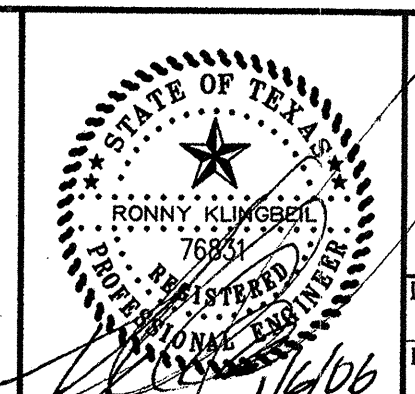


!!! CAUTION !!!
 Existing Utility Lines In Area
 Contractor To Verify Existing Utility Locations
 Contact Appropriate Utility Companies
 48 Hrs. Prior To Any Construction

MISC. INFORMATION	REVISION	DATE	DESCRIPTION
NOTE: Prior to beginning any construction or construction staking, it shall be the Contractor's responsibility to contact the civil engineer to insure that all parties are in possession of the most current set of construction documents.			

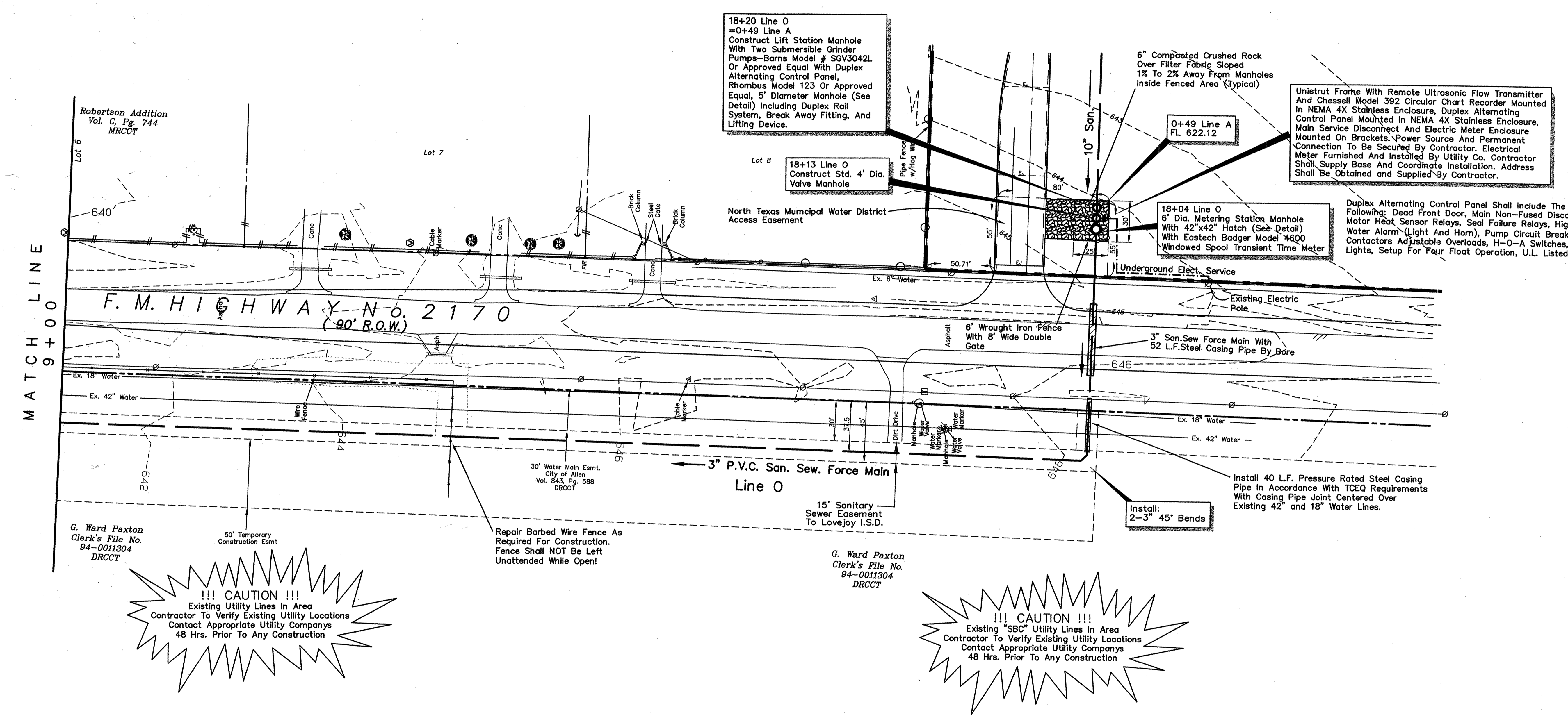
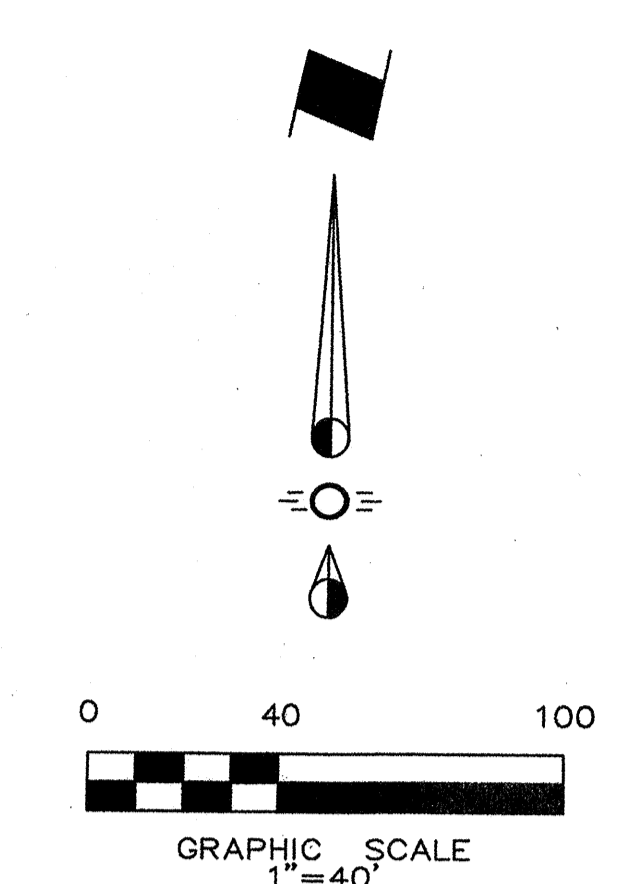
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 Allen, Texas 75013
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 (972) 359-1833 Fax



OFF-SITE SAN. SEWER PLAN

LOVEJOY HIGH SCHOOL
 Lovejoy Independence School District
 Lovejoy, Texas

DESIGNED BY: RLK Engineering	TECH REVIEW: RLK	DRAWING FILE: 0400 OFFSITE SAN1.dwg	DRAWING SCALE: 1"=40'	SHEET:
DRAWN BY: RLK Engineering	PEER REVIEW: RLK	DRAWING DATE: January 6, 2006	PROJECT NUMBER: RLK.01040	C1 OF 6

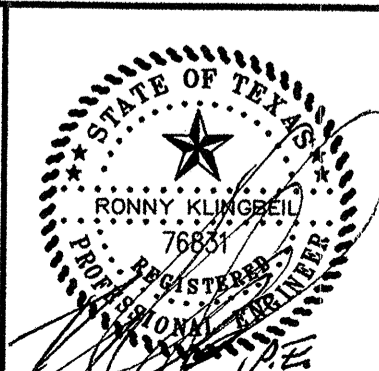


!!! CAUTION !!!
 Existing Utility Lines In Area
 Contractor To Verify Existing Utility Locations
 Contact Appropriate Utility Companies
 48 Hrs. Prior To Any Construction

!!! CAUTION !!!
 Existing "SBC" Utility Lines In Area
 Contractor To Verify Existing Utility Locations
 Contact Appropriate Utility Companies
 48 Hrs. Prior To Any Construction

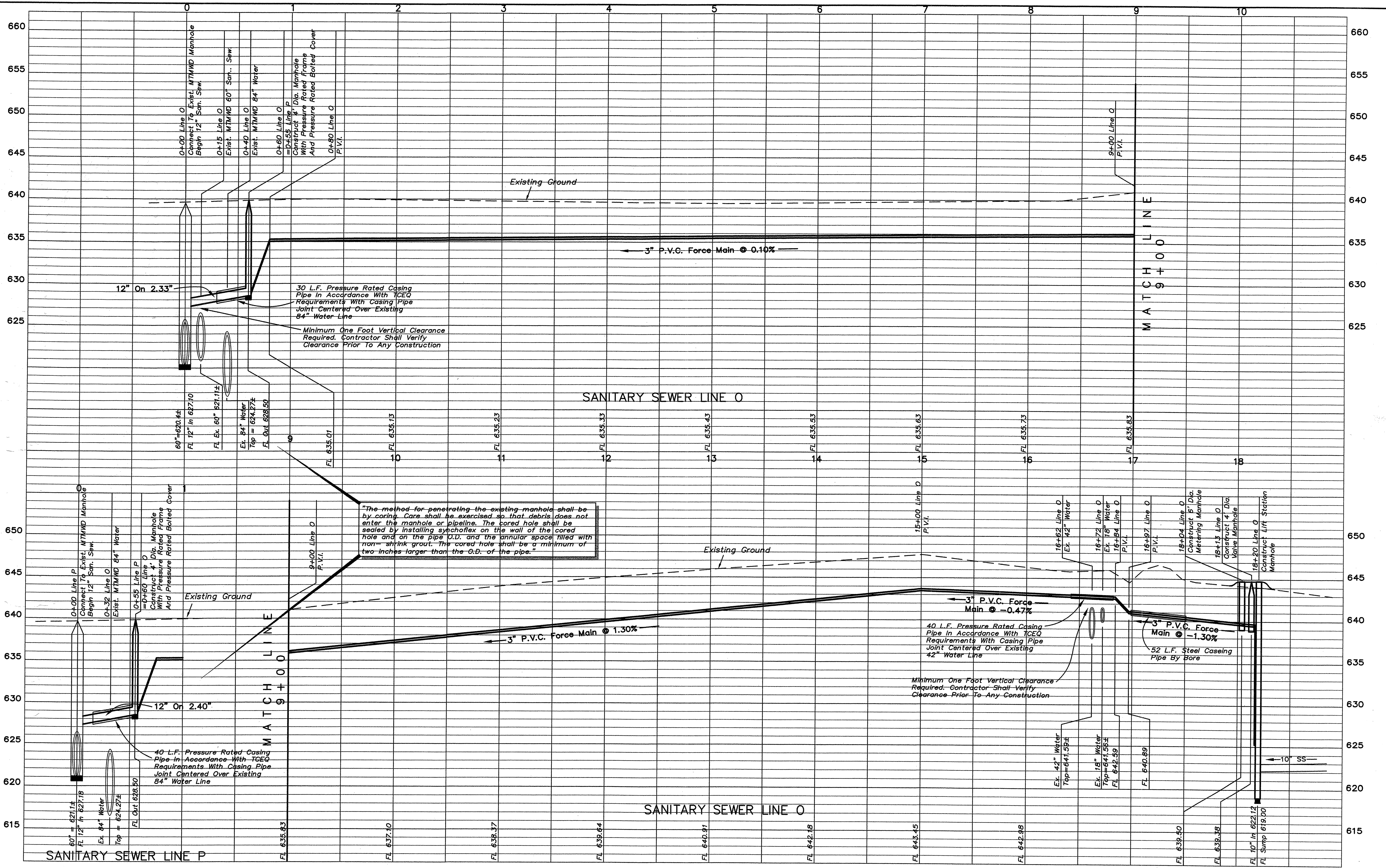
MISC. INFORMATION	REVISION	DATE	DESCRIPTION
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OFF-SITE SAN. SEWER PLAN
LOVEJOY HIGH SCHOOL
 Lovejoy Independence School District
 Lovejoy, Texas

DESIGNED BY: RLK Engineering	TECH REVIEW: RLK	DRAWING FILE: 04040 OFFSITE SAN2.dwg	DRAWING SCALE: 1" = 40'	SHEET: C2 OF 6
DRAWN BY: RLK Engineering	PEER REVIEW: RLK	DRAWING DATE: January 6, 2006	PROJECT NUMBER: RLK 03040	



"The method for penetrating the existing manhole shall be by coring. Care shall be exercised so that debris does not enter the manhole or pipeline. The cored hole shall be sealed by installing sychoflex on the wall of the cored hole and on the pipe O.D. and the annular space filled with non-shrink grout. The cored hole shall be a minimum of two inches larger than the O.D. of the pipe."

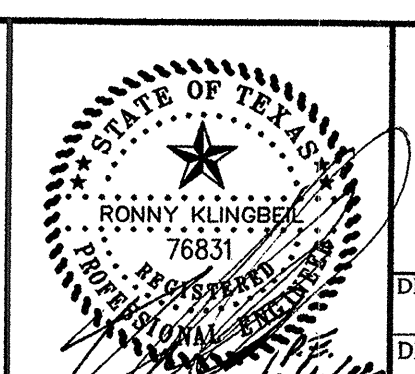
MISC. INFORMATION

NOTE:
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REVISION	DATE	DESCRIPTION

RLK ENGINEERING

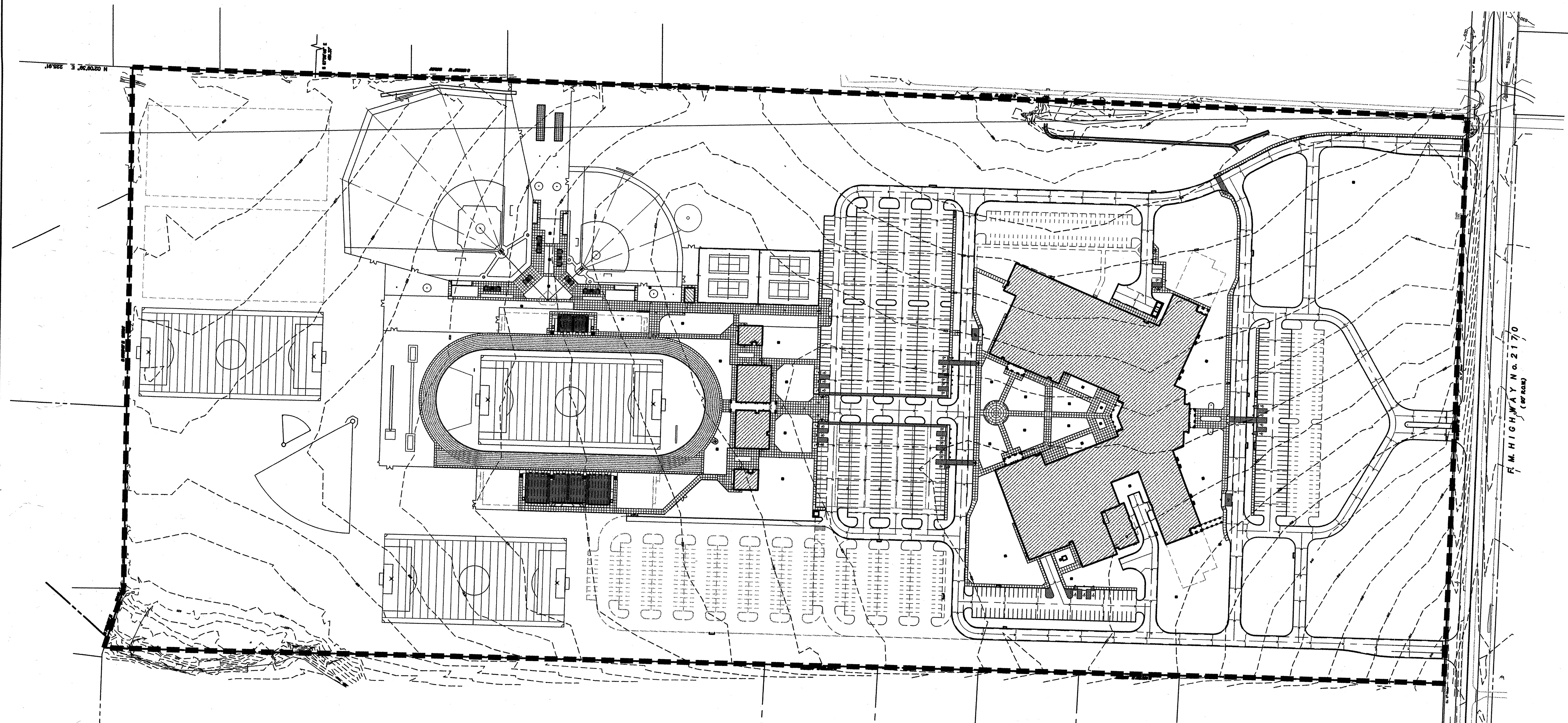
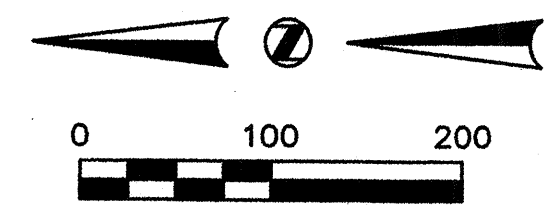
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SANITARY SEWER PROFILE

LOVEJOY HIGH SCHOOL
Lovejoy Independence School District
Lovejoy, Texas

DESIGNED BY: RLK Engineering	TECH REVIEW: RLK	DRAWING FILE: 03040 OFFSITE SAN3.dwg	DRAWING SCALE: H: 1"=40', V: 1"=5'	SHEET: C3 OF 6
DRAWN BY: RLK Engineering	PEER REVIEW: RLK	DRAWING DATE: January 6, 2006	PROJECT NUMBER: RLK: 03040	



WASTEWATER FLOW CALCULATIONS

MAXIMUM SCHOOL POPULATION = 1500 PEOPLE
 20 GAL/DAY/PERSON PER. TCEQ
 MAXIMUM FLOWRATE = $\frac{(20 \text{ GAL/PERSON/DAY})(1500)(\text{PEAKING FACTOR OF } 3)}{(24)(60)}$
 = 62.5 GAL/MIN.

DRAINAGE AREA = 69.2 ACRES

LEGEND

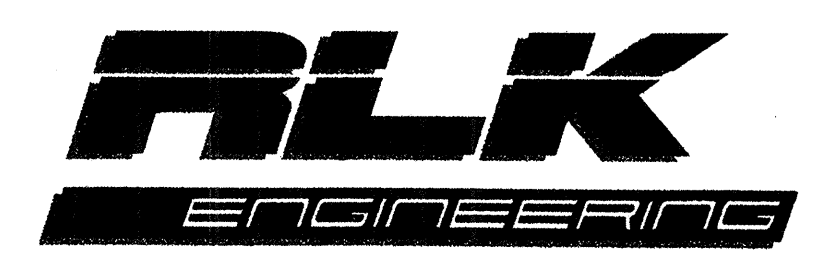
■ ■ ■ ■ ■ DRAINAGE AREA

F.M. HIGHWAY N o. 2170
(see case)

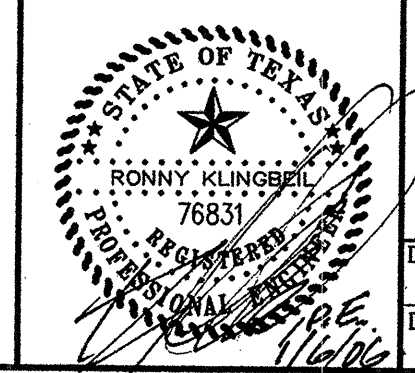
MISC. INFORMATION

NOTE:
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REVISION	DATE	DESCRIPTION



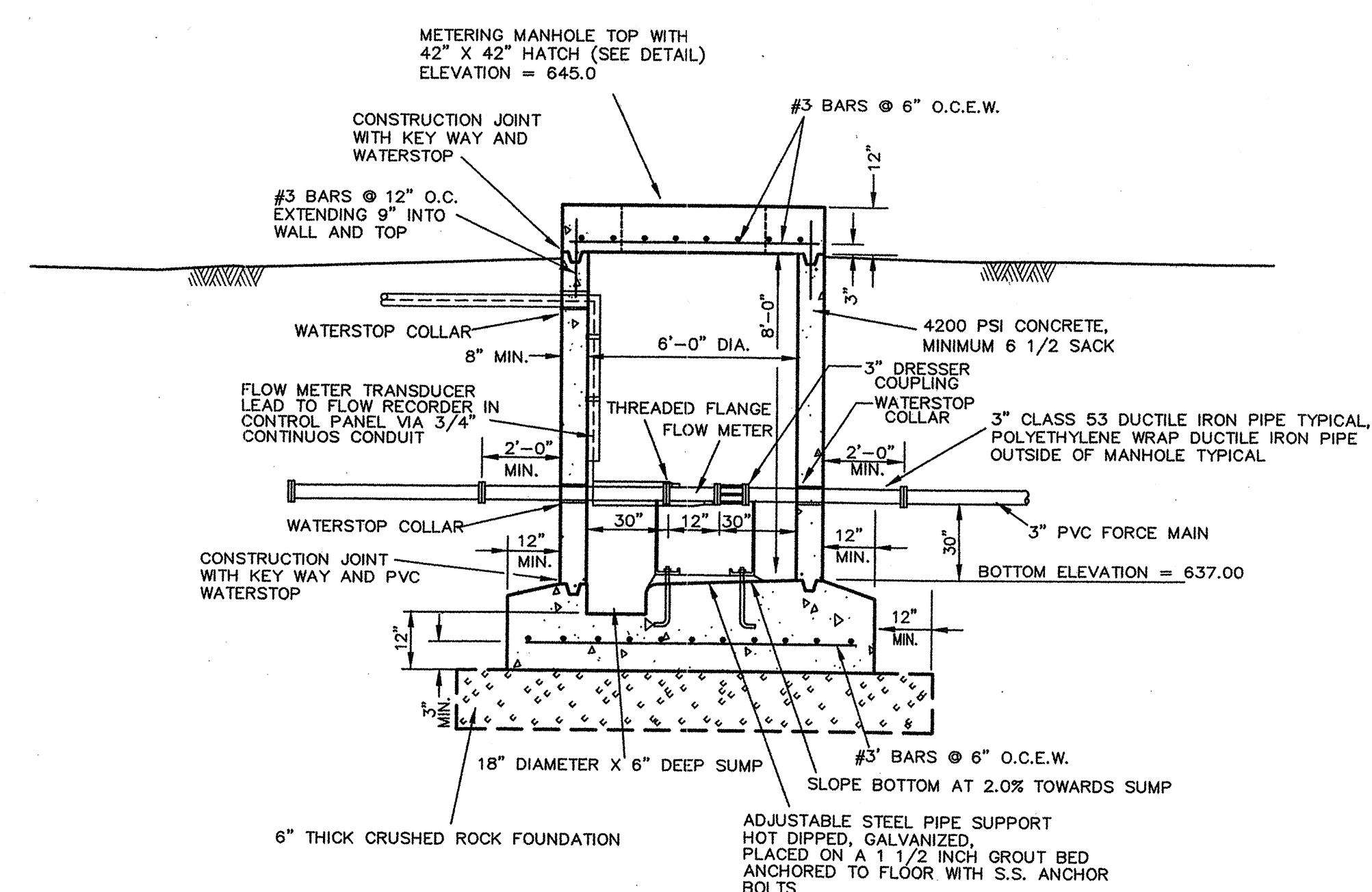
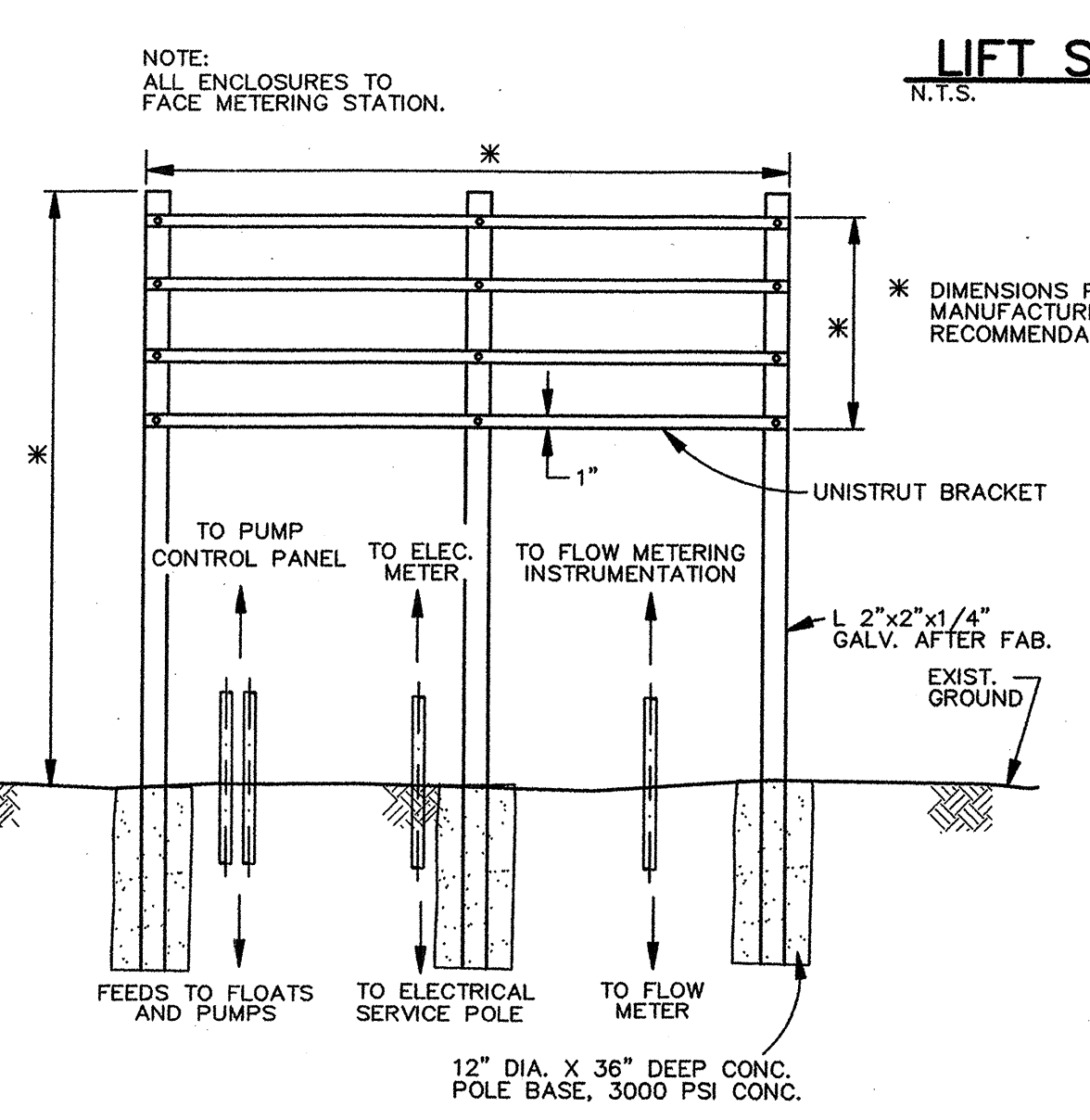
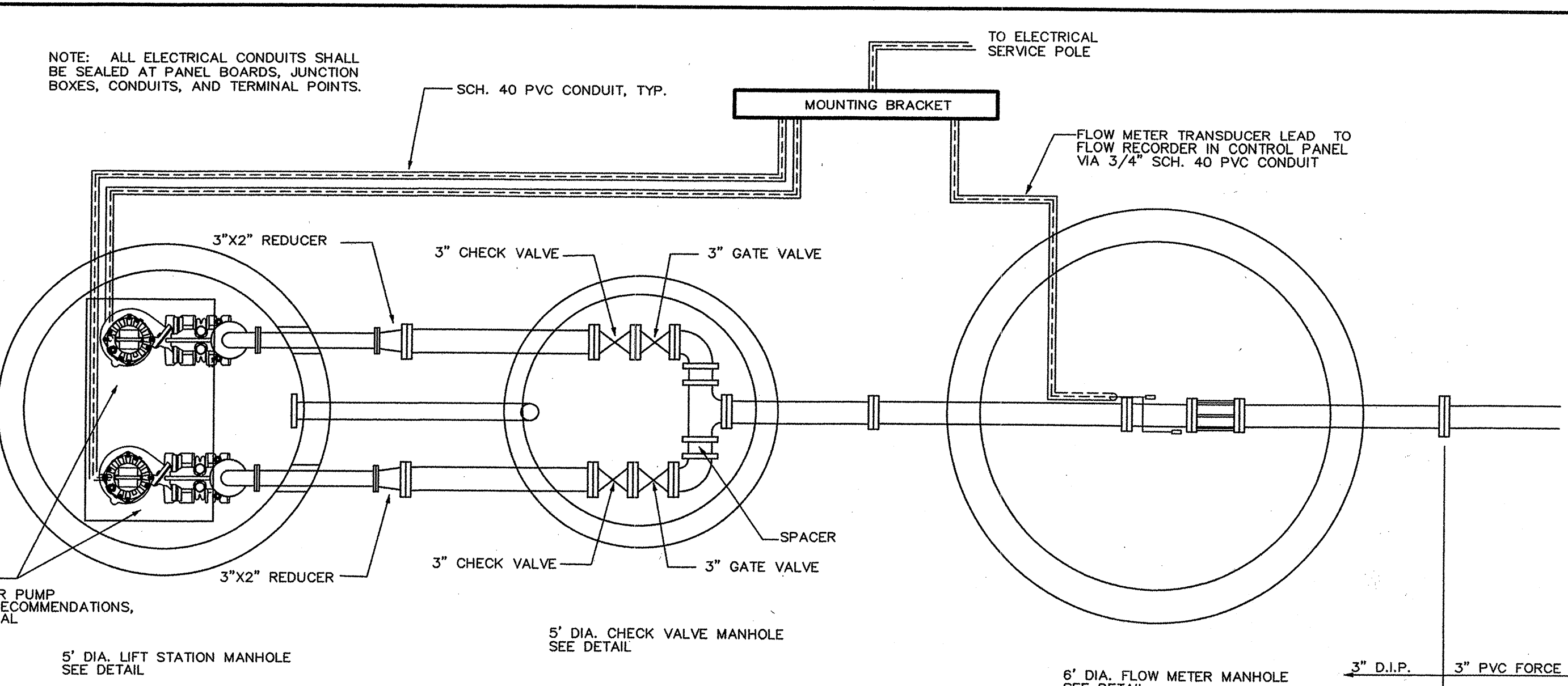
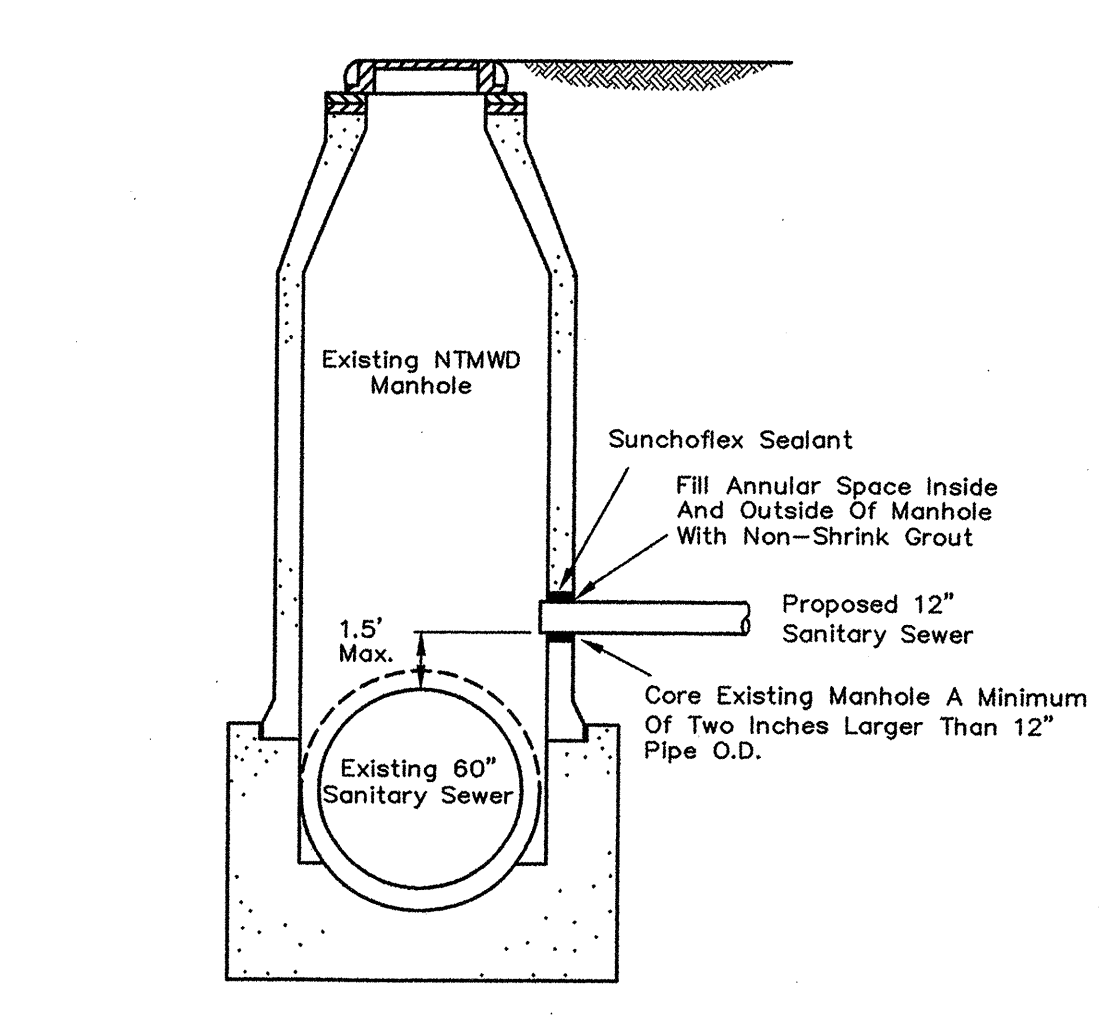
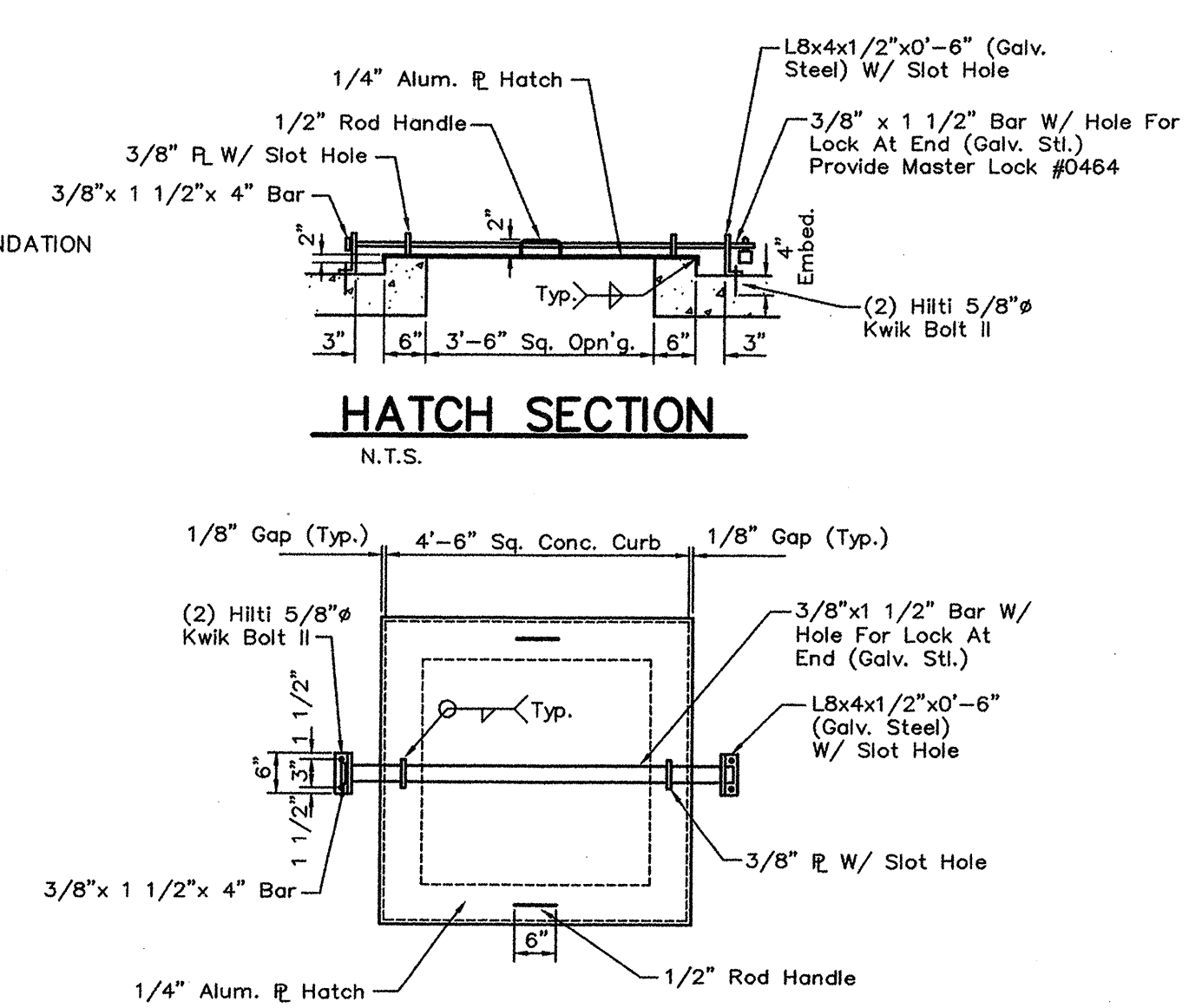
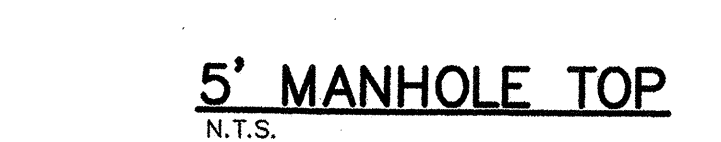
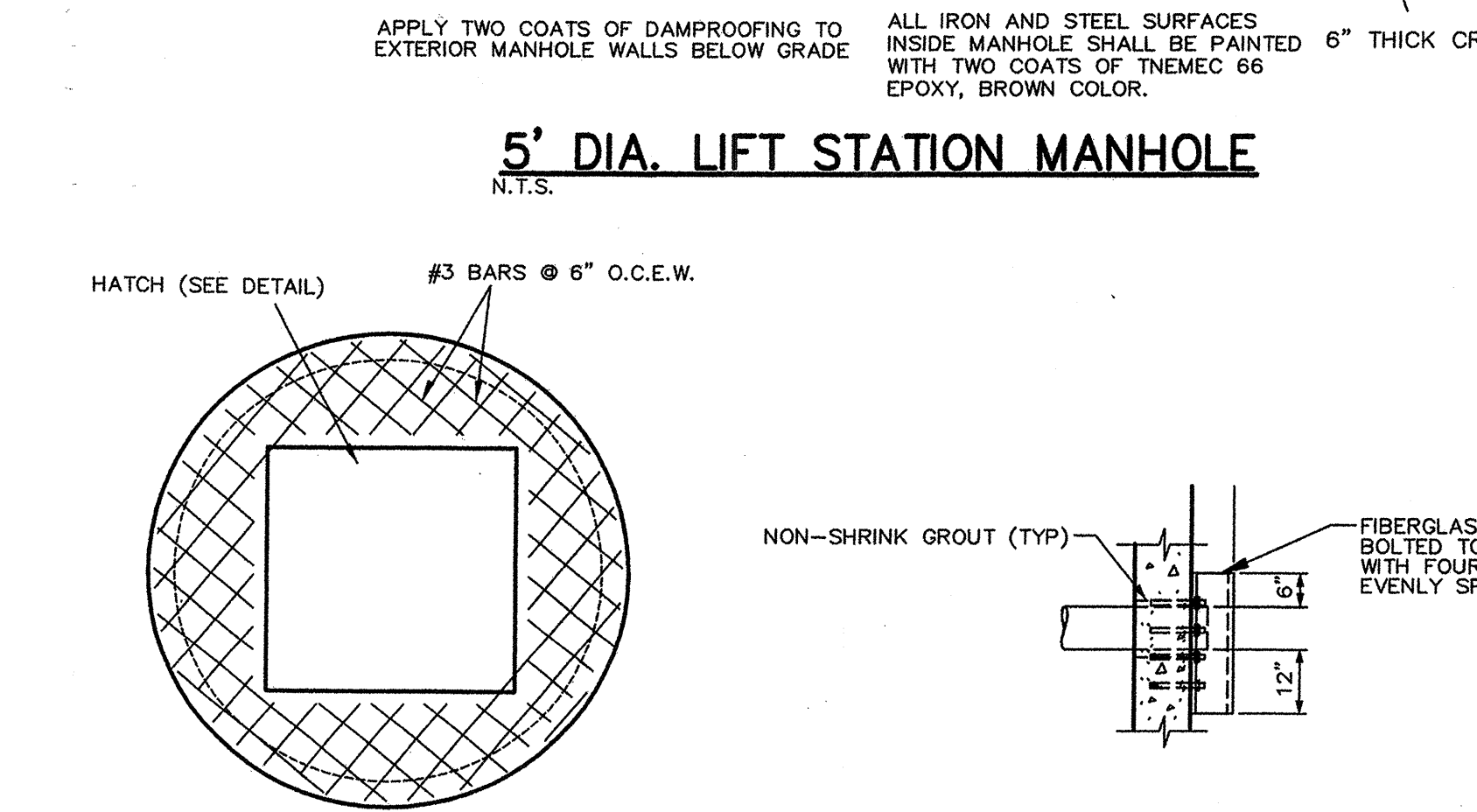
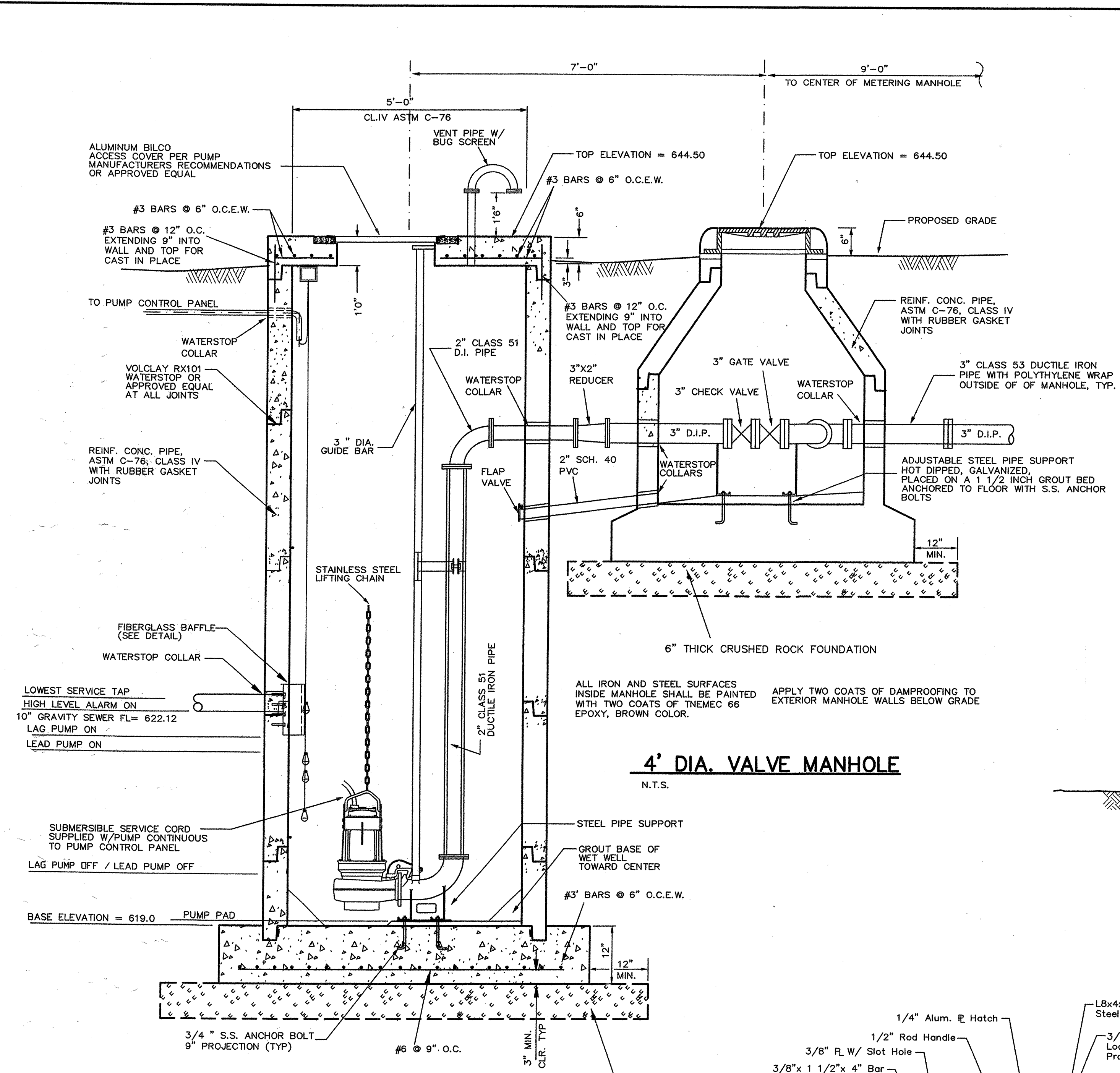
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SANITARY SEWER DRAINAGE AREA MAP

LOVEJOY HIGH SCHOOL
 Lovejoy Independence School District
 Lovejoy, Texas

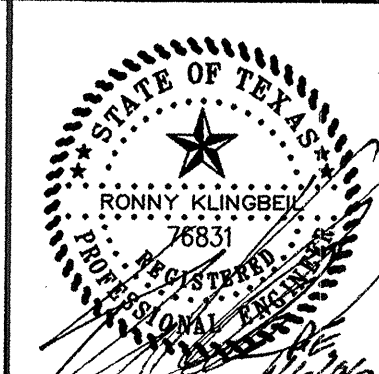
DESIGNED BY: RLK Engineering	TECH REVIEW: RLK	DRAWING FILE: 03040 OFFSITE DAMAP.dwg	DRAWING SCALE: 1"=100'	SHEET:
DRAWN BY: RLK Engineering	PEER REVIEW: RLK	DRAWING DATE: January 6, 2006	PROJECT NUMBER: RLK: 03040	C4 OF 6



- NOTES:**
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,200 PSI AT 28 DAYS.
 - ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
 - ALL GROUT SHALL BE NON-SHRINK, HAVING MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS.
 - PROVIDE HOT DIPPED GALVANIZED ADJUSTABLE STEEL PIPE SUPPORTS IN LIFT STATION MANHOLE, VALVE MANHOLE, AND METER MANHOLE.
 - ALL BOLTS SHALL BE STAINLESS STEEL.
 - CONTRACTOR TO COORDINATE THE CORRECT PLACEMENT & INSTALLATION OF LIFTING EYES ON WET WELL LID & VALVE VAULT LID WITH MANUFACTURER.
 - LOCATE ANCHOR BOLTS USING INSIDE EDGE OF ACCESS FRAME AND CENTER LINE OF THE PUMP AS A REFERENCE POINT. BOLT LOCATIONS MUST BE HELD TO MAINTAIN EXACT OF PUMP RELATIVE TO ACCESS FRAME.
 - COVER SHOWN IS FOR STANDARD DUTY ANGLE FRAME. FOR ADDITIONAL DIMENSIONS ON STANDARD DUTY TROUGH FRAME, CONSULT PUMP VENDOR.
 - ALL ELECTRICAL WORK SHALL CONFORM WITH NEC, NATIONAL, STATE, AND LOCAL CODES.

MISC. INFORMATION	REVISION	DATE	DESCRIPTION
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SANITARY SEWER DETAILS
LOVEJOY HIGH SCHOOL
Lovejoy Independence School District
Lovejoy, Texas

DESIGNED BY: RLK Engineering	TECH REVIEW: RLK	DRAWING FILE: 03040 OFFSITE DETAILS.dwg	DRAWING SCALE: NA	SHEET: C5 OF 6
DRAWN BY: RLK Engineering	PEER REVIEW: RLK	DRAWING DATE: January 6, 2006	PROJECT NUMBER: RLK 03040	

GENERAL NOTES

- All materials and construction shall conform to the City of Lucas Standard Construction Details and Specifications and North Texas Municipal Water District Standards, except as noted herein and approved by the City.
- Contractor shall be responsible for maintaining trench safety requirements in accordance with City Standards, Texas State Law, and O.S.H.A. Standards for all excavation in excess of five feet in depth.
- The location of all utilities located on these plans are taken from existing public records. The exact location and elevation of all public utilities must be determined by the Contractor. It shall be the duty of the Contractor to ascertain whether any additional facilities other than those shown on the plans may be present.
- It shall be the responsibility of the Contractor to protect all public utilities in the construction of this project.
- Backfill for utility lines should be carefully placed so that the utility will be stable. Utility ditches should be visually inspected during the excavation process to ensure that undesirable fill is not used.
- If rock is encountered in the trench, rock spoil shall not be used in the upper 1.5 feet of the trench. The upper 1.5 feet of the trench is to be backfilled only with quality material.
- All water and sanitary mains and services shall have a 10' min. lateral separation.
- All outside conduits and fittings shall be hot dipped ridged galvanized coated conduit and shall have a 40 mil. nominal thickness of p.v.c. coating bonded to the conduit, by fluidized bed method. Inside conduit shall be 3/4" p.v.c. flex conduit non-metallic channel fixed in place with conduit ties.

NTMWD NOTES

- North Texas Municipal Water District (NTMWD's) 42-inch and 84-inch water transmission mains, and two 60-inch sanitary sewer trunk mains are located within limits of construction.
- Operation of heavy earth moving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossings shall be designated and verified to provide a minimum of five-feet of cover.
- To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
- Unless otherwise shown or required, a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
- "The contractor shall contact NTMWD Engineering at (972) 442-5405 at least 48 hours prior to performing any work in the vicinity of the NTMWD facilities."
- Prior to performing any work inside the manholes over the existing NTMWD pipeline, contractor will be required to execute a "contractor's agreement to modify NTMWD facilities" form. The form will need to be completed and signed by the contractor and returned to the NTMWD office prior to construction. The NTMWD field inspector will complete execution of the form at time of scheduled work.
- Excavation adjacent to NTMWD or City of Lucas pipeline and appurtenances shall be performed so that the pipeline or appurtenances are not displaced or damaged. Any damage to the pipeline or appurtenances shall be repaired to the satisfaction of the NTMWD and City of Lucas. Any cost for repair of damage to the pipeline or appurtenances resulting from construction will be the responsibility of the contractor.

SPECIFICATIONS FOR TRANSIT TIME ULTRASONIC FLOW METER

A transit time flow meter shall be provided for installation in the 3-inch force main at the sewage lift station as shown on the plans and in accordance with the manufacturer's recommendations. The flow meter shall be provided in a 3-inch line size epoxy coated carbon steel spool with ANSI 150-pound flanged ends windowed sensors capable of indefinite submergence. The flange-to-flange laying length of the spool shall be no longer than 12-inches. The transducer cables shall be routed to the flow meter electronics in a 3/4-inch metallic conduit and shall be of sufficient length as splicing of the cable will not be permitted.

The flow meter electronics shall be provided with a 128x64 element backlit LCD display capable of simultaneously indicating up to 6 lines of data such as the flow rate, flow velocity, and total flow in engineering units. The display shall also be capable of indicating data in a graphical format. The flow meter shall include a data logger for storing flow rates and total flows. The flow meter shall have two optically isolated 4-20ma isolated outputs linear with flow and three programmable alarm relays. The flow meter shall be capable of operating in a bi-directional mode. The flow meter shall be fully programmable using an integral keypad. The flow meter shall operate from 120VAC or 12VDC power and shall be housed along with a Chessell Model 392 Circular Chart Recorder in a single NEMA 4X FRP outdoor enclosure with a viewing window. Enclosure shall be mounted on a unistrut frame near the metering manhole. The flow meter accuracy shall be +/- 1% of actual flow over a range of 0.1 to 40.0 feet/second. The flow meter electronics shall be housed in a lockable NEMA 4X stainless steel enclosure with white epoxy paint.

The flow meter shall be provided with a three-year warranty and shall be an Eastech Badger Model 4600 or engineer approved equal.

The meter shall be installed, programmed and calibrated by the manufacturer's representative. Contractor shall coordinate scheduling the calibration test on the meter controls with the manufacturer's representative and NTMWD. A written certification that the meter was installed and calibrated per manufacturer's recommendations shall be provided to the NTMWD along with all O&M manuals and parameter data before the meter can be placed into service, and the scheduling of the tie-in connections.

Contractor shall coordinate with the metering manhole manufacturer the certifications required to be submitted by the manufacturer at the various stages of the metering manhole installation.

Meter shop drawings shall be submitted with the contractors stamp to engineer for review and approval by Engineer, City of Lucas and NTMWD.

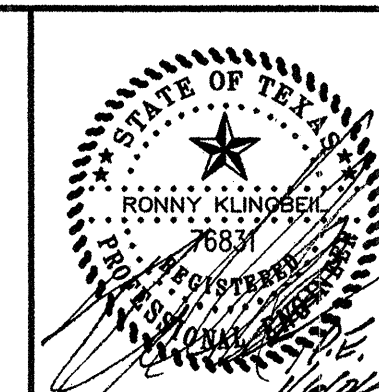
PROCEDURE FOR PROPOSED CONNECTIONS TO NTMWD'S TWO 60-INCH SANITARY SEWER TRUNK MAINS:

- The City of Lucas shall submit a written request for approval of the location of the proposed sewer connections. The NTMWD will approve the proposed location of the connections by letter.
- The sewer lines and manholes shall be constructed and tested in accordance with the City of Lucas standards and specifications prior to connection to the NTMWD line.
- The City of Lucas shall provide a letter indicating that the sewer lines and manholes are complete and tested. NTMWD will authorize, in writing, the connections to the existing manholes on the NTMWD sanitary sewer lines. An NTMWD representative must be present during the connections to the NTMWD lines.
- The contractor shall contact the NTMWD a minimum of two weeks in advance of desired tie-in date, in order to complete the required NTMWD "shut-down" form. The "shut-down" form, along with the letter from the City of Lucas noted in Item C, will be submitted to the NTMWD Executive Director for approval of the actual tie-in date. Dates for tie-ins are limited to Tuesday, Wednesday, and Thursday of each week.
- Connection of the proposed lines to NTMWD existing manhole shall be accomplished in the minimum time during periods of low flow.
- Arrangements for pumping around proposed work shall be by contractor if required.

MISC. INFORMATION	REVISION	DATE	DESCRIPTION
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SANITARY SEWER NOTES

LOVEJOY HIGH SCHOOL
Lovejoy Independence School District
Lovejoy, Texas

DESIGNED BY: RLK Engineering	TECH REVIEW: RLK	DRAWING FILE: 03040 OFFSITE DETAILS.dwg	DRAWING SCALE: NA	SHEET: C6 OF 6
DRAWN BY: RLK Engineering	PEER REVIEW: RLK	DRAWING DATE: January 6, 2006	PROJECT NUMBER: RLK: 03040	