

PLAN VIEW @ GRADE

- NOTES TO DESIGN ENGINEER:**
- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
 - B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).
 - C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP, VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.
 - D. DESIGN ENGINEER TO VERIFY THE SIZE AND LOCATION OF THE WET WELL HATCHES ACCORDING TO THE HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
 - E. THE ACTUAL LOCATION OF THE WET WELL VENTING MAY VARY ACCORDING TO SITE REQUIREMENTS. WHERE POSSIBLE, LOCATE ON THE NORTHWEST SIDE OF THE WET WELL.
 - F. REPLACE THE 90° ELBOW WITH A FLANGED TEE FOR CONNECTION TO SURGE RELIEF VALVE, IF REQUIRED. SEE DETAILS, SHEET ZOC06.
 - G. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
 - H. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
 - J. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
 - K. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

- NOTES:**
1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
 2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
 3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
 4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.

PLAN VIEW @ GRADE
 4 PUMPS @ 500 - 2500 GPM PER PUMP
 ALTERNATE HIGH PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
 DESIGN GUIDELINE DRAWINGS
 FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

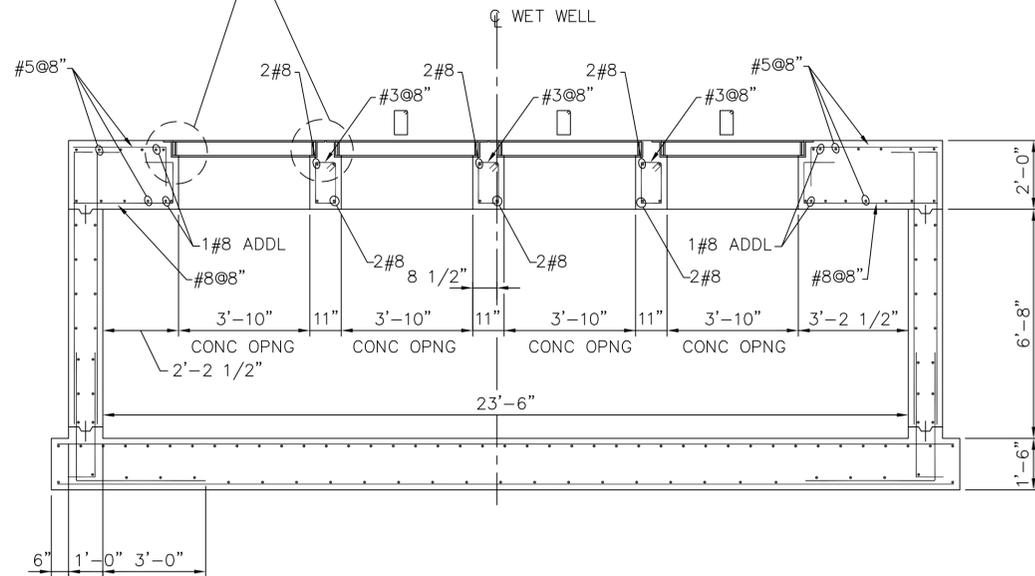
CITY ENGINEER

SCALE: XX" = 1'-0"
 DESIGNED BY:
 DRAWN BY:
 SUBMITTED:
 DATE: DECEMBER, 1996
 SHEET NO. OF SHEETS
 SURVEY BY:
 DWG. NO. 11C01
 FIELD BOOK NO.

REV. NO.	DESCRIPTION	APP'D	DATE

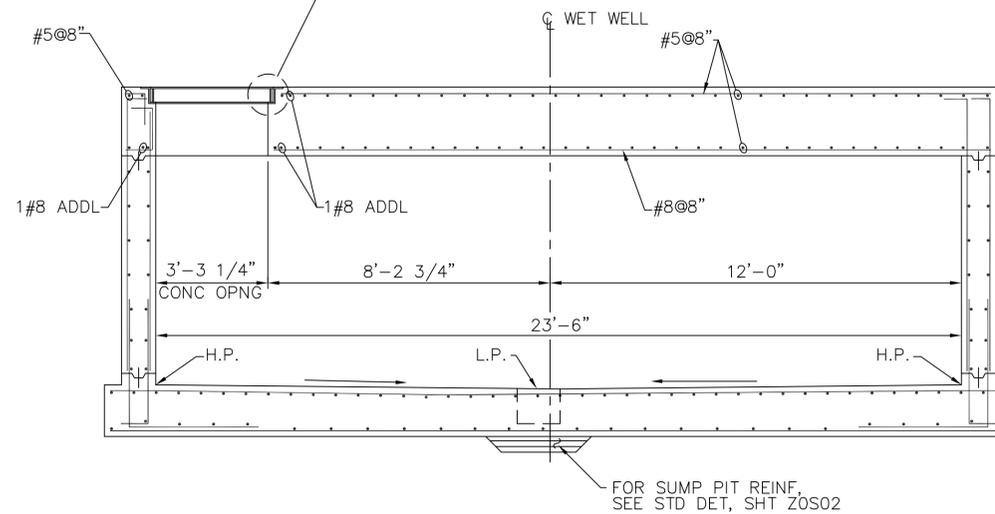
CADD DWG. FILE NO. : 11C01.DWG

HATCH OPNG FRAME, TYP
SEE STD DET, SHT ZOS02



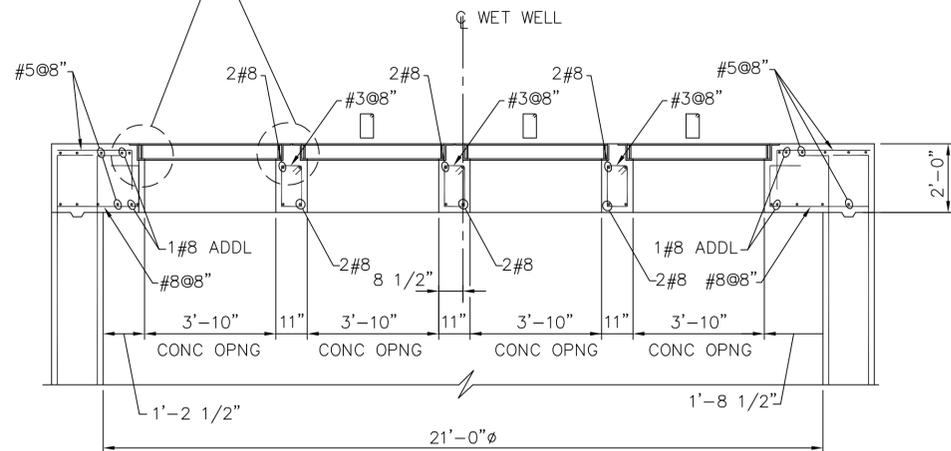
SECTION B
I3S01

HATCH OPNG FRAME, TYP
SEE STD DET, SHT ZOS02



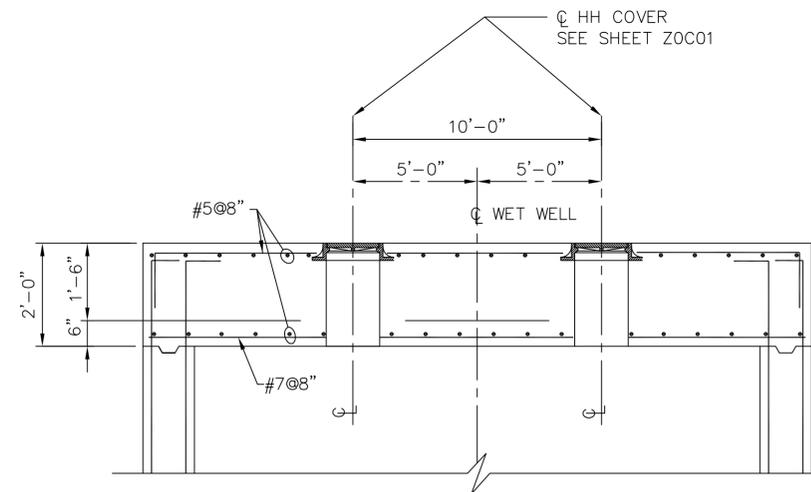
SECTION C
I3S01

HATCH OPNG FRAME, TYP
SEE STD DET, SHT ZOS02



SECTION D
I3S01

HH COVER
SEE SHEET ZOC01



SECTION E
I3S01

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. DESIGN ENGINEER TO VERIFY SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- C. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- E. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

- 1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET ZOS01.
- 2. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- 3. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

STRUCTURAL
4 PUMPS @ 800 - 3499 GPM PER PUMP
ALTERNATE LOW PROFILE CONFIGURATION
PROJECT NO. R-0267-XX-X
TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH
STANDARD TITLE BLOCK ON ALL
DRAWINGS, SEE STANDARD TITLE
BLOCK DETAIL ON SHEET ZOC0X

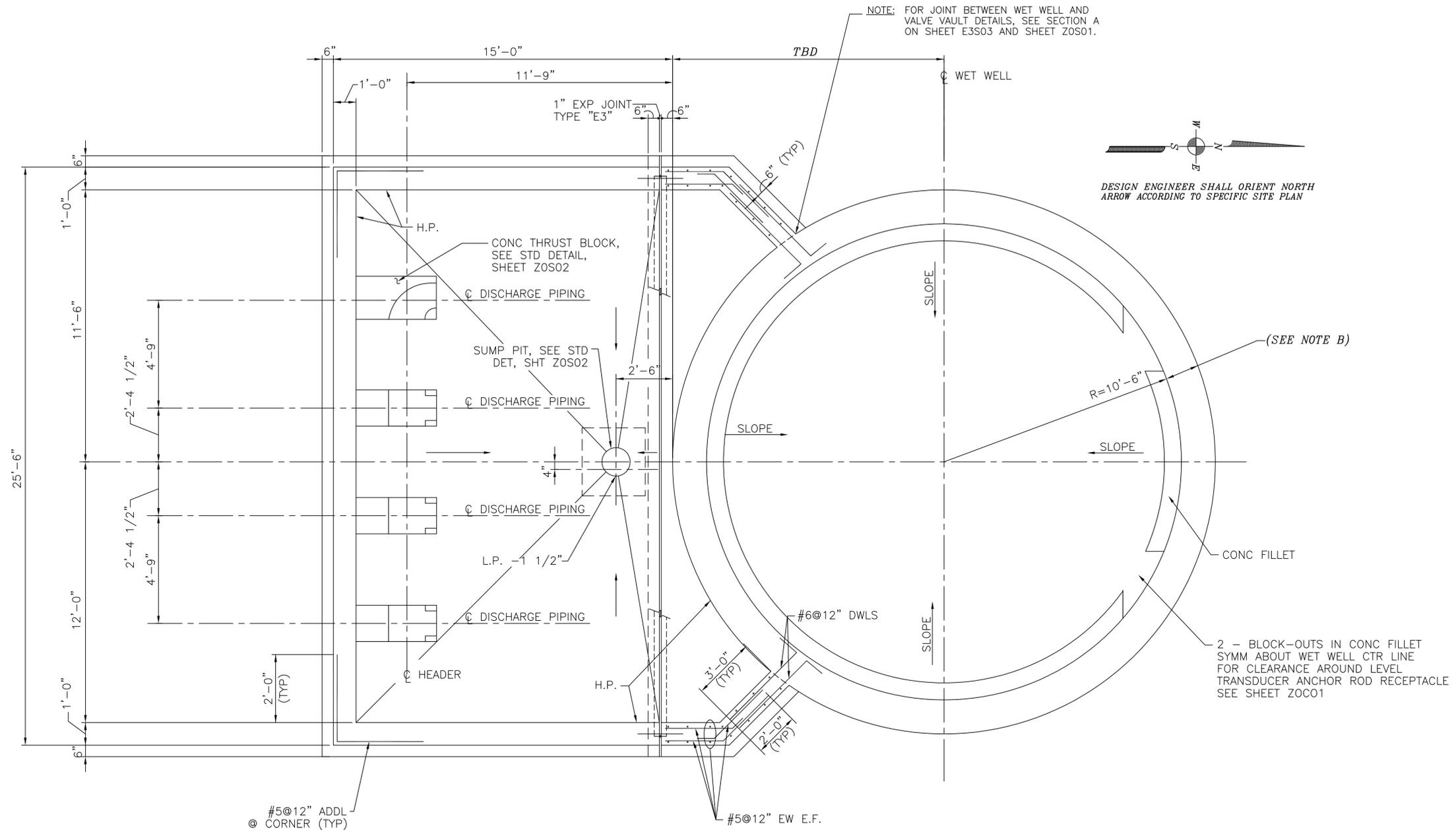
CADD DWG. FILE NO. :
I3S04.DWG

COHSTD.BDR 0 1 2 3

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS
DESIGN ENGINEER TO UPDATE BAR SCALE TO REFLECT ACTUAL SCALE ON THE DRAWING.

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: NOVEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. I3S04
FIELD BOOK NO.	



PLAN VIEW @ VAULT FLOOR

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. DIMENSIONS AND REINFORCING NOT PROVIDED ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER APPLICABLE SITE REQUIREMENTS.
- C. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- E. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

- 1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET ZOS01.
- 2. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
- 3. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- 4. WET WELL TO BE LINED WITH CONCRETE PROTECTIVE LINER PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. LINER SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

STRUCTURAL
4 PUMPS @ 800 - 3499 GPM PER PUMP
ALTERNATE LOW PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH
STANDARD TITLE BLOCK ON ALL
DRAWINGS, SEE STANDARD TITLE
BLOCK DETAIL ON SHEET ZOC0X

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: NOVEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. 13S02
FIELD BOOK NO.	

REV. NO.	DESCRIPTION	APP'D	DATE

CADD DWG. FILE NO. : 13S02.DWG

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).
- C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.
- D. REPLACE THE 90° ELBOW WITH A FLANGED TEE FOR CONNECTION TO SURGE RELIEF VALVE, IF REQUIRED. SEE DETAILS, SHEET ZOC06.
- E. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY.
- F. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- G. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- H. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- I. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

- 1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- 2. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
- 3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
- 4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
- 5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.

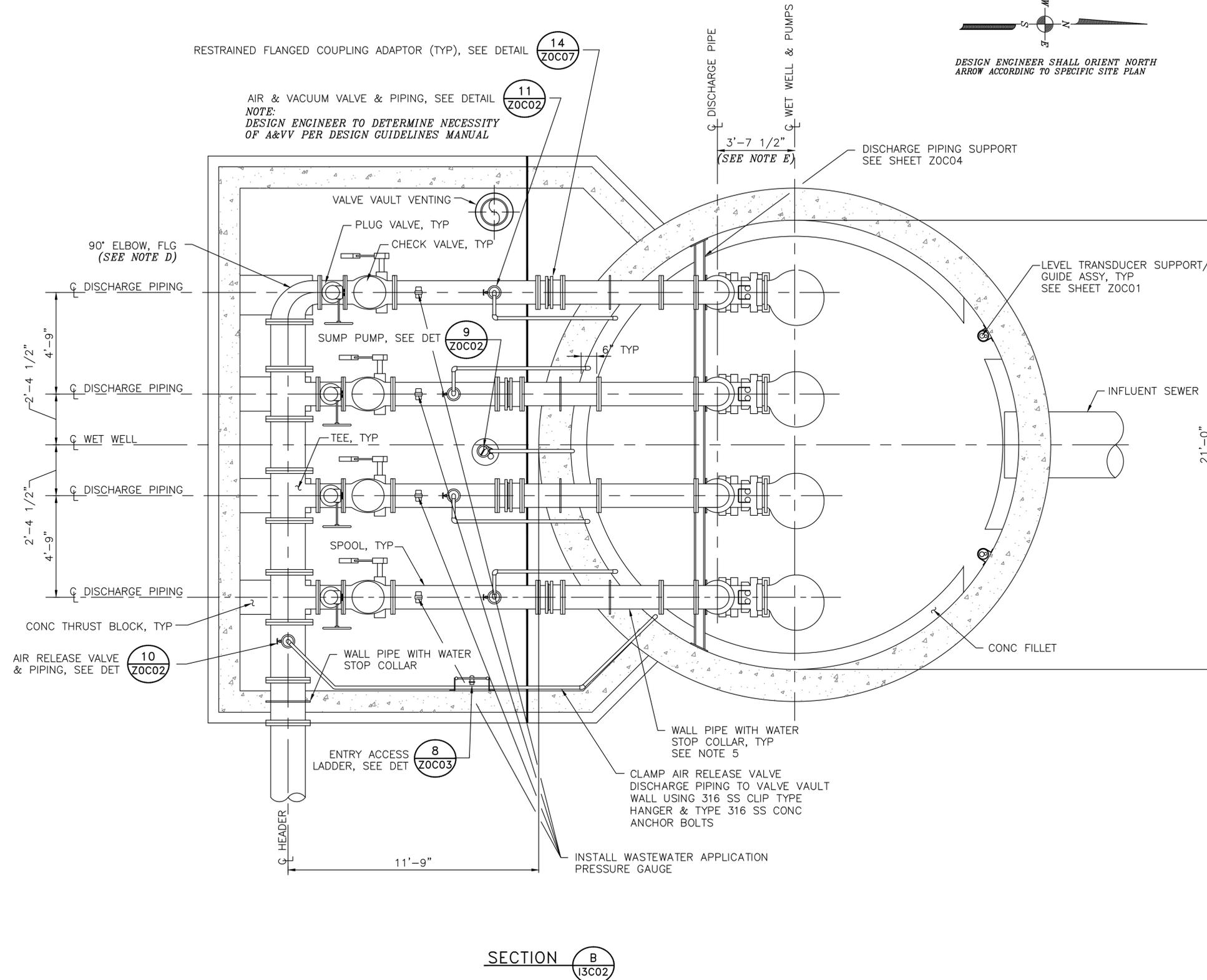
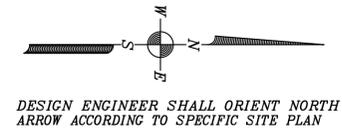
BASE SECTION
4 PUMPS @ 500 - 2500 GPM PER PUMP
ALTERNATE LOW PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X



SECTION **B**
13C02

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: DECEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. 13C03
FIELD BOOK NO.	

CADD DWG. FILE NO. : 13C03.DWG

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).
- C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.
- D. DESIGN ENGINEER TO VERIFY THE SIZE AND LOCATION OF THE WET WELL HATCHES ACCORDING TO THE SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- E. THE ACTUAL LOCATION OF THE WET WELL VENTING MAY VARY ACCORDING TO SITE REQUIREMENTS. WHERE POSSIBLE, LOCATE ON THE NORTHWEST SIDE OF THE WET WELL.
- F. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- G. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- H. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- I. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

- 1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- 2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.

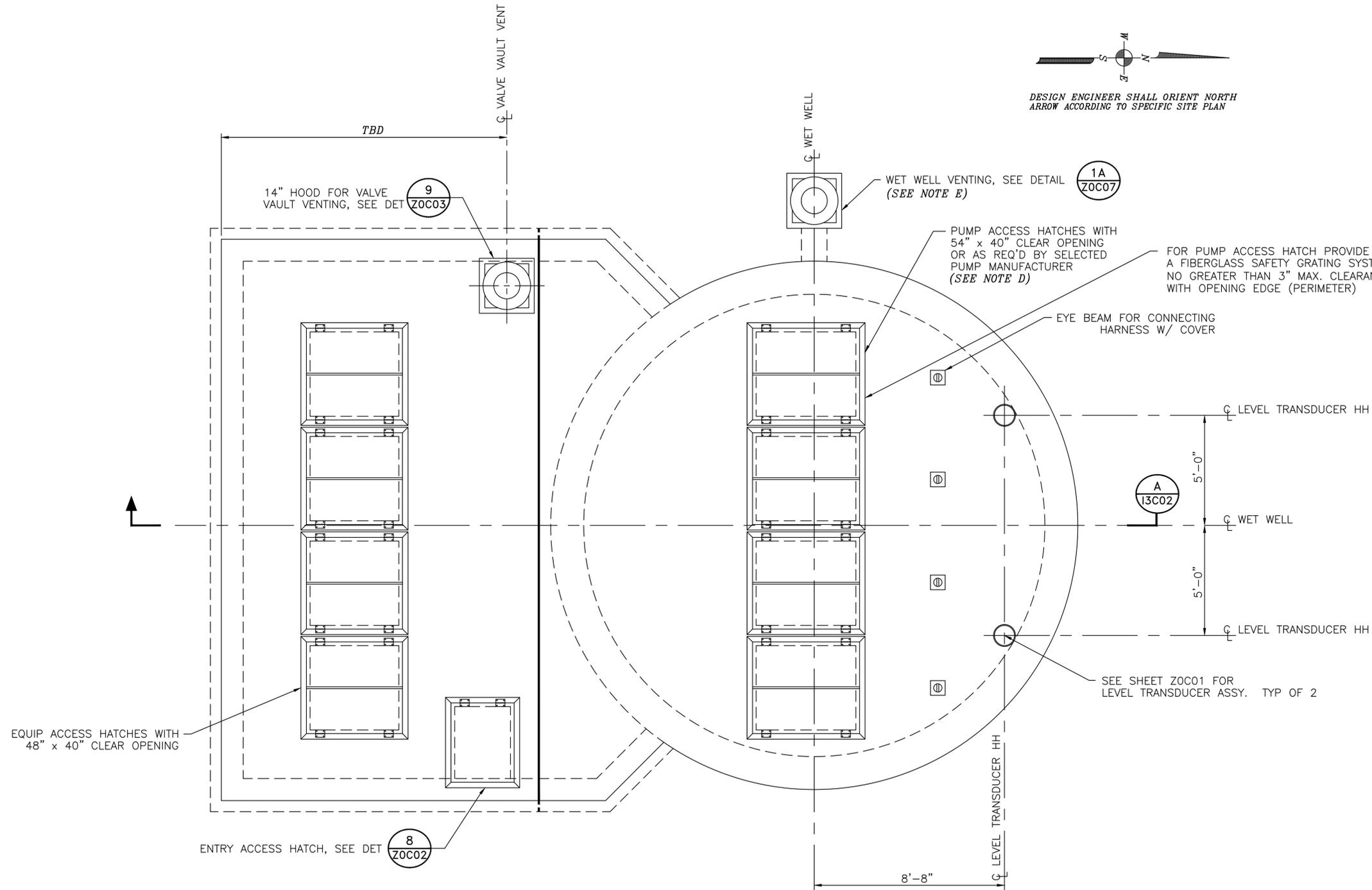
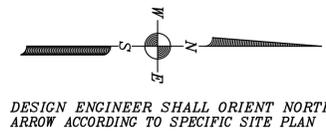
PLAN VIEW @ GRADE
4 PUMPS @ 500 - 2500 GPM PER PUMP
ALTERNATE LOW PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

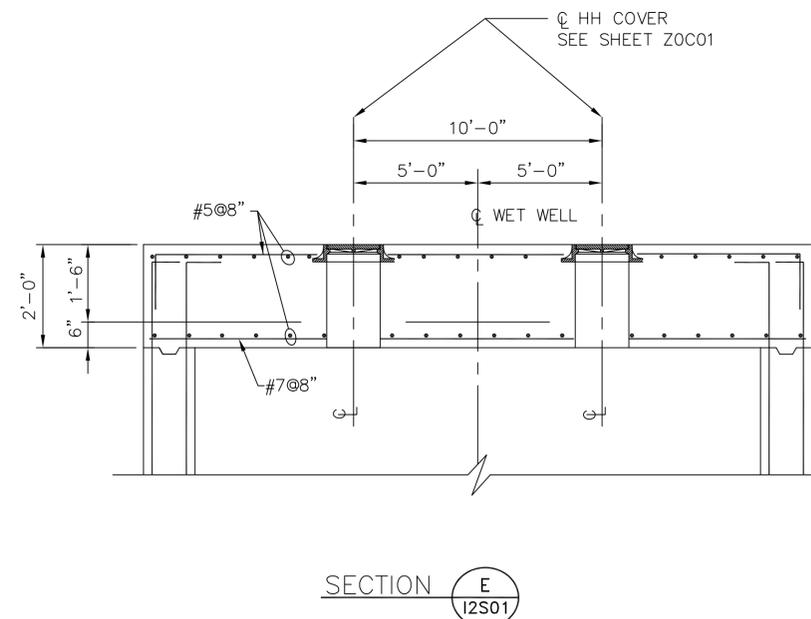
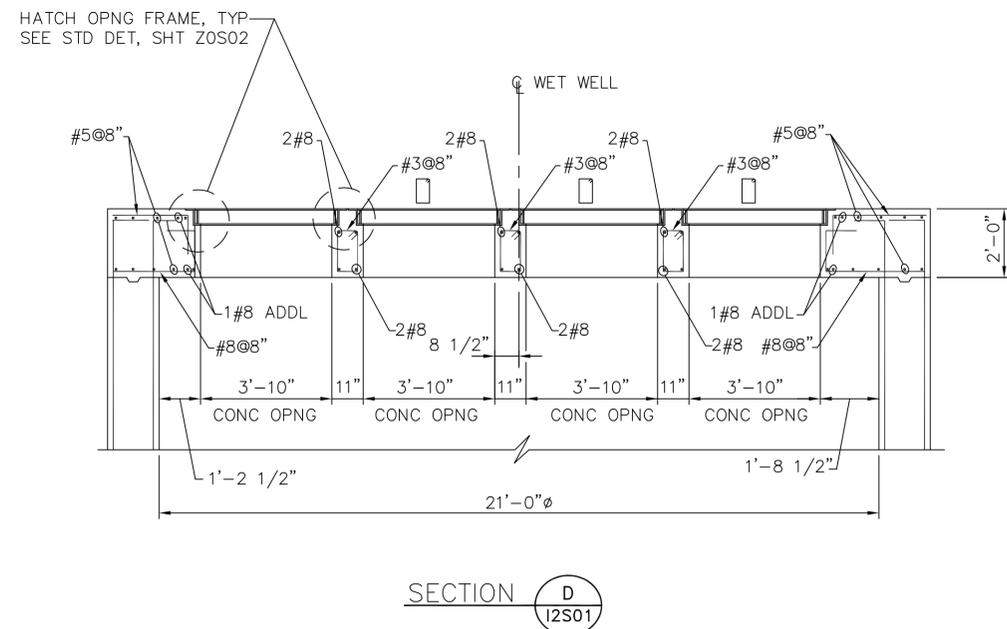
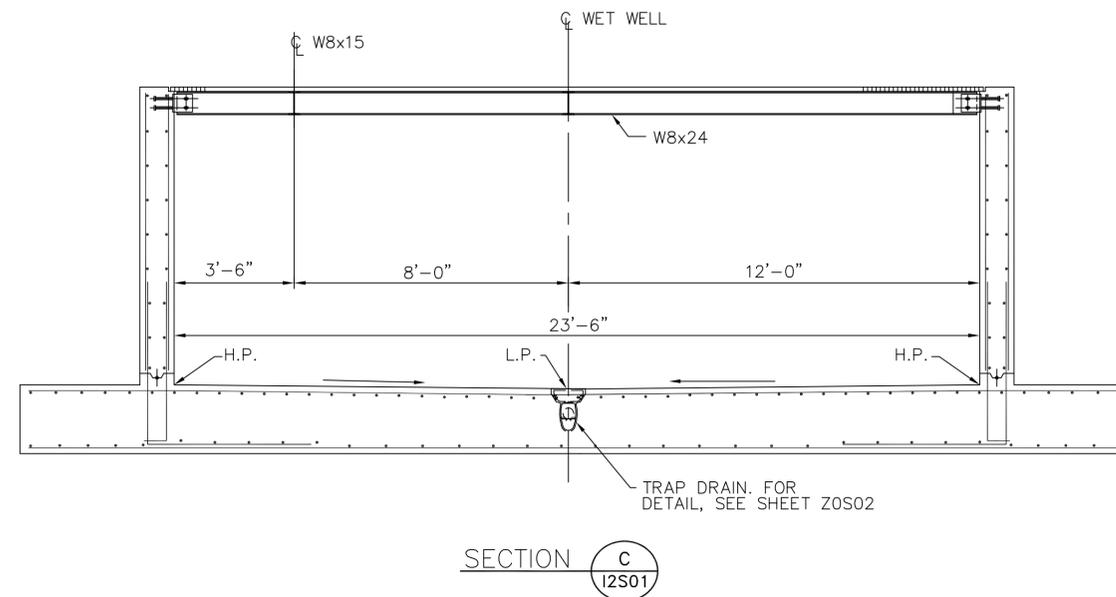
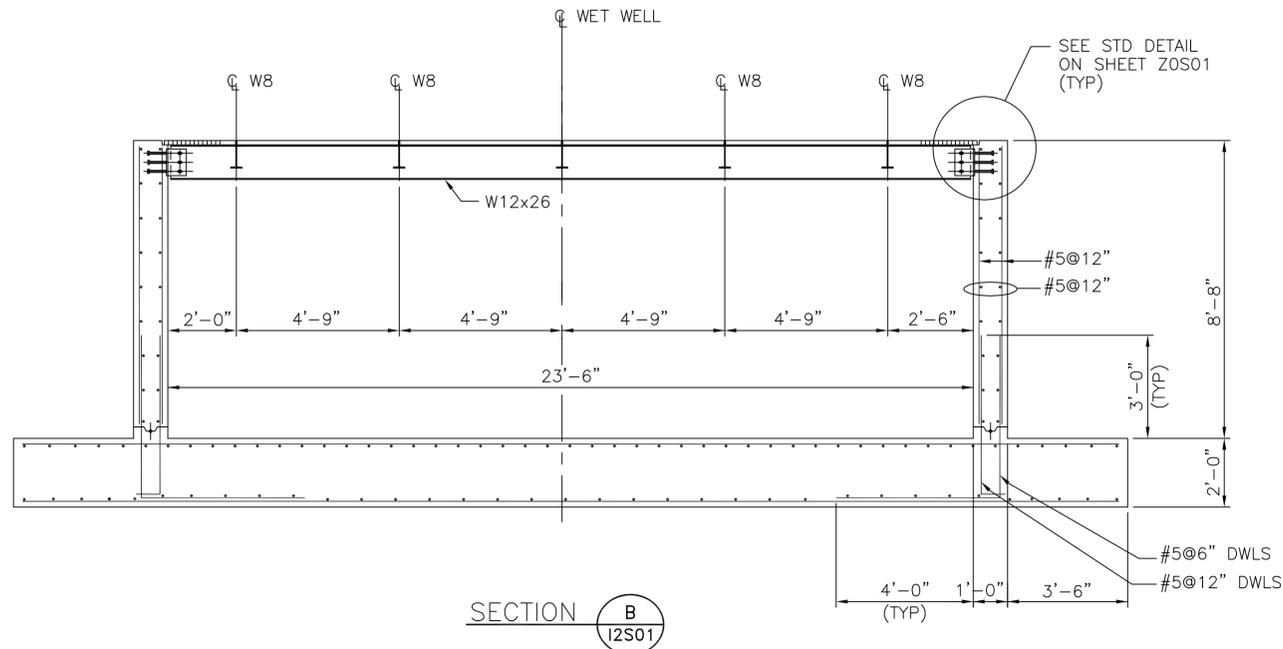


PLAN VIEW @ GRADE

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: NOVEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. 13C01
FIELD BOOK NO.	

CADD DWG. FILE NO. : 13C01.DWG



NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. DESIGN ENGINEER TO VERIFY SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- C. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- E. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

- 1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET ZOS01.
- 2. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- 3. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

STRUCTURAL	
4 PUMPS @ 800 -3499 GPM PER PUMP PREFERRED CONFIGURATION	
PROJECT NO.	R-0267-XX-X
TITLE	CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING AND CONSTRUCTION	

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

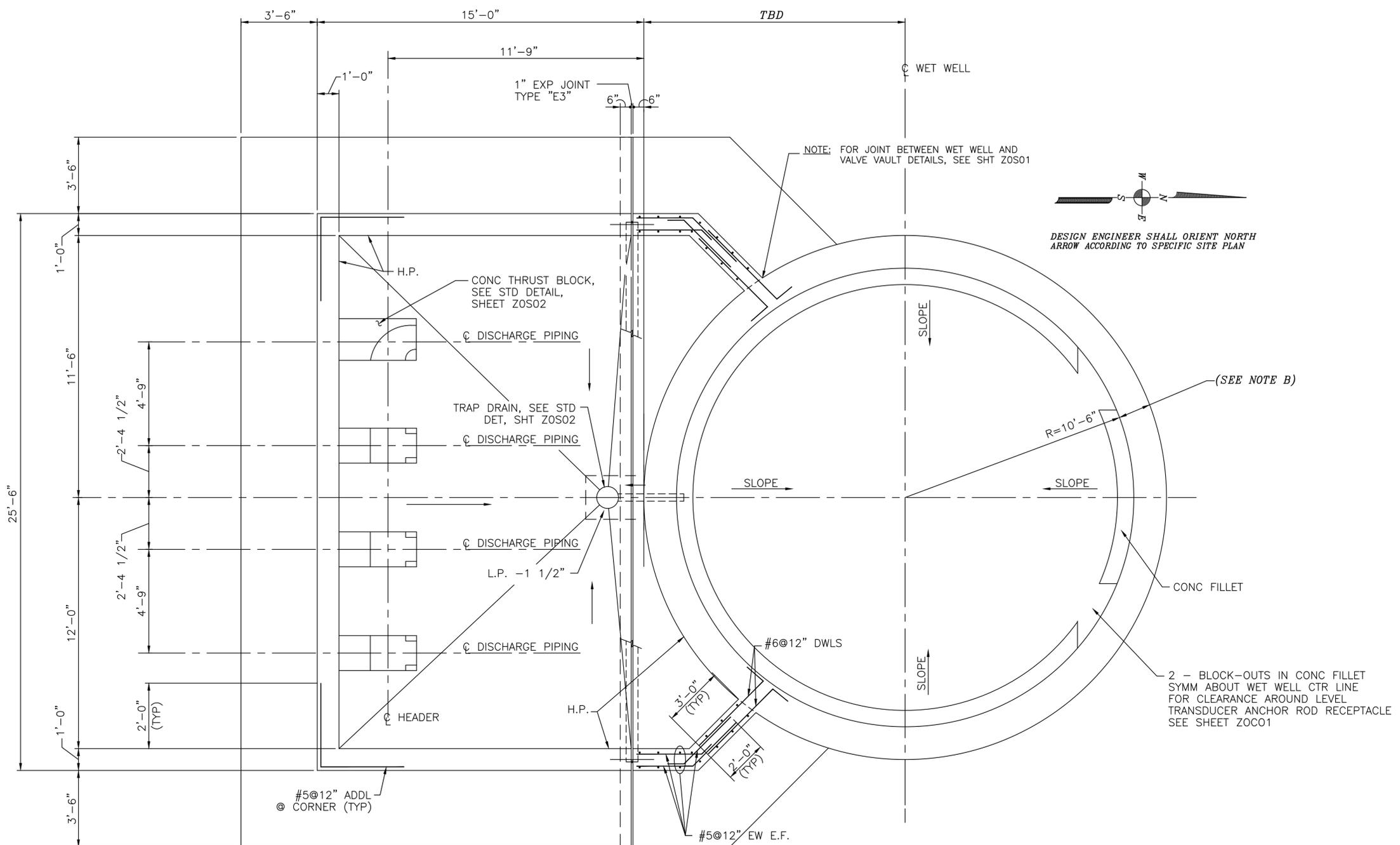
CADD DWG. FILE NO. : I2S04.DWG

COHSTD.BDR 0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS DESIGN ENGINEER TO UPDATE BAR SCALE TO REFLECT ACTUAL SCALE ON THE DRAWING.

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: NOVEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. I2S04
FIELD BOOK NO.	



NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. DIMENSIONS AND REINFORCING NOT PROVIDED ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER APPLICABLE SITE REQUIREMENTS.

C. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

E. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

- NOTES:**
- FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET ZOS01.
 - DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
 - SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
 - WET WELL TO BE LINED WITH CONCRETE PROTECTIVE LINER PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. LINER SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

STRUCTURAL
 4 PUMPS @ 500 - 2500 GPM PER PUMP
 PREFERRED CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
 DESIGN GUIDELINE DRAWINGS
 FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

PLAN VIEW @ VAULT FLOOR

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0" DESIGNED BY:
 SUBMITTED: DRAWN BY:
 DATE: NOVEMBER, 1996 SHEET NO. OF SHEETS
 SURVEY BY: DWG. NO. 12S02
 FIELD BOOK NO.

CADD DWG. FILE NO. : 12S02.DWG

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. DESIGN ENGINEER TO VERIFY SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- C. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY.
- D. DIMENSIONS AND REINFORCING NOT PROVIDED ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER APPLICABLE SITE REQUIREMENTS.
- E. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.
- I. THE DESIGN ENGINEER SHALL ENSURE GUARDRAIL AND CATWALK MEET THE REQUIREMENTS FOR "AREAS NOT OPEN TO PUBLIC" AS PROVIDED BY THE U.S. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) AND LATEST COH CODE ENFORCEMENT APPROVED VERSION OF THE INTERNATIONAL BUILDING CODE (IBC).
- J. THE DESIGN ENGINEER SHALL PROVIDE GUARDRAILS FOR ANY WALKING SURFACES WITH A POTENTIAL FALL DISTANCE EQUAL TO OR GREATER THAN 30 INCHES.

NOTES:

- 1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET Z0501.
- 2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- 3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
- 4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- 5. WET WELL TO BE LINED WITH CONCRETE PROTECTIVE LINER PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. LINER SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

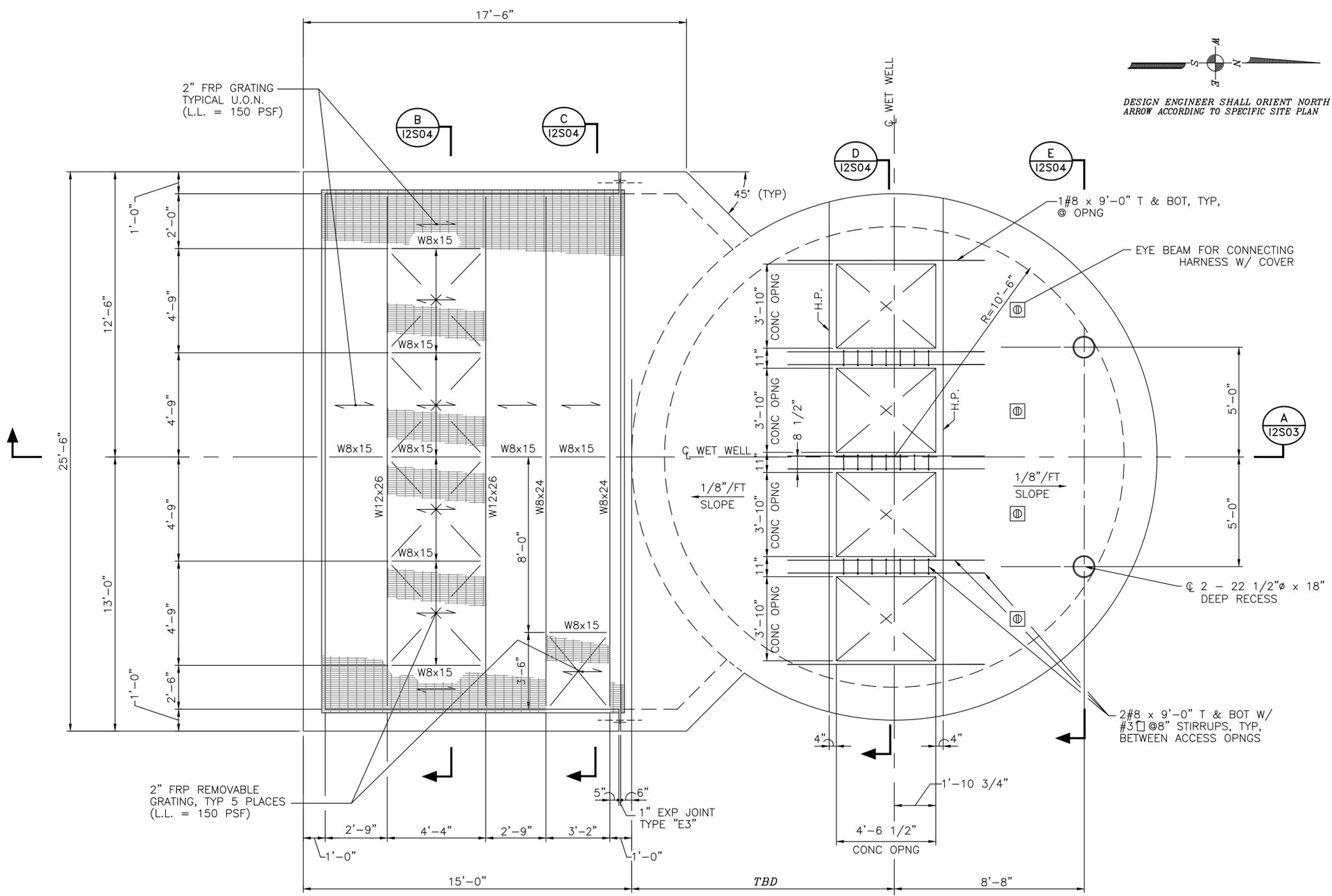
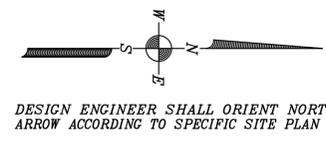
STRUCTURAL
4 PUMPS @ 500 - 2500 GPM PER PUMP
PREFERRED CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH
STANDARD TITLE BLOCK ON ALL
DRAWINGS, SEE STANDARD TITLE
BLOCK DETAIL ON SHEET ZOCOX

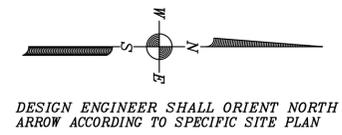
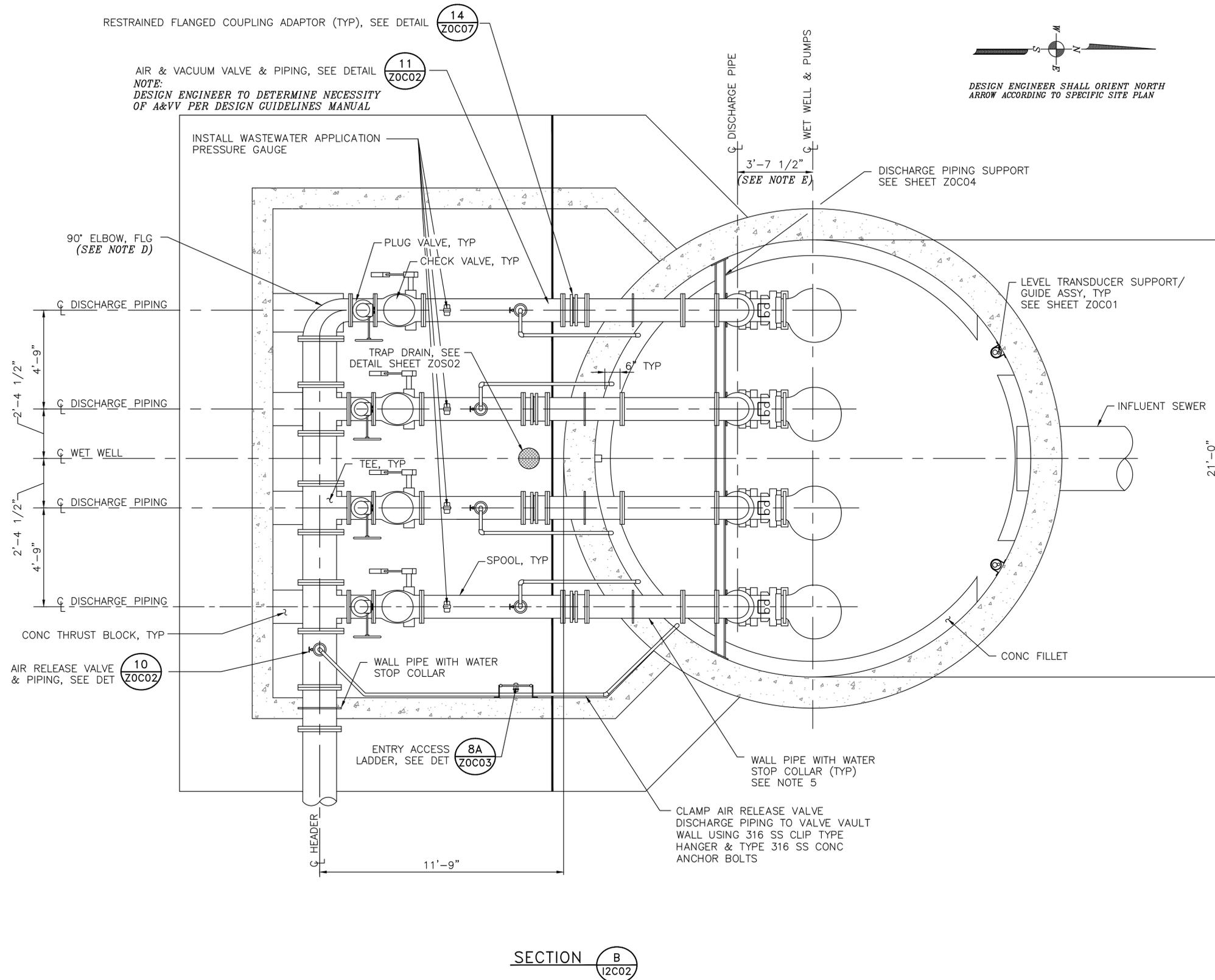


PLAN VIEW @ GRADE

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: NOVEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. I2S01
FIELD BOOK NO.	

CADD DWG. FILE NO. : I2S01.DWG



NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499)

C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP, VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.

D. REPLACE THE 90° ELBOW WITH A FLANGED TEE FOR CONNECTION TO SURGE RELIEF VALVE, IF REQUIRED. SEE DETAILS, SHEET ZOC06.

E. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY.

F. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

G. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

H. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

I. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

- NOTES:**
- SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
 - DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
 - INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
 - INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
 - SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.

BASE SECTION
4 PUMPS @ 500 - 2500 GPM PER PUMP
PREFERRED CONFIGURATION

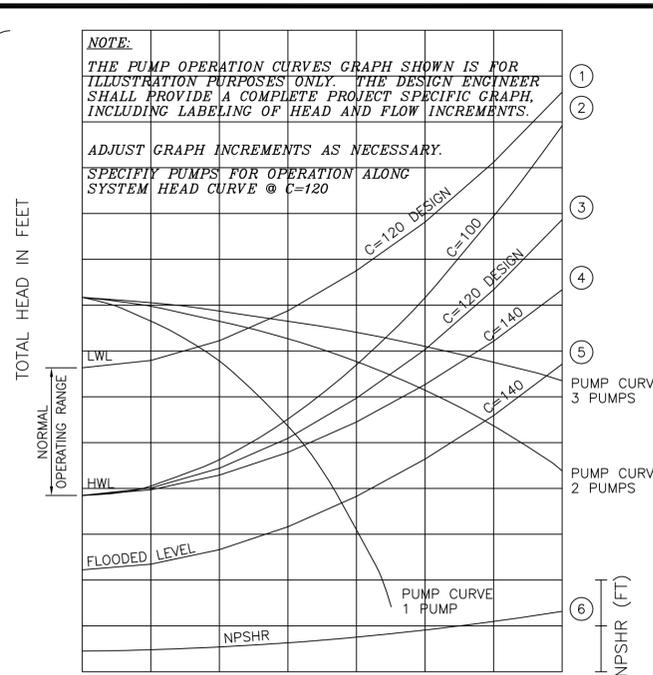
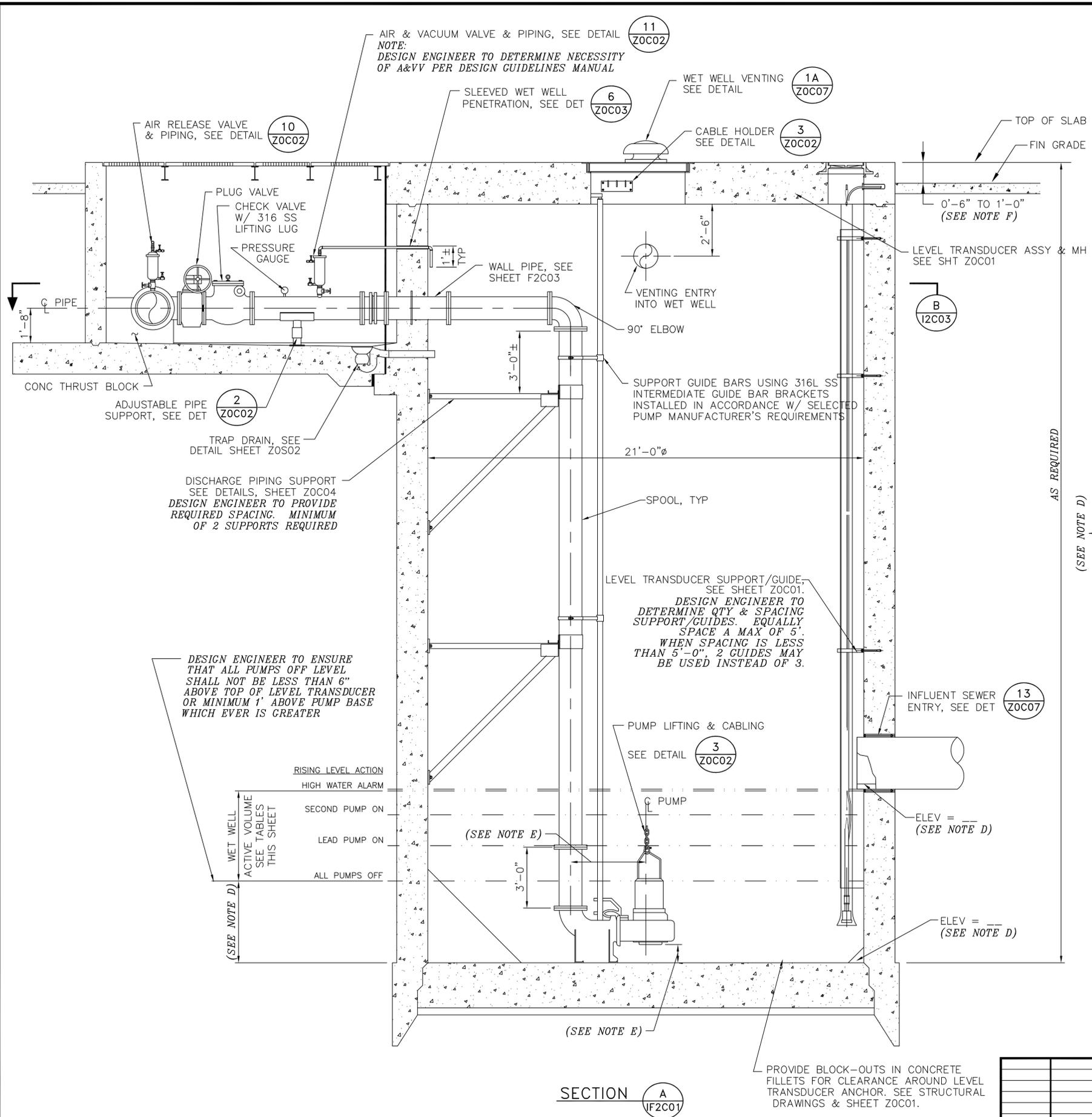
PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: DECEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. 12C03
FIELD BOOK NO.	



PUMP OPERATION CURVES

PUMP CURVE NOTES:

1. LOW NORMAL OPERATING LEVEL C=120 - DESIGN.
2. HIGH NORMAL OPERATING LEVEL C=100 - INFORMATION ONLY (TNRCC)
3. HIGH NORMAL OPERATING LEVEL C=120 - DESIGN
4. HIGH NORMAL OPERATING LEVEL C=140 - INFORMATION ONLY
5. EMERGENCY FLOODED OPERATING LEVEL C=140 - MAXIMUM DISCHARGE
6. NET POSITIVE SUCTION HEAD REQUIRED (NPSHR) BASED ON NORMAL OPERATING WATER LEVELS
7. PUMP CURVES ARE MODIFIED FOR STATION LOSSES.

PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
MOTOR DATA				
NOMINAL SIZE (HP)				
MAX SPEED (RPM)				
SOLIDS PASSAGE				
MIN SPHERE (IN)				
CAPACITY (GPM)				
DESIGN RUNOUT				
DISCHARGE HEAD (FT)				
DESIGN RUNOUT SHUT OFF				
EFFICIENCY (%)				
DESIGN				
NPSHR (FT)				
DESIGN RUNOUT				
PUMP CYCLE TIME				

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
	PUMPS OFF LEVEL - NO ACTION	ALL PUMPS ARE OFF
	LEAD PUMP TURNS ON	LEAD PUMP ON
	SECOND PUMP TURNS ON	LEAD & SECOND PUMPS ON
	THIRD PUMP TURNS ON	LEAD, SECOND & THIRD PUMPS ON
	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
	HIGH WATER LEVEL ALARM OFF	LEAD, SECOND & THIRD PUMPS ON
	LEAD PUMP TURNS OFF	SECOND & THIRD PUMPS ON
	SECOND PUMP TURNS OFF	THIRD PUMP ON
	THIRD PUMP TURNS OFF	ALL PUMPS STOPPED - STANDBY PUMP SWITCHES TO LEAD PUMP

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).

C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.

D. ELEVATIONS AND INFORMATION INDICATED ARE DETERMINED FOR APPLICABLE SITE REQUIREMENTS.

E. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY. DESIGN ENGINEER SHALL PROVIDE RAISED PUMP BASE IF REQUIRED.

F. WHERE FLOOD PLAIN CONDITIONS REQUIRE THE TOP SLAB TO BE GREATER THAN 1'-0" ABOVE FINISHED GRADE, DESIGN ENGINEER SHALL PROVIDE CONCRETE STAIRS.

G. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

H. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

I. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

J. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL VERIFY.
2. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
3. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
4. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS, AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
5. ALL PIPING IN THE WET WELL SHALL BE FLANGED. NO FLANGED COUPLING ADAPTORS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.

ELEVATION SECTION
4 PUMPS @ 500 - 2500 GPM PER PUMP
PREFERRED CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

CADD DWG. FILE NO. : 12C02.DWG

SECTION A (IF2C01)
ALL WET WELL FILLETS NOT SHOWN FOR CLARITY

PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER ANCHOR. SEE STRUCTURAL DRAWINGS & SHEET ZOC01.

DESIGN ENGINEER TO UPDATE BAR SCALE TO REFLECT ACTUAL SCALE ON THE DRAWING.

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0" DESIGNED BY:
SUBMITTED: DRAWN BY:
DATE: DECEMBER, 1996 SHEET NO. OF SHEETS
SURVEY BY: DWG. NO. 12C02
FIELD BOOK NO.

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).

C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.

D. DESIGN ENGINEER TO VERIFY THE SIZE AND LOCATION OF THE WET WELL HATCHES ACCORDING TO THE SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.

E. THE ACTUAL LOCATION OF THE WET WELL VENTING MAY VARY ACCORDING TO SITE REQUIREMENTS. WHERE POSSIBLE, LOCATE ON THE NORTHWEST SIDE OF THE WET WELL.

F. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

G. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

H. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

I. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.

PLAN VIEW @ GRADE
4 PUMPS @ 500 - 2500 GPM PER PUMP
PREFERRED CONFIGURATION

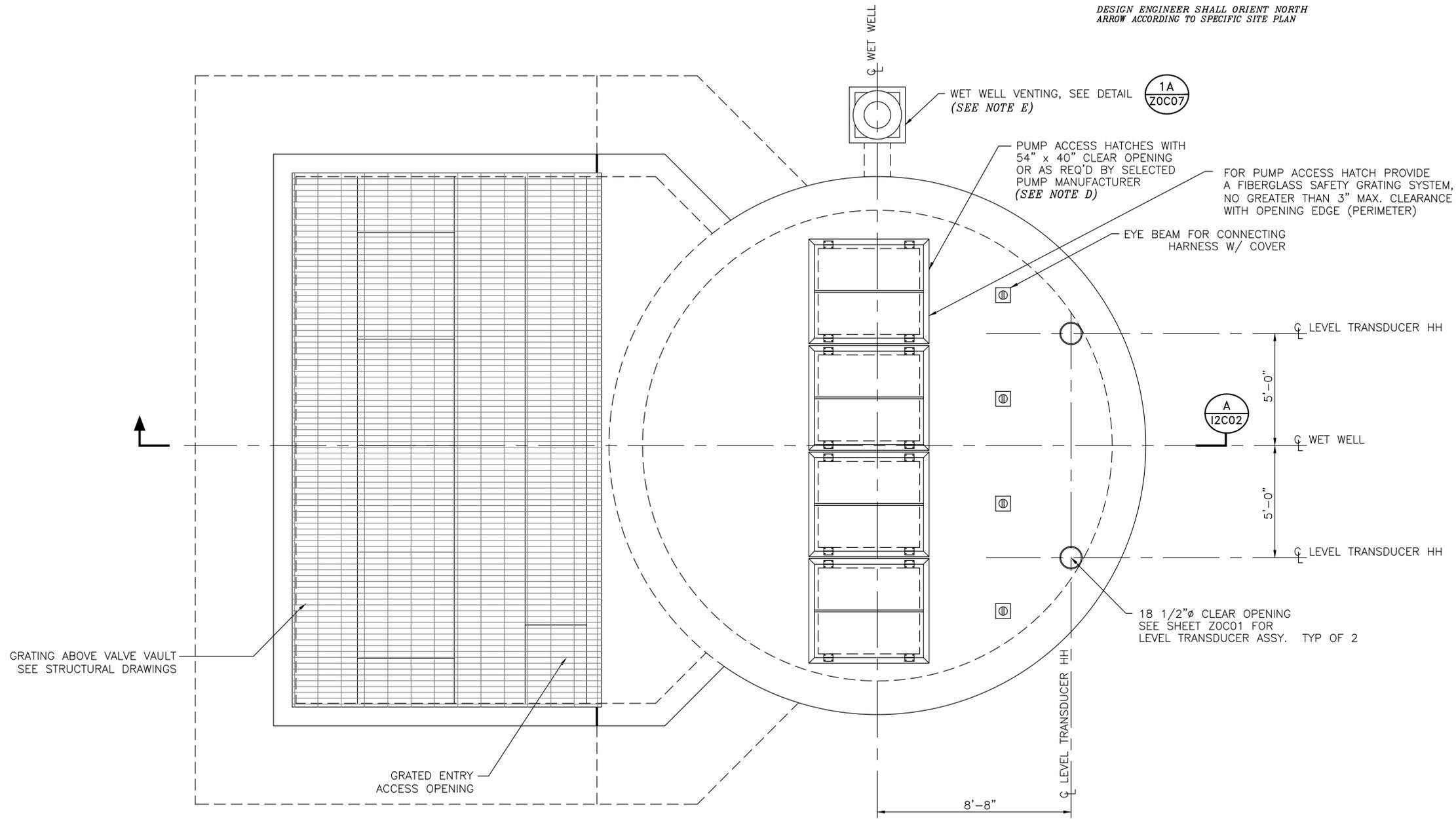
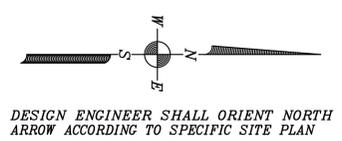
PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

SCALE: XX" = 1'-0"
DESIGNED BY:
DRAWN BY:
DATE: NOVEMBER, 1996 SHEET NO. OF SHEETS
SURVEY BY: DWG. NO. I2C01
FIELD BOOK NO.



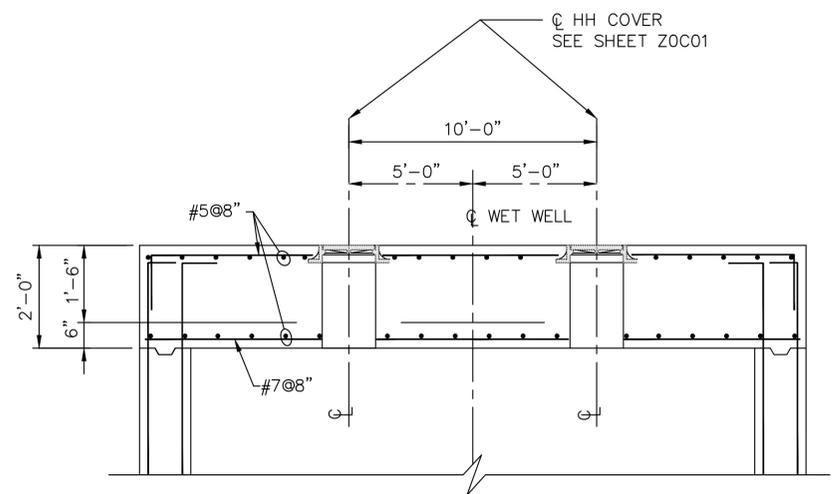
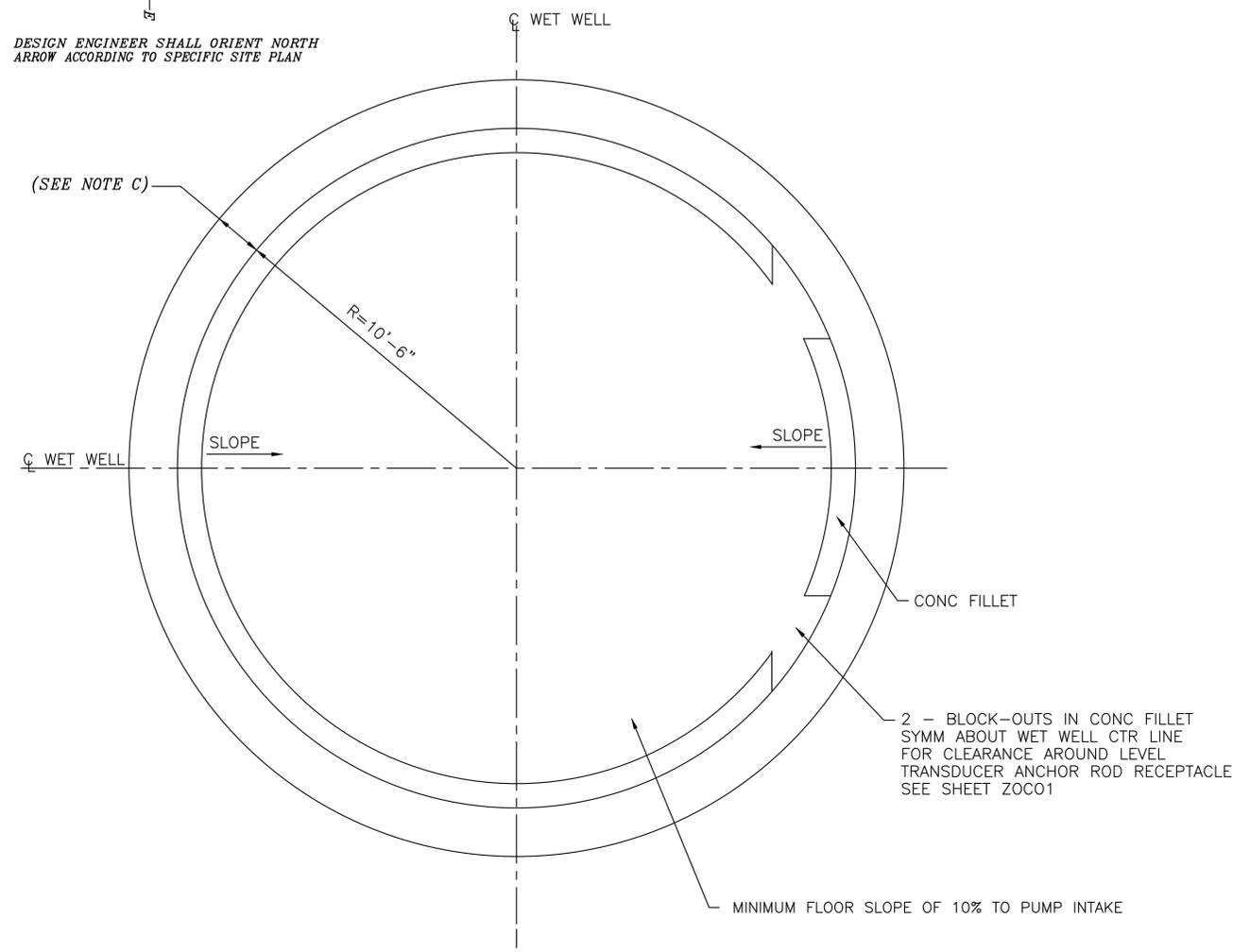
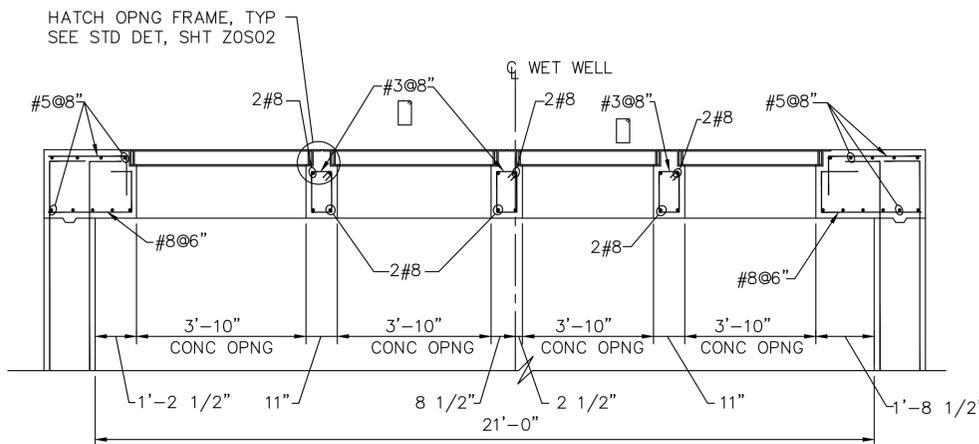
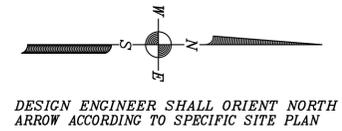
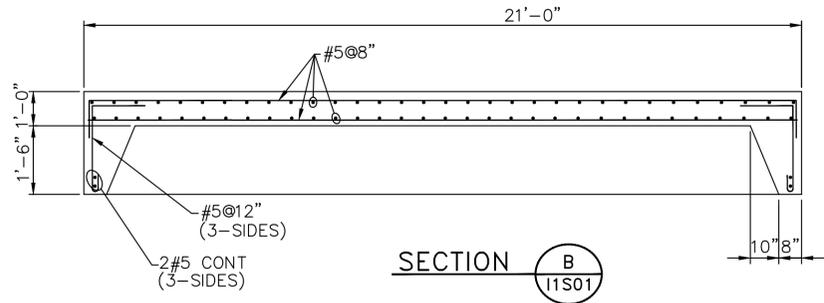
PLAN VIEW @ GRADE

REV. NO.	DESCRIPTION	APP'D	DATE

CADD DWG. FILE NO. : I2C01.DWG

COHSTD.BDR 0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS DESIGN ENGINEER TO UPDATE BAR SCALE TO REFLECT ACTUAL SCALE ON THE DRAWING.



NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. DESIGN ENGINEER TO VERIFY SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.

C. DIMENSIONS AND REINFORCING NOT PROVIDED ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER APPLICABLE SITE REQUIREMENTS.

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F. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

G. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

- NOTES:**
- FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET ZOS01.
 - CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
 - DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
 - SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
 - WET WELL TO BE LINED WITH CONCRETE PROTECTIVE LINER PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. LINER SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

STRUCTURAL
 4 PUMPS @ 500 - 2500 GPM PER PUMP
 ALTERNATE HIGH PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
 DESIGN GUIDELINE DRAWINGS
 FOR SUBMERSIBLE LIFT STATIONS

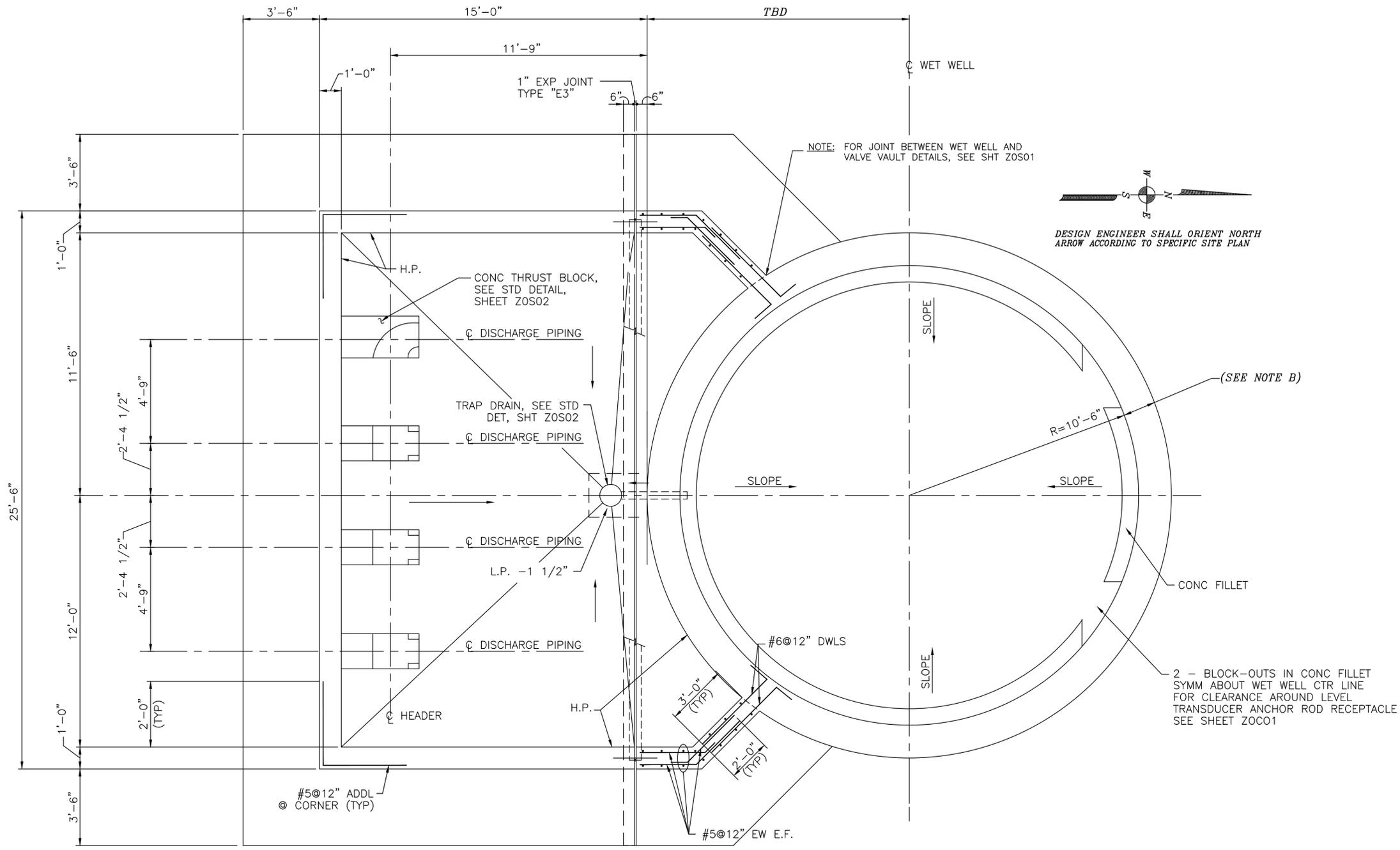
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"
 DESIGNED BY:
 SUBMITTED: DRAWN BY:
 DATE: NOVEMBER, 1996 SHEET NO. OF SHEETS
 SURVEY BY: DWG. NO. I1S03
 FIELD BOOK NO.

CADD DWG. FILE NO. : I1S03.DWG



NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

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- NOTES:**
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 - SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
 - WET WELL TO BE LINED WITH CONCRETE PROTECTIVE LINER PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. LINER SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

STRUCTURAL
 4 PUMPS @ 500 - 2500 GPM PER PUMP
 PREFERRED CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
 DESIGN GUIDELINE DRAWINGS
 FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

PLAN VIEW @ VAULT FLOOR

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"
 DESIGNED BY:
 DRAWN BY:
 DATE: NOVEMBER, 1996
 SHEET NO. OF SHEETS
 SURVEY BY:
 DWG. NO. 12S02
 FIELD BOOK NO.

CADD DWG. FILE NO. : 12S02.DWG

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. DESIGN ENGINEER TO VERIFY SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- C. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY.
- D. DIMENSIONS AND VERIFYING NOT PROVIDED ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER APPLICABLE SITE REQUIREMENTS.
- E. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE HOUSTON DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.
- I. THE DESIGN ENGINEER SHALL ENSURE GUARDRAIL AND CATWALK MEET THE REQUIREMENTS FOR "AREAS NOT OPEN TO PUBLIC" AS PROVIDED BY THE U.S. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) AND LATEST COH CODE ENFORCEMENT APPROVED VERSION OF THE INTERNATIONAL BUILDING CODE (IBC).
- J. THE DESIGN ENGINEER SHALL PROVIDE GUARDRAILS FOR ANY WALKING SURFACES WITH A POTENTIAL FALL DISTANCE EQUAL TO OR GREATER THAN 30 INCHES.

NOTES:

- 1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET Z0S01.
- 2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- 3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
- 4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- 5. WET WELL TO BE LINED WITH CONCRETE PROTECTIVE LINER PER PROJECT SPECIFICATIONS. CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. LINER SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

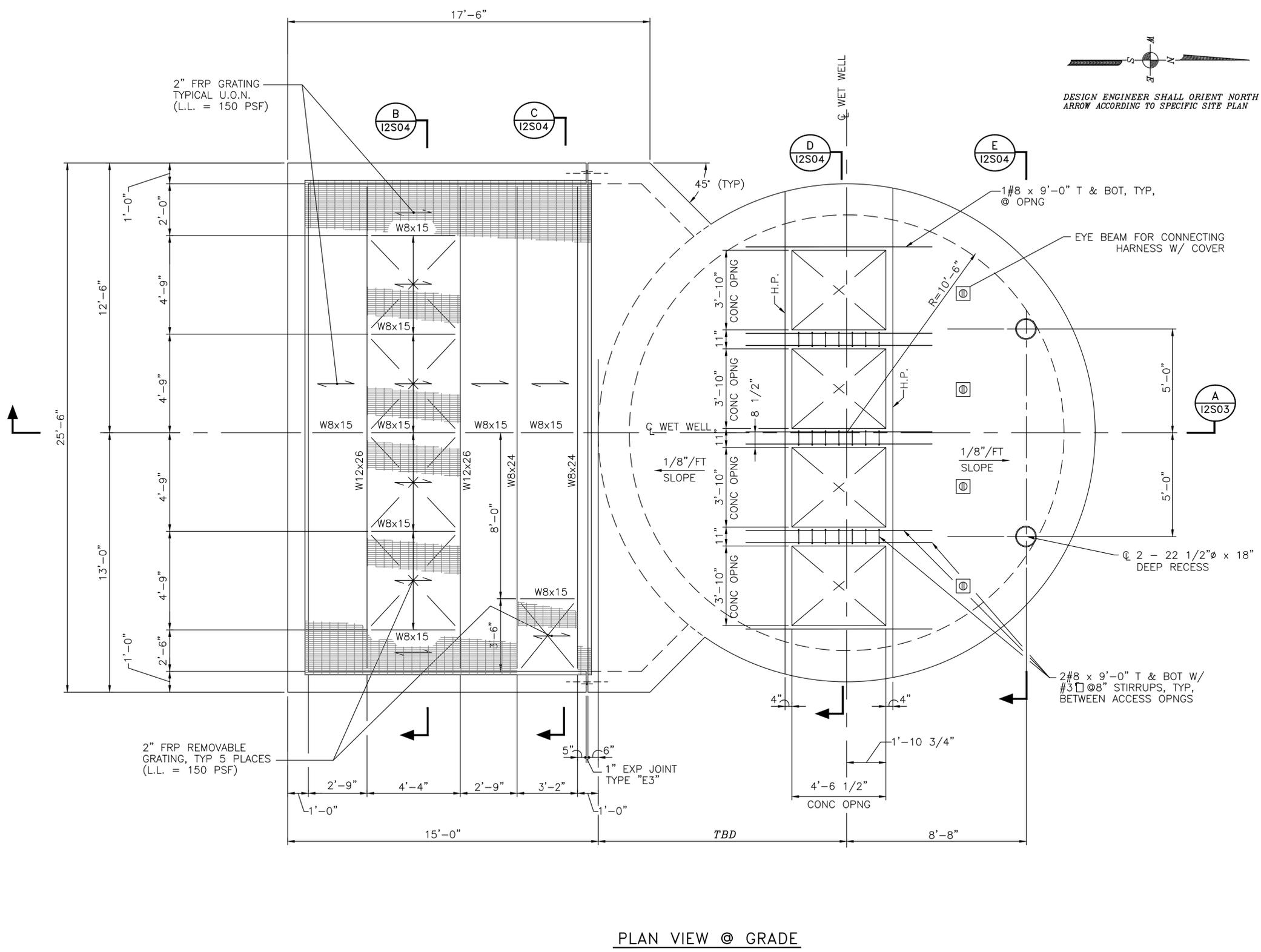
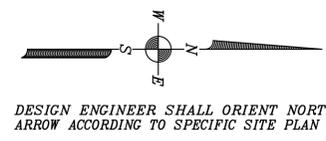
STRUCTURAL
4 PUMPS @ 500 - 2500 GPM PER PUMP
PREFERRED CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH
STANDARD TITLE BLOCK ON ALL
DRAWINGS, SEE STANDARD TITLE
BLOCK DETAIL ON SHEET ZOC0X

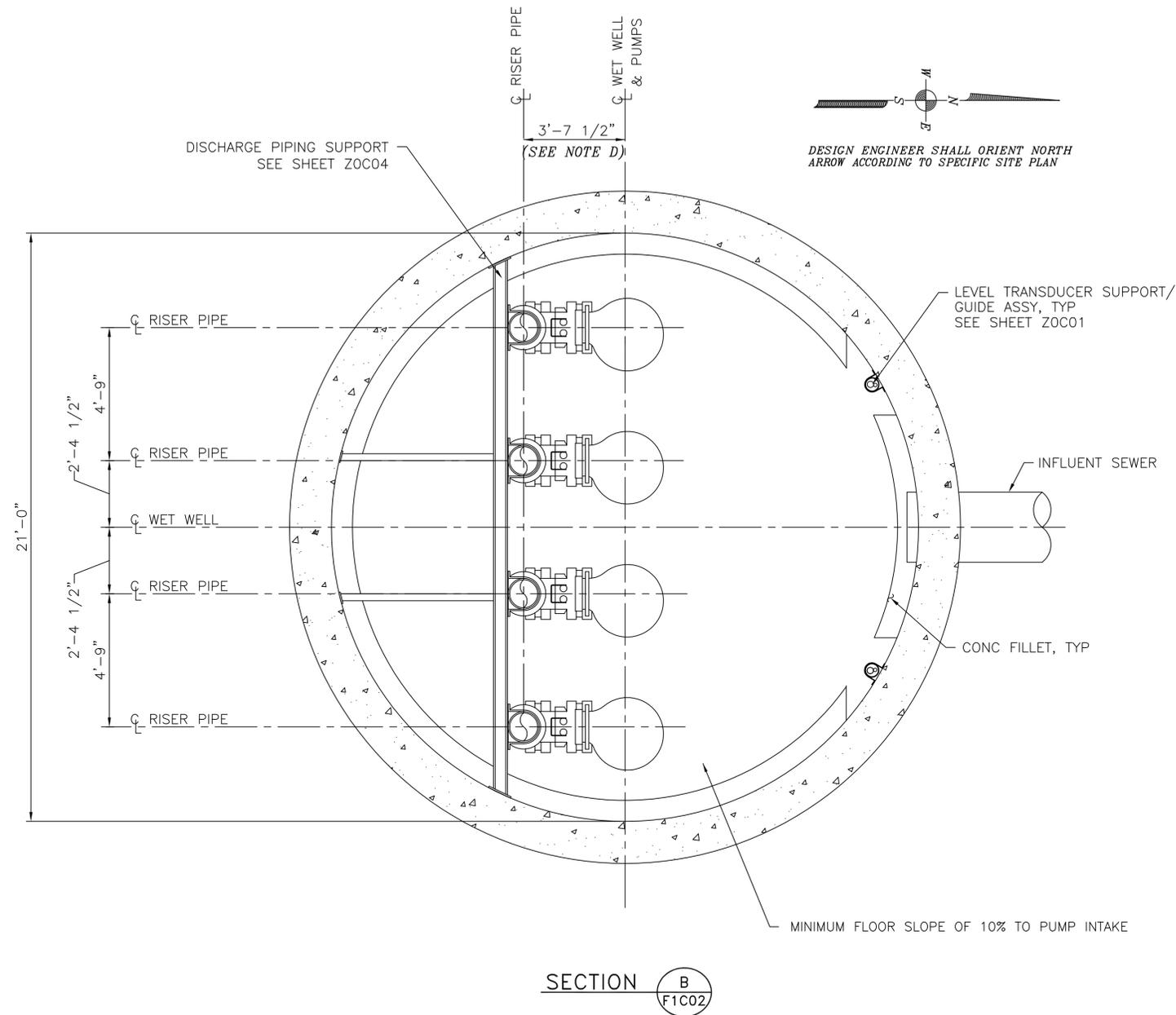


PLAN VIEW @ GRADE

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE: NOVEMBER, 1996	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. I2S01
FIELD BOOK NO.	

CADD DWG. FILE NO. : I2S01.DWG



DESIGN ENGINEER SHALL ORIENT NORTH
ARROW ACCORDING TO SPECIFIC SITE PLAN

NOTES TO DESIGN ENGINEER:

- A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.
- B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).
- C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP, VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.
- D. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY.
- E. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
- G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
- H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

- 1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- 2. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.

BASE SECTION
4 PUMPS @ 500 - 2500 GPM PER PUMP
ALTERNATE HIGH PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

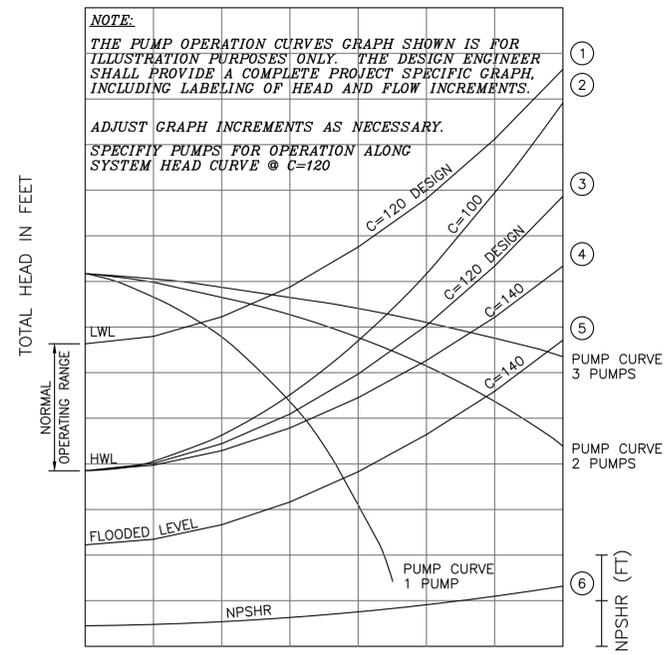
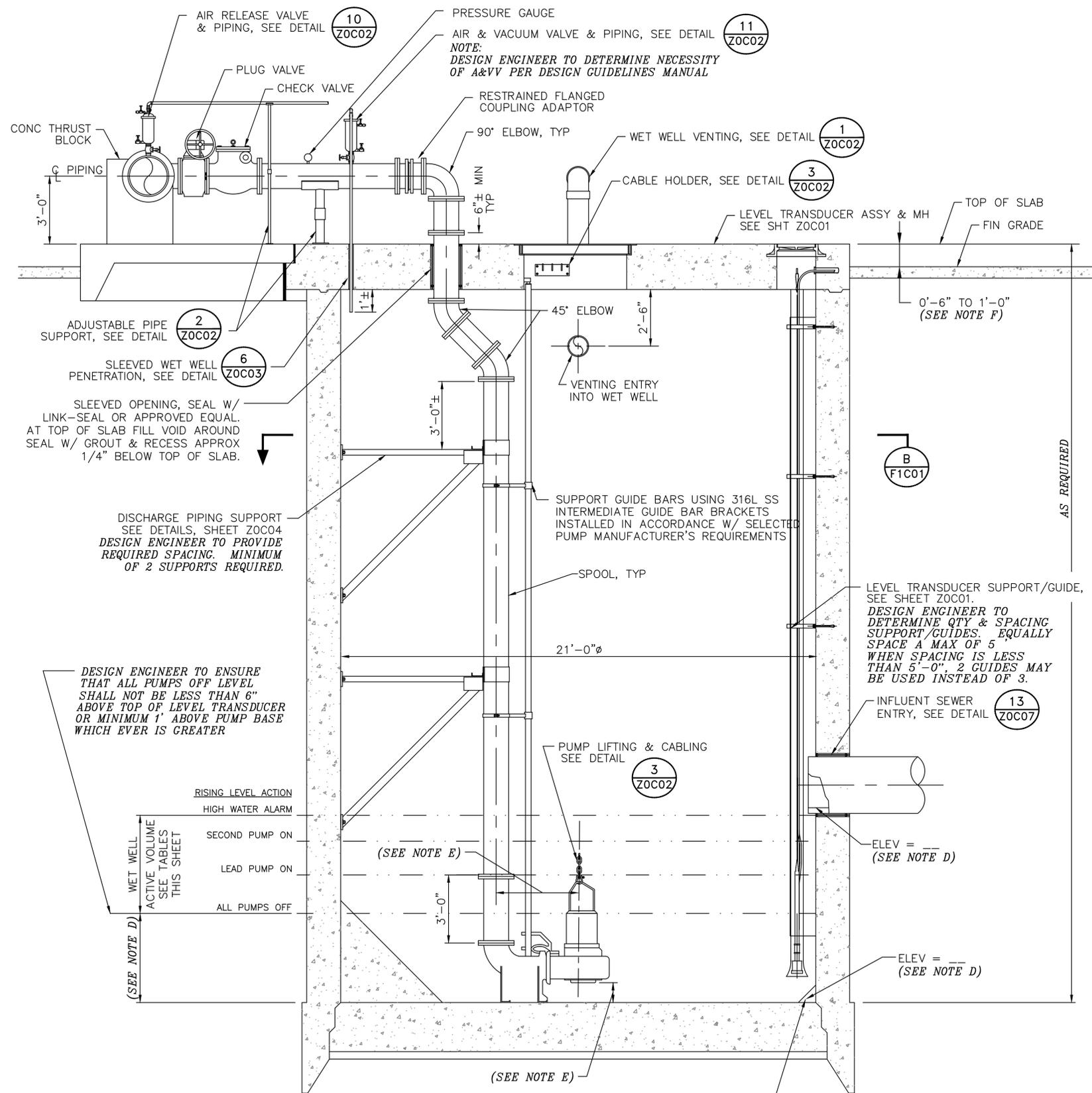
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH
STANDARD TITLE BLOCK ON ALL
DRAWINGS, SEE STANDARD TITLE
BLOCK DETAIL ON SHEET ZOC0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0" DESIGNED BY:
SUBMITTED: DRAWN BY:
DATE: NOVEMBER, 1996 SHEET NO. OF SHEETS
SURVEY BY: DWG. NO. I1C03
FIELD BOOK NO.

CADD DWG. FILE NO. : I1C03.DWG



PUMP OPERATION CURVES

- PUMP CURVE NOTES:**
1. LOW NORMAL OPERATING LEVEL C=120 - DESIGN.
 2. HIGH NORMAL OPERATING LEVEL C=100 - INFORMATION ONLY (TNRC)
 3. HIGH NORMAL OPERATING LEVEL C=120 - DESIGN
 4. HIGH NORMAL OPERATING LEVEL C=140 - INFORMATION ONLY
 5. EMERGENCY FLOODED OPERATING LEVEL C=140 - MAXIMUM DISCHARGE
 6. NET POSITIVE SUCTION HEAD REQUIRED (NPSHR) BASED ON NORMAL OPERATING WATER LEVELS
 7. PUMP CURVES ARE MODIFIED FOR STATION LOSSES.

PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
MOTOR DATA NOMINAL SIZE (HP) MAX SPEED (RPM)				
SOLIDS PASSAGE MIN SPHERE (IN)				
CAPACITY (GPM) DESIGN RUNOUT				
DISCHARGE HEAD (FT) DESIGN RUNOUT SHUT OFF				
EFFICIENCY (%) DESIGN				
NPSHR (FT) DESIGN RUNOUT				
PUMP CYCLE TIME				

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
	PUMPS OFF LEVEL - NO ACTION	ALL PUMPS ARE OFF
	LEAD PUMP TURNS ON	LEAD PUMP ON
	SECOND PUMP TURNS ON	LEAD & SECOND PUMPS ON
	THIRD PUMP TURNS ON	LEAD, SECOND & THIRD PUMPS ON
	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
	HIGH WATER LEVEL ALARM OFF	LEAD, SECOND & THIRD PUMPS ON
	LEAD PUMP TURNS OFF	SECOND & THIRD PUMPS ON
	SECOND PUMP TURNS OFF	THIRD PUMP ON
	THIRD PUMP TURNS OFF	ALL PUMPS STOPPED - STANDBY PUMP SWITCHES TO LEAD PUMP

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS. IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO SPECIFIC SITE REQUIREMENTS.

B. THIS DESIGN IS BASED UPON THE LARGEST CAPACITY PUMP FOR THIS STANDARD (RANGE: 800 - 3499 GPM PER PUMP).

C. LIFT STATION DESIGN IS BASED UPON 10"-20" NOMINAL PUMP, VALVES AND PIPING AS THE SIZES RECOMMENDED FOR THIS STANDARD STATION. THE DESIGN WILL ACCOMMODATE VALVES AND PIPING IF PROJECT SPECIFIC CONDITIONS REQUIRE.

D. ELEVATIONS AND INFORMATION INDICATED ARE DETERMINED FOR APPLICABLE SITE REQUIREMENTS.

E. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. DESIGN ENGINEER SHALL VERIFY DESIGN ENGINEER SHALL PROVIDE RAISED PUMP BASE IF REQUIRED.

F. WHERE FLOOD PLAIN CONDITIONS REQUIRE THE TOP SLAB TO BE GREATER THAN 1'-0" ABOVE FINISHED GRADE, DESIGN ENGINEER SHALL PROVIDE CONCRETE STAIRS.

G. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

H. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

I. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

J. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
2. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
3. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
4. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
5. ALL PIPING IN THE WET WELL SHALL BE FLANGED. NO FLANGED COUPLING ADAPTORS, OR VICTALIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.

ELEVATION SECTION
4 PUMPS @ 500 - 2500 GPM PER PUMP
ALTERNATE HIGH PROFILE CONFIGURATION

PROJECT NO. R-0267-XX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

SCALE: XX" = 1'-0" DESIGNED BY:
SUBMITTED: DRAWN BY:
DATE: DECEMBER, 1996 SHEET NO. OF SHEETS
SURVEY BY: DWG. NO. 11C02
FIELD BOOK NO.

SECTION A
11C01
ALL WET WELL FILLETS NOT SHOWN FOR CLARITY

PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER. SEE STRUCTURAL DRAWINGS & SHEET ZOC01.

DESIGN ENGINEER TO ENSURE THAT ALL PUMPS OFF LEVEL SHALL NOT BE LESS THAN 6" ABOVE TOP OF LEVEL TRANSDUCER OR MINIMUM 1' ABOVE PUMP BASE WHICH EVER IS GREATER

WET WELL ACTIVE VOLUME SEE TABLES THIS SHEET

RISING LEVEL ACTION
HIGH WATER ALARM
SECOND PUMP ON
LEAD PUMP ON
ALL PUMPS OFF

CADD DWG. FILE NO.: 11C02.DWG