THE CITY OF NAPLES WASTE WATER TREATMENT PLANT REUSE PUMP UPGRADES

EXHIBIT A - ITB #14-028





February 11, 2014



THE CITY OF NAPLES 735 EIGHT ST. S NAPLES, FLORIDA 34102

MAYOR JOHN SOREY III **GARY PRICE** VICE MAYOR **BILL MOSS CITY MANAGER** BOB MIDDLETON UTILITIES DIRECTOR

CITY COUNCIL

TERESA HEITMANN MARGARET "DEE" SULIK **BILL BARNETT** DOUG FINLAY SAM SAAD III



10600 CHEVROLET WAY - SUITE 300 - ESTERO - FL 33928 TELEPHONE (239) 390-1467 - FAX (239) 390-1769 - WWW.TETRATECH.COM

10600 CHEVROLET WAY, SUITE 300 ESTERO, FLORIDA 33928 Ph: 239-390-1467 Fax: 239-390-1769

PROJECT LOCATION: 380 RIVERSIDE CIRCLE NAPLES, FLORIDA 34102

Tt PROJECT No.: 200-08516-13002

ISSUED:



Daniel M. Nelson, P.E. Florida Registration 56152 Tetra Tech Inc. 10600 Chevrolet Way, Ste. 300 Estero, Florida 33928 Engineering Business No. 2429

DATE _

PREPARED FOR

TETRA TECH, INC.

Infrastructure Offices Throughout Florida Orlando * Fort Myers



www.tetratech.com

CLIENT INFORMATION:

CITY OF NAPLES 735 EIGHT ST. S NAPLES, FLORIDA 34102

CLIENT PROJECT No.:

PROJECT DESCRIPTION / NOTES:

TO UPGRADE THE SYSTEM BY REPLACING THE TWO (2) 350 HP PUMPS WITH TWO (2) 600 HP PUMPS AND ADDING NEW VFDS FOR ALL PUMPS. IN ADDITION TO THE PUMP IMPROVEMENTS, THE HEATING VENTILATION AND AIR CONDITIONING (HVAC) SYSTEM USED TO COOL THE ELECTRICAL ROOM WHERE THE EXISTING PUMP CONTROLS ARE LOCATED WILL NEED TO BE REPLACED TO PROVIDE SPACE FOR THE NEW VFD CONTROLS

- 08/20/13 60% DESIGN
- 11/08/13 PERMIT SET
- 02/11/14 CONSTRUCTION SET

VICINITY MAP:



GENERAL NOTES

- 1. ALL LABOR, MATERIALS, AND METHODS OF CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE MINIMUM ENGINEERING AND CONSTRUCTION STANDARDS ADOPTED BY THE CITY OF NAPLES, THE PLANS, AND CONSTRUCTION SPECIFICATIONS. WHERE CONFLICTS OR OMISSIONS EXIST, THE CITY OF NAPLES STANDARDS SHALL DICTATE. SUBSTITUTIONS AND DEVIATION FROM PLANS AND SPECIFICATIONS SHALL BE PERMITTED ONLY WHEN WRITTEN APPROVAL HAS BEEN ISSUED BY THE ENGINEER.
- 2. SHOP DRAWINGS OF ALL MATERIALS BEING USED SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- 3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL REQUIRED PERMITS ARE OBTAINED AND IN HAND BEFORE BEGINNING ANY CONSTRUCTION. NO CONSTRUCTION OR FABRICATION OF ANY ITEM SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED ALL PLANS AND ANY OTHER DOCUMENTATION FROM ALL OF THE PERMITTING AND ANY OTHER REGULATORY AUTHORITIES. ANY PENALTIES, STOP WORK ORDERS ON ADDITIONAL WORK RESULTING FROM THE CONTRACTOR BEING IN VIOLATION OF THE REQUIREMENTS ABOVE SHALL BE FULLY BORNE BY THE CONTRACTOR.
- 4. THE LOCATION OF ALL EXISTING UTILITIES AND STORM DRAINAGE SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER OR CITY ASSUMES NO RESPONSIBILITY FOR INACCURACY. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITIES AND TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATION OF THESE UTILITIES WITH THE OWNER OF THE UTILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING UNDERGROUND UTILITY, WHETHER SHOWN ON THE PLAN OR LOCATED BY THE UTILITY COMPANY. ALL UTILITIES WHICH INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FIRST. ANY FEES ASSOCIATED WITH UTILITY RELOCATIONS SHALL BE BORNE IN ACCORDANCE WITH RESPECTIVE UTILITY COMPANY STANDARDS. IT IS REQUESTED UTILITY COMPANIES MOVE THEIR PARTICULAR UTILITIES. ANY DELAY OR INCONVENIENCE CAUSED TO THE CONTRACTOR BY THE RELOCATION OF THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.
- 5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION AND AT LEAST 48 HOURS BEFORE REQUIRED INSPECTION ON EACH AND EVERY PHASE OF WORK. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF 48 HOURS NOTICE PRIOR TO ANY SCHEDULED TESTING. NO PRESSURE TESTING, OR FINAL TESTING WILL BE ACCEPTED UNLESS WITNESSED BY THE ENGINEER'S REPRESENTATIVE.
- 6. ALL CONTRACTORS, CITY REPRESENTATIVES, AND UTILITY COMPANIES ARE RESPONSIBLE FOR THEIR RESPECTIVE SURVEYING AND LAYOUT FROM BENCHMARK PROVIDED ON CONSTRUCTION PLANS. ANY SURVEY MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE REPLACED UPON COMPLETION OF THE WORK BY A REGISTERED LAND SURVEYOR.
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING ANY CONSTRUCTION ACTIVITIES FROM TAKING PLACE OUTSIDE OF THE LIMITS OF CONSTRUCTION SHOWN ON THE PLANS. ANY ON-SITE OR OFFSITE AREAS DISTURBED SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER.
- 8. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION PLANS AND ALL PERMITS ON THE JOB SITE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE TWO (2) SETS OF RECORD DRAWINGS TO THE ENGINEER OF RECORD WITHIN TWO (2) WEEKS AFTER CONSTRUCTION HAS BEEN COMPLETED ON EACH PHASE.
- 9. PRIOR TO BID PREPARATION, THE CONTRACTOR MUST BECOME FAMILIAR WITH THE OVERALL SITE CONDITIONS AND PERFORM ADDITIONAL INVESTIGATIONS AS DETERMINED NECESSARY TO UNDERSTAND THE LIMIT AND DEPTH OF EXPECTED ORGANIC SILT PEAT AREAS, ADEQUACY OF EXISTING MATERIALS AS FILL, DE-WATERING REQUIREMENTS, CLEAN FILL REQUIRED FROM OFFSITE, AND MATERIALS TO BE DISPOSED OF OFFSITE, ALL OF WHICH WILL AFFECT HIS PRICING. ANY DELAY, INCONVENIENCE, OR EXPENSE CAUSED TO THE CONTRACTOR DUE TO INADEQUATE INVESTIGATION OF EXISTING CONDITIONS SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED. THE MATERIALS ANTICIPATED TO BE ENCOUNTERED DURING CONSTRUCTION MAY REQUIRE DRYING PRIOR TO USE AS BACKFILL, AND THE CONTRACTOR MAY HAVE TO IMPORT MATERIALS, AT NO EXTRA COST, FROM OFFSITE TO MEET THE REQUIREMENTS FOR COMPACTION AND PROPER FILL.
- 10. THE CONTRACTOR SHALL SEED AND MULCH ALL AREAS DISTURBED BY CONSTRUCTION UNLESS SODDING, OR OTHER MORE READILY EFFECTIVE STABILIZATION PRACTICES ARE SPECIFIED ON THE PLANS.
- 11. AN ALLOWANCE HAS BEEN INCLUDED FOR VFD PROGRAMMING, WHICH SHALL BE PERFORMED BY TETRA TECH, INC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PHYSICAL EFFORTS ASSOCIATED WITH THE VFD INSTALLATION, LESS PROGRAMMING.
- 12. WORK SHALL BE PERFORMED SUCH THAT ONLY ONE (1) REUSE PUMP MAY BE OUT OF OPERATION AT A TIME AND SUCH THAT TWO 600 HP PUMPS ARE ONLINE AT ALL TIMES.
- 13. SCOPE OF WORK AS DEFINED IN SECTION 01010 INCLUDES REPLACING CONTROLS FOR ALL (4) PUMPS, REPLACING HVAC UNITS IN GENERATOR BUILDING, AND REMOVING AND REPLACING EXISTING PUMP No. 3 AND ASSOCIATED PIPING/APPURTENANCES. WITH THE EXCEPTION OF CONTROLS/WIRING, ALL WORK ASSOCIATED W/ PUMP No. 4 AND ITS ASSOCIATED PIPING/APPURTENANCES IS SHOWN AS FUTURE AND NOT INCLUDED AS PART OF THIS PROJECT.

Sheet Number	
G-000	COVER
G-001	LOCATION I
G-002	LEGENDS A
D-101	REUSE PUN
D-102	REUSE PUN
M-101	HVAC DEM
M-601	HVAC SCHE
E-001	ELECTRICA
E-002	INSTRUMEN
E-101	GENERATO
E-102	GENERATO
E-103	GENERATO
E-601	POWER ON
E-602	CONTROL F

6

|_____

Sheet List Table
Sheet Title
AP, GENERAL NOTES, AND DRAWING INDEX
ID ABBREVIATIONS
PS UPGRADES DEMOLITION PLAN AND SECTIONS
PS UPGRADES IMPROVEMENTS PLAN AND SECTIONS
LITION & NEW WORK FLOOR PLANS
DULES AND DETAILS
LEGENDS
TATION LEGENDS
BUILDING & EFFLUENT PUMP STATION DEMOLITION PLANS
BUILDING & EFFLUENT PUMP STATION ELECTRICAL PLANS
BUILDING & EFFLUENT PUMP STATION ELECTRICAL PLANS_(2)
-LINE
ANEL MODIFICATION AND WIRING

	C		TETRA TECH	RU		WWW.tetratecn.com	10600 CHEVROLET WAY, SUITE 300	ESTERO, FL 33928	H PHONE: (239) 390-1467 FAX: (239) 390-1769
	Daniel M Nelson P F	DE No 56157 El	T.L. IVU. JUIJZ, IL Tetra Tech Inc. 10600 Chevrolet Way Sta 300	Estero, Florida 33928	Engineering Business No. 2429			DATE	
		*****	* * * CIT ONNERS FLOOR			*	ON THE GULF		
	ВΥ								
	DESCRIPTION								
-	RK DATE								
	CITY OF NAPLES, FLORIDA				LOCATION MAP,	CENEDAL NOTES			
	Pro Des Dra Che	ojec sigu awr	ned By By: a By:	2 y: r:	200-0	851	16-1	30 DN C	02 VN GM
			3.	-()()			

LIST OF STANDARD ABBREVIATIONS

ABBREVIATED TERM

	ABBREVIATIO		TFRM		
F			R ΡΔΝΕΙ	E	EAST
	AARV	AUTOMATIC AIR REL	EASE AIR VALVE	EA	EACH
	AAV A	AUTOMATIC AIR VEN ANCHOR BOLT	Т	ECC	EACH FACE
	ABAN ABBSV	ABANDON(ED)		EFF F	EFFLUENT EASEMENT LINE
	ABROV /	ACRYLONITRILE BUT	ADIENE STYRENE	EL	
	ABV AC	ABOVE ALTERNATING CURR	ENT	ELEC	ELECTRICAL
	ACCMP ACP	ASPHALT-COATED CO ASBESTOS CEMENT	ORRUGATED METAL PIPE PIPE	EMER ENC	EMERGENCY ENCASE(MENT)
	ADDM A	ADDENDUM		ENGR EP	ENGINEER
	ADH AFF	ABOVE FINISHED FLO	DOR	EPDM	ETHYLENE PROPYLI
	AFG AFS	ABOVE FINISHED GR ABOVE FINISHED SL/	ADE AB	EPRF EQUIP	EQUIPMENT
	AHD /	AHEAD	-	ER ESMT	ECCENTRIC REDUC
	AL ALT	ALTERNATE		EST	ESTIMATE(D)
	AMP AMT	AMPERE AMOUNT		EXC	EXCAVATE
	APRX ARCH	APPROXIMATE(LY)		EXP EXST	EXPANSION EXISTING
	AS A	ALUM SOLUTION		EXST GR	EXISTING GRADE
	ASPH ASSY	ASSEMBLY		EXTN	EXTENSION
	AVE A/C	AVENUE AIR CONDITIONING		-	
E	A/VV	AIR/VACUUM AIR VAL	VE	F FAB	FABRICATE(D)
	B			FAC	FLANGED ADAPTER
	BAF I	BAFFLE		FB FCV	FLOW-CONTROL VA
	BCV BE	BALL CHECK VALVE		FD FDN	FLOOR DRAIN FOUNDATION
	BFV E	BUTTERFLY VALVE	P	FE FHY	FILTER(ED) EFFLUE
	BI F	BLACK IRON	ĸ	FIG	FIGURE
	BITUM E	BITUMINOUS OR BITU BASELINE	JMASTIC	FIN FIN FL	FINISH(ED) FINISH FLOOR
	BLDG E	BUILDING		FIN GR FL	FINISH GRADE FLUORIDE
	BM E	BENCH MARK		FLG	FLANGE(D)
	BOT	BOTTOM		FLTR	FILTER
	BP E BRG I	BASE PLATE BEARING		FM FPM	FEET PER MINUTE
	BSP E	BLACK STEEL PIPE		FPS FRP	FEET PER SECOND
	BW E	BOTH WAYS		FT	FOOT OR FEET
	BWW	BACKWASH WATER		FUT FV	FOOT VALVE
	С			FW FWP	FINISHED WATER FACTORY WIRED PA
	CAP (F/F	FACE TO FACE
D	CA CA	COMBINATION AIR V	ALVE	G	
	CB (CCC (CATCH BASIN CHLORINE CONTAC ¹	CHAMBER	GA	GAUGE
	CE CEM		JENT JI ITE	GAL GALV	GALLON(S) GALVANIZED
	CFS (CUBIC FEET PER SE	COND	GIP	GALVANIZED IRON F
	CI CI	CAST IRON		GND	GROUND
	CIP (CISP (CAST IRON PIPE CAST IRON SOIL PIPI	E	GPD GPH	GALLONS PER DAY GALLONS PER HOU
	CJ (CONSTRUCTION JOI	NT	GPM GPS	GALLONS PER MINU GALLONS PER SECO
	Ę (CENTER LINE		GR	GRADE
	CLF (CHAIN LINK FENCE		GS	GALVANIZED STEEL
	CLR CLVT CLVT	CLEAR OR CLEARAN CULVERT	CE	GSP GSR	GROUND STORAGE
		CORRUGATED META	L PIPE J. PIPE ARCH	GST GT	GROUND STORAGE GROUT
	CMU (Y UNIT	GV	GATE VALVE
	CND CNR (CORNER		н	
	CO (CO2 (CLEAN OUT CARBON DIOXIDE		НВ	HOSE BIBB
	COAG COL	COAGULANT COLUMN		HD HDPE	HEAVY-DUTY HIGH-DENSITY POLY
0	COM	COMMON		HDR HGR	HYDRAULIC HANGER
C	CONN	CONNECTION		HGT	HEIGHT
	CONSTR (CONT (CONSTRUCT(ION) CONTINUOUS		HOA	HAND RAIL
	CONTR C	CONTRACT(OR)		HORIZ HP	HORIZONTAL HORSEPOWER
	CO.			HPA HR	HIGH PRESSURE AI
	CP CP	CONCRETE PIPE	СН	HVAC	HEATING, VENTILAT
	CPLG (CPVC (COUPLING CHLORINATED POLY	VINYL CHLORIDE	HWL HWY	HIGH WATER LEVEL HIGHWAY
	CR C	CONCENTRIC REDUC		HZ	HERTZ
	CSG (•	1	
	CY CY	CUBIC YARD		ID	
	CYL (C&G (CYLINDER CURB AND GUTTER		INF	INFLUENT
	C/C (CENTER TO CENTER		INT INTR	INTERSECTION INTERIOR
	П			INV IP	INVERT IRON PIPE
	DAT I			IPS IR	
	DBL I DC I	DOUBLE DIRECT CURRENT		IW	IRRIGATION WATER
	DEMO I	DEMOLITION DEPARTMENT			
в	DESC I	DESCRIPTION		J	
	DET I	DIESEL FUEL		JT	JOINT
	DI I DIA I	DUCTILE IRON DIAMETER		K	
	DIFF [N к	KIP (1.000 LB)
	DIP [DUCTILE IRON PIPE		KPL	
	DISCH I DIR I	DIRECTION		KVA	KILOVOLT-AMPERE
	DMH I DN I	DROP MANHOLE DOWN		ĸ₩ KWH	KILOWAT Í KILOWATT-HOUR
	DW I			L	IFFT
	DWG I DWV I	JRAWING DRAIN, WASTE, AND	VENT	LAB	LABORATORY
				LAM LATL	LAMINATE OR LAMIN
				LAV LEN	LAVATORY LENGTH
				LB LF	POUND(S) LINFAR FEFT
				LP	LIGHT POLE
				LS LSS	LIME SLURRY
				LVR LWL	LOUVER LOW WATER LEVEL
А					
1	1				

N ABBREVIATED TERM	ABBREVIAT	ION ABBREVIATED TERM
EAST	M	METER
EACH	MAINT	MAINTAIN OR MAINTENANCE
ECCENTRIC EACH FACE	MAN MAS	MANUAL(LY) MASONRY
	MATL	MATERIAL
ELEVATION	MAX	MOTOR CONTROL CENTER
ELASTOMERIC ELECTRICAL	ME MECH	MITERED END
EMERGENCY	MEG	MATCH EXISTING GRADE
ENCASE(MENT) ENGINEER	MFR MG	MANUFACTURE(R) MILLION GALLONS
EDGE OF PAVEMENT	MGD	MILLION GALLONS PER DAY
ETHYLENE PROPYLENE DIENE MONOMER EXPLOSION PROOF	MH MI	MANHOLE MILE(S)
	MIN	MINIMUM
EASEMENT	MISC	MISCELLANEOUS
ESTIMATE(D) FACH WAY	MJ	MECHANICAL JOINT
EXCAVATE	MO	MASONRY OPENING
EXPANSION EXISTING	MON MPH	MONUMENT MILES PER HOUR
EXISTING GRADE	MPT	MALE PIPE THREAD
EXTENSION	MSP	MOTOR STARTER PANEL
	MTD MV	MOUNTED MOTORIZED VALVE
	MW	MANWAY
FABRICATE(D) FLANGED ADAPTER COUPLING	MWP	MEAN WATER LEVEL MAXIMUM WORKING PRESSU
FLOOR DRAIN		
FOUNDATION FILTER(ED) EFFLUENT		
FIRE HYDRANT	N	NODTH
FIGURE FINISH(ED)	N NE	NORTH
FINISH FLOOR	NIC	NOT IN CONTRACT
FLUORIDE	NOM	NOMINAL
FLANGE(D) FLOW LINE	NPF NPT	NATIONAL PIPE THREAD NATIONAL PIPE TAPER (THRE
FILTER	NPW	NON-POTABLE WATER
FORCE MAIN FEET PER MINUTE	NRS NTS	NON-RISING SYSTEM NOT TO SCALE
	NW	
FOOT OR FEET	N/A	NOT APPLICABLE
	0	
FINISHED WATER	02	OXYGEN
FACTORY WIRED PANEL FACE TO FACE	OC OD	ON CENTER OUTSIDE DIAMETER
	ODP	OPEN DRIP PROOF
	OF OH	OVER HEAD
GAUGE	OHW	OVER HEAD WIRE
GALVANIZED	OPT	OPTIONAL
GALVANIZED IRON PIPE GROOVE JOINT	O.R. OSY	OFFICIAL RECORDS OUTSIDE SCREW AND YOKE
	O&M	OPERATION AND MAINTENAN
GALLONS PER HOUR	P	
GALLONS PER MINUTE GALLONS PER SECOND	P PA	PROCESS AIR
GRADE	PC	POINT OF CURVE
GRATING GALVANIZED STEEL	PCM PE	PERMANENT CONTROL MONU PLAIN END
GALVANIZED STEEL PIPE	PG	PRESSURE GAGE
GROUND STORAGE RESERVOIR GROUND STORAGE TANK	PI PL	PLATE
	P.	
	POB	POINT OF BEGINNING
	POJ POL	PUSH-ON JOINT POLYMER
	PP	
HIGH-DENSITY POLYETHYLENE	PPD PPM	POUNDS PER DAT PARTS PER MILLION
HYDRAULIC HANGER	PREFAB	PREFABRICATED
HEIGHT	PRV	PRESSURE REDUCING VALVE
HAND RAIL HAND-OFF-AUTO	PRW PSF	PROCESS WATER POUNDS PER SQUARE FOOT
HORIZONTAL	PSI	POUNDS PER SQUARE INCH
HORSEPOWER HIGH PRESSURE AIR	PSIG	POUNDS PER SQUARE INCH A
	PT PV	POINT OF TANGENCY
HIGH WATER LEVEL	PVC	POLYVINYL CHLORIDE
HIGHWAY HERTZ	PVMT PW	PAVEMENT POTABLE WATER
	PWR	POWER
	0	
	Q	FLOW/
INFLUENT	QTY	QUANTITY
INTERSECTION INTERIOR	_	
INVERT	R	
IRON PIPE INTERNATIONAL PIPE STANDARD	RAD RAS	RETURN ACTIVATED SLUDGE
INTERNAL RECYCLE	RC	
	RCP	REINFORCED CONCRETE PIP
	RCPA RD	REINFORCED CONCRETE PIP ROAD
JUNCTION BOX	RDC	
JOINT	REF	REFERENCE
	REINF RFM	REINFORCE(D)(ING)(MENT) REMOVE(ABLE)
KIP (1,000 LB)	REQD	
KILOVOLT	кн RJ	RESTRAINED JOINT
KILOVOLT-AMPERE KILOWATT	RM RPRP	
KILOWATT-HOUR	RPM	REVOLUTIONS PER MINUTE
	RR RT	RAILROAD RIGHT
	RVT	
LABORATORY	кw RWW	REUSE WATER
LAMINATE OR LAMINATION	R/W	RIGHT-OF-WAY
LAVATORY		
LENGTH POUND(S)		
LIME SLURRY		
LIME STABILIZED SLUDGE		

MONUMENT MILES PER HOUR MALE PIPE THREAD MOTOR STARTER MOTOR STARTER PANEL MOUNTED MOTORIZED VALVE MANWAY MEAN WATER LEVEL MAXIMUM WORKING PRESSURE NORTH NORTHEAST NOT IN CONTRACT NUMBER NOMINAL NATIONAL PIPE THREAD NATIONAL PIPE TAPER (THREAD) NON-POTABLE WATER NON-RISING SYSTEM NOT TO SCALE NORTHWEST NOT APPLICABLE OXYGEN ON CENTER OUTSIDE DIAMETER OPEN DRIP PROOF OUTSIDE FACE OVER HEAD OVER HEAD WIRE OPPOSITE OPTIONAL OFFICIAL RECORDS OUTSIDE SCREW AND YOKE OPERATION AND MAINTENANCE PROCESS AIR POINT OF CURVE PERMANENT CONTROL MONUMENT PLAIN END PRESSURE GAGE POINT OF INTERSECTION PLATE PROPERTY LINE PINCH VALVE POINT OF BEGINNING PUSH-ON JOINT POLYMER POWER POLE POUNDS PER DAY PARTS PER MILLION PREFABRICATED PRESSURE PRESSURE REDUCING VALVE PROCESS WATER POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH ABSOLUTE POUNDS PER SQUARE INCH GAGE POINT OF TANGENCY PLUG VALVE POLYVINYL CHLORIDE PAVEMENT POTABLE WATER POWER FLOW QUANTITY

RADIUS
RETURN ACTIVATED SLUDGE
REINFORCED CONCRETE
REINFORCED CONCRETE BOX
REINFORCED CONCRETE PIPE
REINFORCED CONCRETE PIPE ARCH
ROAD
REDUCER
REINFORCING STEEL
REFERENCE
REINFORCE(D)(ING)(MENT)
REMOVE(ABLE)
REQUIRED
RAISED FACE
RESTRAINED JOINT
ROOM
REDUCED PRESSURE BACKFLOW PREVENTER
REVOLUTIONS PER MINUTE
RAILROAD
RIGHT
RIVETED
REUSE WATER
RAW WASTEWATER
RIGHT-OF-WAY

SAN

SCH

SD

SEC

SEF

SIG

SLV

SM

SOLN

									<u>PIP</u>	ING L
REVIATION ABBREVIATED TERM			FLANGED			MECHANICAL-JOINT				
		FITTING/ APPURTENANCE	SINGLE-LINE		DOUBLE-LINE		SINGLE-LINE		DOUBLE-LINE	
	SOUTH SAMPLE		EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPC
ED T =	SANITARY SCHEDULE STORM DRAIN SOUTHEAST SECTION SECONDARY EFFLUENT SQUARE FOOT OR FEET	BEND		-#_			-+++ -+	-+++		
	SHEET(ED)(ING) SIGNAL SIMILAR SLUDGE SLEEVE SHEET METAL	TEE		+++-			+) - (- 	+) _ (+		

	SOLUTION					
	SOIL PIPE SPACE(ING) SPECIFICATION SUPPORT SOUARE	WYE		+++		
	SANITARY SEWER SUBSTANDARD EFFLUENT STAINLESS STEEL STREET STATION	CONCENTRIC REDUCER				
	STANDARD STAKE STEEL STRAIGHT	САР				- <u></u>
-	STRUCTURAL SURFACE SOLENOID VALVE SERVICE	PLUG (PLUGGED VALVE)	N/A	N/A	N/A	N/A
	SOUTHWEST SIDEWATER DEPTH SURFACE WASH	BUTTERFLY VALVE	+	∥∔∥		• -
	SYMMETRICAL SIDEWALK	BALL VALVE	N/A	N/A	N/A	N/A
	TANGENT	CHECK VALVE		_ • _\		
	TEMPORARY BENCH MARK TEST BORING-xx (e.g. TB-1) TRENCH DRAIN	GATE VALVE		- -		
					4	

PLUG VALVE

PINCH VALVE

AUTOMATIC

CONTROL VALVE

_||●||__

-R-

SITE SYMBOLS

EXISTING SIGN

FEATURES

NEW SIGN

MAIL BOX

POWER METER

RAIL ROAD SIGNAL

4"-16" DIAMETER.

MISCELLANEOUS

(???.?) SOFT SPOT ELEVATION

----- FLOW DIRECTION

1.00% SLOPE ARROW

HARD SPOT ELEVATION

HANDICAP MARKING

EMBANKMENT

REMOVE TREES

<u>SURVEY</u>

BENCHMARK

NAIL & DISK

• S SET IRON (TYPE)

TRAVERSE POINT

FOUND IRON (TYPE)

FOUND MONUMENT (TYPE)

SET MONUMENT (TYPE)

SECTION CORNER

TREE PROTECTION

WRAP INLETS WITH FILTER FABRIC

HARDWOOD OAK TREE

PALM TREE 4"-12" DIAMETER.

POST

пРМ

ፊЪ

??????

[]

L_.

📥 BN

⊘ND

∕_тр

• F

∗^{FLAG} **FLAG**

—Ĥ

TOP OF BEAM
TEMPORARY BENCH MARK
TEST BORING-xx (e.g. TB-1)
TRENCH DRAIN
TOTAL DYNAMIC HEAD
TOTALLY ENCLOSED
TOTALLY ENCLOSED FAN COOLED
TELEPHONE
TOTALLY ENCLOSED NON-VENTILATED
THREAD(ED)
THICK(NESS)
TELEMETRY
TOP OF BANK
TOP OF CURB
TOE OF SLOPE
TOTAL
TELEPHONE POLE
THICKENED SLUDGE

TELEVISION TYPICAL TOP AND BOTTOM

UNDERDRAIN UNDERGROUND ULTIMATE UNION UNLESS OTHERWISE NOTED UNDERGROUND ELECTRIC UNDERGROUND TELEPHONE CABLE UTILITY

VOLT(S) VACUUM VARIES VERTICAL CURVE VITRIFIED CLAY PIPE VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME

WATT WEST WASTE ACTIVATED SLUDGE WALL CLEAN OUT WIDE FLANGE WALL HYDRANT WATER LINE WATER MAIN WATER PROOF(ING) WORKING PRESSURE WATER SURFACE WELDED STEEL PIPE WEIGHT WATER TREATMENT PLANT WASH WATER WELDED WIRE FABRIC WELDED WIRE MESH WASTEWATER TREATMENT PLANT WITH WITHOUT

TRANSFER

YD

YH YR YARD(S) YARD HYDRANT YEAR(S)

|--|

니ㅁト

N/A

 $|\bowtie|$

N/A

__)•(|____

-|Å|--

N/A

____)**i**(|-____

N/A

____))●(|-

TYPICAL LINETYPES

R/W
EL EL
EL.)
SF
xxxxx
 · - + + + + + + + + + + + + + + + + + +
G
UE
OE

RIGHT OF WAY LINE PROPERTY LINE UTILITY EASEMENTS EX. CONTOUR - MAJOR EX. CONTOUR - MINOR PROP. CONTOUR - MAJOR PROP. CONTOUR - MINOR WETLAND BOUNDARY SILT FENCE FENCE FENCE (STEEL) FLOOD HAZARD FLOW ARROW GUARD RAILING GRAVEL ROAD OR DRIVE RAIL ROAD TRACKS WATER EDGES/C.L'S TREE / BRUSH LINES SANITARY SEWER WATER MAIN SANITARY LINE STORM SEWER NATURAL GAS STEAM POWER UNDERGROUND POWER OVERHEAD STORM PIPES BASELINE LIMIT OF CONSTRUCTION

PING LEGEND

PROPOSED

輪

N/A

╶══╢╠┝╡╣╟═

N/A

N/A

N/A

X

—D1—

N/A

_N__

_[•[-

N/A

N/A











MECHANICAL ABBREVIATIONS

20x12	DUCT SIZE, FIRST FIGURE IS DIMENSION SHOWN ON PLAN
	GRILLE OR REGISTER, SIDEWALL
T	THERMOSTAT
	DEMOLISH

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFG	ABOVE FINISH GRADE
APD	AIR PRESSURE DROP
BHP	BRAKE HORSEPOWER
CAP.	CAPACITY
CONC	CONCRETE
CONN	CONNECTION
CU	CONDENSING UNIT
EAT	ENTERING AIR TEMPERATURE
ENT	ENTERING
ESP	EXTERNAL STATIC PRESSURE
F	FAHRENHEIT
FPM	FEET PER MINUTE
HP	HORSEPOWER
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MIN	MINIMUM
N.T.S.	NOT TO SCALE
OA	OUTDOOR AIR
PD	PRESSURE DROP
RA	RETURN AIR
SA	SUPPLY AIR
SP	STATIC PRESSURE
TEMP	TEMPERATURE
TYP	TYPICAL
V	VOLT
WG	WATER GAUGE

PARTIAL GENERATOR **BUILDING HVAC PLAN**

1/4" = 1' - 0"

<u>AHU-2</u>

MECHANICAL GENERAL NOTES:

THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES, AND CONTRADA METERS OF VENUE COORDINATED WITH ALL DISCIPLINES. ALL PARAMETERS GIVEN IN THESE DOCUMENTS SHALL BE STRICTLY CONFORMED WITH. ANY ITEMS AND LABOR REQUIRED FOR A COMPLETE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, AND THESE CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT OCCURING ANY ADDITIONAL COST TO THE OWNER. CAREFULLY REVIEW ALL CONTRACT DOCUMENTS AND THE DESIGN OF OTHER TRADES BEFORE PREPARING SHOP DRAWINGS.

2. COORDINATE EQUIPMENT WITH ALL OTHER DISCIPLINES AND TRADES.

3. COORDINATE THE EXACT LOCATION AND SIZE OF ALL WALL PENETRATIONS WITH ARCHITECTURAL.

4. MOUNT THERMOSTATS WHERE INDICATED ON PLANS, 4'-0" A.F.F. UNLESS NOTED OTHERWISE.

5. COORDINATE WITH ELECTRICAL CONTRACTOR TO VERIFY CONTROL VOLTAGES WITH EQUIPMENT AND PROVIDE ACCORDINGLY.







MARK	MANUFACTURER / MODEL	AREA SERVICED	CFM	MIN. O.A.
AHU-1	SPECIFIC SYSTEMS / AIRPAK 120	ELEC EQUIPMENT	3900	50
AHU-2	SPECIFIC SYSTEMS / AIRPAK 180	ELEC EQUIPMENT	5700	50
NOTEO	-			

NOTES

INSTALL SUPPLY MOUNTED IONIZATION TYPE DUCT SMOKE DETECTORS INTERLOCKED WITH UNIT TO PROVIDE SHUT DOWN. PROVIDE TECHNICOAT COATED COILS, 316 STAINLESS STEEL CABINET, AND CARBOLINE COATED CONDENSER SECTION. 2. 3. PROVIDE CONDENSATE DRAIN TO GRADE.



E.S.P. (IN W.G.)

0.1

0.1

	AIF	R HAND	ling	UNIT S	SCHEDUL	E								
			COOLING	G CAPACITY				HEATING CA	APACITY				WEIGHT (LBS)	
OTAL MBH	SENSIBLE MBH	SENSIBLE HEAT RATIO	E.A.T. DB/WB (°F)	L.A.T. DB/WB (°F)	MAX COIL FACE VELOCITY (FPM)	REFRIG.	NO. OF CIRCUITS	CAPACITY (kW)	MCA	PHASE	FILTERS	TEMP.		REMARKS
22.8	89.4	0.73	80 / 67	56 / 56	550	R410A	2	N/A	N/A	460/3	MFR. STD.	95	1000	SEE NOTES
70.8	115.4	0.68	80 / 67	56 / 56	550	R410A	2	N/A	N/A	460/3	MFR. STD.	95	1150	SEE NOTES

NOTE:

∖M-601

/ N.T.S.

SHEET METAL

SCREW (TYP.)

AT EXTERIOR WALLS FLASH & SEAL PENETRATION WEATHERTIGHT

PROVIDE LOW AMBIENT CONTROL

PROVIDE DUPLEXOR CONTROLLER. PROVIDE MANUFACTURER STANDARD WALL-MOUNTED SUPPLY AND RETURN GRILLES.



2 CONDENSATE DRAIN DETAIL



WALL -

DUCT

SINGLE ZONE UNIT - SEQUENCE OF OPERATION

RUN CONDITIONS - CONTINUOUS: THE UNIT SHALL RUN WHENEVER THE SPACE REQUIRES COOLING AND SHALL MAINTAIN:

- A 74°F (ADJ.) COOLING SETPOINT

• A 70°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN 40°F (ADJ.).

SUPPLY AIR SMOKE DETECTION:

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

SUPPLY FAN:

THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

COOLING STAGES:

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE COOLING SHALL BE ENABLED WHENEVER:

- THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE SUPPLY FAN STATUS IS ON.

OUTSIDE AIR DAMPER:

THE OUTSIDE AIR DAMPER SHALL OPEN TO PROVIDE MINIMUM OUTSIDE AIR VENTILATION ANYTIME THE UNIT IS ACTIVATED. THE MIXED AIR DAMPERS SHALL CLOSE 5SEC (ADJ.) AFTER THE SUPPLY FAN STOPS.

FILTER DIFFERENTIAL PRESSURE MONITOR: THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

 FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

RETURN AIR HUMIDITY: THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY.

- ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70% (ADJ.).
- LOW RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS LESS THAN 35% (ADJ.).
- SUPPLY AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR
- TEMPERATURE IS GREATER THAN 120°F (ADJ.). LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR
- TEMPERATURE IS LESS THAN 45°F (ADJ.).

MULTI-UNIT CONTROL: MANUFACTURER SUPPLIED DUPLEXOR CONTROLLER SHALL BE PROVIDED FOR STAGING THE TWO SINGLE ZONE UNITS AS REQUIRED TO MEET THE ZONE SETPOINT. THE CONTROLLER SHALL ALSO PROVIDE AUTO CHANGEOVER TO SWITCH THE BACKUP UNIT EVERY USER DEFINABLE PERIOD OF TIME (ADJ.).

SING	LE Z	ONE	E UI	١T	- PC	Ν	S LI	ST		
	HA	RDWAF		ITS		SOFT	WARE F	POINTS		
POINT NAME	AI	AO	BI	во	AV	BV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
ZONE TEMP	Х							Х		Х
FILTER DIFFERENTIAL PRESSURE	Х							Х		
RETURN AIR HUMIDITY	Х							Х		Х
SUPPLY AIR TEMP	Х							Х		Х
SUPPLY AIR SMOKE DETECTOR			Х					Х	Х	Х
SUPPLY FAN STATUS			Х					Х		Х
SUPPLY FAN START/STOP				Х				Х		Х
COOLING STAGE 1				Х				Х		Х
COOLING STAGE 2				Х				Х		Х
OUTSIDE AIR DAMPER				Х						Х
RETURN AIR DAMPER				Х						Х
COOLING SETPOINT								Х		Х
HIGH ZONE TEMP									Х	
LOW ZONE TEMP									Х	
SUPPLY FAN FAILURE									Х	
SUPPLY FAN IN HAND									Х	
SUPPLY FAN RUNTIME EXCEEDED									Х	
COMPRESSOR RUNTIME EXCEEDED									Х	
FILTER CHANGE REQUIRED									Х	
HIGH RETURN AIR HUMIDITY									Х	
LOW RETURN AIR HUMIDITY									Х	
HIGH SUPPLY AIR TEMP									Х	
LOW SUPPLY AIR TEMP									Х	
TOTALS	4	0	2	5	0	0	0	10	12	11
	тот	ALHAR	DWAR	E (11)	ΤΟΤΑ	L SOF	TWARE	(22)		

MIN. 24 GA. SHEET METAL ESCUTCHEON PLATE ON BOTH SIDES OF WALL AROUND

SUPPLY OR RETURN

AIR GRILLE.

	De Dra Ch	CITY OF NAPLES, FLORIDA	MARK	DATE	DESCRIPTION	BΥ		Dorden S herden D E	Ũ		
\mathbf{N}	sigr awn eck	jec	- -	11/08/13	ISSUED FOR PERMIT		* * * * * * *		10		
	ne n E							L.E. NO. 04172, FL			
1.	d By By: d By						CTT OF OF NAVLES FLORIDA	Tetra Tech Inc. 10600 Chevrolet Wey, Ste 300	STI		I J
-(y: /:							Estero, Florida 33928	RU	5	
5		HVAC SCHEDULES						Engineering Business No. 2429	СТ]	
С									IO	www.tetrate	tech.com
)							ON THE GULE		NS	10600 CHEVROLET WAY, SUI	JITE 300
1	S S S	130					***	DATE	SE	ESTERO, FL	- 33928
	BR BR BR	002							T	PHONE: (239) 390-1467 FAX: (239) 39	90-1769

SYMBOL	KGROUND PLAN AND ONE LINE STIMBOLS		C SYMBOL FOR INSTRUMENTATION					
			DESCRIPTION		FIRST LETTER		UCCEEDING LETTERS	
			DEVICE MOUNTED ON PANEL	B BUF		BATCH		
					ISITY, SPECIFIC GRAVITY	CONTRO	JE (FEEDBACK I FPE)	2. INSTALL
				E VOI	<u>TAGE</u>	PRIMAR	Y ELEMENT	- SHALL BE C
			BOARD OR PANEL MOUNTED DEVICE - DEVICE MOUNTED INSIDE PANEL	G GAG	GING	GLASS		DEVICES SI
					RRENT	INDICAT	Ë	
OS			FIELD OR LOCALLY MOUNTED DEVICE			SCAN		3. THE FOL
ТВ	TERMINAL BOX				E, TIME SCHEDOLE EL, LIGHT	LOW	JE (NO FEEDBACK)	(F) FIELD (S) STAR ⁻
\otimes	SOLENOID VALVE			M MO	STURE, HUMIDITY	MIDDLE,	, MODULATE	(MCP) AT
PC	PHOTOCELL LINE VOLTAGE		PROGRAMMED FUNCTION NOT NORMALLY ACCESSIBLE TO OPERATOR	O OVI	ERLOAD	ORIFICE		(1) AT CC
	LIGHTING PANEL, CONTROL PANEL, DISTRIBUTION PANEL, ETC., WALL MOUNTED			P PRE		POINT		(2) AT CC (TCP) AT
JB	JUNCTION BOX		PROGRAMMED FUNCTION ACCESSIBLE THROUGH OPERATOR'S	R RAL	DIOACTIVITY	RECORE	D, PRINT, RECEIVE	
			INTERFACE DEVICE	S SPE	ED, FREQUENCY, SOLENOID	SWITCH		4. NO WIRE
					TIVARIABLE	MULTIFU	JNCTION	_ SIGNAL I YI
	CONDUIT WITH CONDUIT SEAL FITTING		PLC INPUT OR OUTPUT POINT	V VIB		VALVE, I	DAMPER, LOUVER	
	CONDUIT EXPOSED				IGHT, FORCE			5. CONDUIT
	CONDUIT CONCEALED			Y Poor		RELAY, O	COMPUTE	CONDUIT R
E E	DIRECT BURIED CONDUIT		MOTOR STARTER		SITION			THESE ARE
— uc ——— uc ———	DIRECT BURIED CABLE				INSTRUMENTATIC	ON LINE S	SYMBOLS	
				SYMBOL		DESCRIPTION	N	6. RACEWA
_ 00 00			FLOAT SWITCH					
— DB ——— DB ———		_						7. CONDUIT
123_	CONCRETE ENCASED DUCT BANK WITH CABLE LOCATIONS. AND SPARE DUCTS AS		OFF PAGE CONNECTOR		AIR LINE/PNEUMATIC SIGNAL			
4)5)6)	INDICATED ON DRAWINGS			- 	HYDRAULIC SIGNAL			8. THE EXIS
\bigcirc	CABLE REEL		PROCESS MACHINERY MOTOR		ELECTROMAGNETIC OR SONIC S	IGNAL		MULTI-CON
EDB EDB EDB	EXISTING UNDERGROUND DUCT BANK	8	IN-FLOW ELEMENT (PROPELLER TYPE)	-oo	SOFTWARE SIGNAL			
	MULTI-STACK ALARM LIGHTS						ık	1
					CONNECTION TO FROCESS, OR N			-
	SELECTOR SWITCH / PUSHBUTTON.			E-NET	ETHERNET COMMUNICATION SIG	NAL-UNSHIELDE	ED TWISTED PAIR (UTP)-SPEED	
		- (●)	PUMP					4
	LOW VOLTAGE GENERAL USE DISCONNECT SWITCH			E-FO	ETHERNET FIBER OPTIC COMMU	NICATIONS SIGN	JAL	
	LOW VOLTAGE FUSE (BELOW 600V)			V_F0	ETHERNET VIDEO FIBER OPTIC			_
3	STARTERS SHALL BE FULL VOLTAGE, NON-REVERSING UNLESS OTHERWISE							_
Kv	INDICATED. (EVR) FULL VOLTAGE REVERSING			F0 F0	PLC REMOTE I/O FIBER OPTIC CC	DMMUNICATION S	SIGNAL	
FVR	(RV) REDUCED VOLTAGE				NTROL CIRCUIT & F		VICELEGEND	
<u>3</u> _2S,2W	(2S, 2W) TWO SPEED, TWO WINDING							ST/
$ \begin{array}{c} $	600V, 3 POLE MOLDED CASE CIRCUIT BREAKER, FRAME & RATING AS SHOWN			5 Y MBOL	DESCRIPTION	STIVIBOL	DESCRIPTION	
	SINGLE PHASE FRACTIONAL HP MOTOR TO LOCATION INDICATED				DRESS ACTUATED SWITCH	\sim		│
2) A-3	(SEE NOTE 2)	(т)	TIMING RELAY COIL (OFF DELAY)		TRESS. ACTUATED SWITCH		LOAT ACTUATED SWITCH	
7								TAG TI
Α			INDICATING LIGHT		FLOW ACTUATED SWITCH		TEMP. ACTUATED SWITCH	A1-1A
	I HREE PHASE LOAD WITH IDENTIFICATION	∥ ,G	G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW					
					LIMIT SWITCH -	<u>~~~</u> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	LIMIT SWITCH -	
		$-\parallel$ $\Omega(R)$			NORMALLY OPEN		NORMALLY CLOSED	+ $+$ $ -$
FT			G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW	000	CLOSED - HELD OPEN	000	OPEN - HELD CLOSED	
10			120V SECONDARY TRANSFORMER		LATCHING CABLE SWITCH		TIME DELAY FUSE	PUSHE
					MOMENTARY PUSHBUTTON		PUSHBUTTON OPERATOR	
A-3		0 0			OPERATOR-NORMALLY CLOSED		WITH MUSHROOM HEAD	
	FOR POWER (SEE NOTE 2)		MOMENTARY PUSHBUTTON OPERATOR - NORMALLY CLOSED		MOMENTARY PUSHBUTTON		FIELD LOCATED STOP	ST
					OPERATOR-NORMALLY OPEN	(F)		
	CONDULT AND WIRE RUN FROM DEVICE INDICATED TO LOCATION INDICATED		MOMENTARY PUSHBUTTON OPERATOR - NORMALLY OPEN			N	CONTROL RELAY CONTACT -	
					TIMING RELAY INSTANTANEOUS		TIMING RELAY INSTANTANEOUS	-
困	CAPACITOR, 3 PHASE, SIZE AS INDICATED		SELECTOR SWITCH - NORMALLY OPEN	I INST.	CONTACT, NORMALLY OPEN	[\] NST.	CONTACT, NORMALLY CLOSED	-
	DISCONNECT SWITCH: (BLANK) = NON-FLISED (E) - FLISED (C) - CIRCUIT BREAKED					T		
			FUSHDUITUN UPERATUR WITH MUSHROOM HEAD, MAINTAINED		CONTROL RELAY COIL	「てノ		
	MAGNETIC STARTER (BACKGROUND DRAWINGS ONLY)							┥└───
	COMBINATION MAGNETIC STARTER FUSED UNLESS NOTED (C = CIRCUIT BREAKER)						SELECTOR SWITCH	
							SHOWN	
			THERMAL OVERLOAD				H = HAND	
	MANUAL STARTER (R) = REVERSING	_	FIELD LOCATED				O = OFF	
	CONTROL PANEL						R = REMOTE	
СР							L = LOCAL	
		<i> M</i>						_ OFF
	UNIT HEATER, 1/8 HORSEPOWER					1	TIMED OPEN CONTACT ON	
CP 1/8 UH-19	UNIT HEATER, 1/8 HORSEPOWER		LOW VOLTAGE FUSE		TIMED CLOSED CONTACT ON	010		_
	UNIT HEATER, 1/8 HORSEPOWER		LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK		TIMED CLOSED CONTACT ON ENERGIZATION	oto	ENERGIZATION	and the second
	UNIT HEATER, 1/8 HORSEPOWER		ICKNINAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON	070	TIMED CLOSED CONTACT ON	
	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2)		ICKNINAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON DE-ENERGIZATION	010 010	TIMED CLOSED CONTACT ON DE-ENERGIZATION	
	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2)		LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON DE-ENERGIZATION ZERO SPEED OR		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT	
CP 1 8 UH-19 0 - - A-3 NEMA 4	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT		Interviewed LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCH		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER,	
CP 1 8 UH-19 0 	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF		LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON DE-ENERGIZATION ZERO SPEED OR ANTI-PLUGGING SWITCH		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW	
CP 1 8 UH-19 0 	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D		I LINIMAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON DE-ENERGIZATION ZERO SPEED OR ANTI-PLUGGING SWITCH		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED	
CP 1 8 UH-19 0 	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1		LINNINGE LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN SHUT)		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START	
CP 1 8 UH-19 0 - A-3 NEMA 4 NEMA 4X NEMA 7 NEMA 9 ⟨K⟩	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK		I LINIMAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT)		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATIONPUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOWMAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)	
CP 1 8 UH-19 0 	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR		I LININAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT)		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)	
CP 1 8 UH-19 0 	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR		I LINNINAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER CONTROL POWER TRANSFORMER DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT)		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATIONPUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOWMAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)SOLENOID OR CLUTCH	
CP 1 8 UH-19 0 - A-3 NEMA 4 NEMA 4X NEMA 7 NEMA 9 K SD E	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT		I LIXINIVAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT)		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON DE-ENERGIZATION ZERO SPEED OR ANTI-PLUGGING SWITCH MAINTAINED STOP-START PUSHBUTTON OPERATOR MAINTAINED PUSH-PULL		TIMED CLOSED CONTACT ON DE-ENERGIZATIONPUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOWMAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)SOLENOID OR CLUTCH	
CP 1 8 UH-19 0 	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE		Interview Interview		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATORMAINTAINED PUSH-PULL OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG) SOLENOID OR CLUTCH ELAPSED TIME INDICATOR	
CP 1 8 UH-19 0 - A-3 NEMA 4 NEMA 4X NEMA 7 NEMA 9 K SD E	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE		I LININGL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT) PNEUMATIC DIAPHRAGM OR POSITIONER (THROTTLING) ELECTRIC OPERATOR, OPEN-SHUT		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATORMAINTAINED PUSH-PULL OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG) SOLENOID OR CLUTCH ELAPSED TIME INDICATOR	
CP 1 8 UH-19 0 A-3 NEMA 4 NEMA 4 NEMA 4 NEMA 7 NEMA 9 K SD E C	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE		I LINMINAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT) PNEUMATIC DIAPHRAGM OR POSITIONER (THROTTLING) ELECTRIC OPERATOR, OPEN-SHUT		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATORMAINTAINED PUSH-PULL OPERATOR		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG) SOLENOID OR CLUTCH ELAPSED TIME INDICATOR MOLDED CASE CIRCUIT	
CP 1/8 UH-19 0 A-3 NEMA 4 NEMA 4 NEMA 7 NEMA 9 K SD E C	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE INCANDESCENT LUMINAIRE		Interview Interview		TIMED CLOSED CONTACT ON ENERGIZATION TIMED OPEN CONTACT ON DE-ENERGIZATION ZERO SPEED OR ANTI-PLUGGING SWITCH MAINTAINED STOP-START PUSHBUTTON OPERATOR MAINTAINED PUSH-PULL OPERATOR LOCAL TERMINALS WITH		ENERGIZATIONTIMED CLOSED CONTACT ON DE-ENERGIZATIONPUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOWMAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)SOLENOID OR CLUTCHELAPSED TIME INDICATORMOLDED CASE CIRCUIT BREAKER	
$ \begin{array}{c} \mathbb{CP} \\ 1_8 \\ UH-19 \\ \hline $	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE INCANDESCENT LUMINAIRE HIGH INTENSITY DISCHARGE LIGHT		Introduct LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT) PNEUMATIC DIAPHRAGM OR POSITIONER (THROTTLING) ELECTRIC OPERATOR, OPEN-SHUT ELECTRIC OPERATOR, THROTTLING BALL VALVE		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATORMAINTAINED PUSH-PULL OPERATORLOCAL TERMINALS WITH EXTERNAL WIRING		ENERGIZATIONTIMED CLOSED CONTACT ON DE-ENERGIZATIONPUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOWMAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)SOLENOID OR CLUTCHELAPSED TIME INDICATORMOLDED CASE CIRCUIT BREAKER	
CP 1 8 UH-19 0 - A-3 NEMA 4 NEMA 4X NEMA 7 NEMA 9 K SD E Image: Comparison of the second	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE INCANDESCENT LUMINAIRE HIGH INTENSITY DISCHARGE LIGHT EMERGENCY BATTERY PACK		I LININAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT) PNEUMATIC DIAPHRAGM OR POSITIONER (THROTTLING) ELECTRIC OPERATOR, OPEN-SHUT ELECTRIC OPERATOR, THROTTLING BALL VALVE GLOBE VALVE		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATORMAINTAINED PUSH-PULL OPERATORLOCAL TERMINALS WITH EXTERNAL WIRING		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG) SOLENOID OR CLUTCH ELAPSED TIME INDICATOR MOLDED CASE CIRCUIT BREAKER	
CP 8 UH-19 A-3 NEMA 4 VEMA 4X NEMA 7 NEMA 9 K SD E D C E C E C C C C C C C C C C C C C	UNIT HEATER, 1/8 HORSEPOWER LIGHTNING ARRESTOR LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2) WATERTIGHT WATERTIGHT WATERTIGHT AND CORROSION PROOF EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D EXPLOSION PROOF - CLASS II, DIVISION 1 KEY LOCK OR KEY INTERLOCK SMOKE DETECTOR EXIT LIGHT FLUORESCENT LUMINAIRE INCANDESCENT LUMINAIRE HIGH INTENSITY DISCHARGE LIGHT EMERGENCY BATTERY PACK		I LININAL LOW VOLTAGE FUSE FUSIBLE TERMINAL BLOCK CIRCUIT BREAKER WITH STAB CONNECTION CONTROL POWER TRANSFORMER GRAPHIC SYMBOLS FOR VALVES DESCRIPTION STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT) STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING) PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT) PNEUMATIC DIAPHRAGM OR POSITIONER (THROTTLING) ELECTRIC OPERATOR, OPEN-SHUT ELECTRIC OPERATOR, THROTTLING BALL VALVE GLOBE VALVE GATE VALVE OR KNIFE GATE		TIMED CLOSED CONTACT ON ENERGIZATIONTIMED OPEN CONTACT ON DE-ENERGIZATIONZERO SPEED OR ANTI-PLUGGING SWITCHMAINTAINED STOP-START PUSHBUTTON OPERATORMAINTAINED PUSH-PULL OPERATORLOCAL TERMINALS WITH EXTERNAL WIRING		TIMED CLOSED CONTACT ON DE-ENERGIZATION PUSH-TO-TEST INDICATING LIGHT G = GREEN, R = RED, A = AMBER, W = WHITE, B = BLUE, Y = YELLOW MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG) SOLENOID OR CLUTCH ELAPSED TIME INDICATOR MOLDED CASE CIRCUIT BREAKER	

"FIELD LOCATE", CHECK THE DRAWINGS OF OTHER TRADES FOR INTERFERENCE AND NG FLANGES, CONNECTIONS POINTS, ETC.

UCTOR INSULATED (RHW, THHN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, IGS, OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE ACH END TO THE EQUIPMENT GROUND. THIS ALSO INCLUDES INSTRUMENTATION RESSURE, FLOW TRANSMITTERS, LIMIT SWITCHES, CONDUITS, NETWORK AND I/O

COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE: AT STARTER OR OTHER CONTROL PANELS TED PANEL

ONTROL PANEL

MINATED TO TERMINAL STRIPS, OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SULTING FROM LACK OF VERIFICATION SHALL BE BORNE BY CONTRACTOR. DINATE SIGNAL TYPE WITH I/O CARDS.

NN ON BACKGROUND PLANS, AND SITE PLANS ARE INTENDED ROUTINGS ONLY. EXACT L CONDUITS, AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN

AND JUNCTION BOXES TO BE INSTALLED WITH CHANNEL STRUT. MINIMUM STRUT HERE POSSIBLE.

UNTED ON STRUT INCLUDING SINGLE RUNS.

LING METHOD SHALL BE USED AS THE WIRING TAG SCHEME FOR ALL PANEL AND FIELD NATE WITH ELECTRICAL CONTRACTOR. CONTROL WIRES SHALL BE TAGGED AT NTROL PANEL, AT FIELD MOUNTED DEVICES, AND IN STARTERS. CONTROL WIRES AND S SHALL BE LABELED ON BOTH ENDS.





	GRAPHIC SYMBOL FOR I	NSTRUMENT	ATION ITEMS	GRAPHIC SYMROLS FOR VAL
\bigcirc	DEVICE MOUNTED ON PANEL		CONTROL RELAY CONTACT-NORMALLY OPEN	SYMBOL DESCRIPTION
\bigcirc	BOARD OR PANEL MOUNTED DEVICE- DEVICE MOUNTED INSIDE PANEL	N	CONTROL RELAY CONTACT-NORMALLY CLOSED	STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT)
$\overline{\bigcirc}$	FIELD OR LOCALLY MOUNTED DEVICE		LIGHTNING ARRESTOR	
$\overline{\bigcirc}$	PROGRAMMED FUNCTION NOT NORMALLY	(ETI)	ELAPSED TIME INDICATOR	PNEUMATIC DIAPHRAGM OR POSITIONER (OPE
	PROGRAMMED FUNCTION ACCESSIBLE THROUGH	(T)	TIMING RELAY COIL	PNEUMATIC DIAPHRAGM OR POSITIONER (THR
	COMPUTER SYSTEM INPUT OR OUTPUT POINT		TIMED RELAY COIL (OFF-DELAY)	MOTOR OPERATED (THROTTLING)
				M MOTOR OPERATED (OPEN-SHUT)
				SLIDE-STOP GATE
				SLUICE GATE
A	ALIERNATOR		BATTERY	AIR SET ASSEMBLY
Â	OR	×1 ~~~ ×2	SECONDARY TRANSFORMER	D& BALL VALVE
AND	AND	-~~~~	VARIABLE RESISTOR	GLOBE VALVE
	MOTOR STARTER		RESISTOR	GATE VALVE OR KNIFE GATE
P	PURGE	\bigcirc \bigcirc \bigcirc	MOLDED CASE CIRCUIT BREAKER	
L>	COMPLEX LOGIC		SPEED SWITCH	
	COMPUTER LOGIC SYSTEM		MOMENTARY PUSHBUTTON OPERATOR- NORMALLY CLOSED	SI TWO-WAY SOLENOID VALVE OPERATOR
	TERMINAL OR TRANSITION POINT		MOMENTARY PUSHBUTTON OPERATOR- NORMALLY OPEN	ELECTRONICALLY CONTROLLED CHECK VALVE
	FLOAT SWITCH	0 1 0	SELECTOR SWITCH-NORMALLY OPEN	SD TWO-WAY SOLENOID VALVE OPERATOR-DETEN
\sim		<u> </u>	PUSHBUTTON OPERATOR WITH MUSHROOM HEAD	THREE-WAY SOLENOID VALVE OPERATOR
				FOUR-WAY SOLENOID VALVE OPERATOR
0 0	GENERAL USE DISCONNECTING SWITCH			ABBREVIATIONS
× ×	TIMED CLOSED CONTACT ON ENERGIZATION		HORN	SYMBOL DESCRIPTION R RESET
	TIMED OPEN CONTACT ON ENERGIZATION	(F)	FIELD LOCATED	AS AIR SUPPLY
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	TIMED OPEN CONTACT ON DE-ENERGIZATION	$\bigcirc -\bigcirc$	TERMINAL POINT	GS GAS SUPPLY HS HYDRAULIC SUPPLY
oto	TIMED CLOSED CONTACT ON DE-ENERGIZATION	<b>₹</b>	TERMINAL POINT ARROW	NS     NITROGEN SUPPLY       ORP     OXYGEN REDUCTION POTENTIAL
$\sim$	FLOAT ACTUATED SWITCH-NO		LOW VOLTAGE FUSE	SS STEAM SUPPLY SP SET POINT
oTo	FLOAT ACTUATED SWITCH-NC	00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CIRCUIT BREAKER WITH STAB CONNECTION	WSWATER SUPPLYPVPROCESS VARIABLE
To	PRESSURE ACTUATED SWITCH-NC		CONTROL POWER TRANSFORMER	F.O.FAIL OPENF.C.FAIL CLOSE
o o	PRESSURE ACTUATED SWITCH-NO			GAIN OR PROPORTIONAL CONTROL INTEGRAL OR RESET CONTROL
0	FLOW ACTUATED SWITCH-NO		IWU CUIL LAIGHING KELAT	V VELOCITY ALGORITHM
To	FLOW ACTUATED SWITCH-NC		RECEPTACLE	√     SQUARE ROOT EXTRACTOR       €     ADD OR TOTALIZE
	TEMPERATURE SWITCH-NO			△     SUBTRACT OR DIFFERENCE       >     HIGHEST MEASURED VARIABLE
- <u>-</u> 0	TEMPERATURE SWITCH-NC		SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN	<LOWEST MEASURED VARIABLEE/I , I/PCONVERT ONE TO ANOTHER
<u> </u>				X ,÷     MULTIPLY , DIVIDE       €     BIAS OR REVERSING
× v			MAINTAINED PUSH-PULL OPERATOR	τ(x)   CHARACIERIZE – (EQUATION / /D/%/ETC.)
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	LIMIT SWITCH - NORMALLY OPEN - HELD CLOSED	,		INSTRUMENTATION LINE SYMBO
0~0	LIMIT SWITCH – NORMALLY CLOSED – HELD OPEN		MAINTAINED STOP-START PUSHBUTTON OPERATOR	
0~10	LIMIT SWITCH – NORMALLY CLOSED			AIR LINE
			DIODE RECTIFIER OR D-C SURGE PROTECTOR	ELECTROMAGNETIC OR SONIC SIGNAL
				CONNECTION TO PROCESS, OR MECHANICAL L



I.S.A.	STANDARD	L

TETRA TECH					www.tetratech.com	PHONE: (239) 390-1467 FAX: (239) 390-1769		
William A Paison			Orlando, Florida 32801	Engineering Business No. 24290	O	N SE		
ВΥ								
ATE DESCRIPTION								
1ARK D/								
CITY OF NAPLES, FLORIDA		CITY OF NAPLES WWTRF						
Pro De: Dra	ojec sigi	t No.: ned B	2 y:	:00-0	9851 J. L	6-130 AWT	002 ON	
Checked By: W.PAISON								



6		7			
			CC		OI www.tetratech.com Z 10600 CHEVROLET WAY, SUITE 300 GO ESTERO, FL 33928 HONE: (239) 390-1467 FAX: (239) 390-1769
OR UILDING			William A. Paison	201 East Pine Street, Suite 1000 Orlando, Florida 32801 Engineering Business No. 2429	DATE
	SEE NOTE 1 SEE NOTE 4		BY		
			MARK DATE DESCRIPTION		
ING CONDUIT REUSE AND MODIFY ECTION. INSTALL NEW WIRE. WIRE AND CONDUIT. VIRE AND CONDUIT. VIRE AND CONDUIT PER ONE LINE UIT AND WIRE UP WALL FROM PU CUT WALL AS REQUIRED, ONCE IN EQUIRED. E NEW CONDUIT UNDERGROUND E NEW CONDUIT UNDERGROUND E NEW CONDUIT UP FROM GROUN RACTOR IS REQUIRED TO VALIDA RGROUND PIPING. LOCATION SHO RENCE ONLY.	Y AS REQUIRED FOR NEW DRIVE ON SHEET E-601. UL BOX ENTER VFD'S FROM ISTALLED SEAL WALL OPENING TO GENERATOR BUILDING. ND INTO PULL BOX. ITE LOCATION OF ALL OWN ON DRAWING IS FOR	E	CITY OF NAPLES, FLORIDA	CITY OF NAPLES WWTRF REUSE PUMP UPGRADES CENERATOR RUIN DING AND	EFFLUENT PUMP STATION ELECTRICAL PLANS (2)
			Proje Desi Drav Chee	ect No.: 200 gned By: /n By: cked By:	-08516-13002 J. LAWTON J. LAWTON W. PAISON

PLC/ CPU CABINET PARTIAL WIRING DIAGRAM

NO SCALE.

NOTES: 1. RECONNECT 2. SIGNALS FO VFD'S. NEW SIN VFD'S. 3. SIGNALS FO SOFT-STARTEN SIGNALS. CON CONNECT ANA 4. COORDINAT CARDS.

	10600 CHEVROLET WAY, SUITE 300 ESTERO, FL 3328							HONE: (239) 390-1467 FAX: (239) 390-1769
PU CABINET. OLLERS AND HE REMOVED LS FROM THE ID NEW ANALOG	BY William A Paison	P.E. No. 76439. FL	** Corror Marias Florent **	Orlando, Florida 32801	Engineering Business No. 2429	*		
INDICATED. ON EXISTING I/O	MARK DATE DESCRIPTION							
		ject			CONTROL PANEL			
	De: Dra Ch	sign iwn ecke	ed By: ed By	· •	5(J. L J. L W.	awt awt Pais	Convrictive: Totro Toth

 RECONNECT EXISTING CONTROL SIGNALS BETWEEN NEW VFD'S AND THE PLC/CPU CABINET.
 SIGNALS FOR NEW VFD'S SHALL MATCH SIGNALS FROM EXISTING MOTOR CONTROLLERS AND VFD'S. NEW SIGNALS SHALL BE TERMINATED ON SAME INPUTS AND OUTPUTS AS THE REMOVED

3. SIGNALS FOR NEW VFD'S REPLACING THE SOFT-STARTERS SHALL MATCH SIGNALS FROM THE SOFT-STARTERS, ALONG WITH THE ADDITION OF THE VALVE CLOSE PRE-ALARM AND NEW ANALOG SIGNALS. CONNECT THE VALVE CLOSE PRE-ALARMS TO SPARE DIGITAL INPUTS AS INDICATED.

4. COORDINATE WITH OWNER THE LOCATION FOR TERMINATION OF NEW SIGNALSON EXISTING I/O