

1 PRELIMINARY PHOTOMETRIC PLAN
NOT TO SCALE

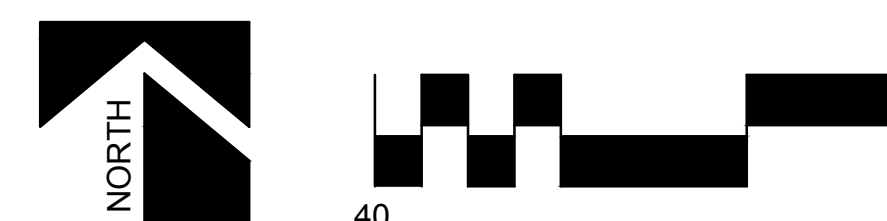
Label	Symbol	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
A3-2	○	4	Lithonia Lighting	RAD1 LED P3 30K ASY HS	RADEAN arm mount with P3 3000K Asymmetric distribution with house-side shield	1	6273	1	107.2368
A3-1	○	12	Lithonia Lighting	RAD1 LED P3 30K ASY HS	RADEAN arm mount with P3 3000K Asymmetric distribution with house-side shield	1	6273	1	53.6184
A3-4	○	6	Lithonia Lighting	RAD1 LED P3 30K ASY HS	RADEAN arm mount with P3 3000K Asymmetric distribution with house-side shield	1	6273	1	214.4736
B1	□	35	Lithonia Lighting	WDGE2 LED P3 30K 80CRI T4M	WDGE2 LED WITH P3 - PERFORMANCE PACKAGE, 3000K, 80CRI, TYPE 4 MEDIUM OPTIC	1	2997	1	32.1375

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
DRIVE AREA #1	+	1.5 fc	2.6 fc	0.8 fc	3.3:1	1.9:1
DRIVE AREA #2	+	1.2 fc	3.1 fc	0.2 fc	15.5:1	6.0:1
PARKING AREA #1	+	1.8 fc	3.2 fc	0.2 fc	16.0:1	9.0:1
PROPERTY LINE	+	0.1 fc	0.4 fc	0.0 fc	N/A	N/A
BUILDING PARKING	+	1.9 fc	3.5 fc	0.4 fc	8.8:1	4.8:1
SIDE PARKING	+	1.2 fc	2.6 fc	0.5 fc	5.2:1	2.4:1

PRELIMINARY PHOTOMETRIC SITE PLAN
WEST ROSEVILLE MARKETPLACE
ROSEVILLE, CA

SHEET E1.1

JOB #: 22002
DATE: 03/14/2022



MEP Engineer of Record
Randall A. Nelson, P.E.
14817 West 95th Street • Lenexa, Kansas 66215
P 913.322.5150 • F 913.322.5155
Proj# 222.0070

NADEL STUDIO ONE, INC.
1990 S. BUNDY DR., SUITE 400
LOS ANGELES, CA 90025
T:310.826.2100 F: 310.826.0182
WWW.NADELARC.COM



CITY OF ROSEVILLE APPROVAL

1600 - ELECTRICAL

GENERAL
DESCRIPTION
DIVISION 16 OF THE SPECIFICATIONS COVERS ALL ELECTRICAL WORK FOR THE PROJECT. WORK SHALL INCLUDE LABOR, MATERIAL, AND ACCESSORIES NECESSARY TO COMPLETE THE WORK AS SPECIFIED AND SHOWN ON THE DRAWINGS, INCLUDING CONNECTION AND CHECKOUTS OF EQUIPMENT FURNISHED BY OTHER TRADES. THE OWNER AND OTHER TRADES (AS CONTRACTORS), AND TO ALL EQUIPMENT ITEMS AS INDICATED ON DRAWINGS OR AS REQUIRED.

THE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS INCLUDING THE GENERAL CONDITIONS, INCLUDING ALL SUPPLEMENTS ISSUED THERETO, INSTRUCTIONS TO BIDDERS, AND OTHERS PERTINENT DOCUMENTS ISSUED BY THE ARCHITECT ARE A PART OF THESE SPECIFICATIONS AND ELECTRICAL DRAWINGS. THIS TRADE SHALL CONSULT THEM FOR INSTRUCTIONS WHICH APPLY. DRAWINGS INDICATE FLOOR ELEVATIONS AND PANELBOARD LAYOUTS AND WORK INCLUDES ELECTRICAL SHALL FOLLOW DRAWINGS IN LAYOUT OF THE ELECTRICAL WORK AND CONSULT THE DRAWINGS AND LAYOUTS OF OTHER TRADES TO VERIFY LOCATION AND SPACES IN WHICH WORK WILL BE INSTALLED.

CODES, PERMITS, INSPECTION AND COMMISSIONING
INSTALLATION SHALL COMPLY WITH ALL LAWS APPLYING TO ELECTRICAL WORK IN EFFECT, INCLUDING THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (N.E.C.), THE NATIONAL ELECTRICAL SAFETY CODE, ALL LOCAL GOVERNING CODES AND ORDINANCES, WITH THE REGULATIONS OF THE SERVING ELECTRICAL UTILITY COMPANY. PROVIDE ALL REQUIRED PERMITS AND INCLUDE THE COST OF SAME IN THE COST OF THE PROJECT. OBTAIN AND PAY FOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER ALL REQUIRED INSPECTIONS AND REVIEWS. PROVIDE FOR AND PAY ALL EXPENSES WITHOUT ADDITIONAL EXPENSE TO THE OWNER ASSOCIATED WITH LIGHTING AND LIGHTING CONTROLS. COMMISSIONING, ALL COMMISSIONING DOCUMENTATION SHALL BE CERTIFIED ACCORDING TO THE DESIGN AND DESIGN PROFESSIONAL.

QUALITY ASSURANCE
THE FOLLOWING INDUSTRY STANDARDS AS APPLICABLE TO ELECTRICAL WORK SHALL APPLY TO THE WORK OF THIS DIVISION EXCEPT THAT, WHERE THE REQUIREMENTS OF THESE SPECIFICATIONS ARE MORE THAN THE INDUSTRY STANDARD, THESE SPECIFICATIONS SHALL TAKE PRECEDENCE:

UL - UNDERWRITERS LABORATORIES
NECA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NECA - NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE
ASTM - AMERICAN SOCIETY OF TESTING MATERIALS

ALL MATERIALS SHALL BE NEW, UL LISTED AND LABELED WHERE LABELED MATERIALS ARE AVAILABLE. UNDAMAGED AND FREE OF DEFECTS AT TIME OF INSTALLATION. MATERIALS OR EQUIPMENT DAMAGED IN SHIPMENT OR OTHERWISE DAMAGED PRIOR TO OR DURING INSTALLATION SHALL NOT BE REPAIRED AT THE JOB SITE, BUT SHALL BE PERMANENTLY REJECTED. MATERIALS WHEN THE MANUFACTURER'S NAME APPEARS IN THESE SPECIFICATIONS AND DRAWINGS SHALL BE IDENTIFIED AS SUCH. MATERIALS SHALL BE IDENTIFIED TO MEET THE FULL REQUIREMENTS OF THE SPECIFICATIONS AND DRAWINGS.

SUBMITTALS
SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EQUIPMENT TO THE ARCHITECT FOR REVIEW ELECTRONICALLY OR HARD COPIES. INCLUDE SUFFICIENT INFORMATION TO INDICATE COMPLETE COMPLIANCE WITH ALL REQUIREMENTS. SUBMITTALS SHALL BE SUBMITTED TO THE ARCHITECT WITHIN THE PROJECT SCHEDULE. ALLOW ONE WEEK FOR ENGINEER REVIEW TIME. THE ENGINEER'S SUBMITTAL REVIEWS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAIL, SIZE OF MEMBERS, OR QUANTITIES; OR FOR OMITTING COMPONENTS OR FITTINGS; OR FOR NOT COORDINATING ITEMS WITH ACTUAL BUILDING CONDITIONS AND/OR OTHER TRADES.

OWNER RECORDS
ACCURATE RECORD THE PROGRESS OF THE JOB, THE FOLLOWING DATA IN DUPLICATE, AND PREPARE IN A NEAT BROCHURE OR PACKET FOLDER TO BE TURNED OVER TO THE OWNER AT SUBSTANTIAL COMPLETION. RECORD DRAWINGS PER ABOVE.

ALL WARRANTIES, GUARANTEES, AND MANUFACTURER'S DIRECTION ON EQUIPMENT & MATERIAL FURNISHED.

COMPLETE PLAIN ENGLISH STEP-BY-STEP OPERATING INSTRUCTIONS FOR THE ELECTRICAL SYSTEM. ONE COPY OF THESE INSTRUCTIONS SHALL BE FRAMED AND POSTED AS DESCRIBED ON THE PREMISES.

CERTIFIED LIGHTING AND LIGHTING CONTROLS COMMISSIONING AS REQUIRED BY CURRENTLY ADOPTED ENERGY CODE REQUIREMENTS.

MANUFACTURER'S NAMES AND CATALOG NUMBERS
WHERE THE MANUFACTURER'S NAME AND MODEL OR CATALOG NUMBERS, USE OF NAMES AND CATALOG NUMBERS DOES NOT INDICATE THAT THE EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM, VARIANCES MAY BE DUE TO REQUIREMENT OF DESIRED FINISH, MATERIAL OR OTHER MODIFICATION.

IN THE CASE OF PANELBOARDS, SAFETY SWITCHES AND OTHER EQUIPMENT REQUIRING WIRE AND CABLE TERMINATIONS, ACCEPTABLE THAT LUG SIZES AND WIRING OUTLETS OR WIRING SPACE ALLOWED IS PROPER FOR THE WIRES AND CABLES CONNECTED THERETO.

WHEN APPROVAL IS GIVEN FOR THE USE OF EQUIPMENT DIFFERING FROM THAT SHOWN ON DRAWINGS IN REGARD TO FOUNDATIONS, SPACE FOR PIPING, OUTLETWORK, WIRING, INSULATION, ETC. CHANGES REQUIRED TO ACCOMPLISH SUCH DIFFERENCES SHALL BE ACCOMPLISHED AT NO COST TO THE OWNER.

PROTECTION OF EQUIPMENT
ELECTRICAL EQUIPMENT SHALL BE PROTECTED FROM THE WEATHER, IN PARTICULAR DRIPPING OR SPILLING WATER, AT ALL TIMES DURING SHIPMENT, STORAGE AND CONSTRUCTION. MANUFACTURER'S RECOMMENDATIONS WITH REGARD TO STORAGE, PROTECTION, AND HANDLING SHALL BE FOLLOWED.

SHOULD ANY APPARATUS BE SUBJECT TO POSSIBLE INJURY DUE TO WATER IT SHALL BE THOROUGHLY DRIED AND PUT THROUGH A DIELECTRIC TEST AT THE EXPENSE OF THE CONTRACTOR, TO ASCERTAIN THE SUITABILITY OF THE APPARATUS OR IT SHALL BE REPLACED WITHOUT ADDITIONAL COST TO THE OWNER.

DAMAGED OR DEFECTIVE EQUIPMENT: INSPECT ALL ELECTRICAL EQUIPMENT AND MATERIALS PRIOR TO INSTALLATION. INSTALLATION OR PLACEMENT INTO SERVICE OF DAMAGED MATERIALS WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER IS PROHIBITED. REPLACE OR REPAIR TO NEW CONDITION, AS CONCENTRIC, COMPRESSED STRANDED FOR NO. 14 AWG AND LARGER, ALL BRANCH CIRCUIT CONDUCTORS NO. 8 AWG AND LARGER, STRANDED, COMPRESSED STRANDED FOR NO. 14 AWG AND LARGER, USED FOR POWER AND LIGHTING CIRCUITS; SOLID COPPER, TYPE THHN-2 INSULATION (WET OR DAMP LOCATIONS, OR IN CONTACT WITH LOW GRADE OR SLAB); TYPE THHN INSULATION (DRY LOCATIONS ONLY ABOVE GRADE); OR DUAL RATED, TYPE THHN/THW-2. ALL BRANCH CIRCUIT WIRING SHALL NOT BE SMALLER THAN NO. 12 AWG, IF NO CONDUCTOR SIZE IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT. PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE / CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICE IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE THREE NO. 12 AWG CONDUCTORS IN 3/4" RACEWAY, AND A 2/0 SINGLE POLE CIRCUIT BREAKER.

INSULATION (WET OR DAMP LOCATIONS, OR IN CONTACT WITH LOW GRADE OR SLAB); TYPE THHN INSULATION (DRY LOCATIONS ONLY ABOVE GRADE); OR DUAL RATED, TYPE THHN/THW-2. ALL BRANCH CIRCUIT WIRING SHALL NOT BE SMALLER THAN NO. 12 AWG, IF NO CONDUCTOR SIZE IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT. PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE / CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICE IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE THREE NO. 12 AWG CONDUCTORS IN 3/4" RACEWAY, AND A 2/0 SINGLE POLE CIRCUIT BREAKER.

COORDINATION
INSTALLATION STUDIES ARE REQUIRED TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF OTHER TRADES. PREPARE COORDINATION DRAWINGS AT ACCURATE SCALE WHERE SEVERAL ELEMENTS OF ELECTRICAL OR COMBINED MECHANICAL/STRUCTURAL/ELECTRICAL WORK MUST BE SEQUENCED AND POSITIONED WITH PRECISION IN ORDER TO FIT INTO THE AVAILABLE SPACE.

SHOW THE ACTUAL PHYSICAL DIMENSIONS REQUIRED FOR PROPER INTEGRATION OF EQUIPMENT WITH BUILDING SYSTEMS.

PROVIDE APPROVED SHOP DRAWINGS TO ALL REQUIRED DISCIPLINES AND VERIFY FINAL ELECTRICAL CHARACTERISTICS BEFORE ROUGHING POWER FEEDS TO EACH PANELBOARD. WHEN ELECTRICAL DATA ON APPROVED SHOP DRAWINGS DIFFERS FROM CONTEMPERATED DESIGN, MAKE NECESSARY ADJUSTMENTS TO THE WIRING, DISCONNECTS, AND BRANCH CIRCUIT PROTECTION FOR THE EQUIPMENT ACTUALLY INSTALLED AT NO ADDITIONAL COST TO THE OWNER.

DAMAGE FROM INTERFERENCE CAUSED BY INADEQUATE COORDINATION SHALL BE RECTIFIED AT NO ADDITIONAL COST TO THE OWNER.

WORKSMANSHIP
ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.

ANY MATERIAL, ITEMS OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THESE SPECIFICATIONS OR VISA-VERSA, OR ANY ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE IN ALL RESPECTS AND READY FOR OPERATION SHALL BE PROVIDED WITHOUT ADDITIONAL COST TO THE OWNER.

THIS TRADE SHALL DO OR HAVE DONE BY COMPETENT TRADESMAN ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THIS WORK, AND CUTTING OR NOT CUTTING IN CONSTRUCTIVE PARTS OF THE BUILDING LIQUID TO IMPAIR ITS STRENGTH SHALL BE DONE WITHOUT THE ARCHITECT-ENGINEERS WRITTEN APPROVAL.

EXCAVATION AND BACKFILL

GFCI CIRCUITS, DO NOT USE MULTI-CONDUCTOR CIRCUITS, WITH A SHARED NEUTRAL, FOR ANY GFCI CIRCUIT BREAKER OR RECEPTACLE CIRCUIT. BRANCH CIRCUITS ARE SPECIFIED FOR GFCI CIRCUIT BREAKERS. LIMIT THE ONE-WAY CONDUCTOR LENGTH TO 100 FEET BETWEEN THE PANELBOARD AND THE MOST REMOTE RECEPTACLE OR LOAD ON THE GFCI CIRCUIT.

BOXES
OUTLET BOXES GALVANIZED PRESSED STEEL WITH GALVANIZED STEEL EXTENSION RINGS OR PLASTER RINGS TO THE RINGS TO PROVIDE EXPOSED WATERPROOF FLUSH WITH WALL OR CEILING FINISH. PROVIDE ALL CEILING OUTLET BOXES WITH "NO-SLOTT" OR THROUGH-AND LOCKNOTED TYPE FUTURE STUDS. JUNCTION AND PULL BOXES: FABRICATE IN ACCORDANCE WITH NEMA AND N.E.C. STANDARDS AND REQUIREMENTS INSIDE/AS MATERIAL, GAUGES, DIMENSIONS, AND FABRICATION METHODS. BOXES SHALL BEAR THE LABEL, WHERE BOXES ARE NOT SIZED ON THE DRAWINGS, THEY SHALL BE SIZED IN ACCORDANCE WITH UL CLASS RKS-1. CURRENT LIMITING, TIME DELAY, DUAL ELEMENT, 200,000 AMPERE RMS SYMMETRICAL INTERRUPTING CAPACITY ON NON-MOTOR CIRCUITS AND UL CLASS RKS-1, TIME DELAY, DUAL ELEMENT, 20,000 AMPERE RMS SYMMETRICAL INTERRUPTING CAPACITY ON MOTOR CIRCUITS.

WIRING DEVICES
SWITCHES: HEAVY DUTY AC, RATED 20 AMPERES, 120/277 VOLTS, SINGLE-POLE, DOUBLE-POLE, THREE-POLE, OR FOUR-WAY AS NOTED ON DRAWINGS OR AS DESCRIBED BELOW UNDER OTHER TRADES.
CAST IRON PIPE SLEEVES: CAST OR FABRICATED "WALL PIPE" EQUIVALENT TO OUTLET-IRON PRESSURE PIPE, WITH PLAN ENDS AND INTEGRAL SATERSTOP, GALVANIZED STEEL, PLAN ENDS AND DRIP RINGS.

CAST IRON PIPE SLEEVES: CAST OR FABRICATED "WALL PIPE" EQUIVALENT TO OUTLET-IRON PRESSURE PIPE, WITH PLAN ENDS AND INTEGRAL SATERSTOP, GALVANIZED STEEL, PLAN ENDS AND DRIP RINGS.

FIRESTOPPING: FIRE RESISTANT THROUGH PENETRATION SEALERS - TWO PART, FORMED-IN-PLACE, SILICONE BEALANT FORMULATED FOR USE IN THROUGH-PENETRATION FIRE-STOPPING ANCHORS, RACEWAYS, AND CABLE TRAYS PENETRATING THROUGH FIRE-RATED WALLS AND FLOORS. SEALANTS AND ACCESSORIES SHALL HAVE FIRE-RESISTANCE RATINGS INDICATED, AS FURNISHED BY THE MANUFACTURER. REFER TO DRAWINGS OR NFPA 701 ASTM E 814, BY UNDERWRITERS LABORATORIES, INC. OR OTHER NRTL ACCEPTABLE TO AUL.

ACCEPTABLE MANUFACTURERS - HILL, INC., JMC CORP, RECTORSIAE, SPECIFY TECHNOLOGY INC., UNITED STATES SUPPLY COMPANY.

ELECTRICAL SERVICE
PROVIDE SECONDARY SERVICE INTO THE BUILDING CONDUIT AND WIRING AS SHOWN ON THE PLANS, INCLUDING, BUT NOT LIMITED TO, UNDERGROUND RACEWAYS AND CABLES AND SECONDARY CONDUCTIONS TO UTILITY TRANSFORMERS AS REQUIRED BY SERVING ELECTRICAL UTILITY COMPANY. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY PRIOR TO BID.

PROVIDE ALL REQUIRED GROUNDING FOR A COMPLETE SERVICE ENTRANCE THROUGH THE SERVICE ENTRANCE. PERMANENTLY GROUND AND BOND THE ELECTRICAL INSTALLATION IN A THOROUGH AND EFFICIENT MANNER, AND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, N.E.C. AND OTHER TRADES. THEY EXCEED CODE REQUIREMENTS, USE BARE OR INSULATED CONDUCTORS, AS SPECIFIED HEREIN, AND OTHER MATERIALS INDICATED ON THE DRAWINGS.

PROVIDE ALL NECESSARY ENCLOSURES REQUIRED BY THE OWNER FOR THE UTILITY COMPANY METERING, REFER TO DRAWINGS OR MINIMUM REQUIREMENTS. COORDINATE WITH UTILITY COMPANY PRIOR TO BID FOR ALL REQUIREMENTS.

RECEPTACLES
RECEPTACLES: SPECIAL PURPOSE: SPECIAL PURPOSE FULLY ISOLATED FROM SCHEDULED DRAWINGS.
PLATES: PROVIDE PLATES FOR ALL OUTLET BOXES. PLATES SHALL BE OF SUITABLE CONFIGURATION FOR THE NUMBER AND TYPE OF DEVICES SERVED. SHALL BE ONE PIECE, SHALL BE AT LEAST 1/8" THICK, AND SHALL BE SMOOTH FINISH NYLON TYPE OF SAME MANUFACTURER AS THE WIRING DEVICES. VERIFY DEVICE MATERIALS AND COLORS WITH ARCHITECT PRIOR TO INSTALLATION.

STANDARD INTERIOR: WOXY FINISHED ON LIGHT COLORED WALLS - COORDINATE ALL COLORS WITH ARCHITECT
INTERIOR DAMP LOCATIONS: STAINLESS STEEL

EXTERIOR LOCATIONS: FOR UNATTENDED VEH LOCATIONS, PROVIDE IN-USE NEMA 3R UL LABELED PLATES INCLUDING PROTECTIVE IMPACT UL TRAVELER STABILIZED POLYCARBONATE MATERIAL FOR EASY VERIFICATION THAT CORUS ARE PLUGGED IN AND THAT THE EQUIPMENT IS OPERATING. CONDUIT PLATES SHALL BE BY THE SAME MANUFACTURER AS THE WIRING DEVICES, COMPLYING WITH NFPA 70, 408 (A) OR (B) REQUIREMENTS FOR ATTENDED OR UNATTENDED USE, AS APPLICABLE.

ACCEPTABLE MANUFACTURERS: HUBBELL, PASC & SEYMOUR, LEVITON AND COOPER
FURNISH AND INSTALL CABINETS AND ENCLOSURES AS SHOWN ON THE PLANS AND AS HEREIN SPECIFIED. UNIT SHALL BE PROVIDED WITH DEAD FRONT SUB PANEL, RECESSED AS REQUIRED, TO HOUSE CONTROLS. DOOR SHALL BE PROVIDED WITH CONCEALED HINGES AND FLUSH KEY OPERATED LOCK. DOOR AND TRIM SHALL BE PRIME PAINTED FOR FIELD PAINTING TO MATCH WALL FINISHES. PROVIDE KEYS FOR LOCKS, HINGES AND IDENTIFICATION ENGRAVING AS REQUIRED TO MEET FIELD CONDITIONS. EXACT BACKBOX SIZE TO BE COORDINATED WITH EQUIPMENT SUPPLIER.

CIRCUIT DISCONNECTS
SAFETY SWITCHES: SAFETY SWITCHES SHALL CONSIST OF A BRONZ FRONT COVER AND CIRCUIT PROTECTOR DEVICE, ALL MANUFACTURED AND ASSEMBLED IN ACCORDANCE WITH NEMA STANDARDS.
THE BOX SHALL BE FABRICATED FROM CODE GAUGE GALVANIZED SHEET STEEL IN ACCORDANCE WITH U.L. LISTING AND LABEL. THE CIRCUIT PROTECTOR DEVICE SHALL BE HEAVY DUTY, UL LISTED, AND SHALL BE RATED FOR MOTOR CIRCUITS AND/OR SERVICE ENTRANCE DUTY. IF REQUIRED, RATED SHALL BE FURNISHED FOR SURFACE OR FLUSH MOUNTING, WITH EITHER MECHANICAL PURPOSE OR RAINTIGHT ENCLOSURES, AS REQUIRED. FURTHER, IT SHALL BE FURNISHED COMPLETE WITH PROPER FUSES.

PANELBOARDS
SHALL CONSIST OF BOX, INTERIOR, FRONT, AND CIRCUIT PROTECTIVE DEVICES IN ACCORDANCE WITH ANSI STANDARD CB3.3. FITTINGS 1/2 INCH THROUGH 2 INCH THICK SHALL BE PROVIDED IN ADDITION TO THE STANDARD PANELBOARD WITH NEMA STANDARD 1/4" - THE LATEST UL STANDARD (UL-50) AND SHALL HAVE A TURNED EDGE AROUND THE FRONT FOR FRONTITY AND FOR CLAMPING ON FRONT TRANSFORMERS WITH FLANGE C-10. FABRICATE FROM STEEL, FROM STEEL SHEET AND FINISH WITH BAKED ON GRAY ENAMEL OVER RUST INHIBITOR. EACH FRONT SHALL HAVE A LOCK MOUNTED ON SIDE CONCEALED TO HINGES WITH A CYLINDER LOCK, INDEX CARD CIRCUIT DIRECTORY MOUNTED BEHIND CLAMP FOR ELASTIC AND HELD IN METAL FRAME, AND CONCEALED TRIP CLAMPS FOR MOUNTING TO THE BOX. ALL LOCKS SHALL BE MASTER KEYS AND ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

ALL INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED. THE DESIGN OF THE INTERIOR SHALL PERMIT REARRANGING OF INDIVIDUAL BRANCH BREAKERS WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT MACHINE DRILLING OR STRIKING. BUS BARS FOR PANELS RATED NO. 14 AWG AND LARGER, SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OR TIN FINISH ALUMINUM (97% CONDUCTIVITY) COPPER OR TIN FINISH ALUMINUM (97% CONDUCTIVITY) COPPER OVER CROSS SECTION. BUS BAR CONNECTIONS TO BRANCH CIRCUIT BREAKERS SHALL BE THE PHASE IDENTIFYING TYPE AND ACCEPT BOLT-TYPE BREAKERS ONLY. PANELBOARD BUS STRUCTURE AND MAIN BREAKER OR MAIN LUGS SHALL BE RATED AS SCHEDULED ON DRAWING. SUCH RATINGS SHALL BE ESTABLISHED BASED ON HEAT RISE TESTS IN ACCORDANCE WITH UL STANDARDS. GROUP INCOMING CABLE LUGS AT ONE END FOR SEPARATION FROM LOAD SIDE CABLES. EQUIPMENT NEUTRAL BUSSING WITH A LUG FOR EACH BRANCH BREAKER POSITION. INTERIOR SHALL MOUNT TO BOX WITHOUT TOUTS.

BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK, BOLT-ON THERMAL-MAGNETIC MOLDED CASE CIRCUIT BREAKERS ONE, TWO OR THREE-POLE WITH INTEGRAL CROSSBARS FOR MULTI-POLE UNITS, EQUIPPED WITH AN OVERCURRENT, TRIP-FREE, TOGGLE-TYPE OPERATING ACTION AND POSITIVE HANDED INDICATION OF BREAKER STATUS. CIRCUIT BREAKERS SHALL BE UL LISTED IN ACCORDANCE WITH UL STANDARDS.

EACH PANELBOARD, AS A COMPLETE UNIT, SHALL HAVE A SHORT CIRCUIT RATING EQUAL TO OR GREATER THAN THE INTEGRATED EQUIPMENT RATINGS SHOWN ON THE DRAWINGS. THE RATING SHALL BE ESTABLISHED BY TESTING WITH THE OVERCURRENT DEVICES MOUNTED IN THE PANELBOARD. THE SHORT CIRCUIT TESTS ON THE OVERCURRENT DEVICES ON THE STRUCTURE SHALL BE MADE SIMULTANEOUSLY BY CONNECTING THE FAULT TO EACH OVERCURRENT DEVICE WITH THE PANELBOARD CONNECTED TO ITS RATED SUPPLY VOLTAGE.

REFER TO PANELBOARD SCHEDULES FOR FULLY RATED OR SERIES-RATED REQUIREMENTS. SERIES-RATED SYSTEMS ARE NOT ALLOWED UNLESS SPECIFICALLY INDICATED ON PANELBOARD SCHEDULES. WHERE ALLOWED, SERIES-RATED SYSTEMS SHALL BE PROPERLY LABELED BY NEC REQUIREMENTS.

METHOD OF TESTING SHALL BE PER UL STANDARDS. PANELBOARDS SHALL BE MARKED WITH THEIR MAXIMUM SHORT CIRCUIT CURRENT RATING AT THE SUPPLY VOLTAGE.

APPROVED MANUFACTURERS: SQUARE-D, CO. OR EQUAL BY GE, SIEMENS AND/OR Eaton.

OVERCURRENT PROTECTIVE DEVICES
FUSES OF THE PROPER SIZE, RATING AND ELECTRICAL CHARACTERISTICS SHALL BE USED FOR EACH FUSE-BLUE DEVICE. FUSES OF 800 VOLTS AND BELOW SHALL BE UL CLASS RK-1. CURRENT LIMITING, TIME DELAY, DUAL ELEMENT, 200,000 AMPERE RMS SYMMETRICAL INTERRUPTING CAPACITY ON NON-MOTOR CIRCUITS AND UL CLASS RKS-1, TIME DELAY, DUAL ELEMENT, 20,000 AMPERE RMS SYMMETRICAL INTERRUPTING CAPACITY ON MOTOR CIRCUITS.

APPROVED MANUFACTURERS: BUSSMANN, LITFLEDER OR FERRAZ SHAWMUT (ALL FUSES SHALL BE OF SAME MANUFACTURER TO ENSURE SELECTIVE COORDINATION).

CIRCUIT BREAKERS: CIRCUIT BREAKERS OF THE PROPER SIZE, RATING, AND ELECTRICAL CHARACTERISTICS SHALL BE PROVIDED WHERE CALLED FOR ON DRAWINGS. BREAKERS SHALL BE THERMAL-MAGNETIC MOLDED-CASE WITH QUICK-MAKE, QUICK-BREAK, OVER-CURRENT TOGGLE TYPE MECHANISM AND

TRIP-FREE HANDLE MECHANISM. THE BREAKER SHALL BE ENCLOSED IN A SUITABLE NEMA RATED ENCLOSURE. BREAKERS SHALL BE OF SAME MANUFACTURER AS THOSE IN THE PANELBOARDS.

SWITCHES
ELECTRIC TIME SWITCHES: ELECTRONIC, SOLID STATE PROGRAMMABLE UNITS WITH ALPHANUMERIC DISPLAY, COMPLYING WITH UL917. SPST, 20 AMPERE, 120/277 VOLTS, 60 HZ, CONTACT RATING, 2.0 PROGRAMMABLE ON/OFF SET POINTS ON A 24-HOUR SCHEDULE. ALLOWING DIFFERENT SET POINTS FOR WEEK-DAYS AND WEEK-ENDS. TIME SWITCHES SHALL BE INSTALLED AS SUBSTITUTE FOR ON-OFF FUNCTION OF A PROGRAMMATIC, ASTRONOMIC TIME ON ALL CHANNELS. BATTERY BACKUP SCHEDULES AND TIME CLOCK.

OUTDOOR PHOTOELECTRIC SWITCHES
SHALL BE USED FOR LIGHT CONTROL RATED FOR 1800-VOLT TUNGSTEN OR 1000-VOLT INDUCTIVE TO OPERATE CONTACTED RELAY, CONTACTOR COILS OR MICROPROCESSOR INPUT. COMPLYING WITH UL 773A.

TELEPHONE AND DATA SYSTEMS
FURNISH AND INSTALL A SYSTEM OF PROPERLY SIZED AND PROPERLY LOCATED OUTLETS WITH ASSOCIATED CONNECTING CONDUIT RUNS, EXTENDING TO PULL BOXES AND TELEPHONE BACKBOARD. FURNISH AND INSTALL RACEWAYS FOR INCOMING SERVICE WHERE INDICATED.

OUTLET BOXES: UNLESS OTHERWISE INDICATED, ALL TELEPHONE OUTLETS AND JUNCTION BOXES SHALL BE PROVIDED AS REQUIRED TO ACCOMMODATE INTERNAL TERMINAL STRIPS BY TELEPHONE CO.

OUTLET COVER PLATES: TELEPHONE OUTLET COVER PLATES SHALL MATCH THOSE SPECIFIED FOR ADJACENT WIRING DEVICES, INCLUDING THOSE WITH SPECIAL FINISHES.

RACEWAYS: MATERIALS FOR TELEPHONE RACEWAY SYSTEM WORK SHALL BE IN ACCORDANCE WITH CORRESPONDING RACEWAYS SPECIFIED HEREIN AND IN OTHER SECTIONS.

VERIFY LOCATION OF WALL OUTLETS BEFORE ROUGHING IN TO ENSURE COORDINATION WITH OWNERS. THE EXACT LOCATION SHALL BE VERIFIED THROUGH INDICATIONS SHALL NOT BE SCALED UNLESS DIRECTED. OUTLETS SHALL BE RELOCATED WITHIN 1/4" AND BEFORE SCHEDULING. WHEN DIRECTED BY ARCHITECT, ENGINEER, OR OTHER AUTHORITY, NOTIFY CONTRACTOR.

TELEPHONE SERVICE CONTRACT LAYOUT SHALL HAVE THE JOB SITE APPROVAL OF AN AUTHORIZED REPRESENTATIVE OF THE TELEPHONE CO. COORDINATE WORK SO THAT BOTH TELEPHONE CO. AND POWER CONTRACTORS ARE ADVISED AT THE SAME TIME FOR APPROVAL OR CHANGES IN AMPLE TIME FOR ANY REQUIRED CORRECTIONS BEFORE COMMENCEMENT OF WORK.

FROM EACH TELEPHONE OUTLET, PROVIDE 3/4" EMT CONDUIT CONCEALED IN WALL TO 6" ABOVE ACCESSIBLE CEILING. INCLUDING 2" PROTECTIVE CEILING EXISTING, UNLESS SHOWN OTHERWISE ON DRAWINGS.

TELEPHONE TERMINAL BOARD: PRIOR TO INSTALLATION OF TELEPHONE TERMINAL BOARD, THE EXACT LOCATION SHALL BE VERIFIED THROUGH INDICATIONS. THE TERMINAL BOARD SHALL BE CONSTRUCTED OF 4 X 8 X 3/4" PLATED WOOD WITH 2 (2) COATS OF FLAME RETARDANT PAINT UNLESS NOTED OTHERWISE ON DRAWINGS.

LIGHTING
FIXTURES ARE SPECIFIED IN THE SCHEDULE BY MANUFACTURER'S NAME AND CATALOG NUMBER.

ALL RECESSED LIGHT FIXTURES SHALL BE PROVIDED WITH FACTORY INSTALLED PROTECTIVE COATING.

ALL LAMPS USED ON THIS PROJECT SHALL BE NEW, DELIVERED TO THE JOB SITE IN THE ORIGINAL PACKAGING CASES AND SLEEVES AND SHALL BE OF THE SAME MANUFACTURER.

PROVIDE FLUORESCENT FIXTURES WITH ELECTRONIC BALLASTS SUITABLE FOR OPERATION OF LAMPS SPECIFIED. TOTAL HARMONIC DISTORTION LESS THAN 20%; FREQUENCY OF OPERATION OF 20 HZ OR GREATER WITH NO VISIBLE FLICKER; LINE TRANSIENT WITHSTAND RATING AS SPECIFIED IN ANNEXURE, CATEGORY A.

APPROVED MANUFACTURERS: ADVANCE OR EQUAL, BY MAGNETEC, MOTOROLA OR GEORAM.

HID BALLASTS SHALL BE AUTO TRANSFORMER EQUAL, HIGH POWER FACTOR, POTTED AND ENCASED TO MINIMIZE SOUND. APPROVED MANUFACTURERS: GE, SYLVANIA, OR OSRAM.

LED LIGHT FIXTURES ARE TO BE PROVIDED WITH COMPATIBLE DRIVER AND CONTROLS. LED LIGHTING SHALL BE PROVIDED WITH THE CORRECT NUMBER OF POLES AND CURRENT CHARACTERISTICS. WHERE LOW VOLTAGE OPERATION IS REQUIRED, MULTIPLE CONDUITS USING MULTIPLE WIRING METHODS ARE PERMITTED.

CONTACTORS AND RELAYS
ALL CONTACTORS AND RELAYS SHALL BE UL LISTED AND LABELED, GENERAL PURPOSE, UL LISTED, HELD TO THE SAME STANDARDS. SPECIFICALLY NOTED ON DRAWINGS, UNITS SHALL BE ELECTRICALLY HELD OR MOMENTARY OPERATIONS. TYPE: UNITS SHALL BE FURNISHED WITH LINE OR LOW VOLTAGE CONTROL, AS NOTED ON DRAWINGS. THE NUMBER OF POLES AND CURRENT CHARACTERISTICS, WHERE LOW VOLTAGE OPERATION IS REQUIRED, MULTIPLE CONDUITS USING MULTIPLE WIRING METHODS ARE PERMITTED. APPROVED MANUFACTURERS: ASCO, OR MANUFACTURER OF APPROVED EQUIPMENT, SHALL BE USED.

TRANSFORMERS
GENERAL PURPOSE, UL LISTED LABELED 150 DEGREES C TEMPERATURE RISE ABOVE 40 DEGREES C AMBIENT. INSULATING MATERIALS EXCEEDS NEMA ST-420 STANDARDS. RATED FOR 2000 VA. TYPE 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 76