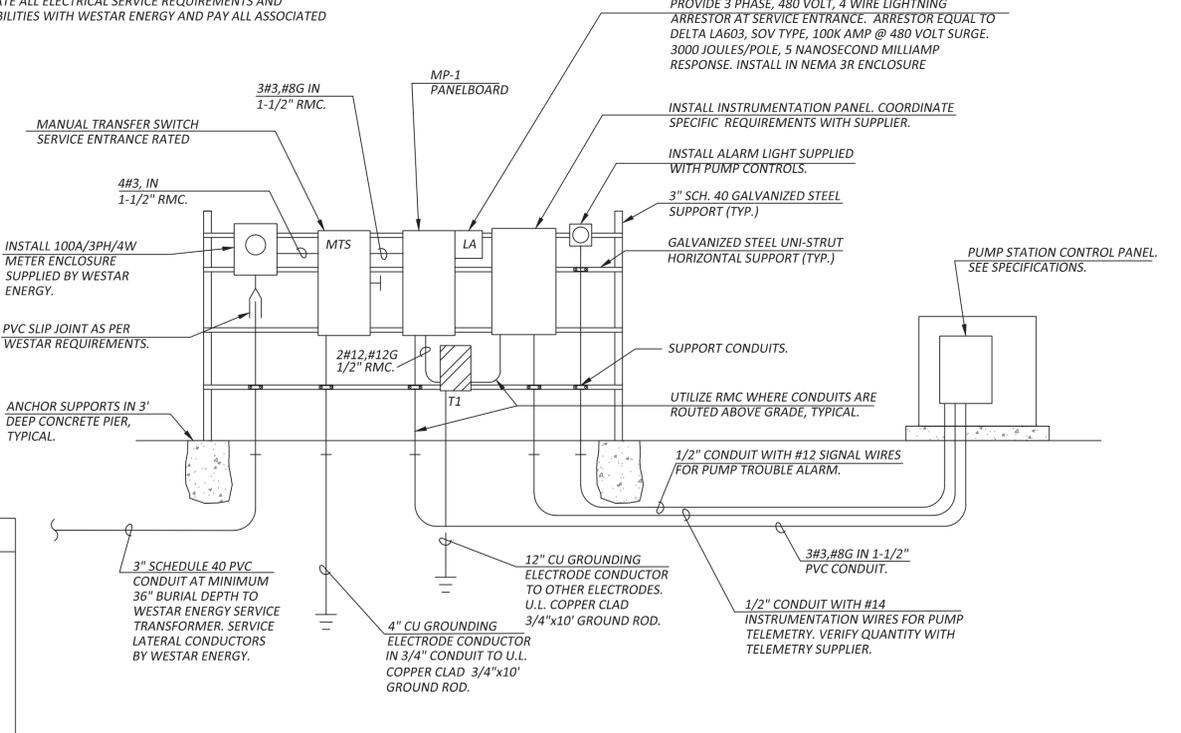


X:\PUBLICWORKS\ENGINEERING\ENGINEERING STANDARDS\DETAILS\CURRENT\DWGS\MSD 2200 SANITARY SEWER LIFT STATION (2015-08).DWG

PLOT DATE: 8/6/2015 10:39 AM
PLOTTED BY: RICK PETER

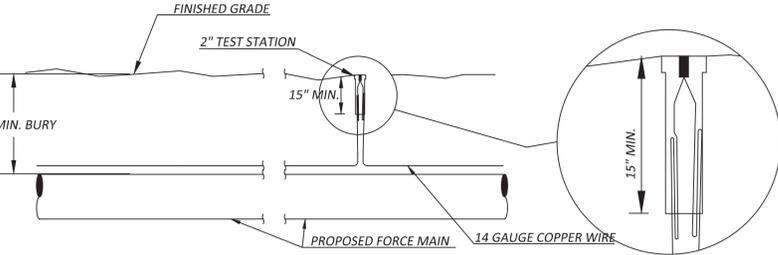
ELECTRICAL EQUIPMENT SCHEDULE	
PANELBOARD	
MP-1	480 VOLT PANELBOARD, 100 AMPERE MCB, 3 PHASE, 3 WIRE, NEMA 3R ENCLOSURE, 18,000 AIC, EQUIVALENT TO SQUARE D NF WITH E FRAME BRANCH BREAKERS. CKT NO. C/B LOAD WIRE
1	100/3 PUMP PANEL 3-#3,#6G
2	15/2 TRANSFORMER 2-#12,#12G
MANUAL TRANSFER SWITCH	
MTS	
MANUAL TRANSFER SWITCH - SERVICE ENTRANCE RATED DOUBLE THROW SWITCH, 100 AMPERE, 480 VOLT, 3-POLE, 4 WIRE, U.L. LISTED, NEMA 3R ENCLOSURE, EQUIVALENT TO SQUARE D F-SERIES DTU.	
TRANSFORMER	
T1	
DRY TYPE TRANSFORMER - 3 KVA, SINGLE PHASE, 480 V PRIMARY, 120/240 V SECONDARY, 115 DEGREE C RISE, U.L. LISTED EQUIVALENT TO SQUARE D 3S1F.	

NOTE:
COORDINATE ALL ELECTRICAL SERVICE REQUIREMENTS AND RESPONSIBILITIES WITH WESTAR ENERGY AND PAY ALL ASSOCIATED FEES



EXAMPLE ELECTRICAL RISER DIAGRAM (NOT TO SCALE)

- ELECTRICAL SPECIFICATION NOTES**
- THIS CONTRACT IS FOR THE FURNISHING OF ALL NECESSARY MATERIAL AND LABOR TO ACCOMPLISH THE WORK AS SHOWN ON THE PLANS AND AS HEREIN SPECIFIED. ALL WORK UNDER THIS CONTRACT SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND AS A MINIMUM THE LATEST NATIONAL ELECTRIC CODE ADOPTED BY THE CITY OF MANHATTAN.
 - THIS CONTRACTOR SHALL PAY ALL FEES, GIVE ALL NOTICES, FILE ALL NECESSARY DRAWINGS AND OBTAIN ALL PERMITS AND CERTIFICATES OF APPROVAL REQUIRED IN CONNECTION WITH ALL WORK UNDER THIS CONTRACT.
 - THE DRAWINGS ARE A SCHEMATIC REPRESENTATION OF WHAT IS TO BE ACCOMPLISHED BY THIS CONTRACT. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO THOROUGHLY INVESTIGATE THE SITE FOR CLEARANCE AND WORK OF OTHERS THAT MAY INTERFERE WITH HIS WORK AND TO COORDINATE HIS WORK WITH ALL TRADES.
 - ALL WORK SHALL BE GUARANTEED FOR ONE YEAR AGAINST LABOR AND MATERIALS, FROM THE DATE OF ACCEPTANCE OF THE COMPLETED WORK BY THE OWNER.
 - ALL EQUIPMENT SHALL BE CLEANED TO THE SATISFACTION OF THE ENGINEER.
 - EQUIPMENT CAPACITIES AND CHARACTERISTICS SHALL BE AS SCHEDULED ON THE DRAWINGS. SUBSTITUTIONS OF EQUIVALENT QUALITY AND CAPACITY MUST BE APPROVED BY THE ENGINEER. INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - LOCATIONS OF CONNECTIONS TO SITE UTILITIES ARE APPROXIMATE AND SHALL BE VERIFIED BY THIS CONTRACTOR. COORDINATE ALL REQUIREMENTS, RESPONSIBILITIES AND FEES WITH THE CITY OR UTILITY COMPANY, AS APPLICABLE.
 - STORE MATERIALS IN SPACES DESIGNATED BY THE OWNER. REMOVE RUBBISH FROM PREMISES AS OFTEN AS DIRECTED OR AS NECESSARY TO ENSURE SAFE AND NEAT WORKING CONDITIONS.
 - ASSUME ALL COSTS FOR EXCAVATION, CUTTING AND PATCHING REQUIRED TO COMPLETE THE INSTALLATION. SURFACES SHALL BE PATCHED TO MATCH THE CONDITION OF ADJACENT SURFACES, TO THE SATISFACTION OF THE ENGINEER.
 - TEST ALL CIRCUITS TO ASSURE THEM TO BE FREE OF GROUNDS BEFORE ENERGIZING.
 - WIRE AND CABLE SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST NATIONAL ELECTRICAL CODE ADOPTED BY THE CITY OF MANHATTAN AND APPLICABLE ASTM SPECIFICATIONS. CONDUITS AND FITTINGS SHALL BE UL LISTED FOR THE APPLICATION AND LOCATION USED.
 - ALL NEW PANEL AND CABLE CONDUCTORS SHALL BE COPPER. PROVIDE A GREEN EQUIPMENT GROUND CONDUCTOR FOR EACH CIRCUIT AND TERMINATE IN APPROVED MANNER WITH U.L. LISTED CONNECTORS.



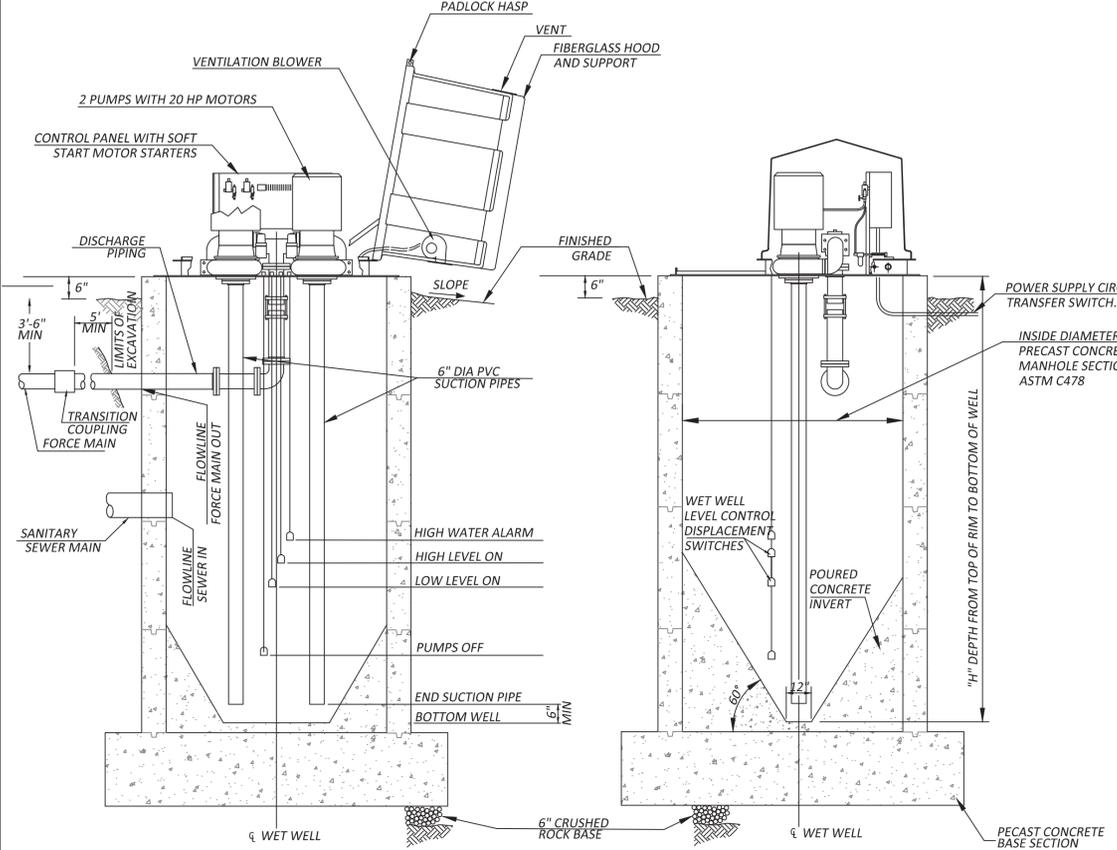
TRACER WIRE
THE WIRE SHALL EXTEND THE ENTIRE LENGTH OF THE PROPOSED PIPE. SPLIT-BOLT CONNECTORS SHALL BE USED AT SPLICE LOCATIONS. ELECTRICAL TAPE SHALL COVER ALL SPLICES SO NO BARE WIRE IS EXPOSED. TEST STATIONS SHALL BE INSTALLED NEAR MANHOLES AT EITHER END OF THE FORCE MAIN. ANY EXCEPTIONS TO THE LOCATION OF TEST STATIONS SHALL BE APPROVED BY THE ENGINEER. A TYPICAL LAYOUT OF THE TRACER WIRE AND TEST STATION IS PROVIDED IN THE ABOVE FIGURE.

WIRE
THE TRACER WIRE SHALL BE GREEN 12 GAUGE SINGLE STRAND COPPER WIRE WITH INSULATION. THE INSULATION SHALL BE HEAT, OIL, AND GASOLINE RESISTANT. TO ALLOW FOR GRADE ADJUSTMENT, A MINIMUM OF 12" OF EXCESS WIRE SHALL BE COILED AT THE BOTTOM OF THE TEST STATION FOR ALL WIRES. THE INSULATION SHEATHING SHALL BE REMOVED SUCH THAT 1" BARE COPPER WIRE IS EXPOSED AT ALL POINTS OF CONNECTION.

SPLICED CONNECTIONS UNDERGROUND BETWEEN TRACE WIRE RUNS SHALL BE MADE WITH 3M DIRECT BURY SPLICE KITS PART NO. 80-6105-9437-8

TEST STATIONS
THE TEST STATION SHALL BE 2 INCH FLUSH STYLE TEST STATION T2PS38 AS MANUFACTURED BY HANDLEY INDUSTRIES OR APPROVED EQUAL. ALL TEST STATIONS SHALL BE MANUFACTURED USING MOLDED GREEN TOPS OR SUFFICIENTLY COATED WITH GREEN ENAMEL PAINT. THE LOCATION OF ALL TEST STATIONS SHALL BE APPROVED BY THE ENGINEER, RECORDED, AND SHOWN IN THE AS-BUILT DRAWINGS.

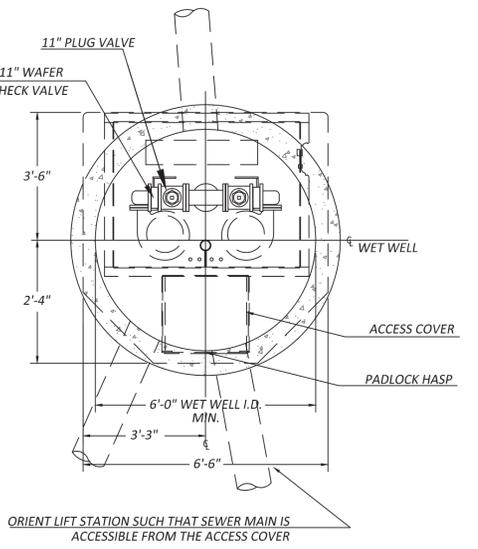
TRACER WIRE DETAIL (NOT TO SCALE)



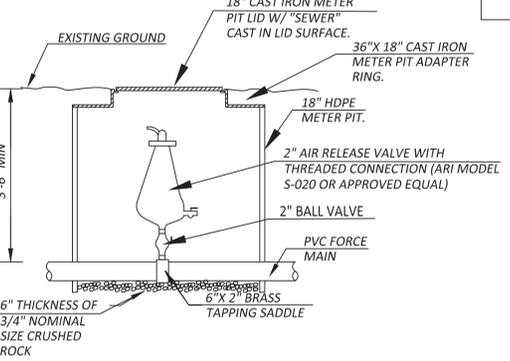
SECTIONAL ELEVATION (NOT TO SCALE)

CROSS SECTION (NO SCALE)

PUMP STATION (NOT TO SCALE)

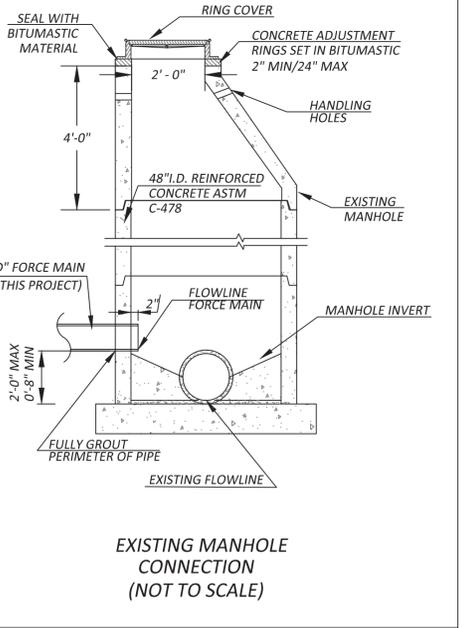


PLAN VIEW (SHOWN LESS HOOD)



AIR RELEASE VALVE DETAIL (NOT TO SCALE)

- NOTES:**
- THE DRAWINGS FOR THE PUMP STATION WERE PROVIDED BY SMITH AND LOVELESS INC. DESIGN AND INVENTION RIGHTS ARE RESERVED.
 - EACH PUMP SHALL BE CAPABLE OF PUMPING XXX GPM AT XX.X FEET OF HEAD PLUS LOSSES WITHIN THE LIFT STATION ITSELF. PUMP MOTORS SHALL NOT EXCEED 20 HP. THE PUMP STATION CONTROL PANEL SHALL BE PROVIDED WITH START MOTOR STARTERS TO PROVIDE SOFT STARTING AND STOPPING CAPABILITIES TO THE PUMPS.
 - OTHER PUMP STATION MANUFACTURERS THAT ARE APPROVED FOR USE IN THE CITY OF MANHATTAN ARE GORMAN-RUPP AND HFE PROCESS.
 - THE CONTRACTOR SHALL COORDINATE ELECTRICAL SERVICE WITH WESTAR. THE POWER SOURCE AVAILABLE WILL BE 277/480 VOLT, THREE PHASE, 4 WIRE, UNDERGROUND ELECTRIC SERVICE. WESTAR WILL SET A TRANSFORMER AT THE UTILITY EASEMENT LINE OF XXXXXXXX. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL AN UNDERGROUND SCH 40 (UL LISTED) GRAY ELECTRICAL GRADE PVC CONDUIT WITH PULL ROPE FROM THE TRANSFORMER TO A UNI-STRUT METER RACK AT THE LIFT STATION. THE CONDUIT SHALL BE 3" DIA. WITH 24" MIN. RADIUS ELBOWS, BURIED WITH 36" OF COVER. THE METER RACK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS ON THIS SHEET. THE METER SOCKET WILL BE PROVIDED BY WESTAR BUT MUST BE INSTALLED BY THE CONTRACTOR.
 - THE PUMP STATION SHALL BE EQUIPPED WITH AN ALARM THAT CAN COMMUNICATE WITH EQUIPMENT AT THE CITY'S WASTEWATER TREATMENT PLANT. THE PUMP STATION RTU SHALL BE A SIEMENS LC 2000 CONTROLLER. THE RTU SHALL BE MOUNTED IN A NEMA 4X ENCLOSURE AND SHALL MONITOR AND REPORT BACK VIA A DEDICATED CIRCUIT PHONE LINE TO THE CITY OF MANHATTAN, KS WWTP MASTER TERMINAL UNIT AND INTEGRATE THE ALARMS INTO THE FOXBORO I/A COMPUTER SYSTEM. THE RTU WILL MONITOR THE FOLLOWING I/O POINTS: POWER FAILURE, COMMUNICATION FAILURE, HIGH WET WELL LEVEL, PUMP 1 RUN, PUMP 2 RUN, PUMP 1 FAILURE, PUMP 2 FAILURE. THE CONTRACTOR SHALL ARRANGE FOR PHONE SERVICE TO BE PROVIDED TO THE SITE.
 - THE CONTRACTOR SHALL COORDINATE THE CONNECTION OF THE ALARM SYSTEM TO THE CITY'S WWTP WITH AN AUTHORIZED FOXBORO REPRESENTATIVE.
 - THE FORCE MAIN SHALL BE INSTALLED WITH TRACER WIRE.



EXISTING MANHOLE CONNECTION (NOT TO SCALE)



NO.	DATE	DESCRIPTION	BY
<p>City of Manhattan Kansas PUBLIC WORKS 1101 POYNTZ AVE., MANHATTAN, KS 66502 (785) 587-2415</p>			
<p>MANHATTAN STANDARD DETAILS MSD 2200 SANITARY SEWER LIFT STATION</p>			
CITY ENGINEER: BRIAN JOHNSON, P.E. DESIGN BY:			
CITY PROJ. #:			
DATE:	DRAWN BY:	PAGE	OF