MIAMIBEACH

PUBLIC WORKS DEPARTMENT

PUMP STATION #27 EMERGENCY GENERATOR
2016-091-KB
DESIGN/BUILD SERVICES FOR WEST AVENUE IMPROVEMENTS
PHASE II
14TH STREET P.S.
60% SUBMITTAL

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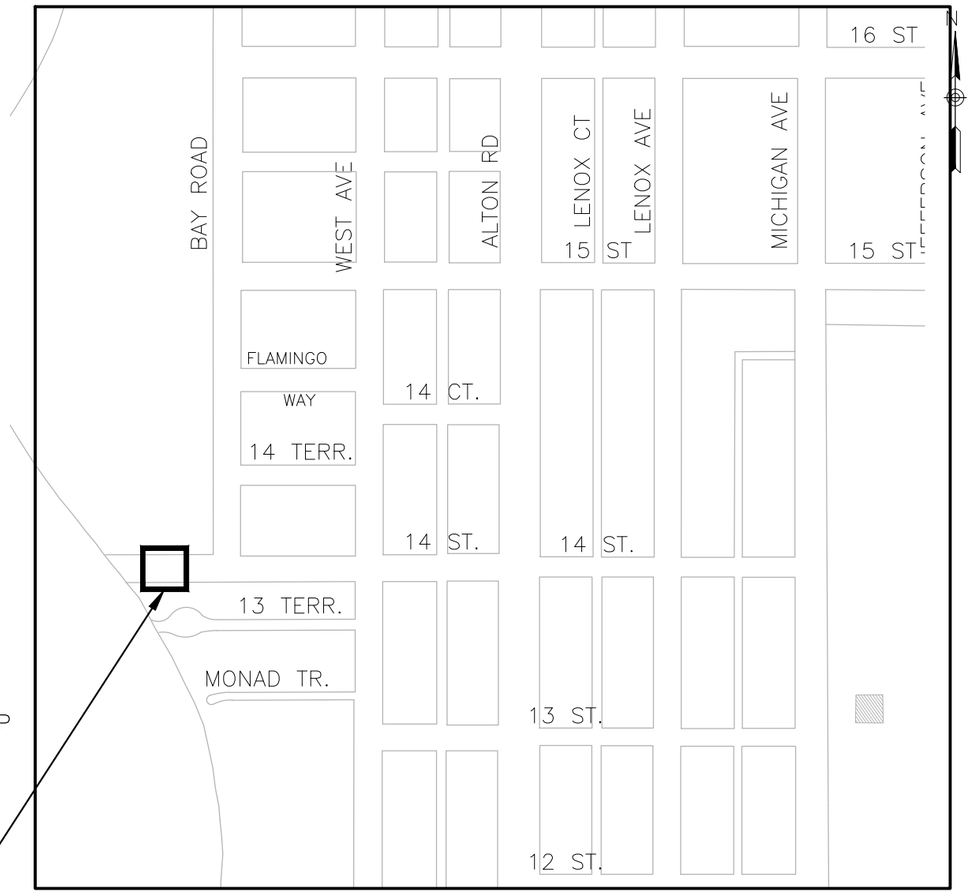
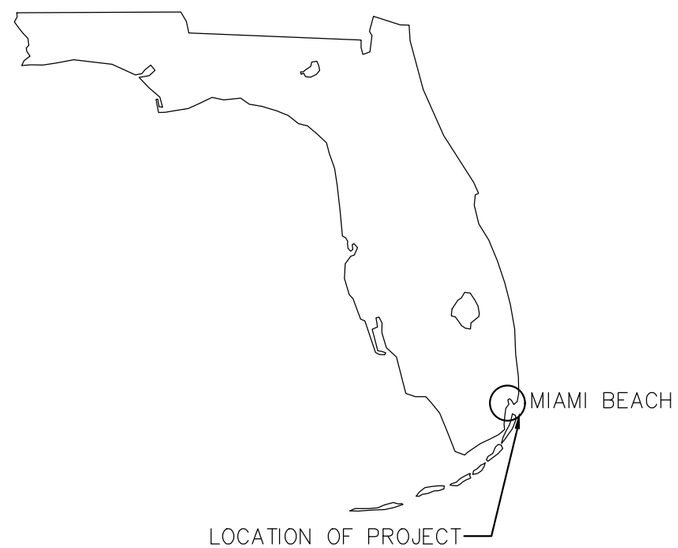
CITY OF MIAMI BEACH

MAYOR:	DAN GELBER
COMMISSIONERS:	KRISTEN ROSEN GONZALEZ MARK SAMUELIAN ALEX J. FERNANDEZ DAVID RICHARDSON RICKY ARRIOLA STEVEN MEINER
CITY MANAGER:	ALINA T. HUDAK
CITY ATTORNEY:	RAFAEL A. PAZ
PUBLIC WORKS DIRECTOR:	JOSE GOMEZ, P.E.
CITY ENGINEER:	CRISTINA ORTEGA, P.E., ENV SP
DIRECTOR OF CAPITAL IMPROVEMENT:	DAVID MARTINEZ, P.E., LEED AP



LOCATION MAP
SCALE: 1" = 200'



RIC-MAN CONST. FL, INC.
MIAMI, FLORIDA

CES CONSULTANTS
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Pembroke Pines, FL 33027
PHONE: 305-827-2220
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Sunshine811

INDEX OF DRAWINGS

WEST AVENUE - GENERATORS PROJECT	
PUMP STATION #27	
Sheet	**Description**
PS27-G00	COVER SHEET
PS27-G01	GENERAL NOTES AND INDEX OF DRAWINGS
PS27-C01	CIVIL - EXISTING/DEMOLITION SITE PLAN
PS27-C02	CIVIL - PROPOSED/RESTORATION SITE PLAN
PS27-S01	STRUCTURAL - GENERAL NOTES
PS27-S02	STRUCTURAL - SECTIONS AND DETAILS
PS27-S03	STRUCTURAL - GENERATOR ELEVATIONS
PS27-E01	ELECTRICAL - GENERAL NOTES
PS27-E02	ELECTRICAL - SPECIFICATIONS
PS27-E03	ELECTRICAL - SITE PLAN
PS27-E04	ELECTRICAL - ELEVATIONS AND SECTIONS
PS27-E05	ELECTRICAL - GENERATOR ELECTRICAL PLAN
PS27-E06	ELECTRICAL - RISER AND ONE-LINE DIAGRAM
PS27-E07	ELECTRICAL - DETAILS
PS27-SD01	CITY OF MIAMI BEACH - STANDARD DETAILS

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 SUBMIT THE PROPOSED METHOD OF CONSTRUCTION TO THE ENGINEER FOR 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. NPDES BMP FOR SEDIMENTATION AND EROSION WORK MUST BE STRICTLY FOLLOWED DURING AND AFTER CONSTRUCTION.

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 PS27-S01 FOR STRUCTURAL NOTES.

13. REFER TO SHEET PS27-E01 AND PS27-E02 FOR ELECTRICAL NOTES.

SURVEYOR'S NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN ON THIS PLAN ARE PER A SURVEY COMPLETED BY MASER CONSULTING P.A. FOR THE CITY OF MIAMI BEACH. THE FIELD SURVEY WAS COMPLETED ON JULY 27, 2017.

2. INFORMATION SHOWN ON THE DRAWINGS 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.

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

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.MIAMBEACHFL.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.

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

NEIGHBORHOOD: PUMP STATION #27 14TH STREET

TITLE: GENERAL NOTES

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

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

ENGINEER OF RECORD:
JOSE A. CARABALLO, PE
FL REG No.73064

NO.	DATE	REVISION	APP'D. BY
1	XX/XX/19	60% DESIGN SUBMITTAL	

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Survey Reference:
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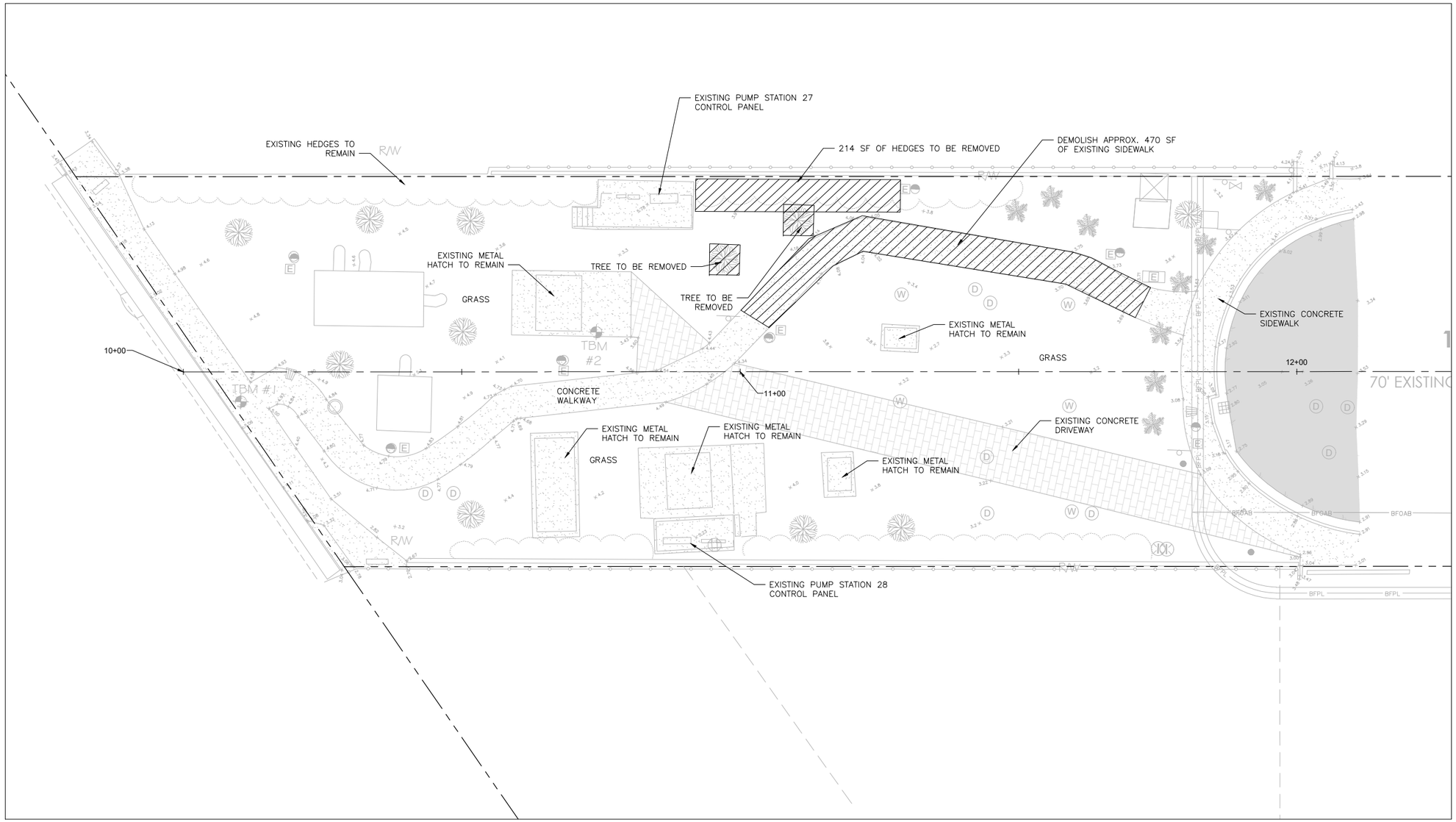

N

0 10' 20'

(SCALE FOR 11" x 17" SHEET)

LEGEND:

- BFPL — BURIED FPL
- BGT — BURIED GAS TECO
- BGFG — BURIED GAS FGT
- BFOAB — BURIED FIBER OPTIC
- RIGHT-OF-WAY
- LIGHT POLE, MAST ARM
- CATCH BASIN
- STORM DRAINAGE MANHOLE
- SANITARY SEWER MANHOLE
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- GAS MANHOLE
- WATER VALVE
- WIRING PULL BOX
- TREE
- PALM TREE
- HEDGE
- 00.00 x — DENOTES EXISTING ELEVATION
- SIGN
- BOLLARD
- CONCRETE LIGHT POLE
- TEMPORARY SITE BENCHMARK
- VALVE
- GARBAGE CAN
- DEMOLITION
- CONCRETE

EXISTING/DEMOLITION SITE PLAN

SCALE: 1" = 10'

NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN ON THIS PLAN, ARE PER A SURVEY COMPLETED BY: LONGITUDE SURVEYORS, LLC, DATED SEPTEMBER 10, 2019. FIELD SURVEY WAS COMPLETED ON SEPTEMBER 10, 2019.
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 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. CONTRACTOR TO INCLUDE NECESSARY CUTTING, PATCHING AND RESTORATION OF ALL EXISTING SURFACES, TO MATCH SURROUNDING AREAS.
6. 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.
7. ELEVATIONS ARE RELATIVE TO NAVD88.

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

NEIGHBORHOOD: **PUMP STATION #27 14TH STREET**

TITLE: **CIVIL EXISTING/DEMOLITION SITE PLAN**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

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

ENGINEER OF RECORD:

JOSE A. CARABALLO, PE
FL REG No.73064

NO	DATE	REVISION	APP'D. BY
1	XX/XX/19	60% DESIGN SUBMITTAL	

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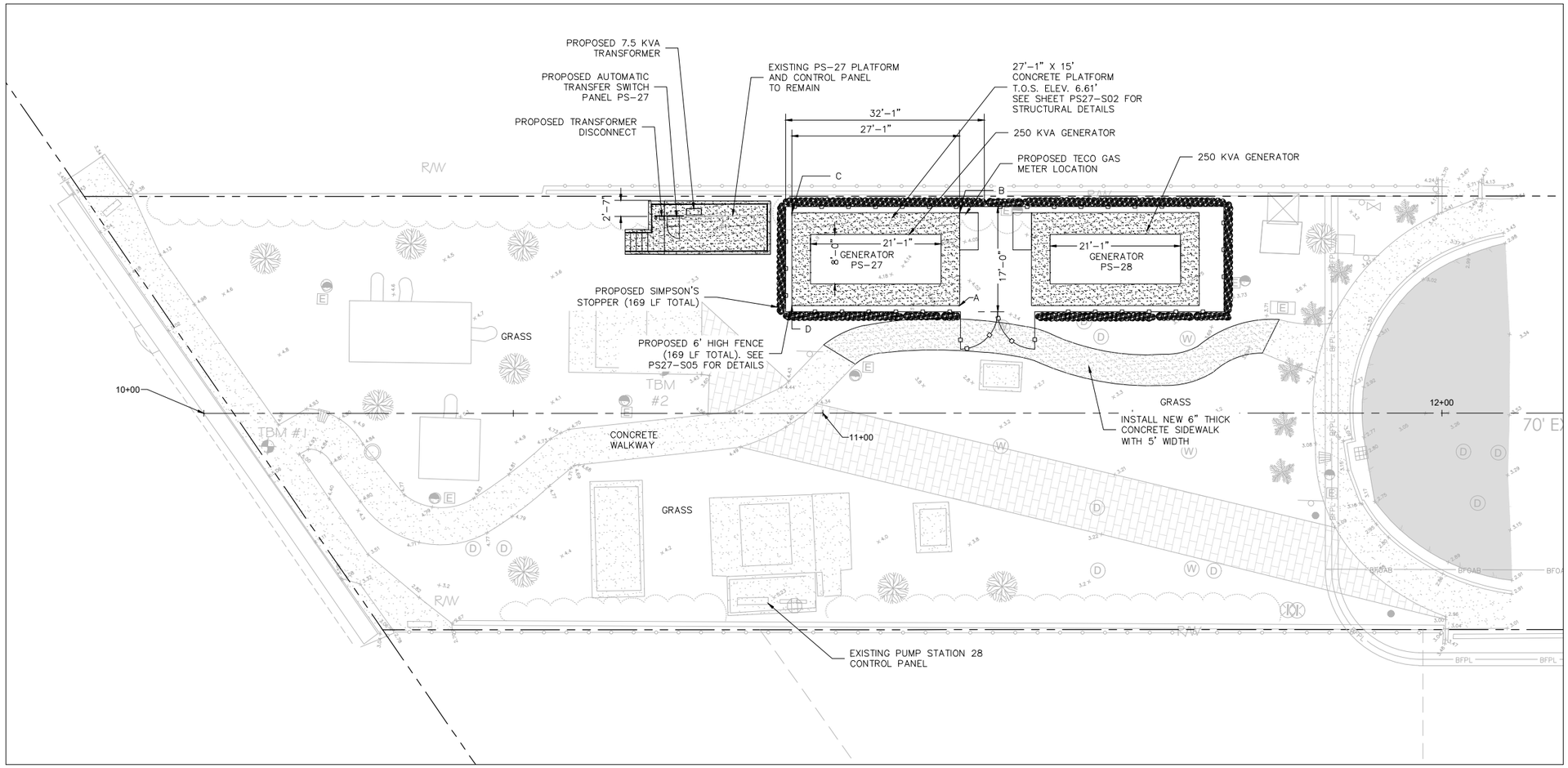

PROPOSED/RESTORATION SITE PLAN

SCALE: 1" = 10'

N

0 10' 20'

(SCALE FOR 11" x 17" SHEET)

LEGEND:

- BFPL — BURIED FPL
- BGT — BURIED GAS TECO
- BGFG — BURIED GAS FGT
- BFOAB — BURIED FIBER OPTIC
- RIGHT-OF-WAY
- LIGHT POLE, MAST ARM
- CATCH BASIN
- (D) STORM DRAINAGE MANHOLE
- (S) SANITARY SEWER MANHOLE
- (E) ELECTRICAL MANHOLE
- (T) TELEPHONE MANHOLE
- (G) GAS MANHOLE
- (W) WATER VALVE
- [P] WIRING PULL BOX
- TREE
- PALM TREE
- HEDGE
- 00.00 × DENOTES EXISTING ELEVATION
- SIGN
- BOLLARD
- CONCRETE LIGHT POLE
- TEMPORARY SITE BENCHMARK
- VALVE
- GARBAGE CAN
- CONCRETE

NOTES:

1. CONTRACTOR TO EMPLOY AND MAINTAIN ALL TRAFFIC CONTROL AND SAFETY MEASURES, DURING CONSTRUCTION.
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.

PS27 GENERATOR SLAB LOCATION SCHEDULE		
POINT	NORTHING	EASTING
A	528520.7905'	937818.8126'
B	528535.7814'	937818.2895'
C	528534.8370'	937791.2230'
D	528519.8461'	937791.7461'

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

NEIGHBORHOOD: PUMP STATION #27 14TH STREET

TITLE: CIVIL PROPOSED/RESTORATION SITE PLAN

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

ENG. OF RECORD: J.A.C.
DESIGN ENGINEER: J.A.C.
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SCALE: AS NOTED

ENGINEER OF RECORD:

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NO	DATE	REVISION	APP'D. BY
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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

a — 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	–
	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.
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

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

NEIGHBORHOOD: PUMP STATION #27 14TH STREET

TITLE: ELECTRICAL GENERAL NOTES

CES CONSULTANTS

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DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

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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.

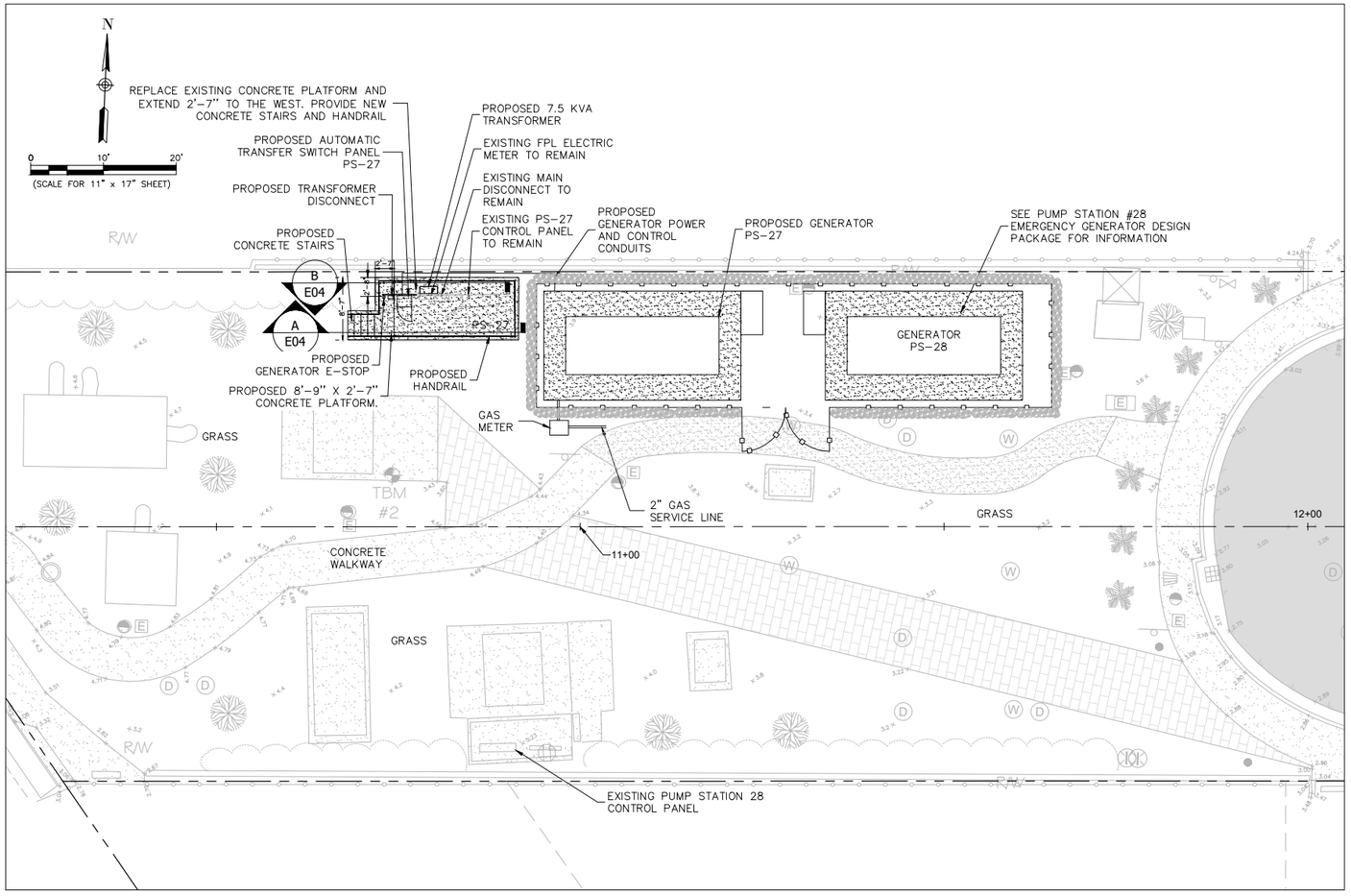
G. FURNISH A NUMBER OF SPARE FUSES EQUALING 10% OF QUANTITY INSTALLED BUT NOT LESS THAN THREE (3) FUSES OF EACH TYPE AND RATING.

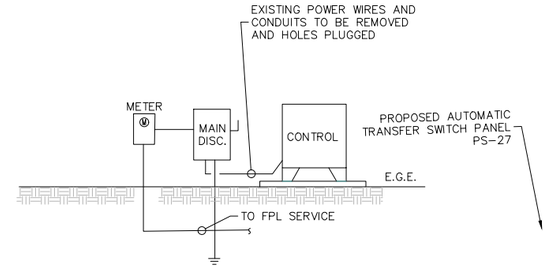
H. INSTALL FUSES WITH LABEL ORIENTED SUCH THAT THE MANUFACTURER, TYPE AND SIZE ARE EASILY READ.

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.

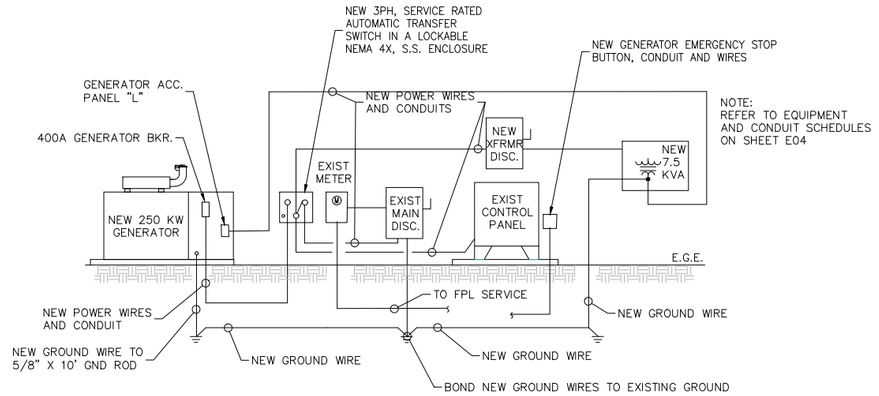
B. INSTALLATION
1. THE WEIGHT OF EACH FIXTURE SHALL REST ONLY ON THE FIXTURE SUPPORT SYSTEM AND ATTACHED TO CEILING CHANNELS. PROVIDE HANGERS, CABLES, SUPPORTS, CHANNELS, FRAMES AND BRACKETS OF EACH KIND REQUIRED TO ERECT THIS EQUIPMENT SAFELY IN PLACE.
2. THE WEIGHT OF EACH FIXTURE SHALL REST ONLY ON 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.





DEMOLITION RISER DIAGRAM

N.T.S.



PROPOSED RISER DIAGRAM

N.T.S.

SCOPE OF WORK:

1. EXISTING CONTROL PANELS AND ELECTRICAL MATERIALS MAY CONTAIN ASBESTOS. TESTING FOR ACM PRIOR TO DEMOLITION IS HIGHLY RECOMMENDED.
2. FURNISH AND INSTALL NEW AUTOMATIC TRANSFER SWITCH, GENERATOR EMERGENCY SHUT-DOWN BUTTON, GENERATOR ACCESSORIES PANEL L, NEW PANEL L TRANSFORMER AND DISCONNECT. REFER TO SHEETS E-3 THRU E-6.
3. FURNISH AND INSTALL COMPLETE 250KW/60HZ/480V, EMERGENCY GENERATOR SET WITH SOUND ATTENUATED ENCLOSURE, SUB-BASE TANK. REFER TO SHEET E-5 FOR DETAILS.
4. FURNISH AND INSTALL GROUNDING FOR ALL NEW EQUIPMENT, HATCHES, PIPING, FENCES, RACKS AND PLATFORMS.
5. FURNISH AND INSTALL ALL 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.
7. FURNISH AND INSTALL NEW GAS METER, COORDINATE GAS SERVICE AND CONNECTION WITH TECO GAS UTILITY.

NOTES:

1. COORDINATE ELECTRICAL SERVICE AND WORK WITH FPL PROJECT MANAGER.
2. COORDINATE WITH FPL REPRESENTATIVE TO PROVIDE TEMPORARY POWER SERVICE AS REQUIRED.
3. CONTRACTOR TO INSTALL NEW EQUIPMENT GROUNDING SYSTEM AND TIE NEW GENERATOR GROUND ROD TO NEW GROUNDING SYSTEM.
4. 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.
5. CONTRACTOR SHALL PERFORM ALL WORK WITHIN PROPERTY AND EASEMENT, AND SHALL NOT DISTURB ADJACENT PRIVATE PROPERTY.
6. CONTRACTOR SHALL VERIFY EXISTING BURIED UTILITIES AND RELOCATE AS NEEDED.
7. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
8. 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.
9. SEE GENERAL NOTES ON SHEET E-1 FOR AREA CLASSIFICATIONS AND THEIR BOUNDARIES.
10. UNLESS OTHERWISE NOTED, ALL ELECTRICAL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
11. SEE DETAILS FOR EQUIPMENT MOUNTING.
12. 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.
13. 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

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

NEIGHBORHOOD: **PUMP STATION #27**
14TH STREET
TITLE: **ELECTRICAL**
SITE PLAN AND RISER DIAGRAM

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

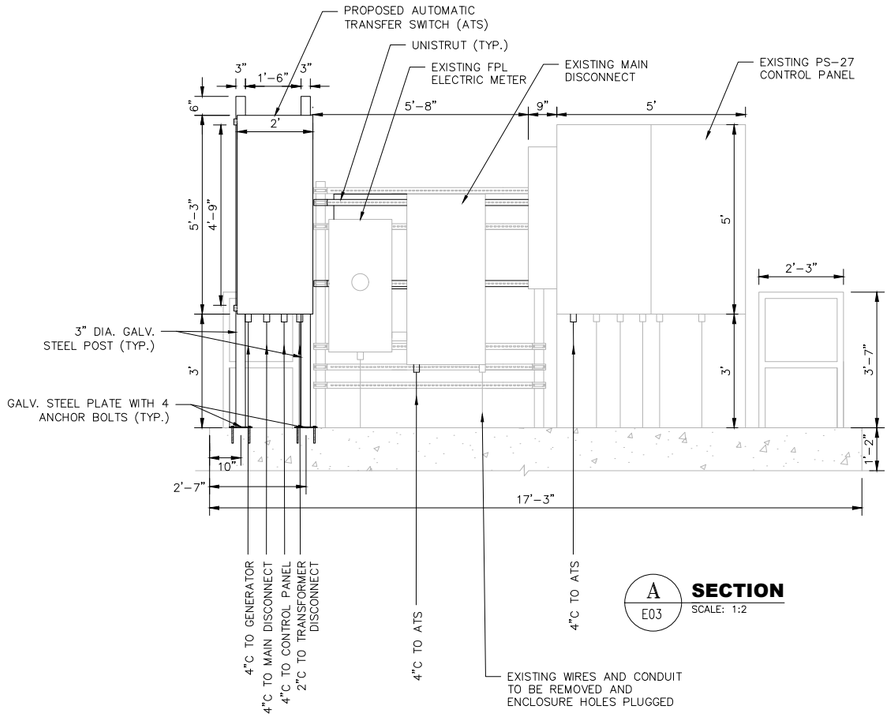
ENG. OF RECORD: E.R.
DESIGN ENGINEER: E.R.
DRAWN BY: D.T.
CHECKER: E.R.
SCALE: AS NOTED

ENGINEER OF RECORD:

EDMUNDO RODRIGUEZ, PE
FL REG No.91400

NO.	DATE	REVISION	APP'D. BY
1	XX/XX/19	60% DESIGN SUBMITTAL	

File Name: PS27-E03.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: XX/XX/19 Sheet: _____ Drawing: **PS27-E03**



A E03 **SECTION**
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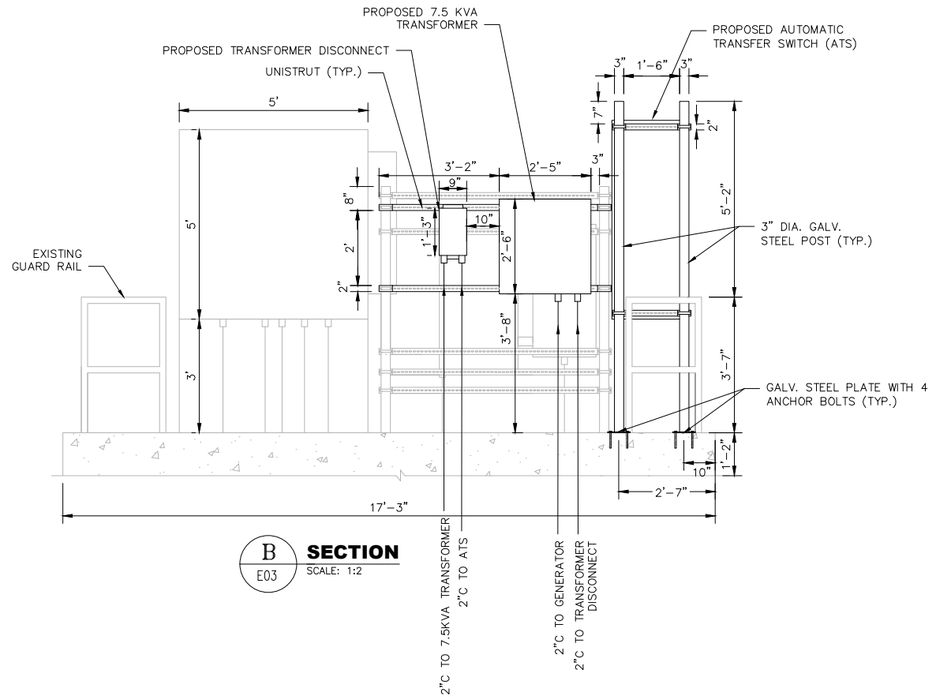

B E03 **SECTION**
SCALE: 1:2

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

NEIGHBORHOOD: **PUMP STATION #27 14TH STREET**

TITLE: **ELECTRICAL SECTIONS**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

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

ENGINEER OF RECORD:

SIMON SAINSBURY, PE
FL REG No.41185

NO.	DATE	REVISION	APP'D. BY
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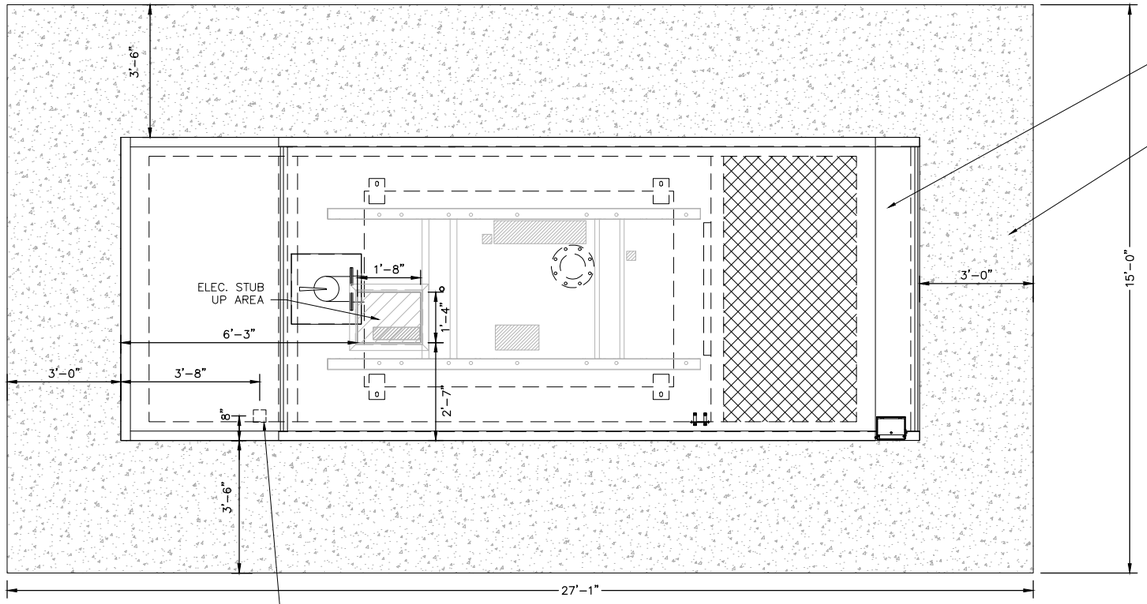
File Name: PS27-E04.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-KB
Date: XX/XX/19 Sheet: _____ Drawing: **PS27-E04**

N

0 2' 4'

(SCALE FOR 11" x 17" SHEET)

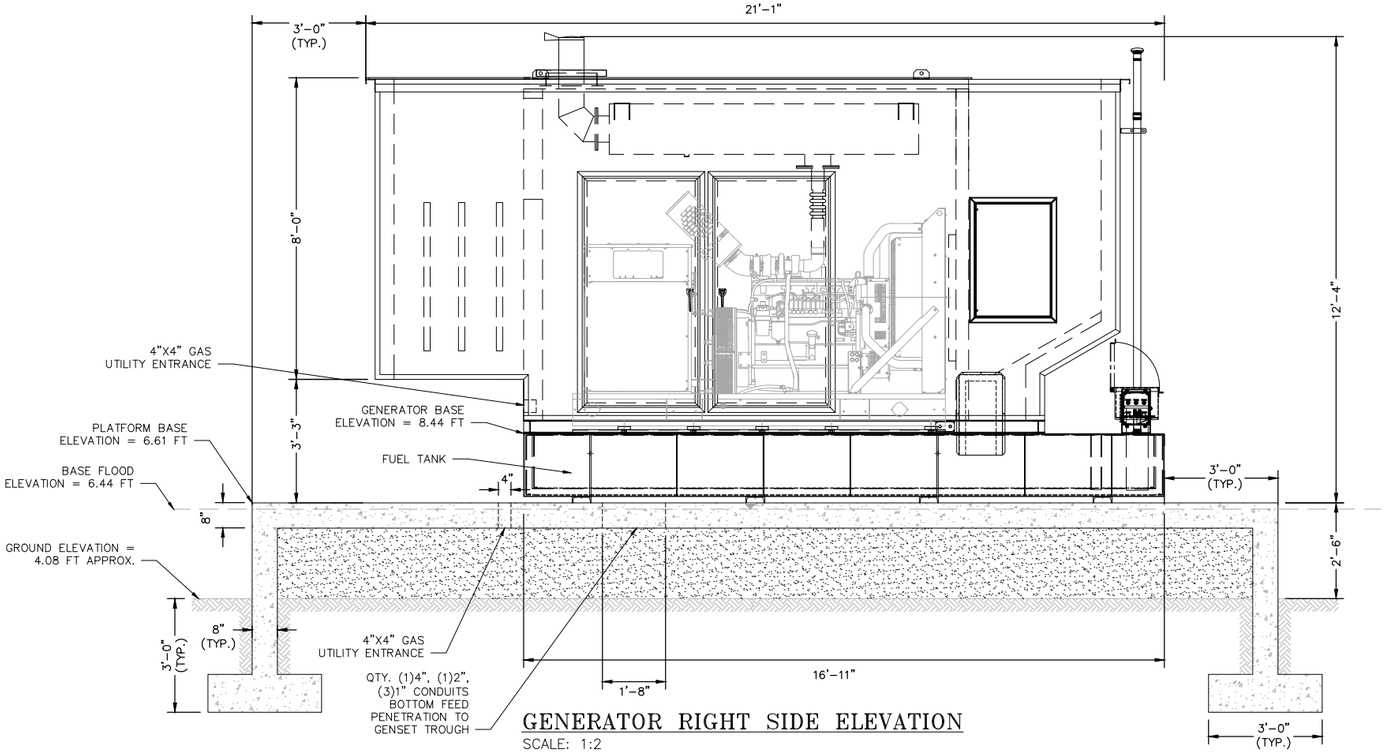


GENERATOR TOP VIEW

SCALE: 1:2

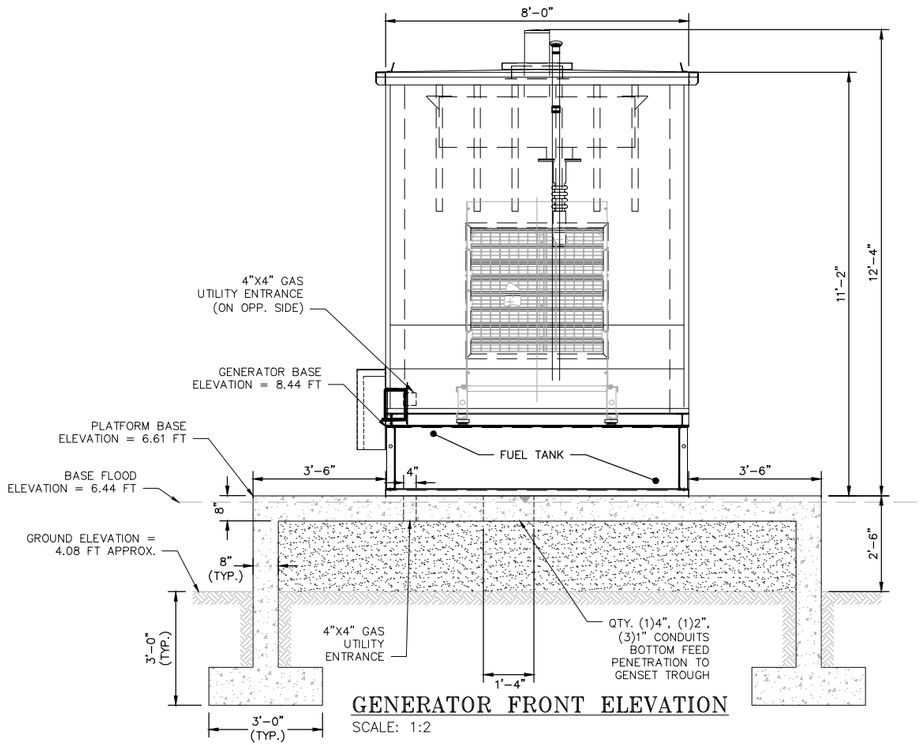
NOTES:

1. GENERATOR AND ENCLOSURE DIMENSIONS ARE BASED ON SHOP DRAWINGS.
2. GROUND ELEVATIONS SHOWN ARE BASED ON SITE SURVEY.
3. BASE FLOOD ELEVATION DETERMINED FROM FEMA FLOODPLAIN MAP PANEL 12086C0317L TO BE IN ZONE AE AND IS 8.0 FT (NGVD) = 6.44 FT (NAVD).
4. THE GENERATOR BASE ELEVATION IS THE BASE FLOOD ELEVATION (BFE) OF 6.44 FT (NAVD) + 2 FT = 8.44 FT (NAVD).
5. GAS LINES TO BE SIZED TO DELIVER 3.5M BTU AT 2-5 PSI.



GENERATOR RIGHT SIDE ELEVATION

SCALE: 1:2



GENERATOR FRONT ELEVATION

SCALE: 1:2

MIAMIBEACH

PUBLIC WORKS DEPARTMENT

1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: **PUMP STATION #27 14TH STREET**

TITLE: **ELECTRICAL GENERATOR ELECTRICAL PLAN**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK

DIRECTOR: JOSE GOMEZ, P.E.

CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP.

ENG. OF RECORD: S.S.

DESIGN ENGINEER: S.S.

DRAWN BY: E.C.

CHECKER: J.A.C.

SCALE: AS NOTED

ENGINEER OF RECORD:

SIMON SAINSBURY, PE
FL REG No.41185

NO.	DATE	REVISION	APP'D. BY
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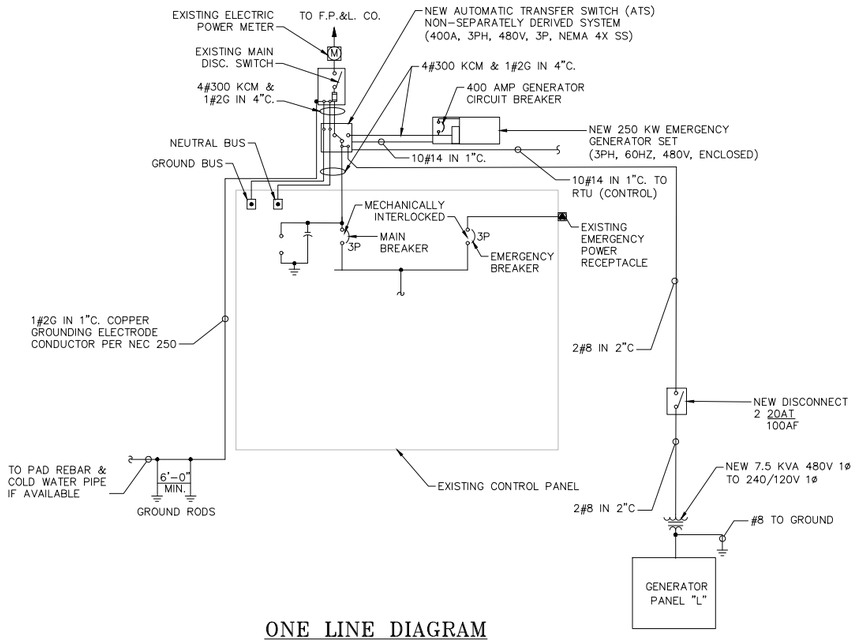
File Name: PS27-E05.dwg

Survey Reference:

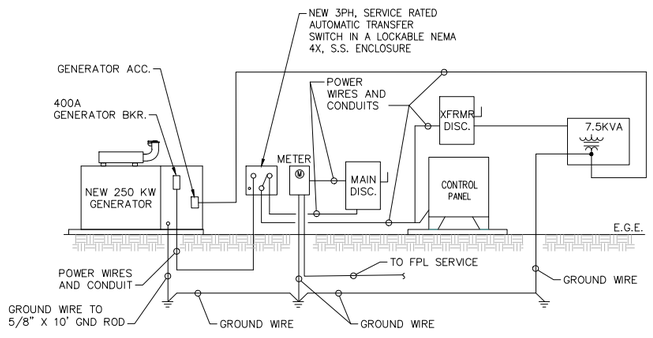
Field Book: _____ Page: _____ Work Order: 2016-091-K8

Date: XX/XX/19 Sheet: _____ Drawing: **PS27-E05**

AVAILABLE 3-PHASE FAULT CURRENT AT THE TRANSFORMER SECONDARY TERMINALS IS ESTIMATED BY FPL TO BE 14106 RMS SYMMETRICAL AMPS AND DOES NOT INCLUDE: CONSIDERATION FOR ANY MOTOR CONTRIBUTION AND/OR FAULT CURRENT ASYMMETRY



ONE LINE DIAGRAM
N.T.S.



ONE LINE POWER DIAGRAM
N.T.S.

ADDITIONAL LOAD CALCULATION

GENERATOR PANEL L	3720 VA

ARC FLASH LABEL

DANGER

Arc – Flash Hazard and Shock Hazard

1' – 0" – Arc Flash Protection Boundary 0.6cal/cm² 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 >= 0.6 cal/cm2, Class 00 Voltage Rated Gloves, Voltage Rated Tools

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

LOCATION: PS-27 PROTECTIVE DEVICE: Main Circuit Breaker

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 24 OF ELECTRICAL GENERAL NOTES SHEET 1.

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)]^1/X

Service Ibf = 14.106 KA SYM.
Motor Locked Rotor Current 441A X 2
En = NORMALIZED INCIDENT ENERGY AT 18"
V = .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/CM²
X = 1.641 *TABLE D.4.2
D = 455 mm = 18" PER NFPA 70E

CALCULATION AT PUMP CONTROL PANEL
RESULTS:
Ia = ARCING CURRENT = 5.88 KA
En = NORMALIZED INCIDENT ENERGY =2.2 J/CM²
E = INCIDENT ENERGY = 0.5 CAL/CM²
Db = DISTANCE TO FLASH PROTECTION BOUNDARY = 278mm = 11"

EQUIPMENT SCHEDULE

DESCRIPTION	PROPERTIES	NOTES
GENSET	EMERGENCY BI-FUEL GENERATOR 250KW	GENSET SUPPLIER TO PROVIDE
GENSET MCB	GENERATOR MAIN CIRCUIT BREAKER 480V 3 PHASE 4W	GENSET SUPPLIER TO PROVIDE
AUTOMATIC TRANSFER SWITCH (ATS)	AUTOMATIC TRANSFER SWITCH	GENSET SUPPLIER TO PROVIDE
GENSET ESTOP	REMOTE GENSET EMERGENCY STOP	GENSET SUPPLIER TO PROVIDE
7.5 KVA TRANSFORMER	7.5KVA 480V TO 240/120V SINGLE PHASE TRANSFORMER	CONTRACTOR TO PROVIDE
TRANSFORMER DISCONNECT	480V, 2P, 20AMP	CONTRACTOR TO PROVIDE

FAULT CURRENT LETTER

FPL

January 14, 2020

GES Consultants
880 SW 145th Ave Ste 106
Pembroke Pines, FL 33027

Re: Available Fault Current for Pump Station # 27 & 28 (14th Street)

Dear GES Consultants:

Thank you for contacting FPL about the available fault current at Pump Station # 27 & 28 (14th Street). Based on the plans you have provided dated January 14 2020, the maximum available fault current at the transformer secondary terminals is estimated to be 14106 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 25 amp type KS 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,

Carlos Henao
Engineer II

CONDUIT SCHEDULE

CONDUIT	DESCRIPTION	NOTES
MAIN DISCONNECT TO ATS	3#300KCM, 1#300KCM N, 1#2G IN 4" C	REMOVE EXISTING MAIN DISCONNECT TO CONTROL PANEL WIRING AND CONDUIT
GENSET MCB TO ATS	3#300KCM, 1#300KCM N, 1#2G IN 4" C	CONTRACTOR TO PROVIDE
ATS TO CONTROL PANEL	3#300KCM, 1#300KCM N, 1#2G IN 4" C	CONTRACTOR TO PROVIDE
ATS TO TRANSFORMER DISCONNECT	2#8 IN 2"C	CONTRACTOR TO PROVIDE
TRANSFORMER DISCONNECT TO 7.5KVA TRANSFORMER	2#8 IN 2"C	CONTRACTOR TO PROVIDE
7.5 KVA TRANSFORMER TO GENSET ACCESORIES PANEL "L"	2#2, 1#2 N, 1#6 G, 2" C	CONTRACTOR TO PROVIDE
GENSET ESTOP	2#14 IN 1'C	CONTRACTOR TO PROVIDE
ATS TO GENSET CONTROLS	10#14 IN 1'C	CONTRACTOR TO PROVIDE
ATS TO CONTROL PANEL (FUTURE RTU)	10#14 IN 1'C	CONTRACTOR TO PROVIDE
GENSET GROUND	GENERATOR ELECTRODE GROUNDING CONDUCTOR (1) #600KCM GROUNDING ELECTRODE WIRE CONNECTED TO (2) 5/8" X 10' COPPER CLAD GROUNDING RODS SPACED AT LEAST 10'.	CONTRACTOR TO PROVIDE. TIE INTO EXISTING GROUND RING PER NEC.
7.5 KVA TRANSFORMER GROUND	ELECTRODE GROUNDING CONDUCTOR (1) #8 GROUNDING ELECTRODE WIRE CONNECTED TO GROUND RING	CONTRACTOR TO PROVIDE. TIE INTO EXISTING GROUND RING PER NEC.

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

NEIGHBORHOOD: **PUMP STATION #27 14TH STREET**

TITLE: **ELECTRICAL RISER AND ONE-LINE DIAGRAM**

GES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP.

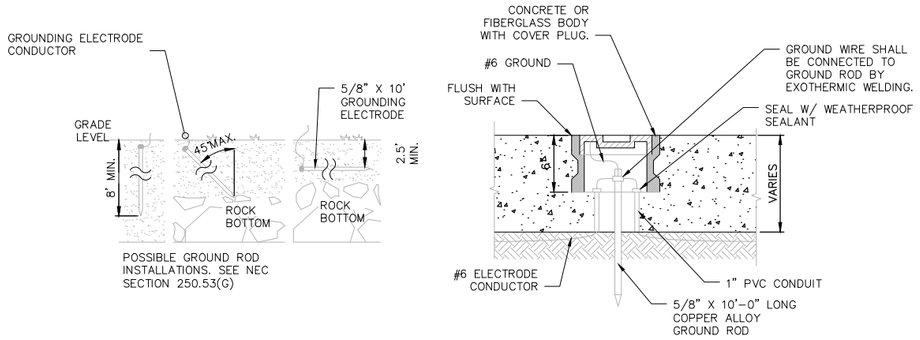
ENG. OF RECORD: S.S.
DESIGN ENGINEER: S.S.
DRAWN BY: E.C.
CHECKER: J.A.C.
SCALE: AS NOTED

ENGINEER OF RECORD:

SIMON SAINSBURY, PE
FL REG No.41185

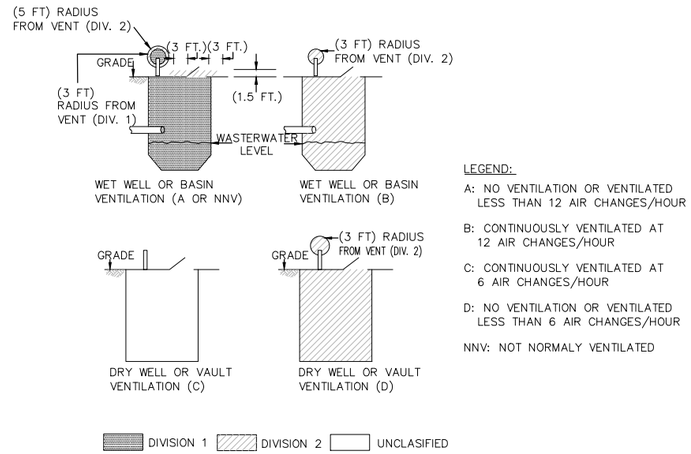
NO.	DATE	REVISION	APP'D. BY
1	XX/XX/19	60% DESIGN SUBMITTAL	

File Name: PS27–E06.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: XX/XX/19 Sheet: _____ Drawing: **PS27-E06**



TYPICAL GROUND ROD DETAIL

N.T.S.



LEGEND:

A: NO VENTILATION OR VENTILATED LESS THAN 12 AIR CHANGES/HOUR

B: CONTINUOUSLY VENTILATED AT 12 AIR CHANGES/HOUR

C: CONTINUOUSLY VENTILATED AT 6 AIR CHANGES/HOUR

D: NO VENTILATION OR VENTILATED LESS THAN 6 AIR CHANGES/HOUR

NNV: NOT NORMALY VENTILATED

NFPA BOUNDARY CLASSIFICATION

N.T.S.

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

NEIGHBORHOOD:

PUMP STATION #27
14TH STREET

TITLE:

ELECTRICAL DETAILS

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP.

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

ENGINEER OF RECORD:

SIMON SAINSBURY, PE
FL REG No.41185

NO.	DATE	REVISION	APP'D. BY
1	XX/XX/19	60% DESIGN SUBMITTAL	

File Name: PS27-E07.dwg
Survey Reference:
Field Book: _____ Page: _____ Work Order: 2016-091-K8
Date: XX/XX/19 Sheet: _____ Drawing: **PS27-E07**

STRUCTURAL GENERAL NOTES

1. UNLESS OTHERWISE NOTED (U.O.N.) ON DRAWINGS OR IN THE SPECIFICATIONS, THE FOLLOWING GENERAL STRUCTURAL NOTES SHALL APPLY TO THIS PROJECT.

2. IF ANY ERRORS OR OMISSIONS APPEAR ON THE DRAWINGS, SPECIFICATIONS OR OTHER DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF SUCH OMISSIONS OR ERRORS PRIOR TO PROCEEDING WITH ANY WORK WHICH APPEARS IN QUESTION. IN THE EVENT OF THE CONTRACTOR'S FAILURE TO GIVE SUCH NOTICE, HE SHALL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY SUCH ERRORS OR OMISSIONS AND THE COST OF RECTIFYING THE SAME.

3. DO NOT CONCEAL ANY WORK UNTIL REQUIRED INFORMATION IS RECORDED. ALL LOCATIONS FOR FUTURE CONNECTIONS OR TIE–INS SHALL BE LEFT UNBURIED AND UNCOVERED UNTIL THE DEPARTMENT'S SURVEYING FORCES OBTAIN AND RECORD THE AS–BUILT INFORMATION.

STRUCTURAL DESIGN CRITERIA

1. THIS DESIGN COMPLIES WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE AND OTHER REFERENCED CODES AND SPECIFICATIONS. ALL REFERENCED CODES AND SPECIFICATIONS SHALL BE LATEST EDITION AT TIME OF PERMIT.

2. WIND LOAD CRITERIA:
   A. BASIC WIND VELOCITY = 186 MPH AT A HEIGHT OF 30 FEET.
   B. NET UPLIFT 0 P.S.F. NOTE: WIND LOADS SHALL COMPLY WITH THE "FLORIDA BUILDING CODE" AND THE "DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" (ASCE 7–16) – ALL WIND PRESSURES, INCLUDING CALCULATED UPLIFT SHALL BE MODIFIED BY THE CORRESPONDING USE AND SHAPE FACTORS, INCLUDING THOSE REQUIRED FOR THE COASTAL BUILDING ZONE, IF APPLICABLE.

3. LIVE LOADS
   A. FLOORS.....100 P.S.F.
   B. TANKS TOP SLAB LOCATED AWAY OF ROADWAY.....150 P.S.F.
   C. TANKS TOP SLAB LOCATED ON ROADWAY – AASHTO HS20–44.

SEE PLANS FOR ADDITIONAL LOADING INFORMATION. RAILING AND STAIR RAILING TO COMPLY WITH F.B.C.

FOUNDATIONS

1. FOUNDATION DESIGN BASED ON "GEOTECHNICAL ENGINEERING STUDY FOR WEST AVENUE IMPROVEMENTS PHASE II NORTH OF 14 STREET (2016–091KB), MIAMI BEACH, FLORIDA" PROJECT, BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, INC. (PROJECT NO. 300208601 OCT 10, 2017)

2. SHOP DRAWINGS FOR CONCRETE AND REINFORCEMENT SHALL BE REQUIRED FOR ANY SPREAD FOOTINGS, COMBINED FOOTINGS OR MAT FOUNDATION.

   A. FOUNDATIONS ARE DESIGNED TO BEAR ON WELL COMPACTED FILL OR UNDISTURBED SOIL WITH A NET ALLOWABLE BEARING CAPACITY OF 2500 P.S.F. FOR SITE WORK INCLUDING SURFACE STRIPPING, EXCAVATION, COMPACTION, PAVING, ETC., SEE SPECIFICATIONS. NOTIFY ENGINEER OF ANY DISCREPANCY IN SOIL BEARING CAPACITY BEFORE PROCEEDING WITH THE WORK.
   B. THE NET ALLOWABLE BEARING PRESSURE CAPACITIES FOR SOILS CONSISTING OF UNDISTURBED SAND, OR SAND AND ROCK, MAY BE TAKEN AS A MAXIMUM OF 2500 POUNDS PER SQUARE FOOT (PSF) UNLESS A HIGHER VALUE IS SUBSTANTIATED BY RECOGNIZED TESTS, ANALYSIS AND PROCEDURE. AT THE TIME OF CONSTRUCTION, A LICENSED ARCHITECT OR REGISTER PROFESSIONAL ENGINEER SHALL SUBMIT TO THE BUILDING OFFICIAL A LETTER ATTESTING THAT THE SITE HAS BEEN OBSERVED AND THE FOUNDATION CONDITIONS ARE SIMILAR TO THOSE UPON WHICH THE DESIGNED IS BASED. THE LETTER SHALL BE SIGNED AND BEAR THE IMPRESS SEAL OF THE ARCHITECT OR ENGINEER, AS APPLICABLE.
   C. TOP OF WALL FOOTINGS TO BE AT SAME ELEVATION AS TOP OF COLUMN FOOTINGS. WALL FOOTING REINFORCEMENT TO RUN CONTINUOUS THROUGH COLUMN FOOTING. STEP WALL FOOTING FROM HIGHER COLUMN FOOTING TO LOWER ONE.
   D. ALL TOP OF FOOTINGS TO BE MINIMUM 1'–4" BELOW THE BOTTOM OF CONCRETE SLAB ON GRADE OR MINIMUM 1'–0" BELOW FINAL GRADE, WHICHEVER IS LOWER. TYPICAL, UNLESS OTHERWISE NOTED ON DRAWINGS.

SLABS ON GRADE

1. SUBMIT SHOP DRAWINGS FOR CONCRETE AND REINFORCEMENT FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

2. ALL CONCRETE SLABS ON GRADE SHALL BE 6" THICK MINIMUM AND REINFORCED WITH #4 @12" E.W.

3. ALL CONCRETE SLABS ON GRADE TO BE IN ACCORDANCE WITH "GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION" (ACI 302.1R).

4. JOINTS SHALL BE PROVIDED IN ALL SLABS ON GRADE WHERE INDICATED ON DRAWINGS CONSTRUCTION JOINTS OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL BE SUBJECTED TO THE ENGINEER'S APPROVAL.

5. PROVIDE SAWCUT JOINTS IN ALL SIDEWALKS AT A MAXIMUM SPACING OF 5 FEET ON CENTER AND ISOLATION JOINTS AT A MAXIMUM OF 20–FEET APART.

6. DEPTH OF SAWCUT JOINTS SHALL BE AS FOLLOWS:
   A. 4" & 6" SLABS = 1–1/2" 8" SLABS = 2".
   B. CUTTING SHOULD BE DONE AS SOON AS POSSIBLE AFTER THE CONCRETE HARDENS, NORMALLY WITHIN 6 HOURS.
   C. THE CONCRETE IS HARD ENOUGH WHEN THE BLADE DOES NOT DISLODGE AGGREGATE AND WHEN THE EDGES OF THE CUT DO NOT RAVEL.

7. CONCRETE SLABS SHALL BE SLOPED AS SHOWN ON THE DRAWINGS. TOPPING OVER CONCRETE SLAB TO ATTAIN SPECIFIED SLOPES IS NOT ALLOWED.

CONCRETE FOR CAST IN PLACE

1. SUBMIT SIGNED AND SEALED CONCRETE DESIGN MIX SHOP DRAWINGS FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

2. CONCRETE DESIGN AND REINFORCEMENT IN ACCORDANCE WITH "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318) AND WITH "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" (ACI 315).

3. ALL CONCRETE WORK IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE" (ACI 301). PRODUCTION OF CONCRETE, DELIVERY, AND PLACING TO BE IN ACCORDANCE WITH "HOT WEATHER CONCRETING" (ACI 305) AND "COLD WEATHER CONCRETING (ACI 306R & 306.1). CONCRETE FOR ENVIRONMENTAL STRUCTURES SHALL ALSO COMPLY WITH THE RECOMMENDATIONS OF ACI 350, "ENVIRONMENTAL ENGINEERING FOR CONCRETE STRUCTURES".

4. CONCRETE CURING SHALL BE DONE THROUGH WATER CURING METHOD AND SHALL COMPLY WITH ACI–305–2.2 LATEST EDITION.

5. NO ADMIXTURES PERMITTED WITHOUT THE REVIEW AND APPROVAL OF ENGINEER OF RECORD.

6. FOR ALL CONCRETE TO BE PLACED IN SLABS (INCLUDING SLABS ON GRADE), THE SLUMP SHALL NOT EXCEED 4–INCHES. NO WAIVERS OF THIS REQUIREMENT SHALL BE CONSIDERED. SLUMP FOR OTHER CONCRETE SHALL NOT EXCEED 5–INCHES, EXCEPT FOR PUMPED CONCRETE CONTAINING WATER REDUCING ADMIXTURES OR TREMIE CONCRETE, IN WHICH CASE SLUMP SHALL NOT EXCEED 8–INCHES.

7. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE: SLABS, WALLS AND BEAMS: 3/4–INCH(NO. 67); ALL OTHER: 1–INCH (NO. 57) BUT NO MORE THAN 75 MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS, WIRES OR PRESTRESSING TENDONS OR DUCTS.

8. CONCRETE MIX – BASED ON CORROSION CONSIDERATIONS DUE TO MODERATELY TO EXTREMELY AGGRESSIVE CONDITIONS ASSOCIATED WITH THE SITE, A CLASS IV CONCRETE IN ACCORDANCE WITH FDOT STANDARDS SHALL BE USED IN THE DESIGN. REFER TO SECTION 5.8 (CORROSION DESIGN CONSIDERATIONS) OF GEOTECHNICAL ENGINEERING STUDY FOR "WEST AVENUE IMPROVEMENTS PHASE II NORTH OF 14 STREET (2016–091KB), MIAMI BEACH, FLORIDA" PROJECT, PAGE 12, BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, INC. (PROJECT NO. 300208601, OCT 10, 2017).
   A. COMPONENT – UNDERGROUND STRUCTURES
   B. ENVIRONMENT – MODERATELY TO EXTREMELY AGGRESSIVE OVER SALTWATER
   C. CONCRETE CLASS – CLASS IV WITH SILICA FUME, METAKAOLIN OR ULTRAFINE FLY ASH
   D. QUALITY CONTROL AND DESIGN STRENGTH AT 28 DAYS – 4,000 PSI; W/C=0.40 (MAX)

9. CONTRACTOR IS RESPONSIBLE FOR THE ADEQUACY OF FORMS, SHORING AND RESHORING AND FOR SAFE PRACTICE IN THEIR USE AND REMOVAL.

10. PLACING OF CONCRETE IN ALL REINFORCED COLUMNS AND WALLS SHALL BE IN EQUAL LIFTS. CONCRETE SHALL BE PLACED THROUGH "ELEPHANT TRUNK" TUBULAR CHUTES LOCATED SUCH THAT THE FREE AIR DROP OF THE MIX DOES NOT EXCEED FIVE FEET.

11. SPECIFIED EXPANSION BOLTS SHALL BE OF THE SIZE INDICATED AND OF THE MAXIMUM EMBEDMENT LENGTH INTO THE CONCRETE. EXPANSION BOLTS AND ACCESSORIES SHALL BE STAINLESS STEEL DEEP WEDGE TYPE OF CHEMICAL ADHESIVE ANCHOR, AS SPECIFIED. LEAD SHIELDS ARE NOT ACCEPTABLE. EXPANSION BOLTS OR CHEMICAL ADHESIVE ANCHORS SHALL NOT BE SUBSTITUTES FOR SPECIFIED EMBEDDED ANCHOR BOLTS WITHOUT THE ENGINEER'S APPROVAL.

12. SAMPLES FOR STRENGTH TEST SHALL BE AS FOLLOWS: OBTAIN AND MOLD THREE (3) SPECIMENS FOR EACH 50 CUBIC YARDS, OR FRACTION THEREOF, OF EACH CLASS OF CONCRETE PLACED EACH DAY OR AS DIRECTED BY THE ENGINEER.

13. IMMEDIATELY AFTER COMPLETION OF PLACEMENT AND FINISHING, CURE CONCRETE CONTINUOUSLY FOR MINIMUM 7 DAYS BY PONDING OR CONTINUOUS SPRINKLING OR APPLICATION OF OTHER ACCEPTABLE MOISTURE RETAINING COVERING SUBJECT TO THE APPROVAL OF THE ENGINEER.

14. SECONDARY CONCRETE TOPPINGS WHERE SPECIFIED OVER STRUCTURAL SLABS OR SLABS–ON–GRADE SHALL BE AS FOLLOWS:
   A. REGULAR WEIGHT CONCRETE TOPPING SHALL HAVE A DESIGN STRENGTH OF 6,000 P.S.I. AT 28 DAYS, WITH MINIMUM 6–1/2 BAGS OF CEMENT (TYPE II) IN EACH CUBIC YARD OF CONCRETE, 3/8–INCH MAXIMUM SIZE OF AGGREGATE AND MAXIMUM 0.45 WATER/CEMENT RATIO.
   B. LIGHTWEIGHT INSULATING CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, AN OVEN DRY DENSITY OF 41+/– 3 PCF A WET DENSITY AT POINT OF PLACEMENT OF 44 PCF +/– 3 PCF AND A THERMAL CONDUCTIVITY ("K" VALUE) OF 0.45 AT 25 PCF.
   C. CONCRETE TOPPING SHALL BE MINIMUM 2–INCHES THICK OVER SUBSTRATE AND SLOPED AS SHOWN ON DRAWINGS. PROVIDE CONSTRUCTION JOINTS AS DETAILED.
   D. NEW SLABS TO RECEIVE TOPPING SHALL BE FINISHED BY BRUSHING SURFACE WITH A COARSE WIRE BROOM TO REMOVE LAITANCE AND SCRATCH SURFACE, AND WATER CURED ONLY CONTINUOUSLY FOR A MINIMUM OF 3 DAYS. PRIOR TO PLACEMENT OF TOPPING, DAMPEN SLAB AND SCRUB INTO THE ROUGHENED SURFACE A COAT OF BONDING GROUT CONSISTING OF ONE PART CEMENT TO PART FINE SAND, MIXED TO THE CONSISTENCY OF THICK CREAM; DO NOT ALLOW TO SET OR DRY BEFORE TOPPING IS APPLIED. PLACE TOPPING, CONSOLIDATE AND FINISH AS SPECIFIED.
   E. EXISTING SLABS TO RECEIVE TOPPING SHALL BE CLEAN OF ALL CONTAMINANTS PREVENTING BOND. SCARIFY EXISTING SURFACE TO A MINIMUM 1/4–INCH AMPLITUDE. PRIOR TO PLACEMENT OF TOPING, DAMPEN SLAB AND SCRUB INTO THE ROUGHENED SURFACE A COAT OF BONDING GROUT CONSISTING OF ONE PART CEMENT TO ONE PART FINE SAND, MIXED TO THE CONSISTENCY OF THICK CREAM; DO NOT ALLOW TO SET OR DRY BEFORE TOPPING IS APPLIED. PLACE TOPPING,CONSOLIDATE AND FINISH AS SPECIFIED IN THE SPECIFICATIONS.

REINFORCING STEEL

1. SUBMIT SHOP DRAWINGS FOR REINFORCING STEEL FOR ENGINEER'S REVIEW PRIOR TO FABRICATION.

2. AS SPECIFIED ON DRAWINGS, NEW BILLET STEEL CONFORMING TO THE LATEST ASTM A615, (STANDARD SPECIFICATION FOR DEFORMED AND PLAIN CARBON STEEL BARS FOR CONCRETE REINFORCEMENT), GRADE 60 MINIMUM SHALL BE USED, FOLLOWING THE SPECIFICATIONS AND FABRICATED IN ACCORDANCE WITH THE LATEST MANUAL OF STANDARD PRACTICE OF THE CRSI AND PLACED IN ACCORDANCE WITH ACI 315 (GUIDE TO PRESENTING REINFORCING STEEL DESIGN DETAILS), AND ACI MANUAL OF STANDARD PRACTICE.

3. COLUMN AND WALL REINFORCEMENT: DOWELS TO BE SAME SIZE AND NUMBER AS VERTICALS ABOVE. LAP 48 BAR DIAMETER OR MINIMUM OF 24–INCHES, WHICHEVER IS GREATER. PROVIDE RIGID TEMPLATES FOR DOWEL LOCATION. PROVIDE STANDARD HOOKS FOR ALL VERTICAL NON–CONTINUOUS REINFORCEMENT, TYPICAL UNLESS OTHERWISE NOTED. PROVIDE MINIMUM 3–FEET HOOKS AT CORNERS FOR ALL HORIZONTAL EXTERIOR WALL REINFORCING AND STANDARD HOOKS FOR HORIZONTAL INTERIOR WALL REINFORCING.

4. ALL DOWELS FOR COLUMNS AND WALLS TO BE SECURED IN POSITION PRIOR TO CONCRETING. DRILLING OR PUSHING THE DOWELS INTO POSITION IN WET CONCRETE IS NOT PERMITTED.

5. CONCRETE COVER TO REINFORCING STEEL, UNLESS OTHERWISE DETAILED ON DRAWINGS:
   A. FOOTINGS, INCLUDING PILING CAPS: 3".
   B. COLUMNS: 2" TO TIES, OR MINIMUM 3" WHEN EXPOSED TO SEWER, WATER OR SOIL.
   C. BEAMS: 2" TO STIRRUPS OR MINIMUM 3" WHEN EXPOSED TO SEWER, WATER OR SOIL.
   D. WALLS: EXTERIOR FACE EXPOSED TO WEATHER=3"; INTERIOR FACE=2"; EXPOSED TO SEWAGE=3".
   E. INTERIOR STRUCTURAL SLABS: 2".
   F. EXPOSED STRUCTURAL SLABS: 2" FOR TOP REINFORCING AND 2" FOR BOTTOM REINFORCING.
   G. SLABS ON GRADE: (MEASURED FROM TOP OF SLAB.) 3".

6. MINIMUM CLEAR SPACING BETWEEN REINFORCING BARS: (BD=BAR DIAMETER)
   A. BEAMS: BD 1–INCH. 1–INCH.
   B. COLUMNS: 1.5 BD 1 1/2–INCHES. 1 1/2–INCHES.
   C. WHERE PARALLEL REINFORCEMENT IS PLACED IN TWO OR MORE LAYERS, BARS IN THE UPPER LAYERS SHALL BE PLACED DIRECTLY ABOVE BARS IN THE BOTTOM LAYER WITH A CLEAR DISTANCE BETWEEN LAYERS NOT LESS THAN 1 INCH.
   D. ALL REINFORCING PLACED THAT DOES NOT COMPLY WITH THE MINIMUM CLEAR SPACING SPECIFIED IN "A", "B" AND "C" ABOVE, WILL BE REJECTED.

7. SLAB, BEAM AND WALL REINFORCEMENT SHALL BE PLACED IN ACCORDANCE WITH THE REINFORCING DIAGRAMS AND LAPPED AS SHOWN ON PLANS OR A MINIMUM OF 40 BAR DIAMETERS FOR TENSION, 30 BAR DIAMETERS FOR COMPRESSION BUT NEVER LESS THAN 18–INCHES, WHICHEVER IS GREATER. BOTTOM BARS SPLICED ONLY AT SUPPORTS, TOP BARS SPLICED ONLY AT MID–SPAN. ALL TOP BARS HOOKED AT NON–CONTINUOUS EDGES (U.O.N.). ALL HOOKS TO BE STANDARD 90 DEGREE OR 180 DEGREE HOOKS AS REQUIRED (U.O.N.).

8. REINFORCEMENT SPLICES:
   A. SPLICES IN SLABS, COLUMNS AND BEAMS MUST BE DONE AS SHOWN ON PLANS.
   B. REINFORCEMENT SPLICES IN STRAIGHT OR CIRCULAR WALLS SHALL BE STAGGERED AT LEAST BE STAGGERED AT LEAST 24 INCHES IN EITHER DIRECTION:
      * HORIZONTALLY (PLAN VIEW) BETWEEN SPLICES IN PARALLEL MATS.
      * VERTICALLY (ELEVATION) BETWEEN SPLICES IN THE SAME MAT. NO SPLICE VERTICALLY (ELEVATION) BETWEEN SPLICES IN THE SAME MAT. NO SPLICE SHALL BE CONTINUOUS WITH THE NEXT ONE, HORIZONTALLY OR VERTICALLY.

9. ADDITIONAL REINFORCEMENT: PROVIDE ADDITIONAL CORNER BARS BENT WITH MINIMUM 30–INCHES LEGS EACH WAY AT CORNERS IN OUTER FACES OF ALL WALLS TO MATCH ALL HORIZONTAL BARS NOT DETAILED WITH A HOOKED END. ADDITIONAL TOP BARS, NOT SHOWN ON DRAWINGS, SHALL BE USED AS REQUIRED TO HOLD IN POSITION MAIN TOP REINFORCEMENT.

10. BOTTOM REINFORCEMENT IS SHOWN ON DRAWINGS WITH DASHED LINES. TOP REINFORCEMENT SHOWN ON DRAWINGS WITH SOLID LINES.

11. THE CONTRACTOR SHALL INFORM THE REBAR DETAILER OF HIS PROPOSED REBAR SUPPORT METHOD AND CONSTRUCTION SEQUENCES. ALL SUPPORT ITEMS AND SPLICES REQUIRED SHALL BE SO DETAILED AND PROVIDED.

12. BAR LENGTHS SHOWN ON DRAWINGS INCLUDE THE HOOK LENGTH. THIS LENGTH IS SHOWN TO INDICATE TO THE CONTRACTOR THE CLOSEST ACCURACY IN BAR LENGTH AND PLACING OF SAME. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THIS LENGTH WITH STRUCTURAL DRAWINGS AND ACTUAL FIELD CONDITIONS AND TO FURNISH THE FINAL BAR DETAILING ON THE CORRESPONDING SHOP DRAWINGS. CONTRACTOR SHALL BRING ALL DISCREPANCIES TO THE ATTENTION OF THE ENGINEER.

13. MECHANICAL CONNECTIONS OF REINFORCING BARS:
   A. ALL MECHANICAL CONNECTIONS SHOWN IN DETAILS OR SPECIFIED SHALL BE THREADED TYPE, COMPLYING WITH ALL LATEST ACI, CRSI AND ASTM REQUIREMENTS FOR A TENSION TYPE SPLICE.
   B. PROVIDE AND PLACE THE REINFORCING REQUIRED FOR FUTURE CONNECTION WITH A THREADED STEEL SLEEVE AND AN INTERNAL PLASTIC COUPLER PROTECTOR ON THE FUTURE CONNECTION END OF SLEEVE.
   C. COMPLY WITH ALL SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS FOR THE REBAR END PREPARATION, COUPLER PROTECTION, CLEARANCES AND PLACING SO AS TO MAKE THE FUTURE CONNECTION POSSIBLE.
   D. NO WELDED TYPE SPLICES SHALL BE USED.

GUARDRAILS & HANDRAILS

1. GUARDRAILS AND HANDRAILS SHALL BE THE PRODUCT OF A COMPANY NORMALLY ENGAGED IN THE MANUFACTURE OF PIPE RAILING. RAILINGS SHALL BE SHOP ASSEMBLED IN LENGTHS NOT TO EXCEED 24 FEET FOR FIELD ERECTION.

2. THE HANDRAIL SHALL BE MADE OF PIPES JOINED TOGETHER BY MEANS OF WELD. SAMPLES OF ALL COMPONENTS, BASES, TOEBOARD AND PIPE MUST BE SUBMITTED FOR APPROVAL OF THE ENGINEER. COMPONENTS THAT ARE POP–RIVETED OR GLUED AT THE JOINTS WILL NOT BE ACCEPTABLE. ALL COMPONENTS MUST BE WELD, UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.

3. TOP RAILING SHALL BE 1½"" SCHEDULE 40 ALUMINUM PIPE ALLOY 6061–T6–E/P. MIDDLE RAILINGS SHALL BE 1½" SCHEDULE 40 ALUMINUM PIPE ALLOY 6061–T6–E/P, ASTM–B–429 OR ASTM–B–221. POST SHALL BE 1½" SCHEDULE 80 ALUMINUM PIPE OF THE SAME ALLOY.

4. GUARDRAILS AND HANDRAILS SHALL BE DESIGNED TO WITHSTAND A 200LB CONCENTRATED LOAD APPLIED IN ANY DIRECTION AND AT ANY POINT ON THE TOP RAIL. GUARDRAILS AND HANDRAILS SHALL ALSO BE DESIGNED TO WITHSTAND A UNIFORM LOAD OF 50 LB/FT APPLIED HORIZONTALLY TO THE TOP RAIL. UNIFORM LOADS ARE NOT TO BE APPLIED SIMULTANEOUSLY WITH THE CONCENTRATED LOADS.

5. INTERMEDIATE VERTICAL OR HORIZONTAL RAILINGS (INFILL) SHALL BE PROVIDED SUCH THAT A 4–INCH DIAMETER SPHERE CANNOT PASS THROUGH ANY OPENING.

6. INTERMEDIATE VERTICAL OR HORIZONTAL RAILINGS (INFILL) SHALL BE DESIGNED TO WITHSTAND A HORIZONTALLY APPLIED NORMAL LOAD OF 50LB ON AN AREA NOT TO EXCEED ONE SQUARE FOOT INCLUDING OPENINGS AND SPACES BETWEEN RAILS.

7. POSTS SHALL NOT INTERRUPT THE CONTINUATION OF THE TOP RAIL AT ANY POINT ALONG THE RAILING, INCLUDING CORNERS AND END TERMINATIONS (OSHA 1910.23). THE TOP SURFACE OF THE TOP RAILING SHALL BE SMOOTH AND SHALL NOT BE INTERRUPTED BY PROJECTED FITTINGS, IF OCCUR.

8. TOEBOARD SHALL CONFORM TO OSHA STANDARDS. TOEBOARD SHALL BE A MINIMUM OF 4" HIGH AND SHALL BE SET 1/4" ABOVE THE WALKING SURFACE. TOEBOARDS SHALL BE PROVIDED ON HANDRAILS AS REQUIRED BY OSHA AND/OR AS SHOWN ON DRAWINGS.

9. ALUMINUM SURFACES IN CONTACT WITH CONCRETE, GROUT OR DISSIMILAR METALS WILL BE PROTECTED WITH A COAT OF BITUMINOUS PAINT, MYLAR ISOLATORS OR OTHER APPROVED MATERIAL.

LEGEND:

- REINFORCED CONCRETE ELEMENT
- REINFORCED CONCRETE ELEMENT BEAM OR WALL OCCURRING BEYOND
- B / PS–006 — DETAIL ID / SHEET NUMBER — SECTION REFERENCE
- 0.00' — FINISHED FLOOR ELEVATION; FEET
- NEGATIVE STEEL REINFORCEMENT FOR CONCRETE SLABS (TOP)
- POSITIVE STEEL REINFORCEMENT FOR CONCRETE SLABS (BOTTOM)
- CENTER LINE

ABBREVIATIONS:

ADD	– ADDITIONAL	HOR.	– HORIZONTAL
ASTM	– AMERICAN SOCIETY FOR TESTING AND MATERIAL	INT	– INTERIOR
ARCH.	– ARCHITECTURAL	L.L.	– LOWER LEVEL
B	– BOTTOM	MAX.	– MAXIMUM
BM.	– BEAM	MECH.	– MECHANICAL
C.C.	– CENTER TO CENTER	MIN.	– MINIMUM
CIP	– CAST IN PLACE	NDS	– NATIONAL DESIGN SPECIFICATIONS
CL	– CLEAR	NO.	– NUMBER
C.L.	– CENTER LINE	O.C.	– ON CENTER
COL.	– COLUMN	O.C.E.W.	– ON CENTER EACH WAY
CONC.	– CONCRETE	PSI	– POUND SQUARE INCH
CONST.	– CONSTRUCTION	REINF.	– REINFORCEMENT
CONT.	– CONTINUOUS	RF. BM.	– ROOF BEAM
DTL.	– DETAIL	SCH.	– SCHEDULE
DWGS.	– DRAWINGS	SPECS.	– SPECIFICATIONS
EA.	– EACH	SS.	STAINLESS STEEL
E.E.	– EACH END	STD.	– STANDARD
E.F.	– EACH FACE	STL.	– STEEL
EL.	– ELEVATION	SUP.	– SUPPLEMENTARY
E.W.	– EACH WAY	T	– TOP
F.B.E.	– FOOTING BOTTOM ELEVATION	TOC	– TOP OF CONCRETE
F.F.E.	– FINISHED FLOOR ELEVATION	TYP.	– TYPICAL
FT	– FEET	VERT.	– VERTICAL
ga.	– GAUGE	VG	– VISUALLY GRADED
GALV.	– GALVANIZED		

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

NEIGHBORHOOD: PUMP STATION #27 14TH STREET

TITLE: STRUCTURAL GENERAL NOTES

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP.

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

ENGINEER OF RECORD:
JOSE A. CARABALLO, PE
FL REG No.73064

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Survey Reference:
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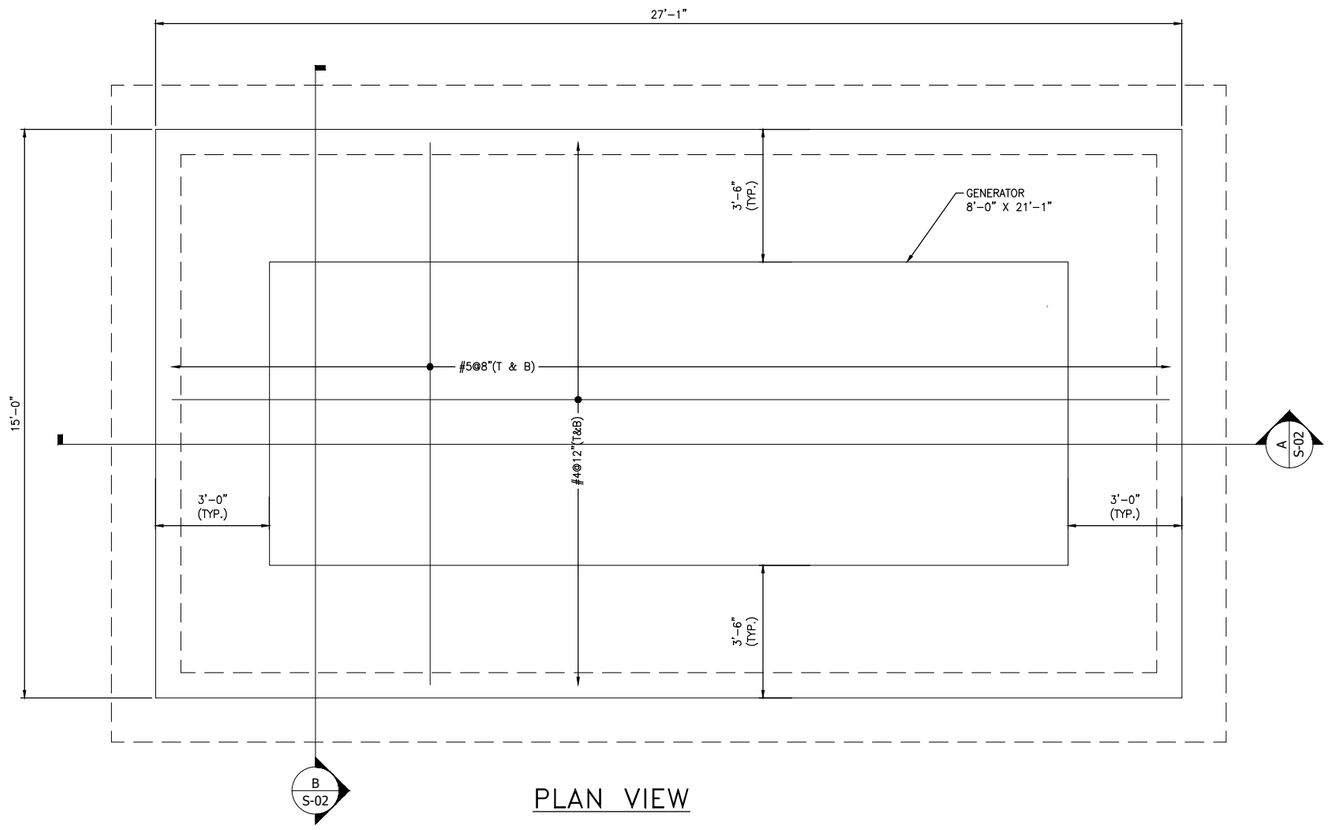
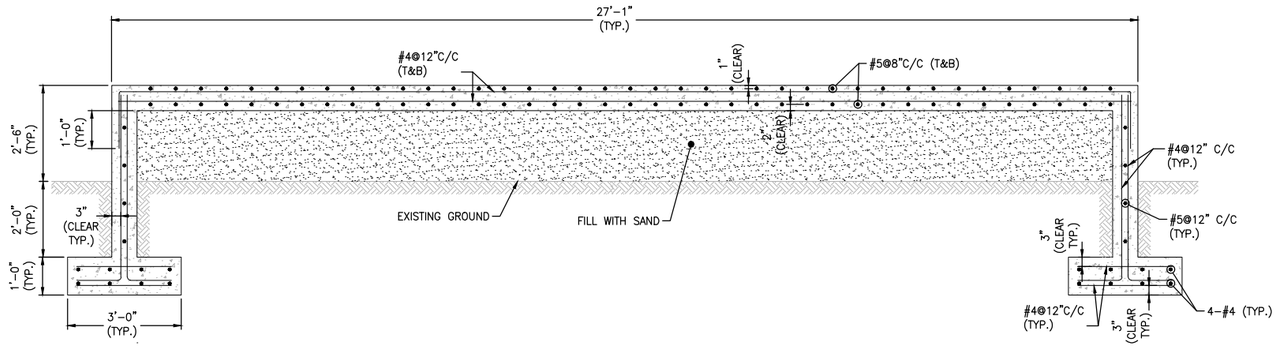


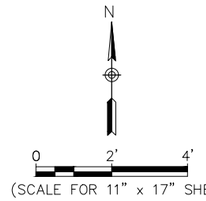
PLAN VIEW

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



A S-02 SECTION

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



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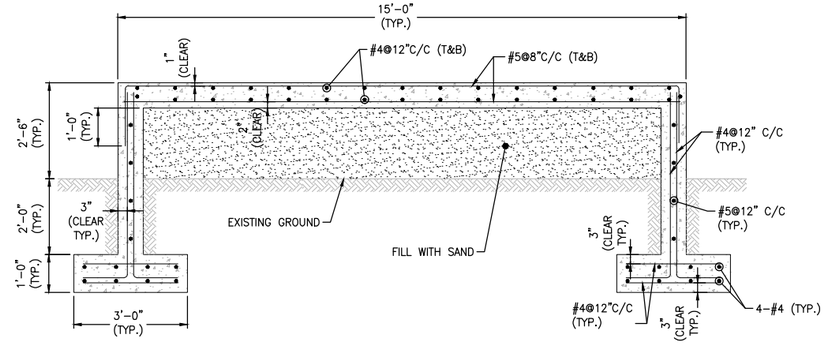

B S-02 SECTION

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

ADDITIONAL NOTES:

1. CONCRETE SHALL HAVE A 28-DAY STRENGTH OF 4,000 PSI MINIMUM.
2. REINFORCING BARS SHALL BE DEFORMED, GRADE 60 AS PER ASTM A-615.
3. GRADE SLAB FOUNDATION SHALL BE SUPPORTED ON WELL-COMPACTED FILL, WITH MINIMUM COMPACTION OF 95% OF MAXIMUM DRY DENSITY FOR LAYERS AS VERIFIED BY FIELD DENSITY TESTS AS PER ASTM D1557.
4. ANCHORING FOR GENERATOR PER MANUFACTURER RECOMMENDATIONS.
5. GENERATOR AND ENCLOSURE DIMENSIONS ARE BASED ON SHOP DRAWINGS.
6. GROUND ELEVATIONS SHOWN ARE BASED ON SITE SURVEY.
7. BASE FLOOD ELEVATION DETERMINED FROM FEMA FLOODPLAIN MAP PANEL 12086C0317L TO BE IN ZONE AE AND IS 8.0 FT (NGVD) = 6.44 FT (NAVD).
8. THE GENERATOR BASE ELEVATION IS THE BASE FLOOD ELEVATION (BFE) OF 6.44 FT (NAVD) + 2 FT = 8.44 FT (NAVD).

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

NEIGHBORHOOD: **PUMP STATION #27 14TH STREET**

TITLE: **STRUCTURAL PLAN VIEW AND SECTIONS**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK
DIRECTOR: JOSE GOMEZ, P.E.
CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP.

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

ENGINEER OF RECORD:

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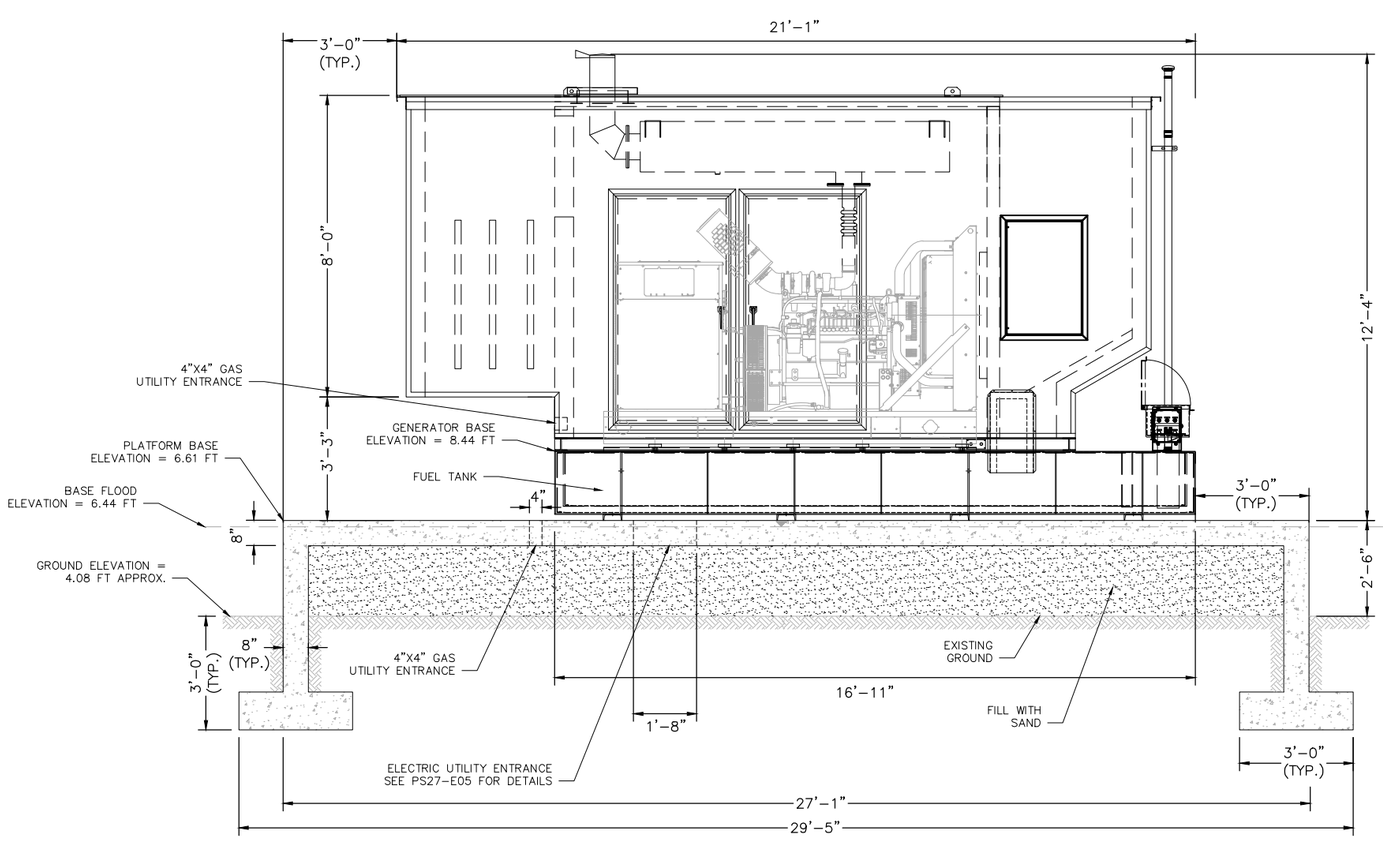
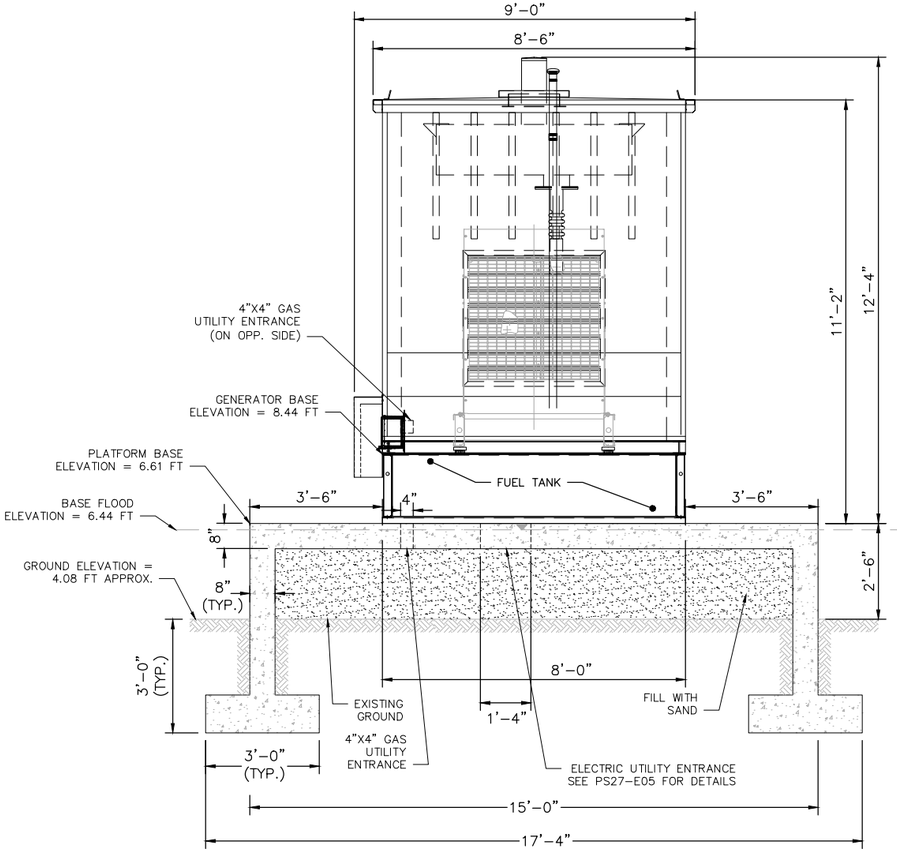


GENERATOR RIGHT SIDE ELEVATION

SCALE: 1:2



GENERATOR FRONT ELEVATION

SCALE: 1:2

NOTES:

1. GENERATOR AND ENCLOSURE DIMENSIONS ARE BASED ON SHOP DRAWINGS.
2. GROUND ELEVATIONS SHOWN ARE BASED ON SITE SURVEY.
3. BASE FLOOD ELEVATION DETERMINED FROM FEMA FLOODPLAIN MAP PANEL 12086C0317L TO BE IN ZONE AE AND IS 8.0 FT (NGVD) = 6.44 FT (NAVD).
4. THE GENERATOR BASE ELEVATION IS THE BASE FLOOD ELEVATION (BFE) OF 6.44 FT (NAVD) + 2 FT = 8.44 FT (NAVD).
5. GAS LINES TO BE SIZED TO DELIVER 3.5M BTU AT 2-5 PSI.

MIAMIBEACH

PUBLIC WORKS DEPARTMENT

1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL.33139

NEIGHBORHOOD: **PUMP STATION #27 14TH STREET**

TITLE: **STRUCTURAL PLAN VIEW AND SECTIONS**

CES CONSULTANTS

CITY MANAGER: ALINA T. HUDAK

DIRECTOR: JOSE GOMEZ, P.E.

CITY ENGINEER: CRISTINA ORTEGA, P.A., ENV SP

ENG. OF RECORD: J.A.C.

DESIGN ENGINEER: J.A.C.

DRAWN BY: E.C.

CHECKER: L.C.M.

SCALE: AS NOTED

ENGINEER OF RECORD:

JOSE A. CARABALLO, PE
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File Name: PS27-S03.dwg

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