

GENERAL NOTES:

- THESE NOTES ARE GENERAL AND SUPPLEMENTAL TO THE SPECIFICATIONS. THESE NOTES APPLY TO THE ENTIRE PROJECT UNLESS MODIFIED OR NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.
- DESIGN IS IN ACCORDANCE WITH AND CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF THE 2017 FLORIDA BUILDING CODE, EXCEPT WHERE OTHER APPLICABLE CODES AND THE CONTRACT DOCUMENTS ARE MORE RESTRICTIVE.
- LIVE LOADS:
HATCHES: 300 PSF
PROCESS AREAS: 200 PSF
STAIRS & PLATFORMS: 100 PSF
CANAL SLAB-ON-GRADE: LIGHT TRUCK LOADING = 200 SPF OR 6 KIP CONCENTRATED LOAD
- ALL DIMENSIONS INDICATED (*) ARE TO BE VERIFIED EITHER BY FIELD MEASUREMENTS FOR EXISTING STRUCTURES OR BY SHOP DRAWINGS FOR EQUIPMENT FURNISHED. STRUCTURAL DIMENSIONS NOT SHOWN BUT CONTROLLED BY OR RELATED TO EQUIPMENT SHALL BE VERIFIED WITH THE MANUFACTURER PRIOR TO CONSTRUCTION.
- EQUIPMENT ANCHOR BOLT SIZES, TYPES, AND PATTERNS SHALL BE VERIFIED WITH THE MANUFACTURER. ALL BOLT PATTERNS SHALL BE TEMPLATED TO INSURE ACCURACY OF PLACEMENT.
- STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH DRAWINGS OF ALL OTHER DISCIPLINES AND MANUFACTURER'S SHOP DRAWINGS.
- IF A CONFLICT IS FOUND BETWEEN DIFFERENT PORTIONS OF THE CONTRACT DOCUMENTS, NOTIFY THE OWNER IMMEDIATELY. CONTINUED CONSTRUCTION OF THE AREA IN CONFLICT SHALL BE AT THE CONTRACTOR'S OWN RISK UNTIL THE CONFLICT IS RESOLVED BY THE OWNER.
- STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURE. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED BY BRACING AND PROPOSED SUPPORTS WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR. OVERSTRESSING OF ANY STRUCTURAL ELEMENT IS PROHIBITED.
- NO BACK FILL SHALL BE PLACED AGAINST ANY WALL UNLESS ALL SUPPORTING ELEMENTS OF THE STRUCTURE HAVE BEEN CONSTRUCTED AND HAVE REACHED THE SPECIFIED MINIMUM CONCRETE STRENGTH.
- DO NOT SCALE THESE DRAWINGS. USE DIMENSIONS.
- CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.
- PROVIDE ADDITIONAL REINFORCEMENT AT OPENINGS AND AT WALL INTERSECTIONS AS SHOWN IN STANDARD DETAILS.
- FOR SIZES AND LOCATIONS OF EQUIPMENT SUPPORTS AND PIPE OPENINGS, SEE OTHER DISCIPLINE DRAWINGS. OPENINGS SIZES LESS THAN 12" ARE NOT SHOWN ON STRUCTURAL DRAWINGS, REFERENCE OTHER DISCIPLINE DRAWINGS FOR LOCATIONS.
- 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.
- STANDARD DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
- DO NOT CUT OR MODIFY STRUCTURAL MEMBERS 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.

CONCRETE NOTES:

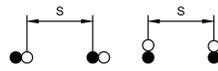
- CONCRETE 28-DAY COMPRESSIVE STRENGTH:
CLASS A - 2500 PSI FOR CONCRETE FILL & DUCT ENCASEMENT
CLASS B - 3000 PSI FOR SIDEWALKS, CURBS ETC.
CLASS C - 5000 PSI ALL FOUNDATIONS AND STRUCTURAL WALLS, SLABS AND BEAMS
CLASS D - 5000 PSI PRE-CAST CONCRETE
- REINFORCEMENT: ASTM A615, GRADE 60.
- CONCRETE COVER FOR REINFORCING:
A) SURFACES CAST AGAINST SUBGRADE 3"
B) TOP SURFACES OF SLABS WHERE PVC WATERSTOP IS REQUIRED IN WALLS 3"
C) FORMED SURFACES IN CONTACT WITH WEATHER, SOIL, OR LIQUID 2"
D) BOTTOM SURFACES OF SLABS OVER LIQUID 2"
E) SURFACES NOT IN CONTACT WITH WEATHER, SOIL, OR LIQUID 1 1/2"
- CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. WHERE NOT SHOWN, CONSTRUCTION JOINTS SHALL BE LOCATED AT NO MORE THAN 40' ON CENTER SPACING. SUBMIT PROPOSED CONSTRUCTION JOINT LOCATIONS FOR REVIEW PRIOR TO CONSTRUCTION.
- WHERE HORIZONTAL CONSTRUCTION JOINTS, LOCATED ABOVE THE FOUNDATION SLAB, EXTEND BEYOND WHERE NEEDED, TERMINATE AT A VERTICAL CONSTRUCTION JOINT AS APPROVED BY THE ENGINEER.
- EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DOCUMENTS, SHALL BE PROVIDED FOR PRIOR TO PLACING CONCRETE.
- AT ALL TYPICAL CURBS, EQUIPMENT PADS, AND PIPE SUPPORT PIERS, REINFORCING DOWELS SHOWN MAY BE REPLACED WITH MATCHING DOWELS SET IN EPOXY IN DRILLED HOLES USING HILTI HIT-RE 500 ADHESIVE SYSTEM OR EQUAL AND 8" MIN. EMBEDMENT. CONTRACTOR TO SUBMIT SIZE, LOCATION AND PROPOSED EMBEDMENTS FOR REVIEW PRIOR TO INSTALLATION OF ANY POST-INSTALLED DOWELS. DOWELS LOCATED CLOSER THAN 3 INCHES FROM ANY EDGE OF CONCRETE SHALL NOT BE REPLACED WITH DRILLED DOWELS.
- WHERE DRILLED EPOXY DOWELS ARE PLACED INTO HARDENED CONCRETE, ADJUST THE DOWEL LOCATIONS AS NEEDED TO AVOID DRILLING THROUGH ANY REINFORCING BARS. IF THE DOWEL LOCATION NEEDS TO BE MODIFIED, CONTACT THE ENGINEER PRIOR TO DRILLING.
- DOWELS, ANCHOR BOLTS, PIPES, AND OTHER EMBEDDED ITEMS SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS PLACED.
- CONDUITS AND PIPES EMBEDDED IN OR PENETRATING THROUGH CONCRETE SHALL BE SPACED ON CENTER NOT LESS THAN 3 TIMES THEIR OUTSIDE DIMENSION, BUT NOT LESS THAN 2 1/2 INCHES CLEAR. OUTSIDE DIMENSION OF EMBEDDED ITEMS SHALL NOT EXCEED 1/3 OF THE CONCRETE MEMBER THICKNESS. CLEAR SPACING REQUIREMENTS SHALL APPLY FOR EMBEDDED CONDUITS OR PIPES CROSSING AT AN ANGLE LESS THAN 60 DEGREES.
- EMBEDDED CONDUITS AND PIPES SHALL BE LOCATED BETWEEN THE LAYERS OF REINFORCEMENT AND A MINIMUM OF 2 1/2 INCHES CLEAR FROM APPROXIMATELY PARALLEL REINFORCING BARS. REQUIREMENTS FOR EMBEDDED ELEMENTS CROSSING REINFORCING BARS SHALL BE AS REQUIRED FOR CROSSING EMBEDDED ELEMENTS.
- REINFORCING BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY METAL PIPE, PIPE IN FLANGE, METAL CONDUIT, OR OTHER METAL PARTS EMBEDDED IN CONCRETE. A MINIMUM CLEARANCE OF 2 INCHES SHALL BE PROVIDED.
- SIZE AND SPACING OF WALL CORNER AND WALL INTERSECTION REINFORCING SHALL MATCH TYPICAL WALL REINFORCING UNLESS OTHERWISE SHOWN ON PLANS.
- 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 350 STANDARD HOOKS.
- WALL CORNERS AND WALL INTERSECTION REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH COLUMNS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS, AS INDICATED IN STANDARD DETAILS.
- REINFORCING STEEL FOR FOOTINGS AND SLABS ON GRADE SHALL BE ADEQUATELY SUPPORTED ON BAR SUPPORTS WITH SPACERS TO KEEP REINFORCING ABOVE THE PREPARED GRADE. LIFTING REINFORCING OFF GRADE DURING CONCRETE PLACEMENT IS NOT PERMITTED.
- PREPARE AND PATCH FORM SNAP-TIE HOLES AND ALTERNATE FORM-THROUGH BOLT HOLE BY DRY-PACKING WITH APPROVED NON-SHRINK GROUT.

STRUCTURAL STEEL NOTES:

- DETAIL, FABRICATE, AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL AND AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, LATEST EDITION.
- STEEL MATERIAL:
2.1. STRUCTURAL TUBING, ASTM A500, GRADE B OR C
2.2. STRUCTURAL PIPE, ASTM A53, GRADE B
2.3. W SHAPES, ASTM A992
2.4. STRUCTURAL CHANNELS, ASTM A36
2.5. ALL OTHER SHAPES AND PLATES, ASTM A36 UON
- BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE FOLLOWING ASTM SPECIFICATIONS EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE:
UNLESS SHOW OTHERWISE A325-N
SLIP CONTROL A325-SC
ANCHOR BOLTS (AB)
STAINLESS STEEL F593, AISI TYPE 316, CONDITION CW
STEEL F1554, GR 36
GALVANIZED STEEL F1554, GR 36 / A153
MACHINE BOLTS (MB) A307
- PROVIDE TYPICAL STEEL BEAM CONNECTIONS FOR A CAPACITY OF NOT LESS THAN THE TOTAL UNIFORM LOAD CAPACITY TABULATED IN THE AISC TABLES FOR ALLOWABLE LOADS OF BEAMS.
- DO NOT PAINT STEEL SURFACES WHICH ARE TO BE WELDED OR ENCASED IN CONCRETE.
- FILLET WELD SIZES SHALL BE THE MINIMUM SIZE REQUIRED BY AISC AND AWS FOR PLATE SIZES TO BE CONNECTED AND SHALL BE APPLIED TO THE ENTIRE JOINT CONTACT LENGTH.
- STAINLESS STEEL SHALL BE TYPE 316L-ASTM A276.
- STAINLESS STEEL TYPE 316L SHALL BE USED IN ALL AREAS TO BE SUBMERGED AND AS SHOWN ON DWGS.
- IF STAINLESS STEEL MEMBERS ARE NOT AVAILABLE, PROVIDE EQUIVALENT STAINLESS STEEL SECTIONS, BUILT UP OUT OF STAINLESS STEEL PLATES.
- ALL BOLTS, ANCHOR BOLTS, AND CONCRETE ANCHORS CONNECTING STAINLESS STEEL SHALL BE TYPE 316 STAINLESS STEEL.
- WHENEVER ONE MEMBER IS FASTENED TO ANOTHER WITH FASTENINGS (BOLTS, WELDS, ETC.) SET AT A UNIFORM SPACING, THERE SHALL BE A MINIMUM OF TWO FASTENINGS PER PIECE CONNECTED AND THE FIRST AND LAST FASTENINGS SHALL BE LOCATED NOT TO EXCEED 1/4 SPACE FROM EACH END.
- ALL GRATING SHALL BE ALUMINUM UNLESS OTHERWISE NOTED.
- 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.

SLAB/SLAB-ON-GRADE REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)				
BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)		
		f _c = 3 KSI	f _c = 4 KSI	f _c = 5 KSI
#4	2	29	25	23
#5	3	36	31	28
#6	3	43	37	34

LAP SPLICE NOTES:

- TABULATED VALUES ARE PER ACI 318-08 REQUIREMENTS FOR NORMALWEIGHT CONCRETE. THE VALUES ON THIS SHEET DO NOT APPLY TO LIGHTWEIGHT CONCRETE.
- MINIMUM BAR SPACING DIAGRAM - "S"

● FIRST BAR
○ SECOND BAR PLACED OR SPLICE BAR
- TABULATED VALUES ARE FOR NON-EPOXY COATED REINFORCEMENT. FOR EPOXY COATED REINFORCEMENT MULTIPLY VALUES BY 1.3 OR "TOP BARS" AND 1.5 FOR ALL OTHER REINFORCEMENT.
- WHERE BARS OF DIFFERENT SIZES ARE LAP SPLICED IN TENSION, THE LAP LENGTH SHALL BE THE TENSION LAP SPLICE LENGTH (LTS) OF THE SMALLER BAR.
- "TOP BARS" ARE DEFINED PER ACI HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE. "OTHER BARS ARE ALL BARS FOR WHICH THIS DOES NOT APPLY."

PRECAST CONCRETE NOTES:

- SEE SPECIFICATIONS FOR ALL PRECAST CONCRETE REQUIREMENTS.
- SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A REGISTERED FLORIDA P.E. FOR REVIEW PRIOR TO FABRICATION.

FOUNDATION NOTES:

- DESIGN OF FOUNDATION IS BASED ON SUBSURFACE SOIL EXPLORATION AND GEOTECHNICAL ENGINEERING EVALUATION (PROJECT NO. 18-23-5319) COMPLETED BY ARDAMAN & ASSOCIATES, INC., ON MAY 3, 2019.
- MINIMUM DEPTH FROM ADJACENT FINISHED GRADE TO BOTTOM OF EXTERIOR FOUNDATION 1'-6" UNLESS OTHERWISE NOTED.
- FOUNDATION SLABS AND SLABS-ON-GRADE SHALL BEAR ON COMPACTED SOILS MEETING THE REQUIREMENTS OF THE GEOTECHNICAL REPORT UNLESS OTHERWISE NOTED IN FACILITY NOTES. CONTRACTOR SHALL SUBMIT DENSITY TESTS TO GEOTECHNICAL AND STRUCTURAL ENGINEER OF RECORD FOR 2 FEET OF SUPPORTING SOILS BELOW BOTTOM OF SLABS AND FOUNDATIONS. PLACE 6 MIL VISQUEEN OVER COMPACTED SOILS PRIOR TO PLACING CHAIRS THAT SUPPORT REINFORCING MATS.
- FOUNDATION AND SLAB ON GRADE BEARING SURFACES SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF FORM WORK OR REINFORCING STEEL. THE OBSERVATION SHALL VERIFY IF THE ACTUAL EXPOSED SUBGRADE IS AS ANTICIPATED BY THE SITE SPECIFIC BORINGS, TEST PITS, TESTING AND DATA REPORTS.



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CERTIFICATE OF AUTHORIZATION #27430



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**CRANE CREEK
M-1 CANAL FLOW RESTORATION
VOLUME 2**

STRUCTURAL GENERAL NOTES

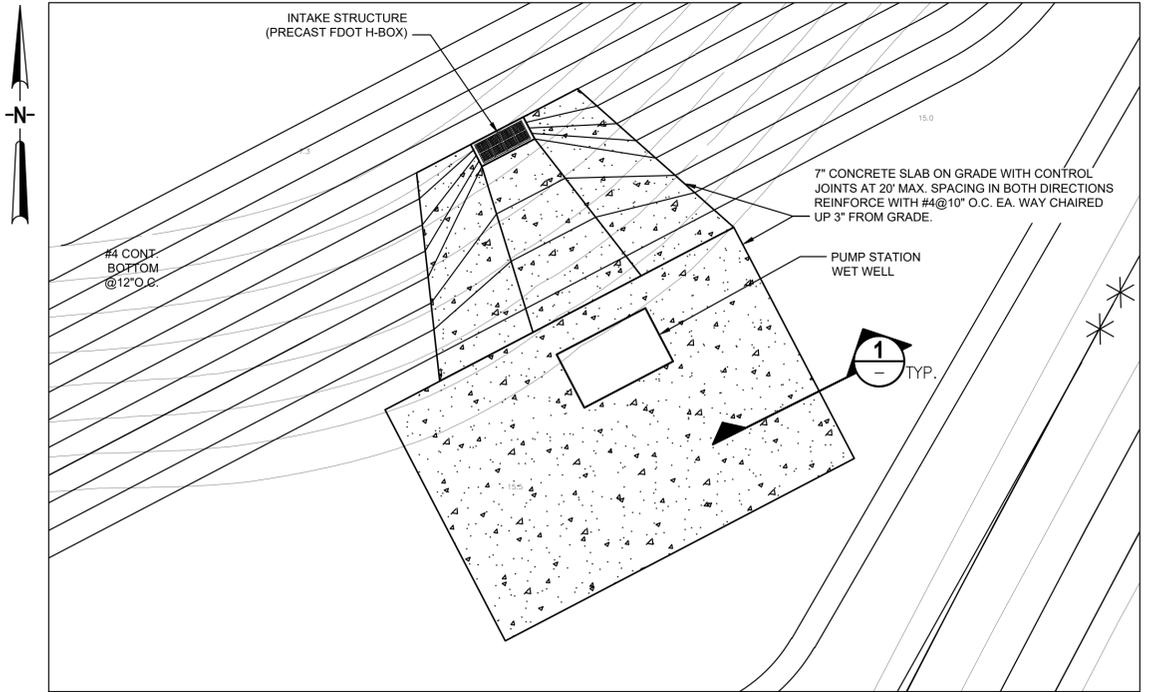
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INDEX NO:	DWG NO: S1-1

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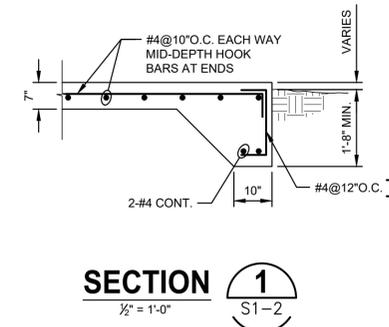
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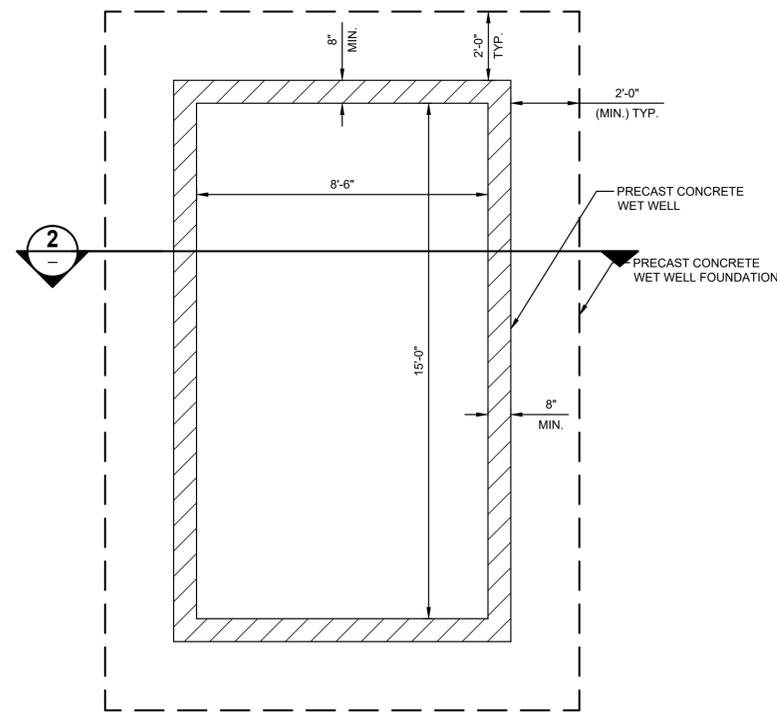
- NOTES:
- SEE SHEET S1-1 FOR GENERAL NOTES AND OTHER INFORMATION.
 - COORDINATE LOCATION OF ALL MECHANICAL EQUIPMENT AND PIPING WITH MECHANICAL DRAWINGS PRIOR TO CONSTRUCTION.
 - PRECAST STRUCTURE SHALL BE DESIGNED FOR A WATER TABLE AT TOP OF STRUCTURE AND A MINIMUM SAFETY OF FACTOR RESISTING BUOYANCY OF 1.3. INCLUDE BUOYANT WEIGHT OF SOIL OVER TOE IN CALCULATIONS.
 - LIVE LOAD ON TOP SLAB = 200 PSF. TOP SLAB SHALL HAVE OPENINGS FOR HATCHES COORDINATED PRIOR TO CONSTRUCTION.
 - ALUMINUM ACCESS HATCHES SHALL BE DESIGNED FOR 300 PSF LIVE LOAD. CONTRACTOR TO VERIFY SIZE AND LOCATION MEETS REQUIREMENTS OF PUMP INSTALLATION AND MAINTENANCE PRIOR TO PURCHASE AND CONSTRUCTION.
 - UNDER THE PRECAST SLAB ON GRADE FOUNDATION, COMPACT SUBGRADE TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557) FOR A DEPTH OF 2 FEET. COMPACT MAXIMUM LIFTS OF 1 FOOT.
 - REFER TO GEOTECHNICAL REPORT (PROJECT NO. 18-23-5319 COMPLETED BY ARDAMAN & ASSOCIATES, INC., ON MAY 3, 2019) FOR LATERAL EARTH PRESSURE LOADS.



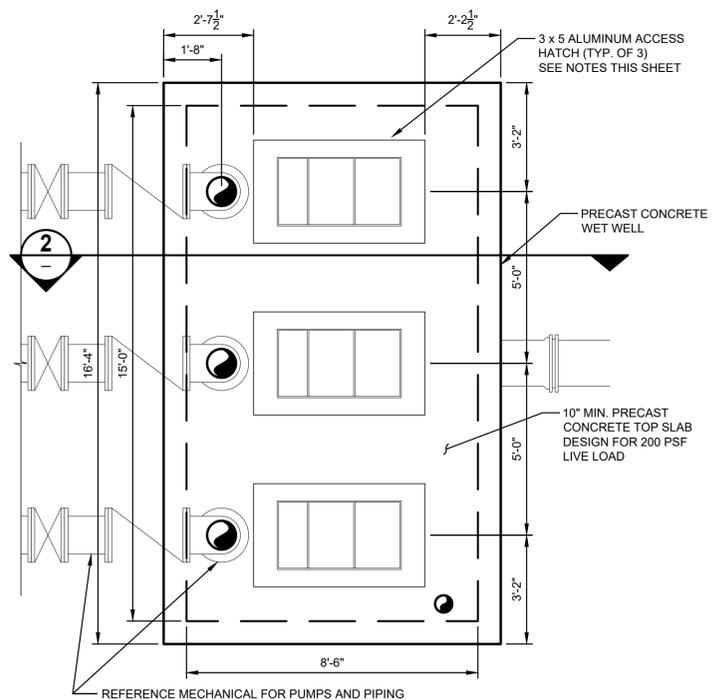
SITE PLAN
1" = 15'-0"



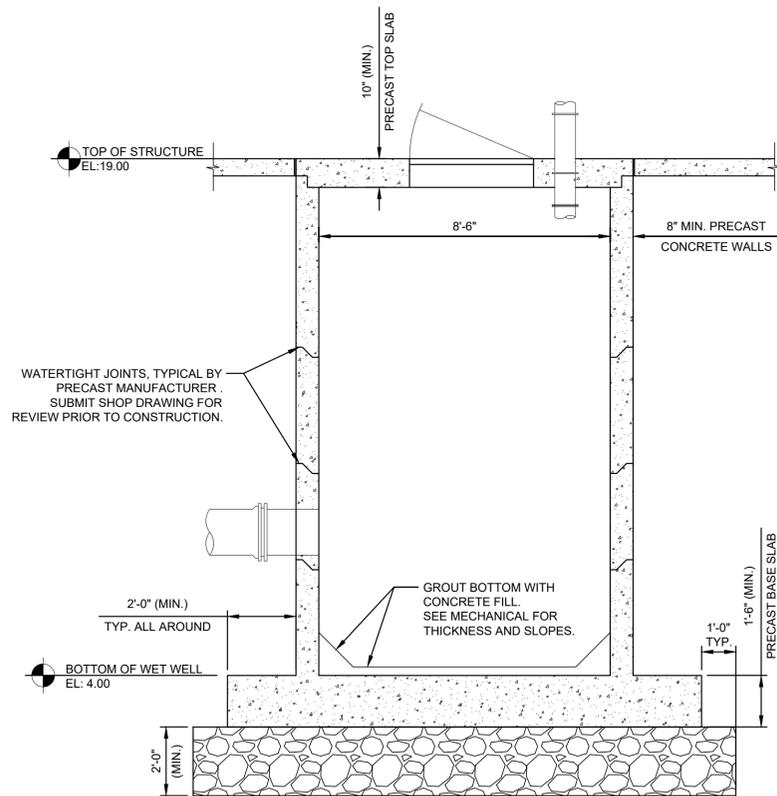
SECTION 1
1/2" = 1'-0"
S1-2



PUMP STATION BASE PLAN A
3/8" = 1'-0"
S1-2



PUMP STATION TOP PLAN B
3/8" = 1'-0"
S1-2



SECTION 2
3/8" = 1'-0"
S1-2



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**CRANE CREEK
M-1 CANAL FLOW RESTORATION
VOLUME 2**

**WEST PUMP STATION PLAN
WITH SECTIONS AND DETAILS**

MONRAD R. THUE, STATE OF FLORIDA,
PROFESSIONAL ENGINEER, LICENSE NO. 32071
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AND SEALED BY MONRAD R. THUE, PE. ON

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