ELECTRICAL SPECIFICATIONS

ELECTRICAL GENERAL PROVISIONS
PART 1– GENERAL

1.01 WORK INCLUDED

A. PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO FURNISH AND INSTALL A COMPLETE ELECTRICAL SYSTEM AS INDICATED ON DRAWINGS AND AS SPECIFIED HEREIN.

B. THE ELECTRICAL WORK INCLUDES PROVIDING THE NEW MATERIAL, FIXTURES, DEVICES AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING ELECTRICAL SYSTEM. THE WORK ALSO INCLUDES FINAL CONNECTION TO ALL ITEMS FURNISHED BY OTHERS ON THIS PROJECT. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL, CODES OR ORDINANCES AND SUBJECT TO INSPECTION AND APPROVAL FROM AUTHORITY HAVING JURISDICTION.

C. THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC, SHOWING THE LOCATION, TYPE DEVICES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. PROVIDE ALL FIXTURES, LAMPS, DEVICES, ACCESSORIES, OFFSETS AND MATERIAL NECESSARY TO FACILITATE THE SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND PER SPECIFIED AND OWNER SUPPLIED EQUIPMENT MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.

D. COORDINATE WITH THE WORK OF OTHER SECTIONS, VERIFYING EXISTING SITE CONDITIONS BEFORE BIDDING, AND MAKE ALL CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. REFER TO ARCHITECTURAL/MECH. PLUMBING, EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION AS REQUIRED.

E. IT IS THE INTENT THAT THE FOREGOING WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT ANY MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS, BUT NECESSARY TO FULLY COMPLETE THE WORK SHALL BE FURNISHED.

1.02 REGULATORY REQUIREMENTS

A. EQUIPMENT FURNISHED SHALL BE UL LISTED WHERE SUCH LABEL IS AVAILABLE. INSTALLATION SHALL CONFORM TO UL STANDARDS WHERE APPLICABLE.

B. ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS, EDITION OF NEC AND NFPA CODES, IN EFFECT AT PROJECT LOCATION, STATE AND LOCAL ELECTRICAL AND BUILDING CODES AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS WITHIN COMPLETE INSTALLATION.

C. OBTAIN PERMITS AND CERTIFICATES OF APPROVAL FROM ALL AUTHORITIES HAVING JURISDICTION OVER THE INSTALLATION AND PAY ALL FEES REQUIRED.

1.03 SUBMITTALS

A. SUBMIT LIST OF MATERIALS AND EQUIPMENT PRIOR TO MANUFACTURE, ORDER OR INSTALLATION AND WITHIN 2 WEEKS AFTER AWARD OF CONTRACT FOR APPROVAL. INCLUDE EACH ITEM OF MATERIAL AND EQUIPMENT WHETHER OR NOT SHOP DRAWINGS ARE ALSO REQUIRED. LIST SHALL INCLUDE MANUFACTURER'S NAME, CATALOG NUMBER AND OTHER COMPLETE IDENTIFICATION AS WELL AS DIMENSIONS AND DETAILED DATA.

SUBMITTALS SHALL INCLUDE THE FOLLOWING:

LIGHTING FIXTURES
PANELBOARDS/BREAKERS
WIRING DEVICES AND DEVICE PLATES
ENCLOSED SWITCHES
CONTACTORS

B. CERTIFIED SHOP DRAWINGS AND SUBMITTALS SHALL BEAR STAMP OF APPROVAL OF CONTRACTOR AS EVIDENCE THAT DRAWINGS HAVE BEEN CHECKED. DRAWINGS SUBMITTED WITHOUT THIS STAMP OF APPROVAL WILL NOT BE CONSIDERED AND WILL BE RETURNED FOR PROPER RESUBMISSION.

C. SUBSTITUTIONS SUBMITTED AFTER THE AWARD OF CONTRACT WILL BE NOT BE REVIEWED AND GROUDED AS DISAPPROVAL. CONTRACTOR WILL BE CHARGED BY THE ARCHITECT/ENGINEER PER HOURLY BASIS TO REVIEW THE SUBSTITUTIONS.

1.04 SITE VISIT

A. VISIT JOB SITE PRIOR TO BID DATE TO DETERMINE ACTUAL CONDITIONS UNDER WHICH WORK SHALL BE DONE, TO FAMILIARIZE ONESELF WITH PROJECT AND TO VERIFY TOTAL SCOPE OF WORK REQUIRED. FAILURE TO DO SO SHALL NOT CONSTITUTE A REASON FOR AN EXTRA CHARGE.

BASIC MATERIALS AND METHODS

PART 1 – GENERAL

1.01 COORDINATION

A. OBTAIN AND REVIEW SHOP DRAWINGS, PRODUCT DATA, AND MANUFACTURER'S INSTRUCTIONS FOR EQUIPMENT FURNISHED UNDER OTHER SECTIONS TO DETERMINE CONNECTION LOCATIONS AND REQUIREMENTS.

B. SEQUENCE ROUGH-IN OF ELECTRICAL CONNECTIONS TO COORDINATE WITH INSTALLATION AND START-UP OF EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

PART 2 – PRODUCTS

2.01 SUBSTITUTIONS

A. FURNISH MATERIALS MADE BY ONE OF THE MANUFACTURERS LISTED. WHEN THERE IS NO MANUFACTURERS LISTED, CONTRACTOR MAY SUBSTITUTE EQUAL PROJUCTS BY A REPUTABLE MANUFACTURER AND WHICH IS SUBJECT TO THE APPROVAL BY ARCHITECT/OWNER.

PART 3 – EXECUTION

3.01 INSTALLATION

A. MAKE ELECTRICAL CONNECTIONS TO UTILIZATION EQUIPMENT IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTRUCTIONS.

B. DRAWINGS ARE DIAGRAMATIC AND SHALL NOT BE SCALED FOR EXACT SIZES OR LOCATIONS, THEY ARE NOT INTENDED TO DISCLOSE ABSOLUTE OR UNCONDITIONAL KNOWLEDGE OF ACTUAL FIELD CONDITIONS.

C. PROTECT WORK AND MATERIALS EQUIPMENT THROUGH OUT THE ENTIRE PROJECT FROM ANY KIND OF DAMAGES.

D. SATISFACTORILY REPAIR OR REMOVE AND REPLACE DAMAGED WORK WITH NEW MATERIALS. DELIVER EQUIPMENT AND MATERIALS TO JOB SITE IN ORIGINAL, UNOPENED, LABELED CONTAINERS. STORE FERROUS MATERIALS TO PREVENT RUSTING. STORE FINISHED MATERIALS AND EQUIPMENT TO PREVENT STAINING AND DISCOLORING.

E. TRENCHES SHALL BE EXCAVATED 6" BELOW ELEVATION OF BOTTOM OF CONDUIT.

F. FAILURE TO ROUTE CONDUIT THROUGH BUILDING WITHOUT INTERFERING WITH OTHER EQUIPMENT AND CONSTRUCTION SHALL NOT CONSTITUTE A REASON FOR AN EXTRA CHARGE. EQUIPMENT, CONDUIT AND FIXTURES SHALL FIT INTO AVAILABLE SPACES IN BUILDING AND SHALL NOT BE INTRODUCED INTO BUILDING AT SUCH TIMES AND MANNER AS TO CAUSE DAMAGE TO STRUCTURE. EQUIPMENT REQUIRING SERVICE SHALL BE READILY ACCESSIBLE.

3.02 TESTING AND EQUIPMENT SERVICING

A. MAKE TEST TO ENSURE THAT ENTIRE SYSTEM IS IN PROPER OPERATING CONDITION, AND THAT ADJUSTMENTS AND APPARATUS SETTING OF CIRCUIT BREAKERS, FUSES, CONTROL EQUIPMENT AND APPARATUS HAVE BEEN MADE. CORRECT DEFECTS DISCOVERED DURING TESTS.

3.03 REMOVAL OF DEBRIS

A. REMOVE SURPLUS MATERIALS AND DEBRIS CAUSED BY, OR INCIDENTAL TO, ELECTRICAL WORK. REMOVE SUCH DEBRIS AT FREQUENT INTERVALS. KEEP JOB CLEAN DURING CONSTRUCTION.

3.04 IDENTIFICATION OF EQUIPMENT

A. IDENTIFY ELECTRICAL DISTRIBUTION EQUIPMENT, DISCONNECTS, AND CONTACTORS WITH BLACK LAMINATED PLASTIC NAME-PLATES, ATTACHED WITH TWO SCREWS, ENGRAVED WITH 1/4 " HIGH, WHITE LETTERS.

3.05 TEMPORARY LIGHTING AND POWER IN AREAS OF CONSTRUCTION

A. PROVIDE, MAINTAIN AND REMOVE AFTER CONSTRUCTION IS COMPLETED, TEMPORARY LIGHTING ADEQUATE FOR WORKMAN SAFETY AND TEMPORARY POWER FOR ALL TRADES

B. PROVIDE AND MAINTAIN BARRICADE LIGHTING WHERE REQUIRED TO ADEQUATELY PROTECT OWNER AGAINST LIABILITY FOR DAMAGE TO PUBLIC OR PERSONNEL. ALL LAMPS USED IN BARRICADE SHALL BE 60 WATT RED, INSTALLED IN WEATHERPROOF SOCKET WITH WIRE GUARD. ALL WIRING SHALL BE APPROVED FOR WEATHERPROOF INSTALLATION.

3.06 GUARANTEE–WARRANTY

A. GUARANTEE WORK TO BE FREE FROM DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF BUILDING. REPAIR AND REPLACE DEFECTIVE WORK AND OTHER WORK DAMAGED THEREBY WHICH BECOMES DEFECTIVE DURING TERM OF GUARANTEE–WARRANTY. FURNISH OWNER WITH THREE WRITTEN COPIES OF GUARANTEE–WARRANTY.

1.04 POLYVINYL CHLORIDE (PVC)

A. USE PVC FOR:
1. UNDERGROUND SERVICE ENTRANCE CONDUITS FOR TELEPHONE AND POWER.

1.05 RIGID STEEL CONDUIT (RSC)
1. INSTALL UNDERGROUND FOR POWER SERVICE ENTRANCE ELBOWS PENETRATING FLOOR SLAB.
2. EXPOSED TO PHYSICAL DAMAGE.

1.06 FLEXIBLE METAL CONDUIT

A. PROVIDE FLEXIBLE METAL CONDUIT FOR TERMINATION AT EQUIPMENT SUBJECT TO MOTION AND VIBRATION.
B. LENGTH SHALL NOT EXCEED 6 FEET.
C. MAXIMUM LENGTH CONCEALED IN WALLS SHALL BE 3 FEET.
D. WHERE EXPOSED TO CONTINUOUS OR INTERMITTENT MOISTURE, CONDUIT SHALL BE U.L. TYPE EF LIQUID TIGHT.

PART 2 – EXECUTION

2.01 INSTALLATION

A. MINIMUM SIZE OF CONDUITS SHALL BE 3/4 INCH UNLESS OTHERWISE NOTED.

B. RUN CONCEALED CONDUITS IN DIRECT LINE WITH LONG SWEEP BENDS OR OFFSETS. RUN EXPOSED CONDUITS PARALLEL TO AND AT RIGHT ANGLES TO BUILDING LINES. GROUP MULTIPLE CONDUIT RUNS IN BANKS.

C. CAP ENDS OF CONDUITS TO PREVENT ENTRANCE OF WATER AND OTHER FOREIGN MATERIAL DURING CONSTRUCTION.

D. PROVIDE NO.12 AWG COPPER PULL WIRES OR NYLON CORD IN ALL EMPTY CONDUITS. STEEL WIRE NOT ACCEPTABLE AS PULL WIRE.

E. WHERE IMC CONDUIT ENTERS A CABINET, JUNCTION BOX, OR PULL BOX CONDUCTORS SHALL BE PROTECTED BY AN INSULATED BUSHING. LOCKNUTS SHALL BE INSTALLED ON CONDUIT OUTSIDE AND INSIDE ENCLOSURE.

F. IN AREAS WHERE ENCLOSED AND GASKETED FIXTURES AND WEATHERPROOF DEVICES ARE SPECIFIED, WHERE RIGID CONDUIT ENTERS A SHEET METAL ENCLOSURE, JUNCTION BOX AND OUTLET BOX, AND NOT TERMINATED IN A THREADED HUB, A STEEL, OR MALLEABLE IRON NYLON INSULATED HUB, COMPLETE WITH RECESSED SEALING "O" RING OR SEALING LOCKNUT SHALL BE USED.

G. PROVIDE SEAL–OFF FITTING IN ALL CONDUITS ENTERING A COLD TEMPERATURE AREA SUCH AS FREEZERS AND DRY REFRIGERATORS.

H. IN CONCRETE SLABS, BLOCK UP CONDUIT FROM FORMS AND SECURELY FASTEN IN PLACE. ALL CONDUITS IN SLABS SHALL HAVE A MINIMUM OF 4" INCHES CONCRETE COVERAGE ABOVE.

J. CONDUIT SHALL BE SIZED TO COMPLY WITH "NEC" FOR NUMBER AND SIZE OF CONDUCTORS INSTALLED. EMT CONNECTORS AND COUPLINGS SHALL BE COMPRESSION TYPE. CLAMP CONDUIT TO BOXES WITH BUSHINGS INSIDE AND LOCKNUT OUTSIDE.

2.02 EMT

A. DO NOT USE ELECTRIC METALLIC TUBING IN CINDER CONCRETE OR CINDER FILL OR WHERE CONDUIT SYSTEM IS IN CONTACT WITH DISSIMILAR METALS OR IN WET LOCATIONS.

2.03 PVC

A. USE THREADED FITTINGS FOR ALL CONNECTORS AND ADAPTERS.

B. PROVIDE 1/4–INCH NYLON PULL ROPE IN ALL PRIMARY POWER AND INCOMING TELEPHONE SERVICE ENTRANCE CONDUITS.

C. NO PVC SHALL EMERGE FROM THE GROUND OR THE CONCRETE SLAB OR ENCASEMENT. PVC SHALL CONVERT TO GALVANIZED RIGID METAL PRIOR TO ITS EMERGENCE.

2.04 FLEXIBLE METAL CONDUIT

A. WHERE FITTINGS FOR LIQUID TIGHT FLEXIBLE CONDUIT ARE BROUGHT INTO AN ENCLOSURE WITH A KNOCK–OUT, A GASKET ASSEMBLY, CONSISTING OF ONE PIECE "O" RING, WITH BUNA–N SEALING MATERIAL, SERIES 3400, SHALL BE INSTALLED ON OUTSIDE OF BOX. FITTINGS SHALL BE MADE OF EITHER STEEL OR MALLEABLE IRON ONLY, AND SHALL HAVE INSULATED THROATS OR INSULATED BUSHINGS.

B. IN DRY LOCATIONS, WHERE FINAL CONNECTIONS TO MOTORS AND OTHER EQUIPMENT MAY BE MADE WITH FLEXIBLE METAL CONDUIT, FITTINGS SHALL BE OF STEEL OR MALLEABLE IRON ONLY WITH INSULATED THROATS OR INSULATED BUSHINGS, AND SHALL BE OF WEDGE AND SCREW TYPE HAVING AN ANGULAR WEDGE FITTING BETWEEN CONVOLUTIONS OF CONDUIT.

RACEWAYS AND CONDUIT SYSTEMS

PART 1 – PRODUCTS

1.01 ACCEPTABLE MANUFACTURERS

A. RIGID IMC, AND EMT CONDUIT SHALL BE HOT–DIPPED, GALVANIZED, OR ELECTROGALVANIZED STEEL BY ALLIED, REPUBLIC, WHEATLAND.

B. PVC CONDUIT SHALL BE CARLON, SCHEDULE 40, 90 DEGREES C. RATED, UNLESS OTHERWISE NOTED.

C. ASSOCIATED COUPLINGS, CONNECTORS AND FITTINGS SHALL BE STEEL AS MANUFACTURED BY RACO OR EQUIVALENT. CATALOG NUMBERS USED BELOW ARE THOSE OF RACO.

D. ERICKSON COUPLINGS, SERIES 1502, SHALL BE USED WHERE NEITHER LENGTH OF CONDUIT CAN BE ROTATED.

E. INSULATED BUSHINGS SHALL BE SERIES 1402.

F. EMT BOX CONNECTORS SHALL BE COMPRESSION FITTINGS.

G. CONDUIT, CONNECTORS, COUPLINGS AND FITTINGS SHALL BE UL LISTED AND LABELED.

1.02 ELECTRICAL METALLIC TUBING (EMT)

A. USE ELECTRIC METALLIC TUBING (EMT) WHERE DRAWINGS CALL FOR CONDUIT TO BE:
1. CONCEALED IN WALLS.
2. INSTALLED ABOVE SUSPENDED CEILINGS.
3. INSTALLED EXPOSED, ABOVE 6 FEET.

1.03 INTERMEDIATE METAL CONDUIT (IMC)

A. USE INTERMEDIATE METAL CONDUIT (IMC) WHERE DRAWINGS CALL FOR CONDUIT TO BE:
1. INSTALLED FOR PANELBOARD FEEDERS.
2. INSTALLED IN CONCRETE SLABS AT GROUND FLOOR.
3. INSTALLED EXPOSED BELOW 6 FEET.
4. INSTALLED IN WET LOCATIONS (INTERIOR AND EXTERIOR).

CONDUCTORS

PART 1 – PRODUCTS

1.01 CONDUCTORS

A. PROVIDE 98% CONDUCTIVITY COPPER CONDUCTORS WITH 600–VOLT INSULATION. FOR CONDUCTORS NO. 12 AWG AND NO. 10 AWG, PROVIDE SOLID TYPE. FOR ALL CONDUCTORS NO. 8 AWG AND LARGER, PROVIDE STRANDED TYPE. ALL CONDUCTORS SHALL HAVE THHN/THWN INSULATION UNLESS NOTED OTHERWISE.

B. CONDUCTORS SHALL BE MANUFACTURED BY TRIANGLE, AMERICAN, ROME, SOUTHWIRE.

C. PROVIDE NO. 14 AWG TYPE THHN FIXTURE CONDUCTORS, FOR CONDUCTORS ENTERING FIXTURES.

D. NO MORE THAN (3) CIRCUIT CONDUCTORS SHALL BE UTILIZED WITH A SINGLE NUETRAL.

E. THE SIZE OF NUETRAL CONDUCTOR SHALL NOT BE SMALLER THAN THE LARGEST PHASE CONDUCTOR WITHIN THE CONDUIT.

F. AC, MC, BX CABLES ARE NOT PERMITTED.

PART 2 – EXECUTION

2.01 INSTALLATION

A. INSTALL PULL BOXES IN CIRCUITS OR FEEDERS OVER 100' LONG.

B. MAKE ALL SPLICES OR CONNECTIONS ONLY AT OUTLET, PULL OR JUNCTION BOXES.

C. ALL CONDUCTORS AND CONNECTIONS SHALL TEST FREE OF GROUNDS, SHORTS, AND OPENS PRIOR TO ENERGIZING CIRCUIT.

D. PROVIDE NO. 10 WIRE IN LIEU OF NO. 12 WIRE FOR ANY BRANCH CIRCUIT IN EXCESS OF 100' LINEAR LENGTH TO PREVENT EXCESSIVE VOLTAGE DROP.

E. USE IDEAL WING NUTS, SCOTCHLOK TYPE Y, R, G, OR B, OR APPROVED EQUIVALENT CONNECTORS FOR FIXTURE CONNECTIONS AT OUTLET BOXES.

F. MAKE FEEDER TAPS AND JOINTS WITH OZ TYPE T, PT, PM OR PTS, OR APPROVED EQUIVALENT CLAMP CONNECTORS AS MANUFACTURED BY KUPLER, OR WITH APPROVED COMPRESSION SLEEVES. WRAP CONNECTORS WITH NO. 10 ELECTRO–SEAL OR APPROVED EQUIVALENT PLASTIC FILLER AND VINYL TAPE.

G. LEAVE A MINIMUM OF 8" SLACK WIRE IN EVERY OUTLET BOX.

H. PROVIDE COLOR CODED WIRE AND WITH A DIFFERENT COLOR FOR EACH PHASE AND NEUTRAL AND GROUND AS FOLLOWS: PHASE A, B, C: BLACK, RED AND BLUE RESPECTIVELY; NEUTRAL: WHITE; ISOLATED GROUND: GREEN WITH YELLOW STRIPES. APPROVED COLOR TAPE IS ACCEPTABLE FOR FEEDERS USING LARGER THAN #6 CONDUCTORS.

I. ALL CONDUCTORS SHALL BE CONTINUOUS FROM ORIGIN TO PANEL OR EQUIPMENT TERMINATION WITHOUT SPLICES WHERE POSSIBLE. WHERE SPLICES AND TAPS ARE NECESSARY OR ARE REQUIRED, THEY SHALL BE MADE IN SPLICE BOXES WITH SUITABLE CONNECTORS.

J. ALL CONDUCTORS SHALL BE CONCEALED IN CONDUITS. LOW VOLTAGE COMMUNICATION AND CONTROLS WIRING NOT IN CONDUITS SHALL BE PLENUM RATED AND APPROVED BY AUTHORITY HAVING JURISDICTION.

OUTLET AND JUNCTION BOXES

PART 1 – GENERAL

1.01 PROJECT CONDITIONS

A. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS AND DIMENSIONS OF EXISTING EQUIPMENT.

B. VERIFY LOCATIONS OF FLOOR BOXES AND OUTLETS IN WORK AREAS PRIOR TO ROUGH–IN.

PART 2 – PRODUCTS

2.01 OUTLET BOXES

A. SHEET METAL OUTLET BOXES: GALVANIZED STEEL.

B. CAST BOXES: TYPE FS, CAST FERALLOY. PROVIDE GASKETED COVER BY BOX MANUFACTURER.

C. MANUFACTURERS: APPLETON, RACO, OR STEEL CITY.

D. PROVIDE BOXES FOR FIXTURES WITH FIXTURE STUDS IN CENTER.

E. OUTLET BOXES FOR LIGHTING, SWITCHES AND RECEPTACLES IN INTERIOR AREAS WITH EXPOSED CONDUIT SHALL BE PRESSED STEEL AND IN EXTERIOR AREAS WITH EXPOSED CONDUIT SHALL BE CAST METAL WITH THREADED HUBS, "FS" TYPE. USE GALVANIZED STEEL FOR CONCEALED BOXES. BOXES SHALL BE 1–1/2" DEEP MINIMUM.

2.02 PULL AND JUNCTION BOXES

A. SHEET METAL BOXES: GALVANIZED STEEL.

B. SURFACE–MOUNTED CAST METAL BOX: TYPE 4; FLAT–FLANGED, SURFACE–MOUNTED JUNCTION BOX.
1. MATERIAL: GALVANIZED CAST IRON.
2. COVER: FURNISH WITH GROUND FLANGE, NEOPRENE GASKET, AND STAINLESS STEEL COVER SCREWS.

C. IN–GROUND CAST METAL BOX: INSIDE FLANGED, RECESSED COVER BOX FOR FLUSH MOUNTING.
1. MATERIAL: GALVANIZED CAST IRON.
2. COVER: NONSKID COVER WITH NEOPRENE GASKET AND STAINLESS STEEL COVER SCREWS.
3. COVER LEGEND: ELECTRIC.

D. MANUFACTURERS: APPLETON, RACO, OZ–GEDNEY OR STEEL CITY.

PART 3 – EXECUTION

3.01 INSTALLATION

A. INSTALL ELECTRICAL BOXES AS SHOWN ON DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS AND COMPLIANCE WITH REGULATORY REQUIREMENTS.

B. INSTALL PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS.

C. INACCESSIBLE CEILING AREAS: INSTALL OUTLET AND JUNCTION BOXES NO MORE THAN 6 INCHES FROM CEILING ACCESS PANEL OR FROM REMOVABLE RECESSED LIGHT FIXTURE.

D. USE FLUSH MOUNTING OUTLET BOXES IN FINISHED AREAS.

E. USE STAMPED STEEL BRIDGES TO FASTEN FLUSH MOUNTING OUTLET BOX BETWEEN STUDS.

F. INSTALL FLUSH MOUNTED BOX WITHOUT DAMAGING WALL INSULATION OR REDUCING ITS EFFECTIVENESS.

G. USE ADJUSTABLE STEEL CHANNEL FASTENERS FOR HUNG CEILING OUTLET BOX.

H. DO NOT FASTEN BOXES TO CEILING SUPPORT WIRES.

I. SUPPORT BOXES INDEPENDENTLY OF CONDUIT, EXCEPT CAST BOX THAT IS CONNECTED TO TWO RIGID METAL CONDUITS BOTH SUPPORTED WITHIN 12 INCHES OF BOX.

J. USE GANG BOX WHERE MORE THAN ONE DEVICE IS MOUNTED TOGETHER. DO NOT USE SECTIONAL BOX.

K. USE GANG BOX WITH PLASTER RING FOR SINGLE DEVICE OUTLETS.

L. USE CAST OUTLET BOX IN EXTERIOR LOCATIONS AND WET LOCATIONS.

3.02 OUTLET BOXES

A. SELECT BOXES ACCORDING TO INTENDED USE AND TYPE OF OUTLET. CEILING OUTLET BOXES SHALL BE 4" OCTAGON AND 1–1/2" DEEP. USE 2–1/8" DEEP OCTAGON BOXES OR 4" SQUARE BOXES REQUIRED.
ALL CEILING OUTLET BOXES SHALL HAVE A FIXTURE STUD OF NO BOLT SELF–LOCKING TYPE INSTALLED IF REQUIRED TO HANG THE FIXTURE SPECIFIED AT THE OUTLET.

3.03 JUNCTION BOXES

A. JUNCTION BOXES SHALL BE SIZED ACCORDING TO NUMBER OF CONDUCTORS IN BOX OR TYPE OF SERVICE TO BE PROVIDED. MINIMUM JUNCTION BOX SIZE 4–11/16" SQUARE AND 2–1/8" DEEP. PROVIDE SCREW COVERS FOR JUNCTION BOXES.

B. USE CODE GAUGE STEEL WITH SCREW COVERS FOR PULL BOXES WITH PRIME COAT AND PROVIDE WITH SCREW COVER. SIZE PULL BOXES ACCORDING TO THE NEC.

C. PROVIDE PULL BOX EVERY 100' OF CONDUIT RUN OR WHERE EXCESSIVE NUMBER OF BENDS NECESSITATES A BOX FOR EASE OF WIRE INSTALLATION.

WIRING DEVICES AND PLATES

PART 1 – PRODUCTS

1.01 WALL SWITCHES

A. COLOR OR WIRING DEVICES AND COVERPLATES SHALL BE SELECTED BY ARCHITECT.

B. RATINGS: 20 AMPS, 120/277 VOLTS A.C. OR AS IDENTIFIED ON DRAWINGS.

C. DEVICES: (LEVITON CATALOG NUMBERS ARE LISTED UNLESS NOTED OTHERWISE):

1. SINGLE POLE TOGGLE SWITCHES:
A. 20 AMP IVORY DEVICE – #1221–2I
B. 20 AMP PILOT LIGHTS ILLUMINATED WITH LOAD ON – #1221–PL

2. DOUBLE POLE TOGGLE SWITCHES: 20 AMP IVORY DEVICE– #1222–2I

1.02 RECEPTACLES

A. COLOR OR WIRING DEVICES AND COVERPLATES SHALL BE SELECTED BY ARCHITECT.

B. DEVICES: (LEVITION CATALOG NUMBERS ARE LISTED UNLESS OTHERWISE NOTED):

1. SPECIFICATION GRADE DEVICES

A. 20 AMP, 125 VOLTS A.C., RECEPTACLES
1. SINGLE DEVICE: #5361–I
2. DUPLEX DEVICE: 5362A–I OR GY
3. ISOLATED GROUND DUPLEX DEVICE: IG5362IG–ORANGE
4. ISOLATED GROUND SINGLE DEVICE: IG5361IG–ORANGE

1.03 SPECIAL DEVICES :

A. MANUAL MOTOR STARTER SWITCH: SQ. D CLASS 2510, TYPE F, FOR USE ON MOTORS UP TO 3/4 HORSEPOWER. PROVIDE NEMA 1 ENCLOSURE IN DRY LOCATIONS; PROVIDE NEMA 3R ENCLOSURE IN WET OR EXTERIOR LOCATIONS.

1.04 WALL PLATES

A. PROVIDE SPECIFICATION/COMMERICAL GRADE PLASTIC LEVITON SERIES FOR SWITCHES, COMMUNICATION AND POWER OUTLETS.

B. PROVIDE BLANK PLATES ON ALL OUTLET BOXES FOR FUTURE OUTLETS, OR OUTLETS WITHOUT DEVICES. PLATE STYLE SHALL MATCH DEVICE PLATES.

C. IMPACT RESISTANT THERMAL PLASTIC LEVITON 5900 SERIES FOR WEATHERPROOF DUPLEX GFI RECEPTACLES LOCATED OUTSIDE OR IN WET LOCATIONS.

D. WHERE DEVICES ARE INSTALLED IN EXPOSED BOXES OR CONDUIT FITTINGS, PROVIDE PROPERLY DESIGNED PLATES AND COVERS EQUAL TO LEVITON RS–SERIES EXPOSED WORK COVERS.

E. INSTALL GALVANIZED STEEL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE–MOUNTED BOXES.

PART 2 – EXECUTION

2.01 INSTALLATION

A. MOUNTING

1. MOUNT SWITCHES AND RECEPTACLES AT HEIGHT ABOVE FINISHED FLOOR AS INDICATED ON PLANS, AND LEGEND.
2. MOUNT SWITCHES ON STRIKE SIDE OF DOOR MAXIMUM 8" FROM DOOR FRAME. OUTLET BOX FOR SWITCH SHALL BE LOCATED CLEAR OF DOOR FRAME. COORDINATE WITH ARCHITECTURAL PLANS PRIOR TO ROUGH–IN.
3. INSTALL SWITCHES WITH OFF POSITION DOWN.
4. FOR GFCI TYPE RECEPTACLES, DO NOT USE THE FEED THRU FEATURE, UNLESS REQUIRED BY THE PLANS.
5. USE JUMBO SIZED PLATES FOR OUTLETS INSTALLED IN MASONRY WALLS.
6. EACH RECEPTACLE SHALL BE PROVIDED WITH A #12 GREEN GROUNDING JUMPER BETWEEN THE GROUND TERMINAL OF THE RECEPTACLE AND THE OUTLET BOX.
7. THE GROUNDING CONDUCTOR TO EACH RECEPTACLE SHALL BE INSTALLED SUCH THAT THE REMOVAL OF THE DEVICE WILL NOT INTERFERE WITH THE CONTINUITY OF THE GROUND.

B. TESTING

1. TEST EACH SWITCH AND VERIFY PROPER OPERATION WITH ENERGIZED CIRCUIT.
2. TEST EACH RECEPTACLE FOR PROPER POLARITY ON ENERGIZED CIRCUIT.
3. TEST EACH GFCI RECEPTACLE WITH GFI RECEPTACLE TESTER AND VERIFY CIRCUIT IS OPENED BY GFI DEVICE AT AMPERE RANGES ESTABLISHED BY MANUFACTURER.

CONTRACTOR VERIFICATION RESPONSIBILITIES

CONTRACTOR SHALL REPORT ANY DISCREPANCIES, OMISSIONS OR INCONSISTENCIES ON THE DRAWINGS TO THE ARCHITECT FOR VERIFICATION BEFORE STARTING CONSTRUCTION. OWNER AND ARCHITECT ARE NOT RESPONSIBLE FOR ANY ERRORS IN CONSTRUCTION WHERE SUCH DISCREPANCIES, OMISSIONS OR INCONSISTENCIES HAVE NOT BEEN PROPERLY REPORTED IN A TIMELY MANNER.

1 ELECTRICAL SPECIFICATIONS
NO SCALE

STATE OF TEXAS
ANDREW J. MOK
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REGISTERED
PROFESSIONAL ENGINEER
05-24-10

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