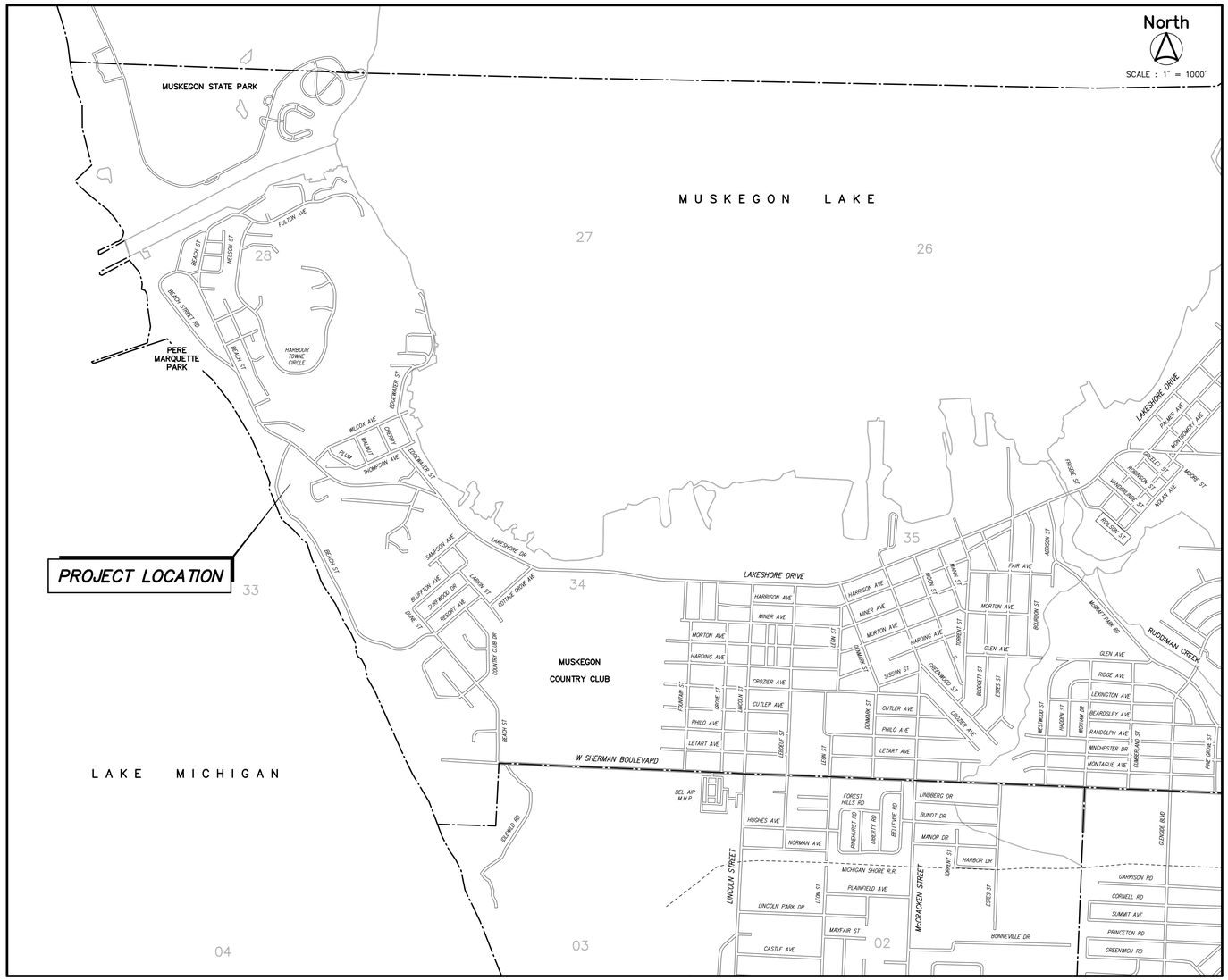
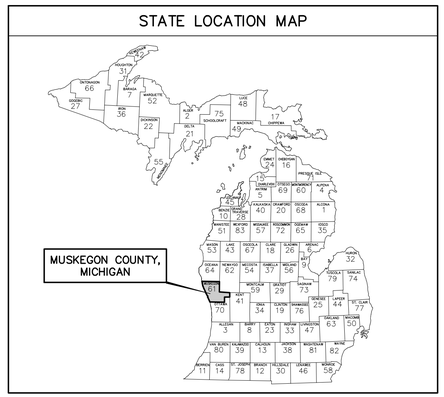
CITY OF MUSKEGON
MUSKEGON COUNTY, MICHIGAN

WATER SYSTEM IMPROVEMENTS

WATER FILTRATION PLANT
BEACH STREET TRANSMISSION MAIN FLOW METER





PROJECT DATUM INFORMATION

COORDINATE SYSTEM :	STATE PLANE GRID
ZONE :	MICHIGAN SOUTH 2113
ELLIPSOID :	GRS 80
HORIZONTAL DATUM :	NAD 83 (2011)
VERTICAL DATUM :	NAVD 88
GEOID :	GEOID 18
UNITS :	INTERNATIONAL FEET

PROJECT COMBINED SCALE FACTOR (PCSF) = 0.999923763526
GROUND DISTANCE = GRID DISTANCE/PCSF

GENERAL NOTES

1. CONTRACTOR TO CALL MISS DIG (CALL TOLL FREE 1-800-482-7171) THREE WORKING DAYS BEFORE STARTING YOUR PROJECT. (EXCLUDING WEEKENDS AND HOLIDAYS)
2. CONTRACTOR SHALL PRESERVE ALL GOVERNMENT AND PROPERTY CORNERS.

SOIL EROSION CONTROL NOTES

EROSION CONTROL BLANKET :

SOIL EROSION CONTROL BLANKET SHALL BE REPLACED ON ALL DISTURBED SLOPES THAT ARE 1 ON 3 OR STEEPER AND IN ALL DISTURBED DITCH BOTTOMS.

TEMPORARY SEEDING :

TEMPORARY SEEDING SHALL BE CAST ON ALL DISTURBED AREAS AS DIRECTED BY THE ENGINEER WITHIN 1 WEEK OF DISTURBANCE.

UTILITIES

ELECTRIC-DISTRIBUTION
CONSUMERS ENERGY
700 E STERNBERG RD.
MUSKEGON, MI 49441
PHONE : (231) 332-2682
ATTN: JOEL BROWN
JOEL.M.BROWN@CMSENERGY.COM

GAS
DTE ENERGY
2359 OLTHOF DR.
MUSKEGON, MI, 49444
PHONE : (231) 777-4034
ATTN: VINCE DUCA
DUCAV@DTEENERGY.COM

WATER & SANITARY
CITY OF MUSKEGON
1350 E. KEATING AVE.
MUSKEGON, MI 49442
PHONE : (231) 724-4184
ATTN: DAVE BAKER
DAVE.BAKER@SHORELINECITY.COM

STORM SEWER
CITY OF MUSKEGON
1350 E. KEATING AVE.
MUSKEGON, MI 49442
PHONE : (231) 724-6992
ATTN: VERNON BERNDT
VERN.BERNDT@SHORELINECITY.COM

COMMUNICATION
FRONTIER COMMUNICATIONS
860 TERRACE ST.
MUSKEGON, MI 49443
PHONE : (231) 727-1319
ATTN: DAVE FLERMOEN
DAVID.B.FLERMOEN@FTR.COM

CABLE TELEVISION
COMCAST
700 W. BROADWAY
MUSKEGON, MI 49441
PHONE: (231) 375-5112
ATTN: JON CHARLAND
JONATHAN_CHARLAND@COMCAST.COM

811 Know what's below. Call before you dig.

UTILITY LOCATIONS ARE DERIVED FROM ACTUAL MEASUREMENTS OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.

SHEET INDEX

STATE OF MICHIGAN
PETER W. BRINK
ENGINEER
No. 6201051071
LICENSED PROFESSIONAL ENGINEER

STATE OF MICHIGAN
MATTHEW A. TIPPING
ENGINEER
No. 6201043947
LICENSED PROFESSIONAL ENGINEER
ELECTRICAL

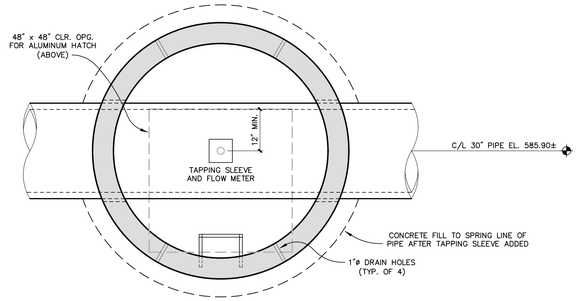
ISSUED FOR BIDS JULY, 2023

Prein&Newhof
Engineers • Surveyors • Environmental • Laboratory

PROJECT NO. 2221055
SHEET NO. 1 OF 3

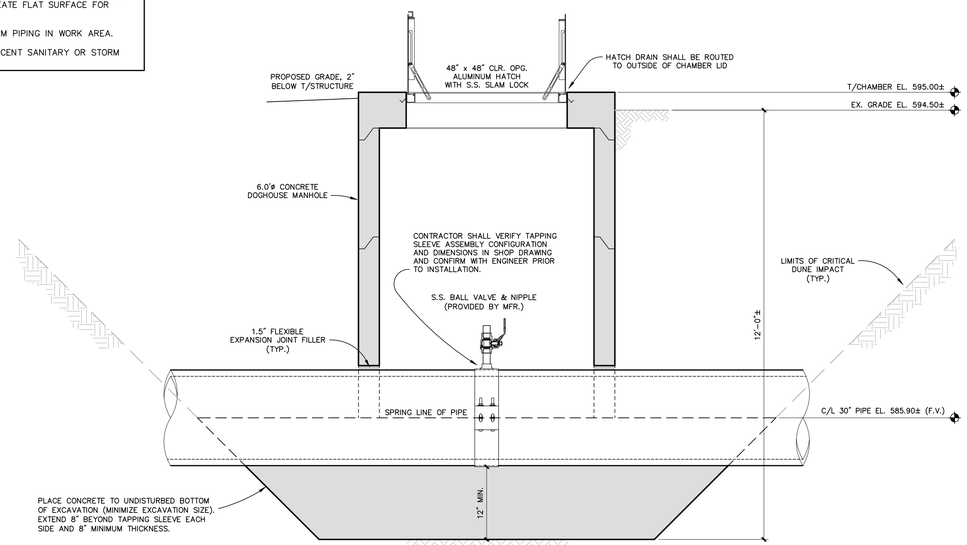
NOTES

1. FIELD VERIFY EXISTING PIPE AND GROUND ELEVATIONS PRIOR TO MANHOLE CONSTRUCTION. FIELD VERIFY OUTSIDE DIAMETER (OD) OF PIPE AND REQUIRED FLOW METER ROD LENGTH PRIOR TO ORDERING FLOW METER.
2. STRUCTURE SHALL BE CONSTRUCTED TO SIX (6) INCHES ABOVE EX. GRADE AND SURROUNDING SAND FEATHERED INTO EXISTING GRADE WITH TWO (2) INCH LIP AT STRUCTURE.
3. COORDINATE TIMING OF TAPPING OPERATIONS WITH WATER TREATMENT PLANT STAFF. TRANSMISSION MAIN CANNOT BE TAKEN OFFLINE DURING CONSTRUCTION. CONTRACTOR SHALL MINIMIZE SIZE OF OPEN EXCAVATION TO PREVENT SHIFTING OF PIPE DURING CONSTRUCTION AND MAINTAIN PIPE INTEGRITY.
4. EXISTING 30-INCH PIPE MATERIAL IS DUCTILE IRON PIPE, PRESSURE CLASS 200 (F.V.).
5. FIELD VERIFY LOCATION OF 45 DEGREE BEND ON 30 INCH PRIOR TO CONSTRUCTION. ENSURE INDICATED MINIMUM INDICATED DISTANCE FROM 45-DEGREE BEND IS MET.
6. LOCATION OF PROPOSED METER MANHOLE MAY BE ADJUSTED FURTHER NORTH IN THE FIELD SUCH THAT METER AND STRUCTURE ARE CENTERED BETWEEN PIPE JOINTS. JOINTS ON EITHER SIDE OF THE PROPOSED STRUCTURE SHALL BE FIELD LOCATED TO ENSURE STRUCTURE IS PLACED IN THE CENTER OF THE TWO JOINTS.
7. TAPPING SADDLE SHALL HAVE TWO (2) INCH NATIONAL PIPE TAPPED (NPT) OUTLET. STAINLESS STEEL BALL VALVE AND NIPPLE PROVIDED BY METER MANUFACTURER SHALL BE USED TO CONNECT METER TO SADDLE.
8. NO STONE OR STONE SUMPS SHALL BE USED IF DEWATERING IS REQUIRED.
9. CONTRACTOR SHALL MINIMIZE EXCAVATION BELOW SPRING LINE OF 30-INCH PIPE. FILL EXCAVATION TO THE SPRING LINE WITH CONCRETE AND CREATE FLAT SURFACE FOR CHAMBER TO SEAL AGAINST.
10. CONTRACTOR SHALL FIELD VERIFY ALL SANITARY AND STORM PIPING IN WORK AREA.
11. CONTRACTOR SHALL TAKE CARE TO AVOID IMPACTING ADJACENT SANITARY OR STORM PIPING AND STRUCTURES DURING CONSTRUCTION.



FLOW METER CHAMBER PLAN

SCALE : NONE



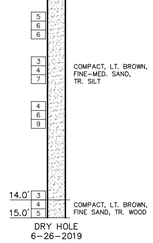
FLOW METER CHAMBER SECTION

(PARALLEL TO PIPE)

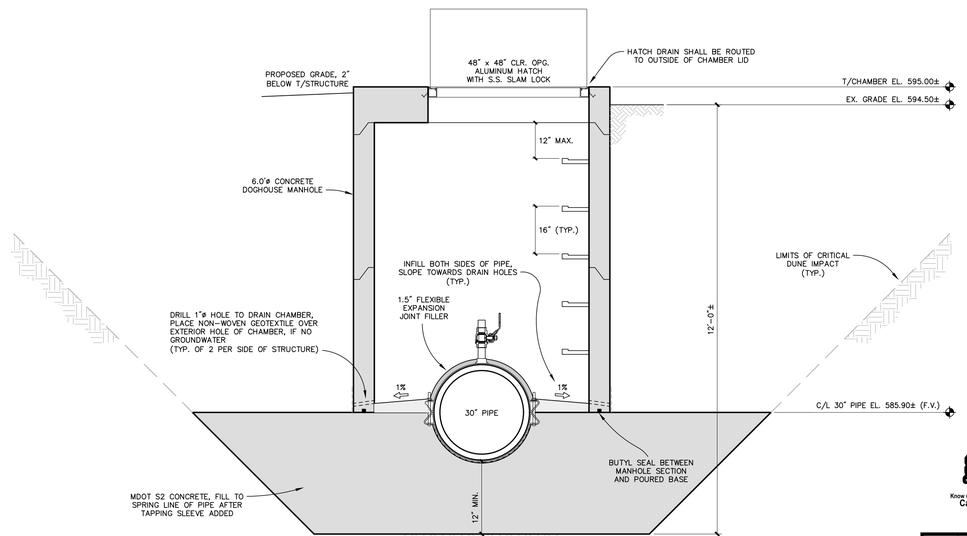
SCALE : NONE

SOIL BORING LOG

SCALE : 1" = 5' VERT.



DRY HOLE
6-26-2019



FLOW METER CHAMBER SECTION

(PERPENDICULAR TO PIPE)

SCALE : NONE

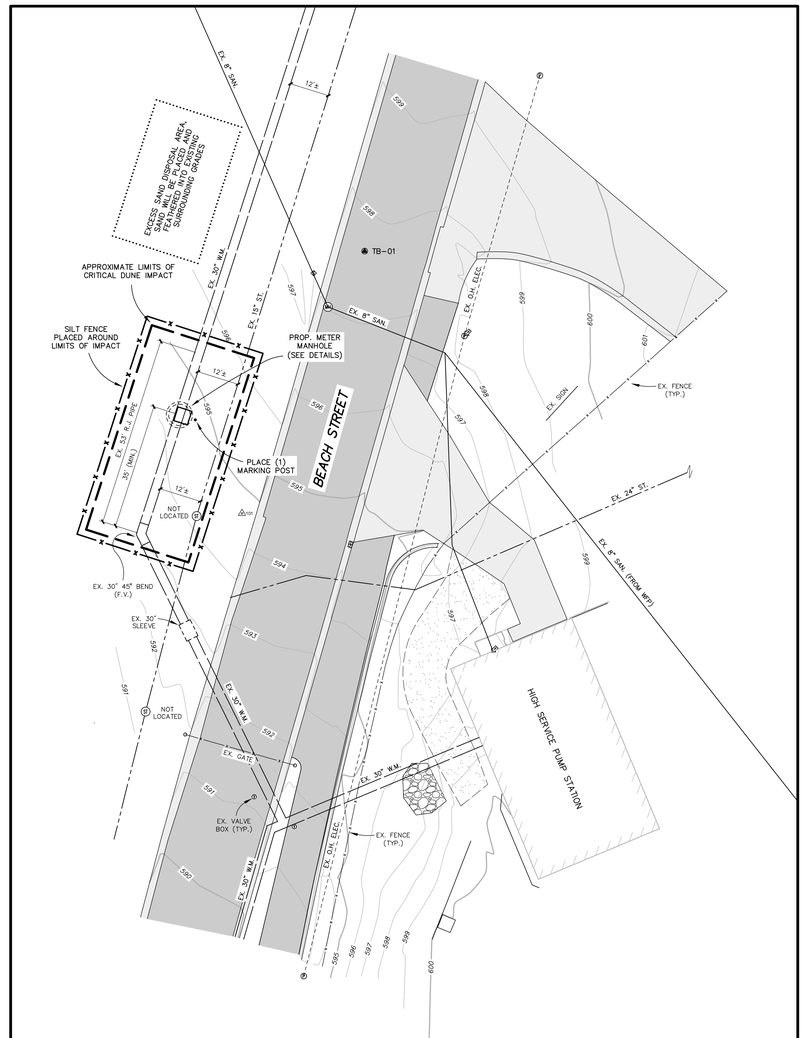
B.M. EL. 599.13
WATER FILTRATION PLANT & BEACH STREET
93'± N. OF W.F.P., SET 60d NAIL IN NW. SIDE OF P. POLE (0.67'± A/GRD.)

B.M. EL. 601.99
WATER FILTRATION PLANT (W.F.P.)
N. SIDE OF W.F.P., CONCRETE AT CENTER DOOR

CONTROL POINT TABLE			
POINT No.	NORTHING	EASTING	ELEVATION
101	632308.609	1259981.810	594.63
102	632567.648	1259998.660	603.90

TOTAL CRITICAL DUNE IMPACT

EXCAVATION IN CRITICAL DUNE :
ESTIMATED DEPTH : 10 FEET
ESTIMATED WIDTH : 30 FEET
ESTIMATED LENGTH : 60 FEET
EXCAVATION & FILL AREA : 1,800 SFT.
EXCAVATION & FILL VOLUME : 667 CYD.



PROPOSED SITE PLAN

SCALE : 1" = 20'

North

SITE PLAN NOTES

1. ORDINARY HIGH WATER MARK (OHWM) LIES AT AN ELEVATION OF 580.5'. ENTIRE PROJECT AREA LIES >10 FEET ABOVE THE OHWM.
2. ENTIRE PROJECT AREA LIES WITHIN A CRITICAL DUNE AREA. AREA HAS BEEN DESIGNATED AS BARRIER DUNE FORMATIONS PURSUANT TO 1976 P.A. 222.

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NO.	REVISIONS	BY	DATE
–	ISSUED FOR BIDS	P.W.B.	7/23

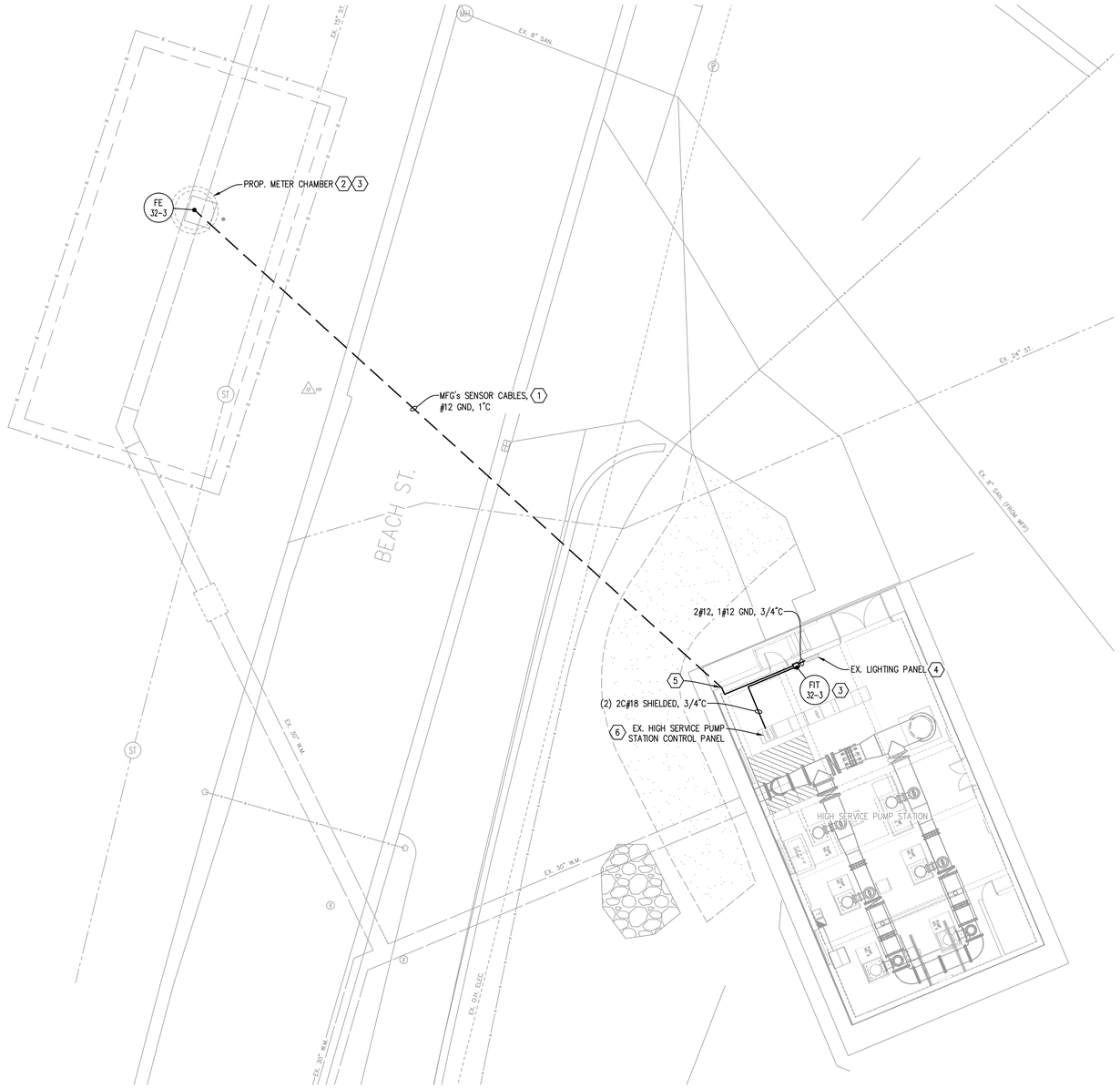
DRAWN SMYTH
DATE JULY '23
CHECKED P.W.B.
DATE JULY '23

Prein&Newhof
Engineers • Surveyors • Environmental • Laboratory

CITY OF MUSKEGON
MUSKEGON COUNTY, MICHIGAN
WATER FILTRATION PLANT
BEACH STREET TRANSMISSION MAIN FLOW METER
SITE PLAN & DETAILS

PROJECT NO. 2221055
SHEET NO. 2 OF 3

T:\CIVIL3D PROJECTS\2022\2221055_MUSKEGON_WFP BEACH STREET\4_PROD\2221055_SITE PLAN.DWG - MSMYTH - JUL 27 2023 - 01:15pm - PrintNewhof



ELECTRICAL SITE PLAN

SCALE : 1" = 10'

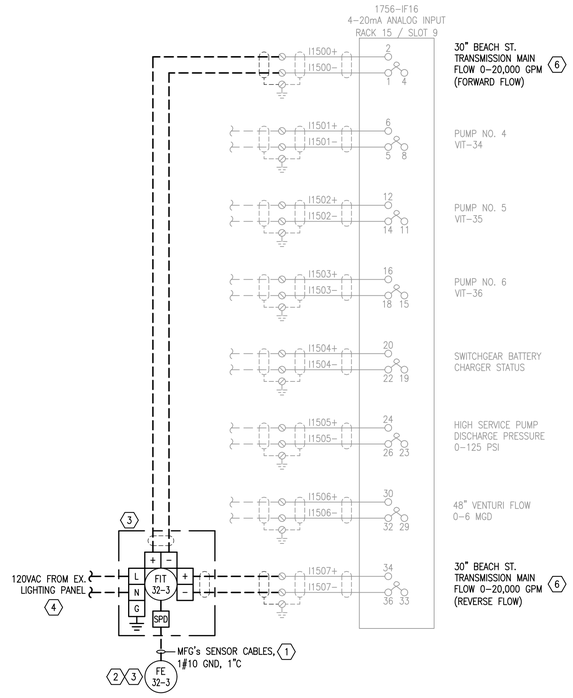
North

GENERAL NOTES:

1. ENGRAVED EQUIPMENT NAMEPLATES (WHITE PHENOLIC WITH BLACK LETTERS) SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR FOR ALL PROP. EQUIPMENT AS NOTED. LETTER SIZES: 1" HIGH FOR INDIVIDUAL ELECTRICAL POWER DISTRIBUTION AND SERVICE EQUIPMENT. LETTER SIZES: 1/4" HIGH FOR INDIVIDUAL ELECTRICAL MOTOR CONTROL CENTER UNITS, VFD ENCLOSURES, SAFETY DISCONNECTS, COMBINATION STARTERS AND PROCESS INSTRUMENTATION.
2. PROVIDE THESE CONDUIT TYPES IN THE FOLLOWING LOCATIONS:
   a. RMC – OUTDOOR ABOVE GRADE.
   b. SCH. 40 PVC OR HDPE – BELOW GRADE.
3. PROVIDE MALLEABLE IRON CONDUIT FITTINGS & CONDUIT BODIES OR NEMA 4, STEEL, JIC, HINGED COVER JUNCTION BOXES. WHERE CONDUITS ENTER EQUIPMENT OUTDOORS PROVIDE WEATHERPROOF HUBS AND LOW POINT DRAINS.

PLAN NOTES: ⟨#⟩ – (SYMBOL DENOTES PLAN NOTE)

1. PROVIDE SCH. 40 PVC OR HDPE CONDUIT FROM FLOW ELEMENT (FE-32-3) IN PROP. METER CHAMBER TO THE HIGH SERVICE PUMP STATION. 24" BELOW GRADE AT HIGH SERVICE PUMP STATION CONVERT SCH. 40 PVC OR HDPE CONDUIT TO RIGID METALLIC CONDUIT (RMC) AND EXTEND EXPOSED TO FLOW TRANSMITTER (FIT-32-3) MOUNTED IN HIGH SERVICE PUMP STATION. DIRECTIONAL BORE SCH. 40 HDPE CONDUIT BELOW PUBLIC ROADWAY AT A MINIMUM DEPTH OF 36". AREAS OF DIRECTIONAL BORING EXCAVATIONS SHALL BE BACKFILLED WITH CLEAN SOIL, SOIL COMPACTED, SOIL LEVELED AND GRASS SEED APPLIED PER SPECIFICATIONS. DISPOSE OF ALL LEFT OVER BORING SPOILS OFFSITE. ROADWAY CROSSING ALIGNMENT SHALL BE COORDINATED WITH OWNER. SEE NOTES ON SHEET 2.
2. COORDINATE WITH OTHER TRADES INSTALLATION OF PROP. IMMERSION TYPE FLOW ELEMENT FE-32-3 IN PROP. METER CHAMBER.
3. PROVIDE NEMA 4X, FIBERGLASS, CONTINUOUS HINGED ENCLOSURE WITH POLYCARBONATE VIEWING WINDOW BY HOFFMAN OR EQUAL ADEQUATELY SIZED TO HOUSE FLOW TRANSMITTER (FIT-32-3) AND SENSOR CABLES SURGE PROTECTION DEVICE (SPD). MOUNT TRANSMITTER ENCLOSURE ON NORTH WALL OF HIGH SERVICE PUMP STATION AT 5'-0" AFF AS SHOWN. CONNECT FIELD WIRING AND GROUNDING BETWEEN FLOW SENSOR AND TRANSMITTER PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. PROVIDE A ONE (1) 15 AMP, 1 POLE BREAKER IN EX. LIGHTING PANEL IN SPARE SPACE TO PROVIDE 120 VAC POWER TO TRANSMITTER. SQUARE D PANELBOARD TYPE NQO. REVISE PANEL SCHEDULE AS REQUIRED.
5. CORE CONDUIT PENETRATION INTO PUMP ROOM AS NEED. FILL ENTIRE INTERIOR TO EXTERIOR DEPTH OF PENETRATION WITH NON-SHRINKING GROUT.
6. CONTACT MICK JONES (TETRA TECH), 734-665-6000 FOR QUOTE FOR INTEGRATION, GRAPHICS AND SCALING OF FORWARD AND REVERSE FLOW 4-20mA SIGNALS FROM PROP. FLOW METER (FIT-32-3) TO THE EXISTING WATER FILTRATION PLANT SCADA SYSTEM.



HIGH SERVICE PUMP STATION CONTROL PANEL WIRING DIAGRAM – PARTIAL

FROM 2018 MUSKEGON WFP SCADA UPGRADES – TETRA TECH SHEET I-92, PROJ# 200-12775-18001

NO.	REVISIONS	BY	DATE
1	ISSUED FOR BIDS	RBD	07/23

DRAWN RBD
DATE JULY '23
CHECKED MAT
DATE JULY '23

CENTURY A&E
Facilities Design
277 Crahen Avenue NE - Grand Rapids, MI 49525
Telephone: (616) 456-5227 / Fax: (616) 456-5228 / Web: www.centuryae.com

Prein&Newhof
Engineers ■ Surveyors ■ Environmental ■ Laboratory

CITY OF MUSKEGON
MUSKEGON COUNTY, MICHIGAN
WATER FILTRATION PLANT
BEACH STREET TRANSMISSION MAIN FLOW METER
ELECTRICAL SITE PLAN & WIRING DIAGRAM

PROJECT NO. 2221055
SHEET NO. 3 OF 3