

ABBREVIATIONS AND ACRONYMS

A/C =AIR CONDITIONER.
A =AMPERE.
AC =ALTERNATING CURRENT, OR ACCESS CHAMBER.
AEIC =ASSOCIATION OF EDISON ILLUMINATING COMPANIES.
AFD =ADJUSTABLE FREQUENCY DRIVE.
AFF =ABOVE FINISHED FLOOR.
AFG =ABOVE FINISHED GRADE.
AHU =AIR HANDLING UNIT.
A.I.C. =AMPERE INTERRUPTING CAPACITY.
AL =ALUMINUM.
ANN =ANNUNCIATOR.
ANSI =AMERICAN NATIONAL STANDARDS INSTITUTE.
ANT =ANTENNA.
APPROX =APPROXIMATE.
ASME =AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
ARC =ARC WELD.
ARCH =ARCHITECTURE.
ASD =ADJUSTABLE SPEED DRIVE.
ASTM =ASTMETRICAL.
ATM =ATMOSPHERE.
ATS =AUTOMATIC TRANSFER SWITCH.
AUTO =AUTOMATIC.
AWG =AMERICAN WIRE GAGE.
AR =AUXILIARY RELAY.
=AND.
BAG =BARE ARMORED GROUND, UL LABELED.
BAT =BATTERY.
BC =BARE COPPER.
BD =BUS DUCT.
BHP =BRAKE HORSEPOWER.
BLDG =BUILDING.
BOC =BOTTOM OF CONDUIT.
BOP =BOTTOM OF PIPE.
BTU =BRITISH THERMAL UNIT.
C =CONDUIT, PER SPECIFICATION, UL LABELED.
CL =CENTER LINE.
CAPL =CADMIUM PLATED.
CAD =COMPUTER AIDED DESIGN.
CAED =COMPUTER AIDED DESIGN AND DRAFTING.
CAP =CAPACITOR.
CB =CIRCUIT BREAKER.
CCTV =CLOSED CIRCUIT TELEVISION.
CFE =CONTRACTOR FURNISHED EQUIPMENT.
CKT =CIRCUIT.
CLX =CONTINUOUS WELDED CORRUGATED METAL SHEATH, UL LABELED TYPE MC.
CMTLR =CONTROLLER.
CO =CONDUIT ONLY.
COAX =COAXIAL CABLE.
COL =COLUMN.
CONC =CONCRETE.
CONT =CONTINUED.
CPU =CENTRAL PROCESSING UNIT.
CR =CONTROL RELAY.
CT =CURRENT TRANSFORMER.
CU =COPPER.
DB =DIRECT BURIED.
DC =DIRECT CURRENT.
DET =DETAIL.
DIA =DIAMETER.
DIAG =DIAGRAM.
DISC =DISCONNECT.
DN =DOWN.
DNA =DOES NOT APPLY.
DPDT =DOUBLE POLE DOUBLE THROW.
DPST =DOUBLE POLE SINGLE THROW.
DT =DUSTTIGHT, UL LABELED.
DWC =DRAWING.
°C =DEGREES CELSIUS (CENTIGRADE).
°F =DEGREES FAHRENHEIT.
E =EMERGENCY.
EA =EACH.
EL =ELEVATION.
ELEC =ELECTRIC.
ELU =EMERGENCY LIGHTING UNIT.
EMT =ELECTRICAL METALLIC TUBING, UL LABELED.
ENG =ENGINE.
EP =EXPLSION PROOF, UL LABELED.
EPR =ETHYLENE PROPYLENE RUBBER (SYNTHETIC POLYMER) INSULATED, UL LABELED TO 35 KV, CERTIFIED TO AEIC SPECIFICATION, ABOVE 35 KV DO NOT IDENTIFY AS EP.
EQPT =EQUIPMENT.
ETC =ET CETERA.
EWC =ELECTRIC WATER COOLER.
EXIST =EXISTING.
FA =FIRE ALARM.
FC =FOOTCANDLE.
FEEDER =FEEDER.
FIG =FIGURE.
FIT =FITURE.
FLX =FULL LOAD AMPS.
FLEX =FLEXIBLE CONDUIT, UL LABELED.
FLUOR =FLUORESCENT.
FM =FACTORY MUTUAL RESEARCH CORPORATION APPROVED AND LABELED, FACTORY MUTUAL SYSTEM APPROVED, FM APPROVED, OR FM.
FREQ =FREQUENCY.
FREQ =FREQUENCY.
FVR =FULL VOLTAGE NON-REVERSING.
FVR =FULL VOLTAGE REVERSING.
G =GAGE (NOT GAUGE).
GALV =GALVANIZED.
GEN =GENERATOR.
GFE =GOVERNMENT FURNISHED EQUIPMENT.

REFERENCE DRAWINGS

LA-E-004 ONE & THREE LINE DIAGRAM SYMBOLS
LA-E-003 SCHEMATIC & WIRING SYMBOLS
LA-E-002 STANDARD PLAN SYMBOLS

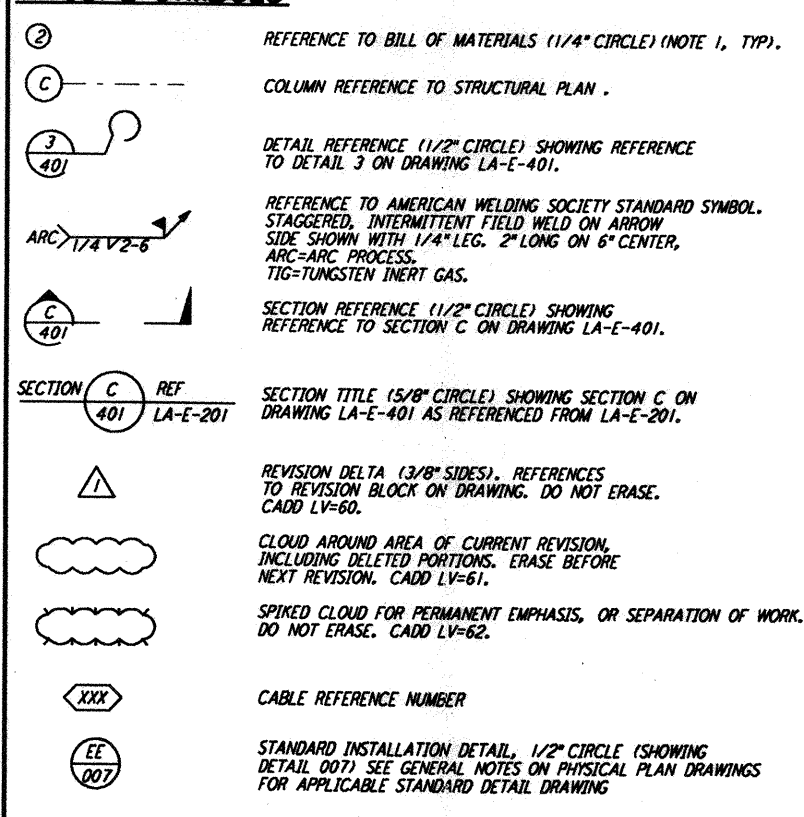
ABBREVIATIONS AND ACRONYMS

GFI =GROUND FAULT INTERRUPTER.
GND =GROUND.
GRN =GROUND RELAY (WITH PERIODS).
GRI =GREEN INSULATED, UL LABELED TYPE TW CONDUCTOR WHEN WITH GND.
GRS =GALVANIZED RIGID STEEL CONDUIT, UL LABELED.
HH =HANDHOLE.
HID =HIGH INTENSITY DISCHARGE.
HP =HORSEPOWER.
HPS =HIGH PRESSURE SODIUM.
HT =HEIGHT.
HTR =HEATER.
HV =HIGH VOLTAGE.
HVAC =HEATING, VENTILATION, AND AIR CONDITIONING.
HZ =HERTZ.
ICEA =INSULATED CABLE ENGINEERS ASSOCIATION.
IE =INVERT ELEVATION.
IEE =INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS.
IGW =INERT GAS WELD.
IJC =INTERMEDIATE GRADE CONDUIT, UL LABELED.
IN =INCH.
INC =INCORPORATED.
INST =INSTANTANEOUS.
INSTR =INSTRUMENT.
INTERCOM =INTERCOMMUNICATION.
INV =INVERT ELEVATION (INSIDE BOTTOM OF PIPE).
IR =INTERPOSING RELAY.
JB =JUNCTION BOX.
KA =KILOAMPERE, (ALL CAPS ON DRAWINGS PER ANSI/ASME Y1.1-1989, TYP).
KCMIL =THOUSAND CIRCULAR MILS (NOT MCML).
K =1,000.
KVA =KILOWATT AMPERES.
KV =KILOWOLT AMPERES REACTIVE.
KW =KILOWATT.
KWH =KILOWATT HOURS.
LB =POUND.
LPS =LOW PRESSURE SODIUM.
LO =LIQUID TIGHT FLEXIBLE CONDUIT, UL LABELED.
LTG =LIGHTING.
LV =LOW VOLTAGE, OR CADD GRAPHIC LEVEL.
MAX =MAXIMUM.
MC =METAL CABLE, UL LABELED.
MCC =MOTOR CONTROL CENTER, UL LABELED.
MCP =MOTOR CIRCUIT PROTECTOR, UL LABELED.
MCS =MOLDED CASE SWITCH, UL LABELED.
MECH =MECHANICAL.
MEGA =1,000,000.
MFR =MANUFACTURER.
MICRO =0.0001.
MILLI =0.001.
MI =MINERAL INSULATED COPPER SHEATHED CABLE, UL LABELED.
MIN =MINIMUM.
MISC =MISCELLANEOUS.
MTG =MOUNTING.
MTW =MACHINE TOOL WIRE, UL LABELED.
MSHA =MINE SAFETY AND HEALTH ADMINISTRATION.
MULTI =MULTIPLY.
MV =MEDIUM VOLTAGE (EQUIPMENT), OR MEDIUM VOLTAGE CABLE, UL LABELED, 133% INSULATED TYPE MV-90 PER NEC.
N =NORTH.
NA =NON AUTOMATIC.
N.C. =NORMALLY CLOSED (WITH PERIODS).
NEC =NATIONAL ELECTRICAL CODE.
NEMA =NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION.
NEC =NATIONAL ELECTRICAL SAFETY CODE.
NEUT =NEUTRAL.
NF =NON FUSED.
NFPA =NATIONAL FIRE PROTECTION ASSOCIATION.
NIC =NOT IN CONTRACT (NO PERIODS).
NL =NIGHT LIGHT.
N.O. =NORMALLY OPEN (WITH PERIODS).
NPT =NATIONAL PIPE THREAD PER ANSI/ASME B1.20.1-1983.
NTS =NOT TO SCALE (NO PERIODS).
=NUMBER.
OAS =OVERALL SHIELD.
OC =ON CENTER.
OCB =OIL CIRCUIT BREAKER.
OD =OUTSIDE DIAMETER.
OFE =OWNER FURNISHED EQUIPMENT.
OH =OVERHEAD.
O.L. =OVERLOAD RELAY CONTACTS (WITH PERIODS).
OSHA =OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
P =PHASE, OR SPELL OUT.
PA =PUBLIC ADDRESS.
PABX =PRIVATE AUTOMATIC BRANCH EXCHANGE.
PB =PUSH BUTTON.
PF =POWER FACTOR.
PILC =PAPER INSULATED LEAD COVERED CABLE.
PANEL =PANEL.
PID =PIPING AND INSTRUMENTATION DIAGRAM.
PLTC =POWER LIMITED TRAY CABLE, UL LABELED.
PLTC =PAIR.
PVC-GRS =POLYVINYL CHLORIDE COATED RIGID STEEL CONDUIT, UL LABELED.
RAC =RIGID ALUMINUM CONDUIT, UL LABELED.
RCPT =RECEPTACLE.
REQD =REQUIRED.
RIHW =RUBBER INSULATED HEAT AND MOISTURE RESISTANT WIRE, UL LABELED.
ROOM =ROOM.
RMS =ROOT MEAN SQUARE.
RPVC =RIGID POLYVINYL CHLORIDE CONDUIT SCHEDULE 40, UL LABELED.
RPVC-80 =RIGID POLYVINYL CHLORIDE CONDUIT SCHEDULE 80, UL LABELED.
RSB =RIGID SILICON-BRONZE CONDUIT, UL LABELED.
RT =RAINTIGHT, UL LABELED.
RVNR =REDUCED VOLTAGE NON-REVERSING.

ABBREVIATIONS AND ACRONYMS

IP =SINGLE POLE.
SC =SHORT CIRCUIT.
SCH =SCHEDULE.
SECT =SECTION.
SIS =SYNTHETIC INSULATED HEAT RESISTANT SWITCHBOARD WIRE, UL LABELED.
SH =SHIELDED.
SHT =SHEET.
SHTP =SHIELDED TWISTED PAIR.
SHTR =SHIELDED TWISTED TRIADS.
SHTO =SHIELDED TWISTED QUADS.
SOV =SOLENOID OPERATED VALVE.
SPDT =SINGLE POLE DOUBLE THROW.
SPEC =SPECIFICATION.
SPST =SINGLE POLE SINGLE THROW.
SQ =SQUARE.
SST =STAINLESS STEEL, TYPE 316, NO SUBSTITUTES.
STD =STANDARD.
STR =STRUCTURAL.
SUBST =SUBSTATION.
SWB =SWITCHBOARD.
SWBR =SWITCHGEAR.
SWRK =SWITCHRACK.
SYM =SYMMETRICAL.
2P =2 POLE.
3P =3 POLE.
3W =THREE WIRE.
TC =TRAY CABLE, UL LABELED SUNLIGHT RESISTANT.
TEL =TELEPHONE.
TERM =TERMINAL.
THHN =THERMOPLASTIC INSULATED HEAT RESISTANT NYLON JACKET WIRE, UL LABELED.
THW =THERMOPLASTIC INSULATED HEAT AND MOISTURE RESISTANT WIRE, UL LABELED.
THWN =THERMOPLASTIC INSULATED HEAT AND MOISTURE RESISTANT NYLON JACKET WIRE, UL LABELED.
TOP =TOP OF CONCRETE.
TOP OF DUCT.
TOP OF STEEL.
TP =TWISTED PAIR.
TW =THERMOPLASTIC INSULATED MOISTURE RESISTANT WIRE, UL LABELED.
TYP =TYPICAL (NO PERIODS).
UBC =UNIFORM BUILDING CODE.
UL =UNDERWRITERS LABORATORIES INC.
UNC =UNIFIED NATIONAL COARSE SCREW THREAD (SEE NOTE 10).
UNF =UNIFIED NATIONAL FINE SCREW THREAD.
UN-8 =UNIFIED NATIONAL 8 THREAD SERIES.
UN-12 =UNIFIED NATIONAL 12 THREAD SERIES.
UN-16 =UNIFIED NATIONAL 16 THREAD SERIES.
UNLESS OTHERWISE NOTED (NO PERIODS).
UPS =UNINTERRUPTIBLE POWER SUPPLY.
V =VOLT.
VAR =VARIABLE OR VOLT AMPERES REACTIVE.
VD =VOLTAGE DROP.
VT =VAPORTIGHT, UL LABELED.
W =WATT OR WIRE.
WP =WEATHERPROOF.
WT =WEIGHT.
XFMR =TRANSFORMER.
XHHW =SYNTHETIC INSULATED HEAT AND MOISTURE RESISTANT WIRE, UL LABELED.
XLP =CROSSLINKED POLYETHYLENE INSULATED, UL LABELED TO 35 KV, CERTIFIED TO AEIC SPECIFICATION ABOVE 35 KV, DO NOT IDENTIFY AS XLP. DO NOT USE ICEA.
Z =IMPEDANCE.

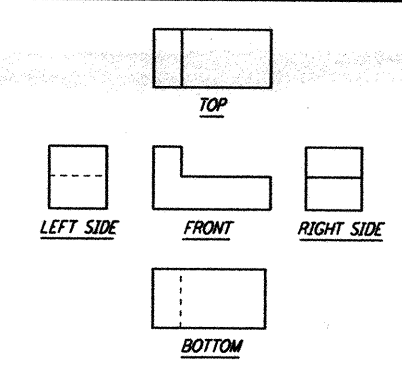
TYPICAL SYMBOLS



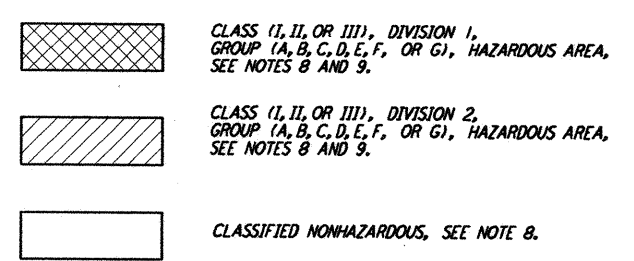
NOTES:

- 1. THIS IS A STANDARD DRAWING. ITEMS NOT SHOWN ON OTHER DRAWINGS ARE FOR FUTURE USE. DO NOT EDIT THIS SHEET FOR SPECIFIC APPLICATIONS. CADD AND MANUAL DRAFTING INSTRUCTIONS SHALL REMAIN FOR FIELD CHANGES AND AS-BUILTS. SPECIFICATION DATA SHALL REMAIN FOR QUALITY CONTROL.
- 2. SYMBOLS ON THIS DRAWING SHALL BE USED AS BASIC BUILDING BLOCKS TO ASSEMBLE ALL REQUIRED FORMS OF GRAPHIC REPRESENTATION.
- 3. DRAFTING SHALL INCLUDE LINE THICKNESS PER ANSI Y14.2M-1979 (R 1987) AND ANSI Y14.15-1966 (R 1988) AS FOLLOWS:
THIN --- CENTER, DIMENSION, BREAK, EXISTING, AND BACKGROUND LINES.
MEDIUM --- NEW WORK.
THICK --- MATCH LINE, POWER BUS, OR BATTERY LIMIT.
DO NOT USE WT=0, 2 OR 4 FOR LINES.
- 4. LETTERING SHALL BE SLANTED WITHIN DRAWING. 1/8 INCH FOR TEXT, 1/4 INCH FOR HEADINGS AND TITLES. CADD FONT 8.1. WIDTH RATIO SHALL BE 90 PERCENT. LINE SPACING SHALL BE 1/2 TEXT HEIGHT. 1/8 INCH LETTERS SHALL BE WT=2. 1/4 INCH LETTERS SHALL BE WT=4. LOWER CASE LETTERS SHALL NOT BE USED. FOUR LINE TITLE BLOCKS SHALL BE 3/16 INCH WT=2.
- 5. ALL WORK SHALL BE SUITABLE FOR LEGIBLE REPRODUCTION FROM HALF SIZE SECOND GENERATION REPRODUCIBLES.
- 6. REPLACE "K" WITH "M" TO CHANGE KILO TO MEGA. (EXAMPLE: MVA=MEGAVOLT AMPERES).
- 7. VFD OR THE WORDS "VARIABLE FREQUENCY DRIVE" SHALL NOT BE USED.
- 8. NEC AREA CLASSIFICATION DESCRIPTION SHALL APPEAR IN EACH HAZARDOUS AREA ON CONSTRUCTION PLANS. THE AREA CLASSIFICATION SYMBOLS NEED APPEAR ONLY ON AN AREA CLASSIFICATION DRAWING.
- 9. PROVIDE UNDERWRITERS LABORATORIES INC. (UL) CARD OR FACTORY MUTUAL (FM) LETTER CERTIFYING THE LABELS OF ALL EXPLOSION PROOF APPARATUS AND WIRING. ITEMS WITH MANUFACTURERS CERTIFICATION BUT NO UL OR FM LABELS PLUS CERTIFICATION SHALL NOT BE INSTALLED.
- 10. SCREW THREADS SHALL BE PER ANSI Y14.6-1978 (R 1987).
- 11. OTHER ABBREVIATIONS ARE DEFINED FOR USE WITH SPECIFIC SYMBOLS ON OTHER SYMBOL LISTS.
- 12. STACKED FRACTIONS SHALL NOT BE USED.

TYPICAL DRAWING LAYOUT



AREA CLASSIFICATION SYMBOLS



LIGO-D960994-A-0

9				J				DATE	10-31-95
8				H				DRAWN	J.G.
7				G				CHECKED	
6				F				ENGINEER	
5				E				PROJ MGR	
4				D					
3				C					
2				B					
1				A	10-31-95	TDM	PRELIMINARY DESIGN REVIEW		
NO.	DATE	APRD BY	DESCRIPTION OF REVISION	NO.	DATE	APRD BY	ISSUED FOR		

PARSONS
100 WEST WALNUT STREET
PASADENA, CALIFORNIA

LIGO
CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LASER INTERFEROMETER
GRAVITATIONAL-WAVE OBSERVATORY
SITE NO. 2 - LIVINGSTON, LOUISIANA
ELECTRICAL STANDARD SYMBOLS ABBREVIATIONS AND ACRONYMS
SCALE: NONE
CONTRACT NUMBER: PP150969
PROJECT NUMBER: 8094
SHEET NUMBER: LA-E-001

This document and the design it covers are the property of PARSONS. They are loaned only with the borrower's expressed written agreement that they will not be reproduced, copied, loaned, exhibited, or used in any other way, except by written consent from PARSONS to the borrower.

Mon Oct 30 23:24:02 1995 s3-v18b2 J:\PLOTS\QUEUES\182\EE001.PRF