

EMERGENCY GENERATOR NOTES

1. SPECIFICATION: IT IS THE INTENT OF THIS SPECIFICATION TO SECURE A STANDBY GENERATOR SYSTEM THAT HAS BEEN PROTOTYPE TESTED, FACTORY BUILT, PRODUCTION TESTED, SITE TESTED, OF THE LATEST COMMERCIAL DESIGN, TOGETHER WITH ALL ACCESSORIES NECESSARY FOR A COMPLETE INSTALLATION AS SHOWN ON THE PLANS AND DRAWINGS, AND SPECIFICATIONS HEREIN. THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, ALONG WITH ALL APPLICABLE LOCAL CODES AND REGULATIONS. ALL EQUIPMENT SHALL BE NEW, OF CURRENT PRODUCTION OF A NATIONAL FIRM WHICH MANUFACTURES THE GENERATOR AND CONTROLS, TRANSFER SWITCH, AND ASSEMBLES THE STANDBY GENERATOR SET AS A MATCHED UNIT SO THAT THERE IS ONE-SOURCE RESPONSIBILITY FOR WARRANTY, PARTS, AND SERVICE THROUGH A LOCAL REPRESENTATIVE WITH FACTORY-TRAINED SERVICEMEN.

2. SUBMITTAL: SUBMITTAL SHALL INCLUDE PROTOTYPE TEST CERTIFICATION AND SPECIFICATION SHEETS SHOWING ALL STANDARD AND OPTIONAL ACCESSORIES TO BE SUPPLIED, SCHEMATIC WIRING DIAGRAMS, DIMENSION DRAWINGS, AND INTERCONNECTION DIAGRAMS IDENTIFYING EACH REQUIRED INTERCONNECTION BETWEEN GENERATOR SET, THE TRANSFER SWITCH, AND THE REMOTE ANNUNCIATOR PANEL.

3. TESTING: THERE SHALL BE THREE TESTS: A DESIGN PROTOTYPE TEST, FINAL PRODUCTION TEST, AND SITE TEST. PROTOTYPE TEST PROGRAMS SHALL INCLUDE THE REQUIREMENTS OF NFPA 100 AND THE FOLLOWING: MAXIMUM KVA; MAXIMUM MOTOR STARTING(KVA) AT 15% INSTANTANEOUS VOLTAGE DIP; ALTERNATOR TEMPERATURE RISE BY EMBEDDED THERMOCOUPLE AND RESISTANCE METHOD PER NFPA 100(22.40 AND 16.40); GOVERNOR SPEED REGULATION UNDER 5.5. AND TRANSIENT CONDITIONS; VOLTAGE REGULATION AND GENERATOR TRANSIENT RESPONSE; FUEL CONSUMPTION AT 25, 50, 75, AND FULL LOAD; COMPLETE HARMONIC ANALYSIS; SINGLE PHASE SHORT CIRCUIT TEST; ALTERNATOR COOLING AIR FLOW; TORSIONAL ANALYSIS TESTING TO VERIFY THAT THE GENERATOR SET IS FREE OF HARMFUL TORSIONAL STRESSES; ENDURANCE TESTING; COMPLETE FINAL PRODUCTION TEST WITH VARIOUS LOADS AND EXHAUST SYSTEM IN PLACE. TEST SHALL INCLUDE SINGLE STEP PICKUP; TRANSIENT AND STEADY STATE GOVERNING; SAFETY SHUTDOWN DEVICE TESTING; VOLTAGE REGULATION; RATED POWER; MAXIMUM POWER.

SITE TEST: AN INSTALLATION CHECK, START-UP, AND BUILDING LOAD TEST SHALL BE PERFORMED BY THE MANUFACTURER'S LOCAL REPRESENTATIVE. THE ENGINEER, REGULAR OPERATORS AND THE MAINTENANCE STAFF SHALL BE NOTIFIED OF THE TIME AND DATE OF THE SITE TEST. THE TEST SHALL INCLUDE: FUEL, LUBRICATING OIL, AND ANTIFREEZE SHALL BE CHECKED FOR CONFORMITY TO THE MANUFACTURER'S RECOMMENDATIONS, UNDER THE ENVIRONMENTAL CONDITIONS PRESENT AND EXPECTED. ACCESSORIES CHECK SHALL INCLUDE, BUT NOT BE LIMITED TO, BLOCK HEATERS, BATTERY CHARGER, GENERATOR STRIP HEATERS, REMOTE ANNUNCIATOR, UNDER START-UP MODE CHECK FOR EXHAUST LEAKS, PATH OF EXHAUST PASSES AWAY FROM THE BUILDING, COOLING AIR FLOW, MOVEMENT DURING STARTING AND STOPPING, VIBRATION DURING RUNNING, NORMAL AND EMERGENCY LINE-TO-LINE VOLTAGE, AND PHASE ROTATION. AUTOMATIC START-UP TEST BY MEANS OF SIMULATED POWER OUTAGE TO TEST REMOTE-AUTOMATIC STARTING, TRANSFER OF THE LOAD, AND AUTO-MATIC SHUTDOWN. PRIOR TO THIS TEST, ALL TRANSFER SWITCH TIMERS SHALL BE SET FOR PROPER SYSTEM COORDINATION. ENGINE COOLANT TEMPERATURE, OIL PRESSURE, AND BATTERY CHARGE LIVE ALONG WITH GENERATOR VOLTAGE, AMPERES, AND FREQUENCY SHALL BE MONITORED THROUGHOUT THE TEST. IN EXTERNAL LOAD BANK SHALL BE CONNECTED TO THE SYSTEM IF SUFFICIENT BUILDING LOAD IS UNAVAILABLE TO LOAD THE GENERATOR TO THE NAMEPLATE KVA RATING.

4. WARRANTY AND MAINTENANCE THE GENERATOR SYSTEM SHALL BE WARRANTED BY THE MANUFACTURER FOR TWO YEARS OR 4,000 HOURS, WHICHEVER COMES FIRST, FROM THE DATE OF FINAL ACCEPTANCE. OPTIONAL FIVE YEAR WARRANTIES SHALL BE AVAILABLE UPON REQUEST. THE SERVICE CONTRACT SHALL INCLUDE THE FURNISHING OF FACTORY TRAINED PERSONNEL AND MAINTAIN A 24-HOUR PARTS AND SERVICE CAPABILITY AND SHOWN AT TIME OF SUBMITTAL THAT THEY ARE REGULARLY ENGAGED IN A MAINTENANCE CONTRACT PROGRAM TO SEMI-ANNUALLY INSPECT AND TEST RUN THE ENGINE TO PERFORM MANUFACTURERS RECOMMENDED PREVENTIVE MAINTENANCE SERVICE ON THE EQUIPMENT FURNISHED. THIS SERVICE CONTRACT SHALL INCLUDE OPERATION OF THE EQUIPMENT UNDER SIMULATED POWER FAILURE CONDITIONS, ADJUSTMENT OF GENERATOR AND TRANSFER SWITCH CONTROLS AS REQUIRED AND CERTIFICATION IN THE OWNER'S MAINTENANCE LOG OF REPAIRS MADE AND PROPER FUNCTIONING OF ALL ENGINE AND AUXILIARY SYSTEMS. THIS SERVICE CONTRACT SHALL BE PROVIDED AT NO ADDITIONAL CHARGE FOR A PERIOD OF TWO YEARS FROM THE DATE OF FINAL ACCEPTANCE. AT THE OWNER'S OPTION, THE SERVICE CONTRACT SHALL BE RENEWABLE ON A YEAR-TO-YEAR BASIS THEREAFTER WITH COSTS BEING PAID BY THE OWNER.

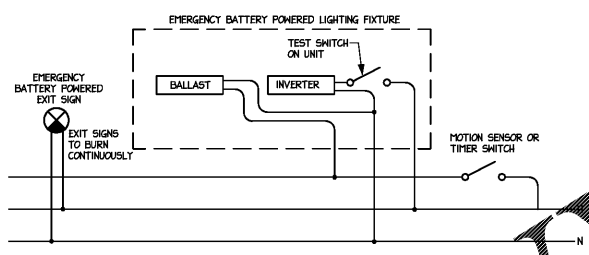
5. ACCEPTABLE MANUFACTURERS SHALL BE LIMITED TO THE FOLLOWING: KOHLER, CUMMINS, GENERAC, & CATERPILLAR.

FOR THIS PROJECT THE EMERGENCY GENERATOR SHALL BE DIESEL 120KVA/3500KVA ALTERNATOR AT 480/277V 3-PHASE, 4 WIRE WITH (1) 1200 AND (1) 200 AMP AUTOMATIC TRANSFER SWITCHES. PROVIDE THE FOLLOWING COMPONENTS AND ACCESSORIES FOR EACH: SILENCER EXHAUST CAP, BATTERY, BATTERY RACK AND CABLES, FULL SOUND ATTENUATING WEATHERPROOF ENCLOSURE, EQUALIZE/LOAT TYPE CHARGER, HEAVY DUTY AIR CLEANER, OIL DRAIN KIT, AIR CLEANER RESTRICTION INDICATOR, SPRING ISOLATORS BETWEEN GENERATOR FRAME AND PAD, 18 VOLTAGE REGULATION, DISCRETE MONITOR - REMOTE ANNUNCIATOR PANEL, OVER VOLTAGE PROTECTION, PRE-HIGH ENGINE TEMPERATURE SENDER AND LAMP, PRE-OIL PRESSURE SENDER AND LAMP, AND LOW WATER LEVEL SENDER AND LAMP. THE COMPLETE INSTALLATION SHALL COMPLY WITH NFPA AND UL 2000 STANDARDS. DOUBLE WALL TANK SHALL BE SIZED FOR 24 HOUR FULL LOAD RUN TIME.

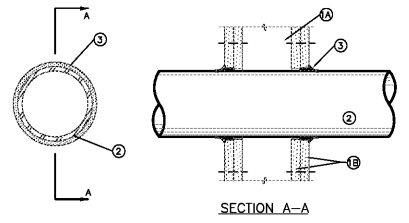
6. CONTRACTOR TO PROVIDE MANUFACTURER'S GENERATOR SIZING REPORT BASED ON THE EMERGENCY LOADS FOR THIS PROJECT IF GENERATOR SIZE IS DIFFERENT THAN THE ONE LISTED ABOVE OR IF GENERATOR MANUFACTURER IS NOT LISTED AS AN APPROVED MANUFACTURER.

3 PENETRATION DETAIL NTS

- 1 OR 2 HOUR WALL ASSEMBLY EQUIVALENT TO UL300 OR UL400 SERIES.
- ELECTRICAL OUTLET BOX, NOT MORE THAN 100 SQUARE INCHES PER 100 SQUARE FEET WALL AREA.
- HOLDABLE PUTTY PADS ARE TO BE INSTALLED TO COMPLETELY COVER THE EXTERIOR SURFACES OF THE BOX WITHIN THE STUD CAVITY WITH A BALL OF THE PUTTY MATERIAL USED TO PLUG THE END OF EACH ELECTRICAL METALLIC TUBE OR CONDUIT AT ITS CONNECTION TO THE BOX.
- PUTTY PAD EQUIVALENT TO 3/8" x 3/8" x 1/8" THICK PADS REQUIRED FOR 1 HOUR WALLS 1/4" GAP BETWEEN BOX AND WALLBOARD.



4 EMERGENCY/NITE LIGHT WIRING DIAGRAMMATIC



NOTES:
1. WALL ASSEMBLY - THE 1,2,3 OR 4 HOUR FIRE-RATED GYPSUM WALLBOARD/STUD ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAXIMUM 2 HOUR FIRE-RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOMINAL 2 BY 4 INCH LUMBER SPACED 16 INCHES ON CENTER WITH NOMINAL 2 BY 4 INCH LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MINIMUM 3-5/8 INCHES BY 1-5/8 INCHES DEEP CHANNELS SPACED MAXIMUM 24 INCHES ON CENTER.
B. WALLBOARD, GYPSUM - NOMINAL 1/2 OR 5/8 INCH THICK, 4 FEET WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAXIMUM DIAMETER OF OPENING IS 13-1/2 INCHES.

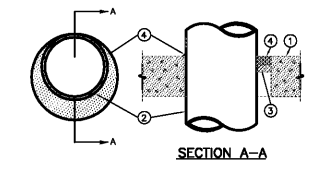
- 2. PIPE OR CONDUIT - NOMINAL 12 INCH DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOMINAL 8 INCH DIAMETER (OR SMALLER) RIGID STEEL CONDUIT, NOMINAL 4 INCH DIAMETER (OR SMALLER) STEEL COPPER PIPE OR NOMINAL 1 INCH DIAMETER (OR SMALLER) FLEXIBLE STEEL CONDUIT, WHEN COPPER PIPE OR FLEXIBLE STEEL CONDUIT IS USED, MAXIMUM F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2 HOUR. STEEL PIPES OR CONDUITS LARGER THAN NOMINAL 4 INCH DIAMETER MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAXIMUM OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.
- 3. FILL VOID OR CAVITY MATERIAL - CAULK - CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MINIMUM 1/4 INCH DIAMETER BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EXCESS FROM FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW.

MAXIMUM PIPE OR CONDUIT DIAMETER, INCH	ANNULAR SPACE, INCH	F RATING, HOUR	T RATING, HOUR
1	0 TO 3/16	1 OR 2	0, 1 OR 2
2	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1/4	1 OR 2	3 OR 4
6	1/4 TO 1/2	3 OR 4	3 OR 4
12	3/16 TO 5/8	1 OR 2	0

*WHEN COPPER PIPE OR FLEXIBLE STEEL CONDUIT IS USED, MAXIMUM F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2 HOUR. STEEL PIPES OR CONDUITS LARGER THAN NOMINAL 4 INCH DIAMETER MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAXIMUM OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.

MINNESOTA WIRING & MFG. CO. - TYPES CP-25 S/L, CP-25 N/S, CP-25 S/L, CP-25 N/S, CP-25 W/L, CP-25 W/S, CP-25 W/L, CP-25 W/S

2 PENETRATION DETAIL NTS



- 1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE. WALL ASSEMBLY MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS, MAX. DIAMETER OF CIRCULAR THROUGH OPENING IS 22-1/2 IN. SEE CONCRETE BLOCK (CATZ) CATEGORY IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- 1A. STEEL SLEEVE - (OPTIONAL, NOT SHOWN) - NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE SLEEVE CAST INTO CONCRETE FLOOR OR WALL. SLEEVE TO BE FLUSH WITH OR PROJECT MAX 2 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL.
- 2. PIPE OR CONDUIT - NOM 20 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 8 IN. DIAM (OR SMALLER) RIGID STEEL CONDUIT, NOM 8 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE, NOM 4 IN. DIAM (OR SMALLER) CAST IRON PIPE OR NOM 4 IN. DIAM (OR SMALLER) STEEL EXIT. MAX ONE PIPE OR CONDUIT PER THROUGH OPENING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING NOT TO EXCEED 2-1/2 IN. MIN ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING IS ZERO IN. (POINT CONTACT). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
- 3. PACKING MATERIAL - POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF TIGHTLY PACKED CERAMIC (ALUMINA SILICA) FIBER BLANKET, MINERAL-WOOL BATT OR GLASS FIBER INSULATION MATERIAL USED AS A PERMANENT FORM. PACKING MATERIAL TO BE COMPRESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL, AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL. (ITEM 4). AS AN ALTERNATE WHEN MAX PIPE SIZE IS 12 IN. DIAM AND WHEN MAX ANNULAR SPACE IS 1 INCH OR LESS, A MINIMUM 1/2 INCH THICKLY-PACKED CERAMIC FIBER BLANKET OR MINERAL-WOOL BATT PACKING MATERIAL MAY BE USED. MINIMUM 1/2 INCH FROM BOTTOM SURFACE OF FLOOR OR FROM EITHER SIDE OF WALL.
- 4. FILL VOID OR CAVITY MATERIAL - CAULK - APPLIED TO FILL THE ANNULAR SPACE TO MINIMUM THICKNESS SHOWN IN THE FOLLOWING TABLE.

MAXIMUM PIPE DIAMETER, INCH	MAXIMUM ANNUAL SPACE, INCH	PACKING MATERIAL	MINIMUM CAULK THICKNESS, INCH
10	1	BR CERAMIC FIBER	1/2 (B)
10	1	BR GLASS FIBER	1/2 (C)
10	1/2	BR CERAMIC FIBER	1 (B)
10	1/2	BR GLASS FIBER	1 (C)

(A) BR = POLYETHYLENE BACKER ROD, CF = CERAMIC FIBER BLANKET, GF = GLASS FIBER INSULATION, MW = MINERAL-WOOL BATT. CAULK INSTALLED FLUSH WITH TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL. CAULK INSTALLED FLUSH WITH BOTTOM SURFACE OF FLOOR OR ONE SURFACE OF WALL.

*BEARING THE CLASSIFICATION MARKING "UL SYSTEM CAJ1001" SHALL BE PROTECTED BY A SYSTEM WHICH HAS A F RATING AT LEAST EQUAL TO THE REQUIRED FIRE RESISTANCE RATING OF THE ASSEMBLY BEING PENETRATED.

UL SYSTEM CAJ1001

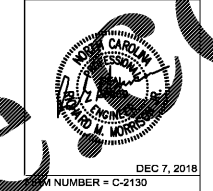
(FORMERLY NO. 49) F RATINGS - 3 HOUR

1 PENETRATION DETAIL NTS

MINNESOTA WIRING & MFG. CO. - TYPES CP-25 S/L, CP-25 N/S, CP-25 S/L, CP-25 N/S, CP-25 W/L, CP-25 W/S, CP-25 W/L, CP-25 W/S

UL SYSTEM WL1001

(FORMERLY NO. 147-A) RATING - 1,2,3 & 4 HOUR



PROJECT NUMBER = C-2130

WILSON AIR CENTER NORTH TERMINAL



ARCHITECT



THE WILSON GROUP

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CIVIL ENGINEER: TALBERT, BRIGHT & ELLINGTON, 3525 WHITEHALL PARK DRIVE, SUITE 210, CHARLOTTE, NC 28273, (704) 426-6070, FIRM NO. C-1163

STRUCTURAL ENGINEER: STEWART, 101 N. TRYON ST., SUITE 1400, CHARLOTTE, NC 28202, (704) 909-3523, FIRM NO. C-1051

MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION ENGINEER: SABER ENGINEERING, 2923 S. TRYON ST., SUITE 280, CHARLOTTE, NC 28203, (704) 373-0068, FIRM NO. C-2130

LANDSCAPE ARCHITECT: URBAN DESIGN PARTNERS, 1318-EB CENTRAL AVENUE, CHARLOTTE, NC 28205, (704) 334-3303, FIRM NO. C-TB0

COMMUNICATIONS INFRASTRUCTURE: DB CONSULTING, 240 LOVES FARM ROAD, BLACKSBURG, SC 29702, (704) 497-7228, FIRM NO. C-TB0

REVISIONS

NO.	DATE	DESCRIPTION

DATE: DECEMBER 7, 2018
PROJECT NUMBER: 9197-000

SHEET TITLE: DETAILS

SHEET NUMBER: E-302

Order Plans @