

I. GENERAL REQUIREMENTS:

- STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2006, ASCE-7, AISC MANUAL (ASD) 13TH EDITION, ACI 318 & ACI 350.
- IN CASE OF DISAGREEMENT BETWEEN DRAWINGS AND SPECIFICATIONS, OR WITHIN EITHER DOCUMENT ITSELF, THE BETTER QUALITY OR GREATER QUANTITY SHALL BE USED UNLESS A WRITTEN CLARIFICATION IS ISSUED.
- THE CONTRACTOR SHALL MAKE NOTE OF DISAGREEMENT OF BUILDING DIMENSIONS AND ELEVATIONS AND SHALL OBTAIN CORRECTIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.
- THE DRAWINGS REPRESENT THE COMPLETED STRUCTURE IN ITS FINAL CONDITION WITH ALL MEMBERS IN PLACE, CONNECTIONS COMPLETE, AND ALL AT THEIR SPECIFIED STRENGTH. PRIOR TO THIS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING AND SHORING DURING CONSTRUCTION AND ERECTION FOR ANY AND ALL LOADS TO WHICH THE CONSTRUCTION IS SUBJECTED. JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL, PROCESS, MECHANICAL, PLUMBING, ELECTRICAL, AND ANY SPECIALTY DRAWINGS AS WELL AS EQUIPMENT FURNISHED FOR SIZE AND LOCATION OF ANCHOR BOLTS, OPENINGS, SLEEVES, CONCRETE PADS, CURBS, INSERTS, SLOPES, DEPRESSIONS, OR OTHER ITEMS THAT INTERFACE WITH THE STRUCTURE.
- REPRODUCTION OF STRUCTURAL CONTRACT DOCUMENTS FOR RESUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED AND RETURNED.

II. DESIGN LOADS:

- SNOW LOAD:
 - A. BALANCED ROOF LOAD ----- 30 PSF
 - B. IMPORTANCE FACTOR ----- 1.1
- FLOOR LIVE LOADS:
 - A. CONCRETE FLOORS ----- 200 PSF
 - B. STAIRS, PLATFORMS, & GRATING ----- 100 PSF
- WIND LOAD:
 - A. BASIC WIND SPEED ----- 105 MPH
 - B. EXPOSURE CATEGORY ----- C
 - C. IMPORTANCE FACTOR ----- 1.15
 - D. WIND ENCLOSURE ----- ENCLOSED
(ALL WINDOW, DOORS, SKYLIGHTS, ETC. MUST BE DESIGNED FOR THESE WIND LOADS)
- SEISMIC LOADS:
 - A. SEISMIC DESIGN CATEGORY ----- B
 - B. SITE CLASS ----- C
 - C. IMPORTANCE FACTOR ----- 1.25
 - D. MAPPED MCE SPECTRAL RESPONSE ACCELERATION
 - 0.2 SECOND ----- 0.213
 - 1.0 SECOND ----- 0.056

III. FOUNDATIONS:

- FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL ENGINEERING INVESTIGATION PREPARED BY GROUND ENGINEERING, DATED JULY 10, 2006, JOB NUMBER 05-3085.
- DESIGN CRITERIA:
 - A. ALLOWABLE FOOTING OR SLAB BEARING PRESSURE ON BEDROCK ----- 3,000 PSF
 - B. AT REST EQUIVALENT LATERAL FLUID PRESSURE OF BACKFILL (DRAINED) ----- 69 PSF
 - C. AT REST EQUIVALENT LATERAL FLUID PRESSURE OF BACKFILL (SATURATED) ----- 105 PSF
 - D. MAXIMUM GROUNDWATER ELEVATION ----- 5730.00
- A QUALIFIED GEOTECHNICAL ENGINEER SHALL PROVIDE FIELD VERIFICATION THAT THE SOIL CONDITIONS ENCOUNTERED, AND SUBGRADE PREPARATION PERFORMED, PROVIDE VALUES EQUAL OR SUPERIOR TO THE DESIGN CRITERIA OUTLINED ABOVE AND THE REQUIREMENTS OF THE SPECIFICATIONS. FIELD VERIFICATION SHALL OCCUR PRIOR TO PLACING FOUNDATIONS.
- BACKFILL EQUALLY ON EACH SIDE OF WALLS OR PROVIDE BRACING. FLOOR SLABS MUST BE IN PLACE AND AT SPECIFIED STRENGTH PRIOR TO BACKFILLING OR LEAK TESTING.
- ALL EXCAVATIONS SHALL BE SLOPED OR SHORED SAFELY FOLLOWING LOCAL AND FEDERAL REGULATIONS INCLUDING OSHA EXCAVATION AND TRENCH SAFETY STANDARDS.

IV. CONCRETE AND REINFORCING

- ALL CONCRETE SHALL BE PREPARED AND PLACED ACCORDING TO ACI 301, "STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE", AND ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
- ALL CONCRETE SHALL BE NORMAL WEIGHT (145 PCF, STONE AGGREGATE) WITH THE FOLLOWING REQUIREMENTS:
 - A. USE TYPE II PORTLAND CEMENT.
 - B. STRUCTURAL CONCRETE (28 DAY STRENGTH) ----- $f'_c = 4,000$ PSI
 - C. REINFORCING STEEL (ASTM A615, GRADE 60) ----- $F_y = 60,000$ PSI
- CHAMFER ALL EXPOSED CORNERS 3/4 INCH.
- PROVIDE COVER FOR REINFORCING IN ACCORDANCE WITH STANDARD DETAIL (3003) UNLESS NOTED OTHERWISE.
- PROVIDE MINIMUM SPLICE LENGTHS IN ACCORDANCE WITH STANDARD DETAIL (3009) UNLESS NOTED OTHERWISE.
- BAR SHALL BE SPLICED BETWEEN SUPPORTS FOR TOP BARS AND OVER SUPPORTS FOR BOTTOM BARS UNLESS INDICATED OTHERWISE.
- MAKE HORIZONTAL BARS CONTINUOUS AROUND CORNERS OR PROVIDE CORNER BARS. IN ACCORDANCE WITH STANDARD DETAIL (3203).
- ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS SHALL COMPLY WITH THE ACI MANUAL SP-66 OF STANDARD PRACTICE.
- NO WELDING OF REINFORCING SHALL BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER.

V. PRECAST PRESTRESSED STRUCTURAL UNITS:

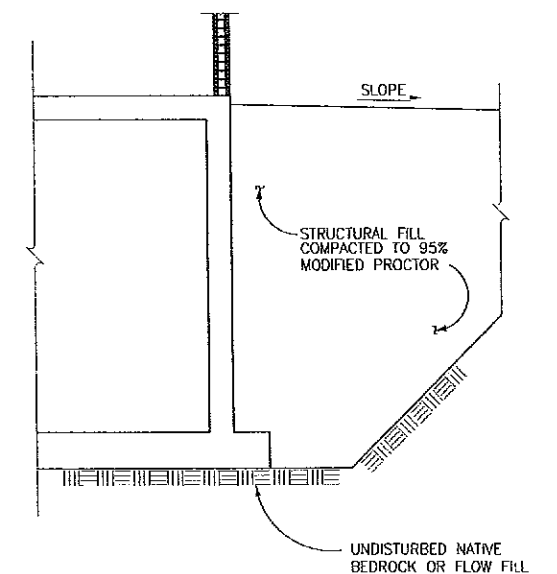
- DESIGN, FABRICATION AND CONSTRUCTION OF PRECAST STRUCTURAL UNITS SHALL CONFORM TO ACI 318. DESIGN AND FABRICATION OF METAL INSERTS FOR CONNECTION OF PRECAST UNITS SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.4 "STRUCTURAL WELDING CODE - REINFORCING STEEL".
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE f'_c IN 28 DAYS OF 5000 PSI AND SHALL HAVE A MINIMUM RELEASE STRENGTH AS APPROVED ON THE MANUFACTURER'S DESIGN CALCULATION.
- PRESTRESSING REINFORCEMENT SHALL BE GRADE 270 SEVEN-WIRE UNCOATED LOW-RELAXATION STRAND.
- ALL OPENINGS IN TEES SHALL BE COORDINATED WITH MECHANICAL, ARCHITECTURAL AND PROCESS DRAWINGS FOR SIZE AND LOCATION. OPENINGS LESS THAN 10" DIAMETER MAY BE CUT IN THE FIELD. HOLES SHALL NOT BE CUT THROUGH STRANDS OR STEMS WITHOUT WRITTEN PERMISSION OF ENGINEER AND PRECAST MANUFACTURER.
- MANUFACTURER SHALL DESIGN STANDARD UNITS TO SUPPORT THE DEAD LOAD OF THE UNITS PLUS THE SUPERIMPOSED LIVE AND DEAD LOADS INDICATED ON THE DRAWINGS. MANUFACTURER SHALL DESIGN CONNECTIONS FOR STANDARD UNITS TO TRANSFER ALL LOADS AS INDICATED ON THE DRAWINGS. DESIGN CALCULATIONS SHALL BE SUBMITTED FOR REVIEW.
- PRECASTER TO FURNISH ALL REQUIRED MASONRY EMBEDS WITH INSTALLATION DRAWINGS TO MASONRY CONTRACTOR.

VI. MASONRY:

- SPECIAL INSPECTION PER IBC 2006, TABLE 1704.5.1 IS REQUIRED FOR ALL MASONRY WORK.
- MASONRY UNITS SHALL CONFORM TO ASTM C652, AND SHALL HAVE A NET AREA COMPRESSIVE STRENGTH OF NOT LESS THAN 11,000 PSI.
- MORTAR SHALL BE TYPE S.
- GROUT SHALL CONFORM TO ASTM C476, SHALL BE MADE WITH PORTLAND CEMENT, AND SHALL DEVELOP 3,500 PSI 28 DAY COMPRESSIVE STRENGTH.
- MASONRY UNIT ASSEMBLY STRENGTH (f'_m) SHALL BE 3,500 PSI.
- REINFORCING SHALL BE ASTM A615, GRADE 60, WELDABLE REINFORCING SHALL BE ASTM A706, GRADE 60.
- SPLICES IN REINFORCEMENT SHALL BE MADE PER STANDARD DETAIL (4013)
- GROUT AND REINFORCE ALL CORNERS WITH TYPICAL VERTICAL REINFORCEMENT FULL HEIGHT.
- LINTELS SHALL BE REINFORCED IN ACCORDANCE WITH (4002) UNLESS SHOWN OTHERWISE.
- VERTICAL REINFORCEMENT SHALL BE CENTERED IN CELLS UNLESS OTHERWISE NOTED ON DRAWINGS.
- HORIZONTAL WIRE REINFORCEMENT SHALL BE PRE-FABRICATED, LADDER TYPE, 9 GAUGE MINIMUM, GALVANIZED AND SPACED AT 16" O.C.
- HORIZONTAL REINFORCEMENT SHALL BE CONTINUOUS BETWEEN CONTROL JOINTS, BUT INTERRUPTED AT JOINTS.
- BOND BEAMS SHALL BE FILLED WITH GROUT AND REINFORCED WITH CONTINUOUS BARS. BAR SIZE AS NOTED ON THE DRAWINGS. BOND BEAMS SHALL BE CONTINUOUS ACROSS CONTROL JOINTS. PROVIDE CORNER BARS WHERE BOND BEAMS EXTEND AROUND CORNERS.

VII. STRUCTURAL STEEL:

- GENERAL:
 - A. ALL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL- ASD, 13TH EDITION.
 - B. ALL ALUMINUM SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION ALUMINUM DESIGN MANUAL.
- DESIGN STRESSES AND ALLOYS:
 - A. WIDE FLANGE SHAPES AND WT SHAPES (ASTM A992) ----- $F_y = 50,000$ PSI
 - B. ANGLES, CHANNELS, PLATES, BARS (ASTM A36) ----- $F_y = 36,000$ PSI
 - C. SQUARE & RECTANGULAR STEEL TUBE (ASTM A500, GRADE B) ----- $F_y = 46,000$ PSI
 - D. ALUMINUM SHAPES AND PLATES ----- 6061-T6
- BOLTS:
 - A. ANCHOR BOLTS ----- ASTM F1554, GRADE 36
 - B. STRUCTURAL BOLTS IN STEEL ----- ASTM A325
 - C. BOLTS IN ALUMINUM ----- TYPE 304 STAINLESS STEEL
- WELDING ELECTRODES:
 - A. ELECTRODES FOR CARBON STEEL ----- E70XX
 - B. FILLER METAL FOR ALUMINUM ----- 5356
- MINIMUM WELDS ACCORDING TO AISC SPECIFICATIONS AND NOT LESS THAN 3/16" FILLET CONTINUOUS, UNLESS DETAILED OTHERWISE. ALL WELDS SHALL BE MADE IN ACCORDANCE WITH CURRENT STANDARDS OF THE AMERICAN WELDING SOCIETY AND PERFORMED BY WELDERS QUALIFIED BY AWS STANDARDS.



TYPICAL EARTHWORK AT LIFT STATION
N.T.S.

3/21/08 15:49 CURT R17 P:\INVERNESS\INVR18\DESIGN\STRUCTURAL\SLIDING\AREAS: P:\INVERNESS\INVR18\DESIGN\BASES\X-TITLE.DWG



VERIFY SCALES	NO.	DATE	REVISION	BY	CHK.	DESIGNED BY:
BAR IS ONE INCH ON ORIGINAL DRAWING.	0	05/2008	ISSUED FOR BID			JMR
0" = 1"						
IF NOT ONE INCH ON THIS DRAWING, ADJUST SCALES ACCORDINGLY.						

Arber
Water, Wastewater & Route Engineers

Richard P. Arber Associates
198 Union Boulevard, Suite 200
Lakewood, Colorado 80228

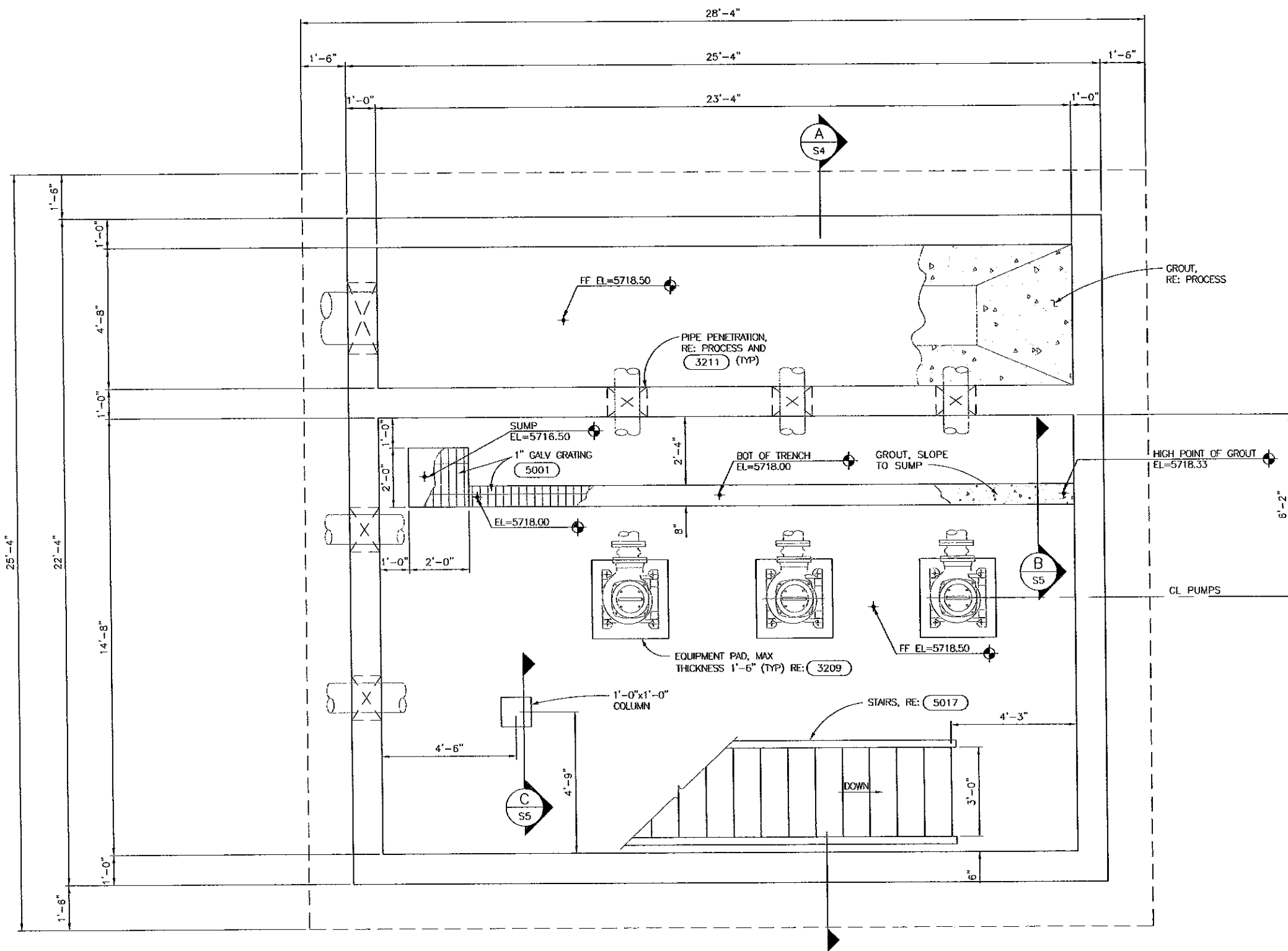
Website: www.arber.com
Phone: 303.631.4700
Fax: 303.631.0250

INVERNESS WATER AND SANITATION DISTRICT
INVERNESS LIFT STATION NO. 2

STRUCTURAL GENERAL NOTES

PROJECT NO.	INVR18
SHEET NO.	S1
DWG. OF	18 57

S:\5\08 1646 CURT R 7 P\INVERNESS\WORK\DESIGN\STRUCTURAL\S2-SB.DWG XREFS: P:\INVERNESS\WORK\DESIGN\BASES\M-TITLE.DWG



FOUNDATION/LOWER LEVEL PLAN
1/2"=1'-0"



NO.	DATE	REVISION	BY	CHK.	DESIGNED BY:
0	05/2008	ISSUED FOR BID			JMR
					DRAWN BY: CWC
					CHECKED BY:
					DATE: APRIL 2008

Arber
Water, Wastewater & Reuse Engineers

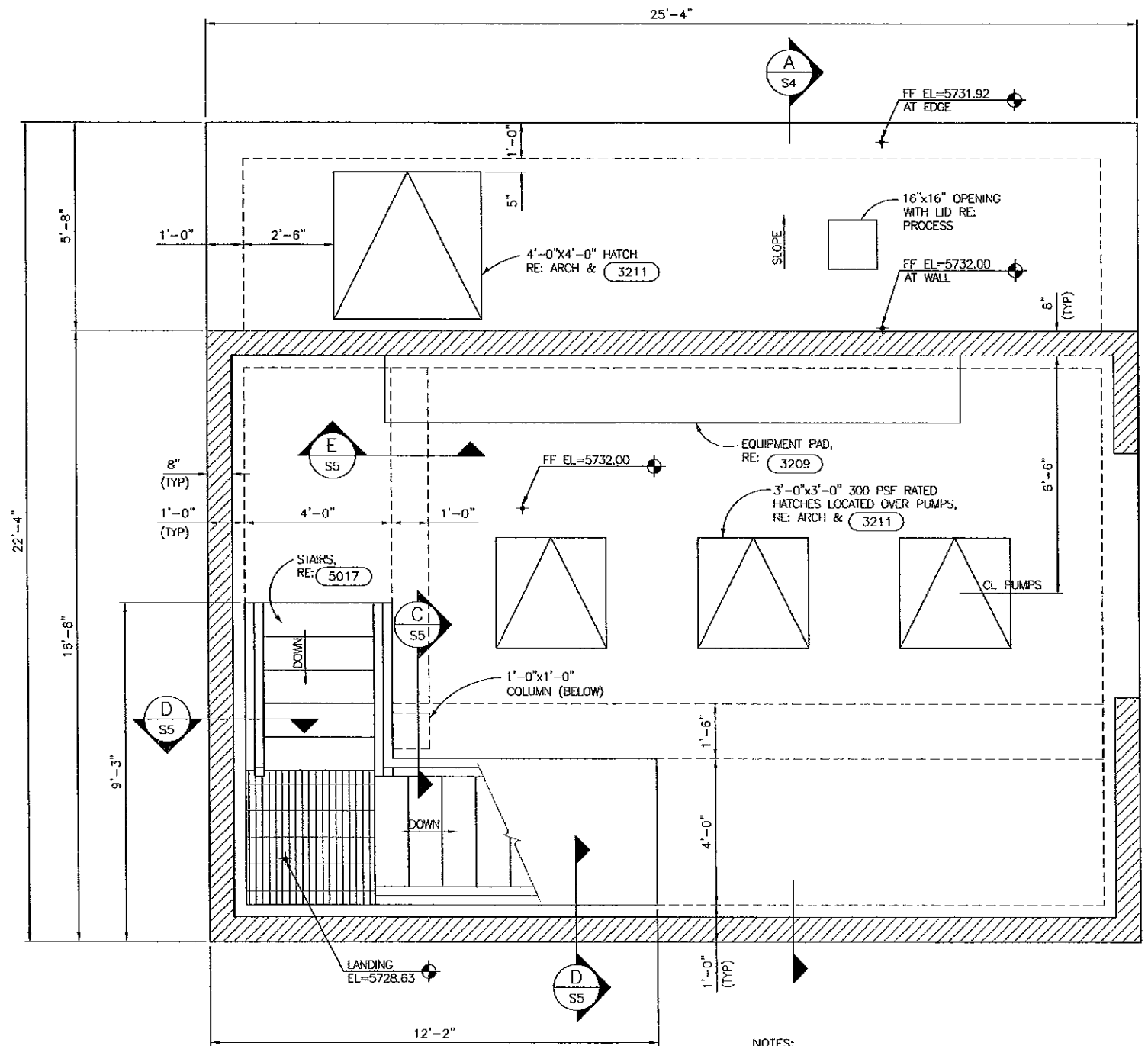
Richard P. Arber Associates
198 Union Boulevard, Suite 200
Lakewood, Colorado 80228
Website: www.arber.com
Phone: 303.831.4700
Fax: 303.831.0290

INVERNESS WATER AND SANITATION DISTRICT
INVERNESS LIFT STATION NO. 2

LIFT STATION
FOUNDATION/LOWER LEVEL
PLAN

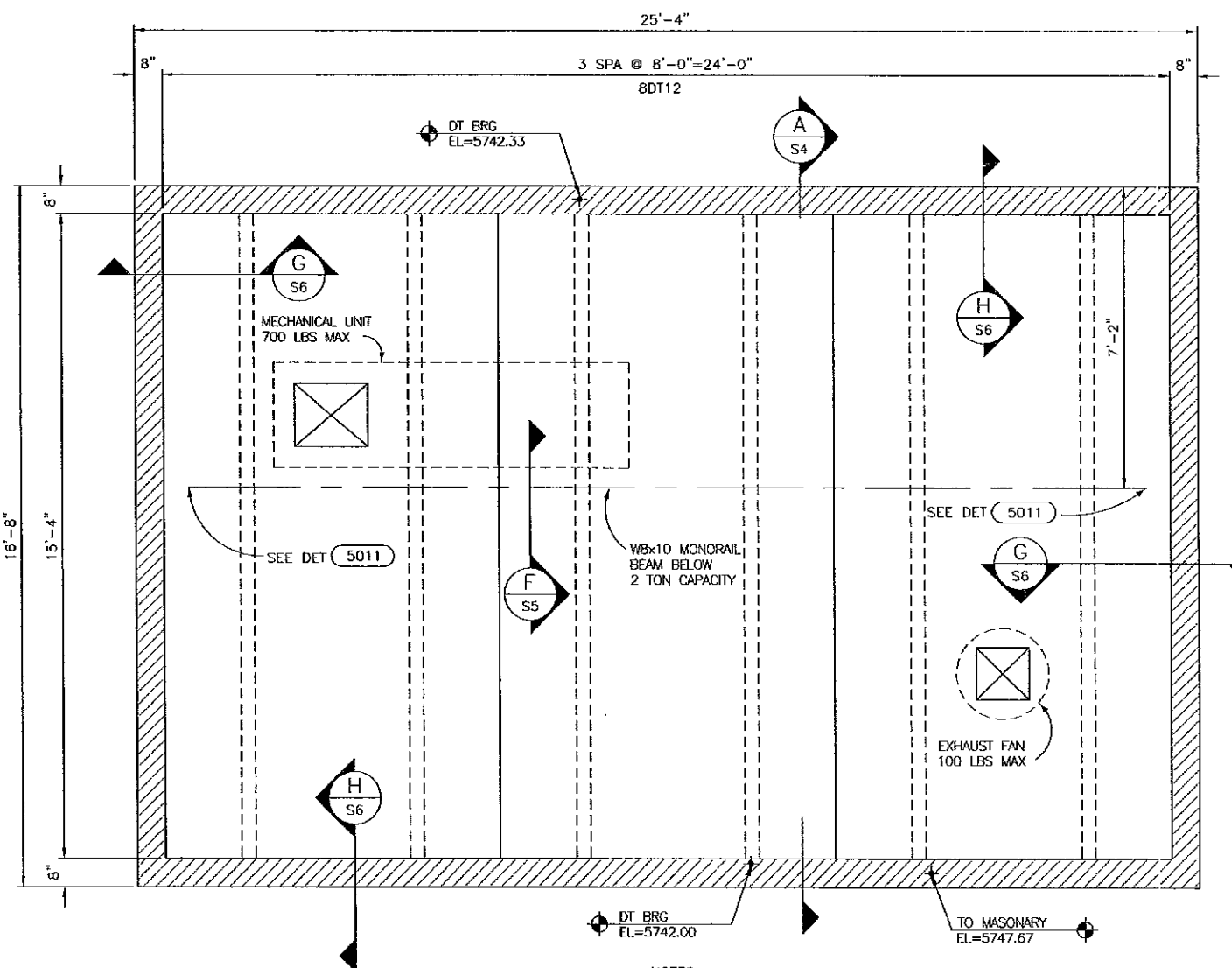
PROJECT NO.	INVR18
SHEET NO.	S2
19 OF	57 OF

5/15/08 15:45 CUP 377 P:\INVERNESS\INVR18\DESIGN\STRUCTURAL\SP-58.DWG WRITS P:\INVERNESS\INVR18\DESIGN\BASIS\X-TITLE.DWG



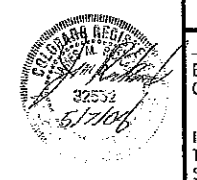
UPPER LEVEL PLAN
1/2"=1'-0"

NOTES:
1. AT STAIR OPENING, PROVIDE DIAGONAL BARS T&B AT EACH CORNER. REPLACEMENT OF ALL INTERRUPTED BARS PER 3211 IS NOT REQUIRED.



ROOF PLAN
1/2"=1'-0"

NOTES:
1. RE MECH & ARCH FOR SIZE & LOCATION OF ROOF OPENINGS.
2. PRECAST DOUBLE TEES SHALL BE DESIGNED TO MEET THE FOLLOWING WORKING LOAD CRITERIA:
a. VERTICAL LOADS:
- SUPERIMPOSED DL = 11 PSF
- SUPERIMPOSED LL = 55 PSF
- CRANE LL = 5,200 PSF (INCLUDING IMPACT)
CRANE LOAD SHALL BE APPLIED AT THE MOST CRITICAL LOCATION FOR EACH MEMBER.
b. SHEAR TIES AND EDGE CONNECTIONS SHALL TRANSFER A MINIMUM SHEAR OF 300 LBS/FT AND MINIMUM OUT-OF-PLANE WALL LOAD OF 300 LBS/FT.



VERIFY SCALES	NO.	DATE	REVISION	BY	CHK.	DESIGNED BY:
BAR IS ONE INCH ON ORIGINAL DRAWING. 0" = 1"	0	05/2008	ISSUED FOR BID			JMR
IF NOT ONE INCH ON THIS DRAWING, ADJUST SCALES ACCORDINGLY.						

DESIGNED BY:	JMR
DRAWN BY:	CWC
CHECKED BY:	
DATE:	APRIL 2008

Arber
Water, Wastewater & Reuse Engineers

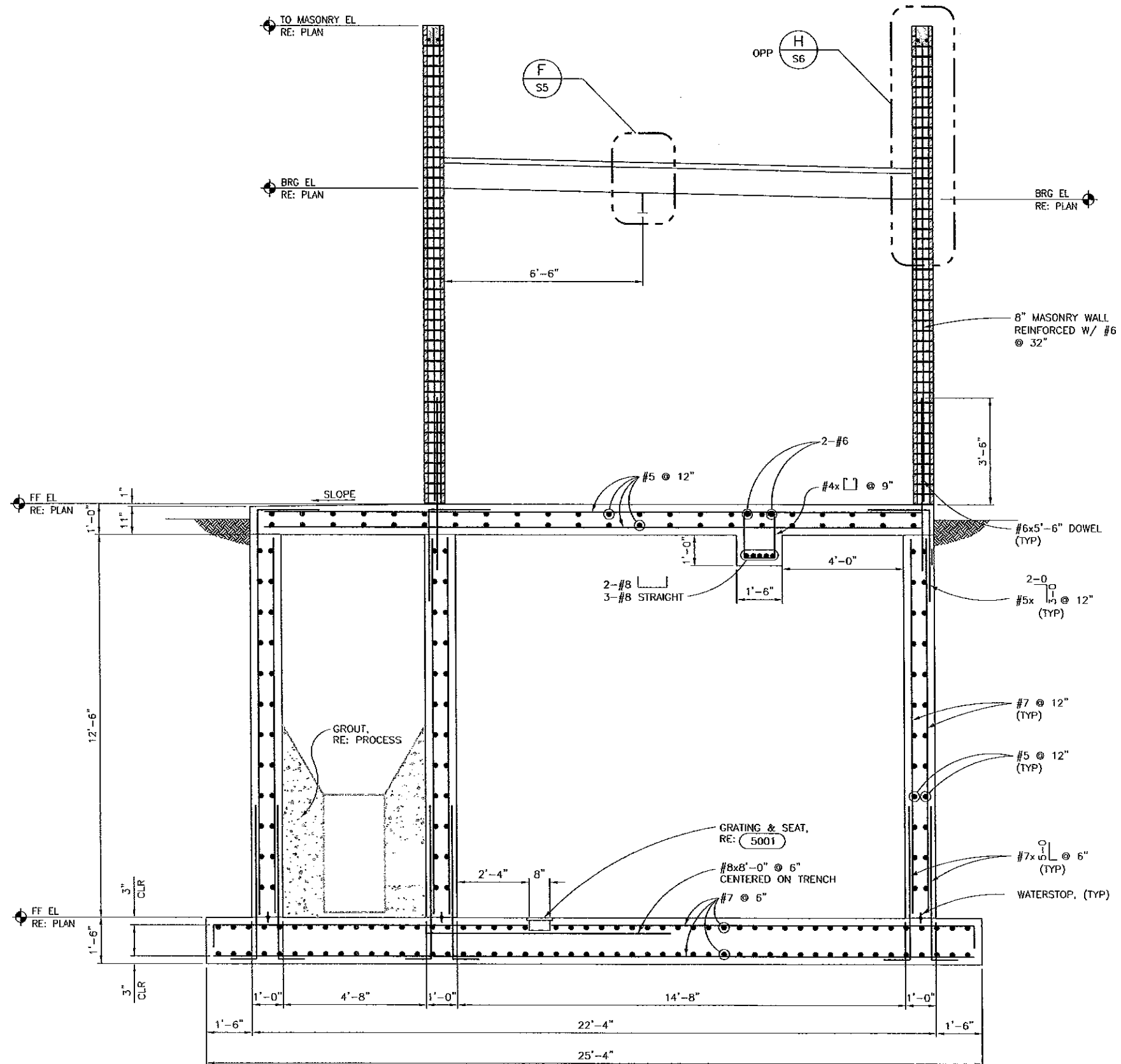
Richard P. Arber Associates
190 Union Boulevard, Suite 200
Lakewood, Colorado 80226
Website: www.arber.com
Phone: 303.831.4700
Fax: 303.831.0290

**INVERNESS WATER AND SANITATION DISTRICT
INVERNESS LIFT STATION NO. 2**

**LIFT STATION
UPPER LEVEL AND ROOF
PLANS**

PROJECT NO.	INVR18
SHEET NO.	S3
DWG.	20 OF 57

5/15/08 16:48 CLF: R17 P:\INVERNESS\INVR18\DESIGN\STRUCTURAL\S2-S6.DWG XREFS: P:\INVERNESS\INVR18\DESIGN\BASIS\X-TITLE.DWG.



A SECTION
S4 1/2" = 1'-0"



VERIFY SCALES	NO.	DATE	REVISION	BY	CHK.	DESIGNED BY:
BAR IS ONE INCH ON ORIGINAL DRAWING.	0	05/2008	ISSUED FOR BID			JMR
0" = 1"						CWC
IF NOT ONE INCH ON THIS DRAWING, ADJUST SCALES ACCORDINGLY.						
						DATE: APRIL 2008

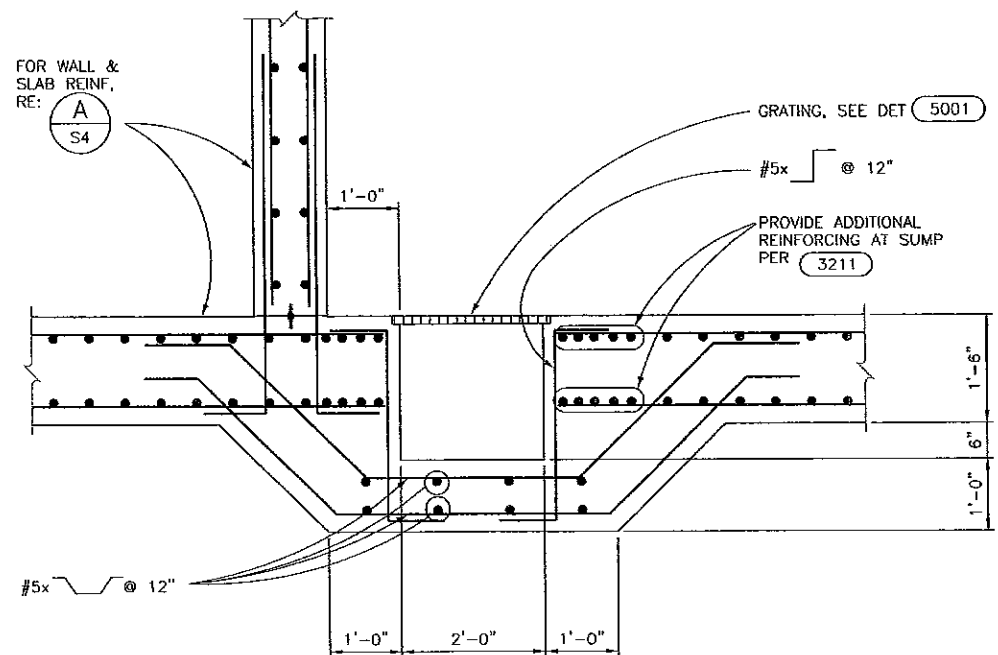
Arber
Water, Wastewater & Reuse Engineers

Richard P. Arber Associates
198 Union Boulevard, Suite 200
Lakewood, Colorado 80228
Website: www.arber.com
Phone: 303.831.4700
Fax: 303.831.0290

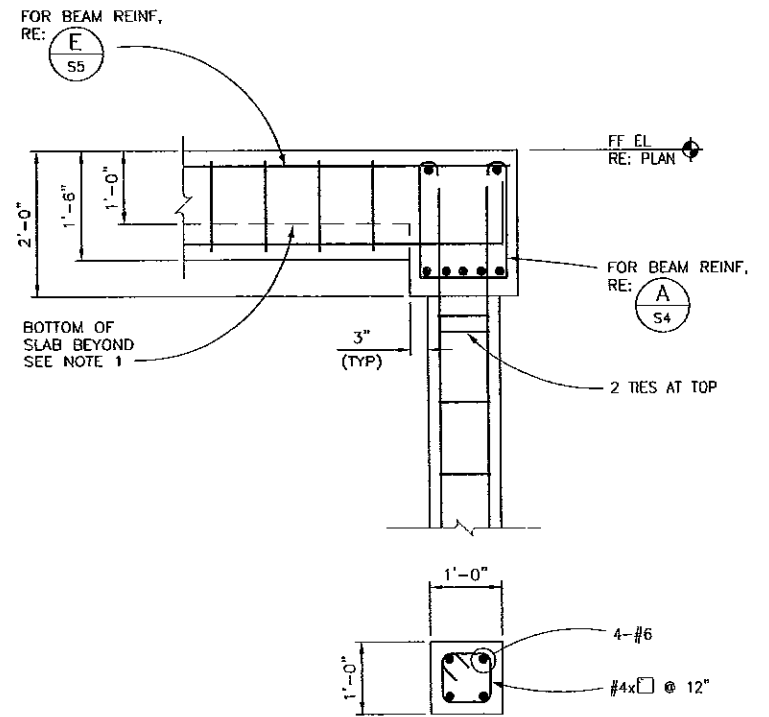
**INVERNESS WATER AND SANITATION DISTRICT
INVERNESS LIFT STATION NO. 2**

LIFT STATION SECTION

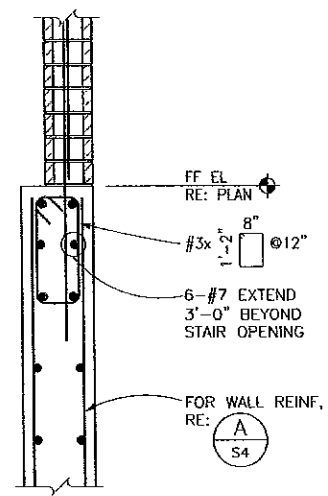
PROJECT NO.	INVR18
SHEET NO.	S4
DWG. OF	21 57



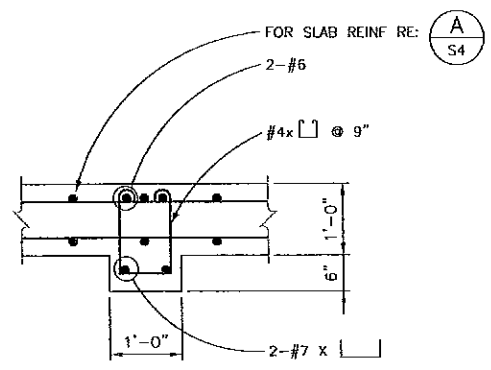
B SECTION @ SUMP
3/4"=1'-0"



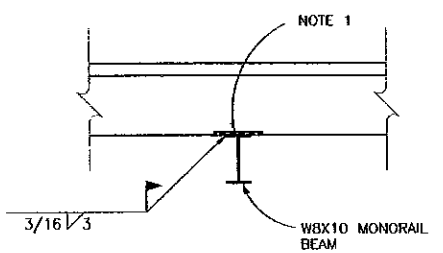
C SECTION @ COLUMN
3/4"=1'-0"



D SECTION @ STAIR OPENING
3/4"=1'-0"

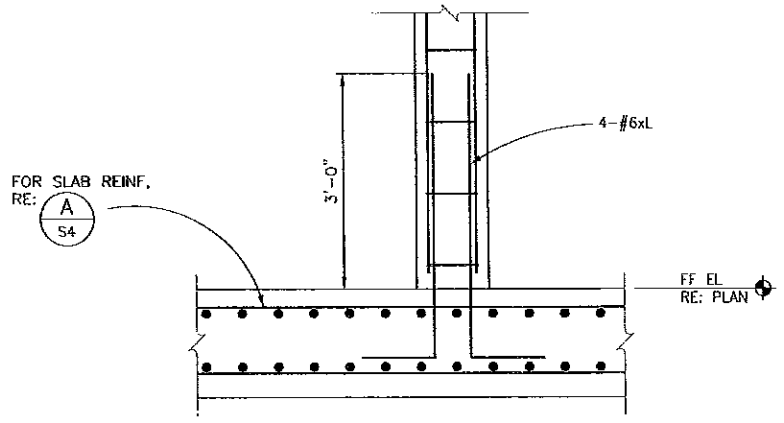


E SECTION @ BEAM
3/4"=1'-0"



F SECTION
3/4"=1'-0"

NOTES:
1. EMBED PLATE BY PRECASTER, 8" WIDTH OF STEM, MINIMUM TENSION CAPACITY 5,200 LBS.



NOTES:
1. UPPER LEVEL SLAB REINF NOT SHOWN FOR CLARITY. RE: A/S4

5/3/08 16:46 CLRT R17 P:\INVERNESS\WORK\DESIGN\STRUCTURAL\S2-SB.DWG. XREFS: P:\INVERNESS\WORK\DESIGN\BASIS\X-TILE.DWG.



VERIFY SCALES	NO.	DATE	REVISION	BY	CHK.	DESIGNED BY:
BAR IS ONE INCH ON ORIGINAL DRAWING. 0" = 1"	0	05/2008	ISSUED FOR BID			JMR
IF NOT ONE INCH ON THIS DRAWING, ADJUST SCALES ACCORDINGLY.						CWC
						DATE: APRIL 2008

Arber
Water, Wastewater & Reuse Engineers

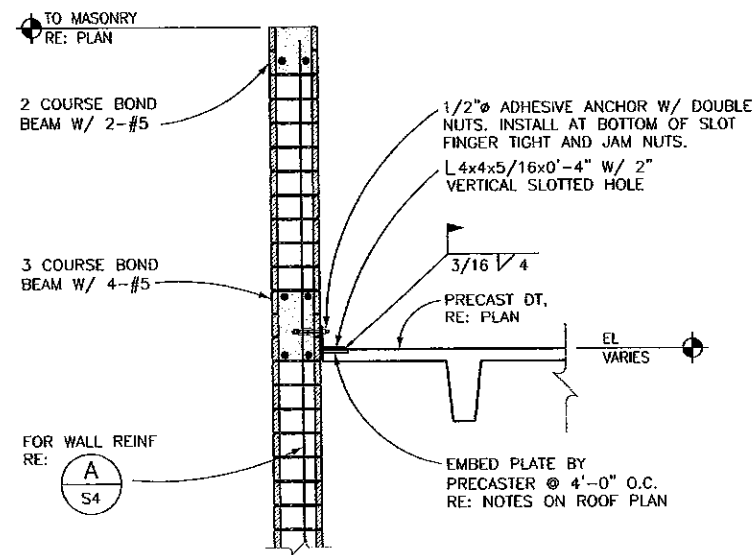
Richard P. Arber Associates
198 Union Boulevard, Suite 200
Lakewood, Colorado 80228
Website: www.arber.com
Phone: 303.831.4700
Fax: 303.831.0290

**INVERNESS WATER AND SANITATION DISTRICT
INVERNESS LIFT STATION NO. 2**

LIFT STATION SECTIONS

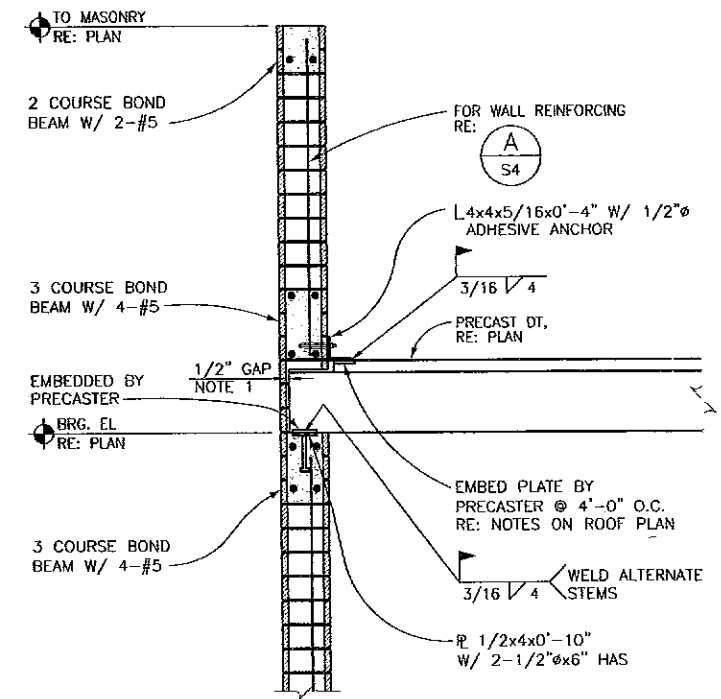
PROJECT NO.	INVR18
SHEET NO.	S5
DWG. OF	22 57

5/5/08 10:46 CUR: R17 P:\INVERNESS\WWR-18 DESIGN\STRUCTURAL\52-58.DWG XREFS: P:\INVERNESS\WWR\BASES\BASES-V-TILE.DWG



G SECTION
S6 3/4"=1'-0"

NOTES:
1. ELEVATION OF BOND BEAM SHALL BE SUCH THAT ALL ADHESIVE ANCHORS ARE WITHIN BOND BEAM ACCOUNTING FOR SLOPE OF ROOF. ADDITIONAL COURSES MAY BE GROUTED AND REINFORCED AT CONTRACTOR'S OPTION.



H SECTION
S6 3/4"=1'-0"

NOTES:
1. MAINTAIN 1/2" GAP AT END, TOP, AND SIDES OF DOUBLE TEE STEM
2. TRIM DOUBLE TEE FLANGE 1/2" BACK FROM FACE OF MASONRY.
3. BETWEEN DOUBLE TEE STEMS, MASONRY WALL & VERTICAL REINFORCING IS CONTINUOUS.



VERIFY SCALES	NO.	DATE	REVISION	BY	CHK.	DESIGNED BY:
BAR IS ONE INCH ON ORIGINAL DRAWING.	0	05/2008	ISSUED FOR BID			JMR
0" = 1"						
IF NOT ONE INCH ON THIS DRAWING, ADJUST SCALES ACCORDINGLY.						

Arber
Water, Wastewater & Reuse Engineers

Richard P. Arber Associates
188 Union Boulevard, Suite 200
Lakewood, Colorado 80228
Website: www.arber.com
Phone: 303.831.4700
Fax: 303.831.0290

**INVERNESS WATER AND SANITATION DISTRICT
INVERNESS LIFT STATION NO. 2**

LIFT STATION SECTIONS

PROJECT NO.	INVR18
SHEET NO.	S6
DWG. OF	23 OF 57

