ST. LUCIE COUNTY

WAVELAND BEACH
PARK RESTROOMS
PROJECT No. C14-09-386
SECTION 11 , TOWNSHIP 37S, RANGE 41E

INDEX OF PLANS

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4	GENERAL NOTES
5	GEOTECHNICAL NOTES
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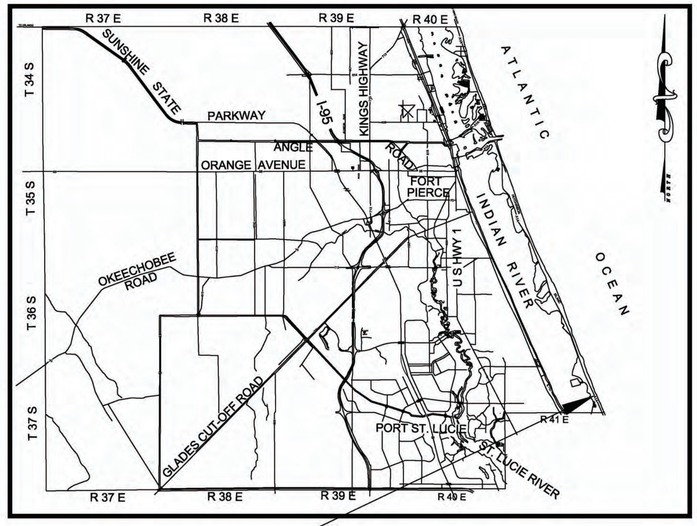
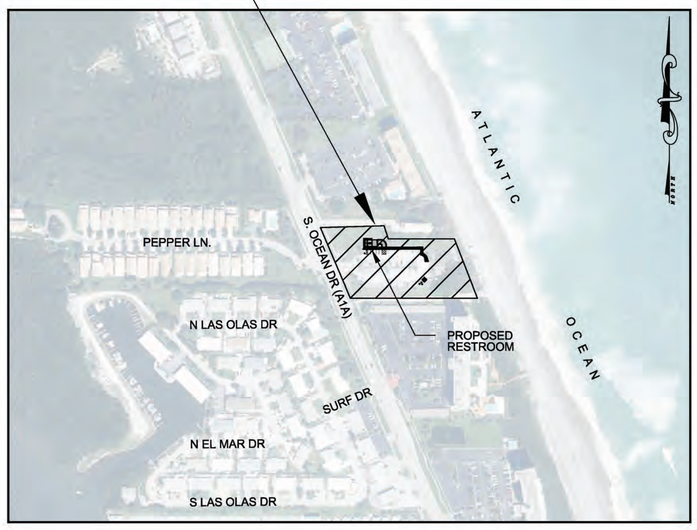


PROJECT LOCATION



GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
DESIGN STANDARDS DATED JANUARY 2014,
AND STANDARD SPECIFICATIONS FOR ROAD AND
BRIDGE CONSTRUCTION DATED 2014,
AS AMENDED BY CONTRACT DOCUMENTS.

ENGINEER OF RECORD

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FLORIDA P.E. NO. 37638
CAPTEC ENGINEERING, INC.
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CAPTEC Engineering, Inc.
Civil Engineering Professionals
Engineering Business
No. EB-0007657

BOARD OF COUNTY COMMISSIONERS

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COUNTY ADMINISTRATION

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PUBLIC WORKS DEPARTMENT

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MICHAEL V. POWLEY, P.E. COUNTY ENGINEER

100% PLANS
11/17/17

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CAPTEC PROJECT NO. 1553.2

LEGEND:

- EXIST. WATER SERVICE
- EXIST. FORCE MAIN
- EXIST. 6" SANITARY
- EXIST. ELEVATION
- PROPOSED ELEVATION
- PROPOSED WATER SERVICE
- PROPOSED SANITARY
- POTENTIAL CONFLICT

PROPOSED SIDEWALK
40' TO ACCESS EASEMENT
6:1 MAX (TYP.)
PROPOSED HOSE BIB
PROPOSED 12" STABILIZED ACCESS MIN LBR 40 (TYPE 'B' STABILIZATION) (SOD ENTIRE AREA)
PROPOSED CLEANOUT ELEV. (-) 0.10
PROPOSED BATHROOM / STORAGE F.F.E. = 5.10
EXIST. VEGETATION LINE
PROPOSED 33 LF 6" PVC SANITARY @ 1% MIN
6:1 MAX (TYP.)
SANITARY MANHOLE RIM. EL.=4.57' INV. EL.=(-)0.30'
PROPOSED 2" PE WATER SERVICE
EXIST. EMERGENCY SIREN
* AS PER ST. LUCIE COUNTY FINISHED FLOOR ELEVATION SET ABOVE ADJACENT PARKING LOT. FEMA FLOOD MAP MINIMUM FINISHED FLOOR ELEVATION NOT REQUIRED FOR NON-HABITABLE BUILDINGS. PROPOSED BATHROOM IS A NON-HABITABLE BUILDING
*FOR SECTIONS SEE SHT. 3
PROPOSED WASHOUT 12" WIDE X 3" HIGH (TYPICAL NORTH AND SOUTH FACE OF RESTROOM)
MARK 12" WHITE CHEVRONS FOR NO PARKING
EXIST. STORMWATER MANHOLE RIM. EL.=4.87'
20' LF 6' WIDE 6" THICK SIDEWALK
EXIST. ABANDONED WATER METER BOX (TO BE REMOVED)
EXIST. PAVEMENT MARKINGS TO REMAIN
EXIST. INLET (TYP.)
CONNECT 6" SAN. TO EXIST. 6" SAN. LINE PROPOSED INV. ELEV. (-) 0.28 ±
RESTRIPE TO INCLUDE (1) HANDICAP PARKING SPACE
FEMA FLOOD ZONE AE 8
FEMA FLOOD ZONE AE 9
EXIST. SIGN
EXIST. R/W
45' HORIZONTAL DIRECTIONAL DRILL (2" HDPE)
2" WS OVER EXIST. FM (6" MIN. CLEARANCE)
EXIST. EOP (TYP.)
COASTAL CONSTRUCTION CONTROL LINE 1986 PLATBOOK 26, PG. 26 ST. LUCIE COUNTY, FLORIDA
EXIST. FENCE
EXIST. LIFT STATION
CONNECT 2" WATER SERVICE TO EXISTING WATER SERVICE AFTER BFF
1 - 2" x 2" TEE
1 - 2" GATE VALVE
EXIST. SIDEWALK
EXIST. 2" BACK FLOW PREVENTER
EXIST. PROPERTY LINE (TYP.)
NOTE: FEMA FLOOD MAP 12111C0314J REV. FEB. 16, 2012

EXIST. PROPERTY LINE (TYP.)
EXIST. 6" PVC SANITARY
SANITARY MANHOLE RIM. EL.=5.59' INV. EL.=0.57'
NORTH
SCALE: 1"=10'
NOTE: ALL DISTURBED AREAS TO BE SODDED
EXISTING SANITARY SEWER TO BE ABANDONED IF NO LONGER IN USE (COORDINATE WITH ST. LUCIE COUNTY)
EXIST. 1 STORY WOOD BUILDING F.F.E.=8.38' TO BE REMOVED
PROPOSED WHEEL STOP (TYP.)
EXISTING DUMPSTER TO BE RELOCATED
EXIST. CONC. SLABS
BENCHMARK SET 5/8" IRC "LB 6852" EL.=5.57' NAVD
- CONTRACTOR TO DEMOLISH EXISTING RESTROOM (COORDINATE WITH ST. LUCIE COUNTY)
- CONTRACTOR TO LEAVE EXISTING BOARDWALK
PROPOSED HANDRAIL TO MATCH EXISTING
EXIST. CONC.
EDGE OF PAVEMENT
EXIST. HANDRAIL (TYP.)
EXIST. CONC. RAMP
EXIST. DECK RAMP
EXIST. WOOD DECK ELEV. 8.14 TO REMAIN
EXIST. POLE
EXIST. PALM TREE (TYP)
EXIST. BIKE RACK
TEMPORARY BENCHMARK SET MNW BL "TRAV. PT. LB 6852" EL.=8.41'
EXIST. HANDRAIL
EXIST. PALM TREES (3)
RELOCATE EXISTING DUMPSTER PROPOSED 10'x10' STABILIZED AREA MIN LBR 40 (TYPE 'B' STABILIZATION) (SOD ENTIRE AREA)
EXIST. SHED (TO BE REMOVED)
EXIST. FENCE
PROPERTY LINES PER ST. LUCIE COUNTY PROPERTY APPRAISER'S GIS MAP (TYP.)
ALL ELEVATIONS REFFERENCE NAVD, 1988 DATUM

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Engineering Business No. EB-0001657

DATE	11/17/17
DRAWN BY	ART
DESIGNED BY	HLT
CHECKED BY	JWC
PROJECT No.	1553.2
HORZ. SCALE	1"=10'
VERT. SCALE	N/A
CADD FILE	1553.2 Site

NO.	DATE	BY	REVISIONS
01	11/17/17	HLT	100% PLANS

SCALE VERIFICATION
0 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

WAVELAND BEACH PARK RESTROOMS
ST. LUCIE, FLORIDA

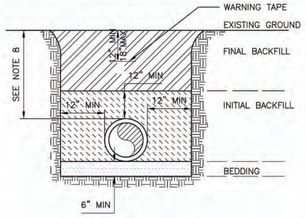
SITE PLAN

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date

JOB No.: 1553.2
SHEET 2 OF 5

P:\1500\1553.2 - Waveland Beach



NOTES:

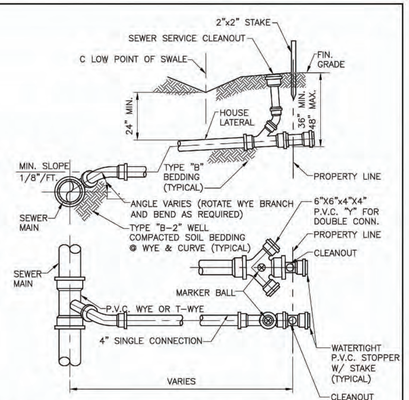
1. BEDDING MATERIAL SHALL BE HAND PLACED IN 6" LIFTS AND SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR APPROVAL MATERIAL. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND ROCK SHALL BE REMOVED.
2. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.
4. BACKFILL SHALL BE DONE WITH APPROVED MATERIAL, CLEAN AND FREE OF ROCKS, MUCK AND OTHER DELETERIOUS MATTER AND COMPACTED BENEATH THE HAUNCHES OF THE PIPE USING MECHANICAL TAMPERS TO 100% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.
5. BACKFILL TO BE COMPACTED ALONG THE SIDES OF THE PIPE AND TO A POINT ONE FOOT ABOVE THE TOP OF THE PIPE TO 100% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.
6. A. WHERE PAVEMENT IS TO BE CONSTRUCTED OVER THE PIPE, THE REMAINING BACKFILL SHALL BE COMPACTED IN 6 INCH LAYERS AND COMPACTED TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180

   B. WHERE "NO" PAVEMENT IS TO BE CONSTRUCTED OVER THE PIPE, THE REMAINING FILL SHALL BE COMPACTED IN 6 INCH LAYERS TO A DENSITY 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
7. CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL TRENCH SAFETY REGULATIONS
8. MINIMUM COVER: UP TO 8" PIPE IS 30" COVER; 10" TO 12" PIPE IS 36" COVER; 14" AND LARGER PIPE IS 48" COVER.

ST. LUCIE COUNTY WATER & WASTEWATER CONSTRUCTION STANDARDS

TYPICAL TRENCH DETAIL

DATE APPROVED: DECEMBER 2015 DRAWING NUMBER: G-5



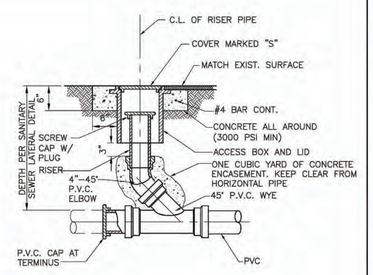
NOTES:

1. INVERT OF LATERAL TO BE 36" FROM FINISHED GRADE EXCEPT ON " WATER 1. LINE SIDE " OF STREET R/W WHERE IT SHALL DROP TO 48" AS SOON AS DEPTH OF SEWER MAIN PERMITS.
2. INSTALL MAGNETIC MARKERS AT THE END OF EACH SERVICE LINE OR OPPOSITE WYES AND RECORD LOCATION.

ST. LUCIE COUNTY WATER & WASTEWATER CONSTRUCTION STANDARDS

SANITARY SEWER LATERAL DETAIL

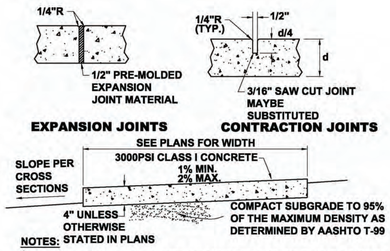
DATE APPROVED: DECEMBER 2015 DRAWING NUMBER: S-1



ST. LUCIE COUNTY WATER & WASTEWATER CONSTRUCTION STANDARDS

SEWER SERVICE CLEANOUT

DATE APPROVED: DECEMBER 2015 DRAWING NUMBER: S-2

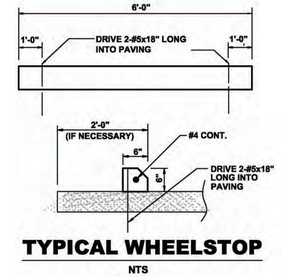


NOTES: STATED IN PLANS

1. PROVIDE EXPANSION JOINTS 20' CENTER TO CENTER, AT PC & PT OF CURVES, JUNCTIONS OF EXISTING & NEW SIDEWALKS, AND WHERE SIDEWALK ABUTS CURBS, DRIVEWAYS & SIMILAR STRUCTURES.
2. PROVIDE CONTRACTION JOINTS 5' CENTER TO CENTER.
3. SOD SHALL BE PLACED BELOW EDGE OF SIDEWALK TO ALLOW DRAINAGE.

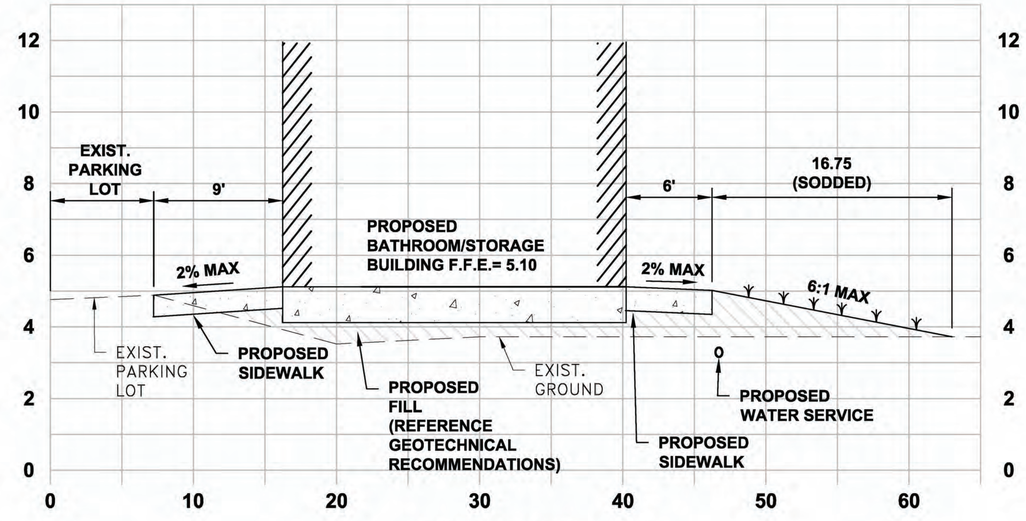
TYPICAL SIDEWALK

N.T.S.



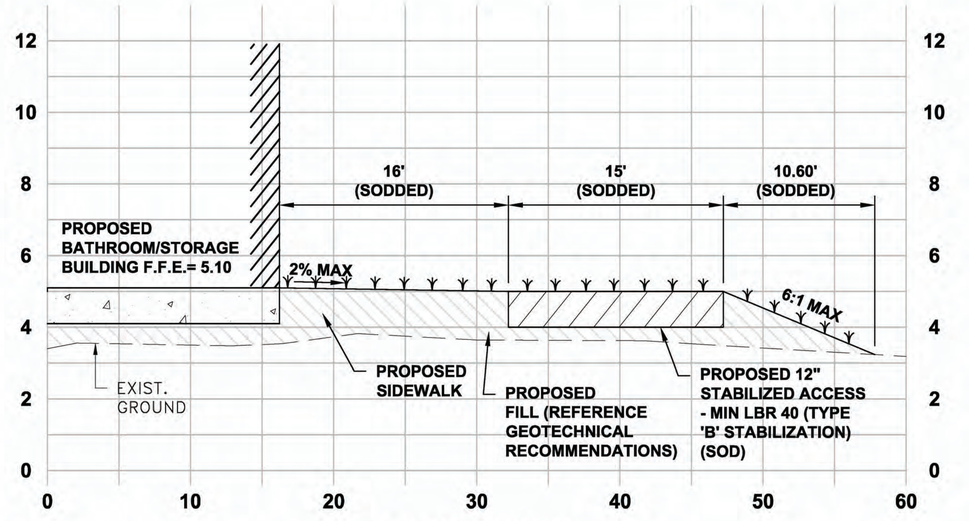
TYPICAL WHEELSTOP

NTS



SECTION A - A

SCALE: 1"=5' HORIZ.
1"=2' VERT.



SECTION B-B

SCALE: 1"=5' HORIZ.
1"=2' VERT.

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Phone: (772) 692-4344
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Engineering Business No. EB-0007057

DATE: 11/17/17
DRAWN BY: AJA
DESIGNED BY: HLT
CHECKED BY: JWC
PROJECT No.: 1553.2
HORZ. SCALE: AS SHOWN
VERT. SCALE: AS SHOWN
CADD FILE: 1553.2 Details

NO.	DATE	BY	REVISIONS
01	11/17/17	HLT	100% PLANS

SCALE VERIFICATION
0 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING. ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

WAVELAND BEACH PARK RESTROOMS
ST. LUCIE COUNTY, FLORIDA
DETAILS AND SECTIONS

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 1553.2
SHEET 3 OF 5

GENERAL NOTES:

FOR THE PURPOSE OF THE GENERAL NOTES BELOW, THE TERM DEPARTMENT SHALL MEAN "ST. LUCIE COUNTY UTILITY DEPARTMENT".

1. ALL CONNECTIONS TO EXISTING MAINS SHALL BE OBSERVED BY THE DEPARTMENT. VALVES ON EXISTING MAINS SHALL BE OPERATED BY DEPARTMENT PERSONNEL OR UNDER THEIR DIRECT SUPERVISION. TAPPING SLEEVE AND VALVE SHALL BE PRESSURE TESTED PRIOR TO TAPPING. IF SERVICE MUST BE CUT OFF TO EXISTING CUSTOMERS, THE DEPARTMENT MUST HAVE THREE DAYS NOTICE TO MAKE NECESSARY NOTIFICATIONS. THE CONTRACTOR MAY BE REQUIRED TO ASSIST IN NOTIFICATIONS. IN THIS EVENT, CONTRACTOR SHALL BE READY TO PROCEED WITH AS MUCH MATERIAL PREASSEMBLED AS POSSIBLE AT THE SITE TO MINIMIZE THE LENGTH OF SERVICE INTERRUPTION. THE DEPARTMENT WILL POSTPONE A SERVICE CUT OFF IF THE CONTRACTOR IS NOT READY TO PROCEED ON SCHEDULE. SUCH CONNECTIONS SHALL BE MADE AT NIGHT TO MINIMIZE EFFECTS UNLESS OTHERWISE AUTHORIZED BY THE DEPARTMENT. NO CUSTOMER SHOULD BE WITHOUT SERVICE FOR MORE THAN FOUR HOURS.

LOCAL CHLORINATION WILL BE REQUIRED FOR ALL PIPE AND FITTINGS USED TO COMPLETE CONNECTIONS WITH POTABLE WATER.

2. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF ST. LUCIE COUNTY UTILITIES MINIMUM DESIGN AND CONSTRUCTION STANDARDS, ONE COPY OF THE CONTRACT DOCUMENTS, INCLUDING PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS, AND COPIES OF ANY REQUIRED CONSTRUCTION PERMITS.

3. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

4. THE LOCATION AND SIZE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY ELECTRONIC METHOD AND BY HAND EXCAVATION IN COORDINATION WITH ALL UTILITY COMPANIES PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. ANY AND ALL CONFLICTS OF EXISTING UTILITIES WITH PROPOSED IMPROVEMENTS SHALL BE RESOLVED BY THE ENGINEER AND DEPARTMENT PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. THIS WORK BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

5. LOCATION OF PROPOSED FACILITIES WILL BE STAKED BY CONTRACTOR. CONTRACTOR MUST GIVE 48 HOURS NOTICE TO THE DEPARTMENT IN ADVANCE OF LAYOUT.

6. PROJECT SUPERINTENDENT: THE CONTRACTOR SHALL PROVIDE A QUALIFIED SUPERINTENDENT TO REMAIN ON THE JOB SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. THE SUPERINTENDENT SHALL BE PRESENT AT THE PRE–CONSTRUCTION MEETINGS. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT BY LETTER PRIOR TO THE PRE–CONSTRUCTION MEETING APPOINTING THE SUPERINTENDENT FOR THIS PROJECT INCLUDING A FORMAL RESUME SHOWING QUALIFICATIONS. IN THE EVENT THE SUPERINTENDENT WILL NOT BE PRESENT FOR ANY PERIOD OF TIME DURING CONTRACT WORK THE CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE IN WRITING TO THE DEPARTMENT, INCLUDING THE APPOINTMENT OF A QUALIFIED REPLACEMENT SUPERINTENDENT WHO WILL BE PRESENT DURING THE CONSTRUCTION. WORK SHALL NOT BE ALLOWED TO PROCEED UNLESS THE ASSIGNED SUPERINTENDENT IS PRESENT.

7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE HIS COMPLETE FAMILIARITY WITH THE PROJECT SITE AND COMPONENTS TO INCLUDE SUBSURFACE CONDITIONS OF SOIL AND GROUNDWATER TABLE.

WARNING: EXACT LOCATION OF UNDERGROUND UTILITIES IS NOT KNOWN NOR IS THIS DRAWING TO BE CONSTRUED AS DEPICTING THE LOCATION OF ALL UNDERGROUND UTILITIES OR STRUCTURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINATION OF LOCATION PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR IS RESPONSIBLE, THEREFORE, FOR ALL DAMAGE AND REPAIR COSTS.

8. DENSITY TESTS OF TRENCH BACKFILL MATERIAL SHALL BE REQUIRED AT INTERVALS OF NOT MORE THAN 500 FEET. DENSITY TESTS OF PAVEMENT OPEN–CUT AREAS INCLUDING ROADS, TURNLANES, AND DRIVES SHALL BE REQUIRED AT EACH OPEN–CUT AT INTERVALS OF NOT MORE THAN 50 FEET. ALL TESTS SHALL COMMENCE AT THE TOP OF CONDUIT AND EVERY 12 INCHES TO THE FINISH GRADE. COMPACTION SHALL BE IN ACCORDANCE WITH ST. LUCIE COUNTY UTILITIES CONSTRUCTION STANDARDS "TYPICAL TRENCH DETAIL" AND "FLEXIBLE PAVEMENT REPLACEMENT DETAIL". FLORIDA BEARING TESTS FOR THE STABILITY OF EXISTING SUBSOIL SHALL BE TAKEN AT INTERVALS OF NOT MORE THAN 500 FEET, AND CLOSER AS MIGHT BE NECESSARY IN THE EVENT OF VARIATIONS IN THE STRATA. A CERTIFIED COPY OF THE TESTS SHALL BE PROVIDED TO THE DEPARTMENT AND THE FLORIDA DEPARTMENT OF TRANSPORTATION OR ST. LUCIE COUNTY ENGINEERING DEPARTMENT DEPENDING ON JURISDICTION. CONTRACTORS BID PRICE SHALL INCLUDE PAYMENT FOR ALL TESTS CONDUCTED BY AN INDEPENDENT TESTING LAB.

9. ANY LANDSCAPING DISTURBED, UNLESS OTHERWISE SHOWN ON THE PLANS, SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE DEPARTMENT AT THE CONTRACTORS EXPENSE.

10. ANY SIDEWALK, CURB AND GUTTER OR PAVEMENT DISTURBED, UNLESS OTHERWISE SHOWN ON PLANS, SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 psi AT 28 DAYS AND ALL CONCRETE WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE AND THE APPLICABLE BUILDING CODES HAVING JURISDICTION IN THE AREA. ALL CONSTRUCTION SHALL MEET ADA REQUIREMENTS. THIS INCLUDES, BUT IS NOT LIMITED TO, DETECTABLE WARNING SURFACES.

11. ALL SOD IS TO BE PLACED FOR THE FULL WIDTH DISTURBED AT THE PER LINEAR FOOT UNIT PRICE FOR SOD. SOD SHALL BE REPLACED TO MATCH EXISTING KIND UNLESS OTHERWISE SHOWN ON PLANS.

12. CONTRACTOR SHALL PROVIDE PROPER BENDS TO MAINTAIN REQUIRED DEPTH AND ALIGNMENT OF PIPE. COST OF BENDS NOT DESIGNATED ON PLANS SHALL BE INCLUDED WITH THE UNIT PRICE FOR PIPE.

13. ANY TREES AND/OR SCRUB OR OTHER VEGETATION NOT TO BE REPLACED SHALL BE REMOVED FROM THE PROJECT AT THE CONTRACTOR'S EXPENSE.

14. ALL RUBBLE AND UNSUITABLE MATERIAL MUST BE REMOVED FROM THE PROJECT AND DISPOSED OF PROPERLY BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

15. MAILBOXES MUST BE CAPABLE OF RECEIVING MAIL AT ALL TIMES.

16. DEFLECT PIPE AS NECESSARY TO OBTAIN THE REQUIRED ALIGNMENT. USE APPROPRIATE FITTINGS WHEN DEFLECTION EXCEEDS 75% OF MANUFACTURER'S RECOMMENDED MAXIMUM DEFLECTION.

17. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED. REFER TO ST. LUCIE COUNTY UTILITIES DEPARTMENT MINIMUM DESIGN & CONSTRUCTION STANDARDS (LATEST EDITION).

18. ALL CONSTRUCTION DEWATERING (WELL POINTS, SUMPS, ETC.) WILL REQUIRE A DEWATERING PERMIT FROM SOUTH FLORIDA WATER MANAGEMENT DISTRICT. THIS SHALL BE OBTAINED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE PRIOR TO BEGINNING OF CONSTRUCTION.

19. THE "TRENCH SAFETY ACT" SHALL BE INCORPORATED INTO THIS CONTRACT AS ENACTED BY THE LEGISLATURE OF THE STATE OF FLORIDA TO BE IN EFFECT AS OF OCTOBER 1, 1990.

20. ALL CONCRETE AND ASPHALT DRIVES MUST BE REPLACED FROM SAW CUT TO EDGE OF PAVEMENT.

21. WATER MAIN DISINFECTION SHALL BE IN ACCORDANCE WITH CURRENT AWWA, BULLETIN C–651.

22. WATER MAINS AND APPURTENANCES SHALL BE IN ACCORDANCE WITH CURRENT AWWA, FDEP AND NSF STANDARDS.

23. MINIMUM COVER TO FINISHED GRADE OVER WATER MAINS SHALL BE 30 INCHES UP TO 8" DIAMETER; 10" OR LARGER SHALL HAVE 36" COVER OR GREATER TO PROVIDE A MINIMUM 18" COVER OVER OPERATING NUT OF GATE VALVES.

24. ALL MAINS SHALL BE TESTED FOR LEAKAGE. WATER SHALL BE SUPPLIED TO THE MAIN AND PUMPED TO THE REQUIRED 150 PSI PRESSURE. THE MAIN TESTED SHALL EITHER BE ISOLATED FROM PRESENTLY POTABLE LINES OR PROTECTED FROM LEAKAGE BY A DOUBLE VALVE ARRANGEMENT.

27. NEWLY CONSTRUCTED FIRE HYDRANTS THROUGHOUT THE PROJECT SHALL HAVE A RED "OUT OF SERVICE" DISK (JOSEPH G. POLLARD CO. OR EQUAL) ATTACHED TO 4" PUMPER NOZZLE CAP. DISK TO BE REMOVED AFTER WATER SYSTEM HAS BEEN APPROVED FOR SERVICE BY THE DEPARTMENT.

THE DEPARTMENT SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY TESTING PROCEDURES. AFTER FLUSHING IS COMPLETED, LINE PRESSURE SHALL BE APPLIED TO THE WATER SYSTEM TO DETERMINE IF ANY MAJOR DEFECTS ARE PRESENT. THE COMPLETE WATER SYSTEM SHALL THEN BE TESTED AT A PRESSURE OF 150 PSI FOR A PERIOD OF NOT LESS THAN TWO HOURS. THE DEPARTMENT MAY, AT ITS DISCRETION, INCREASE THE PERIOD TO FOUR HOURS. MAXIMUM LENGTH OF LINE TO BE TESTED AT ONE TIME SHALL NOT EXCEED 1500 LINEAR FEET. AN OIL FILLED PRESSURE GAUGE UP TO 200 PSI AT 2 POUND INCREMENTS SHALL BE USED FOR ALL PRESSURE TESTS. NO VISIBLE MOVEMENT OF THE SYSTEM SHALL OCCUR AND LEAKAGE SHALL NOT EXCEED:

$$L=\frac{\sqrt{ND}\ P}{7400}\ \text{PER HOUR}$$

L= LEAKAGE IN GALLONS
N= NUMBER OF JOINTS IN TEST SECTION
P= TEST PRESSURE IN PSI.
D= DIAMETER OF PIPE IN INCHES

STANDARD WATER/SEWER SEPARATION STATEMENT

62–555.314 LOCATION OF PUBLIC WATER SYSTEM MAINS.
FOR THE PURPOSE OF THIS SECTION, THE PHRASE "WATER MAINS" SHALL MEAN MAINS, INCLUDING TREATMENT PLANT PROCESS PIPING, CONVEYING EITHER RAW, PARTIALLY TREATED, OR FINISHED DRINKING WATER; FIRE HYDRANT LEADS; AND SERVICE LINES THAT ARE UNDER THE CONTROL OF A PUBLIC WATER SYSTEM AND THAT HAVE AN INSIDE DIAMETER OF THREE INCHES OR GREATER.

(1) HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.
(a) NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.
(b) NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER.
(c) NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY– OR PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY–TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
(d) NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E–6.002, F.A.C.

(2) VERTICAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, AND RECLAIMED WATER PIPELINES.
(a) NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY– OR VACUUM–TYPE SANITARY SEWER OR STORM SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES, ABOVE OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
(b) NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE–TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
(c) AT THE UTILITY CROSSINGS DESCRIBED IN PARAGRAPHS (A) AND (B) ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM–TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY– OR PRESSURE–TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.

(3) SEPARATION BETWEEN WATER MAINS AND SANITARY OR STORM SEWER MANHOLES.
(a) NO WATER MAIN SHALL PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A SANITARY SEWER MANHOLE.
(b) EFFECTIVE AUGUST 28, 2003, WATER MAINS SHALL NOT BE CONSTRUCTED OR ALTERED TO PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A STORM SEWER MANHOLE OR INLET STRUCTURE. WHERE IT IS NOT TECHNICALLY FEASIBLE OR ECONOMICALLY SENSIBLE TO COMPLY WITH THIS REQUIREMENT (I.E., WHERE THERE IS A CONFLICT IN THE ROUTING OF A WATER MAIN AND A STORM SEWER AND WHERE ALTERNATIVE ROUTING OF THE WATER MAIN OR THE STORM SEWER IS NOT TECHNICALLY FEASIBLE OR IS NOT ECONOMICALLY SENSIBLE), THE DEPARTMENT SHALL ALLOW EXCEPTIONS TO THIS REQUIREMENT (I.E., THE DEPARTMENT SHALL ALLOW CONSTRUCTION OF CONFLICT MANHOLES), BUT SUPPLIERS OF WATER OR PERSONS PROPOSING TO CONSTRUCT CONFLICT MANHOLES MUST FIRST OBTAIN A SPECIFIC PERMIT FROM THE DEPARTMENT IN ACCORDANCE WITH PART V OF THIS CHAPTER AND MUST PROVIDE IN THE PRELIMINARY DESIGN REPORT OR DRAWINGS, SPECIFICATIONS, AND DESIGN DATA ACCOMPANYING THEIR PERMIT APPLICATION THE FOLLOWING INFORMATION:
1. TECHNICAL OR ECONOMIC JUSTIFICATION FOR EACH CONFLICT MANHOLE.
2. A STATEMENT IDENTIFYING THE PARTY RESPONSIBLE FOR MAINTAINING EACH CONFLICT MANHOLE.
3. ASSURANCE OF COMPLIANCE WITH THE DESIGN AND CONSTRUCTION REQUIREMENTS IN SUB–SUBPARAGRAPHS A. THROUGH D. BELOW.
a. EACH WATER MAIN PASSING THROUGH A CONFLICT MANHOLE SHALL HAVE A FLEXIBLE, WATERTIGHT JOINT ON EACH SIDE OF THE MANHOLE TO ACCOMMODATE DIFFERENTIAL SETTLING BETWEEN THE MAIN AND THE MANHOLE.
b. WITHIN EACH CONFLICT MANHOLE, THE WATER MAIN PASSING THROUGH THE MANHOLE SHALL BE INSTALLED IN A WATERTIGHT CASING PIPE HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25–INCH–THICK DUCTILE IRON PIPE).
c. EACH CONFLICT MANHOLE SHALL HAVE AN ACCESS OPENING, AND SHALL BE SIZED, TO ALLOW FOR EASY CLEANING OF THE MANHOLE.
d. GRATINGS SHALL BE INSTALLED AT ALL STORM SEWER INLETS UPSTREAM OF EACH CONFLICT MANHOLE TO PREVENT LARGE OBJECTS FROM ENTERING THE MANHOLE.

(4) SEPARATION BETWEEN FIRE HYDRANT DRAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS. NEW OR RELOCATED FIRE HYDRANTS WITH UNDERGROUND DRAINS SHALL BE LOCATED SO THAT THE DRAINS ARE AT LEAST THREE FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.; AT LEAST THREE FEET, AND PREFERABLY TEN FEET, FROM ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER; AT LEAST SIX FEET, AND PREFERABLY TEN FEET, FROM ANY EXISTING OR PROPOSED GRAVITY– OR PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.; AND AT LEAST TEN FEET FROM ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E–6.002, F.A.C.

(5) EXCEPTIONS. WHERE IT IS NOT TECHNICALLY FEASIBLE OR ECONOMICALLY SENSIBLE TO COMPLY WITH THE REQUIREMENTS IN SUBSECTION (1) OR (2) ABOVE, THE DEPARTMENT SHALL ALLOW EXCEPTIONS TO THESE REQUIREMENTS IF SUPPLIERS OF WATER OR CONSTRUCTION PERMIT APPLICANTS PROVIDE TECHNICAL OR ECONOMIC JUSTIFICATION FOR EACH EXCEPTION AND PROVIDE ALTERNATIVE CONSTRUCTION FEATURES THAT AFFORD A SIMILAR LEVEL OF RELIABILITY AND PUBLIC HEALTH PROTECTION. ACCEPTABLE ALTERNATIVE CONSTRUCTION FEATURES INCLUDE THE FOLLOWING:
(a) WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND JOINTS IN THE WATER MAIN ARE BEING LOCATED LESS THAN THE REQUIRED MINIMUM DISTANCE FROM JOINTS IN THE OTHER PIPELINE:
1. USE OF PRESSURE–RATED PIPE CONFORMING TO THE AMERICAN WATER WORKS ASSOCIATION STANDARDS INCORPORATED INTO RULE 62–555.330, F.A.C., FOR THE OTHER PIPELINE IF IT IS A GRAVITY– OR VACUUM–TYPE PIPELINE;
2. USE OF WELDED, FUSED, OR OTHERWISE RESTRAINED JOINTS FOR EITHER THE WATER MAIN OR THE OTHER PIPELINE; OR
3. USE OF WATERTIGHT CASING PIPE OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR EITHER THE WATER MAIN OR THE OTHER PIPELINE.
(a) WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THREE FEET HORIZONTALLY FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND IS BEING LAID LESS THAN THE REQUIRED MINIMUM VERTICAL DISTANCE FROM THE OTHER PIPELINE:
1. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25–INCH–THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE WATER MAIN; AND
2. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25–INCH–THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE OTHER PIPELINE IF IT IS NEW AND IS CONVEYING WASTER.

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PARKS, RECREATION, & FACILITIES
ADMINISTRATION OFFICE:
(772) 462–1610
2000 VIRGINIA AVENUE
FORT PIERCE, FL 34982

10 DAYS PRIOR TO CROSSING EXISTING UTILITY LINES THE CONTRACTOR WILL POT HOLE THE LOCATION OF THE EXISTING UTILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION.

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Engineering Business
No. EB-0007657

DATE:	11/17/17
DRAWN BY:	AJA
DESIGNED BY:	HLT
CHECKED BY:	JWC
PROJECT No.:	1553.2
HORZ. SCALE:	HLT
VERT. SCALE:	N/A
CADD FILE:	1553.2 General Notes

REVISIONS

NO.	DATE	BY	
01	11/17/17	HLT	100% PLANS

SCALE VERIFICATION
0 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING. ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

WAVELAND BEACH PARK RESTROOMS
ST. LUCIE COUNTY, FLORIDA
GENERAL NOTES

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P.E. No. 37638

Printed Date:

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THIS GEOTECHNICAL ENGINEERING EVALUATION IS AN EXCERPT FROM ANDERSEN ANDRE CONSULTING ENGINEERS' (AACE) GEOTECHNICAL ENGINEERING EVALUATION DATED 10/13/2016. AACE FILE NO. 16-193

7.0 GEOTECHNICAL ENGINEERING EVALUATION

7.1 GENERAL

BASED ON THE FINDINGS OF OUR SITE EXPLORATION, OUR EVALUATION OF SUBSURFACE CONDITIONS, AND JUDGMENT BASED ON OUR EXPERIENCE WITH SIMILAR PROJECTS, WE CONCLUDE THAT THE SOILS UNDERLYING THIS SITE ARE GENERALLY SATISFACTORY TO SUPPORT THE PROPOSED SINGLE–STORY RESTROOM BUILDING ON CONVENTIONAL SPREAD FOUNDATIONS OR A MONOLITHIC SLAB. HOWEVER, IN OUR OPINION, THE BEARING CAPACITY OF THE NEAR_SURFACE SOILS SHOULD BE IMPROVED IN ORDER TO REDUCE THE RISK OF UNSATISFACTORY FOUNDATION PERFORMANCE. THE GENERAL SOIL IMPROVEMENT WE RECOMMEND INCLUDES PROOFROLLING THE BUILDING SITE WITH A HEAVY VIBRATORY ROLLER.

FOLLOWING ARE SPECIFIC RECOMMENDATIONS FOR SITE PREPARATION PROCEDURES AND FOUNDATION DESIGN FOR THE PROJECT.
7.2 SITE PREPARATION RECOMMENDATIONS

7.2.1 CLEARING

THE BUILDING AREA WITHIN LINES FIVE FEET OUTSIDE BUILDING PERIMETERS SHOULD BE CLEARED, GRUBBED AND STRIPPED OF ALL SURFACE VEGETATION, TRASH, DEBRIS AND TOPSOIL. UNDERGROUND UTILITIES (INCLUDING ANY SEPTIC TANKS AND DRAIN FIELDS) SHOULD BE REMOVED ENTIRELY AND THEIR EXCAVATIONS BACKFILLED AND COMPACTED TO THE SPECIFICATIONS NOTED BELOW.

7.2.2 COMPACTION PROCEDURES

FOLLOWING CLEARING, THE PROPOSED BUILDING AREA ("PAD") SHOULD BE PROOFROLLED WITH A VIBRATORY ROLLER; ANY SOFT, YIELDING SOILS DETECTED SHOULD BE EXCAVATED AND REPLACED WITH CLEAN, COMPACTED BACKFILL THAT CONFORMS WITH THE RECOMMENDATIONS BELOW. SUFFICIENT PASSES SHOULD BE MADE DURING THE PROOFROLLING OPERATIONS TO PRODUCE DRY DENSITIES NOT LESS THAN 95 PERCENT OF THE MODIFIED PROCTOR (ASTM D1557) MAXIMUM DRY DENSITY OF THE COMPACTED MATERIAL TO DEPTHS OF 2 FEET BELOW THE COMPACTED SURFACE, OR 2 FEET BELOW THE BOTTOM OF FOOTINGS, WHICHEVER IS LOWER. IN ANY CASE, THE BUILDING AREA SHOULD RECEIVE NOT LESS THAN 10 OVERLAPPING PASSES, HALF OF THEM IN EACH OF TWO PERPENDICULAR DIRECTIONS.

AFTER THE EXPOSED SURFACE HAS BEEN PROOFROLLED AND TESTED TO VERIFY THAT THE DESIRED DRY DENSITY HAS BEEN OBTAINED, THE BUILDING AREA MAY BE FILLED TO THE DESIRED GRADES. ALL FILL MATERIAL SHOULD CONFORM TO THE RECOMMENDATIONS BELOW. IT SHOULD BE PLACED IN UNIFORM LAYERS NOT EXCEEDING 12 INCHES IN LOOSE THICKNESS. EACH LAYER SHOULD BE COMPACTED TO A DRY DENSITY NOT LESS THAN 95 PERCENT OF ITS MODIFIED PROCTOR (ASTM D1557) MAXIMUM VALUE.

WE RECOMMEND THAT THE SITE PREPARATION CONTRACTOR CLOSELY MONITOR THE VIBRATIONS PRODUCED DURING THE PROOFROLLING OPERATIONS SO THAT THEY DO NOT ADVERSELY AFFECT ADJACENT PARK FEATURES.

AFTER COMPLETION OF THE GENERAL SITE PREPARATIONS DISCUSSED ABOVE, THE BOTTOM OF FOUNDATION EXCAVATIONS (OR THICKENED SLAB EDGE AREAS) DUG THROUGH THE COMPACTED NATURAL GROUND, FILL OR BACKFILL, SHOULD BE COMPACTED SO AS TO DENSIFY SOILS LOOSENED DURING OR AFTER THE EXCAVATION PROCESS, OR WASHED OR SLOUGHED INTO THE EXCAVATION PRIOR TO THE PLACEMENT OF FORMS. A VIBRATORY, WALK–BEHIND PLATE COMPACTOR CAN BE USED FOR THIS FINAL DENSIFICATION IMMEDIATELY PRIOR TO THE PLACEMENT OF REINFORCING STEEL, WITH PREVIOUSLY DESCRIBED DENSITY REQUIREMENTS TO BE MAINTAINED BELOW THE FOUNDATION LEVEL.

FOLLOWING REMOVAL OF FOUNDATION FORMS, BACKFILL AROUND FOUNDATIONS SHOULD BE PLACED IN LIFTS SIX INCHES OR LESS IN THICKNESS, WITH EACH LIFT INDIVIDUALLY COMPACTED WITH A PLATE TAMPER. THE BACKFILL SHOULD BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MODIFIED PROCTOR (ASTM D1557) MAXIMUM DRY DENSITY.

7.2.3 STRUCTURAL FILL AND UTILITY TRENCHES

ALL FILL MATERIAL UNDER THE BUILDING AREA SHOULD CONSIST OF CLEAN SANDS, FREE OF ORGANICS AND OTHER DELETERIOUS MATERIALS. THE FILL MATERIAL SHOULD HAVE NOT MORE THAN 12 PERCENT BY DRY WEIGHT PASSING THE U.S. NO. 200 SIEVE, AND NO PARTICLE LARGER THAN 3 INCHES IN DIAMETER. BACKFILL BEHIND WALLS, IF ANY, SHOULD BE PARTICULARLY PERVIOUS, WITH NOT MORE THAN 4 PERCENT BY DRY WEIGHT PASSING THE U.S. NO. 200 SIEVE. THE SHALLOW FINE SANDS (SP) ENCOUNTERED ON THIS SITE ARE GENERALLY CONSIDERED TO BE SUITABLE FOR USE AS STRUCTURAL FILL, AS WELL AS UTILITY AND PIPE TRENCH BACKFILL.

7.2.4 QUALITY ASSURANCE

WE RECOMMEND ESTABLISHING A COMPREHENSIVE QUALITY CONTROL PROGRAM TO VERIFY THAT ALL SITE PREPARATION AND FOUNDATION AND PAVEMENT CONSTRUCTION IS CONDUCTED IN ACCORDANCE WITH THE APPROPRIATE PLANS AND SPECIFICATIONS. MATERIALS TESTING AND INSPECTION SERVICES SHOULD BE PROVIDED BY ANDERSEN ANDRE CONSULTING ENGINEERS, INC.

AN EXPERIENCED ENGINEERING TECHNICIAN SHOULD MONITOR ALL STRIPPING AND GRUBBING ON A FULL–TIME BASIS TO VERIFY THAT DELETERIOUS MATERIALS HAVE BEEN REMOVED. THE TECHNICIAN SHOULD OBSERVE THE PROOF–ROLLING OPERATION TO VERIFY THAT THE APPROPRIATE NUMBER OF PASSES ARE APPLIED TO THE SUBGRADE. IN–SITU DENSITY TESTS SHOULD BE CONDUCTED DURING FILLING ACTIVITIES AND BELOW ALL FOOTINGS, FLOOR SLABS AND PAVEMENT AREAS TO VERIFY THAT THE REQUIRED DENSITIES HAVE BEEN ACHIEVED. IN–SITU DENSITY VALUES SHOULD BE COMPARED TO LABORATORY PROCTOR MOISTURE–DENSITY RESULTS FOR EACH OF THE DIFFERENT NATURAL AND FILL SOILS ENCOUNTERED.

7.3 FOUNDATION AND SLAB DESIGN

AFTER THE FOUNDATION SOILS HAVE BEEN PREPARED AS RECOMMENDED ABOVE, THE SITE SHOULD BE SUITABLE FOR SUPPORTING THE PROPOSED SINGLE–STORY RESTROOM CONSTRUCTION ON CONVENTIONAL SHALLOW FOUNDATIONS OR A MONOLITHIC SLAB PROPORTIONED FOR AN ALLOWABLE BEARING STRESS OF 2,500 POUNDS PER SQUARE FOOT [PSF], OR LESS.

TO PROVIDE AN ADEQUATE FACTOR OF SAFETY AGAINST A SHEARING FAILURE IN THE SUBSOILS, ALL CONTINUOUS FOUNDATIONS SHOULD BE AT LEAST 18 INCHES WIDE, AND ALL INDIVIDUAL COLUMN FOOTINGS (IF ANY) SHOULD HAVE A MINIMUM WIDTH OF 24 INCHES. EXTERIOR FOUNDATIONS SHOULD BE SUPPORTED AT LEAST 18 INCHES BELOW ADJACENT OUTSIDE FINAL GRADES, WHILE THICKENED SLAB EDGES CAN BE SUPPORTED 12 INCHES BELOW GRADE.

BASED UPON THE BORING INFORMATION AND THE ASSUMED LOADING CONDITIONS, WE ESTIMATE THAT THE RECOMMENDED ALLOWABLE BEARING STRESS WILL PROVIDE A MINIMUM FACTOR OF SAFETY IN EXCESS OF TWO AGAINST BEARING CAPACITY FAILURE. WITH THE SITE PREPARED AND THE FOUNDATIONS DESIGNED AND CONSTRUCTED AS RECOMMENDED, WE ANTICIPATE TOTAL SETTLEMENTS OF ONE INCH OR LESS, AND DIFFERENTIAL SETTLEMENT BETWEEN ADJACENT SIMILARLY LOADED FOOTINGS OF LESS THAN ONE_QUARTER OF AN INCH. BECAUSE OF THE GRANULAR NATURE OF THE SUBSURFACE SOILS, THE MAJORITY OF THE SETTLEMENTS SHOULD OCCUR DURING CONSTRUCTION; POST_CONSTRUCTION SETTLEMENT SHOULD BE MINIMAL.

WE RECOMMEND THAT REPRESENTATIVES OF AACE INSPECT ALL FOOTING EXCAVATIONS IN ORDER TO VERIFY THAT FOOTING BEARING CONDITIONS ARE CONSISTENT WITH EXPECTATIONS. FOUNDATION CONCRETE SHOULD NOT BE CAST OVER A FOUNDATION SURFACE CONTAINING TOPSOIL OR ORGANIC SOILS, TRASH OF ANY KIND, SURFACE MADE MUDDY BY RAINFALL RUNOFF, OR GROUNDWATER RISE, OR LOOSE SOIL CAUSED BY EXCAVATION OR OTHER CONSTRUCTION WORK. REINFORCING STEEL SHOULD ALSO BE CLEAN AT THE TIME OF CONCRETE CASTING. IF SUCH CONDITIONS DEVELOP DURING CONSTRUCTION, THE REINFORCING STEEL MUST BE LIFTED OUT AND THE FOUNDATION SURFACE RECONDITIONED AND APPROVED BY AACE.

AFTER THE GROUND SURFACE IS PROOFROLLED AND FILLED, IF NECESSARY, AS RECOMMENDED IN THIS REPORT, THE FLOOR SLAB CAN BE PLACED DIRECTLY ON THE PREPARED SUBGRADE. FOR DESIGN PURPOSES, WE RECOMMEND USING A SUBGRADE REACTION MODULUS OF 200 POUNDS PER CUBIC INCH (PCI) FOR THE COMPACTED SHALLOW SANDS. IN OUR OPINION, A HIGHLY POROUS BASE MATERIAL IS NOT NECESSARY. WE RECOMMEND TO USE A MINIMUM OF 10 MIL POLYOLEFIN FILM AS THE MAIN COMPONENT OF A VAPOR BARRIER SYSTEM.

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DATE: 11/17/17
DRAWN BY: AJA
DESIGNED BY: HLT
CHECKED BY: JWC
PROJECT No.: 1553.2
HORZ. SCALE: HLT
VERT. SCALE: N/A
CADD FILES: 2 Geotechnical Notes

NO.	DATE	BY	REVISIONS
01	11/17/17	HLT	100% PLANS

SCALE VERIFICATION
0 — 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

WAVELAND BEACH PARK RESTROOMS
ST. LUCIE COUNTY, FLORIDA

GEOTECHNICAL NOTES

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P.E. No. 37638

Printed Date:

JOB No.: 1553.2
SHEET 5 OF 5

GENERAL NOTES

SUMMARY OF WORK:

1. Project Description: New Restroom Facility at Bathtub Beach
2. Work Involved:
   - a. Exterior walls:
     - i. 8" CMU with stucco finish. See EXTERIOR ELEVATIONS.
     - ii. Cast in Place Concrete Beams and Bond Beams.
     - iii. Provide openings for doors, per plans.
   - b. Exterior Openings:
     - i. Metal Doors and Frames.
     - ii. Metal Louvered Doors and Metal Frames.
     - iii. Skylights.
     - iv. Aluminum Louvers.
     - v. See PRODUCT APPROVAL this sheet for product approval numbers.
   - c. Roofing:
     - i. Standing Seam, with Peel-n-Stick roof underlayment.
     - ii. Wood Pre-Engineering Trusses.
     - iii. Ext Grade Plywood Sheathing.
     - iv. Spray Foam Insulation (R-22).
     - v. See PRODUCT APPROVAL this sheet for product approval numbers.
   - d. Interior walls:
     - i. Provide new interior walls 8" CMU per WALL TYPES.
     - ii. Finish 3 coats of Epoxy Paint over Skim Coat of stucco.
     - iii. See FINISH SCHEDULE for additional information on wall finish.
   - e. Interior Finishes:
     - i. Sealed Concrete and Duraquartz for flooring.
     - ii. See FINISH SCHEDULE for additional information on finishes.
   - f. Interior ceilings and Soffits:
     - i. Painted Moisture Resistant Gypsum Wall Board
     - ii. Hardipanel with Cedarmill Finish (painted).
   - g. Structural:
     - i. Provide concrete foundation for Building, per plans.
     - ii. 8" CMU, Concrete Beams, and Wood Trusses for main structure.
     - iii. See FOUNDATION and FRAMING Plan for additional scope of work.
   - h. Mechanical:
     - i. Refer to Mechanical Plans for full scope of work.
   - i. Electrical:
     - i. Provide lighting and power in all rooms, per Electrical plans.
     - ii. Provide power for all proposed Equipment and Appliances.
     - iii. Refer to Electrical Plans for full scope of work.
   - j. Plumbing:
     - i. Provide new Sanitary Sewer and Water service to Building.
     - ii. Provide Plumbing Fixtures and Accessories per plans.
     - iii. Provide floor drains and underground plumbing for all plumbing fixtures.
     - iv. Refer to Plumbing Plans for full scope of work
   - k. Written Specifications
     - i. See Specifications for additional information.
     - ii. Any discrepancies between Written Specifications and Drawings, notify Architect in writing prior to proceeding with work.
   - l. FGBC:
     - i. Provide St. Lucie County with Submittals for all finishes, fixtures, materials, equipment, etc. used in order to illustrate compliance with FGBC Standards. Literature shall include but should not be limited to location of manufacturing/fabrication, origin of materials, percentage of recycled materials, etc.
3. Work completed shall meet all local and state building code requirements.

COORDINATION:

1. Contractor shall verify existing site conditions of project location prior to commencement of work.
2. Contractor shall coordinate and verify all utility requirements, compatibility and location of projected utilities of project, as shown on the drawings.
3. Contractor responsible for coordinating all trades to complete work. Contractor shall issue full sets of drawings to sub-contractors commissioned to complete the work.
4. Contractor shall verify space requirements and location of project utilities.
5. Contractor shall field verify all dimensions of project. Do not scale drawings.
6. Contractor shall notify Architect of any discrepancies in drawings and/or specifications of project. Commencement of the work without proper notification to the Architect, the contractor will assume responsibility of work performed.
7. Contractor shall notify the Architect, when the full intent of the drawings and/or specifications is not clear. Commencement of the work without proper notification to the Architect, the contractor will assume responsibility of work performed.
8. Owner and Contractor shall coordinate Schedule of Values, Application of Payment, Construction Cost and any other fees related to this project.
9. Owner and Contractor shall coordinate Schedule of Construction and notify Architect of schedule.

CHANGE PROCEDURES:

1. Architect will submit Supplemental Instructions for minor changes.
2. Contractor may propose changes by submitting a request for change to Architect. Architect and Owner shall give written approval for all changes made by the Contractor. Commencement of the work without written approval from Architect and Owner, the contractor will assume responsibility of work performed.

SUBMITTAL:

1. See Section 01300 for required Submittals.
2. Prior to construction Architect and Owner shall submit a list, to the Contractor of required shop drawings submittals for this project.
3. Prior to construction Architect and Owner shall submit a list, to the Contractor of all required testing for this project. Contractor shall be responsible for the cost of any testing requested by the Owner.

TEMPORARY FACILITIES:

1. Contractor shall provide and maintain access to the site of the project.
2. Contractor shall coordinate with Owner for temporary facilities requirements, if required for this project.
3. Contractor shall be responsible for maintaining a clean and safe construction site.
4. Contractor is responsible for the removal of all construction debris.

MATERIALS:

1. Store and protect all project products and materials in accordance with manufacturer instructions. Products and materials of this project shall be installed free of damage.
2. Architect shall approve all product or material substitutions.

CLOSEOUT:

1. Contractor shall leave site clean and free of any construction debris or equipment at the end of the project.
2. Contractor shall give Owner operating instructions for the mechanical, electrical, and other operating equipment installed for this project.
3. Contractor shall submit to the Owner all warranties, operating and maintenance manuals for the following products and equipment:
   - a. Termite Soil Poisoning
   - b. Roof System
   - c. Impact Resistant Doors and Windows, if applicable
   - d. HVAC unit(s)
   - e. Finish Hardware, Keying system
   - f. All installed Flooring
   - g. Toilet Accessories
   - h. Plumbing Fixtures
   - i. Light Fixtures

PROJECT INFORMATION

DESIGN PARAMETERS:

Florida Building Code (5th Edition, 2014)
Florida Residential Code (5th Edition, 2014)
Florida Existing Building Code (5th Edition, 2014)
Florida Plumbing Code (5th Edition, 2014)
Florida Mechanical Code (5th Edition, 2014)
Florida Fuel Gas Code (5th Edition, 2014)
2011 National Electric Code
2012 Florida Accessibility Code (5th Edition, 2014)
Florida Energy Code (5th Edition, 2014)
Florida Fire Prevention Code (5th Edition)
2013 National Fire Alarm Code - (NFPA-72)
2004 Standard for Safeguarding Const., Alterations, & Demo Operations (NFPA-241)

Building Design:	Enclosed & Partially Enclosed
Ultimate Design Wind Speed:	170 mph 3 second gust
Nominal Design Wind Speed:	132 mph
Building Category:	II
Wind Importance/Use Factor:	1.0
Internal Pressure Coefficient:	+/-0.18
Building Mean Height:	20'-0"
Roof Overhang:	2'-6"
Roof Pitch:	5:12
Exposure:	D
Impact Protection:	Impact Rated Doors

OCCUPANCY:
Group 'U' - Utility & Miscellaneous

AREA TABULATIONS:
Gross Square Footage: 1,046 sqft.

CONSTRUCTION:
Type VB
Unsprinklered
Exterior bearing walls - Concrete Masonry Units
Pre-engineered wood trusses
Int walls- MTL stds & drywall/Concrete Masonry Units
Roofing Material - Standing Seam Metal Roof

Refer to Life Safety Plan for Occupant Load

PROJECT CONTACTS

OWNERS:
St Lucie County
James Clasby, MPA
Project Manager - Facilities Department
(772) 462-2567

ARCHITECT:
Π2 architecture + design
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CIVIL ENGINEER:
Captec Engineering
Joe Capra
301 NW Flagler Avenue
Stuart, Florida 34996
(772) 692-4344

STRUCTURAL ENGINEER:
MBV Engineering, Inc.
Rodolfo Villamizar, P.E.
1835 20th Street
Vero Beach, Florida 32960
(772) 569-0035

MEP ENGINEER:
Fort Pierce Engineering, Inc.
Eric Svoboda
315 South 7th Street
Fort Pierce, FL 34950
(772) 672-4636

Product Approval Submittal Affidavit

Bldg Permit: - Waveland Beach Restroom Building

Opening Schedule: Swing Doors, Overhead Doors, Sliding Doors, Fixed Glass, Windows, & Skylights:

FL# or Miami-Dade	Product	Model #	Manufacturer	Glass Description	Attachment Method Type, Size, Spacing, & Embedment	Building Design Pressure	Product Design Pressure
FL # 5891.2	FIBERGLASS ENTRY DOOR	Smooth Star	Thermatru Corp.	N/A	Installation shall stricty adhere to product approval FL# 5891.2 Anchors: 1/4" Tapcons @ Head and Jamb Buck Attachment: Head - 4" max from corners Jamb - 4" max from corners Jamb - 18.99" max O.C. Frame Attachment: Head - 6" max from corners Jamb - 6" max from corners Jamb - 14.00" max O.C. Embedment: 1-1/4" min into concrete	See Cover Sheet	+67 / -67
NOA No: 14-0822.05	STEEL ROLLING DOOR	SERIES 630/631/634	Overhead Door Corporation	N/A -	Installation shall stricty adhere to product approval NOA No: 14-0822.05 Fasteners: • Assembly bolt: 5/8" Grade 5, 18" O.C. • Wall Bolt Steel Jamb: 1/2" Grade 5, 12" O.C. • Wall Bolt at Concrete Jamb: 5/8", 4" Embed Powers Wedge Bolt or 5/8", 4" Embed Hilti Kwik Bolt 3 each at 8" O.C. Max.	See Structural Dwgs	+75.0 / -75.0
FL # 13300.3 R3	SKYLIGHT	QPF PAN FLASHED SKYLIGHT	Velux	Laminated Glass	Installation shall stricty adhere to product approval FL # 13300.3 R3 Anchor skylight with 2" (50mm) nails to rafters at each top and bottom corner and with 1-1/4" (30mm) nails provided in all the pre-punched holes along the flashing flange. The carbon steel nails are zinc coated (double hot dipped) NOTE: Maximum spacing of nail holes in flashing flange/ mounting flange is 8" (203mm).	See Structural Dwgs	+50.0 / -50.0
FL # 7708.2	LOUVER	K6746X	Airolite	- -	Installation shall stricty adhere to product approval FL # 7708.2 Attachment: Jamb - 1/4" dia Tapcon with min 1-1/4" embedment spaced 3.25" max. Attachment: Mullion - 1/4" dia Tapcon with min 1-3/4" embedment spaced 2" max.	See Structural Dwgs	+50.0 / -50.0
NOA No: 15-0122.04	HARDIEPANEL	HARDIE PANEL	James Hardie Building Product, Inc.	- -	Installation shall stricty adhere to product approval NOA No: 15-0122.04 The soffit/panel fastener shall be a 2" long, 0.223" head Dia., 0.097" shank Dia. corrosion resistant siding nail; the fasteners shall be spaced at 4" O.C. at panel edges and intermediate studs/framing members; the fasteners shall be driven into the wood located at 16" O.C. max. Provide additional framing members where applicable.	See Structural Dwgs	+70.0 / -70.0

Product	Model #	Manufacturer	Attachment Method Type, Size, Spacing, & Embedment	Building Design Pressure	Product Design Pressure
Roof Underlayment	Tag & Stick MTP NOA No: 12-1003.04	Tag & Stick, LLC	Roof underlayment shall be installed in strict accordance with the Miami-Dade product approval.	See Structural Dwgs	N/A
Roof	Englert Series 1300 Aluminum Panel NOA No: 12-0417.09	Hurricane Metal Roofing and Supply	Roof Panels are attached to the plywood substrate along the male rib using the approved clips (6-1/4"L x 1-1/2"W x 1-11/16T) located 3" from ea. panel end and at spacing as listed in Table 'A' of the NOA. Ea. clip is attached to substrate with (4) corrosion resistant #10 self tapping pan head screws of sufficient length to penetrate thru sheathing min. 3/16"	See Structural Dwgs	-55.0 psf in field -123.5 psf in perimeter & corner
Siding	Stucco	-	5/8" Thick Light Textured Stucco on Typical Concrete Block Const.	See Structural Dwgs	N/A
Soffit	Hardie Panel - NOA No: 15-0122.04	James Hardie Building Product, Inc.	Refer to the above referenced installation method - -	See Structural Dwgs	+70.0 / -70.0

I have reviewed the above product approval information and and approved it.
Name: Nicole L. Norton/N2 architecture + design
Signature:
Certification Number: AR 91827/ AA26002853
Date: NOV 16 2017

INDEX OF DRAWINGS Revised xx-xx-xx

Sheet	Sheet Title	17-Nov-17 ISSUED	xx-xx-xx REV 1	xx-xx-xx REV 2	xx-xx-xx REV 3	xx-xx-xx REV 4	xx-xx-xx REV 5
A0.1	Cover Sheet, General Information + Notes	■					
A1.1	Building Specifications	■					
A1.2	Building Specifications	■					
A1.3	Building Specifications	■					
A1.4	Building Specifications	■					
A1.5	Building Specifications	■					
A1.6	Building Specifications	■					
A1.7	Building Specifications	■					
A1.8	Building Specifications	■					
A1.9	Building Specifications	■					
A1.10	Building Specifications	■					
A1.11	Building Specifications	■					
A1.12	Building Specifications	■					
A1.13	Building Specifications	■					
A2.0	Life Safety Plan + Notes	■					
A2.1	Floor plans, Details + Notes	■					
A2.2	Roof Plan, Details + Notes	■					
A2.3	Reflected Ceiling + Notes	■					
A2.4	Schedules, Details + Notes	■					
A2.5	Enlarged Plans + Elevations	■					
A2.6	Enlarged Plans + Elevations	■					
A2.7	Enlarged Plans + Elevations	■					
A3.1	Exterior Elevations + Notes	■					
A3.2	Building Sections + Notes	■					
A3.3	Wall Sections + Details	■					
S1.0	Structural Notes	■					
S2.1	Foundation Plan	■					
S3.1	Roof Framing Plan + Roof Zones	■					
S4.1	Sections	■					
S5.1	Structural Details	■					
M-1	Mechanical General Notes, Symbols + Schedules	■					
M-2	Mechanical HVAC Plan	■					
P-1	Plumbing Legend, Notes, Schedules + Details	■					
P-2	Plumbing Plan	■					
P-3	Plumbing Waste-Vent Riser + Water Riser	■					
E-1	Electrical Legend, Specifications + Abbreviations	■					
E-2	Electrical Power Systems Floor Plan	■					
E-3	Electrical Lighting Systems Floor Plan	■					
E-4	Electrical Details, Riser & Schedule	■					

SYMBOLS

XXX Room Name
X Wall Type
AX.Y Wall Section
AX.Y Interior Elevation
AX.Y Exterior Elevation
AX.Y Building Section
AX.Y Detail
X Window
Door

LOCATION MAP

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NIKI L. NORTON, R.A. AR91827
NOV 16 2017
STATE OF FLORIDA

Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A0.1
	Cover Sheet

BUILDING SPECIFICATIONS

SECTION 03100

CONCRETE FORMWORK

1.1 GENERAL

A. Furnish and install all concrete and related work.
B. Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified. (Latest Edition)

2.1 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction
B. Prepare and submit, in accordance with specified procedures, shop drawings indicating fabrication, joint alignment, inserts and location of all snap-ties for all exposed finished concrete formwork. Submit shop drawing or all steel forms.

3.1 PRODUCTS

A. Wood Forms
1. Wood forms for concrete shall be equivalent to B-B Plyform Class 1 as designated by the American Plywood Association; Weyerhauser Concrete Form; G-P Exterior Softwood Plywood; Georgia-Pacific; and Finn-Form by Plywood and Door Corporation.
B. Steel Forms
1. All exposed finished concrete shall be constructed with steel forms of sufficient strength to prevent sagging or deflection while subjected to construction loads.
2. Steel forms shall provide a skin plate with a smooth, non-chorded, "true radius" forming surface, equal to that manufactured by Symons, see Section 03360 for Polished Concrete.
C. Round Column Forms
1. Round column forms shall be a coated laminated fiberboard or a molded fiberglass unit capable of maintaining their shape without bulging or bursting.
D. Form Oil
1. The inside of the forms shall be coated with a non-staining form oil, such as Magic-Kote by Symons Manufacturing Company, Deerfield, Illinois; Formcel by Lambert Corporation; Guardian Chemical Coatings, Inc., Houston, Texas; Form-Coat by Concrete Service Company, Philadelphia, Pennsylvania, or Eucoslip by Euclid Chemical Company.
E. Form Ties
1. Form ties shall be Dayton "Sure-Grip", snap-in-form tie, Hechman "Snapties", or Richmond "Snap-Tys" with a 1 inch minimum break off depth from the face of the concrete. Ties shall be removed after forms are removed and holes shall then be filled with mortar that matches the adjacent surfaces. Provide stainless steel form ties for all exterior surfaces exposed to view.
F. Substitutions: Acceptable, approved and equal.
G. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

4.1 EXECUTION

A. GENERAL
1. Forms, bracing, and supports shall be designed and constructed to withstand the pressure of freshly placed concrete. Temperatures of the concrete at time of placing, effect of vibration, speed of placement, the height of plastic concrete and similar factors shall be considered in the design. Concrete surfaces that are to be exposed shall be free of misalignment or unsightly bulges.
2. Forms shall conform to the shape, lines, grades and dimensions of the concrete called for on the Drawing. Joints in forms shall be horizontal and vertical and shall be tightly fitted to prevent leakage of mortar. Removable sections shall be provided at sufficient intervals at the base of walls to allow cleaning and inspection before concrete is placed. All open joints, holes or other blemishes shall be filled to provide a blemish free surface.
3. Forms for concrete floor slabs shall have top stiff and sufficiently strong to prevent sagging or deflection while subjected to the usual construction loads.
4. Chamfer corners of beams, columns, walls and exposed edges or corners of concrete with 3/4 inch by 3/4 inch wood chamfer strips unless otherwise shown on Drawings or directed by the Architect.
5. Forms shall be checked just prior to placing concrete and tightened as required to produce flush surfaces.
6. Provisions shall be made for chases, offsets, openings, depressions, curbs and bulkheads.
7. Steel forms shall be installed in accordance with manufacturer's recommendations.
8. The shores and supports for the formwork shall have ample strength to support all applied loads without settlement. Sills, if any, shall rest on solid ground. Studs, walls, and bracing shall be dimension stock of sizes as required by form design. Dimensions of centering, bracing, etc. shall be in accordance with "ACI Recommended Practices for Concrete Formwork" (ACI 347).
9. Sleeves, Reglets, Inserts and Conduits: After forms are erected and before reinforcement is placed, all sleeves, reglets and inserts for mechanical trades must be set in place by the trade involved. Other sleeves, anchors, inserts, anchor bolts, specialties and similar items embedded in the concrete shall be furnished, accurately located as shown and set by the Contractor. In general, electric conduits shall be placed within the middle one-third of the thickness of the concrete in which it is embedded.
10. Reinforcements shall be adjusted to fit the sleeves, inserts and openings, using additional bars where required around openings.
B. BULKHEADS
1. Where end of days work requires a joint in a wall, beam or slab, bulkhead shall be tight but arranged for easy removal. Reinforcing steel shall extend through the bulkhead. All joints shall be keyed for 1/2 of the member thickness unless directed otherwise by the Architect. Location of bulkhead must be approved by the Architect or Engineer.
C. REMOVAL OF FORMS
1. Forms shall not be removed from concrete surfaces until the following minimum requirements are met.
a. Reinforced concrete slabs and beams shall have reached 2/3 of their design strength by test, before removal of forms.
b. Column and wall formwork can be removed in 48 hours provided curing compound is applied immediately. If Contractor elects not to provide curing compound, forms must remain in place 7 days minimum.
D. RESHORES
1. No construction loads exceeding the structural design loads shall be supported upon any unshored portion of the structure under construction.
2. In general, the Contractor will be required to provide one level of reshoring while placing concrete on a shored and formed level overhead; i.e., if placing the 4th level, reshores will be required between the 2nd and 3rd levels. Lines of reshores must be located directly below lines of shores above to minimize possible cracking of slabs and beams.
3. The Contractor shall provide engineering computations and drawings showing the proposed method of shoring and reshoring of structural slabs and beams. The drawing shall accurately locate shores and reshores and shall describe all construction sequences fully. All computations and drawings are subject to review by the Architect/Engineer. Structural Engineering computations and drawings are to be prepared and sealed by a Professional Engineer registered in the State of Florida. Structural Engineering computations shall be delivered to the Building Department by the Contractor.
E. REUSE OF FORMS
1. Clean and repair surfaces of forms to be re-used in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound to concrete contact form surfaces as specified for new formwork.
2. When forms are intended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, unless as approved by the Architect/Engineer.

END OF SECTION 03100

SECTION 03200

CONCRETE REINFORCEMENT

1.1 GENERAL

A. Work includes, but is not limited to, supply and installation of all reinforcing bars, welded wire fabric, support bars and chair supports.
B. Shop Drawings
1. The Contractor shall submit shop drawings of all reinforcing supports, clearances and special details before fabrication of reinforcing. Any fabrication done before shop drawing approval is at the Contractor's risk.
2. Comply with the ACI 315- "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, diagrams of bent bars, and arrangements of concrete reinforcement.
C. Mill Test Reports
1. Provide Mill Test Reports for all reinforcing.

2.1 QUALITY ASSURANCE

A. Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified. (Latest Edition)
1. ACI 318- "Building Code Requirements for Reinforced Concrete".
2. ACI 315- "Manual of Standard Practice for Detailing Reinforced Concrete Structures"
3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice"

3.1 MATERIALS

A. Reinforcing Bars shall be rolled from new billet steel, Grade 60 and deformed in accordance with ASTM A615-76a, for bars numbers 3 to number 18 unless otherwise indicated on the plans.
B. Welded Wire Fabric shall be ASTM A185-73, welded steel wire fabric. The yield strength of the steel wire shall not be less than 60,000 pounds per square inch.
C. Stirrups and Ties shall be rolled from new billet steel Grade 60 and deformed in accordance with ASTM A615-76a, unless otherwise indicated on the plans.
D. Bar Supports and Spacers for unexposed concrete shall be manufactured of standard bright basic wire with upturned legs.
E. Bar supports and spacers for concrete exposed to view or exterior to the building use plastic capped bar supports and spacers.

4.1 EXECUTION

A. Cleaning and Storing Reinforcement
1. Steel reinforcement at the time concrete is placed shall be free from heavy rust, scale or other coating that will destroy or reduce the bond. All reinforcing steel shall be stored in neat piles at the site, clear of the ground in such a manner that all bars can be readily identified when required. Excessive form oil on the reinforcing shall be removed by washing the reinforcing with kerosene. Exercise due care that no smoking or welding is permitted in area of cleaning; also provide fire extinguisher at cleaning site.
B. Supports for Reinforcing Steel
1. All reinforcing steel shall be rigidly supported and accurately located and held in position by the use of proper reinforcing steel supports, spacers and accessories before the concrete placement begins, in accordance with the drawings and "Manual of Standard Practice for Detailing Reinforced Concrete Structures . (ACI 315-)
2. The legs of all reinforcing supports shall be bent to form a foot so that the side and not the end of leg rods bears on the form.
3. Metal reinforcement shall be protected by the thickness of the concrete indicated on the drawings. Where not otherwise shown, the concrete cover shall be not less than the following:
a) 3 inches on footing and other principal structural members placed directly against the ground.
b) 2 inches for bars larger than number 5 and 1-1/2 inches for number 5 bars and smaller where concrete will be exposed to the ground or weather after removal of forms
c) 1-1/2 inches in all beams, girders, columns and balconies exposed to the weather. 3/4 inch for all slabs and walls not exposed to the ground or weather.
d) Bending Details
1) Typical bending, lacing and bar support diagrams are shown on the drawings. For parts not shown, bending details and lengths shall conform to the requirements of the ACI Building Code ACI318- and Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI 315-). Bends for stirrups and ties shall be made around a pin having the diameter no less than 1-1/2 inches for number 3 and 2 inches for number 4. Bends for other bars shall be made around a pin having a diameter not less than six bar diameters for number 3 to number 6, 8 bar diameters for number 9, number 10 and number 11, 10 bar diameters for number 14, and number 18. All bars shall be bent cold.
4. Special and minimum Reinforcing Steel Requirements.
a) Where walls or other items are shown as built integrally with other sections, but are placed as separate pours, keys and dowels must be provided. Dowels shall be the same size and at the same spacing as reinforcing.
b) .Main reinforcing bars shall not be spliced unless so noted on the drawings or approved by the Architect or Engineer.
c) Provide 6 x 6 - 1.4 x 1.4 electrically welded wire fabric, ASTM A-185 reinforcing in all concrete slabs on ground unless shown otherwise.
d) .Provide corner bars of same size and spacing as reinforcement at all intersection and corners.
e) Where openings with any dimension greater than 12 inches occur in walls, or slabs, provide two number 5 bars at all sides and extending at least two feet beyond the corners and two number 5 bars at least three feet long diagonally across each re-entrant corner
5. Inspection of Reinforcement
a) Special Inspector and/or Building Official shall inspect and log all placement prior to pouring of concrete.
b) Reinforcing placement must be checked by the Architect/Engineer before any concrete is placed. Any corrections shall be made before concrete is placed.
c) The Contractor shall notify the Architect/Engineer at least 24 hours in advance of concrete placement. Placement of reinforcing shall occur in such sequence that the Architect/Engineer has sufficient time to inspect the correctness of the reinforcing within the placement area and retains the right to require necessary revisions be made before concrete is placed.
6. Stockpile Reinforcement
a) The Contractor shall supply 500 pounds of number 5 bars by 20 feet long, and 500 pounds of number 6 bars by 20 feet long to be used at the discretion of the Architect/Engineer. This supply of reinforcing shall be stockpiled separately from the remainder of the reinforcing and shall be clearly marked as extra reinforcing.
C. The General Contractor shall include in his bid, the installation of the stockpiled reinforcing as well as the cost of the material.

END OF SECTION 03200

SECTION 03300

SEALER/HARDENER CONCRETE FLOOR FINISH

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Applying Sealer/Hardener to concrete floors scheduled and burnishing to develop sheen.
B. Joint Sealant
1.02 RELATED SECTIONS
A. Division 1: Administrative, procedural, and temporary work requirements.
B. Section 03300 - Cast-in-Place Concrete.
1.03 REFERENCES
A. ASTM C 779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
B. ASTM C 1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method; 1996.
C. ASTM G23-81 - Standard Practice for Operating Light - Exposure Apparatus (Carbon-Arc Type) with and without Water Exposure of Nonmetallic Materials.
D. ASTM C805 - Standard Test Method for Rebound Number of Hardened Concrete.
1.04 SUBMITTALS
A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
1. Provide submittal information within 10 calendar days after the contractor has received the Owner's Notice to proceed.
B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
1. Sealer/Hardener Concrete Finish schedule indicating locations and applications by manufacturer's name and product number.
2. Product Data describing product to be provided, giving manufacturer's name and product name for the specified material proposed to be provided under this section.
3. Preparation instructions and recommendations.
4. Storage and handling requirements and recommendations.
5. Installation methods and procedures, which when approved by the Owner's Representative, will become the basis for accepting or rejecting actual installation procedures used on the work.
6. Maintenance data to include detailed instructions on recommended cleaning apparatus and cleaning solutions.
C. Submittals: For each finish specified submit seven complete sets of manufacturer's latest published product data sheets, test data, maintenance data and material safety data sheets and other safety requirements.
D. Manufacturer's Certification:
1. Provide letter of certification from Sealer/Hardener manufacturer stating that the applicator is a Certified applicator of the Ashford Formula and is familiar with proper procedures and installation requirements required by the Manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Acceptable Manufacturer:
1. Penetrating Sealer/Hardener Concrete Floor Finish: Ashford Formula, manufactured by Curecrete Chemical Company; Springville, Utah.
2. Contact Kim Andres, CPM 407-260-9666
3. Other Sealer/Hardener Concrete Floor Finishes will be acceptable if they meet or exceed the performance test data and meet requirements of the specified Concrete Floor Finish for it's intended use and function as specified herein.
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction

2.02 PENETRATING SEALER/HARDENER CONCRETE FLOOR FINISH
A. Product: Ashford Formula. Formulated to permanently seal, dustproof, increase abrasion resistance and develop permanent densification to concrete surfaces to which it is applied.
B. Description: Clear liquid form of silicate to permanently seal, dustproof and harden concrete surfaces and provide abrasion resistance by penetrating into concrete pores and chemically reacting. Chemically relies on an internal reaction, leaving no surface film or residue, to densify pores. Products containing silicanates, silicones, magnesium or lithium silicates will not be acceptable and will not be approved.
C. Performance Criteria:
1. ASTM C 779, Abrasion: An improvement of 32.5% over untreated samples after 30 minutes.
2. ASTM D 3359, Surface Adhesion: A 22% increase in adhesion over untreated samples, when tested with epoxy.
3. ASTM C39 Compressive Strength. An increase of 40% over untreated samples after seven days.
4. ASTM C 805 Impact Resistance. An increase of 13.3% over untreated samples when tested by Schmidt Hammer.
5. Permeability: Sealed and treated surface allowed a rate of 0.00073oz. (0.022cc) per hour when tested by a 7-foot (2.13 meter) head of water applied to 4.91 square inch (122224.71mm) area.
6. ASTM C 1028 Friction: No less than 0.86 result of coefficient of friction on sealed and treated dry surfaces and no less than 0.69 result of coefficient of friction on sealed and treated wet surfaces.
7. ASTM G 23 Light Exposure. No adverse effects on sealed and treated samples.
8. TTM-59, Chemical Resistance: No effect when exposed to alcohols, amines, alkaline detergents, ethers, Halogenated hydrocarbons, hydrocarbons, hydraulic fluids, ketones, oils and fuels. Moderate chemical resistance to some inorganic and organic acids.
D. Manufacturer's Technical Representative available to make site visits if requested by Owner's Representative.
E. Sealer/Hardener Concrete Concrete Finish Schedule:
1. Special Flooring, (SF-1): First Coat: Ashford Formula applied at 200 SF per gallon. Applied at the time of cure to freshly finished concrete, immediately following the trowel operation and the soft cutting of the joints. May be used in conjunction with compatible curing methods if approved by the Sealer/Hardener Manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION
A. Examine substrates, with certified applicator (installer) present, for conditions affecting performance of Sealer/Hardener Concrete Finish. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.
B. Do not begin installation until substrates have been properly prepared and the floor surfaces are free of construction latents and foreign contaminants that will inhibit penetration of Sealer/Hardener and performance.
C. If substrate preparation is the responsibility of another installer, notify Owner's Representative of unsatisfactory preparation before proceeding.

3.02 SURFACE PREPARATION OF CONCRETE FLOORS
A. General:
1. Remove curing, sealing and coating agents, oil, breaking compound residue, wax and grease by scraping off heavy deposits mechanically or chemically to assure penetration of product into surface. Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water.
2. Remove dust and loose material by brushing, sweeping, vacuuming, and blowing with high pressure air.
3. Remove paint residue with solvent/stripper provided the stripper does not have an acidic pH.
4. Remove tire marks or any residue with compatible non-acidic degreaser or stripper as recommended by manufacturer. Mix proper dilution so that the chemical does not etch and open the pores of the concrete. Follow manufacturer's detailed instructions prior to mixing and removal.
5. Power rinse entire floor surface to thoroughly rinse and remove all soap residue or contaminants. Squeegee dry.
B. Grind protrusions flush with surface. Patch voids, holes and cracks with recommended Cementicious patching material compatible with Sealer/Hardener Concrete Floor Finish
C. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and all other contaminants.
D. Protect surrounding and adjacent surfaces in manner recommended by Sealer/Hardener Concrete Finish Manufacturer.

3.03 APPLICATION
A. General:
1. Apply Sealer/Hardener Concrete Finish in strict accordance with Manufacturer's latest printed instructions. Utilize manufacturer's recommended equipment for installation. Use low pressure drum pump with high volume sprayer or pour from drums or pails to flood surface during first coat application. Pump up sprayer maybe used for applying spiff coat following manufacturer's recommended procedures.
2. Application is to take place prior to any in-building accessory installation or as scheduled and coordinated by the Owner's Representative thus allowing as complete and uninhibited concrete slab area for installation.
3. Applicable procedures must be followed as recommended by the Manufacturer.
4. Applicator to install specified Sealer/Hardener Concrete Finish in strict accordance with manufacturer's recommended procedures for each application as specified herein.

3.04 FIELD QUALITY CONTROL
A. Manufacturer's Field Services: Manufacturer's representative must be available to provide technical assistance and guidance for surface preparation and application of Sealer/Hardener Concrete Finish.
B. Sealer/Hardener Concrete Finish shall be inspected and acceptable to the Owner's Representative or the Manufacturer of Sealer/Hardener Concrete Finish. Any area that is found unacceptable shall be repaired by Applicator as deemed necessary.

3.06 PROTECTION
A. Protect and Prohibit traffic on Sealer/Hardener Concrete Finished Work according to manufacturer's instructions and recommendations.

3.07 SCHEDULES
A. Sealer/Hardener (SF-1): Ashford Formula; penetrating Sealer/Hardener Concrete Finish, to be placed on interior exposed concrete floor surfaces in locations as detailed on drawings and as scheduled, Document 003300-1.

END OF SECTION 03300

SECTION 04200

UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This includes, but is not limited to the following:

Concrete block and lintels

Masonry reinforcement and other embedments
Split Face Block

1.2 QUALITY ASSURANCE

A. Comply with provisions of following, except as otherwise indicated:
NCMA "Specifications for the Design and Construction of Load Bearing Concrete Masonry", latest edition. ACI 531 Building Code Requirements for Concrete Masonry Structures".

1.3 SUBMITTALS

A. Submit manufacturer's product data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements.
B. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.

1.4 DELIVERY. STORAGE AND HANDLING

A. Deliver masonry materials to project in undamaged condition.
B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.
C. Store cementitious materials off the ground, under cover and in dry location.
D. Store aggregates where grading and other required characteristics can be maintained.
E. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

1.5 PROJECT CONDTIONS

A. During erection, cover top of walls with heavy waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.
B. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
C. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.
D. Do not apply concentrated loads for at least 3 days after building masonry walls or columns.
E. Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.
F. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
H. Protect sills, ledges and projections from droppings of mortar.

PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. Comply with referenced standards and other requirements indicated below applicable to each form of concrete masonry unit required.
B. Provide special shapes where required for lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.
C. Concrete Block: Provide units complying with characteristics indicated below:
1. Grade N
2. Manufacturer's standard units with nominal face dimensions of 16" long x 8" high (15-5/8 x 7-5/8 actual) x thickness' indicated.
3. Type II, nonmoisture-controlled units, smooth finish for exposed surface; normal weight hollow loadbearing block - ASTM C 90
4. Normal weight solid load bearing - ASTM C145.
D. Smooth Surface and Split Face
1. Smooth Block finished with stucco
2. Split face paint finish.

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce required mortar color.
B. Masonry Cement: ASTM C 91.
C. Hydrated Lime: ASTM C 207, Type S.
D. Aggregates for Mortar: ASTM C 144, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve. Aggregate for Grout: ASTM C 404.
E. Water: Clean, and potable.

2.3 JOINT REINFORCEMENT, TIES AND ANCHORING DEVICES

A. Comply with requirements indicated below for basic materials and with requirements indicated under each form of joint reinforcement, tie and -anchor for size and other characteristics:
1. Hot-Dip Galvanized Steel Wire: ASTM A 82 for uncoated wire and with ASTM A 153, Class B-2 (1.5 oz. per sq. ft. of wire surface) for zinc coating applied after prefabrication into units.
2. Joint Reinforcement: Provide welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with requirements indicated below:
a) Width: Fabricate joint reinforcement in units with widths of approximately 2" less than nominal width of walls and partitions as required to provide mortar coverage of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.
b) Wire Size for Side Rods: 0.1483" diameter.
c) For single-wythe masonry provide ladder type design with single pair of side rods and perpendicular cross rods spaced not more than 16" o .c

2.4 MISCELLANEOUS MASONRY ACCESSORIES

A. Reinforcing Bars: Deformed steel, ASTM A 615 including SI, Grade 60.
B. Provide the following for weepholes: Cotton Cord: Sash cord of length required to produce 2" exposure on exterior and 18" in cavity between wythes

2.5 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (1/2 cup dry measure) and laundry detergent (1/2 cup dry measure) dissolved in one gallon of water

2.6 MORTAR AND GROUT MIXES

A. Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.
B. Do not use calcium chloride in mortar or grout.
C. Combine and thoroughly mix cementitious, water and aggregate in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.
D. Mortar for Unit Masonry: Comply with ASTM C 270. Proportion Specifications, for types of mortar required, unless otherwise indicated.
1. Use Type M mortar for all masonry.
E. Grout for Unit Masonry: Use ready-mixed grout of the strength and consistency indicated.

PART 3 EXECUTION

3.1 INSTALLATION

A. Do not wet concrete masonry units.
B. Before placing, remove loose rust, ice and other coatings from reinforcing.
C. Build cavity and composite walls, floors and other masonry construction to the full thickness shown. Build single-wythe walls (if any) to the actual thickness of the masonry units, using units of nominal thickness indicated.
D. Build chases for recesses as shown or required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.
E. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.
F. Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining work. Use full-size units without cutting where possible.
G. Use dry cutting saws to cut concrete masonry units.

3.2 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of columns, walls and arises do not exceed 1/8" in 10', or 1/8" in a story height not to exceed 20'. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/8" in any story or 20' maximum. For vertical alignment of head joints do not exceed plus or minus 1/8" in 10', 1/4" maximum.
B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/8" in any bay or 20' maximum. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of single unit.
C. Variation of Linear Building Line: For position shown in plain and related portion of columns, walls and partitions, do not exceed 1/8" in any bay or 20' maximum.
D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/8" nor plus 1/8".
E. Variation in Mortar Joint Thickness: Unless otherwise indicated, make all bed and head joints 3/8", +/- 1/32".

3.3 LAYING MASONRY WALLS

A. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate opening, movement-type joints, returns and offsets. Avoid the use of less than half size units at corners, jambs and wherever possible at other location.
B. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.
C. Pattern Bond: Lay exposed masonry in the bond pattern shown or, if not shown, lay in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4" horizontal face dimensions at corners or jambs.
D. Stopping and Resuming Work: Rack back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh mortar.
E. Built-in Work: As the work progresses, build-in items specified under this and other sections of these specifications. Fill in solidly w ith masonry around built-in items.
1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
2. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
3. Fill cores in hollow masonry units with grout 3 courses (24") under bearing plates, beams, lintels, posts and similar items, unless otherwise indicated.

3.4 MORTAR, BEDDING AND JOINTS

A. Lay hollow concrete masonry units w ith full mortar coverage on horizontal and vertical face shells. Bed webs in full mortar in all courses. For all courses below grade fill all block solid with grout or use solid block.
B. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.
C. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.
D. Tool exposed joints slightly concave using a jointer larger than joint thickness, unless otherwise indicated.
E. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required remove units, clean off mortar and reset in fresh mortar.

3.5 CONCRETE TIE BEAMS

A. Where horizontal reinforced concrete beams and bond beams are shown, use special units or modify regular units to allow for placement of continuous horizontal reinforcement bars. Place small mesh expanded metal lath of wire screening in mortar joints under beam courses over cores or cells on non-reinforced vertical cells, or provide units with solid bottoms. Do not use sheet metal, felt, or building paper.

3.6 HORIZONTAL JOINT REINFORCEMENT

A. Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" exterior side of walls, 1/2" elsewhere. Lap reinforcing a minimum of 6".
B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
C. Reinforce walls with continuous horizontal joint reinforcing unless specifically noted to be omitted.
E. Reinforce hollow concrete masonry walls with continuous horizontal joint reinforcement: Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.
F. For single-wythe walls, space reinforcement at 16" o.c. vertically, unless otherwise indicated.
G. Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcement placed in two horizontal joints approximately 8" apart, immediately above the lintel and immediately below the sill Extend reinforcement a minimum of 2'-0" beyond jambs of the opening except at control joints. In addition to wall reinforcement, provide additional reinforcement at openings as required to comply with the above.

3.7 CONTROL AND EXPANSION JOINTS

A. Provide vertical and horizontal expansion, control and isolation joints in masonry where shown. Provide vertical control joints at all CMU walls at 30'-0" maximum except as otherwise shown. Build-in related items as the masonry work progresses.
B. Build-in non-metallic joint filler where indicated.
C. Build-in horizontal pressure relieving joints where indicated; construct joints by either leaving an air space or inserting non-metallic compressible joint filler of width required to permit installation of sealant and backer rod.
D. Locate horizontal pressure relieving joints beneath shelf angles supporting masonry veneer and attached to structure behind masonry veneer.

3.8 LINTELS

A. Provide masonry lintels for all openings. Use specially formed U-shaped lintel units with reinforcement bars placed as shown filled with coarse grout.
B. Provide minimum bearing of 8" at each jamb, unless otherwise indicated.

3.9 FIELD QUALITY CONTROL

A. Employ, at Contractor's expense, a testing laboratory acceptable to Architect to perform the following field quality control testing:
1. Concrete Masonry Unit Tests: For each type, class and grade of concrete masonry unit indicated, test units by method of sampling and testing of ASTM C 140.
2. Mortar Tests: For each type indicated, test mortar by methods of sampling and testing of ASTM C 780. Conduct tests no less frequently than that required to evaluate mortar used to install each increment of masonry units indicated above from which samples are taken for testing or 5000 square feet of wall constructed.
3. Grout Tests: For each type of grout, prepare one set of four prism specimens for each 30 cubic yards or fraction thereof being placed each day as follows: On a flat nonabsorbent base, form a mold approximately 3 inches by 3 inches by 6 inches high, i.e., twice as high as it is wide, using masonry units having the same absorption characteristics and moisture content as those being laid. Line the mold with a permeable paper or porous separator so that water may pass through the liner into the masonry units. Thoroughly mix or ag itate grout to obtain a fully representative mix and place into molds in two layers and puddle each layer with a 1 inch by 2 inch puddling stick to eliminate air bubbles. Level off and immediately cover molds and keep them damp until taken to the laboratory. After 48 hours, carefully remove masonry units and place grout specimens in laboratory fog room until tested. Cap specimens in accordance with the applicable provisions of Standard Method of Capping Cylindrical Concrete Specimens, ASTM C 617. Test specimens in a damp condition in accordance with the applicable provisions of ASTM C 39, Standard Method Test for Compressive Strength of Cylindrical Concrete Specimens. Test one specimen at 7 days, two specimens at 28 days, and hold one specimen in reserve for later testing if required.

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Rev. #	Date

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	Building Specs

BUILDING SPECIFICATIONS

4. Report test results in writing and in form specified under each test method, to Architect and Contractor, on same day tests are made
5. Evaluation of Quality Control Tests: Masonry work, in absence of other indications of noncompliance with requirements, will be considered satisfactory if results from construction quality control tests comply with minimum requirements indicated.

3.10 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
B. Pointing: During the tooling of joints, enlarge any voides or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.
C. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and non metallic scrape hoes or chisels. Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for comparison purposes. Obtain Architect's
2. approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film or waterproof masking tape. saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
4. Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable to NCMA "Tek" bulletins.
a) Protection: Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.

END OF SECTION 04200

SECTION 05400

COLD-FORMED METAL FRAMING

1.1 GENERAL
A. Related Documents
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

2.1 SUMMARY
A. This Section includes the following:
1. Adjust list below to suit Project.
2. Interior and exterior framing.
3. Roof trusses.

3.1 PERFORMANCE REQUIREMENTS
A. Retain this Article if delegating any part of design responsibility for cold-formed metal framing to fabricator. Coordinate with Part 2, deleting prescriptive requirements such as steel thickness and minimum yield strength unless imposing minimum design restrictions. Insert other performance and design criteria below to suit Project or add to Drawings. AIA Document A201 requires Owner or Architect to specify performance and design criteria to be satisfied.
B. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
1. Design Loads: As indicated and as required by the building code.
2. Delete first seven subparagraphs below if design loads and load combinations are indicated on Drawings.
3. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
4. Interior Wall Framing: Horizontal deflection of 1/360 of the wall height under a horizontal load of 5 lbf/sq. ft.
C. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
1. Upward and downward movement of 1 inch.
D. The prefabricated light gage steel roof truss manufacturer shall provide the following services:
1. Design and supply a complete light gauge steel roof system stamped by a registered engineer in the State of Florida to include all of the following components:
a) Light gage steel trusses for gravity and lateral loads with truss sizes, gauges and connections at truss joints (truss top chord shall be 18 gage minimum thickness).
b) Design and stamp truss to truss connections and truss to bearing connections for gravity, lateral and uplift loads.
c) Design and stamp the top chord, bottom chord and web permanent bracing locations.
d) Design and stamp the roof deck structural support at eave edge, valley, hip and ridge transition planes to support steel decking.
E. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing – General Provisions."
1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing – Header Design."
2. Roof Trusses: Design according to AISI's "Standard for Cold-Formed Steel Framing – Truss Design."

4.1 SUBMITTALS
A. Product Data: For each type of cold-formed metal framing product and accessory indicated.
B. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
C. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
D. For cold-formed metal framing include structural analysis data signed and sealed by a qualified professional engineer licensed in the State of Florida responsible for their preparation.
E. Submit detailed roof truss layouts.
F. Submit truss shop drawings, sealed and signed by a qualified registered Professional Engineer in the State of Florida, verifying the truss ability to meet local code and design requirements. Specifically include the engineering and design for all of the following:
1. Description of the design criteria.
2. Engineering analysis depicting member stresses and truss deflections.
3. Truss member sizes, gauges and connections at truss joints; truss to truss attachment details.
4. Truss reaction at all bearing locations; truss to bearing attachment details.
5. Top chord, bottom chord and web permanent bracing requirements; construction and temporary bracing per the Light Gage Steel Engineers Association (LGSEA) 'Field Installation Guidelines' dated October 1999.
6. Eave edge, valley, hip and ridge structural support for roof decking.
7. Roof deck shear transfer framing required transferring the roof deck shear to the building structure.

5.1 QUALITY ASSURANCE
A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.
B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
D. Usually retain mill certifications or test reports from a qualified testing agency below. Add option of test reports from in-house testing with calibrated test equipment, if permitted. Add option for testing ductility if required. See "Mill Certification" Paragraph in "Materials" Article in the Evaluations for more information.
E. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements and metallic-coating thickness.
F. AWS states that welding qualifications remain in effect indefinitely unless welding personnel have not welded for more than six months or there is a specific reason to question their ability.
G. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
H. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
I. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold- Formed Steel Framing – General Provisions."
J. Comply with AISI's "Standard for Cold-Formed Steel Framing – Truss Design."
K. Comply with AISI's "Standard for Cold-Formed Steel Framing – Header Design."
L. Consider retaining paragraph below if Project is limited to one- and two-family residential construction, framing is fully detailed, and this AISI document is acceptable to authorities having jurisdiction.
M. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

6.1 DELIVERY, STORAGE, AND HANDLING
A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

7.1 PRODUCTS
A. MANUFACTURERS
1. See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products.
2. Retain above for nonproprietary or below for semiproprietary specification. Refer to Division 1 Section "Product Requirements."
B. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
1. Clark Steel Framing.
2. Dale/Incor.
3. Dietrich Metal Framing; a Worthington Industries Company.
C. MATERIALS
1. Steel Sheet: ASTM A 653, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
a) Grade: As required by structural performance.
b) Coating: G60.
2. Steel Sheet for Vertical Deflection Clips: ASTM A 653, structural steel, zinc coated, of grade and coating as follows:
a) Grade: As required by structural performance.
b) Coating: G60.
E. INTERIOR WALL FRAMING
1. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
a) Metal Thickness: 0.0329 inch (20GA).
b) Flange Width: 1-5/8 inches minimum.
c) Section Properties: As required by structural performance.
2. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
a) Minimum Base-Metal Thickness: Matching steel studs.
b) Flange Width: 1-1/4 inches.
3. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, punched, with stiffened flanges, and as follows
a) Minimum Base-Metal Thickness: 0.0329 inch (20GA).
b) Flange Width: 1-5/8 inches minimum.
c) Section Properties: As required by structural performance.
d) Vertical Deflection Clips: Manufacturer's standard bypass clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.
F. FRAMING ACCESSORIES
1. Fabricate steel-framing accessories from steel sheet, ASTM A 1003, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
2. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
a) Supplementary framing.
b) Bracing, bridging, and solid blocking.
c) Web stiffeners.
d) Anchor clips.
e) End clips.
f) Foundation clips.
g) Gusset plates.
h) Stud kickers, knee braces, and girts.
i) Joist hangers and end closures.
j) Hole reinforcing plates.
k) Backer plates.
G. ANCHORS, CLIPS, AND FASTENERS
1. Steel Shapes and Clips: ASTM A 36, zinc coated by hot-dip process according to ASTM A123.
2. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
3. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
a) Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
4. Welding Electrodes: Comply with AWS standards.
H. MISCELLANEOUS MATERIALS
1. Galvanizing Repair Paint: ASTM A 780.
2. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
3. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.
I. FABRICATION
1. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
a) Fabricate framing assemblies using jigs or templates.
b) Cut framing members by sawing or shearing; do not torch cut.
c) Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
1. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
2. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
3. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
d) Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
e) Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

3.1 EXECUTION
A. EXAMINATION
1. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
2. Proceed with installation only after unsatisfactory conditions have been corrected.
B. INSTALLATION, GENERAL
1. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
2. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing – General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
3. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
4. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
5. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
6. Cut framing members by sawing or shearing; do not torch cut.
7. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
a) Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
1. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
8. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
9. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
10. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
11. Install insulation, specified in Division 7 Section "Building Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
12. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
13. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
14. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
C. INTERIOR WALL INSTALLATION
1. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:
2. Anchor Spacing: As shown on Shop Drawings.
3. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:
a) Stud spacing: 16 inches.
b) Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.
c) Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.
4. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
a) Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
b) Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.
5. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
a) If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
b) Install horizontal bridging in stud system, spaced as indicated on Shop Drawings. Fasten at each stud intersection.
6. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches (150 mm) deep.

11.1 TRUSS INSTALLATION
A. Install, bridge, and brace trusses according to Shop Drawings and requirements in this Section.
B. Truss Spacing: As indicated.
C. Do not alter, cut, or remove framing members or connections of trusses.
D. Erect trusses with plane of truss webs plumb and parallel to each other, align, and accurately position at spacings indicated.
E. Erect trusses without damaging framing members or connections.
F. Align webs of bottom chords and load-bearing studs or continuously reinforce track to transfer loads to structure. Anchor trusses securely at all bearing points.
G. Install continuous bridging and permanently brace trusses as indicated on Shop Drawings and designed according to LGSEA's Technical Note 551e, "Design Guide for Permanent Bracing of Cold-Formed Steel Trusses."

12.1 FIELD QUALITY CONTROL
A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
B. Field and shop welds will be subject to testing and inspecting.
C. Testing agency will report test results promptly and in writing to Contractor and Architect.
D. Remove and replace work where test results indicate that it does not comply with specified requirements.
E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

13.1 REPAIRS AND PROTECTION
A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05400

SECTION 06071

PRESSURE-TREATED WOOD PRODUCTS

PART 1 GENERAL
1.1 SECTION INCLUDES
A. Preservative treatment of lumber
1.2 RELATED SECTIONS
A. Section 06100 – Rough Carpentry.
1.3 REFERENCES
A. ASTM International (ASTM):
1. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM A653 / A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. ASTM D3201 Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Base Products.
4. ASTM D5516 Standard Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
5. ASTM D5664 Standard Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
6. ASTM D6305 Standard Practice for Calculating Bending Strength Design Adjustment Factors for Fire retardant Treated Plywood Roof Sheathing.
7. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
B. American Wood-Protection Association (AWPA):
1. AWPA E12 Standard method of determining the corrosion of metal in contact with wood.
2. AWPA M4 – Standard for the Care of Preservative Treated Wood Products.
3. AWPA P5 – Standard for Waterborne Preservatives.
4. AWPA P17 Fire Retardant Formulations.
5. AWPA P23 Standard for Chromated Copper Arsenate Type C (CCA-C).
6. AWPA P25 – Standard for Inorganic Boron (SBX).
7. AWPA P26 – Standard for Alkaline Copper Quat Type A (ACQ-A).
8. AWPA P27 – Standard for Alkaline Copper Quat Type B (ACQ-B).
9. AWPA P28 Standard for Alkaline Copper Quat Type C (ACQ-C).
10. AWPA P29 Standard for Alkaline Copper Quat Type D (ACQ-D).
11. AWPA P47 – Standard for DCOI/Imidacloprid/Stabilizer, Waterborne (EL2).
12. AWPA P50 Standard for Fire Retardant FR-2 (FR-2).
13. AWPA T1 – Use Category System: Processing and Treatment Standard.
14. AWPA U1 – Use Category System: User Specification for Treated Wood.
C.
D. Permanent Wood Foundation (PWF) Design Specification, ANSI/AF&PA PWF-2007.
E. Permanent Wood Foundations, Design and Construction Guide, Southern Pine Council. Publication #400.
F. National Fire Protection Association (NFPA) 255 Method of Test of Surface Burning Characteristics of Building Materials.
G. ESR 2644, ACQ Preserve Wood Preservative Treatment; International Code Council –Evaluation Service, ICC-ES.
H. ESR 2645 D-Blaze Fire Retardant Treatment; International Code Council –Evaluation Service, ICC-ES.
. Underwriters Laboratories, Inc. (UL) 723 Tests for Surface Burning Characteristics of Building Materials.
1.4 SUBMITTALS
A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction
B. Product Data: Manufacturer's instructions for use, including requirements for storage, cutting, and finishing.
C. Preservative Treatment Certification: Treating plant's certification of compliance with specified standards, process employed, and preservative retention values.
1.5 QUALITY ASSURANCE
A. Wood Treatment Plant Qualifications: Wood treatment plant experienced in performing work of this section licensed by Viance, LLC.
B. Source Quality: Obtain treated wood products from a single approved source.
C. Preservative Treatment: Mark each piece of plywood and lumber to show compliance with specified standards.
1.6 DELIVERY, STORAGE, AND HANDLING
A. Exposure: Prevent wood products against moisture and dimensional changes, in accordance with instructions from treating plant.
1.7 WARRANTY
A. Manufacturer's Warranty: Provide manufacturer's standard 20-year transferable limited warranty for pressure-treated wood.
PART 2 PRODUCTS
2.1 MANUFACTURERS
A. Acceptable Manufacturer: Viance, which is located at: 200 E. Woodlawn Rd. Suite 350 ; Charlotte, NC 28217; Toll Free Tel: 800-421-8661; Tel: 704-522-0825; Fax: 704-527-8232; Email: request info (ijohnson@viance.net); Web: www.treatedwood.com SupaTimber CCA is manufactured by Chemical Specialties, Inc. (CSI), and marketed by Viance under license.
B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
C. Substitutions: Acceptable, approved and equal.
D. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction
2.2 MATERIALS
A. Dimension Lumber: As specified in Section 06100.
B. Fasteners and Metal Hardware In Preservative Treated Wood : For treated wood and where wood is in ground contact, subject to high relative humidity, or exposed to weather, provide corrosion resistant steel fasteners with hot-dip zinc coating per ASTM A153/A153M, provide corrosion resistant hardware per ASTM A653 / A653M Class G-185 in compliance with building code requirements.
C. Fasteners In Fire-Retardant Treated Wood: Use only code approved fasteners as specified in ICC-ES ESR 2645.
2.3 PRESERVATIVE PRESSURE TREATMENT OF WOOD
A. Preservative treatment for above ground use continuously protected from liquid water:
1. Treat wood in the following locations:
a) All framing lumber, studs, sill plates, floor joists, roof rafters, trusses, plywood,
b) Interior sheathing, furring strips, flooring, moldings and wood trim.
a. Ecolife® is protected with a revolutionary, non-metallic preservative plus wood stabilizer system. Ecolife Stabilized Weather Resistant Wood was the first decking product to receive NAHB Research Center National Green Building Certification as a "Green Approved Product", eligible to contribute points toward certification of a building under the National Green Building Standard™. Ecolife Stabilized Weather-Resistant Wood was awarded a US EPA Presidential Green Chemistry Award in 1996 for its use in other applications. Ecolife Stabilized Weather-Resistant Wood is an environmentally preferred building product that enhances the strength and long-term natural beauty of your deck projects –with significantly lower maintenance. Ecolife Stabilized Weather-Resistant Wood is not approved for use in ground contact, fresh water immersion or salt water immersion.
PART 3 EXECUTION
3.1 INSTALLATION
A. Framing: Comply with installation requirements in Section 06100.
B. Millwork and Trim: Comply with installation requirements in Section 06200.
C. Preservative Treated Wood:
1. Surface treatment of field cuts: All field cuts on members that provide structural support to a permanent structure shall be field treated in accordance with AWPA M4.

END OF SECTION 06071

SECTION 06090

WOOD AND PLASTIC FASTENERS

PART 1 GENERAL
1.1 SECTION INCLUDES
A. Screw fasteners.
1.2 RELATED SECTIONS
A. Section 06160 – Sheathing.
1.3 SUBMITTALS
A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction
B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
1.4 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
1.5 PROJECT CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
1.6 WARRANTY
A. Warranty: GRK Canada Ltd. warrants to the first retail purchaser that its Climatek coated and PHEINOX stainless steel screws will not rust under normal environmental conditions when used in accordance with the recommendations listed in GRK's Screw Selection Guide. This warranty is not transferable.
PART 2 PRODUCTS
2.1 MANUFACTURERS
A. Acceptable Manufacturer: GRK Fasteners, which is located at: 1499 Rosslyn Rd. ; Thunder Bay, ON; Canada P7E 6W1 ; Toll Free Tel: 800-263-0463; Tel: 807-474-4300; Fax: 800-895-5160 ; Email: request info (grk@grkfasteners.com); Web: www.grkfasteners.com
B. Substitutions: Acceptable, approved and equal
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.
2.2 GENERAL REQUIREMENTS
A. General: Provide fasteners of size and type indicated that comply with requirements specified.
1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners fabricated from Type 304, Type 305 or better stainless steel.
B. Code Mandated Use of Metal Fasteners with Treated Wood:
1. ICC-NES Evaluation Report Number NER-643: Section 3.6 Regarding use of metals with ACQ Preserve treated wood.
a) Metals used in contact with ACQ Preserve and ACQ Preserve Plus pressure treated wood shall be hot dip galvanized, stainless steel or triple coated zinc polymer materials. Carbon steel, aluminum, red brass and bronze shall not be used in contact with ACQ Preserve and ACQ Preserve Plus treated wood products.
2. ICC-NES Evaluation Report Number NER-628: Section 3.6 Regarding use of metals with NatureWood Presssure treated wood.
a) Metals used in contact with NatureWood pressure treated wood shall be hot dip galvanized, stainless steel or triple coated zinc polymer materials. Carbon steel, aluminum, red brass and bronze shall not be used in contact with NatureWood products.
3. ICC-NES Evaluation Report Number NER-669: Section 3.6 Regarding use of metals with Wolmanized treated wood.
a) Metals used in contact with Wolmanized Natural Select pressure treated wood shall be hot dip galvanized, stainless steel or triple coated zinc polymer materials. Carbon steel, aluminum, red brass and bronze shall not be used in contact with Wolmanized Natural Select treated wood products.
2.3 APPLICATIONS
A. Pressure Treated Lumber Decking:
1. Use #9 or #10 gauge on deck boards.
2. For Southern Yellow Pine use #10.
3. Product: PHEINOX R4 Stainless Steel screws and Climatek coated screws as manufactured by GRK.
B. Composite and Plastic Decking:
1. Product: Kameleon Composite Deck screws as manufactured by GRK.
2. Product: PHEINOX RT Composite stainless steel screws as manufactured by GRK.
C. Concrete and Masonry:
1. Product: Caliburn Screws as manufactured by GRK.
2.4 FASTENERS
A. Building Code Approval:
1. Approval: ICC-ES #ESR-2442 (01/10/2011).
a) Compliance with the following codes:
1) 2009 International Building Code (IBC)
2) 2008 International Residential Code (IRC)
b) Properties evaluated:
1) Structural.
2) Corrosion Resistance.
c) The RSS fasteners as manufactured by GRK are suitable alternatives for those code mandated requirements subject to listed conditions of use.
2. Approval: ICC-ES #ESR-3201 (07/01/2011).
a) Compliance with the following codes:
1) 2009 International Building Code (IBC)
2) 2009 International Residential Code (IRC)
b) Properties evaluated:
1) Structural.
2) Corrosion Resistance.
c) The R4 Multi Purpose Screw, Trim Screw and Kameleon Screw fasteners as manufactured by GRK are suitable alternatives for those code mandated requirements subject to listed conditions of use.
3. Approval: Florida Building Code
B. Multi Purpose Screw:
1. Product: R4 Multi Purpose Screw as manufactured by GRK.
2. Product: PHEINOX R4 Stainless Steel screws and Climatek coated screws as manufactured by GRK.
C. Structural Screw:
1. Product: RSS Rugged Structural Screw as manufactured by GRK.
D. Joist and Truss Fastener:
1. Product: RSS JTS Joist and Truss Fastener as manufactured by GRK.
2. Product: PHEINOX RSS Stainless Steel Screw as manufactured by GRK.
E. Cabinet Screw:
1. Product: Cabinet Screw as manufactured by GRK.
2. Product: PHEINOX Cabinet Stainless Steel screws and Climatek coated Cabinet screws as manufactured by GRK.
F. Finish Trim Head Screw:
1. Product: FIN/Trim as manufactured by GRK.
2. Product: White FIN/Trim Head Screw as manufactured by GRK.
3. Product: PHEINOX FIN/Trim Stainless Steel Screw as manufactured by GRK.
G. Composite Trim Head Screw:
1. Product: RT Composite Trim Head Screw as manufactured by GRK.
2. Product: PHEINOX RT Composite Stainless Steel Screw as manufactured by GRK.
3. Product: White RT Composite Trim Head Screw as manufactured by GRK.
H. Shim Screw:
1. Product: Top Star Shim Screw as manufactured by GRK.
I. Concrete Screw:
1. Product: Caliburn Concrete Screw as manufactured by GRK.
J. Concrete Pan Head Screw:
1. Product: Caliburn PH Concrete Screw as manufactured by GRK.
2. Product: Caliburn XL Concrete Screw as manufactured by GRK.
PART 3 EXECUTION
3.1 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
3.2 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
3.3 INSTALLATION
A. Install in accordance with manufacturer's instructions.
3.4 PROTECTION
A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.
END OF SECTION 06090

SECTION 6100

CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish all materials, equipment, labor, supervision, and other incidentals necessary to complete all carpentry and millwork as indicated on the drawings and/or herein specified. This includes, but is not limited to the following: Rough Carpentry and Formwork Framing Finish Carpentry and Trim Installation of Doors, Door Frames and Finish Hardware Cabinets, Millwork, Wood Shelving and their installation.

1.2 STANDARDS

A. All carpentry and millwork and materials shall meet the requirements of applicable portions of Standards listed below:

American Plywood Association. APA

American Society for Testing Materials. ASTM

Architectural Woodwork Institute. AWI

American Wood Preservers Institute. AWPI

National Forest Products Association.

Douglas Fir Plywood Association. (DFPA)

National Fire Protection Association. (NFPA)

Southern Building Code Congress International. (SBCCI)

Southern Pine Inspection Bureau. SPIB

Western Wood Products Association. WWPA

National Lumber Manufacturers Association. NLMA

Underwriters Laboratories. (UL)

PART 2 PRODUCTS

2.1 MATERIALS

A. Framing, blocking and bracing that will remain in the building shall be Grade Marked Number 2 KD Southern Yellow Pine, Construction Grade Douglas F ir, Hem/Fir or SPF which has been fire retardant treated to produce a flame spread of 5-20 and a smoke developed of 25-65.
B. Acceptable products are as follows:

Hoover Treated Wood Products – Pro-Tex

Koppers – Dricon

Osmose Wood Preserving, Inc. – Flame Proof LHC

C. All framing and blocking lumber in contact with masonry or concrete or used on the exterior shall be Southern Yellow Pine pressure treated with one of the following preservatives for protection from decay and termite attack.

1. Pentachlorophenol
2. Zinc Chloride
3. Zinc-Meta Arsenate
4. Wolman salts with arsenic content
5. Chromated zinc chloride

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Nikki L. Norton, R.A. AR91827 — NOV 16 2017

Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
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(772) 462-2567

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BUILDING SPECIFICATIONS

D. Materials specified as pressure treated shall meet the requirements of AWPA standards P5, Cl, C2, C3, C4, C5, C9, C14, C16, C18, C23. Material shall be treated to a net retention of .25 lbs per cubic foot for "above ground contact use".
E. Acceptable products are as follows:

Hoover Treated Wood Products – Dixie CCA

Koppers – Wolman CCA

Osmose Wood Preserving, Inc. – Flame Proof LHC

F. All framing lumber shall be free from any warp–that cannot be corrected by nailing and shall be S4S.
G. All framing lumber shall be thoroughly air dried and shall possess a moisture content under 19 percent.
H. Blocking and bracing that is permanent shall be similar to other framing lumber in grade and moisture content.
I. Sound board shall be equal to Homasote Corporation's 440 Sound–A–Sote, 1/2" thick. Install in accordance with manufacturer's recommendations.
J. Gypsum sheathing shall comply with FS SS–L–30 for type II (sheathing), class 2 (water resistant surfaces), form A (plain back), grade (core) X and style, V–tongue and groove long edges, square ends; 5/8" thickness, 48" x 96" panels, conforming to ASTM C79.

PART 3 EXECUTION

3.1 INSTALLING DOORS AND HARDWARE

A. Doors shall be installed and operable in best workmanship. There shall be no binding or friction. They shall be true and plumb and swing through their entire range of motion freely without rubbing or binding. Mortises and rabbets shall be clean and to the depth appropriate to the purpose and provide for a clean and proper installation of the material and hardware.

3.2 ROUGH HARDWARE

A. Furnish and install nails, screws, bolts, anchors, washers, clips, hangers and other rough hardware necessary to complete the various phases of the work.
B. All connections, nails, screws and hardware used anywhere outside or in any other way exposed to the weather shall be double hot dipped galvanized.
C. Fasteners through and/or into treated lumber shall be of a material recognized and recommended by the preservative manufacturer as being compatible with the preservative product being used.

END OF SECTION 06100

SECTION 06160

SHEATHING

Part 1 GENERAL

1.1 Section Includes

A. Includes but not limited to:

1. Furnish and install sheathing required for walls, roof, and floors as described in the Contract Documents.
2. Roof Sheathing

B. Related Sections: Section 07457 Cementitious Panels

1.2 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.

Part 2 PRODUCTS

2.1 General

A. Meet requirements of PS 1–83/ANSI A 199.1 except where APA Performance Rated units are specified. Every sheet shall bear the appropriate APA grade stamp identifying species of plywood or by Certificate of Inspection issued by approved lumber grading or inspection bureau or agency listed.
B. Plywood shall not exceed 18% moisture content when fabricated nor more than 19% when installed.
C. This specification is written for APA Performance Rated Plywood. Waferboard, Composite Board, Oriented Strand Board and Particle Board are NOT acceptable.
D. Panels shall be stamped "Sized for Spacing".

2.2 General Use Sheathing

A. Exposure 1.

3/8"	24/0
15/32"	32/16
1/2"	32/16
19/32"	40/20
5/8"	40/20
23/32"	48/24
3/4"	48/24

2.3 Underlayment:

A. PS–1 Underlayment grade, exposure 1.

2.4 Nails:

A. Up to 15/32" panel 8d common or galvanized box
B. 15/32" and thicker panel10d common or galvanized box
C. Underlayment 4d ring shanked

Part 3. EXECUTION

3.1 Installation:

A. General:

1. Nail heads shall be flush with, but do not penetrate, sheathing surface.
2. Use of edge clips to provide spacing between sheathing panels is acceptable.

B.Roof Sheathing:

1. Placing:
   a) Lay face grain at right angles to supports. Provide blocking for support where framing turns at roof overhangs.
   b) Provide 1/8" space between sheets at end and side joints.
   c) Stagger panel end joints.
   d) Sheathing shall be continuous over two spans minimum.
2. Nailing: (Verify with Drawings)
   a) Place nails at least 3/8" in from edge.
   b) Nail 6" o.c. along all supported edges.
   c) Nail 4" o.c at:
      1) Diaphragm boundaries
      2) Blocking above plywood sheathed walls and block masonry walls.
      3) At shear wall struts and all fascias.
3. Thickness: 5/8" minimum
4. Overlay: PEEL–N–STICK

3.2 Protection:

a) Protect roof sheathing from moisture until roofing is installed.

END OF SECTION 06160

SECTION 06200

FINISH CARPENTRY

Part 1 GENERAL

1.1 SECTION INCLUDES:

A. Furnish all materials, equipment, labor, supervision, and other incidentals necessary to complete all cabinetry and millwork as indicated on the drawings and/or herein specified.

1.2 STANDARDS

A. All cabinetry and millwork shall meet the requirements and recommendations of applicable portions of Standards listed above in 06100.

1.3 SUBMITTALS

A. Shop drawings will be required for all cabinetry and millwork. Submit one "blueprint" and one reproducible mylar print set only.
B. Show sizes, quantities, markings, materials, finishes and installed hardware and methods of fastening, bracing and connecting to the work of other trades and the building.
C. Draw profiles, sections and plans of items at a scale large enough to permit checking for design conformity.
D. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.

1.4 DELIVERY AND STORAGE

A. Do not bring cabinetry and millwork items into the building until receiving areas are thoroughly dry.
B. Store and handle materials and assembled work to prevent any damage. Protect finished surfaces from soiling, staining, or otherwise marring the finish. Damaged work must be replaced or repaired to the satisfaction of the Owner and Architect.

Part 2 PRODUCTS

2.1 MATERIALS

A. Moisture content of all wood and wood products shall not exceed 8%.
B. Plywood for cabinetry shall be B–D INT DFPA with B face exposed.
C. Shop fabricated cabinets to conform to Quality Standards requirements for AWI 400 B and 400 C custom grade for laminate cabinets and tops.
D. Clean all cabinetry of soil and stain after installation.
E. Fill all small cracks with polyseamseal. Cracks over 1/16" are not acceptable.
F. Joints shall be scribed to one another.
G. Pre–cut all openings required in cabinets and countertops. Contractor shall coordinate all openings with mechanical and electrical contractors. Smooth edges of all cutouts and where located in countertops and similar exposure seal edges of cutouts with a water resistant coating.
H. Contractor shall field measure for all cabinetry and millwork prior to fabrication.
I. Provide dust panels of 1/4" thick plywood above compartments and drawers, except where located directly below countertops.
J. Provide hinges, catches and pulls of types indicated or as selected by Architect, to accommodate each door size and style.
K. Equip each drawer with side mounted, full extension, ball bearing, nylon roller drawer slides with a load capacity of 75lbs per pair. Proved drawer slides and pulls as indicated or as selected by Architect.
L. Where shelving is indicated as adjustable, provide slotted type standards and brackets of type needed to support shelves with a uniform load of 50 lb/sq.ft.
M. Except where otherwise noted, provide exposed hardware with US26D, satin chrome plated finish. Stainless steel will be accepted as an alternate for products that are not available in US26D.
N. Scribe and cut all cabinets, countertops and millwork to fit adjoining work, and refinish cut edges or surfaces or repair finish at cuts.
O. Anchor all casework to anchors or blocking built–in or directly attached to substrates.

6.1 FABRICATION

A. Plastic Laminate Cabinets:

1. AWI Type of Cabinet Construction; Reveal overlay.
2. WIC Construction Style: Style A, Frameless
3. WIC Construction Type: Type I, multiple self supporting units rigidly joined together.
4. WIC Door and Front Style: Reveal Overlay
5. Reveal dimension: ½".
6. Laminate Cladding for Exposed Surfaces: High–pressure decorative of grade indicated:
   a) Horizontal Surfaces other than Tops: HGS
   b) Postformed Surfaces: HGP
   c) Vertical Surfaces: HGS
   d) Edges: VGS
7. Semi–exposed Surface other than Drawer Bodies: High pressure decorative laminate, Grade VGS.

a. Drawer sides and backs: Solid– Thermoset decorative overlay.
b. Drawer bottoms: Thermoset decorative overlay.

8. Provide dust panels of ¼" plywood or tempered hardboard above compartments and drawers, unless located directly under tops.
9. Colors, Patterns and Finishes: As selected from the manufacturer's full range.

END OF SECTION 06200

SECTION 06610

SOLID SURFACING

PART 1 – GENERAL

1.1 SUMMARY

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
B. SECTION INCLUDES:
   1. Solid Surfacing Fabrications for countertops as indicated, including trim and material needed for a complete installation.

1.2 RELATED WORK
A. WORK OF THIS SECTION IS RELATED TO WORK SPECIFIED IN THE FOLLOWING SECTIONS:
   1. Section 06200 (06 20 23) – "Interior Finish Carpentry."

1.3 REFERENCES

A.REFERENCE STANDARDS: In addition to requirements, comply with applicable provisions of following for design, materials, fabrication, and installation of component parts:
1. ISSFA–2, "Classification And Standards Publication of Solid Surfacing Material".
2. ANSI Z124–3 for vanities and Z124–6 for kitchen sinks.
3. NSF Standard 51 for use in both splash and food service areas.
4. New York City MEA for gas toxicity.
5. Canadian Standards Association (CSA).
6. ASTM G21 "Fungal Resistance," Method [A] [B], no growth.
7. ASTM G22 "Bacterial Resistance," no growth.
8. Stain Resistance, ANSI Z124–6–5.2 1997.

1.4 DESIGN REQUIREMENTS

A. DESIGN LOAD: Deflection limited to 1/360.
B. Design items with sufficient strength for handling stresses.

1.5 SUBMITTALS

A. PRODUCT DATA: Manufacturer's technical literature indicating physical properties and performance criteria for solid surfacing materials and related components.
B. SHOP DRAWINGS: Indicate design parameters, adjacent construction, materials, dimensions, thickness, fabrication details, tolerances, jointing methods, method of support, anchorages, integration with plumbing fixtures and connections, and colors.
C. SAMPLES: Submit two, 2 inch by 2 inch (51mm x 51mm) samples representative of colors, patterns, textures, finishes and edge treatments. Approved samples will be retained as a standard for the work.
D. INFORMATIONAL SUBMITTALS: Submit following packaged separately from other submittals:
   1. Manufacturer's written installation instructions.
   2. Maintenance Data: Manufacturer's recommended cleaning and maintenance procedures. Include in project closeout documents.
E. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.

1.6 QUALITY ASSURANCE

A. FABRICATOR/INSTALLER QUALIFICATIONS: Company specializing in fabricating and installing solid surfacing fabrications similar in complexity to those required in this project, including specific requirements indicated.
B. SOURCE LIMITATIONS: Obtain solid surfacing fabrications through one source.
C. FIRE–TEST–RESPONSE CHARACTERISTICS: Provide solid surfacing fabrications with the following surface–burning characteristics as determined by testing identical products per ASTM E 84 by UL 723 or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. Flame–Spread Index: 25 or less.
   2. Smoke–Developed Index: 450 or less.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, handle, and protect materials in accordance with manufacturer's written instructions.
   1. Provide protective coverings of suitable material. Take special precautions at corners.

1.8 PROJECT CONDITIONS

A. ENVIRONMENTAL LIMITATIONS: Do not deliver or install solid surfacing fabrications until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at design levels during the remainder of the construction period.
B. FIELD MEASUREMENTS: Verify that field measurements are as indicated on Shop Drawings.

1.9 SEQUENCING

A. Sequence work to permit installation of adjacent affected construction, plumbing rough–in.
B. Coordinate sizes and locations of plumbing, cut–outs, and other related work specified in other sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.10 WARRANTY

A. WARRANTY: Provide manufacturer's 10 year limited warranty covering replacement of the material except for non–covered conditions as follows:
   1. Minor stains, scratches, water spots, and burns that may be corrected by techniques covered in the manufacturer's Use and Care Guide.
   2. Failure of solid surfacing joint material.
   3. Failure due to structural failure of base cabinets or other solid surfacing substrate construction.
   4. Use for purposes other than indoor finish material.

PART 2 – PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS
A. ACCEPTABLE PRODUCT AND MANUFACTURER: Formica Solid Surfacing, Formica Corp., Cincinnati, OH.
   1. Surrell Series

2.2 MATERIALS AND COMPONENTS

A. SOLID SURFACING MATERIALS: Homogeneous solid sheets of filled plastic resin complying with ISSFA–2.
   1. Colors and Patterns: As selected by owner, of one of the following:
      a) Ginger Root Mist
      b) Sierra Mist
      c) Spanish Paprika Mist
      d) Rocky Rose
B. SPECIAL FEATURES: Eased edge treatments.

2.3 ACCESSORIES

1. Adhesives: For seams and drop edges, Formica Solid Surfacing Seaming Cartridges, 9 ounce (260ml); color to blend with sheet material.
2. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 FABRICATION

A. Assemble work at shop following manufacturer's printed fabrication instructions and deliver to job ready for installation. Manufacture in largest practical pieces for handling and shipping without seams.
   1. Grade: AWI, Economy.
   2. Fabricate work square and to required lines.
   3. Recess and conceal fasteners, connections, and reinforcing.
   4. Design construction and installation details to allow for expansion and contraction of materials. Properly frames material with tight, hairline joints held rigidly in place.
   5. Fabricate countertops and vanities with back splash and side splash pieces to profiles and sizes indicated.
   6. Fabricate items to profiles shown with connections and supports as indicated or as required for complete installation in accordance with manufacturer's written instructions and approved submittals.
   7. Provide cut–outs for plumbing fixtures and trim, washroom accessories, appliances, and related items. Confirm layout with manufacturer's cut–out templates before beginning work. Round corners of cut–outs and sand edges smooth.
   8. Do not exceed manufacturer's recommended unsupported overhang distances.
   9. Finish exposed surfaces smooth and polish to low sheen.
   10. Radius corners and edges.

B. Countertops: 1/2 inch (13mm) thick, Solid Surfacing, adhesively joined with no exposed seams, edge details as indicated.
   1. Exterior grade plywood, CDX, pressure treated plywood.
C. WINDOWSILLS: [1/2 inch (13mm)] thick, Solid Surfacing, edge details as indicated.
D. COUNTERTOPS WITH UNDER–MOUNTED SINKS: 1/2 inch (13mm) thick, Solid Surfacing, edge details as indicated with under–mount sink.
E. TOLERANCES:
   1. VARIATION IN COMPONENT SIZE: Plus/Minus 1/4 inch.
   2. LOCATION OF OPENINGS: Plus/Minus 1/4 inch from indicated location.

PART 3 – EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Examine surfaces for conditions that would adversely affect execution.
B. PREPARATION: Take field measurements.

3.2 INSTALLATION

A. GENERAL: Install in accordance with manufacturer's written installation instructions and approved Submittals. Provide templates and rough–in measurements.

   1. Set items plumb, level, rigid and solidly adhered to substrate.
   2. Prefit items: Adjust supports to make fit. Align joints over support framing.
   3. Apply dabs of silicone on supports; place items on supports and attach.
B. SPLASHES: Install splashes at back and sides of countertops and vanities using silicone. Apply silicone to back surface only. Place thin bead of seam adhesive along edge where splash seats.
   1. Seal joint between vanity top and splashes and between splashes and walls with Sealant Designation as specified in Section 07900 "Joint Sealers."
   2. 4" high back splash.
C. TOLERANCES:
   1. Maximum Variation From True Dimension: 1/8 inch.
   2. Maximum Offset From True Position: 1/8 inch.

3.3 CLEANING AND PROTECTION

A.CLEANING:
   1. Clean and polish fabrications in accordance with manufacturer's instructions.
   2. Promptly remove excessive mastic and seam adhesive.
   3. Clean tops and splashes in accordance with manufacturer's recommendations.
B.PROTECTION:
   1. Do not permit construction near unprotected surfaces.

C. Refer to manufacturer's warranty and exclusions.

END OF SECTION

SECTION 07210

BUILDING INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Thermal insulation in exterior walls and ceilings.
B. Acoustical insulation.

1.2 RELATED SECTIONS

A. Section 15080 – Mechanical Insulation: Mechanical equipment, duct and plumbing insulation
B. Section 15081 – Plumbing Insulation.
C. Section 15082 – HVAC Insulation: Duct Insulation: Duct liner and duct wrap.

1.3 REFERENCES

A. ASTM C 423 – Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2000.
B. ASTM C 518 – Standard Test Method for Steady–State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 1998.
C. ASTM C 612 – Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2000a.
D. ASTM C 665 – Standard Specification for Mineral–Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 1998.
E. ASTM C 764 – Standard Specification for Mineral Fiber Loose–Fill Thermal Insulation; 1999.
F. ASTM C 1136 – Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation; 2000.
G. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2000a.
H. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials; 2000.
I. ASTM E 136 – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 1999.
J. NAIMA – Recommendations for Installation in Residential and Other Light–Frame Construction – Fiber Glass Building Insulation; North American Insulation Manufacturers Association; 1999.
K. NAIMA – Recommendations for Installation in Residential and Other Light–Frame Construction – Fiber Glass Loose Fill Insulation; North American Insulation Manufacturers Association; 1997.
L. TAPPI T 803 – Puncture Resistance of Container Board; TAPPI; 1999.

1.4 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging with labeling intact including material name, production date and product code, until ready for installation.
B. Protect insulation from physical damage and from becoming wet, soiled, or covered with ice or snow.

1.6 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Knauf Insulation, which is located at: One Knauf Dr. ; Shelbyville, IN 46176. ASD. Tel. Toll Free Tel: 800–825–4434; Fax: 317–398–3675; Email: bob.gardner@knaufinsulation.com ; Web: www.knaufinsulation.us.
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 APPLICATIONS/SCOPE

A. Exterior Concrete and Masonry Walls: Rigid board type applied to interior face.
   1. R–Value: 4.3
   2. Vapor Retarder: FSK facing.
   3. Vapor Retarder: ASJ facing.
B. Roof Rafters, With No Covering: Spray Foam Insulation.
   1. R–Value: 22.
   2. Vapor Retarder: FSK–25 facing.
C. Interior Partitions Indicated with STC Rating: TBD R–11 Batt type.

2.3 MATERIALS

A. Rigid Board Insulation: Glass fiber thermal insulation complying with ASTM C 612, Type 1A or 1B; insulation exclusive of facing non–combustible when tested in accordance with ASTM E 136; Knauf Insulation Board with ECOSE Technology sustainable bio–based binder.
   1. R–value as indicated when tested in accordance with ASTM C 518.
   2. 1 Inch (25 mm) Thickness: R–value of 4.3.
   3. Size: Maximum sizes available, to avoid jointing to greatest extent possible.
   4. Density: 2.25 lb/cu ft (36 kg/cu m) minimum.
   5. Dimensional Stability: Linear shrinkage less than 0.3 percent.
   6. Facing: None, unfaced.
      a) Surface Burning Characteristics: Maximum flame spread of 25, maximum smoke developed of 50, when tested in accordance with ASTM E 84.
      b) Noise Reduction Coefficient: 1.00, when tested on 2 inch (50 mm) samples in accordance with ASTM C 423.
   7. Properties:
      a) Free of Formaldehyde: Insulation is manufactured with bio–based binder and no formaldehyde.
      b) VOC Emission: Low VOC emission certified by GreenGuard Environmental Institute for Children and Schools.
      c) Recycled Content: Minimum of 40% "post–consumer" recycled material.
B. Unfaced Batt Insulation: EcoBatt Glasswool thermal insulation complying with ASTM C 665, Type I, Class A; non–combustible when tested in accordance with ASTM E 136.
   1. R–value as indicated when tested in accordance with ASTM C 518.
   2. 3–1/2 Inch (89 mm) Thickness: R–value of 11.
   3. Size: Maximum sizes available, to avoid jointing to greatest extent possible.
   4. Width for Metal Framing Application: Same as framing center to center dimension.
   5. Surface Burning Characteristics: Maximum flame spread of 25, maximum smoke developed of 50, when tested in accordance with ASTM E 84.
   6. Properties:
      a) Free of Formaldehyde: Insulation is manufactured with bio–based binder and no formaldehyde.
      b) VOC Emission: Low VOC emission certified by GreenGuard Environmental Institute for Children and Schools.
      c) Recycled Content: Minimum of 40% "post–consumer" recycled material.
C. Spray Foam Insulation See SECTION 07214.
D. Accessory Materials and Fasteners: Provide all materials required for complete and proper installation of insulation, whether specified or not.

PART 3 EXECUTION

3.1 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. Examine the areas and conditions under which work of this section will be installed.
C. Verify that adjacent materials are dry and ready to receive insulation.
D. Verify mechanical and electrical services within walls have been tested and inspected.
E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION – BATTS, BLANKETS, AND BOARDS

A. Install in accordance with manufacturer's instructions.
B. Install in accordance with NAIMA "Recommendations for Installation in Residential and Other Light–Frame Construction – Fiber Glass Building Insulation" and manufacturer's instructions.
C. Surface Application: Apply insulation directly to surface with appropriate spindle or prong–type anchors.
   1. Fasten anchors to steel surfaces by welding the pin to metal or by using pre–attached heads and welded through the insulation.
   2. Fasten anchors to other substrates with adhesive. Follow manufacturer's recommendations for surface preparation and adhesive pattern.
   3. Impale insulation on anchor and secure with washer.
   4. Select pin lengths to ensure tight fit. Protect pin tips where subject to human contact.
   5. See manufacturer's diagram for impaling pin pattern.
D. Surface Application: Apply insulation with adhesive. Follow adhesive manufacturer's recommendations for surface preparation and adhesive pattern.
E. Between Furring Strips, Hat–Channels, and Z–Shaped Furring: Install insulation between furring members; use fastening system recommended by furring strip manufacturer.
F. Between Metal Studs, Rafters, and Joists: Friction fit insulation between framing members after cover material has been installed on one side of the cavity.
   1. Unfaced Insulation: In applications without a cover material and where framing depth is larger than insulation thickness, use wire or metal straps to hold insulation in place.
   2. Faced Insulation: Tape attachment flanges to face of metal framing prior to applying interior finish.
   3. Wall Heights Over 8 Feet (2440 mm) and Ceilings: Provide supplementary support to hold insulation in place until finish surface is applied.
G. Maintain vapor retarder integrity by tightly abutting adjacent insulation.
H. Repair punctures or tears in vapor retarder facing by taping. Follow tape manufacturer's application recommendations.
I. Do not leave kraft or standard foil facings exposed.

3.3 PROTECTION

A. Protect insulation from damage and from becoming wet before, during and after installation.
B. Replace damaged products before Substantial Completion.

END OF SECTION 07210

SECTION 07214

SPRAY FOAM INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Open Cell Spray Foam Insulation.

1.2 REFERENCES

A. ASTM C 518 – Standard Test Method for Steady–State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
B. ASTM C 177 – Standard Test Method for Steady–State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded–Hot–Plate Apparatus.
C. ASTM C 1338 – Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
D. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
E. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials.
F. ASTM E 283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
G. ASTM D 1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
H. ASTM D 1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
I. ASTM D 1623 – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
J. ASTM D 2126 – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
K. ASTM D 2842 – Standard Test Method for Water Absorption of Rigid Cellular Plastics.

1.3 PERFORMANCE REQUIREMENTS

A. Conform to applicable code for flame and smoke, concealment, and over coat requirements.

1.4 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with a minimum of ten years experience manufacturing products in this section shall provide all products listed.
B. Installer Qualifications: Products listed in this section shall be installed by a single organization with at least five years experience successfully installing insulation on projects of similar type and scope as specified in this section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
B. Storage: Store materials in dry locations with adequate ventilation, protected from freezing rain, direct sunlight and excess heat and in such a manner to permit easy access for inspection and handling. Store at temperature between 55 and 80 degrees F (12.7 to 26.6 degrees C).
C. Handling: Handle materials to avoid damage.

1.7 PRE–APPLICATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
B. Do not apply insulation when substrate temperatures are under 40 degrees F (4.4 degrees C) prior to installation.
C. Surfaces must be dry prior to application of spray foam. Excess humidity may cause poor adhesion, and result in product failure.
D. To avoid overspray, product should not be applied when conditions are windy.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: CertainTeed Corp., Insulation Group, which is located at: 750 E. Swedesford Rd. P. O. Box 860 ; Valley Forge, PA 19482–0860; Toll Free Tel: 800–233–8990; Fax: 610–341–7940; Email: request info (amanda.froehlich@saint–gobain.com); Web: www.certainteed.com/products/insulation
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction

2.2 SPRAY FOAM INSULATION

A. Insulation: Polyurethane water–blown type Open Cell Foam: CertainTeed CertaSpray Open Cell Foam is a low density, MDI–based semi–rigid polyurethane foam:
   1. Physical and Mechanical Properties:
      a) Core Density: 0.45–0.55 pcf when tested in accordance with ASTM D 1622.
      b) Thermal Resistance: 3.6 when tested in accordance with ASTM C 518 at 75 degrees F, (h–ft2– degrees F)/Btu.
      c) Open Cell Content: Greater than 95 percent when tested in accordance with ASTM D 2842.
      d) Compressive Strength: Greater than 2.4 psi when tested in accordance with ASTM D 1621.
      e) Tensile Strength: 5.2 psi when tested in accordance with ASTM D 1623.
      f) Water Absorption: Less than 30 percent by volume when tested in accordance with ASTM D 2842.
      g) Dimensional Stability: Less than 12 percent by volume when tested in accordance with ASTM D 2126 at 75 degrees F/95 percent RH, 28 Days.
      h) Water Vapor Transmission: 33 perm/inch when tested in accordance with ASTM E 96.
      i) Air Permeability: 0.013 when tested in accordance with ASTM E 283 at 5–1/2 inch thickness, L/s/m2.
      j) Fungi Resistance: Pass, with no growth when tested in accordance with ASTM C 1338.
   2. Fire performance
      a) Flame Spread: Less than 25 when tested in accordance with ASTM E 84.
      b) Smoke: Less than 350 when tested in accordance with ASTM E 84.
   3. Thermal Performance: Tested in accordance with ASTM C 518 and/or ASTM C 177 at 75 degrees F (24 degrees C) mean temperature.
      a) Thickness 1 inch (25 mm), R–Value 3.6 (h–ft2–degreesF)/Btu (0.6 (m2–degreesC)/W).
      b) Thickness 1–1/2 inches (38 mm), R–Value 5.4 (h–ft2–degreesF)/Btu (1.0 (m2–degreesC)/W).
      c) Thickness 2 inches (51 mm), R–Value 7.2 (h–ft2–degreesF)/Btu (1.3 (m2–degreesC)/W).
      d) Thickness 2–1/2 inches (64 mm), R–Value 9.0 (h–ft2–degreesF)/Btu (1.6 (m2–degreesC)/W).
      e) Thickness 3 inches (76 mm), R–Value 10.8 (h–ft2–degreesF)/Btu (1.9 (m2–degreesC)/W).
      f) Thickness 3–1/2 inches (89 mm), R–Value 12.6 (h–ft2–degreesF)/Btu (2.2 (m2–degreesC)/W).
      g) Thickness 4 inches (102 mm), R–Value 14.4 (h–ft2–degreesF)/Btu (2.5 (m2–degreesC)/W).
      h) Thickness 4–1/2 inches (114 mm), R–Value 16.2 (h–ft2–degreesF)/Btu (2.9 (m2–degreesC)/W).
      i) Thickness 5 inches (127 mm), R–Value 18.0 (h–ft2–degreesF)/Btu (3.2 (m2–degreesC)/W).
      j) Thickness 5–1/2 inches (140 mm), R–Value 19.8 (h–ft2–degreesF)/Btu (3.5 (m2–degreesC)/W).
      k) Thickness 6 inches (152 mm), R–Value 21.6 (h–ft2–degreesF)/Btu (3.8 (m2–degreesC)/W).

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Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.3
	Building Specs

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BUILDING SPECIFICATIONS

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. Verify that all exterior and interior wall, partition, and floor/ceiling assembly construction has been completed to the point where the insulation may correctly be installed.
C. Verify that substrate and cavities are dry and free of any foreign material that will impede application.
D. Verify that mechanical and electrical services in ceilings, walls and floors have been installed and tested and, if appropriate, verify that adjacent materials are dry and ready to receive insulation.
E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C .Mask and protect adjacent surfaces from overspray or dusting.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions. Product must be installed according to local code, and must be applied by a qualified applicator.
B. Apply insulation by spray method, to uniform monolithic density without voids.
C. Apply to minimum cured thickness as indicated on the Drawings or as scheduled at the end of this Section.
D. Apply to minimum cured thickness of +/– 4 inches.
E. Apply to achieve thermal resistance R–Value of 22 .
F. Apply insulation to seal voids at truss ends to prevent wind scouring of ceiling insulation.
G. Seal plumbing stacks, electrical wiring and other penetrations into attic to control air leakage.
H. Do not install spray foam insulation in areas where it will be in contact with equipment or materials with operating temperatures of 180 degrees F (82 degrees C) or greater.
J. Where building is designed to meet the specific air tightness standards of the Energy Star Program, apply insulation as recommended by manufacturer to provide airtight construction. Apply sealant to joints between structural assemblies as specified in Division 7.
K. Patch damaged areas.

3.4 FIELD QUALITY CONTROL

A. Inspection will include verification of insulation and density.

3.5 PROTECTION

A. Protect installed products until completion of project.
B. Touch–up, repair or replace damaged products before Substantial Completion.

3.6 SCHEDULES

A. For the following locations, apply the average cured thickness indicated.
1. Unvented roof spaces: +/–4 inches.

END OF SECTION 07214

SECTION 07410

SHEET METAL ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Integral snap–lock metal panel roofing system.

1.2 RELATED SECTIONS

A. Section 06160–Sheathing.
B. Section 07410–Roofing Underlayment.
C. Section 07600 – Flashing and Sheet Metal
D. Section 07900 – Joint Sealers

1.3 REFERENCES

A. ASTM A 653/A 653M – Standard Specification for Steel Sheet, Zinc–Coated (Galvanized) or Zinc–Iron Alloy–Coated (Galvannealed) by the Hot–Dip Process.
B. ASTM A 792/A 792M – Standard Specification for Steel Sheet, 55% Aluminum–Zinc Alloy–Coated by the Hot–Dip Process.
C. ASTM B 209 – Standard Specification for Aluminum and Aluminum–Alloy Sheet and Plate.
D. ASTM D 226 – Standard Specification for Asphalt–Saturated Organic Felt Used in Roofing and Waterproofing.
E. ASTM D 2178 – Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
F. ASTM E 84 – Standard Test for Surface Burning Characteristics of Building Materials.
G. ASTM E 1592 – Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
H. ASTM E 1646 – Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
I. ASTM E 1680 – Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
J. FM 4471 – Class 1 Panel Roof (Uplift Evaluation); Factory Mutual Research Corporation.
K. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.
L. UL 790 – Standard Test Methods for Fire Tests of Roof Coverings.
M. FM 4471 – Class 1 Roofing Panels.
N. SMACNA – Architectural Sheet Metal Manual.
O. NRCA – The NRCA Roofing and Waterproofing Manual.

1.4 SUBMITTALS

A. Submit as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Shop Drawings: Prepared specifically for this project; showing dimensions of metal roofing and accessories, fastening details and connections and interface with other products.
C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Certified and approved installer of the sheet metal roofing manufacturer Englert, Inc.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
B. Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
1. Store materials above ground, on skids.
2. Protect material with waterproof covering and allow sufficient ventilation to prevent condensation buildup or moisture entrapment on the materials.

1.7 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Provide warranties as follows:
1. Warranty covering the metal substrate against rupture, perforation and structural failure due to normal atmospheric corrosion.
2. Warranty on paint finish against cracking, peeling, blistering, chalk and color change.
3. Provide 25–year warranty for GalvalumePlus against corrosion and perforation.
B. Manufacturer's Weathertightness Warranty:
1. Warranty: Provide the manufacturers limited warrantee for workmanship and material covering a period of ten (10) years from the date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Englert, Inc., which is located at: 1200 Amboy Ave. ; Perth Amboy, NJ 08861; Toll Free Tel: 800–364–5378; Tel: 732–826–8614; Fax: 732–826–8865; Email: c.mcguire@englertinc.com; Web: www.englertinc.com
B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
C. Substitutions: Acceptable, approved and equal.
D. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction
E. Provide all sheet metal roofing and accessories from a single manufacturer.

2.2 RESIDENTIAL/LIGHT COMMERCIAL SYSTEMS

A. Integral Snap–Lock Panels:
1. Profile: Series A1100, 1–1/4 inch (31.75 mm) standing seam.
a) Width: 16 inches (406 mm).
b) Stiffening ribs.
c) Striated pattern.
d) Stucco embossed pattern.
e) Wind Uplift Resistance: UL 580; Class 90.
f) Air Leakage: Passed when tested in accordance with ASTM E 1680.
g) Water Penetration: None, when tested in accordance with ASTM E 1646.
h) Flame Spread: Class 1 when tested in accordance with ASTM E 84.
i) Class A Fire Rating, UL–790.
j) .Florida Building Code approval.
2. Profile: Series A1101, 1 inch (25.4 mm) or 1–1/4 inch (31.75 mm) low profile seam.
a) Width: 16 inches (406 mm).
b) Stiffening ribs.
c) Striated pattern.
d) Stucco embossed pattern.
e) Wind Uplift Resistance: UL 580; Class 90.
f) Air Leakage: Passed when tested in accordance with ASTM E 1680.
g) Water Penetration: None, when tested in accordance with ASTM E 1646.
h) Flame Spread: Class 1 when tested in accordance with ASTM E 84.
i) Class A Fire Rating, UL–790.
j) Florida Building Code approval.

2.3 ACCESSORIES

A. Fasteners: As recommended by panel manufacturer for the system specified.
B. Sealant: Sealant as recommended by panel manufacturer.
C. Flashings and Trim: As recommended by panel manufacturer.

2.4 MATERIALS

A. Galvalume–Plus: ASTM A 792/A792M, AZ55, aluminum–zinc alloy coating.
1. Base metal: 50ksi yield point, 52 ksi tensile strength:
2. Thickness:
a) 22 gauge.
3.Finish: Zinc chromate pretreatment, with clear factory–applied acrylic coating.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive sheet metal roofing. Notify the Architect in writing of any defective conditions encountered. Starting of work shall constitute acceptance of such conditions.
B. Wood and Metal Deck Substrate:
1. Inspect roof deck to verify deck is clean and smooth, free of depressions, waves, or projections, and properly sloped.
2. Verify deck is dry and joints are solidly supported and fastened.
3. Verify wood nailers are installed and correctly located.
C. Structural Framing Substrate:
1. Verify primary and secondary framing members are installed and fastened, properly aligned and sloped.
2. Verify damaged shop coatings are repaired with touch up paint.
D. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets are in place, and nailing strips located.
E. Correct defective conditions before beginning work.

3.2 INSTALLATION

A. Install in conformance with the NRCA Roofing and Waterproofing Manual and manufacturers installation instructions and recommendations.
B. Form panel shape as indicated on Drawings, accurate in size, square, and free from distortion or defects.
C. Install base sheet and eave protection sheet underlayment as recommended by the manufacturer.
D. Install all panels continuous from ridge to eave. Transverse seams are not permitted.
E. Where not otherwise indicated conform to SMACNA details including flashings and trim.
F. Install sealants where indicated to clean dry surfaces only without skips or voids.

3.3 PROTECTION

A. Protect installed products until completion of project.
B. Touch–up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07410

SECTION 07417

ROOF UNDERLAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sheet–applied self–adhering underlayment membrane for roofing.

1.2 RELATED SECTIONS

A. Section 06100 – Rough Carpentry.
B. Section 07410 – Metal Roofing
C. Section 07900 - Joint Sealers

1.3 REFERENCES

A. American Society of Testing and Materials (ASTM):
1. ASTM D 903 Standard Test Method for Peel Resistance.
2. ASTM D 1970 Standard Test Method for Flexibility at Cold Temperature.
3. ASTM E 96(B) Standard Test Method for Water Vapor Permeance.
4. ASTM E 283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
B. International Organization for Standardization (ISO) 9001:2000 Quality Standard.

1.4 DEFINITIONS

A. Waterproofing Terminology: Refer to the following publications for terms related to waterproofing work not otherwise defined in this section.
1. ASTM D 1079: Definitions of Terms Relating to Waterproofing, Roofing, and Bituminous Materials.
2. National Roofing Contractor's Association (NRCA): Roofing and Waterproofing Manual.
3. Roof Consultants Institute Glossary of Terms.

1.5 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Submit three copies of the most current technical data sheets. These documents shall describe the physical properties of the specified materials and explanations about product installation, including installation techniques,restrictions, limitations and manufacturer recommendations.
C. Certification that all products are in compliance with specified ASTM criteria.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
1. The installer shall have experience with specified product and manufacturer recommended application and detailing.
B. Manufacturer Qualifications:
1. Shall have a minimum of 10–year experience manufacturing waterproofing membrane systems.
C. Mock–Up: Provide a mock–up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Correct mock–up area as required to produce acceptable work.

1.7 PRE–INSTALLATION CONFERENCE

A. Convene no less than five days prior to commencing Work at a time and location to be determined.
1. All parties responsible for Work of this section shall be required to attend including the Architect, Owner, Contractor and any other trades affected by the roofing and underlayment Work.
2. Review installation procedures and coordination required with related work.
3. Inspect and make notes of job conditions prior to installation:
a) Minutes shall be taken at the conference and provided to all parties present.
b) All outstanding issues shall be noted in writing designating the responsible party for follow–up action and the timetable for completion.
c) Application of waterproofing system shall not take place until all outstanding issues are resolved to the satisfaction of the Building Owner.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials clearly labeled with manufacturer's name, brand name, and all identifying numbers.
B. Store all materials upright, on pallets, in protected and well–ventilated areas. Only materials to be used the same day shall be removed from this location. Special care may be required at temperatures below 40 degree F (4 degree C). Keep all materials away from open flame or welding sparks.
C. Pails of materials shall be carefully stored and adequately protected in accordance with the manufacturer's recommendations.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

A. Sheet Membrane Underlayment: Upon completion of work, the Contractor shall supply the Owner with a single–source warranty issued by the manufacturer of the underlayment.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: SOPREMA, Inc., which is located at: 310 Quadral Dr. ; Wadsworth, OH 44281; Toll Free Tel: 800–356–3521; Tel: 330–334–0066; Fax: 330–334–4289; Email: request info (bbotdorf@soprema.us); Web: www.soprema.us
B. Substitutions: Acceptable, approved and equal
C. Requests for substitutions will be considered in accordance with with Article 14 of the eement between Martin County and Contractor for Horizontal Construction.

2.2 UNDERLAYMENT

A. Sheet Membrane Underlayment: Lastobond Shield HT is a 40 mil (1 mm) self–adhesive waterproofing membrane. Lastobond MU is a 60 mil (1.5 mm) self–adhesive waterproofing membrane. Both are composed of SBS modified bitumen and a tough UV resistant anti–slip polyethylene woven top facer. The release film backing is UV resistant and protects the product from degradation when stored outside without the cardboard packaging.
1. Standards:
a) Underwriters Laboratories Inc. File #R21824
b) FM Approvals, ICC/ES, Miami–Dade County or Florida Building Code Product Approval for Roof Assembly combinations.
c) Soprema is ISO–9001: 2008 Certified.
B. Product: Lastobond Shield HT by SOPREMA.
1. Physical Properties:
a) Load strain properties @ 77 degree F (25 degree C):
1) Maximum load (lbs/inch) MD/XD: 64/88.
2) Elongation @ maximum load (%) MD/XD: 52/24.
b) Low Temperature Flexibility (ASTM 1970): –22 degree F (–30 degree C).
c) Peel Resistance on plywood (ASTM D 903): 11.4 lb/ft (17 kg/m).
d) Maximum Service Temperature: 240 degree F (116 degree C).
e) Water Vapor Permeance perm (ng/Pa*s*m2) (ASTM E 96): 0.017 (0.92).
f) Air Permeability, (L/sec*m2) (ASTM E 283 – 75 Pa): <0.007.

2.3 PRIMER

A. Surface Primer: ELASTOCOL 600c by SOPREMA. A solvent based primer used specifically for self–adhered membranes. Primer is composed of a blend of natural resins and solvent/synthetic rubber; may be spray or roller applied.
B. Surface Primer: ELASTOCOL STICK WB by SOPREMA. A polymer, emulsion based primer used specifically for self–adhered membranes. Primer may be spray or roller applied. For use when temperatures are above 41 degree F (5 degree C). Keep from freezing.

2.4 ACCESSORIES

A. Sealant / Mastic: Sopramastic by SOPREMA.

PART 3 EXECUTION

3.1 SURFACE INSPECTION

A. Do not begin installation until substrates have been properly prepared.
B. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are completed.
C. Determinations of bond strength and moisture content are the responsibility of the contractor and shall be performed periodically by the contractor throughout the course of work.
D. Do not install materials in conditions of inclement weather.

3.2 SURFACE PREPARATION

A. Surfaces shall be structurally sound and free of voids, spalled areas, looser aggregate and sharp protrusions. Remove contaminates such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods which are acceptable to manufacturer of sheet membrane waterproofing.
B. Wood Substrates: Prime as necessary for wood. Apply waterproofing membrane over securely fastened, sound surface. All joints and fasteners shall be flush to create a smooth surface.
C. Treat joints and install flashing details as recommended by underlayment membrane manufacturer.

3.3 MEMBRANE INSTALLATION

A. Comply with membrane manufacturer's literature and approved details for installation, including but not limited to the following:
1. Apply primer by spray or roller at a rate recommended by the membrane manufacturer. Recoat areas not waterproofed if contaminated by dust. Allow primer to dry per membrane manufacturer's recommendations.
2. The membrane shall be bonded to a properly prepared, dry (not damp), clean substrate which is free of dirt; dust; debris; oils; unadhered coatings; any other contaminates that may result in a surface that is not sound or is un–even and affects the adhesion of the membrane to the substrate.
3. Remove the release material from the self adhesive underside and apply onto the approved substrate using applied pressure. Starting at the low point, position a full roll or cut the membrane into ten to fifteen feet (3 to 5 m) lengths and re–roll loosely. Peel back one to two feet (300 to 600 mm) of release material, align the membrane, and continue to peel the release film from the membrane. Press the membrane in place with heavy hand pressure. Apply pressure to the membrane roll side and end laps to insure water tightness and bonding to the substrate. Membrane installation shall not prevent ventilation of existing structure.
4. Follow good roofing practice by orientating underlayment so side laps shed water. Apply the membrane in valleys before the membrane is applied to the eaves. For valley and ridge application, peel the release material, center the sheet over the valley or ridge, drape, and press it in place. Work the center of the valley or ridge outward in each direction. Following placement along the eaves, continue application of the membrane up the roof. If nailing of the membrane is necessary on steep slopes during hot weather, back nail and cover the nails by overlapping with the next sheet. Extend sheet to the height as recommended by the local building code or to the highest locally expected level in order to maintain water tightness from wind driven rain, headwater back–up, ice dams and snow load.

END OF SECTION 07417

SECTION 07600

SHEET METAL

Part 1. GENERAL

1.1 SECTION INCLUDES:

1. Furnish all materials, equipment, labor, supervision and other incidentals necessary to provide all sheet metal work as indicated on the drawings and/or specified herein.

1.2. STANDARDS

1. Sheet metal work shall meet the requirements and recommendations of the applicable portions of the Standards listed below, latest edition:
1) American National Standards Institute ANSI
2) American Society for Testing Materials ASTM
3) Underwriters Laboratory UL
4) Sheet Metal and Air Conditioning Contractors National Association SMACNA
5) Coppers Development Association CDA, CABRA
6) Lead Industries Association LIA
7) National Roofing Contractors Association NRCA
8) Factory Mutual FM

1.1. SHEET METAL MATERIALS AND APPLICATION

1. Review air conditioning drawings and specifications for additional sheet metal work.
2. Flashing, unless otherwise noted, shall be aluminum. Installation must be in strict accordance with roofing manufacturer's warranty. Roofing contractor shall warranty this flashing in the "single source" roof warranty. Copper flashing, as indicated on Drawings, shall be 16 ounce lead coated.
3. Fabricate flashing in sections as large as practicable. Fold exposed edges back at least one half inch (1/2") and flatten. Lap joints four inches (4") minimum and seal properly.
1) Where lapped or bayonet type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant, concealed within the joint.
2) Where movable, non–expansion type joints are indicated or required for proper performance of the work, form metal to provide installation of elastomeric sealant, in compliance with SMACNA standards.
4. Wherever two dissimilar metals contact each other, and when they are separated on the scale by more than a single intermediate metal, the contacting surfaces shall be insulated from each other by roofing cement.
5. Solder for use with copper or stainless steel shall be 50–50 tin/lead solder with rosin flux conforming to ASTM B32. Solder for aluminum shall be as per SMACNA.
6. Fasteners shall be of the same metal as the flashing/sheet metal or other non–corrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with the material being fastened.
7. Bituminous coating shall conform to FS TT–D–494 or SSPC–Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15 mil dry film thickness per coat.
8. Elastomeric sealant shall be generic type recommended by manufacturer of metal and fabricator of components being sealed; comply with FS–TT–S–00227, TT–S–00230 or TT–S–001543.
9. Provide metal accessories, clips, straps, anchoring devices and similar product units as required for installation of work, matching or compatible with materials being installed, non–corrosive, size and gauge required for performance.
10. Nail flanges of expansion joint units to curb nailer at maximum spacing of six inches on centers. Fabricate seams at joints between units with minimum three inch overlap to form continuous waterproof system.
11. After installation, clean all sheet metal of any foreign matter that could be corrosive. Protect all units from abuse or other deterioration.

END OF SECTION 07600

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Polyurethane construction sealant.
B. Clear sealant.
C. Polyurethane adhesive sealant.

1.2 RELATED SECTIONS

A. Section 04200 – Masonry Units.
B. Section 06200 – Finish Carpentry
C. Section 06610 – Solid Surfacing
D. Section 08110 - Metal Doors and Frames
E. Section 08330 - Overhead Doors
F. Section 08589 - Impact Resistant Windows and Doors.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM C 661 – Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
2. ASTM C 920 – Standard Specification for Elastomeric Joint Sealants.
3. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
4. ASTM E 162 – Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
5. ASTM E 662 – Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
B. National Sanitation Foundation (NSF).
C. International Maritime Organization (IMO/MED).
D. Florida Green Building Coalition (FGBC), New Commercial.

1.4 SUBMITTALS

A. Submit per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods including joint design, surface preparation, and application methods.
4. Submit manufacturer's test reports indicating test results of adhesion and/or compatibility testing of samples of substrates which either come in contact with or are in close proximity to sealants.
C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Product shall meet the criteria to contribute to the Environmental Quality ("EQ") Credit 4.1: Low–Emitting Materials: Adhesives & Sealants under the United States Green Building Council's Rating System for New Construction &
B. Mock–Up: Provide a mock–up for evaluation of surface preparation techniques and application workmanship.
1. Prepare mock–ups for sealants and for each type of surface using same materials, tools, equipment, and procedures intended for actual surface preparation and application under actual use and environmental conditions.
2. Verify adhesion of sealants and compatibility of materials in contact with or in close proximity to sealants.
3. Perform manufacturer's required adhesion–to–substrate pretest.
4. Test for sealant and surface staining or discoloration.
5. Obtain Architect's approval of mock–ups.
6. Retain mock–ups to establish intended standards by which sealants will be judged.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
1. Product name.
2. Manufacturer.
3. Sealant color.
4. Sealant batch or lot number.
5. Sealant use–before date.
B. Store products in manufacturer's unopened packaging until ready for installation.
C. Store and dispose of solvent–based materials, and materials used with solvent–based materials, in accordance with requirements of local authorities having jurisdiction.
1. Store materials in a clean, dry area indoors in accordance with manufacturer's instructions.
2. Store sealants within temperature range in accordance with manufacturer's instructions.
3. Keep containers sealed until ready for use.
4. Do not use materials after manufacturer's use–before date.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
1. Do not apply sealants to surfaces that are wet, damp, or contain frost.
2. Do not apply sealants when air or surface temperature is below 35 degrees F (4 degrees C).
3. Use caution when applying sealants when air or surface temperature is above 120 degrees F (49 degrees C).

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: 3M Industrial Adhesives and Tapes Division, which is located at: 3M Center Building 0230–B–E–16 ; St. Paul, MN 55144–1000; Tel: 651–736–2070; Fax: 651–737–1920; Email: request info (cmmoss@mmm.com); Web: www.3m.com/contractor.
B. Substitutions: Acceptable, approved and equal
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 CONSTRUCTION SEALANT

A. Construction sealants shall be formulated one component, moisture cure exhibiting high tensile strength, permanently elastic, low modulus and a paintable surface after cure.
1. Heat Resistance: Long term exposure to temperatures greater than 194 degrees F (90 degrees C) will decrease tensile strength over time. Do not use in applications where the temperatures will continuously exceed 194 degrees F (90 degrees C).
B. 3M Polyurethane Construction Sealant 525 as manufactured by 3M Industrial Adhesives and Tapes Division.
1. Properties:
a) Tack–Free Time at 73 degrees F and 50 percent Relative Humidity: 90 – 150 minutes.
b) Rate of Cure at 73 degrees F and 50 percent Relative Humidity: 1/8 inch (3 mm) per 24 hour.
c) Shore A Hardness (ASTM C 661): 25.
d) Tensile Strength (ASTM D 412): 400 psi (2.6 MPa).
e) Elongation at Break (ASTM D 412): Greater than 600 percent.
f) 100 percent Modulus (ASTM D 412): 44 psi (0.3 MPa).
g) Service Temperature: –22 degrees F – 176 degrees F (–30 degrees C – 80 degrees C).
h) Specific Gravity: 1.17.
i) Consistency: Medium paste.
j) VOC Content: 35.1 g/L.
2. Compliance:
a) ASTM C 920, Type S, Grade NS, Class 35. Use T, NT, G, A, M.
b) NSF R2 Coating for Use on Structural Surfaces (White and Gray only).
3. Color: As indicated on the Drawings.
C. 3M Polyurethane Sealant 540 as manufactured by 3M Industrial Adhesives and Tapes Division.
1. Properties:
a) Tack–Free Time at 73 degrees F and 50 percent Relative Humidity: 60 – 90 minutes.
b) Rate of Cure at 73 degrees F and 50 percent Relative Humidity: 1/8 inch (3 mm) per 24 hour.
c) Shore A Hardness (ASTM C 661): 40.
d) Tensile Strength (ASTM D 412): 300 psi (2.1 MPa).
e) Elongation at Break (ASTM D 412): Greater than 600 percent.
f) 100 percent Modulus (ASTM D 412): 58 psi (0.4 MPa).
g) Service Temperature: –40 degrees F – 194 degrees F (–40 degrees C – 90 degrees C).
h) Specific Gravity: 1.17.
i) Consistency: Medium paste.
j) VOC Content: 53.7 g/L.
2. Compliance:
a) ASTM C 920, Type S, Grade NS, Class 25.
b) Federal Railroad Administration: Surface Flame Spread ASTM E 162, Smoke Generation ASTM E 662.
c) Bombardier: SP800–C. Toxic Gas Production.
d) IMO/MED: International Maritime Organization.
3. Color: As indicated on the Drawings.

2.3 CLEAR SEALANT

A. Clear Sealant:
1. Product: Crystal Clear Sealant 230 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Description: Single component thermoplastic elastomer.
3. Tack–Free Time at 73 degrees F and 50 percent Relative Humidity: Less than 20 minutes.
4. Skin Time at 73 degrees F and 50 percent Relative Humidity: 3 minutes.
5. Shore A Hardness (ASTM C 661): 25–35.
6. Elongation at Break (ASTM D 412): 500 percent.
7 .Service Temperature: –35 degree F – 350 degrees F (–37 degrees C – 177 degrees C).
8. Specific Gravity: 0.93.
9. Consistency: Medium paste.
10. VOC Content: 158 g/L.

2.4 ADHESIVE SEALANT

A. Construction sealants shall be formulated one component, moisture cure exhibiting fast curing, high tensile strength, permanently elastic, high modulus and a paintable surface after cure.
1. Heat Resistance: Long term exposure to temperatures greater than 194 degrees F (90 degrees C) will decrease tensile strength over time. Do not use in applications where the temperatures will continuously exceed 194 degrees F (90 degrees C).
B. Adhesive Sealant:
1. Product: 3M Polyurethane Adhesive Sealant Fast Cure 550 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Properties:
a) Tack–Free Time at 73 degrees F and 50 percent Relative Humidity: 50 – 90 minutes.
b) Rate of Cure at 73 degrees F and 50 percent Relative Humidity: 3/16 inch (4 mm) per 24 hour.
c) Shore A Hardness (ASTM C 661): 45.
d) Tensile Strength (ASTM D 412): 450 psi (3.1 MPa).
e) Elongation at Break (ASTM D 412): Greater than 600 percent.
f) 100 percent Modulus (ASTM D 412): 87 psi (0.6 MPa).
g) Service Temperature: –40 degrees F – 194 degrees F (–40 degrees C – 90 degrees C).
h) Specific Gravity: 1.17.
i) Consistency: Medium paste.
j) VOC Content: 29.0 g/L.
3. Compliance:
a) ASTM C 920, Type S, Grade NS, Class 25.
b) NSF R2 Coating for Use on Structural Surfaces (White and Gray only).
c) IMO/MED: International Maritime Organization.
4. Color: As indicated on the Drawings.
C. Adhesive Sealant:
1. Product: 3M Polyurethane Adhesive Sealant 551 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Properties:
a) Tack–Free Time at 73 degrees F and 50 percent Relative Humidity: 2 – 3 hours.
b) Rate of Cure at 73 degrees F and 50 percent Relative Humidity: 3/16 inch (4 mm) per 24 hour.
c) Shore A Hardness (ASTM C 661): 45.
d) Tensile Strength (ASTM D 412): 450 psi (3.1 MPa).
e) Elongation at Break (ASTM D 412): Greater than 600 percent.
f) 100 percent Modulus (ASTM D 412): 87 psi (0.6 MPa).
g) Service Temperature: –40 degrees F – 194 degrees F (–40 degrees C – 90 degrees C).
h) Specific Gravity: 1.17.
i) Consistency: Medium paste.
j) VOC Content: 36.5 g/L.
3. Color: As indicated on the Drawings.

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Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.4
	Building Specs

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BUILDING SPECIFICATIONS

D. Adhesive Sealant:
1. Product: 3M Polyurethane Adhesive Sealant 560 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Properties:
a) Tack-Free Time at 73 degrees F and 50 percent Relative Humidity: 50 – 60 minutes.
b) Rate of Cure at 73 degrees F and 50 percent Relative Humidity: 3/16 inch (4 mm) per 24 hour.
c) Shore A Hardness (ASTM C 661): 55.
d) Tensile Strength (ASTM D 412): 580 psi (4 MPa).
e) Elongation at Break (ASTM D 412): Greater than 300 percent.
f) 100 percent Modulus (ASTM D 412): 145 psi (1.0 MPa).
g) Service Temperature: –40 degrees F – 194 degrees F (–40 degrees C – 90 degrees C).
h) Specific Gravity: 1.17.
i) Consistency: Medium paste.
j) VOC Content: 56.0 g/L.
3. Compliance:
a) ASTM C 920, Type S, Grade NS, Class 25.
b) Federal Railroad Administration: Surface Flame Spread ASTM E 162, Smoke Generation ASTM E 662.
c) Bombardier: SP800-C, Toxic Gas Production.
4. Color: As indicated on the Drawings.

E. Adhesive Sealant:
1. Product: 3M 755 Hybrid Sealant as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Tack-Free Time 73 degrees F and 50 percent Relative Humidity: 40 – 70 minutes.
3. Rate of Cure 73 degrees F and 50 percent Relative Humidity: Greater than 1/8 inch (3.5 mm) per 24 hours.
4. Shore A Hardness (ASTM C 661): Greater than 45.
5. Tensile Strength (ASTM D 412): 225 psi (1.6 MPa).
6. Elongation at Break (ASTM D 412): Greater than 120 percent.
7. 100% Modulus (ASTM D 412): 375 psi (greater than 2.7 MPa)
8. Service Temperature: 40 degrees F – 190 degrees F (–40 degrees C – 90 degrees C).
9. Specific Gravity: 1.58.
10. Consistency: Medium paste.
11. VOC Content: 41 g/L.

F. Adhesive Sealant:
1. Product: 3M 4000UV Sealant as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Base: Polyether.
3. Density in lbs/Gallon: Approximately 11.7.
4. Color: White.
5. Consistency: Medium Paste.
6. Service Temperature: 40 degrees F – 190 degrees F (–40 degrees C – 90 degrees C).
7. Sag: Less than 3/8 inch Boeing Flow.
8. Shore A Hardness: 38–39.
9. 180 degree Peel Strength: One inch (2.54 cm) wide specimen on canvas. Tested at 70 degrees F (21 degrees C), 50 percent relative humidity.
10. Overlap Shear Strength: One inch (2.54 cm) overlap specimens (0.093 inch thickness). Tested at 70 degrees F (21 degrees C), 50 percent relative humidity.

2.5 PRIMERS

A. Fritted Glass Primer:
1. Product: P590 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Color: Black.
3. Viscosity: 12–15 sec (DIN cup).
4. Solids (percentage): 28.5.
5. VOC g/L: 687.
6. Active Ingredient: NCO/MEK.

B. Plastic Primer:
1. Product: P591 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Color: Black.
3. Viscosity: 12–15 sec (Ford Cup).
4. Solids (percentage): 36.5.
5. VOC g/L: 613.
6. Active Ingredient: NCO/MEK.

C. Metal Primer:
1. Product: P592 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Color: Clear.
3. Viscosity: Extremely low.
4. Solids (percentage): 1.5.
5. VOC g/L: 790.
6. Active Ingredient: Silane/Ethanol.

D. Teak and Glass Primer:
1. Product: P595 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Color: Black.
3. Viscosity: 50 mPa*s.
4. Solids (percentage): 29.5.
5. VOC g/L: 793.
6. Active Ingredient: NCO/MEK.

E. Cleaner:
1. Product: C596 as manufactured by 3M Industrial Adhesives and Tapes Division.
2. Color: Clear.
3. Viscosity: Extremely low.
4. Solids (percentage): 3.
5. VOC g/L: 798.
6. Active Ingredient: Silane/Ethanol.

2.6 ACCESSORIES

A. Product: 3M Bondbreaker Tape as manufactured by 3M Industrial Adhesives and Tapes Division.
B. Product: 3M Masking Tape as manufactured by 3M Industrial Adhesives and Tapes Division.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Surfaces to be sealed or bonded shall be clean and dry. Surfaces shall be free from grease, mold release, oil, water/condensation, and other contaminants that may affect the adhesion of the sealant.
D. Abrade with 180 to 220 grit abrasive followed by a solvent wipe to improve the bond strength where adhesion testing indicates need.
E. Prepare joints in accordance with manufacturer's instructions. Ensure joint thickness is as indicated on the drawings.
F. Clean surfaces within 1 to 2 hours before applying sealants.

3.3 INSTALLATION

D. Application Temperature: 40 degrees F to 95 degrees F (5 degrees C to 35 degrees C).
E. Install sealants in accordance with manufacturer's instructions, with uniform appearance and in proper relation with adjacent materials.
F. Pre–testing for adhesion is required to determine if a primer is needed.
G. Do not apply polyurethane sealants and adhesive sealants on frozen nor wet surfaces.
H. Do not apply over silicone nor in the presence of curing silicone nor hybrid products.
I. Avoid contact with alcohol and solvents during curing. Sealant can be tooled immediately after applying to give desired appearance.

3.4 CLEANING

A. Remove excess sealants from glass, metal, and plastic surfaces while still uncured.
B. Remove excess sealants from porous surfaces after initial cure or set–up.

3.5 PROTECTION

A. Protect sealants in joints from damage until fully cured.
B. Protect installed products until completion of project.
C. Touch–up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07900

DIVISION 081613

FIBERGLASS ENTRY DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Fiberglass Entry Doors
B. Impact Resistant Fiberglass Entry Doors
C. Fire Rated Fiberglass Entry Doors

1.2 RELATED SECTIONS
A. 06 40 00 – Architectural Woodwork
B. 07 27 00 – Air Barriers: Water–resistant barrier
C. 07 92 00 – Joint Sealants: Sealants and caulking
D. 08 71 00 – Door Hardware
E. 09 90 00 – Painting and Coating

1.3 REFERENCES
A. American Society for Testing and Materials (ASTM):
1. ASTM E 90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
2. ASTM E 283 – Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Difference Across the Specimen.
3. ASTM E 330 – Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
4. ASTM E 331 – Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
5. ASTM E 413 – Classification for Rating Sound Insulation (STC).
6. ASTM E 547 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
7. ASTM E 1300 – Standard Practice for Determining Load Resistance of Glass in Buildings.
8. ASTM E 1332 – Standard Classification for Determination of Outdoor–Indoor Transmission Class.
9. ASTM E 1886 – Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missiles and Exposed to Cyclic Pressure Differentials.
10. ASTM E 1996 – Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
11. ASTM E 2235 – Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.

B. Environmental Protection Agency and Department of Energy:
1. Energy Star Program Requirements Product Specification for Residential Windows, Doors, and Skylights.

C. Code of Federal Regulations:
1. CFR 1201 Part 2 – Safety Standard for Architectural Glazing Materials.

D. Florida High Velocity Hurricane Zone (HVHZ) Testing Application Standards:
1. TAS 201 – Impact Test Procedures.
2. TAS 202 – Criteria for Testing Impact and Non–Impact Resistant Building Envelope Components Using Uniform Static Air Pressure.
3. TAS 203 – Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

E. National Accreditation & Management Institute (NAMI)

F. National Fenestration Rating Council
1. NFRC 100 – Procedure for Determining Fenestration Product U–Factors.
2. NFRC 200 – Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance (VT) at Normal Incidence.
3. NFRC 400 – Procedure for Determining Fenestration Product Air Leakage.

G. National Fire Protection Association
1. NFPA 252 – Standard Methods of Fire Tests of Door Assemblies

H. Underwriters Laboratory
1. UL 10B – Standard for Fire Testing Door Assemblies.
2. UL 10C – Standard for Positive Pressure Fire Tests of Door Assemblies.

1.4 PERFORMANCE REQUIREMENTS
A. Doors shall have a minimum structural design pressure rating of DP +67.0/–67.0.

1.5 SUBMITTALS
A. Product Data: Submit door manufacturer current product literature, including installation instructions.
B. Shop Drawings: Submit manufacturer's shop drawings, indicating dimensions, construction, component connections, anchorage methods and locations, accessories, hardware locations, and installation details.
C. Samples: Submit partial full–size verification sample of door illustrating glazing system, quality of construction, texture, and color of finish.

1.6 QUALITY ASSURANCE
A. Quality Assurance Submittals:
1. Provide documentation for specified performance as required.
2. Manufacturers' installation instructions.
B. Manufacturer Qualifications: Manufacturer shall have successful experience in producing the type of product required for project applications equivalent to the requirements for this project.
C. Installer Qualifications:
1. Installer holds current credential as a NAMI Certified Installer of Therma–Tru Side Hinged Door Installations and as a Therma–Tru® Certified Installer.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Delivery: Deliver materials to site undamaged with labels clearly identifying manufacturer, product name, and installation instructions
B. Storage: Store materials in an upright position, off ground, under cover, and protected from weather, direct sunlight, and construction activities.
C. Handling: protect materials and finish during handling and installation to prevent damage.

1.8 WARRANTY
B. Therma–Tru® standard limited warranty for fiberglass Therma–Tru® Door Product and genuine Therma–Tru® components, including rot–resistant frames, mullions, and brickmould sourced from Therma–Tru (excluding primed pine door frames and oak door frames, and non–rot resistant mullions and brickmould) used in commercial and multi–residential projects will be free from material and workmanship defects for a period of three years subject to certain limitations and restrictions. For complete details and current warranty information go to www.thermatru.com.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Basis of design:
Therma–Tru Corp.
1750 Indian Wood Circle
Maumee, OH 43537
(419) 891–7400
(800) 843–7628
www.thermatru.com
Contact:
Rod Clark
458–206–8532
rclark@thermatru.com

B. Substitutions: Must be approved by Owner

2.2 FIBERGLASS ENTRY DOORS
A. Fiberglass Entry Doors: All fiberglass doors manufactured by Therma–Tru®. Specification is for complete entry systems with components manufactured by Therma–Tru® and assembled by independent fabricators.
1. Construction:
a. Smooth Star® 1/16–inch minimum thickness, proprietary fiberglass–reinforced thermoset composite, surface lightly textured. Door edges are machinable kiln–dried pine, primed, lock edge reinforced with engineered lumber core, lockset area reinforced with solid hardwood backup. Door bottom edge is moisture– and decay–resistant composite. Core is foamed–in–place polyurethane, density 1.9 pcf minimum.
2. Door Style
a. Smooth–Star® Style Number DRS60_1 (or approved equal)

B. Frames: Provided and assembled by third party fabricators to exacting specifications from Therma– Tru to help maximize system performance. Therma–Tru® strongly recommends the use of rot–resistant frames, mullions, and brickmould sourced from Therma–Tru, however, the use of a non Therma–Tru® frame system (or a Therma–Tru Primed Pine Frame or Therma–Tru Oak Frame) will not automatically void the entire limited warranty. Refer to 1.8.B for clarification.
1. Milled from 5/4 kiln–dried material with profiled ¾" stop and 6 degree sill gain prep.
2. Jamb Width [Standard 4 9/16"] Optional: [5 ¼"] [6 9/16"]
3. Rot Resistant – frames, mullions, and brickmould sourced through Therma–Tru.

C. Sills
1. Inswing: N/A
2. Outswing: Aluminum No Thermal Break
3. Other: N/A
4. Finish: Mill

2.3 HARDWARE
A. Hinges: Stainless Steel, [optional ball bearing] 4 x 4 x 0.098 inches finished to match hardware, plated screws to match
1. Finish: US32D stainless steel
B. Locking Hardware:
1. Multi–point lock system includes stainless steel face plate.
2. Multi–point lock system handle set hardware: As selected by Owner.
3. Finish: As selected by Owner.

2.4 INSTALLATION ACCESSORIES
A. Sill pan
B. Corner seal pad
C. Rain deflector
D. Rain Guard

PART 3 EXECUTION

3.1 EXAMINATION
A. Examine areas to receive doors. Notify Architect in writing any unacceptable conditions that would adversely affect installation or subsequent performance of the product. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 INSTALLATION
A. Install fiberglass doors in full compliance with Therma–Tru® written instructions and approved shop drawings.
B. Install 20 minute doors with permanent fire door certification label in compliance with the requirements of the labeling agency and NFPA.
C. Maintain alignment and compatibility with adjacent work.

3.3 FINISHING
A. Finish in compliance with Therma–Tru® written recommendations. Guidance for proper finishing is available at www.thermatru.com – "Recommendations for Proper Finishing and Painting or Staining."

3.4 Protection
A. Protect installed products until completion of project.
B. Touch–up, repair or replace damaged products prior to Substantial Completion in accordance with Therma–Tru written recommendations. Guidance for proper finishing is available at www.thermatru.com – "Recommendations for Proper Finishing and Painting or Staining."

END OF SECTION

SECTION 08330

OVERHEAD COILING DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Overhead coiling service doors.

1.2 RELATED SECTIONS
A. Section 06200 – Finish Carpentry.
B. Section 08710 – Door Hardware.
C. Section 09900 – Painting: Field applied finish.

1.3 REFERENCES
A. ASTM A 653 – Standard Specification for Steel Sheet, Zinc–Coated (Galvanized) or Zinc–Iron Alloy–Coated (Galvannealed) by the Hot–Dip Process.
B. ASTM A 666 – Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
C. ASTM A 924 – Standard Specification for General Requirements for Steel Sheet, Metallic–Coated by the Hot–Dip Process.
D. ASTM B 221 – Standard Specification for Aluminum and Aluminum–Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.4 DESIGN / PERFORMANCE REQUIREMENTS
A. Overhead coiling service doors:
1. Wind Loads: Design door assembly to withstand wind/suction load of 20 psf (958 Pa) without damage to door or assembly components.
2. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.
B. Single–Source Responsibility: Provide doors, tracks and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS
A. Submit per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Details of construction and fabrication.
4. Installation instructions.
C. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.
D. Selection Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and pattern.
E. Verification Samples: For each finish product specified, two samples of color chips representing manufacturer's full range of available colors and patterns.
F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.6 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.
B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
C. Store materials in a dry, warm, ventilated weathertight location.

1.8 PROJECT CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 COORDINATION
A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

1.10 WARRANTY
A. Warranty: Manufacturer's limited door and operators System warranty for 10 year against delamination of polyurethane foam from steel face and all other components for 3 years or 20,000 cycles, whichever comes first.
B. Warranty: Manufacturer's limited door warranty for 2 years for all parts and components.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Acceptable Manufacturer: Overhead Door Corporation, which is located at: 2501 S. State Highway 121 Bus. Suite 200 ; Lewisville, TX 75067; Toll Free Tel: 800–929–3667; Tel: 469–549–7100; Fax: 972–906–1499; Email: request info (arcat@overheaddoor.com); Web: www.overheaddoor.com
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction

2.2 OVERHEAD COILING SERVICE DOORS
A. Industrial Doors: Overhead Door Corporation, 610 Series Service Doors.
1. Curtain: Interlocking roll–formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
a. Curved profile type C–187 for doors up to 15 feet 4 inches (4.67 m) wide, fabricated of:
1) 22 gauge galvanized steel.
2. Finish:
a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust–inhibitive, roll coating process, including 0.2 mils thick baked–on prime paint, and 0.6 mils thick baked–on polyester top coat.
1) Powder coat: PowderGuard.

a) PowderGuard Premium: Weather resistant polyester powder coat color as selected by the Architect.

3. Weatherseals:
a. Guide weatherseal.
4. Bottom Bar:
a. Two galvanized steel angles.
5. Guides: Roll–formed galvanized steel shapes attached to continuous galvanized steel wall angle.
a. Finish: PowderGuard Zinc Finish for guides, bottom bar and head plate.
6. Brackets:
a. Galvanized steel to support counterbalance, curtain and hood.
7. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
8. Hood:
a. 24 gauge galvanized steel with intermediate supports as required.
9. Manual Operation:
a. Manual push up for doors up to 96 SF.
10. Windlood Design:
a. Standard windload shall be 20 PSF.
11. Locking:
a. Two interior bottom bar slide bolts for manually operated doors.
12. Wall Mounting Condition:
a. Face–of–wall mounting.

PART 3 EXECUTION

3.1 EXAMINATION
A. Verify opening sizes, tolerances and conditions are acceptable.
B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.
C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
E. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.
F. Install perimeter trim and closures.
G. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING
A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING
A. Clean curtain and components using non–abrasive materials and methods recommended by manufacturer.
B. Remove labels and visible markings.
C. Touch–up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION
A. Protect installed products until completion of project.

END OF SECTION 08330

SECTION 08620

UNIT SKYLIGHTS FIXED CURB MOUNT SKYLIGHT

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Performance and product component information for VELUX® FCM curb mount fixed skylight.
B. Unit skylight mounted on prefabricated curbs per NOA.
C. Engineered flashings ECW for high profile roofing material.

1.2 REFERENCE STANDARDS
A. ASTM E 283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specific Pressure Differences Across the Specimen.
B. ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
C. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
D. ASTM E 1886 – Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
E. ASTM E 1996 – Standard Specifications for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
F. National Fenestration Rating Council, NFRC 100, Procedure for Determining Fenestration Product U–factors.
G. National Fenestration Rating Council, NFRC 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
H. National Fenestration Rating Council, NFRC 300, Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems.
I. Occupational Safety & Health Administration, OSHA Standards – 29 CFR 1910.23, Guarding Floor Openings and Holes.
J. TAS 201–94, Standard Impact Test Procedures
K. TAS 202–94, Standard Criteria for Testing Impact and Non Impact Resistant Building Envelope Components using Uniform Static Air Pressure Loading.
L. TAS 203–94, Standard Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

1.3 SYSTEM DESCRIPTION
A. Skylight: Fixed curb mount skylight that consists of five integrated components – an interior condensation drainage gasket, an insulating glass unit, exterior structural sealant, roll–formed aluminum curb flashing with ASA corner keys.
B. Configuration: Fixed unit, curb mounted
C. Condensation Control: Integral internal condensation collection system and drainage slots

1.4 PERFORMANCE REQUIREMENTS
A. The FCM curb mount skylight is independently tested in accordance with listed standards for compliance with the unit skylight provisions of the 2003, 2006 and 2009 IBC, IECC, and IRC as follows:
a) AAMA/WDMA/CSA 101/I.S.2/A440–05 (NAFS–05) and AAMA/WDMA/CSA 101/I.S.2/A440–08 (NAFS–08) Performance Grades must be greater than or equal to:
i. Downward design pressure = 170 psf
ii. Uplift Design Pressure = 70 psf
b) AAMA/WDMA/CSA 101/I.S.2 (NAFS–02) Rated pressures must be greater than or equal to:
i. Downward design pressure = 150 psf
ii. Uplift Design Pressure = 85 psf
B. Air leakage: Maximum of 0.2 l/s/m² (0.04 CFM/ft²) of total unit area, measured at a differential pressure of 75 Pa (1.57 psf) in accordance with ASTM E 283, per the NAFS standards in (A).
C. Water infiltration: No water penetration noted as measured in accordance with ASTM E 331 with a test pressure differential of 720 Pa (15.0 psf). Exceeds requirements of NAFS standards in (A).
D. Thermal Performance: U–factor = 0.51 Btu/hr*ft2*F° or less, SHGC = 0.26 or less and [Vt = 0.52 or greater (clear)] or [Vt = 0.39 (white)]. Tested and certified in accordance with NFRC 100 and 200 procedures. 2010 ENERGY STAR® qualified in all U.S. Zones.
E. FCM skylights with impact glazing (07): Tested and certified in accordance with approved Miami–Dade County Test Proposal #09–1669, Design Pressure rating of +70/–70 psf.
F. Limit member deflection to flexure limit of glass with full recovery of glazing materials.
G. System accommodates, without damage to components or deterioration of seals, movement between and frame and curb.

1.5 SUBMITTALS
A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's installation details and product data sheets include:
a) Preparation details and installation instructions
b) Product Data sheets with storage and handling information
C. Architectural/Cross Sectional Drawings
a) Mounting details
b) Frame sizes
c) Flashing details
D. Shop Drawings
a) Indicate material types, gauge, finishes, and installation details
E. Maintenance Data: For unit skylights, unit skylight flashing system to be included in maintenance manuals
F. Warranty: Sample of warranty

1.6 QUALITY ASSURANCE
A. Manufacturer Qualifications:
a) Skylight manufacturer shall have a minimum of ten years experience in design and fabrication of curb mount glass skylights.
b) Skylights shall be manufactured to the highest standards of quality and craftsmanship in ISO 9001 and ISO 14001–certified facilities.
c) Flashings shall be engineered and manufactured to match up with the roofing material and skylight.
B. Source Limitations: Obtain unit skylights, flashings, and accessories from a single source and from a single manufacturer.
a) Unit Skylight Standard: Comply with AAMA/WDMA 101/I.S.2./NAFS, North American Fenestration Standard Voluntary Performance specifications for Windows, Skylights and Glass Doors, and all later editions, for minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
b) Provide third party certified unit skylights with attached labels.
c) Thermal Performance – rated per applicable NFRC procedures.
i.Provide NFRC–certified unit skylight ratings on an attached label.
ii.Qualify under ENERGY STAR criteria in all 50 states and carry a verifying label.
d) Manufactured to the highest standards of quality and craftsmanship in accordance with VELUX Manufacturing Standards.

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n2 architecture + design

Waveland Beach Park - Restroom Facility

James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.5

Building Specs

BUILDING SPECIFICATIONS

1.7 COORDINATION

A. Coordinate unit skylight flashing requirements with roofing system.
B. Coordinate size and locations of site built curbs with actual unit skylights provided.
C. Pre-installation conference: conduct conference at (project site).

1.8 WARRANTY

A. Standard VELUX product warranty, as specified in VELUX Warranty, publication XUS 20194.

1.9 DELIVERY, HANDLING, STORAGE

A. Deliver products in manufacturer's original containers dry and undamaged, with seals and labels intact.
B. Store and protect products in accordance with manufacturer's recommendations.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Acceptable Manufacturer: VELUX America Inc., P.O. Box 5001, Greenwood, SC 29648; Toll Free Tel: 800-888-3589; Fax: 800-388-1329; Web: www.VELUXusa.com
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 MATERIALS

A. Maintenance-free Exterior Aluminum Frame and Covers: Roll-formed 15 gauge, 1.5-mm (0.06") thick, prefinished neutral gray, production engineered and fabricated to fit.
B. Field Fasteners: Skylight frame to curb #8 x 1-3/4" Stainless steel self-drill screw # per skylight as indicated in manufacturer's installation instructions.
C. Dual sealed Glazing
   a) Dual sealed thermal pane with warm edge technology, 95% argon gas fill, and with three layers of LoE³ silver that increases visible light over standard low-e coatings while lowering the solar heat gain. The following glazing options are available:
   i. 04 - Tempered LoE³ pane over a laminated heat strengthened interior pane with 0.030" interlayer.

D. Weather stripping: Factory applied neoprene and thermoplastic elastomeric weather stripping around entire frame, profiled to effect weather seal.

2.3 Flashing options

A. Type ECL Flashing is an engineered prefabricated step flashing system, designed for use with roofing materials less than 3/4" thick and for slopes 10 to 60 degree.

2.4 FABRICATION

A. Fabricated one piece aluminum counter flashing system with corner keys.
B. Provide internal drainage of glazing spaces with exterior through gasketing to remove condensation.
C. All units are factory glazed with structural silicone-based primary seal.
D. Prefabricated curb required.
E. ECL and ECW aluminum flashing available, but site-built fabricated flashings can be installed.

2.5 FINISHES

A. Exterior surfaces: Maintenance-free roll-formed aluminum frame with neutral gray Kynar® 500 polyvinylidene fluoride resin finish.
B. Maintenance-free flashing: Roll-formed aluminum, neutral gray, baked on polyester polyamide primer and finish coats.
C. Interior surface: Provided by others, other than glass.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify curb and rough opening dimensions, squareness, roof pitch, and proper orientation of skylight.

3.2 INSTALLATION

A. Install skylight in accordance with manufacturer's installation instructions and local code requirements.
B. Align skylight with curb, free of warp or twist, maintaining dimensional tolerances.
C. Attach skylight to curb with screws furnished by manufacturer.
D. Coordinate attachment and seal of perimeter air and vapor barrier material.
E. Provide insulation of the curb for maximum energy efficiency.
F. Install manufacturer's prefabricated engineered flashing in accordance with manufacturer's installation instructions to achieve weather tight installation.
G. Install sunscreening products and electrical or manual controls.

3.3 Cleaning

A. Clean exposed skylight according to manufacturer's written instructions. Touch up damage to metal coatings and finishes.
B. Remove excess sealants, dirt, and other substances.
C. During the construction process, protect the skylight surfaces from contact with contaminates.

3.4 Field Quality Control

A. Install skylight, flashing, and accessories in accordance with manufacturer's installation instructions.

END OF SECTION 08620

SECTION 08710

DOOR HARDWARE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Door Hardware.

1.2 RELATED SECTIONS

A. Section 05100 – Structural Metal Framing: Door Frames.
B. Section 06100 – Rough Carpentry: Door Frames.
C. Section 08100 – Metal Doors and Frames.

1.3 REFERENCES

A. ANSI A156.12 – American National Standard for Interconnected Locks.
B. ANSI A156.13 – American National Standard for Mortise Locks and Latches Series 1000.
C. ANSI A156.2 – American National Standard for Bored and Preassembled Locks and Latches.
D. Underwriters Laboratories (UL). – Fire Resistance Directory.

1.4 SUBMITTALS

A. Submit per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Manufacturer's approved shop drawings are required detailing the application of each product specified.
D. Selection Samples: For each finish product specified, two full size samples representing manufacturer's full range of available colors and patterns.
E. Verification Samples: For each finish product specified, two full size samples, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: All equipment specified in this section will be provided by a single manufacturer with a minimum of ten (10) years experience manufacturing door hardware.
B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. At project closeout, provide to the Owner or Owner's Representative an executed copy if the manufacturer's Limited Warranty against Manufacturing Defects.
   1. Duration: Ten (10) years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Schlage Lock Co., Div. of Ingersoll Rand, which is located at: 11819 N. Pennsylvania St. ; Carmel, IN 46032; Toll Free Tel: 877-671-7011; Email: request info (securitemail_Lenexa@ingerrand.com); Web: w3.securitytechnologies.com/Products/mechanical_locks/Pages/default.aspx
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 Tubular Locks

A. S-Series Light / Medium Duty Tubular Locks: Grade 2, light traffic lockset certified to ANSI A156.2-2003, series 4000. Exceeds 400,000 cycles.
   1. Handing: Non-Handed except Flair lever styles.
   2. Chassis: Zinc plated steel.
   3. Lock Functions: 2 non-keyed and 4 keyed functions available. Function as noted in the Hardware Schedule.

2.3 Commercial Cylindrical Locks

A. AL-Series Heavy Duty Locks: Grade 2, medium traffic lockset certified to ANSI A156.2-2003, series 4000. Exceeds 400,000 cycles.
   1. Handing: Keyed functions are reversible. Non-keyed functions are not handed.
   2. Chassis: Zinc plated steel.
   3. Lock Functions: 5 non-keyed and 5 keyed functions available. Function as noted in the Hardware Schedule.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 HARDWARE SCHEDULE

A. Tubular Locks
   1. Door Number: See Door Schedule.
   2. Device: S-Series Light / Medium Duty Tubular Locks.
      a) Function: ANSI F75 – Non-keyed passage latch
      b) Function: ANSI F76 – Non-keyed bath / bedroom privacy lock.
      c) Function: ANSI F86 – Storeroom lock.
      d) Lever Style: Jupiter.
      e) Cylinder/Keying: Standard.
      f) Finish: Plated – BHMA 626 – Satin Chrome.
B. Commercial Cylindrical Locks
   1. Door Number: See Door Schedule.
   2. Device: AL-Series Heavy Duty Locks.
      a) Function: ANSI F86 – Storeroom lock.
      b) Function: ANSI F93 – Facility restroom lock.
      c) Function: Exit lock.
      d) Lever Style: Jupiter.
      e) Cylinder/Keying: Standard.

END OF SECTION 08710

SECTION 08720

WEATHERSTRIPPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Door Weatherstrips.
B. Window Weatherstrips.
C. Interlocking Weatherstrips.

1.2 RELATED SECTIONS

A. Section 08100 – Metal Doors and Frames.
B. Section 08300 – Specialty Doors.
C. Section 08500 – Windows.

1.3 REFERENCES

A. ASTM E 84 – Title; 2001.

1.4 SUBMITTALS

A. Submit per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction..
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Provide plan, section, elevation and perspective drawings as necessary to detail dimensions and characteristics of each product specified in this section and to depict proper installation techniques.
D. Selection Samples: For each finish product specified, two samples representing manufacturer's full range of available colors and patterns.
E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) representing each product specified.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.
B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Accurate Metal Weather Strip Co., Inc., which is located at: 725 S. Fulton Ave. ; Mount Vernon, NY 10550-5086; Toll Free Tel: 800-536-6043; Tel: 914-668-6042; Fax: 914-668-6062; Email: request info (sales@accurateweatherstrip.com); Web: www.accurateweatherstrip.com
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 08720

SECTION 09200

LIME PLASTER

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Conventional stucco system for exterior applications.
B. Sustainable stucco system.

1.2 RELATED SECTIONS

A. Section 03300 – Cast-In-Place Concrete.
B. Section 04220 – Masonry Units.
C. Section 04290 – Adobe Masonry Units.
D. Section 06110 – Wood Framing.
E. Section 07190 – Vapor Barriers.
F. Section 07270 – Air Barriers.
G. Section 09205 – Metal Lath.
H. Section 09210 – Gypsum Plaster.
I. Section 09220 – Portland Cement Plaster.
J. Section 09260 – Gypsum Board Systems.
K. Section 09910 – Paints.

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM A 641 – Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
   2. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   3. ASTM B 69 – Standard Specification for Rolled Zinc.
   4. ASTM C 144 – Standard Specification for Aggregate for Masonry Mortar.
   5. ASTM C 847 – Standard Specification for Metal Lath.
   6. ASTM C 897 – Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters.
   7. ASTM C 1032 – Standard Specification for Woven Wire Plaster Base.
   8. ASTM C 1063 – Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster.
   9. ASTM C 1396 – Standard Specification for Gypsum Board.
   10. ASTM D 1784 – Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
B. Portland Cement Association (PCA): Portland cement Plaster (Stucco) Manual.

1.4 PERFORMANCE REQUIREMENTS

A. Structural (wind and axial loads):
   1. Design for maximum allowable deflection, normal to the plane of the wall, of L/360.
   2. Design for wind load in conformance with code requirements.
B. Moisture Control:
   1. Prevent the accumulation of water into or behind the stucco, either by condensation or leakage into the wall construction, by the design and detailing of the wall assembly.
      a) Provide corrosion resistant flashing where water is likely to penetrate components in the wall assembly to direct water to the exterior, including, above window and door heads, beneath window and door sills, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.
      b) Air Leakage Prevention: Prevent excess air leakage in the design and detailing of the wall assembly. Provide continuity between air barrier components in the wall assembly.
      c) Vapor Diffusion and Condensation: Perform a dew point analysis of the wall assembly to determine the potential for accumulation of moisture in the wall assembly as a result of water vapor diffusion and condensation. Adjust insulation thickness and/or other wall assembly components accordingly to minimize the risk of condensation.
      d) Waterproofing/Air Barrier over sheathing, concrete and masonry.
      e) At expansion joints, back joints with barrier membrane.
C. Grade Condition:
   1. Do not apply stucco below grade or on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure. Provide minimum 4 inch (102 mm) clearance above earth grade, minimum 2 inch (51 mm) clearance above finished grade (pavers/sidewalk). Provide increased clearance in freeze/thaw climate zones.
D. Sloped Surfaces: Including foam trim and projecting architectural features attached to stucco.
   1. Avoid the use of stucco on build-outs or weather exposed sloped and horizontal surfaces.
   2. Build out trim and projecting architectural features from the stucco wall surface with code compliant EPS foam. Foam trim and projecting architectural features shall have a minimum 1:2 (27 degree) slope along their top surface. Foam horizontal reveals shall have a minimum 1:2 (27 degree) slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface. Where trim/feature or bottom surface of reveal projects more than 2 inches (51 mm) from the face of the wall plane, protect the top surface with waterproof base coat. Avoid the use of trim and features that exceed the maximum allowable thickness of EPS permitted by code (typically 4 inches (102 mm)) unless approved by the code official. Periodic inspections and increased maintenance shall be required to maintain surface integrity of finishes on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate maintenance and minimize maintenance burden.
   3. Do not use EPS foam on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing.
E. Joints:
   1. Provide two piece expansion joints in the stucco system where building movement is anticipated: at joints in the substrate or supporting construction, where the system is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, at columns and cantilevered areas. Provide one piece expansion/control joints every 144 ft2 (13 m2). Do not exceed length to width ratio of 2-1/2:1 in expansion joint layout and do not exceed more than 18 feet (5.5 m) in any direction without an expansion joint. Cut and wire and tie lath to the expansion/control joint accessory so lath is discontinuous beneath the accessory. At expansion joints, back the joint with barrier membrane.
   2. Provide one piece expansion/control joints at through wall penetrations, including above and below doors or windows.
   3. Provide minimum 3/8 inch (9.5 mm) wide joints where the system abuts windows, doors and other through wall penetrations.
   4. Provide accessories at stucco terminations and joints.
   5. Provide sealant at stucco terminations.
F. Fire Protection:
   1. Do not use foam trim in excess of 4 inches (102 mm) thick unless approved by the code official.
   2. Refer to the applicable code compliance report for other limitations and fire-resistive assemblies that may apply.
G. Stucco Thickness:
   1. Application to Metal Plaster Bases:
      a) Woven wire fabric lath: Stucco thickness shall be 3/4 inch (19 mm) applied in two coats.
      b) Galvanized diamond mesh metal lath (Minimum 2.5 lb/yd2 (1.4 kg/m2)): stucco thickness shall be 3/4 to 7/8 inch (19 to 22 mm) applied in two coats.
   2. Thickness shall be uniform throughout the wall area.

1.5 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Evidence of applicator's experience including project identification with names of Owner and Architect/Engineer.
D. Certification of compliance of materials with product specifications.
E. Selection Samples: For each finish product specified, two complete sets of color chips representing the manufacturer's full range of available colors and patterns.
F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
G. Quality Sample(s): Apply eco stucco over primed substrate sample. Prepare sample to show substrate, primer, base coat, finish coat, and sealer if scheduled in accordance with design requirements. Submit full size mock over masonry substrate. Approved sample shall be available at the job site with final sign off by the architect and/or the owner.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Insured and engaged in application of Portland cement stucco for a minimum of three years.
   2. Knowledgeable in the proper use and handling of eco stucco materials.
   3. Employ skilled mechanics who are experienced and knowledgeable in waterproofing/air barrier, lathing and furring, Portland cement stucco application, and familiar with the requirements of the specified work.
   4. Successful completion of minimum of three projects of similar size and complexity to the specified project.
   5. Provide the proper equipment, manpower and supervision on the job site to install the system in compliance the Project plans and specifications.
B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver manufactured materials in original packages or containers, fully identified with manufacturer's labels intact and legible.
B. Inspect materials upon delivery and immediately report to Architect any damaged or defective materials.
C. Store materials in a sheltered area with minimum ambient temperature of 45 degree F (7 degree C).
D. Store products in manufacturer's unopened packaging until ready for installation.
E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
B. Environmental Requirements: Do not apply lime plaster when substrate or ambient air temperatures are below 45 degree F (5 degree C) or above 86 degree F (30 degree C). Maintain these conditions 24 hours before, during and 48 hours after installation of lime plaster.
C. Maintain ambient and surface temperatures above 40 degree F (4 degree C) during application and drying period of waterproofing/air barrier. Maintain ambient and surface temperatures above 40 degree F (4 degree C) during application and for 24 hours after set of stucco.
D. Prevent uneven or excessive evaporation of moisture from stucco during hot, dry or windy weather. For installation under any of these conditions provide special measures to properly moist cure the stucco.
E. Provide protection of surrounding areas and adjacent surfaces from application of materials.
F. Prevent excess interior humidity (including that caused by the use of temporary interior propane heaters) during and after construction.

1.9 PROJECT COORDINATION

A. Protect substrate from climatic conditions to prevent weather damage until the installation of the waterproofing/air barrier.
B. Provide protection of the waterproofing/air barrier installation with stucco no later than 60 days after installation.
C. Commence the stucco installation after completion of all floor, roof construction and other construction that imposes dead loads on the walls to prevent excessive deflection (and potential cracking) of the stucco.
D. Sequence interior work such as drywall installation prior to stucco installation to prevent stud distortion (and potential cracking) of the stucco.
E. Provide site grading such that the stucco terminates above earth grade minimum 4 inches (102 mm) and above finished grade (pavers/sidewalk) minimum 2 inches (51 mm). Provide increased clearance in freeze/thaw climate zones.
F. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall and provide sill flashing. Coordinate installation of waterproofing/air barrier components with window and door installation to provide weather proofing of the structure and to prevent moisture infiltration and excess air infiltration.
G. Install window and door head flashing immediately after windows and doors are installed.
H. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.
I. Install copings and sealant immediately after installation of the stucco and when finish coatings are dry.
J. Attach penetrations through stucco to structural support and provide air tight and water tight seals at penetrations.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: EcoStucco®, which is located at: 3060 Kerner Blvd. Suite S ; San Rafael, CA 94901; Toll Free Tel: 877-326-6872; Tel: 415-455-9896; Fax: 415-887-7999; Email: request info (info@ecostucco.com); Web: www.ecostucco.com
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction..

2.2 LATH

A. Minimum No. 17 gauge 1.5 inch (38 mm) self-furred galvanized steel woven wire fabric in compliance with ASTM C 1032.

2.3 MECHANICAL FASTENERS

A. Non-corroding fasteners, as recommended by manufacturer for type of framing.
   1. Wood Framing: Minimum 11 gauge, 7/16 inch (11 mm) diameter head galvanized roofing nails with minimum 3/4 inch (19 mm) penetration into studs or minimum #8 Type S wafer head fully threaded corrosion resistant screws with minimum 3/4 inch (19 mm) penetration into studs.
   2. Steel Framing: Minimum #8 Type S or S-12 wafer head fully threaded corrosion resistant screws with minimum 3/8 inch (9.5 mm) penetration into studs.
B. Tie Wire: 18 gauge galvanized and annealed low-carbon steel in compliance with ASTM A 641 with Class I coating.

2.4 ACCESSORIES

E. Primer: Conventional PVA.
F. Weep screed, casing bead, corner bead, corner lath, expansion, and control joint accessories. Accessories shall meet the requirements of ASTM C 1063 and its referenced documents.
G. PVC Plastic: In compliance with ASTM D 1784, cell classification 13244C.
H. Zinc: In compliance with ASTM B 69.
I. Galvanized Metal: In compliance with ASTM A 653 with G60 coating.

2.5 JOB-MIX MATERIALS

A. Water: Clean and potable.
B. Sand: Clean, well graded sand free of deleterious materials in compliance with ASTM C 897 or ASTM C 144.

2.6 STUCCO

A. Common Scratch and Brown Coat Stucco: As manufactured by Mediterranean Colors, LLC.
   1. Job-site proportioned, Portland cement based stucco for trowel or pump application, field mixed with graded sand (ASTM C 897 or C 144) and water.
B. Proprietary Scratch and Brown Coat Polymer Modified Stucco: As manufactured by Mediterranean Colors, LLC.
   1. Factory proportioned, fiber reinforced Portland cement based stucco, field mixed with graded sand (ASTM C 897 or C 144) and water.
C. PRIMA/ PRIMA LITE Scratch and Brown Coat: As manufactured by Mediterranean Colors, LLC.
   1. Job-site proportioned, lime based stucco for trowel or pump application, field mixed with graded sand (ASTM C 897 or C 144) and water.
   2. Substrate: Sheathing, concrete and masonry as scheduled or indicated.
a. Scratch Coat: 3/8 inch (9.5 mm).
b. Brown Coat 3/8 inch (9.5 mm).
   3. Substrate: Straw-Bale.
a. Scratch Coat: 3/4 inch (19 mm).
b. Brown Coat: 1/2 inch (13 mm).

2.7 BASE COAT

A. eco stucco PRIMA: As manufactured by Mediterranean Colors, LLC.
   1. Scratch and Brown Coat – job-site proportioned, lime stucco for trowel or pump application, field mixed with graded sand (ASTM C 897 or C 144) and water.

2.8 REINFORCING MESH

A. eco stucco GMESH: As manufactured by Mediterranean Colors, LLC.
   1. Nominal 260 g/m2 – symmetrical, interlaced open-weave glass fiber fabric made with alkaline resistant coating for compatibility with eco stucco materials.
B. eco stucco COMBO 90: As manufactured by Mediterranean Colors, LLC.
   1. Nominal 160 g/m2 – woven glass fiber mesh factory-bended over 90 degree PVC bead designed to reinforce outside corners.
C. eco stucco ARROW 45: As manufactured by Mediterranean Colors, LLC.
   1. Nominal 260 g/m2 – Woven factory pre-cut 45 degree angle designed to provide reinforcement at corners of windows and doors.

2.9 FINISH COAT

A. eco stucco DECOLIME: As manufactured by Mediterranean Colors, LLC.
   1. Ready-mix lime plaster – 3/32 to 1/8 inch (2 to 3 mm) nominal thickness.
   2. Finish: Sandstone.

2.10 COLOR

A. Natural Mineral Pigments: Premix pigments in clean mixing water prior to adding to plaster.
   1. Standard Color: As selected by architect.

2.11 MIXING

A. PRIMA: As manufactured by Mediterranean Colors, LLC.
   1. Scratch Coat: 1 part PRIMA and 2 parts of sand, proportioned by volume.
   2. Brown Coats: 1 part PRIMA and 2.5 parts of sand, proportioned by volume.
      a) Small Mixers:
         1) Discharge half of the required sand.
         2) Add all of the required lime.
         3) Dry-Mix thoroughly (about 2 minutes until uniform color is achieved).
         4) Add the remaining sand.
         5) Continue dry-mixing thoroughly.
         6) Pour water slowly and keep mixing until required workability is achieved (Approx. 10 minutes).
      b) Large Mixers:
         1) Discharge equal parts of the required sand.
         2) Add equal parts of lime.
         3) Dry-mix thoroughly (about 2 minutes until uniform color is achieved).
         4) Add more sand (in equal parts).
         5) Mix well again (1-2 minutes).
         6) Add remaining lime and remaining sand.
         7) Continue dry-mixing thoroughly.
         8) Pour water slowly and keep mixing until required workability is achieved (Approx. 12 minutes).
B. DECOLIME: Ready-mix lime plaster as manufactured by Mediterranean Colors, LLC.
   1. Mix Ratio: 5 qt. (4.5 to 5 lt.) of clean water per 55 lb (25 kg) bag.
   2. When color applies, pre-blend pigments with water to prevent starring.
   3. Add water into a clean mixing bucket.
   4. Discharge DECOLIME and using a low speed electric mixer mix to a uniform consistency, adding color when applicable.
   5. Allow to settle for 15 minutes.
   6. Mix again before use to obtain a smooth and lump-free workable mud.

2.12 MATERIALS

A. PRIMA: As manufactured by Mediterranean Colors, LLC.
   1. Physical Data:
      a) Density: 0.6 kg/dm3.
      b) pH: 12.
      c) Flexural strength (28 days): 2.4 N / mm2
      d) Compressive strength (28 days): 7.7 N / mm2
      e) Adherence: >= 0.3 N / mm2.
B. DECOLIME: As manufactured by Mediterranean Colors, LLC.
   1. Physical Data:
      a) Density: 1.65 kg/Liter.
      b) pH: 12.
      c) Flexural strength (28 days): 2 N / mm2.
      d) Dynamic Elasticity: 8500 MPa.
      e) Adherence: >= 0.6 Mpa.
      f) Aggregate Grade: 35 mesh (0.5 mm).

2.13 MISCELLANEOUS MATERIALS

A. Penetrating Sealer: Meta Creme by Dry-Treat Inc. 1104 Philadelphia Pike Wilmington DE 19809, USA.

Commercial + Residential
2081 SE Ocean Blvd. Suite 1A
Stuart, FL 34996
O: (772) 220-4411
www.n2archdesign.com
n2 architecture + design

Niki J. Norton, R.A. AR91827
NOV 16 2017

Waveland Beach Park - Restroom Facility

James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.6 Building Specs

BUILDING SPECIFICATIONS

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify the suitability of existing conditions before starting work. Do not begin work of this Section until unsatisfactory conditions have been corrected. Secure grounds, screeds, corner beads, casing beads, plaster stops, and accessories.

B. Inspect surfaces for:
1. Contamination: Algae, chalkiness, dirt, dust, efflorescence, fungus, grease, laitance, mildew or other foreign substances.
2. Surface absorption and chalkiness.
3. Cracks: Measure crack width and record location of cracks.
4. Damage and deterioration.
5. Moisture damage--record any areas of moisture damage.

C. Inspect sheathing application for compliance with applicable requirement:
1. Exterior Gypsum Sheathing shall comply with GA-253.
2. Glass Mat Faced Gypsum Sheathing shall comply with manufacturer's instructions.
3. Exterior Grade and Exposure 1 wood based sheathing shall comply with APA Engineered Wood Association E 30.

D. Report deviations from the requirements of project specifications or other conditions that might adversely affect the stucco installation to the Architect.

3.2 PREPARATION

A. Concrete (Cast-in-Place):
1. Provide a surface that is slightly scarified, water absorbent, straight and true to line and plane.
2. Remove form ties and trim projecting concrete so it is even with the plane of the wall.
3. Remove form release agents by washing with a trisodium phosphate detergent and rinsing with clean water.
4. Establish surface profile by sandblasting, water-blasting, wire brushing, chipping or other appropriate means.
5. Remove all dust, dirt, grease, laitance or other bond inhibiting material.
6. Pre-moisten absorbent surfaces with water prior to placement of stucco.

B. Concrete Masonry Units:
1. Remove projecting joint mortar so it is even with the plane of the wall.
2. Remove surface contaminants such as efflorescence, existing paint or any other bond inhibiting material by sandblasting, water blasting, wire brushing, chipping or other adequate means.
3. Pre-moisten the surface with water just prior to placement of stucco, or apply one uniform coat of bonding agent by brush or roller.

C. Sheathing:
1. Gypsum sheathing in compliance with ASTM C1396.
2. Glass mat faced gypsum sheathing in compliance with ASTM C 1177.
3. Exterior or Exposure 1 wood-based sheathing (plywood and oriented strand board (OSB)).
4. Verify installation of sheathing in compliance with applicable requirement.
5. Protect the substrate with a moisture barrier as required by the applicable code and install lath and accessories.

3.3 INSTALLATION

A. Substrate: Cast-In-Place Concrete and Concrete Masonry Units:
1. Install foundation weep screed at the base of the wall.
2. Install casing beads at stucco terminations – doors, windows and other through wall penetrations. Install two piece expansion joints (or back-to-back casing beads) at joints in the supporting construction, building expansion joints, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install one piece expansion joints at corners of windows, doors and similar through wall penetrations, and every 250 sf (23 m2). Install corner bead at outside corners and corner lath at inside corners. Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories. Attach at no more than 7 inches (178 mm) on center into concrete/masonry with appropriate fasteners.
3. Pre-moisten concrete masonry units and absorbent concrete prior to the placement of stucco (unless bonding agent has been applied to the surface).
4. Scratch and Brown Coat Application:

a. Scratch Coat: apply the stucco with sufficient pressure to ensure intimate contact with the substrate and complete coverage to a thickness of 3/16 inch (5 mm). Score the stucco horizontally upon completion of each panel in preparation for a second coat.

b. Brown Coat: As soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat to an approximate thickness of 3/8 to 1/2 inch (9.5 to 12 mm). Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane with stucco.

5. One Coat Application: Apply the stucco with sufficient pressure to ensure intimate contact with the substrate and complete coverage to an approximate thickness of 1/2 inch (13 mm).
6. After the stucco has lost sufficient moisture so that the surface sheen has disappeared, float the surface lightly with a darby or wood float to compress the surface and to provide a smooth, yet open, even surface.
7. Moist cure after the stucco has set by lightly fogging the surface for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75 percent the frequency of moist-curing can be reduced.
8. In hot weather or windy conditions, moist cure the surface for at least the first 3 to 4 days to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75 percent the frequency of moist-curing can be reduced. Protect from frost and adverse weather conditions for a minimum of 72 hours.

B. Installation Over Frame Construction with Sheathing:
1. Weep Screed Installation:
   a) Install foundation weep screed at the base of the wall securely to framing with mechanical fastener. Locate foundation weep screed so that it overlaps the joint between the foundation and framing by a minimum of 1 inch (25 mm). Locate the foundation weep screed minimum 4 inches (100 mm) above earth grade, 2 inches (51 mm) above finished grade
2. Weather Protection:
   a) Protect sills of rough openings with barrier membrane.
   b) Apply moisture barrier in compliance with the applicable building code. Wrap paper into rough opening and lap over barrier membrane at jambs. Lap paper over foundation weep screed attachment flange and window/door head flashings.
3. Casing Bead and Expansion Joint Installation:
   a) Install casing beads at stucco terminations, including doors, windows and other through wall penetrations. Install expansion joints (or back-to-back casing beads) at building expansion joints, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install one piece expansion joints at corners of windows, doors, and similar through wall penetrations, and every 144 sf (13 m2). Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories. Attach at no more than 7 inches (178 mm) into framing with appropriate fasteners.
4. Lath Installation:
   a) Diamond Mesh Metal Lath:
      1) General: Install metal lath with the long dimension at right angles to structural framing. Terminate lath at expansion joints. Do no install continuously beneath joints.
      2) Seams/Overlaps: Overlap side seams minimum 1/2 inch (13 mm) and end seams minimum 1 inch (25 mm). Stagger end seams. Overlap casing beads and expansion joints minimum 1 inch (25 mm) over narrow wing accessories, minimum 2 inches (51 mm) over expanded flange accessories. Do not install lath continuously beneath expansion joints.
      3) Attachment: Fasten securely through sheathing into structural framing at 7 inches (178 mm) on center maximum vertically and 16 inches (406 mm) on center horizontally. Wire tie at no more than 9 inches (225 mm) on center at: side laps, accessory overlaps, and where end laps occur between supports.
   b) Woven wire fabric lath – follow installation as for metal lath except overlap all seams by one mesh minimum.
   c) Paper-backed lath – follow installation as for metal lath. Lap lath over lath, not paper to lath, overlap. For horizontal overlaps the paper backing shall lap shingle style behind the lath to lath overlap.
5. One Piece Expansion Joint Installation:
   a) Install one piece expansion joints over lath at through wall penetrations, including above and below doors or windows (unless another type of expansion joint is provided at these locations or one piece expansion joints are provided). Install one piece expansion joints over lath every 144 sf (13 m2). Wire tie one piece expansion joints to lath at no more than 7 inches (178 mm) on center. Ensure lath is discontinuous beneath joints.
6. Inside and Outside Corners:
   a) Install corner lath at inside corners and corner bead at outside corners over lath. Attach through lath into framing at no more than 7 inches (178 mm) on center with appropriate fasteners.
7. Stucco Installation:
   a) Scratch Coat: apply stucco with sufficient pressure to key into and embed the metal lath. Apply sufficient material, 3/8 to 1/2 inch (9.5 to13 mm), to cover the metal lath and to permit scoring the surface. Score the stucco horizontally upon completion of each panel in preparation for a second coat.
   b) Brown Coat: As soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat and as needed to bring the stucco to a uniform thickness that matches the grounds of the accessories. Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane with stucco. Final thickness of stucco shall be minimum 3/4 inch (19 mm), maximum 7/8 inch (22 mm).
   c) After the stucco has become slightly firm float the surface lightly with a darby or wood float to compress the surface and to provide a smooth, even surface. Moist cure after the stucco has set by lightly fogging for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75 percent the frequency of moist curing can be reduced.

C. Base Coat Installation:
1. Wait until stucco is at least 7 days old or the pH level of the surface is below 10 before applying base coat. Moist cure stucco beforehand and allow the surface to dry before applying finish.

D. Finish Installation:
1. Apply finish directly over the stucco or the base coat when dry. Apply finish by troweling with a stainless steel trowel to achieve the finish specified:
   a) Moist cure the stucco or the base coat before the finish installation.
   b) Avoid application in direct sunlight.
   c) Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
   d) Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and shall require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
   e) Do not install separate batches of finish side-by-side.
   f) Do not apply finish into or over joints or accessories. Apply finish to outside face of wall only.
   g) Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.
   h) In hot weather conditions saturate the brown coat with water the night preceding the finish installation.
2. Apply finish directly over the brown coat. Apply finish by troweling with a stainless steel trowel to achieve the finish specified:
   a) Moist cure the brown coat before the finish installation.
   b) Avoid application in direct sunlight.
   c) Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
   d) Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work shall be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
   e) Do not install separate batches of finish side-by-side.
   f) Do not apply finish into or over joints or accessories. Apply finish to outside face of wall only.
   g) Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.
   h) In hot weather conditions saturate the brown coat with water the night preceding the finish installation.

3.4 INSTALLATION

A. Base Coat:
3. PRIMA: Scratch coat 3/8 inch (9.5 mm) – brown coat 1/2 inch (13 mm).
4. UNILIME: Nominal thickness 1/8 inch (3 mm). Apply with a stainless steel trowel in a single coat. Let surface moisture evaporate and lightly trowel float, knocking down high spots and other irregularities.
5. DECOLIME: Nominal thickness 3/32 to 1/8 inch (2 to 3 mm). Apply with a stainless steel trowel in a single coat. Let surface moisture evaporate and lightly trowel float, knocking down high spots and other irregularities.

B. Finish Coat:
1. Wash: Brush application over either suitable base coat or other porous, mineral finish – nominal thickness is achieved in 2 coats "wet-in-wet".
2. Plaster: Trowel apply an initial coat over entire surface. Leave surface smooth, yet "open" and matte in appearance. The surface shall be dry to the touch and set enough that a finger pressed into the surface no longer leaves an impression. Hand trowel finish coat in continuous application over entire plane. Trowel to desired texture matching control sample.
3. Trowel apply an initial coat over entire surface. Leave surface smooth, yet "open" and matte in appearance. The surface shall be dry to the touch and is set enough that a finger pressed into the surface no longer leaves an impression. Hand trowel finish coat in continuous application over entire plane. Trowel to desired texture matching control sample.

C. Sealer:
1. Meta Creme: Generously coat the surface with an even layer using a foam roller, brush. Leave the product to penetrate for minimum of 1 hour, and then thoroughly polish off excess product with a clean dry cloth/s.
2. Bee's Wax: Cloth apply and buff over plaster 7 to 10 days following the application.
3. Natural Black Soap: Spray or trowel apply wet into wet immediately following the application.

D. Inspection:
1. During application, clean adjacent surfaces and completed finishes of foreign materials resulting from the Work.
2. Inspect completed installation with Architect to verify that finishes meet the visual standard established by the control sample, including the accuracy and consistency of color, physical texture, visual texture, and surface sheen. In addition, verify that the expected standards of craftsmanship have been maintained throughout the project.
3. Verify the absence of cold joints, scaffold lines, or other surface effects that interrupt the overall visual balance.
4. Clean, tightly troweled surfaces at all corners consistent with the level of quality found in the field portions of the plane.
5. Crisp and clean transitions where plaster meets dissimilar materials.
6. Plaster again areas that do not meet the standards described above and repair other surfaces that may have been stained, marred, or otherwise damaged.

3.5 CLEANING AND PROTECTION

A. Provide protection of installed materials from water infiltration into or behind them.
B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing.
C. Point up around trim and other locations where plaster abuts dissimilar materials.
D. Remove temporary coverings used to protect adjacent surfaces.
E. Clean and repair adjacent surfaces and items soiled or damaged during work in this Section.

END OF SECTION 09200

SECTION 09300

TILE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Tile and Accessories
1. Porcelain floor tile and Ceramic cove base.
2. Trim and Accessories.
3. Setting Materials.

1.2 RELATED SECTIONS

A. Section 07920 – Joint Sealant.

1.3 REFERENCES

A. American National Standards Institute (ANSI):
1. ANSI A108.1A – Specifications for Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar.
2. ANSI A108.4 – Specifications for Ceramic Tile Installed with Organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive.
3. ANSI A108.6 – Specifications for Ceramic Tile Installed with Chemical-Resistant, Water-Cleanable Tile-Setting and -Grouting Epoxy.
4. ANSI A108.9 – Specifications for Ceramic Tile Installed with Modified Epoxy Emulsion Mortar/Grout.
5. ANSI A108.10 – Specifications for Installation of Grout in Tilework.
6. ANSI A118.3 – Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy and Water-Cleanable Tile-Setting Epoxy Adhesive.
7. ANSI A118.4 – Latex-Portland Cement Mortar.
8. ANSI A118.5 – Chemical-Resistant Furan Mortar and Grout.
9. ANSI A118.6 – Standard Ceramic Tile Grouts.
10. ANSI A118.8 – Modified Epoxy Emulsion Mortar/Grout.
11. ANSI A136.1 – Organic Adhesives for Installation of Ceramic Tile.
12. ANSI A137.1 – Specifications for Ceramic Tile.

B. ASTM International (ASTM):
1. ASTM C 50 – Standard Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products.
2. ASTM C 144 – Standard Specification for Aggregate for Masonry Mortar.
3. ASTM C 241 – Standard Test Method For Abrasion Resistance of Stone Subjected to Foot Traffic.
4. ASTM C 1028 – Standard Test method for Determining the Static Coefficient of Friction or Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull meter Method.
5. ASTM D 4397 – Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.

C. Tile Council of North America (TCNA): TCA Handbook for Ceramic Tile Installation, 2007.

1.4 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: Tile on walkway surfaces shall be provided with the following values as determined by testing in conformance with ASTM C 1028.
1. Level Surfaces: Minimum of 0.6 (Wet).

1.5 SUBMITTALS

A. Submit as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. DalTile– Uptown Taupe for porcelain and ceramic: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
D. Selection Samples: Samples of actual tiles for selection.
E. Samples: Mount tile and apply grout on two plywood panels, illustrating pattern, color variations, and grout joint size variations.
F. Manufacturer's Certificate:
1. Certify that products meet or exceed specified requirements.
2. For each shipment, type and composition of tile provide a Master Grade Certificate signed by the manufacturer and the installer certifying that products meet or exceed the specified requirements of ANSI A137.1.
G. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum two years experience.
B. Single Source Responsibility: Obtain each type and color of tile from a single source. Obtain each type and color of mortar, adhesive and grout from the same source.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging until ready for installation.
B. Protect adhesives and liquid additives from freezing or overheating in accordance with manufacturer's instructions.
C. Store tile and setting materials on elevated platforms, under cover and in a dry location and protect from contamination, dampness, freezing or overheating.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in an unventilated environment.
B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during tiling and for a minimum of 7 days after completion.

1.9 EXTRA MATERIALS

A. Provide for Owner's use a minimum of 2 percent of the primary sizes and colors of tile specified, boxed and clearly labeled.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: DalTile Corporation, which is located at: 7834 C.F. Hawn Fwy. P. O. Box 170130 ; Dallas, TX 75217; Toll Free Tel: 800-933-TILE; Tel: 214-398-1411; Fax: 214-309-4584; Email: todd.lehr@daltile.com; Web: www.daltileproducts.com
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 TILE

A. General: Provide tile that complies with ANSI A137.1 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors and pattern indicated on the Drawings and identified in the Schedule and the end of this Section. Tile shall also be provided in accordance with the following:
1. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.
2. Mounting: For factory mounted tile, provide back or edge mounted tile assemblies as standard with the manufacturer, unless otherwise specified.
3. Factory Applied Temporary Protective Coatings: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.

B. Daltile:
1. Product: Porcelain Tile: Keystone.
2. Size and Shape:
   a) Floor Tile 2 inches by 2 inches, nominal.
   b) Cove Base shall be 2x2 Built Up Base with (3) additional 2x2 courses of tile, such that total dimension of cove base is 6" high. Piece between floor and wall shall be Built-Up Base by Daltile, which is a Cove piece. Cut tile base is NOT acceptable.
3. Surface Finish:
   a) Floor Tile, D202 Speckle Uptown Taupe, Keystone
   b) Cove Base, D202 Speckle Uptown Taupe, Keystone Built Up Base & Field Tile.
4. Trim Units: Built-Up cove base, outside cove corner shapes in sizes coordinated with field tile shapes with Keystone series.

2.3 TRIM AND ACCESSORIES

A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, stainless steel, brass, etc, style and dimensions to suit application, for setting using tile mortar or adhesive; use in the following locations:
1. Open edges of floor tile.
2. Transition between floor finishes of different heights.
3. Thresholds at door openings.
4. Expansion and control joints, floor and wall.

2.4 SETTING MATERIALS

A. Epoxy Grout: ANSI A118.8,
1. Color shall be selected by Owner.
2. Epoxy LATIcrete SpectraLOCK PRO Premium Grout or MAPEI Kerapoxy

Commercial + Residential
2081 SE Ocean Blvd. Suite 1A
Stuart, FL 34996
O: (772) 220-4411
www.n2architdesign.com
n2 architecture + design

Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.7 Building Specs

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BUILDING SPECIFICATIONS

PART 3 EXECUTION

3.1 EXAMINATION

B. Verify that wall surfaces are free of substances which would impair bonding of setting materials, smooth and flat within tolerances specified in ANSI A137.1, and are ready to receive tile.
C. Verify that sub-floor surfaces are dust-free, and free of substances which would impair bonding of setting materials to sub-floor surfaces, and are smooth and flat within tolerances specified in ANSI A137.1.
D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
E. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Protect surrounding work from damage.
B. Remove any curing compounds or other contaminates.
C. Vacuum clean surfaces and damp clean.
D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.3 INSTALLATION – GENERAL

A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
B. Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2 width is used. Do not interrupt tile pattern through openings.
C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
E. Install ceramic accessories rigidly in prepared openings.
F. Install thresholds where indicated.
G. Sound tile after setting. Replace hollow sounding units.
H. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
I. Allow tile to set for a minimum of 48 hours prior to grouting.
J. Grout tile joints. Use standard grout unless otherwise indicated. 1/8" max for Joint width.
K. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 INSTALLATION – FLOORS – THIN-SET METHODS

A. Over exterior concrete substrates, install in accordance with TCA Handbook Method F102, with standard grout.
B. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, latex-portland cement bond coat, with standard grout, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, install in accordance with TCA Handbook Method F122, with latex-portland cement grout.
   2. Where epoxy bond coat and grout are indicated, install in accordance with TCA Handbook Method F131.

3.5 CLEANING

A. Clean tile and grout surfaces.

3.6 PROTECTION OF FINISHED WORK

A. Do not permit traffic over finished floor surface for 72 hours after installation.
B. Cover floors with kraft paper and protect from dirt and residue from other trades.
C. Where floor will be exposed for prolonged periods cover with plywood or other similar type walkways

3.7 SCHEDULE

A. Floor Tile:
   1. Tile Type: Porcelain, D202 Daltile Uptown Taupe Speckle 2x2, Keystone
   2. Tile Base: Porcelain, D202 Daltile Uptown Taupe Speckle, Built-up Cove Base with (3) courses of 2x2 tile, total height of 6".
   3. Installation Method: TCA Thin set
   4. Grout Type/Color: Epoxy Laticrete SpectraLOCK Pro Premium Grout or MAPEI Kerapoxy

END OF SECTION 09300

SECTION 09900

INTERIOR, EXTERIOR AND INDUSTRIAL PAINTINGS AND COATINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Interior paint and coatings systems(LEED-09 NC/CI/CS COMPLIANT) including surface preparation.
B. Interior high-performance paint and coatings systems including surface preparation.
C. Exterior paint and coatings systems including surface preparation.

1.2 RELATED SECTIONS

A. Section 06200 – Finish Carpentry: Shop priming architectural woodwork.
B. Section 08110 - Metal Doors and Frames: Factory priming steel doors and frames.
C. Section 09250 – Gypsum Board: Surface preparation of gypsum board.

1.3 REFERENCES

A. Environmental Protection Agency (EPA): Method 24 – Determination Of Volatile Matter Content, Water Content, Density, Volume Solids, And Weight Solids Of Surface Coatings.
B. South Coast Air Quality Management District (SCAQMD): Rule 113 – Architectural Coatings.(January 1, 2004)
C. Green Seal, Inc.:
   1. GS-11 Standard for Paints and Coatings.(1st Edition, May 20,1993)
   2. GC-03 – Environmental Criteria for Anti-Corrosive Paints.
D. United States Green Building Council (USGBC): LEED-09 NC/CI/CS

1.4 SUBMITTALS

A. Submit per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: For each paint system indicated, including.
   1. Product characteristics.
   2. Surface preparation instructions and recommendations.
   3. Primer requirements and finish specification.
   4. Storage and handling requirements and recommendations.
   5. Application methods.
   6. Cautions for storage, handling and installation.
C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors and sheens available.
D. Verification Samples: For each finish product specified, submit samples that represent actual product, color, and sheen.
E. Contractor provide written paint finish schedule including all manufacturer's color names/formulas.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.
C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish surfaces for verification of products, colors and sheens.
   2. Finish area designated by Architect.
   3. Provide samples that designate primer and finish coats.
   4. Do not proceed with remaining work until the Architect approves the mock-up.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
   1. Product name, and type (description).
   2. Application and use instructions.
   3. Surface preparation.
   4. VOC content.
   5. Environmental issues.
   6. Batch date.
   7. Color number.
B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
B. Furnish Owner with an additional one percent of each material and color, but not less than 1 quart minimum or 1 case, as appropriate (exclusive of primer).

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Sherwin-Williams, which is located at: 101 Prospect Ave. ; Cleveland, OH 44115; Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989; Email: request info (sherwin@ultlead.com); Web: www.sherwin-williams.com/pro/services/architects_designers /?WT.mc_id=SWRedirect_ProServices_Architects
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 APPLICATIONS/SCOPE

A. Interior Paints and Coatings:
   1. Concrete: Cement board.
   2. Masonry: Concrete masonry units, including split-face, scored, and smooth block.
   3. Metal: Aluminum, galvanized steel.
   4. Wallboard: Gypsum drywall.
B. Exterior Paints and Coatings:
   1. Masonry: Concrete masonry units, cinder or concrete block.
   2. Metal: Aluminum, galvanized steel.
   3. Wood: trim and miscellaneous hardboard.
   4. Drywall: Gypsum board, and exterior drywall.
   5. Hardiboard soffits

2.3 PAINT MATERIALS – GENERAL

A. Paints and Coatings.
   1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
   2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufactures product instructions for optimal color conformance.
B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
D. Refer to the current MSDS/EDS for exact VOCs. VOCs may vary by base. Some colors may not be 0 VOC after tinting with conventional colorants.

2.4 INTERIOR PAINT SYSTEMS

A. CONCRETE – (Cement Board) Ceilings.
   1. Tile - Clad HS
      a) Gloss Finish (Low VOC):
         1) 1st Coat: Part A: B62Z.
         2) 3rd Coats: Part B: B60VZ70
         3) Sand Dollar
B. MASONRY: CMU – Smooth.
   1. Gloss Finish (Low VOC Finish):
      a) Tile-Clad High Solids
         1) one (1) coat Heavy Duty Block Filler
         2) two (2) coats Tile-Clad High Solids
         3) Color: Sand Dollar
C. DOORS AND TRIM (METAL)
   1. Semi-Gloss (Low VOC Finish):
      a) DTM Acrylic Coating
         1) (1) Coat Primer
         2) (2) Coats Color
         3) Color: Sand Dollar
D. DRYWALL
   1. Semi-Gloss
      1) (1) Coat Primer
      2) (2) Coats Color
      3) Color: Sand Dollar

2.5 EXTERIOR PAINT SYSTEMS

A. CONCRETE (Cementitious Siding, (Non-Roof), Stucco).
   1. Textured and Smooth Systems:
      a) Textured (Water Based Finish):
         1) 1st Coat: S-W Loxon XP Smooth, A24W400 Series.
         2) 2nd Coat: S-W Loxon XP Fine Textured Waterproofing System, A24-750 Series (14-18 mils wet).
B. MASONRY CMU - SPLIT FACE:
   1. Flat
      1) 1st Coat: Primer
      2) 2nd Coat: (2) Coats Color
      3) Color: (3rd color TBS - Darker than Sand Dollar)
C. MASONRY CMU - STUCCO
   1. Super Paint, Flat
      1) (1) Coat Primer
      2) (2) Coats Color
      3) Color: Sand Dollar
D. METAL: Doors and Trim.
   1. DTM Acrylic Coating:
      a) Semi-Gloss Finish:
         1) 1st Coat: Primer.
         2) 2nd Coat: (2) Coats Color.
         3) Color: Sand Dune
E. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
F. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

2.6 SURFACE PREPARATION

A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
   1. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry 48 hours before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
   2. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
   3. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.
B. Aluminum: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP1, Solvent Cleaning.
C. Block (Cinder and Concrete): Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75 degrees F (24 degrees C). The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.
D. Concrete, SSPC-SP13 or NACE 6: This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
E. Stainless Steel: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP 2, Hand Tool Cleaning.
F. Exterior Composition Board (Hardboard): Some composition boards may exude a waxy material that must be removed with a solvent prior to coating. Whether factory primed or unprimed, exterior composition board siding (hardboard) must be cleaned thoroughly and primed with an alkyd primer.
G. Drywall – Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
H. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 is necessary to remove these treatments.
I. Plaster: Must be allowed to dry thoroughly for at least 30 days before painting, unless the products are designed to be used in high pH environments. Room must be ventilated while drying; in cold, damp weather, rooms must be heated. Damaged areas must be repaired with an appropriate patching material. Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.
J. Stucco: Must be clean and free of any loose stucco. If recommended procedures for applying stucco are followed, and normal drying conditions prevail, the surface may be painted in 30 days. The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments such as Loxon.
K. Wood: Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

2.7 INSTALLATION

A.General: Apply all coatings and materials with manufacture specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
B.Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content.
C.Apply coatings using methods recommended by manufacturer.
D.Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
E.Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
F.Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
G.Inspection: The coated surface must be inspected and approved by the Architect just prior to each coat.

2.8 PROTECTION

A.Protect finished coatings from damage until completion of project.
B.Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION 09900

SECTION 09962

DUR-A-QUARTZ EPOXY BROADCAST WITH URETHANE TOPCOAT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:
   1. Quartz flooring system as shown on the drawings and in schedules.
B. Related sections include the following:
   1. Cast-in-Place Concrete, section 03 30 00
   2. Concrete Curing, section 03 39 00

1.3 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of an epoxy based multi roller applied flooring system with Q28 or Q11 colored quartz aggregate and urethane topcoat. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/8 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
B. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.4 SUBMITTALS

A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.
B. Manufacturer's Material Safety Data Sheet (MSDS) for each product being used.
C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.5 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
C. No requests for substitutions shall be considered that would change the generic type of the specified System.
D. System shall be in compliance with requirements of United States Department of Agriculture (USDA),Food, Drug Administration (FDA), and local Health Department.
E. System shall be in compliance with the Indoor Air Quality requirements of California section 01350 as verified by a qualified independent testing laboratory.
F. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping
   1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.
B. Storage and Protection
   1. The Applicator shall be provided with a storage area for all components. The area shall be between 60 F and 90 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
   2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.
C. Waste Disposal
   1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.7 PROJECT CONDITIONS

A. Site Requirements
   1. Application may proceed while air, material and substrate temperatures are between 60 F and 90 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
   2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
   3. The Applicator shall ensure that adequate ventilation is available for the work area.
   4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.
B. Conditions of new concrete to be coated with epoxy material.
   1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of twenty eight days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.
   2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary or desirable).
   3. Sealers and curing agents should not to be used.
   4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.
C. Safety Requirements
   1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
   2. "No Smoking" signs shall be posted at the entrances to the work area.
   3. The Owner shall be responsible for the removal of foodstuffs from the work area.
   4. Non-related personnel in the work area shall be kept to a minimum.

1.8 WARRANTY

A. Dur-A-Flex, Inc. warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Dur-A-Flex, Inc. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
B. Dur-A-Flex, Inc. liability with respect to this warranty is strictly limited to the value of the material purchase.

PART 2 - PRODUCTS

2.1 FLOORING

A. Dur-A-Flex, Inc, Dur-A-Quartz, Epoxy-Based seamless flooring system.
   1. System Materials:
      a) Primer: Dur-A-Flex, Inc, Dur-A-Glaze #4 WB resin and hardener.
      b) Broadcast Coats: Dur-A-Flex, Inc, Dur-A-Glaze #4 resin and hardener.
      c) The quartz aggregate shall be Dur-A-Flex, Inc. Q-28 or Q-11 colored quartz aggregate.
      d) Grout Coat: Dur-A-Flex, Inc. Dur-A-Glaze #4 resin and Water Clear hardener.
      e) Topcoat: Dur-A-Flex, Inc. Armor Top resin, hardener and grit.
   2. Patch Materials
      a) Shallow Fill and Patching: Use Dur-A-Flex, Inc. Dur-A-Glaze # 4 Cove-Rez.
      b) Deep Fill and Sloping Material (over ¼ inch): Use Dur-A-Flex, Inc. Dur-A-Crete.

2.2 MANUFACTURER

A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802
B. Manufacturer of Approved System shall be single source and made in the USA.

2.3 PRODUCT REQUIREMENTS

A. Primer — Dur-A-Glaze #4 WB
   1. Percent Solids — 56 %
   2. VOC — 2 g/L
   3. Bond Strength to Concrete ASTM D 4541 — 550 psi, substrates fails
   4. Hardness, ASTM D 3363 — 3H
   5. Elongation, ASTM D 2370 — 9 %
   6. Flexibility (1/4: Cylindrical mandrel), ASTM D 1737 — Pass
   7. Impact Resistance, MIL D-2794 — >160
   6. Abrasion Resistance ASTM D 4060, CS 17 wheel, 1,000 g Load — 30 mg loss
B. Broadcast, and Grout Coat Dur-A-Glaze #4
   1. Percent Solids — 100 %
   2. VOC — 3.8 g/L
   3. Compressive Strength, ASTM D 695 — 17,500 psi
   4. Tensile Strength, ASTM D 638 — 2,100 psi
   5. Flexural Strength, ASTM D 790 — 5,100 psi
   6. Abrasion Resistance, ASTM D 4060 C-10 Wheel, 1,000 gm load, 1,000 cycles — 29 mg loss
   7. Flame Spread/NFPA-101, ASTM E 84 — Class A
   8. Impact Resistance MIL D-24613 — 0.0007 inches, no cracking or delamination
   9. Water Absorption. MIL D-24613 — Nil
   10. Potlife @ 70 F — 20 minutes
C. Topcoat — Armor Top
   1. Percent Solids — 95 %
   2. VOC — 0 g/L
   3. Tensile Strength, ASTM D 2370 — 7,000 psi
   4. Adhesion, ASTM 4541 — Substrate Failure
   5. Hardness, ASTM D 3363 — 4H
   6. 600 Gloss ASTM D 523 — 70
   7. Abrasion Resistance, ASTM D4060 — Gloss Satin
      CS 17 wheel (1,000 g load) 1,000 cycles — 4 8 mg loss with grit — 10 12 mg loss without grit
   8. Pot Life, 70 F, 50% RH — 2 Hours
   9. Full Chemical Resistance — 7 days

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.
   1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.2 PREPARATION

A. General
   1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.
   2. Moisture Testing: Perform tests recommended by manufacturer and as follows.
      a) Perform relative humidity test using is situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
      b) If the relative humidity exceeds 75% then Dur-A-Flex, Inc Dur-A-Glaze MVP Primer moisture mitigation system must be installed prior to resinous flooring installation. Slab-on grade substrates without a vapor barrier may also require the moisture mitigation system.
   3. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
   4. Mechanical surface preparation
      a) Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.
      b) Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
      c) Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.
      d) Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
   2. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufactures recommendations.

3.3 APPLICATION

A. General
   1. The system shall be applied in seven distinct steps as listed below:
      a) Substrate preparation
      b) Priming
      c) First broadcast coat application with first aggregate broadcast
      d) Second broadcast coat with second aggregate broadcast
      e) Grout coat application, sand floor (if required)
      f) First topcoat application
      g) Second topcoat application
   2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
   3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
   4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
   5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.
B. Primer
   1. The primer shall consist of a liquid resin and hardener that is mixed at the ratio of 1 part resin to 4 parts hardener per the manufacturer's instructions.
   2. The primer shall be applied by 1/8 inch notched squeegee and back rolled at the rate of 200 sf/gal to yield a dry film thickness of 4 mils.
C. Broadcast Coat
   1. The broadcast coat shall be applied as a double broadcast system as specified by the Architect.
   2. The broadcast coat shall be comprised of two components, a resin, and hardener as supplied by the Manufacturer and mixed in the ratio of 2 parts resin to 1 part hardener.
   3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means.
   4. The broadcast coat shall be applied over horizontal surfaces using "v" notched squeegee and back rolled at the rate of 90-100 sf/gal.
   5. Colored quartz aggregate shall be broadcast to excess into the wet material at the rate of 0.5 lbs/sf.
   6. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
   7. Apply a second coat of resin with a coverage rate of 90 sf/gal (Q28) or 50 sf/gal (Q11). and broadcast aggregate to excess at the rate of 0.5 lbs/sf.
   8. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
D. Grout Coat
   1. The grout coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part
   2. The grout coat shall be squeegee applied with a coverage rate of 90 sf/gal (Q28) or 50 sf/gal (Q11). hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
   3. The grout coat will be back rolled and cross rolled to provide a uniform texture and finish.
E. Topcoat
   1. The topcoat of Armor Top shall be roller applied at the rate of 500 sf/gal to yield a dry film thickness of 3 mils.
   2. The topcoat shall be comprised of a liquid resin, hardener and grit that is mixed per the manufacturer's instructions.
   3. The finish floor will have a nominal thickness of 1/8 inch.

3.4 FIELD QUALITY CONTROL

A. Tests, Inspection
   1. The following tests shall be conducted by the Applicator:
      a) Temperature
         1) Air, substrate temperatures and, if applicable, dew point.
      b) Coverage Rates
         1) Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.5 CLEANING AND PROTECTION

A.Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
B.Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.

END OF SECTION 09962

SECTION 10155

TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Floor-mounted overhead-braced solid plastic toilet compartments, urinal and privacy screens.

1.2 RELATED SECTIONS

A. Section 06100 – Rough Carpentry: Anchorage/blocking for attachment of partitions.

1.3 REFERENCES

A. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.
D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
E. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.

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Nikki L. Norton, R.A. AR91827
NOV 16 2017

Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.8
	Building Specs

BUILDING SPECIFICATIONS

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.
B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.
C. Materials: Doors, panels and pilasters shall be constructed from High Density Polyethylene (HDPE) resins. Partitions shall be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. All plastic components shall be covered with a protective plastic masking.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. (Labor not included in warranty.)

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St. ; Scranton, PA 18507; Toll Free Tel: 800-445-5148; Fax: 800-551-6993; Email: request info (info@scrantonproducts.com); Web: www.scrantonproducts.com
   1. Fabricator: Santana Toilet Partitions.
   2. Fabricator: Comtec Toilet Partitions.
   3. Fabricator: Capitol Toilet Partitions.
   4. Hiny Hinders Products
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 FLOOR-MOUNTED OVERHEAD-BRACED SOLID PLASTIC TOILET COMPARTMENTS

A. Doors, panels, and pilasters shall be 1 inch (25 mm) thick with all edges rounded to a radius. Doors and dividing panels shall be 55 inches (1397 mm) high and mounted at 14 inches (356 mm) above the finished floor. Color as selected from mosaic palette of colors.
   1. Rotary brushed texture
B. Headrail shall be made of heavy-duty extruded aluminum (6463-T5 alloy) with anti-grip design and integrated curtain track. The headrail shall have a clear anodized finish and shall be fastened to the headrail bracket by a stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
   1. Headrail brackets shall be 20 gauge stainless steel with a satin finish and secured to the wall with a stainless steel tamper resistant Torx head screws.
C. Pilaster Shoes:
   1. Molded HDPE Plastic Shoes: Pilaster shoes shall be 3 inches (76 mm) high and made of one-piece molded HDPE plastic. Pilaster shoes shall be secured to the pilaster with a stainless steel tamper resistant Torx head sex bolt.
      a) Pilaster Shoe Color: To match partition
D. Wall Brackets:
   1. Aluminum Brackets: Wall brackets shall be 1-1/2 inches (38 mm) stirrup type made of heavy-duty aluminum (6463-T5 alloy) with polished aluminum finish. Stirrup brackets shall be fastened to pilasters and panels with stainless steel tamper resistant Torx head sex bolts.
E. Door Hardware:
   1. Integral Hinges: Hinges shall be integral, fabricated in the door and pilaster with no exposed metal parts. Hinges operate with field adjustable nylon cams. Cams can be field adjusted to any degree.
   2. Wrap-Around Hinges: Hinges shall be 8 inches (203 mm) and fabricated from heavy-duty extruded aluminum wrap-around hinges through-bolted to pilasters and doors with stainless steel tamper resistant Torx head sex bolts. Hinges operate with field adjustable nylon cams. Cams can be field set in 30, 60 or 90-degree increments.
   3. Door strike/keeper shall be 6 inches (152 mm) long and made of heavy-duty extruded aluminum (6436-T5 alloy) with a polished aluminum finish and secured to the pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
   4. Latch and housing shall be made of heavy-duty extruded aluminum (6463-T5 alloy). The latch housing shall have a polished aluminum finish, and the slide bolt and button shall have a black anodized finish.
   5. Each door shall be supplied with one coat hook/bumper and door pull made of polished aluminum.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Install partitions rigid, straight, plumb, and level manor, with plastic laid out as shown on shop drawings.
C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).
D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.4 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 10155

SECTION 10212

HURRICANE LOUVERS

PART 1 GENERAL
1.1 SECTION INCLUDES
   A. Stationary Hurricane Louvers, Florida State Building Code Approved.
   1.2 RELATED SECTIONS
   A. Section 05500 - Metal Fabrications.
   B. Section 07920 - Joint Sealants.
   C. Section 09910 - Painting.
1.3 REFERENCES
   A. Air Movement and Control Association International (AMCA):
      1. AMCA 501 - Application Manual for Air Louvers.
      2. AMCA 511 - Certified Ratings Program - Product Rating Manual for Air Control Devices.
      3. AMCA 512 - Certified Ratings Program - AMCA Listing Label Program.
      4. AMCA 540 - Test Method for Louvers Impacted by Windborne Debris.
      5. AMCA 550 - Test Method for High Velocity Wind Driven Rain Resistant Louvers.
   B. American Architectural Manufacturer's Association (AAMA).
      1. AAMA 2604 - High Performance Organic Coatings on Architectural Extrusions and Panels.
      2. AAMA 2605 - High Performance Organic Coatings on Architectural Extrusions and Panels.
   C. ASTM International (ASTM):
      1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
      2. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
      3. ASTM D822 - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
      4. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
      5. ASTM D2244 - Standard Test Method for Calculation of Color Differences From Instrumentally Measured Color Coordinates.
      6. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
      7. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
      8. ASTM E413 - Classification for Rating Sound Insulation.
1.4 DEFINITIONS
   A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section, unless otherwise defined in this Section or in referenced standards.
   B. Standard Free Area: Free area of a louver 48 inches (1220 mm) wide by 48 inches (1220 mm) high, identical to that provided.
   C. Maximum Standard Airflow: Airflow at point of beginning water penetration through a louver 48 inches (1220 mm) wide by 48 inches (1220 mm) high, identical to that provided.
   D. Drainable-Blade Louver: Louver designed to collect and drain water to exterior at sill by means of gutters in front edges of blades and channels in jambs and mullions.
   E. Minimum Weather Louver Effectiveness: Weather louver effectiveness rating shall be based on tests conducted in accordance with:
      1. AMCA Standard 500-L.
1.5 SUBMITTALS
   A. Product Data: Manufacturer's data sheets for each product and assembly specified.
      1. Preparation instructions and recommendations.
      2. Storage and handling requirements and recommendations.
      3. Cleaning methods.
   B. Engineering Review: Submit theoretical calculations prepared by a professional engineer specializing in the application of welding technology demonstrating that each fillet weld joining blade and frame members will withstand a minimum of 526 pounds of force in shear.
   C. Shop Drawings: For units and accessories. Include plans; elevations; sections; and details showing profiles, angles, and spacing of elements. Show unit dimensions related to wall openings and adjacent construction; free area for each size indicated for louvers; profiles of frames at jambs, heads, and sills; and anchorage details and locations.
      1. Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.
      2. For installed products indicated to comply with design loadings, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   D. Selection Samples: Two complete color charts showing the full range of colors available for units with factory-applied color finishes.
   E. Samples for Verification: For each finish specified, two samples representing actual finishes specified; prepared on Samples of same thickness and material indicated for final Work. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected.
   F. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
1.6 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Minimum 5 years manufacturing similar products. The manufacturer shall have implemented a program for the management of quality objectives, continual improvement, and monitoring of customer satisfaction to assure that customer needs and expectations are met.
   B. Installer Qualifications: Minimum 2 years experience installing similar louvers.
   C. Professional Engineer Qualifications: A professional engineer legally qualified to practice in jurisdiction where Project is located and experienced in providing engineering services of kind indicated. Engineering services are defined as those performed for installations of products that are similar to those indicated for this Project in material, design, and extent.
   D. Source Limitations: Obtain products through one source from a single manufacturer where alike in one or more respects regarding type, design, or factory-applied color finish.
   E. Welding Standards: As follows.
      1. Comply with AWS D1.2, "Structural Welding Code - Aluminum."
      2. Comply with AWS D1.3, "Structural Welding Code - Sheet Steel."
1.7 DELIVERY, STORAGE, AND HANDLING
   A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
   B. Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.
   C. Handling: Protect materials and finishes during handling and installation to prevent damage.
1.8 SEQUENCING AND SCHEDULING
   A. Field Measurements: Verify openings and adjacent construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
      1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.
      2. Coordinate Setting Drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.
1.9 PROJECT CONDITIONS
   A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
1.10 WARRANTY
   A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty for louver systems for a period of 1 year from date of installation, no more than 18 months after shipment from manufacturing plant. When notified in writing from the Owner of a manufacturing defect, manufacturer shall promptly correct deficiencies without cost to the Owner.
   B. Manufacturer's Finish Warranty: Provide manufacturer's limited warranty for 70% fluoropolymer-based finish on aluminum substrates.
      1. Warranty Period: 20 years.
      2. Finish coating shall not peel, blister, chip, crack or check.
      3. Chalking, fading or erosion of finish when measured by the following tests:
      4. Finish coating shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D4214.
      5. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D2244 and ASTM D822.
      6. Finish coating shall not erode at a rate in excess of .01 mils/year confirmed by Florida test samples.
   C. Manufacturer's Finish Warranty: Provide manufacturer 5 year limited warranty for 50% fluoropolymer-based finish on aluminum substrates.
      1. Finish coating shall not peel, blister, chip, crack or check.
      2. Chalking, fading or erosion of finish when measured by the following tests:
      3. Finish coating shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D4214.
      4. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D2244 and ASTM D822.
      5. Finish coating shall not erode at a rate in excess of .01 mils/year confirmed by Florida test samples.
   D. Manufacturer's Finish Warranty: Provide manufacturer 1 year limited warranty for baked enamel /acrylic enamel finish on aluminum substrates.
      1. Finish coating shall not peel, blister, chip, crack or check.
      2. Chalking, fading or erosion of finish when measured by the following tests:
      3. Finish coating shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D4214.
      4. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D2244 and ASTM D822.
      5. Finish coating shall not erode at a rate in excess of .01 mils/year confirmed by Florida test samples.
   E. Manufacturer's Finish Warranty: Provide manufacturer 5 year limited warranty for Class I anodized finish.
   F. Manufacturer's Finish Warranty: Provide manufacturer 1 year limited warranty for Class II anodized finish.

PART 2 PRODUCTS
2.1 MANUFACTURERS
   A. Acceptable Manufacturer: Airolite Co. (The), which is located at: P.O. Box 410 ; Schofield, WI 54476; Tel: 715-841-8759; Fax: 715-841-8773; Email: request info (info@airolite.com); Web: www.airolite.com
   B. Substitutions: Acceptable, approved and equal.
   C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.
2.2 LOUVERS - GENERAL
   A. Louver shall be of welded construction and furnished with bird screen, insect screen, sill pans, supports, installation hardware and finishes as specified or required for a complete installation.
   B. The supporting structure shall be designed to accommodate the point loads transferred by the louvers when subject to the design wind loads.
      1. Louvers shall be secured to a structural substrate in accordance with Dade County Product Approval Drawings.
2.3 FLORIDA STATE CODE APPROVED STATIONARY LOUVER
   A. FL Approved Horizontal Blade, Drainable Louver:
      1. Product: Drainable Louver Type K6746X with visible vertical mullions as designed and manufactured by The Airolite Company LLC.
         a. Florida Product Approval No.: FL7708.2; UL Classified: R25376.
      2. ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference, to +/- 200 psf (9.6 kPA) in compliance with the Florida Building Code.
      3. Material: Extruded Aluminum, Alloy 6063-T5.
      4. Louver Depth: 6 inches (152.4 mm).
      5. Blade: 0.081 inch (2.06 mm). Blades shall be stationary, incorporate drainable gutters, and be spaced 4-inches (101.6 mm) on center. Jamb frames shall incorporate drainable gutters to ensure resistance to water penetration.
      6. Frame: 0.081 inch (2.06 mm).
      7. Blade Angle: 35 degree.
      8. Miami-Dade County Protocols Compliance:
         a. PA-201 Large and Small Missile Impact Test. Welded Construction Required
         b. PA-202 Uniform Static Air Pressure Test.
         c. PA-203 Cyclic Wind Pressure Test - Maximum Design Pressure Rating +/- 150 psf (7.2 kPa). Welded Construction Required.
      9. AMCA Listing Label Compliance:
         a. 540 - Test Method for Louvers Impacted by Windborne Debris.
      10. Test Standard: AMCA Standard 500-L.
      11. Free Area - 4 feet by 4 feet (1219 mm by 1219 mm) unit: 9.41 ft2 (0.88 m2).
      12. Percent Free Area: 59%.
      13. Beginning Point of Water Penetration: 1,077 fpm (5.47 m/s).
      14. Air Volume Flow Rate at Beginning Point of Water Penetration: 10,135 cfm (4.78 m3/s).
      15. Pressure Drop at Beginning Point of Water Penetration: 0.20 in. H20 (0.050 kPa).
      16. Maximum Qualified Wind Design Load +/- 200 PSF (9.6 kpa).
2.4 LOUVER SCREENS
   A. General: Provide louvers with screens as manufactured by The Airolite Co. at locations indicated on Drawings.
   B. General: Provide exterior louvers with louver screens.
      1. Screen Location for Fixed Louvers: Interior face.
      2. Screening Type: Bird screening, unless otherwise indicated.
   C. Attachment: Secure screens to louver frames with stainless-steel machine screws, spaced 18 inches (458 mm) o.c.
   D. Louver Screen Frames: As manufactured by The Airolite Co; to sizes indicated on Drawings.
      1. Fabrication: Mitered corners.
      2. Metal: Roll formed aluminum.
      3. Finish: Same finish as louver frames to which louver screens are attached.
      4. Finish: Mill finish, unless otherwise indicated.
      5. Type: Non-rewirable, U-shaped frames for permanently securing screen mesh.
   E. Louver Screening for Aluminum Louvers: As manufactured by The Airolite Co.
      1. Bird Screening: Flattened, expanded aluminum, 3/4 by 0.050 inch (19 by 1.27 mm) thick.
      2. Bird Screening: Aluminum, 1/2 inch (12.7 mm) square mesh, 0.063 inch (1.6 mm) wire.
      3. Bird Screening: Stainless steel, 1/2 inch (12.7 mm) square mesh, 0.047 inch (1.19 mm) wire.
   F. Louver Screening for Galvanized Steel Louvers: As manufactured by The Airolite Co.
      1. Bird Screening: Galvanized steel, 1/2 inch (12.7 mm) wire cloth, 0.041 inch (1.04 mm) wire.
      2. Bird Screening: Stainless steel, 1/2 inch (12.7 mm) square mesh, 0.047 inch (1.19 mm) wire.
   G. Louver Screening for Stainless-Steel Louvers: As manufactured by The Airolite Co.
      1. Bird Screening: Stainless steel, 1/2 inch (12.7 mm) square mesh, 0.047 inch (1.19 mm) wire.
2.5 FINISHES, GENERAL
   A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   B. Finish units after assembly.
2.6 ALUMINUM FINISHES
   A. Compliance: Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
   B. Class I, Clear Anodic Finish: AA-M12C22A41 complying with AAMA 611.
      1. Mechanical Finish: Nonspecular as fabricated.
      2. Chemical Finish: Etched, medium matte.
      3. Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker.
   C. Class I, Color Anodic Finish: AA-M12C22A42/A44 complying with AAMA 611.
      1. Mechanical Finish: Nonspecular as fabricated.
      2. Chemical Finish: Etched, medium matte.
      3. Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker. Color to fall in standard range for color variation in anodic finishes.
      4. Color: TBD
   D. Baked-Enamel Finish: AA-C12C42R1x.
      1. Apply baked enamel complying with paint manufacturer's specifications for cleaning, conversion coating, and painting.
      2. Chemical Finishes: Cleaned with inhibited chemicals and acid-chromate-fluoride-phosphate conversion coating.
   E. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      1. Chemical Finishes: Cleaned with inhibited chemicals and acid-chromate-fluoride-phosphate conversion coating.
      2. Fluoropolymer Two-Coat Coating System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
      3. Color: As selected by Architect from manufacturer's full range of colors.

PART 3 EXECUTION
3.1 EXAMINATION AND PREPARATION
   A. Prepare substrates and openings using methods recommended by manufacturer for achieving best result for substrates under project conditions.
   B. Do not proceed with installation until substrates and nailers have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
   C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
3.2 INSTALLATION
   A. Install in accordance with manufacturer's instructions.
      1. Locate and place units level, plumb, and at indicated alignment with adjacent work.
      2. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
      3. Form closely fitted joints with exposed connections accurately located and secured.
      4. Provide perimeter reveals and openings of uniform width for sealants and joint fillers as indicated on Drawings.
      5. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.
      6. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.
   B. Install concealed gaskets, flashings, joint fillers, and insulation, as installation progresses, where weathertight joints are required. Comply with Division 7 Section "Joint Sealants" for sealants applied during installation.
3.3 ADJUSTING, CLEANING AND PROTECTION
   A. Test operation of adjustable louvers and adjust as needed to produce fully functioning units that comply with requirements.
   B. Protect products from damage until completion of project. Use temporary protective coverings where needed and approved by manufacturer. Remove protective covering at the time of Substantial Completion.
   C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 10440

SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Plastic interior panel signs.
B. Plastic exterior panel signs.

1.2 RELATED SECTIONS

A. Section 06200 - Finish Carpentry: installation accessories and requirements.

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
   2. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   3. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
B. Underwriters Laboratories (UL):
   1. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
   2. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Submit as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction. .
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Include location, size, mounting height, and content for each sign.
D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and available pictograms, characters, and Braille indications.
E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and typical pictograms, characters, and Braille indications.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum two years documented experience in work of this Section.
B. Installer Qualifications: Minimum two years documented experience in work of this Section.
C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Furnish signs designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Nova Polymers, Inc., which is located at: 8 Evans St. Suite 201 ; Fairfield, NJ 07004; Toll Free Tel: 888-484-NOVA (6682); Email: request info (info@novapolymers.com); Web: www.novapolymers.corn
   1. Acceptable Fabricator: Acorn Sign Graphics, PO Box 11664, Richmond, Virginia 23230. Phone: (804) 726-6999. Email: info@acornsign.com. Web: www.acornsign.com.
   2. Acceptable Fabricator: Acumen Visual Group, 30 Riviera Drive Markham ON Canada L3R 5M1 Phone: +1 905-947-0770 Web: www.ideasbuilt.ca
   3. Acceptable Fabricator: Adelphia Graphics, 302 Commerce Drive, Exton, PA 19341. Phone: (610) 363-8150. Email: info@ags.com. Web: www.agsinfo.com.
   4. Acceptable Fabricator: Advanced Signing LLC, 4 Industrial Park Road, Medway, MA 02053. Phone: (508) 533-9000 ext. 3034. Email: dfontaine@advancedsigning.com. Web: www.advancedsigning.com
   5. Acceptable Fabricator: APCO Graphics, Inc., 388 Grant St. SE, Atlanta, GA 30312. Phone (800) 215-4039. Web: www.apcographics.com.
   6. Acceptable Fabricator: ASI, Modulex - East Berlin, CT, 100 Clark Dr., East Berlin, CT. Phone: (860) 828-3331. Web: www.asimodulex.com/default.asp?IsDev=False&NodeId=2284
   7. Acceptable Fabricator: ASI, Dallas - Dallas, TX, 8181 Jetstar Drive, Suite 110, Irving, TX 75063. Phone:(972) 915-3800. Web: http://www.asisignage.com/ASIDallas/tabid/243/Default.aspx
   8. Acceptable Fabricator: ASI, Iowa - Grinnell, IA, 1219 Zimmerman Dr., Grinnell, IA 50112. Phone: (641) 236-6616. Web: www.asisignage.com/ASIIowa/tabid/239/Default.aspx
   9. Acceptable Fabricator: ASI, New Orleans - Kenner, LA, 1101 24th St., Kenner, LA 70062. Phone: (504) 704-1000. Web: www.asisignage.com/ASINewOrleans/tabid/236/Default.aspx.
   10. Acceptable Fabricator: Bell Company, 106 Morrow Ave., P.O. Box 92, Trussville, AL 35173-0092. Phone: (800) 828-3564. Email: sales@bellcoinc.com. Web: www.bellcoinc.com.
   11. Acceptable Fabricator: Creative Sign Designs, 12801 Commodity Place, Tampa, FL 33626 Phone: (800) 804-4809. Email: sales@creativesigndesigns.com. Web: www.creativesigndesigns.com.
   12. Acceptable Fabricator: Dixie Graphics, 636 Grassmere Park, Nashville TN 37211 Phone: 615-832-7000 Email: info@dixiegraphics.com, Web: www.dixiesignagesolutions.com
   13. Acceptable Fabricator: GraphTec, Inc., 8411 Rannie Road, Houston, TX 77080. Phone: (713) 690-9999. Email: blake@graphtecinc.com. Web: www.graphtecinc.com.
   14. Acceptable Fabricator: InPro Corporation, S80 W18766 Apollo Drive, Muskego, WI 53150. Phone: (800) 222-5556. Email: kboeder@inprocorp.com. Web: www.inprocorp.com.
   15. Acceptable Fabricator: JRT Industries, 36 Tanderra Drive, Sharon, QLD 4670 Australia. Phone: (07) 41577003. Email: info@jrtindustries.com.au. Web: www.jrtindustries.com.au.
   16. Acceptable Fabricator: Kroy Sign Systems, 7575 E Redfield Rd, Suite 113, Scottsdale, AZ 85260. Phone: (800) 950-5769. Email: signs@kroysignsystems.com. Web: www.kroysignsystems.com.
   17. Acceptable Fabricator: The Look Company Middle East, 125 Al Waab Street, Doha, Qatar. Phone: +974 4447 5865 Email: sales@thelookcompany.com, Web: www.thelookcompany.com.
   18. Acceptable Fabricator: Neiman & Company, 6842 Valjean Ave., Van Nuys, CA 91406. Phone: (818) 781-8600. Email: signs@neimanandco.com. Web: www.neimanandcompany.com.
   19. Acceptable Fabricator: Nova Polymers, 15348 U.S. Rt. 127 EW, Bryan, OH 43506. Phone: (888) 484-6682. Email: info@novapolymers.com. Web: www.novapolymers.com.
   20. Acceptable Fabricator: Park Place Sign Systems, Inc., 2019 30th Street, Hannibal, MO 63401. Phone: (573) 221-1360. Email: sales@parkplacesign.com. Web: www.parkplacesign.com.
   21. Acceptable Fabricator: Poblocki Sign Company LLC, 922 S 70th St., Milwaukee, WI 53214. Phone: (414) 453-4010. Web: www.poblocki.com.
   22. Acceptable Fabricator: WSI Sign System Ltd. & KING Architectural Products, 31 Simpson Road, Bolton - Ontario L7E 2R6. Phone: (905) 857-2804. Web: www.king-ap.com.
B. Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 MATERIALS

A. Panel Material:
   1. Description: NovAcryl PT, ECR, YA photo polymer sheet.
   2. Description: NovAcryl Permaglow 150 interior grade photo polymer sheet with luminescent powder colorants.
   3. Composition: 0.032 inch (0.8 mm) thick moisture resistant, non-glare nylon photo polymer on ultraviolet resistant clear PETG sign base, single piece construction. Laminated photo polymers, added-on characters, and engraved characters are not acceptable.
   4. Base thickness: 0.080 inch (2.0 mm).
   5. Color: TBD.
   6. Color: To be selected from manufacturer's full color range by Architect.
   7. Surface burning characteristics: Flame spread/smoke developed rating less than 75/120, tested to ASTM E 84 and UL 723.
   8. Rate of burning: Tested to ASTM D 635 at nominal 0.060 inch (1.5 mm) thickness with resulting Classification CC1.
   9. Vertical burning: Tested to UL 94, classified as 94V-2 in thickness of 0.118 inch (3.0 mm) or greater and 94HB in thicknesses less than 0.118 inch (3.0 mm).
   10. Self ignition temperature: 800 degrees F (427 degrees C), tested to ASTM D 1929.
B. Panel Material:
   1. Description: NovEx exterior grade photo polymer sheet.
   2. Composition: 0.032 inch (0.8 mm) thick exterior grade synthetic rubber based polymer integral bonded to 0.017 inch (0.4 mm) thick aluminum alloy base.
   3. Color: TBD.
   4. Color: To be selected from manufacturer's full color range by Architect.
C. Frame: Extruded aluminum.
   1. Size: Refer to Signage Schedule.
   2. Square profile.
   3. Clear anodized finish.
D. Frame:
   1. Size: Refer to Signage Schedule.
   2. Clear polyurethane.
E. Changeable Slide Insert Covers: Clear PETG sheet, minimum 1/8 inch (3 mm) thick.

2.3 ACCESSORIES

A. Adhesive:
   1. Type recommended by sign manufacturer.
   2. Maximum volatile organic compound (VOC) content: 70 grams per liter.
B. Tape: Double sided, waterproof, pressure sensitive.
C. Fasteners: Chrome plated screws.
D. Fasteners: Brass screws.
E. Fasteners: Stainless steel screws.

2.4 FABRICATION

A. Fabricate panel material in accordance with manufacturer's instructions and approved shop drawings.
B. Fabricate signs by photo polymer process using film negatives to produce characters and graphics in contrasting color, raised. Refer to Signage Schedule.
C. Characters:
   1. Height: Refer to Signage Schedule.
   2. Style: Refer to Signage Schedule.
   3. Width to height ratio: Refer to Signage Schedule.
   4. Stroke width to height ratio: Refer to Signage Schedule.
D. Pictograms: Refer to Signage Schedule.
E. Provide Grade II Braille indications for each character.
F. Frames:
   1. Miter corners; fit to hairline joint.
   2. Secure frame to sign with adhesive.
G. Changeable Slide Inserts: Clear PETG sheet cover with slot behind for insertion of changeable slide strip, removed from side.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 10440

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Waveland Beach Park - Restroom Facility
James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.9
	Building Specs

BUILDING SPECIFICATIONS

SECTION 10800

WASHROOM ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Washroom accessories as scheduled in this Section and as indicated on the Drawings.

1.2 RELATED REQUIREMENTS

A. Section 061000 – Rough Carpentry, coordination with blocking.
B. Section 092000 – Plaster and Gypsum Board, coordination with blocking.
C. Section 093000 – Tiling, coordination with layout and installation.
D. Section 102113 – Toilet Compartments, coordination with accessories.
E. Section 102814 – Baby Changing Stations, for baby changing stations.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's data sheets for each product specified, including the following:
1. Installation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Cleaning and maintenance instructions.
4. Replacement parts information.
B. Schedule: Submit a toilet accessory schedule, indicating the type and quantity to be installed in each washroom. Use room numbers as indicated on the Drawings.
C. Country of Origin: Manufacturer must supply, with first submittal, Country of Origin information for each type of washroom accessory for this project.

1.4 QUALITY ASSURANCE

A. Manufacturer: Provide products manufactured by a company with a minimum of 10 years successful experience manufacturing similar products.
B. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
C. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.
D. Hazardous Materials: Comply with EU Directive "Restrictions of Hazardous Substances (RoHS) requirements."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

1.6 WARRANTY

A. Manufacturer's Warranty for Washroom Accessories: Manufacturer's standard 1 year warranty for materials and workmanship.
B. Manufacturer's Warranty for Electric Hand Dryers: Manufacturer's standard 10 year warranty on parts, except 3 year warranty on motor brushes from date of purchase. Does not include Bobrick Compac Model B–710.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Bobrick Washroom Equipment, Inc.. www.bobrick.com. Location of manufacturing shall be the United States.
B. Substitutions: Substitutions: Acceptable, approved and equal.
C. Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction.

2.2 TOILET ACCESSORY SCHEDULE

A. Single–User Washroom, Heavy Duty:
1. TA–1: B–6806 Series Concealed Mounting Grab Bar - 1–1/2 inch diameter.
2. TA–2: B–290 Series Angle–Frame Mirror.
3. TA–3: B–3888 ClassicSeries Recessed Multi–Roll Toilet Tissue Dispenser.
4. TA–4: B–3961 ClassicSeries Recessed Touch Free, Pull–Towel, Universal Roll Paper Towel Dispenser
5. TA–5: B–2111 ClassicSeries Wall–Mounted Soap Dispenser.

B. Multiple–Use Washroom, Heavy–Duty:
1. TA–1: B–6806 Series Concealed Mounting Grab Bar - 1–1/2 inch diameter.
2. TA–2: B–290 Series Angle–Frame Mirror.
3. TA–3: Toilet Tissue Dispensers B–4288 ConturaSeries Surface–Mounted Multi–Roll Toilet Tissue Dispenser.
4. TA–5: B–2111 ClassicSeries Wall–Mounted Soap Dispenser.
5. TA–6: B–354 ClassicSeries Partition–Mounted Sanitary Napkin Waste Receptacle.
6. TA–8: KB200–00 Koala Kare Products Horizontal Surface–Mounted Baby Changing Station.
7. TA–9: KB102–00 Koala Kare Products Wall–Mounted Child Protection Seat.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
1. Verify blocking has been installed properly.
2. Verify location does not interfere with door swings or use of fixtures.
3. Comply with manufacturer's recommendations for backing and proper support.
4. Use fasteners and anchors suitable for substrate and project conditions
5. Install units rigid, straight, plumb, and level, in accordance with manufacturer's installation instructions and approved shop drawings.
6. Conceal evidence of drilling, cutting, and fitting to room finish.
7. Test for proper operation.

3.2 CLEANING AND PROTECTION

A. Clean exposed surfaces of compartments, hardware, and fittings using methods acceptable to the manufacturer.
B. Touch–up, repair or replace damaged products until Substantial Completion.

END OF SECTION 10800

SECTION 10811

ELECTRIC HAND DRYERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Warm air, high speed, and energy efficient self–contained electric hand dryers.
B. Warm air, self–contained electric hair dryers.

1.2 RELATED SECTIONS

A. Section 06100 – Rough Carpentry: Blocking in stud partitions for mounting hand dryers.
B. Section 16100 – Wiring Methods: Electrical supply, conduit, wiring, boxes, and wiring devices for hand dryers.

1.3 REFERENCES

A. ICC/ANSI A117.1 – American National Standard for Accessible and Useable Buildings and Facilities; 1998.

1.4 SUBMITTALS

A. All submittals are to be as per Article 20 of the Agreement between Martin County and Contractor for Horizontal Construction.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Operating instructions and performance.
3. Storage and handling requirements and recommendations.
4. Installation methods.
C. Shop Drawings showing dimensions, method of attachment, and required supports.
D. Electrical wiring diagrams for connection of hand dryers.
E. Warranty for review by Architect.
F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing electric hand dryers with 10 years minimum experience.
B. Equipment certified by Underwriters Laboratory, Inc., with UL and ULC labels.
C. Comply with ICC/ANSI A117.1.

1.6 WARRANTY

A. Provide manufacturer's standard limited warranty for period specified.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Excel Dryer Inc., which is located at: 357 Chestnut St. P. O. Box 365 ; East Longmeadow, MA 01028; Tel: 413–525–4531; Fax: 413–525–2853; Email: request info (sales@exceldryer.com); Web: www.exceldryer.com
B. Substitutions: Acceptable, approved and equal.

2.2 Requests for substitutions will be considered in accordance with Article 14 of the Agreement between Martin County and Contractor for Horizontal Construction. ELECTRIC HAND DRYERS

A. Hand Dryer: Warm air, rapid drying, energy efficient electric hand dryer; XLERATOR; recessed; entire dryer internally grounded.
1. Warranty Period: 5 years; limited warranty.
2. Made in the USA.
3. Controls: Automatic, activated by infrared optical sensor. Operates while hands are under blower. Shut–off within 2 seconds when hands removed, or in 35 seconds if hands not removed. Control assembly completely sealed for protection against moisture, lint–dust and vandalism.
4. Cover: One piece, vandal resistant, reinforced white thermoplastic (Bulk Molding Compound).
5. Cover: Stainless steel with brushed finish.
6. Air Intake: Inlet openings on bottom of cover.
7. Air Outlet: Delivers focused air stream of 18,000 LFM at nozzle and 16,000 LFM at average hand position of 4 inches (102 mm) below air outlet.
8. Noise Reduction Nozzle: Reduces air deflection noise level by 9 db..
9. Recess Kit: ADA compliant recess kit is fabricated of 22 GA 18–8 type 304 stainless steel with #4 satin finish with 16 GA18–8 type 304 stainless steel dryer mounting plate. All welded construction. 16–3/8 inches (416 mm) wide by 26 inches (660 mm) high by 3–3/8 inches (86 mm) deep.
10. Nominal Size: 11–3/4 inches (298 mm) wide by 12–11/16 inches (322 mm) high by 6–11/16 inches (170 mm) deep.
11. Weight:
a) 17 pounds (7.7 kg) die cast cover.
12. Power Source: 208 volt, 7.0 amp, 60 Hz
13. Combination Motor and Blower: Series commutated, through–flow discharge, vacuum type; 5/8 HP, 20,000 RPM. Air flow rate: 19,000 linear feet per minute (97 meters per second) at air outlet, 16,000 linear feet per minute (81 meters per second) at average hand position of 4 inches (102 mm) below air outlet.
14. Heater: Nichrome wire element, mounted inside blower housing to be vandal proof.
15. Heater Safeguard: Automatic resetting thermostat to open when airflow is restricted and close when air flow is resumed.
16. Air Temperature: 135 degrees F (55 degrees C) measured at average hand position of 4 inches (102 mm) below air outlet. Air Heater Output: 900 watts.
17. All metal parts coated according to Underwriters Laboratories, Inc. requirements.
18. Mount dryers at heights indicated on Drawings.
19. Mount at the following heights above floor surface:
a) Men's Toilets: 45 inches (1143 mm).
b) Women's Toilets: 43 inches (1092 mm).
c) Toilets for Persons with Physical Disabilities: 37 inches (940 mm).

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Coordinate requirements for blocking to ensure adequate means for support and installation of hand dryers.
D. Coordinate requirements for power supply, conduit, disconnect switches and wiring.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Install dryers at specified heights.
C. Install dryers securely to supporting substrate so that fixtures are level and aligned with each other. Use type and length of fastener as recommended by manufacturer for type of substrate.

3.4 PROTECTION

A. Inspect installation to verify secure and proper mounting. Test each dryer to verify operation, control functions, and performance. Correct deficiencies.
B. Protect installed driers until completion of project.
C. Replace damaged products before Substantial Completion.

END OF SECTION 10811

SECTION 15055 - COMMON PIPING REQUIREMENTS

PART 1 – GENERAL (Not Applicable)

PART 2 – PRODUCTS

2.1 SUPPORTING DEVICES

A. Hanger and Pipe Attachments: Factory fabricated with galvanized coatings; nonmetallic coated for hangers in direct contact with copper tubing.
B. Building Attachments: Powder–actuated–type, drive–pin attachments with pullout and shear capacities appropriate for supported loads and building materials; UL listing and FM approval for fire–protection systems.
C. Mechanical–Anchor Fasteners: Insert–type attachments with pullout and shear capacities appropriate for supported loads and building materials; UL listing and FM approval for fire–protection systems.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install piping free of sags and bends.
B. Install fittings for changes in direction and branch connections.
C. Install sleeves for pipes passing through concrete and masonry walls, gypsum–board partitions, concrete floor, and roof slabs.
D. Exterior Wall, Pipe Penetrations: Mechanical sleeve seals installed in steel or cast–iron pipes for wall sleeves.
E. Fire–Barrier Penetrations: Seal pipe penetrations with firestopping sealant material specified in Division 7. Install unions adjacent to each valve and at final connection to each piece of equipment.
F. Install dielectric unions and flanges to connect piping materials of dissimilar metals in gas, compressed air, and vacuum piping.
G. Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals in water and steam piping.

3.2 HANGERS AND SUPPORTS

A. Install building attachments within concrete or to structural steel. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping.
B. Install powder–actuated drive–pin fasteners in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches (100 mm) thick.
C. Install mechanical–anchor fasteners in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches (100 mm) thick.
D. Support fire–protection system piping independent of other piping.
E. Load Distribution: Install hangers and supports so piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

END OF SECTION 15055

SECTION 15080 - MECHANICAL INSULATION

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: Mechanical insulation includes pipe and duct insulation for indoor applications.
B. Submit Product Data for each type of mechanical insulation.
C. Quality Assurance: UL labeled with maximum flame–spread rating of 25 and maximum smoke– developed rating of 50 according to ASTM E 84.

PART 2 – PRODUCTS

2.1 PIPE INSULATION

A. Preformed Glass–Fiber Pipe Insulation: ASTM C 547, Class 1, jacketed, with a k–value of 0.26 at 75 deg F (23 deg C) mean temperature and an average maximum density of 10 lb/cu. ft. (160 kg/cu. m).
B. Flexible Elastomeric Cellular Pipe Insulation: ASTM C 534, Type I, closed–cell insulation with a k–value of 0.30 at 75 deg F (23 deg C) mean temperature.

2.2 DUCT AND EQUIPMENT INSULATION

A. Glass–Fiber Insulation: ASTM C 612, Class 1B, semirigid, jacketed board with a k–value of 0.26 at 75 deg F (23 deg C) mean temperature and an average maximum density of 12 lb/cu. ft. (192 kg/cu. m).
B. Glass–Fiber–Blanket Insulation: ASTM C 553, Type II, Class F1, jacketed blankets with a k–value of 0.31 at 75 deg F (23 deg C) mean temperature.
C. Flexible Elastomeric Cellular Sheet Insulation: ASTM C 534, Type I, closed–cell insulation with a k–value of 0.30 at 75 deg F (23 deg C) mean temperature.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install vapor barriers on insulated pipes with surface operating temperatures below 60 deg F (15 deg C).
B. Insulate fittings, valves, and specialties.
C. Seal vapor–barrier penetrations for hangers, supports, anchors, and other projections.
D. Coat glass–fiber pipe insulation ends with vapor–barrier coating.
E. Seal ends of flexible elastomeric cellular insulation with adhesive.
F. Roof Penetrations: Apply insulation for interior applications to a point even with the top of the roof flashing.
G. Exterior Wall Penetrations: For penetrations of below–grade exterior walls, terminate insulation flush with mechanical sleeve seal.
H. Interior Walls and Partitions Penetrations: Apply insulation continuously through walls and partitions, except fire–rated walls and partitions.
I. Fire–Rated Walls and Partitions Penetrations: Terminate insulation at penetrations through fire–rated walls and partitions. Seal around penetration with firestopping specified in Division 7.
J. Floor Penetrations: Terminate insulation at the underside of the floor assembly and at the floor support at top of floor. Seal around penetration with firestopping specified in Division 7.
K. Glass–Fiber Insulation Installation: Bond insulation to pipe with adhesive. Seal seams and joints with vapor–barrier compound.
L. Flexible Elastomeric Insulation Installation: Seal joints with adhesive.
M. Interior Piping System Applications: Insulate the following piping systems:

1. Domestic hot water.
2. Recirculated domestic hot water.
3. Roof drain bodies and horizontal rainwater leaders of storm water piping.
4. Exposed sanitary drains for handicapped accessible fixtures.
5. Hydronic heating and cooling piping.
6. Refrigerant suction piping.

N. Do not apply insulation to the following systems, materials, and equipment:

1. Flexible connectors.
2. Fire–protection piping systems.
3. Sanitary drainage and vent piping.
4. Drainage piping located in crawl spaces, unless otherwise indicated.
5. Below–grade piping.
6. Chrome–plated pipes and fittings, except for plumbing fixtures for the disabled.
7. Piping specialties, including air chambers, unions, strainers, check valves, plug valves, and flow regulators.

O. Pipe Insulation Thickness Application Schedule: Insulate piping with the following materials and thicknesses:

8. Domestic Hot Water and Recirculated Hot Water: 1/2–inch (12.7–mm) flexible elastomeric pipe insulation.
9. Sanitary Drains and Storm Water Piping: 1/2–inch (12.7–mm) flexible elastomeric pipe insulation.

P. Install duct insulation as follows:

10. Install insulation continuously on ducts that penetrate walls and floors, except at fire–rated assemblies terminate insulation at the assembly. Maintain insulation vapor retarder on cold duct.
11. Install removable or segmented insulation on access panel and doors.
12. Install vapor barriers on insulated ducts and plenums with surface operating temperatures below 60 deg F (15 deg C). Seal joints and seams to maintain vapor barrier on insulation requiring a vapor barrier.
13. Seal penetrations for hangers, supports, anchors, and other projections in insulation requiring a vapor barrier.
14. Taper glass–fiber insulation ends at a 45–degree angle and seal with adhesive. Cut ends of flexible elastomeric cellular insulation square and seal with adhesive.
15. Board Insulation Installation: Secure insulation tight and smooth with speed washers and anchor pins. Space anchor pins 18 inches (450 mm) apart each way and 3 inches (76 mm) from insulation joints. Apply vapor–barrier coating compound to insulation in contact, open joints, breaks, punctures, and voids in vapor barrier.
16. Blanket Insulation Installation: Bond ducts having long sides or diameters smaller than 24 inches (610 mm) with bonding adhesive applied in 6–inch– (150–mm–) wide transverse strips on 12–inch (300–mm) centers. Bond ducts having long sides or diameters 24 inches (610 mm) and larger with anchor pins spaced 12 inches (300 mm) apart each way. Apply bonding adhesive to prevent sagging of insulation. Overlap joints 3 inches (76 mm). Seal joints, breaks, and punctures with vapor–barrier compound.

Q. Duct System Applications: Insulate indoor concealed supply–, return–, and outside–air ducts.
R. Do not apply insulation to the following systems, materials, and equipment:

17. Fibrous glass ducts.
18. Metal ducts with duct liner.
19. Factory–insulated flexible ducts.
20. Factory–insulated plenums, casings, terminal boxes, and filter boxes and sections.
21. Flexible connectors.
22. Vibration–control devices.
23. Testing laboratory labels and stamps.
24. Nameplates and data plates.

S. Duct Insulation Thickness and Application Schedule: Insulate ducts with the following materials and thicknesses:

25. Concealed Applications: Fiberglass blanket, 1–1/2 inches (38 mm) thick or Fiberglass board, 2 inches (50 mm) thick.
26. Exposed Applications: Fiberglass board, 2 inches (50 mm) thick.

END OF SECTION 15080

SECTION 15110 - VALVES

PART 1 – GENERAL (Not Applicable)

PART 2 – PRODUCTS

2.1 GENERAL–DUTY VALVES

A. End Connections: Threads shall comply with ANSI B1.20.1. Flanges shall comply with ANSI B16.1 for cast–iron valves and ANSI B16.24 for bronze valves. Solder–joint connections shall comply with ANSI B16.18.
B. Gate Valves: Class 125, cast–bronze body and bonnet; with threaded or solder ends, solid disc, copper–silicon alloy stem, brass packing gland, "Teflon" impregnated packing, and malleable– iron handwheel.
C. Ball Valves: Rated for 150–psig (1035–kPa) saturated steam pressure, 400–psig (2760–kPa) WOG pressure; 2–piece construction; with bronze body, standard (or regular) port, chrome–plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout–proof stem, and vinyl–covered steel handle.
D. Plug Valves: Rated at 150–psig (1035–kPa) WOG; bronze body, with straightaway pattern, square head, and threaded ends.
E. Globe Valves: Class 125; body and screwed cast–bronze bonnet; with threaded or solder ends, brass or replaceable composition disc, copper–silicon alloy stem, brass packing gland, "Teflon" impregnated packing, and malleable–iron handwheel.
F. Swing Check Valves: Class 125, cast–bronze body and cap; with horizontal swing, Y–pattern, and bronze disc; and with threaded or solder ends.
G. Valves for Copper Tube: Solder ends, except provide threaded ends for heating hot water and low–pressure steam service.
H. Valves for Steel Pipe: Threaded ends.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Use gate and ball valves for shutoff duty; globe and ball for throttling duty.
B. Locate valves for easy access and provide separate support where necessary.
C. Install valves for each fixture and item of equipment.
D. Install 3–valve bypass around each pressure–reducing valve using throttling–type valves.
E. Install valves in horizontal piping with stem at or above center of pipe.
F. Install valves in a position to allow full stem movement.
G. Install check valves for proper direction of flow in horizontal position with hinge pin level.

END OF SECTION 15110

SECTION 15140 - DOMESTIC WATER PIPING

PART 1 – GENERAL (Not Applicable)

PART 2 – PRODUCTS

2.1 PIPES AND TUBES

A. Hard Copper Tube: ASTM B 88, Types L and M, water tube, drawn temper.
B. Soft Copper Tube: ASTM B 88, Types K and L, water tube, annealed temper.
C. Steel Pipe: ASTM A 53, Type S, Grade A, Schedule 40, seamless, galvanized, plain ends.
D. Ductile–Iron Pipe: AWWA C151, Classes 50 and 51; mechanical or push–on joint; with AWWA C104 cement–mortar lining.
E. PVC Plastic, Water Pipe: ASTM D 1785, Schedules 40 and 80, plain ends.

2.2 FITTINGS

A. Wrought–Copper, Solder–Joint Pressure Fittings: ASME B16.22.
B. Cast–Copper–Alloy, Solder–Joint Pressure Fittings: ASME B16.18.
C. Bronze Flanges: ASME B16.24, Classes 150 and 300.
D. Copper Unions: ASME B16.18, cast–copper–alloy body, hexagonal stock, with ball–and–socket joint, metal–to–metal seating surfaces, and solder–joint, threaded, or solder–joint and threaded ends. Threads complying with ASME B1.20.1.
E. Ductile– and Gray–Iron Gasketed Fittings: AWWA C110 standard pattern or ductile–iron AWWA C153 compact pattern, 250–psig (1725–kPa) minimum pressure rating, with AWWA C104 cement–mortar lining and AWWA C111 rubber gaskets.
F. Ductile– and Gray–Iron Flanged Fittings: AWWA C110, 250–psig (1725kPa) minimum pressure rating, with AWWA C104 cement–mortar lining.
G. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53 or ASTM A 106, Schedule 40, seamless, galvanized, carbon–steel pipe.
H. Malleable–Iron Unions: ASME B16.39, Classes 150 and 300; hexagonal stock; with ball–and–socket joint; metal–to–metal bronze seating surfaces; and female threaded ends with threads complying with ASME B1.20.1.
I. Galvanized, Cast–Iron Threaded Fittings: ASME B16.4, Classes 125 and 250; standard pattern; with threads complying with ASME B1.20.1.
J. Cast–Iron Threaded Flanges: ASME B16.1, Classes 125 and 300.
K. PVC Plastic, Schedule 40, Socket–Type Pipe Fittings: ASTM D 2466.

2.3 JOINING MATERIALS

A. Ductile–Iron Pipe Push–On Joints: AWWA C111 rubber gaskets and lubricant.
B. Ductile–Iron Pipe Mechanical Joints: AWWA C111 ductile– or gray–iron glands, high–strength steel bolts and nuts, and rubber gaskets.
C. Ductile–Iron Pipe Flanged Joints: AWWA C115 ductile– or gray–iron pipe flanges, rubber gaskets, and high–strength steel bolts and nuts.
D. Pipe Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
E. Solder Filler Metal: ASTM B 32, alloys to suit system requirements.
F. Brazing Filler Metals: AWS A5.8, alloys to suit system requirements.
G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
H. Solvent Cements: As recommended by manufacturer.
I. Plastic Pipe Seals: ASTM F 477, elastomeric gasket.

PART 3 – EXECUTION

3.1 PIPING APPLICATIONS

A. Install listed pipe materials and joining methods below in the following applications:
1. Underground, Service Entrance Piping: [Soft copper tube, Type L, cast–copper–alloy, solder–joint pressure fittings and soldered joints with Alloy Sn95, Sn94, or E solder] or [Schedule 80 PVC plastic water pipe, Schedule 80 PVC fittings, and solvent–cemented joints].
2. Aboveground: Hard copper tube, Type M; wrought–copper or cast–copper–alloy pressure fittings; copper unions; bronze flanges; and solder joints with Alloy Sn95, Sn94, or E solder.

3.2 VALVE APPLICATIONS

A. Install gate valves close to main on each branch and riser serving 2 or more plumbing fixtures or equipment connections and where indicated.
B. Install gate or ball valves on inlet to each plumbing equipment item, on each supply to each plumbing fixture not having stops on supplies, and elsewhere as indicated.
C. Install drain valve at base of each riser, at low points of horizontal runs, and where required to drain water distribution piping system.
D. Install swing check valve on discharge side of each pump and elsewhere as indicated.
E. Install ball valves in each hot–water circulating loop and discharge side of each pump.

3.3 PIPING INSTALLATIONS

A. Install hangers and supports at intervals indicated in the applicable Plumbing Code and as recommended by pipe manufacturer.
B. Support vertical piping at each floor.

3.4 INSPECTING AND CLEANING

A. Inspect and test piping systems following procedures of authorities having jurisdiction.
B. Clean and disinfect water distribution piping following procedures of authorities having jurisdiction.

END OF SECTION 15140

SECTION 15150 - SANITARY WASTE AND VENT PIPING

PART 1 – GENERAL (Not Applicable)

PART 2 – PRODUCTS

2.1 PIPES AND TUBES

A. Copper Drainage Tube: ASTM B 306, Type DWV, drawn temper.
B. Hubless, Cast–Iron Soil Pipe: CISPI 301.
C. PVC Plastic, DWV Pipe: ASTM D 2665, Schedule 40, plain ends.

2.2 FITTINGS

A. Wrought–Copper, Solder–Joint, DWV Drainage Fittings: ASME B16.29.
B. Cast–Copper–Alloy, Solder–Joint, DWV Drainage Fittings: ASME B16.23.
C. Wrought–Copper, Solder–Joint, Sovent Drainage Fittings: ASME B16.43.
D. Cast–Copper–Alloy, Solder–Joint, Sovent Drainage Fittings: ASME B16.32.
E. Hub–and–Spigot, Cast–Iron Soil Pipe Fittings: ASTM A 74, Service class.
F. Hubless, Cast–Iron Soil Pipe Fittings: CISPI 301.
G. Cast–Iron, Sovent Drainage Fittings: ASME B16.45.
H. PVC Plastic, DWV Pipe Fittings: ASTM D 2665, made to ASTM D 3311; socket–type; drain, waste, and vent pipe patterns.
I. Cast–Iron Soil Pipe and Fittings: ASTM C 564 neoprene rubber gaskets and lubricant.
J. CISPI Couplings for Hubless, Cast–Iron Soil Pipe and Fittings: CISPI 310, having ASTM C 564 neoprene sealing sleeve, with 300 series stainless–steel, corrugated shield–and–clamp assembly.
K. Cast–Iron–Pipe Sleeve–Type Couplings for Plain–End, Nonpressure System Pipe: Rubber or elastomeric sleeve and stainless–steel band assembly, fabricated to match OD of pipes to be joined.
L. Plastic Pipe Sleeves: ASTM C 564 rubber for cast–iron soil pipe and ASTM F 477 elastomeric seal.

PART 3 – EXECUTION

3.1 PIPE APPLICATIONS

A. Hubless, cast–iron soil pipe; hubless, cast–iron soil pipe fittings; cast–iron, heavy–duty couplings for hubless, cast–iron soil pipe and fittings; and hubless joints.
B. PVC plastic DWV pipe; PVC socket–type drain, waste, and vent pipe pattern fittings; and solvent–cemented joints.
C. Copper drainage tube, wrought–copper or cast–copper–alloy drainage fittings, and soldered joints with Alloy E or Alloy Sn50 solder.

3.2 PIPING INSTALLATION

A. Install cleanout and extension to grade at connection of building sanitary drain and building sanitary sewer.
B. Locate drainage piping runouts as close as possible to bottom of floor slab supporting fixtures or drains.

3.3 INSPECTION

A. Inspect and test piping systems following procedures of authorities having jurisdiction.

END OF SECTION 15150

SECTION 15410 - PLUMBING FIXTURES

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data for each type of plumbing fixture.
B. Comply with requirements of Public Law 102–486, "Energy Policy Act," regarding water flow rate and water consumption of plumbing fixtures.

PART 2 – PRODUCTS

2.1 WATER CLOSET

A. Vitreous–China Water Closet: See Plumbing Schedule on Drawings.
B. Toilet Seat: See Plumbing Schedule on Drawings.

2.2 LAVATORY

A. Vitreous–China Lavatory: See Plumbing Schedule on Drawings.
B. Faucet: See Plumbing Schedule on Drawings.
C. Drain: See Plumbing Schedule on Drawings.
D. Fixture Support: Hanger plate

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Rev. #	Date

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	Building Specs

S:\02_Projects\03_Commercial\2016\16-0245 St. Lucie Beach Building\02_Drawings\01_Project Drawings\03_Construction Documents\16-0245 - BID SET SPECIFICATIONS - 11-15-17.dwg, 11/16/2017 4:50:10 PM, Lightning PDF Professional

BUILDING SPECIFICATIONS

2.2 LAVATORY

A. Vitreous-China Lavatory: See Plumbing Schedule on Drawings.
B. Faucet: See Plumbing Schedule on Drawings.
C. Drain: See Plumbing Schedule on Drawings.
D. Fixture Support: Hanger plate

2.2 SHOWER

A. Mixing-Valve Faucet and Miscellaneous Fittings: See Plumbing Schedule on Drawings.
B. Supplies: Copper tubing with ball, gate, or globe valve if check stops are not included with faucet.
C. Drain: 2-inch NPS (DN50), nickel-bronze-strainer, floor drain.
D. Trap: 2-inch NPS (DN50) drainage piping.

2.3 SINK

A. Stainless-Steel Sink: See Plumbing Schedule on Drawings.
B. Faucet: See Plumbing Schedule on Drawings.
C. Drain(s): See Plumbing Schedule on Drawings.

2.4 MOP-SERVICE SINK

A. Plastic Mop-Service Basin: See Plumbing Schedule on Drawings.
B. Faucet: See Plumbing Schedule on Drawings.
C. Mounting: Floor.
D. Rim Guard: Manufacturer's standard
E. Drain: 3-inch NPS (DN80) with grid strainer.
F. P-Trap: 3-inch NPS (DN80) drainage piping.
G. Mop Rack: Manufacturer's standard
H. Supplies: 1/2-inch NPS (DN15) copper tubing with ball, gate, or globe valve.
I. Reinforcement: Provide for wall-mounting faucet, wall brace, and hose-hook bracket.

2.5 SERVICE SINK

A. Plastic Sink: See Plumbing Schedule on Drawings.
B. Fixture Mounting: Floor stand
C. Faucet: See Plumbing Schedule on Drawings.
D. Drain(s): Manufacturer's standard grid drain with 1-1/2-inch NPS (DN40) tubular-brass tailpiece.
E. Fixture Support: Manufacturer's standard steel stand or base unit.

2.6 ELECTRIC WATER COOLER

A. See Plumbing Schedule on Drawings.

PART 3 – EXECUTION

3.1 INSTALLATIONS

A. Install fitting insulation kits on handicap-accessible fixtures.
B. Install fixtures with flanges and gasket seals.
C. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for handicapped people to reach.
D. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.
E. Fasten wall-hanging plumbing fixtures securely to supports attached to building substrate when supports are specified, and to building wall construction where no support is indicated.
F. Fasten floor-mounted fixtures to substrate. Fasten fixtures having holes for securing fixture to wall construction, to reinforcement built into walls.
G. Fasten wall-mounted fittings to reinforcement built into walls.
H. Fasten counter-mounting plumbing fixtures to casework.
I. Secure supplies to supports or substrate within pipe space behind fixture.
J. Set shower receptors and mop basins in leveling bed of cement grout.
K. Install individual supply inlets, supply stops, supply risers, and tubular brass traps with cleanouts at fixture.
L. Install water-supply stop valves in accessible locations.
M. Install traps on fixture outlets. Omit traps on fixtures having integral traps. Omit traps on indirect wastes, unless otherwise indicated.
N. Install disposers in sink outlets. Install switch where indicated, or in wall adjacent to sink if location is not indicated.
O. Install hot-water dispensers in back top surface of sink or in counter with spout over sink.
P. Install escutcheons at wall, floor, and ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons where required to conceal protruding pipe fittings.
Q. Seal joints between fixtures and walls, floors, and counters using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color.
R. Install piping connections between plumbing fixtures and piping systems and plumbing equipment. Install insulation on supplies and drains of handicap-accessible fixtures.
S. Ground equipment. Tighten electrical connectors and terminals according to UL 486A and UL 486B.

END OF SECTION 15410

SECTION 15425 - PLUMBING SPECIALTIES

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Floor Drains: See Plumbing Schedule on Drawings.
B. Backflow Preventers: ASSE standard backflow preventers, 150-psig (1035-kPa) minimum working pressure, bronze body with threaded ends, and an inlet strainer.
C. Atmospheric Vacuum Breakers: ASSE 1001, with floating disc and atmospheric vent.
D. Hose Connection Vacuum Breakers: ASSE 1011, rough bronze, with nonremovable and manual drain features and garden-hose threaded connection.
E. Water Filters: Cartridge type.
F. Hose Bibbs: Bronze body in rough-bronze finish, with removable composition disc, threaded or soldered inlet, garden-hose threaded outlet, and loose-key handle.
G. Water Hammer Arrester: Bellows or piston type with pressurized cushioning chamber.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install backflow preventers at each water-supply connection to mechanical equipment and where required by authorities having jurisdiction.
B. Install hose bibbs with integral or field-installed vacuum breaker.
C. Install floor drains at low points of surface areas and where indicated. Set tops of drains flush with finished floor. Set drain elevation depressed below finished slab elevation as indicated below:
   1. 5-Foot (1.5-m) Drain Area Radius: 1/2-inch (13-mm) depression.
   2. 10-Foot (3-m) Drain Area Radius: 3-1/2-inch (90-mm) depression.
   3. 15-Foot (4.5-m) Drain Area Radius: 1-inch (25-mm) depression.
   4. 20-Foot (6-m) Drain Area Radius: 1-1/4-inch (32-mm) depression.
   5. 25-Foot (7.6-m) Drain Area Radius: 1-1/2-inch (38-mm) depression.
D. Trap drains connected to sanitary building drain.
E. Install drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes.

END OF SECTION 15425

SECTION 15480 - DOMESTIC WATER HEATERS

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data.
B. Comply with performance efficiencies prescribed in ASHRAE 90.2, "Energy Efficient Design of New Low-Rise Residential Buildings."

PART 2 – PRODUCTS

2.1 ELECTRIC WATER HEATERS

A. See Plumbing Schedule on Drawings.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install temperature and pressure-relief valves and extend to closest floor drain.
B. Install vacuum-relief valves and expansion tank in cold-water-inlet piping.
C. Install shutoff valves and unions at hot- and cold-water piping connections.
D. Make piping connections with dielectric fittings where dissimilar piping materials are joined.
E. Electrically ground units according to authorities having jurisdiction.

END OF SECTION 15480

SECTION 15731 - PACKAGED TERMINAL AIR CONDITIONERS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes packaged terminal air conditioners and their accessories and controls, in the following configurations:
   1. Through the wall.
   2. Heat-pump unit.
   3. Electric-resistance heating.

1.2 SUBMITTALS

A. Product Data: For each product indicated.
B. Shop Drawings: Include details of installation and wiring diagrams.
C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE/IESNA 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
C. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE/IESNA 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged terminal air conditioners that fail in materials or workmanship within specified warranty period.
B. Warranty Period for Sealed Refrigeration System: Manufacturer's standard, but not less than five years from date of Substantial Completion, including components and labor.
C. Warranty Period for Nonsealed System Parts: Manufacturer's standard, but not less than five years from date of Substantial Completion, including only components and excluding labor.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Carrier Corp.
   2. Friedrich Air Conditioning Co.
   3. GE Co.; GE Appliances.
   4. Trane
   5. LG

2.2 MANUFACTURED UNITS

A. Description: Factory-assembled and tested, self-contained, packaged terminal air conditioner with room cabinet, electric refrigeration system, heating and temperature controls; fully charged with refrigerant and filled with oil.
   1. Power Supply: Cord-connected chassis for 230/208-V units.
B. Cabinet: **0.052-inch-**thick, galvanized steel with removable front panel with concealed latches.
   1. Mounting: Wall with wall sleeve.
   2. Finish: Epoxy coating.
   3. Discharge Grille and Access Door: Extruded-aluminum discharge grille, with hinged door in top of cabinet for access to controls.
   4. Cabinet Extension: Matching cabinet in construction and finish, allowing diversion of airflow to adjoining room; with grille.
   5. Wall Sleeves: Galvanized steel with polyester finish.
   6. Louvers: Extruded aluminum with enamel finish .
C. Refrigeration System: Direct-expansion indoor coil with capillary restrictor, hermetically sealed scroll compressor with internal spring isolation, external isolation, permanent-split-capacitor motor, and overload protection. Include the following:
   1. Outdoor coil and fan.
   2. Accumulator.
   3. Constant-pressure expansion valve.
   4. Reversing valve.
D. Indoor Fan: Forward curved, centrifugal, with two-speed permanent-split-capacitor motor and positive-pressure ventilation damper with concealed manual operator.
   1. Motor: Refer to Division 15 Section "Motors" for general requirements.
      a. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
      b. Noise Rating: Quiet.
      c. Electrical devices and connections are specified in Division 16 Sections.
E. Filters: Washable polyurethane in molded plastic frame.
F. Electric-Resistance Heating Coil: Nickel-chromium-wire, electric-resistance heating elements with contactor and high-temperature-limit switch.
G. Condensate Drain: Drain pan to direct condensate to outdoor coil for re-evaporation] [with slinger ring around outside of outdoor fan.
H. Outdoor Fan: Forward curved, centrifugal type with separate permanent-split-capacitor motor.
   1. Motor: Refer to Division 15 Section "Motors" for general requirements.
      a. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
      b. Noise Rating: Quiet.
      c. Electrical devices and connections are specified in Division 16 Sections.

2.3 CONTROLS

A. Control Module: Unit-mounted adjustable thermostat with heat anticipator, off-heat-auto-cool switch, and high-low fan switch.
B. Low Ambient Lockout Control: Prevents cooling-cycle operation below **40 deg F** outdoor-air temperature.
C. Heat-Pump Ambient Control: Field-adjustable switch changes to heat-pump heating operation above **40 deg F** and to supplemental heating below **plus 25 deg F**.
D. Sound-Power Level Ratings: Factory test to comply with ARI 270, "Sound Rating of Outdoor Unitary Equipment."
E. Unit Performance Ratings: Factory test to comply with ARI 310/380, "Packaged Terminal Air-Conditioners and Heat Pumps."

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install units level and plumb, maintaining manufacturer's recommended clearances and tolerances.
B. Install wall sleeves in finished wall assembly; seal and weatherproof. Joint-sealant materials and applications are specified in Division 7 Section "Joint Sealants."

3.2 CONNECTIONS

A. Electrical System Connections: Comply with applicable requirements in Division 16 Sections for power wiring, switches, and motor controls.
B. Ground equipment according to Division 16 Section "Grounding and Bonding."

END OF SECTION 15731

SECTION 15810 - DUCTS AND ACCESSORIES

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: Metal and nonmetal ducts and accessories in pressure classes 2 inch wg (500 Pa) or less and a maximum velocity of 2400 fpm (12 m/s).
B. Submit Product Data for fire dampers and smoke dampers.
C. Submit Shop Drawings detailing duct layout and including locations and types of duct accessories, duct sizes, transitions, radius and vaned elbows, special supports details, and inlets and outlet types and locations.
D. Comply with NFPA 90A for systems serving spaces more than 25,000 cu. ft . (708 cu. m) in volume or building Types II, IV, and V construction over 3 stories in height.
E. Comply with NFPA 90B for systems serving spaces 1- or 2-family dwellings or serving spaces less than 25,000 cu. ft. (708 cu. m).
F. Comply with NFPA 96 for systems serving public or private cooking operations, except single-family residential usage; and includes cooking equipment exhaust hoods, grease-removal devices, exhaust ductwork, exhaust fans, dampers, fire-extinguishing equipment, and all other auxiliary or ancillary components of systems or systems that are involved in the capture, containment, and control of grease-laden cooking effluent.
G. Comply with UL 181 and UL 181A for ducts and closures.
H. Testing, Adjusting, and Balancing Agency Qualifications: AABC or NEBB certified.

PART 2 – PRODUCTS

3.1 DUCTS

A. Galvanized Sheet Steel: Lock-forming quality, ASTM A 653, G90 (ASTM A 653M, Z275) coating designation with mill phosphatized finish for exposed surfaces of ducts exposed to view.
B. Fibrous Glass Duct Board: Comply with UL 181, Class 1, fibrous glass with fire-resistant, reinforced foil-scrim-kraft barrier, and having the air-side surface treated to prevent erosion. Thickness: 1-1/2 inches (38 mm).
C. Duct Liner: ASTM C 1071, Type II, with an airstream surface coated with a temperature-resistant coating.
D. Thickness: 1-1/2 inches (38 mm).
E. Adhesive: ASTM C 916, Type I.
F. Mechanical Fasteners: Galvanized steel pin, length required penetrate liner plus a 1/8-inch (3-mm) projection maximum into the airstream.
G. Joint and Seam Tape: Comply with UL 181A.
H. Joint and Seam Sealant: Comply with UL 181A.
I. Rectangular Metal Duct Fabrication: Comply with SMACNA's "HVAC Duct Construction Standard" for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals.
J. Fabricate Fibrous Glass Ducts: Comply with SMACNA's "Fibrous Glass Duct Construction Standard."

3.2 ACCESSORIES

A. Volume-Control Dampers: Factory-fabricated volume-control dampers, complete with required hardware and accessories. Single-blade and multiple opposed-blade, standard leakage rating, and suitable for horizontal or vertical applications.
B. Fire Dampers: Factory-fabricated fire dampers, complete with required hardware and accessories. UL labeled according to UL 555, "Standard for Fire Dampers."
C. Ceiling Fire Dampers: Factory-fabricated fire dampers, complete with required hardware and accessories. UL listed and labeled; comply with the construction details for the tested floor/roof-ceiling assemblies as indicated in UL's "Fire Resistance Directory."
D. Smoke Dampers: Factory-fabricated smoke and fire dampers, complete with required hardware and accessories. UL labeled according to UL 555S, "Standard for Leakage Rated Dampers for Use in Smoke Control Systems." Combination fire and smoke dampers shall also be UL labeled for 1-1/2-hour rating according to UL 555, "Standard for Fire Dampers."
E. Flexible Connectors: Flame-retarded or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.
F. Flexible Ducts: Spiral-wound steel spring with flameproof vinyl sheathing or Factory-fabricated, insulated, round duct, with an outer jacket enclosing 1-1/2-inch- (38-mm-) thick, glass-fiber insulation around a continuous inner liner.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Duct System Pressure Class: Construct and install each duct system for the specific duct pressure classification indicated.
B. Conceal ducts from view in finished and occupied spaces.
C. Avoid passing through electrical equipment spaces and enclosures.
D. Dishwasher Exhaust Duct Installation: Comply with SMACNA's "HVAC Duct Construction Standards."
E. Support and connect metal ducts according to SMACNA's "HVAC Duct Construction Standard."
F. Support and connect fibrous glass ducts according to SMACNA's "Fibrous Glass Duct Construction Standard."
G. Install duct accessories according to applicable portions of details of construction as shown in SMACNA standards.
H. Install volume-control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.
I. Install fire and smoke dampers according to manufacturer's UL-approved written instructions.
J. Install fusible links in fire dampers.

3.2 TESTING, ADJUSTING, AND BALANCING

A. Balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities.

END OF SECTION 15810

SECTION 15838 - POWER VENTILATORS

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data.
B. Submit Shop Drawings, including roof-mounting details.
C. Bear the AMCA seal.
D. Comply with applicable NEMA standards.
E. Comply with UL 705.

PART 2 – PRODUCTS

2.1 VENTILATORS AND ACCESSORIES

A. Wall-Mounted Ventilators: See HVAC Plans for manufacturer and details.
B. Ceiling-Mounted Ventilators: See HVAC Plans for manufacturer and details.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Ceiling Units: Suspend units from structure using steel wire or metal straps.
B. Ground power ventilators.
C. Tighten electrical connectors and terminals according to UL 486A and UL 486B.

END OF SECTION 15838

SECTION 15855 - DIFFUSERS, REGISTERS, AND GRILLES

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data, including color charts for factory finishes.

PART 2 – PRODUCTS

2.1 OUTLETS AND INLETS

A. Diffusers: See HVAC Plans for manufacturer and details.
B. Wall and Ceiling Registers: See HVAC Plans for manufacturer and details.
C. Wall and Ceiling Grilles: See HVAC Plans for manufacturer and details.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Coordinate location and installation with duct installation and installation of other ceiling- and wall-mounted items.
B. Locate ceiling diffusers, registers, and grilles, as indicated on general construction "Reflected Ceiling Plans." Unless otherwise indicated, locate units in center of acoustical ceiling panels.

END OF SECTION 15855

SECTION 15900 - HVAC INSTRUMENTATION AND CONTROLS

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: Electric/electronic controls sequences for HVAC systems and equipment.
B. Submit Shop Drawings detailing operating control sequences of each item of HVAC equipment and system.
C. Submit Product Data for controllers, sensors, operators, control panels, thermostats, humidistats, actuators, and control valves and dampers.
D. System Description: See HVAC Plans for control requirements.
E. Operation Sequence: See HVAC Plans for control requirements.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install control wiring concealed, except in mechanical rooms, and according to requirements specified in Division 16 sections.

END OF SECTION 15900

SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Raceways.
   2. Building wire and connectors.
   3. Supporting devices for electrical components.
   4. Electrical identification.
   5. Utility company electricity-metering components.
   6. Concrete equipment bases.
   7. Electrical demolition.
   8. Cutting and patching for electrical construction.

1.2 SUBMITTALS

A. Product Data: For utility company electricity-metering components.
B. Shop Drawings: Dimensioned plans and sections or elevation layouts and single-line diagram of electricity-metering component assemblies specific to this Project.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Devices for Utility Company Electricity Metering: Comply with utility company published standards.
C. Comply with NFPA 70.

1.4 COORDINATION

A. Coordinate chases, slots, inserts, sleeves, and openings for electrical supports, raceways, and cable with general construction work.
B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment that requires positioning before closing in the building.
C. Coordinate electrical service connections to components furnished by utility companies.
   1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for service entrances and electricity-metering components.
D. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces. Access doors and panels are specified in other portions of this specification.
E. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

PART 2 – PRODUCTS

2.1 RACEWAYS

A. EMT: Electrical metallic tubing; ANSI C80.3, zinc-coated steel, with set-screw fittings.
B. FMC: Flexible metal conduit; zinc-coated steel.
C. IMC: Intermediate metal conduit; ANSI C80.6, zinc-coated steel, with threaded fittings.
D. LFMC: Liquidtight flexible metal conduit; zinc-coated steel with sunlight-resistant and mineral-oil-resistant plastic jacket.
E. RMC: Rigid metal conduit; galvanized rigid steel; ANSI C80.1.
F. RNC: Rigid nonmetallic conduit; NEMA TC 2, Schedule 40 PVC, with NEMA TC3 fittings.
G. Raceway Fittings: Specifically designed for raceway type with which used.

2.2 WIRES, CABLES, AND CONNECTIONS

A. Conductors, No. 10 AWG and Smaller: Solid or stranded copper.
B. Conductors, Larger Than No. 10 AWG: Stranded copper.
C. Insulation: Thermoplastic, rated 600 V, 75 deg C minimum, Type THW, THHN-THWN, or USE depending on application.
D. Wire Connectors and Splices: Units of size, ampacity rating, material, type, and class suitable for service indicated.

2.3 SUPPORTING DEVICES

A. Material: Cold-formed steel, with corrosion-resistant coating.
B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.
C. Slotted-Steel Channel: Flange edges turned toward web, and **9/16-inch-**diameter slotted holes at a maximum of **2 inches** o.c., in webs. Strength rating to suit structural loading.
D. Nonmetallic Slotted Channel and Angle: Structural-grade, factory-formed, glass-fiber-resin channels and angles with **9/16-inch-** diameter holes at a maximum of **8 inches** o.c., in at least one surface. Strength rating to suit structural loading.
E. Slotted Channel Fittings and Accessories: Recommended by the manufacturer for use with the type and size of channel with which used.
   1. Materials: Same as channels and angles, except metal items may be stainless steel.
F. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.
G. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
H. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.
I. Expansion Anchors: Carbon-steel wedge or sleeve type.
J. Toggle Bolts: All-steel springhead type.
K. Powder-Driven Threaded Studs: Heat-treated steel.

2.4 ELECTRICAL IDENTIFICATION

A. Identification Device Colors: Use those prescribed by ANSI A13.1, NFPA 70, and these Specifications.
B. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than **1 inch wide by 3 mils thick**.
C. Tape Markers for Conductors: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
D. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
E. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape compounded for permanent direct-burial service, and with the following features:
   1. Not less than **6 inches wide by 4 mils thick**.
   2. Embedded continuous metallic strip or core.
   3. Printed legend that indicates type of underground line.
F. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners **1/16-inch** minimum thickness for signs up to **20 sq. in.** and **1/8-inch** minimum thickness for larger sizes. Engraved legend in black letters on white background.
G. Warning and Caution Signs: Preprinted; comply with 29 CFR 1910.145, Chapter XVII. Colors, legend, and size appropriate to each application.
   1. Interior Units: Aluminum, baked-enamel-finish, punched or drilled for mechanical fasteners.
   2. Exterior Units: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate with **0.0396-inch**, galvanized-steel backing. **1/4-inch** grommets in corners for mounting.
H. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.5 EQUIPMENT FOR UTILITY COMPANY'S ELECTRICITY METERING

A. Comply with requirements of electrical power utility company for meter socket.

2.6 CONCRETE BASES

A. Concrete Forms and Reinforcement Materials: As specified in Division 3 Section "Cast-in-Place Concrete."
B. Concrete: **3000-psi**, 28-day compressive strength.

PART 3 – EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom.
B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
D. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2 RACEWAY APPLICATION

A. Outdoor Installations:
   1. Exposed: RNC.
   2. Concealed: RNC.
   3. Underground, Single Run: RNC.
   4. Underground, Grouped: RNC.
   5. Connection to Vibrating Equipment: LFMC.
   6. Boxes and Enclosures: NEMA 250, Type 3R or Type 4, unless otherwise indicated.
B. Indoor Installations:
   1. Exposed: EMT except in wet or damp locations, use IMC.
   2. Concealed in Walls or Ceilings: EMT.
   3. In Concrete Slab: EMT.
   4. Below Slab on Grade or in Crawlspace: RNC
   5. Connection to Vibrating Equipment: FMC; except in wet or damp locations: LFMC.
   6. Boxes and Enclosures: NEMA 250, Type 1, unless otherwise indicated.

3.3 RACEWAY AND CABLE INSTALLATION

A. Conceal raceways and cables, unless otherwise indicated, within finished walls, ceilings, and floors.
B. Keep legs of raceway bends in the same plane and keep straight legs of offsets parallel.
C. Use RMC elbows where RNC turns out of slab.
D. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or woven polypropylene or monofilament plastic line with not less than **200-lb** (90-kg) tensile strength. Leave at least **12 inches** of slack at each end of pull wires.
E. Install telephone and signal system raceways, **2-inch trade size** (DN 53) and smaller, in maximum lengths of **150 feet** and with a maximum of two 90-degree bends or equivalent. Add pull boxes where necessary to accomplish this.
F. Connect motors and equipment subject to vibration, noise transmission, or movement with a maximum of **72-inches** flexible conduit. Install LFMC in wet or damp locations. Install separate ground conductor across flexible connections.
G. Set floor boxes level and trim after installation to fit flush to finished floor surface.

3.4 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS

A. Application: Use wiring methods specified below to the extent permitted by applicable codes as interpreted by authorities having jurisdiction.
B. Exposed Feeders: Insulated single conductors in raceway.
C. Concealed Feeders in Ceilings, Walls, Gypsum Board Partitions: Insulated single conductors in raceway.
D. Concealed Feeders in Concrete, below Floors on Grade, in Crawlspaces: Insulated single conductors in raceway.
E. Exposed Branch Circuits Including in Crawlspaces: Insulated single conductors in raceway.
F. Concealed Branch Circuits in Ceilings, Walls, Gypsum Board Partitions: Insulated single conductors in raceway.
G. Concealed Branch Circuits in Concrete, below Floors on Grade: Insulated single conductors in raceway.
H. Underground Feeders and Branch Circuits: Insulated single conductors in raceway.

3.5 WIRING INSTALLATION

A. Make taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

3.6 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, slotted channel system components.
B. Dry Locations: Steel materials.
C. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four with, **200-lb** minimum design load for each support element.

3.7 SUPPORT INSTALLATION

A. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
B. Size supports for multiple raceway or cable runs so capacity can be increased by a 25 percent minimum in the future.
C. Support individual horizontal single raceways with separate, malleable-iron pipe hangers or clamps.
D. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
E. Secure electrical items and their supports to building structure, using the following methods unless other fastening methods are indicated:
   1. Wood: Wood screws or screw-type nails.
   2. Gypsum Board: Toggle bolts. Seal around sleeves with joint compound, both sides of wall.
   3. Masonry: Toggle bolts on hollow block and expansion bolts on solid block. Seal around sleeves with mortar, both sides of wall.
   4. New Concrete: Concrete inserts with machine screws and bolts.
   5. Existing Concrete: Expansion bolts or threaded studs driven by powder charge and provided with lock washers.
   6. Structural Steel: Threaded studs driven by powder charge and provided with lock washers.
   7. Light Steel Framing: Sheet metal screws.
   8. Fasteners for Damp, Wet, or Weather-Exposed Locations: Stainless steel.
   9. Light Steel: Sheet-metal screws.
   10. Fasteners: Select so load applied to each fastener does not exceed 25 percent of its proof-test load.

3.8 IDENTIFICATION MATERIALS AND DEVICES

A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.
C. Self-Adhesive Identification Products: Clean surfaces before applying.
D. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.
E. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate **6 to 8 inches** below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed **16 inches**, overall, use a single line marker..
F. Install warning, caution, and instruction signs where required to comply with 29 CFR 1910.145, Chapter XVII, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Indoors install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
G. Install engraved-laminated emergency-operating signs with white letters on red background with minimum **3/8-inch-** high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.9 ELECTRICITY-METERING EQUIPMENT

A. Install utility company metering equipment according to utility company's written requirements. Provide grounding and empty conduits as required by utility company.

3.10 FIRESTOPPING

A. Apply firestopping to cable and raceway sleeves and other penetrations of fire-rated floor and wall assemblies to restore original undisturbed fire-resistance ratings of assemblies. Firestopping installation is specified in other sections of these specifications.

3.11 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than **4 inches** larger, in both directions, than supported unit. Follow supported equipment manufacturer's anchorage recommendations and setting templates for anchor-bolt and tie locations, unless otherwise indicated.

3.12 DEMOLITION

A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.
B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.
C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, **2 inches** below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.
D. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.13 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.
B. Repair, refinish and touch up disturbed finish materials and other surfaces to match adjacent undisturbed surfaces.

END OF SECTION 16050

SECTION 16060 - GROUNDING AND BONDING

PART 1 – GENERAL

1.1 SUMMARY
A. This Section includes grounding of electrical systems and equipment. Requirements specified in this Section may be supplemented by requirements of other Sections.

1.2 SUBMITTALS
A. Product Data: For ground rods.
B. Field quality-control test reports.

1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled under UL 467 as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE C2.
C. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Apache Grounding/Erico Inc.
   2. Boggs, Inc.
   3. Chance/Hubbell.
   4. Copperweld Corp.
   5. Dossert Corp.
   6. Erico Inc.; Electrical Products Group.
   7. Framatome Connectors/Burndy Electrical.
   8. Galvan Industries, Inc.
   9. Harger Lightning Protection, Inc.
   10. Hastings Fiber Glass Products, Inc.
   11. Heary Brothers Lightning Protection Co.
   12. Ideal Industries, Inc.
   13. ILSCO.
   14. Kearney/Cooper Power Systems.
   15. Korns, C. C. Co.; Division of Robroy Industries.
   16. Lightning Master Corp.
   17. Lyncole XIT Grounding.
   18. O-Z/Gedney Co.; a business of the EGS Electrical Group.
   19. Raco, Inc.; Division of Hubbell.
   20. Robbins Lightning, Inc.
   21. Salisbury, W. H. & Co.
   22. Superior Grounding Systems, Inc.
   23. Thomas & Betts, Electrical.

2.2 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 16 Section "Conductors and Cables."
B. Equipment Grounding Conductors: Insulated with green-colored insulation.
C. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe. On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.
D. Grounding Electrode Conductors: Stranded cable.
E. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.
F. Bare, Solid-Copper Conductors: ASTM B 3.
G. Assembly of Bare, Stranded-Copper Conductors: ASTM B 8.
H. Bare, Tinned-Copper Conductors: ASTM B 33.
I. Copper Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
J. Copper Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; **1-5/8 inches** wide and **1/16 inch** thick.
K. Tinned-Copper Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; **1-5/8 inches** wide and **1/16 inch** thick.
L. Ground Conductor for Overhead Distribution: No. 4 AWG minimum, soft-drawn copper.
M. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulated spacer.
N. Connectors: Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items. Exothermic-welded type, in kit form, selected per manufacturer's written instructions.

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Rev. #	Date

Project Number	16-0245
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BUILDING SPECIFICATIONS

2.3 GROUNDING ELECTRODES

A. Ground Rods: Sectional type; copper-clad steel.
1. Size: ¾" in diameter **by 120 inches** per section.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.
B. In raceways, use insulated equipment grounding conductors.
C. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections.
D. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
1. Use insulated spacer; space **1 inch** from wall and support from wall **6 inches** above finished floor, unless otherwise indicated.
2. At doors, route the bus up to the top of the door frame, across the top of the doorway, and down to the indicated height above the floor.
E. Underground Grounding Conductors: Use copper conductor, No. 2/0 AWG minimum. Bury at least **24 inches** below grade.
F. Equipment Grounding Conductors: Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
1. Install insulated equipment grounding conductors in feeders and branch circuits.
2. Busway Supply Circuits: Install insulated equipment grounding conductor from the grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.
3. Computer Outlet Circuits: Install insulated equipment grounding conductor in branch-circuit runs from computer-area power panels or power-distribution units.
4. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate grounding conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
5. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install an insulated equipment grounding conductor. Isolate equipment grounding conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
6. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.
7. Air-Duct Equipment Circuits: Install an insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct.
8. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install an insulated equipment grounding conductor to each electric water heater, heat-tracing, and antifrost heating cable. Bond conductor to heater units, piping, connected equipment, and components.
9. Common Ground Bonding with Lightning Protection System: Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
G. Metal Frame Grounding for Buildings: Drive a ground rod at the base of every corner column and at intermediate exterior columns at distances not more than **60 feet** apart. Connect rod to column with an underground grounding conductor. Interconnect ground rods with a continuous underground conductor, extending to existing building grounds, **24 inches** minimum from building foundation. Use copper conductor not less than No. 2/0 AWG for underground conductor, and bury **18 inches** below grade, minimum.
H. Ground Rods: Install at least two rods (twenty feet in length) or three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes.
1. Drive ground rods until tops are **2 inches** below finished floor or final grade, unless otherwise indicated.
2. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except as otherwise indicated. Make connections without exposing steel or damaging copper coating.
I. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
J. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers or supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.
K. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
L. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.
M. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.
N. Connections: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
4. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
5. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
6. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.
7. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.
8. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
9. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.
O. Overhead Line Grounding: Comply with IEEE C2 except where stricter requirements are indicated. Use 2 or more parallel ground rods if a single ground rod electrode resistance to ground exceeds 25 ohms.
1. Drive ground rods to a depth of **12 inches** below finished grade in undisturbed earth.
2. Ground Rod Connections: Use clamp-type connectors listed for the purpose for underground connections and connections to rods.
3. Lightning Arresters: Separate arrester grounds from other grounding conductors.
4. Secondary Neutral and Tank of Transformer: Interconnect and connect to grounding conductor.
5. Protect grounding conductors on surface of wood poles with molding extended from grade level up to and through communication service and transformer spaces.
P. Pad-Mounted Transformers and Switches: Install two ground rods and counterpoise circling pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Use tinned-copper conductor not less than No. 2 AWG for counterpoise and for taps to equipment ground pad. Bury counterpoise not less than **18 inches** below grade and **6 inches** from the foundation.

3.2 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:
1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
2. Test completed grounding system at each location where a maximum ground-resistance level is indicated and at service disconnect enclosure grounding terminal. Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests, by the fall-of-potential method according to IEEE 81.
3. Provide drawings locating each ground rod, ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results. Nominal maximum values are as follows:
a. Equipment Rated 500 kVA and Less: 10 ohms.
b. Equipment Rated 500 to 1000 kVA: 5 ohms.
c. Equipment Rated More Than 1000 kVA: 3 ohms.
d. Overhead Distribution Line Equipment: 25 ohms.
e. Substations and Pad-Mounted Switching Equipment: 5 ohms.
f. Manhole Grounds: 10 ohms.

END OF SECTION 16060

SECTION 16120 - CONDUCTORS AND CABLES

PART 1 – GENERAL

1.1 SUMMARY
A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.
1.2 SUBMITTALS
A. Field quality-control test reports.
1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 CONDUCTORS AND CABLES

A. Available Manufacturers:
1. American Insulated Wire Corp.; a Leviton Company.
2. General Cable Corporation.
3. Senator Wire & Cable Company.
4. Southwire Company.
B. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.
C. Conductor Material: Copper complying with NEMA WC 5 or 7; stranded conductor, solid conductor for No. 10 AWG and smaller, stranded for No. 8 AWG and larger.
D. Conductor Insulation Types: Type THHN-THWN complying with NEMA WC 5 or 7.

2.3 CONNECTORS AND SPLICES

A. Available Manufacturers:
1. AFC Cable Systems, Inc.
2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. 3M Company; Electrical Products Division.
B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 – EXECUTION

3.1 CONDUCTOR AND INSULATION APPLICATIONS

A. Service Entrance: Type THHN-THWN, single conductors in raceway.
B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
C. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
D. Feeders Concealed in Concrete, below Slabs-on-Grade, and in Crawlspaces: Type THHN-THWN, single conductors in raceway.
E. Exposed Branch Circuits, including in Crawlspaces: Type THHN-THWN, single conductors in raceway.
F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
G. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.

3.2 INSTALLATION

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
C. Use pulling means, including fish tape, cable, rope, and basket weave wire/cable grips that will not damage cables or raceway.
D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
E. Support cables according to Division 16 Section "Basic Electrical Materials and Methods."
F. Seal around cables penetrating fire-rated elements according to other sections of this specification.
G. Identify and color-code conductors and cables according to Division 16 Section "Basic Electrical Materials and Methods."
H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
I. Wiring at Outlets: Install conductor at each outlet, with at least **6 inches** of slack.

3.3 FIELD QUALITY CONTROL

A. Testing: Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.
B. Test Reports: Prepare a written report to record the following:
1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 16120

SECTION 16130 - RACEWAYS AND BOXES

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
B. See other sections of this specification for exterior ductbanks, manholes, and underground utility construction.
C. See other sections of this specification for firestopping materials and installation at penetrations through walls, ceilings, and other fire-rated elements.
D. See Division 16 Section "Basic Electrical Materials and Methods" for supports, anchors, and identification products.
E. See Division 16 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings.
1.2 SUBMITTALS
A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets indicated.
B. Shop Drawings: Show fabrication and installation details of components for raceways, fittings, boxes, enclosures, and cabinets.
1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 METAL CONDUIT AND TUBING

A. Available Manufacturers:
1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Anamet Electrical, Inc.; Anaconda Metal Hose.
4. Electri-Flex Co.
5. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
6. LTV Steel Tubular Products Company.
7. Manhattan/CDT/Cole-Flex.
8. O-Z Gedney; Unit of General Signal.
9. Wheatland Tube Co.
B. Rigid Steel Conduit: ANSI C80.1.
C. Aluminum Rigid Conduit: ANSI C80.5.
D. IMC: ANSI C80.6.
E. EMT and Fittings: ANSI C80.3.
1. Fittings: Set-screw type.
F. LFMC: Flexible steel conduit with PVC jacket.
G. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

2.3 NONMETALLIC CONDUIT AND TUBING

A. Available Manufacturers:
1. American International.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corp.
4. Cantex Inc.
5. Certainteed Corp.; Pipe & Plastics Group.
6. Condux International.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; Division of Hubbell, Inc.
12. Spiralduct, Inc./AFC Cable Systems, Inc.
13. Thomas & Betts Corporation.
B. ENT: NEMA TC 13.
C. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.
D. ENT and RNC Fittings: NEMA TC 3; match to conduit or tubing type and material.
E. LFNC: UL 1660.

2.4 METAL WIREWAYS

A. Available Manufacturers:
1. Hoffman.
2. Square D.
B. Material and Construction: Sheet metal sized and shaped as indicated, NEMA 3R.
C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.
E. Wireway Covers: As indicated.
F. Finish: Manufacturer's standard enamel finish.

2.5 NONMETALLIC WIREWAYS

A. Available Manufacturers:
1. Hoffman.
2. Lamson & Sessions; Carlon Electrical Products.
B. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

2.6 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
1. Available Manufacturers:
a. Airey-Thompson Sentinel Lighting; Wiremold Company (The).
b. Thomas & Betts Corporation.
c. Walker Systems, Inc.; Wiremold Company (The).
B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC compound with matte texture and manufacturer's standard color.
1. Available Manufacturers:
a. Butler Manufacturing Co.; Walker Division.
b. Enduro Composite Systems.
c. Hubbell, Inc.; Wiring Device Division.
d. Lamson & Sessions; Carlon Electrical Products.
e. Panduit Corp.
f. Walker Systems, Inc.; Wiremold Company (The).
g. Wiremold Company (The); Electrical Sales Division.
C. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.

2.7 BOXES, ENCLOSURES, AND CABINETS

A. Available Manufacturers:
1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. Emerson/General Signal; Appleton Electric Company.
3. Erickson Electrical Equipment Co.
4. Hoffman.
5. Hubbell, Inc.; Killark Electric Manufacturing Co.
6. O-Z/Gedney; Unit of General Signal.
7. RACO; Division of Hubbell, Inc.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet-PLM Division.
10. Spring City Electrical Manufacturing Co.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.
D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
E. Floor Boxes: Cast metal, fully adjustable, rectangular.
F. Floor Boxes: Nonmetallic, nonadjustable, round.
G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
H. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
I. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.
J. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.8 FACTORY FINISHES

A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.
B. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 – EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors:
1. Exposed: Rigid steel or IMC or PVC80.
2. Concealed: Rigid steel or IMC or PVC40.
3. Underground, Single Run: RNC or PVC40.
4. Underground, Grouped: RNC or PVC40.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
6. Boxes and Enclosures: NEMA 250, Type 3R.
B. Indoors:
1. Exposed: RNC or PVC40/80.
2. Concealed: RNC or PVC40.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except use LFMC in damp or wet locations.
4. Damp or Wet Locations: Rigid steel conduit.
5. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
a. Damp or Wet Locations: NEMA 250, Type 4, nonmetallic.
C. Minimum Raceway Size: **3/4-inch trade size.**
D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
F. Do not install aluminum conduits embedded in or in contact with concrete.

3.2 INSTALLATION

A. Keep raceways at least **6 inches** away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
B. Complete raceway installation before starting conductor installation.
C. Support raceways as specified in Division 16 Section "Basic Electrical Materials and Methods."
D. Install temporary closures to prevent foreign matter from entering raceways.
E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above finished slab.
F. Make bends and offsets so ID is not reduced. Keep legs of bends in same plane and keep straight legs of offsets parallel, unless otherwise indicated.
G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
1. Install concealed raceways with a minimum of bends in shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
H. Raceways Embedded in Slabs: Install in middle 1/3 of slab thickness where practical and leave at least **2 inches** of concrete cover.
1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
2. Space raceways laterally to prevent voids in concrete.
3. Run conduit larger than **1-inch trade size** parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
4. Change from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.
I. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
1. Run parallel or banked raceways together on common supports.
2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
J. Join raceways with fittings designed and approved for that purpose and make joints tight.
1. Use insulating bushings to protect conductors.
K. Tighten set screws of threadless fittings with suitable tools.
L. Terminations:
1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than **200-lb** tensile strength. Leave at least **12 inches** of slack at each end of pull wire.
N. Telephone and Signal System Raceways, **2-Inch Trade Size** and Smaller: In addition to above requirements, install raceways in maximum lengths of **150 feet** and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.
O. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used **6 inches** above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.
P. Flexible Connections: Use maximum of **72 inches** of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.
Q. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.
R. Set floor boxes level. Trim after installation to fit flush with finished floor surface.
S. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

3.3 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 16130

SECTION 16140 - WIRING DEVICES

PART 1 – GENERAL

1.1 SUMMARY
A. This Section includes the following:
1. Single and duplex receptacles, ground-fault circuit interrupters, and integral surge suppression units.
2. Single- and double-pole snap switches and dimmer switches.
3. Device wall plates.
4. Floor service outlets, poke-through assemblies, service poles, and multioutlet assemblies.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
C. Samples: One for each type of device and wall plate specified, in each color specified.
D. Field quality-control test reports.

1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Wiring Devices:
a. Bryant Electric, Inc./Hubbell Subsidiary.
b. Eagle Electric Manufacturing Co., Inc.
c. Hubbell Incorporated; Wiring Device-Kellems.
d. Leviton Mfg. Company Inc.
e. Pass & Seymour/Legrand; Wiring Devices Div.
2. Multioutlet Assemblies:
a. Hubbell Incorporated; Wiring Device-Kellems.
b. Wiremold Company (The).
3. Poke-Through, Floor Service Outlets and Telephone/Power Poles:
a. Hubbell Incorporated; Wiring Device-Kellems.
b. Pass & Seymour/Legrand; Wiring Devices Div.
c. Square D/Groupe Schneider NA.
d. Thomas & Betts Corporation.
e. Wiremold Company (The).

2.2 RECEPTACLES

A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498.
B. GFCI Receptacles: Straight blade, non-feed-through type, Heavy-Duty grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a **2-3/4-inch** – deep outlet box without an adapter.

2.3 SWITCHES

A. Single- and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20.
B. Snap Switches: Heavy-Duty grade, quiet type.
C. Combination Switch and Receptacle: Both devices in a single gang unit with plaster ears and removable tab connector that permit separate or common feed connection.
1. Switch: 20 A, 120/277-V ac.
2. Receptacle: NEMA WD 6, Configuration 5-15R.
D. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible frequency and EMI/RFI filters.
1. Control: Continuously adjustable toggle switch with single-pole or three-way switching to suit connections.
2. Incandescent Lamp Dimmers: Modular, 120 V, 60 Hz with continuously adjustable rotary knob, toggle switch, or slider; single pole with soft tap or other quiet switch; EMI/RFI filter to eliminate interference; and **5-inch** wire connecting leads.
3. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.4 WALL PLATES

A. Single and combination types to match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
3. Material for Wet Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in "wet locations."

2.5 MULTIOUTLET ASSEMBLIES

A. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
B. Raceway Material: Metal, with manufacturer's standard finish.
C. Wire: No. 12 AWG.

2.6 FINISHES

A. Color:
1. Wiring Devices Connected to Normal Power System: Ivory, unless otherwise indicated or required by NFPA 70.
2. TVSS Devices: Blue.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install devices and assemblies level, plumb, and square with building lines.
B. Install wall dimmers to achieve indicated rating after derating for ganging.
C. Install unshared neutral conductors on line and load side of dimmers.
D. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
E. Remove wall plates and protect devices and assemblies during painting.
F. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 IDENTIFICATION

A. Comply with Division 16 Section "Basic Electrical Materials and Methods."
1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 CONNECTIONS

A. Ground equipment according to Division 16 Section "Grounding and Bonding."
B. Connect wiring according to Division 16 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION 16140

SECTION 16145 - LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following:
1. Time switches.
2. Photoelectric relays.
3. Occupancy sensors.
4. Multipole lighting relays.
5. Multipole lighting contactors.

1.2 SUBMITTALS

A. Product Data: For each type of lighting control device indicated.
B. Field quality-control test reports.
C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with 47 CFR 15, Subparts A and B, for Class A digital devices.
C. Comply with NFPA 70.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Contactors and Relays:
a. Automatic Switch Co.
b. Challenger Electrical Equipment Corp.
c. Cutler-Hammer Products; Eaton Corporation.
d. Furnas Electric Co.
e. GE Lighting Controls.
f. Hubbell Lighting, Inc.
g. Siemens Energy and Automation, Inc.
h. Square D Co.; Power Management Organization.
i. Zenith Controls, Inc.
2. Time Switches:
a. Diversified Electronics, Inc.
b. Grasslin Controls Corp.
c. Intermatic, Inc.
d. Leviton Manufacturing.
e. Paragon Electric Co., Inc.
f. Tork, Inc.
g. Zenith Controls, Inc.
3. Photoelectric Relays:
a. Allen-Bradley/Rockwell Automation.
b. Area Lighting Research, Inc.
c. Fisher Pierce.
d. Grasslin Controls, Corp.
e. Intermatic, Inc.
f. Paragon Electric Co., Inc.
g. Rhodes, M H , Inc.
h. SSAC, Inc.
i. Tork, Inc.

2.2 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS

A. Line-Voltage Surge Protection: Include in all 120- and 277-V solid-state equipment. Comply with UL 1449 and with ANSI C62.41 for Category A locations.

2.3 TIME SWITCHES

A. Description: Solid-state programmable type with alphanumeric display complying with UL 917.
1. Astronomic dial.
2. Two contacts, rated 30 A at 277-V ac, unless otherwise indicated.
3. Two pilot-duty contacts, rated 2 A at 240-V ac, unless otherwise indicated.
4. Eight-day program uniquely programmable for each weekday and holidays.
5. Skip-day mode.

2.4 PHOTOELECTRIC RELAYS

A. Outdoor Sealed Units: Solid state, with single-pole, double-throw dry contacts rated to operate connected relay or contactor coils or microprocessor input, and complying with UL 773A Weathertight housing, resistant to high temperatures and equipped with sun-glare shield.
1. Light-Level Monitoring Range: **0 to 3500 fc**, with an adjustment for turn-on/turn-off levels.
2. Time Delay: Prevents false operation.

2.5 MULTIPOLE CONTACTORS AND RELAYS

A. Description: Electrically operated and mechanically held, and complying with UL 508 and NEMA ICS 2.
1. Listed Current Rating for Switching: Consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballasts with 15 percent or less total harmonic distortion of normal load current).
2. Control Coil Voltage: Match control power source.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Mounting heights indicated are to bottom of unit for suspended devices and to center of unit for wall-mounting devices.

3.2 CONTROL WIRING INSTALLATION

A. Install wiring between sensing and control devices according to manufacturer's written instructions and as specified in Division 16 Section "Basic Electrical Materials and Methods."
B. Bundle, train, and support wiring in enclosures.

3.3 IDENTIFICATION

A. Identify components and power and control wiring according to Division 16 Section "Basic Electrical Materials and Methods."

3.4 FIELD QUALITY CONTROL

A. Inspect control components for defects and physical damage, testing laboratory labeling, and nameplate compliance with the Contract Documents.
B. Electrical Tests: Use particular caution when testing devices containing solid-state components. Perform the following according to manufacturer's written instructions:
1. Continuity tests of circuits.
2. Operational Tests: Set and operate devices to demonstrate their functions and capabilities in a methodical sequence that cues and reproduces actual operating functions. Record control settings, operations, and functional observations.
3. Correct deficiencies, make necessary adjustments, and retest. Verify that specified requirements are met.

END OF SECTION 16145

SECTION 16410 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes individually mounted enclosed switches and circuit breakers, rated 600 V and less, used for disconnecting and protection functions.
B. See Division 16 Section "Fuses" for fuses for fusible disconnect switches.
1.2 SUBMITTALS
A. Product Data: For each type of switch and circuit breaker indicated.
B. Shop Drawings: Include wiring diagrams for shunt-tripped circuit breakers.
C. Field quality-control test reports.
D. Operation and maintenance data.
1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Source Limitations: Obtain switches and circuit breakers through one source from a single manufacturer.
C. Comply with NFPA 70.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Corp.; Cutler-Hammer Products.
2. General Electric Co.; Electrical Distribution & Control Division.
3. Siemens Energy & Automation, Inc.
4. Square D Co.

2.2 ENCLOSED SWITCHES

A. Enclosed, Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle, interlocked with cover.
B. Enclosed, Fusible Switch, 800 A and Smaller: NEMA KS 1, Type HD, with clips to accommodate specified fuses, and lockable handle, interlocked with cover.

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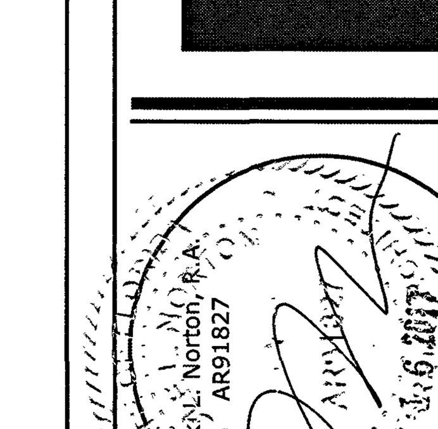

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Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A1.12
	Building Specs

S:\02_Projects\03_Commercial\2016\16-0245 St. Lucie Beach Building\02_Drawings\01_Project Drawings\03_Construction Documents\16-0245 - BID SET SPECIFICATIONS - 11-15-17.dwg, 11/16/2017 4:50:51 PM, Lightning PDF Professional

BUILDING SPECIFICATIONS

2.3 ENCLOSED CIRCUIT BREAKERS

A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents.
   1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
   2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
   3. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
   4. GFCI Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.

B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
   1. Lugs: Suitable for number, size, trip ratings, and material of conductors.
   2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
   3. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
   4. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.

2.4 ENCLOSURES

A. Listed for environmental conditions of installed locations, including:
   1. Outdoor Locations: NEMA 250, Type 3R.
   2. Food Service Areas: NEMA 250, Type 4X, stainless steel.
   3. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Temporary Provisions: Remove temporary lifting provisions and blocking of moving parts.

B. Identify components; provide warning signs as specified in Division 16 Section "Basic Electrical Materials and Methods."

3.2 FIELD QUALITY CONTROL

A. Testing: After installing disconnect switches and circuit breakers and after electrical circuits have been energized, demonstrate product capability and compliance with requirements.

B. Inspections and Tests for Switches and Circuit Breakers: Make internal and external inspections and perform tests, including the following:
   1. Inspect for freedom from physical damage, proper unit rating, mechanical condition, enclosure integrity, cover operation, unit anchorage, clearances, and tightness of electrical connections. If a loose electrical connection is observed on any unit, check each electrical connection for each switch and circuit breaker with a torque wrench for compliance with manufacturer's torquing instructions.
   2. Test insulation resistance of each pole, phase-to-phase, and phase-to-ground, following manufacturer's written instructions. Test insulation resistance of shunt trip circuits. Use 500-V minimum test voltage for units and circuits rated up to 250 V, 1000-V minimum test voltage for units rated more than 250 V. Measured insulation resistance must be 25 megohms, minimum, for switches rated up to 250 V, and 100 megohms, minimum, for switches rated more than 250 V.
   3. Test cover and other interlocks and interlock release devices for proper operation.

C. Additional Inspections and Tests for Switches: Include the following:
   1. Inspect for proper rating and fuse provisions.
   2. Check adequacy and integrity of fuseholders by removing and installing fuses.
   3. Check integrity of phase barriers.
   4. Inspect blade alignment visually while operating switch to observe adequacy of blade pressure.

D. Additional Inspections and Tests for Circuit Breakers: Include the following:
   1. Inspect for proper frame, trip, and fault current interrupting rating.
   2. Test shunt trip devices, circuits, and actuating components for proper operation.

E. Correct defective and malfunctioning units on-site, where possible, and reinspect and retest to demonstrate compliance; otherwise, remove and replace with new units and retest.

END OF SECTION 16410

SECTION 16511 - INTERIOR LIGHTING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Interior lighting fixtures with lamps and ballasts.
   2. Lighting fixtures mounted on exterior building surfaces.

1.2 SUBMITTALS

A. Product Data: For each type of lighting fixture scheduled, arranged in order of fixture designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Show details of nonstandard or custom fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.
   1. Include wiring diagrams.

C. Product Certificates: For each type of ballast for dimmer-controlled fixtures, signed by product manufacturer.

D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

C. FMG Compliance: Fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FMG.

D. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
   2. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 LIGHTING FIXTURES

A. Fixture Drawing E-7:
   1. Available Products:
      a. As specified on drawings
   2. Voltage: 120/240-V ac.
   3. Mounting: As specified on drawings
   4. Lamps: As specified on drawings.>

2.3 FLUORESCENT LAMP BALLASTS

A. Description: Include the following features, unless otherwise indicated:
   1. Designed for type and quantity of lamps indicated at full light output.
   2. Externally fused with slow-blow type rated between 2.65 and 3.0 times the line current.

B. Electronic ballasts for linear lamps shall include the following features, unless otherwise indicated:
   1. Comply with NEMA C82.11.
   2. Ballast Type: Instant start, unless otherwise indicated.
   3. Programmed Start: Ballasts with two-step lamp starting to extend life of frequently started lamps.
   4. Total harmonic distortion rating of less than 10 percent according to NEMA C82.11.
   5. Transient Voltage Protection: IEEE C62.41, Category A.
   6. Parallel Lamp Circuits: Multiple lamp ballasts connected to maintain full light output on surviving lamps if one or more lamps fail.

C. Ballasts for compact lamps in recessed fixtures shall have the following features, unless otherwise indicated:
   1. Type: Electronic.
   2. Power Factor: 90 percent, minimum.
   3. Flicker: Less than 5 percent.
   4. Lamp end-of-life detection and shutdown circuit.

D. Ballasts for compact lamps in nonrecessed fixtures shall include the following features, unless otherwise indicated:
   1. Power Factor: 90 percent, minimum.
   2. Ballast Coil Temperature: 65 deg C, maximum.
   3. Transient Protection: Comply with IEEE C62.41 for Category A1 locations.

2.4 FLUORESCENT LAMPS

A. Low-Mercury Lamps: Comply with Federal toxic characteristic leaching procedure test, and yield less than 0.2 mg of mercury per liter, when tested according to NEMA LL 1.

B. T8 rapid-start low-mercury lamps, rated 32 W maximum, 2800 initial lumens (minimum), CRI of 75 (minimum), color temperature of 3500 K, and average rated life of 20,000 hours, unless otherwise indicated.

C. T8 rapid-start low-mercury lamps, rated 17 W maximum, nominal length of **24 inches**, 1300 initial lumens (minimum), CRI of 75 (minimum), color temperature of 3500 K, and average rated life of 20,000 hours, unless otherwise indicated.

D. Compact Fluorescent Lamps: CRI 80 (minimum), color temperature 3500 , average rated life of 10,000 hours at 3 hours operation per start, unless otherwise indicated.
   1. T4, Twin Tube: Rated 5 W, 250 initial lumens (minimum).
   2. T4, Twin Tube: Rated 7 W, 400 initial lumens (minimum).
   3. T4, Twin Tube: Rated 9 W, 600 initial lumens (minimum).
   4. T4, Twin Tube: Rated 13 W, 825 initial lumens (minimum).
   5. T4, Double-Twin Tube: Rated 13 W, 900 initial lumens (minimum).
   6. T4, Double-Twin Tube: Rated 18 W, 1200 initial lumens (minimum).
   7. T4, Double-Twin Tube: Rated 26 W, 1800 initial lumens (minimum).

2.5 FIXTURE SUPPORT COMPONENTS

A. Comply with Division 16 Section "Basic Electrical Materials and Methods" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: **1/2-inch** steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, **1/2-inch** steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated, 12 gage wire size>.

E. Wires For Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, **12 gage**.

F. Rod Hangers: **3/16-inch** minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Support for Fixtures in or on Grid-Type Suspended Ceilings: Use grid for support.
   1. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than **6 inches** from fixture corners.
   2. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
   3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two **3/4-inch** metal channels spanning and secured to ceiling tees.
   4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.

C. Suspended Fixture Support: As follows:
   1. Pendants and Rods: Where longer than **48 inches**, brace to limit swinging.
   2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
   3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
   4. Continuous Rows: Suspend from cable.

D. Air-Handling Fixtures: Install with dampers closed and ready for adjustment.

E. Adjust aimable fixtures to provide required light intensities.

END OF SECTION 16511

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NOV 16 2017

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Rev. #	Date

Project Number	16-0245
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LIFE SAFETY

FLORIDA BUILDING CODE 2014 EDITION, CH. 10	
OCCUPANCY	GROUP 'U' - UTILITY & MISCELLANEOUS
MAXIMUM TRAVEL DISTANCE TO EXIT	200' (UNSPRINKLERED)
MAXIMUM DEAD END CORRIDOR	20'
MINIMUM CORRIDOR WIDTH	44 INCHES CLEAR
MINIMUM CLEAR OPENING OF DOORS	32 INCHES CLEAR
MINIMUM STAIR WIDTH	44 INCHES CLEAR (50 OR MORE PEOPLE)
EGRESS WIDTH PER PERSON 3/0 WIDE DOOR= 32" CLEAR 2-3/0 WIDE DOORS= 68" CLEAR	0.2/FLOOR 0.3/STAIR 170 PERSONS/OPENING 340 PERSONS/OPENING

AREA & OCCUPANT LOAD SUMMARY (TABLE 1004.1.1)

Total Gross Area: 1,046 SF

SPACE	GROSS AREA S.F.	AREA S.F./OCCUPANT	PERSONS
WOMEN 102	177.50	100 GSF	2
MEN 104	177.50	100 GSF	2
STORAGE 106	452.00	300 GSF	2
TOTAL			6
TOTAL OCCUPIED S.F. LOAD	807.00		

WALL LEGEND

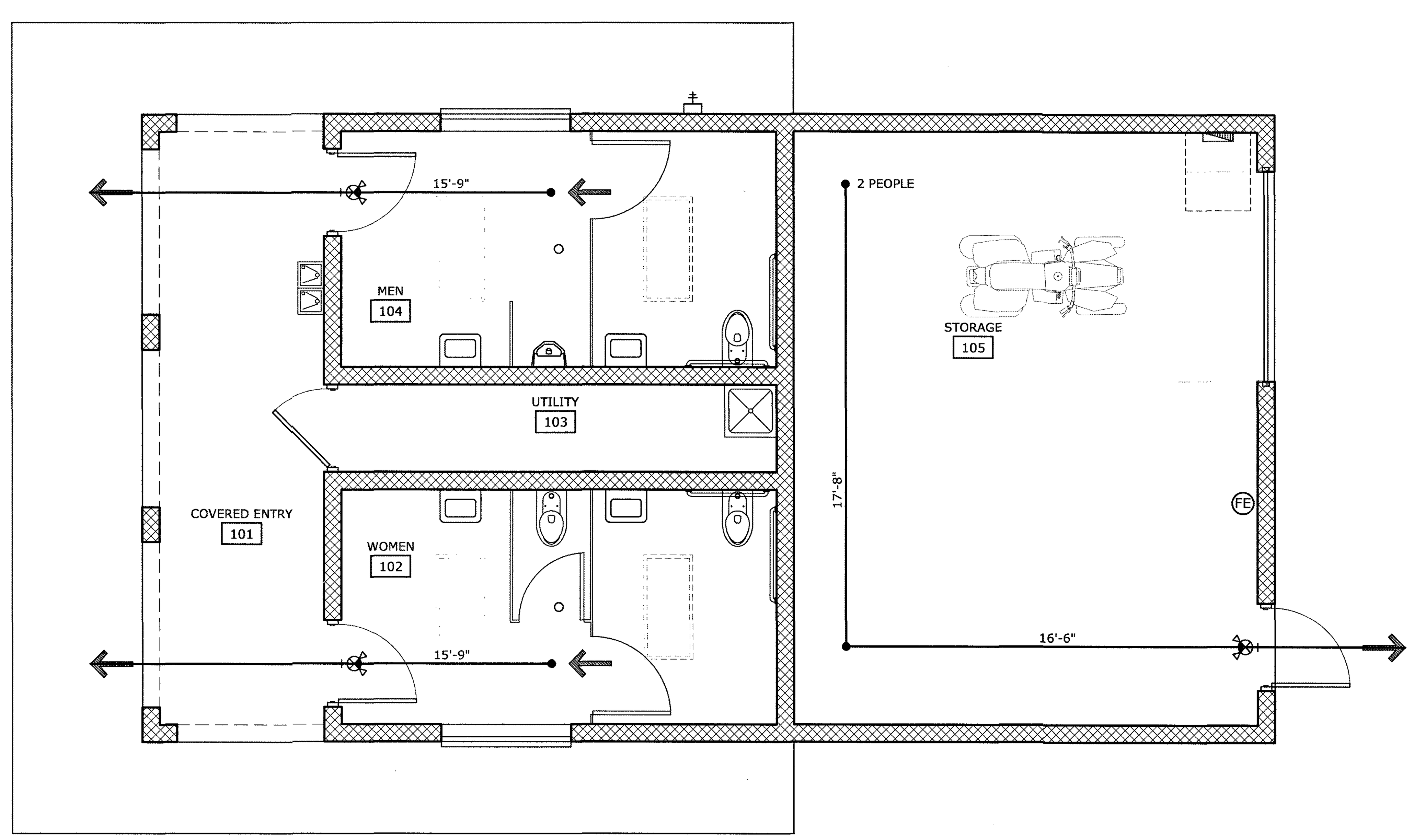
NEW CMU WALLS

SYMBOLS

EMERGENCY LIGHT FIXTURE

EXIT LIGHT

FE FIRE EXTINGUISHER - 2A-10BC



1 - LIFE SAFETY PLAN

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

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(772) 462-2567

Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A2.0
	Life Safety Plan

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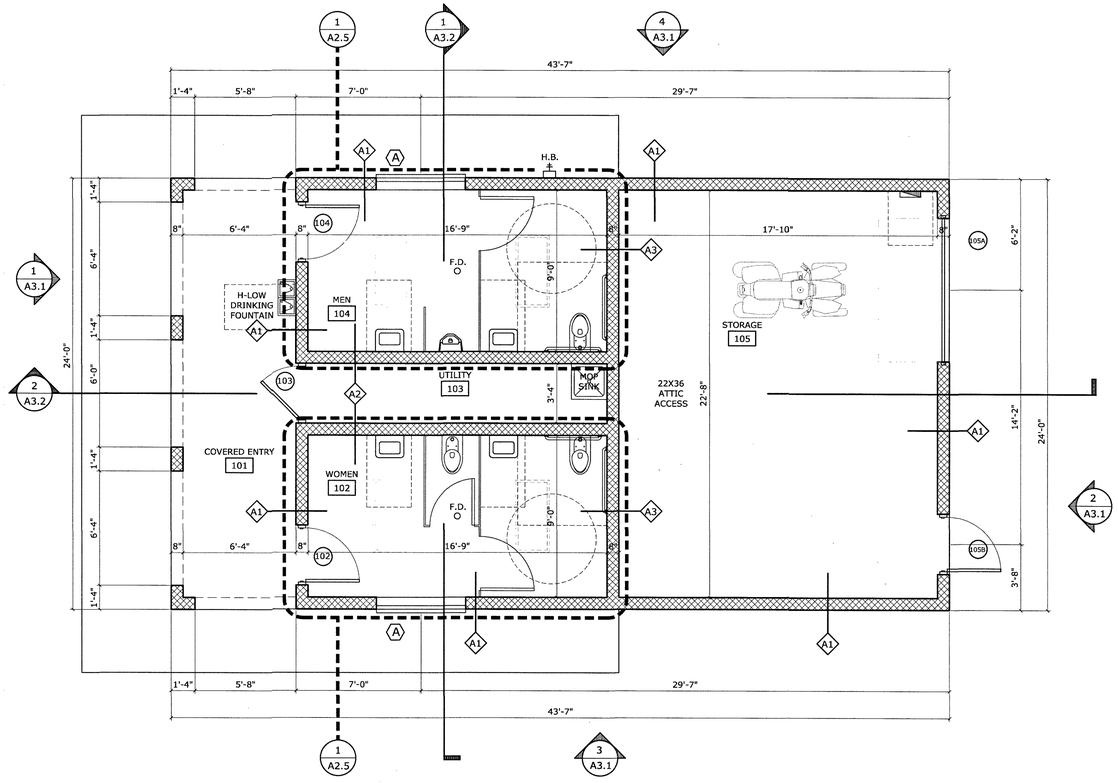


1 - FLOOR PLAN

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

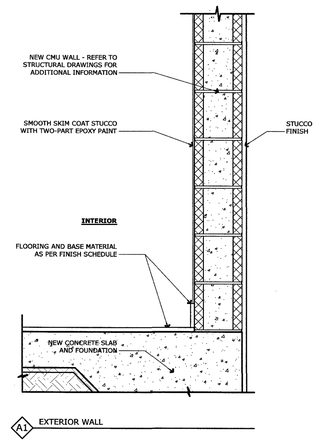
N

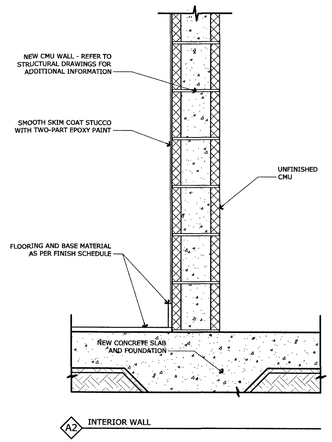
WALL LEGEND

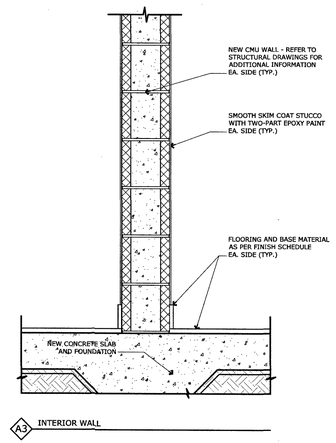
8" CMU WALLS. REFER TO WALL TYPES FOR INTERIOR AND EXTERIOR WALL FINISHES.

GENERAL NOTES

1. Dimensions are to framing, not finish.
2. Field verify all existing utilities prior to construction.
3. Refer to General Notes on cover sheet for full scope of work.
4. A truss placard shall be installed on the exterior of the building as per FSS 633.027.
5. All elevations referenced on these drawings are base on top of ground floor slab - 0'-0"
6. Verify all dimensions with Architectural Drawings prior to construction. Notify Architect/Engineer of any discrepancies.







2 - WALL TYPES

SCALE: 1" = 1'-0"

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STATE OF FLORIDA
NOV 15 2017

Waveland Beach Park - Restroom Facility

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Rev. #	Date

Project Number	16-0245
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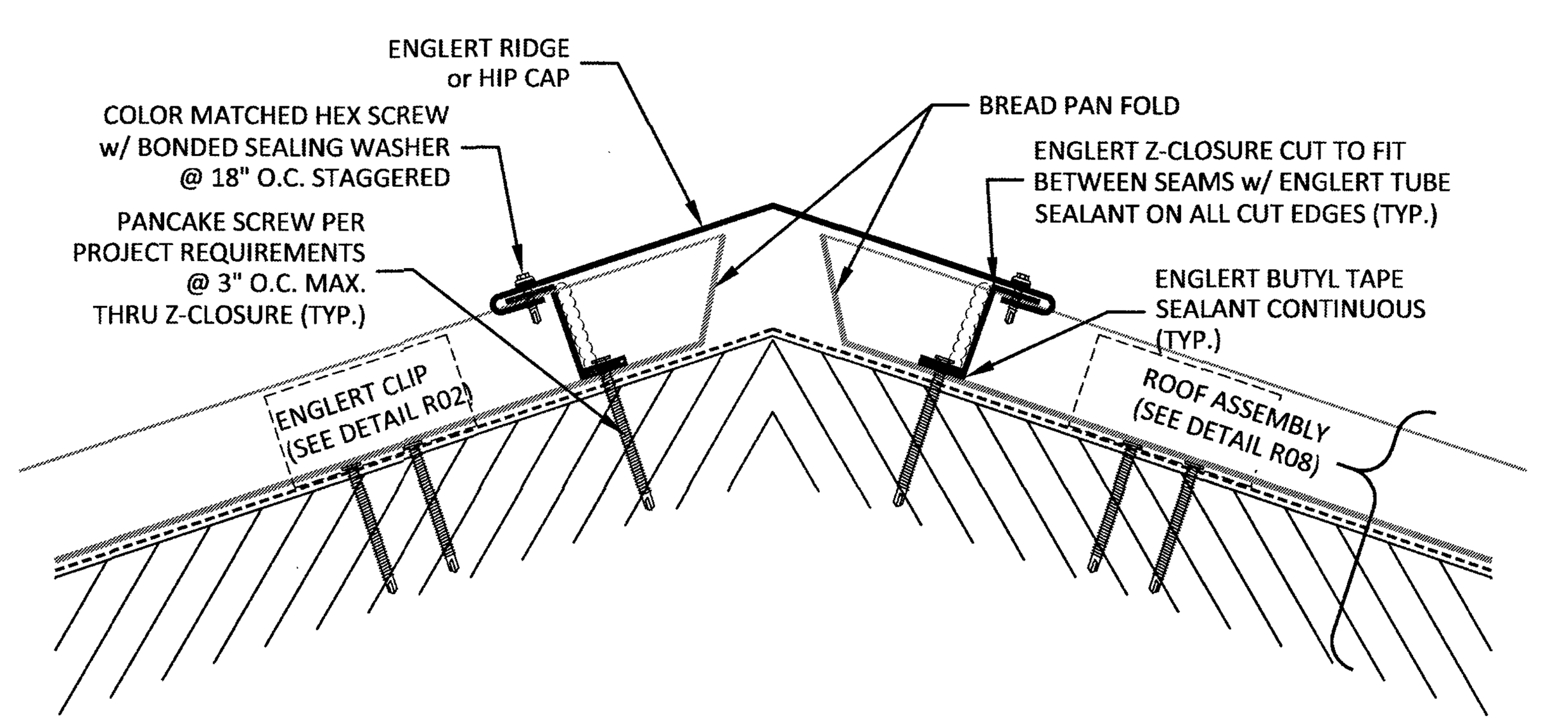
Floor Plan

ROOF SPECIFICATION

Roof shall be Englert 1300 Series, .032 gauge aluminum standing seam metal roof with Englert HT Peel-N-Stick roof underlayment. Roofing shall be installed as per manufacturer specifications and in accordance with the current product approval.

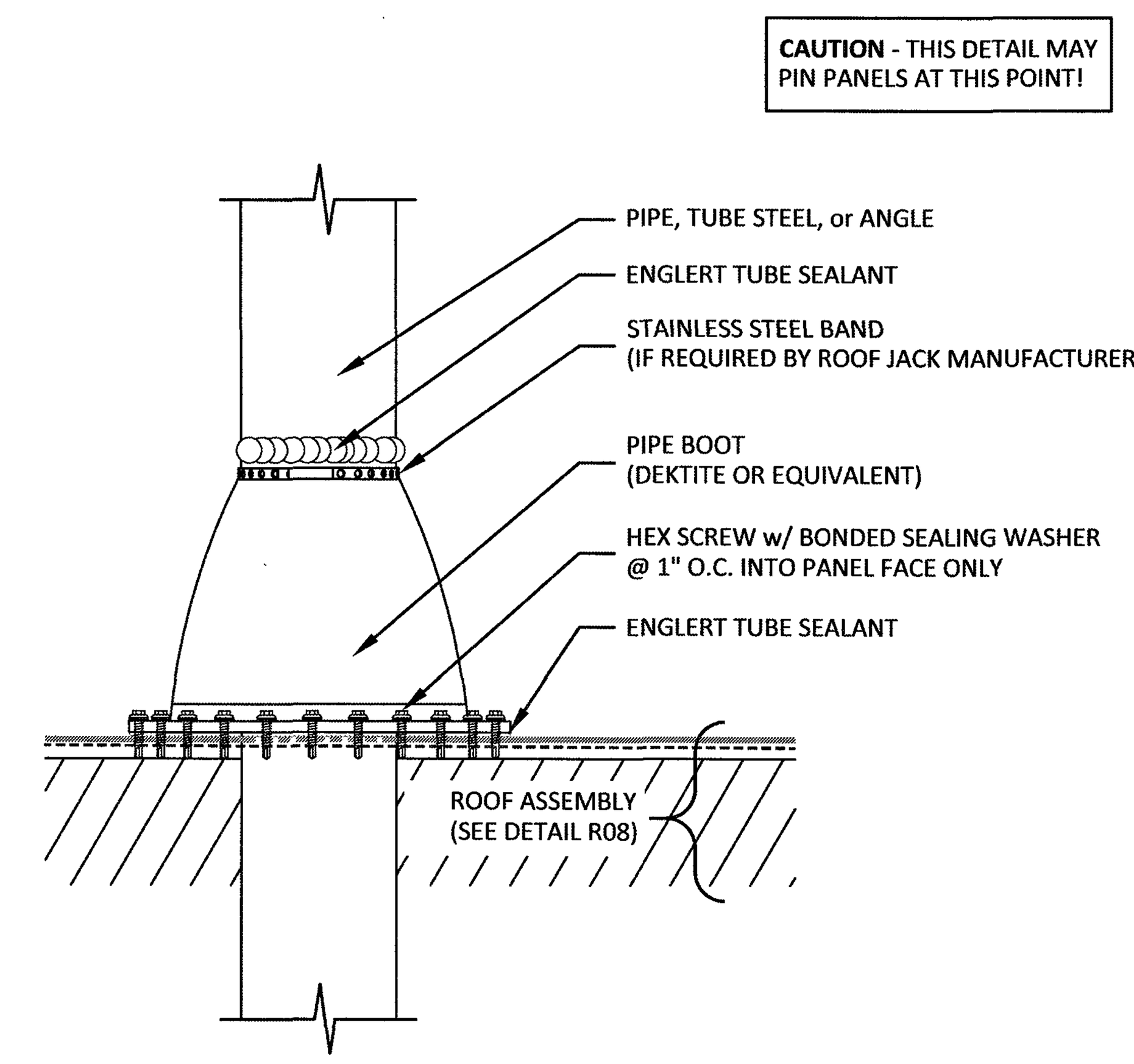
GENERAL NOTES

1. Standing seam metal roof installed as per manufacturer specifications, color to be selected by Owner. Provide samples for Owner approval prior to installation.
2. R-30 spray foam insulation at under side of roof truss at Storage 105. Provide a spray on type thermal ignition barrier to the underside of foam insulation.
3. Refer to Reflected Ceiling Plan for attic access location.
4. Refer to Structural drawings for additional information.



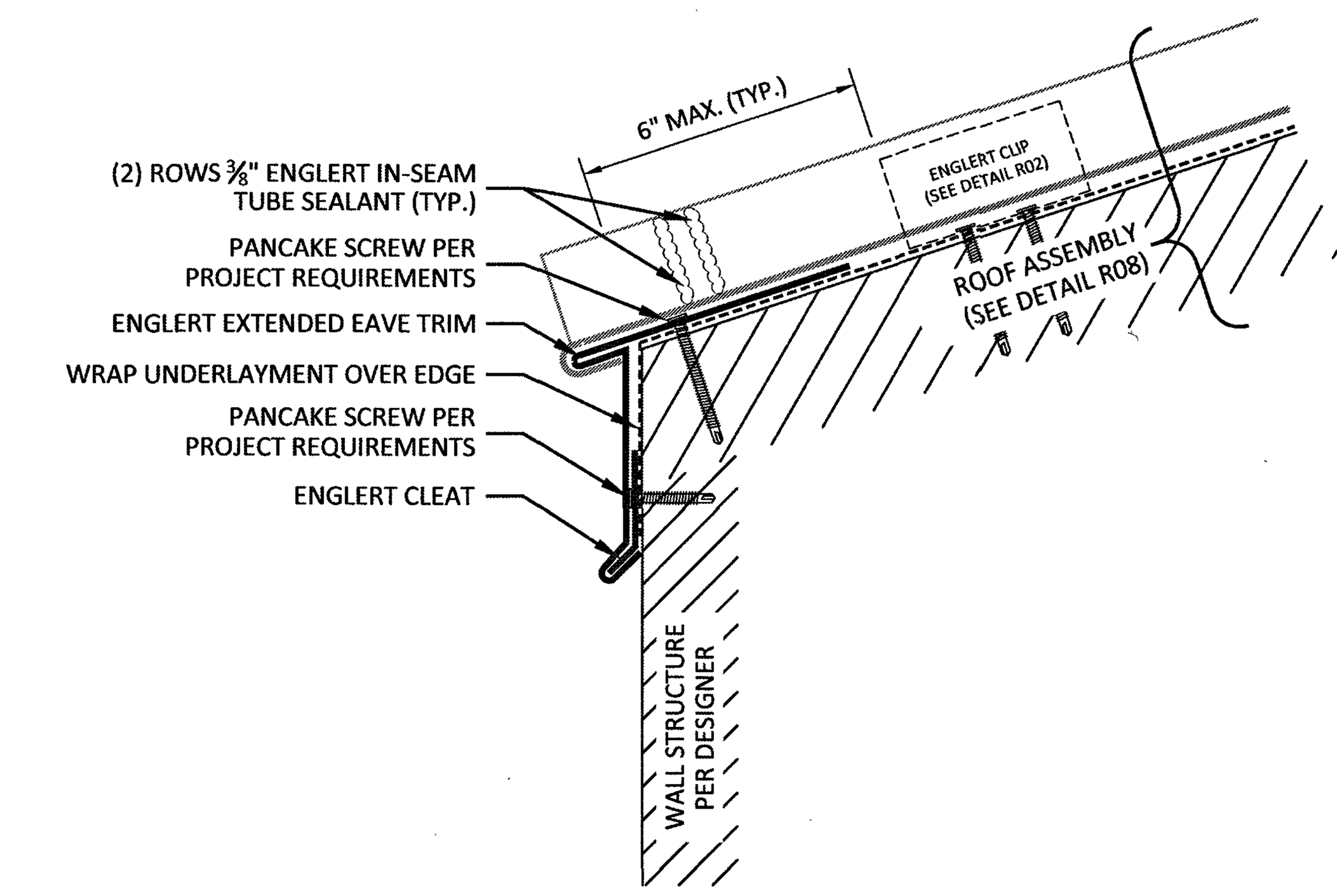
2 - RIDGE CAP DETAIL

SCALE: 3" = 1'-0"



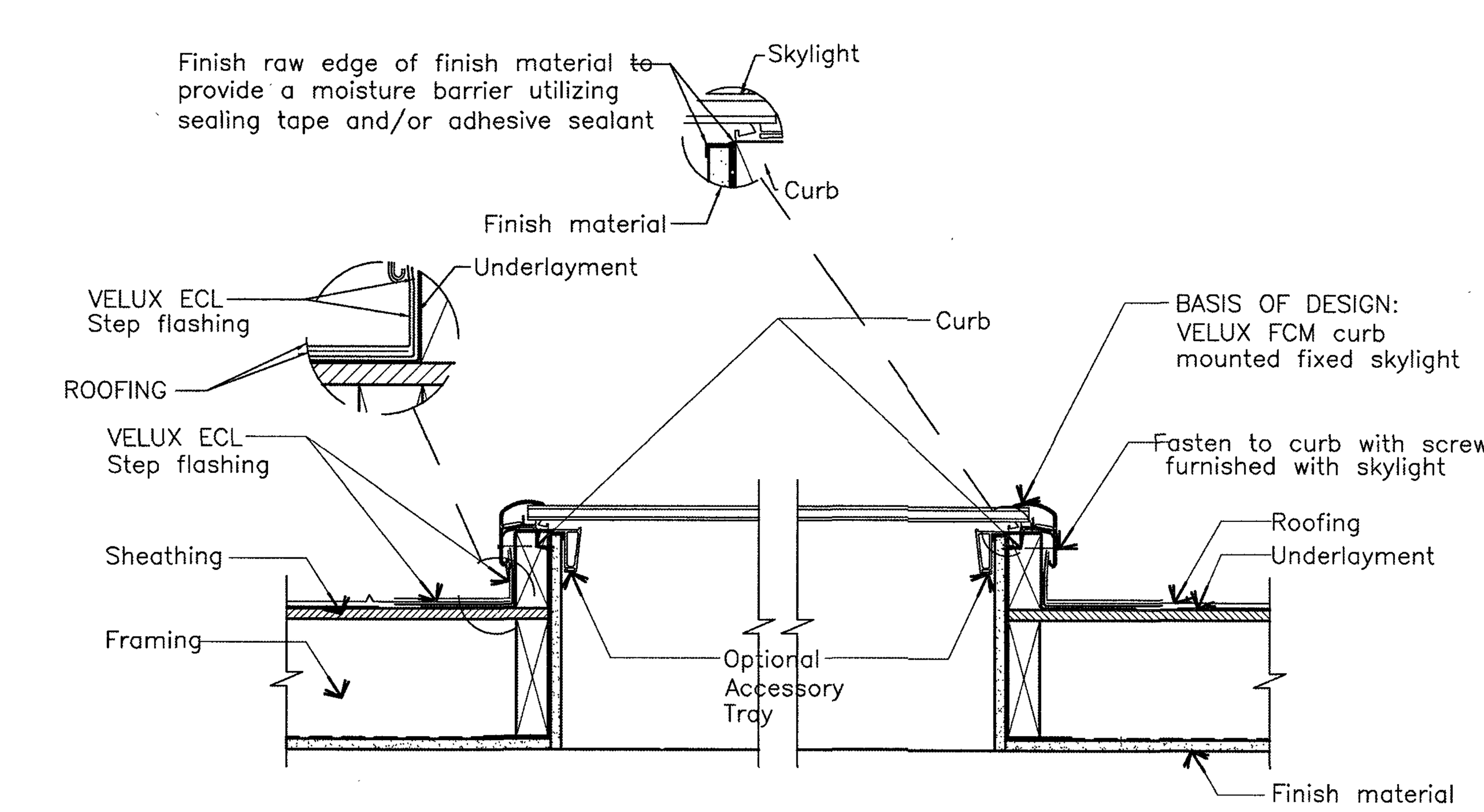
3 - PITCH PIPE DETAIL

SCALE: 3" = 1'-0"



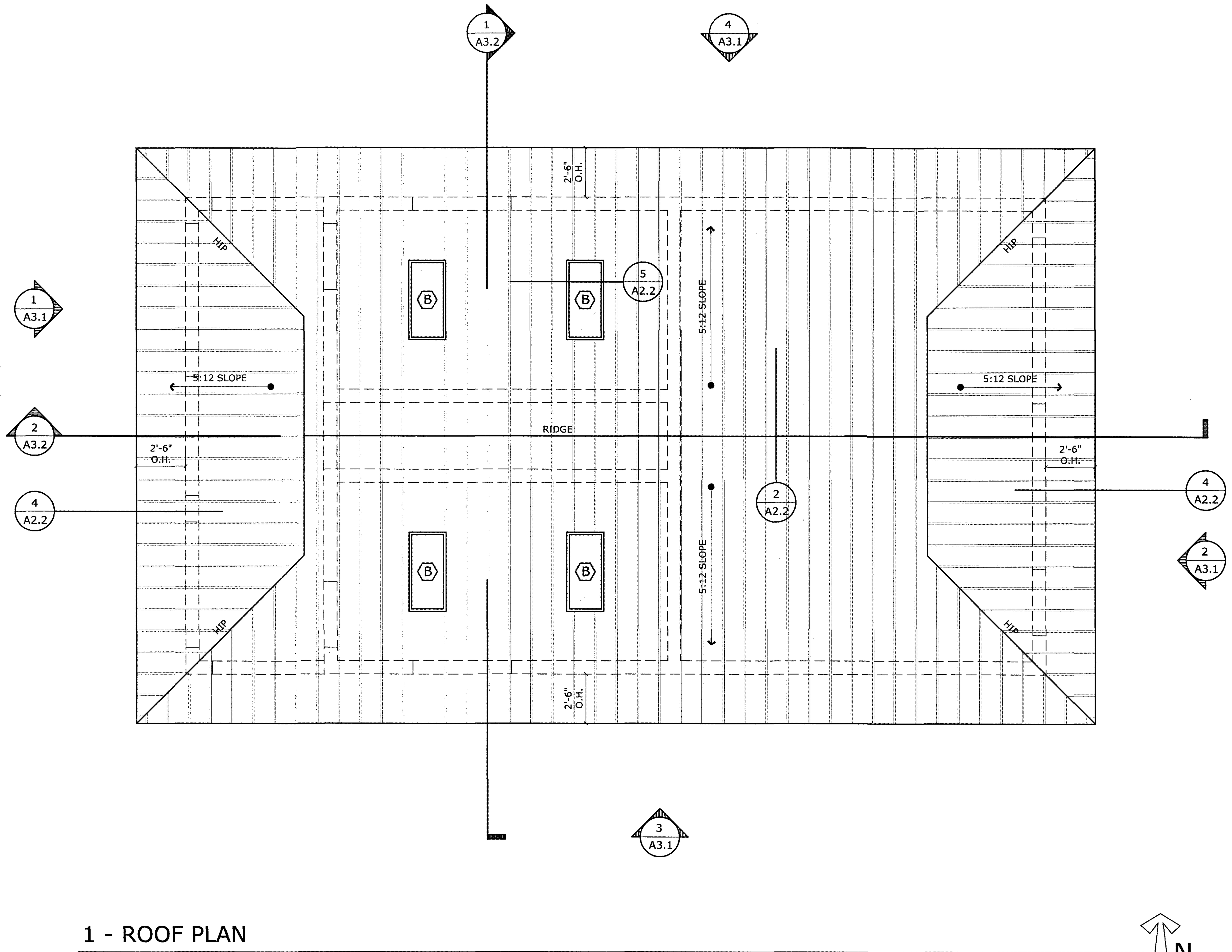
4 - EAVE DETAIL

SCALE: 3" = 1'-0"



5 - SKYLIGHT DETAIL

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



1 - ROOF PLAN

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

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Rev. #	Date

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	Roof Plan

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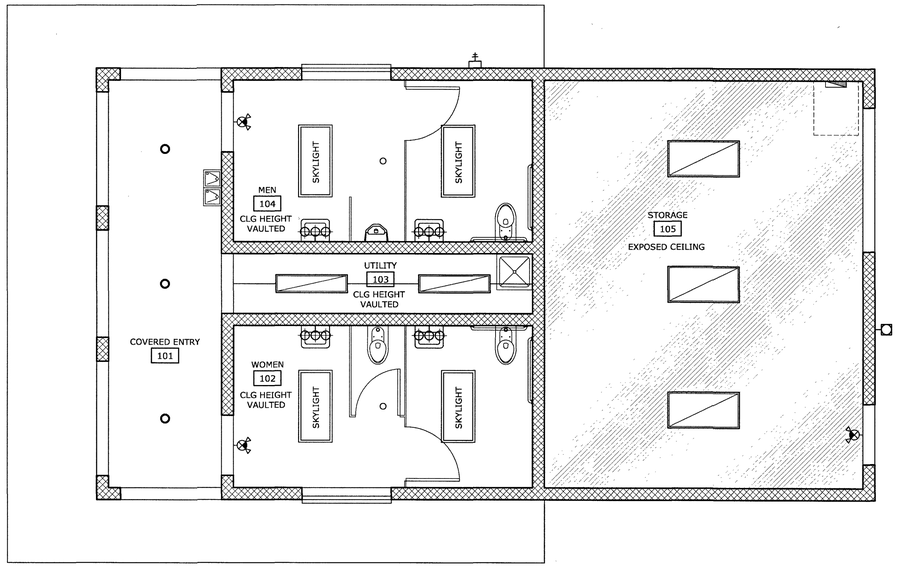
RCP LEGEND

- Hardipanel Ceiling with Cedarmill Finish Painted
- Exposed Ceiling
- 2X4/1X4 Fluorescent Light Fixtures
- Emergency Light Fixture
- Exit Light
- Wall Mounted Interior Decorative Light
- Recessed Can Fixtures
- Exhaust Fan
- Exterior Grade Light Fixture



1 - REFLECTED CEILING PLAN

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

N

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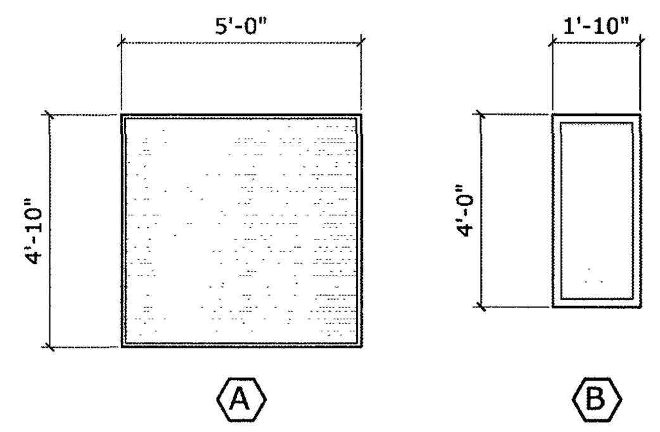
Reflected Ceiling Plan

WINDOW SCHEDULE

WIN. TYPE	SIZE		ROUGH OPENING		MUTTINS		FINISH		MANUFACTURER (STYLE)	MODEL #/SERIES	TYPE	NOTES: (SEE BELOW)
	WIDTH	HEIGHT	WIDTH	HEIGHT	COLOR	ELEV.	WINDOW	HARDW.				
A	5'-0"	4'-10"	VERIFY	VERIFY	-	A	-	-	ALUMINUM LOUVER	-	-	1,2,3,4,5
B	1'-10"	4'-0"	VERIFY	VERIFY	-	B	-	-	SKYLIGHT	-	-	1,2,3,4

NOTES

1. VERIFY ROUGH OPENINGS WITH MANUFACTURER.
2. ALL DIMENSIONS ARE NOMINAL (MASONRY OR ROUGH) DIMENSIONS, SHOP DRAWINGS TO BE PROVIDED FOR ALL UNITS ALONG WITH FIELD DIMENSIONS.
3. REFER TO BUILDING ELEVATIONS AND WINDOW TYPES, WINDOW CONFIGURATIONS & LOCATIONS.
4. HURRICANE IMPACT RESISTANT SKYLIGHTS BETWEEN TRUSS OPENINGS.
5. PROVIDE STAINLESS STEEL BIRD SCREEN ON LOUVERS



WINDOW/LOUVER ELEVATIONS

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

FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR	WALL BASE	WALLS				OTHER FINISHES	CEILINGS		CROWN MOULDING		NOTES: (SEE BELOW)
		TYPE	TYPE	N	E	S	W		MAT'L	HT./A.F.F.	FINISH	MODEL #	
101	COVERED ENTRY	BFC	-	-	-	STUC	-	-	HP	9'-6"	-	-	1,2
102	WOMEN	DQ	DQ BASE	PSF	PSF	PSF	PSF	-	HP	VARIES	-	-	1,2
103	UTILITY	CONC	-	UNFIN	UNFIN	UNFIN	UNFIN	-	HP	VARIES	-	-	1,2
104	MEN	DQ	DQ BASE	PSF	PSF	PSF	PSF	-	HP	VARIES	-	-	1,2
105	STORAGE	CONC	WD	PSF	PSF	PSF	PSF	-	PMRGW	9'-6"	-	-	1,2
-	-	-	-	-	-	-	-	-	-	-	-	-	-

FINISH LEGEND

BFC	BROOM FINISHED CONCRETE	CT COVE	4" COVE TILE BASE - AS SELECTED BY OWNER	PMRGW	PAINTED MOISTURE-RESISTANT GYP. WALLBD
CT	CERAMIC TILE FINISH AS SELECTED BY OWNER	DQ BASE	DURA-QUARTZ BASE COLOR TO MATCH FLOOR	UNFIN	UNFINISHED WALLS
DQ	DURA-QUARTZ - COLOR AS SELECTED BY OWNER	PSF	EPOXY PAINTED STUCCO FINISH	HP	HARDIPANEL CEILING WITH CEDARMILL FINISH PAINTED
CONC	TROWELED FINISH SMOOTH CONCRETE FLOOR	WD	1X6 WOOD BASEBOARD PAINTED		

NOTES

1. All finishes shall be approved by Owner and installed by GC. GC to verify finish schedule with Owner prior to installation.
2. Tape, mud and sand drywall to smooth finish. Paint (1) coats of primer and (2) coat semi-gloss for walls and ceiling. Paint to be selected by Owner.
3. Provide Durock at restroom shower walls.

DOOR SCHEDULE

DOOR NO.	SIZE			DOOR						FRAME			NOTES: (SEE BELOW)
	WIDTH	HEIGHT	THICK	MAT.	FINISH	HDW.	TYPE	ELEV.	MDL.	MAT.	FINISH	T'HOLD	
102	3'-0"	6'-8"	1.75"	FBR	FAC	2	FLUSH W/ LOUVER	C	-	FBR	FAC	AL	1,2,3,4,5,6,7,8
103	3'-0"	6'-8"	1.75"	FBR	FAC	1	FLUSH	B	-	FBR	FAC	AL	2,3,4,5,6,8
104	3'-0"	6'-8"	1.75"	FBR	FAC	2	FLUSH W/ LOUVER	C	-	FBR	FAC	AL	1,2,3,4,5,6,7,8
105A	8'-0"	7'-0"	1.75"	MTL	FAC	-	OVERHEAD ROLL-UP	A	-	MTL	FAC	-	4,6,8
105B	3'-0"	6'-8"	1.75"	FBR	FAC	1	FLUSH	B	-	FBR	FAC	AL	2,3,4,5,6,8
-	-	-	-	-	-	-	-	-	-	-	-	-	-

HARDWARE LEGEND

NO. 1
AUTO CLOSER HINGE
S.S. NRP, BB HINGES
S.S. PASSAGE HARDWARE
S.S. KEYED DEADBOLT
WEATHER STRIPPING
ASTRAGAL AT DOUBLE DOOR

NO. 2
AUTO CLOSER HINGE
S.S. BB HINGES
S.S. PASSAGE HARDWARE
S.S. KEYED DEADBOLT

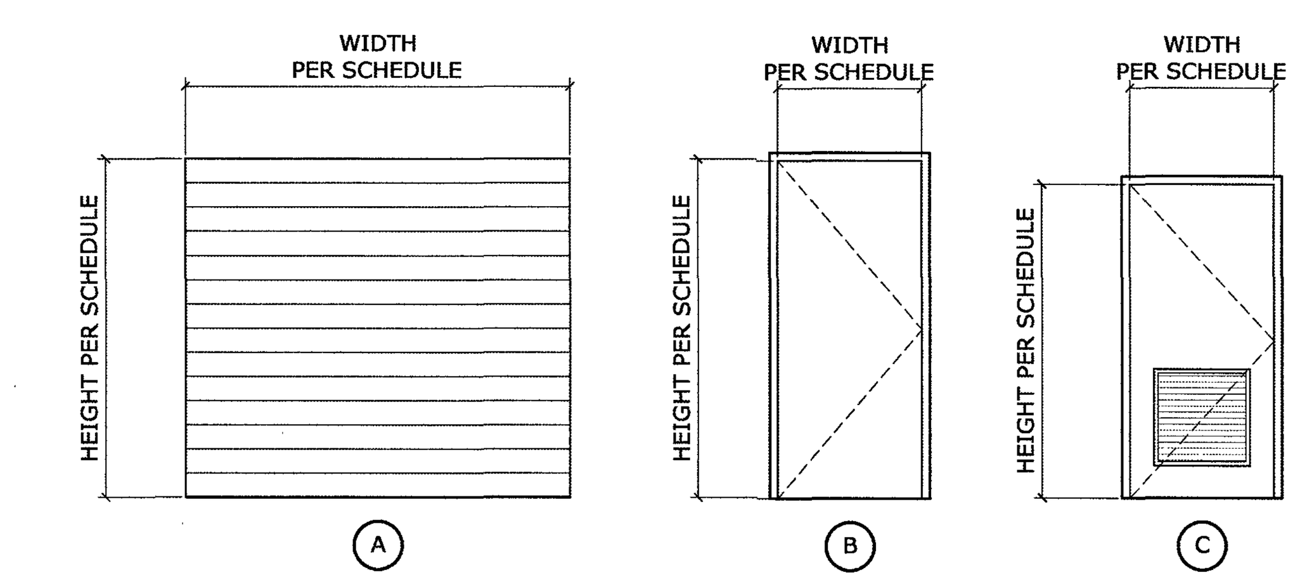
NO. 3
S.S. BB HINGES
S.S. PASSAGE HARDWARE
THUMB LOCK

DOOR LEGEND

FBR	FIBERGLASS DOOR AND FRAME	MTL	METAL DOOR OR FRAME (WELDED)	PTD	PAINTED
SCM	SOLID CORE METAL	WD	WOOD DOOR FRAME	GL	TEMPERED GLASS DOOR
HCM	HOLLOW CORE METAL	FAC	FACTORY FINISH	AL	ALUMINUM
HCW	HOLLOW CORE WOOD	MFR	MANUFACTURER RECOMMENDED		

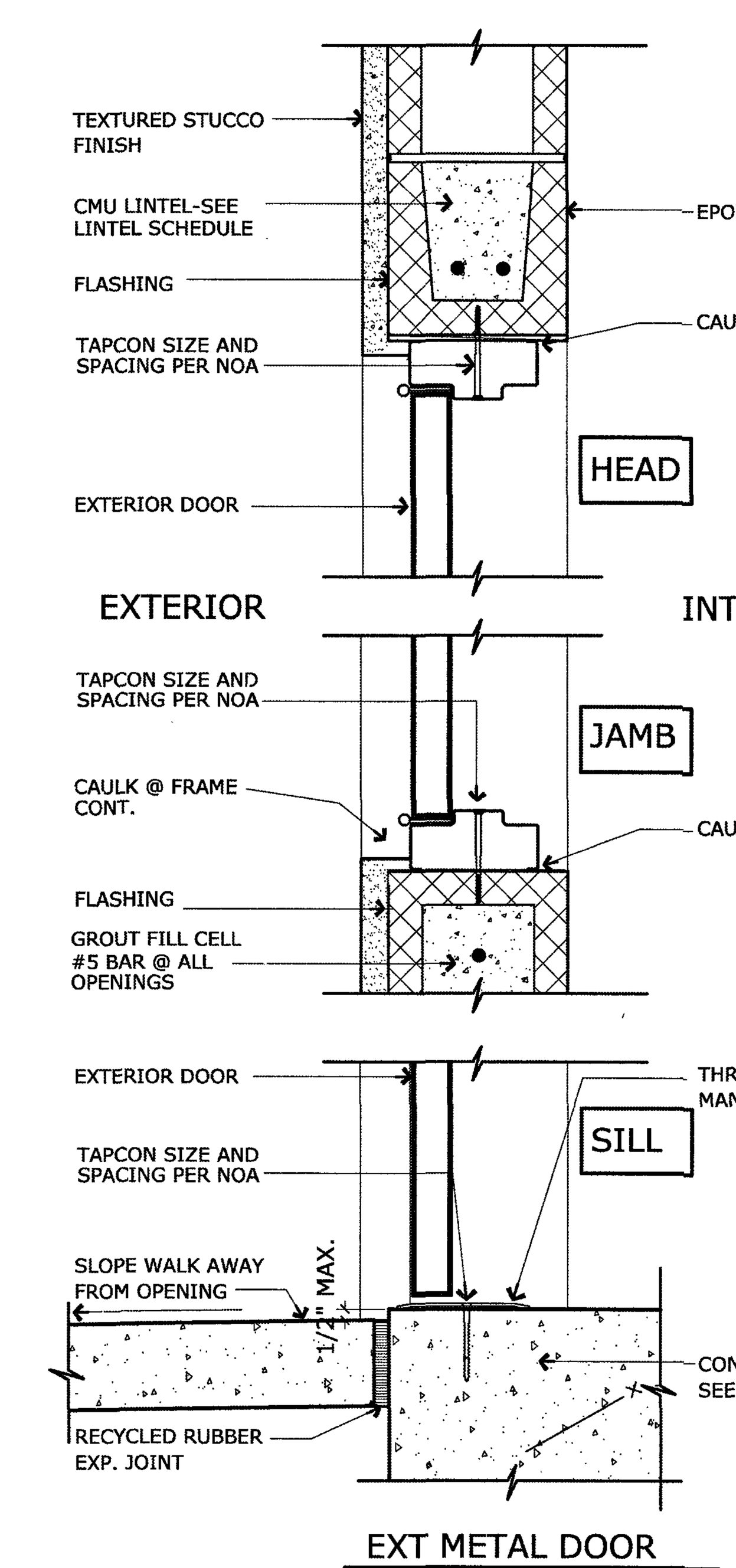
NOTES

1. All exit doors shall comply with FBC 2014.
2. All door hardware shall be by Schlage, provide (6) pin keyed locks. All specified hardware shall be commercial grade stainless steel. All key ways are to be 6-pin type "C". Key way pinning shall be configured as per County Parks and Recreation Department (PRD Codes). Require (1) master key and (2) operating keys per each lockset.
3. All doors and door frames shall be painted to match wall color.
4. Manufacturer doors, installed per manufacturers specifications.
5. Grout all thresholds.
6. Caulk around all door frames.
7. Provide Tactile signage at each exit door. Signage to be mounted on latch side of door, 60" a.f.f. Tactile Signage shall read "WOMAN" or "MEN" (1) per bathroom.
8. Weatherstrip at each exterior exit door.



DOOR TYPES

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



DOOR H-S-J DETAILS

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

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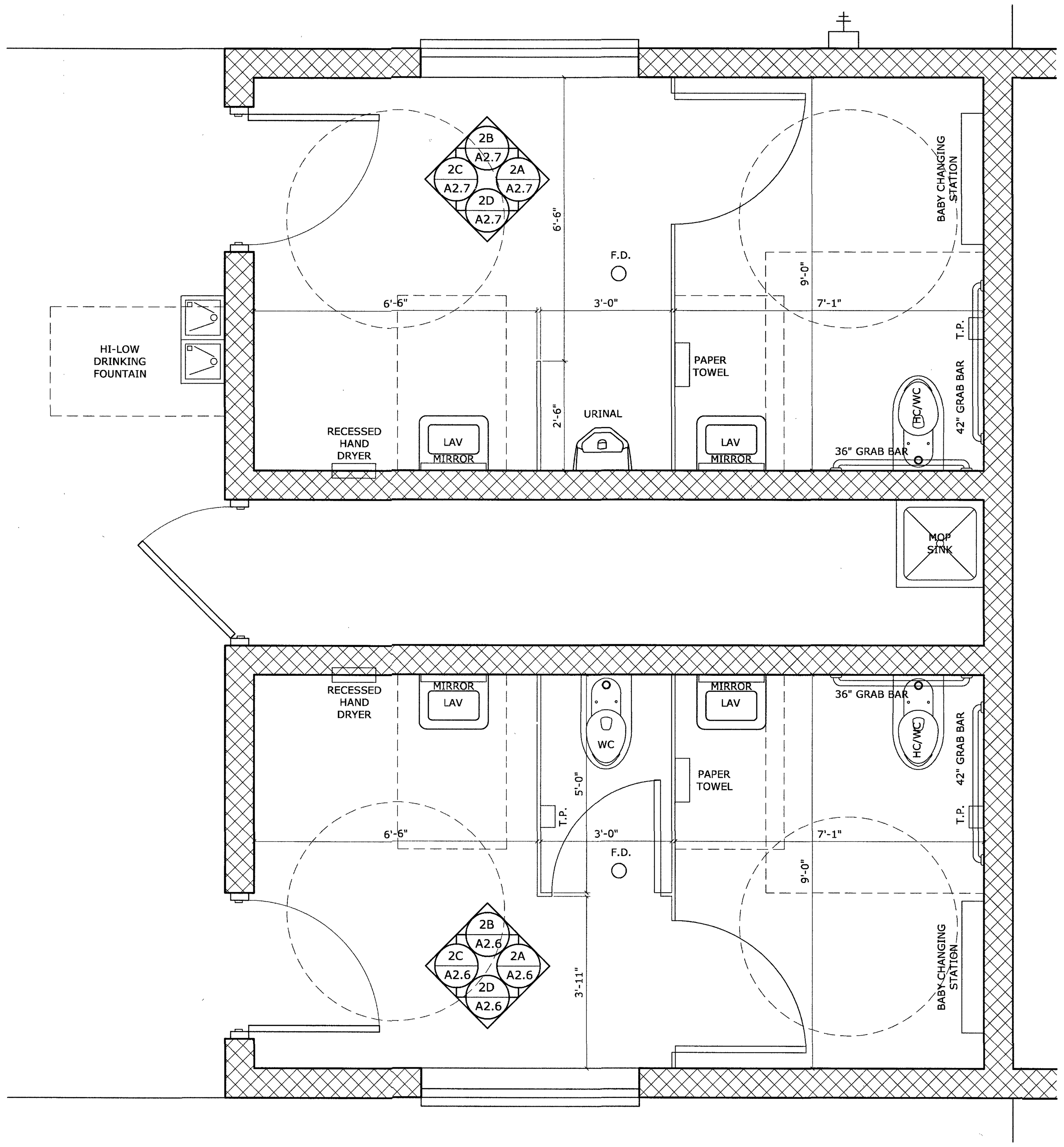
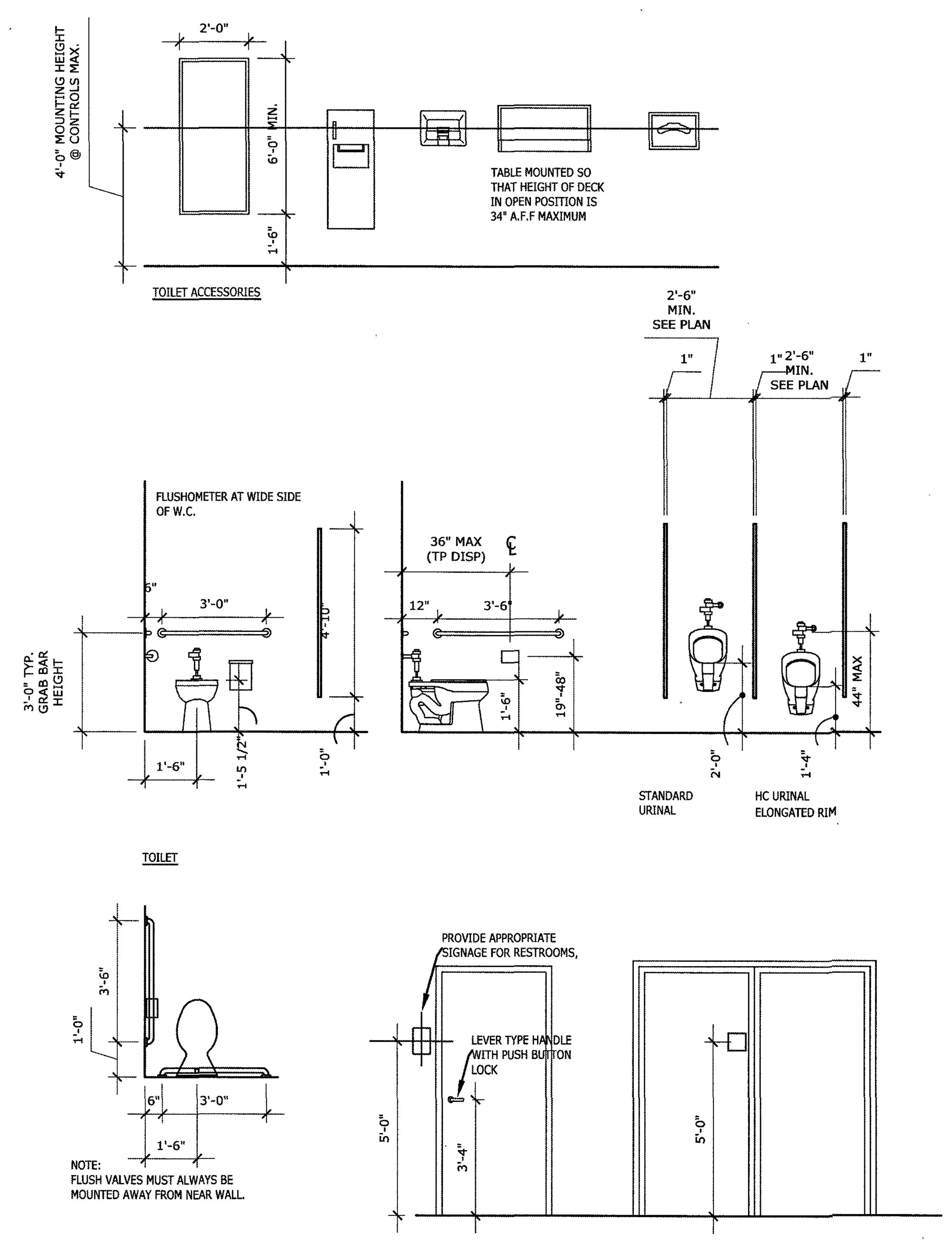
	Schedules & Details



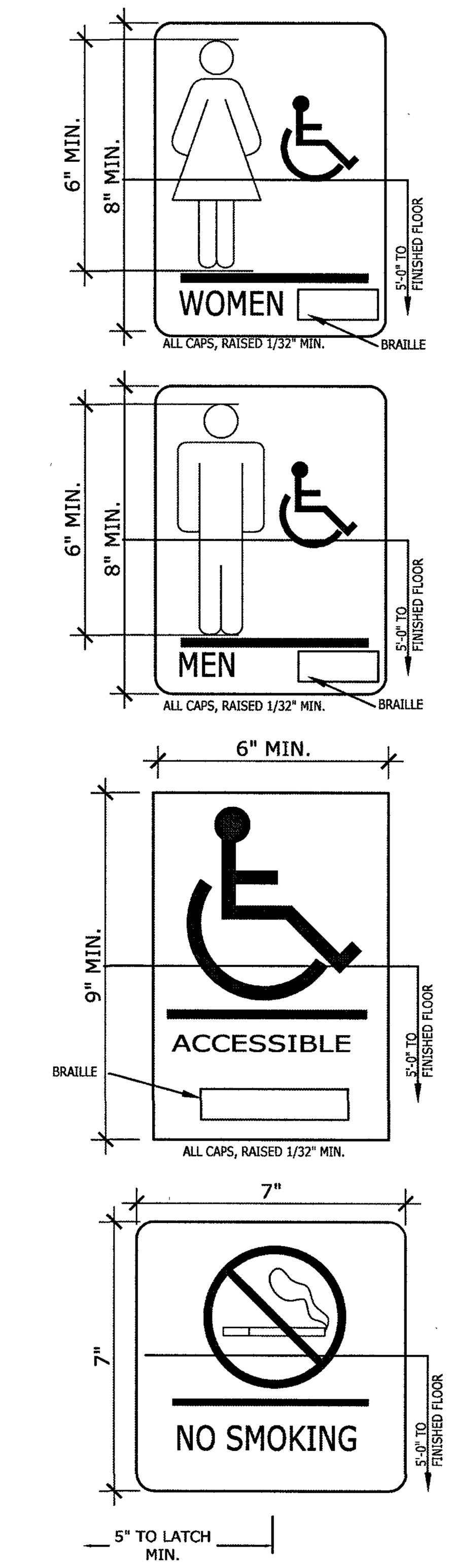
1 - ENLARGED PLAN

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



2 - ACCESSIBLE FIXTURE MOUNTING HEIGHTS

SCALE: NOT TO SCALE



ACCESSIBLE SIGNAGE TEXT REQUIREMENTS

CHARACTER PROPORTIONS
LETTERS AND NUMBERS ON SIGNS SHALL HAVE A WIDTH TO HEIGHT RATIO BETWEEN 1:5 AND 1:10. UTILIZING AN UPPER CASE 'X' FOR MEASUREMENT.

CHARACTER HEIGHT:
SEE LETTER AND NUMBER HEIGHT CHART BELOW.
-EXCEPTION CHARACTER HEIGHT SHALL BE 5/8" HIGH MINIMUM FOR BUILDING DIRECTORIES

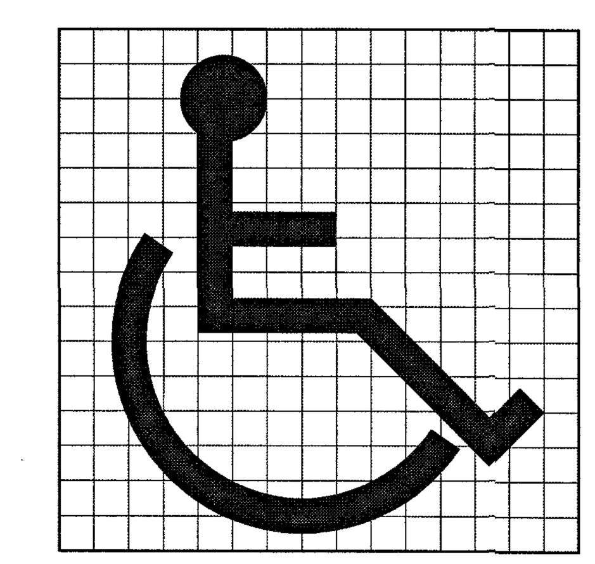
FINISH AND CONTRAST:
THE CHARACTERS, SYMBOLS AND BACKGROUND OF SIGNS SHALL BE EGGSHELL, MATTE, OR OTHER NON-GLARE FINISH. characters AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, WITH EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

RAISED CHARACTERS AND SYMBOLS:
CHARACTER AND SYMBOLS ON TACTILE SIGNS SHALL BE RAISED 1/32" MINIMUM. RAISED CHARACTERS AND SYMBOLS SHALL BE IN UPPERCASE CHARACTER. RAISED CHARACTERS AND SYMBOLS SHALL BE 5/8" HIGH MINIMUM AND 2" MAXIMUM. RAISED CHARACTERS AND SYMBOLS SHALL BE ACCOMPANIED BY BRAILLE IN ACCORDANCE WITH THE PROVISIONS OUTLINED BELOW.

BRAILLE:
BRAILLE SHALL BE SEPARATED 1/2" MINIMUM FROM THE CORRESPONDING RAISED CHARACTERS OR SYMBOLS. BRAILLE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS FOR ELEVATOR CONTROLS SHALL BE PLACED 3/16" MINIMUM BELOW THE CORRESPONDING CHARACTERS OR SYMBOLS. BRAILLE SHALL BE GRADE II AND SHALL CONFORM TO THE SPECIFICATION "800, NATIONAL LIBRARY SERVICE, LIBRARY OF CONGRESS."

LOCATION OF TACTILE SIGNAGE:
TACTILE SIGNAGE SHALL BE LOCATED ALONGSIDE THE DOOR ON THE LATCH SIDE AND SHALL BE MOUNTED AT 60" ABOVE THE ADJACENT FINISHED FLOOR TO THE CENTERLINE OF THE SIGN. IN LOCATIONS HAVING DOUBLE DOORS TACTILE SIGNS SHALL BE MOUNTED TO THE RIGHT OF THE RIGHT HAND DOOR WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE OF THE DOOR INCLUDING DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL.

GENERAL NOTE:
ANY ADDITIONAL TEXT REQUIRED DUE TO LOCAL ORDINANCES (FINES FOR PARKING IN ACCESSIBLE SPACE, ETC.) SHALL COMPLY WITH THE SIGNAGE REQUIREMENTS ABOVE.



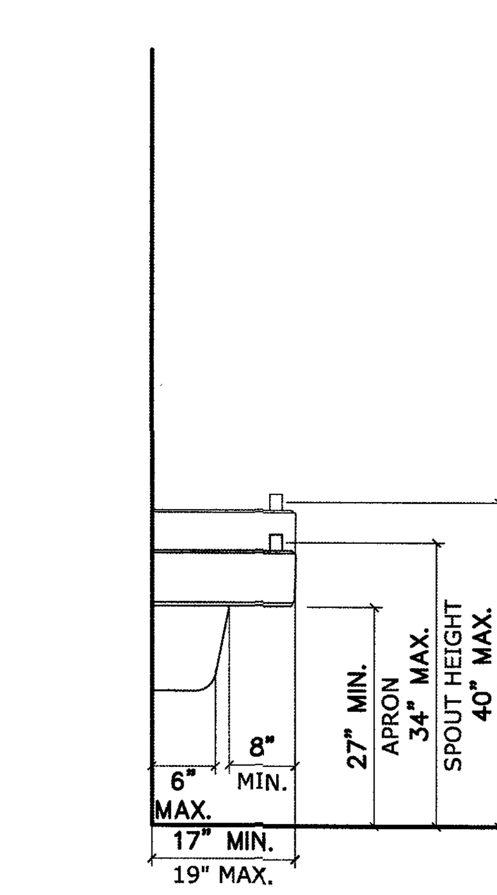
PROPORTIONS OF THE INTERNATIONAL SYMBOL OF ACCESSIBILITY

LETTER AND NUMBER HEIGHTS

HEIGHT ABOVE FLOOR/ GROUND,	MINIMUM CHARACTER HEIGHT:
MORE THAN 80"	3"
MORE THAN 60" BUT NOT MORE THAN 80"	2"
MORE THAN 48" BUT NOM MORE THAN 60"	1"

3 - ACCESSIBLE SIGNAGE DETAILS

SCALE: NOT TO SCALE



4 - DRINKING FOUNTAIN DETAIL

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

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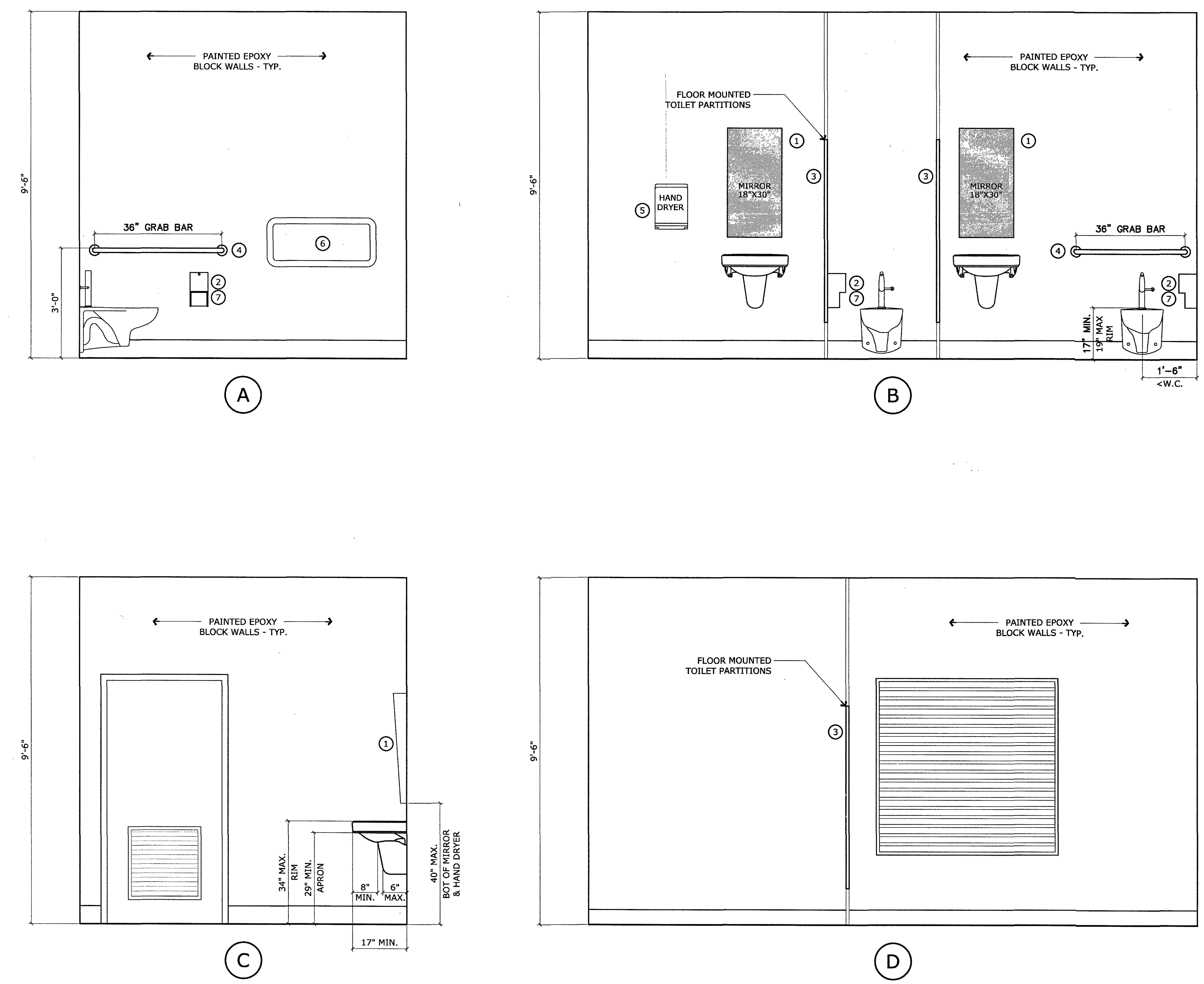
FIXTURE LEGEND
(1) "BOBRICK" GLASS MIRROR MODEL #B-290 1836
(2) "BOBRICK" PARTITION MOUNTED SANITARY NAPKIN DISPOSAL MODEL #B-354
(3) "SCRANTON PRODUCTS" MOSAIC COLLECTION, COLOR: ONYX. PARTITIONS SHALL BE FLOOR MOUNTED AND OVERHEAD BRACED WITH FLOOR TO CEILING PILASTERS.
(4) "BOBRICK" 1-1/2" STAINLESS STEEL GRAB BAR W/ SNAP FLANGE MODEL #B-6897
(5) RECESSED HAND DRYER - SEE SPECIFICATIONS FOR RECESSED OPTION
(6) "BOBRICK" HORIZONTAL WALL MOUNTED BABY STATION MODEL #KB-200-00
(7) "BOBRICK" SURFACE MOUNTED MULTI-ROLL TOILET TISSUE DISPENSER MODEL #B-4288



2 - INTERIOR ELEVATIONS

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

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Sheet	A2.6
	Enlarged Plans

FIXTURE LEGEND

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2. "BOBRICK" PARTITION MOUNTED SANITARY NAPKIN DISPOSAL MODEL #B-354
3. "SCRANTON PRODUCTS" MOSAIC COLLECTION, COLOR: ONYX. PARTITIONS SHALL BE FLOOR MOUNTED AND OVERHEAD BRACED WITH FLOOR TO CEILING PILASTERS.
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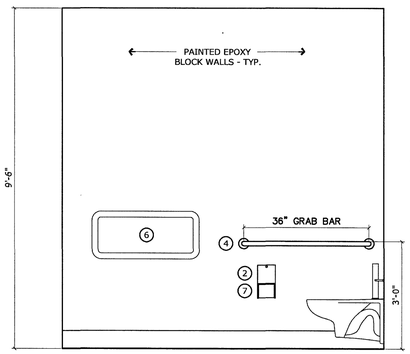

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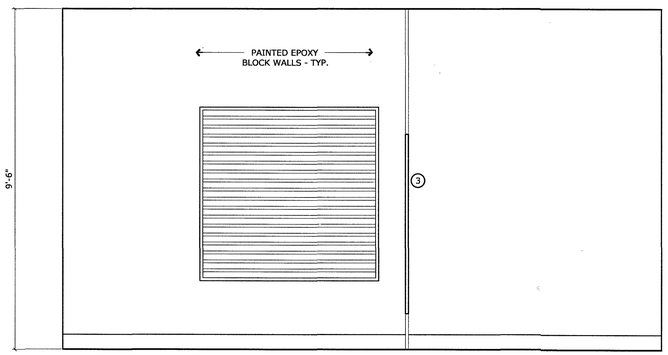

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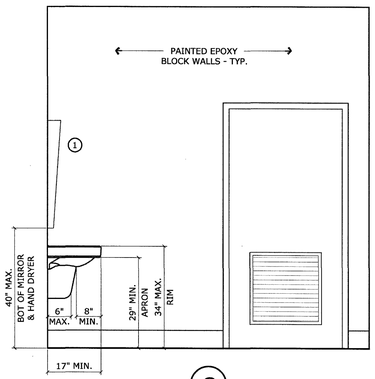

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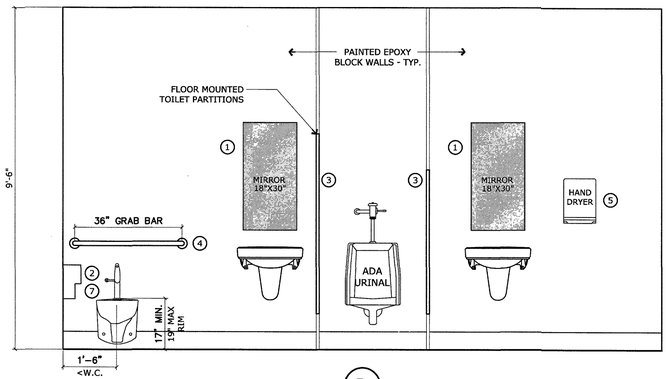

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2 - INTERIOR ELEVATIONS

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

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Enlarged Plans

BUILDING PAINT COLORS

Walls: Dover Beige by Porter Paints #6694-3 (provide alternate matching color by Sherwin Williams)

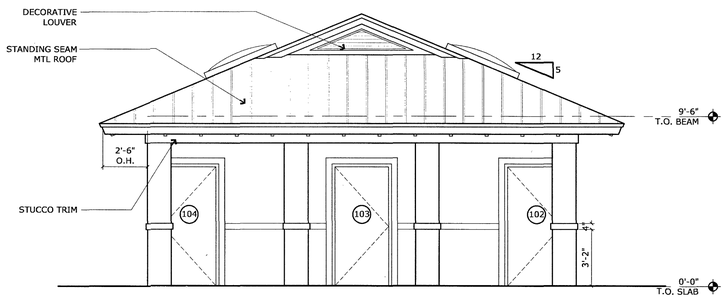
Doors and Trim: Sea Sand by Porter Paints #6885-1 (provide alternate matching color by Sherwin Williams)

Roof: Regal Blue by Sherwin Williams #SW 6801

All paints shall be applied as per manufacturer and product specifications

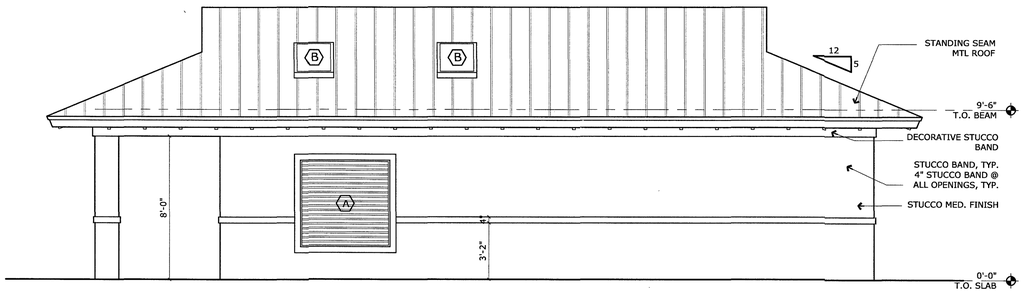
GENERAL NOTES

1. All exterior windows and doors shall be hurricane impact resistant.
2. All window and door headers shall align.
3. All window head heights shall be 6'-8" A.F.F. unless otherwise noted.
4. Standing seam roofing color to be selected by Owner.



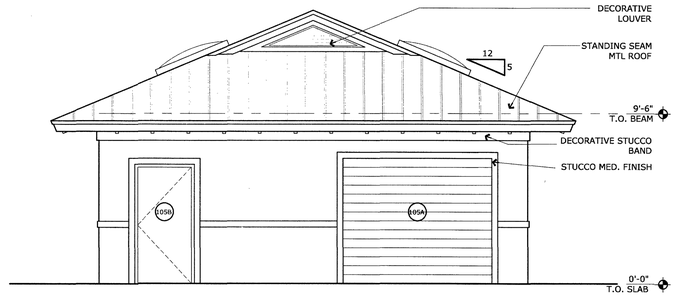
1 - WEST ELEVATION

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



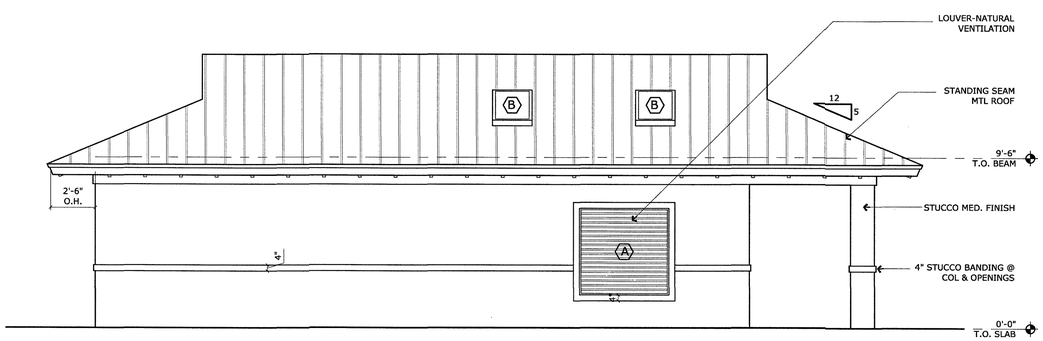
3 - SOUTH ELEVATION

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



2 - EAST ELEVATION

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



4 - NORTH ELEVATION

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

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NOV 16 2017

Waveland Beach Park - Restroom Facility

James Clasby MPA, Project Manager - Facilities Department
10350 South Ocean Drive
St. Lucie County, Florida
(772) 462-2567

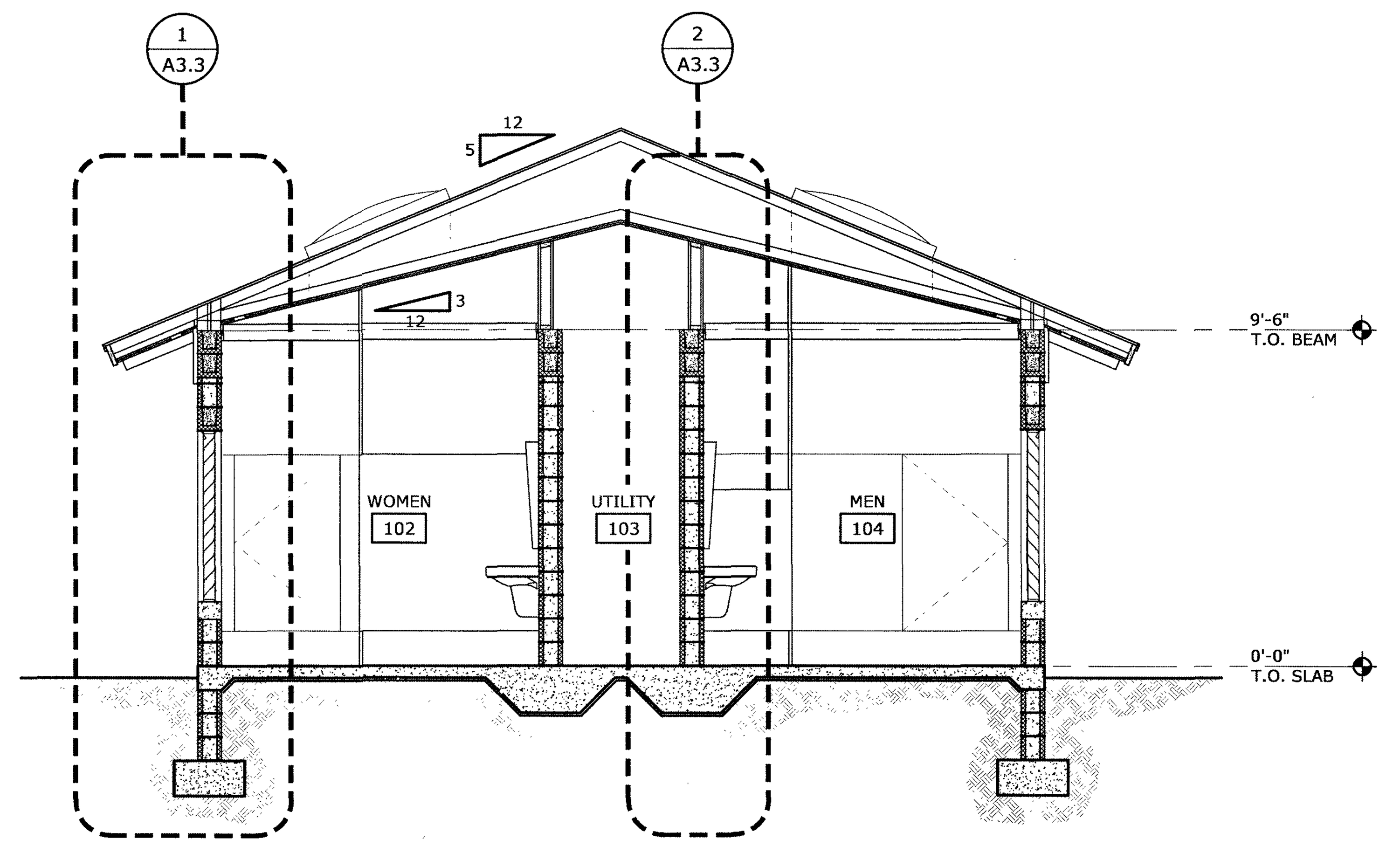
Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A3.1

Exterior Elevations

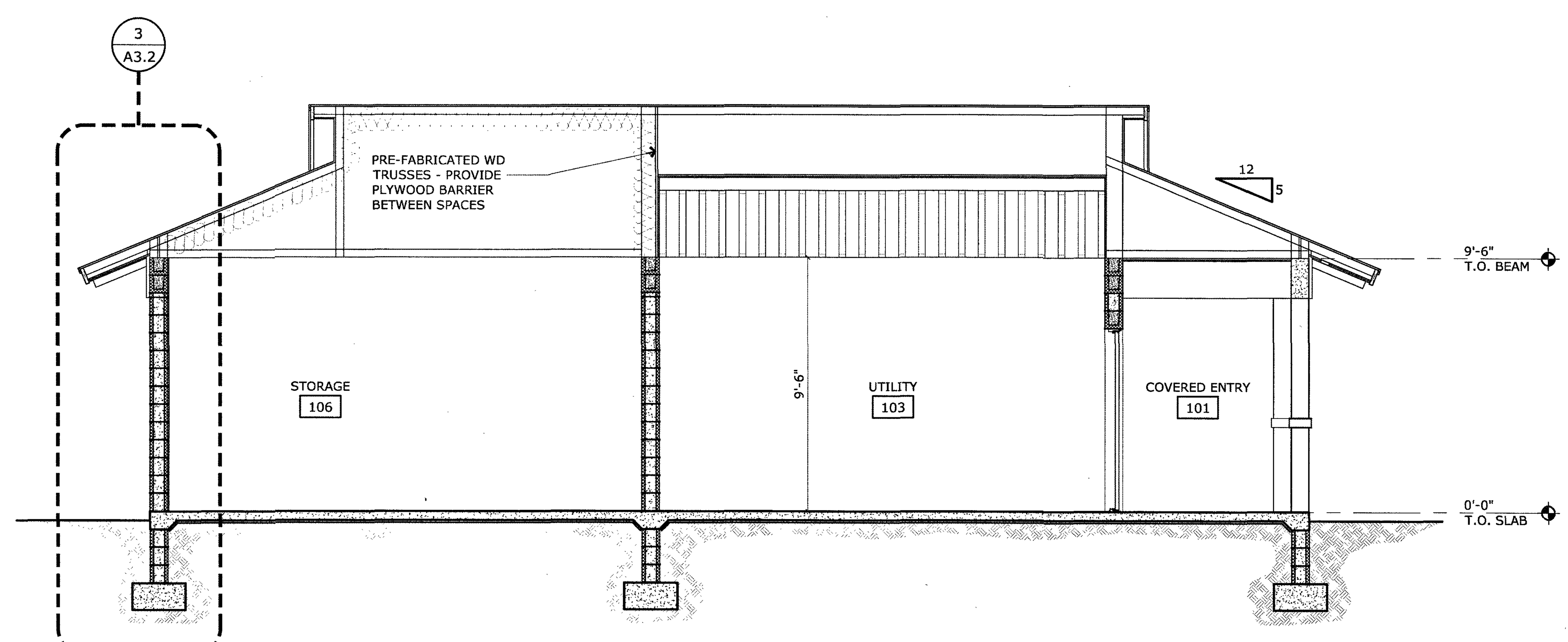
GENERAL NOTES

1. All exterior windows and doors shall be hurricane impact resistant.
2. All window and door headers shall align.
3. All window head heights shall be 6'-8" A.F.F. unless otherwise noted.
4. Standing seam roofing color to be selected by Owner.



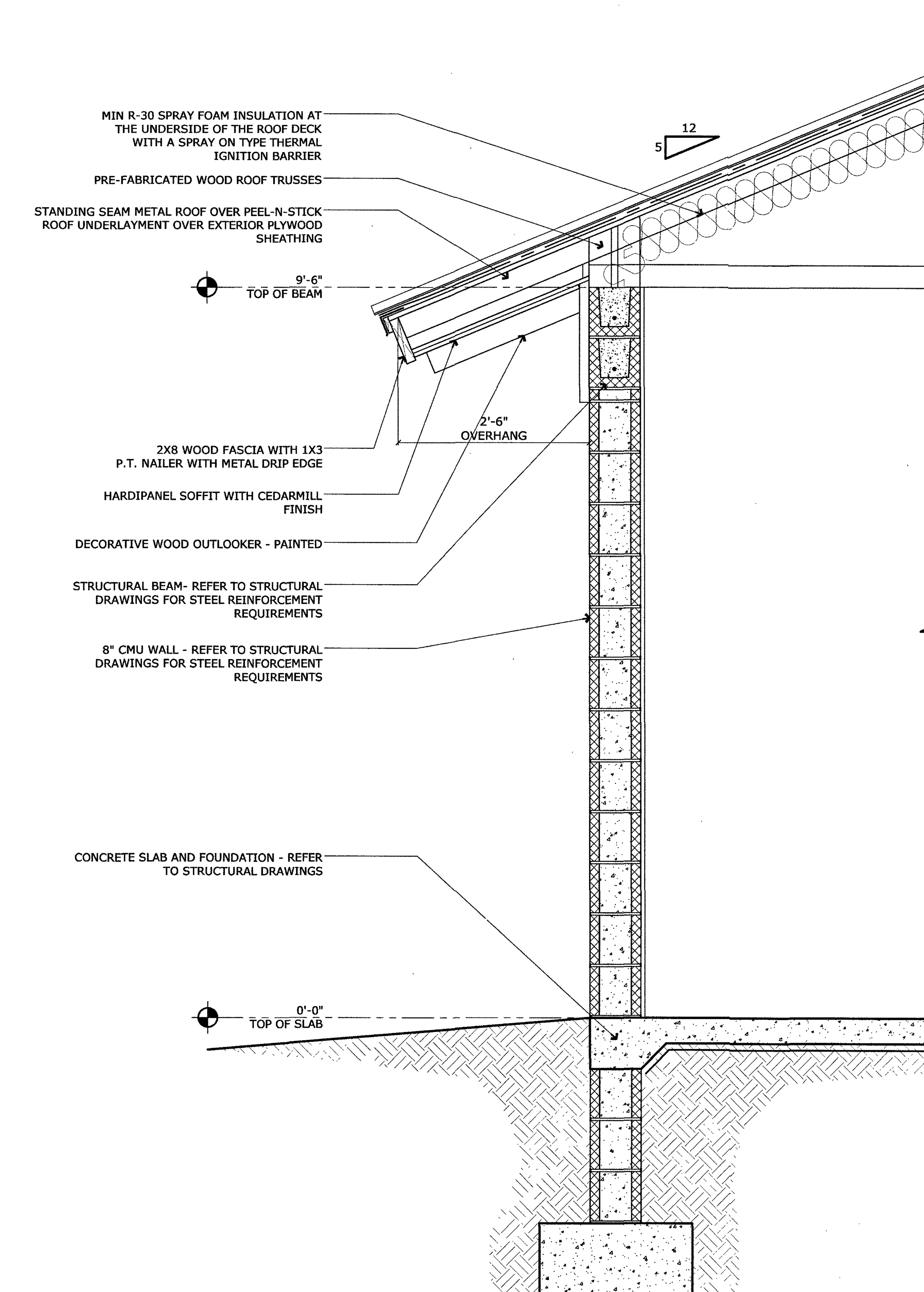
1 - BUILDING SECTION

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



2 - BUILDING SECTION

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



3 - TYPICAL WALL SECTION

SCALE: 3/4" = 1'-0"

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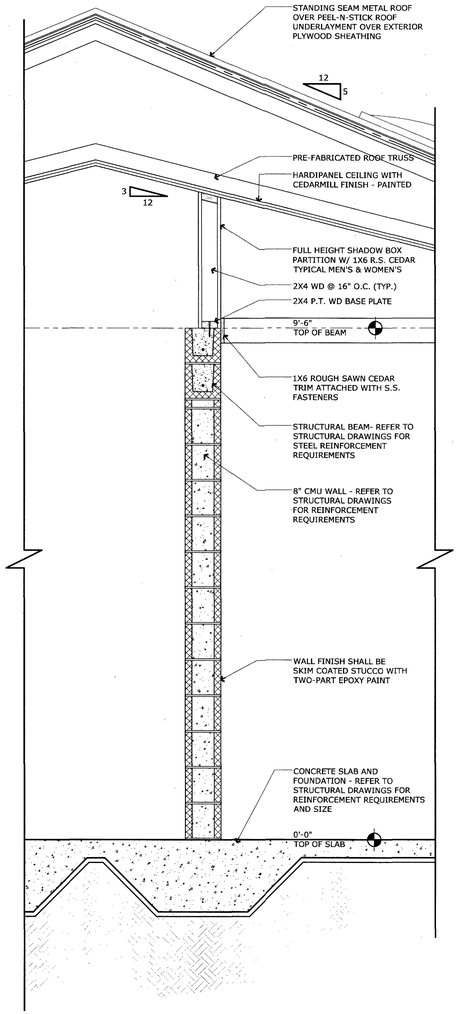
Rev. #	Date

Project Number	16-0245
Status	Bid Set
Issue date	17-Nov-17
Sheet	A3.2
	Building Sections

S:\02_Projects\03_Commercial\2016\16-0245 St. Lucie Beach Building\02_Drawings\01_Project Drawings\03_Construction Documents\16-0245 - CD Bid Set - 11-15-17.dwg, 11/16/2017 4:41:25 PM, Lightning PDF Professional

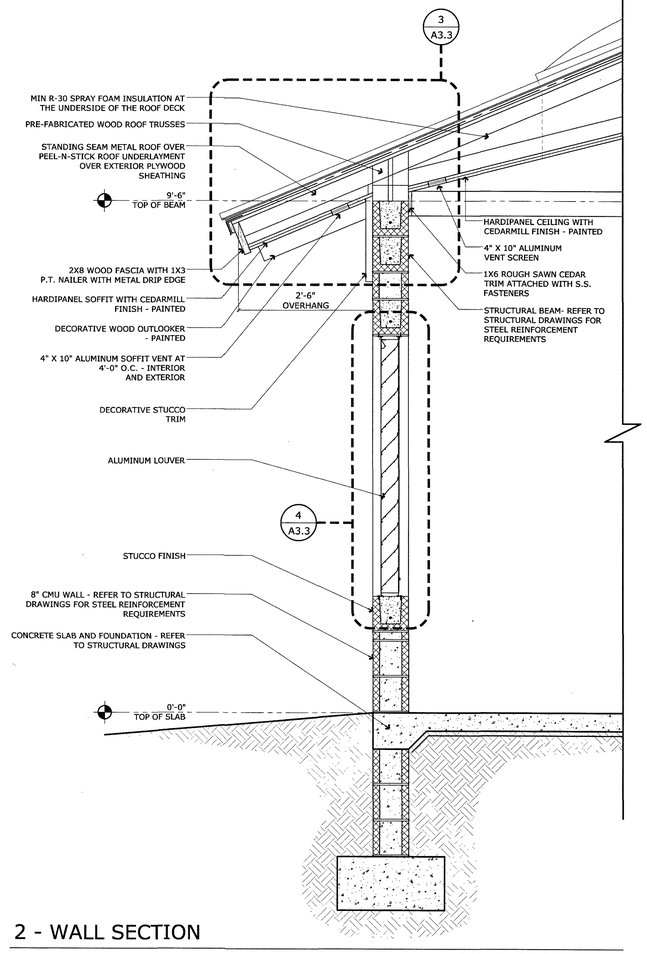
GENERAL NOTES

1. All exterior windows and doors shall be hurricane impact resistant.
2. All window and door headers shall align.
3. All window head heights shall be 6'-8" A.F.F. unless otherwise noted.
4. Standing seam roofing color to be selected by Owner.



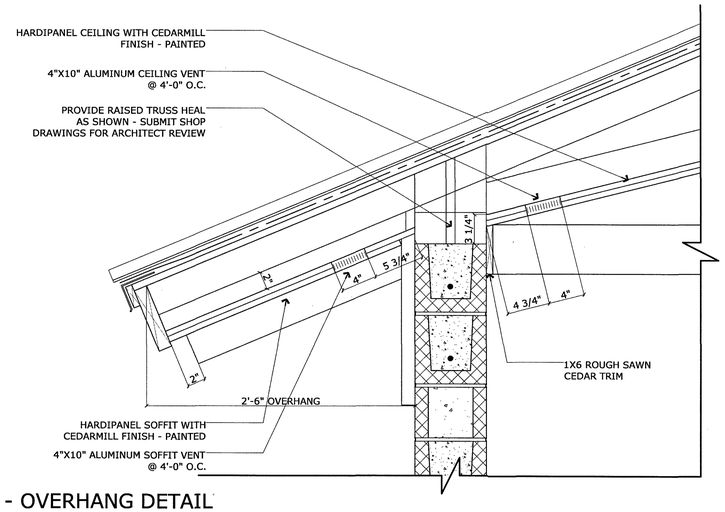
1 - WALL SECTION

SCALE: 3/4" = 1'-0"



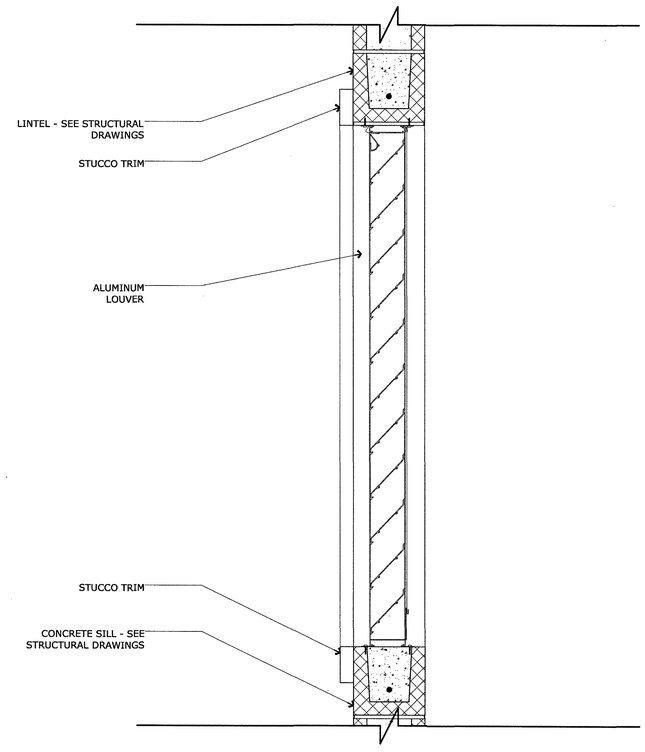
2 - WALL SECTION

SCALE: 3/4" = 1'-0"



3 - OVERHANG DETAIL

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



4 - LOUVER DETAIL

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

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Sheet	A3.3

Wall Sections & Details

STRUCTURAL-GENERAL NOTES

DESIGN CRITERIA AND LOADS:

1. WIND DESIGN:

WIND SPEED (MPH)		V(ADJ)=127 V(ULT)=165
RISK CATEGORY		II
EXPOSURE CATEGORY		D
ENCLOSURE CLASSIFICATION		ENCLOSED
INTERNAL PRESSURE COEFFICIENT		CPI =+/- 0.18
ENCLOSURE CLASSIFICATION	(PORCHES)	PARTIALLY ENCLOSED
INTERNAL PRESSURE COEFFICIENT		CPI =+/- 0.55
TOPOGRAPHIC FACTOR		KZT =1.0

2. DESIGN LIVE LOADS:
   a. ROOF LIVE 20 PSF
3. DESIGN DEAD LOADS :
   a. ROOF DEAD LOAD, TOTAL (METAL) 17 PSF
4. THE CONTRACTOR HAS THE RESPONSIBILITY TO NOTIFY THE STRUCTURAL ENGINEER OF RECORD (SER) OF ANY ARCHITECTURAL, MECHANICAL, ELECTRICAL, OR PLUMBING LOAD IMPOSED ONTO THE STRUCTURE THAT DIFFERS FROM, OR THAT IS NOT DOCUMENTED ON THE ORIGINAL CONTRACT DOCUMENTS (ARCHITECTURAL/ STRUCTURAL/ MECHANICAL/ ELECTRICAL OR PLUMBING DRAWINGS). PROVIDE DOCUMENTATION OF LOCATION, LOAD, SIZE AND ANCHORAGE OF ALL UNDOCUMENTED LOADS IN EXCESS OF 400 POUNDS. PROVIDE MARKED-UP STRUCTURAL PLAN INDICATING LOCATIONS OF ANY NEW EQUIPMENT OR LOADS. SUBMIT PLANS TO THE ARCHITECT/ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
5. LOADS ON THE STRUCTURE DURING CONSTRUCTION SHALL NOT EXCEED THE DESIGN LOADS AS NOTED IN DESIGN CRITERIA & LOADS BELOW OR THE CAPACITY OF PARTIALLY COMPLETED CONSTRUCTION AS DETERMINED BY THE CONTRACTOR'S SSE FOR BRACING/SHORING.

GENERAL REQUIREMENTS

1. PLAN AND DETAIL NOTES AND SPECIFIC LOADING DATA PROVIDED ON INDIVIDUAL PLANS AND DETAIL DRAWINGS SUPPLEMENTS INFORMATION IN THE STRUCTURAL GENERAL NOTES.
2. THE DESIGN AND CONSTRUCTION OF THIS PROJECT IS GOVERNED BY THE "FLORIDA BUILDING CODE (FBC)", FIFTH EDITION, HEREAFTER REFERRED TO AS THE FBC, AS ADOPTED AND MODIFIED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
3. WHERE OTHER STANDARDS ARE NOTED IN THE DRAWINGS, USE THE LATEST EDITION OF THE STANDARD UNLESS A SPECIFIC DATE IS INDICATED. REFERENCE TO A SPECIFIC SECTION IN A CODE DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE ENTIRE STANDARD.
4. REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, CIVIL AND PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION INCLUDING BUT NOT LIMITED TO: DIMENSIONS, ELEVATIONS, SLOPES, DOOR AND WINDOW OPENINGS, NON-BEARING WALLS, STAIRS, FINISHES, DRAINS, WATERPROOFING, RAILINGS, CURTAIN WALLS, DEPRESSIONS, MECHANICAL UNIT LOCATIONS, AND OTHER NONSTRUCTURAL ITEMS.
5. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING DETAILS AND ACCURACY OF THE WORK WITH ARCHITECT, ENGINEER(S) AND OTHER TRADES; FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; FOR SELECTING FABRICATION PROCESSES; FOR TECHNIQUES OF ASSEMBLY; AND FOR PERFORMING WORK IN A SAFE AND SECURE MANNER.
6. IN CASE OF DISCREPANCIES BETWEEN THE GENERAL NOTES, SPECIFICATIONS PLAN/DETAILS, REFERENCE STANDARDS, THE ARCHITECT/ENGINEER SHALL DETERMINE WHICH SHALL GOVERN. SHOULD ANY DISCREPANCY BE FOUND IN THE CONTRACT DOCUMENTS, THE CONTRACTOR WILL BE DEEMED TO HAVE INCLUDED IN THE PRICE THE MOST EXPENSIVE WAY OF COMPLETING THE WORK, UNLESS PRIOR TO THE SUBMISSION OF THE PRICE, THE CONTRACTOR ASKS FOR A DECISION FROM THE ARCHITECT/ ENGINEER AS TO WHICH SHALL GOVERN. ACCORDINGLY, ANY CONFLICT IN OR BETWEEN THE CONTRACT DOCUMENTS SHALL NOT BE A BASIS FOR ADJUSTMENT IN THE CONTRACT PRICE.
7. THE STRUCTURAL DRAWINGS ARE INTENDED TO SHOW THE GENERAL CHARACTER AND EXTENT OF THE PROJECT AND ARE NOT INTENDED TO SHOW ALL DETAILS OF THE WORK. ARCHITECTURAL DRAWINGS SHALL GOVERN THE WORK FOR ALL DIMENSIONS.
8. ALTERNATE PRODUCTS OF SIMILAR STRENGTH, NATURE AND FORM FOR SPECIFIED ITEMS MAY BE SUBMITTED WITH ADEQUATE TECHNICAL DOCUMENTATION TO THE ARCHITECT/ENGINEER FOR REVIEW. ALTERNATE MATERIALS THAT ARE SUBMITTED WITHOUT ADEQUATE TECHNICAL DOCUMENTATION THAT SIGNIFICANTLY DEVIATE FROM THE DESIGN INTENT OF MATERIALS SPECIFIED MAY BE RETURNED WITHOUT REVIEW. ALTERNATES THAT REQUIRE SUBSTANTIAL EFFORT TO REVIEW WILL NOT BE REVIEWED UNLESS AUTHORIZED BY THE OWNER.
9. ALL BUILDING SITES SHALL BE GRADED TO PROVIDE DRAINAGE UNDER ALL PORTIONS OF THE BUILDING AND AROUND THE BUILDING PERIMETER TO ALLOW DRAINAGE AWAY FROM THE STRUCTURE.
10. SHOP DRAWINGS WILL BE REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS ONLY. IT SHALL BE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS AS TO QUANTITY, LENGTH, DIMENSIONS, ELEVATIONS,ETC.
11. SHOP DRAWINGS SHALL BE REVIEWED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE ARCHITECT/ENGINEER. DRAWINGS SUBMITTED WITHOUT REVIEW WILL BE RETURNED UNCHECKED.
12. CHANGES AND ADDITIONS MADE ON RE-SUBMITTALS SHALL BE CLEARLY CLOUDED AND NOTED. ARCHITECT/ENGINEER REVIEW WILL BE LIMITED TO THOSE ITEMS CAUSING THE RE-SUBMITTAL.
13. DISCREPANCIES, OMISSIONS, OR INCONSISTENCIES WITH APPLICABLE CODE REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER IN WRITING BEFORE SUBMITTING A BID OR PROCEEDING WITH THE WORK.
14. THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES PRIOR TO EARTHWORK, FOUNDATIONS, SHORING, AND EXCAVATION. ANY UTILITY INFORMATION SHOWN ON THE DRAWINGS AND DETAILS IS APPROXIMATE AND NOT NECESSARILY COMPLETE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE. CONFLICTS BETWEEN THE DRAWINGS AND ACTUAL SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER IN WRITING BEFORE PROCEEDING WITH THE WORK.

STRUCTURAL CERTIFICATION

1. I CERTIFY THAT THE PLANS AND SPECIFICATIONS COMPLY WITH THE STRUCTURAL PORTION OF THE FLORIDA BUILDING CODE FIFTH EDITION.
2. I ALSO CERTIFY THAT STRUCTURAL ELEMENTS DEPICTED ON THESE PLANS PROVIDE ADEQUATE RESISTANCE TO THE WIND LOADS SPECIFIED IN SECTION 1609 IN THE FBC.

FOUNDATION AND SLABS ON GRADE

1. FOUNDATION IS DESIGNED BASED ON PRESUMPTIVE SAFE ALLOWABLE BEARING PRESSURE OF 2,000 PSF. CONTRACTOR SHALL VERIFY THAT THE MINIMUM BEARING PRESSURE IS OBTAINED PRIOR TO FOOTING PLACEMENT.
2. FOUNDATIONS WERE DESIGNED FOLLOWING THE RECOMMENDATIONS OF ANDERSON ANDRE CONSULTING ENGINEERS,INC. AS STATED IN THEIR REPORT, FILE NO 16-193, DATED OCTOBER 13, 2016.
3. FOLLOW GEOTECHNICAL REPORT FOR SITE PREPARATION RECOMMENDATIONS.
4. THE ARCHITECT /ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY INTERPRETATION THAT THE SUBSURFACE CONDITIONS DESCRIBED IN THE TEST BORING LOGS OCCUR CONSISTENTLY THROUGHOUT THE JOB SITE. TEST BORINGS ARE INCLUDED ONLY TO ASSIST THE CONTRACTOR DURING BIDDING AND SUBSEQUENT CONSTRUCTION AND REPRESENT SOIL CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND AT THE PARTICULAR TIMES THEY WERE TAKEN.
5. REINFORCED FOUNDATION REQUIREMENTS USED IN THE DESIGN:
   a. MINIMUM DEPTH BELOW FINISHED GRADE......................1'-0"
   b. MAXIMUM ALLOWABLE BEARING CAPACITY....................2,000 PSF
   c. MODULUS OF SUBGRADE REACTION............................. 200 PCI
   d. PASSIVE LATERAL PRESSURE.. 250 PSF
   e. ACTIVE LATERAL PRESSURE (UNRESTRAINED) ....55 PSF
   f. ACTIVE LATERAL PRESSURE (RESTRAINED)...............35 PSF
   g. COEFFICIENT OF SLIDING FRICTION...........................0.4
6. ALL FOUNDATION CONCRETE SHALL BE CAST IN THE DRY. DEWATERING OPERATION SHALL BE DONE IN SUCH A WAY THAT GROUND WATER LEVELS OUTSIDE THE SITE WILL BE MAINTAINED TO AVOID SETTLEMENT AND DAMAGE TO NEARBY BUILDINGS AND STRUCTURES.
7. SYNTHETIC FIBER REINFORCEMENT SHALL COMPLY WITH ASTM-C-1116, AND THE DOSAGE AMOUNT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION BUT NOT LESS THAN 1.2 LBS/CY
8. WELDED WIRE FABRIC SHALL CONFORM TO A.S.T.M. A185 (LATEST EDITION), AND BE SUPPORTED ON SLAB CHAIRS SPACED AT 3' -0 O.C.. MAXIMUM.
9. THE CONCRETE STRENGTHS SHOWN IN THE FOLLOWING TABLE ARE THE MINIMUM COMPRESSIVE STRENGTHS AT 28 DAYS AND THE WATER/CEMENT RATIO IS THE MAXIMUM. THE SPECIFIED SLUMP IS THE MAXIMUM PRIOR TO THE ADDITION OF ADMIXTURES. CONCRETE SHALL BE STANDARD WEIGHT CONCRETE (145 PCF).

ITEM OF CONSTRUCTION	STRENGTH (PSF)	AGG (IN)	SLUMP (IN)	WATER/CEMENT (LB/LB)
FOUNDATION PADS	4000	1	2-4	0.50
SLABS ON GRADE (STRUCTURAL)	4000	3/4	4-6	0.50

10. REMOVE AND REPLACE MINIMUM 1 FEET OF EXISTING SOIL BELOW FOUNDATION WITH COMPACTED, MOISTURE-TREATED, NON-EXPANSLVE FILL MATERIAL. FILL AREA SHALL EXTEND 1 FOOT BEYOND FOUNDATION FOOTPRINT.
11. FOR SITE PREPARATION, REMOVE DELETERIOUS MATERIAL SUCH AS VEGETATION, ORGANIC SOILS AND ROOT ZONES, EXISTING FILL, OR LOOSE, SOFT FROZEN, OR OTHERWISE UNSUITABLE MATERIALS FROM BELOW THE PROPOSED FOUNDATION AREAS.
12. SOIL BENEATH SLABS AND FOOTINGS SHALL BE EXCAVATED AS REQUIRED TO REMOVE ALL ORGANIC AND DELETERIOUS MATERIALS. PLACE CLEAN SAND FILL IN MAXIMUM OF 12 INCH LIFTS. SUBGRADE AND EACH LIFT SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF ITS MODIFIED PROCTOR VALUE IN ACCORDANCE WITH ASTM D 1557.
13. SUBGRADE SHALL BE UNIFORM OVER THE ENTIRE FOUNDATION AREA. DEPRESS SLABS ON GRADE FOR FLOOR FINISHES PER ARCHITECTURAL DRAWINGS.
14. FOUNDATIONS SHALL BEAR ON EITHER COMPETENT NATIVE SOIL OR COMPACTED STRUCTURAL FILL AS PER THE GEOTECHNICAL REPORT. EXTERIOR PERIMETER FOOTINGS SHALL BEAR NOT LESS THAN 24 INCHES BELOW FINISH GRADE, UNLESS OTHERWISE SPECIFIED BY THE GEOTECHNICAL ENGINEER AND/OR THE BUILDING OFFICIAL.
15. PROVIDE 6 MIL 'VISQUEEN' VAPOR BARRIER UNDER ALL SLABS ON FILL (UNLESS OTHERWISE NOTED ON PLANS).
16. COLUMNS, BEAMS, WALLS OR ANY OTHER STRUCTURAL MEMBER PENETRATING SLABS ON FILL SHALL BE ISOLATED BY PRE-MOLDED JOINT FILLER (1/2" THICK) COMPLYING WITH ASTM D1752, TYPE 1.
17. TOPS OF FOOTINGS AND SLABS ON GRADE SHALL BE AS SHOWN ON PLANS WITH VERTICAL CHANGES AS INDICATED WITH STEPS IN THE FOOTINGS; LOCATIONS OF STEPS SHOWN AS APPROXIMATE AND SHALL BE COORDINATED WITH THE CIVIL GRADING PLANS TO ENSURE THAT THE EXTERIOR PERIMETER FOOTINGS BEAR NO LESS THAN 24 INCHES BELOW FINISH GRADE, OR AS OTHERWISE INDICATED BY THE GEOTECHNICAL ENGINEER OR BUILDING OFFICIAL.
18. NON-EXPANSIVE BACKFILL SHALL BE PLACED IN CONTROLLED LIFTS NOT TO EXCEED 12 INCHES AND SHALL BE COMPACTED TO AT LEAST 95% OF LABORATORY MAXIMUM DENSITY (ASTM D 1557).
19. AREA DRAINAGE SHALL BE DIRECTED AWAY FROM THE FOUNDATION.
20. GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SHORING, SHEETING AND BRACING OF EXCAVATIONS.
21. GENERAL CONTRACTOR SHALL INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, ETC., AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS TO RECEIVE BEAMS AND SLABS SHALL BE PROVIDED AS REQUIRED FOR THE SUPER-STRUCTURE. SHOP DRAWINGS SHOWING THE POSITION OF OPENINGS SHALL BE SUBMITTED TO THE CONTRACTING OFFICER PRIOR TO PLACEMENT OF CONCRETE.
22. LOCATE SAWCUTS PER PLAN OR IF NOT SHOWN ON PLANS COMPLY WITH ACI 224.3.
23. IN NO CASE SHALL TRUCKS, BULLDOZERS OR OTHER HEAVY EQUIPMENT BE PERMITTED CLOSER THAN 8'-0" FROM ANY FOUNDATION WALL UNLESS APPROVED BY ENGINEER.

DOORS AND WINDOWS:

1. THE DESIGN PRESSURES FOR THE DOORS AND WINDOWS SHALL BE NOT LESS THAN THE VALUES SHOWN IN THE SCHEDULE.
2. THE DOORS AND WINDOWS SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S NOTICE OF APPROVAL (MIAMI NOA OR FBC APPROVAL).
3. THE DOORS AND WINDOWS MUST WITHSTAND THE IMPACT OF WIND BORNE MISSILES, OR SHALL BE PROTECTED WITH AN APPROVED IMPACT RESISTANT COVERING.
4. EACH UNIT SHALL BEAR A LABEL WITH THE MANUFACTURER'S NAME AND DESIGN PRESSURES.
5. PRIOR TO INSTALLATION, ALL FRAMES MUST BE CHECKED FOR RACK, TWIST AND OUT OF SQUARE.

CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
2. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A 615 GRADE 60.
3. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 "SPECIFICATION FOR WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT, FLAT SHEETS ONLY.
4. HOOKED ANCHOR BOLTS SHALL BE IN ACCORDANCE WITH ASTM A 36.
5. HEADED MACHINE BOLTS SHALL BE IN ACCORDANCE WITH ASTM A 1554.
6. ALL CONCRETE STRUCTURAL COMPONENTS SHALL HAVE CONCRETE STRENGTH TESTED IN ACCORDANCE WITH ASTM STANDARDS, FLORIDA BUILDING CODE AND ACI 318 (LATEST EDITION). TEST CYLINDERS MUST BE TAKEN EVERY 50 CUBIC YARDS OF CONCRETE PRIOR TO PLACEMENT. TESTING LAB SHALL PROVIDE COPIES OF CONCRETE TESTS RESULTS TO ENGINEER'S OFFICE FOR REVIEW.
7. THE CONCRETE STRENGTHS SHOWN IN THE FOLLOWING TABLE ARE THE MINIMUM COMPRESSIVE STRENGTHS AT 28 DAYS AND THE WATER/CEMENT RATIO IS THE MAXIMUM. THE SPECIFIED SLUMP IS THE MAXIMUM PRIOR TO THE ADDITION OF ADMIXTURES.CONCRETE SHALL BE STANDARD WEIGHT CONCRETE (145 PCF).

ITEM OF CONSTRUCTION	STRENGTH (PSI)	AGG (IN)	SLUMP (IN)	WATER/CEMENT (LB/LB)
BEAMS	4,000	3/4	3-5	0.45
ALL OTHER CONCRETE	3,000	3/4	6-8	0.60

8. FORMWORK SHALL COMPLY WITH "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK" (ACI 347R).
9. CONCRETE SHALL BE PROPORTIONED SUCH THAT 7 DAY STRENGTHS ARE A MINIMUM OF SEVENTY PERCENT OF THE SPECIFIED 28 DAY STRENGTH FOR ANY CONCRETE CONSTRUCTION REQUIRING SHORING, BRACING OR TO RECEIVE CONSTRUCTION LOADS.
10. IN ADDITION, SLABS-ON-GRADE SHALL HAVE A COMPRESSIVE STRENGTH OF AT LEAST 2400 PSI AT THREE DAYS IF SUBJECT TO CONSTRUCTION TRAFFIC.
11. CONCRETE ON EXPOSED BALCONIES, SLABS, BEAMS AND STAIRS SHALL HAVE A TOP SURFACE COATED WITH "ALKYL-ALKYOXY SILANE SEALER" OR ENGINEER-APPROVED EQUAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
12. TRANSPORTATION, PLACING, AND CURING OF CONCRETE SHALL COMPLY WITH ACI 318 BUILDING CODE (LATEST EDITION).
13. ALL CONCRETE EXPOSED TO WEATHER SHALL BE DESIGNED WITH A CORROSION INHIBITOR.
14. ALL CONCRETE SHALL CONTAIN AN ENGINEER-APPROVED ASTM C494 TYPE 'D' ADMIXTURE (WATER-REDUCING RETARDER).USE OF FLY ASH IS PERMITTED.
15. REINFORCING STEEL SHALL BE DEFORMED BARS, FREE FROM LOOSE RUST AND SCALE.
16. ALL ACCESSORIES SHALL HAVE UPTURNED LEGS, AND BE PLASTIC DIPPED AFTER FABRICATION. ACCESSORIES FOR REINFORCING SHALL BE INSTALLED IN ACCORDANCE WITH ACI 315 CURRENT EDITION.
17. ALL REINFORCING SHALL BE DETAILED AND FABRICATED FOLLOWING THE REQUIREMENTS OF ACI 315.
18. WELDED WIRE FABRIC SHALL BE SUPPORTED ON SLAB BOLSTERS.USE FLAT SHEETS ONLY.
19. LAP SPLICES FOR REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI 318. ALL UNSPECIFIED LAP SPLICES SHALL BE MAXIMUM LENGTH.
20. WELDING OF REINFORCING STEEL SHALL BE DONE IN STRICT ACCORDANCE WITH THE AMERICAN WELDING SOCIETY "REINFORCING STEEL WELDING CODE", A.W.S.D1.4.PREHEATING OF REINFORCING SHALL BE BASED ON THE CARBON EQUIVALENT DETERMINED FROM REINFORCING MILL REPORTS. GRADE 40 REINFORCING SHALL BE WELDED WITH E7018 LOW HYDROGEN ELECTRODES, AND GRADE 60 REINFORCING SHALL BE WELDED WITH E9018 LOW HYDROGEN ELECTRODES.
21. EXPOSED REINFORCEMENT, INSERTS AND PLATES INTENDED FOR BONDING WITH FUTURE EXTENSIONS SHALL BE PROTECTED FROM CORROSION.
22. CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
   a. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
   b. EXPOSED TO EARTH OR WEATHER:
      NO. 5 AND SMALLER BARS 1 1/2"
      NO. 6 AND LARGER BARS 2"
   c. NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
      BEAMS AND COLUMNS (PRIMARY REINFORCEMENT, TIES, STIRRUPS AND SPIRALS) 1 1/2"
23. NO WATER SHALL BE ADDED TO THE CONCRETE AT THE JOB SITE.
24. CONCRETE BEAMS CAST OVER MASONRY WALLS SHALL BE POURED AFTER THE BLOCK WALLS BELOW ARE IN PLACE. REINFORCING SHALL BE CONTINUOUS THROUGH BEAM WITH MINIMUM LAP SPLICES OF 48 BAR DIAMETERS AND BENT BARS AT CORNERS. USE METAL LATH, MORTAR OR SPECIAL UNITS TO CONFINE CONCRETE TO AREA REQUIRED, IN ACCORDANCE WITH ACI 530.1(SOLID METAL OR FELT CAVITY CAPS ARE PROHIBITED)
25. REMOVE ALL DEBRIS FROM FORMS AND FLOOR DECK BEFORE POURING.
26. ALL CONCRETE PLACED SHALL BE VIBRATED BY MECHANICAL VIBRATORS.
27. CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL (AS IN WALLS AND COLUMNS) SO AS TO CAUSE SEGREGATION OF AGGREGATES. USE HOPPERS, CHUTES OR TRUNKS OF VARYING LENGTHS SO THAT THE FREE UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 5 FEET, AND A SUFFICIENT NUMBER SHALL BE USED TO ENSURE THE CONCRETE IS BEING KEPT LEVEL AT ALL TIMES.
28. ALL PLACEMENT OF REINFORCING BARS SHALL BE IN ACCORDANCE WITH THE MANUAL OF STANDARD PRACTICE OF THE CONCRETE REINFORCING STEEL INSTITUTE.
29. SUPPORT BARS SHALL BE #5 OR GREATER, AND NOT SPACED MORE THAN 4' -0" 0/C. SUPPORT BARS AND ENDS OF MAIN REINFORCING SHALL NOT EXTEND MORE THAN 1' -6" PAST OUTERMOST CHAIR OR SUPPORT BAR.
30. A MINIMUM OF 3 SUPPORT BARS AND 3 INDIVIDUAL HIGH CHAIRS FOR EACH SUPPORT BAR SHALL BE PROVIDED FOR TOP REINFORCING.
31. PLASTIC TIPPED COLUMN SPACERS SHALL BE PROVIDED FOR VERTICAL COLUMN REINFORCING STEEL, SUCH THAT A 2" MINIMUM CLEARANCE IS MAINTAINED.
32. THE CONTRACTOR SHALL PROVIDE CHAIRS AT 4' -0" CENTER TO CENTER TO SUPPORT WIRE MESH WHILE CASTING SLAB. PULL FABRIC UP BETWEEN SUPPORTS TO PROVIDE 2" CLEARANCE TO TOP OF SLAB. MINIMUM SIDE AND END LAP ON FABRIC SHALL BE ONE WIRE SPACE.
33. ALL REINFORCING BARS SHALL BE SECURELY HELD IN PLACE DURING CONCRETE POURING. IF REQUIRED, ADDITIONAL BARS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR THE BARS.
34. BARS SUPPORTS SHALL BE PLASTIC TIPPED FOR EXPOSED CONCRETE. LEGS OF FOUNDATIONS CHAIRS SHALL BE GALVANIZED. PLASTIC "DONUT" SPACERS WILL BE REQUIRED FOR STEEL AGAINST FORMS IN CONCRETE BEAMS & WALLS IF FIELD CONDITIONS WARRANT.
35. ALL REINFORCING BARS MARKED "CONTINUOUS" SHALL BE LAPPED 36 DIA. AT SPLICES AND CORNERS UNLESS OTHERWISE NOTED. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AS REQUIRED. TERMINATE CONTINUOUS BARS AT NON-CONTINUOUS ENDS WITH STANDARD HOOKS. U.O.N.
36. ALL WALLS (OTHER THAN SHEARWALLS) AND COLUMNS SHALL BE DOWELED INTO FOOTINGS, WALLS, BEAMS, OR SLABS WITH BARS OF THE SAME SIZE AND SPACING AS THE BARS ABOVE. USE A (30) BAR DIAMETER LAP EXCEPT WHERE SPECIFICALLY INDICATED.
37. THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFE ADEQUATE SHORING,RE -SHORING, BRACING AND FORMWORK. GENERAL CONTRACTOR SHALL CONTRACT A STATE OF FLORIDA REGISTERED ENGINEER TO PREPARE SHORING AND RE-SHORING PLANS TO BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.
38. THE LONGITUDINAL REINFORCING STEEL IN BOND BEAMS, WALLS AND FOOTINGS SHALL BE CONTINUOUS AROUND CORNERS. SEE TYPICAL DETAILS.

CONCRETE MASONRY

1. CONCRETE MASONRY WORK SHALL BE IN ACCORDANCE WITH THE FLORIDA BUILDING CODE REQUIREMENTS FOR MASONRY, AND REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES ACI 530 / ASCE 6 (LATEST EDITION).
2. ALL MASONRY WORK SHALL CONFORM TO ACI 530/ASCE 5 STANDARDS, LATEST EDITION.
3. MOISTURE CONTENT OF BLOCKS SHALL NOT EXCEED 35% OF TOTAL ABSORPTION AT THE TIME OF PLACEMENT.
4. BLOCK UNITS SHALL CONFORM TO FLORIDA CONCRETE AND PRODUCTS ASSOCIATION SPECIFICATION "CM-1".
5. MAXIMUM LINEAR SHRINKAGE FOR BLOCK UNITS USED FOR EXTERIOR WALL SHALL NOT EXCEED .04%.
6. CONCRETE MASONRY UNITS SHALL BE IN CONFORMANCE WITH ASTM C 90, GRADE N, TYPE II. MASONRY UNITS SHALL BE TESTED IN ACCORDANCE WITH ASTM C 140 AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1900 PSI MINIMUM BASED ON THE NET CROSS SECTIONAL AREA.
7. TESTING TO BE DONE FOLLOWING ASTM C 140 "SAMPLING AND TESTING OF CONCRETE MASONRY UNITS".
8. USE ALL GROUT CONFORMING TO ASTM C 476 WITH A MIN. COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS, TESTED IN ACCORDANCE WITH ASTM C 39, COARSE TYPE WITH MAX. AGGREGATE SIZE OF 3/8" AND SLUMP OF 8" TO 11". TEST SAMPLES FOR COMPRESSIVE STRENGTH EVERY 30 YARDS OR EA DAY OF GROUTING. 2,800 PSI PUMP MIX READY MIX CONCRETE MADE WITH MAX. 3/8" AGGREGATE AND MAX. 9" SLUMP IS ACCEPTED ALTERNATE. NO ADMIXTURES WILL BE PERMITTED IN MORTAR AND GROUT.
9. GROUT FOR POURING SHALL BE A FLUID CONSISTENCY.
10. USE TYPE "M" MORTAR IN CONFORMANCE WITH ASTM C 270, AND ASTM C 780, TYPES (DO NOT USE MASONRY CEMENT). MORTAR SHALL BE FRESHLY PREPARED AND UNIFORMLY MIXED.
11. REMOVE MORTAR PROTRUDING INTO CELL CAVITIES THAT ARE TO BE REINFORCED AND GROUTED. ALLOW A MIN. OF 24 HOURS FOR MORTAR TO CURE BEFORE PLACING GROUT.
12. REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60, FY = 60,000 PSI. ALL SPLICES (LAPS) AND CORNER BARS SHALL BE MINIMUM 30 INCHES OR AS SHOWN ON DRAWINGS. EPOXY COATED BARS SHALL HAVE THEIR LAP LENGTHS 50% GREATER THAN HOSE SPECIFIED ABOVE.
13. ANCHOR BOLTS SHALL BE ASTM A 307, FOR HEADED MACHINE BOLTS.
14. USE PRESSURE-TREATED WOOD FOR ALL WOOD IN CONTACT WITH MASONRY
15. DO NOT STACK MASONRY UNITS MORE THAN 2' -8" HIGH AND IN PALLETS OF 4'X4' MAXIMUM SURFACE AREA AND NO LESS THAN 8 FT. AWAY FROM EACH OTHER.
16. WALLS TALLER THAN 8 FEET SHALL BE BRACED TO ENSURE STABILITY OF THE MASONRY DURING CONSTRUCTION.
17. ALL UNITS TO BE LAID UP IN RUNNING BOND WITH CONCAVE COMPRESSED JOINTS UNLESS NOTED OTHERWISE.
18. HEAD AND BED JOINTS SHALL BE 3/8" THICK EXCEPT STARTING JOINT AT FOUNDATION WHICH SHALL BE 1/4" MINIMUM AND 3/4" MAXIMUM. ALL UNITS SHALL BE LAID WITH FULL MORTAR COVERAGE OF THE FACE SHELLS IN BOTH HORIZONTAL AND VERTICAL OR TRUSS.
19. PROVIDE 9 GAGE LADDER TYPE CONT. GALVANIZED HORIZONTAL JOINT REINFORCING (DUR O WALL OR ENGINEER APPROVED SUBSTITUTION) AT ALTERNATE BLOCK COURSES.(16" VERTICALLY) WITH MIN. 6" LAP SPLICE.
20. USE PREFABRICATED CORNERS AND TEES AT WALL INTERSECTIONS. OVERLAP DISCONTINUOUS ENDS A MIN. OF 12". HORIZONTAL REINFORCING SHALL CONFORM TO ASTM A-82.
21. INTERSECTING WALLS SHALL BE INTERLOCKED WITH RUNNING BOND.
22. 18 GAUGE DOVETAIL ANCHORS (5~8" LONG) AND INSERTS SHALL BE USED EVERY 2ND BLOCK COURSE AT BLOCK-COLUMN INTERSECTIONS.
23. WHERE VERTICAL REINFORCEMENT IS REQUIRED PROVIDE ONE PIECE, NO SPLICES, CENTERED IN THE WALL UNLESS SPECIFICALLY DETAILED. OTHERWISE.PROVIDE VERTICAL SUPPORT SPACERS AT 200 REINFORCEMENT DIAMETERS MAXIMUM BUT NOT EXCEEDING 10 FEET. THE CONTRACTOR HAS THE OPTION TO USE ADDITIONAL LAP SPLICES FOR THE PLACEMENT OF THE VERTICAL REINFORCING.
24. ALL REINFORCED HOLLOW UNIT MASONRY SHALL BE BUILT TO PRESERVE THE UNOBSTRUCTED VERTICAL CONTINUITY OF THE CELLS TO BE FILLED. WALLS AND CROSS WEBS FORMING SUCH CELLS TO BE FILLED SHALL BE FULL-BEDDED IN MORTAR TO PREVENT LEAKAGE OF GROUT. ALL HEAD (OR END) JOINTS SHALL BE SOLIDLY FILLED WITH MORTAR FOR A DISTANCE IN FROM THE FACE OF THE WALL OR UNIT NOT LESS THAN THE THICKNESS OF THE LONGITUDINAL FACE SHELLS. BOND SHALL BE PROVIDED BY LAPPING UNITS IN SUCCESSIVE VERTICAL COURSES OR BY EQUIVALENT MECHANICAL ANCHORAGE.
25. VERTICAL CELLS TO BE FILLED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED, CONTINUOUS VERTICAL CELL MEASURING NOT LESS THAN 3" AND HAVING A CLEAR AREA OF 10 SQUARE INCHES.
26. REINFORCING BARS REQUIRE A MINIMUM CLEAR DISTANCE OF 1/4" FOR FINE GROUT OR 1/2" FOR COURSE GROUT BETWEEN ANY MASONRY FACE. A MINIMUM 2" COVER FROM THE EXTERIOR FACE OF THE BLOCK TO THE REINFORCING INCLUDING GROUT SHALL ALSO BE OBSERVED.
27. FOR REINFORCING CONGESTION KNOCK OUT BLOCKS TO BE USED TO FACILITATE CONSTRUCTION.
28. ALL REINFORCING TERMINATING AT BOND BEAMS REQUIRE A STANDARD HOOK WITH AN EMBEDMENT OF 6" MIN.
29. USE MINIMUM 1 #5 IN FILLED CELL AT WALL INTERSECTIONS, EACH SIDE OF OPENINGS IN THE WALL AND AT THE ENDS OF WALLS UNLESS NOTED IN PLANS TO BE DIFFERENT.
30. ALL CELLS CONTAINING REINFORCING OR EMBEDDED ITEMS SHALL BE SOLID GROUTED.
31. CLEANOUT OPENINGS SHALL BE PROVIDED AT THE BOTTOM OF ALL CELLS TO BE FILLED IN EACH POUR OF GROUT WHERE SUCH GROUT POUR IS IN EXCESS OF 4 FEET IN HEIGHT. ANY OVERHANGING MORTAR OR OTHER OBSTRUCTION OR DEBRIS SHALL BE REMOVED FROM THE INSIDES OF SUCH CELL WALLS. THE CLEANOUTS SHALL BE SEALED BEFORE GROUTING, AFTER INSPECTION.
32. GROUT SHALL BE A CONTINUOUS OPERATION POURED IN LIFTS OF 8 FEET MAXIMUM HEIGHT. ALL GROUT SHALL BE CONSOLIDATED AT TIME OF POURING BY PUDDLING OR VIBRATION AND THEN RECONSOLIDATED AGAIN BY PUDDLING LATER, BEFORE PLASTICITY IS LOST.
33. WHEN TOTAL GROUT POUR EXCEEDS 8 FEET IN HEIGHT, THE GROUT SHALL BE PLACED IN FOUR FOOT LIFTS WITH NOT LESS THAN 30 MINUTES NOR MORE THAN ONE HOUR BETWEEN LIFTS. VIBRATE EACH LIFT AND RECONSOLIDATE PREVIOUS LIFT AFTER PLACING NEXT.
34. WHEN THE GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE POUR OF GROUT NOT LESS THAN 1/2 INCH BELOW THE TOP OF THE UPPERMOST UNIT GROUTED.
35. UNITS WHICH ARE DISTURBED AFTER INITIAL BOND IS ACHIEVED MUST BE REMOVED AND RELAID WITH FRESH MORTAR TO ENSURE ADEQUATE BOND STRENGTH AND MINIMIZE THE LIKELIHOOD OF WATER PENETRATION INTO AN UNBONDED JOINT
36. WHERE ANCHOR BOLTS ARE SET IN MASONRY WALL, FILL BLOCK CELLS WITH GROUT FOR BOLT COURSE, ONE COURSE ABOVE AND TWO COURSES BELOW ANCHOR ELEVATION.
37. CHASES AND RECESSES SHALL BE CONSTRUCTED AS MASONRY UNITS ARE LAID. MASONRY DIRECT ABOVE CHASES OR RECESSES WIDER THAN 12 INCHES SHALL BE SUPPORTED ON PRECAST GROUTED LINTELS.
38. PROVIDE PRECAST LINTELS OVER ALL OPENINGS IN MASONRY CONSTRUCTION UNLESS NOTED OTHERWISE IN PLAN. PROVIDE #5 BAR IN ALL LINTELS GROUTED SOLID AND SHALL HAVE 4" MINIMUM BEARING AT EACH END. FOR RECESSED LINTELS THE MINIMUM BEARING SHALL BE 8".
39. FOR SPECIAL INSPECTIONS THE ARCHITECT/ENGINEER SHALL BE GIVEN A MINIMUM 72 HOURS NOTICE PRIOR TO EACH REINFORCED BLOCK GROUTING OR CONCRETING OPERATION.

TIMBER AND PRE-ENGINEERED WOOD TRUSSES

1. ALL LUMBER SHALL MEET THE STANDARD OF QUALITY AS STATED IN FBC 2303.
2. ALL PRESERVATIVE TREATED WOOD REQUIRED TO BE TREATED PER CODE OR DRAWINGS SHALL BE IDENTIFIED BY THE QUALITY MARK OF AN INSPECTION AGENCY WHICH HAS BEEN APPROVED BY AN ACCREDITATION BODY WHICH COMPLIES WITH THE REQUIREMENTS OF THE AMERICAN LUMBER STANDARD COMMITTEE TREATED WOOD PROGRAM, OR EQUIVALENT.
3. ALL LUMBER SIZES NOTED AND SPECIFIED ON PLANS ARE NOMINAL SIZES UNLESS SPECIFICALLY INDICATED AS NET SIZE.
4. WOOD IN CONTACT WITH THE GROUND OR BELOW GROUND LEVEL SHALL BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD.
5. WOOD IN CONTACT WITH CONCRETE OR MASONRY SHALL BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD.
6. THE PLACEMENT OF HOLES IN FLOOR JOIST WEBS SHALL BE PER MANUFACTURERS SPECIFICATIONS OR APPROVED BY THE S.E.R. IN WRITING. THE NOTCHING OR CUTTING OF FLOOR JOIST FLANGES IS NOT ALLOWED.
7. SUBMIT TRUSS SHOP DRAWINGS SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF FLORIDA FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS SHALL INCLUDE TRUSS LAYOUT, DESIGN LOADS, TRUSS REACTIONS (DL & LL AND DL & WL) AND ALL OTHER INFORMATION REQUIRED FOR PROPER TRUSS INSTALLATION. DESIGN OF TRUSSES SHALL INCLUDE THE UPLIFT EFFECTS OF THE APPROPRIATE DESIGN WIND LOAD UTILIZING SHAPE FACTORS FROM THE FLORIDA BUILDING CODE.
8. TRUSS MEMBERS AND COMPONENTS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED, OR OTHERWISE ALTERED IN ANY WAY WITHOUT THE WRITTEN APPROVAL OF THE S.E.R. ALTERATIONS RESULTING IN THE ADDITION OF LOADS TO ANY MEMBER (E.G. HVAC EQUIPMENT, WATER HEATER) SHALL NOT BE PERMITTED WITHOUT VERIFICATION THAT THE TRUSS IS CAPABLE OF SUPPORTING SUCH ADDITIONAL LOADING.
9. STUD PARTITIONS CONTAINING PLUMBING, HEATING, CONDUIT OR OTHER PIPES SHALL BE SO FRAMED AND SPACED AS TO GIVE PROPER CLEARANCE FOR THE PIPING. WHERE PIPES ARE PLACED IN OR PERTLY IN A PARTITION, NECESSITATION THE CUTTING OF THE SOLE PLATE, A METAL TIE NOT LESS THAN 0.058 INCH (16 GAGE) AND 1 ½ INCHES WIDE SHALL BE FASTENED TO EACH PLATE ACROSS AND TO EACH SIDE OF THE OPENING WITH NOT LESS THAN SIX 16D NAILS.
10. IN LOAD BEARING WALLS AND PARTITIONS, ANY WOOD STUD MAY BE CUT OR NOTCHED TO A DEPTH NOT EXCEEDING 25 PERCENT OF ITS WIDTH. CUTTING OR NOTCHING OF STUDS TO A DEPTH NOT GREATER THAN 40 PERCENT OF THE WIDTH OF THE STUD IS PERMITTED IN NON-BEARING PARTITIONS SUPPORTING NO LOADS OTHER THAN THE WEIGHT OF THE PARTITION.
11. BORED HOLES NOT GREATER THAN 60 PERCENT OF THE WIDTH OF THE STUD ARE PERMITTED IN NONBEARING PARTITIONS OR IN ANY WALL WHERE EACH BORED STUD IS DOUBLED, PROVIDING NOT MORE THAN TWO SUCH SUCCESSIVE DOUBLE STUDS ARE BORED. IN NO CASE SHALL THE EDGE OF THE BORED HOLE BE NEARER THAN 5/8 INCH TO THE EDGE OF THE STUD. BORED HOLES SHALL NOT BE LOCATED AT THE SAME SECTION OF STUD AS A CUT OR NOTCH.
12. DESIGN CALCULATIONS FOR TRUSSES SHALL CLEARLY SHOW THE DESIGN LOADS FOR BOTH GRAVITY AND UPLIFT CONDITIONS.
13. ROOF PLYWOOD SHALL SPAN RATED STRUCTURAL SHEATHING, ATTACHED TO ROOF FRAMING WITH GALVANIZED NAILS PER DRAWINGS. PROVIDE 1/8" SPACING AT PANEL EDGES AND END JOINTS UNLESS OTHERWISE NOTED.
14. PROVIDE TRUSS ANCHORS AT ALL RAFTER/TRUSS TO BEARING CONNECTIONS. ALL TRUSS TO TRUSS CONNECTORS AND TIE DOWNS ARE RESPONSIBILITY OF THE TRUSS MANUFACTURER.
15. ALL WOOD TRUSS/RAFTER/BEAM TO MASONRY OR CONCRETE SHALL HAVE A MOISTURE BARRIER.
16. CHECK SCHEDULE AND/OR SECTIONS FOR VARIATIONS IN STRAPS. PROVIDE MULTIPLE OR SPECIFIC STRAPS AT TRUSS GIRDERS AND GABLE ENDS AS SHOWN ON PLANS.
17. ALL NAILS AND METAL HARDWARE EXPOSED TO THE WEATHER SHALL BE GALVANIZED OR COATED WITH AN APPROVED MATERIAL. ALL NAILS SHALL BE COMMON WIRE NAILS UNLESS NOTED OTHERWISE. SPACE NAILS IN STRAPS SO AS NOT TO SPLIT WOOD.
18. ALL STRUCTURAL ELEMENTS MUST BE S.P.F. GRADE 1, S. PINE GRADE 2 OR BETTER.
19. ALL WALL SHEATHING FOR EXTERIOR WALLS SHALL BE SPAN RATED STRUCTURAL, INSTALLED WITH FACE GRAIN PARALLEL TO SUPPORTS. CONNECT TO SUPPORTS WITH GALVANIZED NAILS PER THE DRAWINGS. PROVIDE 2X4 BLOCKING AT ALL HORIZONTAL JOINTS. PROVIDE 1/8" SPACE AT PANEL EDGES AND END JOINTS UNLESS OTHERWISE NOTED.
20. BUILT UP LUMBER (MULTIPLE MEMBERS) MUST BE FASTENED TOGETHER TO ACT AS ONE TO RESIST THE APPLIED LOAD. PROVIDE MINIMUM 2 ROWS OF 16D @ 12" O.C.

ABBREVIATIONS

AB	- ANCHOR BOLT	IN	- INCH/INCHES
AFF	- ABOVE FINISHED FLOOR	MAS	- MASONRY
AHJ	- AUTHORITY HAVING JURISDICTION	MAX	- MAXIMUM
ALT	- ALTERNATE	MFR	- MANUFACTURER
BOTT	- BOTTOM	MIN	- MINIMUM
CMU	- CONCRETE MASONRY UNIT	MISC	- MISCELLANEOUS
COL	- COLUMN	MPH	- MILES PER HOUR
CONC	- CONCRETE	NTS	- NOT TO SCALE
CONT	- CONTINUOUS	OC	- ON CENTER
D&E	- DRILLED AND EPOXY	PSF	- POUNDS PER SQUARE FOOT
DIA	- DIAMETER	PT	- PRESSURE TREATED
DIM	- DIMENSION	REV	- REVISION/REVISED
DN	- DOWN	SPECS	- SPECIFICATIONS
EA	- EACH	SCHED	- SCHEDULE
ELEV	- ELEVATION/ELEVATOR	TYP	- TYPICAL
ENGR	- ENGINEER	UNO	- UNLESS NOTED OTHERWISE
EW	- EACH WAY	VERT	- VERTICAL
E	- EXISTING	VIF	- VERIFY IN FIELD
EXP	- EXPANSION	W/	- WITH
EXT	- EXTERIOR	W/O	- WITHOUT
FBC	- FLORIDA BUILDING CODE	WWF	- WELDED WIRE FABRIC
FF	- FINISH FLOOR	WWM	- WELDED WIRE MESH
FND	- FOUNDATION	#5 (5/8")	- STEEL REINFORCING BAR (REBAR) #5
FT	- FEET/FOOT		
FTG	- FOOTING		
HORIZ	- HORIZONTAL		

Components & Cladding Design Pressure Schedule (pounds per square foot minimum)

Area	Zone 4	Zone 5 (Corner)
10 SF	+46 / -50	+46 / -62
20 SF	+44 / -48	+46 / -58
35 SF	+43 / -50	+43 / -55
50 SF	+42 / -45	+42 / -52
100 SF	+39 / -43	+39 / -48
200 SF	+38 / -41	+38 / -45
	Zone 5 < 5' from edge of Building	

ZONE 5 < 5' FROM EDGE OF BUILDING

REVISIONS	DATE
1	
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5	
6	

JOB NUMBER	16-0357
DESIGNED	RV
DRAWN BY	RK
DATE	DEC 2016
CHECKED BY	RV
DATE ISSUED	11/17/2017
SCALE	As indicated

MBV ENGINEERING, INC.
MOIA BOWLES VILLAMIZAR & ASSOCIATES
CONSULTING ENGINEERING CA#3728
1835 20th STREET
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STRUCTURAL NOTES

Waveland Beach Park
Parks and Special Facilities Division
10350 S. OCEAN DRIVE
ST. LUCIE COUNTY FLORIDA

RODOLFO VILLAMIZAR LICENSE No. 61000 STATE OF FLORIDA PROFESSIONAL ENGINEER

RODOLFO VILLAMIZAR
P.E. #61000
DATE: 11-17-2017

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S1.0
1 OF 5
16-0357

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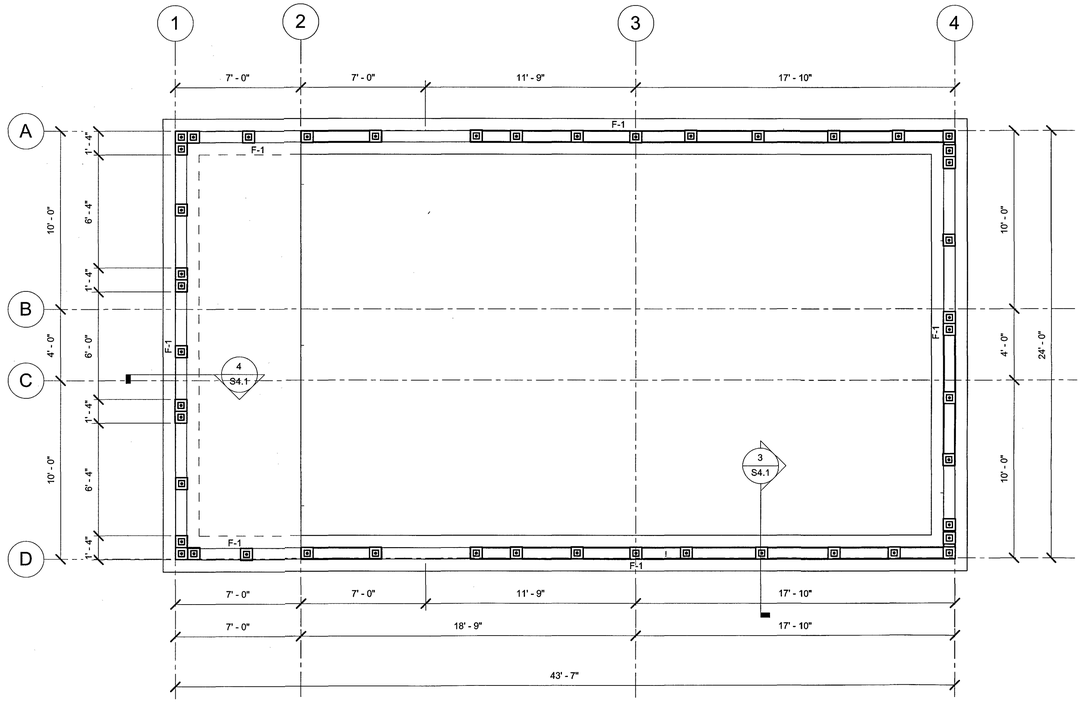
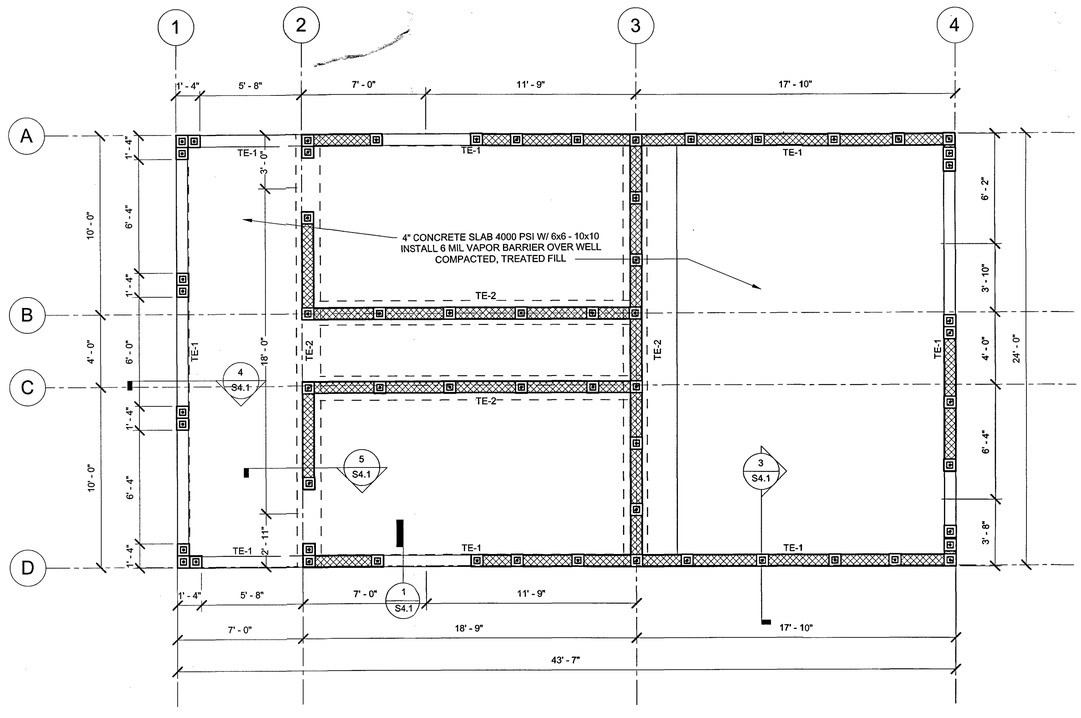


FOUNDATION STEM WALL PLAN

1/4" = 1'-0"



FOUNDATION SLAB PLAN

1/4" = 1'-0"

Foundation Schedule			
MARK	W x D x L	REINFORCEMENT	NOTES
TE-1	8" x 8" x CONT.	(2) #5 CONT. BOTTOM	THICKENED EDGE
TE-2	20" x 16" x CONT.	(2) #5 CONT. BOTTOM	BELL FOOTER
F-1	24" x 12" x CONT.	(3) #5 CONT. BOTTOM	STEM WALL

REVISIONS	DATE
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FOUNDATION PLANS

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Parks and Special Facilities Division
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2 OF 5
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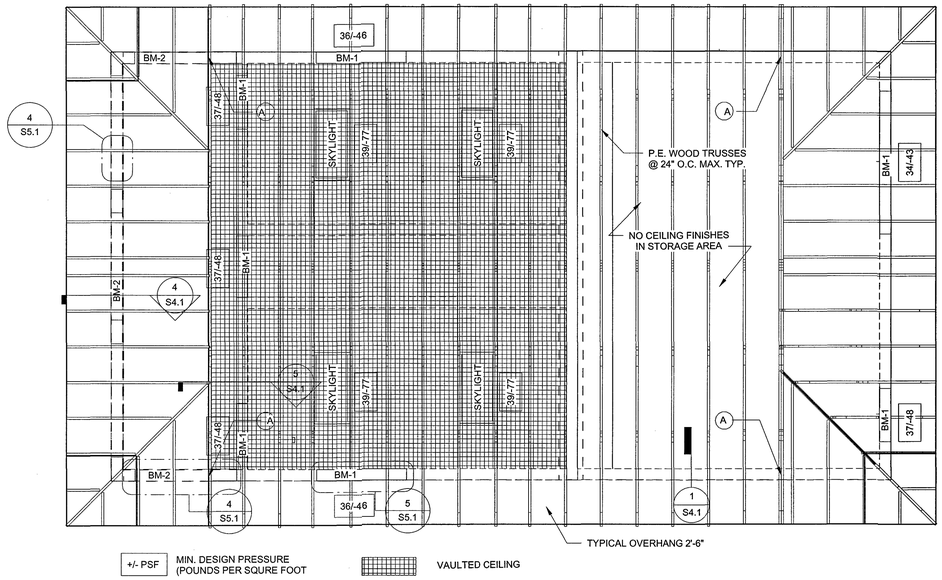
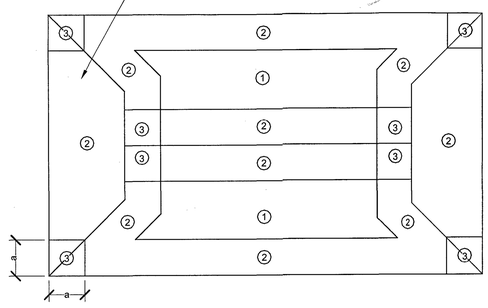


Roof Framing Plan

1/4" = 1'-0"



Roof Zones

1/8" = 1'-0"

TRUSS CONNECTOR SCHEDULE

TRUSS	STRAP	UP-LIFT MAX (LBS)	FASTENERS	NOTES
MASONRY				
	HETA20	1,810	(9) 10d x 1-1/2"	
(A)	(2) HETA20	2,035	(10) 10d x 1-1/2"	FOR 2 PLY USE (12) 16d's

NOTE: INTERIOR WALLS DESIGNED AS NON-LOAD BEARING AND DO NOT NEED TRUSS CONNECTORS

ROOF SHEATHING FASTENING SCHEDULE WITH 19/32" PLYWOOD SPACING REQUIRED FOR 8d GALV. RINGSHANK NAILS

BUILDING	ZONE 1	ZONE 2	ZONE 3
ENCLOSED	6" O.C. @ EDGES 6" O.C. @ FIELD	4" O.C. @ EDGES 6" O.C. @ FIELD	4" O.C. @ EDGES 4" O.C. @ FIELD
DESIGN PRESSURE ALLOWABLE	-44 PSF	-84 PSF	-84 PSF
DESIGN PRESSURE ULTIMATE	-70 PSF	-135 PSF	-135 PSF
PARTIALLY ENCLOSED	3" O.C. @ EDGES 6" O.C. @ FIELD	3" O.C. @ EDGES 3" O.C. @ FIELD	3" O.C. @ EDGES 3" O.C. @ FIELD
DESIGN PRESSURE ALLOWABLE	-59 PSF	-99 PSF	-99 PSF
DESIGN PRESSURE ULTIMATE	-94 PSF	-159 PSF	-159 PSF

*** a = 4 FT**

Beam Schedule

MARK	Type	REINFORCEMENT/CONNECTION	NOTES
BM-1	8F16 - 1T/1B	(1) #5 TOP & BOTTOM CONT.	PRE-CAST LINTEL
BM-2	8"Wx18"D	(2) #6 TOP CONT. & (3) #6 BOTTOM CONT.	REINFORCED CONCRETE W/ #4 HOOPS @ 8" O.C. MAX.

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ROOF FRAMING AND ZONES PLAN

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Parks and Special Facilities Division
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3 OF 5

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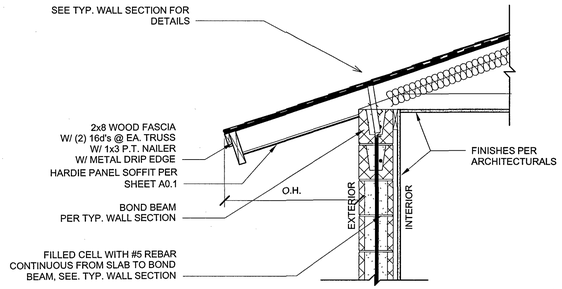
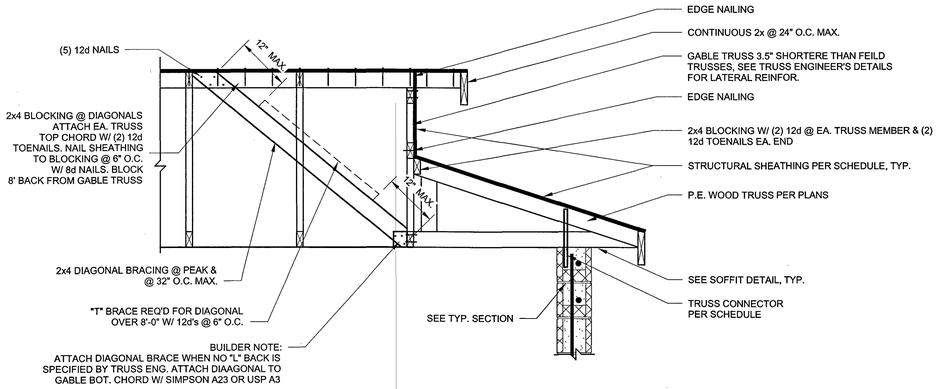


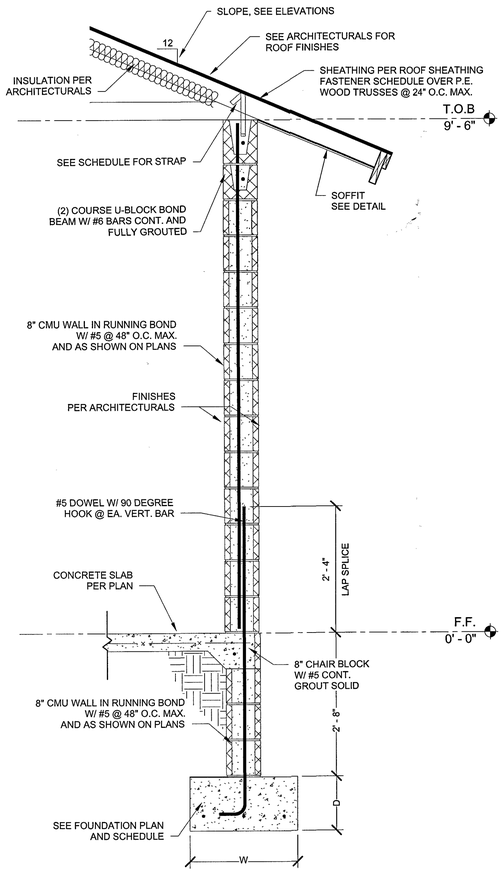
2 S4.1 Soffit Detail

3/4" = 1'-0"



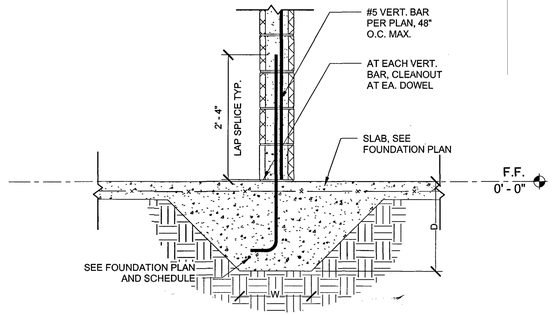
6 S4.1 Dutch Hip Gable Detail

3/4" = 1'-0"



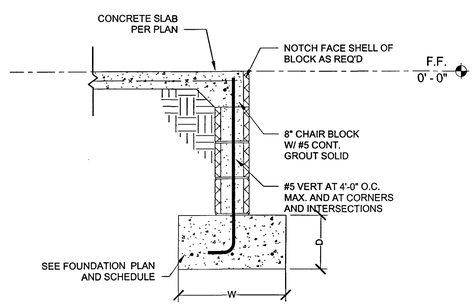
3 S4.1 Typical Wall Section here

3/4" = 1'-0"



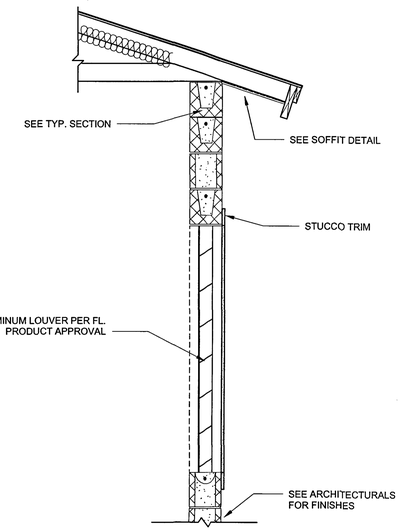
5 S4.1 Bell Footer

3/4" = 1'-0"



4 S4.1 Edge of Slab

3/4" = 1'-0"



1 S4.1 Louver Section

3/4" = 1'-0"

16-0357

REVISIONS	DATE
1	
2	
3	
4	
5	
6	

JOB NUMBER	16-0357
DESIGNED	RK
DRAWN BY	RK
DATE	12/06/16
CHECKED BY	RV
DATE ISSUED	11/17/2017
SCALE	3/4" = 1'-0"

MBV ENGINEERING, INC.
MOIA BOWLES VILLAMIZAR & ASSOCIATES
CONSULTING ENGINEERING CA#3728
1835 20th STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3817
MELBOURNE, FL - PH (321) 253-1510
FT. PIERCE, FL - PH (772)-468-9055

STRUCTURAL SECTIONS

Waveland Beach Park
Parks and Special Facilities Division
10350 S. OCEAN DRIVE
ST. LUCIE COUNTY FLORIDA

RODOLFO VILLAMIZAR LICENSE No. 61000 STATE OF FLORIDA PROFESSIONAL ENGINEER

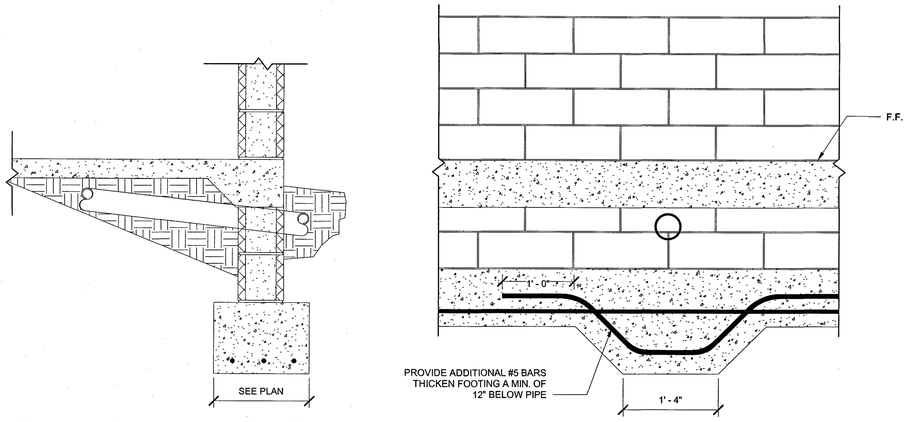
RODOLFO VILLAMIZAR P.E. #61000

DATE: 11-17-2017

SHEET
S4.1
4 OF 5

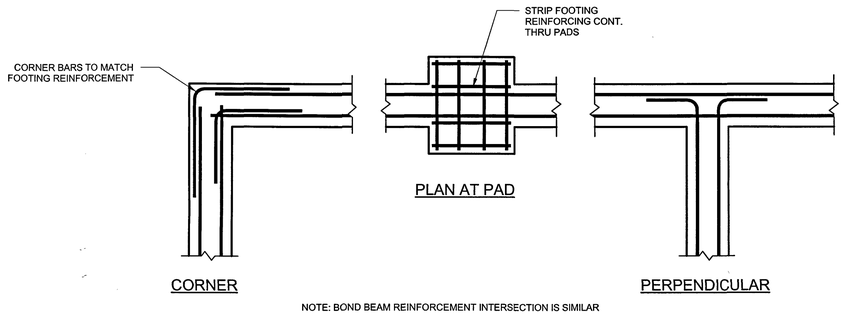
16-0357

BID SET



1 S5.1 Footing Penetration Detail

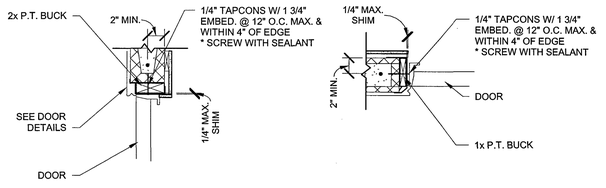
1" = 1'-0"



NOTE: BOND BEAM REINFORCEMENT INTERSECTION IS SIMILAR

6 S5.1 Footing Intersection Detail

3/4" = 1'-0"

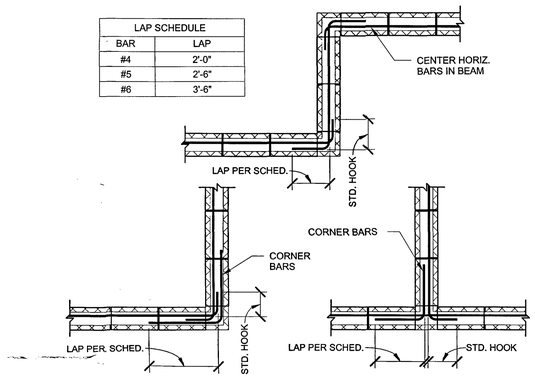


NOTES:
*REFERENCE N.O.A. INSTALLATION ANCHOR LAYOUT OR SPECIFIC ANCHOR LOCATIONS AT CORNERS AND MEETING RAILS.
SHIMS SHALL BE SHORTER THAN DEPTH OF DOOR AND SHALL BE NON WATER-DEGRADABLE OR COMPRESSIBLE.
SEE ARCHITECTURAL PLANS FOR FINISHES AND WATERPROOFING.

2 S5.1 Door Buck Detail

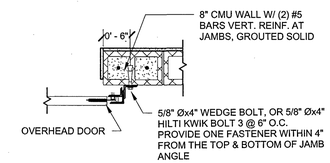
3/4" = 1'-0"

LAP SCHEDULE	
BAR	LAP
#4	2'-0"
#5	2'-6"
#6	3'-6"



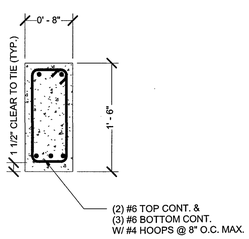
7 S5.1 Masonry Beam Corner Details

1/2" = 1'-0"



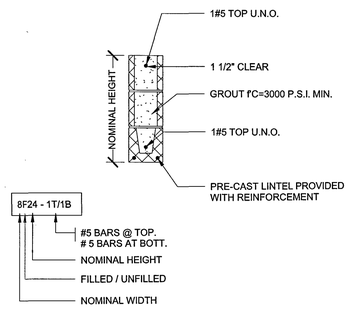
3 S5.1 Overhead Door Detail

3/4" = 1'-0"



4 S5.1 Concrete Beam Detail

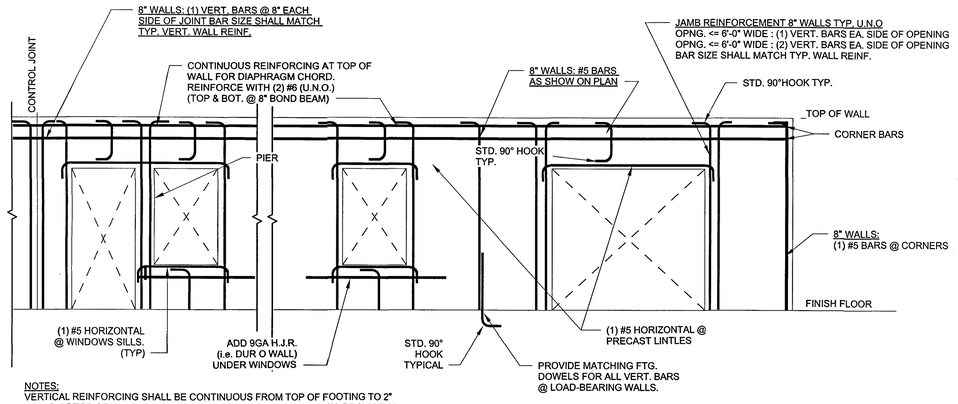
1" = 1'-0"



NOTE: LINTEL SHALL BE 8F16 - 1B/1T UNLESS CALLED OUT ON PLAN

5 S5.1 Lintel Designation Detail

3/4" = 1'-0"



NOTES:
VERTICAL REINFORCING SHALL BE CONTINUOUS FROM TOP OF FOOTING TO 2" CLEAR OF TOP OF WALL, WITH DOWELS FROM FOOTING TO MATCH. PROVIDE 90 HOOK IN BOND BEAM ON ALL VERT. BARS.
SEE GENERAL NOTES FOR JOINT REINFORCEMENT

8 S5.1 Elevation of a Typical Masonry Wall

1/2" = 1'-0"

16-0357

MBV ENGINEERING, INC.
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PH. (772) 569-0035
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MELBOURNE, FL - PH (321) 253-1510
FT. PIERCE, FL - PH (772)-468-9055

REVISIONS	DATE
1	
2	
3	
4	
5	
6	

JOB NUMBER	16-0357
DESIGNED	RV
DRAWN BY	RK
DATE	MAY 2017
CHECKED BY	RV
DATE ISSUED	11/17/2017
SCALE	As indicated

STRUCTURAL DETAILS

Waveland Beach Park
Parks and Special Facilities Division
10350 S. OCEAN DRIVE
FLORIDA
ST. LUCIE COUNTY

RODOLFO VILLAMIZAR LICENSE No. 61000 STATE OF FLORIDA PROFESSIONAL ENGINEER

RODOLFO VILLAMIZAR
P.E. #61000
DATE: 11-17-2017

SHEET
S5.1
5 OF 5

16-0357

BID SET

DUCTWORK SYSTEM SYMBOLS

SYMBOL	DESCRIPTION
	SUPPLY AIR DUCT SECTION (UP/DOWN)
	RETURN, OUTDOOR OR EXHAUST AIR DUCT SECTION (UP/DOWN)
	OUTDOOR AIR DUCT SECTION (UP/DOWN)
	EXHAUST AIR DUCT SECTION (UP/DOWN)
	RETURN, EXHAUST OR TRANSFER AIR FLOW
	SUPPLY AIR FLOW
MD	MOTORIZED DAMPER
VD	MANUAL VOLUME DAMPER
FD	FIRE DAMPER
SD	SMOKE DAMPER
AD	ACCESS DOOR
	FLEXIBLE DUCT CONNECTION
	ELBOW WITH TURNING VANES
	SUPPLY DIFFUSER WITH 4-WAY BLOW
	SUPPLY DIFFUSER WITH 2-WAY BLOW
	SUPPLY DIFFUSER WITH QUADRANT BLOCK
	SD - SIDEWALL DIFFUSER
	RETURN, TRANSFER OR EXHAUST GRILLE OR REGISTER
	EXHAUST FAN
	ROUND CEILING DIFFUSER
	LINEAR DIFFUSER
CDP-1 / 100	AIR DEVICE, TYPE AND CAPACITY
	SQUARE TO ROUND TRANSITION
	EXISTING DUCTWORK OR EQUIPMENT TO REMAIN
	EXISTING DUCTWORK OR EQUIPMENT TO BE REMOVED
	NEW DUCTWORK OR EQUIPMENT
	ROOF CENTRIFUGAL FAN, EXHAUST
	ROOF CENTRIFUGAL FAN, SUPPLY
	ELECTRIC DUCT HEATER
	UNDERCUT

CONTROL SYMBOLS

T	THERMOSTAT – 5'-0" A.F.F. MOUNTING HEIGHT
H	HUMIDISTAT – 5'-0" A.F.F. MOUNTING HEIGHT
T	TEMPERATURE SENSOR
P	STATIC PRESSURE SENSOR
S	DUCT SMOKE DETECTOR
VD	VOLUME DAMPER
AD	AUTO DAMPER

HVAC PIPING LEGEND

—CWR—	CONDENSER WATER RETURN
—CWS—	CONDENSER WATER SUPPLY
—CHWS—	CHILLED WATER SUPPLY
—CHWR—	CHILLED WATER RETURN
—HWS—	HOT WATER SUPPLY
—HWR—	HOT WATER RETURN
– – – – –	REFRIGERANT PIPING
— CD —	CONDENSATE DRAIN FROM COOLING COIL
— – —	DOMESTIC COLD WATER
— G —	GAS PIPING

GENERAL NOTES:

1. PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE JOB SITE TO THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING FIELD CONDITIONS AND PHYSICAL CONSTRAINTS ASSOCIATED WITH THE WORK TO BE ACCOMPLISHED UNDER THIS CONTRACT.
2. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING CODES AND STANDARDS: FLORIDA MECHANICAL CODE, FLORIDA ENERGY CODE, NFPA-90A STANDARDS FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS, SMACNA DUCT CONSTRUCTION STANDARDS, ASHRAE 62.1
3. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE INSTALLED.
4. COORDINATE THE CUTTING AND PATCHING OF BUILDING COMPONENTS TO ACCOMMODATE THE INSTALLATION OF HVAC EQUIPMENT AND MATERIALS.
5. PROVIDE WEATHER PROTECTION FOR ALL EQUIPMENT AND MATERIALS STORED ON SITE.
6. VENTILATION DUCTWORK SHALL BE SHEET METAL AND INSTALLED IN ACCORDANCE WITH SMACNA. ALL OTHER DUCTWORK SHALL BE AS SHOWN ON THE PROJECT PLANS. DUCTWORK INSULATION SHALL COMPLY WITH THE FLORIDA ENERGY CODE.
7. REFER TO ELECTRICAL CEILING GRID LIGHTING PLAN FOR EXACT LOCATION OF AIR DISTRIBUTION DEVICES
8. PROVIDE ALL DUCT TRANSITIONS REQUIRED TO CONNECT EQUIPMENT SHOWN TO DUCT SYSTEMS.
9. PROVIDE DUCT MOUNTED SMOKE DETECTORS ON THE SUPPLY & RETURN OF ALL AIR HANDLING SYSTEMS 2000 CFM AND GREATER.
10. PROVIDE AIR BALANCE TO QUANTITIES SHOWN ON THE PLANS. PROVIDE ALL VOLUME DAMPERS REQUIRED TO ACCOMPLISH AIR BALANCE.—SUBMIT BALANCE REPORT FOR REVIEW
11. SYSTEM TEST & BALANCE REPORT TO BE INCLUDED WITH INSTALLATION PROVIDE REPORT TO OWNER AND ENGINEER FOR REVIEW INSTALLATION WILL NOT BE CONSIDERED COMPLETE WITHOUT T&B REPORT

MECHANICAL DRAWING INDEX

SHEET	DESCRIPTION	ISSUED
M-1	HVAC GENERAL NOTES, SYMBOLS & SCHEDULES	YES
M-2	MECHANICAL HVAC PLAN	YES

NOTE: SOME NOTES & SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

NO.	DATE	REVISIONS	CK	APP
		BID SET		
1	01-17-17			

Fort Pierce Engineering, Inc.
Dependable Mechanical, Electrical & Plumbing Design
C.A. No. 28173
315 South 7th Street
Fort Pierce, FL. 34950
Phone: 772 672-4636
Fax: 772 672-4637

PROJECT NAME: WAVELAND BEACH PARK - RESTROOM FACILITY

CLIENT: N2 ARCHITECTURE + DESIGN, 2081 SE OCEAN BOULEVARD, SUITE 1A, STUART, FLORIDA 34996

PROJECT LOCATION: ST. LUCIE COUNTY, FLORIDA

ENGINEER SEAL

ERIC J. SVOBODA, LICENSE, No. 60982, 11/15/17, STATE OF FLORIDA, PROFESSIONAL ENGINEER

Eric J. Svoboda, PE
P.E. No. 60982

SHEET TITLE: HVAC GENERAL NOTES, SYMBOLS & SCHEDULES

ISSUE DATE: 11-17-2017

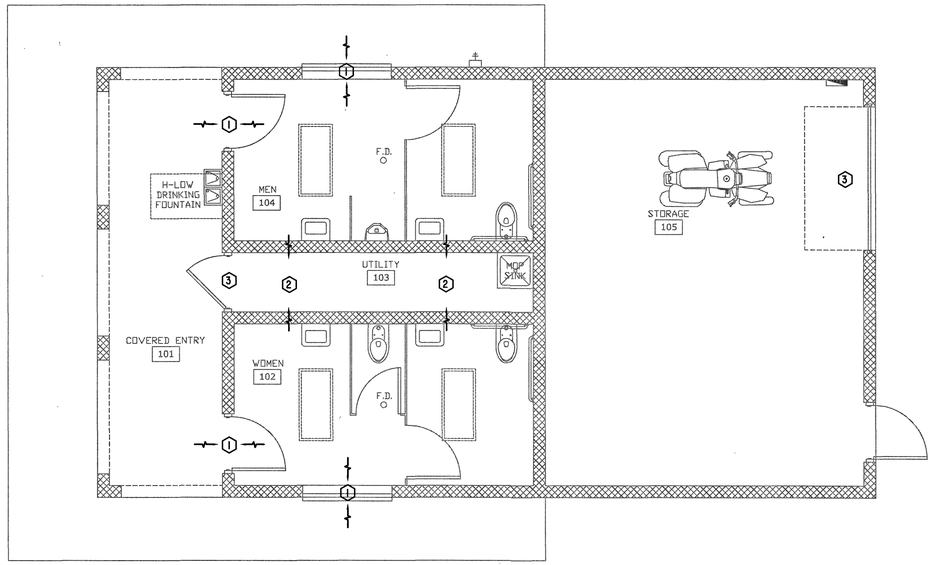
DRAWN: EJS

APPROVED: EJS

DRAWING NUMBER: M-1

SHEET 1 OF 2

16006-05



HVAC PLAN

SCALE 1/4" = 1'-0"

KEY NOTES:

1. VENTILATION PROVIDED THRU WALL LOUVERS OR LOUVERED DOOR. SEE ARCH. PLANS.
2. NO CEILING IN UTILITY CORRIDOR - OPEN TO EACH RESTROOM ABOVE WALL & VENTILATION PROVIDED BY WALL LOUVERS.
3. VENTILATION PROVIDED BY OPEN DOORS WHEN OCCUPIED.

VENTILATION AIR CALCULATIONS

STORAGE
NATURAL VENTILATION VIA OPEN DOORS

UTILITY
NATURAL VENTILATION VIA WALL LOUVERS / OPEN DOOR

MEN / WOMEN
NATURAL VENTILATION VIA WALL / DOOR LOUVERS

NO.	DATE	REVISIONS	DR	CK	APP
1	09-17-17	BID SET	---	---	---

Fort Pierce Engineering, Inc.
Dependable Mechanical, Electrical & Plumbing Design
C.A. No. 28173

315 South 7th Street
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ST. LUCIE COUNTY
FLORIDA

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N2 ARCHITECTURE + DESIGN
2081 SE OCEAN BOULEVARD, SUITE 1A
STUART, FLORIDA
34996

ENGINEER SEAL

ERIC J. SVOBODA LICENSE No. 60982 STATE OF FLORIDA PROFESSIONAL ENGINEER

11-15-17

Eric J. Svobodo, PE
P.E. No. 60982

SHEET TITLE
HVAC PLAN

ISSUE DATE: 11-17-2017

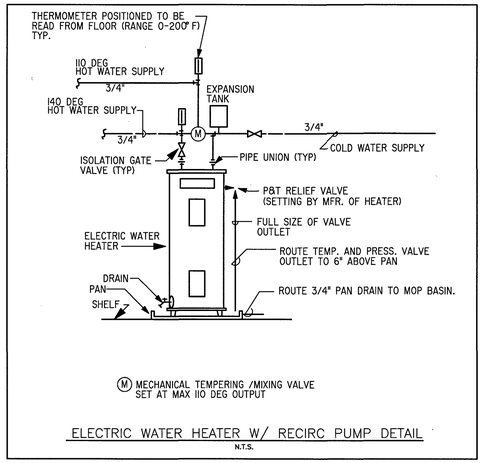
DRAWN: EJS

APPROVED: EJS

DRAWING NUMBER
M-2

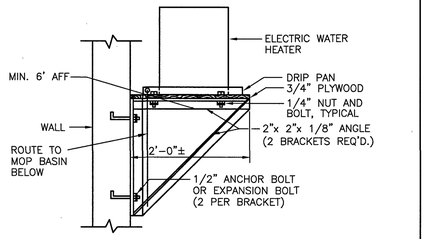
SHEET 2 OF 2

16006-05



ELECTRIC WATER HEATER W/ RECIRC PUMP DETAIL

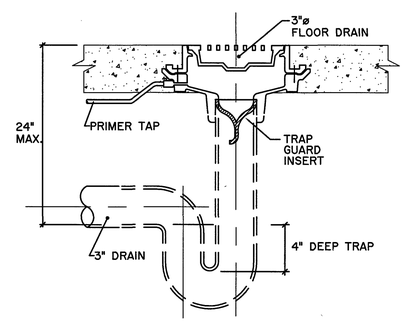
N.T.S.



NOTE: N.S.P.C. 10.16.7 REQUIRES: WHERE A HOT WATER STORAGE TANK OR INDIRECT WATER HEATER IS LOCATED AT AN ELEVATION ABOVE THE FIXTURE OUTLETS IN THE SYSTEM A VACUUM RELIEF VALVE SHALL BE INSTALLED ON THE STORAGE TANK.

WALL MOUNTED
ELECTRIC WATER HEATER DETAIL WITH DRIP PAN

N.T.S.



FLOOR DRAIN WITH TRAP GUARD INSERT

N.T.S.

PLUMBING FIXTURE SCHEDULE

CODE	DESCRIPTION	HW	CW	WASTE	VENT	TRAP	REMARKS
WC-1	WATER CLOSET, FLOOR MOUNTED / REAR WASTE CONNECTION, WILLOUGHBY MODEL ETW-1490-FM-FA, 14 GAUGE 304 S.S., ELONGATED RIM, 1-1/2" BACK SPUD, INTEGRAL CONTOURED SEAT, SLOAN REGAL 9603 PUSH BUTTON / HYDRAULIC OPERATED FLUSH VALVE, 1.28 GPF.	—	1"	4"	2"	INT	
WC-2	WATER CLOSET, FLOOR MOUNTED / REAR WASTE CONNECTION, WILLOUGHBY MODEL ETW-1490-FM-FA-HC. SAME AS WC-1, EXCEPT ADA COMPLIANT.	—	1"	4"	2"	INT	
U-1	URINAL, WALL HUNG, WILLOUGHBY MODEL UW-1317-HEU-BS, 16 GAUGE 304 S.S., 3/4" BACK SPUD, SLOAN ROYAL 9609 PUSH BUTTON / HYDRAULIC OPERATED FLUSH VALVE, 0.5 GPF. PROVIDE WITH ZURN Z-1221 CARRIER. ADA COMPLIANT.	—	3/4"	2"	1 1/2"	INT	
L-1	LAVATORY, WALL HUNG, WILLOUGHBY MODEL ES-1015-HC, 16 GAUGE 304 S.S., 1 1/4" 'P' TRAP, GRID DRAIN, (3) 4" CENTER HOLES, DECK MOUNTED SPOUT W/ DUAL TEMP PNEUMATIC METERING VALVE - PUSH BUTTON OPERATED, VANDAL RESISTANT. PROVIDE WITH ZURN Z-1253 CARRIER.	1/2"	1/2"	2"	1 1/4"	1 1/4"	
L-2	SAME AS L-1, EXCEPT ADA COMPLIANT.	1/2"	1/2"	2"	1 1/4"	1 1/4"	
S-1	SERVICE SINK, MUSTEE 62M DURASTONE MOP BASIN WITH MOP HANGER, BUMPER GUARDS, WALL GUARDS, HOSE & HOSE HOLDER. CHICAGO FAUCET 540-LD897SWXF WITH WALL BRACE, 3/4" HOSE THREAD, VACUUM BREAKER & PAIL HOOK.	1/2"	1/2"	3"	2"	3"	
EWC-1	ELECTRIC WATER COOLER, ELKAY VRCTL8SC, SPLIT LEVEL, 8GPH, VANDAL RESISTANT, ADA COMPLIANT.	—	1/2"	2"	1 1/4"	1 1/4"	

PLUMBING EQUIPMENT SCHEDULE

CODE	DESCRIPTION	REMARKS
CO-1	EXTERIOR CLEAN OUT, ADJUSTABLE TOP, INTERNAL CLOSURE PLUG, HEAVY DUTY COVER PLATE.	SET IN 12" X 12" X 4" CONCRETE
CO-2	WALL CLEAN OUT PLUG WITH CHROME PLATED BRASS COVER PLATE.	
EWH-1	ELECTRIC WATER HEATER, A.O. SMITH DEL 20, 20 GAL, 4.5KW, ASME CONSTRUCTION, T&P RELIEF VALVE, 230V, 1 PHASE.	PROVIDE EXPANSION TANK PER CODE. SET AT 140 DEG, PROVIDE WITH MIXING VALVE FOR 110 DEG LINE.
FD-1	FLOOR DRAIN, JOSAM SERIES 30000A, C.I. BODY, POLISHED BRONZE STRAINER, INTEGRAL TRAP, WITH PRIMER CONNECTION & TRAPGUARD INSERT BY PROSET.	TRAP PRIMER TO BE CONNECTED TO NEAREST SINK.
HB-1	HOSE BIBB, ALL BRASS, 3/4" HOSE CONNECTION, VACUUM BREAKER, LOOSE KEY STOP.	PROVIDE SHUT-OFF TO EACH HOSE BIBB PER CODE.
WH-1	WALL HYDRANT, WOODFORD MODEL B67, CONCEALED BOX, CHROME, 3/4" HOSE CONNECTION, DOUBLE CHECK BACKFLOW PREVENTER, LOOSE TEE KEY.	PROVIDE SHUT-OFF PER CODE.

PLUMBING SYMBOLS

SYMBOLS	DESCRIPTION
— · — · —	COLD WATER (CW)
— — — —	HOT WATER (HW)
———	SEWER (S)
– – – – –	VENT LINE (V)
HWR	RECIR. HOT WATER
CD	CONDENSATE DRAIN
X	EXISTING PIPE
	CONNECT TO EXISTING
SD	STORM DRAIN (SD)
P	PUMP
VTR	VENT THRU ROOF
WC	WATER CLOSET
UR	URINAL
HL	HAND LAVATORY
L-(No)	LAVATORY
HB	HOSE BIBB
SS	SERVICE SINK
DF	DRINKING FOUNTIAN
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
GWH	GAS WATER HEATER
SH	SHOWER
HS	HAND SINK
FD	FLOOR DRAIN
RD	ROOF DRAIN
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	BACK FLOW PREVENTER
	VALVE IN YARD BOX (TYPE AS NOTED)
	PRESURE RELEIF VALVE (RV)
M	WATER METER
	ELBOW - UP
	RISE OR DROP
	CONCENTRIC REDUCER
	DIRECTION OF FLOW
C.O.	CLEAN OUT (RISER)
C.O. / C.O.	CLEAN OUT
	WALL CLEAN OUT
	PLUGGED PIPE
	SHOWER HEAD
	PUMP W/FLOW DIRECTION
	FLOW SWITCH
	PRESSURE SWITCH
A,B,C,D	WATER HAMMER ARRESTER WITH P.D.I. SIZE

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

GENERAL NOTES:

1. PLUMBING CONTRACTOR IS TO FURNISH AND INSTALL ALL PLUMBING FIXTURES COMPLETE AS LISTED IN "PLUMBING FIXTURE SCHEDULE".
2. PLUMBING CONTRACTOR MAY USE SCHEDULE 40 OR 80 TYPE I, GRADE I, POLYVINYL CHLORIDE PIPE FOR ALL SOIL, WASTE AND VENT PIPING WHERE PERMITTED BY LOCAL CODES. WHERE PVC PIPING IS NOT PERMITTED BY LOCAL CODES, USE STANDARD WEIGHT CAST IRON PIPING. ALL PIPING ABOVE GRADE MAY HAVE HUBLESS FITTINGS. PLASTIC PIPING SHALL NOT BE USED IN A RETURN AIR PLENUM. COORDINATE THIS REQUIREMENT WITH H.V.A.C. CONTRACTOR.
3. PROVIDE SHUT-OFF GATE VALVES ON ALL EQUIPMENT & HOSE BIBBS, & STOP COCKS IN HOT AND COLD WATER PIPING TO ALL PLUMBING FIXTURES.
4. ALL WATER PIPING BELOW GRADE SHALL BE TYPE "L" SOFT TEMPERED COPPER AND ALL WATER PIPING ABOVE GRADE SHALL BE TYPE "L" HARD TEMPERED COPPER.
5. INSTALL 1" FOAM RUBBER INSULATION ON ALL HOT WATER PIPING ABOVE & BELOW GRADE. ALL JOINTS IN INSULATION ARE TO BE TAPED.
6. ELEVATION OF ALL FLOOR DRAINS SHALL BE HELD 1/2" BELOW FINISH FLOOR TILE.
7. ALL MATERIAL AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH ALL LOCAL AND STATE PLUMBING AND MECHANICAL CODES, INCLUDING THE STANDARD BUILDING, PLUMBING AND MECHANICAL CODES, NFPA, ASME, ASHRAE, ASA AND AGA.
8. THE SANITARY SYSTEM INCLUDES CONNECTION TO FIXTURES, RUNNING OF SOIL AND WASTE LINE AND SOIL AND VENT SANITARY SEWER SYSTEM AND/OR SEPTIC TANKS AND DRAIN FIELDS AND ALL ITEMS AS SHOWN ON DRAWINGS. VENT STACKS SHALL EXTEND THROUGH ROOF WITH LEAD FLASHING.
9. THE DOMESTIC WATER SYSTEM INCLUDES CONNECTIONS TO THE DESIGNED SYSTEM, CONTROL VALVES AND PIPING TO PLUMBING FIXTURES, INCLUDING CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS.
10. PIPE INSTALLATIONS AND MATERIALS SHALL BE AS REQUIRED TO MAINTAIN FIRE RATINGS WHERE REQUIRED BETWEEN FLOORS AND/OR BETWEEN UNITS.
11. ARRESTERS SHALL BE INSTALLED WHERE NECESSARY TO PREVENT WATER HAMMER.
12. COPPER PIPING WHERE USED SHALL NOT CONTACT DISSIMILAR METALS OR MASONRY. PROVIDE ISOLATING BUSHINGS WHEN CONNECTING TO ANY DISSIMILAR METALS.
13. PLUMBING CONTRACTOR SHALL COORDINATE WITH ARCHITECT FOR DETAILED DIMENSIONS AND LOCATIONS OF ALL FIXTURES AND EQUIPMENT AND FOR ANY CHANGES IN LAYOUT.
14. PLUMBING CONTRACTOR SHALL MAKE ALL TEST AND ADJUSTMENTS AS REQUIRED, UPON COMPLETION OF WORK AND PRIOR TO FINAL ACCEPTANCE BY OWNER.
15. AFTER COMPLETION OF THIS WORK, THE CONTRACTOR SHALL OBTAIN A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM ALL AUTHORITY'S HAVING JURISDICTION.
16. ALL WORKMANSHIP, MATERIALS AND APPARATUS UNDER THIS CONTRACT SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER.

PLUMBING DRAWING INDEX

SHEET	DESCRIPTION	ISSUED
P-1	PLUMBING LEGEND, NOTES, SCHEDULES & DETAILS	YES
P-2	PLUMBING PLAN	YES
P-3	PLUMBING WASTE-VENT & WATER RISERS	YES

NO	DATE	REVISIONS
1	01-17-17	BID SET
2	---	---
3	---	---

Fort Pierce Engineering, Inc.
Dependable Mechanical, Electrical & Plumbing Design
C.A. No. 28173
315 South 7th Street
Fort Pierce, FL. 34950
Phone: 772 672-4636
Fax: 772 672-4637

PROJECT NAME: WAVELAND BEACH PARK - RESTROOM FACILITY

CLIENT: N2 ARCHITECTURE + DESIGN
2081 SE OCEAN BOULEVARD, SUITE 1A
STUART, FLORIDA
34996

PROJECT LOCATION: ST. LUCIE COUNTY FLORIDA

ENGINEER SEAL

ERIC J. SVOBODA LICENSED P.E. No. 60982 STATE OF FLORIDA PROFESSIONAL ENGINEER 11-15-17

Eric J. Svoboda, PE
P.E. No. 60982

SHEET TITLE
PLUMBING LEGEND, NOTES, SCHEDULES & DETAILS

ISSUE DATE: 11-17-2017
DRAWN: EJS
APPROVED: EJS

DRAWING NUMBER
P-1

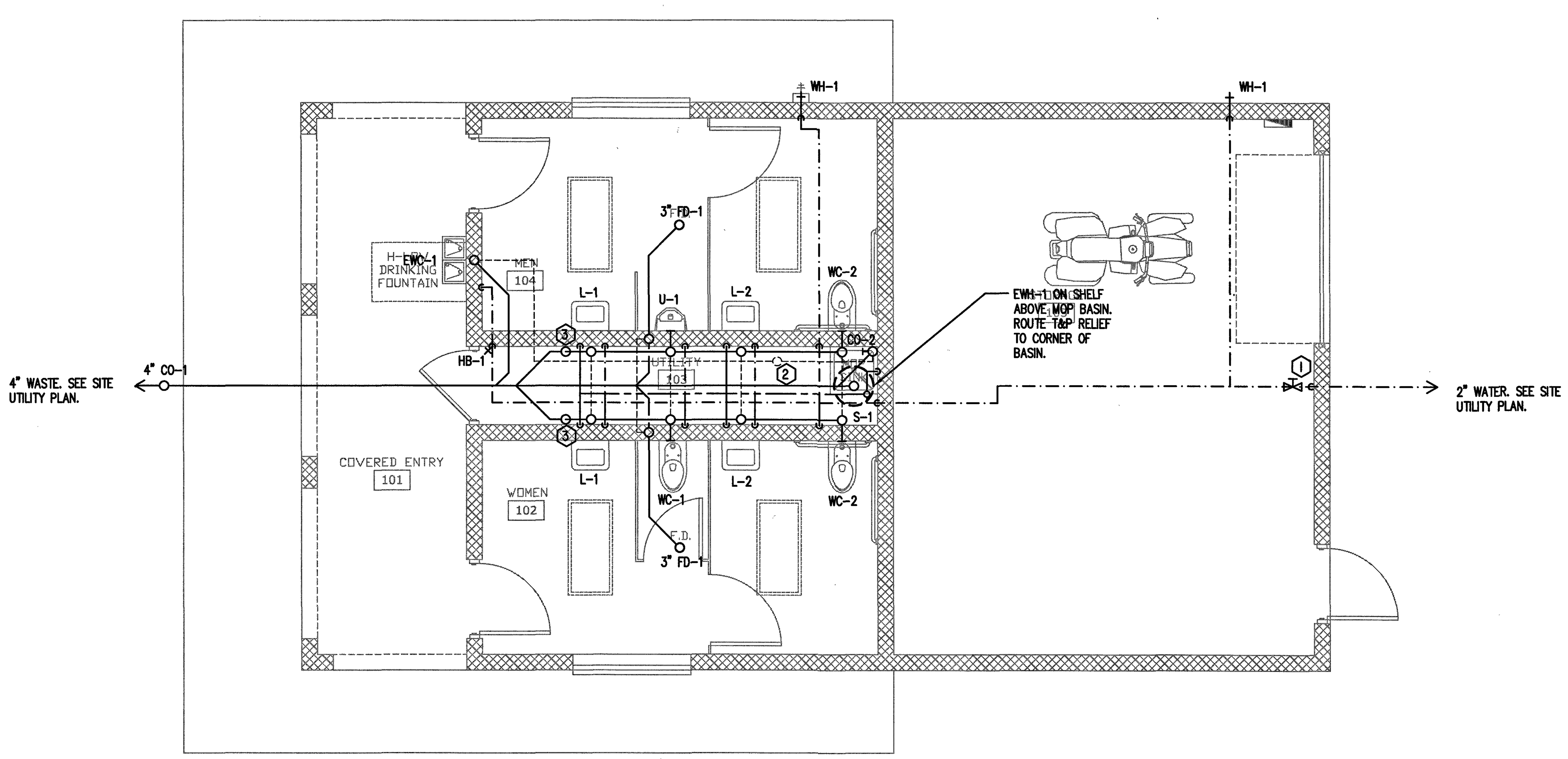
SHEET 1 OF 3
16006-05

GENERAL NOTES:

1. ROUTE WATER LINES ABOVE HIGH IN SPACE OR CEILINGS AS INDICATED.
2. LOCATE FLUSH VALVES IN UTILITY CORRIDOR.

KEY NOTES:

(1) ROUTE 2" WATER UP ABOVE CEILING. PROVIDE SHUT-OFF IN RISER.
(2) 3 ½" VENT THRU ROOF.
(3) 4" WASTE DOWN BELOW FLOOR.



PLUMBING PLAN

SCALE 1/4" = 1'-0"

NO.	DATE	REVISIONS	DR	CK	APP
1	011-17-17	BID SET	--	--	--

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SHEET TITLE

PLUMBING FLOOR PLAN

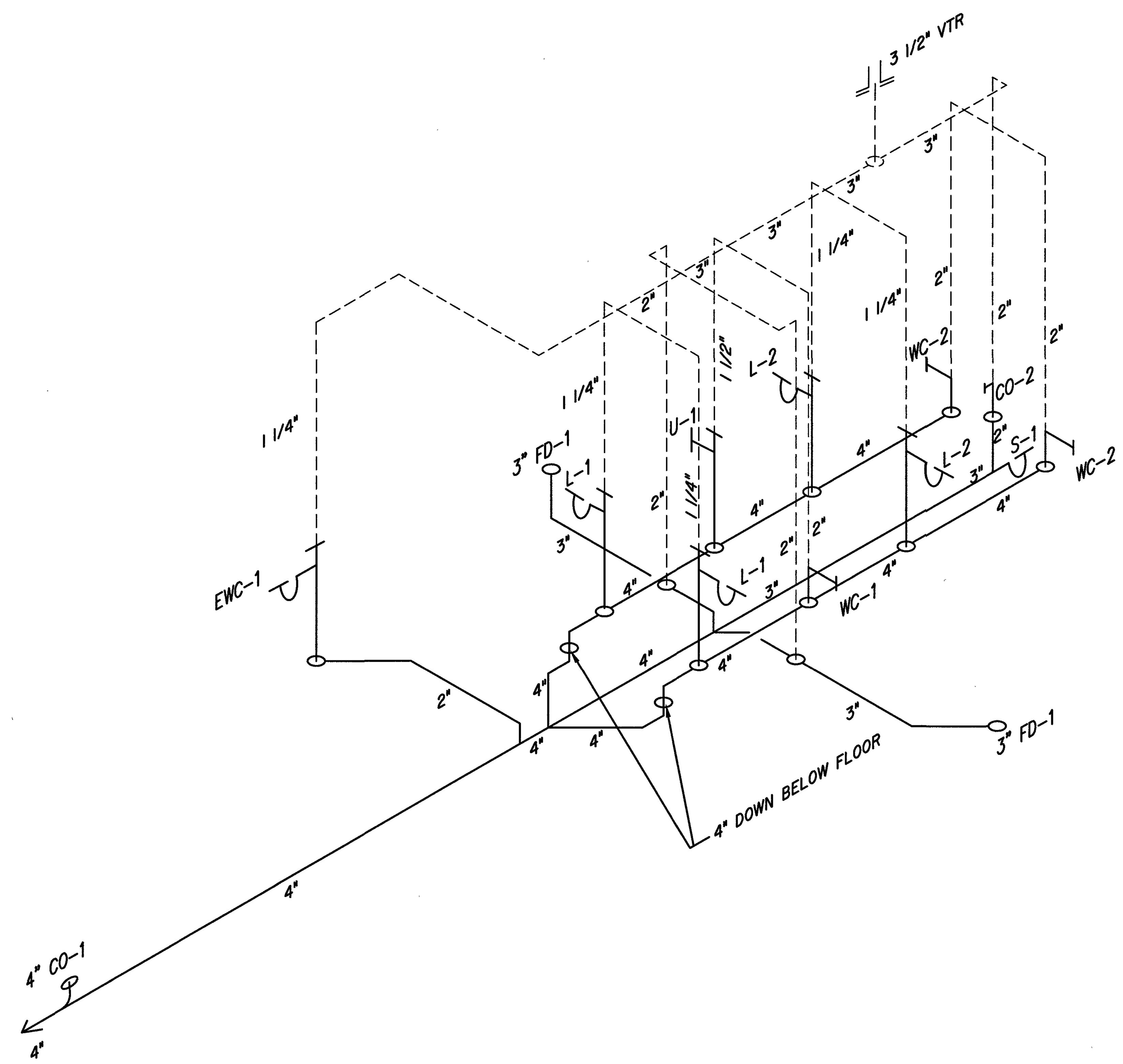
ISSUE DATE: 11-17-2017
DRAWN: EJS
APPROVED: EJS

DRAWING NUMBER

P-2

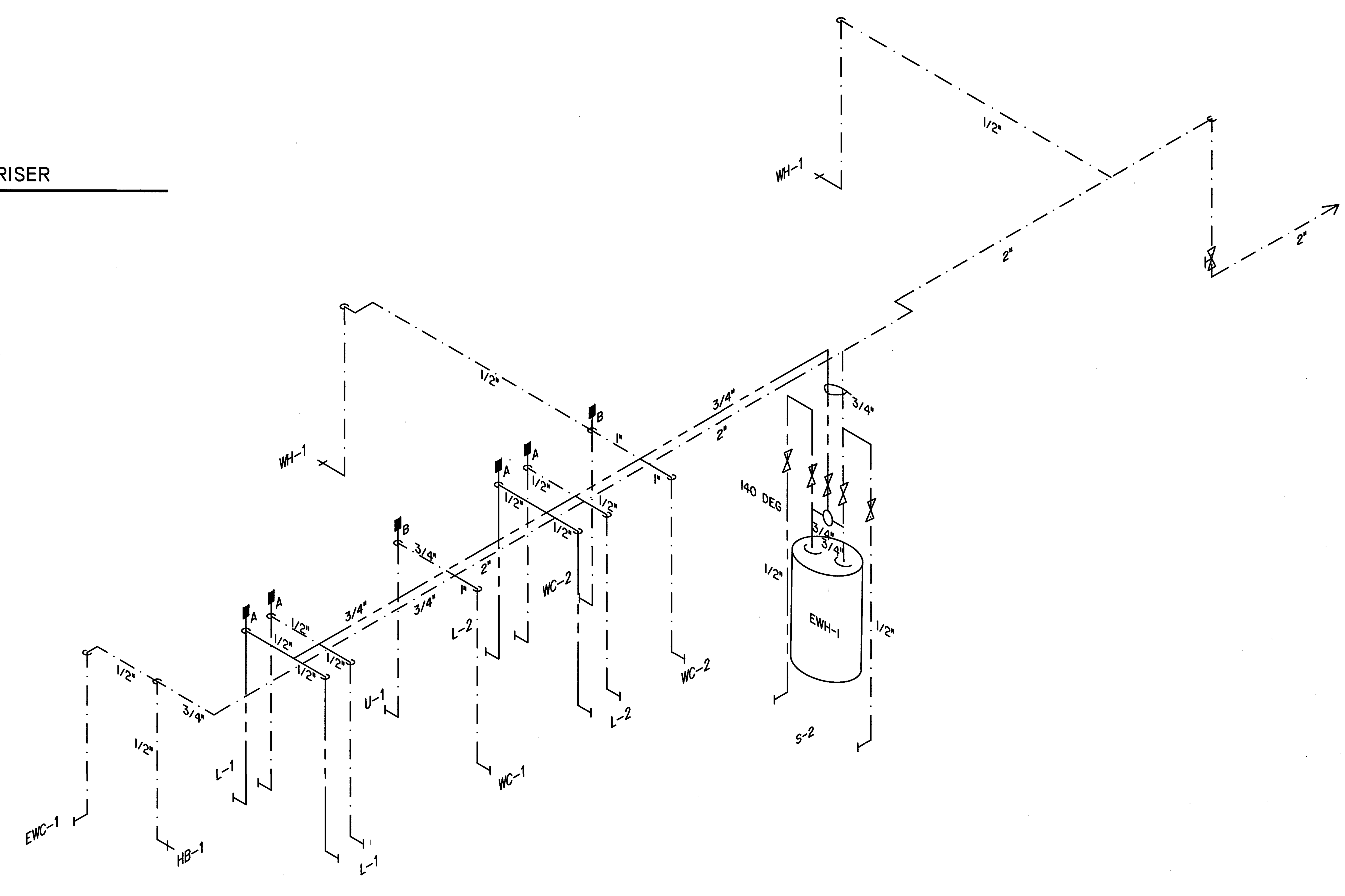
SHEET 2 OF 3

16006-05



WASTE - VENT RISER

SCALE: N.T.S.



WATER RISER RISER

SCALE: N.T.S.

NO.	DATE	REVISIONS	DR	CK	APP
1	01-17-17	BID SET	--	--	--

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SHEET TITLE

PLUMBING WASTE-VENT & WATER RISERS

ISSUE DATE: 11-17-2017

DRAWN: EJS

APPROVED: EJS

DRAWING NUMBER

P-3

SHEET 3 OF 3

16006-05

ELECTRICAL SYMBOL LEGEND

BASIC MATERIALS

SYMBOL	DESCRIPTION
S_a	SINGLE POLE SWITCH (SUBSCRIPT INDICATES ITEM CONTROLLED)
S_3	THREE-WAY SWITCH
S_4	FOUR-WAY SWITCH
S_P	SINGLE POLE SWITCH WITH PILOT LIGHT
S_{WP}	SINGLE POLE SWITCH WITH WEATHERPROOF COVER
S_{WST}	SPRING WOUND WALL SWITCH TIMER (30 MIN.)
S_K	SINGLE POLE KEY SWITCH
S_{3K}	THREE-WAY KEY SWITCH
S_{4K}	FOUR-WAY KEY SWITCH
S_L	SINGLE POLE SWITCH WITH SECURITY LOCKING KEY
S_{LV}	LOW VOLTAGE SWITCH
S_F	CEILING FAN/LIGHT CONTROL, DAN'S FAN CITY #423LW OR EQUAL WHITE COLOR
S_M	MOTOR RATED SNAP SWITCH, IHP MIN., 20A, 120/277V LEVITON 1121-2 OR EQUAL
S_{MP}	MANUAL MOTOR STARTER WITH OVERLOAD HEATERS AND PILOT LIGHT
S_D	DIMMER SWITCH (1500 WATTS UNLESS OTHERWISE INDICATED)
S_{TD}	SINGLE POLE SWITCH - TIME DELAY FOR EXHAUST FAN/LIGHTS
	DUPLEX RECEPTACLE, 5-20R UNLESS OTHERWISE NOTED
T	SINGLE 5-20R RECEPTACLE, T DENOTES TWIST-LOCK
SP	SURGE PROTECTION TYPE (TVSS) DUPLEX RECEPTACLE
	PEDESTAL MOUNTED RECEPTACLE
	FLOOR OUTLET BOX AND DUPLEX RECEPTACLE WITH APPROPRIATE FLANGE.
	FLOOR OUTLET BOX WITH DUPLEX RECEPTACLE AND ONE COMBINATION W/ VOICE/DATA OUTLET
	FLOOR OUTLET BOX WITH TWO DUPLEX RECEPTACLES AND ONE COMBINATION W/ VOICE/DATA OUTLET
P	POKE THRU
PP	POWER POLE
S	SINGLE POLE SWITCH/RECEPTACLE COMBINATION
	DUPLEX RECEPTACLE WITH EACH HALF ON SEPARATE CIRCUIT (BREAKER SHALL BE TWO POLE WITH COMMON TRIP)
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
	DUPLEX TAMPER-RESISTANT RECEPTACLE. MOUNT COVER PLATE WITH SPANNER HEAD SCREWS
	DUPLEX RECEPTACLE WITH TOP HALF SWITCHED
EWC	GFI RECEPTACLE (EWC DENOTES ELECTRIC WATER COOLER. COORDINATE WITH EWC INSTALLER FOR MOUNTING HEIGHT)
WP	GFI RECEPTACLE. WP DENOTES WEATHERPROOF COVER.
	GFI RECEPTACLE MOUNTED ABOVE COUNTER
	TWO DUPLEX RECEPTACLES WITH COMMON COVER
	TWO DUPLEX RECEPTACLES WITH COMMON COVER MOUNTED ABOVE COUNTER
IG	ISOLATED GROUND DUPLEX RECEPTACLE, (ORANGE DEVICE)
	DUPLEX RECEPTACLE NOTE: TICK MARKS SHOWN ON ANY DEVICE REPRESENTS RECEPTACLE CONNECTED TO THE EMERGENCY CIRCUIT (RED DEVICE) TYPICAL FOR ANY DEVICE IN LEGEND
C	CLOCK RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE, RATING AS NOTED
	LIGHTING CONTROL TIME CLOCK
	PHOTOCELL, MOUNTED ON ROOF FACING NORTH
GND	GROUND BAR
	PLUG-IN STRIP WITH RECEPTACLES, 18" O.C. UNLESS OTHERWISE INDICATED
	UNDER GROUND CONCRETE ENCASED DUCTBANK
J	JUNCTION BOX
J	JUNCTION BOX- WALL MOUNTED
J	JUNCTION BOX- FURNITURE SYSTEM FEED
	CONDUIT SEAL-OFF FITTINGS
SP C3	SURGE PROTECTOR C3 = SERVICE ENTRANCE DEVICE, MAX 250KA PER PHASE B3 = DISTRIBUTION BOARD DEVICE, SEE RISER FOR RATING A3 = PANEL BOARD DEVICE, MAX 125KA PER PHASE
ST	SHUNT-TRIP BUTTON - FLUSH MOUNTED UNLESS OTHERWISE NOTED NEMA 3R FOR EXTERIOR LOCATIONS
EDH-X	ELECTRIC DUCT HEATER
	MOTOR CONNECTION.
VFD	VARIABLE FREQUENCY DRIVE
HD	ELECTRIC HAND DRYER
DDC	DIRECT DIGITAL CONTROL PANEL
T	TRANSFORMER

BASIC MATERIALS CONT.

SYMBOL	DESCRIPTION
	AUTOMATIC TRANSFER SWITCH
30A/3	NON-FUSED DISCONNECT SWITCH, AMP RATING / # OF POLES NEMA 1 IF INDOORS NEMA 3R IF OUTDOORS
30AR 20AF	FUSED DISCONNECT AR DENOTES AMP RATING OF SWITCH AF DENOTES AMP FUSE SIZE * DENOTES FUSE PER MANUFACTURER RECOMMENDATIONS
MCP SIZE 30/3 0 3R	# OF POLES COMBINATION MAGNETIC MOTOR STARTER, SIZE & # OF POLES 3 POLE UNLESS OTHERWISE NOTED ENCLOSURE NEMA RATING. NEMA STARTER SIZE
	BRANCH CIRCUIT PANEL BOARD, UNDER 250 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANEL BOARD, UNDER 250 VOLTS, FLUSH MOUNTED
	BRANCH CIRCUIT PANEL BOARD, OVER 250 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANEL BOARD, OVER 250 VOLTS, FLUSH MOUNTED
	BRANCH CIRCUIT CONDUIT CONCEALED ABOVE CEILING OR IN WALL. CONDUIT SHALL INCLUDE PHASE, NEUTRAL AND GROUND CONDUCTORS AS REQUIRED FOR CIRCUITS (UNLESS OTHERWISE NOTED).
	BRANCH CIRCUIT CONDUIT CONCEALED IN SLAB, UNDERGROUND OR UNDER FLOOR.
	BRANCH CIRCUIT CONDUIT EXPOSED
	GROUND OR GROUND ROD AS NOTED
EM	EMERGENCY BRANCH CONDUIT
UP	CONDUIT TURNING UP
DN	CONDUIT TURNING DOWN
	CONDUIT STUB
	CONDUIT CONTINUED
	FLEXIBLE CONDUIT
	EXISTING TO BE REMOVED
	EXISTING TO REMAIN
	EXISTING AFFECTED BY THIS PROJECT
	FUTURE
	NEW

LIGHTING

	FLUORESCENT STRIP FIXTURE
FIXTURE DESIGNATION A	FLUORESCENT FIXTURE
CIRCUIT NUMBER 2 a	LOWER CASE LETTER INDICATES CONTROL CIRCUIT SWITCH LEG
	FLUORESCENT FIXTURE DIAGONAL SHADING DENOTES EMERGENCY LIGHT FIXTURE.
	FLUORESCENT WRAP AROUND OR SURFACE MOUNTED FIXTURE.
	FLUORESCENT WALL MOUNTED FIXTURE WITH WALL OUTLET BOX
	HID, INCANDESCENT OR FLUORESCENT WALL MOUNTED FIXTURE
	HID, FLUORESCENT, OR INCANDESCENT FIXTURE
	FLUORESCENT, OR INCANDESCENT WALL WASHER.
	ACCENT FLOOD LIGHTING - AIMING AS INDICATED
	EXIT LIGHT FIXTURE DIRECTION ARROWS AS SHOWN (SHADED QUADRANT INDICATES FACE(S) OF FIXTURE)
	WALL MOUNTED EXIT LIGHT FIXTURE
	COMBINATION EXIT/EMERGENCY LIGHT FIXTURE
	EXTERIOR LIGHT FIXTURE WITH ARMS AS SHOWN ON DRAWINGS
PB	ELECTRICAL PULL BOX
	TRACK WITH TRACK LIGHT FIXTURE (TRIANGLES INDICATE QUANTITY OF LIGHT FIXTURES)
	BATTERY PACK WITH TWIN HEADS (CEILING MOUNT)
	BATTERY PACK WITH TWIN HEADS (WALL MOUNT)

MOTION/OCCUPANCY SENSOR SYSTEM

LCP	LIGHTING CONTROL PANEL
P	PASSIVE INFRARED OCCUPANCY SENSOR C = CEILING MOUNT W = WALL MOUNT
U	ULTRASONIC OCCUPANCY SENSOR C = CEILING MOUNT W = WALL MOUNT
D	PASSIVE INFRARED / ULTRASONIC OCCUPANCY SENSOR C = CEILING MOUNT W = WALL MOUNT
S_{MS}	OCCUPANCY SENSOR - WATT STOPPER # DT 355 SINGLE POLE SWITCH - PASSIVE INFRARED OCCUPANCY SENSOR WATT STOPPER - # WS250 (IR)
PS	OCCUPANCY SENSOR POWER SUPPLY WATT STOPPER - # BZ 50

FIRE ALARM/DETECTION SYSTEM

SYMBOL	DESCRIPTION
F	MANUAL PULL STATION
	CEILING SMOKE DETECTOR, PHOTOELECTRIC TYPE UNLESS OTHERWISE NOTED E = ELEVATOR WITH RECALL CONTACTS I = IONIZATION
	DUCT SMOKE DETECTOR R = RETURN S = SUPPLY
R	SUPERVISED CONTROL RELAY
R	DUCT SMOKE REMOTE ALARM INDICATING LAMP, W/ TEST SWITCH, WALL MOUNTED 72" AFF
RI	REMOTE INDICATING LAMP FIRE ALARM WITH TEST SWITCH WALL MOUNTED 72" AFF, SIMPLEX 4098-9842 OR EQUAL
F XXCD	COMBINATION AUDIBLE/VISUAL NOTIFICATION DEVICE CD = CANDELA RATING, MINIMUM 75 CD PER FBC 11-4.28.3(4)
S	FIRE ALARM SPEAKER - CEILING MOUNTED
S XXCD	WALL MOUNTED SPEAKER WITH STROBE CD = CANDELA RATING
S	FIRE ALARM SPEAKER - WALL MOUNTED
F	FIRE ALARM SPEAKER WITH STROBE - CEILING MOUNTED CD = CANDELA RATING
F	VISUAL SIGNALING UNIT, WALL MOUNTED (NO AUDIO DEVICE)
P	FIREMAN'S PHONE JACK
TS	SPRINKLER TAMPER SWITCH CONNECTION
FS	SPRINKLER WATER FLOW SWITCH CONNECTION
FP	FIRE ALARM SYSTEM PRINTER
ZAM	ZONE ADDRESSABLE MODULE
	ELECTROMAGNETIC DOOR HOLD OPEN DEVICE
H	ELECTROMAGNETIC DOOR HOLD OPEN DEVICE CONNECTION TO CLOSURE/ HOLDER
H	ELECTROMAGNETIC DOOR HOLD OPEN DEVICE CONNECTION TO CLOSURE/ HOLDER INCLUDES DETECTOR
H	CEILING HEAT DETECTOR 135 F UNLESS OTHERWISE INDICATED.
T	BEAM DETECTOR - TRANSMITTER
R	BEAM DETECTOR - RECEIVER
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
FAAP	FIRE ALARM ANNUNCIATOR PANEL - FLUSH MOUNTED
F	FIRE ALARM SYSTEM CONDUIT AND WIRING
E	FIREMAN'S ELEVATOR WARNING LIGHT

PAGING SYSTEM & BACKGROUND MUSIC

S	LOUDSPEAKER/ TRANSFORMER/ BAFFLE/ SUPPORT TRUSS. (CEILING MOUNTED) W = WALL MOUNTED
S	LOUDSPEAKER/ TRANSFORMER/ BAFFLE/ ENCLOSURE FOR EXPOSED CEILING AREAS W = WALL MOUNTED
S	HORN/TRANSFORMER FOR HIGH NOISE AREAS
PAEC	PAGING SYSTEM EQUIPMENT CABINET
PATC	PAGING SYSTEM TERMINAL CABINET
DR	DOCTORS REGISTRY SYSTEM CONDUIT AND WIRING
VC	VOLUME CONTROL

TELEPHONE/DATA SYSTEM

SYMBOL	DESCRIPTION
	PHONE/DATA OUTLETS MOUNTED AT RECEPTACLE HEIGHT UNLESS OTHERWISE NOTED. C = ABOVE THE COUNTER M = NUMBER OF DATA PORTS, DEFAULT = 1 N = NUMBER OF PHONE PORTS, DEFAULT = 1
M	DATA OUTLET, 8P8C
N	PHONE OUTLET, RJ 11
M N	COMBINED DATA/PHONE OUTLET, 8P8C/RJ11
	TELEPHONE OUTLET FLOOR MOUNTED
TTB	TELEPHONE/COMPUTER TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
T	TELEPHONE SYSTEM RACEWAY

TELEVISION RACEWAY SYSTEM

TV	TELEVISION OUTLET FOR ANTENNA
TV	TELEVISION SIGNAL WALL OUTLET
TV	TV DISTRIBUTION SYSTEM RACEWAY
M	MAGNETIC LOCK
	CCTV CAMERA W/ CONDUIT TO VIDEO JUNCTION BOX
PTZ	PAN/ TILT/ ZOOM CCTV CAMERA W/CONDUIT TO VIDEO JUNCTION BOX - MOUNTED MIN 15' AFF OR @ CEILING

SYNCHRONOUS MASTER CLOCK SYSTEM

	SYNCHRONOUS SYSTEM CLOCK
FATC	MASTER CLOCK CONTROL PANEL
CL	MASTER CLOCK SYSTEM CONDUIT AND WIRING

DOORBELL SYSTEM

	DOOR PUSH-BUTTON STATION WP = WEATHERPROOF
DB	DOORBELL CHIME (SELF CONTAINED)
DB	DOORBELL SYSTEM CONDUIT AND WIRING

DOOR CONTROL SYSTEM

M	MOTION DETECTOR 360
CR	CARD READER
K	DIGITAL KEYPAD
	BALANCED MAGNETIC DOOR CONTACT

INTERCOM SYSTEM

IC	MASTER STATION C = COUNTER D = DESK W = WALL MOUNTED H = HAND SET TYPE HF = HANDS FREE WP = WEATHER PROOF
IC	INTERCOM SYSTEM SPEAKER W = WALL MOUNTED
ICEC	INTERCOM EQUIPMENT CABINET
ICTC	INTERCOM TERMINAL CABINET
IC	INTERCOM SYSTEM CONDUIT AND WIRING
SSEC	SOUND SYSTEM EQUIPMENT CABINET
SSTC	SOUND SYSTEM TERMINAL CABINET
S	SOUND SYSTEM CONDUIT AND WIRING

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

SPECIFICATIONS:

1. THE TOTAL ELECTRICAL INSTALLATION MUST MEET THE REQUIREMENTS OF THE 2011 EDITION OF NFPA 70, THE NATIONAL ELECTRICAL CODE, THE 2014 FLORIDA BUILDING CODE.
2. ON ALL ELECTRICAL PLAN SHEETS, E.G. "E-1", "E-2.1", ETC., THE TERM "CONTRACTOR" SHALL MEAN "ELECTRICAL CONTRACTOR", SOMETIMES ALSO ABBREVIATED AS "E.C.".
3. MATERIALS AND EQUIPMENT INSTALLED SHALL BE ENTIRELY NEW, UNLESS OTHERWISE NOTED, AND SHALL MEET U.L. REQUIREMENTS.
4. EQUIPMENT SHALL BE OF MATERIALS SUITABLE FOR AND RATED FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED.
5. CONTRACTOR TO INSTALL A COMPLETE ELECTRICAL SYSTEM FOR LIGHTING AND POWER FROM THE POINT OF ATTACHMENT OF THE POWER COMPANY TO AND THROUGH THE METER AND BRANCH-CIRCUIT PANEL TO AND INCLUDING ALL OUTLETS, DEVICES AND EQUIPMENT FURNISHED BY OTHERS AS MAY BE REQUIRED.
6. CONTRACTOR SHALL MAKE EARLY CONTACT AND MAINTAIN DIRECT COMMUNICATION WITH THE SERVING ELECTRIC UTILITY TO ENSURE CORRECT INSTALLATION OF CONDUITS PRIOR TO CONCRETE AND PAVEMENT INSTALLATIONS, TO ENSURE CORRECT INSTALLATION OF METERING FACILITIES, TO ASSIST THE OWNER IN OBTAINING A FAULT CURRENT LETTER, AND TO ENSURE THE TIMELY PROVISION OF ELECTRIC SERVICE.
7. SERVICE EQUIPMENT SHALL BE MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER NEC 110.24 AND THE DATE OF THE MARKING. SEE RISER DIAGRAM SHEET E-4 FOR FAULT CURRENT CALCULATION.
8. UNLESS OTHERWISE NOTED OR SHOWN ON THESE PLANS, 8.4 KV MCOV LINE-TO-NEUTRAL, 75KV BIL, 33.7KV CREST FRONT-OF-WAVE PROTECTIVE LEVEL, 65KA MINIMUM SHORT-DURATION WITHSTAND SURGE PROTECTION (TYPICAL) IS PROVIDED BY THE SERVING ELECTRIC UTILITY AT THE OVERHEAD TRANSFORMER OR PRIMARY RISER POLE SERVING THIS PREMISES.
9. CONTRACTOR TO COMPLETE ALL WORK INCIDENTAL TO MECHANICAL TRADES FOR A COMPLETE INSTALLATION, INCLUDING CONTROL WIRING, MOTOR STARTERS, DISCONNECT SWITCHES AND EQUIPMENT GROUNDS.
10. CONTRACTOR TO MAKE NECESSARY PROVISIONS FOR THE INSTALLATION OF TELEPHONE, DATA SYSTEMS INCLUDING RACEWAYS, CABINETS, PULL BOXES AND OUTLETS. SEE SHOP DRAWINGS FOR EACH SYSTEM FOR ADDITIONAL DETAILS AND INSTRUCTIONS.
11. CONTRACTOR SHALL FURNISH AND INSTALL ALL FIXTURES COMPLETE AS LISTED IN THE "LIGHTING FIXTURE SCHEDULE".
12. PANELBOARDS, SWITCHBOARDS AND DISCONNECT SWITCHES SHALL HAVE COPPER OR COPPER (NOMINAL 15% BY VOLUME) CLAD ALUMINUM BUS.
13. ALL PANELS, DISCONNECTS, TIME CLOCKS, AND CONTACTORS SHALL BE LABELED WITH A PERMANENT ENGRAVED LABEL. IDENTIFICATION ON THE LABEL MUST CONFORM TO THESE ELECTRICAL DRAWINGS.
14. TYPEWRITTEN CIRCUIT IDENTIFICATION SHALL BE INSTALLED IN ALL PANELBOARDS, EACH BREAKER HAVING A DISTINCTIVE DESCRIPTION COMPLYING WITH NEC 408.4.
15. METERS SHALL PERMIT AN OVERHEAD OR UNDERGROUND SERVICE ENTRANCE.
16. CONDUIT FOR UNDERGROUND SHALL BE SCHEDULE 40 PVC OR MC CABLE LISTED FOR UNDERGROUND USE UNLESS OTHERWISE SHOWN AND/OR REQUIRED BY CODE.
17. CONDUIT FOR ABOVE GRADE SHALL BE "GRC", "IMC" "SCH 80 PVC" OR "EMT". "LFNC" SHALL BE USED FOR CONNECTIONS TO AIR HANDLING UNITS, CONDENSING UNITS, WATER HEATERS AND OTHER EQUIPMENT. MC CABLE MAY BE USED FROM "J-BOXES" IN CEILING TO SWITCHES, RECEPTACLES AND BETWEEN DEVICES. SPARE CONDUITS SHALL HAVE A PULL WIRE INSTALLED.
18. CONDUCTORS SHALL BE THHN/THWN EXCEPT WHERE SPECIFIED OTHERWISE ON THE DRAWINGS. CONDUCTORS NO. 8 AWG AND LARGER SHALL BE JOINED BY AN APPROVED PRESSURE CONNECTOR. CONNECTION TO GROUND CONDUCTORS NO. 1/0 AWG AND LARGER SHALL BE CAST BY FUSIBLE METAL PROCESS. ALL CONDUCTORS MUST BE INSTALLED IN CONDUIT, MC CABLE, OR LFNC. CONDUCTORS IN PANELS SHALL HAVE THEIR FACTORY LABELS VISIBLE TO A PERSON IN THE WORKING SPACE.
19. CONDUCTORS OF MULTIWIRE CIRCUITS SHALL BE GROUPED IN AT LEAST ONE LOCATION WITHIN THE PANELBOARD OR OTHER POINT OF ORIGIN BY WIRE TIES OR SIMILAR MEANS. MULTIWIRE CIRCUIT DISCONNECTS SHALL BE PROVIDED WITH A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES.
20. NO CONDUCTORS SMALLER THAN 12 AWG SHALL BE USED FOR POWER AND LIGHTING. ALL CONDUCTORS SHALL BE COPPER, UNLESS NOTED OTHERWISE.
21. COLOR CODE FOR 120/240V 1ø SYSTEM SHALL BE: BLACK, RED, WHITE, & GREEN.
22. CONTRACTOR SHALL VERIFY WITH ARCHITECT FOR DETAILED DIMENSIONS AND LOCATIONS OF OUTLETS AND EQUIPMENT AND FOR ANY REVISIONS IN LAYOUT.
23. MOUNT WALL SWITCHES 44" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED ON DRAWING. GANG SWITCHES WHEREVER POSSIBLE.
24. SWITCHES SHALL BE TOGGLE TYPE, 120 VOLT, 20A, COMMERCIAL SPECIFICATION GRADE, UNLESS OTHERWISE NOTED. SWITCHES SHALL BE WHITE IN COLOR. SWITCHES CONTROLLING LINE-TO-NEUTRAL LIGHTING LOADS SHALL COMPLY WITH NEC 404.2(C).
25. RECEPTACLES SHALL BE LOCATED 15" ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED. ABOVE-COUNTER RECEPTACLES SHALL BE MOUNTED 6" ABOVE BACK SPLASH TO CENTERLINE OF DEVICE.
26. COVER PLATES SHALL BE WHITE PLASTIC, UNLESS OTHERWISE NOTED. RECEPTACLES WITH PLASTIC COVER PLATES SHALL BE MOUNTED SUCH THAT THE GROUND PIN IS MOUNTED DOWN, UNLESS OTHERWISE NOTED. RECEPTACLES WITH METAL COVER PLATES SHALL BE MOUNTED SUCH THAT THE GROUND PIN IS MOUNTED UP, UNLESS OTHERWISE NOTED.
27. ALL NEW 125V RECEPTACLES SHALL BE NEMA 5-20R. COLOR SHALL BE WHITE. OUTDOOR RECEPTACLES SHALL BE WEATHER RESISTANT.
28. ALL DEVICES SHALL BE MOUNTED VERTICAL, UNLESS OTHERWISE NOTED.
29. RESERVED
30. CONTRACTOR SHALL CONNECT AIR CONDITIONERS, PUMPS, FANS AND OTHER EQUIPMENT.
31. RESERVED
32. AIR CONDITIONER BREAKER SHALL BE MARKED "LISTED HACR TYPE" AS REQUIRED BY NEC 110.3(B). IF BREAKER IS NOT MARKED, THE OUTSIDE DISCONNECT SHALL BE CHANGED TO A FUSED DISCONNECT WITH RATING AS NOTED ON A/C EQUIPMENT.
33. CONTRACTOR SHALL MAKE TESTS AND ADJUSTMENTS AS REQUIRED, UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE BY THE OWNER. THE CONTRACTOR SHALL TEST THE COMPLETE ELECTRICAL SYSTEM IN THE PRESENCE OF THE ENGINEER/ARCHITECT FOR CONTINUITY, FUNCTION, CONTROL, PERFORMANCE, LOAD BALANCE, GROUNDS AND GROUND RESISTANCE, SHORT CIRCUITS, AND TO INSURE SATISFACTORY OPERATION AND CONFORMANCE TO CONTRACT REQUIREMENTS.
34. EQUIPMENT, LABOR AND MATERIAL REQUIRED FOR TESTING SHALL BE FURNISHED BY THE CONTRACTOR(S) AS PART OF THIS CONTRACT.
35. PRIOR TO COMPLETION OF THE WORK, THE CONTRACTOR SHALL MARK THE SERVICE EQUIPMENT WITH THE AVAILABLE FAULT CURRENT PER NEC 110.24, USING EITHER THE FAULT-CURRENT FROM THE UTILITY FAULT CURRENT LETTER, OR THE SHORT CIRCUIT CURRENT CALCULATION FROM THESE PLANS. IF PROVIDED WITH THE FAULT CURRENT LETTER, THIS ENGINEER WILL UPDATE THE CALCULATION TO OBTAIN THE FAULT CURRENT AT THE SERVICE ENTRANCE.
36. AFTER COMPLETION OF THE WORK, THE CONTRACTOR SHALL SECURE CERTIFICATES OF FINAL INSPECTION AND APPROVAL FROM AUTHORITIES HAVING JURISDICTION (AHJ).
37. WITHIN 30 DAYS OF ELECTRICAL SYSTEM ACCEPTANCE BY THE AHJ, THE CONTRACTOR SHALL PROVIDE THE BUILDING OWNER WITH RECORD DRAWINGS OF THE ACTUAL INSTALLATION. THE RECORD DRAWINGS SHALL INCLUDE A SINGLE-LINE DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM AND FLOOR PLANS INDICATING LOCATION AND AREA SERVED FOR ALL DISTRIBUTION. IF PROVIDED WITH COMPLETE FIELD MARKUPS ON THESE PLAN SHEETS, THE ENGINEER SHALL MODIFY THESE PLAN SHEETS INTO SAID RECORD DRAWINGS AND PROVIDE A COPY TO THE OWNER AND TO THE CONTRACTOR AND RETURN THE ORIGINAL FIELD MARKUP TO THE CONTRACTOR.
38. WITHIN 30 DAYS OF ELECTRICAL SYSTEM ACCEPTANCE BY THE AHJ, THE CONTRACTOR SHALL PROVIDE THE BUILDING OWNER AN OPERATING AND MAINTENANCE MANUAL FOR ALL ELECTRICAL SYSTEMS INSTALLED IN ACCORDANCE WITH THESE PLANS THAT REQUIRE MAINTENANCE. AT A MINIMUM, THE MANUAL SHALL INCLUDE:
   A. EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
   B. OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.
   C. NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY.
39. WORKMANSHIP, MATERIALS AND APPARATUS UNDER THIS CONTRACT SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.
40. GREATER THAN 80% NONLINEAR LOADS: SHARED NEUTRALS AND GROUNDS ARE NOT PERMITTED FOR SINGLE PHASE CIRCUITS.
41. WORKING CLEARANCES FOR ELECTRICAL EQUIPMENT SHALL BE IN COMPLIANCE WITH NEC 110. AND WITH NEC 210.8 FOR GFCI DEVICES.
42. THE EXCLUSIVELY-DEDICATED SPACE EXTENDING FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE PANEL BOARD OR SWITCHBOARD MUST BE CLEAR OF ALL PIPING, DUCTS OR EQUIPMENT FOREIGN TO THE ELECTRICAL EQUIPMENT OR ARCHITECTURAL APPURTENANCES IN ACCORDANCE WITH NEC 408.
43. WHEN ELECTRICAL BOXES ARE LOCATED IN VERTICAL FIRE-RESISTIVE ASSEMBLIES, (CLASSIFIED AS FIRE/SMOKE AND SMOKE PARTITIONS), THEY SHALL BE INSTALLED WITHOUT AFFECTING THE FIRE CLASSIFICATION. ALL OF THE FOLLOWING CONDITIONS SHALL BE MET PER FBC 302:
   A. ALL ELECTRICAL BOXES SHALL BE METALLIC.
   B. BOX OPENING SHALL OCCUR ONLY ON ONE SIDE OF FRAMING SPACE. B.
   C. BOX OPENING SHALL NOT EXCEED 16 SQUARE INCHES.
   D. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT NOT TO EXCEED 1/8 INCH BETWEEN THE EDGES OF THE OUTLET BOX AND THE EDGES OF THE OPENING.
   E. ALL CLEARANCES BETWEEN OUTLET BOX AND GYPSUM BOARD SHALL BE COMPLETELY FILLED WITH JOINT COMPOUND (OR OTHER APPROVED MATERIAL).
   F. PROVIDE A WALL AROUND OUTLETS LARGER THAN 16 SQUARE INCHES. THE INTEGRITY OF THE WALL RATING SHALL BE MAINTAINED.
   G. THE TOTAL AGGREGATE SURFACE AREA OF THE BOXES SHALL NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET OF WALL AREA. OUTLET BOXES LOCATED ON OPPOSITE SIDES OF FIRE-RESISTIVE ASSEMBLIES
   H. SHALL BE SEPARATED BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES.
   I. OUTLET BOXES SHALL BE SECURELY FASTENED TO WALL FRAMING MEMBERS.

NOTE:
TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THESE PLANS AND SPECIFICATIONS COMPLY WITH THE 2014 FLORIDA BUILDING CODE AND THE 2014 FLORIDA FIRE PREVENTION CODE.

ELECTRICAL ABBREVIATIONS

AFF: ABOVE FINISHED FLOOR	M: MOTOR LOAD
AFG: ABOVE FINISHED GRADE	MBJ: MAIN BONDING JUMPER
BFC: BELOW FINISHED CEILING	NL: NIGHT LIGHT
E.C.: ELECTRICAL CONTRACTOR	P: PANEL
EGC: EQUIPMENT GROUNDING CONDUCTOR	R: RECEPTACLE LOAD
F: FAN LOAD	SA: SMOKE/CO ALARM LOAD
GC: GROUNDED CONDUCTOR	SCA: SHORT CIRCUIT AMPERES
GEC: GROUNDING ELECTRODE CONDUCTOR	SN: SOLID NEUTRAL
GFI: GROUND FAULT CIRCUIT-INTERRUPTER	UON: UNLESS OTHERWISE NOTED
IG: ISOLATED GROUND	VP: VAPOR PROOF
L: LIGHTING LOAD	WP: WEATHER PROOF

ELECTRICAL DRAWING INDEX

		01-17-17	BID SET
		DATE	REVISIONS
NO	CK	DR	APP

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PROJECT LOCATION: ST. LUCIE COUNTY FLORIDA
CLIENT: N2 ARCHITECTURE + DESIGN 2081 SE OCEAN BOULEVARD, SUITE 1A STUART, FLORIDA 34996

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SHEET TITLE
ELECTRICAL SYMBOL LEGEND, GENERAL NOTES & ABBREVIATIONS

ISSUE DATE: 11-17-2017
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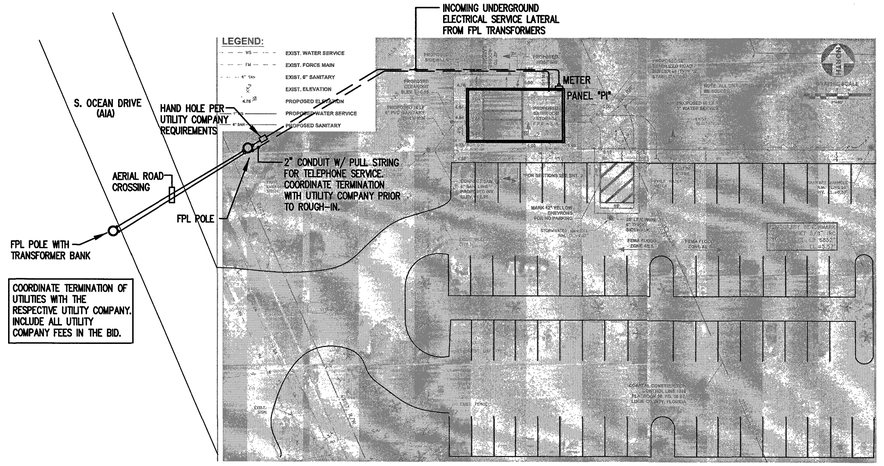
APPROVED: TCT

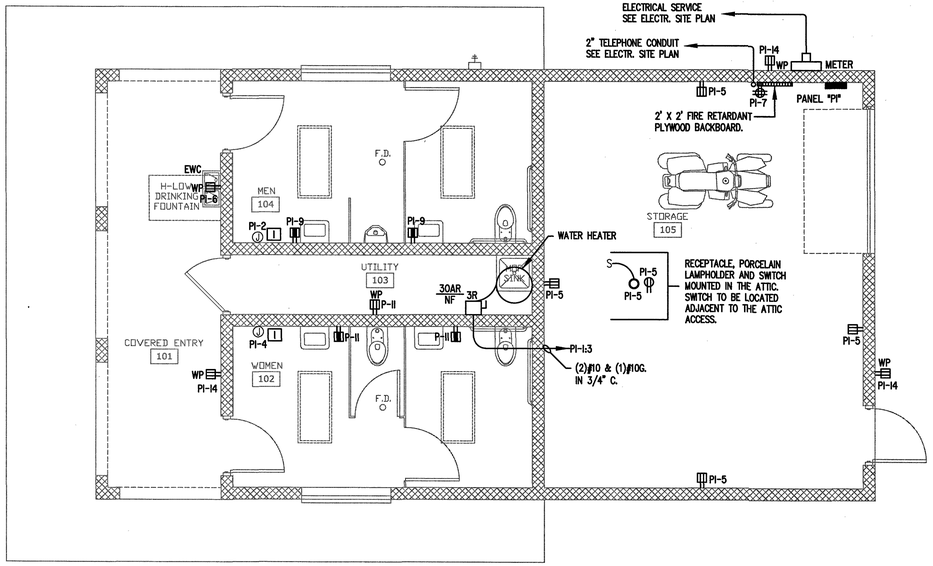
DRAWING NUMBER
E-1

SHEET 1 OF 4
16006-05



ELECTRICAL SITE PLAN

SCALE 1/32" = 1'-0"



POWER SYSTEMS PLAN

SCALE 1/4" = 1'-0"

ELECTRICAL KEY NOTES:

1 120V VOLT CONNECTION TO THE ELECTRIC HAND DRYER. COORDINATE ELECTRICAL CONNECTIONS WITH HAND DRYER INSTALLATION MANUAL.

NO.	DATE	REVISIONS	DR	CK	APP
1	01-17-17	BID SET	---	---	---

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SHEET TITLE

ELECTRICAL POWER SYSTEMS PLAN

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E-2

SHEET 2 OF 4

16006-05

LIGHTING POWER DENSITIES

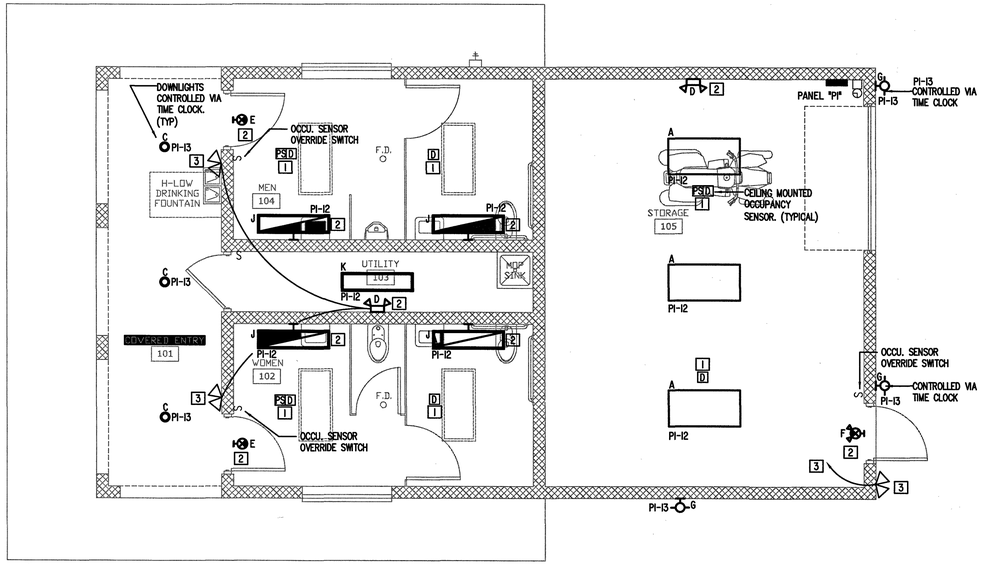
ROOM	AREA (SQUARE FOOTAGE)	ROOM WATTAGE	LPD-(FBC-405.5.2(1)(2) (WATTS PER SQ. FT)	LPD - CALCULATED (WATTS PER SQ. FT)
MEN 104	150	130	1.0	.9
UTILITY 103	60	63	1.1	1.0
WOMEN 102	150	130	1.1	.9
STORAGE 105	404	283	.8	.7

LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURER - PART NUMBER	LAMPS NO	LAMPS TYPE	LAMPS WATTS	VOLTS	MOUNTING	DESCRIPTION	REMARKS
A	DAY-BRITE-L A 3 32 120	3	T8	32	120	SURFACE	4' FLUORESCENT DAMP LOCATION LABEL, HIGH IMPACT FIBERGLASS HOUSING.	SUPPORT FROM STRUCTURAL MEMBERS SUPPORT PER THE N.E.C.
B	RESERVED							
C	LITON - LHLD6I5C70 LRLD62IBB-TAM-B45	1	LED	15	120	RECESSED	6" TURTLE SAFE, AMBER LED DOWN LIGHT	
D	CHLORIDE-TNMI25 B 2 DL	2	LED	12	120	CEILING/WALL	EMERGENCY BATTERY UNIT WITH REMOTE HEAD CAPACITY. REMOTE HEADS:CHLORIDE#CR2CSWL	MOUNT 8'-0" A.F.F. FOR WALL MOUNT.
E	CHLORIDE - ER60MLD I G W TI5TPTOOL	-	LED	<=5	120	CEILING/WALL	LED THERMOPLASTIC LED EXIT FIXTURE WITH NICAD BATTERY. GREEN LETTERS.	MOUNT 8'-0" A.F.F. FOR WALL MOUNT.
F	MCPHILBEN - CCAXL-I-G-W	2	MR16	18	120	CEILING/WALL	COMBINATION 2 LAMP POLYCARBONATE EMERGENCY LIGHTING/EXIT SIGN FIXTURE. HO HALOGEN LAMPS.	MOUNT 8'-0" A.F.F. FOR WALL MOUNT. 65 TO 85 DEG F. LEAD CALCIUM BATTERY.
G	MILLERBERND - WLT I8 3I6 AMBER LED I20 Y P(BRONZE)	1	LED	30	120	WALL	WALL MOUNTED FIXTURE, CUT OFF SHIELD, STAINLESS STEEL, FROSTED ACRYLIC LENS	MOUNTED AT 8'0" AFF
J	DAY-BRITE - V2 W P E70L 835 4 UNV EM/LED	1	LED	65	120	WALL	48" LONG LED WALL BRACKET, VANDAL RESISTANT TAMPER PROOF HARDWARE, POLYCARBONATE LENS	WALL MOUNT ABOVE MIRROR CENTER LINE. INTEGRAL EM. BATTERY
K	DAY-BRITE - V2 W A 43L 835 4 UNV	1	LED	38	120	SURFACE	VAPORLUME, WET LOCATION LABEL, HIGH IMPACT ACRYLIC LENS, FIBERGLASS BODY	

GENERAL LIGHTING FIXTURE SCHEDULE NOTES:

1. VERIFY TYPE OF CEILING FOR EACH FIXTURE WITH ARCHITECTURAL REFLECTED CEILING PLANS AND PROVIDE FIXTURE TRIM AS REQUIRED.
2. VERIFY VOLTAGES PRIOR TO BID AND INSTALLATION OF FIXTURES.
3. PROPOSED ALTERNATE LIGHTING BIDS MUST INCLUDE THE FOLLOWING:
   A. COST SAVINGS TO OWNER.
   B. PHOTOMETRIC LAYOUT OF PROPOSED ALTERNATE LIGHTING FIXTURES.
   C. ABOVE INFORMATION MUST BE SUPPLIED TO THE ENGINEER (3) DAYS PRIOR TO BID.
4. ALL COMPACT FLUORESCENT DOWNLIGHTS SHALL USE ELECTRONIC BALLASTS, UNLESS OTHERWISE NOTED.
5. PROVIDE APPROVED FIRE RATED ENCLOSURES FOR ALL LIGHT FIXTURES LOCATED IN FIRE RATED CEILINGS.
6. FIXTURES IN AREAS WITHOUT CEILINGS OR IN MECHANICAL AND ELECTRICAL ROOMS SHALL BE MOUNTED WITH 1 1/2"x1 1/2" KINDORF CHANNEL SUPPORT SUSPENDED FROM ROOF STRUCTURE WITH THREADED RODS. FIXTURES SHALL BE MOUNTED 10'-0"A.F.F. UNLESS OTHERWISE NOTED.
7. ALL ACRYLIC LENSED FIXTURES SHALL HAVE A MINIMUM LENS THICKNESS OF .125 INCHES.
8. ALL SHEET STEEL USED IN FIXTURES ABOVE SHALL HAVE A PHOSPHATE LAYER APPLIED PRIOR TO PAINTING.



LIGHTING SYSTEMS PLAN

SCALE 1/4" = 1'-0"

ELECTRICAL KEY NOTES:

1. CEILING SENSOR, 120V LINE VOLTAGE, DUAL TECHNOLOGY - WATT STOPPER # DT-355. USES PIR DETECTION AND MICROPHONES FOR AREAS WITH OBSTRUCTIONS TO SENSE OCCUPANCY AND INITATES LIGHTS "ON" CONDITION. THE TIME DELAY (15 MINUTES) KEEPS LIGHTS "ON" DURING PERIODS OF INACTIVITY, WHEN TIMER EXPIRES, LIGHTS TURN "OFF".
2. EXIT SIGNS AND EMERGENCY BATTERY UNITS TO BE CONNECTED TO LIGHTING CIRCUIT AHEAD OF THE SWITCH. EMERGENCY FIXTURES WITH INTEGRAL EMERGENCY BATTERY ARE TO BE WIRED TO OPERATE ON LOSS OF POWER, NOT WHEN SWITCH IS IN THE OFF POSITION.
3. 12 VOLT REMOTE TWIN EMERGENCY HEADS POWERED VIA EMERGENCY BATTERY UNIT.

NO.	DATE	REVISIONS	DR	CK	APP
1	01-17-17	BID SET			

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ELECTRICAL LIGHTING SYSTEMS PLAN

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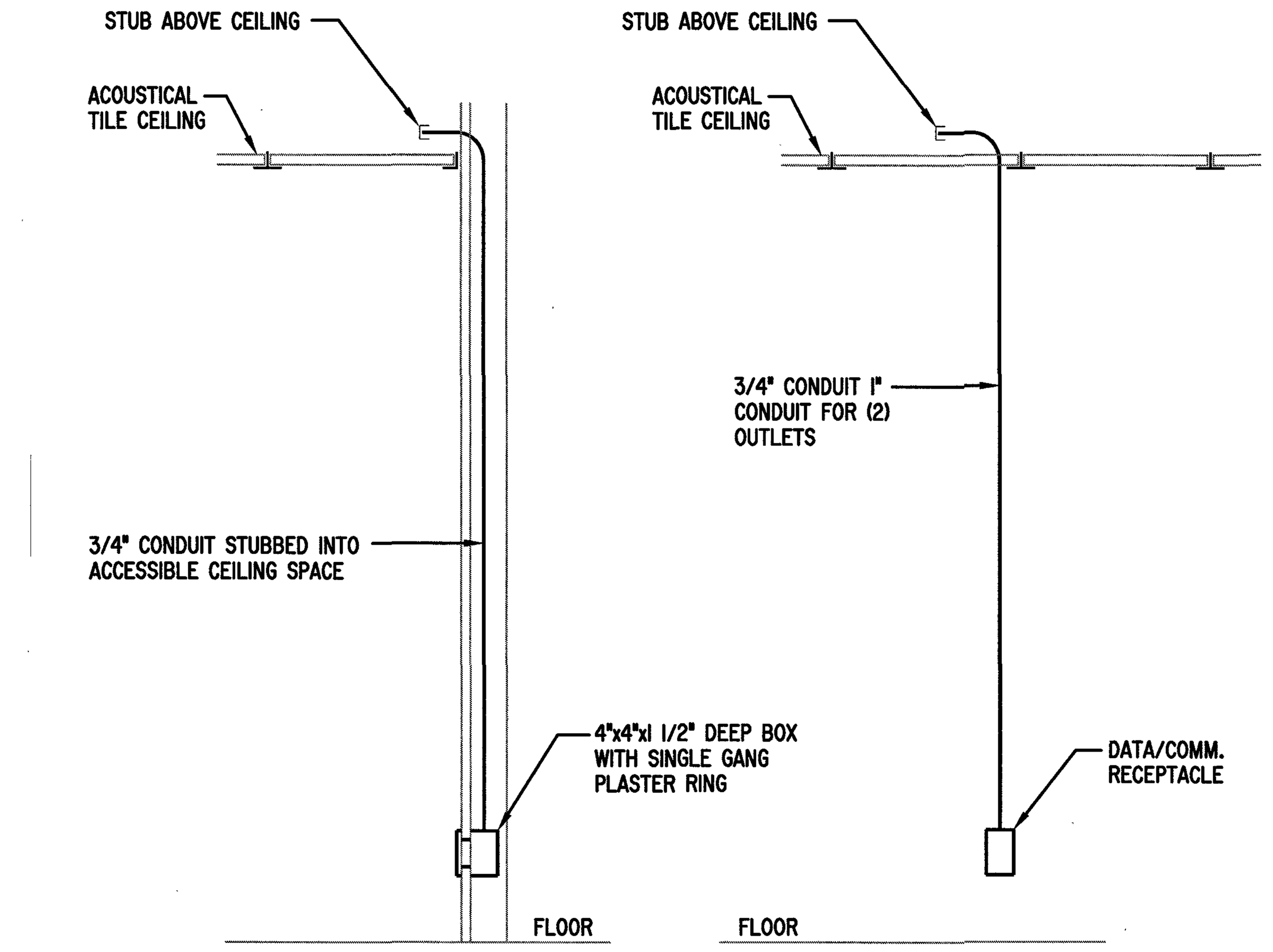
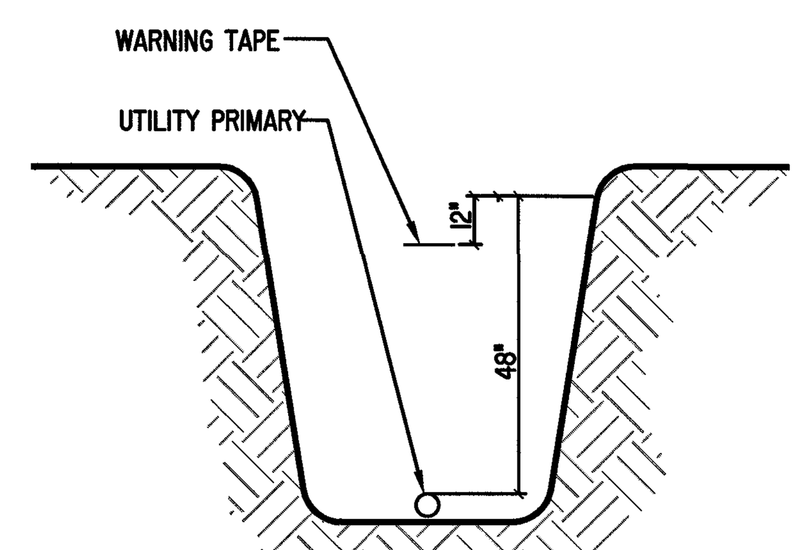
SHEET 3 OF 4

16006-05



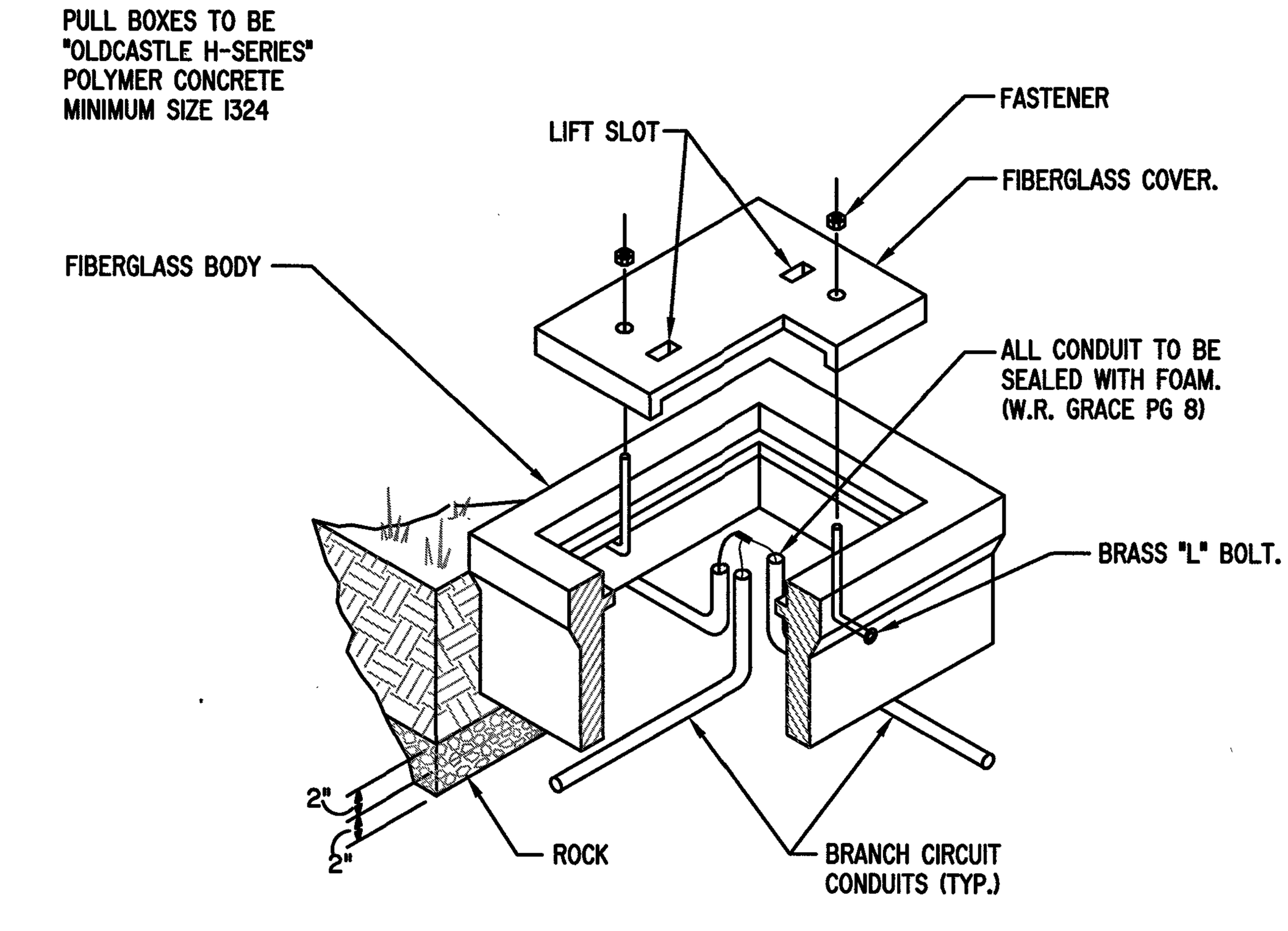
NOTE:
FOR GYPSUM CEILING TYPES, ROUTE CONDUIT WITH PULL-STRING BACK TO POINT OF BUILDING TELEPHONE/DATA SERVICE EQUIPMENT.

A DATA/COMM. STUB-UP DETAIL — SCALE = (N.T.S.)



NOTE: CONTACT ELECTRICAL ENGINEER AT LEAST 24 HOURS IN ADVANCE TO ARRANGE FOR CONDUIT INSPECTION PRIOR TO BACKFILL. SPOT FILLING TO PREVENT FLOATING IS ACCEPTABLE.

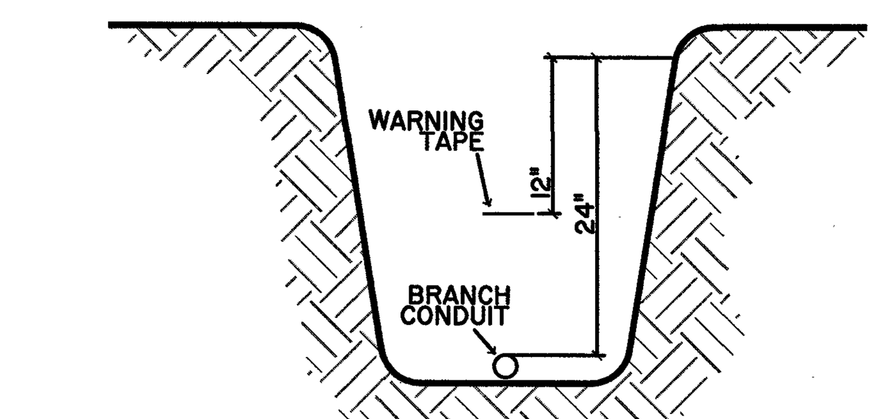
B UTILITY SERVICE FEEDER TRENCHING DETAIL — SCALE = (N.T.S.)



NOTES:

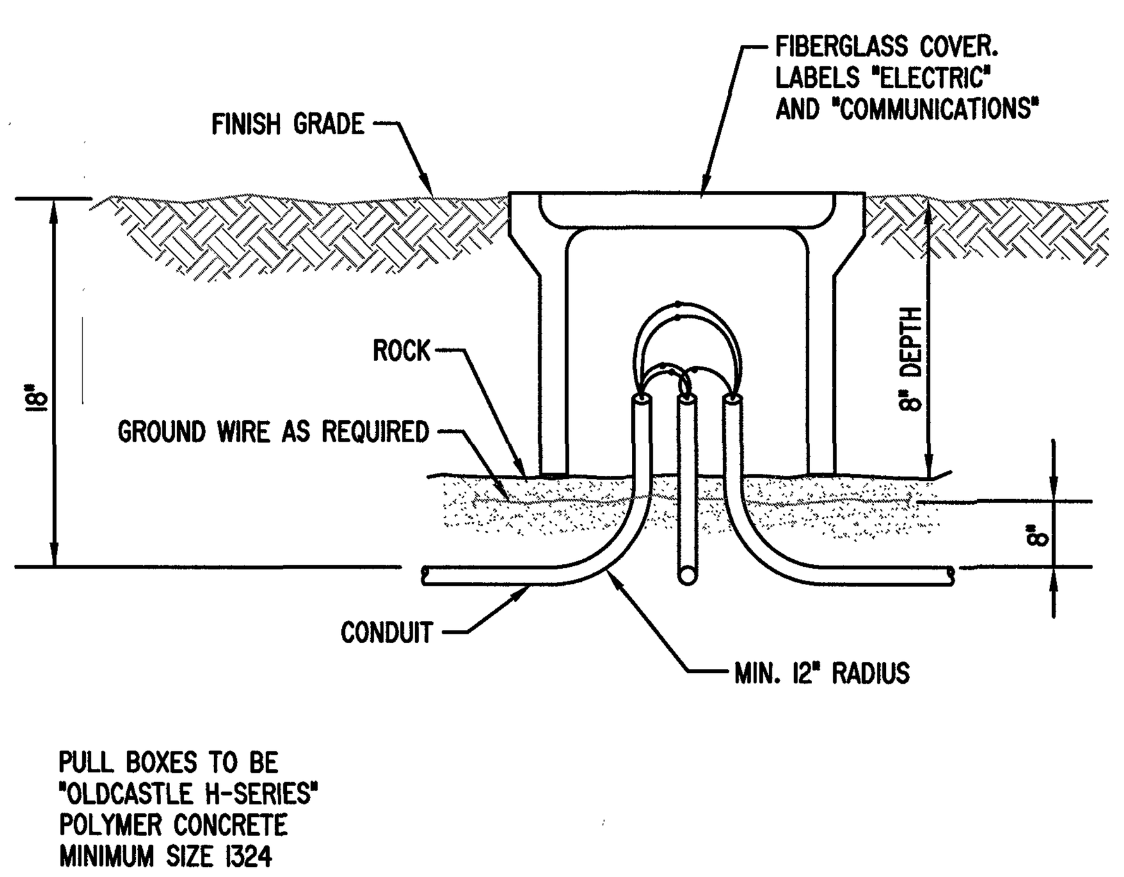
1. FIBERGLASS JUNCTION BOX WITH SCREW DOWN COVER. SIZE AS REQUIRED.
2. SPLICES SHALL BE MADE WITH SPLIT BOLT CONNECTORS. CONNECTOR SHALL BE SEALED IN SILICONE GEL THAT WILL BE CONTAINED IN A CLOSURE AROUND THE SPLIT BOLT TO PROVIDE A WATERPROOF CONNECTION. THIS CLOSURE SHALL BE UV RESISTANT, IMPACT RESISTANT AND ABRASION RESISTANT.
3. PULL BOX COVERS TO BE LABELED "COMMUNICATION" AND "ELECTRIC"

C PULL-BOX DETAIL — SCALE = (N.T.S.)



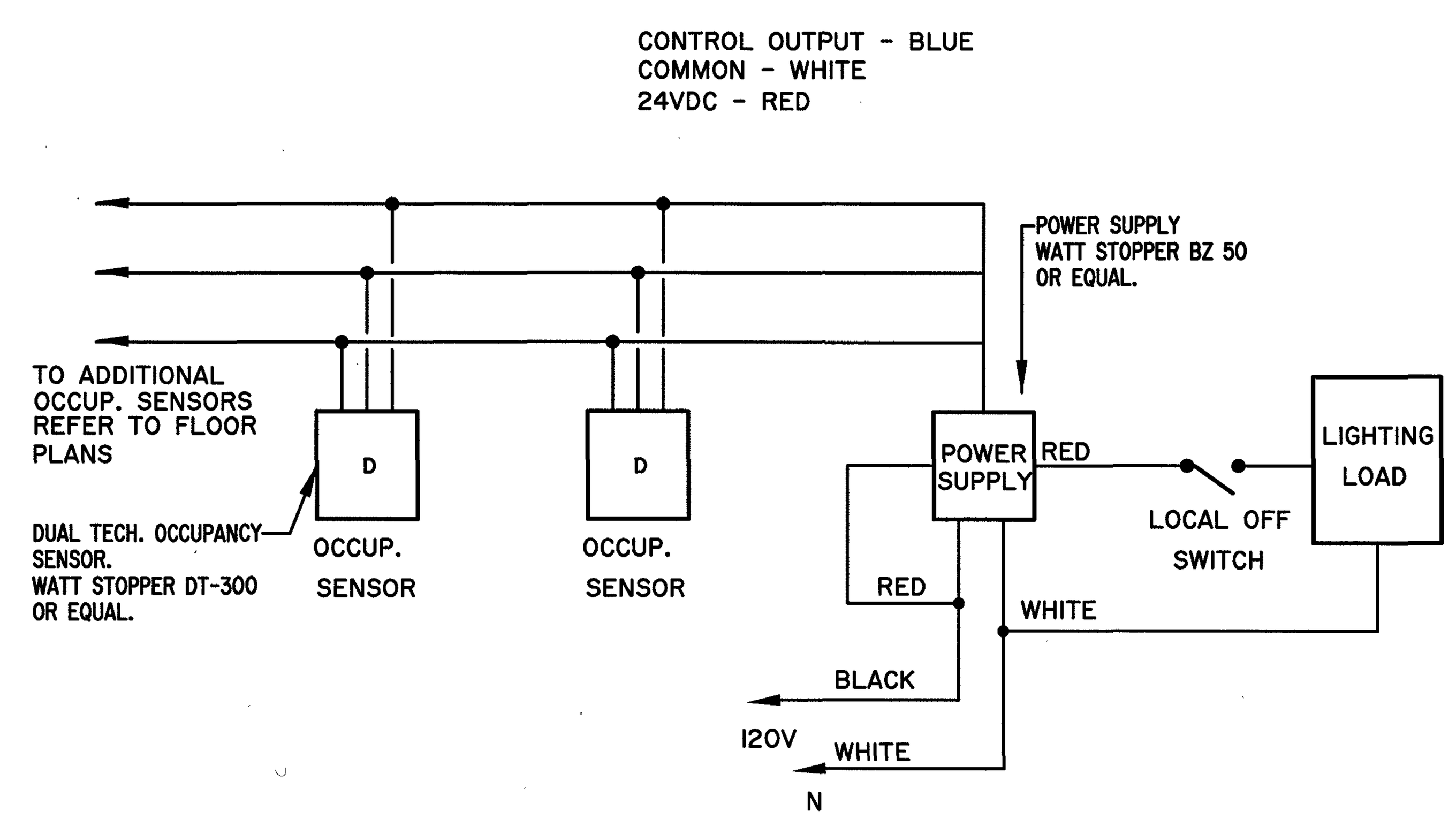
NOTE: CONTACT ELECTRICAL ENGINEER AT LEAST 24 HOURS IN ADVANCE TO ARRANGE FOR CONDUIT INSPECTION PRIOR TO BACKFILL. SPOT FILLING TO PREVENT FLOATING IS ACCEPTABLE.

D CONDUCTOR TRENCHING DETAIL — SCALE = (N.T.S.)

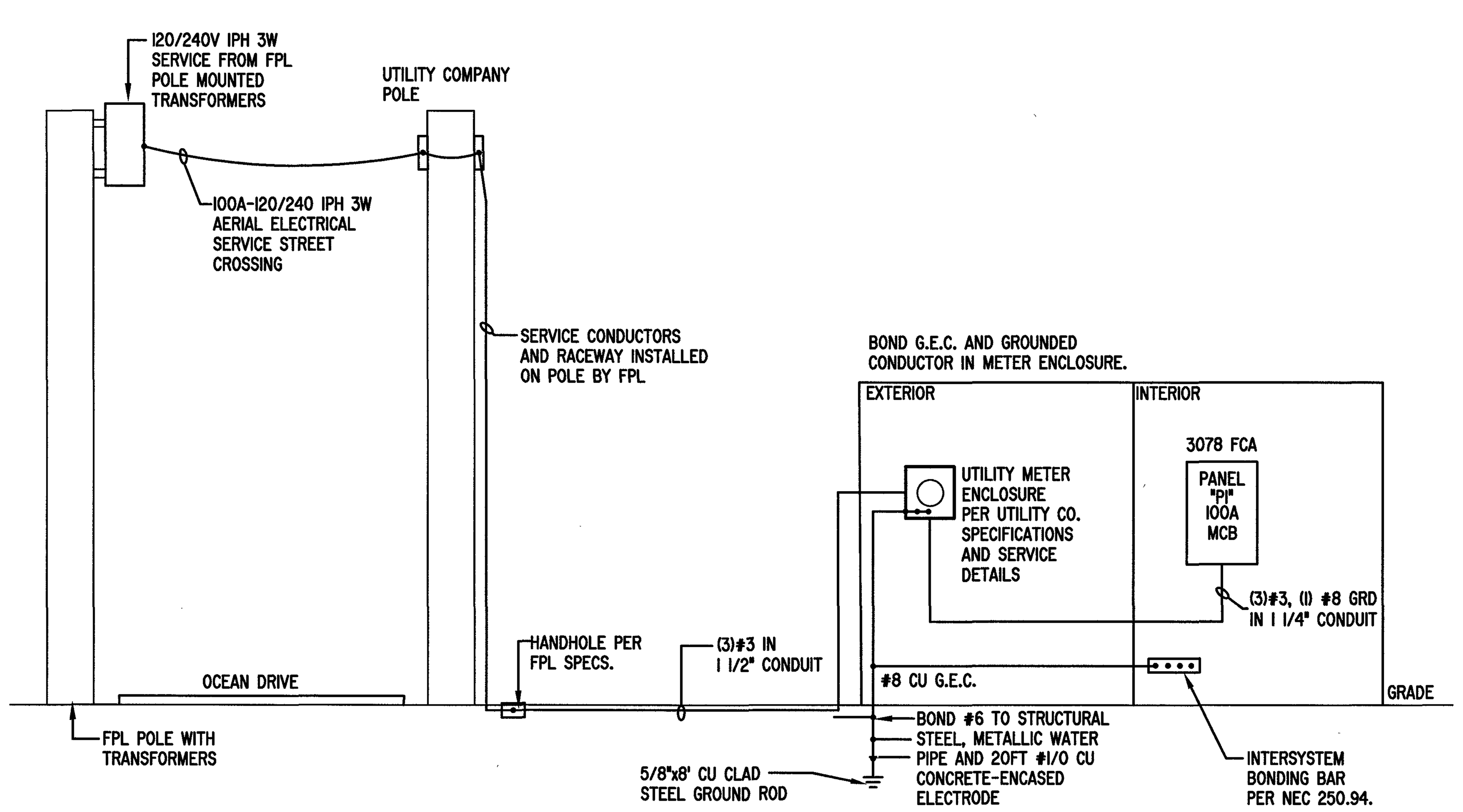


PULL BOXES TO BE "OLDCASTLE H-SERIES" POLYMER CONCRETE MINIMUM SIZE 1324

E PULL-BOX SECTION — SCALE = (N.T.S.)



F OCCUPANCY SENSOR WIRING DIAGRAM — SCALE = (N.T.S.)



G ELECTRICAL RISER DIAGRAM — SCALE = (N.T.S.)

SINGLE PHASE LINE-LINE SHORT-CIRCUIT CURRENT CALCULATION
25KVA=TRANSFORMER SIZE

$$I_{SC} = \frac{25000VA}{240} \times \frac{100}{1.4\%IZ} = 7440\ AMPS$$

$$f = \frac{2}{1} \times \frac{110'}{4,811} \times \frac{7440A}{240} = 1.418$$

$$M = \frac{1}{1 + 1.418} = 0.414$$

7440 AMPS X 0.414 = 3078 AMPS

LINE TO NEUTRAL SHORT-CIRCUIT CURRENT CALCULATION

$$I_{SC} = 1.5 \times 7440AMPS = 11161\ AMPS$$

$$f = \frac{2}{1} \times \frac{110'}{4,811} \times \frac{11161A}{120V} = 4.253$$

$$M = \frac{1}{1 + 4.253} = 0.190$$

11161 AMPS X 0.190 = 2125 AMPS

USE MINIMUM IOKA RATED EQUIPMENT AT PANEL "P1"

PANEL: "P1"	VOLTAGE: 120/240V 1PH 3W	BUS/BREAKER AIC RATING: 22KA/10KA	RATING: 100A
	LOCATION: STORAGE ROOM	MOUNTING: SURFACE-NEMA1	MAIN CONNECTION: M.C.B.
		FED FROM: FPL TRANSFORMER BANK	DEVICE FAMILY: SQUARE D QO OR EQUAL

DESCRIPTION	WIRE SIZE	CKT BKR	P	CONNECTED KVA A	CONNECTED KVA B	No.	No.	CONNECTED KVA A	CONNECTED KVA B	P	CKT BKR	WIRE SIZE	DESCRIPTION
WATER HEATER	10	30	2	2.25		1	2	1.40		1	20	12	R-HAND DRYER-MENS
	10				2.25	3	4		1.40	1	20	12	R-HAND DRYER-WOMENS
R-STORAGE ROOM	12	20	1	0.85		5	6	0.37		1	20	12	R-EWC
R-TELEPHONE BACKBD.	12	20	1		0.36	7	8		0.00	1	20		SPARE
R-MENS ROOM	12	20	1	0.36		9	10	0.00		1	20		SPARE
R-WOMENS ROOM	12	20	1		0.36	11	12		0.34	1	20	12	L-STORAGE,MENS,WOMENS
L-CANOPY & WALL LIGHTS-NOTE 4	12	20	1	0.10		13	14	0.54		1	20	12	R-EXTERIOR
SPARE		20	1		0.00	15	16		0.00	1	20		SPARE
SPACE				0.00		17	18	0.00		1	20		SPARE
SPACE					0.00	19	20		0.00				SPACE
SPACE				0.00		21	22	0.00					SPACE
SPACE					0.00	23	24		0.00				SPACE
NO SPACE				0.00		25	26	0.00					NO SPACE
NO SPACE					0.00	27	28		0.00				NO SPACE
NO SPACE				0.00		29	30	0.00					NO SPACE
NO SPACE					0.00	31	32		0.00				NO SPACE
NO SPACE				0.00		33	34	0.00					NO SPACE
NO SPACE					0.00	35	36		0.00				NO SPACE
NO SPACE				0.00		37	38	0.00					NO SPACE
NO SPACE					0.00	39	40		0.00				NO SPACE
NO SPACE				0.00		41	42	0.00					NO SPACE
				3.56	2.97	TOTAL		2.31	1.74	10.58	TOTAL CONNECTED KVA		

SERVES	CONNECTED LOAD - KVA	DF	CALCULATED DEMAND - KVA
LIGHTING	0.54	1.25	0.68
RECEPTACLES (FIRST 10 KVA)	2.74	1.00	2.74
RECEPTACLES (OVER 10 KVA)	0.00	0.50	0.00
LARGEST MOTOR	0.00	1.25	0.00
OTHER MOTORS	0.00	1.00	0.00
EQUIPMENT/HEAT	7.30	1.00	7.30
KITCHEN EQUIPMENT	0.00	1.00	0.00
TOTAL DEMAND KVA:			10.72
TOTAL AMPERAGE:			44.65

NOTES:

1. VERIFY ELECTRICAL REQUIREMENTS FOR ALL EQUIPMENT WITH MANUFACTURER'S MANUAL PRIOR TO BIDDING AND INSTALLATION.
2. PROVIDE TYPEWRITTEN DIRECTORY ON INSIDE PANEL COVER
3. CIRCUIT CONTROLLED VIA 1PST TIME CLOCK W/ ASTRONOMICAL DIAL AND BATTERY BACK-UP. MOUNT ADJACENT TO PANEL

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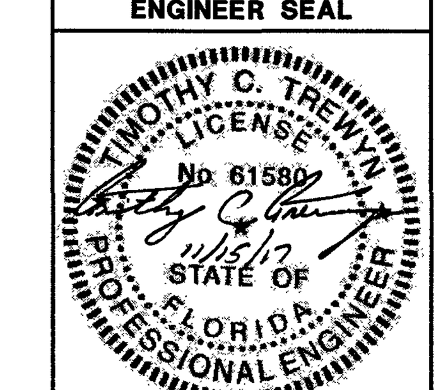

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SHEET TITLE

ELECTRICAL DETAILS, RISERS & SCHEDULES

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E-4

SHEET 4 OF 4

16006-05