SECTION 02820

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Section includes:

1. Chain link fence framework, fabric, and accessories.

2. Excavation for post bases.

3. Manual gates and related hardware.

1.02 REFERENCES:

A. Not Used

B. American Association of State Highway and Transportation Officials (AASHTO):

1. M181: Standard Specification for Chain-Link Fence.

C. American Society for Testing and Materials (ASTM):

1. A53/A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

2. C387: Standard Specifications for packaged, Dry/Combined materials for Mortar and Concrete.

3. F567: Standard Practice for Installation of Chain-Link Fence.

4. F900: Standard Specification for Industrial and Commercial Swing Gates.

D. Chain Link Fence Manufacturers Institute (CLFMI):

1. PM 2445: Chain Link Fence Manufacturers Institute Product Manual.

1.03 SUBMITTALS:

A. Design Submittals.

B. Submit Manufacturer's specifications, drawings, details and fence layout with appurtenances.

C. Submit certified test reports with results of tests for fence finish.

D. Submit shop drawings, samples and certificates simultaneously as one complete package.

1.04 SPARE PARTS:

A. Not Used

1.05 QUALITY ASSURANCE:

A. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

B. Monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship to produce Work of specified quality.

C. Comply with manufacturer's instructions, including steps in sequence.

D. When manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

E. Perform work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed my manufacturer.

G. Monitor fabrication and installation tolerance control of products to produce acceptable work. Do not allow tolerances to accumulate.

H. Comply with manufacturer's tolerances. When manufacturer's tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

I. Adjust products to appropriate dimensions; position before securing products in place.

J. Sustainability Standards Certifications.

1.06 DELIVERY STORAGE AND HANDLING:

A. Transport and handle all items in accordance with manufacturer's printed instructions.

B. Schedule delivery to limit on-site storage of materials.

C. Provide equipment and personnel to unload all items delivered to site.

1.07 TRAFFIC MANAGEMENT:

A. Truck access for materials and equipment deliveries to the Peirce Island Wastewater Treatment Facility is affected by traffic, narrow streets, pedestrians, and tight intersections

B. Tractor-trailers longer than an AASHTO WB-50 are not recommended for use in this location due to the congested nature of the route to the Wastewater Treatment Facility, as well as the limited space within the Treatment Facility itself. The contractor is advised to use transport vehicles that are appropriate for the congested conditions.

C. Access to the installation area from within the Wastewater Treatment Facility via the gate located on the eastern side of the facility may only be allowed during the Wastewater Treatment Facility operating hours of 7AM-3:30PM. At all other times, access within the Wastewater Treatment Facility will not be allowed. The contractor will be able to access the worksite via alternative approaches. The contractor shall coordinate any access to the Wastewater treatment facility with the Chief Plant Operator daily.

D. Construction will be taking place for the duration of this project for a separate project, the replacement of the sewer force main pipes along Peirce Island from the Peirce Island Bridge to the Wastewater Treatment Facility. The construction area will extend from the Wastewater Treatment Facility to and including part of the Peirce Island Bridge.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION:

A. Conform to Chain Link Fence Manufacturers Institute Product Manual (CLFMI PM 2445) for the specified use.

B. Provide chain link fence in accordance with AASHTO M181; Fabric: Type I, Class D fabric coating; Posts: Grade 2; Tension wire: Type I, Class 3 coating.

C. Provide framework, fabric, accessories and gates in accordance with ASTM F567.

D. Fence heights as indicated with top rail and bottom tension wire

E. Gates:

1. Industrial and Commercial:

a. Provide swing gates in accordance with ASTM F900.

2.02 FENCE FABRIC:

A. Galvanized steel.

B. Galvanized steel chain-link fabric conforming to ASTM A392, with Class 2 zinc coating (2.0 ounces of zinc per square foot of uncoated wire surface); Fabric woven in 2-inch mesh from No. 9 gage wire in a 42" height with knuckled selvages top and bottom.

2.03 TENSION WIRE:

A. No. 7-gage coil spring steel wire with galvanized finish having minimum of 0.8 oz of zinc coating over each square foot of uncoated wire surface.

2.04 TIE WIRES:

A. Tie wires, for fastening fence fabric to line posts and rails, not less than No. 6 gage aluminum wire.

2.05 LINE POSTS:

A. 2-3/8 inches outside diameter steel pipe weighing not less than 3.65 lb/ft.

2.06 END, CORNER, AND PULL POSTS:

A. 2-7/8 inch outside diameter steel pipe weighing not less than 5.79 lb/ft, or 2-1/2 inch square steel tube weighing not less than 5.14 lb/ft.

2.07 GATE POSTS:

A. 2-7/8 inches outside diameter steel pipe and gate posts, for gate leaves up to and including 6 feet wide, weighing not less than 5.79 lb. per ft.

2.08 RAILINGS:

A. 1-5/8 inch outside diameter steel pipe with minimum weight of 2.27 lb/ft or 1-5/8 inch by 1-1/4 inch.

2.09 TRUSS:

A. 3/8 inch diameter steel rod diagonal truss braces between terminal and adjacent line posts and for gate framework.

2.10 FITTINGS:

A. Heavy-duty malleable iron or pressed steel fittings of suitable size to produce strong construction.

2.11 STRETCHER BARS:

A. Flat bars with minimum cross section dimensions of 1/4-inch by 3/4 inch, full height of fabric, secured with bar bands of minimum 11-gage sheet steel, spaced

approximately 15 inches on centers and bolted with 3/8-inch diameter bolts, for attaching fabric to terminal posts.

2.12 GATE LEAF FRAMEWORK:

A. 1-7/8 inch outside diameter steel pipe weighing 2.72 lb/ft, minimum.

2.13 GATE HINGES:

A. Heavy pattern of adequate strength for gate size, with large bearing surfaces for clamping or bolting in position.

2.14 LATCH:

A. Gates with suitable latch, accessible from both sides and with provision for padlocking.

2.15 NOT USED

2.16 CONCRETE FOOTINGS:

A. Section 03300 Cast-In-Place Concrete, 4,000 psi concrete.

a. 4000 PSI strength after 28 days

b. 2-3” slump

c. Unit weight of 140 lb./cubic foot

2.17 GROUT:

A. One part Portland cement and three parts of clean, sharp, well-graded sand with minimum water for proper workability for posts set in solid rock.

2.18 ACCESSORIES:

A. Steel pipe dimensions and weights: ASTM A53/A53M, Schedule 40. Dimensions specified are nominal pipe sizes.

B. Dimensions and weight tolerances: Plus or minus 5 percent.

C. Zinc Coating: Minimum 2.0 ounces per square foot.

D. Provide posts with tops of same material, and designed to fit securely over post and carry top rail. Carry apron around outside of post at base of top fitting.

E. Ferrous metal fittings, posts, fence, gate framework, and accessories galvanized with heavy coating of 2.0 oz/ft2 pure zinc spelter per square foot or surface area to be coated. Use hot-dip process. Thinner zinc coatings, electro-galvanizing, zinc

paint or cold galvanizing compounds not used as substitute for hot-dipped galvanized finish not acceptable.

F. Fabricate and weld before hot-dip galvanizing. Weld conforming to American Welding Society standards.

G. Hot-dip galvanized gate frame, after welding, if bolted or riveted corner fittings not used.

H. Galvanize fittings, posts, fence and gate framework, and accessories.

I. Single and double leaf swing gates with center bolt, center stop, and automatic backstops.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine conditions under which fence and gates are to be installed. Notify Engineer, in writing, of improper conditions of work.

B. Do not proceed with work until unsatisfactory conditions have been corrected.

C. Verify measurements at site.

D. Check location of underground work to make sure fence footings clear utilities, buried piping, drainage work, and all other buried systems, equipment and obstructions.

E. Do not install fence until final grading is complete and finish elevations are established.

F. Do not drive equipment on areas to be landscaped, except as accepted by Engineer. Areas not accessible from roads shall be protected with heavy wood planking. Remove barricades and protection at completion of project. Repair damaged landscape surfaces.

G. There are archeological remains in the broader project area. To reach the installation site, only existing trails may be utilized. No off trail travel of personnel, materials or equipment is permitted.

3.02 INSTALLATION:

A. Footings:

1. Vertical sides to minimize up-lift. Dispose of excavated material in accordance with local codes, ordinances, regulations and anti-pollution laws.

2. Rod and compact concrete around posts. Slope top of footings above level of adjacent grade, and trowel finish.

3. Size:

   a. 6 inches minimum diameter, plus outside dimension of post.

   b. Set corner, end, pull, and gate posts 42 inches into concrete.

   c. Set line posts set 36 inches into concrete.

   d. Total depth of concrete 6 inches greater than required for post embedment.

4. Time of Set: 48 hours before rails are erected or before fabric is applied or stretched.

B. Framing:

1. Install line posts not more than 10 feet apart.

2. Install pull posts not more than 600 feet apart where a straight run of fence exceeds 600 feet and where fence line changes direction by more than 15 degrees but less than 30 degrees.

3. Install corner posts where the fence line changes direction by more than 30 degrees.

4. Set posts in concrete footings, plumb and true to line.

5. Brace and truss end, pull, corner, and gate posts to adjacent line posts. Provide brace to match top rail spaced midway between top rail and tension wire and extending to adjacent line posts. Provide brace to match top rail spaced midway between top rail and tension wire and extending to adjacent line post. Truss diagonally with 5/16-inch diameter tension rod with turnbuckle.

6. Fasten top rail to end, pull, gate and corner posts. Pass top rail through fittings of line posts.

7. Provide expansion and contraction joints in top rail for each 100 linear feet of fence.

8. Fasten bottom tension wire to end, pull, gate, corner, and line posts.

9. Maximum area of unbraced fence shall not exceed 1,500 square feet.

10. Use galvanized sleeve and grout posts or install with suitable galvanized flange casings and galvanized anchor bolts as accepted by Engineer.

11. When rock is encountered, set posts into rock a minimum depth of 12 inches for line posts and 18 inches for terminal posts. If solid ledge is encountered without overburden of soil, provide post holes at least 1 inch greater in diameter than post, fill post holes with concrete work post into hole taking care not to cause voids, remove excess concrete and crown remainder at top to shed water. Where solid rock is covered by overburden, do not exceed total setting depth required for setting in earth, grout posts into rock as described.

C. Fabric:

1. Place fabric on outside of posts and stretch to avoid bulging or buckling.

2. Fasten at line posts, top rail, and bottom tension wire with PVC coated ties. Space ties not more than 15 inches apart on line posts and not more than 24 inches apart on rail and tension wire.

3. Fasten at terminal posts at intervals not exceeding 15 inches using flat or beveled galvanized steel bands with 5/16-inch x 1-1/4 inch galvanized carriage bolts and nuts.

4. Make tie connections on interior side of fence.

5. Provide steel angle metal closures where finished ground surface is more than two inches below bottom tension wire.

6. Install gates plumb, level, and secure for full width of opening and hardware adjusted for smooth operation.

7. Electrical ground where a power line carrying more than 600 volts passes over fence, install ground rod at nearest point directly below each point of crossing.

3.03 REPAIR:

A. Remove and replace fencing which is improperly located or is not true to line, grade and plumb within tolerances as indicated.

B. Repair damaged components as recommended by manufacturer.

END OF SECTION

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The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

WETLANDS AND NON-SITE SPECIFIC PERMIT 2021-01572

NOTE CONDITIONS

PERMITTEE:	**CITY OF PORTSMOUTH** **TERRY DESMARAIS PE - CITY ENGINEER** **680 PEVERLY HILL RD** **PORTSMOUTH NH 03801**
PROJECT LOCATION	**200 PEIRCE ISLAND RD, PORTSMOUTH** **TAX MAP #208, LOT #1**
WATERBODY:	**PISCATAQUA RIVER**
APPROVAL DATE:	**SEPTEMBER 02, 2021** **EXPIRATION DATE: SEPTEMBER 02, 2026**

Based upon review of permit application 2021-01572 in accordance with RSA 482-A and RSA 485-A:17, the New Hampshire Department of Environmental Services (NHDES) hereby issues this Wetlands and Non-Site Specific Permit. To validate this Permit, signatures of the Permittee and the Principal Contractor are required.

PERMIT DESCRIPTION:
Impact 12,951 square feet of previously developed upland tidal buffer zone and 890 square feet of undeveloped upland tidal buffer zone in order to improve resiliency of the access road to the Peirce Island Wastewater Treatment Facility (WWTF), upgrade an existing parking area, extend a public walking trail, and to replace and rehabilitate existing sewer and drinking water force mains. In addition, the project will temporarily impact 56,794 square feet of previously developed upland tidal buffer zone and 1,803 square feet of undeveloped upland tidal buffer zone for construction access and installation. Compensatory mitigation is provided for permanent impacts within the undeveloped upland tidal buffer zone as a 9,731 square foot buffer enhancement area to be planted.

THIS PERMIT IS SUBJECT TO THE FOLLOWING PROJECT-SPECIFIC CONDITIONS:

1. All work shall be done in accordance with the plans by AECOM and Altus Engineering, Inc., titled Force Main and Water Main Replacement (dated April 2021), Overview Plan (G-001) and Parking Improvements (C-001), Erosion Control Notes and Parking Improvement Details (C-003, C-004; dated April 13, 2021) and Proposed Walking Trail (C-002; dated April 2020), as received by the NH Department of Environmental Services (NHDES) on May 20, 2021; Overall Site Plan (00 G-003-P OSP) dated April 13, 2021 and revised through July 23, 2021, last received by NHDES on July 30, 2021; Compensatory Mitigation and Post-Construction Monitoring Plan (received by NHDES September 1, 2021); and, Parking Improvements (L-001) dated August 31, 2021 and received by NHDES on September 01, 2021, per Rule Env-Wt 307.16.
2. Prior to the start of construction, the contractor shall install fencing around protected plant species to prevent unintentional encroachment, in accordance with Env-Wt 311.06(g).
3. All work shall comply with all applicable conditions specified in Env-Wt 307.
4. All development activities associated with any project shall be conducted in compliance with applicable requirements of RSA 483-B and Env-Wq 1400 during and after construction, per Rule Env-Wt 307.07.
5. All work, including management of soil stockpiles, shall be conducted so as to minimize erosion, minimize sediment transfer to surface waters or wetlands, and minimize turbidity in surface waters and wetlands using the techniques described in Env-Wq 1505.02, Env-Wq 1505.04, Env-Wq 1506, and Env-Wq 1508; the applicable BMP manual; or a

combination thereof, if the BMP manual provides less protection to jurisdictional areas than the provisions of Env-Wq 1500, per Rule Env-Wt 307.03(b).
6. Water quality control measures shall be selected and implemented based on the size and nature of the project and the physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to jurisdictional areas, per Rule Env-Wt 307.03(c)(1).
7. The person in charge of construction equipment shall inspect such equipment for leaking fuel, oil, and hydraulic fluid each day prior to entering surface waters or wetlands or operating in an area where such fluids could reach groundwater, surface waters, or wetlands, per Rule Env-Wt 307.03(g)(1).
8. Equipment shall be staged and refueled outside of jurisdictional areas (unless allowed) per Rule Env-Wt 307.15 and Env-Wt 307.03(h).

MONITORING:
9. Within 60 days of completing a mitigation project that included enhancement, the applicant shall submit a signed letter specifying the date of completion and the anticipated dates of submittal of the annual monitoring reports plus a post - construction monitoring report documenting the conditions of the enhanced area in accordance with Env-Wt 807.03.
10. Compensatory mitigation project monitoring reports shall be submitted to the department annually, by December 1 of each monitoring year in accordance with the approved compensatory mitigation plan, Env- Wt 307.18(a) and Env-Wt 803.04.
11. Mitigation project monitoring shall span no fewer than 5 growing seasons for any mitigation project that includes plantings, in accordance with Env-Wt 803.04(b)(1).

THIS PERMIT IS SUBJECT TO THE FOLLOWING GENERAL CONDITIONS:
1. Pursuant to RSA 482-A:12, a copy of this permit shall be posted in a secure manner in a prominent place at the site of the approved project.
2. In accordance with Env-Wt 313.01(a)(5), and as required by RSA 482-A:11, II, work shall not infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners.
3. In accordance with Env-Wt 314.01, a standard permit shall be signed by the permittee, and the principal contractor who will build or install the project prior to start of construction, and will not be valid until signed.
4. In accordance with Env-Wt 314.03(a), the permittee shall notify the department in writing at least one week prior to commencing any work under this permit.
5. In accordance with Env-Wt 314.08(a), the permittee shall file a completed notice of completion of work and certificate of compliance with the department within 10 working days of completing the work authorized by this permit.
6. In accordance with Env-Wt 314.06, transfer of this permit to a new owner shall require notification to, and approval of, the NHDES.
7. The permit holder shall ensure that work is done in a way that protects water quality per Env-Wt 307.03; protects fisheries and breeding areas per Env-Wt 307.04; protects against invasive species per Env-Wt 307.05; meets dredging activity conditions in Env-Wt 307.10; and meets filling activity conditions in Env-Wt 307.11.
8. This project has been screened for potential impact to known occurrences of protected species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or only cursory surveys have been performed, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species. This permit does not authorize in any way the take of threatened or endangered species, as defined by RSA 212-A:2, or of any protected species or exemplary natural communities, as defined in RSA 217-A:3.
9. In accordance with Env-Wt 307.06(a) through (c), no activity shall jeopardize the continued existence of a threatened or endangered species, a species proposed for listing as threatened or endangered, or a designated or proposed critical habitat under the Federal Endangered Species Act, 16 U.S.C. §1531 et seq.; State Endangered Species Conservation Act, RSA 212-A; or New Hampshire Native Plant Protection Act, RSA 217-A.

10. In accordance with Env-Wt 307.02, and in accordance with federal requirements, all work in areas under the jurisdiction of the U.S. Army Corps of Engineers (USACE) shall comply with all conditions of the applicable state general permit.

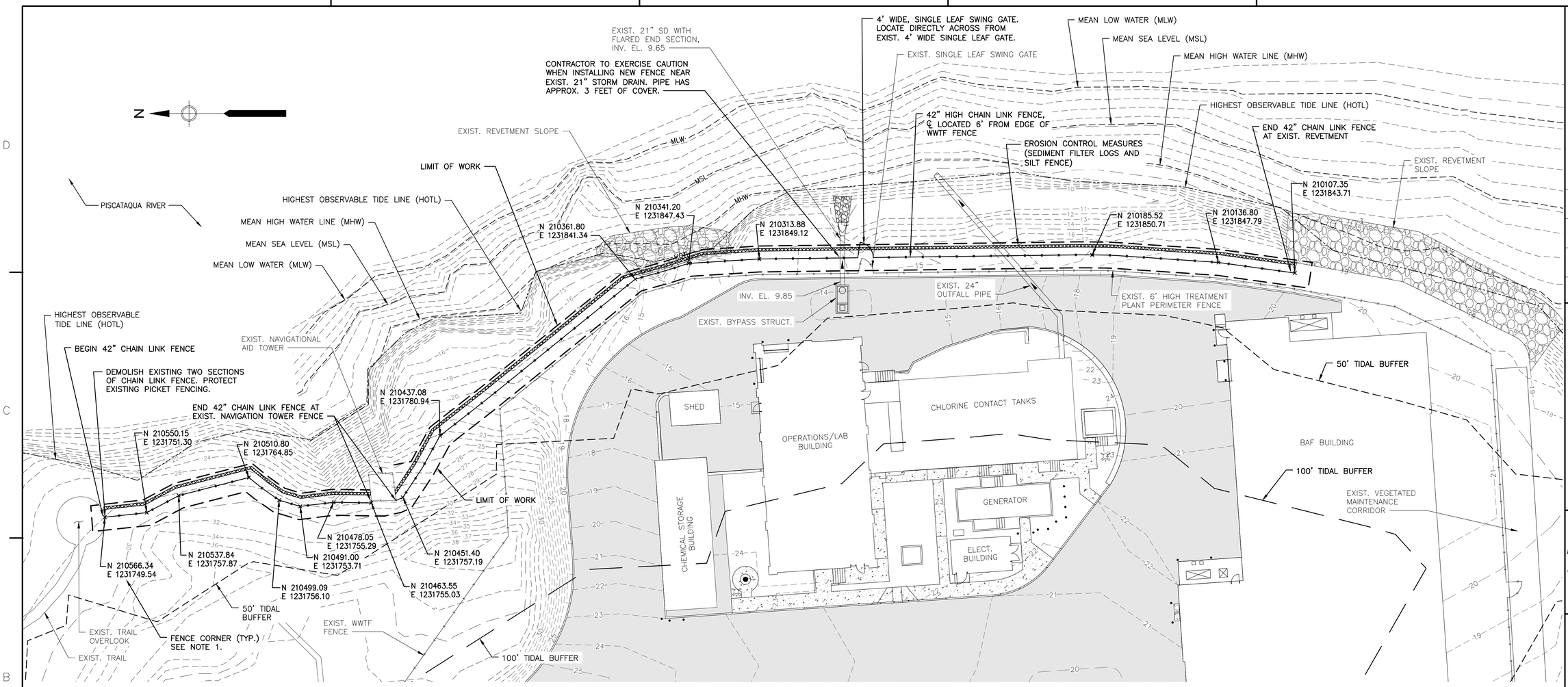
APPROVED:

Stefanie M. Giallongo
Inland Wetland Supervisor, Wetlands Bureau
Land Resources Management, Water Division

THE SIGNATURES BELOW ARE REQUIRED TO VALIDATE THIS PERMIT (Env-Wt 314.01).

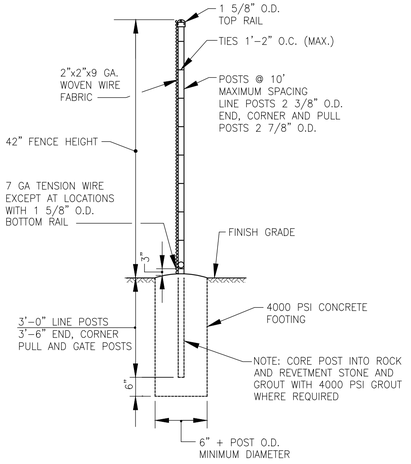
_____ _____

PERMITTEE SIGNATURE (required) PRINCIPAL CONTRACTOR SIGNATURE (required)



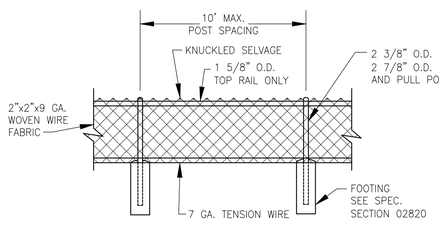
PLAN

SCALE: 1"=20'



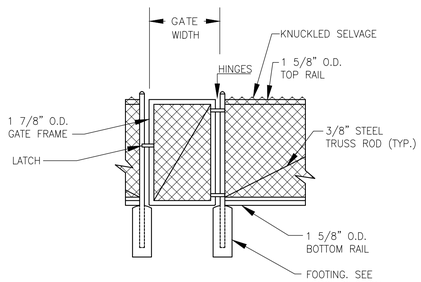
CHAIN LINK FENCE SECTION

NOT TO SCALE



3'-6" HEIGHT CHAIN LINK FENCE ELEVATION

NOT TO SCALE



3'-6" HEIGHT SINGLE LEAF GATE

NOT TO SCALE

LEGEND

EXISTING		PROPOSED	
	STRUCTURE		LIMIT OF WORK
	CHAINLINK FENCE		CHAIN LINK FENCE
24	CONTOUR LINE		EROSION CONTROL
	BIT. CONC. PAVEMENT	N 210107.35 E 1231843.71	FENCE CORNER LOCATION IN NH STATE PLANE COORDINATE SYSTEM, NAD83
	CONCRETE		
	STONE REVETMENT SLOPE		
	PIPE – 6" DIAM.		
	DIRECTION OF FLOW		
	FLARED END SECTION WITH STONE		
	MANHOLE		
	GUARD POST OR BOLLARD		
	FIRE HYDRANT		
	50' TIDAL BUFFER		
	100' TIDAL BUFFER		

NOTES:

1. COORDINATE LOCATIONS SHOWN ARE REFERENCED TO THE NH STATE PLANE COORDINATE SYSTEM, NAD83.
2. VERTICAL DATUM IS NAVD 88.

1" = 20' SCALE: 0 20 40 60 FEET

REVISIONS

MARK	DATE	MADE BY	CHECKED	DESCRIPTION

PROPOSED FENCE PLAN

CITY OF PORTSMOUTH, NH - DEPARTMENT OF PUBLIC WORKS

PEIRCE ISLAND TRAIL EXTENSION

PROJECT NO: 60323328
CAD DWG FILE: C-001 12-9-21
DATE: DECEMBER 2021
SCALE: AS NOTED

C-001

PATH/FILENAME: L:\LEGACY\USCHL1FP001\DATA\PROJECTS\WAKEFIELD\DATA_3\PRO\60301525 - PORTSMOUTH WWTF UPGRADES\SHEETS\BP-2\C\C-001 12-9-21.DWG
LAST UPDATE: Thursday, December 9, 2021 1:12:18 PM
PLOT DATE: Monday, December 13, 2021 10:56:57 AM
ANSI D – 9-Dec-21