DIVISION 26 - ELECTRICAL

GENERAL
1. ARRANGE AND PAY FOR ALL PERMITS AND OTHER CHARGES REQUIRED IN CONNECTION WITH THE INSTALLATION OF THIS WORK.
2. ALL CUTTING AND PATCHING SHALL BE PERFORMED BY THE PARTICULAR TRADES INVOLVED. PROPERLY STORE ALL MATERIAL AND EQUIPMENT AT THE JOB SITE, PROTECTING SAME FROM ELEMENTS WHEN IN OPEN STORAGE AND FROM DAMAGE BY WORK OF OTHER TRADES WHEN IN PLACE. MATERIAL IMPROPERLY HANDLED OR DAMAGED FROM ROUGH USAGE OR IMPROPER STORAGE SHALL BE TAKEN OUT AND REPLACED AT NO ADDITIONAL COST TO THE OWNER, WITH NEW UNITS AT THE DIRECTION OF THE ARCHITECT AND/OR ENGINEER.
3. ALL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER. COORDINATE WORK WITH WORK OF OTHER CONTRACTORS IN PUTTING THE INSTALLATION IN PLACE AT A TIME WHEN THE SPACE REQUIRED BY THIS INSTALLATION IS ACCESSIBLE. CUTTING AND PATCHING NECESSITATED BY ANY FAILURE ON THE PART OF THE CONTRACTOR SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
4. ALL ITEMS OF EQUIPMENT AND ALL MATERIALS, FOR WHICH APPROVAL STANDARD HAVE BEEN ESTABLISHED BY UNDERWRITER'S LABORATORIES, CERTIFIED BALLAST MANUFACTURERS (CBM), ELECTRICAL TESTING LABORATORY, THE NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, OR RLM STANDARDS, SHALL BE SO APPROVED AND SHALL BEAR APPROVAL LABELS ATTESTING TO SAME.
5. ALL PERTINENT DOCUMENTS ISSUED BY THE ENGINEER ARE A PART OF THESE PLANS AND SPECIFICATIONS AND SHALL BE COMPLIED WITH IN EVERY RESPECT. FAILURE TO COMPLY SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITIES CONTAINED HEREIN.
6. COMPLY WITH THE 2011 NATIONAL ELECTRICAL CODE, AND PERTINENT LOCAL ORDINANCES WHETHER SO SHOWN ON THE PLANS OR NOT. IN THE EVENT OF CONFLICT BETWEEN THE PLANS AND THE LOCAL ENFORCING AUTHORITY, THE LATTER SHALL RULE. ANY MODIFICATIONS RESULTING THEREFROM SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. THIS CONTRACTOR SHALL REPORT ANY SUCH MODIFICATIONS TO THE ENGINEER AND SECURE HIS APPROVAL BEFORE PROCEEDING. UPON COMPLETION OF THE WORK, THIS CONTRACTOR SHALL FURNISH AN ACCEPTANCE CERTIFICATE FROM THE LOCAL ENFORCING AUTHORITY

SCOPE OF WORK
1. FURNISH ALL LABOR AND EQUIPMENT.
2. FURNISH ALL MATERIALS SHOWN ON DRAWINGS OR SPECIFIED.
3. INSTALL AND CONNECT MOTORS AND CONTROLS FURNISHED BY MECHANICAL CONTRACTOR. COORDINATE REFRIGERATION AND CONTROLS WITH M/C.
4. IT IS IN THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS.

PLANS AND SPECIFICATIONS
1. THE DRAWINGS SHOW DIAGRAMMATICALLY THE SIZES AND LOCATIONS OF THE VARIOUS OUTLETS AND EQUIPMENT ITEMS AND THE SIZES OF THE MAJOR INTERCONNECTING WIRES, WITHOUT SHOWING EXACT DETAILS AS TO ELEVATIONS, OFFSETS, CONTROL LINES, AND INSTALLATION DETAILS. THE CONTRACTOR SHALL CAREFULLY LAY OUT HIS WORK AT THE SITE TO CONFORM TO THE ARCHITECTURAL AND STRUCTURAL CONDITIONS AND TO AVOID OBSTRUCTIONS. EXACT LOCATIONS OF OUTLETS, APPARATUS AND CONNECTIONS THERETO SHALL BE DETERMINED BY REFERENCE TO THE GENERAL PLANS, BY MEASUREMENTS AT THE BUILDING, AND IN COOPERATION WITH OTHER CONTRACTORS AND IN ALL CASES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
2. IT SHALL ALSO BE THIS CONTRACTOR'S RESPONSIBILITY TO VISIT THE ACTUAL SITE AND COMPARE WITH THE DRAWINGS. ASCERTAIN AND CHECK LOCATIONS OF ANY EXISTING OBSTRUCTIONS, UNDERGROUND OR OTHERWISE, WHICH MAY AFFECT THE WORK. FAILURE TO DETERMINE CONDITIONS WILL NOT BE CONSIDERED CAUSES FOR GRANTING ADDITIONAL COMPENSATION.
3. THE METHOD OF CIRCUITING USED ON THE PLANS SHOWS TRUE RUNS OF CONDUIT AS CIRCUIT LEGS, AND SWITCH LEG INDICATIONS SHOWING CONTROL OUTLETS. THE HOME RUN GROUPINGS ARE SHOWN ONLY FOR THE POSSIBLE CONVENIENCE OF THE CONTRACTOR. THE GROUPING OF THE HOME RUNS MAY BE CHANGED AT OPTION OF THE CONTRACTOR BUT SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL CODES.
4. ALL ELECTRICAL RACEWAYS, EXCEPT IN UNFURNISHED SPACES, OR WHERE SPECIFICALLY DESIGNATED HEREIN ON THE PLANS, SHALL BE RUN CONCEALED IN WALLS. WHEREVER CONDITIONS EXIST WHICH WOULD CAUSE ANY OF THESE ITEMS TO BE EXPOSED TO FINISHED SPACES OR THE BUILDING EXTERIOR, THE CONTRACTOR WHOSE WORK IS INVOLVED SHALL IMMEDIATELY CALL THE SITUATION TO THE ATTENTION OF THE ENGINEER AND SHALL STOP WORK IN THOSE AREAS UNTIL THE ENGINEER DIRECTS THE RESUMPTION OF THE WORK.
5. THE CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE ARCHITECTURAL AND STRUCTURAL DETAILS OF THE BUILDING BEFORE SUBMITTING HIS BID. NO ALLOWANCES WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH THESE DETAILS.

SUBSTITUTION OF MATERIAL
1. WHERE A DEFINITE MANUFACTURER'S PRODUCT IS SPECIFIED AND THE SPECIFICATION STATES THAT PRODUCTS OF SIMILAR DESIGN AND EQUAL CONSTRUCTION FROM SPECIFIED LIST OF MANUFACTURERS MAY BE SUBSTITUTED, IT IS NOT THE INTENTION OF THE ENGINEER THAT PRODUCTS OF MANUFACTURERS THAT ARE SPECIFIED ARE THE ONLY PRODUCTS THAT WILL BE ACCEPTED AND THAT PRODUCTS OF OTHER MANUFACTURERS WILL NOT BE CONSIDERED FOR SUBSTITUTION. HOWEVER, UNDER NO CIRCUMSTANCE SHALL ANY SUBSTITUTION OF THE PRODUCTS FROM THESE SPECIFIED MANUFACTURERS BE MADE WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
2. IT IS NOT THE INTENTION OF THE ENGINEER TO DISCRIMINATE AGAINST ANY MATERIAL EQUAL TO THE STANDARDS AS DESCRIBED IN THE SPECIFICATIONS; THEREFORE, ANY CONTRACTOR THAT DESIRES TO BASE HIS BID ON ANY MATERIAL THAT CANNOT BE SUBSTITUTED IN ACCORDANCE WITH THE CONDITIONS AS DESCRIBED HEREWITH, MAY SUBMIT THIS MATERIAL TO THE ENGINEER NOT LATER THAN FOUR (4) DAYS PRIOR TO THE BID OPENING DATE. IF THE MATERIAL SUBMITTED IS APPROVED, THE SPECIFICATION WILL BE ALTERED BY ADDENDUM TO ALLOW FOR THE SUBSTITUTION.
3. WHEREVER A DEFINITE MANUFACTURER'S PRODUCT IS SPECIFIED AND THE TERM "OR EQUAL" IS USED, IT IS THE INTENTION OF THE ENGINEER TO SET A DEFINITE STANDARD AS TO THE PRODUCT. PRODUCTS BY OTHER RELIABLE MANUFACTURERS WILL BE ACCEPTED PROVIDED IT HAS EQUAL CAPACITY, CONSTRUCTION, AND PERFORMANCE. HOWEVER, UNDER NO CIRCUMSTANCES SHALL ANY SUBSTITUTION BE MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
4. IF ANY REQUEST FOR A SUBSTITUTION OF MATERIAL IS REJECTED, THE CONTRACTOR SHALL AUTOMATICALLY BE REQUIRED TO FURNISH THE MATERIAL NAMED IN THE SPECIFICATIONS AS REPETITIVE SUBSTITUTIONS FOR THE SAME MATERIAL WILL NOT BE CONSIDERED.

SHOP DRAWINGS
1. WITHIN TEN (10) WORKING DAYS AFTER THE CONTRACT IS AWARDED, SUBMIT TO THE ENGINEER FOR APPROVAL, A LIST OF THE TYPE AND MANUFACTURER OF EVERY ITEM OF EQUIPMENT WHICH THE CONTRACTOR PLANS TO FURNISH. FAILURE TO INCLUDE ANY ITEM OF EQUIPMENT ON THE MATERIALS LIST, OR FAILURE TO SUBMIT WITHIN SPECIFIED TIME, SHALL GIVE THE ENGINEER THE RIGHT TO DICTATE THE EQUIPMENT TO BE USED, EVEN AFTER OTHER EQUIPMENT HAS BEEN INSTALLED, AT NO ADDITIONAL COST TO THE OWNER.
2. FAILURE TO INSTALL OR USE ANY APPROVED ITEM ON THIS LIST SHALL GIVE THE ENGINEER THE RIGHT TO DICTATE THE EQUIPMENT TO BE USED, EVEN AFTER OTHER EQUIPMENT HAS BEEN INSTALLED, AT NO ADDITIONAL COST TO THE OWNER.
3. TYPICAL ITEMS OF EQUIPMENT TO BE INCLUDED IN THIS LIST AND THE PARTICULAR INFORMATION DESIRED IS AS FOLLOWS:
   - A. WALL SWITCHES - MANUFACTURER, TYPE, AND CATALOG NUMBER.
   - B. CONVENIENCE AND SPECIAL PURPOSE OUTLETS - MANUFACTURER AND CATALOG NUMBER FOR EACH OF THE VARIOUS PURPOSES.
   - C. COVER PLATES - MANUFACTURER AND FINISH.
   - D. PANELBOARDS - NUMBER, SIZE AND TYPE OF CIRCUIT BREAKERS AND SWITCHES, DIMENSIONS, GAUGES, AND TYPE OF CONSTRUCTION OF CABINETS, SIZE OF MAIN BUS AND ALL LUGS AND CONNECTORS, SIZE OF GUTTER, TYPE LOCKS AND TYPE CARDHOLDER, TYPE FINISH AND COLOR.
   - E. SAFETY SWITCHES - MANUFACTURER, DUTY, AND TYPE.
   - F. LIGHT FIXTURES - CATALOG DATA MARKED TO SHOW HOW THE FIXTURE WILL BE ORDERED AND INSTALLED FOR THIS PARTICULAR JOB. SUCH DATA SHALL INCLUDE GAGES OF METAL; SHIELDING; TYPE OF GLASS, PLASTIC, METAL OR OTHER DIFFUSER; TYPE REFLECTOR; TYPE BALLAST; PHOTOMETRIC DATA; TYPE HINGES AND CATCHES; TYPE, SIZE AND MANUFACTURER OF THE LAMPS; FINISH OF ALL COMPONENTS; AND METHOD OF MOUNTING AND MOUNTING ACCESSORIES.

REGULATIONS
1. WORK FURNISHED UNDER THIS CONTRACT SHALL BE DONE IN FULL ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, STANDARD OF THE NATIONAL BOARD OF FIRE UNDERWRITERS FOR ELECTRICAL WIRING AND APPARATUS, AND WITH ALL LOCAL REQUIREMENTS.
2. THE AFOREMENTIONED REGULATIONS SHALL BE CONSIDERED AS INCLUDED IN THESE SPECIFICATIONS AND SHALL TAKE PREFERENCE.
3. THIS CONTRACTOR SHALL PROCURE AND PAY FOR ALL NECESSARY FEES AND CERTIFICATES.

GROUNDING
1. GROUNDING TO COMPLY WITH ARTICLE 250 NFPA PAMPHLET 70, LATEST EDITION.
2. GROUND THE SYSTEM NEUTRAL CONDUCTOR TO THE NEAREST 3/4" OR LARGER COLD WATER LINE, USING COPPER WIRE IN CONDUIT OF THE SIZE AS REQUIRED BY THE N.E.C. AND A BURNDY OR EQUAL GROUNDING CLAMP.
3. GROUND ALL RACEWAYS AND ALL OTHER METAL NON-CURRENT CARRYING EQUIPMENT PERMANENTLY AND EFFECTIVELY TAKING CARE THAT ALL RACEWAYS SYSTEMS ARE ELECTRICALLY CONTINUOUS THROUGHOUT THE INSTALLATION.
4. INSTALL A GROUND CONDUCTOR IN ALL PLASTIC CONDUITS OF THE SIZE AS RECOMMENDED IN TABLE 250-94(B) OF THE N.E.C.
5. CONDUIT SHALL NEVER BE USED AS THE GROUNDING CONDUCTOR, BUT CONDUIT SHALL BE SECURELY BONDED TO THE GROUNDING CONDUCTOR.

CONDUITS AND HANGERS
1. ALL WIRING OF EVERY DESCRIPTION SHALL BE RUN IN CONDUIT UNLESS OTHERWISE STATED ON PLANS.
2. CONDUITS SHALL BE OF SUCH SIZE AND SHALL BE SO INSTALLED THAT THE CONDUCTORS MAY BE DRAWN IN WITHOUT INJURY OR EXCESSIVE STRAIN.
3. ALL CONDUIT AND TUBING SHALL BE UNDERWRITER'S LABORATORY APPROVED. ALL GALVANIZED CONDUIT SHALL BE GALVANIZED INSIDE AND OUTSIDE.
4. ALL CONDUITS IN EARTH, CONCRETE, OR ENCASED IN MASONRY SHALL BE RIGID POLYVINYL CHLORIDE AS MANUFACTURED BY KRALEY OR CARLON, OR SHALL BE RIGID OR INTERMEDIATE GALVANIZED STEEL. ALL EXPOSED CONDUIT WHERE SUBJECT TO DAMAGE SHALL BE RIGID GALVANIZED STEEL. ALL OTHER CONDUITS MAY BE RIGID OR INTERMEDIATE GALVANIZED STEEL OR MAY BE ELECTRICAL METALLIC TUBING IN SIZES NOT EXCEEDING THREE (3") INCH ELECTRICAL TRADE SIZE. ALL UNDERGROUND CONDUIT TO HAVE WATERTIGHT JOINTS.
5. STEEL CONDUIT SHALL BE ATTACHED TO PANEL BOXES, PULL BOXES, ETC. WITH GALVANIZED LOCKNUTS, INSIDE AND OUTSIDE, AND WITH INSULATING BUSHING.
6. PLASTIC CONDUITS SHALL BE CONNECTED AS RECOMMENDED BY THE MANUFACTURER. PROVIDE A BUSHING WHERE CONDUIT ENTERS A BOX OR OTHER FITTING TO PROTECT THE WIRE FROM ABRASION UNLESS THE DESIGN OF THE BOX OR FITTING PROVIDES ADEQUATE PROTECTION. TRANSITION TO STEEL CONDUIT SHALL BE MADE BEFORE THE CONDUIT LEAVES THE EARTH, CONCRETE, OR MASONRY ENCASEMENT. PROVIDE EXPANSION JOINTS IN PLASTIC CONDUITS AS REQUIRED.
7. NO RUN OF CONDUIT SHALL HAVE MORE THAN THREE (3) 90 DEGREE BENDS AND SHALL NOT BE MORE THAN 100 FEET IN LENGTH WITHOUT A PULL OR JUNCTION BOX OF THE PROPER SIZE.
8. BENDS IN CONDUIT SHALL BE MADE WITH AN APPROVED BENDING DEVICE. CONDUIT WITH CRUSHED OR DEFORMED WALLS SHALL NOT BE PERMITTED. USE STANDARD BENDS IN CONDUIT LARGER THAN ONE (1") INCH.
9. CONDUITS SHALL BE INSTALLED SO AS TO AVOID MOISTURE TRAPS.
10. REAM OUT ALL ENDS AFTER CUTTING AND THREADING. KEEP ENDS CAPPED AND DRY DURING CONSTRUCTION, AND SWAB OUT ALL CONDUITS BEFORE WIRES ARE PULLED IN.
11. CONDUITS SHALL BE RUN CONCEALED WHEREVER POSSIBLE. WHERE EXPOSED TO VIEW, THEY SHALL RUN PARALLEL TO THE ADJACENT BUILDING CONSTRUCTION.
12. HORIZONTAL RUNS SHALL BE SECURED WITH EITHER ONE-HOLE RIGID GALVANIZED PIPE CLAMP OR ADJUSTABLE HINGED RING HANGERS, BOTH SECURED TO STRUCTURE WITH BOLTS OR SCREWS.
13. THE USE OF NAILS, WIRE OR PERFORATED HANGER IRON SHALL NOT BE PERMITTED.
14. VERTICAL RUNS SHALL BE SUPPORTED BY MEANS OF CLAMPS RESTING ON ADJACENT BEAMS OR FLOOR CONSTRUCTION.
15. USE OF FLEXIBLE CONDUIT FOR GREATER THAN 6 FT. WILL BE PROHIBITED.

WIRE
1. MINIMUM SIZE WIRE FOR BRANCH CIRCUITS SHALL BE #12. ALL WIRE UP THROUGH #10 SHALL BE TYPE THW OR THHN 600 VOLT. WIRE #8 AND LARGER SHALL BE 600 VOLT TYPE THHN OR AS CALLED FOR ON PLANS.
2. COMPLY WITH N.E.C. COLOR CODING THROUGHOUT. IN THE LIGHTING SYSTEM, ONE (1) CONDUCTOR OF EACH CIRCUIT SHALL BE IDENTIFIED AND THE IDENTIFIED CONDUCTORS SHALL BE CONNECTED TO THE SCREW SHELL OF ALL LAMP SOCKETS. AT ALL OTHER OUTLETS, A STANDARD CONNECTION SHALL BE ADOPTED THAT WILL BE UNIFORM THROUGHOUT THE INSTALLATIONS. THE IDENTIFYING MARKS SHALL BE CONTINUOUS THE FULL LENGTH OF ALL #8, #10, #12, AND #14 B & S GAUGE CONDUCTORS AND PREFERABLY SO ON THE LARGER OUTLETS BY MEANS OF PAINT, BANDS OR TAPS THAT WILL BE PERMANENT WITH THE BUILDING WILL BE ACCEPTED.
3. POWDERED SOAPSTONE OR AN UNDERWRITERS' APPROVED CABLE PULLING COMPOUND MAY BE USED AS A LUBRICANT WHEN PULLING WIRE.
4. ALL WIRING FOR BRANCH CIRCUITS SHALL UTILIZE SOFT DRAWN ANNEALED COPPER WITH [illegible]% OF THAT OF PURE COPPER. CONDUCTIVITY NOT LESS THAN 96.

PIPE SLEEVES
1. GENERALLY WHERE CONDUITS PASS THROUGH FLOORS, 22 GAUGE GALVANIZED SHEET METAL SLEEVES SHALL BE USED. IN PIPE CHASES THEY SHALL EXTEND 1 ½" ABOVE THE FLOOR SLAB AND BE CEMENTED IN A WATER-TIGHT MANNER. THE SIZE OF THESE SLEEVES SHALL BE SUCH AS TO PERMIT READILY THE SUBSEQUENT INSERTION OF CONDUITS OF THE PROPER SIZE.

SPLICES AND CONNECTIONS
1. SLICES OF WIRE SHALL BE ELIMINATED WHEREVER POSSIBLE, AND NECESSARY SPLICES SHALL BE MADE ONLY IN READILY ACCESSIBLE PULL AND OUTLET BOXES.

OUTLET BOXES
1. INSTALL ALL BOXES PLUMB AND SQUARE WITH PARTICULAR ATTENTION BEING CALLED TO THE NEAT INSTALLATION OF ALL FLUSH-MOUNTED BOXES FOR WALL SWITCHES, RECEPTACLES, ETC.
2. OUTLET BOXES FOR LIGHT FIXTURES SHALL CONTAIN A 3/8" FIXTURE STUD FASTENED THROUGH FROM THE BACK OF THE BOX WHEN REQUIRED FOR FIXTURE MOUNTING.
3. PROVIDE AT EACH OUTLET A DEEP DRAWN PATTERN BOX. WHERE RECESSED, USE DEEP PATTERN GALVANIZED STEEL BOXES. USE GALVANIZED CAST IRON WITH THREADED HUBS WHERE EXPOSED. SHALLOW PATTERN BOXES MAY BE USED ONLY WHEN BUILDING CONSTRUCTION DOES NOT PROVIDE SPACE FOR THE DEEP PATTERN BOX. FASTEN GALVANIZED STEEL BOXES TO CONDUIT WITH LOCKNUT AND INSULATING BUSHING INSIDE AND LOCKNUT OUTSIDE.

MOUNTING HEIGHTS
1. IN GENERAL, UNLESS NOTED OTHERWISE ON DRAWINGS, MOUNTING HEIGHTS SHALL BE AS FOLLOWS:
   - WALL SWITCHES - 54" ABOVE FINISHED FLOOR
   - RECEPTACLES - 18" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE
   - PANELBOARD - 72" ABOVE FINISHED FLOOR TO TOP OF PANELBOARD
2. ALL DEVICES WHERE OCCURRING ON A SINGLE WALL AND WITHIN APPROXIMATELY 12" HORIZONTALLY OF EACH OTHER SHALL BE ALIGNED VERTICALLY. FOR EXAMPLE, CONVENIENCE OUTLETS WITHIN 12" HORIZONTALLY OF WALL SWITCHES SHALL BE MOVED, HORIZONTALLY, TO OCCUR DIRECTLY BELOW THE SWITCH EXCEPT WHERE IT AFFECTS CODE DESIGNATED SPACINGS.

COVER PLATES
1. ALL COVER PLATES FOR SWITCHES, RECEPTACLES, AND KINDRED DEVICES SHALL BE EQUAL TO HUBBELL, COLOR TO MATCH DEVICE.

RECEPTACLES
1. DUPLEX 15/20 AMP, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE IN WHITE BY HUBBELL UNLESS OTHERWISE NOTED ON PLAN. REFER TO ARCHITECTURAL FINISH PLANS FOR COLOR SELECTION.

SWITCHES
1. 15/20 AMP, 125 VOLT SINGLE POLE SWITCH, WEATHERPROOF, EQUAL TO HUBBELL 5205WO. REFER TO ARCHITECTURAL FINISH PLANS FOR COLOR SELECTION.

DISCONNECT SWITCHES
1. ALL DISCONNECT SWITCHES SHALL BE GENERAL DUTY FUSIBLE SAFETY SWITCHES UNLESS NOTED OTHERWISE. WHERE INSTALLED EXPOSED TO THE WEATHER, THEY SHALL BE IN A NEMA 3R ENCLOSURE. UNFUSED MAY BE USED WHERE SHOWN ON PLANS.
2. DISCONNECT SWITCHES OF SIMILAR DESIGN AND EQUAL CONSTRUCTION WILL BE ACCEPTED FROM THE FOLLOWING MANUFACTURERS: WESTINGHOUSE, SQUARE D, FEDERAL, CUTLER HAMMER, OR ITE.
3. DISCONNECTS AND PANELBOARDS SHALL HAVE WITHSTAND RATING ABOVE THAT AVAILABLE IN SYSTEM.

PANELBOARDS
1. FURNISH AND INSTALL THE PANELBOARD AS SHOWN WITH THE NUMBER AND SIZE BREAKERS AS SCHEDULED. ALL CIRCUITS SHALL BE WIRED WITH SEQUENCE PHASING. THE PANELBOARD SHALL BE AS CALLED FOR ON THE PLANS WITH BOLT-ON CIRCUIT BREAKERS.
2. PANELBOARDS OF SIMILAR DESIGN AND EQUAL CONSTRUCTION WILL BE ACCEPTED FROM THE FOLLOWING MANUFACTURERS: WESTINGHOUSE, FEDERAL, ITE, SQUARE D, OR G.E.
3. PROVIDE WITH PANELBOARD A TYPEWRITTEN INDEX FOR ALL CIRCUIT BREAKERS. PROVIDE KEYED-ALIKE COVERS FOR ALL PANELS ACCESSIBLE TO THE PUBLIC.

FUSES
1. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL FUSES NECESSARY FOR LEAVING THE INSTALLATION COMPLETE AND IN WORKING ORDER, INCLUDING A COMPLETE SET OF FUSES IN EACH SPARE SWITCH. ALL FUSES SHALL BE BUSSMAN LOW PEAK OF PROPER CAPACITIES. ON COMPLETION OF THE WORK, FURNISH AND DELIVER TO THE BUILDING A FULL BOX OF EACH SIZE OF FUSES USED, EXCEPT THAT IN NO CASE SHALL THERE BE LESS THAN THREE (3) SPARE FUSES OF EACH SIZE FURNISHED. THESE FUSES ARE IN ADDITION TO THOSE BLOWN DURING CONSTRUCTION AND TESTING.
2. FUSES SHALL NOT BE LARGER THAN THE CURRENT CARRYING CAPACITY OF THE CONDUCTORS. FUSES IN MOTOR FEEDERS SHALL BE DUAL ELEMENT TYPE AND SIZED IN ACCORDANCE WITH RECOMMENDATIONS OF THE MOTOR MANUFACTURER.

CONTROL SWITCHES
1. THE ELECTRICAL CONTRACTOR SHALL INSTALL THE THERMOSTATS, CONNECTORS TO ELECTRIC VALVES, STRIP HEATERS, AND DAMPER MOTORS, STARTERS AND OTHER ITEMS REQUIRING ELECTRICAL CONNECTORS ON THE MECHANICAL SYSTEM.

MOTOR AND CONTROL WIRING
1. ALL MOTOR AND CONTROL WIRING PERTAINING TO HEATING, VENTILATING AND AIR CONDITIONING SHALL BE PERFORMED AS A PART OF THE ELECTRICAL CONTRACTING. FOR BIDDING PURPOSES, THE HEATING, VENTILATING, AND AIR CONDITIONING CONTROL WIRING IS DIAGRAMMED ON THE PLANS. THIS DIAGRAM SHALL VARY IN ACCORDANCE WITH THE MANUFACTURER OF THE TEMPERATURE CONTROLS; THEREFORE, THE HEATING, VENTILATING AND AIR CONDITIONING CONTRACTOR SHALL BE REQUIRED TO PROVIDE THE CONTROLS TO THE HEATING, VENTILATING, AND REFRIGERATION EQUIPMENT IN ACCORDANCE WITH THESE FINAL DIAGRAMS.
2. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE DIAGRAMS IN THE HEATING, VENTILATING, AND AIR CONDITIONING SECTION OF THIS SPECIFICATION TO DETERMINE THE ELECTRICAL CONTROLS THAT WILL BE FURNISHED BY THE HEATING, VENTILATING AND REFRIGERATION CONTRACTOR.

LIGHTING FIXTURES
1. CONTRACTOR SHALL FURNISH AND INSTALL ALL FIXTURES AS INDICATED ON THE FIXTURE SCHEDULE. ALL FIXTURES MUST BEAR U.L. LABEL FOR THE TYPE OF SERVICE IN WHICH THEY ARE INSTALLED.
2. FURNISH AND INSTALL LAMPS FOR ALL FIXTURES AS LISTED IN THE FIXTURE SCHEDULE. LAMPS SHALL BE OF ONE MANUFACTURER: GENERAL ELECTRIC, SYLVANIA, OR WESTINGHOUSE.
3. ALL FLUORESCENT BALLASTS SHALL BE HIGH POWER FACTOR CBM LABELED AND CERTIFIED BY ETL.
4. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF ADJUSTING AND AIMING ALL LIGHTING FIXTURES AS DIRECTED.

FINAL COMPLETION AND TEST
1. UPON COMPLETION, TEST SYSTEMS FOR SHORT CIRCUITS AND GROUNDS IN ACCORDANCE WITH METHOD AND RESISTANCE VALUES OUTLINED IN THE NATIONAL ELECTRICAL CODE, AND FOR LOAD BALANCE ON FEEDERS AND BRANCH CIRCUITS.
2. COMPLETE SYSTEM SHALL OPERATE SATISFACTORILY IN EVERY RESPECT; MAKE ANY REPAIRS OR ADJUSTMENTS NECESSARY TO THIS, AND TO THE SATISFACTION OF THE ENGINEER.

GUARANTEE
1. THE ELECTRICAL CONTRACTOR SHALL GUARANTEE TO REPLACE ANY DEFECTIVE MATERIALS AND REMEDY ANY DEFECTIVE WORKMANSHIP INSTALLED AS PART OF THIS WORK, WITHOUT COST TO THE OWNER, FOR A PERIOD OF ONE (1) YEAR FOLLOWING THE DATE OF CERTIFICATE OF FINAL PAYMENT TO THE CONTRACTOR. INCANDESCENT LAMPS AND FUSES ARE EXPECTED FROM THIS GUARANTEE.

PANELBOARD SCHEDULE — P1

VOLTAGE: 120/208	MOUNTING SPACE: 42	MOUNTING: RECESSED	ENCLOSURE: NEMA 1		
PHASE / WIRE: 3 / 4	KAIC AMPS (RMS): 22	LOCATION: JANITOR CLOSET	MANUFACTURER: SQUARE D		
AMPS: 200	MAIN BREAKER/MLO: MLO	FED FROM: VERIFY	MODEL: NQ		

CIRC. NO.	EQUIPMENT SERVED	C/B AMPS	C/B POLES	C/B ACC.	LOAD (VA)	PHASE LOADS (VA) A	B	C	LOAD (VA)	C/B ACC.	C/B POLES	C/B AMPS	EQUIPMENT SERVED	CIRC. NO.
1	LOBBY, OASIS, VIDEO, HALL LIGHTING	20	1	GFCI	500	2000			1500	GFCI	2	20	FLOAT POD FILTER #1	2
3	POD ROOM LIGHTING	20	1	GFCI	500		2000		1500	-	-	-	"	4
5	RECEPTION RECEPTACLES	20	1	GFCI	800			2300	1500	GFCI	2	20	FLOAT POD FILTER #1	6
7	HALL RECEPTACLES	20	1	GFCI	1176	2676			1500	-	-	-	"	8
9	VIDEO RECEPTACLES	20	1	GFCI	1100		2600		1500	GFCI	2	20	FLOAT POD FILTER #1	10
11	POD ROOM #1 RECEPTACLES	20	1	GFCI	720			2220	1500	-	-	-	"	12
13	POD ROOM #2 RECEPTACLES	20	1	GFCI	900	900				GFCI	1	20	SPARE	14
15	POD ROOM #3 RECEPTACLES	20	1	GFCI	720		720			GFCI	1	20	SPARE	16
17	STORAGE RECEPTACLES	20	1	GFCI	720			720		GFCI	1	20	SPARE	18
19	FAN COIL UNITS	15	2	-	800	1300			500	-	1	20	WATER HEATER	20
21		-	-	-	800		800			-	1	20	SPARE	22
23	HEAT PUMP UNIT	50	2	-	3400			3900	500	-	1	20	LIGHTING CONTROL PANEL	24
25		-	-	-	3400	3400				-	-	-	SPACE	26
27	EXHAUST FAN	20	1	-	720		720			-	-	-	SPACE	28
29	SPARE	20	1	-	975			975		-	-	-	SPACE	30
31	SPARE	20	1	-	1343	1343				-	-	-	SPACE	32
33	SPARE	20	1	-	500		500			-	-	-	SPACE	34
35	SPACE	-	-	-						-	-	-	SPACE	36
37	SPACE	-	-	-						-	-	-	SPACE	38
39	SPACE	-	-	-						-	-	-	SPACE	40
41	SPACE	-	-	-						-	-	-	SPACE	42

ENCLOSURE ACCESSORIES: CH,FL — PANELBOARD ACCESSORIES: GB,CBB

CIRCUIT BREAKER ACCESSORIES:
- AC - AUXILLIARY CONTACTS
- EO - ELECTRICAL OPERATOR
- GFCI - GROUND-FAULT INTERRUPTING
- HACR - HACR RATING
- HLF - HANDLE LOCK-OFF
- HLN - HANDLE LOCK-ON
- SR - SWITCH RATING
- ST - SHUNT TRIP

ENCLOSURE ACCESSORIES:
- CH - CONCEALED HINGE
- CW - COLUMN WIDTH PANEL
- DWD - HINDGED DOOR WITHIN HINGED DOOR
- EGT - EXTENDED GUTTER TOP
- EGB - EXTENDED GUTTER BOTTOM
- EGSL - EXTENDED GUTTER LEFT HAND SIDE
- EGSR - EXTENDED GUTTER RIGHT HAND SIDE
- FL - FLUSH LOCK(S)

PANELBOARD ACCESSORIES:
- CL - COMPRESSION LUGS
- FTL - FEED-THRU LUGS
- GB - EQUIPMENT GROUND BAR KIT
- GBI - GROUND BAR INSULATOR KIT
- NBK - NEUTRAL BONDING KIT
- PS - PREPARED CIRCUIT BREAKER SPACE
- SB - SPLIT BUS
- SER - SERVICE ENTRANCE RATING
- SFB - SUB-FEED CIRCUIT BREAKER
- SFL - SUB-FEED LUGS
- CBB - TIN PLATED COPPER BUS BARS
- ABB - TIN PLATED ALUMINUM BUS BARS
- TRN - 200% RATED NEUTRAL BUS BAR
- TVSS - TRANSIENT VOLTAGE SURGE SUPPRESSION

NOTES:
- CR - CONFIRM REQUIREMENTS FOR EQUIPMENT FURNISHED BY OTHERS

LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURER	MODEL #	FINISH	MOUNTING	LAMP TYPE	FIXTURE WATTS	VOLTAGE	APPROVED MANUFACTURERS	NOTES
A	WILLIAMS	6DR-TL-L10/835-DIM-UNV-LW-OF-CS	WHITE	RECESSED	LED	10	120	LITHONIA, PORTFOLIO	-
AE	WILLIAMS	6DR-TL-L10/835-DIM-UNV-LW-OF-CS-EM	WHITE	RECESSED	LED	10	120	LITHONIA, PORTFOLIO	-
B	TREND LIGHTING	TP4386	VERIFY	PENDANT	LED	60	120	SUBMIT FOR APPROVAL	1,2
C	WILLIAMS	75R-3-L40/835-835	WHITE	SURFACE	LED	35	120	METALUX, LITHONIA	-
X1	PHILIPS CHLORIDE	ER44RLDUR	VERIFY	SURFACE	LED	5	120	SUBMIT FOR APPROVAL	1,3,4

NOTES:
1. VERIFY EXACT MOUNTING HEIGHT AND/OR LOCATION WITH ARCHITECT/ENGINEER PRIOR TO ROUGH-IN.
2. PROVIDE SUSPENSION LENGTH AS REQUIRED AND ALL COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION.
3. FIXTURE SHALL BE UL LISTED FOR DAMP OR WET LOCATION AS REQUIRED.
4. REFER TO DRAWINGS FOR MOUNTING TYPE AND CHEVRON DIRECTION. INSTALL FIXTURE AT 8'-0" ABOVE FINISH FLOOR UNLESS NOTED OTHERWISE.

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Professional Seal

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GEORGIA REGISTERED No. PE 044450 PROFESSIONAL ENGINEER NATHAN S. RILEY

Digitally signed by Nathan S. Riley
Date: 2019.05.31 11:11:02-05'00'

NATHAN S. RILEY, ENGINEER
GA #: PE-044450
THIS SEAL IS FOR ENGINEERING INFORMATION ONLY

Revisions

1	05/10/19 - REVISION #1
2	05/31/19 - REVISION #2

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Project Number:	49034
Drawn By:	NSR
Reviewed By:	NSR
Date:	04.10.19

True Rest Float Spa

2995 Cobb Parkway Southeast
Cobb County, GA 30339

ELECTRICAL SCHEDULES AND SPECIFICATIONS

CONSTRUCTION DOCUMENTS

Sheet Number

E2.1

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