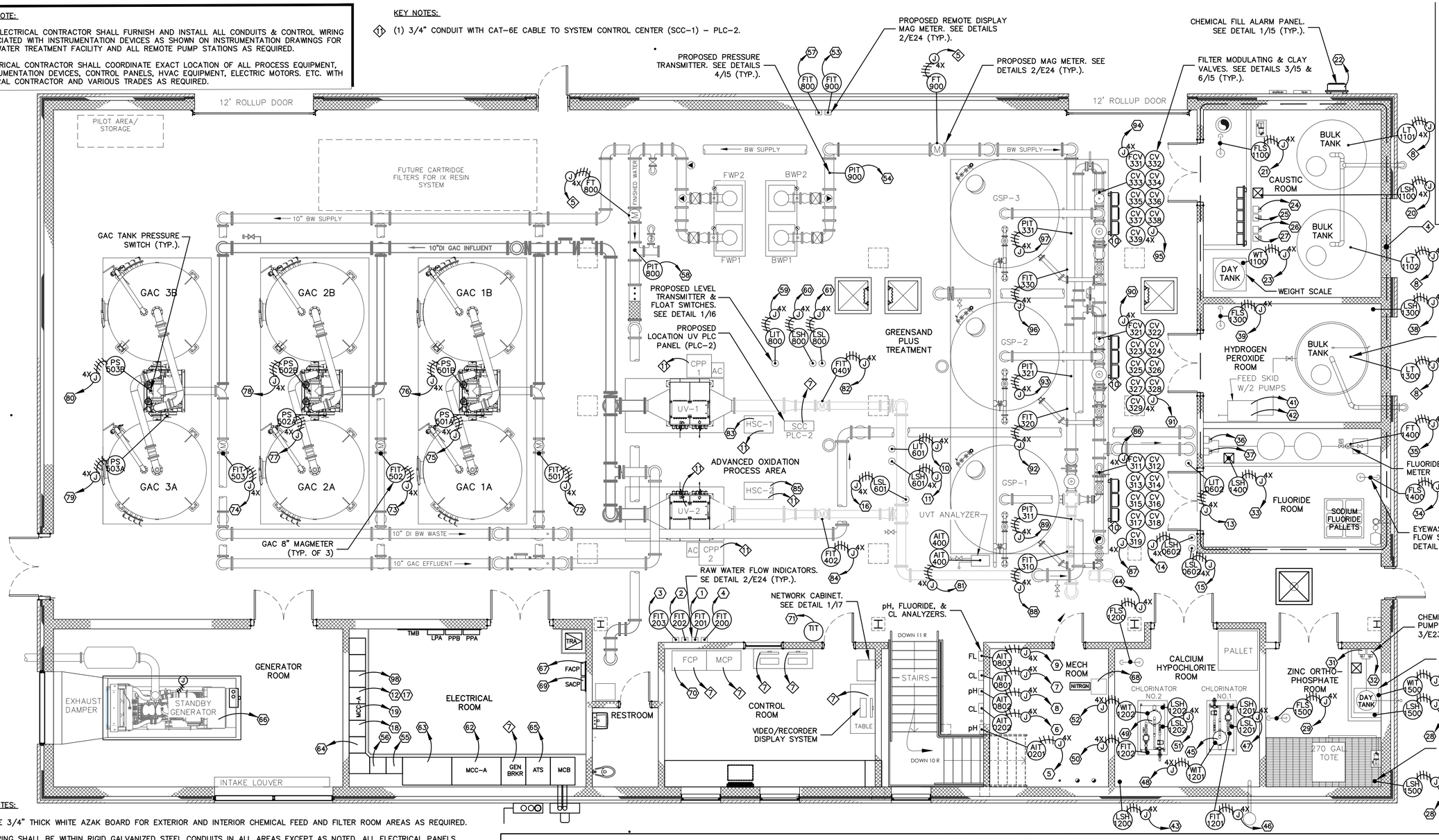
FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-I2-BD.dwg Jul 09, 2021 - 3:10pm

GENERAL NOTE:

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS & CONTROL WIRING ASSOCIATED WITH INSTRUMENTATION DEVICES AS SHOWN ON INSTRUMENTATION DRAWINGS FOR THE WATER TREATMENT FACILITY AND ALL REMOTE PUMP STATIONS AS REQUIRED.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL PROCESS EQUIPMENT, INSTRUMENTATION DEVICES, CONTROL PANELS, HVAC EQUIPMENT, ELECTRIC MOTORS. ETC. WITH GENERAL CONTRACTOR AND VARIOUS TRADES AS REQUIRED.

KEY NOTES:

1. (1) 3/4" CONDUIT WITH CAT-6E CABLE TO SYSTEM CONTROL CENTER (SCC-1) – PLC-2.



KEY NOTES:

1. PROVIDE 3/4" THICK WHITE AZAK BOARD FOR EXTERIOR AND INTERIOR CHEMICAL FEED AND FILTER ROOM AREAS AS REQUIRED.
2. ALL WIRING SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS IN ALL AREAS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. EXCEPT FOR CHEMICAL FEED ROOMS, PROCESS AREAS, SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL WIRING IN THE PROCESS AREA SHALL BE RIGID GALVANIZED STEEL CONDUIT, AND ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC SHALL BE PROVIDED WITH NEMA 4X STAINLESS STEEL METAL CONSTRUCTION UNLESS OTHERWISE NOTED. EMT CONDUIT SHALL BE ALLOWED IN THE FINISHED AREAS ABOVE HUNG CEILING ONLY. REFER TO SPECIFICATIONS FOR CONDUIT TYPE AND APPLICATION.
3. ALL WIRING IN THE CHEMICAL STORAGE & FEED ROOMS SHALL BE WITHIN PVC SCHEDULE 40 RACEWAY SYSTEM, EXCEPT FOR ANALOG SIGNAL WIRING (4-20MADC) TO BE WITHIN PVC COATED RGS CONDUIT AS NOTED. ALL ELECTRICAL ENCLOSURES, PULL BOXES, J-BOXES, ETC. SHALL BE NEMA 4X NON-METALIC CONSTRUCTION UNLESS OTHERWISE NOTED.
4. ALL WIRING SHALL BE WITHIN PVC CONDUITS IN ALL CHEMICAL FEED AND STORAGE AREAS EXCEPT FOR ANALOG SIGNAL WIRING (4-20MADC) TO BE WITHIN PVC COATED RGS CONDUIT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, JUNCTION BOXES, ETC. SHALL BE NONMETALLIC 4X CONSTRUCTION. REFER TO SPECIFICATIONS FOR CONDUIT TYPE AND APPLICATION.
5. (1) 3/4" CONDUIT WITH VENDER SUPPLIED CABLE FROM MAG METER TO REMOTE FLOW INDICATOR TRANSMITTER.
6. (1) 1" CONDUIT WITH TELEPHONE CABLE TO TMB.
7. (1) 1" CONDUIT WITH CAT-6E CABLE TO NETWORK CABINET PANEL.
8. (1) 3/4" CONDUIT WITH VENDER SUPPLIED CABLE FROM TRANSMITTER TO CHEMICAL FILL PANEL.
9. REFER TO PROCESS SHEETS FOR EXACT LOCATION OF FILTER VALVES.
10. PROPOSED LOCATION OF POWER & SIGNAL NEMA 4X JUNCTION BOXES FOR EACH FILTER VALVES AND DEVICES (TYP OF 6 LOCATIONS). SEE DETAIL 1/E26.

LOOP DESTINATION SCHEDULE

1 TO MCP AI-100	8 TO MCP AI-263	14 TO MCP DI-122	19 TO MCP DO-140, DI-141,142 DI-143, AO-144	24 TO MCP DO-151, DI-152,154 AO-153	28 TO MCP DI-167	34 TO MCP DI-179	40 NOT USED	46 TO MCP AI-202	54 TO MCP AI-216	60 TO MCP DI-236	64 TO MCP DO-254 DI-255,256 DI-257,259, DI-260,261 AO-258	72 TO MCP AI-278	80 TO MCP AI-286	87 TO PLC-3 LOOPS #'S 305 - 349	94 TO MCP DI-404, DI-405,406 AO-407, AI-408
2 TO MCP AI-101	9 TO MCP AI-264	15 TO MCP DI-123		25 TO MCP DO-155, DI-156, AO-157	29 TO MCP DI-168	35 TO MCP AI-180	41 TO PLC-2 DO-214 DI-215, AO-216	47 TO MCP DI-203,204	55 TO MCP DO-217 DI-218,219 DI-220,222 AO-221	61 TO MCP AI-237		73 TO MCP AI-279	81 TO PLC-2 AI-202,203	88 TO PLC-3 AI-350	95 TO PLC-3 LOOPS #'S 409 - 453
3 TO MCP AI-103	10 TO MCP AI-109	16 TO MCP DI-111	20 TO MCP DI-146		30 TO MCP AI-169	36 TO MCP DO-184 DI-185,187 AO-186	42 TO PLC-2 DO-217 DI-218, AO-219	48 TO MCP AI-205		62 TO MCP DO-238 DI-239,240 DI-241,243, DI-244,245 AO-242	66 TO MCP DI-268,269	74 TO MCP AI-280	82 TO PLC-2 AI-204	89 TO PLC-3 AI-351	
4 TO MCP AI-104	11 TO MCP DI-110	17 TO MCP DO-128, DI-129,130 DI-131, AO-132	21 TO MCP DI-147		31 TO MCP DO-170 DI-171, AO-172	37 TO MCP DO-188 DI-189, AO-190	43 TO MCP DI-196	49 TO MCP DO-206, DI-207,209 AO-208	56 TO MCP DO-225 DI-226,227 DI-228,230, DI-231 AO-229	63 TO MCP DO-246 DI-247,248 DI-249,251, DI-252,253 AO-250	67 TO MCP DI-270	75 TO MCP DI-281	83 TO PLC-2 AO-205, DI-206,207 AO-208	90 TO MCP DI-352, DI-353,354 AO-355, AI-356	96 TO PLC-3 AI-454
5 TO MCP AI-106	12 TO MCP DO-116, DI-117,118 DI-119, AO-120		22 TO MCP DI-148,149 AI-194	26 TO MCP DO-159, DI-160 AO-161	32 TO MCP DO-174 DI-175, AO-176	38 TO MCP DI-192	44 TO MCP DI-197	50 TO MCP AI-210	57 TO MCP DI-233	68 TO MCP DI-271	76 TO MCP DI-282	84 TO PLC-2 AI-209	91 TO PLC-3 LOOPS #'S 357 - 401	97 TO PLC-3 AI-455	
6 TO MCP AI-107		18 TO MCP DO-134, DI-135,136 DI-137, AO-138	23 TO MCP AI-150	27 TO MCP DO-163, DI-164 AO-165	33 TO MCP DI-178	39 TO MCP DI-193	45 TO MCP DO-198 DI-199,201 AO-200	51 TO MCP DI-211,212	58 TO MCP AI-234	69 TO MCP DI-272	77 TO MCP DI-283	85 TO PLC-2 DO-210, DI-211,212 AO-213	92 TO PLC-3 AI-402	98 TO MCP DO-456, DI-457,458	
7 TO MCP AI-262	13 TO MCP AI-121							52 TO MCP AI-213	59 TO MCP AI-235	70 TO MCP AI-273,274	78 TO MCP DI-284	86 TO PLC-3 DI-300, DI-301,302 AO-303, AI-304	93 TO PLC-3 AI-403		
								53 TO MCP AI-215		71 TO MCP AI-275	79 TO MCP DI-285				

WATER TREATMENT FACILITY UPPER LEVEL INSTRUMENTATION PLAN

SCALE: 3/16"=1'-0"

1 / I3

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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SMR ENGINEERING, PC

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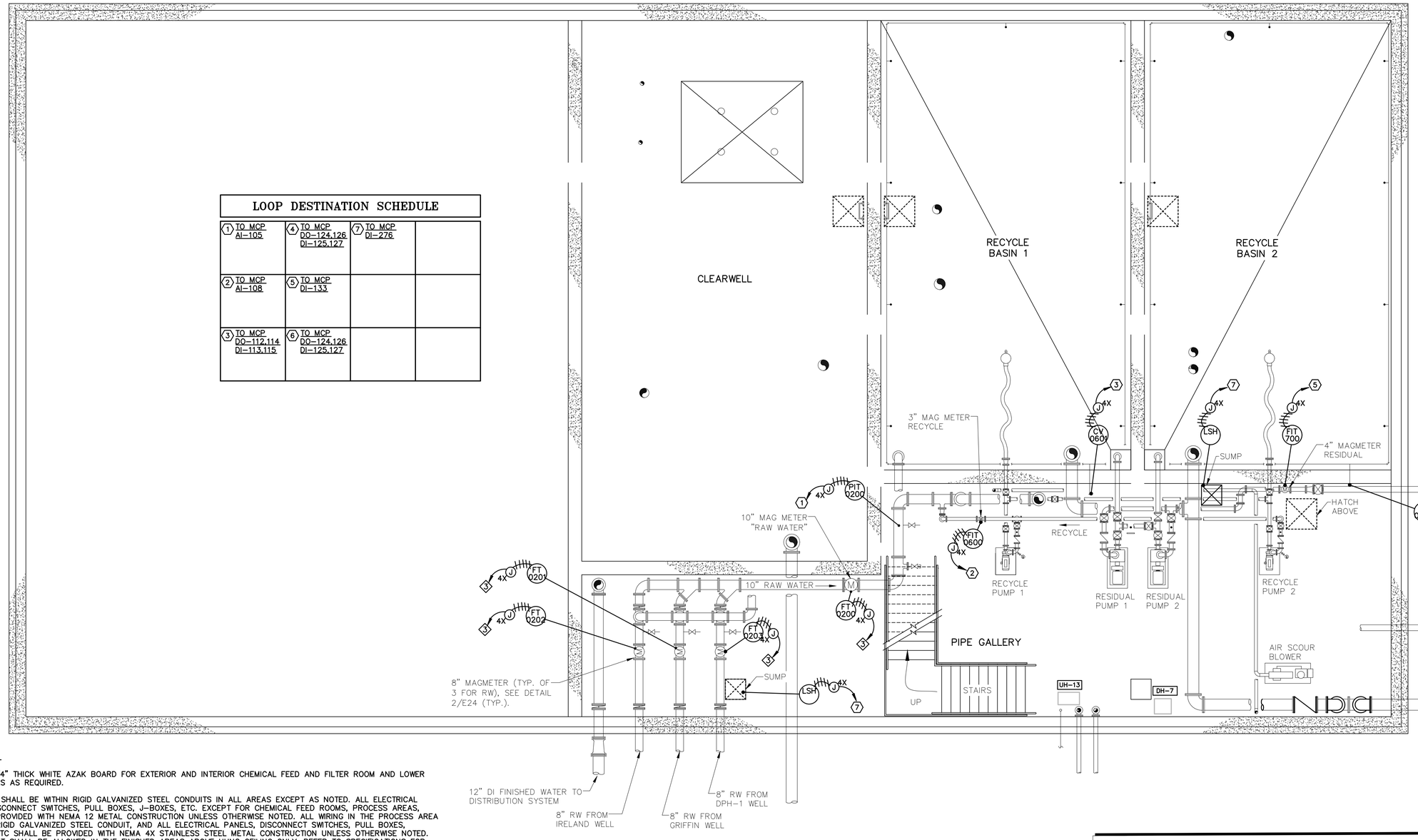
NO.	REVISIONS	APP'D	Date

LOOP DESTINATION SCHEDULE			
① TO MCP AI-105	④ TO MCP DO-124,126 DI-125,127	⑦ TO MCP DI-276	
② TO MCP AI-108	⑤ TO MCP DI-133		
③ TO MCP DO-112,114 DI-113,115	⑥ TO MCP DO-124,126 DI-125,127		



KEY NOTES:

① PROVIDE 3/4" THICK WHITE AZAK BOARD FOR EXTERIOR AND INTERIOR CHEMICAL FEED AND FILTER ROOM AND LOWER LEVEL AREAS AS REQUIRED.

② ALL WIRING SHALL BE WITHIN RIGID GALVANIZED STEEL CONDUITS IN ALL AREAS EXCEPT AS NOTED. ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC. EXCEPT FOR CHEMICAL FEED ROOMS, PROCESS AREAS, SHALL BE PROVIDED WITH NEMA 12 METAL CONSTRUCTION UNLESS OTHERWISE NOTED. ALL WIRING IN THE PROCESS AREA SHALL BE RIGID GALVANIZED STEEL CONDUIT, AND ALL ELECTRICAL PANELS, DISCONNECT SWITCHES, PULL BOXES, J-BOXES, ETC SHALL BE PROVIDED WITH NEMA 4X STAINLESS STEEL METAL CONSTRUCTION UNLESS OTHERWISE NOTED. EMT CONDUIT SHALL BE ALLOWED IN THE FINISHED AREAS ABOVE HUNG CEILING ONLY. REFER TO SPECIFICATIONS FOR CONDUIT TYPE AND APPLICATION.

③ (1) 3/4" CONDUIT WITH VENDER SUPPLIED CABLE FROM MAG METER TO REMOTE FLOW INDICATOR TRANSMITTER ON UPPER LEVEL.

GENERAL NOTE:

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS & CONTROL WIRING ASSOCIATED WITH INSTRUMENTATION DEVICES AS SHOWN ON INSTRUMENTATION DRAWINGS FOR THE WATER TREATMENT FACILITY AND ALL REMOTE PUMP STATIONS AS REQUIRED.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL PROCESS EQUIPMENT, INSTRUMENTATION DEVICES, CONTROL PANELS, HVAC EQUIPMENT, ELECTRIC MOTORS. ETC. WITH GENERAL CONTRACTOR AND VARIOUS TRADES AS REQUIRED.

WATER TREATMENT FACILITY LOWER LEVEL PINSTRUMENTATION PLAN (1/14)

SCALE: 3/16"=1'-0"

0 4' 8' 12'

SCALE: 3/16" = 1'-0"

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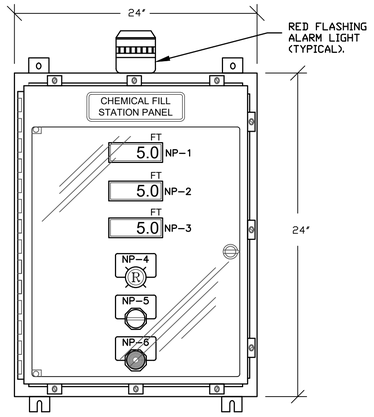


NEMA 4X S.S. ENCLOSURE (TYP.)

NOTE: PROVIDE LOCKING HASP ON DOOR

TYPICAL PANEL NAMEPLATE SCHEDULE:

NP-1	TANK LEVEL INDICATOR 3-1/2" LARGE DIGIT INDICATOR
NP-2	TANK LEVEL INDICATOR 3-1/2" LARGE DIGIT INDICATOR
NP-3	TANK LEVEL INDICATOR 3-1/2" LARGE DIGIT INDICATOR
NP-4	TANK HIGH LEVEL INDICATOR LIGHT
NP-5	ALARM RESET SILENCE
NP-6	AUDIBLE ALARM HORN

TYPICAL CONTROL PANEL SYMBOLS:

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

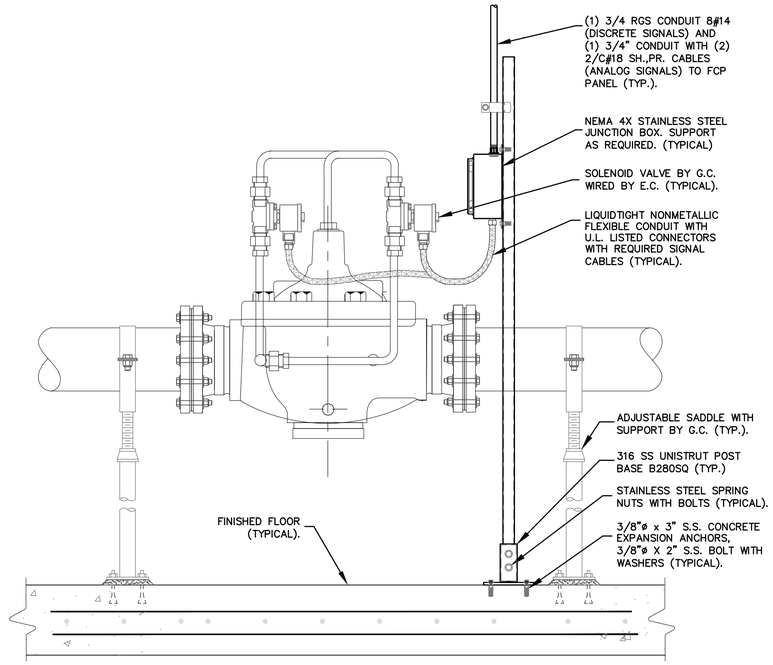
GPM 150.0 — LCD, 3-1/2 LARGE DIGIT INDICATOR

PUSHBUTTON STATION – MOMENTARY

SONALERT

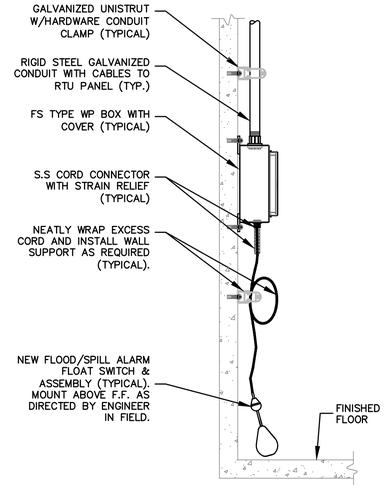
CHEMICAL FILL ALARM PANEL DETAIL (TYP.) 1/I5

SCALE: NONE



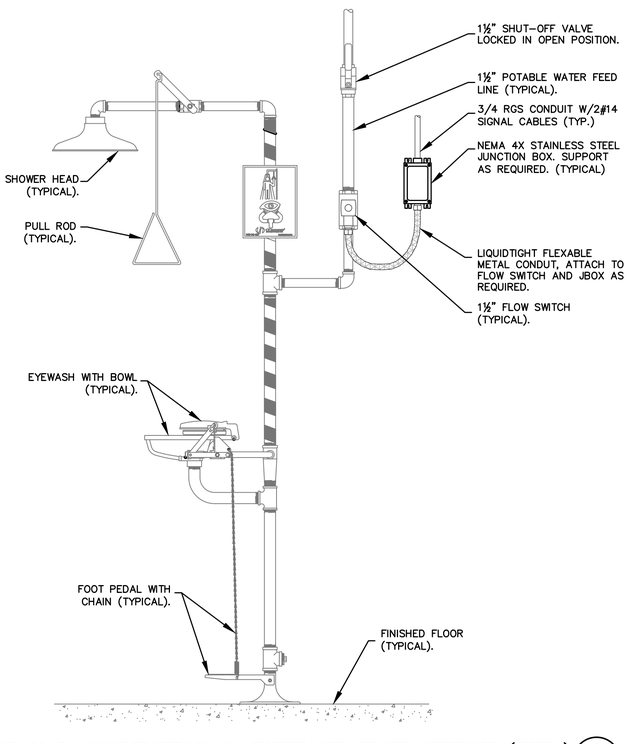
SIGNAL CONNECTION @ FILTER CLAY VALVE (TYP.) 3/I5

SCALE: NONE



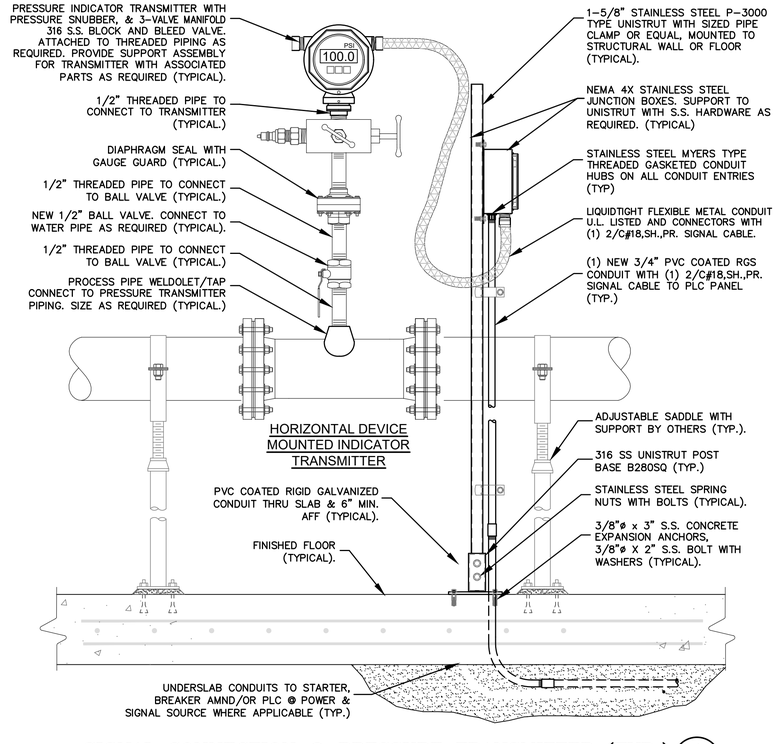
SIGNAL CONNECTION @ FLOAT SWITCH (TYP.) 5/I5

SCALE: NONE



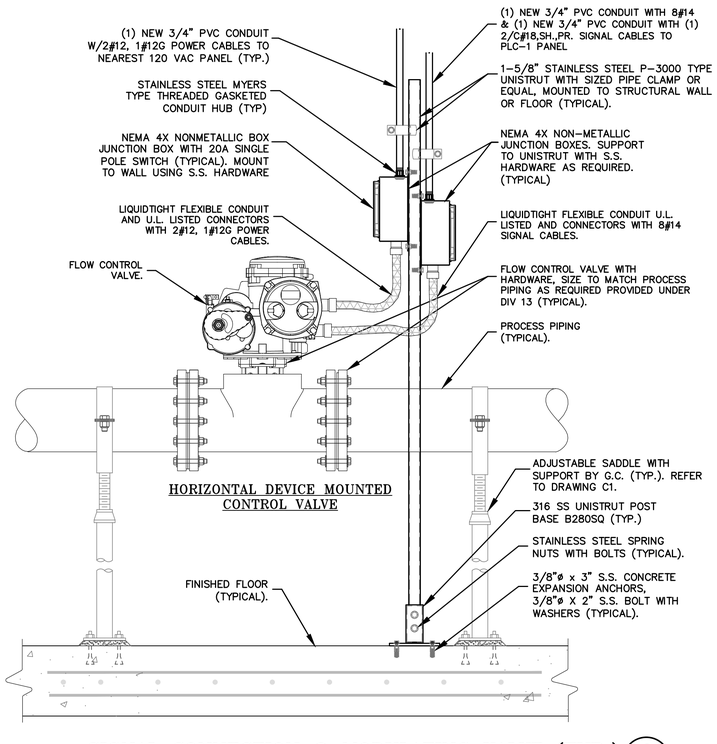
SIGNAL CONNECTION @ EYEWASH FLOW SWITCH (TYP.) 2/I5

SCALE: NONE



SIGNAL CONNECTION @ PRESSURE TRANSMITTER (TYP.) 4/I5

SCALE: NONE



SIGNAL CONNECTION @ MODULATING VALVE (TYP.) 6/I5

SCALE: NONE

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NO.	REVISIONS	APP'D	Date
△	RECORD DRAWING	By	-
△	CONSTRUCTION	By TGP	Date 6/28/21
△	APPROVAL	By TGP	Date 5/21/21
△	ISSUE FOR		

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2298-I5-DTLS
Scale AS SHOWN

NEW HAMPSHIRE STATE OF — RANDALL R. SADECKI — 15757 — REGISTERED PROFESSIONAL ENGINEER
6-28-21

UNDERWOOD engineers
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INSTRUMENTATION DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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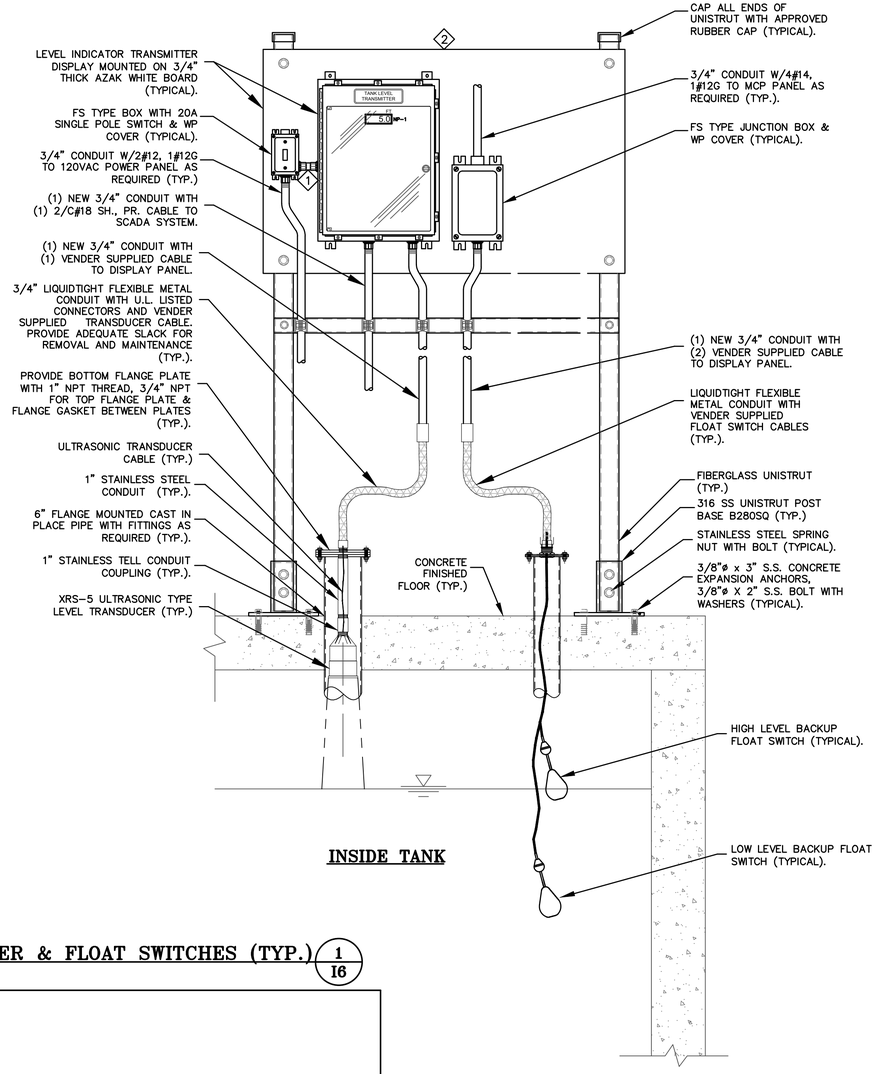
DWG NO I5 | SHEET 115 OF 122

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-I5-I7-DTLS.dwg Jul 09, 2021 - 3:10pm

KEY NOTES:

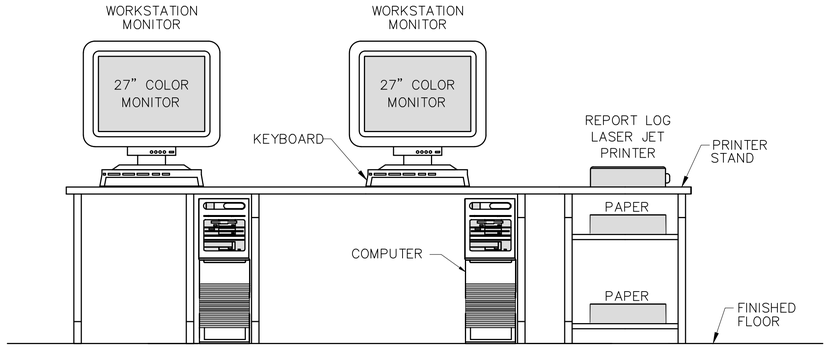
1. 3/4" CONDUIT W/2#12, 1#12G TO SERVICE SWITCH AS REQUIRED (TYP.)
2. CAREFULLY COORDINATE LOCATION OF TRANSMITTERS, FLANGES THRU FLOOR, AND MOUNTING BOARD WITH TRANSMITTERS NAD SWITCHES WITH OWNER/ENGINEER IN FIELD AS REQUIRED.



INSIDE TANK

SIGNAL CONNECTION @ TANK LEVEL TRANSMITTER & FLOAT SWITCHES (TYP.) 1/I6

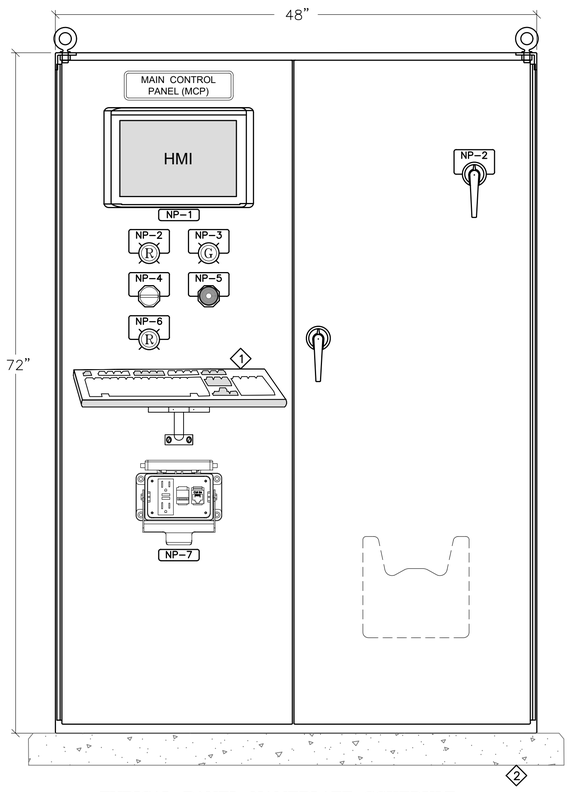
SCALE: NONE



SCADA WORKSTATION COMPUTER ELEVATION (TYP.) 2/I6

SCALE: NONE

NEMA 4X ENCLOSURE



TYPICAL PANEL NAMEPLATE SCHEDULE:

NP-1	HMI COMPUTER
NP-2	COMMUNICATION FAIL
NP-3	POWER ON
NP-4	RESET
NP-5	SONALERT AUDIBLE ALARM HORN
NP-6	CRITICAL ALARM FLASHING LIGHT/BUTTON
NP-7	PANEL INTERFACE CONNECTOR MODULE WITH COVER (INCLUDES 120 VAC 20 AMP GFCI RECEPTACLE, USB PORT, & RJ45 JACK)

TYPICAL CONTROL PANEL SYMBOLS:

- 150.0 (GPM) — 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

KEY NOTES:

1. INTEGRATED PANEL MOUNTED KEYBOARD WITH USB CONNECTION PORT (TYP.).
2. 4" THICK HOUSEKEEPING PAD. SEE DETAIL 3/E121.

MAIN CONTROL PANEL (MCP) (TYP.) 3/I6

SCALE: NONE

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ISSUE FOR	NO.	REVISIONS	APP'D	Date
APPROVAL	1	-	-	-
				By -
				Date 5/21/21
				By TGP
CONSTRUCTION	2	-	-	-
				Date 6/28/21
				By TGP
RECORD DRAWING	3	-	-	-
				Date -
				By -

Drawn/Chk. JWC
Designed JWC
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Book No. -
Project No. 2509
Dwg. ID 2298-I6-DTLS
Scale AS SHOWN

NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER TIMOTHY G. PUTNAM 6-28-21

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INSTRUMENTATION DETAILS

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
I6	116 OF 122

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-I5-I7-DTLS.dwg Jul 09, 2021 - 3:10pm

KEY NOTES:

1. REFER TO SPECIFICATIONS FOR ALL COMPONENTS BEING INSTALLED INSIDE CABINET (TYP.).
2. 4" THICK HOUSEKEEPING PAD. SEE DETAIL 3/E121.

NETWORK CABINET PANEL ELEVATION (TYP.) 1/I7

SCALE: NONE

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NO.	REVISIONS	APP'D

DESCRIPTION					FUNCTION	HARDWARE														SOFTWARE																								REMARKS
						WIRE			INPUT/OUTPUT DIGITAL		INPUT/OUTPUT ANALOG			OUTPUT FUNCT. DIGITAL			OUTPUT FUNCT. ANALOG	STATUS			LOGGING					SCHEDULING			APPLICATION PROGRAM			ALARMS									MISC.			
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 – PUDDING HILL TREATMENT FACILITY PROJECT																																											
MAIN CONTROL PANEL (MCP) @ WTF																																											
100	MCP	FIT–0201		Griffin Well – Flow Indicator Transmitter	Griffin Well – Influent Flow			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
101	MCP	FIT–0202		Ireland Well – Flow Indicator Transmitter	Ireland Well – Influent Flow			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
102	MCP	LT–202A		Ireland Well – Level Transmitter	Ireland Well – Level			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
103	MCP	FIT–0203		DPH–1 Well – Flow Indicator Transmitter	DPH–1 Well – Influent Flow			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
104	MCP	FIT–0200		Raw Water Flow Indicator Transmitter	Combined Raw Water – Flow			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
105	MCP	PIT–0200		Raw Water – Pressure Indicator Transmitter	Raw Water – Pressure			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
106	MCP	AIT–0201		pH Analyzer – Raw Water Pre–Treated	Raw Water – pH Level			X			X							X	X	X	X	X	X					X				X	X	X	X	X	X	X	X	X	X	
107	MCP	AIT–0202		Chlorine Analyzer – Raw Water Pre–Treated	Raw Water – Cl Level			X			X							X	X	X	X	X	X	X	X			X				X	X	X	X	X	X	X	X	X	X	
108	MCP	FIT–0600		Recycle Water – Flow Indicator Transmitter	Recycled Water – Flow			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
109	MCP	LIT–0601		Recycle Tank No.1 – Level Transmitter	Recycle Tank #1 – Level			X			X							X	X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
110	MCP	LSH–0601		Recycle Tank No.1 – Backup Level Switch	RecycleT ank #1 – Backup High Level Alarm	X				X											X	X	X				X				X				X	X	X				
111	MCP	LSL–0601		Recycle Tank No.1 – Backup Level Switch	RecycleT ank #1 – Backup Low Level Alarm	X				X											X	X	X				X					X			X	X	X				
112	MCP	CV–0601		Spray Water – Motor Control Valve	Valve #0601 – Open Signal	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
113	MCP	CV–0601		Spray Water – Motor Control Valve	Valve #0601– Open Status	X				X								X	X	X						X		X		X					X							
114	MCP	CV–0601		Spray Water – Motor Control Valve	Valve #0601 – Close Signal	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
115	MCP	CV–0601		Spray Water – Motor Control Valve	Valve #0601 – Close Status	X				X								X	X	X						X		X							X							
116	MCP	RCP–1	MCC–A	Recycle Water Pump Motor No.1 – VFD	Pump Motor #1 – Start/Stop	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
117	MCP	RCP–1	MCC–A	Recycle Water Pump Motor No.1 – VFD	Pump Motor #1 – Status	X				X								X	X	X						X		X							X							
118	MCP	RCP–1	MCC–A	Recycle Water Pump Motor No.1 – VFD	Pump Motor #1– Fail Alarm	X				X											X	X	X							X				X	X	X					
119	MCP	RCP–1	MCC–A	Recycle Water Pump Motor No.1 – VFD	Pump Motor #1 – Not in Auto	X				X											X	X	X							X		X			X	X					
120	MCP	RCP–1	MCC–A	Recycle Water Pump Motor No.1 – VFD	Pump Motor #1 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
121	MCP	LIT–0602		Recycle Tank No.2 – Level Transmitter	Recycle Tank #2 – Level			X				X							X	X	X	X	X	X	X			X				X	X			X	X	X	X		X	
122	MCP	LSH–0602		Recycle Tank No.2 – Backup Level Switch	RecycleTank #2 – Backup High Level Alarm	X				X											X	X	X									X			X	X	X				
123	MCP	LSL–0602		Recycle Tank No.2 – Backup Level Switch	RecycleTank #2 – Backup Low Level Alarm	X				X											X	X	X								X				X	X	X				
124	MCP	CV–0602		Spray Water – Motor Control Valve	Valve #0602 – Open Signal	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
125	MCP	CV–0602		Spray Water – Motor Control Valve	Valve #0602– Open Status	X				X								X	X	X						X		X							X							
126	MCP	CV–0602		Spray Water – Motor Control Valve	Valve #0602 – Close Signal	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
127	MCP	CV–0602		Spray Water – Motor Control Valve	Valve #0602 – Close Status	X				X								X	X	X						X		X							X							
128	MCP	RCP–2	MCC–A	Recycle Water Pump Motor No.2 – VFD	Pump Motor #2 – Start/Stop	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
129	MCP	RCP–2	MCC–A	Recycle Water Pump Motor No.2 – VFD	Pump Motor #2 – Status	X				X								X	X	X						X		X							X							
130	MCP	RCP–2	MCC–A	Recycle Water Pump Motor No.2 – VFD	Pump Motor #2– Fail Alarm	X				X											X	X	X							X				X	X	X					
131	MCP	RCP–2	MCC–A	Recycle Water Pump Motor No.2 – VFD	Pump Motor #2 – Not in Auto	X				X											X	X	X							X		X			X	X					
132	MCP	RCP–2	MCC–A	Recycle Water Pump Motor No.2 – VFD	Pump Motor #2 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
133	MCP	FIT–0700		Residuals Water – Flow Indicator Transmitter	Residuals Water – Flow			X				X							X	X	X	X	X	X	X		X	X			X	X			X	X	X	X		X	
134	MCP	RSP–1	MCC–A	Residuals Water Pump Motor No.1 – VFD	Pump Motor #1 – Start/Stop	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
135	MCP	RSP–1	MCC–A	Residuals Water Pump Motor No.1 – VFD	Pump Motor #1 – Status	X				X								X	X	X						X		X							X							
136	MCP	RSP–1	MCC–A	Residuals Water Pump Motor No.1 – VFD	Pump Motor #1– Fail Alarm	X				X											X	X	X							X				X	X	X					
137	MCP	RSP–1	MCC–A	Residuals Water Pump Motor No.1 – VFD	Pump Motor #1 – Not in Auto	X				X											X	X	X							X		X			X	X					
138	MCP	RSP–1	MCC–A	Residuals Water Pump Motor No.1 – VFD	Pump Motor #1 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
139	MCP			Not Used	Not Used																																					
140	MCP	RSP–2	MCC–A	Residuals Water Pump Motor No.2 – VFD	Pump Motor #2 – Start/Stop	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
141	MCP	RSP–2	MCC–A	Residuals Water Pump Motor No.2 – VFD	Pump Motor #2 – Status	X				X								X	X	X						X		X							X							
142	MCP	RSP–2	MCC–A	Residuals Water Pump Motor No.2 – VFD	Pump Motor #2– Fail Alarm	X				X											X	X	X							X				X	X	X					
143	MCP	RSP–2	MCC–A	Residuals Water Pump Motor No.2 – VFD	Pump Motor #2 – Not in Auto	X				X											X	X	X							X		X			X	X					
144	MCP	RSP–2	MCC–A	Residuals Water Pump Motor No.2 – VFD	Pump Motor #2 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
145	MCP			Not Used	Not Used																																					
146	MCP	LSH–1100	Chem Room	Sodium Hydroxide Area – Float Switch	Chemical Flood – Alarm	X				X											X	X	X							X				X	X	X				
147	MCP	FLS–1100	Chem Room	Sodium Hydroxide Area Eyewash/Shower Flow Switch	Eyewash/Shower – Alarm					X									X	X	X	X	X							X				X	X	X				
148	MCP	LT–1101	Chem Room	Sodium Hydroxide Bulk Tank No.1 – Level Transmitter	Bulk Tank No.1 – Level			X				X							X	X	X	X	X	X	X		X	X			X	X			X	X	X	X		X	
149	MCP	LT–1102	Chem Room	Sodium Hydroxide Bulk Tank No.2 – Level Transmitter	Bulk Tank No.2 – Level			X				X							X	X	X	X	X	X	X		X	X			X	X			X	X	X	X		X	
150	MCP	WT–1100	Chem Room	Sodium Hydroxide Day Tank – Weight Scale Transmitter	Day Tank – Level			X				X							X	X	X	X	X	X	X		X	X			X	X			X	X	X	X		X	
151	MCP	SHP–1	Chem Room	Sodium Hydroxide Pump No.1 – Pre–Treatment	Pump Motor #1 – Start/Stop	X								X					X	X	X	X	X	X	X			X	X			X	X			X					
152	MCP	SHP–1	Chem Room	Sodium Hydroxide Pump No.1 – Pre–Treatment	Pump Motor #1 – Status	X				X									X	X	X						X		X					X							
153	MCP	SHP–1	Chem Room	Sodium Hydroxide Pump No.1 – Pre–Treatment	Pump Motor #1 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
154	MCP	SHP–1	Chem Room	Sodium Hydroxide Pump No.1 – Pre–Treatment	Pump Motor #1– Seal Leak Alarm	X				X											X	X	X							X				X	X	X					
155	MCP	SHP–2	Chem Room	Sodium Hydroxide Pump No.2 – Pre–Treatment – Spare	Pump Motor #2 – Start/Stop	X								X					X	X	X	X	X	X	X			X	X			X	X			X					
156	MCP	SHP–2	Chem Room	Sodium Hydroxide Pump No.2 – Pre–Treatment – Spare	Pump Motor #2 – Status	X				X									X	X	X						X		X					X							
157	MCP	SHP–2	Chem Room	Sodium Hydroxide Pump No.2 – Pre–Treatment – Spare	Pump Motor #2 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
158	MCP			Not Used	Not Used																																					
159	MCP	SHP–3	Chem Room	Sodium Hydroxide Pump No.3 – Post–Treatment	Pump Motor #3 – Start/Stop	X								X					X	X	X	X	X	X	X			X	X			X	X			X					
160	MCP	SHP–3	Chem Room	Sodium Hydroxide Pump No.3 – Post–Treatment	Pump Motor #3 – Status	X				X									X	X	X						X		X					X							
161	MCP	SHP–3	Chem Room	Sodium Hydroxide Pump No.3 – Post–Treatment	Pump Motor #3 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
162	MCP			Not Used	Not Used																																					
163	MCP	SHP–4	Chem Room	Sodium Hydroxide Pump No.4 – Post–Treatment – Spare	Pump Motor #4 – Start/Stop	X								X					X	X	X	X	X	X	X			X	X			X	X			X					
164	MCP	SHP–4	Chem Room	Sodium Hydroxide Pump No.4 – Post–Treatment – Spare	Pump Motor #4 – Status	X				X									X	X	X						X		X					X							
165	MCP	SHP–4	Chem Room	Sodium Hydroxide Pump No.4 – Post–Treatment – Spare	Pump Motor #4 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
166	MCP		Chem Room	Not Used	Not Used																																					
167	MCP	LSH–1500	Chem Room	Zinc Orthophosphate Area – Float Switch	Chemical Flood – Alarm	X				X									X	X	X						X			X				X	X	X				
168	MCP	FLS–1500		Zinc Orthophosphate Area Eyewash/Shower Flow Switch	Eyewash/Shower – Alarm					X									X	X	X						X			X				X	X	X				
169	MCP	WT–1500	Chem Room	Zinc Orthophosphate Day Tank – Weight Scale Xmtr	Day Tank – Level			X				X							X	X	X	X	X	X	X		X	X			X	X			X	X	X	X		X	
170	MCP	ZOP–1	Chem Room	Zinc Orthophosphate Pump No.1 – Primary	Pump Motor #1 – Start/Stop	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
171	MCP	ZOP–1	Chem Room	Zinc Orthophosphate Pump No.1 – Primary	Pump Motor #1 – Status	X				X								X	X	X						X		X							X							
172	MCP	ZOP–1	Chem Room	Zinc Orthophosphate Pump No.1 – Primary	Pump Motor #1 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
173	MCP		Chem Room	Not Used	Not Used																																					
174	MCP	ZOP–2	Chem Room	Zinc Orthophosphate Pump No.2 – Spare	Pump Motor #2 – Start/Stop	X					X				X			X	X	X	X	X	X	X			X	X						X	X	X		X			
175	MCP	ZOP–2	Chem Room	Zinc Orthophosphate Pump No.2 – Spare	Pump Motor #2 – Status	X				X								X	X	X						X		X							X							
176	MCP	ZOP–2	Chem Room	Zinc Orthophosphate Pump No.2 – Spare	Pump Motor #2 – Speed Signal			X					X				X		X	X	X								X	X							X		X	
177	MCP		Chem Room	Not Used	Not Used																																					

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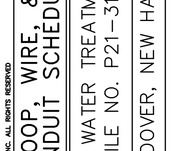
ISSUE FOR		
APPROVAL	By	TGP
Date 5/21/21		
CONSTRUCTION	By	TGP
Date 6/28/21		
RECORD DRAWING	By	–
Date –		
NO.	REVISIONS	APP'D

Drawn/Chk JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509-I8-LSI
Scale AS SHOWN



6-28-21

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LOOP, WIRE, & CONDUIT SCHEDULE

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21-31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO	SHEET
I8	118 OF 122

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| DESCRIPTION | | | | | FUNCTION | HARDWARE | | | | | | | | | | | | | | | | SOFTWARE | | | | | | | | | | | | | | | |

DESCRIPTION					FUNCTION	HARDWARE														SOFTWARE																								REMARKS
						WIRE			INPUT/OUTPUT				OUTPUT FUNCT.			STATUS			LOGGING					SCHEDULING			APPLICATION PROGRAM	ALARMS									MISC.							
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	DIGITAL		ANALOG			DIGITAL	ANALOG				@ 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.	
										DI (DIGITAL INPUT)	DO (DIGITAL OUTPUT)	AI (ANALOG INPUT)	AO (ANALOG OUTPUT)	PULSE – POSITION	START/STOP	OPEN/CLOSE	PACING	MODULATING																													
259	MCP	IWP	MCC–A	Ireland Well Pump – By–Pass	Pump Motor – By–Pass Status	X				X									X	X	X						X				X												
260	MCP	IWP	MCC–A	Ireland Well Pump – By–Pass	Pump Motor – By–Pass O.L. Alarm	X				X												X	X	X											X	X	X						
261	MCP	IWP	MCC–A	Ireland Well Pump	Pump Motor – Motor Over Temperature Alarm	X				X												X	X	X											X	X	X						
262	MCP	AIT–0801		Chlorine Analyzer – Finished Water	Finished Water – Cl Level			X				X							X	X	X	X	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	X	
263	MCP	AIT–0802		pH Analyzer – Finished Water	Finished Water – pH Level			X				X							X	X	X	X	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	X	
264	MCP	AIT–0803		Fluoride Analyzer – Finished Water	Finished Water – Cl Level			X				X							X	X	X	X	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	X	
265	MCP	ATS	ATS	ATS	ATS – Normal Power Status	X				X									X	X	X						X		X														
266	MCP	ATS	ATS	ATS	ATS – Emergency Power Status	X				X									X	X	X						X		X														
267	MCP	ATS	ATS	ATS	ATS – Load Shed Signal	X				X									X	X	X						X		X														
268	MCP	GEN	GEN BRKR	Generator Control Panel	Generator – Status	X				X									X	X	X						X		X														
269	MCP	GEN	GEN BRKR	Generator Control Panel	Generator – Fail Alarm	X				X												X	X	X											X	X	X						
270	MCP	FACP		Building Fire Alarm – FACP	Building – Fire Alarm	X				X												X	X	X											X	X	X						
271	MCP	FSCP		Building Fire Alarm – Fire Supression Panel	Building – Fire Supression Alarm	X				X												X	X	X											X	X	X						
272	MCP	SACP		Building – Security Alarm	Building – Security Alarm	X				X												X	X	X											X	X	X						
273	MCP	FCP		Filter Control Panel	Filter Control Panel – Status	X				X									X	X	X						X		X														
274	MCP	FCP		Filter Control Panel	Filter Control Panel – Fail Alarm	X				X												X	X	X													X	X	X					
275	MCP	TIT	WTP	Temperature Transmitter	Building Temperature							X							X	X	X	X	X	X	X	X		X	X				X	X			X	X	X	X	X	X	
276	MCP	LSH	WTP	Pipe Gallery – Flood Alarm Float Switch	Building Flood – Alarm					X												X	X	X											X			X	X	X				
277	MCP			Not Used	Not Used																																						
278	MCP		FIT–501	GAC Filters No.1A & 1B – Effluent Mag Meter	Filter #1A & 1B – Effluent Flow							X							X	X	X	X	X	X	X	X		X	X			X	X	X		X	X	X	X				X
279	MCP		FIT–502	GAC Filters No.2A & 2B – Effluent Mag Meter	Filter #2A & 2B – Effluent Flow							X							X	X	X	X	X	X	X	X		X	X			X	X	X		X	X	X	X				X
280	MCP		FIT–503	GAC Filters No.3A & 3B – Effluent Mag Meter	Filter #3A & 3B – Effluent Flow							X							X	X	X	X	X	X	X	X		X	X			X	X	X		X	X	X	X				X
281	MCP		PS–501A	GAC Vessel No.1A – Differential Pressure Switch	GAC Vessel #1A – Pressure Alarm	X				X									X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
282	MCP		PS–501B	GAC Vessel No.1B – Differential Pressure Switch	GAC Vessel #1B – Pressure Alarm	X				X									X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
283	MCP		PS–502A	GAC Vessel No.2A – Differential Pressure Switch	GAC Vessel #2A – Pressure Alarm	X				X									X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
284	MCP		PS–502B	GAC Vessel No.2B – Differential Pressure Switch	GAC Vessel #2B – Pressure Alarm	X				X									X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
285	MCP		PS–503A	GAC Vessel No.3A – Differential Pressure Switch	GAC Vessel #3A – Pressure Alarm	X				X									X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
286	MCP		PS–503B	GAC Vessel No.3B – Differential Pressure Switch	GAC Vessel #3B – Pressure Alarm	X				X									X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
UV SYSTEM PLC PANEL (PLC–2)																																											
200	PLC–2	SCC		UV System Control Center	UV – Warning Alarm	X				X												X	X	X											X			X	X	X			
201	PLC–2	SCC		UV System Control Center	UV – Fail Alarm	X				X												X	X	X											X			X	X	X			
202	PLC–2	AIT–400		UV Transmittance Analyzer	Filtered Water – UV Transmittance Level			X				X							X	X	X	X	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	X	
203	PLC–2	AIT–400		UV Transmittance Analyzer	Transmittance – Fail Alarm	X				X												X	X	X											X			X	X	X			
204	PLC–2	FIT–0401		UV System Control Panel No.1 – Flow Meter	UV System #1– Flow			X				X							X	X	X	X	X	X	X	X		X	X			X	X			X	X	X	X				X
205	PLC–2		UVR–1	UV Control Panel No.1	UV System #1 – Start/Stop	X					X			X					X	X	X	X	X	X	X	X			X	X			X	X	X			X				
206	PLC–2		UVR–1	UV Control Panel No.1	UV System #1 – Status	X				X									X	X	X						X		X					X									
207	PLC–2		UVR–1	UV Control Panel No.1	UV System #1 – Fail Alarm	X				X												X	X	X													X	X	X			
208	PLC–2		UVR–1	UV Control Panel No.1	UV System #1 – Intensity Output Level			X					X						X	X	X	X	X	X	X	X			X			X	X			X	X	X	X				X
209	PLC–2	FIT–0402		UV System Control Panel No.B – Flow Meter	UV System #2 – Flow			X				X							X	X	X	X	X	X	X	X			X			X	X			X	X	X	X				X
210	PLC–2		UVR–2	UV Control Panel No.2	UV System #2 – Start/Stop	X					X			X					X	X	X	X	X	X	X	X			X	X			X	X	X			X				
211	PLC–2		UVR–2	UV Control Panel No.2	UV System #2 – Status	X				X									X	X	X						X		X					X									
212	PLC–2		UVR–2	UV Control Panel No.2	UV System #2 – Fail Alarm	X				X												X	X	X													X	X	X			
213	PLC–2		UVR–2	UV Control Panel No.2	UV System #2 – Intensity Output Level			X					X						X	X	X	X	X	X	X	X			X			X	X			X	X	X	X				X
214	PLC–2	HPP–1	Chem Room	Hydrogen Peroxide Pump No.1	Pump Motor #1 – Start/Stop	X					X			X					X	X	X	X	X	X	X	X			X	X			X	X	X			X				
215	PLC–2	HPP–1	Chem Room	Hydrogen Peroxide Pump No.1	Pump Motor #1 – Status	X				X									X	X	X						X		X					X									
216	PLC–2	HPP–1	Chem Room	Hydrogen Peroxide Pump No.1	Pump Motor #1 – Speed Signal			X					X				X		X	X	X						X	X													X		X
217	PLC–2	HPP–2	Chem Room	Hydrogen Peroxide Pump No.2	Pump Motor #2 – Start/Stop	X					X			X					X	X	X	X	X	X	X	X			X	X			X	X	X			X				
218	PLC–2	HPP–2	Chem Room	Hydrogen Peroxide Pump No.2	Pump Motor #2 – Status	X				X									X	X	X						X		X					X									
219	PLC–2	HPP–2	Chem Room	Hydrogen Peroxide Pump No.2	Pump Motor #2 – Speed Signal			X					X				X		X	X	X						X	X													X		X
FILTER CONTROL PANEL (FCP) PLC–3																																											
300	FCP	FCV–311	Filter No.1	Filter No.1 – Raw Water – Influent Flow Control Valve	Valve #311 – Open Status	X				X				X					X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
301	FCP	FCV–311	Filter No.1	Filter No.1 – Raw Water – Influent Flow Control Valve	Valve #311 – Close Status	X				X				X					X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
302	FCP	FCV–311	Filter No.1	Filter No.1 – Raw Water – Influent Flow Control Valve	Valve #311 – Not in Auto	X				X												X	X	X											X			X	X	X			
303	FCP	FCV–311	Filter No.1	Filter No.1 – Raw Water – Influent Flow Control Valve	Valve #311 – Modulating Command			X					X				X		X	X	X						X	X													X		X
304	FCP	FCV–311	Filter No.1	Filter No.1 – Raw Water – Influent Flow Control Valve	Valve #311 – Position Feedback Signal			X				X					X		X	X	X						X	X													X		X
305	FCP	CV–312	Filter No.1	Filter No.1 – Filtered Water – Effluent Control Valve	Valve #312 – Open Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
306	FCP	CV–312	Filter No.1	Filter No.1 – Filtered Water – Effluent Control Valve	Valve #312 – Open Status	X				X									X	X	X						X		X					X									
307	FCP	CV–312	Filter No.1	Filter No.1 – Filtered Water – Effluent Control Valve	Valve #312 – Close Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
308	FCP	CV–312	Filter No.1	Filter No.1 – Filtered Water – Effluent Control Valve	Valve #312 – Close Status	X				X									X	X	X						X		X					X									
309	FCP	CV–312	Filter No.1	Filter No.1 – Filtered Water – Effluent Control Valve	Valve #312 – Not in Auto	X				X												X	X	X											X			X	X	X			
310	FCP	CV–313	Filter No.1	Filter No.1 – Backwash Supply – Control Valve	Valve #313 – Open Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
311	FCP	CV–313	Filter No.1	Filter No.1 – Backwash Supply – Control Valve	Valve #313 – Open Status	X				X									X	X	X						X		X					X									
312	FCP	CV–313	Filter No.1	Filter No.1 – Backwash Supply – Control Valve	Valve #313 – Close Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
313	FCP	CV–313	Filter No.1	Filter No.1 – Backwash Supply – Control Valve	Valve #313 – Close Status	X				X									X	X	X						X		X					X									
314	FCP	CV–313	Filter No.1	Filter No.1 – Backwash Supply – Control Valve	Valve #313 – Not in Auto	X				X												X	X	X											X			X	X	X			
315	FCP	CV–314	Filter No.1	Filter No.1 – Filter to Waste – Control Valve	Valve #314 – Open Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
316	FCP	CV–314	Filter No.1	Filter No.1 – Filter to Waste – Control Valve	Valve #314 – Open Status	X				X									X	X	X						X		X					X									
317	FCP	CV–314	Filter No.1	Filter No.1 – Filter to Waste – Control Valve	Valve #314 – Close Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
318	FCP	CV–314	Filter No.1	Filter No.1 – Filter to Waste – Control Valve	Valve #314 – Close Status	X				X									X	X	X						X		X					X									
319	FCP	CV–314	Filter No.1	Filter No.1 – Filter to Waste – Control Valve	Valve #314 – Not in Auto	X				X												X	X	X											X			X	X	X			
320	FCP	CV–315	Filter No.1	Filter No.1 – Backwash Waste – Control Valve	Valve #315 – Open Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
321	FCP	CV–315	Filter No.1	Filter No.1 – Backwash Waste – Control Valve	Valve #315 – Open Status	X				X									X	X	X						X		X					X									
322	FCP	CV–315	Filter No.1	Filter No.1 – Backwash Waste – Control Valve	Valve #315 – Close Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
323	FCP	CV–315	Filter No.1	Filter No.1 – Backwash Waste – Control Valve	Valve #315 – Close Status	X				X									X	X	X						X		X					X									
324	FCP	CV–315	Filter No.1	Filter No.1 – Backwash Waste – Control Valve	Valve #315 – Not in Auto	X				X												X	X	X											X			X	X	X			
325	FCP	CV–316	Filter No.1	Filter No.1 – Air Wash Inlet – Control Valve	Valve #316 – Open Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			
326	FCP	CV–316	Filter No.1	Filter No.1 – Air Wash Inlet – Control Valve	Valve #316 – Open Status	X				X									X	X	X						X		X					X									
327	FCP	CV–316	Filter No.1	Filter No.1 – Air Wash Inlet – Control Valve	Valve #316 – Close Command	X					X				X				X	X	X	X	X	X	X	X			X	X			X	X	X			X	X	X			

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SMR ENGINEERING, PC

NO.	REVISIONS	APP'D

ISSUE FOR

APPROVAL — Date 5/21/21 — By TGP

CONSTRUCTION — Date 6/28/21 — By TGP

RECORD DRAWING — Date – — By –

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509-110-LS3
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — TIMOTHY G. SADER — NO. 9875 — REGISTERED PROFESSIONAL ENGINEER

6-28-21

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LOOP, WIRE, & CONDUIT SCHEDULE

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

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DWG NO 110

SHEET 120OF 122

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| DESCRIPTION | | | | | FUNCTION | HARDWARE | | | | | | | | | | | | | | | | SOFTWARE | | | | | | | | | | | | | | | |

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 @ GUI	ANNUNCIATE @ PRINTER	ANNUNCIATE TO MODEM	SET POINT ADJ. @ PLC	TREND LOG	CALCULATION NO.	
404	FCP	FCV–331	Filter No.3	Filter No.3 – Raw Water – Influent Flow Control Valve	Valve #331 – Open Status	X				X						X				X	X	X	X	X	X	X	X																						
405	FCP	FCV–331	Filter No.3	Filter No.3 – Raw Water – Influent Flow Control Valve	Valve #331 – Close Status	X				X						X				X	X	X	X	X	X	X	X																								
406	FCP	FCV–331	Filter No.3	Filter No.3 – Raw Water – Influent Flow Control Valve	Valve #331 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
407	FCP	FCV–331	Filter No.3	Filter No.3 – Raw Water – Influent Flow Control Valve	Valve #331 – Modulating Command			X					X				X		X	X	X										X	X							X		X									
408	FCP	FCV–331	Filter No.3	Filter No.3 – Raw Water – Influent Flow Control Valve	Valve #331 – Position Feedback Signal			X				X					X		X	X	X										X	X							X		X									
409	FCP	CV–332	Filter No.3	Filter No.3 – Filtered Water – Effluent Control Valve	Valve #332 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
410	FCP	CV–332	Filter No.3	Filter No.3 – Filtered Water – Effluent Control Valve	Valve #332 – Open Status	X				X									X	X	X						X		X		X						X												
411	FCP	CV–332	Filter No.3	Filter No.3 – Filtered Water – Effluent Control Valve	Valve #332 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
412	FCP	CV–332	Filter No.3	Filter No.3 – Filtered Water – Effluent Control Valve	Valve #332 – Close Status	X				X									X	X	X						X		X		X						X												
413	FCP	CV–332	Filter No.3	Filter No.3 – Filtered Water – Effluent Control Valve	Valve #332 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
414	FCP	CV–333	Filter No.3	Filter No.3 – Backwash Supply – Control Valve	Valve #333 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
415	FCP	CV–333	Filter No.3	Filter No.3 – Backwash Supply – Control Valve	Valve #333 – Open Status	X				X									X	X	X						X		X		X						X												
416	FCP	CV–333	Filter No.3	Filter No.3 – Backwash Supply – Control Valve	Valve #333 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
417	FCP	CV–333	Filter No.3	Filter No.3 – Backwash Supply – Control Valve	Valve #333 – Close Status	X				X									X	X	X						X		X		X						X												
418	FCP	CV–333	Filter No.3	Filter No.3 – Backwash Supply – Control Valve	Valve #333 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
419	FCP	CV–334	Filter No.3	Filter No.3 – Filter to Waste – Control Valve	Valve #334 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
420	FCP	CV–334	Filter No.3	Filter No.3 – Filter to Waste – Control Valve	Valve #334 – Open Status	X				X									X	X	X						X		X		X						X												
421	FCP	CV–334	Filter No.3	Filter No.3 – Filter to Waste – Control Valve	Valve #334 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
422	FCP	CV–334	Filter No.3	Filter No.3 – Filter to Waste – Control Valve	Valve #334 – Close Status	X				X									X	X	X						X		X		X						X												
423	FCP	CV–334	Filter No.3	Filter No.3 – Filter to Waste – Control Valve	Valve #334 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
424	FCP	CV–335	Filter No.3	Filter No.3 – Backwash Waste – Control Valve	Valve #335 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
425	FCP	CV–335	Filter No.3	Filter No.3 – Backwash Waste – Control Valve	Valve #335 – Open Status	X				X									X	X	X						X		X		X						X												
426	FCP	CV–335	Filter No.3	Filter No.3 – Backwash Waste – Control Valve	Valve #335 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
427	FCP	CV–335	Filter No.3	Filter No.3 – Backwash Waste – Control Valve	Valve #335 – Close Status	X				X									X	X	X						X		X		X						X												
428	FCP	CV–335	Filter No.3	Filter No.3 – Backwash Waste – Control Valve	Valve #335 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
429	FCP	CV–336	Filter No.3	Filter No.3 – Air Wash Inlet – Control Valve	Valve #336 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
430	FCP	CV–336	Filter No.3	Filter No.3 – Air Wash Inlet – Control Valve	Valve #336 – Open Status	X				X									X	X	X						X		X		X						X												
431	FCP	CV–336	Filter No.3	Filter No.3 – Air Wash Inlet – Control Valve	Valve #336 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
432	FCP	CV–336	Filter No.3	Filter No.3 – Air Wash Inlet – Control Valve	Valve #336 – Close Status	X				X									X	X	X						X		X		X						X												
433	FCP	CV–336	Filter No.3	Filter No.3 – Air Wash Inlet – Control Valve	Valve #336 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
434	FCP	CV–337	Filter No.3	Filter No.3 – Drain Down – Control Valve	Valve #337 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
435	FCP	CV–337	Filter No.3	Filter No.3 – Drain Down – Control Valve	Valve #337 – Open Status	X				X									X	X	X						X		X		X						X												
436	FCP	CV–337	Filter No.3	Filter No.3 – Drain Down – Control Valve	Valve #337 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
437	FCP	CV–337	Filter No.3	Filter No.3 – Drain Down – Control Valve	Valve #337 – Close Status	X				X									X	X	X						X		X		X						X												
438	FCP	CV–337	Filter No.3	Filter No.3 – Drain Down – Control Valve	Valve #337 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
439	FCP	CV–338	Filter No.3	Filter No.3 – Air Pressurization – Control Valve	Valve #338 – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
440	FCP	CV–338	Filter No.3	Filter No.3 – Air Pressurization – Control Valve	Valve #338 – Open Status	X				X									X	X	X						X		X		X						X												
441	FCP	CV–338	Filter No.3	Filter No.3 – Air Pressurization – Control Valve	Valve #338 – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
442	FCP	CV–338	Filter No.3	Filter No.3 – Air Pressurization – Control Valve	Valve #338 – Close Status	X				X									X	X	X						X		X		X						X												
443	FCP	CV–338	Filter No.3	Filter No.3 – Air Pressurization – Control Valve	Valve #338 – Not in Auto	X				X										X	X	X								X		X			X	X	X												
444	FCP	CV–339A	Filter No.3	Filter No.3 – Air Release (Pipe) – Solenoid Valve	Valve #339A – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
445	FCP	CV–339A	Filter No.3	Filter No.3 – Air Release (Pipe) – Solenoid Valve	Valve #339A – Open Status	X				X									X	X	X						X		X		X						X												
446	FCP	CV–339A	Filter No.3	Filter No.3 – Air Release (Pipe) – Solenoid Valve	Valve #339A – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
447	FCP	CV–339A	Filter No.3	Filter No.3 – Air Release (Pipe) – Solenoid Valve	Valve #339A – Close Status	X				X									X	X	X						X		X		X						X												
448	FCP	CV–339A	Filter No.3	Filter No.3 – Air Release (Pipe) – Solenoid Valve	Valve #339A – Not in Auto	X				X										X	X	X								X		X			X	X	X												
449	FCP	CV–339B	Filter No.3	Filter No.3 – Air Release (Tank) – Solenoid Valve	Valve #339B – Open Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
450	FCP	CV–339B	Filter No.3	Filter No.3 – Air Release (Tank) – Solenoid Valve	Valve #339B – Open Status	X				X									X	X	X						X		X		X						X												
451	FCP	CV–339B	Filter No.3	Filter No.3 – Air Release (Tank) – Solenoid Valve	Valve #339B – Close Command	X					X					X			X	X	X	X	X	X	X			X	X						X	X	X		X											
452	FCP	CV–339B	Filter No.3	Filter No.3 – Air Release (Tank) – Solenoid Valve	Valve #339B – Close Status	X				X									X	X	X						X		X		X						X												
453	FCP	CV–339B	Filter No.3	Filter No.3 – Air Release (Tank) – Solenoid Valve	Valve #339B – Not in Auto	X				X										X	X	X								X		X			X	X	X												
454	FCP	FIT–330	Filter No.3	Filter No.3 – Effluent Flow Transmitter – Mag Meter	Filter #3 – Effluent Flow							X				X			X	X	X	X	X	X	X		X	X	X					X	X	X		X			X										
455	FCP	PIT–331	Filter No.3	Filter No.3 – Differential Pressure Transmitter	Filter #3 – Differential Pressure			X				X				X			X	X	X	X	X	X	X		X	X	X					X	X	X		X			X										
456	FCP	ASB–1	MCC–A	Air Scour Blower Motor	Motor #1 – Start/Stop	X					X				X				X	X	X	X	X	X	X			X	X						X	X	X		X											
457	FCP	ASB–1	MCC–A	Air Scour Blower Motor	Motor #1 – Status	X				X									X	X	X						X		X		X						X												
458	FCP	ASB–1	MCC–A	Air Scour Blower Motor	Motor #1– Fail Alarm	X				X										X	X	X								X		X				X		X	X	X											

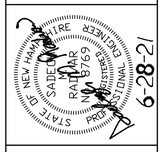
Electrical, Instrumentation, & Control Systems Engineering
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone: 603/429-3313 *Fax:* 603/429-3466

SMR ENGINEERING, PC

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

ISSUE FOR		
APPROVAL	By	TGP
Date 5/21/21		
CONSTRUCTION	By	TGP
Date 6/28/21		
RECORD DRAWING	By	–
Date –		
NO.	REVISIONS	APP'D

Drawn/Chk. JWC
Designed JWC
Checked SMR
Approved TGP
Date 6/28/2021
Book No. –
Project No. 2509
Dwg. ID 2509-112-LSS
Scale AS SHOWN



UNDERWOOD engineers
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LOOP, WIRE, & CONDUIT SCHEDULE

PUDDING HILL WATER TREATMENT FACILITY
(FILE NO. P21–31)

CITY OF DOVER, NEW HAMPSHIRE

DWG NO	SHEET
112	122OF 122

FILE: C:\SMR Engineering\Underwood Engineering\Dover NH\Putting Hill WTP\2509-19-113-LS.dwg Jul 09, 2021 - 3:10pm

Exhibit B
Insurance Requirements

(a) Workers' Compensation – in accordance with statutory requirements for all locations where work, products or services are to be provided.

(b) Builder's Risk insurance or Installation Floater – on a 100 percent completed value basis on the insurable portion of the work, to be obtained on an occurrence basis by Contractors while performing any construction work for the Treatment Facilities.

(c) Owner's Protective Liability in the amount of $1,000,000 each occurrence and $2,000,000 in the aggregate, to be obtained on an occurrence basis by Contractors while performing any construction work for the Treatment Facilities.

(d) Commercial General Liability – with a limit of not less than $500,000 each person, $2,000,000 each occurrence bodily injury, $1,000,000 per occurrence, $2,000,000 aggregate property damage, $2,000,000 for products and completed operations aggregate to be carried for one year beyond date of completion of the work, and $2,000,000 in the general aggregate, to be obtained on an occurrence basis by Contractors while performing any work or providing products or services related to this Agreement.

(e) Automobile insurance in the amount of $500,000 each person bodily injury, $1,000,000 each occurrence bodily injury, $200,000 each occurrence property damage, and $200,000 aggregate property damage to be obtained on an occurrence basis by Contractors while performing any work or providing products or services related to this Agreement.

(f) Excess/Umbrella Liability, with a limit of not less than $10,000,000 per occurrence, written over the underlying commercial general liability and automobile liability insurance to be obtained on an occurrence basis by Contractors while performing any work or providing products or services related to this Agreement.

(g) To the extent commercially available, Professional Liability (Errors & Omissions) covering claims concerning the acts, errors or omissions in connection with work or services provided by engineer(s) with a limit of not less than $5,000,000 per claim, $5,000,000 aggregate ("Increased Coverage"), to be obtained on a "claims made" basis by Underwood Engineers for the calendar years 2022, 2023, and 2024. NEMR may require the Increased Coverage to remain in place and continue for one or more calendar years beyond 2024 as NEMR believes reasonably necessary, provided such coverage is commercially available and also provided NEMR reimburses the City for the incremental cost of Underwood Engineers maintaining such

continuing Increased Coverage to the extent that Underwood Engineers would not otherwise maintain or be required to maintain such Increased Coverage. Otherwise, Underwood Engineers shall continue to at least maintain Professional Liability (Errors & Omissions) of at least $2,000,000 per claim and $5,000,000 in the aggregate at no cost to NEMR for eight years following substantial completion of the Treatment Facilities.

(h) All insurance policies required to be maintained by the City or its Contractors shall be maintained without interruption during the terms identified above. The City and its Contractors' required insurance limits may be satisfied by a combination of primary and excess/umbrella policies.

(i) The City shall maintain government risk pooling coverage consistent with its existing coverage to the extent such coverage is reasonably available.

(j) Underwood Engineers shall be required to obtain only the insurance coverage types listed in sections (a), (d), (e), (f), and (g) above, with the following modifications. With respect to the insurance in section (d) above, no per-person minimum shall apply and Underwood Engineers shall obtain $1,000,000 each occurrence for Bodily Injury. With respect to the insurance in section (e) above, the Engineer need only obtain general coverage in the amount of $1,000,000 as the combined single limit per accident.

(k) NEMR will be provided with certificates of insurance and, where possible and if requested, copies of policy endorsements, declaration pages and forms schedules prior to or contemporaneous with the engagement of any Contractor.

None of the requirements contained herein as to types or limits or NEMR's approval of insurance coverage to be maintained by the City or its contractors are intended to, and shall not in any manner, limit, qualify or quantify any liabilities and obligations assumed by the City and its Contractors under the Agreement or otherwise provided by law. NEMR's failure to monitor compliance or to object to noncompliance or unsatisfactory compliance with any terms of these insurance requirements does not modify or waive the City and its Contractors' obligations in any way.

Exhibit C
City Well – Sampling and Analysis Plan

At the beginning of the third year of system operation, the City Wells (Ireland Well and Well DPH-1) shall be sampled on a monthly basis by City representatives. The monthly samples shall be representative of produced water and shall thus be collected under pumping conditions (minimum 100 gallon per minute pumping rate after at least one hour of continuous operation) from sample ports installed between the wellheads and the first treatment components within the treatment plant.

The samples shall be transported by City representatives to a New Hampshire Department of Environmental Services (NHDES) accredited laboratory for analysis of Identified Pollutants. Sample results shall be compared to each constituent's respective NHDES Ambient Groundwater Quality Standard (AGQS) to determine if water produced from each of the City Wells continues to require treatment.

In the event analytical results from the final three monthly sampling events of the third year of Treatment Facilities operation (months 10, 11, and 12) document AGQS exceedances for the Identified Pollutants, NEMR will be obligated to contribute to system operation & maintenance (O&M) costs in the fourth year of system operation in an amount equal to $295,000, adjusted for inflation at a rate of 3% per year.

Monthly sampling of the City Wells for the Identified Pollutants shall continue during the fourth year of system operation. If each of the final three monthly sampling events of the third year of Treatment Facilities operation documents concentrations of all Identified Pollutants below their respective AGQS but one or more Identified Pollutant constituents is determined to exceed its respective AGQS during any fourth-year monthly sampling event, then NEMR shall be responsible for an incremental prorated share of its prior annual O&M contribution to fund its portion of that month's O&M costs ($295,000/12, adjusted for inflation at a rate of 3% per year). The monthly sampling program shall terminate at the end of the fourth year of system operation if all twelve fourth year monthly sampling events do not detect Identified Pollutant constituent concentrations in excess of their respective AGQS.

If any AGQS exceedances for the Identified Pollutants are documented during any fourth-year sampling event, then the monthly sampling program shall continue into the fifth year under the same incremental pro-rated NEMR funding arrangement employed during the fourth year. This arrangement shall continue into future years, with any Identified Pollutant AGQS exceedance in a particular year triggering extension of the monthly sampling program into the next year. The monthly sampling program shall terminate at the end of any year in which all twelve monthly sampling events do not detect Identified Pollutant constituent concentrations in excess of their respective AGQS. Upon termination of the monthly sampling program, NEMR shall have no obligation for any future O&M costs.

The Parties recognize this sampling plan may need to be amended from time to time to include any Emerging Contaminants.

In order to assist with monitoring the area surrounding the City Wells, the parties expect to cooperate in good faith and execute a final Memorandum of Understanding between them that will provide for NEMR's contributions toward an expanded aquifer monitoring program during the first three years of operation of the new Treatment Facilities. It is expected that NEMR's funding will cover 10 selected wells (exclusive of Ireland and DPH-1) selected for quarterly monitoring, along with water level data to support optimization of artificial recharge.

Execution Version

GUARANTY AGREEMENT

THIS GUARANTY AGREEMENT ("Guaranty"), dated as of the ____ day of December, 2021, is made by Schnitzer Steel Industries, Inc., an Oregon corporation, (together with its successors and assigns, "Guarantor"), for the benefit of the City of Dover, New Hampshire ("City").

WHEREAS, the City and New England Metal Recycling, LLC, ("NEMR"), an indirect wholly-owned subsidiary of the Guarantor, have entered into a Settlement and Funding Agreement dated December ___, 2021 (the "Settlement and Funding Agreement"); and

WHEREAS, the City is unwilling to enter into the Settlement and Funding Agreement unless Guarantor absolutely and unconditionally guarantees to the City the prompt and unconditional performance of NEMR's obligations under the Settlement and Funding Agreement, including NEMR's payment obligations pursuant to Sections 2, 5, and 6 (NEMR's Obligations) of the Settlement and Funding Agreement (the "Guaranteed Obligations"), and Guarantor is entering into this Guaranty to induce the City to enter into the Settlement and Funding Agreement.

NOW THEREFORE, in consideration of the promises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Guarantor hereby represents, warrants, covenants, and agrees for the benefit of the City as follows:

1. Guaranty.

a. Guarantor hereby irrevocably, absolutely, and unconditionally guarantees to the City the full and prompt payment and performance of the Guaranteed Obligations, as and when the same shall be required to be performed or paid, as applicable, under the Settlement and Funding Agreement. Guarantor hereby irrevocably, absolutely, and unconditionally covenants and agrees that it is liable for the Guaranteed Obligations as a primary obligor. This Guaranty is a continuing guarantee of: (i) payment; and (ii) performance of any non-monetary Guaranteed Obligations and is not a guaranty of collection.

b. Upon the occurrence, from time to time, of any default by NEMR in the payment or performance of the Guaranteed Obligations, or any part thereof, when such Guaranteed Obligations are due to be performed or paid by NEMR, Guarantor shall promptly pay or perform the Guaranteed Obligations then due in full upon written demand by the City. In such case it shall not be necessary for the City, in order to enforce such performance or payment by Guarantor, to first: (i) institute suit or exhaust its remedies against NEMR or any other person; or (ii) demonstrate that the City has currently suffered any loss or liability.

2. Guarantor's Obligations Absolute and Unconditional; Waivers of Defenses.

a. Guarantor hereby guarantees that the Guaranteed Obligations will be performed or paid strictly in accordance with the terms of the Settlement and Funding Agreement to which NEMR is a party. A separate action may be brought against Guarantor to enforce this Guaranty, whether or not any action is brought against NEMR or whether or not NEMR is joined in any such action. The obligations of Guarantor under this Guaranty shall be irrevocable,

absolute, and unconditional in all respects, and this Guaranty and Guarantor's obligations hereunder shall at all times be valid and enforceable to the same extent as the validity and enforceability of the Settlement and Funding Agreement with respect to NEMR, and shall not be terminated, discharged, affected, or impaired, and Guarantor hereby irrevocably waives any defenses to enforcement it may have (now or in the future) by reason of:

i. any change in the time, place, or manner of performance or payment of, or in any other term of, the Guaranteed Obligations in accordance with the terms of the Settlement and Funding Agreement, or any waiver, extension, amendment, or other modification of the Settlement and Funding Agreement;

ii. any change, restructuring, or termination of the corporate structure, ownership, or existence of NEMR or any insolvency, bankruptcy, reorganization, or other similar proceeding affecting NEMR or its assets or any resulting release or discharge of any Guaranteed Obligations;

iii. any sale, transfer, grant, conveyance, or assignment of NEMR's interest in the NEMR Property (as defined in the Settlement and Funding Agreement) or any part thereof, or any transfer or assignment of interests in the ownership of NEMR and/or the reconstitution of NEMR, regardless of whether any of the foregoing is permitted under the Settlement and Funding Agreement; and/or

iv. the failure of the City to assert any claim or demand or to exercise or enforce any right or remedy under the provisions of the Settlement and Funding Agreement.

b. This Guaranty is a continuing guaranty and shall remain in full force and effect until the satisfaction in full of all of the Guaranteed Obligations.

c. Nothing in this Guaranty shall constitute a waiver by Guarantor of any defense, set-off, or counterclaim that may at any time be available to, or be asserted by, NEMR with respect to the Guaranteed Obligations under the Settlement and Funding Agreement or otherwise and Guarantor shall be entitled to assert such defenses, set-offs, or counterclaims.

3. Additional Waivers and Acknowledgments.

a. Guarantor hereby unconditionally and irrevocably waives any right to revoke this Guaranty and acknowledges that this Guaranty is continuing in nature and applies to all presently existing and future Guaranteed Obligations.

b. Guarantor agrees that the City need not attempt to enforce performance by or collect any Guaranteed Obligations from NEMR but may require Guarantor to perform or make payment of all of the Guaranteed Obligations to the City when due to be performed or paid.

c. No failure on the part of the City to exercise, and no delay in exercising, any right hereunder shall operate as a waiver thereof; nor shall any single or partial exercise of any right hereunder preclude any other or further exercise thereof or the exercise of any other

right. The remedies herein provided to the City are cumulative and not exclusive of any remedies provided under the Settlement and Funding Agreement.

d. Guarantor agrees to the provisions of the Settlement and Funding Agreement.

4. Representations and Warranties of Guarantor. To induce the City to enter into the Settlement and Funding Agreement, Guarantor represents and warrants to the City as follows:

a. Guarantor (i) is the owner of an indirect interest in NEMR, and has received, or will receive, substantial benefit from the entry of the Settlement and Funding Agreement. The value of the consideration and benefits received and to be received by Guarantor as a result of the City entering into the Settlement and Funding Agreement is reasonably worth at least as much as the liability and obligation of Guarantor hereunder; and (ii) is an Oregon corporation duly organized, validly existing, and in good standing under the laws of the State of Oregon, is duly qualified to do business in each jurisdiction where the conduct of its business requires such qualification and has full requisite power and authority to enter into and perform its obligations under this Guaranty.

b. The execution, delivery, and performance by Guarantor of this Guaranty and the consummation of the transactions contemplated hereunder do not, and will not, contravene or conflict with any law, statute, or regulation whatsoever to which Guarantor is subject or constitute a default (or an event which with notice or lapse of time or both would constitute a default) under, or result in the breach of, any court order, indenture, mortgage, deed to secure debt, deed of trust, trust deed, charge, lien, or any contract, agreement, or other instrument to which Guarantor is a party or which may be binding on or applicable to Guarantor. This Guaranty is a legal, valid, and binding obligation of Guarantor and is enforceable in accordance with its terms, except as limited by bankruptcy, insolvency, or other laws of general application relating to the enforcement of creditors' rights.

c. No authorization or approval or other action by, and no notice to or filing with, any governmental authority or any person (other than those that have been duly obtained or made and which are in full force and effect) is required for the consummation of this Guaranty or the due execution, delivery, or performance by Guarantor of this Guaranty.

d. There are no conditions precedent to the effectiveness of this Guaranty that have not been satisfied or waived.

e. Neither the City nor any other party has made any representation, warranty, or statement to Guarantor in order to induce Guarantor to execute this Guaranty.

f. As of the date hereof, and after giving effect to this Guaranty and the contingent obligation evidenced hereby, Guarantor is, and will be, solvent, and has and will have assets which, fairly valued, exceed its obligations, liabilities (including contingent liabilities), and debts, and has and will have property and assets sufficient to satisfy its obligations and liabilities.

g. Guarantor has reviewed and approved the Settlement and Funding Agreement and has had an opportunity to discuss the Settlement and Funding Agreement and this Guaranty with its legal counsel.

5. Notices. All notices, requests, and communications required or permitted to be delivered under this Guaranty shall be in writing and delivered to all persons at the addresses below, by one of the following methods: (i) hand delivery, whereby delivery is deemed to have occurred at the time of delivery; (ii) a nationally recognized overnight courier company, whereby delivery is deemed to have occurred the business day following deposit with the courier; (iii) certified United States Mail, signature required and postage-prepaid, whereby delivery is deemed to have occurred on the third business day following deposit with the United States Postal Service; or (iv) electronic transmission (facsimile or email) provided that the transmission is completed no later than 4:00 p.m. prevailing Eastern Time on a business day and the original also is sent via overnight courier or U.S. Mail, whereby delivery is deemed to have occurred at the end of the business day on which electronic transmission is completed.

To Guarantor:

Schnitzer Steel Industries, Inc.
Attn: General Counsel
299 SW Clay St., Suite 350
Portland, OR 97201
Telephone: (503) 244-9900
Facsimile: (503) 299-2277
Email: generalcounsel@schn.com

with a copy to:

McLane Middleton, Professional Association
Attn: Gregory H. Smith, Esq.
11 South Main Street
Concord, NH 03301
Telephone: 603-230-4401
Facsimile: 603-230-4448
Email: greg.smith@mclane.com

To the City:

City Manager
288 Central Avenue
Dover, NH 03820

with a copy to:

City Attorney
City of Dover
288 Central Avenue
Dover, NH 03820

Any party may change its address for purposes of this Section 5 by giving written notice as provided in this Section 5.

All notices and demands delivered by a party's attorney on a party's behalf shall be deemed to have been delivered by said party. Notices shall be valid only if served in the manner provided in this Section 5.

6. Governing Law; Jurisdiction and Venue.

a. This Guaranty and any claim, controversy, dispute, or cause of action (whether in contract, equity, tort, or contract) based upon, arising out of, or relating to this Guaranty and the transactions contemplated hereby shall be governed by and construed in accordance with the laws of the State of New Hampshire.

b. Guarantor and the City irrevocably and unconditionally: (i) agree that any legal action, suit, or proceeding arising out of or relating to this Guaranty shall be brought in the Strafford County Superior Court in the State of New Hampshire; and (ii) submit to the jurisdiction of such court in any such action, suit, or proceeding. Final judgment against Guarantor in any action, suit, or proceeding shall be conclusive and may be enforced in any other jurisdiction by suit on the judgment. Nothing in this Section shall affect or impair the City's right to serve legal process in any manner permitted by law.

c. Guarantor irrevocably and unconditionally waives, to the fullest extent Guarantor may effectively do so under applicable law, any objection that it may now or hereafter have to the laying of venue of any action or proceeding arising out of this Guaranty in the Strafford County Superior Court and the defense of improper venue and/or an inconvenient forum to the maintenance of any action or proceeding in such court relating to this Guaranty.

d. Guarantor agrees that the exclusive forum for any legal action or proceeding against the City concerning any matter arising out of or relating to this Guaranty or any of the Guaranteed Obligations shall be in the Strafford County Superior Court in the State of New Hampshire.

7. Severability. If any term or provision of this Guaranty is invalid, illegal, or unenforceable in any jurisdiction, such invalidity, illegality, or unenforceability shall not affect any other term or provision of this Guaranty or invalidate or render unenforceable such term or provision in any other jurisdiction. Upon such determination that any term or other provision is invalid, illegal, or unenforceable, the parties hereto shall negotiate in good faith to modify this Guaranty so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the greatest extent possible.

8. Amendments and Waivers. No term of this Guaranty may be waived, modified, or amended except by an instrument in writing signed by both of the parties hereto. Any waiver of the terms hereof shall be effective only in the specific instance and for the specific purpose given.

9. Parties Bound; Assignment. This Guaranty shall be binding upon and inure to the benefit of the parties hereto and their respective successors, assigns, and legal representatives; provided, however, that Guarantor may not, without the prior written consent of the City, assign any of its rights, powers, duties, or obligations hereunder.

10. Headings. Section headings are for convenience of reference only and shall not define, modify, expand, or limit any of the terms of this Guaranty.

11. Recitals. The Recital and introductory paragraphs hereof are a part hereof, form a basis for this Guaranty, and shall be considered prima facie evidence of the facts and documents referred to therein.

12. Counterparts; Effectiveness. This Guaranty and any amendments, waivers, consents, or supplements hereto may be executed in counterparts, each of which shall constitute an original, but all taken together shall constitute a single contract. Delivery of an executed counterpart of a signature page to this Guaranty or any amendment, modification, or supplement thereto by facsimile or in electronic (i.e., "pdf" or "tif") format shall be effective as delivery of a manually executed counterpart of this Guaranty.

13. No Waiver by the City. No failure to exercise, and no delay in exercising, on the part of the City, any right, remedy, power, or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any other right, remedy, power, or privilege. Notwithstanding anything to the contrary in this Guaranty, the rights of the City hereunder vis-à-vis the Guarantor shall be to the same extent as, but not more expansive than, the rights of the City vis-à-vis NEMR under the Settlement and Funding Agreement. No modification or waiver of any provision of this Guaranty, or consent to depart therefrom, shall be effective unless in writing and no such consent or waiver shall extend beyond the particular case and purpose involved. No notice or demand given in any case shall constitute a waiver of the right to take other action in the same, similar, or other instances without such notice or demand.

14. Entire Agreement. This Guaranty and the Settlement and Funding Agreement embody the final, entire agreement of the Guarantor and the City with respect to Guarantor's guaranty of the Guaranteed Obligations and supersedes any and all prior commitments, agreements, representations, and understandings, whether written or oral, relating to the subject matter hereof. This Guaranty is intended by the Guarantor and the City as a final and complete expression of the terms of the guaranty, and no course of dealing between the Guarantor and the City, no course of performance, and no evidence of prior, contemporaneous, or subsequent oral agreements or discussions or other extrinsic evidence of any nature shall be used to contradict, vary, supplement, or modify any term of this Guaranty. There are no oral agreements between the Guarantor and the City relating to the guaranty of the Guaranteed Obligations.

15. Interpretation. For purposes of this Guaranty: (a) the words "include," "includes," and "including" shall be deemed to be followed by the words "without limitation;" (b) the word "or" is not exclusive; and (c) the words "herein," "hereof," "hereby," "hereto," and "hereunder" refer to this Guaranty as a whole. The definitions given for any defined terms in this Guaranty shall apply equally to both the singular and plural forms of the terms defined. Whenever the

context may require, any pronoun shall include the corresponding masculine, feminine, and neuter forms. Unless the context otherwise requires, references herein: (i) to Schedules, Exhibits, and Sections mean the Schedules, Exhibits, and Sections of this Guaranty; (ii) to an agreement, instrument, or other document means such agreement, instrument, or other document as amended, supplemented, and modified from time to time to the extent permitted by the provisions thereof; and (iii) to a statute means such statute as amended from time to time and includes any successor legislation thereto and any regulations promulgated thereunder. This Guaranty shall be construed without regard to any presumption or rule requiring construction or interpretation against the party drafting an instrument or causing any instrument to be drafted.

[Signature page follows.]

IN WITNESS WHEREOF, the Guarantor has executed this Guaranty as of the date first above written.

GUARANTOR:

SCHNITZER STEEL INDUSTRIES, INC.

By:_____

Name: Peter B. Saba

Title: Senior Vice President & General Counsel

Acknowledged and Agreed:

THE CITY OF DOVER

By: _____
J. Michael Joyal, Jr.

TITLE: City Manager, Duly Authorized

DATE: _____

COMCAST

November 18, 2021

Dover City Council
City of Dover
288 Central Avenue
Dover, NH 03820

RE: Important Information—Price Changes

Dear Members of the Council:

At Comcast, we are always committed to delivering the entertainment and services that matter most to our customers in your community, as well as exciting experiences they won't find anywhere else. We are also focused on making our network stronger in order to meet our customers' current needs and future demands.

As we continue to invest in our network, products, and services, the cost of doing business rises. Rising programming costs, most notably for broadcast TV and sports, continue to be the biggest factors driving price increases. While we absorb some of these costs, these fee increases affect service pricing. As a result, starting December 20, 2021, prices for certain services and fees will be increasing, including the Broadcast TV Fee and the Regional Sports Network Fee. Please see the enclosed Customer Notice for more information.

In addition to the price changes noted on the enclosed Customer Notice, customers subscribing to Performance Starter Internet at $54.95, which is no longer available for new subscriptions, will receive additional notice of a price change to this service from $54.95 to $59.95 per month as part of the letter accompanying their Customer Notice.

Lastly, effective December 31, 2021, NBC Sports Network (NBCSN) will cease operations.

We know you may have questions about these changes. If I can be of any further assistance, please do not hesitate to contact me at **Bryan_Christiansen@cable.comcast.com**.

Very truly yours,

Bryan Christiansen

Bryan Christiansen, Sr. Manager
Government & Regulatory Affairs

Enclosure: Customer Notice

Important information regarding your Xfinity services and pricing

Effective December 20, 2021

Xfinity TV	Current	New
Broadcast TV Fee		
All areas except South Hampton	$19.45	$24.95
South Hampton	$19.45	$23.10
Franchise Costs		
Auburn	$.16	$.17
Bedford	$.32	$.36
Derry	$.25	$.28
East Kingston	$.21	$.22
Epping	$.16	$.17
Lee	$.04	$.05
Regional Sports Fee		
All areas except South Hampton	$10.75	$11.85
South Hampton	$10.75	$14.10
Choice TV Select	$30.00	$32.50
Choice TV Select - with TV Box	$37.50	$41.00
Entertainment	$15.00	$17.00
TV Box and Remote	$7.50	$8.50
TV Box	$7.10	$8.10
HD TV Box Limited Basic	$7.10	$8.10
HD TV Box and Remote Limited Basic	$7.50	$8.50
Service to Additional TV with TV Adapter	$7.50	$8.50

Xfinity Internet	Current	New
Performance - Xfinity Internet Service Only	$80.95	$83.95
Performance Pro - Xfinity Internet Service Only	$95.95	$98.95

Xfinity Internet - Cont.	Current	New
Blast! - Xfinity Internet Service Only	$100.95	$103.95
Extreme Pro - Xfinity Internet Service Only	$105.95	$108.95
Gigabit - Xfinity Internet Service Only	$110.95	$113.95

Brentwood, Antrim, Auburn, Bedford, Belmont, Boscawen, Bow, Candia, Canterbury, Chichester, Deering, Derry, Dover, Durham, East Kingston, Epping, Epsom, Fremont, Gilford, Greenland, Hampton, Hampton Falls, Henniker, Hillsborough, Hooksett, Hopkinton, Kensington, Laconia, Lee, Loudon, Madbury, New Castle, Newfields, Newington, Newmarket, North Hampton, Northfield (service availability limited to certain areas), Nottingham, Portsmouth, Raymond, Rochester, Rollinsford, Rye, South Hampton, NH

87732000 (1100, 1220, 1230, 1240, 1250, 1270, 1280, 1300, 1310, 1330, 1340, 1350, 1360, 1390, 1400, 1410, 1420, 1440, 1450, 1460, 1470, 1480, 1490, 1510, 1520, 1530, 1540, 1560, 1570, 1590, 1640, 1670, 1680, 1690, 1700, 1810, 1830, 1840, 1850, 1870, 1880, 1890, 3200)

P092AL22

MUNICIPAL - EMERGENCY/TROUBLE REPORTING PROCEDURES

In our effort to better assist our municipal customers, we are writing once again to provide you with the **emergency reporting procedures** for certain outside plant and service problems.

In the event any **municipal building** experiences problems with downed cable drops, signal transport issues with I-NET or Video Return Lines, Public, Education and Government (PEG) Access channels or to have our technical or construction staff on-site during an emergency, please follow the steps detailed below:

MUNICIPAL - EMERGENCY/TROUBLE REPORTING PROCEDURES
(Please note the XOC telephone number listed below IS NOT for public dissemination)

- **STEP 1 Call 1-877-359-1821** (24/7 – XOC)
- **STEP 2 Select Option # 1** - Municipalities, Utilities, Police & Fire
- **STEP 3 Prompted for Reason for call:**

  Option # 1 - Down Wires (will be prompted to enter zip code)

  Option # 2 – Pole hits, pole transfers or all other Municipal Issues
- **STEP 4 Speak with Rep. and obtain job reference #**

The above steps will put you in touch with our Excellence Operations Center (XOC), 24-hours a day, and seven days a week. ***Once again, please note this telephone # IS NOT for public dissemination.***