

State of Vermont  
 Department of Buildings & General Services  
**BARTON STATE HIGHWAY GARAGE**  
 PROPOSED IMPROVEMENTS TO  
 FLOOR DRAIN & SANITARY SEWER CONNECTION  
 BARTON, VERMONT

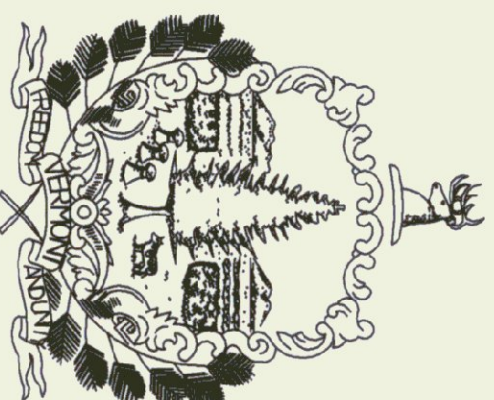
AGENCY OF ADMINISTRATION  
 DEPARTMENT OF BUILDINGS & GENERAL SERVICES  
 2 GOVERNOR AIKEN AVENUE  
 MONTPELIER, VERMONT 05633-5801  
 THOMAS W. TORTI, COMMISSIONER

**INDEX OF SHEETS**

- 2 LAYOUT OPTION 1
- 3 PROFILE/ DETAILS
- 4 DETAILS
- 5 NOTES/ DETAILS

**CONVENTIONAL SYMBOLS**

COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	
FENCE LINE	
STONE WALL	
TRAVELED WAY	
GUARD RAIL	
RAILROAD	
SURVEY LINE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
TREES	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	
TOP OF CUT	
TOE OF SLOPE	



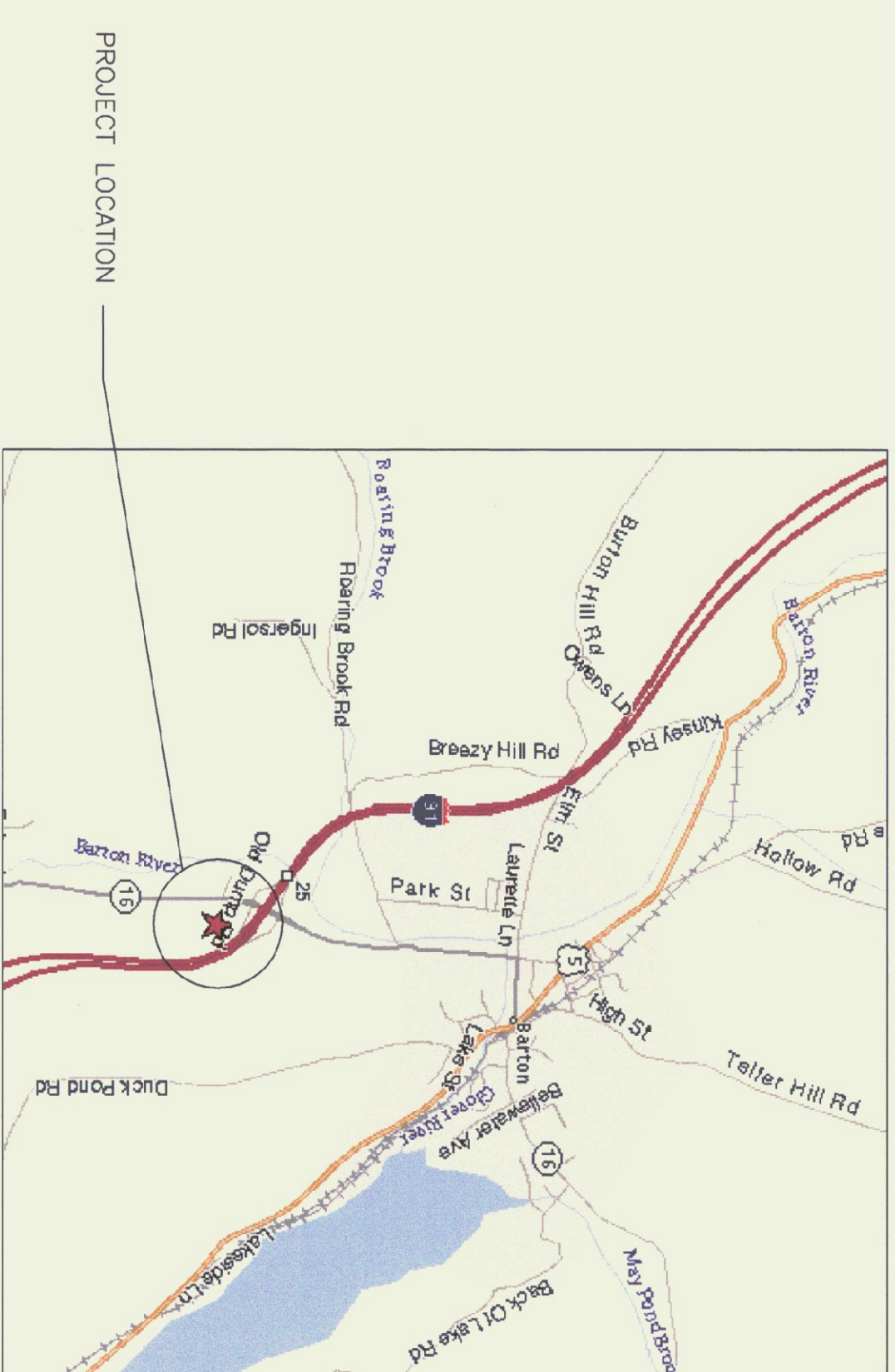
James H. Douglas  
 Governor

January 2003

ENGINEER: \_\_\_\_\_

C.L.D. CONSULTING ENGINEERS  
 THE CURTIS HOUSE 256 RT. 5 SOUTH  
 NORWICH, VERMONT 05055  
 PHONE: (802) 649-1154 FAX: (802) 649-1159

AGENCY OF TRANSPORTATION  
 1 NATIONAL LIFE DRIVE DRAWER 33  
 MONTPELIER, VERMONT 05633  
 PATRICIA A. McDONALD, SECRETARY



**PROJECT LOCATION MAP**

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROJECT DEVELOPMENT. CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR THE CONSTRUCTION DATED 1990, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON MARCH 15, 1990 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DATUM  
 VERTICAL N/A  
 HORIZONTAL N/A



APPROXIMATE LOCATION BASED ON RECORD DRAWINGS BY DUBOIS & KING, RANDOLPH, VT, DATED 2/89.

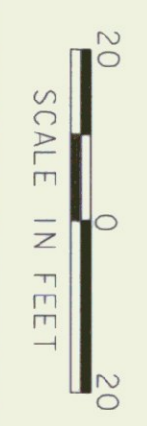
NEW 4" ID DOGHOUSE MANHOLE W/ TAPPING SLEEVE & CHECK VALVE

CONNECT NEW PVC PIPE TO EXISTING DRAIN CONTRACTOR TO VERIFY ELEVATION OF EXISTING PIPE. 2.0% SLOPE OUT OF BUILDING

CONNECT EXISTING SANITARY LATERAL TO NEW GRAVITY SEWER. CONTRACTOR TO VERIFY LOCATION & ELEVATION OF EXISTING LATERAL. USE "FERRO" OR EQUIVALENT AND W/ PVC FITTING.

NEW 1/2" IN SLAB GRIT CHAMBER LOCATE TO MIDDLE OF EAST BAY

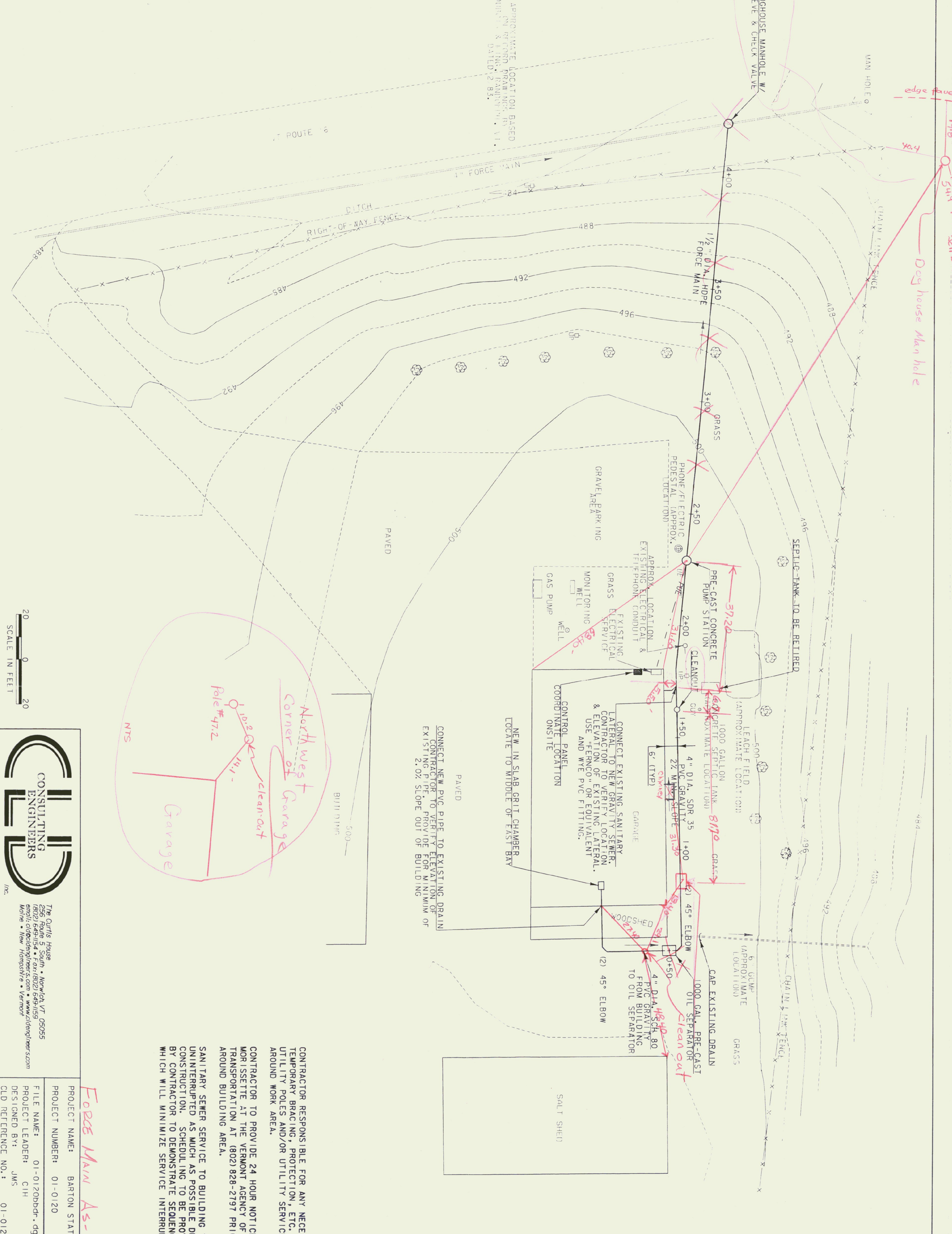
CONTRACTOR RESPONSIBLE FOR ANY NECESSARY TEMPORARY BRACING, PROTECTION, ETC., OF EXISTING UTILITY POLES AND/OR UTILITY SERVICES IMMEDIATELY AROUND WORK AREA.  
 CONTRACTOR TO PROVIDE 24 HOUR NOTICE TO MIKE MORISSETTE AT THE VERMONT AGENCY OF TRANSPORTATION AT (802) 828-2797 PRIOR TO EXCAVATION AROUND BUILDING AREA.  
 SANITARY SEWER SERVICE TO BUILDING TO POE UNINTERRUPTED AS MUCH AS POSSIBLE DURING CONSTRUCTION. SCHEDULING TO BE PROVIDED BY CONTRACTOR TO DEMONSTRATE SEQUENCING WHICH WILL MINIMIZE SERVICE INTERRUPTION.



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 256 Route 5 South • New York, VT 05055  
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 1000 Middlebury Street • New Hampshire • Vermont

PROJECT NAME: BARTON STATE HIGHWAY GARAGE  
 PROJECT NUMBER: 01-0120  
 FILE NAME: 01-0120bdr.dgn  
 PROJECT LEADER: CIH  
 DESIGNED BY: JMS  
 CHECKED BY: JMS  
 PLOT DATE: 03/07/2002  
 DRAWN BY: PCJ  
 SHEET 2 OF 5

DATUM  
 VERTICAL N/A  
 HORIZONTAL N/A



20 0 20  
 SCALE IN FEET



**Force Main As-Builts**

PROJECT NAME: BARTON STATE HIGHWAY GARAGE  
 PROJECT NUMBER: 01-0120

FILE NAME: 01-0120bldr.dgn  
 PROJECT LEADER: CIH  
 DESIGNED BY: JMS  
 CHECKED BY: JMS  
 PLOT DATE: 03/07/2002  
 DRAWN BY: PGJ  
 SHEET 2 OF 5

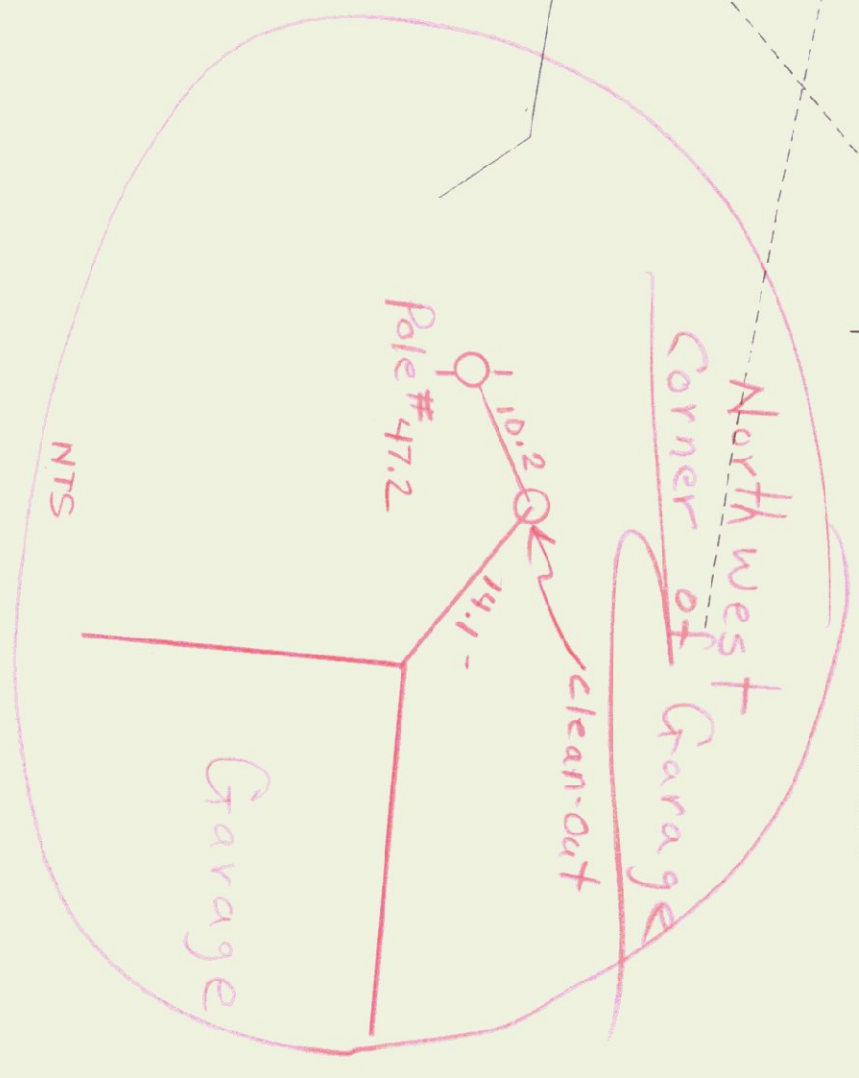
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CONNECT NEW PVC PIPE TO EXISTING DRAIN CONTRACTOR TO VERIFY ELEVATION OF EXISTING PIPE. PROVIDE FOR MINIMUM OF 2.0% SLOPE OUT OF BUILDING

CONNECT EXISTING SANITARY LATERAL TO NEW GRAVITY SEWER CONTRACTOR TO VERIFY LOCATION & ELEVATION OF EXISTING LATERAL. USE "FERRO" OR EQUIVALENT AND WYE PVC FITTING.

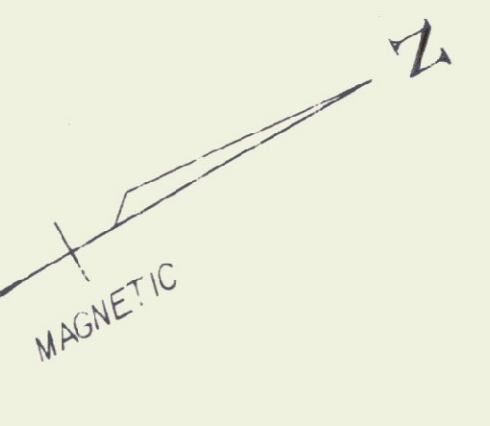
NEW IN SLAB CRUI CHAMBER LOCATE TO MIDDLE OF EAST BAY

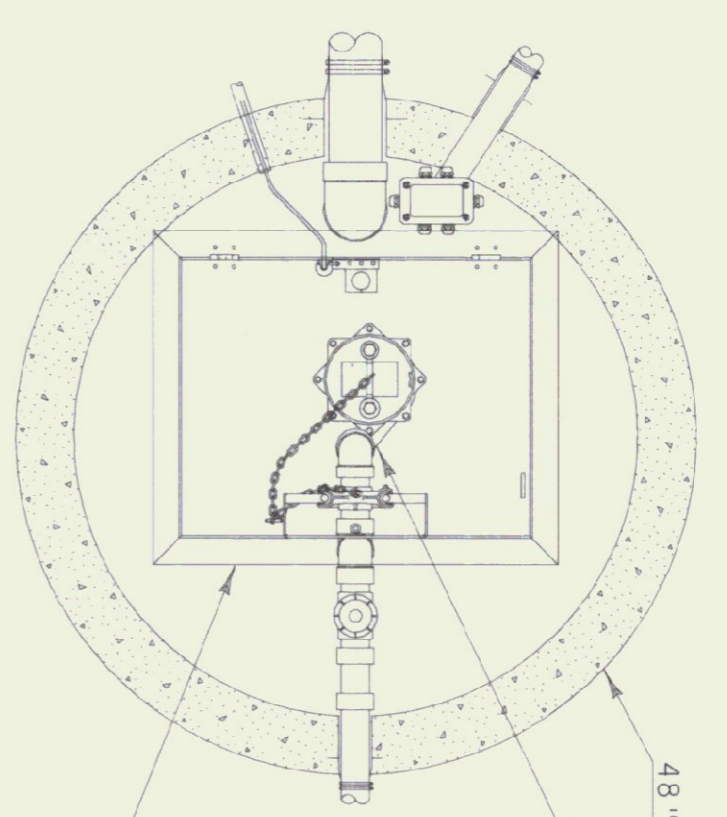
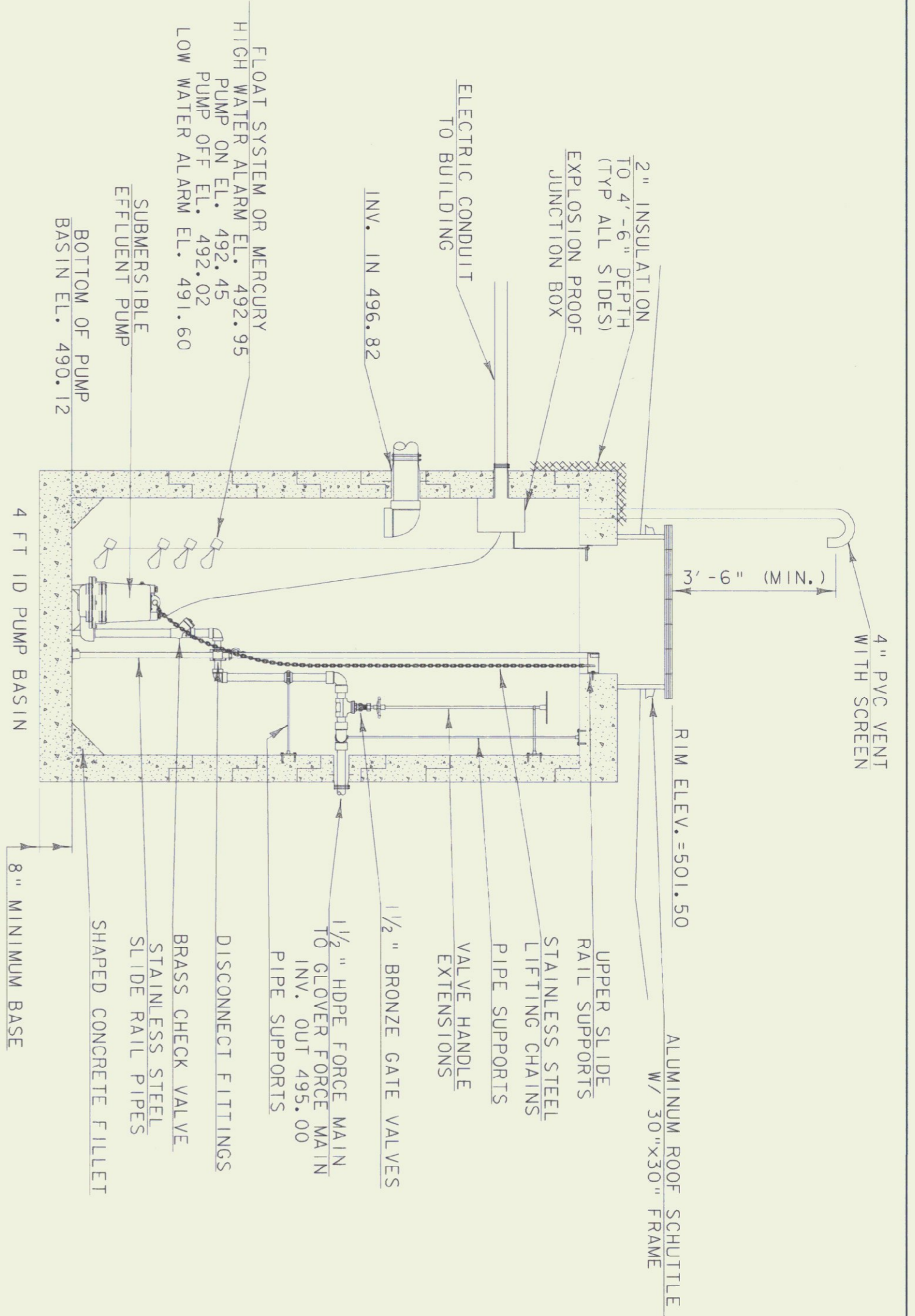
**CID CONSULTING ENGINEERS Inc.**  
 The Curtis House  
 256 Route 5 South • Norwich, VT 05055  
 (802) 649-1154 • Fax: (802) 649-1159  
 email: cid@cidengr.com • www.cidengr.com  
 Mohr • New Hampshire • Vermont



APPROXIMATE LOCATION BASED ON RECORD DRAWINGS BY DEWITT & LITTLE, FARMINGTON, VT. DATED 12-83.

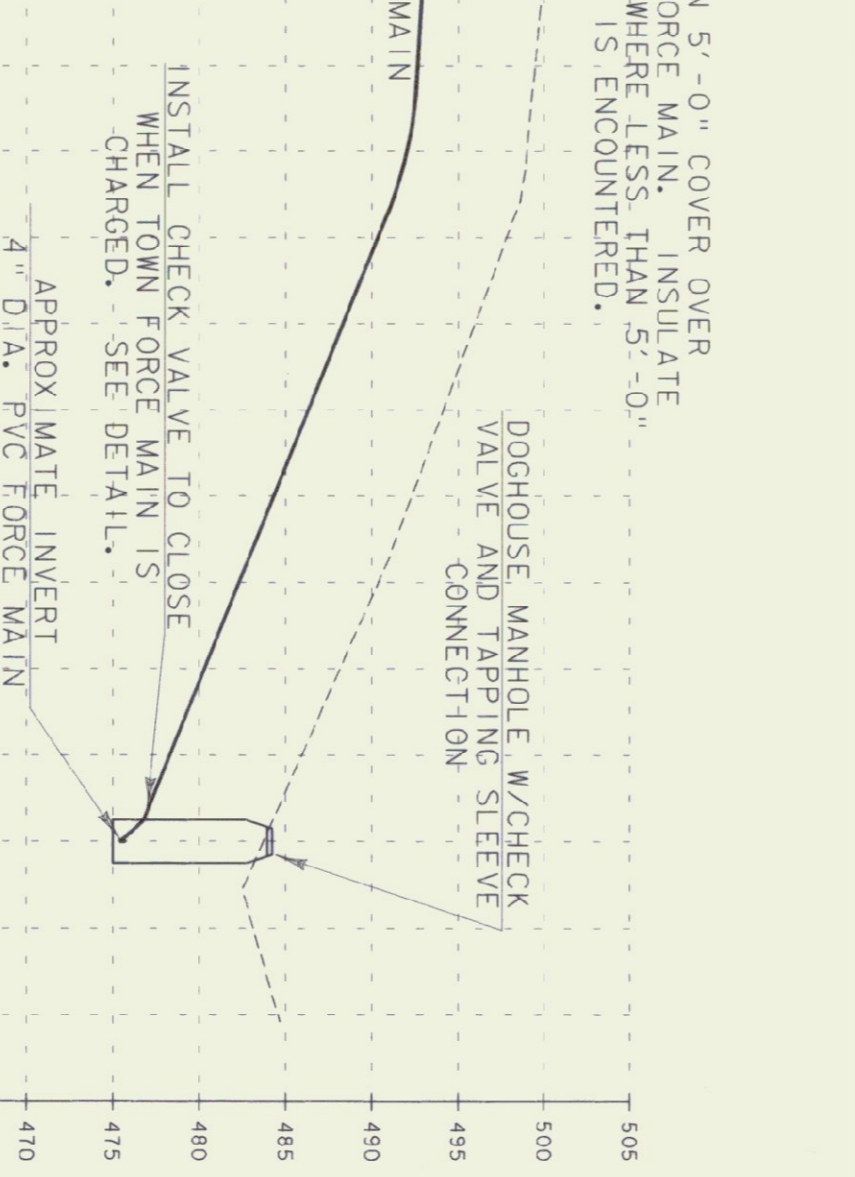
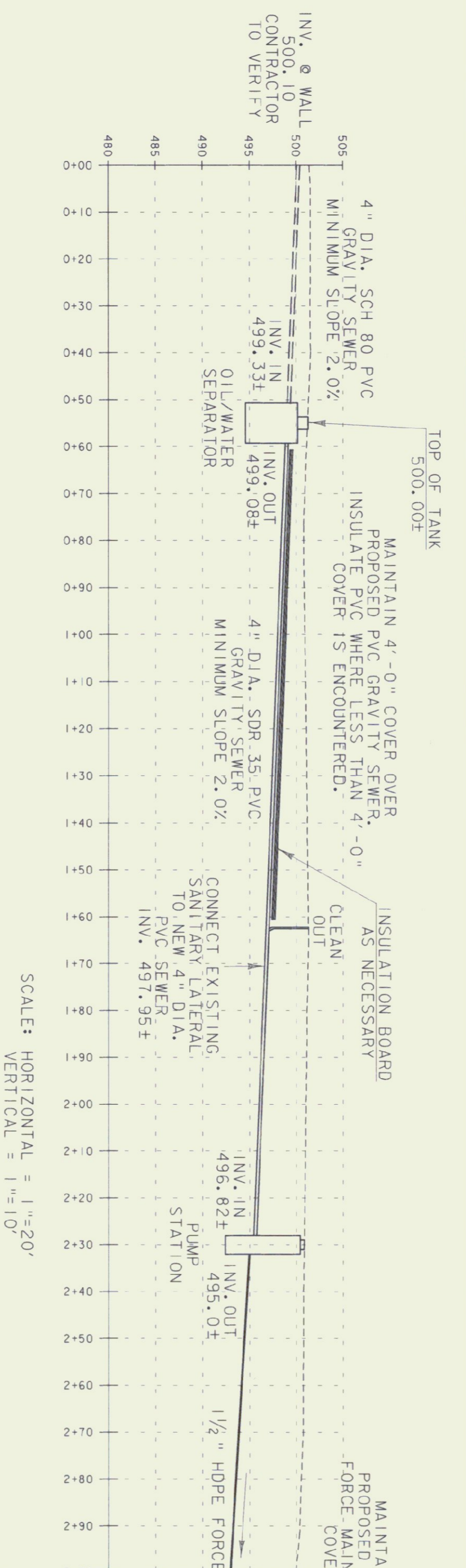
edge of road  
 198  
 549 Telephone Set Box  
 Dog house Man hole



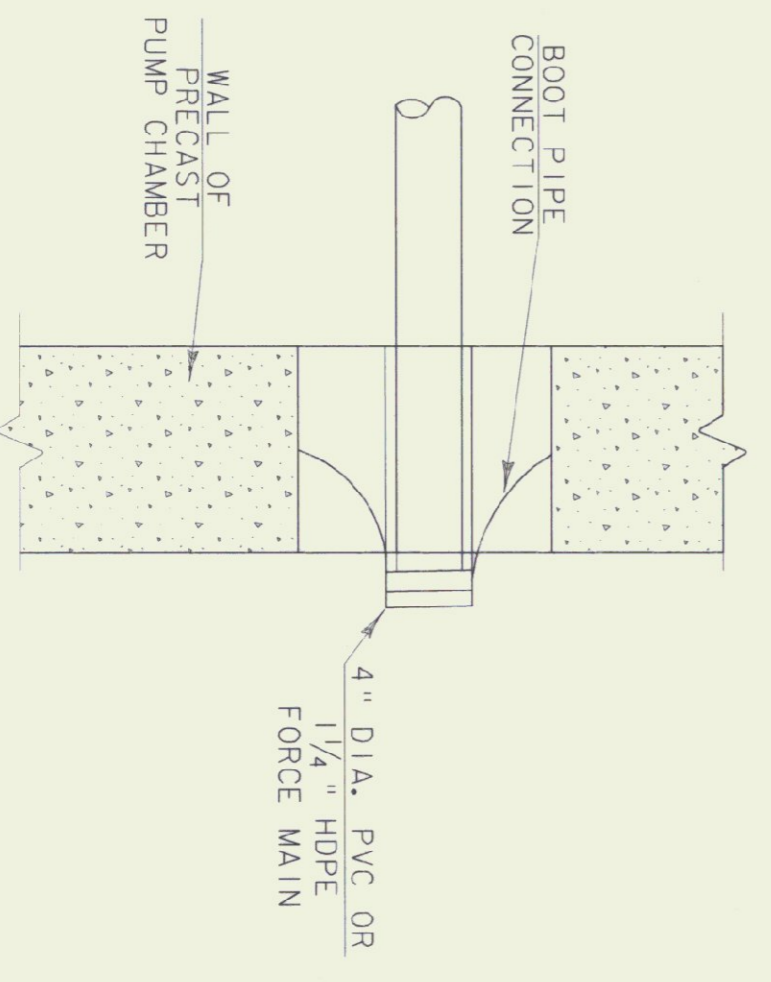
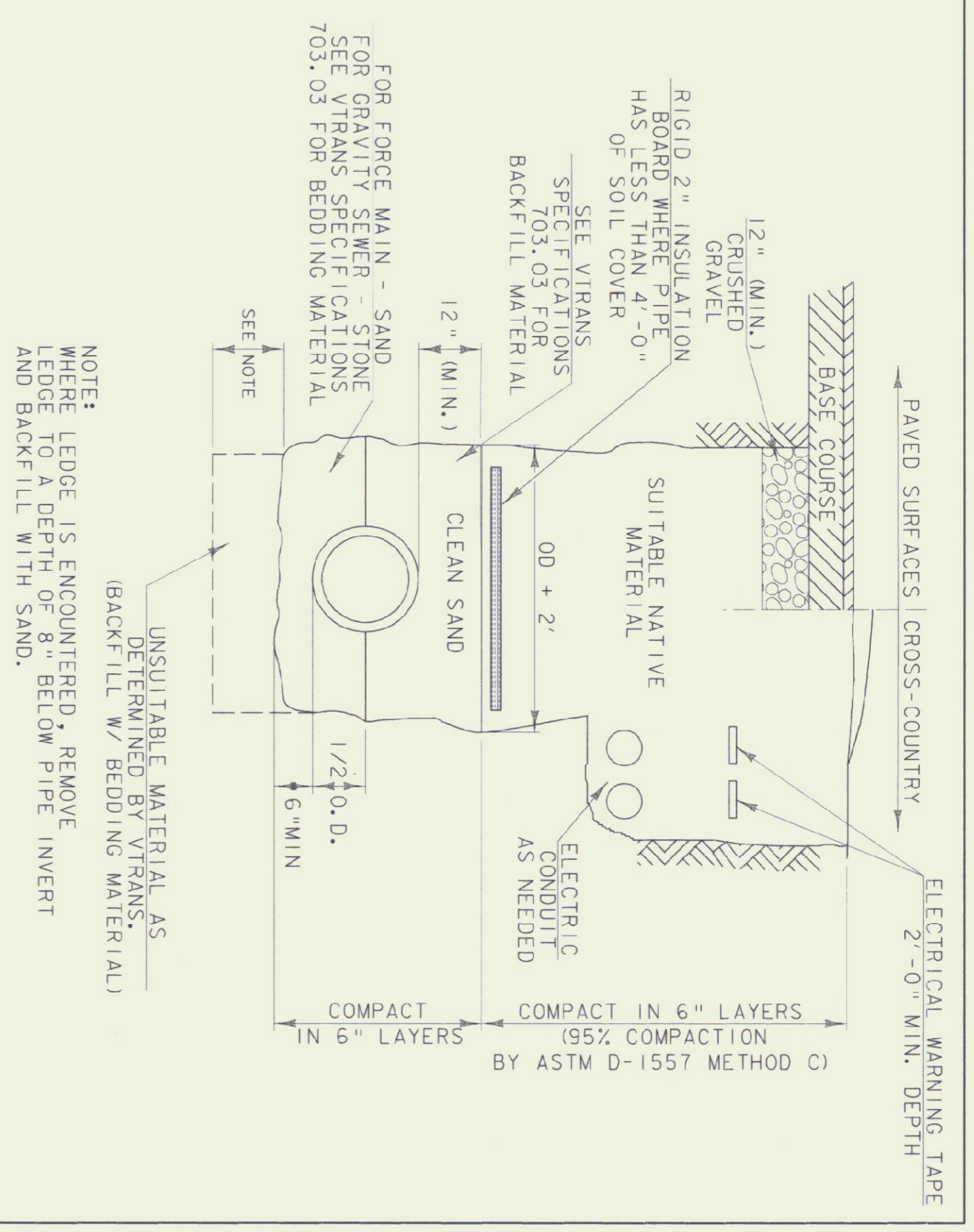


**VERTICAL SIMPLEX PUMP STATION DETAIL**

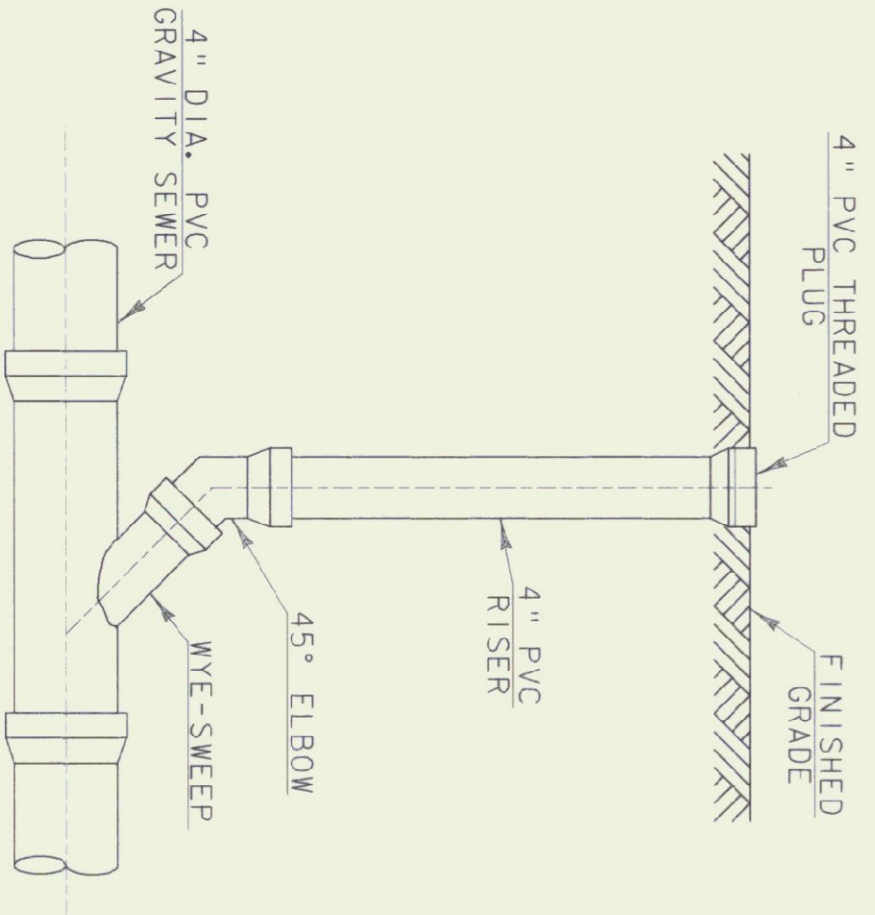
ALL DETAILS NOT TO SCALE



**TRENCH - GENERAL DIMENSIONS (EARTH CONSTRUCTION)**

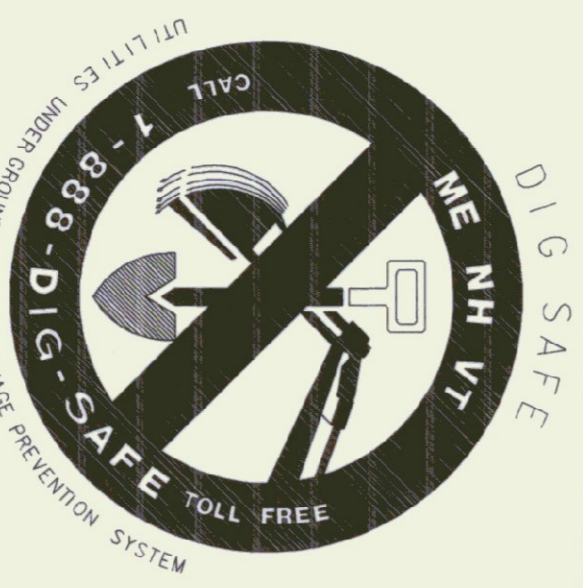


**GRAVITY / FORCE MAIN TO PUMP CHAMBER CONNECTION**



**SEWER CLEANOUT**

ALL DETAILS NOT TO SCALE



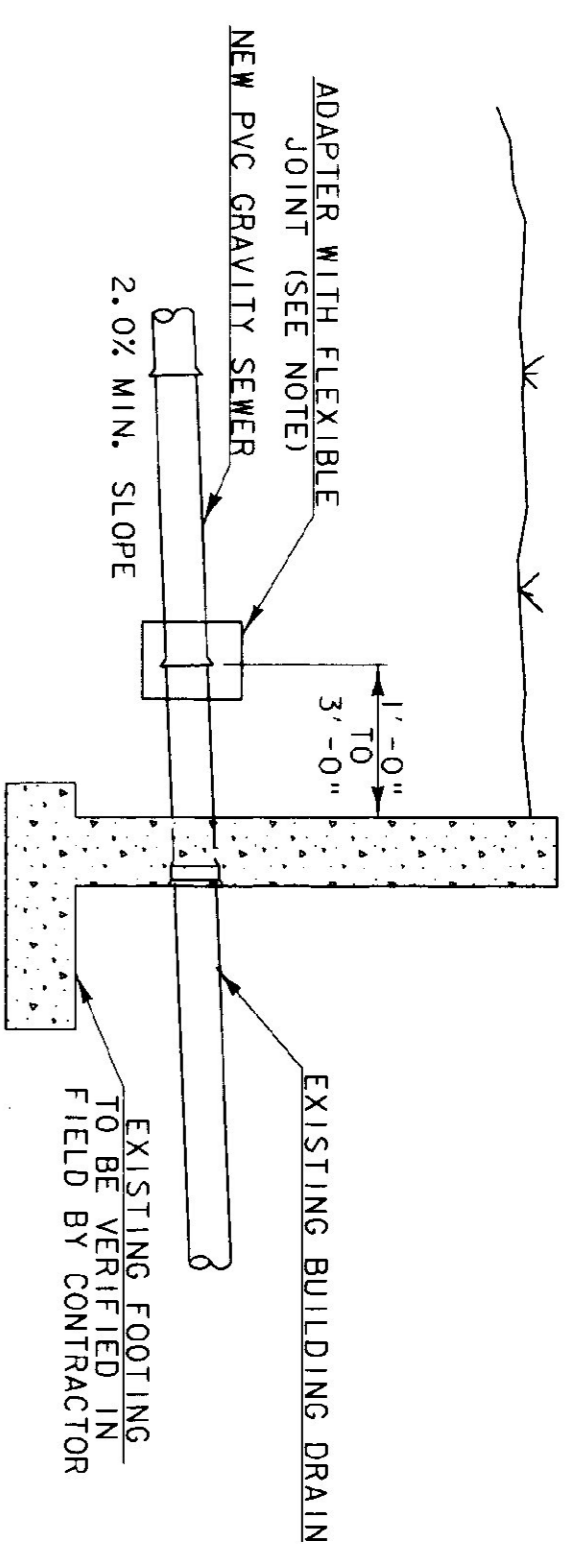
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION  
THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. CONSULT ENGINEERING, INC. LOCATIONS SHOWN TO 72 HOURS PRIOR TO ANY EXCAVATION ON SITE. THE CONTRACTOR SHALL CONTACT DIG-SAFE AT 1-888-DIG-SAFE.



The Curtis House  
256 Route 5 South • Norwold, VT 05055  
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Norwold • New Hampshire • Vermont

PROJECT NAME: BARTON STATE HIGHWAY GARAGE  
PROJECT NUMBER: 01-0120  
FILE NAME: 01-0120sddet.dgn  
PROJECT LEADER: CIH  
DESIGNED BY: JMS  
CHECKED BY: JMS  
PLOT DATE: 03/07/2002  
DRAWN BY: POU  
SHEET 3 OF 5

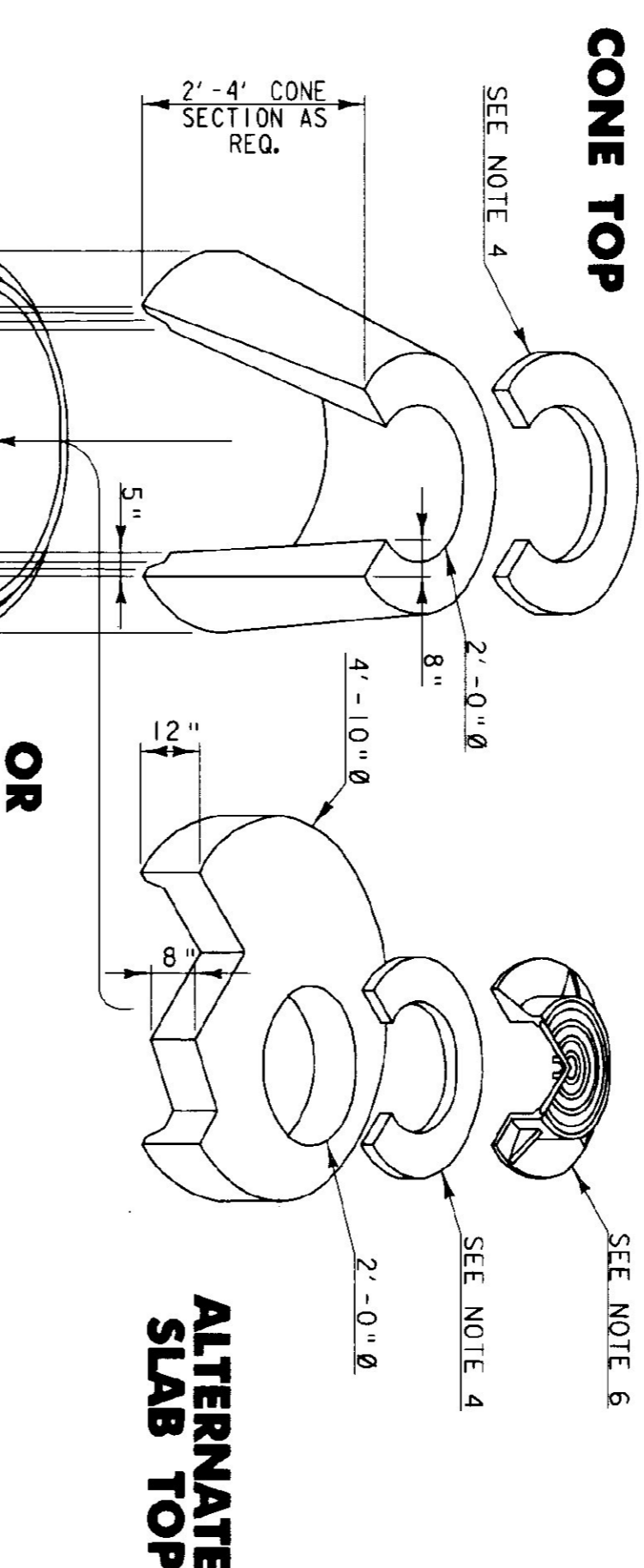




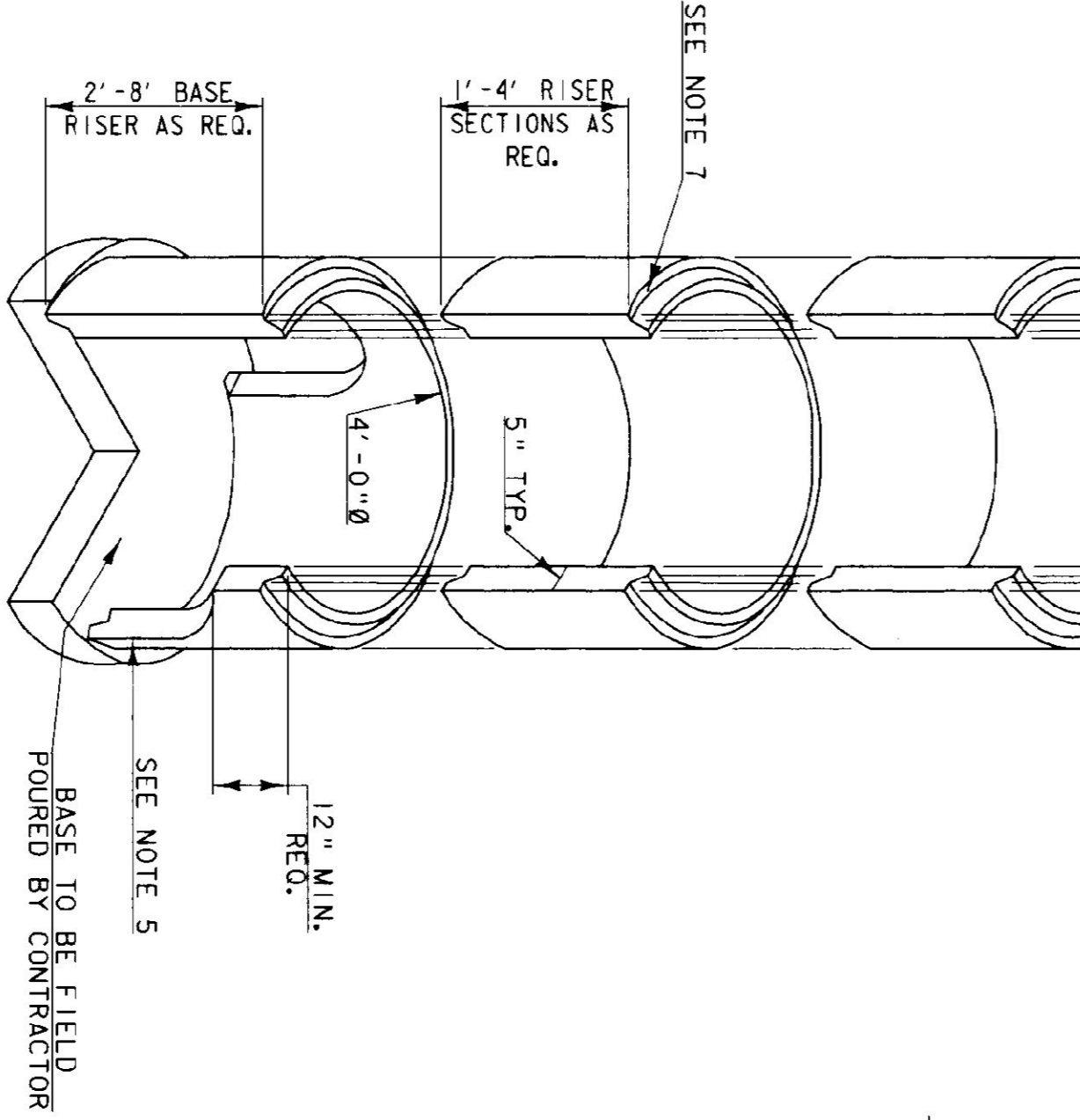
NOTES:  
 1. JOINTS SHALL HAVE A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, APPROPRIATE ADAPTERS SUCH AS "FERROCO" OR EQUIVALENT SHALL BE USED.

2. INSULATE PIPE WITH 2" RIGID INSULATION WHERE LESS THAN 3'-0" OF COVER IS PROVIDED.

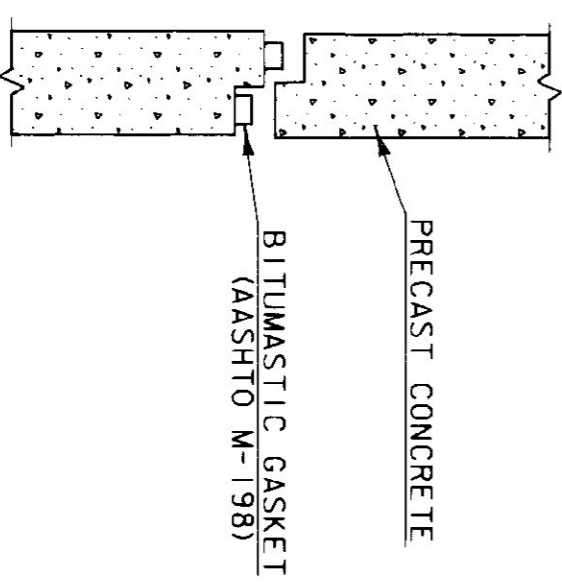
**BUILDING SEWER CONNECTION**



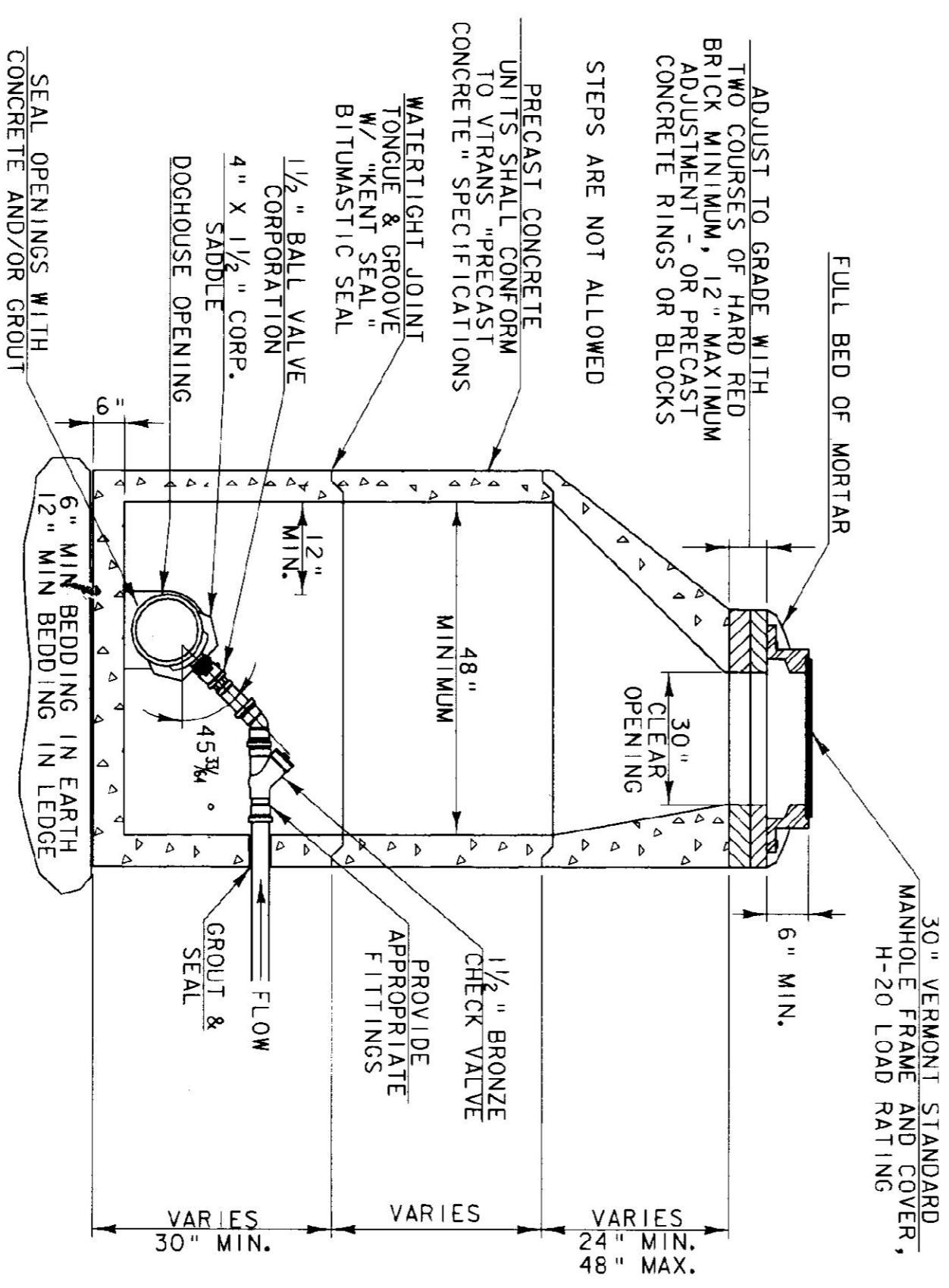
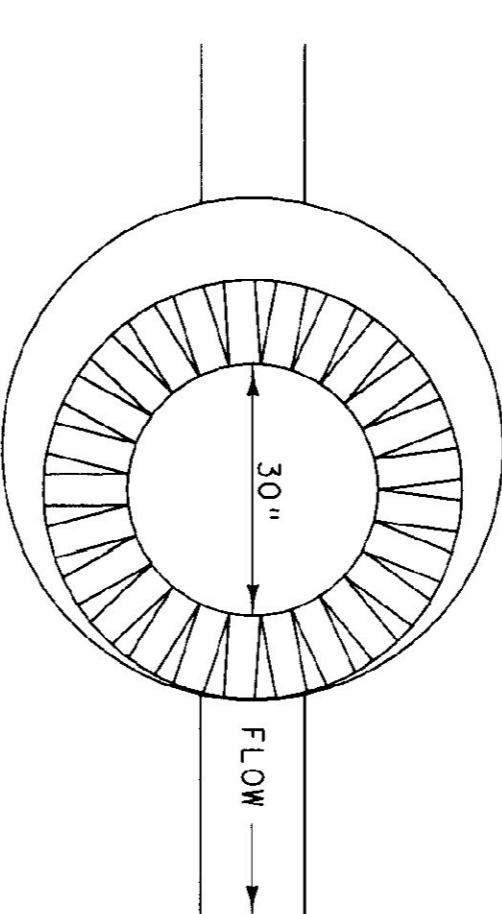
OR



- GENERAL NOTES:**
1. CONCRETE COMPRESSIVE STRENGTH 4,000 PSI MIN.
  2. ADDITIONAL REINFORCING REQUIRED AT OPENINGS.
  3. DESIGNED FOR H-20 LOADING.
  4. CONTRACTOR TO ADJUST TO GRADE AS REQ. 4" GRADE RINGS TO BE SUPPLIED OR TO BE FIELD ADJUSTED, USING APPROVED METHODS, BY CONTRACTOR.
  5. DOG HOUSE BASE RISER TO BE SET OVER EXISTING LINE.
  6. CAST IRON RING AND COVER TO BE AS PER SPECIFICATIONS.
  7. JOINTS TO BE SEALED WITH PRE FORMED BUTYL RUBBER SEALANT.



**PRECAST JOINT DETAIL**



**FORCE MAIN CONNECTION/MANHOLE DETAIL**

**ALL DETAILS NOT TO SCALE**



**CEI CONSULTING ENGINEERS**

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 Fax: 603-271-1101  
 Email: info@ceiengineers.com  
 Website: www.ceiengineers.com

Madison • New Hampshire • Vermont

PROJECT NAME:	BARTON STATE HIGHWAY GARAGE	PLOT DATE:	03/07/2002
PROJECT NUMBER:	01-0120	DRAWN BY:	PCJ
FILE NAME:	01-0120-det-1.dgn	CHECKED BY:	JMS
PROJECT LEADER:	CIH	SHEET	4 OF 5
DESIGNED BY:	JMS		
CLD REFERENCE NO.:	01-0120		

**PRESSURE SEWER SYSTEM SPECIFICATIONS**  
FOR  
**BARTON STATE HIGHWAY GARAGE**

Vitrans Standard Specifications for Construction

All Materials and installations to be in conformance with Vitrans Standard Specifications for Construction, 2001 except the items listed below. Installation shall be executed in an workman like manner:

**Materials**

**Force Mains:** Shall be 1/2" diameter Heavy Duty Polyethylene pipe, rated 200 psi.

**Force Main Joints & Fittings:** Shall be pressure rated at or above the Force Main pipe specified. 30 degree angle bends are not to be used without written permission of the Engineer. Joints are to be installed with stainless steel bands.

**Check Valves:** Shall be installed at the Municipal Force Main Connection as indicated on the details. Install check valve to resist flow from town force main when town force main is charged. Shall be 1/2" x 1/2" pattern bronze check valve, rated 200 psi.

**Gravity Sewer:** Shall be 4 inch diameter SDR 35 PVC pipe with push on joints. Gravity Sewer shall be installed with invert elevations as indicated on the plans and shall have a minimum slope of 2.00%.

**Gravity Sewer Joints & Fittings:** Joints shall be assembled such that bell ends of the pipe are facing up slope and spigot ends are correspondingly facing down slope.

**Utility Conduit:** Electric service shall be installed in conduit as indicated on the plans or a minimum diameter SCH 40 PVC electrical conduit shall be used. Conduit shall be installed in a trench and shall be installed with marker tape installed 6" directly above the top of the conduit. Conduit shall be terminated as indicated on the plans and shall be capped with an acceptable manufacturer cap. Conduit shall be installed with wire included. All wire to conform to NEC and State and Local codes. Conduit shall be penetration sealed at pump chamber to prohibit any gases from exiting pump chamber via conduit.

**Pump Chamber:** The pump chamber shall be watertight, pre-cast concrete manhole with booted pipe connections.

**Doghouse Manhole:** Manhole design specifications shall conform to latest Vitrans Specifications for Precast Concrete Manhole. Concrete shall meet Class "B" requirements. Manhole shall be designed for H-20 loading. Doghouse manhole shall be installed with a 30" steel frame and cover with the word "SEWER" cast into top side of steel cover.

**Pump Chamber Appurtenances:** A double rail pump lift system with brass/bronze castings, top guide rail bracket, wall stand-off brackets, and rail foot. Rails to be 1" stainless steel. System to be for 1/2" discharge/disconnect. Provide stainless steel lifting chains. Rail system to be Goulds Pump Simplex System, Campbell Manufacturing Disconnect System, or approved equal. A gas venting system configured such that it is camouflaged from plain view; See Detail. A check valve shall be installed as per the Pump Chamber Detail. A gate valve with an extended stem actuator shall be installed for valve operation from the manhole access. A stationary plumbing connection for "quick disconnect" remote disengagement of the pump from the pump chamber plumbing shall be used with the rail lift system.

**Grinder Pumps:** Pump shall be submersible, waste water type or grinder pump with a minimum capacity of 20 gallons per minute against a total head of 55 feet. Motor housing shall be of cast iron construction with stainless steel rotor shaft. All external fasteners shall be stainless steel. Cutting elements shall be hardened stainless steel. The pump motor shall be a minimum 2 HP, single phase, 230 volt, 60 Hz. Pump shall be ABS "Prinnee" Model 08, Flygt Model M 3068-216 Grinder, or approved equal.

**Control Panel:** Shall be a Simplex NEMA 4X panel. Panel to be single phase, 60 Hz, 230 volt. Panel to include through door mounted H-0-A switch and run light. Control panel shall be equipped with a visual and audible alarm for high water and low water. Switches shall be mercury activated float type. One switch for each function shall be installed: pump on, pump off, high water alarm, low water alarm. Control panel shall include cycle counter, panel shall be Goulds Pumps A Series Electrical Control Panel, Ohio Electrical Control, Inc., Cougar Series Control Panel, or approved equal.

**Retire Existing Septic Tank:** The Highway facility shall have an interrupted sanitary disposal capabilities at all times. Tank retirement shall include: pumping out tank, puncturing a hole in the floor of the existing septic tank, plugging the effluent pipe and inlet with concrete or other suitable means, filling the tank with sand, and crushing the existing concrete cover. Care shall be exercised to ensure that no air voids are left in or near the existing tank including the existing pipes.

**Rigid Styrofoam Insulation:** Shall be 2 inch thick "Blue Board" with tongue and groove edges manufactured by Dow Industries or equivalent.

**Cast-In-Place Grit Chamber:** Grit chamber shall be cast into existing concrete slab. Saw cut existing slab and embed grove reinforcement as indicated on the details. Existing concrete positive drainage into new grit chamber.

**Capping of Existing Pipes:** Existing sewer and drainage pipes to be abandoned shall be capped with concrete or other suitable means.

**Testing**

Once the entire sewer system has been installed it shall be pressure tested by the Contractor. The gravity and Force Main shall be tested in accordance with E.P.A. Small Scale Sewerwater Treatment and Disposal Rules, 1986, Chapter 1, Appendix I-A, Section I-A-02 and Section I-A-04 respectively.

**ALL DETAILS NOT TO SCALE**

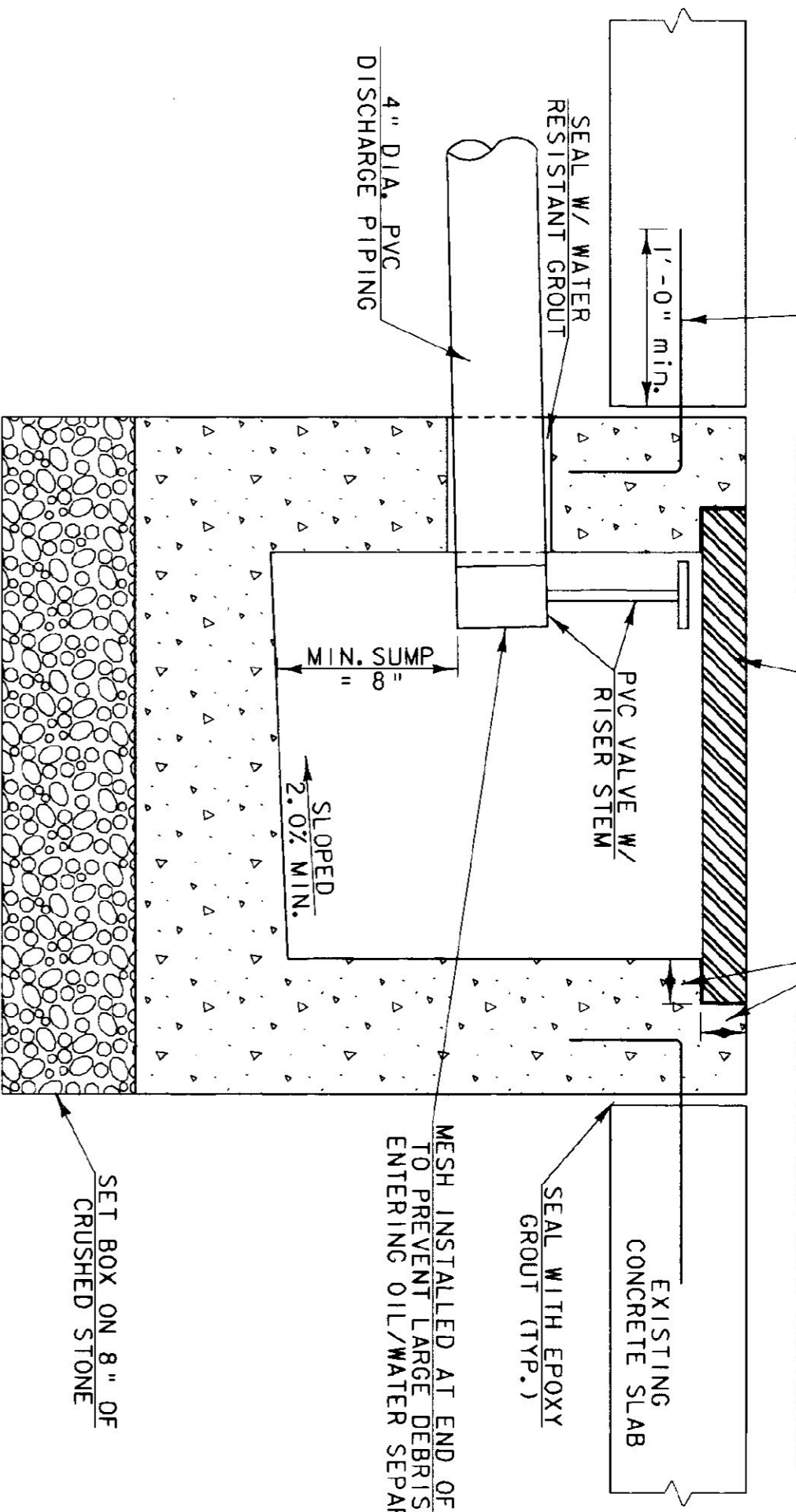
PROJECT NAME: BARTON STATE HIGHWAY GARAGE  
PROJECT NUMBER: 01-0120

FILE NAME: 01-0120b.dwg  
PROJECT LEADER: CJH  
DESIGNED BY: JMS  
PLOT DATE: 03/12/2002  
DRAWN BY: PGJ  
CHECKED BY: JMS  
SHEET 5 OF 5



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236 Route 5 South • Newmarket, VA 29055  
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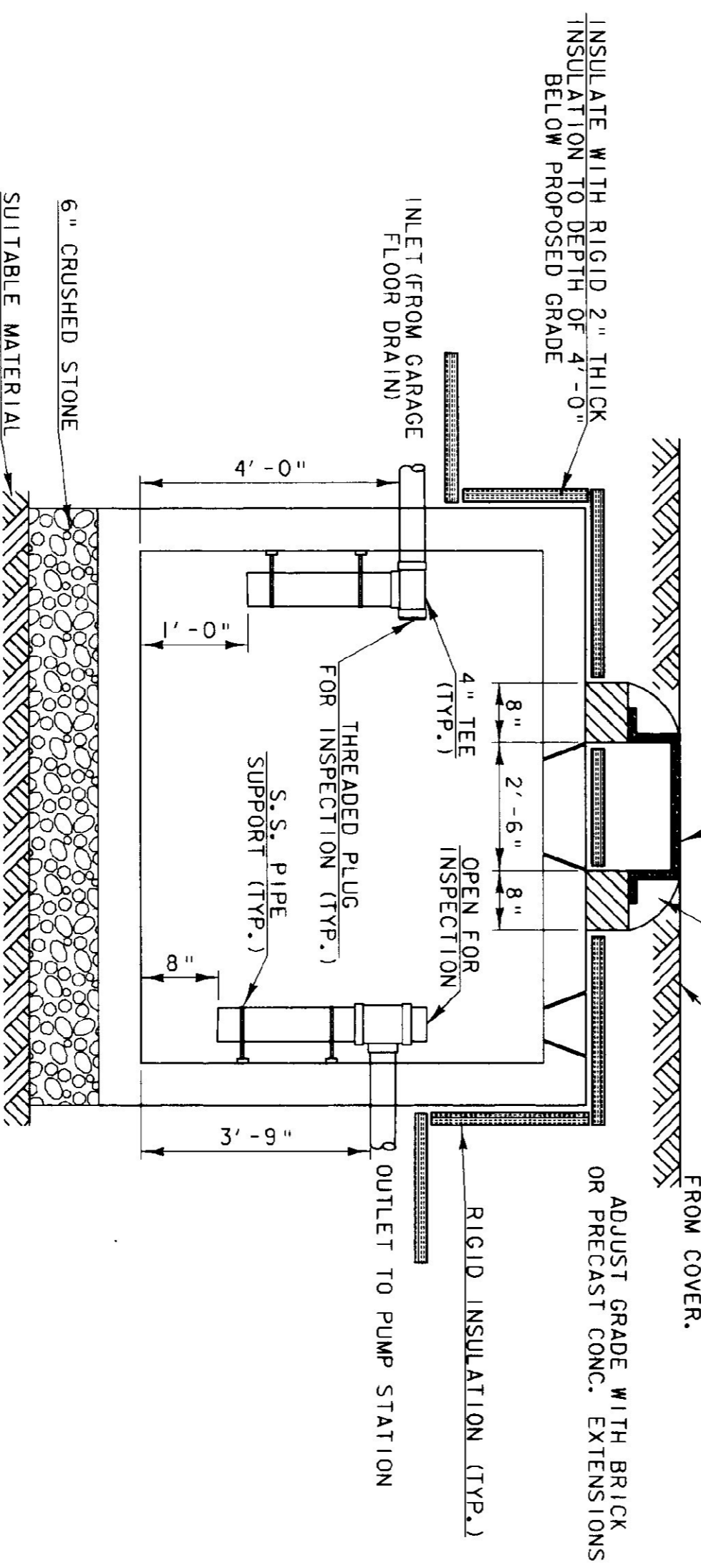
H-20 RATED FIBERGLASS TRAFFIC GRATING BY MCN HOLS, INC. OR EQUIVALENT  
DOWEL & GROUT REINFORCING BARS @ 12" O.C.  
1'-0" min.  
SEAL W/ WATER RESISTANT GROUT  
4" DIA. PVC DISCHARGE PIPING  
PVC VALVE W/ RISER STEM  
SEAL W/ EPOXY GROUT (TYP.)  
EXISTING CONCRETE SLAB  
MESH INSTALLED AT END OF VALVE TO PREVENT LARGE DEBRIS FROM ENTERING OIL/WATER SEPARATOR.



- NOTES:
- BOX EXTERIOR WALL DIMENSIONS ARE 2'-6" LONG x 2'-2" WIDE x 2'-3" HIGH w/ 6" WALLS.
  - SAW CUT EXISTING CONCRETE SLAB, DRILL & DOWEL EXISTING SLAB. POUR CONCRETE TO MATCH EXISTING SLAB GRADE & ALLOW FOR POSITIVE DRAINAGE.
  - STEEL REINFORCEMENT PER VITRANS STANDARD D-8 "REINFORCED CONCRETE DROP INLET W/ PRECAST COVER". CONTRACTOR TO ALTER STEEL LENGTHS AS NECESSARY.

**CAST-IN-PLACE FLOOR DRAIN & GRIT COLLECTION CHAMBER**

"SANITARY" SOLID C.I. FRAME & COVER (H-20 LOADING) (MENAHA R-1743 OR EQUAL) ADJUST TO MEET EXISTING TERRAIN



- NOTES:
- THE OIL SEPARATOR CHAMBER SHALL BE A 1000 GALLON SEPTIC TANK WITH 30" OPENING. THE CONCRETE SECTIONS SHALL BE CAPABLE OF WITHSTANDING H-20 LOADING. PIPE PENETRATIONS SHALL BE SEALED BY FLEXIBLE WATERIGHT BOOTS.
  - THE EXTERIOR OF THE BOX SHALL RECEIVE TWO COATS OF ASPHALTIC SEAL COATING AT THE FACTORY.
  - JOINTS BETWEEN THE CONCRETE SECTIONS SHALL BE SEALED BY BUTYL-MASTIC (ASHITO W-1981).
  - VERTICAL SEPARATORS SHALL BE RESTRAINED WITH STAINLESS STEEL AND SUBJECTED TO A 24 HOUR HYDROSTATIC LEAKAGE TEST. IT IS NO LEAKAGE WILL BE ALLOWED DURING THE TEST PERIOD.
  - THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A WATERIGHT STRUCTURE. INTERIOR PIPING SHALL BE PVC SCH 40. FITTINGS SHALL BE SOLVENT WELD TYPE.

**OIL SEPARATOR**