

CONTRACT DOCUMENTS
FOR THE CONSTRUCTION OF
SWWRF NITROGEN REMOVAL



PREPARED FOR
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

VOLUME 3 OF 3
DRAWINGS

For information regarding this project, contact:

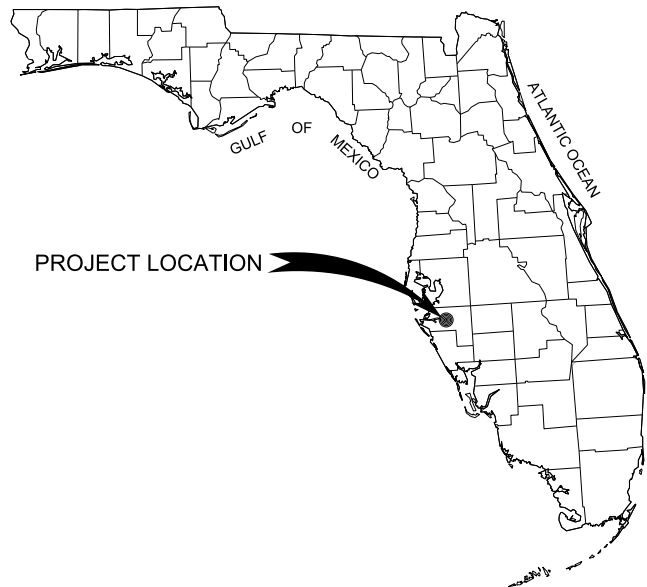
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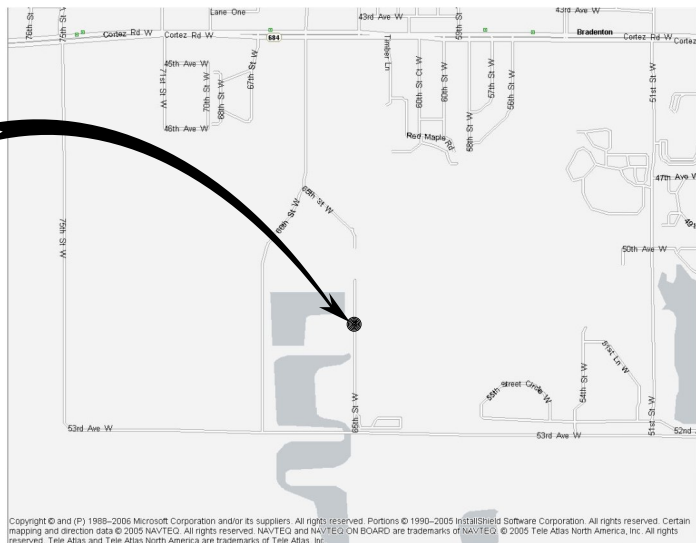
Project No. 457133

MAY 2014

CONSTRUCTION DOCUMENTS
ISSUED FOR BID



VICINITY MAP



LOCATION MAP

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- 950-N-5003 STANDARD DETAILS

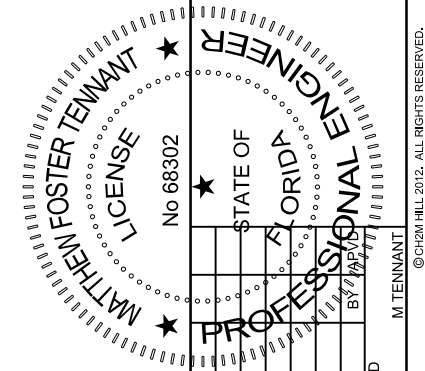
THE DRAWING NUMBERS FOR THIS PROJECT SHALL FOLLOW THE FOLLOWING GUIDELINE:

XXX - N - # # # #

FACILITY NUMBER (3 DIGITS) DISCIPLINE DESIGNATOR VARIABLE (2 DIGIT) SEQUENTIAL NUMBERING (2 DIGITS)

FACILITY NUMBERS	DESIGNATOR	DISCIPLINE	VARIABLES	SEQUENTIAL NUMBERS
000 - GENERAL	G	GENERAL	PLAN TYPES	00
(SEE LIST ON THIS SHEET FOR OTHER FACILITY NUMBERS)	C	CIVIL		01
	Y	YARD PIPING		02
	S	STRUCTURAL		03
	A	ARCHITECTURAL		ETC
	D	PROCESS MECHANICAL		
	M	HVAC		
	P	PLUMBING		
	E	ELECTRICAL		
	N	INSTRUMENTATION AND CONTROL		

FACILITY NUMBERS	GENERAL
001	GENERAL
004	DEMOLITION
005	SITE
007	ELECTRICAL (NON FACILITY SPECIFIC)
008	INSTRUMENTATION AND CONTROLS
200	GENERATOR ROOM
315	SPLITTER BOX
510	ANOXIC BASIN
520	AERATION BASINS
600	MOTOR CONTROL BUILDING
825	SLUDGE HOLDING TANKS
827	BLOWER BUILDING
850	DEWATERING BUILDING
860	EXISTING SW GENERATOR BUILDING
950	STANDARD DETAILS (PACKAGE SPECIFIC)



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SWWRF NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

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GENERAL

INDEX OF DRAWINGS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

DATE: DECEMBER 2013
PROJ: 457133
DWG: 001-G-0001
SHEET: of

ISSUED FOR BID

ABBREVIATIONS

<p>A AMMETER, AMPERES, AWNINGS ANCHOR BOLT, ABOVE ABANDON ACOUSTICAL, ACOUSTICAL CEILING ALTERNATING CURRENT ASPHALTIC CONCRETE ACCESS FLOORING AMERICAN CONCRETE INSTITUTE ACOUSTICAL CONCRETE MASONRY UNIT, ACOUSTICAL CMU ACOUSTICAL PANELS ACOUSTICAL ACOUSTICAL TILE AREA DRAIN ADDITIONAL ADJACENT DRY WEATHER AVERAGE ADJUSTABLE FREQUENCY DRIVE ABOVE FINISHED FLOOR ABOVE FINISHED GRADE ACOUSTICAL, ACOUSTICAL GLASS AGGREGATE ANCHOR AMERICAN INSTITUTE OF STEEL CONSTRUCTION ADJUSTABLE ALUMINUM ALKALINITY ALTERNATE AUTO-MANUAL ACOUSTICAL METAL ROOF DECKING ANODIZE APPROXIMATE APPROVED ARCHITECTURAL ANALOG RELAY AS SELECTED AUTOMATIC TRANSFER SWITCH AUTOMATIC AUXILIARY AVERAGE WET WEATHER AVERAGE AT</p> <p>B BELL BALANCE BETWEEN BLIND FLANGE, BOTTOM FACE BUTTERFLY VALVE BASELINE BACKFLOW PREVENTER BUILDING BLOCK BEAM, BENCHMARK BOTTOM OF BOTTOM OF BEAM</p> <p>BOTTOM OF DUCT BOTTOM OF PIPE BOTTOM BEARING BRICK BREAKER BLACK STEEL PIPE BALL VALVE, BLOCK VENT BEGINNING OF VERTICAL CURVE</p> <p>C CONDUIT, CASEMENT DEGREE CELSIUS CENTER TO CENTER CABINET CATCH BASIN, CIRCUIT BREAKER CENTER OF CIRCLE CONTROL CABLE CENTRAL CONTROL PANEL CENTRAL CONTROL SYSTEM CONTROLLED DENSITY FILL CONSTRUCTION ENTRANCE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHEMICAL CHECKERED CAST IRON CAST IRON PIPE, CAST IN PLACE CULVERT INLET PROTECTION CAST IRON SOIL PIPE CONSTRUCTION JOINT CIRCUIT CENTERLINE CEMENT LINED DUCTILE IRON</p> <p>CLSF CEILING CLEAR, CLEARANCE CONTROLLED LOW STRENGTH MATERIAL CENTRAL MONITORING PANEL CORRUGATED METAL PIPE CONCRETE MASONRY UNIT COUNTER CLEANOUT, CARBON MONOXIDE COLUMN, COLOR CONCRETE CONDENSATE CONDITIONED CONNECTION CONSTRUCTION CONTINUED, CONTINUOUS, CONTINUATION CONTRACTOR COORDINATE COPPER CENTER PIVOT CONTROL PANEL NO. X COUPLING COMPRESSOR CONTROL POWER TRANSFORMER, CARPET CHLORINATED PVC CONTROL RELAY COLD ROLLED STEEL CONSTRUCTION ROAD STABILIZATION CERAMIC TILE CURRENT TRANSFORMER COMPUTER TERMINAL CABINET CENTER CENTERED COUNTERSUNK CUBIC CUBIC FOOT CUBIC INCH COPPER TUBING, HARD DRAWN CHECK VALVE CABINET DOOR MOUNTED WASTE RECEPTACLE CUBIC YARD CLEAN WATER SERVICES</p> <p>D DEEP, DRAIN PENNY NAIL SIZE DUAL ACTION DATA ACQUISITION SYSTEM DEFORMED BAR ANCHOR DOUBLE DIRECT CURRENT DEGREE DETAIL DOUGLAS FIR, DRINKING FOUNTAIN DROP INLET DOUBLE HUNG DUCTILE IRON DIAMETER DIAGONAL DUCTILE IRON PIPE DIRECTION DISCHARGE DOWN DISSOLVED OXYGEN DIRECT-ON-LINE DISTRIBUTION PANEL DOOR DOWNSPOUT DRAWING DOWEL DELTA</p> <p>E EAST, EMPTY EACH, EXHAUST AIR EMPTY BED CONTACT TIME ECCENTRIC EMERGENCY EYEWASH EGG-SHAPED DIGESTER FACILITY EACH FACE, EXHAUST FAN EFFICIENCY, EFFICIENT EFFLUENT EXTERIOR INSULATION AND FINISH SYSTEM ELEVATION ELBOW ELECTRICAL LOAD CENTER ELECTRIC, ELECTRICAL ENGINEER EDGE OF PAVEMENT EROSION AND SEDIMENT CONTROL EXPLOSION PROOF, EDGE OF PAVING</p> <p>EQL EQUALLY SPACED EQUIPMENT EROSION AND SEDIMENT CONTROL ELAPSED TIME METER END OF VERTICAL CURVE EACH WAY ELECTRIC WATER COOLER EXHAUST EXPANSION, EXPOSED EXPANSION ANCHOR BOLT EXPANSION JOINT EXISTING EXTERIOR</p> <p>DEGREE FAHRENHEIT FLAT BAR FUSE FIXED FIRE ALARM PANEL FLEXIBLE CONDUIT FLANGED COUPLING ADAPTER FREE CHLORINE RESIDUAL FLOOR CLEANOUT FACTORY FLOOR DRAIN FOUNDATION FEEDER FIRE EXTINGUISHER FINISHED FLOOR FINISH GRADE, FLOAT GLASS FLAT HEAD FIRE HYDRANT FIGURE FLOW LINE FLANGE FLOOR FLEXIBLE FLAT HEAD FILTER FLUORESCENT FINISH FLAT ON BOTTOM FLAT ON TOP FIELD PANEL FEET PER MINUTE FORWARD REVERSE FIBERGLASS REINFORCED PLASTIC FOLDING SHOWER SEAT FOOT OR FEET FOOTING FIXTURE UNIT FULL VOLTAGE NON-REVERSING FULL VOLTAGE REVERSING FORWARD</p> <p>G, GND GROUND GAUGE GALLON GALVANIZED GYPSUM BOARD GROOVED COUPLING GLAZED CONCRETE MASONRY UNITS GROOVED FLANGE ADAPTER GROUND FAULT INTERRUPTER GROUND FAULT RELAY GREENHOUSE GLASS GALLONS PER DAY GALLONS PER HOUR GALLONS PER MINUTE GLOBAL POSITION SYSTEM GRATING GYPSUM SOFFIT BOARD GALVANIZED STEEL PIPE GATE VALVE GRAVEL GYPSUM WALLBOARD GYPSUM</p> <p>H HIGH, HORN OR HOWLER HYDROGEN SULFIDE HEADED ANCHOR STUD HOLLOW CORE WOOD HYDROCHLORIC ACID HARDENER HARDNESS HEADER HARDWARE HYDRAULIC GRADE LINE HOOK</p> <p>HGT HEIGHT HANDHOLE HIGH INTENSITY DISCHARGE HOOK HOLLOW METAL HAND-OFF-AUTO HAND-OFF-REMOTE HORIZONTAL HORSEPOWER HIGH POINT HYDRAULIC POWER UNIT HOSE RACK, HANDRAIL HOSE VALVE HEATING, VENTILATING AND AIR CONDITIONING HIGH WATER LEVEL</p> <p>INTERRUPTING CAPACITY INDUCED DRAFT, INSIDE DIAMETER INVERT ELEVATION INSIDE FACE INSULATING, INSULATING GLASS INCH INCANDESCENT INFLUENT INJECTIONS INSTANTANEOUS INSTRUMENT, INSTRUMENTATION INSULATION INVERT INLET PROTECTION, INSTRUMENTATION PANEL IRRIGATION INSULATED TEMPERED GLASS ISOLATION TRANSFORMER INTAKE UNIT IRRIGATION WELL</p> <p>J JALOUSIE JAL-AWNING JUNCTION BOX JANITOR JUNCTION JOINT</p> <p>KEY GROUP, KEY INTERLOCK THOUSAND POUNDS KITCHEN KICKPLATE KITCHEN SINK KILOVOLTS KILOVOLT AMPERES KILOVOLT AMPERES REACTIVE KILOWATT</p> <p>ANGLE, LENGTH LIGHTNING ARRESTER LABORATORY LAMINATE LATITUDE POUND LIGHTING CONTACTOR COMBINATION LOUVER/DAMPER LOADING DOCK LOWER EXPLOSIVE LIMIT LINEAR FEET LONG LEFT HAND LEFT HAND REVERSE LONG LEG HORIZONTAL LONG LEG VERTICAL LINTEL LONGITUDINAL LOCK-OUT STOP PUSHBUTTON LIGHT POLE, LIGHTING PANEL, LOCAL PANEL LOW POINT LATCHING RELAY LOCAL-REMOTE LONG RADIUS LABORATORY SINK LEFT LIGHTS OR LIGHTING LIGHTING TRANSFORMER LOW WATER LEVEL</p> <p>MANUAL-AUTO MASONRY MATERIAL MAXIMUM MACHINE BOLT MASONRY CLEARANCE MODULATE-CLOSE MOTOR CONTROL CENTER MASONRY CONTROL JOINT</p> <p>MEDIUM DENSITY OVERLAY MECHANICAL MANUFACTURED MANUFACTURER MILLION GALLONS PER DAY MANHOLE, MOUNTING HEIGHT MINIMUM MISCELLANEOUS MECHANICAL JOINT MAIN LUGS ONLY DRY WEATHER MAXIMUM MONTH MECHANICAL MOUNTING PANEL WET WEATHER MAXIMUM MONTH MANUAL OPERABLE, MASONRY OPENING METAL PANEL MULTIPURPOSE UNIT MANUFACTURER'S STANDARD MANUFACTURER SUPPLIED CABLE GROUPED MOTOR CONTROL MOUNT MOUNTED MOUNTING MANUAL TRANSFER SWITCH MILL TYPE STEEL PIPE MULCHING MERCURY VAPOR MAXIMUM WATER SURFACE</p> <p>NORTH, NEUTRAL NOT APPLICABLE NON-AUTOMATIC NORMALLY CLOSED NEUTRAL NATURAL GAS NATIONAL GEODETIC VERTICAL DATUM NOT IN CONTRACT NORMALLY OPEN NUMBER NONMINAL NON-PROTECTED NATIONAL PIPE THREADS NON-SHRINK NOT TO SCALE</p> <p>OXYGEN OUT TO OUT OVERALL, ODOROUS AIR ON CENTER OPEN-CLOSE (O) OPEN-CLOSE-AUTO OPEN-CLOSE-REMOTE OUTSIDE DIAMETER, OVERFLOW DRAIN OUTSIDE FACE OWNER FURNISHED, CONTRACTOR INSTALLED OWNER FURNISHED, OWNER INSTALLED OVERLOAD RELAY ON-OFF ON-OFF-AUTO ON-OFF-REMOTE OPAQUE PANEL, OUTLET PROTECTION OPERATOR OPENING OPPOSITE OUTSIDE AIR OPEN-STOP-CLOSE OPEN SITE DRAIN OPEN WEB STEEL JOIST OUNCE</p> <p>PROJECTED PILASTER, PIPE PAVER TILE PUSHBUTTON SWITCH POINT OF CURVE, PHOTOCCELL PRECAST CONCRETE PANEL PRECAST CONCRETE CYLINDER PIPE PRESSURE CONTROL VALVE PLAIN END PEDESTAL, PEDESTRIAN</p> <p>POLYETHYLENE PIPE PENETRATION POUNDS PER CUBIC FOOT PENTHOUSE HYDROGEN ION CONCENTRATION PHASE POINT OF INTERSECTION PILOT TUBE TEST STATION PREMOULDED JOINT FILLER PLATE (STEEL) PROPERTY LINE PLASTIC LAMINATE PLASTER, PLASTIC PROGRAMMABLE LOGIC CONTROLLER PLYWOOD PANEL POWER POLE PUSH-PULL POLYPROPYLENE LINED PAIR POINT OF REVERSE CURVE PRECAST PREFABRICATION PRESSURE PRIMARY PERMANENT REFERENCED MARKER PROJECTION PROPERTY PLASTIC SHEET, POLYCARBONATE SHEET PAINT SYSTEM POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH, GAUGE POINT OF TANGENCY POTENTIAL TRANSFORMER PRESSURE TREATED PAPER TOWEL DISPENSER PARTITION PLUG VALVE POLYVINYL CHLORIDE POINT OF VERTICAL INTERSECTION PAVEMENT POINT OF VERTICAL TANGENCY</p> <p>AVERAGE FLOW MAXIMUM 30 DAY FLOW PEAK INSTANTANEOUS FLOW PEAK PUMPING FLOW QUARRY TILE</p> <p>RISER RADIUS RETURN AIR REINFORCED CONCRETE REINFORCED CONCRETE PIPE RECEPTACLE</p> <p>ROAD, ROOF DRAIN REDUCER REDWOOD RECIRCULATION REFER OR REFERENCE</p> <p>REFRIGERATE, REFRIGERANT REINFORCED, REINFORCING, REINFORCE REQUIRED RESILIENT ROLL-UP FIRE SHUTTER RIGHT HAND RODHOLE RIGHT HAND REVERSE RAIN LEADER RUBBER LINED STEEL ROOM ROUGH OPENING RAISE-OFF-LOWER REVOLUTIONS PER MINUTE RIPRAP</p>	<p>CLSF CONTROLLED LOW STRENGTH FILL</p> <p>CLG CEILING</p> <p>CLR CLEAR, CLEARANCE</p> <p>CLSM CONTROLLED LOW STRENGTH MATERIAL</p> <p>CMP CENTRAL MONITORING PANEL</p> <p>CMP CORRUGATED METAL PIPE</p> <p>CMU CONCRETE MASONRY UNIT</p> <p>CNTR COUNTER</p> <p>CO CLEANOUT, CARBON MONOXIDE</p> <p>COL COLUMN, COLOR</p> <p>CONC CONCRETE</p> <p>COND CONDENSATE</p> <p>CONDNTN CONDITIONED</p> <p>CONN CONNECTION</p> <p>CONSTR CONSTRUCTION</p> <p>CONT CONTINUED, CONTINUOUS, CONTINUATION</p> <p>CONTR CONTRACTOR</p> <p>COORD COORDINATE</p> <p>COP COPPER</p> <p>CP CENTER PIVOT</p> <p>CP-X CONTROL PANEL NO. X</p> <p>CPLG COUPLING</p> <p>CPRSR COMPRESSOR</p> <p>CPT CONTROL POWER TRANSFORMER, CARPET</p> <p>CPVC CHLORINATED PVC</p> <p>CR CONTROL RELAY</p> <p>CRS COLD ROLLED STEEL</p> <p>CRS CONSTRUCTION ROAD STABILIZATION</p> <p>CT CERAMIC TILE</p> <p>CT CURRENT TRANSFORMER</p> <p>CTC COMPUTER TERMINAL CABINET</p> <p>CTR CENTER</p> <p>CTRD CENTERED</p> <p>CTSK COUNTERSUNK</p> <p>CU CUBIC</p> <p>CU FT CUBIC FOOT</p> <p>CU IN CUBIC INCH</p> <p>CUH COPPER TUBING, HARD DRAWN</p> <p>CV CHECK VALVE</p> <p>CWR CABINET DOOR MOUNTED WASTE RECEPTACLE</p> <p>CY, CU YD CUBIC YARD</p> <p>CWS CLEAN WATER SERVICES</p> <p>D DEEP, DRAIN</p> <p>d PENNY NAIL SIZE</p> <p>DA DUAL ACTION</p> <p>DAS DATA ACQUISITION SYSTEM</p> <p>DBA DEFORMED BAR ANCHOR</p> <p>DBL DOUBLE</p> <p>DC DIRECT CURRENT</p> <p>DEG DEGREE</p> <p>DET DETAIL</p> <p>DF DOUGLAS FIR, DRINKING FOUNTAIN</p> <p>DDI DROP INLET</p> <p>DI DOUBLE HUNG</p> <p>DI DUCTILE IRON</p> <p>DIA DIAMETER</p> <p>DIAG DIAGONAL</p> <p>DIP DUCTILE IRON PIPE</p> <p>DIR DIRECTION</p> <p>DISCH DISCHARGE</p> <p>DN DOWN</p> <p>DO DISSOLVED OXYGEN</p> <p>DOL DIRECT-ON-LINE</p> <p>DP, DPNL DISTRIBUTION PANEL</p> <p>DR DOOR</p> <p>DS DOWNSPOUT</p> <p>DWG DRAWING</p> <p>DWL DOWEL</p> <p>Δ DELTA</p> <p>E EAST, EMPTY</p> <p>EA EACH, EXHAUST AIR</p> <p>EB, EBCT EMPTY BED CONTACT TIME</p> <p>ECC ECCENTRIC</p> <p>EE EMERGENCY EYEWASH</p> <p>EDF EGG-SHAPED DIGESTER FACILITY</p> <p>EF EACH FACE, EXHAUST FAN</p> <p>EFF EFFICIENCY, EFFICIENT</p> <p>EFFL EFFLUENT</p> <p>EIFS EXTERIOR INSULATION AND FINISH SYSTEM</p> <p>EL ELEVATION</p> <p>ELB ELBOW</p> <p>ELC ELECTRICAL LOAD CENTER</p> <p>ELEC ELECTRIC, ELECTRICAL</p> <p>ENGR ENGINEER</p> <p>EOP EDGE OF PAVEMENT</p> <p>ESC EROSION AND SEDIMENT CONTROL</p> <p>EP EXPLOSION PROOF, EDGE OF PAVING</p>
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SWRWF NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

NO. DATE

REVISION

CHK

APVD

M. TENNANT

G. GERMAN

R. BOE

DR

DGN

ISSUED FOR BID

GENERAL NOTE:

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

DATE: DECEMBER 2013
PROJ: 457133
DWG: 001-G-0101
SHEET: of

ABBREVIATIONS

RRUB RADIAL RUBBER
 RS RIGID STEEL
 RST REINFORCING STEEL
 RT RIGHT
 RTN RETURN
 RTO REGENERATIVE THERMAL OXIDIZER
 RUB RUBBER
 RUBC RUBBER CUSHIONED FLOORING
 RUBS RUBBER ESD CONTROL FLOORING
 R/W RIGHT OF WAY

S I-BEAM
 S SLOPE, SOUTH, SWITCH
 SA SUPPLY AIR
 SATC SUSPENDED ACCUSTICAL TILE CEILING
 SB SEDIMENT BASIN
 SC SHOWER CURTAIN, SOLID CORE WOOD
 SCADA SUPERVISORY CONTROL AND DATA ACQUISITION
 SCC SOLID CORE
 SCFM STANDARD CUBIC FEED PER MINUTE
 SCHED SCHEDULE
 SCU SPEED CONTROL UNIT
 SDP SUB-DISTRIBUTION PANEL
 SDWK SIDEWALK
 SEC SECONDARY
 SECT SECTION
 SED SEDIMENTATION
 SEW SEWAGE
 SG LAMINATED SAFETY GLASS, SAFETY
 SGWB SUSPENDED GYPSUM WALL BOARD

SH SHEET
 SHA SURFACE HARDENING AGENT
 SHS SOLIDS HANDLING SYSTEM
 SIM SIMILAR
 SK SINK
 SLR SEALER
 SMLS SEAMLESS EPOXY
 SOI SPRAY- ON INSULATION
 SOLN SOLUTION
 SP SPACE OR SPACES, SPANDREL PANEL, STORMPROOF SPECIFICATIONS

SPD SUMP PUMP DISCHARGE
 SPG SPACING
 SPLY SUPPLY
 SQ SQUARE
 SQ FT SQUARE FOOT, FEET
 SQ IN SQUARE INCH
 SR SHORT RADIUS
 SS START-STOP
 SST STAINLESS STEEL
 SSC SUPERVISORY SET POINT CONTROL
 ST STORM DRAIN
 STA STRAIGHT
 STA STATUS, STATION
 STD STANDARD
 STIF STIFFENER
 STIRR STIRRUP
 STL STEEL
 STRL STRUCTURAL
 STRUCT STRUCTURE
 SUBFL SUBFLOOR
 SUSP SUSPENDED
 SV SOLENOID VALVE
 SVIN SHEET VINYL
 SWBD SWITCHBOARD
 SWGR SWITCHGEAR
 SYMM SYMMETRICAL

T THERMOSTAT, TREAD
 T&B TOP AND BOTTOM
 T&G TONGUE AND GROOVE
 TA TRANSFER AIR
 TAN TANGENT
 TB TERMINAL BOARD
 TBG TUBING
 TC TIME TO CLOSE
 TC TURBIDITY CURTAIN
 TCAD TIME CLOSE AFTER DE-ENERGIZATION
 TCAD TIME CLOSE AFTER ENERGIZATION
 TDH TOTAL DYNAMIC HEAD
 TDR TIME DELAY RELAY

TECH TECHNICAL
 TEL TELEPHONE
 TEMP TEMPORARY, TEMPERATURE
 TF TOP FACE
 TFG TEMPERED FLOAT GLASS

TG TEMPERED
 TH TOP-HINGED
 THD THREAD
 THK THICKNESS
 THRU THROUGH
 TJB TERMINAL JUNCTION BOX
 TL TEFLON LINED PIPE
 T.O. TIME TO OPEN, TOP OF
 TOAE TIME OPEN AFTER ENERGIZATION
 TOC TOP OF CONCRETE
 TOC TOP OF CURB
 TOD TIME ON DELAY, TOP OF DUCT
 TOD TOTAL OXYGEN DEMAND
 TOF TOP OF FOOTING
 TOG TOP OF GROUT, TOP OF GRATE
 T.O.P. TOP OF PARAPET
 TOS TOP OF SLAB
 TOW TOP OF WALL
 TP TURNING POINT
 TR TRANSOM, TRUSS
 TRANS TRANSFORMER, TRANSITION
 TRANSV TRANSVERSE
 TRD TREAD
 TS TEMPORARY SEEDING, TUBE STEEL
 TSHT THRESHOLD
 TSS TOTAL SUSPENSION SOLIDS
 TST TOP OF STEEL
 TTC TELEPHONE TERMINAL CABINET
 TTD TOILET TISSUE DISPENSER
 TU-X TREATMENT UNIT NO. X
 TURB TURBIDITY
 TWP TRANSLUCENT WALL PANEL
 TX TRANSFORMER
 TYP TYPICAL

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 VB VAPOR BARRIER (RETARDER)
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 VCP VITRIFIED CLAY PIPE
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 VERT VERTICAL
 VHC VOLATILE HYDROCARBONS
 VIB VIBRATION
 VIF VERIFY IN FIELD
 VIN VINYL
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 VPS VENEER PLASTER SYSTEM
 VPC POINT OF VERTICAL CURVATURE
 VPI POINT OF VERTICAL INTERSECTION
 VPT POINT OF VERTICAL TANGENT
 VS VERTICAL SLIDE
 VTR VENT THRU ROOF
 VWC VINYL WALL COVERING

W WEST
 W WITH
 WC WATER COLUMN
 WEASTRIP WEATHERSTRIP
 WG WIRE, WIRE GLASS
 WH WATTHOUR METER
 WHD WATTHOUR DEMAND METER
 WP WATERPROOF, WEATHERPROOF, WORKPOINT
 WR WASTE RECEPTACLE
 WRB WATER RESISTANT GWB
 WS WATER SURFACE, WATERSTOP, WELDED STEEL
 WWF WELDED WIRE FABRIC
 WWPH WET WEATHER PEAK HOUR

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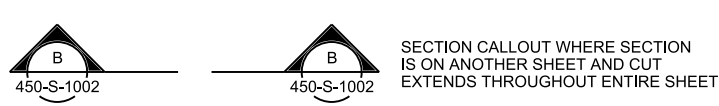
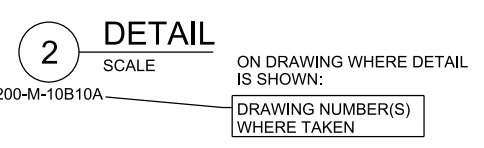
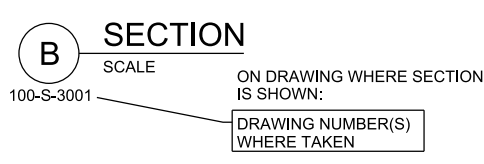
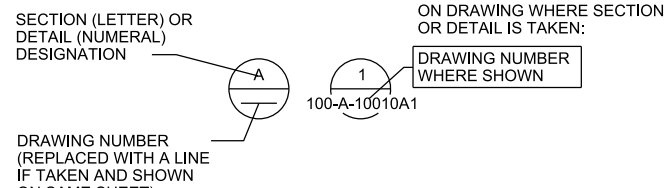
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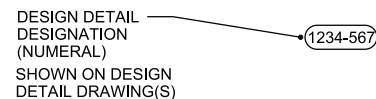
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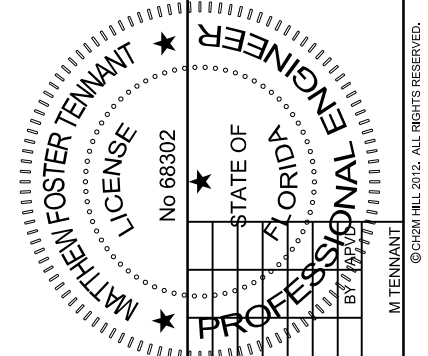
SECTION / DETAIL DESIGNATIONS



DESIGN DETAIL DESIGNATION



- NOTES:**
- ALL DESIGN DETAILS ARE TYPICAL AND MUST BE USED IF DESIGN DETAIL DESIGNATION IS NOT SHOWN
 - THE TERM STANDARD DETAIL, OR A FORM OF IT, IS SYNONOMOUS WITH DESIGN DETAIL. THE DESIGN DETAILS REPRESENT THE CHARACTER AND NATURE OF THE WORK REQUIRED THROUGHOUT THE PROJECT. ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH THE DESIGN DETAILS SHOWN WHETHER THE DETAILS ARE SPECIFICALLY REFERENCED OR NOT.



NO.	DATE	REVISION	CHK	APVD

3011 SW WILLISTON RD
 GAINESVILLE, FL 32608
 EB0000072 AAC001992
 MATTHEW F. TENNANT - PE 68302

SWRF NITROGEN REMOVAL
 AND DIGESTER MODIFICATIONS
 MANATEE COUNTY UTILITIES
 MANATEE COUNTY, FL

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GENERAL ABBREVIATIONS

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GENERAL NOTE:



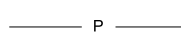

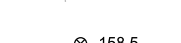
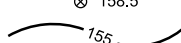
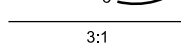
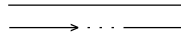
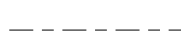

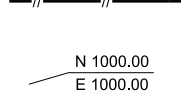


1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0102
SHEET	of

GENERAL SITE NOTES:

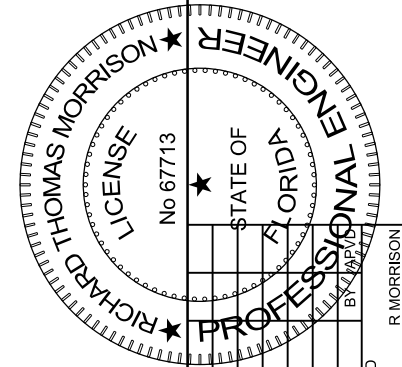
- SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE RECORD DRAWINGS PREPARED BY URS AND WERE PROVIDED BY MANATEE COUNTY. ADDITIONAL MAPPING HAS BEEN ADDED FROM SUPPLEMENT SURVEY FROM ZNS ENGINEERING. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
- EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
- HORIZONTAL DATUM: NAD83
- VERTICAL DATUM: NGVD29
- MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
- FOR LOCATION OF CONTROL POINT ON STRUCTURES, SEE STRUCTURAL DRAWINGS.
- COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
- STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
- ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
- SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
- ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH GRASS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, PERMITTING, IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. CONTRACTOR SHALL PREPARE A SWPPP AND OBTAIN NECESSARY NPDES PERMIT.
- CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN.

CIVIL LEGEND

-  EXISTING SPOT ELEVATION
-  EXISTING CONTOUR LINE
-  EXISTING POWER LINE
-  EXISTING BRUSH/TREE LINE
-  SPOT ELEVATION
-  CONTOUR LINE
-  EMBANKMENT AND SLOPE
-  DRAINAGEWAY OR DITCH
-  CENTER LINE, PIPING, ROAD, DITCH, ETC.
-  SILT FENCE
-  LOCATION POINT - COORDINATES
-  ASPHALT SURFACING
-  CONCRETE

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3011 SW WILLISTON RD
GAINESVILLE, FL 32608
EB0000072 / AAC001992
RICHARD THOMAS MORRISON - PE 67713

CH2MHILL®

GENERAL
CIVIL LEGEND

SWWRF NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0103
SHEET	of

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.

ISSUED FOR BID

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NEW CONSTRUCTION ARCHITECTURAL LEGEND

SYMBOL	LEGEND	SYMBOL	LEGEND
	VENEER		GRATING, SPAN DIRECTION INDICATED
	METAL STUD WALL (PLAN)		CHECKERED PLATE
	WOOD STUD WALL (PLAN)		GROUT
	RIGID INSULATION		GRANULAR FILL
	BATT INSULATION		EARTH OR FINISH GRADE
	STEEL		CONCRETE
	ALUMINUM		CMU WALL (PLAN)
	PLYWOOD		CMU WALL (SECTION)
	GYPSUM WALLBOARD		CONTROL JOINT
	ACOUSTICAL TILE		EXPANSION JOINT X" = DIMENSION
	WOOD, ROUGH CONTINUOUS		RAILINGS
	WOOD, ROUGH NON-CONTINUOUS		
	WOOD, FINISHED		
	FINISH AS SCHEDULED		
	GRID / COLUMN INDICATOR		
	ROOM IDENTIFIER		
	DOOR DESIGNATION		INDICATES PAIR OF DOORS (DOOR # ON ACTIVE)
	WINDOW IDENTIFIER		FIRE EXTINGUISHER "X" = NUMBER IN SPECIFICATIONS
	RELIGHT IDENTIFIER		
	LOUVER IDENTIFIER		
	PARTITION TYPE INDICATOR		PRECAST PANEL IDENTIFIER
	SIGNAGE IDENTIFIER		SLAB INDICATOR
	INTERIOR ELEVATION INDICATOR		BEAM INDICATOR
	SPOT ELEVATION INDICATOR (IN FEET)		
	ELEVATION DATUM (IN FEET)		
	DIRECTION OF SLOPE DOWN		
	HATCH SWING INDICATOR		

APPLICABLE CODES

2010 FLORIDA EXISTING BUILDING CODE
 2010 FLORIDA BUILDING CODE
 2010 FLORIDA FIRE PREVENTION CODE
 2011 NATIONAL ELECTRIC CODE
 2010 FLORIDA PLUMBING CODE
 2010 FLORIDA MECHANICAL CODE
 2010 FLORIDA FIRE PREVENTION CODE

PROJECT SPECIFIC BUILDING CODE INFORMATION

THIS PROJECT SCOPE INVOLVES UPGRADES AND REPLACEMENT EQUIPMENT IN SUPPORT OF WATER TREATMENT AT THE SOUTHWEST WASTEWATER RECLAMATION FACILITY.

PER THE 2010 FLORIDA EXISTING BUILDING CODE, ALL FACILITY BUILDINGS AFFECTED BY PROCESS CHANGES ARE ONLY CLASSIFIED UNDER THE CODE BY ALTERATION OF EQUIPMENT PADS AND RENOVATION OF ELECTRICAL BUILDING POWER SYSTEMS. THE SCOPE OF WORK WITHIN ALL FOUR OF THE BUILDINGS DO NOT QUALIFY AS ADDITIONS, CHANGE OF OCCUPANCY, OR ALTERATIONS LEVEL 2 OR 3.

THE FOLLOWING IS A LIST OF THE AFFECTED FACILITIES, THE CLASSIFICATION OF WORK PER CODE AND SPECIFIC DRAWING NUMBERS FOR REFERENCE:

- 600 EXISTING SOUTH ELECTRICAL BUILDING -WORK CLASSIFICATION LEVEL I ALTERATION
SEE DRAWING 600-A-0001
- 827 EXISTING BLOWER BUILDING-WORK CLASSIFICATION LEVEL I ALTERATION
SEE DRAWING 827-A-0001.
- 850 EXISTING DEWATERING BUILDING-WORK CLASSIFICATION LEVEL I ALTERATION
SEE DRAWING 850-E-2001.
- 860 EXISTING SOUTHWEST GENERATOR BUILDING-WORK CLASSIFICATION LEVEL I ALTERATION
SEE DRAWING 860-A-0001.

ARCHITECTURAL GENERAL NOTES

LINE OF EXISTING GRADES, AS SHOWN ON THE BUILDING ELEVATIONS AND SECTIONS ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE, OR AT THE SECTION END EXCEPT AS NOTED.

VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT, OR BY OTHERS.

NIC MEANS "NOT IN CONTRACT".

VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT, OR BY OTHERS.

CONTRACTOR IS RESPONSIBLE FOR FULL ENCLOSURE OF ALL AIR CONDITIONED SPACES, AND SEPARATION FROM NON-AIR-CONDITIONED SPACES, BY CARRYING WALLS TO UNDERSIDE OF DECKING AND SEALING TO PREVENT AIR EXCHANGE. SEALING AROUND STRUCTURAL MEMBERS MAY REQUIRE CONTRACTOR TO OBTAIN ADDITIONAL ENGINEERING JUDGEMENTS FOR THE SEALANT MANUFACTURER, WHICH CONTRACTOR SHALL DO AT NO ADDITION COST TO OWNER.

CH2MHILL® GENERAL ARCHITECTURAL LEGEND AND CODE DATA		3011 SW WILLISTON RD GAINESVILLE, FL 32608 EB0000072 AAC001992 BETH TRAUTWEIN - AR 91388		SWRF NITROGEN REMOVAL AND DIGESTER MODIFICATIONS MANATEE COUNTY UTILITIES MANATEE COUNTY, FL	
		NO. DATE DSGN	DR B TRAUTWEIN	REVISION CHK K RINER	APVD T DODGE
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.					
DATE DECEMBER 2013 PROJ 457133 DWG 001-G-0104 SHEET of					

DESIGN CRITERIA

- APPLICABLE CODE: 2010 FLORIDA BUILDING CODE (FBC), AS AMENDED BY ALL APPLICABLE LOCAL AGENCIES.
- REFER TO THE DRAWINGS FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS.
- FLOOR LIVE LOADS:

ELECTRICAL ROOM	300 PSF
CORRIDORS, EXITS, STAIRS	100 PSF
ELEVATED PLATFORMS, WALKWAYS, TYPICAL UON	100 PSF

- WIND LOAD:

BASIC WIND SPEED (3-SECOND GUST)	= 160 MPH
EXPOSURE	= C
INTERNAL PRESSURE COEFFICIENT (GC _{pi})	= +/- 0.18
RISK CATEGORY	= III
- SOIL DESIGN PARAMETERS:

A. NET ALLOWABLE SOIL BEARING PRESSURES:	= 1500 PSF
B. NATIVE SOIL UNIT WEIGHT:	115 PCF
C. GROUND WATER ELEVATION:	ASSUMED AT GRADE

GENERAL INFORMATION

- FOR ABBREVIATIONS NOT LISTED, SEE ASME Y14.38 "ABBREVIATIONS AND ACRONYMS: PUBLICATION AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
- DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
- DETAILING AND DIMENSIONS OF EXISTING STRUCTURES SHOWN ARE BASED ON AS-BUILT DESIGN DRAWINGS, AND DO NOT NECESSARILY REPRESENT THE AS-CONSTRUCTED CONDITIONS. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS AND DETAILING OF THE EXISTING STRUCTURES PRIOR TO FABRICATION OF ADJACENT FRAMING OR CONNECTIONS OR SUPPORTS THAT ARE AFFECTED BY THE EXISTING STRUCTURE.
- VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
- FOR NUMBER, TYPE, SIZE, ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS SEE OTHER DISCIPLINE DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE PIPING OPENINGS WITH OTHER DISCIPLINE DRAWINGS.
- STRUCTURAL MEMBERS SHALL NOT BE CUT OR MODIFIED FOR PIPES, DUCTS, ETC., UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
- VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTOR OF CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.

FOUNDATIONS

- EXCAVATIONS SHALL BE SHORED TO PREVENT SUBSIDENCE OR DAMAGE TO ADJACENT EXISTING STRUCTURES, STREETS, UTILITIES, ETC.
- ALL FOUNDATION BEARING SURFACES SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER OR HIS DESIGNEE PRIOR TO PLACEMENT OF FORMING OR REINFORCING STEEL. THE OBSERVATION SHALL VERIFY THAT THE ACTUAL EXPOSED SUBGRADE IS AS ANTICIPATED BY THE SITE SPECIFIC BORINGS, TEST PITS, TESTING AND DATA REPORTS.
- NO BACKFILL SHALL BE PLACED BEHIND WALLS UNTIL THE WALLS HAVE ATTAINED 100 PERCENT OF ITS SPECIFIED COMPRESSIVE STRENGTH AND TOP SUPPORTING SLAB'S CONCRETE HAVE ATTAINED 80 PERCENT OF THEIR SPECIFIED COMPRESSIVE STRENGTH.
- NO BACKFILL SHALL BE PLACED BEHIND CANTILEVERED, FREE TOP WALLS UNTIL THE CONCRETE HAS ATTAINED 100 PERCENT OF ITS SPECIFIED COMPRESSIVE STRENGTH.
- REFER TO GEOTECHNICAL INVESTIGATION BY DRIGGERS ENGINEERING SERVICES INC., JANUARY 2013.
- ALL FOUNDATIONS SHALL BEAR ON A MINIMUM OF 6" COMPACTED GRANULAR FILL AS SPECIFIED.

FORMWORK, SHORING AND BRACING

- STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONDITIONS ONLY. DESIGN SHOWN DOES NOT INCLUDE NECESSARY COMPONENTS OR EQUIPMENT FOR STABILITY OF THE STRUCTURES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL WORK RELATING TO CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, GUYS, SCAFFOLDING, FORMWORK, AND OTHER WORK AIDS REQUIRED TO SAFELY PERFORM THE WORK SHOWN.
- TEMPORARY SHORING SHALL REMAIN IN PLACE UNTIL ELEVATED CONCRETE FLOOR OR SLABS HAVE REACHED 80 PERCENT OF THE 28 DAY DESIGN STRENGTH AS DETERMINED BY CYLINDER BREAKS.

CONCRETE REINFORCING

- MINIMUM REINFORCING FOR ALL CONCRETE WALLS AND SLABS SHALL BE AS FOLLOWS:

THICKNESS	REINF EACH WAY	LOCATION
6"	#4@12"	CENTERED
8"	#5@12"	CENTERED
10"	#4@12"	EACH FACE
12"	#5@12"	EACH FACE

PROVIDE LARGER SIZES AND MORE REINFORCING IN SECTIONS OF CONCRETE WHERE REQUIRED BY THE DETAILS ON THE DRAWINGS OR BY THE SPECIFICATIONS.

- CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:

WHEN PLACED ON GROUND:	3"
ALL OTHER CONCRETE SURFACES	2"
- 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 318 STANDARD HOOKS.
- LOCATE SLAB AND BEAM TOP BAR SPLICES AT MIDSPAN AND BOTTOM BAR SPLICES AT SUPPORTS.
- REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

CONCRETE DESIGN STRENGTH = 4,500 PSI **		GRADE 60 REINFORCING STEEL									
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11	
LAP SPLICE LENGTH											
SPACING < 6"	TOP BAR *	1'-3"	1'-11"	2'-7"	3'-5"	5'-3"	6'-4"	7'-1"	8'-0"	8'-11"	
	OTHER BAR	11"	1'-5"	2'-0"	2'-7"	4'-1"	4'-10"	5'-6"	6'-2"	6'-10"	
SPACING ≥ 6"	TOP BAR *	1'-2"	1'-6"	1'-11"	2'-3"	2'-8"	3'-0"	3'-9"	4'-8"	7'-11"	
	OTHER BAR	10"	1'-2"	1'-5"	1'-9"	2'-0"	2'-4"	2'-11"	3'-9"	5'-4"	
EMBEDMENT LENGTH											
SPACING < 6"	TOP BAR *	11"	1'-5"	2'-0"	2'-7"	4'-1"	4'-10"	5'-6"	6'-2"	6'-10"	
	OTHER BAR	9"	1'-1"	1'-7"	2'-0"	3'-1"	3'-9"	4'-2"	4'-9"	5'-3"	
SPACING ≥ 6"	TOP BAR *	10"	1'-2"	1'-5"	1'-8"	2'-0"	2'-4"	2'-11"	3'-9"	5'-4"	
	OTHER BAR	8"	11"	1'-1"	1'-4"	1'-7"	1'-9"	2'-3"	2'-9"	4'-1"	

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

** WHERE DIFFERENT STRENGTH CONCRETE IS USED, MULTIPLY ABOVE LENGTHS BY $\sqrt{\frac{4500 \text{ psi}}{\text{CONC STRENGTH USED}}}$

- FOR EXTRA REINFORCING AROUND OPENINGS, SEE DETAIL 0330-001.
- FOR WALL BASE CONSTRUCTION JOINT, SEE DETAILS 0315-154 AND 0330-004.
- FOR FORM TIES, SEE DETAILS 0310-051 AND 0310-052.

CONCRETE

- 28-DAY CAST-IN-PLACE CONCRETE STRENGTHS:

TYPICAL (UNO):	5000 PSI
ELECTRICAL DUCT BANKS AND PIPE ENCASMENTS NOT INTEGRAL WITH FOUNDATIONS:	3000 PSI
GROUT TOPPING:	5000 PSI
- REINFORCING STEEL:

TYPICAL:	ASTM A615, GRADE 60
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- FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
- CONTINUOUS WATERSTOP AS SPECIFIED SHALL BE INSTALLED IN ALL CONSTRUCTION JOINTS IN WALLS AND SLABS OF BELOW GRADE STRUCTURES, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.
- CONSTRUCTION JOINTS INDICATED ARE SUGGESTED LOCATIONS. CONTRACTOR MAY REVISE LOCATION OF JOINTS, SUBJECT TO SPECIFIED REQUIREMENTS. ADDITIONAL CONSTRUCTION JOINT LOCATIONS, INCLUDING ADDITIONAL REQUIRED FOR CONSTRUCTION, SHALL BE SUBMITTED FOR REVIEW BY ENGINEER.
- ROUGHEN AND CLEAN CONSTRUCTION JOINTS IN WALLS AND SLABS AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE.
- THE CONTRACTOR SHALL COORDINATE PLACEMENT OF OPENINGS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
- NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
- CONDUIT SHALL NOT BE PLACED PARALLEL WITH BEAM OR COLUMN REINFORCEMENT UNLESS SPECIFICALLY INDICATED IN DRAWINGS.

WELDING

- WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS), LATEST EDITION:

D1.1. STRUCTURAL WELDING CODE - STEEL
D1.2. STRUCTURAL WELDING CODE - ALUMINUM
D1.3. STRUCTURAL WELDING CODE - SHEET STEEL
D1.6. STRUCTURAL WELDING CODE - STAINLESS STEEL
- USE INTERMITTENT WELDS AT FIELD WELDS OF EMBED PLATES AND ANGLES TO AVOID CRACKING OF THE EXISTING CONCRETE.
- BUTT JOINT WELDS SHALL BE COMPLETE JOINT PENETRATION (CJP) UNLESS INDICATED OTHERWISE.

STRUCTURAL STEEL AND METAL FABRICATIONS

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:

W-SHAPES	A992
MISCELLANEOUS SHAPES INCLUDING ANGLES, CHANNELS, PLATES, ETC.	A36
SQUARE OR RECTANGULAR STEEL TUBING	A500, GRADE B
STEEL PIPE	A53, GRADE B
- STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION, AND CURRENT OSHA STANDARDS.
- BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE FOLLOWING EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE:

ANCHOR BOLTS (AB)	F593, AISI TYPE 316, CONDITION CW
STAINLESS STEEL	F1554, GR 36
STEEL	F1554, GR 36 / A153
GALVANIZED STEEL	A307
MACHINE BOLTS (MB)	A307
- ITEMS TO BE EMBEDDED IN CONCRETE SHALL BE CLEAN AND FREE OF OIL, DIRT AND PAINT.
- NO HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS. NO CUTTING OR BURNING OF STRUCTURAL STEEL IS PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.



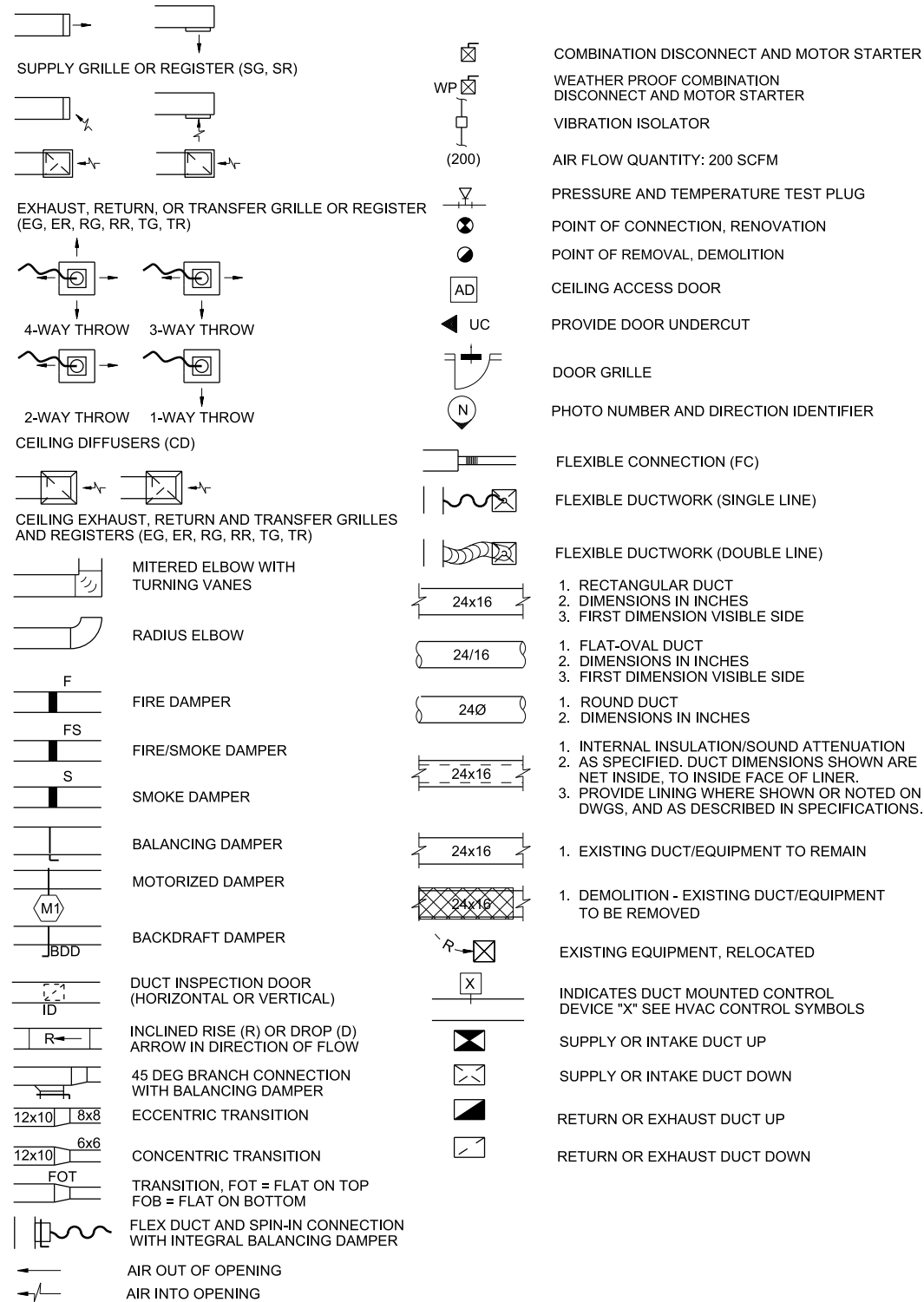
3011 SW WILLISTON RD GAINESVILLE, FL 32608 EB0000072 - AAC001992 DELAUNE LANGE - PE 70194	SWWRN NITROGEN REMOVAL AND DIGESTER MODIFICATIONS MANATEE COUNTY UTILITIES MANATEE COUNTY, FL	NO. DATE	D LANGE	DR	K RINER	M CHRZANOWSKI	REVISION	APVD	D LANGE
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GENERAL	STRUCTURAL NOTES
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VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING.
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0105
SHEET	of

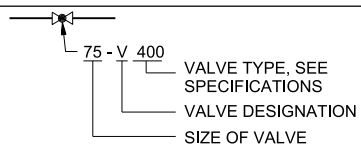
ISSUED FOR BID

HEATING, VENTILATING, AND AIR CONDITIONING SYMBOLS

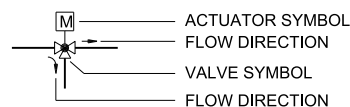


EQUIPMENT NOMENCLATURE

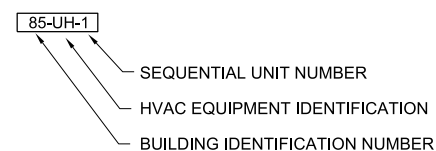
MANUAL VALVES AND CHECK VALVES IDENTIFICATION



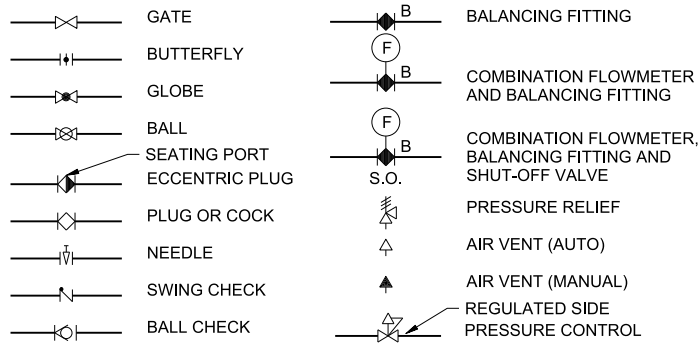
CONTROL VALVES IDENTIFICATION



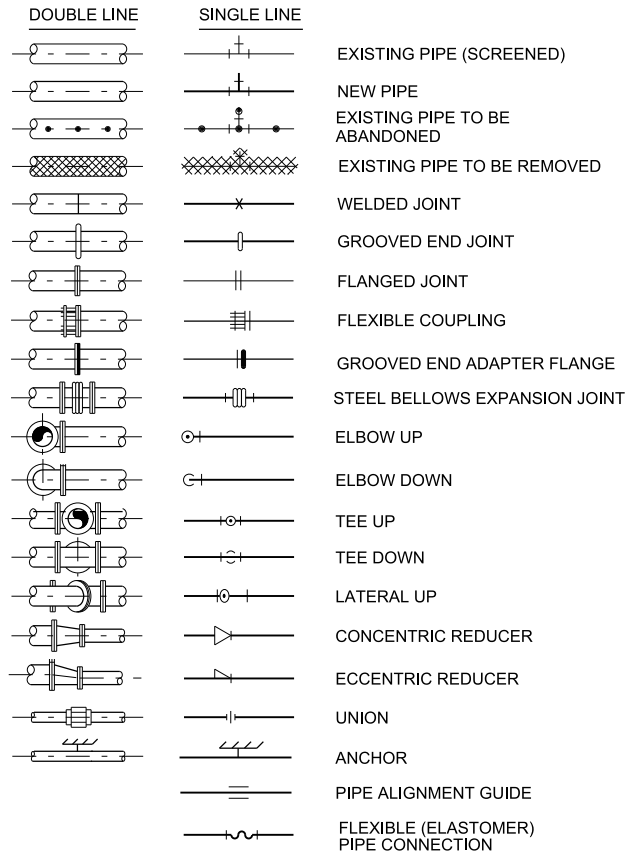
HVAC EQUIPMENT TAG



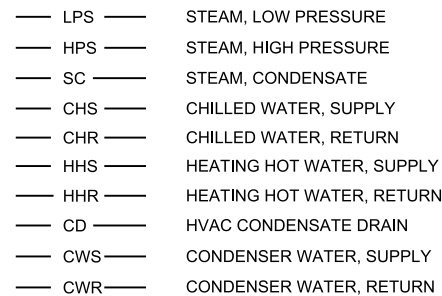
VALVE SYMBOLS



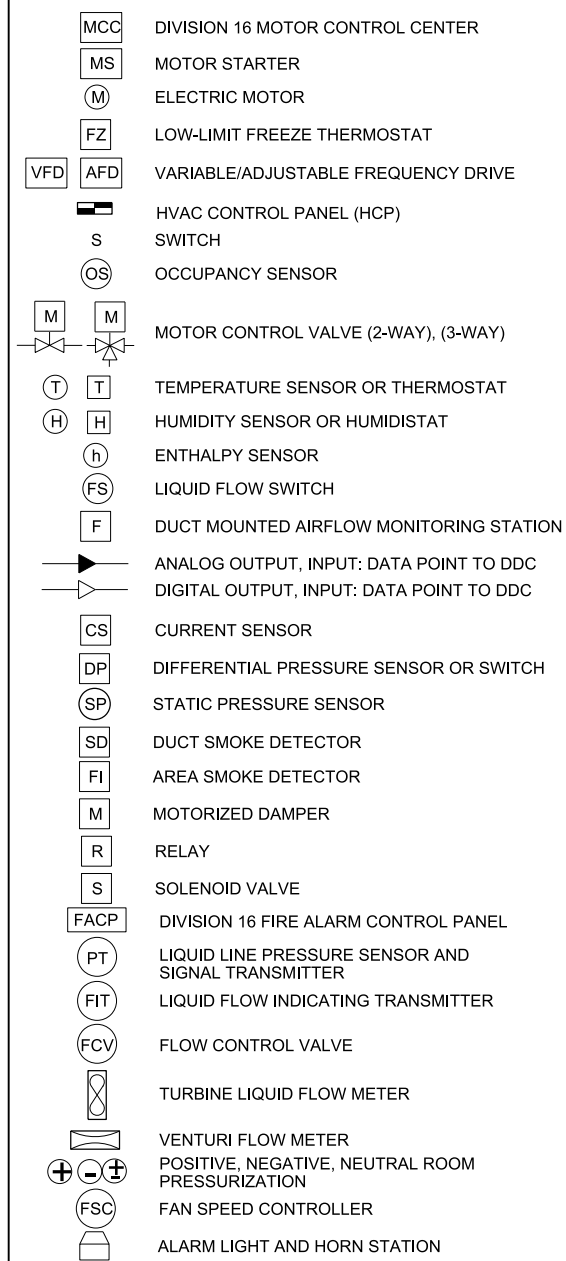
HVAC PIPING SYMBOLS



PIPING FLOW STREAM IDENTIFICATION



HVAC CONTROLS SYMBOLS

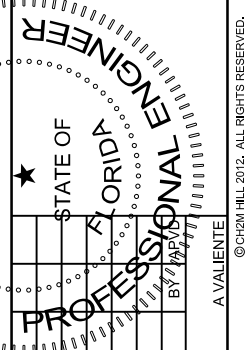


HVAC GENERAL NOTES

- THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS ON THIS SHEET MAY NOT APPEAR ON THE PLANS.
- FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS, SEE OTHER LEGENDS FOR PLUMBING, MECHANICAL, AND STRUCTURAL/ARCHITECTURAL.

ABBREVIATIONS AND EQUIPMENT ID

ACCU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITIONING UNIT
AHU	AIR HANDLING UNIT
AS	CENTRIFUGAL AIR SEPARATOR
BD	BALANCING DAMPER
BDD	BACKDRAFT DAMPER (GRAVITY)
BO	BOILER
CC	COOLING COIL
CCU	CABINET CONVECTOR UNIT
CD	CEILING DIFFUSER
CF	CEILING FAN
CMF	CHEMICAL FEEDER
CRU	CONDENSATE RETURN UNIT
CSU	CEILING-MOUNTED AIR SUPPLY UNIT
CU	CONDENSING UNIT
DL	DRUM LOUVER DIFFUSER
EA	EXHAUST AIR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
ET	DIAPHRAGM EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
FC	FLEXIBLE CONNECTION, FAIL CLOSE
FCU	FAN-COIL UNIT
FD	FIRE DAMPER
FO	FAIL OPEN
FF	FINAL FILTER
FRP	FIBERGLASS REINFORCED PLASTIC
FSD	FIRE SMOKE DAMPER
FT	FINNED-TUBE BASEBOARD HEATER
FZ	FREEZE STAT
HC	HEATING COIL
HCP	HVAC CONTROL PANEL
HD	HOOD, EXHAUST
HGR	HOT GLYCOL RETURN
HGS	HOT GLYCOL SUPPLY
HTP	HEAT TRANSFER PACKAGE
HVU	HEATING AND VENTILATING UNIT
HWP	HEATING WATER PUMP
HX	HEAT EXCHANGER
IRH	INFRARED HEATERS
JD	JET DIFFUSER
MAU	MAKEUP AIR UNIT
MB	MIXING BOX
MD	MOTORIZED DAMPER
ML	MOTORIZED LOUVER
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED-BLADE DAMPER (MANUAL)
OIT	OPERATOR INTERFACE TERMINAL
OS	OCCUPANCY SENSOR
OSA	OUTSIDE AIR
PA	PRESSURIZATION AIR
PCV	PRESSURE-CONTROL VALVE
PF	PREFILTER
PHC	PREHEAT COIL
PTAC	PACKAGED TERMINAL AC UNIT
PTS	PITOT-TUBE TESTING STATION
RA	RETURN AIR
RF	RETURN FAN
RG	RETURN GRILLE
RGH	RADIANT GAS-FIRED HEATING SYSTEM
RL	REFRIGERANT LIQUID PIPE
RR	RETURN REGISTER
RS	REFRIGERANT SUCTION PIPE
RV	ROOF VENTILATOR
SA	SOUND ATTENUATOR, SUPPLY AIR
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SP	STATIC PRESSURE
SR	SUPPLY REGISTER
TG	TRANSFER GRILLE
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME UNIT



NO.	DATE	DR	CHK	APVD

3011 SW WILLISTON RD
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EB0000072 AA-C001992
ABEL VALENTE - PE 70128

SWWRf NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

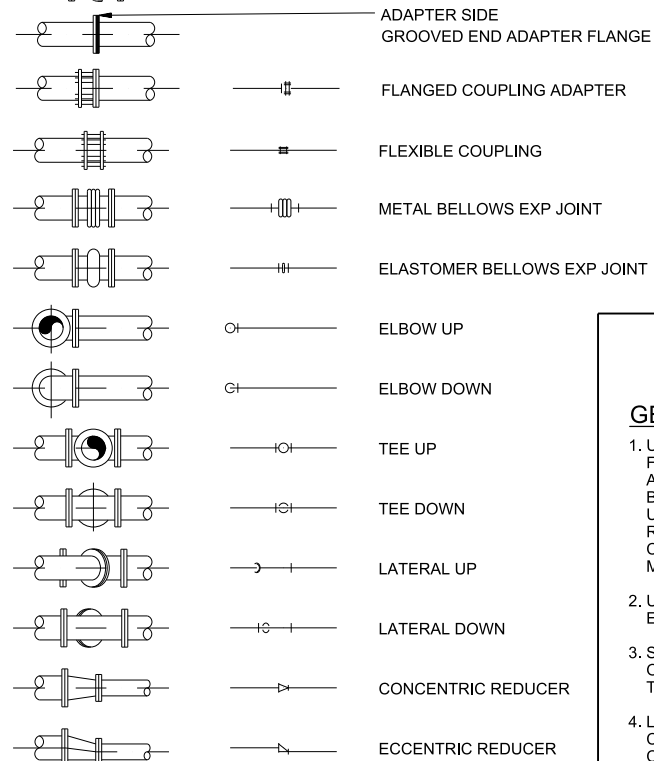
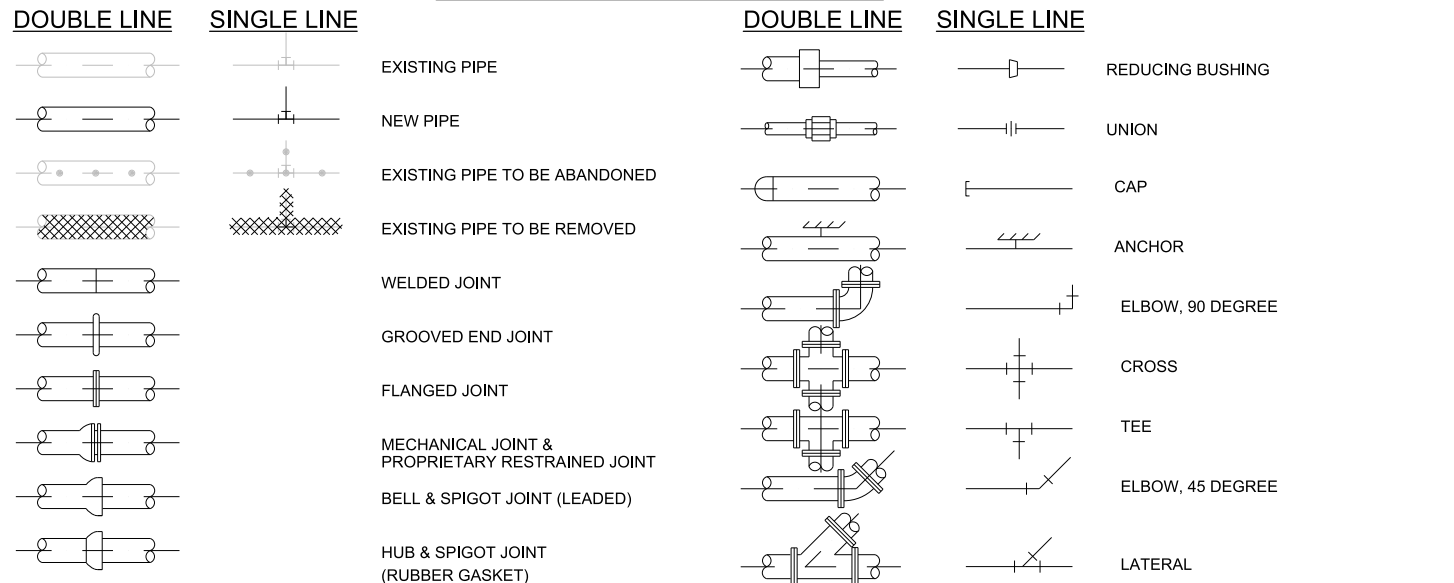
CH2MHILL®

GENERAL

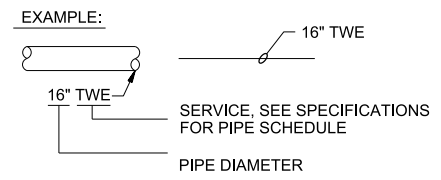
**BUILDING MECHANICAL
LEGEND**

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0106
SHEET	of

PIPE AND FITTING SYMBOLS



PIPING DESIGNATION



NOTES:

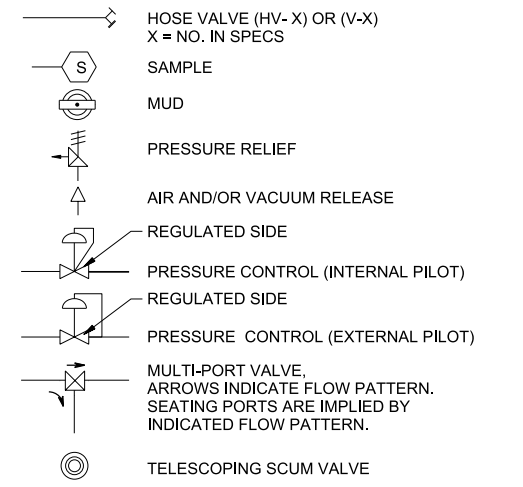
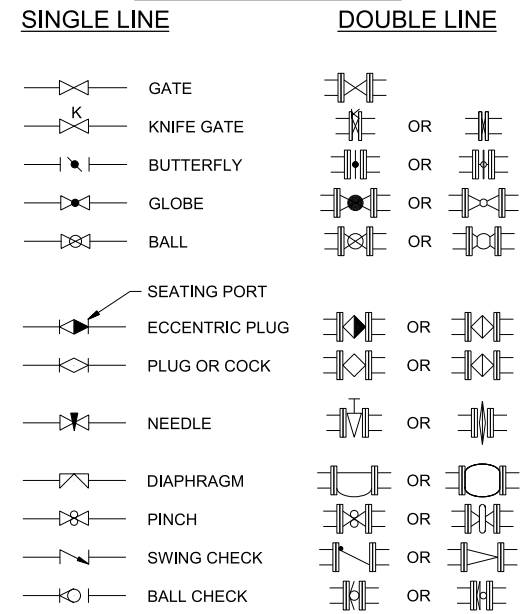
- ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
- SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
- EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.

MECHANICAL LEGEND AND NOTES

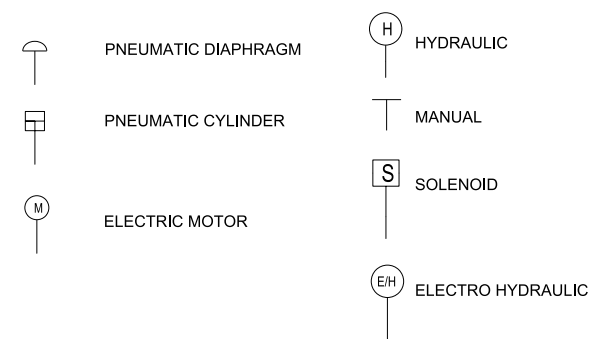
GENERAL PIPING NOTES

- UNDERGROUND UTILITIES SHOWN ARE TAKEN FROM EXISTING RECORDS AND ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS AND CONFIRM LOCATIONS OF EXISTING UTILITIES AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL ACCURATELY LOCATE AND UNCOVER ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. WHERE CROSSING OF EXISTING UTILITIES OCCUR, PROVIDE 12" MINIMUM CLEARANCE.
- UNLESS OTHERWISE NOTED, LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
- SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
- LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN ARE ONLY APPROXIMATE. CONTRACTOR SHALL DESIGN AND PROVIDE ALL HANGERS AND SUPPORTS NECESSARY TO COMPLY WITH SPACING AND LOCATON REQUIREMENTS IN ACCORDANCE WITH SPECIFICATION SECTION 40 05 15.
- ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL.
- ALL FLEXIBLE CONNECTORS AND FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST TIES, AND ANCHORS, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED IN SPECIFICATION SECTION 40 27 00.
- SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE PLANS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
- ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED, EXCEPT FLANGED, WELDED, OR SCREWED PIPING, SHALL BE PROVIDED WITH THRUST RESTRAINTS AT ALL DIRECTION CHANGES. SEE THRUST DETAILS AND NOTES ON THIS SHEET AND SPECIFICATION SECTION 40 27 00.
- NUMBER AND LOCATION OF UNIONS SHOWN ON PLANS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
- UNLESS SHOWN OTHERWISE ON DRAWINGS, THE UNDERGROUND PIPES SHALL HAVE 3-FEET MINIMUM SOIL COVER.
- PROVIDE FLEXIBLE JOINTS AT CONCRETE BACKFILL OR CONCRETE ENCASEMENT AND AT CONCRETE STRUCTURES IN ACCORDANCE WITH SPECIFICATION SECTION 40 27 01.

VALVE SYMBOLS



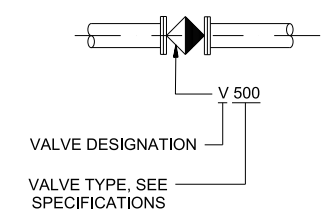
ACTUATOR SYMBOLS



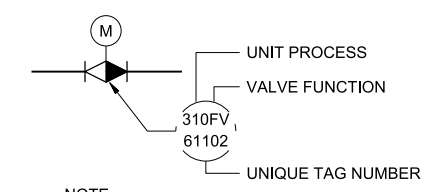
NOTE: FLOW STREAM IDENTIFICATIONS ARE SHOWN ON THE INSTRUMENTATION AND CONTROL LEGENDS

VALVE DESIGNATIONS

MANUAL VALVES AND CHECK VALVES

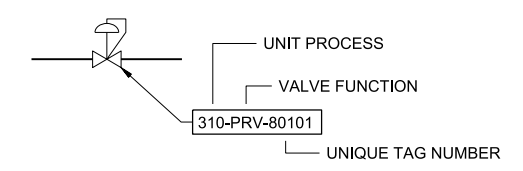


CONTROL VALVES



NOTE: SEE I&C LEGENDS FOR FURTHER DEFINITIONS AND ACTUATOR TYPES.

SELF-CONTAINED REGULATING VALVES



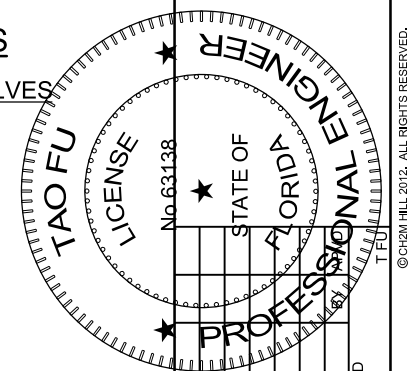
THRUST RESTRAINT SCHEDULE/TABLE

MINIMUM RESTRAINED LENGTH (FT) FOR A TEST PRESSURE OF 100 PSI

NOMINAL PIPE SIZE (INCHES)	FITTING TYPE					TERMINAL PLUG
	TEE	90°	WYE, OR 45°	22½°	11¼°	
18	20	20	20	20	20	107
24	20	60	20	20	20	139
36	120	148	90	20	20	203
42	160	185	135	41	20	233
48	198	220	176	93	20	262
54	232	252	213	138	20	290
64	287	303	270	205	80	336

NOTES:

- THESE VALUES ARE FOR DUCTILE IRON PIPES WRAPPED WITH POLYETHYLENE.
- ASSUMPTIONS:
SANDY MATERIAL USED AS BACKFILL
WATER TABLE AT 3' BELOW GROUND SURFACE
TESTING PRESSURE AT 100 PSI. For TESTING PRESSURE AT 50 PSI, MULTIPLY THE RESTRAINED LENGTH BY 0.5
MINIMUM 3 FEET OF COVER



NO.	DATE	REVISION	CHK	APVD

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SWMRF NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

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GENERAL
PROCESS MECHANICAL
LEGEND

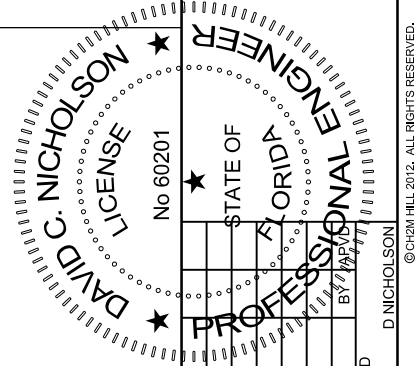
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0201
SHEET	of

SYMBOL	DESCRIPTION
ONE LINE DIAGRAMS	
	DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE
	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO
	CIRCUIT BREAKER, STATIC TRIP UNIT, SENSOR AMP TRIP AND FRAME RATINGS SHOWN, 3 POLE, UNO
	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, TRIP RATING SHOWN, 3 POLE, UNO
	SWITCH, CURRENT RATING INDICATED, 3 POLE, UNO
	FUSE, CURRENT RATING AND QUANTITY INDICATED
	MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO
	ELECTRONIC STARTER/SPEED CONTROL AFD = AC ADJUSTABLE FREQUENCY DRIVE DC = DC ADJUSTABLE SPEED DRIVE RVAT = REDUCED VOLTAGE AUTO TRANSFORMER TYPE RVRT = REDUCED VOLTAGE REACTOR TYPE
	DRAWOUT CIRCUIT BREAKER, MEDIUM VOLTAGE
	MOTOR CONTACTOR, MEDIUM VOLTAGE
	RVSS = REDUCED VOLTAGE SOFT STARTER
	CABLE OR BUS CONNECTION POINT
	KEY INTERLOCK
	SURGE ARRESTER (GAP TYPE)
	CAPACITOR - KVAR INDICATED, 3 PHASE
	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED
	GENERATOR, KW/KVA RATING SHOWN
	UTILITY REVENUE METER
	GROUND
	TRANSFORMER, SIZE, VOLTAGE RATINGS, AND PHASE INDICATED
	SHIELDED ISOLATION TRANSFORMER
	POTENTIAL TRANSFORMER, VOLTAGE RATING AND QUANTITY INDICATED
	CURRENT TRANSFORMER, RATIO(100:5) AND QUANTITY INDICATED (3)
	CONNECTION POINT TO EQUIPMENT SPECIFIED IN OTHER DIVISIONS, RACEWAY, CONDUCTOR AND CONNECTION IN THIS DIVISION
	SURGE PROTECTIVE DEVICE
	DIGITAL POWER METER WITH MODBUS COMMUNICATIONS LINK TO DEVICE SHOWN

SYMBOL	DESCRIPTION
CONTROL DIAGRAMS	
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
	SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION WHEN NEEDED FOR CLARITY:
	TOGGLE SWITCH, ON-OFF TYPE
	SELECTOR SWITCH, ON-OFF TYPE
	INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR
	INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN S - STROBE B - BLUE R - RED C - CLEAR W - WHITE
	ELAPSED TIME METER
	MOTOR STARTER CONTACTOR COIL
	CONTROL RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
	TIME DELAY RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
	SOLENOID VALVE, X INDICATES NUMERICAL ORDER IN CIRCUIT
	CONTACT - NORMALLY OPEN
	CONTACT - NORMALLY CLOSED
	REMOTE DEVICE
	TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSURES WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, CLOSURES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, OPENS WHEN ENERGIZED, CLOSURES WHEN DE-ENERGIZED AND TIMED OUT
	TERMINAL BLOCK, REMOTE
	TERMINAL BLOCK, INTERNAL
	FUSE, RATING INDICATED
	TRANSFORMER, CONTROL POWER
NOTES:	
1. THESE ARE STANDARD LEGEND SHEETS. SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.	
2. FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS (HVAC, MECHANICAL, AND STRUCTURAL/ARCHITECTURAL) SEE OTHER LEGENDS.	

SYMBOL	DESCRIPTION
GROUND SYSTEM PLAN	
	GROUND ROD
	GROUND ROD IN TEST WELL
	GROUNDING CONDUCTOR, SIZE AS INDICATED
	PIGTAIL FOR CONNECTION TO EQUIPMENT CABINET OR FRAME
	EQUIPMENT GROUND BUS
	EQUIPMENT NEUTRAL BUS

SYMBOL	DESCRIPTION
ABBREVIATIONS	
A	AMMETER, AMPERES
AIC	AVAILABLE INTERRUPTING CURRENT
BC	BY-PASS CONTACTOR
C	CONDUIT
CB	CIRCUIT BREAKER
CE	CONCRETE ENCASED
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CU	COPPER
DOE	DELAY ON ENERGIZATION
DPM	DIGITAL POWER METER
DWVG	DRAWING
EXST	EXSTING
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
G, GND	GROUND
HH	HANDHOLE
HZ	HERTZ
IC	ISOLATION CONTACTOR
KVA	KILOVOLT AMPERES
KV	KILOVOLT
LS1	LONG TIME, SHORT TIME, INSTANTANEOUS LOW VOLTAGE
MCC	MOTOR CONTROL CENTER
MIN	MINUTE, MINIMUM
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OL	OVERLOAD
PH	PHASE
RMS	ROOT MEAN SQUARE
RVSS	REDUCES VOLTAGE SOLID STATE STARTER
SEC	SECONDS
SPD	SURGE PROTECTIVE DEVICE
SW	SOUTH WEST
TDR	TIME DELAY RELAY
TYP	TYPICAL
V	VOLTS, VOLTAGE, VOLT METER
W	WITH
XFMR	TRANSFORMER
Z	IMPEDANCE



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SWWRP NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

CH2MHILL®

GENERAL
ELECTRICAL LEGEND
SHEET 1

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0301
SHEET	of

ISSUED FOR BID

INSTRUMENT IDENTIFICATION

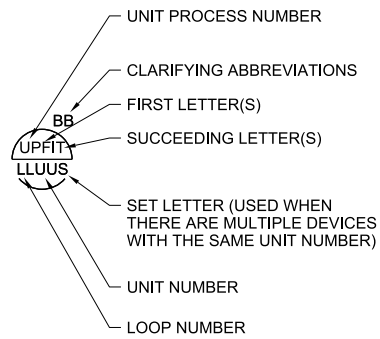
INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER		SUCCEEDING-LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	
D	DENSITY (S.G.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT, SENSOR		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	MULTI FUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (*)	X AXIS	UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TABLE BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION (ISA) STANDARD.

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.
 (*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT.

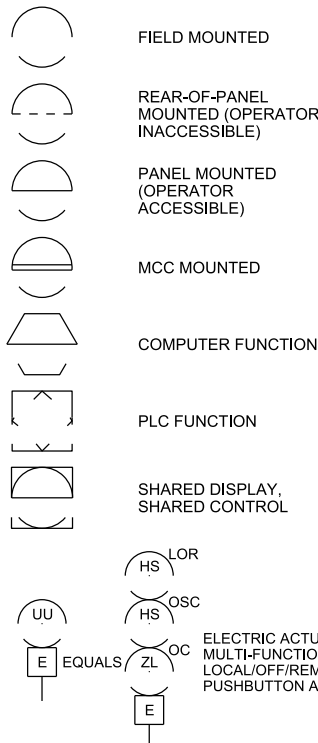
EXAMPLE SYMBOLS



DIGITAL SYSTEM INTERFACES

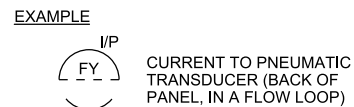
- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- △_X DISCRETE INPUT
- ▽_X DISCRETE OUTPUT

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS



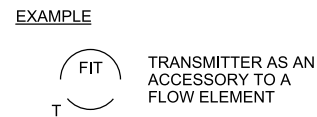
TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

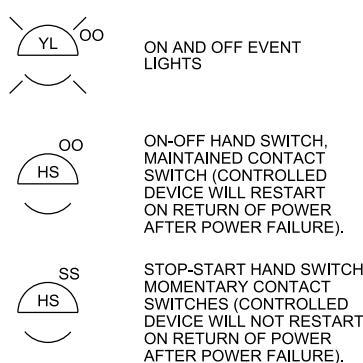


ACCESSORY DEVICES

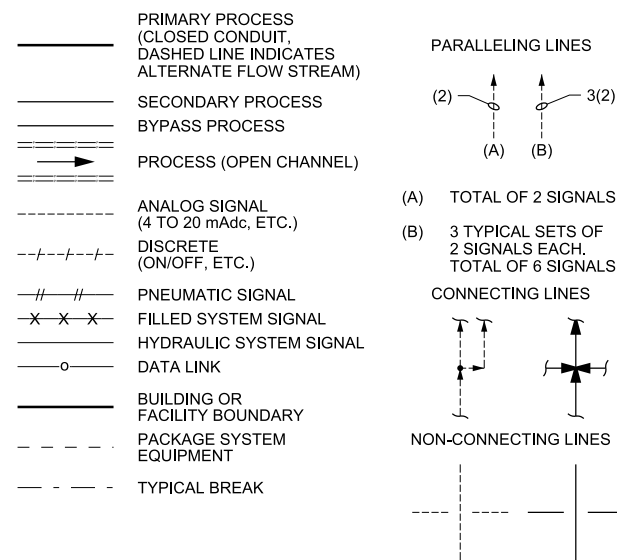
A	ALARM
C	CONTROLLER
I	INDICATOR
R	RECORDER
S	SWITCH
T	TRANSMITTER
X	UNCLASSIFIED



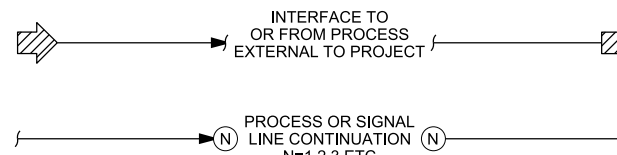
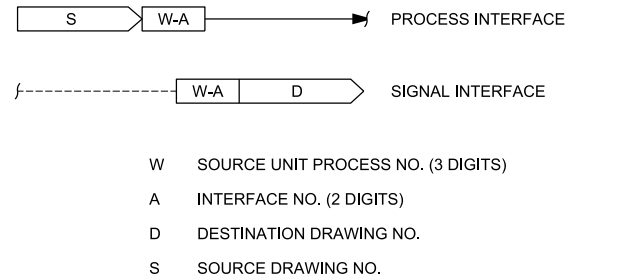
SPECIAL CASES



LINE LEGEND



INTERFACE SYMBOLS



SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

W-D-X-Y

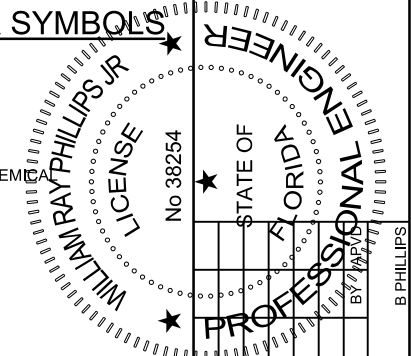
W	UNIT PROCESS NUMBER
D	ARV AIR RELEASE VALVE AVRV AIR AND VACUUM RELEASE VALVE BLR BLOWER CMP COMPRESSOR E EJECTOR GTE GATE M MECHANICAL EQUIPMENT MIX MIXER NMH MONORAIL PMP PUMP PRV PRESSURE RELIEF VALVE T TANK SCR SCREEN
X	LOOP NUMBER
Y	UNIT NUMBER

ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AM	AUTO-MANUAL
CAM	COMPUTER-AUTO-MANUAL
CCS	CENTRAL CONTROL SYSTEM
CL ₂ etc.	CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATIONS)
CM	COMPUTER-MANUAL
COD	CHEMICAL OXYGEN DEMAND
CP-X	CONTROL PANEL NO. X
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
DO	DISSOLVED OXYGEN
FAP	FIRE ALARM PANEL
FCL ₂	FREE CHLORINE RESIDUAL
FOS	FAST-OFF-SLOW
FOSA	FAST-OFF-SLOW-AUTO
FOSR	FAST-OFF-SLOW-REMOTE
FP-W-X	FIELD PANEL NO. WX (W=UNIT PROCESS NUMBER X= PANEL NUMBER)
FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
ISR	INTRINSICALLY SAFE RELAY
LCP	LOCAL CONTROL PANEL
LEL	LOWER EXPLOSIVE LIMIT
LOS	LOCKOUT STOP
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MC	MODULATE-CLOSE
MCC-X	MOTOR CONTROL CENTER NO. X
MCP	MASTER CONTROL PANEL
MSC	MANUFACTURER SUPPLIED CABLE
OC	OPEN-CLOSE(D)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OIU	OPERATOR INTERFACE UNIT
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
pH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE I/O UNIT
RM-X	REMOTE MULTIPLEXING MODULE NO. X
RTU-X	REMOTE TELEMETRY UNIT NO. X
SF	SLOWER-FASTER
SS	START-STOP
SSC	SUPERVISORY SET POINT CONTROL
TCL ₂	TOTAL CHLORINE RESIDUAL
TOC	TOTAL ORGANIC CARBON
TOD	TOTAL OXYGEN DEMAND
TURB	TURBIDITY
VFD	VARIABLE FREQUENCY DRIVE
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
Δ	DIFFERENCE
Σ	SUM
x	MULTIPLY
÷	DIVIDE
F(X)	CHARACTERIZED RAISED TO THE Nth POWER
X ⁿ	SQUARE ROOT
√	AVERAGE
AVG	REPEAT OR BOOST
1:1	SELECT HIGHEST SIGNAL
>	SELECT LOWEST SIGNAL
<	BIAS
}	GAIN OR ATTENUATE
%	

GENERAL NOTES

- COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (*) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM.
- COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (***) ARE TO BE PROVIDED UNDER DIVISION 26, ELECTRICAL.
- COMPONENTS SHOWN WITH A DIAMOND (◆) ARE PART OF PROCESS INSTRUMENTATION AND CONTROLS.
- THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THE PROJECT.



NO.	DATE	REVISION	BY

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 EB0000072 AAC001992
 WILLIAM RAY PHILLIPS - PE 38254

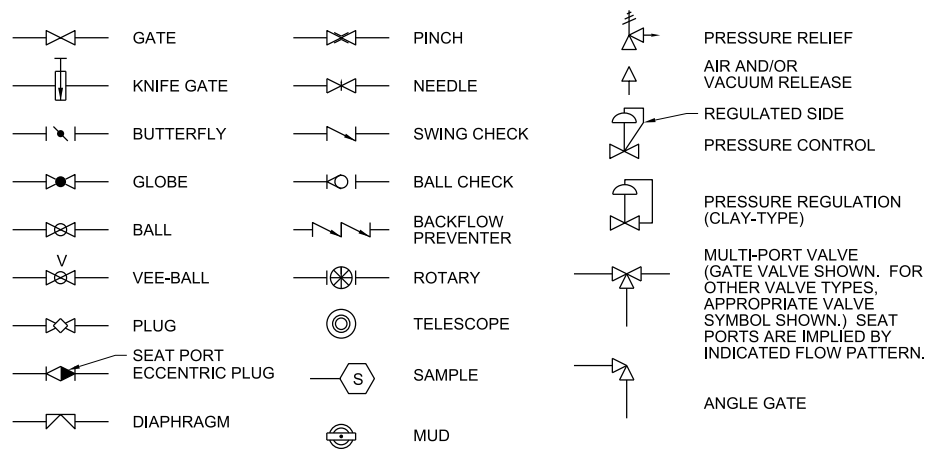
SWWRP NITROGEN REMOVAL
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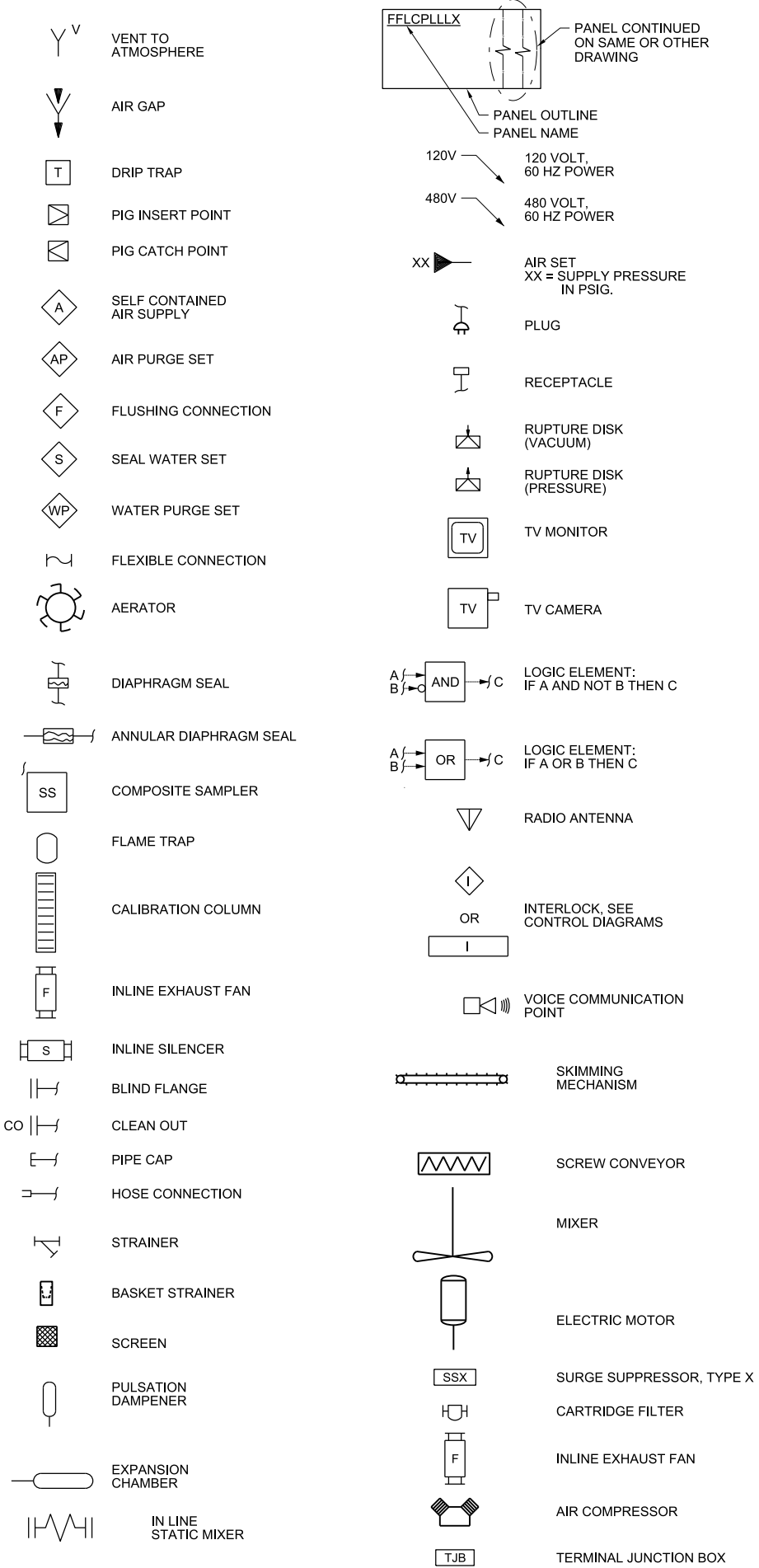
GENERAL
INSTRUMENTATION AND CONTROLS
 LEGEND
 SHEET 1

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-0401
SHEET	of

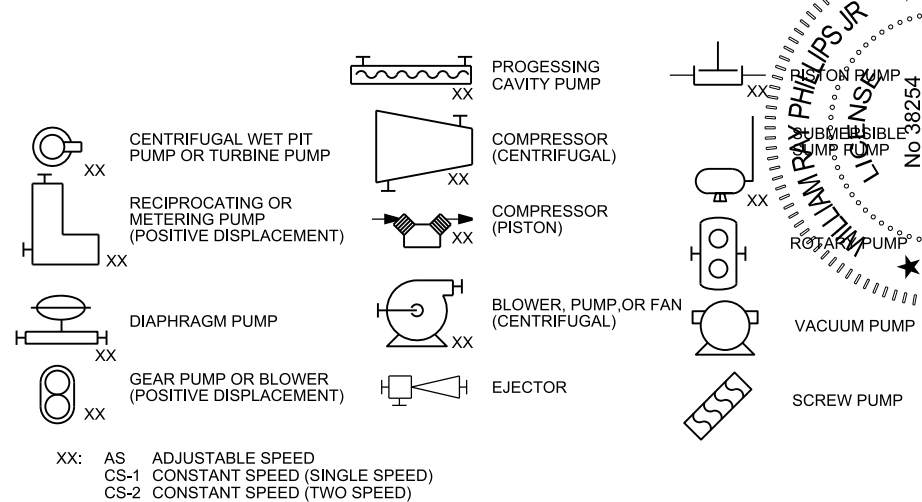
VALVE SYMBOLS



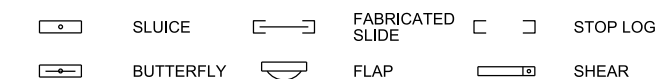
MISCELLANEOUS SYMBOLS



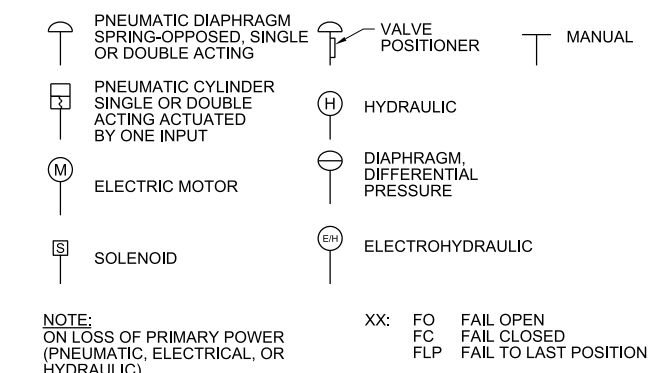
PUMP AND COMPRESSOR SYMBOLS



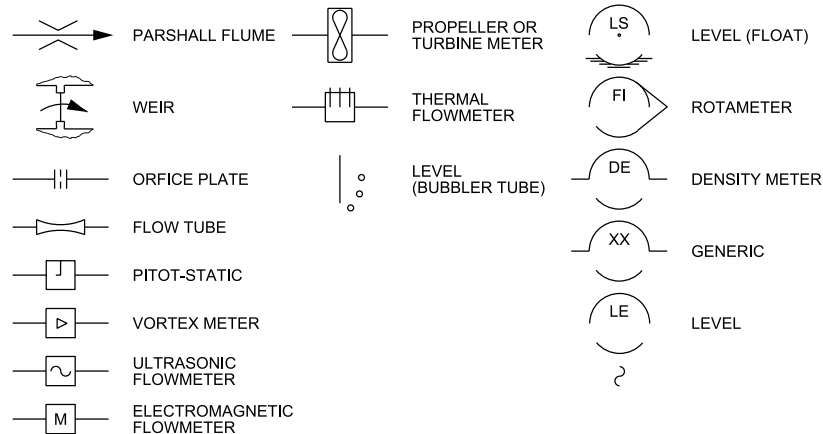
GATE SYMBOLS



ACTUATOR SYMBOLS

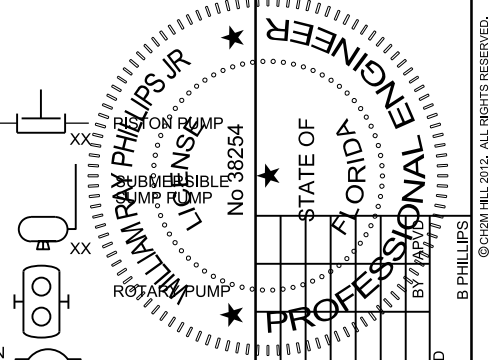


PRIMARY ELEMENT SYMBOLS



FLOW STREAM IDENTIFICATION

XX		FLOW STREAM IDENTIFICATION	
ALP	AIR LOW PRESSURE	PR	PLANT RECYCLE
BWR	BACKWASH RECYCLE	RAS	RETURN ACTIVATED SLUDGE
DR	PROCESS DRAIN	RS	RAW SEWAGE
DSL	DECANT	SE	SECONDARY EFFLUENT
DWS	DEWATERED SLUDGE	SH	SODIUM HYPOCHLORITE
F	FILTRATE	SRS	SCREENED RAW SEWAGE
FE	FILTER EFFLUENT	WAS	WASTE ACTIVATED SLUDGE
ML	MIXED LIQUOR	W3	PLANT REUSE WATER.
NRCY	NITRIFIED RECYCLE		
OFL	OVERFLOW		
PLE	PLANT EFFLUENT		
POS	POLYMER SOLUTION		



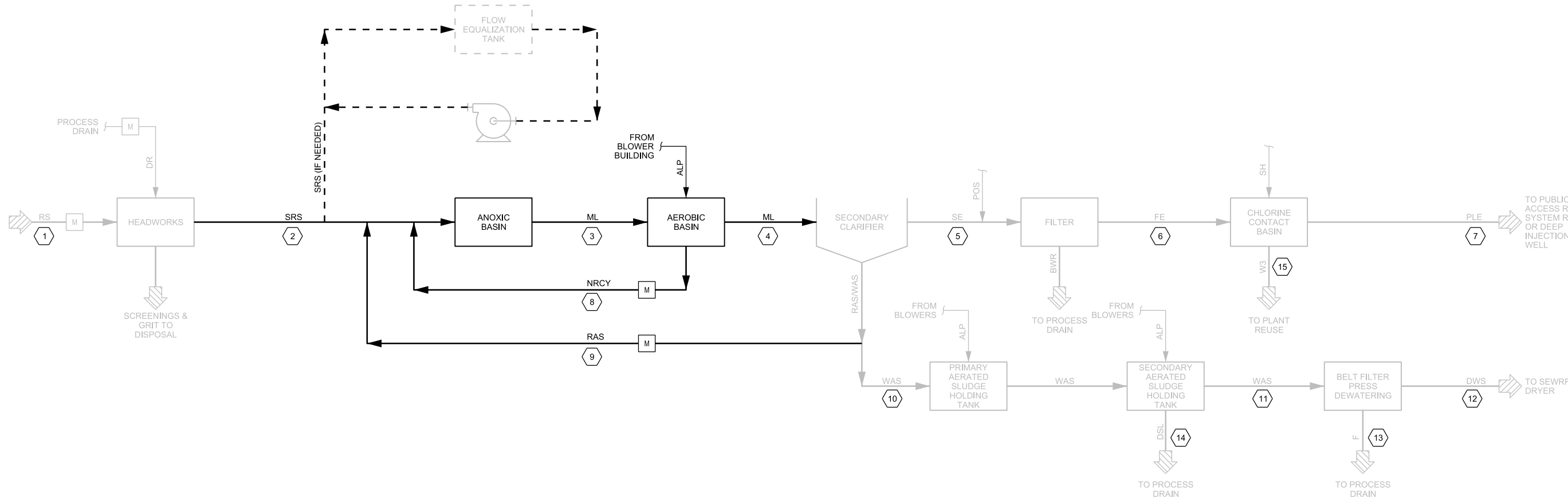
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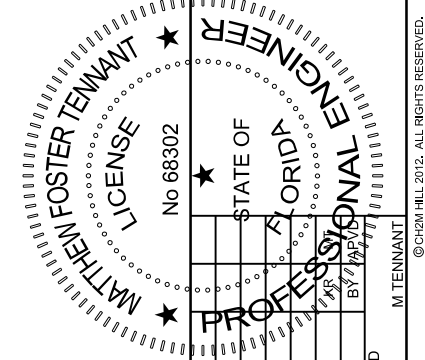
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CH2MHILL®
GENERAL
**INSTRUMENTATION AND CONTROLS
LEGEND
SHEET 2**

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
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SHEET	of



Number	ID	Flow Stream Description	Flow MGD	Phase 1 Maximum Month Average Day Conditions (Winter)							Phase 1 Maximum Month Average Day Conditions (Summer)									
				CBOD5		TSS		TKN		Nitrate		CBOD5		TSS		TKN		Nitrate		
				MASS LB/D	CONC. MG/L	MASS LB/D	CONC. MG/L	MASS LB/D	CONC. MG/L	MASS LB/D	CONC. MG/L	Flow MGD	MASS LB/D	CONC. MG/L	MASS LB/D	CONC. MG/L	MASS LB/D	CONC. MG/L	MASS LB/D	CONC. MG/L
1	RS	Raw Sewage	15.90	21,200	160	24,100	187	5,100	39	0	0	15.90	21,200	169	24,100	198	5,100	41	0	0
2	SRS + PR	Screened Raw Sewage, Plant Recycle	16.72	21,690	156	28,789	206	5,409	39	227	2	16.72	21,635	155	28,852	207	5,375	39	200	1
3	ML	Mixed Liquor	64.42	--	--	1,779,541	3,312	--	--	1,023	2	64.42	--	--	1,775,688	3,305	--	--	19	0
4	ML	Mixed Liquor	32.62	--	--	903,944	3,312	--	--	1,023	2	32.62	--	--	899,137	3,305	--	--	19	0
5	SE	Secondary Effluent	16.34	591	4	2,045	15	228	2	821	6	16.34	499	4	2,044	15	214	2	790	6
6	FE	Filter Effluent	15.89	172	1	409	3	136	1	798	6	15.89	150	1	409	3	126	1	768	6
7	PLE	Plant Effluent	15.89	172	1	409	3	136	1	798	6	15.89	150	1	409	3	126	1	768	6
8	NRCY	Nitrified Recycle	31.80	--	--	878,449	3,312	--	--	1,023	2	31.80	--	--	0	0	--	--	19	0
9	RAS	Return Activated Sludge	15.90	--	--	852,548	6,429	--	--	798	6	15.90	--	--	0	0	--	--	133	1
10	WAS	Waste Activated Sludge	0.38	--	--	20,192	6,429	--	--	19	6	0.38	--	--	20,263	6,450	--	--	18	6
11	WAS	Waste Activated Sludge	0.13	--	--	13,420	12,264	--	--	73	66	0.13	--	--	14,064	12,806	--	--	64	58
12	DWS	Dewatered Sludge	0.01	--	--	12,078	180,000	--	--	4	66	0.01	--	--	12,658	180,000	--	--	4	58
13	F	Filtrate	0.12	67	65	1,342	1,306	100	97	68	66	0.12	76	74	1,406	1,368	91	88	60	58
14	DSL	Decant	0.25	51	25	1,023	500	106	52	136	66	0.24	55	27	1,022	500	85	42	119	58
15	W3	Plant Water	0.04	0	1	1	3	0	1	2	6	0.04	0	1	3	0	1	2	6	



DATE	08/2013
NO.	1
RAI #1	
REVISION	
CHK	
DR	
APVD	
M. TENNANT	
R. BOE	
K. RINER	
D. GSN	

3011 SW WILLISTON RD
GAINESVILLE, FL 32608
EB0000072 - AAC001992
MATTHEW F. TENNANT - PE 68302

SWRRF NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

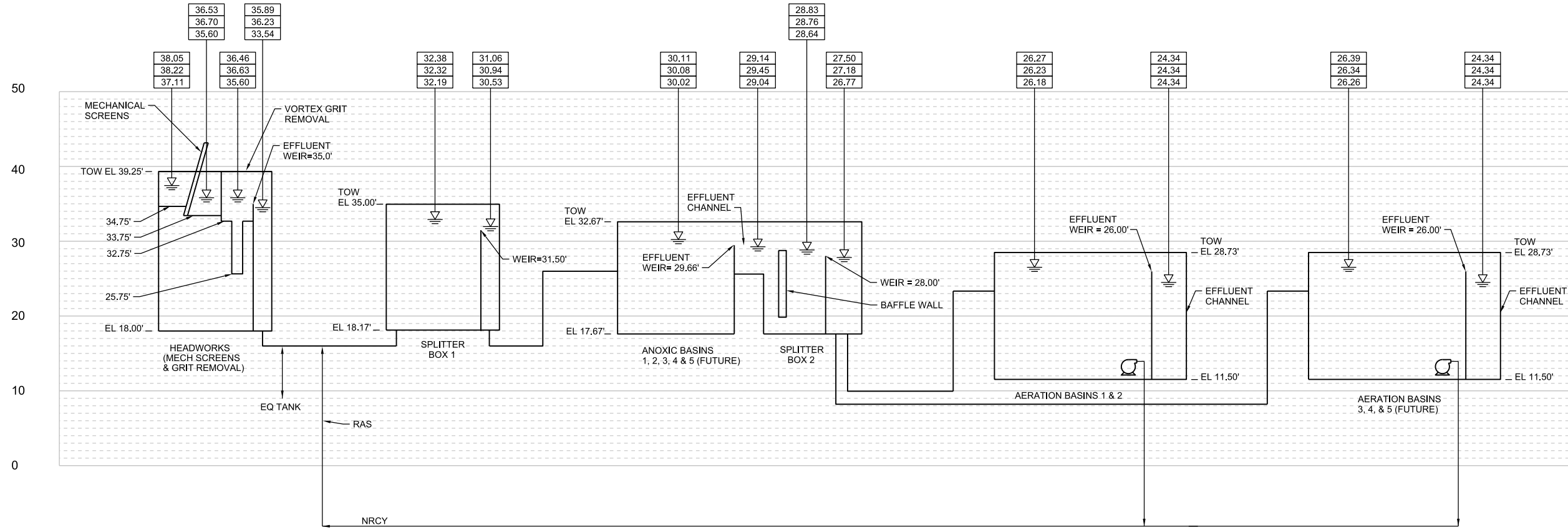
CH2MHILL
GENERAL
PROCESS FLOW DIAGRAM AND MASS BALANCE

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-1501
SHEET	of

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KEY:

X.XX	PHASE 2 PHF: 48 MGD, MDF: 27.5 MGD, RAS = 19.1 MGD, NRCY = 37.1 MGD. ONE ANOXIC AND ONE 1.0 MG AERATION BASIN OUT OF SERVICE (NOTE 1).
X.XX	PHASE 2 PHF: 48 MGD, MDF: 27.5 MGD, RAS= 19.1 MGD, NRCY= 47.8 MGD. ALL BASINS IN SERVICE (NOTE 1).
X.XX	PHASE 2 MMAADF: 19.1 MGD, RAS= 19.1 MGD, NRCY= 47.8 MGD. ALL BASINS IN SERVICE.



NOTES:
1. PHF THROUGH HEADWORKS, MDF DOWNSTREAM OF BRANCH TO/FROM EQ TANK.



MATTHEW FOSTER TENNANT
LICENSE
No 68302
STATE OF FLORIDA
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	APVD

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EB0000072 AAC001992
MATTHEW F TENNANT - PE 68302

SWRF NITROGEN REMOVAL
AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

CH2MHILL®
GENERAL
HYDRAULIC PROFILE

DATE	DECEMBER 2013
PROJ	457133
DWG	001-G-1701
SHEET	of

ISSUED FOR BID

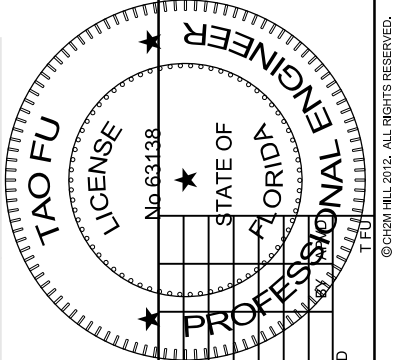
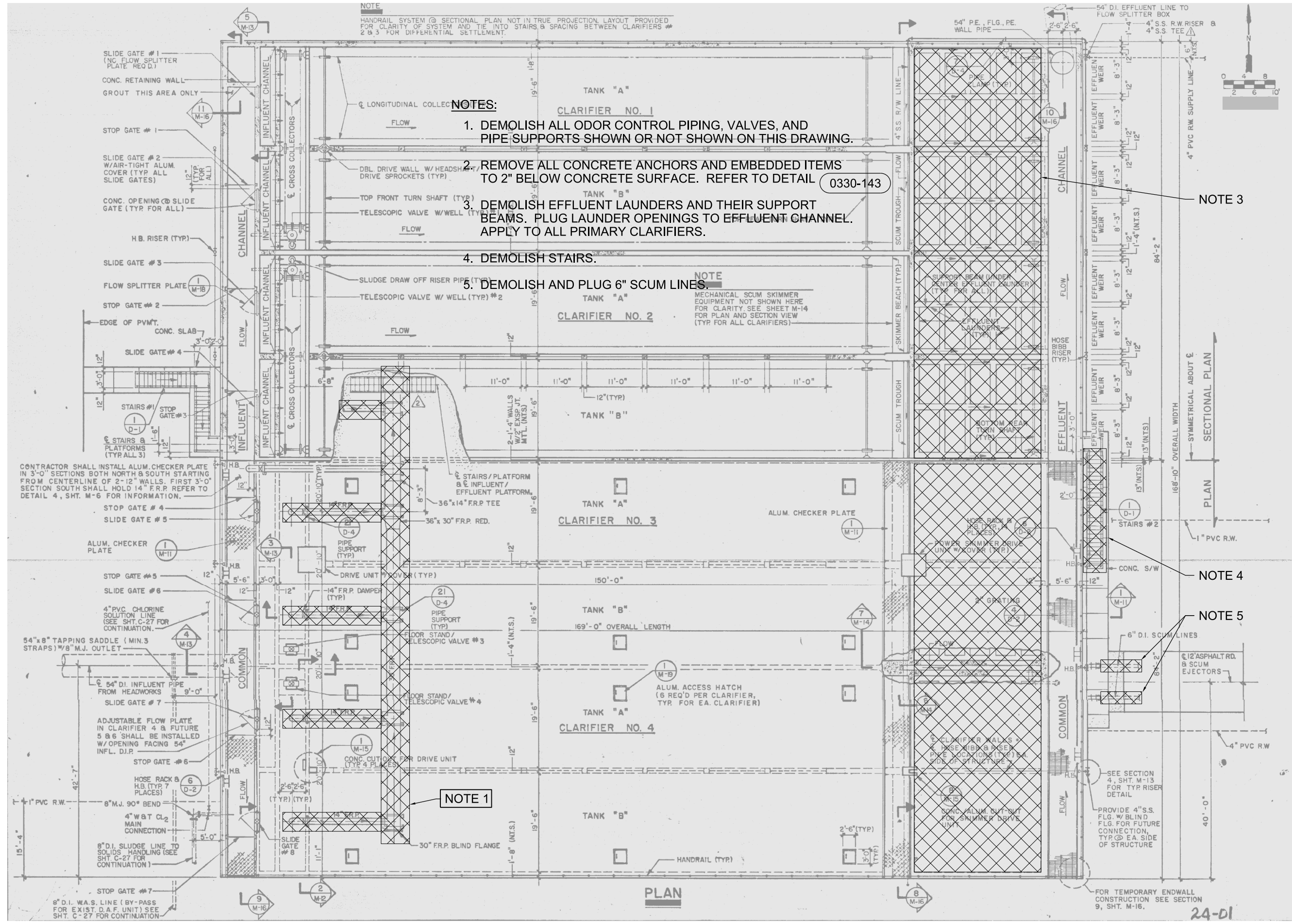
NOTE
 HANDRAIL SYSTEM @ SECTIONAL PLAN NOT IN TRUE PROJECTION. LAYOUT PROVIDED FOR CLARITY OF SYSTEM AND TIE INTO STAIRS & SPACING BETWEEN CLARIFIERS # 2 & 3 FOR DIFFERENTIAL SETTLEMENT.

NOTES:

1. DEMOLISH ALL ODOR CONTROL PIPING, VALVES, AND PIPE SUPPORTS SHOWN OR NOT SHOWN ON THIS DRAWING.
2. REMOVE ALL CONCRETE ANCHORS AND EMBEDDED ITEMS TO 2" BELOW CONCRETE SURFACE. REFER TO DETAIL 0330-143
3. DEMOLISH EFFLUENT LAUNDERS AND THEIR SUPPORT BEAMS. PLUG LAUNDRER OPENINGS TO EFFLUENT CHANNEL. APPLY TO ALL PRIMARY CLARIFIERS.
4. DEMOLISH STAIRS.
5. DEMOLISH AND PLUG 6" SCUM LINES.

NOTE

MECHANICAL SCUM SKIMMER EQUIPMENT NOT SHOWN HERE FOR CLARITY SEE SHEET M-14 FOR PLAN AND SECTION VIEW (TYP. FOR ALL CLARIFIERS)



NO.	DATE	DSGN	DR	REVISION	APVD
				CHK	R. BOE

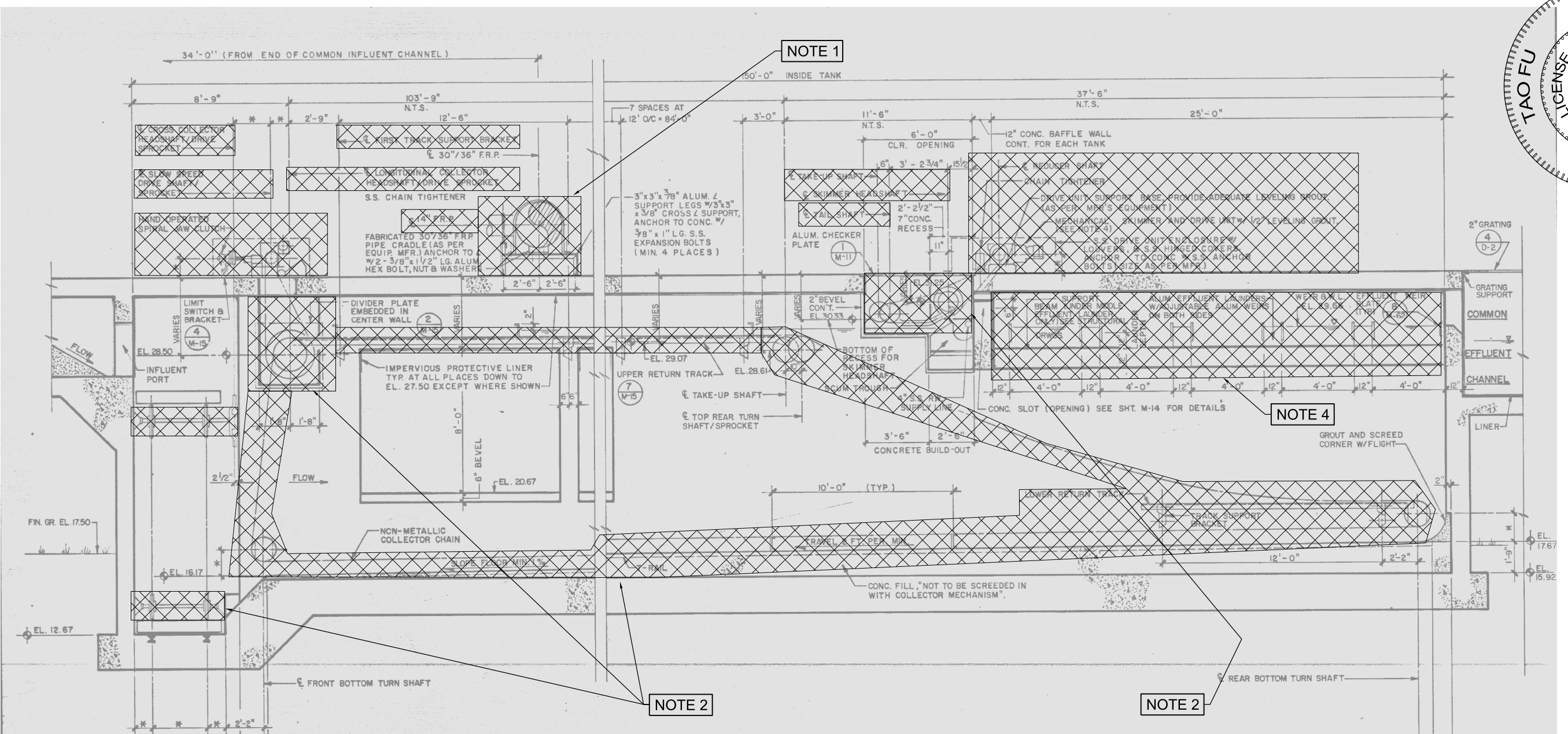
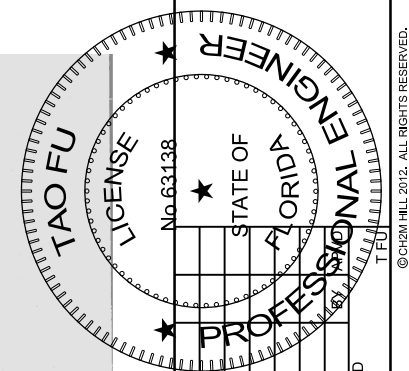
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SWRF NITROGEN REMOVAL
 AND DIGESTER MODIFICATIONS
 MANATEE COUNTY UTILITIES
 MANATEE COUNTY, FL

CH2MHILL
 DEMOLITION
 PRIMARY CLARIFIERS
 PLAN

VERIFY SCALE	DATE	PROJ	DWG	SHEET
BAR IS ONE INCH ON ORIGINAL DRAWING.	DECEMBER 2013	457133	004-D-1001	of

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NOTE 1

NOTE 4

NOTE 2

NOTE 2

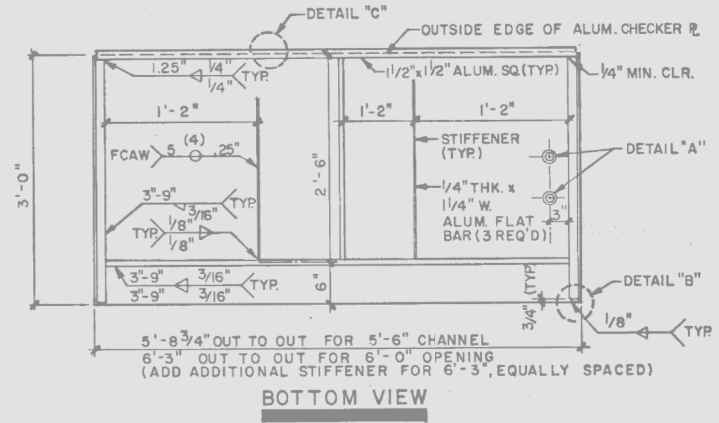
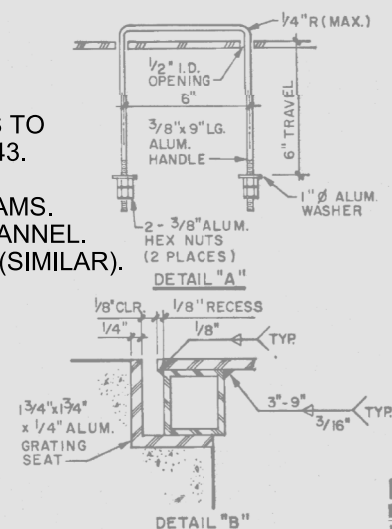
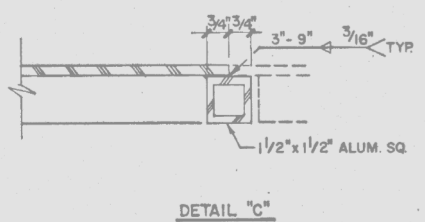
NOTES:

1. DEMOLISH ALL ODOR CONTROL PIPING, VALVES AND PIPE SUPPORTS, SHOWN OR NOT SHOWN ON THIS DRAWING.
2. DEMOLISH ALL PARTS OF THE CLARIFIER MECHANISM.
3. REMOVE ALL CONCRETE ANCHORS AND EMBEDDED ITEMS TO 2" BELOW CONCRETE SURFACE. REFER TO DETAIL 0330-143.
4. DEMOLISH EFFLUENT LAUNDERS AND THEIR SUPPORT BEAMS. PLUG 1'-0" SQUARE LAUNDRER OPENINGS TO EFFLUENT CHANNEL. APPLY TO ALL PRIMARY CLARIFIERS. SEE DETAIL 0330-142 (SIMILAR).

NOTES

1. * AS PER MFR'S EQUIP.
2. TANK FLOOR SHALL BE FLOSH TO 1/4" BELOW TOP OF TEE RAILS. FLOOR SHOULD NOT PROJECT ABOVE THE TOP OF THE RAIL AT ANY POINT.
3. CHAIN TIGHTENER SHALL NOT BE USED TO TIGHTEN CHAIN UPON INSTALLATION. SEE APPROVED SHOP DWG'S.
4. MFR. SHALL PROVIDE EXPANDED METAL COUPLING GUARD TO MOTOR.
5. SEE STRUCTURAL DRAWING FOR CEILING CONSTRUCTION.
6. ALL CONCRETE CHANNELS AND TROUGHS AND INTERIOR WALL SURFACES DOWN TO ELEVATION 27.50 SHALL BE LINED WITH PLASTIC LINER. SEE DETAILS ON SHD-D-15.
7. UNDERSIDE OF ROOF SLAB SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATION SECTION 09500 INTERIOR, SUBSECTION OR SUBJECT TO SPALLING CONCRETE.

SECTION



DETAIL 1 M-11 N.T.S.

24-01

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NOTE 1

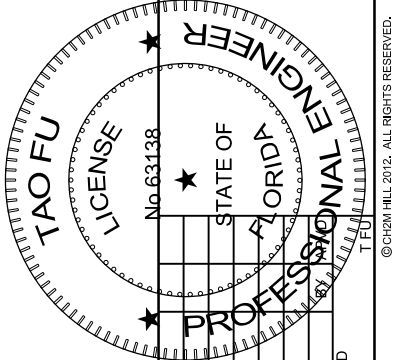
NOTE 2

NOTES:

1. DEMOLISH ALL ODOR-CONTROL PIPING, VALVES & PIPE SUPPORTS, SHOWN OR NOT SHOWN ON THIS DRAWING
2. DEMOLISH ALL PARTS OF THE CLARIFIER MECHANISMS.
3. REMOVE ALL CONCRETE ANCHORS AND EMBEDDED ITEMS TO 2" BELOW CONCRETE SURFACE. REFER TO DETAIL 0330-143

NOTES
 1. 1/2" DIA PER MANUFACTURERS EQUIPMENT
 TANK FLOOR SHALL BE FLUSH TO 1/4"
 BELOW TOP OF VEE RAILS. FLOOR
 SHOULD NOT PROJECT ABOVE THE TOP
 OF THE RAIL AT ANY POINT.

SECTION 2
 M-10



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SWWRF NITROGEN REMOVAL
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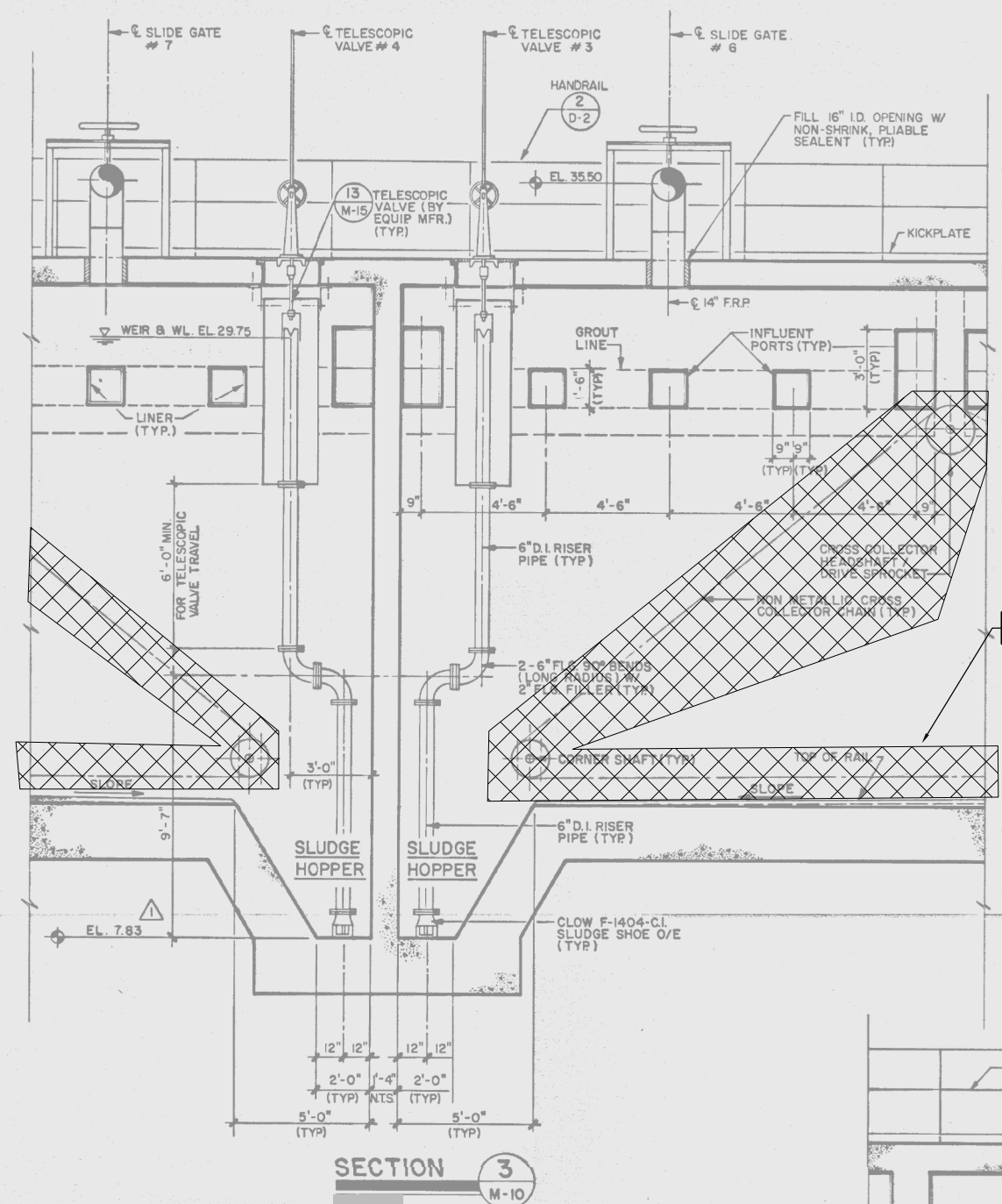
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**PRIMARY CLARIFIERS
 SECTION**

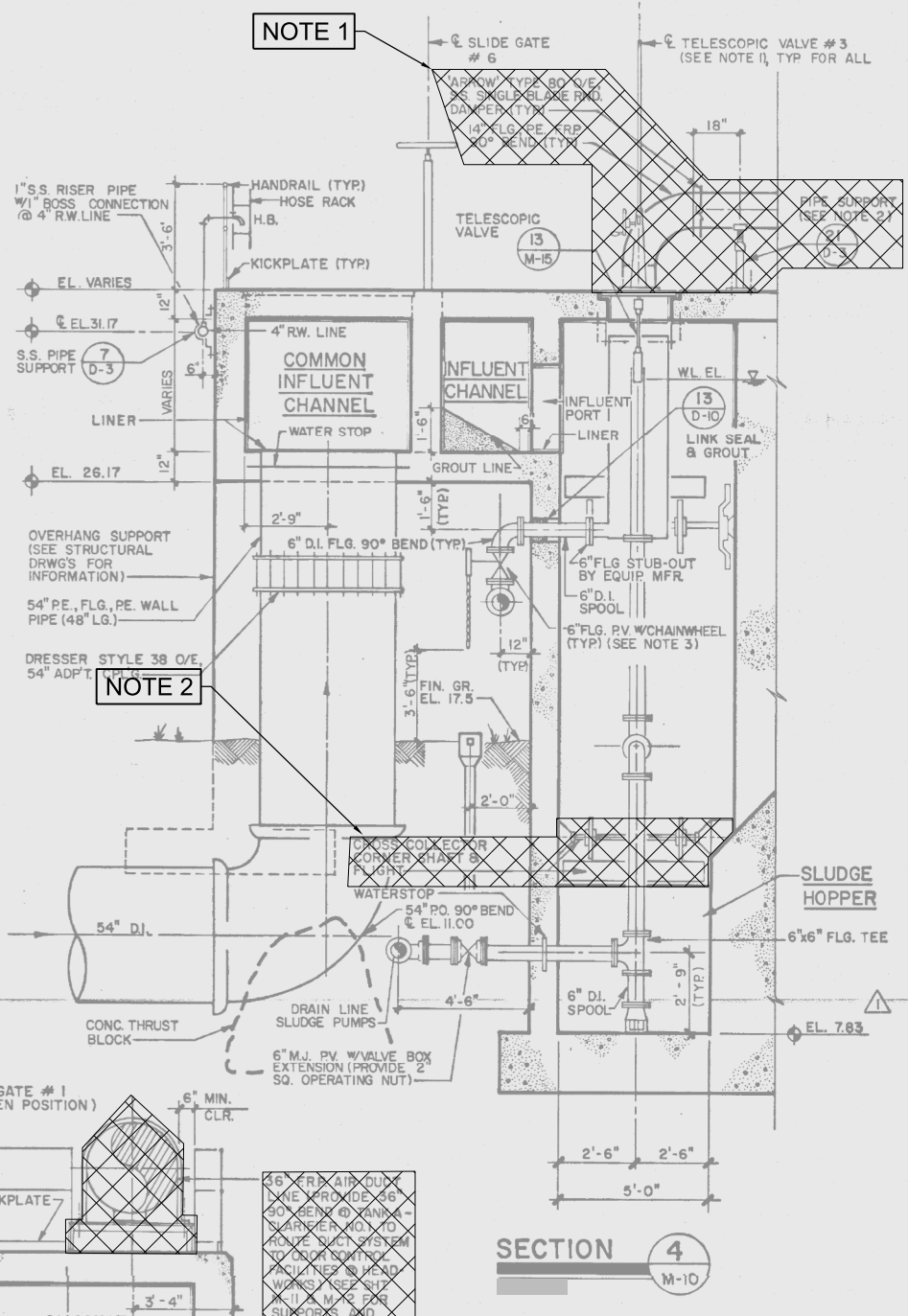
DATE	DECEMBER 2013
PROJ	457133
DWG	004-D-1003
SHEET	of

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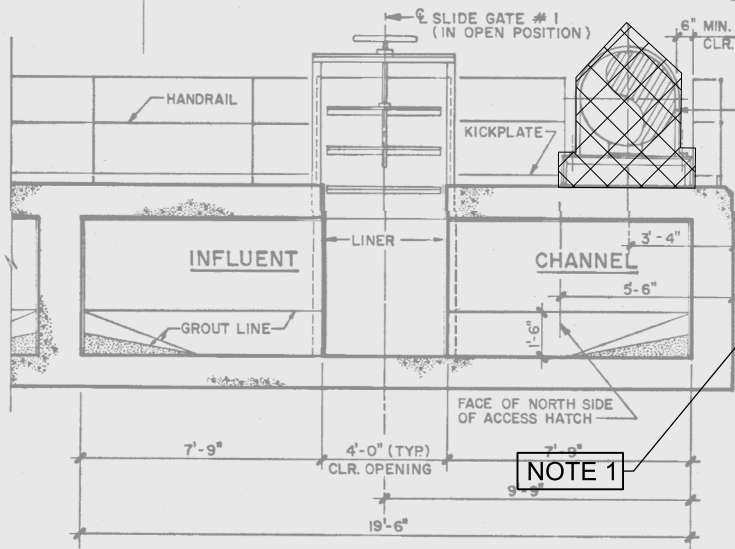
NOTE 2



NOTE 1

NOTE 2

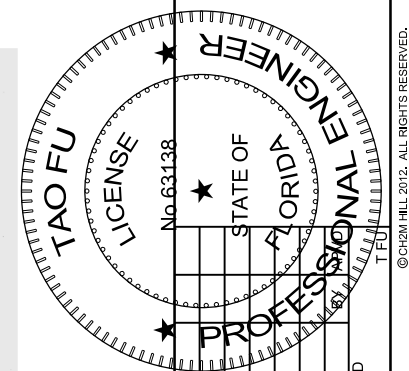
SECTION 4 M-10



NOTE 1

SECTION 5 M-10

- NOTES:**
1. DEMOLISH ALL ODOR CONTROL PIPING, VALVES & PIPE SUPPORTS, SHOWN OR NOT SHOWN ON THIS DRAWING
 2. DEMOLISH ALL PARTS OF THE CLARIFIER MECHANISMS.
 3. REMOVE ALL CONCRETE ANCHORS AND EMBEDDED ITEMS TO 2" BELOW CONCRETE SURFACE. REFER TO DETAIL 0330-143



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			N. PATTERSON		

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AND DIGESTER MODIFICATIONS
MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

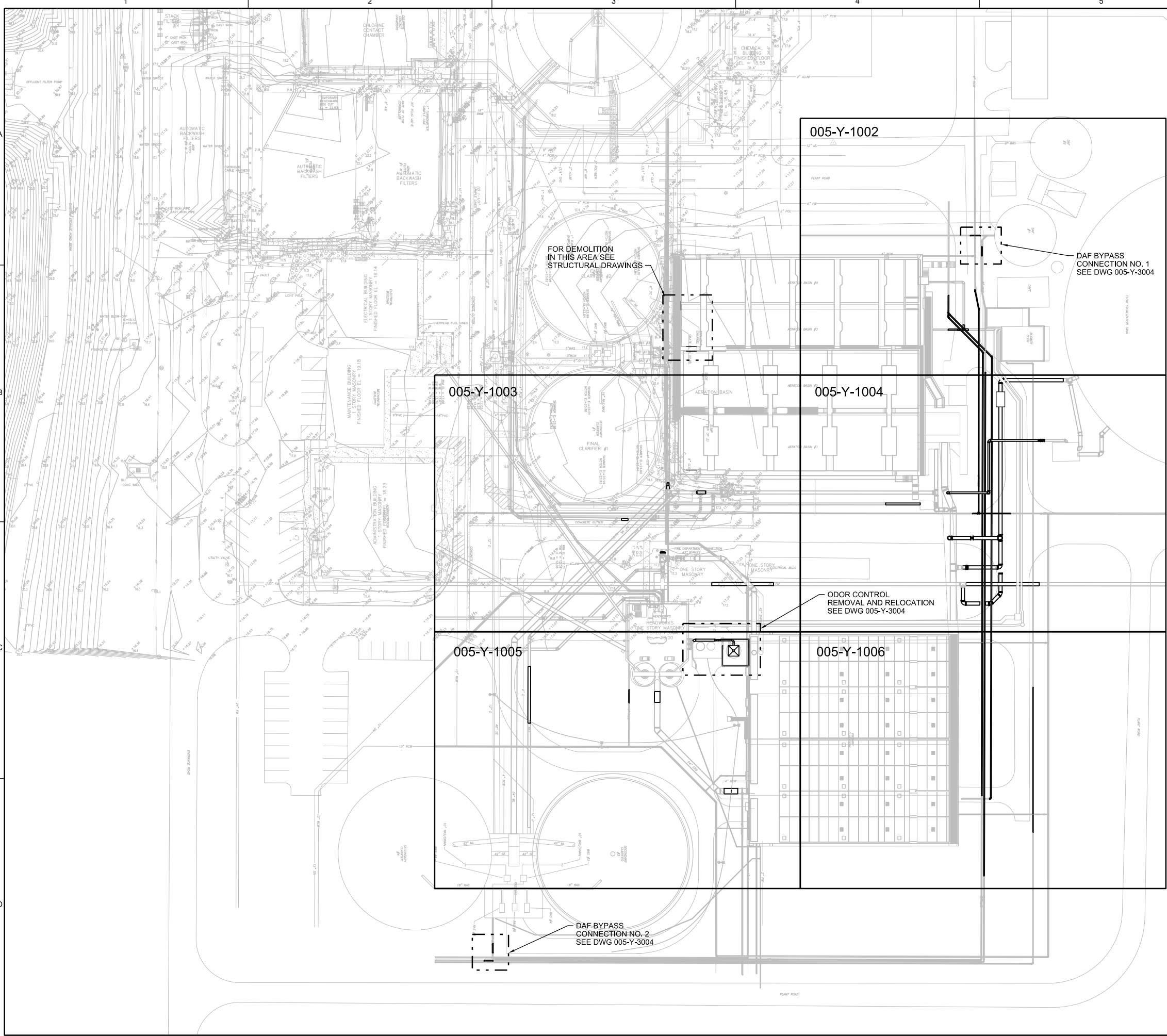
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DEMOLITION
PRIMARY CLARIFIERS
SECTIONS

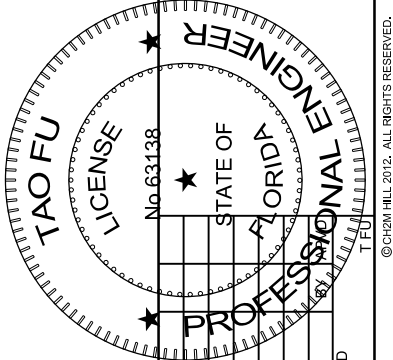
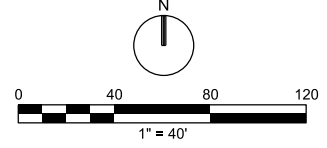
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BAR IS ONE INCH ON ORIGINAL DRAWING.	DECEMBER 2013	457133	004-D-1004	of

24-01

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- NOTES:**
- CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING PIPING PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO PROVIDE TEMPORARY SHEETING AND/OR SHORING TO PROTECT EXISTING PIPING AND STRUCTURES DURING CONSTRUCTION.



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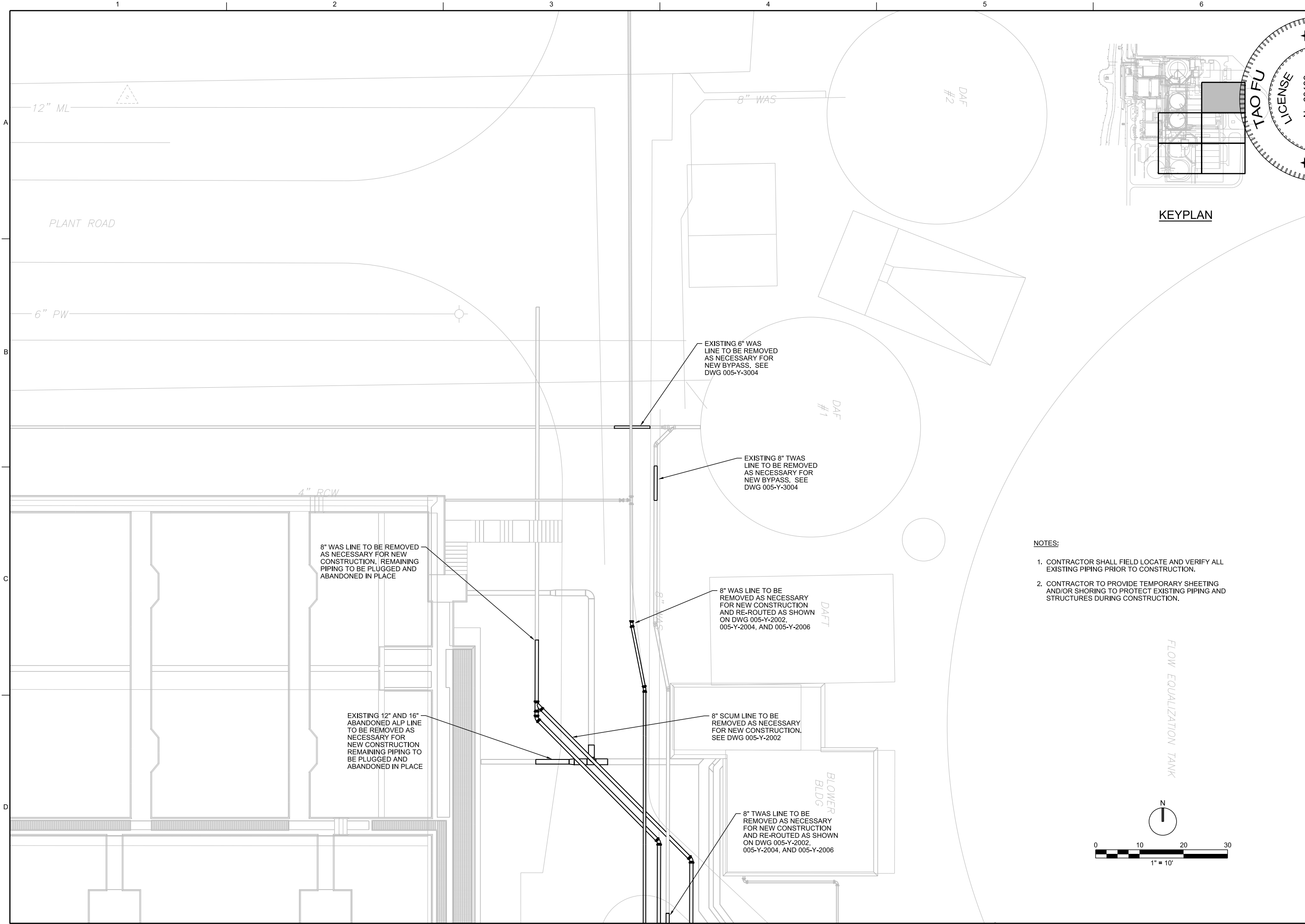
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 DATE: DECEMBER 2013
 PROJ: 457133
 DWG: 004-Y-1001
 SHEET: of

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		S PASTEUR	APVD
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 AND DIGESTER MODIFICATIONS
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 MANATEE COUNTY, FL

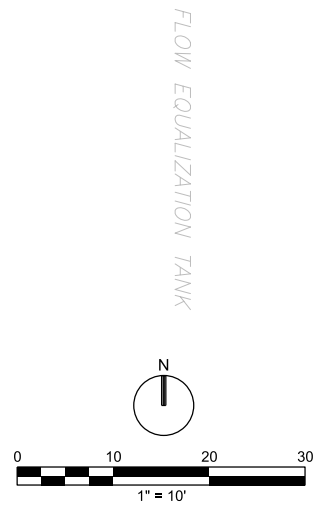
TAO FU
 PROFESSIONAL ENGINEER
 LICENSE
 No. 63138
 STATE OF
 FLORIDA

NO.	DATE	REVISION	CHK	DR	T FU	S PASTEUR	R BOE	APVD

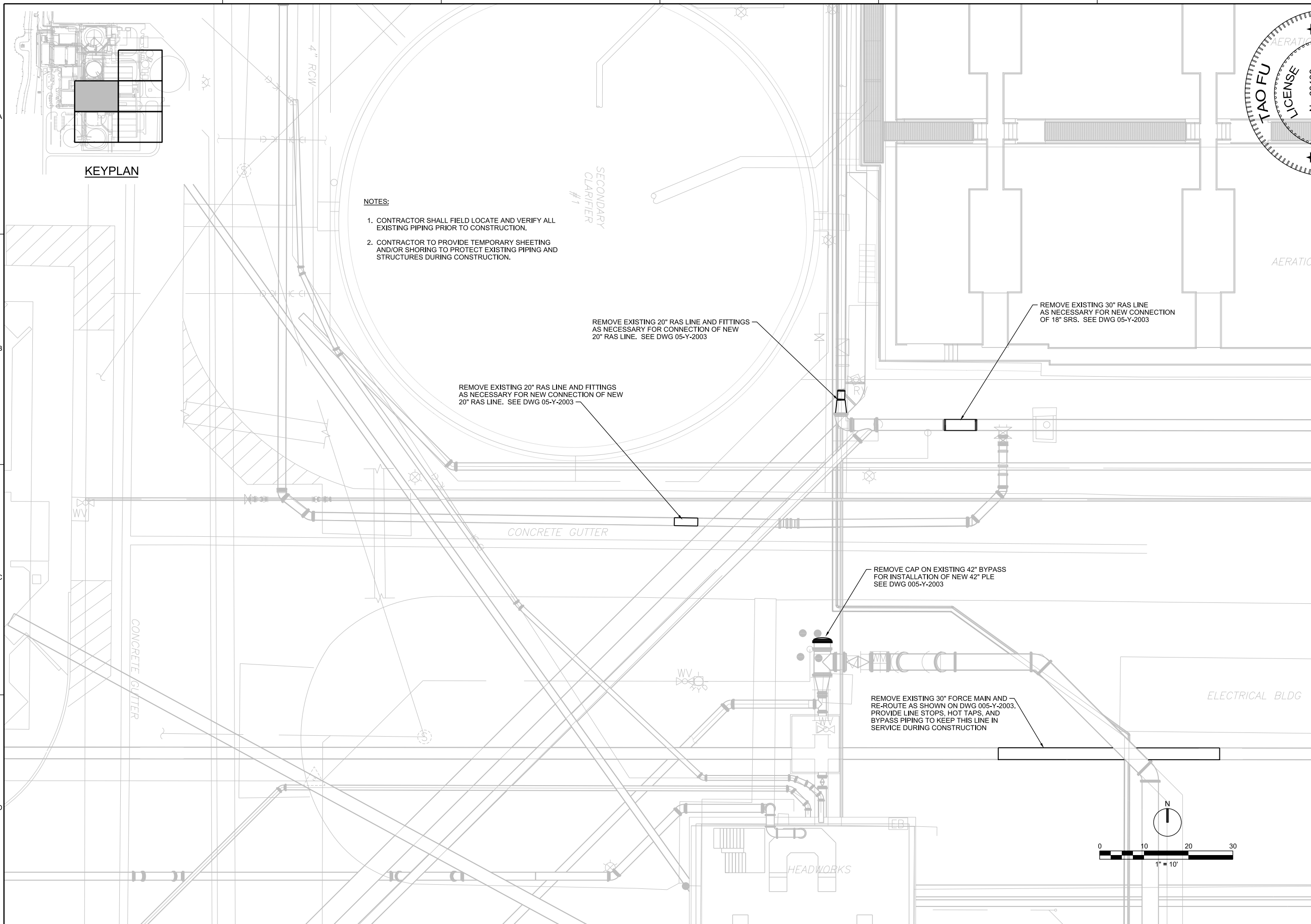
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NOTES:

- CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING PIPING PRIOR TO CONSTRUCTION.
- CONTRACTOR TO PROVIDE TEMPORARY SHEETING AND/OR SHORING TO PROTECT EXISTING PIPING AND STRUCTURES DURING CONSTRUCTION.



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- NOTES:
1. CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING PIPING PRIOR TO CONSTRUCTION.
 2. CONTRACTOR TO PROVIDE TEMPORARY SHEETING AND/OR SHORING TO PROTECT EXISTING PIPING AND STRUCTURES DURING CONSTRUCTION.

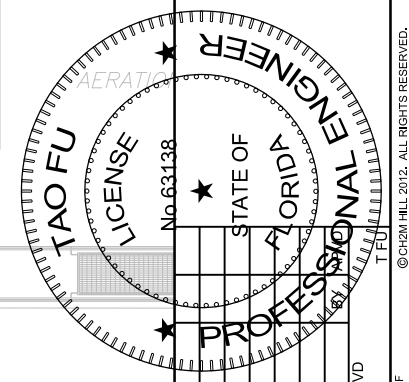
REMOVE EXISTING 20" RAS LINE AND FITTINGS AS NECESSARY FOR NEW CONNECTION OF NEW 20" RAS LINE. SEE DWG 05-Y-2003

REMOVE EXISTING 20" RAS LINE AND FITTINGS AS NECESSARY FOR CONNECTION OF NEW 20" RAS LINE. SEE DWG 05-Y-2003

REMOVE EXISTING 30" RAS LINE AS NECESSARY FOR NEW CONNECTION OF 18" SRS. SEE DWG 05-Y-2003

REMOVE CAP ON EXISTING 42" BYPASS FOR INSTALLATION OF NEW 42" PLE SEE DWG 005-Y-2003

REMOVE EXISTING 30" FORCE MAIN AND RE-ROUTE AS SHOWN ON DWG 005-Y-2003. PROVIDE LINE STOPS, HOT TAPS, AND BYPASS PIPING TO KEEP THIS LINE IN SERVICE DURING CONSTRUCTION



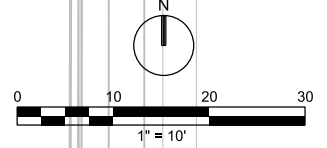
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SWMRF NITROGEN REMOVAL
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 MANATEE COUNTY UTILITIES
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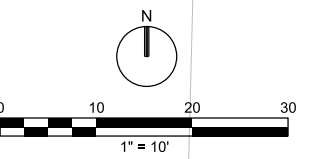
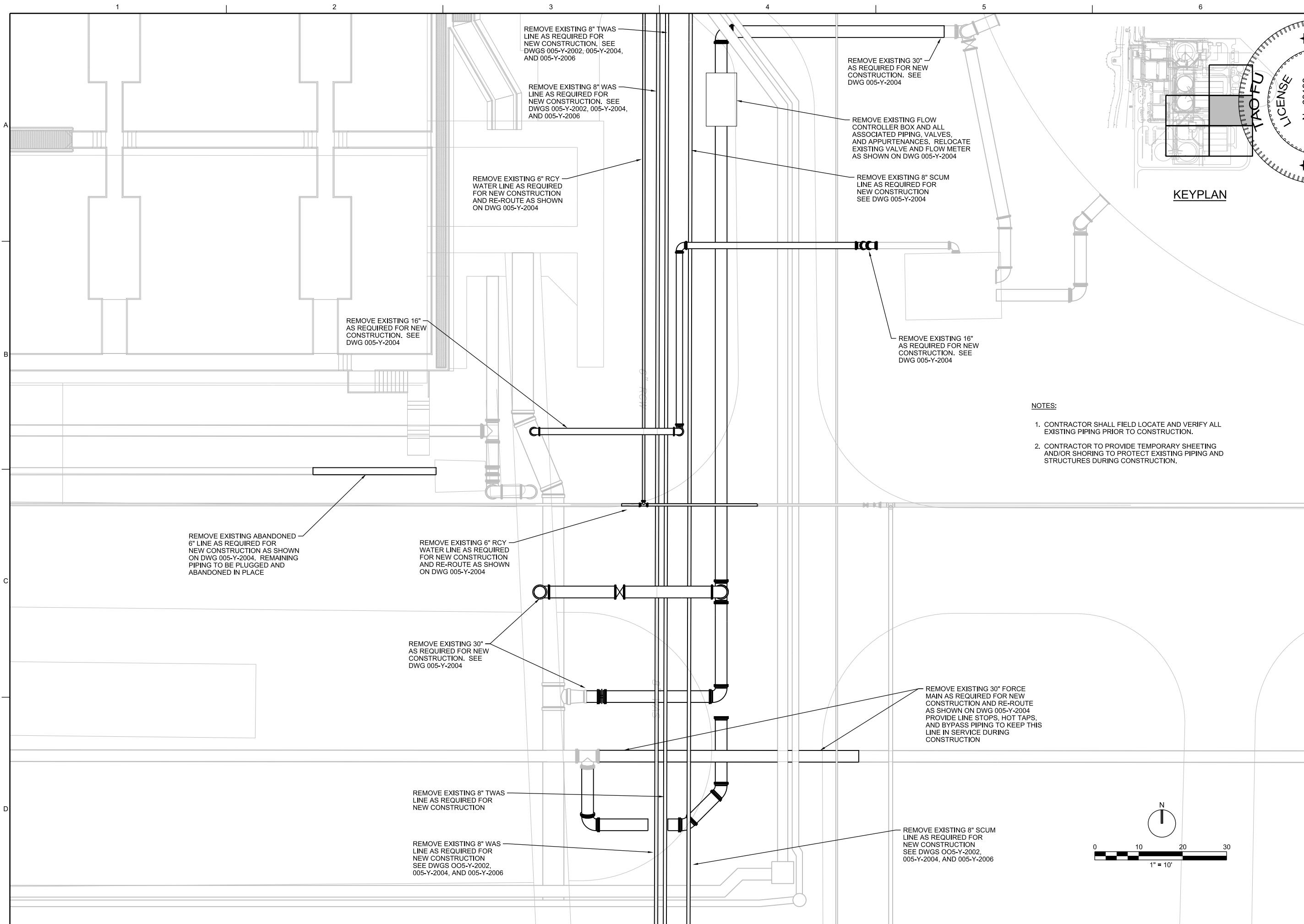
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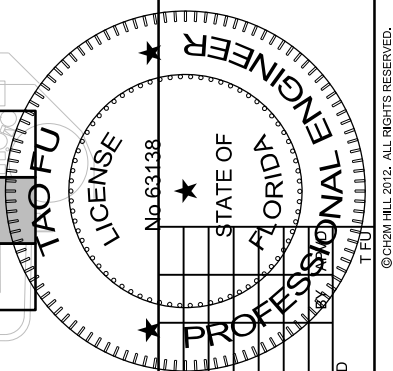
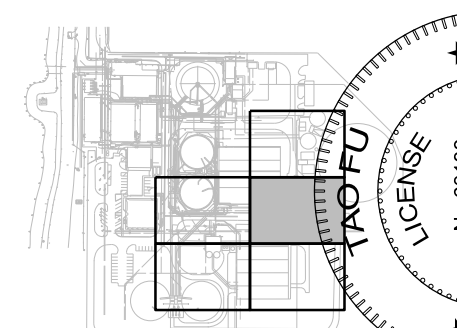
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NOTES:

1. CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING PIPING PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO PROVIDE TEMPORARY SHEETING AND/OR SHORING TO PROTECT EXISTING PIPING AND STRUCTURES DURING CONSTRUCTION.

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 AND DIGESTER MODIFICATIONS
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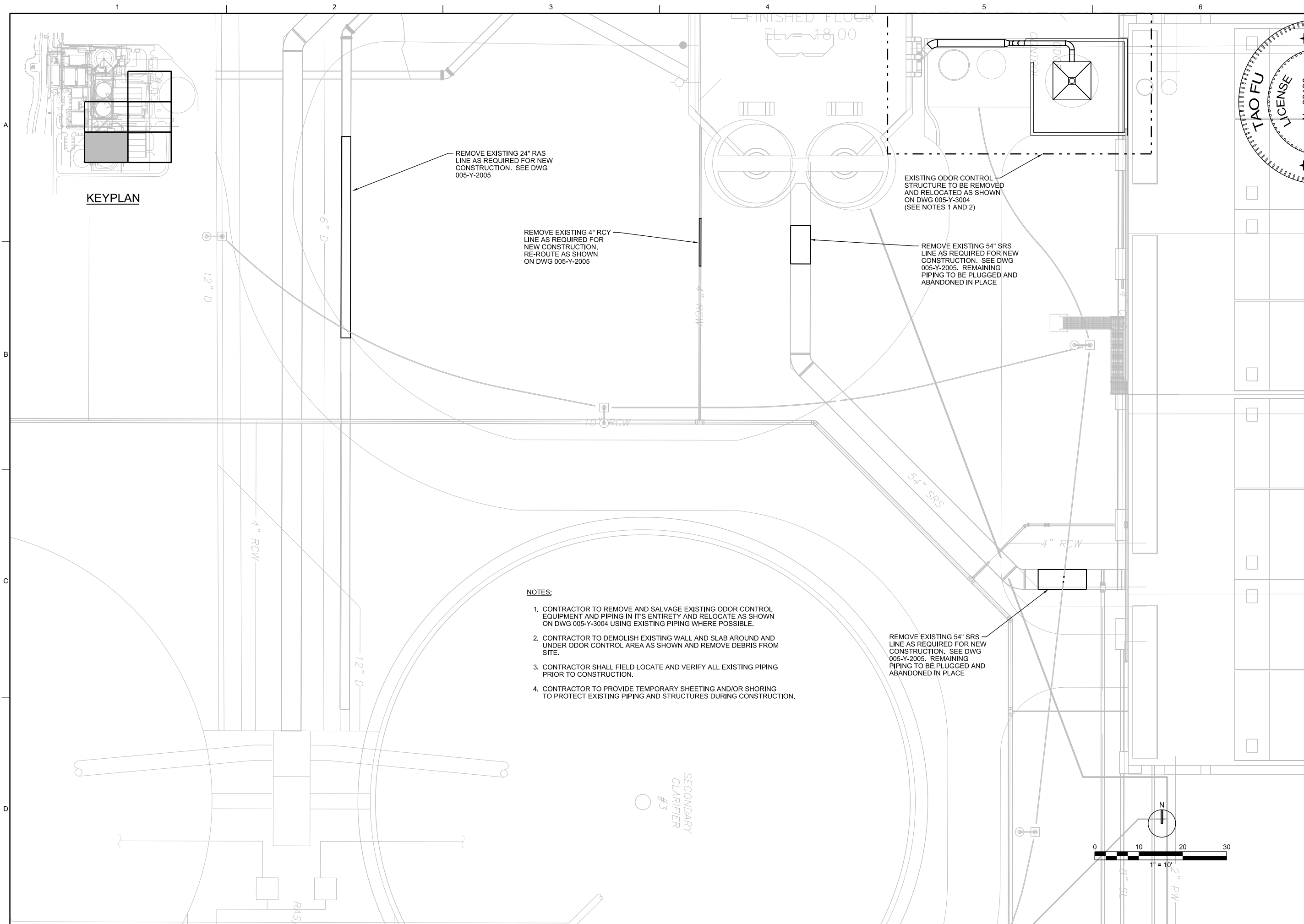
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REMOVE EXISTING 24" RAS LINE AS REQUIRED FOR NEW CONSTRUCTION. SEE DWG 005-Y-2005

REMOVE EXISTING 4" RCY LINE AS REQUIRED FOR NEW CONSTRUCTION. RE-ROUTE AS SHOWN ON DWG 005-Y-2005

EXISTING ODOR CONTROL STRUCTURE TO BE REMOVED AND RELOCATED AS SHOWN ON DWG 005-Y-3004 (SEE NOTES 1 AND 2)

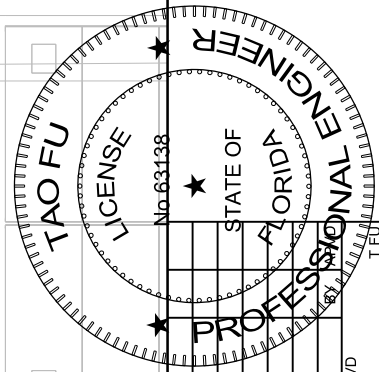
REMOVE EXISTING 54" SRS LINE AS REQUIRED FOR NEW CONSTRUCTION. SEE DWG 005-Y-2005. REMAINING PIPING TO BE PLUGGED AND ABANDONED IN PLACE

NOTES:

1. CONTRACTOR TO REMOVE AND SALVAGE EXISTING ODOR CONTROL EQUIPMENT AND PIPING IN ITS ENTIRETY AND RELOCATE AS SHOWN ON DWG 005-Y-3004 USING EXISTING PIPING WHERE POSSIBLE.
2. CONTRACTOR TO DEMOLISH EXISTING WALL AND SLAB AROUND AND UNDER ODOR CONTROL AREA AS SHOWN AND REMOVE DEBRIS FROM SITE.
3. CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING PIPING PRIOR TO CONSTRUCTION.
4. CONTRACTOR TO PROVIDE TEMPORARY SHEETING AND/OR SHORING TO PROTECT EXISTING PIPING AND STRUCTURES DURING CONSTRUCTION.

REMOVE EXISTING 54" SRS LINE AS REQUIRED FOR NEW CONSTRUCTION. SEE DWG 005-Y-2005. REMAINING PIPING TO BE PLUGGED AND ABANDONED IN PLACE

SECONDARY CLARIFIER #3



NO.	DATE	REVISION

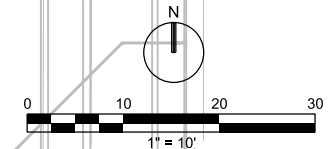
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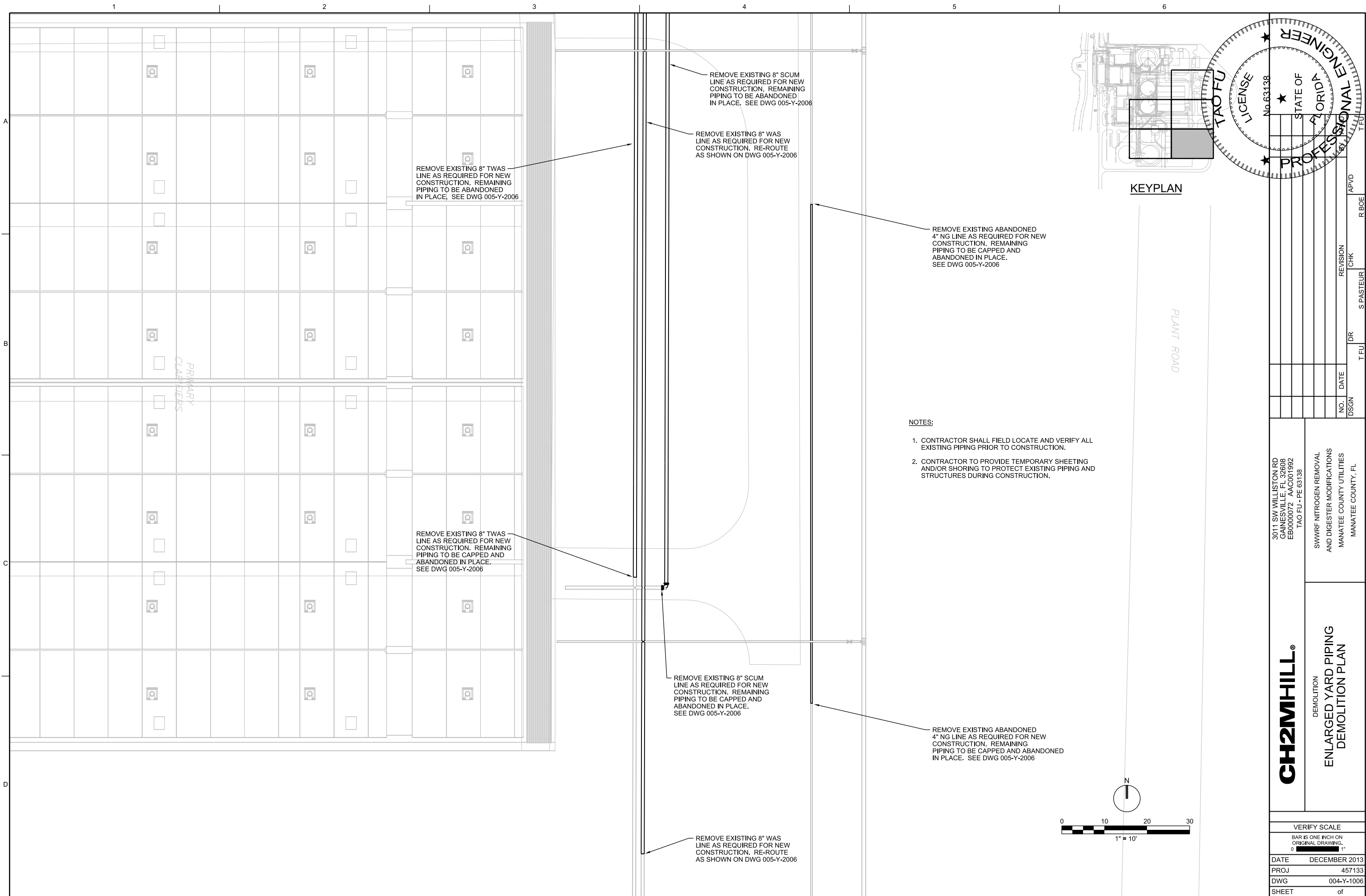
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REMOVE EXISTING 8" TWAS
LINE AS REQUIRED FOR NEW
CONSTRUCTION. REMAINING
PIPING TO BE ABANDONED
IN PLACE. SEE DWG 005-Y-2006

REMOVE EXISTING 8" SCUM
LINE AS REQUIRED FOR NEW
CONSTRUCTION. REMAINING
PIPING TO BE ABANDONED
IN PLACE. SEE DWG 005-Y-2006

REMOVE EXISTING 8" WAS
LINE AS REQUIRED FOR NEW
CONSTRUCTION. RE-ROUTE
AS SHOWN ON DWG 005-Y-2006

REMOVE EXISTING 8" TWAS
LINE AS REQUIRED FOR NEW
CONSTRUCTION. REMAINING
PIPING TO BE CAPPED AND
ABANDONED IN PLACE.
SEE DWG 005-Y-2006

REMOVE EXISTING 8" SCUM
LINE AS REQUIRED FOR NEW
CONSTRUCTION. REMAINING
PIPING TO BE CAPPED AND
ABANDONED IN PLACE.
SEE DWG 005-Y-2006

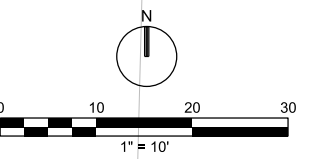
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LINE AS REQUIRED FOR NEW
CONSTRUCTION. RE-ROUTE
AS SHOWN ON DWG 005-Y-2006

REMOVE EXISTING ABANDONED
4" NG LINE AS REQUIRED FOR NEW
CONSTRUCTION. REMAINING
PIPING TO BE CAPPED AND
ABANDONED IN PLACE.
SEE DWG 005-Y-2006

REMOVE EXISTING ABANDONED
4" NG LINE AS REQUIRED FOR NEW
CONSTRUCTION. REMAINING
PIPING TO BE CAPPED AND ABANDONED
IN PLACE. SEE DWG 005-Y-2006

NOTES:

1. CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING PIPING PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO PROVIDE TEMPORARY SHEETING AND/OR SHORING TO PROTECT EXISTING PIPING AND STRUCTURES DURING CONSTRUCTION.



KEYPLAN

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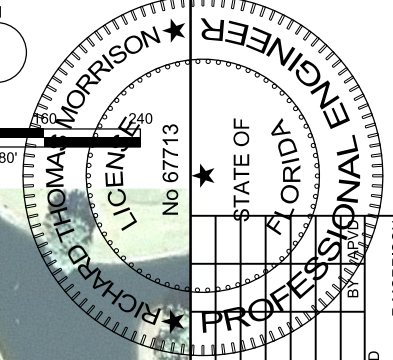
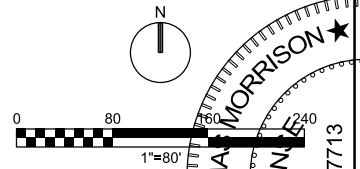
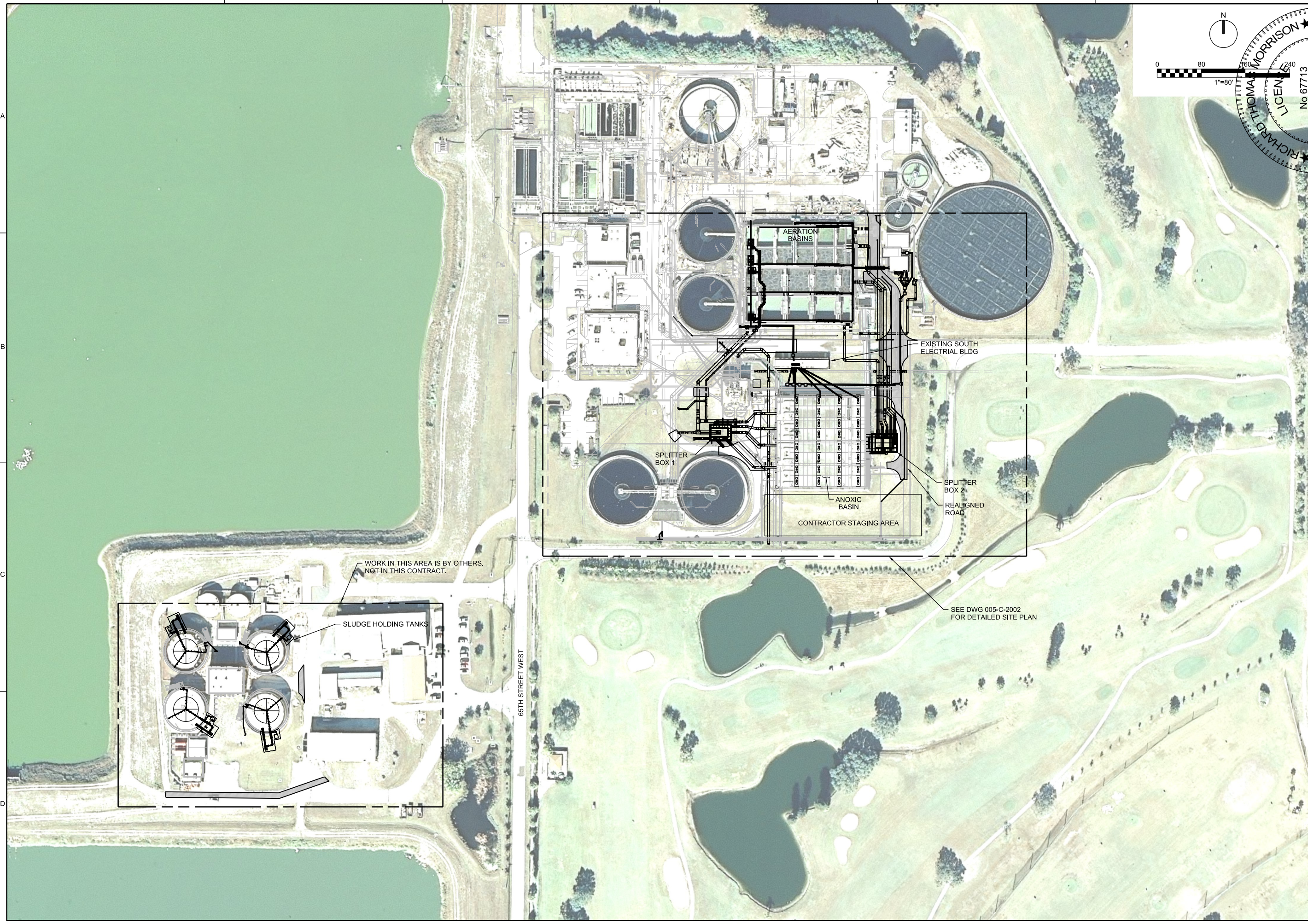
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DATE	DECEMBER 2013		
PROJ	457133		
DWG	005-C-2001		
SHEET	of		
R. MORRISON		DR	C. CHILDRESS
A. MALONE		CHK	APVD
R. MORRISON		NO.	DATE
R. MORRISON		REVISION	

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