

CONSTRUCTION PLANS
FOR
WASTEWATER SYSTEM IMPROVEMENTS

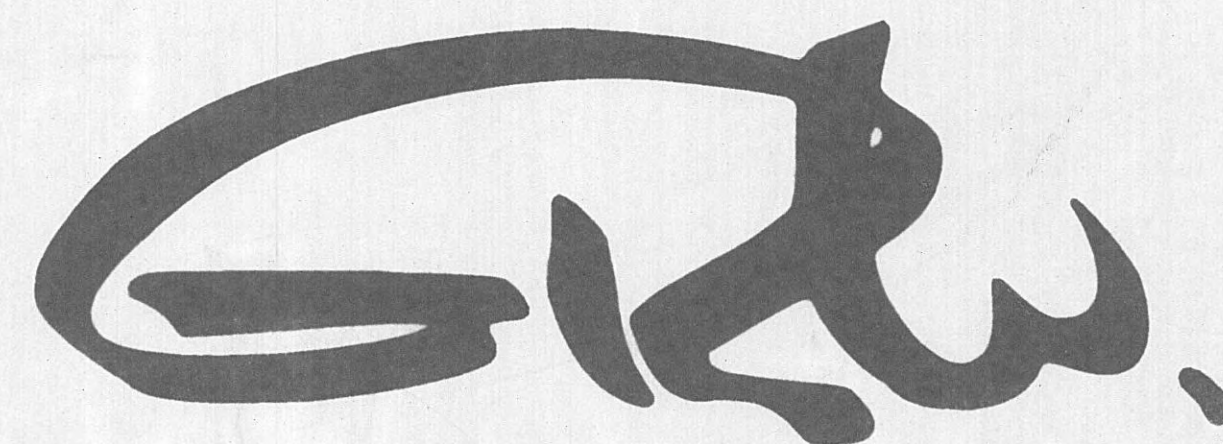
HARRIMAN UTILITY BOARD
HARRIMAN, TENNESSEE

**WOODYARD SEWAGE PUMP STATION UPGRADE
AND
FORCE MAIN REPLACEMENT**

C.D.B.G. NO. Z-02-009159-00

CONTRACT S02-02

JUNE, 2002



GRW Elrod Dunson, Inc.

Engineers, Architects, Planners

404 BNA Drive, Suite 201 NASHVILLE, TN 37217
PH. (615)366-1600 FAX (615)366-0406

LEXINGTON LOUISVILLE NASHVILLE KNOXVILLE INDIANAPOLIS

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ENGINEER'S REPRESENTATIVE: RL

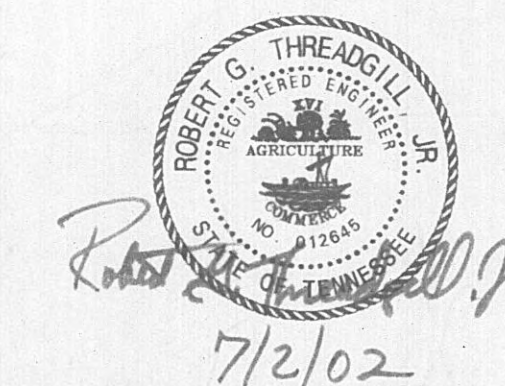
CONSTRUCTION COMPANY: W & O CONSTRUCTION COMPANY

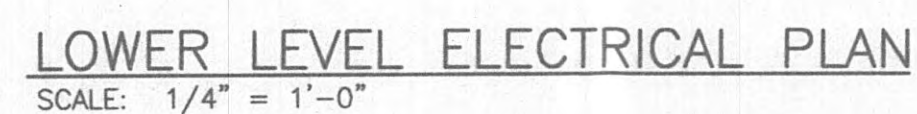
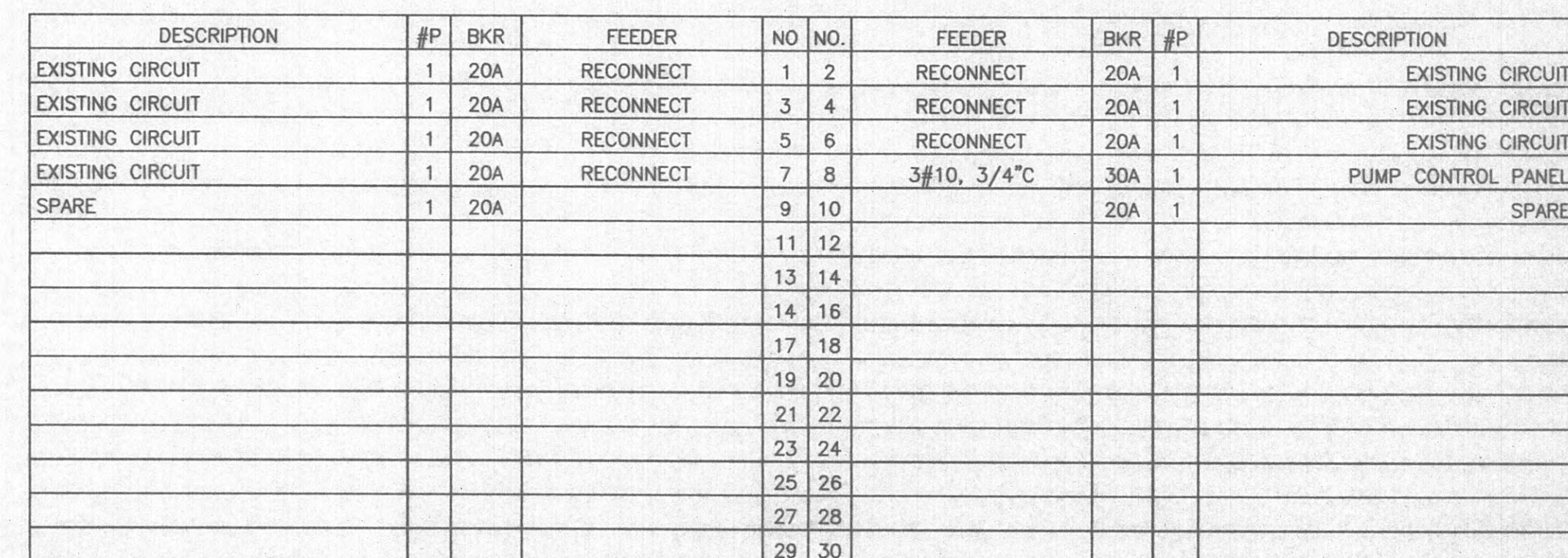
DATE: 8/29/02

Accepted By: Charles Flora
Title: MANAGER
For: HARRIMAN UTILITY BOARD
Date: 7/8/02

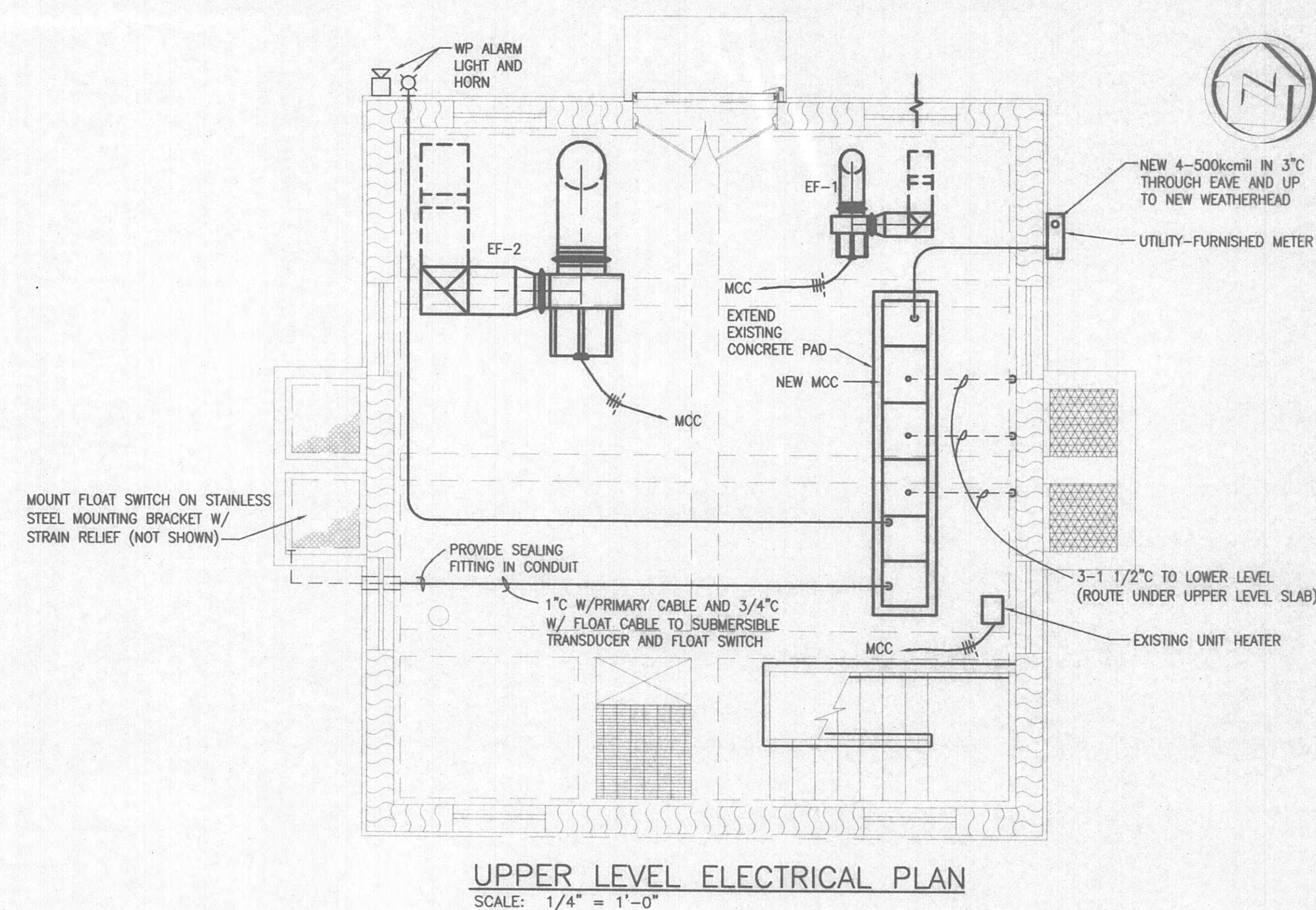
PROJECT NO. 7601-20

SET NO.





1. AT NEW WEIR HEAD, LEAVE MINIMUM 3' CONDUCTOR SLACK FOR CONNECTION BY UTILITY. MOUNT METER BASE SUCH THAT BOTTOM IS ABOVE 100 YEAR FLOOD LEVEL.
2. FORM NEW CONSTRUCTION SUCH THAT STATION DOWNTIME IS MINIMIZED, WITH AT LEAST ONE PUMP OPERATIONAL. IT IS RECOMMENDED THAT THE NEW MAIN BREAKER AND PUMP NO.1 BE INSTALLED BE SET, AND NEW SERVICE CONDUCTORS/CONDUIT BE INSTALLED WHILE EXISTING MCC IS STILL IN PLACE. UPON SUCH CHECK OVER TO NEW SERVICE, THE REMAINDER OF THE MCC CAN THEN BE REPLACED.
3. THE WETWELL IS A CLASS 1, DIVISION 1 HAZARDOUS LOCATION. EQUIPMENT, WIRING, AND NECESSARY SEPARATIONS SHALL BE PROVIDED AS REQUIRED PER NEC.



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GRW.


GRW Engineers, Inc.
Engineers, Architects, Planners
and Interiors
10000 W. 15th Avenue, Suite 100
Denver, Colorado 80202
Tel: 303.751.1100

ENGINEER/ARCHITECT: *W. S. B. Trust*

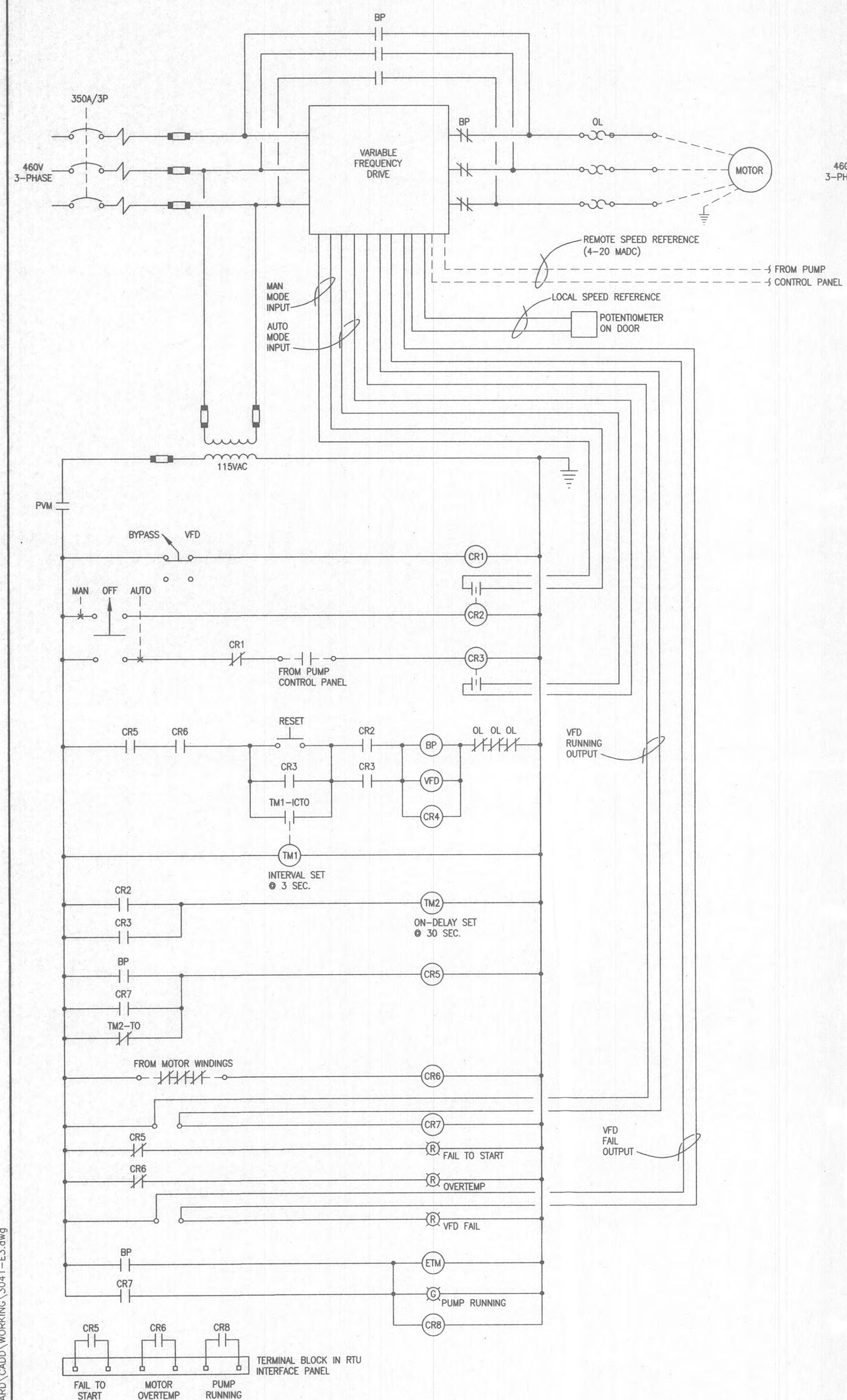
CONSTRUCTION COMPANY: **WED CONSTRUCTION CO.**

DATE: *8/29/03*

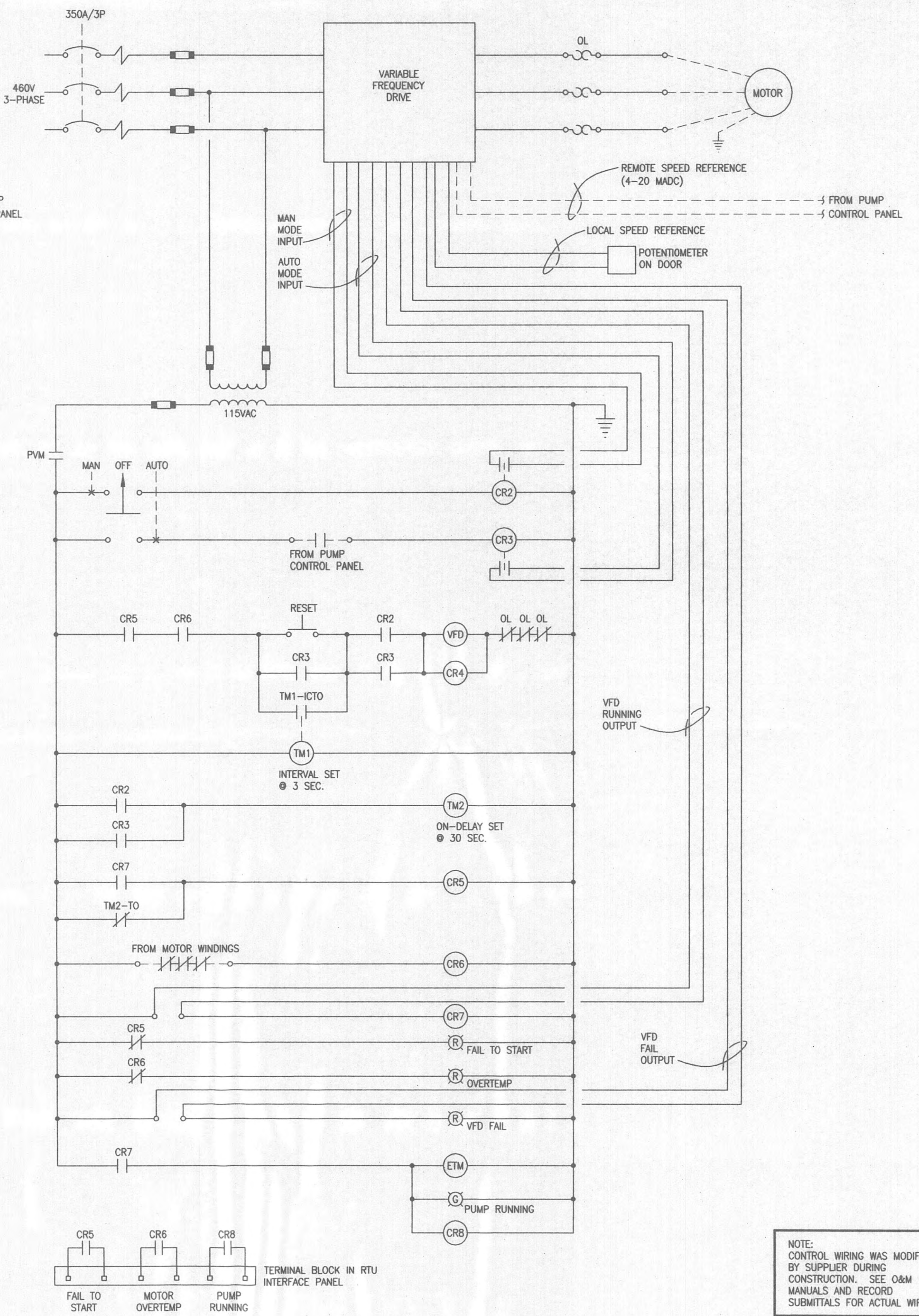
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1	CHANGE ORDER PROPOSAL	3/17/03	MH
NO.	DESCRIPTION	DATE	BY
REVISIONS			

GRW PROJECT NO. 7601-20		CONTRACT S02-102																	
<p>EXISTING WOODYARD SEWAGE PUMP STATION ELECTRICAL HARRIMAN UTILITY BOARD HARRIMAN, TENNESSEE</p>																			
 <p>GRW Elrod Dunson, Inc. Engineers, Architects, Planners LEXINGTON LOUISVILLE INDIANAPOLIS NASHVILLE KNOXVILLE</p>		<table border="1"> <tr> <td>DESIGNED:</td> <td>DATE:</td> </tr> <tr> <td>TMH</td> <td>JUNE, 2002</td> </tr> <tr> <td>DRAWN:</td> <td>SCALE:</td> </tr> <tr> <td>JMG</td> <td>AS NOTED</td> </tr> <tr> <td>REVIEWED:</td> <td>SHEET NO.</td> </tr> <tr> <td>TMH</td> <td></td> </tr> <tr> <td>APPROVED:</td> <td></td> </tr> <tr> <td>TO: J.L.</td> <td></td> </tr> </table>		DESIGNED:	DATE:	TMH	JUNE, 2002	DRAWN:	SCALE:	JMG	AS NOTED	REVIEWED:	SHEET NO.	TMH		APPROVED:		TO: J.L.	
DESIGNED:	DATE:																		
TMH	JUNE, 2002																		
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JMG	AS NOTED																		
REVIEWED:	SHEET NO.																		
TMH																			
APPROVED:																			
TO: J.L.																			
		E-2																	

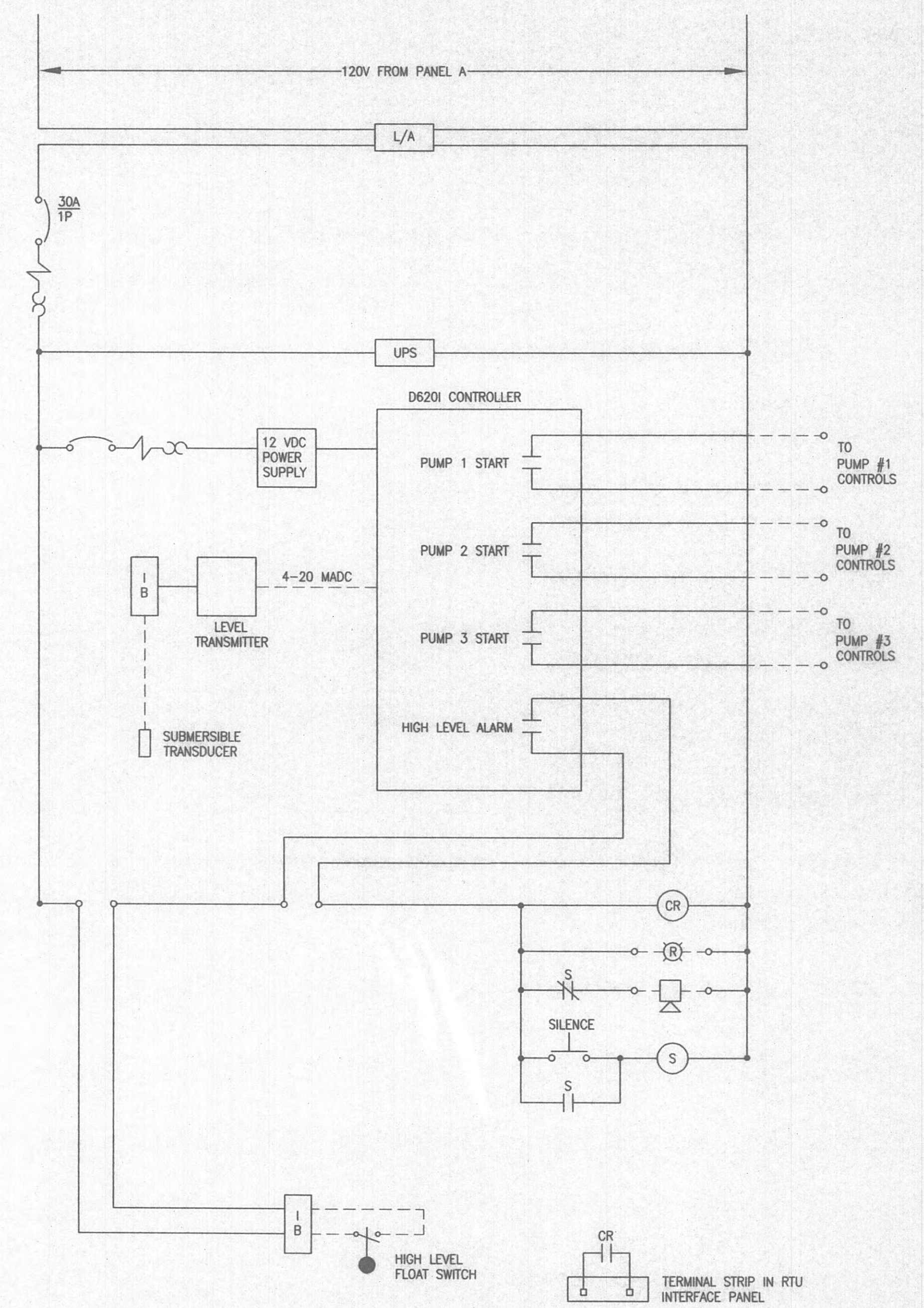
FILE: 29 Aug 2003 - 10:51 am
FILE NAME: U:\304\05-WOODYARD\CADD\WORKING\3041-E3.dwg



CONTROL CIRCUIT NO. 3
PUMP NO.1
1 REQUIRED IN MCC



CONTROL CIRCUIT NO. 4
PUMP NO.2 AND NO. 3
2 REQUIRED IN MCC



- CONTROL CIRCUIT NO.5 NOTES:
1. SIZE OF UPS SHALL BE PER VENDOR TO PROVIDE 4 HOURS BACKUP.
 2. SIZE OF 12 VDC POWER SUPPLY AND PRIMARY BREAKER SHALL BE AS REQUIRED PER VENDOR.
 3. "IB" REPRESENTS INTRINSICALLY SAFE RELAY.

CONTROL CIRCUIT NO. 5
PUMP CONTROL PANEL
1 REQUIRED IN A NEMA 1 ENCLOSURE

NOTE:
CONTROL WIRING WAS MODIFIED
BY SUPPLIER DURING
CONSTRUCTION. SEE O&M
MANUALS AND RECORD
SUBMITTALS FOR ACTUAL WIRING.

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GRW
GRW Engineers, Inc.
Engineers, Architects, Planners
1000 CONSTRUCTION CO.
DATE: 8/29/03

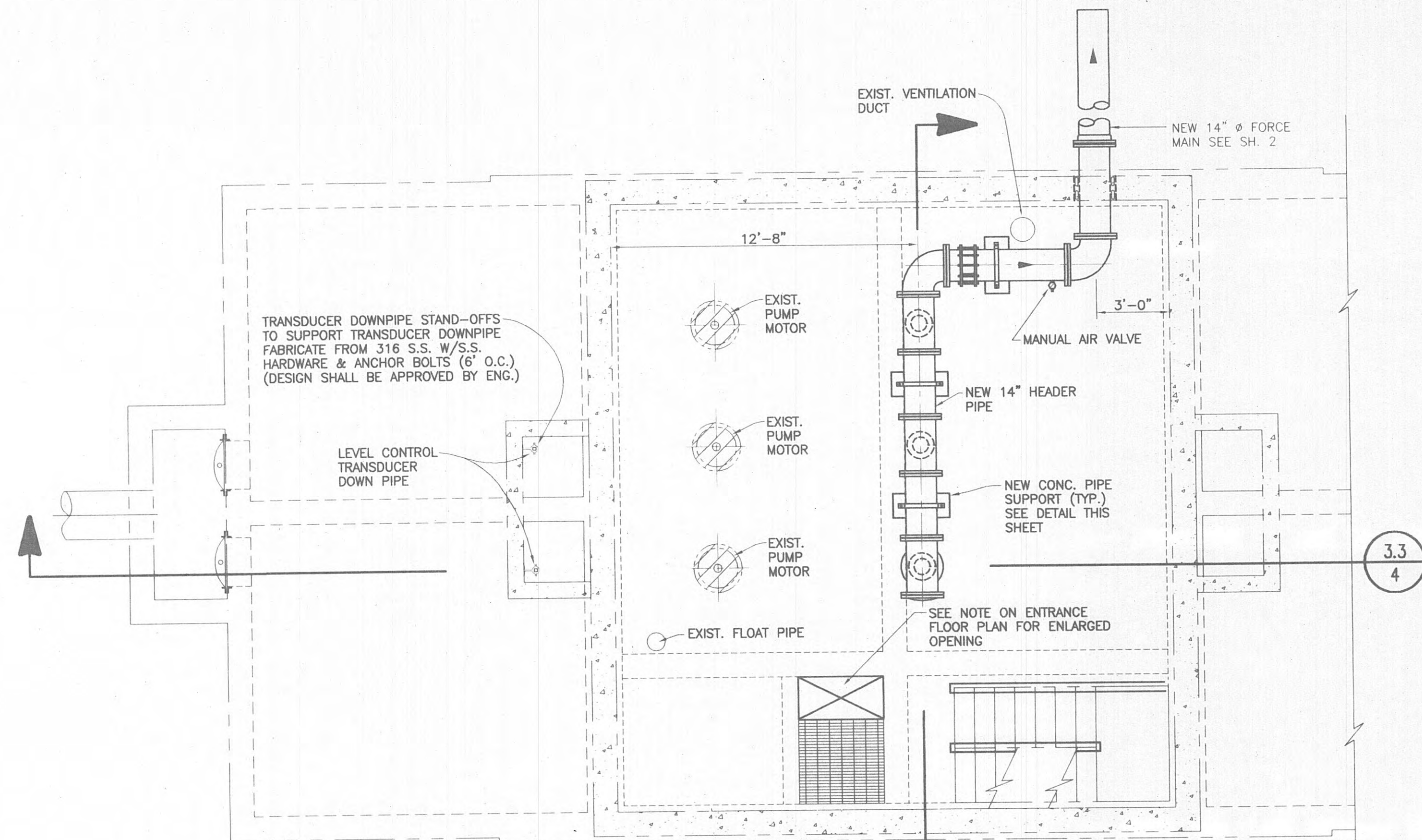
REVISIONS			
NO.	DESCRIPTION	DATE	BY

GRW PROJECT NO. 7601-20 CONTRACT S02-02

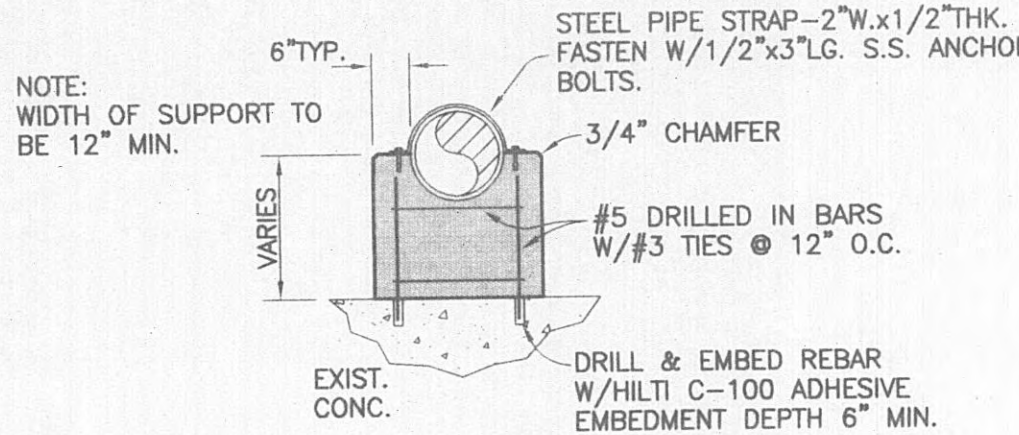
**EXISTING WOODYARD SEWAGE PUMP STATION
CONTROL CIRCUITS
HARRIMAN UTILITY BOARD
HARRIMAN, TENNESSEE**

DESIGNED: TMH	DATE: JUNE, 2002
DRAWN: MKC	SCALE: AS NOTED
REVIEWED: TMH	SHEET NO. E-3
APPROVED: TMH	

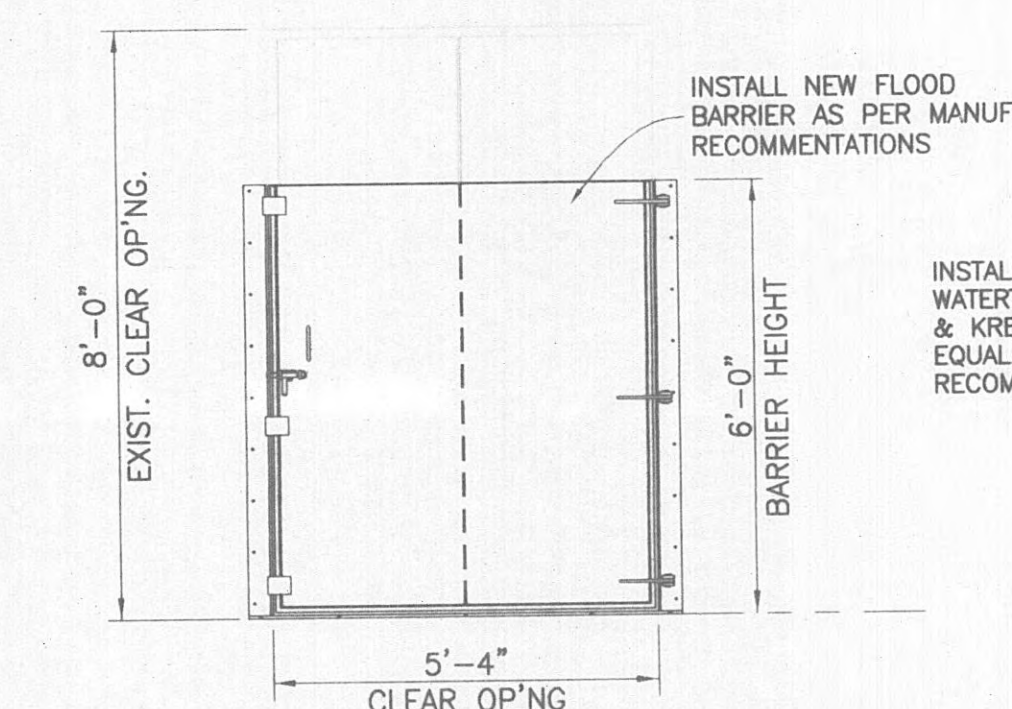
GRW Elrod Dunson, Inc.
Engineers, Architects, Planners
LEXINGTON LOUISVILLE INDIANAPOLIS
NASHVILLE KNOXVILLE



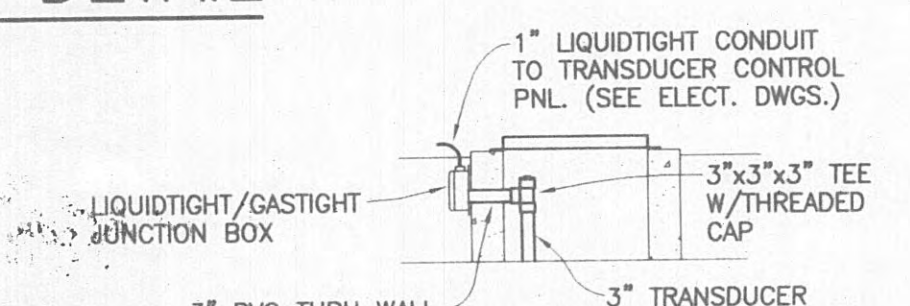
INTERMEDIATE FLOOR PLAN
SCALE: 1/4" = 1'-0"



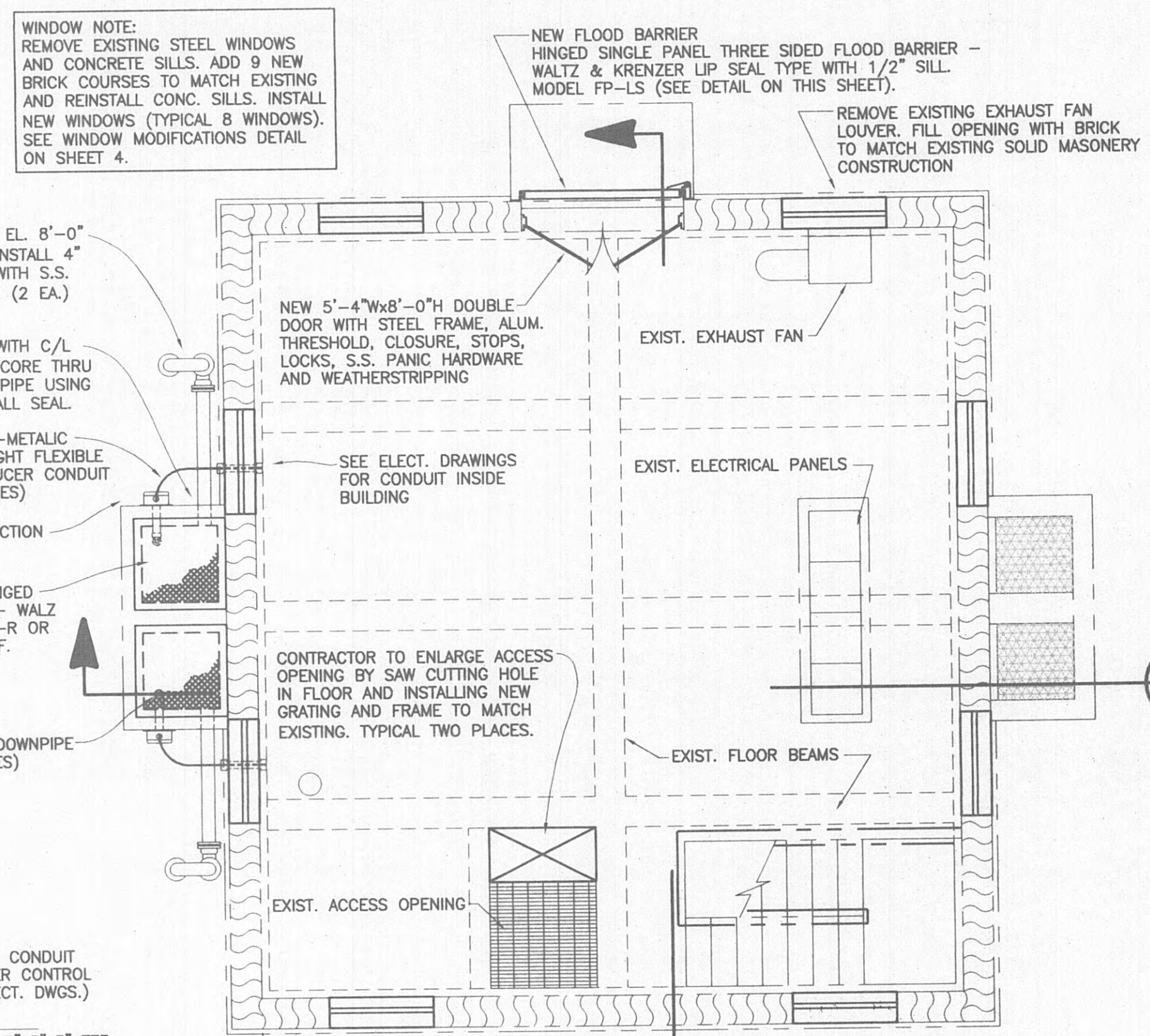
PIPE SUPPORT DETAIL
SCALE: 3/8" = 1'-0"



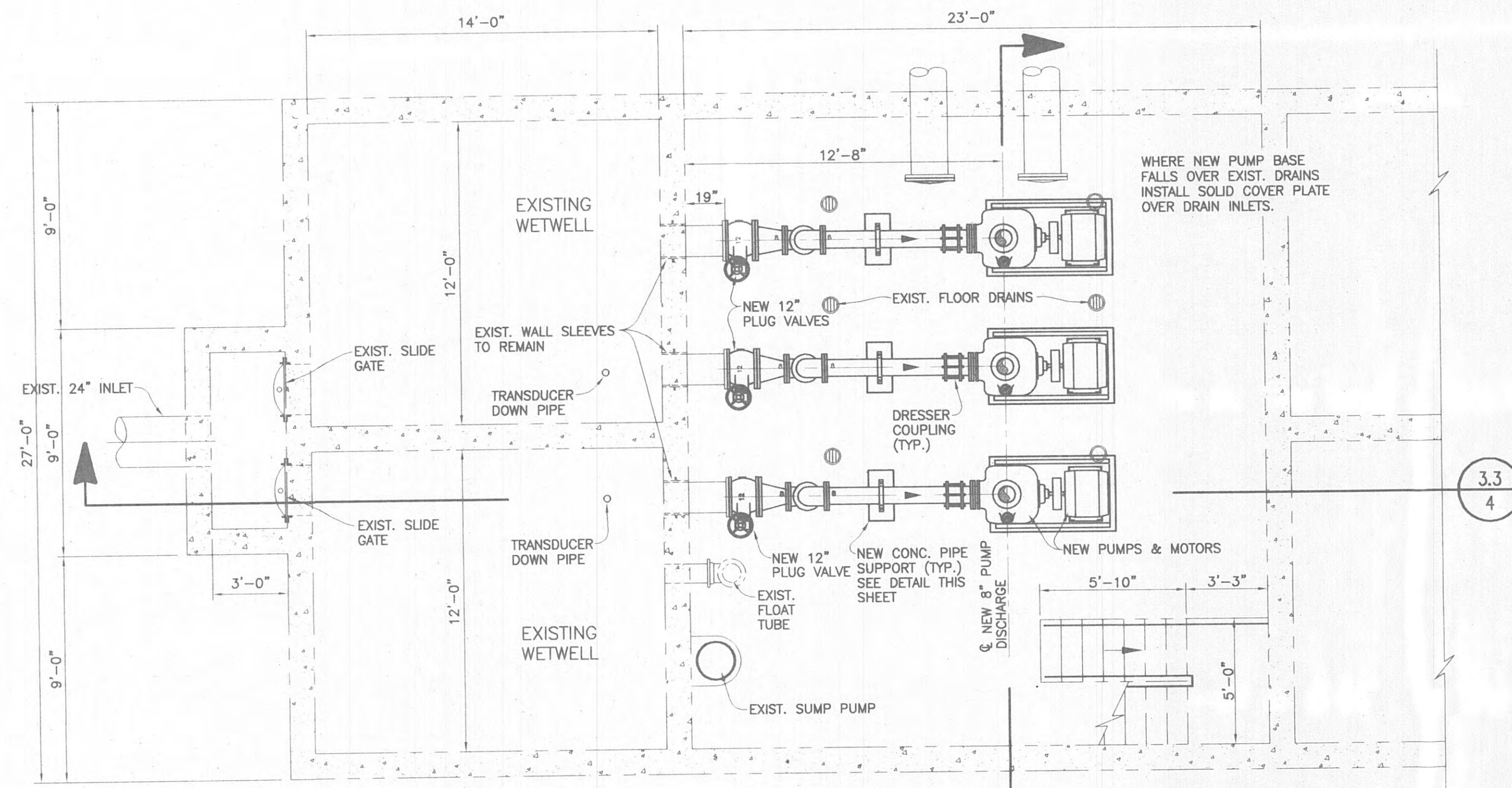
FLOOD BARRIER DETAIL
SCALE: 3/8" = 1'-0"



WATERTIGHT J.B. DETAIL
SCALE: 1/4" = 1'-0"



ENTRANCE FLOOR PLAN
SCALE: 1/4" = 1'-0"



PUMP LEVEL - PLAN
SCALE: 1/4" = 1'-0"

LEGEND

- EQUIPMENT TO BE REMOVED
- EXIST. CONC. STRUCTURE
- EXISTING BRICK WALL

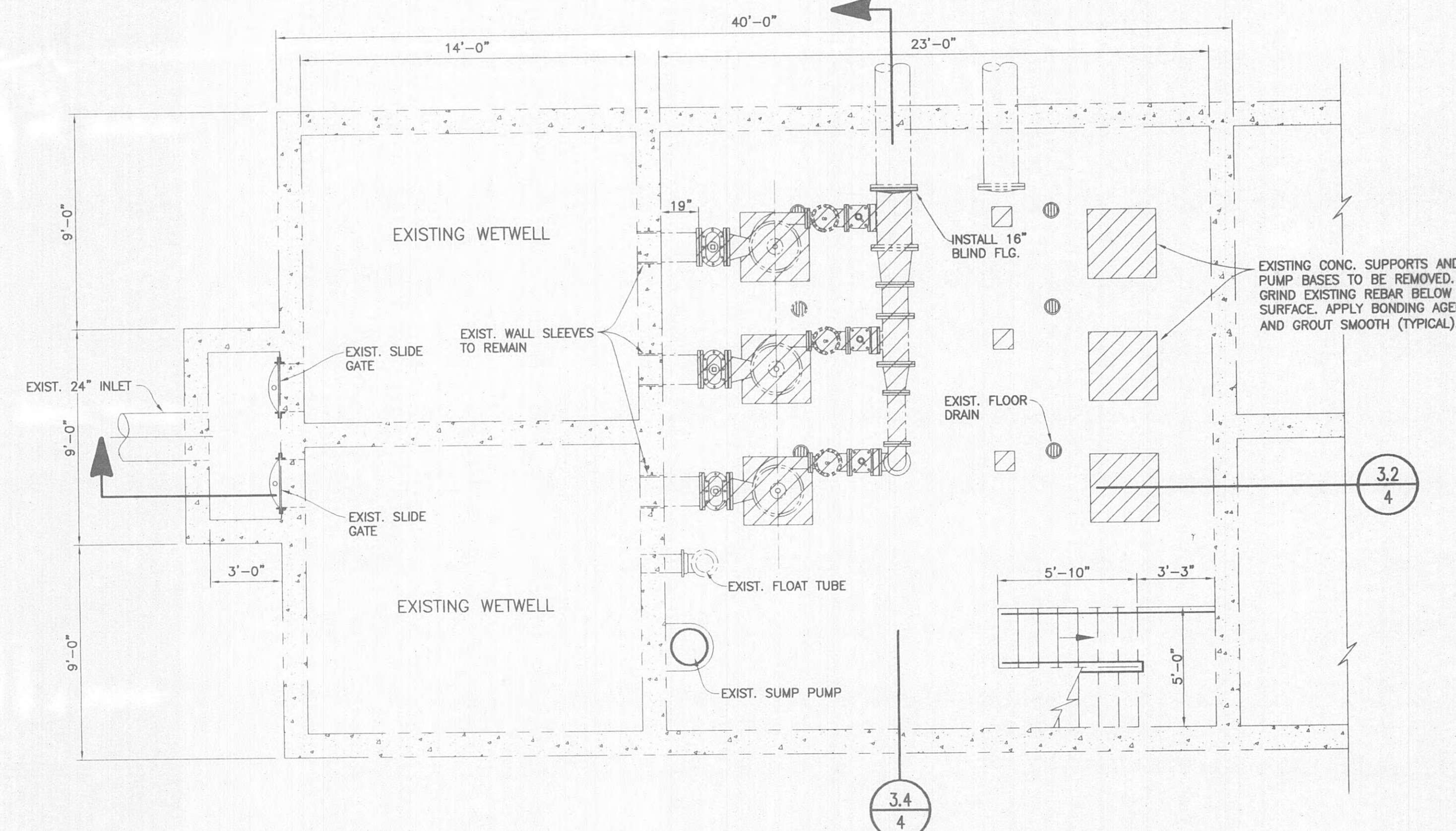
NOTE TO CONTRACTOR:
ALL EXPOSED EXTERIOR MASONRY SHALL BE COATED WITH CHEMPROBE MASONRY DIVISION OF TNEPEC PRIME-A-PELL 200 AT A RATE OF 125 TO 150 SQ. FT. PER GALLON.

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ENGINEER'S REPRESENTATIVE: *de*
CONSTRUCTION COMPANY: W & O CONSTRUCTION COMPANY
DATE: 8/29/03

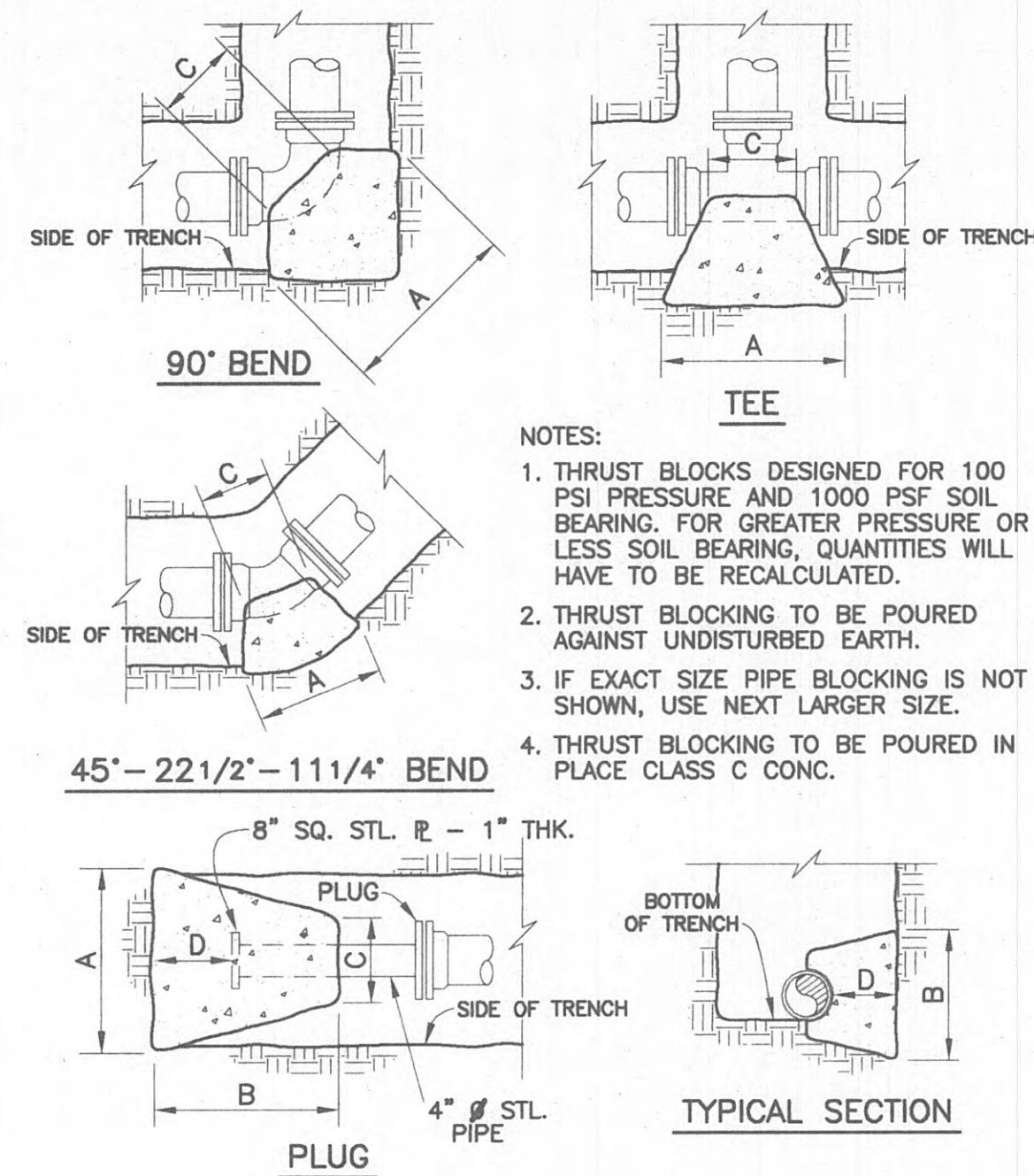


PUMP LEVEL - EXIST. LAYOUT
SCALE: 1/4" = 1'-0"



GRW PROJECT NO. 7601-20 CONTRACT S02-02
EXISTING WOODYARD SEWAGE PUMP STATION
PLAN VIEWS
HARRIMAN UTILITY BOARD
HARRIMAN, TENNESSEE

 GRW Elrod Dunson, Inc. Engineers, Architects, Planners LEADSPRINT LOUISVILLE INDIANAPOLIS NASHVILLE KNOXVILLE	DESIGNED:	DATE:
	RGT	JUNE, 2002
	DRAWN:	SCALE:
	DGR/SG	AS NOTED
	NDW	SHEET NO.
APPROVED:		
RGT		



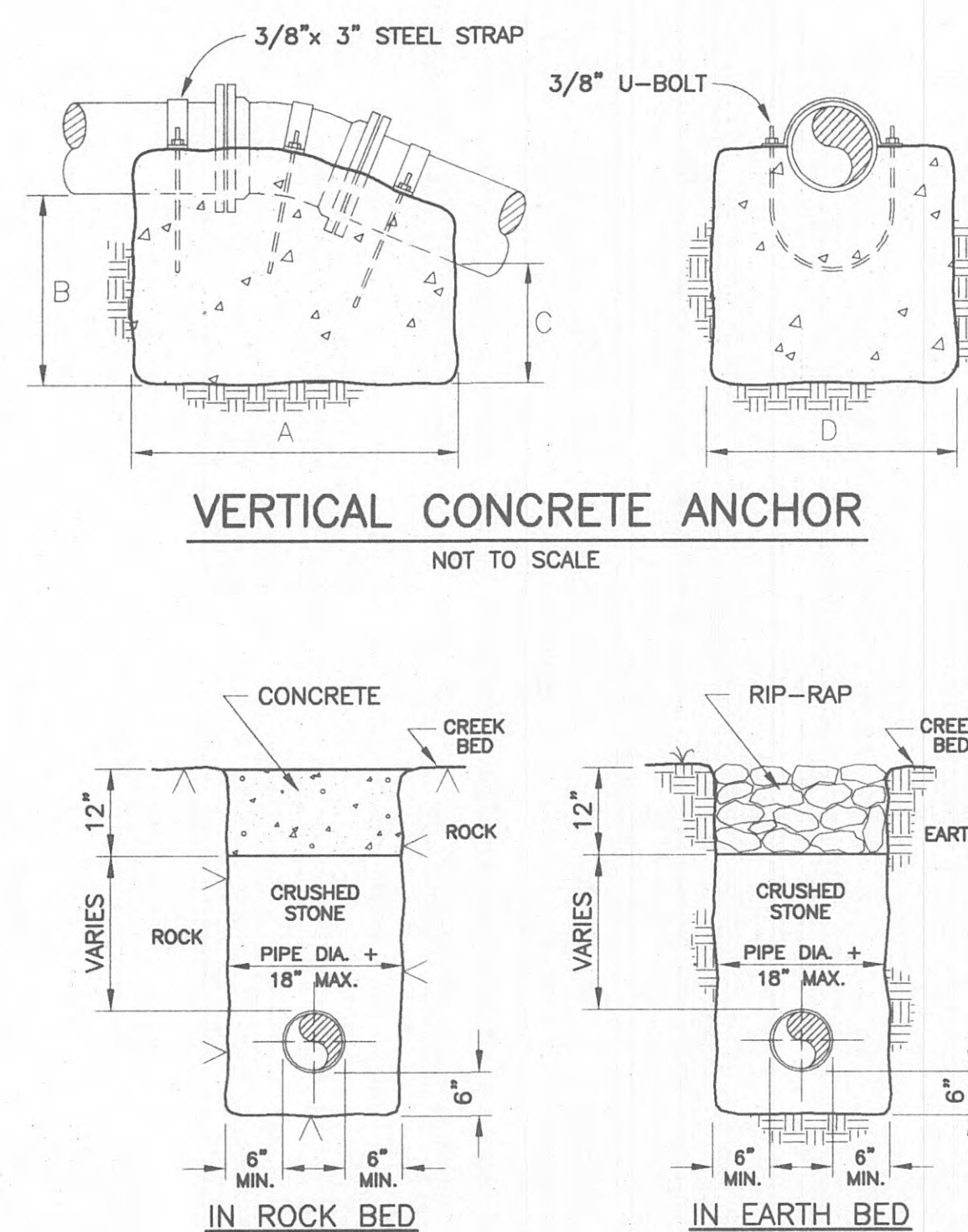
THRUST BLOCKING DETAIL
NOT TO SCALE

90° BEND							45° BEND						
SIZE	12"	10"	8"	6"	4"	2"	SIZE	12"	10"	8"	6"	4"	2"
A	60	54	48	42	36	30	A	56	50	44	38	32	28
B	48	42	36	30	22	12	B	42	38	32	26	20	12
C	44	38	32	26	18	8	C	38	34	28	22	16	8
D	46	40	34	28	20	12	D	40	36	30	24	18	10

22 1/2° BEND							11 1/4° BEND						
SIZE	12"	10"	8"	6"	4"	2"	SIZE	12"	10"	8"	6"	4"	2"
A	50	44	38	34	30	22	A	34	30	26	24	22	18
B	34	30	26	22	16	12	B	26	24	18	16	12	8
C	30	26	22	18	12	8	C	26	24	18	16	12	8
D	32	28	24	20	14	10	D	30	26	24	18	12	10

DIMENSIONS ARE IN INCHES

- NOTES:
1. POUR CLASS C CONCRETE ANCHOR AGAINST UNDISTURBED EARTH OR ROCK.
 2. IF EXACT SIZE PIPE IS NOT SHOWN, USE NEXT LARGER SIZE.
 3. VERTICAL CONCRETE ANCHOR DESIGNED FOR 100 PSI FOR GREATER PRESSURE, QUANTITIES WILL HAVE TO BE RECALCULATED.



DITCH CROSSING DETAIL
NOT TO SCALE

90° BEND							
SIZE	16"	12"	10"	8"	6"	4"	2"
A	67	50	42	34	26	18	16
B	67	50	42	34	26	18	16
C	30	16	15	12	12	9	9
D	34	25	21	17	13	9	9

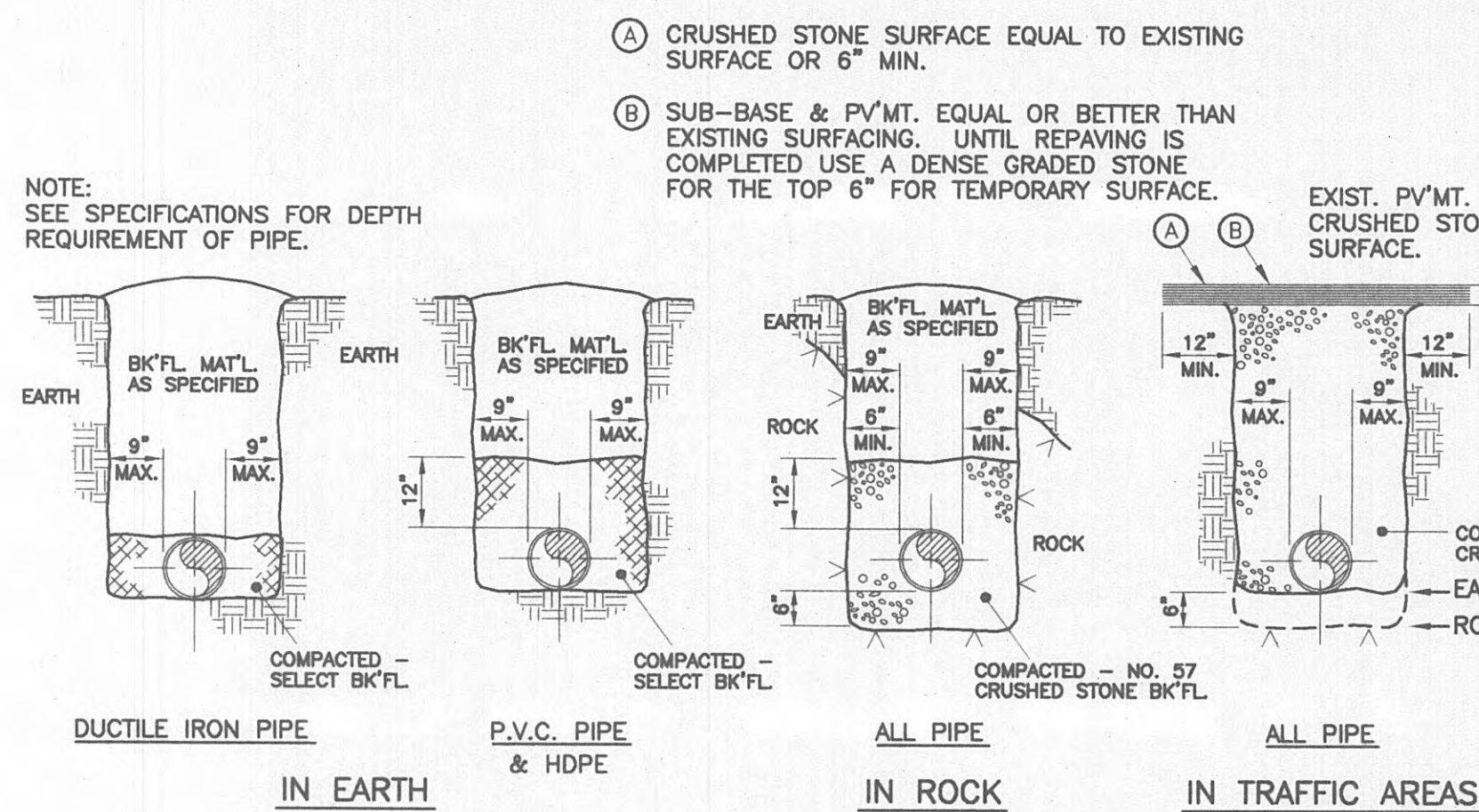
45° BEND							
SIZE	16"	12"	10"	8"	6"	4"	2"
A	49	37	31	25	18	12	12
B	49	37	31	25	18	12	12
C	18	16	14	12	12	8	8
D	24	18	15	12	9	6	6

22 1/2° BEND							
SIZE	16"	12"	10"	8"	6"	4"	2"
A	35	26	23	18	13	9	9
B	35	26	23	18	13	9	9
C	18	16	14	12	10	8	8
D	18	13	11	9	6	4	4

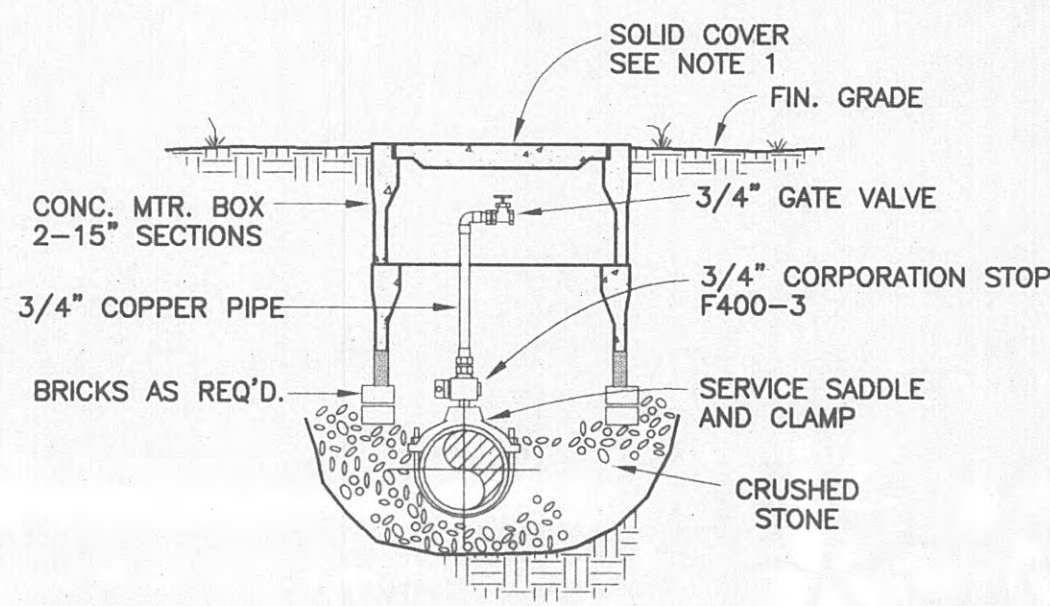
11 1/4° BEND							
SIZE	16"	12"	10"	8"	6"	4"	2"
A	25	19	16	13	11	9	9
B	25	19	16	13	11	9	9
C	18	16	14	12	10	8	8
D	12	9	8	6	5	4	4

PLUG							
SIZE	16"	12"	10"	8"	6"	4"	2"
A	56	52	43	34	26	26	26
B	56	52	43	34	26	26	26
C	12	12	12	12	12	12	12
D	44	32	22	15	11	11	11

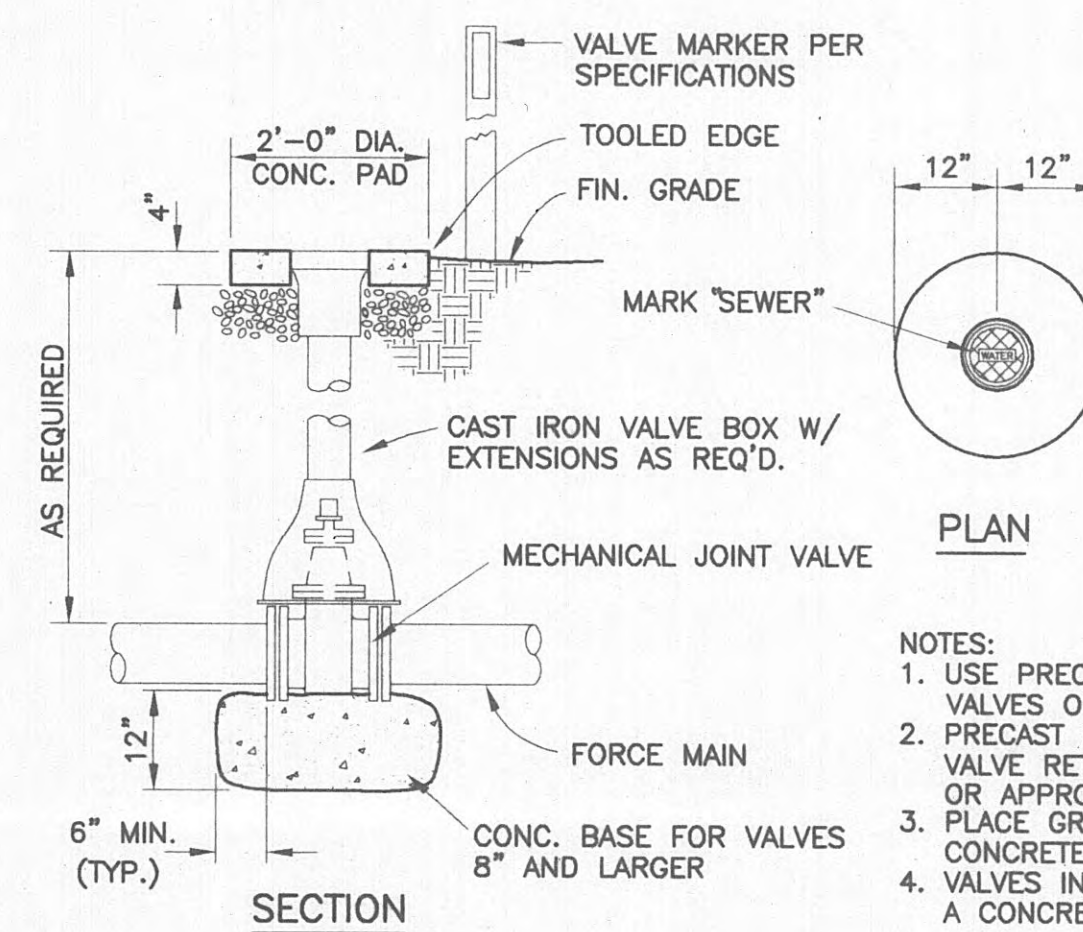
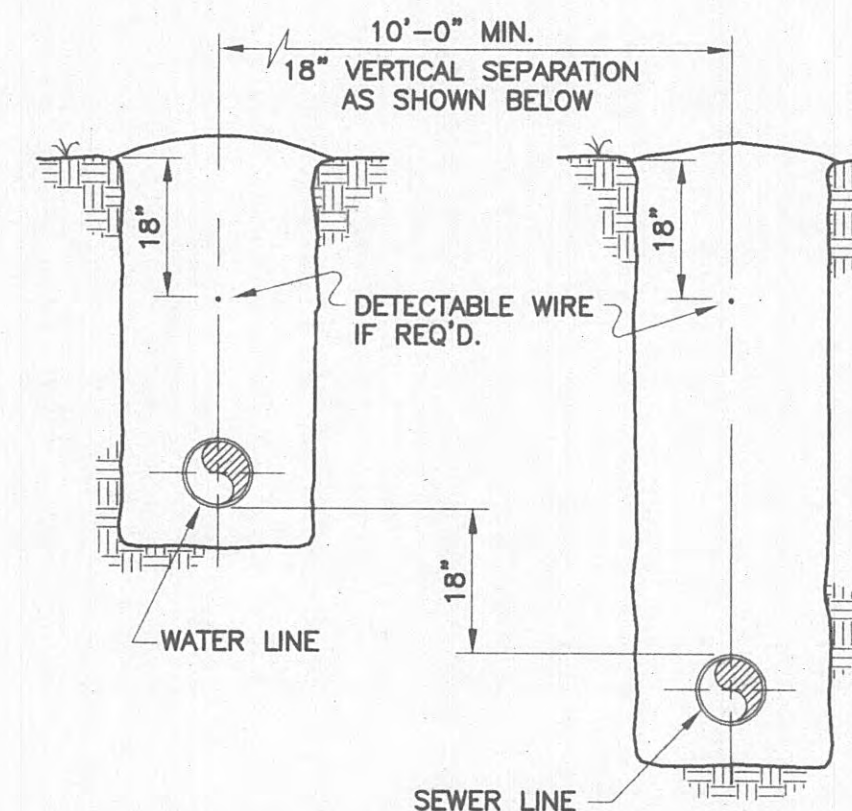
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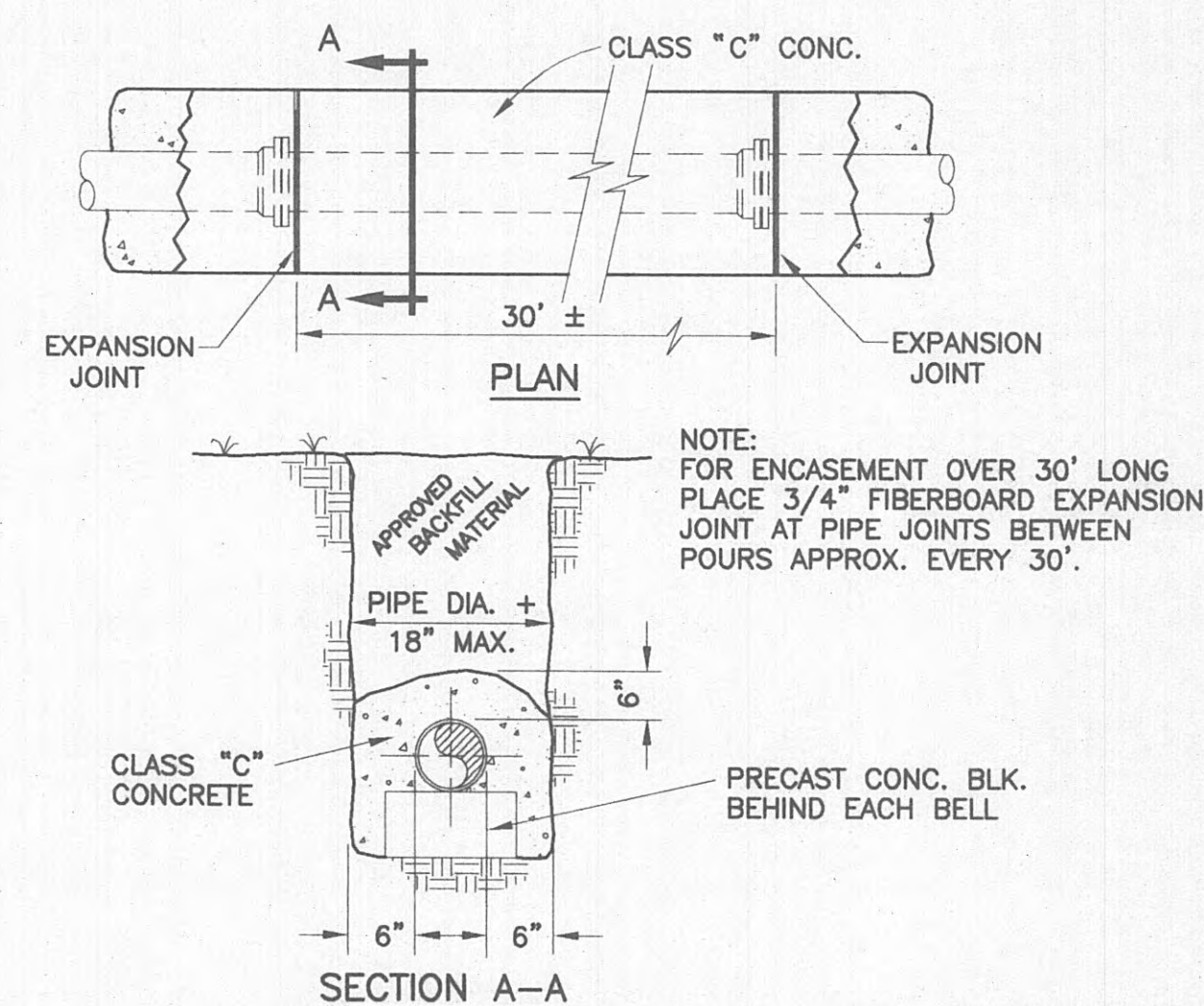
- NOTES:
1. 17"x28" CONC. METER BOX - AS MANUF. BY BROOKS PRODUCTS, INC. MEMPHIS, TN - OR APPROVED EQUAL USE EXTENSIONS AS REQ'D.
 2. PLACE MANUAL AIR BLEED VALVE @ HIGH POINT IN LINE (SHOWN ON PLANS)
 3. SEAL SLOTS IN METER BOX W/NON-SHRINK GROUT.
 4. ALL ACCESSARY VALVES AND PIPING SHALL BE BRASS UNLESS OTHERWISE NOTED.



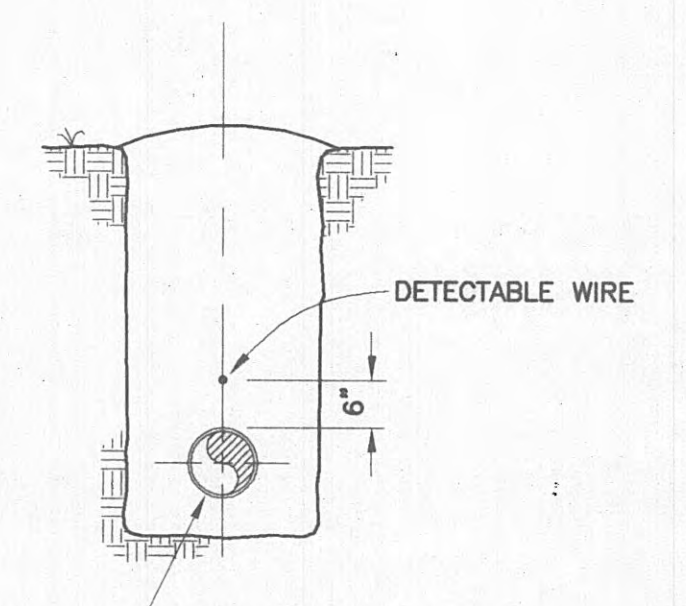
MANUAL AIR BLEED VALVE
NOT TO SCALE



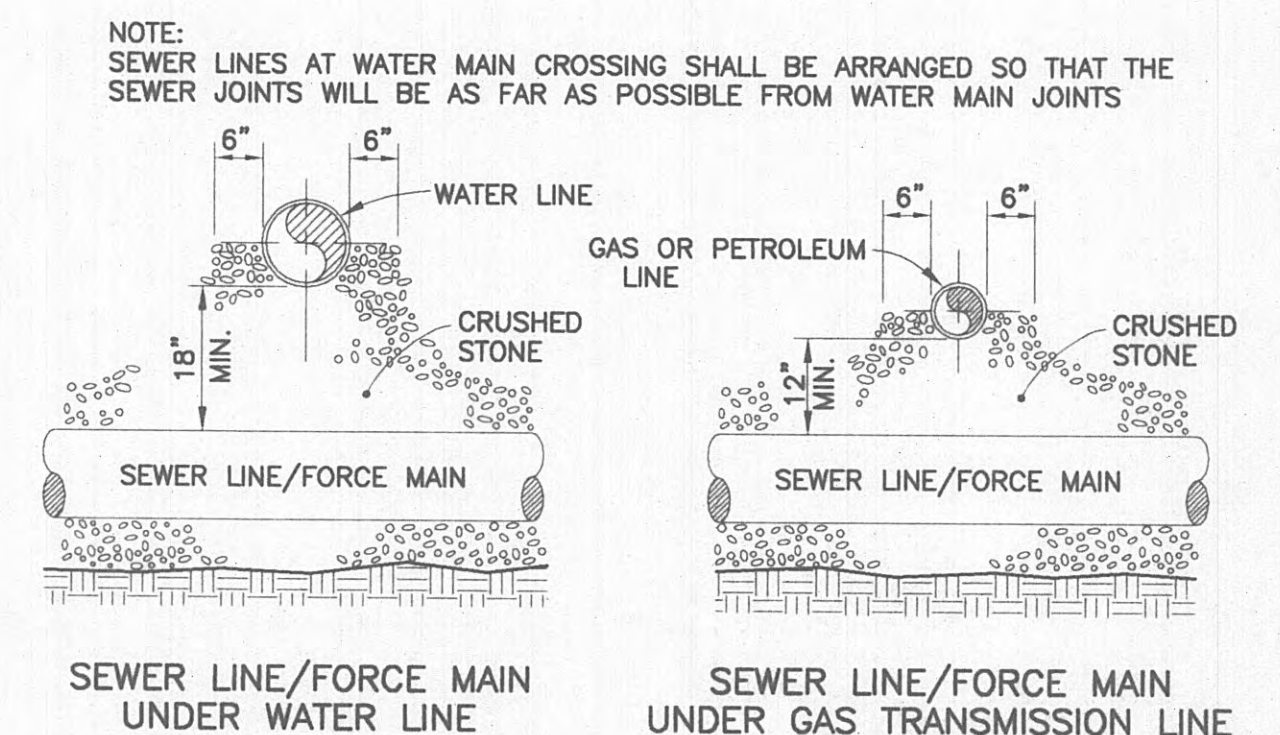
VALVE SETTING DETAIL
NOT TO SCALE



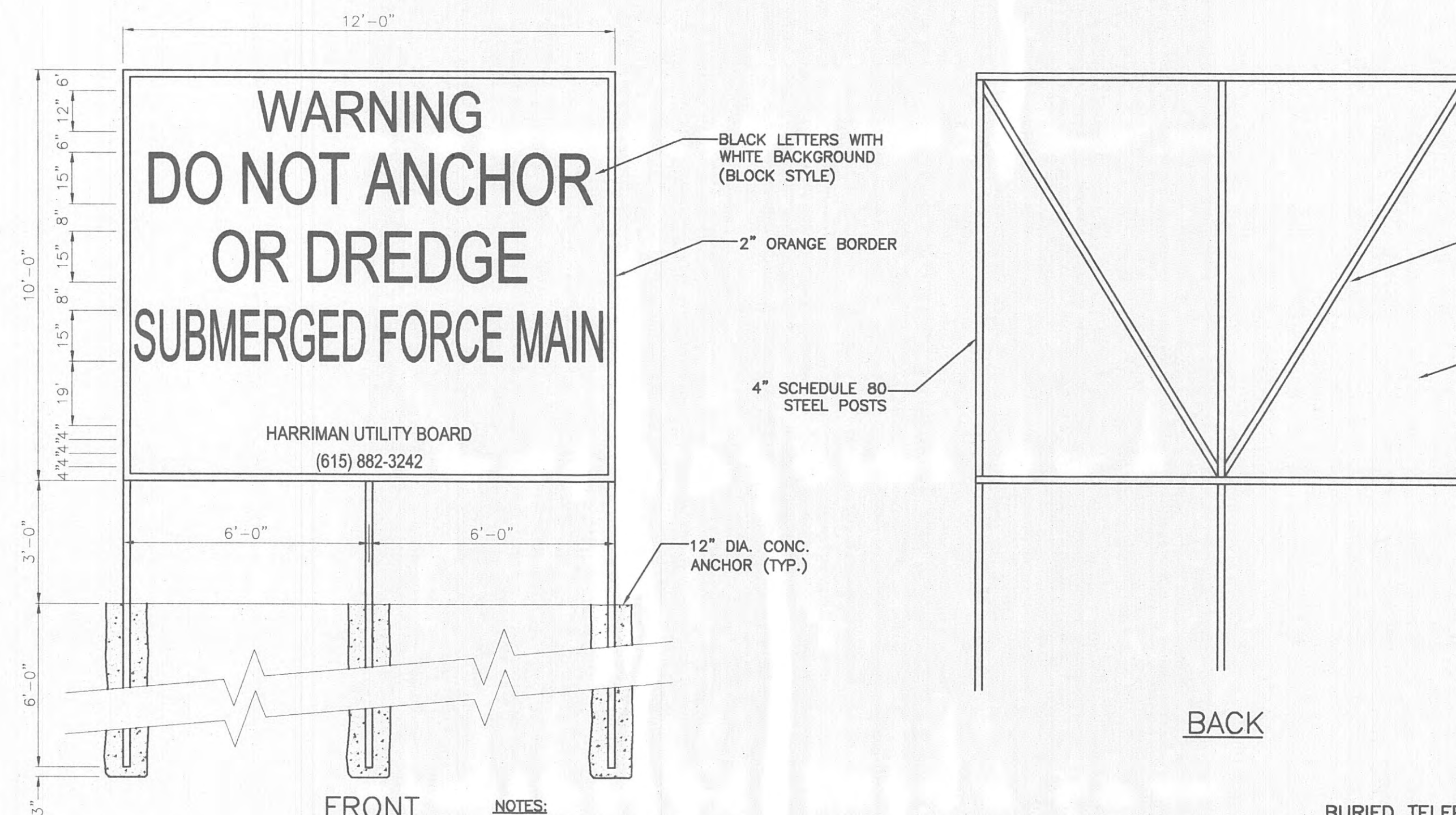
STANDARD CONCRETE ENCASEMENT
NOT TO SCALE



DETECTABLE WIRE DETAIL
NOT TO SCALE



PIPE CROSSING FOR SEWER LINE/FORCE MAIN
NOT TO SCALE




- NOTES:
1. ALL MEMBERS SHALL RECEIVE A PRIME COAT OF EPOXY POLYIMIDE PRIMER, KOPPERS NO. 654, MOBIL CHEMICAL NO. 13R60, OR APPROVED EQUAL. A FINISH COAT OF EPOXY ENAMEL, KOPPERS NO. 200 EPOXY, MOBIL CHEMICAL VAL CHEM EPOXY ENAMEL-84 SERIES, OR APPROVED EQUAL. EACH COAT SHALL BE MINIMUM 20 DRY MILLS.
 2. TWO (2) SIGNS SHALL BE FURNISHED AND INSTALLED FOR OUTFALL LOCATION. LOCATION SHALL BE AS PER ENGINEER'S INSTRUCTION WITH SIGN LOCATED ON EACH RIVER BANK TO INDICATE LOCATION OF THE FORCE MAIN.

WARNING SIGN
NOT TO SCALE

BURIED TELEPHONE CABLES AND UTILITIES
CALL: TENNESSEE ONE CALL (1-800-351-1111)

REVISIONS			
NO.	DESCRIPTION	DATE	BY



GRW PROJECT NO. 7601-20		CONTRACT S02-02	
MISCELLANEOUS FORCE MAIN DETAILS WOODYARD SEWAGE PUMP STATION UPGRADE HARRIMAN UTILITIES BOARD HARRIMAN, TENNESSEE			
 GRW Elrod Dunson, Inc. Engineers, Architects, Planners LEXINGTON LOUISVILLE INDIANAPOLIS NASHVILLE KNOXVILLE		DESIGNED: R.G.T. DRAWN: D.M. REVIEWED: NDW APPROVED: R.G.T.	DATE: JUNE, 2002 SCALE: AS NOTED SHEET NO. 5

7-2-02

GENERAL LEGEND

	APPEARS ON SHEET WHERE SECTION IS CUT SECTION IDENTIFICATION LETTER SHEET WHERE SECTION IS DRAWN
	APPEARS ON THE SHEET WHERE SECTION IS DRAWN SECTION OR DETAIL IDENTIFICATION LETTER SHEET WHERE DRAWN
	ENLARGED AREA OR PARTIAL PLAN SYMBOL (ON SHEET WHERE INDICATED AND SHEET WHERE DRAWN) IDENTIFICATION LETTER SHEET WHERE DRAWN
	PLAN MATCH LINE SYMBOL
	CONNECTION OF NEW WORK TO EXISTING
	LINE OR EQUIPMENT TO BE REMOVED
	ROOM NUMBER
	CEILING HEIGHT
	ABOVE FINISHED FLOOR
	TOP OF STEEL, BOTTOM
	TOP OF BEAM, BOTTOM
	TOP OF JOIST, BOTTOM
	TOP OF CONCRETE, BOTTOM
	TOP OF PIPE, BOTTOM
	BOTTOM OF DECK

MECHANICAL LEGEND

	NEW DUCT - 1ST FIGURE IS DIMENSION SHOWN
	SUPPLY OR OUTSIDE AIR DUCTWORK; PLAN, UP & DOWN
	RETURN OR EXHAUST DUCTWORK
	ROUND DUCTWORK; PLAN, UP AND DOWN
	AIR FLOW; DIRECTION
	MOTOR OPERATED DAMPER; PLAN, ONE LINE DIAGRAM
	DUCT TRANSITION; PLAN, ONE LINE DIAGRAM
	FLEXIBLE DUCT CONNECTOR; PLAN
	THERMOSTAT, OR TEMP. CONTROLLER
	HORIZONTAL UNIT HEATER
	ROOF EXHAUST HOOD, EXHAUST FAN
	ROOF INTAKE HOOD, SUPPLY FAN

THIS RECORD DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY THE CONSTRUCTION CONTRACTOR. GRW ENGINEERS, INC. HAS ATTEMPTED TO VERIFY THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION BUT SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

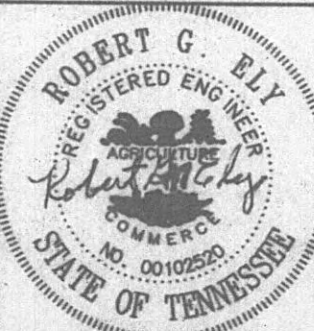
GRW
GRW Engineers, Inc.
Engineers, Architects, Planners
1001 N. 10th St.
Nashville, TN 37203
615-259-0300

ENGINEER/ARCHITECT: *Robert G. Ely*
CONSTRUCTION COMPANY: **WEO CONSTRUCTION Co.**
DATE: *8/29/03*

GENERAL NOTES

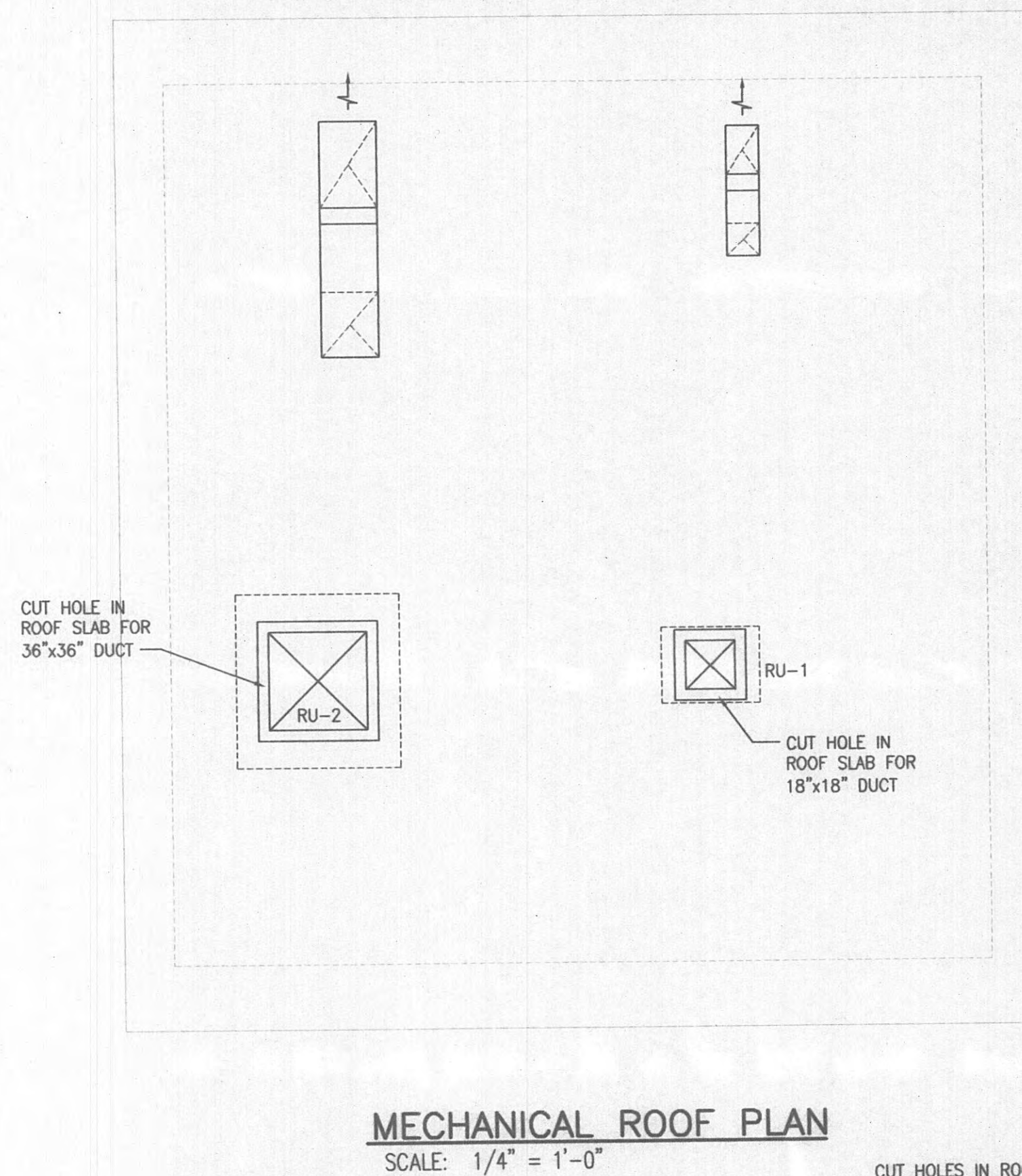
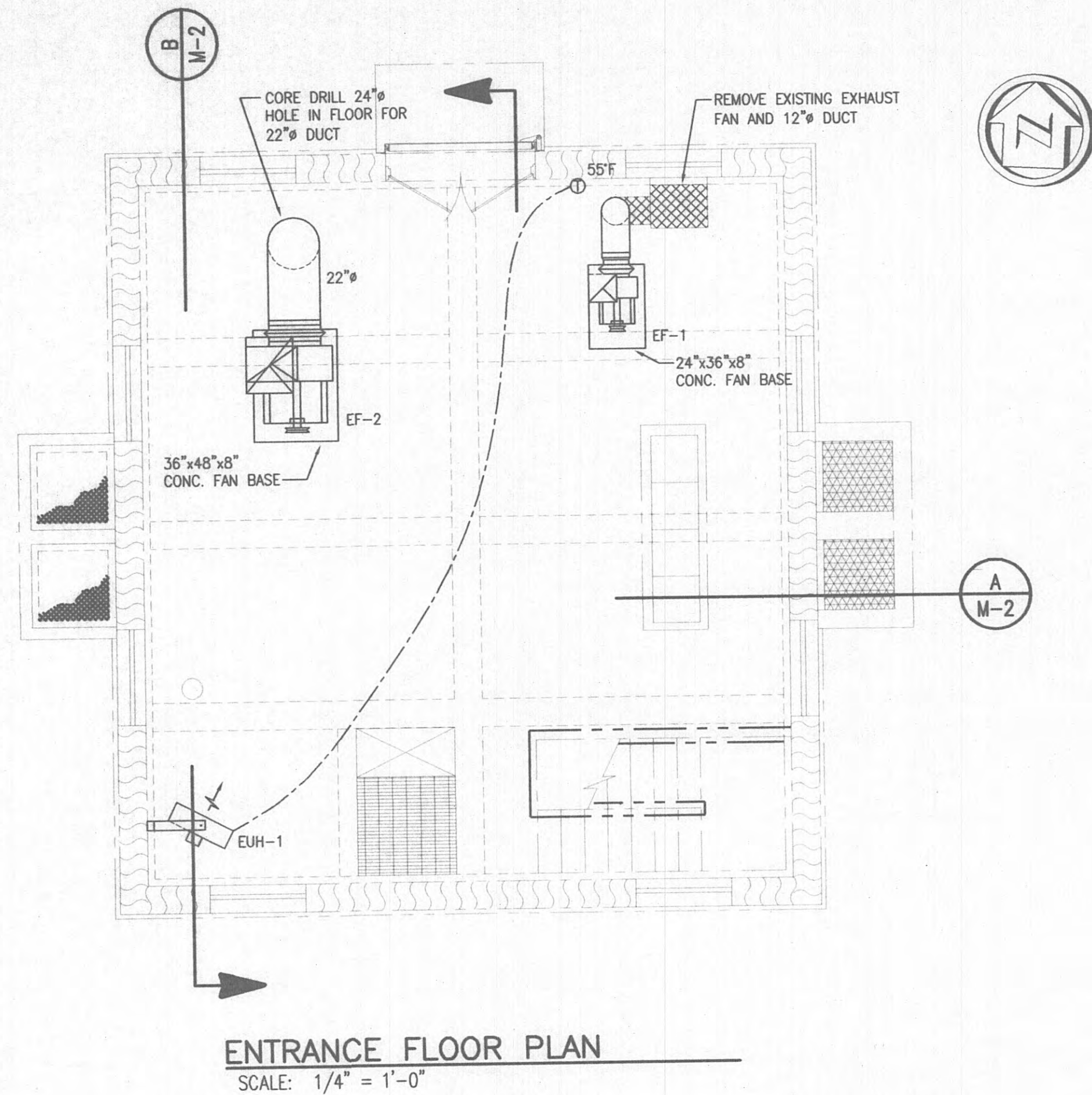
- GENERAL NOTES, WHEREVER THEY ARE FOUND, APPLY TO ALL WORK IN THE PROJECT, UNLESS OTHERWISE INDICATED. SHEET NOTES, UTILIZING NOTE SYMBOLS, APPLY ONLY TO THE SHEET ON WHICH THEY ARE FOUND, UNLESS OTHERWISE STATED. THE MEANING OF NOTE SYMBOLS AND NUMBERS VARIES FROM SHEET TO SHEET.
- CONTRACTOR SHALL UTILIZE ALL INFORMATION IN THE CONTRACT DOCUMENTS FOR PROVIDING THE WORK. CONTRACTOR SHALL UTILIZE DETAILS AND FLOW DIAGRAMS FOR THE WORK WHERE APPROPRIATE, WHETHER OR NOT THEY ARE SPECIFICALLY REFERENCED ON THE PLANS OR SUPPORTING DRAWINGS.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND CONTRACT DOCUMENTS ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ANY WORK RELATING TO THOSE CONDITIONS IS PERFORMED.
- LEGENDS OR LISTS OF SYMBOLS AND ABBREVIATIONS ARE GENERAL IN NATURE AND MAY CONTAIN ITEMS NOT USED IN THE CONTRACT DOCUMENTS. IF ANY SUCH ITEMS ARE FOUND WHICH ARE NOT DEFINED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER SHALL BE CONTACTED FOR CLARIFICATION BEFORE THE BID.
- CONTRACTOR SHALL MAINTAIN A SET OF PROJECT RECORD DRAWINGS AT THE JOB SITE AND SHALL BE RESPONSIBLE FOR MAKING CLEAR, NEAT CHANGES TO THE DRAWINGS, REFLECTING CHANGES TO THE WORK AND VARIANCE IN EXISTING CONDITIONS.
- PROVIDE ALL MISCELLANEOUS STEEL, AS REQUIRED, TO SUPPORT ALL MECHANICAL DUCT AND PIPING SYSTEMS AND EQUIPMENT. HANG ALL EQUIPMENT FROM STRUCTURE WITH MINIMUM OF TWO TRAPEZE ASSEMBLIES OR FOUR INTEGRAL MOUNTING POINTS WITH VIBRATION ISOLATORS ON ALL FOUR SUPPORTS. DO NOT HANG ANYTHING FROM STEEL COMPOSITION OR WOODEN DECKS. NON-ROOF CONCRETE DECKS MAY BE USED ONLY WITH PERMISSION OF THE ENGINEER. DO NOT HANG ANYTHING FROM MECHANICAL OR ELECTRICAL ITEMS.
- NO CONCRETE RIBS OR JOISTS SHALL BE CUT WITHOUT SPECIFIC PERMISSION FROM THE ENGINEER. ALL ROOF OR FLOOR DECK PENETRATIONS IN WAFFLE STRUCTURE SHALL BE IN THE THIN-SLAB DEPRESSIONS IN THE STRUCTURE UNLESS OTHERWISE SHOWN.
- NO STEEL STRUCTURAL MEMBERS SHALL BE CUT, BURNED, WELDED OR DRILLED WITHOUT SPECIFIC PERMISSION OF THE ENGINEER.
- NO WOODEN STRUCTURAL MEMBERS SHALL BE CUT OR DRILLED EXCEPT AS INDICATED IN THE CONTRACT DOCUMENTS OR AS APPROVED BY THE ENGINEER.
- CONSULT ROOF PLAN AND STRUCTURAL DRAWINGS FOR PLACEMENT OF ROOF MOUNTED EQUIPMENT. PROVIDE ALL NECESSARY ROOF CURBS, EQUIPMENT RAILS AND BASES AND ANY ADDITIONAL REQUIRED FRAMING IN COORDINATION WITH STRUCTURAL AND ROOFING WORK.
- ALL EQUIPMENT, DUCT, PIPING AND ACCESSORIES INSTALLED OUTSIDE OR OTHERWISE EXPOSED TO THE ELEMENTS SHALL BE ADEQUATELY WEATHERPROOFED, IN KEEPING WITH THE SPECIFICATIONS. ALL FERROUS METAL FRAMING COMPONENTS SHALL BE STAINLESS STEEL OR HOT-DIP GALVANIZED.
- DO NOT CHANGE PATH OF PIPING OR DUCT RUNS, ADD TURNS OR OFFSETS OR CHANGE DUCT DIMENSIONS OR PIPE SIZE WITHOUT FIRST CONSULTING THE ENGINEER. PIPE SIZES SHOWN ON DRAWINGS ARE NOMINAL UNLESS OTHERWISE INDICATED. ALL DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS FOR SHOP OR FIELD-FABRICATED DUCT AND NOMINAL SIZES FOR FACTORY FABRICATED DUCT.
- CONTRACTOR SHALL CERTIFY AT THE TIME OF OWNER OCCUPANCY THAT ALL BELT-DRIVEN EQUIPMENT HAS BEEN CHECKED FOR BELT TIGHTNESS AFTER WEAR-IN PERIOD.
- ALL EXISTING EQUIPMENT SHUTDOWNS OR INTERRUPTIONS OF UTILITY SERVICE REQUIRED FOR COMPLETION OF THE WORK SHALL BE SCHEDULED IN ADVANCE, AS REQUIRED BY THE OWNER.
- COORDINATE ALL PIPING AND DUCTWORK WITH BOTH NEW AND EXISTING MECHANICAL AND ELECTRICAL WORK, INCLUDING HVAC, PLUMBING, ELECTRICAL, FIRE ALARM AND COMMUNICATIONS.
- CONTRACTOR IS RESPONSIBLE FOR MAKING ALL REQUIRED CONNECTIONS FOR A COMPLETE SYSTEM. CONNECTIONS OF NEW WORK TO EXISTING IS USUALLY INDICATED BY SPECIAL SYMBOL (SEE LEGEND). SYMBOLS MISSING FROM THE DRAWINGS DO NOT EXCUSE THE CONTRACTOR FROM PROVIDING THE WORK.
- ALL DUCTWORK AND SHEET METAL SHALL BE PROVIDED AS INDICATED AND SHALL BE MANUFACTURED AND SHOP- OR FIELD-FABRICATED, AS A MINIMUM, IN ACCORDANCE WITH THE RECOMMENDATIONS AND DETAILS OF SMACNA, UNLESS SPECIFICALLY INDICATED OTHERWISE.
- FANS SHALL BE PROVIDED AS INDICATED BY GREENHECK, CARNES, COOK OR APPROVED EQUAL. GRILLES, REGISTERS AND DIFFUSERS SHALL BE PROVIDED AS INDICATED BY TITUS, TUTTLE AND BAILEY, CARNES OR APPROVED EQUAL. LOUVERS, HOODS AND PENTHOUSES SHALL BE PROVIDED AS INDICATED BY GREENHECK, AIRSTREAM, LOUVERS AND DAMPERS, CARNES, RUSKIN OR APPROVED EQUAL. PROVIDE FIRE AND SMOKE DAMPERS IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA AND THE TENNESSEE BUILDING CODE.
- USE TURNING VANES, PER SMACNA CONSTRUCTION GUIDELINES, FOR ALL MITERED RECTANGULAR TURNS OF 45 DEGREES OR MORE.
- PROVIDE ALL CONTROLS NECESSARY TO OPERATE EQUIPMENT AS SHOWN OR DESCRIBED, INCLUDING VALVES, ACTUATORS, THERMOSTATS, DAMPERS, ALL ACCESSORY DEVICES, POWER AND/OR PNEUMATIC SERVICE.
- PROVIDE DISCONNECTS AND MAGNETIC STARTERS (OR RELAYS WITH OVERLOAD PROTECTION FOR SINGLE PHASE) FOR ALL EQUIPMENT SUPPLIED UNDER DIVISION 15 WHICH IS SPECIFIED TO HAVE FACTORY CONTROL PANEL. POWER WIRING AND CONDUIT TO THESE DEVICES AND BETWEEN THESE DEVICES AND MECHANICAL EQUIPMENT, IF REQUIRED, SHALL BE SUPPLIED UNDER DIVISION 16.

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NO.	DESCRIPTION	DATE BY
REVISIONS		



GRW PROJECT NO. 7601-20		CONTRACT S02-02	
EXISTING WOODYARD SEWAGE PUMP STATION MECHANICAL LEGEND HARRIMAN UTILITY BOARD HARRIMAN, TENNESSEE			
DESIGNED:	RGE	DATE:	JUNE, 2002
DRAWN:	JTR	SCALE:	AS NOTED
REVIEWED:	RGE	SHEET NO.	M-1
APPROVED:	RGE		

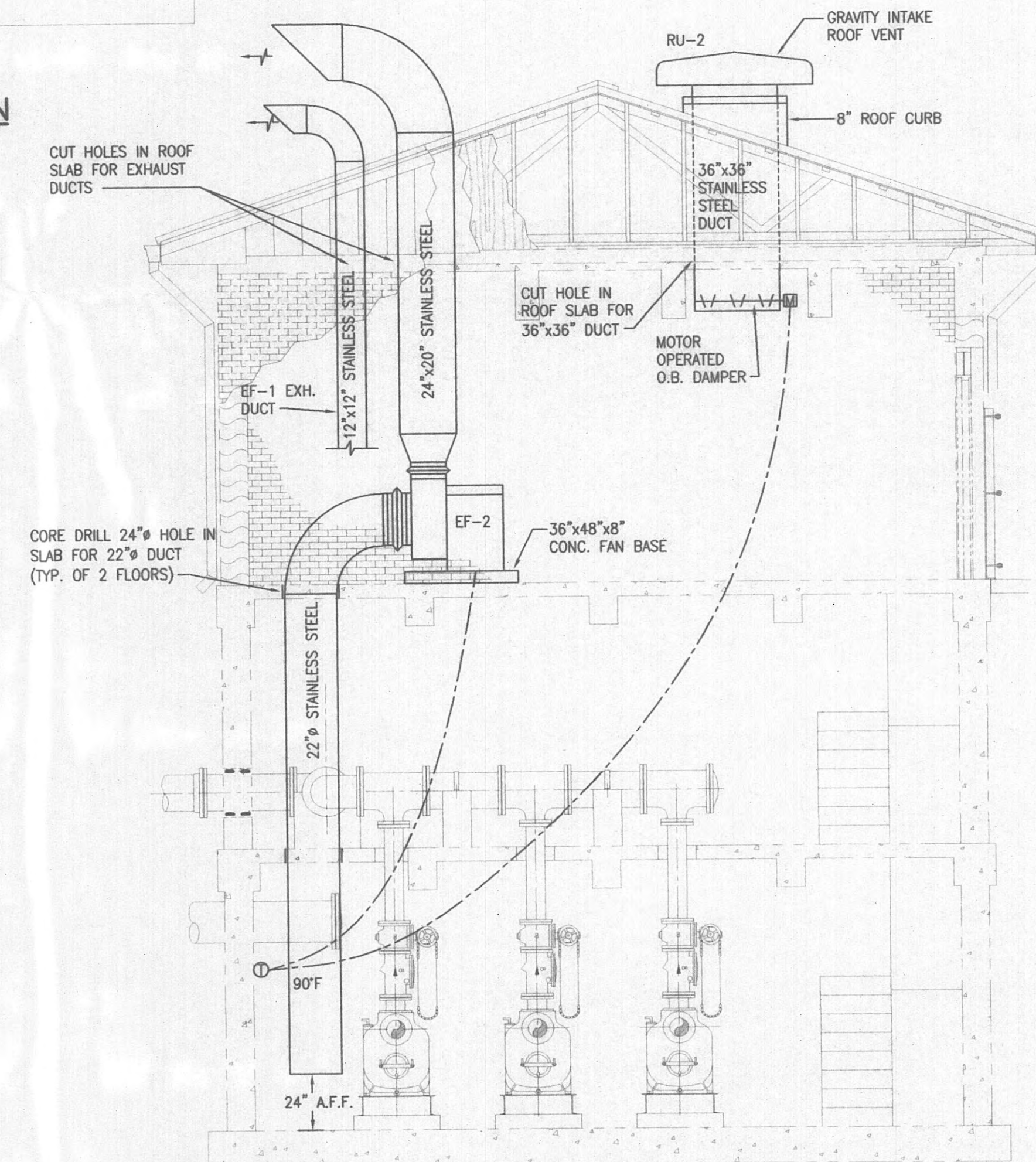
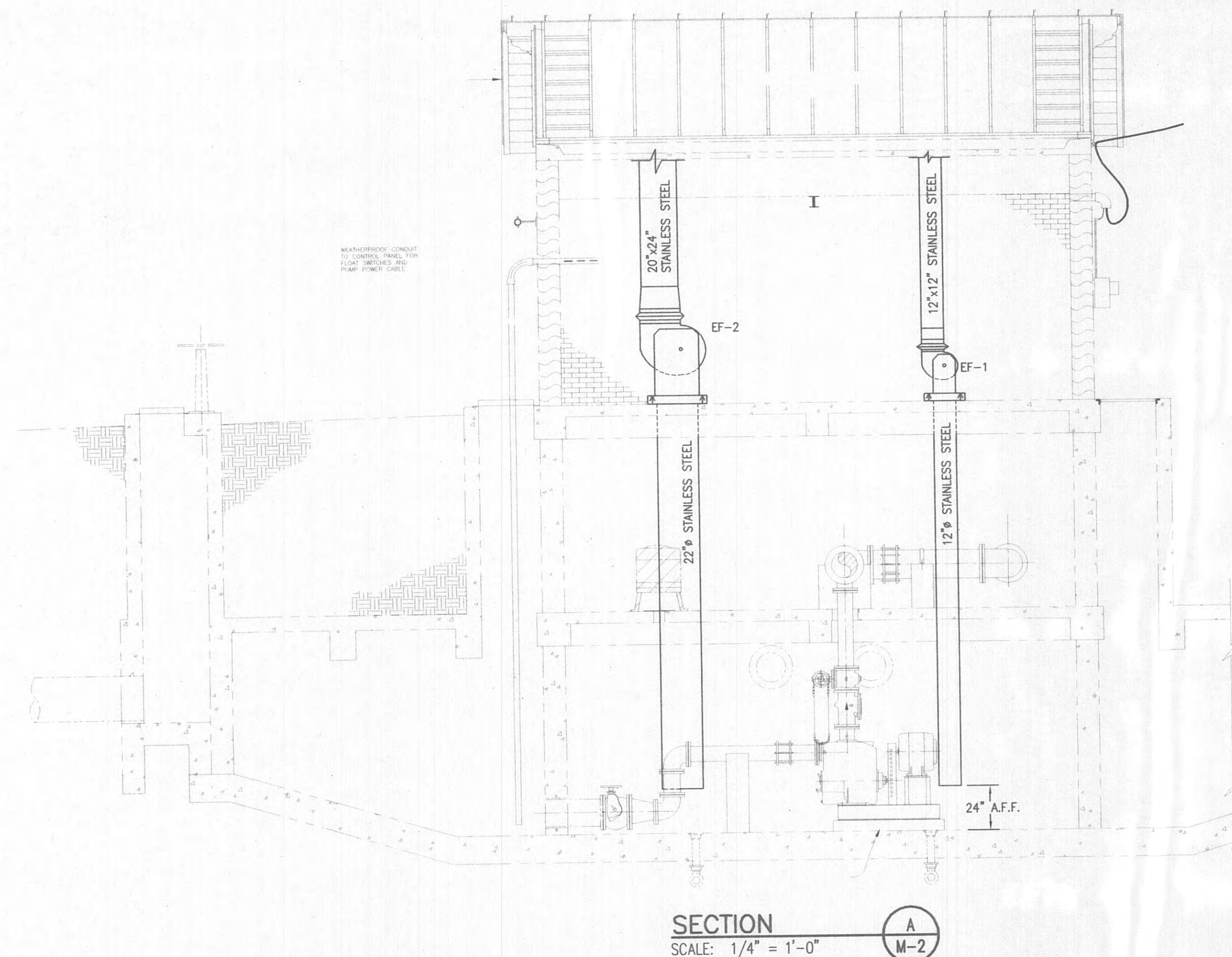




EXHAUST FAN SCHEDULE							
MARK	FAN TYPE	CFM	S.P. IN W.G.	R.P.M.	DRIVE	H.P.	VOLTS/PHASE
EF-1	FORWARD CURVED CENTRIFUGAL UTILITY	1687	0.75	1093	BELT	3/4	460/3
EF-2	FORWARD CURVED CENTRIFUGAL UTILITY	6550	0.75	593	BELT	3	460/3

ROOF VENT SCHEDULE						
MARK	TYPE	CFM	THROAT SIZE (IN.)	THROAT AREA (SQ. FT.)	S.P. IN W.G.	HOOD SIZE WxLxH
RV-1	GRAVITY INTAKE	1687	18x18	2.25	0.071	28x36x16
RV-2	GRAVITY INTAKE	6550	36x36	9.00	0.071	65x60x19

ELECTRIC UNIT HEATER SCHEDULE							
MARK	UNIT TYPE	MIN. BTUH	CFM	THROW FT.	KW	F TEMP RISE	VOLTS/PHASE
EUH-1	HORIZONTAL DISCHARGE UNIT HEATER	68,300	1100	32	20	57	460/3

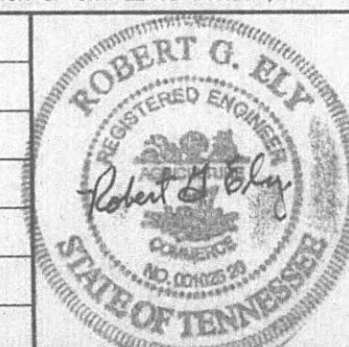



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GRW
 GRW Engineers, Inc.
 Engineers, Architects, Planners

ENGINEER/ARCHITECT: *Robert G. Ely*
 CONSTRUCTION COMPANY: *W&O CONSTRUCTION CO.*
 DATE: *8/29/03*

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NO.	DESCRIPTION	DATE	BY
REVISIONS			



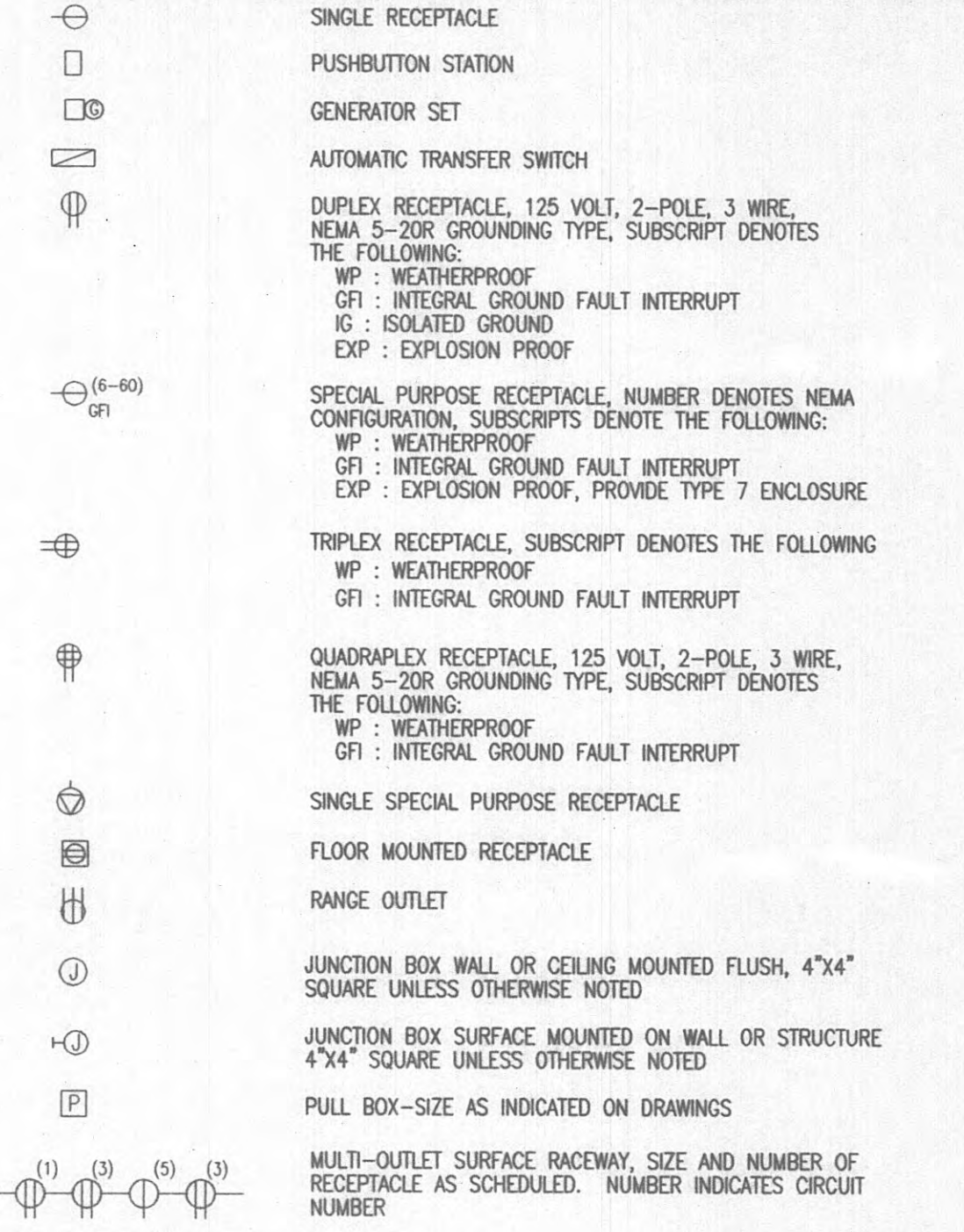
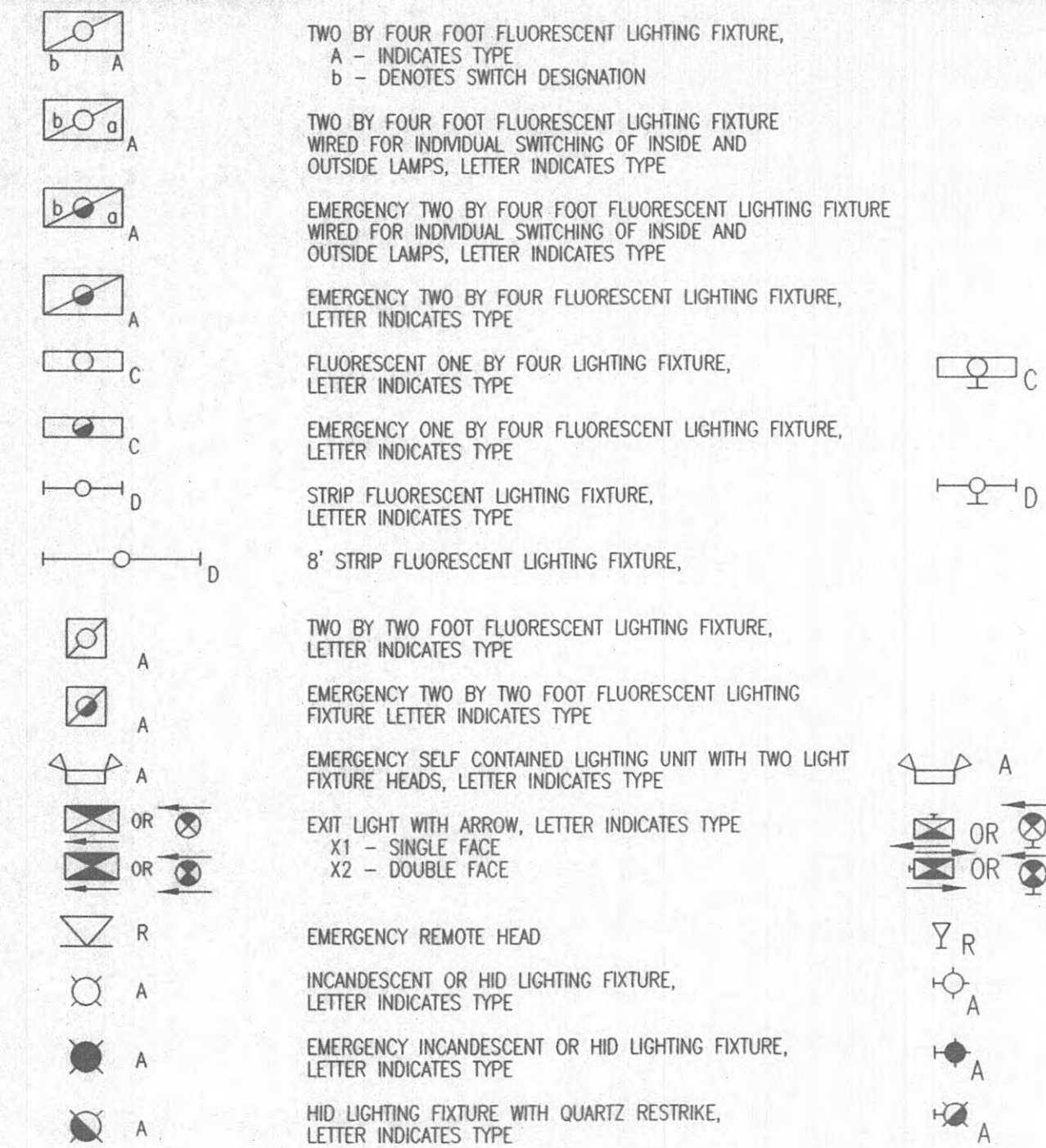
GRW PROJECT NO. 7601-20		CONTRACT S02-02	
EXISTING WOODYARD SEWAGE PUMP STATION MECHANICAL HARRIMAN UTILITY BOARD HARRIMAN, TENNESSEE			
 GRW Elrod Dunson, Inc. Engineers, Architects, Planners LEXINGTON LOUISVILLE INDIANAPOLIS NASHVILLE KNOXVILLE		DESIGNED: RGE	DATE: JUNE, 2002
		DRAWN: JMG	SCALE: AS NOTED
		REVIEWED: RGE	SHEET NO.
		APPROVED: RGE	M-2

CEILING MOUNTED

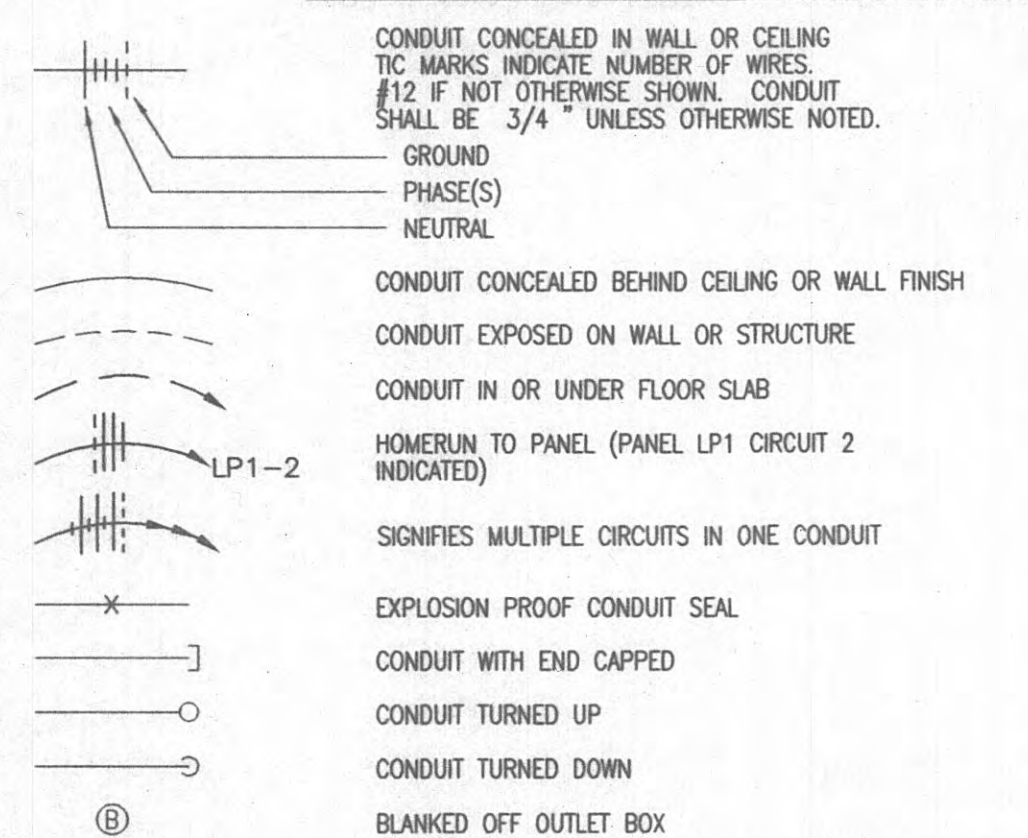
INTERIOR LIGHTING

WALL MOUNTED

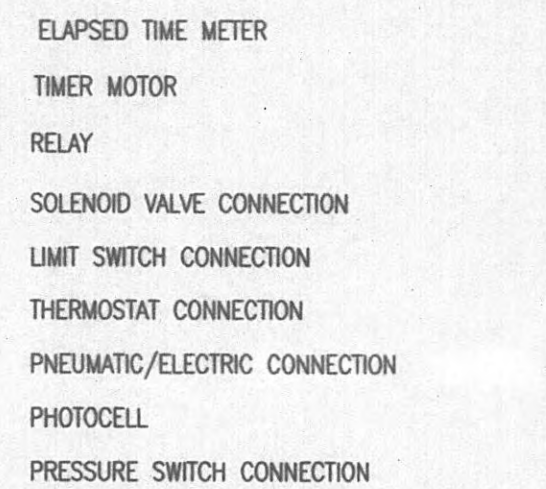
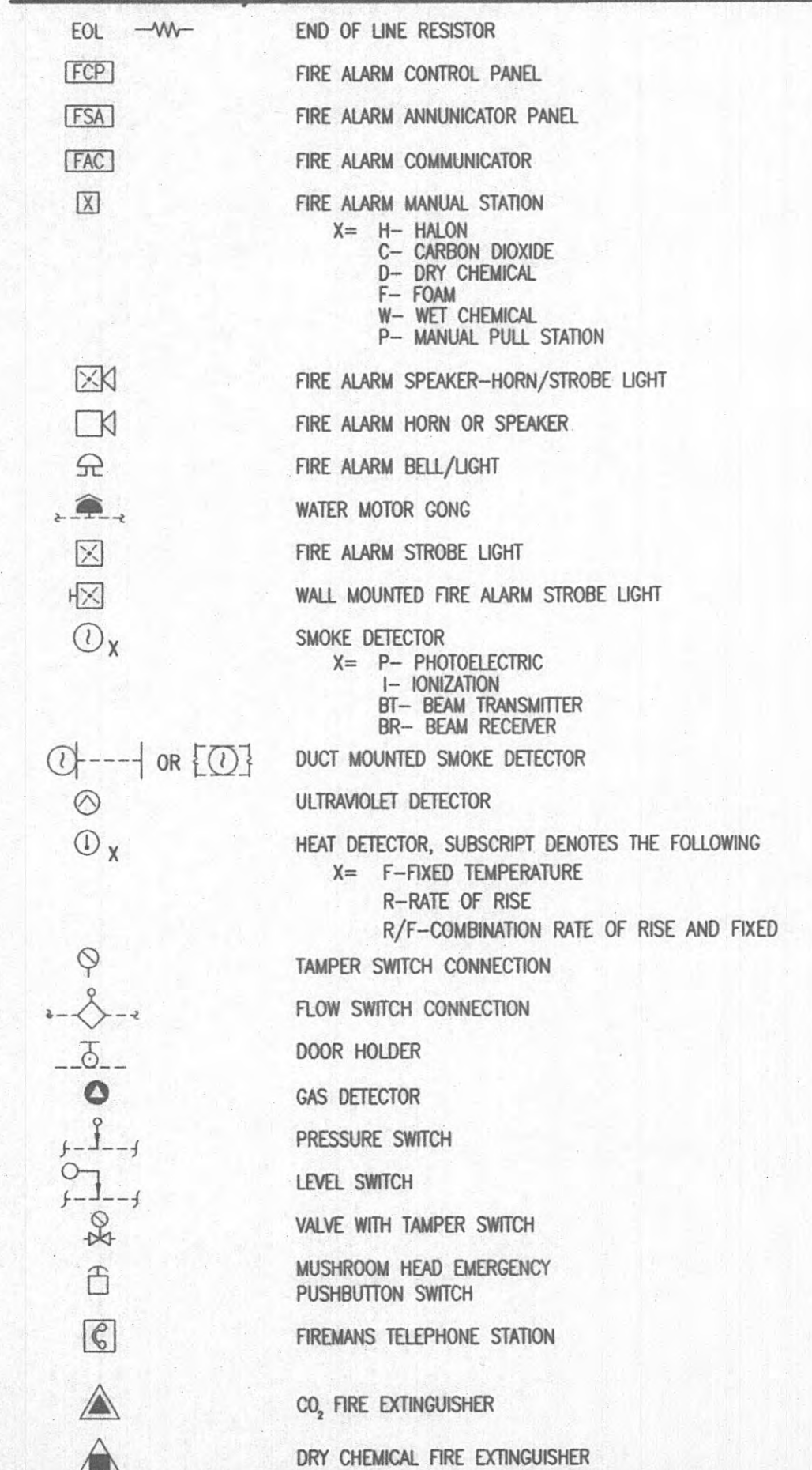
INTERIOR POWER EQUIPMENT AND DEVICES



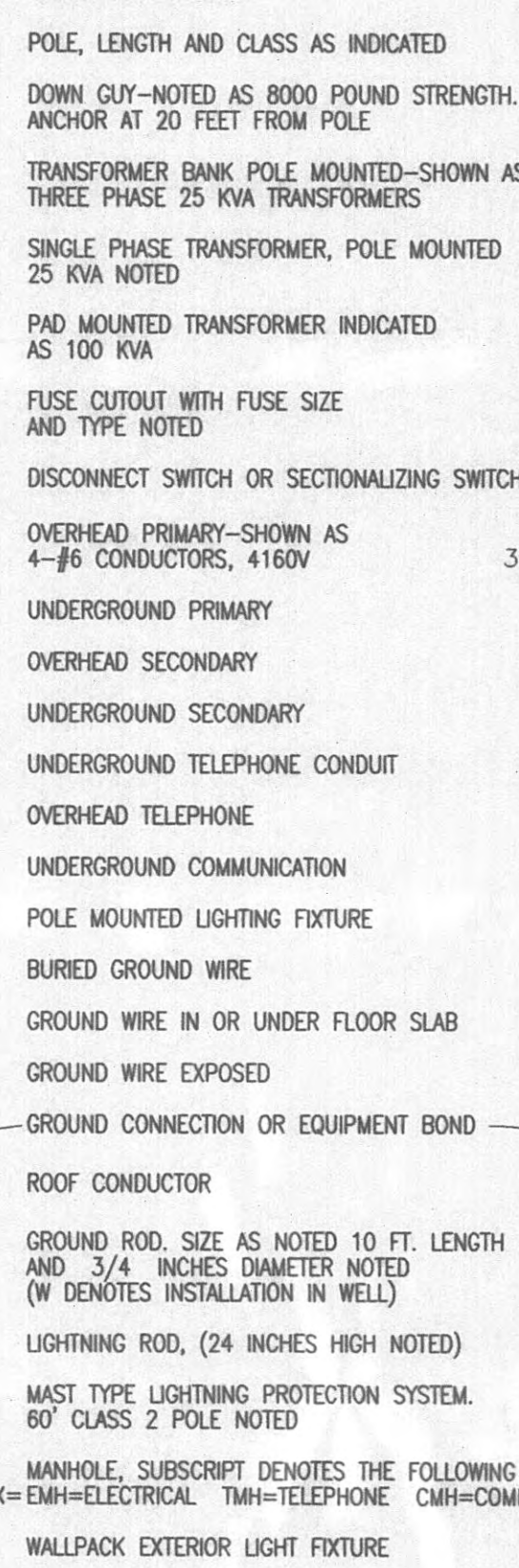
INTERIOR CONDUIT AND WIRE



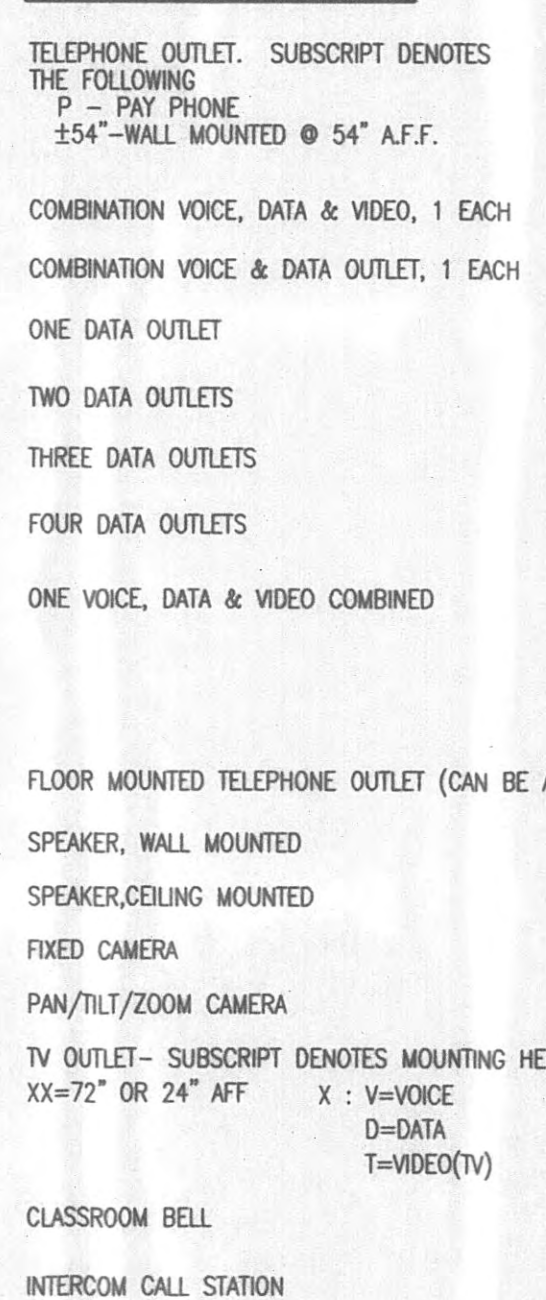
FIRE ALARM/SUPPRESSION SYSTEM DEVICES



EXTERIOR



COMMUNICATION

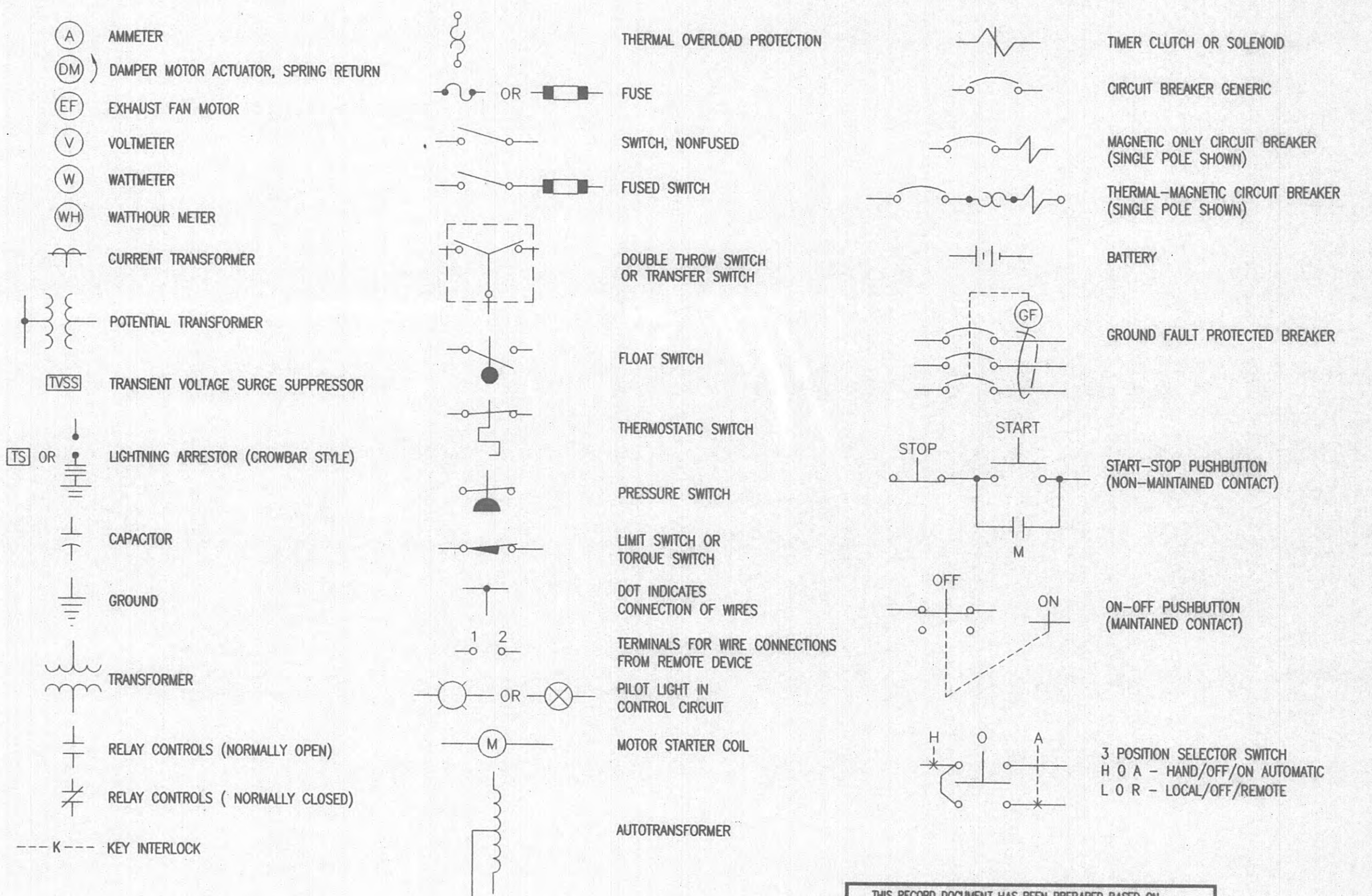


ABBREVIATIONS

ELEV - ELEVATOR	LA - LIGHTNING ARRESTER	PNL - PANEL
EM, EMERG - EMERGENCY	LTC - LIGHTING	POC - POINT OF CONNECTION
EMT - ELECTRICAL METALLIC TUBING	LV - LOW VOLTAGE	PS - PULL SWITCH OR PRESSURE SWITCH
EOL - END OF LINE	LVDT - LINEAR VARIABLE DIFFERENTIAL TRANSFORMER	QTY - QUANTITY
EUH - ELECTRIC UNIT HEATER	MAU - MAKEUP AIR UNIT	REF - REFERENCE, REFER
EW - ELECTRIC WATER COOLER	MAX - MAXIMUM	RCPT - RECEPTACLE
EX - EXISTING	MCCB - MAIN CIRCUIT BREAKER	RGS - RIGID GALVANIZED STEEL
F - FUSE	MCC - MOTOR CONTROL CENTER	SCH - SCHEDULE
FLA - FULL LOAD AMPS	MCP - MOTOR CIRCUIT PROTECTOR	SMR - SURFACE METAL RACEWAY
FLEX - FLEXIBLE	MGP - MAIN DISTRIBUTION PANEL	S/N - SOLID NEUTRAL
FLR - FLOOR	MFR - MANUFACTURER	SQ FT - SQUARE FOOT
FLOOR - FLOURESCENT	MG - MOTOR GENERATOR	SS - STAINLESS STEEL
FOR - FORWARD-OFF-REVERSE	MH - MANHOLE, METAL HALIDE, MOUNTING HEIGHT	STD - STANDARD
FTG - FITTING	MIC - MICROPHONE	SW - SWITCH
FVNR - FULL VOLTAGE NON-REVERSING	MIN - MINIMUM	SYS - SYSTEM
GALV - GALVANIZED	MLO - MAIN LUGS ONLY	TEL - TELEPHONE
G, GND - GROUND	MTD - MOUNTED	TM - THERMAL MAGNETIC
GFI - GROUND FAULT INTERRUPTER	MV - MEDIUM VOLTAGE	TV - TELEVISION
HID - HIGH INTENSITY DISCHARGE	N/A - NOT APPLICABLE	TVSS - TRANSIENT VOLTAGE SURGE SUPPRESSOR
HP - HORSEPOWER	NEC - NATIONAL ELECTRICAL CODE	TYP - TYPICAL
HT, H - HEIGHT	NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	UG - UNDERGROUND
IG - ISOLATED GROUND	NESC - NATIONAL ELECTRICAL SAFETY CODE	UN - UNIT HEATER
IN - INCH	NFPA - NATIONAL FIRE PROTECTION ASSOCIATION	V - VOLTAGE
INC - INCANDESCENT	NIC - NOT IN CONTRACT	VFD - VARIABLE FREQUENCY DRIVE
J-BOX, JB - JUNCTION BOX	NTS - NOT TO SCALE	W - WIRE
KCMIL - 1000 CIRCULAR MILS	NO - NORMALLY OPEN, NUMBER	W/O - WITH OUT
KVA - KILOVOLT AMPS	OH - OVERHEAD	WP - WEATHERPROOF
KVAF - KILOVOLT AMPS REACTIVE	OL - OVERLOAD	WT - WEIGHT
KW - KILOWATT	PB - PULL BOX, PUSH BUTTON	XFMR, XFMR - TRANSFORMER
KWH - KILOWATT HOUR	PH - PHASE	

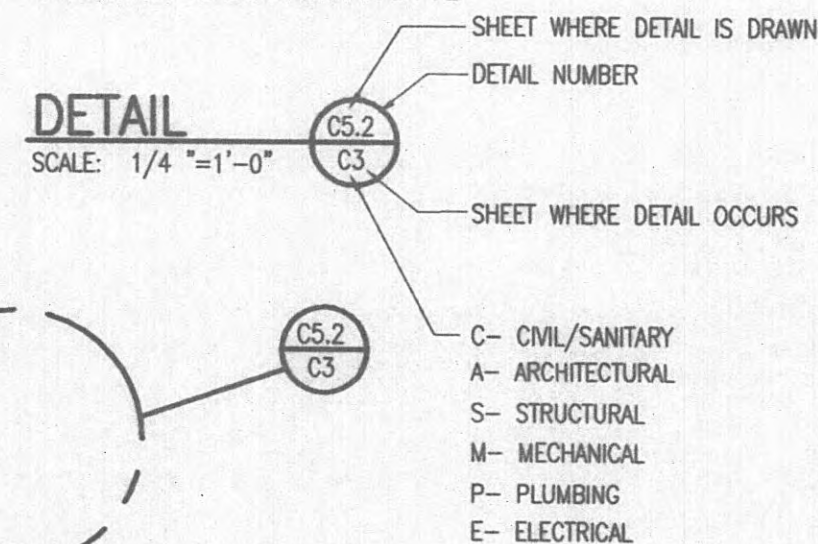
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CONTROLS



MISCELLANEOUS

DETAIL CONVENTIONS



DETAIL IN PLAN

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

GRW PROJECT NO. 7601-20 CONTRACT S02-02

EXISTING WOODYARD SEWAGE PUMP STATION ELECTRICAL HARRIMAN UTILITY BOARD HARRIMAN, TENNESSEE

DESIGNED: TMH DATE: JUNE, 2002

DRAWN: JMG SCALE: AS NOTED

REVIEWED: TMH SHEET NO. E-1

APPROVED: TMH

GRW Elrod Dunsen, Inc. Engineers, Architects, Planners LEXINGTON LOUISVILLE INDIANAPOLIS NASHVILLE KNOXVILLE