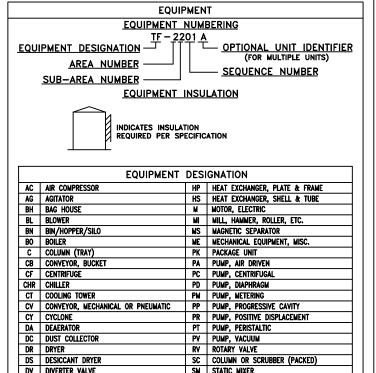
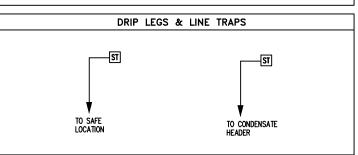


LINE NUMBERING SYSTEM		
EXAMPLE: 6"-CHWS-1111-01-CS5  NOM SIZE  SERVICE  PID NUM  SEQ NUM	insulation type  insulation req  pipe spec	

	LINE CERVICE	DEC	IONATIONS	
	LINE SERVICE DESIGNATIONS			
ACID	GENERAL ACID	HYDS	HYDROLYSATE SLURRY	
AF	AIR — FILTERED (STERILE)	LIQS	LIQUID SLURRY	
Al	AIR - INSTRUMENT	SMT	LIME SLURRY (SLAKED)	
AMH	AMMONIUM HYDROXIDE	NAOH	SODIUM HYDROXIDE (CAUSTIC), XX% SOL	
AMS	AMMONIUM SULFATE SLURRY	NCWW	NON-CONTACT WASTE WATER	
AMX	AQUEOUS AMMONIA	NUTR	NUTRIENT	
ANTF	ANTIFOAM	РС	PROCESS CONDENSATE	
AP	PLANT AIR - LESS THAN 120 PSIG	PHOC	PHOSPHORIC ACID-CONCNETRATED (85%)	
BASE	GENERAL BASE	PHOD	PHOSPHORIC ACID - DILUTE (2%)	
BEER	BEER (CIP/SIP CLEANED)	PROP	PROPAGATOR LIQUID (CIP CLEANED)	
BMS	BIOMASS STILLAGE	PW	POTABLE WATER	
C5S	C5 SLURRY	RCW	RECYCLED WATER	
CELU	CELLULASE	RW	RAW WATER	
CH	CONDENSATE-HIGH PRESSURE-600 PSIG	SAC	SULFURIC ACID - 93%	
CHWR	CHILLED WATER RETURN	SAD	SULFURIC ACID - XX% (DILUTE)	
CHWS	CHILLED WATER SUPPLY	SFA	SULFAMIC ACID - XXX	
CIPR	CLEAN IN PLACE RETURN	SH	STEAM - HIGH PRESSURE - 600 PSIG	
CIPS	CLEAN IN PLACE SUPPLY	SL	STEAM - LOW PRESSURE - < 100 PSIG	
CL	CONDENSATE-LOW PRESSURE-<100 PSIG	SM	STEAM - MED PRESSURE - 300 PSIG	
CM	CONDENSATE-MED PRESSURE-300 PSIG	UVW	UV WATER	
CO2	CARBON DIOXIDE (CIP CLEANED)	٧T	VENT - SULFURIC ACID	
CP	CONDENSATE - PUMPED	VTC	VENT - CORROSIVE	
CWR	COOLING WATER RETURN	VTN	VENT - NON CORROSIVE	
CWS	COOLING WATER SUPPLY	VTP	VENT - CIP CLEAN	
DEN	DENATURANT (GASOLINE)	VTS	VENT - STEAM CLEAN	
DGFS	DIGESTER FLASH STEAM	WSW	WASTE WATER	
ETHD	ETHANOL > 50%			
ETDN	ETHANOL - DENATURED	INCLUATION TYPES		
ETHW	ETHANOL < 50%	1	INSULATION TYPES	
FPW	FIRE PROTECTION WATER	С	COLD CONSERVATION	
FW	FILTERED WATER	Н	HEAT CONSERVATION	
HW	HOT WATER	Р	PERSONNEL PROTECTION	





SN SCREEN

VS VESSEL

WS WEIGH SCALE

SV SLIDE GATE VALVE

TF TANK, FIELD ERECTED

TS TANK, SHOP FABRICATED

TC TANK, CONCRETE

THE DESIGN IS BASED ON THE EQUIPMENT DATA SHEETS AND SPECIFICATIONS PROVIDED. DESIGN LAYOUTS WERE DEVELOPED USING THE DATA SHEETS, HORSEPOWER AND DIMENSIONAL INFORMATION OBTAINED FROM VENDOR PRELIMINARY INFORMATION AND/OR CATALOGS.

EJ EJECTOR OR EDUCTOR

FL FILTER, CARTRIDGE OR PRESSURE

FA FAN

FE FEEDER

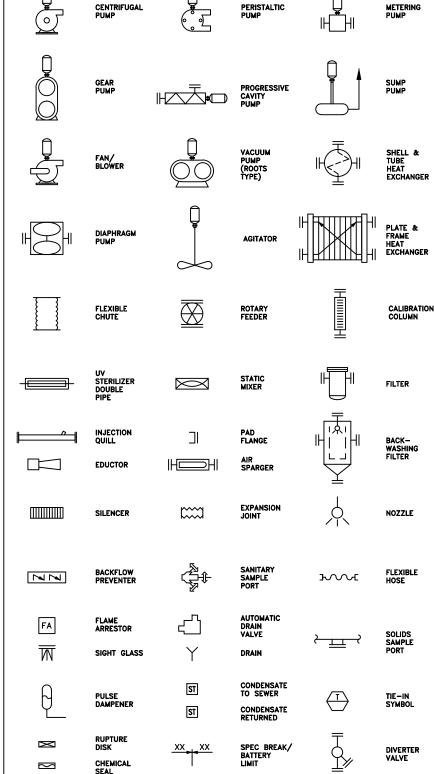
FH FIRED HEATER

FV FILTER, VACUUM

FB FILTER, BELT

UPON FINAL EQUIPMENT SELECTION AND PURCHASE THE CERTIFIED DIMENSIONAL INFORMATION MUST BE VERIFIED BY THE CONTRACTOR, AND ANY IDENTIFIED DEVIATIONS FROM THE EQUIPMENT DATA SHEETS OR SPECIFICATIONS SHALL BE BROUGHT TO THE OWNER'S ENGINEER FOR RESOLUTION.

THE OWNER'S ENGINEER MUST APPROVE ALL DEVIATIONS FROM THE EQUIPMENT DATA SHEETS AND SPECIFICATIONS PROVIDED.



**EQUIPMENT & PIPING SYMBOLS** 

PROPERTY OF THE UNIVERSITY OF FLORIDA. THE FOLLOWING CONTAINS PROPRIETARY INFORMATION THAT THE UNIVERSITY REQUESTS NOT BE RELEASED TO PERSONS NOT DIRECTLY RELATED TO THE PROJECT.

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> UNIVERSITY OF FLORIDA BIOREFINERY PILOT PLANT

PROCESS & INSTRUMENTATION DIAGRAM PROJECT LEGEND

Ford, Bacon & Davis A Limited Liability Compan 7825 PARK PLACE BLVD.

3 06/18/15 WJS 2 12/05/12 JT TPK DCG ISSUED FOR RECORD 1 11/30/10 JT TPK DCG UPDATED AS NOTED PROJ: Y7275 0 07/30/10 KRS TPK DCG ISSUED FOR CONSTRUCTION SCALE: NONE DATE: 01/13/10 REV DATE BY CK APP DESCRIPTION

PIL-PID-0001