



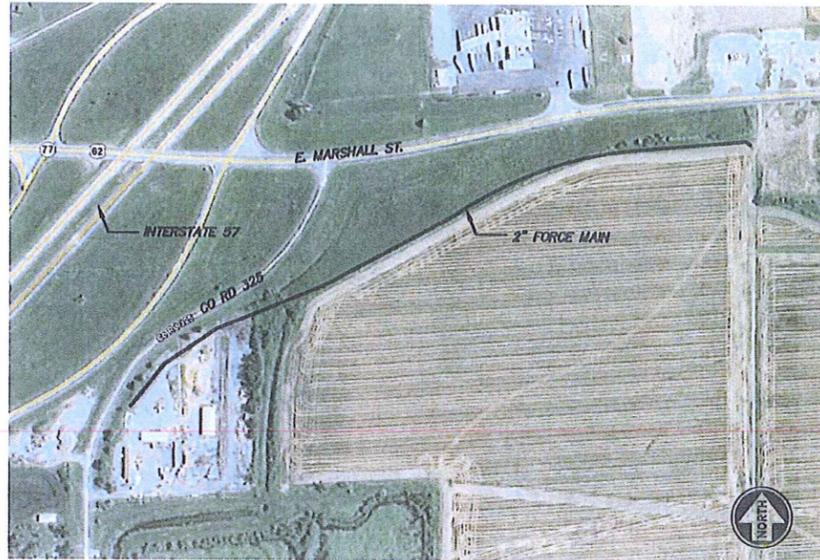
DIG -- DRILL -- BLAST
 1-800-344-7483
 (TOLL FREE)
 MISSOURI ONE CALL SYSTEM, INC.

CHARLESTON MoDOT MAINTENANCE FACILITY SEWER EXTENSION

CHARLESTON, MISSISSIPPI COUNTY, MISSOURI



KEY MAP
SHOWING LOCATION OF COUNTY



PROJECT LOCATION MAP
NOT TO SCALE

UTILITIES	
SEWER --	CITY OF CHARLESTON 204 NORTH MAIN ST. CHARLESTON, MO 63834 (573) 573-683-6686
ELECTRIC --	SEMO ELECTRIC CO-OP 1505 SOUTH MAIN ST. SIKESTON, MO (573) 471-5821
WATER --	CHARLESTON WATER TREATMENT 1002 SOUTH CHESTNUT ST. CHARLESTON, MO 63834 (573) 683-2456
GAS --	SEMO GAS INC. 40 NORTH SPRIGG ST. CAPE GIRARDEAU, MO (573) 339-0313
TELEPHONE --	AT&T 221 15TH ST. CAIRO, IL (618) 734-9960

INDEX OF SHEETS	
1	COVER SHEET
2	LIFT STATION SITE PLAN
3	PLAN & PROFILE, STA. 0+00 TO STA.13+50
4	PLAN & PROFILE, STA. 13+50 TO STA. 27+50
5	PUMP STATION DETAILS
6	ELECTRICAL DETAILS
7	MISC DETAILS
8	MISC DETAILS
9	EROSION CONTROL DETAILS

NOTES TO CONTRACTOR:

- UNDERGROUND UTILITIES HAVE BEEN SHOWN FROM APPROXIMATE LOCATIONS PROVIDED BY UTILITY COMPANIES, THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. VERIFICATION OF THE LOCATIONS OF UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, WILL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR.
- CONTRACTOR SHALL MAKE EVERY EFFORT TO ASSURE MINIMUM CLEARANCE BETWEEN SEWER LINES AND WATER LINES (10' HORIZONTAL, 18" VERTICAL AT CROSSINGS).
- ALL ROADS, DRIVEWAYS, CULVERTS, SIDEWALKS, FENCES, AND LANDSCAPING DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATE OF MISSOURI MINIMUM STANDARDS.
- ALL EXCAVATION WITH THE STREET RIGHT-OF-WAY SHALL BE BACKFILLED WITH GRANULAR MATERIAL OR COMPACTED EARTH FILL.
- ALL SEWER GREATER THAN 15 FEET IN DEPTH SHALL BE A MINIMUM OF SDR 26. ALL MANHOLES GREATER THAN 16 FEET IN DEPTH SHALL HAVE A DOUBLE STEEL REINFORCEMENT PER CITY OF CHARLESTON SPECIFICATIONS.
- ALL EROSION CONTROL DEVICES SHALL BE INSTALLED IN CONFORMITY WITH THE STATE OF MISSOURI MINIMUM STANDARDS.
- IT IS THE INTENT OF THESE PLANS TO COMPLY WITH THE REQUIREMENTS OF THE MISSOURI CLEAN WATER COMMISSION.
- SILT FENCE SHALL BE PLACED AS INDICATED ON THE PLANS

PROJECT SURVEY CONTROL
SURVEY BASE ON MoDOT VRS SYSTEM.



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 LAYOUT: COVER BY: PERRIGO DATE: 2/9/2011
 XREF DWG1: NONE XREF DWG2: NONE
 XREF DWG3: NONE XREF DWG4: NONE

NO.	DATE	REVISIONS	BY
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Designed By: *MLH*
 Drawn By: *SP*
 Checked By: *MLH*
 Issue Date: *2-11-11*

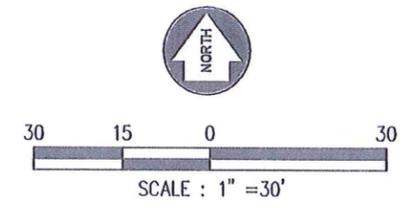
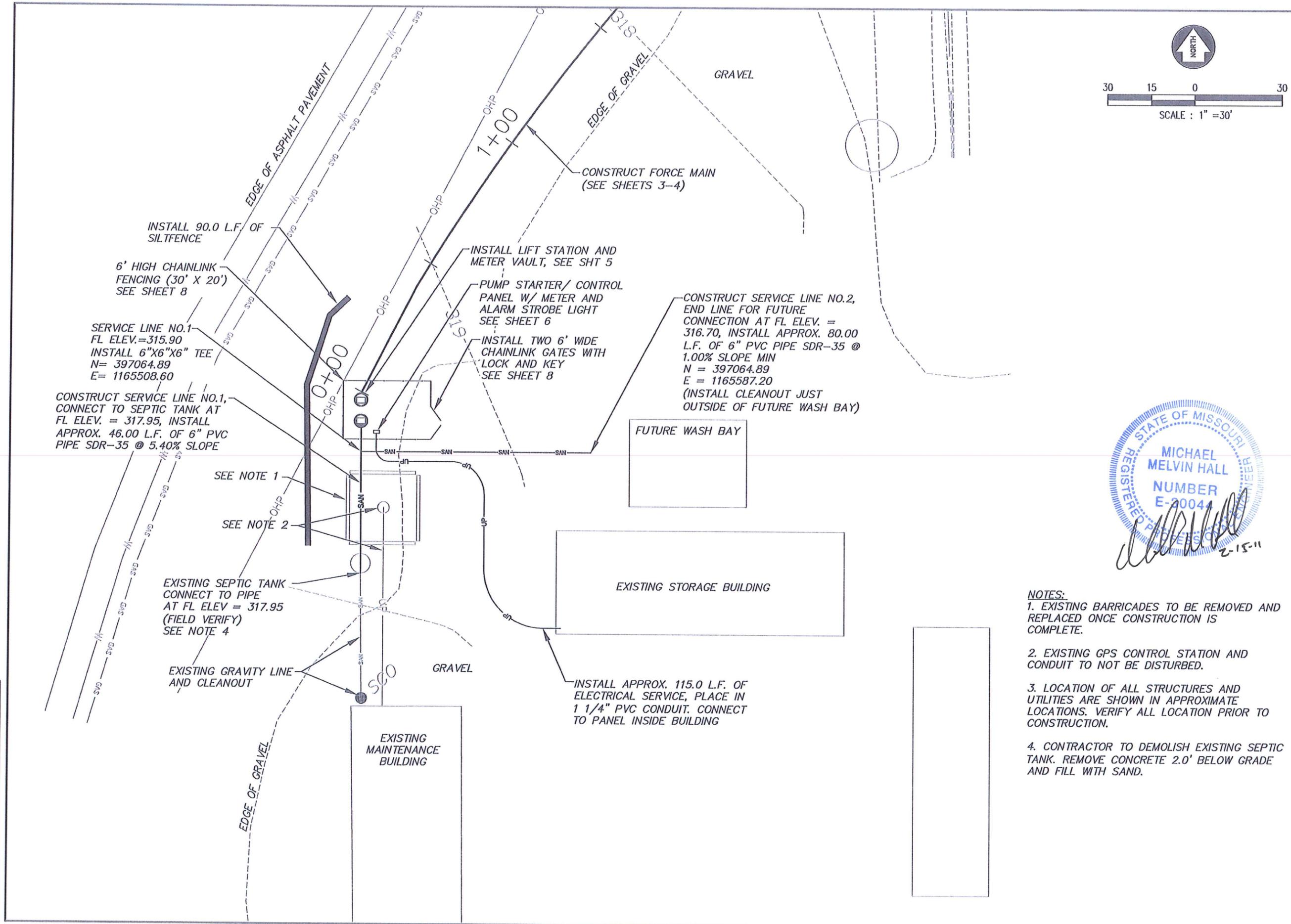
SHAFER, KLINE & WARREN, INC.
 1400 Forum Boulevard, Suite 19A, Columbia, MO 65205-1997
 573/442-4537 FAX: 573/442-4543
 OFFICE LOCATIONS:
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 Columbia, MO
 Houston, TX
 Iola, KS
 Kansas City, MO
 Lenexa, KS
 Macao, MO
 North Kansas City, MO
 Tulsa, OK



CHARLESTON MoDOT MAINT FACILITY
 CHARLESTON, MISSOURI
 SEWER EXTENSION
 COVER SHEET

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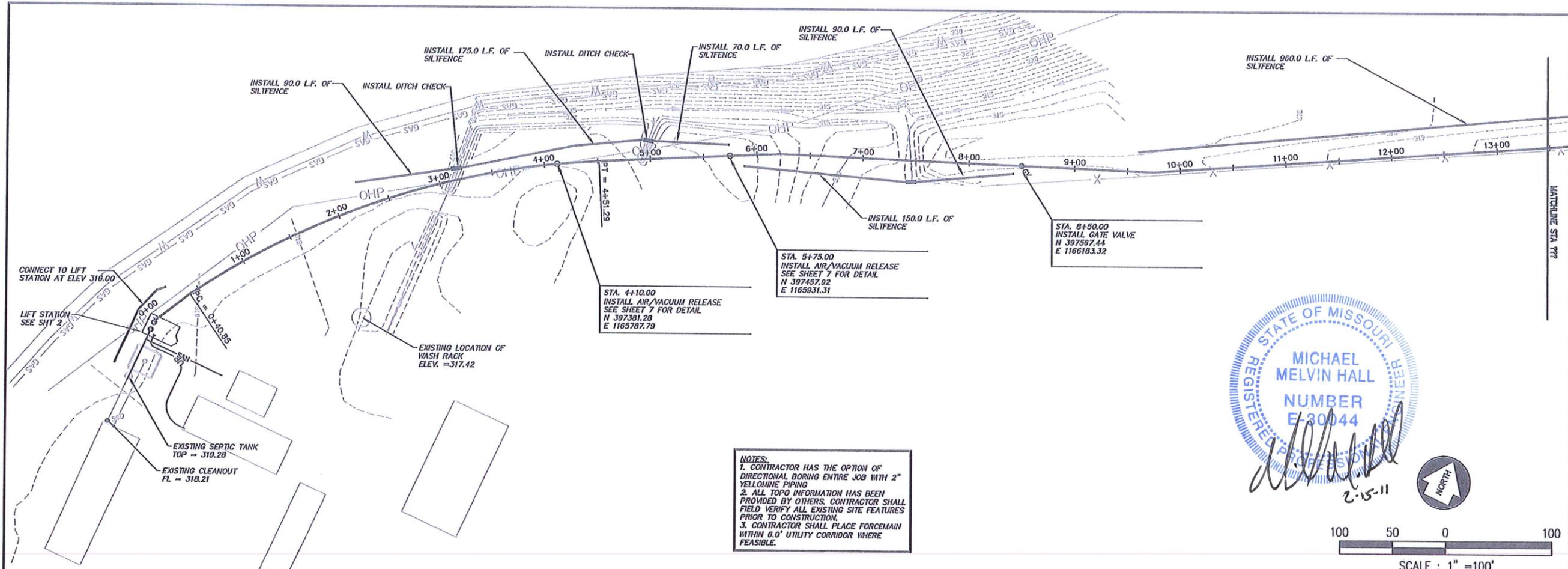
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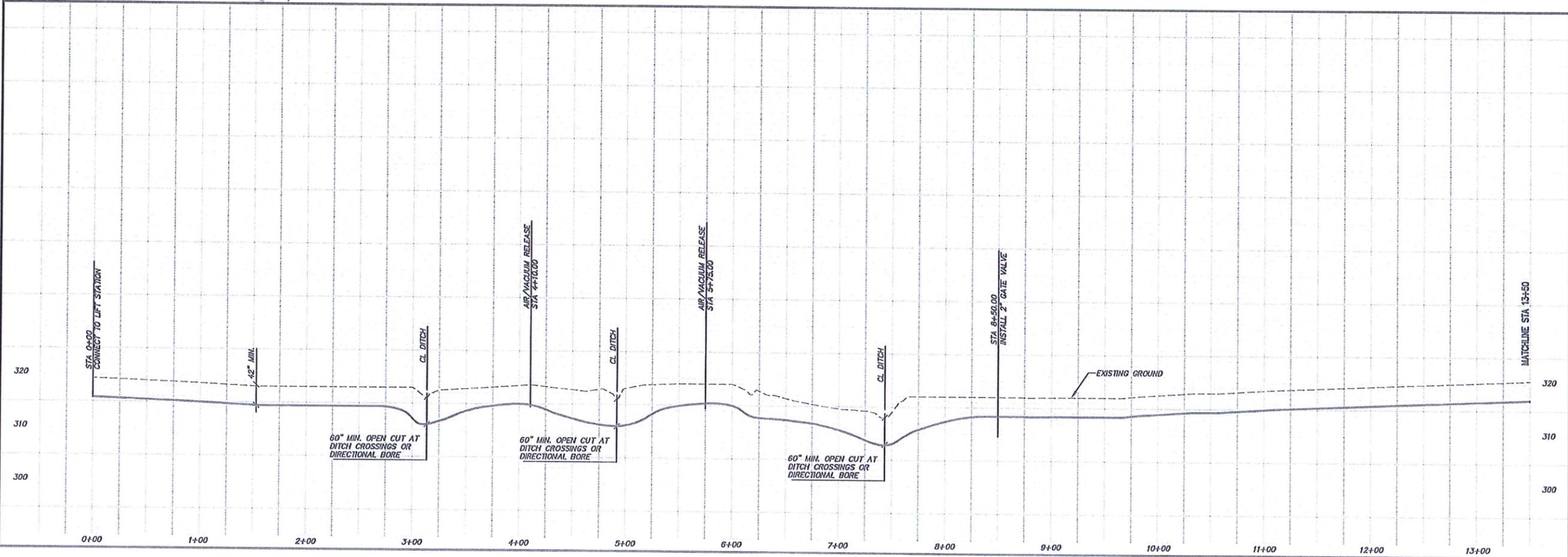
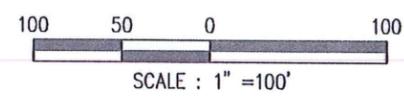
- NOTES:**
- EXISTING BARRICADES TO BE REMOVED AND REPLACED ONCE CONSTRUCTION IS COMPLETE.
 - EXISTING GPS CONTROL STATION AND CONDUIT TO NOT BE DISTURBED.
 - LOCATION OF ALL STRUCTURES AND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS. VERIFY ALL LOCATION PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO DEMOLISH EXISTING SEPTIC TANK. REMOVE CONCRETE 2.0' BELOW GRADE AND FILL WITH SAND.

CHARLESTON MODOT MAINT FACILITY CHARLESTON, MISSOURI		SHAFER, KLINE & WARREN, INC. 1400 Forum Boulevard, Suite 19A, Columbia, MO 65205-1997 573/442-4537 FAX: 573/442-4543	
LIFT STATION SITE PLAN		OFFICE LOCATIONS: Chillicothe, MO Columbia, MO Iola, KS Kansas City, MO Lenexa, KS Houston, TX	
110001-010 SHEET NO.		MISSOURI REGISTERED PROFESSIONAL ENGINEER MICHAEL MELVIN HALL NUMBER E-2004	
2 OF 3		DESIGNED BY: [Signature] DRAWN BY: [Signature] CHECKED BY: [Signature] ISSUE DATE: 2-15-11	
NO. DATE REVISIONS BY APPD		COPYRIGHT © 2000 SHAFER, KLINE & WARREN, INC. MISSOURI CERTIFICATE OF AUTHORITY: F00139850	

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 LAYOUT: SHT3 BY: PERRIGO DATE: 2/15/2011
 XREF DWG1: NONE XREF DWG2: NONE
 XREF DWG3: NONE XREF DWG4: NONE



NOTES:
 1. CONTRACTOR HAS THE OPTION OF DIRECTIONAL BORING ENTIRE JOB WITH 2" YELLOW PIPE.
 2. ALL TOPO INFORMATION HAS BEEN PROVIDED BY OTHERS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SITE FEATURES PRIOR TO CONSTRUCTION.
 3. CONTRACTOR SHALL PLACE FORCEMAIN WITHIN 6.0' UTILITY CORRIDOR WHERE FEASIBLE.



5	DESIGNED BY: <i>[Signature]</i>	NO. DATE	REVISIONS	BY: JAPPD
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3	CHECKED BY: <i>[Signature]</i>	2		
2	ISSUE DATE: 2/15/11	3		
1		4		

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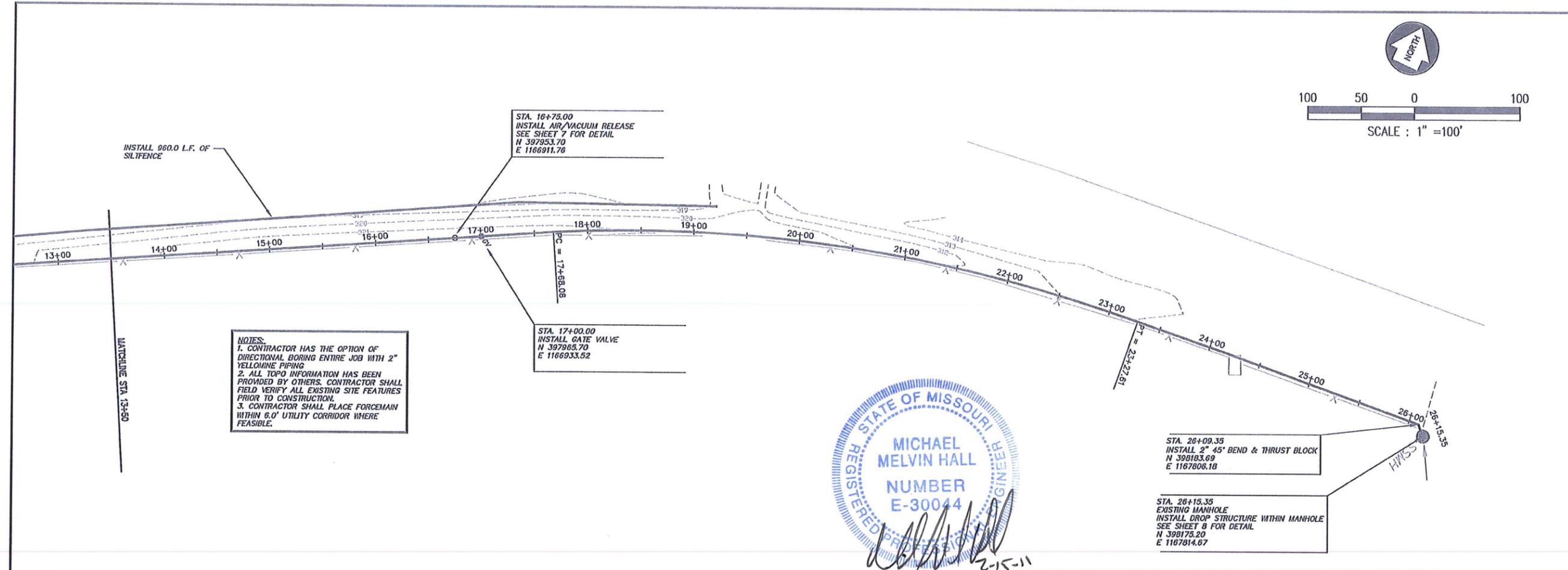
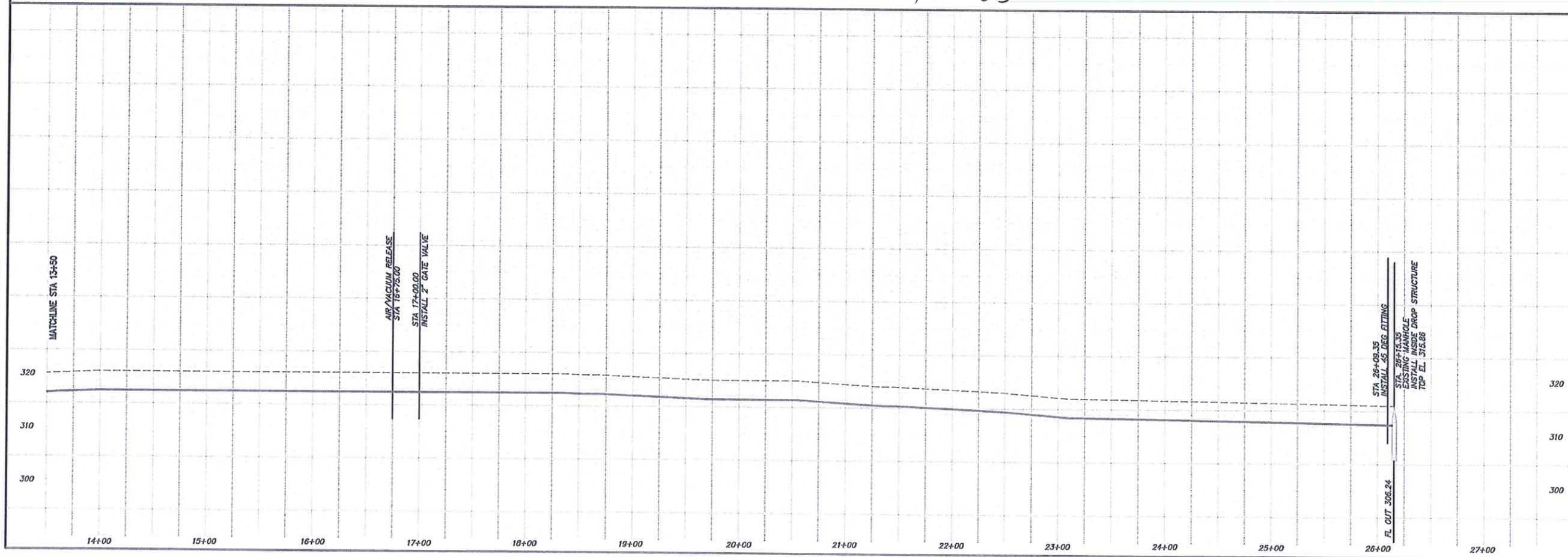
CIVIL ENGINEERS ELECTRICAL ENGINEERS MECHANICAL ENGINEERS LANDSCAPE ARCHITECTS LAND SURVEYORS LAND PLANNERS

CHARLESTON MODOT MAINT FACILITY
 CHARLESTON, MISSOURI

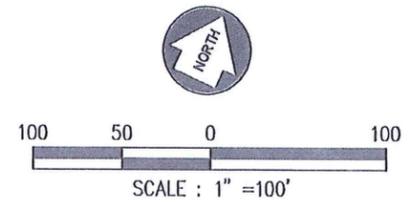
PLAN & PROFILE
 STA. 0+00 TO STA. 13+50

110001-010
 SHEET NO. 3 OF 3

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 XREF DWG1: NONE XREF DWG2: NONE
 XREF DWG3: NONE XREF DWG4: NONE



NOTES:
 1. CONTRACTOR HAS THE OPTION OF DIRECTIONAL BORING ENTIRE JOB WITH 2" YELLOWLINE PIPING.
 2. ALL TOPO INFORMATION HAS BEEN PROVIDED BY OTHERS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SITE FEATURES PRIOR TO CONSTRUCTION.
 3. CONTRACTOR SHALL PLACE FORCEMAIN WITHIN 6' UTILITY CORRIDOR WHERE FEASIBLE.

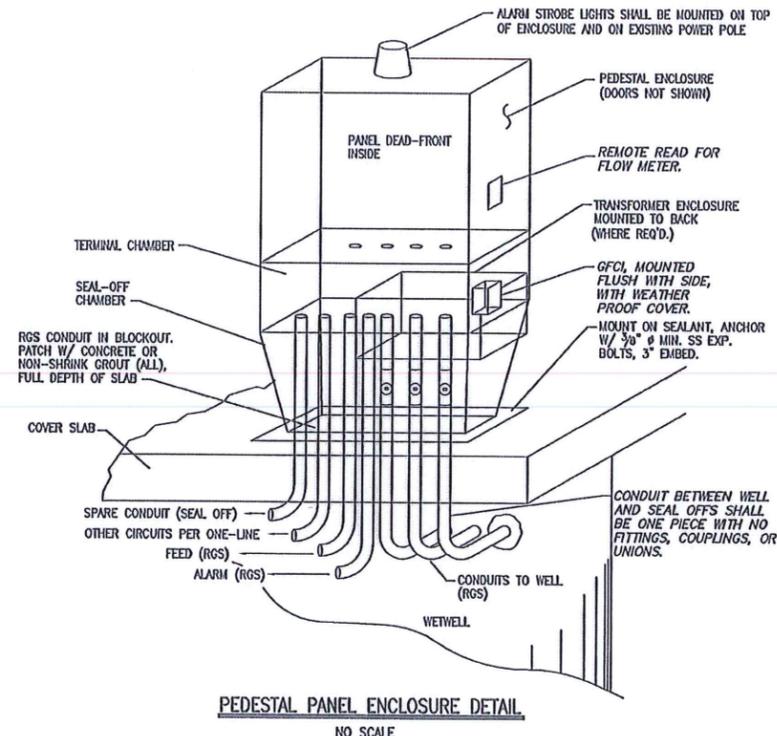


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PLAN & PROFILE STA. 13+50 TO STA. 26+15.35		OFFICE LOCATIONS: Chillicothe, MO Columbia, MO Houston, TX Iola, KS Kansas City, MO Lenexa, KS Macon, MO North Kansas City, MO Tulsa, OK	
110001-010 SHEET NO. 4 OF 9		CIVIL ENGINEERS MECHANICAL ENGINEERS STRUCTURAL ENGINEERS LAND SURVEYORS LAND PLANNERS	
DESIGNED BY: <i>[Signature]</i> DRAWN BY: <i>[Signature]</i> CHECKED BY: <i>[Signature]</i> ISSUE DATE: 2-15-11		REVISIONS NO. DATE REVISIONS BY: JAPPD 1 2 3 4 5	
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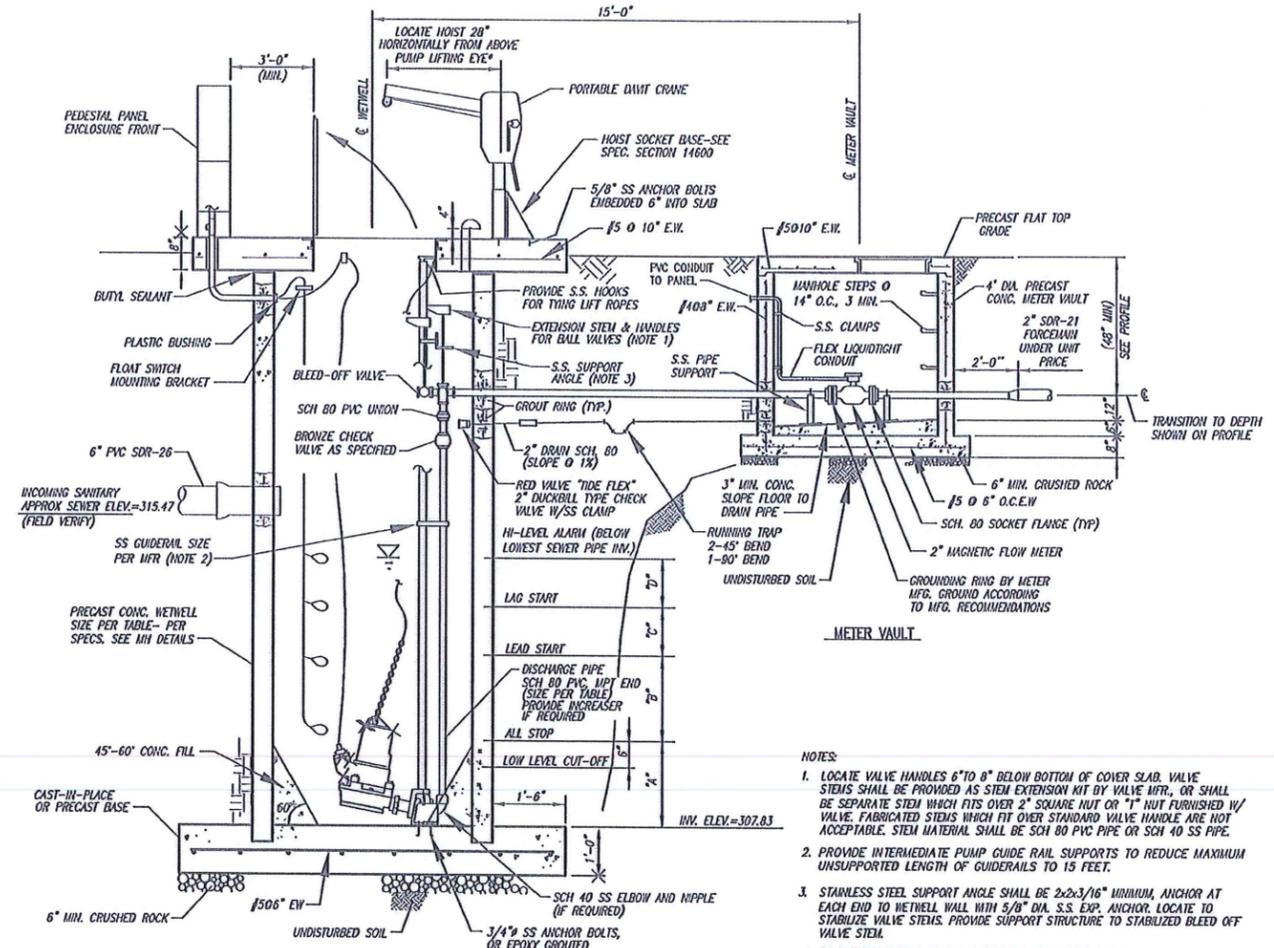
NON-CLOG PUMP STATION TABLE

STATION	WETWELL DIA	WETWELL HATCH	DISCHARGE PIPE SIZE	TOP SLAB ELEV.	WETWELL INV. ELEV.	DIM "A"	DIM "B"	DIM "C"	DIM "D"
MoDOT REST STOP	60" DIA. CONCRETE	30" x 18" MIN.	2"	319.50'	307.83	18"	12"	6"	6"

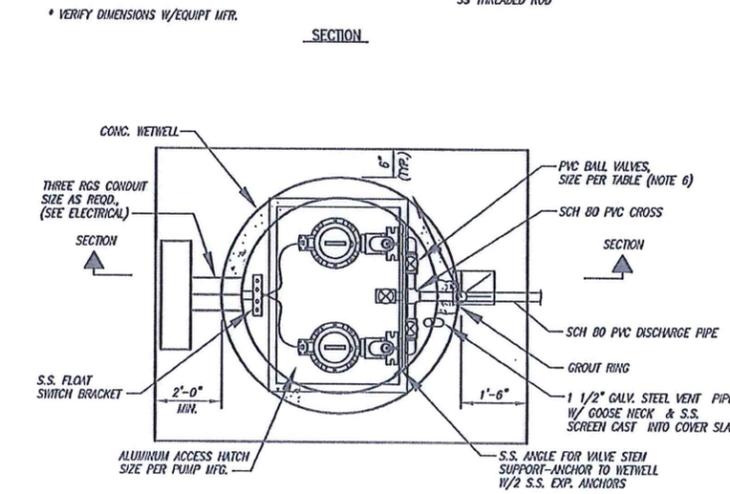
* - TOP OF SLAB SHALL BE 0.5' ABOVE EXISTING GRADE, FIELD VERIFY



PEDESTAL PANEL ENCLOSURE DETAIL
NO SCALE



- NOTES:
- LOCATE VALVE HANDLES 6" TO 8" BELOW BOTTOM OF COVER SLAB. VALVE STEMS SHALL BE PROVIDED AS STEM EXTENSION KIT BY VALVE MFR, OR SHALL BE SEPARATE STEM WHICH FITS OVER 2" SQUARE NUT OR 1" NUT FURNISHED W/ VALVE. FABRICATED STEMS WHICH FIT OVER STANDARD VALVE HANDLE ARE NOT ACCEPTABLE. STEM MATERIAL SHALL BE SCH 80 PVC PIPE OR SCH 40 SS PIPE.
 - PROVIDE INTERMEDIATE PUMP GUIDE RAIL SUPPORTS TO REDUCE MAXIMUM UNSUPPORTED LENGTH OF GUIDERAILS TO 15 FEET.
 - STAINLESS STEEL SUPPORT ANGLE SHALL BE 2x2x3/16" MINIMUM, ANCHOR AT EACH END TO WETWELL WALL WITH 5/8" DIA. S.S. EXP. ANCHOR. LOCATE TO STABILIZE VALVE STEMS. PROVIDE SUPPORT STRUCTURE TO STABILIZE BLEED OFF VALVE STEM.
 - PROVIDE HATCH PER PUMP STATION SPECIFICATIONS.
 - PROVIDE SS KELLUMS GRIP FOR EACH PUMP CORD. HANG FROM SS EYE HOOK ANCHORED TO VERTICAL FACE OF HATCH OPENING ON EACH SIDE.
 - CONTRACTOR SHALL PAY ATTENTION TO THE PIPING LAYOUT, TO ENSURE THAT THE HATCH LOCATION AND PUMP BASE LOCATION ALLOWS ROOM IN WETWELL FOR FULL WIDTH OF DISCHARGE HEADER. CONTRACTOR SHALL DETOUR PRE-CASTING LD, SUBMIT TO THE ENGINEER A SCALED SKETCH WITH DIMENSIONS, SHOWING PUMP LOCATION, HATCH SIZE AND LOCATION, RISER PIPE LOCATION, AND DISCHARGE HEADER LOCATION. THIS SKETCH SHALL BE USED FOR THE INSTALLATION OF COMPONENTS. OFFSET OF PUMP RISERS MAY BE NECESSARY, AND IF SO SHALL BE DONE WITH SCHEDULE 80 22 1/2" BENDS (45° BENDS WILL NOT BE PERMITTED).



NOTE: SEE SITE PLAN FOR ACTUAL ORIENTATION OF PIPING, CONTROL PANEL, AND ELECTRICAL.
* VERIFY DIMENSIONS W/EQUIP MFR.

PUMP STATION ARRANGEMENT PLAN
NO SCALE



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DATE: 2/15/2011
BY: MHALL
LAYOUT: SHITS
XREF DWG1: NONE
XREF DWG2: NONE
XREF DWG3: NONE
XREF DWG4: NONE

5	Designed By: <i>[Signature]</i>	REVISIONS	BY: APPD
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3	Checked By: <i>[Signature]</i>		
2	Issue Date: 2-15-11		
1			

DATE: _____
DATE: _____
DATE: _____
DATE: _____

MOBILE: 314-241-1111
FAX: 314-241-1111

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Columbia, MO
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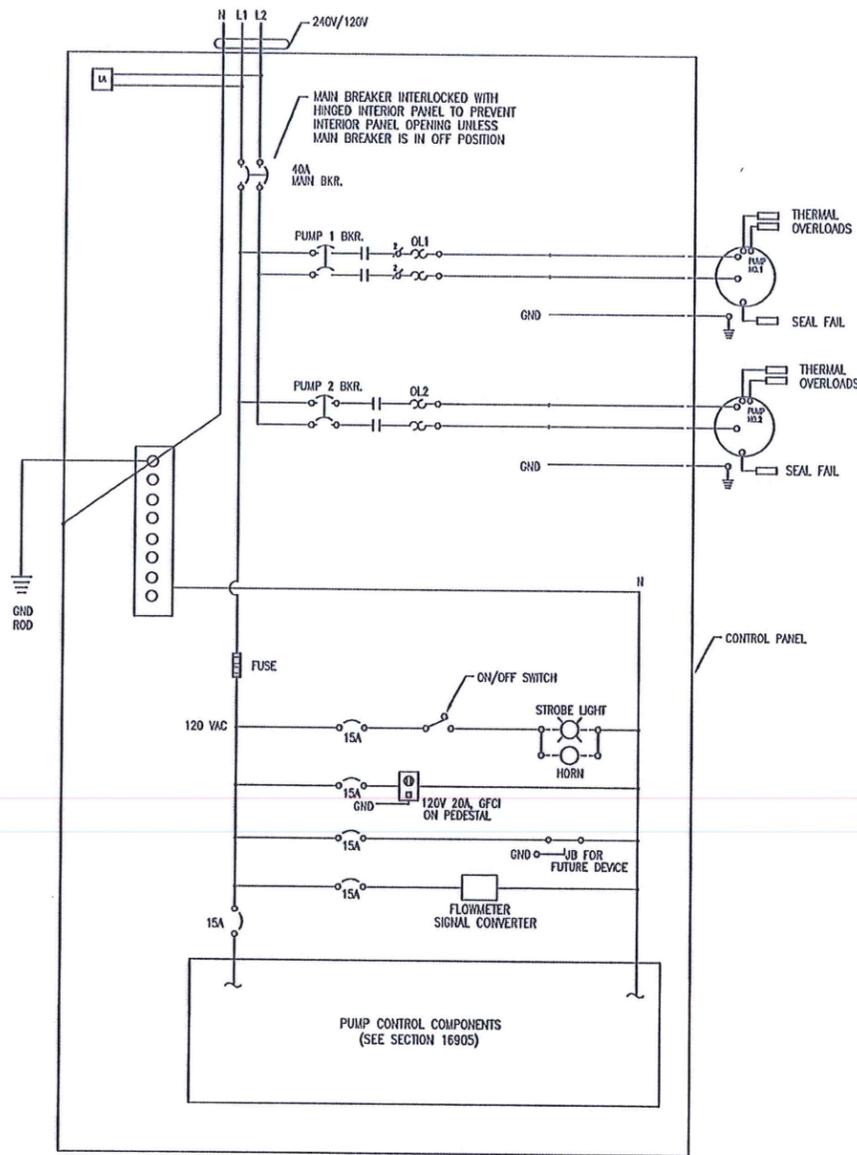
CIVIL ENGINEERS ELECTRICAL ENGINEERS MECHANICAL ENGINEERS LAND SURVEYORS LAND PLANNERS

CHARLESTON MODOT MAINT FACILITY
CHARLESTON, MISSOURI

PUMP STATION DETAILS

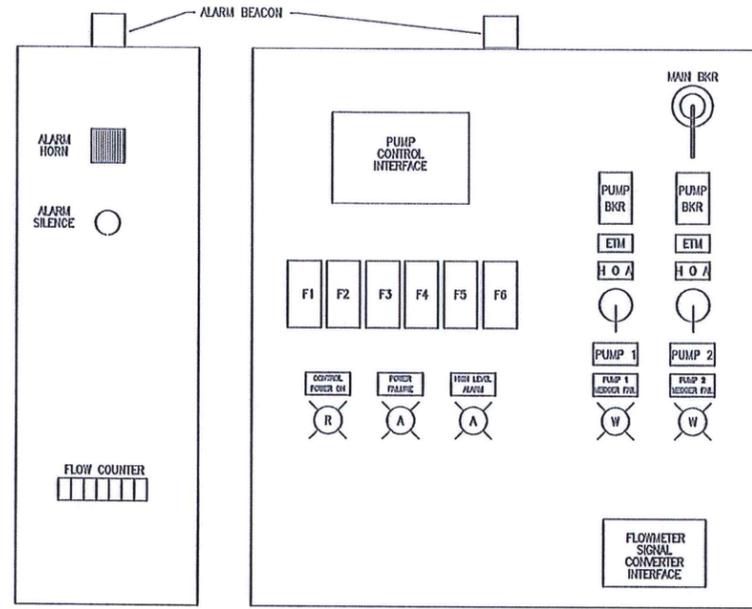
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SHEET NO. 7 OF 9

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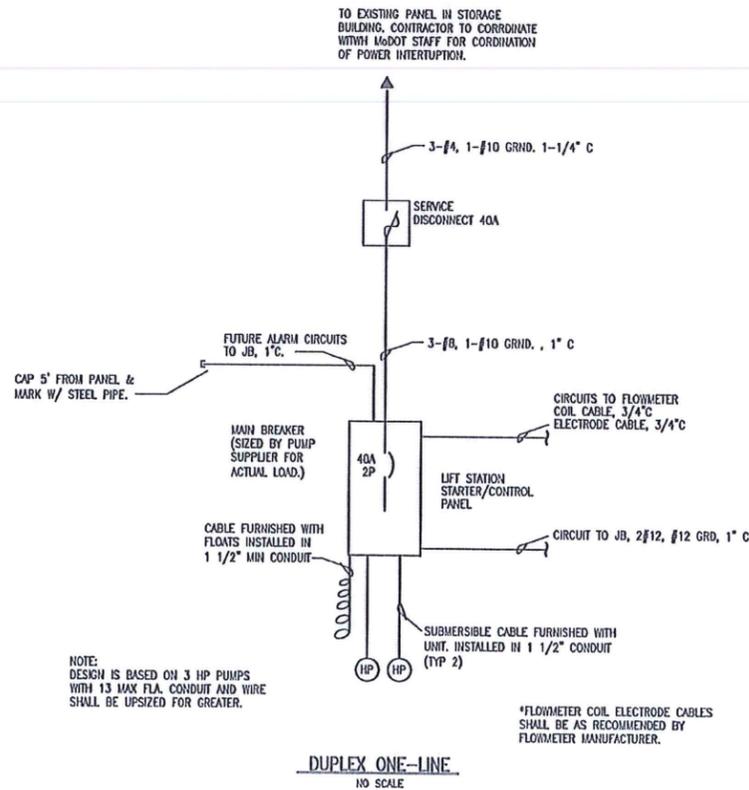
DUPLEX PUMP CONTROL PANEL SCHEMATIC

- LEGEND**
- M1,M2 - MOTOR CONTACTORS
 - OL1,OL2 - OVERLOADS
 - TP1,TP2 - THERMAL PROTECTORS
 - GND - EQUIP. GROUND, GROUND
 - EA - ELECTRIC ALTERNATOR
 - FS5 - FLOAT SWITCH LOW WATER CUTOFF
 - FS4 - FLOAT SWITCH 1- PUMP OFF
 - FS3 - FLOAT SWITCH 2- PUMP ON
 - FS2 - FLOAT SWITCH 3- LAG PUMP ON
 - FS1 - FLOAT SWITCH 4-
 - WIRING WITHIN PANEL
 - FIELD WIRING
 - CONTROL PANEL TERMINALS
 - EQUIP. TERMINALS
 - LA LIGHTING ARRESTOR
 - ULTRASAFE FUSES, DISCONNECT RATED WITH INDICATOR "FUSE-BLOWN"
 - CIRCUIT BREAKER
 - THERMAL MAGNETIC CIRCUIT BREAKER



SIDE OF ENCLOSURE
 NO SCALE

INNER SUB PANEL LAYOUT
 NO SCALE



DUPLEX ONE-LINE
 NO SCALE

ELECTRIC SERVICE NOTES

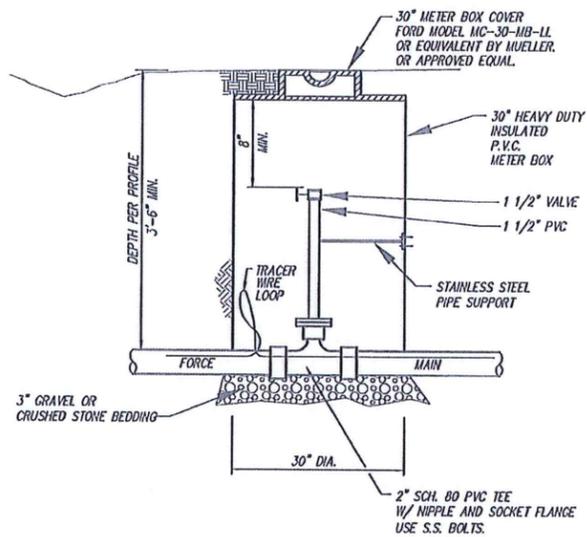
1. EXISTING ELECTRIC SERVICE IS 240 VOLT, 3 WIRE, SINGLE PHASE.
2. CONTRACTOR SHALL ROUTE THE WIRING TO THE EXISTING PANEL IN THE STORAGE BUILDING.
3. CONTRACTOR SHALL INSTALL A NEW 40 AMP TWO POLE BREAKER IN THE EXISTING PANEL.

GENERAL ELECTRIC NOTES

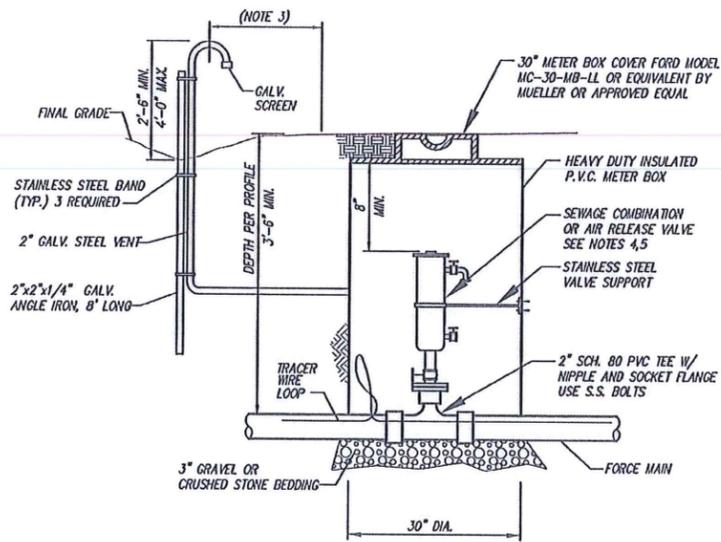
1. ALL INSTALLATION SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AND ANY OTHER APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL DEVICES & ENCLOSURES LOCATED OUTSIDE SHALL BE WEATHERPROOF & RATED FOR EXTERIOR USE, NEMA 3R.
3. ALL ELECTRICAL CONDUCTORS SHALL BE COPPER.
4. ELECTRICAL CONTRACTOR/SUPPLIER SHALL BE RESPONSIBLE FOR FINALLY COORDINATION OF OVERLOAD PROTECTION WITH ACTUAL FULL LOAD AMPERAGE AND WIRE SIZING.
5. ALL BURIED CONDUIT SHALL BE PVC SCHEDULE 80.
6. ALL INTERIOR CONDUIT SHALL BE RIGID ALUMINUM.



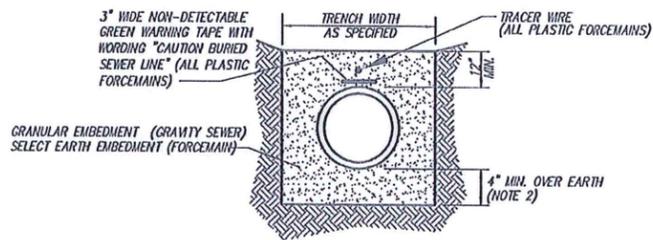
SHAFER, KLINE & WARREN, INC. 1400 Forum Boulevard, Suite 194, Columbia, MO 65205-1997 573/442-4537 FAX: 573/442-4543 OFFICE LOCATIONS: Chillicothe, MO Columbia, MO Houston, TX Iola, KS Kansas City, MO Lenexa, KS Macon, MO North Kansas City, MO Tulsa, OK		DESIGNED BY: <i>[Signature]</i> DRAWN BY: <i>[Signature]</i> CHECKED BY: <i>[Signature]</i> ISSUE DATE: 2-15-11	NO. DATE REVISIONS BY 1 2 3 4 5	COPYRIGHT © 2009-SHAFER, KLINE & WARREN INC. MISSOURI CERTIFICATE OF AUTHORITY: F0013950
CHARLESTON MODOT MAINT FACILITY CHARLESTON, MISSOURI		ELECTRICAL DETAILS		
110001-010 SHEET NO. 6 OF 9				



MANUAL AIR RELEASE VALVE & VAULT
NO SCALE



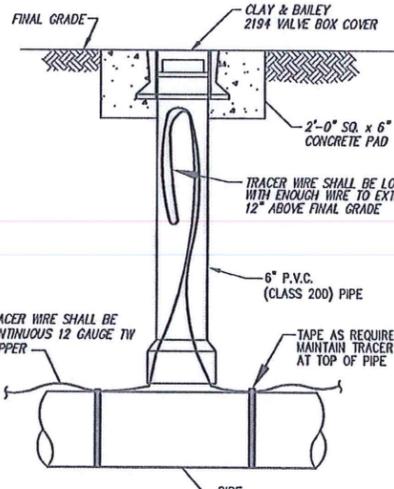
COMBINATION OR AIR RELEASE VALVE & VAULT
NO SCALE



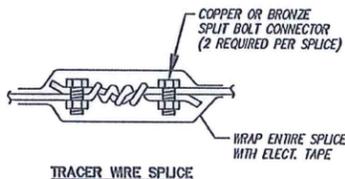
CLASS B-1
PROVIDE FOR: GRAVITY SEWERS
PVC FORCE MAIN

- NOTES:**
- REFER TO THE EARTHWORK AND TRENCHING SPECIFICATIONS FOR TRENCH WIDTH & COMPACTION REQUIREMENTS.
 - DIMENSION OVER ROCK SHALL BE B/4, 6" MIN.

PIPE EMBEDMENT DETAILS
NO SCALE



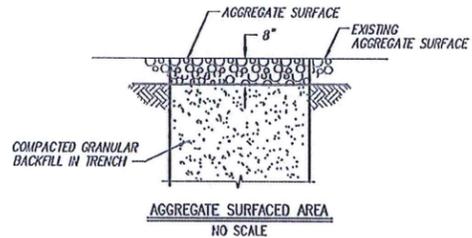
TRACER WIRE TEST STATION



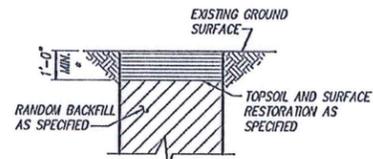
TRACER WIRE SPLICE

- NOTES:**
- INSTALL TEST STATIONS AT LOCATIONS ALONG SEWER FORCE MAIN AT INTERVALS NOT TO EXCEED 600 FEET. AIR VALVE VAULTS SHALL BE USED AS TEST STATIONS.
 - AT TRACER WIRE TEST STATION THE TRACER WIRE SHALL BE LOOPED WITH ENOUGH WIRE TO EXTEND 12" ABOVE GRADE. THE LOOP SHALL BE PLACED IN AN ORGANIZED FASHION WITHIN THE TEST STATION WHICH DOES NOT INTERFERE WITH ENTRY OR MAINTENANCE.
 - ALL TEST STATIONS SHALL HAVE A MARKER POST LOCATED AT THE RIGHT OF WAY. MARKER POSTS SHALL BE USA BLUE BOOK RHINO J-RAIL STOCK NO. 70457 WITH DECAL INDICATING SEWER FORCE MAIN STOCK NO. 70474.

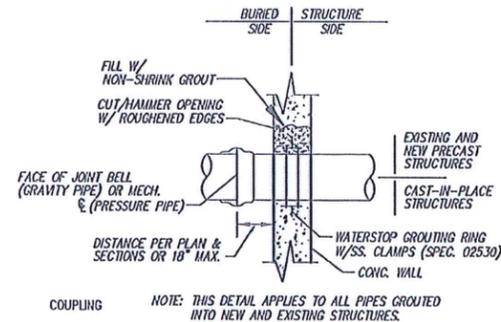
TRACER WIRE DETAILS
NO SCALE



AGGREGATE SURFACED AREA
NO SCALE



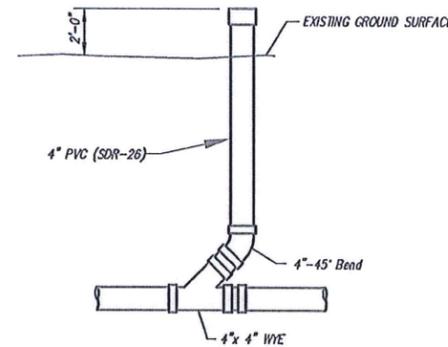
GRASED AREA TRENCH BACKFILL DETAIL
NO SCALE



COUPLING

NOTE: THIS DETAIL APPLIES TO ALL PIPES GROUTED INTO NEW AND EXISTING STRUCTURES.

GROUT RING
NO SCALE



TYPICAL CLEAN OUT DETAIL (GRAVITY SEWER)
NO SCALE

NOTES:

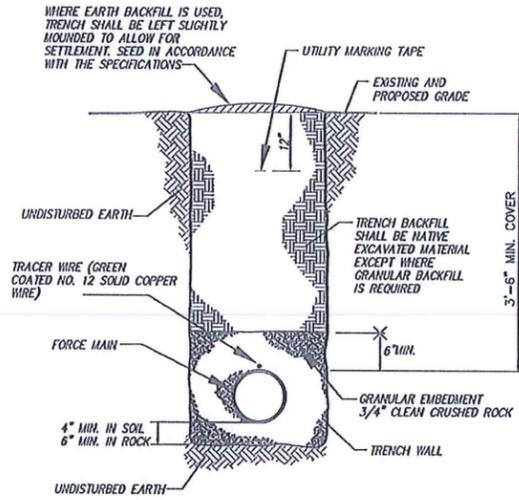
- SEWAGE COMBINATION AIR RELEASE AND AIR/VACUUM VALVES SHALL BE VALMATIC "VM-801 BW", GA INDUSTRIES "FIGURE 942" OR ENGINEER APPROVED EQUAL. INLET SHALL BE 2" NPT, UNLESS OTHERWISE NOTED ON THE PLANS OR PROFILES, OUTLET SIZE SHALL BE 1" NPT AND AIR RELEASE ORIFICE SHALL BE 5/16". VALVES SHALL BE PROVIDED WITH FLUSHING ATTACHMENT, INCLUDING BRONZE SHUT-OFF AND FLUSHING BALL VALVES, QUICK CONNECTION COUPLING, AND 5' OF RUBBER HOSE, FOR BACK WASHING WITH CLEAR WATER. THE UNIT SHALL BE COATED WITH AHWVA C550 FUSION BONDED EPOXY OR 2-PART EPOXY.
- SEWAGE AIR RELEASE VALVES SHALL BE VALMATIC "VM-488W", GA INDUSTRIES "FIGURE 925", OR ENGINEER APPROVED EQUAL. INLET SHALL BE 2" NPT, UNLESS OTHERWISE NOTED ON THE PLANS OR PROFILES, OUTLET SIZE SHALL BE 1/2" NPT AND AIR RELEASE ORIFICE SHALL BE 3/16".
- LOCATE GOOSENECK AT RIGHT OF WAY.
- IF HEIGHT OF VAULT CAUSES FRAME AND COVER TO BE ABOVE GRADE, PERFORM GRADING TO PROVIDE A SMOOTH TRANSITION. DO NOT LOCATE VAULT TO OBSTRUCT DITCH. IF NECESSARY, OFFSET ALIGNMENT AT VAULT TO AVOID PLACING STRUCTURE IN DITCH FLOWLINE. ROTATE TOP RING AND COVER TO AVOID DITCH FLOW LINE.
- ALL VALVE VAULTS SHALL HAVE A MARKER POST LOCATED AT THE RIGHT OF WAY. MARKER POSTS SHALL BE USA BLUE BOOK FORCE MAIN, "STOCK NO. 70474".

"RHINO J-RAIL STOCK NO. 70457" WITH DECAL INDICATING SEWER

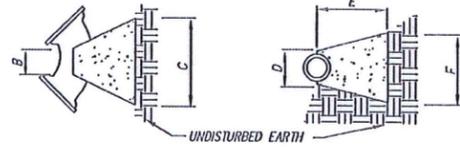
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DATE: 2/15/2011
LAYOUT: SHT7 BY: MHALL
XREF DWG1: NONE XREF DWG2: NONE
XREF DWG3: NONE XREF DWG4: NONE



<p>SHAFER, KLINE & WARREN, INC. 1400 Forum Boulevard, Suite 194, Columbia, MO 65203-1997 573/442-4537 FAX: 573/442-4543</p>		<p>DESIGNED BY: [Signature] DRAWN BY: [Signature] CHECKED BY: [Signature] ISSUE DATE: 2-15-11</p>	<p>REVISIONS NO. DATE REMARKS BY: APP'D</p>	<p>COPYRIGHT © 2009 SHAFER, KLINE & WARREN INC. MISSOURI CERTIFICATE OF AUTHORITY: F00139850</p>
<p>OFFICE LOCATIONS: Iola, KS Chillicothe, MO Columbia, MO Houston, TX</p>		<p>MACON, MO North Kansas City, MO Tulsa, OK</p>	<p>STRUCTURAL ENGINEERS MECHANICAL ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS LAND PLANNERS</p>	<p>110001-010 SHEET NO. 7 OF 9</p>
<p>CHARLESTON MDOT MAINT FACILITY CHARLESTON, MISSOURI</p>		<p>MISC DETAILS</p>	<p>NO SCALE</p>	<p>NO SCALE</p>



LOW PRESSURE SEWER MAINS



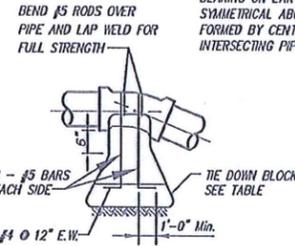
BENDS	B	C	D	E	F
2'-3" 11 1/4 DEG	8"	15"	10"	24"	12"
2'-3" 22 1/2 DEG	8"	19"	10"	24"	13"
4" 11 1/4 DEG	8"	15"	12"	24"	13"
4" 22 1/2 DEG	8"	19"	12"	24"	13"
6" 11 1/4 DEG	8"	15"	12"	24"	12"
6" 22 1/2 DEG	8"	19"	12"	24"	13"

BENDS	B	C	D	E	F
2'-3" 45 DEG	8"	30"	10"	24"	14"
2'-3" 90 DEG	8"	30"	10"	24"	27"
4" 90 DEG	8"	30"	12"	24"	27"
4" 90 DEG	8"	30"	12"	24"	27"
6" 45 DEG	8"	30"	12"	24"	14"
6" 90 DEG	8"	30"	12"	24"	27"

THRUST BLOCKS SHALL BE POURED CONCRETE

TYPICAL CONCRETE THRUST BLOCKS
NO SCALE

NOTE: VERTICAL FACE OF BEARING ON EARTH TO BE SYMMETRICAL ABOUT PLANE FORMED BY CENTERLINES OF INTERSECTING PIPE ALIGNMENTS.

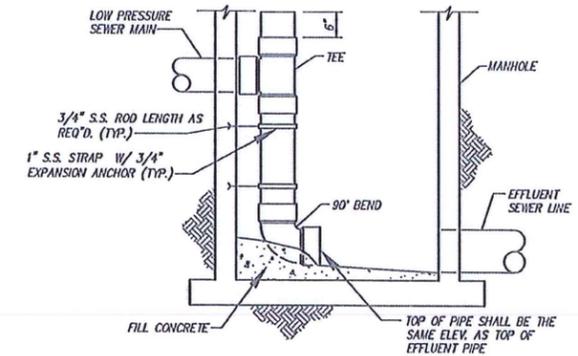


REQUIRED CU. FT. CONCRETE FOR THE DOWN BLOCKS

BEND	PIPE SIZE	4"	2"
90°	18	18	
45°	11	11	
22 1/2°	9	9	
11 1/4°	5	5	

NOTE: CONSTRUCT BACKING BLOCK AT ALL FITTINGS AND HYDRANTS

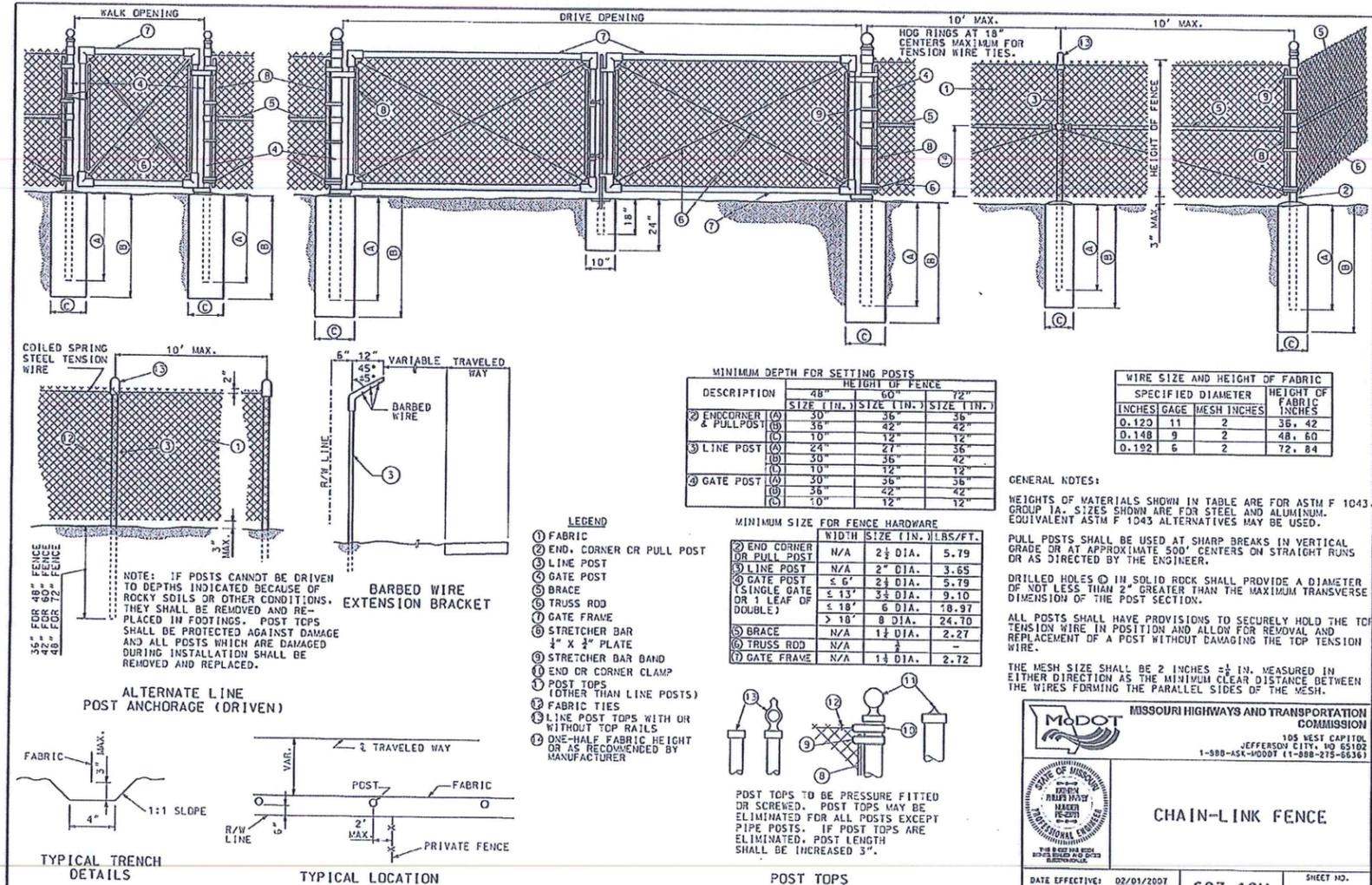
CONCRETE TIE DOWN BLOCK
NO SCALE



LOW PRESSURE SEWER MAIN CONNECTION AT MANHOLE
NO SCALE

- NOTES:
- UNDERGROUND MARKING TAPE MARKED "CAUTION SEWER LINE BURIED BELOW" BY TERRA TAPE OR APPROVED EQUAL, LOCATED 12" BELOW FINISH GRADE.
 - TRACER WIRE FOR SEWER PIPELINE AND DISCHARGE PIPING, HIGH MOLECULAR WEIGHT - POLYETHYLENE TRACER WIRE, 1-#14 AWG, BY PAGE ELECTRIC OR APPROVED EQUAL. SPLICING SHALL BE WITH 3M DBV/DDB DIRECT BURY SPLICE KITS. TRACER WIRE LEAD CONNECTIONS TO BE LOCATED IN "IN-LINE FLUSHING ASSEMBLIES".

PIPE INSTALLATION DETAILS
NO SCALE



IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND IS VALID.

P:\10001-010_CAD\CAD\10001-010-DETAILS.DWG
LAYOUT: SHTB BY: MHALL DATE: 2/15/2011
XREF DWG1: NONE XREF DWG2: NONE
XREF DWG3: NONE XREF DWG4: NONE



SHAFER, KLINE & WARREN, INC.
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OFFICE LOCATIONS:
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Columbia, MO
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Kansas City, MO
Leoneia, KS
Macon, MO
North Kansas City, MO
Tulsa, OK

CIVIL ENGINEERS ELECTRICAL ENGINEERS MECHANICAL ENGINEERS LANDSCAPE ARCHITECTS LAND SURVEYORS LAND PLANNERS

DESIGNED BY: [Signature]
DRAWN BY: [Signature]
CHECKED BY: [Signature]
ISSUE DATE: 2-15-11

REVISIONS BY: JAPPD
NO. DATE

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CHARLESTON MODOT MAINT FACILITY
CHARLESTON, MISSOURI

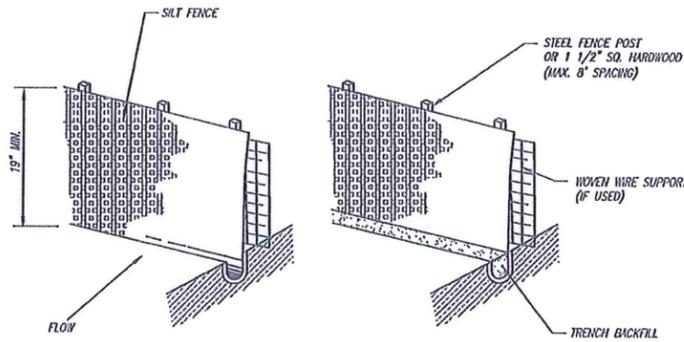
MISC DETAILS

110001-010
SHEET NO. 8 OF 9

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-800-ASK-MODOT (1-888-215-6636)

DATE EFFECTIVE: 02/01/2001
DATE PREPARED: 8/21/2009

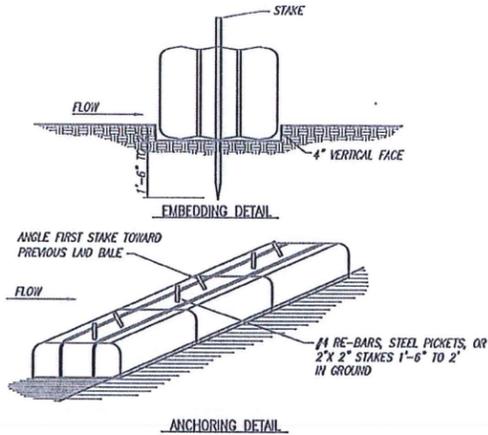
607.10V SHEET NO. 1 OF 1



CONSTRUCTION SPECIFICATIONS:

1. POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE AND SPACED AT A MAX. 8' APART OR TO SILT FENCE MANUFACTURER SPECIFICATIONS, WHICHEVER IS STRICTER.
2. SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH SHOULD BE A MINIMUM OF 6" DEEP 3-4" WIDE TO ALLOW FOR THE SILT FENCE TO BE LAID IN THE GROUND AND BACKFILLED.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WOVEN WIRE WHICH IS IN TURN ATTACHED TO THE FENCE POSTS.
5. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE UNIFORMLY DISTRIBUTED ON THE SOURCE AREA PRIOR TO TOPSOILING.
8. SILT FENCE SHALL BE MIMT-100K FILTER FABRIC OR APPROVED EQUAL.

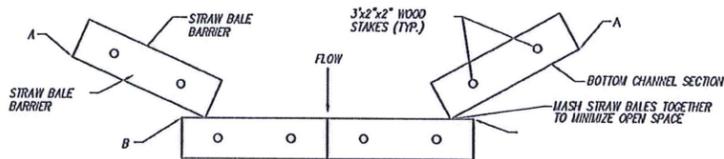
SILT FENCE DETAIL
NO SCALE



NOTES:

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ADJUTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE BY THE OWNER.

STRAW BALE DIKE DETAIL
NO SCALE



POINTS "A" SHOULD BE HIGHER THAN POINTS "B" TO INSURE FLOW THROUGH OR OVER BARRIER, NOT AROUND IT.

TOP VIEW DITCH APPLICATION DETAILS

DITCH CHECK SPACING			
DITCH @ SLOPE %	SPACING (FT)	DITCH @ SLOPE %	SPACING (FT)
.05	400	5.5	38
1.0	200	6.0	35
1.5	133	6.5	30
2.0	100	7.0	28
2.5	80	7.5	26
3.0	66	8.0	25
3.5	57	8.5	23
4.0	50	9.0	22
4.5	44	9.5	21
5.0	40	10.0	20

TEMPORARY STRAW BALE DITCH CHECK
NO SCALE

NOTES:

1. THE EROSION CONTROL FEATURES AND NOTES SHOWN ON THIS SHEET REPRESENT THE MINIMUM REQUIREMENTS ACCEPTABLE. LOCATIONS ARE TYPICAL AND MAY VARY ACCORDING TO CONTRACTOR'S STAGING AND LIMITS OF CONSTRUCTION.
2. IT SHALL BE EACH CONTRACTOR'S RESPONSIBILITY TO CONTROL EROSION AND PREVENT POLLUTION FOR ALL WORK WHICH THEY ARE DIRECTLY INVOLVED.
3. IT SHALL BE EACH CONTRACTOR'S RESPONSIBILITY TO PLACE ADDITIONAL CONTROL DEVICES AS REQUIRED DURING CONSTRUCTION TO PREVENT SOIL LOSS FROM THE SITE. IT SHALL ALSO BE EACH CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THEIR EROSION CONTROL FEATURES IN PROPER WORKING CONDITION UNTIL THE SITE IS STABILIZED BY PAVEMENT, VEGETATION OR OTHER MEANS.
4. WHEN POSSIBLE, WITHOUT ADVERSELY AFFECTING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL: MINIMIZE THE AMOUNT OF SURFACE AREA WHICH IS EXPOSED AT ONE TIME, LEAVE GRADED AREAS WITH A ROUGH TEXTURE, CONSTRUCT TEMPORARY TERRACES DURING GRADING OPERATIONS, AND LIMIT UNNECESSARY VEHICLE TRAFFIC IN GRADED AREAS.
5. THE SPILLAGE OF DEBRIS, INCLUDING THE TRACKING OF SOIL, OUTSIDE OF THE CONSTRUCTION LIMITS SHALL BE AVOIDED.
6. STRAW BALE DIKES OR SILT FENCES SHALL BE PLACED ON A CONTOUR ELEVATION ALONG THE DOWNHILL SIDE AND FOR THE FULL EXTENT OF THE DISTURBED AREAS WITHIN THE CONSTRUCTION LIMITS. THE LAST FIVE FEET ON EACH END OF RUN OF SILT FENCE/STRAW BALE DIKE SHALL BE PLACED FACING UPHILL AT 90 DEGREES TO THE CONTOUR LINE.
7. THE CONTRACTOR SHALL PREVENT SILT AND SEDIMENT FROM ENTERING THE STORM SEWER SYSTEM. STRAW BALE DIKES SHALL BE PLACED AROUND ALL STORM SEWER INLETS EXCEPT DURING CONSTRUCTION OPERATIONS WHICH REQUIRE THEIR REMOVAL.
8. CONTRACTOR SHALL INSPECT THEIR EROSION CONTROL DEVICES AFTER ALL RAINFALL EVENTS TO INSURE THEY ARE WORKING PROPERLY. THE CONTRACTOR SHALL ALSO INSPECT THE SITE AFTER ALL RAINFALL EVENTS AND ON A PERIODIC BASIS TO ASSESS THE NEED AND IF PRUDENT, INSTALL ADDITIONAL EROSION CONTROL DEVICES AS REQUIRED.
9. ALL AREAS UPON REACHING FINAL GRADE SHALL BE BROUGHT TO FINAL PLAN CONDITION (PAVED, MULCHED AND SEEDDED, SODDED, OR OTHER) AS SOON AS POSSIBLE.

P:\110001-010\CAD\CIVIL\110001-010-DETAILS.DWG
 LAYOUT: SHT9 BY: MHALL DATE: 2/15/2011
 XREF DWG1: NONE XREF DWG2: NONE
 XREF DWG3: NONE XREF DWG4: NONE



5	4	3	2	1	NO.	DATE	REVISIONS	BY	APP'D
Designed By: <i>MLH</i>		Drawn By: <i>MLH</i>		Checked By: <i>MLH</i>		Issue Date: 2-15-11		COPYRIGHT © 2009-SHAFER, KLINE & WARREN INC. MISSOURI CERTIFICATE OF AUTHORITY: F00139850	
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CHARLESTON MODOT MAINT FACILITY CHARLESTON, MISSOURI					EROSION CONTROL DETAILS				
110001-010 SHEET NO. 9 OF 9									

2-15-11