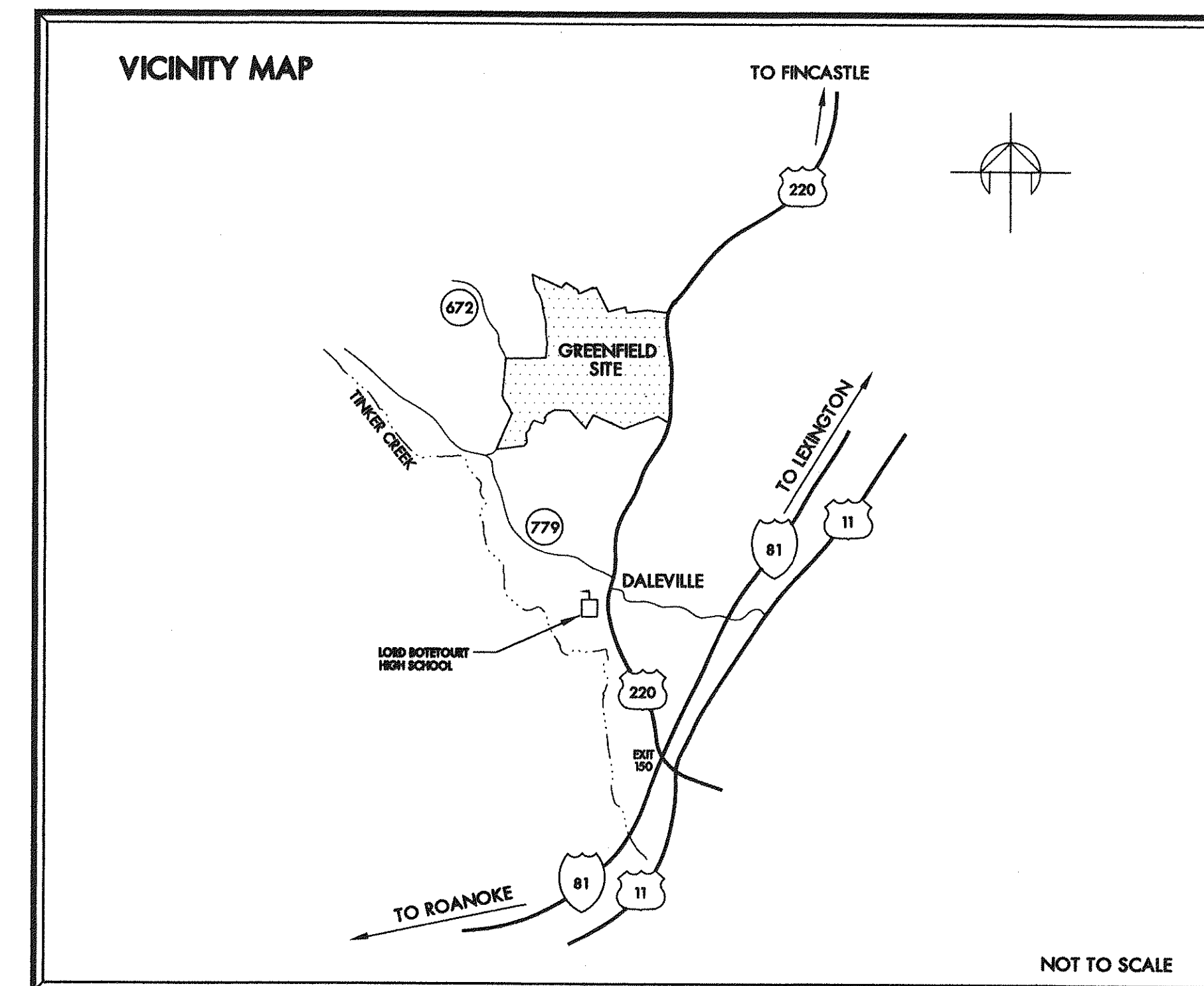
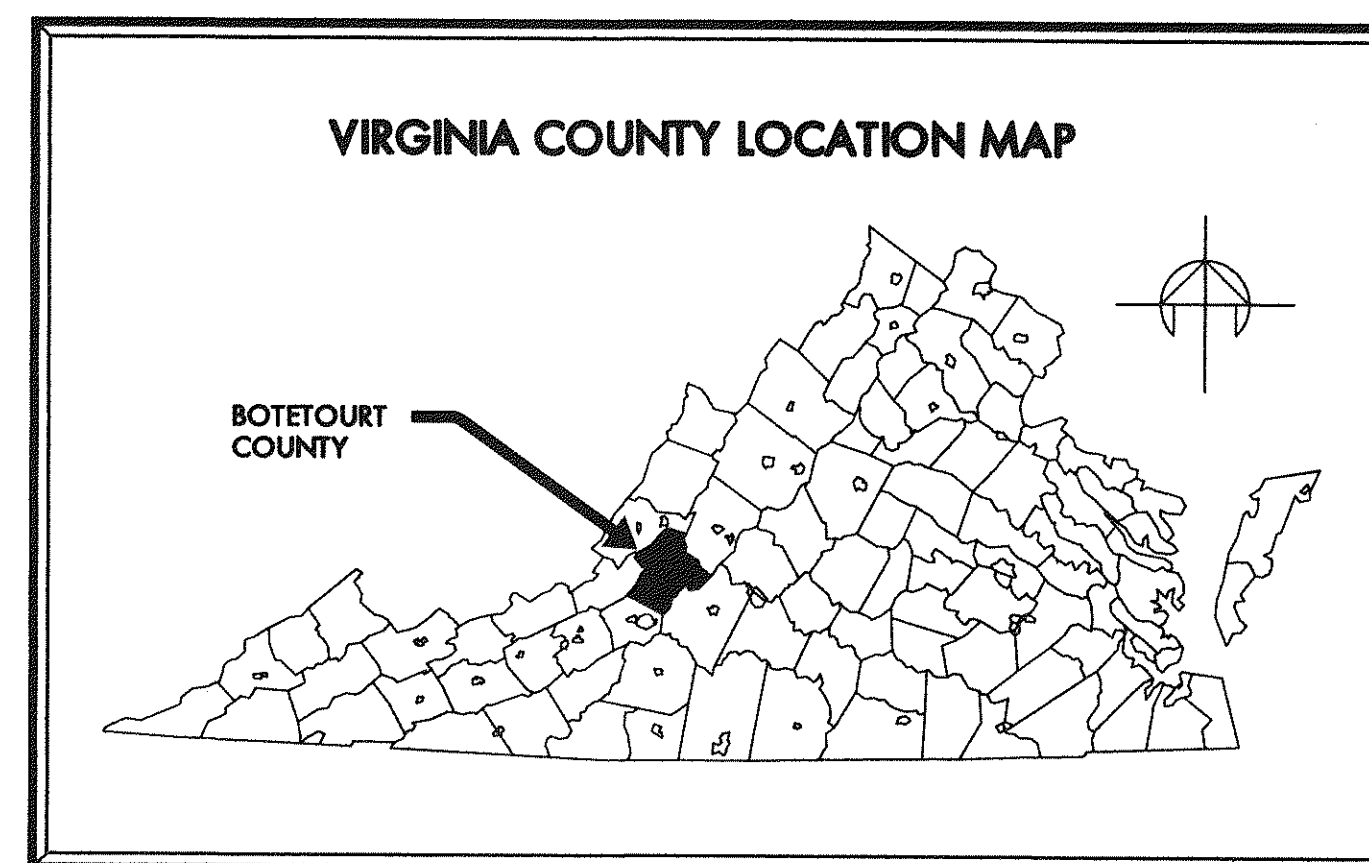


# GREENFIELD RAW WATER LINE #3

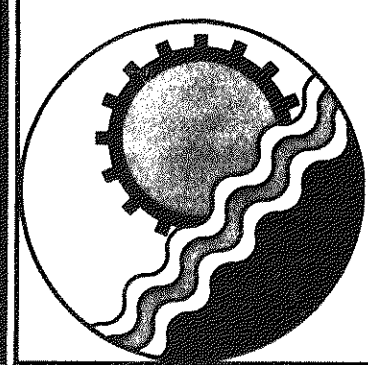
## BOTETOURT COUNTY DEPARTMENT OF PUBLIC FACILITIES AND PROGRAMS

BOTETOURT COUNTY, VIRGINIA  
JUNE 22, 1998

PROJECT NAME: GREENFIELD RAW WATER LINE #3  
DATE: FEB 18, 2000  
TYPE: WATER  
LOCATION: GREENFIELD  
TOTAL # SHEETS: 10  
AVE. FIRM: ECL  
# OF SETS: 1



AS-BUILT  
FEBRUARY 18, 2000

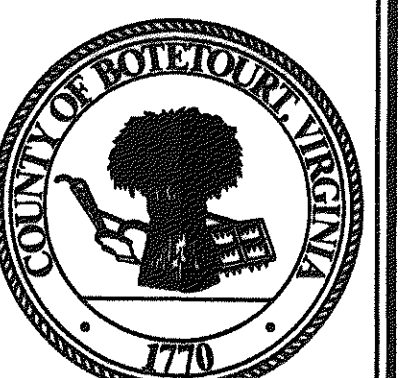


**ENGINEERING CONCEPTS, INC.**

20 S. ROANOKE ST., PO BOX 619  
FINCASTLE, VIRGINIA 24090  
540.473.1253 FAX: 540.473.1254

**OWNER: BOTETOURT COUNTY**

DEPARTMENT OF PUBLIC FACILITIES AND PROGRAMS  
1 WEST MAIN ST., BOX 4  
FINCASTLE, VIRGINIA 24090  
540.473.8316







**GENERAL NOTES**

1. INFORMATION ON THESE DRAWINGS CONCERNING THE LOCATION AND ELEVATION OF EXISTING UTILITIES, STRUCTURES, AND OBSTRUCTIONS HAS BEEN PREPARED FROM THE MOST RELIABLE INFORMATION AVAILABLE TO THE ENGINEER. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION ARE NOT GUARANTEED, HOWEVER, NOR DOES THE ENGINEER ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR DEVIATIONS OF THE EXISTING UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS FROM THE LOCATIONS AND ELEVATIONS INDICATED OR FOR THE EXISTENCE OF UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS NOT INDICATED ON THESE DRAWINGS.
2. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO ELIMINATE ANY POSSIBILITY OF ANY DISTURBANCE OF OR DAMAGE TO PUBLIC AND PRIVATELY-OWNED UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTION RESULTING FROM HIS ACTIVITIES. TO THIS END, CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, TAKE ALL MEASURES NECESSARY TO PROVIDE, AND SHALL BE SOLELY RESPONSIBLE FOR, TEMPORARY SUPPORT AND SHORING, ADEQUATE PROTECTION, AND MAINTENANCE OF CONTINUOUS OPERATION OF ALL UNDERGROUND AND ABOVEGROUND WATER, SEWER, AND GAS MAINS AND SERVICE LINES; PETROLEUM LINES; TELEPHONE, TELEVISION, AND ELECTRICAL LINES, CABLES, AND POLES; EQUIPMENT CABLES AND CONDUITS; STORM SEWERS; BUILDINGS; TANKS; FENCES; AND ALL OTHER UTILITIES, STRUCTURES, FACILITIES, AND OBSTRUCTIONS, WHETHER OR NOT INDICATED ON THESE DRAWINGS. ALL DISTURBED OR DAMAGED UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS SHALL BE IMMEDIATELY REPAIRED, REPLACED, OR COMPENSATED FOR BY THE CONTRACTOR TO OWNER'S SATISFACTION, AND AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR THE CHARACTER AND ACTUAL LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONTACT THE OWNERS/OPERATORS OF ALL UTILITIES AND ARRANGE FOR THE VERIFICATION AND MARKING OF UTILITY LOCATIONS BY SAID OWNERS/OPERATORS. THE CONTRACTOR SHALL ASSIST THE UTILITY OWNERS/OPERATORS BY EVERY MEANS POSSIBLE TO DETERMINE THE LOCATION OF UTILITIES. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR ALL DISTURBANCE OF ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTOR'S FAILURE TO ARRANGE FOR THE LOCATION OF UTILITIES BY THE OWNERS/OPERATORS OF THE UTILITIES. CONTACT MISS UTILITY (800) 552-7001.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL NEW ABOVE AND BELOW GRADE PIPING, STRUCTURES, ELECTRICAL EQUIPMENT AND CONDUIT, AND OTHER FACILITIES AT THE PROJECT SITE, FROM ALL DISTURBANCE OR DAMAGE WHICH MAY RESULT FROM THE PERFORMANCE OF WORK ON THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REPAIR OR REPLACEMENT OF ALL NEW ABOVE AND BELOW GRADE PIPING, STRUCTURES, ELECTRICAL EQUIPMENT AND CONDUIT, AND OTHER FACILITIES AT THE PROJECT SITE WHICH MAY BE DISTURBED OR DAMAGED AS A RESULT OF THE PERFORMANCE OF WORK ON THIS PROJECT.
5. SITE CONDITIONS MAY NECESSITATE SLIGHT DEVIATIONS IN ALIGNMENT, GRADE, AND/OR LOCATION OF NEW FACILITIES FROM THE ALIGNMENT, GRADE, AND/OR LOCATION INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL CONSTRUCT THE NEW FACILITIES TO SUCH DEVIATIONS AS DIRECTED BY THE ENGINEER WITHOUT INCREASE IN THE CONTRACT PRICE OR FINE.
6. THE CONTRACTOR SHALL MAINTAIN A CLEAR FLOW PATH TO AND THROUGH ALL SURFACE WATER AND STORM WATER DRAINAGE FACILITIES AT ALL TIMES.
7. THE CONTRACTOR SHALL GRADE, SEED, AND/OR SOD, AND MULCH THE ENTIRE AREA(S) DISTURBED BY CONSTRUCTION ACTIVITIES.
8. CONSTRUCTION AND START-UP OF ALL WORK SHALL NOT INTERFERE WITH THE OPERATION OF WATER AND SEWERAGE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH THE OWNERS AS REQUIRED.
9. MINIMUM COVER ON ALL PIPE SHALL BE 3 FEET, UNLESS OTHERWISE SPECIFICALLY INDICATED ON THESE DRAWINGS. ALL PVC PIPE SHALL BE INSTALLED WITH COATED TRACER WIRE TO FACILITATE FUTURE LOCATION OF PIPE AFTER CONSTRUCTION IS COMPLETED.
10. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE JOINT DEFLECTION OR BARREL BEND RADIUS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION ANGLE OR BEND RADIUS.
11. ALL PIPING SHALL BE PROPERLY SUPPORTED. ALL PIPING WHICH WILL BE PRESSURIZED DURING OPERATION SHALL BE PROPERLY RESTRAINED.
12. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE CURRENT BOCA AND/OR STATE AND LOCAL BUILDING CODES.
13. CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION AREA IN A MANNER ACCEPTABLE TO OWNER AND SHALL BE RESPONSIBLE FOR REMEDIATING ANY DAMAGES RESULTING FROM FAILURE TO DO SO.
14. CONTRACTOR SHALL MAINTAIN LIMITS OF CONSTRUCTION WITHIN THE BOUNDARIES OF THE PROPERTY AS INDICATED ON THE SITE PLAN.

**E & S NOTES**

ALL WORK SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW AND REGULATIONS. SPECIFICALLY MINIMUM STANDARD 16:

- UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
1. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
  2. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
  3. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
  4. RESTABILIZATION SHALL BE ACCOMPLISHED WITH THESE REGULATIONS.
  5. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

**GAS LINE NOTE**

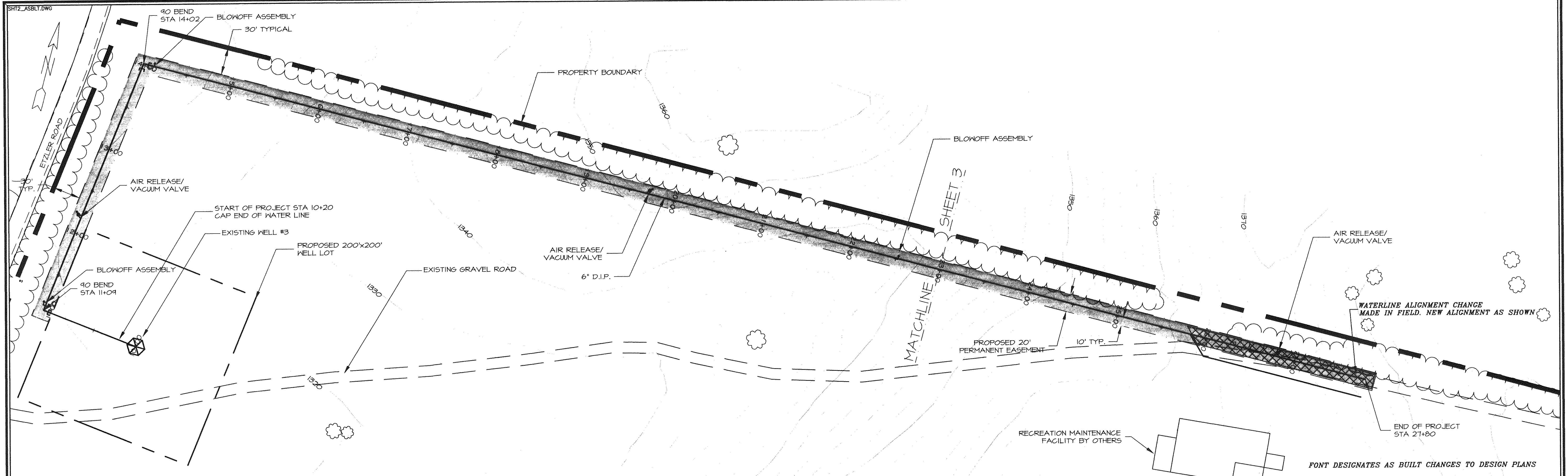
GAS LINE EASEMENT IS APPROXIMATE AND SHOULD BE FIELD VERIFIED.

ANY BLASTING OR EXCAVATION NEAR THE GAS LINE MUST BE COORDINATED WITH ROANOKE GAS. CONTACT ROANOKE GAS 24 HOURS PRIOR TO ANY SUCH ACTIVITY.

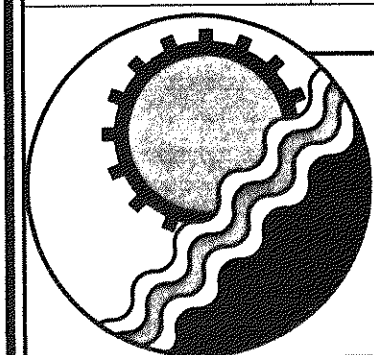
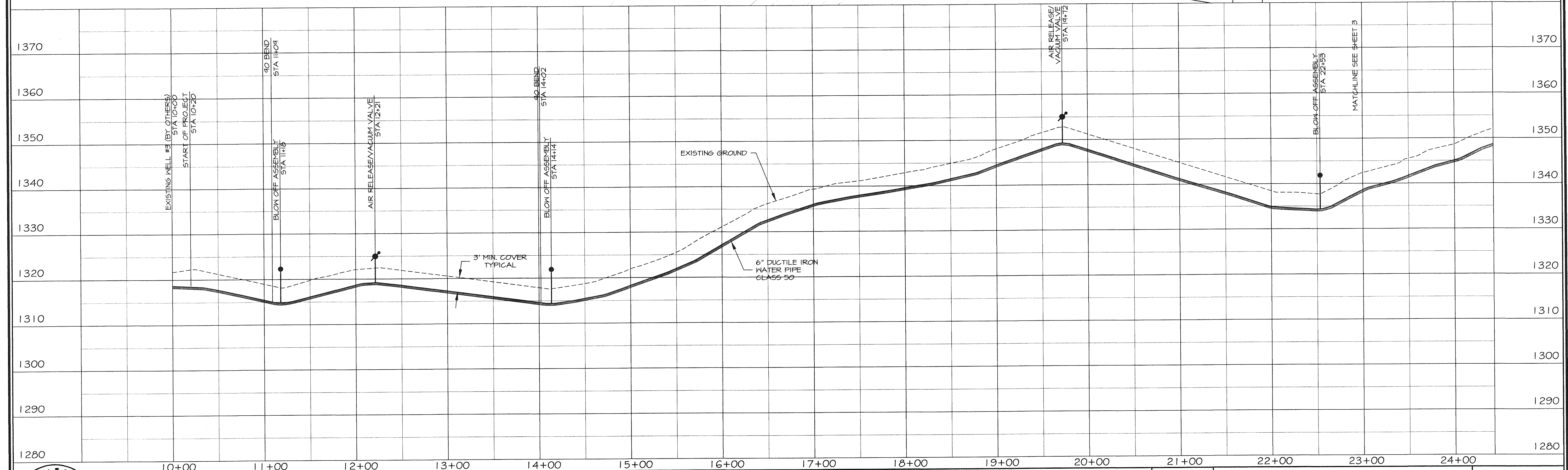
**KEY CONTACTS**

1. ENGINEERING CONCEPTS, JIM TALIAN, 540.473.1253
2. ENGINEERING CONCEPTS, BOBBY WAMPLER, 540.473.1253
3. BOTETOURT COUNTY, KEVIN SHEARER, 540.473.8316
4. BOTETOURT COUNTY, JAY KNIGHT, 540.473.8316
5. ROANOKE GAS, DAVID SPANGLER, 540.983.3806
6. ROANOKE GAS, WILLIAM BELL, 540.983.3806





FONT DESIGNATES AS BUILT CHANGES TO DESIGN PLANS



**ENGINEERING CONCEPTS, INC.**

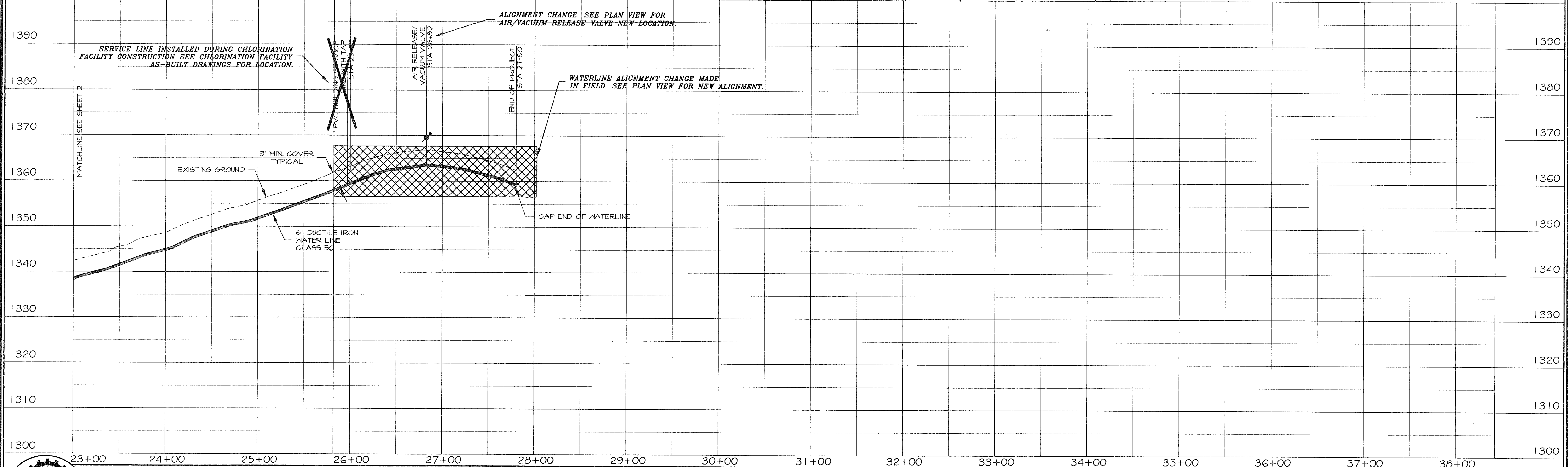
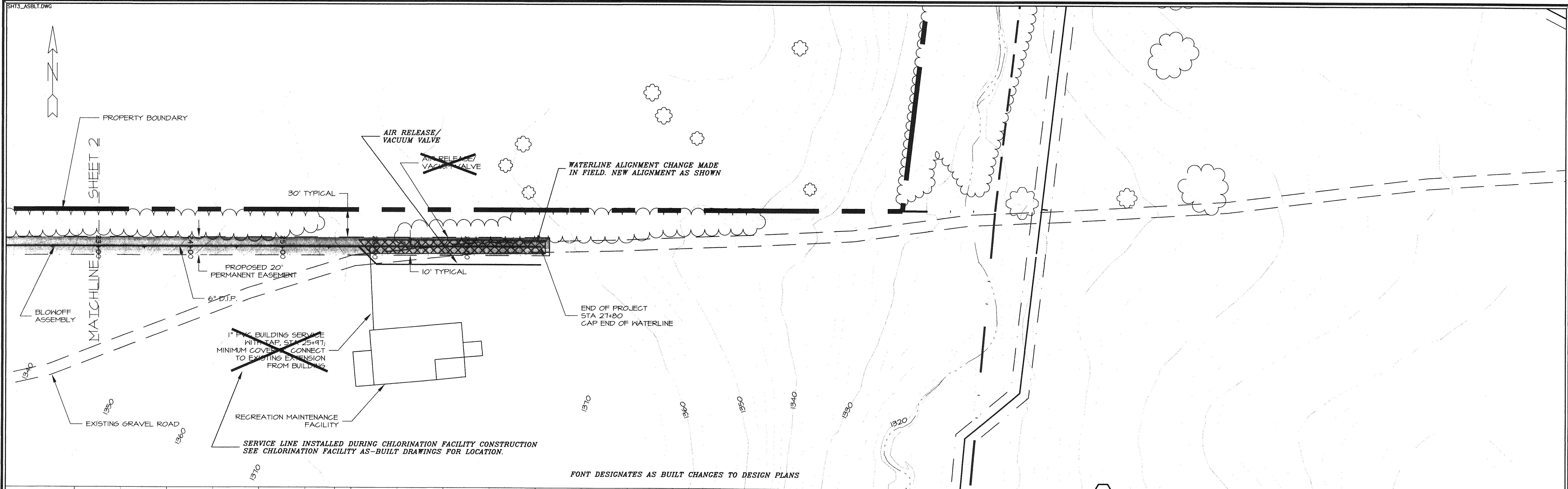
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AS-BUILT

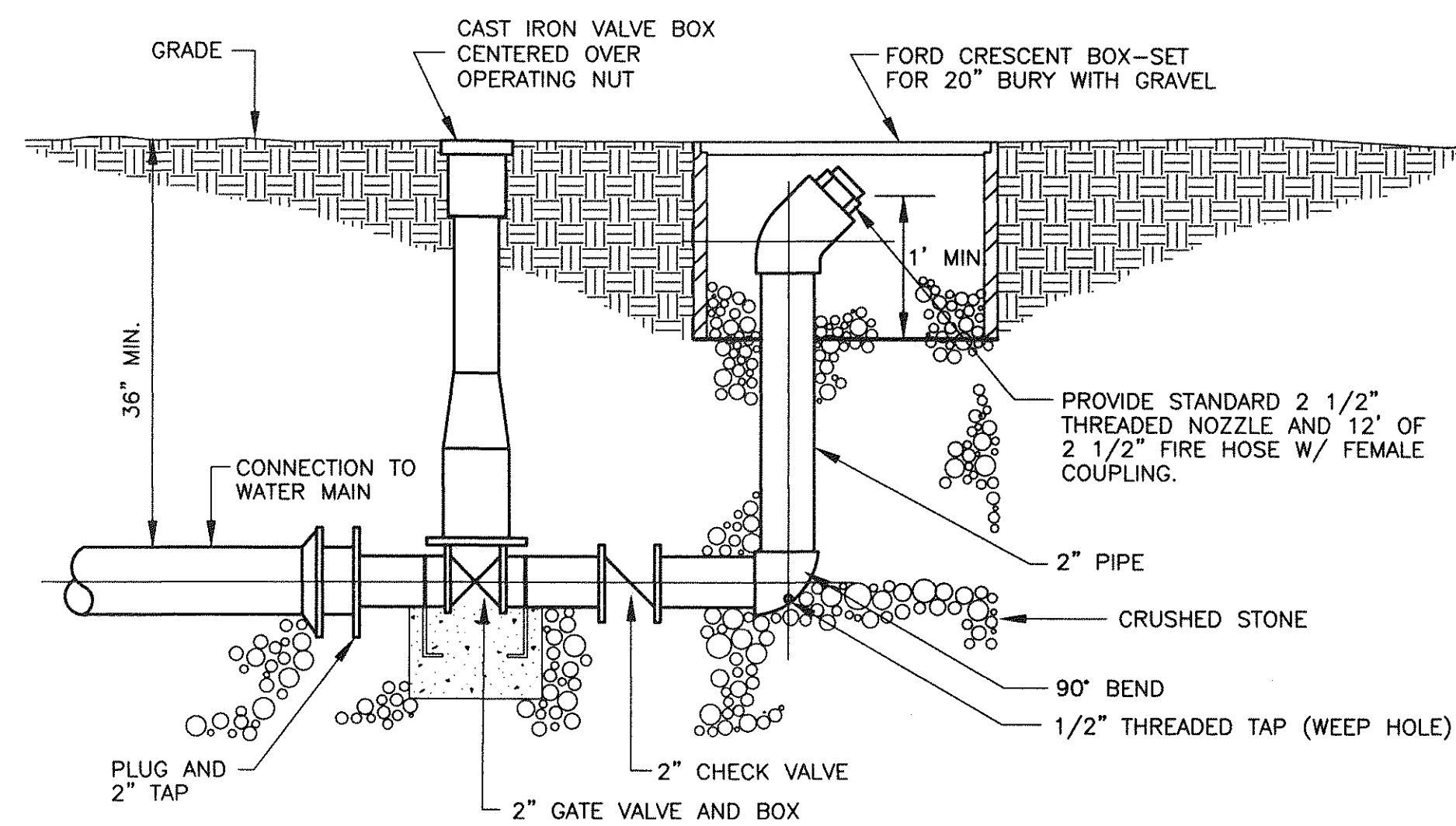
Drawn RHW  
Designed RHW  
Checked WPJ  
Approved JST

**GREENFIELD  
RAW WATER LINE #3**  
**PLAN AND PROFILE**  
**STA 10+00 - STA 24+00**

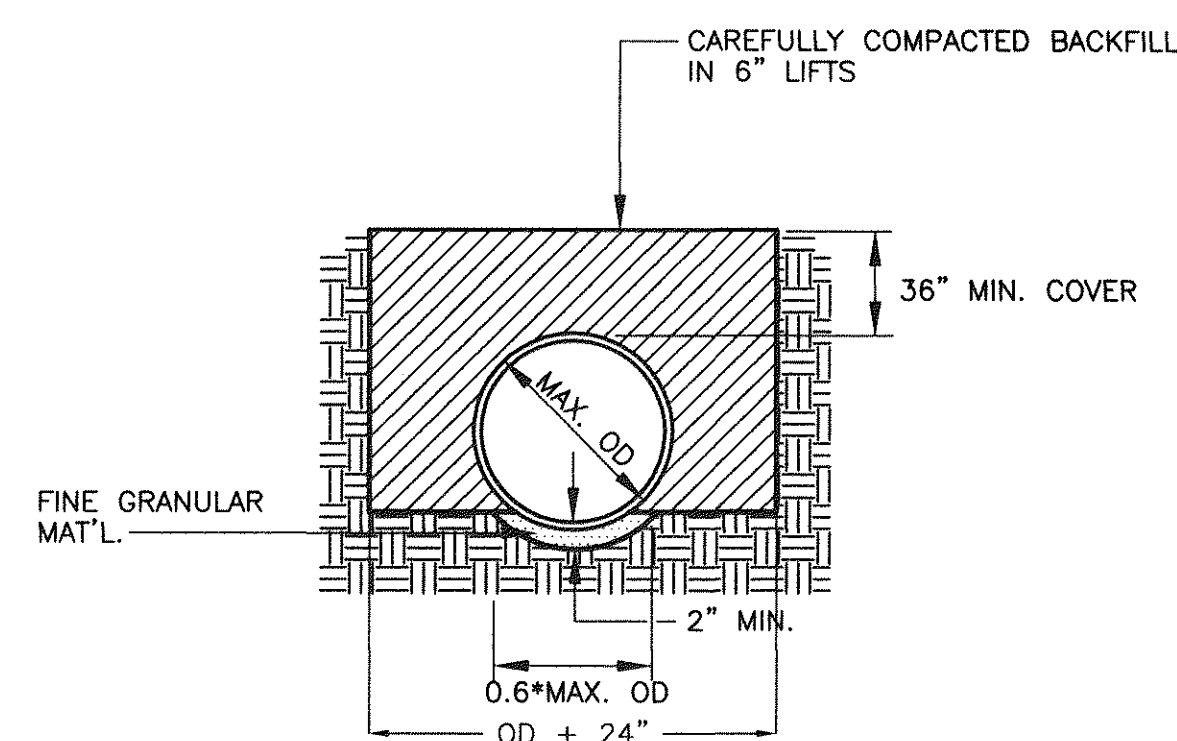
H: 1"=50' V: 1"=10'  
JUNE 18, 1998  
PROJECT: 97075  
**2 of 4**







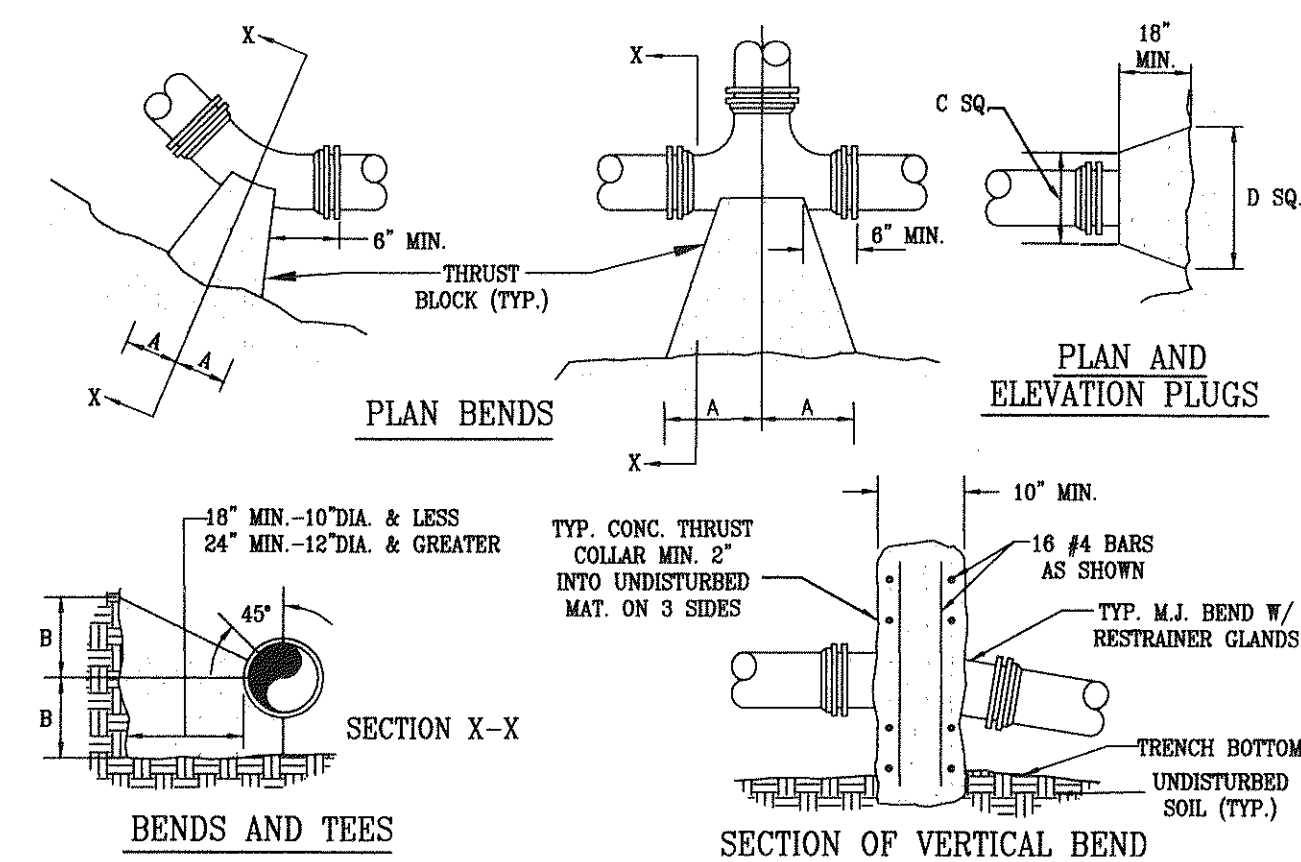
BLOW-OFF ASSEMBLY



SHAPED BOTTOM  
W/ TAMPED BACKFILL

- NOTES:
1. WHERE THE TRENCH BOTTOM IS IN ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH SUITABLE BEDDING MATERIAL.
  2. WHERE PIPE FOUNDATIONS ARE YIELDING, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" SUITABLE BEDDING MATERIAL.
  3. SHAPE TRENCH BOTTOM FOR PIPE BARREL, JOINTS, AND FITTINGS TO PROVIDE CONTINUOUS SUPPORT AND NO POINT LOADING OF PIPE, JOINTS, AND FITTINGS.
  4. FOR PIPE LESS THAN 12" DIA., TRENCH WIDTH MAY BE 36"

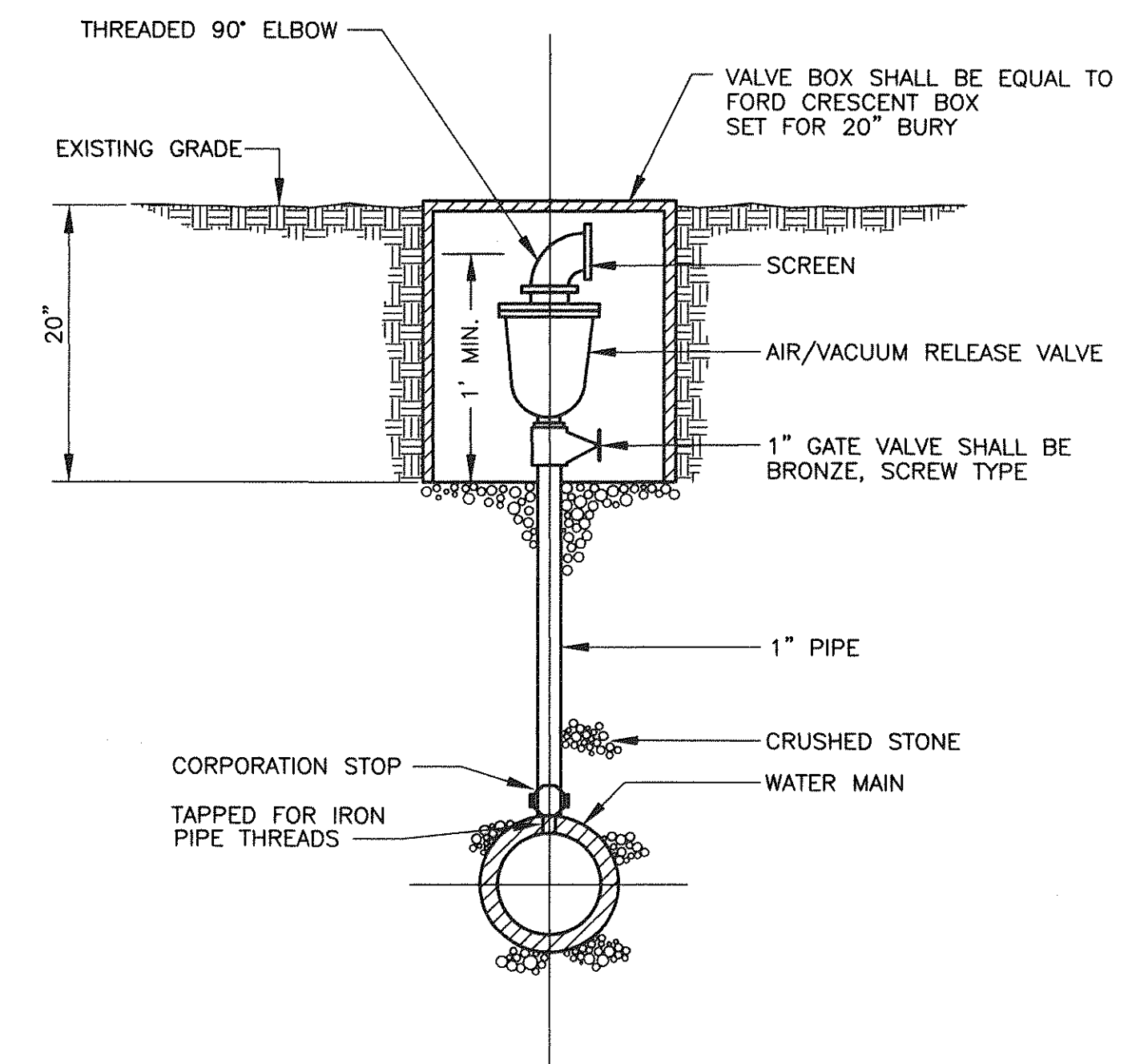
BEDDING DETAIL



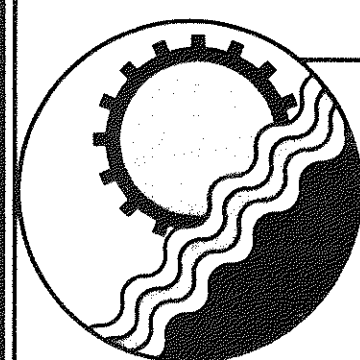
- NOTES:
1. FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
  2. FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
  3. GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
  4. ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
  5. THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER.
- PRESSURE = 200 psi  
BEARING = 2000 psf  
FACTOR OF SAFETY = 1.5

PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	11"	9"	10"	6"
6"	18"	12"	8"	10"	8"	8"	8"	8"	11"	10"	12"	18"
8"	18"	13"	10"	10"	8"	8"	8"	8"	11"	12"	12"	24"
10"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
16"	26"	20"	16"	18"	11"	13"	11"	13"	18"	20"	20"	36"
24"	82"	42"	62"	30"	44"	22"	22"	16"	82"	42"	82"	42"
30"	185"	42"	100"	42"	52"	42"	46"	30"	185"	42"	185"	42"

THRUST BLOCK DETAILS



AUTOMATIC AIR/VACUUM RELEASE VALVE ASSEMBLY



ENGINEERING CONCEPTS, INC.

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FINCASTLE, VIRGINIA 24090  
540.473.1253 FAX: 540.473.1254

AS-BUILT

Drawn RHW  
Designed RHW  
Checked WPJ  
Approved JST

GREENFIELD  
RAW WATER LINE #3  
WATER SYSTEM  
DETAILS

SCALE: NONE

JUNE 22, 1998

PROJECT: 97075

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