WILLIAMS PARK
ACTIVITY CENTER EXPANSION

CONSTRUCTION DOCUMENTS

PLOT DATE : PLOT_DATE

CONSULTANTS

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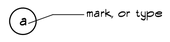
ABBREVIATIONS

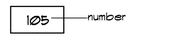
AFF	above finished floor	INSUL	insulate (d), (ion)
ADJT	adjustable	JT	joint
A/C	air conditioning	JST	joist
ALT	alternate	LAV	lavatory
AB	anchor bolt	LTL	lintel
BM	beam	MH	manhole
BIT	bituminous	MO	masonry opening
BLKG	blocking	MECH	mechanical
BUR	built up roofing	MET	metal
CIPC	cast-in-place concrete	MOD	modular
CLG	ceiling	NOM	nominal
CT	ceramic tile	NIC	not in contract
CLR	clearance	NTS	not to scale
COL	column	PLAS	plaster
CON	concrete	PT	pressure
CMT	ceramic mosaic tile	PVC	polyvinyl chloride
CMU	concrete masonry unit	PTC	post-tension concrete
CONT	continuous or continue	PCF	pounds per cubic feet
CJT	control joint	PFL	pounds per linesl foot
DP	dampproofing	PSF	pounds per square foot
DL	dead load	PSI	pounds per square inch
DET	detail	PCC	precast concrete
DIA	diameter	PL	property line
DIM	dimension	RAD	radius
DR	door	RVT	reinforced vinyl title
DS	downspout	REF	reference
DWG	drawing	RA	return air
DF	drinking fountain	RD	roof drain
ELEC	electrical	RFG	roofing
EWC	electrical water cooler	RO	rough opening
EL	elevation	SS	service sink
EQ	equal	SIM	similar
EXIST	existing	SC	solid core
EXPJT	expansion joint	SPEC	specification(s)
EXT	exterior	SQ	square
FFE	finished floor elevation	SS	stainless steel
FFL	finished floor line	STL	steel
FLG	flashing	STR	structural
FLR	flooring	TBR	to be removed
FD	floor drain	TEL	telephone
FTG	footing	THK	thick(ness)
FOB	furnished by others	T&G	tongue & groove
GA	gage, gauge	UNO	unless noted otherwise
GALV	galvanized	VB	vapor barrier
GC	general contractor	VERT	vertical
GL	glass, glazing	VAT	vinyl asbestos title
GB	grab bar	VB	vinyl base
GYPDWL	gypsum dry wall	WC	water closet
HH	handhole	WH	water heater
HDW	hardware	WP	water proofing
HT	height	WD	wood
HC	hollow core		
HB	hose bibb		

ALTERNATES

SYMBOLS

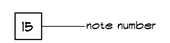


WINDOW TYPE



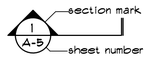
ROOM NUMBER

RESTROOM ACCESSORY

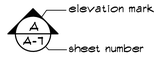


DRAWING NOTE

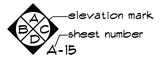
DOOR NUMBER



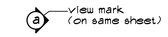
SECTION CUT



ELEVATION



MULTI-ELEVATION



VIEW

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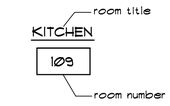

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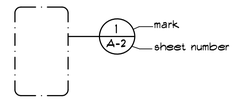

DETAIL

PROJECT NOTES

1 ALL CONSTRUCTION SHALL COMPLY WITH APPLICABLE CODES AND STANDARDS, INCLUDING BUT NOT LIMITED TO ALL STATE LAWS, LOCAL ORDINANCES, UTILITY COMPANY, FLORIDA ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION, THE STANDARD MECHANICAL CODE, THE STANDARD PLUMBING CODE, THE OCCUPATIONAL SAFETY AND HEALTH ACT, NFPA AND THE CURRENTLY ADOPTED STANDARD BUILDING CODE.

2 CONTRACTOR SHALL REMOVE ALL DEBRIS FROM THE PROJECT SITE AS REQUIRED TO MAINTAIN A SAFE AND ORDERLY WORK ENVIRONMENT.

3 GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO AND DURING CONSTRUCTION.

4 DEMOLITION WORK SHALL NOT BE LIMITED TO THESE DOCUMENTS TO COMPLETE PROJECT AS ILLUSTRATED, REMOVE ITEMS NECESSARY TO ALLOW FOR NEW CONSTRUCTION.

5 EXISTING SURFACES (WALLS, CEILINGS, ETC.) SHALL BE PROTECTED DURING CONSTRUCTION. THE CONTRACTOR SHALL CLEAN SURFACES AFTER CONSTRUCTION. REPAIR, PAINT AND OR REPLACE AREAS DAMAGED AS A RESULT OF PERFORMANCE OF THE WORK.

6 ALL WORK SHALL BE COORDINATED WITH THE CITY OF TAMPA'S ARCHITECTURAL REPRESENTATIVE.

7 THE CONTRACTOR SHALL SECURE ALL OPENINGS UNDER CONSTRUCTION AT THE END OF EACH WORKING DAY.

8 ITEMS OR AREAS DAMAGED BY THE CONTRACTOR OR SUBCONTRACTORS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

9 CONTRACTOR SHALL PROVIDE DEAD WOOD BLOCKING FOR ALL WALL CABINETS, WOOD BASES, CHAIR RAILS, CROWN MOULDINGS, AND ANY OTHER ITEMS THAT REQUIRE BLOCKING FOR PROPER ANCHORING.

BUILDING TYPE: SMALL ASSEMBLY
TYPE II A, UNPROTECTED UNSPRINKLERED

FIRM NOTE

PANEL 17 OF 46
COMMUNITY-PANEL NUMBER
120114 0001 7B

FLOOD ZONE C

CODE REFERENCE NOTE

ALL CONSTRUCTION SHALL COMPLY WITH CURRENTLY ADOPTED CODES, WHICH INCLUDE BUT ARE NOT LIMITED TO:

CHAPTER 11	*TAMPA CITY CODE, WHICH INCLUDES:* NATIONAL FIRE PROTECTION ASSOCIATION CODES, LATEST ADOPTED EDITION. STANDARD FIRE PREVENTION CODE, LATEST ADOPTED EDITION. NFPA #101 LIFE SAFETY CODE, LATEST ADOPTED EDITION.
CHAPTER 5	*TAMPA CITY CODE, WHICH INCLUDES:* FLORIDA BUILDING CODE LATEST ADOPTED EDITION 2017 6TH ED. FBC MECHANICAL CODE, LATEST ADOPTED EDITION2017 6TH ED. NFPA #70, NATIONAL ELECTRICAL CODE, LATEST ADOPTED EDITION.
FLORIDA STATUE 633	*WHICH INCLUDES:* STATE FIRE MARSHALL'S RULES AND REGULATIONS.

ARCHITECT

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FAX: 274-8080
EMAIL:THOMAS.HESTER@TAMPAGOV.NET

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L-4.0 LANDSCAPE PLAN
L-4.1 LANDSCAPE DETAILS
L-4.2 PERMATRAK BOARWALK DETAILS

ARCHITECTURAL
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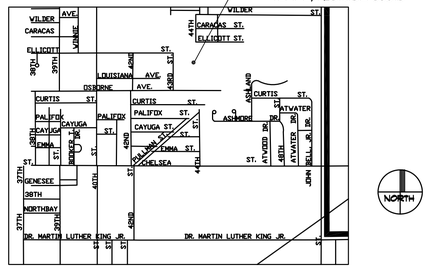
E-5.0 ELECTRICAL DETAILS

LOCATION MAP

SITE LOCATION
4362 E. OSBORNE AVE.
TAMPA, FLORIDA 33610



LEGAL DESCRIPTION

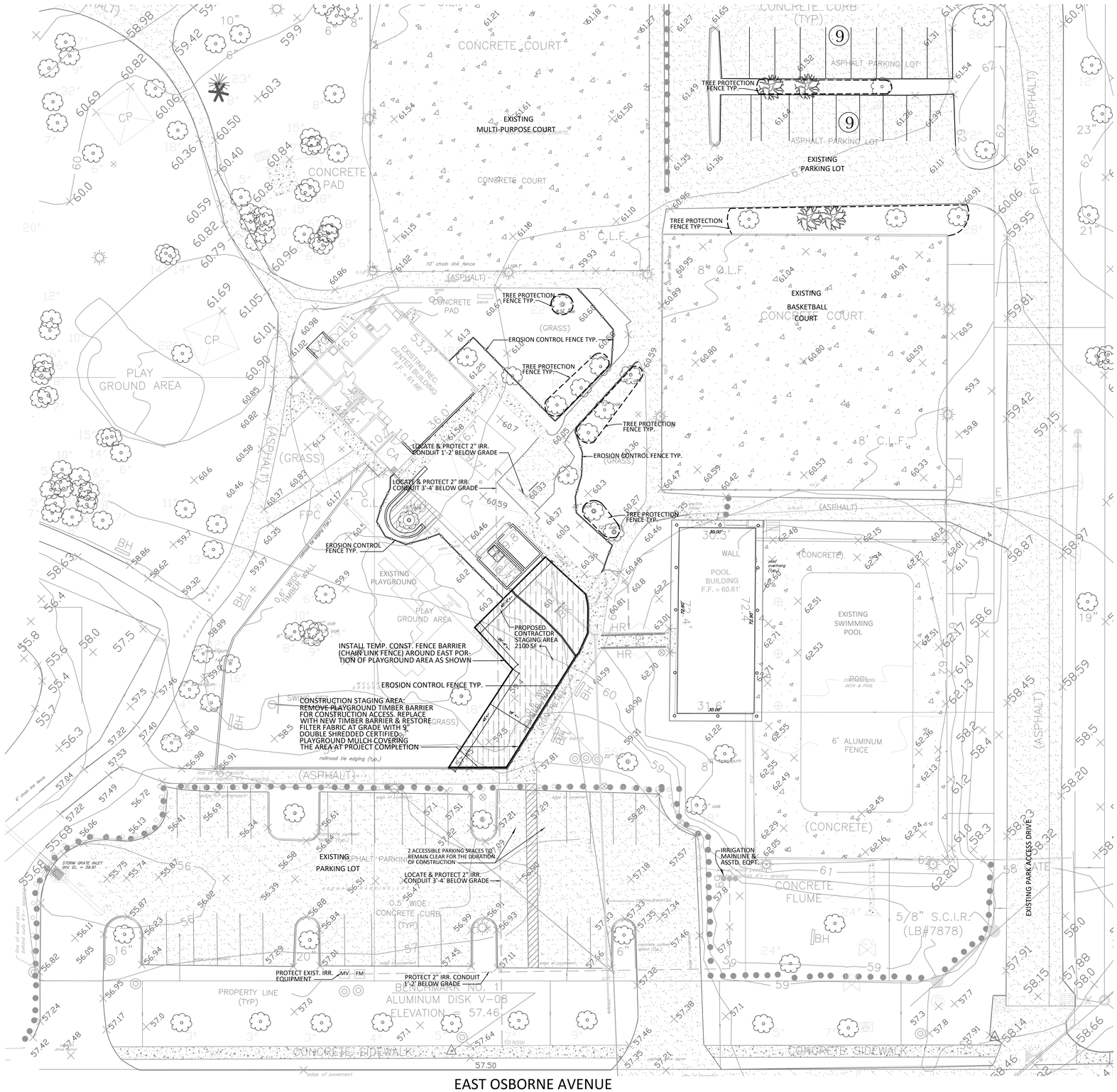
SEC9, T29S, R19E
ATLAS SHEET No. F-15

SQUARE FOOTAGE

843 SQUARE FEET

SHEET NUMBER
G - 1
___ OF ___

PLOT DATE : PLOT_DATE



GENERAL NOTES

KEY NOTES

1. PROPERTY IS LOCATED IN FLOOD ZONE X.
2. ELEVATIONS SHOWN ARE REFERENCED TO THE NATIONAL GEODETIC SURVEY (NGS) NAV88 DATUM.
3. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE LOCATED WITHIN THE SILT FENCE BOUNDARY.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES - PUBLIC AND PRIVATE - PRIOR TO DEMOLITION,EXCAVATION OR REMOVAL WORK. UTILITY LOCATION COST TO BE INCLUDED IN BID PRICE.
5. CONTRACTOR IS RESPONSIBLE FOR INSTALLING APPROVED SILT FENCE, TREE PROTECTION FENCE, AND STAGING AREA FENCE. ALL FENCING SHALL BE MAINTAINED IN PLACE FOR THE DURATION OF THE PROJECT UNTIL FINAL ACCEPTANCE.
6. ALL TURF AREAS DISTURBED BY CONSTRUCTION SHALL BE SODDED WITH 'ARGENTINE BAHIA', FRESHLY CUT, IN 18" X 24" PIECES, HEALTHY, FREE OF INSECTS, WEEDS OR DISEASES. SOD SHALL BE LAID LEVEL TO EXISTING TURF AREAS, AND MEET ADJACENT PAVED SURFACES. SOD SHALL BE LAID WITH TIGHT SEAMS, WATERED IMMEDIATELY AND ROLLED TO SMOOTH, EVEN GRADE. AFTER WATERING, SOD SHALL BE TOP DRESSED WITH A COMMERCIAL SOD FERTILIZER PER MANUFACTURER'S REQUIREMENTS.
7. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING NEWLY SODDED AREAS (INCLUDING MOWING AND WEED CONTROL) UNTIL PROJECT HAS ACHIEVED FINAL ACCEPTANCE.
8. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS, AND SHALL COMPLY WITH ALL LOCAL AND STATE CONSTRUCTION AND STORMWATER REQUIREMENTS.

WILLIAMS PARK ACTIVITY CENTER EXPANSION

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION

306 E. JACKSON STREET 4 NORTH
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WILLIAMS PARK CENTER EXPANSION
4362 E. OSBORNE AVE
TAMPA, FL 33610

DPW FILE NUMBER

DPW NUMBER
17-C-

ISSUE DATE
FEBURARY 21 2018

DRAWN BY
JERRY P. SANDERS / P BORS

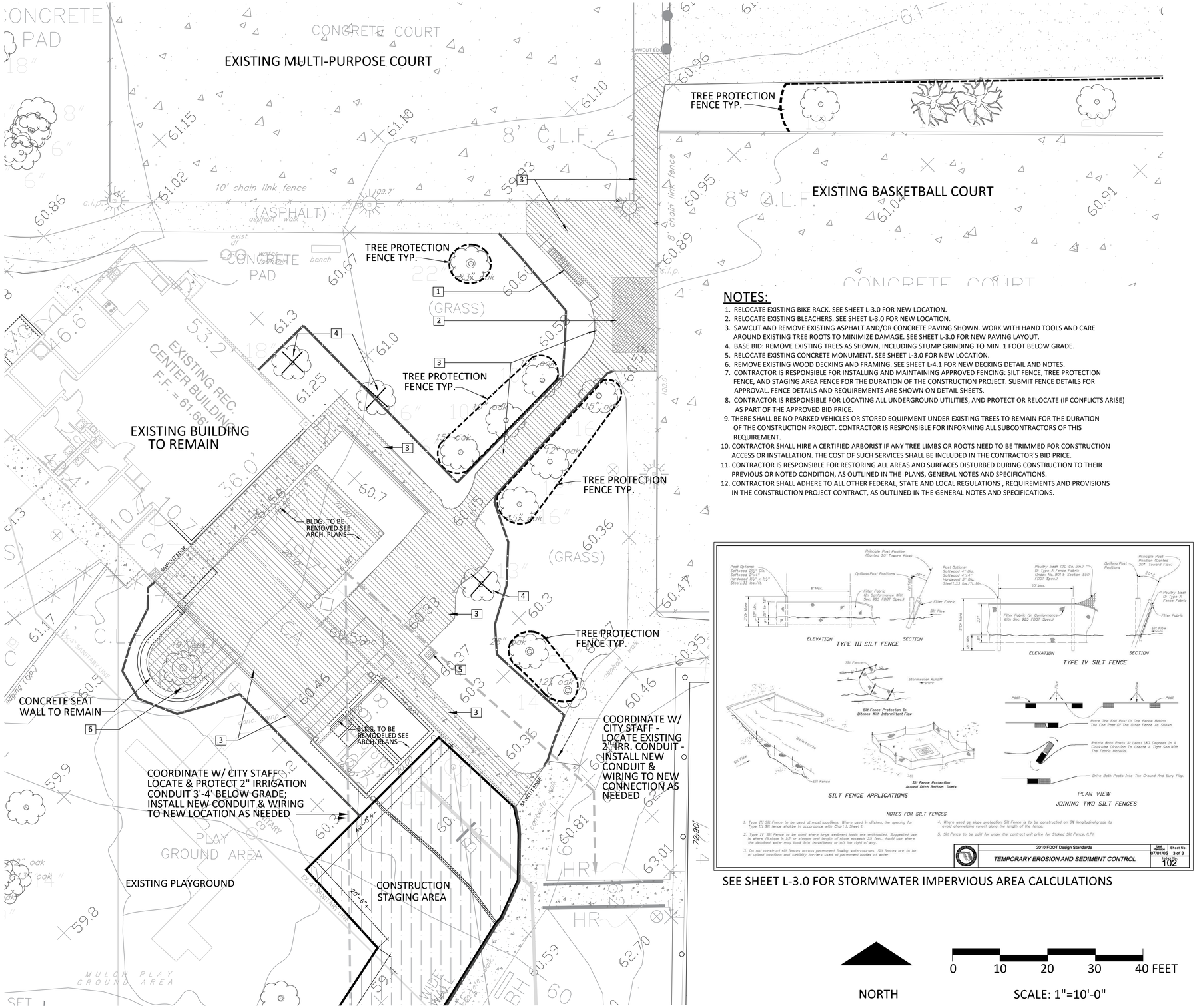
REVISIONS

SEAL
REGISTERED LANDSCAPE ARCHITECT
MARGARET MARY DECKER HESTER
LA 0666845
STATE OF FLORIDA

SCALE: VARIES

STAGING & EROSION CONTROL PLAN

SHEET NUMBER
L-1.0
X OF X



NOTES:

1. RELOCATE EXISTING BIKE RACK. SEE SHEET L-3.0 FOR NEW LOCATION.
2. RELOCATE EXISTING BLEACHERS. SEE SHEET L-3.0 FOR NEW LOCATION.
3. SAWCUT AND REMOVE EXISTING ASPHALT AND/OR CONCRETE PAVING SHOWN. WORK WITH HAND TOOLS AND CARE AROUND EXISTING TREE ROOTS TO MINIMIZE DAMAGE. SEE SHEET L-3.0 FOR NEW PAVING LAYOUT.
4. BASE BID: REMOVE EXISTING TREES AS SHOWN, INCLUDING STUMP GRINDING TO MIN. 1 FOOT BELOW GRADE.
5. RELOCATE EXISTING CONCRETE MONUMENT. SEE SHEET L-3.0 FOR NEW LOCATION.
6. REMOVE EXISTING WOOD DECKING AND FRAMING. SEE SHEET L-4.1 FOR NEW DECKING DETAIL AND NOTES.
7. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING APPROVED FENCING: SILT FENCE, TREE PROTECTION FENCE, AND STAGING AREA FENCE FOR THE DURATION OF THE CONSTRUCTION PROJECT. SUBMIT FENCE DETAILS FOR APPROVAL. FENCE DETAILS AND REQUIREMENTS ARE SHOWN ON DETAIL SHEETS.
8. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES, AND PROTECT OR RELOCATE (IF CONFLICTS ARISE) AS PART OF THE APPROVED BID PRICE.
9. THERE SHALL BE NO PARKED VEHICLES OR STORED EQUIPMENT UNDER EXISTING TREES TO REMAIN FOR THE DURATION OF THE CONSTRUCTION PROJECT. CONTRACTOR IS RESPONSIBLE FOR INFORMING ALL SUBCONTRACTORS OF THIS REQUIREMENT.
10. CONTRACTOR SHALL HIRE A CERTIFIED ARBORIST IF ANY TREE LIMBS OR ROOTS NEED TO BE TRIMMED FOR CONSTRUCTION ACCESS OR INSTALLATION. THE COST OF SUCH SERVICES SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.
11. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL AREAS AND SURFACES DISTURBED DURING CONSTRUCTION TO THEIR PREVIOUS OR NOTED CONDITION, AS OUTLINED IN THE PLANS, GENERAL NOTES AND SPECIFICATIONS.
12. CONTRACTOR SHALL ADHERE TO ALL OTHER FEDERAL, STATE AND LOCAL REGULATIONS , REQUIREMENTS AND PROVISIONS IN THE CONSTRUCTION PROJECT CONTRACT, AS OUTLINED IN THE GENERAL NOTES AND SPECIFICATIONS.

SEE SHEET L-3.0 FOR STORMWATER IMPERVIOUS AREA CALCULATIONS

NORTH

SCALE: 1"=10'-0"

0 10 20 30 40 FEET

GENERAL NOTES

KEY NOTES

WILLIAMS PARK ACTIVITY CENTER EXPANSION

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION

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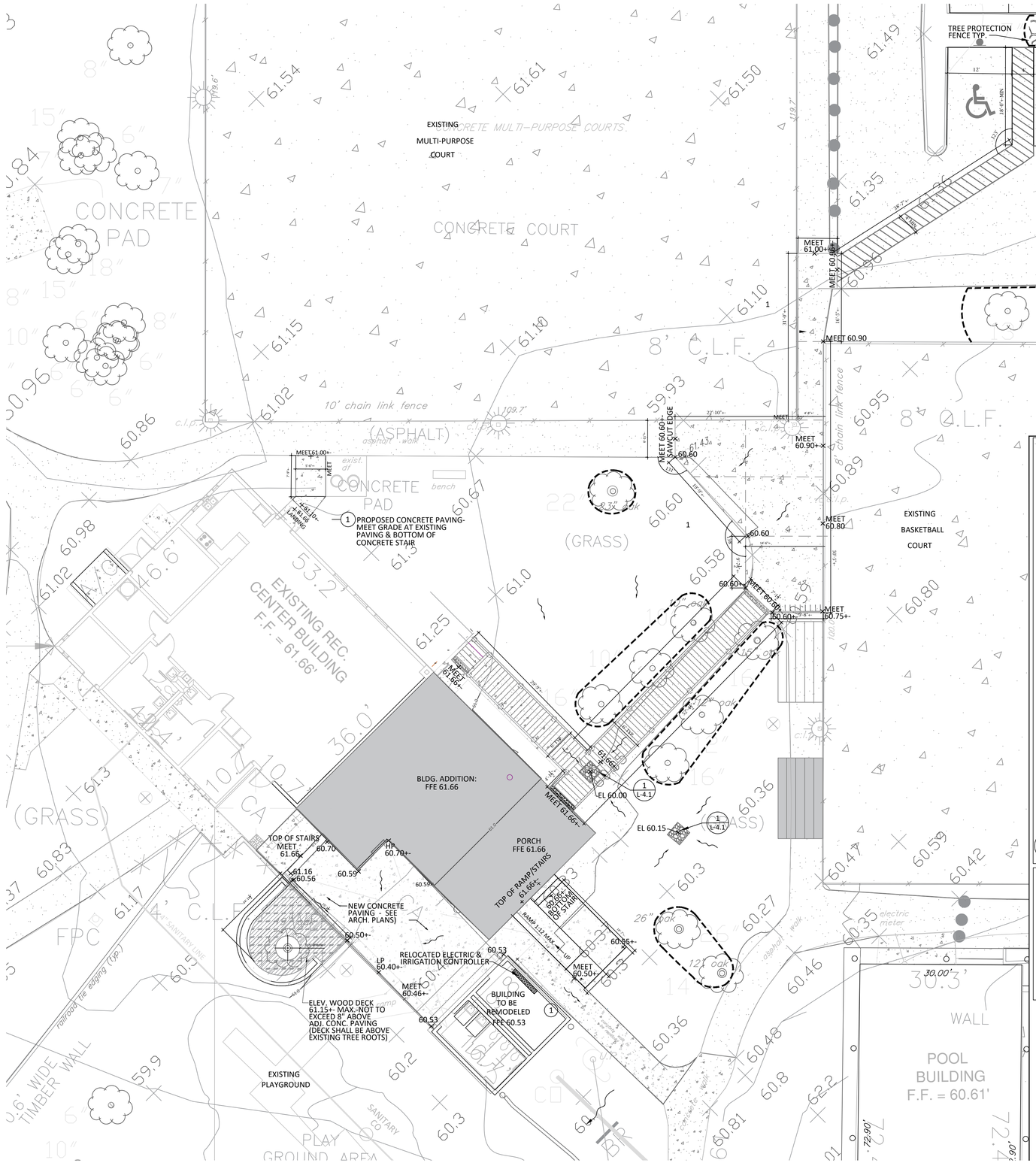
DRAWN BY
J. SANDERS / P. BORS

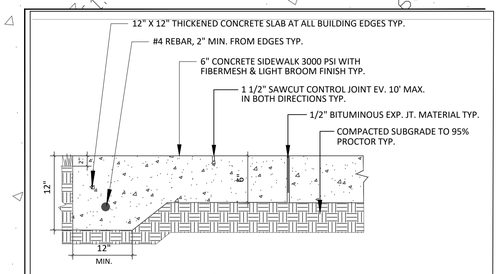
REVISIONS

SEAL
REGISTERED LANDSCAPE ARCHITECT
ROBERT MARY DECOSTER
LA 0666946
STATE OF FLORIDA

SITE DEMOLITION PLAN

SHEET NUMBER
L-2.0
_____ OF _____





SECTION

NOTES:

- CONCRETE SHALL BE 6" DEPTH WITH THICKENED EDGES (12" DEPTH) ADJACENT TO BUILDING EDGES. CONCRETE MIX TO INCLUDE FIBERMESH. SUBMIT CONCRETE MIX SPECIFICATIONS FOR APPROVAL AS REQUIRED.
- CONCRETE SHALL BE PER DIMENSIONS SHOWN ON PLAN. CONCRETE SHALL NOT BE POURED PRIOR TO LAYOUT AND CONCRETE MIX APPROVAL.
- NO CONCRETE PAVING SHALL EXCEED 10' IN EITHER DIRECTION WITHOUT A 1 1/2" DEEP CONTROL JOINT-EITHER HAND TOOLED OR SAWCUT TO MEET DEPTH SHOWN.
- EXPANSION JOINTS SHALL BE PLACED EVERY 30 LF IN EITHER DIRECTION, MEETING ADJACENT PAVING GRADE. EXPANSION JOINT MATERIAL SHALL BE 1/2" BITUMINOUS CLOSED CELL MATERIAL MEETING AASHTO M33 OR ASTM D994.
- CONCRETE PAVING SHALL HAVE LIGHT BROOM FINISH TYP.
- WHERE CONCRETE PAVING IS ADJACENT TO TURF AREAS, CONCRETE SHALL BE 2" ABOVE ADJACENT GRADE.
- SEE ARCHITECTURAL PLANS FOR CONCRETE RAMP & STAIR DETAILS.
- SEE SPECIFICATIONS FOR ALL OTHER CONCRETE REQUIREMENTS.

1 SECTION: CONCRETE SIDEWALK TYP.

N.T.S.

STORMWATER IMPERVIOUS CALCULATIONS

EXISTING IMPERVIOUS	
EXIST. STORAGE BUILDING	369.43
EXISTING PAVING (CONCRETE & ASPHALT)	3065.00
SUBTOTAL	3434.43
PROPOSED	
BUILDING ADDITION	1308.70
NEW CONC. PAVING	2070.24
PERMATRAK BOARDWALK	532.00
SUBTOTAL	3910.94
DIFFERENCE	476.51

NORTH

0 10 20 30 40

SCALE: 1"=10'-0"

GENERAL NOTES

KEY NOTES

1. ELEVATIONS SHOWN ARE REFERENCED TO THE NATIONAL GEODETIC SURVEY (NGS) NAV88 DATUM.
2. ALL SURFACES SHALL BE GRADED FOR POSITIVE DRAINAGE AS SHOWN.
3. ALL DISTURBED AREAS SHALL EITHER BE PAVED OR SODDED WITH 'ARGENTINE BAHIA' TO PREVENT SOIL EROSION.
4. CONTRACTOR RESPONSIBLE FOR CONSTRUCTION OF PERMATRAK BOARDWALK SHALL BE EXPERIENCED IN SITE WORK, DRAINAGE, AND CONSTRUCTING SITE AMENITIES TO EXACT ELEVATION DETAIL. THE COST OF ALL EQUIPMENT NEEDED FOR CONSTRUCTION SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.
5. ALL DISTURBED AREAS SHALL MEET EXISTING GRADE AT EDGES WITHOUT TRIP HAZARDS, TO MEET ADA REQUIREMENTS.
6. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CITY OF TAMPA PROJECT INSPECTION STAFF FOR RESOLUTION.
7. SEE SPECIFICATIONS FOR ALL OTHER CITY OF TAMPA REQUIREMENTS.

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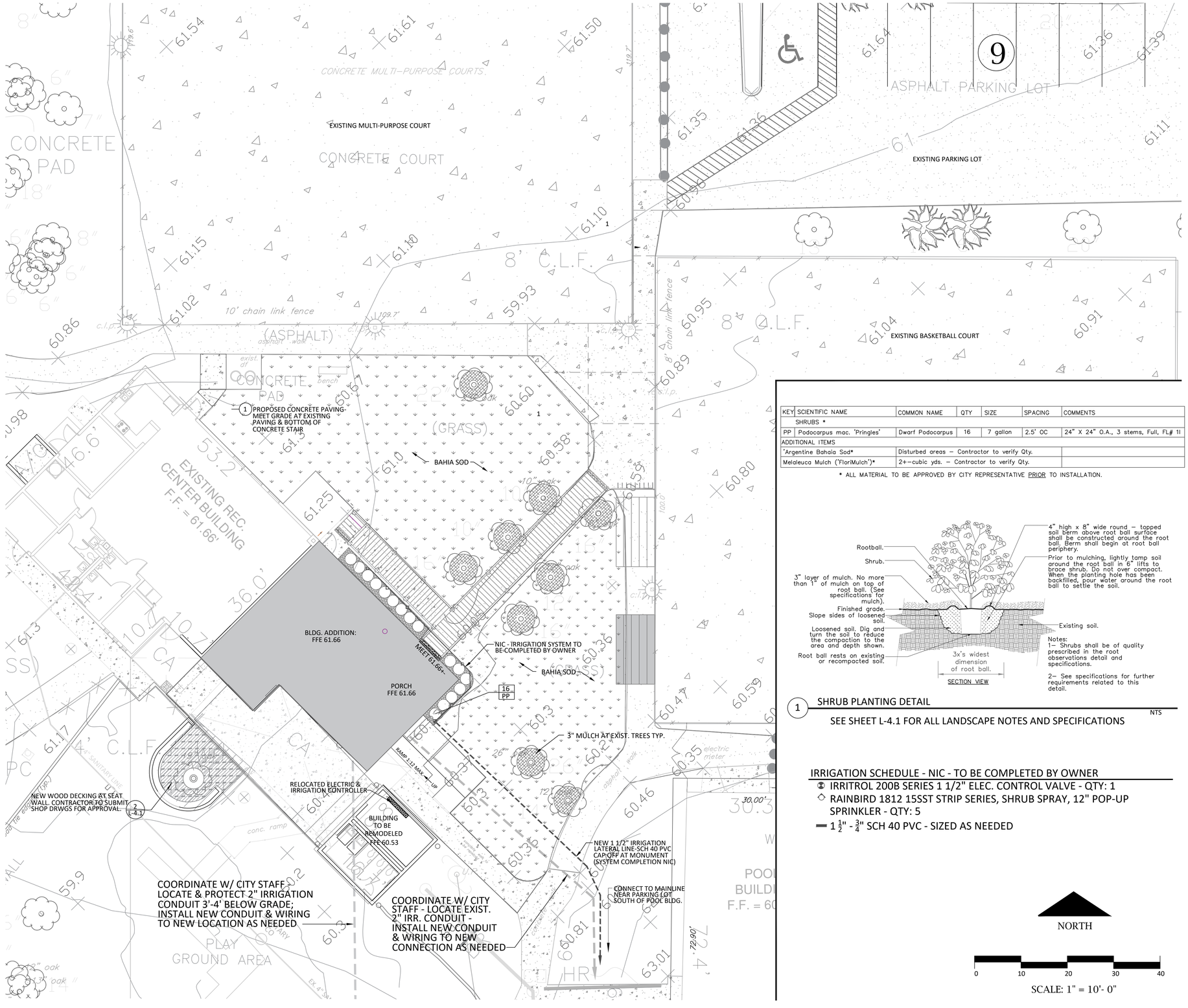
REVISIONS

SEAL
REGISTERED LANDSCAPE ARCHITECT
VARGENE MARY DECKER
LA 6666845
STATE OF FLORIDA

GRADING AND PAVING PLAN

SHEET NUMBER
L-3.0
____ OF ____



KEY	SCIENTIFIC NAME	COMMON NAME	QTY	SIZE	SPACING	COMMENTS
	SHRUBS *					
PP	Podocarpus mac. 'Pringles'	Dwarf Podocarpus	16	7 gallon	2.5' OC	24" X 24" O.A., 3 stems, Full, FL# 11
ADDITIONAL ITEMS						
'Argentine Bahaia Sod*		Disturbed areas – Contractor to verify Qty.				
Melaleuca Mulch ('FloriMulch')*		2+–cubic yds. – Contractor to verify Qty.				

* ALL MATERIAL TO BE APPROVED BY CITY REPRESENTATIVE PRIOR TO INSTALLATION.

1 SHRUB PLANTING DETAIL — NTS

SEE SHEET L-4.1 FOR ALL LANDSCAPE NOTES AND SPECIFICATIONS

IRRIGATION SCHEDULE - NIC - TO BE COMPLETED BY OWNER

- IRRITROL 200B SERIES 1 1/2" ELEC. CONTROL VALVE - QTY: 1
- RAINBIRD 1812 15SST STRIP SERIES, SHRUB SPRAY, 12" POP-UP SPRINKLER - QTY: 5
- 1 1/2" - 3/4" SCH 40 PVC - SIZED AS NEEDED

NORTH

0 10 20 30 40

SCALE: 1" = 10'- 0"

GENERAL NOTES

KEY NOTES

WILLIAMS PARK ACTIVITY CENTER EXPANSION

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION

306 E. JACKSON STREET 4 NORTH
TAMPA, FLORIDA 33602
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4362 E. OSBORNE AVE.
TAMPA, FL 33610

DPW FILE NUMBER

DPW NUMBER

ISSUE DATE

DRAWN BY
J. SANDERS / P. BORS

REVISIONS

SEAL
REGISTERED LANDSCAPE ARCHITECT
LA 0666945
STATE OF FLORIDA

LANDSCAPE PLAN

SHEET NUMBER
L-4.0
____ OF ____

TREE TABLES FOR CREDIT AND DEBIT

Diameter (inches)	# Retained on site	Multiplier for Credit	Credit
5" to 7"	176	0	0
8" to 12"	236	1	236
13' to 19"	168	2	336
20" to 29"	65	4	260
30" or more	11	10	110
All Palms	43	1	43
TOTAL	699		985

Diameter (inches)	# Removed on site	Multiplier for Debit	Debit
5" to 7"	0	0	0
8" to 12"	0	1	0
13' to 19"	3	2	6
20" to 29"	0	4	0
30" or more	0	Inch per inch	0
All Palms	0	1/2	0
TOTAL	3		6

PERMITTING NOTES

1. Grand trees and protected trees will maintain a protective barricade per Chapter 13 Section 164 during the course of work.

2. No trees will be removed from site or right-of-way during this project.

3. All adjacent properties to this site to the north, east and west are residential. Property to the south across M.L. King Jr. Boulevard is Hillsborough County School Board property.

4. No Vehicular Use Area is being built in association with this project.

		Required Number of 2" Trees
VUA Street Frontage requirement	None / 40 feet =	0
VUA Square Footage requirement	None / 1500 SF =	+ 0
Debit for trees removed		+ 7
Credit for trees to remain		-985
TOTAL TREES TO BE PLANTED		0
	Required Greenspace	
20% Green Space W/I 10' of VUA	None Total VUA x 0.20 =	0 SF
	Green Space Provided	0 SF
Multi-family Greenspace with VUA	350 SF x 0 units =	0
Multi-family Greenspace without VUA	750 SF x 0 units =	0

BARRICADE NOTES

1. Protective barricades shall be placed around all protected trees and grand trees during site cleaing to create a protective root zone and shall remain in place until land alteration, site clearing, and construction activities are complete. Barricades for the protective root zone shall be erected a minimum of ten (10) feet from the edge of trunk of protected trees and twenty (20) feet from the edge of trunk of grand trees.

2. A minimum distance of ten (10) feet from all protected trees and twenty (20) feet from all grand trees shall be maintainted when installing underground utilities. If this results in unreasonable hardship, a soil auger shall be used to tunnel under root systems.

3. Installation of artificial barricades such as protective barricades, fences, post or walls shall not destroy or adversely harm the root system of protected trees and grand trees. Footers for walls shall start at the point where larger roots are encountered, and the roots shall be bridged. Post holes and trenches located close to protected trees and grand trees shall be adjusted to avoid damage to major roots.

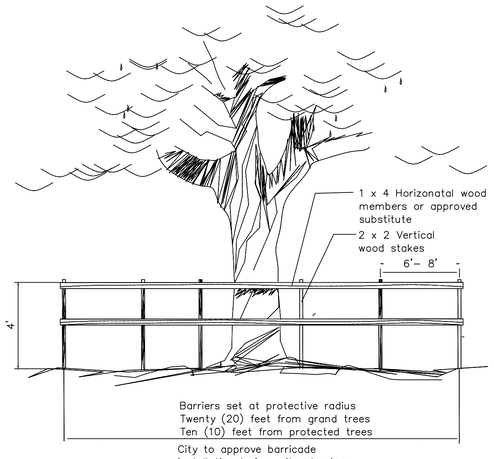
4. All roots to be removed during the site clearing process shall be severed clean at the perimeter of the protected root zone. Such work will be done be a qualified, certified arborist.

5. A two-inch layer of mulch shall be applied over the surface of the exposed roots of protected trees and grand trees during the site clearing process.

6. A protective dry well and drainage/aeration system shall be provided where protected trees or grand trees will be adversely affected by raising the grade.

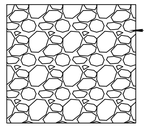
7. A protective retaining wall shall be constructed at the perimeter of the protective root zone around a protected tree or grand tree where the protected tree or grand tree will be adversely affected by lowering the grade.

8. All trimming of protected trees and grand trees during development shall be done by a qualified, certified arborist.

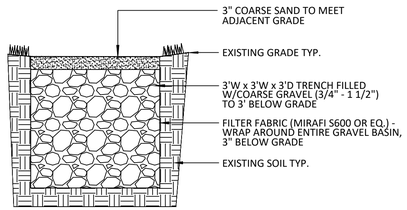


TYPICAL TREE BARRICADE

N.T.S.



PLAN VIEW



SECTION VIEW

1 FRENCH DRAIN DETAIL

NTS

GENERAL LANDSCAPE NOTES

1. Landscape contractor is responsible for verifying project site conditions and quantities indicated on these plans before pricing work.

2. Plant material shall be Florida Grade No. 1 or better as specified in "Grades and Standards for Nursery Plants, 1998 edition Division of Plant Industry, Florida Department of Agriculture and Consumer Services and shall conform to current American Association of Nurseryman Standards for Nursery Stock.

3. Landscape contractor shall be responsible for calling SUNSHINE 1-800-4770 in his effort toward locating and verifying the condition of underground utilities that may effect planting procedures. If any conflicts occur between proposed location of trees or other plantings on the drawings and any underground utilities or subsurface structures, the landscape contractor shall notify the City representative. If the landscape contractor damages any marked, staked or in-place utilities by his own negligence, they shall be repaired at the landscape contractor's expense.

4. Landscape contractor shall notify City representative of any conditions that would prevent the healthy growth of plant species called for on the drawings. This notification must occur prior to contract award.

5. If any discrepancies occur between quantities called for on the plant list and those indicated on the drawings, the drawings quantity shall govern.

6. Plants shall be sound, healthy and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insects, eggs, or larvae, and shall have healthy, well developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving growth.

7. Plants must be container grown or b&b as indicated in the plant list, unless transplanted material is used.

8. Plants shall conform to the varieties, sizes and condition specified and indicated in the plant list.

9. Substitution of plant materials will not be permitted unless authorized in writing by the City representative prior to purchase and installation. If proof is submitted that any plant specified is not obtainable, a written proposal will be provided by the Contractor for consideration by the City Landscape Architect for use of the nearest equivalent size or variety with corresponding adjustment of contract prices.

10. Plant material locations and bed outlines shall be staked or flagged on site by the landscape contractor and shall be adjusted if required to fit actual as-built conditions on site and approved by the City representative prior to installation.

11. Landscape contractor shall replace existing soil by excavating all proposed planting areas to 6" depth (except around existing tree roots), remove top 6" of existing soil, and replace with fresh topsoil equal to a weed-free mixture of 50% course native sand, 30% peat, and 20% compost, with pH between 5.5 and 6.5. Fresh topsoil shall also be utilized to backfill plant beds and/or plant pits according to the drawings.

12. Backfill around plant material shall be worked firmly, tamped, and thoroughly watered-in under and around the root ball to fill voids.

13. Landscape contractor shall be responsible for providing equipment if necessary for the removal or placement of soil, plant material, paving materials, or mulch.

14. Landscape contractor shall bear final responsibility for final grade, creating proper surface drainage of planted areas. Any discrepancy in the drawings, obstruction on the site, or prior work done by another party which the landscape contractor feels precludes establishing proper drainage shall be immediately brought to the attention of City representative. The final grade shall be provided by the landscape contractor.

15. After plant material has been installed and approved, planting beds shall be raked to an even grade to conform to pre-mulching finish grades. Planting beds and plant saucers shall then be uniformly covered with a minimum 3 inch layer of mulch as specified.

16. Plant material backfill mixture shall be thoroughly mixed and distributed evenly throughout the proposed planting bed areas.

17. All plant material shall have 3" mini pine bark nuggets mulch or approved alternative applied immediately after planting and initial watering operations.

18. Tree staking is required as shown on the planting detail, Sheet L-4. The landscape contractor shall be responsible for any damages that occur as the result of the failure to stake trees properly that are not a result of an act of God or vandalism, and the landscape contractor shall be responsible for straightening trees during the guarantee period.

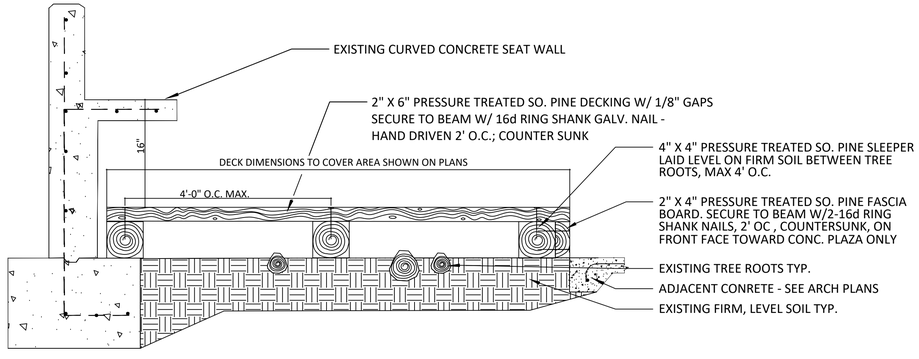
19. Landscape contractor shall be responsible for obtaining all applicable permits before commencing construction.

20. The landscape contractor shall fully maintain plant material on site during and before planting, until the work is accepted by the City representative, and for an additional 90 days after final acceptance.

21. Plants shall be guaranteed by the landscape contractor to be healthy plants and in flourishing condition of active growth for one (1) year from final inspection and acceptance. Transplanted material, if any, is excluded from this guarantee.

22. The City representative has the right to reject any and all work which in his opinion does not meet with the requirements of the specifications at any stage of the project.

23. Contractor shall be responsible for the daily immediate cleanup of project site, and removal and legal disposal of discarded and surplus materials and rubbish at an appropriate waste facility.



NOTES:
- DETAIL ABOVE IS SCHEMATIC FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL EXAMINE EXISTING DECK CONSTRUCTION, AND SUBMIT SHOP DRAWINGS FOR DECK REPLACEMENT WORK.
- ALL LUMBER SHALL BE PRESSURE TREATED, AND ALL HARDWARE SHALL BE GALV. OR STAINLESS STEEL.
- IF TREE ROOTS PROHIBIT THE PLACEMENT OF BEAMS, CONTRACTOR SHALL DISCUSS THE ISSUE WITH THE CITY REPRESENTATIVE FOR A FORMAL SOLUTION PRIOR TO COMMENCING CONSTRUCTION.

2 WOOD DECK DETAIL

NTS

GENERAL NOTES

KEY NOTES

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4362 E. OSBORNE AVE.
TAMPA, FL 33610

DPW FILE NUMBER

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ISSUE DATE

DRAWN BY
J. SANDERS / P. BORS

REVISIONS

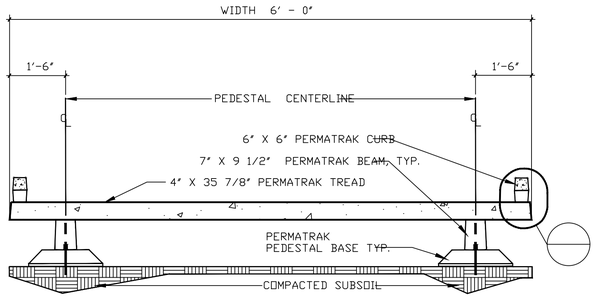
SEAL

REGISTERED LANDSCAPE ARCHITECT ROBERT MARY DEBORD LA 6666945 STATE OF FLORIDA

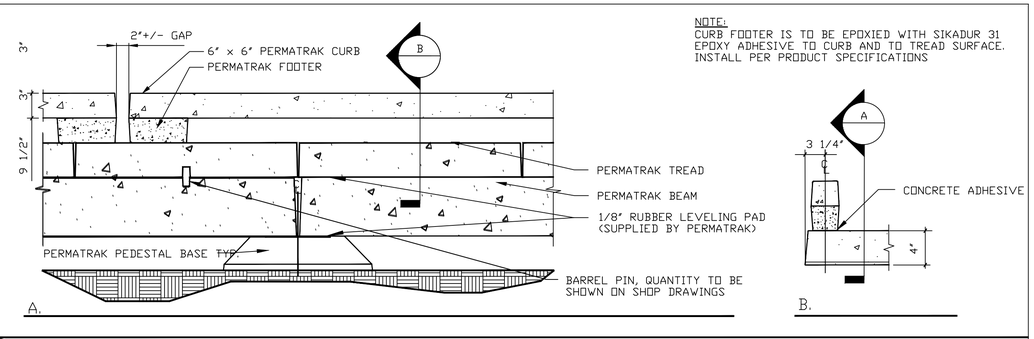
LANDSCAPE DETAILS

SHEET NUMBER
L-4.1

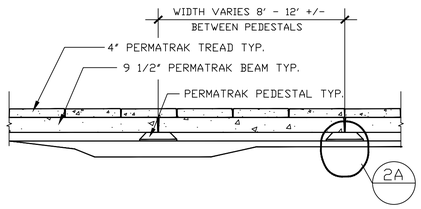
_____ OF _____



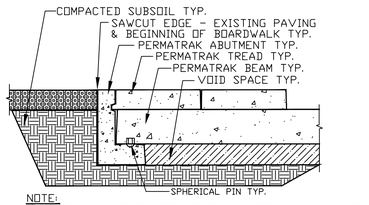
1 PERMATRAK - CROSS SECTION TYP. NTS



2 PERMATRAK - SECTION DETAILS



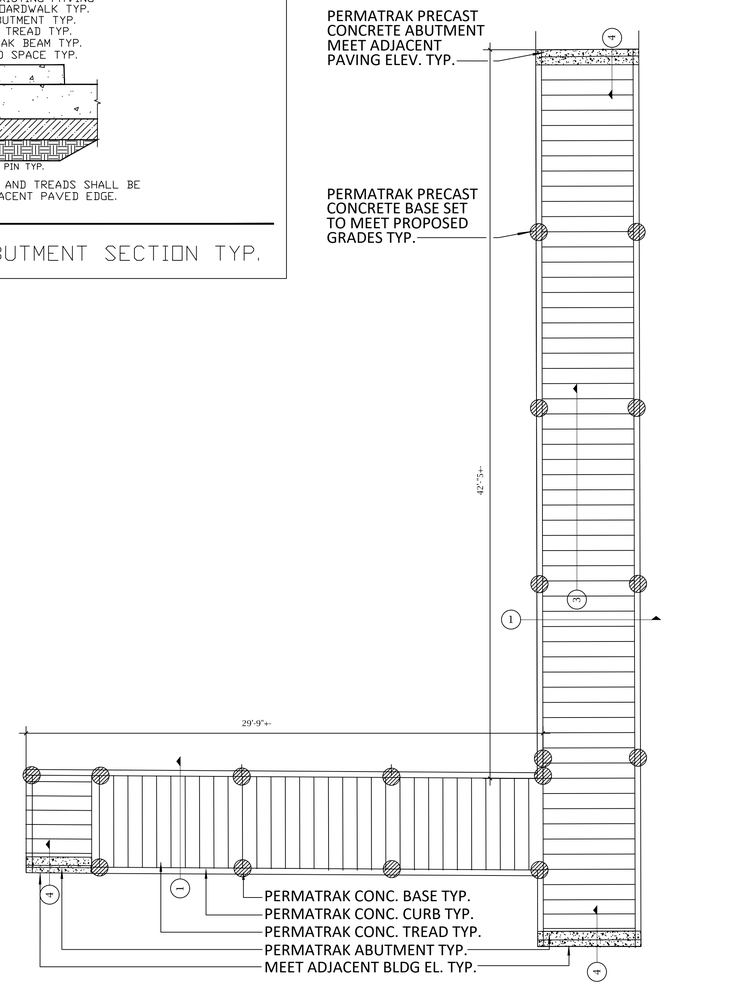
3 PERMATRAK - LONGITUDINAL ELEVATION TYP.



4 PERMATRAK - ABUTMENT SECTION TYP.

PERMATRAK INSTALLATION NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL MEASUREMENTS PRIOR TO ORDERING ENGR. PLANS AND MATERIALS.
2. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ENGINEERED PLANS FROM MANUFACTURER FOR CONSTRUCTION APPROVAL.
3. CONTRACTOR SHALL SUBMIT MANUFACTURER'S ENGINEERING DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
4. DETAILS SHOWN ILLUSTRATE THE INTENDED LAYOUT AND CONSTRUCTION. CONTRACTOR TO VERIFY SITE ELEVATIONS AND PLAN ACCORDING FOR INSTALLATION TO MEET PROPOSED GRADES.
5. CONTRACTOR SHALL PROVIDE DETAILS OF SIMILAR WORK SUCH AS SITE GRADING, PAVING AND DRAINAGE INSTALLATION, ETC.
6. SECURITY FOR MATERIALS STORAGE, IF NEEDED, IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. INSTALLATION OF BEAMS AND TREADS SHALL NOT OCCUR BEFORE INSPECTION APPROVAL OF FOUNDATIONS AT PROPOSED GRADES.
8. PERMATRAK BOARDWALK SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS, AND MEET SHALL MEET ALL CURRENT ADA REQUIREMENTS.



PERMATRAK BOARDWALK LAYOUT

SCALE: 1"=50'-0"

GENERAL NOTES

KEY NOTES

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DPW FILE NUMBER

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ISSUE DATE

DRAWN BY
J. SANDERS / P. BORS

REVISIONS

SEAL

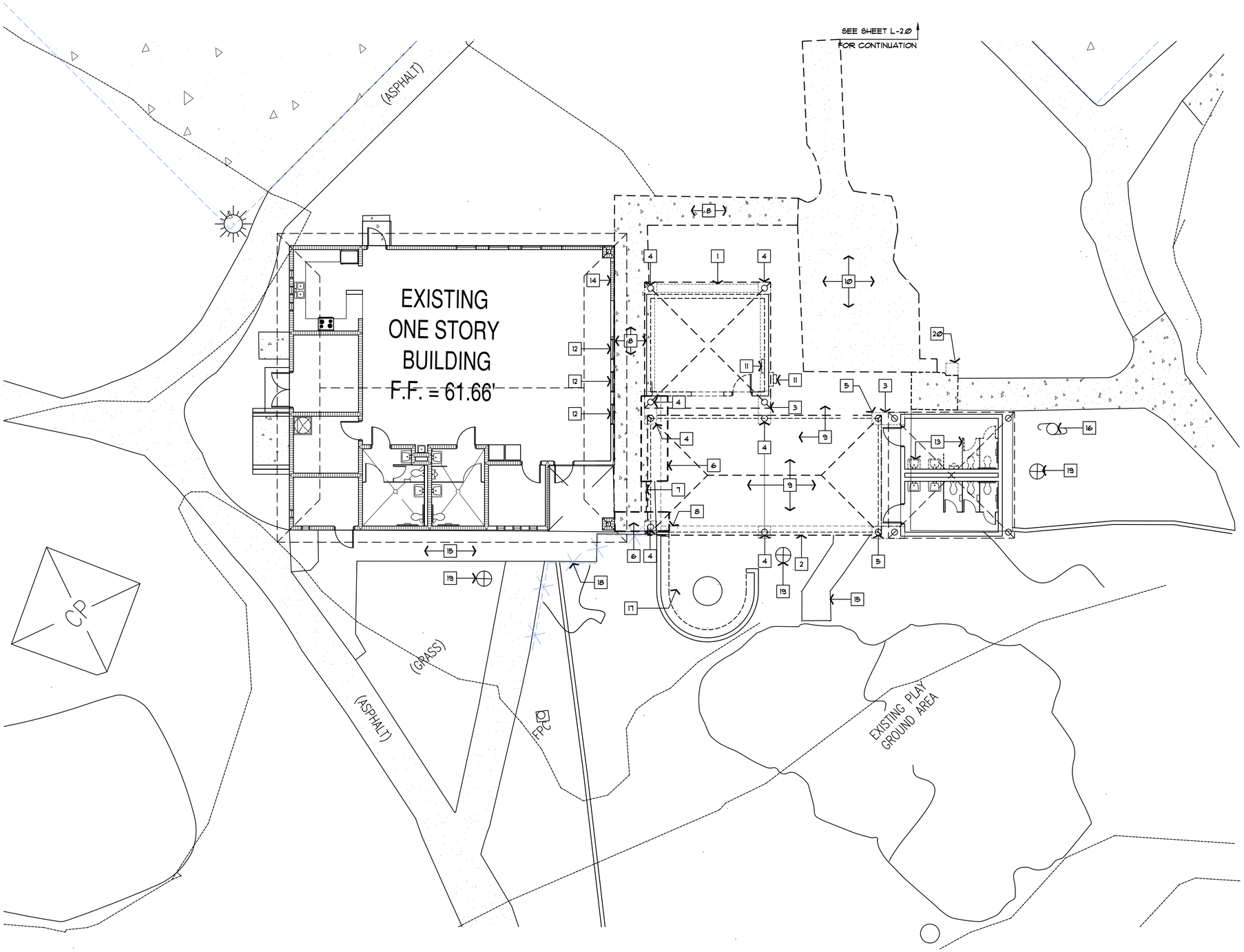
SCALE: AS SHOWN

PERMATRAK BOARDWALK DETAILS

SHEET NUMBER

L-4.2

_____ OF _____



DEMOLITION / SITE FLOOR PLAN

SCALE: 1/8" = 1'-0"

N

GENERAL NOTES

CARE SHOULD BE TAKEN WHEN TRENCHING AND DURING DEMOLITION TO AVOID UNDERGROUND ELECTRICAL, WATER , SPRINKLER & DRAIN LINES GROUND PENETRATING %******* CAN BE UTILIZED CONTRACTOR SHALL REPAIR LIKE NEW CONDITION, AT HIS OR HER OWN EXPENSE ANY DAMAGE THAT HE OR SHE MAY CAUSE BY THE WORK. RESTORE LANDSCAPE AREAS TO ORIGINAL CONDITION WITH APPROPRIATE SEEDING AND PLANTING

KEY NOTES

1. REMOVE EXISTING 1-STORY CONCRETE BLOCK STORAGE BUILDING.
2. REMOVE EXISTING 1-STORY SHELTER
3. REMOVE EXISTING LINEAR ROOF DRAINS
4. REMOVE EXISTING ROUND CONCRETE COLUMN AND FOOTING BELOW
5. CUT AND REMOVE EXISTING ROUND CONCRETE COLUMN. FOOTING BELOW TO REMAIN.
6. REMOVE EXISTING WOOD ENCLOSURES
7. REMOVE EXISTING CONCRETE STAIRS
8. REMOVE EXISTING CONCRETE WALK, STAIR AND CURBING.
9. REMOVE EXISTING CONCRETE SLAB
10. REMOVE PORTION OF EXISTING ASPHALT PAVING.
11. REMOVE EXISTING ELECTRICAL PANELS, METER , WIRING AND CONDUIT COORDINATE W/ ELECTRICAL PLAN(S) TO RELOCATE
12. REMOVE EXISTING WIDOWS, CONCRETE & MARBLE SILLS, AND STARBURSTS FROM EXISTING BUILDING.
13. REMOVE EXISTING PLUMBING FIXTURES, RESTROOM ACCESSORIES AND TOILET PARTITION.
14. EXISTING MASONRY WALL TO BE CUT 6'- x 4' . WIDE 7'-4" HIGH COORDINATE IN FIELD.
15. EXISTING SIDE WALK TO REMAIN
16. EXISTING POWER POLE TO REMAIN
17. REMOVE EXISTING WOOD PLANKS THIS AREA.
18. REMOVE PORTION OF CHAIN LINK FENCE
19. EXISITING CLEANOUT TO BE REMOVED
20. REMOVE EXISTING PLAQUE AND CONCRETE BASE.

ARCHITECTURAL DEMOLITION PLAN

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DPW FILE NUMBER

DPW NUMBER
18-C-00025

ISSUE DATE
JUNE 20, 2018

DRAWN BY
JERRY P. SANDERS

REVISIONS

SEAL

STATE OF FLORIDA
THOMAS A. HESTER, JR.
REGISTERED ARCHITECT
AR0091745

SCALE: VARIES

SHEET NUMBER
A–1.0

x OF x

GENERAL NOTES

DESIGN CRITERIA

1.0 REFERENCED STANDARDS
- 1.1 DESIGN
  - 1.1.1 THE FLORIDA BUILDING CODE, 2017 5TH EDITION.
  - 1.1.2 ACI 318-LATEST EDITION BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
  - 1.1.3 ACI 520-LATEST EDITION BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
  - 1.1.4 ASTM SPECIFICATIONS FOR MASONRY STRUCTURES.
  - 1.1.5 NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION DESIGN CODES AND GUIDELINES.
  - 1.1.6 PLYWOOD DESIGN SPECIFICATIONS.
  - 1.1.7 AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) (LRFD OR ASD METHOD).
  - 1.1.8 PRODUCTS SUBMITTED ARE PRODUCT APPROVED AND CAN BE SUBSTITUTED WITH PRODUCT APPROVED EQUALS.

2.0 DESIGN LOADS
- 2.1 DEAD LOADS:
  - 2.1.1 FLOOR DEAD LOAD = 40 PSF
  - 2.1.2 ROOF DEAD LOAD = 20 PSF
- 2.2 LIVE LOADS:
  - 2.2.1 FLOOR LIVE LOAD: = 40 PSF
  - 2.2.2 ROOF LIVE LOAD: = 20 PSF
- 2.3 WIND LOADS: PERFORMED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, CHAPTER 16, LATEST EDITION
  - 2.3.1 DESIGN WIND SPEED = 140 M.P.H. (3 SECOND GUST)
  - 2.3.2 RISK CATEGORY III
  - 2.3.3 EXPOSURE CATEGORY = B
  - 2.3.4 INTERNAL PRESSURE COEFFICIENT = 0.18
  - 2.3.5 BUILDING TYPE = ENCLOSED
  - 2.3.6 COMPONENT AND CLADDING DESIGN WIND PRESSURES:
    ROOF AREAS 50 S.F. OR GREATER = (+) 25.90 PSF (U.O.N.)
    (–) 106.28 PSF (U.O.N.)
    ROOF OVERHANGS = (–) 59.7 PSF (U.O.N.)
    WALL AREAS 20 S.F. OR GREATER = (–) 48.23 PSF (U.O.N.)
    FOR ADDITIONAL COMPONENTS AND CLADDING WIND PRESSURES SEE THE DESIGN WIND PRESSURE CHART OF THESE GENERAL NOTES.
- 2.4 THERMAL FORCES
  - 2.4.1 SEASONAL VARIATION FOR DESIGN AND CONSTRUCTION:
    - 2.4.1.1MEDIAN TEMPERATURE: 70° F
    - 2.4.1.2TEMEPRATURE RISE: 25° F
    - 2.4.1.3TEMPERATURE FALL: 35° F
  - 2.4.2 MEDIAN RELATIVE HUMIDITY: 75%
- 2.5 RAILING LOADS
  - 2.5.1 ALL RAILING AND GUARD RAIL SYSTEMS ARE TO BE DESIGNED TO WITHSTAND A CONCENTRATED LOAD OF 200 POUNDS AT ANY POINT AND IN ANY DIRECTION.
- 2.6 CREEP AND SHRINKAGE
  - 2.6.1 ALL LOSSES IN ACCORDANCE WITH ACI 318-LATEST EDITION.
- 2.7 SEISMIC LOADS:
  - 2.7.1 SEISMIC PERFORMANCE CATEGORY 'A'.
- 2.8 DEFLECTIONS:
  - 2.8.1 FLOOR TRUSSES SHALL LIMIT DEFLECTION TO 1/360 TIMES THE SPAN FOR LIVE LOADS AND 1/240 TIMES THE SPAN FOR TOTAL LOAD.

3.0 LOAD FACTOR DESIGN
- 3.1 THE LOAD FACTOR DESIGN METHODS WAS USED TO DESIGN;
  - 3.1.1 CAST-IN-PLACE CONCRETE SLABS AND FOOTINGS.
  - 3.1.2 STRUCTURAL STEEL (IN ACCORDANCE WITH AISC-LRFD).
- 3.2 THE FOLLOWING LOAD COMBINATIONS WERE DESIGNED FOR:
  - 3.2.1 1.4 X TOTAL DL
  - 3.2.2 1.2 X TOTAL DL + 1.6 X TOTAL LL
  - 3.2.3 1.2 X TOTAL DL + 1.6 X WL + 1.0 X FLOOR LL + 0.5 X ROOF LL
  - 3.2.4 0.9 X TOTAL DL + 1.6 X WL

4.0 SERVICE LOAD DESIGN
- 4.1 THE SERVICE LOAD DESIGN WAS USED TO DESIGN:
  - 4.1.1 MASONRY WALLS AND LINTELS.
  - 4.1.2 INTERIOR AND EXTERIOR WOOD FRAMING AND SHEATHING.
  - 4.1.3 STAIR AND FLOOR FRAMING.
  - 4.4.4 STRUCTURAL STEEL (IN ACCORDANCE WITH AISC-ASD).
  - 4.4.5 ROOF FRAMING, SHEATHING, AND UPLIFT.
- 4.2 THE FOLLOWING LOAD COMBINATIONS WERE DESIGNED FOR:
  - 4.2.1 TOTAL DL
  - 4.2.2 TOTAL DL + FLOOR LL + ROOF LL
  - 4.2.3 TOTAL DL + FLOOR LL + WL
  - 4.2.4 TOTAL DL + WL
- 4.3 IN THE CASE OF WIND LOADS. AN ALLOWABLE OVER STRESS OF 125% CAN BE CONSIDERED.
- 4.4 ALL ROOF AND FLOOR TRUSSES SHALL BE DESIGNED TO RESIST THE WORST LOAD COMBINATION RESULTING IN THE MAXIMUM STRESSES PLACED ON THAT COMPONENT. PARTIAL, FULL, AND ALTERNATING SPAN LOADING ARE TO BE CONSIDERED.

5.0 GEOTECHNICAL PARAMETERS
- 5.1 ASSUMED SOIL DENSITY = 120 PCF
- 5.2 ASSUMED SOIL BEARING CAPACITY = 1500 PSF
- 5.3 ALL SUBSURFACE AND GEOTECHNICAL INFORMATION TO BE PROVIDED BY CLIENT AND/OR VERIFIED BY CONTRACTOR
- 5.4 DESIGN ASSUMPTIONS:
  - 5.4.1 FOUNDATIONS ARE DESIGNED BASED ON A PRESUMPTIVE BEARING CAPACITY OF 1500 PSF ON UNDISTURBED SOIL OR ROCK. A REGISTERED GEOTECHNICAL ENGINEER SHALL VERIFY ACTUAL CONDITIONS PRIOR TO PLACEMENT OF THE FOOTING. IF THE FOUNDATION IS ON PREPARED FILL, THE REGISTERED GEOTECHNICAL ENGINEER SHALL VERIFY SUITABILITY OF FILL FOR USE AND ITS FOUNDATION BEARING CAPACITY.
  - 5.4.2 ALL FOUNDATIONS ARE CENTERED UNDER SUPPORTED CILUMNS AND WALLS UNLESS SHOWN OTHERWISE ON THE DESIGN PLANS.

GENERAL CONDITIONS

6.0 CONTRACTOR RESPONSIBILITIES
- 6.1 CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING FIELD CONDITIONS AND DIMENSIONS PRIOR TO COMMENCEMENT OF DEMOLITION, CONSTRUCTION, AND/OR FABRICATION. WHERE DISCREPENCIES ARISE, THE ENGINEER OF RECORD IS TO BE CONTACTED IN WRITING FOR CLARIFICATION.
- 6.2 THE CONTRACTOR IS RESPONSIBILE FOR ALL MEANS AND METHODS ASSOCIATED WITH WORK TO BE COMPLETED.
- 6.3 THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF COMPONENTS, FIXTURES, OPENINGS, AND LANDSCAPING ON THE SITE WHICH ARE NOT INCLUDED WITHIN THE SCOPE OF THIS PROJECT. IF DAMAGE OCCURS TO ITEMS NOT INCLUDED WITHIN THE SCOPE OF THIS PROJECT, THE CONTRACTOR I S RESPONSIBLE FOR REPAIR OR REPLACEMENT TO CONDITION PRIOR TO DAMAGE.
- 6.4 THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND REVIEWING A COPY OF THE GEOTECHNICAL REPORT FOR THE PROJECT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- 6.5 THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING SHOP DRAWINGS IN ACCORDANCE WITH THE SHOP DRAWINGS SECTION OF THESE GENERAL NOTES.
- 6.6 ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 1929). SURVEY INFORMATION TO BE PROVIDED BY OWNER/CONTRACTOR.

7.0 SHOP DRAWINGS
- 7.1 THERE SHALL NOT BE ANY DEVIATIONS FROM THESE DESIGN PLANS BY OTHERS DURING THE PREPARATION OF SHOP DRAWINGS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OF RECORD. ALL ITEMS IDENTIFIED OR INTENDED TO BE DESIGNED BY OTHERS REQUIRE SHOP DRAWINGS THAT ARE TO BE SIGNED AND SEALED BY A QUALIFIED STATE OF FLORIDA LISCENCED ENGINEER AND SHALL INCLUDE: DRAWINGS AND CALCULATIONS, REACTIONS AND BRACING REQUIREMENTS, LIFTING LOCATIONS, AND CONNECTIONS TO SUPPORTING MEMBERS.
- 7.2 ALL SHOP DRAWINGS ARE TO BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND AS DISCUSSED BELOW.
- 7.3 IT IS THE DELEGATED ENGINEER'S RESPONSIBILITY TO REVIEW THE SIGNED AND SEALED PLANS AND/OR SPECIFICATIONS OF THE ENGINEER OF RECORD IN ORDER TO DETERMINE THE APPROPRIATE SCOPE OF THE ENGINEERING REQUIRED OF THE DELEGATED ENGINEER.
- 7.4 THE DELEGATED ENGINEERING DOCUMENTS SHALL COMPLY AND/OR BE COORDINATED WITH THE SIGNED AND SEALED PLANS OF THE ENGINEER OF RECORD. THE DELEGATED ENGINEERING DOCUMENTS SHALL INCLUDE THE PROJECT IDENTIFICATION AND THE CRITERIA USED AS A BASIS FOR THEIR PREPARATION. IF A DELEGATED ENGINEER DETERMINES THAT THERE ARE DETAILS, FEATURES OR PROJECT LIMITS WHICH CONFLICT WITH THE SIGNED AND SEALED PLANS OF THE ENGINEER OF RECORD, THE DELEGATED ENGINEER SHALL CONTACT THE ENGINEER OF RECORD IMMEDIATELY.
- 7.5 THE DELEGATED ENGINEER SHALL FORWARD THE DELEGATED ENGINEERING DOCUMENT TO THE ENGINEER OF RECORD FOR REVIEW EITHER PRIOR TO OR AT THE TIME OF ORIGINAL ISSUANCE. ALL FINAL DELEGATED ENGINEERING DOCUMENTS REQUIRE THE IMPRESSED SEAL AND SIGNATURE OF THE DELEGATED ENGINEER AND MUST INCLUDE:
  - 7.5.1 DRAWINGS INTRODUCING ENGINEERING INPUT SUCH AS DEFINING THE CONFIGURATION OR STRUCTURAL CAPACITY OF STRUCTURAL COMPONENTS AND/OR THEIR ASSEMBLY INTO STRUCTURAL SYSTEMS.
  - 7.5.2 CALCULATIONS.
  - 7.5.3 COMPUTER PRINTOUTS WHICH ARE AN ACCEPTABLE SUBSTITUTE FOR MANUAL CALCULATIONS PROVIDED THEY ARE ACCOMPANIED BY SUFFICIENT DESIGN ASSUMPTIONS AND IDENTIFIED INPUT AND OUTPUT INFORMATION TO PERMIT THEIR PROPER EVALUATION. SUCH INFORMATION SHALL BEAR THE IMPRESSED SEAL AND SIGNATURE OF THE DELEGATED ENGINEER AS AN INDICATION THAT THE ENGINEER HAS ACCEPTED RESPONSIBILITY FOR THE RESULTS.

8.0 TERMITE PROTECTION
- 8.1 CERTIFICATE OF PROTECTIVE TREATMENT FOR PREVENTION OF TERMITES
  - 8.1.1 A WEATHER RESISTANT JOBSITE POSTING BOARD SHALL BE PROVIDED TO RECIEVE DUPLICATE TREATMENT CERIFICATES AS EACH REQUIRED PROTECTIVE TREATMEMT IS COMPLETED, PROVIDING A COPY FOR THE PERSON THE PERMIT IS ISSUED TO AND ANOTHER COPY FOR THE BUILDING PERMIT FILES. THE TREATMENT CERTIFICATE SHALL PROVIDE THE PRODUCT USED, IDENTITY OF THE APPLICATOR, TIME AND DATE OF TREATMENT, SITE LOCATION, AREA TREATED, CHEMICAL USED, PERCENT CONCENTRATION AND NUMBER OF GALLONS USED, TO ESTABLISH A CERIFIABLE RECORD OF PROTECTIVE TREATMENT. IF THE SOIL CHEMICAL BARRIER METHOD FOR TERMITE PREVENTION IS USED, FINAL EXTERIOR TREATMENT SHALL BE COMPLETED PRIOR TO FINAL BUILDING APPROVAL.
  - 8.1.2 ALL BUILDINGS ARE REQUIRED TO HAVE PRE-CONSTRUCTION TREATMENT. A CERTIFICATE OF COMPLIANCE MUST BE ISSUED TO THE BUILDING DEPARTMENT BY A LICENSED PEST CONTROL COMPANY BEFORE A CERTIFICATE OF OCCUPANCY WILL BE ISSUED. THE CERTIFICATE SHALL STATE: 'THE BUILDING HAS RECEIVED A COMPLETE TREATMENT FOR THE PREVENTION OF SUBTERRANEAN TERMITES. THE TREATMENT IS IN ACCORDANCE WITH THE RULES AND LAWS OF THE FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES.'
- 8.2 NOTICE OF TERMITE PROTECTION
  - 8.2.1 A PERMANENT SIGN WHICH IDENTIFIES THE TERMITE TREATMENT PROVIDER AND NEED FOR REINSPECTION AND TREATMENT CONTRACT RENEWAL SHALL BE PROVIDED. THE SIGN SHALL BE POSTED NEAR THE WATER HEATER OR ELECTRICAL PANEL.
  - 8.2.2 IN ORDER TO PROVIDE FOR INSPECTION FOR TERMITE INFESTATION, CLEARANCE BETWEEN EXTERIOR WALL COVERINGS AND FINAL EARTH GRADE ON THE EXTERIOR OF THE BUILDING SHALL NOT BE LESS THAN SIX (6) INCHES.
- 8.3 PROTECTION FROM TERMITES
  - 8.3.1 INITIAL TREATMENT SHALL BE DONE AFTER ALL EXCAVATION AND BACKFILL IS COMPLETE. SOIL DISTURBED AFTER INITIAL TREATMENT SHALL BE RETREATED INCLUDING SPACED BOXED OR FORMED.
  - 8.3.2 SOIL TREATMENT MUST BE APPLIED UNDER ALL EXTERIOR CONCRETE OR GRADE WITHIN 1'-0" OF THE STRUCTURE SIDEWALLS.
  - 8.3.3 TERMITE PROTECTION SHALL BE PROVIDED BY FLOOR FRAMING OF NATURALLY DURABLE WOOD, PRESERVATIVE-TREATED WOOD, SOIL TREATMENT OR THER APPROVED METHODS.
  - 8.3.4 TERMITE PROTECTION SHALL BE PROVIDED BY REGISTERED TERMITICIDES OR OTHER APPROVED METHODS OF TERMITE PROTECTION LABELED FOR USE AS A PREVENTATIVE TREATMENT TO NEW CONSTRUCTION.
  - 8.3.5 AN EXTERIOR VERTICAL CHEMICAL BARRIER MUST BE INSTALLED AFTER CONSTRUCTION IS COMPLETE INCLUDING LANDSCAPING AND IRRIFATION. ANY SOIL DISTURBED AFTER THE VERTICAL BARRIER IS APPLIED, SHALL BE RETREATED.
- 8.4 PREPERATION OF BUILDING SITE
  - 8.4.1 IN ORDER TO REDUCE CHANCES OF TERMITE INFESTION, NO WOOD, VEGETATION, STUMPS, DEAD ROOTS, CARDBOARD, TRASH, OR OTHER CELLUOSE-CONTAINING MATERIAL SHALL BE BURIED ON THE BUILDING LOT WITHIN FIFTEEN (15) FEET OF ANY BUILDING OR THE PORTION OF ANY BUILDING PROPOSED TO BE BUILT.
  - 8.4.2 CONCRETE OVERPOUR AND MORTAR ALONG THE FOUNDATION PERIMETER MUST REMOVED BEFORE EXTERIOR SOIL TREATMENT.

9.0 BUILDING DRAINAGE
- 9.1 CONDENSATE LINE AND ROOF DOWNSPOUTS SHALL DISCHARFE AT LEAST ONE (1) FOOT AWAY FROM THE STRUCTURE SIDEWALL, WHETHER BY UNDERGROUND PIPING, TAIL EXTENSIONS, OR SPLASH BLOCKS.
- 9.2 GUTTERS WITH DOWNSPOUTS ARE REQUIRED ON ALL BUILDINGS WITH EAVES OF LESS THAN SIX (6) INCHES HORIZONTAL PROJECTION EXCEPT FOR GABLE END RAKES OR ON A ROOF ABOVE ANOTHER ROOF.
- 9.3 IRRIGATION/SPRINKLER SYSTEMS AND RISERS FOR SPRAY HEADS SHALL NOT BE INSTALLED WITHIN ONE (1) FOOT OF THE BUILDING SIDEWALL.

MATERIALS

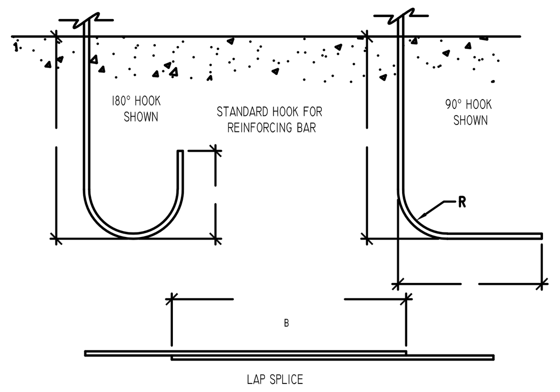
10.0 CONCRETE
- 10.1 CONCRETE STRENGTH SHALL BE IN ACCORDANCE WITH:

	f'c	E
C.I.P. CONCRETE	3000 PSI	3122 KSI
C.I.P. GROUT	2000 PSI	2550 KSI
PRE-CAST CONCRETE LINTELS	3000 PSI	3122 KSI
PRE-STRESSED CONCRETE LINTELS	5000 PSI	4031 KSI

WHEREf'c = MINIMUM 28 DAY COMPRESSIVE STRENGTH
E = MODULUS OF ELASTICITY

- 10.2 CONCRETE SHALL CONSIST OF 1" MAXIMUM AGGREGATE CONCRETE MIX WITH SLUMP BETWEEN 6" AND 7" AT THE TIME OF PLACEMENT. SEE ACI AND ASTM SPECIFICATIONS FOR ADDITIONAL CRITERIA.
- 10.3 GROUT SHALL CONSIST OF PEA ROCK (3/8" MAXIMUM AGGREGATE) CONCRETE MIX WITH SLUMP BETWEEN 8" AND 10" AT THE TIME OF PLACEMENT. SEE ACI AND ASTM SPECIFICATIONS FOR ADDITIONAL CRITERIA.
- 10.4 CONSTRUCTION JOINTS ARE TO BE PROVIDED ON ACCORDANCE WITH THE DESIGN CODES AND GUIDELINES AT THE ENGINEER'S DIRECTION.
- 10.5 METHOD OF CONCRETE FORMING, PLACEMENT AND CURING SHALL BE CONDUCTED IN ACCORDANCE WITH THE ACI AND ASTM SPECIFICATIONS AS STATED.

11.0 STEEL REINFORCEMENT
- 11.1 STEEL REINFORCEMENT SHALL BE ASTM A615 GRADE 60 WITH Fy = 60 KSI. (U.O.N.)
- 11.2 REINFORCEMENT LAP SPLICES SHALL BE CLASS B LAP SPLICES WITH A MINIMUM OF 48 BAR DIAMETERS IN LENGTH. (U.O.N.)
- 11.3 ALL DIMENSIONS PERTAINING TO THE LOCATION OF THE REINFORCEMENT ARE TO THE CENTER LINE OF EACH BAR EXCEPT WHERE THE COVER DIMENSIONS IS SHOWN TO THE FACE OF THE CONCRETE.
- 11.4 REINFORCEMENT MECHANICAL COUPLERS ARE TO DEVELOP 125% OF THE REQUIRED YIELD STRENGTH OF THE BAR AND ARE TO BE APPROVED BY THE ENGINEER OF RECORD.
- 11.5 DESIGN COVER REQUIREMENTS:
  - 11.5.1 C.I.P. CONCRETE FORMED AGAINST EARTH: 3"
  - 11.5.2 C.I.P. CONCRETE EXPOSED TO EXTERIOR: 2"
  - 11.5.3 PRE-CAST GROUT FILLED LINTELS: 1-1/2"
  - 11.5.4 C.I.P. CONCRETE NOT EXPOSED: 1-1/2"
  - 11.5.5 GROUT FILLED MASONRY: 1-1/2"
  - 11.5.6 PRE-STRESSED CONCRETE LINTELS: 1-1/2"
- 11.6 WELDED WIRE MESH
  - 11.6.1 WELDED WIRE MESH SHALL CONFORM TO ASTM A185. (U.O.N.)
  - 11.6.2 WELDED WIRE MESH SHALL BE SUPPLIED IN SHEETS, AND NOT ROLLS.
- 11.7 STEEL REINFORCEMENT IS NOT TO BE WELDED.
- 11.8 PRE-STRESSING STRANDS IN PRE-STRESSED CONCRETE MASONRY LINTELS SHALL BE 7/32" MINIMUM AND CONFORM TO ASTM A416, GRADE 270, LOW RELAXATION.
- 11.9 PLASTIC CHAIRS OR OTHER NON-METALLIC SUPPORT SHALL BE USED TO ELEVATE STEEL REINFORCEMENT ABOVE THE BOTTOM SURFACE OF THE CONCRETE FORM.
- 11.10 STEEL REINFORCEMENT LAP AND BEND DIMENSIONS:



RECOMMENDED END HOOKS AND LAP LENGTHS

BAR SIZE		180° HOOK A	90° HOOK A			HOOK R	LAP L_B	EMBEDMENT LENGTH E
#3	5"	6"	-1/4"	18"	6"			
#4	6"	8"	-1/2"	24"	7"			
#5	7"	10"	2"	30"	7"			
#6	8"	12"	2-1/4"	36"	8"			
#7	10"	14"	2-3/4"	48"	9"			
#8	11"	16"	3"	55"	10"			
#9	15"	19"	4-3/4"	62"	12"			
#10	17"	22"	5-1/2"	69"	14"			

12.0 STRUCTURAL STEEL
- 12.1 COMPONENT STRENGTHS:
  - 12.1.1 STRUCTURAL STEEL SHAPES, ANGLES AND CHANNELS SHALL CONFORM TO ASTM A36, Fy = 36 KSI.
  - 12.1.2 STRUCTUAL STEEL W-SECTIONS SHALL CONFORM TO ASTM A992, Fy = 50 KSI.
  - 12.1.3 ROUND METAL PIPE SHALL CONFORM TO ASTM A53, GRADE B, Fy = 35 KSI.
  - 12.1.4 SQUARE METAL TUNING SHALL CONFORM TO ASTM A500, GRADE B, Fy = 46 KSI.
  - 12.1.5 PLATE MATERIAL SHALL CONFORM TO ASTM A36, Fy = 36 KSI.
- 12.2 STEEL CONNECTIONS:
  - 12.2.1 HIGH STRENGTH BOLTS SHALL CONFORM TO ASTIM A325.
  - 12.2.2 MACHINE BOLTS GALVANIZED SHALL CONFORM TO ASTM A307.
  - 12.2.3 THREADED RODS SHALL CONFORM TO ASTM A36, MINIMUM.
  - 12.2.4 WELDING SHALL BE PERFORMED BY AN AWS CERTIFIED WELDER.
  - 12.2.5 ALL WELDS SHALL HAVE A MINIMUM STRENGTH OF 70 KSI.
- 12.3 FINSIHES
  - 12.3.1 ALL STRUCTURAL STEEL SHALL RECEIVE A DOUBLE COAT OF SHOP PRIMER AT MINIMUM.
  - 12.3.2 ALL STRUCTUAL STEEL TO BEAR ON CONCRETE SHALL BE GALVANIZED OR SHALL HAVE A PERMANENT SEPARATION BETWEEN THE STEEL COMPONENT AND THE CONCRETE.
  - 12.3.3 ALL EXTERIOR EXPOSED STRUCTUAL STEEL COMPONENTS SHALL RECEIVE A MINIMUM G60 GALVANIZED COATING. STRUCTURAL STEEL INSTALLED IN MARINE OR OTHERWISE HARSH ENVIRONMENTS SHALL RECIEVE A MINIMUM G90 GALVANIZED COATING.

13.0 CONCRETE MASONRY
- 13.1 THE AGGREGATE MINIMUM NET AREA COMPRESSIVE STRENGTH OF THE BLOCK AND MORTAR SHALL BE f'm = 1900 PSI.
- 13.2 CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90, TYPE II, NON-MOISTURE CONTROLLED.
- 13.3 MORTAR
  - 13.3.1 MORTAR SHALL CONFORM TO ASTM C270, TYPE S, WITH A MINIMUM STRENGTH f'c = 2000 PSI.
  - 13.3.2 ADMIXTURES ARE NOT TO BE ADDED TO THE MORTAR WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OF RECORD.
- 13.4 GROUT
  - 13.4.1 MASONRY GROUT SHALL CONFORM TO ASTM C476, f'g = 3000 PSI
  - 13.4.2 MASONRY GROUT SHALL HAVE MAXIMUM 3/8" AGGREGATE AND 8" TO 11" SLUMP.
- 13.5 METHOD OF CONCRETE MASNONRY PLACEMENT AND CONSTRUCTION SHALL BE CONDUCTED IN ACCORDANCE WITH THE SPECIFICATIONS AS STATED.
- 13.6 JOINT REINFORCEMENT
  - 13.6.1 JOINT REINFORCEMENT SHALL CONSIST OF "LADUR-TYPE" BY DURO-WALL OR EQUAL WITH ASTM A641M CLASS 1 GALVANIZED COATING.
  - 13.6.2 JOINT REINFORCEMENT SHALL BE PLACED AT 16" O.C. VERTICALLY, FULLY EMBEDDED IN MORTAR JOINT. LAP 8" MINIMUM AT MASONRY WALL CORNERS AND INTERSECTIONS. PROVIDE FABRICATED ELLS, TEES OR BENDS OF DISCONTINUOUS WIRES TO PROVIDE 3" HOOK AT OUTSIDE OF CORNERS.
  - 13.6.3 JOINT REINFORCEMENT SHALL BE EMBEDDED A MINIMUM OF 6" INTO TIE COLUMNS AT CORNERS AND END OF WALLS, CONTINUE REINFORCING THROUGH TIE COLUMNS AWAY FROM WALL ENDS.
- 13.7 PRE-CAST CONCRETE LINTELS SHALL HAVE A MINIMUM f'c = 3000 PSI.
- 13.8 PRE-STRESSED CONCRETE LINTELS SHALL HAVE A MINIMUM f'c = 6000 PSI.

14.0 STRUCTURAL LUMBER
- 14.1 ALL WOOD SHALL BE SOUTHERN YELLOW PINE NO. 2. (U.O.N.)
- 14.2 MINIMUM DESIGN VALUES FOR STRUCTURAL WOOD COMPONETS:

	BENDING (f'b)	SHEAR (f'v)	TENSION (f't)
14.2.1 INTERIOR FRAMING 2X(4):	1300 PSI	175 PSI	775 PSI
14.2.2 EXTERIOR FRAMING 2X(6 AND 8):	1050 PSI	175 PSI	625 PSI
14.2.3 FLOOR FRAMING 2X(8 AND 10):	925 PSI	175 PSI	550 PSI

  - 14.2.4 ALL STRUCTURAL LUMBER COMPONENTS SHALL HAVE A MINIMUM MODULUS OF ELASTICITY (E) OF 1400 PSI.
  - 14.2.5 VALUES ARE MINIMUMS AND ARE BASED ON SOUTHERN PINE NO.2.
- 14.3 ALL PLYWOOD USED FOR EXTERIOR APPLICATIONS SHALL CONFORM TO VOLUNTARY PRODUCT STANDARD PS 1-83 AND SHALL BE APA RATED SHEATHING EXP 3.
- 14.4 ALL PLYWOOD USED FOR INTERIOR APPLICATIONS SUCH AS SUB FLOORING AND SHEAR WALLS SHALL CONFORM TO VOLUNTARY PRODUCT STANDARDS PS 1-83 AND SHALL BE PS RATED SHEATHING EXP 1 OR 2.
- 14.5 IF OSB BOARD IS TO BE USED IN PLACE OF PLYWOOD, IT IS TO HAVE SIMILAR SECTION PROPERTIES.
- 14.6 PRESSURE TREATMENT OF STRUCTURAL LUMBER:
  - 14.6.1 ONLY STRUCTURAL LUMBER TO BE USED FOR AN EXTERIOR APPLICATION AND IN CONTACT WITH CONCRETE, MASONRY, OR EARTH IS TO RECEIVE A STANDARD GRADE PRESSURE TREATING.
  - 14.6.2 PRESSURE TREATED STRUCTURAL LUMBER IS NOT TO BE USED FOR INTERIOR FRAMING.
  - 14.6.3 FASTENERS AND TIE-DOWNS FOR PRESSURE TREATED WOOD COMPONENTS SHALL BE SELECTED IN ACCORDANCE WITH THE CORROSION/FASTENER COMPATIBILITY CHART WITHIN THESE GENERAL NOTES.
- 14.7 WHEN PRE-ENGINEERED TRUSSES AND JOISTS ARE CALLED FOR ON THE PLANS THE DELEGATED TRUSS ENGINEER IS TO SUBMIT SHOP DRAWINGS TO THE ENGINEER OF RECORD IN ACCORDANCE WITH THE SHOP DRAWINGS SECTION OF THESE GENERAL NOTES.

15.0 FASTENERS AND TIE DOWNS
- 15.1 SHEET METAL ACCESSORIES SHALL CONFORM TO: ASTM A446 OR ASTM A526 Fy = 33 KSI WITH G90 GALVANIZED COATING IN ACCORDANCE WITH ASTM A525.
- 15.2 NAILS SHALL CONSIST OF COMMON WIRE NAILS WITH MINIMUM DIAMETER AND LENGTH AS FOLLOWS:
  - 13.2.1 8D NAILS: 0.131 IN DIAMETER X 2-1/2 IN. LONG
  - 13.2.2 10D NAILS: 0.148 IN DIAMETER X 3 IN. LONG
  - 13.2.3 16D NAILS: 0.162 IN DIAMETER X 3-1/2 IN LONG
- 15.3 ALL FASTENERS AND TIE DOWNS EMBEDDED IN CONCRETE OR USED IN AN EXTERIOR APPLICATIONS ARE TO RECEIVE AN ANTI-CORROSIVE COATING PRIOR TO INSTALLATION.
- 15.4 ALL FASTENERS AND TIE DOWNS ARE TO PROVIDE THE UPLIFT CAPACITY CALLED FOR IN THE PLANS AS A MINIMUM.
- 15.5 ALL FASTENER TIE DOWNS, BEAM HANGERS, JOIST HANGERS, AND FLOOR TRUSS STRAPPING ARE TO BE INSTALLED IN ACCORDANCE WITH THE PLANS AND MANUFACTURER'S SPECIFICATIONS.
- 15.6 CONCRETE EMBEDDED 'J' BOLTS USED FOR UPLIFT ARE TO BE WET SET PRIOR TO INITIAL SET OF THE CONCRETE, SPACING AND ALIGNMENT ARE TO BE IN ACCORDANCE WITH THE DESIGN PLANS.
- 15.7 CONCRETE EMBEDDED TIE DOWNS USED FOR TRUSS AND WALL UPLIFT ARE TO BE PLACED AROUND EMBEDDED REINFORCING PRIOR TO PLACING GROUT.
- 15.8 FASTENERS OF EQUAL OR GREATER STRENGTH MAY BE SUBSTITUTED FOR THOSE SPECIFIED.
- 15.9 FASTENERS AND TIE DOWNS FOR PRESSURE TREATED WOOD COMPONENTS SHALL BE SELECTED IN ACCORDANCE WITH THE CORROSION/FASTENER COMPATIBILTY CHART WITHIN THESE GENERAL NOTES.

16.0 ROOF COMPONENTS
- 16.1 FASTENERS SHALL BE GALVANIZED ROOFING NAILS WITH A MINIMUM 12 GAUGE SHANK AND MINIMUM 3/8" DIA. HEAD.
- 16.2 FASTENERS SHALL BE LONG ENOUGH TO PENETRATE THE SHINGLES AND PROTRUDE AT LEAST 3/4" INTO OR THROUGH THE ROOF SHEATHING, USE 1" NAILS MINIMUM.
- 16.3 SHINGLES SHALL BE RATED FOR THE WIND SPEED SPECIFIED IN SECTION 2 OF THE GENERAL NOTES AND A MINIMUM OF 120 M.P.H.
- 16.4 SHINGLES SHALL COMPLY WITH M-DC PA 107-LATEST.
- 16.5 SHINGLES SHALL BE OWENS CORNING OAKRIDGE PRO SERIES SHINGLE OR APPROVED EQUVALENT.
- 16.6 SHINGLES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

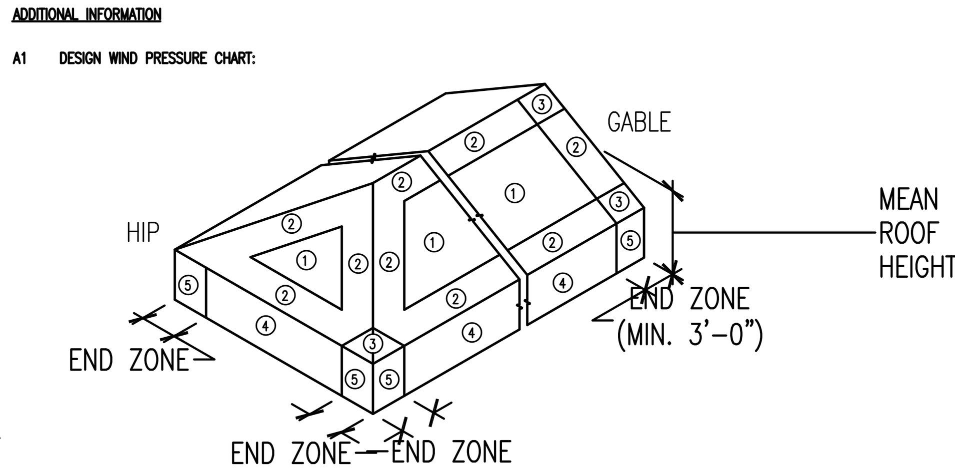
17.0 EXTERIOR WINDOW AND DOOR ASSEMBLIES
- 17.1 EXTERIOR WINDOW AND DOOR ASSEMBLIES SHALL BE SELECTED/DESIGNED FOR THE WALL DESIGN WIND PRESSURE STATED WITHIN THE WIND LOADS PORTION OF THESE GENERAL NOTES.
- 17.2 EXTERIOR WINDOWS AND GLASS DOORS SHALL BE TESTED BY AN APPROVED INDEPENDENT TESTING LABORATORY, AND BEAR AN AAMA OR WDMA OR OTHER APPROVED LABEL IDENTIFYING THE MANUFACTURER PERFORMANCE CHARACTERISTICS AND APPROVED PRODUCT EVALUATUION ENTITY TO INDICATE COMPLIANCE WITH THE REQUIREMENTS OF THE FOLLOWING SPECIFICATION: ANSI/AAMA/NWWDA 101/I.S. 2-97.
- 17.3 A SUPPLEMENTAL TEMPORARY LABEL CONFORMING TO AAMA 203, PROCEDURAL GUIDE FOR WINDOW INSPECTION AND NOTIFICATION SYSTEM, SHALL BE ACCEPTABLE FOR ESTABLISHED CALCULATED ALLOWABLE DESIGN PRESSURES HIGHER THAN INDICATED ON THE LABEL REQUIRED BY 1707.4.2.1 FOR WINDOW SIZES SMALLER THAN THAT REQUIRED BY THE ANSI/AAMA/NWWDA 101/IS2 TEST REQUIREMENTS. THIS SUPPLEMENTAL LABEL SHALL REMAIN ON THE WINDOW UNTIL FINAL APPROVAL BY THE BUILDING OFFICIAL.

8. SIMPSON STRONG-TIE CONNECTORS

SIMPSON MODEL NO.	DESCRIPTION	SUPPORTING MEMBER	SUPPORTED MEMBER	FLORIDA PRODUCT APPROVAL NO.
HETAL12	EMBEDDED TRUSS ANCHOR	-	(10) 10d x 1-1/2	11473.5
HETAL16	EMBEDDED TRUSS ANCHOR	-	(10) 10d x 1-1/2	11473.5
MGT	GIRDER TRUSS HOLD DOWN	(1) 5/8" TO CMU	(22) 10d TO GIRDER	11470.7
LU24	FACE MOUNT MOUNT	(4) 10d	(2) 10d x 1-1/2	10655.103
H2.5A	HURRICANE TIE	(5) 8d	(5) 8d	10456.12
HGT-2	GIRDER TRUSS HOLD DOWN	(2) 5/8"	(16) 10d	10456.18
H14	HURRICANE STRAP	(12) 8dx1-1/2"	(15) 8d	11478.2
LGUM210-2-SDS	GIRDER TRUSS HOLD DOWN	(8) 3/8"x4"	(8) 1/4"x2-1/2"	11473.12

ADDITIONAL INFORMATION

A1 DESIGN WIND PRESSURE CHART:



A2 CORROSION FASTENER COMPATABILITY CHART:

	CONNECTOR PRODUCT FINISH G-90 OR (1.0 OZ/FT²)	Z MAX OR TZ	POST HOP DIP GALVANIZED (HSG)	STAINLESS STEEL
UNTREATED WOOD	X	X	X	X
CHROMATED COPPER ARSENATE (CCA-C)	X	X	X	X
DOT SODIUM BORATE (SBX)	X	X	X	X
ALKALINE COPPER QUAT ACQ-C & ACQ-D (CARBONATE)		X	X	X
COPPER AZOLE (CBA-A & CA-B)		X	X	X
OTHER BORATE (NON-DOT)		X	X	X
AMMONIACAL COPPER ZINC ARSENATE (ACZA)				X
OTHER PRESSURE-TREATED WOODS				X

NOTES:
1. STAINLESS STEEL CONNECTORS AND FASTENERS MUST BE USED IF PRESSURE TREATED WOOD IS NOT INDICATED BY NAME.
2. CONNECTORS AND THEIR FASTENERS MUST BE OF LIKE MATERIALS.
3. THE ABOVE CHART SHALL BE CONSULTED IF METAL CONNECTORS, ANCHORS, AND/OR FASTENERS ARE EXPOSED TO CORROSIVE ENVIRONMENTS. CORROSIVE ENVIRONMENTS INCLUDE OCEAN SALT AIR, FIRE-RETARDANTS, FUMES, FERTILIZERS, PRESSURE-TREATED WOOD, AND DISSIMILAR METALS.
4. SEE SIMPSON STRONG-TIE CATALOG 'WOOD CONSTRUCTION CONNECTORS' OR USP 'FULL LINE CATALOG' LATEST EDITION FOR ADDITIONAL SPECIFICATIONS.

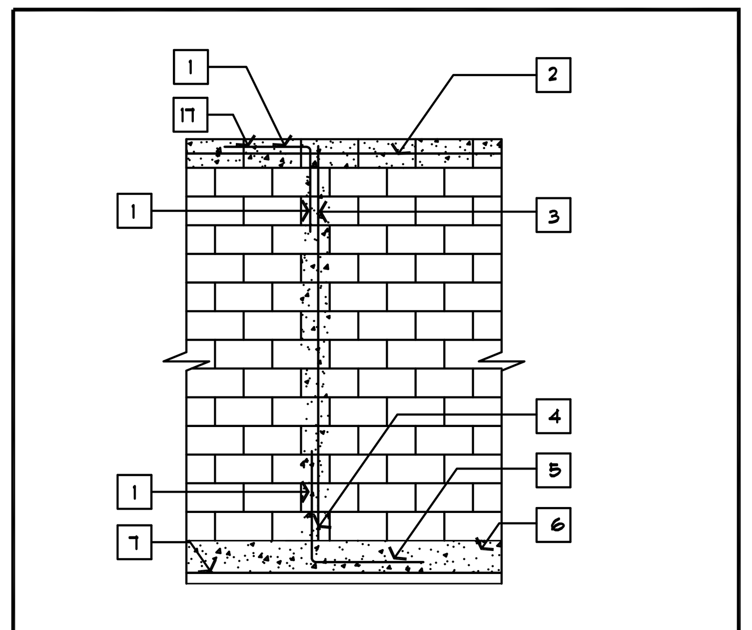
EFFECTIVE WIND AREA (SQ. FT.)	EXTERNAL PRESSURE COEFFICIENT GCp ZONE 1 FIELD	ZONE 2 EDGE	ZONE 3 CORNER	INTERNAL PRESSURE COEFFICIENT GCpi	P (psf) ZONE 1 FIELD	ZONE 2 EDGE	ZONE 3 CORNER
PRESSURE							
< 10	0.5	0.5	0.5	0.18	30.36	30.36	30.36
20	0.45	0.45	0.45	0.18	28.13	28.13	28.13
50	0.4	0.4	0.4	0.18	25.90	25.90	25.90
100 <	0.3	0.3	0.3	0.18	21.43	21.43	21.43
SUCTION							
< 10	-0.9	-1.7	-2.6	-0.18	-48.23	-83.95	-124.14
20	-0.85	-1.55	-2.4	-0.18	-45.99	-77.25	-115.21
50	-0.82	-1.35	-2.2	-0.18	-44.65	-68.32	-106.28
100 <	-0.8	-1.2	-2.0	-0.18	-43.76	-61.62	-97.34
OVERHANG							
< 10	-	-2.2	-3.7	ASCE 07-10	-	-106.28	-173.26
20	-	-2.2	-3.4	ASCE 07-10	-	-106.28	-159.86
50	-	-2.2	-2.8	ASCE 07-10	-	-106.28	-133.07
100 <	-	-2.2	-2.5	ASCE 07-10	-	-106.28	-119.67

ROOF CORNER ZONE WIDTH = 3'-0" | ROOF CORNER ZONE LENGTH = 3'-0" | ROOF EDGE ZONE WIDTH = 3'-0"

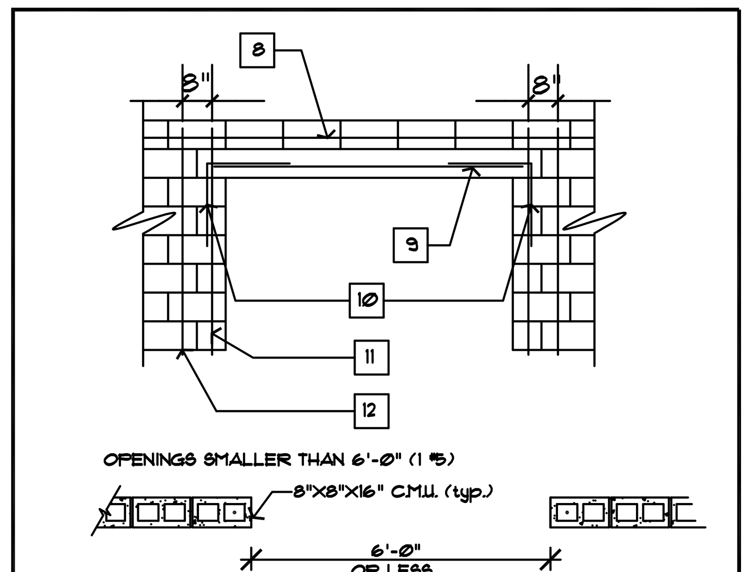
7. WALL COMPONENTS AND CLADDING

EFFECTIVE WIND AREA (SQ. FT.)	EXTERNAL PRESSURE COEFFICIENT GCp ZONE 4 FIELD	ZONE 5 EDGE		INTERNAL PRESSURE COEFFICIENT GCpi	P (psf) ZONE 4 FIELD	ZONE 5 EDGE	
PRESSURE							
< 10	1.0	1.0		0.18	52.69	52.69	
20	0.9	0.9		0.18	48.23	48.23	
50	0.85	0.85		0.18	45.99	45.99	
100	0.8	0.8		0.18	43.76	43.76	
SUCTION							
< 10	-1.1	-1.4		-0.18	-57.16	-70.55	
20	-1.05	-1.3		-0.18	-54.92	-66.09	
50	-0.95	-1.2		-0.18	-50.46	-61.62	
100	-0.9	-1.05		-0.18	-48.23	-54.92	

WALL EDGE ZONE WIDTH = 3'-0"

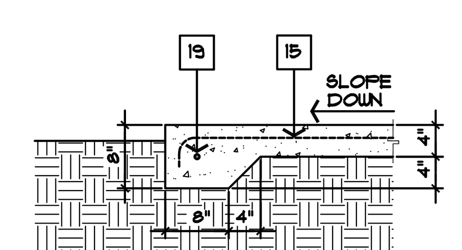


A MASONRY WALL SECTION
A2.0 SCALE: N.T.S.



1. EACH VERTICAL CELL ADJACENT TO THE OPENING IS TO BE REINFORCED WITH 1 - #5 VERTICAL REBAR AND CELL GROUTED.

B TYP. MASONRY LINTEL
A2.0 SCALE: N.T.S.



C THICKENED EDGE
A2.0 SCALE: N.T.S.

GENERAL NOTES

KEY NOTES

1. MINIMUM 30" LAP (TYP)
2. SINGLE COURSE BOND BEAM WITH (1) #5 REBAR CONTINUOUS.
3. VERTICAL REINFORCEMENT IN GROUT FILLED CELL. (SEE PLAN ON SHEET A2.1 FOR LOCATION).
4. CLEAN OUT REQUIRED
5. FOOTING (SEE PLAN ON SHEET S-2).
6. STANDARD HOOK
7. MINIMUM (3) #5 REBAR CONTINUOUS.
8. (1) #5 CONTINUOUS IN GROUTED BOND BEAM.
9. (1) #5 IN GROUTED P/C LINTEL OR APPROVED EQUAL.
10. (1) #5 BENT REBAR 30" LONG EACH LEG (SEE C/S-2, NOTE 2).
11. (1) #5 VERT. REBAR IN GROUT CELL DOOR OPENING.
12. DENOTES LOCATION OF VERT. #5 REINFORCEMENT IN GROUT FILLED CELL. MAX SPACING 4' O.C. (SEE SECTION A/S-2).
13. VERT. REBAR TO BE EMBEDDED IN THE FOUNDATION AS SHOWN IN WALL SECTION (TYP).
14. (1) #5 CONTINUOUS WITNIN LINTEL WITH #5 BENT (30" LONG EACH LEG) REBAR TURNED DOWN INTO GROUT - FILLED CELL AT EACH END OF LINTEL.
15. 4" CONC. SLAB W/6X6X10/10 WWM, VAPOR BARRIER ON COMPACTED/TERMITE TREATED SOIL.

16 CMU WALL WITH #5 HOOK & #5 VERT. #5 GROUT FILLED CELL.

17 (3) #5 REBARS CONTINUOUS AND #4 REBAR AT 2' O.C.

18 #5 HOOKS AT MAX. 4' O.C.

19 (1) #5 CONTINUOUS.

GENERAL NOTES

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DRAWN BY
JERRY P. SANDERS

REVISIONS

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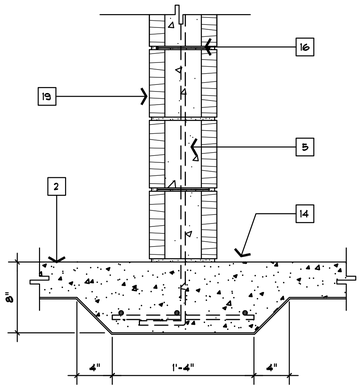
STATE OF FLORIDA · THOMAS A. HESTER, SR. · REGISTERED ARCHITECT · AR0091745

SCALE: VARIES

NTS

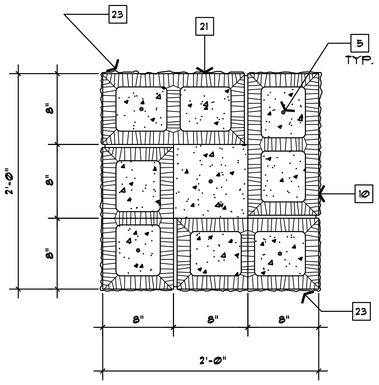
SHEET NUMBER
A-2.0

x OF x



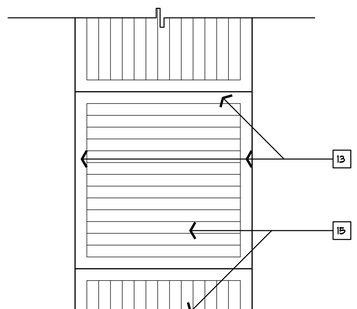
THICKENED SLAB

1 / A2.1 — SCALE: 1-1/2" = 1'-Ø"



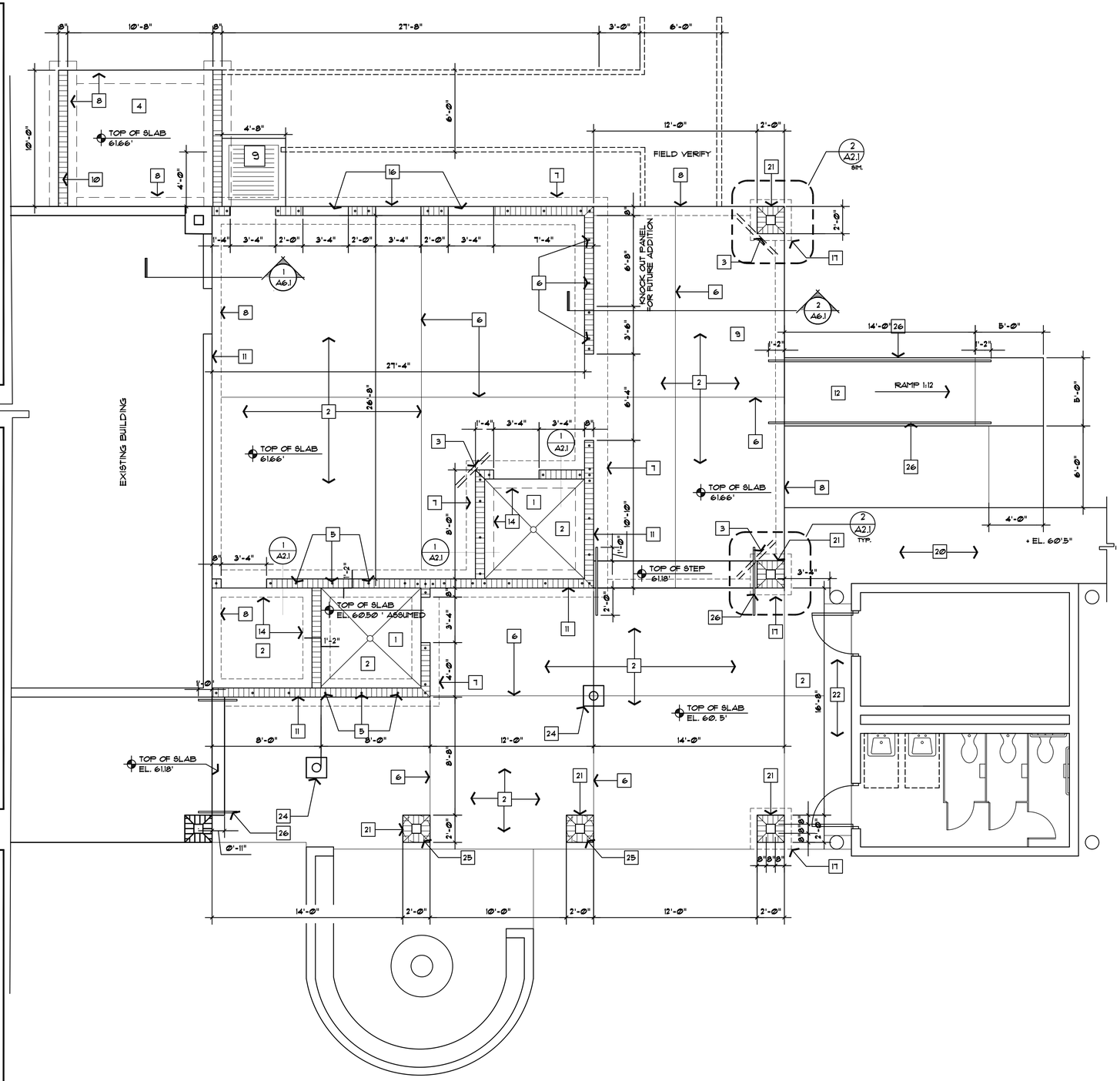
COLUMN DETAIL

2 / A2.1 — SCALE 1-1/2" = 1'-Ø"



SIDEWALK DETAIL

3 / A2.1 — SCALE: 1-1/2" = 1'-Ø"



FOUNDATION PLAN

SCALE: 1/4" = 1'-Ø"

N

GENERAL NOTES

ASSUMED SOIL BEARING CAPACITY 2000 PSF AFTER COMPACTION

TOP OF FOOTING @ 1'-4" BELOW FIN. FLR.

FOR PLAN DIMENSIONS NOT SHOWN REFER TO ARCH. DWGS. VERIFY ALL DIMENSIONS WITH ARCH. DWGS.

KEY NOTES

1. SLOPE CONCRETE FLOOR SLAB TO DRAIN. SEE PLUMBING DRAWINGS
2. 4" FIBERMESH REINFORCED CONCRETE SLAB W.W.F 6x6 W1.4 x W1.4 OVER 6 MIL VISQUEEN VAPOR BARRIER ON WELL COMPACTED TERMITE SAND FILL (TYP.)
3. 2-#4's AT 4'-Ø" IN SLAB
4. 6" MECHANICAL EQUIPMENT PAD REINF. W/2 LAYERS OF 6 x 6 W1.4 x W1.4 W.W.F
5. 1-#5 DOWEL IN GROUT FILLED CELL @ 4'-Ø" O.C. MAX. TYP. OR AS INDICATED ON DRAWINGS. FOOTING TO TIE BEAM
6. SAWCUT SLAB CONTROL JOINTS, TYP. WHERE SHOWN WITHIN 12 HOURS OF POUR DO NOT DISLODGE AGGREGATE OR RAVEL CUT EDGE. FILL W/ SEALANT
7. LINE OF FOOTING BELOW, 12" THICK x 2'-Ø" WIDE CONCRETE FOOTING REINFORCED W/ 3 - #5s CONTINUOUS & 1 - #4 @ 24" O.C. TRANSVERSE. 12" MINIMUM COVER
8. 8"x 8" THICKENED SLAB EDGE W/ 2 - #5s CONTINUOUS
9. BROOM FINISH WITH PICTURE FRAME TROWEL EDGES & CONTROL JOINTS
10. 8" x 16" CONCRETE MASONRY UNIT SCORE. TOOL ALL JOINTS.
11. SILICONE SEAL OVER 1/2" PREMOLDED EXPANSION JOINT. TYPICAL AT ALL SLAB TO MASONRY CONNECTIONS
12. 5'-Ø" WIDE REINFORCED CONCRETE WALK. SLOPE FROM BUILDING DOWN TO FINISH GRADE. 1:12 MAX. (SEE PLAN)
13. 4" SMOOTH TROWEL EDGE BAND
14. 8" x 16" WIDE REINF. CONC. THICKENED SLAB W/ 3 - #5s CONT. & 1 - #4 @ 24" O.C. TRANSVERSE OVER VAPOR BARRIER & COMPACTED TERMITE SOIL
15. MEDIUM BROOM FINISH. PROVIDE ALTERNATING CHECKERBOARD FINISH.
16. MASONRY OPENING ABOVE. COORDINATE WITH ARCH. DWGS.
17. 3'-Ø" x 3'-Ø" 1'-6" THICK REINF. CONC. COLUMN FOOTING WITH 5 - #5s EACH WAY TOP & BOTTOM ON ON COMPACTED FILL.
18. HORIZONTAL JOINT REINFORCEMENT ALTERNATE COURSES (TYP.)
19. 8" CONCRETE BRICK WALL
20. REFER TO CIVIL FOR EXISTING CONC. WALK
21. 2'-Ø" x 2'-Ø" REINFORCED BLOCK COLUMN. SEE 2/A-6.1 FOR FOOTING
22. EXISTING PORTION OF CONCRETE SLAB TO REMAIN.
23. LINE OF INTEGRALLY COLORED SINGLE SCORE SPLIT FACE CMU ABOVE AND BELOW. TOOL ALL JOINTS TO MATCH SCORE. SEE 2/A-6.1 AND EXTERIOR FOR CHANGES OF BLOCK TEXTURE.
24. THREADED CLEAN OUT PLUG. SEE PLUMBING DRAWING.
25. 24" DIA. POURED REINF. CONC FOOTING W/6 - #5 VERT. & #3 TIES @ 8" W/ CLASS 'A' LAP.
26. 1½" DIAMETER ALUMINUM HANDRAIL

FOUNDATION PLAN

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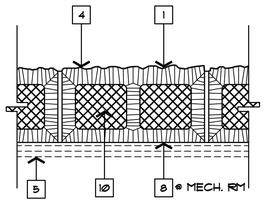
STATE OF FLORIDA — JAMES E. JACKSON JR. — REGISTERED ARCHITECT — AR0091745

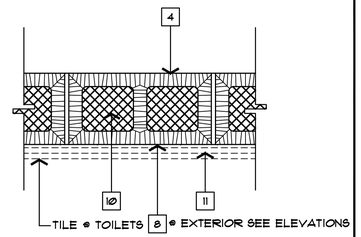
SCALE: VARIES

SHEET NUMBER
A-2.1

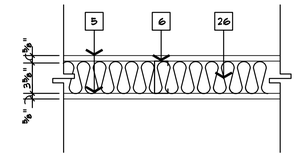
x OF x



W-1 / A-2.2 **WALL TYPE** SCALE 1 1/2" = 1'-0"



W-2 / A-2.2 **WALL TYPE** (ABOVE) (SPLIT FACE) SCALE 1 1/2" = 1'-0"



P-1 / A-2.2 **PARTITION TYPE** SCALE 1 1/2" = 1'-0"

LIFE SAFETY INFORMATION

OCCUPANCY

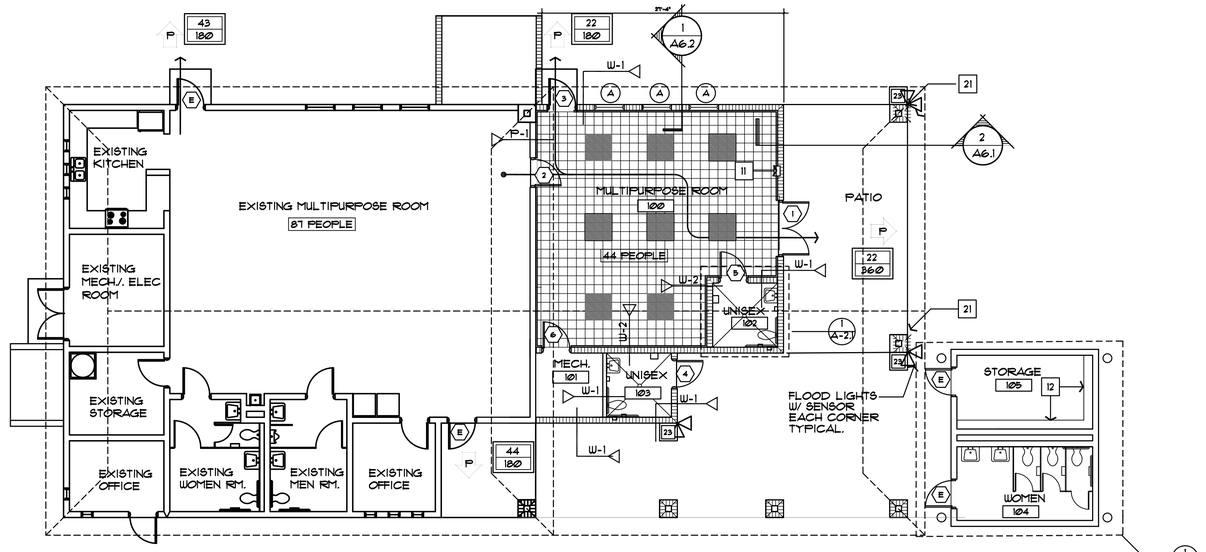
EXISTING OCCUPANT LOAD	87 PEOPLE
ADDITIONAL OCCUPANT LOAD	44 PEOPLE
TOTAL OCCUPANT LOAD	131 PEOPLE
ACTUAL OCCUPANT LOAD	
MAXIMUM OCCUPANT LOAD PER SBCCI AND NFPA 101	
PRIMARY EXIT	P
SECONDARY EXIT	S

CODE REFERENCES

FBC 2017 6TH ed.

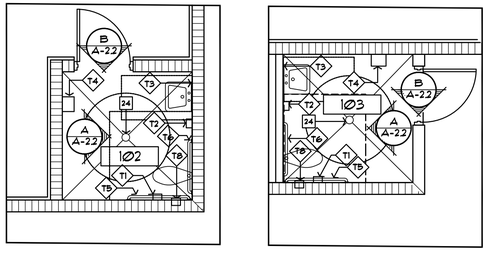
NFPA 101 2017 6TH ed.

ASSEMBLY SPACE = 15 s.f. / PERSON UNCONCENTRATED

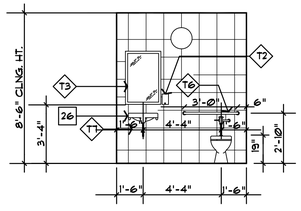


INFORMATIONAL FLOOR PLAN

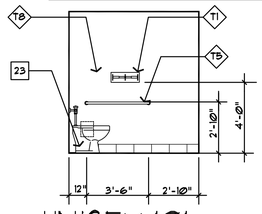
SCALE 1/8" = 1'-0"



1 / A-2.2 **ENLARGED FLOOR PLAN** SCALE 1/4" = 1'-0"



UNISEX 101
UNISEX 102 SIM. OPP.
A / A-22
SCALE: 1/4" =1'-0"



UNISEX 101
UNISEX 102 SIM. OPP.
B / A-22
SCALE: 1/4" =1'-0"

TOILET ACCESSORIES

T1	DOUBLE ROLL SURFACE MOUNTED TOILET TISSUE DISPENSER MODEL: TO WAUSAU PAPER HC 8Ø480.
T2	SURFACE MOUNTED SOAP DISPENSER EQUAL TO " FOAM EEZE " BULK FOAM MODEL: 5326
T3	2' x 3' FIXED MIRROR EQUAL TO BRADLEY #148-2436.
T4	RECESSED HAND DRYER EQUAL TO WORLD DRYER, MODEL: DXRA-5, STAINLESS STEEL
T5	GRAB BARS - EQUAL TO BRADLEY 812-ØØ1 SERIES WITH 42" BAR AT SIDE OF WATER CLOSET.
T6	GRAB BAR EQUAL TO BRADLEY 812-ØØ1 SERIES 36" IN LENGTH.
T7	UNDER LAV ENCLOSURE OF PIPING, TRANSFORMER, WIRING, ETC, TO IPS CORP. / TRUEBRO LAV SHIELD, MODEL: 2Ø18.
T8	SEMI-RECESSED (2½") NAPKIN DISPOSAL EQUAL TO BRADLEY 4722-1Ø1B, WALL MNTD, LT. FIXT. (SEE ELECT)

GENERAL NOTES

KEY NOTES

1	INTEGRALLY COLORED 8"x 16" SPLIT FACE BLOCK WITH CONCAVE HORIZONTAL AND VERTICAL JOINTS REFER TO EXTERIOR ELEVATIONS FOR LOCATION
2	40 GALLON HWH ABOVE JANITOR'S SINK (SEE PLUMBING DRAWINGS)
3	NOT USED
4	EXPOSED 8" CMU WITH FLUSH VERTICAL JOINTS & CONCAVE HORIZONTAL JOINTS REFER TO EXTERIOR ELEVATIONS FOR LOCATION
5	5/8" GYPSUM BOARD PROVIDE 5/8" MOISTURE RESISTANT GYPSUM BOARD IN ALL RESTROOMS, MECHANICAL ROOM
6	3-5/8" 25 GAUGE METAL STUDS 16" O.C.
7	NOT USED
8	EPOXY PAINT OR SEALER
9	EXTEND WALL TO STRUCTURE ABOVE
10	FOAM INSULATION FOR MASONRY CELLS AT NEW MASONRY NO FOAM @ EXTERIOR COMPRESSOR ENCLOSURE.
11	LINE OF 5/8" MR G.W.B. OVER 3/4" P.T. FURRING STRIP @ 16" O.C. (REFER TO PLAN)
12	16"-0" WIDE PLASTIC LAMINATE SHELVES HEAVY DUTY STADARD AND BRACKETS TO FRAME OR TAP CON FILLED CELLS
13	ELECTRICAL PANEL (SEE ELEC. DWGS)
14	SEMI-RECESSED FIRE EXTINGUISHER CABINET 36" AFF. TO CENTERLINE OF CABINET & LESS THAN OR EQUAL TO 48" TOP FLUSH A.F.F. . WITH PORTABLE FIRE EXTINGUISHER 5A:6Ø:BC
15	4" THICK x 5' WIDE REINFORCED CONCRETE WALK. BROOM FINISH WITH TROWELED EXP. JTS. AND EDGES. EXACT LOCATION OF WALKWAY TO BE DETERMINED IN THE FIELD BY CITY REPRESENTATIVE
16	A/C CONDENSER LOCATION, COORDINATE WITH MECHANICAL DRAWINGS
17	6" REINFORCED CONCRETE PAD. COORD. SIZE PER CONDENSER MANUFACTURER
18	6' HIGH CHAIN LINK FENCE WITH COVER & DOUBLE GATE. PROVIDE 3' MIN. CLEARANCE. VERIFY WITH MANUFACTURER AND LOCAL JURISDICTION
19	NOT USED
2Ø	EXISTING WATER COOLER
21	REINFORCED CONCRETE COLUMN
22	NOT USED
23	2' x 2' x 4" THK. REINF. CONC. SPLASH BLK.
24	FLOOR DRAIN (SEE PLUMBING DWGS.)
25	LOUVER (SEE EXTERIOR ELEVATIONS)
26	NOT USED
27	NO DRY WALL NO INSULATION.
28	NO DRY WALL FURRING.
29	24' x 24' FRESH AIR INTAKE LOUVER. SEE MECHANICAL DWGS. PROVIDE METAL DUCT EXTENSION SEE CEILING PLAN FOR SOFFIT DETAIL.
3Ø	WATER FOUNTAIN

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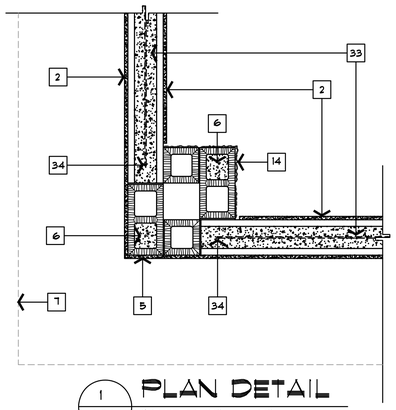
AR0001745
REGISTERED ARCHITECT

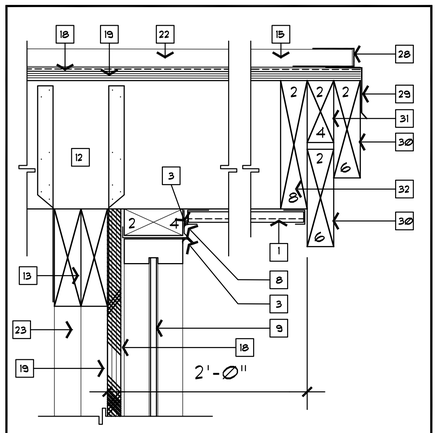
SCALE: VARIES

SHEET NUMBER
A-2.2

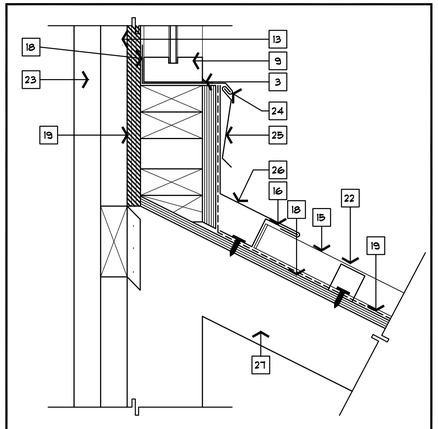
X OF X



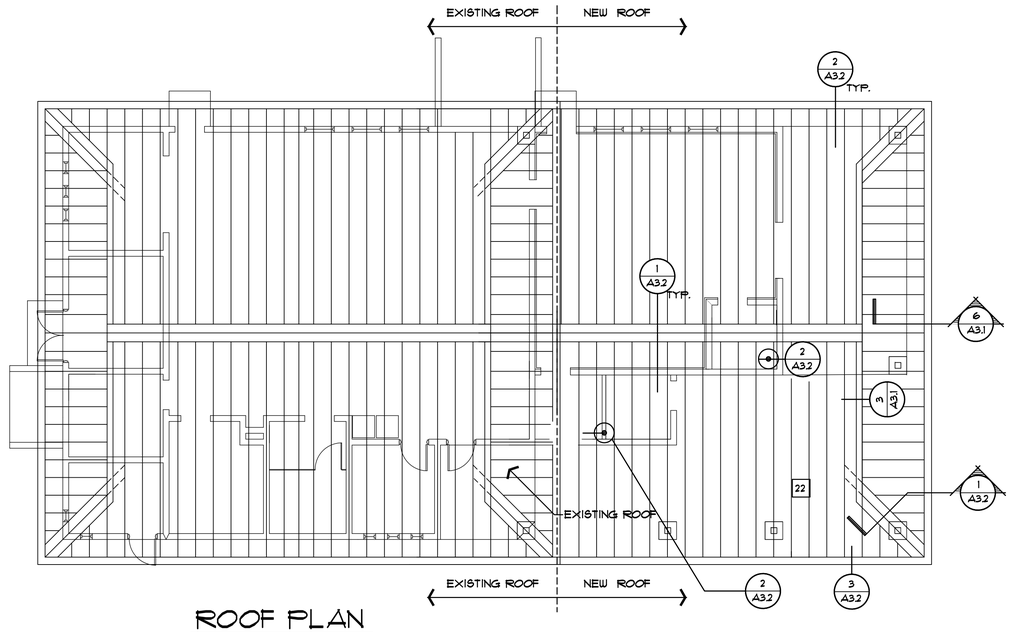
1 A3.1 PLAN DETAIL
SCALE 3/8" = 1'-0"



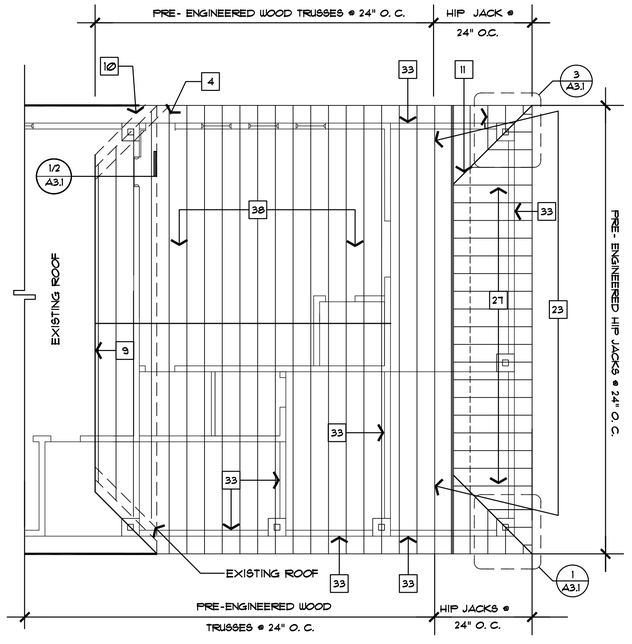
2 A3.1 GABLE END DETAIL
SCALE 3" = 1'-0"



3 A3.1 RAKE WALL DETAIL
SCALE 3" = 1'-0"



ROOF PLAN
SCALE: 1/8" = 1'-0"



ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

KEY NOTES

1 ALUM. SOFFIT
2 3/4" CEMENT PLASTER FINISH
3 SEALANT
4 REMOVE EXISTING STANDING SEAM - METAL ROOFING & EDGE OF EXISTING ROOF EAVE.
5 3/4" CEMENT PLASTER FINISH OVER STANDARD CMU FLUSH W/ LINTEL
6 FILLED CELL W 1-#5 VERT. CONT. AT EACH CORNER
7 LINE OF SOFFIT ABOVE
8 ANODIZED METAL DRIP & CLEAT
9 SPANDREL GLAZING IN ANODIZED METAL FRAME
10 REMOVE EXISTING RIDGE CAP
11 HIP TRUSSES
12 2x6 OUTRIGGER 24" O.C. CLIPPED TO ADJACENT TRUSS AND GIRDER
13 PRE-ENGINEERED STEP GIRDER TRUSS WITH KING POST FOR 2x6 OUTRIGGERS TO ANCHOR SPANDREL CENTER MULLION
14 8 x 16 CMU SPLIT FACE(SEE ELEVATIONS AND WALL SECTIONS)
15 1-1/2" HIGH SEAM METAL ROOF SYSTEM ON TRUSSES
16 ZEE CLOSURE TRIM (TYPICAL)
17 RIDGE CAP
18 30# FELT (TYPICAL)
19 EXISTING 3/4" EXTERIOR GRADE PLYWOOD
20 ROOF JACK (DECK TILE)
21 VENT
22 METAL ROOF SYSTEM ON TRUSSES
23 STEP GIRDER TRUSS FOR 2x6 OUTRIGGERS BEYOND.
24 THRU WALL FLASHING WITH INTEGRAL DRIP CLIP ON FULL BED OF SEALANT
25 INTEGRAL SPRING LOCK COUNTER FLASHING
26 BASE FLASHING
27 PRE-ENGINEERED WOOD TRUSS @ 24" O.C. MAX.
28 METAL ROOF TRIM EDGE
29 ALUM. DRIP EDGE TO MATCH STANDING SEAM ROOF
30 P.T. 2x6 PAINTED
31 P.T. 2x4
32 P.T. 2x8
33 2-1 3/4" x 16" LVL'S WITH 3/4" CEMENT PLASTER FINISH OVER 3/4" EXTERIOR GRADE PLYWOOD AND BLOCKING CONNECT WITH SIMPSON TOP FLANGE HANGER AT EACH COLUMN.
34 EXTEND #5 VERT. REBAR UP THRU END OF EA. LINTEL
35 NOT USED
36 REINF. CONC. COL. BELOW
37 HIP TRUSSES
38 2 x 4 STRUTS TYP.

FRAMING NOTES:

ALL INTERIOR DIMENSIONS ARE GIVEN TO THE INDICATED CENTER OF THE STUD UNLESS OTHERWISE NOTED.

ALL EXTERIOR DIMENSIONS ARE GIVEN TO THE FACE OF THE STUD OR FACE OF BLOCK (AS APPROPRIATE).

ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE TREATED OR APPROVED CEDAR, OR HAVE 15 LB. FELT AS A MOISTURE BARRIER.

ROOF FRAMING / ROOF PLAN

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION
306 E. JACKSON STREET 4 NORTH
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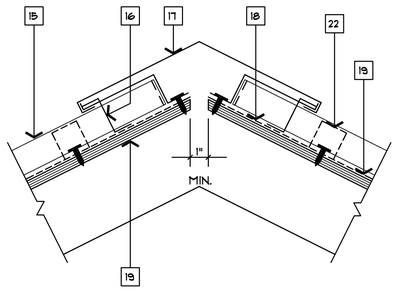
REVISIONS

SEAL

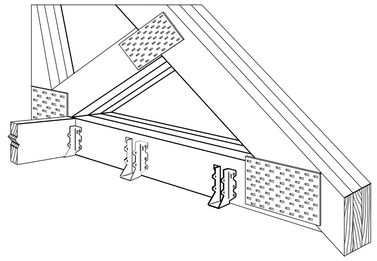
SCALE: VARIES

SHEET NUMBER
A-3.1

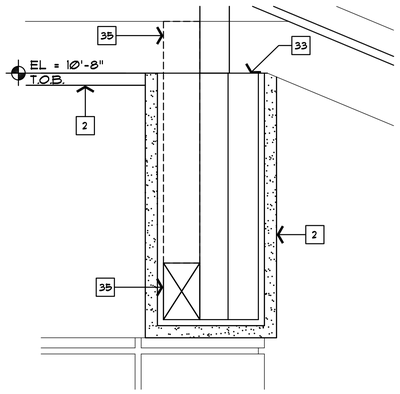
x OF x



1 / A3.2 SECTION DETAIL
SCALE 3" = 1'-0"



4 / A3.2 HU24 GIRDER HANGER
NOT TO SCALE FL10655



7 / A3.2 LVL DETAIL
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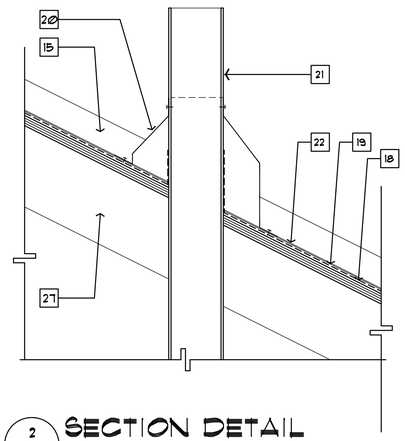

2 / A3.2 SECTION DETAIL
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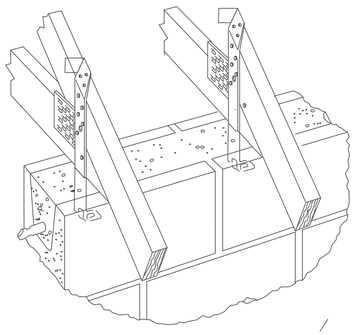
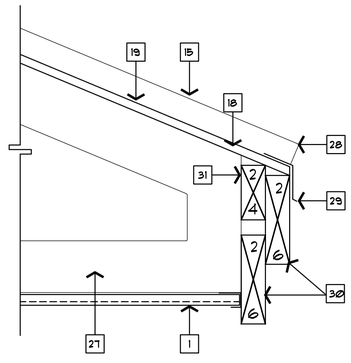
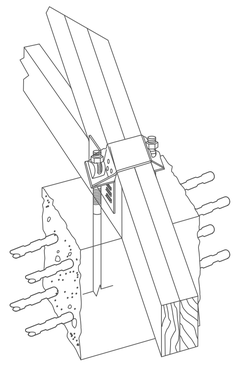


5 / A3.2 HETA20 TRUSS ANCHORS
NOT TO SCALE FL11473



3 / A3.2 SECTION DETAIL
SCALE 3/8" = 1'-0"



6 / A3.2 HGT-2 GIRDER TIEDOWN
NOT TO SCALE FL10456/FL10866

GENERAL NOTES

KEY NOTES

1 ALUM. SOFFIT
2 3/4" CEMENT PLASTER FINISH ON 3/8" PAPER-BACKED LATH
3 SEALANT
4 REMOVE EXISTING STANDING SEAM - METAL ROOFING & EDGE OF EXISTING ROOF EAVE.
5 3/4" CEMENT PLASTER FINISH OVER STANDARD CMU FLUSH W/ LINTEL
6 FILLED CELL W 1-#5 VERT. CONT. AT EACH CORNER
7 LINE OF SOFFIT ABOVE
8 ANODIZED METAL DRIP & CLEAT
9 SPANDREL GLAZING IN ANODIZED METAL FRAME
10 REMOVE EXISTING RIDGE CAP
11 HIP TRUSSES
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29 ALUM. DRIP EDGE TO MATCH STANDING SEAM ROOF
30 P.T. 2x6 PAINTED
31 P.T. 2x4
32 P.T. 2x8
33 2-1 3/4"x16" LVL BEAMS CONNECT TO CONCRETE BLOCK COLUMNS WITH SIMPSON TOP-MOUNTED CONNECTOR MBHA3.56/16
34 EXTEND #5 VERT. REBAR UP THRU END OF EA. LINTEL
35 P.T. 2X BLOCKING
36 REINF. CONC. COL. BELOW
37 HIP TRUSSES
38 2 x 4 STRUTS TYP.

ROOF FRAMING / ROOF PLAN

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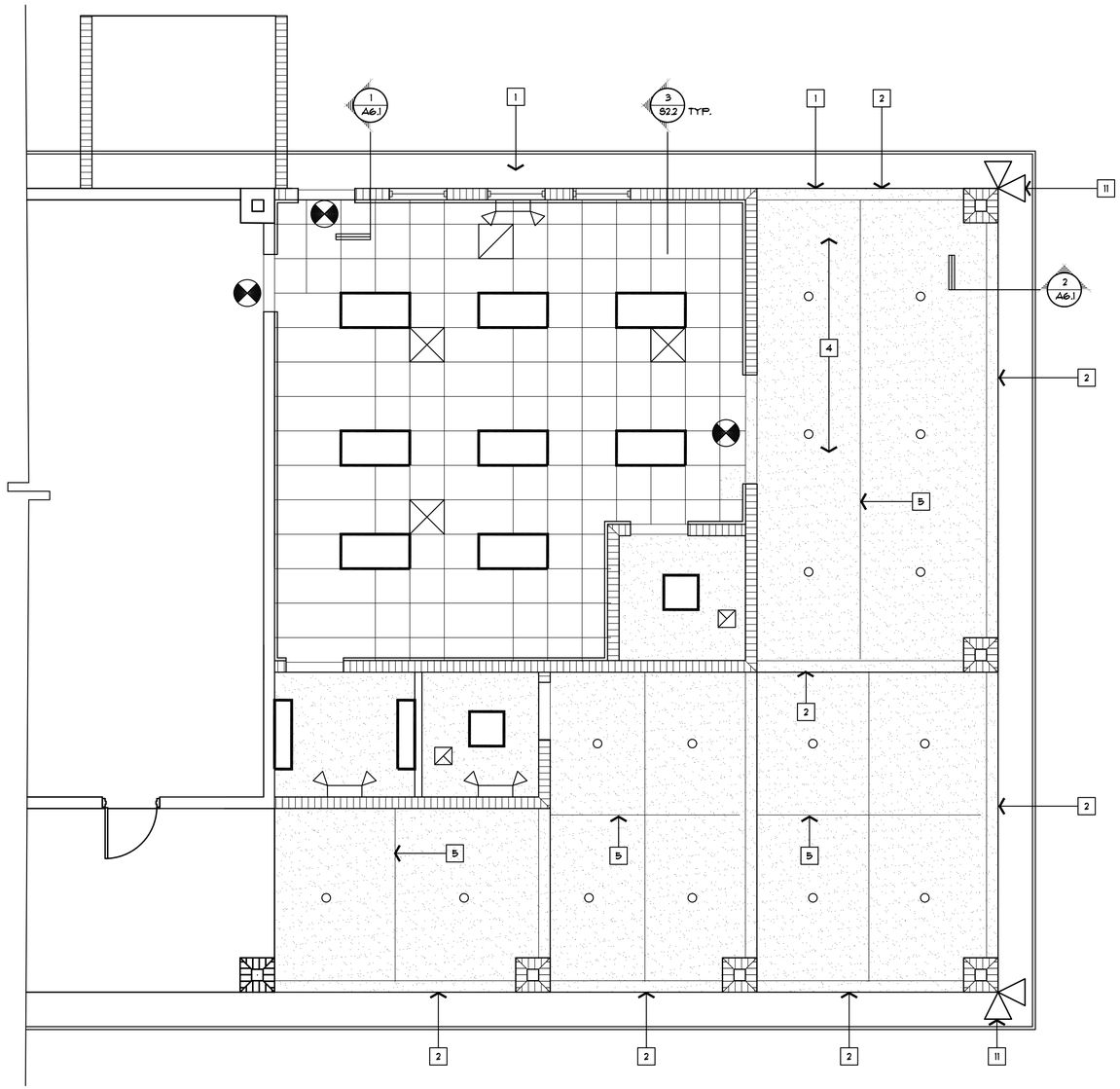
1
2
3

SEAL
STATE OF FLORIDA
THOMAS A. HESTER, SR.
AR0091745
REGISTERED ARCHITECT

SCALE: VARIES

SHEET NUMBER
A-3.2

X OF X



REFLECTED CEILING PLAN

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

N

GENERAL NOTES

KEY NOTES

1. NOT USED
2. BUILT -UP LINTEL W/ 3/4" CEMENT PLASTER FINISH (SEE ROOF FRAMING PLAN FOR DETAIL).
3. NOT USED
4. 3/4" CEMENT PLASTER ON 3/8" PAPER-BACK RIB LATH ATTACHED DIRECTLY TO WOOD TRUSSES AND WOOD FRAMING.
5. CEMENT PLASTER CONTROL JOINT.
6. ACOUSTICAL TILE.
7. G.W.B. OVER WALL FRAMING. REFER TO FLOR PLAN TO MATCH WALL TYPE.
8. CORNER BEAD TYPICAL.
9. CEILING FRAME SUSPENSION FOR ACOUSTICAL TILE.
10. WALL ANGLE FOR CEILING SYSTEM.
11. FLOOD LIGHTS WITH SENSOR @ EACH CORNER (SEE ELEC. DWGS.)
12. EXISTING VINYL SOFFIT TO REMAIN
13. ACOUSTICAL CEILING
14. 5/8" GYP. BD. ON 3 5/8" METAL STUD FRAMING 24" O.C.
15. CORNER BEAD

LEGEND

- 1X4 FLUORESCENT LIGHT
- 2X4 FLUORESCENT LIGHT
- 2X2 FLUORESCENT LIGHT
- RECESSED LIGHT FIXTURE
- 2X2 SUSPENDED CEILING SYSTEM
- GYPSUM BOARD SUSPENDED CEILING
- CEILING DIFFUSER SUPPLY
- RETURN AIR
- EXHAUST FAN
- (S) SPEAKER
- (SD) SMOKE DETECTOR
- FIRE SPRINKLER
- FIRE EXIT

REFLECTED CEILING PLAN

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION

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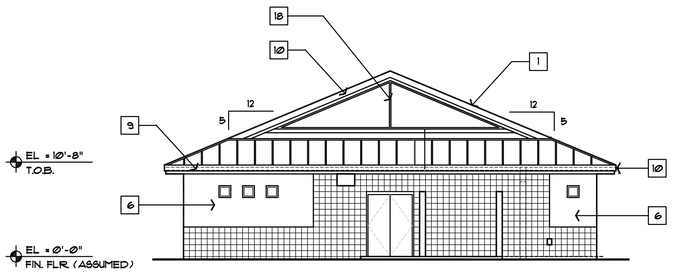
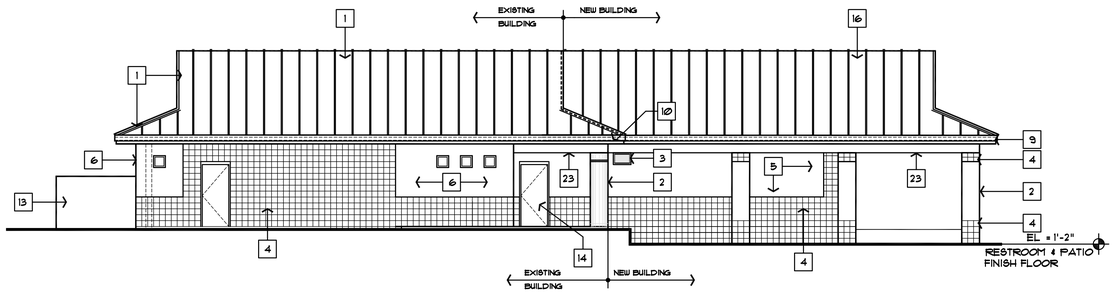
X OF X



WEST ELEVATION

SCALE: 1/8" = 1'-0"



SOUTH ELEVATION

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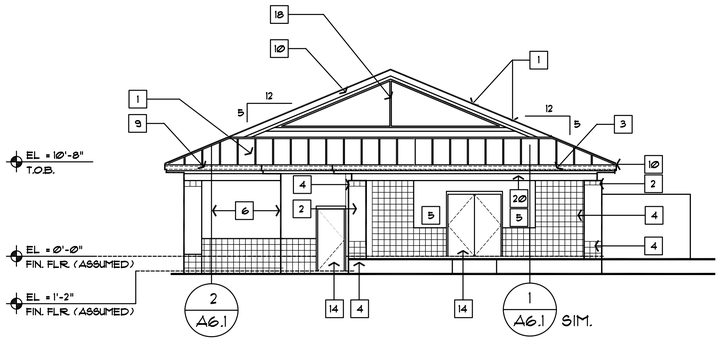
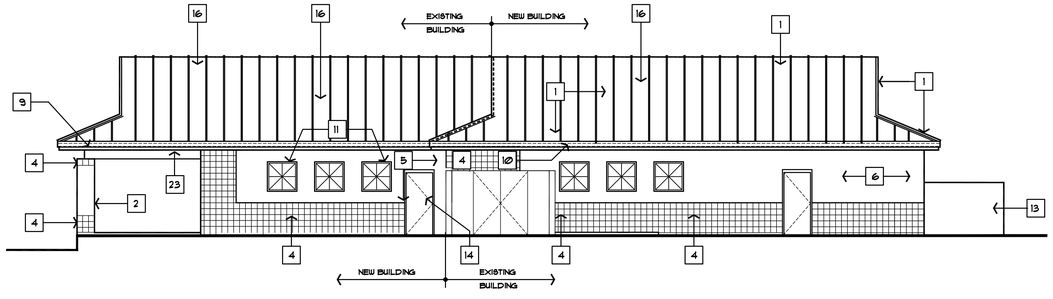


EAST ELEVATION

SCALE: 1/8" = 1'-0"



NORTH ELEVATION

SCALE: 1/8" = 1'-0"

GENERAL NOTES

EXISTING ELEVATIONS FOR COORDINATION SEE KEYNOTES 1, 9, 12, 16, 17, 18, 24

KEY NOTES

1. REMOVE EXISTING STANDING SEAM METAL ROOF. NEW ROOF TO MATCH ADDITION.
2. 24" X 24" CONC. BLOCK COLUMN PAINTED W/ ELASTOMERIC PAINT.
3. 24" x 36" LOUVER SEE MECHANICAL DRAWINGS
4. EXPOSED 8 x 16 SPLIT FACE CMU, INTEGRALLY COLORED W/ CONCAVE JOINTS
5. EXPOSED 8 x 16 SMOOTH FACE CMU, W/ CONCAVE HORIZONTAL JOINTS AND FLUSH VERTICAL JOINTS, PAINTED
6. EXISTING CONCRETE BLACK , PAINT TO MATCH ADDITION.
7. TOOTH EXPOSED 8x16 SPLIT FACE INTEGRALLY COLORED SINGLE CMU.
8. FILLED CELL @ 48" VERT. @ CHANGE OF CMU TEXTURE
9. REMOVE WHEN NEW CONSTRUCTION ADJOINS COORDINATE IN FIELD.
10. EXISTING PAINTED FASCIA REPAINT TO MATCH ADDITION.
11. PROJECTED WINDOWS WITH ALUM. FILL FINISH SUN BURST.
12. EXISTING WINDOW TO BE REMOVED
13. EXISTING A/C ENCLOSURE REPAINT TO MATCH ADDITION.
14. PAINTED METAL DOORS WITH FULL WEATHER STRIP.
15. PAINTED METAL DRIP TO MATCH ABOVE DOOR IN FULL BED OF SEALANT
16. NEW STANDING SEAM METAL ROOF.
17. EXISTING FRESH AIR LOUVER TO BE RELOCATED.
18. NOT USED
19. NOT USED
20. EXTEND 3/4" STUCCO BAND TO SPLIT FACE BLOCK
21. NOT USED
22. NOT USED
23. 3/4" STUCCO FINISH ON BUILT-UP LINTEL

EXTERIOR ELEVATIONS

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
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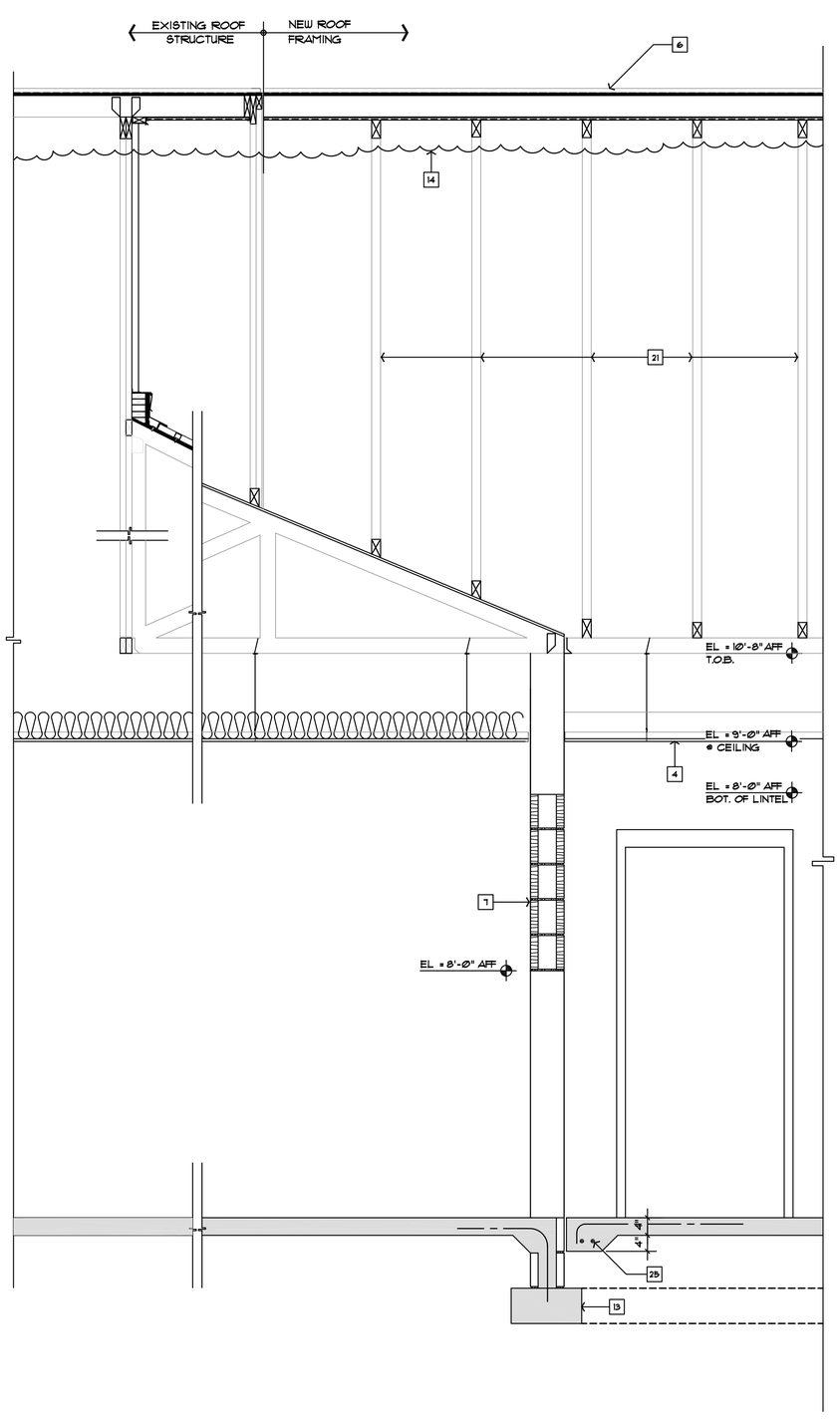
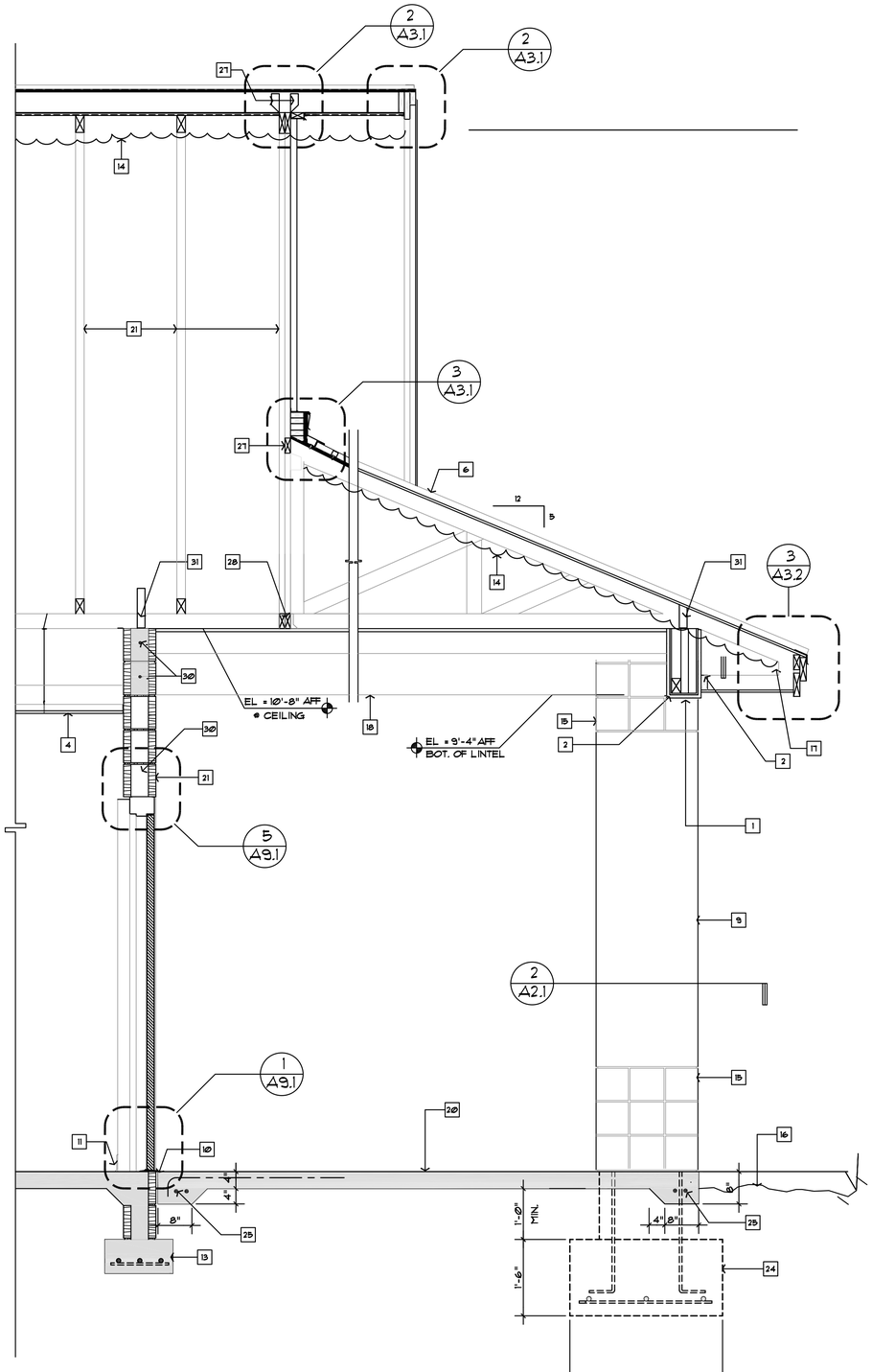


EXISTING WALL SECTION

(1 / A6.1)

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



WALL SECTION AT PORCH

(2 / A6.1)

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

GENERAL NOTES

KEY NOTES

1 2-1 3/4" x 16" LVL'S WITH 3/4" CEMENT PLASTER FINISH OVER 3/4" EXTERIOR GRADE PLYWOOD AND BLOCKING CONNECT WITH SIMPSON TOP FLANGE HANGER AT EACH COLUMN.

2 3/4" CEMENT PLASTER FINISH

3 NOT USED

4 ACOUSTICAL SUSPENDED CLG.

5 NOT USED

6 STANDING SEAM MTL. ROOF ON 30# FELT OVER 3/4" EXTERIOR GRADE PLYWOOD ON PRE-ENGINEERED WOOD TRUSSES

7 8" CMU - PROVIDE HORIZ. TRUSS TYPE REINF. AT 16" O.C. , START POINT SHALL FROM EXISTING WALL OPENING. ADD 1/2" GYPSUM BOARD TO EXISTING INTERIOR WALL

8 PREFABRICATED WOOD TRUSSES @ 24" O.C. SEE ROOF FRAMING PLAN.

9 CONC. BLOCK COLUMN PAINTED

10 1/2" EXPANSION JOINT MATERAL

11 4" VINYL BASE

12 4" EXISTING CONC.

13 CONC. FOOTING. SEE FOUNDATION PLAN

14 6" FOAM SPRAY INSULATION

15 INTEGRALLY COLORED 8'x 6" SPLIT FACE BLOCK WITH CONCAVE HORIZONTAL AND VERTICAL JOINTS

16 FINISH GRADE

17 PREFINISHED ALUM. SOFFIT

18 LINE OF OPENING BEYOND

19 NOT USED

20 4" CONCRETE SLAB ON COMPACTED FILL WITH THICKENED SLAB EDGE CONTINUOUS

21 CUT BLOCK WEB FOR KNOCK OUT ON STEEL LINTEL, TYP. AT EACH MASONRY OPENING.

22 NOT USED

23 NOT USED

24 3'-0" X 3'-0" x 1'-6" THICK REINF. CONC. COL. FOOTING W/ 3-#5s EACH WAY TOP & BOTTOM ON COMPACTED FILL

25 2-#5s CONT.

26 NOT USED

27 BLOCKING FOR TRUSS AND HURRICANE SIMPSON L550 OR BETTER, TYP.

28 HURRICANE TRUSS SADDLE. SIMPSON THA OR BETTER.

29 SIMPSON H5 OR BETTER TYPICAL.

30 1 #5 DIA. CONTINUOUS. HORIZONTAL IN CONCRETE.

31 ANCHOR SIMPSON HETA 20 TYPICAL OR BETTER.

WALL SECTIONS

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
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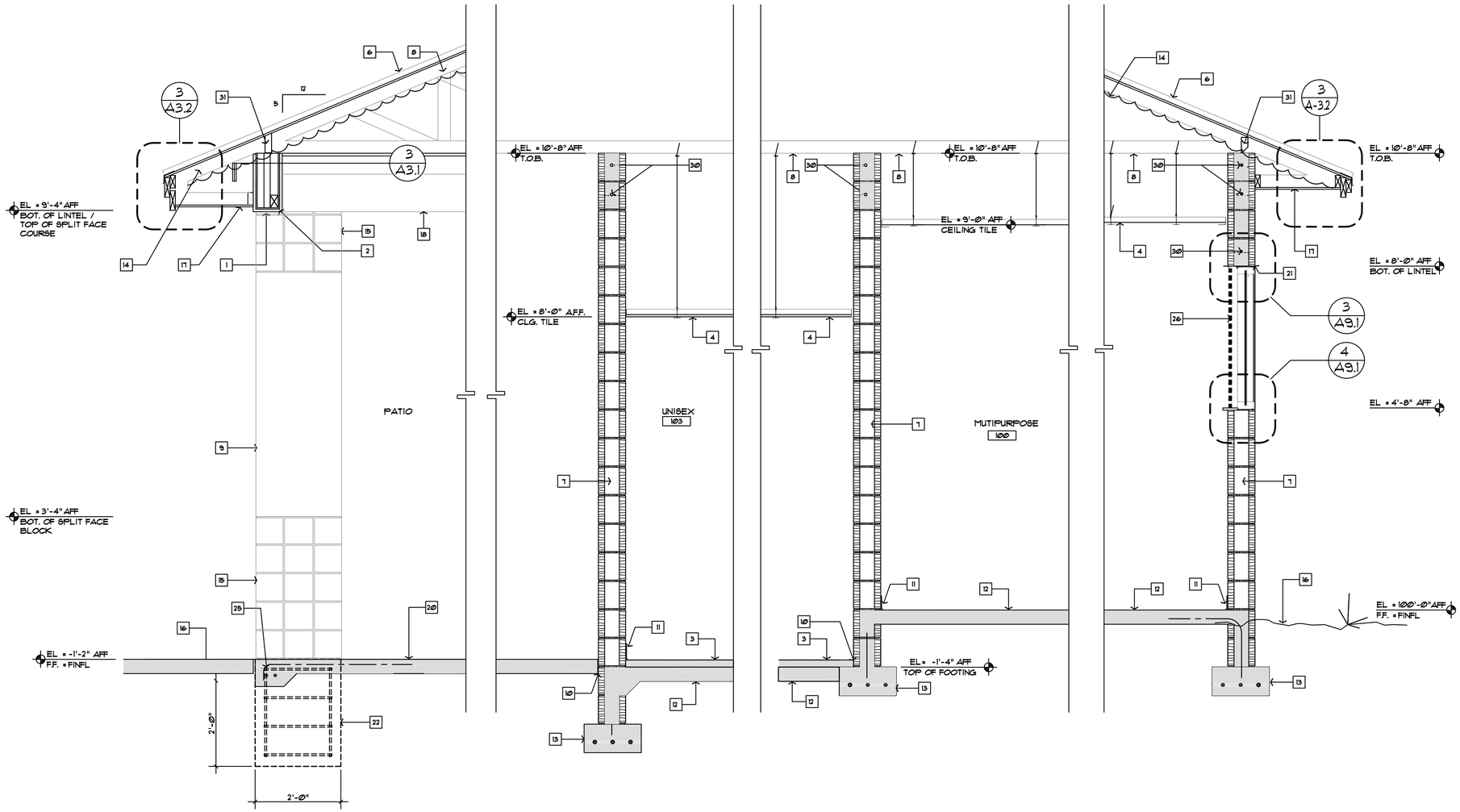

1 / A6.2 WALL SECTION THROUGH UNISEX RESTROOM / PATIO

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

2 / A6.2 WALL SECTION THOUGHT MULTIPURPOSE

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

GENERAL NOTES

KEY NOTES

1 2-1 3/4" x 16" LVL'S WITH 3/4" CEMENT PLASTER FINISH OVER 3/4" EXTERIOR GRADE PLYWOOD AND BLOCKING CONNECT WITH SIMPSON TOP FLANGE HANGER AT EACH COLUMN.

2 3/4" CEMENT PLASTER FINISH

3 2" CONCRETE TOPPING OVER 4" THICK SLAB. SEE SHEET A-2.1 FOR FLOOR ELEV.

4 ACOUSTICAL SUSPENDED CLG. WITH

5 EXISTING SIDEWALK SEE SITE PLAN

6 STANDING SEAM MTL. ROOF ON 30# FELT OVER 3/4" EXTERIOR GRADE PLYWOOD ON PRE-ENGINEERED WOOD TRUSSES

7 8" CMU - PROVIDE HORIZ. TRUSS TYPE REINF. AT 16" O.C. , START POINT SHALL BE FINISH FLOOR.

8 PREFABRICATED WOOD TRUSSES @ 24" O.C. SEE ROOF FRAMING PLAN.

9 CONC. BLOCK COLUMN, PAINTED

10 1/2" EXPANSION JOINT MATERAL

11 4" VINYL BASE

12 4" CONC. SLAB ON 6 MIL. VISQUEEN, ON COMPACTED TERMITE TREATED SOIL

13 CONC. FOOTING. SEE FOUNDATION PLAN

14 6" SPRAY FOAM INSULATION.

15 INTEGRALLY COLORED 8" x 6" SPLIT FACE BLOCK WITH CONCAVE HORIZONTAL AND VERTICAL JOINTS

16 FINISH GRADE

17 PREFINISHED ALUM. SOFFIT

18 LINE OF OPENING BEYOND

19 NOT USED

20 4" CONCRETE SLAB ON COMPACTED FILL WITH THICKENED SLAB EDGE CONTINUOUS

21 CUT BLOCK WEB FOR KNOCK OUT ON STEEL LINTEL, TYP. AT EACH MASONRY OPENING.

22 24" DIA. POURED REINF. CONC. FOOTING W/ 6-#5s VERT. & #3 CIRCULAR TIES @ 8" O.C. W/ CLASS "A" LAP.

23 NOT USED

24 NOT USED

25 2-#5s CONT.

26 LINE OF BLINDS

27 NOT USED

28 NOT USED

29 NOT USED

30 1 #5 DIA. CONTINUOUS. HORIZONTAL IN CONCRETE.

31 ANCHOR SIMPSON HETA 20 TYPICAL OR BETTER.

WALL SECTIONS

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION

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WILLIAMS PARK CENTER EXPANSION
4362 E. OSBORNE AVE
TAMPA, FL 33610

DPW FILE NUMBER

DPW NUMBER
18-C-00025

ISSUE DATE
JULY 20, 2018

DRAWN BY
JERRY P. SANDERS

REVISIONS

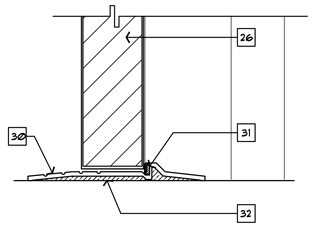
SEAL

STATE OF FLORIDA
THOMAS A. HESTER
M0091745
REGISTERED ARCHITECT

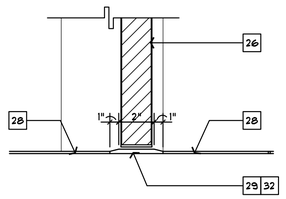
SCALE: VARIES

SHEET NUMBER
A-6.2

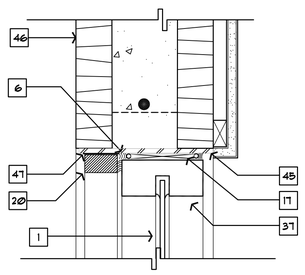
X OF X



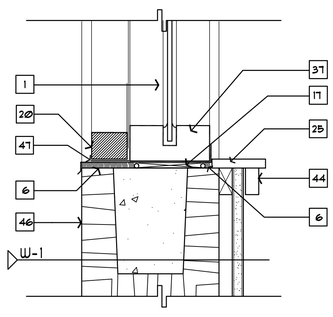
1 THRESHOLD DETAIL
SCALE: 6" = 1'-0"



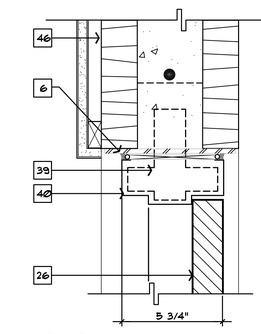
2 THRESHOLD DETAIL
SCALE: 3" = 1'-0"



3 HEAD DETAIL (JAMB SIMILAR)
SCALE: 3" = 1'-0"



4 SILL (JAMB SIMILAR)
SCALE: 3" = 1'-0"



5 JAMB DETAIL (HEAD SIMILAR)
SCALE: 3" = 1'-0"

FINISH SCHEDULE

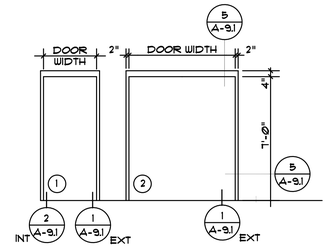
NO.	ROOM NAME	FLOOR	BASE	WALLS				CLG.	CLG. HT.	REMARKS
				N	E	S	W			
100	MULTIPURPOSE ROOM	F1	B1	W3	W3	W3	W3	C1	9'-0"	
101	MECHANICAL	F1	B1	W3	W3	W3	W3	C1	9'-0"	1 LAYERS 5/8" - 1 HR. RATED
102	UNISEX	F2	B2	W2	W2	W2	W2	C2	8'-0"	
103	UNISEX	F4	B2	W4	W4	W4	W4	C2	8'-0"	MR GWB @ PLUMBING WALL
104	WOMENS	F4	-	W4	W4	W4	W4		EXISTING	
105	STORAGE	F4	-	W4	W4	W4	W4		EXISTING	

FINISH LEGEND

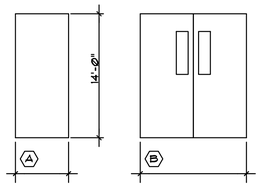
W1	PAINTED	F1	VINYL COMPOSITION TILE (VCT)	C1	SUSPENDED ACOUSTICAL CEILING	B1	VINYL BASE
W2	CERAMIC MOSAIC TILE	F2	CERAMIC MOSAIC TILE	C2	SUSPENDED GYPSUM CEILING	B2	TILE BASE
W3	EPOXY PAINT ON GWB	F3	NOT USED				
W4	EPOXY PAINT ON CONC. BLK	F4	SEALED CONCRETE				

DOOR SCHEDULE

NO.	EL.	DOOR				FRAME		DETAILS			FIRE RATED	REMARKS
		W	H	T	MATERIAL	TYP.	MAT'L	HEAD	JAMB	SILL		
1	B	2-3'-0"	7'-0"	1-3/4"	HOLLOW METAL	2	H.M.	1	1	8	-	CLOSER, PANIC HARDWARE (SEE FRAME TYPE FOR DETAILS)
2	A	3'-0"	7'-0"	1-3/4"	S.C. WOOD	1	H.M.	4	4	7	-	CLOSER, PANIC HARDWARE (SEE FRAME TYPE FOR DETAILS)
3	A	3'-0"	7'-0"	1-3/4"	HOLLOW METAL	1	H.M.	1	1	8	-	CLOSER, PANIC HARDWARE (SEE FRAME TYPE FOR DETAILS)
4	A	3'-0"	7'-0"	1-3/4"	HOLLOW METAL	1	H.M.	1	1	8	-	CLOSER/(SEE FRAME TYPE FOR DETAILS)
5	A	3'-0"	7'-0"	1-3/4"	S.C. WOOD	1	H.M.	4	4	7	-	
6	A	3'-0"	7'-0"	1-3/4"	S.C. WOOD	1	H.M.	4	4	7	-	



FRAME TYPES



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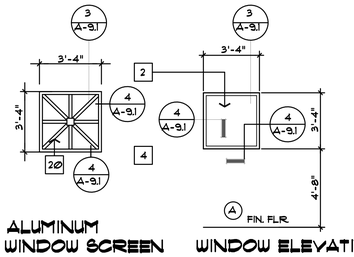

ALUMINUM WINDOW SCREEN

WINDOW ELEVATIONS

GENERAL NOTES

KEY NOTES

1 1 5/16" THICK TEMPERED IMPACT GLASS.
2 FINISHED FLOOR.
3 NOT USED
4 NOT USED
5 NOT USED
6 CAULK CONTINUOUS.
7 5/8" GYP. BOARD ON 1/2" FURRING STRIP ON 8" CMU. (IN OFFICE 101 ONLY)
8 NOT USED
9 NOT USED
10 NOT USED
11 NOT USED
12 NOT USED
13 NOT USED
14 NOT USED
15 NOT USED
16 NOT USED
17 1" x SHIMMING AS REQUIRED.
18 CORNER BEAD
19 NOT USED
20 ALUMINUM WINDOW SCREEN, SUNBURST. 2" x 3" x 1/8" THICK EXTRUDED ALUMINUN W/ 6" x 6" x 1/2" THICK CENTER PLATE ON FRONT AND BACK OF SUNBURST SCREEN
21 NOT USED
22 NOT USED
23 NOT USED
24 NOT USED
25 MARBLE SILL
26 DOOR - SEE DOOR SCHEDULE.
27 HOLLOW METAL FRAME . PROVIDE G90 GALV. FOR EXTERIOR FRAMES.
28 FLOOR - REFER TO ROOM SCHEDULE.
29 MARBLE THRESHOLD, IN TILE TO TILE AREAS.
30 ALUMINUM SADDLE.
31 VINYL INSERT.
32 CONTINUOUS BED OF SEALANT.
33 NOT USED
34 NOT USED
35 NOT USED
36 NOT USED
37 ALUMINUM STOREFRONT.
38 NOT USED
39 MASONRY ANCHOR IN GROUT FILLED FRAME.
40 HOLLOW METAL FRAME. PROVIDE G90 GALV. AT ALL EXTERIOR FRAMES.
41 NOT USED
42 NOT USED
43 LINTEL FRAMING AT HEAD CONDITION.
44 MARBLE LEDGER IN FULL BED OF ADHESIVE USED
45 STL. LINTEL - REFER TO PLAN FOR SPANS. TYP.
46 INTEGRALLY COLORED SMOOTH FACE, SINGLE FACE SCORE CMU.
47 VINYL SHIM FOR DIS-SIMILAR METALS.

FINISH DOOR SCHEDULE

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GENERAL MECHANICAL NOTES

1. ALL MECHANICAL WORK SHALL MEET ALL OF THE REQUIREMENTS OF THE FOLLOWING:
   A. FLORIDA BUILDING CODE (FBC) 6TH EDITION (2017): THIS CODE INCLUDES THE 2017 FBC BUILDING, MECHANICAL, PLUMBING, ENERGY CONSERVATION, FUEL GAS, ACCESSIBILITY, AND TEST PROTOCOLS VOLUMES. FURTHER, SEE "REFERENCED STANDARDS" IN THE FBC BUILDING CHAPTER 35; FBC MECHANICAL CHAPTER 15; FBC PLUMBING CHAPTER 15; FBC ENERGY CONSERVATION CHAPTER 6; AND FBC FUEL GAS CHAPTER 8) (EFFECTIVE DECEMBER 31, 2017).
   B. 6TH EDITION OF THE FLORIDA FIRE PREVENTION CODE (FFPC): (THIS CODE ALSO INCLUDES THE FLORIDA VERSIONS OF NFPA 1 AND NFPA 101.) (EFFECTIVE DECEMBER 31, 2017).
   C. 2014 NATIONAL ELECTRIC CODE.
2. VERIFY, BY VISITING THE SITE, THE LOCATION OF UTILITIES IN ALL AREAS BEFORE COMMENCING WORK.
3. COORDINATE ALL WORK WITH OTHER AFFECTED TRADES. THE MECHANICAL CONTRACTOR SHALL FORWARD TO THE ELECTRICAL CONTRACTOR AN APPROVED COPY OF ALL EQUIPMENT SHOP DRAWINGS FOR ELECTRICAL POWER/CONTROL INTERFACE.
4. COVER ALL ELECTRICAL AND MECHANICAL EQUIPMENT TO PROTECT THEM FROM DUST AND DAMAGE DURING CONSTRUCTION. RESTORE ALL FACTORY PAINTED SURFACES TO NEW CONDITION, REPAIR ALL SCRATCHES, DENTS AND ABRASIONS. THOROUGHLY CLEAN ALL SURFACES OF DUST DEBRIS, AND FOREIGN MATTER. THE EQUIPMENT, WHEN TURNED OVER TO THE OWNER, SHALL BE CLEAN AND FREE OF DEFECTS.
5. THE CONDENSATE DRAIN LINE SHALL HAVE A TRAP AT THE AIR HANDLING UNIT. TRAP SHALL BE FULL SIZE OF UNIT CONNECTION AND SHALL BE AS DETAILED. PROVIDE CLEAN OUTS IN ALL CHANGES OF DIRECTION. MINIMUM PITCH 1/8" PER FOOT. CONDENSATE DRAIN LINE SHALL RUN TO CONDENSATE DRYWELL. INSULATE ALL INTERIOR CONDENSATE PIPING WITH FLEXIBLE UNICELLULAR FOAM (ARMAFLEX OR EQUIVALENT) INSULATION TO PREVENT SWEATING. CONDENSATE DRAIN LINES AND TRAPS IN MECHANICAL ROOMS SHALL BE INSULATED COPPER OR PVC AND SHALL BE RIGIDLY SUPPORTED.
6. FLEXIBLE UNICELLULAR FOAM (ARMAFLEX OR EQUIVALENT) INSULATION SHALL BE 25/50 FLAME SPREAD/SMOKE DEVELOPED. REFRIGERANT PIPING SHALL BE INSULATED WITH FLEXIBLE UNICELLULAR FOAM INSULATION COMPLYING WITH ASTM C534, TYPE 1. PROVIDE ALUMINUM CLADDING FOR ALL INSULATION EXPOSED TO THE SUN AND WEATHER.
7. REFRIGERANT LINES SHALL BE SIZED AND REFRIGERANT SPECIALTIES SHALL BE PROVIDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR STATIC LIFTS AND TOTAL LENGTHS REQUIRED. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. AIR HANDLING UNITS SHALL HAVE AN AUXILIARY DRAIN PAN 3" LARGER THAN UNIT EACH WAY. DRAIN PAN SHALL HAVE A FLOAT SWITCH TO DE-ENERGIZE THE AHU IN EVENT OF A CONDENSATE OVERFLOW CONDITION.
9. AIR HANDLING UNITS SHALL BE PLACED ON A 1/4" NEOPRENE PAD WITHIN AN AUXILIARY DRAIN PAN.
10. AIR HANDLING UNITS SHALL BE PLACED ON A CONCRETE PAD 6" THICK BY 6" LARGER, EACH WAY, THAN UNIT.
11. AIR HANDLING UNITS SHALL BE PLACED A MINIMUM OF 18" AWAY FROM WALLS.
12. CONDENSING UNITS SHALL BE PLACED ON A CONCRETE PAD 6" THICK BY 6" LARGER, EACH WAY, THAN UNIT.
13. IN GENERAL, PLANS ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED.
14. ALL DUCTWORK SHALL MEET THE STANDARDS SET FORTH BY THE LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". SUPPLY, RETURN, AND EXHAUST DUCTWORK SHALL BE FABRICATED FROM SHEET METAL. ALL ROUND DUCT SHALL BE SHEET METAL UNLESS OTHERWISE NOTED. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.
15. PROVIDE INSULATION FOR NEW DUCTWORK TO AND FROM THE UNIT WITH GLASS FIBER DUCT WRAP INSULATION. FACTORY APPLIED FOIL FACED VAPOR BARRIER, ASTM 518 AND ASTM E84 CERTIFIED TESTING PROCEDURES. JOINT TAPE SHALL BE MINIMUM 3" WIDE FOIL REINFORCED KRAFT TYPE. INSULATION THICKNESS SHALL BE A MINIMUM 2" THICK.
16. SUPPLY AIR DUCT FULL SIZE OF UNIT DISCHARGE. TRANSITION TO SIZE INDICATED ON DRAWINGS. RETURN AIR DUCT IS TO TRANSITION FROM SIZE INDICATED ON DRAWINGS TO FULL SIZE OF UNIT INLET.
17. ALL DUCT DIMENSIONS ARE CLEAR INSIDE DIMENSIONS (FREE AREA).
18. VERIFY ALL CLEARANCES AND DIMENSIONS BEFORE FABRICATION OF DUCTWORK AND PROVIDE ADDITIONAL OFFSETS TO MEET FIELD CONDITIONS. ADJUST LOCATIONS OF ALL EQUIPMENT AND DUCTWORK, AS NECESSARY TO AVOID INTERFERENCES WITH STRUCTURAL AND OTHER BUILDING COMPONENTS.
19. UNLESS NOTED OTHERWISE, INSTALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO UNDERSIDE OF STRUCTURE. COORDINATE DUCT ELEVATION WITH RAIN LEADERS, WATER PIPING, DRAINS, AND MAJOR ELECTRICAL CONDUITS AND LIGHTS. PROVIDE OFFSETS AND TRANSITIONS AS REQUIRED TO KEEP DUCTWORK TIGHT TO THE STRUCTURE AND MAINTAIN CEILING ELEVATIONS AS INDICATED IN THE ARCHITECTURAL DRAWINGS. DUCTWORK MAY BE FLATTENED TO A 4:1 HEIGHT RATIO MAINTAINING THE DUCT FREE AREA SIZE AS INDICATED IN THE DRAWINGS. DUCTWORK SHAPE MAY HAVE TO BE ADJUSTED (I.E. ROUND TO RECTANGULAR) AS SPACE DICTATES. MULTIPLE SMALLER RUNS MAY BE REQUIRED IN PLACE OF A SINGLE RUN. DUCT RECONFIGURATION SHALL BE INDICATED IN THE DUCT FABRICATION DRAWINGS AND FIELD VERIFIED PRIOR TO SUBMITTAL FOR ENGINEER'S REVIEW.
20. DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, AND OTHER ITEMS OF THE AIR HANDLING SYSTEM SHALL NOT BE SUPPORTED BY THE CEILING OR CEILING SUSPENSION SYSTEM.
21. ALL SUPPLY DUCTWORK BETWEEN THE DISCHARGE OF THE PRIMARY AIR HANDLER AND THE DIFFUSERS SHALL BE 2" W.G. PRESSURE CLASS. ALL OTHER DUCTWORK SHALL BE 1" W.G. ALL SHEET METAL DUCTWORK SHALL HAVE A CLASS C SEAL.
22. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED TO INSTALL MECHANICAL EQUIPMENT AND MATERIALS.
23. ALL EQUIPMENT MUST BE PERMANENTLY IDENTIFIED BY ZONE SERVED FOR CONVENIENCE OF SERVICE AND MAINTENANCE.
24. REPLACE ANY CEILING TILES OR GRID, DAMAGED DURING CONSTRUCTION IN ANY AREAS WHERE THE CEILING IS REMOVED TO EXECUTE WORK. REPLACEMENT TILES AND TEES SHALL MATCH EXISTING.
25. PROVIDE ADDITIONAL VOLUME DAMPERS AS REQUIRED BY THE TEST AND BALANCE CONTRACTOR TO ACHIEVE AIRFLOWS INDICATED ON THE DRAWINGS.
26. MAINTAIN NEGATIVE PRESSURE IN ALL DESIGNATED CONSTRUCTION AREAS.
27. THE OWNER SHALL BE GIVEN ONE WEEK PRIOR NOTICE FOR ALL PERIODS OF HVAC SYSTEMS DOWNTIME.
28. IN ADDITION TO THE REQUIREMENTS OF THE SPECIFICATIONS, THE AIR HANDLERS MAY ONLY BE STARTED IF THE FOLLOWING CONDITIONS ARE MET:
   A. ALL OPENINGS FROM THE CONDITIONED SPACE DIRECTLY TO THE OUTSIDE MUST BE CLOSED. TEMPORARY CLOSURE METHODS MAY BE USED SUCH AS THE UTILIZATION OF PLASTIC SHEETS AND DUCT TAPE.
   B. MOP CLEAN ALL CONSTRUCTION DEBRIS AND DUST FROM THE FLOOR. PROVIDE DOOR MATS AT ALL ENTRANCES INTO THE BUILDING.
   C. TEMPORARY BARRIERS ARE TO BE PROVIDED AROUND AREAS THAT WILL HAVE ANY CONCRETE GRINDING OPERATION, DRYWALL WORK, PAINTING OR ANY OTHER PARTICULATE PRODUCING PROCESSES. ALL AIR DISTRIBUTION DEVICES IN THESE AREAS OF CONTAINMENT ARE TO BE COVERED AND SEALED AIR TIGHT.
   D. ALL RETURN GRILLES SHALL HAVE MERV-8 FILTER MEDIA TAPED OVER THEM PRIOR TO AIR HANDLER STARTUP AND SHALL REMAIN IN PLACE UNTIL ALL DUST PRODUCING OPERATIONS HAVE BEEN COMPLETED AND PRIOR TO TEST AND BALANCE. CLEAN ALL TAPE RESIDUE FROM THE GRILLES.
   E. ONCE THE UNIT IS STARTED, FILTERS IN THE AIR HANDLERS ARE TO BE SHAKEN CLEAN DAILY.
29. OMIT INSULATION ON TRANSFER DUCT SYSTEM. TRANSFER DUCT SYSTEMS ARE CONNECTED TO "XG#" TYPE AIR DISTRIBUTION DEVICES.
30. SUBMIT DUCT FABRICATION DRAWINGS AND MECHANICAL ROOM LAYOUTS PER SPECIFICATIONS PRIOR TO ANY FRAMING WORK. ALL CHASE SIZES, FLOOR DRAINS IN MECHANICAL ROOMS/CLOSETS, AND ELECTRICAL PANEL LOCATIONS SHALL BE FIELD VERIFIED, COORDINATED, AND INDICATED IN THE SUBMITTAL.
31. ALL DUCT MOUNTED MANUAL BALANCING DAMPERS SHALL HAVE A TWO FOOT LONG, YELLOW STRIP OF MATERIAL ATTACHED TO THE DAMPER HANDLE FOR EASY VISUAL IDENTIFICATION.
32. ALL FIRE STOPPING SHALL BE INSTALLED IN CONFORMANCE WITH THE MANUFACTURER'S U.L. DETAILS OF THE PRODUCTS USED SPECIFICALLY ON THIS PROJECT. APPLICABLE U.L. DETAILS SHALL BE SUBMITTED FOR THE ENGINEER'S REVIEW AND A COPY SHALL BE AVAILABLE ON SITE FOR USE BY THE AUTHORITY HAVING JURISDICTION.
33. CONTROLS CONDUITS SHALL CONFORM TO ALL REQUIREMENTS FOR DIVISION 26 CONDUITS. REFER TO DIVISION 26 SPECIFICATIONS AND DRAWINGS.
34. CONCRETE SLAB/PAD IS TO HAVE NO CONTACT WITH ANY METAL PORTION OF THE EQUIPMENT OR THAT EQUIPMENT'S SUPPORT. PROVIDE 1/4" THICK RED, OR BLACK, RUBBER PAD UNDER THE ENTIRE METAL SURFACE INTENDED TO REST ON THE CONCRETE PAD.
35. PROVIDE DIELECTRIC UNIONS/PROTECTION AT ALL POINTS OF CONNECTION BETWEEN DISSIMILAR METALS; PIPE, PIPE HANGERS, CONNECTIONS TO STRUCTURAL STEEL, ETC.
36. ROUND FLEX DUCT SHALL BE A MAXIMUM LENGTH OF 6 FEET. ALL RUNS OF FLEX DUCT ARE TO BE SUPPORTED WITH THE APPROPRIATE HANGERS. FLEX DUCT SHALL NOT SAG OR BE CRIMPED.
37. AIR CONDITIONING FILTERS ARE TO BE PROVIDED AND CHANGED BY THE CONTRACTOR UP TO AND ON THE DATE OF SUBSTANTIAL COMPLETION ACCEPTANCE. FROM THAT TIME ON, THE OWNER WILL RETAIN ALL RESPONSIBILITY FOR FILTER MAINTENANCE. FILTERS SHALL BE CLEAN AT THE TIME OF SUBSTANTIAL COMPLETION.
38. LOCATE ALL AIR DISTRIBUTION DEVICES AND CEILING MOUNTED EQUIPMENT IN CONFORMANCE WITH THE REFLECTED CEILING PLANS INCLUDED IN THE ARCHITECTURAL DRAWINGS FOR THIS PROJECT. COORDINATE DUCTWORK TO ALLOW FOR LOCATIONS OF THESE ITEMS. PROVIDE REVISED DUCTWORK LAYOUT WHERE REQUIRED. ANY MECHANICAL ITEMS EXPOSED TO VIEW SHALL BE PLACED PER THE ARCHITECTURAL DRAWINGS.
39. FALL PROTECTION SYSTEMS: OSHA REQUIRES THAT ONE OF THE FOLLOWING SYSTEMS MUST BE IN PLACE WHENEVER AN EMPLOYEE IS EXPOSED TO A FALL GREATER THAN SIX FEET:
   A. GUARDRAIL SYSTEMS
   B. PERSONAL FALL PROTECTIVE SYSTEMS CONSISTING OF THE FOLLOWING:
      – PERSONAL PROTECTIVE EQUIPMENT
      – CONNECTING DEVICES
      – ANCHORAGE
   C. WARNING LINE SYSTEMS AND CONTROLLED ACCESS ZONES: GUIDELINES FOR THE IMPLEMENTATION OF WARNING LINE SYSTEMS AND WORK IN CONTROLLED ACCESS ZONES MUST BE DEVELOPED IN ACCORDANCE WITH OSHA REGULATION 1926.502 AND APPROVED BY OSHA BEFORE EMPLOYEES ARE EXPOSED TO FALL HAZARDS.
40. ALL EXTERIOR FASTENERS, ANCHORS, SUPPORTS, AND MOUNTING HARDWARE SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.
41. PRIOR TO SUBSTANTIAL COMPLETION, A COMPLETE CERTIFIED TEST AND BALANCE REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. REFER TO THE SPECIFICATIONS FOR REQUIREMENTS.
42. ALL THERMOSTAT/WALL SENSORS SHALL BE LABELED WITH THE UNIT MARK OF THE ITEM BEING CONTROLLED.
43. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

HVAC LEGEND

- SUPPLY AIR DUCT (UP & DOWN)
- RETURN AIR DUCT (UP & DOWN)
- EXHAUST AIR DUCT (UP & DOWN)
- VOLUME DAMPER
- SIDEWALL GRILLE
- WALL MTD THERMOSTAT OR TEMPERATURE SENSOR
- WALL MTD HUMIDITY SENSOR
- ELEVATION CHANGE IN DUCT
- BACKDRAFT DAMPER
- BELLMOUTH "SPIN-IN" FITTING WITH LOCKING QUADRANT DAMPER
- FLEX DUCT
- AIR DEVICE MARK. TOP LINE INDICATES TYPE, REFER TO SCHEDULE. SECOND LINE INDICATES AIR QUANTITY CFM. THIRD LINE INDICATES NECK SIZE AND DUCT CONNECTION SIZE. (CD1 / 375 / 12x12/8"ø)
- UNDERCUT DOOR BY 3/4" AFF UNLESS OTHERWISE INDICATED COORDINATE WITH ARCHITECTURAL DRAWINGS.
- MOTORIZED DAMPER (24 VOLT UNLESS NOTED OTHERWISE)
- OPPOSED BLADE MOTORIZED DAMPER (24 VOLT UNLESS NOTED OTHERWISE)
- BACKDRAFT DAMPER EQUIVALENT TO RUSKIN BD2A1. DAMPER SHALL START TO OPEN AT 0.03" W.G. PRESSURE
- BOG — BOTTOM OF SIDEWALL GRILLE ELEVATION
- TOG — TOP OF SIDEWALL GRILLE ELEVATION
- IJS — DUCT IS LOCATED BETWEEN JOIST OR THROUGH JOIST WEB.
- (E) — EXISTING – FIELD VERIFY EXACT SIZE AND LOCATION
- (D) OR -X-X- — EXISTING TO BE DEMOLISHED
- (RL) — EXISTING ITEM TO BE RELOCATED
- (R) — NEW LOCATION OF EXISTING ITEM
- CONNECT NEW TO EXISTING
- ELEVATION
- TWIST TIMER
- REMOVE ALL HATCHED MECHANICAL ITEMS

DUCTWORK MATERIALS

1. ALL EXPOSED DUCTWORK SHALL BE PAINTED AS DIRECTED BY THE ARCHITECT.
2. UNLESS NOTED OTHERWISE, ALL EXPOSED ROUND SUPPLY DUCTWORK SHALL BE SINGLE WALL AS MANUFACTURED BY UNITED McGILL OR LINDAB. ROUND DUCT SHALL BE SPIRAL LOCK SEAM FOR STRAIGHT SECTIONS WITH WELDED FITTINGS. ALL EXPOSED DUCTWORK SEALED WITHIN THE LAP (MASTIC SHALL NOT BE VISIBLE) AND SHALL BE PAINTED. COORDINATE COLOR WITH ARCHITECT.
3. ALL TRANSFER DUCT SHALL BE UNINSULATED LONGITUDINAL SEAM SHEET METAL DUCTWORK.
4. FLEXIBLE DUCT RUNOUTS SHALL NOT EXCEED 6 FEET.
5. THE USE OF SNAP LOCK DUCT IS NOT PERMITTED.

DESIGN CRITERIA

Location:	TAMPA
Latitude:	28.0°
Longitude:	82.4°
Elevation:	56 ft.
Barometric Pressure:	29.9 in. Hg
DESIGN TEMPERATURES:	
Ambient Summer Design Dry Bulb:	91°F
Ambient Summer Design Wet Bulb:	80°F
Ambient Winter Design Dry Bulb:	39°F
Space Setpoint – cooling	76°F
Space Setpoint – heating	70°F
Space Setpoint – humidity	50% RH

OUTDOOR AIR VENTILATION RATES

Description of Area	Space Classification	People Outdoor Air Rate cfm / person	x	Occupants Each (Oz)	=	People (Rp x Pz) cfm	Area Outdoor Air Rate (Ra) cfm / Sq. Ft.	x	Total Sq. Ft. (Az)	=	Area (Ra x Az) cfm	People cfm + Area cfm = uncorrected OA cfm (Vbz)	Air Distribution Effectiveness	Required Outside Air (CFM)
AHU-2														
Multi-Purpose Room	Educational: Multiuse Assembly	7.5	x	66	=	495	0.06	x	660	=	40	535	1.0	535
Unisex Toilet	–	–	x	–	=	–	–	x	–	=	–	–	1.0	–
												Required Outside Air:		535
												Outside Air Provided:		535

BUILDING AIR BALANCE

OUTSIDE AIR INTO BUILDING		EXHAUST AIR OUT OF BUILDING		NET CFM
SOURCE	CFM	SOURCE	CFM	
AHU-2	535	EF5, EF6, EF7	300	
	535		300	235

ZONE PRESSURIZATION ((535 OA – 300 EXH) / 1,350 SA) x 100 = 17.4%

HVAC DRAWING INDEX

M0.0	HVAC GENERAL NOTES, LEGEND AND FBC VENTILATION COMPLIANCE
M0.1	HVAC SPECIFICATIONS
M1.0	HVAC FLOOR PLAN
M2.0	HVAC DETAILS AND SCHEDULES

GENERAL NOTES

KEY NOTES

HVAC GENERAL NOTES, LEGEND , AND FBC VENTILATION COMPLIANCE

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DPW FILE NUMBER

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DRAWN BY
SRF

REVISIONS

SEAL

STEPHEN R. FORKNER, P.E. 80532

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M-0.0
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SECTION 230100 – MECHANICAL REQUIREMENTS

PART 1.00 – GENERAL

1.01 RELATED DOCUMENTS

A. Cooperate with all other trades and install work as fast as the progress of the job will permit.

B. Use only mechanics skilled in the work they are to perform and have a competent representative on the job when any work is being done.

C. No work shall be done unless the Superintendent of the Contractor is on the job site. Work shall be properly protected, all rubbish removed promptly, and exposed work shall be carefully cleaned prior to final acceptance.

D. The term "provide" shall include labor, materials, and equipment necessary to furnish and install, complete and operable, the item or system indicated.

E. In decisions arising from discrepancies, interpretation of Drawings and Specifications, substitutes, and other pertinent matters, the decision of the Owner's representative's approval shall be final.

1.02 SPECIFICATIONS AND DRAWINGS

A. Plans show location of fixtures and equipment and are intended to depict the general intent of the work in scope, layout and quality of workmanship. They are not intended to show in minute detail every or all accessories intended for the purpose of executing the work, but it is understood that such details are a part of this work.

B. Where Drawings and Specifications conflict, it shall be the responsibility of the Mechanical Contractor to bring such conflict to the attention of the Architect/Engineer for clarification. In general, the more stringent interpretation shall take precedence and the Architectural Drawings shall take precedence over the Mechanical Drawings with reference to building construction. All changes from the Drawings necessary to make the work conform with the building as constructed and to fit the work of other trades or to conform to the rules of authorities having jurisdiction, shall be made by the Contractor at his own expense.

C. Keep a record of the locations of concealed work and of any field changes in Contract Drawings and Specifications for each trade and, upon completion of the job, supply "As–Built" Drawings and Specifications showing in pencil on sepia reproducibles, any deviations from the original Drawings, indicating in the Specifications each manufacturer's name underlined or inserted whose product was used on the job. These Drawings shall indicate dimensions of buried utility lines from building walls. One set of sepia reproducibles of the original tracings will be furnished upon request for this purpose.

D. Where equipment is used other than manufacturers specified, request approval to substitute materials and/or products as indicated and defined herein. Provide four (4) copies of materials and equipment for approval, for items requiring submittals.

1.03 PERMITS, FEES AND INSPECTIONS:

A. Give all necessary notices, obtain all permits and pay all government fees, sales taxes and other costs, including utility connections or extensions, in connection with this work; file all permit applications required by all governmental departments having jurisdiction.

B. Obtain all required certificates of inspection for work and deliver them to the Owner before requesting acceptance and final payment for the work.

C. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus and drawings required to comply with all applicable laws, ordinances, rules and regulations.

D. Inform the Owner of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.

1.04 GENERAL

A. Materials or products specified herein and/or indicated on drawings by trade name, manufacturer's name and/or catalog number shall be provided as specified. Substitutions will not be permitted except as described herein and in the Supplementary and General Conditions.

B. Since manufacturers reserve the right to change their products at any time, contractors shall verify all dimensions, performance data, etc. for each piece of equipment submitted to assure compliance with the intent of the drawings and specifications.

C. All materials shall be new and of quality as specified, and when required, be clearly labeled and/or stamped as manufactured in the United States.

D. For acceptance of products or manufacturers other than those specified, bidders shall submit to the Architect/Engineer a request in writing at least ten (10) days prior to bid date and hour. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data list of references or other information necessary to completely describe the item. Approval will be in the form of an addendum to the specifications issued to all prospective prime contract bidders on record. The addendum will indicate the additional products which are approved for this project.

E. A list of all materials and equipment which the Mechanical Contractor proposes to furnish shall be submitted for approval within ten (10) days after the contract has been awarded. Data shall be complete in all respects.

F. Where an accepted substitution or deviation requires different quantity or arrangement of foundations, supports, ductwork, piping, wiring, conduit, and any other equipment or accessories normal to this equipment, contractor shall furnish said changes and additions and pay all costs for all changes and additions to his work and the work of others affected by this substitution or deviation.

G. Deviations mean the use of any listed approved manufacturer other than those on which the drawings are based.

1.05 SHOP AND ERECTION DRAWINGS AND SAMPLES

A. The Architect/Engineer's approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval will not be permitted at the job site. Submittals shall be made for all equipment and systems as indicated in the respective specification section.

B. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Architect/Engineer to ascertain that the proposed equipment and materials comply with specification and drawing requirements. Catalog cuts submitted for approval shall be legible and clearly identify equipment being submitted.

C. Shop and erection drawing submittals shall conform to the requirements of the General Conditions and Division–1 specifications except as modified herein.

D. Submit required and/or requested shop and erection drawings, for review by Architect/Engineer before ordering or installing any equipment or material. Equipment or material ordered or installed before Architect/Engineer review may not be accepted and may have to be removed from the project if deemed unacceptable.

E. Shop drawings shall consist of manufacturer's scale drawings, cuts or catalogs, including descriptive literature which shall clearly indicate the construction, material, physical dimensions, wiring diagrams and complete operating data clearly marked for each item. Data of general nature will not be accepted.

F. Shop drawings on paper larger than 11"x17" shall be submitted in the form of one set of reproducibles (vellum) and one set of blueprints. The blueprints will be retained by the engineer and the reproducibles will be returned to the contractor. All drawings are to be submitted no later than 60 days after the contract has been awarded.

1. Coordination drawings shall show major elements, components, and systems of mechanical equipment and materials in relationship with other building components. Prepare drawings to an accurate scale of 1/4"=1'–0" or larger. Indicate the locations of all equipment and materials, including clearances for installing, servicing and maintaining equipment, valve stem movement, and similar requirements. Indicate movement and positioning of large equipment into the building during construction.

G. Submittals for individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assembly as a whole. Partial submittals will not be considered for approval. Submittals shall be submitted for all applicable products and materials specified in each individual section of these specifications.

H. Make submittals for the equipment and materials in accordance with the following:

1. Mark the submittals, "SUBMITTED UNDER SECTION_____".

2. Submittals shall be marked to show specification reference including the section and paragraph numbers.

3. The submittals shall include the following:

a. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required. Provide any additional information specifically requested in the individual specification section or on the drawings.

b. Parts list which shall include those replacement parts recommended by the equipment manufacturer, quantity of parts, current price and availability of each part.

I. Shop drawings on paper 11"X17" or smaller in size shall be submitted in tabbed and indexed three ring binder. The binder shall not exceed 11–5/8" height. Partial submittals are unacceptable. The index shall indicate the related specification section number.

J. A Fee will be charged for Engineering review of drawings received after the time allotted as described in "F" above or for plans that have been rejected two or more times due to non–compliance or incompleteness. The fee will be determined by the Architect/Engineer and will accompany the re–submittal in the form of a cashiers check or money order made payable to the Engineer.

K. Certify that all shop drawings are in conformance with the plans and specifications. Deviations from the plans and specifications shall be noted, and the specific area of the deviation clouded and in contrasting color (green) with a complete explanation for the reasons for the deviation. Any redesign of the system shall be Certified by a Professional Engineer currently registered in the State of Florida, and will be accompanied by the fees as described in "J" above.

L. Carefully examine all shop drawings and mark–up as necessary before submitting to the Architect/Engineer for review. The consultant will only consider shop drawings bearing the contractor's stamp of approval.

M. The engineer's review shall not relieve the contractor from the responsibility for deviations from drawings and specifications. The engineer's review shall be construed to apply only to general arrangement and shall not relieve the contractor from the responsibility for the correctness of details and dimensions and provision of the correct equipment.

N. Retain copies of all reviewed shop drawings on the job site for reference.

O. In addition to the requirement of SUBMITTALS, the Owner reserves the right to request the manufacturer to arrange for the Owner's representative(s) to see typical active systems in operation, when there has been no prior experience with the manufacturer or the type of equipment being submitted.

1.06 COORDINATION WITH OTHER TRADES

A. Coordinate work with other trades to avoid interferences and delays. Assist in working out space requirements to make a satisfactory installation.

B. If installation occurs prior to coordinating with other trades, or so as to cause any interference with the work of other trades, necessary changes to correct the condition shall be without extra charge.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.07 EQUIPMENT IDENTIFICATION

A. Each unit shall be identified by its system number and other appropriate designation by stenciling in letters of approved size and wording. Equipment requiring identification shall include: supply and exhaust fans, air conditioning and heating machinery and apparatus, control cabinets, and other equipment units as may be directed by the owner.

1.08 CUTTING, PATCHING, EXCAVATION, BACKFILL, AND LAYOUT

A. Provide openings and excavation required for the installation of the work. Patch work and backfill as required. Finished work shall match the existing adjoining work.

B. Verify all conditions affecting the work to be performed under this contract.

C. Carefully verify measurements at the site, determine the exact location of chases and openings required. Provide sleeves, inserts, and hangers as required. No columns, beams, joists, building foundations nor any other structural building component shall be cut, drilled or disturbed in any way. Conflicts shall immediately be brought to the attention of the Architect/Engineer.

D. All excavation on sites containing existing buildings and existing services, shall be done with hand shovel to avoid damage to existing services. Any damage incurred shall be repaired in a manner approved by the Architect/Engineer at no cost to the Owner and with no extension of time limitation.

1.09 EXPERIENCE

A. The Mechanical Contractor shall be a licensed, reputable firm, regularly performing the type of work incorporated in this project and who also maintains, as part of the firm, a service department with qualified personnel who regularly perform this type of work. Upon request, show evidence of at least two jobs of similar character and size installed within the preceding two years.

1.10 ELECTRICAL WORK FOR MECHANICAL SYSTEMS

A. Controllers, and control equipment necessary for mechanical equipment operation shall be provided under Division 15 Mechanical. Starters not integral with mechanical equipment and starters mounted in motor control centers shall be provided under Division 16 Electrical.

B. Power wiring for motors and installation of starters shall be provided under Division 16 Electrical.

C. Temperature, humidity, pressure and similar controls essential to the operation of mechanical systems, and wiring and conduit thereof, including interlock wiring, shall be provided under Division 15 of Specifications, installed in accordance with requirements of Division 16.

D. Motors shall be provided under Division 15 Mechanical of capacity required to operate equipment specified, but shall not be less than that specified.

E. All low voltage (120V and under) temperature control wiring for equipment shall be provided under this division.

F. Conduit when required for control wiring shall be provided under this division.

1.11 MOTORS

A. All motors shall be furnished and installed under Division 15 Mechanical and shall be wired under Division 16 Electrical.

B. All motors shall be built in accordance with the current applicable IEEE, ASA, and NEMA standards. All general purpose motors shall be open drip–proof machines for installation indoors and/or in protected locations. Totally enclosed fan cooled (TEFC) motors shall be used in all areas of exposure to weather or other environmental contamination. Motors shall be rated explosion proof when located in hazardous atmospheres. Type II weather protected motors may be used in lieu of TEFC motors on roof mounted fan units and similar equipment.

C. Unless indicated otherwise, motors shall be NEMA Design B with a service factor of 1.15 with total temperature rise of 90 degrees C. (resistance measured) in 40 degrees C. ambient when powered from the system voltage feeding the motor. TEFC motors shall have a service factor of 1.00 with total temperature rise of 80 degrees C. in the above conditions. Motors located in areas exceeding 40 degrees C. ambient shall be factory rated for the ambient temperature of the motor environment. Single phase motors shall generally be NEMA Design N split phase induction motors with built–in thermal protectors. Single phase motors connected on loads requiring high starting torque shall be capacitor–start induction motors. Single phase motors of 1/10 HP or less may be shaded pole induction motors. Refer to Div. 16 drawings for three phase motor starters

D. If variations are proposed in motor horsepowers and/or characteristics from those specified, inform the Architect/Engineer of the change and shall then coordinate the change and shall pay all additional charges in connection with the change.

E. All motors supplied on this project one (1) HP and larger shall have a power factor not less than 85 percent under rated load conditions. Power factor of less than 85 percent shall be corrected to at least 90 percent under rated load conditions. Power factor corrective devices, installed to comply with this Code, shall be switched with the utilization equipment.

1.12 REMOVAL OF RUBBISH

A. Keep premises free from accumulations of waste material or rubbish caused by his employees or work. At completion of work, remove all tools, scaffolding, surplus materials, and rubbish from building and site. Leave premises and work in a clean orderly condition acceptable to the Architect/Engineer.

1.13 QUIET OPERATION AND VIBRATION

A. All equipment provided under this section shall operate under all conditions of load free of objectionable sound and vibration. Sound and vibration conditions considered objectionable shall be corrected in an approved manner.

B. Vibration and sound control shall be by means of approved vibration eliminators or sound attenuators in a manner as specified and as recommended by the manufacturer.

1.14 EXAMINATION OF EXISTING CONDITIONS

A. Visit and carefully examine those portions of the site and/or present buildings affected by this work so as to become familiar with existing conditions and difficulties that will affect the execution of the work before submitting proposals.

B. Submission of a proposal will be construed as evidence that such examination has been made and later claims for labor, equipment or materials required because of difficulties encountered, which could have been foreseen had such examination been made, will not be recognized.

1.15 CLEANING AND ADJUSTMENTS

A. Upon completion of work, clean and lubricate fans, motors, and other running equipment and apparatus which he has installed and make certain such apparatus and mechanisms are in proper working order and ready to test.

B. Scratched or damaged painting shall be touched up as necessary to return the painting to "new" condition and appearance.

C. All piping and equipment shall be thoroughly blown out under pressure and cleared of all foreign matter, wasting air, gas or water through temporary connections as long as necessary to thoroughly clean system before system is placed in operation. Use every precaution to prevent pipe compound, scale, dirt, welding and other objectionable matter from getting into the piping system and equipment.

D. During blow out period, baskets from strainers shall be removed, traps and control valves, etc., shall be by–passed.

E. All cleaning shall be done prior to any sterilization, pressure testing, flow balancing or equipment adjustment procedures.

1.16 DEMOLITION

A. No columns, beams, joists, building foundations nor any other structural building component shall be cut, drilled or disturbed in any way. Conflicts shall immediately be brought to the attention of the Architect/Engineer. Do not proceed until instructed in writing by the Architect/Engineer if conflicts between mechanical work and structural elements occur.

1.18 CLEANING AND PROTECTING

A. During construction protect all piping and equipment from damage and dirt. Cap the open ends of all piping and equipment.

B. After completion of project clean the exterior surface of equipment included in this section, remove all concrete residues and as directed touch up paint or completely repaint all damaged surfaces.

1.19 STORAGE OF MATERIALS

A. All materials stored on site shall be properly protected from injury or deterioration. Materials shall not be stored in contact with ground or floor.

B. Do not remove manufacturer's packing materials until ready to install. Materials showing signs of corrosion, improper handling or storage shall be replaced at no cost to the Owner.

C. Provide continuous protection for all equipment already installed.

1.20 WATERPROOFING

A. Where any work pierces waterproofing including waterproof concrete, the method of installation shall be as approved by the Owner before the work is done.

B. Provide all necessary sleeves, caulking and flashing required to make openings absolutely watertight. Waterproof flashing materials shall be compatible with base materials.

1.21 TESTS

A. All tests required to establish the adequacy, quality, safety, completed status and satisfactory operation of all systems to the satisfaction of the Architect/Engineer. Provide all instruments, labor and services necessary to conduct tests.

1.22 INSTRUCTIONS

A. Fully instruct Owner's personnel in the care and operation of mechanical systems and furnish a letter to the Architect/Engineer advising the particular person who has received such instruction.

1.23 Warranty

A. Furnish a letter addressed to the Architect/Engineer advising that the completed systems have been installed in accordance with the Plans and Specifications and that they are in proper operating condition. The Owner shall receive a written guarantee covering all defects in workmanship and material for a period of one year from date of final acceptance. Any defects appearing within this year period shall be repaired without additional cost to the Owner. Provide a five year manufacturer's warranty covering repair and replacement for all equipment and fixtures furnished for this project due to failure of the product.

1.24 ACCEPTANCE

A. Before requesting final inspection:

1. Complete all work required. If any items are held in abeyance as incomplete for final inspection, list such items together with explanation for delay.

2. Submit statement that equipment is properly installed, adjusted, fully lubricated and operation is satisfactory.

3. Certify in writing to the Architect/Engineer that the Owner's representative has been instructed as to the care and operation of the system and that catalog service and maintenance information has been turned over to the Architect/Engineer.

4. Submit copy of written guarantee.

5. Submit copy of other data as may be outlined in these specifications.

B. Copies of the above data shall be submitted to the Architect/Engineer prior to requesting final inspection.

1.25 BROCHURE

A. At the completion of work, submit a bound brochure containing the following:

1. Shop Drawings

2. Maintenance Manuals

3. Control Wiring and Piping Diagrams

4. Operating Instructions

5. Copy of Guarantee

6. As–Built Drawings

B. Where projects are of sufficient size to make a single brochure impractical, several brochures shall be prepared by trade and As–Built Drawings may be submitted as a separate item.

C. Brochure shall be indexed and divided for reasonable clarity.

D. Brochure shall be turned over to the Architect/Engineer for review and approval. The contractor shall make modifications to the brochure as deemed necessary for compliance and clarity, by the Architect/Engineer, and re–submit the final brochure to the Architect/Engineer to be forwarded to the Owner.

END OF SECTION 230100

SECTION 230500 – MECHANICAL MATERIALS AND METHODS

1. PART ONE – GENERAL

1.01 RELATED DOCUMENTS

A. The general conditions and all requirements of the contract documents shall apply to all work of this Division.

1.2 WORK INCLUDED

A. Scheduling: Schedule work with Owner so as to avoid disruption of normal activities.

B. Sheet Metal Duct Work

C. Ductwork Accessories

D. Diffusers

E. Hangers and Supports

F. Insulation

G. Mechanical Equipment

H. Test and Balance

1.3 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM).

1. ASTM C177–76: Steady–State Thermal Transmission Properties by means of the Guarded Hot Plate: Thermal Conductivity.

2. ASTM C335–79: Steady–State Heat Transfer Properties of Horizontal Pipe Insulations: Thermal Conductivity.

B. National Electrical Manufacturers Association (NEMA).

1. NEMA Standard MGI –12.536.

1.4 SUBMITTALS

A. Submit the following detailed manufacturer's product data and shop drawings for each item as follows:

1. Fibrous Glass Duct Work

2. Duct Work Accessories

3. Diffusers

4. Hangers and Supports

5. Insulation

6. Mechanical Equipment

1.5 MECHANICAL SYSTEMS DEMONSTRATION

A. Prior to inspection, demonstrate the proper operations of each system to the Owner's representative.

B. Instruct Owner's maintenance personnel in operation, adjustment, maintenance of equipment and system using the operation and maintenance data as the basis of instruction.

1.6 WARRANTIES AND BONDS

A. HVAC system to be warranted for one year from date of occupancy with five year minimum manufacturer warranty on equipment.

B. Prior to final payment, compile manufacturer's written warranties for each major piece of equipment. In addition, warranty all apparatus furnished to remain in serviceable and operational condition for a period of at least one year from the date of substantial completion and acceptance of the work. This written warranty shall provide that any imperfections in material or function, as a whole or in part, by reason of defective workmanship, defective materials damaged as result of these defects or their repair, shall be made good to the satisfaction of the Owner's representative at the contractor's expense.

2. PART TWO – PRODUCTS

2.1 MECHANICAL EQUIPMENT

A. Provide fans with all indicated accessories, as scheduled, to provide the performances indicated by the schedules on the drawings.

2.2 FIBROUS GLASS DUCT WORK

A. Low Pressure Fibrous Glass Duct Work: For duct velocities less than 2,000 ft/min., and static pressure 2 inches wg and less, construct ductwork from Knauf "Air Duct–M" fiberglass duct board with an antimicrobial liner, Type EI–800, or approved equivalent product. Ductwork shall be manufactured with an antimicrobial treatment on the mat–faced inner surface.

2.3 DUCTWORK ACCESSORIES

A. Flexible Connections: 6 inch long uncompressed, 30 ounce glass fabric, double neoprene coated.

B. Balancing Dampers: For small outside air intake and branch duct taps provide single blade, locking quadrant dampers with shaft extension and mounting flange for insulated ducts, shaft bushings, blade stops, and quadrant handle.

C. Balancing Dampers: Opposed blade type with equal percentage flow characteristics. Provide bushings and stops, quadrant locking handle.

D. Turning Vanes: Provide turning vanes constructed of 1–1/2" wide curved blades set at 3/4" o.c., supported with bars perpendicular to blades set at 2" o.c., and set into side strips suitable for mounting in ductwork. Barber–Colman Co. or approved equal.

2.4 GRILLES, REGISTERS, AND DIFFUSERS

A. Furnish and install grilles, registers, and diffusers as indicated on the drawings and as described herein.

B. Diffusers: Square ceiling mounted aluminum diffusers with frame assembly to match ceiling face. Provide vaned face, integral adjustable opposed blade damper, aluminum frame and vanes, round neck connection where required, and ADC certified performance. Finish off–white enamel. Manufacturers shall be Titus, Metalaire, Krueger, or approved equal.

2.5 HANGERS AND SUPPORTS

A. Fibrous Glass Duct Work: Except as otherwise indicated provide hot–dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of duct work.

2.6 INSULATION

A. Diffusers, grilles, and sheet metal supply & return ductwork below ambient space temperature: Diffusers and grilles shall be insulated with glass fiber duct wrap insulation, factory applied foil faced vapor barrier, ASTM C518 and ASTM E84 certified testing procedures. Seal the insulation to the diffuser and connecting duct, and at all edges. Joint tape shall be 3–inch wide minimum foil–reinforced kraft type. Insulation thickness shall be 1–1/2 inches thick except in attic spaces and above ceiling insulation where it shall be a minimum of 2 inches thick.

PART THREE – EXECUTION

3.1 MECHANICAL EQUIPMENT

A. Install fans in accordance with approved shop drawings and manufacturer's written instructions.

3.2 DUCT WORK

A. Install in accordance with approved shop drawings and manufacturer's written instructions.

B. Coordinate with architectural ceiling heights and lighting trades. Reflected ceiling plans shall be adhered to unless otherwise noted.

C. Install work in accordance with construction schedules.

D. Test duct work for leakage prior to concealing and prior to final testing. Submit these tests for approvals.

3.3 INSULATION

A. Duct Insulation – Glass Fiber Duct Wrap Insulation, ASTM C 1136, Type II: Provide insulation of the following thicknesses:

1. Supply Duct: 2" thickness.

3.4 CONTROLS

A. Install controls in compliance with the drawings and all applicable codes. Installation shall yield a fully operational system in compliance with manufacturer's recommendations.

3.5 TEST AND BALANCE

A. Tester's Qualifications: Firm certified by Associated Air Balance Council (AABC) in those testing and balancing disciplines similar to those required for this project.

B. AABC Compliance: Comply with AABC's Manual MN–1 "AABC National Standards", as applicable to mechanical air and hydronic distribution systems, and associated equipment and apparatus.

C. Job Conditions: Do not proceed with testing, adjusting, and balancing work until work has been completed and is operable. Ensure that there is no latent residual work still to be completed.

D. Examine installed work and conditions under which testing is to be done to ensure that work has been completed, cleaned, and is operable. Do not proceed with TAB work until satisfactory conditions have been corrected in manner acceptable to Tester.

E. Test, adjust and balance environmental systems and components, as indicated, in accordance with procedures outlined in applicable standards.

F. Prepare report of test results, including instrumentation calibration reports, in format recommended by applicable standards.

G. Patch holes in insulation, ductwork, and housings, which have been cut or drilled for test purposes, in manner recommended by original installer.

H. Mark equipment settings, including damper control positions, valve indicators, fan speed control levers, and similar controls and devices, to show final settings at completion of TAB work. Provide markings with paint or other suitable permanent identification materials.

I. Prepare report of recommendations for correcting unsatisfactory mechanical performances when system cannot be successfully balanced; including, where necessary, modifications which exceed requirements of contract documents for mechanical work.

J. Retest, adjust, and balance systems subsequent to significant system modifications, and resubmit test results.

END OF SECTION

GENERAL NOTES

KEY NOTES

HVAC SPECIFICATIONS

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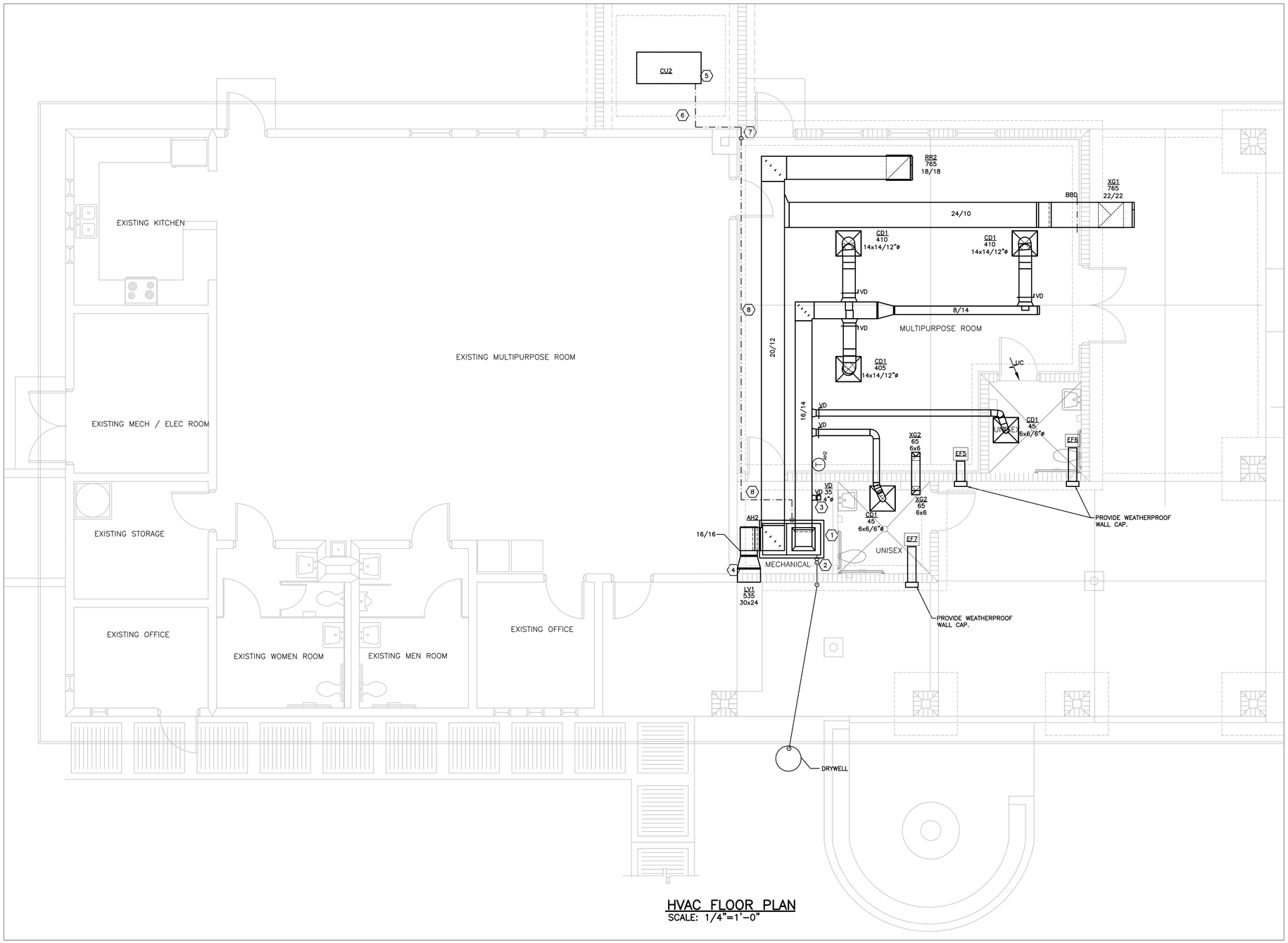
SEAL

STEPHEN R. FORKNER, P.E. 80532

SCALE: VARIES

SHEET NUMBER
M–0.1

X OF **X**



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

GENERAL NOTES

KEY NOTES

1. THE AIR HANDLER SHALL BE PLACED ON A 4" THICK, REINFORCED CONCRETE PAD (6" LARGER EACH WAY THAN THE UNIT) AND AUXILIARY DRAIN PAN WITH FLOAT SWITCH.
2. PROVIDE CONDENSATE TRAP AS DETAILED AND ROUTE INSULATED COPPER CONDENSATE DRAIN LINE TO DRYWELL. SUPPORT DRAIN LINE FROM FLOOR. COORDINATE EQUIPMENT SUPPORT RAIL HEIGHT OF AIR HANDLER TO ALLOW FOR PROPER TRAP DEPTH.
3. PROVIDE 4" SPIN-IN FITTING WITH VOLUME DAMPER AND BALANCE TO AIRFLOW INDICATED.
4. FABRICATE 10" DEEP PLENUM ON BACKSIDE OF LOUVER. ALL CORNERS OF PLENUM TO BE CONTINUOUSLY WELDED AND ENTIRE FABRICATION IS TO BE HOT DIPPED GALVANIZED. BOTTOM PANEL SHALL SLOPE 1"/FOOT BACK TO LOUVER SO COLLECTED WATER DRAINS BACK INTO LOUVER. PROVIDE WEATHERPROOF SEAL AT LOUVER/PLENUM CONNECTION.
5. SECURE CONDENSING UNIT TO THE CONCRETE SLAB. PROVIDE NEOPRENE PADS BETWEEN THE UNIT AND THE CONCRETE SLAB. SUBMIT CONDENSER YARD LAYOUT COORDINATION SHOP DRAWING. INDICATE ALL REQUIRED UNIT CLEARANCES AS DEFINED BY THE EQUIPMENT MANUFACTURER. SHOW LOCATION OF ELECTRICAL DISCONNECTS.
6. RIGIDLY SUPPORT REFRIGERANT LINES OFF PAD. PROVIDE HOT DIPPED GALVANIZED SUPPORTS AND HARDWARE WHERE EXPOSED TO WEATHER.
7. ROUTE REFRIGERANT LINES THROUGH WALL AND SEAL WALL PENETRATION WEATHERTIGHT.
8. SUPPORT REFRIGERANT LINES FROM ABOVE. ROUTE LINES AS DIRECTLY AS POSSIBLE, MINIMIZING TURNS. LINES SHALL BE SIZED AS DIRECTED BY THE MANUFACTURER'S REPRESENTATIVE. REFER TO SCHEDULE AND SPECIFICATIONS.

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SCALE: VARIES

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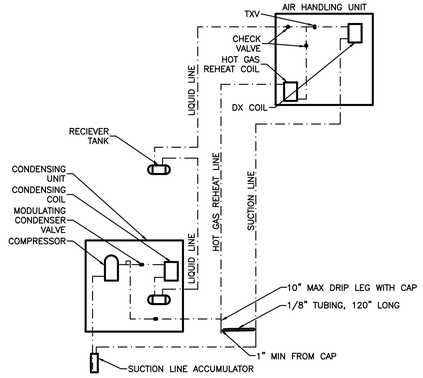
X OF **X**

FAN SCHEDULE

MARK	SERVES	CFM	DRIVE	TIP SPEED	MOTOR RPM	FAM RPM	S.P. IN. H 0	ELECTRICAL VOLT/ø/Hz	MOTOR HP WATTS	SONES	MANUFACTURER	MODEL NUMBER	MOUNTING LOCATION	WEIGHT	INTERLOCK	NOTES
EF5	GENERAL EXHAUST	100	DIRECT	–	950	950	0.250	120/1/60	80	1.5	GREENHECK	SP–B110	CEILING	10	AHU–2	1,2,3,4,5
EF6	GENERAL EXHAUST	100	DIRECT	–	950	950	0.250	120/1/60	80	1.5	GREENHECK	SP–B110	CEILING	10	AHU–2	1,2,3,4,5
EF7	GENERAL EXHAUST	100	DIRECT	–	950	950	0.250	120/1/60	80	1.5	GREENHECK	SP–B110	CEILING	10	AHU–2	1,2,3,4,5

NOTES:
1. COORDINATE WITH ELECTRICAL DRAWINGS. REFER TO SPECIFICATIONS SECTION 15781 FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE WITH FACTORY DISCONNECT.
3. PROVIDE REQUIRED CONTACTS AND RELAYS FOR INTERLOCKING FAN WITH AIR HANDLER AS SCHEDULED.
4. PROVIDE WITH WEATHERPROOF WALL CAP.
5. PROVIDE BACKDRAFT DAMPER.



REFRIGERANT PIPING SCHEMATIC
NOT TO SCALE

AIR DISTRIBUTION DEVICE SCHEDULE

MARK		CD1	RR2	XG1	XG2	LV1
NECK SIZE	INCH	–	–	–	–	ANSI/AMCA 540 & 550 LISTED AND FL PRODUCT APPROVAL
MODULE/FACE SIZE	INCH	24x24/24x24	24x24/23x23	24x24/23x23	–/–	
MANUFACTURER	–	J&J	TITUS	TITUS	TITUS	GREENHECK
MODEL NUMBER	–	AL1444–33–TR	PAR–AA	PAR–AA	50F	EVH–501D
CONSTRUCTION	–	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM
NOTES	–	1, 2, 4	1, 4, 5	1, 4, 5	1, 4, 5	3, 4, 6

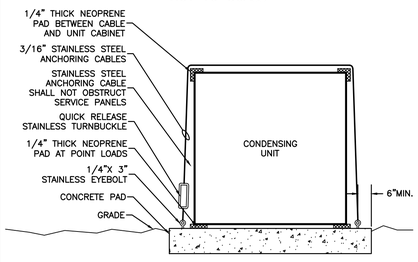
NOTES:
1. NECK SIZE OF DEVICE IS EQUAL TO THE DUCT SIZE INDICATED ON THE DRAWING.
2. PROVIDE WITH SQUARE TO ROUND ADAPTER. REFER TO PLANS FOR SIZE.
3. COORDINATE COLOR AND FINISH TEXTURE BY SAMPLE SUBMITTAL TO ARCHITECT.
4. SEE PLANS FOR SIZE.
5. WHERE GRILLE IS INDICATED TO BE LOCATED IN LAY–IN CEILINGS, PROVIDE 24x24 LAY–IN PANEL BORDER, WHITE IN COLOR.
6. LOUVER WIND–DRIVEN RAIN PERFORMANCE SHALL BE WITHOUT A DAMPER: 99.9% EFFECTIVE AT PREVENTING WATER PENETRATION THROUGH LOUVER WHEN AMCA–500L TESTED AT 50 MILES PER HOUR WIND WITH 8 INCHES PER HOUR RAINFALL AND 2,155 FEET PER MINUTE AIRFLOW THROUGH THE FREE AREA. PENETRATION CLASS 'A' WITH DISCHARGE CLASS (INTAKE) 3 IN ACCORDANCE WITH AMCA 500–L WIND DRIVEN RAIN TEST. THE LOUVER SHALL BE ANSI/AMCA 540 AND ANSI/AMCA 550 LISTED AND SHALL A FLORIDA PRODUCT APPROVAL.

REMARKS:
A. REFER TO PLANS FOR EXACT LOCATIONS OF ALL DIFFUSERS, GRILLES AND REGISTERS.
B. COORDINATE FRAME STYLES WITH CEILING SYSTEM ACTUALLY FURNISHED.
C. NC VALUES FOR DIFFUSERS, GRILLES AND REGISTERS SHALL NOT EXCEED 35 WITH A ROOM ABSORPTION RATE OF 10db ie.. 10–12 WATTS.
D. REFER TO THE MECHANICAL LEGEND FOR A DESCRIPTION OF THE AIR DEVICE MARK.
E. WHERE THE CONNECTING DUCT OR PLENUM CAN BE OBSERVED THROUGH THE FACE OF THE GRILLE, THE VISIBLE DUCTWORK SHALL BE PAINTED FLAT BLACK.
F. LOUVERS ARE PROVIDED UNDER A DIFFERENT DIVISION. REFER TO ARCHITECTURAL DRAWINGS.

SPLIT SYSTEM A/C SCHEDULE

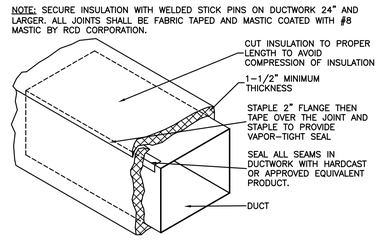
AIR HANDLER UNIT DATA			
MARK		AHU–2	
SUPPLY AIR	CFM	1,350	
OUTDOOR AIR	CFM	535	
STATIC PRESS (EXT/TOTAL)	IN. H2O	1.00/1.78	
ENT AIR TEMP db/wb	°F/°F	82.5/71.0	
OUTSIDE AIR TEMP db/wb	°F/°F	92/77	
LVG AIR TEMP	°F/°F	56.8/56.0	
TOTAL CAPACITY (NET)	MBH	64.7	
SENSIBLE CAPAACITY (NET)	MBH	37.4	
COOLING COIL	ROWS/FPI	6/12	
MAX AIR PRESSURE DROP	IN. H2O	0.50	
MAX FACE VELOCITY	FPM	370	
REHEAT COIL CAPACITY	MBH	20.0	
REHEAT COIL LAT db/wb	°F/°F	70/61.2	
SATURATED SUCTION TEMP	SST °F	–	
MAX FAN SPEED	RPM	2015	
FAN MOTOR	BHP/HP	0.64/1.0	
ELECTRICAL	V/Ph/Hz	208/3/60	
ELECTRICAL	MCA/MOP	40/40	
ELECTRIC HEAT (ØXXXV)	KW/STAGE	10.5/2	
FAN ARRANGMENT/TYPE	–	–	
FILTER TYPE	–	2" PLEATED, MERV 8	
MANUFACTURER	–	AAON	
MODEL	–	V3–BRB–8–0–161C	
UNIT WEIGHT	LBS.	805	
SOUND POWER LEVELS (OCTAVES)	dB (63 thru 8000)	–/–	
RAD. SND. PWR. LEVELS	dB (63 thru 8000)	–	
UNIT LOCATION	–	MECHANICAL ROOM	
SPACE SERVED	–	MULTIPURPOSE ROOM	
NOTES	–	1 THROUGH 14	
CONDENSING UNIT DATA			
MARK		CU–2	
NOMINAL TONS	°F	5	
OUTDOOR TEMP.	°F	95	
REFRIGERANT	–	R–410A	
ELECTRICAL CHARACTERISTCS	V/Ph/Hz	208/3/60	
OUTDOOR FAN(S)	QTY/HP	1/0.33	
OUTDOOR FAN RLA EACH	AMPS	2.8	
COMPRESSOR(S)	–	1	
COMPRESSOR RLA EACH	AMPS	16.9	
ELECTRICAL	MCA/FUSE	24/40	
SEER/EER/IPLV (MINIMUM)	–	–/14.5/–	
UNIT WEIGHT	LBS.	462	
UNIT DIMENSIONS (LxWxH)	INxINxIN	61.5x29.25x56.25	
MANUFACTURER	–	AAON	
MODEL	–	CFA–005–A–A–8	
NOTES	–	1 THROUGH 14	

NOTES:
1. COORDINATE WITH ELECTRICAL DRAWINGS.
2. PROVIDE ALL REQUIRED CONTACTS, RELAYS AND STARTERS FOR START/STOP CONTROL.
3. PROVIDE MANUFACTURER'S PHASE LOSS PROTECTION FOR THREE PHASE MOTORS. INSTALL PHASE LOSS PROTECTION IN CONFORMANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. PROVIDE WITH PROGRAMMABLE 1 STAGE HEAT / 1 STAGE COOL / MODULATING REHEAT THERMOSTAT WITH REMOTE TEMPERATURE AND HUMIDITY SENSOR, OCCUPANCY SCHEDULING, ENTHALPY ECONOMIZER, FAN–ON–AUTO SWITCH, AND AUTO–HEAT–COOL CHANGEOVER. LOCATE IN MECHANICAL ROOM WITH REMOTE SENSORS IN LOCATION SHOWN.
5. PROVIDE SINGLE POINT CONNECTION TO AIR HANDLING UNIT FOR BOTH FAN MOTOR AND ELECTRIC HEAT.
6. REFRIGERANT LINES SHALL BE SIZED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR STATIC LIFTS AND TOTAL LENGTHS REQUIRED. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. LINE SIZES SHALL BE CALCULATED BASED ON THE PLANS AND SUBMITTED WITH EQUIPMENT SHOP DRAWINGS. THE CALCULATION SHALL INCLUDE ANY LOSS OF EQUIPMENT PERFORMANCE AND ANY ADDITIONAL REQUIREMENTS SUCH AS DOUBLE RISERS, ACCUMULATORS, ETC.
7. PROVIDE MANUFACTURER'S RECOMMENDED REFRIGERANT SPECIALTIES INCLUDING RECEIVER TANK, ISOLATION VALVES, REPLACEABLE CORE FILTER DRIER, DISCHARGE MUFFLERS AND SIGHT GLASSES IN EACH REFRIGERANT CIRCUIT.
8. EACH REFRIGERANT CIRCUIT SHALL BE RUN INDEPENDENTLY TO THE AIR HANDLER COIL. MANIFOLDING CIRCUITS TOGETHER IS NOT ACCEPTABLE. REFRIGERANT CIRCUITING IN COOLING COILS SHALL BE FULL FACE WITH ROW SPLITS. FACE VELOCITIES ARE MAXIMUM.
9. THE ELECTRIC HEAT SHALL BE LOCKED OUT WHEN THE CONDENSING UNIT'S COMPRESSOR IS RUNNING. PROVIDE ALL REQUIRED CONTROLS, CONTACTS, AND RELAYS TO ACCOMMODATE THIS.
10. PROVIDE BOTH HIGH PRESSURE AND LOW PRESSURE REFRIGERANT SAFETY SWITCHES.
11. PROVIDE 5 MINUTE ANTI–CYCLE TIMER, TIME DELAY RELAY AND HEAD PRESSURE CONTROL.
12. PROVIDE LOW AMBIENT CONTROL TO 35°F.
13. UNIT SELECTION SHALL BE MADE WITH CONDENSING AMBIENT TEMPERATURE @ 95°F.
14. SYSTEM SHALL BE CAPABLE OF UNLOADING THE EVAPORATOR COIL TO 15% (85% BYPASS) OF FULL LOAD WITHOUT OVERHEATING THE COMPRESSORS. PROVIDE HOT GAS BYPASS FOR THIS APPLICATION.



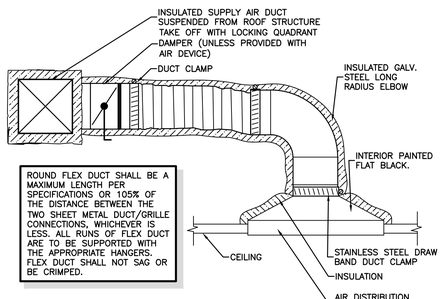
NOTE: PROVIDE A MINIMUM OF TWO CABLES WITH FOUR ANCHOR CONNECTIONS TO PAD.

CONDENSING UNIT TIE DOWN
NOT TO SCALE



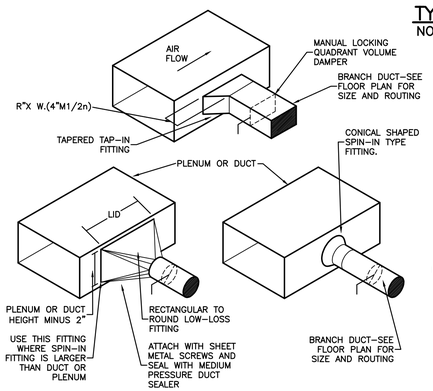
NOTE: SECURE INSULATION WITH WELDED STICK PINS ON DUCTWORK 24" AND LARGER. ALL JOINTS SHALL BE FABRIC TAPED AND MASTIC COATED WITH #8 MASTIC BY RCD CORPORATION.

TYPICAL DUCT WRAPPING DETAIL
NOT TO SCALE



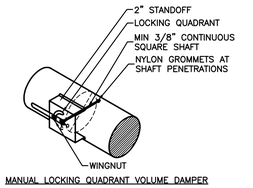
NOTES:
1. REFER TO THE AIR DISTRIBUTION DEVICE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
2. REFER TO SPECIFICATIONS FOR MAXIMUM FLEXIBLE DUCT LENGTH.
3. SUSPEND AIR DEVICE FROM ABOVE, DO NOT SUPPORT FROM CEILING.
4. INTERIOR OF DEVICE TO BE PAINTED FLAT BLACK.

FLEXIBLE DUCT RUN–OUTS TO AIR DEVICE
NOT TO SCALE



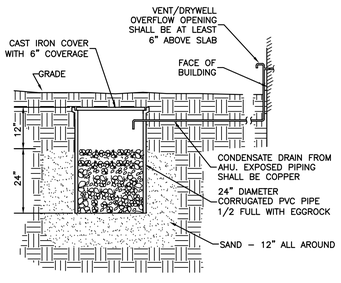
BRANCH DUCT TAKE–OFF DETAIL
NOT TO SCALE

NOTES:
1. PROVIDE FITTING WITH 1" WIDE FLANGE WITH GASKET.
2. MUST MEET SMACNA GUAGE STANDARDS AND 2"W.G. STATIC PRESSSURE.
3. CONTINUOUS WELD LONGITUDINAL SEAM FOR NO LEAKAGE AT 2" W.G. STATIC PRESSURE.

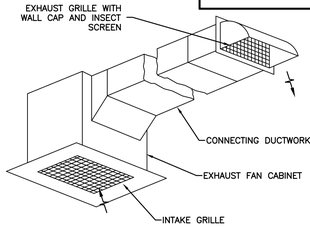


MANUAL LOCKING QUADRANT VOLUME DAMPER

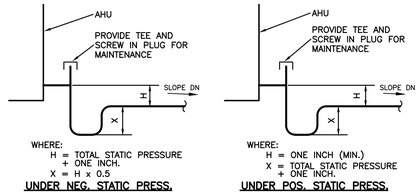
NOTES:
1. WINGNUT ON SHAFT IS UNACCEPTABLE. WINGNUT MUST RIDE IN LOCKING QUADRANT.



DRYWELL DETAIL
NOT TO SCALE



CEILING EXHAUST FAN DETAIL
NOT TO SCALE



CONDENSATE DRAIN TRAP
NOT TO SCALE

GENERAL NOTES

KEY NOTES

HVAC DETAILS AND SCHEDULES

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X OF X

PLUMBING EQUIPMENT SCHEDULE

MARK	DESCRIPTION	SELECTION	W OR S	TRAP	VENT	HW	CW
FD1	FLOOR DRAIN 3" FLOOR DRAIN WITH TRAP PRIMER CONNECTED TO DOMESTIC COLD WATER LINE AT LAVATORY. NICKEL BRONZE TOP. 6" ROUND. CAST IRON BODY WITH FLASHING COLLAR AND ADJUSTABLE STRAINER.	SMITH 2005-A-6"	3"	3"	1-1/2"	–	–
WCO	CAST IRON TEE WALL CLEAN-OUT WITH BRONZE PLUG AND ROUND STAINLESS STEEL COVER PLATE. SIZE C.O. SAME AS LINE SIZE (2-1/2" MINIMUM). PROVIDE PVC TO NO-HUB ADAPTERS FOR PVC DWV APPLICATIONS.	SMITH 4351S-Y	2-1/2" MIN.	–	–	–	–
VTR	VENT THROUGH ROOF WITH VANDALPROOF VENT CAP SIZE AS INDICATED ON DRAWINGS.	WADE W-3680	–	–	–	–	–
TP	PRESSURE DROP ACTIVATED TRAP PRIMER INSTALLED UNDER LAVATORY OR SINK, EXPOSED FOR MAINTENANCE. ALL EXPOSED PIPING TO TRAP PRIMER SHALL HAVE A CHROME FINISH.	MIFAB M-500	–	–	–	–	–
CO	THREADED CLEAN-OUT PLUG SIZE CLEANOUT SAME AS LINE SIZE.	–	–	–	–	–	–

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	SELECTION	W OR S	TRAP	VENT	HW	CW
P1 WATER CLOSET	HANDICAPPED ** 6TH GRADE – ADULT BOWL: WHITE FLOOR MOUNTED WITH BOTTOM OUTLET, VITREOUS CHINA, SIPHON-JET, ELONGATED BOWL, 18" AFF TO RIM, BOLT CAPS WITH CAULK, LOW CONSUMPTION FLUSH (1.6 GPF). BOWL AND SEAT DIMENSIONS MUST MATCH WITHIN 1/4". SEAT: WHITE SOLID PLASTIC, HEAVY DUTY, ELONGATED, OPEN FRONT (WITHOUT COVER), STAINLESS STEEL SELF-SUSTAINING CHECK HINGES, INTEGRAL MOLDED BUMPERS. FLUSH VALVE ASSEMBLY: 11-1/2" HIGH ABOVE RIM, EXPOSED DIAPHRAGM VALVE (1.6 GALLON FLUSH), CHROME FINISH, ADA COMPLIANT NON-HOLD-OPEN HANDLE, 1" INLET, 1-1/2" OUTLET, INTEGRAL SCREWDRIVER ADJUSTABLE ANGLE STOP AND CHECK VALVE WITH COVER, VACUUM BREAKER, WALL AND SPUD FLANGES, SWEAT SOLDER ADAPTER KIT, SOLID RING PIPE SUPPORT. ROUGH-IN DIMENSION MUST ALLOW FOR FLUSH VALVE CLEARANCE OF HANDICAPPED GRAB BAR WHERE APPLICABLE, OR OFFSET FITTING MAY BE REQUIRED.	BRIGGS 7790 BENEKE 523-SS NCH SLOAN ROYAL 111-1.6-YB-YK	4"	INT.	2"	–	1"
P2 LAVATORY	HANDICAPPED ** HOT/COLD WATER – K to ADULT BOWL: WHITE, WALL MOUNTED, ENAMELED CAST IRON, 20"x18", ADA COMPLIANT 4" CENTER FAUCET HOLE. PROVIDE FLOOR MOUNTED WALL CARRIER WITH CONCEALED CARRIER ARMS. MOUNT AS FOLLOWS: APPLICATION / APRON(MIN) / RIM(MAX) PRE – 7TH GRADE 28" 31" 8TH GRADE – ADULT 29" 34" FAUCET: CHROME FINISHED SELF-CLOSING MIXING FAUCET, METERING TYPE WITH ADJUSTABLE TIME CYCLE (0.35GPM/10 SECONDS MINIMUM), ADA COMPLIANT PUSH HANDLES, VANDAL RESISTANT AERATOR. DRAIN: FLAT GRID, CHROME FINISH, 1-1/4" OUTLET WITH ADA COMPLIANT OFFSET TAILPIECE. PROVIDE PROTECTIVE INSULATION AS REQUIRED BY ADA. P-TRAP: CHROME FINISHED WITH TWO UNIONS, 1-1/4" INLET AND 1-1/2" OUTLET, WALL ESCUTCHEON. SUPPLY: TWO REQUIRED, CHROME PLATED, LOOSE KEY ANGLE VALVE, WALL ESCUTCHEON, FLEXIBLE TUBE RISER, 3/8" INLET AND OUTLET CONNECTIONS. PROVIDE PROTECTIVE INSULATION AS REQUIRED BY ADA***. MIXING VALVE: THERMOSTATICALLY CONTROLLED POINT OF USE MIXING VALVE. LEAD FREE. ASSE 1070 COMPLIANT. SET TEMPERATURE TO 105°F.	KOHLER 2867 WATTS TCA-411 CHICAGO 802A-665-E39VPJKCP MCGUIRE 155WC MCGUIRE 8902CNC MCGUIRE 2165CCLK MCGUIRE PW-2150WC W/155WC & 8902 PLUMBEREX "PRO-2000" SYMMONS 7-225-CK	2"	1-1/4"	1-1/4"	1/2"	1/2"

** FIXTURE AND ALL ATTACHMENTS SHALL COMPLY WITH THE FBC/ACCESSIBILITY CODE AND THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES; CHILDREN'S FACILITIES. FIXTURE TO BE MOUNTED PER THIS SCHEDULE UNLESS NOTED OTHERWISE IN PLAN. FLUSH VALVE IS TO BE ON THE SIDE TOWARDS THE ASSOCIATED LAVATORY WHERE APPLICABLE.

*** CONNECT COLD WATER SUPPLY LINE TO HOT AND COLD WATER FIXTURE CONNECTIONS. PROVIDE TWO COLD WATER INDEXES WHERE POSSIBLE.

GENERAL PLUMBING NOTES

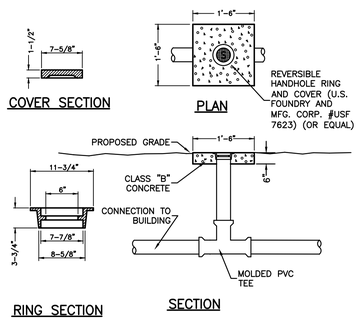
1. ALL PLUMBING WORK SHALL MEET ALL OF THE REQUIREMENTS OF THE FOLLOWING:
   A. FLORIDA BUILDING CODE (FBC) 6TH EDITION (2017): THIS CODE INCLUDES THE 2017 FBC BUILDING, MECHANICAL, PLUMBING, ENERGY CONSERVATION, FUEL GAS, ACCESSIBILITY, AND TEST PROTOCOLS VOLUMES. FURTHER, SEE "REFERENCED STANDARDS" IN THE FBC BUILDING CHAPTER 35; FBC MECHANICAL CHAPTER 15; FBC PLUMBING CHAPTER 15; FBC ENERGY CONSERVATION CHAPTER 6; AND FBC FUEL GAS CHAPTER 8) (EFFECTIVE DECEMBER 31, 2017)
   B. 6TH EDITION OF THE FLORIDA FIRE PREVENTION CODE (FFPC): (THIS CODE ALSO INCLUDES THE FLORIDA VERSIONS OF NFPA 1 AND NFPA 101.) (EFFECTIVE DECEMBER 31, 2017)
   C. 2014 NATIONAL ELECTRIC CODE
2. PROVIDE COMPLETE PLUMBING SYSTEMS AS DETAILED. WORK CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT, AND SERVICES REQUIRED FOR COMPLETE SYSTEMS.
3. IN GENERAL, PLANS ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED. ALL FLOOR DRAINS IN MECHANICAL ROOMS/CLOSETS, SHALL BE FIELD VERIFIED AND COORDINATED WITH THE HVAC EQUIPMENT/PAD LOCATIONS.
4. CONDITIONS SHOWN AS EXISTING ARE BASED ON AVAILABLE DATA AND SHOULD BE INTERPRETED TO BE APPROXIMATE. VERIFY EXISTING CONDITIONS IN THE FIELD.
5. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS.
6. COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS AND FLOOR HYDRANTS WITH THE ARCHITECTURAL DRAWINGS.
7. UNLESS OTHERWISE NOTED, ALL PIPING SHALL BE RUN IN CONCEALED SPACES. HOWEVER, NO PIPING SHALL BE CHASED OR CUT INTO THE TENANT DEMISING WALLS.
8. WATER PIPING SHALL BE HARD DRAWN COPPER TYPE L WITH WROUGHT COPPER FITTINGS AND 95-5 SOLDER.
9. ALL SOIL, WASTE, AND VENT PIPING SHALL BE SCHEDULE 40 PVC DWV.
10. SANITARY PIPING BELOW THE GROUND FLOOR SLAB SHALL BE SCHEDULE 40 DWV PVC SOIL PIPE AND FITTINGS.
11. VENT THROUGH ROOF TERMINALS SHALL BE LOCATED 10'-0" AWAY FROM ANY BUILDING INTAKE OPENINGS. COORDINATE WITH THE MECHANICAL CONTRACTOR.
12. GATE VALVES SHALL BE #125 BRONZE WITH UNION BONNET.
13. PROVIDE TRAP PRIMERS WHERE REQUIRED BY CODE.
14. ALL FIRE STOPPING SHALL BE INSTALLED IN CONFORMANCE WITH THE MANUFACTURER'S U.L. DETAILS OF THE PRODUCTS USED SPECIFICALLY ON THIS PROJECT. APPLICABLE U.L. DETAILS SHALL BE SUBMITTED FOR THE ENGINEER'S REVIEW AND A COPY SHALL BE AVAILABLE ON SITE FOR USE BY THE AUTHORITY HAVING JURISDICTION.
15. UNLESS NOTED OTHERWISE, ALL PLUMBING EQUIPMENT, MATERIALS, AND WORKMANSHIP SHALL BE GUARANTEED FOR A ONE YEAR PERIOD FROM DATE OF ACCEPTANCE.
16. PROVIDE ALL CUTTING REQUIRED FOR THE INSTALLATION OF PLUMBING WORK. FINISH PATCHING SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER.
17. ALL SOIL AND WASTE PIPING 2-1/2" AND SMALLER SHALL BE SLOPED AT 1/4" PER FOOT. LARGER WASTE PIPING SHALL BE SLOPED AT 1/8" PER FOOT.
18. ALL WATER PIPING SHALL BE SUPPORTED RIGIDLY AND IN LINE FROM THE BUILDING STRUCTURE. OFFSET PIPING TO AVOID STRUCTURAL MEMBERS, CANTS, FLASHING, MECHANICAL AND ELECTRICAL EQUIPMENT, ETC.
19. PRIOR TO COMMENCING ANY PLUMBING ROUGH-IN, THE EXISTING SANITARY PIPING SHALL BE EXCAVATED. VERIFY THE EXACT SIZE, LOCATION, INVERT AND DIRECTION OF FLOW. NOTIFY THE ENGINEER IMMEDIATELY IF THE DRAIN IS SMALLER THAN INDICATED OR IF THE INVERT WILL NOT BE LOW ENOUGH FOR THE NEW PLUMBING ROUGH-IN. CONNECT NEW SANITARY LINES TO EXISTING SANITARY LINES AS INDICATED. PATCH THE FLOOR AS DIRECTED BY THE ARCHITECT.
20. VERIFY ALL SITE RELATED SANITARY & WATER CONNECTIONS PRIOR TO STARTING WORK. SHOULD DEPTHS BE DIFFERENT THAN THAT SHOWN HEREIN ADVISE ENGINEER IMMEDIATELY.
21. PRIOR TO SITE UTILITIES WORK, CALCULATE THE INVERTS FOR ALL SANITARY WASTE CONNECTIONS BASED ON ACTUAL CONDITIONS. COORDINATE SANITARY WASTE LOCATIONS AND INVERTS WITH SITE UTILITIES CONTRACTOR.
22. WASTE LINES RECEIVING BELOW AMBIENT TEMPERATURE CONDENSATE SHALL BE INSULATED WITH 1/2" FLEXIBLE UNICELLULAR FOAM (ARMAFLEX OR EQUIVALENT) INSULATION TO GRADE.
23. ANY PLUMBING ITEMS EXPOSED TO VIEW SHALL BE PLACED PER THE ARCHITECTURAL DRAWINGS.
24. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

COORDINATE AND VERIFY EXACT LOCATIONS OF ALL PLUMBING FIXTURES WITH ARCHITECTURAL DRAWINGS

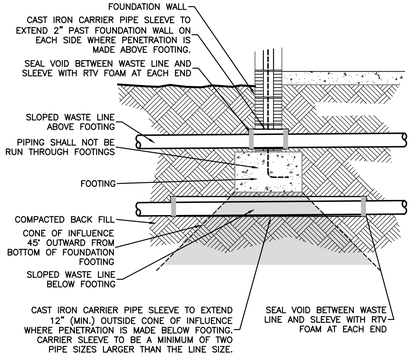
REFER TO RISER ON DRAWING P101 FOR DOMESTIC WATER AND WASTE AND VENT LINE SIZING

PLUMBING LEGEND

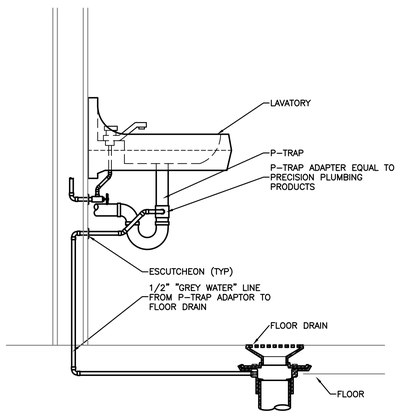
VENT PIPING	
WASTE PIPING BELOW FLOOR OR GRADE (SAN)	
COLD WATER PIPING (CW)	
HOT WATER PIPING (HW)	
TEMPERED WATER (110°F) (TW)	
HOT WATER RETURN PIPING (HWR)	
120° HOT WATER (120°F)	
RL RAIN LEADER LINE RL BELOW FLOOR	
GAS GAS PIPING (G)	
WASTE PIPING IN SLEEVE UNDER FOOTER	
PIPING UP	
PIPING DOWN	
⊗	HOT WATER BALANCING VALVE
P#	PLUMBING FIXTURE IDENTIFICATION. SEE PLUMBING FIXTURE SCHEDULE
VTR	VENT THROUGH ROOF
⊕	ELEVATION
	CONNECT NEW TO EXISTING. FIELD VERIFY SIZE AND LOCATION PRIOR TO EXECUTING WORK
(E)	EXISTING – EXACT SIZE AND LOCATION TO BE FIELD VERIFIED.
(D)	EXISTING ITEM TO BE DEMOLISHED
(RL)	EXISTING ITEM TO BE RELOCATED
(R)	NEW LOCATION OF EXISTING ITEM
AFF	ABOVE FINISHED FLOOR
BFF	BELOW FINISHED FLOOR
S	SANITARY
W	WASTE
V	VENT
RL	RAIN LEADER
OD	OVER FLOW DRAIN
GW	GREASE WASTE



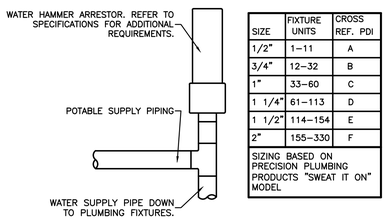
EXTERIOR CLEAN-OUT DETAIL (ECO2)
NOT TO SCALE



FOUNDATION PIPE SLEEVE DETAIL
NOT TO SCALE



TRAP PRIMER DETAIL
NOT TO SCALE



SIZE	FIXTURE UNITS	CROSS REF. PDI
1/2"	1-11	A
3/4"	12-32	B
1"	33-60	C
1 1/4"	61-113	D
1 1/2"	114-154	E
2"	155-330	F
SIZING BASED ON PRECISION PLUMBING PRODUCTS "SWEAT IT ON" MODEL		

WATER HAMMER ARRESTOR DETAIL
NOT TO SCALE

PLUMBING DRAWING INDEX

P0.0 PLUMBING GENERAL NOTES, SCHEDULES, DETAILS, AND LEGEND
P0.1 PLUMBING SPECIFICATIONS
P0.2 PLUMBING SPECIFICATIONS
P1.0 PLUMBING FLOOR PLAN, SANITARY RISERS, AND DOMESTIC WATER RISERS

GENERAL NOTES

KEY NOTES

PLUMBING GENERAL NOTES, SCHEDULES, DETAILS AND LEGEND

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SCALE: VARIES

SHEET NUMBER
P-0.0

X OF X

SECTION 220400 – PLUMBING REQUIREMENTS

PART 1.00 – GENERAL

1.01 RELATED DOCUMENTS

A. Cooperate with all other trades and install work as fast as the progress of the job will permit.

B. Use only mechanics skilled in the work they are to perform and have a competent representative on the job when any work is being done.

C. No work shall be done unless the Superintendent of the Contractor is on the job site. Work shall be properly protected, all rubbish removed promptly, and exposed work shall be carefully cleaned prior to final acceptance.

D. The term "provide" shall include labor, materials, and equipment necessary to furnish and install, complete and operable, the item or system indicated.

E. In decisions arising from discrepancies, interpretation of Drawings and Specifications, substitutes, and other pertinent matters, the decision of the Owner's representative's approval shall be final.

1.02 SPECIFICATIONS AND DRAWINGS

A. Plans show location of fixtures and equipment and are intended to depict the general intent of the work in scope, layout and quality of workmanship. They are not intended to show in minute detail every or all accessories intended for the purpose of executing the work, but it is understood that such details are a part of this work.

B. Where Drawings and Specifications conflict, it shall be the responsibility of this Contractor to bring such conflict to the attention of the Architect/Engineer for clarification. In general, the more stringent interpretation shall take precedence and the Architectural Drawings shall take precedence over the Plumbing Drawings with reference to building construction. All changes from the Drawings necessary to make the work conform with the building as constructed and to fit the work of other trades or to conform to the rules of authorities having jurisdiction, shall be made by the Contractor at his own expense.

C. Keep a record of the locations of concealed work and of any field changes in Contract Drawings and Specifications for each trade and, upon completion of the job, supply "As-Built" Drawings and Specifications showing in pencil on sepia reproducibles, any deviations from the original Drawings, indicating in the Specifications each manufacturer's name underlined or inserted whose product was used on the job. These Drawings shall indicate dimensions of buried utility lines from building walls. One set of sepia reproducibles of the original tracings will be furnished upon request for this purpose.

D. Where equipment is used other than manufacturers specified, the Sub-Contractor shall request approval to substitute materials and/or products as indicated and defined herein. Provide four (4) copies of materials and equipment for approval, for items requiring submittals.

1.03 PERMITS, FEES AND INSPECTIONS:

A. The Contractor shall give all necessary notices, obtain all permits and pay all government fees, sales taxes and other costs, including utility connections or extensions, in connection with this work; file all permit applications required by all governmental departments having jurisdiction.

B. Obtain all required certificates of inspection for work and deliver them to the Owner before requesting acceptance and final payment for the work.

C. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus and drawings required to comply with all applicable laws, ordinances, rules and regulations.

D. The Contractor shall inform the Owner of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.

1.04 GENERAL

A. Materials or products specified herein and/or indicated on drawings by trade name, manufacturer's name and/or catalog number shall be provided as specified. Substitutions will not be permitted except as described herein and in the Supplementary and General Conditions.

B. Since manufacturers reserve the right to change their products at any time, contractors shall verify all dimensions, performance data, etc. for each piece of equipment submitted to assure compliance with the intent of the drawings and specifications.

C. All materials shall be new and of quality as specified, and when required, be clearly labeled and/or stamped as manufactured in the United States.

D. For acceptance of products or manufacturers other than those specified, bidders shall submit to the Architect/Engineer a request in writing at least ten (10) days prior to bid date and hour. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data list of references or other information necessary to completely describe the item. Approval will be in the form of an addendum to the specifications issued to all prospective prime contract bidders on record. The addendum will indicate the additional products which are approved for this project.

E. A list of all materials and equipment which the Contractor proposes to furnish shall be submitted for approval within ten (10) days after the contract has been awarded. Data shall be complete in all respects.

F. Where an accepted substitution or deviation requires different quantity or arrangement of foundations, supports, ductwork, piping, wiring, conduit, and any other equipment or accessories normal to this equipment, contractor shall furnish said changes and additions and pay all costs for all changes and additions to his work and the work of others affected by this substitution or deviation.

G. Deviations mean the use of any listed approved manufacturer other than those on which the drawings are based.

1.05 SHOP AND ERECTION DRAWINGS AND SAMPLES

A. The Architect/Engineer's approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval will not be permitted at the job site. Submittals shall be made for all equipment and systems as indicated in the respective specification section.

B. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Architect/Engineer to ascertain that the proposed equipment and materials comply with specification and drawing requirements. Catalog cuts submitted for approval shall be legible and clearly identify equipment being submitted.

C. Shop and erection drawing submittals shall conform to the requirements of the General Conditions and Division-1 specifications except as modified herein.

D. Submit required and/or requested shop and erection drawings, for review by Architect/Engineer before ordering or installing any equipment or material. Equipment or material ordered or installed before Architect/Engineer review may not be accepted and may have to be removed from the project if deemed unacceptable.

E. Shop drawings shall consist of manufacturer's scale drawings, cuts or catalogs, including descriptive literature which shall clearly indicate the construction, material, physical dimensions, wiring diagrams and complete operating data clearly marked for each item. Data of general nature will not be accepted.

F. Shop drawings on paper larger than 11"x17" shall be submitted in the form of one set of reproducibles (vellum) and one set of blueprints. The blueprints will be retained by the engineer and the reproducibles will be returned to the contractor. All drawings are to be submitted no later than 60 days after the contract has been awarded.

1. Coordination drawings shall show major elements, components, and systems of plumbing equipment and materials in relationship with other building components. Prepare drawings to an accurate scale of 1/4"=1'-0" or larger. Indicate the locations of all equipment and materials, including clearances for installing, servicing and maintaining equipment, valve stem movement, and similar requirements. Indicate movement and positioning of large equipment into the building during construction.

G. Submittals for individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assembly as a whole. Partial submittals will not be considered for approval. Submittals shall be submitted for all applicable products and materials specified in each individual section of these specifications.

H. Make submittals for the equipment and materials in accordance with the following:

1. Mark the submittals, "SUBMITTED UNDER SECTION_____".

2. Submittals shall be marked to show specification reference including the section and paragraph numbers.

3. The submittals shall include the following:

a. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required. Provide any additional information specifically requested in the individual specification section or on the drawings.

b. Parts list which shall include those replacement parts recommended by the equipment manufacturer, quantity of parts, current price and availability of each part.

I. Shop drawings on paper 11"X17" or smaller in size shall be submitted in tabbed and indexed three ring binder. The binder shall not exceed 11-5/8" height. Partial submittals are unacceptable. The index shall indicate the related specification section number.

J. A Fee will be charged for Engineering review of drawings received after the time allotted as described in "F" above or for plans that have been rejected two or more times due to non-compliance or incompleteness. The fee will be determined by the Architect/Engineer and will accompany the re-submittal in the form of a cashiers check or money order made payable to the Engineer.

K. The General Contractor will certify that all shop drawings are in conformance with the plans and specifications. Deviations from the plans and specifications shall be noted, and the specific area of the deviation clouded and in contrasting color (green) with a complete explanation for the reasons for the deviation. Any redesign of the system shall be Certified by a Professional Engineer currently registered in the State of Florida, and will be accompanied by the fees as described in "J" above.

L.Carefully examine all shop drawings and mark-up as necessary before submitting to the Architect/Engineer for review. The consultant will only consider shop drawings bearing the contractor's stamp of approval.

M. The engineer's review shall not relieve the contractor from the responsibility for deviations from drawings and specifications. The engineer's review shall be construed to apply only to general arrangement and shall not relieve the contractor from the responsibility for the correctness of details and dimensions and provision of the correct equipment.

N. The contractor shall retain copies of all reviewed shop drawings on the job site for reference.

O. In addition to the requirement of SUBMITTALS, the Owner reserves the right to request the manufacturer to arrange for the Owner's representative(s) to see typical active systems in operation, when there has been no prior experience with the manufacturer or the type of equipment being submitted.

1.06 COORDINATION WITH OTHER TRADES

A. Contractor shall coordinate his work with other trades to avoid interferences and delays. He shall assist in working out space requirements to make a satisfactory installation.

B. If the Contractor installs his work before coordinating with other trades, or so as to cause any interference with the work of other trades, he shall make the necessary changes in his work to correct the condition without extra charge.

C. The Contractor shall furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.07 EQUIPMENT IDENTIFICATION

A. Each unit shall be identified by its system number and other appropriate designation by stenciling in letters of approved size and wording. Equipment requiring identification shall include: supply and exhaust fans, air conditioning and heating machinery and apparatus, control cabinets, and other equipment units as may be directed by the owner.

1.08 CUTTING, PATCHING, EXCAVATION, BACKFILL, AND LAYOUT

A. Provide openings and excavation required for the installation of the work. Patch work and backfill as required. Finished work shall match the existing adjoining work.

B. Verify all conditions affecting the work to be performed under this contract.

C. Carefully verify measurements at the site, determine the exact location of chases and openings required. Provide sleeves, inserts, and hangers as required. No columns, beams, joists, building foundations, nor any other structural building component shall be cut, drilled or disturbed in any way. Conflicts shall immediately be brought to the attention of the Architect/Engineer.

D. All excavation on sites containing existing buildings and existing services, shall be done with hand shovel to avoid damage to existing services. Any damage incurred by the Contractor shall be repaired by the Contractor in a manner approved by the Architect/Engineer at no cost to the Owner and with no extension of time limitation.

1.09 EXPERIENCE

A. The Contractor performing this work shall be a licensed, reputable firm, regularly performing the type of work incorporated in this project and who also maintains, as part of the firm, a service department with qualified personnel who regularly perform this type of work. The Contractor shall, upon request, show evidence of at least two jobs of similar character and size installed within the preceding two years.

1.10 ELECTRICAL WORK FOR PLUMBING SYSTEMS

A. Controllers, and control equipment necessary for plumbing equipment operation shall be provided under Division 15 Mechanical. Starters not integral with plumbing equipment and starters mounted in motor control centers shall be provided under Division 16 Electrical.

B. Power wiring for motors and installation of starters shall be provided under Division 16 Electrical.

C. Temperature, humidity, pressure and similar controls essential to the operation of plumbing systems, and wiring and conduit thereof, including interlock wiring, shall be provided under Division 15 of Specifications, installed in accordance with requirements of Division 16.

D. Motors shall be provided under Division 15 Mechanical of capacity required to operate equipment specified, but shall not be less than that specified.

E. All low voltage (120V and under) temperature control wiring for equipment shall be provided under this division.

F. Conduit when required for control wiring shall be provided under this division.

1.11 REMOVAL OF RUBBISH

A. Contractor shall keep premises free from accumulations of waste material or rubbish caused by his employees or work. At completion of work, he shall remove all his tools, scaffolding, surplus materials, and rubbish from building and site. He shall leave premises and his work in a clean orderly condition acceptable to the Architect/Engineer.

1.12 QUIET OPERATION AND VIBRATION

A. All equipment provided under this section shall operate under all conditions of load free of objectionable sound and vibration. Sound and vibration conditions considered objectionable shall be corrected in an approved manner.

B. Vibration and sound control shall be by means of approved vibration eliminators or sound attenuators in a manner as specified and as recommended by the manufacturer.

1.13 EXAMINATION OF EXISTING CONDITIONS

A. Visit and carefully examine those portions of the site and/or present buildings affected by this work so as to become familiar with existing conditions and difficulties that will affect the execution of the work before submitting proposals.

B. Submission of a proposal will be construed as evidence that such examination has been made and later claims for labor, equipment or materials required because of difficulties encountered, which could have been foreseen had such examination been made, will not be recognized.

1.14 CLEANING AND ADJUSTMENTS

A. Upon completion of work, Contractor shall clean and lubricate fans, motors, and other running equipment and apparatus which he has installed and make certain such apparatus and mechanisms are in proper working order and ready to test.

B. Scratched or damaged painting shall be touched up as necessary to return the painting to "new" condition and appearance.

C. All piping and equipment shall be thoroughly blown out under pressure and cleared of all foreign matter, or run water through temporary connections as long as necessary to thoroughly clean system before system is placed in operation. Use every precaution to prevent pipe compound, scale, dirt, welding and other objectionable matter from getting into the piping system and equipment.

D. During blow out period, baskets from strainers shall be removed, traps and control valves, etc., shall be by-passed.

E. All cleaning shall be done prior to any sterilization, pressure testing, flow balancing or equipment adjustment procedures.

1.15 DEMOLITION

A. No columns, beams, joists, building foundations nor any other structural building component shall be cut, drilled or disturbed in any way. Conflicts shall immediately be brought to the attention of the Architect/Engineer. Contractor shall not proceed until instructed in writing by the Architect/Engineer if conflicts between plumbing work and structural elements occur.

1.16 CLEANING AND PROTECTING

A. During construction protect all piping and equipment from damage and dirt. Cap the open ends of all piping and equipment.

B. After completion of project clean the exterior surface of equipment included in this section, remove all concrete residues and as directed touch up paint or completely repaint all damaged surfaces.

1.17 STORAGE OF MATERIALS

A. All materials stored on site shall be properly protected from injury or deterioration. Materials shall not be stored in contact with ground or floor.

B. Do not remove manufacturer's packing materials until ready to install. Materials showing signs of corrosion, improper handling or storage shall be replaced at no cost to the Owner.

C. Provide continuous protection for all equipment already installed.

1.18 WATERPROOFING

A. Where any work pierces waterproofing including waterproof concrete, the method of installation shall be as approved by the Owner before the work is done.

B. Provide all necessary sleeves, caulking and flashing required to make openings absolutely watertight. Waterproof flashing materials shall be compatible with base materials.

1.19 TESTS

A. Contractor shall make all tests required to establish the adequacy, quality, safety, completed status and satisfactory operation of all systems to the satisfaction of the Architect/Engineer. Provide all instruments, labor and services necessary to conduct tests.

1.20 INSTRUCTIONS

A. Fully instruct Owner's personnel in the care and operation of plumbing systems and furnish a letter to the Architect/Engineer advising the particular person who has received such instruction.

1.21 Warranty

A. Furnish a letter addressed to the Architect/Engineer advising that the completed systems have been installed in accordance with the Plans and Specifications and that they are in proper operating condition. The Owner shall receive a written guarantee covering all defects in workmanship and material for a period of one year from date of final acceptance. Any defects appearing within this year period shall be repaired without additional cost to the Owner. Provide a five year manufacturer's warranty covering repair and replacement for all equipment and fixtures furnished for this project due to failure of the product.

1.23 ACCEPTANCE

A. Before requesting final inspection:

1. Complete all work required. If any items are held in obeyance as incomplete for final inspection, list such items together with explanation for delay.

2. Submit statement that equipment is properly installed, adjusted, fully lubricated and operation is satisfactory.

3. Certify in writing to the Architect/Engineer that the Owner's representative has been instructed as to the care and operation of the system and that catalog service and maintenance information has been turned over to the Architect/Engineer.

4. Submit copy of written guarantee.

5. Submit copy of other data as may be outlined in these specifications.

B. Copies of the above data shall be submitted to the Architect/Engineer prior to requesting final inspection.

1.24 BROCHURE

A. At the completion of work, submit a bound brochure containing the following:

1. Shop Drawings

2. Maintenance Manuals

3. Control Wiring and Piping Diagrams

4. Operating Instructions

5. Copy of Guarantee

6. As-Built Drawings

B. Where projects are of sufficient size to make a single brochure impractical, several brochures shall be prepared by trade and As-Built Drawings may be submitted as a separate item.

C. Brochure shall be indexed and divided for reasonable clarity.

D. Brochure shall be turned over to the Architect/Engineer for review and approval. The contractor shall make modifications to the brochure as deemed necessary for compliance and clarity, by the Architect/Engineer, and re-submit the final brochure to the Architect/Engineer to be forwarded to the Owner.

END OF SECTION 220400

GENERAL NOTES

KEY NOTES

PLUMBING SPECIFICATIONS

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X OF X

SECTION 220450 – PLUMBING MATERIALS & METHODS

PART 1.00 – GENERAL

1.01 RELATED DOCUMENTS

A. The general conditions and all requirements of the contract documents shall apply to all work of this Division.

1.02 WORK INCLUDED

A. Scheduling: Schedule work with Owner so as to avoid disruption of normal activities.
B. Pipes and Pipe Fittings
C. Piping Specialties
D. Valves
E. Hangers and Supports
F. Insulation
G. Plumbing Fixtures
H. Plumbing Equipment

1.03 REFERENCE STANDARDS

A. Standard Building Codes
1. 2017 Florida Building Code, Sixth Addition – Building
2. 2017 Florida Building Code, Sixth Addition – Plumbing
B. National Fire Protection Association (NFPA) Codes.
C. American Society for Testing and Materials (ASTM).
1. ASTM C177–76: Steady–State Thermal Transmission Properties by means of the Guarded Hot Plate: Thermal Conductivity.
2. ASTM C335–79: Steady–State Heat Transfer Properties of Horizontal Pipe Insulations: Thermal Conductivity.
D. National Electrical Manufacturers Association (NEMA).
1. NEMA Standard MG1 –12.536.
EManufacturer's Standardization Society of the Valve and Fittings Industry, Inc.
1. MSS SP–58 – Pipe Hangers and Supports – Materials Design and Manufacture, 1988.
2. MSS SP–69 – Pipe Hangers and Supports – Selection and Application, 1991.

1.04 SUBMITTALS

A. Submit the following detailed manufacturer's product data and shop drawings for each item as follows:
1. Pipes and Pipe Fittings
2. Piping Specialties and Valves
3. Valves
4. Hangers and Supports
5. Insulation
6. Plumbing Fixtures
7. Plumbing Equipment

1.05 MECHANICAL SYSTEMS DEMONSTRATION

A. Prior to inspection, demonstrate the proper operations of each system to the Owner's representative.
B. Instruct Owner's maintenance personnel in operation, adjustment, maintenance of equipment and system using the operation and maintenance data as the basis of instruction.

1.06 WARRANTIES AND BONDS

A. Prior to final payment, compile manufacturer's written warranties for each major piece of equipment. In addition, warranty all apparatus furnished to remain in serviceable and operational condition for a period of at least one year from the date of substantial completion and acceptance of the work. This written warranty shall provide that any imperfections in material or function, as a whole or in part, by reason of defective workmanship, defective materials damaged as result of these defects or their repair, shall be made good to the satisfaction of the Owner's representative at the contractor's expense.

PART 2.00 – PRODUCTS

2.01 PIPES AND PIPE FITTINGS

A. Domestic Water Piping:
1. Interior above ground shall type N, Grade 1 Chlorinated Polyvinyl Chloride (CPVC) and below ground Chlorinated Polyvinyl Chloride (CPVC). Pipe and fittings shall meet ASTM D2846, and meet the requirements of CSA B137.6 for CPVC hot and cold water distribution piping.Exterior below ground shall be polyvinyl chloride, Type 1, Grade 1, Schedule 40, ASTM D 2466–78 with NSF label.
B. Sanitary Waste and Vent Piping:
1. Above Slab & Exterior: Polyvinyl chloride DWV Schedule 40 pipe (PVC); standard weight; PVC DWV Schedule 40 pipe fittings, solvent cement joints.
2. Below Slab: Polyvinyl chloride DWV Schedule 40 pipe (PVC); standard weight; PVC DWV Schedule 40 pipe fittings, solvent cement joints.

2.02 PIPING SPECIALTIES

A. Pipe Escutcheons: Provide pipe escutcheons with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Furnish pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas.
1. Pipe Escutcheons for Moist Areas: For waterproof floors, and areas where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged.
2. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.
3. Manufacturer: Chicago Specialty; Producers Specialty; or Sanitary–Dash.

B. Dielectric Unions: Provide standard products recommended by manufacturer for use in service indicated, which effectively isolate ferrous from non–ferrous piping (electrical conductance), prevent galvanic action, and stop corrosion.
1. Manufacturer: B&K Industries; Capital Mfg.; Eclipse; Epco; Perfection; or Rockford–Eclipse.

C. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
1. Manufacturer: Thunderline.

D. Fire Barrier Penetration Seals: Provide seals for any opening through fire–rated walls, floors, or ceilings used as passage for mechanical components such as piping or ductwork as shown in the details.

E. Water Hammer Arresters: Provide bellows type water hammer arresters, stainless steel casing and bellows, pressure rated for 250 psi, tested and certified in accordance with PDI Standard WH–201.
1. Manufacturer: Amtrol; Smith; Tyler; or Zurn.

F. Pipe Sleeves: Provide pipe sleeves of one of the following:
1. Sheet–metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gages: 3" and smaller, 20 ga.; 4" to 6", 16 ga.; over 6", 14 ga.
2. Steel–Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
3. Iron–Pipe: Fabricate from cast–iron or ductile–iron pipe; remove burrs.
4. Plastic–Pipe: Fabricate from Schedule 80 PVC plastic pipe; remove burrs.

G. Sleeve Seals: Provide sleeve seals for sleeves located in foundation walls below grade, or in exterior walls, of one of the following:
1. Mechanical Sleeve Seals: Installed between sleeve and pipe.

2.03 VALVES

A. General: Provide factory–fabricated valves recommended by manufacturer for use in service indicated. Provide valves of types and pressure ratings indicated. Where not indicated, provide proper selection as determined by installer to comply with installation requirements. Provide end connections which properly mate with pipe, tube, and equipment connections. Where more than one type is indicated, selection is installer's option.
B. Sizes: Unless otherwise indicated, provide valves of same size as upstream pipe size.
C. Operators: Provide handwheels, fastened to valve stem, for valves other than quarter–turn. Provide lever handle for quarter–turn valves, 6" and smaller, other than plug valves. Provide one wrench for every 10 plug valves. Provide gear operators for quarter–turn valves 8" and larger. Provide chain–operated sheaves and chains for overhead valves as indicated.
D. Gate Valves: Comply with the following standards:
1. Cast–Iron Valves: MSS SP–70.
2. Bronze Valves: MSS SP–80.
3. Steel Valves: ANSI B16.34.
4. Manufacturer: Crane; Fairbanks; Hammond; Grinnel; Jenkins, Lunkenheimer; Milwaukee; Nibco, Powell; Stockham; or Walworth.
EBall Valves: Comply with the following standards:
1. Cast–Iron Valves: MSS SP–72.
2. Steel Valves: ANSI B16.34.
3. Manufacturer: Conbraco; Crane; Fairbanks; Hammond; Grinnell; Jamesbury; Jenkins; Metraflex; Milwaukee; Nibco; Powell; Stockman; Walworth; or Watts.

2.04 HANGERS AND SUPPORTS

A. Piping:
1. Hangers and supports shall comply with the requirements of MSS SP–58.
2. For support of copper tubing, use a split ring hanger with provision for vertical adjustment of cast brass, copper plated malleable iron.

2.05 INSULATION

A. Domestic Hot and Cold Water Piping: Insulate all domestic hot and cold water piping except exposed fixture connections with 1/2" Armaflex or approved equal.
B. Storm Water Piping: Insulate all horizontal storm water piping and roof drain body with 1/2" Armaflex or approved equal.

2.06 PLUMBING FIXTURES

A. Plumbing fixtures shall be of the size, type, manufacturer, and capacity with all trim as listed on the fixture schedule on the drawings. Provide carrier where indicated.
B. Submit shop drawings for approval of all plumbing fixtures furnished.

2.07 PLUMBING EQUIPMENT

A. Plumbing equipment shall be of the size, type, manufacturer, and capacity as listed in the equipment schedules on the drawings.
B. Submit shop drawings for approval of all plumbing equipment furnished.

PART 3.00 – EXECUTION

3.01 PIPES AND PIPE FITTINGS

A. General: Install pipes and pipe fittings in accordance with recognized industry practices which will achieve permanently–leakproof piping system, capable of performing each indicated service without piping failure. Install each run with minimum joints and coupling, but with adequate and accessible unions for disassembly and maintenance/replacement of valves and equipment. Reduce sizes (where indicated) by use of reducing fittings. Align piping accurately at connections, within 1/16" misalignment tolerance. Comply with ASME B31 Code for Pressure Piping.
B. Locate piping runs, except as otherwise indicated, vertically and horizontally (pitched to drain) and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations or, if not otherwise indicated, run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent–enclosure elements of building; limit clearance to 1/2" where furring is shown for enclosure or concealment of piping, but allow for insulation thickness, if any. Where possible, locate insulated piping for 1" clearance outside insulation. Wherever possible in finished and occupied spaces, conceal piping from view, by locating in column enclosures, in hollow wall construction or above suspended ceilings; do not encase horizontal runs in solid partitions, except as indicated.
C. Electrical Equipment Spaces: Do not run piping through transformer vaults and other electrical or electronic equipment spaces and enclosures.
D. Solder copper tube–and–fitting joints in accordance with applicable provisions of CDA "Copper Tube Handbook".
E. Plastic Pipe/Tube Joints: Comply with the following:
1. Making Solvent–Cemented Joints: ASTM D 2235, and ASTM F 402.
F. Cleaning, Flushing, Inspecting:
1. General: Clean exterior surfaces of installed piping systems of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items.
a. Inspect pressure piping in accordance with procedures of ASME B31.
b. Disinfect water mains and water service piping in accordance with AWWA C601.
2. Test pressure piping in accordance with ASTM B31.
3. Repair piping systems sections which fail required piping test, by disassembly and re–installation, using new materials to extent required to overcome leakage. Do not use chemicals, stop–leak compounds, mastics, or other temporary repair methods.
4. Drain test water from piping systems after testing and repair work has been completed.

3.02 PIPING SPECIALTIES

A. Pipe Escutcheons: Install pipe escutcheons on each pipe penetration thru floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.
B. Dielectric Unions: Install dielectric unions at each piping joint between ferrous (steel) and non–ferrous (copper, brass, or pvc) piping. Comply with manufacturer's installation instructions.
C. Mechanical Sleeve Seals: Loosely assemble rubber links around pipe with bolts and pressure plates located under each bolt head and nut. Push into sleeve and center. Tighten bolts until links have expanded to form watertight seal.
D. Water Hammer Arresters: Install in upright position, in locations and of sizes in accordance with PDI Standard WH–201, and elsewhere as indicated.
E. Pipe Sleeves: Install pipe sleeves of types indicated where piping passes through walls, floors, ceilings, and roofs. Do not install sleeves through structural members of work, except as detailed on drawings, or as reviewed by Architect/Engineer. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insulation (if any) will have free movement in sleeve, including allowance for thermal expansion; but not less than 2 pipe sizes larger than piping run. Where insulation includes vapor–barrier jacket, provide sleeve with sufficient clearance for installation. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface; except floor sleeves. Extend floor sleeves 1/4" above level floor finish, and 3/4" above floor finish sloped to drain. Provide temporary support of sleeves during placement of concrete and other work around sleeves, and provide temporary closure to prevent concrete and other materials from entering sleeves.
1. Install sheet–metal sleeves at interior partitions and ceilings other than suspended ceilings.
2. Install iron–pipe sleeves at exterior penetrations, both above and below grade.
3. Install steel–pipe or plastic–pipe sleeves except as otherwise indicated.
F. Cleanout
1. Provide cleanouts at end and at points in change of direction of all drains, soil and waste pipes and branches thereof, at foot of each riser, at all offsets in all horizontal runs at approximately 75 foot intervals both inside and outside building, at other points where indicated on the plans or where required.

3.03 VALVES

A. Install valves where required for proper operation of piping and equipment, including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
B. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Install valve drains with hose–end adapter for each valve that must be installed with stem below horizontal plane.
C. Place shut–off valve on each water main service. Place valve near the building where indicated on the drawings.

3.04 SUPPORTS AND ANCHORS

A. Install hangers, supports, clamps and attachments to support piping properly from building structure; comply with MSS SP–69. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacings complying with MSS SP–69. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.
B. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and other accessories. Except as otherwise indicated for exposed continuous pipe runs, install hangers and supports of same type and style as installed for adjacent similar piping.
C. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated, or by other recognized industry methods.
1. Saddles: Where insulation without vapor barrier is indicated, install protection saddles.

3.05 INSULATION

A. Piping Insulation:
1. Do not split insulation. Slide over the tubing before fabrication. Seal successive sections of insulation with factory approved and recommended mastic. Butt together and hold until mastic dries...60 seconds.
2. Split insulation is not acceptable and shall be removed and new insulation installed if it is observed on the job.
3. Size insulation for tubing. Do not oversize. Insulation shall be snug.

3.06 PLUMBING FIXTURES AND EQUIPMENT

A. Plumbing Fixtures
1. Install plumbing fixtures and equipment as indicated on the drawings. Installation must be in accordance with applicable codes and manufacturer's recommendations. Coordinate to ensure that fixture carrier is of appropriate type and size to fit plumbing chase walls provided.
2. All wall hung fixtures, pipes, etc. shall be tightly secured to and anchored to walls. Provide additional stiffening members on stud walls as required.
3. Contractor shall refer to, and locate and install plumbing fixtures as shown on latest architectural drawings.
4. After plumbing fixtures are set, the crack between the fixture and the wall shall be caulked carefully with Tub–Tite as manufactured by American Fluoresite Company, or approved equal.
5. Fixtures shall be protected from damage during construction, and shall be thoroughly cleaned of all tape and adhesives prior to final acceptance.
6. All porcelain or vitreous china fixtures shall be clean, smooth and bright. All shall be warranted not to craze, discolor or scale.

END OF SECTION 220450

GENERAL NOTES

KEY NOTES

PLUMBING SPECIFICATIONS

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DPW FILE NUMBER

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REVISIONS

SEAL

STEPHEN R. FORKNER, P.E. 80532

SCALE: VARIES

SHEET NUMBER
P–0.2

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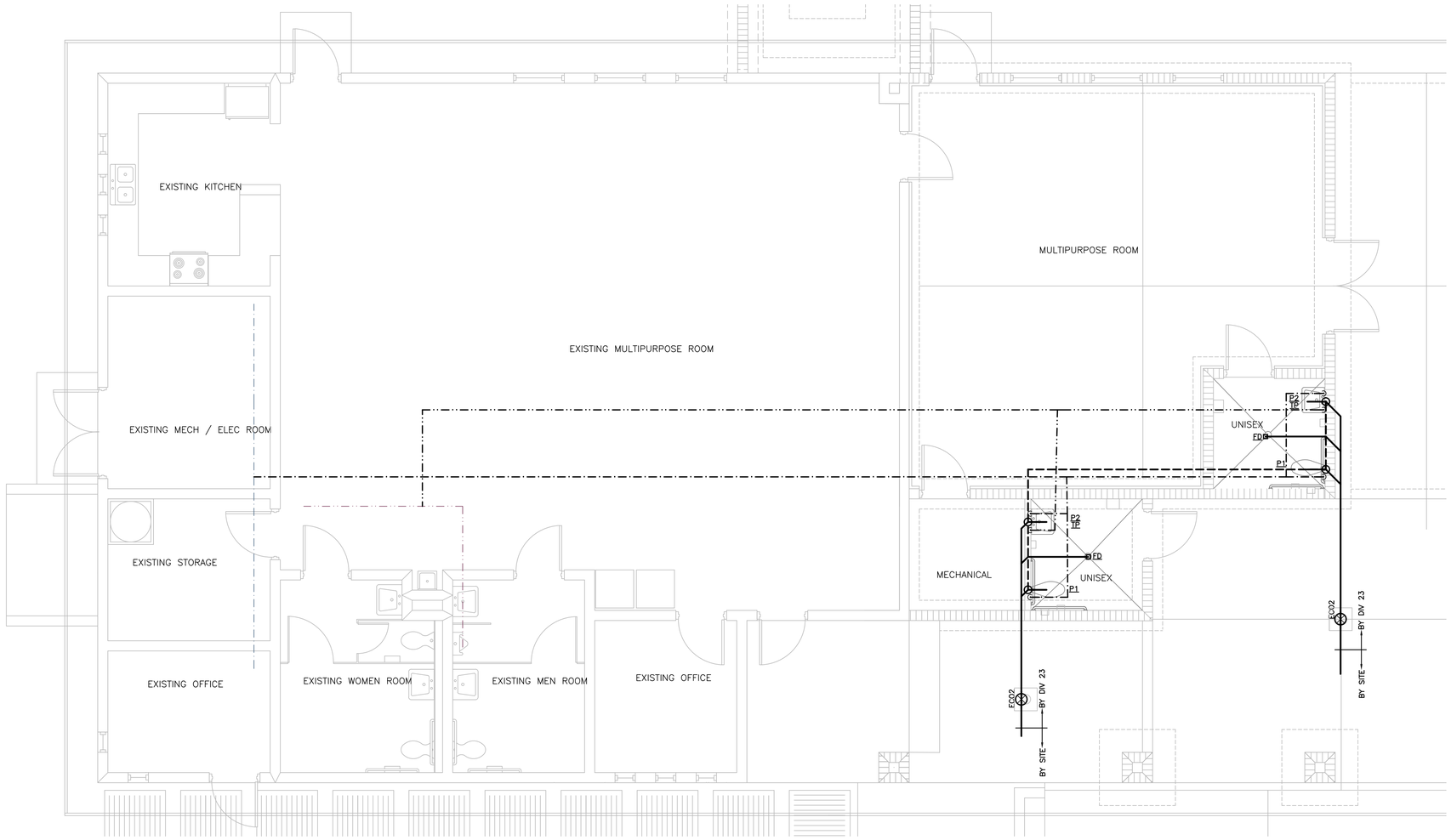

PLUMBING FLOOR PLAN
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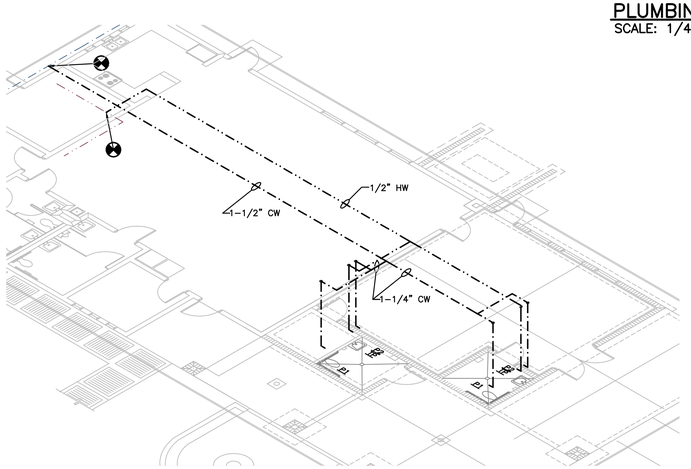

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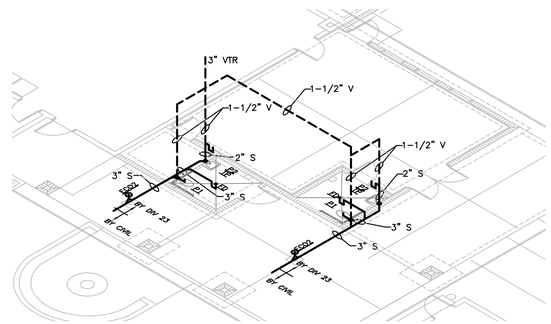
NOT TO SCALE



SANITARY RISER
NOT TO SCALE

GENERAL NOTES

KEY NOTES

PLUMBING FLOOR PLAN, SANITARY RISER, AND DOMESTIC WATER RISER

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x OF **x**

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	VOLTS	WATTS	LAMPS	BALLAST (IF APPLICABLE)	MOUNTING
A	2'x4' RECESSED EDGE-LIT LED PANEL TYPE LUMINAIRE. ACRYLIC LENS, FULLY LUMINOUS ACROSS FACE OF LENS. LITHONIA #EPANL-24-40L-40K, OR APPROVED EQUIVALENT	120	39	LED DRIVER 0-10 VOLT DIMMING	LED 4000 LUMENS, 40K	RECESSED GRID OR GWB
B	2'x2' RECESSED EDGE-LIT LED PANEL TYPE LUMINAIRE. ACRYLIC LENS, FULLY LUMINOUS ACROSS FACE OF LENS. LITHONIA #EPANL-22-34L-40K, OR APPROVED EQUIVALENT. PROVIDE DRYWALL FLANGE ACCESSORY LITHONIA #DGA22	120	31	LED DRIVER 0-10 VOLT DIMMING	LED 3400 LUMENS, 40K	RECESSED GRID OR GWB
C	1'x4' LED STRIP LUMINAIRE WITH FROSTED DROP LENS. LITHONIA #ZL1N-L48-3000L-FST-MVOLT-40K-80CRI, OR APPROVED EQUIVALENT.	120	33	LED, 3000 LUMEN, 40K	LED DRIVER	WALL MOUNT AT 9'-0" AFF
D	6" OPEN REFLECTOR, LED DOWNLIGHT WITH WHITE TRIM. WET LOCATION LISTED. DUAL VOLTAGE. LITHONIA #LDN6-40/15-L06-WR-MVOLT-SF, OR APPROVED EQUIVALENT	120	40	LED 1500 LUMENS, 4000K	LED DRIVER	RECESSED
E	LED SECURITY FLOOD LUMINAIRE WITH PHOTOCELL AND MOTION SENSOR. WET LOCATION LISTED, CAST ALUMINUM CONSTRUCTION, DARK BRONZE COLOR WITH TWO ROUND HEADS. LITHONIA #OLF-2RH-40K-120-MO-BZ	120	25	LED, 2160 LUMENS, 4000K	LED DRIVER	CEILING
EM	EMERGENCY LUMINAIRE, THERMOPLASTIC HOUSING, TWO LAMP, INTEGRAL BATTERY BACK-UP WITH SELF DIAGNOSTICS. BATTERY SHALL BE MECHANICALLY FASTENED IN PLACE INSIDE THE LUMINAIRE ENCLOSURE. LITHONIA #ELM2-LED-SD, OR APPROVED EQUIVALENT.	120	5	LED W/FIXT.	LED DRIVER	WALL MOUNT AT 8'-0" AFF
X	EDGE LIT LED EXIT SIGN WITH UNIVERSAL MOUNTING AND RED LETTERING. PROVIDE SINGLE OR DOUBLE FACED SIGNS AND CHEVRON ARROWS AS INDICATED ON THE DRAWINGS. PROVIDE MIRROR PANEL ON DOUBLE FACE, AND CLEAR ON SINGLE FACE. INTEGRAL BATTERY BACKUP WITH SELF DIAGNOSTICS. LITHONIA #EDG-2-R/RMR-EL-SD, OR APPROVED EQUIVALENT.	120	5	LED DRIVER	LED, WITH FIXTURE	WALL OR CEILING

NOTES:

1. ALL LUMINAIRES THAT ARE EQUIPPED WITH AN EMERGENCY BATTERY PACK SHALL HAVE TEST BUTTONS AND INDICATOR LIGHTS VISIBLE AND ACCESSIBLE FROM A FLOOR STANDING POSITION.
2. PROPOSED SUBSTITUTIONS SHALL BE SUBMITTED IN WRITING AND REVIEWED FOR PRIOR APPROVAL. ACCEPTABLE SUBSTITUTIONS SHALL BE ISSUED BY OFFICIAL ADDENDUM.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
	BRANCH CIRCUIT CONDUIT AND WIRE CONCEALED ABOVE CEILING OR BEHIND FINISHED WALL	N/A
	BRANCH CIRCUIT CONDUIT AND WIRE CONCEALED BELOW FINISHED FLOOR OR UNDERGROUND.	N/A
	RACEWAY EXPOSED ON WALL OR CEILING	N/A
LA-1,3,5 #12EG #12G	HOMERUN TO PANELBOARD - LETTER INDICATES PANEL, NUMBER INDICATES CIRCUIT, MINIMUM 3/4" CONDUIT. NOTE: ANY HOMERUN WITHOUT FURTHER DESIGNATION INDICATES TWO #12 AWG AND #12 AWG EQUIPMENT GROUND. PC OUTLET REQUIRES SEPARATE NEUTRAL, MIN. #10 AWG. DEDICATED CIRCUIT REQUIRES SEPARATE NEUTRAL	N/A
UP DOWN	RACEWAY RISER, UP OR DOWN AS NOTED	N/A
	CONDUIT CAPPED	N/A
X X	EXIT LIGHT, LETTER INDICATES TYPE SINGLE OR DUAL FACED AS INDICATED ON DRAWINGS	SEE FIXTURE SCHEDULE
VS	LOW VOLTAGE VACANCY SENSOR CEILING MOUNTED, DUAL TECHNOLOGY. SUBMIT SENSOR MANUFACTURER'S LAYOUT DRAWINGS FOR APPROVAL. SENSOR SWITCH CMR-PDT-10 OR APPROVED EQUIVALENT. PROVIDE WIDER RANGE DEVICES WHEN NECESSARY.	CEILING
^{M}	MOTOR/HP RATED TOGGLE SWITCH SIZED PER MOTOR MANUFACTURER'S RECOMMENDATION, MINIMUM 20 AMP.	SURFACE, ADJACENT TO OR ON MOTOR
$_{a}$	LIGHTING CONTROL WALL SWITCH WITH 0-10V DIMMING CONTROL. LETTER INDICATES FIXTURE GROUPING BY SWITCH. SENSOR SWITCH #SPODM-D, OR APPROVED EQUIVALENT.	M.H. 48" AFF TO TOP
$_{3}$	LOW VOLTAGE LIGHTING CONTROL DIMMER SWITCH FOR THREE WAY APPLICATIONS. DIMMER SWITCH TO BE COMPATIBLE WITH LED DRIVE. (0-10V DIMMING). SENSOR SWITCH #SPODM-D-3, OR APPROVED EQUIVALENT.	M.H. 48" AFF TO TOP
	SINGLE POLE SWITCH	M.H. 48" AFF TO TOP
$_{3}$	THREE WAY SWITCH	M.H. 48" AFF TO TOP
^{OS}	PUSH BUTTON WALL SWITCH/OCCUPANCY SENSOR. AUTO ON/AUTO OFF. SENSOR SWITCH #WSD-PDT, OR APPROVED EQUIVALENT.	M.H. 48" AFF TO TOP
$_{a}$	LIGHTING CONTROL WALL SWITCH. PUSH BUTTON MANUAL ON/AUTO OFF. LETTER INDICATES FIXTURE GROUPING BY SWITCH. SENSOR SWITCH #SPODM-SA, OR APPROVED EQUIVALENT.	M.H. 48" AFF TO TOP
$^{a}_{3}$	THREE WAY LIGHTING CONTROL WALL SWITCH. PUSH BUTTON MANUAL ON/AUTO OFF. LETTER INDICATES FIXTURE GROUPING BY SWITCH. SENSOR SWITCH #SPODM-SA-3X, OR APPROVED EQUIVALENT.	M.H. 48" AFF TO TOP
^{VS}	WALL SWITCH VACANCY SENSOR. PUSH BUTTON MANUAL ON/AUTO OFF. LETTER INDICATES FIXTURE GROUPING BY SWITCH. SENSOR SWITCH #WSD-PDT-SA, OR APPROVED EQUIVALENT.	M.H. 48" AFF TO TOP
	SINGLE RECEPTACLE - 120VAC	M.H. 16" AFF TO BOTTOM
WP GFI	DUPLEX RECEPTACLE - 120VAC, "WP" DENOTES WEATHERPROOF "GFI" DENOTES GROUND FAULT PROTECTION.	M.H. 16" AFF TO BOTTOM
	DUPLEX RECEPTACLE - 120VAC	MOUNTED 42" AFF TO BOTTOM OR AS NOTED
	DOUBLE DUPLEX RECEPTACLE - 120VAC	M.H. 16" AFF TO BOTTOM
	DOUBLE DUPLEX RECEPTACLE - 120VAC	M.H. 42" AFF TO BOTTOM
	4"x4"x2-1/8" DEEP OUTLET BOX FOR COMMUNICATIONS WITH 1" CONDUIT TO ACCESSIBLE CEILING SPACE. CABLING AND DATA JACKS BY OWNER.	M.H. 16" AFF TO BOTTOM OR AS NOTED (VERIFY MOUNTING HEIGHTS WITH OWNER PRIOR TO ROUGH-IN AT ALL COUNTER LOCATIONS)
J	JUNCTION BOX OR OUTLET BOX, 4" SQUARE BOX UNLESS OTHERWISE NOTED	AS NOTED
J	JUNCTION BOX OR OUTLET BOX, 4" SQUARE BOX UNLESS OTHERWISE NOTED	WALL MOUNTED
J HD	JUNCTION BOX OR OUTLET BOX, 4" SQUARE BOX, FOR HAND DRYER ELECTRICAL CONNECTION.	M.H. 44" AFF TO CENTER
	120/208V. PANELBOARD	M.H. 6'-0" TO TOP OR AS NOTED
	NON-FUSIBLE SAFETY SWITCH	M.H. 6'-0" TO TOP OR AS NOTED
	FUSIBLE SAFETY SWITCH	M.H. 6'-0" TO TOP OR ON EQUIPMENT
	MOTOR CONNECTION	AS NOTED
	MOMENTARY SWITCH WITH RED 2" MUSHROOM HEAD BUTTON, WITH COVER, OR AS NOTED	M.H. 48" A.F.F. TO TOP OR AS NOTED
C	SECURITY CAMERA PROVIDE 4" SQUARE x 2-1/8" DEEP BOX AND 3/4" CONDUIT TO ACCESSIBLE CEILING SPACE. CAMERAS AND CABLING BY OWNER.	SURFACE MOUNT AT HEIGHT DETERMINED BY ARCHITECT/OWNER

THIS IS A STANDARD LEGEND. NOT ALL DEVICES SHOWN ARE USED IN THESE DOCUMENTS.

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR	GWB	GYPSUM WALL BOARD
AFG	ABOVE FINISHED GRADE	HD	HAND DRYER
BS	MOUNTED IN BACK SPLASH	INT	INTERCOM/PAGING CABINET
ETR	EXISTING TO REMAIN	M.H.	MOUNTING HEIGHT
EWC	ELECTRIC WATER COOLER	N/A	NOT APPLICABLE
EWH	ELECTRIC WATER HEATER	NL	NIGHT LIGHT
EG	EQUIPMENT GROUND	PROJ	PROJECTOR LOCATION
ESB	ENERGY SAVING BALLAST	U.O.N.	UNLESS OTHERWISE NOTED
EXP	EXPLOSION PROOF	RL	RELOCATED
FACP	FIRE ALARM CONTROL PANEL	R	REMOVE
FATC	FIRE ALARM TERMINAL CABINET	UP	UP
GFI	GROUND FAULT PROTECTION	WP	WEATHER PROOF
G, GND	GROUND	WR	WEATHER RESISTANT

ELECTRICAL GENERAL NOTES:

(THESE NOTES APPLY TO ALL SHEETS)

1. ALL WORK SHALL COMPLY WITH THE LATEST ACCEPTED VERSIONS OF THE FOLLOWING:
   - FLORIDA BUILDING CODE (FBC) 6TH EDITION (2017): THIS CODE INCLUDES THE 2017 FBC BUILDING, MECHANICAL, PLUMBING, FUEL GAS AND ENERGY CONSERVATION VOLUMES. FURTHER, SEE "REFERENCED STANDARDS" IN THE FBC, BUILDING CHAPTER 35; FBC, PLUMBING CHAPTER 14; FBC, MECHANICAL CHAPTER 15; FBC, FUEL GAS CHAPTER 8, FBC, ENERGY CONSERVATION CHAPTER 5.) (EFFECTIVE DECEMBER 31, 2017)
   - 6TH EDITION OF THE FLORIDA FIRE PREVENTION CODE (FFPC): (THIS CODE ALSO INCLUDES THE FLORIDA VERSIONS OF NFPA 1 AND NFPA 101.) (EFFECTIVE DECEMBER 31, 2017)
   - 2014 NATIONAL ELECTRIC CODE
   - ALL OTHER LOCAL CODES AND ORDINANCES
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE AND VERIFY THE EXISTING CONDITIONS TO GAIN KNOWLEDGE OF THE SCOPE OF WORK INVOLVED.
3. "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
4. IN GENERAL, THESE DRAWINGS ARE SCHEMATIC IN NATURE AND SHOULD NOT BE SCALED. IT SHALL NOT BE THE INTENT OF THESE PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. PROVIDE ALL ITEMS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
5. ELECTRICAL INSTALLATION SHALL BE CLOSELY COORDINATED WITH ALL OTHER TRADES. REVIEW THE ENTIRE SET OF DOCUMENTS FOR COORDINATION. NO COST SHALL BE ASSOCIATED WITH ILL-TIMED INSTALLATION INCLUDING ANY REPAIRS OR REPLACEMENTS.
6. ALL CONDUITS AND BOXES SHALL BE CONCEALED UNLESS OTHERWISE NOTED. ALL CONDUIT RUNS ARE SCHEMATIC IN NATURE. EXACT ROUTING TO BE DETERMINED IN THE FIELD UNLESS OTHERWISE NOTED.
7. APPLY A BITUMASTIC COATING FOR ALL MTEALIC CONDUITS PENETRATING FLOOR SLABS FROM BELOW GRADE.
8. PROVIDE ALL REQUIRED PULL BOXES, JUNCTION BOXES, ETC. FOR A COMPLETE INSTALLATION.
9. PROVIDE FIRE-STOPPING AT ALL FIRE WALL PENETRATIONS. USE A U.L. APPROVED SYSTEM LISTED FOR THE ASSOCIATED INSTALLATION.
10. ALL CONDUCTORS SHALL BE STRANDED COPPER, THHN/THWN, MINIMUM #12 AWG. ALL CONDUCTORS SHALL BE IN CONDUIT. FLEXIBLE CONDUIT SHALL BE LIMITED TO A MAXIMUM OF 6'-0" IN LENGTH.
11. MC CABLE SHALL BE PERMITTED FOR 277 VOLT, AND 120 VOLT, 20 AMP BRANCH CIRCUITS ONLY. MC CABLE SHALL USE COPPER CONDUCTORS, AND SHALL BE COMPLETE WITH A SEPARATE INTEGRAL COPPER GROUND CONDUCTOR. MC CABLE SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 330, AND SHALL BE PROPERLY SUPPORTED. DO NOT SUPPORT FROM DUCTWORK, RACEWAYS, CEILING GRID, CEILING TILES, OR ANY OTHER NON-STRUCTURAL MEMBER.
12. ALL CIRCUITS SHALL CONTAIN A SEPARATE, GREEN, COPPER GROUNDING CONDUCTOR.
13. ALL RECEPTACLES SHALL HAVE A GROUND TERMINAL.
14. RECESSED LIGHTING FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE AT (4) POINTS. DO NOT SUPPORT FIXTURES FROM THE CEILING GRID, MECHANICAL PIPING, DUCTWORK, CONDUIT OR OTHER NON-STRUCTURAL BUILDING MEMBERS. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED FOR INSTALLATION.
15. THE COLOR OF ALL RECEPTACLES, TOGGLE SWITCHES AND COVERPLATES SHALL BE VERIFIED WITH THE ARCHITECT PRIOR TO ORDERING.
16. PANELBOARD DIRECTORY CARDS SHALL BE TYPEWRITTEN AND ACCURATELY LABELED TO IDENTIFY FINAL CIRCUIT NUMBERS UTILIZED, THEIR LOAD AND LOCATION.
17. SYSTEMS (FIRE ALARM, INTERCOM, TV, VOICE/DATA, SECURITY) WIRING SHALL NOT BE RUN UNDERGROUND. CABLING/SERVICES FROM ONE BUILDING TO ANOTHER MAY RUN UNDERGROUND. WIRING SHALL BE RATED SUCH USE.
18. PROVIDE FIRE RETARDANT U.L. APPROVED SEALANT ON ALL PENETRATIONS OF FIRE RATED PARTITIONS, WALLS AND STRUCTURAL SLABS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY, PRIOR TO SUBMITTING BID, LOCATIONS OF ALL SUCH FIRE RATED PARTITIONS, WALL AND STRUCTURAL SLABS.
19. ALL COMMUNICATION RACEWAY (DATA, VOICE, AV, SECURITY, ETC.) SHALL BE STUBBED INTO AN ACCESSIBLE CEILING SPACE. PROVIDE WITH PROTECTIVE BUSHINGS.
20. 120 VOLT CIRCUITS OVER 110 FEET SHALL BE #10 AWG MINIMUM, INCLUDING GROUND.
21. 277 VOLT CIRCUITS OVER 240 FEET SHALL BE #10 AWG. MINIMUM, INCLUDING GROUND.
22. PROVIDE HANDLE TIES FOR 2 OR MORE SINGLE POLE WITH SHARED NEUTRALS TO COMPLY WITH NEC 210.4 (B).

ELECTRICAL DRAWING INDEX

E0.0 ELECTRICAL SYMBOL LEGEND, GENERAL NOTES AND LUMINAIRE SCHEDULE
E0.1 LUMINAIRE CUT SHEETS
E0.2A DIVISION 16 SPECIFICATIONS
E0.2B DIVISION 16 SPECIFICATIONS
E0.3 ELECTRICAL SITE PLAN
E1.0 LIGHTING PLAN
E2.0 POWER AND SYSTEMS PLAN
E3.0 POWER RISER DIAGRAM
E4.0 ELECTRICAL SCHEDULES
E5.0 ELECTRICAL DETAILS

ELECTRICAL SYMBOL LEGEND, GENERAL NOTES & LUMINAIRE SCHEDULE

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CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION
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TAMPA, FLORIDA 33602
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STRUCTURAL CONSULTANT

CIVIL CONSULTANT

LANDSCAPE CONSULTANT

WILLIAMS PARK COMMUNITY ADDITION
4362 E.. OSBORNE AVE
TAMPA, FL 33610

DPW FILE NUMBER

DPW NUMBER
18-C-00025

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DRAWN BY
ASC

REVISIONS

SEAL

ROBERT C. ANSTON, P.E. 40858

SCALE: VARIES

SHEET NUMBER
E-0.0

LUMINAIRE TYPES 'A' & 'B'

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — The EPANL Series LED Edge-Lit Flat Panel provides a fully luminous appearance across the face of the lens. This provides a soft, glare-free solution that is visually comfortable within the space. Suitable for many lighting applications including schools, offices and other commercial spaces, retail, convenience stores, hospitals and healthcare facilities. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** **Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.**

CONSTRUCTION — Stylish, one-piece frame. The satin white lens provides excellent shielding and fully luminous appearance. EPANL's low-profile design provides increased installation flexibility especially in restricted plenum spaces. The back plate includes integral T-bar clips for installation into grid ceilings and clips for attachment of suspension cables. Fixture may be mounted and wired in continuous rows.

ELECTRICAL — Long-life LEDs, coupled with a high-efficiency driver, provide superior illumination for extended service life. 70% LED lumen maintenance at 60,000 hours (L70/60,000). 0-10V dimming driver, dims to 10%.

LISTINGS — CSA certified to meet US and Canadian standards. DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified. Damp location listed. IC rated. IP5X rated.

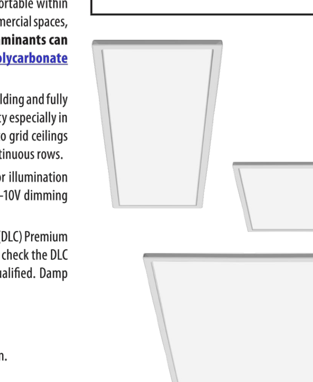
WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

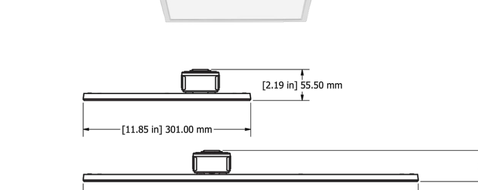
Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Contractor Select

EPANL LED

1' x 4', 2' x 2'and 2' x 4'





ORDERING INFORMATION

Catalog Number	UPC	Description	Lumens	Color Temperature	CRI	Voltage	Wattage	Efficacy	Pallet Qty.	Standard Carton Qty.
EPANL 14 40L 35K[1]	190887602739	1x4 Flat Panel	3905	3500K	>80	120-277V	38.6W	101	39	1
EPANL 14 40LHE 35K[1]	190887602746	1x4 Flat Panel	3922	3500K	>80	120-277V	30.6W	128	39	1
EPANL 14 40L 40K	190887602753	1x4 Flat Panel	4397	4000K	>80	120-277V	38.5W	114	39	1
EPANL 14 40LHE 40K[1]	190887602760	1x4 Flat Panel	3857	4000K	>80	120-277V	30.2W	128	39	1
EPANL 22 34L 35K[1]	190887602647	2x2 Flat Panel	3285	3500K	>80	120-277V	31.3W	105	26	1
EPANL 22 34LHE 35K[1]	190887602661	2x2 Flat Panel	3357	3500K	>80	120-277V	26.0W	129	26	1
EPANL 22 34L 40K	190887602678	2x2 Flat Panel	3479	4000K	>80	120-277V	30.8W	113	26	1
EPANL 22 34LHE 40K[1]	190887602685	2x2 Flat Panel	3361	4000K	>80	120-277V	25.9W	130	26	1
EPANL 24 40L 35K[1]	190887602692	2x4 Flat Panel	4039	3500K	>80	120-277V	38.8W	104	13	1
EPANL 24 40LHE 35K[1]	190887602708	2x4 Flat Panel	3953	3500K	>80	120-277V	30.3W	130	13	1
EPANL 24 40L 40K	190887602715	2x4 Flat Panel	4351	4000K	>80	120-277V	38.9W	112	13	1
EPANL 24 40LHE 40K[1]	190887602722	2x4 Flat Panel	4013	4000K	>80	120-277V	30.7W	131	13	1

ACCESSORIES

Accessories: *Order as separate catalog number.*

DGA14	Drywall grid adapter for 1x4 recessed fixture.
DGA22	Drywall grid adapter for 2x2 recessed fixture.
DGA24	Drywall grid adapter for 2x4 recessed fixture.

Notes:
1 Extended lead-time.

LUMINAIRE TYPE 'C'

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Built on the compact, low-profile Z strip channel, this LED strip offers long maintenance-free life, several color temperatures, lumen outputs and lengths. Ideal for new construction and retrofit applications in T5 and T8 lengths. Ideal for uplight and downlight in commercial, retail, manufacturing, warehouse, cove and display applications. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** **Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.**

CONSTRUCTION — Compact-design channel and cover are formed from code-gauge cold-rolled steel. Easy to install row aligner included for continuous row mounting.

Finish: Paint options include high-gloss, baked white enamel (WH), galvanized (GALV), matte black (MB) and smoke gray (SKGY). After fabrication, five-stage iron phosphate pre-treatment ensures superior paint adhesion and rust resistance.

OPTICS — Standard diffuse snap on/snap off lens eliminates pixels, improves uniformity and minimizes glare. L/LENS option available.

ELECTRICAL — L70>60,000hours. Utilizes high-output LEDs integrated on a two-layer circuit board, ensuring cool-running operation. Optional internal pluggable wiring harness for reduced labor cost in row mounting applications. (See PLR_ ordering information on page 3.) Electronic LED driver is rated for 75 input watts maximum (see Operational Data on page two for actual wattage consumption), **multi-volt input and 0-10V dimming standard**. This fixture is designed to withstand a maximum line surge of 1.5kV at 0.75kA combination wave for indoor locations, for applications requiring higher level of protection additional surge protection must be provided.

LEDs provide nominal 80 CRI at 3000 K, 3500 K, 4000 K, or 5000 K.

Lumen output up to 2,000 lumens per foot. In 86°F (30°C) ambient environments. Luminaire should be installed in applications where ambient temperatures do not exceed 86°F (30°C).

INSTALLATION — Tool-less channel cover for easy installation.

Fixture may be surface mounted (with or without ZSPRG hanger), pendant or stem mounted with appropriate mounting options. Three-point aligner locks in place for easy continuous row mounting.

LISTINGS — CSA certified to US and Canadian safety standards. For use in damp locations between -4°F (-20°C) and 86°F (30°C).

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

LED Striplight

ZL1N

24", 48" and 96" Lengths

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® or XPoint™ Wireless control networks marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

LUMINAIRE TYPE 'D'

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Typical applications include corridors, lobbies, conference rooms and private offices.

CONSTRUCTION — Galvanized steel mounting/plaster frame; galvanized steel junction box with bottom-hinged access covers and spring latches. Reflectors are retained by torsion springs.

Vertically adjustable mounting brackets with commercial bar hangers provide 3-3/4" total adjustment.

Two combination ½"-3/4" and four ½" knockouts for straight-through conduit runs. Capacity: 8 (4 in, 4 out). No. 12 AWG conductors, rated for 90°C.

Accommodates 12"-24" joist spacing.

Passive cooling thermal management for 25°C standard; high ambient (40°C) option available. Light engine and drivers are accessible from above or below ceiling.

Max ceiling thickness 1-1/2".

OPTICS — LEDs are binned to a 3-step SDCM; 80 CRI minimum.

LED light source concealed with diffusing optical lens.

General illumination lighting with 1.0 S/MH and 55° cutoff to source and source image.

Self-flanged anodized reflectors in specular, semi-specular, or matte diffuse finishes. Also available in white and black painted reflectors.

ELECTRICAL — Multi-volt (120-277V, 50/60Hz) eldoLED 0-10V dimming drivers mounted to junction box, 10% or 1% minimum dimming level available.

0-10V dimming fixture requires two (2) additional low-voltage wires to be pulled.

70% lumen maintenance at 50,000 hours.

LISTINGS — Certified to US and Canadian safety standards. Damp location standard (wet location, covered ceiling optional).

WARRANTY — 5-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Note: Specifications subject to change without notice.

LDN6

6" OPEN and WALLWASH LED
Non-IC
New Construction Downlight

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Example: LDN6 35/15 LO6AR MVOLT EZ10

LDN6					
Series	**Color temperature**	**Lumens[1]**	**Aperture/Trim Color**	**Finish**	**Voltage**
LDN6 6" round	27/ 2700K 30/ 3000K 35/ 3500K 40/ 4000K	05 500 lumens 10 1000 lumens 15 1500 lumens 20 2000 lumens 25 2500 lumens 30 3000 lumens 40 4000 lumens 50 5000 lumens	L06 Downlight LW6 Wallwash AR Clear WR[2] White BR[2] Black	LSS Semi-specular LD Matte diffuse LS Specular	MVOLT Multi-volt 120 120V 277 277V 347[3] 347V

Driver	**Options**
EZ10 eldoLED 10% 0-10V EZ1 eldoLED 1% 0-10V	SF[4] Single fuse TRW[5] White painted flange TRBL[5] Black painted flange ELR[4] Batterypack (remote) EL[4] Batterypack NPS80EZ[4] nLight® dimming pack controls 0-10V eldoLED drivers. NPS80EZER[4] nLight® dimming pack controls 0-10V eldoLED drivers. ER controls fixtures on emergency circuit. HAO High ambient option CP Chicago Plenum WL Wet location RRL__ RELOC®-ready luminaire connectors enable a simple and consistent factory installed option across all ABL luminaire brands. Refer to RRL for complete nomenclature. Available only in RRLA, RRLB, RRLAE, and RRLC12S.

Accessories: *Order as separate catalog number.*

EAC ISSM 375	Compact interruptible emergency AC power system
EAC ISSM 125	Compact interruptible emergency AC power system
GRA68 JZ	Oversized trim ring with 8" outside diameter [1]
SCA6	Sloped ceiling adapter. Refer to TECH-SCA for more options.

Notes
1 Overall height varies based on lumen package; refer to dimensional chart on page 3.
2 Not available with finishes.
3 Not available with emergency options.
4 Must specify voltage 120V or 277V.
5 Available with clear (AR) reflector only.

LUMINAIRE TYPE 'E'

OLF 2RH LED with Motion Occupancy

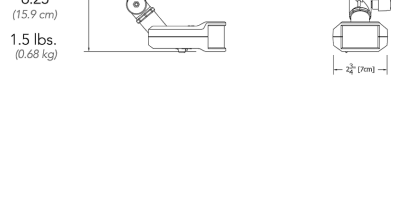
Security Floodlight

Catalog Number	
Notes	
Type	

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Width:	7.00" *(17.8 cm)*
Height:	7.5" *(19.1 cm)*
Depth:	6.25" *(15.9 cm)*
Weight:	1.5 lbs. *(0.68 kg)*



Introduction

The OLF 2RH LED security floodlight featuring motion occupancy technology, combines powerful LED security lighting with motion response light-on-detection. Features include 180 degree range/70ft forward detection, built-in photocell to prevent daylight operation, sensor sensitivity adjustment and a test/time switch to adjust duration lights stay illuminated.

Delivering 2,160 lumens, at only 25 input watts, OLF 2RH replaces up to (2) 90W PAR incandescent lamps offering 86% energy savings. Motion Occupancy (MO) combined with enhanced design features and breadth of options make the OLF family the best choice for residential and commercial applications that require reliable security lighting.

Ordering Information **EXAMPLE:** OLF 2RH 40K 120 MO BZ

OLF					
Series	**Number of heads**	**Color Temperature[1]**	**Voltage**	**Control**	**Finish**
OLF	2RH 2 heads, round	40K 4000K [1]	120 120 volts	MO PIR motion detection with photocell	BZ Bronze WH White

Complete list of configurations available:
OLF 2RH 40K 120 MO BZ
OLF 2RH 40K 120 MO WH

NOTES
1. Correlated color temperature (CCT) shown is nominal per ANSI C78, 377-2008.
2. LED lifespan based on IESNA LM-80-08 results and calculated per IESNA TM-21-11 methodology.

FEATURES & SPECIFICATIONS

INTENDED USE
25 watt LED wall or ceiling mount security floodlight delivers 2,160 lumens for an energy-ecient replacement of (2) 90W incandescent security lights. The OLF LED provides years of maintenance-free general illumination for outdoor applications. OLF 2RH with option MO turns LED's on when occupants in the space are detected. Ideal for entrances, walkways, cooridors, yards, driveways and patios.

CONSTRUCTION
Rugged cast-aluminum, corrosion-resistant housing with dark bronze or white polyester powder paint for lasting durability. Motion sensor features corrosion resistant thermo-plastic housing. LED lamp heads are thermally isolated from the driver that is located in the rear housing, promoting a long service life. Lenses are sealed to keep out moisture, dirt and bugs. LEDs maintain 70% of light output at 50,000 hours of service life[2].

ELECTRICAL
Consumes 25 input watts utilizing 120V 60Hz driver. The OMS1000 motion detection head controls turning LED's on/off when occupancy is detected within the space. Detection range is 180 degrees at 70ft forward detection. A built-in photocell is included to prevent daylight operation. See digram and installation instructions for more information. Rated for outdoor installations, -40ºC minimum ambient.

INSTALLATION
Mounts to a recessed junction box on wall or ceiling. Crossbar and hardware provided. Wet location listed for mounting 4 feet above ground. Tool-less adjustable heads allow for precise aiming. Neighbor-friendly visors are adjustable or removable.

LISTINGS
UL/cUL listed Listed to U.S. and Canadian safety standards for wet locations. Tested in accordance with IESNA LM-79 and LM-80 standards.

WARRANTY
Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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LUMINAIRE TYPE 'EM'

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Provides a minimum of 90 minutes of illumination for the rated wattage upon loss of AC power. Ideal for applications requiring attractive unit equipment with quick installation. **Certain airborne contaminants can diminish integrity of acrylic and/or polycarbonate.** **Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.**

CONSTRUCTION — White, compact, low-profile contemporary design. Engineering-grade thermoplastic housing is impact-resistant, scratch-resistant and corrosion-proof. UL94V-0 flame rating. UV-stable resin resists discoloration from natural and man-made light sources.

Low-profile, integrated test switch/pilot light. Easily visible bright red status indicator.

Unique track-and-swivel arrangement permits full range of direction of lamp head adjustment. Universal J-box mounting pattern. Tool-less access for maintenance.

OPTICS — Two LED lamp heads with polycarbonate lens, 12 series-parallel white LEDs each, provide redundant light sources to ensure emergency lighting performance. Typical LED lamp life is 10 years.

ELECTRICAL — Dual-voltage input capability (120/277V). Edge connector on printed circuit board ensures long-term durability.

Current-limiting charger maximizes battery life and minimizes energy consumption. Provides low operating costs.

Short-circuit protection — current-limiting charger circuitry protects printed circuit board from shorts.

Thermal compensation adjusts charger output to provide optimum charge voltage relative to ambient temperature.

Regulated charge voltage maintains constant-charge voltage over a wide range of line voltages. Prevents over/undercharging that shortens battery life and reduces capacity.

Filtered charger input minimizes charge voltage ripple and extends battery life.

AC/LVD reset allows battery connection before AC power is applied and prevents battery damage from deep discharge.

BATTERY: Sealed, maintenance-free nickel-cadmium battery delivers 90 minute capacity to emergency lamps. Two-state constant-current charge maximizes battery life and automatically recharges after battery discharge. Low-voltage disconnect prevents excessively deep discharge that can permanently damage the battery. Optional high-output battery available to power both local and optional LED remote lamp heads simultaneously.

Self -Diagnostics (SD- Option) Single multi-color LED indicator to display two-state charging, test activation and three-state diagnostic test. Test switch provides manual activation of 30-second diagnostic testing for on-demand visual inspection. Self-diagnostic testing for 30 seconds every 30 days, 30 minutes at 180-day interval, and 90 minutes annually. Diagnostic evaluation of LED light source, AC to DC transfer, charging and battery condition.

INSTALLATION — Ceiling- or wall-mount standard. Flexible conduit entry provision on top of the unit.

LISTINGS — UL damp location listed standard 50-104°F (10-40°C). Meets UL 924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards.

QUANTUM®

Thermoplastic Emergency Light

ELM2 LED

LED Lamp Head
Ni-Cad Battery

WARRANTY — 5-year limited warranty. (Battery is prorated). Complete warranty terms located at www.AcuityBrands.com/CustomerResources/Terms_and_Conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example:** ELM2 LED

ELM2	LED		
Series	**Lamp type**	**Housing**	**Options**
ELM2	LED Two 1.5W/3.6V white LED	(blank) White B Black	HO High-output ni-cad battery for 6W remote capacity [1] SD Self-diagnostics NOM Meets Mexican standards T20C California Title 20 Compliance [2]

Accessories: *Order as separate catalog number.*

ELA Q L0304 SD	Single LED indoor remote head, white, self-diagnostics [3,4,5]	ELA Q L0304	Single LED indoor remote head, white [3,4,5]
ELA T Q L0304 SD	Twin LED indoor remote head, white, self-diagnostics [3,4,5]	ELA T Q L0304	Twin LED indoor remote head, white [3,4,5]
ELA QWP L0304 SD	Single LED weather-proof remote head, gray, self-diagnostics [3,4,5]	ELA QWP L0304	Single LED weather-proof remote head, gray [3,5]
ELA T QWP L0304 SD	Twin LED weather-proof remote head, gray, self-diagnostics	ELA T QWP L0304	Twin LED weather-proof remote head, gray [3,5]
ELA WG1	Wireguard, 15"W x 13-1/2"H x 6" D (See spec sheet ELA-WG)	ELAVS	Thermoplastic vandal shield[6]

Notes
1 Not available with NOM.
2 See T20C compliant product list. Only available with ELM2 LED, ELM2 LED HO SD and ELM2 LED B HO SD.
3 Only available with HO option. See spec sheet ELA Q LED.
4 Also available in black. Add "B" after ELA to order black finish. Example: ELA B Q L0304 SD. See spec sheet ELA Q LED.
5 Only compatible with Quantum LED series.
6 See spec sheet ELA VS-VS2.

LUMINAIRE TYPE 'X'

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Suitable for applications requiring attractive edge-lit exit signage, universal installation and low energy consumption.

CONSTRUCTION — Extruded brushed aluminum finish.

Clear acrylic panels- letters measure 6" high with 3/4" stroke, with 100 ft viewing distance rating, based upon UL 924 standard.

For single-face clear panels, EXIT is seen as a reversed image from the back.

OPTICS — LEDs mounted on printed circuit board. The typical life of the exit LED lamp is 10 years.

Low energy consumption – less than 3 watts for AC only and less than 5 watts for battery back-up.

ELECTRICAL — Dual voltage input capacity (120/277V).

Battery: (EL Option) – Sealed, maintenance free nickel-cadmium battery delivers 90 minutes capacity to emergency lamps. Test switch provides manual activation of 30-second diagnostic testing for on-demand visual inspection.

Self-diagnostic testing (EL Option Only) for 30 seconds every 30 days and 90 minutes annually. Diagnostic evaluation of LED light source, AC to DC transfer, charging and battery condition.

X2 Option: This circuit option on the AC-only exit enables it to be connected to two different (one acting as a backup to the other) supplies at the same time.

INSTALLATION — EDG – Universal surface (top, end or back) mounting. Canopy provided.

EDGR – Recessed mounting. Bar hanger and brackets provided for both new or restricted ceiling access installation applications. Back wall mount (WM) option.

Universal directional indicators. Field selected and attached.

LISTINGS — UL damp location listed 32°-122°F (0°-50°C) standard. Meets UL924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards.

WARRANTY — 3-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

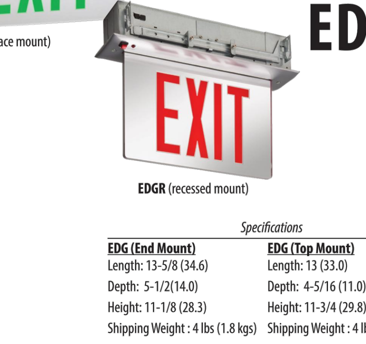
NOTE: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25°C.

Specifications subject to change without notice.

LED Edge-Lit Exits

EDG
EDGR



EDG (surface mount)

EDGR (recessed mount)

LED Lamps

Specifications

EDG (End Mount)	**EDG (Top Mount)**
Length: 13-5/8 (34.6)	Length: 13 (33.0)
Depth: 5-1/2(14.0)	Depth: 4-5/16 (11.0)
Height: 11-1/8 (28.3)	Height: 11-3/4 (29.8)
Shipping Weight : 4 lbs (1.8 kgs)	Shipping Weight : 4 lbs (1.8 kgs)
EDG (Back Mount)	**EDGR**
Length: 13 (33.0)	Length: 13 (33.0)
Depth: 3 (7.6)	Depth: 1-3/4 (4.4)
Height: 11-1/8 (28.3)	Height: 8 (20.3)
Shipping Weight : 4 lbs (1.8 kgs)	Shipping Weight : 6.8 lbs (3.1 kgs)
	Shipping Weight (WM option) : 8.1 lbs (3.7 kgs)

All dimensions are inches (centimeters) unless otherwise noted.

ORDERING INFORMATION For shortest lead times, configure products using **bolded options**. **Example**: EDG 1 R EL

Family	**Housing color**	**Number of faces**	**Letter color**	**Operations**	**Options**
EDG Surface mount LED edge-lit exit **EDGR** Recessed LED edge-lit exit	**(blank)** Brushed aluminum W White	**1** Single face **2** Double face	**R** Red on clear (single face only)[1] **G** Green on clear (single face only)[1] RMR Red on mirror[2] GMR Green on mirror[2] RW Red on white[3] GW Green on white[3]	**(blank)** AC only **EL** Nickel-cadmium battery X2 Provides primary and secondary AC input[4] SD Self-diagnostics[5]	**(blank)** None WM Recessed wall mount[6]

Accessories: Order as separate item.

ELA US12	12" stem kit with brushed aluminum canopy[7]
ELA W US12	12" stem kit with white canopy[7]

Notes
1 For single-face clear panels, EXIT is seen as a reversed image from the back.
2 Available with single and double face.
3 White panel standard for double and single face.
4 Not available with EL and SD options.
5 Available with EL option only.
6 Available on EDGR single face only
7 See spec sheet ELA-StemKits. Only available for EDG.

LUMINAIRE
CUT SHEETS

CITY OF TAMPA
CONTRACT ADMINISTRATION DEPARTMENT
PLANNING AND DESIGN DIVISION

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DPW FILE NUMBER

DPW NUMBER
18-C-00025

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DRAWN BY
ASC

REVISIONS

SEAL

ROBERT C. ANSTON, P.E. 40858

SCALE: VARIES

SHEET NUMBER
E-0.1

2 OF 10

SECTION 16010 – ELECTRICAL REQUIREMENTS

PART 1.00 – GENERAL

1.01 RELATED DOCUMENTS

A. Work herein shall conform to all applicable laws, ordinances, and to regulations of the local utility companies. The general conditions and all requirements of the contract documents shall apply to all work of this section. Work shall be in accordance with the requirements of:

1. Florida Building Code (FBC) 6th Edition (2017): this code includes the 2017 FBC Building, Mechanical, Plumbing, Fuel Gas and Energy Conservation volumes. Further, see "Referenced Standards" in the FBC, Building chapter 35; FBC, Plumbing chapter 14; FBC, Mechanical chapter 15; FBC, Fuel Gas chapter 8; FBC Energy Conservation chapter 5.) (Effective December 31, 2017)
2. 6th Edition of the Florida Fire Prevention Code (FFPC); (this code also includes the Florida revisions of NFPA 1 and NFPA 101.) (Effective December 31, 2017)
3. Local Electrical Codes and Standards
4. 2014 National Electric Code

B. Use only mechanics skilled in the work they are to perform and have a competent representative on the job when any work is being done.

C. No work shall be done unless the Superintendent of the Contractor is on the job site. Work shall be properly protected, all rubbish removed promptly, and exposed work shall be carefully cleaned prior to final acceptance.

D. The term "provide" shall include labor, materials, and equipment necessary to furnish and install, complete and operable, the item or system indicated.

E. In decisions arising from discrepancies, interpretation of Drawings and Specifications, substitutes, and other pertinent matters, the decision of the Owner's representative's approval shall be final.

1.02 SUMMARY

A. Provide complete electrical systems as indicated in the Drawings and as specified herein.

B. Extend from the service point of connection furnishing all protective devices, conductors, supports, raceways, etc. to provide complete electrical systems to serve motor loads, lighting loads and miscellaneous electrical loads. Care shall be exercised that all lines run straight, level. Care shall be exercised so that Code clearance is allowed for all panels disconnect, etc., requiring it; do not allow other trades to infringe on this clearance. Balance load as equally as practicable on service and all feeders, circuits and panel buses.

C. Upon completion of work, the entire wiring system shall be tested, and shall be shown to be in proper working condition in accordance with intent of Specifications and Drawings. It shall be the responsibility of the electrical installer to have all systems ready for operation, make any minor connection changes or adjustments necessary for the proper functioning of the system and equipment, and to have an electrician available to operate systems and equipment in presence of the Architect/Engineer. The electrician shall be available to assist in removal of panel fronts, etc., to permit inspection as required.

D. Temporary electrical service shall be provided for construction period, making all connections and removal of same at job conclusion. In addition, Contractor shall furnish and install temporary lighting for construction period. At job completion, all temporary wiring shall be removed.

1.03 MINIMUM REQUIREMENTS

A. References to the National Electrical Code (NEC), Underwriters Laboratories, Inc. (UL), and National Fire Protection Association (NFPA) are a minimum installation requirement standard. Drawings and other Specification Sections shall govern in those instances where requirements are greater than those specified in NEC.

B. The rules and regulations of the Federal, State, local, civil authorities and utility companies in force at the time of execution of the contract shall become a part of this specification.

C. In general, materials and apparatus shall comply with all applicable tests, ratings, specifications, and requirements of the IEEE and NEMA and shall bear the approved device label of the Underwriter's Laboratories, Inc.

D. Where not otherwise specified, provide only new, standard first–grade materials throughout, conforming to standards established by Underwriter's Laboratories, Inc., and so marked and labeled, together with manufacturer's brand or trademark. All equipment subject to review of Architect/Engineer before installation. All like items shall be of one manufacturer.

E. Any equipment or material shown on the Drawings to be removed and reinstalled shall be cleaned and, if necessary, repaired to first class condition prior to reinstallation.

F. Drawings are generally diagrammatic. Coordinate his work with the different trades so that interferences between existing and/or new conduits, piping, equipment, architectural and structural work will be avoided. Provide all necessary offsets in raceways, fittings, etc., required to properly install the work with minimum additional space. In the event of conflicts or interference, Architect/Engineer will decide which equipment, piping, etc., must be relocated, regardless of which was installed first. Perform work in such a manner and at times as not to delay work of other trades, complete all work as soon as the condition of the structure and installations of equipment will permit. Patch, in a satisfactory manner and by the proper trade, any work damaged by electrical installer.

G. Fully instruct representatives of Owner in operation and maintenance of electrical systems. A letter naming personnel who received this instruction shall be submitted to Architect/Engineer.

H. Keep accurate record of any deviations from the original drawings, and also routing of runs shown in diagrams. As–built drawing shall be made with colored pencil on blue–line prints and shall be kept current as the work progresses.

1.04 STANDARDS

A. All material and equipment shall be listed, labeled or certified by Underwriters Laboratories, Inc., where such standards have been established. Equipment and material which are not covered by UL Standards will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory. Equipment of a class which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, will be considered if inspected or tested in accordance with national industrial standards, such as NEMA, or ANSI. Evidence of compliance shall include certified test reports and definitive shop drawings.

1.05 QUALIFICATIONS (PRODUCTS AND SERVICES)

A. Manufacturers Qualifications: The manufacturer shall regularly and presently produce, as one of the manufacturer's principal products, the equipment and material specified for this project, and shall have manufactured the item for at least five years, unless otherwise noted elsewhere in the specifications or on the drawings.

B. Product Qualification:

1. Manufacturer's product shall have been in satisfactory operation on three installations of similar size and type, as this project, for approximately three years.
2. The Owner reserves the right to require the contractor to submit a list of installations where the products have been in operation before approval of said products.

C. Service Qualifications: There shall be a permanent service organization maintained or trained by the manufacturer which will render satisfactory service to this installation within four hours of receipt of notification that service is needed. Submit name and address of service organizations.

1.06 QUALIFICATIONS (INSTALLER)

A. Electrical Installer shall have had experience of at least the same size and scope as this project, on at least two other projects within the last 5 years in order to be qualified to bid this project.

B. This qualification shall apply to his subcontractors.

C. Workmen shall be experienced in their respective trade. Workmanship of installed work shall be first class and will be so judged by the Architect/Engineer. Substandard work shall be removed and replaced.

1.07 MANUFACTURED PRODUCTS

A. Materials and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacture of such items, for which replacement parts should be available. Items not meeting this requirement, but which otherwise meet technical specifications, and merits of which can be established through reliable test reports or physical examination of representative samples, will be considered.

B. When more than one unit of the same class of equipment is required, such units shall be the product of a single manufacturer.

C. Equipment Assemblies and Components:

1. All components of an assembled unit need not be products of the same manufacturer, however, the assembled unit shall be the responsibility of a single manufacturer and warranted as such.
2. Manufacturers of equipment assemblies, which include components made by others, shall assume complete responsibility for the final assembled unit.
3. Components shall be compatible with each other and with the total assembly for the intended service.
4. Constituent parts which are similar shall be the product of a single manufacturer.

D. All factory wiring shall be identified on the equipment being furnished and on all wiring diagrams.

1.08 EQUIPMENT REQUIREMENTS

A. Equipment voltage ratings shall be in accordance with the requirements indicated on the drawings or as specified.

B. Prior to bid, written approval shall be obtained by the Contractor for any equipment that differs from these specified on the drawings and specifications. Be prepared to submit samples of the equipment when requested at no cost to the Architect/Engineer.

1. The Contractor shall furnish drawings showing all installation details, shop drawings, technical data and other pertinent information as required to determine that the equipment is equivalent in quality and function to the equipment specified.
2. Approval by the Architect/Engineer of the equal equipment does not relieve the Contractor of the responsibility of furnishing and installing the equipment at no additional cost to the Owner.
3. Any other items required for the satisfactory installation of the equal equipment shall be furnished and installed at no additional cost to the Owner. This includes but shall not be limited to additions or changes to branch circuits, circuit protective devices, conduits, wire, feeders, controls, panels and correlation with other work, subject to the jurisdiction and approval of the Architect/Engineer.

C. Catalogue numbers, where given, are intended to give a basis for design, quality and function. Any other incidental equipment needed for a complete and functional installation shall be provided at no additional cost.

1.09 DELIVERY, STORAGE AND HANDLING

A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

B. Store equipment and materials at the site, unless off–site storage is authorized in writing. Protect stored equipment and materials from damage.

C. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

1.10 EQUIPMENT PROTECTION:

A. Equipment and material shall be protected during shipment and storage against physical damage, dirt, moisture, cold and rain.

B. During installation, equipment, controls, controllers, circuit protective devices, etc., shall be protected against entry of foreign matter; and be vacuum cleaned both inside and outside before testing, operating and painting.

C. Painted surfaces shall be protected with factory installed removable heavy kraft paper, sheet vinyl or equal.

D. Damaged equipment shall be, as determined by the Architect/Engineer, placed in first class operating condition or be returned to the source of supply for repair or replacement.

E. Damaged paint on equipment and materials shall be refinished with the same quality of paint and workmanship as used by the manufacturer so repaired areas are not obvious.

1.11 WORK PERFORMANCE

A. Arrange, phase and perform work to assure electrical service for other buildings at all times.

B. New work shall be installed and connected to existing work neatly and carefully. Disturbed or damaged work shall be replaced or repaired to its prior conditions.

C. Coordinate location of equipment and conduit with other trades to minimize interferences.

D. Obtain and pay for all required installation inspections and deliver certificates approving installations to the Owner unless directed otherwise.

1.12 EQUIPMENT INSTALLATION AND REQUIREMENTS

A. Equipment location shall be as close as practical to locations shown on the drawings. Where architectural features govern location of work, refer to architectural drawings.

B. Working spaces shall not be less than specified in the National Electrical Code for all voltages specified.

C. Inaccessible Equipment:

1. Where the Owner determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled as directed at no additional cost to the Owner.
2. "Conveniently accessibility" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as motors, pumps, belt guards, transformers, piping, and duct work.

D. Equipment and Material:

1. New equipment and material shall be installed, unless otherwise specified.
2. Equipment and material shall be designed to assure satisfactory operation and operating life for environmental conditions where being installed. NEC and other code requirements shall apply to the installation in areas requiring special protection such as explosion–proof, watertight and weatherproof construction.

E. Utility Services:

1. Determine utility connection requirements and include in the base bid all costs to the Owner for utility service.
2. Include all costs for temporary service, temporary routing of service or any other requirements of a temporary nature associated with the utility service.

F. Continuity of Service:

1. No service shall be interrupted or changed without permission from the Architect and the Owner. Written permission shall be obtained before any work is started.
2. When interruption of services is required, all persons concerned shall be notified and a prearranged time agreed upon.

G. Concrete Work:

1. Provide all cast–in–place concrete shown on the documents unless noted otherwise.
2. Provide all anchor bolts, metal shapes and templates required to be cast in concrete or used to form concrete for support of electrical equipment.

1.13 EQUIPMENT IDENTIFICATION

A. In addition to the requirements of the National Electrical Code, install an identification sign which will clearly indicate information required for use and maintenance of items such as panelboards, cabinets, safety switches, separately enclosed circuit breakers, individual breakers, contactors, toggle switches, control devices and other significant equipment.

B. Nameplates shall be laminated white phenolic resin with a black core with engraved lettering, a minimum of 3/16–inch high. Nameplates that are furnished by manufacturer as a standard catalog item, or where other method of identification is herein specified, are exceptions. Nameplates shall be permanently installed on the front of the device enclosure.

1.14 SUBMITTALS

A. The Architect/Engineer's approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval will not be permitted at the job site. Submittals shall be made for all equipment and systems as indicated in the respective specification section.

B. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Architect/Engineer to ascertain that the proposed equipment and materials comply with specification and drawing requirements. Catalog cuts submitted for approval shall be legible and clearly identify equipment being submitted.

C. Submittals for individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assembly as a whole. Partial submittals will not be considered for approval.

D. Make submittals for the equipment and materials in accordance with the following:

1. Mark the submittals, "SUBMITTED UNDER SECTION_____".
2. Submittals shall be marked to show specification reference including the section and paragraph numbers.
3. The submittals shall include the following:
   a. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
   b. Elementary and interconnection wiring diagrams for communication system and equipment assemblies. All terminal points and wiring shall be identified on wiring diagrams.
   c. Parts list which shall include those replacement parts recommended by the equipment manufacturer, quantity of parts, current price and availability of each part.
   d. Manuals:
1. Maintenance manuals shall be complete and shall be furnished in a loose leaf binder or in the manufacturer's standard binder. Information shall be sufficient to enable a qualified technician to perform normal first line maintenance and repair.
2. Operation manuals shall be clear and concise and shall describe, in detail, the information required to properly operate the equipment specified.

E. In addition to the requirement of SUBMITTALS, the Owner reserves the right to request the manufacturer to arrange for the Owner's representative(s) to see typical active systems in operation, when there has been no prior experience with the manufacturer or the type of equipment being submitted.

1.15 ELECTRICAL WORK FOR MECHANICAL SYSTEMS

A. The electrical contractor shall furnish and install all power wiring, complete, from power source to motor or equipment junction box, and including wiring through starters and disconnect switches, except where starters or disconnect switches are an integral part of the mechanical equipment.

B. The electrical contractor shall furnish and install all starters and disconnect switches except when specified as a part of, and furnished with a particular piece of equipment.

C. The mechanical contractor shall furnish and install all control wiring, conduit and devices, unless specifically indicated on the drawings to be indicated by the electrical contractor. The mechanical contractor shall furnish and install all control components (such as thermostats and humidistats) and complete and test the final control connections. Regardless of the responsibility for furnishing electrical work for the controls, all electrical work shall be performed by a properly licensed electrical contractor in conformance with applicable codes.

END OF SECTION 16010

SECTION 16050 – ELECTRICAL METHODS AND MATERIALS

PART 1.00 – GENERAL

1.02 SUMMARY

A. Furnish and install all electrical wiring, systems, equipment and accessories in accordance with the specifications and drawings. Capacities and ratings of motors, cable, panelboards, etc., and arrangement for specified items in general are shown on drawings.

B. All ampacities herein specified or indicated on the drawings are based on copper conductors, with the conduit and raceways accordingly sized. Aluminum conductors are not permitted.

1.03 REFERENCE STANDARDS

A. National Electrical Code – 2014

B. Florida Building Code – 2017 (6th Edition)

C. 2017 Florida Fire Prevention Code (6th Edition)

1.04 SUBMITTALS

A. Submit (6) six copies of the following detailed manufacturer's product data and shop drawings for each item as follows:

1. Lighting Fixtures, including lamps & ballasts.
2. Panelboards.
3. Disconnects.
4. Starters, Contactors and Controllers
5. Receptacles.
6. Toggle Switches.
7. Lighting Controls including occupancy sensors.
8. Fire Alarm System
9. Dry Type Transformers

1.05 ELECTRICAL SYSTEMS DEMONSTRATION

A. Prior to inspection, demonstrate the proper operations of each system to the Owner's representative.

B. Instruct Owner's maintenance personnel in operation, adjustment and maintenance of equipment and systems using the operations and maintenance data as the basis of instruction.

1.06 WARRANTIES AND BONDS

A. Refer to contract requirements.

PART 2.00 – PRODUCTS

2.01 PANELBOARDS

A. Submit manufacturer's shop drawings to the Architect/Engineer for review and shall receive such review comments before panelboards are delivered to the job. Shop drawings shall indicate arrangement of busses, branch circuits, circuit breakers, ratings, cabinets, etc., for all panelboards.

B. All panelboards shall be dead front safety type. The bus size, the number of branch circuits, their ampere rating and number of poles, etc., for each panelboard is noted on the drawings. Solderless lugs, or connections in the correct number and sizes for conductors shall be provided on mains, on the load side of each branch circuit, and on neutral bars. Provide an equipment ground bus bar within the panelboard for connection of equipment ground conductors. Cabinets shall be fabricated of code gauge sheet steel and shall be galvanized or cadmium plated inside and out. Cabinets shall be furnished without knock–outs and all holes for raceways shall be drilled and punched on the job. Fronts shall be sheet steel with gray paint finish over a rust inhibitive primer. Doors shall be hinged and shall be equipped with suitable latches and pin–cylinder locks, all keyed alike. All bus bars shall be copper.

C. All panelboards shall be connected distributed phase with circuit numbering as indicated on the drawings. Panelboards shall be numbered with odd numbers on the left side of the panel and even numbers on the right side of the panel. Panelboards shall have a circuit directory card mounted in a frame with plastic cover mounted on the inside of the door, and directory cards shall be completed with a typewriter by the Contractor to indicate areas and/or devices served by each circuit.

D. Circuit breakers for panelboards shall be molded plastic case, air circuit breaker type. Breakers shall have thermal–magnetic trip units and multi–pole breakers shall have a common trip bar so that the tripping of one pole will automatically trip all poles of the breaker. Breakers shall be trip–free and trip–indicating and shall have quick–make, quick–break contacts. Breakers shall be bolt–on type. Circuit breakers shall be as manufactured by General Electric, I.T.E. or Square D.

E. Panelboard boxes shall be current design by Square D type "NQOD", or equal by General Electric, Seimens or Cutler Hammer. Panelboard boxes shall be 5–3/4 inches deep. Voltage shall be as indicated.

2.02 SAFETY SWITCHES

A. All safety switches shall be heavy duty type, NEMA type "HD". Switch mechanism shall be quick–make, quick–break. Cover shall be interlocked with mechanism to prevent opening unless switch is in the "OFF" position. All enclosures shall all be "Bonderized" or equal, and primed and finished to resist rusting and corrosion. Switches shall be General Electric, I.T.E. or Square D.

B. All fuses for safety switches shall be dual element, cartridge, rejection type. Fuses shall be Buss "Fusetron", Gould–Shawmut "Tronic", or Cefco "LO–IP". The Contractor shall furnish and install proper size fuses where required for all fusible equipment and shall furnish to the Owner one spare fuse for each fuse installed. Fuses for service entrance disconnects shall be class RK–1, current limiting type. Fuses for all motors shall be class RK–5, sized as recommended by the motor manufacturer. Provide rejection clips for all disconnects utilizing class R fuses.

2.03 RIGID STEEL CONDUIT

A. Rigid steel conduit shall be Underwriters' approved hot–dip galvanized, zinc metallized, or sherardized. The threaded ends of the conduit shall also be zinc coated. Conduit fittings shall be zinc coated and shall be threaded type.

2.04 THIN WALL CONDUIT

A. Thin wall conduit shall be Underwriters' approved galvanized electrical metallic tubing. Couplings and connectors for conduit sizes 2 inches and smaller shall be hex–nut, expansion–gland type, zinc or cadmium plated. Set screw type fittings may be used for conduit sizes 2–1/2 inches and larger.

2.05 FLEXIBLE METALLIC CONDUIT

A. Flexible metallic conduit in dry locations shall be Underwriters' approved, zinc coated, single strip type. Fittings shall be Thomas and Betts "Tite–Bite", straight or angle connectors.

B. Flexible conduit in damp or wet locations shall be flexible, liquid–tight conduit similar to Sealtite or equal. Fittings shall be as manufactured by Appleton, Crouse Hinds or Thomas and Betts.

2.06 PVC CONDUIT

A. PVC conduit and couplings where indicated shall be high impact, rigid polyvinyl chloride, heavy wall type (Schedule 40).

B. PVC conduit for use underground shall be type DB and listed for such use.

2.07 BOXES

A. Ceiling boxes shall be 4 inch square or octagonal, 2–1/8 inch deep for exposed work or furred ceiling work and 3 inches deep for concrete work. Plaster rings and/or fixture studs shall be provided where required.

B. Flush mounted wall outlets shall be 4 inch square boxes or gang boxes, not less than 1–1/2 inches deep. Boxes shall be provided with extension rings and/or covers with sufficient depth to bring the covers flush with the finished wall.

C. Boxes for flush mounting in concrete block work with one or two devices shall have covers with square corners on the raised portion of the cover. The covers shall have a sufficient amount of depth to be flush with the face of the block. The bottom side of the covers or boxes shall be installed at the masonry course nearest to the dimension specified or noted.

D. Cover plates for flush mounted wall boxes shall be stainless steel and suitable for the device covered and/or purpose intended. Cover plates for telephone/data outlets shall be equipped with a suitable data jack or as otherwise specified by the Owner.

E. Outlet boxes for exposed wall mounting, including shop areas, or outdoor installation shall be cast metal type "FS" or "FD" boxes with suitable cast aluminum covers. Weatherproof receptacle covers shall have spring hinged lids. Outlet boxes for exterior devices or otherwise wet locations shall be weatherproof boxes.

2.08 CONDUCTORS

A. All conductors shall be copper with 98% conductivity rating.

B. Unless otherwise indicated, all conductors shall have moisture and heat resistant thermoplastic insulation, Under writers' dual rated THHN/THWN.

C. Unless otherwise indicated, all conductors No. 12 AWG and smaller shall be solid, and all others shall be stranded. Stranding shall be IPCEA Standard.

D. Fixture wire for incandescent fixtures shall be Underwriters' type SF–2 (600V., 200 degrees C.).

E. Fixture wire for fluorescent fixtures shall have a heat resistant thermoplastic insulation with a nylon jacket, Underwriters' Type THHN or TFFN (90 degrees C.). Type THHN shall also be used to serve continuous row fluorescent fixture installations where wiring is extended from fixture to fixture thru fixture channels.

F. Control wire shall be #14, 19 strand, with .015 inch polyvinyl chloride insulation, .004 inch nylon jacket, type THW or THHN/THWN, rated 90 degrees C.

G. Service entrance conductors shall be type THWN/THHN, THHN, or XHHW, 75 or 90 degrees C.

H. Wire and cable shall be as manufactured by: Cyprus, General Electric, Okonite, Triangle, Phelps–Dodge, or General Cable.

I. All conductors for motors shall be type THWN/THHN, THHN or type XHHW.

2.09 RECEPTACLES

A. All receptacles shall be specification grade, grounding type with ground connection made through an extra pole which shall be permanently connected to the green grounding conductor.

B. One receptacle for a 20 ampere, 120 volt branch circuit shall be a two wire, three pole receptacle rated 20 amperes at 125 volts. Duplex receptacles shall be by Hubbell or equivalent by Arrow–Hart, Pass & Seymour or Leviton.

C. Two or more receptacles installed on a 20 ampere branch circuit shall be two wire, three pole receptacles rated at 15 amperes at 125 volts in accordance with NEC Article 210, Table 210–21(b)(2). Duplex receptacles shall be by Hubbell or equivalent by Arrow–Hart, Pass & Seymour or Leviton.

D. Provide special configuration receptacles where required. All receptacle configurations shall be verified with the Owner prior to installation.

E. All coverplates shall be impact resistant nylon.

F. All receptacles shall be white color with a matching white coverplate, except where available only in black. Colors shall be verified by the contractor with the Architect prior to ordering.

2.10 TOGGLE SWITCHES

A. Local toggle switches shall be specification grade of the type as indicated on the drawings. Switches shall be rated 20 amperes at 120/277 volts, quiet type and shall be Underwriters' approved without derating for tungsten lamp loads or inductive loads. Toggle switches shall be by Hubbell equal by Arrow–Hart, or Leviton.

B. Toggle switches shall be white color with a matching white coverplate. Colors shall be verified by the contractor with the Architect prior to ordering.

2.11 LIGHTING FIXTURES

A. Manufacturers: Subject to compliance with requirements, provide as indicated on the fixture schedule.

B. General: Provide lighting fixtures, of sizes, types, and ratings indicated; complete with, but not necessarily limited to, housings, lamps, lamp holders, reflectors, ballasts, starters and wiring. Catalog numbers indicated on the fixture schedule are intended to specify the general type and quality of light fixture required and are not intended to be complete in every respect for the accessories required or otherwise specified. Provide all necessary mounting hardware, special options, and accessories required or specified on the drawings.

C. LED: LED luminaires shall be rated/tested to LM–79 standards

Provide energy saving LED–lamp drivers, compatible with the LED lamps and luminaire; Type 1, Class P; sound–rated A, and with internal thermal protection. All LED lamp type and associated driver for each individual type luminaire shall be of the same manufacturer and type. Drivers shall also meet the following requirements:

1. Operate LED lamps with no detectable flicker and provide for dimming where specified. Driver shall be compatible with the dimmers provided and installed. Provide written documentation of compatibility.
2. Driver manufacturer shall have been producing LED drivers in the U.S. for more than three years with a low failure rate.
3. Drivers shall be approved and listed by UL.
4. Drivers shall comply with all applicable state and federal efficiency standards.
5. Drivers shall comply with FCC and NEMA limits governing electromagnetic and radio frequency interference and shall not interfere with operation of other normal electrical equipment.
6. Drivers shall meet all applicable ANSI and IEEE standards regarding harmonic distortion and surge protection, but in no case shall have total harmonic distortion exceeding 10%.
7. Drivers shall not be affected by lamp failure and shall yield normal published expected lamp life.
8. Drivers shall operate at an input frequency of 60 HZ and an input voltage of 108 to 132 volts.
9. Driver assembly shall carry a minimum three year warranty, including labor allowance.

D. Fusing: All LED drivers shall be fused or be provided with automatic electronic thermal overload protection. Divers shall be capable of being disconnected at the luminaire for service and replacement.

2.12 LED LAMPS

A. Lamps: Provide LED lamps that comply with LM–80 standards. LED lamps shall be rated for a minimum of 50,000 hours life. Lamps shall be provided with a minimum 3 year warranty.

B. Provide all necessary accessories and hardware for the indicated mounting.

2.13 INDIVIDUAL MOTOR CONTROLLERS

A. Manual motor starters/toggle switches for 115 volts, single phase motors one horsepower and smaller, shall be single pole, horsepower rated switches with thermal overload units and heaters. Thermal overloads may be omitted if the motor contains internal overloads. Starters shall be Allen–Bradley Bulletin 609, General Electric CR–101 or Square D Class 2510 with stainless steel cover plates or weatherproof where required.

B. Magnetic full voltage starters for three phase motors shall be three pole, horsepower rated, magnetically operated with electronic overloads sized per the specific motors supplied. Starters shall be provided with a Hand–Off–Auto switch, plus a red and green pilot light. Starters shall be Allen–Bradley Bulletin 509, General Electric CR–306 or Square D Class 8536. Combination starter disconnects shall be heavy duty fusible, with a magnetic full voltage starter equal to the above.

C. Provide phase failure relay for all three phase motors. Relay shall be fully adjustable to open the contacts when any phase to phase or phase to ground voltage drops below 20% nominal. The relay drop out point shall be adjustable from 0% to 50%. Relay shall be provided with an adjustable time delay of 0 to 120 seconds before opening to avoid nuisance outages. Relay shall be full automatic to open and fully automatic to reset.

2.14 LIGHTING CONTROLS

A. Lighting control system shall be as specified or approved equal. Provide all set–up, programming, commissioning and training. Provide permanent labeling on all control stations that is intuitive as to the area controlled. Final labeling shall be approved prior to installation. Provide a full one year manufacturer's warranty including all parts and labor.

B. Provide low voltage lighting controls as indicated on the drawings and electrical legend.

PART 3.00 – EXECUTION

3.01 PREPARATION

A. Verify final locations for rough–ins with field measurements and with the requirements of the actual equipment to be connected.

3.02 ELECTRICAL INSTALLATIONS

A. Coordinate electrical equipment and materials installation with other building components.

B. Verify all dimensions by field measurements.

C. Arrange for chases, slots, and openings in other building components to allow for electrical installations.

D. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.

E. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing–in the building.

F. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.

G. Where mounting heights are not detailed or dimensioned, install electrical services and overhead equipment to provide the maximum headroom possible.

H. Install electrical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

I. Coordinate the installation of electrical materials and equipment above ceilings with suspension system, mechanical equipment and systems, and structural components.

3.03 CUTTING AND PATCHING

A. This Article specifies the cutting and patching of electrical equipment, components, and materials to include removal and legal disposal of selected materials, components, and equipment.

B. Do not endanger or damage installed Work through procedures and processes of cutting and patching.

C. Arrange for repairs required to restore other work, because of damage caused as a result of electrical installations.

D. No additional compensation will be authorized for cutting and patching Work that is necessitated by ill–timed, defective, or non–conforming installations.

E. Perform cutting, fitting, and patching of electrical equipment and materials required to:

12. Uncover Work to provide for installation of ill–timed Work;
13. Remove and replace defective Work;
14. Remove and replace Work not conforming to requirements of the Contract Documents;
15. Install equipment and materials in existing structures;
16. Upon written instructions from the Architect/Engineer, uncover and restore Work to provide for Architect/Engineer observation of concealed Work.

3.04 PANELBOARDS, SAFETY SWITCHES, CONTACTORS

A. Unless otherwise indicated, protective devices shall be mounted with top of cabinet or enclosure 6'–0" above finished floor, shall be properly aligned, and shall be adequately supported independently of the connecting raceways. All steel shapes, etc., necessary for the support of the equipment shall be furnished and installed where the building structure is not suitable for mounting the equipment directly thereon. Unless otherwise indicated, all branch circuit protective devices enclosures shall be NEMA type 1, general purpose type. Branch circuit protective devices installed outdoors or exposed to the weather shall have weatherproof enclosures, NEMA type 3R or type 4.

3.05 RACEWAYS AND FITTINGS

A. Raceways run below grade, under floors on grade, or in concrete shall be PVC heavy wall type (Schedule 40) conduit provided PVC coated rigid steel conduit is used for all elbows greater than 45 degrees and risers to boxes, cabinets, etc. Rigid steel conduit shall be used for all installations subject to mechanical damage or saturation with moisture. All other raceways may be thin wall conduit (EMT). Exposed raceway in the shop may be EMT where protected. All conduit shall be properly aligned, grouped and supported. Exposed conduit shall be installed at right angles to or parallel to the principal structural members. Conduit run above accessible ceilings shall be supported from the structure and shall not be supported from or attached to ceiling suspension system. All conduit shall be supported at intervals not exceeding 8 feet. Double lock nuts shall be used on all rigid conduit terminations except threaded hubs. All conduit shall be made up tight and no running threads will be permitted.

B. Minimum size of conduit shall be 1/2 inch, except home runs shall be minimum 3/4 inch. Sizes of raceways shall be not less than N.E.C. requirements and shall not in any case be less than indicated on the drawings. Larger size raceways and/or pull boxes shall be installed if there is excessive length of unbroken run or excessive number of bends.

C. Combining of circuits other than those indicated on the drawings will not be permitted.

3.06 BOXES

A. All boxes shall be rigidly mounted and shall be equipped with suitable screw fastened covers. Open knock–outs or holes in boxes shall be plugged with suitable blanking devices.

B. Metallic and approved non–metallic electrical outlet boxes may be installed in vertical fire resistive assemblies classified as 2 hour or less without affecting the fire classification, provided such openings occur on one side only in each framing space and that openings do not exceed 16 sq. inches. Boxes locate opposite sides of walls or partitions shall be separated by a horizontal distance of 24 inches.

C. In openings larger than 16 sq. inches, the wall shall be built around openings so as not to interfere with the integrity of the wall rating.

D. All clearances between such boxes and the gypsum board shall be completely filled with joint compound or other approved material.

E. Provide exterior in–ground handholes or pull boxes where required for excessively long runs or multiple conduit bends.

F. Provide junction boxes and pull boxes to accommodate the installation of conduit runs as required for multiple bends, avoidance of conflicting structures or equipment or otherwise required for code compliance.

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SHEET NUMBER
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3 OF 10

3.07 CONDUCTORS

A. All conductors shall conform to applicable ASTM specifications as to conductivity, and shall be free from kinks and defects when installed.

B. Unless otherwise noted, all branch circuit conductors shall be minimum No. 12 AWG.

C. Splices, taps and attachment fittings and lugs shall be electrically and mechanically secure and solderless lugs and connectors shall be used. Mechanical pressure lugs shall be used for conductors sizes No. 8 AWG and larger. There shall be plenty of slack cable in boxes, outlets and cabinets to insure that there is no binding at the bushings. All lugs shall be of the correct sizes for the conductors joined and in no case shall strands be cut from a conductor in order to fit the conductor into a lug. Provide heat shrink type insulation for splices. Outdoor conductors shall not be spliced below grade.

D. All conductors shall be color coded as required by the NEC and further identified and coded as specified hereinafter. Color coding shall be by means of colored insulating material, colored braid or jacket, over the insulation or by means of suitable colored, permanent, non-aging, insulating tape applied to conductors at each outlet, cabinet or junction point. The color coding shall be accomplished as the conductors are installed. The following systems of color coding shall be strictly adhered to:

1. 120/208 volt, 3 phase, 4 wire: phase A–black, phase B–red, phase C–blue, neutral–white; ground conductor–green.
2. 277/480 volt, 3 phase, 4 wire: phase A–brown, phase B–orange, phase C–yellow, neutral–gray; ground conductor–green.

E. Minimum conductor sizes, except as specifically identified on the drawings, shall be as follows:

1. No. 12 – Branch circuits of any kind, except as specified otherwise below.
2. No. 14 – Signal systems, fire alarm system, unless specifically noted otherwise.
3. No. 10 – Exit light circuits, emergency circuits, security lighting, and exterior light circuits.

F. The color code assigned to each phase wire shall be consistently followed throughout.

3.08 GROUNDING

A. The interior electrical systems shall be completely and effectively grounded as required by the NEC and as specified hereinafter.

B. All panels shall be grounded. See riser diagram for additional requirements

C. All metallic raceways shall be mechanically and electrically secure at all joints and at all boxes, cabinets, fittings and equipment. Metallic raceways shall be connected to a direct ground at the point of electrical service entrance and shall be electrically continuous throughout the entire system.

D. All equipment ground conductors shall be terminated with lugs of compression terminals. Conductors looped under screw or bolt heads will not be permitted.

E. All raceways shall be provided with a minimum No. 12 AWG green grounding conductor. Equipment ground conductor shall be connected to ground bus in panelboards.

F. The grounding system shall be tested to ensure it is free from all ground faults and resistance to ground is less than the requirements of the National Electric Code.

3.09 EQUIPMENT CONNECTIONS

A. Where equipment is shown on the drawings (such as H.V.A.C. equipment, motors, compressors, air handlers, or any other vibrating equipment) which is furnished under other sections of these specifications shall be wired under this section. This equipment shall be considered as being furnished in place. Such equipment shall be connected to the conduit system by means of a short section (18" minimum) of flexible conduit.

B. All direct connected shop equipment shall be connected to the conduit system by means of a short section (18" minimum) of liquidtight flexible conduit.

3.10 MOTOR CONTROLLERS AND ASSOCIATED CONTROLS

A. Unless otherwise indicated, motor controllers and/or motor control centers shown on the drawings shall be furnished and installed under this section. The full load current and starting characteristics of each motor shall be verified for proper selection of motor over load devices. The Contractor shall furnish and install all steel shapes, etc., necessary for a support of all motor controllers.

3.11 IDENTIFICATION OF EQUIPMENT

A. Identification shall be provided for all electrical equipment installed by the Contractor. Identification shall consist of white laminated plastic plates with black engraved letters.

3.12 FIRE STOPPING

A. Raceway penetrations of fire rated walls and/or floors shall be sealed to maintain integrity of construction. All products, materials and methods of installation shall be UL approved and meet NFPA requirements.

B. Fire rating of construction assemblies are specified under architectural section of the contract documents.

C. Unless otherwise shown or specified the following materials may be used:

1. Rock wool: Minimum four pound per cubic foot density; flame spread 15, smoke developed 0, fuel contribution 0 by ASTM E84; minimum melting point 2000 degrees F.
2. Concrete and masonry are also approved firestop materials by NFPA 90A.
3. UL approved products such as Dow–Corning "RTV Silicone Foam." Manufacturer's recommendations shall be strictly followed.

D. Submit complete data on fire stopping materials and construction methods for review by Architect/Engineer before proceeding with work.

3.13 INSTALLATION OF LIGHTING FIXTURES

A. Install lighting fixtures at locations and heights as indicated, in accordance with fixture manufacturer's written instructions, applicable requirements of NEC, NECA's "Standard of Installation", NEMA standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.

B. Coordinate with other electrical work as appropriate to properly interface installation of interior lighting fixtures with other work.

C. Fasten fixtures securely to building structural members; and ensure that pendant fixtures are plumb and level. Fixtures shall not be supported from conduits, ceiling grid, ductwork, plumbing, or any other non–structural building member. Fixtures may be supported from the ceiling grid only if the ceiling grid is supported from the structure at a minimum of two opposite corners of the fixture, plus the fixture is provided with grid hold–down clips.

D. Coordinate fixture installation with mechanical ductwork, structural members and architectural building components and adjustments shall be made to avoid any interferences.

E. Clean interior and exterior lighting fixtures of dirt and debris upon completion of installation.

F. Protect installed fixtures from damage during remainder of construction period.

G. Upon completion of installation of lighting fixtures, and after building circuitry has been energized, apply electrical energy to demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting.

H. At the time of Substantial Completion, replace lamps in all lighting fixtures which are observed to be noticeably dimmed after Contractor's use and testing, as judged by Architect/Engineer or Owner.

I. Refer to Division–1 sections for the replacement/restoration of lamps in lighting fixtures, where used for temporary lighting prior to time of Substantial Completion.

J. Provide tight equipment grounding connections for each lighting fixture installation.

K. All exterior lighting fixtures and their components shall be suitable for the environment in which they are installed and shall contain the appropriate UL listing.

3.14 ELECTRICAL WORK FOR MECHANICAL SYSTEMS

A. The electrical contractor shall furnish and install all power wiring, complete, from power source to motor or equipment junction box, and including wiring through starters and disconnect switches.

B. The electrical contractor shall furnish and install all starters and disconnect switches except when specified as a part of, and furnished with a particular piece of equipment.

C. The mechanical contractor shall furnish and install all control wiring, conduit and devices, unless specifically indicated on the drawings to be indicated by the electrical contractor. The mechanical contractor shall furnish and install all control components (such as thermostats and humidistats) and complete and test the final control connections. Regardless of the responsibility for furnishing electrical work for the controls, all electrical work shall be performed by a properly licensed electrical contractor in conformance with applicable codes and local requirements.

END OF SECTION 16050

SECTION 16680 SURGE PROTECTION DEVICES

part 1.00 – GENERAL

1.01 SUMMARY

A. This Section includes transient voltage surge suppressors for low–voltage (600Volts and below) power equipment

B. Related Sections include the following:

1. Division 16 Section "Panelboards"
2. Division 16 Section "Switchboards"

1.02 SUBMITTALS

A. Drawings: Electrical and mechanical drawings shall be provided by the manufacturer which show unit dimensions, weights, mounting provisions, connection notes, wire size and wiring diagram.

1. SPD's with dimensions that exceed the available space to mount the device within the required maximum lead lengths will be rejected and not accepted. Verify maximum lead lengths can be met.

B. Equipment Manual: The manufacturer shall furnish an installation manual with installation notes, start–up and operating instructions for the specified system. Installation instructions shall clearly state whether the system requires an external overcurrent device to maintain the system's UL 1449 listing. SPD requiring external overcurrent devices are not acceptable.

C. Verification that all SPD are UL 1449 3rd Edition listed and rated with a 20kA (In) nominal discharge rating for compliance to UL96A Lightning Protection Master Label and NFPA 780. Also provide UL 1449 3rd Edition VPR showing the following maximum VPR (clamping voltage) as follows:

1. 120Vsystem 600V (L–N)
2. 277Vsystem 1200V (L–N)

D. SPD manufacturer shall provide UL 3rd Edition documentation as part of submittal.

E. Manufacturer's Warranty Statement, showing a 10 year replacment warranty for modules or unit are damaged by transient voltages

1.03 STANDARDS

A. Underwriters Laboratories 1449 – (UL 1449 3rd edition safety standard for surge protection devices – 2009)

B. NEC article 285. National Electrical Code 2014 SPD shall be labeled with a minimum 200kAIC rating.

C. NFPA 780 Standard for the installation of lightning protection systems

D. UL96A – Lightning Protection System Master Label

E. IEEE (Institute of Electrical and Electronic Engineering Inc.) C62.41.1 and C62.41.2 – 2002, IEEE C62.45 – 2002, IEEE C62.33 & C62.35

F. All manufacturers must comply with above listed standards and any additions current revisions of industry standards. All products that do not comply with current industry standards will not be accepted.

1.04 QUALITY ASSURANCE

A. Source Limitations: Obtain suppression devices and accessories through one source from a single manufacturer.

1.05 COORDINATION

A. Coordinate location of field–mounted surge suppressors to allow adequate clearances for maintenance.

B. Coordinate surge protective devices with Division 16 Section "Panelboards" and 'Switchboards'.

1.06 WARRANTY

A. Manufacturer shall provide a product warranty for a period of not less than ten (10) years from date of installation. Warranty shall cover unlimited replacement of SPD modules during the warranty period. Those firms responding to this specification shall provide proof that they have been regularly engaged in the design, manufacturing and testing of SPD for not less than five (5) years.

PART 2.00 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. PQ Protection

B. APT

2.02 SERVICE ENTRANCE SUPPRESSORS

Panel Amperage	≥3,000Amps	2500–1600Amps	1200–400Amps
Service Entrance	400kA/Modular	300kA/modular	200kA/modular

A. Provide service entrance rated, UL Type 1 SPD's as shown and indicated on contract drawings.

B. Minimum surge current ratings per phase shown above, three phase, wye systems per phase rating shall equal L–N and L–G modes added together. No other methods are acceptable for per phase surge current rating calculations.

C. SPD's shall be a multi–stage parallel connected device.

D. SPD's UL 1449 3rd Edition VPR (clamping voltage) shall be a maximum rating of:

1. 120Vsystem 600V (L–N)
2. 277Vsystem 1200V (L–N)

E. SPD's shall mount external to the panel; internally mounted SPD's are not acceptable.

F. SPD voltages shall be verified by location on drawings, one–line diagrams and equipment schedules.

G. SPD shall be modular design with field replaceable modules per phase and per mode.

H. SPD shall have redundant status indicators on the front of the enclosure and shall monitor and indicate whether suppression capabilities have been compromised.

I. SPD shall contain protective components that utilize multiple thermally protected metal oxide varistors (MOV) per mode.

J. SPD's relying upon external and/or supplementary installed safety overcurrent protection do not meet the intent of this specification.

K. SPD's that are limited to being connected to breaker whether or not an integral disconnect switch is supplied do not meet the intent of this specification.

L. SPD's shall have an UL 'In' rating (nominal discharge) of 20kA.

M. SPD shall have dry contacts for remote monitoring via the Campus security system (Ademco panels). Coordinate the required contact type with the existing security panels.

N. Service Entrance SPD's shall have audible alarms and surge counters.

O. SPD's shall have a metal, NEMA 4 rated enclosure.

P. SPD shall be designed and equipped with integral disconnecting means.

Q. Protection modes: The SPD shall provide Line to Neutral (L–N) (Wye), Line to Ground (L–G) (Wye or Delta), Line to Line (L–L) (Delta) and Neutral to Ground (N–G) (Wye) protection.

2.03 DISTRIBUTION, BRANCH PANEL AND/OR AUXILLARY PANELS

Panel Amperage	1200–800A	600A	400–100A
Distribution	200kA	200kA	200kA
Branch Panels		100kA	100kA

A. Provide UL Type 2 SPD's as shown and indicated on contract drawings. Any panel indicated to be 600 amp or larger, and any panel that is the service disconnect panel for the building shall be considered a 'Distribution' type.

B. SPD's minimum surge current ratings per phase shown above, three phase, wye systems per phase rating shall equal L–N and L–G modes added together. No other methods are acceptable for per phase surge current rating calculations.

C. SPD's shall be a multi–stage parallel connected device.

D. SPD's shall mount external to the panel; internally mounted SPD's are not acceptable.

E. SPD voltages shall be verified by location on drawings, one–line diagrams and equipment schedules.

F. SPD shall be a compact, non–modular design

G. SPD shall have per phase status indicators on the front of the enclosure and shall monitor and indicate whether suppression capabilities have been compromised.

H. SPD shall contain protective components that utilize multiple thermally protected metal oxide varistors (MOV) per mode.

I. SPD's relying upon external and/or supplementary installed safety overcurrent protection do not meet the intent of this specification.

J. SPD's shall have an UL 'In' rating (nominal discharge) of 20kA.

K. SPD shall have dry contacts for remote monitoring capabilities.

L. SPD's shall have a metal, NEMA 4 rated enclosure

M. Protection modes: The SPD shall provide Line to Neutral (L–N) (Wye), Line to Ground (L–G) (Wye or Delta), Line to Line (L–L) (Delta) and Neutral to Ground (N–G) (Wye) protection.

PART 3.00 – EXECUTION

3.01 INSTALLATION OF SURGE PROTECTIVE DEVICES

A. Review all installation information in manufacturer's installation manual prior to installing SPD's.

B. Verify all voltages before connecting to avoid injury and damage to equipment.

C. The SPD's shall be installed external to switchboard, distribution and panelboard.

D. Internally mounted SPD's will not be accepted.

E. The service entrance/switchboard/switchgear SPD's shall be installed with the shortest lead length possible and shall avoid any unnecessary or sharp bends. SPD's shall be connected to breakers with a 30 amp, 3 pole breaker for connection means.

F. The distribution, panelboard and auxiliary SPD's shall be installed with the shortest lead length possible from the panel it is protecting and shall avoid any unnecessary or sharp bends. SPD's shall be connected to breakers with a 30 amp, 3 pole breaker for connection means.

G. Ground resistance shall be 5 Ohms or less.

H. Refer to manufacturer's installation manual for further installation details.

3.02 FIELD QUALITY CONTROL

A INSTALLATION

1. After installing surge protective devices, but before electrical circuitry has been energized, test for compliance with manufacturers' installation instruction requirements and recommendations.

END OF SECTION 16680

ELECTRICAL SPECIFICATIONS

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SEAL

ROBERT C. ANSTON, P.E. 40858

SCALE: VARIES

SHEET NUMBER
E–0.2B

ELECTRICAL SITE PLAN
SCALE: 1"=40'–0"

GENERAL NOTES:

1. COORDINATE ALL SITE WORK WITH UTILITY COMPANIES.
2. ALL CONDUIT RUN BELOW BUILDINGS SHALL BE AT LEAST 24" BELOW GRADE. COORDINATE DEPTH WITH ALL OTHER UTILITIES.
3. ALL CONDUIT ROUTED UNDERGROUND SHALL BE A MINIMUM OF 3/4" AND SHALL BE BURIED A MINIMUM OF 24" B.F.G.
4. HAND DIG TRENCHES NEAR ANY EXISTING UTILITIES OR SYSTEMS (I.E. IRRIGATION, ETC.). DAMAGE TO ANY EXISTING UTILITIES OR SYSTEMS SHALL BE REPAIRED TO NEW CONDITION AT NO COST TO THE OWNER.
5. PROVIDE HANDHOLES AND PULLBOXES AS REQUIRED. ALL PULLBOXES SHALL BE POLYMER CONCRETE (QUAZITE OR EQUAL), FULL TIER 22 TRAFFIC RATED BOX AND COVER. COVERS TO BE LIFT OUT, LOCKING TYPE WITH (2) HEX HEAD BOLTS. COVERS TO INDICATE "ELECTRICAL". NOMINAL BOX SIZE 12"W x 12"L x 18"D. PROVIDE GRAVEL (1FT.) IN BOTTOM OF PULLBOX FOR DRAINAGE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALL CONDUITS TO BE STUBBED UP TO 8" BELOW COVER.
6. DIRECTIONAL BORE WHERE POSSIBLE.
7. COMPACT AND FILL ALL TRENCHES AND RESTORE DAMAGED GRASS AREAS TO ORIGINAL CONDITION WITH SOD (NO SEED ALLOWED).

SITE DEMOLITION GENERAL NOTES:

1. REMOVE ABANDONED UNDERGROUND CONDUCTORS AND RACEWAYS ENTIRELY UNLESS SPECIFICALLY NOTED OTHERWISE.
2. CUT, CAP AND PATCH OVER CONCEALED CONDUITS THAT ARE NOT ACCESSIBLE FOR REMOVAL AT POINT OF EMERGENCE.
3. EXISTING EQUIPMENT AND MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED EXCEPT WHERE SPECIFICALLY NOTED.
4. DISPOSE OF SCRAP AND DEBRIS. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL.
5. MAINTAIN ELECTRICAL CONTINUITY TO ANY/ALL ELECTRICAL DEVICES THAT ARE EXISTING TO REMAIN.
6. ANY PRODUCT CONTAINING MERCURY (INCLUDING BUT NOT LIMITED TO FLUORESCENT LAMPS) SHALL BE PROPERLY MANAGED IN ACCORDANCE WITH DISPOSAL LAWS WHEN IT BECOMES WASTE TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT. PLEASE VISIT www.lamprecycle.org OR CALL 1–866–666–6850.

DRAWING NOTES:

1. EXISTING TECO POWER POLE WITH SERVICE DROP AND UNDERGROUND 120/240V, 1ø, 3W. SERVICE TO EXISTING METER AND PANEL BEING REMOVED. CONTACT TECO AND COORDINATE ALL SHUT–DOWN AND TURN–ON EVENTS ASSOCIATED WITH DISCONNECT AND REMOVAL OF EXISTING SERVICE/CONDUCTORS AND INSTALLATION OF NEW SERVICE AND NEW CONDUCTORS TO NEW PANEL 'B' LOCATION. CONTRACTOR MAY REUSE EXISTING RACEWAY UP TO NEW PULLBOX. SEE RISER DIAGRAM #2.
2. PROVIDE NEW UNDERGROUND 1–1/4" CONDUIT WITH 2 #4, 1 #8 EG TO EXISTING JUNCTION BOX AT BASE OF POLE TO RECONNECT MUTI–USE COURT LIGHTING CIRCUIT. MAKE ALL CONNECTIONS REQUIRED TO RE–FEED ALL EXISTING MULTI–USE COURT POLE LIGHTS. NEW CONDUCTORS SHALL NOT BE SMALLER THAN THOSE OF EXISTING CIRCUIT BEING EXTENDED. ROUTE CIRCUIT VIA CONTACTOR #2 AND MIR SYSTEM CONTROLLER FOR CONTROL OF LIGHTS. SEE RISER DIAGRAM #2.
3. PROVIDE NEW UNDERGROUND 1–1/2" CONDUIT WITH 4 #4, 1 #8 EG TO EXISTING JUNCTION BOX AT BASE OF POLE TO RECONNECT EXISTING TENNIS COURT LIGHTING CIRCUITS. MAKE ALL CONNECTIONS REQUIRED TO RE–FEED ALL EXISTING TENNIS COURT POLE LIGHTS. NEW CONDUCTORS SHALL NOT BE SMALLER THAN THOSE OF EXISTING CIRCUIT BEING EXTENDED. ROUTE CIRCUITS VIA CONTACTOR #1 AND MIR SYSTEM CONTROLLER FOR CONTROL OF LIGHTS. SEE RISER DIAGRAM #2.
4. PROVIDE NEW UNDERGROUND 3/4" CONDUIT WITH 2 #8 AND 1 #8 EG TO RE–FEED EXISTING PICNIC SHELTER LIGHTING FROM NEW CIRCUIT INDICATED. INTENT IS TO RE–FEED FIRST SHELTER IN EXISTING BRANCH CIRCUIT WITH NEW CONDUIT/CONDUCTORS AND REUSE EXISTING CONDUIT/CONDUCTORS TO MAINTAIN CONNECTION TO ALL DOWNSTREAM SHELTERS. FIELD VERIFY ACTUAL LOCATION OF FIRST SHELTER IN BRANCH CIRCUIT AND ROUTING PRIOR TO PURCHASE. NEW CONDUCTORS SHALL NOT BE SMALLER THAN THOSE OF EXISTING CIRCUIT BEING EXTENDED. ROUTE CIRCUIT VIA CONTACTOR #3 AND MIR SYSTEM CONTROLLER FOR CONTROL OF LIGHTS. SEE RISER DIAGRAM #2.
5. PROVIDE NEW UNDERGROUND 3/4" CONDUIT WITH 2 #8 AND 1 #8 EG TO RE–FEED EXISTING POLE MOUNTED WALKWAY LIGHTING FROM NEW CIRCUIT INDICATED. INTENT IS TO RE–FEED FIRST POLE IN EXISTING BRANCH CIRCUIT WITH NEW CONDUIT/CONDUCTORS AND REUSE EXISTING CONDUIT/CONDUCTORS TO MAINTAIN CONNECTION TO ALL DOWNSTREAM WALKWAY LIGHTING. FIELD VERIFY ACTUAL LOCATION OF FIRST POLE IN BRANCH CIRCUIT AND ROUTING PRIOR TO PURCHASE. NEW CONDUCTORS SHALL NOT BE SMALLER THAN THOSE OF EXISTING CIRCUIT BEING EXTENDED. ROUTE CIRCUIT VIA TIMECLOCK/CONTACTOR FOR CONTROL. ROUTE CIRCUIT VIA CONTACTOR #3 AND MIR SYSTEM CONTROLLER FOR CONTROL OF LIGHTS. SEE RISER DIAGRAM #2.
6. INTERCEPT AND EXTEND EXISTING 2" CONDUIT FOR IRRIGATION CONTROLS WIRING TO NEW MIR SYSTEM CONTROLLER LOCATION. CONTACT TAMPA PARKS AND RECREATION FACILITIES SUPPORT SUPERVISOR MARK NUEBERGER (813–478–5280) TO COORDINATE INSTALLATION OF NEW CONDUIT AND CONNECTION TO MIR SYSTEM CONTROLLER AND IRRIGATION CONTROLS. CABLING WILL BE FURNISHED AND INSTALLED BY OWNER, BUT CONDUCTORS WILL NEED TO BE PULLED AT TIME OF INSTALLATION OF NEW 2" CONDUIT FOR EASE OF PULLING.

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TAMPA, FL 33610

DPW FILE NUMBER

DPW NUMBER
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SEAL
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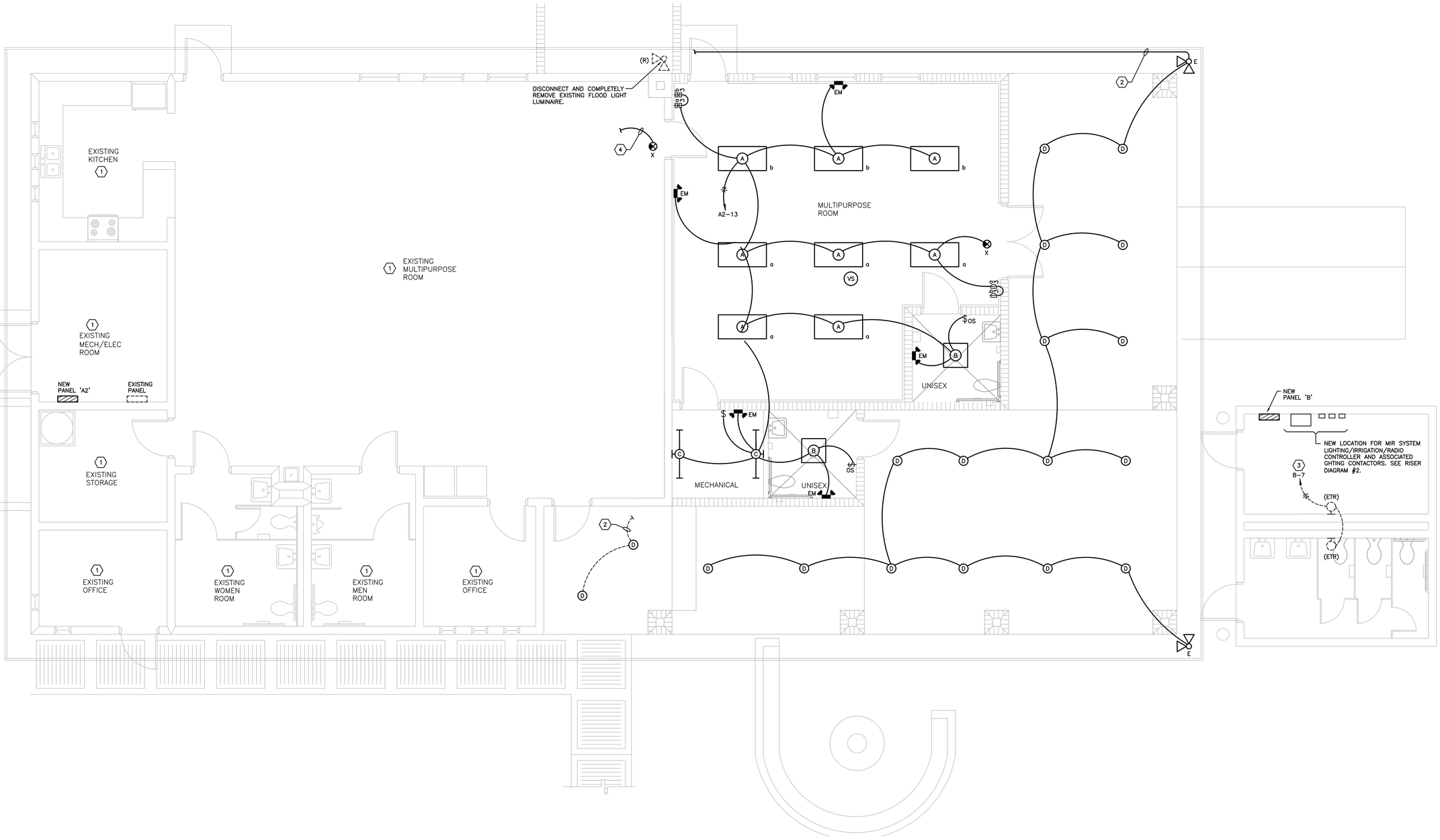
SCALE: VARIES

ELECTRICAL SITE PLAN

SHEET NUMBER
E–0.3

5 OF 10



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

GENERAL NOTES:

1. CONNECT EXIT AND EMERGENCY LIGHTS TO UNSWITCHED LEG OF LOCAL LIGHTING CIRCUIT.

DRAWING NOTES:

1. EXISTING LIGHTING AND SWITCHING IN THIS AREA TO REMAIN AS-IS.
2. SPLICE/EXTEND EXISTING EXTERIOR LIGHTING BRANCH CIRCUIT AS NECESSARY TO CONNECT NEW EXTERIOR LUMINAIRES TO EXISTING CIRCUIT AND CONTROLS.
3. SPLICE/EXTEND EXISTING LIGHTING BRANCH CIRCUIT AS NECESSARY TO RECONNECT EXISTING LUMINAIRES TO NEW CIRCUIT INDICATED.
4. CONNECT NEW EXIT LUMINAIRE TO UNSWITCHED LEG OF EXISTING ROOM LIGHTING CIRCUIT WITH 2 NO. 12 AND 1 #12 EG - 3/4"C.

LIGHTING PLAN

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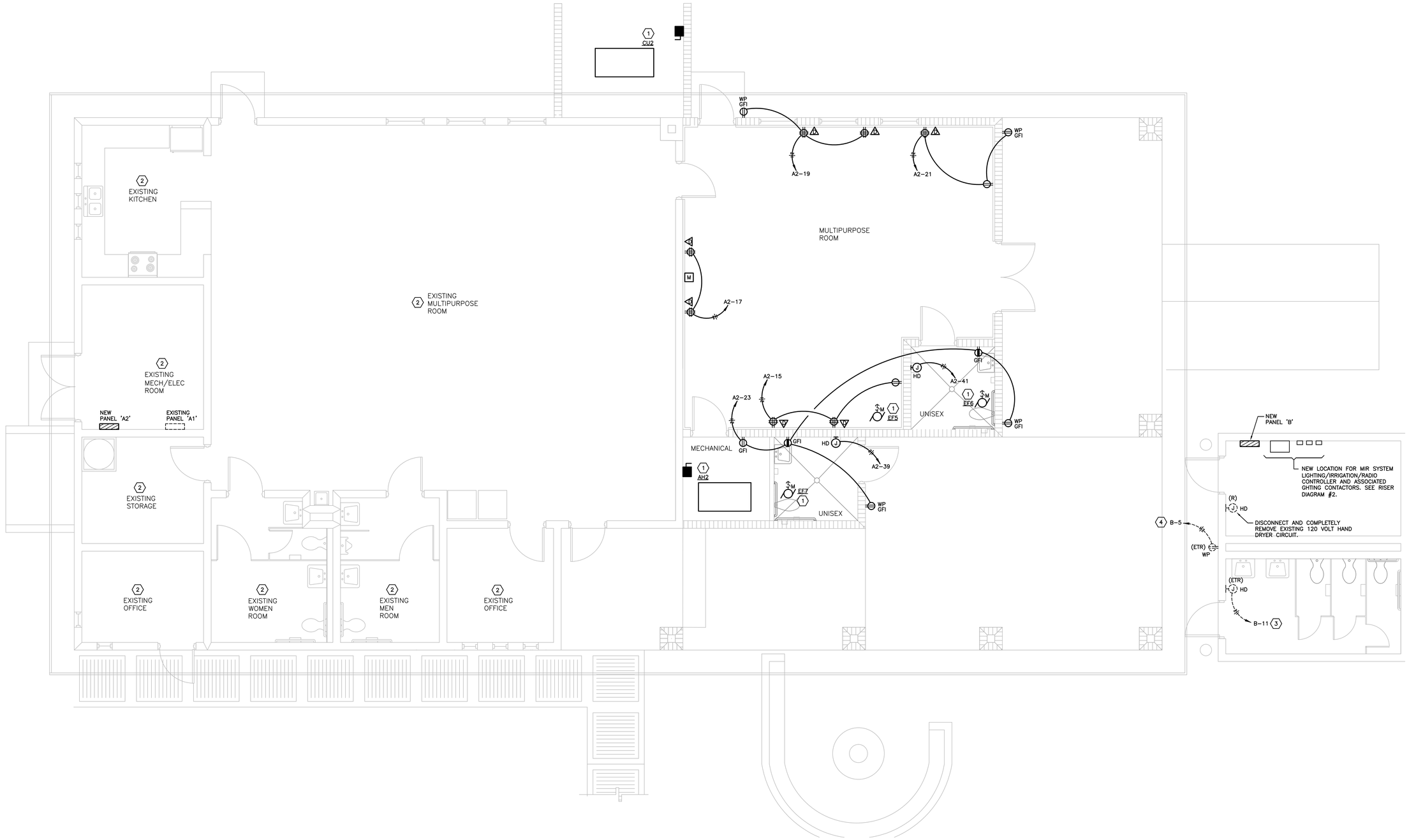
SCALE: VARIES

SHEET NUMBER
E-1.0

6 OF **10**



POWER AND SYSTEMS PLAN
SCALE: 1/4"=1'-0"

DRAWING NOTES:

1. REFER TO MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE FOR ELECTRICAL CONNECTION REQUIREMENTS OF MECHANICAL EQUIPMENT SHOW ON THIS PLAN.
2. EXISTING POWER, DATA AND SECURITY IN THIS AREA TO REMAIN AS-IS.
3. SPLICE/EXTEND EXISTING 120 VOLT, 20 AMP BRANCH CIRCUIT AS NECESSARY TO RECONNECT EXISTING HAND DRYER TO NEW CIRCUIT INDICATED.
4. SPLICE/EXTEND EXISTING 120 VOLT, 20 AMP BRANCH CIRCUIT AS NECESSARY TO RECONNECT EXISTING ELECTRIC WATER COOLER TO NEW CIRCUIT INDICATED.

POWER AND SYSTEMS PLAN

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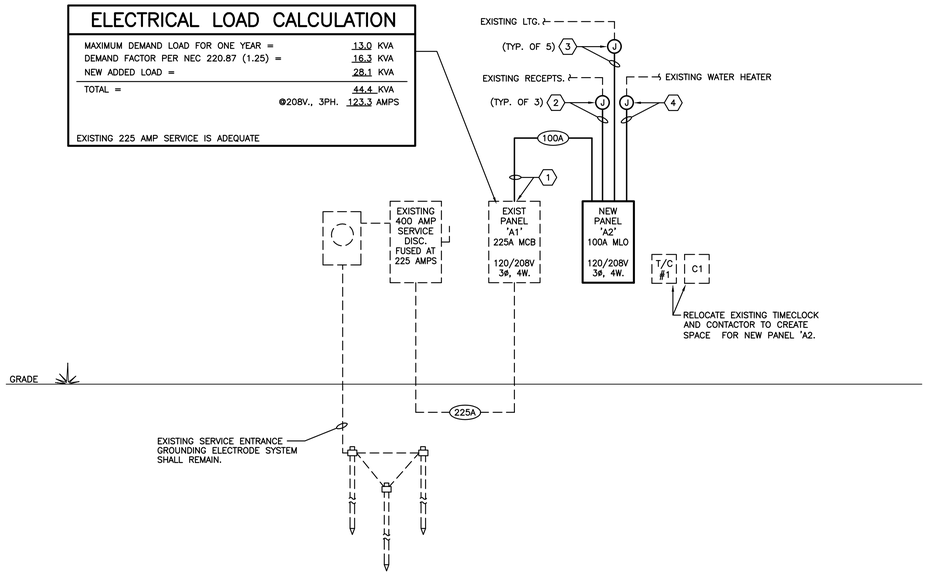
SHEET NUMBER
E-2.0

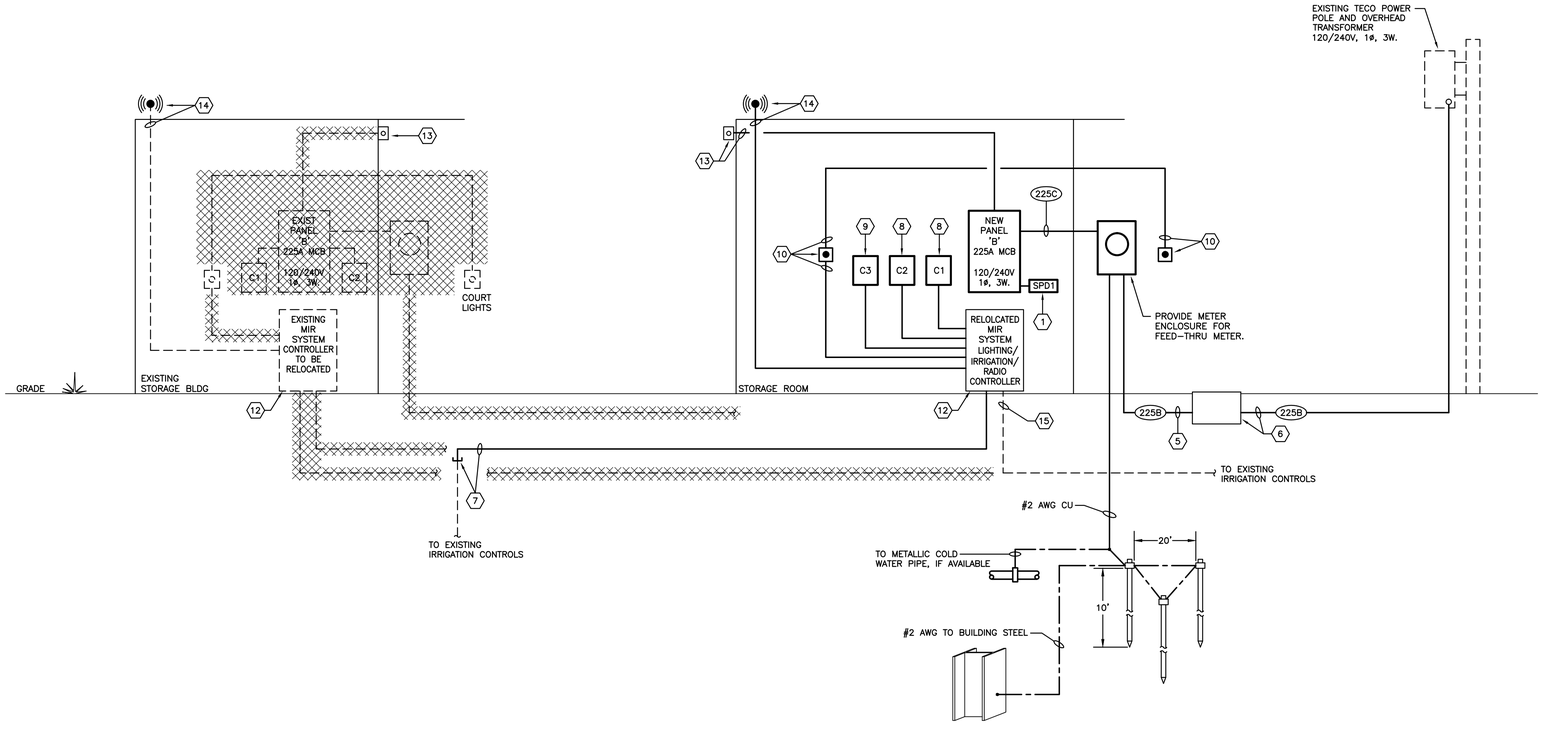
ELECTRICAL LOAD CALCULATION

MAXIMUM DEMAND LOAD FOR ONE YEAR =	13.0	KVA
DEMAND FACTOR PER NEC 220.87 (1.25) =	16.3	KVA
NEW ADDED LOAD =	28.1	KVA
TOTAL =	44.4	KVA
@208V., 3PH.	123.3	AMPS

EXISTING 225 AMP SERVICE IS ADEQUATE



ELECTRICAL RISER DIAGRAM #1
NOT TO SCALE



ELECTRICAL RISER DIAGRAM #2
NOT TO SCALE

FEEDER SCHEDULE

AMPS	CONDUIT & CABLING
100A	1-1/4"C; 3-#3, 1-#3 NEUTRAL, 1-#8 GROUND
225A	2-1/2"C; 3-#4/0, 1-#4/0 NEUTRAL, 1-#4 GROUND
225B	2-1/2"C; 2-#4/0, 1-#4 GROUND
225C	2-1/2"C; 2-#4/0, 1-#4/0 NEUTRAL, 1-#4 GROUND

LEGEND

- EXISTING ELECTRICAL EQUIPMENT OR CONDUIT/CONDUCTORS TO BE DISCONNECTED AND REMOVED.
- EXISTING ELECTRICAL EQUIPMENT OR CONDUIT/CONDUCTORS TO REMAIN.
- NEW ELECTRICAL EQUIPMENT OR CONDUIT/CONDUCTORS.

GENERAL NOTES:

1. CONTACT TECO AND COORDINATE ALL SHUT-DOWN AND TURN-ON EVENTS ASSOCIATED WITH DISCONNECT AND REMOVAL OF EXISTING SERVICE/CONDUCTORS AND INSTALLATION OF NEW SERVICE AND NEW CONDUCTORS TO NEW PANEL 'B' LOCATION.

RISER NOTES:

1. PROVIDE NEW 100 AMP, 3 POLE CIRCUIT BREAKER IN SPACE MADE AVAILABLE IN EXISTING PANEL 'A1' TO FEED NEW PANEL 'A2' AS SHOWN. EXISTING PANEL IS A GENERAL ELECTRIC, A SERIES.
2. SPLICE/EXTEND EXISTING 20 AMP, 120 VOLT RECEPTACLE BRANCH CIRCUIT AS NECESSARY TO RE-FEED EXISTING RECEPTACLES FROM NEW PANEL 'A2'. SEE PANEL SCHEDULES.
3. SPLICE/EXTEND EXISTING 20 AMP, 120 VOLT LIGHTING BRANCH CIRCUIT AS NECESSARY TO RE-FEED EXISTING LIGHTING FROM NEW PANEL 'A2'. SEE PANEL SCHEDULES.
4. SPLICE/EXTEND EXISTING 30 AMP, 208 VOLT, SINGLE PHASE WATER HEATER CIRCUIT AS NECESSARY TO RE-FEED WATER HEATER FROM NEW PANEL 'A2'. SEE PANEL SCHEDULE.
5. PROVIDE NEW CONDUIT FROM PULLBOX TO NEW PANEL 'B' LOCATION ON EXTERIOR OF EXISTING RESTROOM BUILDING.
6. PROVIDE NEW PULLBOX AND REUSE EXISTING RACEWAY TO PULL NEW UTILITY SERVICE CONDUCTORS FROM EXISTING POLE TO NEW PANEL 'B' LOCATION.
7. INTERCEPT AND EXTEND EXISTING 2" CONDUIT FOR IRRIGATION CONTROLS WIRING (1 OF 2) TO NEW MIR SYSTEM CONTROLLER LOCATION. CONTACT TAMPA PARKS AND RECREATION FACILITIES SUPPORT SUPERVISOR MARK NUEBERGER (813-478-5280) TO COORDINATE INSTALLATION OF NEW CONDUIT AND CONNECTION TO MIR SYSTEM CONTROLLER AND IRRIGATION CONTROLS. CABLING WILL BE FURNISHED AND INSTALLED BY OWNER, BUT CONDUCTORS WILL NEED TO BE PULLED AT TIME OF INSTALLATION OF NEW 2" CONDUIT FOR EASE OF PULLING.
8. PROVIDE LIGHTING CONTACTOR (SQUARE D #SPG4, OR APPROVED EQUIVALENT) FOR TENNIS COURT/MULTI-USE LIGHTING CIRCUITS AND ROUTE NEW CIRCUITS VIA EXISTING/RELOCATED MIR SYSTEM CONTROLLER FOR LIGHTING CONTROLS. COORDINATE COMPATIBILITY OF CONTACTOR AND CONNECTION TO MIR SYSTEM CONTROLLER FOR LIGHTING CONTROL WITH MARK NUEBERGER. PROGRAMMING AND CONTROLS CONNECTIONS WILL BE BY OWNER. REFER TO SITE PLAN.
9. PROVIDE LIGHTING CONTACTOR (SQUARE D #LG60, OR APPROVED EQUIVALENT) FOR WALKWAY/PICNIC SHELTER LIGHTING CIRCUITS AND ROUTE NEW CIRCUITS VIA EXISTING/RELOCATED MIR SYSTEM CONTROLLER FOR LIGHTING CONTROLS. COORDINATE COMPATIBILITY OF CONTACTOR AND CONNECTION TO MIR SYSTEM CONTROLLER FOR LIGHTING CONTROL WITH MARK NUEBERGER. PROGRAMMING AND CONTROLS CONNECTIONS WILL BE BY OWNER. REFER TO SITE PLAN.
10. RELOCATE EXISTING PUSH BUTTON FOR CONTROL OF TENNIS/MULTI COURTS LIGHTING CIRCUITS. PROVIDE CONDUIT AND CONDUCTORS AS REQUIRED TO RECONNECT TO EXISTING MIR SYSTEM CONTROLLER.
11. PROVIDE SERVICE ENTRANCE TYPE SURGE PROTECTION DEVICE (SPD1), 120/240V, 1ø.
12. DISCONNECT EXISTING MIR SYSTEM LIGHTING/IRRIGATION/RADIO CONTROLLER TO BE RELOCATED. COORDINATE DISCONNECT/RE-INSTALLATION WITH MARK NUEBERGER. SAFELY STORE ON SITE OR AS DIRECTED BY OWNER BETWEEN DEMOLITION AND RE-INSATLL. PROGRAMMING AND CONTROLS CONNECTIONS WILL BE BY OWNER.
13. DISCONNECT EXISTING 120 VOLT MIR SYSTEM RADIO FREQUENCY TUNER TO BE RELOCATED WITH MIR SYSTEM CONTROLLER. SAFELY STORE ON SITE OR AS DIRECTED BY OWNER AND RE-INSTALL AT NEW MIR SYSTEM CONTROLLER LOCATION. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
14. DISCONNECT EXISTING MIR SYSTEM RADIO ANTENNAE AND CABLING TO BE RELOCATED WITH MIR SYSTEM CONTROLLER. SAFELY STORE ON SITE OR AS DIRECTED BY OWNER AND RE-INSTALL AT NEW MIR SYSTEM CONTROLLER LOCATION. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
15. EXISTING IRRIGATION CONTROL WIRING CONNECTIONS (2 OF 2) TO BE MADE BY OWNER.

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SCALE: VARIES

ELECTRICAL RISER DIAGRAMS

SHEET NUMBER
E-3.0

8 OF 10

EXISTING PANEL

PANEL: A1 — 3PH,4W — MLO: 0 AMPS
AIC RATING: 22000 AMPS — MCB: 225 AMPS
SERVICE: 120/208 V.,

	DESCRIPTION	KVA	BKR	CKT	A	B	C	CKT	BKR	KVA	DESCRIPTION	
D	A/C; AHU-2	3.85	3P	1				2	3P	2.4	A/C; CU-2	D
D	A/C; AHU-2	3.85	40	3				4	40	2.4	A/C; CU-2	D
D	A/C; AHU-2	3.85	"	5				6	"	2.4	A/C; CU-2	D
D	PNL A2	7.4	3P	7				8	20	0.7	EXTERIOR OFFICE OUTLETS	E
D	PNL A2	7.04	100	9				10	20	0.7	STORAGE OULETS	E
D	PNL A2	7.4	"	11				12	30	2.4	HAND DRYER WOMEN'S	E
D	SPACE	0	–	13				14	30	2.4	HAND DRYER WOMEN'S	E
E	AHU-1	0.7	3P	15				16	30	2.4	HAND DRYER MEN'S	E
E	AHU-1	0.7	20	17				18	30	2.4	HAND DRYER MEN'S	E
E	AHU-1	0.7	"	19				20	20	0.7	EXTERIOR OUTLETS	E
E	CU-1	7.6	3P	21				22	20	0.4	KITCHEN OUTLETS	E
E	CU-1	7.6	100	23				24	20	0.4	KITCHEN OUTLETS	E
E	CU-1	7.6	"	25				26	20	1.6	VENDING	E
E	EDH-1	5	3P	27				28	20	1.6	VENDING	E
E	EDH-1	5	60	29				30	20	2.6	REFRIGERATOR	E
E	EDH-1	5	"	31				32	2P	4.6	RANGE	E
E	LIGHTING CONTACTOR	0.5	20	33				34	50	4.6	RANGE	E
E	ELECTRONIC LAVATORY	0.2	20	35				36	–	0	SHUNT-TRIP MODULE	E
E	COMPUTERS	1.1	20	37				38	20	0.6	EWC	E
E	SPACE	0	–	39				40	20	0.2	EXHAUST HOOD	E
E	DUCT DETECTORS	0.5	20	41				42	20	0.6	SHUNT-TRIP CKT	E

A PH = 38.65 — B PH = 36.99 — C PH = 36.05

SERVES	CONN LOAD		FACTOR		FEED	DIVERSITY		KVAD	PANEL KVAD
LIGHTING	0.00	x	1.25	=	0.00	x	=		
RECEPT	0.00	x	*	=	0.00	x	=		
MISC EQUIP	0.00	x	1.00	=	0.00	x	=		
A/C	18.75	x	1.00	=	18.75	x	=		
HEATING	0.00	x	1.00	=	0.00	x	=		
LARGEST MOTOR	0.00	x	1.25	=	0.00	x	=		
OTHER MOTORS	0.00	x	1.00	=	0.00	x	=		
OTHER **	92.94	x	0.44	=	40.81	x	=		
SPARE					21.41				
TOTALS	111.69	KVA			80.96	KVA			

* PER N.E.C. TABLE 220.44

** INCLUDES EXISTING MAXIMUM PEAK DEMAND LOAD IN PAST 12 MONTHS PER UTILITY COMPANY AND NEW LOAD FROM SUB-FEED PANELS.

NEW PANEL

PANEL: A2 — 3PH,4W — MLO: 100 AMPS
AIC RATING: 22000 AMPS — MCB: 0 AMPS
SERVICE: 120/208 V.,

DESCRIPTION	KVA	BKR	CKT	A	B	C	CKT	BKR	KVA	DESCRIPTION
LTG; MULTIPURP RM 1	1.4	20	1				2	20	0.8	REC; MULTIPURP RM 1
LTG; MULTIPURP RM 1	1.3	20	3				4	20	1.1	REC; MULTIPURP RM 1
LTG; KITCHEN/MECH/STORAGE	1	20	5				6	20	0.6	REC; TOILETS
LTG; TOILETS/OFFICE	1	20	7				8	20	0	SPARE
LTG; EXTERIOR	1.2	20	9				10	20	0	SPARE
EQ; EWH	2.6	2P	11				12	20	0	SPARE
EQ; EWH	2.6	30	13				14	20	0	SPARE
LTG; MULTIPURP RM 2	0.5	20	15				16	20	0	SPARE
REC; MULTIPURP RM 2	0.7	20	17				18	20	0	SPARE
REC; MULTIPURP RM 2	0.7	20	19				20	–	0	SPACE
REC; MULTIPURP RM 2	0.9	20	21				22	–	0	SPACE
REC; MULTIPURP RM 2	0.7	20	23				24	–	0	SPACE
REC; MECH/TOILETS	0.9	20	25				26	–	0	SPACE
EQ; EXHAUST FANS EF5,6,7	0.24	20	27				28	–	0	SPACE
SPACE	0	–	29				30	–	0	SPACE
SPACE	0	–	31				32	–	0	SPACE
SPACE	0	–	33				34	–	0	SPACE
SPACE	0	–	35				36	–	0	SPACE
SPACE	0	–	37				38	–	0	SPACE
EQ; HAND DRYER	1.8	20	39				40	–	0	SPACE
EQ; HAND DRYER	1.8	20	41				42	–	0	SPACE

A PH = 7.40 — B PH = 7.04 — C PH = 7.40

SERVES	CONN LOAD		FACTOR		FEED	DIVERSITY		KVAD	PANEL KVAD
LIGHTING	6.40	x	1.25	=	8.00	x	=		
RECEPT	6.40	x	*	=	6.40	x	=		
MISC EQUIP	9.04	x	1.00	=	9.04	x	=		
A/C	0.00	x	1.00	=	0.00	x	=		
HEATING	0.00	x	1.00	=	0.00	x	=		
LARGEST MOTOR	0.00	x	1.25	=	0.00	x	=		
OTHER MOTORS	0.00	x	1.00	=	0.00	x	=		
OTHER	0.00	x	1.00	=	0.00	x	=		
SPARE					12.54				
TOTALS	21.84	KVA			35.98	KVA			

* PER N.E.C. TABLE 220.44

NEW PANEL

PANEL: B — 1PH, 3W — MLO: 0 AMPS
AIC RATING: 10000 AMPS — MCB: 225 AMPS
SERVICE: 120/240 V.,

DESCRIPTION	KVA	BKR	CKT	A	B	CKT	BKR	KVA	DESCRIPTION
LTG; PICNIC SHELTERS	0.5	30	1			2	2P	5.4	LTG; MULTI-USE COURT
SPARE	0	20	3			4	60	5.4	LTG; MULTI-USE COURT
EQ; EWC	0.6	20	5			6	2P	0.6	LTG; WALKWAY
LTG; RESTROOMS	0.3	20	7			8	30	0.6	LTG; WALKWAY
SPARE	0	20	9			10	2P	0.6	LTG; WALKWAY
EQ; HAND DRYER	1.8	20	11			12	30	0.6	LTG; WALKWAY
LTG; TENNIS COURT	5.4	2P	13			14	–	0	SPACE
LTG; TENNIS COURT	5.4	60	15			16	–	0	SPACE
LTG; TENNIS COURT	5.4	2P	17			18	–	0	SPACE
LTG; TENNIS COURT	5.4	60	19			20	–	0	SPACE
EQ; MIR SYSTEM CONTROLLER	0.5	15	21			22	–	0	SPACE
EQ; MIR SYSTEM RF TUNER	0.5	20	23			24	–	0	SPACE
SPARE	0	20	25			26	–	0	SPACE
SPARE	0	20	27			28	–	0	SPACE
SPARE	0	20	29			30	–	0	SPACE
SPARE	0	20	31			32	–	0	SPACE
SPARE	0	20	33			34	–	0	SPACE
SPARE	0	20	35			36	–	0	SPACE
SPACE	0	–	37			38	–	0	SPACE
SPACE	0	–	39			40	2P	0	SPD
SPACE	0	–	41			42	30	0	SPD

A PH = 19.00 — B PH = 20.00

SERVES	CONN LOAD		FACTOR		FEED	DIVERSITY		KVAD	PANEL KVAD
LIGHTING	35.60	x	1.25	=	44.50	x	=		
RECEPT	0.00	x	*	=	0.00	x	=		
MISC EQUIP	3.40	x	1.00	=	3.40	x	=		
A/C	0.00	x	1.00	=	0.00	x	=		
HEATING	0.00	x	1.00	=	0.00	x	=		
LARGEST MOTOR	0.00	x	1.25	=	0.00	x	=		
OTHER MOTORS	0.00	x	1.00	=	0.00	x	=		
OTHER	0.00	x	1.00	=	0.00	x	=		
SPARE					6.10				
TOTALS	39.00	KVA			54.00	KVA			

* PER N.E.C. TABLE 220.44

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

MARK	VOLTAGE/ PHASE	KW	HP	FLA	MCA	BREAKER	HOMERUN CIRCUIT	CONDUIT & CABLING	COMBINATION STARTER/DISCONNECT SWITCH					INTERLOCK/REMARKS
									SIZE AMPS	POLES	FUSE	STARTER SIZE	NEMA RATING	
AIR HANDLERS														
AHU-2	208/3	–	–	32.1	40.0	40	A1-1,3,5	3/4"C; 3 #8, 1 #10 EG	60	3	MFS	–	1	NOTE #1
CONDENSING UNITS														
CU2	208/3	–	–	20.0	24.0	40	A1-2,4,6	3/4"C; 3 #8, 1 #10 EG	60	3	MF2	–	3R	NOTE #1
EXHAUST/SUPPLY FANS														
EF5	120/1	–	80W	0.7	0.8	20	A2-27	3/4"C; 2 #12, 1 #12 EG	DIV23	–	DIV23	–	–	NOTES #1,2
EF6	120/1	–	80W	0.7	0.8	20	A2-27	3/4"C; 2 #12, 1 #12 EG	DIV23	–	DIV23	–	–	NOTES #1,2
EF7	120/1	–	80W	0.7	0.8	20	A2-27	3/4"C; 2 #12, 1 #12 EG	DIV23	–	DIV23	–	–	NOTES #1,2

MFS = MANUFACTURER'S RECOMMENDED FUSE SIZE
MRS = MOTOR RATED TOGGLE SWITCH BY DIVISION 26
VFD = VARIABLE FREQUENCY DRIVE (BY DIVISION 23) INSTALLED BY DIVISION 26
NF = NON-FUSED
DIV23 = DISCONNECTING MEANS PROVIDED BY THE MANUFACTURER OR DIVISION 23 CONTRACTOR

NOTES:
1. VERIFY MANUFACTURER'S RECOMMENDED OVERCURRENT PROTECTION DEVICE SIZE AND PROVIDE BREAKER AND CIRCUIT SIZED ACCORDINGLY.
2. INTERLOCK WITH AHU-2 VIA THERMOSTAT CONTROLS.

ALL PANELBOARDS DIRECTORY CARDS SHALL BE ACCURATELY LABELED AND NUMBERED TO IDENTIFY FINAL CIRCUIT NUMBERS UTILIZED, THEIR LOAD AND LOCATION.

E = EXISTING CIRCUIT TO REMAIN.
N = NEW BREAKER AND CIRCUIT.
R = REUSE EXISTING CIRCUIT BREAKER TO FEED NEW CIRCUIT.
S = SPARE OUT EXISTING BREAKER. REMOVE ALL ABANDONED CONDUCTORS AND CONDUIT. SWITCH BREAKER TO "OFF" POSITION AND LABEL AS SPARE.
D = REMOVE EXISTING CIRCUIT BREAKER AND PROVIDE NEW BREAKER, CONDUIT AND WIRE.
ER = EXTEND/REWORK EXISTING CIRCUIT AS REQUIRED TO FEED NEW DEVICE(S)/EQUIPMENT.

ELECTRICAL SCHEDULES

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REVISIONS

SEAL

ROBERT C. ANSTON, P.E. 40858

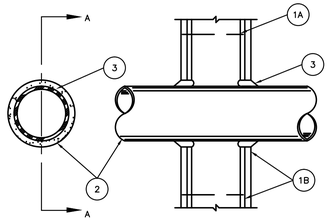
SCALE: VARIES

SHEET NUMBER
E-4.0

SYSTEM NO. W–L–1001

JUNE 15, 2005

F RATINGS — 1, 2, 3 AND 4 HR (SEE ITEMS 2 AND 3)
T RATINGS — 0, 1, 2, 3, AND 4 HR (SEE ITEM 3)
L RATING AT AMBIENT — LESS THAN 1 CFM/SQ FT
L RATING AT 400 F — LESS THAN 1 CFM/SQ FT



SECTION A–A

FIRE–RATED WALL PENETRATION DETAIL FOR PIPE OR CONDUIT
NOT TO SCALE

1. WALL ASSEMBLY — THE 1, 2, 3 OR 4 HR FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2 H FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC WITH NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3–5/8 IN. (92 MM) WIDE BY 1–3/8 IN. (35 MM) DEEP CHANNELS SPACED MAX 24 IN. (610 MM) OC.

   B. GYPSUM BOARD* — NOM 1/2 OR 5/8 IN. (13 OR 16 MM) THICK, 4 FT. (122 CM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 26 IN. (660 MM).

2. THROUGH–PENETRANT — ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN / (0 MM). (POINT CONTACT) TO MAX 2 IN. (51 MM) PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

   A. STEEL PIPE — NOM 24 IN. (610 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

   B. IRON PIPE — NOM 24 IN. (610 MM) DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN (305 MM) DIAM (OR SMALLER) OR CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.

   C. CONDUIT — NOM 6 IN. (152 MM) DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING

   D. COPPER TUBING — NOM 6 IN. (152 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING

   E. COPPER PIPE — NOM 6 IN. (152 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

   F. THROUGH PENETRATING PRODUCT* — FLEXIBLE METAL PIPING THE FOLLOWING TYPES OF STEEL FLEXIBLE METAL GAS PIPING MAY BE USED:

      1. NOM 2 IN. (51 MM) DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

         OMEGA FLEX INC

      2. NOM 1 IN. (25 MM) DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

         GASTITE, DIV OF TITEFLEX

      3. NOM 1 IN. (25 MM) DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

         WARD MFG L L C

3. FILL, VOID OR CAVITY MATERIAL* — CAULK OR SEALANT — MIN 5/8. , 1–1/4,1–7/8 AND 2–1/2 IN. (16, 32, 48 AND 64 MM) THICKNESS OF CAULK FOR 1, 2, 3 AND 4 HR RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

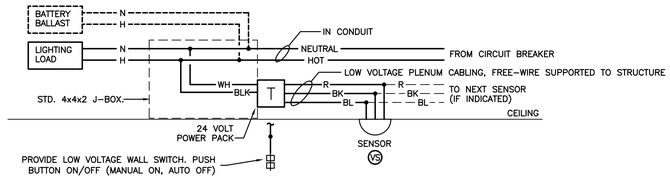
Max Pipe or Conduit Diam. In (mm)	F Rating Hr	T Rating Hr
1 (25)	1 or 2	0+, 1 or 2
1 (25)	3 or 4	3 or 4
4 (102)	1 or 2	0
6 (152)	3 or 4	0
12 (305)	1 or 2	0

+WHEN COPPER PIPE IS USED, T RATING IS 0 HR.

3M COMPANY — CP 25WB+ OR FB–3000 WT.

* INDICATES SUCH PRODUCTS SHALL BEAR THE UL OR CUL CERTIFICATION MARK FOR JURISDICTIONS EMPLOYING THE UL OR CUL CERTIFICATION (SUCH AS CANADA), RESPECTIVELY.

LAST UPDATED ON 2005–06–15



NOTES:
1. CONTRACTOR SHALL SUBMIT SENSOR MANUFACTURER'S LAYOUT DRAWING FOR APPROVAL. PROVIDE ADDITIONAL OCCUPANCY SENSORS AS REQUIRED TO PROVIDE TOTAL COVERAGE OF AREA.
2. PROVIDE FOR DUAL SWITCHING WHERE INDICATED ON DRAWING.

TYPICAL CEILING MOUNT OCCUPANCY SENSOR WIRING DIAGRAM
NOT TO SCALE

EXAMPLE

AHU-2
208V, 3Ø
FED FROM PANEL 'A1'
CIR-1,3,5

NAMEPLATE DETAIL
NOT TO SCALE

NOTES:
PROVIDE NAMEPLATE LABELS ON ALL EQUIPMENT. EACH NAME PLATE SHALL HAVE THE FOLLOWING INFORMATION:
1. EQUIPMENT NAME.
2. VOLTAGE AND PHASE.
3. LOCATION FROM WHICH EQUIPMENT IS BEING FED FROM. INCLUDE CIRCUIT NUMBERS.

ELECTRICAL DETAILS

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10 OF **10**