LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019

2851 SANDRIDGE ROAD
GREEN COVE SPRINGS, FLORIDA 32043

CLAY COUNTY BOARD OF COUNTY COMMISSIONERS
BID NO. 18/19-23

<u>S C H O O L B O A R D M E M B E R S</u>

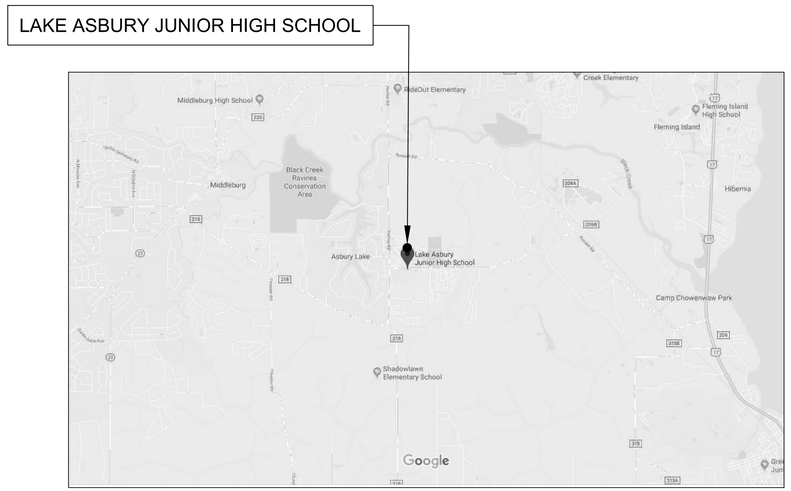
MR. ADDISON DAVIS SUPERINTENDENT OF SCHOOLS

BOARD MEMBERS :

DISTRICT 1 :	MS. JANICE KEREKES
DISTRICT 2 :	MS. CAROL STUDDARD
DISTRICT 3 :	MS. TINA BULLOCK
DISTRICT 4 :	MS. MARY BOLLA
DISTRICT 5 :	MS. ASHLEY GILHOUSEN

GENERAL NOTES

1. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO VERIFY THE CONDITION OF THE EXISTING BUILDING AND THE SCOPE OF WORK.
2. ALL DIMENSIONS INDICATED ARE NOMINAL. THE CONTRACTOR SHALL FIELD VERIFY MEASURE ALL DIMENSIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK REQUIRED TO REMOVE AND REINSTALL EQUIPMENT SUCH AS FANS, CONDUITS OR OTHER ITEMS. THE CONTRACTOR SHALL VERIFY THE OPERATION OF ANY EQUIPMENT OR SYSTEM PRIOR TO BEING TEMPORARILY DISCONNECTED AND ITS OPERATION AFTER RECONNECTION.
4. ALL WALL OPENINGS SHALL BE SEALED FROM ENTRY AND/OR WEATHER DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WEATHER RELATED DAMAGE TO INTERIOR FINISHES OR OTHER MATERIALS.
5. THE CONTRACTOR SHALL NOTIFY THE SCHOOL PRINCIPAL 24 HOURS PRIOR TO THE INTERRUPTION OF ANY SYSTEMS OF THE SCHOOL INCLUDING ELECTRICAL, FIRE ALARM, SECURITY AND COMPUTER NETWORKS.
6. DISPOSE OF ALL DEBRIS ON A DAILY BASIS. WORK AREAS AND SIDEWALKS SHALL BE KEPT CLEAN. COORDINATE THE WORK SO AS TO SEPARATE THE OPERATIONS AND CONSTRUCTION MATERIALS FROM STUDENT CONTACT.
7. REPAIR AND REPAINT ANY DAMAGE TO THE INTERIOR/EXTERIOR FINISHES TO MATCH ADJACENT SURFACES.
8. IN THE COURSE OF THIS PROJECT, THE CONTRACTOR CAN ANTICIPATE ENCOUNTERING FINISH MATERIAL NOT SPECIFICALLY INDICATED OR MENTIONED ON THE DRAWINGS OR IN THESE SPECIFICATIONS. THE METHOD OF THE WORK CHOSEN BY THE CONTRACTOR HAS BEARING ON THE QUANTITY AND EXTENT OF FINISHES ENCOUNTERED. EXERCISE CARE IN DEMOLITION TO REDUCE EXTENT OF PATCHING AND REPAIR REQUIRED. CONTRACTOR SHALL REPAIR ALL EXISTING WORK DAMAGED OR DISTURBED BY THE WORK USING SIMILAR MATERIAL TO THAT REQUIRING REPAIR. PATCH TO MATCH EXISTING AND LEAVE ALL WORK IN A FINISHED AND COMPLETE CONDITION.
9. <u>ALL STRUCTURAL STEEL COMPONENTS, INCLUDING EXPANDED METAL MESH, SHALL BE HOT DIPPED GALVANIZED.</u>



VICINITY MAP

<u>INDEX OF DRAWINGS</u>

<u>PROJECT CONTACTS:</u>

<u>OWNER</u>
SCHOOL DISTRICT OF CLAY COUNTY
FACILITY PLANNING & CONSTRUCTION
925 CENTER STREET
GREEN COVE SPRINGS, FL 32043

<u>ARCHITECT</u>
BHIDE & HALL ARCHITECTS, P.A.
1329-C KINGSLEY AVENUE
ORANGE PARK, FL 32073
Phone: (904) 264-1919
CERT. LIC. # AAC-000569

<u>STRUCTURAL ENGINEER</u>
G.M.HILL ENGINEERING, INC.
10199 SOUTHSIDE BLVD. SUITE 103A
JACKSONVILLE, FLORIDA 32256
CERT. LIC.# 52225

<u>ELECTRICAL ENGINEER</u>
HADDAD ENGINEERING
3030 HARTLEY ROAD, SUITE 290
JACKSONVILLE, FL 32257
Phone: (904) 262-5066
Cert. of Authorization No. 4000

<u>SCOPE OF WORK:</u>

A: PROVIDE GENERATOR ENCLOSURE AND CONNECTION INTO EXISTING ELECTRICAL SYSTEM FOR PORTABLE GENERATOR (BY OTHERS). INTENT IS TO EXTEND THE TIME OF THE EXISTING GENERATOR BY TRANSFER TO A PORTABLE GENERATOR, SUPPLIED BY OTHERS DURING EMERGENCY EVENTS.

B. THIS WORK REQUIRES UNDERGROUND CONNECTIONS TO THE EXISTING GENERATOR AREA. RESTORE EXISTING GRADES AND PROVIDE SODDING AT ANY DISTURBED AREAS.

C. THIS WORK REQUIRES CONNECTIONS TO BE RUN ABOVE CEILINGS TO CONNECT TO THE EXISTING ELECTRICAL ROOM. PATCH AND REPAIR ALL PENETRATIONS AND AS NEEDED TO MAINTAIN ANY RATED WALLS.

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

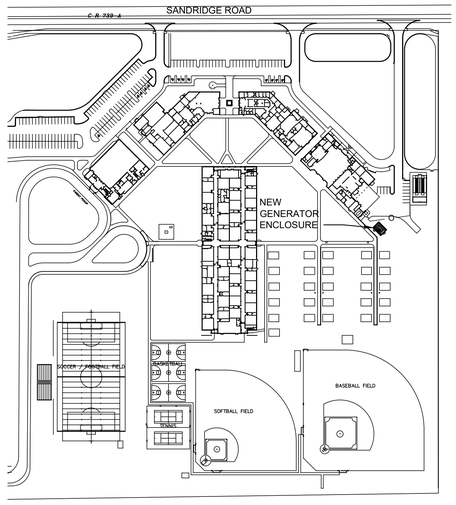
LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

REVISIONS

COVER & SHEET INDEX

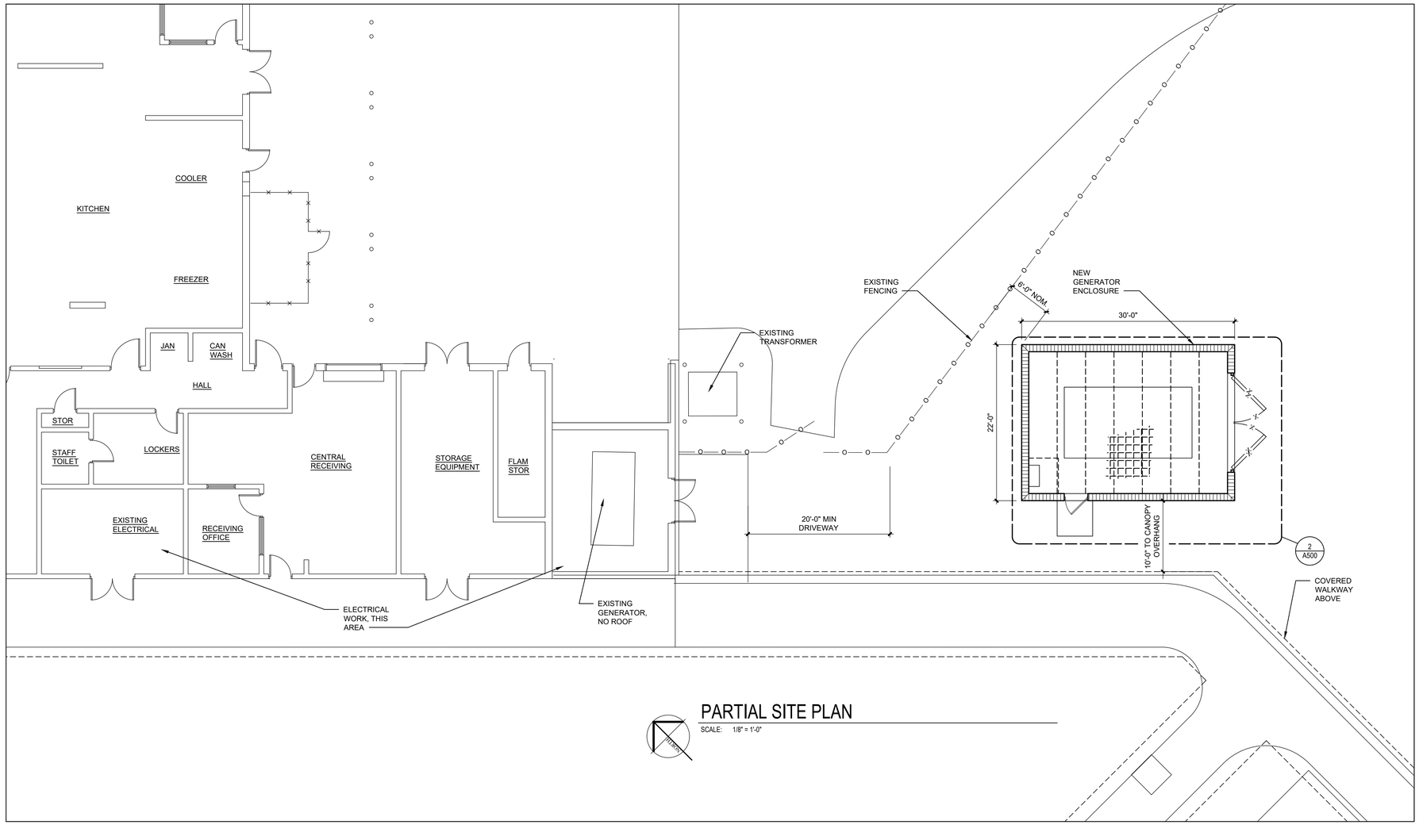
DATE	9-19-2019
D.B.	SLC
C.B.	REM
JOB NO.	18052

G001
BID SET



KEY PLAN

SCALE: N.T.S.



PARTIAL SITE PLAN

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

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23

for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

REVISIONS

PARTIAL SITE PLAN

DATE	9-19-2019
D.B.	SLC
C.B.	RMV
JOB NO.	18052

A100

BID SET

COMPONENT & CLADDING WIND LOADS ASCE 7-10

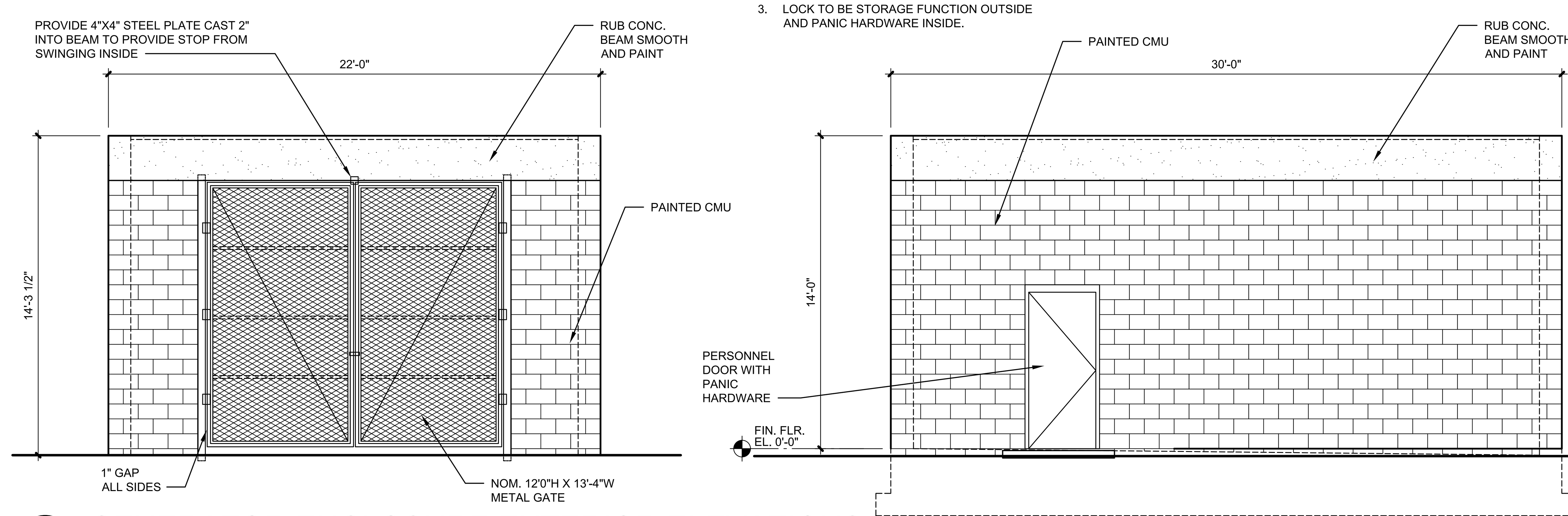
Ultimate Wind Speed, V = 134 mph
Building Risk Category = IV
Exposure = C
Enclosure = Enclosed
Internal Pressure Coefficient = ±0.18

Ultimate Door and Window Pressures in PSF					
Area \ Zone	4	5			
10 ft^2 or less	+44 -48	+44 -59			
20 ft^2	+43 -46	+43 -56			
50 ft^2	+40 -44	+40 -50			
100 ft^2	+38 -42	+38 -46			
200 ft^2 or larger	+35 -40	+35 -42			

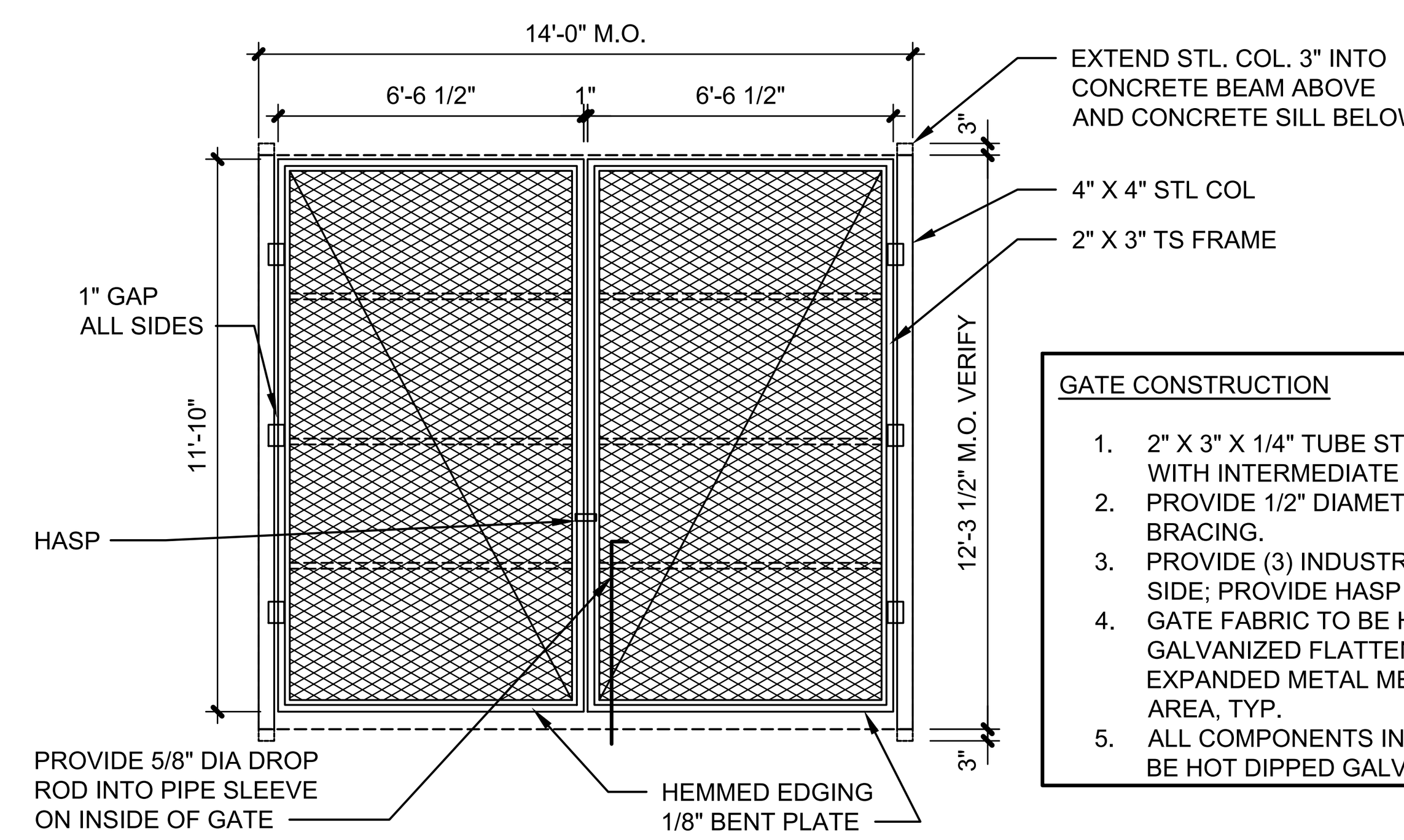
Nominal (ASD) Door and Window Pressures in PSF					
Area \ Zone	4	5			
10 ft^2 or less	+27 -29	+27 -36			
20 ft^2	+26 -28	+26 -34			
50 ft^2	+24 -26	+24 -30			
100 ft^2	+23 -25	+23 -28			
200 ft^2 or larger	+21 -24	+21 -25			

NOTES:
1. "a" = 10'-4"
2. THE PROPOSED STRUCTURE IS NOT LOCATED WITHIN A WIND BORNE DEBRIS AREA.
3. DESIGN PRESSURE VALUES FOR OTHER EFFECTIVE TRIBUTARY AREAS SHALL BE LINEARLY INTERPOLATED BETWEEN VALUES SHOWN.
4. NOMINAL DESIGN PRESSURES MAY BE USED TO SELECT DOOR AND WINDOW ASSEMBLIES BASED ON MIAMI-DADE NOA OR FLPA DATA.

PERSONNEL DOOR
1. 3'-0" X 7'-0" H.M. DOOR AND FRAME (4" HEAD).
2. PROVIDE HARDWARE PER NOA OR FBC APPROVAL. OPENING TO BE L.M.I. RATED.
3. LOCK TO BE STORAGE FUNCTION OUTSIDE AND PANIC HARDWARE INSIDE.

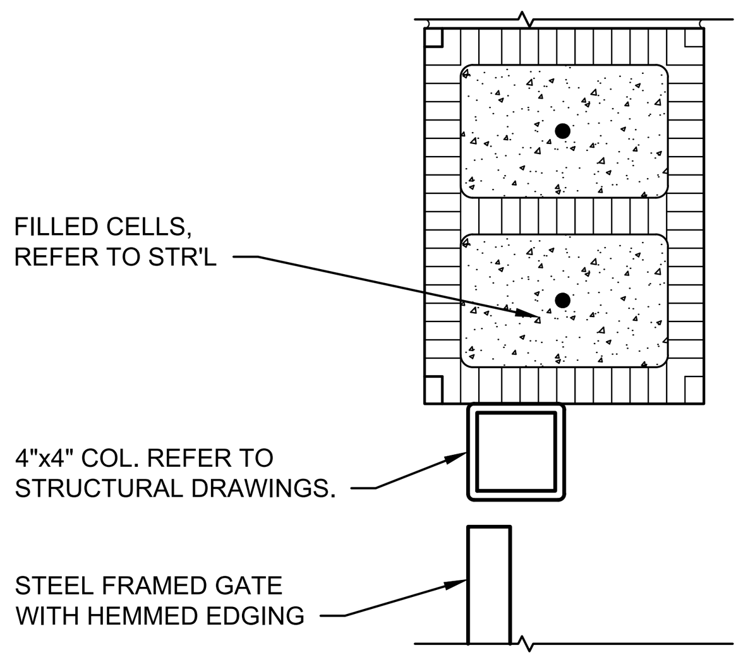


A A500 GENERATOR ENCLOSURE EXTERIOR ELEVATIONS
SCALE: 1/4" = 1'-0"

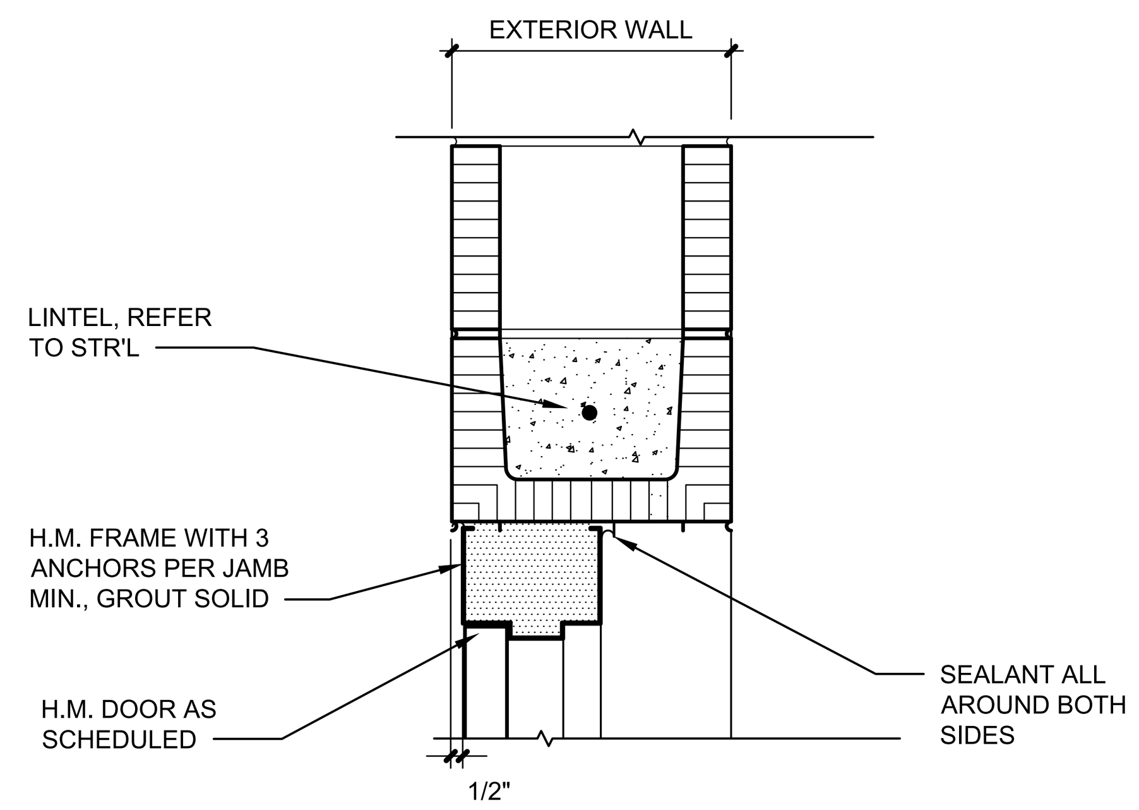


GATE CONSTRUCTION
1. 2" X 3" X 1/4" TUBE STEEL WELDED FRAME WITH INTERMEDIATE FRAMING.
2. PROVIDE 1/2" DIAMETER ROD DIAGONAL BRACING.
3. PROVIDE (3) INDUSTRIAL HINGES AT EACH SIDE; PROVIDE HASP AND PADLOCK.
4. GATE FABRIC TO BE HOT-DIPPED GALVANIZED FLATTENED DIAMOND EXPANDED METAL MESH - 3/4 #16 74% OPEN AREA, TYP.
5. ALL COMPONENTS INCLUDING HARDWARE TO BE HOT DIPPED GALVANIZED.

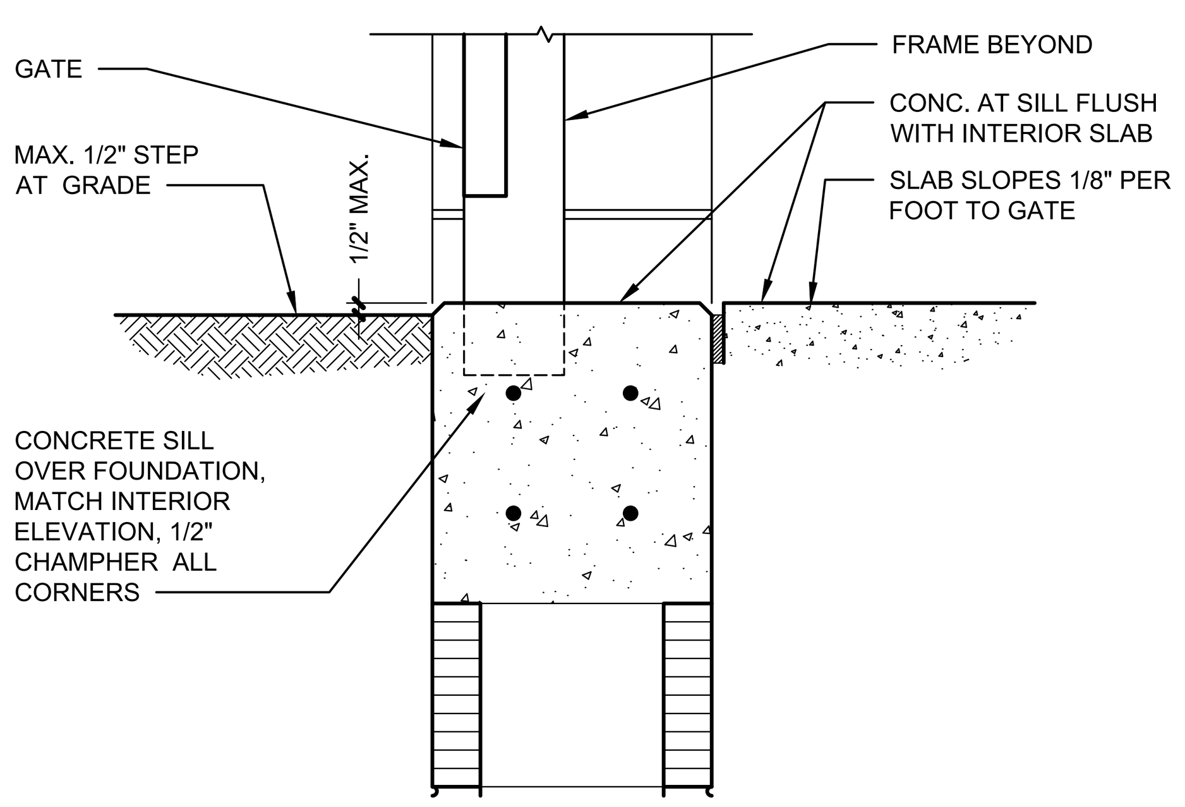
B A500 GATE ELEVATION
SCALE: 1/4" = 1'-0"



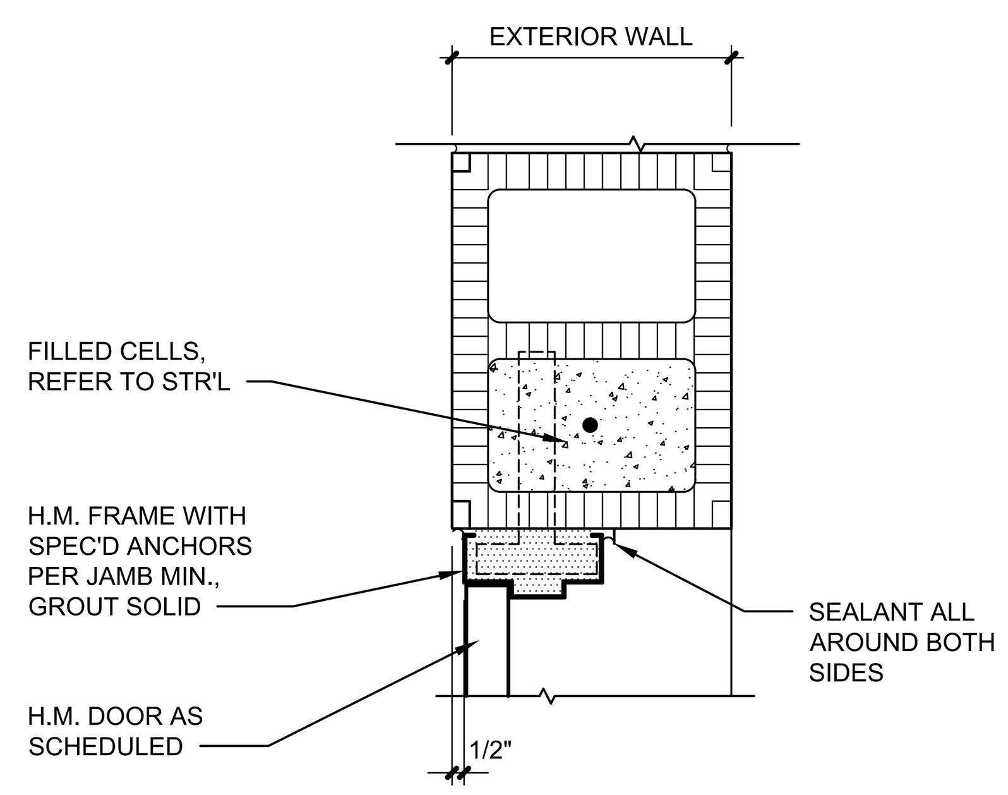
5 A500 JAMB AT STEEL GATES
SCALE: 1 1/2" = 1'-0"



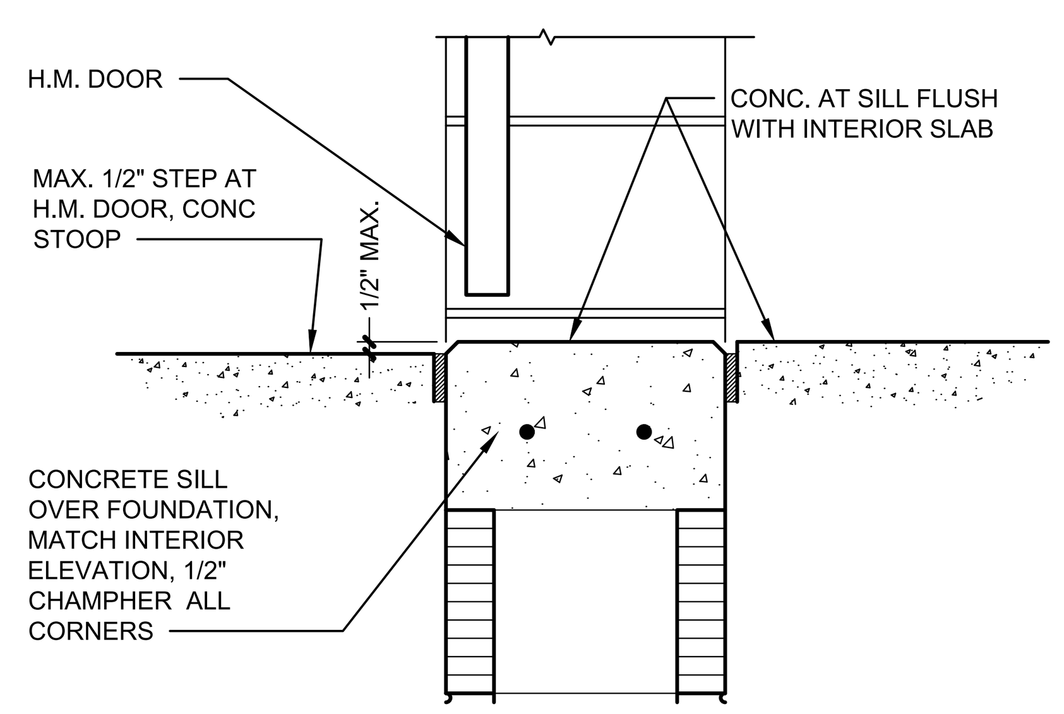
3 A500 4" HEAD, H.M. EXTERIOR CMU
SCALE: 1 1/2" = 1'-0"



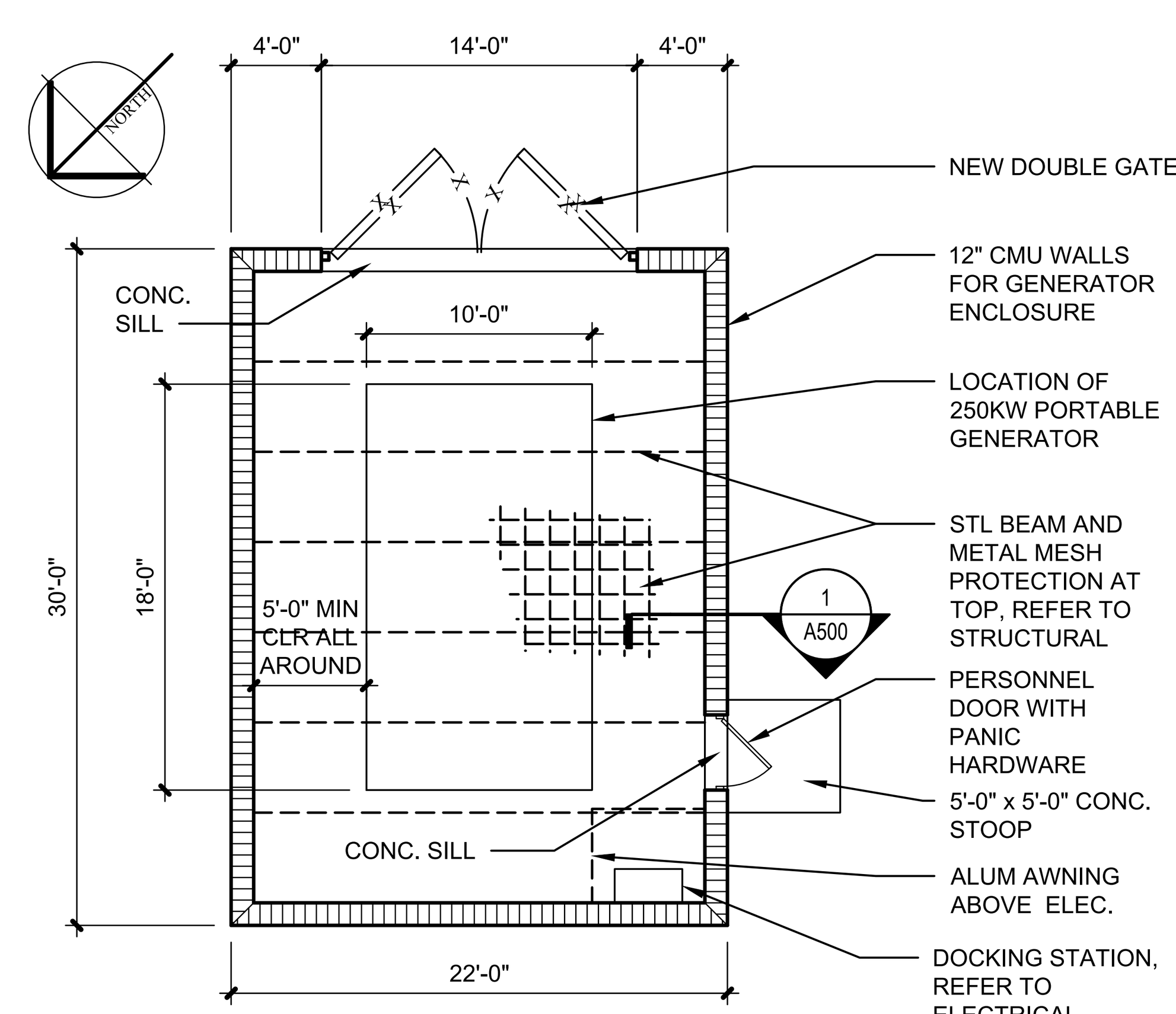
6 A500 SILL, EXTERIOR GATE
SCALE: 1 1/2" = 1'-0"



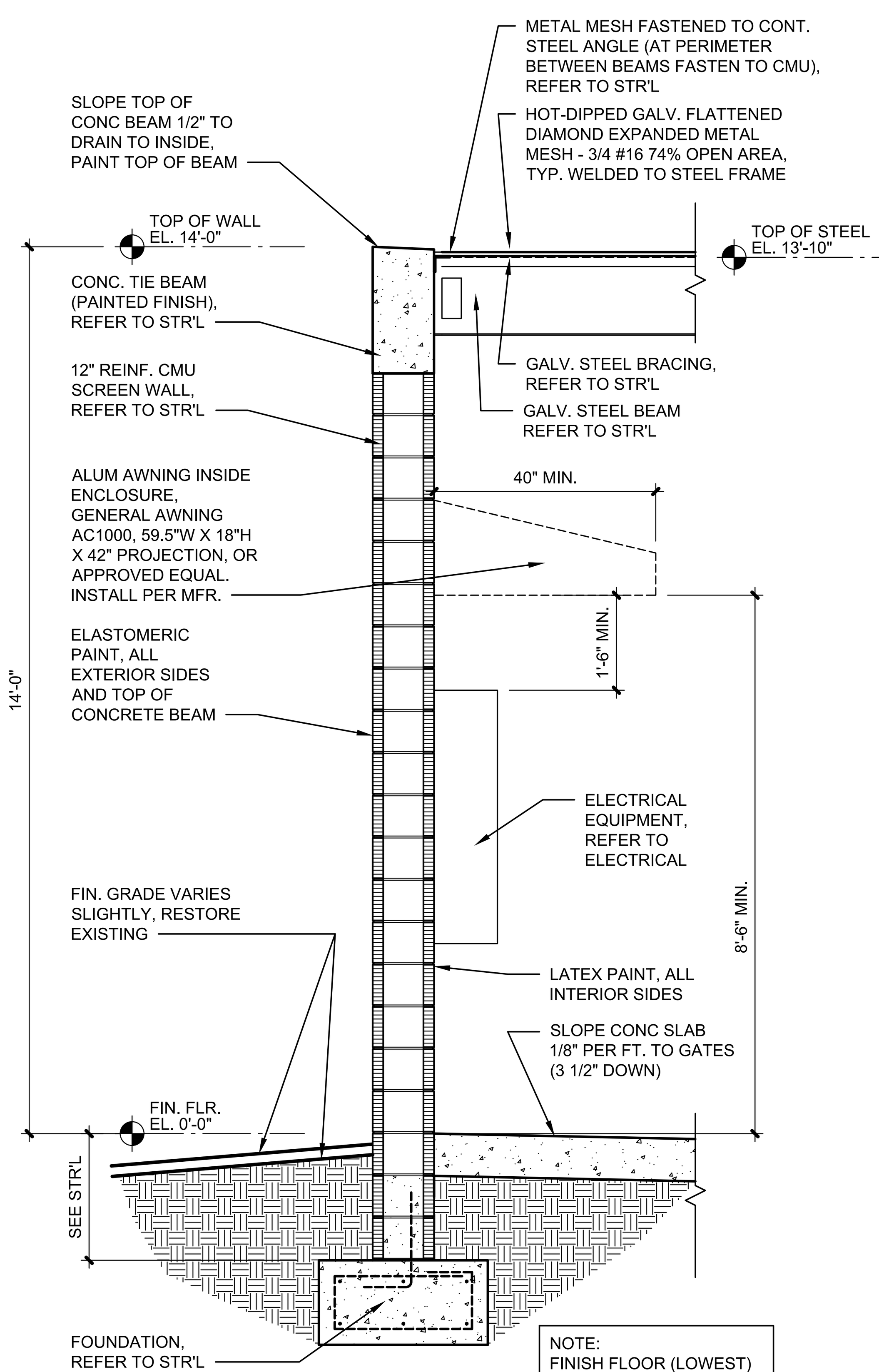
4 A500 JAMB, H.M. EXTERIOR CMU
SCALE: 1 1/2" = 1'-0"



4A A500 SILL, H.M. EXTERIOR CMU
SCALE: 1 1/2" = 1'-0"



2 A500 GENERATOR ENCLOSURE PLAN
SCALE: 1/8" = 1'-0"



NOTE:
FINISH FLOOR (LOWEST) TO MATCH EXISTING GENERATOR ENCLOSURE FIN. FLR. OR HIGHER

1 A500 SCREEN WALL AT GENERATOR ENCLOSURE
SCALE: 1/2" = 1'-0"

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

REVISIONS

GENERATOR ENCLOSURE AND DETAILS

DATE	9-19-2019
D.B.	SLC
C.B.	RMV
JOB NO.	18052

A500
BID SET

GENERAL NOTES:

1. GENERAL INFORMATION

1. THE STRUCTURAL ENGINEER SHALL NOT HAVE CONTROL OR BE RESPONSIBLE FOR THE CONSTRUCTION MEANS AND METHOD, TECHNIQUES, PROCEDURES OR SEQUENCES OR THE ACTS OF OMISSIONS OF THE CONTRACTOR OR ANY OTHER PERSONS PERFORMING THE WORK OR FOR THE FAILURE FOR ANY OF THEM TO CONSTRUCT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. IF THE DRAWINGS AND SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT RESTRICTIONS AND REQUIREMENTS SHALL GOVERN.
3. PLAN NOTES, DETAILS AND SECTIONS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES. TYPICAL DETAILS AND SECTIONS NOT CUT ON THE PLANS SHALL APPLY UNLESS NOTED OTHERWISE.
4. CONTRACTORS ARE REQUIRED TO COORDINATE THEIR RESPECTIVE WORK WITH ALL OTHER DISCIPLINES TO AVOID ANY CONFLICTS DURING CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE STRUCTURAL DRAWINGS WITH ALL OTHER CONSTRUCTION DOCUMENTS.
5. LOCATION, SIZES AND QUANTITY OF ALL OPENINGS MAY NOT BE COMPLETELY INDICATED ON THE STRUCTURAL DRAWINGS. CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL OPENINGS WITH ALL OTHER DISCIPLINES PRIOR TO ANY FABRICATION.
6. CONTRACTORS ARE REQUIRED TO VERIFY EXISTING CONDITIONS PRIOR TO ANY FABRICATION OR CONSTRUCTION. IF EXISTING CONDITIONS ARE DIFFERENT THAN SHOWN, NOTIFY A/E IMMEDIATELY FOR MODIFICATIONS TO THE DRAWINGS.
7. THE CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT LIMITED TO, BRACING, SHORING,UNDERPINNING, ETC. THE A/E IS NOT RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES OR SAFETY PROCEDURES DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING THAT IS REQUIRED DURING CONSTRUCTION TO KEEP THE STRUCTURE SAFE AND PLUMB UNTIL THE ENTIRE STRUCTURE IS COMPLETE. ANY BRACING INDICATED OR CALLED FOR ON THESE DRAWINGS ARE DESIGNED FOR THE FINAL AND COMPLETED STRUCTURE ONLY.
9. GENERAL CONTRACTOR MUST REVIEW AND APPROVE SHOP DRAWINGS PRIOR TO SUBMITTAL TO ARCHITECT/ENGINEER.
10. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSION AND CONDITIONS OF EXISTING STRUCTURE AND SITE THAT ARE AFFECTED BY NEW WORK PRIOR TO ANY ERECTING OR FABRICATION OF NEW STRUCTURAL STEEL.

2. DESIGN CRITERIA

1. BUILDING CODE: THE FLORIDA BUILDING CODE 2017, 6TH EDITION.
2. DESIGN CODES:
   - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE 7-10)
   - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-13)
   - SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS (ANSI/AISC 360-10)
   - AMERICAN CONCRETE INSTITUTE (ACI 318-14)
   - STRUCTURAL WELDING CODE (ANSI/AWS D1.1)
3. DESIGN LOAD CRITERIA:

   WIND LOAD CRITERIA:
   - ULTIMATE DESIGN WIND SPEED ....: Vult = 175 MPH (3 SECOND GUST)
   - NOMINAL DESIGN WIND SPEED ....: Vasd = 135 MPH
   - RISK CATEGORY ....: IV (SHELTER)
   - ENCLOSURE CLASSIFICATION ....: ENCLOSED
   - WIND EXPOSURE CATEGORY ....: C

3. CONCRETE

1. ALL CONCRETE, UNLESS OTHERWISE NOTED IN SCHEDULES OR DETAILS, SHALL HAVE A MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH OF 3000 PSI. ALL CONCRETE SHALL BE NORMAL WEIGHT (145 PCF).
2. ALL CONCRETE EXPOSED TO THE WEATHER SHALL BE AIR-ENTRAINED. FOR SURFACE FINISHES AND OTHER REQUIREMENTS, REFER TO ARCH. DWGS..
3. DETAILS OF FABRICATION OF REINFORCEMENT, HANDLING AND PLACEMENT OF THE CONCRETE, CONSTRUCTION OF FORMS AND PLACEMENT OF REINFORCEMENT, NOT OTHERWISE COVERED BY THE PLANS AND SPECIFICATIONS, SHALL COMPLY WITH THE LATEST EDITION OF THE A.C.I. CODE AND C.R.S.I. REQUIREMENTS.
4. PROVIDE ¾" CHAMFERS ON ALL EXPOSED EDGES OF CONCRETE AND THE EXPOSED CORNERS OF BEAMS, GIRDERS AND COLUMNS UNLESS OTHERWISE SHOWN OR NOTED.
5. ALL MISCELLANEOUS ITEMS TO BE INSTALLED IN ANY CONCRETE WORK, SUCH AS PIPES, ELECTRICAL CONDUITS, DOVETAIL ANCHOR SLOTS, RELETS, ETC., SHALL BE PROPERLY LOCATED, INSTALLED AND CHECKED PRIOR TO PLACEMENT OF CONCRETE. REFER TO ARCHITECTURAL AND MEP DRAWINGS FOR THE EXACT EXTENT AND LOCATION OF THESE ITEMS THAT ARE NOT SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.

4. REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN ACCORDANCE WITH THE LATEST EDITION OF ACI 315, ACI 318, AND CRSI.
2. REINFORCEMENT SHALL HAVE DEFORMED SURFACES IN ACCORDANCE WITH ASTM A615 WITH MINIMUM YIELD STRENGTH OF 60,000 PSI.
3. ALL REINFORCING STEEL SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH CRSI MANUAL OF STANDARD PRACTICE.
4. REINFORCING STEEL SHALL HAVE THE FOLLOWING CONCRETE PROTECTION (CLEAR COVER) UNLESS OTHERWISE NOTED:
   - SURFACES NOT FORMED AND IN CONTACT WITH SOIL ....: 3"
   - FORMED SURFACES IN CONTACT WITH SOIL OR WEATHER ....: 2"
5. REINFORCING STEEL SHOP DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION. CONTRACTOR SHALL CAREFULLY CHECK AND "APPROVED" BEFORE STAMP SUBMITTING TO THE EOR. NO SPLICES OR OTHER DETAILS ARE TO BE ADDED WITHOUT SUBMITTAL.

5. CONCRETE MASONRY

1. ALL MASONRY CONSTRUCTION SHALL COMPLY WITH ACI 530-13/ASCE 5-13/TMS 402-13" BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", LATEST EDITION.
2. CONCRETE MASONRY UNITS SHALL BE ASTM C90, HOLLOW LOAD BEARING UNITS, TYPE 1, GRADE N-1, NORMAL WEIGHT, WITH A MIN. COMPRESSIVE STRENGTH OF 2,000 PSI (f'm = 2,000 PSI).
3. GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2,000 PSI PER ASTM C1019. GROUT SHALL BE MIXED TO PROVIDE A SLUMP BETWEEN 8" TO 11".
4. MORTAR SHALL CONFORM TO ASTM C270 TYPE M OR S.
5. LAP VERTICAL BARS MINIMUM OF 48 BAR DIAMETERS WITH WIRE TIES.
6. GROUT ALL CELLS CONTAINING VERTICAL REINFORCEMENT IN 4'-0" LIFTS MAXIMUM. DO NOT BEGIN PLACEMENT OF GROUT UNTIL ALIGNMENT OF CELLS ARE INSPECTED AND APPROVED.
7. ALL CELLS SHALL BE FULLY GROUTED WHERE VERTICAL REINFORCEMENT IS INDICATE ON THESE DRAWINGS.
8. FILL ALL CELLS BELOW FINISHED GRADE.
9. PROVIDE #9 GALV. HORIZONTAL JOINT REINFORCEMENT IN WALLS AT 16"O.C. VERTICALLY, UNLESS NOTED OTHERWISE. PROVIDE HORIZONTAL JOINT REINFORCEMENT IN BOND BEAMS AT 8"O.C. VERTICALLY. LAP JOINT REINFORCEMENT @ 12" O.C. MINIMUM.
10. PROVIDE HORIZONTAL JOINT REINFORCEMENT AT 32"O.C. ACROSS VERTICAL CONTROL JOINTS IN WALLS AT 16"O.C. AND ACROSS VERTICAL CONTROL JOINTS IN BOND BEAMS. TOP AND BOTTOM REINFORCEMENT IN SPANDREL BEAMS SHALL BE CONTINUOUS ACROSS CONTROL JOINTS.
11. PROVIDE 8"x16" BOND BEAM @ TOP OF WALLS. REINFORCE BOND BEAM WITH (2) #5 PER 8" OF DEPTH U.O.N.
12. PROVIDE (1) #5 BAR VERTICAL MINIMUM AT ALL CORNERS, INTERSECTIONS AND EACH SIDE OF CONTROL JOINTS.
13. PROVIDE (2) #5 BARS VERTICAL AT 8"O.C. AT END WALLS. PROVIDE #5 @ 48"O.C. MINIMUM VERTICAL REINFORCEMENT, TYPICAL U.N.O. ON PLAN.
14. PROVIDE (2) #5 BAR VERTICAL MINIMUM EACH SIDE OF OPENINGS.
15. ALL REINFORCED HOLLOW UNIT MASONRY SHALL BE BUILT TO PRESERVE THE UNOBSTRUCTED VERTICAL CONTINUITY OF THE CELLS TO BE FILLED. WALLS AND CROSS WEBS FORMING SUCH CELLS TO BE FILLED SHALL BE FULL-BEDDED IN MORTAR TO PREVENT LEAKAGE OF GROUT. ALL HEAD (OR END) JOINTS SHALL BE SOLIDLY FILLED WITH MORTAR FOR A DISTANCE IN FROM THE FACE OF THE WALL OR UNIT NOT LESS THAN THE THICKNESS OF THE LONGITUDINAL FACE SHELLS. BOND SHALL BE PROVIDED BY LAPPING UNITS IN SUCCESSIVE VERTICAL COURSES OR BY EQUIVALENT MECHANICAL ANCHORAGE.
16. VERTICAL CELLS TO BE FILLED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED, CONTINUOUS, VERTICAL CELL MEASURING NOT LESS THAN 3" AND HAVING A CLEAR AREA OF 10 SQUARE INCHES.
17. VERTICAL REINFORCEMENT SHALL BE HELD IN POSITION AT TOP AND BOTTOM AND AT INTERVALS NOT EXCEEDING 10 FEET.
18. WHEN THE GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE POUR OF GROUT NOT LESS THAN ½" BELOW THE TOP OF THE UPPERMOST UNIT GROUTED.
19. WHERE LINTELS BEAR ON MASONRY WALLS, THEY SHALL BEAR ON EITHER A BOND BEAM COURSE OR CORES GROUTED SOLID. ALL LINTELS SHALL HAVE AT LEAST 8" OF BEARING AT EACH END UNLESS NOTED OTHERWISE.
20. ALL GROUT PLACED SHALL BE VIBRATED BY MECHANICAL VIBRATORS.
21. PROVIDE CONTROL JOINTS IN MASONRY WALLS AT A MAXIMUM OF 25'-0". COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.

6. STRUCTURAL STEEL

1. DETAILS FOR DESIGN, FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST A.I.S.C. STANDARDS UNLESS OTHERWISE NOTED OR SPECIFIED.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING U.N.O. ON THE STRUCTURAL DRAWINGS:
   - WIDE FLANGE SHAPES .... ASTM A992 (Fy = 50 KSI)
   - CHANNELS, ANGLES, PLATES, BARS .... ASTM A36 (Fy = 36 KSI)
3. ALL STRUCTURAL BOLTS (INCLUDING WASHERS AND NUTS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 OR A490. ALL BOLTS SHALL BE TIGHTENED TO THE SNUG TIGHT CONDITION U.N.O. BOLTING OF STRUCTURAL STEEL SHALL CONFORM TO THE PROVISIONS OF RCSC "SPECIFICATIONS" FOR STRUCTURAL JOINTS USING ASTM A325 AND A490 BOLTS.
4. MINIMUM SIZE OF BOLTS SHALL BE 3/4" DIAMETER, AND EACH CONNECTION SHALL HAVE A MINIMUM OF 2 BOLTS WITH ONE HARDENED WASHER PER BOLT.
5. ANCHOR BOLTS SHALL CONFORM TO ASTM F-1554, GRADE 36, AS NOTED ON THE DRAWINGS. REFER TO TYPICAL DETAIL FOR SIZE AND LENGTH.
6. PERMANENT MACHINE BOLTS, USING AN APPROVED TYPE OF SELF ANCHORING HEX NUT, MAY BE USED FOR SUCH MINOR CONNECTIONS AS SHELF ANGLES, CLOSURES, ETC.
7. EXPANSION BOLTS SHALL BE A MINIMUM OF ¾" DIAMETER (HILTI KWIK BOLT II OR APPROVED EQUAL) WITH A MIN. EMBEDMENT OF 3¼" INTO CONCRETE AND 5¼" INTO GROUT FILLED CONCRETE MASONRY UNITS.
8. EPOXY ANCHOR BOLTS SHALL BE A MINIMUM OF HITLI RE500-SD (OR APPROVED EQUAL). MINIMUM EMBEDMENT SHALL BE 12" TIMES BAR DIAMETER U.O.N. FOLLOW ALL WRITTEN MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
9. WELDING PROCEDURES SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY'S (AWS) STRUCTURAL WELDING CODES. ALL WELDING SHALL BE PERFORMED BY PREQUALIFIED WELDERS.
10. WELDED CONNECTIONS FOR STEEL MEETING ASTM A992 OR A572 SHALL BE MADE WITH E70XX LOW HYDROGEN ELECTRODES. OTHER WELDED CONNECTIONS TO BE MADE WITH REGULAR E70XX ELECTRODES.
11. WELDS NOT OTHERWISE NOTED ON DRAWINGS SHALL BE CONTINUOUS FILLET WELDS. THE MINIMUM SIZE SHALL BE ¼", (MIN. 2"-12") OR AS REQUIRED BY THE AISC SPECIFICATIONS, WHICHEVER IS LARGER.
12. MINIMUM THICKNESS OF ALL CONNECTION MATERIAL SHALL BE 5/16".
13. UNLESS NOTED OTHERWISE, ALL SIMPLE BEAM SHEAR CONNECTIONS SHALL BE MADE USING DOUBLE ANGLE CONNECTIONS. CONNECTIONS SHALL BE HIGH STRENGTH BOLT BEARING TYPE WITH THREADED PARTS INCLUDED IN THE SHEAR PLANE. ALL CONNECTIONS, UNLESS FULLY DETAILED ON THE STRUCTURAL DRAWINGS, SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL STEEL FABRICATOR TO MEET BOTH AISC AND OSHA REQUIREMENTS. REFER TO TYPICAL DETAILS FOR TYPE OF SIMPLE BEAM CONNECTION AND MINIMUM BOLT REQUIREMENTS.
14. PROVIDE TEMPORARY ERECTION BRACING OF THE STRUCTURE UNTIL ALL PERMANENT LATERAL SUPPORT IS IN PLACE. FIELD PAINT, WHERE APPLICABLE, ALL FIELD WELDS, ABRASIONS, RUST SPOTS AND FIELD BOLTS ON STRUCTURAL STEEL, JOISTS AND DECKING AFTER ERECTION.
15. ALL EDGE ANGLES OR BENT PLATES SHALL BE FIELD APPLIED TO THE BEAMS WITH ±1/8" HORIZONTAL AND VERTICAL TOLERANCE TO FACILITATE OTHER INSTALLATIONS.
16. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR ARCHITECTURALLY EXPOSED STEEL.
17. ALL INTERIOR & EXTERIOR EXPOSED STEEL SHALL RECEIVE ONE SHOP COAT OF RED OXIDE PRIMER. INTERIOR STEEL BEAMS, COLUMNS, ANGLES ETC. ARE REQUIRED TO BE SHOP PRIMED PRIOR TO PAINTING EXPOSED STEEL.

7. SUBMITTALS

CONTRACTOR SHALL SUBMIT THE FOLLOWING FOR APPROVAL PRIOR TO FABRICATION AND ERECTION:
1. CONCRETE MIX DESIGNS.
2. STEEL REINFORCEMENT SHOP DRAWINGS.
3. MASONRY MATERIALS AND ACCESSORIES.
4. STRUCTURAL STEEL SHOP DRAWINGS.
5. TESTING LAB RESULTS FOR SOIL DENSITY AND CONCRETE COMPRESSIVE STRENGTH.

ABBREVIATIONS

AB	– ANCHOR BOLT	K	– KIP(s)
ALT	– ALTERNATE	KIP(s)	– 1000 POUNDS
APPROX	– APPROXIMATELY	KLF	– KIPS PER LINEAR FOOT
ARCH	– ARCHITECT	KJ	– CONSTRUCTION JOINT
ARCH'L	– ARCHITECTURAL	L	– ANGLE
B/	– BOTTOM OF	LG	– LONG
BC	– BOTTOM CHORD	LLH	– LONG LEG HORIZONTAL
BLDG	– BUILDING	LLV	– LONG LEG VERTICAL
BM	– BEAM	LP	– LOW POINT
BOTT	– BOTTOM	LW	– LONG WAY
BRG	– BEARING	MFR	– MANUFACTURER
C/C	– CENTER TO CENTER	MAS	– MASONRY
CIP	– CAST IN PLACE	MO	– MASONRY OPENING
CJ	– CONTRACTION JOINT	MAT'L	– MATERIAL
CL	– CENTERLINE	MAX	– MAXIMUM
CLR	– CLEAR	MECH'L	– MECHANICAL
CMU	– CONCRETE MASONRY UNIT	MTL	– METAL
COL	– COLUMN	MIN	– MINIMUM
CONC	– CONCRETE	MISC	– MISCELLANEOUS
CONFIG	– CONFIGURATION	NS	– NEAR SIDE
CONT	– CONTINUOUS	NIC	– NOT IN CONTRACT
CONTR	– CONTRACTOR	NTS	– NOT TO SCALE
CTR	– CENTER	OC	– ON CENTER
DBL	– DOUBLE	OH	– OPPOSITE HAND
DET	– DETAIL	OPNG	– OPENING
DIA	– DIAMETER	PAF	– POWDER ACTUATED FASTENERS
DIM	– DIMENSION	PART	– PARTITION
DN	– DOWN	PART'L	– PARTIAL
DR	– DOOR/DRAIN	PCJ	– PRECAST CONCRETE JOIST
DWG	– DRAWING	PL	– PLATE
EA	– EACH	PLF	– POUNDS PER LINEAR FOOT
EE	– EACH END	PSF	– POUNDS PER SQUARE FOOT
EF	– EACH FACE	PSI	– POUNDS PER SQUARE INCH
EJ	– EXPANSION JOINT	PT	– POST TENSIONED/PRESSURE TREATED
EL	– ELEVATION	R	– RISER/RADIUS
ELEV	– ELEVATION/ELEVATOR	REG	– REGULAR
ENGR	– ENGINEER	REINF	– REINFORCING
EOR	– ENGINEER OF RECORD	REM	– REMAINDER
EOS	– EDGE OF SLAB	REQ'D	– REQUIRED
EQ	– EQUAL	REV	– REVISED/REVISION
EW	– EACH WAY	RM	– ROOM
EXIST	– EXISTING	RO	– ROUGH OPENING
EXP	– EXPANSION	RQMTS	– REQUIREMENTS
EXT	– EXTERIOR	SCHED	– SCHEDULE
FIN	– FINISH	SECT	– SECTION
FLR	– FLOOR	SIM	– SIMILAR
FND	– FOUNDATION	SL	– SLOPE
FOM	– FACE OF MASONRY	SOG	– SLAB-ON-GRADE
FS	– FAR SIDE	SP	– SPIRAL
FT	– FOOT	SQ	– SQUARE
FTG	– FOOTING	SS	– STAINLESS STEEL
GA	– GAGE	STD	– STANDARD
GALV	– GALVANIZED	STL	– STEEL
GC	– GENERAL CONTRACTOR	STRUCT'L	– STRUCTURAL
GT	– GIRDER TRUSS	SW	– SHEARWALL/SHORT WAY
HC	– HOLLOW CORE	T/	– TOP OF
HCP	– HOLLOW CORE PLANK	TB	– TIE BEAM
HDG	– HOT DIPPED GALVANIZED	TC	– TIE COLUMN/TOP CHORD
HG	– HIP GIRDER	TEMP	– TEMPERATURE
HK	– HOOK	TJ	– TIE JOIST
HORIZ	– HORIZONTAL	T/O	– THRU OUT
HP	– HIGH POINT	TR	– TREAD/TRUSS
HS	– HIGH STRENGTH	TYP	– TYPICAL
IJ	– ISOLATION JOINT	UNO	– UNLESS NOTED OTHERWISE
INFO	– INFORMATION	VERT	– VERTICAL
INT	– INTERIOR	W/	– WITH
IRR	– IRREGULAR	W/O	– WITHOUT
JR	– JAMB REINFORCING	WD	– WOOD
JT	– JOINT	WP	– WORK POINT
		WWR	– WELDED WIRE REINFROCMENT

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

G.M. HILL ENGINEERING INC.
STRUCTURAL

GM Hill Engineering, Inc.
9640 Sunbeam Center Drive, Suite 1
Jacksonville, Florida 32257
Phone (904) 280-8244
Web: www.gmhillengineering.com
Job #: 02-19-030-30

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Structural Engineer	License No.
Jeffery D. McGee	45944

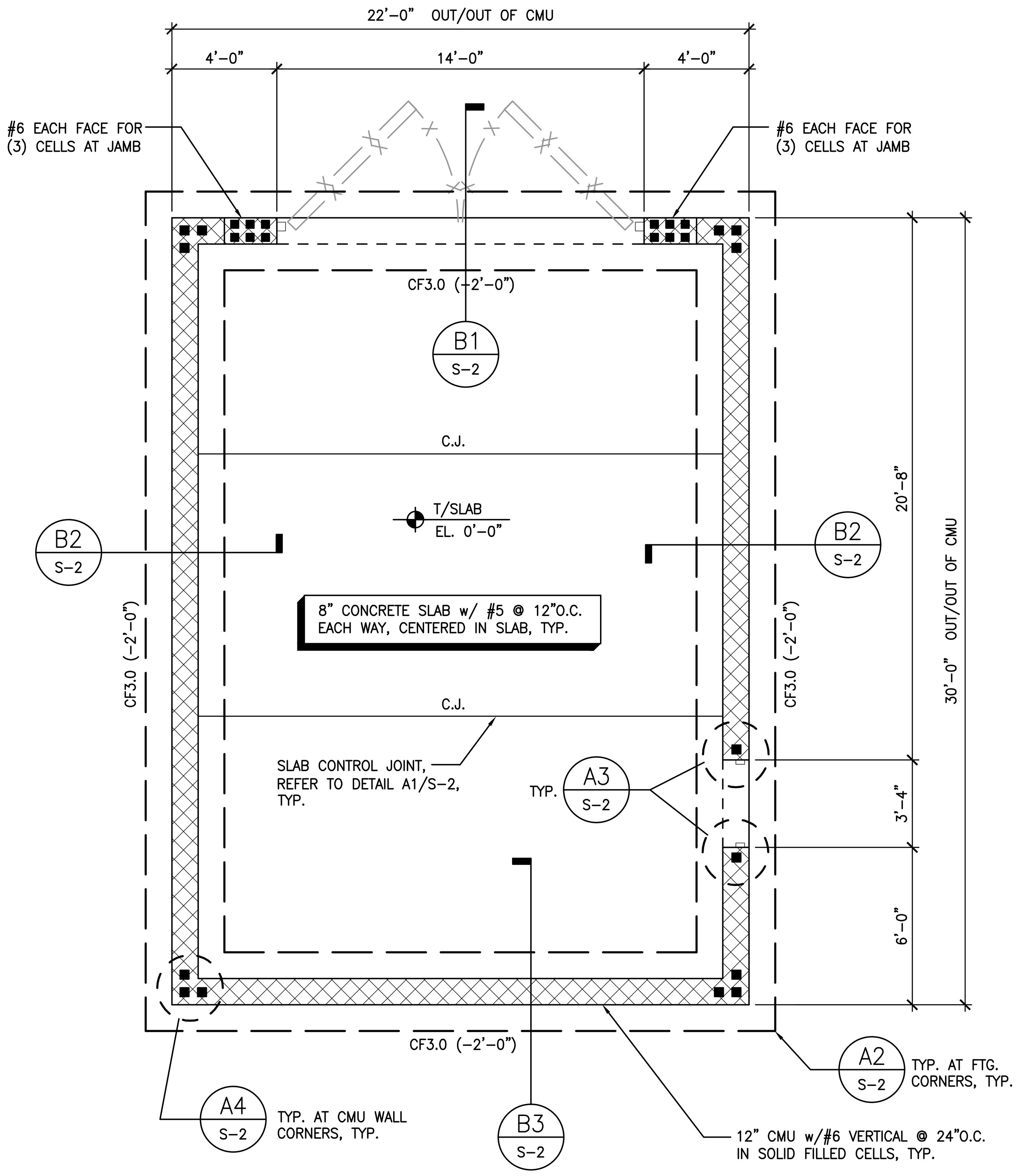
SYM.	REVISION	DATE

DESIGN CRITERIA
AND
GENERAL NOTES

DATE	09-19-2019
D.B.	TMP
C.B.	KM/JDM
JOB NO.	18052

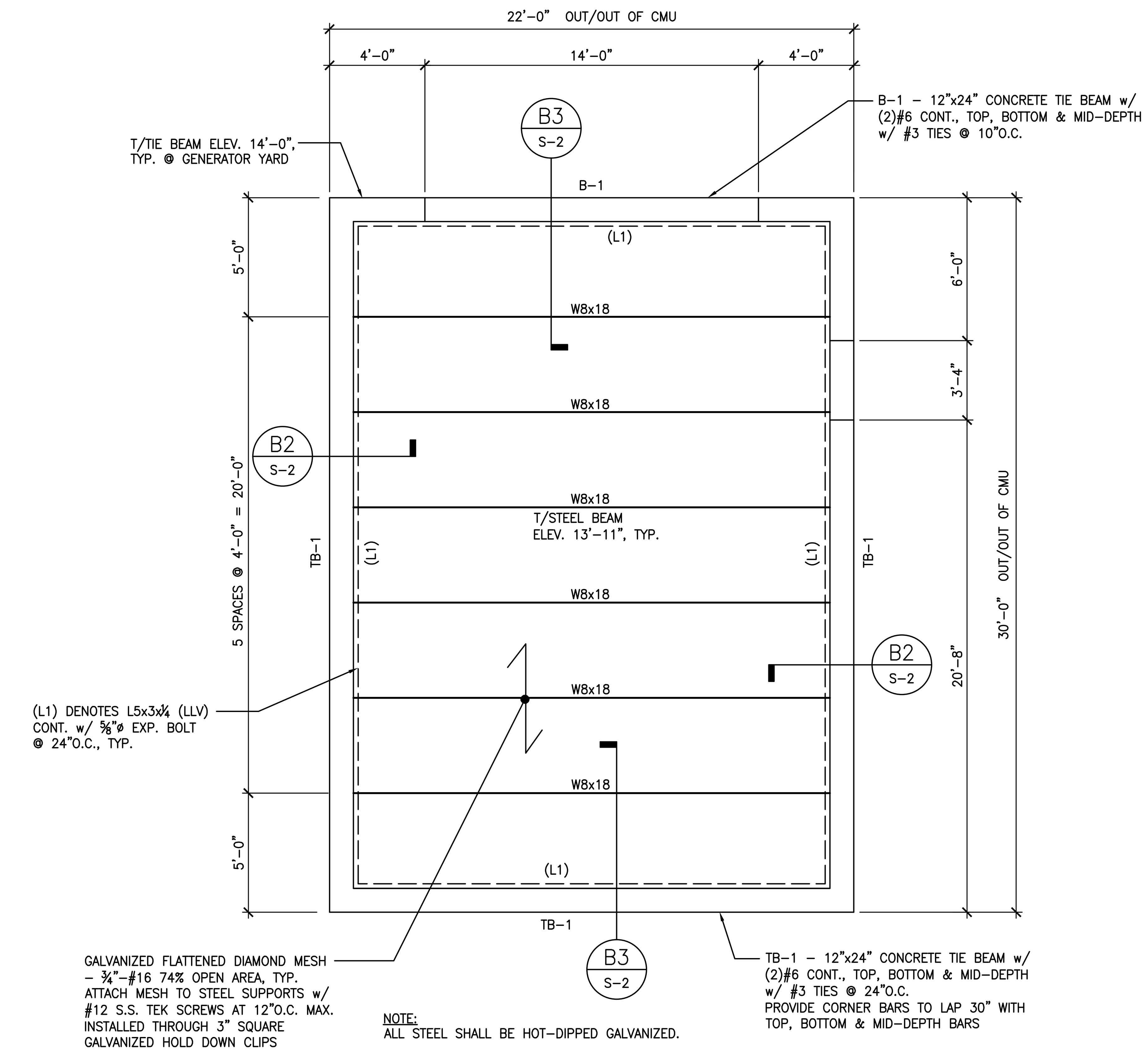
S-0

BID SET



FOUNDATION AND SLAB PLAN

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



ROOF FRAMING PLAN

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

FOUNDATION NOTES:

1. REFER TO ARCH. FLOOR PLAN FOR ALL WALL OPENINGS, WALL LOCATIONS, DEPRESSED / SLOPING SLABS, ELEVATIONS & DIMS.
2. REFER TO SHEET S-2 FOR FOUNDATION SECTIONS AND DETAILS.
3. FOOTINGS & FOUNDATIONS SHALL BE IN ACCORDANCE WITH FBC CHAPTER 18 AND GEO-TECHNICAL INVESTIGATION REPORT. T/FTG. ELEV. -2'-0" BELOW FINISHED GRADE, TYP. U.O.N.
4. REFER TO SHEET S-0 FOR ADDITIONAL GENERAL NOTES & DESIGN CRITERIA.
5. THE STRUCTURAL ENGINEER SHALL NOT HAVE CONTROL OR BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS TECHNIQUES, PROCEDURES OR SEQUENCES. FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, OR ANY OTHER PERSONS PERFORMING THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. ▨ – DENOTES 12" CMU WALL WITH VERTICAL REINF. (SEE PLAN FOR SIZE AND SPACING) IN GROUT SOLID FILLED CELLS.
7. ■ – DENOTES GROUT SOLID FILLED CELL WITH REINFORCING PER PLAN.

FOOTING SCHEDULE

MARK	SIZE (WxLxD)	REINFORCING	REMARKS
CF3.0	3'-0" x CONT. x 1'-2"	(3)#5 CONT. TOP AND BOTTOM w/#4 TRANSVERSE BARS @ 24"O.C. TOP & BOTTOM	

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

G. M. HILL ENGINEERING, INC. STRUCTURAL
GM Hill Engineering, Inc.
9640 Sunbeam Center Drive, Suite 1
Jacksonville, Florida 32257
Phone (904) 280-8244
Web: www.gmhillengineering.com
Job #: 02-19-030-30

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Structural Engineer	License No.
Jeffery D. McGee	45944

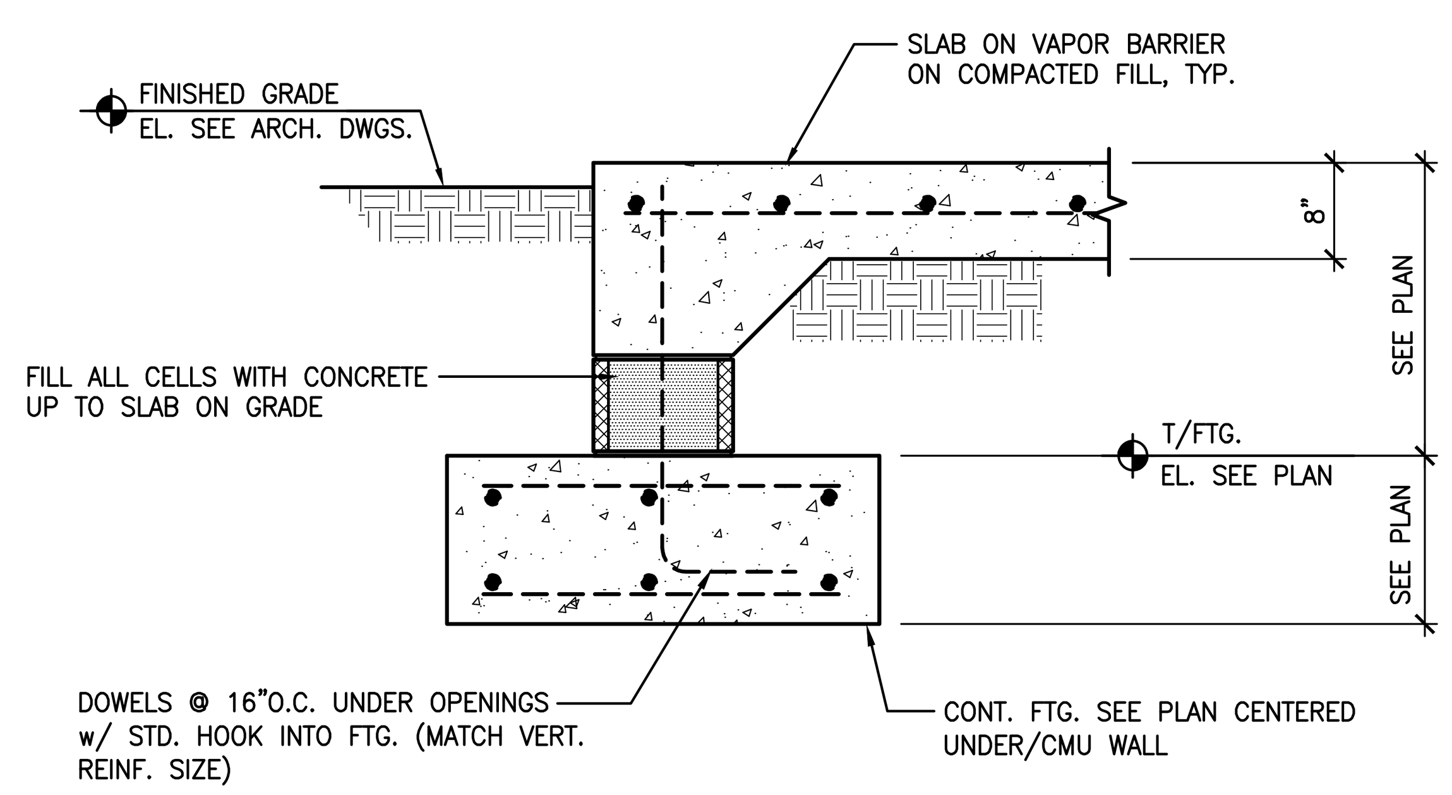
SYM.	REVISION	DATE

GENERATOR ENCLOSURE FOUNDATION & ROOF FRAMING PLANS

DATE	09-19-2019
D.B.	TMP
C.B.	KM/JDM
JOB NO.	18052

S-1

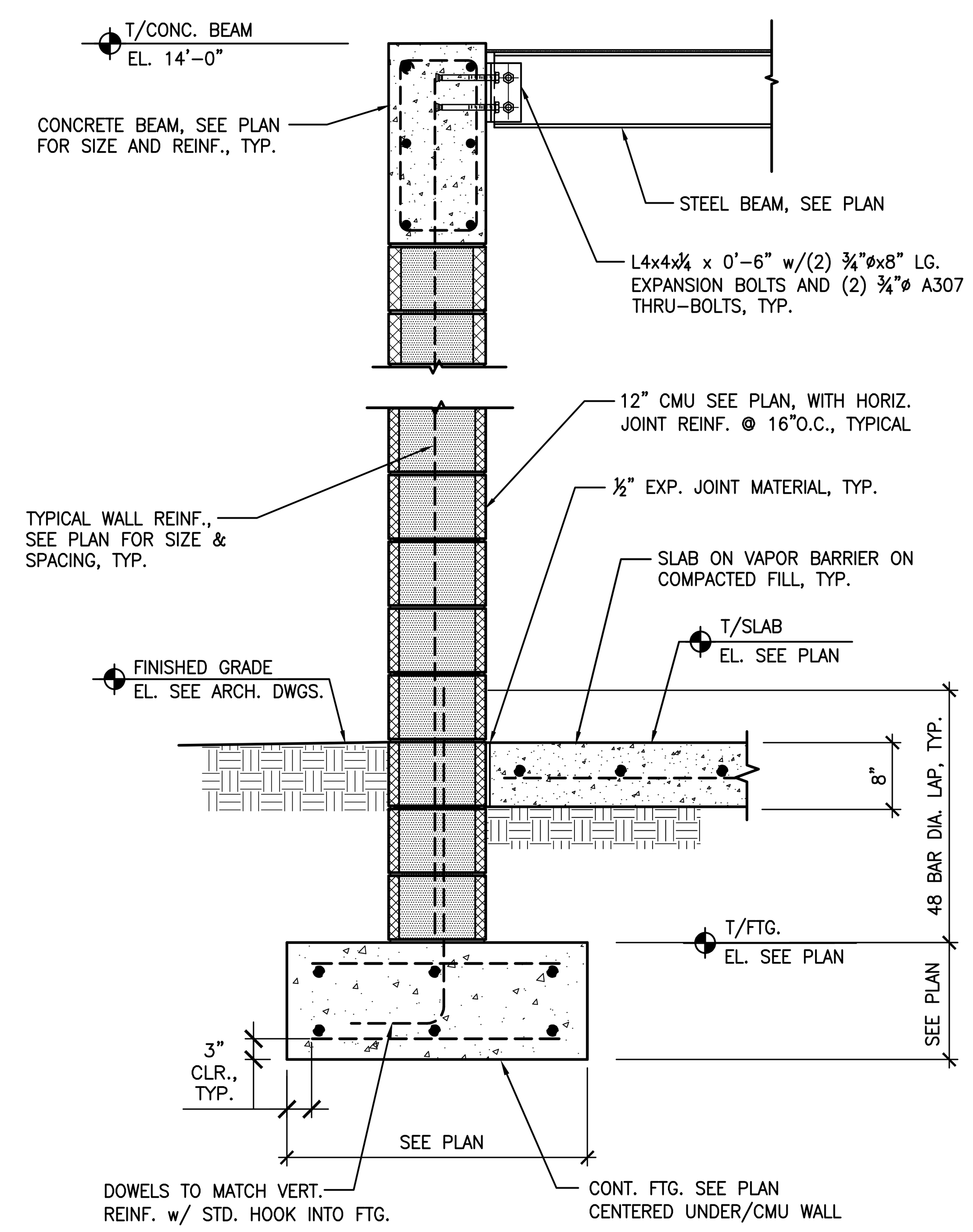
BID SET



SECTION @ DOOR OPENING
@ GENERATOR ENCLOSURE

SCALE: NONE

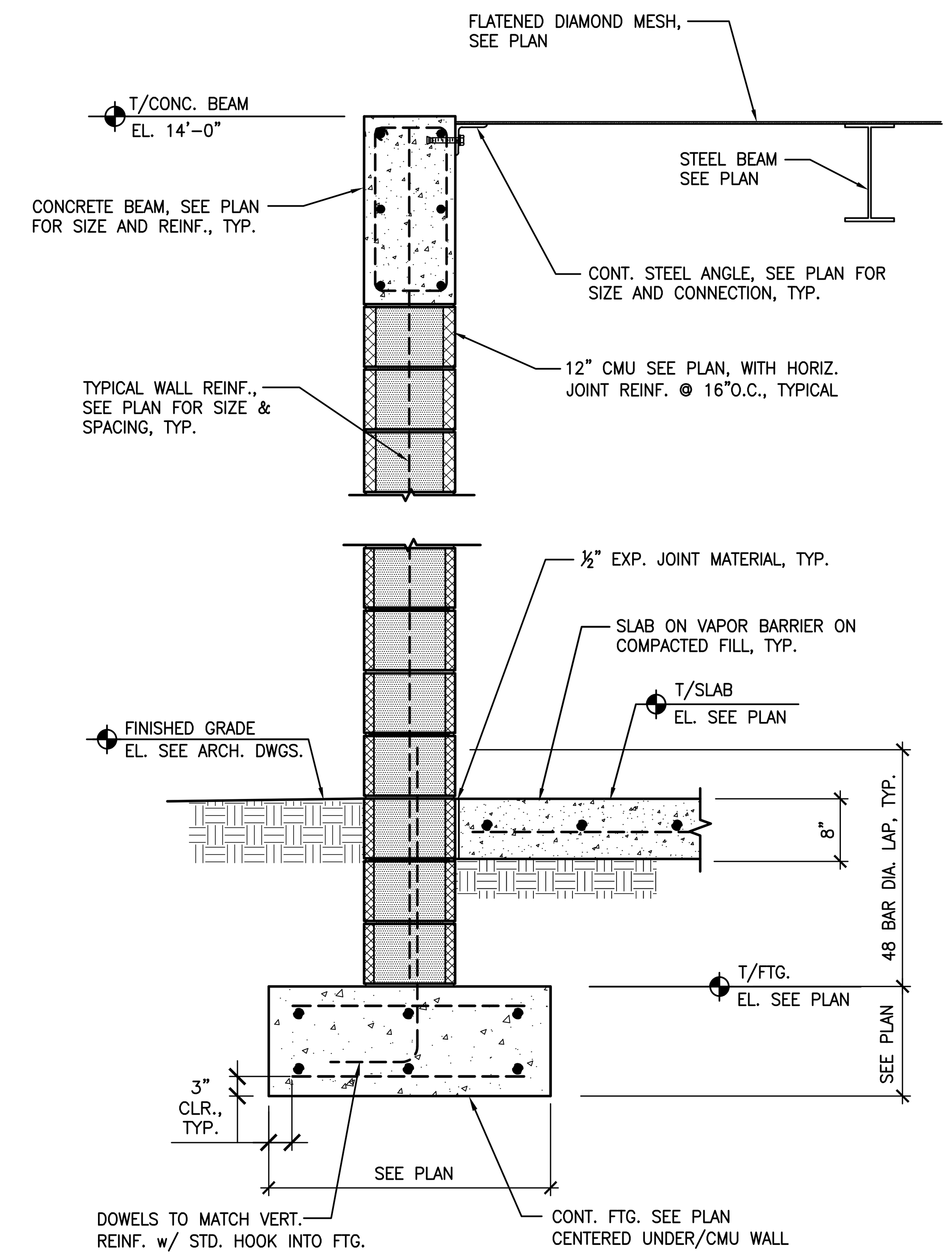
B1



SECTION AT CMU WALL
@ GENERATOR ENCLOSURE

SCALE: 3/4"=1'–0"

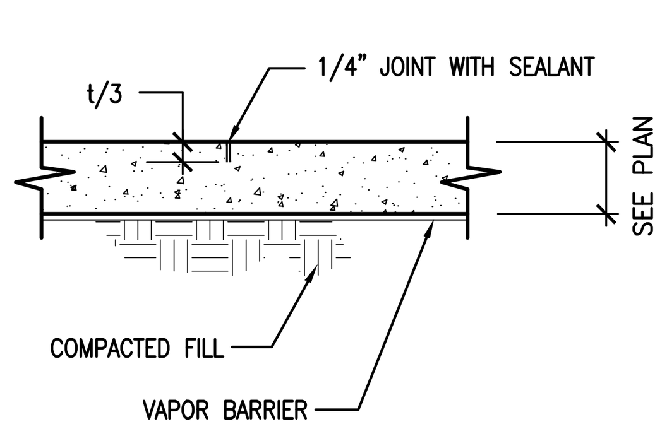
B2



SECTION AT CMU WALL
@ GENERATOR ENCLOSURE

SCALE: 3/4"=1'–0"

B3



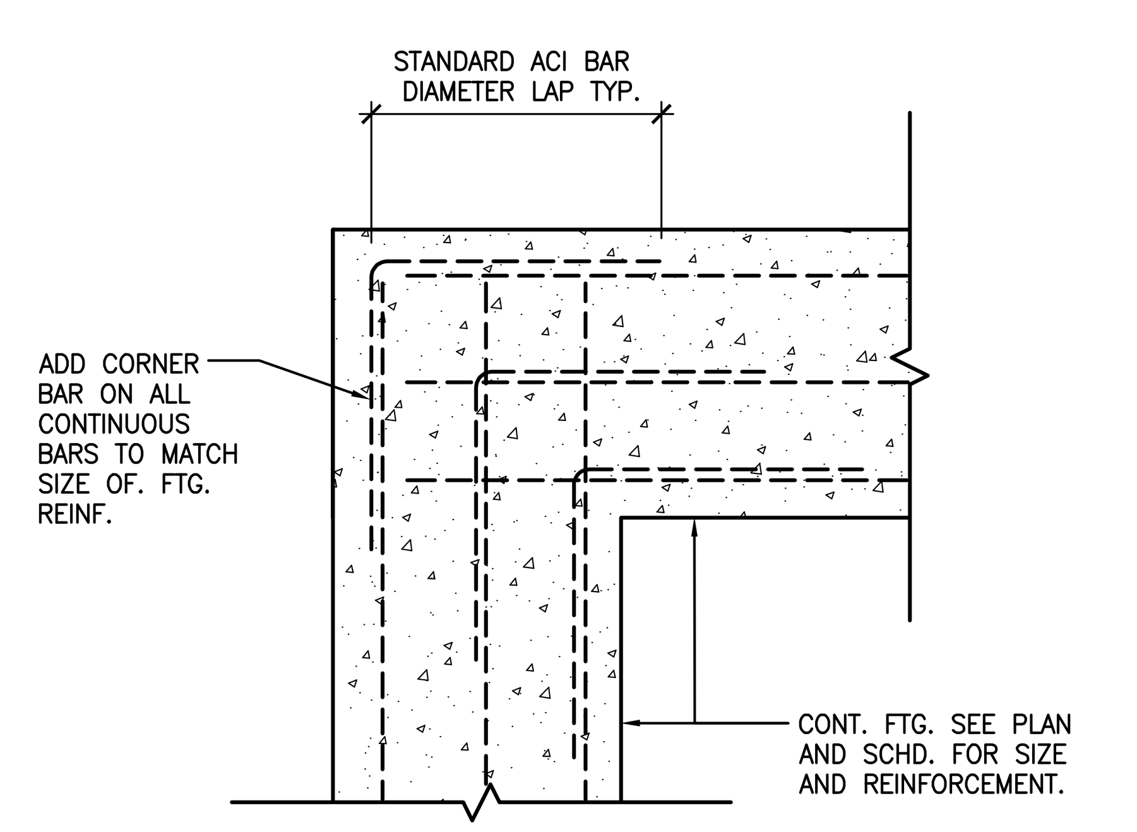
CONTROL JOINT (C.J.)

NOTES:
1. REFER TO PLANS FOR SLAB REINF.
2. t = SLAB THICKNESS, SEE PLAN.
3. CONTRACTOR SHALL CUT SLAB CONTROL JOINTS WITHIN 8–24 HRS OF SLAB PLACEMENT.

SLAB JOINT DETAILS

SCALE: NONE

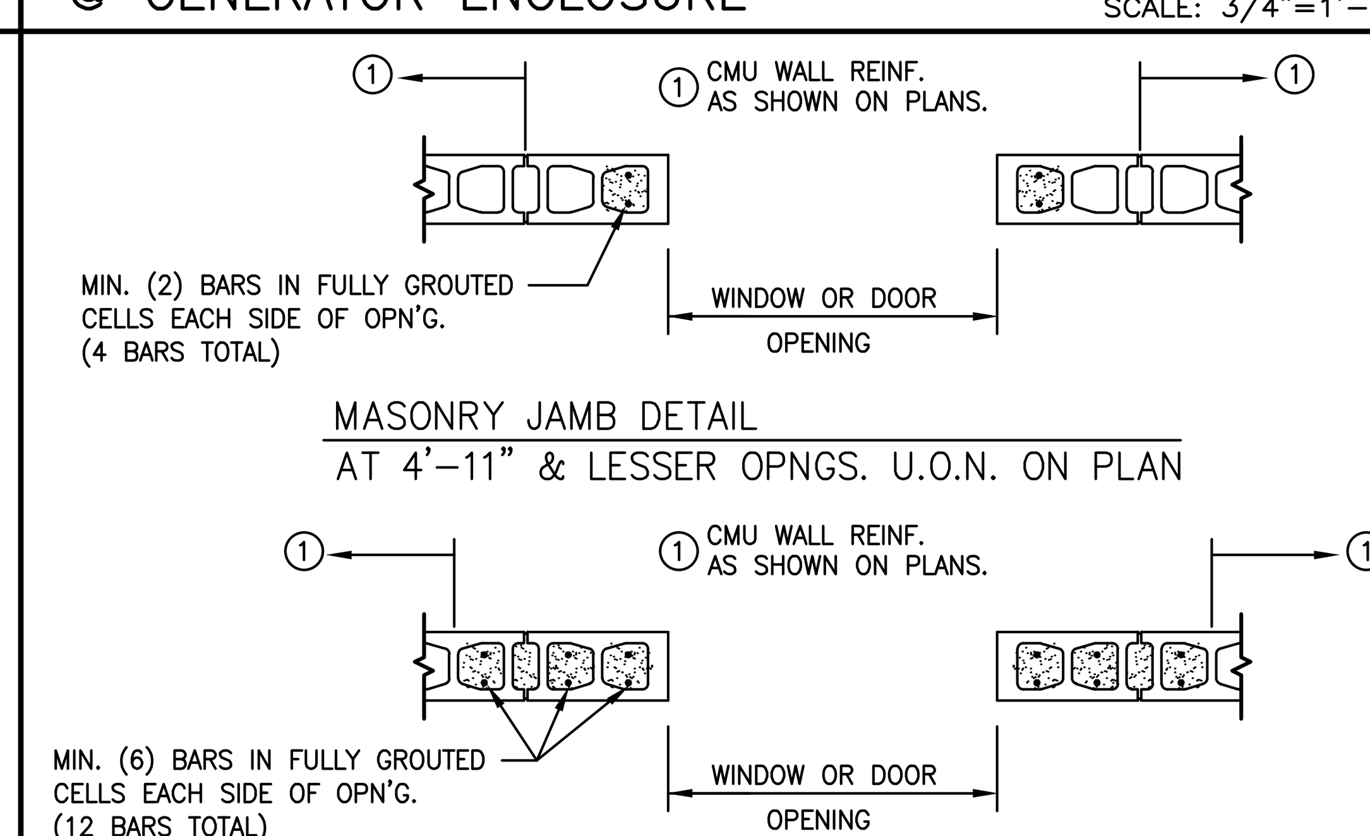
A1



CORNER REINF. AT FTG.
CONC. TIE & BOND BEAMS SIM.

SCALE: NONE

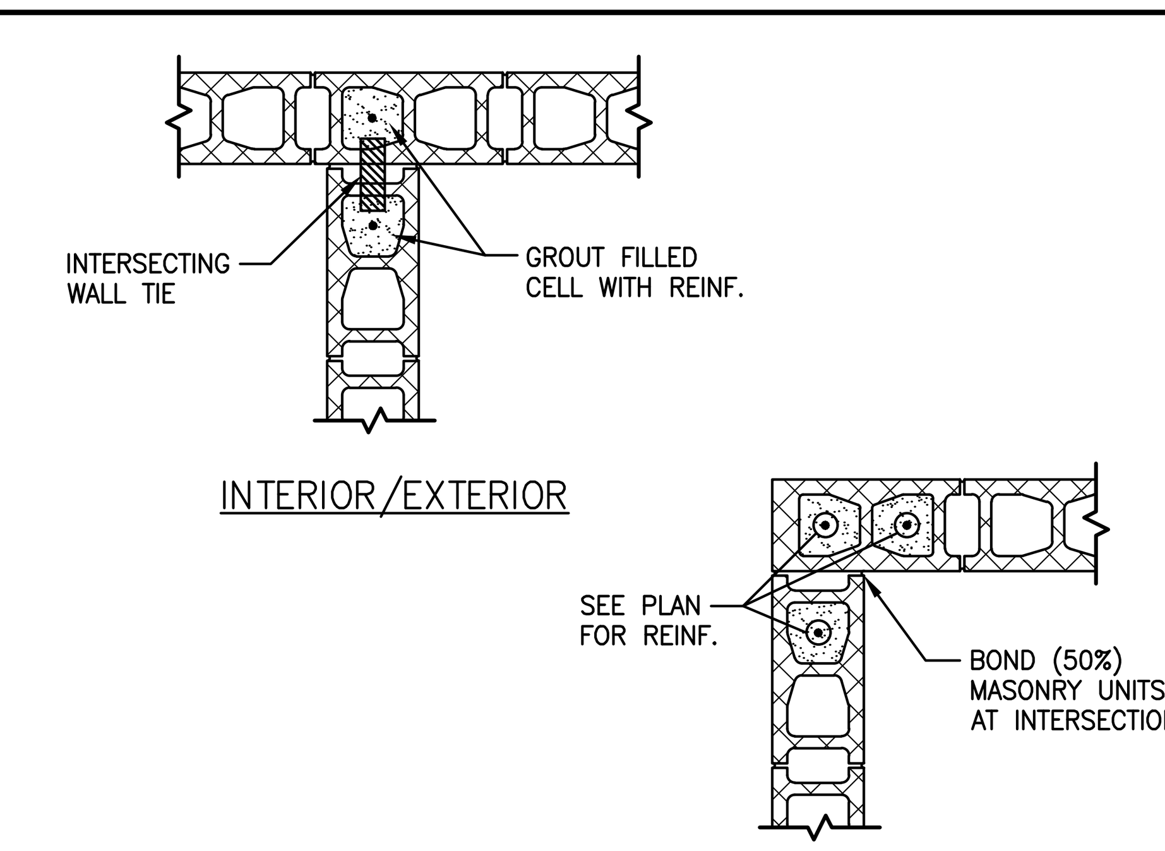
A2



C.M.U. JAMB DETAILS

SCALE: NONE

A3



C.M.U. CORNER JOINTS
EXTERIOR & INTERIOR

SCALE: NONE

A4

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

G.M. HILL ENGINEERING INC. STRUCTURAL
GM Hill Engineering, Inc.
9640 Sunbeam Center Drive, Suite 1
Jacksonville, Florida 32257
Phone (904) 280-8244
Web: www.gmhillengineering.com
Job #: 02-19-030-30

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Structural Engineer	License No.
Jeffery D. McGee	45944

SYM.	REVISION	DATE

SECTIONS AND DETAILS

DATE	09-19-2019
D.B.	TMP
C.B.	KM/JDM
JOB NO.	18052

S-2

BID SET

GENERAL NOTES:

1. THERE SHALL NOT BE ANY INTERRUPTION TO SERVICES TO THE EXISTING BUILDINGS WITHOUT PRIOR SCHEDULING OF SUCH OUTAGES WITH THE OWNER'S REPRESENTATIVE. THE FIRE ALARM SYSTEM SHALL NOT BE OUT OF SERVICE FOR MORE THAN 4 HOURS IN A 24 HOUR PERIOD. CODE ENFORCEMENT SHALL BE NOTIFIED, AND THE BUILDING EVACUATED OR AN APPROVED FIRE WATCH PROVIDED.
2. WHERE FEEDERS ARE ABANDONED, WIRE SHALL BE PULLED OUT AND ALL EXPOSED SECTIONS OF CONDUITS REMOVED. ALL SWITCHES, PANELS, ETC. SHALL BE REMOVED. ALL CONCEALED CONDUITS SHALL BE CAPPED AT POINT OF CONCEALMENT.
3. THE CONTRACTOR SHALL NOT TAKE POSSESSION OF OR DISPOSE OF ANY SALVAGEABLE ITEMS IN ASSOCIATION WITH THE WORK. ALL SALVAGEABLE ITEMS SHALL BE THE OWNER'S PROPERTY AT HIS OPTION. ALL UNSALVAGEABLE EQUIPMENT AND MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
4. THE CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ANY MODIFICATIONS TO EXISTING SYSTEMS AND SHALL UPON COMPLETION, DELIVER "AS-BUILT" DRAWINGS TO THE OWNER, INDICATING ANY SUCH CHANGES.
5. CONTRACTOR MAY RE-USE ANY EXISTING CONDUIT, PROVIDING EXISTING CONDUITS MEET NEC AND PROJECT SPECIFICATIONS. WHERE FEEDERS ARE ABANDONED, WIRE SHALL BE PULLED OUT AND ALL EXPOSED SECTIONS OF CONDUITS REMOVED. ALL CONCEALED CONDUITS SHALL BE CAPPED AT POINT OF CONCEALMENT.
6. PROVIDE ALL WORK REQUIRED TO PROVIDE COMPLETE CONDUIT SYSTEMS AND RUNS. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL MATERIALS, INSTALLATION HARDWARE, DRILLING OF WALLS, TRENCHING, MOUNTING HARDWARE, LABOR, PAINTING, REPAIRING OF EXISTING SURFACES, FIRESTOPPING AND ACCESSORIES.
7. CONTRACTOR SHALL VISIT SITE PRIOR TO PREPARING HIS BID AND DETERMINE THE EXTENT OF EXISTING EQUIPMENT AND WIRING TO ACCOMMODATE CHANGES AND ADDITIONS. ALL THE NECESSARY REROUTING, RELOCATING AND/OR REMOVAL OF EXISTING EQUIPMENT, WIRING, ETC. SHALL BE INCLUDED IN THE SCOPE OF THIS WORK. ANY VARIATION FROM EXISTING CONDITIONS SHALL BE INCLUDED UNDER THIS CONTRACT.
8. RESTORE DISTURBED CEILINGS/WALLS TO ITS ORIGINAL CONDITION. FINISH AND PAINT DAMAGED AREAS. PAINT SHALL MATCH EXISTING. REPLACE DAMAGED CEILING TILES. NEW CEILING TILES SHALL BE SAME TYPE AND QUALITY OF EXISTING TILES.
9. PAINT ALL INTERIOR AND EXTERIOR, EXPOSED CONDUITS SAME COLOR AS SURFACE.
10. ALL PAINTING SHALL BE IN ACCORDANCE WITH FDOE & FLORIDA SCHOOL PLANT MANAGEMENT ASSOCIATION PLANT SPECIFICATIONS. SEE THE FOLLOWING MINIMUM SPECIFICATIONS: INTERIOR PAINT – 1 COAT OF ALKYD RESIN PRIMER AND 2 COATS OF ALKYD ENAMEL. 1 COAT OF ALKYD RUST – INHIBITIVE PRIMER AND 2 COATS OF ALKYD ENAMEL.
11. CONDUITS SHALL BE CONCEALED IN WALLS, ABOVE CEILING SPACE, OR UNDERGROUND. SURFACE MOUNTED CONDUITS WILL BE PERMITTED ON CONCRETE WALLS OR ON CEILINGS WITH NO CAVITY.
12. TRENCHING AND BACKFILL: EXISTING UTILITY LINES MAY BE IN THE PATH OF THE NEW UNDERGROUND CONDUIT INSTALLATIONS. THE USE OF CHAIN TRENCHING MACHINES WILL NOT BE PERMITTED. CONTRACTOR SHALL PROMPTLY REPAIR ANY UTILITY LINES DAMAGED BY HIS OPERATION. DISTURBED SURFACES SHALL BE RESTORED TO ITS ORIGINAL CONDITION. PROVIDE SOD, PATCH PAVEMENT, PATCH SIDE WALKS ETC. TO MATCH EXISTING.
13. ALL EXTERIOR OUTLET BOXES SHALL BE CAST METAL, GASKETED, AND NEMA-3R. PAINT SAME COLOR AS SURFACE.
14. UPDATE PANEL BOARD DIRECTORIES TO REFLECT TYPE AND LOCATION OF ADDED CIRCUITS. NEW DIRECTORIES SHALL BE TYPED OR MACHINE GENERATED.
15. IF EXISTING HOLES OR OPENINGS IN WALLS AND/OR CEILINGS ARE UTILIZED FOR CONDUIT ROUTING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PATCHING, CAULKING, FINISHING, OR OTHER MODIFICATIONS REQUIRED TO COMPLETELY REPAIR HOLE OR OPENING IN WALL AND/OR CEILING. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIRESTOPPING REQUIRED TO RE-ESTABLISH THE FIRE RESISTANCE RATING OF THE BARRIER.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SEALING ALL NEW PENETRATIONS IN FIRE RATED ASSEMBLIES, BOTH VERTICAL AND HORIZONTAL, IN ACCORDANCE WITH SECTION 705 OF THE FLORIDA BUILDING CODE, WHICH REQUIRES THAT ALL INSTALLATIONS OF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES OR FIRE STOP SYSTEMS SHALL BE AS TESTED BY ASTM E 119 & ASTM E 814.
17. REPAIR ALL SIDEWALKS AND PAVEMENT CUT OR DAMAGED DURING CONSTRUCTION. PATCH / REPAIR TO MATCH EXISTING CONDITION. REPAIR ALL LANDSCAPE AND AREAS OF GRASS DISTURBED DURING CONSTRUCTION. REPLACE SOD AND/OR SEED AREAS AS REQUIRED. ABANDONED EQUIPMENT, PANELS, DEVICES, WIRES, AND CONDUIT SHOULD BE REMOVED BY THE AT COMPLETION OF THE PROJECT.
18. NOTIFY ENGINEER OF ANY ITEMS OF NON-COMPLIANCE, WHETHER IT IS THE RESULT OF NEW WORK OR IS AN UNCOVERED EXISTING CONDITION.
19. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COVER AND PROTECT EXISTING ELECTRONICS, EQUIPMENT, AND SCHOOL PROPERTY DURING CONSTRUCTION.
20. UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40. STUB-UPS (INCLUDING ELLS) SHALL BE RIGID GALVANIZED STEEL CONDUIT. PROVIDE ASPHALTUM COATING TO COVER STEEL CONDUIT AND ELLS IN CONTACT WITH EARTH OR CONCRETE.
21. PROVIDE RGS CONDUIT FOR ABOVE GRADE EXTERIOR RACEWAYS.
22. CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553.60, "TRENCH SAFETY ACT".
23. NEATLY TRAIN AND SECURE CABLES INSIDE JUNCTION BOX. PROVIDE LABEL AT END OF EACH CABLE/WIRE SHOWING CIRCUIT NUMBERS AND PANELBOARD DESIGNATION. PROVIDE LABEL AT BOX COVER "EMERGENCY POWER CIRCUITS JUNCTION BOX."
24. DRAWINGS SHOW APPROXIMATE LOCATION OF EQUIPMENT, THE EXACT LOCATION SHALL BE DETERMINED AT BUILDING SITE.
25. CONTRACTOR SHALL INSTALL A GREEN EQUIPMENT GROUND WIRE IN ALL POWER AND LIGHTING WIRING CIRCUITS AND SHALL BOND THE GROUND WIRE TO ALL DEVICES AND EQUIPMENT.
26. ALL CONDUITS PENETRATING A EXTERIOR WALL SHALL BE RGSC AND HAVE 3" CLEARANCE ALL AROUND THE CONDUIT TO ANY OBSTRUCTION TO ALLOW FOR PROPER SEALING OF PENETRATIONS. CONDUITS SHALL BE SUPPORTED WITHIN 12" FROM WALL (TYPICAL).
27. VERIFY THE OPERATION AND FUNCTION OF ATS 1S. ALL FUNCTIONS SHALL MEET NFPA. A GENERATOR TECHNICIAN SHALL BE PRESENT AT COMPLETION TO DEMONSTRATE THE OPERATION OF GENERATOR AND AUTOMATIC TRANSFER SWITCHES.

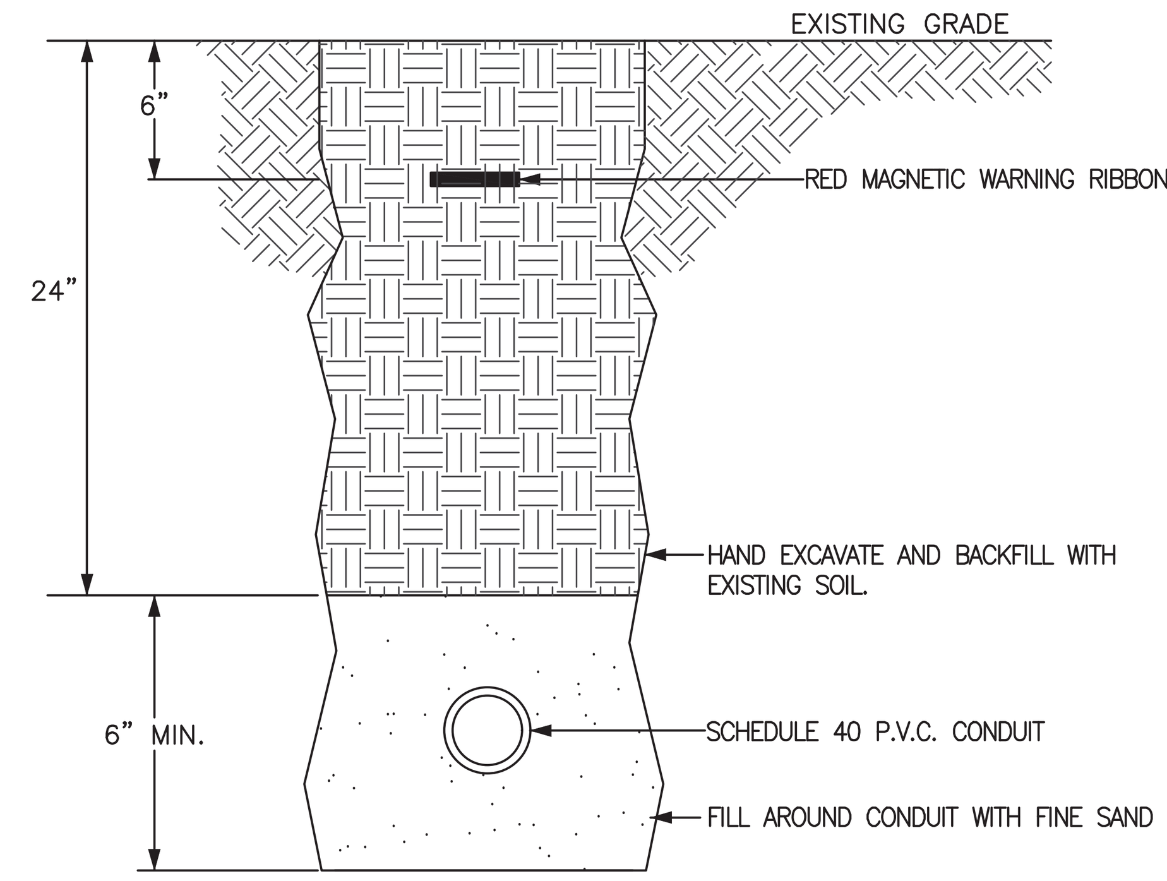
WARNING

POTENTIAL ARC FLASH HAZARD
APPROPRIATE PPE AND TOOLS REQUIRED
WHEN WORKING ON THIS EQUIPMENT.

* SELF ADHESIVE YELLOW WORKING SIGN, 2" HIGH BY 4" WIDE.
* PROVIDE NAME PLATE ON SWITCHBOARD AND ALL PANELS.

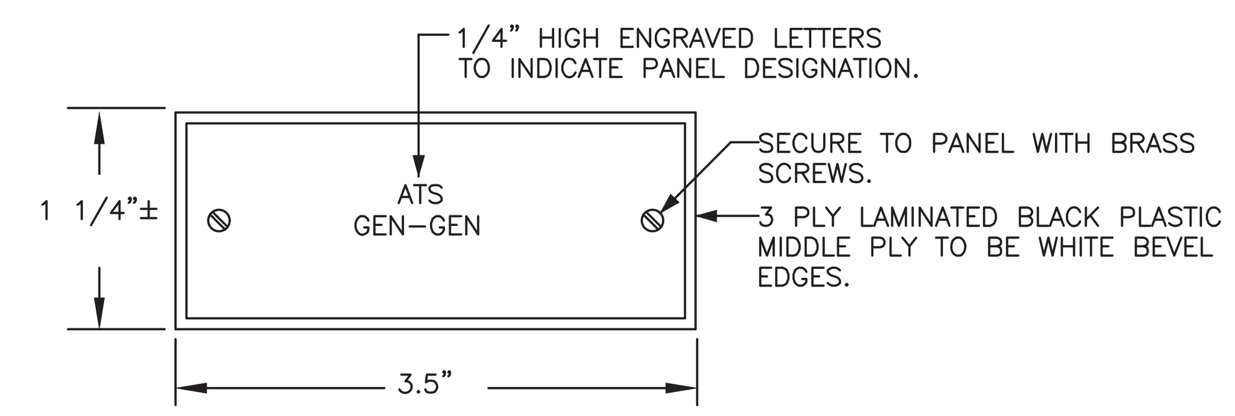
NOT TO SCALE

NAME PLATE DETAIL



NOT TO SCALE

DIRECT BURIED CONDUIT DETAIL - LOW VOLTAGE

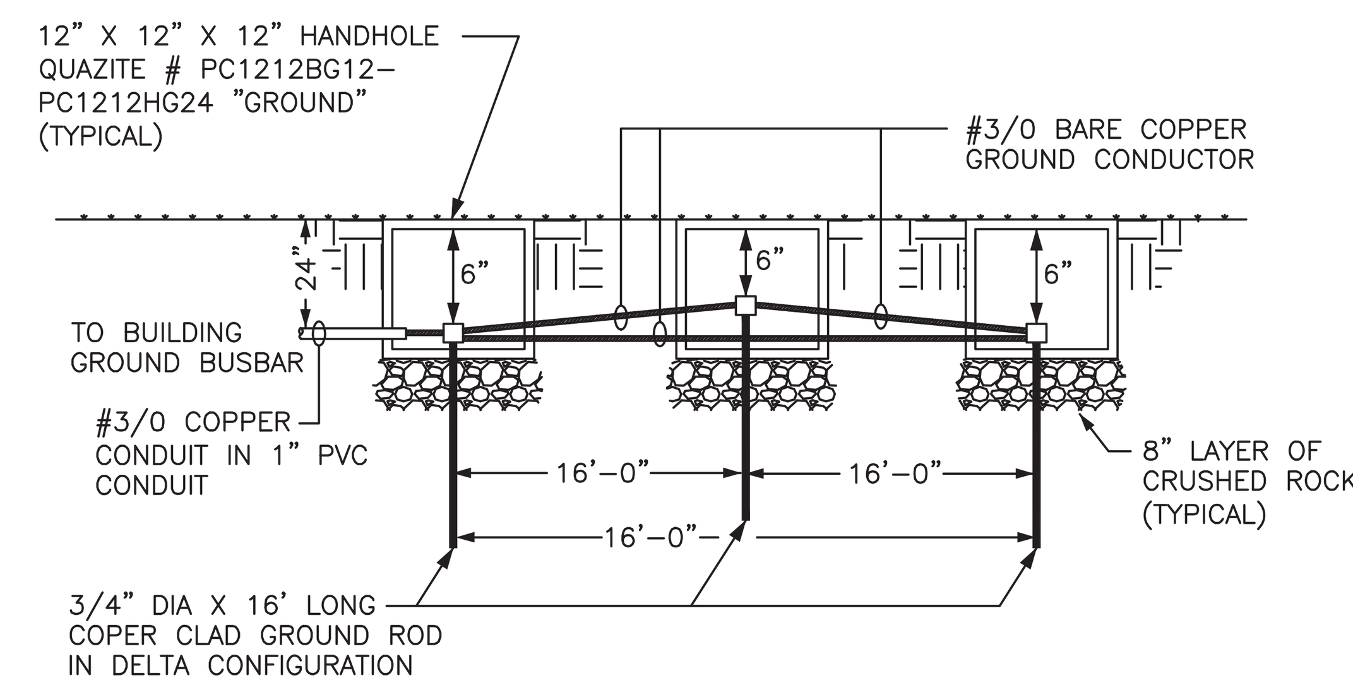


NOTE:

1. PROVIDE NAMEPLATES ON ALL NEW ELECTRICAL EQUIPMENT.

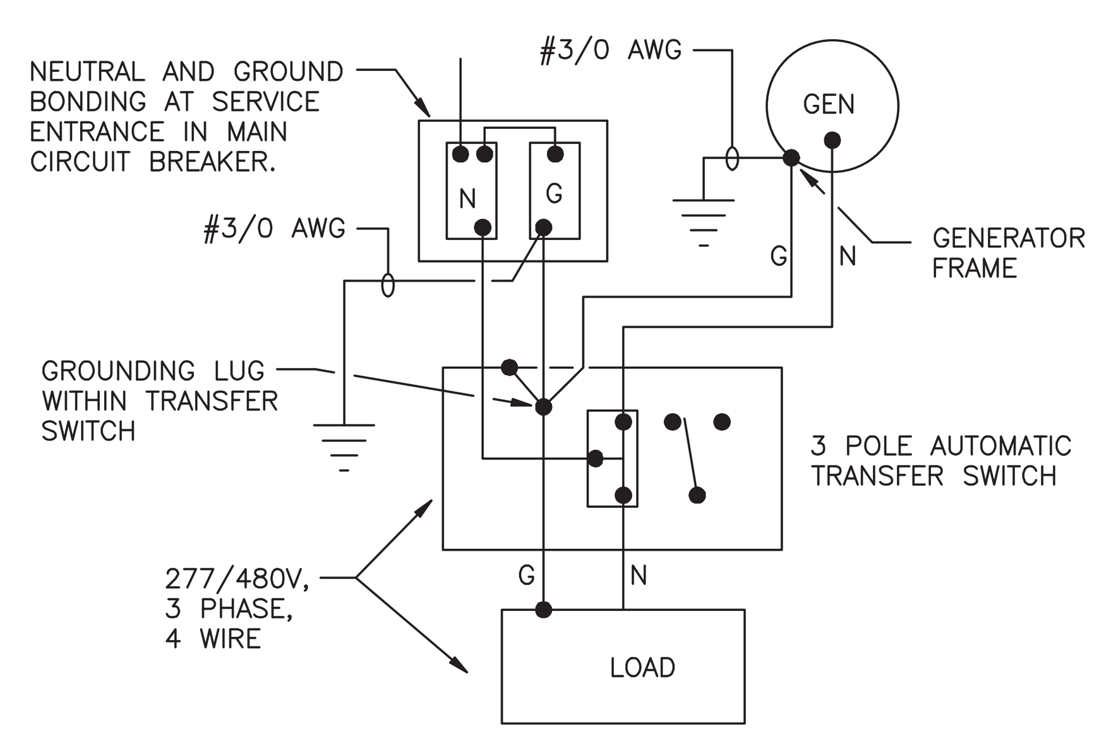
NOT TO SCALE

TYPICAL NAME PLATE DETAIL



NOT TO SCALE

GROUND WELL DETAIL



NOT TO SCALE

GENERATOR GROUNDING AND NEUTRAL DETAIL

ELECTRICAL LEGEND

	NEW WALL MOUNTED LIGHTING FIXTURE, BATTERY BACK UP PHOTOCELL, CONNECTED TO LIFE SAFETY BRANCH. BEGHLLI, MEZZO SERIES, ME2-LED. ACEMWH – 120/277/AT. 8' MOUNTING HIGHT.
$	TOGGLE SWITCH – SINGLE POLE – QUIET TYPE 20 AMP, 120/277 VOLT LEVITON NO. 1221-2I WITH NO. 84001-40 COVERPLATE, 46" MOUNTING HEIGHT U.N.O.
	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, 20 AMP, 120 VOLT, 3 WIRE GROUNDING. HUBBELL NO. GFR5362ITR WITH NO. NP26I COVERPLATE, 46" MOUNTING HEIGHT, U.N.O.
▬	LIGHTING AND/OR POWER PANELBOARD.
———	WIRING IN CONDUIT, RUN CONCEALED ABOVE CEILING OR IN WALLS.
– – – –	WIRING IN CONDUIT, RUN CONCEALED IN SLAB OR UNDERGROUND.
	HOMERUN TO PANELBOARD – NUMBER OF ARROWS DENOTES QUANTITY OR CIRCUITS. CROSS MARKS INDICATE QUANTITY OF NO. 12 CONDUCTORS. RUNS VOID OF CROSS MARKS ARE 1/2" CONDUIT, 3 #12, U.N.O. DO NOT COMBINE HOMERUNS EXCEPT AS SPECIFICALLY INDICATED ON THE PLAN.

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569
HADDAD ENGINEERING, INC.
3030 HARTLEY ROAD, SUITE 290
JACKSONVILLE, FLORIDA 32257
TEL (904) 262-5066
CERTIFICATE OF AUTHORIZATION NO. 4000

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Engineer	License No.
Namir A. Haddad P.E.	31967

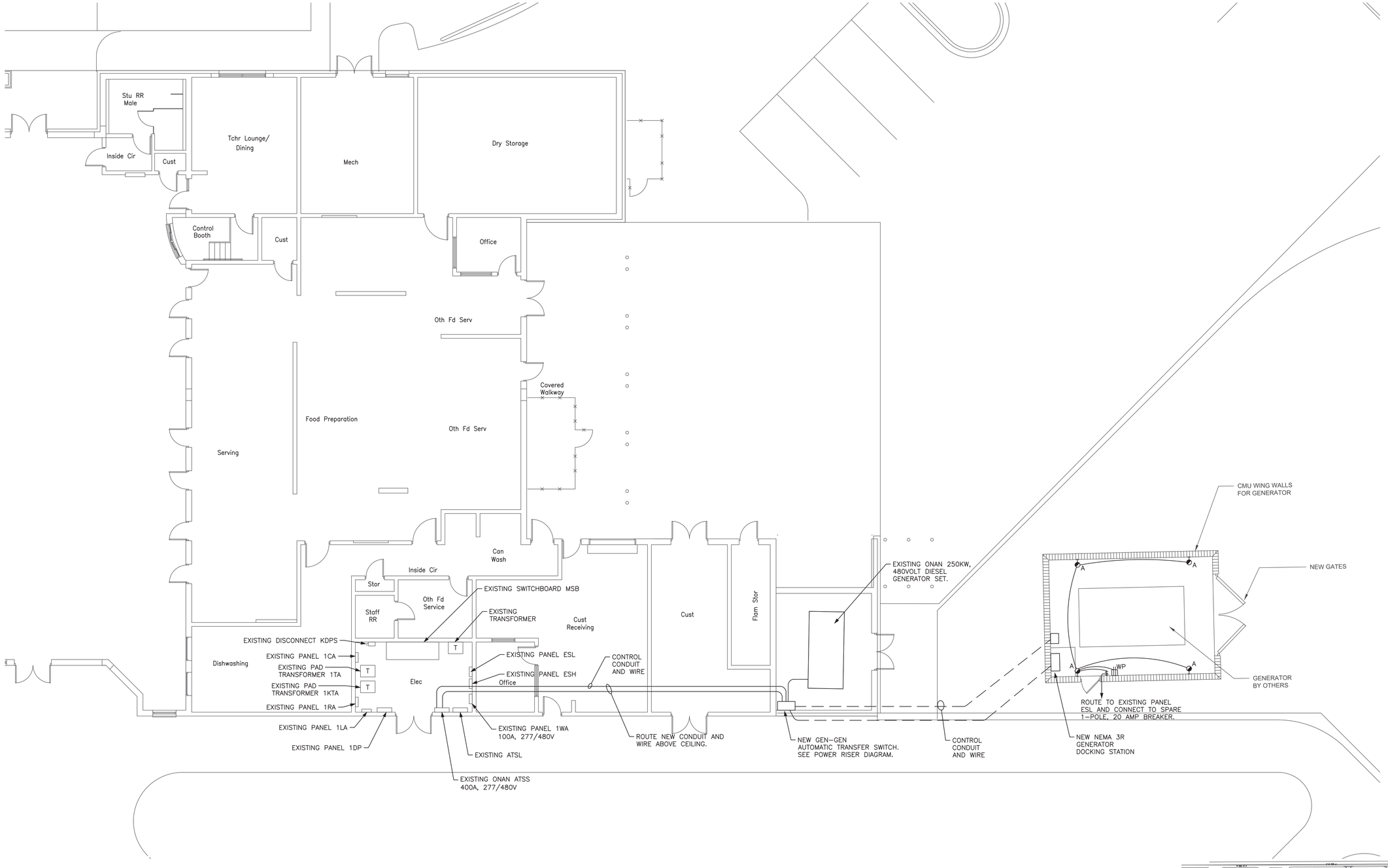
REVISIONS

ELECTRICAL LEGEND, NOTES, AND DETAILS

DATE	9-19-2019
D.B.	RE
C.B.	NAH
JOB NO.	18052

E1.0

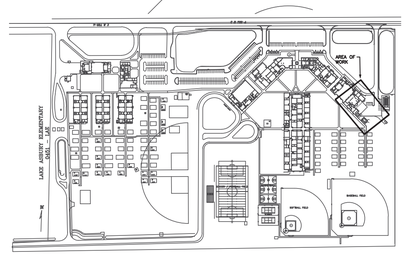
BID SET



PARTIAL FLOOR PLAN - ELECTRICAL

8' 6' 4' 2' 0' 8' 16'

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



KEY PLAN

NOT TO SCALE

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569
HADDAD ENGINEERING, INC.
3030 HARTLEY ROAD, SUITE 250
JACKSONVILLE, FLORIDA 32257
TEL (904) 262-5066
CERTIFICATE OF AUTHORIZATION NO. 4900

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Engineer	License No.
Namir A. Haddad P.E.	31967

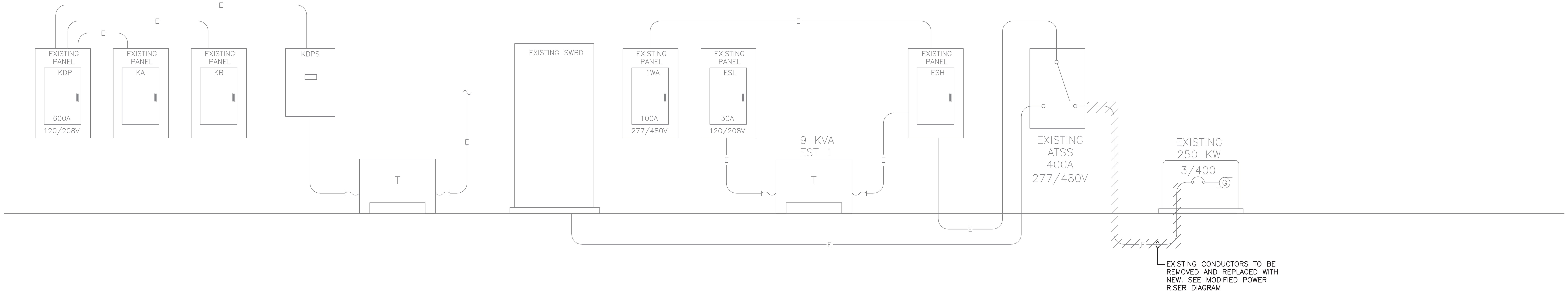
REVISIONS

PARTIAL FLOOR PLAN - ELECTRICAL

DATE	9-19-2019
D.B.	RE
C.B.	NAH
JOB NO.	18052

E2.1

BID SET



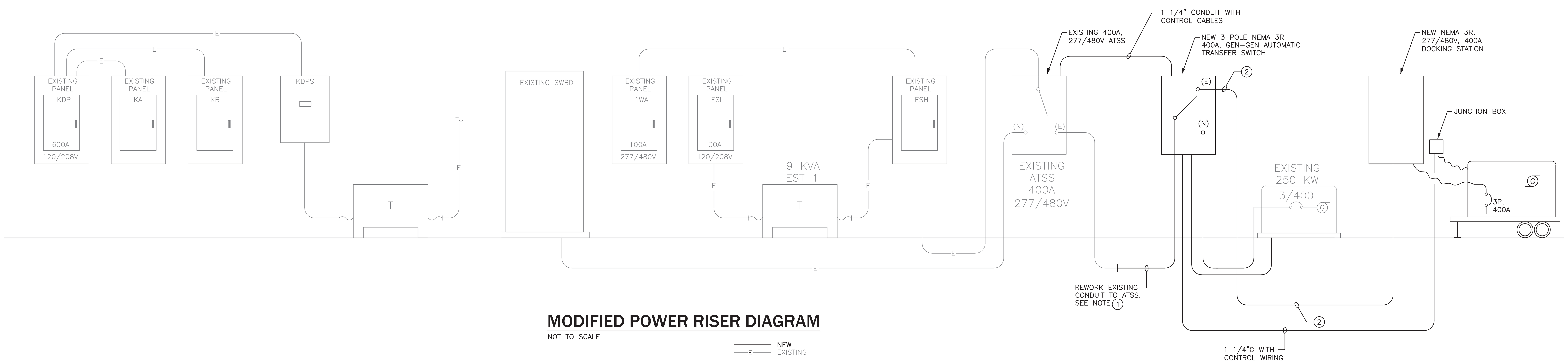
EXISTING POWER RISER DIAGRAM

NOT TO SCALE

/ / / / / HATCHING DENOTES ITEM TO BE REMOVED

NOTES:

1. INTERCEPT EXISTING CONDUIT AND EXTEND TO NEW ATS GEN–GEN. PROVIDE 4 #500KCM, 1 #1/0 CABLES IN 3 1/2" CONDUIT.
2. NEW 4 #500KCM, 1 #1/0 CABLES IN 3 1/2" CONDUIT.
3. DOCKING STATION SHALL BE SQD CAM–LOCK TAP BOX OR EQUAL, NEMA–3R, 400 AMP, 277/480V, TERMINAL LUGS AND CAM–LOCKS.
4. PROGRAM EXISTING ATS'S TO START EXISTING GENERATOR 1ST ON CONCRETE BUILDING LOAD FOR UTILITY POWER OUTAGE. START THE PORTABLE GENERATOR IF THE EXISTING GENERATOR FAILED.
5. NEW AUTOMATIC TRANSFER SWITCH SHALL BE SUITABLE FOR GEN–GEN OPERATION. SWITCH SHALL HAVE THE FEATURES TO BE MODIFIED TO MANUAL OPERATION IF THE PORTABLE GENERATOR IS CONNECTED. PROCEDURE OF CONVERSATION TO MANUAL SHALL BE POSTED INSIDE NEW ATS.
   NEW ATS GEN–GEN SHALL BE AS MANUFACTURED BY ONAN OR COMPATIBLE WITH EXISTING ATS.



MODIFIED POWER RISER DIAGRAM

NOT TO SCALE

——— NEW
—E— EXISTING

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569
HADDAD ENGINEERING, INC.
3030 HARTLEY ROAD, SUITE 290
JACKSONVILLE, FLORIDA 32257
TEL (904) 262-5066
CERTIFICATE OF AUTHORIZATION NO. 4000

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Engineer	License No.
Namir A. Haddad P.E.	31967

REVISIONS

ELECTRICAL
RI□ER
□IA□RAM□

DATE	9-19-2019
D.B.	RE
C.B.	NAH
JOB NO.	18052

E□□

BID SET

ELECTRICAL SPECIFICATIONS
SECTION 16050 – BASIC ELECTRICAL MATERIALS AND METHODS
PART 1 GENERAL

1.1 SUBMITTALS
- A. PRODUCT DATA: FOR REVIEW; PROVIDE CATALOG DATA FOR GROUNDING AND BONDING DEVICES.

1.2 REGULATORY REQUIREMENTS
- A. CONFORM TO REQUIREMENTS OF NFPA 70.
- B. FURNISH PRODUCTS LISTED BY UL OR OTHER TESTING FIRM ACCEPTABLE TO AUTHORITY HAVING JURISDICTION.
- C. FLORIDA BUILDING CODE 2017

PART 2 PRODUCTS
2.1 GROUNDING MATERIALS
- A. GROUND ROD: COPPER–CLAD STEEL
- B. MECHANICAL CONNECTORS: BRONZE. ABOVE GRADE ONLY.
- C. EXOTHERMIC WELDS: BELOW GRADE CONNECTORS.

2.2 BASIC MATERIALS
- A. STEEL CHANNEL: GALVANIZED
- B. MISCELLANEOUS HARDWARE: TREAT FOR CORROSION RESISTANCE.
- C. NAMEPLATES: ENGRAVED THREE–LAYER LAMINATED PLASTIC, BLACK LETTERS ON WHITE BACKGROUND.
- D. WIRE AND CABLE MARKERS: CLOTH MARKERS, SPLIT SLEEVE OR TUBING TYPE.

PART 3 EXECUTION
3.1 INSTALLATION
- A. INSTALL WORK ACCORDING TO NECA "STANDARD OF INSTALLATION."
- B. PROVIDE BONDING TO MEET REGULATORY REQUIREMENTS.
- C. MAKE ELECTRICAL CONNECTIONS TO UTILIZATION EQUIPMENT IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTRUCTIONS.
  1. MAKE CONDUIT CONNECTIONS TO EQUIPMENT USING FLEXIBLE CONDUIT. USE LIQUIDTIGHT FLEXIBLE CONDUIT IN DAMP OR WET LOCATIONS.
- D. INSTALL SUPPORT SYSTEMS SIZED AND FASTENED TO ACCOMMODATE WEIGHT OF EQUIPMENT AND CONDUIT, INCLUDING WIRING, WHICH THEY CARRY.
  1. FASTEN HANGER RODS, CONDUIT CLAMPS, AND OUTLET AND JUNCTION BOXES TO BUILDING STRUCTURE USING PRECAST INSERT SYSTEM BEAM CLAMPS.
  2. USE TOGGLE BOLTS OR HOLLOW WALL FASTENERS IN HOLLOW MASONRY, PLASTER, OR GYPSUM BOARD PARTITIONS AND WALLS; EXPANSION ANCHORS OR PRESET INSERTS IN SOLID MASONRY WALLS; SELF–DRILLING ANCHORS OR EXPANSION ANCHOR ON CONCRETE SURFACES; SHEET METAL SCREWS IN SHEET METAL STUDS; AND WOOD SCREWS IN WOOD CONSTRUCTION.
  3. DO NOT FASTEN SUPPORTS TO PIPING, CEILING SUPPORT WIRES, DUCTWORK, MECHANICAL EQUIPMENT, OR CONDUIT.
  4. DO NOT USE POWDER–ACTUATED ANCHORS.
  5. DO NOT DRILL STRUCTURAL STEEL MEMBERS.
  6. FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL.
- E. IDENTIFY ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT, AND LOADS SERVED, TO MEET REGULATORY REQUIREMENTS AND AS SCHEDULED.
  1. SECURE NAMEPLATES TO EQUIPMENT FRONTS USING SCREWS, RIVETS, OR ADHESIVE, WITH EDGES PARALLEL TO EQUIPMENT LINES. SECURE NAMEPLATE TO INSIDE FACE OF RECESSED PANELBOARD DOORS IN FINISHED LOCATIONS.
  2. USE NAMEPLATES WITH 1/8 INCH LETTERING TO IDENTIFY INDIVIDUAL SWITCHES AND CIRCUIT BREAKERS, RECEPTACLE CIRCUITS, AND LOADS SERVED.
  3. USE NAMEPLATES WITH 1/4 INCH TO IDENTIFY DISTRIBUTION AND CONTROL EQUIPMENT.
- F. INSTALL WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT LOAD CONNECTIONS.
  1. USE BRANCH CIRCUIT OR FEEDER NUMBER TO IDENTIFY POWER AND LIGHTING CIRCUITS.
  2. USE CONTROL WIRE NUMBER AS INDICATED ON EQUIPMENT MANUFACTURER'S SHOP DRAWINGS TO IDENTIFY CONTROL WIRING.

SECTION 16100 – WIRING METHODS
PART 1 GENERAL
1.1 SUBMITTALS
- A. PRODUCT DATA: FOR REVIEW.
  1. PROVIDE WIRING DEVICE CONFIGURATIONS, RATINGS, DIMENSIONS, AND COLOR SELECTIONS.
  2. PROVIDE SERVICE FITTING CONFIGURATIONS, DIMENSIONS, AND FINISH AND COLOR

1.2 REGULATORY REQUIREMENTS
- A. CONFORM TO REQUIREMENTS OF NFPA 70.
- B. FURNISH PRODUCTS LISTED BY UL OR OTHER TESTING FIRM ACCEPTABLE TO AUTHORITY HAVING JURISDICTION.

PART 2 PRODUCTS
2.1 PRODUCT REQUIREMENTS
- A. USE ONLY SPECIFIED RACEWAY IN THE FOLLOWING LOCATIONS:
  1. UNDERGROUND INSTALLATIONS:PVC SCHEDULE 40. RIGID GALVANIZED STEEL CONDUIT STUB–UP.
  2. EXPOSED OUTDOOR LOCATIONS: RIGID STEEL CONDUIT. USE THREADED OR RAINTIGHT FITTINGS.
  3. CONCEALED DRY INTERIOR LOCATIONS: ELECTRICAL METALLIC TUBING.
  4. EXPOSED DRY INTERIOR LOCATIONS: RIGID STEEL CONDUIT OR ELECTRICAL METALLIC TUBING.
- B. WIRE AND CABLE SHALL BE ENCASED IN RACEWAYS SYSTEM.
- C. USE 10 AWG CONDUCTOR FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET; AND FOR 20 AMPERE, 277 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 200 FEET.

2.2 CONDUIT AND FITTINGS
- A. CONDUIT:
  1. METAL CONDUIT AND TUBING: GALVANIZED STEEL, ELECTRICAL METALLIC TUBING
  2. FLEXIBLE CONDUIT: STEEL
  3. LIQUID TIGHT FLEXIBLE CONDUIT: FLEXIBLE CONDUIT WITH PVC JACKET.
  4. PLASTIC CONDUIT AND TUBING: NEMA TC 2, PVC. USE SCHEDULE 40 CONDUIT.
- B. CONDUIT FITTINGS:
  1. METAL FITTINGS AND CONDUIT BODIES: NEMA FB 1.
  2. PLASTIC FITTINGS AND CONDUIT BODIES: NEMA TC 3.
  3. EMT FITTINGS: STEEL COMPRESSION TYPE

2.3 ELECTRICAL BOXES
- A. BOXES:
  1. SHEET METAL: NEMA OS 1, GALVANIZED STEEL.
  2. CAST METAL: CAST FERALLOY, DEEP TYPE, GASKETED COVER, THREADED HUBS.
- B. HINGED COVER ENCLOSURES: NEMA–1 INDOOR, NEMA–3R WET LOCATION HINGED, LOCKABLE, LIGHT GRAY FINISH.

2.4 BUILDING WIRE AND CABLE
- A. FEEDERS AND BRANCH CIRCUITS LARGER THAN 8 AWG: COPPER STRANDED CONDUCTOR, 600 VOLT INSULATION, THHN/THWN AND XHHW.
- B. FEEDERS AND BRANCH CIRCUITS 8 AWG AND SMALLER: COPPER CONDUCTOR, 600 VOLT INSULATION, THHN/THWN, XHHW SOLID CONDUCTOR.
- C. CONTROL CIRCUITS: COPPER, STRANDED CONDUCTOR, 600 VOLT INSULATION, THW.

PART 3 EXECUTION
3.1 EXAMINATION AND PREPARATION
- A. VERIFY THAT INTERIOR OF BUILDING IS PHYSICALLY PROTECTED FROM WEATHER.
- B. VERIFY THAT MECHANICAL WORK THAT IS LIKELY TO DAMAGE CONDUCTORS HAS BEEN COMPLETED.
- C. COMPLETELY AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS.
- D. ELECTRICAL BOXES ARE SHOWN ON DRAWINGS IN APPROXIMATE LOCATIONS UNLESS DIMENSIONED.
  1. OBTAIN VERIFICATION FROM ENGINEER OF FLOOR BOX LOCATIONS, AND LOCATIONS OF OUTLETS IN OFFICES AND WORK AREAS, PRIOR TO ROUGH–IN.
  2. IT SHALL BE UNDERSTOOD THAT ANY OUTLET MAY BE RELOCATED A DISTANCE NOT EXCEEDING 15FT FROM THE LOCATION SHOWN ON THE DRAWINGS PRIOR TO OR DURING ROUGH–IN, IF SO DIRECTED BY THE ARCHITECT–ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
  3. LOCAL SWITCHES WHICH ARE SHOWN NEAR DOORS SHALL BE LOCATED AT THE STRIKE SIDE OF THE DOOR AS FINALLY HUNG, REGARDLESS OF SWING ON THE DRAWINGS.

3.2 INSTALLATION
- A. PERFORM WORK ACCORDING TO NECA STANDARD OF INSTALLATION.
- B. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT NEAT APPEARANCE.
  1. ROUTE EXPOSED RACEWAY PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING.
  2. MAINTAIN MINIMUM 6–INCH CLEARANCE TO PIPING AND 12–INCH CLEARANCE TO HEAT SURFACES SUCH AS FLUES, STEAM PIPES, AND HEATING APPLIANCES.
  3. MAINTAIN REQUIRED FIRE, ACOUSTIC, AND VAPOR BARRIER RATING WHEN PENETRATING WALLS, FLOORS, AND CEILINGS.
  4. ROUTE CONDUIT THROUGH ROOF OPENINGS FOR PIPING AND DUCTWORK WHERE POSSIBLE; OTHERWISE, ROUTE THROUGH ROOF JACK WITH PITCH POCKET.
  5. GROUP IN PARALLEL RUNS WHERE PRACTICAL. USE RACK CONSTRUCTED OF STEEL CHANNEL. MAINTAIN SPACING BETWEEN RACEWAYS OR DERATE CIRCUIT AMPACITIES TO NFPA 70 REQUIREMENTS.
  6. USE CONDUIT HANGERS AND CLAMPS; DO NOT FASTEN WITH WIRE OR PERFORATED PIPE STRAPS.
  7. USE CONDUIT BODIES TO MAKE SHARP CHANGES IN DIRECTION.
  8. TERMINATE CONDUIT STUBS WITH INSULATED BUSHINGS.
  9. USE SUITABLE CAPS TO PROTECT INSTALLED RACEWAY AGAINST ENTRANCE OF DIRT AND MOISTURE.
  10. PROVIDE NO. 12 AWG INSULATED CONDUCTOR OR SUITABLE PULL STRING IN EMPTY RACEWAYS, EXCEPT SLEEVES AND NIPPLES.
  11. INSTALL EXPANSION JOINTS WHERE RACEWAY CROSSES BUILDING EXPANSION OR SEISMIC JOINTS.
  12. INSTALL PLASTIC CONDUIT AND TUBING ACCORDING TO MANUFACTURER'S INSTRUCTIONS
- C. INSTALL ELECTRICAL BOXES AS SHOWN ON THE DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS AND REGULATORY REQUIREMENTS.
  1. USE CAST OUTLET BOX IN EXTERIOR LOCATIONS EXPOSED TO WEATHER AND WET LOCATIONS.
  2. USE HINGED COVER ENCLOSURE FOR INTERIOR PULL AND JUNCTION BOX LARGER THAN 12 INCHES IN ANY DIMENSION.
  3. LOCATE AND INSTALL ELECTRICAL BOXES TO ALLOW ACCESS. PROVIDE ACCESS PANELS IF REQUIRED.
  4. LOCATE AND INSTALL ELECTRICAL BOXES TO MAINTAIN HEADROOM AND TO PRESENT NEAT MECHANICAL APPEARANCE.
  5. INSTALL PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS OR IN UNFINISHED AREAS.
  6. PROVIDE KNOCKOUT CLOSURES FOR UNUSED OPENINGS.
  7. ALIGN WALL–MOUNTED OUTLET BOXES FOR SWITCHES, THERMOSTATS, AND SIMILAR DEVICES.
  8. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS ABOVE COUNTERS AND BACKSPLASHES.
  9. USE RECESSED OUTLET BOXES IN FINISHED AREAS AND WHERE INDICATED.
  10. SECURE BOXES TO INTERIOR WALL AND PARTITION STUDS, ACCURATELY POSITIONING TO ALLOW FOR SURFACE FINISH THICKNESS.
  11. USE STAMPED STEEL STUD BRIDGES FOR FLUSH OUTLETS IN HOLLOW STUD WALL, AND ADJUSTABLE STEEL CHANNEL FASTENERS FOR FLUSH CEILING OUTLET BOXES.
  12. LOCATE BOXES IN MASONRY WALLS TO REQUIRE CUTTING CORNER ONLY. COORDINATE MASONRY CUTTING TO ACHIEVE NEAT OPENINGS FOR BOXES.
  13. DO NOT INSTALL BOXES BACK–TO–BACK IN WALLS; PROVIDE 6 INCHES SEPARATION, MINIMUM; EXCEPT PROVIDE 24 INCHES SEPARATION, MINIMUM IN ACOUSTIC–RATED WALLS.
  14. DO NOT DAMAGE INSULATION.
- D. INSTALL CABLE AND WIRE ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
  1. NEATLY TRAIN AND SECURE WIRING INSIDE BOXES, EQUIPMENT, AND PANELBOARDS.
  2. USE WIRE PULLING LUBRICANT FOR PULLING 4 AWG AND LARGER WIRES.
  3. SUPPORT CABLES ABOVE ACCESSIBLE CEILINGS TO KEEP THEM FROM RESTING ON CEILING TILES.
  4. MAKE SPLICES, TAPS, AND TERMINATIONS TO CARRY FULL AMPACITY OF CONDUCTORS WITHOUT PERCEPTIBLE TEMPERATURE RISE.
  5. TERMINATE SPARE CONDUCTORS WITH ELECTRICAL TAPE.
- E. INSTALL WALL PLATES FLUSH AND LEVEL.
- F. BEFORE INSTALLING RACEWAYS AND PULLING WIRE TO ANY MECHANICAL EQUIPMENT OR KITCHEN EQUIPMENT, VERIFY ELECTRICAL CHARACTERISTICS WITH FINAL SUBMITTAL ON EQUIPMENT TO ASSURE PROPER NUMBER AND AWG OF CONDUCTORS.
- G. THE CONTRACTOR SHALL PROMPTLY REPAIR ANY UTILITY LINES OR SYSTEM DAMAGED BY HIS OPERATION. THE TOP OF UNDERGROUND CONDUIT SHALL NOT BE LESS THAN 24 INCHES BELOW GRADE. THE BOTTOM OF CONDUITS TRENCH SHALL BE GRADED SMOOTH, WHERE ROCK AND SHARP EDGED MATERIAL ARE ENCOUNTERED, THE BOTTOM SHALL BE EXCAVATED FOR ADDITIONAL 3 INCHES, FILLED AND TAMPED LEVEL TO THE ORIGINAL BOTTOM WITH SAND OR EARTH FREE FROM ROCKS AND SHARP MATERIALS. PROVIDE MAGNETIC YELLOW WARNING TAPE ABOVE THE ENTIRE LENGTH OF UNDERGROUND CONDUITS TAPE SHALL BE BURIED 12" BELOW GRADE.
- H. SURFACES DISTURBED DURING THE INSTALLATION OF UNDERGROUND CONDUITS SHALL BE RESTORED TO THEIR ORIGINAL CONDITIONS. PROVIDE SOD OF QUALITY EQUAL TO THAT REMOVED, PATCH PAVEMENT, SIDEWALK CURB, ETC. EXCAVATED MATERIAL NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED FROM PROJECT SITE.

SECTION 16400 – SERVICE AND DISTRIBUTION

PART 1 GENERAL
1.1 SUBMITTALS
- A. SHOP DRAWINGS: FOR REVIEW; INDICATE CONSTRUCTION DETAILS FOR THE FOLLOWING:
  1. PANELBOARDS.
- B. PRODUCT DATA: FOR REVIEW; PROVIDE RATINGS AND COMPONENT DETAILS FOR THE FOLLOWING:
  1. ENCLOSED SWITCHES.
  2. FUSES.
  3. CIRCUIT BREAKERS.

1.2 REGULATORY REQUIREMENTS
- A. CONFORM TO REQUIREMENTS OF NFPA 70.
- B. FURNISH PRODUCTS LISTED BY UL OR OTHER TESTING FIRM ACCEPTABLE TO AUTHORITY HAVING JURISDICTION.
- C. CONFORM TO REQUIREMENTS OF UTILITY COMPANY.

PART 2 PRODUCTS
2.1 ENCLOSED SWITCHES
- A. MANUFACTURERS: SQUARE D, GE, EATON
- B. ENCLOSED SWITCH ASSEMBLIES: HEAVY DUTY FUSE CLIPS DESIGNED TO ACCOMMODATE CLASS R OR J FUSES.
- C. ENCLOSURES: NEMA–1 FOR INTERIOR LOCATIONS, NEMA–3R FOR EXTERIOR LOCATIONS.

2.2 FUSES
- A. FUSES 600 AMPERES AND LESS: CURRENT LIMITING, ONE–TIME FUSE, 250 VOLT, UL CLASS RK 1, RK 5 OR J

PART 3 EXECUTION
3.1 INSTALLATION
- A. INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. INSTALL PANELBOARDS TO NEMA PB 1.1.
- C. CLEAN EQUIPMENT

SECTION 16415
TRANSFER SWITCHES
PART 1 – GENERAL
1.1 SUMMARY
- A. THIS SECTION INCLUDES AUTOMATIC TRANSFER SWITCHES RATED 600 V AND LESS.

1.2 SUBMITTALS
- A. PRODUCT DATA: INCLUDE RATED CAPACITIES, WEIGHTS, OPERATING CHARACTERISTICS, FURNISHED SPECIALTIES, AND ACCESSORIES.
- B. SHOP DRAWINGS: DIMENSIONED PLANS, ELEVATIONS, SECTIONS, AND DETAILS SHOWING MINIMUM CLEARANCES, CONDUCTOR ENTRY PROVISIONS, GUTTER SPACE, INSTALLED FEATURES AND DEVICES, AND MATERIAL LISTS FOR EACH SWITCH SPECIFIED.
- C. FIELD QUALITY–CONTROL TEST REPORTS.
- D. OPERATION AND MAINTENANCE DATA.

1.3 QUALITY ASSURANCE
- A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
- B. COMPLY WITH NEMA ICS 1.
- C. COMPLY WITH NFPA 70.
- D. COMPLY WITH NFPA 99.
- E. COMPLY WITH NFPA 110.
- F. COMPLY WITH UL 1008 UNLESS REQUIREMENTS OF THESE SPECIFICATIONS ARE STRICTER.

PART 2 – PRODUCTS
2.1 MANUFACTURERS
- A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
  1. CONTACTOR TRANSFER SWITCHES:
     a. CATERPILLAR; ENGINE DIV.
     b. EMERSON; ASCO POWER TECHNOLOGIES, LP.
     c. KOHLER POWER SYSTEMS; GENERATOR DIVISION.

2.2 GENERAL TRANSFER–SWITCH PRODUCT REQUIREMENTS
- A. INDICATED CURRENT RATINGS: APPLY AS DEFINED IN UL 1008 FOR CONTINUOUS LOADING AND TOTAL SYSTEM TRANSFER, INCLUDING TUNGSTEN FILAMENT LAMP LOADS NOT EXCEEDING 30 PERCENT OF SWITCH AMPERE RATING, UNLESS OTHERWISE INDICATED.
- B. TESTED FAULT–CURRENT CLOSING AND WITHSTAND RATINGS: ADEQUATE FOR DUTY IMPOSED BY PROTECTIVE DEVICES AT INSTALLATION LOCATIONS IN PROJECT UNDER THE FAULT CONDITIONS INDICATED, BASED ON TESTING ACCORDING TO UL 1008.
  1. WHERE TRANSFER SWITCH INCLUDES INTERNAL FAULT–CURRENT PROTECTION, RATING OF SWITCH AND TRIP UNIT COMBINATION SHALL EXCEED INDICATED FAULT–CURRENT VALUE AT INSTALLATION LOCATION.
- C. SOLID–STATE CONTROLS: REPETITIVE ACCURACY OF ALL SETTINGS SHALL BE PLUS OR MINUS 2 PERCENT OR BETTER OVER AN OPERATING TEMPERATURE RANGE OF MINUS 20 TO PLUS 70 DEG C.
- D. RESISTANCE TO DAMAGE BY VOLTAGE TRANSIENTS: COMPONENTS SHALL MEET OR EXCEED VOLTAGE–SURGE WITHSTAND CAPABILITY REQUIREMENTS WHEN TESTED ACCORDING TO IEEE C62.41. COMPONENTS SHALL MEET OR EXCEED VOLTAGE–IMPULSE WITHSTAND TEST OF NEMA ICS 1.
- E. ELECTRICAL OPERATION: ACCOMPLISH BY A NONFUSED, MOMENTARILY ENERGIZED SOLENOID OR ELECTRIC–MOTOR–OPERATED MECHANISM, MECHANICALLY AND ELECTRICALLY INTERLOCKED IN BOTH DIRECTIONS.
- F. SWITCH CHARACTERISTICS: DESIGNED FOR CONTINUOUS–DUTY REPETITIVE TRANSFER OF FULL–RATED CURRENT BETWEEN ACTIVE POWER SOURCES.
  1. LIMITATION: SWITCHES USING MOLDED–CASE SWITCHES OR CIRCUIT BREAKERS OR INSULATEDCASE CIRCUIT–BREAKER COMPONENTS ARE NOT ACCEPTABLE.
  2. SWITCH ACTION: DOUBLE THROW; MECHANICALLY HELD IN BOTH DIRECTIONS.
  3. CONTACTS: SILVER COMPOSITION OR SILVER ALLOY FOR LOAD–CURRENT SWITCHING. CONVENTIONAL AUTOMATIC TRANSFER–SWITCH UNITS, RATED 225 A AND HIGHER, SHALL HAVE SEPARATE ARCING CONTACTS.
- G. NEUTRAL SWITCHING. WHERE FOUR–POLE SWITCHES ARE INDICATED, PROVIDE OVERLAPPING NEUTRAL CONTACTS.
- H. NEUTRAL TERMINAL: SOLID AND FULLY RATED, UNLESS OTHERWISE INDICATED.
- I. ENCLOSURES: GENERAL–PURPOSE NEMA 250, TYPE 1, COMPLYING WITH NEMA ICS 6 AND UL 508, UNLESS OTHERWISE INDICATED.

2.3 AUTOMATIC TRANSFER SWITCHES
- A. COMPLY WITH LEVEL 2 EQUIPMENT ACCORDING TO NFPA 110.
- B. SWITCHING ARRANGEMENT: DOUBLE–THROW TYPE, INCAPABLE OF PAUSES OR INTERMEDIATE POSITION STOPS DURING NORMAL FUNCTIONING, UNLESS OTHERWISE INDICATED.
- C. SIGNAL–BEFORE–TRANSFER CONTACTS: A SET OF NORMALLY OPEN/NORMALLY CLOSED DRY CONTACTS OPERATES IN ADVANCE OF RETRANSFER TO NORMAL SOURCE. INTERVAL IS ADJUSTABLE FROM 1 TO 30 SECONDS.
- D. IN–PHASE MONITOR: FACTORY–WIRED, INTERNAL RELAY CONTROLS TRANSFER SO IT OCCURS ONLY WHEN THE TWO SOURCES ARE SYNCHRONIZED IN PHASE.
- E. MOTOR DISCONNECT AND TIMING RELAY: CONTROLS DESIGNATE STARTERS SO THEY DISCONNECT MOTORS BEFORE TRANSFER AND RECONNECT THEM SELECTIVELY AT AN ADJUSTABLE TIME INTERVAL AFTER TRANSFER. TIME DELAY FOR RECONNECTING INDIVIDUAL MOTOR LOADS IS ADJUSTABLE BETWEEN 1 AND 60 SECONDS, AND SETTINGS ARE AS INDICATED.
- F. AUTOMATIC TRANSFER–SWITCH FEATURES:
  1. UNDERVOLTAGE SENSING FOR EACH PHASE OF NORMAL SOURCE: SENSE LOW PHASE–TO GROUND VOLTAGE ON EACH PHASE. PICKUP VOLTAGE SHALL BE ADJUSTABLE FROM 85 TO 100 PERCENT OF NOMINAL, AND DROPOUT VOLTAGE IS ADJUSTABLE FROM 75 TO 98 PERCENT OF PICKUP VALUE. FACTORY SET FOR PICKUP AT 90 PERCENT AND DROPOUT AT 85 PERCENT.
  2. ADJUSTABLE TIME DELAY: FOR OVERRIDE OF NORMAL–SOURCE VOLTAGE SENSING TO DELAY TRANSFER AND ENGINE START SIGNALS. ADJUSTABLE FROM ZERO TO SIX SECONDS, AND FACTORY SET FOR ONE SECOND.
  3. VOLTAGE/FREQUENCY LOCKOUT RELAY: PREVENT PREMATURE TRANSFER TO GENERATOR. PICKUP VOLTAGE SHALL BE ADJUSTABLE FROM 85 TO 100 PERCENT OF NOMINAL. FACTORY SET FOR PICKUP AT 90 PERCENT. PICKUP FREQUENCY SHALL BE ADJUSTABLE FROM 90 TO 100 PERCENT OF NOMINAL. FACTORY SET FOR PICKUP AT 95 PERCENT.
  4. TIME DELAY FOR RETRANSFER TO NORMAL SOURCE: ADJUSTABLE FROM 0 TO 30 MINUTES, AND FACTORY SET FOR 10 MINUTES TO AUTOMATICALLY DEFEAT DELAY ON LOSS OF VOLTAGE OR SUSTAINED UNDERVOLTAGE OF EMERGENCY SOURCE, PROVIDED NORMAL SUPPLY HAS BEEN RESTORED.
  5. TEST SWITCH: SIMULATE NORMAL–SOURCE FAILURE.
  6. SWITCH–POSITION PILOT LIGHTS: INDICATE SOURCE TO WHICH LOAD IS CONNECTED.
  7. SOURCE–AVAILABLE INDICATING LIGHTS: SUPERVISE SOURCES VIA TRANSFER–SWITCH NORMAL– AND EMERGENCY–SOURCE SENSING CIRCUITS.
     a. NORMAL POWER SUPERVISION: GREEN LIGHT WITH NAMEPLATE ENGRAVED "NORMAL SOURCE AVAILABLE."
     b. EMERGENCY POWER SUPERVISION: RED LIGHT WITH NAMEPLATE ENGRAVED "EMERGENCY SOURCE AVAILABLE."
  8. UNASSIGNED AUXILIARY CONTACTS: TWO NORMALLY OPEN, SINGLE–POLE, DOUBLE–THROW CONTACTS FOR EACH SWITCH POSITION, RATED 10 A AT 240–V AC.
  9. TRANSFER OVERRIDE SWITCH: OVERRIDES AUTOMATIC RETRANSFER CONTROL SO AUTOMATIC TRANSFER SWITCH WILL REMAIN CONNECTED TO EMERGENCY POWER SOURCE REGARDLESS OF CONDITION OF NORMAL SOURCE. PILOT LIGHT INDICATES OVERRIDE STATUS.
  10. ENGINE STARTING CONTACTS: ONE ISOLATED AND NORMALLY CLOSED, AND ONE ISOLATED AND NORMALLY OPEN; RATED 10 A AT 32–V DC MINIMUM.
  11. ENGINE SHUTDOWN CONTACTS: INSTANTANEOUS; SHALL INITIATE SHUTDOWN SEQUENCE AT REMOTE ENGINE–GENERATOR CONTROLS AFTER RETRANSFER OF LOAD TO NORMAL SOURCE.
  12. ENGINE SHUTDOWN CONTACTS: TIME DELAY ADJUSTABLE FROM ZERO TO FIVE MINUTES, AND FACTORY SET FOR FIVE MINUTES. CONTACTS SHALL INITIATE SHUTDOWN AT REMOTE ENGINE GENERATOR CONTROLS AFTER RETRANSFER OF LOAD TO NORMAL SOURCE.
  13. ENGINE–GENERATOR EXERCISER: SOLID–STATE, PROGRAMMABLE–TIME SWITCH STARTS ENGINE GENERATOR AND TRANSFERS LOAD TO IT FROM NORMAL SOURCE FOR A PRESET TIME, THEN RETRANSFERS AND SHUTS DOWN ENGINE AFTER A PRESET COOL–DOWN PERIOD. INITIATES EXERCISE CYCLE AT PRESET INTERVALS ADJUSTABLE FROM 7 TO 30 DAYS. RUNNING PERIODS ARE ADJUSTABLE FROM 10 TO 30 MINUTES. FACTORY SETTINGS ARE FOR 7–DAY EXERCISE CYCLE, 20–MINUTE RUNNING PERIOD, AND 5–MINUTE COOL–DOWN PERIOD. EXERCISER FEATURES INCLUDE THE FOLLOWING:
     a. EXERCISER TRANSFER SELECTOR SWITCH: PERMITS SELECTION OF EXERCISE WITH AND WITHOUT LOAD TRANSFER.
     b. PUSH–BUTTON PROGRAMMING CONTROL WITH DIGITAL DISPLAY OF SETTINGS.
     c. INTEGRAL BATTERY OPERATION OF TIME SWITCH WHEN NORMAL CONTROL POWER IS NOT AVAILABLE.
- G. HOUSING: NEMA–3R FLOOR MOUNTED

2.4 SOURCE QUALITY CONTROL
- A. FACTORY TEST AND INSPECT COMPONENTS, ASSEMBLED SWITCHES, AND ASSOCIATED EQUIPMENT. ENSURE PROPER OPERATION. CHECK TRANSFER TIME AND VOLTAGE, FREQUENCY, AND TIME–DELAY SETTINGS FOR COMPLIANCE WITH SPECIFIED REQUIREMENTS. PERFORM DIELECTRIC STRENGTH TEST COMPLYING WITH NEMA ICS 1.

PART 3 – EXECUTION
3.1 INSTALLATION
- A. DESIGN EACH FASTENER AND SUPPORT TO CARRY LOAD REQUIREMENTS.
- B. FLOOR–MOUNTING SWITCH: ANCHOR TO FLOOR BY BOLTING.
  1. CONCRETE BASES: 4 INCHES (100 MM) HIGH, REINFORCED, WITH CHAMFERED EDGES. EXTEND BASE NO MORE THAN 4 INCHES (100 MM) IN ALL DIRECTIONS BEYOND THE MAXIMUM DIMENSIONS OF SWITCH, UNLESS OTHERWISE INDICATED OR UNLESS REQUIRED FOR SEISMIC SUPPORT.
- C. SET FIELD–ADJUSTABLE INTERVALS AND DELAYS, RELAYS, AND ENGINE EXERCISER CLOCK.

3.2 CONNECTIONS
- A. GROUND EQUIPMENT ACCORDING TO DIVISION 16 SECTION "GROUNDING AND BONDING."
- B. CONNECT WIRING ACCORDING TO DIVISION 16 SECTION "CONDUCTORS AND CABLES."

3.3 FIELD QUALITY CONTROL
- A. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY–AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT, TEST, AND ADJUST COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS. REPORT RESULTS IN WRITING.
- B. PERFORM TESTS AND INSPECTIONS AND PREPARE TEST REPORTS.
  1. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY–AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATION, INCLUDING CONNECTIONS, AND TO ASSIST IN TESTING.
  2. AFTER INSTALLING EQUIPMENT AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST FOR COMPLIANCE WITH REQUIREMENTS.
  3. PERFORM EACH VISUAL AND MECHANICAL INSPECTION AND ELECTRICAL TEST STATED IN NETA ACCEPTANCE TESTING SPECIFICATION. CERTIFY COMPLIANCE WITH TEST PARAMETERS.
  4. MEASURE INSULATION RESISTANCE PHASE–TO–PHASE AND PHASE–TO–GROUND WITH INSULATION–RESISTANCE TESTER. USE TEST VOLTAGES AND PROCEDURE RECOMMENDED BY MANUFACTURER. COMPLY WITH MANUFACTURER'S SPECIFIED MINIMUM RESISTANCE.
     a. CHECK FOR ELECTRICAL CONTINUITY OF CIRCUITS AND FOR SHORT CIRCUITS.
     b. INSPECT FOR PHYSICAL DAMAGE, PROPER INSTALLATION AND CONNECTION, AND INTEGRITY OF BARRIERS, COVERS, AND SAFETY FEATURES.
     c. VERIFY THAT MANUAL TRANSFER WARNINGS ARE PROPERLY PLACED.
     d. PERFORM MANUAL TRANSFER OPERATION.
  5. AFTER ENERGIZING CIRCUITS, DEMONSTRATE INTERLOCKING SEQUENCE AND OPERATIONAL FUNCTION FOR EACH SWITCH AT LEAST THREE TIMES.
     a. SIMULATE POWER FAILURES OF NORMAL SOURCE TO AUTOMATIC TRANSFER SWITCHES AND OF EMERGENCY SOURCE WITH NORMAL SOURCE AVAILABLE.
     b. SIMULATE LOSS OF PHASE–TO–GROUND VOLTAGE FOR EACH PHASE OF NORMAL SOURCE.
     c. VERIFY TIME–DELAY SETTINGS.
     d. VERIFY PICKUP AND DROPOUT VOLTAGES BY DATA READOUT OR INSPECTION OF CONTROL SETTINGS.
     e. PERFORM CONTACT–RESISTANCE TEST ACROSS MAIN CONTACTS AND CORRECT VALUES EXCEEDING 500 MICROHMS AND VALUES FOR 1 POLE DEVIATING BY MORE THAN 50 PERCENT FROM OTHER POLES.
     f. VERIFY PROPER SEQUENCE AND CORRECT TIMING OF AUTOMATIC ENGINE STARTING, TRANSFER TIME DELAY, RETRANSFER TIME DELAY ON RESTORATION OF NORMAL POWER, AND ENGINE COOL–DOWN AND SHUTDOWN.
  6. GROUND–FAULT TESTS: COORDINATE WITH TESTING OF GROUND–FAULT PROTECTIVE DEVICES FOR POWER DELIVERY FROM BOTH SOURCES.
     a. VERIFY GROUNDING CONNECTIONS AND LOCATIONS AND RATINGS OF SENSORS.
- C. COORDINATE TESTS WITH TESTS OF GENERATOR AND RUN THEM CONCURRENTLY.
- D. REPORT RESULTS OF TESTS AND INSPECTIONS IN WRITING. RECORD ADJUSTABLE RELAY SETTINGS AND MEASURED INSULATION AND CONTACT RESISTANCES AND TIME DELAYS. ATTACH A LABEL OR TAG TO EACH TESTED COMPONENT INDICATING SATISFACTORY COMPLETION OF TESTS.
- E. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST AS SPECIFIED ABOVE.
- F. INFRARED SCANNING: AFTER SUBSTANTIAL COMPLETION, BUT NOT MORE THAN 60 DAYS AFTER FINAL ACCEPTANCE, PERFORM AN INFRARED SCAN OF EACH SWITCH. REMOVE ALL ACCESS PANELS SO JOINTS AND CONNECTIONS ARE ACCESSIBLE TO PORTABLE SCANNER.
  1. FOLLOW–UP INFRARED SCANNING: PERFORM AN ADDITIONAL FOLLOW–UP INFRARED SCAN OF EACH SWITCH 11 MONTHS AFTER DATE OF SUBSTANTIAL COMPLETION.
  2. INSTRUMENT: USE AN INFRARED SCANNING DEVICE DESIGNED TO MEASURE TEMPERATURE OR TO DETECT SIGNIFICANT DEVIATIONS FROM NORMAL VALUES. PROVIDE CALIBRATION RECORD FOR DEVICE.
  3. RECORD OF INFRARED SCANNING: PREPARE A CERTIFIED REPORT THAT IDENTIFIES SWITCHES CHECKED AND THAT DESCRIBES SCANNING RESULTS. INCLUDE NOTATION OF DEFICIENCIES DETECTED, REMEDIAL ACTION TAKEN, AND OBSERVATIONS AFTER REMEDIAL ACTION.

3.4 DEMONSTRATION
- A. ENGAGE A FACTORY–AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN TRANSFER SWITCHES AND RELATED EQUIPMENT.
- B. COORDINATE THIS TRAINING WITH SCHOOL MAINTENANCE.

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH. (904) 264-1919 LIC. NO. AAC000569

HADDAD ENGINEERING, INC.
3030 HARTLEY ROAD, SUITE 290
JACKSONVILLE, FLORIDA 32257
TEL (904) 262-5066
CERTIFICATE OF AUTHORIZATION NO. 4000

LAKE ASBURY JUNIOR HIGH SCHOOL
HURRICANE RETROFIT 2019, BID # 18/19-23
for CLAY COUNTY BOARD OF COMMISSIONERS
2851 Sandridge Road
Green Cove Springs, FL 32043

Engineer	License No.
Namir A. Haddad P.E.	31967

REVISIONS

ELECTRICAL SPECIFICATIONS

DATE	9-19-2019
D.B.	RE
C.B.	NAH
JOB NO.	18052

E4.1

BID SET