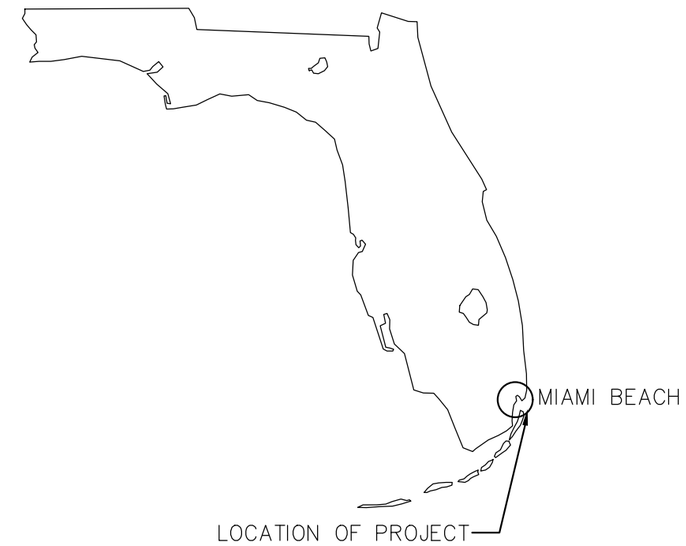
MIAMIBEACH

PUBLIC WORKS DEPARTMENT

WEST AVENUE WATER TREATMENT STRUCTURE
2016-091-KB
DESIGN/BUILD SERVICES FOR WEST AVENUE IMPROVEMENTS PHASE II

PERMIT SET SUBMITTAL



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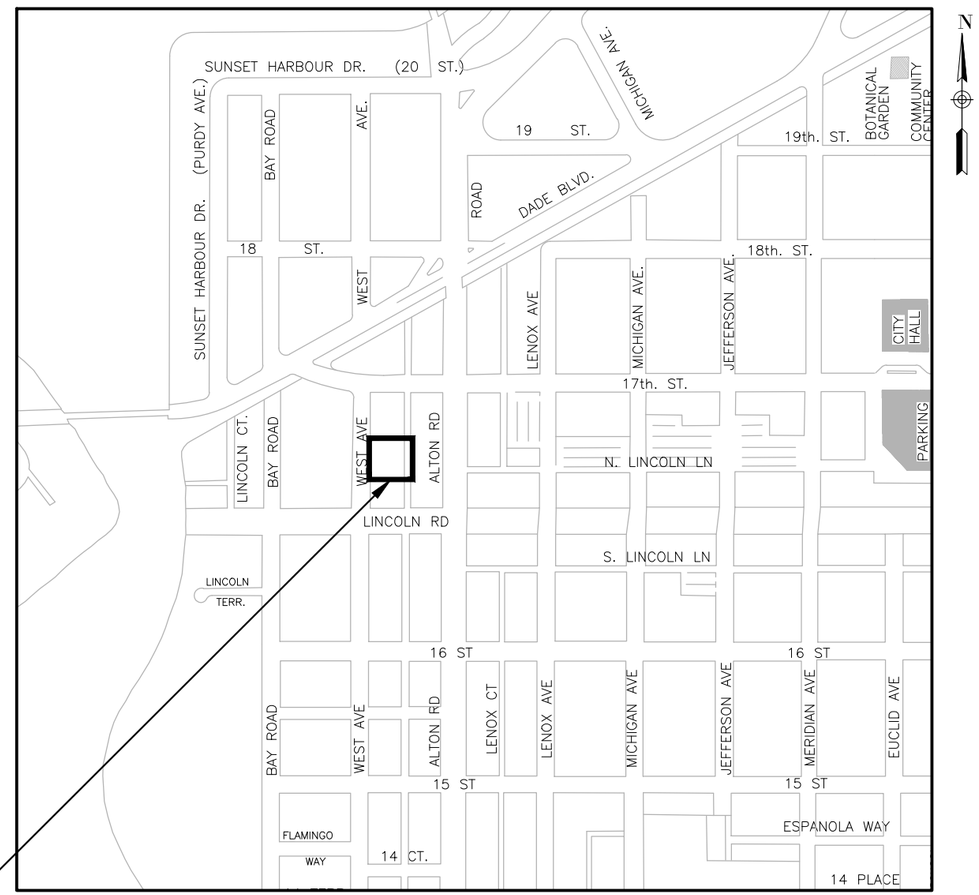
CITY OF MIAMI BEACH

MAYOR:	DAN GELBER
COMMISSIONERS:	MICHAEL GONGORA MARK SAMUELIAN MICKY STEINBERG DAVID RICHARDSON RICKY ARRIOLA STEVEN MEINER
CITY MANAGER:	ALINA T. HUDAK
CITY ATTORNEY:	RAUL J. AGUILA
PUBLIC WORKS DIRECTOR:	JOSE GOMEZ, P.E.
CITY ENGINEER:	NELSON PEREZ-JACOME
DIRECTOR OF CAPITAL IMPROVEMENT:	DAVID MARTINEZ, P.E., LEED AP



PROJECT LOCATION

LOCATION MAP

FOLIO NUMBER: 02-3233-017-0080
FOLIO NUMBER: 02-3233-017-0070
FOLIO NUMBER: 02-3233-017-0060
FOLIO NUMBER: 02-3233-017-0050

Jose A Caraballo

Digitally signed by Jose A Caraballo
Date: 2021.11.05 14:43:20 -04'00'

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

Jose A. Caraballo, State of Florida Professional Engineer License No. 73064
This item has been digitally signed and sealed by Jose A. Caraballo on the date indicated here.
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RIC-MAN CONST. FL, INC. MIAMI, FLORIDA

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WEST AVENUE	
PUMP STATION - INDEX SHEET	
Sheet	**Description**
PS-G00	COVER SHEET
PS-G01	GENERAL NOTES AND INDEX OF DRAWINGS
PS-G02	GENERAL LEGEND
PS-C01	CIVIL - EXISTING - SITE PLAN
PS-C02	CIVIL - DEMOLITION - SITE PLAN
PS-C03	CIVIL - SEAWALL DEMOLITION - SITE PLAN
PS-C04	CIVIL - RESTORATION - SITE PLAN
PS-C05	CIVIL - PROPOSED SITE PLAN - KEY PLAN
PS-C06	CIVIL - PROPOSED SITE PLAN - PUMP STATION
PS-C07	CIVIL - PROPOSED SITE PLAN - WEST AVE
PS-C08	CIVIL - PROPOSED DISSIPATOR - SITE PLAN
PS-M01	MECHANICAL - NOTES AND LEGEND
PS-M02	MECHANICAL - GENERAL PLAN - PUMP STATION
PS-M03	MECHANICAL - FACILITY PROFILE
PS-M04	MECHANICAL - PUMP INTAKE STRUCTURE - PLAN
PS-M05	MECHANICAL - PUMP INTAKE STRUCTURE - SECTIONS
PS-M06	MECHANICAL - DRAINAGE WELL AND SETTLING TANK
PS-M07	MECHANICAL - CDS TREATMENT STRUCTUREPLAN - PROFILE
PS-M08	MECHANICAL - CDS TREATMENT STRUCTURE PLANS - SECTIONS - ELEVATIONS
PS-M09	MECHANICAL - TRASH RACK STRUCTURE PLAN - PROFILE
PS-M10	MECHANICAL - TRASH RACK STRUCTURE ELEVATIONS - SECTIONS
PS-S01	STRUCTURAL - NOTES AND LEGEND
PS-S02	STRUCTURAL - PUMP FACILITY PLAN
PS-S03	STRUCTURAL - PUMP FACILITY PROFILE
PS-S04	STRUCTURAL - TRASH RACK STRUCTURE - PLAN
PS-S05	STRUCTURAL - TRASH RACK STRUCTURE - PLAN
PS-S06	STRUCTURAL - TRASH RACK STRUCTURE - SECTIONS
PS-S07	STRUCTURAL - TRASH RACK STRUCTURE - SECTIONS
PS-S08	STRUCTURAL - TREATMENT STRUCTURE - PLAN
PS-S09	STRUCTURAL - TREATMENT STRUCTURE - PLAN
PS-S10	STRUCTURAL - TREATMENT STRUCTURE - SECTIONS
PS-S11	STRUCTURAL - TREATMENT STRUCTURE - SECTIONS
PS-S12	STRUCTURAL - PUMP INTAKE STRUCTURE - PLAN
PS-S13	STRUCTURAL - PUMP INTAKE STRUCTURE - PLAN
PS-S14	STRUCTURAL - PUMP INTAKE STRUCTURE - SECTIONS
PS-S15	STRUCTURAL - PUMP INTAKE STRUCTURE - SECTIONS
PS-S16	STRUCTURAL - JUNCTION BOX - PLAN
PS-S17	STRUCTURAL - JUNCTION BOX - PLAN
PS-S18	STRUCTURAL - JUNCTION BOX - PLAN
PS-S19	STRUCTURAL - JUNCTION BOX - SECTION 'H-H'
PS-S20	STRUCTURAL - JUNCTION BOX - SECTIONS 'J-J' AND 'I-I'
PS-S21	STRUCTURAL - ELECTRICAL CONTROL - PLAN
PS-S22	STRUCTURAL - ELECTRICAL CONTROL - SECTION 'A'
PS-S23	STRUCTURAL - ELECTRICAL CONTROL - SECTION 'B' AND 'C'
PS-S24	STRUCTURAL - ELECTRICAL GENERATOR - PLAN
PS-S25	STRUCTURAL - DRAINAGE WELL - PLANS
PS-S26	STRUCTURAL - DRAINAGE WELL - PLANS
PS-S27	STRUCTURAL - DRAINAGE WELL SECTIONS
PS-S28	STRUCTURAL - SEA WALL PLAN
PS-S29	STRUCTURAL - SEA WALL SECTIONS AND DETAILS
PS-S30	STRUCTURAL - SEA WALL DETAILS
PS-S31	STRUCTURAL - GENERAL DETAILS
PS-E01	ELECTRICAL - GENERAL NOTES
PS-E02	ELECTRICAL - SPECIFICATIONS
PS-E03	ELECTRICAL - GENERAL PLAN - PUMP STATION
PS-E04	ELECTRICAL - EQUIPMENT PLATFORM - LAYOUT
PS-E05	ELECTRICAL - ELECTRICAL AND CONTROL - SECTIONS
PS-E06	ELECTRICAL - ELECTRICAL AND CONTROL - SECTIONS
PS-E07	ELECTRICAL - EMERGENCY GENERATOR - PLAN
PS-E08	ELECTRICAL - ONE-LINE DIAGRAM AND SCHEDULES
PS-E09	ELECTRICAL - RISER AND SCHEDULES
PS-E010	ELECTRICAL - DETAILS
PS-SD01	CITY OF MIAMI BEACH - STANDARD DETAILS
PS-SD02	CITY OF MIAMI BEACH - STANDARD DETAILS
PS-SD03	CITY OF MIAMI BEACH - STANDARD DETAILS

SURVEYOR'S NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN ON THIS PLAN ARE PER A SURVEY COMPLETED BY LONGITUD SURVEYORS. FOR THE CITY OF MIAMI BEACH. THE FIELD SURVEY WAS COMPLETED ON FEBRERO 1, 2021.

2. INFORMATION SHOWN ON THE DRAWNGS AS TO THEIR LOCATION AND CHARACTER HAS BEEN PREPARED FROM THE MOST RELIABLE DATA AVAILABLE.

3. THE GENERAL DESCRIPTION OF THE PROJECT AREA WAS GENERATED FROM THE UNDERLYING PLATS OF RECORD AND CLIENT DIRECTION.

4. BEARINGS AS SHOWN HEREON REFER TO A CALCULATED BEARING N01°59'06"W ALONG THE BASELINE OF SURVEY FOR WEST AVENUE AS SHOWN ON THE SURVEY MAP. FOR THE PURPOSE OF THIS SURVEY, THIS MAY BE CONSIDERED A WELL-MONUMENTED AND IDENTIFIED LINE AS DELINEATED ON THE SURVEY MAP. THE BASELINE OF SURVEY WAS CREATED BY RECOVERY OF A SUFFICIENT AMOUNT OF RIGHT OF WAY AND CENTERLINE CONTROL THROUGHOUT THE ENTIRE PROJECT AREA CORRIDOR.

ELEVATIONS AS DEPICTED ON THE SURVEY MAP AND REFERENCED IN THIS REPORT ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

5. THE FOLLOWING BENCHMARKS WERE USED FOR THIS SURVEY:
   a. CITY OF MIAMI BEACH BENCHMARK CBM 16 A ADJUSTED, ELEVATION = +2.52 FEET (NAVD 88). THE BENCHMARK IS A MAG NAIL AND WASHER ON TOP OF CURB AND IS LOCATED ON THE SOUTHWEST CORNER OF 16th STREET AND ALTON ROAD.
   b. CITY OF MIAMI BEACH BENCHMARK CBM 08 15 A ADJUSTED, ELEVATION = +2.33 FEET (NAVD 88). THE BENCHMARK IS A MAG NAIL AND WASHER ON TOP OF CURB AND IS LOCATED ON THE NORTHEAST CORNER 8th STREET AND ALTON ROAD.
   c. CITY OF MIAMI BEACH BENCHMARK CBM 13 05 R ADJUSTED, ELEVATION = +1.94 FEET (NAVD 88). THE BENCHMARK IS A NAIL AND WASHER IS LOCATED ON THE NORTHEAST OF INTERSECTION OF 11th STREET AND WEST AVENUE.
   d. CITY OF MIAMI BEACH BENCHMARK CBM 15 06 ADJUSTED, ELEVATION = +2.26 FEET (NAVD 88). THE BENCHMARK IS A MAG NAIL AND WASHER AND IS LOCATED AT THE INTERSECTION OF WEST AVENUE AND 15th STREET.
   e. CITY OF MIAMI BEACH BENCHMARK CBM LR 05 R ADJUSTED, ELEVATION = +2.82 FEET. THE BENCHMARK IS A MAG NAIL AND WASHER AND IS LOCATED AT THE INTERSECTION OF LINCOLN ROAD AND WEST AVENUE.
   f. MIAMI-DADE COUNTY BENCHMARK C-100, ELEVATION +11.05 FEET (NGVD 29) AND +9.50 FEET (NAVD 88). THE BENCHMARK IS A BRASS DISC IN THE NORTH CORNER OF THE BRIDGE LOCATED 25 FEET SOUTH OF THE CENTERLINE OF THE EAST BOUND LANE OF DADE BLVD AND 65 FEET EAST OF THE CENTERLINE OF BAY ROAD.

5. WELL-IDENTIFIED FEATURES AS DEPICTED ON THE SURVEY MAP WERE MEASURED TO AN ESTIMATED HORIZONTAL POSITIONAL ACCURACY OF 1/10 FOOT.

6. NO ENCROACHMENTS WERE NOTED BY THIS SURVEY, EXCEPT AS SHOWN HEREON. THE OWNERSHIP OF THE FENCES AND/OR WALLS AS SHOWN HEREON WAS NOT DETERMINED. THE LOCATION OF UTILITIES ON OR ADJACENT TO THE PROPERTY WAS NOT SECURED. THE SURVEYOR HAS PERFORMED NO SUBSURFACE INVESTIGATION OR DETERMINED THE LOCATION OF UNDERGROUND FOUNDATIONS.

7. THE SURVEY MAP IS INTENDED TO BE DISPLAYED AT THE STATED AND GRAPHIC SCALES IN ENGLISH UNITS OF MEASUREMENT. ATTENTION IS DRAWN TO THE FACT THAT SAID SCALE MAY BE ALTERED BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

8. THE ELEVATIONS OF WELL-IDENTIFIED FEATURES AS DEPICTED ON THE SURVEY MAP WERE MEASURED TO AN ESTIMATED VERTICAL POSITIONAL ACCURACY OF 1/10 FOOT FOR NATURAL GROUND SURFACES AND 1/100 FOOT FOR HARDSCAPE SURFACES.

9. AS THE SURVEY WAS LIMITED TO THE LOCATION OF SURFACE TOPOGRAPHY WITHIN THE PROJECT AREA, THE ABUTTING INTERIOR LOTS AND EASEMENTS CREATED BY THE PLATS OR OTHER INSTRUMENTS OF RECORD TH AT FELL OUTSIDE THE RIGHT OF WAY ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.

10. THE SUBSURFACE UTILITIES INFORMATION THAT WAS PROVIDED BY THE CITY OF MIAMI BEACH WAS USED TO SHOW THE CONNECTIONS FOR PIPES AND IN THE CASES WHERE THE CITY'S ATLAS, WEB SITE GIS.MIAMIBEACHFL.GOV OR AS-BUILTS DRAWINGS PROVIDED MAY CONFLICT WITH THAT OF THE FIXTURES PHYSICALLY LOCATED BY MASER CONSULTING, IT SHOULD BE CONSIDERED THAT THE FIELD LOCATIONS WILL TAKE PRECEDENCE. IN THE CASE WHERE AN ASTERISK (*) IS INDICATED, THAT SHALL BE APPLIED TO STRUCTURES IN WHICH THE INFORMATION SHOWN IN THE TABLE WAS OBTAINED FROM AS-BUILT DRAWINGS PROVIDED BY THE CITY OF MIAMI BEACH.

GENERAL NOTES:

1. ALL APPLICABLE PERMITS MUST BE OBTAINED PRIOR TO COMMENCEMENT OF CONSTRUCTION.

2. ALL MATERIALS AND CONSTRUCTION UNDER THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF MIAMI BEACH, PUBLIC WORKS DEPARTMENT.

3. THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AS SHOWN ON THE APPROVED PLANS ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER OF ANY DISCREPANCY OR VARIATION FROM THE APPROVED DRAWINGS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES AND IMPROVEMENTS FROM DAMAGE, DISRUPTION OF SERVICE, OR DESTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING NECESSARY MEASURES TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.

5. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION PLANS ON SITE. THE PLANS ARE TO BE MADE AVAILABLE TO THE ENGINEERING INSPECTOR OF THE CITY OF MIAMI BEACH OR HIS DESIGNEE UPON REQUEST.

6. THE CONTRACTOR SHALL PROVIDE ACCESS AND ASSISTANCE TO THE CITY ENGINEER OR HIS DESIGNEE TO MAKE INSPECTIONS, AS NECESSARY, DURING CONSTRUCTION.

7. NO DEVIATION FROM APPROVED PLANS SHALL BE PERMITTED WITHOUT THE WRITTEN CONSENT OF THE CITY ENGINEER OR HIS DESIGNEE.

8. CONTRACTOR MUST CALL CITY OF MIAMI BEACH, PUBLIC WORKS DEPARTMENT TO OBTAIN A RIGHT OF WAY PERMIT AND ARRANGE A PRE-CONSTRUCTION MEETING 48 HOURS PRIOR TO START OF CONSTRUCTION.

9. ENGINEERING PERSONNEL WILL INSPECT ALL FACILITIES APPROVED BY THEIR OFFICE. ALL OTHER REQUIREMENTS OF THE PERMITTING AGENCIES SHALL BE IN ACCORDANCE WITH THEIR STANDARDS.

10. TRENCH EXCAVATIONS IN EXCESS OF 5 FEET DEEP SHALL COMPLY WITH THE TRENCH SAFETY ACT AS PER O.S.H.A. STANDARD 29 CFR S.926.650 SUBPART P IN STATUTES. THE TRENCHES AND DITCHES SHALL BE PROTECTED IN ACCORDANCE WITH RULE 38c 43.02 FAC AND 6A-1,095(2).

11. ERECTION OR INSTALLATION OF APPROPRIATE SAFETY AND WARNING DEVICES SHALL BE REQUIRED DURING THE COURSE OF CONSTRUCTION. SAID DEVICES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S "MANUAL ON TRAFFIC CONTROL AND SAFETY PRACTICES" AND THE MIAMI-DADE COUNTY PUBLIC WORKS MANUAL.

12. PLANS AND SPECIFICATIONS REQUIRE THAT COMPACTED BACKFILL BE PLACED ALONGSIDE OF AND OVER ALL UTILITIES. THE CITY ENGINEER REQUIRES THAT COMPACTION TESTS BE TAKEN TO VERIFY BACKFILL COMPACTION. THE COST OF SUCH COMPACTION TESTS WILL BE BORNE BY THE CONTRACTOR. THE RETESTING COST, DUE TO FAILURE OF THE COMPACTION TEST, WILL BE PAID BY THE CONTRACTOR.

13. THE CONTRACTOR SHALL PROVIDE QUALITY ASSURANCE TO ALL CONCRETE WORK IN ACCORDANCE WITH THE SPECIFICATION.

14. WORK PERFORMED UNDER THIS PROJECT WILL NOT BE CONSIDERED COMPLETE UNTIL THE FOLLOWING DOCUMENTS ARE RECEIVED BY THE CITY OF MIAMI BEACH, PUBLIC WORKS DEPARTMENT.

A. CONTRACTOR'S, SUBCONTRACTOR'S AND SUPPLIER'S WAIVER AND RELEASE OF LIEN.
B. CONTRACTOR'S LETTER OF WARRANTY (I.E. LETTER OF AGREEMENT).
C. "AS BUILT" – FOUR (4) ORIGINALS 22"X34" & 11"X17" SIGNED AND SEALED BY A FLORIDA REGISTERED LAND SURVEYOR SHOWING SPECIFIC LOCATION, DEPTH, ETC. OF ALL CITY FACILITIES TOGETHER WITH A DIGITAL COPY IN AUTOCAD LAST VERSION 2011 OF THE "AS-BUILT" DRAWINGS USING STATE PLANE FLORIDA EAST FIPS 0901 FEET MAP 1983 (FEET).

15. FOR SPECIFICATIONS, PLEASE REFER TO THE CITY OF MIAMI BEACH PUBLIC WORKS MANUAL.

16. DUE TO SOIL CONDITIONS, HIGH WATER TABLE AND PROTECTION OF ROADWAY, UTILITIES AND EXISTING LANDSCAPING, SHORING WILL BE REQUIRED FOR TRENCH AND STRUCTURE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSABLE OF PROPOSED METHOD OF CONSTRUCTION 10 CMB APPROVAL AT THE PRECONSTRUCTION MEETING. THE COST OF SHORING WILL BE INCLUDED IN THE COSTS OF STRUCTURE AND PIPES. DEWATERING MAY BE REQUIRED AND SHALL BE INCLUDED IN THE COSTS OF STRUCTURES AND PIPES.

17. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING TURBIDITY BARRIER AT ALL OUTFALLS SUBJECT TO POTENTIAL DISCHARGE DURING CONSTRUCTION. SEE FDOT INDEX No 104. CONTRACTOR SHALL BE RESPONSIBLE FOR FULL KNOWLEDGE OF ALL APPLICABLE REGULATORY REQUIREMENTS AND CORRECT ANY SILTATION OR OTHER DAMAGE TO THE DRAINAGE SYSTEM.

18. CONTRACTOR SHALL PROVIDE MAINTENANCE OF TRAFFIC DURING CONSTRUCTION IN ACCORDANCE WITH ALL STATE, COUNTY AND LOCAL REQUIREMENTS.

19. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH CURRENT FDOT STANDARD INDEXES (600 SERIES), AND THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND ALL OTHER STATE, COUNTY AND LOCAL REQUIREMENTS.

20. WHEN POWER POLES ARE ADJACENT TO ANY PROPOSED UTILITY, THE CONTRACTOR SHALL PROVIDE PROPER SHORING OR OTHER SUITABLE SUPPORT DURING CONSTRUCTION. THE SHORING AND SUPPORT METHODS SHALL BE APPROVED BY THE UTILITY COMPANY ENGINEERING DEPARTMENT.

21. ALL DEFECTIVE WORK NOT ACCEPTED BY THE CITY ENGINEER OR HIS DESIGNEE, OR BY ANY GOVERNMENT PERMITTING AGENCY SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

22. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

23. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING UNINTERRUPTED WATER SERVICE DURING THE CONSTRUCTION OF THE TIE-IN CONNECTION OF ALL PROPOSED WATER SYSTEMS TO ANY EXISTING WATER SERVICE LINES. ABANDONMENT SHALL NOT OCCUR UNTIL THE PROPOSED WORK HAS BEEN APPROVED AND ACCEPTED FOR OPERATION BY THE ENGINEER OF RECORD AND THE CITY OF MIAMI BEACH PUBLIC WORKS DEPARTMENT, WATER DIVISION. CONTRACTOR SHALL REQUEST FROM CMB 48 HOURS PRIOR FOR WATER MAIN SHUTDOWN.

24. EXISTING FIRE HYDRANTS SHALL REMAIN IN SERVICE DURING CONSTRUCTION.

25. CONTRACTOR SHALL COMPLY NPDES BMP FOR SEDIMENTATION AND EROSION WORK. CONTRACTOR MUST STRICTLY FOLLOWED SWPP PLAN DURING AND AFTER CONSTRUCTION. CONTRACTOR TO COMPLY WITH STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.

26. THE CONTRACTOR SHALL BE GOVERNED BY THE LATEST APPLICABLE PORTIONS OF THE F.D.O.T. DESIGN STANDARDS, AND THE F.D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND SUPPLEMENTS THERE TO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

27. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES IN THE PROJECT AREA BEFORE THE START OF CONSTRUCTION. SEE THE UTILITY CONTACT INFORMATION TABLE FOR CONTACT NUMBERS.

28. ANY DAMAGED PUBLIC OR PRIVATE PROPERTY BY THE CONTRACTOR SHALL BE RESTORED TO PRE-EXISTING CONDITIONS OR BETTER AT NO EXPENSE TO THE OWNER, AS GOVERNED BY HARMONIZATION PLANS.

29. ALL CONSTRUCTION DEBRIS SHALL BE PROPERLY DISPOSED OF OFFSITE AT THE CONTRACTOR'S EXPENSE.

30. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553.851 FOR THE PROTECTION OF UNDERGROUND GAS LINES.

31. ERECTION OR INSTALLATION OF APPROPRIATE SAFETY AND WARNING DEVICES SHALL BE REQUIRED DURING THE COURSE OF CONSTRUCTION. SAID DEVICES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S "MANUAL OF TRAFFIC CONTROL AND SAFETY PRACTICES" AND THE MIAMI-DADE COUNTY PUBLIC WORKS MANUAL.

32. ALL EXISTING UTILITIES, MANHOLE COVERS, ELECTRICAL BOXES, VALVE BOXES, METER BOXES, DRAINAGE STRUCTURES, ETC. TO REMAIN WITHIN PROPOSED AREAS OF IMPROVEMENTS SHALL BE ADJUSTED TO GRADE ELEVATION, UNLESS OTHERWISE NOTED.

33. CONTRACTOR SHALL REPLACE ALL UTILITY BOXES/COVERS DAMAGED DURING CONSTRUCTION. CONTRACTOR SHALL NOTE THE CONDITION OF EXISTING UTILITIES BEFORE STARTING WORK. IF ANY EXISTING UTILITY ASSET IS DAMAGED, CONTACT THE CORRESPONDING UTILITY FOR REPLACEMENT.

34. CONTRACTOR SHALL USE A STREET SWEEPER (USING WATER) OR OTHER EQUIPMENT CAPABLE OF CONTROLLING AND REMOVING DUST. APPROVAL OF THE USE OF SUCH EQUIPMENT IS CONTINGENT UPON ITS DEMONSTRATED ABILITY TO DO THE WORK.

35. THE COLOR OF THE DETECTABLE WARNINGS ON CONCRETE OF COLORS OTHER THAN MIAMI BEACH RED, COORDINATE WITH THE PUBLIC WORKS DEPARTMENT FOR APPROPRIATE COLOR AND CONTRAST.

ENGINEER'S NOTES:

1. EXISTING UNDERGROUND UTILITIES: INFORMATION SHOWN ON THE DRAWINGS AS TO THEIR LOCATION AND CHARACTER HAS BEEN PREPARED FROM THE MOST RELIABLE DATA AVAILABLE TO THE ENGINEER; THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL OF FLORIDA, INC. DBA SUNSHINE 811 TWO (2) BUSINESS DAYS PRIOR TO ANY EXCAVATION TO DETERMINE SAID LOCATIONS AND THE LOCATIONS OF RECENT ADDITIONS TO THE SYSTEMS NOT SHOWN. EXTREME CAUTION SHALL BE EXERCISED BY THE CONTRACTOR TO ELIMINATE ANY POSSIBILITY OF DAMAGE TO UTILITIES DURING CONSTRUCTION. THE LOCATION AND CHARACTER OF ALL UTILITIES SHALL BE VERIFIED AND THE OWNER'S REPRESENTATIVE NOTIFIED OF ANY CONFLICT THAT MIGHT OCCUR.

2. PROTECT MATERIALS AND EQUIPMENT ON SITE FROM WEATHER, DUST, AND DEBRIS AT ALL TIMES, AND AVOID THE CREATION OF NUISANCE OR HAZARD IN THE SURROUNDING AREA.

3. UNSCHEDULED ITEMS SHALL BE RESTORED TO THEIR ORIGINAL DESIGN AND FUNCTION AT CONTRACTOR'S EXPENSE.

4. WHERE PAVEMENT DEMOLITION IS REQUIRED, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO PROTECT AND PREVENT DAMAGE TO ADJACENT STRUCTURES, EXISTING TREES, AND PAVEMENTS TO REMAIN. LIMITS OF PAVEMENT DEMOLITION SHALL BE PERFORMED IN A NEAT, STRAIGHT LINE BY SAW CUTTING AT CONTRACTORS EXPENSE.

5. EXISTING BENCHMARKS LOCATED WITHIN THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED. IN THE EVENT THAT THE BENCHMARKS ARE DISTURBED OR DESTROYED, THEY SHALL BE REPLACED UPON COMPLETION OF THE PROJECT AT NO ADDITIONAL COST TO THE OWNER.

6. ADJUSTMENT AND CLEANING: CLEAN DEBRIS FROM AREAS OF DEMOLITION LEAVING AREA SUITABLE FOR WORK.

7. FALL MATERIALS RESULTING FROM DEMOLITION WORK SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVE FROM SITE AND DISPOSE OF THESE MATERIALS IN A MANNER AND LOCATION APPROVED BY MIAMI-DADE COUNTY REGULATIONS.

8. ALL THE NOTES IN THE PLANS FOR IMPROVEMENTS PROPOSED TO THE WATER SYSTEM, SANITARY SEWER SYSTEM, DRAINAGE SYSTEM AND STREET LIGHTNING SHALL APPLY TO ANY RELATED WORK ACCORDINGLY.

9. ALL SIGNING AND PAVEMENT MARKINGS INSTALLED AS PART OF THESE PLANS SHALL CONFORM TO THE GENERAL NOTES ON THE SIGNALIZATION PLAN.

10. ALL LANDSCAPE RELATED WORK SHALL COMPLY TO THE GENERAL NOTES ON THE LANDSCAPING PLAN.

11. RESURFACING AND OTHER CIVIL WORK SHALL ALSO COMPLY TO THE GENERAL NOTES ON THE ROADWAY PLANS.

12. REFER TO SHEETS PS-S01 AND PS-S17 FOR STRUCTURAL NOTES.

13. REFER TO SHEET PS-E01 FOR ELECTRICAL NOTES.

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: GENERAL NOTES AND INDEX OF DRAWINGS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jose A. Caraballo on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

NO.	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-G01.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-G01

LEGEND AND ABBREVIATIONS

= PALM TREE
= TREE
= ORNAMENTAL TREE
= TEMPORARY SITE BENCHMARK
O.R.B. = OFFICIAL RECORDS BOOK
PG. = PAGE
ADA = AMERICAN DISABILITY ACT
(2)2"Ø = INDICATES NUMBER OF PIPES AND THE DIAMETER OF PIPES
INV. = INVERT
ELEV. = ELEVATION
TYP. = TYPICAL
IRR = IRRIGATION
EX = EXISTING
ST = STORM
SAN = SANITARY
G = GAS
W = WATER
COM = EXISTING UNDERGROUND COMMUNCATION LINE
OHE = EXISTING OVERHEAD ELECTRIC LINE
FO = FIBER OPTIC
CATV = CABLE TELEVISION
ELEC. = ELECTRIC
x 0.00 = SPOT ELEVATION
CONC. = CONCRETE
C.B.S. = CONCRETE BLOCK STUCCO
C.L.F. = CHAIN LINK FENCE
W.F. = WOOD FENCE
M.F. = METAL FENCE
RCP = REINFORCED CONCRETE PIPE
FF = FINISH FLOOR
FDC = FIRE DEPARTMENT CONNECTION
D = DIAMETER OF TREE (TAKEN AT BREAST HEIGHT)
H = HEIGHT OF TREE
S = SPREAD (CANOPY OF TREE)
PVC = POLYVINYL CHLORIDE PIPE
HDPE = HIGH-DENSITY POLYETHYLENE
(R) = RECORD
(C) = CALCULATED
(M) = MEASURE
CMP = CORRUGATED METAL PIPE
CIP = CAST IRON PIPE
LB = LICENSE BUSINESS
L = LENGTH
Δ = CENTRAL ANGLE
R = RADIUS
T = TANGENT
PCC = POINT OF COMPOUND CURVATURE
PRC = POINT OF REVERSE CURVATURE
PT = POINT OF TANGENCY
PC = POINT OF CURVATURE
STA. = STATION
PI = POINT OF INTERSECTION
ID = IDENTIFICATION
BP = BEGINING POINT OF BASELINE
EP = ENDING POINT OF BASELINE
R/W = RIGHT-OF-WAY
P.B. = PLAT BOOK
℄ = SECTION LINE
℄ = CENTERLINE
℄ = BASELINE
M = MONUMENT LINE
TR = TRAFFIC SIGNAL BOX
TR = TRAFFIC SIGNAL CABINET
= BOLLARD
= PEDESTRIAN SIGNAL
TR = TRAFFIC HANDHOLE
TR = TRAFFIC MANHOLE
= TRAFFIC CAMERA
TR = TRAFFIC MARKER SIGN
= TRAFFIC SIGNAL MAST ARM
= SIGN
TR = TRAFFIC SENSOR
TV = CABLE TELEVISION MANHOLE
TV = CABLE TELEVISION HANDHOLE
TV = CABLE TELEVISION VAULT
TV = CABLE TELEVISION BOX
TV = CABLE TELEVISION MARKER SIGN
TV = CABLE TELEVISION MARKER FLAG
= CONCRETE LIGHT POLE

= FLOODLIGHT
E = ELECTRIC BOX
= ELECTRIC SWITCH
= WOODEN UTILITY POLE
= CONCRETE UTILITY POLE
= METAL UTILITY POLE
T = ELECTRIC TRANSFORMER
= GUY ANCHOR
= GUY ANCHOR POST
E = ELECTRIC MANHOLE
E = ELECTRIC METER
E = ELECTRIC HANDHOLE
E = ELECTRIC PANEL
E = ELECTRIC MARKING FLAG
E = ELECTRIC MARKING SIGN
G = GAS VALVE
G = GAS UTILITY BOX
G = GAS MANHOLE
G = GAS TANK
G = GAS HANDHOLE
G = GAS METER
G = GAS VAULT
G = GAS WELL
G = GAS MARKER FLAG
G = GAS MARKER SIGN
C = COMMUNICATION BOX
C = COMMUNICATION MANHOLE
C = COMMUNICATION VAULT
C = COMMUNICATION HANDHOLE
C = COMMUNICATION MARKER SIGN
C = COMMUNICATION MARKER FLAG
= GARBAGE RECEPTACLE
= PAYPHONE
= BASKETBALL HOOP
= HANDICAP PARKING SPACE
W = WATER METER
= IRRIGATION VALVE
= WATER VALVE
= FIRE HYDRANT
A = AIR RELEASE VALVE
W = WATER BOX
= WATER CONNECTION
W = WATER HANDHOLE
W = WATER MANHOLE
W = WATER TANK
W = WATER VAULT
W = WATER WELL
W = WATER MARKING FLAG
W = WATER MARKING SIGN
D = STORM MANHOLE
D = STORM METER
D = STORM HANDHOLE
D = STORM VAULT
= CATCH BASIN
D = STORM MARKER FLAG
D = STORM MARKER SIGN
T = TELEPHONE MANHOLE
T = TELEPHONE BOX
T = TELEPHONEHANDHOLE
= TELEPHONE BOX
= TELEPHONE MARKER SIGN
N = NEWSPAPER DISPENSER
= MAILBOX
= BORING HOLE
S = SANITARY MANHOLE
SV = SANITARY VALVE
S = SANITARY METER
ST = SANITARY TANK
S = SANITARY HANDHOLE
LS = SANITARY LIFT STATION
S = SANITARY VAULT
S = SANITARY MARKER FLAG
S = SANITARY MARKER SIGN
GT = GREASE TRAP MANHOLE
= CLEANOUT
= PARKING METER
F = FIBER OPTIC MANHOLE
F = FIBER OPTIC VAULT
F = FIBER OPTIC BOX
F = FIBER OPTIC HANDHOLE
F = FIBER OPTIC MARKER FLAG
F = FIBER OPTIC MARKER SIGN
= MONITORING WELL
FU = FUEL TANK
U = UNKNOWN UTILITY BOX
U = UNKNOWN UTILITY HANDHOLE
U = UNKNOWN UTILITY METER
U = UNKNOWN UTILITY MANHOLE

= UNKNOWN UTILITY POLE
U = UNKNOWN UTILITY TANK
U = UNKNOWN UTILITY VALVE
U = UNKNOWN UTILITY VAULT
U = UNKNOWN UTILITY MARKER FLAG
U = UNKNOWN UTILITY MARKER SIGN
= RAILROAD SIGNAL
= RAILROAD SIGN
RR = RAILROAD BOX
RR = RAILROAD VAULT
RR = RAILROAD HANDHOLE
= FLAGPOLE
P = PIPELINE BOX
P = PIPELINE HANDHOLE
P = PIPELINE METER
P = PIPELINE MANHOLE
P = PIPELINE VALVE
P = PIPELINE VAULT
P = PIPELINE MARKER FLAG
P = PIPELINE MARKER SIGN
PL = PROPERTY LINE
= ELECTRICAL OUTLET

MHWL
BASELINE
LIMITED ACCESS RW
CITY LIMITS
UNDERGROUND FIBEROPTIC — FIB
UNDERGROUND CATV — CBL
UNDERGROUND COMMUNICATION — CBL
UNDERGROUND FUEL
UNDERGROUND ELECTRIC — UGE
UNDERGROUND STORM — SD
UNDERGROUND SANITARY
UNDERGROUND TELEPHONE — TEL
UNDERGROUND UNIDENTIFIED
UNDERGROUND WATER — W
UNDERGROUND GAS — GAS
BARBED WIRE FENCE — X
METAL FENCE
CHAIN LINK FENCE
WOOD FENCE

BRICK HATCH
STAMPED CONCRETE HATCH
GRAVEL HATCH
TILE HATCH
UNIMPROVED HATCH
WALL HATCH
PAVER HATCH
ASPHALT HATCH
CONCRETE HATCH
BUILDING OUTLINE HATCH

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE
TITLE: GENERAL LEGEND

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

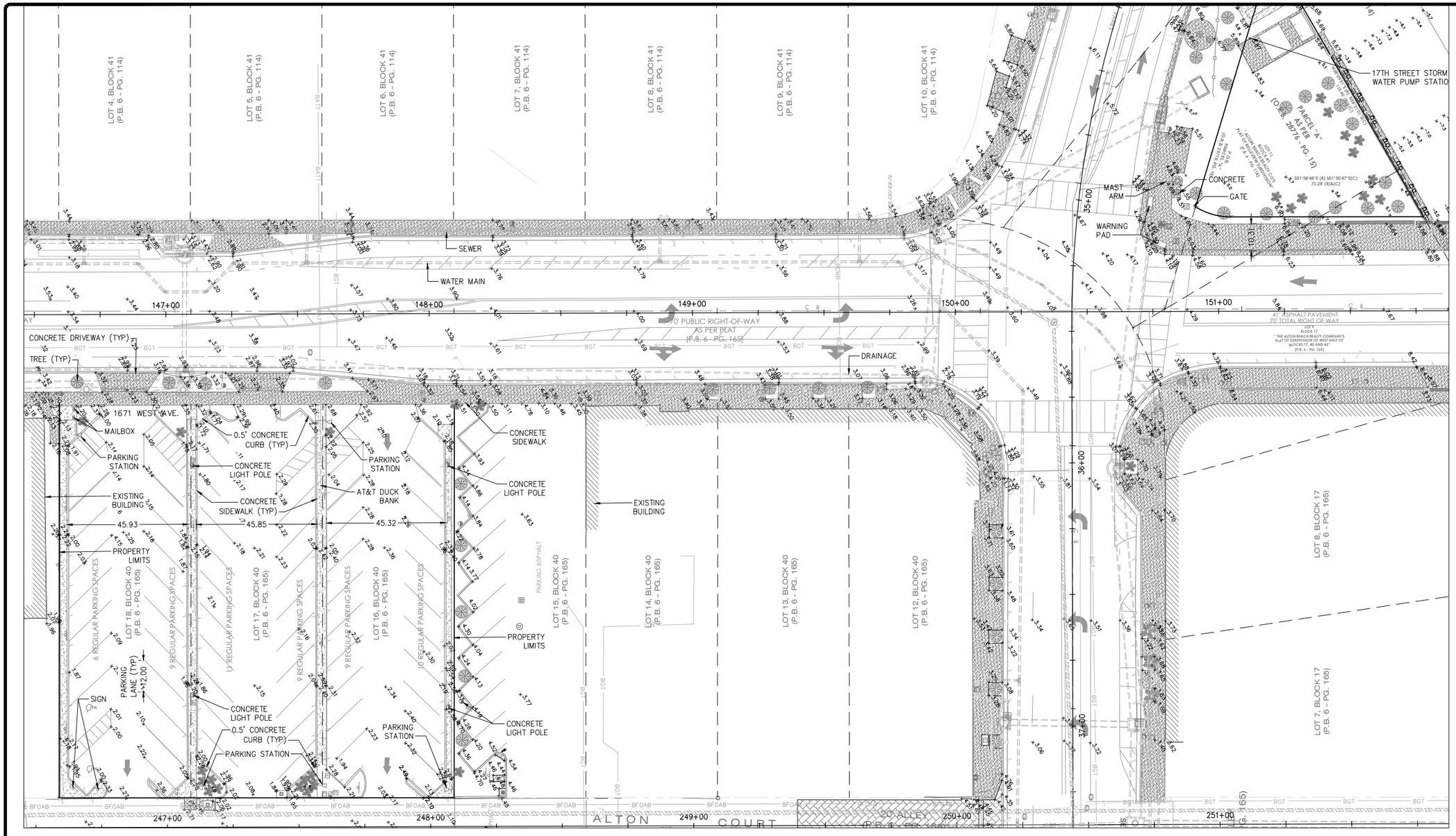
ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARBALLO LICENSED No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jose A. Caballo on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

NO.	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL–MECH–ELEC

File Name: PS–G02.dwg
Survey Reference:
Field Book: ____ Page: ____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: ____ Drawing: PS-G02



NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN ON THIS PLAN, ARE PER A SURVEY COMPLETED BY:EDUARDO M. SUAREZ, PSM, DATED FEB 23, 2021. FIELD SURVEY WAS COMPLETED ON FEB 1, 2021.
2. UTILITIES SHOWN AS TO THEIR LOCATION AND CHARACTER HAVE BEEN PREPARED FROM THE MOST RELIABLE DATA AVAILABLE TO THE ENGINEER. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL OF FLORIDA, INC. DBA SUNSHINE 811 TWO (2) BUSINESS DAYS PRIOR TO ANY EXCAVATION TO DETERMINE SAID LOCATIONS AND THE LOCATIONS OF RECENT ADDITIONS TO THE SYSTEMS NOT SHOWN.
3. CONTRACTOR TO VERIFY NEARBY BUILDING DIMENSIONS, UTILITY AND BASEMENT DEPTHS.
4. CONTRACTOR TO COMPLY WITH THE LOCAL APPROVED SWPP PLAN. ALL WORK TO BE IN ACCORDANCE WITH THE LATEST FEDERAL, STATE AND LOCAL AGENCY'S REGULATIONS AND STANDARDS.
5. ELEVATIONS ARE RELATIVE TO NAVD88.
4. CONTRACTOR TO PERFORM ALL WORK WITHIN LEGAL PROPERTY AND EASEMENT, AND SHOULD NOT DISTURB ADJACENT PROPERTY. ADDITIONAL EASEMENTS FROM PRIVATE PROPERTY OWNERS TO BE OBTAINED BY CONTRACTOR. REFER TO HARMONIZATION PLAN.
5. 44 REGULAR PARKING SPACES AND 2 HANDICAP PARKING SPACES.

PLAN

SCALE: 1"=20'-0"

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: CIVIL
EXISTING - SITE PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSED No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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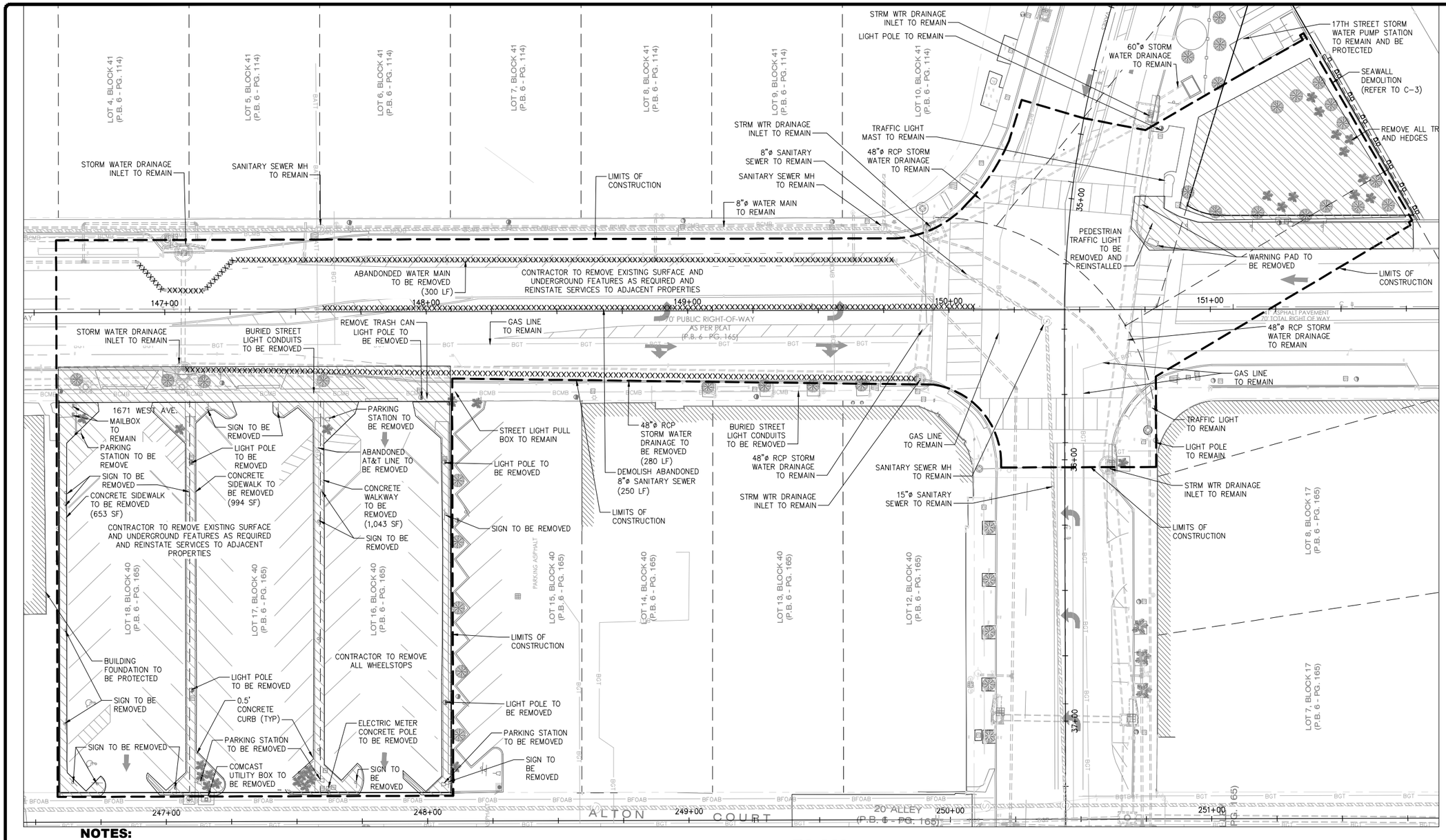
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-C01.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-C01



PLAN

SCALE: 1"=20'-0"

NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN ON THIS PLAN, ARE PER A SURVEY COMPLETED BY: EDUARDO M. SUAREZ, PSM, DATED FEB 23, 2021. FIELD SURVEY WAS COMPLETED ON FEB 1, 2021.
2. UTILITIES SHOWN AS TO THEIR LOCATION AND CHARACTER HAVE BEEN PREPARED FROM THE MOST RELIABLE DATA AVAILABLE TO THE ENGINEER. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL OF FLORIDA, INC. DBA SUNSHINE 811 TWO (2) BUSINESS DAYS PRIOR TO ANY EXCAVATION TO DETERMINE SAID LOCATIONS AND THE LOCATIONS OF RECENT ADDITIONS TO THE SYSTEMS NOT SHOWN.
3. CONTRACTOR TO VERIFY BUILDING DIMENSIONS, UTILITY AND BASEMENT DEPTHS.
4. CONTRACTOR TO INCLUDE NECESSARY CUTTING, PATCHING AND RESTORATION OF ALL EXISTING SURFACES, TO MATCH SURROUNDING AREAS.
5. CONTRACTOR TO COMPLY WITH THE LOCAL APPROVED SWPP PLAN. ALL WORK TO BE IN ACCORDANCE WITH THE LATEST FEDERAL, STATE AND LOCAL AGENCY'S REGULATIONS AND STANDARDS.
6. ELEVATIONS ARE RELATIVE TO NAVD88.
7. 32 PARKING SPACES ON 1671 WEST AVE ARE TO BE PERMANENTLY REMOVED DURING CONSTRUCTION.
8. CONTRACTOR TO REMOVE EXISTING SURFACE AND UNDERGROUND FEATURES AS REQUIRED.
9. CONTRACTOR TO REMOVE ALL WHEELSTOPS.
10. REMOVE APPROXIMATELY 20 SIGNS.
11. REMOVE APPROXIMATELY 10 LIGHT POLES.
12. DEMOLISH APPROXIMATELY 6.600 SQUARE FEET OF CONCRETE.
13. DEMOLISH APPROXIMATELY 19.370 SQUARE FEET OF PAVEMENT SURFACE.
14. REMOVE APPROXIMATELY 3.370 SQUARE FEET OF SOD.
15. REMOVE APPROXIMATELY 42 TREES/HEDGES.

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: CIVIL DEMOLITION - SITE PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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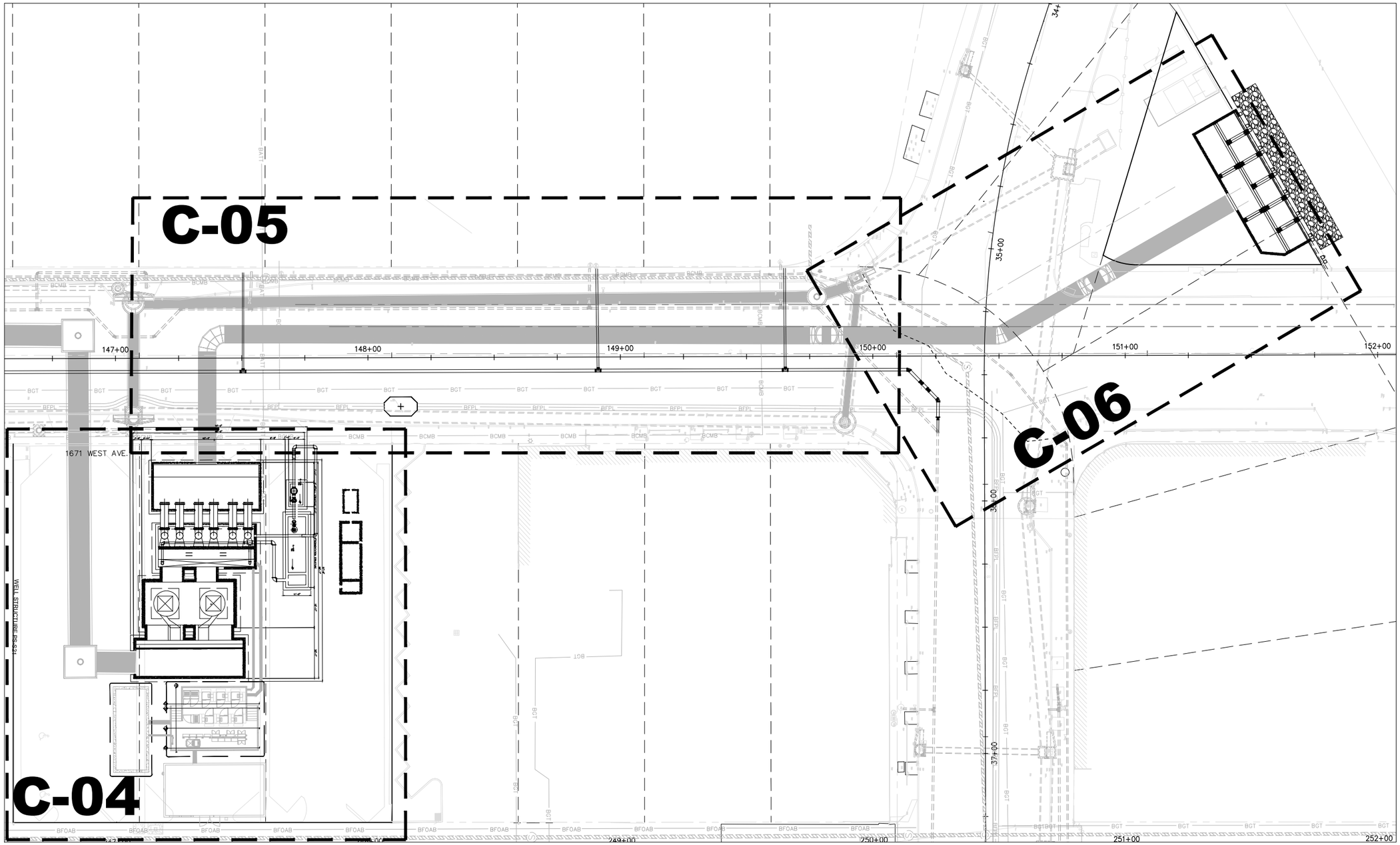
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-C02.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-C02



N

0 20' 40'
(SCALE FOR 11" x 17" SHEET)

SITE PLAN

SCALE: 1"=20'-0"

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL 33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: CIVIL
PROPOSED SITE PLAN - KEY PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSED No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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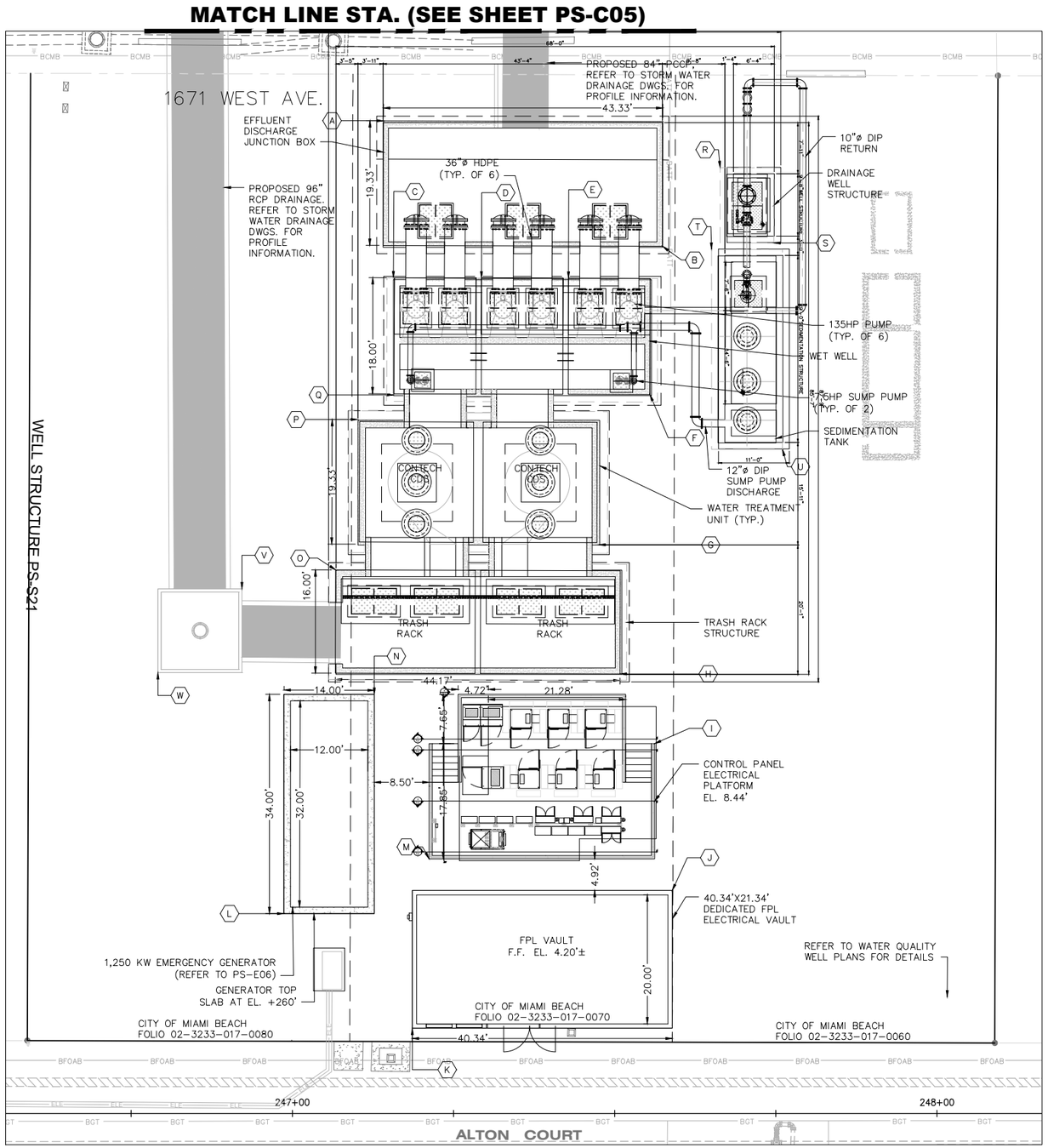
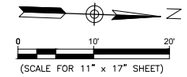
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-C03.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-C03



PLAN

SCALE: 1"=10'-0"



LOCATION SCHEDULE		
POINT	STATION (ALTON COURT)	OFFSET
A	247+14.14	153.95'L
B	247+57.42	134.49'L
C	247+15.68	129.61'L
D	247+29.34	129.57'R
E	247+42.84	129.53'L
F	247+55.46	111.50'L
G	247+47.55	88.18'L
H	247+50.83	68.17'L
I	247+56.20	57.36'L
J	247+58.94	35.59'L
K	247+18.60	13.25'L
L	246+98.70	31.01'L
M	247+21.20	39.51'L
N	247+12.70	65.01'L
O	247+06.71	84.30'L
P	247+10.11	107.63'L
Q	247+15.62	111.45'L
R	247+66.35	146.68'L
S	247+74.69	135.01'L
T	247+65.02	134.01'L
U	247+76.02	103.01'L
V	246+92.17	81.35'L
W	246+79.17	68.35'L

NOTES:

1. CONTRACTOR TO EMPLOY AND MAINTAIN ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING CONSTRUCTION. REFER TO CWI MOT PLANS.
2. NO WORK, STORAGE OR TRESPASS, SHOULD BE PERMITTED BEYOND THE SITE PROPERTY LINES OR PUBLIC RIGHT-OF-WAY.
3. ALL UNDERGROUND UTILITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR TO VERIFY ACTUAL LOCATION IN THE FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. STATIONS AND OFFSETS REFER TO WEST AVENUE.

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: CIVIL
PROPOSED PUMP STATION - SITE PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARBALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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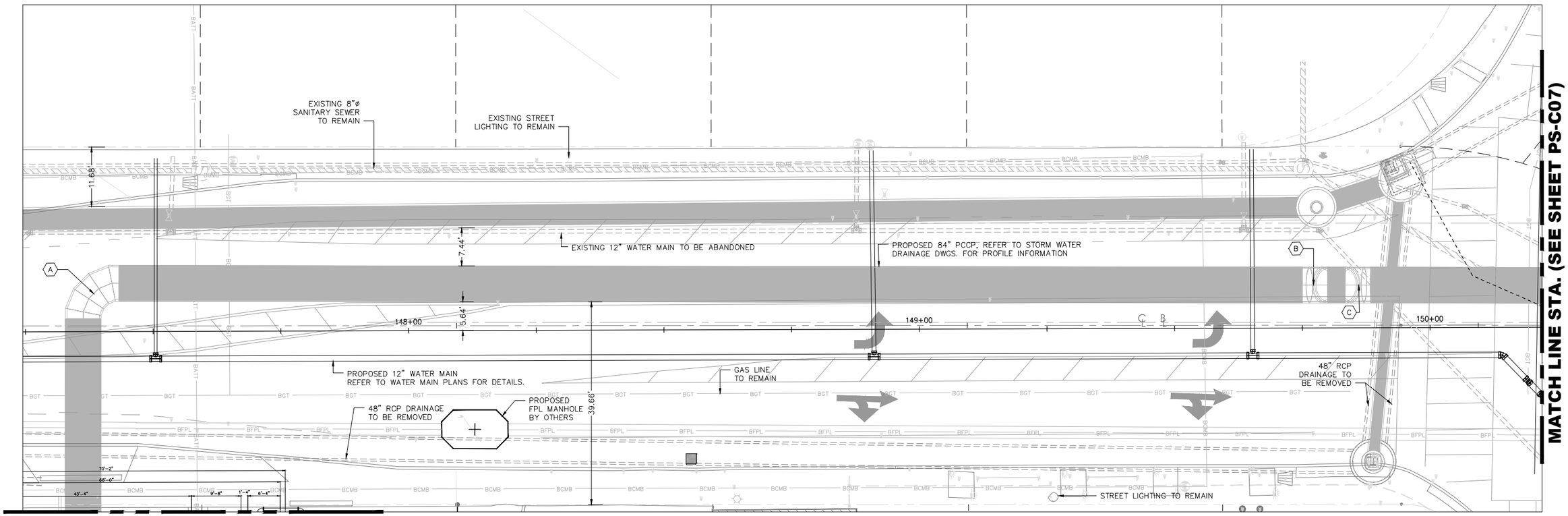
NO	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-C04.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-C04



PLAN

SCALE: 1"=10'-0"

NOTES:

1. CONTRACTOR TO EMPLOY AND MAINTAIN ALL TRAFFIC CONTROL AND SAFETY MEASURES, DURING CONSTRUCTION. REFER TO CWI MOT PLANS.
2. NO WORK, STORAGE OR TRESPASS, SHOULD BE PERMITTED BEYOND THE SITE PROPERTY LINES OR PUBLIC RIGHT-OF-WAY. SEE HARMONIZATION PLANS FOR DETAILS.
3. ALL UNDERGROUND UTILITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR TO VERIFY ACTUAL LOCATION IN THE FIELD, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. STATION AND OFFSET TO REFER TO WEST AVENUE.

LOCATION SCHEDULE		
POINT	STATION (WEST AVENUE)	OFFSET
A	147+38.40	7.42'L
B	149+77.23	8.42'L
C	149+86.04	8.38'L

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: CIVIL
PROPOSED SITE PLAN - WEST AVENUE

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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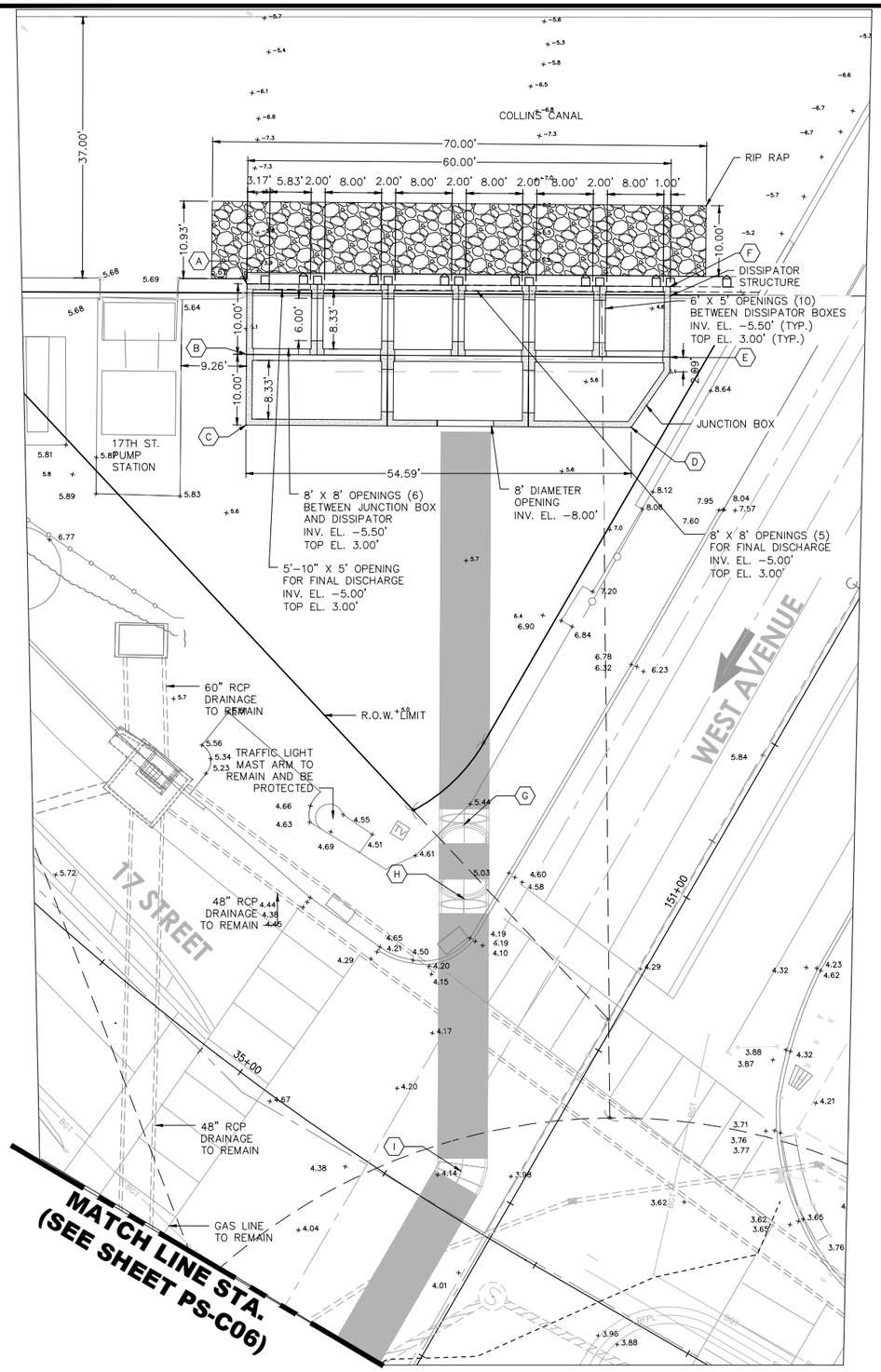
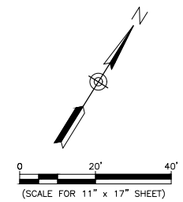
NO	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-C05.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-C05





LOCATION SCHEDULE		
POINT	STATION (17TH STREET)	OFFSET
A	34+16.58	83.32'L
B	34+25.71	76.54'L
C	34+34.47	69.60'L
D	34+86.18	106.15'L
E	34+83.45	117.35'L
F	34+74.46	125.09'L
G	35+5.01	47.09'L
H	35+11.77	38.53'L
I	35+34.00	6.08'L

NOTES:

1. CONTRACTOR TO EMPLOY AND MAINTAIN ALL TRAFFIC CONTROL AND SAFETY MEASURES, DURING CONSTRUCTION. REFER TO CWI MOT PLANS.
2. NO WORK, STORAGE OR TRESPASS, SHOULD BE PERMITTED BEYOND THE SITE PROPERTY LINES OR PUBLIC RIGHT-OF-WAY. SEE HARMONIZATION PLANS FOR DETAILS.
3. ALL UNDERGROUND UTILITIES SHOWN, ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR TO VERIFY ACTUAL LOCATION IN THE FIELD, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. STATIONS AND OFFSETS REFER TO 17TH STREET.
5. DESIGN-BUILD FIRM TO SUBMIT MOT PLAN FOR 17TH STREET & WEST AVENUE INTERSECTION, STREET INTERSECTION NEEDS TO BE CLOSED FOR CONSTRUCTION.

PLAN

SCALE: 1"=10'-0"

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL 33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: CIVIL
PROPOSED DISSIPATOR - SITE PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSED No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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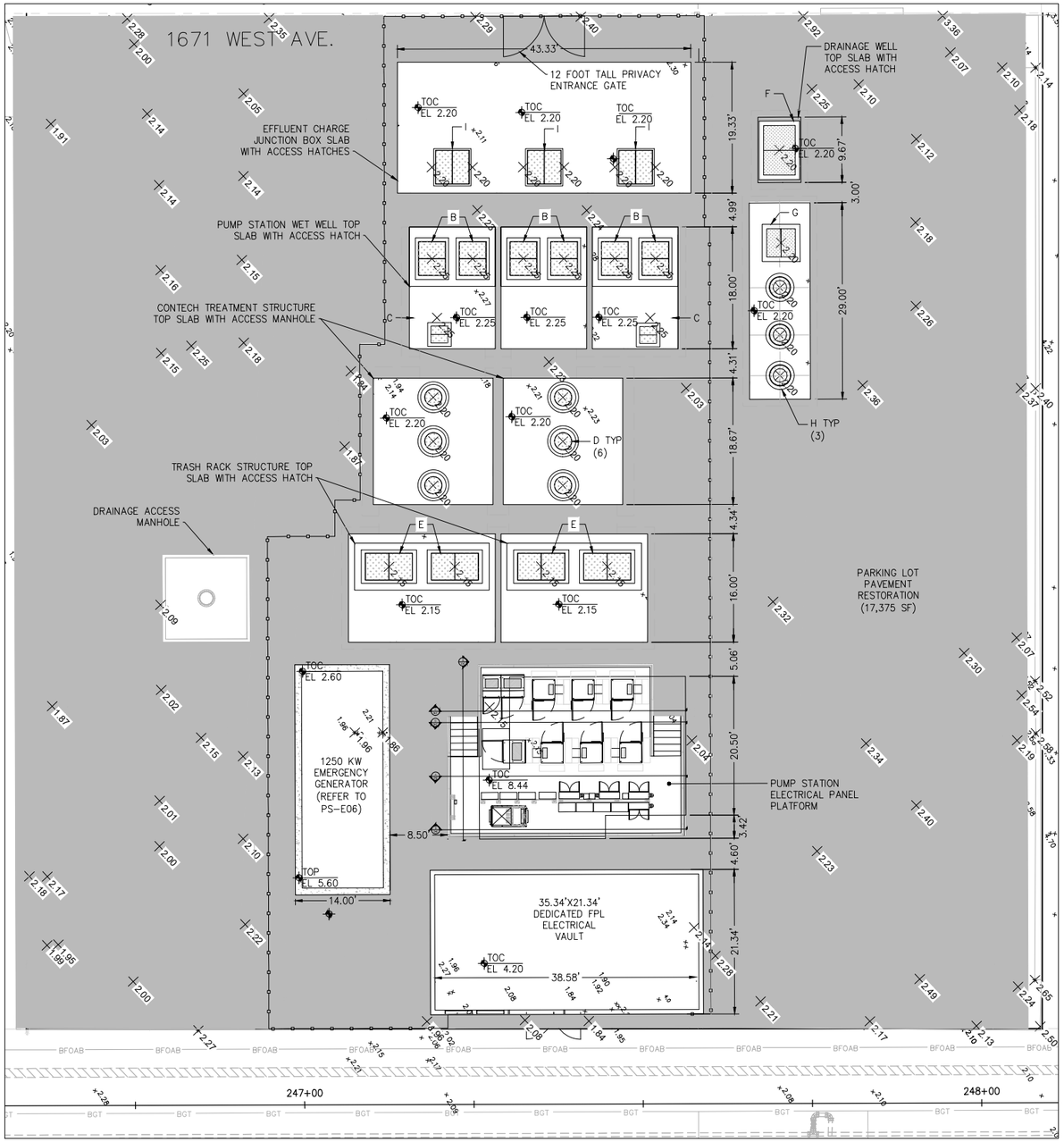
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

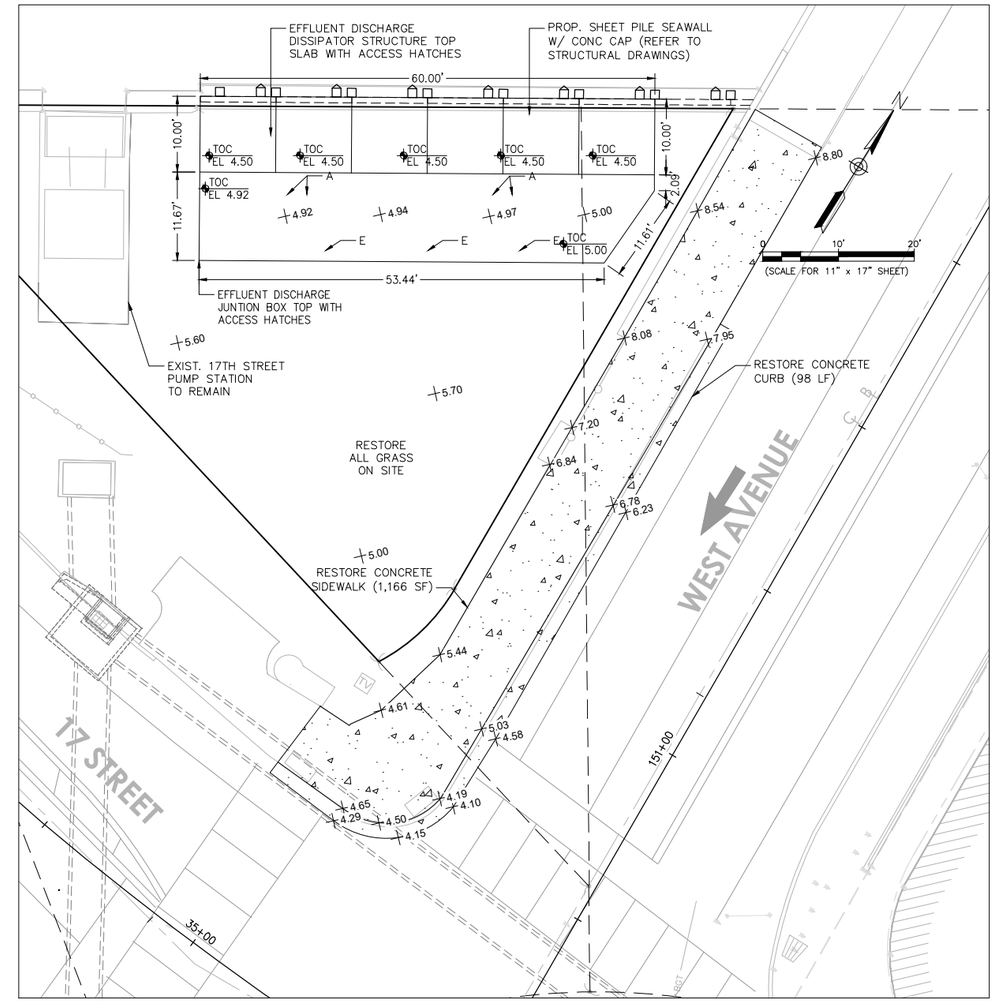
File Name: PS-C06.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-C06

ACCESS COVER SCHEDULE					
ID	QUANTITY	ITEM / TYPE	FRAME SIZE	MATERIAL	NOTES
A	7	AHD	60" X 60"	ALUMINUM	DOUBLE DOOR HINGED ON THE SAME SIDE
B	6	AHD	48" X 60"	ALUMINUM	DOUBLE DOOR HINGED ON OPPOSITE SHORT SIDES
C	2	AHD	78" X 78"	ALUMINUM	DOUBLE DOOR HINGED ON OPPOSITE SIDES
D	6	USF 230-AA	41 ½" RING W/ 30" COVER	GRAY IRON	
E	7	AHD	48" X 84"	ALUMINUM	DOUBLE DOOR HINGED ON OPPOSITE SHORT SIDES
F	1	AHD	56" X 88"	ALUMINUM	DOUBLE DOOR HINGED ON OPPOSITE SHORT SIDES
G	1	AHD	50" X 51"	ALUMINUM	DOUBLE DOOR HINGED ON OPPOSITE SHORT SIDES
H	3	USF 230-AA	49 ½" RING W/ 36" COVER	GRAY IRON	
I	3				



PUMP STATION - PLAN

SCALE: 1"=10'-0"



DISSIPATOR - PLAN

SCALE: 1"=10'-0"

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: CIVIL PLAN AT GRADE

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARBALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jose A. Carballo on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

NO.	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-C07.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-C07

MATERIAL SPECIFICATIONS:

1. DUCTILE IRON (DI) PIPE: ANSI/AWWA C151, CLASS 250, POLY-LINED IN ACCORDANCE WITH ANSI/AWWA C116/A21.16 OR PROTECTO 401 CERAMIC EPOXY WITH A MINIMUM DRY FILM THICKNESS OF 40 MILS. THE OUTSIDE COATING SHALL BE ASPHALTIC, ONE MIL THICK, PER AWWA C151. FLANGES SHALL CONFORM TO ANSI/ASME B16.1, CLASS 125. UNLESS OTHERWISE SPECIFIED, JOINTS SHALL BE PUSH-ON TYPE.
2. DUCTILE IRON FITTINGS: ANSI/AWWA C110/A21.10, AND DRILLED ANSI/ASME B16.1, CLASS 125. FLANGED OR MECHANICAL JOINT AS SPECIFIED ON PLANS. POLY-LINED IN ACCORDANCE WITH ANSI/AWWA C116/A21.16 OR PROTECTO 401 CERAMIC EPOXY WITH A MINIMUM DRY FILM THICKNESS OF 40 MILS. THE OUTSIDE COATING SHALL BE ASPHALTIC, ONE MIL THICK, PER AWWA C151.
3. GASKET JOINTS FOR DUCTILE IRON PIPE AND FITTINGS PER AWWA C111/A21.11.
4. ALL FASTENERS, BOLTS, WASHERS AND NUTS AS PER ASTM F593 AND F594 TYPE 316 SS.
5. TRASH RACK: ALL STAINLESS STEEL BARS, PLATES AND OTHER SHAPES SHALL CONFORM TO ASTM A276 TYPE 304/304L SS.
5. PVC PIPE: ASTM D1784 POLYVINYL CHLORIDE (PVC) PLASTIC PIPE TO CONFORM WITH ANSI/AWWA C900, CAST IRON OUTSIDE DIAMETER (CIOD), DR41, PUSH-ON JOINTS. ELASTOMERIC GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.
6. ACCESS HATCHES: ALUMINUM ACCESS HATCH DOUBLE LEAF W/ AUTOMATIC HOLD OPEN ARM AND SLAM LOCK MANUFACTURED BY US FOUNDRY OF APPROVED EQUAL. HS20 LOADING.
7. MANHOLE COVERS AND RINGS: GREY IRON CASTINGS AS PER AASHTO M-105 CLASS 35 B OR ASTM A 48 CLASS 35 B MANUFACTURED BY US FOUNDRY OR APPROVED EQUAL.
8. FABRICATED STEEL TAPPING SADDLE: CARBON STEEL A36, FUSION EPOXY COATING, FLANGE OUTLET, SS 304 BOLTS, SBR GASKET PER ASTM D 2000.
9. VERTICAL PIPE SUPPORTS: MADE OF STAINLESS STEEL 304/304L. CLAMP SIMILAR TO ANVIL FIG 40.
10. PUMP CHAINS, SHACKLES AND CABLE HOLDER: MADE OF STAINLESS STEEL 304/304L, PER PUMP MANUFACTURER RECOMMENDATIONS.
11. SMALL VALVES AND COUPLINGS (2-INCH OR LESS): BRASS.
12. REFER TO CIVIL AND STORM DRAINAGE DRAWINGS FOR REINFORCED CONCRETE PIPE (RCP) SPECIFICATIONS.

EQUIPMENT SPECIFICATIONS:

1. MAIN PUMP:
   - 1.1. AXIAL FLOW PROPELLER PUMP W/ FIXED STAINLESS STEEL BLADES. XYLEM/FLYGT PUMP MODEL PL 7065/706, IMPELLER 840 22" (523 MM), 135 HP, 460V, 3 PHASE, 60 HZ, 880 RPM.
   - 1.2. DISCHARGE CAN W/ ELBOW: 32 IN, 3/8" WALL TK, TYPE 316/316L SS W/ STANDARD ANSI FLANGE. ALL WELDING AS PER AWS D1.1 WELDING CODE. ALL BUTT WELDS FULL PENETRATION AND WATERTITE. BELZONA COATED INCLUDE LIFTING LUGS, BASE PLATE AND PUMP SUPPORT RING, ALUM ANODES, AND MOUNT PALTES, AND REQUIRED SUPPORT BRACKTES. BACKWALL BRACE TUBE EVERY 8 FEET AS PER FLYGT. TUBE TO BE MOUNTED ON AND FULLY SUPPORTED BY THE FORMED SUCTION INTAKE. ANCHOR FSI AS PER FLYGT REQUIREMENTS.
   - 1.3. FORMED SUCTION INTAKE: FLYGT FSI INTAKE FOR 32 IN DISCHARGE, FABRICATED FROM TYPE 316 SS, W/ STANDARD ANSI FLANGE TO CONNECT TO DISCHARGE FSI TO SUPPORT DISCHARGE TUBE, ELBOW AND WATER WEIGHT. BELZONA COATED.SUMP PUMP: SUBMERSIBLE XYLEM/FLYGT PUMP MODEL NP 3171 LT, HARD IRON IMPELLER 274 MM, 25 HP, 220V, 3 PHASE, 60 HZ, 1,160 RPM.
   - 1.4. FLYGT CABLE HANDING SYSTEM INCLUDING CABLE HOLD UNIT, ENTRY UNIT, REQ'D CABLES, AND LIFTING EYE UNITS AND REQ'D ACCESSORIES.
   - 1.5. FLYGT LEVEL SENSORS AND SS TYPE 316 SUPPORT BRACKETS, AND REQ'D ACCESSORIES.
   - 1.6. FLYGT SUPPLIED PUMP LIFTING CHAIN, TYPE 316 SS, LENGTH AND SIZE TO BE PROVIDED BY MANUFACTURER.
   - 1.7. PUMP CONTROLS: TO BE PROVIDED BY PUMP MANUFACTURER (XYLEM).
2. SUMP PUMP:
   - 2.1. SUBMERSIBLE XYLEM/FLYGT PUMP MODEL NP 3127 MT, HARD IRON IMPELLER 439 (188 MM), 7.5 HP, 460V, 3 PHASE, 60 HZ, 1,750 RPM.
   - 2.2. FLYGT LEVEL SENSORS AND SS TYPE 304 SUPPORT BRACKETS, AND REQ'D ACCESSORIES.
   - 2.3. FLYGT SUPPLIED PUMP LIFTING CHAIN, TYPE 304 SS, LENGTH AND SIZE TO BE PROVIDED BY MANUFACTURER.
   - 2.4. PUMP CONTROLS: TO BE PROVIDED BY PUMP MANUFACTURER (XYLEM).
3. PLUG VALVE: MANUFACTURED TO AWWA C207, CLASS 125, SIMILAR TO DEZURIK MODEL PEC OR APPROVED EQUAL.
4. CHECK VALVE: MANUFACTURED TO AWWA C508, AND DRILLED ANSI/ASME B16.1, CLASS 125, SIMILAR TO DEZURIK/APCO MODEL CVS6000, SWING CHECK VALVE WITH LEVEL AND WEIGHT OR APPROVED EQUAL.
5. AIR/VACUUM VALVE: MANUFACTURED TO AWWA C512, SIMILAR TO APCO SERIES 140 OR SERIES 150, DEPENDING ON SIZE, OR APPROVED EQUAL.
6. BUTTERFLY VALVE: UNINTERRUPTED SEAT RESILIENT SEATED, WITH STAINLESS STEEL DISK AND SHAFT, NBR SEAT, AND MANUAL ACTUATOR, SIMILAR TO DEZURIK MODEL BOS-US OR APPROVED EQUAL.
7. TREATMENT UNIT: CONTECH CDS TREATMENT UNIT MODEL 92100 (63 CFS), 80% REMOVAL OF 125 MICRONS PARTICLE.
8. FLAP GATE: ROSS MODEL 70HFV-A-125, ANSI 125 HDPE FLAP VALVE FLANGES AS PER AWWA C207, CLASS B AND DRILLED ANSI/ASME B16.1, CLASS 125 OR APPROVED EQUAL.

GENERAL NOTES:

1. ALL ELEVATIONS SHOWN ON DRAWINGS REFER TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD-88).
2. FITTINGS AND CONNECTIONS UNDERGROUND TO USE MECHANICAL JOINT; FITTINGS ABOVE GROUND OR IN VAULT TO USE FLANGE JOINT.
3. APPLY TWO COATS OF BITUMASTIC MATERIAL OR APPROVED EQUAL ON UNDERGROUND FITTINGS AND FLANGED FITTINGS IN DIRECT CONTACT WITH SOIL.
4. PROVIDE DIELECTRIC FITTINGS BETWEEN TWO DIFFERENT PIPING (METALLIC) MATERIALS.
5. FIELD VERIFY ALL LOCATIONS AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK.
6. PENETRATIONS ON BEAMS AND/OR COLUMNS ARE NOT ALLOWED.
7. THE CONTRACTOR WILL BE RESPONSIBLE TO ACCURATELY MEASURE THE LENGTH OF REQUIRED UNSPLICED CABLES AND CHAINS.
8. ALL WATER-TIGHT OR SUBMERSIBLE EQUIPMENT INSTALLATIONS SHALL BE COORDINATED WITH ELECTRICAL REQUIREMENTS.
9. SUBMERSIBLE PUMPS WILL USE A LEVEL TRANSDUCER AS PRIMARY CONTROL.
10. PROVIDE THREE (3) FLOAT SWITCHES FOR BACKUP CONTROL OF SUBMERSIBLE PUMPS. INSTALL AVOIDING INTERFERENCE.
11. ALL HARDWARE USED SHALL BE STAINLESS STEEL TYPE 304 OR 316, AS SPECIFIED.
12. PROVIDE A DUCTILE IRON RISER AND LID FOR EACH BURIED VALVE, IF ANY.
13. ALL DEFECTIVE WORK NOT ACCEPTED BY CITY OF MIAMI BEACH, ITS REPRESENTATIVE, OR ANY PERMITTING AGENCY, SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
14. ALL FITTINGS AND PIPES WITH MECHANICAL JOINTS SHALL BE RESTRAINED AS FOLLOWS:
    - 14.1. PUSH-ON DIP: TR-FLEX BY U.S. PIPE OR FLEX RING BY AMERICAN; OR EBAA IRON SERIES 1700 MEGALUG OR APPROVED EQUAL.
    - 14.2. FITTINGS WITH DIP PIPE: EBAA IRON SERIES 1100 MEGALUG OR APPROVED EQUAL.

INFLOW ASSUMPTIONS

1. DESIGN FLOW VELOCITY 3.0 FPS - FULL PIPE.
2. MAX UPSTREAM WATER SURFACE ELEV = +1.0 FT NAVD

TRASH RACK DESIGN NOTES

1. DESIGN FLOW RATE = 268 CFS
2. 50% BLOCKAGE WITH HEAD LOSS < 0.1 FT
3. 2 IN CLEAR SPACE BETWEEN BARS
4. RACK CLEAR HEIGHT = 10 FT
5. CLEAR WIDTH = 40' FT.
6. BAR WIDTH = 0.25 IN.
7. VELOCITY THRU RACK = 1.67 FPS (50% BLOCKED)
8. (12) 38 1/2"W x 138"H RACKS

TREATMENT SYSTEM DESIGN NOTES

1. TREATMENT UNIT - CONTECH CDS MODEL 92100
2. UNIT TREATMENT CAPACITY = 65 CFS x 2 = 130 CFS
3. SOLIDS REMOVAL = 77% @ 110 MICRONS
4. BYPASS WEIR:
   CREST ELEVATION -7.0 FT NAVD
   CREST LENGTH L = 14.3 FT. x 2 = 28.6 FT.
   MAX HEAD OVER CREST = 3.0 FT.
   MAX BYPASS Q = 134 x 2 = 268 CFS

PRIMARY PUMP INTAKE DESIGN NOTES

1. FORMED SUCTION INTAKE (FSI) DESIGN AS PER HYDRAULIC INSTITUTE STANDARD HI-9.8 AND FLYGT/XYLEM.
4. FSI HEIGHT = 24 13/16 IN. AS PER FLYGT
5. FSI WIDTH = 51 11/16 IN. AS PER FLYGT
6. MINIMUM SUBMERGENCE AS PER HI-9.8 = 4.15 FT.
7. MIN WATER DEPTH ABOVE FLOOR = 5.18 FT.

PRIMARY PUMP DESIGN CRITERIA

1. FIVE (5) 19,300 GPM (43 CFS) AXIAL FLOW SUBMERSIBLE DUTY PUMPS.
2. ONE (1) 19,300 GPM BACKUP PUMP.
3. PUMPS TO BE PROVIDED W/ VARIABLE FREQUENCY DRIVES (VFD).

PRIMARY PUMPING SYSTEM DESIGN NOTES

1. DESIGN Q = 19,300 GPM (43 CFS)
2. DESIGN TAILWATER ELEV. = 2.70 FT NAVD
3. HAZEN-WILLIAMS C = 130
4. MAX. STATIC HEAD = 10.5 FT.
5. MIN. STATIC HEAD = 1.5 FT.
6. MAX. TDH = 21.6 FT.
7. MIN. TDH = 9.5 FT.
8. VELOCITY @ DESIGN Q = 7.98 FT/S
9. MAX. DISCHARGE VEL. = 9.34 FT/S (@ 23,490 GPM)
10. MOTOR SIZE = 135 HP (3PH/60HZ/460V)
11. HIGH ALARM LEVEL = -3.50 FT NAVD
12. LOW ALARM LEVEL = -14.00 FT NAVD
13. RECOMMENDED PUMP OPERATION:

MAIN PUMP OPERATION SCHEDULE		
PUMP NO.	ON ELEV.	OFF ELEV.
1	-9.25	-13.50
2	-8.08	-12.83
3	-7.17	-12.17
4	-6.08	-11.50
5	-5.25	-10.83
6	-4.50	-10.17

WL STANDS FOR WATER LEVEL IN PUMP WELL
EL. STANDS FOR ELEVATION IN NAVD88

DISSIPATOR DESIGN NOTES

1. DESIGN FLOW RATE = 140,490 GPM (314.01 CFS) @ MIN. PUMP HEAD
2. MAX DISCHARGE VELOCITY, V = 0.98 FT/S (@ DTW)
3. DISCHARGE VELOCITY @ LOW TIDE, V = 2.19 FT/S
4. DISCHARGE PIPES TO HAVE FLAP GATES FOR BACKFLOW PREVENTION.
5. CONSTRUCT STRUCTURE ADJACENT TO AND DISCHARGE THRU SEAWALL.
6. DISCHARGE OPENINGS TO HAVE MANATEE GRATES.
7. RIP RAP MIN EXTENSION = 10.0 FT
8. RIP RAP MIN DEPTH = 2.5 FT
9. RIP RAP D50 SIZE = 14 INCH

SUMP PUMP DESIGN CRITERIA

1. TWO (2) 800 GPM (1.78 CFS) CENTRIFUGAL SUBMERSIBLE PUMP.
2. PUMPS TO BE CONTROLLED BY LEVEL TRANSDUCER AND BACK-UP FLOATS.
3. NO VFD REQUIRED.

SUMP PUMPING SYSTEM DESIGN NOTES

1. DESIGN Q = 800 GPM (4.46 CFS)
2. DESIGN WATER TABLE ELEV. = -3.00 FT NAVD88
3. HAZEN-WILLIAMS C = 120
4. MAX. STATIC HEAD = 20 FT
5. MIN. STATIC HEAD = 18 FT
6. MAX. TDH = 25 FT
7. MIN. TDH = 23 FT
8. DISCHARGE VELOCITY @ DESIGN Q = 9.1 FT/S (6-INCH PIPE)
9. MAX. DISCHARGE VEL. = 9.5 FT/S (@ 840 GPM) (6-INCH PIPE)
10. MOTOR SIZE = 7.5 HP (3PH/60HZ/220V)
11. MINIMUM PUMP ON/OFF SPAN = 0.3 FT
12. HIGH ALARM LEVEL = -16.50 FT NAVD88
13. LOW ALARM LEVEL = -19.00 FT NAVD88
14. RECOMMENDED PUMP OPERATION:

SUMP PUMP OPERATION SCHEDULE		
PUMP NO.	PUMP STATUS	CRITERIA
1	OFF	WL < EL. -19.50
	ON	EL. -18.50 < WL < EL. -9.75
	OFF	WL > EL. -9.75
2	OFF	WL < EL. -19.50
	ON	EL. -17.50 < WL < EL. -9.75
	OFF	WL > EL. -9.75

WL STANDS FOR WATER LEVEL IN PUMP WELL
EL. STANDS FOR ELEVATION IN NAVD88

DRAINAGE WELL DESIGN NOTES

1. HYDRAULIC CONDUCTIVITY = 500 GPM/FT OF HEAD
2. DESIGN WATER TABLE ELEV. = -3.00 FT NAVD88
3. HAZEN-WILLIAMS C = 120
4. MAX. STATIC HEAD = 5.20 FT
5. MIN. STATIC HEAD = 3.00 FT
6. MAX. TDH = 29 FT
7. MIN. TDH = 25 FT
8. DISCHARGE VELOCITY @ DESIGN Q = 9.1 FT/S (6-INCH PIPE)
9. MAX. DISCHARGE VEL. = 10.62 FT/S (@ 2600 GPM) (10-INCH PIPE)
10. MOTOR SIZE = 25 HP (3PH/60HZ/460V)
11. MINIMUM PUMP ON/OFF SPAN = 2.2 FT
12. HIGH ALARM LEVEL = -1.00 FT NAVD88
13. LOW ALARM LEVEL = -5.70 FT NAVD88
14. RECOMMENDED PUMP OPERATION:

MAIN PUMP OPERATION SCHEDULE		
PUMP NO.	ON ELEV.	OFF ELEV.
1	-3.00	-5.20

WL STANDS FOR WATER LEVEL IN PUMP WELL
EL. STANDS FOR ELEVATION IN NAVD88

CODES, STANDARDS AND REFERENCES:

1. AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)
2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
3. AMERICAN WATER WORKS ASSOCIATION (AWWA)
4. ANSI/HI 9.8, 11.6 & 14.6 - AMERICAN NATIONAL STANDARD FOR ROTODYNAMIC PUMPS
5. ANSI/AWWA C110/A21.10 - AMERICAN NATIONAL STANDARD FOR DUCTILE IRON AND GRAY IRON FITTINGS
6. ANSI B16.1 - GRAY IRON PIPE FLANGES AND FLANGED FITTINGS
7. DESIGN RECOMMENDATIONS FOR PUMP STATIONS WITH MIDRANGE CENTRIFUGAL FLYGT WASTEWATER PUMPS, XYLEM, INC.
8. DEZURIK PRODUCT DATA AND SPECIFICATIONS
9. FEDERAL HIGHWAY ADMINISTRATION (FHWA), US DEPARTMENT OF TRANSPORTATION.
10. FLORIDA BUILDING CODE (FBC)
11. FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP)
12. HYDRAULIC INSTITUTE (HI)
13. HYDRAULIC ENGINEERING CIRCULAR (HEC) NO. 24 - HIGHWAY STORMWATER PUMP STATION DESIGN
14. MIAMI DADE WATER AND SEWER DEPARTMENT SPECIFICATIONS AND STANDARD DETAILS.
15. MIAMI DADE PUBLIC WORKS DEPARTMENT STANDARD DETAILS
16. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
17. PUMP STATION IMPROVEMENT PROGRAM (PSIP/MD-WASD) SUPPLEMENTAL DESIGN GUIDELINES FOR LIFT STATIONS AND FORCE MAINS.
18. REGULATORY AND ECONOMIC MESOURCES DEPARTMENT (RER)

LEGEND:

- A / M01 — DETAIL ID / SHEET NUMBER — SECTION REFERENCE
- 0.00' T.O.C. — FINISHED FLOOR ELEVATION
- WATER LEVEL
- PIPE BREAK / CONTINUES
- CONCRETE
- CENTER LINE (℄)

ABBREVIATIONS:

@	AT
℄	CENTER LINE
ø	DIAMETER
'	FOOT/FEET
"	INCH/INCHES
#	NUMBER
(X2)	TIMES TWO
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ADD'L	ADDITIONAL
AHD	ANGLE FRAME HEAVY-DUTY LOADING DOUBLE LEAF HATCH
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
APPROX.	APPROXIMATELY
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVV	AIR VACUUM VALVE
AWWA	AMERICAN WATER WORKS ASSOCIATION
CFS	CUBIC FEET PER SECOND
CMB	CITY OF MIAMI BEACH
CONC.	CONCRETE
CONT.	CONTINUATION
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DIV.	DIVISION
DWG	DRAWING
EL/ELEV.	ELEVATION
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
F.F.	FINISH FLOOR
FLG	FLANGE
FRP	FIBERGLASS REINFORCED PIPE
FT	FOOT/FEET
FT/S	FEET PER SECOND
GA.	GAGE
GALV.	GALVANIZED
GPM	GALLONS PER MINUTE
HI	HYDRAULIC INSTITUTE
HP	HORSEPOWER
HZ	HERTZ
IN	INCH(ES)
INV.	INVERT
L	LENGTH
LBS	POUNDS
LF	LINEAR FEET
MAX.	MAXIMUM
MIN.	MINIMUM
MJ	MECHANICAL JOINT
MM	MILLIMETERS
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NPT	NATIONAL PIPE THREAT
N.T.S.	NOT TO SCALE
PH	PHASE
PSI	POUNDS PER SQUARE INCH
Q	FLOW
R/W	RIGHT-OF-WAY
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
RPM	REVOLUTIONS PER MINUTE
RT	RIGHT
S	SLOPE
SCH	SCHEDULE
SQFT	SQUARE FEET
S.S.	STAINLESS STEEL
T/C	THRUST COLLAR
TDH	TOTAL DYNAMIC HEAD
T.O.C.	TOP OF CONCRETE
T.O.S.	TOP OF SLAB
TYP.	TYPICAL
V	VOLTS
VEL.	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL 33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE
TITLE: MECHANICAL NOTES AND LEGEND

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jose A. Caraballo on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

NO.	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL - STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

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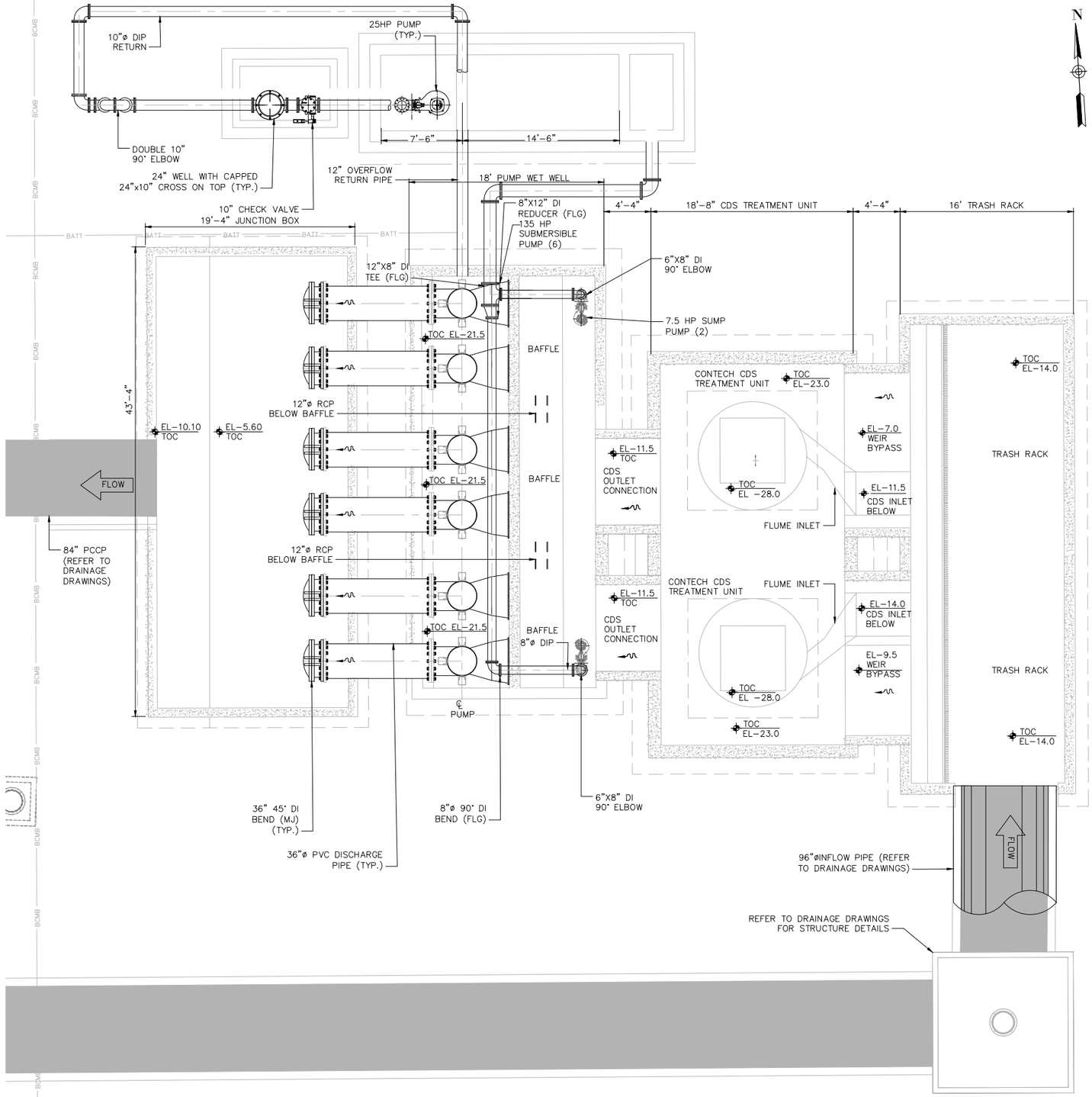
Date: 07/21/2021 Sheet: _____ Drawing: PS-M01



GENERAL PLAN

SCALE: 3/16"=1'-0"

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: MECHANICAL
PUMP STATION - GENERAL PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

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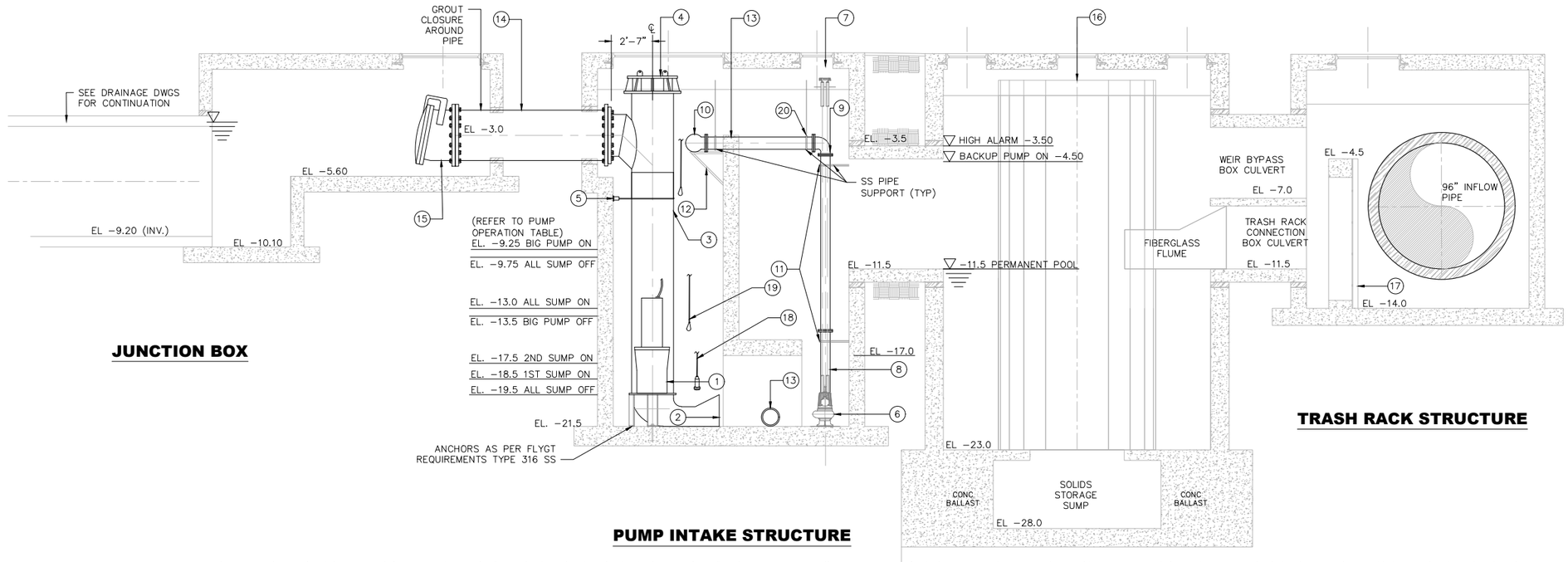
Date: 07/21/2021 Sheet: _____ Drawing: PS-M02



PROFILE

SCALE: 1/4"=1'−0"

MECHANICAL MATERIALS LIST

ITEM	QTY	DESCRIPTION	REMARKS
1	6	FLYGT AXIAL PUMP MODEL PL7065/706 3~ 840 (135 HP)	ASTM A473 TYPE 316 SS IMPELLER
2	6	FLYGT FORMED SUCTION INTAKE, 32 INCH	TYPE 316 SS, STD ANSI FLANGE
3	6	FLYGT DISCHARGE CAN 32 INCH DIA.	TYPE 316 SS, STD ANSI FLANGE
4	6	FLYGT CABLE HANDLING SYSTEM	TYPE 316 SS
5	6	FLYGT PUMP CAN BRACKET	TYPE 316 SS, 32" TUBE DIA.
6	2	FLYGT SUBMERSIBLE PUMP MODEL NP 3127 MT / 439 (7.5 HP)	HARD IRON IMPELLER
7	2	FLYGT 2−INCH DUAL GUIDERAIL SYSTEM	TYPE 316 SS
8	30 LF	6−INCH DUCTILE IRON PIPE	
9	2	6X8 DI 90° BEND (FLG)	
10	1	8−INCH DI 90° BEND (FLG)	
11	4	VERTICAL PIPE SUPPORT	TYPE 304/304L SS
12	2	HORIZONTAL PIPE SUPPORT	TYPE 304/304L SS
13	5 LF	12−INCH REINFORCED CONCRETE PIPE	
14	54 LF	36−INCH PVC PIPE	AWWA C900
15	6	36−INCH FLAP VALVE	HDPE ROSS MODEL 70HFV−A−125
16	2	TREATMENT UNIT−CONTECH MODEL 92100	W/ FIBERGLASS INLET FLUME
17	1	TRASH RACK 38.5" X 144"	ASTM A276 TYPE 304/304L SS
18	6	LEVEL TRANSDUCER	
19	7	BACKUP FLOAT	
20	2	VERTICAL PIPE SUPPORT	

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: MECHANICAL
FACILITY PROFILE

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSED No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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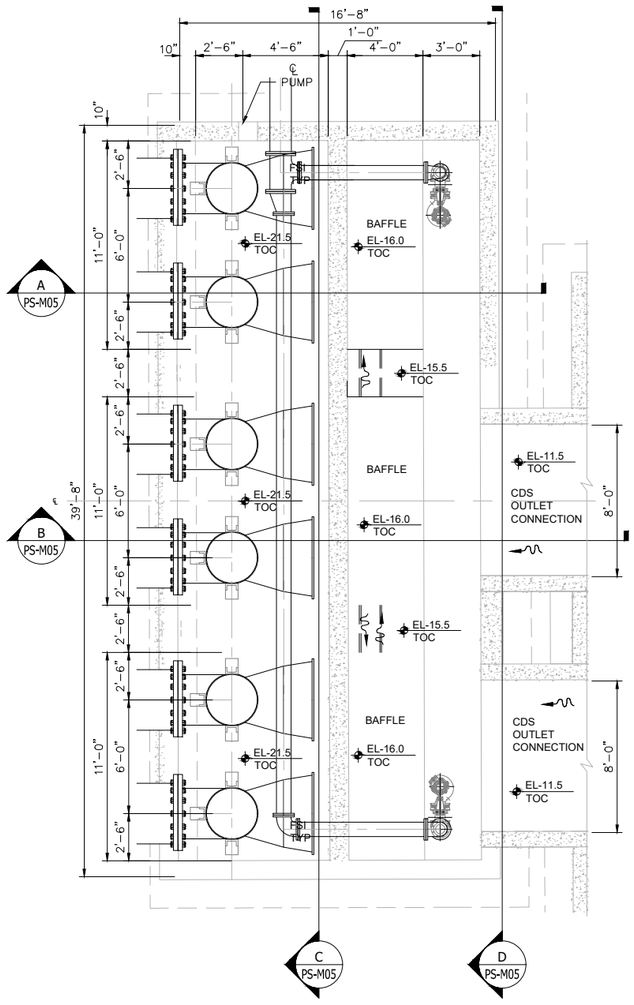
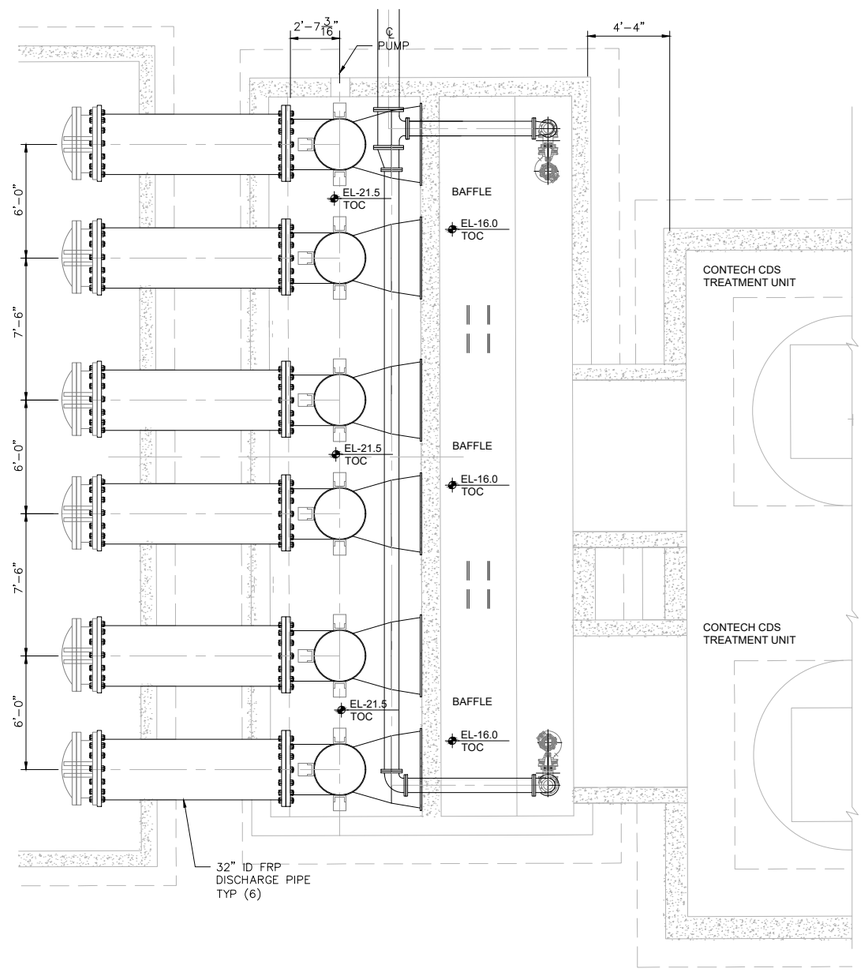
2	04/08/21	60% SUBMITTAL − STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL−MECH−ELEC

File Name: PS−M03.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-M03



PLAN @ ELEV -11.5 FT

SCALE: 1/4" = 1'-0"



PLAN @ ELEV 0.0 FT

SCALE: 1/4" = 1'-0"

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NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: MECHANICAL
PUMP INTAKE STRUCTURE - PLANS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 75064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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2	04/08/21	60% SUBMITTAL – STRUCTURAL
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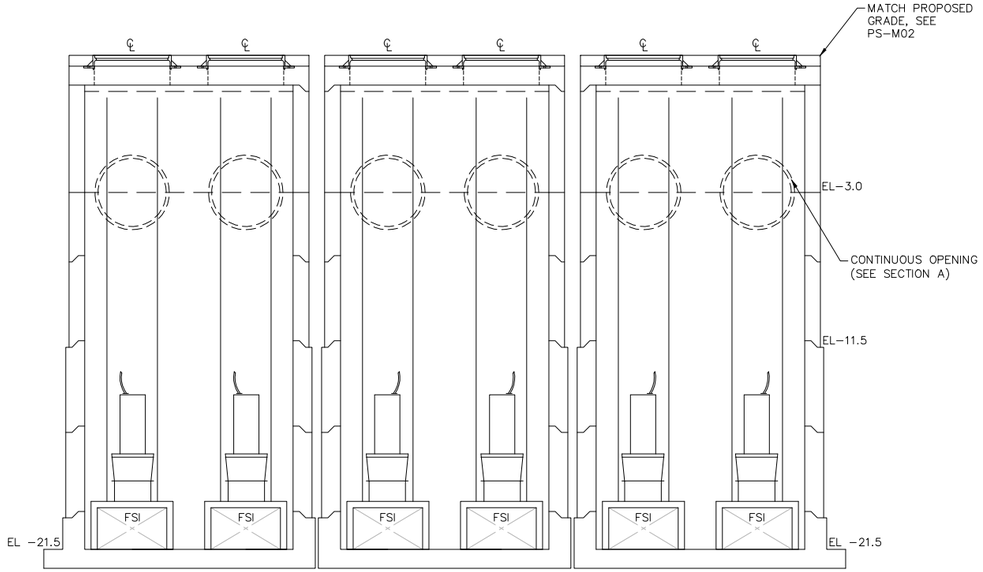
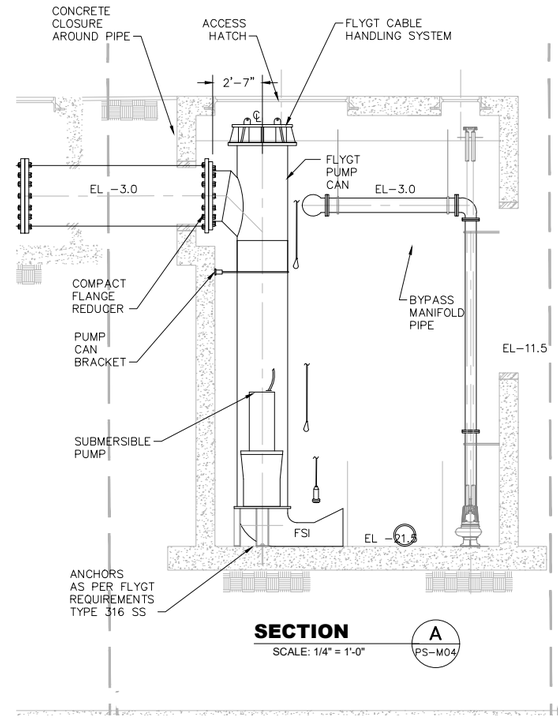
File Name: PS-M04.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-M04

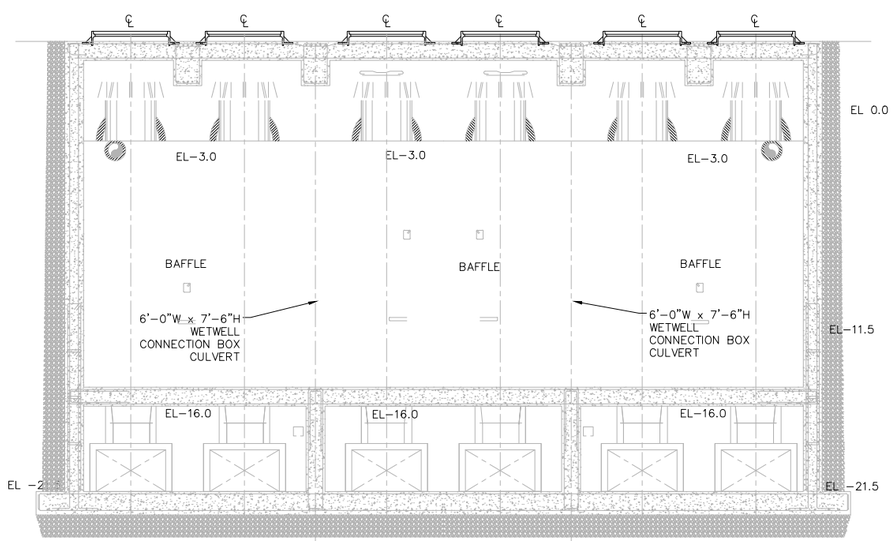


SECTION C
SCALE: 1/4" = 1'-0" PS-M04

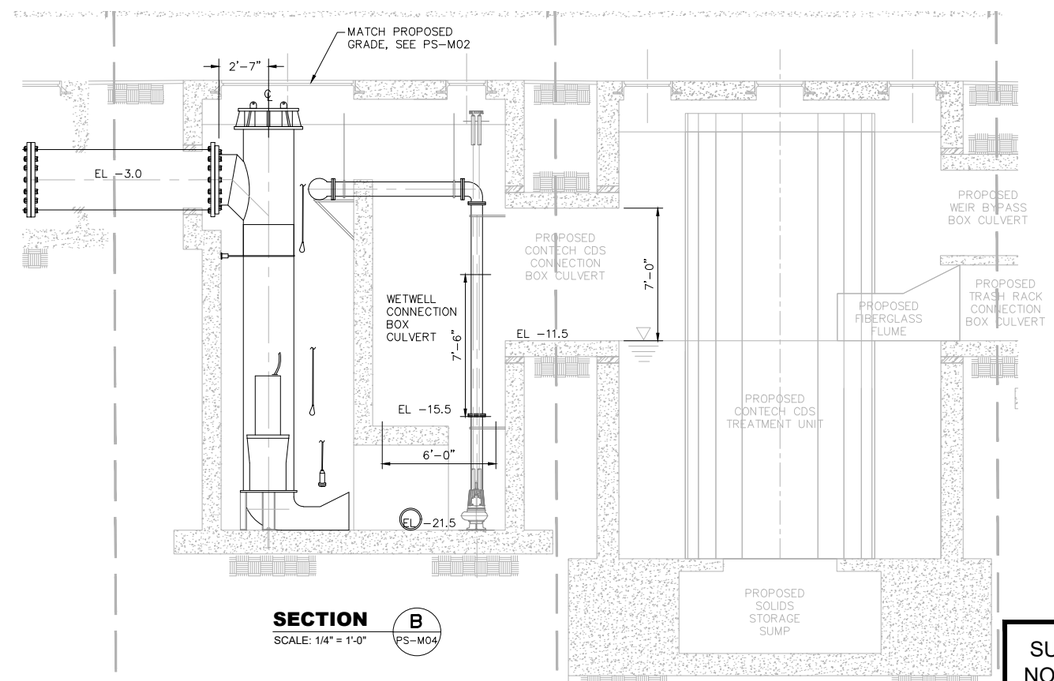
NOTE:
REFER TO PS-M03 FOR PUMP OPERATION AND ALARM LEVELS AND EQUIPMENT SPECIFICATIONS.



SECTION A
SCALE: 1/4" = 1'-0" PS-M04



SECTION D
SCALE: 1/4" = 1'-0" PS-M04



SECTION B
SCALE: 1/4" = 1'-0" PS-M04

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: **WEST AVENUE WATER TREATMENT STRUCTURE**

TITLE: **MECHANICAL PUMP INTAKE STRUCTURE - SECTIONS**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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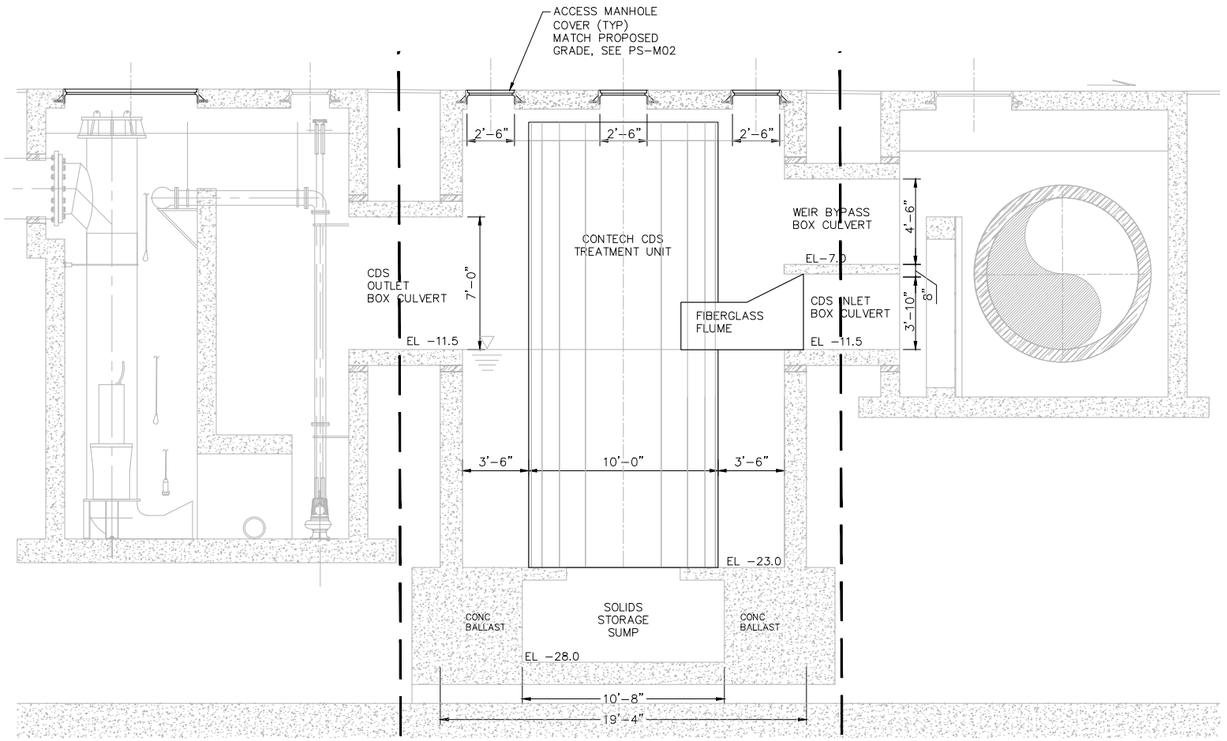
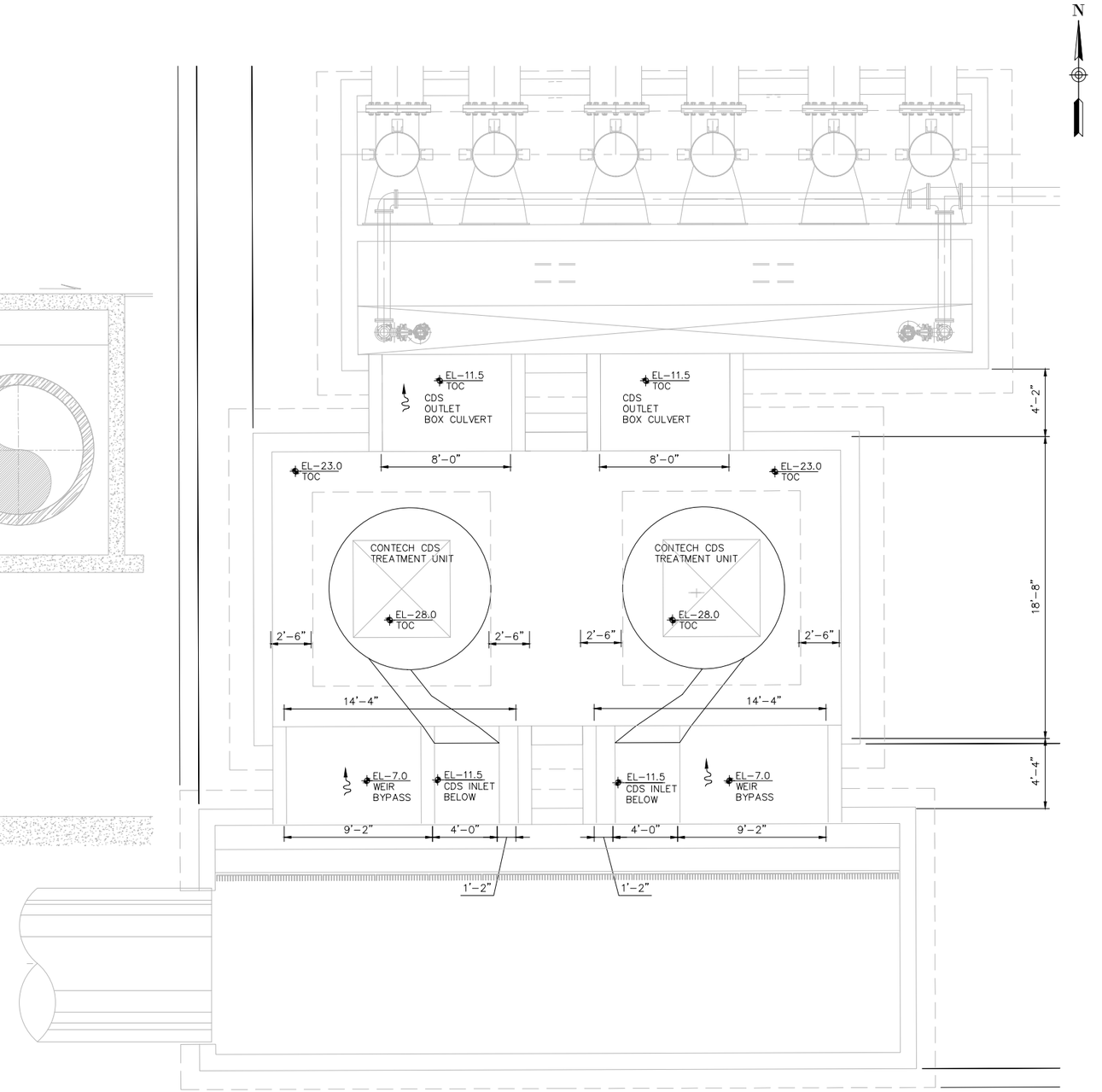
File Name: PS-M05.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: **PS-M05**



PROFILE
SCALE: 1/4" = 1'-0"



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

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: **WEST AVENUE WATER TREATMENT STRUCTURE**

TITLE: **CDS TREATMENT STRUCTURE PLAN - PROFILE**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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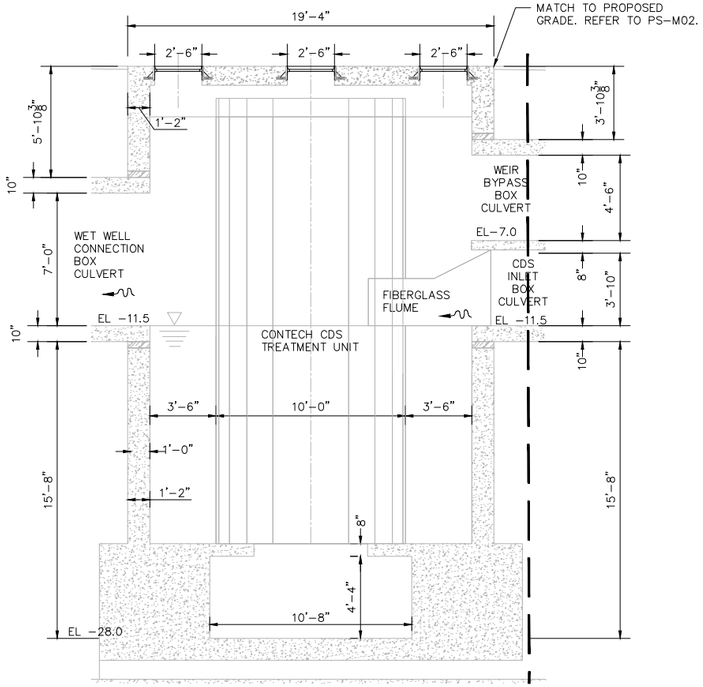
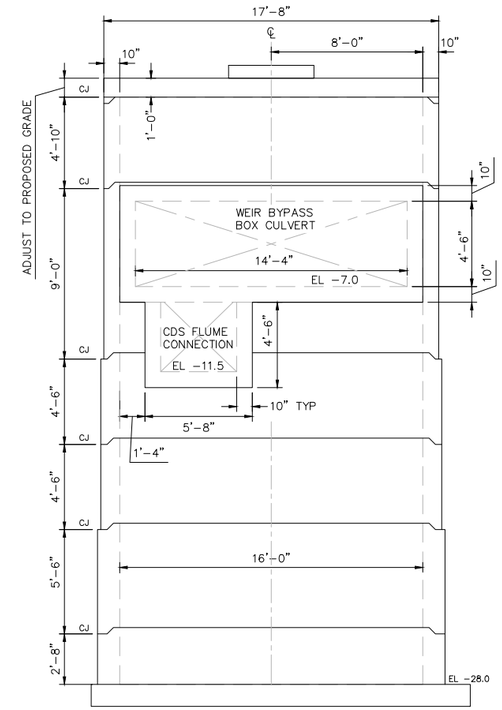
File Name: PS-M06.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: **PS-M06**

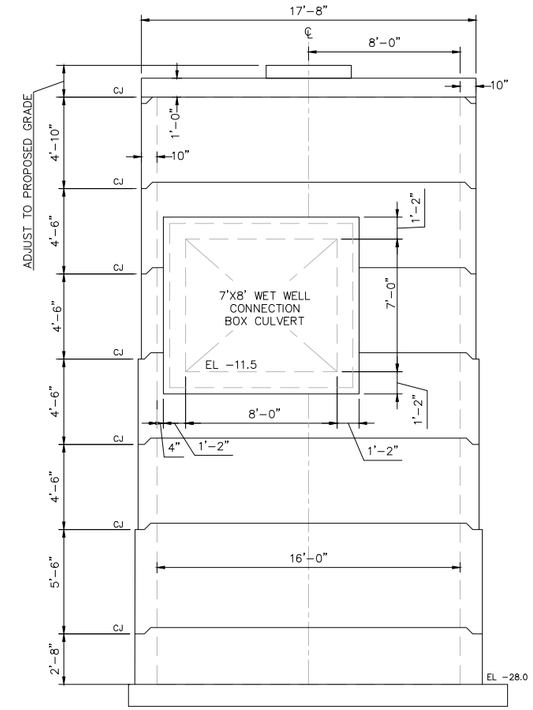


SECTION E-W SOUTH STRUCTURE
SCALE: 1/4" = 1'-0"

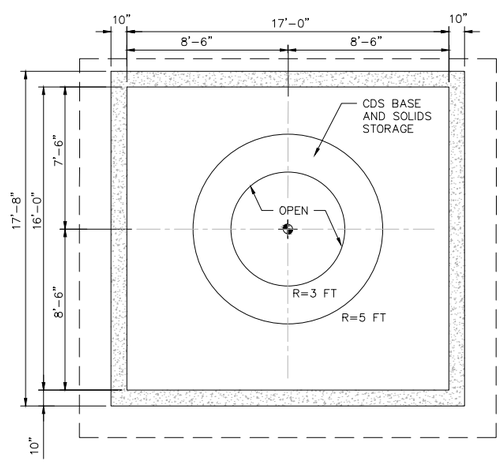


NOTE: NORTH TREATMENT STRUCTURE IS A MIRROR OF THE SOUTH TREATMENT STRUCTURE. SEE PLAN VIEW IN PS-M09.

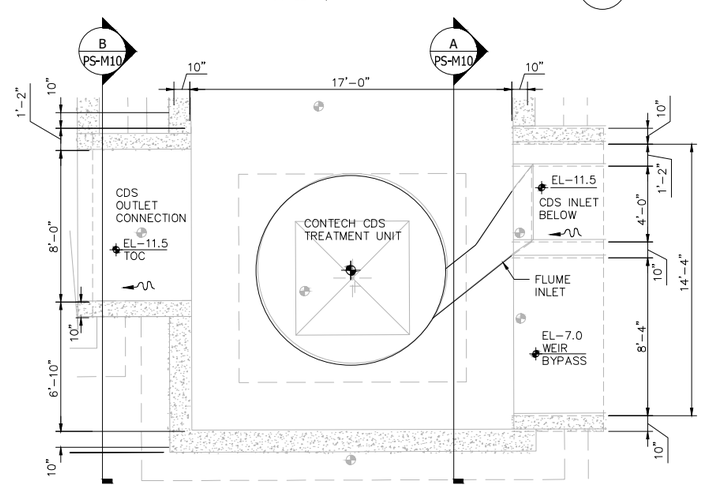
SOUTH STRUCTURE - EAST ELEVATION A PS-M10
SCALE: 1/4" = 1'-0"



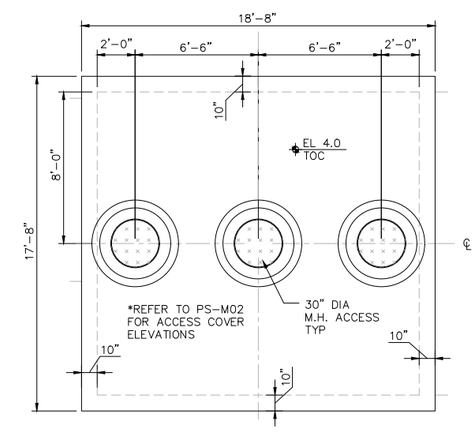
SOUTH STRUCTURE - WEST ELEVATION B PS-M10
SCALE: 1/4" = 1'-0"



PLAN @ EL -22.0 - SOUTH STRUCTURE
SCALE: 1/4" = 1'-0"



PLAN @ EL -11.5 - SOUTH STRUCTURE
SCALE: 1/4" = 1'-0"



PLAN @ TOP SLAB - SOUTH STRUCTURE
SCALE: 1/4" = 1'-0"

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE
TITLE: CDS TREATMENT STRUCTURE
PLANS - SECTIONS - ELEVATIONS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARBALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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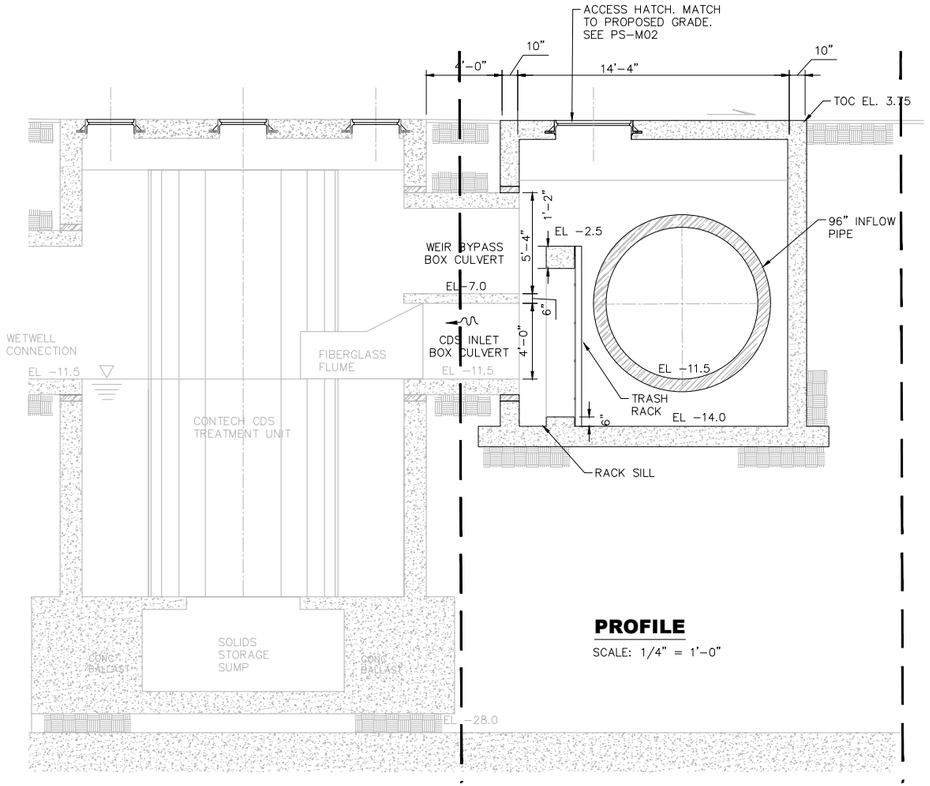
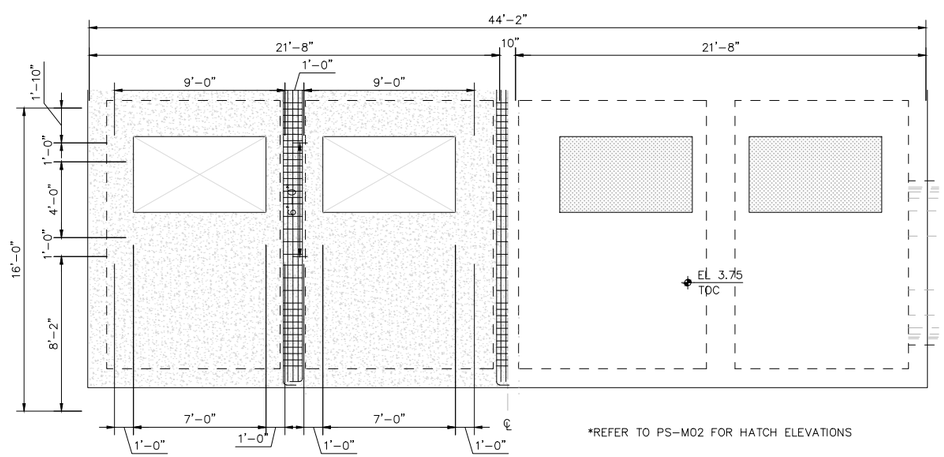
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-M07.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-M07



PROFILE

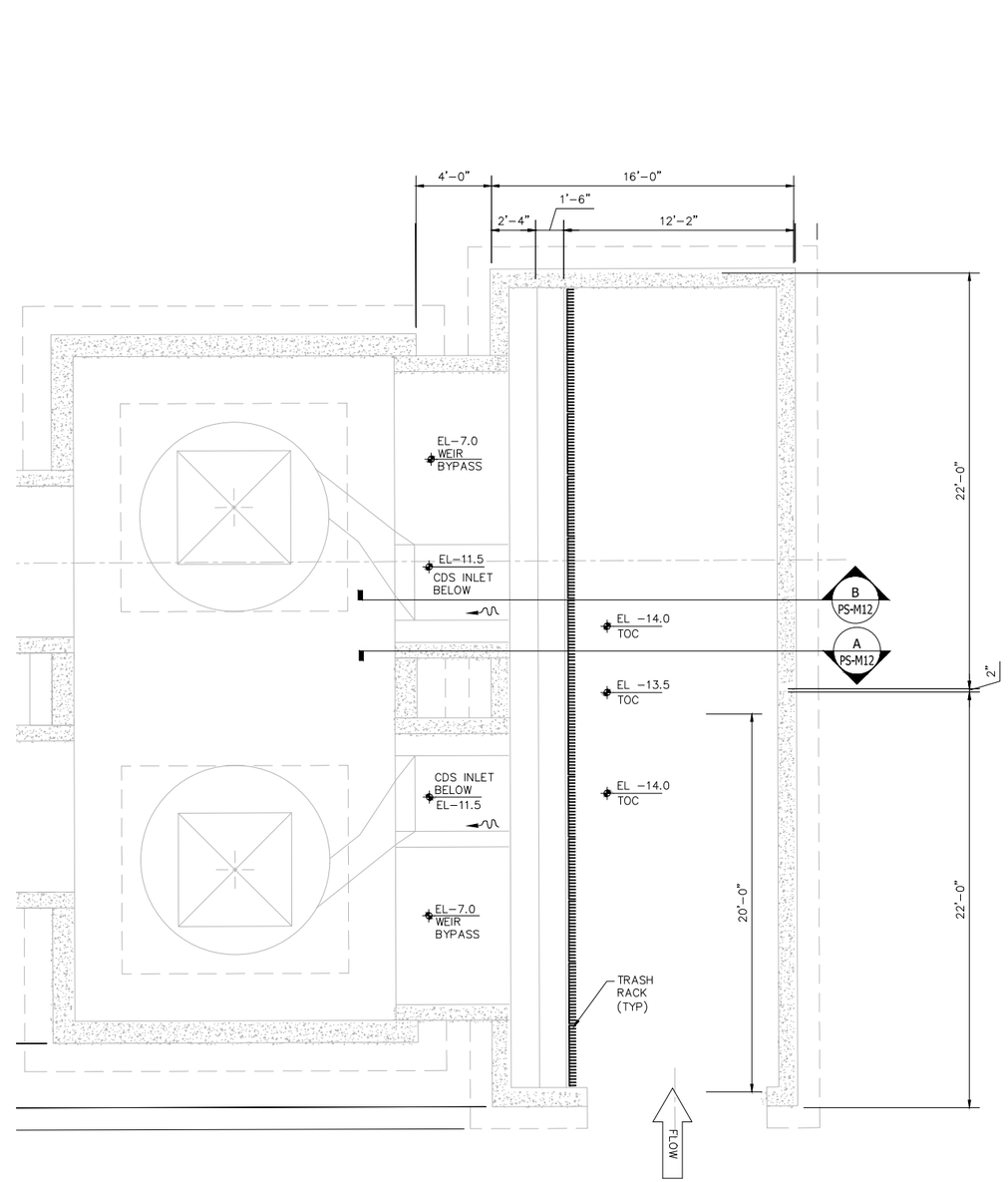
SCALE: 1/4" = 1'-0"



*REFER TO PS-M02 FOR HATCH ELEVATIONS

PLAN @ TOP SLAB

SCALE: 1/4" = 1'-0"



PLAN

SCALE: 1/4" = 1'-0"

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NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: TRASH RACK STRUCTURE
PLAN - PROFILE

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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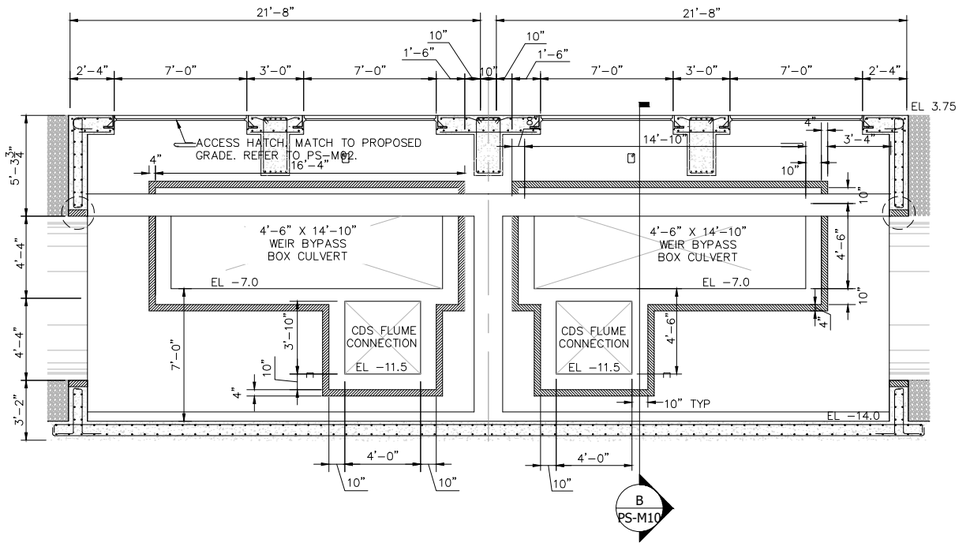
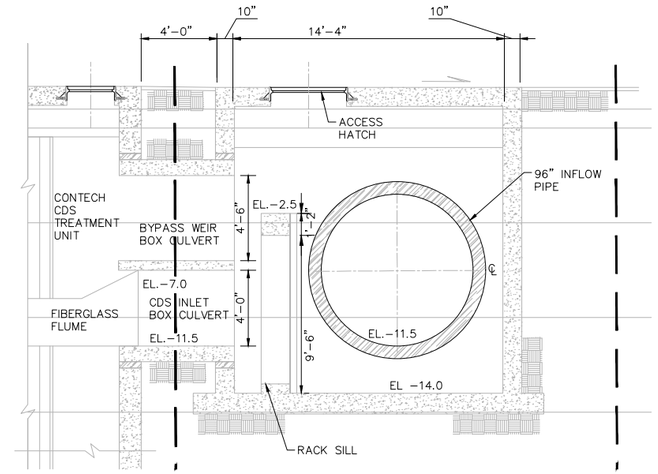
File Name: PS-M08.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-M08



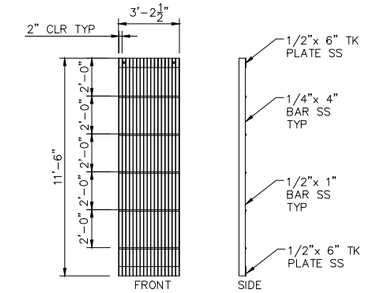
ELEVATION - WEST WALL

SCALE: 1/4" = 1'-0"



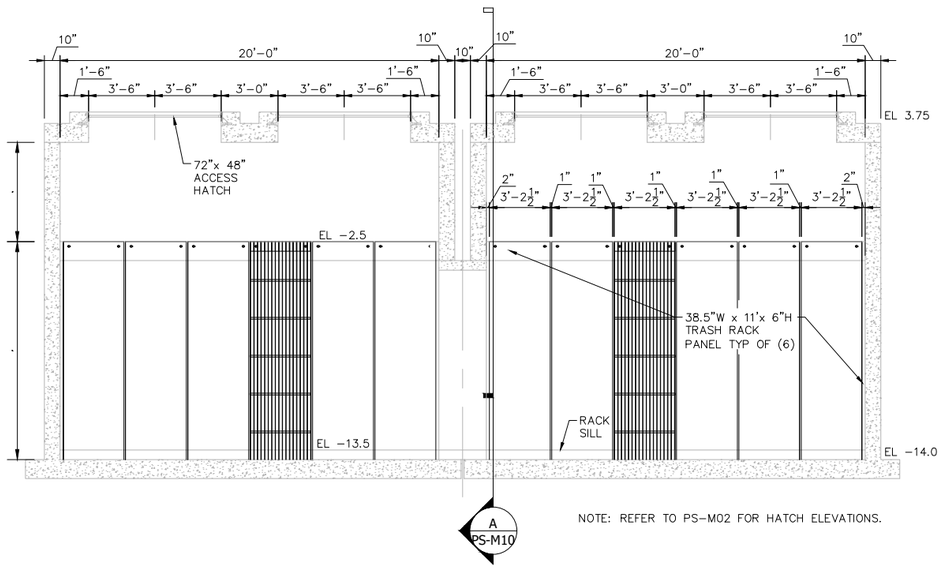
SECTION B

SCALE: 1/4"=1'-0" PS-M12



ELEVATION - RACK

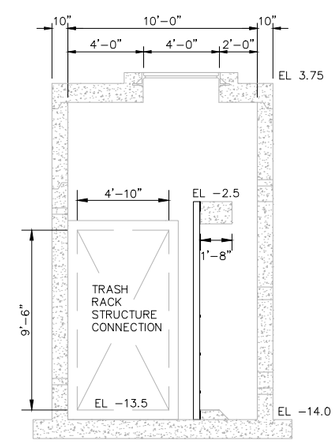
SCALE: 1/4" = 1'-0"



NOTE: REFER TO PS-M02 FOR HATCH ELEVATIONS.

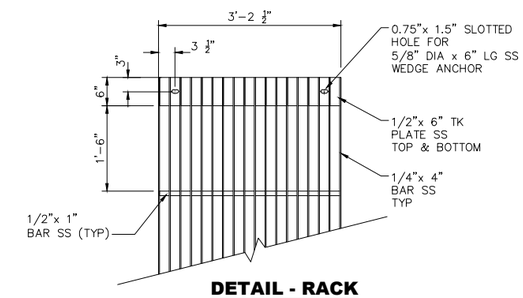
ELEVATION - TRASH RACK

SCALE: 1/4" = 1'-0"



SECTION A

SCALE: 1/4"=1'-0" PS-M12



DETAIL - RACK

SCALE: NTS

MATERIAL SPECIFICATIONS:

1. TRASH RACK: ALL STAINLESS STEEL BARS, PLATES AND OTHER SHAPES SHALL CONFORM TO ASTM A276 TYPE 304/304L SS. FASTENERS AS PER ASTM F593 AND F594 TYPE 316.
2. FASTENERS: ALL FASTENERS SHALL CONFORM TO ASTM F593 AND F594 TYPE 316.
3. WELDING: ALL WELDING AS PER AWS D1.1 WELDING CODE. ALL BUTT WELDS FULL PENETRATION WELD.

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: TRASH RACK STRUCTURE
ELEVATIONS - SECTIONS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 75064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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File Name: PS-M09.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-M09

ELECTRICAL GENERAL NOTES

SUPPLEMENTAL GENERAL CONDITIONS

A1 THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND IT IS THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS THAT THE CONTRACTOR SHALL PROVIDE AN ELECTRICAL INSTALLATION THAT IS COMPLETE WITH ALL ITEMS AND APPURTENANCES NECESSARY, REASONABLE INCIDENTAL, OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM IS NOT SPECIFICALLY CALLED OUT OR SHOWN. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS, LABOR, SUPERVISION AND SERVICE NECESSARY SO AS TO PROVIDE A COMPLETE, FUNCTIONING ELECTRICAL SYSTEM IN SAFE WORKING ORDER.

A2 SYMBOLS FOR VARIOUS ELEMENTS AND SYSTEMS ARE SHOWN ON THE DRAWINGS. SHOULD THERE BE ANY DOUBT REGARDING THE MEANING OR INTENT OF THE SYMBOLS USED, AN INTERPRETATION SHALL BE OBTAINED FROM THE ENGINEER IN WRITING. THE DECISION OF THE ENGINEER SHALL BE FINAL.

A3 WHEREVER CONFLICTS OCCUR BETWEEN DIFFERENT PARTS OF THE CONTRACT DOCUMENTS, THE GREATER QUANTITY, THE BETTER QUALITY, OR LARGER SIZE SHALL PREVAIL UNLESS THE ENGINEER INFORMS THE CONTRACTOR OTHERWISE IN WRITING.

A4 THE SCALE OF EACH DRAWING IS RELATIVELY ACCURATE; ANY DIMENSIONS SHOWN ARE APPROXIMATE TO CENTERLINE FROM ASSUMED BUILDING PERIMETER. THE CONTRACTOR SHALL OBTAIN THE NECESSARY DIMENSIONS FOR ANY EXACT TAKEOFFS FROM THE ENGINEER. NO ADDITIONAL COST TO THE OWNER WILL BE CONSIDERED FOR FAILURE TO OBTAIN EXACT DIMENSIONS WHERE NOT CLEAR OR IN ERROR ON THE DRAWINGS. ANY DEVICE OR FIXTURE ROUGHED IN IMPROPERLY AND NOT POSITIONED ON IMPLIED CENTER-LINES OR AS REQUIRED BY GOOD PRACTICE MUST BE REPOSITIONED AT NO COST TO THE OWNER.

A5 ONLY EXPERIENCED CRAFTSMEN KNOWLEDGEABLE IN THEIR RESPECTIVE TRADE SHALL PERFORM THE WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS.

A6 ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ADDITION OF NFPA STANDARD 70 (NATIONAL ELECTRICAL CODE). CONTRACTOR SHALL ALSO CONFORM TO ALL APPLICABLE STATE AND LOCAL CODES, INCLUDING AMENDMENTS.

A7 FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR A COMPLETE WORKING AND COORDINATED SYSTEM.

ELECTRICAL EQUIPMENT

B1 PROVIDE AN IDENTIFICATION NAMEPLATE FOR EACH ELECTRICAL EQUIPMENT, APPURTENANCE DEPICTING THE DESIGNATION INDICATED ON THE DRAWINGS. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS.

B2 WEATHERPROOF ENCLOSURES SHALL BE PROVIDED FOR ALL ELECTRICAL EQUIPMENT, DEVICES AND APPURTENANCES (ALL SYSTEMS) INSTALLED OUTDOORS.

B3 COORDINATE AND SCHEDULE ALL POWER OUTAGES WITH OWNER. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS.

B4 SPACE ALLOCATIONS FOR MATERIALS, EQUIPMENT AND DEVICES HAVE BEEN MADE ON THE BASIS OF PRESENT AND KNOWN FUTURE REQUIREMENTS AND THE DIMENSIONS OF ITEMS OF EQUIPMENT OR DEVICES OF A PARTICULAR MANUFACTURER. THE CONTRACTOR SHALL VERIFY THAT ALL MATERIALS, EQUIPMENT AND DEVICES PROPOSED FOR USE ON THIS PROJECT ARE WITHIN THE CONSTRAINTS OF THE ALLOCATED SPACE.

B5 DO NOT USE PERMANENT INK WHEN MAKING FIELD MARKINGS OR TEMPORARY CIRCUIT LABELS ON PANELS. CONTRACTOR SHALL USE REMOVABLE TAPE/TAGS FOR ALL TEMPORARY MARKINGS AND SHALL REMOVE THESE TEMPORARY MARKINGS AT THE CONCLUSION OF THIS PROJECT.

B6 ANY DEVIATIONS FROM SCHEDULED EQUIPMENT RESULTING IN ADDITIONAL COSTS DUE TO LACK OF COORDINATION WITH DIMENSIONS AND WEIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

SITE WORK

C1 COORDINATE WITH THE SITE WORK FOR THE LOCATION, DIMENSIONS AND ELEVATION OF ALL DUCTBANKS/SERVICE CONDUITS EXTERNAL TO THE BUILDING PRIOR TO INSTALLATION OF ALL DUCTBANKS/SERVICE CONDUITS INTERNAL TO THE BUILDING.

C2 COORDINATE ALL ELECTRICAL UTILITY SERVICE REQUIREMENTS WITH UTILITIES REPRESENTATIVE PRIOR TO COMMENCING ANY ELECTRICAL SITE WORK. CONTRACTOR SHALL SCHEDULE ALL NECESSARY MEETINGS BETWEEN UTILITY COMPANIES CONSTRUCTION FOREMAN, ELECTRICAL SUBCONTRACTORS, AND VARIOUS SUBCONTRACTORS RESPONSIBLE FOR SITE CONSTRICTION PRIOR TO ELECTRICAL ROUGH-IN.

CONDUIT & RACEWAY

D1 ALL WORK SHALL BE COORDINATED SO THAT INTERFERENCES ARE AVOIDED. PROVIDE ALL NECESSARY OFFSETS IN CONDUITS, RACEWAYS, ETC., REQUIRED TO PROPERLY INSTALL THE WORK. EXPOSED WORK MUST BE KEPT AS CLOSE AS POSSIBLE TO WALLS, CEILINGS, COLUMNS, ETC., SO AS TO TAKE UP MINIMUM AMOUNT OF SPACE; ALL OFFSETS, FITTINGS, ETC., REQUIRED SHALL BE PROVIDED WITHOUT ADDITIONAL EXPENSE TO THE OWNER. WORK SHALL BE COORDINATED WITH OTHER TRADES.

D2 CONDUIT RUNS ARE DIAGRAMMATIC IN NATURE. CONTRACTOR IS RESPONSIBLE FOR SIZING AND LOCATING PULL BOXES PER NFPA 70 AND FOR COORDINATION WITH OTHER DISCIPLINES.

D3 PENETRATIONS OF WALLS, FLOORS, AND ROOFS FOR THE PASSAGE OF ELECTRICAL RACEWAYS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO THE COMMENCEMENT OF WORK. ALL SUCH PENETRATIONS SHALL BE PROPERLY SEALED OFF AFTER INSTALLATION OF RACEWAY SO AS TO MAINTAIN THE STRUCTURAL, WATER PROOF, AND FIRE PROOF INTEGRITY OF THE WALL, FLOOR, OR ROOF SYSTEM PENETRATED.

D4 SEAL ALL CONDUITS THAT PENETRATE THE BASEMENT FLOOR SLAB TO MAKE THEM WATER TIGHT. THE CONDUITS SHALL BE DRIED PRIOR TO INSTALLATION OF WIRE/CABLE AND SHALL BE SEALED AT TERMINATIONS.

D5 ALL PENETRATIONS THROUGH FIRE RATED WALLS OR PARTITIONS SHALL BE MADE IN ACCORDANCE WITH U.L. "FIRE RESISTANCE DIRECTORY". PENETRATIONS SHALL BE SLEEVED AND SEALED WITH A UL APPROVED FIRE RATED SEALANT. REFER TO ENGINEERING PLANS FOR FIRE RATED WALLS.

D6 ALL EMPTY CONDUIT SYSTEMS SHALL CONTAIN A PULL WIRE FOR FUTURE PULLING OF CONDUCTORS.

D7 PROVIDE AND INSTALL ADEQUATE SUPPORTS NECESSARY FOR THE RACEWAY SYSTEM. THIS INCLUDES, BUT IS NOT LIMITED TO, BLOCKING FOR SURFACE AND FLUSH MOUNTED PANELS. CONTRACTOR SHALL REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SIZES AND QUANTITIES OF ALL SUPPORTING MEANS.

BRANCH CIRCUITS AND FEEDERS

E1 A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE PULLED WITH THE CIRCUIT CONDUCTORS FOR GROUNDING WHETHER OR NOT INDICATED ON THE DRAWINGS. METAL RACEWAY, OR A CABLE ARMOR OR SHEATH SHALL NOT BE USED AS THE ONLY EQUIPMENT GROUNDING CONDUCTOR.

E2 HOMERUN CIRCUITS FOR ISOLATED GROUND RECEPTACLES SHALL BE SEPARATED FROM OTHER CIRCUITS. EACH CIRCUIT SHALL HAVE ITS OWN NEUTRAL CONDUCTOR AND EACH HOMERUN SHALL CONTAIN AN ISOLATED AND EQUIPMENT GROUND CONDUCTOR.

E3 GROUND ALL EQUIPMENT AND ELECTRICAL SYSTEM ACCORDING TO NFPA 70.

WIRING DEVICES

F1 REFER TO ENGINEERING DRAWINGS AND SPECIFICATIONS FOR LOCATION AND MOUNTING HEIGHT OF ALL WALL AND FLOOR MOUNTED ELEMENTS (OUTLETS, LIGHT SWITCHES, CONTROLLERS, POKE-THRU, ETC). ALL WALL/FLOOR MOUNTED ITEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE ENGINEERING DIMENSIONED DRAWINGS. IF LOCATION FOR AN ITEM IS NOT SHOWN ON THE ENGINEERING DRAWINGS, VERIFY THE EXACT LOCATION OF THE ITEM WITH THE ENGINEER PRIOR TO INSTALLATION. THESE REQUIREMENTS APPLY TO ALL WALL/FLOOR TYPES IN ALL AREAS. DO NOT SCALE OR DIMENSION LOCATIONS FROM THESE DRAWINGS.

F2 VERIFY THE EXACT POWER CONNECTION TYPE AND NEMA CONFIGURATION OF RECEPTACLES FOR EQUIPMENT FURNISHED BY THE OWNER, OTHER TRADES, OR UNDER A SEPARATE SECTION OF THIS CONTRACT PRIOR TO ELECTRICAL ROUGH-IN.

F3 ALL RECEPTACLES LOCATED OUTSIDE THE BUILDING ENVELOPE SHALL BE HOUSED IN ENCLOSURES THAT ARE RATED 'WEATHER-PROOF-WHILE-IN-USE' AND SHALL BE EQUIPPED WITH GFCI FOR PERSONNEL PROTECTION.

F4 ALL GFCI RECEPTACLES SHALL BE CONNECTED SO THAT ALL DEVICES ON THE SAME CIRCUIT AS THE GFCI RECEPTACLE DO NOT DE-ENERGIZE UPON TRIPPING. ALL GFCI RECEPTACLES SHALL INCLUDE A LOCK-OUT FUNCTION TO PROTECT AGAINST THE USE OF MISWIRED DEVICES OR DEVICES THAT HAVE BEEN DAMAGED DUE TO DISABLING SURGES.

ELECTRICAL ABBREVIATIONS

AFC	ABOVE FINISHED COUNTER
AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
BFC	BELOW FINISHED CEILING
BOF	BOTTOM OF FIXTURE
C	CONDUIT
CB,C/B OR CKT BKR	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
DFA	DOWN FROM ABOVE
EC	EMPTY CONDUIT
ELEC	ELECTRIC
E	EMERGENCY - RED
EMS	ENERGY MANAGEMENT SYSTEM
EP	EXPLOSION PROOF
EX	EXISTING
F	FUSE
FA	FIRE ALARM
FACP, FAP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FIXT	FIXTURE
FLR	FLOOR
FTP, FTS	FAN TERMINAL UNIT
FTU	FAN TERMINAL UNIT
G, GND	GROUND (EQUIPMENT)
GEF	GENERAL EXHAUST FAN
GEN	GENERATOR
GFCI, GFI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSE POWER
HV	HIGH VOLTAGE
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
JB	JUNCTION BOX
LTG	LIGHTING
LTS	LIGHTS
LV	LOW VOLTAGE
MATV	MASTER ANTENNA
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTD	MOUNT OR MOUNTED
N	NEW DEVICE
NC (N.C.)	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NF	NONFUSED
NIC	NOT IN CONTRACT
NO (N.O.)	NORMALLY OPEN
(ON)	HOME RUN FOR CKT IS "ON" THE SAME CKT. ELSEWHERE ON THE PLAN
PB	PULL BOX
PNL	PANEL
PWR	POWER
R	RELOCATED DEVICE
RCPT(S) OR RECEPT	RECEPTACLE(S)
RF	RETURN AIR FAN
SEF	SMOKE EXHAUST FAN
SF	SUPPLY AIR FAN
SO (S.O.)	SPACE ONLY
SP	SPARE
ST (S.T.)	SHUNT TRIP
SW	SWITCH
TF	TRANSFER FAN
TP	TAMPER PROOF
UF	UNDERFLOOR
UG	UNDERGROUND
UNO (U.N.O.)	UNLESS NOTED OR INDICATED OTHERWISE
V	VOLTAGE
VP	VAPOR PROOF
W	WIRE
W/	WITH
WG	WIRE GUARD
WP	WEATHER PROOF
WT	WATER TIGHT
XFMR	TRANSFORMER
+xx	MOUNTING HEIGHT IN INCHES. AFF UNO.

NOTES:

1. 48" AFF INDICATES TO TOP OF DEVICE; 18" AFF INDICATES TO BOTTOM OF DEVICE; 80" AFF INDICATES TO BOTTOM OF DEVICE; ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.

MISCELLANEOUS

(2) – NOTES: DENOTES "SEE NOTE NO. 2"

– MARK (ID) NUMBER FOR EQUIPMENT

REF. 2/E2.02 – DENOTES: REFERENCE DETAIL 2 IN DRAWING (SHEET) E2.02

XX–XX ← PANEL AND CIRCUIT
o ← SWITCHING DESIGNATION
X ← FIXTURE TYPE

NOTE: THIS INFORMATION MAY NOT ALWAYS BE INDICATED IN THE FORMAT SHOWN, DUE TO SPACE RESTRICTIONS IN THE FLOOR PLAN.

CODES AND STANDARDS

THE SCOPE OF THE WORK SHALL INCLUDE THE FURNISHING AND INSTALLATION OF THE NECESSARY MATERIAL AND LABOR TO ACCOMPLISH THE WORK INDICATED BY THE DRAWINGS AND HEREIN SPECIFIED. ALL WORK BY CONTRACTOR SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO:

1. STATE OF FLORIDA
2. CITY OF MIAMI BEACH
3. LIFE SAFETY CODE – NFPA 101 (2012)
4. UNDERWRITERS LABORATORIES, INC. PUBLICATIONS (UL)
5. NATIONAL FIRE PROTECTION ASSOCIATION. (NFPA–110 2010)
6. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
7. NATIONAL ELECTRICAL CODE – NFPA 70 (2011)
8. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
9. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA)
10. INTERNATIONAL POWER CABLE ENGINEER'S ASSOCIATION (IPCEA)
11. NATIONAL ELECTRICAL SAFETY CODE (NBS Handbook 81)
12. REQUIREMENTS OF LOCAL UTILITY COMPANY
13. NATIONAL FIRE PROTECTION ASSOCIATION 72 (2010)
14. NATIONAL FIRE PROTECTION ASSOCIATION 99 (2012)
15. THE STATE FIRE PREVENTION CODE, 4A60 (2010)
16. BUILDING CODE: FLORIDA BUILDING CODE (2014)

WIRING DEVICES & POWER

SYMBOL	DESCRIPTION	DEVICE MTG. HT. U.N.O.
	SINGLE RECEPTACLE – 20A/125V/2P/3W/G NEMA 5–20R	18" AFF U.N.O.
TV	DUPLEX RECEPTACLE – 20A/125V/2P/3W/G NEMA 5–20R TV = LOCATE RECEPTACLE 6" BELOW FINISHED CEILING.	18" AFF U.N.O.
	DUPLEX RECEPTACLE – 20A/125V/2P/3W/G NEMA 5–20R	6" ABOVE COUNTERTOP U.N.O.
GFI	DUPLEX RECEPTACLE GFI – 20A/125V/2P/3W/G NEMA 5–20R	18" AFF U.N.O.
GFI	DUPLEX RECEPTACLE GFI – 20A/125V/2P/3W/G NEMA 5–20R	6" ABOVE COUNTERTOP U.N.O.
	QUADRAPLEX RECEPTACLE (TWO DUPLEX RCPTS. UNDER ONE COVERPLATE)	18" AFF U.N.O.
GFI	QUADRAPLEX RECEPTACLE (TWO DUPLEX RCPTS. UNDER ONE COVERPLATE)	6" ABOVE COUNTERTOP U.N.O.
GFI WP	DUPLEX RECEPTACLE GFI – 20A/125V/2P/3W/G NEMA 5–20R WITH WEATHERPROOF ENCLOSURE	18" AFF U.N.O.
GFI WP	DUPLEX RECEPTACLE GFI – 20A/125V/2P/3W/G NEMA 5–20R WITH WEATHERPROOF ENCLOSURE – ROOF MOUNTED	18" AFF U.N.O.
	DUPLEX RECEPTACLE – 20A/125V/2P/3W/G NEMA 5–20R FLOOR MOUNTED – FLUSH MOUNTED UNO	–
	DUPLEX RECEPTACLE – 20A/125V/2P/3W/G NEMA 5–20R CEILING MOUNTED – FLUSH MOUNTED UNO	–
Y	SPECIAL PURPOSE RECEPTACLE (NEMA NO. AS INDICATED)	18" AFF U.N.O.
J	JUNCTION BOX – SIZE AND MOUNTING AS REQUIRED	–
	MULTIOUTLET ASSEMBLY – LENGTH AND OUTLET SPACING AS INDICATED	–
	PANELBOARD – SURFACE MOUNTED	72" TO TOP
	PANELBOARD – FLUSH MOUNTED	72" TO TOP
30/3	CIRCUIT BREAKER DISCONNECT SWITCH – THERMAL MAGNETIC CB IN NEMA 1 ENCLOSURE U.N.O.; AMPS/POLES AS INDICATED	+54" U.N.O.
F J 30/3/*/1	DISCONNECT SWITCH – 30/3/*/1. INDICATES 30A, 3–POLE, FUSE SIZE PER MANUF SPECS, NEMA TYPE. F DENOTES FUSIBLE SWITCH	+54" U.N.O.
2	MOTOR STARTER FVNR UNO; NUMBER INDICATES NEMA SIZE	AS REQUIRED
CB J	COMBINATION MOTOR CONTROLLER/DISCONNECT SWITCH	AS REQUIRED
$M	MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOAD AND PILOT LIGHT	AS REQUIRED
	MOTOR	–
EPO	EMERGENCY POWER OFF BUTTON. WALL MOUNTED – STUB 3/4" C. ABOVE ACCESSIBLE CEILING FROM OUTLET BOX	48" AFF
X,X,X	THREE SINGLE POLE DEVICE CIRCUIT NUMBERS	–
X/X/X	MULTI–POLE DEVICE CIRCUIT NUMBERS	–
	HOMERUN CONDUIT MINIMUM ¾" U.N.O. (NUMBER OF ARROWHEADS INDICATE QUANTITY OF #12 PHASE CONDUCTORS). PROVIDE ONE #12 GROUND AND ONE #12 NEUTRAL IN EACH CONDUIT U.N.O. MAXIMUM OF THREE PHASE CONDUCTORS PER HOMERUN CONDUIT. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS.	–
	CONDUIT CONCEALED IN WALLS OR ABOVE CEILING	–
	CONDUIT BELOW GRADE OR UNDER FLOOR	–
	CONDUIT EXPOSED	–

ONE-LINE DIAGRAM AND RISER SYMBOLS

XXX/X	CIRCUIT BREAKER	K	ELECTRIC KIRK KEY INTERLOCK
		CM	POWER CIRCUIT MONITOR
AF / AT	DRAW OUT CIRCUIT BREAKER	200 / 5	CURRENT TRANSFORMER
			POTENTIAL TRANSFORMER
X / S.O.	CIRCUIT BREAKER SPACE ONLY		NEUTRAL REMOVABLE LINK
		ATO	AUTOMATIC THROWOVER EQUIPMENT
	CIRCUIT BREAKER WITH THERMAL OVERLOAD DEVICE	DPM	DIGITAL POWER METER
		WM	WATT HOUR METER
X / FUSE / X	DISCONNECT RATING FUSE RATING	A	AMMETER
		V	VOLTMETER
	CAPACITOR	AS	AMMETER SWITCH
	CONTACTOR	VS	VOLTMETER SWITCH
	TRANSFORMER	50	METER OR INSTRUMENT/RELAY DEVICE – NUMBER DENOTES DEVICE TYPE.
	GROUNDING ELECTRODE	XXX	FEEDER TAG. REFER TO FEEDER SCHEDULE FOR NUMBER AND SIZE OF CONDUCTORS AND CONDUIT.
XXX/X GFR	CIRCUIT BREAKER WITH GROUND FAULT PROTECTION	TVSS	POWER CONDITIONING TVSS DEVICE
		SPD	SURGE PROTECTION DEVICE
XXX/X S.T.	SHUNT TRIP CIRCUIT BREAKER	X	C.B./MOTOR STARTER WITH THERMAL OVERLOAD DEVICE INSIDE OF MOTOR CONTROL CENTER. "X" INDICATES NEMA STARTER SIZE

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL GENERAL NOTES

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 75064 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jose A. Caraballo on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

NO.	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

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ELECTRICAL SPECIFICATIONS

16010 – BASIC ELECTRICAL REQUIREMENTS

A. THE SCOPE OF THE WORK SHALL INCLUDE THE FURNISHING AND INSTALLATION OF THE NECESSARY MATERIAL AND LABOR TO ACCOMPLISH THE WORK INDICATED BY THE DRAWINGS AND HEREIN SPECIFIED. ALL WORK BY CONTRACTOR SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO:

B. CODES AND STANDARDS REFERRED TO ARE MINIMUM. WHERE THE REQUIREMENTS OF THE DRAWINGS OR SPECIFICATIONS EXCEED THOSE OF THE CODES AND REGULATIONS, THE DRAWINGS AND SPECIFICATIONS GOVERN.

C. THE CONTRACTOR SHALL OBTAIN AND PAY FOR PERMITS, PLAN CHECKS, INSPECTIONS, AND APPROVALS APPLICABLE TO THE WORK AS REQUIRED BY THE REGULATORY AUTHORITIES. FEES AND COSTS OF ANY NATURE WHATSOEVER INCIDENTAL TO THESE PERMITS, INSPECTIONS AND APPROVALS SHALL BE ASSUMED AND PAID BY THE CONTRACTOR. THE PRO-RATA COSTS, IF ANY, FOR UTILITIES SERVING THIS PROPERTY WILL BE PAID FOR BY THE OWNER AND SHALL NOT BE INCLUDED AS PART OF THIS CONTRACT.

D. SPACE ALLOCATIONS FOR MATERIALS, EQUIPMENT AND DEVICES HAVE BEEN MADE ON THE BASIS OF PRESENT AND KNOWN FUTURE REQUIREMENTS AND THE DIMENSIONS OF ITEMS OF EQUIPMENT OR DEVICES OF A PARTICULAR MANUFACTURER WHETHER INDICATED OR NOT. THE CONTRACTOR SHALL VERIFY THAT ALL MATERIALS, EQUIPMENT AND DEVICES PROPOSED FOR USE ON THIS PROJECT ARE WITHIN THE CONSTRAINTS OF THE ALLOCATED SPACE.

E. ALL EXISTING SYSTEMS, EQUIPMENT OR MATERIAL. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE EXISTING CONDITIONS AT THE JOB SITE BEFORE SUBMITTING PROPOSALS. SUBMISSION OF PROPOSALS SHALL BE TAKEN AS EVIDENCE THAT SUCH INSPECTION HAS TAKEN PLACE. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE COMPLETE SET OF CONSTRUCTION DOCUMENTS, AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

F. EQUIPMENT SHALL BE NEW AND SHALL BEAR THE U.L. LABEL WHERE APPLICABLE, UNLESS NOTED OTHERWISE. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR AFTER COMPLETION AND ACCEPTANCE BY THE OWNER.

G. CONTRACTOR SHALL INSTALL ELECTRICAL SYSTEMS WITHOUT INTERFERENCE AND IN STRICT COORDINATION WITH OTHER TRADES.

H. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND APPLICABLE CODES AND STANDARDS. IN CASE OF DIFFERENCE BETWEEN APPLICABLE CODES AND STANDARDS AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF SUCH DIFFERENCE. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF APPLICABLE CODES AND STANDARDS, HE/SHE SHALL BEAR ALL COSTS ARISING IN CORRECTING SUCH DEFECTS. APPLICABLE CODES AND STANDARDS SHALL INCLUDE ALL ORDINANCES, UTILITY COMPANY REGULATIONS, AND APPLICABLE REQUIREMENTS OF NATIONALLY ACCEPTED CODES AND STANDARDS. SHOULD THE CONTRACTOR SUPPLY EQUIPMENT DIFFERING FROM THE SPECIFIED ITEMS IN THE CONTRACT DOCUMENTS WITHOUT NOTIFICATION TO THE ENGINEER, HE SHALL BEAR ALL COSTS TO UPGRADE DEFICIENCIES ARISING FROM SUCH.

I. WHERE ONLY ONE MANUFACTURER'S NAME IS LISTED IN THE EQUIPMENT SPECIFICATION, OTHER MANUFACTURERS OF SIMILAR CHARACTERISTICS AND OF EQUAL OR BETTER PERFORMANCE CAPACITIES MAY BE CONSIDERED FOR "OR EQUAL" ACCEPTANCE BY THE ENGINEER. SUBSTITUTION REQUESTS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL. WHERE MORE THAN ONE MANUFACTURER IS LISTED IN THE NOTES AND EQUIPMENT SPECIFICATIONS, ONLY THOSE NAMED MANUFACTURERS WILL BE CONSIDERED FOR ACCEPTANCE. SHOULD A SUBSTITUTION BE ACCEPTED, AND SHOULD THE SUBSTITUTE MATERIAL PROVE DEFECTIVE, OR OTHERWISE UNSATISFACTORY FOR THE SERVICE INTENDED WITHIN THE GUARANTEE PERIOD, THIS MATERIAL OR EQUIPMENT SHALL BE REPLACED WITH THE MATERIAL OR EQUIPMENT SPECIFIED AT NO COST TO THE OWNER.

J. PROVIDE ACCESS, INCLUDING NECESSARY ACCESS DOORS, FOR NEW AND EXISTING EQUIPMENT REQUIRING OPERATION AND/OR MAINTENANCE. RELOCATE EXISTING AND LOCATE ALL NEW EQUIPMENT SUCH THAT OPERATION OR MAINTENANCE IS NOT RESTRICTED.

K. INSTALL EQUIPMENT WITH WORKING CLEARANCES COMPLYING WITH NEC 110-26 AND 110-34.

L. SHOP DRAWING SUBMITTALS
1. CONTRACTOR SHALL PREPARE AND SUBMIT ALL SUBMITTALS FOR ALL PERTINENT ELECTRICAL EQUIPMENT AND DEVICES INDICATED IN THE SCOPE OF WORK.
2. COMPLETE LIST OF MATERIALS TO BE FURNISHED UNDER EACH SPECIFIC SECTION.
3. MANUFACTURERS' SPECIFICATIONS AND OTHER DATA REQUIRED TO ASSURE SPECIFICATION COMPLIANCE.
4. CATALOG SHEETS, CLEARLY MARKED FOR IDENTIFICATION OF ITEMS TO BE PROVIDED, INCLUDING DISCONNECT SWITCHES, BREAKERS, FUSES, STARTERS, LIGHTING FIXTURES, TRANSFORMERS, OR OTHER MATERIAL NOT REQUIRING SPECIALLY PREPARED SHOP DRAWINGS.
5. ALL SHOP DRAWING CUT SHEETS SHALL CLEARLY IDENTIFY THE SPECIFIC PRODUCT TO BE REVIEWED AND APPROVED, INCLUDING MANUFACTURER. GENERIC CUT SHEETS, INCOMPLETE CUT SHEETS AND CUT SHEETS SUBMITTED WITHOUT IDENTIFYING THE SPECIFIC PRODUCT PROVIDED, WILL BE AUTOMATICALLY REJECTED.
6. AS PART OF EQUIPMENT SHOP DRAWINGS, PROVIDE DETAILED DIMENSIONED LAYOUT DRAWINGS FOR ALL LARGE ELECTRICAL EQUIPMENT AND ELECTRICAL ROOMS WHERE NEW EQUIPMENT IS BEING INSTALLED.

M. EACH CONDUIT, REGARDLESS OF MATERIAL, WHICH PASSES THROUGH A CONCRETE SLAB, MASONRY WALL, OR ROOF OR PORTION OF THE BUILDING STRUCTURE SHALL BE FREE FROM THE STRUCTURE AND SHALL PASS THROUGH A SLEEVE. ALL SLEEVES SHALL BE CONSTRUCTED FROM ELECTRIC-METALLIC TUBING OR EQUIVALENT WEIGHT GALVANIZED STEEL TUBING AND SHALL BE FLUSH ON BOTH SIDES OF THE SURFACE PENETRATED, U.N.O. ALL SLEEVES PENETRATING THE ROOF AREAS SHALL EXTEND A MINIMUM 10 INCHES ABOVE THE ROOF WITH APPROVED WEATHERPROOF COUNTERFLASHING ATTACHED TO THE CONDUIT ABOVE THE ROOF. ALL SLEEVES PENETRATING FLOORS SHALL EXTEND A MINIMUM OF 6 INCHES A.F.F. THE SLEEVES SHALL BE SIZED TO ALLOW FREE PASSAGE OF THE CONDUIT TO BE INSERTED. SLEEVES PASSING THROUGH WALLS OR FLOORS ON OR BELOW GRADE OR IN MOIST AREAS SHALL BE CONSTRUCTED OF GALVANIZED RIGID STEEL AND SHALL BE DESIGNED WITH A SUITABLE FLANGE INT HE CENTER TO FORM A WATERPROOF PASSAGE. AFTER THE CONDUIT HAS BEEN INSTALLED IN SLEEVES, THE VOID SPACE AROUND THE CONDUIT SHALL BE CAULKED AND FILLED WITH AN ASPHALT-BASE COMPOUND TO INSURE A WATERPROOF PENETRATION. JUTE TWINE CAULKING SHALL NOT BE USED.

N. CONTRACTOR SHALL KEEP A CLEAN SET OF DRAWINGS AT THE SITE, NOTING DAILY ALL CHANGES MADE IN THESE DRAWINGS IN CONNECTION WITH THE FINAL INSTALLATION INCLUDING EXACT DIMENSIONED LOCATIONS OF ALL NEW AND UNCOVERED EXISTING UTILITIES TURN OVER A CLEAN, NEATLY MARKED SET OF REPRODUCIBLE MYLARS SHOWING "AS INSTALLED" WORK TO THE ARCHITECT FOR SUBSEQUENT REVIEW AND TRANSMITTAL TO THE OWNER. CONTRACTOR SHALL NOTE ALL CONSTRUCTION CHANGES, DATE EACH SHEET AND LABEL "AS-BUILTS" IN THE REVISION BLOCK ON THE DRAWINGS. CONTRACTOR SHALL ALSO FURNISH ONE (1) SET OF "AS-BUILT" BLUELINE PRINTS.

O. IN ADDITION TO THE ABOVE, CONTRACTOR SHALL ACCUMULATE DURING THE JOB'S PROGRESS, THE FOLLOWING DATA, IN TRIPLICATE, PREPARED IN A NEAT BROCHURE OR PACKET FOLDER AND TURNED OVER TO THE PROJECT MANAGER FOR REVIEW AND SUBSEQUENT DELIVERY TO THE OWNER.
1. ALL WARRANTIES AND GUARANTEES AND MANUFACTURER'S DIRECTIONS ON EQUIPMENT AND MATERIAL COVERED BY THE CONTRACT INCLUDING THE NAMES, ADDRESSES AND TELEPHONE NUMBERS OF THE MANUFACTURER'S REPRESENTATIVE.
2. APPROVED FIXTURE BROCHURES, WIRING DIAGRAMS AND CONTROL DIAGRAMS (ORIGINAL DATA, NO COPIES).
3. COPIES OF APPROVED SHOP DRAWINGS.
4. OPERATING INSTRUCTIONS FOR ALL ELECTRICAL SYSTEM EQUIPMENT. OPERATING INSTRUCTIONS SHALL ALSO INCLUDE RECOMMENDED MAINTENANCE PROCEDURES.
5. TEST REPORTS REQUIRED BY THESE SPECIFICATIONS.
6. ANY AND ALL OTHER DATA AND/OR DRAWINGS REQUIRED DURING CONSTRUCTION.
7. REPAIR PARTS LISTS OF ALL MAJOR ITEMS OF EQUIPMENT INCLUDING NAME, ADDRESS AND TELEPHONE NUMBERS OF LOCAL SUPPLIER OR AGENT.

P. ALL OF THE ABOVE DATA SHALL BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AT SUCH TIME AS THE CONTRACTOR SUBMITS HIS LAST ESTIMATE PRIOR TO HIS FINAL PAYMENT, BUT IN NO CASE, LESS THAN TWO WEEKS BEFORE FINAL INSPECTION.

Q. ALL OF THE ABOVE DATA SHALL BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AT SUCH TIME AS THE CONTRACTOR SUBMITS HIS LAST ESTIMATE PRIOR TO HIS FINAL PAYMENT, BUT IN NO CASE, LESS THAN TWO WEEKS BEFORE FINAL INSPECTION.

16110 – SYSTEMS OF RACEWAYS

A. CONDUIT
1. RIGID STEEL CONDUIT (GRC – GALVANIZED RIGID CONDUIT): CONSTRUCTED OF MILD STEEL PIPING, GALVANIZED INSIDE AND OUTSIDE, CONFORMING WITH FED. SPEC. WW-C-581E, ANSI C80.1 AND UL 6.
2. INTERMEDIATE METAL CONDUIT (IMC): CONSTRUCTED OF ZINC COATED STEEL TUBING MANUFACTURED IN ACCORDANCE WITH FED. SPEC. WW-C-581-E, UL-1242 AND MEETING THE REQUIREMENTS OF THE NEC.
3. ELECTRIC METALLIC TUBING (EMT): CONSTRUCTED OF HIGH GRADE STEEL MANUFACTURED SPECIFICALLY TO STANDARDS ASSURING MAXIMUM WELDING CHARACTERISTICS AND DUCTILITY, AND SHALL CONFORM TO FED. SPEC. WW-C-563-A, ANSI C80-3, AND UL 797.
4. LIQUIDTIGHT FLEXIBLE CONDUIT: FLEXIBLE METAL CONDUIT AS SPECIFIED HEREIN WITH A COPPER GROUNDING STRAND AND FACTORY-APPLIED NEOPRENE JACKET. LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE UL LISTED, EQUIVALENT TO ANACONDA "SEALTITE", TYPE UA.
5. INSTALLATION OF UNDERGROUND CONDUIT
   a. INSTALL UNDERGROUND FEEDER CONDUCTORS IN RIGID NONMETALLIC CONDUIT (PVC), U.N.O. INSTALL AT LEAST 30 INCHES BELOW FINISHED GRADE U.N.O. ON A BED OF SAND BEFORE CONTINUING BACKFILL.
   b. WHERE CONDUIT ENTERS INTO PULL OR JUNCTION BOXES AND AT ALL BENDS, CHANGE FROM PVC TO RIGID GALVANIZED STEEL CONDUIT BELOW GRADE.
   c. PROVIDE A PULL BOX OF APPROPRIATE SIZE EVERY 500 FEET OF STRAIGHT RUN AND AT EVERY 90 DEGREE BEND.

B. COUPLINGS AND TERMINATORS
1. FOR RIGID STEEL OR INTERMEDIATE METAL CONDUIT: FACTORY-MADE THREADED COUPLINGS OF SAME MATERIAL AS THE CONDUIT.
2. FOR ELECTRICAL METALLIC TUBING, USE STEEL COMPRESSION COUPLINGS AND NYLON INSULATED GROUNDING BUSHINGS.
3. FOR FLEXIBLE METAL CONDUIT: COUPLINGS AT CONNECTIONS BETWEEN FLEXIBLE CONDUIT AND EMT, AND NYLON INSULATED THROAT STEEL CONNECTORS AT BOX OR CABINET TERMINATIONS.
4. SCREW COUPLINGS; STEEL SET SCREW BOX CONNECTORS WITH NYLON INSULATED THROAT AND LOCKNUTS AT ALL BOXES AND CABINET TERMINATIONS OR NON-INSULATED BOX CONNECTOR, LOCKNUT AND NYLON-INSULATED GROUNDING BUSHING ON ALL TUBING WHERE GROUNDING BUSHINGS ARE REQUIRED.

C. JUNCTION AND PULL BOXES
1. SIZE BOXES IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC. BOXES SHALL BE UL LISTED AND NO SMALLER THAN 4 INCHES SQUARE BY 1-1/2 INCHES DEEP WITH COVERS ACCESSIBLE AT ALL TIMES. SET BOXES ON CONCEALED CONDUITS WITH COVERS FLUSH WITH THE FINISHED WALL OR CEILING LINE. PROVIDE JUNCTION AND PULL BOXES OF APPROPRIATE DIMENSIONS FOR CONDUITS AND CONDUCTORS NOTED, WHERE SHOWN AND WHERE NECESSARY FOR THE INSTALLATION AND PULLING OF CABLES AND WIRES. INSTALL COVERS ON JUNCTION BOXES AND CONDUITS AFTER WIRING AND CONNECTIONS ARE COMPLETED.
2. INSTALLATION OF PULL AND JUNCTION BOXES
   a. FASTEN ALL BOXES SECURELY TO THE BUILDING CONSTRUCTION, INDEPENDENT OF CONDUIT SYSTEMS.
   b. ON CONCEALED CONDUIT SYSTEMS WHERE BOXES ARE NOT OTHERWISE ACCESSIBLE, SET BOXES FLUSH WITH FINISHED SURFACES FOR ACCESS, AND PROVIDE OVERLAPPING COVERS.
   c. ALL WIRING DEVICES FACEPLATES SHALL BE ENGRAVED WITH THE PANELBOARD DESIGNATION AND CIRCUIT NUMBER SERVING THE OUTLET. LABEL TAPE WILL NOT BE ACCEPTABLE.

D. OUTLET BOXES
1. OUTLET BOXES SHALL BE UL LISTED, AND OF SIZES AND TYPES REQUIRED FOR THE APPLICATION. OUTLET BOXES SHALL BE SHEET STEEL, NO LIGHTER THAN 14 GAUGE, GALVANIZED AFTER FABRICATION. SET BOX SO FACE OF BOX WILL FINISH FLUSH WITH BUILDING SURFACE.
   a. FOR LIGHTING FIXTURE OUTLETS: 4 INCH SQUARE BY 1-1/2 INCHES DEEP WITH RAISED FIXTURE RING.
   b. FOR WALL SWITCHES, RECEPTACLES, AND COMMUNICATION USE: 4 INCH SQUARE, BY 1-1/2 INCHES DEEP. USE BOXES WITH PLASTER RINGS IN ALL PLASTERED WALLS WHERE WALL THICKNESS PERMITS. USE BOXES LESS THAN 1-1/2 INCH DEEP ONLY IN LOCATIONS WHERE DEEP BOXES CANNOT BE ACCOMMODATED BY CONSTRUCTION.

E. PULL CORDS
1. PROVIDE A NYLON POLYETHYLENE CORD, WITH A TENSILE STRENGTH OF NOT LESS THAN 200 POUNDS, IN EACH EMPTY CONDUIT TO FACILITATE THE FUTURE INSTALLATION OF CONDUCTORS. INCORPORATE PLASTIC TAGS FOR IDENTIFICATION.

F. SEGREGATION OF WIRING SYSTEMS
1. SEGREGATION OF WIRING SYSTEMS SHALL NOT BE COMPROMISED BY THE USE OF COMMON PULLBOXES, WIREWAYS, CABINETS OR ANY OTHER TYPE OF ENCLOSURE.
2. THE RACEWAY SYSTEM FOR EACH FEEDER SHALL BE A SEPARATE SYSTEM COMPLETELY FAULT ISOLATED FROM ALL OTHER RACEWAY SYSTEMS.
3. THE RACEWAY SYSTEM FOR THE BRANCH CIRCUITS OF EACH PANELBOARD SHALL BE A SEPARATE SYSTEM COMPLETELY FAULT ISOLATED FROM ALL OTHER RACEWAY SYSTEMS.

16120 – SYSTEM OF CONDUCTORS

A. CONDUCTORS SHALL BE 98% CONDUCTIVITY SOFT DRAWN ANNEALED COPPER, 600 VOLT, THHN/THWN INSULATION, #10 AND SMALLER – SOLID, #8 AND LARGER – STRANDED.

B. NO CONDUCTORS SHALL BE SMALLER THAN NO. 12, EXCEPT FOR SIGNAL OR CONTROL CIRCUITS AND FOR INDIVIDUAL LIGHTING FIXTURE TAPS AS PERMITTED BY NEC.

C. FOR HOME RUNS ON 120-VOLT, 20-AMPERE BRANCH CIRCUITS, WHERE LENGTH OF RUN FROM PANELBOARD TO FIRST OUTLET EXCEEDS 100 LINEAR FEET, USE NO. 10 CONDUCTORS. WHERE LENGTH OF RUN IS 100 LINEAR FEET OR LESS, USE NO. 12 CONDUCTORS.

D. FOR HOME RUNS ON 277-VOLT, 20-AMPERE BRANCH CIRCUITS, WHERE LENGTH OF RUN FROM PANELBOARD TO FIRST OUTLET EXCEEDS 200 LINEAR FEET, USE NO. 10 CONDUCTORS. WHERE LENGTH OF RUN IS 100 LINEAR FEET OR LESS, USE NO. 12 CONDUCTORS.

E. RUN DEDICATED NEUTRAL CONDUCTOR WITH EACH BRANCH CIRCUIT. SHARING OF NEUTRAL CONDUCTORS WOULD NECESSITATE THE USE OF MULTIPLE POLE OR TIED CIRCUIT BREAKERS TO ALLOW SIMULTANEOUS DISCONNECTING OF CURRENT CARRYING CONDUCTORS IN ORDER TO COMPLY WITH NFPA 70 REQUIREMENTS AND THEREFORE IS UNACCEPTABLE.

F. PROVIDE COLOR CODED CABLE SYSTEM APPROVED BY OWNER. IF NONE IS REQUIRED BY OWNER, PROVIDE THE FOLLOWING COLOR CODING:

a. 480V/277	b. 208V/120
A PHASE – BROWN	A PHASE – BLACK
B PHASE – PURPLE	B PHASE – RED
C PHASE – YELLOW	C PHASE – BLUE
NEUTRAL – GREY	NEUTRAL – WHITE
GROUND – GREEN	GROUND – GREEN

COLOR CODING SHALL BE CONTINUOUS ON INSULATION FOR #6 AWG OR SMALLER AND CONTINUOUS OR MARKED WITH COLOR TAPE AT ALL CONNECTIONS FOR CONDUCTORS LARGER THAN #6 AWG.

G. INSTALLATION OF CONDUCTORS
1. PULL NO CONDUCTORS INTO CONDUITS UNTIL ALL WORK OF A NATURE WHICH MAY CAUSE INJURY TO CONDUCTORS IS COMPLETED.
2. RUN FEEDERS IN CONTINUOUS LENGTHS, WITHOUT JOINTS OR SPLICES, INSOFAR AS PRACTICABLE.
3. RUN CONDUITS FOR EMERGENCY POWER CONDUCTORS SEPARATE FROM ALL OTHER WIRING.
4. CABLE TYPE AC OR MC IS NOT ALLOWED FOR HOMERUN AND FEEDER INSTALLATIONS.

16140 – WIRING DEVICES

A. ALL WIRING DEVICES SHALL BE UL LISTED.

B. ACCEPTABLE MANUFACTURERS: PASS & SEYMOUR, HUBBEL, LEVITON, AND COOPER.

C. RECEPTACLES
1. RECEPTACLES SHALL BE 20A, 125V, 2-POLE, 3-WIRE, NEMA 5-20R CONFIGURATION, BACK AND SIDE WIRED WITH A GREEN EQUIPMENT GROUND SCREW OR AN AUTOMATIC GROUNDING SYSTEM ATTACHED TO THE STRAP U.N.O.
2. GFCI RECEPTACLES SHALL BE A FEED THROUGH TYPE WIRED FOR SINGLE RECEPTACLE PROTECTION THUS NOT AFFECTING RECEPTACLES DOWNSTREAM ON THE SAME CIRCUIT. THEY SHALL BE UL RATED CLASS 1 WITH 5mA GROUND FAULT TRIP LEVEL AND A 20A FEED-THROUGH RATING AND HAVE A NEMA 5-20R CONFIGURATION.
3. RECEPTACLE COLOR SHALL BE IVORY. THEY SHALL BE RED WHEN CONNECTED TO AN EMERGENCY CIRCUIT.

16160 – CABINETS AND ENCLOSURES

A. CABINETS SHALL BE GALVANIZED STEEL WITH GRAY BAKED ENAMEL FINISH AND SHALL BE SIZED AS REQUIRED OR INDICATED. FRONTS SHALL BE STEEL, FLUSH OR SURFACE TYPE INDICATED WITH CONCEALED HINGE, AND FLUSH LOCK KEYED TO MATCH BRANCH CIRCUIT PANELBOARD. FINISH WITH GRAY BAKED ENAMEL.

B. ENCLOSURES SHALL BE NEMA 250, TYPE 1 OR 3R, AS INDICATED ON DRAWINGS. THEY SHALL HAVE CONTINUOUS HINGED COVERS. PROVIDE INTERIOR METAL PANEL FOR MOUNTING TERMINAL BLOCKS AND ELECTRICAL COMPONENTS; FINISH WITH WHITE ENAMEL. ENCLOSURE FINISH SHALL BE MANUFACTURER'S STANDARD ENAMEL.

16190 – SUPPORTING DEVICES

A. ACCEPTABLE MANUFACTURERS: UNISTRUT CORP., B-LINE SYSTEMS, INC., AND MIDLAND ROSS-KINDORF.

B. FURNISH AND INSTALL ALL HANGERS AND SUPPORTS REQUIRED BY RACEWAY SYSTEMS.

C. HANGERS SHALL BE SUPPORTED BY MEANS OF UNCOATED SOLID STEEL RODS WHICH ARE THREADED TO ALLOW VERTICAL ADJUSTMENTS. LOCK NUTS SHALL BE PROVIDED IN SUFFICIENT NUMBER AND LOCATION TO LOCK ALL ROD ADJUSTMENTS PERMANENTLY AT THE ADJUSTED HEIGHT. TWO LOCK NUTS SHALL BE USED UNLESS THE NUT TIGHTENS AGAINST A THREADED SOCKET. MINIMUM ROD DIAMETERS SHALL BE AS FOLLOWS:

NOMINAL CONDUIT SIZE	ROD DIAMETER
1/2" THROUGH 2"	1/4"
2-1/2" THROUGH 3"	3/8"
4" AND 5"	1/2"

D. HANGER SPACING SHALL BE AS REQUIRED FOR PROPER SUPPORT OF RACEWAY, BUT IN NO CASE SHALL BE LESS THAN ONE HANGER PER 8'-0" OF RACEWAY LENGTH EXCEPT THAT CONDUIT LESS THAN 1" DIAMETER SHALL BE SUPPORTED AT LEAST EVERY 6'-0".

E. WHERE NUMEROUS CONDUITS ARE RUN PARALLEL TO ONE ANOTHER, THEY MAY BE SUPPORTED FROM A TRAPEZE TYPE HANGER ARRANGEMENT WITH STRUT BOTTOM.

F. SUPPORT OF HANGERS SHALL BE BY MEANS OF SUFFICIENT QUANTITIES OF INDIVIDUAL AFTER SET STEEL EXPANSION SHIELDS, OR BEAM CLAMPS ATTACHED TO STRUCTURAL STEEL.

G. STIFF-LEGS SHALL BE FURNISHED AND INSTALLED IN CASES WHERE SUPPORT FROM OVERHEAD STRUCTURE IS NOT POSSIBLE.

H. CEILING MOUNTED LIGHT FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE AT TWO OPPOSITE CORNERS. THE CONTRACTOR SHALL PROVIDE FIXTURE HANGERS TO PROPERLY INTERFACE WITH THE CEILING SYSTEM.

I. FURNISH AND INSTALL COMPLETE ANY ADDITIONAL STRUCTURAL SUPPORT STEEL, BRACKETS, FASTENERS, ETC. AS REQUIRED TO ADEQUATELY SUPPORT ALL RACEWAY AND EQUIPMENT.

J. SUPPORT OF HANGERS FROM CONCRETE SLABS SHALL BE BY MEANS OF SUFFICIENT QUANTITY OF "U" BRACKETS ATTACHED WITH AFTER SET EXPANSION SHIELDS AND BOLTS.

16195 – ELECTRICAL IDENTIFICATION

A. PROVIDE ELECTRICAL IDENTIFICATION FOR THE FOLLOWING:
1. SWITCHGEARS, SWITCHBOARDS, MOTOR CONTROL CENTERS, PANELBOARDS, MOTOR STARTERS, CONTACTORS, DISCONNECT SWITCHES, CIRCUIT BREAKERS, AND OTHER ELECTRICAL EQUIPMENT WITH NAMEPLATE IDENTIFYING THE ITEM OF EQUIPMENT SERVING THE SAME.
2. RACEWAYS, JUNCTION BOXES, AND PULL BOXES.
3. WIRING DEVICES, WIRING, AND THREE PHASE MOTOR ROTATION.

B. PROVIDE THE FOLLOWING COLOR CODING FOR ALL EQUIPMENT NAMEPLATES:
NORMAL SYSTEM – BLACK W/ WHITE LETTERS
EMERGENCY SYSTEM – RED W/ WHITE LETTERS

C. ALL NAMEPLATES SHALL INCLUDE VOLTAGE, PHASE, WIRE, BRANCH OF POWER CONNECTED TO, AND SOURCE OF POWER EQUIPMENT IS FED FROM. NAMEPLATES SHALL BE LAMINATED, WHITE CORE, PLASTIC WITH BEVELED EDGES, MINIMUM 1/16" THICK. LETTERING SHALL BE MACHINE ENGRAVED, NOT LESS THAN 1/4" HIGH, CUT THROUGH THE SURFACE TO THE WHITE CORE. NAMEPLATES SHALL BE SECURELY ATTACHED TO THE EQUIPMENT USING GALVANIZED SCREWS. ADHESIVES SHALL NOT BE USED.

D. ALL NAMEPLATES SHALL INCLUDE VOLTAGE, PHASE, WIRE, BRANCH OF POWER CONNECTED TO, AND SOURCE OF POWER EQUIPMENT IS FED FROM. NAMEPLATES SHALL BE LAMINATED, WHITE CORE, PLASTIC WITH BEVELED EDGES, MINIMUM 1/16" THICK. LETTERING SHALL BE MACHINE ENGRAVED, NOT LESS THAN 1/4" HIGH, CUT THROUGH THE SURFACE TO THE WHITE CORE. NAMEPLATES SHALL BE SECURELY ATTACHED TO THE EQUIPMENT USING GALVANIZED SCREWS. ADHESIVES SHALL NOT BE USED.

E. IDENTIFICATION OF JUNCTION AND PULL BOXES SHALL BE WITH A BLACK PERMANENT MARKING PEN ON THE TOP OF THE 4" X 4" JUNCTION BOX COVER OR ON THE BACK OF THE OUTLET BOX COVER PLATE IDENTIFYING THE BRANCH CIRCUITS AND SYSTEMS WITHIN THE CONDUIT. PULL BOXES SHALL BE PROVIDED WITH A NAMEPLATE STATING VOLTAGE AND SYSTEM SERVED.

F. ON THE FACE OF THE WIRING DEVICE WALL PLATE, MACHINE ENGRAVE THERMOPLASTIC PLATES WITH THE PANELBOARD AND BRANCH CIRCUIT NUMBER THE DEVICE IS SERVED FROM. ADHESIVE LABELS ARE NOT ALLOWED.

G. RACEWAY IDENTIFICATION SHALL BE PROVIDED AT A MINIMUM OF EVERY 50', AT EACH END IF LESS THAN 50', AND A MINIMUM OF ONCE PER ROOM OR SPACE THROUGH WHICH IT PASSES.

16440 – DISCONNECT SWITCHES

A. ACCEPTABLE MANUFACTURERS: CUTLER HAMMER, GENERAL ELECTRIC, OR SQUARE D.

B. SWITCHES SHALL BE HEAVY DUTY TYPE AND UL LISTED..

C. SWITCHES SHALL HAVE SWITCHBLADES WHICH ARE VISIBLE WHEN THE SWITCH IS OFF AND THE COVER IS OPEN.

D. LUGS SHALL BE FRONT REMOVABLE AND UL LISTED 60 OR 75 DEGREES C FOR CONDUCTOR 30-100A, AND 75 DEGREES C CONDUCTORS 200A AND UP.

E. SWITCH OPERATING MECHANISM SHALL BE QUICK-BREAK SUCH THAT, DURING NORMAL OPERATION OF THE SWITCH, THE OPERATION OF THE CONTACTS SHALL NOT BE CAPABLE OF BEING RESTRAINED BY THE OPERATING HANDLE AFTER THE CLOSING OR OPENING ACTION OF THE CONTACTS HAS STARTED.

F. THE OPERATING HANDLE SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER.

G. SWITCHES SHALL HAVE A DUAL COVER INTERLOCK MECHANISM TO PREVENT UNINTENTIONAL OPENING OF THE SWITCH COVER WHEN THE SWITCH IS ON AND PREVENT TURNING THE SWITCH ON WHEN THE COVER IS OPEN. THE COVER INTERLOCK MECHANISM SHALL HAVE AN EXTERNALLY OPERATED OVERRIDE BUT THE OVERRODE SHALL NOT PERMANENTLY DISABLE THE INTERLOCK MECHANISM. THE TOOL USED TO OVERRIDE THE COVER INTERLOCK MECHANISM SHALL NOT BE REQUIRED TO ENTER THE ENCLOSURE IN ORDER TO OVERRIDE THE INTERLOCK.

H. SWITCH COVERS SHALL BE ATTACHED WITH WELDED PIN-TYPE HINGES (NEMA TYPE 1) OR TOP HINGED, ATTACHED WITH REMOVABLE SCREWS AND SECURABLE IN THE OPEN POSITION (TYPE 3R).

I. THE ENCLOSURE SHALL HAVE ON AND OFF MARKINGS STAMPED TO THE COVER.

J. SWITCHES SHALL HAVE PROVISIONS TO ACCEPT UP TO 3/8" HASP PADLOCKS TO LOCK THE HANDLE IN THE OFF POSITION.

K. TANGENTIAL KNOCKOUTS SHALL BE PROVIDED TO FACILITATE EASE OF CONDUIT ENTRY (NEMA TYPE 1). TYPE 3R ENCLOSURE SHALL CONTAIN NO KNOCKOUTS. SUPPLY WATERTIGHT HUBS.

L. SWITCHES SHALL BE HORSEPOWER RATED.

M. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES AS INDICATED OR AS REQUIRED BY MANUFACTURER OF EQUIPMENT THAT THE SWITCH IS SERVING.

N. FUSIBLE SWITCHES: FOR 600 AMPERE AND SMALLER SWITCHES, PROVIDE UL LISTED REJECTION CLIPS TO REJECT ALL FUSES EXCEPT CLASS R; FOR 800 AMPERE AND LARGER SWITCHES, PROVIDE FUSE CLIPS FOR CLASS L FUSES. ALL SWITCHES UL LISTED SHORT CIRCUIT RATING OF 200,00 AMPERES RMS SYMMETRICAL.

O. ENCLOSED CIRCUIT BREAKER ENCLOSURES: NEMA 1 OR NEMA 3R AS INDICATED ON THE DRAWINGS. NEMA 1 ENCLOSURES: FURNISHED WITH KNOCKOUTS WHERE PRACTICAL; FABRICATED FROM SHEET STEEL, GALVANIZED AFTER FORMING; ELECTRODEPOSITED, GRAY BAKED ENAMEL FINISH. PROVIDE PADLOCKING PROVISIONS TO ALLOW LOCKING THE CIRCUIT BREAKER IN THE "OFF" POSITION. NEMA 3R ENCLOSURES FOR CIRCUIT BREAKERS RATED THRU THE 225 AMPERE FRAME SIZE FURNISHED WITH PROVISIONS FOR INTERCHANGEABLE, BOLT-ON HUBS. NEMA 3R ENCLOSURE COVERS SECURABLE IN THE OPEN POSITION. PROVIDE PADLOCKING PROVISIONS TO ALLOW LOCKING THE ENCLOSURE COVER CLOSED.

P. ALL ENCLOSED CIRCUIT BREAKER, FUSIBLE SWITCHES, AND DISCONNECT SWITCHES INSTALLED OUTSIDE OR IN WET OR DAMP LOCATIONS, SHALL BE IN A NEMA 3R ENCLOSURE.

16450 – GROUNDING

A. EXPOSED METALLIC PARTS OF THE ELECTRICAL SYSTEM WHICH ARE NOT INTENDED TO CARRY CURRENT, INCLUDING SYSTEM COMPONENTS SUCH AS BUSDUCTS, SWITCHBOARDS, PANELBOARDS AND RACEWAY SYSTEMS, AND INCLUDING GROUNDING AND NEUTRAL CONDUCTORS OF THE VARIOUS WIRING SYSTEMS, SHALL BE GROUNDED IN ACCORDANCE WITH NEC REQUIREMENTS.,

B. PROVIDE COPPER CLAD STEEL GROUND RODS 3/4 INCH DIAMETER 10 FEET LONG DESIGNED FOR DRIVEN INSTALLATION.

C. PROVIDE EXOTHERMIC TYPE CHEMICAL WELDED TYPE CONNECTORS FOR JOINING OF GROUNDING ELECTRODE CONDUCTORS TO GROUND RODS, GROUNDING PLATES AND SPLICING OF CONDUCTORS. PROVIDE COMPRESSION AND BOLTED TYPE CONNECTORS FOR JOINING OF GROUNDING ELECTRODE CONDUCTORS TO GROUND BARS.

D. PROVIDE MECHANICAL TYPE CONNECTORS FOR JOINING OF ALL EQUIPMENT AND ISOLATED GROUND CONDUCTORS.

E. SIZE GROUNDING CONDUCTORS IN ACCORDANCE WITH TABLES 250-66 AND 250-122 OF THE NEC.

F. PROVIDE GROUNDING BUSHINGS ON ALL RACEWAYS TERMINATING WITHIN ALL ELECTRICAL ENCLOSURES CONSTRUCTED OF SEPARATE ENCLOSURE PANELS WHICH ARE NOT INTEGRALLY WELDED TOGETHER. PROVIDE GROUNDING CONDUCTORS FROM SUCH BUSHINGS TO THE FRAME OF THE ENCLOSURE, GROUND BUS AND EQUIPMENT GROUNDING STRAP WHERE ONE OCCURS.

G. PROVIDE A SEPARATE GREEN-INSULATED EQUIPMENT GROUNDING CONDUCTOR, WITH INSULATION OF THE SAME RATING AS THE PHASE CONDUCTORS, FOR ALL FEEDERS AND BRANCH CIRCUITS. INSTALL THE GROUNDING CONDUCTORS IN THE RACEWAY WITH RELATED PHASE AND NEUTRAL CONDUCTORS. WHERE PARALLEL CONDUCTORS IN SEPARATE RACEWAYS OCCUR, PROVIDE A GROUNDING CONDUCTOR IN EACH RACEWAY. CONNECT ALL GROUNDING CONDUCTORS TO GROUND TERMINALS AT EACH END OF THE RUN, TO THE END THAT THERE WILL BE NO UNINTERRUPTED GROUNDING CIRCUIT FROM THE POINT OF GROUND FAULT BACK TO A POINT OF CONNECTION OF THE EQUIPMENT GROUND AND SYSTEM NEUTRAL.

H. CONNECT THE SECONDARY NEUTRAL POINT AND THE ENCLOSURE IN EACH DRY TYPE TRANSFORMER TOGETHER AND RUN A GROUNDING ELECTRODE CONDUCTOR FROM THEIR COMMON POINT OF CONNECTION TO THE BUILDING GROUNDING ELECTRODE SYSTEM.

I. PERFORM THE FOLLOWING TESTS:
1. TEST THE CONTINUITY OF, AND THE PROPER CONNECTION OF, EACH GROUND CONDUCTOR AND SYSTEM, TO ASSURE THAT THE GROUNDING SYSTEM IS COMPLETE AND UNINTERRUPTED. TESTING SHALL BE PERFORMED USING LABORATORY-ACCURACY TEST INSTRUMENTS OF SUITABLE DESIGN FOR THE TESTS TO BE PERFORMED. TEST INSTRUMENTS SHALL BE PROVIDED UNDER DIVISION 16.
2. TEST GROUNDING CONDUCTORS, PHASE CONDUCTORS AND NEUTRAL CONDUCTORS FOR CONTINUITY AND FOR POSSIBLE DAMAGE TO INSULATION. EACH CONDUCTOR SHALL BE TESTED FOR INSULATION FROM GROUND AND FROM OTHER CONDUCTORS.
3. ANY PORTIONS OF THE INSTALLATIONS WHICH FAIL TO PASS THESE TESTS SHALL BE REPLACED, REPAIRED OR OTHERWISE CORRECTED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE, AND COMPLETELY RETESTED TO SHOW PROPER CONFORMITY.
4. CONTRACTOR IS RESPONSIBLE FOR TESTING THE EFFECTIVENESS OF THE GROUNDING SYSTEM FOR ALL ELECTRICAL DEVICES IN THE SCOPE OF WORK AREA BY VOLTAGE AND IMPEDANCE MEASUREMENTS AS INDICATED IN NFPA 99, 4.3.3.1.3 & 4.3.3.1.4 RESPECTIVELY. THE RESULTS SHALL BE RECORDED WITH A METER THAT HAS BEEN CALIBRATED WITHIN THE LAST 12 MONTHS. THE METER AND TYPED OR PRINTED RECORDED RESULTS SHALL BE MADE AVAILABLE AT TIME OF FINAL INSPECTION.

16460 – TRANSFORMERS – INDOOR DRY TYPE

A. ACCEPTABLE MANUFACTURERS: CUTLER HAMMER, GENERAL ELECTRIC, OR SQUARE D.

B. TRANSFORMERS SHALL BE UL LISTED AND LABELED, AND CONSTRUCTED IN ACCORDANCE WITH NEMA STANDARDS.

C. TRANSFORMER COILS SHALL BE OF CONTINUOUS WOUND CONSTRUCTION AND SHALL BE IMPREGNATED WITH NONHYGROSCOPIC, THERMOSETTING VARNISH.

D. TRANSFORMERS 15KVA AND LARGER SHALL BE 150°C RISE ABOVE 40°C AMBIENT. TRANSFORMERS 25KVA AND LARGER SHALL HAVE A MINIMUM OF 4-2 1/2% FULL CAPACITY PRIMARY TRAPS.

E. ALL INSULATING MATERIALS SHALL BE IN ACCORDANCE WITH NEMA ST20 STANDARDS FOR 220°C UL COMPONENT RECOGNIZED INSULATION SYSTEM. TRANSFORMERS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ANSI STANDARDS C57.12.01 AND C57.12.91.

F. CONSTRUCT ALL CORES OF HIGH GRADE, NON-AGING SILICON MEANS OF RUBBER, VIBRATION-ABSORBING MOUNTS. THERE STEEL WITH HIGH MAGNETIC FLUX DENSITIES WELL BELOW THE SATURATION POINT. CLAMP THE CORE LAMINATIONS TOGETHER WITH STEEL ANGLES. BOLT THE COMPLETED CORE AND COIL TO THE BASE OF THE ENCLOSURE BUT ISOLATED THEREFROM BY SHALL BE NO METAL-TO-METAL CONTACT BETWEEN THE CORE AND COIL AND THE ENCLOSURE. SOUND ISOLATION SYSTEMS REQUIRING THE COMPLETE REMOVAL OF ALL FASTENING DEVICES WILL NOT BE ACCEPTABLE.

G. VISIBLY GROUND THE CORE OF THE TRANSFORMER TO THE ENCLOSURE BY MEANS OF A FLEXIBLE GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH APPLICABLE UL AND NEC STANDARDS.

H. THE TRANSFORMER ENCLOSURES SHALL BE VENTILATED AND BE FABRICATED OF HEAVY GAUGE, SHEET STEEL CONSTRUCTION. THE ENTIRE ENCLOSURE SHALL BE FINISHED UTILIZING A CONTINUOUS PROCESS CONSISTING OF DEGREASING, CLEANING AND PHOSPHATIZING, FOLLOWED BY ELECTROSTATIC DEPOSITION OF A POLYMER POLYESTER POWER COATING AND BAKING CYCLE TO PROVIDE UNIFORM COATING OF ALL EDGES AND SURFACES. THE COATING SHALL BE ANSI 49 GRAY, BAKED ENAMEL.

I. THE MAXIMUM TEMPERATURE OF THE TOP OF THE ENCLOSURE SHALL NOT EXCEED 50°C RISE ABOVE A 40°C AMBIENT.

J. SOUND LEVELS SHALL BE WARRANTED BY THE MANUFACTURER NOT TO EXCEED THE FOLLOWING:

K. INSTALLATION OF TRANSFORMERS
1. TRANSFORMERS 15KVA OR LESS SHALL BE WALL OR FLOOR MOUNTED OR SUSPENDED AS INDICATED. 30KVA AND 45KVA TRANSFORMERS SHALL BE FLOOR MOUNTED OR SUSPENDED AS INDICATED. TRANSFORMERS GREATER THAN 45 KVA SHALL BE FLOOR MOUNTED.
2. FLOOR MOUNTED TRANSFORMERS SHALL BE SET ON A CONCRETE HOUSEKEEPING PAD WITH A NEOPRENE VIBRATION ISOLATING PAD.
3. WALL MOUNTED AND SUSPENDED TRANSFORMERS SHALL UTILIZE APPROPRIATE HARDWARE BASED ON THE WEIGHT OF THE UNIT AND INSTALLATION LOCATION. WALL MOUNTED UNITS SHALL HAVE NEOPRENE VIBRATION ISOLATORS BETWEEN THE WALL AND TRANSFORMER.
3. WALL MOUNTED AND SUSPENDED TRANSFORMERS SHALL UTILIZE APPROPRIATE HARDWARE BASED ON THE WEIGHT OF THE UNIT AND INSTALLATION LOCATION. WALL MOUNTED UNITS SHALL HAVE NEOPRENE VIBRATION ISOLATORS BETWEEN THE WALL AND TRANSFORMER.
4. WIRING CONNECTIONS TO TRANSFORMER ENCLOSURE SHALL BE MADE USING FLEXIBLE METAL CONDUIT WITH MINIMUM 12" LENGTH.
5. PROVIDE TRANSFORMER GROUNDING IN ACCORDANCE WITH SECTION 16450.

16470 – PANELBOARDS

A. ACCEPTABLE MANUFACTURERS: CUTLER HAMMER, GENERAL ELECTRIC, OR SQUARE D.

B. PROVIDE TIME/CURRNET CHARACTERISTIC TRIP CURVES FOR EACH TYPE OF OVERCURRENT PROTECTIVE DEVICE.

C. LIGHTING AND APPLIANCE PANELBOARDS
1. PANELBOARDS SHALL BE RATED 240V OR 480/277V AS INDICATED ON THE DRAWINGS. CONTINUOUS MAIN CURRENT RATINGS SHALL BE AS INDICATED ON THE DRAWINGS. MINIMUM SHORT CIRCUIT RATINGS SHALL BE AS INDICATED ON THE DRAWINGS.
2. PROVIDE ONE (1) CONTINUOUS BUS BAR PER PHASE. EACH BUS BAR SHALL HAVE SEQUENTIALLY PHASED BRANCH CIRCUIT CONNECTORS SUITABLE FOR PLUG-ON OR BOLT-ON BRANCH CIRCUIT BREAKERS. THE BUSSING SHALL BE FULLY RATED. PANELBOARD BUS CURRENT RATINGS SHALL BE DETERMINED BY HEAT-RISE TESTS CONDUCTED IN ACCORDANCE WITH UL 67. BUSSING RATED 100-400A SHALL BE COPPER. BUSSING RATED FOR 600A SHALL BE COPPER AS STANDARD CONSTRUCTION. PANELBOARDS SHALL BE SUITABLE FOR USE AS SERVICE EQUIPMENT WHEN APPLICATION REQUIREMENTS COMPLY WITH UL 67 AND NEC ARTICLES 230-F AND G.
3. ALL CURRENT CARRYING PARTS SHALL BE INSULATED FROM GROUND AND PHASE-TO-PHASE BY NORYL HIGH DIELECTRIC STRENGTH THERMOPLASTIC OR EQUIVALENT.
4. SPLIT SOLID NEUTRAL SHALL BE PLATED AND LOCATED IN THE MAINS COMPARTMENT UP TO 225A SO ALL INCOMING NEUTRAL CABLE MAY BE OF THE SAME LENGTH.
5. INTERIOR TRIM SHALL BE OF DEAD-FRONT CONSTRUCTION TO SHIELD USER FROM ENERGIZED PARTS. DEAD-FRONT TRIM SHALL HAVE PRE-FORMED TWISTOUTS COVERING UNUSED MOUNTING SPACE.
6. METAL NAMEPLATES SHALL BE SECURED TO DEAD-FRONT WITH RIVETS OR SCREWS. STICKER OR FOIL NAMEPLATES ARE NOT PERMITTED. INTERIOR WIRING DIAGRAM, NEUTRAL WIRING DIAGRAM, UL LISTED LABEL AND SHORT CIRCUIT CURRENT RATING SHALL BE DISPLAYED ON THE INTERIOR.
7. INTERIORS SHALL BE FIELD CONVERTIBLE FOR TOP OR BOTTOM INCOMING FEED. MAIN AND SUB-FEED CIRCUIT BREAKERS SHALL BE VERTICALLY MOUNTED. MAIN LUG INTERIORS UP TO 400A SHALL BE FIELD CONVERTIBLE TO MAIN BREAKER. INTERIOR LEVELING PROVISIONS SHALL BE PROVIDED FOR FLUSH MOUNTED APPLICATIONS.
8. MAIN BREAKERS: SHALL BE MOLDED CASE TYPE, WITH A PUSH-TO-TRIP BUTTON FOR MAINTENANCE AND TESTING PURPOSES. BREAKER HANDLE AND AND FACEPLATE SHALL INDICATE RATED AMPACITY. LUGS SHALL BE UL LISTED TO ACCEPT SOLID OR STRANDED COPPER CONDUCTORS ONLY. LUGS SHALL BE SUITABLE FOR 75°C RATED WIRE.
9. NEMA 1 BOXES: BOXES SHALL BE GALVANIZED STEEL CONSTRUCTED IN ACCORDANCE WITH UL 50. BOXES SHALL HAVE REMOVABLE ENDWALLS WITH KNOCKOUTS LOCATED ON ONE END. BOXES SHALL HAVE WELDED INTERIOR MOUNTING STUDS. INTERIOR MOUNTING BRACKETS ARE NOT REQUIRED.
10. NEMA 1 TRIM FRONTS: TRIM FRONTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL 50. TRIM FRONTS SHALL HAVE DOOR-IN-DOOR WITH MULTI POINT CATCH AND LOCK, AND CONCEALED MOUNTING HARDWARE.
11. COORDINATE THE PANELBOARD BUS RATINGS AND CIRCUIT BREAKER COORDINATION RATINGS WITH THE AVAILABLE FAULT CURRENT.

16475 – OVERCURRENT PROTECTIVE DEVICES

A. PROVIDE DATA SHEETS SHOWING ELECTRICAL CHARACTERISTICS INCLUDING TIME-CURRENT CURVES AS PART OF THE SHOP DRAWING SUBMITTAL.

B. FAULT CURRENT VALUES INDICATED ON THE DRAWINGS ARE BASED ON ACTUAL AVAILABLE FAULT VALUES AT EACH SWITCHBOARD, PANELBOARD AND ANY OTHER SIMILAR EQUIPMENT. EQUIPMENT MANUFACTURERS SHALL PROVIDE EQUIPMENT AND PROTECTIVE DEVICES SUITABLY RATED FOR THE CONFIGURATIONS INDICATED RATED FOR THE AVAILABLE FAULT CURRENT INDICATED. SERIES RATING OF DEVICES IS NOT ACCEPTABLE.

C. CIRCUIT BREAKERS
1. CIRCUIT BREAKER MANUFACTURER SHALL BE THE SAME AS THE SWITCHBOARD/PANELBOARD/MOTOR CONTROL CENTER MANUFACTURER.

D. FUSES
1. ACCEPTABLE MANUFACTURERS: BUSSMAN, GOUL SHAWMUT, OR LITTLEFUSE
2. FUSES SHALL HAVE 200,000 RMS SYMMETRICAL AMPERE INTERRUPTING CAPACITY AT 600V OR LESS, CURRENT LIMITING TYPE; TIME DELAY CHARACTERISTICS – 10 SECONDS (MINIMUM) AT 500% RATED CURRENT; UL CLASS RK1.

E. SELF-CONTAINED CIRCUIT BREAKER ENCLOSURES SHALL BE PADLOCKABLE NEMA 1, EXCEPT FOR UNITS IN DAMP OR WET AREAS WHICH SHALL BE A NEMA 3R ENCLOSURE WITH CONDUIT HUBS.

F. ENCLOSURES FOR SELF-CONTAINED UNITS SHALL BE SECURELY MOUNTED TO WALL AND SHALL BE LEVEL AND TRUE. MOUNTING HEIGHT SHALL BE PLUS 54" A.F.F. TO CENTER OF BREAKER U.N.O.

G. FURNISH A NUMBER OF SPARE FUSES EQUALING 10% OF QUANTITY INSTALLED BUT NOT LESS THAN THREE (3) FUSES OF EACH TYPE AND RATING.

H. INSTALL FUSES WITH LABEL ORIENTED SUCH THAT THE MANUFACTURER, TYPE AND SIZE ARE EASILY READ.

16500 – LIGHTING FIXTURES

A. FIXTURES SHALL BE COMPLETE WITH LAMPS, BALLASTS AND RELATED AUXILIARY EQUIPMENT AND ACCESSORIES NECESSARY TO THE INTENDED OPERATION, INCLUDING MOUNTING DEVICES REQUIRED FOR EACH TYPE OF INSTALLATION.

B. INSTALLATION
1. THE WEIGHT OF EACH FIXTURE SHALL REST ONLY ON THE FIXTURE SUPPORT SYSTEM AND ATTACHED TO CEILING CHANNELS. PROVIDE HANGERS, CABLES, SUPPORTS, CHANNELS, FRAMES AND BRACKETS OF EACH KIND REQUIRED TO ERECT THIS EQUIPMENT SAFELY IN PLACE.
2. THE WEIGHT OF EACH FIXTURE SHALL REST ONLY ON THE FIXTURE SUPPORT SYSTEM AND ATTACHED TO CEILING CHANNELS. PROVIDE HANGERS, CABLES, SUPPORTS, CHANNELS, FRAMES AND BRACKETS OF EACH KIND REQUIRED TO ERECT THIS EQUIPMENT SAFELY IN PLACE.
3. THE MOUNTING BRACKETS SHALL BE INSTALLED TO OVERLAP THE CEILING SUPPORT CHANNELS IN ORDER TO PREVENT THE CHANNELS FROM SHIFTING FROM UNDERNEATH THE FIXTURES.
4. THE LIGHTING FIXTURE INSTALLATION SHALL NOT INTERFERE WITH THE INSTALLATION OR REMOVAL OF ADJACENT CEILING PANELS.
5. RECESSED FIXTURES IN DROPPED CEILING AREAS SHALL BE CONNECTED USING FLEXIBLE CONDUIT. CONDUIT SHALL BE CONNECTED TO FIXTURE AND OUTLET BOX. EACH PIECE SHALL HAVE A SEPARATE INSULATED GREEN GROUNDING CONDUCTOR #14 MIN. FOR GROUNDING CONTINUITY BETWEEN THE FIXTURE AND THE CONDUIT SYSTEM. GROUNDING CONDUCTOR SHALL BE MECHANICALLY CONNECTED IN A PERMANENT AND EFFECTIVE MANNER TO FIXTURE AND CONDUIT SYSTEM AND BE ELECTRICALLY CONTINUOUS.

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NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL SPECIFICATIONS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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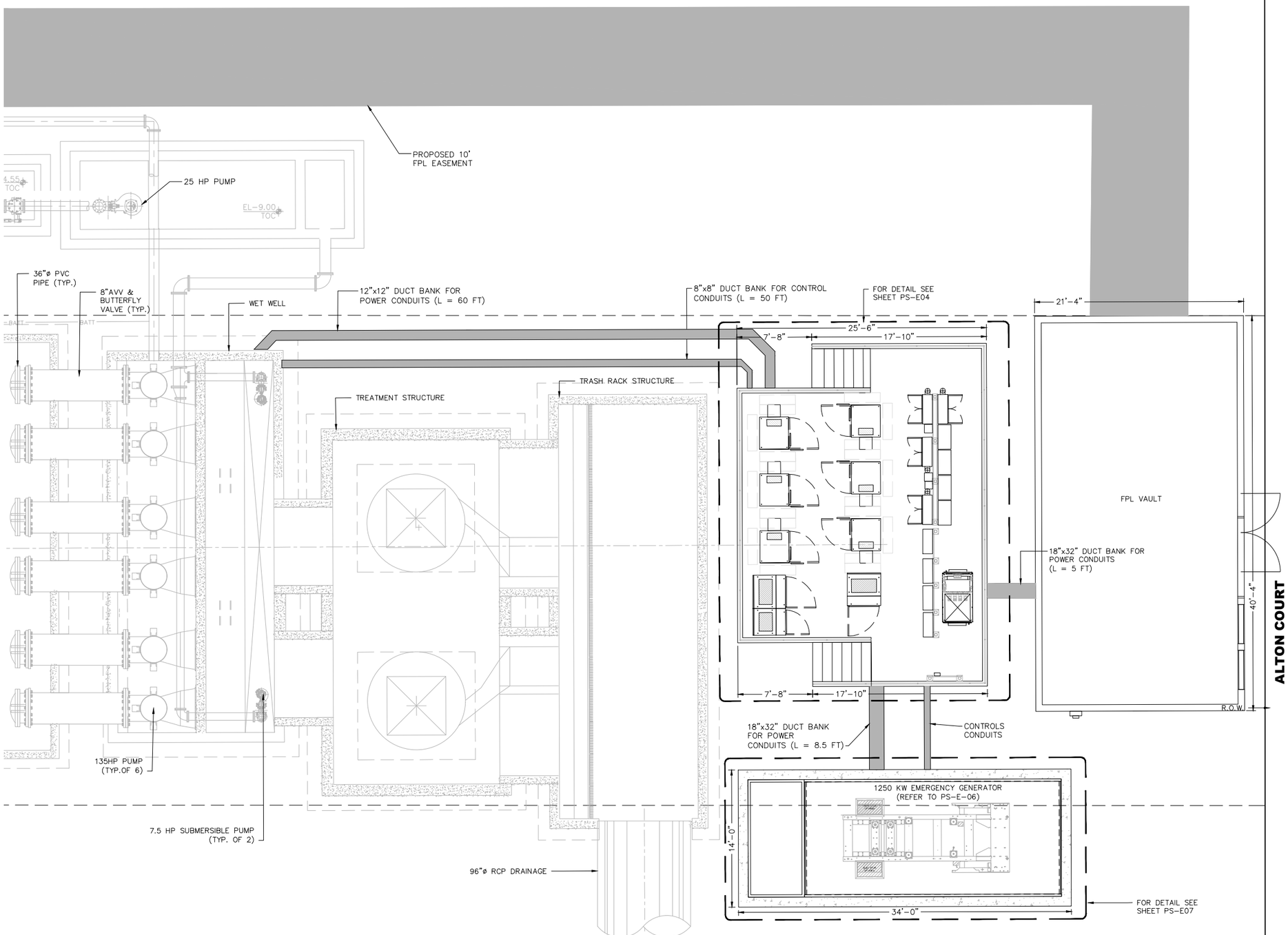
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-E02.dwg
Survey Reference:
Field Book: ______ Page: ______ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: ______ Drawing: PS-E02



N

0 10' 20'

(SCALE FOR 11" x 17" SHEET)

SCOPE OF WORK:

1. FURNISH AND INSTALL NEW ELECTRIC METER CAN, AND NEW ELECTRIC PLATFORM CONTAINING MAIN DISCONNECT SWITCH, MSA, VFDS, AUTOMATIC TRANSFER SWITCH, GENERATOR EMERGENCY SHUT-DOWN BUTTON, CONTROL PANELS COMPLETE, PUMPS MOTOR CONNECTION BOXES AND CONTROL CONNECTION BOXES, AND LOW VOLTAGE TRANSFORMERS AND PANELS INCLUDING BREAKERS. REFER TO ELECTRICAL SHEETS.
2. INSTALL COMPLETE 1250KW/60HZ/480V, EMERGENCY GENERATOR SET WITH SOUND ATTENUATED ENCLOSURE, SUB-BASE TANK. REFER TO SHEET E-07 FOR DETAILS.
3. FURNISH AND INSTALL GROUNDING AND GROUND RINGS FOR ALL ELECTRICAL SYSTEMS PER NEC. SEE SHEETS E08 AND E-09 FOR DETAILS.
4. FURNISH AND INSTALL FLOATS AND SENSING DEVICES INTO THE WET WELL AND VALVE VAULT FOR PUMPS CONTROL AND MONITORING.
5. FURNISH AND INSTALL ALL DUCTBANKS, CONDUITS, FITTINGS, SUPPORTS, WIRES, CABLES, JUNCTION BOXES, PULL BOXES, WIREWAYS, SLEEVES, SEALS, AND ANY OTHER MATERIAL DEEMED NECESSARY FOR THE PROPER INSTALLATION AND ADEQUATE OPERATION OF THE EQUIPMENT INCLUDED IN THIS SCOPE OF WORK.
6. FURNISH AND INSTALL LABELS AND SIGNS AS REQUIRED.

NOTES:

1. COORDINATE ELECTRICAL SERVICE AND WORK WITH FPL PROJECT MANAGER.
2. CONTRACTOR TO INSTALL NEW UNDERGROUND DUCTBANK SERVICE TO FPL VAULT PRIMARY.
3. COORDINATE WITH FPL REPRESENTATIVE TO PROVIDE TEMPORARY POWER SERVICE.
4. FURNISH, INSTALL AND MAINTAIN TEMPORARY POWER AND LIGHTING AS NEEDED FOR ALL TRADES.
5. CONTRACTOR TO INSTALL NEW GROUNDING SYSTEM AND TIE NEW GENERATOR GROUND ROD TO NEW GROUNDING SYSTEM.
6. THE INFORMATION PROVIDED IN THESE PLANS IS TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT ANY INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED.
7. CONTRACTOR SHALL PERFORM ALL WORK WITHIN PROPERTY AND EASEMENT, AND SHALL NOT DISTURB ADJACENT PRIVATE PROPERTY.
8. CONTRACTOR SHALL VERIFY EXISTING BURIED UTILITIES AND RELOCATE AS NEEDED.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
10. THE CONTRACTOR SHALL MAINTAIN A SET OF PLANS WITH CURRENT FIELD CHANGES MARKED THEREON AND SHALL DELIVER THESE PLANS TO THE ENGINEER UPON COMPLETION OF CONSTRUCTION. PROVIDE COMPLETE AS-BUILT DATA AT THE PROJECT'S COMPLETION.
11. SEE GENERAL NOTES ON SHEET E-1 FOR AREA CLASSIFICATIONS AND THEIR BOUNDARIES.
12. UNLESS OTHERWISE NOTED, ALL ELECTRICAL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
13. SEE DETAILS FOR EQUIPMENT MOUNTING.
14. CONTRACTOR SHALL FIELD ROUTE NEW DUCTBANKS, CONDUITS, PROVIDE ALL CONDUIT AND CABLE AS SHOWN ON THE POWER/CONTROL DIAGRAMS AND DETAILS SHEET, AND ELECTRICAL CONTROL PANEL AND DETAILS.
15. REFER TO SHEET SS-1 FOR IDENTIFICATION OF PROPERTY LIMITS.

LEGEND:

BATT	BURIED ATT
BCMB	BURIED LIGHTING
BFPL	BURIED FPL
BGT	BURIED GAS
BFOAB	BURIED FIBER OPTIC
WM	EXISTING WATER MAIN
	PROPOSED DUCT BANK

GENERAL PLAN

SCALE: 3/16"=1'-0"

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NOT FOR CONSTRUCTION

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL PUMP STATION - GENERAL PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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2	04/08/21	60% SUBMITTAL – STRUCTURAL
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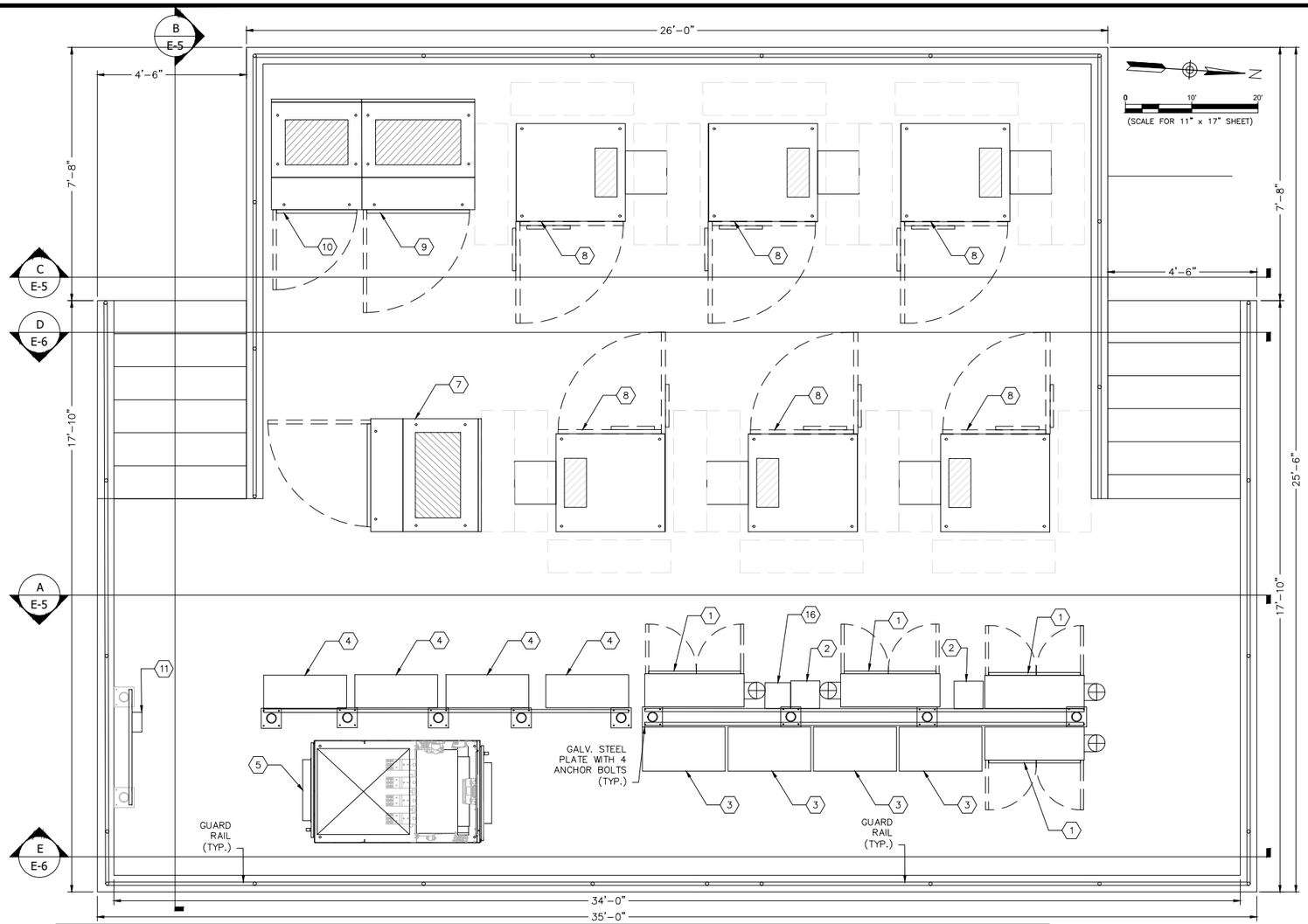
File Name: PS-E03.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-E03



PLATFORM LAYOUT

SCALE: 1/2"=1'-0"

EQUIPMENT SCHEDULE

ID	DESCRIPTION	PROPERTIES	NOTES
1	CONTROL PANEL	PUMP CONTROL PANEL	PUMP SUPPLIER TO PROVIDE QTY 4.
2	T-2, T-3, T-4, T-5	10KVA, 480-240/120V 1PH	PUMP SUPPLIER TO PROVIDE QTY 4.
3	PUMP MOTOR CONNECTION BOX	PUMP MOTOR CONNECTION BOX.	PUMP SUPPLIER TO PROVIDE QTY 4 BOXES WITH SITE SPECIFIC PUMP CABLES.
4	CONTROL CONNECTION BOX	PUMP CONTROL CONNECTION BOX.	PUMP SUPPLIER TO PROVIDE QTY 4 BOXES AND SITE SPECIFIC FLOAT AND TRANSDUCER CABLES.
5	AUTOMATIC TRANSFER SWITCH (ATS)	AUTOMATIC TRANSFER SWITCH	GENSET MANUFACTURER TO PROVIDE
7	MAIN DISCONNECT	NEW MAIN DISCONNECT SERVICE ENTRANCE.	CONTRACTOR TO PROVIDE AND INSTALL NEUTRAL TO GROUND BOND PER NEC.
8	VARIABLE FREQUENCY DRIVE (VFD)	VFD PUMP MOTOR CONTROLLER WITH INTEGRAL AIR CONDITIONER.	PUMP SUPPLIER TO PROVIDE QTY 6.
9	MOTOR CONTROL CENTER (MCC)	MCC-SWGR MOTOR CONTROL CENTER PANEL 1.	PUMP SUPPLIER TO PROVIDE.
10	MOTOR CONTROL CENTER (MCC)	MCC-SWGR MOTOR CONTROL CENTER PANEL 2.	PUMP SUPPLIER TO PROVIDE.
11	GENSET ESTOP	REMOTE GENSET EMERGENCY STOP	GENSET SUPPLIER TO PROVIDE
16	T-1	30KVA, 480-208Y/120V 3PH	CONTRACTOR TO PROVIDE

PLATFORM CONDUIT SCHEDULE

PANEL	QTY	SIZE (IN)	DESCRIPTION
FPL METER	1	2	TO FPL VAULT
MAIN DISCONNECT	4	4	TO FPL VAULT
	4	4	TO ATS
	1	1	TO CP1
	1	2	TO GND
ATS	4	4	FROM GENERATOR
	4	4	FROM MAIN DISCONNECT
	4	4	TO MCC
	1	1	TO GENERATOR
	1	1	TO CP1
MCC	4	4	TO ATS
	1	2	TO T-1
	1	1	TO T-2
	1	1	TO T-3
	6	3	TO PUMP 1-6 VFDS
	1	2	GROUND
	1	2	TO CP3
	1	2	TO CP4
GENERATOR	4	4	TO ATS
	1	2	TO T-1
	1	1	TO ATS
	1	1	ESTOP
	1	2	T-1
	1	2	GROUND
VFD 1	1	3	TO MCC
	1	3	TO PUMP MOTOR CONNECTION BOX 1
	1	1	TO CP1
VFD 2	1	3	TO MCC
	1	3	TO PUMP MOTOR CONNECTION BOX 1
	1	1	TO CP1
VFD 3	1	3	TO MCC
	1	3	TO PUMP MOTOR CONNECTION BOX 1
	1	1	TO CP1
VFD 4	1	3	TO MCC
	1	3	TO PUMP MOTOR CONNECTION BOX 2
	1	1	TO CP2
VFD 5	1	3	TO MCC
	1	3	TO PUMP MOTOR CONNECTION BOX 2
	1	1	TO CP2
VFD 6	1	3	TO MCC
	1	3	TO PUMP MOTOR CONNECTION BOX 2
	1	1	TO CP2
T-1	1	2	TO GENERATOR (ACC PANEL)
	1	2	TO MCC
	1	3/4	GROUND
T-2	1	2	CP1
	1	1	TO MCC
	1	3/4	GROUND
T-3	1	2	CP2
	1	1	TO MCC
	1	3/4	GROUND
T-4	2	1	CP3
	1	3/4	GROUND
T-5	2	1	CP4
	1	3/4	GROUND
CP1	1	1	TO VFD1
	1	1	TO VFD2
	1	1	TO VFD3
	1	1	TO MAIN DISCONNECT
	1	1	TO ATS
	1	1	TO MCC
	3	1	TO CONTROL CONNECTION BOX 1
	1	2	CP2
	1	1	T2

PLATFORM CONDUIT SCHEDULE

CP2	1	1	TO VFD4
	1	1	TO VFD5
	1	1	TO VFD6
	1	1	TO MAIN DISCONNECT
	1	1	TO ATS
	1	1	TO MCC
	3	1	TO CONTROL CONNECTION BOX 2
	1	2	CP1
	1	1	T3
CP3	1	2	TO MCC
	3	1	TO CONTROL CONNECTION BOX 3
	3	2	TO PUMP MOTOR CONNECTION BOX 3
	2	1	T4
CP4	1	2	TO MCC
	3	1	TO CONTROL CONNECTION BOX 4
	3	1-1/2	TO PUMP MOTOR CONNECTION BOX 4
	2	1	T5
PUMP MOTOR CONNECTION BOX 1	1	3	TO VFD1
	1	3	TO VFD2
	1	3	TO VFD3
	1	2	TO PUMP1
	1	2	TO PUMP2
	1	2	TO PUMP3
PUMP MOTOR CONNECTION BOX 2	1	3	TO VFD4
	1	3	TO VFD5
	1	3	TO VFD6
	1	2	TO PUMP4
	1	2	TO PUMP5
	1	2	TO PUMP6
PUMP MOTOR CONNECTION BOX 3	1	2	TO CP3
	2	2	TO CP3 (SPARE)
	1	2	TO PUMP7
	2	2	TO PUMP7 (SPARE)
PUMP MOTOR CONNECTION BOX 4	2	1-1/2"	TO CP4
	1	1-1/2"	TO CP4 (SPARE)
	1	1-1/2"	TO PUMP8
	1	1-1/2"	TO PUMP8 (SPARE)
	1	1-1/2"	TO PUMP9
CONTROL CONNECTION BOX 1	1	1	TO FLOATS 1
	1	1	TO FLOATS 2
	1	1	TO FLOATS 3
	3	1	TO CP1
CONTROL CONNECTION BOX 2	1	1	TO LEVEL SENSOR 1
	1	1	TO LEVEL SENSOR 2
	1	1	TO LEVEL SENSOR 3
	3	1	TO CP2
CONTROL CONNECTION BOX 3	1	1	TO DW FLOATS
	1	1	TO DW LEVEL SENSOR
	1	1	SPARE
	3	1	TO CP3
CONTROL CONNECTION BOX 4	1	1	TO SUMP FLOATS
	1	1	TO SUMP LEVEL SENSOR
	1	1	SPARE
	3	1	TO CP4
ESTOP	1	3/4	TO GENSET

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL EQUIPMENT PLATFORM - LAYOUT

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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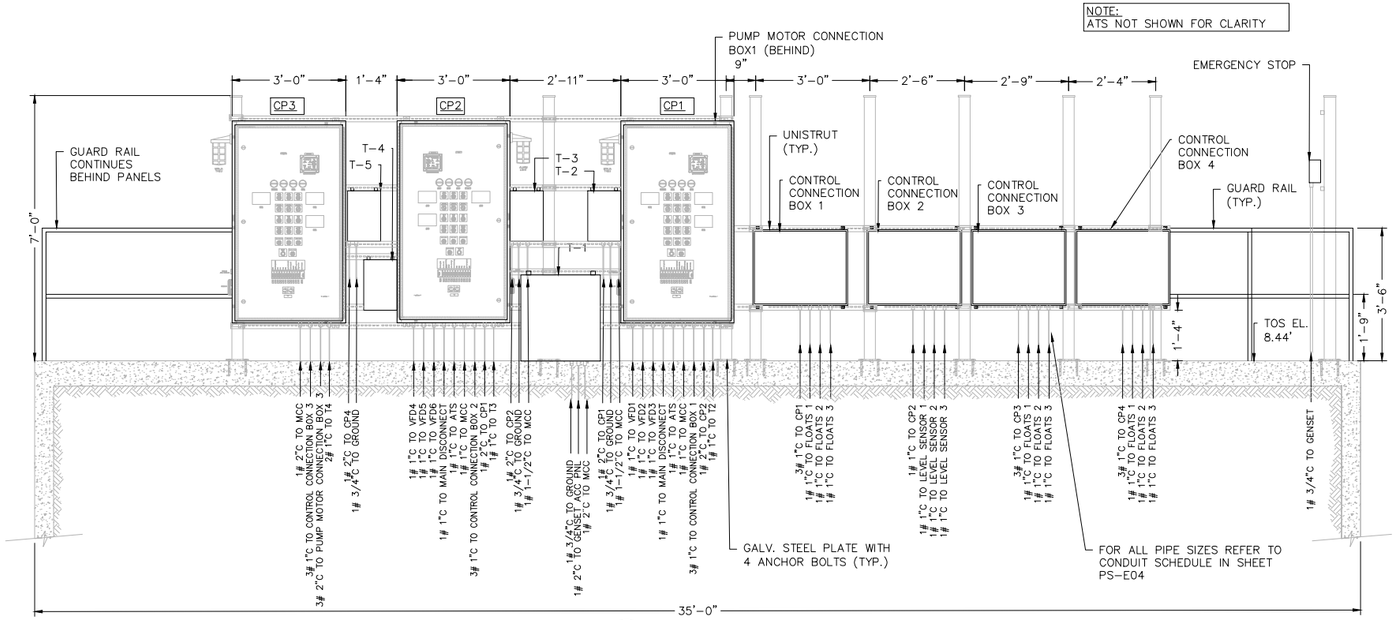
File Name: PS-E04.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: PS-E04

NOTE:
ATS NOT SHOWN FOR CLARITY



A PS-E05 **SECTION**
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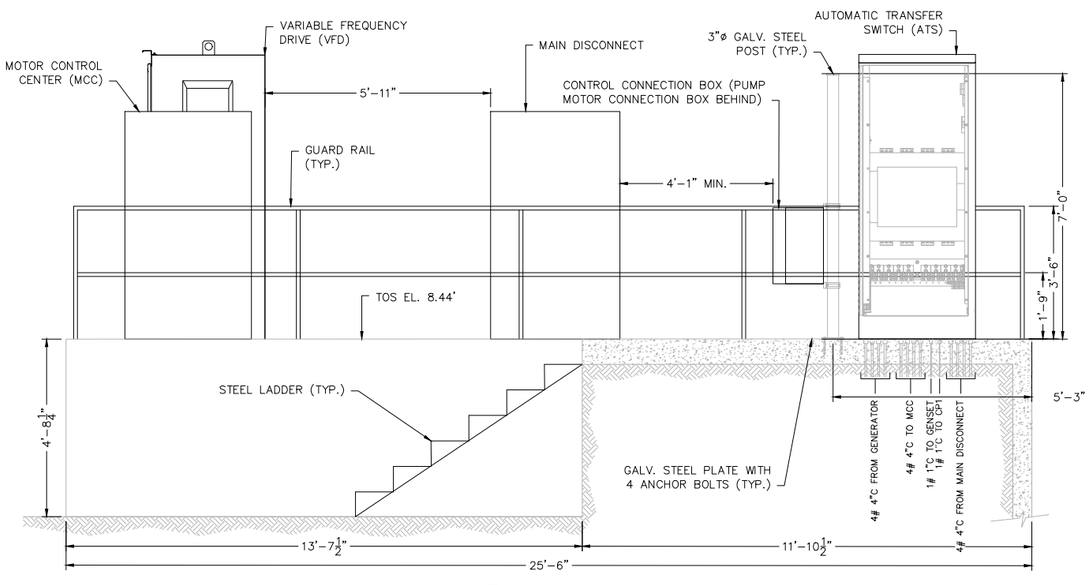

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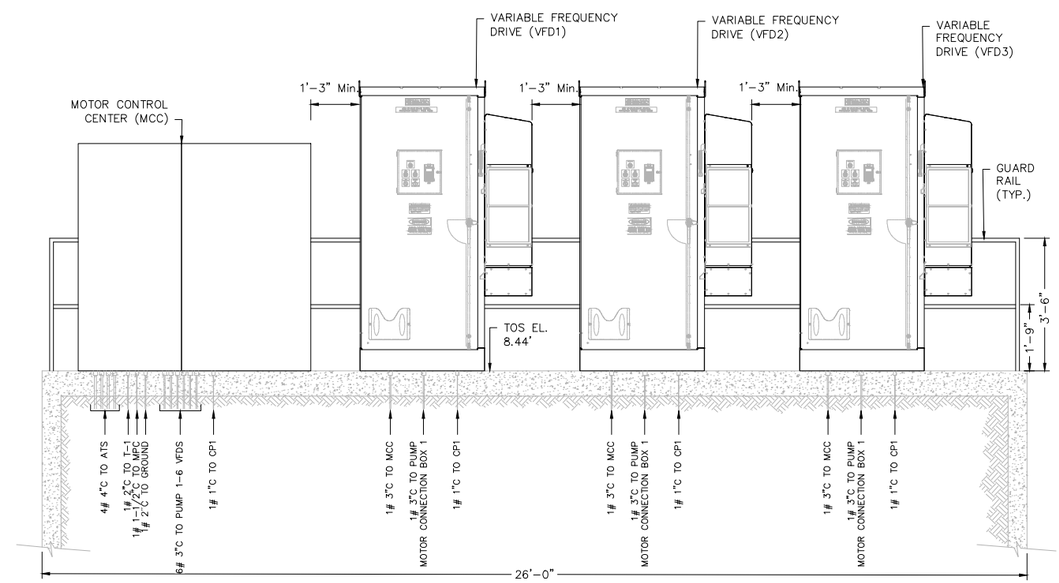

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SECTIONS

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: **WEST AVENUE WATER TREATMENT STRUCTURE**

TITLE: **ELECTRICAL ELECTRICAL AND CONTROL SECTIONS**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

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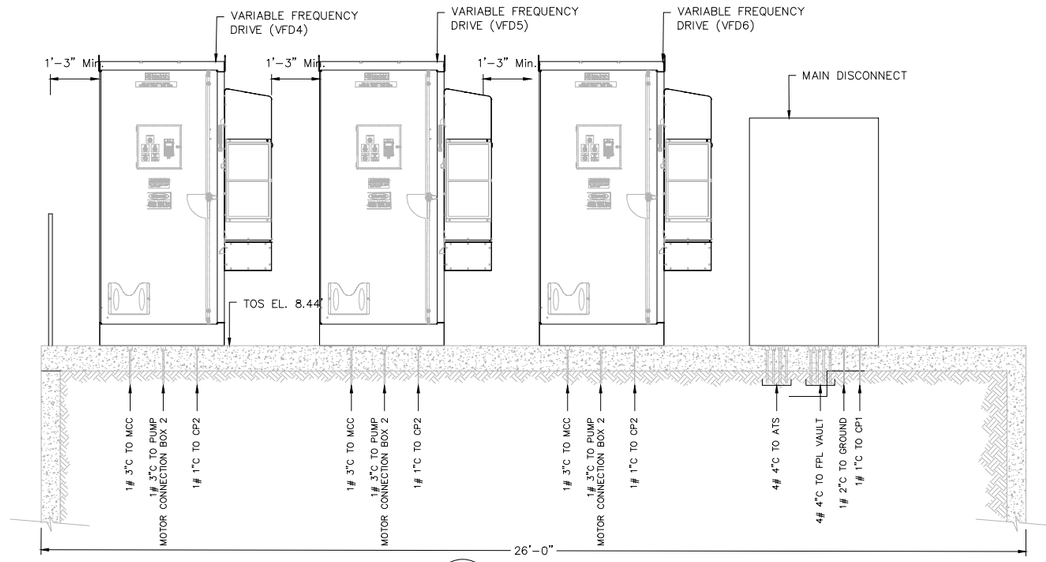
File Name: PS-E05.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: **PS-E05**



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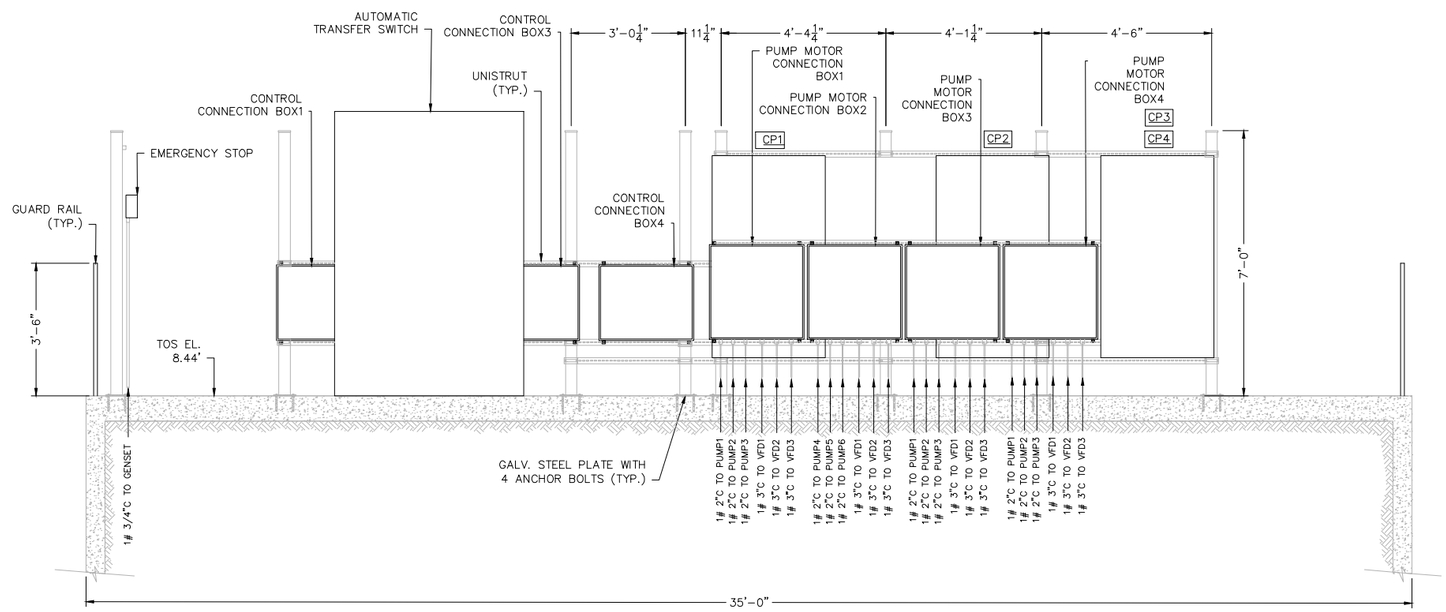

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SCALE 1:2

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD:
WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE:
ELECTRICAL
ELECTRICAL AND CONTROL SECTIONS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 75064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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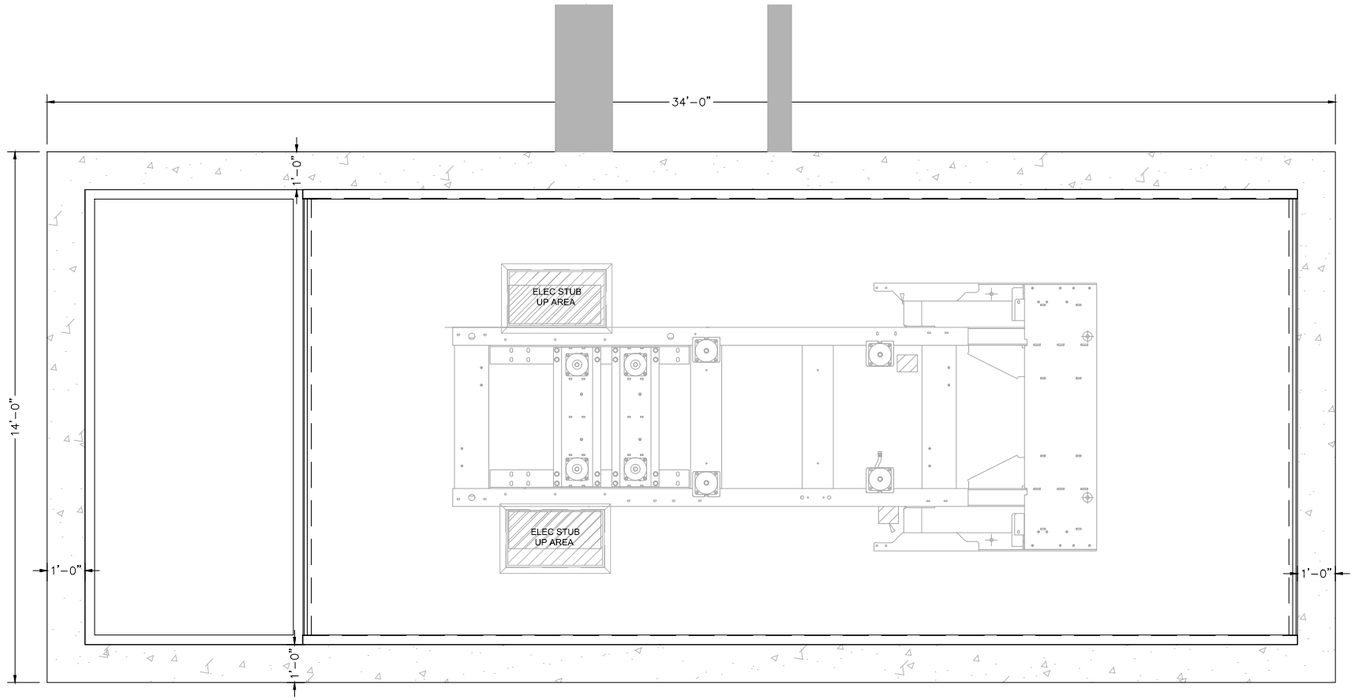
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-E06.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: 07/21/2021 Sheet: _____ Drawing: **PS-E06**



GENERATOR SET NOTES

1,250 KW KOHLER KD1250-A (3PH/60HZ/277-480V/1,800 RPM) OR APPROVED EQUAL:

- UL2200 LISTING.
- BI-FUEL CAPABILITY (DIESEL AND NATURAL GAS).
- TIER 2 EPA-CERTIFIED.
- 4-POLE, BRUSHLESS ROTATING-FIELD ALTERNATOR AND BRUSHLESS PERMANENT-MAGNET PILOT EXCITER.
- NEMA MG1, IEEE AND ANSI STANDARDS COMPLIANCE FOR TEMPERATURE RISE AND MOTOR STARTING.
- EQUIPPED WITH GENERATOR HEATER AND 24V/20A BATTERY CHARGER.
- INTEGRAL VIBRATION ISOLATORS.

WEATHER RESISTANT, LEVEL 2 SOUND ATTENUATED ALUMINUM ENCLOSURE:

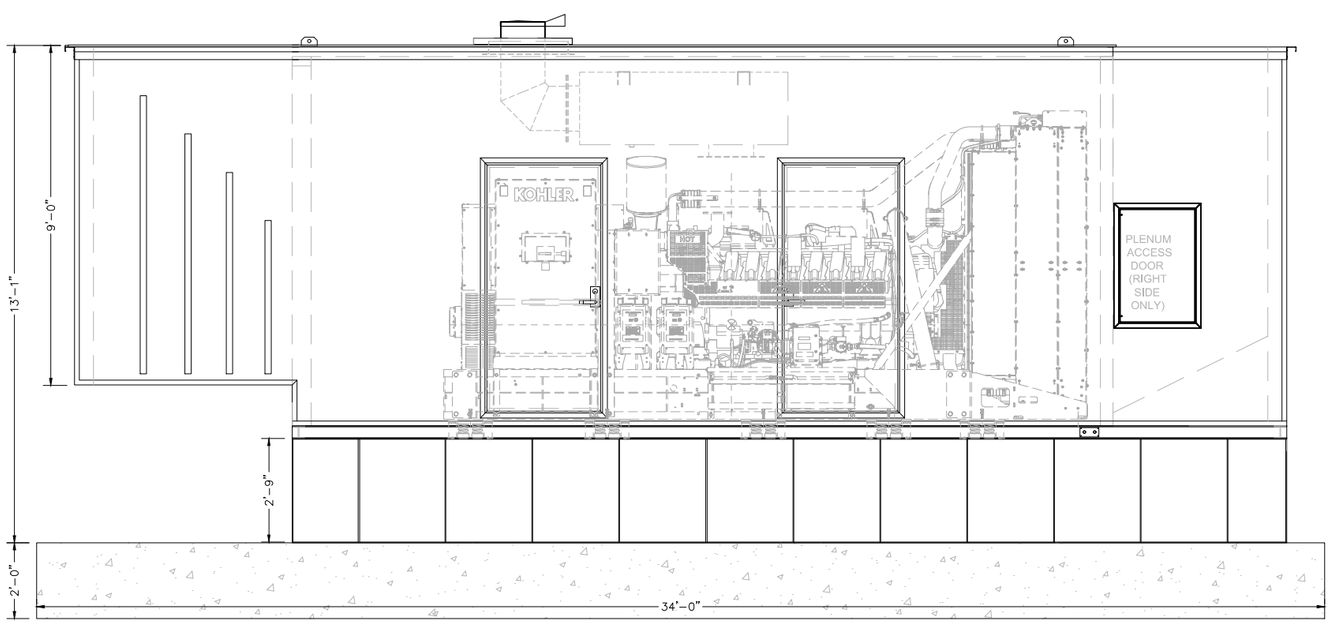
- ENCLOSURE EXTERIOR TO BE OF .090",5052-H32 ALUMINUM, FORMED, PANEL CONSTRUCTION, PAINTED FINISH (PAINTED STANDARD WHITE).
- AIR INTAKE: SOUND ATTENUATED INTAKE SCOOPS WITH FIXED INTAKE LOUVERS.
- AIR DISCHARGE: SOUND ATTENUATED DISCHARGE HOOD WITH GRAVITY DAMPERS AND BIRD SCREEN.
- 3" SOUND ATTENUATING FIRE BLANKET IN WALLS, DOORS, HOODS AND CEILINGS. INSULATION RETAINED WITH .032" PERFORATED ALUMINUM LINER.
- ENCLOSURE DESIGNED TO REDUCE SOURCE SPL TO < 60 DB (A) @ 7M IN A FREE-FIELD ENVIRONMENT.
- (4) LOCKABLE, HINGED ACCESS DOORS WITH CORROSION RESISTANT HARDWARE.
- HOSPITAL GRADE SILENCER.
- EXHAUST ELBOW WITH RAIN CAP TO DISCHARGE THRU ROOF.
- ALL EXTERIOR HARDWARE TO BE STAINLESS STEEL.
- ENCLOSURE DESIGNED FOR LARGE MISSILE IMPACT CRITERIA AS PER CURRENT FLORIDA BULIDING CODE (SUITABLE FOR 186 MPH WIND LOADING).
- EXTEND OIL AND COOLANT DRAINS TO EXTERIOR OF ENCLOSURE.
- PROVIDE WITH 100A. 120/208V 3-PH MLO LOAD CENTER WITH BRANCH CIRCUIT BREAKERS.
- PROVIDE WITH FOUR (4) 48" LED LIGHT FIXTURES WITH TWO 3-WAY SWITCHES LOCATED BY ENTRANCE DOORS AND ONE 60-MINUTE TIMER SWITCH.
- PROVIDE TWO (2) 20A, 125V DUPLEX GFCI RECEPTACLES LOCATED BY ENTRANCE DOORS.
- PROVIDE WITH ONE X-LBS DRY TYPE FIRE EXTINGUISHER.

5,000-GALLON CAPACITY, UL-142, DOUBLE WALL, FDEP APPROVED BASE FUEL TANK:

- RUPTURE BASIN.
- ¼" MILD STEEL PRIMARY AND SECONDARY TANK
- INTERSTITIAL SPACE WITH FDEP APPROVED LEAK DETECTION SWITCH.
- MECHANICAL FUEL LEVEL GAUGE (VISIBLE AT FILL POINT).
- LOCKING 2" FILL WITH SPILL CONTAINMENT/LABELED PER API STANDARDS.
- NORMAL AND EMERGENCY VENTS PER UL-142.
- LOW FUEL LEVEL SWITCH SET @ 40% CAPACITY WIRED TO CONTROL PANEL TERMINAL STRIP.
- HIGH FUEL LEVEL SWITCH SET @ 90% CAPACITY WIRED TO CONTROL PANEL TERMINAL STRIP.
- LEAK DETECTION SWITCH WIRED TO CONTROL PANEL TERMINAL STRIP.
- SUPPLY AND RETURN CONNECTIONS.
- CABLE STUB UP LOCATED UNDER BREAKER.
- GENERATOR MOUNTING PADS.
- EXTERIOR PRIMED WITH TWO PART EPOXY PRIMER AND PAINTED GLOSS BLACK.
- NFPA 704 PLACARD.
- ALL TESTING TO BE COMPLETED BY THE MANUFACTURER AND PROVIDED TO THE CONTRACTOR; INCLUDING BUT NOT LIMITED TO: THE OPERABILITY TEST FOR RELEASE DETECTION DEVICES, INTEGRITY TEST SPILL BUCKET TESTING, OVERFILL PROTECTION TESTING, AND BREACH OF INTEGRITY TEST FOR THE STORAGE TANK.

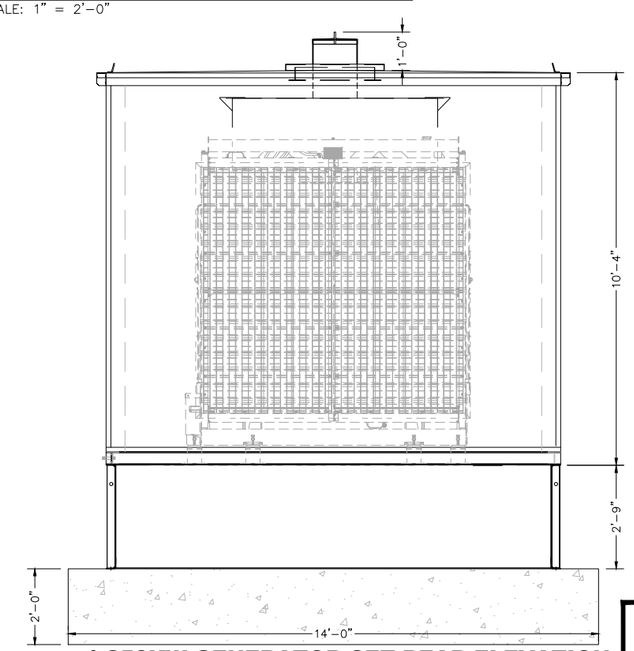
1,250KW GENERATOR SET TOP VIEW

SCALE: 1" = 2'-0"



1,250KW GENERATOR SET SIDE ELEVATION

SCALE: 1" = 2'-0"



1,250KW GENERATOR SET REAR ELEVATION

SCALE: 1" = 2'-0"

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL EMERGENCY GENERATOR - PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO-LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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NO	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-E07.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-E07

GENERAL NOTES

A. REFER TO FEEDER SCHEDULE ON THIS SHEET FOR FEEDER SIZING.

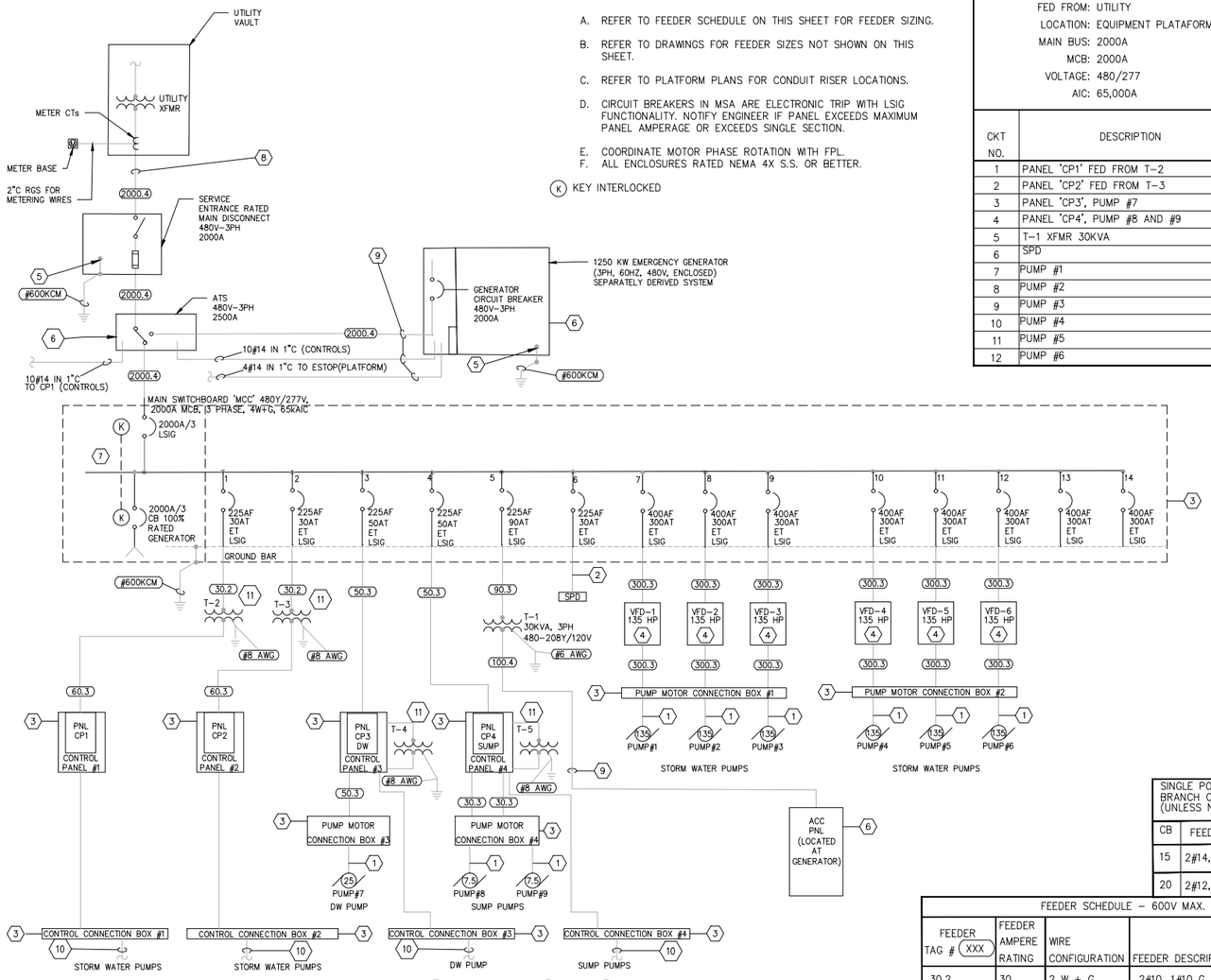
B. REFER TO DRAWINGS FOR FEEDER SIZES NOT SHOWN ON THIS SHEET.

C. REFER TO PLATFORM PLANS FOR CONDUIT RISER LOCATIONS.

D. CIRCUIT BREAKERS IN MSA ARE ELECTRONIC TRIP WITH LSIG FUNCTIONALITY. NOTIFY ENGINEER IF PANEL EXCEEDS MAXIMUM PANEL AMPERAGE OR EXCEEDS SINGLE SECTION.

E. COORDINATE MOTOR PHASE ROTATION WITH FPL.
F. ALL ENCLOSURES RATED NEMA 4X S.S. OR BETTER.

(K) KEY INTERLOCKED



LEGEND NOTES

1. CABLE PROVIDED BY PUMP MANUFACTURER, IN UNDERGROUND DUCTBANK
2. FACTORY INSTALLED CABLES.
3. PROVIDED BY PUMP MANUFACTURER.
4. 200HP, POWERFLEX VFD IN FREESTANDING STAINLESS NEMA 4X ENCLOSURE. PROVIDED BY PUMP MANUFACTURE.
5. PROVIDE NEUTRAL TO GROUND BOND.
6. PROVIDED BY GENERATOR MANUFACTURER.
7. EATON SWITCHBOARD OR APPROVED EQUIVALENT WITH THE FOLLOWING SPECS PROVIDED BY PUMP MANUFACTURER:

   VOLTAGE RATING: 480V
   AMPERE RATING: 2000A
   NEMA RATING: 4X STAINLESS
   C.B. TYPE: PROVIDE MAIN CIRCUIT BREAKER (MAIN 1 OF 1) AND PORTABLE GENERATOR MAIN CIRCUIT BREAKER WITH KEY INTERLOCK, 65KAIC RATED.
   REQUIREMENTS: PROVIDE SURGE PROTECTIVE DEVICE.
8. INSTAII IN FPL VAULT TO EQUIPMENT PLATFORM UNDERGROUND DUCTBANK
9. INSTALL IN GENERATOR TO EQUIPMENT PLATFORM UNDERGROUND DUCTBANK.
10. CABLE PROVIDED BY PUMP MANUFACTURER, IN UNDERGROUND DUCTBANK
11. 10KVA TRANSFORMER. 480V-240/120V. PROVIDED BY PUMP MANUFACTURER

ELECTRICAL ONE-LINE DIAGRAM

SCALE: N.T.S.

SINGLE POLE AND 2 POLE BRANCH CIRCUIT SCHEDULE (UNLESS NOTED OTHERWISE)	
CB	FEEDER DESCRIPTION
15	2#14, 1#14 G, 3/4" C
20	2#12, 1#12 G, 3/4" C

FEEDER SCHEDULE – 600V MAX.			
FEEDER TAG # XXX	FEEDER AMPERE RATING	WIRE CONFIGURATION	FEEDER DESCRIPTION
30.2	30	2 W + G	2#10, 1#10 G, 1" C
30.3	30	3 W + G	3#10, 1#10G, 1-1/2" C
50.3	50	3 W + G	3#6, 1#8 G, 2" C
60.3	60	3 W + G	3#4, 1#8 G, 2" C
70.3	70	3 W + G	3#3, 1#6 G, 2" C
90.3	90	3 W + G	3#6, 1#6 G, 2" C
100.4	100	4 W + G	3#2, 1#2 N, 1#6 G, 2" C
300.3	300	4 W + G	3#350KCM, 1#4 G, 3" C
2000.4	2000.4	4 W	4 SETS EACH OF [3#600KCM, 1#600KCM N, 4" C]

PANEL SCHEDULES

SCALE: N.T.S.

DISTRIBUTION PANEL: MCC
FED FROM: UTILITY
LOCATION: EQUIPMENT PLATAFORM
MAIN BUS: 2000A
MCB: 2000A
VOLTAGE: 480/277
AIC: 65,000A

WIRES: 4W + G
ENCLOSURE: NEMA 4X
BUS TYPE: Copper
MOUNTING: Freestanding
PANEL LUGS: Main Circuit Breaker

NEUTRAL BUS: Yes NORMAL
GROUND BUS: Yes
ISOLATED GROUND BUS: No
200% NEUTRAL: No

CKT NO.	DESCRIPTION	TOTAL LOAD (VA)	LOAD (VA) LTS	RCPTS	MTRS	ELEV	HEAT	MISC	CIRCUIT BREAKER AMPS	POLES	REMARKS
1	PANEL 'CP1' FED FROM T-2	4,000		800				3,200	30	2	
2	PANEL 'CP2' FED FROM T-3	4,000		800				3,200	30	2	
3	PANEL 'CP3', PUMP #7	34,000		800	30000			3,200	50	3	
4	PANEL 'CP4', PUMP #8 AND #9	24,000		800	20,000			3,200	50	3	
5	T-1 XFMR 30KVA	15,000	240	1,200			9,300	1,500	90	3	
6	SPD	–							30	3	
7	PUMP #1	137,040			137,040				300	3	
8	PUMP #2	137,040			137,040				300	3	
9	PUMP #3	137,040			137,040				300	3	
10	PUMP #4	137,040			137,040				300	3	
11	PUMP #5	137,040			137,040				300	3	
12	PUMP #6	137,040			137,040				300	3	

'MCC' LOAD SUMMARY	LTS	RCPTS	MTRS	ELEV	HEAT	MISC	TOTAL (KVA)	TOTAL (AMPS)
TOTAL CONNECTED LOAD	0.24	4.4	873	0.0	9.3	14.3	950	1200
DEMAND FACTOR	1.0	1.0	1.25/1.0			1.0		
TOTAL DEMAND LOAD	0.24	4.4	1091.3	0.0	9.3	14.3	1200	1400
CONTINUOUS (DESIGN) FACTOR	1.25	1.00	1.00	1.00	1.00	1.00		
TOTAL DESIGN LOAD	0.3	4.4	873	0.0	9.3	14.3	920	1200

PANEL: CP1 LOCATION: BUILT IN CONTROL PANEL FED FROM: T-2, 10KVA TRANSFORMER NEUTRAL BUS: Yes
POLES: 2 GROUND BUS: Yes

1	FUTURE SCADA RTU PANEL	800	20	1	A	20	1	–	FUTURE DECORATIVE LTG	2
3	CONTROLS	400	15	1	C	15	1	400	BACK UP CONTROLLER	4
5	GFI RECEPT IN CONTROL PANEL	180	20	1	A	15	1	–	SPARE	6
7	SPARE	–	15	1	C	15	1	–	SPARE	8
9	SPARE	–	15	1	A	20*	2	180	SUMP PUMP RECEPT.	10
11	SPARE	–	20	1	C					

PANEL: CP2 LOCATION: BUILT IN CONTROL PANEL FED FROM: T-3, 10KVA TRANSFORMER NEUTRAL BUS: Yes
POLES: 2 GROUND BUS: Yes

1	SPARE	800	20	1	A	20	1	–	FUTURE DECORATIVE LTG	2
3	CONTROLS	400	15	1	C	15	1	400	BACK UP CONTROLLER	4
5	GFI RECEPT IN CONTROL PANEL	180	20	1	A	15	1	–	SPARE	6
7	SPARE	–	15	1	C	15	1	–	SPARE	8
9	SPARE	–	15		A	20*	2	180	SUMP PUMP RECEPT.	10
11	SPARE	–	20	–	C					

PANEL: CP3 LOCATION: BUILT IN CONTROL PANEL FED FROM: T-4, 10KVA TRANSFORMER NEUTRAL BUS: Yes
POLES: 2 GROUND BUS: Yes

1	FUTURE SCADA RTU PANEL	800	20	1	A	20	1	–	FUTURE DECORATIVE LTG	2
3	CONTROLS	400	15	1	C	15	1	400	BACK UP CONTROLLER	4
5	GFI RECEPT IN CONTROL PANEL	180	20	1	A	15	1	–	SPARE	6
7	SPARE	–	15	1	C	15	1	–	SPARE	8
9	SPARE	–	15	1	A	20*	2	180	SUMP PUMP RECEPT.	10
11	SPARE	–	20	1	C					

PANEL: CP4 LOCATION: BUILT IN CONTROL PANEL FED FROM: T-5, 10KVA TRANSFORMER NEUTRAL BUS: Yes
POLES: 2 GROUND BUS: Yes

1	SPARE	800	20	1	A	20	1	–	FUTURE DECORATIVE LTG	2
3	CONTROLS	400	15	1	C	15	1	400	BACK UP CONTROLLER	4
5	GFI RECEPT IN CONTROL PANEL	180	20	1	A	15	1	–	SPARE	6
7	SPARE	–	15	1	C	15	1	–	SPARE	8
9	SPARE	–	15		A	20*	2	180	SUMP PUMP RECEPT.	10
11	SPARE	–	20	–	C					

PANEL: ACC PNL LOCATION: GENERATOR FED FROM: T-1, 30KVA TRANSFORMER NEUTRAL BUS: Yes
AIC: 65,000A MCB 100A POLES: 3 GROUND BUS: Yes

CKT #	DESCRIPTION	LOAD VA	VOLTAGE	# PHASES	–	VOLTAGE	# PHASES	LOAD VA	DESCRIPTION	CKT #
1	BLOCK HEATER	9000	208	3	–	120	1	720	BATTERY CHARGER #1	2
3	BATTERY CHARGER #2	720	120	1	–	120	1	240	SPARE	4
5	ALTERNATOR STRIP HEATER	300	120	1	–	120	1	120	SPARE	6

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE WATER TREATMENT STRUCTURE
TITLE: ELECTRICAL ONE-LINE DIAGRAM AND SCHEDULES

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARABALLO LICENSE No. 73064 STATE OF FLORIDA PROFESSIONAL ENGINEER

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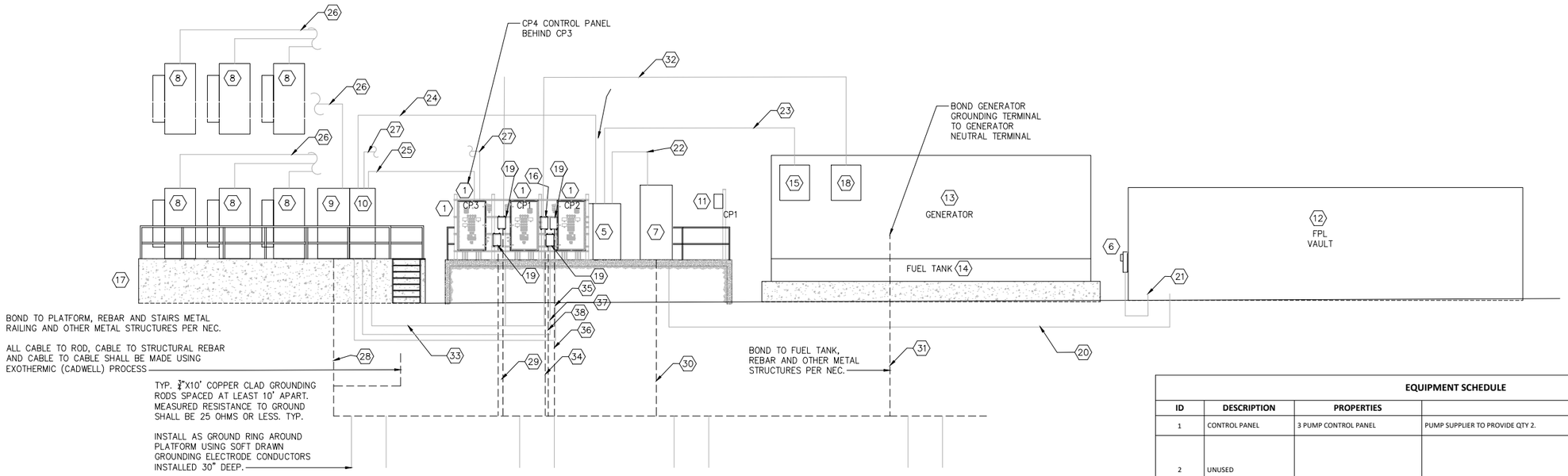
1	03/22/21	60% SUBMITTAL/CIVIL-MECH-ELEC

File Name: PS-E08.dwg
Survey Reference:
Field Book: ____ Page: ____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: ____ Drawing: PS-E08



POWER RISER DIAGRAM

SCALE: N.T.S.

SHEET KEYNOTES		
KEY VALUE	KEYNOTE TEXT	FEEDER DESCRIPTION
20	FPL FDR – NEW FPL SERVICE FEEDER TO MAIN DISCONNECT	4 SETS EACH OF [3#600KCM, 1#600KCM N, 4" C] PROVIDE (1) ADDITIONAL 4"C (SPARE) IN DUCTBANK
21	FPL METER TO CTs	METERING WIRES, 2'C
22	FDR FROM MAIN DISCONNECT TO ATS	4 SETS EACH OF [3#600KCM, 1#600KCM N, 4" C]
23	GEN FDR TO ATS	4 SETS EACH OF [3#600KCM, 1#600KCM N, 4" C] PROVIDE (1) ADDITIONAL 4" C (SPARE) IN DUCTBANK
24	FDR TO MCC FROM ATS	4 SETS EACH OF [3#600KCM, 1#600KCM N, 4" C]
25	FDR TO CP3 FROM MCC	3#6, 1#8 G, 2" C
26	PUMP 1–6 FDR TO VFD 1–6 FROM MCC	3#350KCM, 1#4 G, 3" C
27	FDR TO CP4 FROM MPC	3#6, 1#8 G, 2" C
28	MCC ELECTRODE GROUNDING CONDUCTOR (1) #600KCM GROUNDING ELECTRODE WIRE CONNECTED TO (2) 5/8" X 10' COPPER CLAD GROUNDING RODS SPACED AT LEAST 10'. PROVIDE (1) #2 GROUNDING CONDUCTOR TO METAL RAILING. FIELD VERIFY METAL RAILING IS ELECTRICALLY CONTINUOUS.	
29	MPC ELECTRODE GROUNDING CONDUCTOR (1) #6 GROUNDING ELECTRODE WIRE CONNECTED TO (2) 5/8" X 10' COPPER CLAD GROUNDING RODS SPACED AT LEAST 10'.	
30	MCC ELECTRODE GROUNDING CONDUCTOR (1) #600KCM GROUNDING ELECTRODE WIRE CONNECTED TO (2) 5/8" X 10' COPPER CLAD GROUNDING RODS SPACED AT LEAST 10'.	
31	GENERATOR ELECTRODE GROUNDING CONDUCTOR (1) #600KCM GROUNDING ELECTRODE WIRE CONNECTED TO (2) 5/8" X 10' COPPER CLAD GROUNDING RODS SPACED AT LEAST 10'. PROVIDE (1) #2 GROUNDING CONDUCTOR TO FUEL TANK, REBAR, ETC.	
32	GENSET ACC PNL FDR FROM T–1	3#2, 1#2 N, 1#6 G, 2" C
33	T–1 FDR FROM MCC	3#6, 1#6 G, 2" C
34	T–1 ELECTRODE GROUNDING CONDUCTOR (1) #6 GROUNDING ELECTRODE WIRE CONNECTED TO GROUND RING	
35	T–2 FDR FROM MCC	3#10, 1#10 G, 1" C
36	T–2 ELECTRODE GROUNDING CONDUCTOR (1) #8 GROUNDING ELECTRODE WIRE CONNECTED TO GROUND RING	
37	T–3 FDR FROM MCC	3#10, 1#10 G, 1" C
38	T–3 ELECTRODE GROUNDING CONDUCTOR (1) #8 GROUNDING ELECTRODE WIRE CONNECTED TO GROUND RING	

RISER SCHEDULE

SCALE: N.T.S.

EQUIPMENT SCHEDULE

ID	DESCRIPTION	PROPERTIES	NOTES
1	CONTROL PANEL	3 PUMP CONTROL PANEL	PUMP SUPPLIER TO PROVIDE QTY 2.
2	UNUSED		
3	PUMP MOTOR CONNECTION BOX	SUBMERSIBLE PUMP POWER PULL BOX.	PUMP SUPPLIER TO PROVIDE QTY 4 BOXES WITH SITE SPECIFIC PUMP CABLES.
4	CONTROL CONNECTION BOX	SUBMERSIBLE PUMP CONTROL CONNECTION PULL BOX.	PUMP SUPPLIER TO PROVIDE QTY 4 BOXES AND SITE SPECIFIC FLOAT AND TRANSDUCER CABLES.
5	AUTOMATIC TRANSFER SWITCH (ATS)	AUTOMATIC TRANSFER SWITCH	GENSET MANUFACTURER TO PROVIDE
6	METER BASE	ELECTRICAL SERVICE METER.	CONTRACTOR TO COORDINATE WITH FPL FOR SIZING AND INSTALLATION OF REQUIRED CTS.
7	MAIN DISCONNECT	NEW MAIN DISCONNECT SERVICE ENTRANCE.	CONTRACTOR TO PROVIDE AND INSTALL NEUTRAL TO GROUND BOND PER NEC.
8	VARIABLE FREQUENCY DRIVE (VFD)	VFD PUMP MOTOR CONTROLLER WITH INTEGRAL AIR CONDITIONER.	PUMP SUPPLIER TO PROVIDE QTY 6.
9	MOTOR CONTROL CENTER (MCC)	MCC-SWGR MOTOR CONTROL CENTER PANEL 1.	PUMP SUPPLIER TO PROVIDE.
10	MOTOR CONTROL CENTER (MCC)	MCC-SWGR MOTOR CONTROL CENTER PANEL 2.	PUMP SUPPLIER TO PROVIDE.
11	GENSET ESTOP	REMOTE GENSET EMERGENCY STOP	GENSET SUPPLIER TO PROVIDE
12	FPL VAULT	UTILITY POWER	
13	GENSET	EMERGENCY BI-FUEL GENERATOR 1250KW	GENSET SUPPLIER TO PROVIDE
14	FUEL TANK	DIESEL FUEL SUB BASE TANK	GENSET SUPPLIER TO PROVIDE
15	GENSET MCB	GENERATOR MAIN CIRCUIT BREAKER 480V 3 PHASE 4W	
16	T-1	30KVA, 480-208Y/120V 3PH	CONTRACTOR TO PROVIDE
17	PLATFORM	CONCRETE PLATFORM	SEE SHEETS E-03 AND E-04 FOR LAYOUT
18	GENSET ACC PNL	ACCESSORIES PANEL	GENSET LOW VOLTAGE ACCESSORIES PANEL
19	T-2, T-3,T-4,T-5	10KVA, 480-240/120V 1PH	PUMP SUPPLIER TO PROVIDE QTY 4

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MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL
RISER AND SCHEDULES

CES CONSULTANTS

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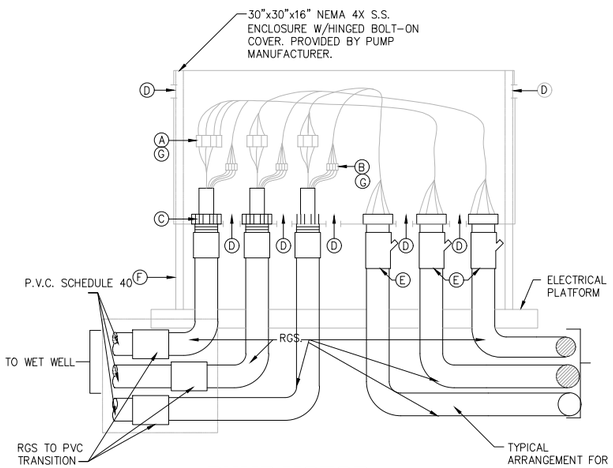
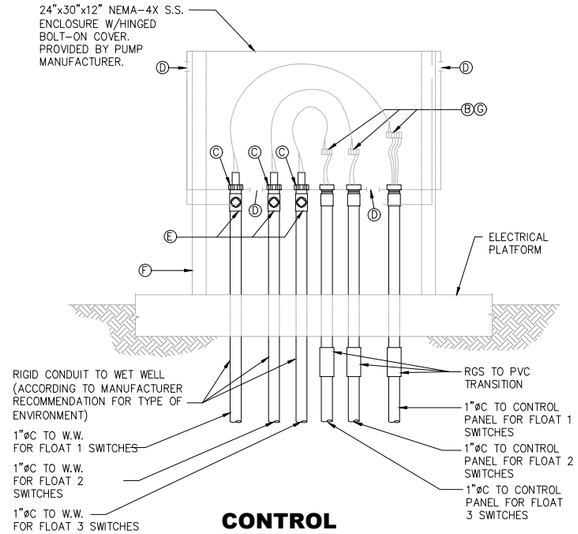


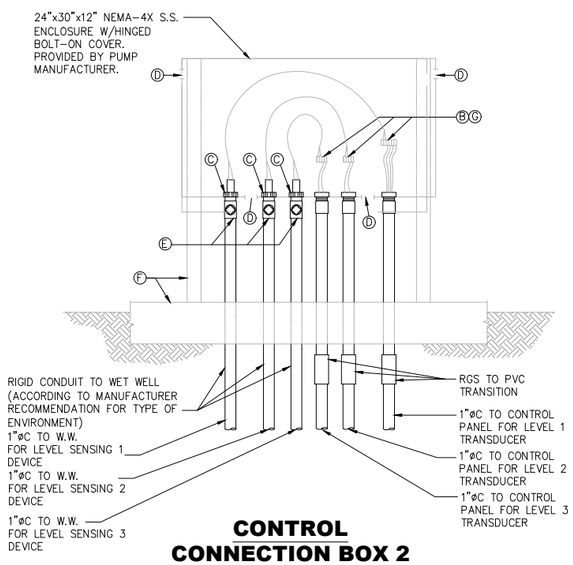
PUMP MOTOR CONNECTION BOX TYP.

SCALE: N.T.S.



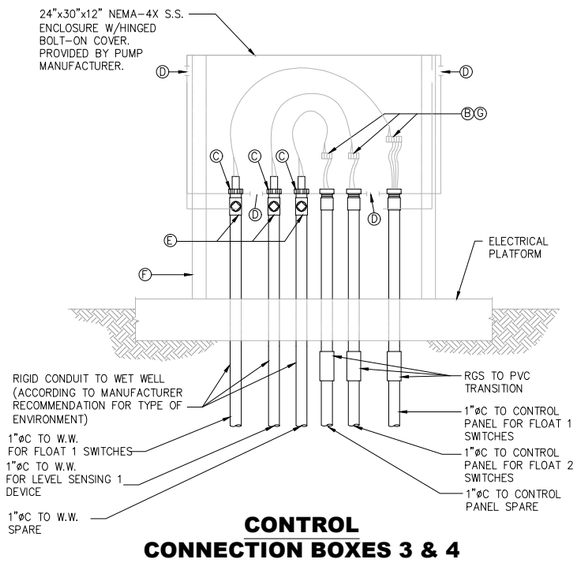
CONTROL CONNECTION BOX 1

SCALE: N.T.S.



CONTROL CONNECTION BOX 2

SCALE: N.T.S.



CONTROL CONNECTION BOXES 3 & 4

SCALE: N.T.S.

DANGER

Arc – Flash Hazard and Shock Hazard

8 inches – Arc Flash Protection Boundary
.28 – Incident Energy Flash Hazard at 18 inches

CLASS 0 Arc – Flash Hazard Risk Category

Appropriate PPE Required for both Arc–Flash and Shock Hazards: Safety Glasses/Goggles, Hard Hat, Flash Suit Hood, Leather Gloves, Leather Work Shoes, Hearing Protection, FR clothing system with an ATPV rating > = .28 cal/cm2, Class Voltage Rated Gloves, Voltage Rated Tools

480VAC -- Shock Hazard with covers/doors open
3' – 6" -- Limited Approach Boundary
1' – 0" -- Restricted Approach Boundary
0' – 1" -- Prohibited Approach Boundary

Shock Hazard

LOCATION: Lincoln Road PROTECTIVE DEVICE: Main Circuit Breaker

ARC FLASH LABEL

NOTES:

1– LABEL BACKGROUND SHALL BE WHITE COLOR.
2– LABEL LETTERING SHALL BE BLACK COLOR.
3– 'DANGER' WORD SHALL BE WHITE COLOR WITH RED BACKGROUND.
4– LABEL SIZE SHALL BE 4 X 6 INCHES.
5– INFORMATION PRINTED ON LABEL SHALL BE VERIFIED AND PROVED BY CONTRACTOR.
6– THE LABEL SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT NEC 110.16.
7– SEE NOTE 28 OF ELECTRICAL GENERAL NOTES SHEET 1.
8– ARC FLASH STUDY IS A DESIGN TOOL BUT MUST BE UPDATED BY THE CONTRACTOR BASED ON THE ACTUAL INSTALLED EQUIPMENT.

ARC FLASH CALCULATIONS

ARC FLASH CALCULATIONS FOR UTILITY SERVICE POWER SOURCE
CALCULATIONS BASED ON FORMULAS OF NFPA 70E / IEEE 1584, AS FOLLOWS:
log Ia = K + .662 log Ibf + .0966V + .000526G + .5588V(log Ibf) – .00304G(log Ibf)
log En = k1 + k2 +1.081 log Ia + .0011G
E = 4.184 Cf En (t/.2)(610^X/D^X)
Db = [(4.184)(Cf)(En)(t/.2)(610^X/Eb)]^

Service Ibf = 15.980 KA SYM.
Motor Locked Rotor Current 710A X 3
En = NORMALIZED INCIDENT ENERGY AT 18"
V = 0.48KV
G = 25mm *TABLE D.4.2
K = –.097 *D.4.3 ARC IN BOX
K1 = –.555 *D.4.3 ARC IN BOX
K2 = –.113 *D.4.3 GROUNDED SYSTEM
Cf = 1.5 *D.4.3 VOLTAGE < 1KV
t = .0167S *SQUARE D HDL
Eb = INCIDENT ENERGY AT BOUNDARY = 5 JOULES/CM^2
X = 1.641 *TABLE D.4.2
D = 455 mm = 18" PER NFPA 70E

CALCULATION AT MSA PANEL

RESULTS:
Ia = ARCING CURRENT = 9.39 KA
En = NORMALIZED INCIDENT ENERGY = 101.4 J/CM^2
E = INCIDENT ENERGY = 24.2 CAL/CM^2
Db = DISTANCE TO FLASH PROTECTION BOUNDARY = 2049mm = 8.1'

FPL

November 16, 2017

CES Consultant, INC - David Hoot
880 SW 145 Ave Suite 106
Pembroke Pines, FL 33027

Re: Available Fault Current for Lincoln Road Pump Station

Dear CES Consultant, INC - David Hoot:

Thank you for contacting FPL about the available fault current at Lincoln Road Pump Station. Based on the plans you have provided dated October 17 2017, the maximum available fault current at the transformer secondary terminals is estimated to be 15980 symmetrical amperes at 277/480 volts. The protective device on the line side of the transformer currently in place or to be installed and serving your property located at the subject location is a 40 amp type E fuse. The primary service voltage is 13.2kV L-L. This calculated symmetrical fault current is not intended for use as the basis for motor starting calculations and does not include:

- Consideration for any motor contribution or
- Fault current asymmetry.

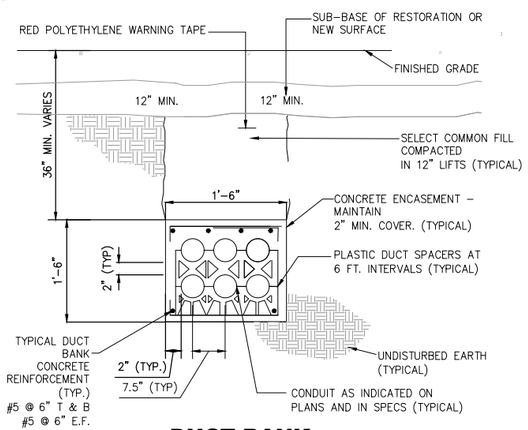
The FPL equipment currently serving or planned to serve your facility may change over time as a result of any number of factors, including but not limited to transformer replacements due to load growth, electrical grid changes or emergencies. As a result, although we are providing you with this information for the sole purpose of assisting you in the completion of your study, you and your client should not design, install or operate your system in reliance upon any expectation that the specific size and type of equipment currently in place will remain so. If and when the size and type of the equipment changes, our employees are not always in a position to immediately notify customers.

As the construction project progresses, any questions or information you may need can be communicated through me. I have enclosed my business card for easy reference and look forward to hearing from you in the near future.

Sincerely,

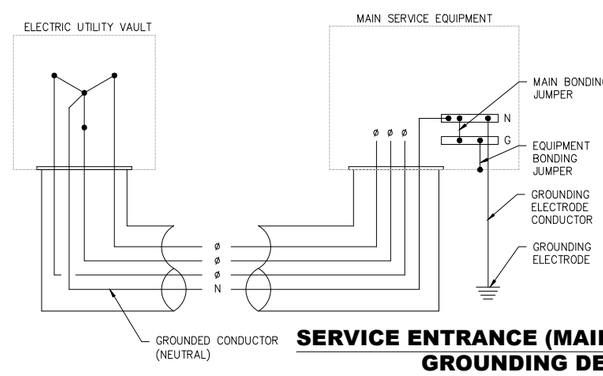
Rita Suarez
Senior Engineer

FAULT CURRENT LETTER



DUCT BANK DETAIL

SCALE: N.T.S.



SERVICE ENTRANCE (MAIN DISCONNECT) GROUNDING DETAIL

SCALE: N.T.S.

THESE ARE NOT CONSTRUCTION DRAWINGS. THE INFORMATION HEREIN CONTAINED SHALL ONLY BE USED AS GENERAL GUIDELINE OF THE INTENDED OPERATION AND FUNCTIONS AND SHALL NOT BE CONSTRUED AS ALL INCLUSIVE. ENGINEERS OF RECORD AND CONSULTANTS USING THESE GUIDELINES SHALL VERIFY AND MODIFY ANY REQUIREMENT NOT NECESSARILY SHOWN AS MAY BE REQUIRED BY ANY AND ALL APPLICABLE CODES AND STANDARDS.

SUBMITTAL FOR REVIEW
NOT FOR CONSTRUCTION

(A) 6–POLE POWER INSULATED TERM BLOCK PANEL MOUNT ALLEN BRADLEY BULLETIN 1492 SIZED AS REQUIRED.

(B) 6–CIRCUIT CONTROL INSULATED TERM BLOCK PANEL MOUNT ALLEN BRADLEY BULLETIN 1492.

(C) CABLE CORD FITTING WITH GLAND NUT AND NEOPRENE BUSHING EQUAL TO CROUSE HINDS CGFP SIZE OR AS REQUIRED FOR CABLE O.D.

(D) 1/8" DRAIN AND VENTILATION HOLES.

(E) CONDUIT SEAL.

(F) S.S. UNISTRUT SUPPORT FOR ENCLOSURE.

(G) COAT WITH CLEAR URETHANE SEAL ELECTRICAL–ELECTRONIC INSULATOR AS CRC 'U' 02049.

(H) PROVIDE 3/4" COND. FROM BOX TO W.W. FOR CONTROL WIRING (IF NECESSARY).

(I) PAD–LOCK CAPABLE COVER.

MIAMIBEACH
PUBLIC WORKS DEPARTMENT
1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: WEST AVENUE
WATER TREATMENT STRUCTURE

TITLE: ELECTRICAL
GENERAL - DETAILS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: NELSON PEREZ-JACOME, P.E.

ENG. OF RECORD: S.S.
DESIGN ENGINEER: E.A.
DRAWN BY: E.C.
CHECKER: G.A.S.
SCALE: AS NOTED

JOSE A. CARBALLO LICENSE No. 75064 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jose A. Caballo on the date indicated here. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

NO.	DATE	REVISION
3	07/21/21	PERMIT SET SUBMITTAL
2	04/08/21	60% SUBMITTAL – STRUCTURAL
1	03/22/21	60% SUBMITTAL/CIVIL–MECH–ELEC

File Name: PS–E10.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: 07/21/2021 Sheet: _____ Drawing: PS-E10