



Request For Proposal

Grand Traverse County Board of Public Works Exterior Water Tank Cleaning Request For Proposal (RFP)

Proposals Due:

10:00 AM, Friday May 8, 2026

Response to this RFP must be submitted in person or by email to the DPW Office:

Noah Karberg, DPW Director
ATTN: RFP – EXTERIOR WATER TANK CLEANING
Department of Public Works
2650 LaFranier Road,
Traverse City, MI 49684
Nkarberg@gtcountymi.gov

Address Questions to:

Gourdie Fraser, Inc. (GFA)
Jennifer Graham, P.E. (Engineer)
1820 Oak Hollow Drive,
Traverse City, MI 49685
Email: jennifer@gfa.tc
Phone: 231-946-5874
Fax: 231-946-3703

General Scope: The Charter Township of East Bay owns a Type I Community Municipal Water System that provides domestic and fire suppression supply to approximately 3,800 customers. The infrastructure is comprised of supply, storage, treatment, pumps, transmission and distribution infrastructure of nine (9) groundwater wells including treatment, three (3) elevated water storage tanks, two (2) booster stations, Pressure Reducing Valves, transmission and distribution piping. The Grand Traverse County Department of Public Works (DPW) is responsible for providing operations and maintenance of this infrastructure.

Gourdie Fraser (GFA) as the Engineer of Record for the GTC DPW was requested to solicit a proposal from qualified and experienced contractors to provide exterior cleaning of the three (3) elevated water storage tanks. The table (right) provides a summary of the tank information. Record drawings are included with this proposal.

		East Bay Township		
		Cherry Ridge	Hammond Road	English Wood
Condition	Year Built	1991	2016	1993
	Address	1020 Schmidt Way	Hammond / Five Mile	Winchester Drive
	Type	Single Pedestal Elevated	Single Pedestal Elevated	Single Pedestal Elevated
	Operating Range (LWL / HWL)	958 (HWL)	1060 / 1090	1038.4 (HWL)
	Availabe Head Range	Unknown	30'	Unknown
	Gross Volume	200,000 gallons	300,000 gallons	300,000 gallons
	Operating Volume	200,000 gallons	300,000 Gallons	300,000 gallons
	Past Inspections / Repairs	Date	2018	N/A
Performed By		Dixon Engineering	N/A	Dixon Engineering
Scope of Work		Interior Abrasive Blast & Repair & Exterior Cleaning & Overcoat	N/A	Interior Abrasive Blast & Repair & Exterior Cleaning & Overcoat



Requirements - General:

- Work must comply with all applicable federal, state and local laws and regulations
- All labor and materials shall be performed compliant with Township, DPW, OSHA, AWWA, ANSI and all other applicable requirements.
- Contractor shall have a minimum of five (5) years experience performing work of similar scope and provide references upon request.
- Provide a one (1) year full labor and material warranty on all workmanship, material and equipment furnished for this project.
- Contractor to submit an Occupational Safety and Health Programs and certification that all site personnel have been trained as required by law
- It is strongly recommended that you make a site visit and perform an evaluation of the existing conditions and proposed scope of work. Coordinate with the DPW for site access:
 - Kent Nothstine, DPW Manager: (231) 493-2994

Terms of Agreement:

General:

- To hold bid open for 60 consecutive calendar days from the bid due date
- To enter into and execute a contract with the Grand Traverse County Board of Public Works.

Insurance:

- Contractor will have Worker's Compensation Insurance and Comprehensive General Liability Insurance coverage in force for all of its operations under this contract.

Bonds:

- The Contractor shall include in the proposal price the cost to provide the following:
 - Maintenance and Guarantee Bond in the amount of 50% of the proposal amount, guarantying for a period of one (1) year from final acceptance of the project work
 - Letter of Surety, licensed to business in the State of Michigan, stating ability to obtain a Performance Bond, and Labor and Material Bond for 100% of the proposal amount.

Schedule:

- Engineer will coordinate with contractor to conduct preconstruction meeting where contractor is responsible to provide preliminary construction schedule for review and acceptance of the DPW.
- To be completed by November 1, 2026
- All work must be completed within ten (10) calendar days from date of arrival to final clean up. Delays by inclement weather shall be approved by the DPW manager.

Services/Materials to be Provided:

Contractor shall provide all equipment and materials necessary to complete the work described herein. The Contractor shall provide a detailed summary of the equipment and services to be provided. The scope of work shall include but shall not be limited to the following:

General:

- The tanks must remain in-service and operational during all phases of work.
- Under no circumstances shall the contractor enter the wet interior of the tank.
- Contractor shall be responsible for conducting field exploration to verify all conditions prior to beginning work.
- All work including staging, storage and equipment shall remain within confines of Township property and/or easements.
- Contractor shall coordinate work with GTC DPW including schedule, mobilization, staging areas
- Contractor shall be responsible to provide temporary power supply as needed to complete work.



- Clean exterior surfaces of tank with high pressure water 3,500 psi to 5,000 psi to review mildew, sediments and debris. Contractor shall use care to not compromise existing paint system and document areas of wavering coating indicative of poor adhesions, spots, or other areas of noted concern as performing the work.
 - Documentation shall be in report format including photographs
 - Coating that is damaged as result of work performed shall be repaired as coordinated with the DPW. This will include sanding the damaged area and applying coating system and application as approved by the DPW
- Contractor may use a biodegradable algaecide as needed to aid with removal.
 - Contractor shall submit MSDS documentation to DPW for approval prior to use
 - Hand wash with a higher concentration of algaecide any mildew not removed by power washing.
 - Mix Algaecide at a level recommended by the manufacturer.
- Site restoration and clean up.
- Contractor to notify cellular companies of work being performed and coordinate with providers to eliminate and/or greatly reduce power transmission through antennas while working in vicinity. Contractors are required to wear RF (radio frequency) sensitivity meter during work within 15 feet of any antennas.
- Antenna companies and associated contact information is available via placards posted on each respective water tank. Contractor shall call contact number to notify work is being done on the tank within the RF area and the site power transmission needs to be eliminated or reduced. Contractor responsible for all communication and coordination with cellular antenna companies.
- Contractor shall use care when working in the vicinity of antennas. It is the responsibility of the contractor to assure that any infrastructure located on/near the water tanks is protected from damage during work.

Submittals:

- Contractor must also submit 10 days before any work commences all MSDS sheets for all applicable materials including, but not limited to cleaning agents, paints, thinners and abrasive materials.
- Contractor to provide a Fall Prevention Plan and Site-Specific Fall Hazard Evaluation and the plans shall include a site-specific generic drawing of the existing structure and Appurtenances of this tank and reflect safety changes specified for this project.
- Contractor to supply certifications for all spiders, scaffolding, stages, man lifts, etc. to be used on this project
- Contractor to submit 10 days before the project start the OSHA Competent Person and qualifications, along with all the power tools and attachments that will be used for this project.

Services / Materials Not To Be Included – Provided by Owner:

- Site accessibility and potable water supply – Available onsite
 - An onsite hydrant is available for use and contractor shall coordinate with GTC DPW for access, operations and backflow preventor.
 - Contractor responsible for water use metering and provide record of volume consumed to DPW at project completion.
- Contractor responsible for coordinating 48 hours in advance to provide site access and prior to beginning work.



Contractors Proposal Form

Bidders are instructed to submit bids for this project on a lump sum basis as stated in the Proposal. All labor, materials and equipment are considered incidental and to be included in total bid price. All work shall comply with RFP and applicable laws and regulations.

No.	Item	Unit	Est. Qty.	Unit Price	Item Cost
East Bay Township Exterior Tank Cleaning					
1	Cherry Ridge Elevated Water Tank	LS	1		
2	English Wood Elevated Water Tank	LS	1		
3	Hammond Rd Elevated Water Tank	LS	1		
TOTAL BID					

Bidders Signature

Printed Name:

Business Name:

Address:

MI Contractor License No.:

Telephone:

Email:

The GTC DPW may make such investigations as deemed necessary to determine the ability of the Bidder to perform the Work and the Bidder shall furnish to the DPW all such information and data for this purpose as the DPW may request. The GTC DPW reserves the right to reject any / all bids if the evidence submitted by, or investigation of, such Bidder fails to satisfy the DPW that such Bidder is properly qualified to carry out the work as requested.



***RECORD DRAWINGS
Hammond / Five Mile***

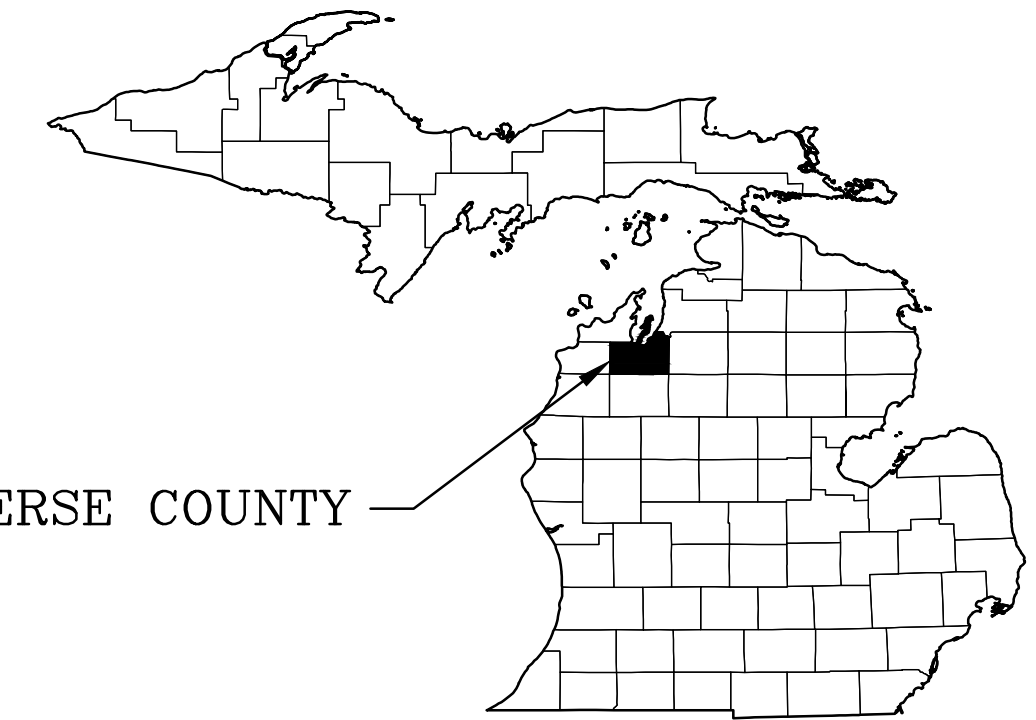
SITE/CIVIL CONSTRUCTION DOCUMENTS FOR PROPOSED EAST BAY CHARTER TOWNSHIP CONTRACT NO. 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK EAST BAY TOWNSHIP GRAND TRAVERSE COUNTY, MICHIGAN

UTILITIES & MUNICIPALITIES

TELEPHONE AT&T 142 EAST STATE STREET TRAVERSE CITY, MI 49684 ATTN: KATHY DOHM-BEISER PHONE: (231) 941-2707 EMAIL: KD1484@ATT.COM	GRAND TRAVERSE COUNTY PUBLIC WORKS 2650 LaFRANIER ROAD TRAVERSE CITY, MI 49686 ATTN: JOHN DIVOZZO, DIRECTOR PHONE: (231) 995-6039 EMAIL: JDIVOZZO@GRANDTRAVERSE.ORG
FIBER MERIT NETWORK INC ATTN: KEN LOPEZ PHONE: (616) 393-0132	GAS MICHIGAN CONSOLIDATED GAS ATTN: BARBARA SAUNDERS PHONE: (313) 235-5111
CABLE TV CHARTER COMMUNICATIONS ATTN: DAN BIELACZYC PHONE: (231) 941-3819	ELECTRIC CHERRYLAND ELECTRIC CO-OP ATTN: JIM CARPENTER PHONE: (231) 486-9217
	CHARTER TOWNSHIP OF EAST BAY 1965 NORTH THREE MILE ROAD TRAVERSE CITY, MI 49696 PH. (231) 947-8647



LOCATION MAP
NOT TO SCALE



GRAND TRAVERSE COUNTY

KEY MAP
NOT TO SCALE

SHEET INDEX	
GENERAL SHEETS	SHEET NO.
COVER SHEET	1
SITE PLAN	2
WATER STORAGE TANK DETAILS	3
WATER MAIN DETAILS	4

SITE LOCATION

NOT VALID FOR CONSTRUCTION
UNLESS SIGNED AND DATED:

JOB NO. EBT3415-03C	SHEET 1
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WADETRIM
10850 East Traverse Highway, Suite 2200
Traverse City, MI 49684
231.947.7400/800.968.6660
FAX: 231.946.1000
www.wadetrिम.com

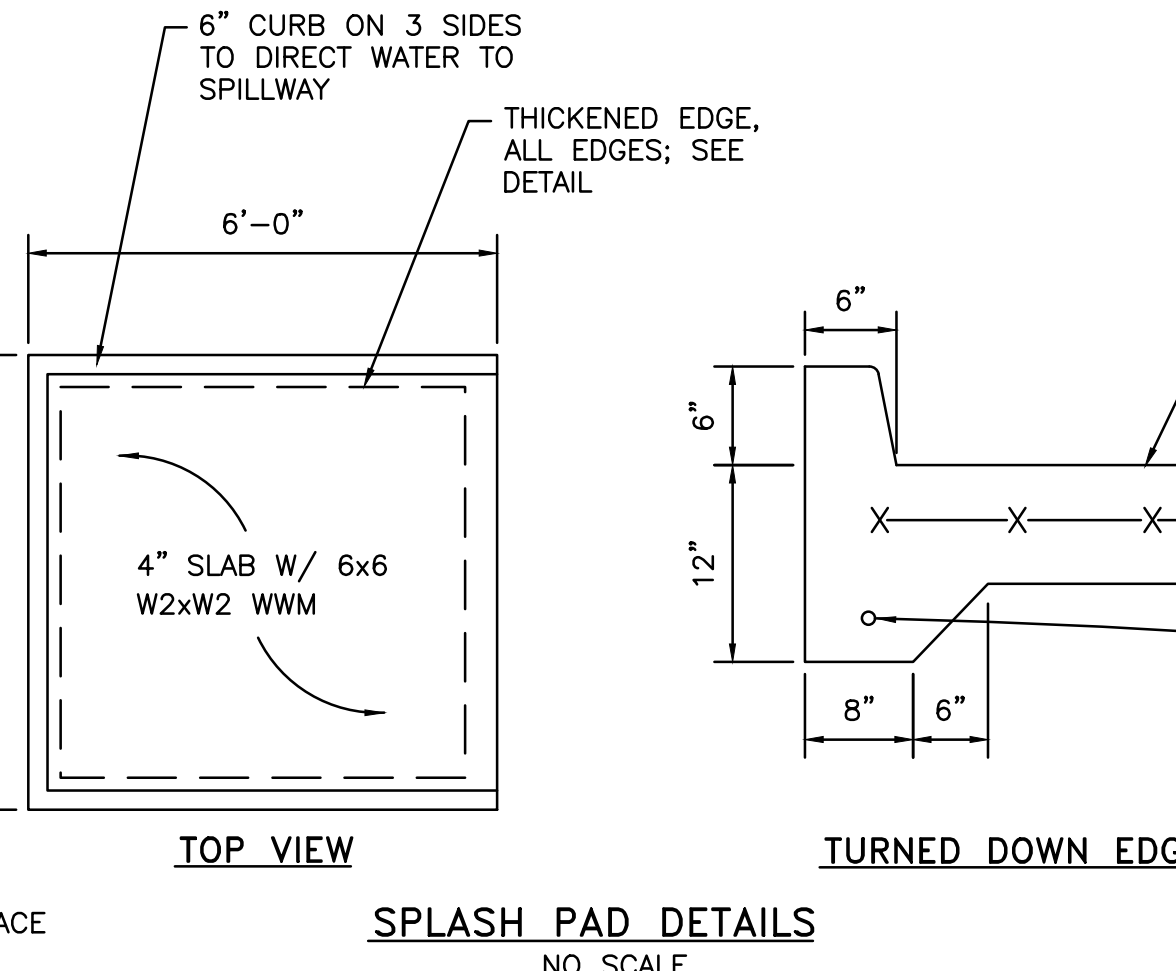
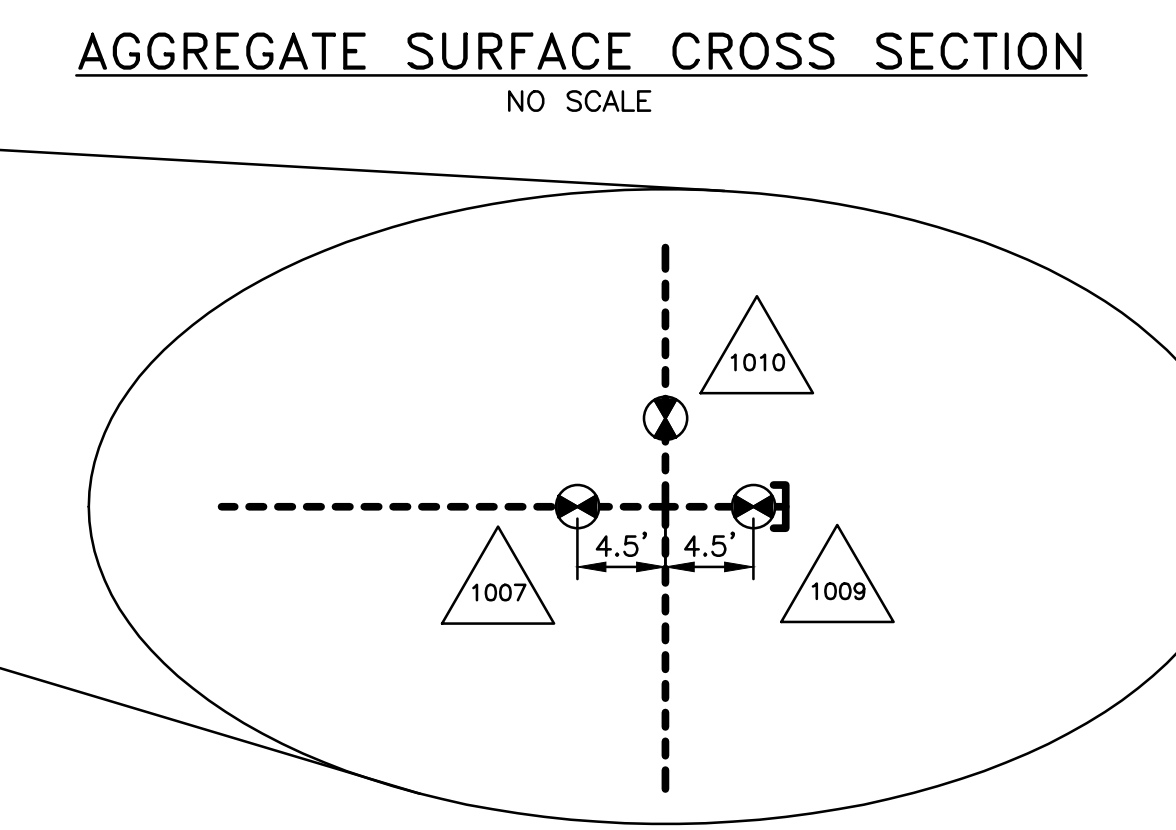
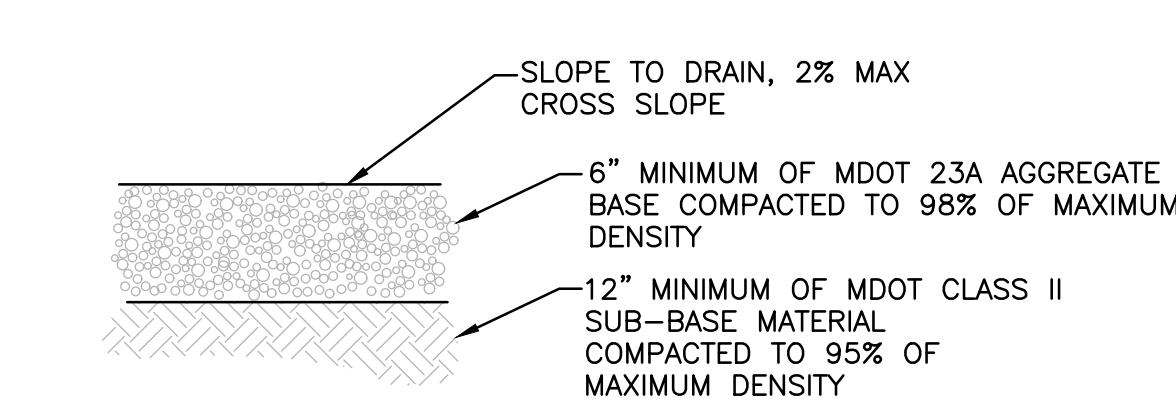
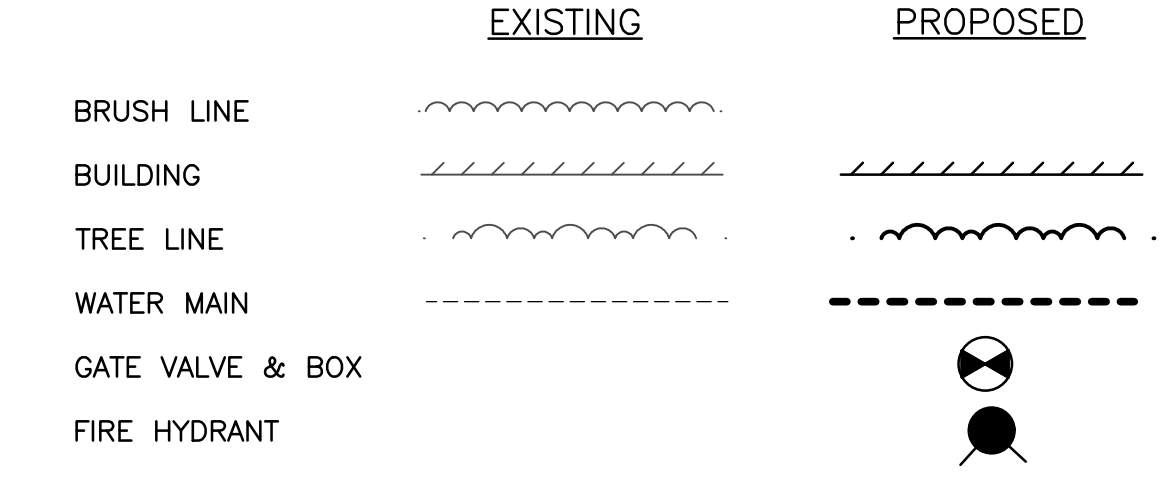
PREPARED UNDER THE SUPERVISION OF:

RECORD DRAWING APRIL 2017
PLAN DATE: 01/20/16
FILE NO.: 29-1-35

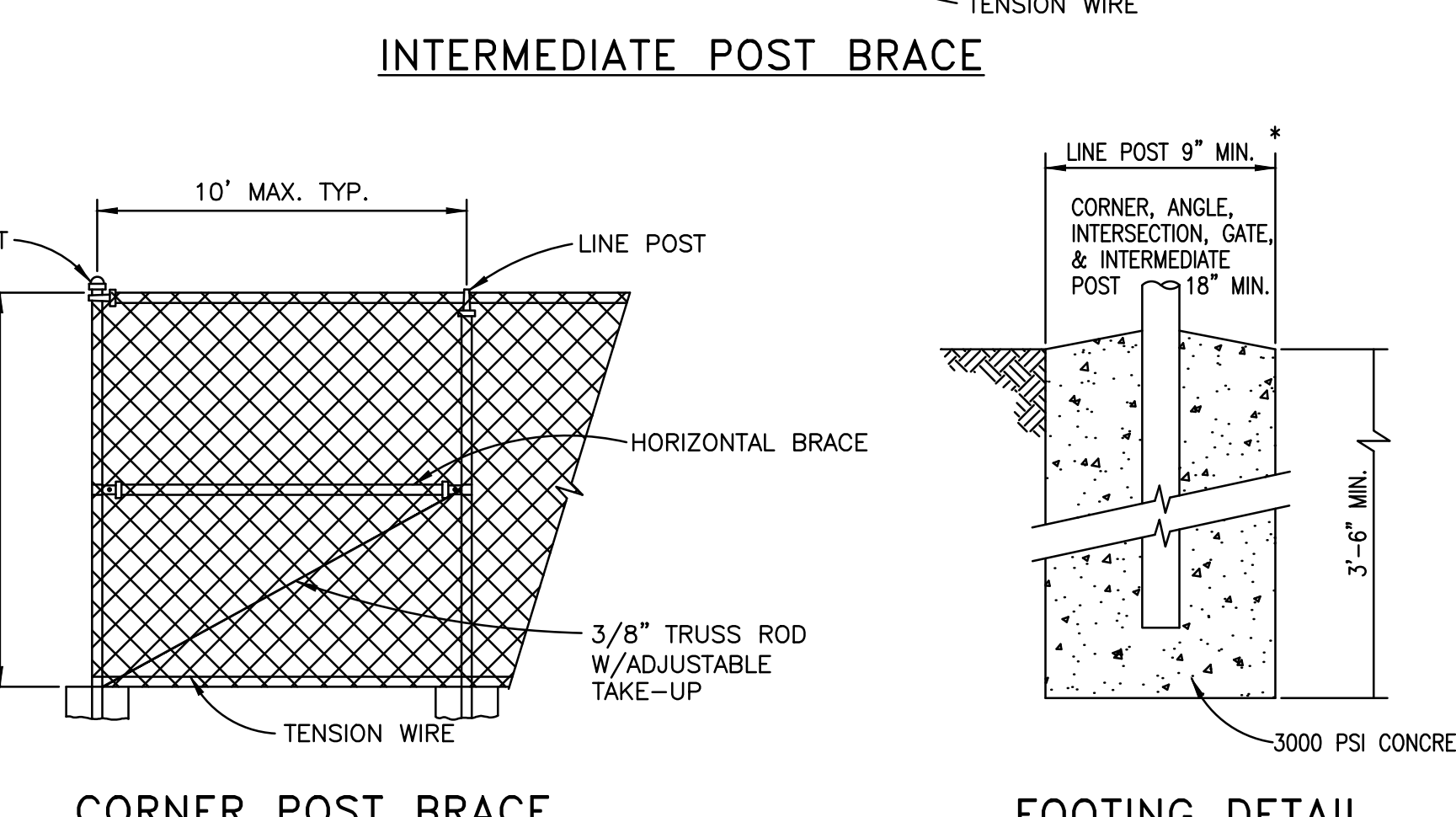
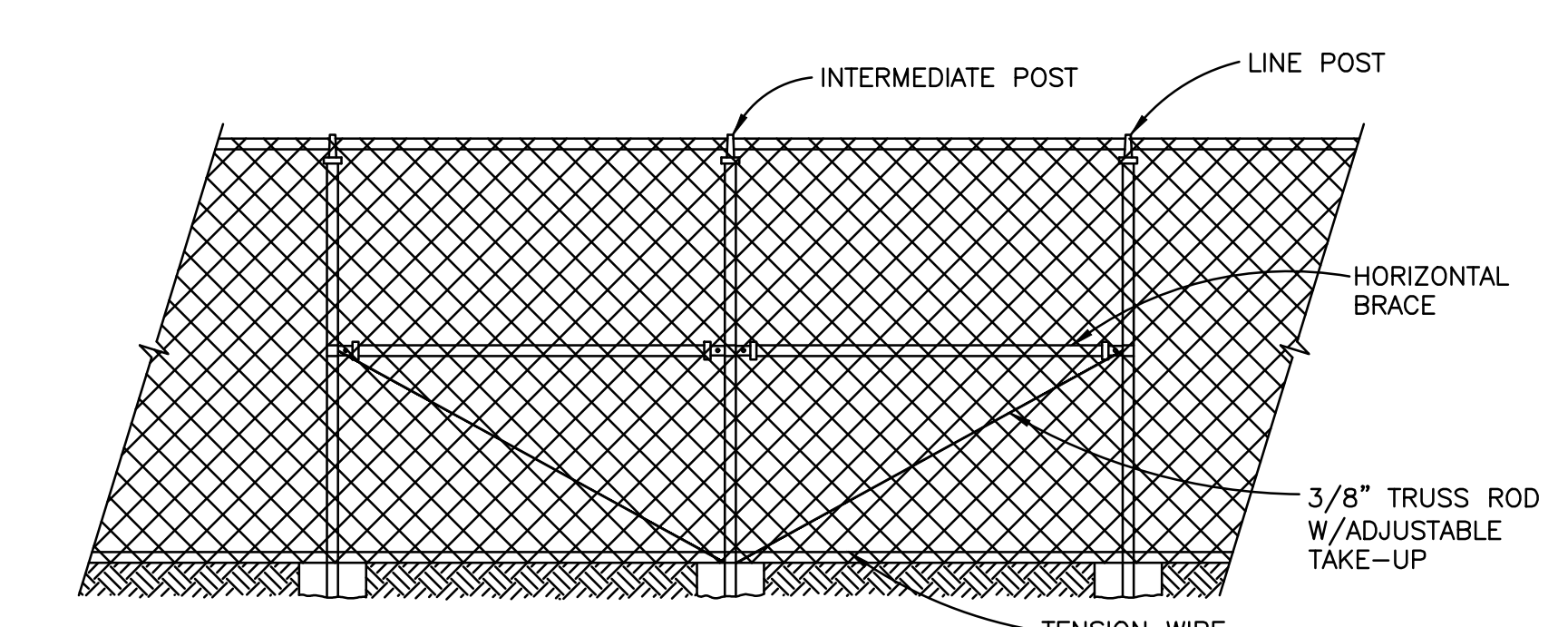
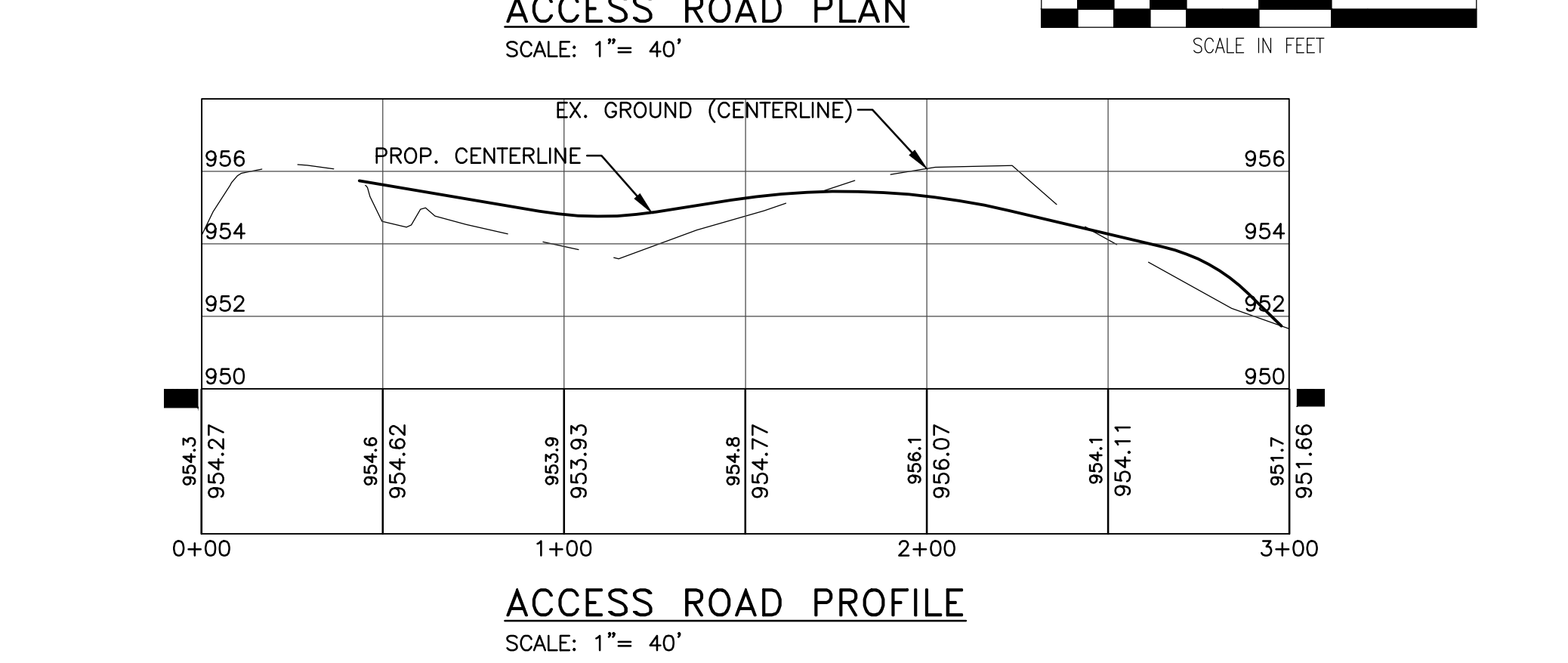
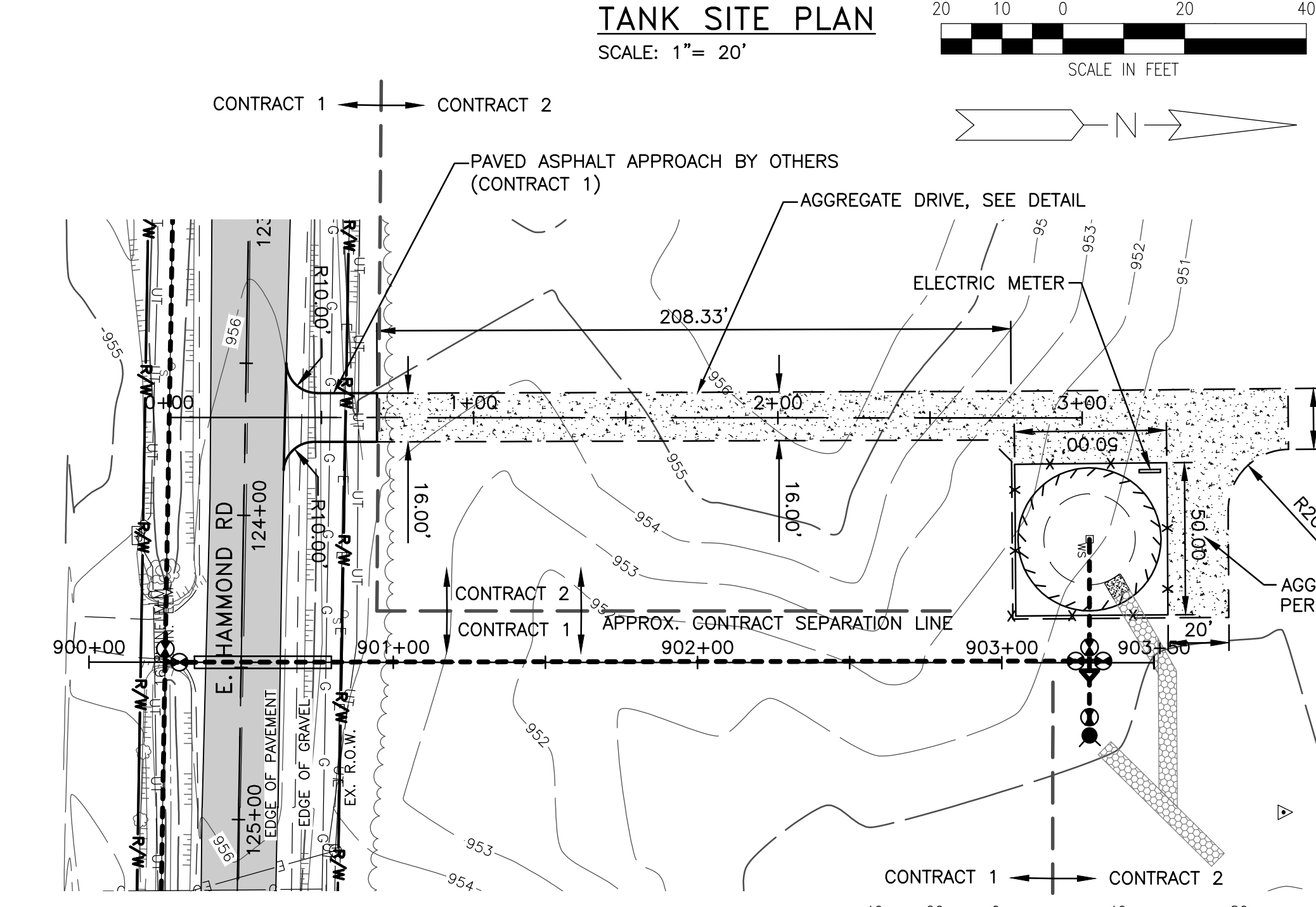
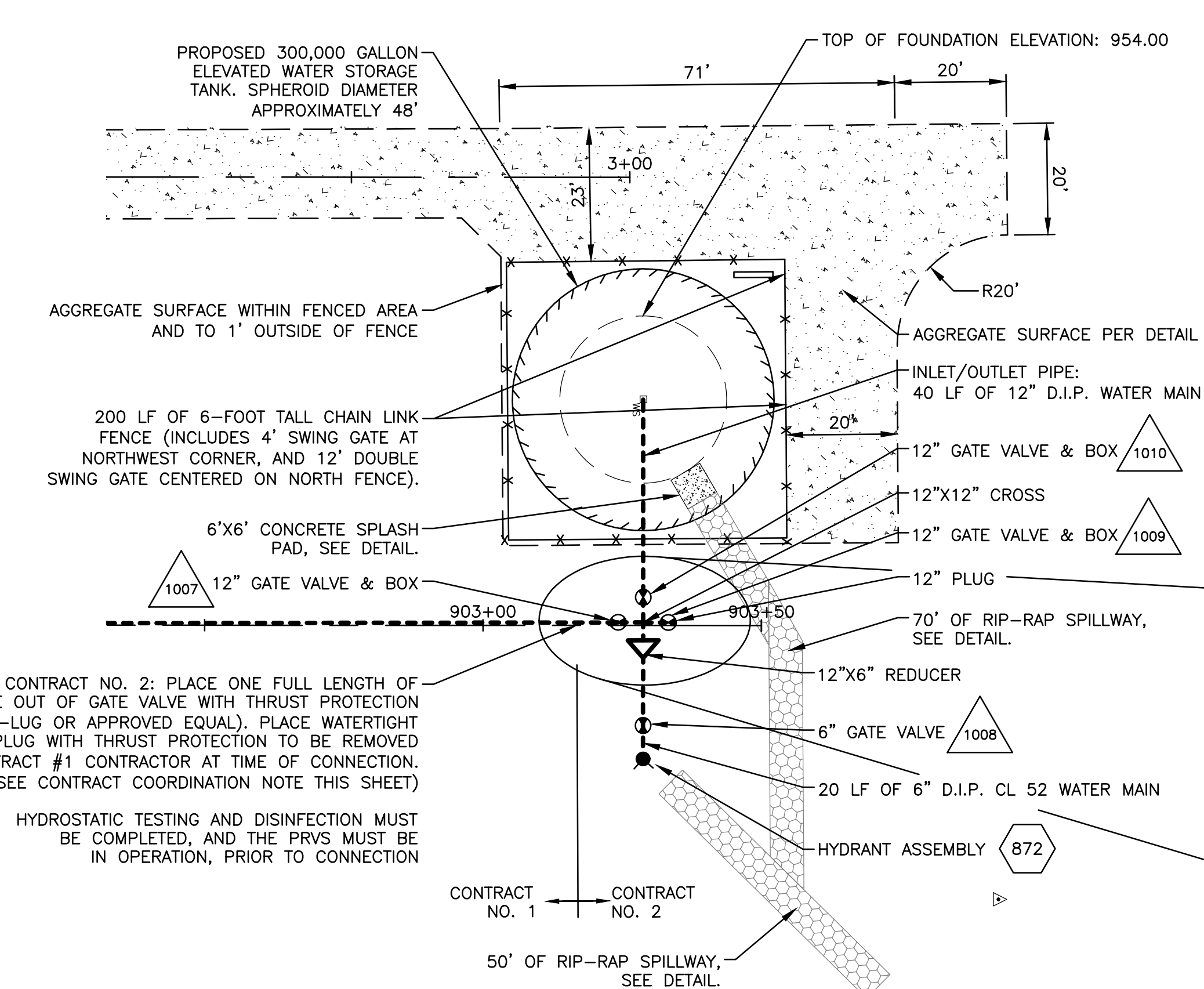


Know what's below.
Call before you dig.

LEGEND



- CONSTRUCTION NOTES**
- ALL CONSTRUCTION ACTIVITY MUST REMAIN IN THE R.O.W., EASEMENTS, TOWNSHIP-OWNED PROPERTY, OR DESIGNATED STAGING AREAS. ANY AREAS OUTSIDE OF THOSE NOTED, THAT ARE AFFECTED BY CONSTRUCTION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - ALL TREES MUST BE SAVED IF POSSIBLE, UNLESS OTHERWISE NOTED. CLEAR TREES WITHIN 10' OF FENCE AND ACCESS DRIVE. CONTRACTOR IS RESPONSIBLE FOR TREE REMOVAL. PAYMENT IS INCLUDED IN THE ELEVATED WATER STORAGE TANK PAY ITEM.
 - THE MINIMUM COVER REQUIREMENT FOR WATER MAIN IS 6 FEET.
 - CONTRACT COORDINATION: CONTRACT #2 SHALL INCLUDE WATER MAIN TO LOCATION SHOWN ON THIS PLAN SHEET INCLUDING BACKFILL, TESTING, TOPSOIL AND SEEDING. CONTRACT #1 CONTRACTOR SHALL REMOVE THE WATER MAIN PLUG AND EXTEND WATER MAIN AS SPECIFIED. IF CONTRACT #2 WATER MAIN HAS TO BE INSTALLED AT TIME OF CONTRACT #1 WORK, THEN THE TWO CONTRACTORS SHALL MEET TO COORDINATE ACTIVITIES (BUT CONTRACT #1 SHALL STILL MAKE THE CONNECTION), AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF BRINGING 480V, 3PH. ELECTRICITY TO THE WATER STORAGE TANK SITE AND ASSOCIATED METER INSTALLATIONS. THE OWNER WILL PAY FOR THE UTILITY COMPANY'S COST TO INSTALL THE ELECTRICAL SERVICE TO THE SITE, FOR WHICH AN ALLOWANCE IS ALLOCATED IN THE BID SCHEDULE. ALL OTHER ASSOCIATED COSTS SHOULD BE INCLUDED IN THE BID ITEM ELECTRICAL WORK.
 - ELECTRIC WORK MUST ACCOMMODATE A FUTURE AUTOMATIC TRANSFER SWITCH. CONTROLS WORK MUST BE CONSISTENT WITH, AND INTERFACED WITH THE GRAND TRAVERSE COUNTY DPW SCADA NETWORK.
 - ELECTRICAL AND CONTROLS WORK TO BE DONE BY WINDEMULLER ELECTRICAL INC. CALL 1-231-935-4800 TO COORDINATE.



* LINE POSTS AT GRADE DEPRESSIONS AND ALIGNMENT ANGLES, 18" MINIMUM. FABRIC MESH SHALL BE 2 INCHES.

INTERMEDIATE BRACE POST SHALL BE SPACED AT 660 FEET MAXIMUM OR MIDWAY BETWEEN END POST, ANGLE POST, OR CORNER POST WHEN DISTANCE IS LESS THAN 1320 FEET BUT MORE THAN 660 FEET.

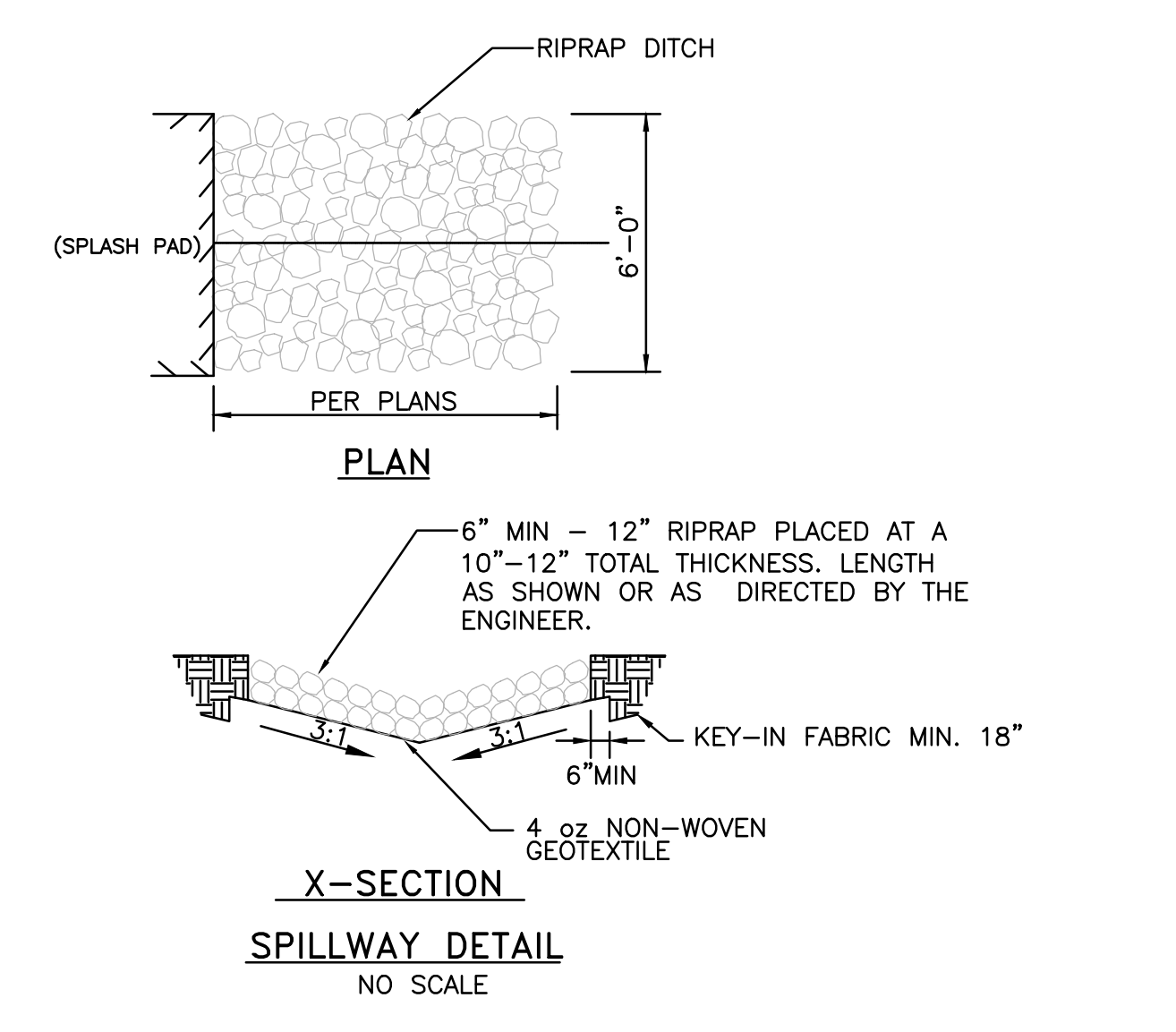
POST BRACES SHALL BE PROVIDED FOR EACH GATE CORNER, INTERMEDIATE AND END POST WHEN FENCE IS 6 FEET OR MORE IN HEIGHT. TRUSS RODS MAY BE ELIMINATED WHEN FENCE HAS A CENTER RAIL.

ANY FENCE 10 FEET OR MORE IN HEIGHT SHALL HAVE A CENTER RAIL.

ALL CHAIN LINK FENCE SHOULD BE 9 GAGE WIRE, WITH BLACK PLASTIC COATING, UNLESS OTHERWISE SPECIFIED.

ALL CHAIN LINK FENCE SHALL BE PROVIDED WITH A 3-WIRE BARBED SECURITY EXTENSION SLOPING OUTWARD ABOVE THE TOP RAIL.

COMMERCIAL GRADE CHAIN LINK FENCE DETAILS
NO SCALE



PROJECT MANAGER: BRIAN C. SOUSA, PE C:\PW_WORK\2\00763141\CSP-PLTS-C02-SITEPLAN.DWG - 2 - PLOTTED: 4/21/2017 12:21 PM BY: WHALEY, RUS	ISSUED FOR: MDEQ DATE: 11/13/15 BY: DCC JOB NO.: EBT3415-03C SHEET: 2	RECORD DRAWING APRIL 2017 FILE NO.: 29-1-36
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WADETRIM
1880 East Traverse Highway, Suite 200
Traverse City, MI 49684
Ph: 231.946.1000
Fax: 231.946.1000
www.wadetrtrim.com

EAST BAY CHARTER TOWNSHIP
1965 N. THREE MILE ROAD
TRAVERSE CITY, MI 49696

CONTRACT 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK

SITE PLAN
EAST BAY CHARTER TOWNSHIP, CONTRACT NO. 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK

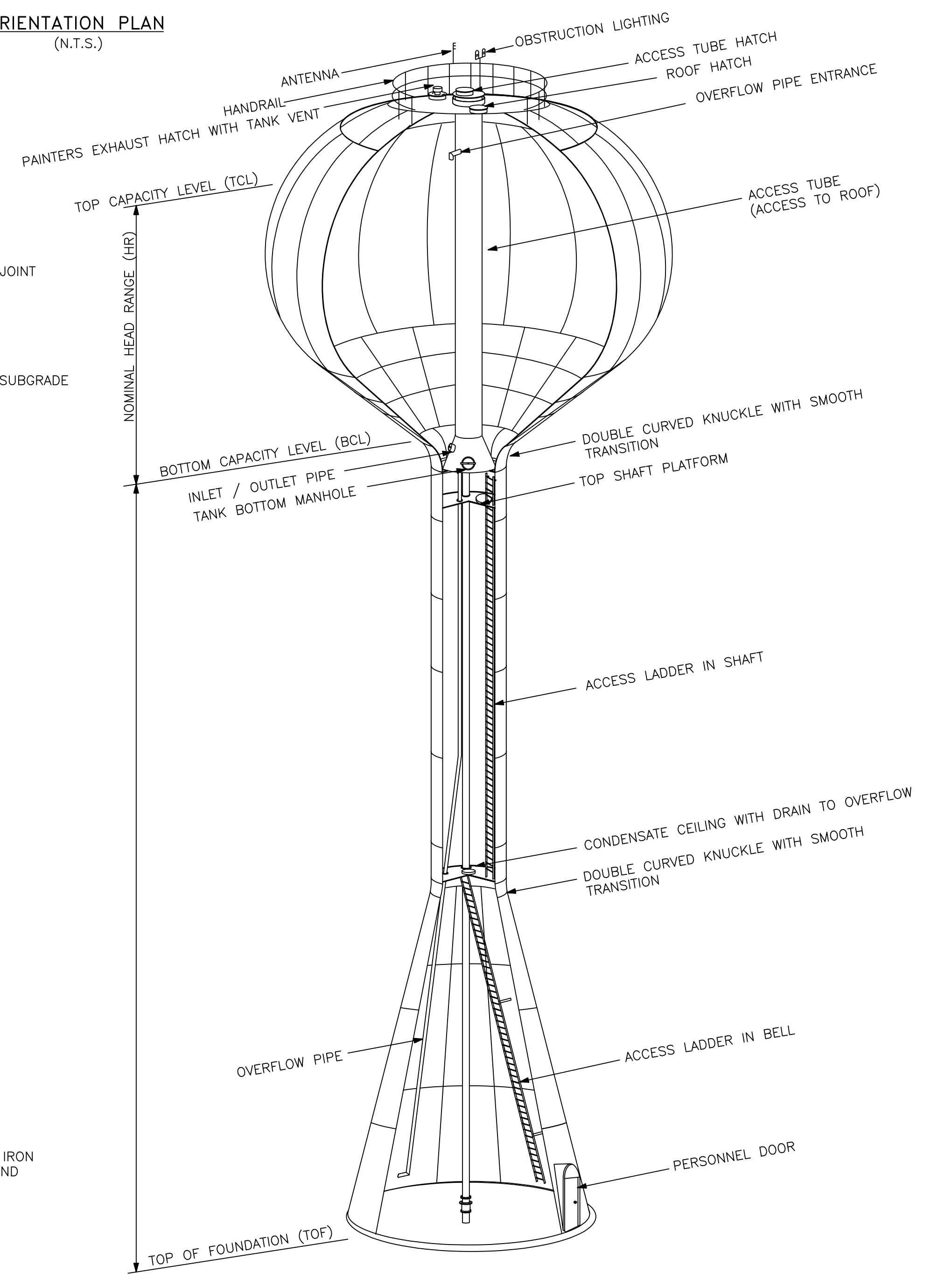
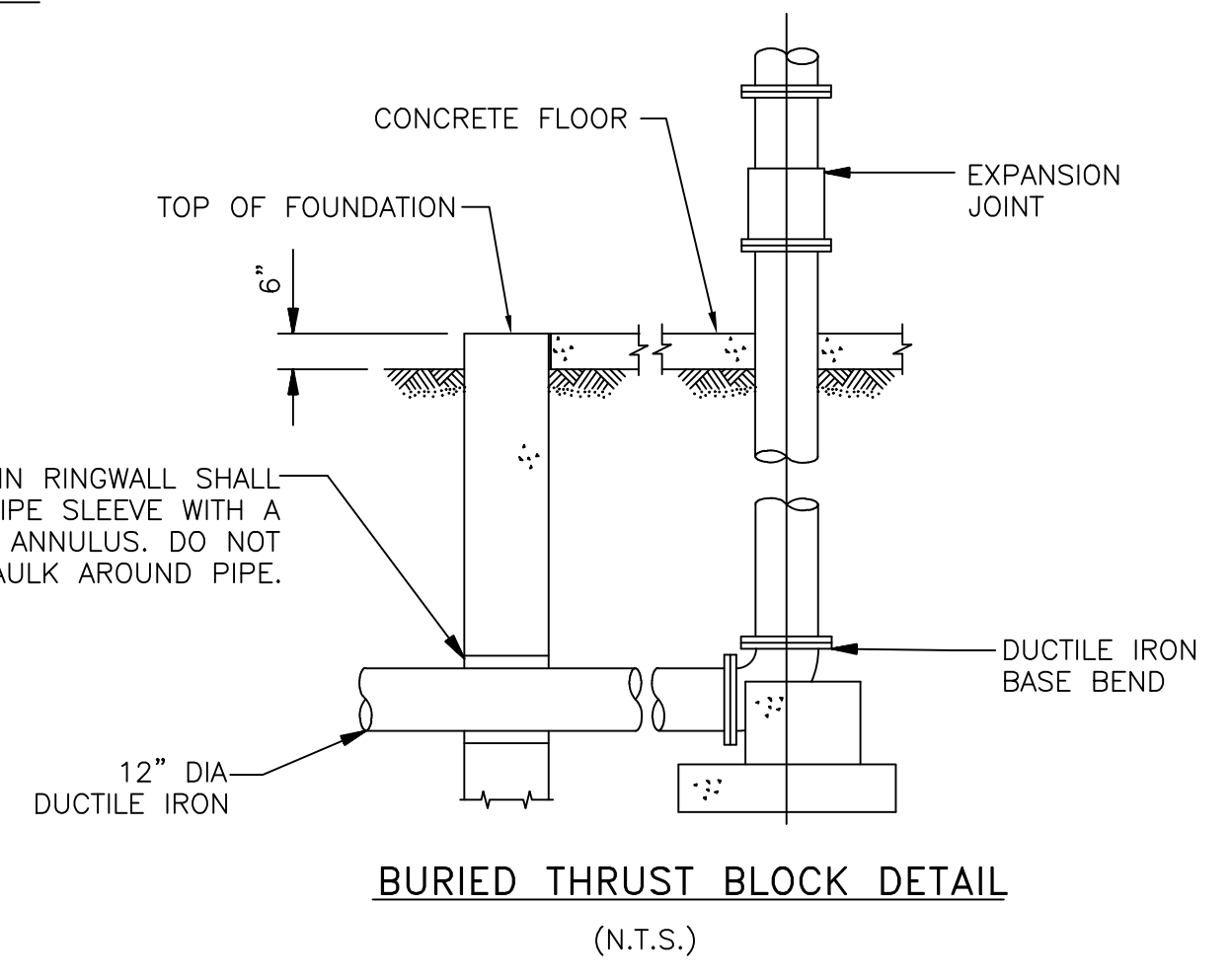
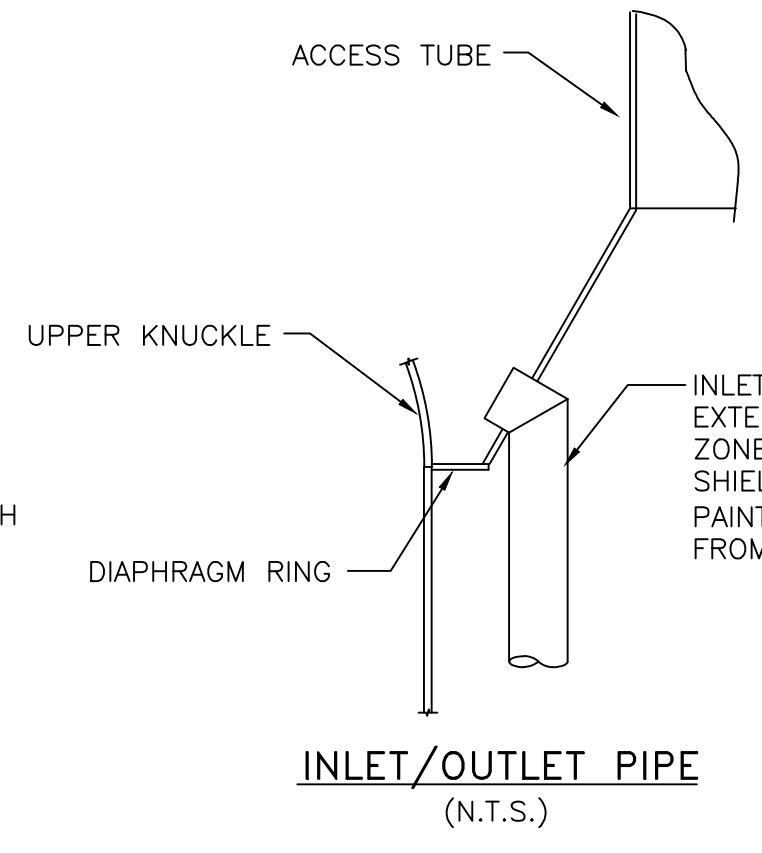
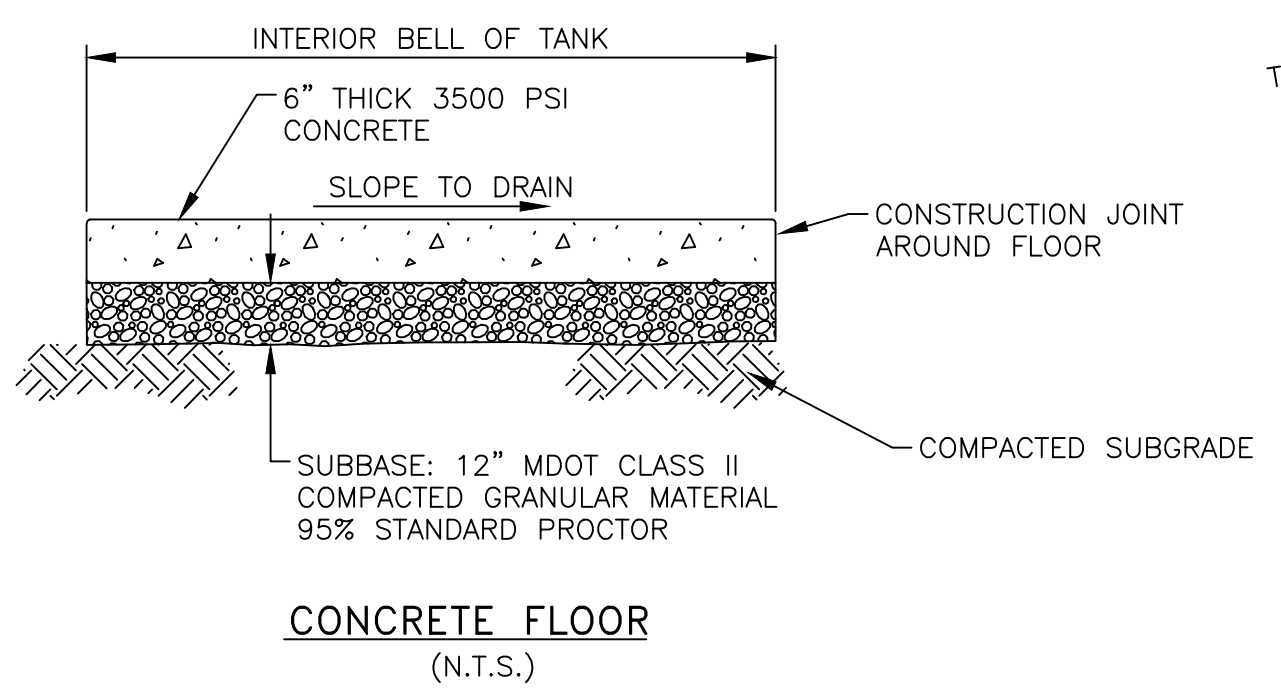
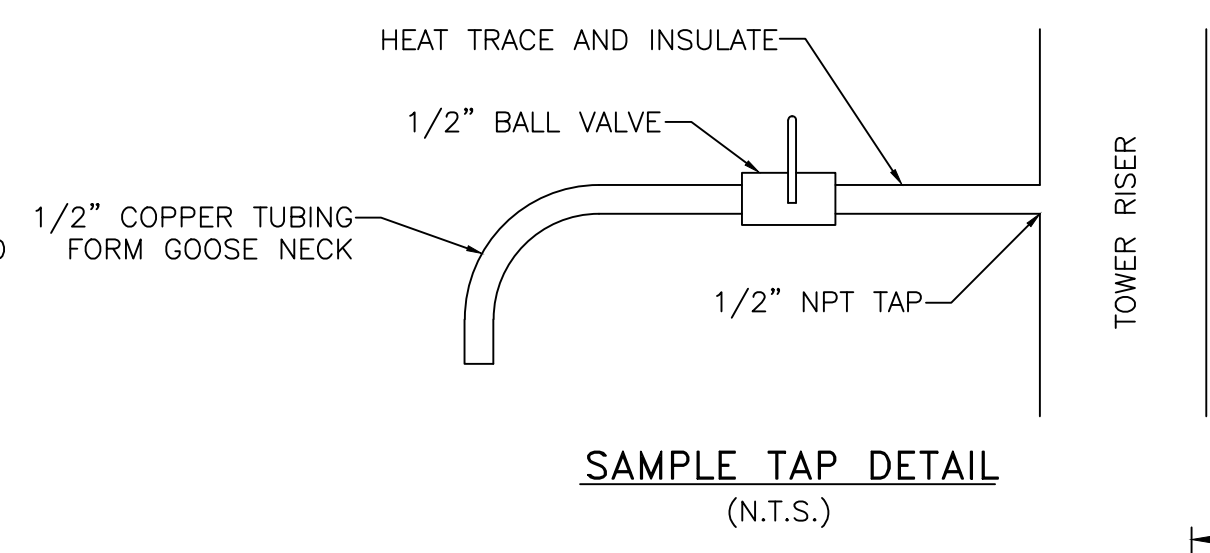
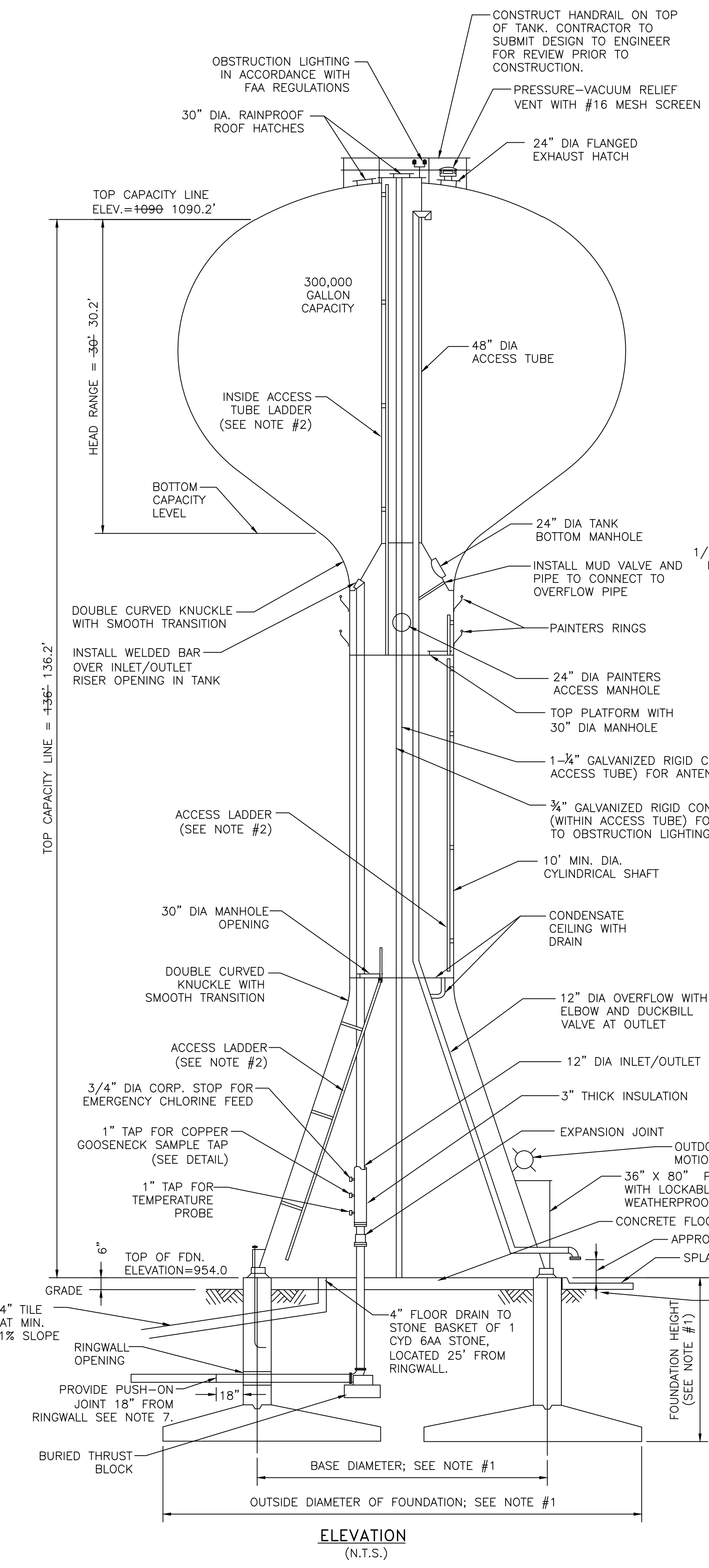
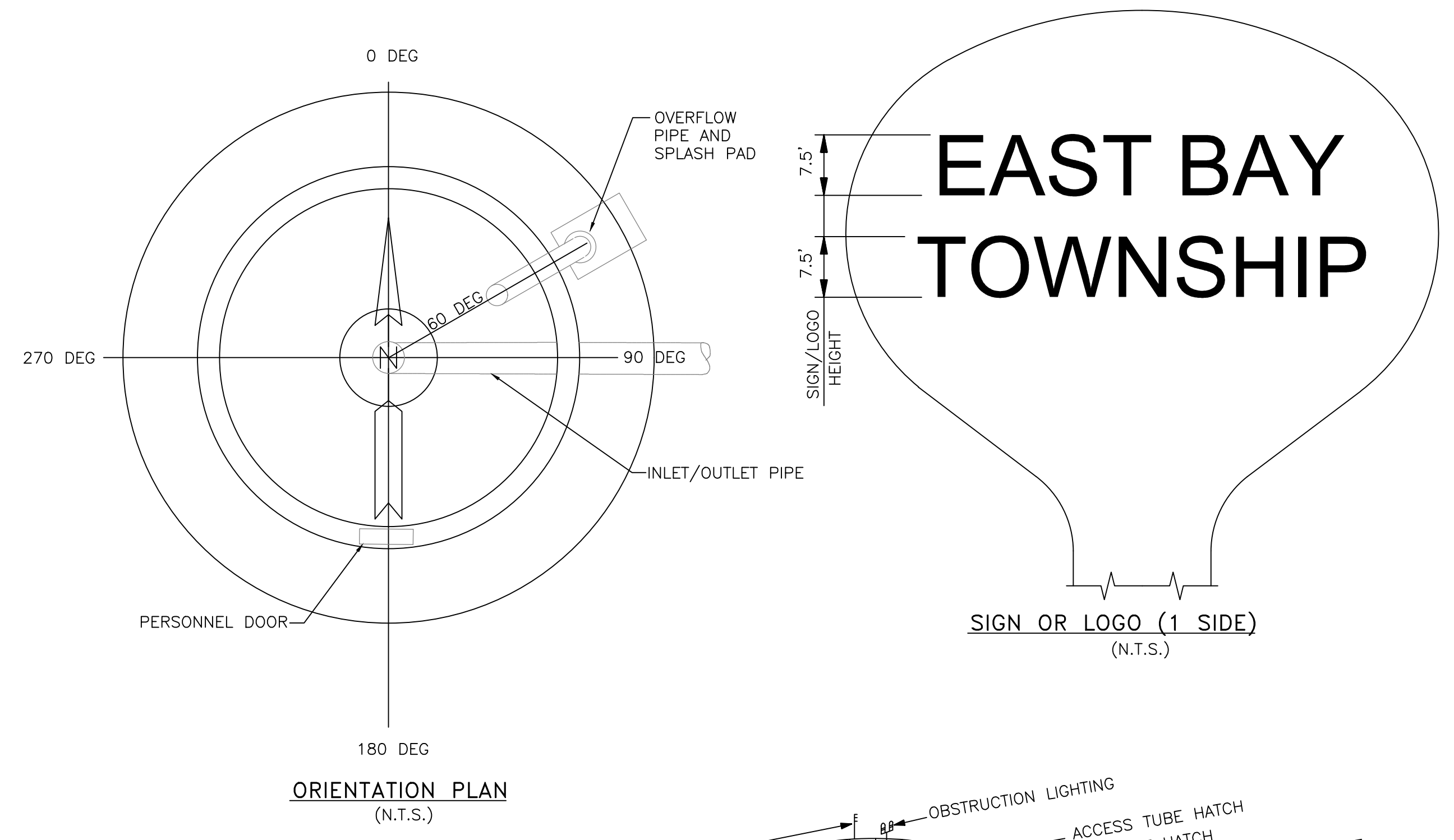


PROJECT MANAGER: BRIAN C. SOUSA, PE
 C:\PW_WORK\2\00763141\DOT-PLTS-C02-STORAGE-TANK-DETAILS.DWG - 3 - PLOTTED: 4/21/2017 12:22 PM BY WHALEY, RUSS

FIELD BOOK INFORMATION: -
 FIELD BOOK INFORMATION: -

WATER TANK NOTES

1. DIAMETER OF SUPPORT BELL AND DIMENSIONS OF FOUNDATION SHALL BE DETERMINED BY THE TANK CONTRACTOR BASED UPON THE SOIL BEARING SPECIFIED AND THE RECOMMENDATIONS IN THE SOIL REPORT INCLUDED IN THE PROJECT MANUAL. CONTRACTOR TO SUBMIT PROPOSED TOWER AND FOUNDATION DRAWINGS SEALED BY A MICHIGAN LICENSED ENGINEER TO PROJECT ENGINEER FOR SHOP DRAWING APPROVAL.
2. WHEN LADDER HEIGHT REQUIRES, A LADDER SAFETY DEVICE MEETING OSHA STANDARDS SHALL BE PROVIDED.
3. OPENING IN RINGWALL SHALL PROVIDE CLEARANCE FOR FLANGED PIPE. OPENING SHALL BE A NOMINAL ONE INCH LARGER THAN FLANGE DIAMETER. DO NOT GROUT OR CAULK AROUND PIPE.
4. ALL ELECTRICAL WORK SHALL BE PER N.E.C. STANDARDS.
5. THE CONTRACTOR SHALL INSTALL A JUNCTION BOX AT ALL FIXTURE LOCATIONS.
6. THE ELECTRICAL PANEL SHALL BE LOCATED INSIDE THE TOWER PEDESTAL.
7. ALL PIPING WITHIN CONTRACT SHALL HAVE RESTRAINED JOINTS.
8. ALL TOWER CONSTRUCTION SHALL MEET OSHA REQUIREMENTS.
9. ALL ELEVATIONS SHOWN ARE IN FEET.
10. AT ALL LOCATIONS WHERE CONCRETE THRUST BLOCKS ARE USED, WATER MAIN MUST BE COVERED WITH 6 MIL PLASTIC SHEETING PRIOR TO THE CONSTRUCTION OF THE THRUST BLOCK.
11. WELD IN PLACE ATTACHMENT CLIPS AND PRESSURE FITTING FOR A FUTURE FLOATING RING CATHODIC PROTECTION SYSTEM AS MANUFACTURED BY CORRPRO, MEDINA, OHIO.



ISSUED FOR:	DATE:	BY:
MDEQ	11/13/15	DCC
BID	01/20/16	DCC

JOB NO. EBT3415-03C

SHEET 3

RECORD DRAWING APRIL 2017
 FILE NO.: 29-1-37

WATER STORAGE TANK DETAILS
 CONTRACT NO. 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK

EAST BAY CHARTER TOWNSHIP
 1965 N. THREE MILE ROAD
 TRAVERSE CITY, MI 49696
 CONTRACT 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK

WADETRIM
 1880 East Traverse Highway, Suite 200
 Traverse City, MI 49684
 FAX: 231.946.1000
 www.wadetrिम.com

Building relationships on a foundation of excellence

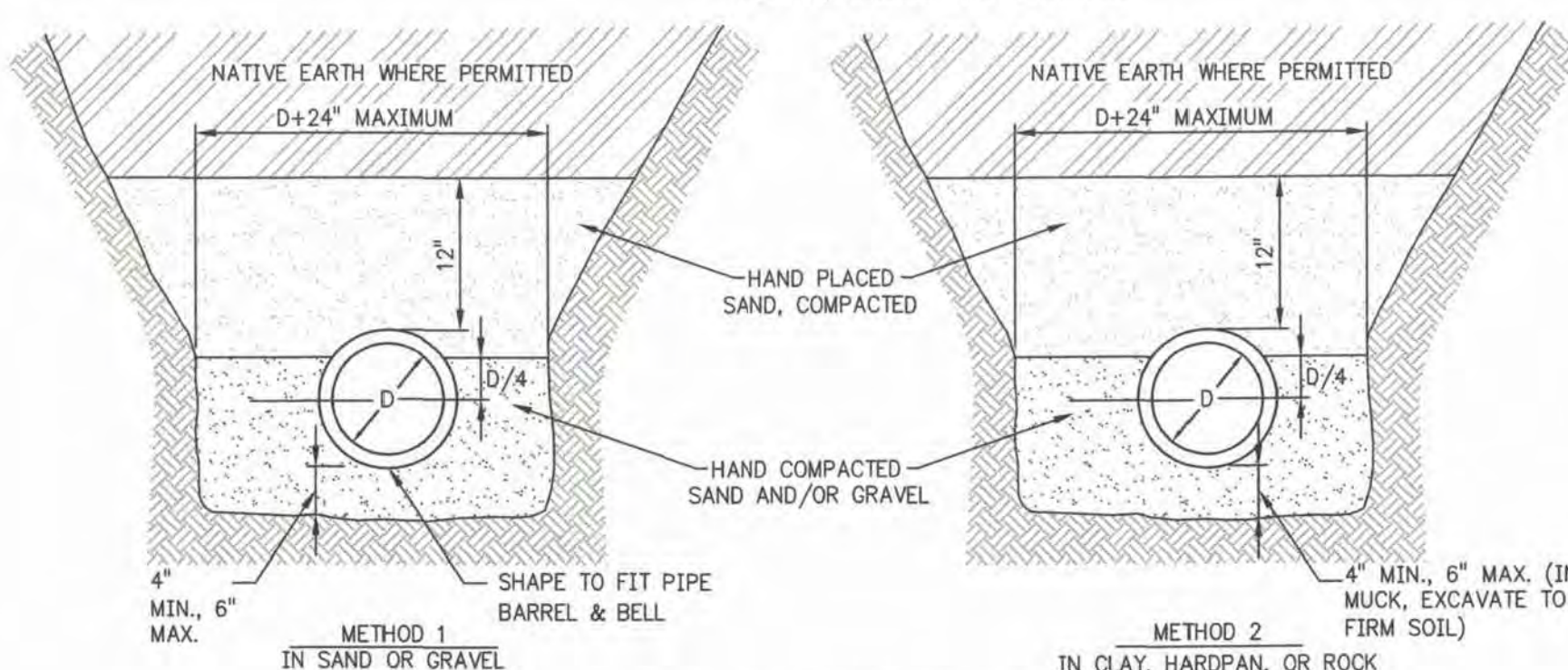
NOT VALID FOR CONSTRUCTION UNLESS SIGNED AND DATED

RECORD DRAWINGS DESCRIPTION
 DATE
 04/20/17
 REV# 1

BCS BY

NOTE:
ALL BACKFILL MATERIAL SHALL CONFORM TO ASTM D2321 STANDARDS

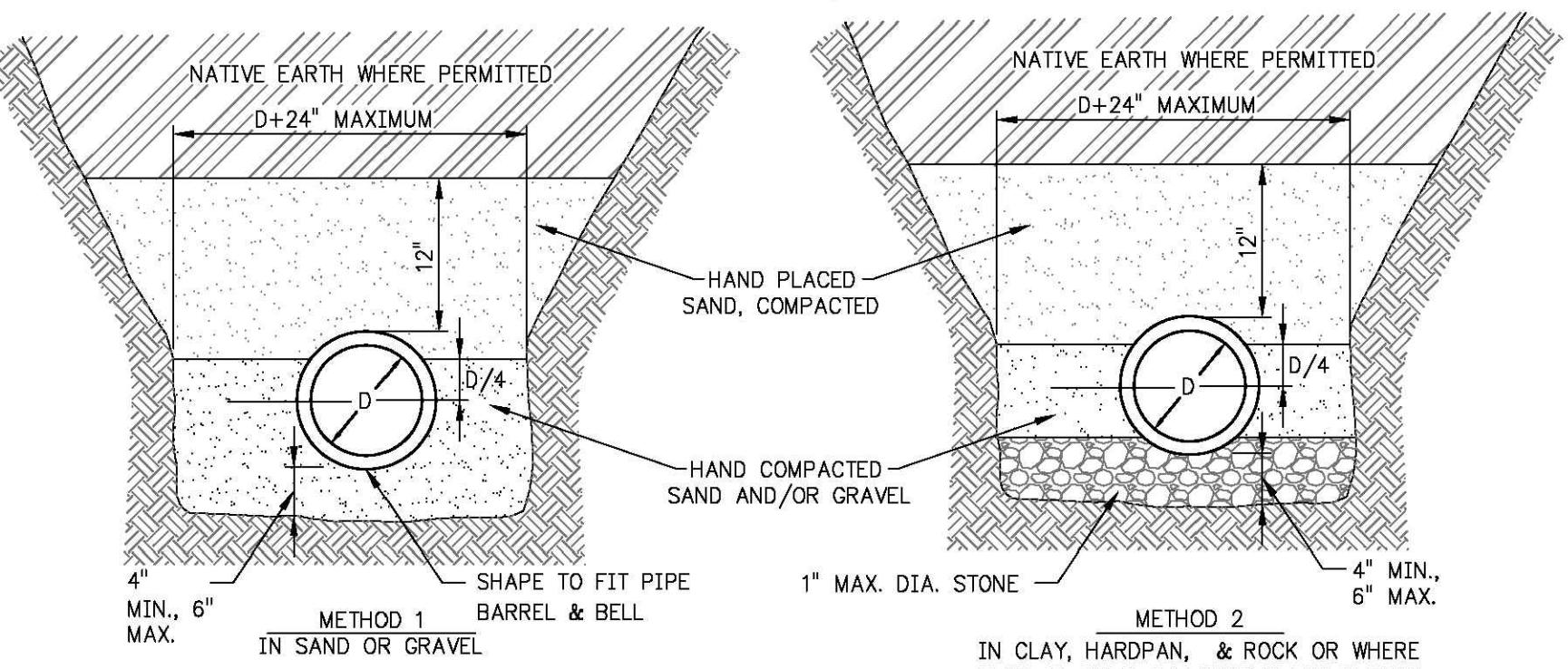
NOTE:
WATERMAIN TRENCHES NEED TO PROVIDE A MINIMUM WIDTH OF PIPE DIAMETER PLUS 16 INCHES FOR 8 INCH TO 18 INCH DIAMETER PLASTIC/FLEXIBLE PIPE MATERIALS. FOR 18 INCH AND LARGER PIPE DIAMETERS, THE MINIMUM TRENCH WIDTH IS 1.25 TIMES THE PIPE DIAMETER PLUS 12 INCHES FOR PLASTIC/FLEXIBLE PIPE MATERIALS.



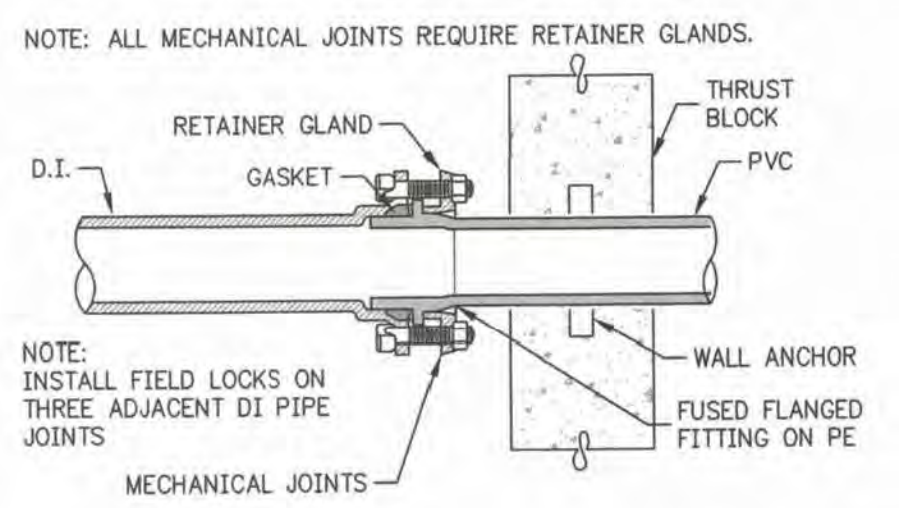
PIPE BEDDING DETAIL
(CLASS A) NO SCALE

NOTE:
ALL BACKFILL MATERIAL SHALL CONFORM TO ASTM D2321 STANDARDS

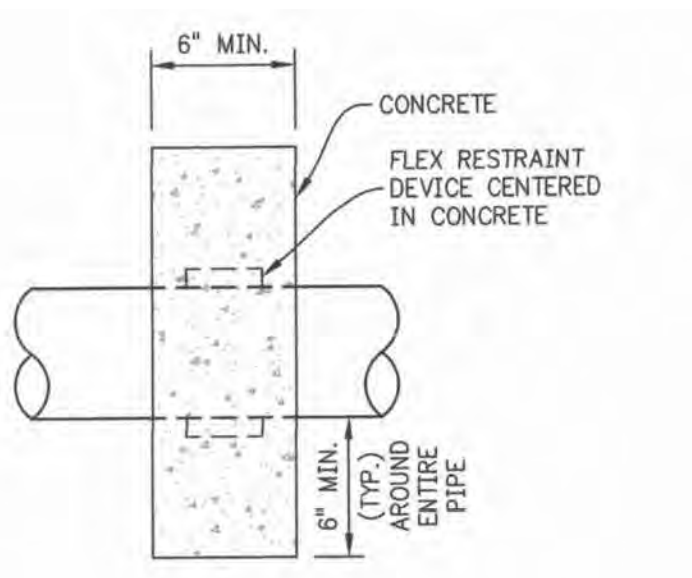
NOTE:
WATERMAIN TRENCHES NEED TO PROVIDE A MINIMUM WIDTH OF PIPE DIAMETER PLUS 16 INCHES FOR 8 INCH TO 18 INCH DIAMETER PLASTIC/FLEXIBLE PIPE MATERIALS. FOR 18 INCH AND LARGER PIPE DIAMETERS, THE MINIMUM TRENCH WIDTH IS 1.25 TIMES THE PIPE DIAMETER PLUS 12 INCHES FOR PLASTIC/FLEXIBLE PIPE MATERIALS.



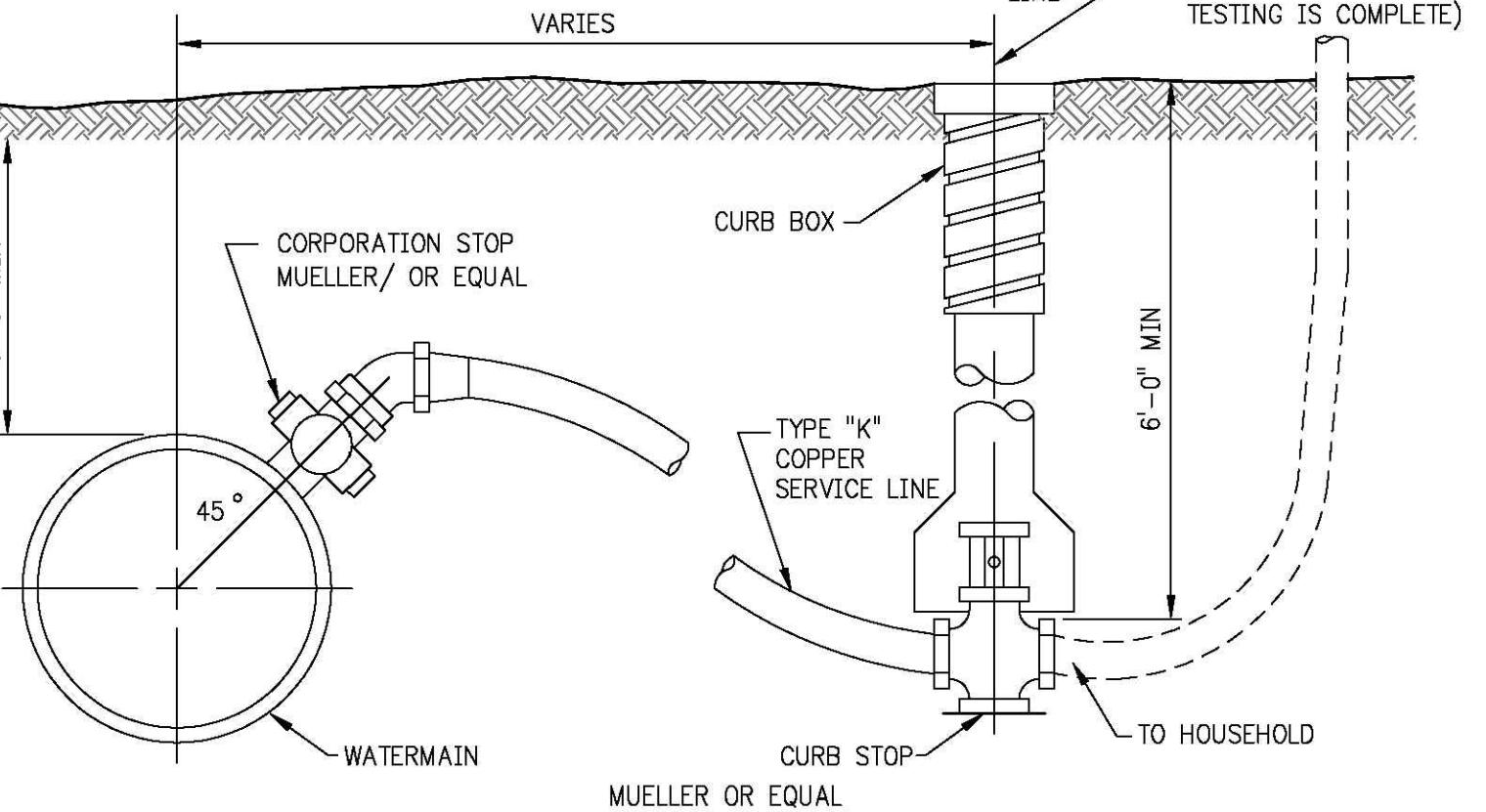
PIPE BEDDING DETAIL
(CLASS B) NO SCALE



HDPE/PVC TO DI (MJ) ADAPTER DETAIL
NO SCALE



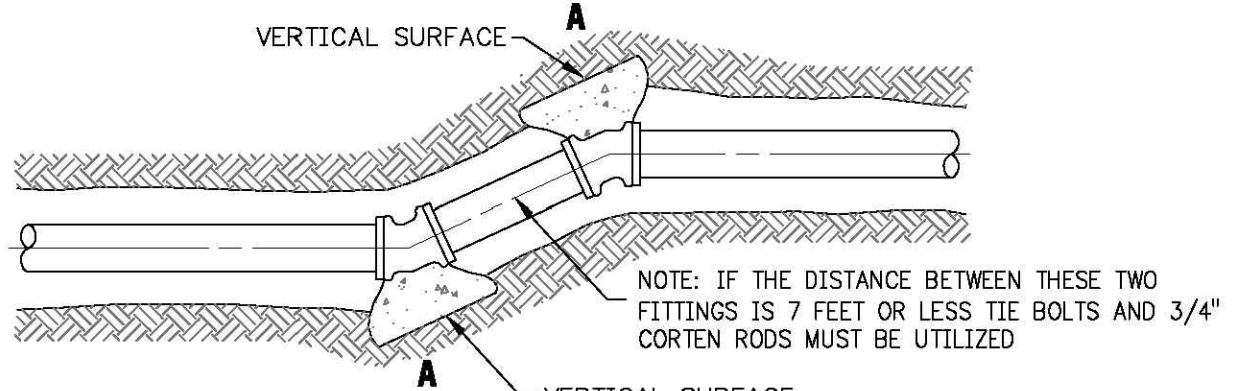
SERVICE LEAD THRUST RESTRAINT DETAIL
(APPLICABLE FOR HDPE/PVC WATERMAIN ONLY)
NO SCALE



SERVICE CONNECTION DETAIL
NO SCALE

DEGREE OF BEND IN ELBOW	PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE A		
45°	4"	1'-4" x 1'-0" = 1.3 SQ. FT.
45°	6"	1'-8" x 1'-4" = 2.2 SQ. FT.
45°	8"	2'-0" x 2'-0" = 4.0 SQ. FT.
45°	10"	2'-4" x 2'-4" = 5.4 SQ. FT.
45°	12"	2'-8" x 2'-8" = 7.1 SQ. FT.
45°	16"	3'-8" x 3'-8" = 13.5 SQ. FT.
SURFACE B		
22.5° OR 11.25°	4"	1'-0" x 0'-8" = 0.7 SQ. FT.
22.5° OR 11.25°	6"	1'-4" x 1'-0" = 1.3 SQ. FT.
22.5° OR 11.25°	8"	1'-8" x 1'-4" = 2.2 SQ. FT.
22.5° OR 11.25°	10"	1'-8" x 1'-8" = 2.8 SQ. FT.
22.5° OR 11.25°	12"	1'-10" x 1'-10" = 3.4 SQ. FT.
22.5° OR 11.25°	16"	2'-8" x 2'-8" = 7.1 SQ. FT.

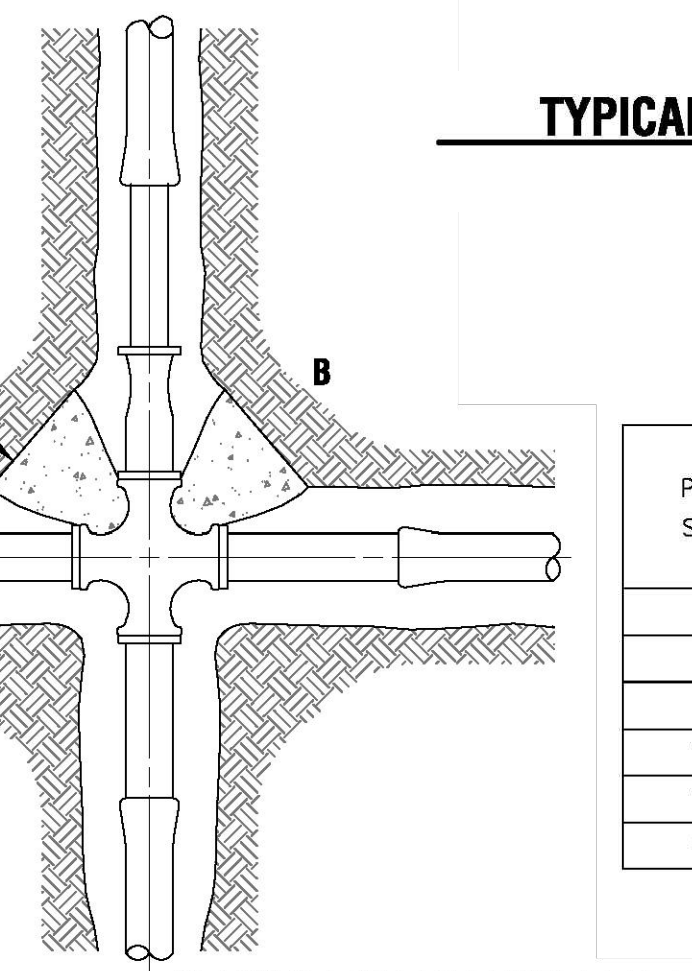
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



TYPICAL OFFSET DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE A	
4"	1'-0" x 1'-0" = 1.0 SQ.FT.
6"	1'-4" x 1'-0" = 1.8 SQ.FT.
8"	2'-0" x 1'-4" = 2.7 SQ.FT.
10"	1'-10" x 1'-10" = 3.4 SQ.FT.
12"	2'-4" x 2'-4" = 5.4 SQ.FT.
16"	2'-10" x 2'-10" = 8.0 SQ.FT.

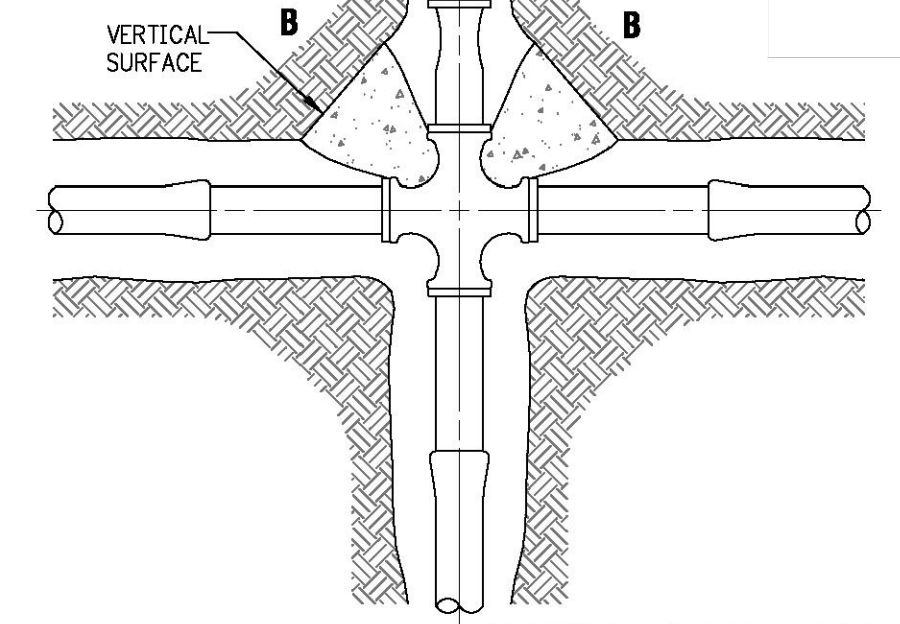
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



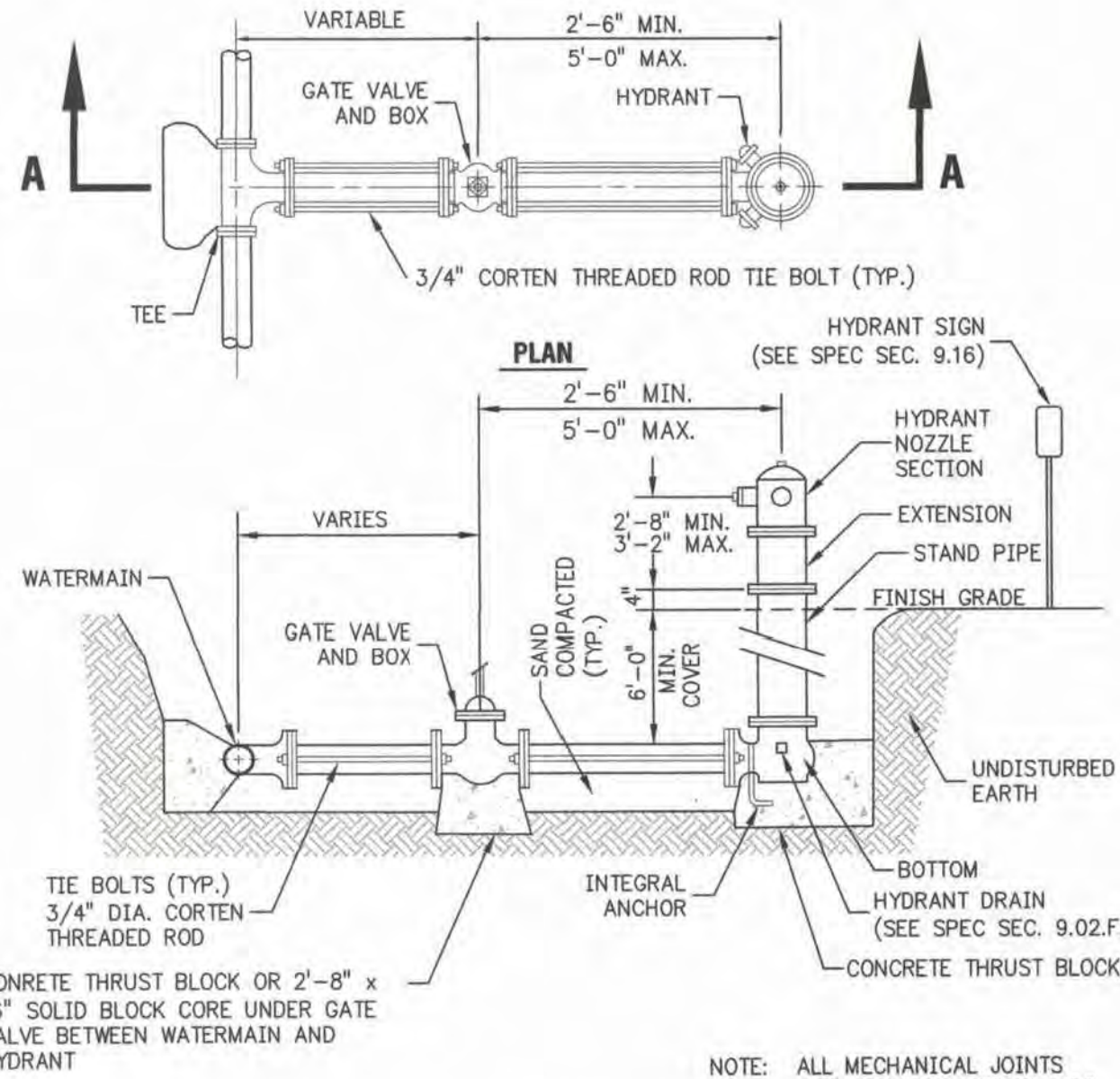
CROSS AND REDUCER DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE B	
4"	0'-6" x 0'-6" = 0.3 SQ.FT.
6"	0'-10" x 0'-8" = 0.6 SQ.FT.
8"	1'-0" x 0'-10" = 0.8 SQ.FT.
10"	1'-4" x 1'-4" = 1.8 SQ.FT.
12"	1'-8" x 1'-8" = 2.8 SQ.FT.
16"	2'-0" x 2'-0" = 4.0 SQ.FT.

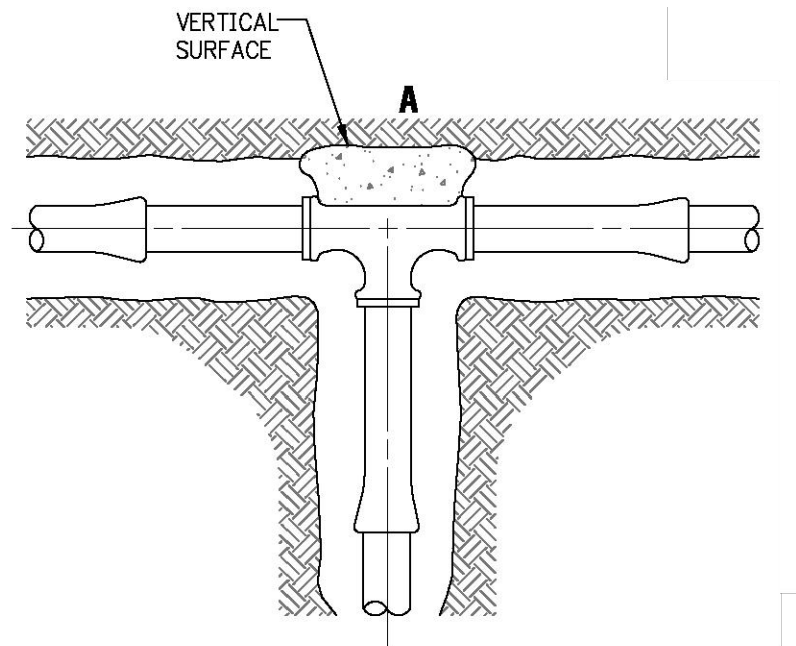
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



TYPICAL CROSS AND PLUG DETAIL
NO SCALE



HYDRANT ASSEMBLY DETAIL
NO SCALE



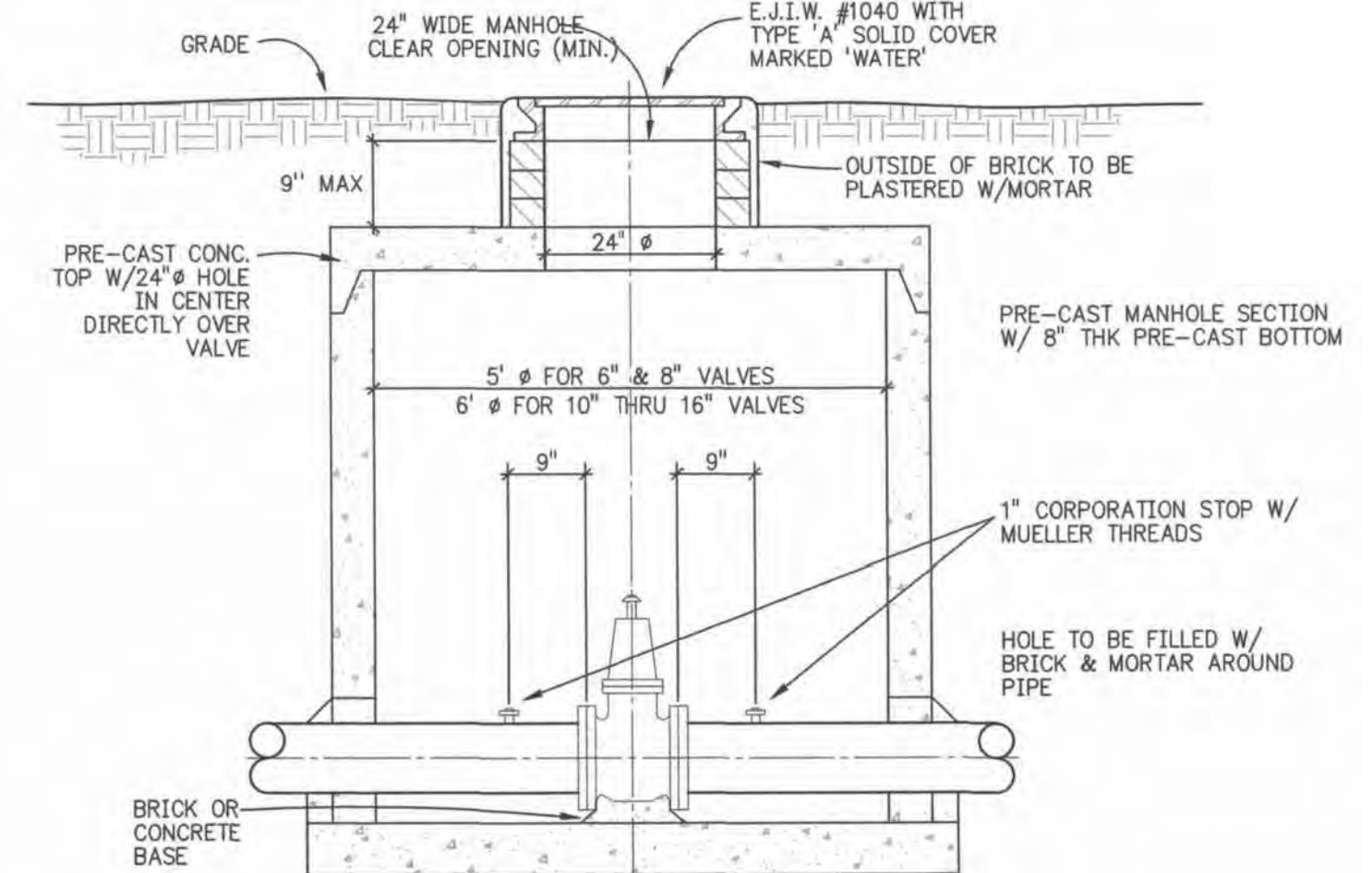
TYPICAL TEE AND PLUG DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE A	
4"	1'-6" x 1'-6" = 2.3 SQ. FT.
6"	1'-9" x 1'-9" = 3.1 SQ. FT.
8"	2'-4" x 2'-4" = 5.4 SQ. FT.
10"	2'-8" x 2'-8" = 7.1 SQ. FT.
12"	3'-0" x 3'-0" = 9.0 SQ. FT.
16"	4'-5" x 4'-5" = 19.5 SQ. FT.

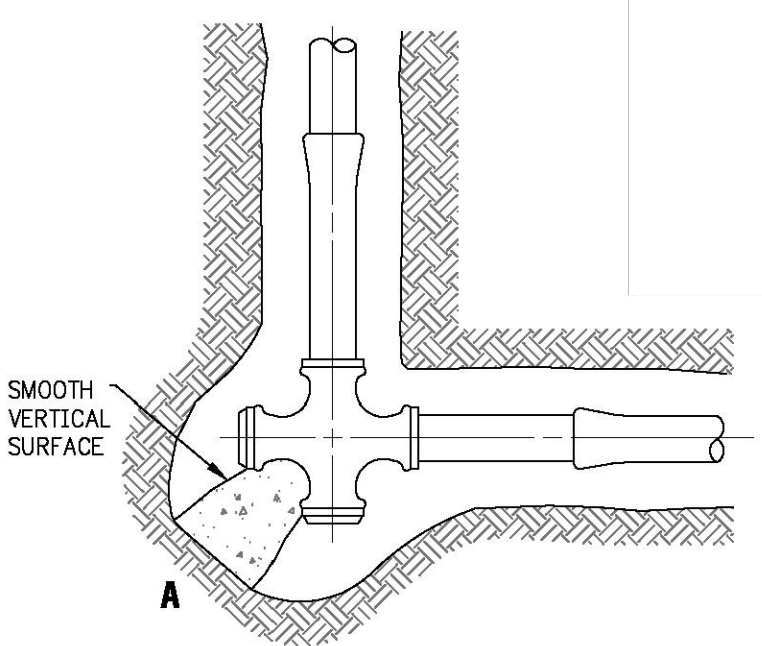
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



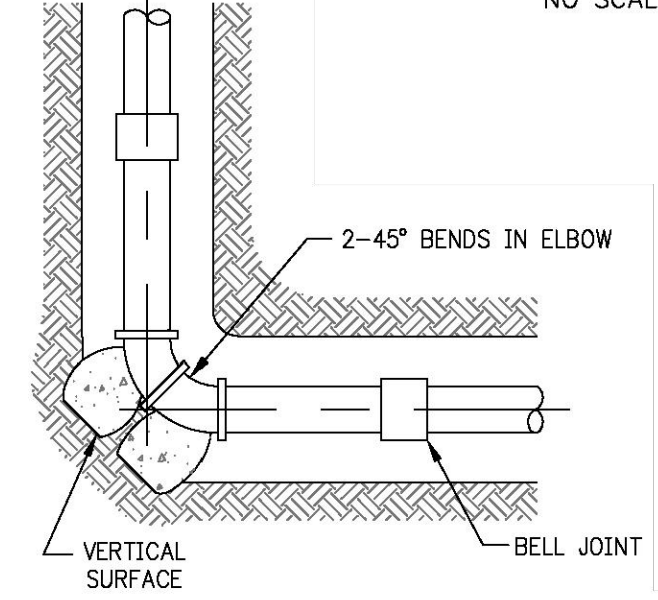
TYPICAL TEE CONNECTION DETAIL
NO SCALE



BUTTERFLY VALVE MANHOLE DETAIL
(APPLICABLE FOR STREAM CROSSINGS ONLY)
NO SCALE



CROSS WITH 2 PLUGS DETAIL
NO SCALE



TYPICAL BEND DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE A	
4"	1'-4" x 0'-8" = 0.9 SQ. FT.
6"	1'-8" x 1'-4" = 2.2 SQ. FT.
8"	2'-0" x 1'-9" = 3.5 SQ. FT.
10"	2'-4" x 2'-4" = 5.4 SQ. FT.
12"	2'-8" x 2'-8" = 7.1 SQ. FT.
16"	3'-8" x 3'-8" = 13.5 SQ. FT.

ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



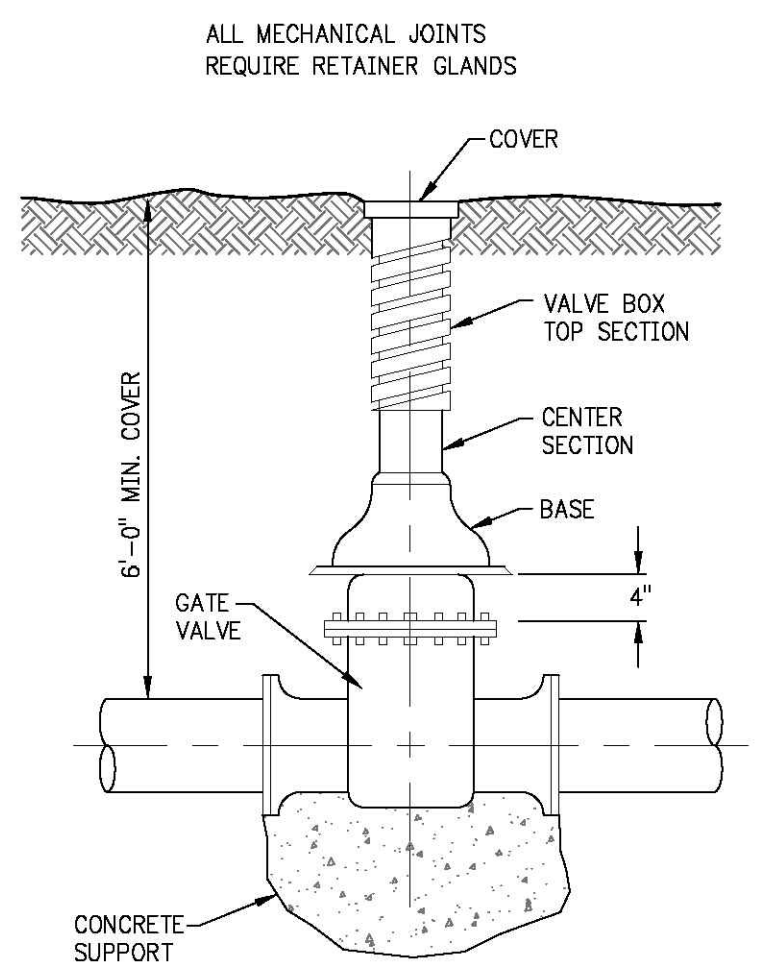
TYPICAL TEE AND PLUG DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE A	
4"	1'-9" x 1'-4" = 2.3 SQ. FT.
6"	2'-3" x 2'-0" = 4.5 SQ. FT.
8"	2'-8" x 2'-8" = 7.1 SQ. FT.
10"	3'-0" x 3'-0" = 9.0 SQ. FT.
12"	3'-8" x 3'-8" = 13.5 SQ. FT.

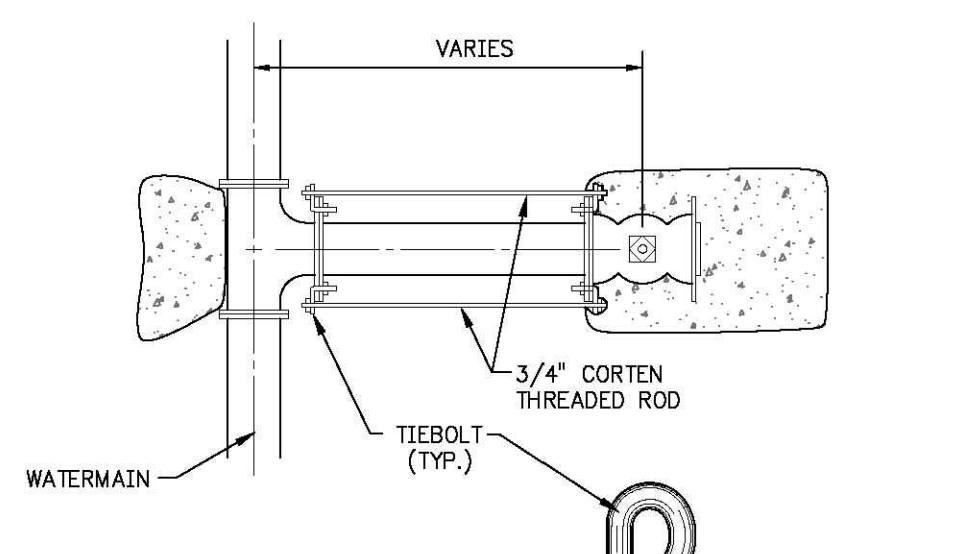
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
SURFACE A	
4"	1'-9" x 1'-4" = 2.3 SQ.FT.
6"	2'-3" x 2'-0" = 4.5 SQ.FT.
8"	2'-8" x 2'-8" = 7.1 SQ.FT.
10"	3'-0" x 3'-0" = 9.0 SQ.FT.
12"	3'-8" x 3'-8" = 13.5 SQ.FT.
16"	5'-0" x 5'-0" = 25 SQ.FT.

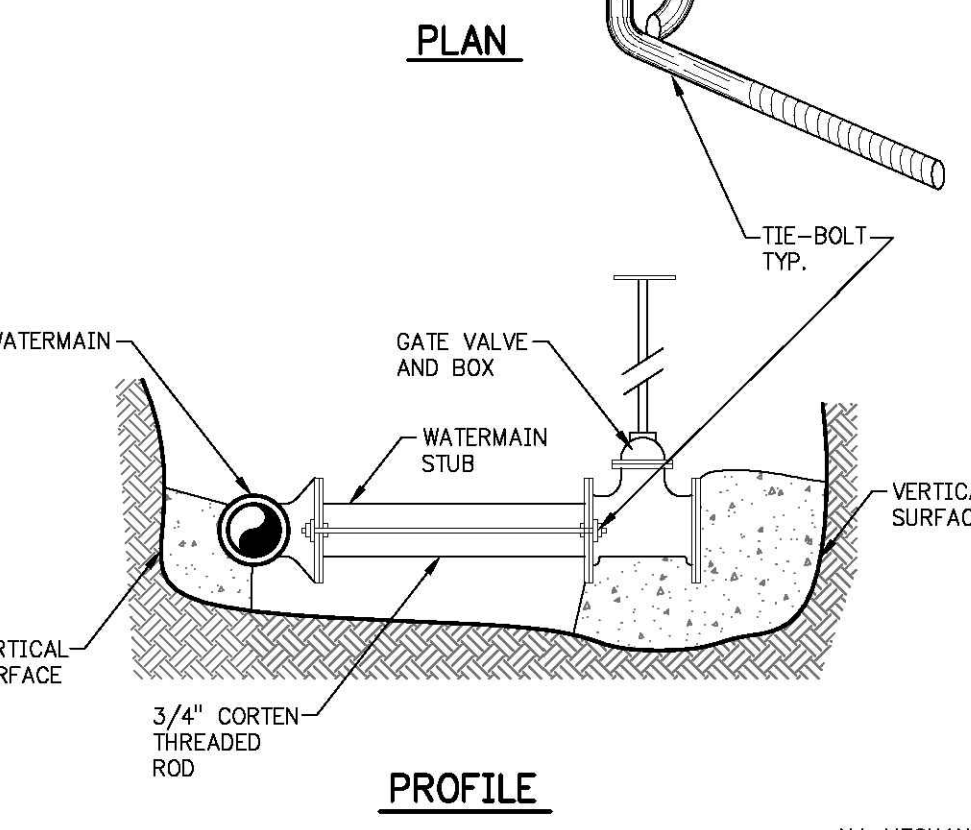
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



VALVE BOX INSTALLATION DETAIL
NO SCALE



THRUST RESTRAINT DETAIL FOR ALL VALVES ON STUBBED LINES
NO SCALE



ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS

REV.#	DATE	DESCRIPTION
1	04/20/17	RECORD DRAWINGS

NOT VALID FOR CONSTRUCTION UNLESS SIGNED AND DATED:
WADETRIM
1880 East Towne Highway, Suite 200
Traverse City, MI 49684
TEL: 231.946.1000
FAX: 231.946.1000
www.wadetrims.com

241 East State Street
Traverse City, MI 49684
TEL: 231.946.1000
FAX: 231.946.1000

EAST BAY CHARTER TOWNSHIP
1965 N. THREE MILE ROAD
TRAVERSE CITY, MI 49696

CONTRACT 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK

ISSUED FOR: DATE: BY:
MDEQ 11/13/15 DCC
BID 01/20/16 DCC

JOB NO.
EBT3415-03C

SHEET
4

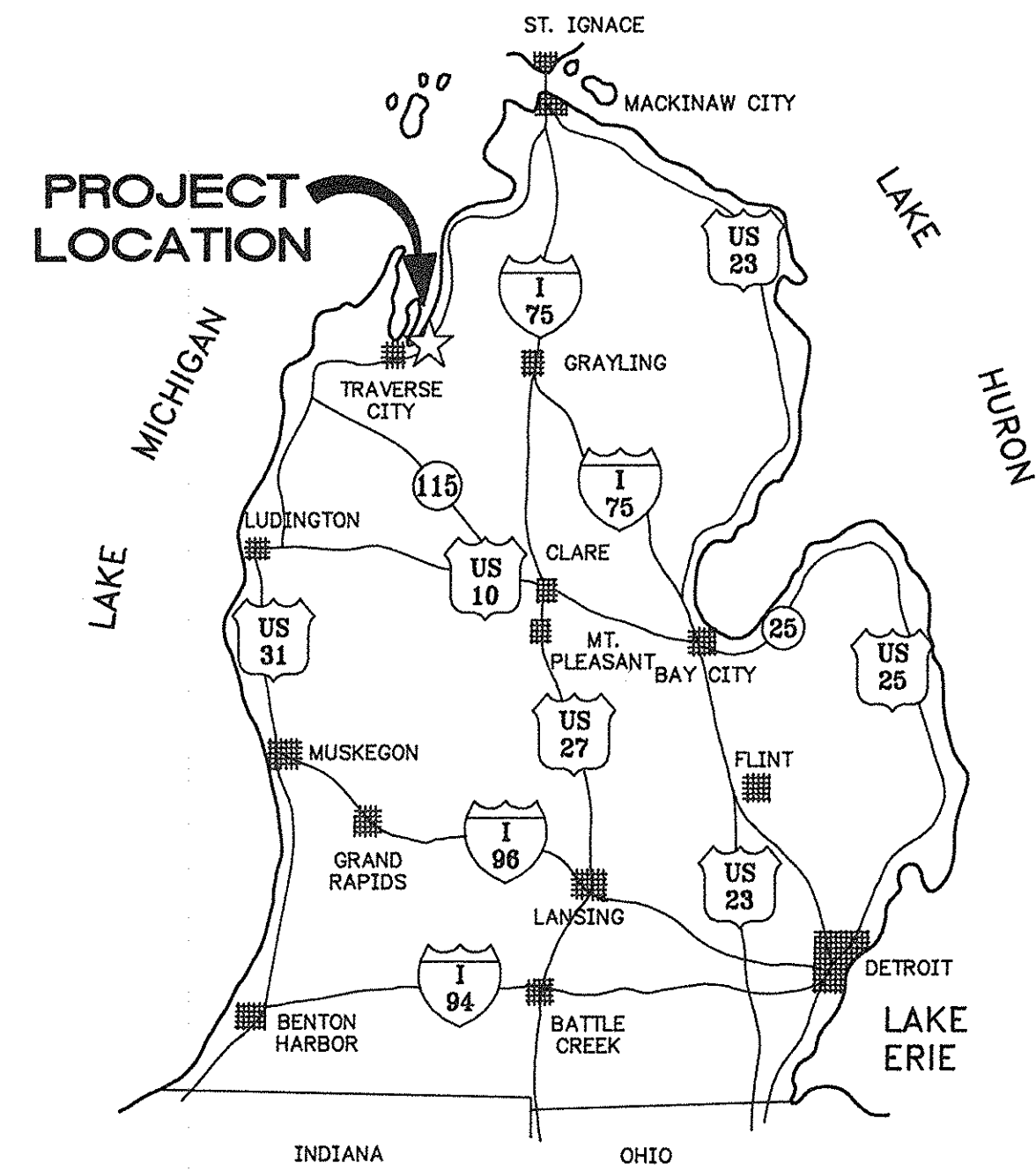
RECORD DRAWING APRIL 2017
FILE NO.: 29-1-38

PROJECT MANAGER: BRIAN C. SOUSA, PE
C:\PW_WORK\2017\63141_COT-PLTS-C02-WATERMAINDETAILS.DWG - 4 - PLOTTED: 4/21/2017 12:22 PM BY: WHALEY, RUS

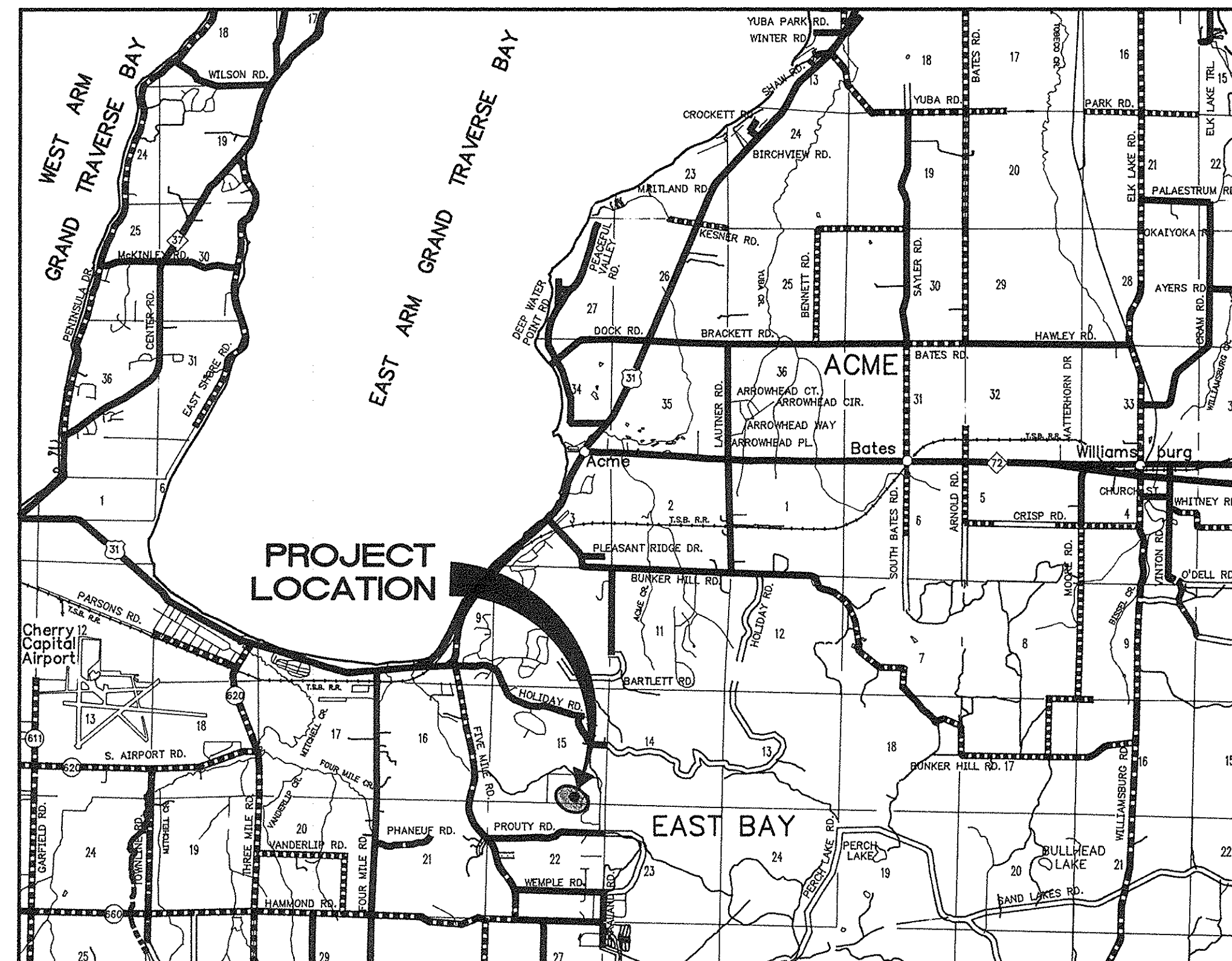
EAST BAY CHARTER TOWNSHIP, CONTRACT NO. 2: HAMMOND ROAD ELEVATED WATER STORAGE TANK



RECORD DRAWINGS
English Woods



VICINITY MAP
NO SCALE



LOCATION MAP

UTILITIES

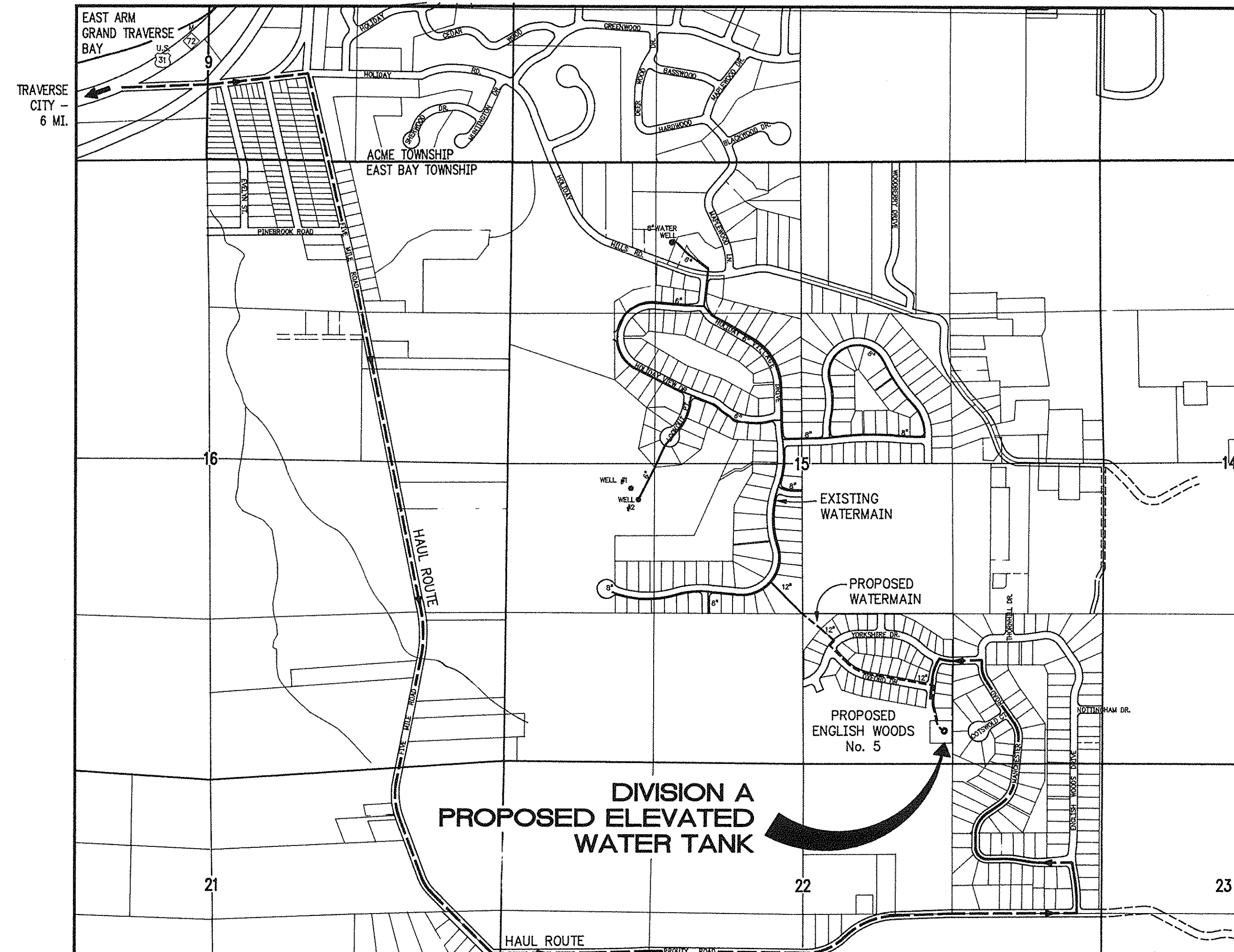
- GRAND TRAVERSE COUNTY DEPARTMENT OF PUBLIC WORKS
 Superintendent - Roger Rouse
 Address - 400 Boardman Avenue, Traverse City
 Telephone - 922-4727/947-7702
- GRAND TRAVERSE COUNTY ROAD COMMISSION (G.T.CO.)
 County Road
 Comm. Manager - Mike Dillenbeck
 Address - 3949 Silver Lake Road, Traverse City
 Telephone - 922-4848
- GRAND TRAVERSE COUNTY SOIL EROSION & SEDIMENTATION CONTROL
 Director - Maureen Kennedy
 Address - 400 Boardman Avenue, Traverse City
 Telephone - 922-4731
- CONSUMERS POWER COMPANY (C.P.)
 Area Engineer - James Gray or Ruddy Rozanek
 Address - 821 Hastings St., Traverse City
 Telephone - 941-1700
- MICHIGAN BELL TELEPHONE (M.B.T.)
 Area Engineer - Dale Goddard
 Address - 812 Garfield St., Traverse City
 Telephone - 946-2717 & 941-2734
- MICHIGAN CONSOLIDATED GAS COMPANY (M.C.G.)
 Area Manager - Ted Anderson
 Address - 1011 Hastings St., Traverse City
 Telephone - 946-5363
- CHERRYLAND ELECTRIC COOPERATIVE
 Area Engineer - Bob Siekas
 Address - US 31 South, Grawn
 Telephone - 943-8377
- MICHIGAN DEPARTMENT OF STATE HIGHWAYS (M.D.O.T.)
 District Operation
 Engineer - Robert Paterson
 Address - 100 E. Chapman, Cadillac
 Telephone - 775-3487
- C-TEC CABLE COMPANY
 Area Manager - Dave McManus
 Address - 701 S. Airport Road West, Traverse City
 Telephone - 947-5220
- POLICE AGENCIES
 EMERGENCY CALLS - 911
 City of Traverse City - 941-2300
 Michigan State Police - 946-4646
 Grand Traverse County Sheriff - 941-2225
- FIRE DEPARTMENTS
 EMERGENCY CALLS - 911
 City of Traverse City - 941-2340
 Grand Traverse County - 941-2238
- AMBULANCE
 EMERGENCY CALLS - 911
- MISS DIG - 800/482-7171

STANDARD PLAN LEGEND

DESCRIPTION	EXISTING	PROPOSED
WATER MAIN	—	—
SANITARY SEWER	—	—
STORM SEWER	—	—
SANITARY FORCE MAIN	—	—
GAS MAIN	—	—
OVERHEAD ELECTRIC	—	—
PROPERTY LINE	—	—
MANHOLE (MH)	○ MH	○ MH
CATCH BASIN (CB)	□ CB	□ CB
RISE	□	□
GATE VALVE	⊕	⊕
FIRE HYDRANT ASSEMBLY	⊕	⊕
POLE, POWER OR ELECTRIC	#PP	#PP
SIGN	⊕	⊕
BENCH MARK (BM)	△ BM	△ BM
U/G UTILITY SIGN	△	△

PLAN INDEX

- TITLE SHEET
- TANK SITE PLAN
- TANK ELECTRICAL DETAILS
- TANK PROFILE & VALVE PIT DETAIL
- GEOTECHNICAL SITE PLAN & SOIL BORING LOGS



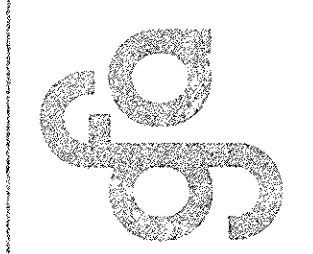
VICINITY MAP

**DIVISION A
 EAST BAY TOWNSHIP
 ELEVATED WATER STORAGE TANK
 GRAND TRAVERSE COUNTY,
 MICHIGAN**

Traverse City
 124 West State Street
 P.O. Box 327
 Traverse City, Michigan
 49783-946-5874

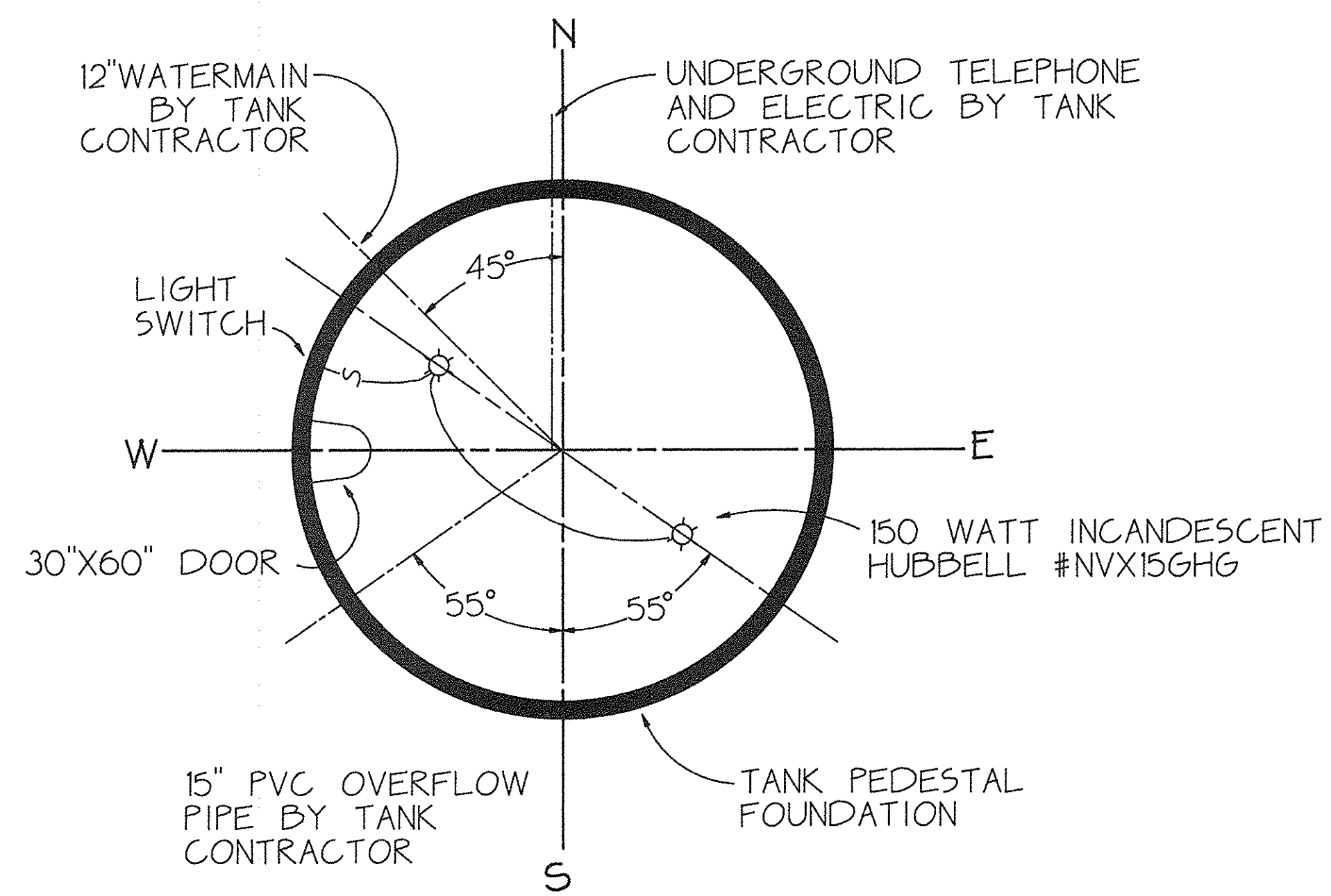
Consulting
 Engineers
 Surveyors
 Planners

Gourdie Fraser
 & Associates, Inc.

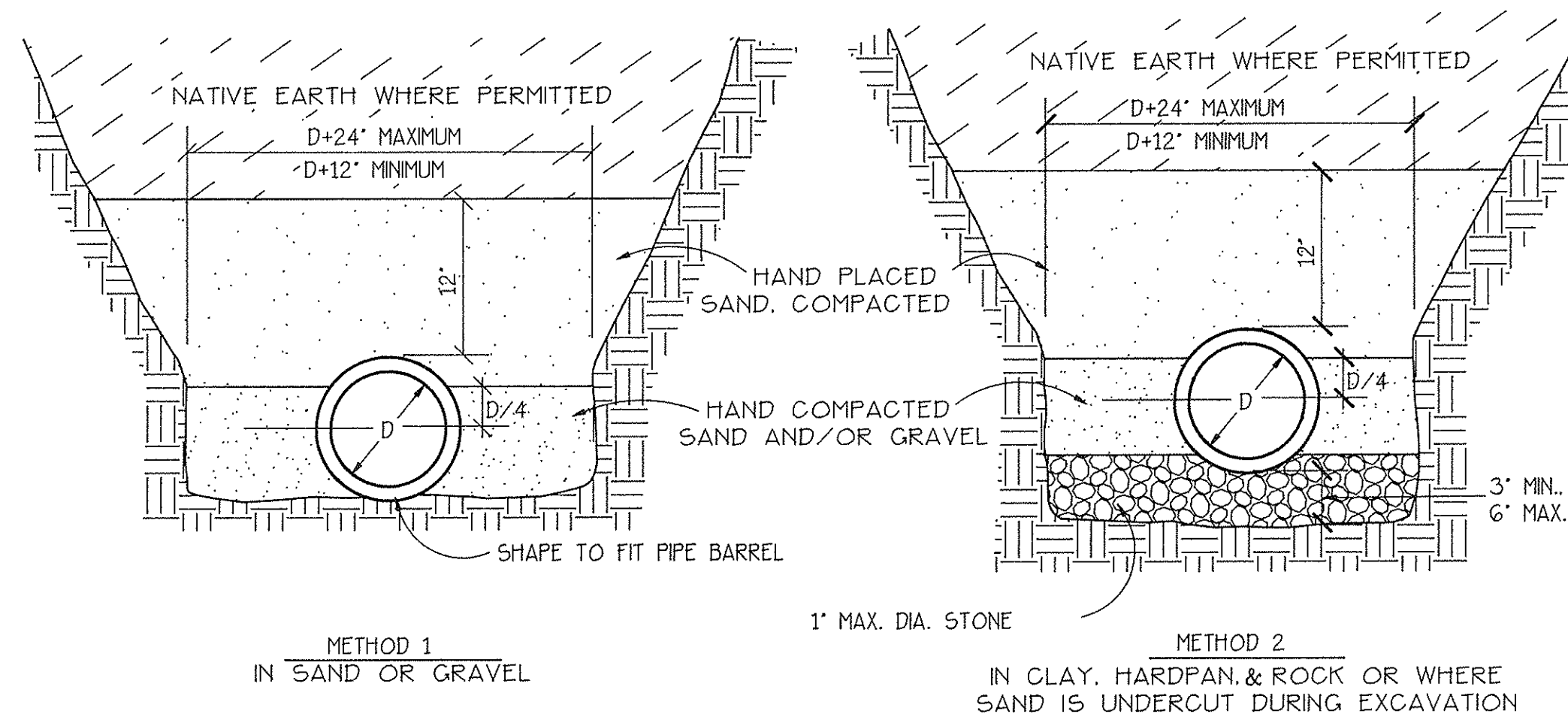


COVER SHEET
 DIVISION A
 EAST BAY TOWNSHIP
 ELEVATED WATER STORAGE TANK

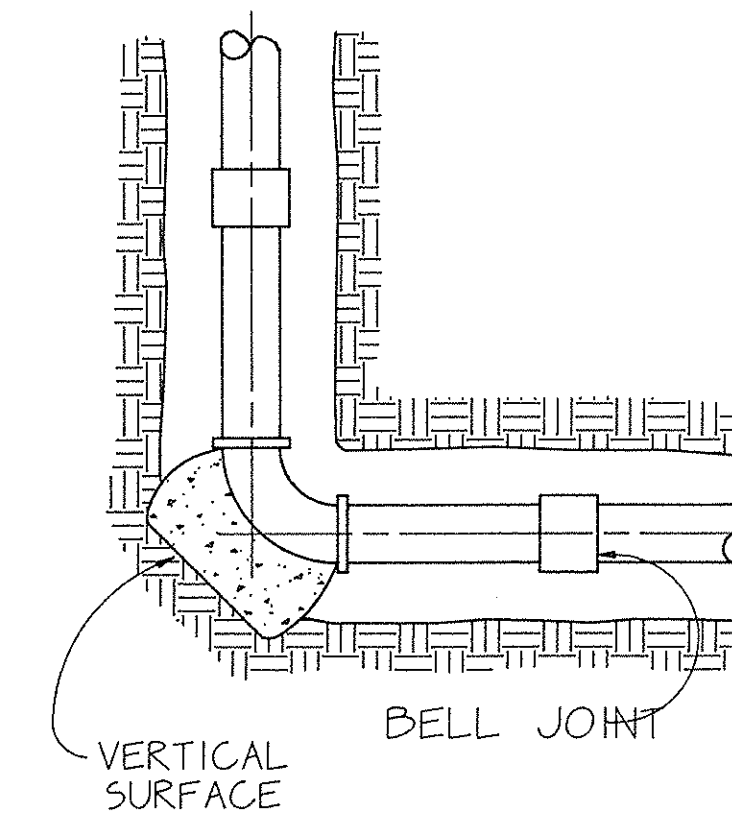
REV.	
A.P.R.	
CRD.	RKC-12-01-92
DRN.	COVER-ADWG
920360	



ORIENTATION OF TANK AND ACCESSORIES
NO SCALE

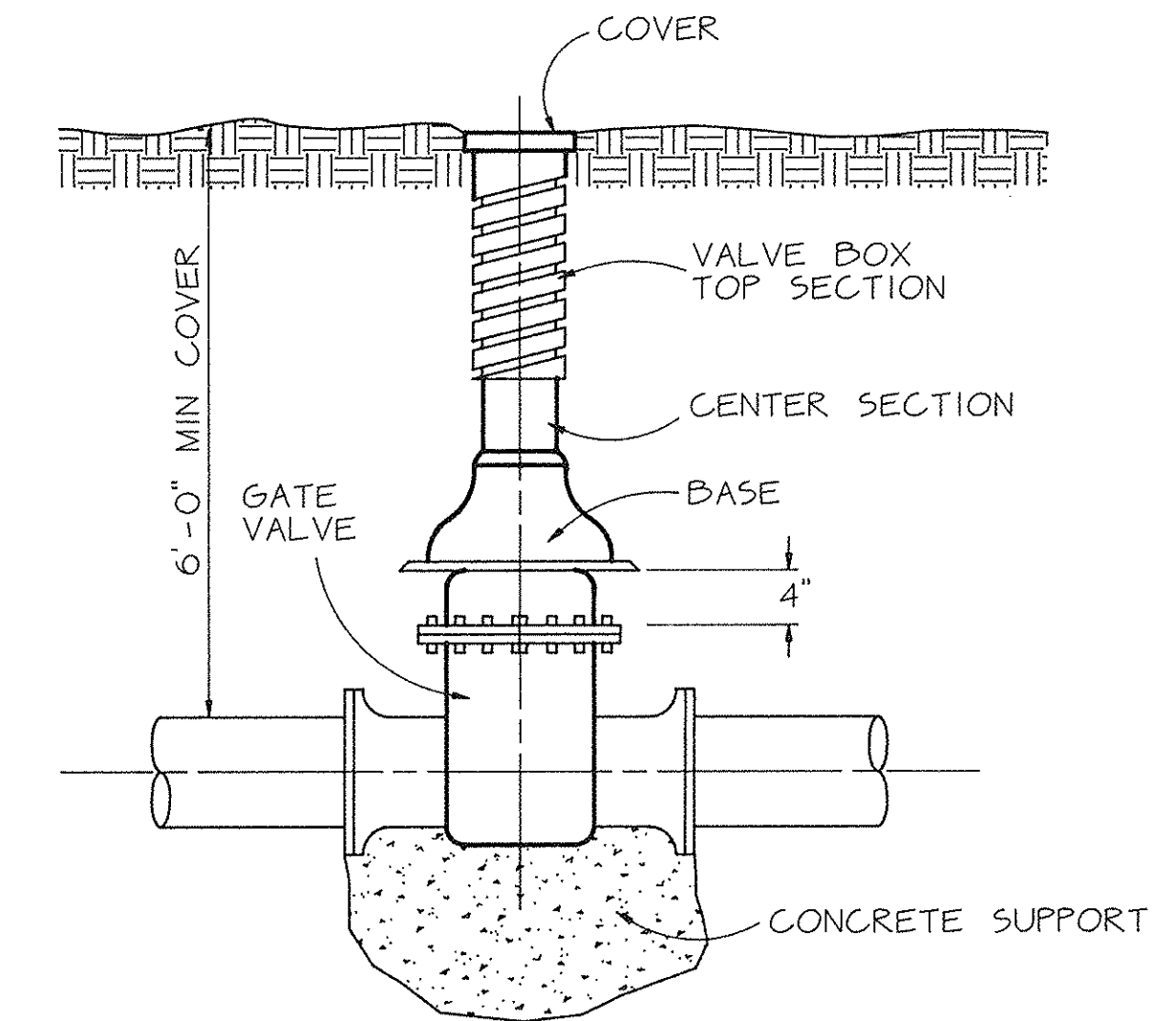


PIPE BEDDING DETAIL (CLASS B)

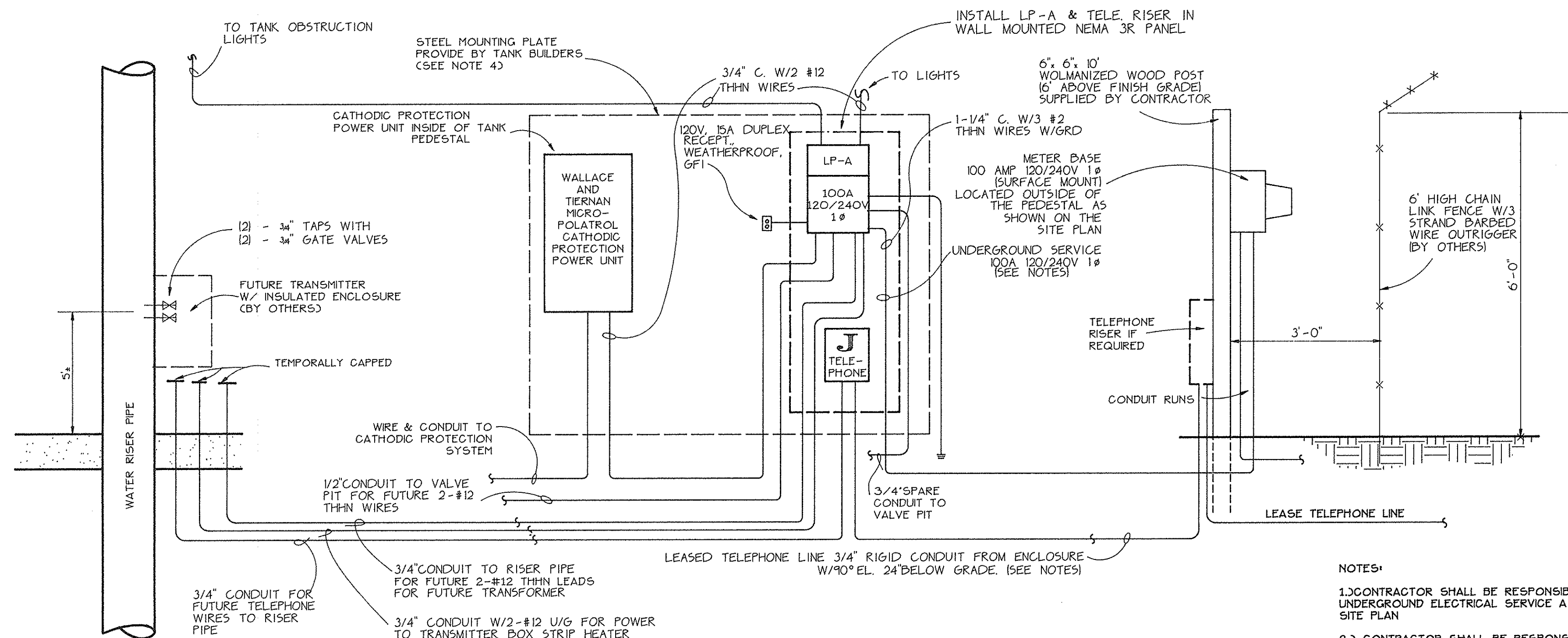


TYPICAL BEND
NO SCALE

DEGREE OF BEND IN ELBOW	PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
90°	4"	1'-9" x 1'-4" = 2.3 SQ.FT.
90°	6"	2'-3" x 2'-0" = 4.5 SQ.FT.
90°	8"	2'-8" x 2'-8" = 7.1 SQ.FT.
90°	10"	3'-0" x 3'-0" = 9.0 SQ.FT.
90°	12"	3'-8" x 3'-8" = 13.5 SQ.FT.
90°	16"	5'-0" x 5'-0" = 25 SQ.FT.
90°	20"	

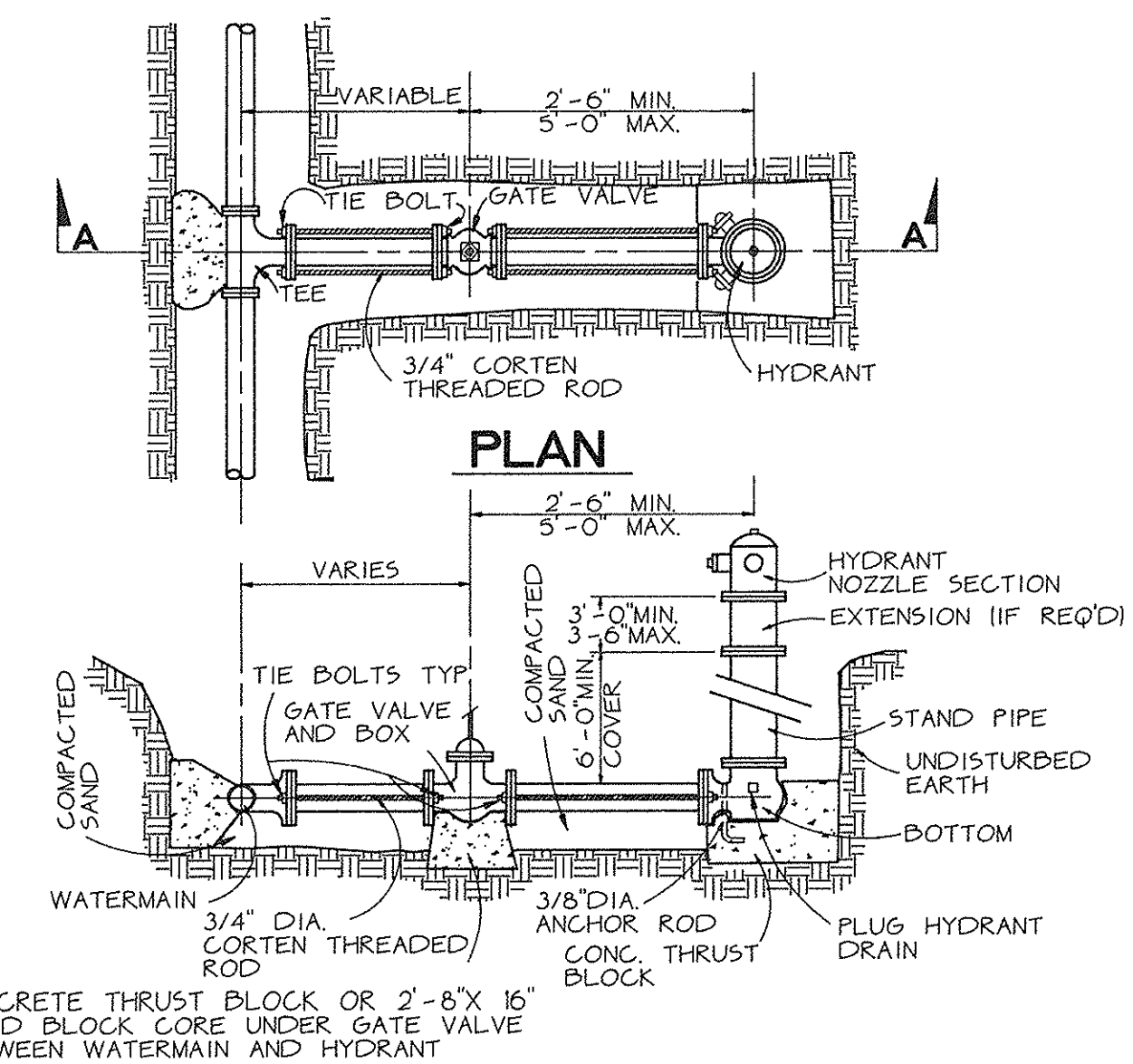


TYPICAL VALVE BOX INSTALLATION
NO SCALE



ELECTRICAL RISER DIAGRAM WITHIN TANK PEDESTAL
NO SCALE

- NOTES:
1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING UNDERGROUND ELECTRICAL SERVICE AS SHOWN ON THE SITE PLAN.
 2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING UNDERGROUND TELEPHONE LINE AS SHOWN ON THE SITE PLAN.
 3. INTERIOR LIGHTING SHALL PROVIDE FOR ONE LIGHT DIRECTLY OVER THE ELECTRIC AND CATHODIC PANELS.
 4. PROVIDE ADEQUATE MOUNTING PLATE INSIDE TANK PEDESTAL TO MOUNT CATHODIC PROTECTION UNIT, LIGHTING PANEL LP-A AND TELEPHONE JUNCTION BOX ON MOUNTING PLATE.



SECTION A-A
HYDRANT ASSEMBLY DETAIL
NO SCALE

Traverse City
124 West State Street
P.O. Box 927
Traverse City, Michigan
49884
(616) 946-5974

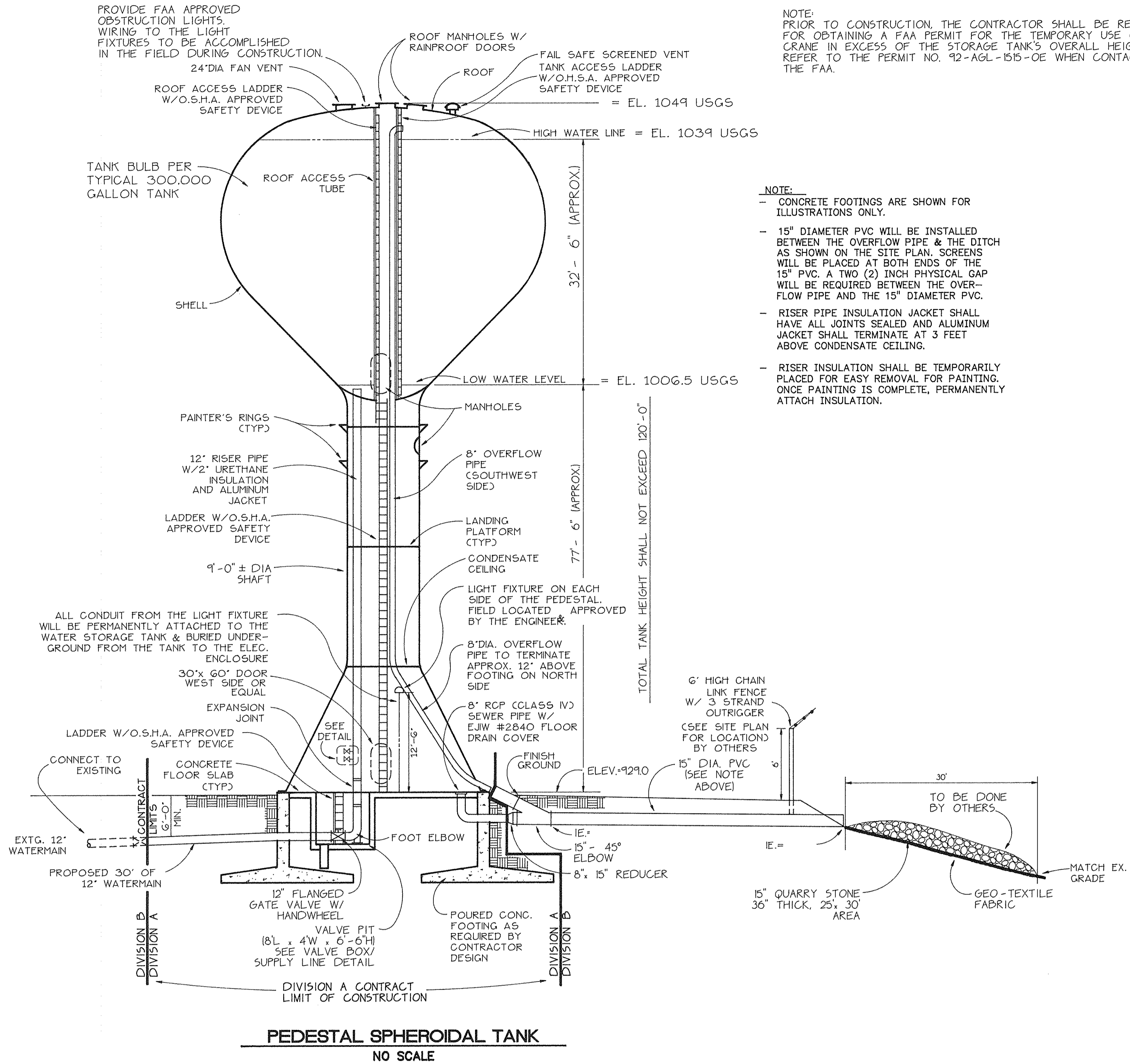
Consulting
Engineers
Surveyors
Planners

Gourdie/Fraser
& Associates, Inc



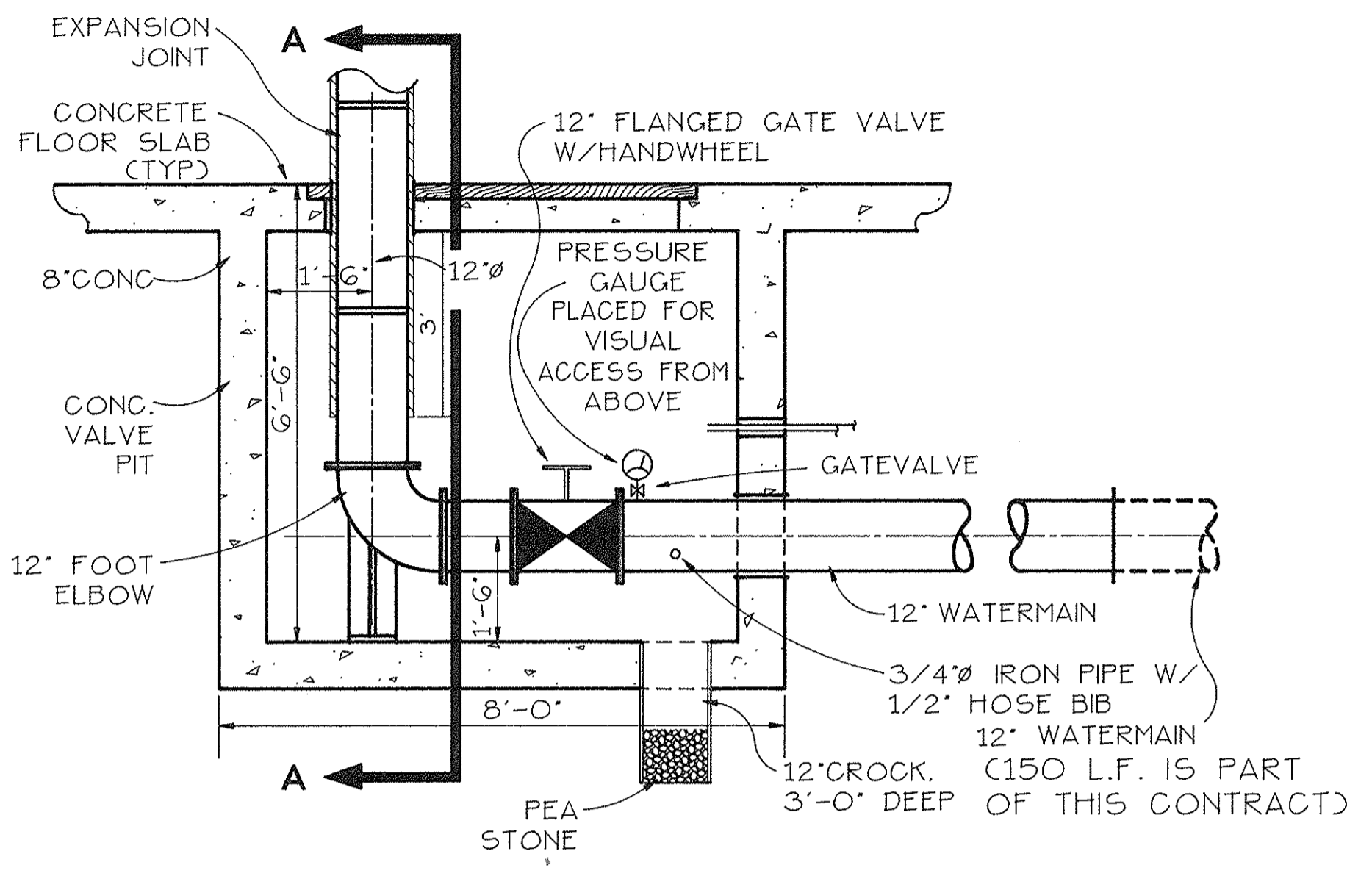
ENGLISH WOODS NO. 5
ELEVATED STORAGE TANK
ELECTRICAL PLAN/DETAILS
EAST BAY TOWNSHIP

REV.
APR.
CRD.
DATE: FEB 21-13
TANK ELECTRICAL PLAN
920360

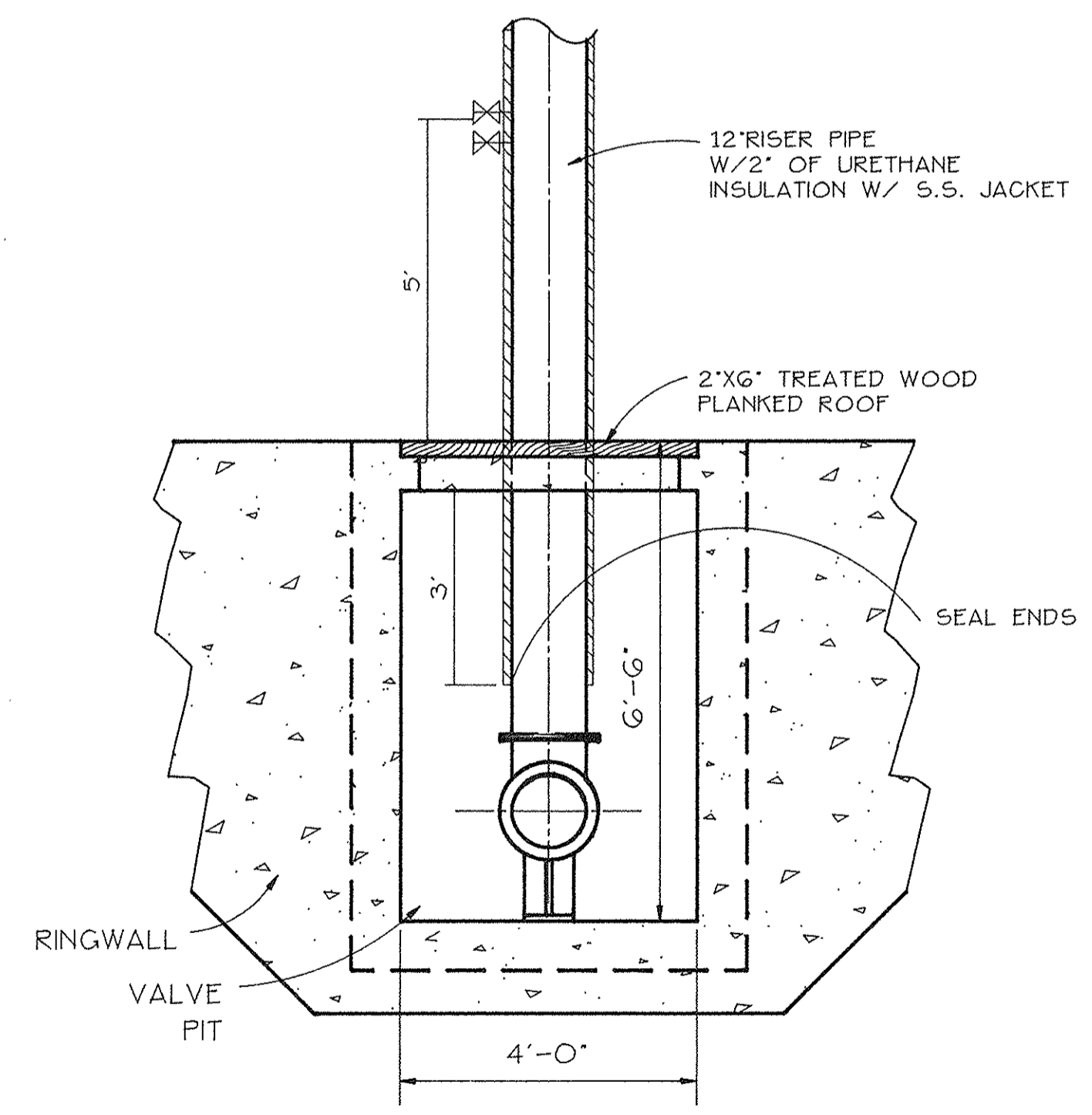


NOTE:
PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A FAA PERMIT FOR THE TEMPORARY USE OF A CRANE IN EXCESS OF THE STORAGE TANK'S OVERALL HEIGHT. REFER TO THE PERMIT NO. 92-AGL-1515-OE WHEN CONTACTING THE FAA.

- NOTE:
- CONCRETE FOOTINGS ARE SHOWN FOR ILLUSTRATIONS ONLY.
 - 15" DIAMETER PVC WILL BE INSTALLED BETWEEN THE OVERFLOW PIPE & THE DITCH AS SHOWN ON THE SITE PLAN. SCREENS WILL BE PLACED AT BOTH ENDS OF THE 15" PVC. A TWO (2) INCH PHYSICAL GAP WILL BE REQUIRED BETWEEN THE OVERFLOW PIPE AND THE 15" DIAMETER PVC.
 - RISER PIPE INSULATION JACKET SHALL HAVE ALL JOINTS SEALED AND ALUMINUM JACKET SHALL TERMINATE AT 3 FEET ABOVE CONDENSATE CEILING.
 - RISER INSULATION SHALL BE TEMPORARILY PLACED FOR EASY REMOVAL FOR PAINTING. ONCE PAINTING IS COMPLETE, PERMANENTLY ATTACH INSULATION.



SECTION THRU VALVE BOX/SUPPLY LINE
SCALE: 1/2" = 1'-0"



SECTION A - A
SCALE: 1/2" = 1'-0"

- NOTES:
- 1.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND HOOKUP OF THE 12" WATERMAIN FROM THE TANK VALVE PIT TO THE SITE LIMITS TIE-IN POINT AS REFLECTED ON THE SITE PLAN.
 - 2.) CONCRETE FOOTINGS, RING WALL AND BASE MATERIALS ARE SHOWN FOR ILLUSTRATION ONLY. FOUNDATIONS SHALL BE DESIGNED BY THE CONTRACTOR AND APPROVED BY THE OWNER.
 - 3.) THE OWNER SHALL DETERMINE AND MARK THE CENTERLINE OF THE TANK PRIOR TO CONTRACTORS COMMENCEMENT OF SITE ACTIVITIES.
 - 4.) ELEVATED WATER STORAGE TANK CAPACITY = 300,000 GALLONS AND OVERALL MAXIMUM TANK HEIGHT OF 100 FEET
 - 5.) ALL MANHOLES SHALL BE BUILT-UP FLANGED MANHOLES IN LIEU OF CRAB-CLAW MANHOLES, UNLESS APPROVED BY THE ENGINEER.
 - 6.) ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, FERTILIZED AND MULCHED, OR AS DIRECTED BY THE ENGINEER (SEE NOTE 1 SHEET 2

- 7.) LOCATION OF EXISTING UNDERGROUND UTILITIES, EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRICAL CONDUITS, SEWER AND WATER LINES ARE SHOWN ON THE PLANS. THE INFORMATION SHOWN IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND REQUEST THAT THEY STAKE OUT THE LOCATIONS OF THE UTILITIES IN QUESTION.
- 8.) SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION, PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW THE GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION

Traverse City
124 West State Street
P.O. Box 927
Traverse City, Michigan
49684
(616) 946-5874

Consulting
Engineers
Surveyors
Planners

Gourdie/Fraser
& Associates, Inc.

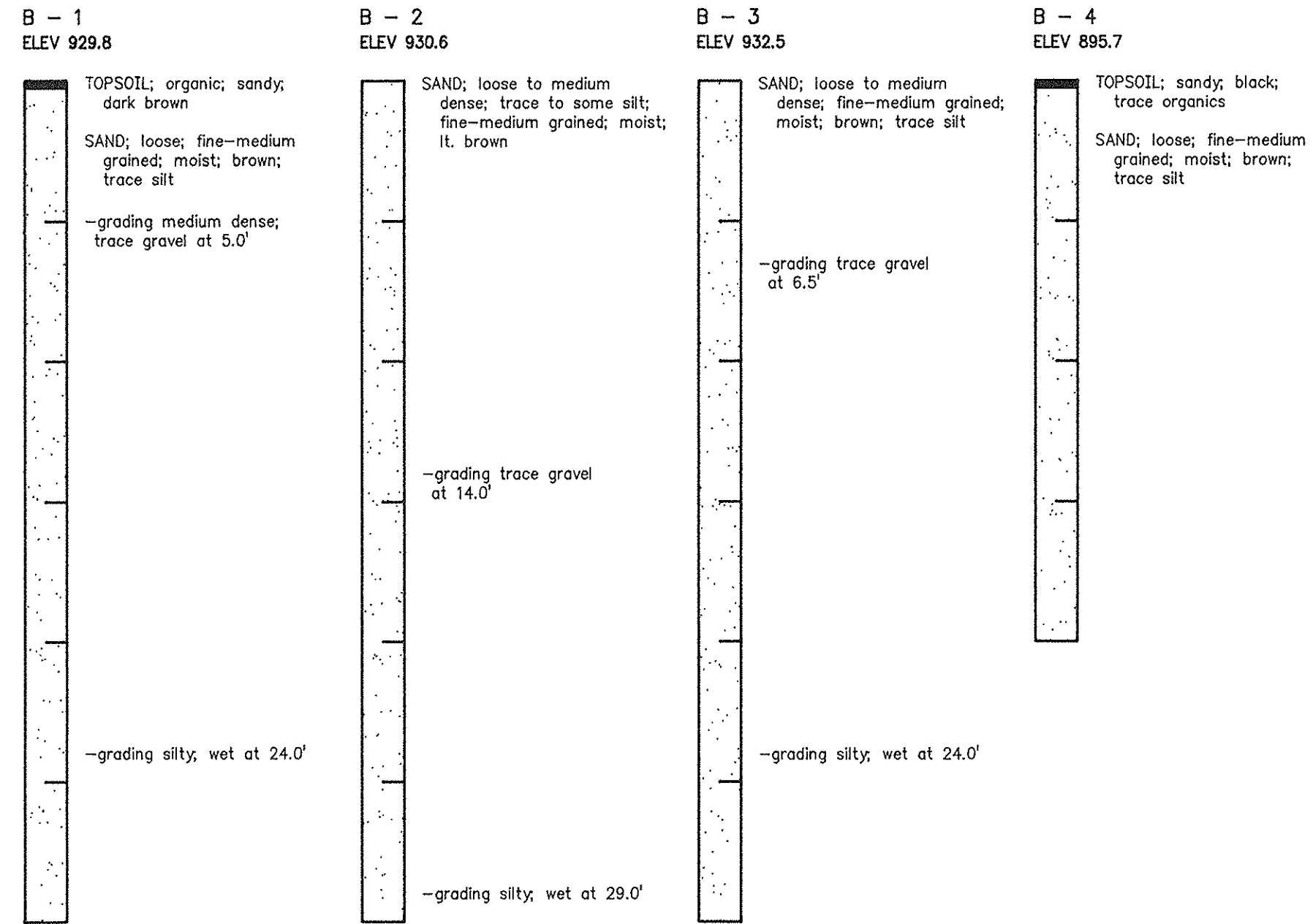


ENGLISH WOODS NO. 5
ELEVATED STORAGE TANK
TANK PROFILE/VALVE PIT DETAIL
EAST BAY TOWNSHIP

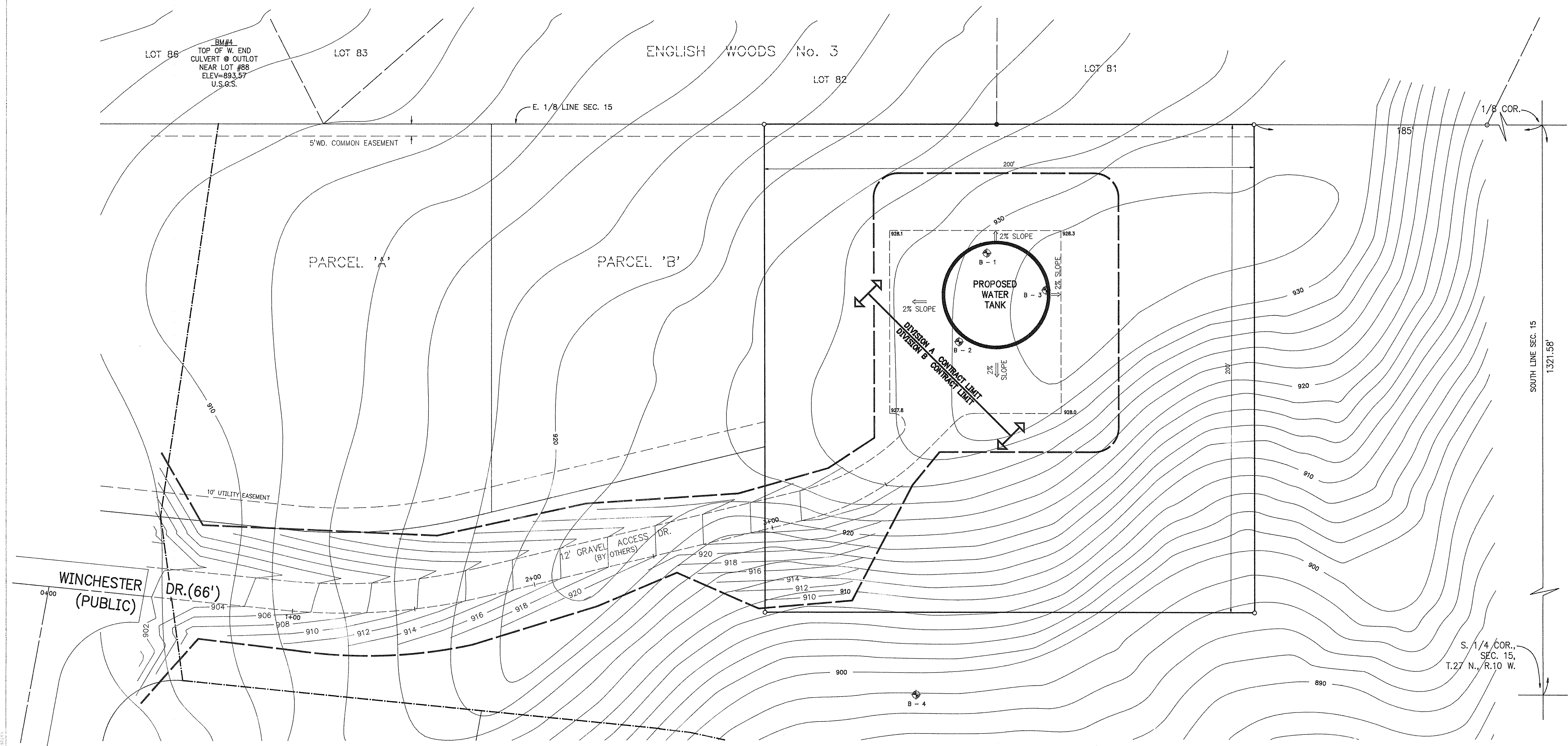
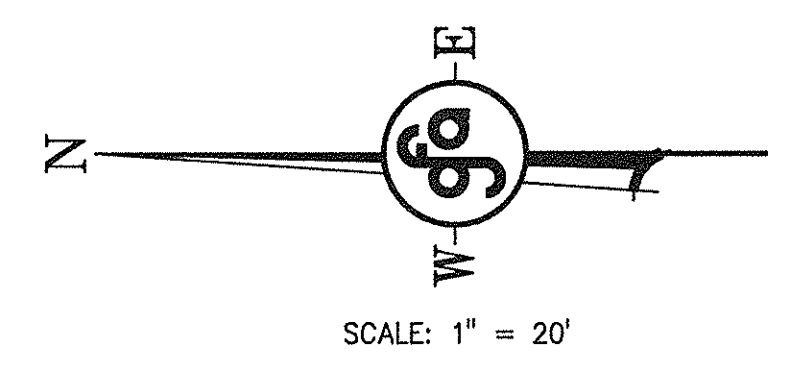
REV. 3-13-93
APR
END.
DRN. RKC 12-01-92
TANK.DWG

920360

SOIL BORINGS
SCALE: 1" = 5'



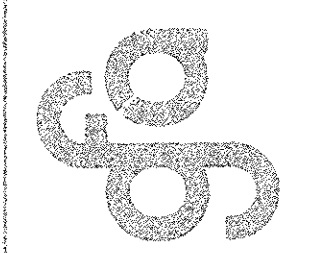
NOTE:
SEE APPENDIX A OF SPECIFICATIONS
FOR MORE DETAILED GEOTECHNICAL
INFORMATION.



Traverse City
124 West State Street
P.O. Box 627
Traverse City, Michigan
49884
(616) 846-5874

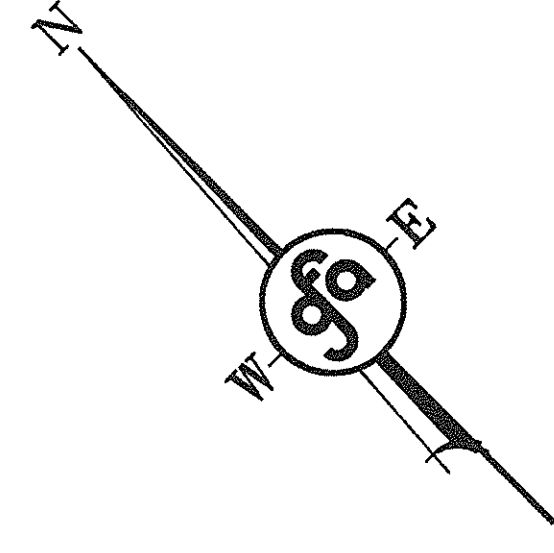
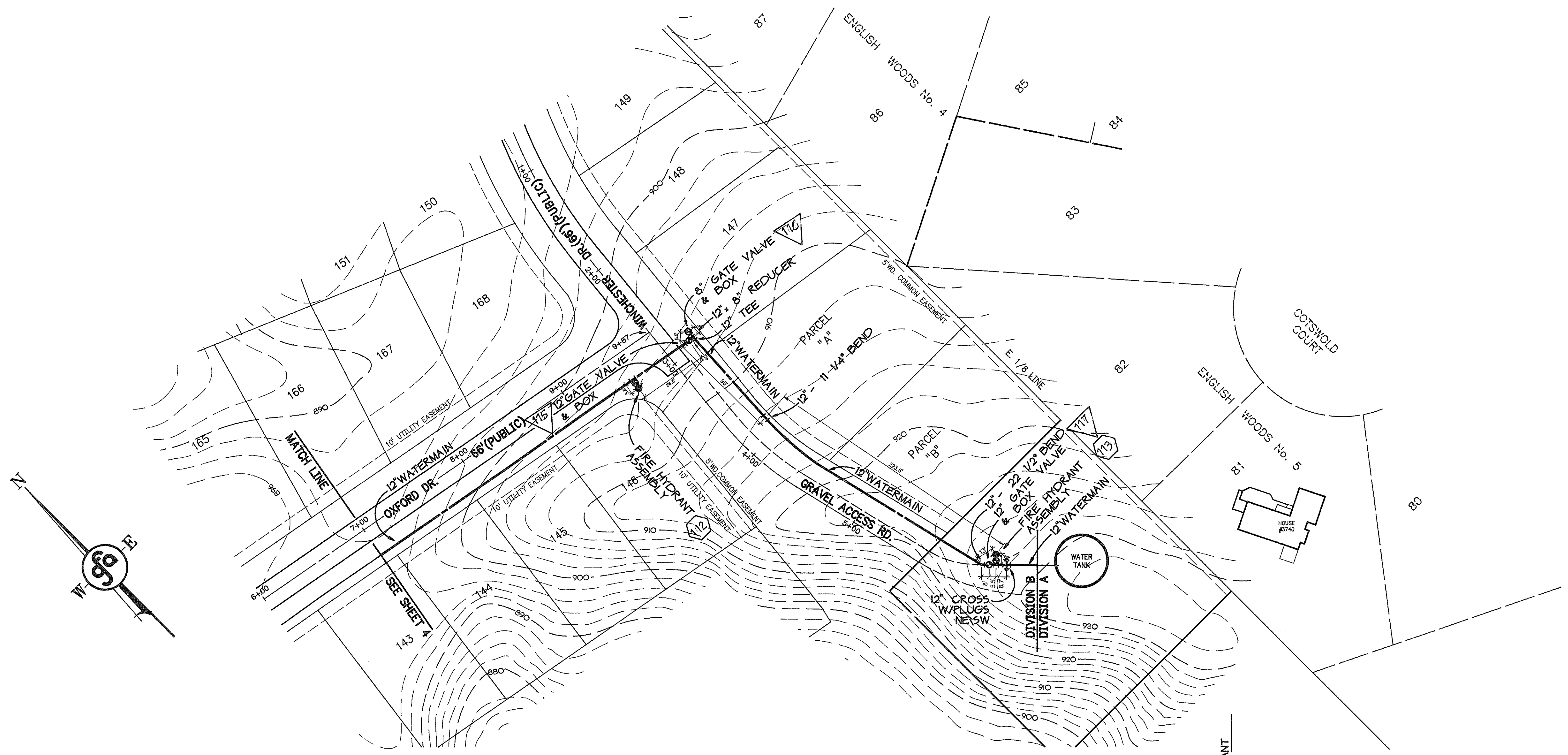
Consulting
Engineers
Surveyors
Planners

Gourdie/Fraser
& Associates, Inc.



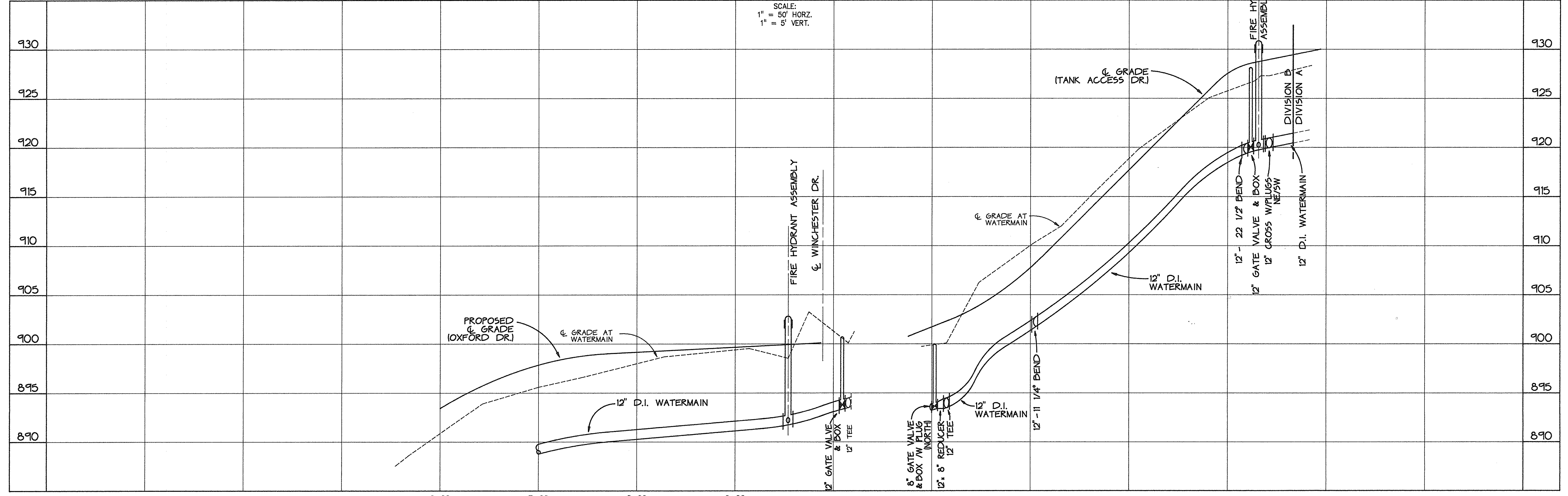
GEOTECHNICAL SITE PLAN
& SOIL BORING LOGS
DIVISION A
ELEVATED WATER STORAGE TANK
EAST BAY TOWNSHIP

REV: 2-13-13
APR:
CLD:
DNW: RKC 12-01-02
SHT-A5.DWG
920360



TANK ACCESS DRIVE

SCALE:
 1" = 50' HORZ.
 1" = 5' VERT.



124 West State Street
 P.O. Box 927
 Traverse City, Michigan
 49684 (616) 946-5874
 Fax: (616) 946-3703

Consulting
 Engineers
 Surveyors
 Planners

gfa
 Gourdie/Fraser
 & Associates, Inc.

REVISIONS:

**WATERMAIN
 PLAN and PROFILE
 DIVISION B
 ENGLISH WOODS No. 5
 EAST BAY TOWNSHIP**

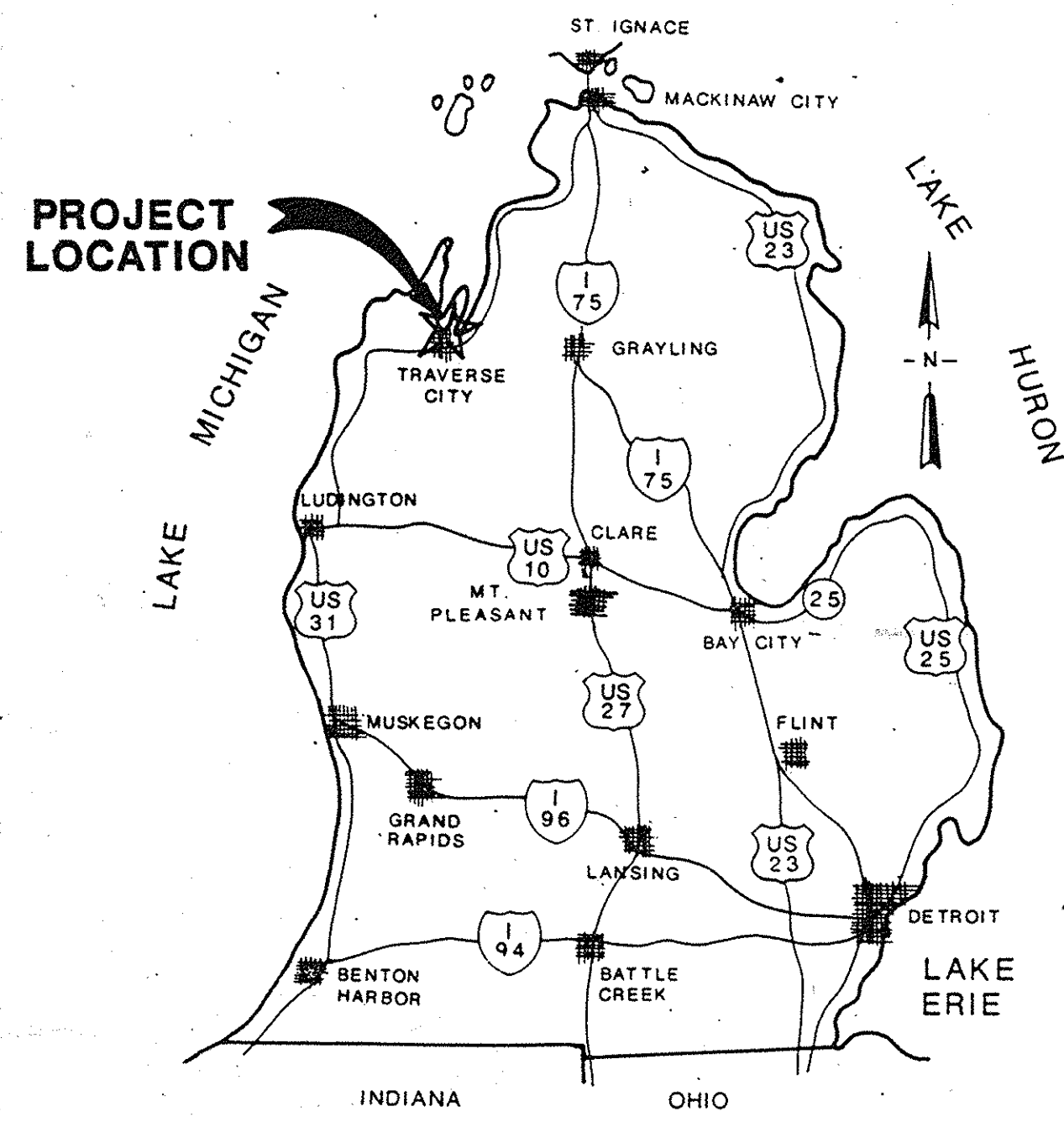
ISSUED FOR:
 RECORD DWG.
 RKC 12-21-93

DRN./DATE
 RKC 12-02-92
 FILE NAME
 SH1-B3.DWG
 JOB NO.

**920360
 SHT 3 OF 6**



RECORD DRAWINGS
Cherry Ridge



VICINITY MAP
NO SCALE

UTILITY LEGEND

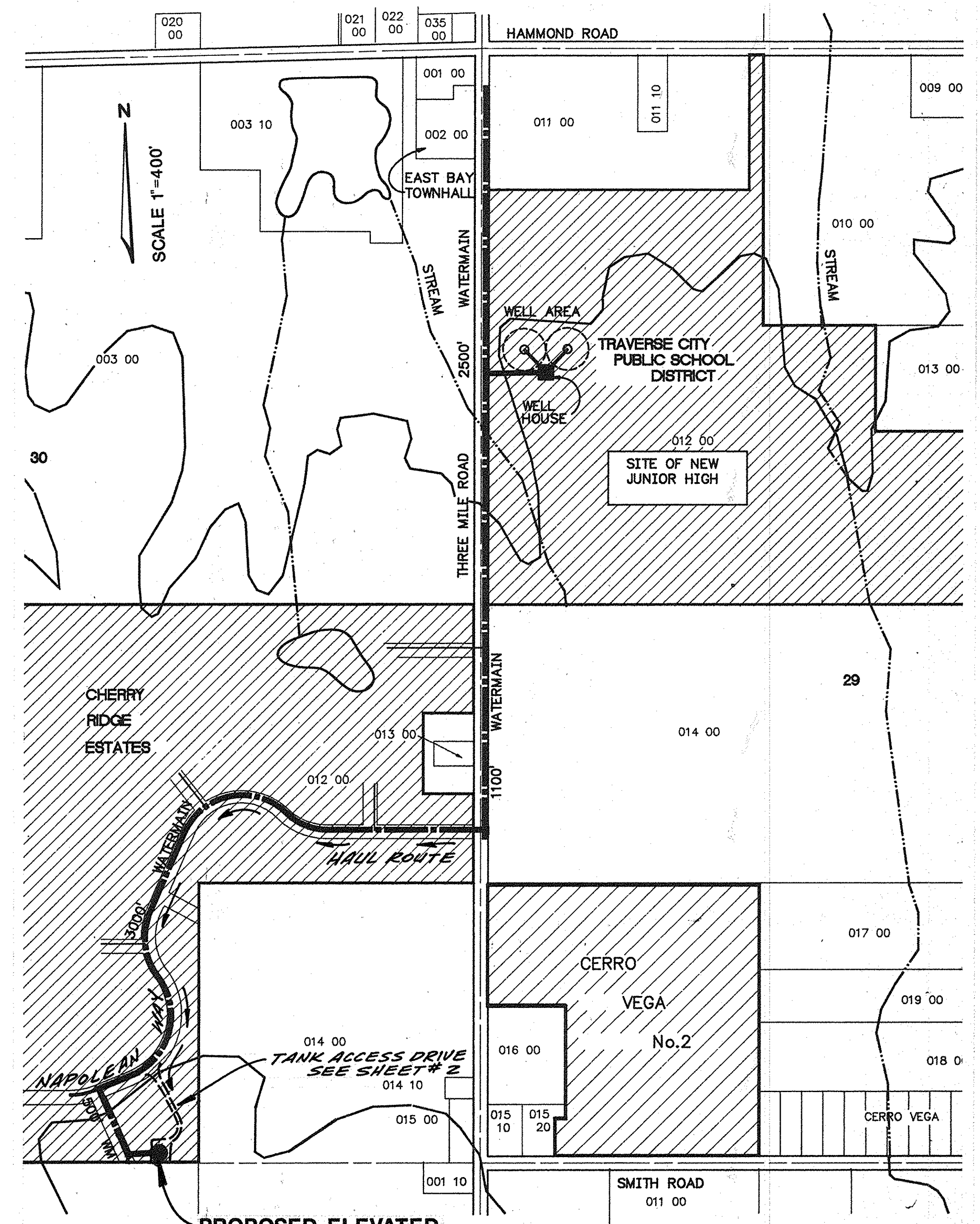
PROPOSED	EXISTING	
—W—	—W—	WATER MAIN
—S—	—S—	SANITARY SEWER
—FM—	—FM—	SANITARY FORCE MAIN
—SD—	—SD—	STORM SEWER
—G—	—G—	GAS MAIN
—E—	—E—	UNDERGROUND ELECTRIC
—T—	—T—	UNDERGROUND TELEPHONE
○	○	MANHOLE (MH)
□	□	CATCH BASIN (CB)
⊕	⊕	GATE VALVE
•	•	FIRE HYDRANT
—P—	—P—	POLE, ELECTRIC OR TELEPHONE
—L—	—L—	LIGHT
—	—	PROPERTY LINE
—888—	—888—	GRADING LIMITS
—888—	—888—	CONTOURS

SHEET INDEX

1	TITLE SHEET
2	TANK SITE PLAN
3	TANK ELECTRICAL DETAILS
4	TANK PROFILE & VALVE PIT DETAIL
5	GEOTECHNICAL SITE PLAN & SOIL BORING LOGS

UTILITIES

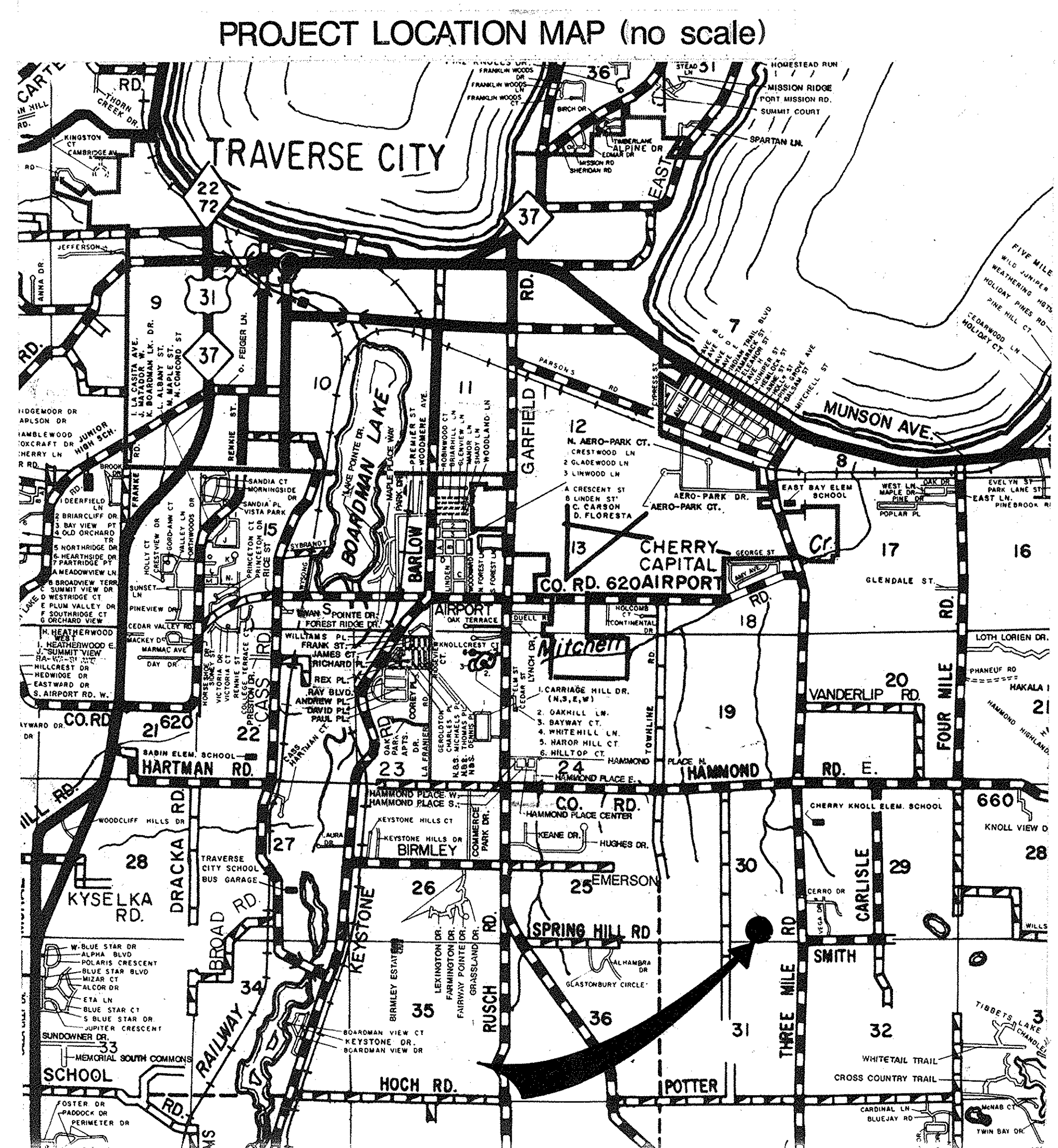
- GRAND TRAVERSE COUNTY DEPARTMENT OF PUBLIC WORKS
 Superintendent - Otto Kipper
 Address - 400 Boardman Avenue, Traverse City
 Telephone - 922-4727/947-7702
- GRAND TRAVERSE COUNTY ROAD COMMISSION (G.T. CO.)
 County Road Comm. Manager - Mike Dillenbeck
 Address - 3949 Silver Lake Road, Traverse City
 Telephone - 922-4848
- GRAND TRAVERSE COUNTY SOIL EROSION & SEDIMENTATION CONTROL
 Director - Maureen Kennedy
 Address - 400 Boardman Avenue, Traverse City
 Telephone - 922-4733
- CONSUMERS POWER COMPANY (C.P.)
 Area Engineer - James H. Gray
 Address - 821 Hastings, Traverse City
 Telephone - 947-8400
- MICHIGAN BELL TELEPHONE (M.B.T.)
 Area Engineer - Chuck Henboldt
 Address - 812 Garfield St., Traverse City
 Telephone - 941-22715
- MICHIGAN CONSOLIDATED GAS COMPANY (M.C.G.)
 Area Manager - Morcy Nelson
 Address - 1031 Hastings St., Traverse City
 Telephone - 946-5363
- CHERRYLAND ELECTRIC COOPERATIVE
 Area Engineer - Bob Siekas
 Address - US-31 South, Grawn
 Telephone - 276-9212
- CENTEL CABLE TELEVISION COMPANY
 Area Manager - Terry McQuater
 Address - 701 S. Airport Road West, Traverse City
 Telephone - 947-5220
- POLICE AGENCIES
 EMERGENCY CALLS - 941-1911
 City of Traverse City - 941-2300
 Michigan State Police - 946-4646
 Grand Traverse County Sheriff - 941-2225
- FIRE DEPARTMENTS
 EMERGENCY CALLS - 941-1911
 City of Traverse City - 941-2340
 Grand Traverse County - 941-2238
- AMBULANCE
 EMERGENCY CALLS - 941-1911
- MISS DIG - 800-482-7171



PROPOSED ELEVATED WATER TANK

ELEVATED WATER STORAGE TANK
"DIVISION A"
 EAST BAY TOWNSHIP
 GRAND TRAVERSE COUNTY,
 MICHIGAN

- NOTES:**
- ACCESS TO THE TANK SITE WILL BE THROUGH THE CHERRY RIDGE ESTATES. NAPOLEON WAY WILL BE ROUGH GRADED UP TO THE INTERSECTION WITH THE TANK ACCESS DRIVE. IT SHALL BE THE TANK CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THIS ROUGH GRADE ON NAPOLEON WAY TO A CONDITION AS GOOD AS OR BETTER THAN WHEN TANK CONTRACTOR STARTED USE OF THIS ACCESS HAUL ROUTE.
 - UTILITY SERVICE (ELECTRIC AND TELEPHONE) TO THE WATER TANK WILL BE THE CONTRACTOR'S RESPONSIBILITY WITHIN THE LIMITS OF THE DIVISION "A" PROJECT (SEE 1" = 20' SCALE SITE PLAN). OFFSITE ELECTRICAL SERVICE, TELEPHONE SERVICE AND WATERMAIN INSTALLATION WILL BE BY OTHERS.



Marquette
 105 E. Washington Street
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Traverse City
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 Traverse City, Michigan
 49781
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Consulting
 Engineers
 Surveyors
 Planners

**Gourdie/Fraser
 & Associates, Inc.**

gfa

REV.
APR.
CKD. JHE 2-19-91
DRN. D.L.N. 2-19-91
900343-A
SHEET 1 OF 5

LEGAL DESCRIPTION
 DESCRIPTION: A parcel of land situated in the Township of East Bay, County of Grand Traverse, State of Michigan, and fully described as follows to-wit:
WATER TANK PARCEL
 That part of the Southeast One-quarter of the Southeast One-quarter of Section 30, Township 27 North, Range 10 West, more fully described as: Commencing at the South One-quarter Corner of said Section 30; thence North 88°26'31" East, along the South line of said Section 30, 935.24 feet; thence North 26°59'33" West, 49.83 feet; thence North 80°29'43" East, 74.37 feet to the Point of Beginning; thence North 19°54'38" West, 45.00 feet; thence North 70°05'22" East, 103.50 feet; thence South 19°54'38" East, 100.00 feet; thence South 83°45'28" West, 106.52 feet; thence North 19°54'38" West, 29.80 feet, to the Point of Beginning. Containing 0.21 acres of land more or less.

TOGETHER WITH
WATERMAIN ESMT. FROM TANK TO MORSE WAY
 A twenty (20) foot wide nonexclusive easement for the installation and maintenance of public and private utilities, lying 10 feet on each side of and adjacent to a centerline described as: that part of the Southwest One-quarter of the Southeast One-quarter of Section 30, Township 27 North, Range 10 West and more fully described as: Commencing at the South One-quarter Corner of said Section 30; thence North 88°26'31" East, along the South line of said Section 30, 935.24 feet; thence North 26°59'33" West, 49.83 feet, to the Point of Beginning of said easement; thence North 80°29'43" East, along the centerline of said Easement, 74.37 feet, to the Point of Ending of said easement. Containing 74.37 lineal feet of easement.

ALSO TOGETHER WITH
ACCESS ESMT. FROM TANK DR. TO THREE MILE RD.
 A thirty (30) foot wide nonexclusive, temporary access easement for ingress and egress, lying 15 feet on each side of and adjacent to a centerline described as: that part of the Southeast One-quarter of Section 30, Township 27 North, Range 10 West and more fully described as: Commencing at the South One-quarter Corner of said Section 30; thence North 88°26'31" East along the South line of said Section 30, 935.24 feet; thence North 26°59'33" West, 49.83 feet; thence North 80°29'43" East, 74.37 feet; thence North 19°54'38" West, 45.00 feet; thence North 70°05'22" East, 103.50 feet; thence South 19°54'38" East, 100.00 feet; thence North 57°54'27" East, 99.58 feet; thence 39.25 feet along the arc of a curve to the left whose radius is 100.00 feet, delta is 22°29'22" and chord bears North 46°39'46" East, 39.00 feet; thence 44.22 feet along the arc of a curve to the left whose radius is 40.00 feet, delta is 63°20'11" and chord bears North 03°45'00" East, 42.00 feet; thence North 27°55'06" West, 216.30 feet, to the Point of Beginning of said Easement; thence along the centerline of said Easement, 529.13 feet along the arc of a curve to the left whose radius is 317.00 feet, delta is 95°38'15" and chord bears North 08°12'26" East, 469.81 feet; thence 337.10 feet along the arc of a curve to the right whose radius is 100.00 feet, delta is 64°22'53" and chord bears North 07°25'16" West, 319.64 feet; thence North 24°46'11" East, 161.10 feet; thence 223.98 feet along the arc of a curve to the left whose radius is 154.00 feet, delta is 08°19'01" and chord bears North 20°36'41" East, 223.98 feet; thence 568.68 feet along the arc of a curve to the right whose radius is 275.00 feet, delta is 118°29'01" and chord bears North 75°41'42" East, 472.63 feet; thence 257.31 feet along the arc of a curve to the left whose radius is 317.00 feet, delta is 46°30'17" and chord bears South 68°18'56" East, 250.29 feet; thence North 88°25'56" East, 692.96 feet, to the Point of Ending of said easement, said point being on the East line of said Section 30, said point also being South 00°39'00" East, 1094.07 feet, from the East One-quarter Corner of said Section 30. Containing 2770.25 lineal feet of easement.

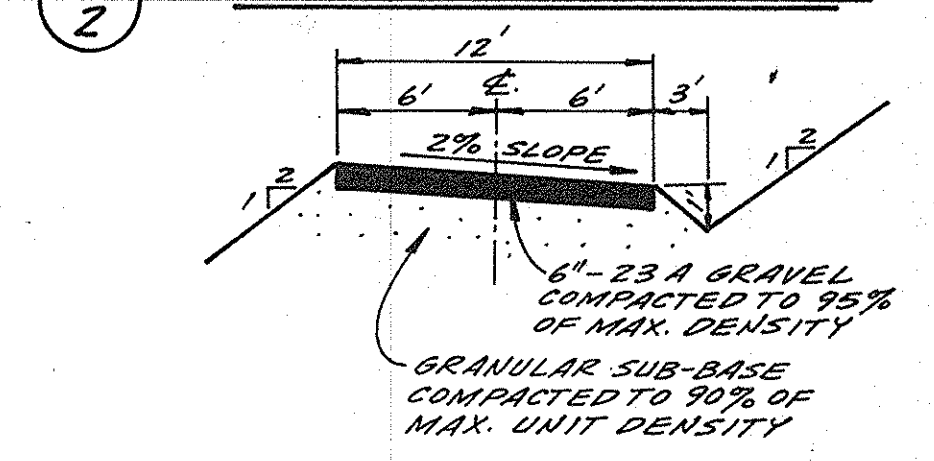
The above described temporary easement shall terminate when said area is included in the platting of "CHERRY RIDGE ESTATES".

SUBJECT TO all agreements, covenants, easements, and restrictions of record, if any.

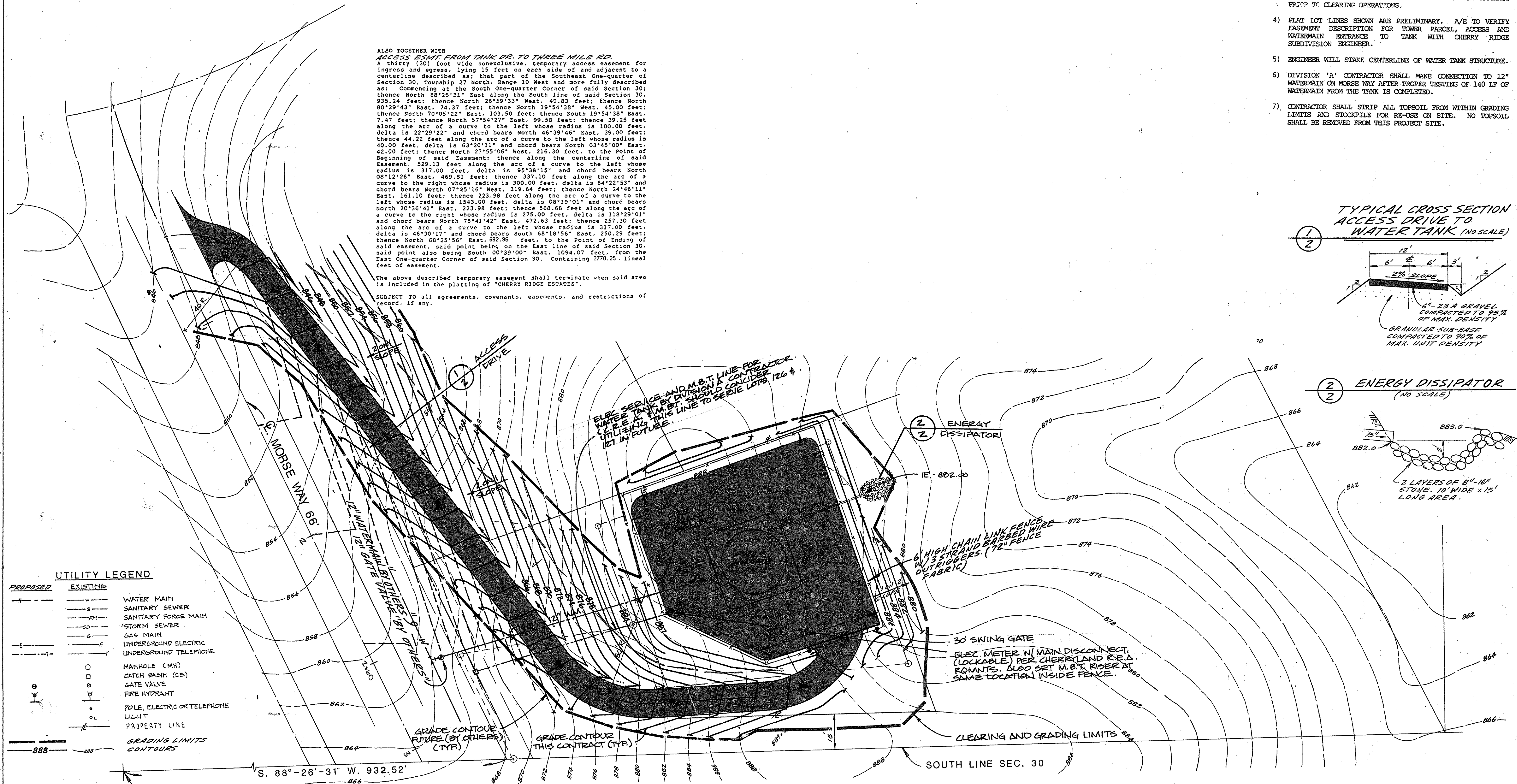
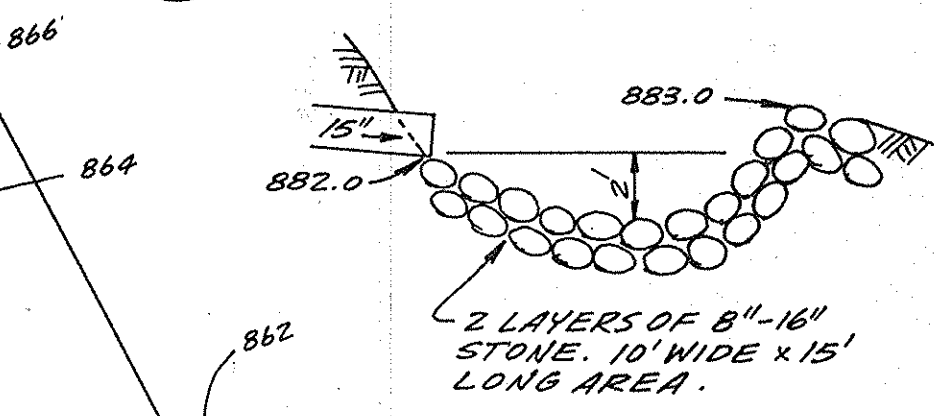
N
 SCALE: 1" = 20'

- NOTES:
- 1) ALL DISTURBED AREAS NOT COVERED BY STRUCTURE OR GRAVEL SHALL BE GRADED AND COVERED WITH 4" OF TOPSOIL, SEEDED AT 100 LBS/ACRE RATE, FERTILIZED AT A RATE OF 240 LBS/ACRE AND MULCHED WITH STRAW AT A RATE OF 2 TONS/ACRE. ALL SLOPES GREATER THAN 1 ON 3 SHALL HAVE EXCELSTOR MULCH BLANKET STAKED IN PLACE IN LIEU OF STRAW MULCH.
 - 2) INSTALL AND STAKE IN PLACE STRAW BALE CHECKDAMS IN DITCHES AT EVERY 75 FEET UNTIL VEGETATION IS ESTABLISHED.
 - 3) CLEARING LIMITS SHALL BE STAKED IN THE FIELD BY THE CONTRACTOR AND REVIEWED BY PROJECT ENGINEER FOR ACCURACY PRIOR TO CLEARING OPERATIONS.
 - 4) PLAT LOT LINES SHOWN ARE PRELIMINARY. A/S TO VERIFY EASEMENT DESCRIPTION FOR TOWER PARCEL, ACCESS AND WATERMAIN ENTRANCE TO TANK WITH CHERRY RIDGE SUBDIVISION ENGINEER.
 - 5) ENGINEER WILL STAKE CENTERLINE OF WATER TANK STRUCTURE.
 - 6) DIVISION 'A' CONTRACTOR SHALL MAKE CONNECTION TO 12" WATERMAIN ON MORSE WAY AFTER PROPER TESTING OF 140 LF OF WATERMAIN FROM THE TANK IS COMPLETED.
 - 7) CONTRACTOR SHALL STRIP ALL TOPSOIL FROM WITHIN GRADING LIMITS AND STOCKPILE FOR RE-USE ON SITE. NO TOPSOIL SHALL BE REMOVED FROM THIS PROJECT SITE.

TYPICAL CROSS SECTION ACCESS DRIVE TO WATER TANK (NO SCALE)



ENERGY DISSIPATOR (NO SCALE)



UTILITY LEGEND

PROPOSED	EXISTING	DESCRIPTION
—W—	—W—	WATER MAIN
—S—	—S—	SANITARY SEWER
—FM—	—FM—	SANITARY FORCE MAIN
—SD—	—SD—	STORM SEWER
—G—	—G—	GAS MAIN
—E—	—E—	UNDERGROUND ELECTRIC
—T—	—T—	UNDERGROUND TELEPHONE
○	○	MANHOLE (MH)
□	□	CATCH BASIN (CB)
○	○	GATE VALVE
○	○	FIRE HYDRANT
○	○	POLE, ELECTRIC OR TELEPHONE LIGHT
—	—	PROPERTY LINE
—	—	GRADING LIMITS
—	—	CONTOURS

Marquette
 105 E. Washington Street
 Marquette, Michigan
 49855
 (906) 228-5171

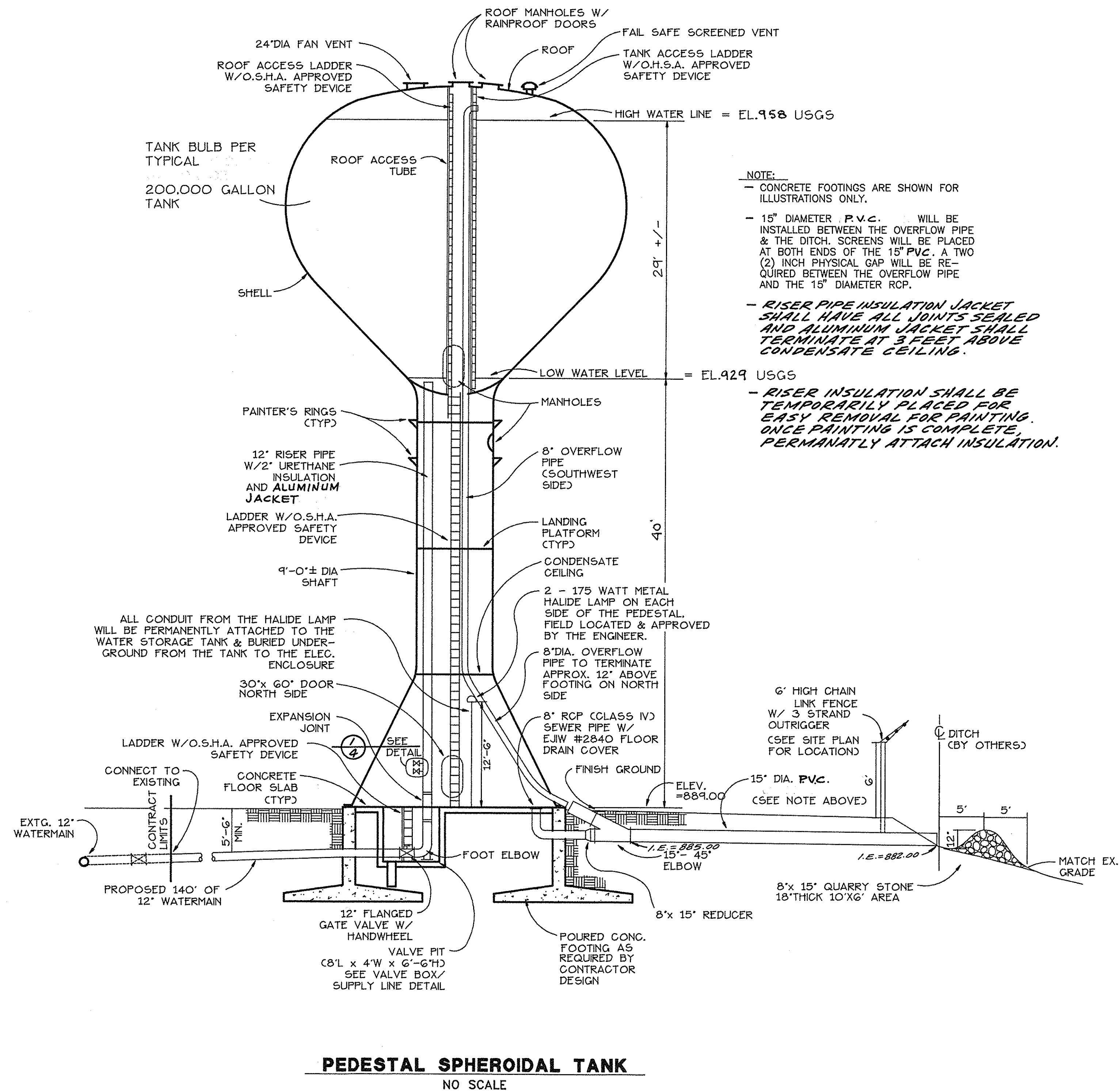
Traverse City
 124 West State Street
 P.O. Box 927
 Traverse City, Michigan
 49684
 (616) 946-5874

Consulting Engineers Surveyors Planners

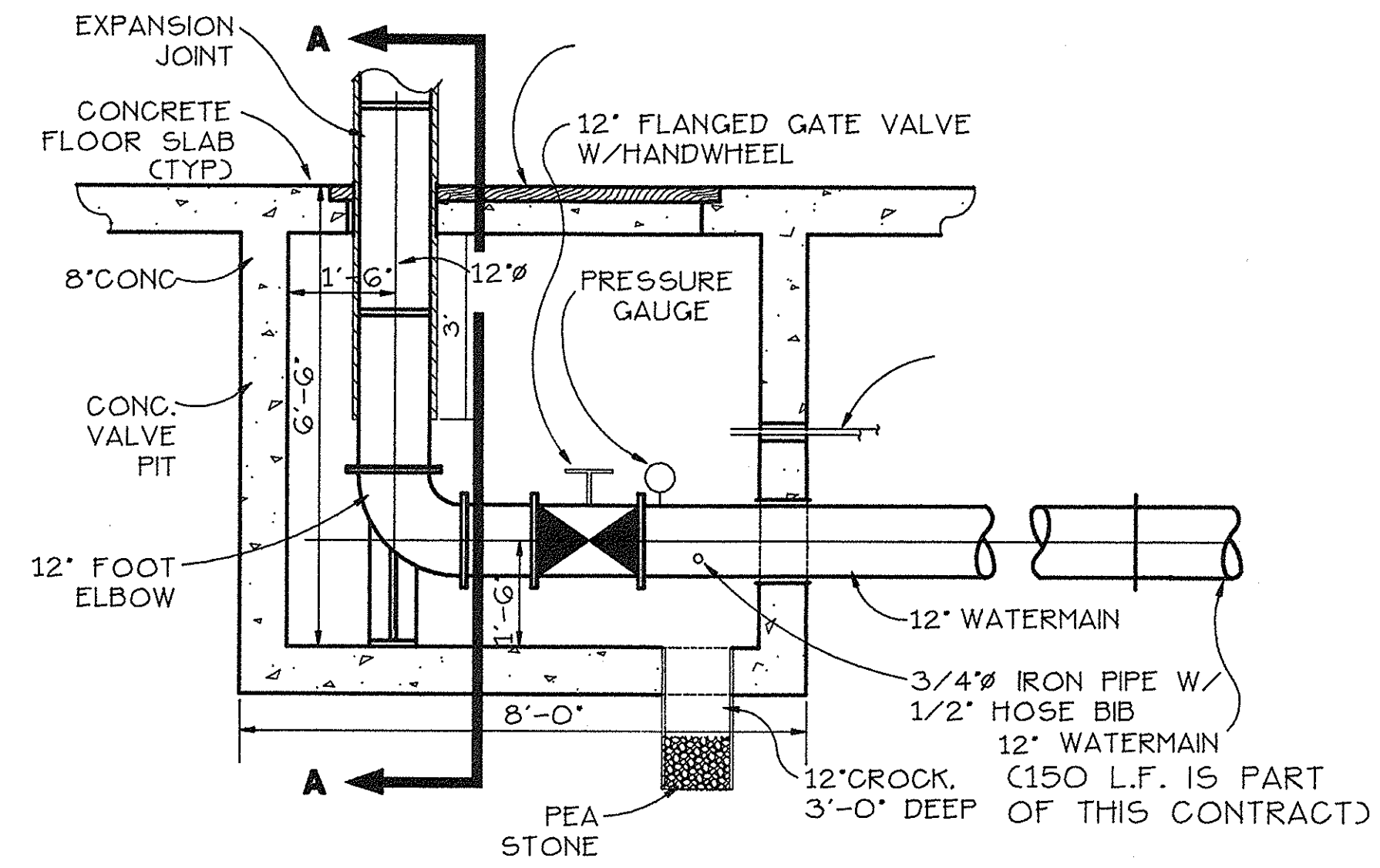
gfa Gourdie/Fraser & Associates, Inc.

SITE PLAN
 ELEVATED WATER STORAGE TANK
 EAST BAY TOWNSHIP
 GRAND TRAVERSE COUNTY, MICHIGAN

Revised Site Plan
 REV. 2-9-91 JHO
 APR. JHE 2-19-91
 DRN. C.L.M. 1-31-91
900343-A
 SHEET 2 OF 5

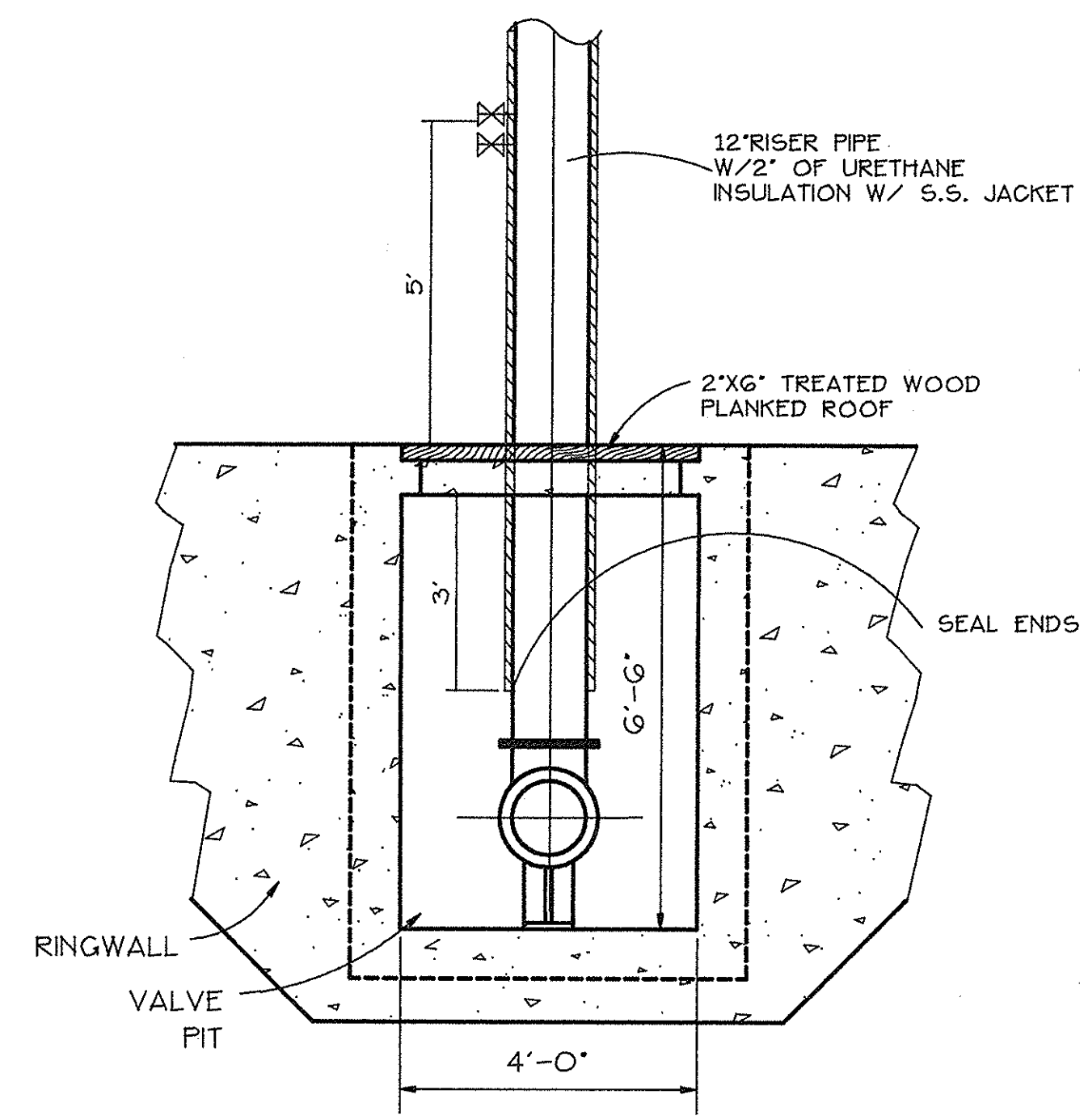


NOTE:
 - CONCRETE FOOTINGS ARE SHOWN FOR ILLUSTRATIONS ONLY.
 - 15" DIAMETER P.V.C. WILL BE INSTALLED BETWEEN THE OVERFLOW PIPE & THE DITCH. SCREENS WILL BE PLACED AT BOTH ENDS OF THE 15" P.V.C. A TWO (2) INCH PHYSICAL GAP WILL BE REQUIRED BETWEEN THE OVERFLOW PIPE AND THE 15" DIAMETER RCP.
 - RISER PIPE INSULATION JACKET SHALL HAVE ALL JOINTS SEALED AND ALUMINUM JACKET SHALL TERMINATE AT 3 FEET ABOVE CONDENSATE CEILING.
 - RISER INSULATION SHALL BE TEMPORARILY PLACED FOR EASY REMOVAL FOR PAINTING. ONCE PAINTING IS COMPLETE, PERMANENTLY ATTACH INSULATION.



SECTION THRU VALVE BOX/SUPPLY LINE

SCALE: 1/2" = 1'-0"



SECTION A - A

SCALE: 1/2" = 1'-0"

NOTES:

- 1.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND HOOKUP OF THE 12" WATERMAIN FROM THE TANK VALVE PIT TO THE SITE LIMITS TIE-IN POINT AS REFLECTED ON THE SITE PLAN.
- 2.) CONCRETE FOOTINGS, RING WALL AND BASE MATERIALS ARE SHOWN FOR ILLUSTRATION ONLY. FOUNDATIONS SHALL BE DESIGNED BY THE CONTRACTOR AND APPROVED BY THE OWNER.
- 3.) THE OWNER SHALL DETERMINE AND MARK THE CENTERLINE OF THE TANK PRIOR TO CONTRACTORS COMMENCEMENT OF SITE ACTIVITIES.
- 4.) ELEVATED WATER STORAGE TANK CAPACITY = 200,000 GALLONS AND OVERALL **MAXIMUM TANK HEIGHT OF 100 FEET.**
- 5.) ALL MANHOLES SHALL BE BUILT-UP FLANGED MANHOLES IN LIEU OF CRAB-CLAW MANHOLES, UNLESS APPROVED BY THE ENGINEER.
- 6.) ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, FERTILIZED AND MULCHED, OR AS DIRECTED BY THE ENGINEER (SEE NOTE 1 SHEET 2)

7.) LOCATION OF EXISTING UNDERGROUND UTILITIES, EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRICAL CONDUITS, SEWER AND WATER LINES ARE SHOWN ON THE PLANS. THE INFORMATION SHOWN IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND REQUEST THAT THEY STAKE OUT THE LOCATIONS OF THE UTILITIES IN QUESTION.

8.) SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION. PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW THE GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION

9.) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO APPLY FOR THE FEDERAL AVIATION ADMINISTRATIONS APPROVAL FOR CONSTRUCTION OPERATIONS AT THE TANK SITE. AN INITIAL STUDY 90-AGL-1678-OE HAS INDICATED THAT IF THE STRUCTURE OR CONSTRUCTION EQUIPMENT WAS KEPT BELOW AN ELEVATION 1000 ABOVE MEAN SEA LEVEL THAT IT WOULD NOT EXCEED PART 77 STANDARDS. CONTRACTOR SHALL VERIFY THIS APPLICATION AS REQUIRED.

TANK PROFILE AND VALVE PIT DETAIL
 ELEVATED WATER STORAGE TANK
 EAST BAY TOWNSHIP
 GRAND TRAVERSE COUNTY, MICHIGAN

FEB. 18, 1991

REV. JHE 2-19-91
 APR. JHE 2-19-91
 C.D. JHE
 DWN. DLM

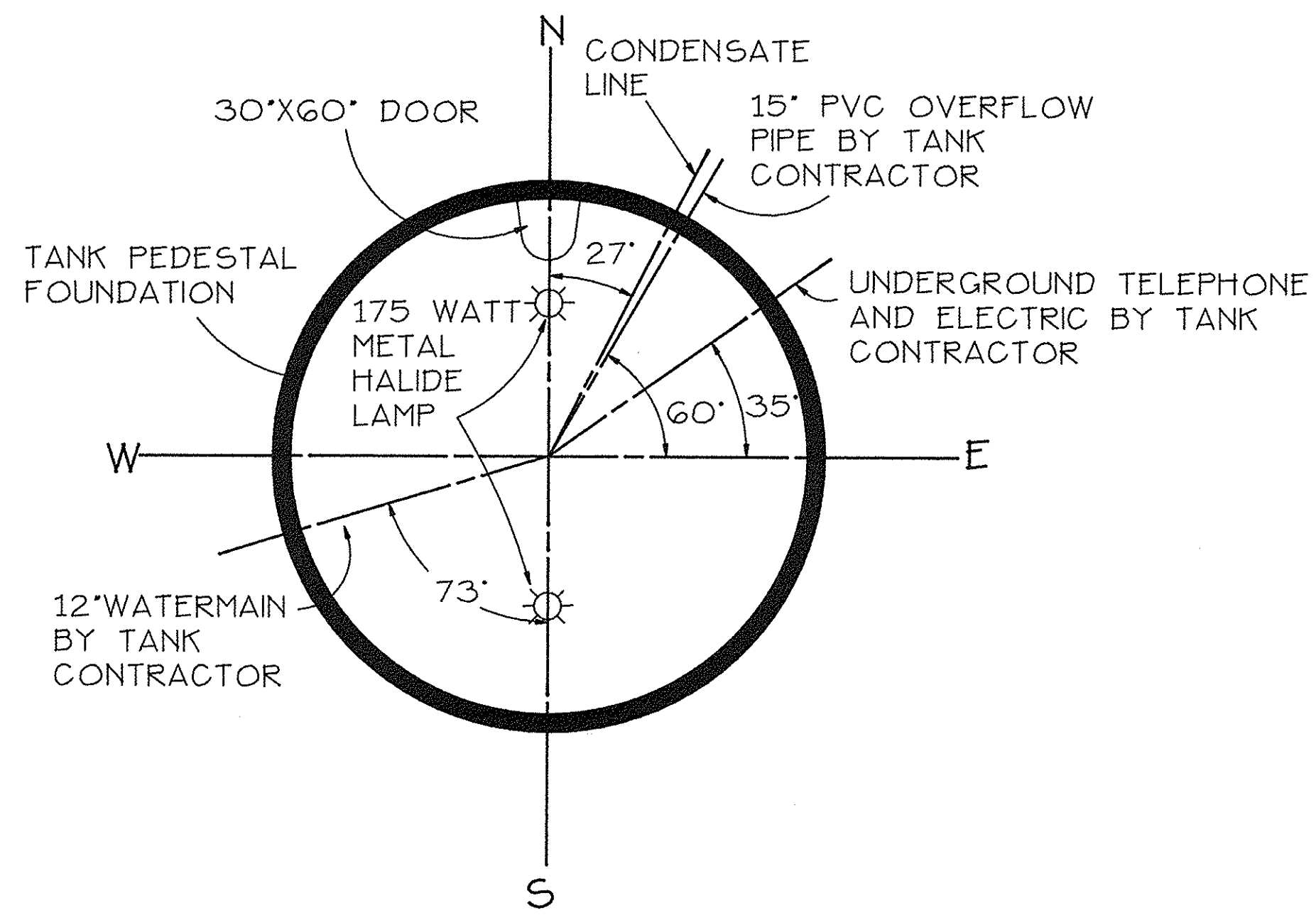
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Traverse City
 124 West State Street
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 49886-9274
 (616) 946-5874

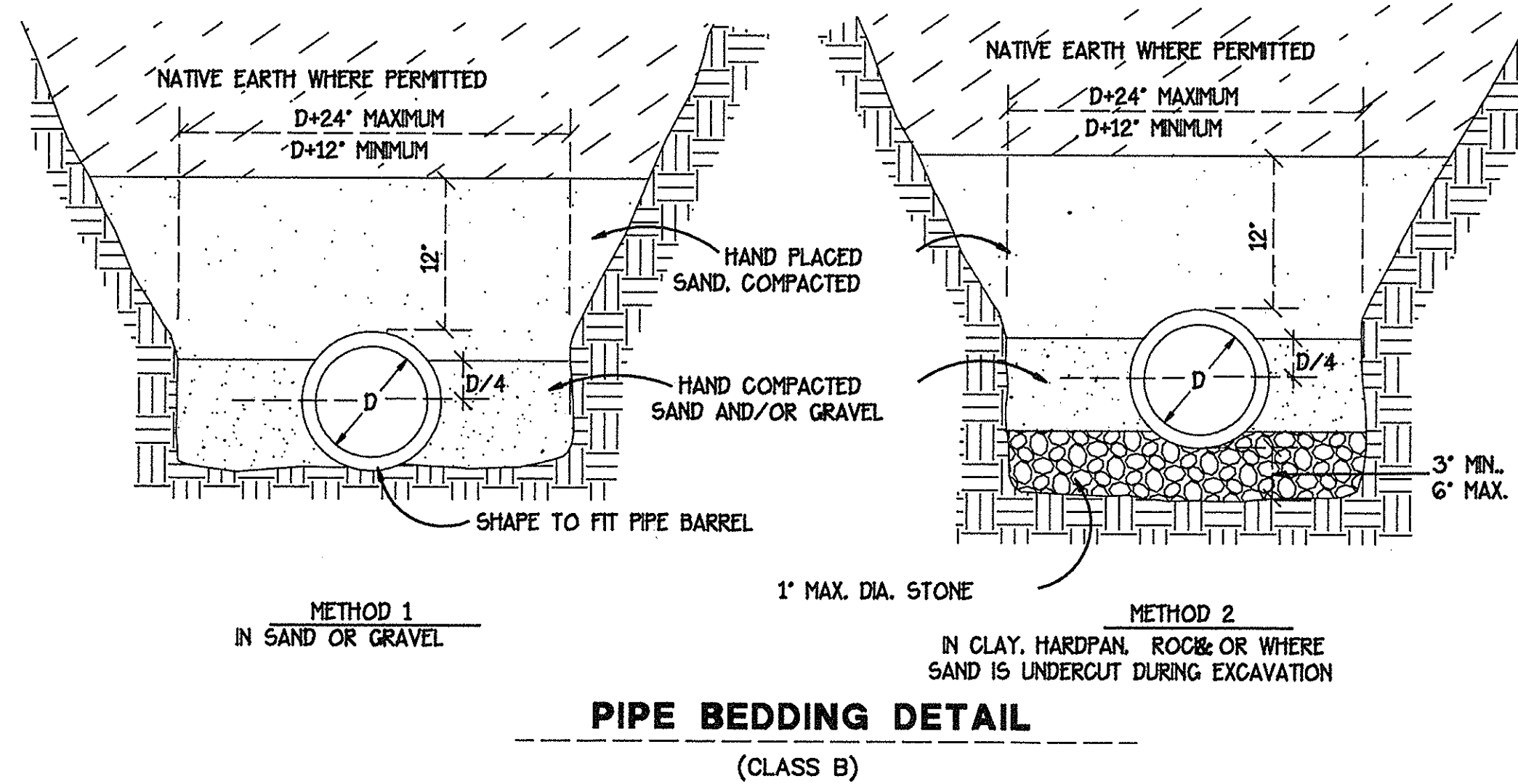
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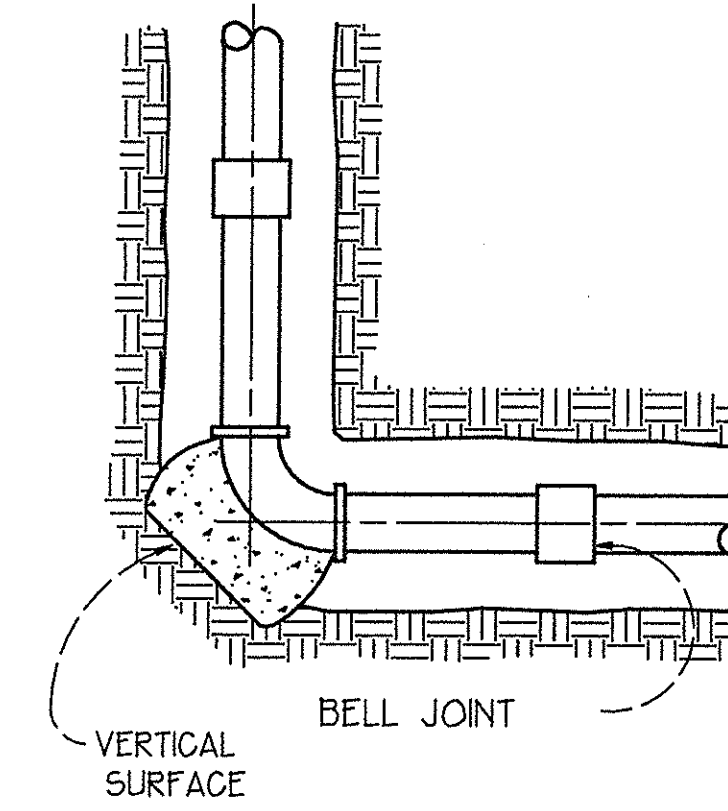
gfa



ORIENTATION OF TANK AND ACCESSORIES
NO SCALE

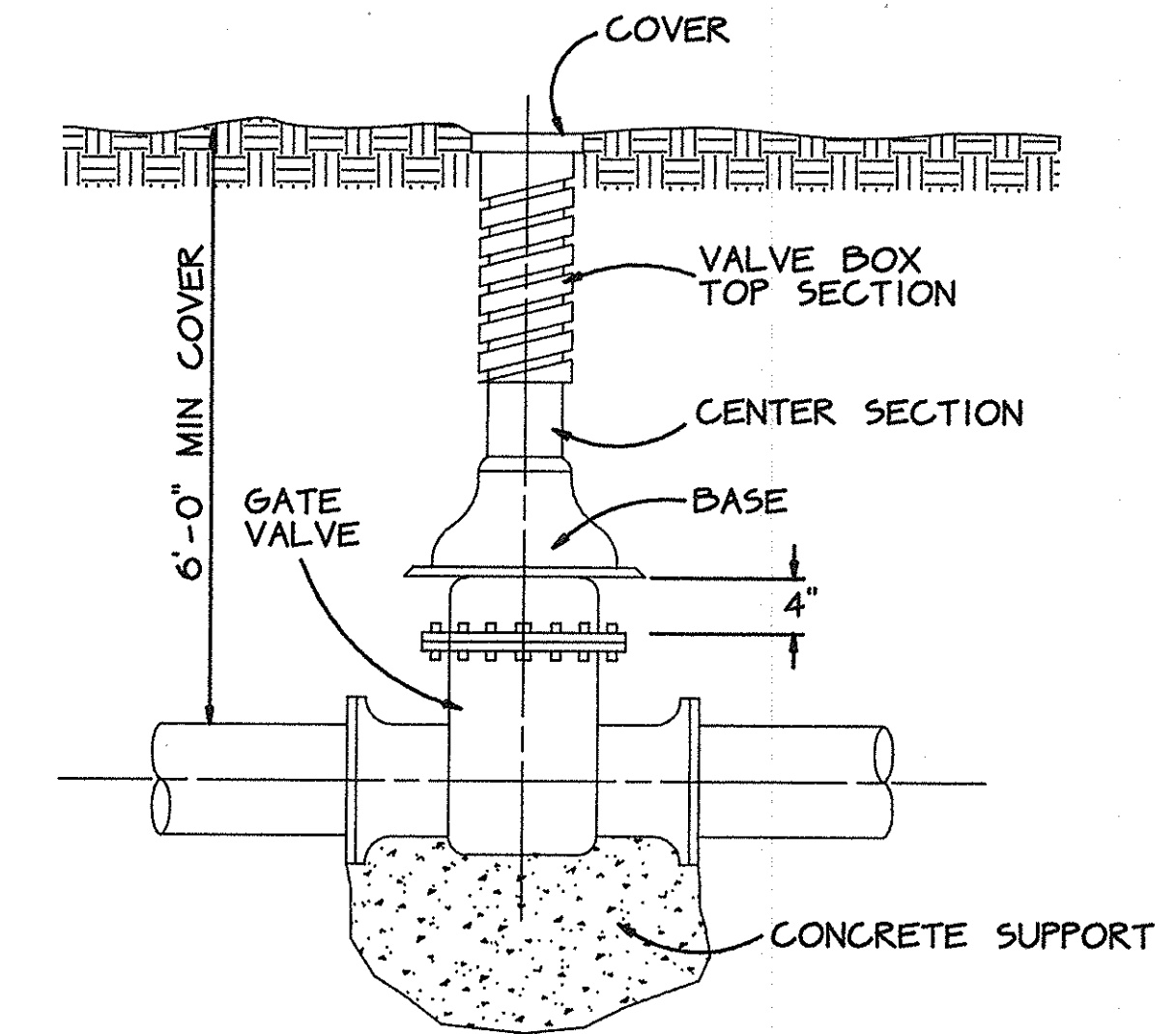


PIPE BEDDING DETAIL
(CLASS B)

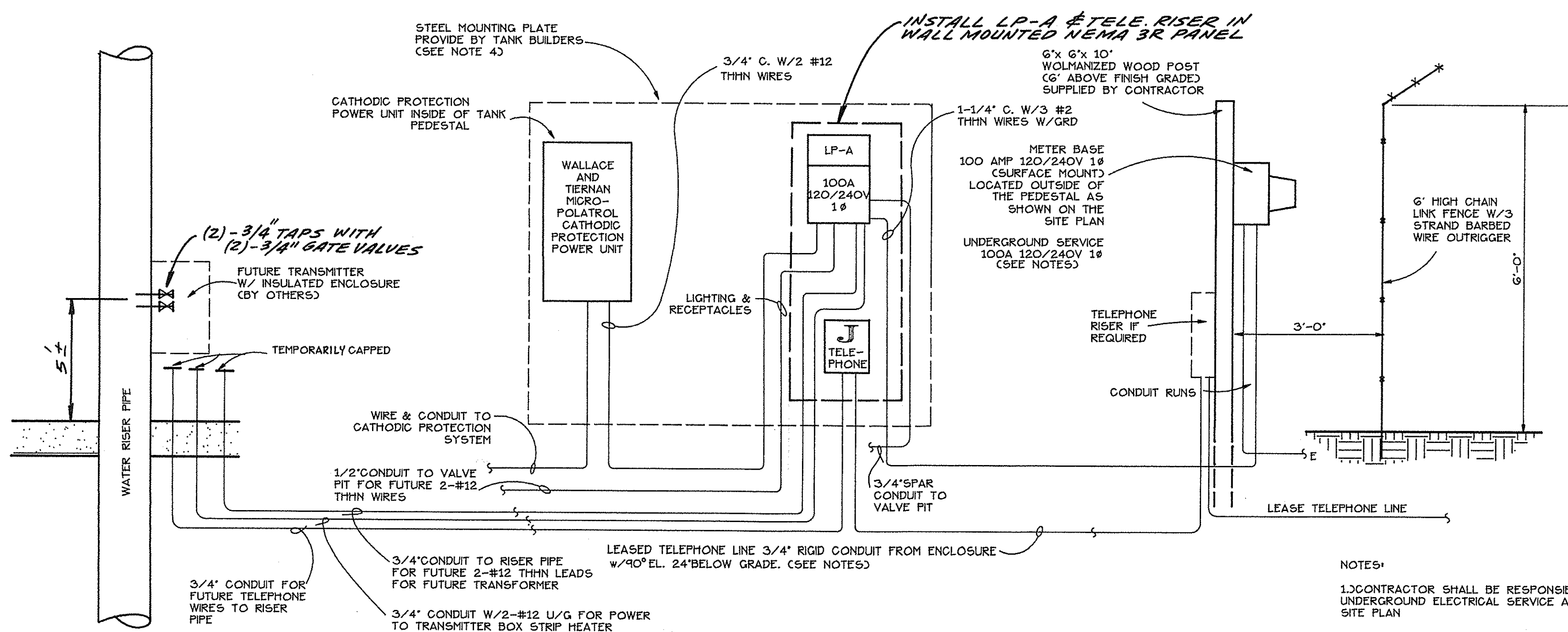


TYPICAL BEND
NO SCALE

DEGREE OF BEND IN ELBOW	PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS
90°	4"	1'-9" x 1'-4" = 2.3 SQ.FT.
90°	6"	2'-3" x 2'-0" = 4.5 SQ.FT.
90°	8"	2'-8" x 2'-8" = 7.1 SQ.FT.
90°	10"	3'-0" x 3'-0" = 9.0 SQ.FT.
90°	12"	3'-8" x 3'-8" = 13.5 SQ.FT.
90°	16"	5'-0" x 5'-0" = 25 SQ.FT.
90°	20"	

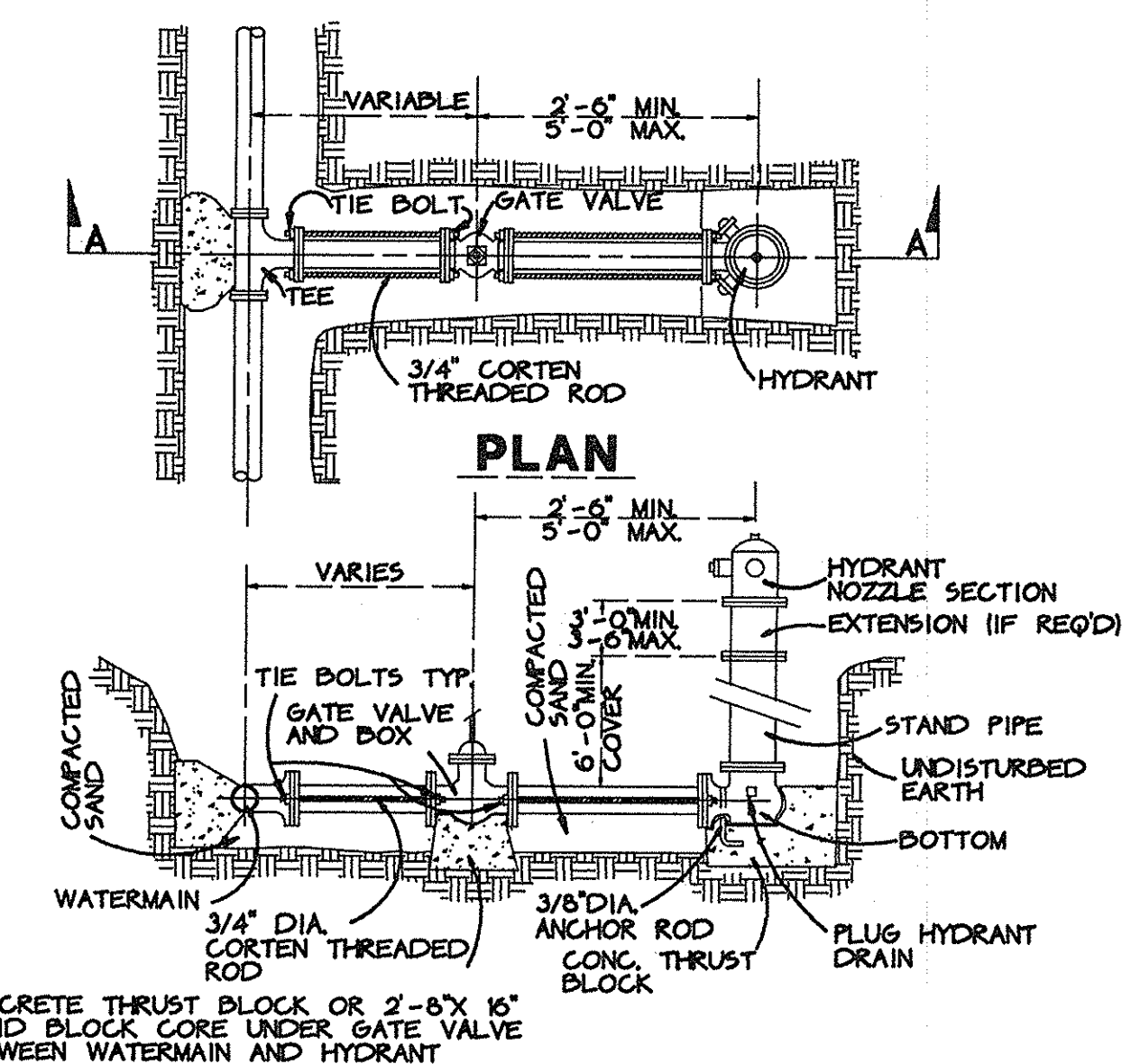


TYPICAL VALVE BOX INSTALLATION
NO SCALE



ELECTRICAL RISER DIAGRAM WITHIN TANK PEDESTAL
NO SCALE

- NOTES:
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING UNDERGROUND ELECTRICAL SERVICE AS SHOWN ON THE SITE PLAN.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING UNDERGROUND TELEPHONE LINE AS SHOWN ON THE SITE PLAN.
 - INTERIOR LIGHTING SHALL PROVIDE FOR ONE LIGHT DIRECTLY OVER THEIR ELECTRIC AND CATHODIC PANEL.
 - PROVIDE ADEQUATE MOUNTING PLATE INSIDE TANK PEDESTAL TO MOUNT CATHODIC PROTECTION UNIT, LIGHTING PANEL LP-A AND TELEPHONE JUNCTION BOX ON MOUNTING PLATE. (IN BR ENCLOSURE)

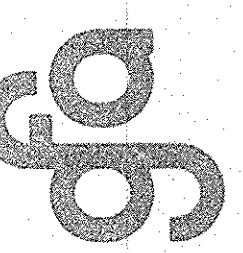


PROFILE SECTION A-A
HYDRANT ASSEMBLY DETAIL
NO SCALE

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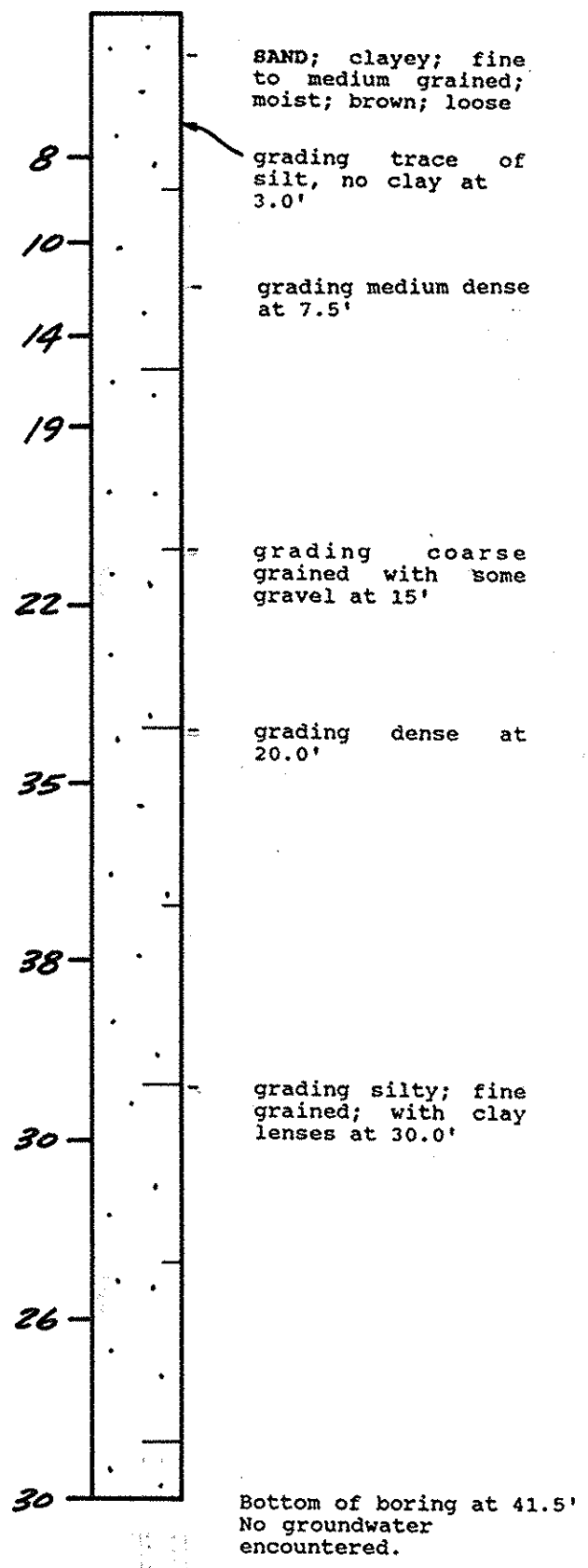
TANK ELECTRICAL DETAILS
ELEVATED WATER STORAGE TANK
EAST BAY TOWNSHIP
GRAND TRAVERSE COUNTY, MICHIGAN

Feb 19, 1991

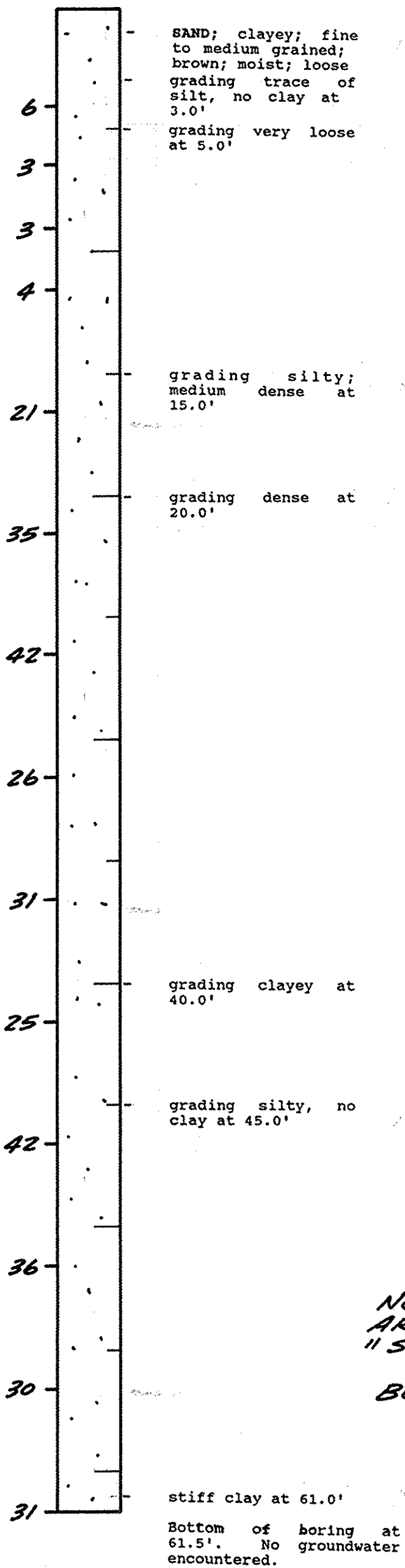
REV.
APR. JHE 2-19-91
CKD. JHE
DRN. DLM

900343-A

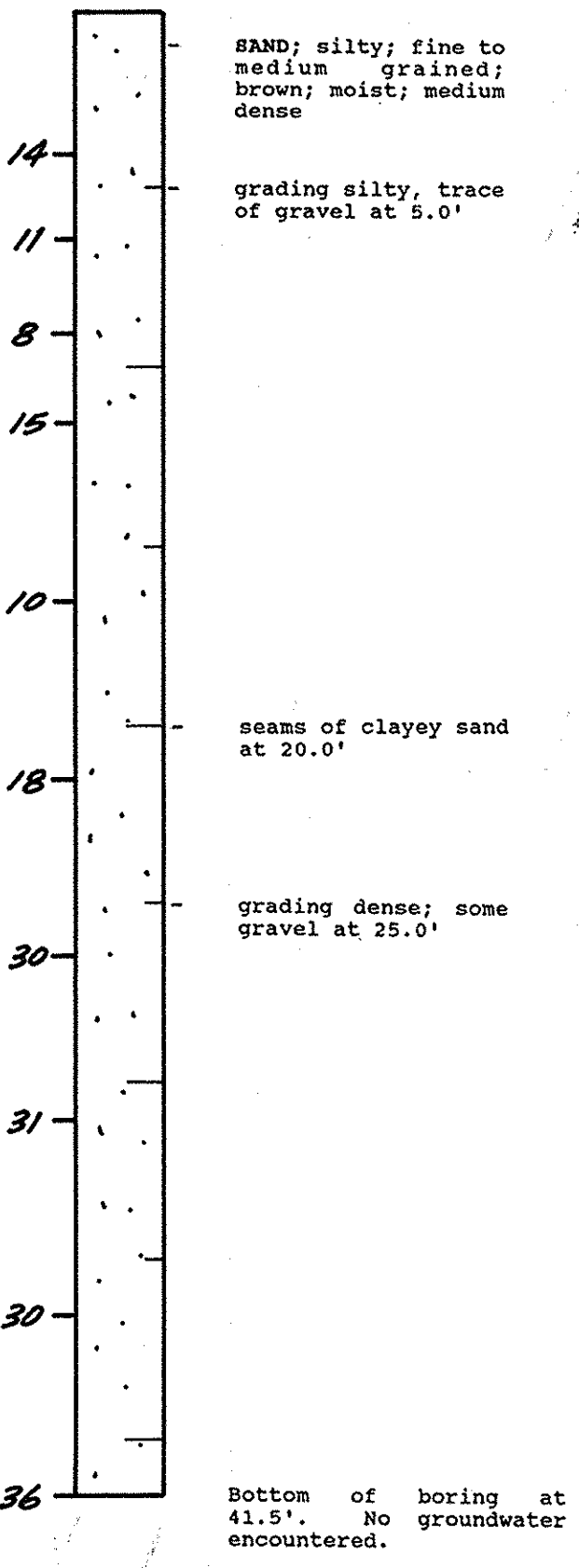
B-1
ELEV. 99.3



B-2
ELEV. 98.5

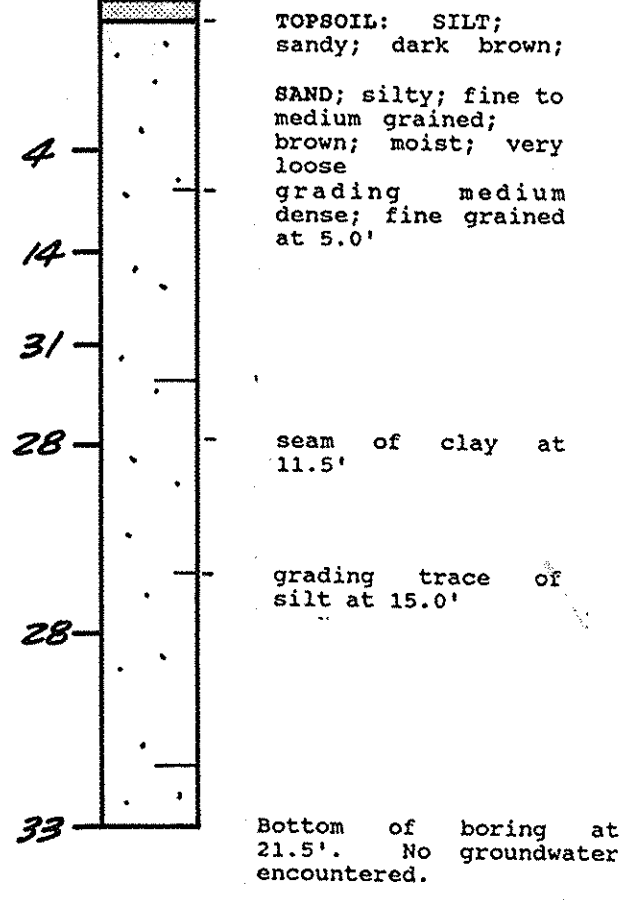


B-3
ELEV. 98.5

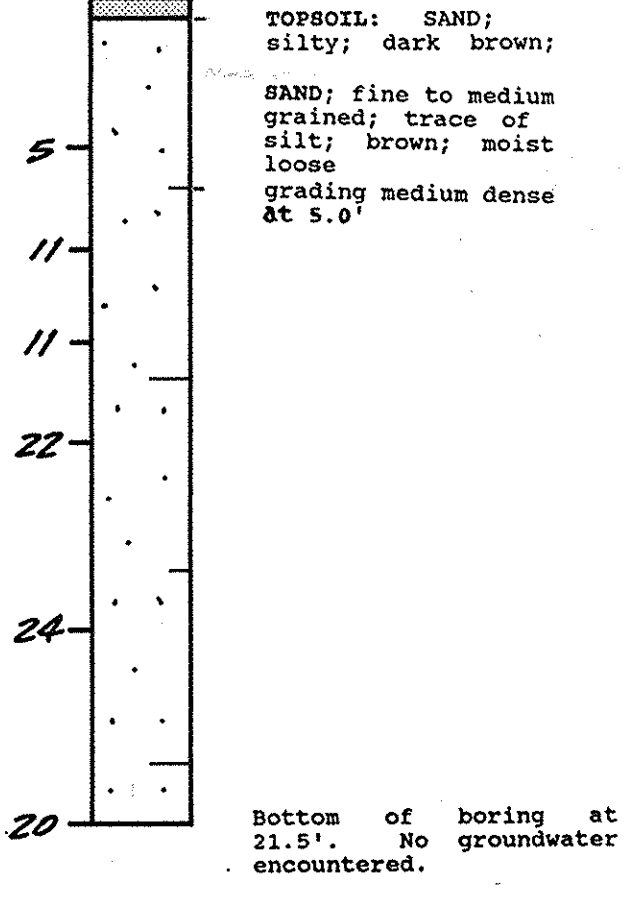


NOTE: ELEV'S SHOWN ON BORINGS ARE ON ASSUMED DATUM.
"SEE THIS SH. FOR B.M."
BORING SCALE: 1" = 5' VERT.

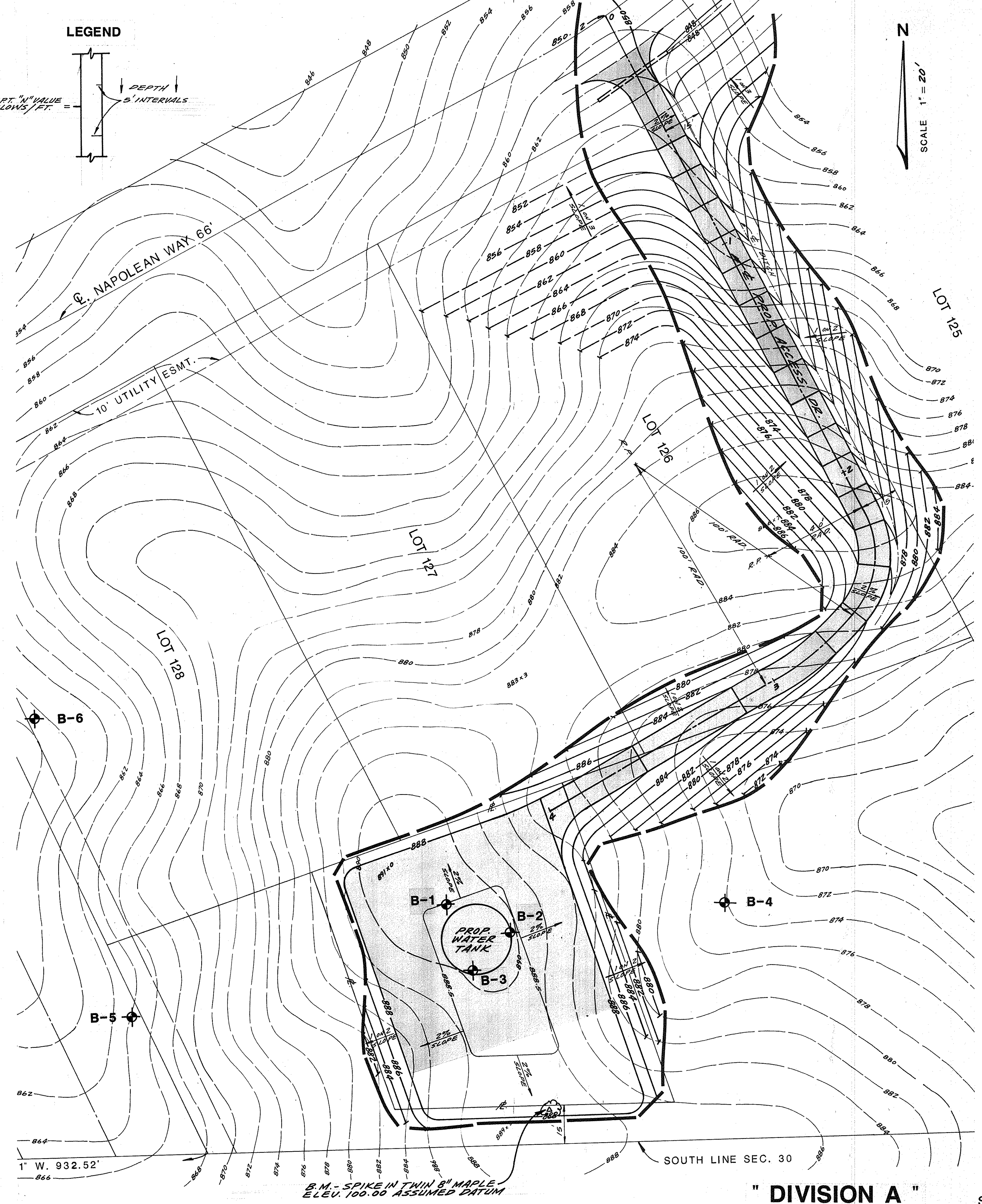
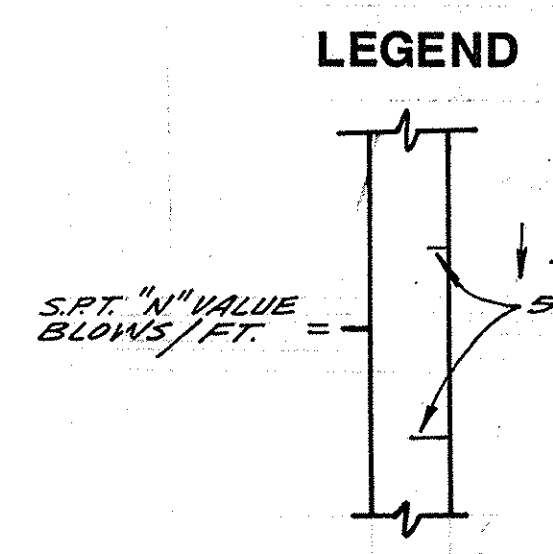
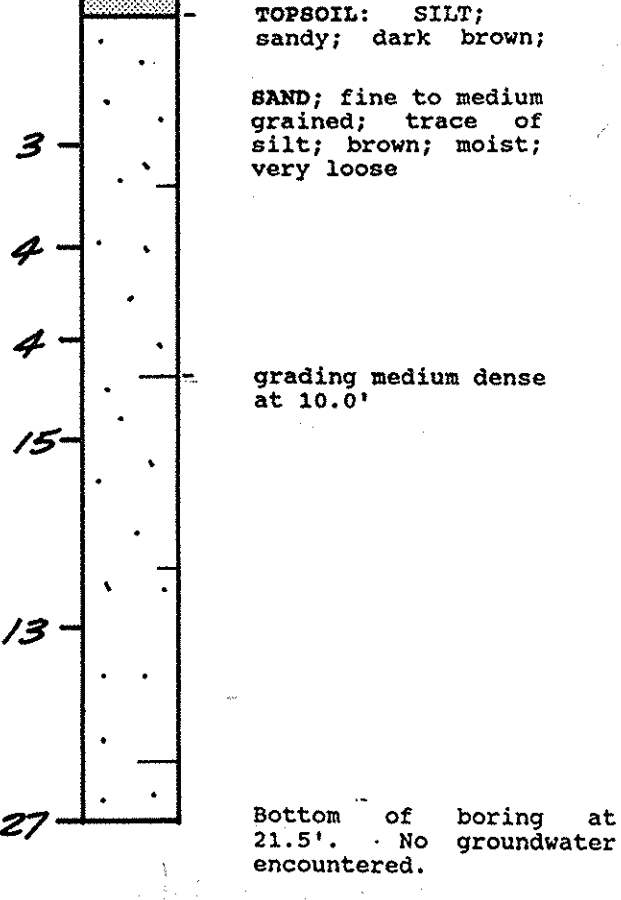
B-4
ELEV. 84.0



B-5
ELEV. 72.0



B-6
ELEV. 63.4



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GEOTECHNICAL SITE PLAN & SOIL BORING LOGS
ELEVATED WATER STORAGE TANK
EAST BAY TOWNSHIP
GRAND TRAVERSE COUNTY, MICHIGAN

REV. APR. JHE 2-19-91
CKD J.C. 2-18-91
DNW P.L.N. 2-18-91
900343-A
SHEET 5 OF 5

" DIVISION A "

1" W. 932.52' SOUTH LINE SEC. 30

B.M. - SPIKE IN TWIN 8" MARLE ELEV. 100.00 ASSUMED DATUM