

State of Vermont  
Department of Buildings & General Services  
CASTLETON STATE HIGHWAY GARAGE  
MUNICIPAL WASTEWATER CONNECTION  
Castleton, Vermont

AGENCY OF ADMINISTRATION  
DEPT. OF BUILDINGS & GENERAL SERVICES  
2 GOVERNOR AIKEN AVENUE  
MONTPELIER, VERMONT 05633-5801  
R. TASHA WALLIS, COMMISSIONER

AGENCY OF TRANSPORTATION  
NATIONAL LIFE BUILDING  
MONTPELIER, VERMONT 05633-5001  
PATRICIA MCDONALD, SECRETARY



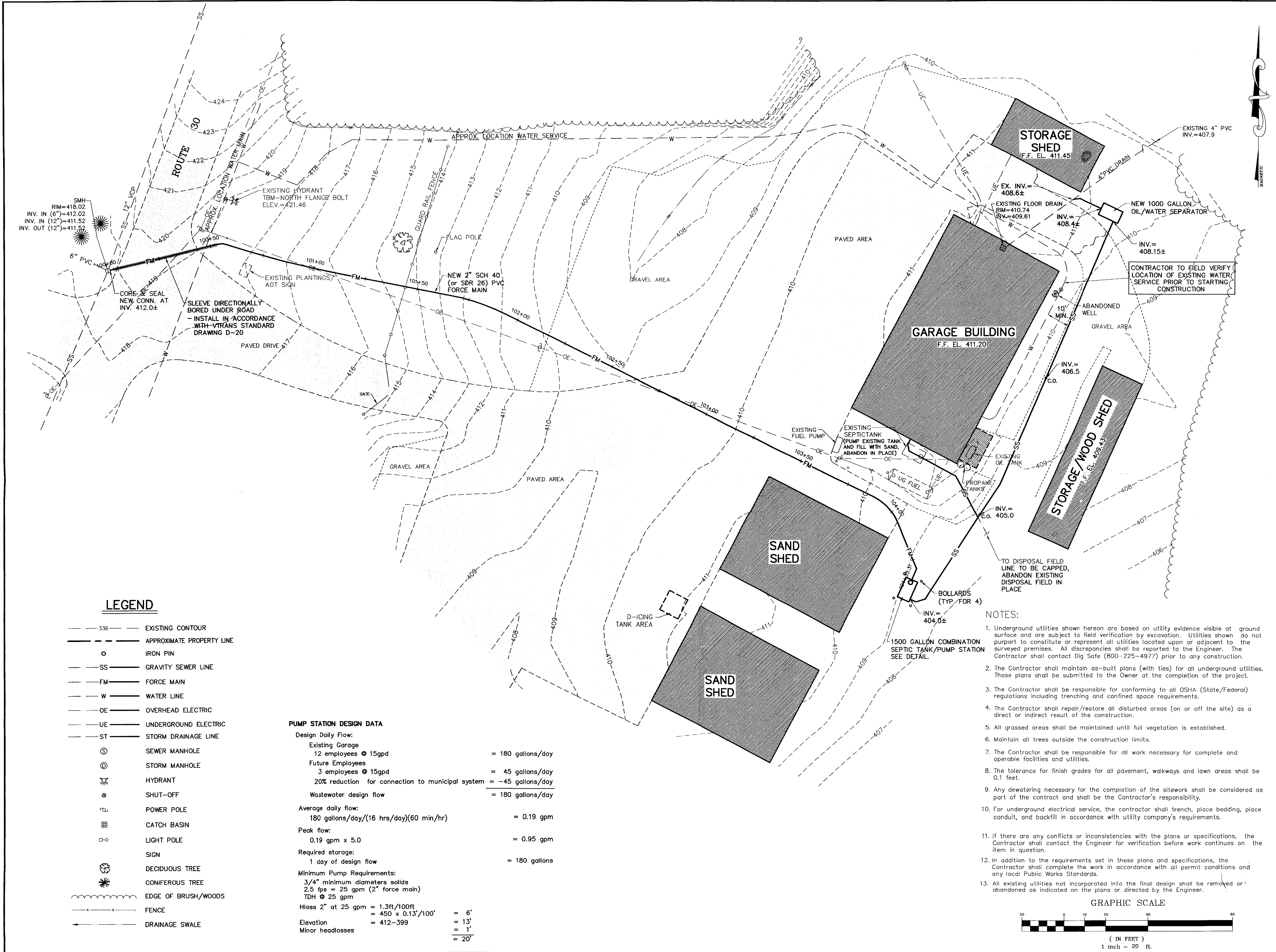
James Douglas  
Governor

January 2005

INDEX OF SHEETS

C1 SITE PLAN  
C2 SITE DETAILS  
C3 SITE DETAILS

SET # 4  
DO NOT COPY



**LEGEND**

- 3.36 --- EXISTING CONTOUR
- --- APPROXIMATE PROPERTY LINE
- o IRON PIN
- SS --- GRAVITY SEWER LINE
- FM --- FORCE MAIN
- W --- WATER LINE
- OE --- OVERHEAD ELECTRIC
- UE --- UNDERGROUND ELECTRIC
- ST --- STORM DRAINAGE LINE
- ⊙ SEWER MANHOLE
- ⊙ STORM MANHOLE
- ⊙ HYDRANT
- ⊙ SHUT-OFF
- ⊙ POWER POLE
- ⊙ CATCH BASIN
- ⊙ LIGHT POLE
- ⊙ SIGN
- ⊙ DECIDUOUS TREE
- ⊙ CONIFEROUS TREE
- EDGE OF BRUSH/WOODS
- FENCE
- DRAINAGE SWALE

**PUMP STATION DESIGN DATA**

Design Daily Flow:  
 Existing Garage 12 employees @ 15gpd = 180 gallons/day  
 Future Employees 3 employees @ 15gpd = 45 gallons/day  
 20% reduction for connection to municipal system = -45 gallons/day  
 Wastewater design flow = 180 gallons/day

Average daily flow:  
 180 gallons/day/(16 hrs/day)(60 min/hr) = 0.19 gpm

Peak flow:  
 0.19 gpm x 5.0 = 0.95 gpm

Required storage:  
 1 day of design flow = 180 gallons

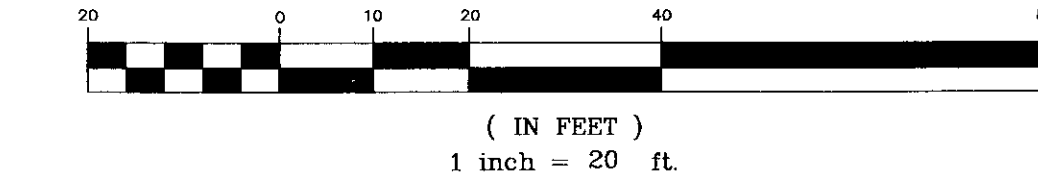
Minimum Pump Requirements:  
 3/4" minimum diameters solids  
 2.5 fps = 25 gpm (2" force main)  
 TDH @ 25 gpm

Hloss 2" at 25 gpm = 1.3ft/100ft = 6'  
 = 450 x 0.13'/100' = 13'  
 Elevation = 412-399 = 1'  
 Minor headlosses = 20'

**NOTES:**

1. Underground utilities shown hereon are based on utility evidence visible at ground surface and are subject to field verification by excavation. Utilities shown do not purport to constitute or represent all utilities located upon or adjacent to the surveyed premises. All discrepancies shall be reported to the Engineer. The Contractor shall contact Dig Safe (800-225-4977) prior to any construction.
2. The Contractor shall maintain as-built plans (with ties) for all underground utilities. Those plans shall be submitted to the Owner at the completion of the project.
3. The Contractor shall be responsible for conforming to all OSHA (State/Federal) regulations including trenching and confined space requirements.
4. The Contractor shall repair/restore all disturbed areas (on or off the site) as a direct or indirect result of the construction.
5. All grassed areas shall be maintained until full vegetation is established.
6. Maintain all trees outside the construction limits.
7. The Contractor shall be responsible for all work necessary for complete and operable facilities and utilities.
8. The tolerance for finish grades for all pavement, walkways and lawn areas shall be 0.1 feet.
9. Any dewatering necessary for the completion of the sitework shall be considered as part of the contract and shall be the Contractor's responsibility.
10. For underground electrical service, the contractor shall trench, place bedding, place conduit, and backfill in accordance with utility company's requirements.
11. If there are any conflicts or inconsistencies with the plans or specifications, the Contractor shall contact the Engineer for verification before work continues on the item in question.
12. In addition to the requirements set in these plans and specifications, the Contractor shall complete the work in accordance with all permit conditions and any local Public Works Standards.
13. All existing utilities not incorporated into the final design shall be removed or abandoned as indicated on the plans or directed by the Engineer.

**GRAPHIC SCALE**



SITE ENGINEER:  
  
**CIVIL ENGINEERING ASSOCIATES, INC.**  
 P.O. BOX 485 SHELburnE, VT 05482  
 802-985-2323 FAX: 802-985-2271 web: www.cae-vt.com  
 COPYRIGHT © 2004 - ALL RIGHTS RESERVED

DRAWN: ACL  
 CHECKED: BCE  
 APPROVED: BCE

OWNER:  
  
**STATE OF VERMONT**  
 VERMONT AGENCY OF TRANSPORTATION  
 MONTPELIER, VERMONT

PROJECT:  
**DISTRICT 3 CASTLETON GARAGE**  
 MUNICIPAL WASTEWATER CONNECTION  
 ROUTE 30 CASTLETON, VERMONT

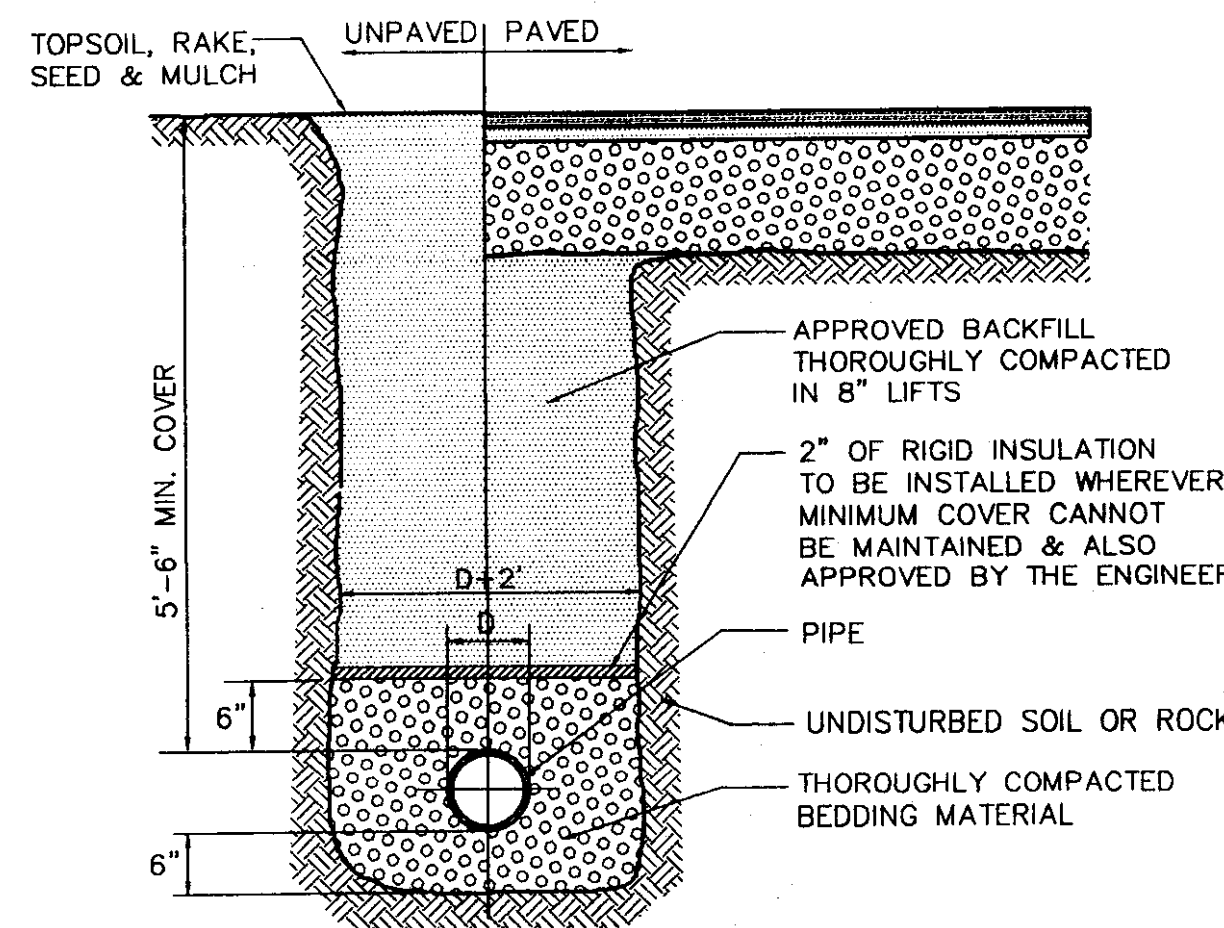
**LOCATION MAP**  
 1" = 1.25 ± miles

DATE	CHECKED	REVISION

**SITE PLAN**

DATE: JAN., 2005  
 SCALE: 1" = 20'  
 PROJ. NO. 04128.10

DRAWING NUMBER: **C1**  
 002

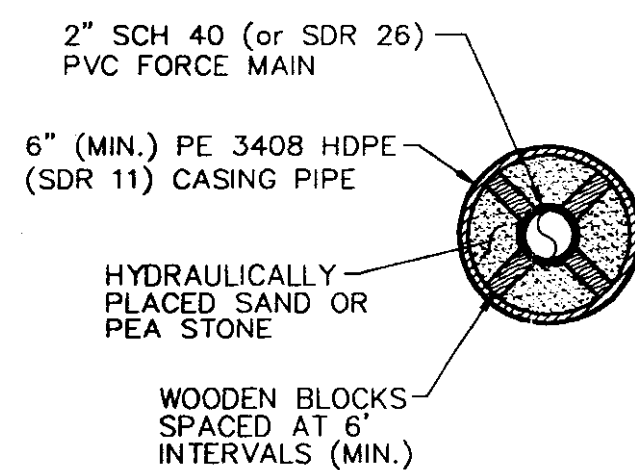


NOTES:

1. Typical trench for water, sewer, and drainage pipe.
2. Compaction of backfill and bedding shall be a minimum of 90% (95% under roadway surfaces) of maximum dry density determined in the standard proctor test (ASTM D698).
3. Bedding material shall not be placed on frozen subgrade.
4. Approved backfill shall not contain any stones more than 6" in largest dimension, 2" maximum diameter within 2' of the outside of the pipe, or any frozen, or organic material.
5. Trenches shall be completely dewatered prior to placing of pipe bedding material and kept dewatered during installation of pipe and backfill.
6. The sides of trenches 4' or more in depth entered by personnel shall be sheeted or sloped to the angle of repose as defined by O.S.H.A. standards.
7. Bedding material shall consist of crushed stone gravel or sand with a maximum size of 3/4".

**TYPICAL TRENCH DETAIL**

N.T.S.

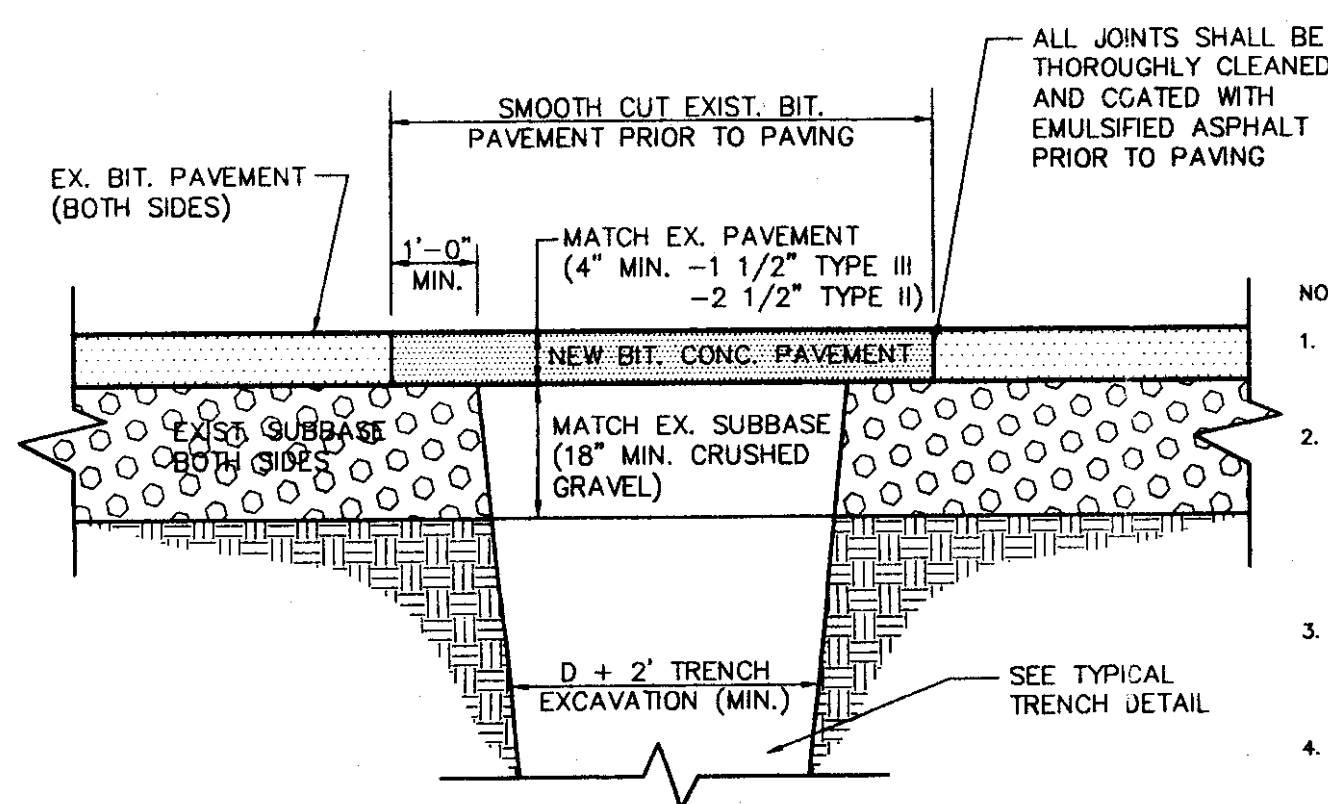


THE CARRIER PIPE SHALL BE PLACED THROUGH THE SLEEVE USING SKIDS SIZED SUCH THAT A UNIFORM SLOPE WILL BE ESTABLISHED. THE ANNULAR SPACE BETWEEN THE CARRIER AND SLEEVE SHALL BE FILLED WITH SAND. THE CARRIER SHALL BE SEALED AT EACH END OF THE SLEEVE BY USE OF A "LINK-SEAL" OR OTHER METHOD APPROVED BY THE ENGINEER.

THE CONTRACTOR MAY SUBSTITUTE STAINLESS STEEL CASING SPACERS BY CASCADE WATERWORKS CO. FOR THE WOODEN SKIDS (OR APPROVED EQUAL)

**SEWER SERVICE CASING AND CARRIER PIPE DETAIL**

N.T.S.

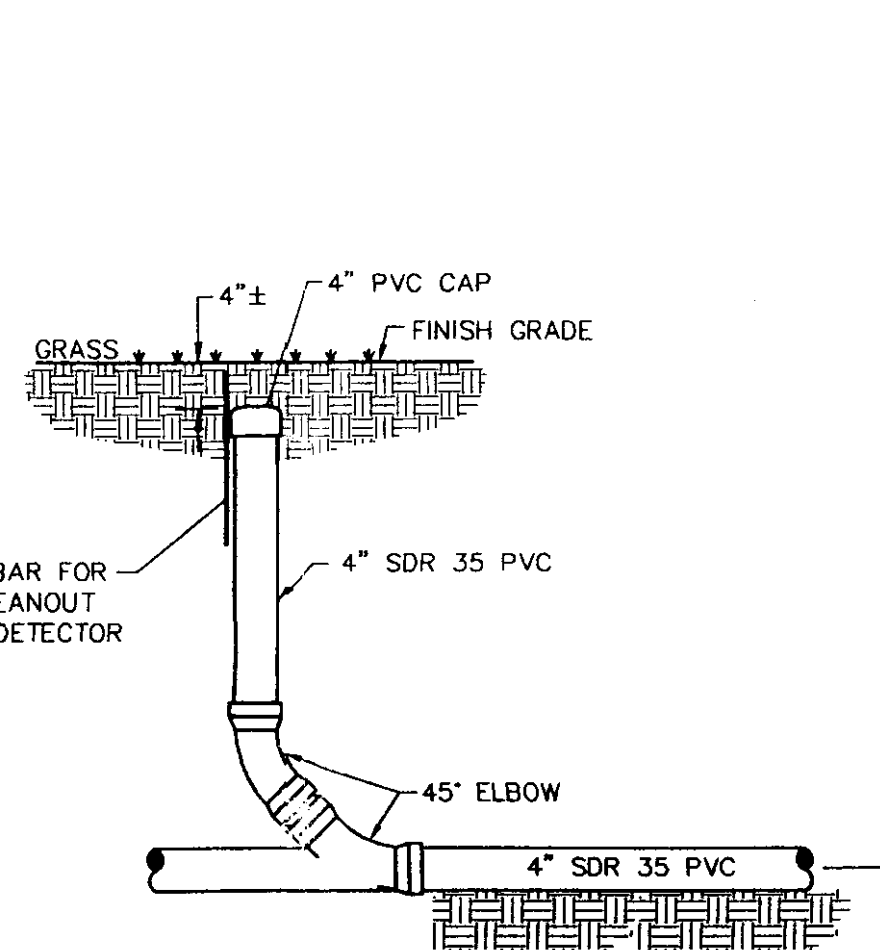


NOTES:

1. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE-WAY TRAFFIC AT ALL TIMES DURING WORK WITHIN THE R.O.W.
2. MAINTENANCE AND PROTECTION OF TRAFFIC DURING WORK WITHIN THE HIGHWAY R.O.W. SHALL BE PROVIDED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR SHALL NOT WORK WITHIN THE R.O.W. WITHOUT APPROPRIATE CONSTRUCTION SIGNING IN PLACE.
3. ALL BACKFILL SHALL BE MADE IN SIX (6") LIFTS AND COMPACTED TO NOT LESS THAN 95% MAXIMUM DRY DENSITY ACCORDING TO ASTM D698.
4. REPLACE EXISTING ROAD STRIPING AS NECESSARY.

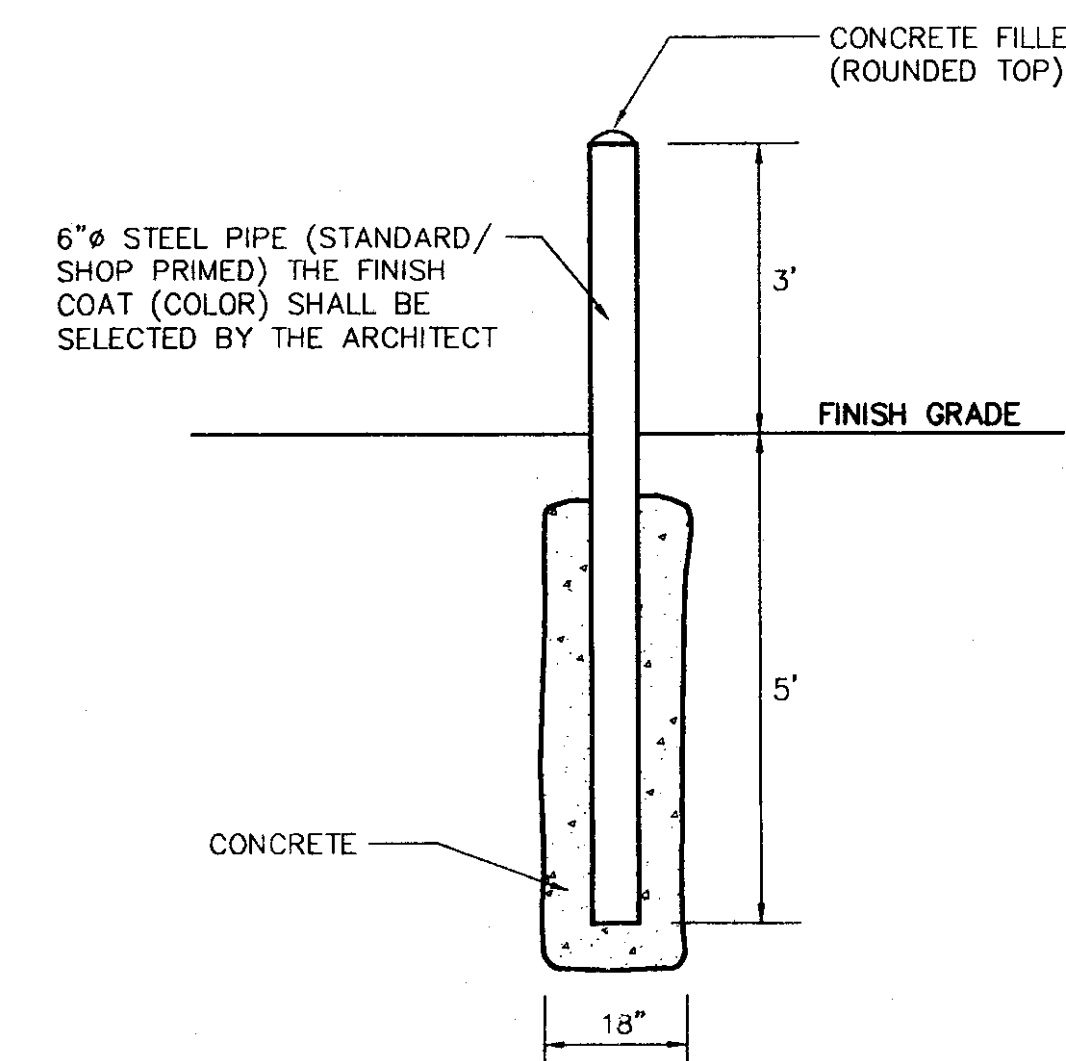
**REPLACEMENT OF EXIST. PAVEMENT**

N.T.S.



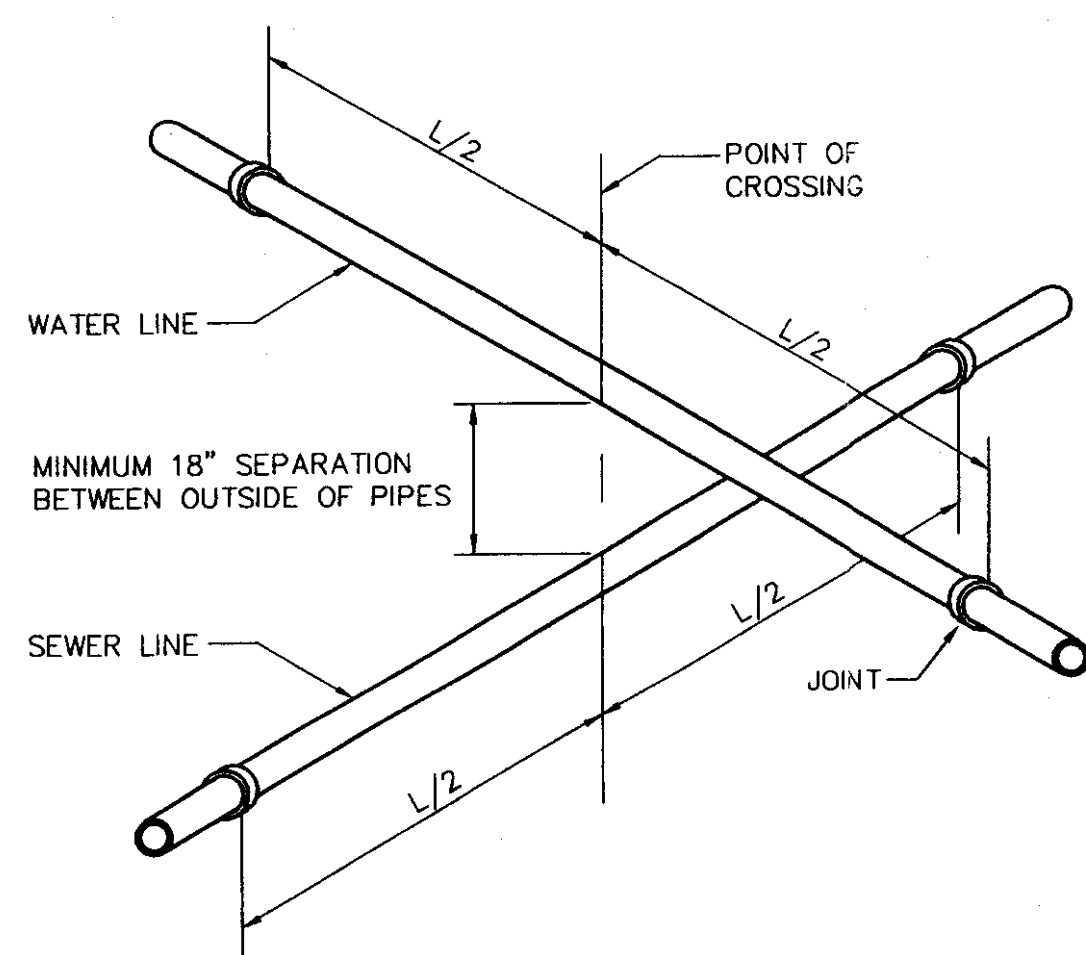
**TYPICAL CLEANOUT DETAIL**

N.T.S.



**BOLLARD DETAIL**

N.T.S.

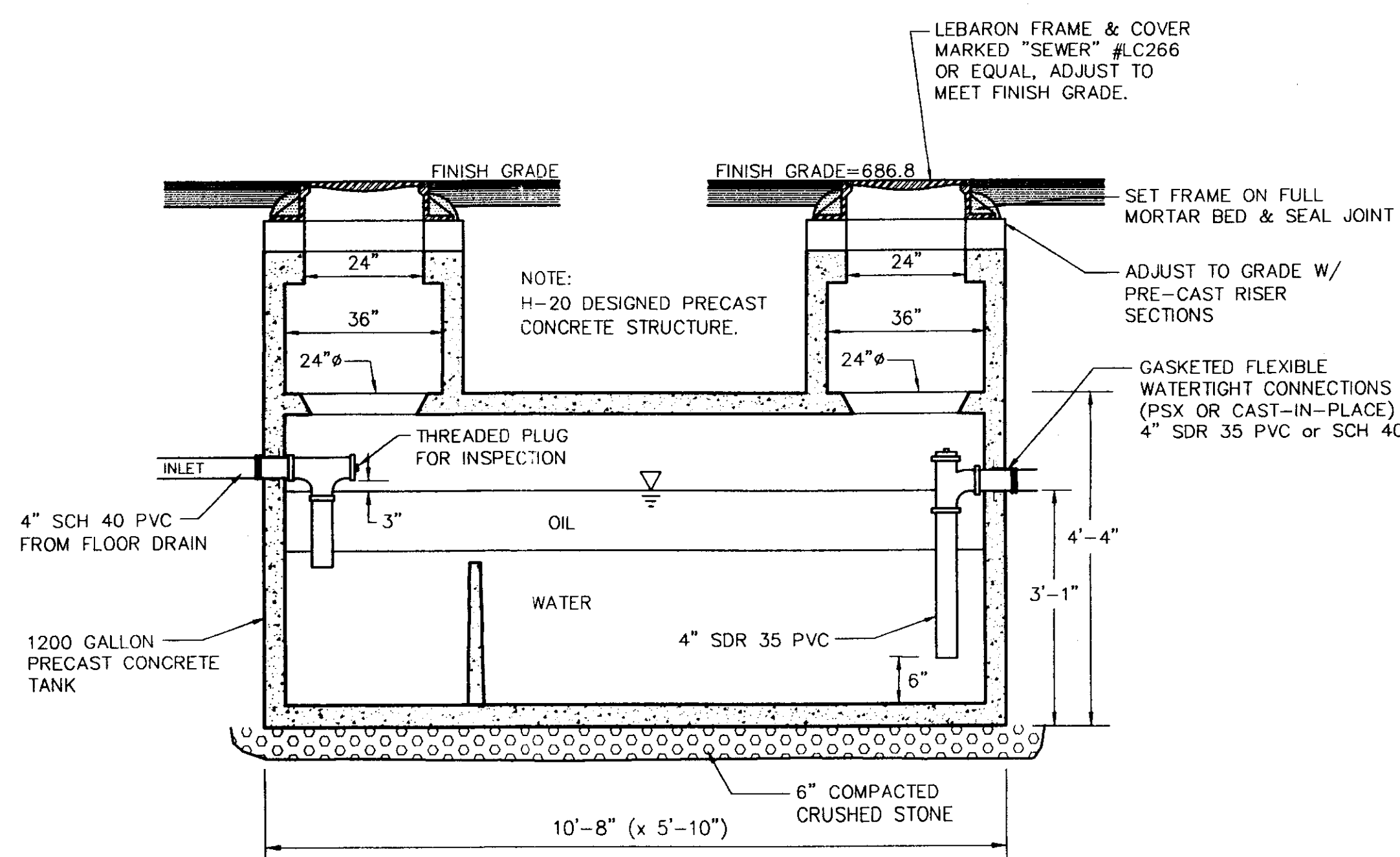


NOTES:

1. AT CROSSINGS, ONE FULL LENGTH OF WATER/SEWER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER/SEWER AS POSSIBLE.
2. IF THE SEWER MAIN IS OVER THE WATER MAIN, THE FIRST SEWER PIPE JOINTS ON EACH SIDE OF THE WATER MAIN MUST BE CONCRETE ENCASED OR SLEEVED. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED.
3. WHERE IT IS IMPOSSIBLE TO MAINTAIN THE 18" SEPARATION, THE SEWER MATERIALS SHALL BE WATER MAIN PIPE OR EQUIVALENT FOR A MINIMUM DISTANCE OF 20 FEET EITHER SIDE OF THE CROSSING AND SHALL BE PRESSURE TESTED TO 50 psi FOR 15 MINUTES WITHOUT LEAKAGE PRIOR TO BACKFILLING BEYOND 1 FOOT ABOVE PIPE.
4. WATER MAINS AND SEWER LINES OR MANHOLES SHALL HAVE AT LEAST 10' HORIZONTAL SEPARATION. THIS DISTANCE SHALL BE MEASURED EDGE TO EDGE.

**WATER/SEWER CROSSING DETAIL**

N.T.S.



**1200 GALLON HEAVY DUTY OIL SEPARATOR**

N.T.S.

**SEPARATOR TESTING**

A. The separator shall be tested by the following procedure:

1. Infiltration Leakage Test: All pipes and other openings into the tank shall be suitably plugged and the plugs braced to prevent blowout.

The tank shall then be filled with water to the top of the riser section. A period of time may be permitted, if the Contractor so wishes, to allow for absorption. At the end of this period, the tank shall be refilled to the top of the riser, if necessary, and the measuring time of at least four hours begun. At the end of the test period, the tank shall be refilled to the top of the riser, measuring the volume of water added. This amount shall be converted to gallons per vertical foot depth for 24 hours. The leakage for each tank shall not exceed four gallon/vertical foot/day. If leakage exceeds the allowable rate, repairs shall be made as approved by the Engineer and the tank retested.

If the Contractor elects to backfill prior to testing, the testing shall be at his own risk, and it shall be incumbent upon the Contractor to determine the reason for any failure of the test. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorption, etc. It will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, the Contractor shall take any steps necessary to assure the Engineer that the water table is below the bottom of the tank throughout the test.

SITE ENGINEER:



CIVIL ENGINEERING ASSOCIATES, INC.  
P.O. BOX 486 SHELburne, VT 05482  
802-288-3323 FAX: 802-288-2271 web: www.caa-vt.com

COPYRIGHT © 2004 - ALL RIGHTS RESERVED

DRAWN: ACL  
CHECKED: BCE  
APPROVED: BCE

OWNER:



STATE OF VERMONT

VERMONT AGENCY OF TRANSPORTATION  
MONTPELIER, VERMONT

PROJECT:

DISTRICT 3  
CASTLETON GARAGE

MUNICIPAL WASTEWATER CONNECTION

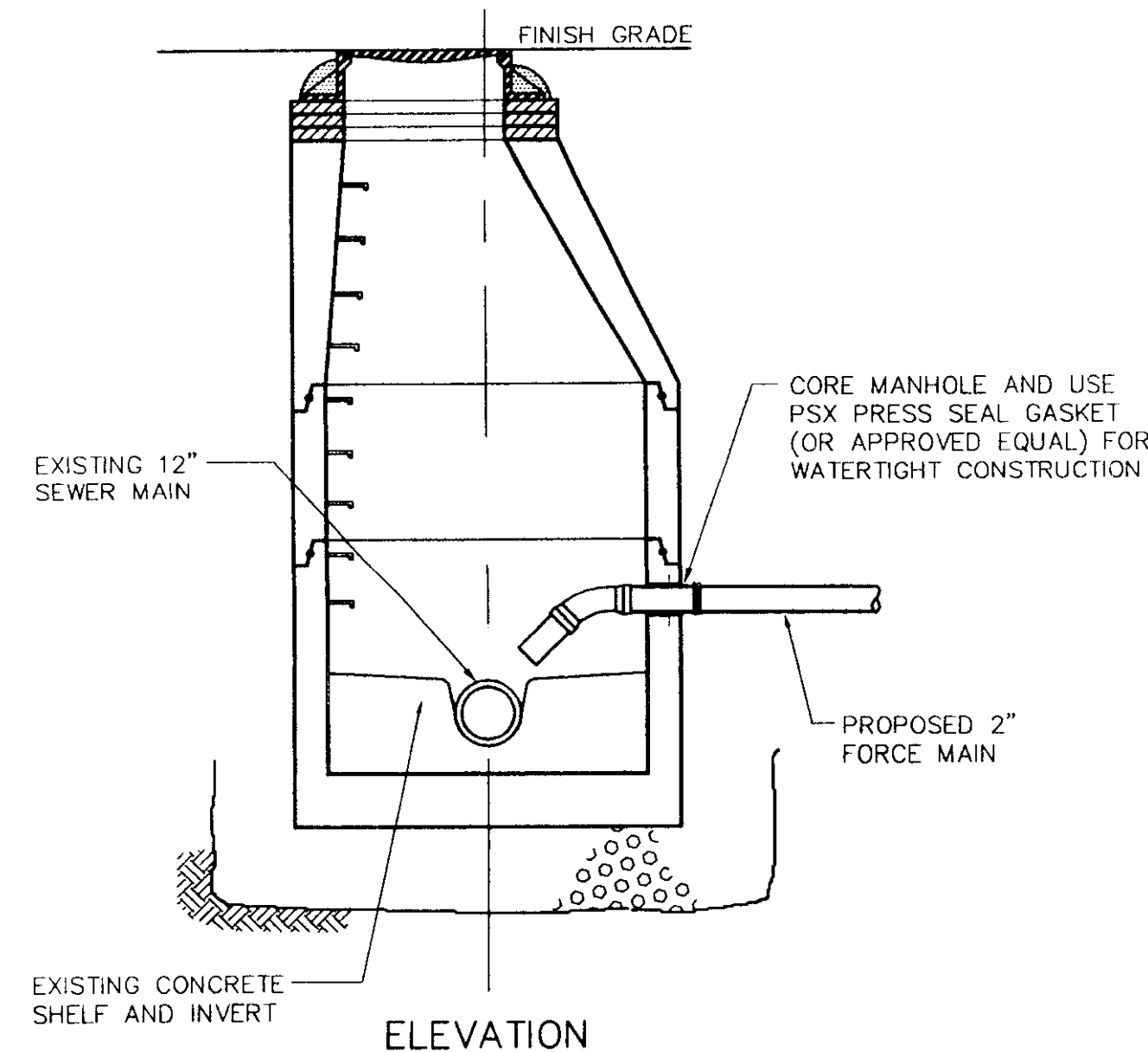
ROUTE 30  
CASTLETON, VERMONT

DATE	CHECKED	REVISION

**SITE DETAILS**

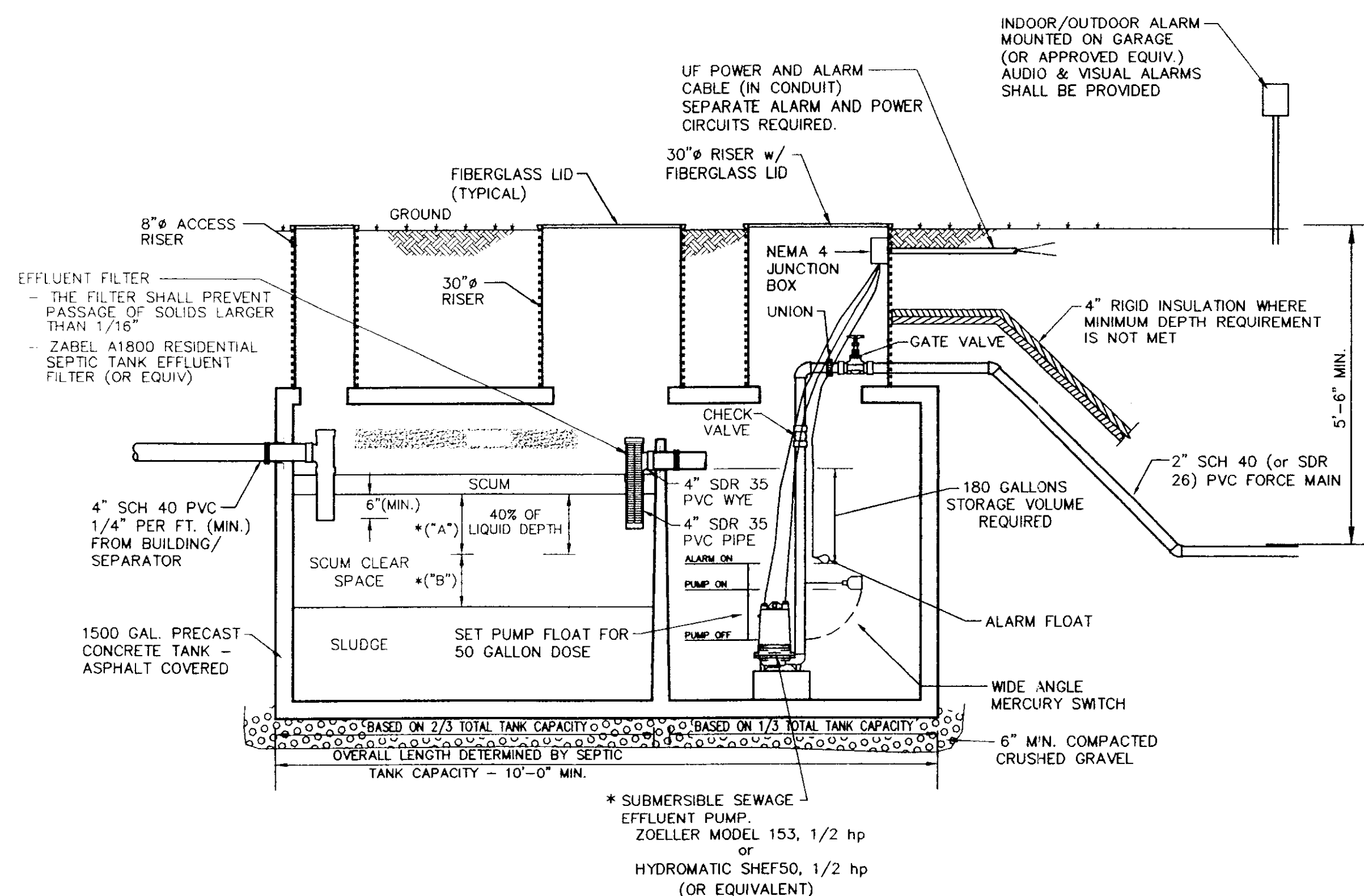
DATE: JAN., 2005  
SCALE: AS SHOWN  
PROJ. NO.: 04128.10

DRAWING NUMBER: C2  
003

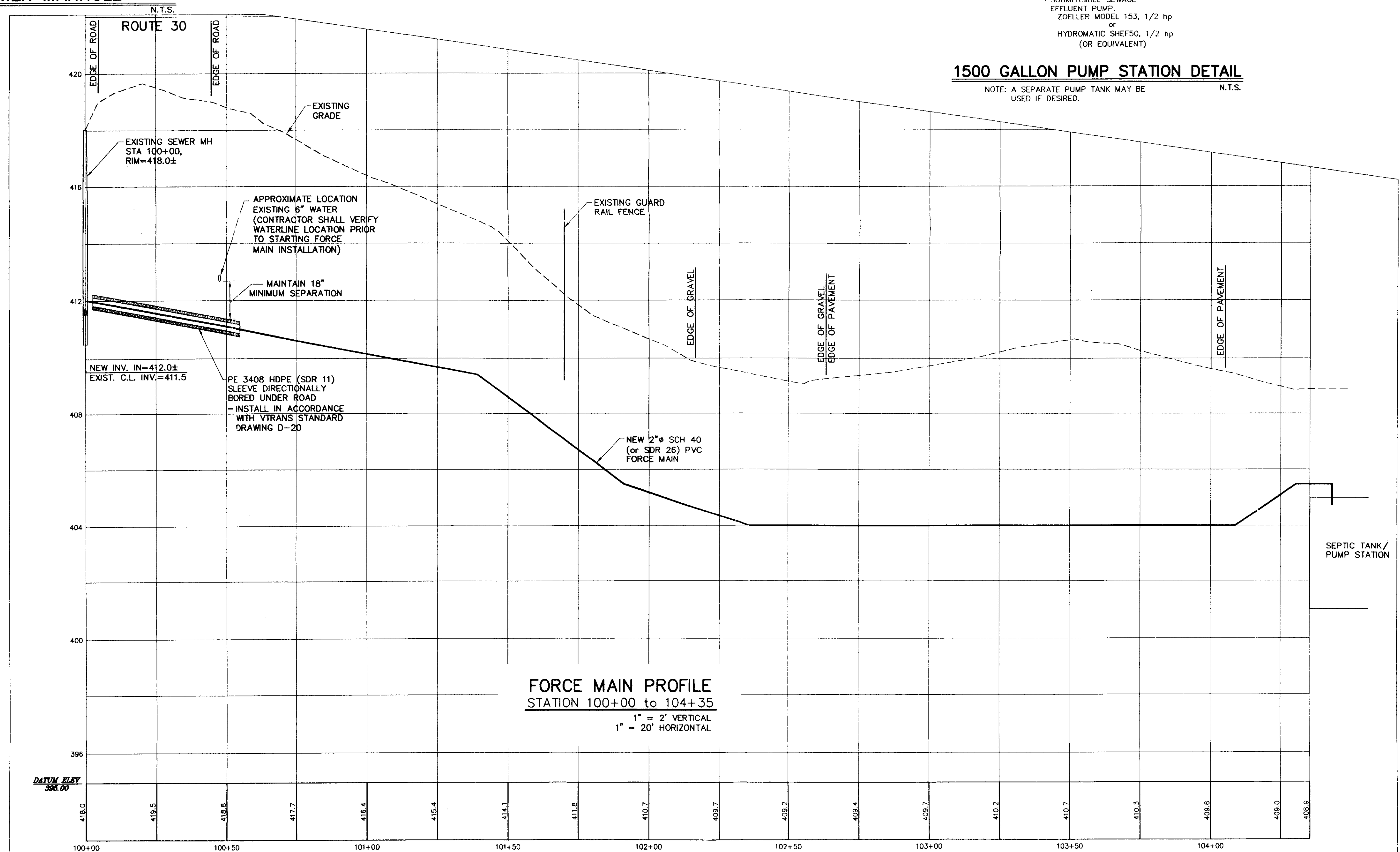


**CONNECTION TO EXISTING SEWER MANHOLE**

- Septic Tank Notes**
- Septic tank shall be a precast concrete tank, unless otherwise approved.
  - Maintenance**
    - At least once a year, the depth of sludge and scum in the septic tank should be measured. The tank should be pumped if:
      - The sludge is closer than twelve inches to the outlet baffle or;
      - The scum layer is closer than three inches to the outlet baffle.
    - Under no circumstances should anyone enter a septic tank.
  - Recommendations**
    - The use of garbage grinders is discouraged as sludge accumulation in the septic tank can be increased by up to 40%. If used, the septic tank will require more frequent pumping.
    - The septic system is designed to handle human waste and toilet paper, plus water from plumbing fixtures such as toilets, baths and sinks. Moderate use of household cleaners, detergents and bleach should not damage your system; however, indiscriminate use may cause problems. Non-degradable paper products and any other non-biodegradable substances should not be put in your wastewater system.
    - Minimize the amount of water used in the household. Excessive water could flush solids from the septic tank to the disposal field which leads to clogging or plugging of the piping. When dishwashers and washers are used, make sure loads are full and stagger their use to reduce peak flows, i.e. stagger loads of laundry over several days instead of one day.
  - Walkways, patios and decks or other permanent structures should not be constructed over the septic tank.
  - There should be no need to use commercial "starter", "bacterial feeds", or "cleaners", etc. Bacteria in a septic tank system occurs naturally.



**1500 GALLON PUMP STATION DETAIL**



**FORCE MAIN PROFILE**  
STATION 100+00 to 104+35  
1" = 2' VERTICAL  
1" = 20' HORIZONTAL

SITE ENGINEER:

CIVIL ENGINEERING ASSOCIATES, INC.  
P.O. BOX 485 SHELBURNE, VT 05482  
802-885-2323 FAX: 802-885-2271 web: www.ces-vc.com

COPYRIGHT © 2004 - ALL RIGHTS RESERVED

DRAWN: ACL  
CHECKED: BCE  
APPROVED: BCE

OWNER:

**STATE OF VERMONT**  
VERMONT AGENCY OF TRANSPORTATION  
MONTPELIER, VERMONT

PROJECT:

**DISTRICT 3 CASTLETON GARAGE**  
MUNICIPAL WASTEWATER CONNECTION  
ROUTE 30 CASTLETON, VERMONT

DATE	CHECKED	REVISION

**SITE DETAILS**

DATE: JAN., 2005  
SCALE: AS SHOWN  
PROJ. NO.: 04128.10

DRAWING NUMBER: **C3**