SEWER SPECIFICATIONS

SEWER MANHOLES

- A. All component parts shall have the strength, leak resistance, and
- space necessary for the intended service. B. Manhole structures shall have a life in excess of 25 years.
- C. Manhole structures shall be designed to withstand H-20 loading and shall not leak in excess of one gallon per day per vertical foot of manhole
- for the life of the structure. D. Barrels and cone sections shall be constructed of precast reinforced concrete, or cast-in-place reinforced concrete.
- E. Base sections shall be of monolithic construction to a point 6" above the crown of the incoming pipe.
- F. Horizontal joints between sections of precast concrete barrels shall be of an overlapping type, which shall depend for water-tightness using a double row of an elastomeric or mastic-like sealant.
- G. Pipe to manhole joints shall be as follows:
- 1. Elastomeric, rubber sleeve with watertight joints at the manhole opening and pipe surfaces;
- 2. Cast into the wall or secured with stainless steel clamps;
- 3. Elastomeric sealing ring cast in the manhole opening with seal formed on the surface of the pipe by compression or the ring; and 4. Non-shrink grouted joints where watertight bonding to the manhole
- and pipe can be obtained. H. Manhole cone sections shall be eccentric in shape.

MINTER HARBOR

- I. All precast sections and bases shall have the date of manufacture and the name or trademark of the manufacturer impressed or indelibly marked on the inside wall.
- J. Pipe supports shall be constructed from materials intended to withstand corrosion in a wet environment. They must be able to resist concentrated stress loads from maintenance activities and prevent excessive pipe deflection or damage to pipe fittings. Pipe bearing

ZONE 1 Q = 12.6 gp

OCKEY COPE

ZONE 0 Q = 9.2 gpm

38 CONNECTIONS

2500 ft PVC PIPE

- surfaces shall be free of rough surfaces or sharp edges, and must not restrict linear movement of the pipe caused by expansion or contraction.
- 1. Concrete for cast-in-place bases or complete manholes shall conform to the requirements for class AA concrete in the New Hampshire Department of Transportation's standard specifications for road and bridge construction;

K. Materials of construction for manholes shall be as follows:

- 2. Reinforcing steel for cast-in-place concrete shall conform to the requirements for billet-steel bars and welded steel wire fabric in the New Hampshire Department of Transportation's standard specifications for road and bridge construction;
- 3. Precast concrete barrel sections, cones, and bases shall conform to ASTM C478 except as may be otherwise shown in these rules; 4. The manhole frame and cover shall provide a 30" diameter clear opening;
- 5. The manhole cover shall have the word "SEWER" in 3" tall letters cast into the top surface;
- 6. The castings shall be of even-grained cast iron, smooth and free from scale, lumps, blisters, sand holes and defects;
- 7. Contact surfaces of covers and frames shall be machined at the foundry to prevent rocking of covers in any orientation;
- 8. Castings shall be equal to class 30, conforming to ASTM
- 9. Coatings for frames and covers shall be specified in the construction specifications:
- 10. Brick masonry for grade adjustment shall comply with ASTM C32-05, clay or shale, for grade SS hard brick: 11. Mortar shall be composed of portland cement and sand with or
- without hydrated lime addition; 12. Proportions in mortar of parts by volumes shall be:
- a. 4.5 parts sand and 1.5 parts cement; or

 $\frac{\text{ZONE 3}}{Q = 21.4 \text{ gpm}}$

b. 4.5 parts sand, one part cement and 0.5 part hydrated lime: 13. Cement shall be type II portland cement conforming to ASTM

PROPOSED 2.5" PVC IPS DR21

EXTENSION TO PRESSURE SEWER

- - 14. Hydrated lime shall be type S conforming to ASTM C207-06 "Standard Specifications for Hydrated Lime for Masonry Purposes";
 - 15. Sand shall consist of inert natural sand conforming to the ASTM C33-03 "Standard Specifications for Concrete, Fine Aggregates";
 - L. Manholes shall be installed at the end of each sewer line, at all intersections, and at all changes in grade, size or alignment. In no case
 - shall the distance between manholes be greater than 500 feet for sewers up to and including 48" in diameter.
 - M. Watertight manhole covers shall be used wherever the manhole tops may be flooded by street runoff or high water.
 - material. Bedding shall conform to ASTM C33 No. 67 stone. The excavation shall be properly dewatered while placing bedding material and setting the base or pouring concrete. Water-stops shall be used at
 - with the manufacturer's recommended procedure, or cast integrally with the poured base.

LOW PRESSURE SEWER PIPING

- A. Low pressure sewers shall be constructed of PVC material. Resin
- B. Joint gaskets for PVC pipe shall be oil resistant compression rings of rubber material conforming to ASTM D1869 and shall be push-on, bell-and-spigot type;
- C. PVC pipe used for low pressure sewers shall conform to ASTM
- pressures of at least 2.5 times the design total dynamic head.

SEWER PIPING FITTINGS

are to have been proven to be reliable in similar installations over a reasonable number of years. All couplings and connectors shall have a minimum pressure rating equal to that of the pipe line in which they are

- A. Ball valves shall be full ported with minimal pressure drop.
- B. Curb boxes shall have a cast iron base piece, steel upper, cast iron lid, and threaded bronze plug with a pentagon nut (Rope Thread); extension type and arch pattern base with $\frac{5}{8}$ " diameter, minimum, 30"
- applications, to prevent contamination and mechanical fouling due to solids entering the valve.
- D. Flushing and cleanout connections in manholes shall be equipped with a nipple and threaded cap facing upwards for ease of operations.

TRENCHING

- B. Pipe sand blanket material shall be graded sand free from organic materials, so graded that 90% to 100% passes a $\frac{1}{2}$ inch sieve and a
- C. Pipe bedding material shall extend from a horizontal plane through the pipe axis to 6" below the bottom of the pipe outside surface. D. Pipe sand blanket material shall cover the pipe a minimum of 12"
- E. Compaction shall be in 12" layers for bedding and blanket materials. F. Backfill material shall be compacted in 36" layers to the ground
- compacted in 12" layers to the road base surface.
- materials excavated from the trench during construction, excluding: Debris;

- 3. Organic matter;
- 4. Top soil;
- Wet or soft muck;
- 7. Excavated ledge material;
- 8. Rocks over 6" in the largest dimension; and
- 9. any material not approved by the engineer
- above, except that top soil, loam, muck or peat may be used provided the completed construction will be stable, and provided that access to the sewer for maintenance and reconstruction is preserved.

- J. Base course for trench repair shall meet the requirements of section 300 of the standard specifications for road and bridge construction for the New Hampshire Department of Transportation.
- K. Where sheeting is placed alongside the pipe and extends below mid-diameter, it shall be cut of and left in place to an elevation not less than 12" above the top of the pipe. Where sheeting is to be left in place,
- L. For sewer pipe up to 15" in diameter, allowable trench width at plane
- trench dams installed at locations indicated on the profiles, to lower possible groundwater flow velocity and potential disturbance to pipe zone materials. Trench dams shall be equivalent to Ripley's ABS dam, installed per manufacturer's recommendations with an appropriately sized Fernco type flexible adapter tightened to create a seal between the pipe and dam neck.

- A. Sewers shall be located during design at least 10' horizontally from any existing or proposed water main.
- constructed as follows:
- 1. Sewer pipe joints shall be located at least 6' horizontally from the
- 2. Vertical separation of the sewer and water main shall be not less than 18", with water above sewer.

- A. Low pressure sewers shall be tested in accordance with Section 4 of AWWA C600-05 "Installation of Cast Iron Water Mains and Their Appurtenances", at a pressure equal to the greater of 150% of the design operating total dynamic head or at least 100 psi.
- B. Manholes shall be tested for leakage using a vacuum test.
- C. The manhole vacuum test shall conform to the following: 1. The initial vacuum gauge test pressure shall be 10" Hg; and
- a. Not less than 2 minutes for manholes less than 10' in depth; b. Not less than $2\frac{1}{2}$ minutes for manholes 10'-15' deep; and
- to achieve the acceptance limits specified in C above. E. Following completion of the leakage test, the frame and cover shall be
- placed on the top of the manhole or some other means used to prevent accidental entry by unauthorized persons, children, or animals, until the contractor is ready to make final adjustment to grade.

GRINDER PUMP STATION SPECIFICATIONS

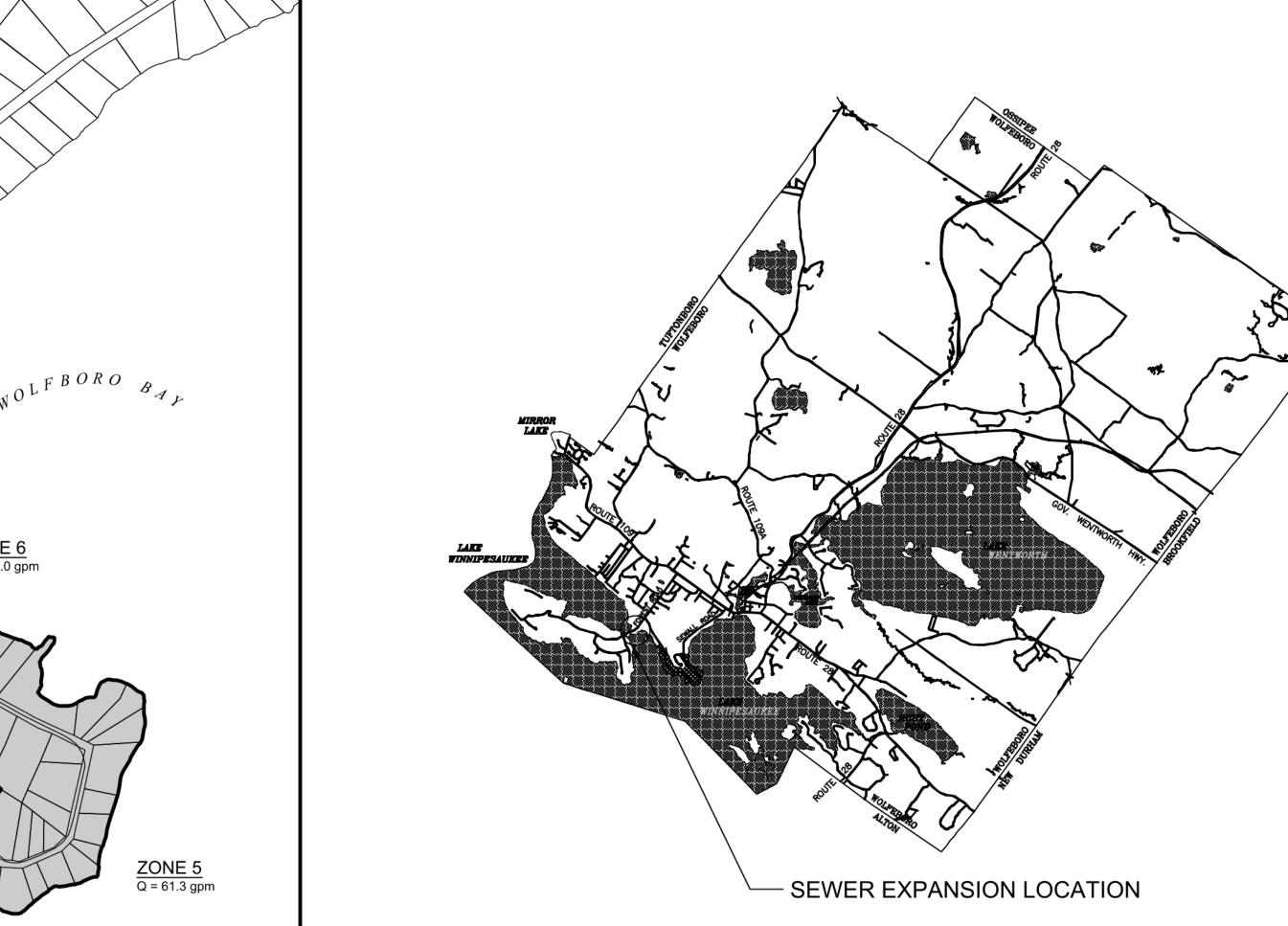
PRIVATE CONNECTIONS: NOT PART OF THE MUNICIPAL INSTALLATIONS (For proposed & future low pressure sewer service in Zone 0)

Individual grinder pump stations shall be either outdoor in-ground Simplex type or indoor Simplex type, designated for the specific purpose of grinding and pumping domestic wastewater. Where the connection is to be made to an existing residence, the pump station should be placed outdoors and as close to

the house as possible given topography and exterior conditions.

Grinder pumps shall be Franklin Electric IGPH-M series grinder pump, installed with stainless steel rains in fiberglass, or single compartment concrete chamber. Simplex systems to be installed in minimum of Ø30" basin, duplex with minimum of 26" diameter. Control panel to be provided with flashing red light and audible horn for high water alarm.

Private connections must have a transfer switch to allow for emergency power in the event of an outage.



WOLFEBORO LOCATION MAP

DATE OF PRINT

AUGUST 31 2023 HORIZONS ENGINEERING

> Engineering **Civil and Structural Engineering** Land Surveying and Environmental Consultin

TOWN OF WOLFEBORO

PRESSURE SEWER EXTENSION **FOREST STREET**

PRESSURE SEWER SYSTEM OVERVIEW PLAN

REVISION DESCRIPTION 1\ 08/2023 REVISED PER NHDES COMMENTS 2023-02-0 220367 ARCHIVE

No. 8397

SCALE 1:5000

SEWALL-FOREST PRESSURE SEWER SYSTEM OVERVIEW

 $\frac{\text{ZONE 4}}{\text{Q} = 45.0 \text{ gpm}}$

 $\frac{\text{ZONE 6}}{\text{Q = 69.0 gpm}}$

16. When manhole depth is less than 6 feet, a reinforced concrete slab

cover may by used in lieu of a cone section. Slab shall have an eccentric entrance opening and be capable of supporting H-20 loads.

N. Precast bases shall be placed on a 6" layer of compacted bedding

the horizontal joint of cast-in-place manholes. O. Inlet and outlet stubs shall be connected and sealed in accordance

P. A leakage test shall be performed.

compound shall conform to ASTM D1784;

D2241-05 or ASTM D1785-05;

D. Low pressure sewers shall be designed to withstand hydrostatic

Each group of shut off valves, curb boxes, ball valves, check valves, and air release valves shall be manufactured by one manufacturer. Products

stationary rod. C. Air release valves shall be specifically designed for pressure sewer

A. Pipe trench bedding material and fill material shall be screened gravel or crushed stone to ASTM C33 stone size No. 67.

maximum of 15% passes a #200 sieve. The sand blanket shall cover the pipe to a depth of 12".

above the crown of the outside surface.

surface except for road construction where the final 3' shall be

- G. Trench backfill material in roadway locations shall be natural
- 2. Pieces of pavement:
- Peat or clay;
- H. Trench backfill at cross-country locations shall be as described in G

I. Backfill at cross-country locations shall be mounded 6" above original

it shall be cut off at least 3' below finished grade, but not less than 12"

above the top of the pipe.

12" above pipe shall be no more than 36". M. Trenches for sewer pipes with slopes over .08 feet per foot shall have

WATERLINE SEPARATION

B. Whenever sewers must cross water mains, the sewer shall be

SEWER COMPONENT TESTING

- 2. The minimum acceptable test hold time for a 1" Hg pressure drop to
- c. Not less than 3 minutes for manholes more than 15' deep. D. The manhole shall be repaired and retested if the test hold times fail



horizons

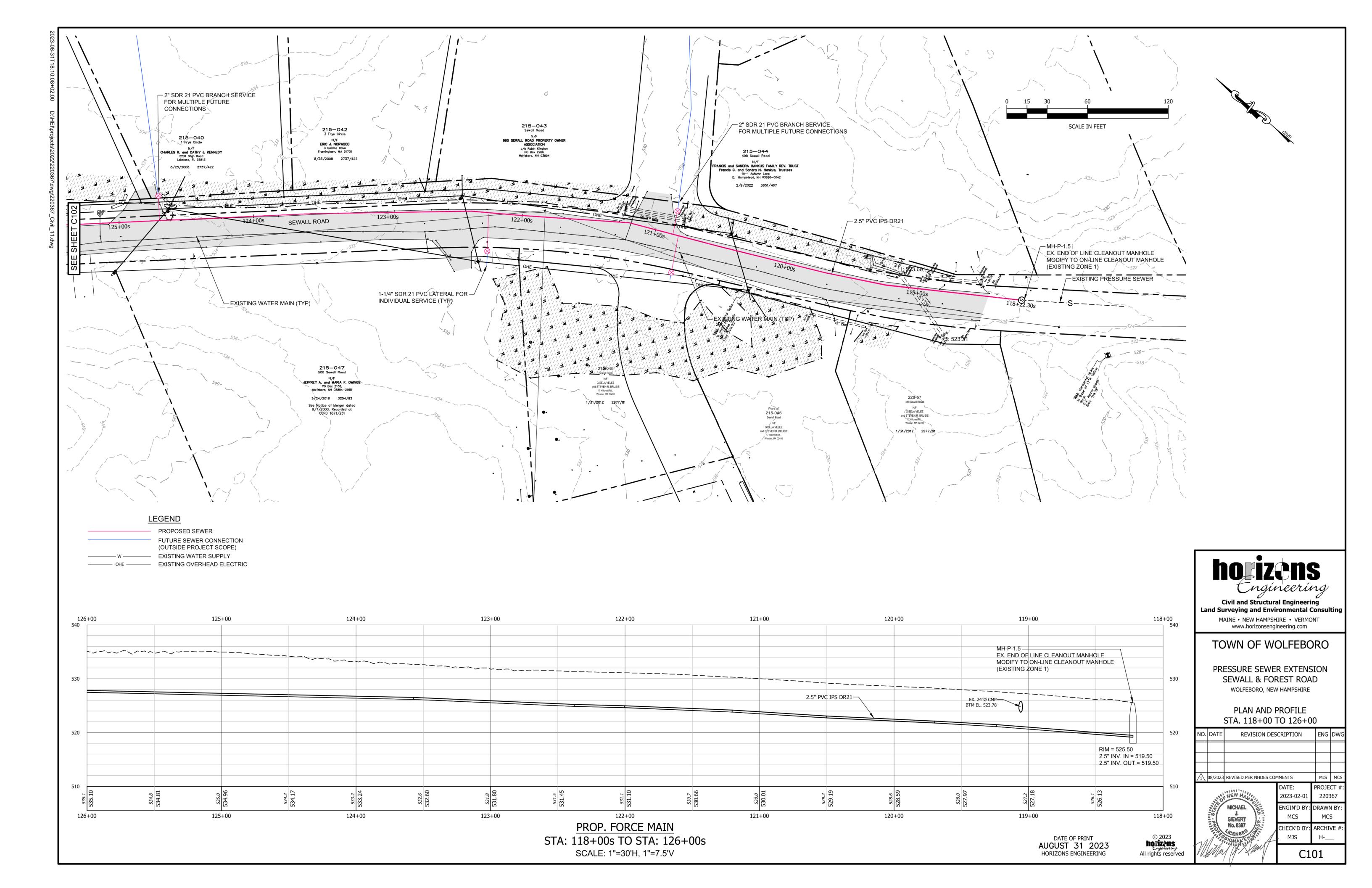
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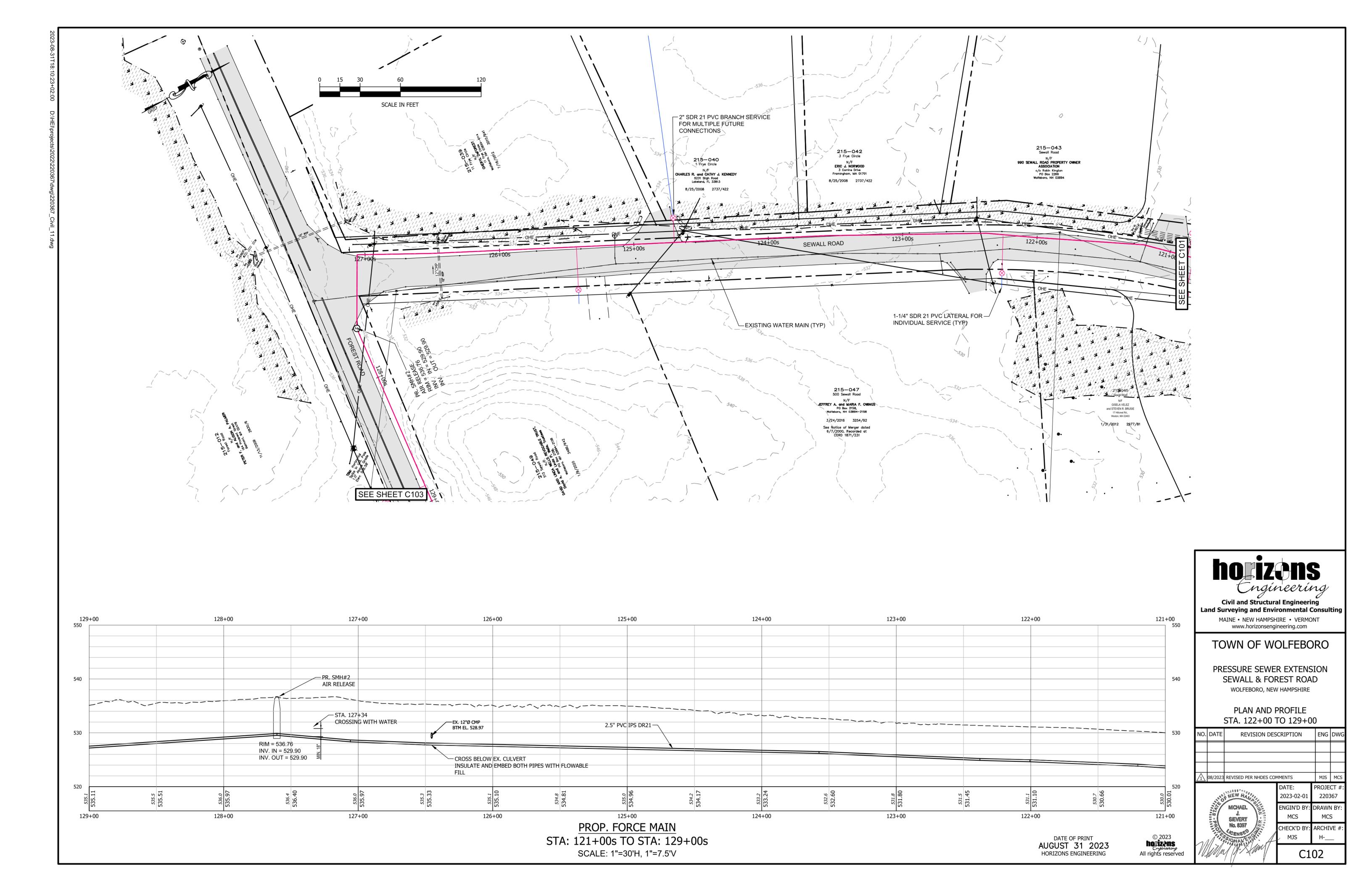
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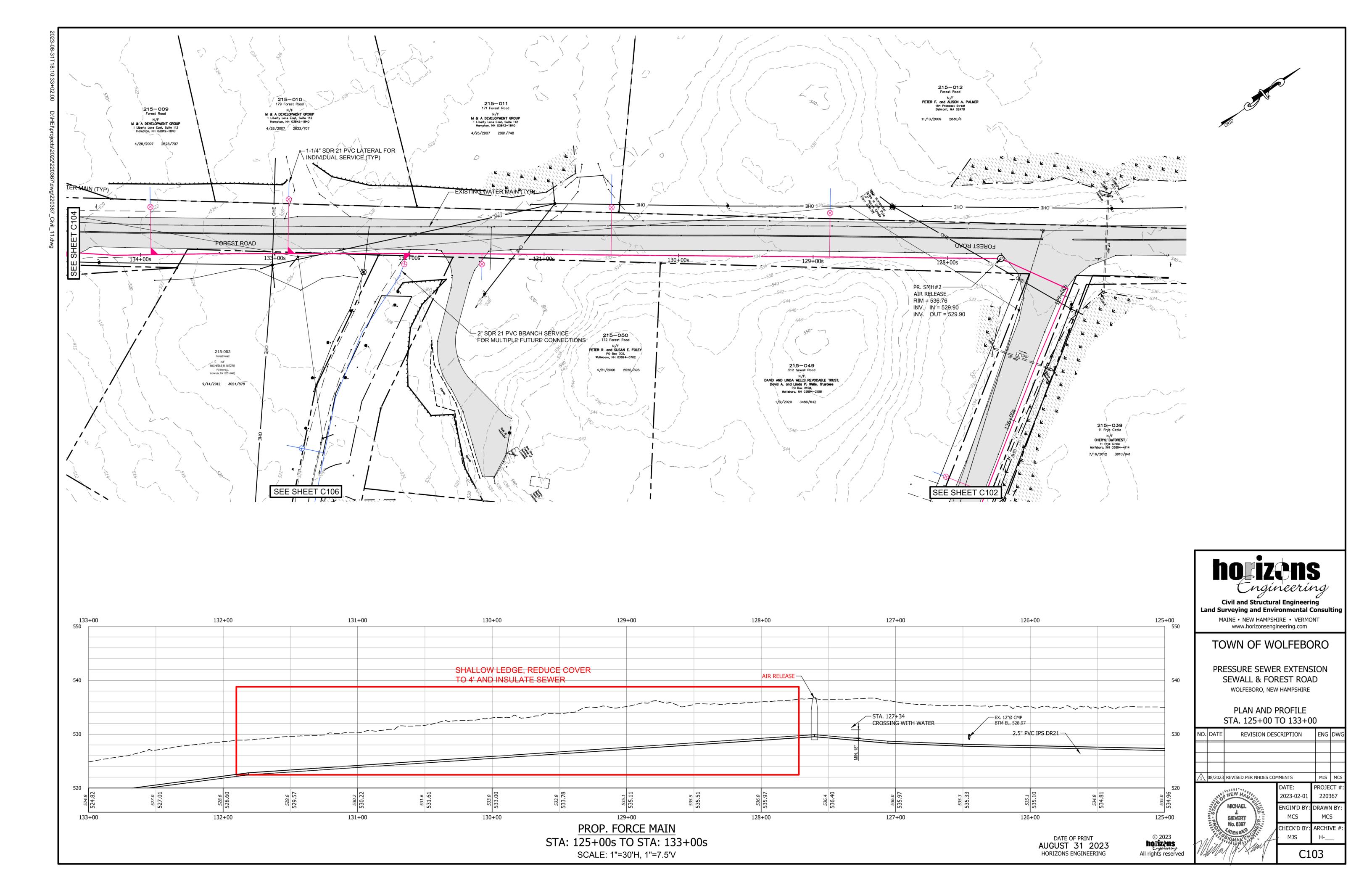
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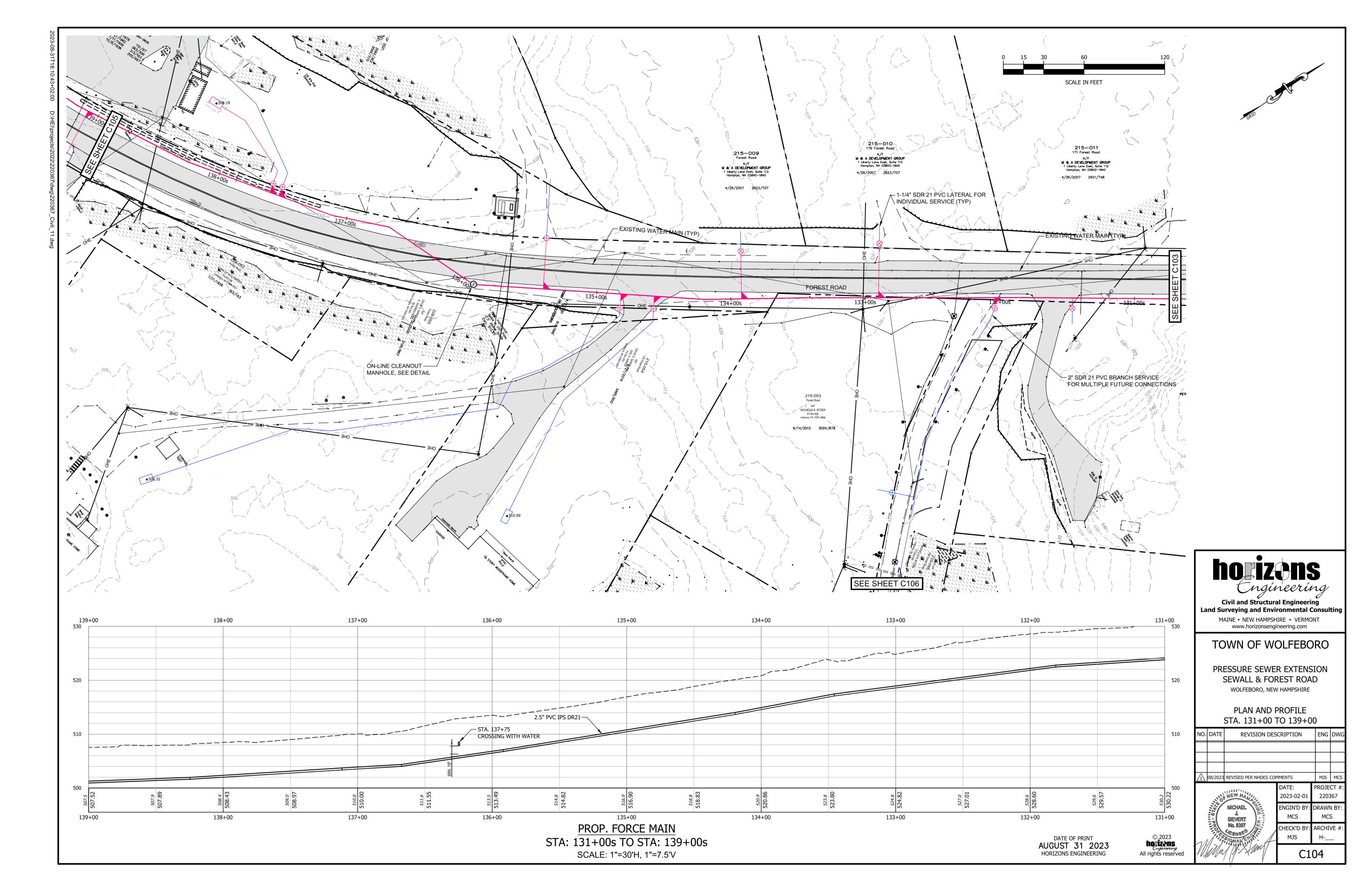
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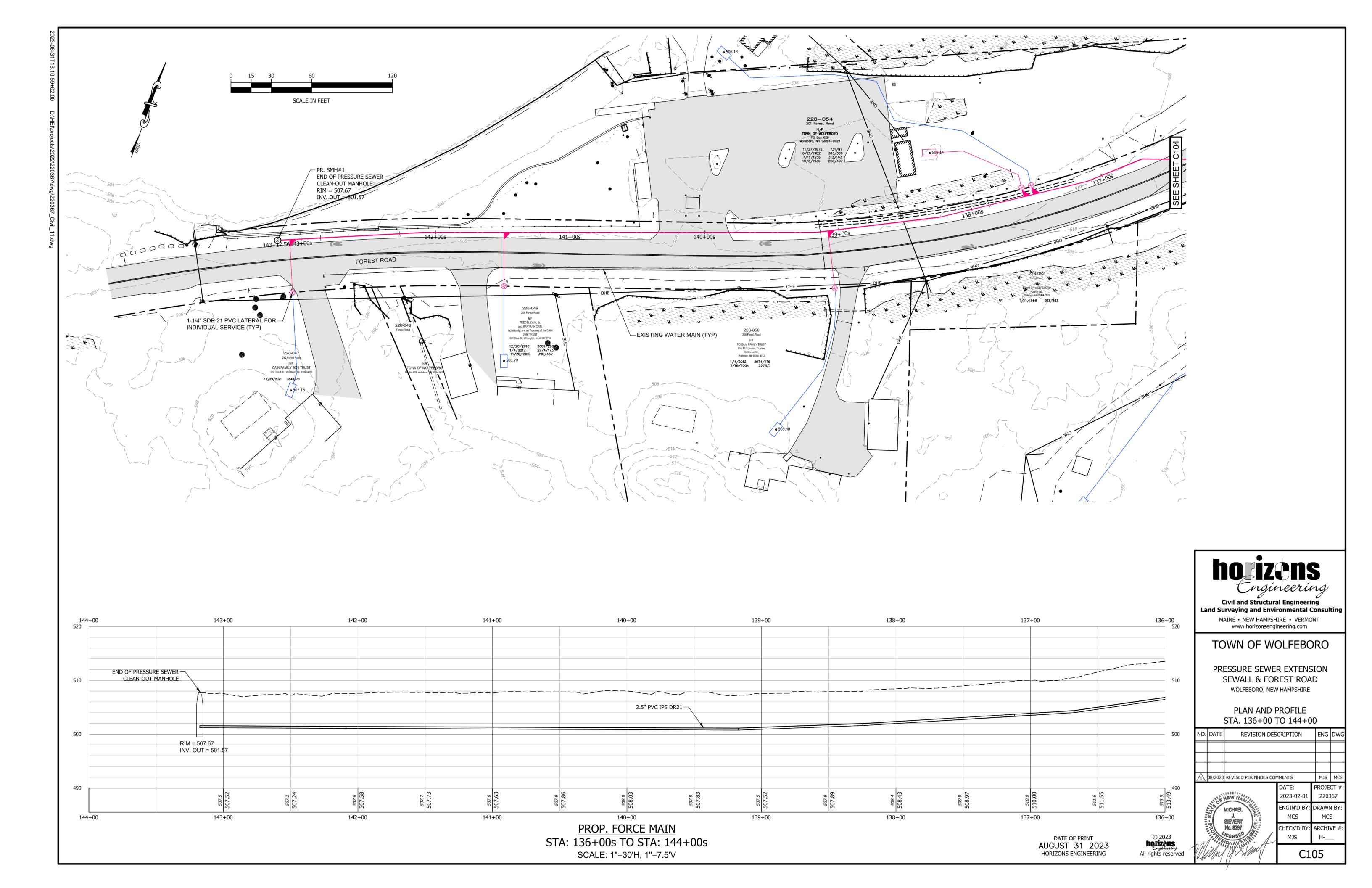
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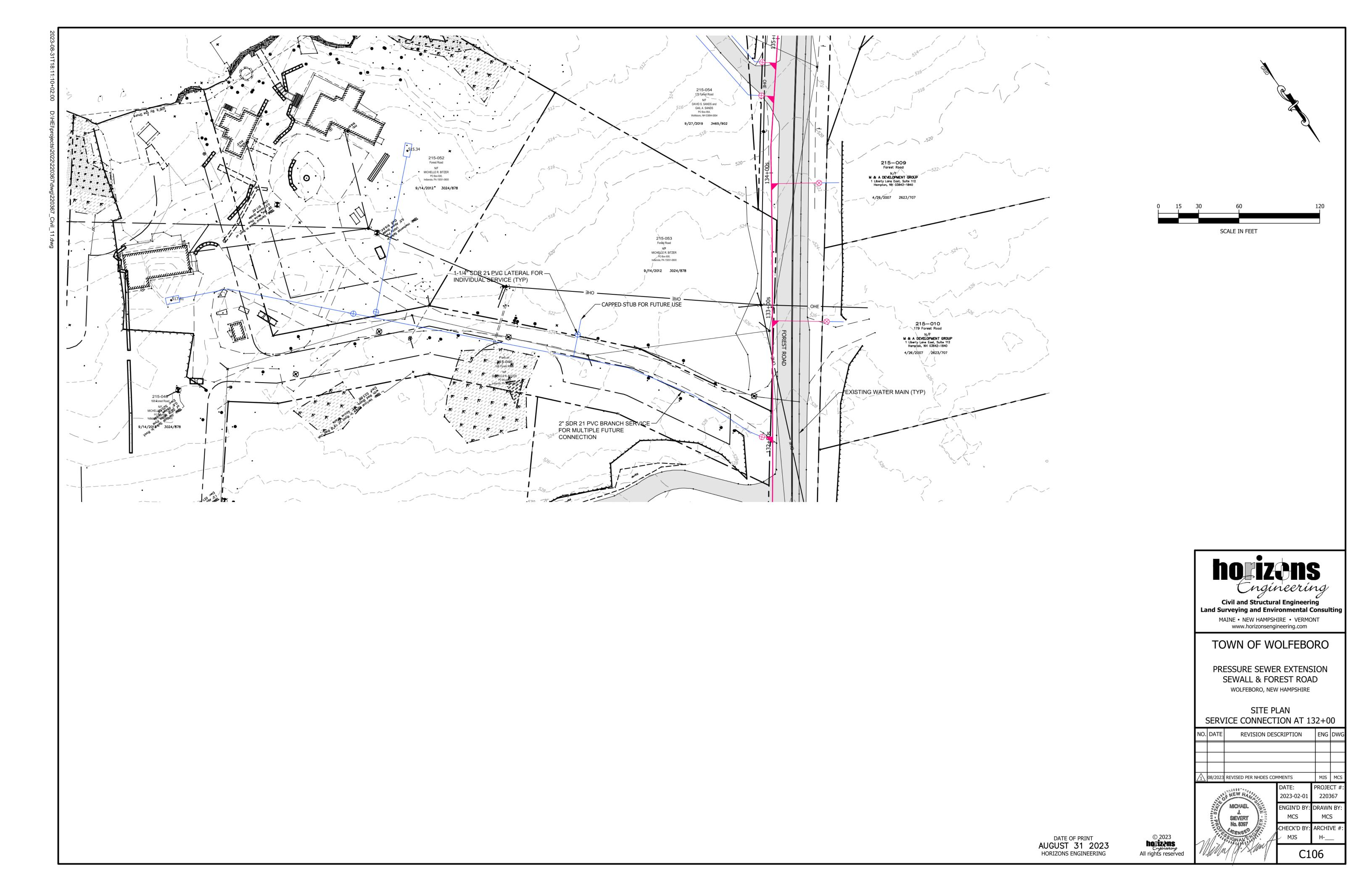


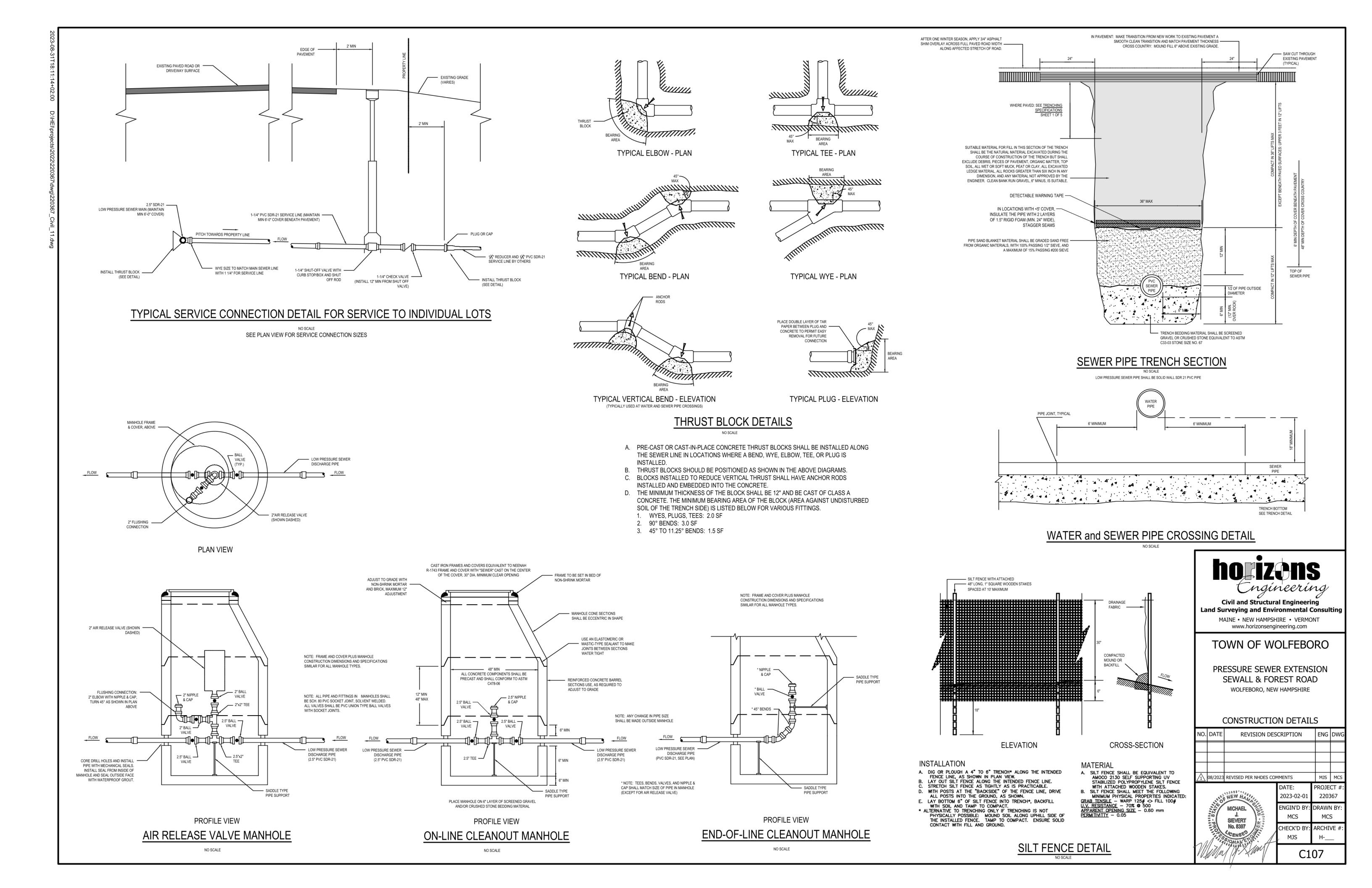


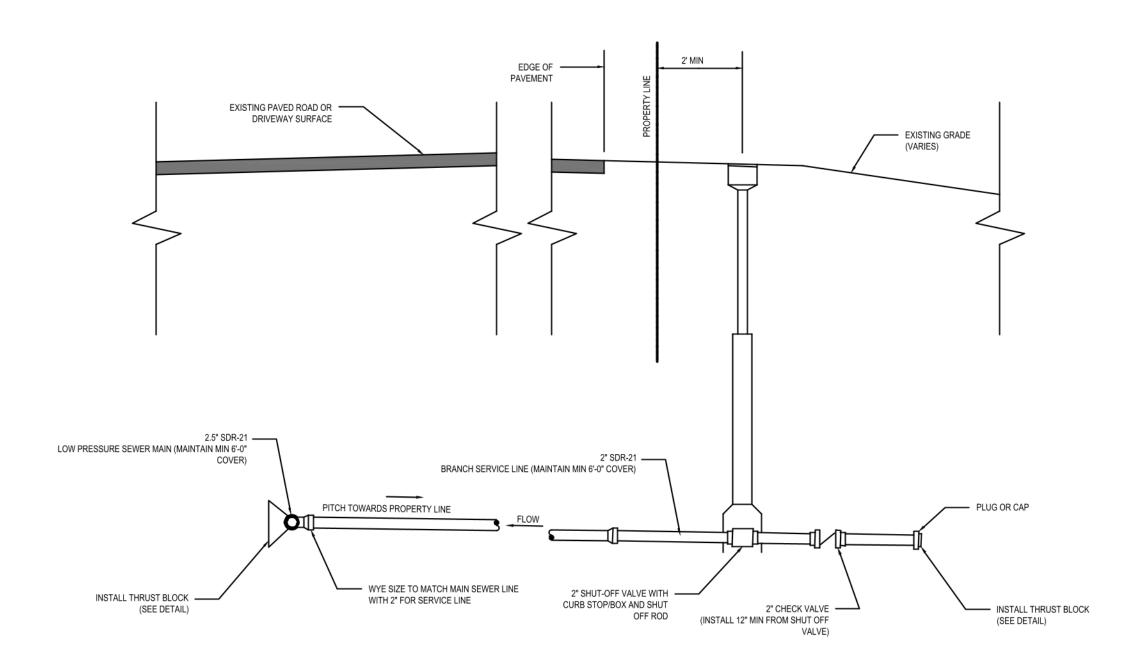












TYPICAL BRANCH SERVICE CONNECTION DETAIL FOR SERVICE TO FUTURE MULTIPLE CONNECTIONS

NO SCALE SEE PLAN VIEW FOR SERVICE CONNECTION SIZES



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TOWN OF WOLFEBORO

PRESSURE SEWER EXTENSION SEWALL & FOREST ROAD WOLFEBORO, NEW HAMPSHIRE

CONSTRUCTION DETAILS

NO.	DATE	REVISION DESCRIPTION			ENG	DWC
$\overline{\Lambda}$	08/2023	REVISED PER NHDES COMMENTS			MJS	MCS
NEW HAMPE			DATE: 2023-02-01	F	PROJECT # 220367	
	NYS PROCES	MICHAEL SIEVERT No. 8397 CENSE	ENGIN'D BY: MCS	DRAWN BY: MCS		
n A			CHECK'D BY: MJS	ARCHIVE # H		
M	Mn		C108			