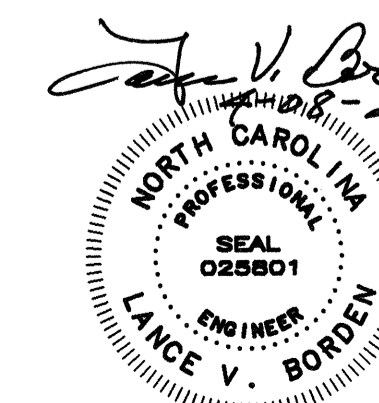


GROUP 100 EQUIPMENT					
PIECE NO.	QUANTITY	NAME	MANUFACTURER	TYPE - MODEL	RATING AND DESCRIPTION
E101	1	MOTOR CONTROL CENTER	ALLEN-BRADLEY	CENTERLINE BULLETIN 2100	FREE STANDING MOTOR CONTROL CENTER SHALL INCLUDE MOUNTING SPACE FOR MOTOR STARTERS, CIRCUIT BREAKERS, OVERLOAD CURRENT MONITORS, PANELBOARDS AND TERMINAL BLOCKS AS SHOWN ON DRAWINGS. ENCLOSURES SHALL BE NEMA 12. ENCLOSURE FINISH SHALL MEET U.L. REQUIREMENTS FOR CORROSIVE RESISTANCE AND DURABILITY AS DETERMINED BY EXPOSURE TO SALT SPRAY, HUMIDITY AND WATER. BUS BARS SHALL BE TIN PLATED COPPER WITH RATINGS AS: 800 AMP HORIZONTAL AND 400 AMP VERTICAL. SERVICE TO BE 480 VOLT, 3 PHASE, 3 WIRE. MOUNTING HARDWARE SHALL BE HOT-DIP GALVANIZED STEEL OR STAINLESS STEEL. SEE DETAILED DESCRIPTION IN SPECIAL PROVISIONS.
E102	1	MANUAL TRANSFER SWITCH	RUSSELELECTRIC	TYPE RMT-MAN	U.L. LISTED 3 POLE, DOUBLE THROW TRANSFER SWITCH IN NEMA 12 CABINET. CONTINUOUS CURRENT RATING OF 600 AMPS, 600 VOLTS AC. SYMMETRICAL SHORT CIRCUIT CURRENT OF 30,000 AMPS AT 480 VOLTS AC. SHALL BE MECHANICALLY HELD AND ELECTRICAL OPERATED BY MEANS OF WATER-TIGHT, MOMENTARY PUSH-BUTTON SWITCHES MOUNTED ON ENCLOSURE OR REMOTELY FROM THE CONTROL CONSOLE. SWITCH SHALL HAVE SINGLE MOTOR DRIVEN TRANSFER MECHANISM IN EITHER DIRECTION, AND SHALL BE EQUIPPED WITH A SINGLE HANDLE FOR DIRECT MANUAL OPERATION OF SWITCH PROVIDING CONTACT-TO-CONTACT TRANSFER SPEED AS MOTORIZED OPERATOR. CONTACTS SHALL BE HIGH SPEED, QUICK MAKE, QUICK BREAK. SHALL INCLUDE CORROSION RESISTANT MOUNTING HARDWARE.
E103	1	AUTOMATIC TRANSFER SWITCH	RUSSELELECTRIC	TYPE RMT	U.L. LISTED 3 POLE DOUBLE THROW, 100A TRANSFER SWITCH, NEMA 12 CABINET. SHALL HAVE UNIDIRECTIONAL MOTOR OPERATOR, POSITIVE MECHANICAL INTERLOCK, QUICK-MAKE, QUICK-BREAK PRE-LOADED TRANSFER. SHALL HAVE ADJUSTABLE TIME DELAY FOR TRANSFER TO EMERGENCY AND RETRANSFER TO NORMAL, LOAD TEST SWITCH TO SIMULATE POWER FAILURE, GREEN PILOT LIGHT FOR NORMAL AND RED FOR EMERGENCY POWER, AUXILIARY CONTACTS FOR NORMAL AND EMERGENCY POSITION. SELECTOR SWITCH SHALL PROVIDE MANUAL AND AUTOMATIC MODES WITH PUSH BUTTONS TO SELECT NORMAL OR EMERGENCY SOURCE.
E104	4	MAIN DRIVE	ALLEN-BRADLEY	1336 IMPACT	180 AMPERES (CONTINUOUS) OUTPUT, 460 VOLT, 3 PHASE, TRUE FLUX VECTOR DRIVE. SHALL BE CONFIGURED AND WITH ALL MISCELLANEOUS COMPONENTS AS SHOWN.
E105	1 COMPLETE SYSTEM	PROGRAMMABLE LOGIC CONTROLLER (PLC)	ALLEN-BRADLEY	PLC-5/60	PROGRAMMABLE CONTROLLER SYSTEM INCLUDES ON-LINE AND SPARE PROCESSORS, LOCAL AND REMOTE DISCRETE AND ANALOG I/O, SPECIALTY MODULES, AND ALL RELATED HARDWARE. COMPLETE SYSTEM SHALL INCLUDE ALL INDICATED COMPONENTS, ALL SOFTWARE, AND ALL MISCELLANEOUS HARDWARE AS REQUIRED TO PROVIDE OPERATION AS SHOWN.
E106	1	BUS MONITOR	DIVERSIFIED ELECTRONICS	PBE	TRUE RMS PHASE SEQUENCE AND VOLTAGE BAND MONITOR WITH ADJUSTABLE OVERVOLTAGE, UNDERVOLTAGE, AND TIME DELAY. SHALL BE SUITABLE FOR USE ON 480 VOLT, GROUNDED, 4 WIRE SYSTEMS.
E107	1	ROTARY CAM LIMIT SWITCH	GEMCO	MODEL 1980	6 CAM ROTARY CAM LIMIT SWITCH WITH NEMA 4 ENCLOSURE. SHALL INCLUDE 120V, 10A RATED DOUBLE POLE, DOUBLE THROW SNAP SWITCHES. TIMING DIAL.
E108	2	PANELBOARD LP-1A, LP-1B	SQUARE D	NQOD	U.L. LISTED, WALL MOUNTED, FACTORY ASSEMBLED NEMA 12 PANELBOARD FOR 120/208 VOLT, 3 PHASE, 4 WIRE SERVICE. SHALL INCLUDE MAIN LUGS, BOLT-ON BRANCH CIRCUIT BREAKERS AND SPARES. PROVIDE TYPEWRITTEN CIRCUIT DIRECTORY ON INSIDE OF PANELBOARD DOOR.
E109	2	FLASHER GATE LIGHTS	TRAFFIC PARTS INC. SPRING, TX	TP-505	TWO CIRCUIT ELECTRO-MECHANICAL FLASHER. CONTACTS RATED 120V, 25A. MOTOR 120V, 60 RPM, 60 HZ. SHALL INCLUDE SUB-BASE, COVER AND SPARE PARTS KIT.
E110	5	DISCONNECT SWITCH	HUBBELL	HBLDS3AC	UNFUSED DISCONNECT SWITCH. NEMA 4X ENCLOSURE. 30A, 480V, 3-POLE WITH AUXILIARY CONTACTS. EACH SWITCH SHALL BE PERMANENTLY LABELED WITH NAME OF THE DEVICE CONTROLLED.
E111	1	VIDEO TO FIBER TRANSMITTER	GE SECURITY	S702VT-EST	FIBER OPTIC VIDEO TRANSMITTER AND RECEIVER SYSTEM, SHALL INCLUDE POWER SUPPLIES AND ANY ADDITIONAL INTERFACING AS MAY BE REQUIRED FOR TRANSMISSION OF TWO VIDEO CHANNELS FROM THE WEST SIDE OF THE BRIDGE TO MONITORS IN THE OPERATORS ROOM THROUGH MULTIMODE FIBER OPTIC CABLES.
	1	FIBER TO VIDEO RECEIVER		S702VR-EST	
E112	4	OPTICAL ENCODER	DYNAPAR CORPORATION	SERIES H56	MILL-DUTY INCREMENTAL OPTICAL ENCODER. SHALL BE HIGHLY RUGGEDIZED WITH FOOT MOUNTED NEMA 4 CAST ALUMINUM HOUSING, 5/8" DIAMETER INPUT SHAFT, AND HEAVY DUTY BEARINGS RATED FOR OPERATING TO 3600 RPM. SHALL PROVIDE DIFFERENTIAL LINE DRIVER OUTPUTS.
E113	1	SERVICE DISCONNECT	SQUARE D	CLASS 3110	HEAVY DUTY FUSED SAFETY SWITCH. RATED FOR USE WITH 480/277 VOLT, 3 PHASE, 4 WIRE, 600A SERVICE. SHALL BE U.L. LISTED WITH NEMA 4X STAINLESS STEEL ENCLOSURE. FUSES SHALL BE 600A, CLASS R. SWITCH OPERATING HANDLE SHALL BE PADLOCKABLE. ASSEMBLY SHALL BE RATED FOR 200,000 RMS SYMMETRICAL AMPERES AVAILABLE FAULT CURRENT. INCLUDE GROUNDING PROVISIONS AS SHOWN ON PLANS. MOUNTING HARDWARE SHALL BE STAINLESS STEEL.

GROUP 100 EQUIPMENT (CONTINUED)					
PIECE NO.	QUANTITY	NAME	MANUFACTURER	TYPE - MODEL	RATING AND DESCRIPTION
E114	4	RESOLVER	GEMCO	1986-A/1746R-2	ABSOLUTE, BRUSHLESS, 64:1 MULTITURN DUAL RESOLVER. FOOT MOUNTED NEMA 4 HOUSING. OPERATING TEMPERATURE -40 TO -125 CELSIUS. SHALL WITHSTAND 50G'S SHOCK FOR 11 MSEC AND 20G'S VIBRATION AT 200 HZ. INCLUDE MATCHING INPUT MODULE TO PROVIDE 18 BIT RESOLUTION.
E115	1	CIRCUIT BREAKER CB-1	SQUARE D	TYPE MAL	THERMAL-MAGNETIC CIRCUIT BREAKER WITH NEMA 12 ENCLOSURE. SHALL BE 600V RATED WITH 1000A FRAME, 3-POLE 600A CONTINUOUS ADJUSTABLE MAGNETIC TRIP INTERRUPT RATING 30,000A, U.L. LISTED.
E116	2	BARRIER GATE	B & B ELECTROMATIC CORPORATION	VT-6801	VERTICAL TO HORIZONTAL TYPE BARRIER GATE. ELECTRO-MECHANICAL DRIVE WITH 3-PHASE 480V REVERSIBLE MOTOR AND SOLENOID TYPE BRAKE. ARM LENGTHS AND WARNING LIGHTS AS SHOWN ON PLANS. ARMS SHALL UTILIZE ALUMINUM TUBES AND STAINLESS STEEL AIRCRAFT CABLE. HOUSING SHALL BE HOT-DIP GALVANIZED STEEL. SEE DETAILED REQUIREMENTS IN THE SPECIAL PROVISIONS.
E117	2	AUXILIARY GEARMOTOR STARTER	ALLEN-BRADLEY	BULLETIN 505	FULL VOLTAGE REVERSING STARTER, NEMA SIZE 1, 480V, 3 PHASE WITH NEMA TYPE 4 ENCLOSURE. SHALL INCLUDE CONTROL TRANSFORMER (120V) PILOT LIGHTS ON COVER LABELED FOR RAISE AND LOWER AND MANUAL RESET OVERLOAD RELAYS. SHALL INCLUDE 120V AUXILIARY CONTACT. ENCLOSURE SHALL INCLUDE DEAD FRONT PLUG RECEPTACLE FOR ATTACHMENT OF PENDANT PUSHBUTTON CABLE.
	2	PENDANT PUSHBUTTON STATION	HUBBELL	CPB21	NEMA 4X PENDANT PUSHBUTTON STATION. MOMENTARY CONTACT PUSH-BUTTONS FOR RAISE AND LOWER, LABELED ACCORDINGLY. SHALL INCLUDE 25 FEET AWG 12 TYPE SOW CABLE WITH PLUG CONNECTION TO STARTER ENCLOSURE.
	2	PENDANT CONTROLLER STORAGE CABINET	HOFFMAN	A-16N166LP	WALL MOUNT NEMA 1 ENCLOSURE 16" x 16" x 6" OR AS REQUIRED FOR STORAGE OF PENDANT CONTROL STATION AND CABLE. LABEL CABINET DOOR ACCORDINGLY WITH PERMANENTLY ATTACHED ENGRAVED LABEL. CABINET SHALL HAVE RECESSED DOOR HANDLE, POLYESTER POWDER COAT FINISH.
E118	2	AUXILIARY DRIVE LIMIT SWITCH	NAMCO	MODEL NO. EA 710	NEMA 4 RATED SINGLE POLE LEVER ARM LIMIT SWITCH. SLIDING, SILVER ALLOY CONTACTS RATED 120V, 10A. SHALL BE SUPPLIED WITH NAMCO ROLLER-TYPE LEVER ARM, LENGTH AS REQUIRED.
E119	1	SURGE PROTECTOR	INNOVATIVE TECHNOLOGY	PTX 320-3Y201-SD	TRANSIENT VOLTAGE SURGE SUPPRESSOR. U.L. 1449 SECOND EDITION LISTED. NEMA 4 ENCLOSURE WITH DEAD FRONT CONSTRUCTION. RATED FOR 320 KA/PHASE ON 3 PHASE 480V SYSTEM. SHALL HAVE AUDIBLE ALARM, L.E.D. PROTECTION FAILURE INDICATORS, EVENT HISTORY INDICATOR. SHALL INCLUDE BUILT-IN 60A FUSES AND DISCONNECT SWITCH.
E120	2	AUXILIARY DRIVE GEARMOTOR	SEW EURODRIVE	MODEL R97DV132M4	U.L. LISTED, 10 HP, 1750 RPM, 480V, 3 PHASE MOTOR WITH ATTACHED FOOT MOUNTED REDUCER REDUCTION RATED SHALL BE 33.25:1.
E121	2	LEVER ARM LIMIT SWITCH	CUTLER HAMMER	E50 6P+	LEVER ARM LIMIT SWITCH RATED NEMA 4X, 6P. SHALL BE U.L. LISTED WITH FACTORY SEALED CORD, EPOXY FILLED SWITCH BODY, DIE CAST ZINC SWITCH BODY. SWITCH CONTACTS SHALL BE RATED TO 600V AND UTILIZE WIPING ACTION TO ASSURE CONTINUITY. SWITCHES SHALL BE DOUBLE POLE, RATED 10A AT 120V. LEVER ARM SHALL BE CAST ALUMINUM WITH METAL ROLLER WHEEL. SHALL INCLUDE ALL NECESSARY MOUNTING BRACKETS AND HARDWARE.
E122	1	POWER MONITOR	ELECTRO INDUSTRIES	FUTURA+	THREE PHASE MULTI-FUNCTION (VOLTAGE, CURRENT, POWER, FREQUENCY, ETC.) POWER MONITOR WITH CENTRAL TRANSDUCER MODULE AND REMOTE DISPLAYS. MONITOR SHALL INCLUDE ONE DISPLAY MOUNTED IN THE MCC AND ONE MOUNTED ON THE CONSOLE, AND INCLUDE ALL CURRENT TRANSFORMERS AND OTHER HARDWARE NECESSARY TO PROVIDE PROPER OPERATION.
E123	2	SKREW LIMIT SWITCH	GEMCO	MODEL 1980	6 CAM ROTATING CAM LIMIT SWITCH WITH NEMA 4 ENCLOSURE. SHALL INCLUDE 120V, 10A RATED SINGLE POLE DOUBLE THROW SNAP SWITCHES AND TIMING DIAL.
E124	1	CIRCUIT BREAKER CB-LP	SQUARE D	TYPE KAL	THERMAL MAGNETIC CIRCUIT BREAKER WITH NEMA 12 ENCLOSURE. SHALL BE 600V RATED WITH 250A FRAME 3-POLE, 90A CONTINUOUS ADJUSTABLE MAGNETIC TRIP INTERRUPT RATING 25,000A, U.L. LISTED.

NOTES:

1. QUANTITIES SHOWN ARE FOR INFORMATION ONLY AND DOES NOT INCLUDE SPARES. CONTRACTOR SHALL PREPARE HIS OWN MATERIALS LIST INCLUDING SPARES AS MAY BE SPECIFIED IN THE SPECIAL PROVISIONS.
2. CONTRACTOR SHALL CONFIRM SIZE OF TERMINAL CABINETS, ADJUSTING DIMENSIONS AS MAY BE REQUIRED FOR NUMBER OF TERMINATIONS AND BENDING RADIUS OF CONDUCTORS.



STATE OF NORTH CAROLINA			
DEPARTMENT OF TRANSPORTATION			
RALEIGH			
CAPE FEAR RIVER CROSSING			
WILMINGTON, NORTH CAROLINA			
ELECTRICAL EQUIPMENT SCHEDULE - 1			
DRAWN BY		R.L. REED	
SCALE		NONE	
DESIGNED	G.L. FASICK	DETAILED	R.L. REED
CHECKED	L.R. BAKER	CHECKED	G.L. FASICK
DATE		APRIL, 2005	
DRAWING NO.		52 OF 53	