ABBREVIATIONS (ALL ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS)

A

A/C	AIR CONDITIONING
ABV	ABOVE
AC	ALTERNATING CURRENT
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ADJ	ADJUSTABLE
AF	AMPERE FUSE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
AMPS	AMPERES
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARCH	ARCHITECT, ARCHITECTURAL
ARI	AIR CONDITIONING AND REFRIGERATION INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AUX	AUXILIARY
AV	AIR VENT
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
AWWA	AMERICAN WATER WORKS ASSOCIATION
ATM	AUTOMATIC TELLER MACHINE

B

BAS	BUILDING AUTOMATION SYSTEM
BD	BACKDRAFT DAMPER
BFF	BELOW FINISHED FLOOR
BFW	BOILER FEED WATER
BKR	BREAKER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT

C

C	CONDUIT
CATV	CABLE TELEVISION SYSTEM
CCTV	CLOSED CIRCUIT TELEVISION
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CIRC	CIRCULATING
CKT	CIRCUIT
℄	CENTERLINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER
CW	COLD WATER
°C	DEGREES CELSIUS
CNT	CONTACTOR

D

D	DEPTH
DB	DRY BULB
DC	DIRECT CURRENT
DEG	DEGREES
DESIG	DESIGNATION
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
DS	DOWNSPOUT
DWG	DRAWING
DX	DIRECT EXPANSION

E

EA	EACH
EAT	ENTERING AIR TEMPERATURE
ECC	ECCENTRIC
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EL	ELEVATION
ELEC	ELECTRICAL
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB
EWC	ELECTRICAL WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXIST	EXISTING
EUH	ELECTRIC UNIT HEATER

F

FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FL	FLOW LINE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FPM	FEET PER MINUTE
FT	FOOT, FEET
FVNR	FULL-VOLTAGE, NON-REVERSING
°F	DEGREES FAHRENHEIT

G

G, GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE

H

H	HEIGHT
HD	HEAD, HUB DRAIN
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER
HSTAT	HUMIDISTAT
HSTM	HIGH PRESSURE STEAM
HTG	HEATING
HTR	HEATER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HYD	HYDRANT
HZ	HERTZ

I

ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IES	ILLUMINATING ENGINEERING SOCIETY
IG	ISOLATED GROUND
IN	INCH
IN WC	INCHES OF WATER COLUMN

J

J-BOX	JUNCTION BOX

K

KCMIL	1000 CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT-AMPS
KW	KILOWATT
KWH	KILOWATT-HOUR

L

L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LB, #	POUNDS
LDB	LEAVING DRY BULB
LF	LINEAR FEET
LP	LOW PRESSURE
LRA	LOCKED ROTOR AMPS
LSTM	LOW PRESSURE STEAM (15 PSIG)
LTG	LIGHTING
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE

M

MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MFGR	MANUFACTURER
MG	MOTOR GENERATOR
MH	MANHOLE, METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED

N

N/A	NOT APPLICABLE
NC	NOISE CRITERIA, NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
N.T.S.	NOT TO SCALE

O

OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OPG	OPENING
OS&Y	OUTSIDE STEM AND YOKE
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

P

PA	PUBLIC ADDRESS
PD	PRESSURE DROP
PF	POWER FACTOR
PH	PHASE
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PSV	PRESSURE SAFETY VALVE, RELIEF VALVE
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE

Q

QTY	QUANTITY

R

RA	RETURN AIR
RCP	REFLECTED CEILING PLAN, REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RE:	REFERENCE, REFER
RECIRC	RECIRCULATE
REINF	REINFORCING
REQD	REQUIRED
REV	REVISION, REVISE
RGS	RIGID GALVANIZED STEEL
RH	RELATIVE HUMIDITY
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RLA	RUNNING LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOF TOP UNIT

S

SA	SUPPLY AIR
SD	SMOKE DAMPER, STORM DRAIN
SECT	SECTION
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SHT MTL	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL, SANITARY SEWER
ST	SOUND TRAP, STEAM TRAP
STD	STANDARD
STL	STEEL
SURF	SURFACE
SUSP	SUSPEND

T

TDH	TOTAL DYNAMIC HEAD
THRU	THROUGH
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TYP	TYPICAL
TV	TELEVISION
TF	TRANSFER FAN

U

U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UL	UNDERWRITERS LABORATORIES, INC.
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY

V

V	VOLT
VA	VOLT-AMPERE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VTR	VENT THROUGH ROOF
VSI	VENTURE STORES, INC.

W

W	WATT, WIDTH
W/	WITH
W/O	WITHOUT
WB	WET BULB
WG	WATER GONG
WPD	WATER PRESSURE DROP
WP	WEATHER PROOF
WT	WATERTIGHT, WEIGHT
WH	WATER HEATER

X

XFMR	TRANSFORMER

ELECTRICAL SYMBOLS (ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS)

LIGHTING

- O_A INCANDESCENT OR HID LIGHTING FIXTURE, LETTER DENOTES TYPE
- O_B WALL WASHER LIGHTING FIXTURE, LETTER DENOTES
- EXIT SIGN, ARROWS AS INDICATED, LETTER DENOTES TYPE DARKENED AREA DENOTES LIGHTED FACE
- $\vdash O \dashv_B$ STRIP FLUORESCENT LIGHTING FIXTURE, LETTER DENOTES TYPE
- LIGHT FIXTURE ON EMERGENCY OR LIFE SAFETY CIRCUIT
- $\square_B$ FLUORESCENT FIXTURE, LETTER DENOTES TYPE
- Ψ_B WALL MOUNTED LIGHT FIXTURE, LETTER DENOTES TYPE
- EMERGENCY LIGHTING FIXTURE WITH BATTERY PACK

SWITCHES

- S SWITCH, SPST, 20A, 120/277V
- S_3 SWITCH, 20A, 120/277V, "2" DENOTES DPST, "3" DENOTES THREE-WAY, "4" DENOTES FOUR-WAY
- S_L SWITCH, SPDT, CENTER OFF, MOMENTARY CONTACT
- S_K SWITCH, SPST, 20A, 120/277V, "K" DENOTES KEY SWITCH, "P" DENOTES PILOT LIGHT, "N" DENOTES NARROW MULLION SWITCH
- S_D DIMMER CONTROL SWITCH, 2000 WATT UNLESS OTHERWISE NOTED

RECEPTACLES AND OUTLETS

- SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V
- DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V, "H" DENOTES MOUNTED HORIZONTALLY, RE: SPECIFICATIONS
- DUPLEX WALL RECEPTACLE ON DEDICATED CIRCUIT.
- GFI DUPLEX WALL RECEPTACLE. "WP" DENOTES WEATHERPROOF, "TP" DENOTES SAFETY TYPE. "GFI" DENOTES GROUND FAULT INTERRUPTER.
- FOURPLEX WALL RECEPTACLE. NEMA 5-20R, 20A, 125V
- FOURPLEX WALL RECEPTACLE. NEMA 5-20R, 20A, 125V ON DEDICATED CIRCUIT
- SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED
- $\odot_F$ FLOOR RECEPTACLE, "F" DENOTES FLUSH.
- TV TELEVISION OUTLET
- CLOCK RECEPTACLE
- MULTI-OUTLET SURFACE RACEWAY WITH NEMA 5-20R, 20A, 125V AT 12" ON CENTER
- J S JUNCTION BOX POWER & LIGHTING, S-SECURITY SYSTEM
- POWER/TELEPHONE/DATA POLE (FOR MODULAR FURNITURE)
- $\blacktriangledown_F$ FLOOR TELEPHONE OUTLET "F" DENOTES FLUSH
- $\blacktriangledown_F$ FLOOR DATA OUTLET "F" DENOTES FLUSH
- $\blacktriangledown\blacktriangledown_F$ FLOOR RECEPTACLE/TELEPHONE OUTLET "F" DENOTES FLUSH
- $\blacktriangledown\blacktriangledown_F$ FLOOR RECEPTACLE/DATA OUTLET "F" DENOTES FLUSH
- TELEPHONE OUTLET STUB ¾" CONDUIT & PULLCORD OUT 6" AFC.
- DATA OUTLET STUB ¾" CONDUIT AND PULLCORD OUT 6" AFC.
- TELEPHONE & DATA OUTLET STUB ¾" CONDUIT AND PULLCORD OUT 6" AFC.

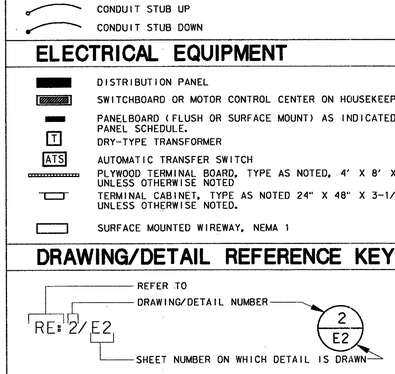
CIRCUITING AND WIRING

- CIRCUIT CONCEALED IN WALL OR CEILING
- CIRCUIT BELOW SLAB OR GRADE
- UG UNDERGROUND CIRCUIT/DUCTBANK
- HASH MARKS INDICATE NUMBER OF CONDUCTORS (LEFT TO RIGHT: NEUTRAL/PHASE/SWITCH LEG/GROUND). NO HASH MARKS INDICATE 2#12 AND 1#12 GROUND, UNLESS OTHERWISE NOTED.
- L1A-2, 4 HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.
- CONDUIT STUB UP
- CONDUIT STUB DOWN

ELECTRICAL EQUIPMENT

- DISTRIBUTION PANEL
- SWITCHBOARD OR MOTOR CONTROL CENTER ON HOUSEKEEPING PAD.
- PANELBOARD (FLUSH OR SURFACE MOUNT) AS INDICATED ON PANEL SCHEDULE.
- T DRY-TYPE TRANSFORMER
- ATS AUTOMATIC TRANSFER SWITCH
- PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS OTHERWISE NOTED
- TERMINAL CABINET, TYPE AS NOTED 24" X 48" X 3-1/2" UNLESS OTHERWISE NOTED.
- SURFACE MOUNTED WIREWAY, NEMA 1

DRAWING/DETAIL REFERENCE KEY



MISCELLANEOUS

- (1) DRAWING NOTE REFERENCE (NOTES BY SYMBOL)
- (T) THERMOSTAT
- INTRUSION ALARM (MAGNETIC SWITCH) DEVICE.

MOUNTING HEIGHTS (UNLESS OTHERWISE NOTED)

WALL SWITCHES-48" A.F.F. TO CENTER OF SWITCH.
WALL RECEPTACLES:
DUPLEX - 15" A.F.F. TO CENTER OF RECEPTACLE.
QUADPLEX - 15" A.F.F. TO CENTER OF RECEPTACLE.
WALL TELEPHONE/DATA OUTLETS:
FINISHED AREAS-12" A.F.F. TO CENTER OF OUTLET.
WALL MOUNTED - 42" A.F.F. TO CENTER OF OUTLET.
WALL DIMMER SWITCHES-48" A.F.F. TO CENTER OF SWITCH.
WALL MOUNTED EMERGENCY LIGHT FIXTURE-84" A.F.F. TO CENTER OF FIXTURE.
CLOCK OUTLET-84" A.F.F. TO CENTER OF OUTLET.
FIRE ALARM PULL STATION-48" A.F.F. TO CENTER OF STATION.
FIRE ALARM HORN OR BELL-84" A.F.F. TO CENTER OF HORN OR BELL.

GENERAL NOTES

A. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR ELECTRICAL CONSTRUCTION

B. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR THE EXACT LOCATION OF ALL CEILING MOUNTED DEVICES.

C. REFER TO ARCHITECTURAL INTERIOR ELEVATION DRAWINGS, WHERE THE ARCHITECT HAS DRAWN SUCH ELEVATIONS, FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES.

D. COORDINATE EXACT LOCATION OF ALL LIGHTING FIXTURES IN MECHANICAL / ELECTRICAL SPACES WITH EQUIPMENT, DUCTWORK AND PIPING.

E. PROVIDE 2#12, 1#12G, IN A MINIMUM ½" C., UNLESS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS. PROVIDE 4#12, 1#12 GND, FOR ALL 3 CIRCUIT HOMERUNS.

F. MINIMUM SIZE CONDUIT FOR HOMERUNS IS ¾" C.

G. COORDINATE ALL SLAB PENETRATIONS AND SLEEVES PRIOR TO EACH CONCRETE POUR.

H. PROVIDE ACCESS DOORS IN WALLS AND CEILINGS WHERE ACCESS IS REQUIRED TO CONCEALED ELECTRICAL BOXES AND DEVICES.

I. MAINTAIN ALL NEC. REQUIRED CLEARANCES. NOTIFY A/E OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

LIGHTING FIXTURE CIRCUITING NOTES

A. THE LIGHTING PLANS INDICATE SWITCHING AND BRANCH CIRCUIT NUMBERS FOR ALL LIGHTING FIXTURES. LOWER CASE LETTERS AT SWITCHES AND LIGHT FIXTURES INDICATE SWITCHING WHERE THE CONTROL PATTERN IS NOT OBVIOUS. PROVIDE BRANCH CIRCUIT WIRING IN A RACEWAY TO ALL RIGIDLY ATTACHED LIGHT FIXTURES AND TO JUNCTION BOXES FOR ALL LAY-IN LIGHT FIXTURES, AS REQUIRED TO PROVIDE SWITCHING AND CIRCUITING AS SHOWN ON THE DRAWINGS. RE: SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

B. BRANCH CIRCUIT HOMERUNS SHALL BE LIMITED TO A MAXIMUM OF THREE PHASE CONDUCTORS (ON DIFFERENT PHASES), ONE NEUTRAL CONDUCTOR AND ONE GROUND CONDUCTOR, AND SHALL BE INSTALLED IN CONDUIT. CIRCUITS HAVING DIMMERS SHALL HAVE INDIVIDUAL NEUTRALS FOR EACH PHASE WIRE.

PANEL DESIGNATIONS (NEW)

H2A "H" DENOTES VOLTAGE - "H"=480Y/277V, "L"=208Y/120V
H2EA "2" DENOTES FLOOR WHERE PANEL IS LOCATED (OMITTED IF SINGLE STORY)
"E" DENOTES SYSTEM TYPE - BLANK = NORMAL POWER, E= EMERGENCY POWER
"A" DENOTES PANEL SEQUENCE

MOTORS AND CONTROLS

- SINGLE OR THREE PHASE MOTOR (NUMBER INSIDE SYMBOL CAN INDICATE HORSEPOWER)
- EDH ELECTRIC DUCT HEATER
- DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE, "NF" DENOTES NON-FUSED
- MOTOR STARTER, NEMA SIZE AS NOTED
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER, "30/3/15/1" DENOTES AMPERES/POLES/ /FUSE(OR BREAKER)/ NEMA STARTER SIZE, "NF" DENOTES NON-FUSED.
- S_M MANUAL MOTOR STARTER WITH THERMAL OVERLOAD
- C LIGHTING CONTACTOR
- PC PHOTOCELL
- PUSH BUTTON STATION
- DC DOOR CONTACT SWITCH
- TC TIME CLOCK

SITE

EXISTING	EXISTING TO BE REMOVED	NEW	DESCRIPTION
		1000	PAD MOUNTED TRANSFORMER NUMBER INDICATES KVA RATING
A		A	AREA LIGHT POLE & BRACKET ORIENTATION SHOWN, LETTER DENOTES TYPE
--UP--	-X-EP-X-	---UP---	UNDERGROUND PRIMARY
--US--	-X-ES-X-	---US---	UNDERGROUND SECONDARY 480Y/277V, 3PH, 4W
---UT---	-X-UT-X-	---UT---	UNDERGROUND TELEPHONE

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

TOWN OF ADDISON, TEXAS

MIDWAY/BELTLINE SANITARY SEWER PHASE II

LIFT STATION
ELECTRICAL SYMBOLS & ABBREVIATIONS

Carter::Burgess
Consultants in Engineering, Architecture, Planning and the Environment
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STATE OF TEXAS · RICHARD S. POWER · 46183 · REGISTERED PROFESSIONAL ENGINEER
4-5-96

Unit		Scale	Date 04-05-96
Designed R. POWER		Checked R. POWER	Job No. 93327601D
Drawn J. WEBB		Approved J. LINDNER	Sheet 54 of 63

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