



**REVIEW BY FORT BEND COUNTY
COMMISSIONERS COURT**

120
**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytexas.gov

☒ **Right of Way Permit**
☐ **Commercial Driveway Permit**
Permit No: 2017-12747

Applicant: Gonzalez Construction Enterprise, Inc.

Job Location Site: 26736 1/2 FM 1093, Katy, TX 77494

Bond No. **Date of Bond:** 7/27/2015 **Amount:** \$50,000.00

The above applicant came to make use of certain Fort Bend County property subject to, "The Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas, of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Chapter 181, Vernon's Texas Statutes and Codes Annotated.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
 - a. 48 hours in advance of construction start up, and
 - b. When construction is completed and ready for final inspection, submit notification to Permit Administrator thru MyGovernmentOnline.org portal.
3. This permit expires one (1) year from date of permit if construction has not commenced.

On this 4th day of April, 2017, Upon Motion of Commissioner Meyer, seconded by Commissioner Morales, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Signature

Presented to Commissioners Court and approved.

By: Charles O. Ay
for County Engineer

Date Recorded 4-06-17 Comm. Court No. 120

N/A
By: _____
Drainage District Engineer/Manager

Clerk of Commissioners Court

By: Ronda Wilho
Deputy



**PERMIT APPLICATION REVIEW FORM FOR
CABLE, CONDUIT, AND POLE LINE ACTIVITY
IN FORT BEND COUNTY**

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

- ☒ **Right of Way Permit**
☐ **Commercial Driveway Permit**

Permit No: 2017-12747

The following "Notice of Proposed Cable, Conduit, and/or Pole Line activity in Fort Bend County" and accompanying attachments have been reviewed and the notice conforms to appropriate regulations set by Commissioner's Court of Fort Bend County, Texas.

(1) COMPLETE APPLICATION FORM:

- ☒ a. Name of road, street, and/or drainage ditch affected.
☒ b. Vicinity map showing course of directions
☒ c. Plans and specifications

(2) BOND:

- ☐ County Attorney, approval when applicable.
- ☒ Perpetual bond currently posted. Bond No: Amount: \$50,000.00
- ☐ Performance bond submitted. Bond No: Amount:
- ☐ Cashier's Check Check No: Amount:

(3) DRAINAGE DISTRICT APPROVAL (WHEN APPLICABLE):

Drainage District Approval

Date

We have reviewed this project and agree it meets minimum requirements.

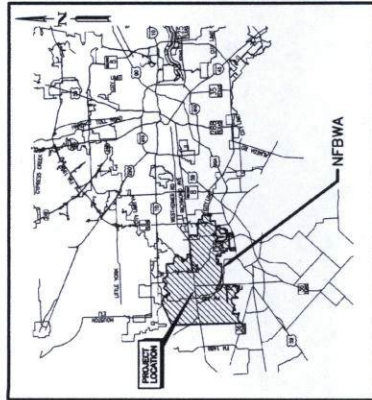
Charles O. Ay

Permit Administrator

3/28/17

Date

NORTH FORT BEND WATER AUTHORITY FORT BEND COUNTY IMPROVEMENT DISTRICT NO. 24 PROPOSED 12" CONNECTION LINE FROM SEGMENT 13A TO WATER PLANT



LOCATION MAP



VICINITY MAP
KEY MAP NO. 324 E
ZIP CODE: 77494



* NO KNOWN PROPOSED WASTEWATER WORK IS SHOWN ON THIS PLAN SET, NOR INCLUDED IN ITS WORK SCOPE.
** NO KNOWN PROPOSED STORM WATER WORK IS SHOWN ON THIS PLAN SET, NOR INCLUDED IN ITS WORK SCOPE.

ALL FUTURE ACCESS AND MAINTENANCE
REMAIN THE RESPONSIBILITY OF THE NFBWA.

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
DIAL 811

DIRECTORS

DAVID SPELL
ROBERT DARGEN
BRUCE FAY
MELONY F. GAY, P.E.
ROBERT L. PATTON
PETER HOUGHTON
PAT HEBERT

PRECINCT

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Contractor shall notify the City of Houston Department of Public Works and Engineering at least 48 hours before starting work on this project.
No. 832-384-8084 48 hours before starting work on this project.

FIRM
Flood Insurance Rate Map
Panel #4415/CD00L
LOCATED IN UNSHADED ZONE "X"

I, MATTHEW L. FROELICH P.E., certify that this project is entirely located outside the area with 100-year flood frequency.

ISSUE DATE: JANUARY 2017

PLAN NO: 18087114
LOG NO: 18-1084

DATE: AUGUST 31, 2016

REF. NO. C1

SHEET 1 OF 48

FORT BEND COUNTY ENGINEER

ENGINEER: *Richard A. Stoltz, P.E.*

DATE: 2/10/17

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN ONE (1) YEAR FROM DATE OF APPROVAL.

APPROVED: *Matthew L. Froelich*
DEVELOPMENT COORDINATOR

DATE: 2/10/17

REV. NO.	DATE	DESCRIPTION	BY	DATE
1				
2				
3				



SUBMITTED BY: BGE, INC.

FB NO:

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 2/10/17

1-12-17

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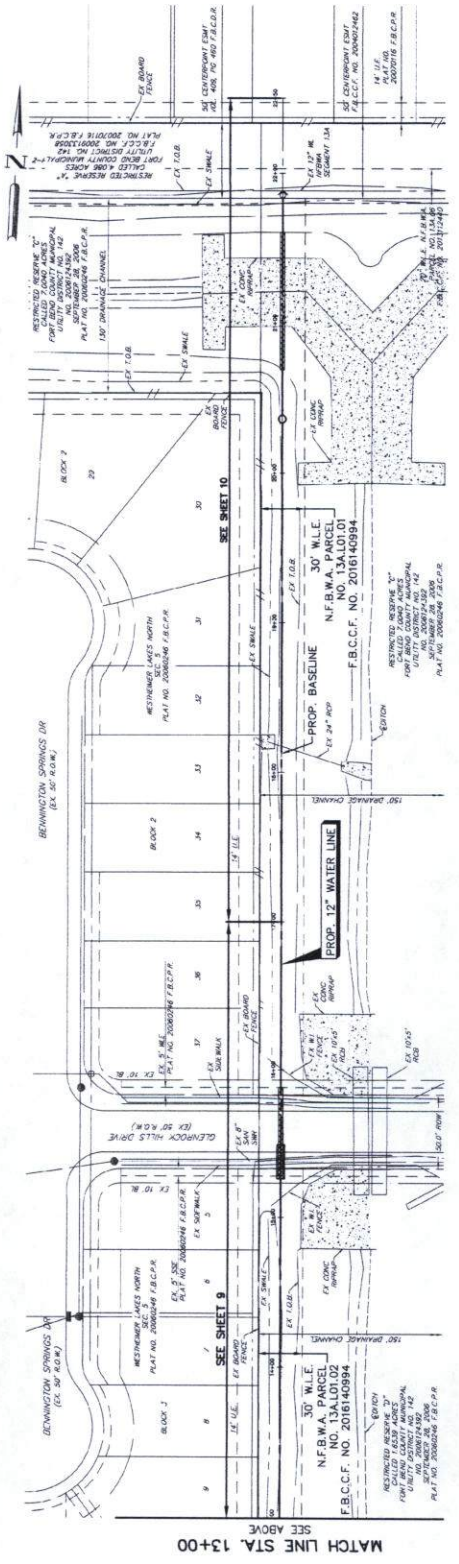
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NOTE:

1. ALL ROAD CROSSINGS AND BORES WITHIN PUBLIC ROW MUST BE PERMITTED THROUGH FORT BEND COUNTY ENGINEERING PERMIT DEPT. CONTACT JOHNNY ORTEGA AT 281-633-7501.

FORT BEND COUNTY ENGINEERING DEPARTMENT
AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED: Masi Vot
DEVELOPMENT COORDINATOR

DATE: 2/10/17

NO.	DATE	REVISION	APPROV.
4			
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FBCID NO. 24 CONNECTION LINE

OVERALL LAYOUT



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES		
CITY OF HOUSTON	WATER	TRAFFIC AND TRANSPORTATION
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	 1/12/17 WASHINGTON	STORM WATER QUALITY 1/12/17

DATE	10/17/1987
FACILITY	
SURNAME	Integre. Care
STREET & HOUSE	117217

FILE NO:		FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE		

1"=40'

SHEET 4 OF 48
No:

57404

MADE IN U.S.A.



1. ALL ROAD CROSSINGS AND BORES WITHIN PUBLIC ROW MUST BE PERMITTED THROUGH FORT BEND COUNTY ENGINEERING PERMIT DEPT. CONTACT JOHNNY ORTEGA AT 281-633-7501.

FORT BEND COUNTY ENGINEERING DEPARTMENT
AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED: [Signature] COORDINATOR
DEVELOPMENT

DATE: 2/10/17

4			
3			
2			
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B

Matthew L. Froehlich
Professional Engineer
No. 100213
State of Oregon
Exp. 12/17

Blowen & Gay Engineers, Inc.
10777 Neumaine, Suite 600
Hillsboro, OR 97124
Tel: 503-538-8100 • www.bloweng.com
bloweng@bloweng.com

F=1046	FBCID NO. 24 CONNECTION LINE
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SURVEY CONTROL MAP



MAKE CITY SIGNATURE VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING WATER AND SEWER DIVISION	STORM WATER QUALITY FACILITY DATE SIGNED SIGNED & WITNESSED
RECEIVED 01/12/17 11-12-17 11-12-17	11/21/17

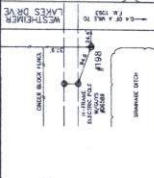
FILE NO:	FOR CITY OF HOUSTON USE ONLY
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57404

DRAWING SCALE

SHEET 5 OF 48

NORTH FORT BAND WATER AUTHORITY		SEGMENT 13 CONTROL POINT 198 - SHEET 1	
CONTROL POINT NUMBER 99 SET MAP PAGE 354-E	GRID COORDINATES X: 2,891,300.00 Y: 13,890,000.00	VERTICAL ADJUST. NANO-88 VERTICAL ADJUSTMENT 2002 ADL (SEE VERTICAL NOTES)	 American & Clay Engineers, Inc. 6077 West 10th Avenue, Suite 100 Fort Collins, CO 80504 Tel: 970-226-1100 Fax: 970-226-1101
HORIZONTAL DATUM: NAD83 HORIZONTAL ADJUSTMENT: (COORD 88 - EPOCH 2002)	SURFACE COORDINATES X: 2,891,300.00 Y: 13,890,000.00	POINT ESTABLISHED BY TIK POINTS DIRECTLY TIED: 22 & HOSDS-66 DECEMBER, 2011	
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.000-3		
STAMPING: "NORTH FORT BAND WATER AUTHORITY 199"	ELEVATION 3,010 FT.		
GEOREF. COORDINATES LONGITUDE: W 92° 50' 28.2895" LATITUDE: N 39° 00' 38.9408" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BAND MARKER SET IN A CENTERPOINT CORRIDOR 4,1500 FEET WEST OF WESTMEHR LAKES DRIVE.		VERTICAL NOTES: THIS SURVEY IS BASED ON THE 1988 ELEVATION FOR THE NORTH FORT 2250 CORP. AND ADJUSTED BY NGS IN 2002 USING THE 1988 DATUM. THIS SURVEY WAS CONDUCTED AS A 40' BASELINE, EPOCH DATE 2002.	
			

NORTH FORT BEND		SCHEMATIC 13 CONTROL POINT 100 - BUREAU	
CONTROL POINT NUMBER 198	GRID COORDINATES	VERTICAL DATUM: NAVD-88	
KEY MAP PAGE: 524-E	Y:13,816,375.65 X:2,272,846.91	VERTICAL ADJUSTMENT: 2002 ADJ (SEE VERTICAL NOTES)	
HORIZONTAL DATUM: NAD83	SURFACE COORDINATES Y:13,816,171.78 X:2,272,828.38	POINT ESTABLISHED BY RIK 27 AND HIC505-66 DECEMBER, 2001	
HORIZONTAL ADJUSTMENT (CODE 98 - EPOCH 2002)	SCALE FACTOR: 1.00013		
MARKER: ALUMINUM CAP	ELEVATION 125.42 FT.	VERTICAL NOTES: THIS SURVEY IS A RECONSTRUCTION OF THE CLAVATION FOR THE NORTH-EAST 22ND CORPS AREA ADJUSTED BY NGS IN 2002 AND USED AS THE ADDRESS FOR THE DATE 2002.	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 198"	GEODETIC COORDINATES LATITUDE: N 29° 56' 41.8533" LONGITUDE: W 98° 04' 31.1533" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY 198 SET IN A 1 1/2" DIAMETER JAMES DUFF, LOCATED 0.4' OF A MIF NORTH OF P.M. 1055.		
			

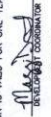




NOTES:

1. NFWA WATER LINE MARKERS TO BE INSTALLED OVER ALL OF WATER LINE AS SHOWN. EXISTING WATER LINE TO BE REMOVED AND REPLACED WITH NEW 12" WATER LINE. COORDINATED BY AUTHORITY'S ENGINEER IN THE FIELD.
2. REMOVE AND REPLACE EXISTING FENCE AS NECESSARY.
3. SUBMIT LOCATIONS OF BORE PITS PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL RESTORE OR REPAIR ANY DAMAGE TO THE EXISTING DRAINAGE CHANNEL DUE TO CONSTRUCTION. NO SEPARATE PAY.
5. CENTER 1'-20" JOINT C-900 PVC WATER LINE EXISTING SANITARY SEWER, 24" MIN. CLEARANCE.
6. EXISTING BACKSLOPE SWALE TO BE RESTORED TO ORIGINAL OR BETTER CONDITION AFTER CONSTRUCTION. EXISTING SANITARY SEWER DISTURBED AREAS WITHIN DITCH TO BE HYDROMULCH SEED.

EXETER COUNTY ENGINEERING DEPARTMENT
AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED:  MICHAEL J. GOSS
DATE: 2/15/17

NO.	DATE	REVISION	APPROVAL
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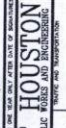
EGE
Brown & Day Engineers, Inc.
1001 W. 10th Street, Suite 100
Des Moines, IA 50319
Tel: 515.281.1100
Fax: 515.281.1101
www.brownandday.com



Michael J. Goss
Professional Engineer
State of Iowa
No. 100213
Ex. 24" ROP

PLAN AND PROFILE
BASELINE
STA. 3+25 TO 8+00





CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

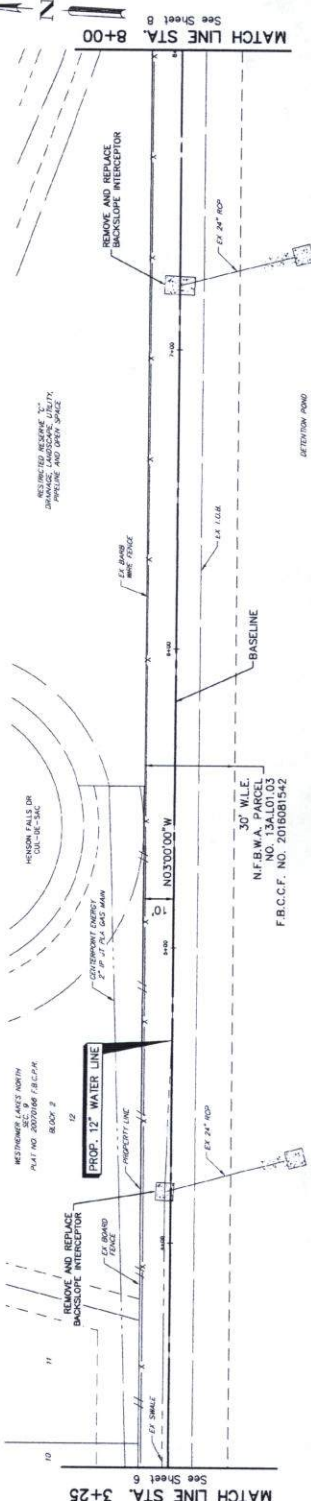
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CHECKED BY: [Signature]
APPROVED BY: [Signature]

FILE NO.

FOR CITY OF HOUSTON USE ONLY

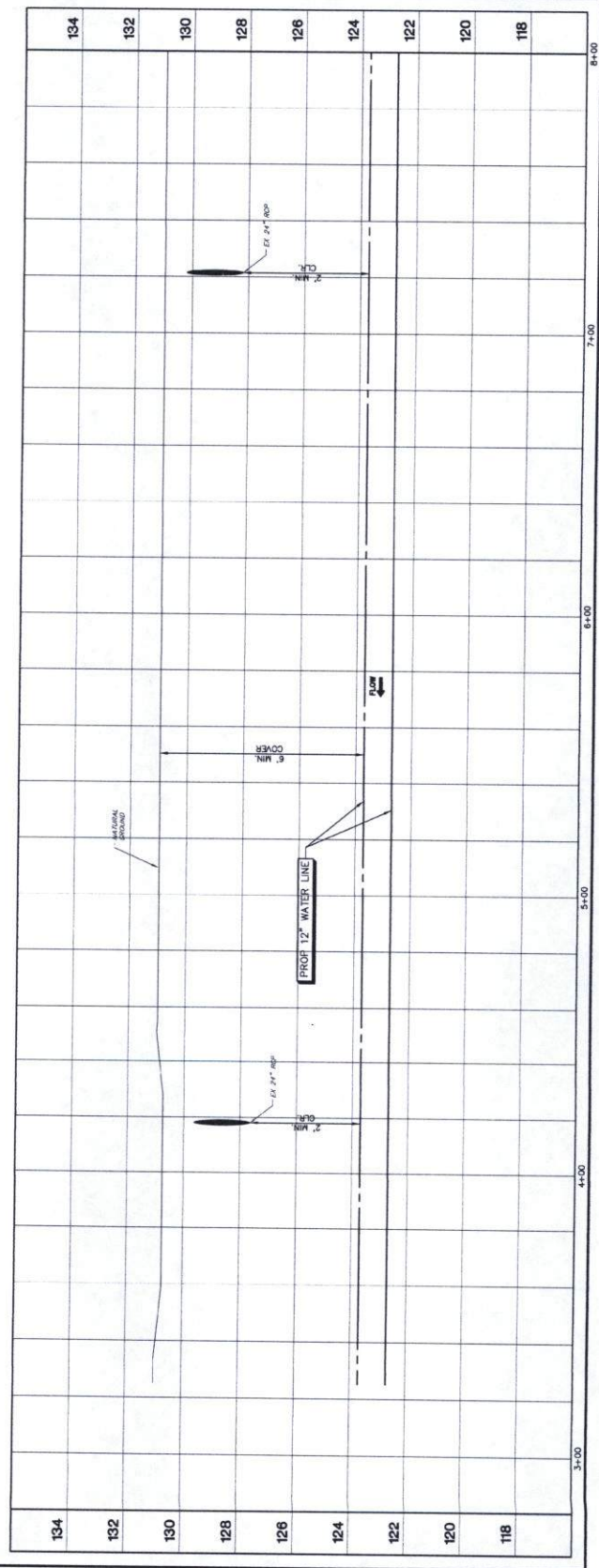
DRAWING SCALE
HORIZ : 1"=20'
VERT : 1"=2'

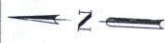
SHEET 7 OF 48



30' WIDE
NFBWA PARCEL
NO. 13A.01.03
F.B.C.C.F. NO. 2016081542

CALL 3.785 ACRES
SALE TO NFBWA, LLC
F.B.C.C.F. NO. 2016081542
DATE: 08/15/16





- NOTES:
1. UPRWA WATER LINE MARKERS TO BE INSTALLED OVER CL. OF WATER LINE AS SHOWN. FINAL LOCATIONS TO BE COORDINATED BY UPRWA FIELD ENGINEER.
 2. REPAIR OR REPLACE EX. FENCE AS NECESSARY.
 3. SUBMIT LOCATIONS OF BORE PITS PRIOR TO BEGINNING WORK.
 4. CONTRACTOR WILL RESTORE OR REPAIR ANY DAMAGE TO THE EXISTING DRAINAGE CHANNEL DUE TO CONSTRUCTION. NO SEPARATE PAY.
 5. CENTER 1'-30" JOINT C-900 PVC WATER LINE ON EXISTING SANITARY SINK, 24" MIN. DIA.
 6. EXISTING BACKSLOPE SWALE TO BE RESTORED TO ORIGINAL OR BETTER CONDITION AFTER CONSTRUCTION. EXISTING UNPAVED AREAS WITHIN DITCH TO BE HYDROLOGIC SEEDS.

OKTAVIUS COUNTY ENGINEERING DEPARTMENT
AUTOMATICALLY IS PAID FOR BY OKTAVIUS COUNTY.

APPROVED: *[Signature]*
ENGINEERING COORDINATOR

DATE: 2/10/17

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BCE
BROWN & CALDWELL ENGINEERS, INC.
10015 E. Highway 100, Suite 100
Fort Worth, Texas 76131
Tel: 817-444-4444 • Fax: 817-444-4444
www.bce-engineers.com

CITY OF HOUSTON
OFFICE OF PUBLIC WORKS
WATER AND WASTEWATER DIVISION

FILE NO. _____
DRAWING SCALE: _____
SHEET NO. 8 OF 48

PLAN AND PROFILE
BASELINE
STA. 8+00 TO 12+00

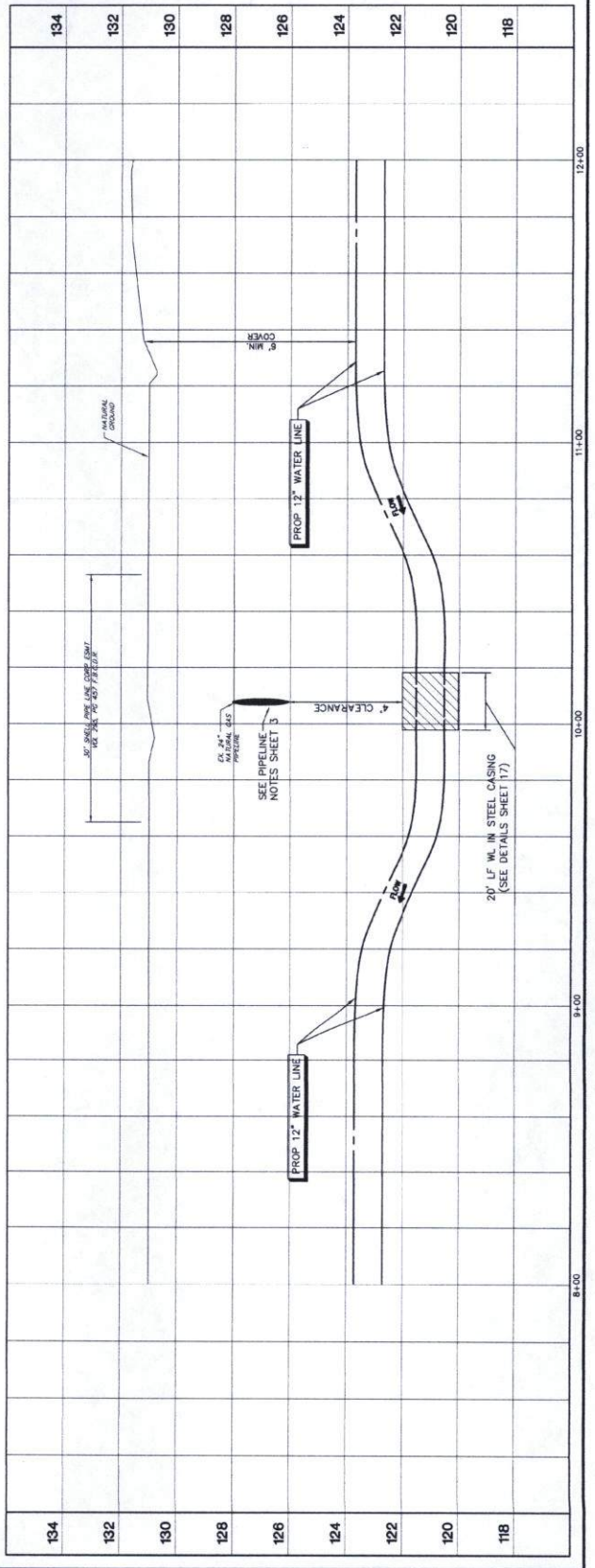
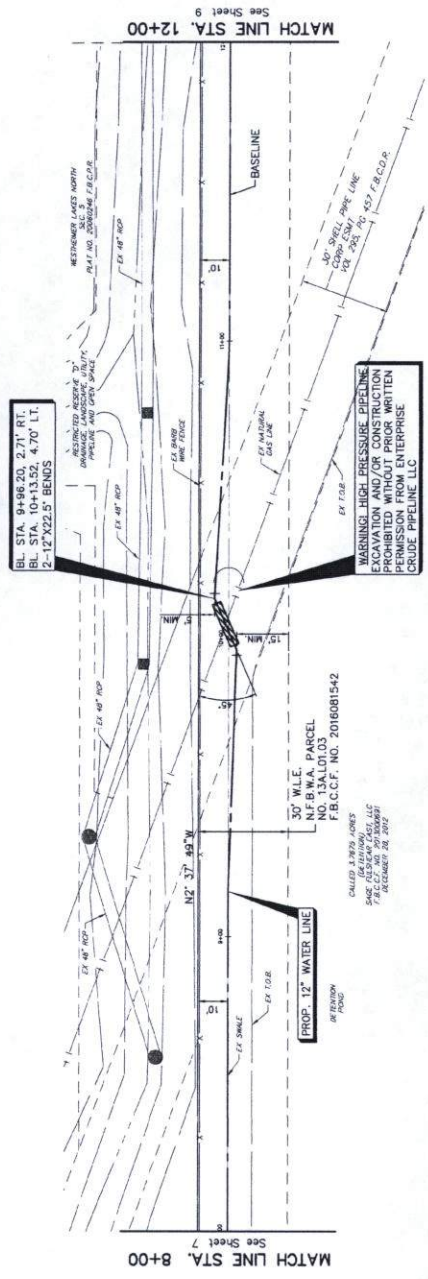


CITY OF HOUSTON
OFFICE OF PUBLIC WORKS
WATER AND WASTEWATER DIVISION

DATE: 2/10/17
BY: *[Signature]*
CHECKED: *[Signature]*
APPROVED: *[Signature]*

CITY OF HOUSTON
OFFICE OF PUBLIC WORKS
WATER AND WASTEWATER DIVISION

DATE: 2/10/17
BY: *[Signature]*
CHECKED: *[Signature]*
APPROVED: *[Signature]*





NOTES:

1. MINOR WATER LINE MARKERS TO BE INSTALLED OVER C.L. OF WATER LINE AS SHOWN. FINAL EXACT LOCATIONS TO BE DETERMINED BY SURVEYOR'S ENGINEER IN THE FIELD.
2. REMOVE AND REPLACE EX. FENCE AS NECESSARY.
3. SUBMIT LOCATIONS OF BORE PITS PRIOR TO BEGINNING WORK.
4. CONTRACTOR WILL RESTORE OR REPAIR EXISTING DRIVEWAY AND SIDEWALKS TO ORIGINAL CONDITION DUE TO CONSTRUCTION. NO SEPARATE PAY.
5. CENTER 1'-20" JOINT C-100 PVC WATER LINE PIPE ON EXISTING SANITARY SEWER, 24" DIA. CUL.
6. CONTRACTOR SHALL BE RESPONSIBLE TO BE CONDITION AFTER CONSTRUCTION OF THE DITCH TO BE HYDRAULICALLY SEED.

EAST BEND COUNTY ENGINEERING DEPARTMENT
AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR

DATE: 2/10/17

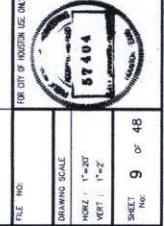
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PLAN AND PROFILE
BASELINE
STA. 12+00 TO 17+00



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
NAME OF PROJECT: *[Signature]*
DATE: 2/10/17
PROJECT: *[Signature]*
SHEET: 9 OF 48



BL. STA. 15+87.90
BEGIN 12" W/L IN STEEL CASING
BY TRENCHLESS CONSTRUCTION
(SEE DETAIL SHEET 17)

BL. STA. 15+27.00
BEGIN 12" W/L IN STEEL CASING
BY TRENCHLESS CONSTRUCTION
(SEE DETAIL SHEET 17)

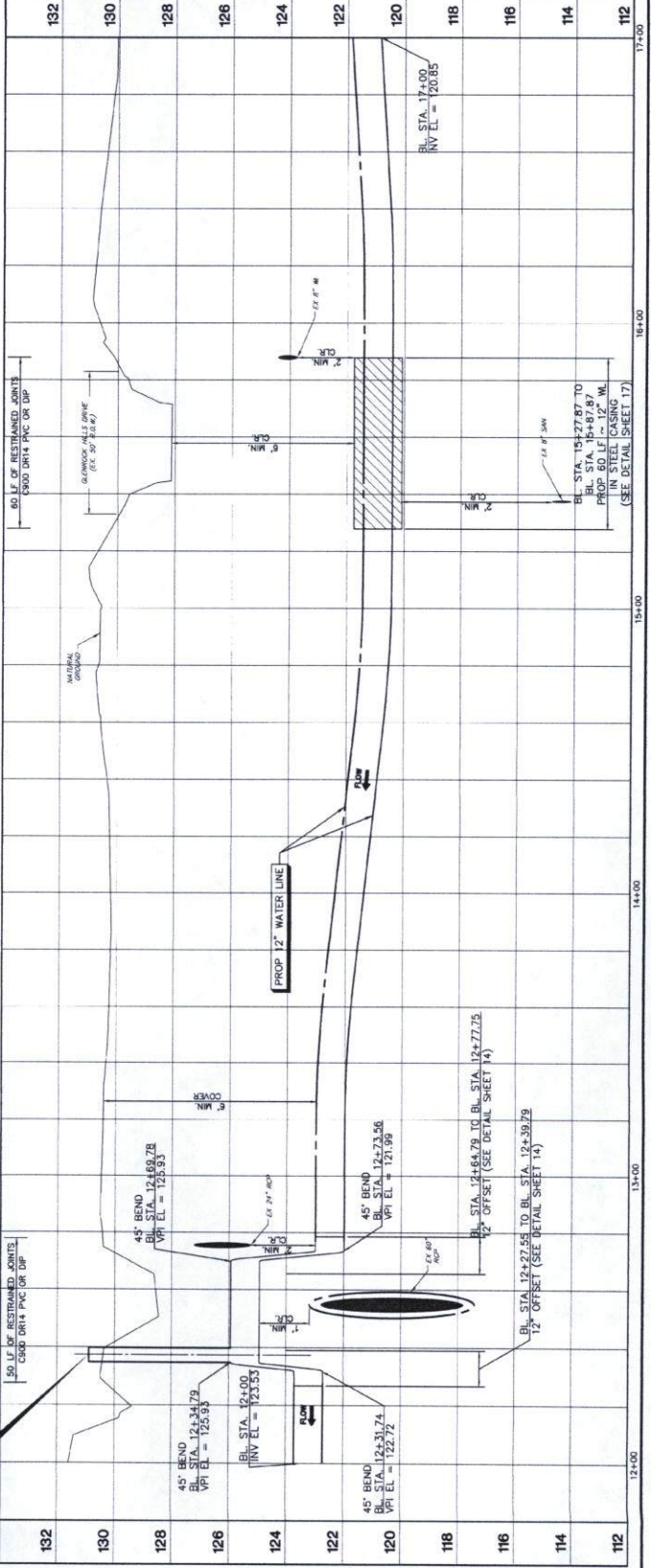
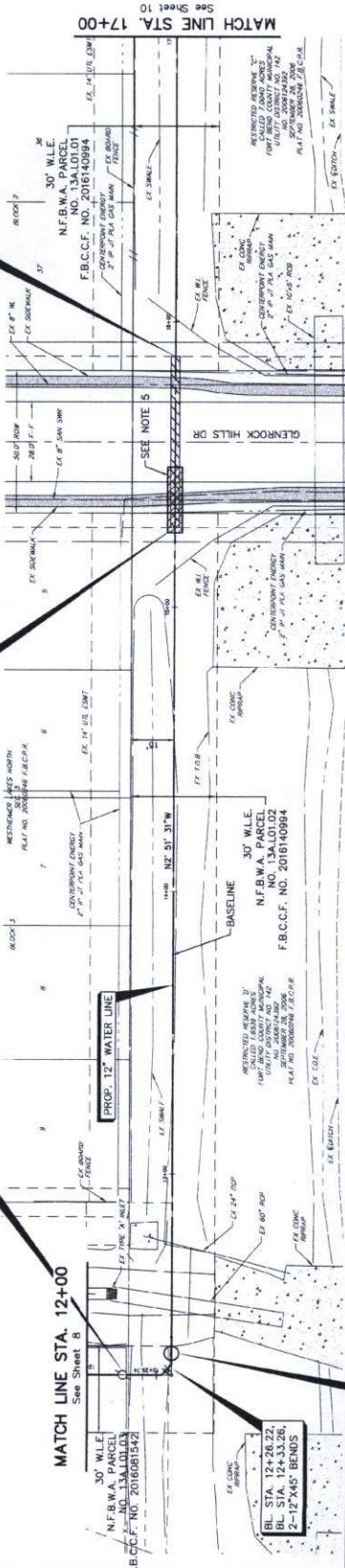
BL. STA. 12+12.74
1'-12" C.V. W/BOX
(SEE DETAIL 5, SHEET 19)

MATCH LINE STA. 12+00
See Sheet 8

30' W.L.E.
N.F.B.W.A. PARCEL
NO. 2016081542

30' W.L.E.
N.F.B.W.A. PARCEL
NO. 2016140994
F.B.C.C.F. NO. 2016140994

BL. STA. 12+37.25
1'-1" ARV AND SERVICE MH
LOCATED AT INTERSECTION BOLLARD
(SEE DETAIL 18, SHEET 16 AND
6 & 7, SHEET 19)





- LEGEND**
- INLET PROTECTION BARRIER FOR STAGE I INLETS (SEE SPEC. ITEM 4511)
 - INLET PROTECTION BARRIER FOR STAGE II INLETS (SEE SPEC. ITEM 4512)
 - HYDRO-MULCH SEEDING (SEE SPEC. ITEM 4513)
 - FILTER FABRIC FENCE (SEE SPEC. ITEM 4514)
 - REINFORCED FILTER FABRIC BARRIER (SEE SPEC. ITEM 4515)
 - STABILIZED CONSTRUCTION ACCESS (SEE SPEC. ITEM 4516)
 - CONCRETE TRUCK WASHOUT AREA
 - FILTER DAM

- EXPLANATION/NOTES:**
- AGGRAVATED DAMAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITY AND THE ADJACENT PROPERTY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITY AND THE ADJACENT PROPERTY.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITY AND THE ADJACENT PROPERTY.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITY AND THE ADJACENT PROPERTY.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITY AND THE ADJACENT PROPERTY.
 - ALL RECESSES AND AREAS BETWEEN BACK-OF-CURB AND RIGHT-OF-WAY SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING UTILITY AND THE ADJACENT PROPERTY.

FORT BEND COUNTY ENGINEERING DEPARTMENT

AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED: *[Signature]*

DATE: 2/10/17

NO.	DATE	REVISION
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STORM WATER POLLUTION PREVENTION PLAN

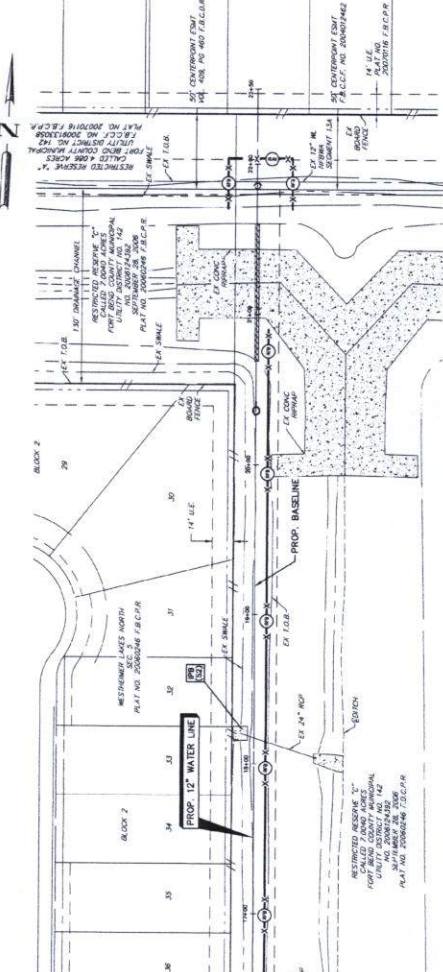
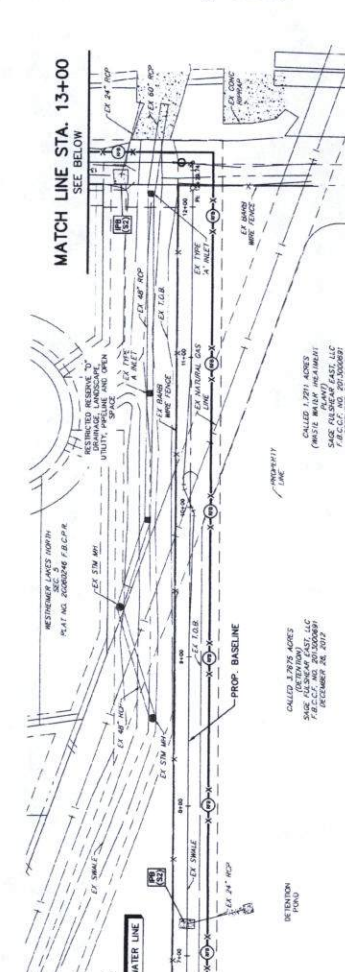
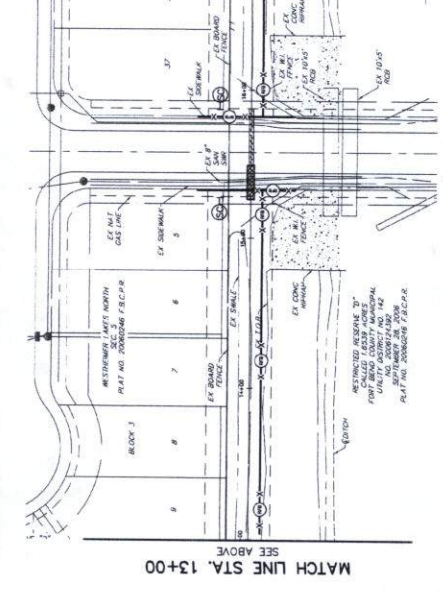
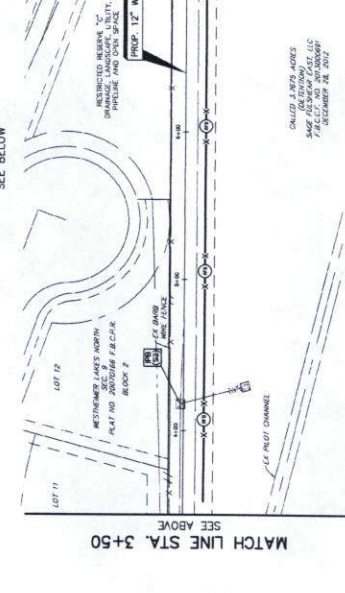
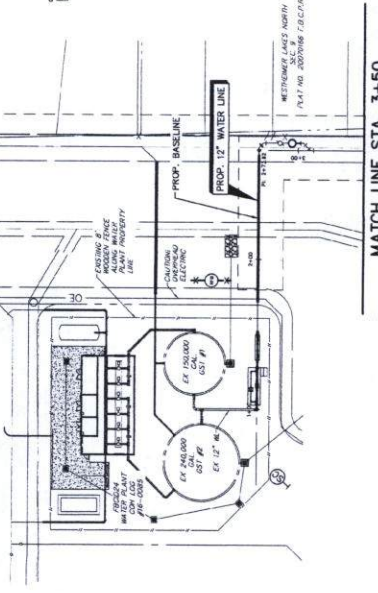


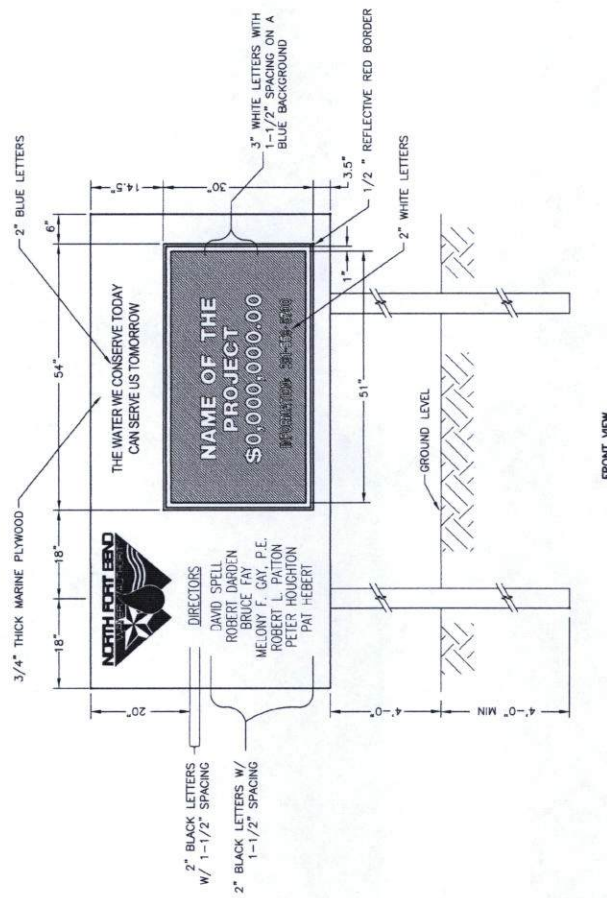
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

FILE NO.
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1"=40'

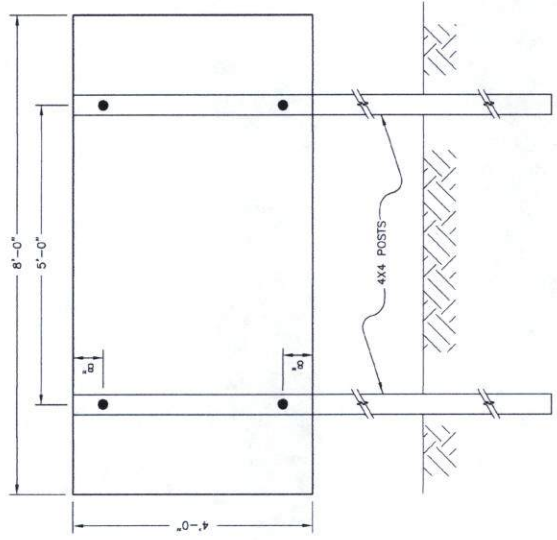


SHEET 11 OF 48





FRONT VIEW



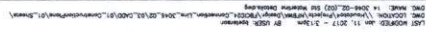
BACK VIEW

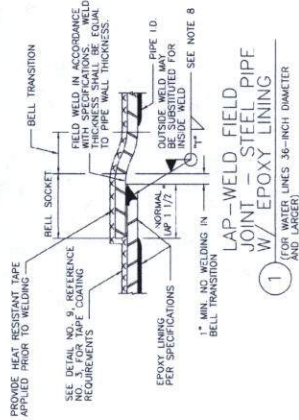
PROJECT SIGN
SCALE: 1"=1'

EAST BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 2/10/17		BCE BENDER & COMPANY, INC. 10777 Highway 290, Suite 200 Fort Worth, Texas 76133 Tel: 817-424-4477 • Fax: 817-424-4478 ECE: 100213	APPROVED: [Signature] DATE: 2/10/17
NO. DATE	REVISION	APPROVAL	
1			
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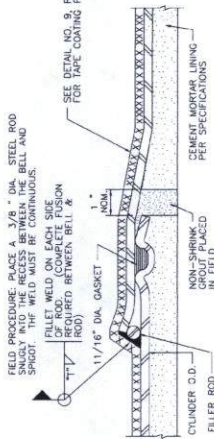
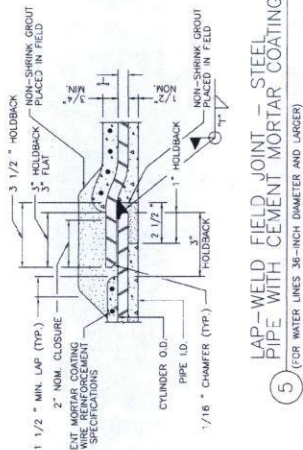
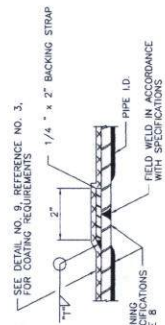
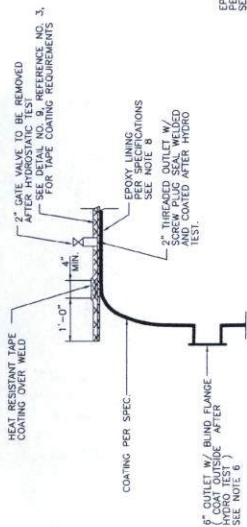
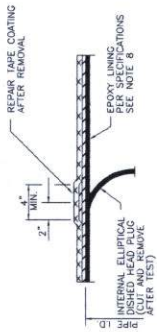
PROJECT SIGN DETAIL FBCD NO. 24 CONNECTION LINE	
NORTH FORT BEND COUNTY ENGINEER	
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS TRAFFIC AND TRANSPORTATION	
DATE: 08/01/17 DRAWN BY: [Signature] CHECKED BY: [Signature] IN CHARGE: [Signature]	TOWN WHITE QUALITY FINISHES TYPED NAME: [Signature]
FILE NO.	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	1"=1'
REF. NO.	SHEET NO.
01	13 of 48

DATE: AUGUST 31, 2010

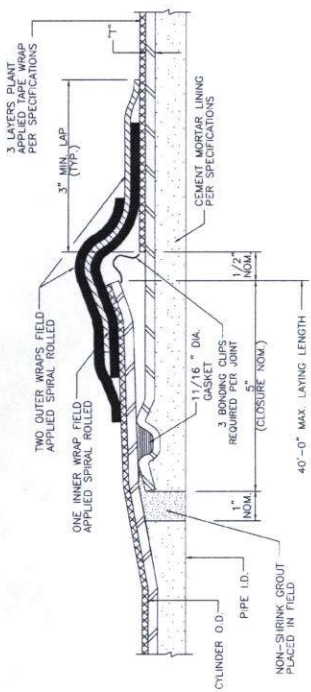




INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL
STEEL PIPE

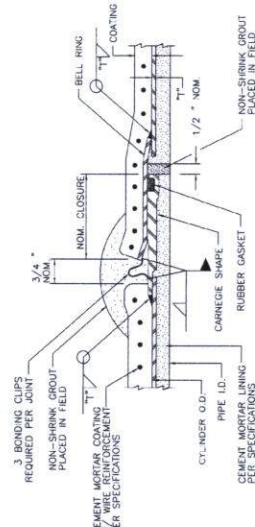


ROLLED JOINT STEEL PIPE



- NOTES:
1. STEEL PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
 2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE UNLINED PIPE.
 3. REFER TO SPECIFICATIONS FOR POLYURETHANE ALTERNATIVE TO TAPE OR CEMENT MORTAR COATING.
 4. DETAILS 1.2.3 AND 4 SHOW EPOXY LINING. CEMENT MORTAR LINING TO BE SIMILAR TO DETAILS ON THIS SHEET SHOWING CEMENT MORTAR UNLINED PIPE, AS APPROVED BY ENGINEER.
 5. DETAILS 3, 4, 7 AND 8 SHOW CEMENT MORTAR COATING. REFER TO DETAIL NO. 6, REFERENCE NO. 3, AS APPROVED BY ENGINEER.
 6. INSTALL 8 INCH FLANGED OUTLETS ON EITHER SIDE OF THE DISHED HEAD PLUG.
 7. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.
 8. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING.
 9. WHEN CEMENT MORTAR COATING IS USED FOR STEEL PIPE, FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT. WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCLOSURE PIECE ALIGNMENTS.

O-RING STEEL PIPE JOINT DETAIL
(CEMENT MORTAR UNLINED & TAPE WRAPPED)



LOCAL BOND COUNTY ENGINEERING DEPARTMENT
AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED: *[Signature]*
DATE: 2/18/17

NO. DATE REVISION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PROJECT NO. 24 CONNECTION LINE

STEEL PIPE DETAILS

NORTH RUT LEDD

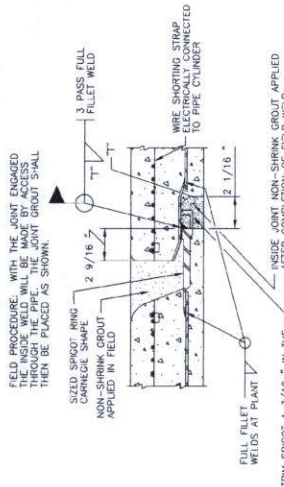
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND STREETS

57404

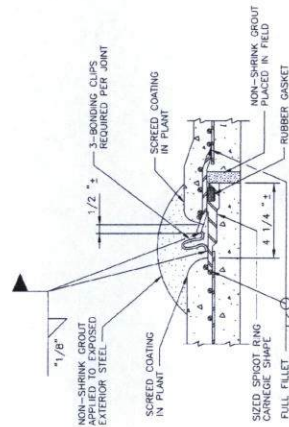
REF. NO. 03
SHEET 15 of 48
DATE: JULY 31, 2013

NOTES

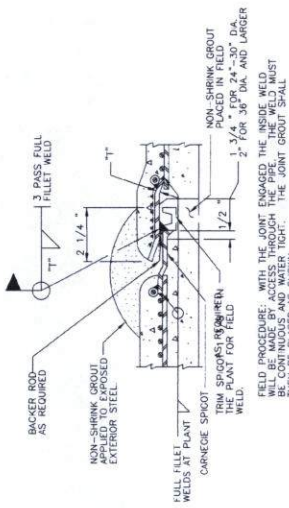
1. T = PIPE WALL THICKNESS AND SIZE OF FILET ATTACHMENT WELD.
2. P = STEEL CYLINDER PERIMETER.
3. INITIAL 6-INCH FLANGED OUTLET ON OTHER SIDE OF THE DISHD HEAD PLUG.
4. DISHD HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE AND SHALL BE WELDED TO THE OPPOSITE SIDE EMPTY OF WATER.
5. FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS WELDED IN A TUNNEL OR ENCASE-MENT PIPE.
6. SUBMERGED CONCRETE CYLINDER PIPE DETAILS ARE SIMILAR TO DETAILS ON THIS SHEET.



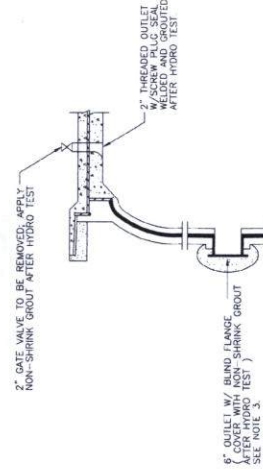
1 JOINT - EMBEDDED CYLINDER PIPE



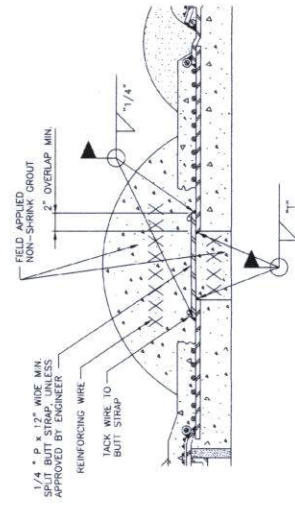
2 WELDED JOINT - EMBEDDED CYLINDER PIPE
(FOR WATERLINES 36-INCHES DIAMETER AND LARGER)



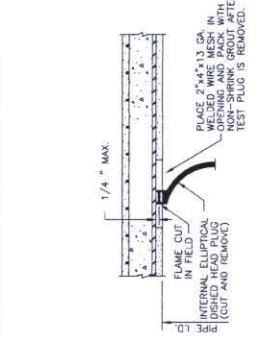
3 JOINT - LINED CYLINDER PIPE
(FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



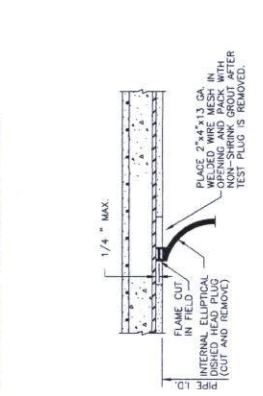
4 WELDED JOINT WITH TRIMMED SPIGOT - LINED CYLINDER PIPE
(FOR WATER LINES 36-INCHES DIAMETER AND LARGER)



5 WELDED JOINT - LINED CYLINDER PIPE
(FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



6 INTERNAL ELLIPTICAL DISHD HEAD PLUG REMOVAL EMBEDDED CYLINDER PIPE
(CONCRETE EMBEDDED CYLINDER PIPE IS SIMILAR, (AS APPROVED BY ENGINEER))

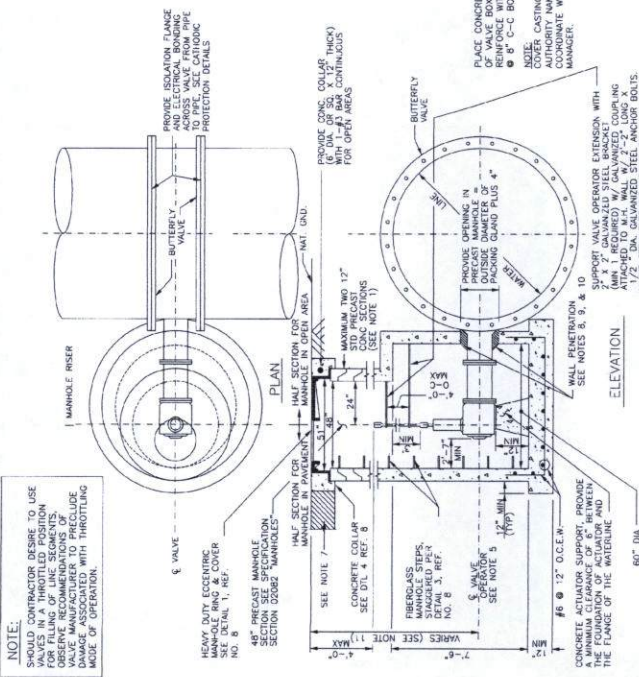


7 INTERNAL ELLIPTICAL DISHD HEAD PLUG REMOVAL EMBEDDED CYLINDER PIPE
(CONCRETE EMBEDDED CYLINDER PIPE IS SIMILAR, (AS APPROVED BY ENGINEER))

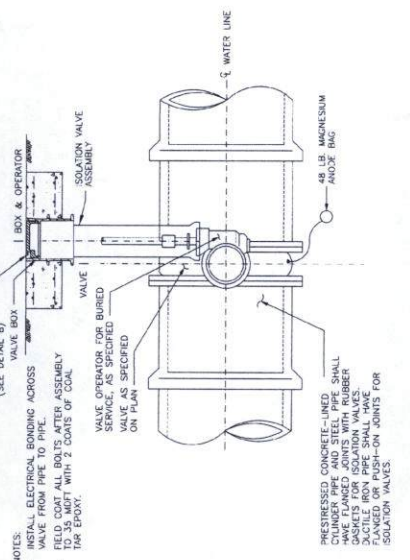
PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17		EGE ENGINEERING GROUP, INC. 10013 10013 10013	PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17
1. TITLE 2. PROJECT 3. LOCATION 4. DATE 5. DRAWING NO. 6. SHEET NO.	7. SCALE 8. N.T.S. 9. 16 OF 48 10. REF. NO. 04 11. DATE: JULY 31, 2013	CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING 10013 10013 10013	PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17

PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17	EGE ENGINEERING GROUP, INC. 10013 10013 10013	PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17	PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17
1. TITLE 2. PROJECT 3. LOCATION 4. DATE 5. DRAWING NO. 6. SHEET NO.	7. SCALE 8. N.T.S. 9. 16 OF 48 10. REF. NO. 04 11. DATE: JULY 31, 2013	CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING 10013 10013 10013	PORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 4/19/17

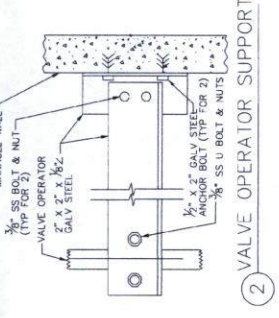
NOTE:
SHOULD CONTRACTOR DESIRE TO USE VALVES IN A THROTTLED POSITION, OBSERVE RECOMMENDATIONS OF MANUFACTURER TO PRECLUDE DAMAGE TO VALVE WITH THROTTLING MODE OF OPERATION.



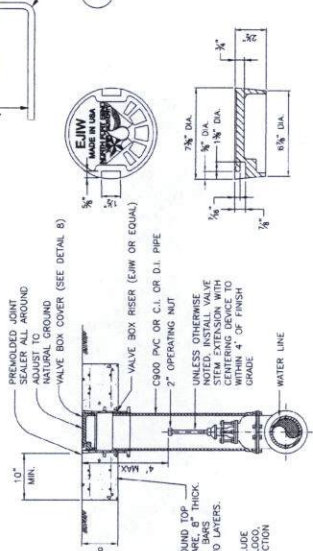
1 BUTTERFLY VALVES WITH ACTUATOR MANHOLE
(FOR WATER LINES 30 INCHES AND LARGER IN DIAMETER)



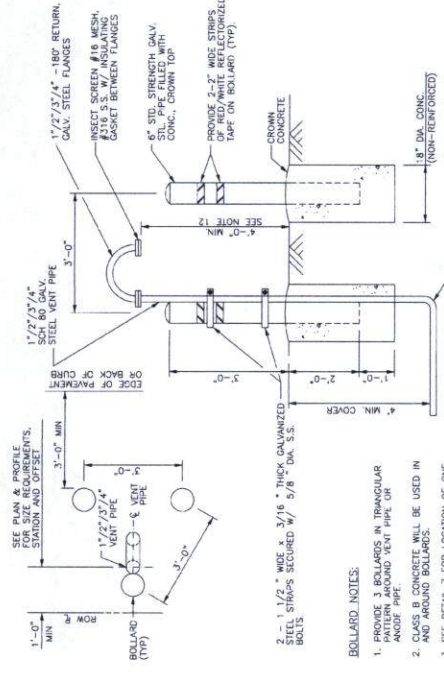
2 ISOLATION VALVE ASSEMBLY
(FOR WATER LINES 24 INCHES IN DIAMETER AND SMALLER)



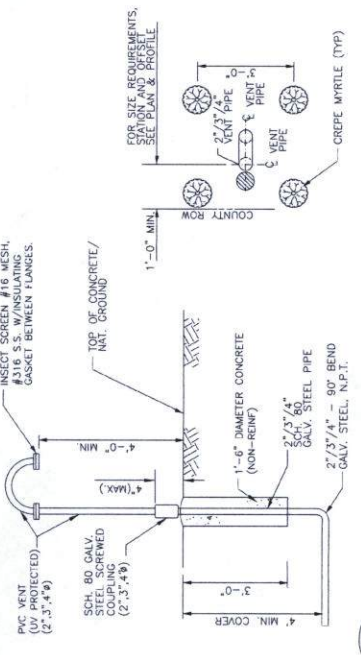
3 VALVE OPERATOR SUPPORT



4 VALVE BOX DETAIL

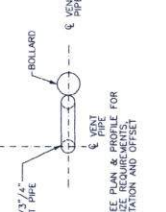


5 VALVE BOX COVER DETAIL
(EAST JORDAN IRON WORKS (LHM) OR EQUAL)

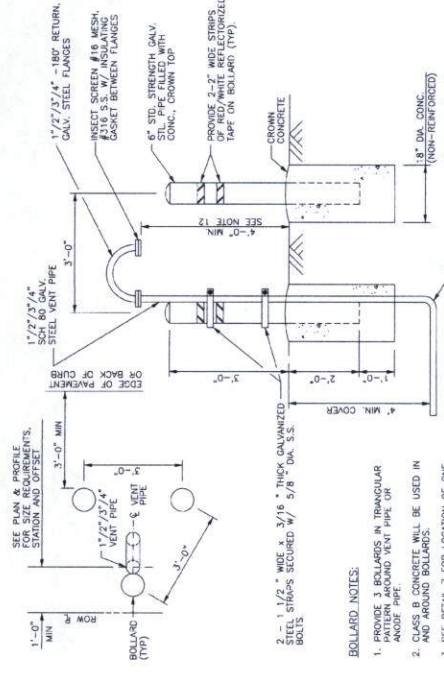


6 BREAKAWAY VENT PIPE DETAIL
(VENT PIPES WITHIN FORT BEND COUNTY ROW)

- GENERAL NOTES:**
1. PROVIDE 1/2" MIN. GAP OF APPROX. EQUAL BETWEEN PROTECTIVE COATINGS OF THE MANHOLE RISER AND VALVE BOX COVER.
 2. PROVIDE AN OVERLAP OF 1/2" BETWEEN COATINGS OF VALVE BOX COVER AND VALVE BOX RISER.
 3. ALL JOINTS SHALL BE BONDED. SEE THE CATHODIC PROTECTION DETAILS.
 4. FIELD COAT ALL FLANGE BOLTS, FLANGE COUPLING, FLANGE COUPLING ADAPTER AND THROTTLE VALVE COAT OF COAT 100% EPOXY.
 5. 2" OPERATING NUT ON LARGE DIAMETER BUTTERFLY VALVE SHALL TURN COUNTER CLOCKWISE TO OPEN VALVE.
 6. PLACE MANHOLE ON COMPACTED (90% SPD) BOTTOM.
 7. FOR PAVEMENT REPAIR, SEE REF. NO. 9.
 8. POLYURETHANE SEALANT, BACKFILL AND PAVEMENT REPAIR DETAILS.
 9. SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINER WITH STAINLESS STEEL BOLTS AND NUTS, THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
 10. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAILS FOR WALL PENETRATION. MANHOLE SHALL BE SEALED BY PROFESSIONAL ENGINEER LICENSED IN TEXAS.
 11. FOR MANHOLES DEEPER THAN 20 FEET, INCREASE SIZE OF MANHOLE TO 30 INCHES IN DIAMETER AND PROVIDE SAFETY CLIMBING RAIL (SAF-T-CLIMB) OR APPROVED EQUAL.
 12. VERIFY THAT LOCATION OF SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.



7 VENT PIPE WITH 1 BOLLARD DETAIL



8 VENT PIPE WITH 3 BOLLARDS DETAIL

- BOLLARD NOTES:**
1. PROVIDE 1 BOLLARD IN TRIANGULAR PATTERN AROUND VENT PIPE AND AROUND PIPE.
 2. CLASS B CONCRETE WILL BE USED IN AROUND BOLLARDS.
 3. SEE DETAIL 7 FOR LOCATION OF ONE BOLLARD AROUND VENT PIPE.

FORT BEND COUNTY ENGINEERING DEPARTMENT
AUTHORIZATION IS VALID FOR ONE YEAR ONLY.

APPROVED: *[Signature]*
DATE: 2/10/17

BCE
Brennan & Co. Engineers, Inc.
10777 Westpark Dr., Suite 100
Houston, Texas 77036
Tel: 281-419-1111
Fax: 281-419-1112
www.bce-engineers.com

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

FBOD NO. 24 CONNECTION LINE

VALVE AND VENT PIPING AND SERVICE MANHOLE DETAILS

NORTH FORT BEND

FILE NO.

DRAWING SCALE

N.T.S.

FOR CITY OF HOUSTON USE ONLY

87404

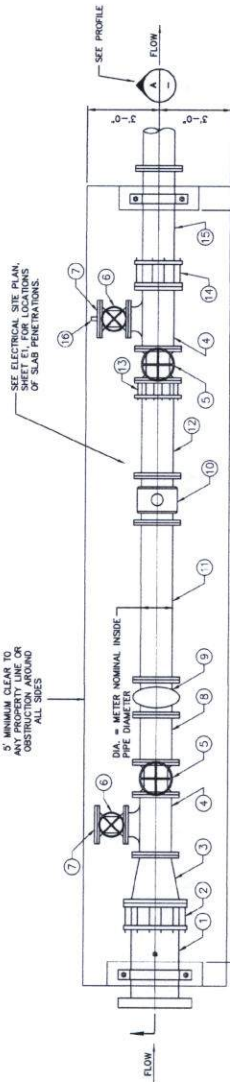
SHEET NO. 19 OF 48

DATE: JULY 31, 2013

REF. NO. 07

SLAB ON GRADE METER STATION

ITEM	PIPE RUN SIZE = METER NOMINAL INSIDE DIAMETER DIA. (NCH) =	DIA. = 8 INCH
1	PIPE (DIAMETER) w/ 2" THREADED TAP	12
2	FLANGED COUPLING ADAPTER WITH RESTRAINTS	12
3	REDUCER	12x8
4	TEE W/BASE (DIAMETER RUN X RUN X BRANCH)	8x8x8
5	VALVE, GATE GY-1 (SEE NOTE A) (DIAMETER)	8
6	VALVE, GATE GY-1 (SEE NOTE A) (DIAMETER)	6
7	BUNG FLANGE (SIZE)	6
8	PIPE SPOOL (DIAMETER)	8
9	STRAINER ASSEMBLY	8
10	FLOW METER SIZE (ELECTROMAGNETIC METER SEE NOTE B)	8
11	PIPE SPOOL (DIAMETER) LENGTH=(5 x DIA.) MINIMUM	8
12	PIPE SPOOL (DIAMETER) LENGTH=(3 x DIA.) MINIMUM	8
13	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	8
14	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	8
15	PIPE (DIAMETER)	8
16	2" FLANGE w/ 2" THREADED CONNECTION AND 2" INSIDE DIA. FOR VALVE	6



L=21'-0" (SEE NOTE D)

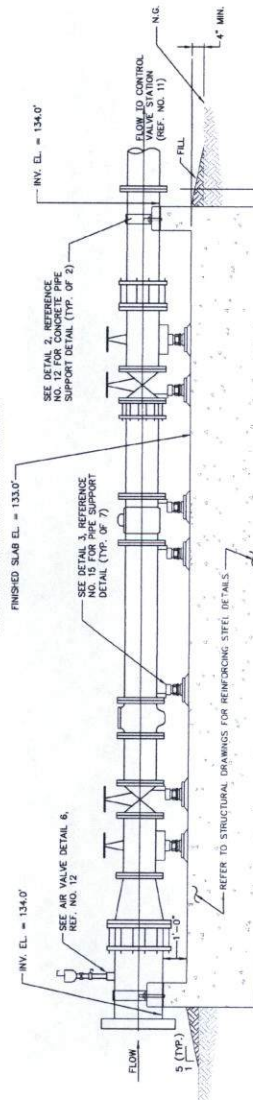
1 PLAN - SLAB ON GRADE METER STATION

NTS

NOTES

- (A) DESIGN IS BASED ON AMERICAN R/D RESILIENT GATE VALVE, PATTERN 2002 W/HAND WHEEL OPERATOR ON APPROVED EQUAL.
- (B) DESIGN IS BASED ON THE KROHNE F5 4000 KC (ENHANCED) OR SEMIUS STRAINS FM 5100 W ELECTROMAGNETIC.
- (C) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS.
- (D) LENGTH (L) OF METER RUN IS APPROXIMATE, IT MAY BE ADJUSTED BASED ON PIPING SHOP DRAWINGS.
- (E) ALL WATER LINE PIPING WITHIN WATER PLANT SITE SHALL CONSIST OF RESTRAINED JOINTS.
- (F) APPLY SAGINAW WILLIAMS POLYMER-BASED PIPE COATINGS TO ALL WATER LINES IN ACCORDANCE WITH SECTION 0900-PROTECTIVE COATINGS.
- (G) ALL BOLLARDS INSTALLED WITHIN THE WATER PLANT SITE, SHALL BE REMOVABLE. SEE DETAIL 2, THIS SHEET.

FINISHED SLAB ELEVATION TO BE DETERMINED BY DISTRICT ENGINEER AND DESIGN CONSULTANT.



A SLAB ON GRADE METER STATION

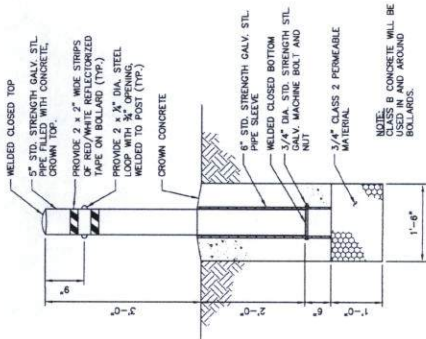
NTS

INITIAL INSTALLATION NOTES

1. INSTALL PIPING, METER ETC. AS SHOWN, DISINPECT, PRESSURE TEST AND VERIFY SATISFACTORY OPERATION.
2. ENSURE THAT AS A RESULT OF THE TESTING PROCESS, NO FLOW WILL BE ALLOWED TO ENTER THE DISTRICT'S GROUND STORAGE TANK.
3. DESIGN CONSULTANT IS RESPONSIBLE FOR THE LOCATION OF THE CONDUITS.

2 REMOVABLE BOLLARD DETAIL

NTS



NOTE: CLASS B CONCRETE WILL BE USED FOR CURB AND AROUND BOLLARDS.

DATE: 2/15/17

APPROVED: *[Signature]*

DESIGN COORDINATOR

FOR CITY OF HOUSTON USE ONLY

FILE NO.

DRAWING SCALE

NTS

SHEET NO. 22 OF 48

10

REF. NO.

DATE: FEBRUARY 20, 2011

10213

BCE

Brown & Berry Engineers, Inc.

10011 Independence Blvd., Suite 200 Houston, TX 77055

10011 Independence Blvd., Suite 200 Houston, TX 77055

10011 Independence Blvd., Suite 200 Houston, TX 77055

FBID NO. 24 CONNECTION LINE

METER STATION LAYOUT

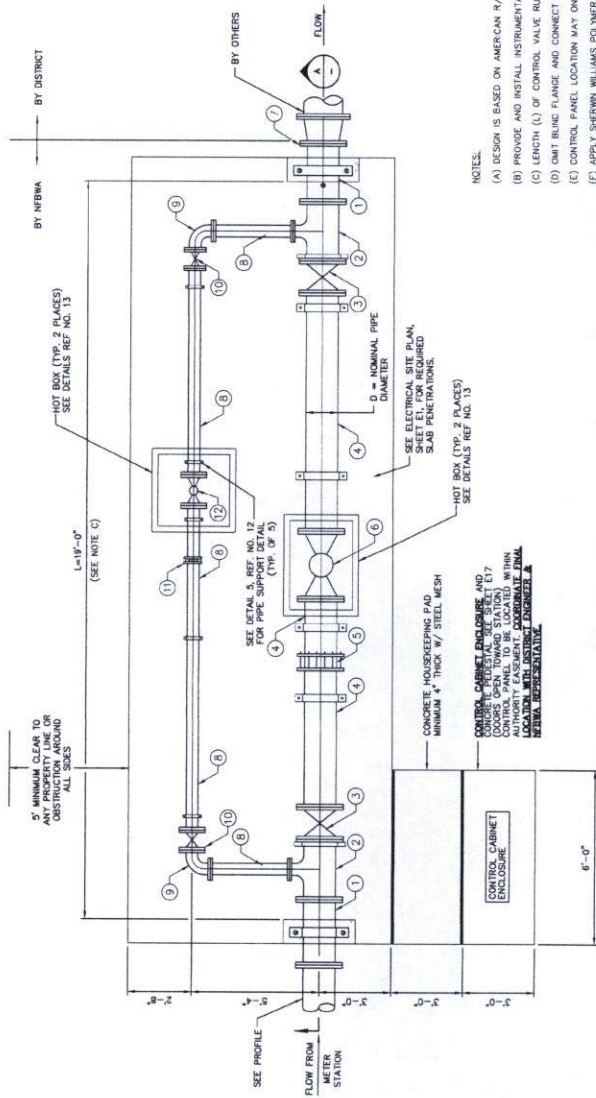
NORTH

FOR CITY OF HOUSTON USE ONLY

57404

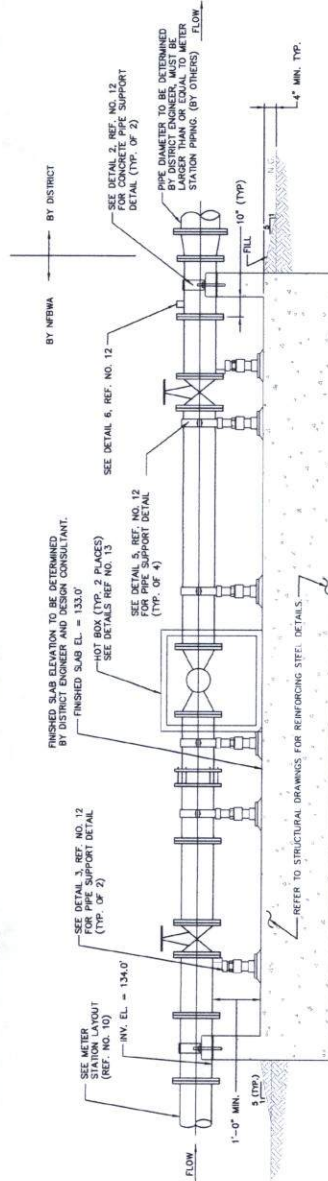
SLAB ON GRADE CONTROL VALVE STATION

ITEM	FITTING DESCRIPTION	FITTING SIZE (NCH)
1	PIPE (DIAMETER) W/ 2" THREADED TAP (ONE PLACE AS SHOWN)	8
2	TEE (DIAMETER, RUN X RUN X BRANCH)	8X8X4
3	VALVE, GATE (GV-1) (SEE NOTE 8) (DIAMETER)	8
4	PIPE SPOOL (DIAMETER)	8
5	FLEXIBLE COUPLING (DIAMETER) WITH RESTRAINT	8
6	VALVE, FLOW CONTROL, FCV-1 (DIAMETER)	8
7	BLIND FLANGE (SEE NOTE D)	8
8	PIPE SPOOL (DIAMETER)	8
9	ELBOW, 90 DEGREE (DIAMETER)	4
10	VALVE, GATE (GV-1) (SEE NOTE A) (DIAMETER)	4
11	FLEXIBLE COUPLING (DIAMETER) WITH RESTRAINT	4
12	VALVE, FLOW CONTROL, FCV-2 (DIAMETER)	4



1 PLAN - SLAB ON GRADE CONTROL VALVE STATION

N.T.S.



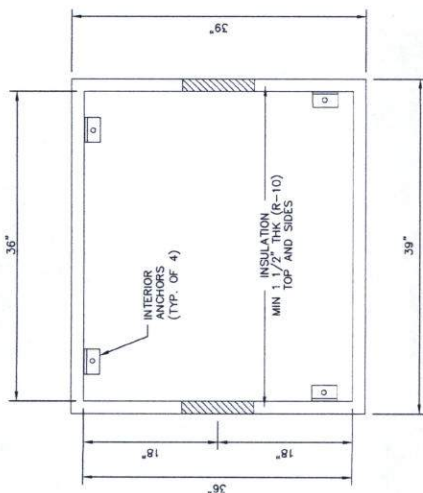
A SLAB ON GRADE CONTROL VALVE STATION

N.T.S.

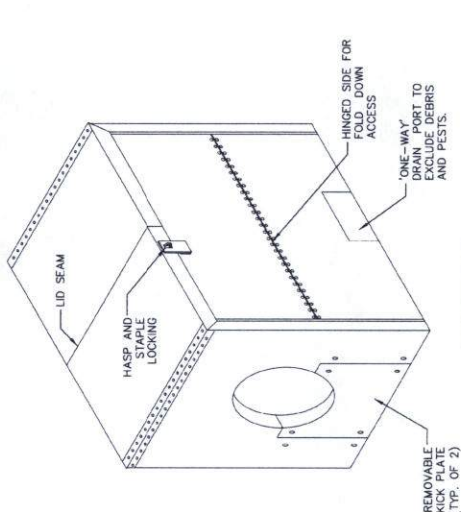
EST. BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 2/10/17		NO. DATE REVISION 1 2 3 4
BCE BEND COUNTY ENGINEERING 100113 100113 100113 100113		NO. DATE REVISION 1 2 3 4
FBOD NO. 24 CONNECTION LINE CONTROL VALVE STATION LAYOUT		NO. DATE REVISION 1 2 3 4
NORTH FORT BEND COUNTY ENGINEERING DEPARTMENT 100113 100113 100113 100113		NO. DATE REVISION 1 2 3 4
CITY OF HOUSTON DEPARTMENT OF PUBLIC UTILITY AND ENGINEERING 100113 100113 100113 100113		NO. DATE REVISION 1 2 3 4
FILE NO. DRAWING SCALE N.T.S. REF. NO. 23 OF 48		NO. DATE REVISION 1 2 3 4

NOTES:

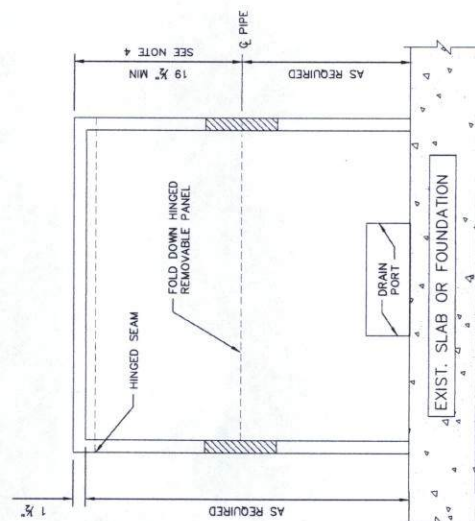
1. PROVIDE HOT BOX MODIFIED MODEL MFD2D1L "DURA-FOLD" ALUMINUM ENCLOSURE, 600 TLUBBO-AL BY SA-1-COVER OR EQUIVALENT.
2. ANCHOR BOX IN PLACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. CENTER PENETRATION FOR PIPE HORIZONTALLY IN SIDE OF BOX. SIZE DIAMETER OF PENETRATION TO FIT THE PIPE. FILL SPACE BETWEEN PENETRATION HOLE AND PIPE W/ WEATHERPROOF INSULATING MATERIAL.
4. VERIFY DIMENSIONS OF ALL VALVES AND APPURTENANCES PRIOR TO ORDERING. PROVIDE 4" MINIMUM CLEARANCE BETWEEN INTERIOR OF HOT BOX AND ALL INTERNAL COMPONENTS INCLUDING LIMIT SWITCH, OR POSITION INDICATOR AT POINT OF HIGHEST EXTENSION, ELECTRICAL CONDUIT, AND PILOT PIPING.
5. ENCLOSURES SHALL BE DESIGNED TO SUPPORT A MINIMUM VERTICAL LOAD OF 100 POUNDS PER SQUARE FOOT (PSF).
6. CONTRACTOR TO POSITION CONDUITS TO FALL WITHIN THE LIMITS OF THE HOT BOX. NO WALL PENETRATIONS WILL BE ALLOWED.



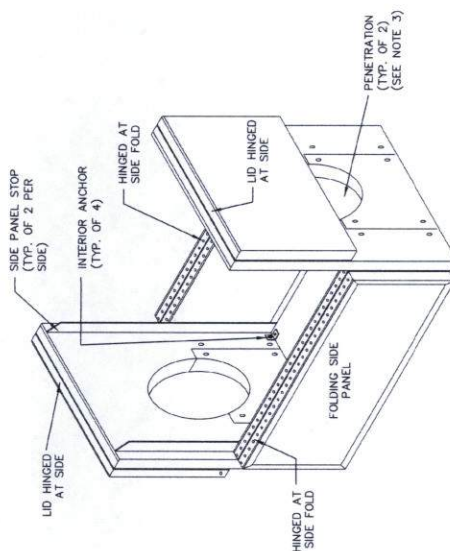
CLOSED POSITION



CLOSED POSITION



OPEN POSITION



FOR KING COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY.		APPROVED: <i>[Signature]</i> DEVELOPED COORDINATOR		DATE: 2/10/17	
BCE Brown & Cal Engineering, Inc. 10777 Westpark Drive, Suite 200 Houston, Texas 77036 Tel: 281-488-8888 • Fax: 281-488-8889 www.brownandcal.com		SEAL KENNETH L. BROWN PROFESSIONAL ENGINEER No. 10000 State of Texas		APPROVED: <i>[Signature]</i> DATE: 2/10/17	
FBCD NO. 24 CONNECTION LINE					
STANDARD CONTROL VALVE HOTBOX DETAIL					
NORTH FORT BEND COUNTY ENGINEERS 10000 North Fort Bend Road, Suite 100 Houston, Texas 77036 Tel: 281-488-8888 • Fax: 281-488-8889 www.northfortbend.com					
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE WATER AND WASTEWATER					
PROJECT NO. 17-12-17 SHEET NO. 25 OF 48 DATE: 2/10/17 DRAWING SCALE: N.T.S. FILE NO.: FOR CITY OF HOUSTON USE ONLY					

REF. NO. 13
 DATE: FEBRUARY 20, 2017



1. ALL TREES SHOWN ON THE TREE PROTECTION PLANS SHALL BE PROTECTED THROUGHOUT CONSTRUCTION WITH TREE PROTECTION.
2. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEANING, GRUBBING OR GRADING).
3. FENCING SHALL BE COATED AS SHOWN ON DRAWINGS, OR COMPLETELY SPRAYED WITH WHITE WASH. FENCING SHALL BE MAINTAINED WITHIN THE OUTERMOST LIMITS OF THE TREE BRANCHES (DRIPLINE). THE DRIPLINE DEFINES THE "ROOT ZONE". WITHIN THE LIMITS OF FENCING, THE CONTRACTOR SHALL PREVENT THE FOLLOWING FROM THE OWNER'S REPRESENTATIVE:
 - A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS.
 - B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 3" CUT OR FILL) OR TRENCHING NOT REVIEWED OR APPROVED.
 - C. WOUNDS TO EXPOSED ROOTS, TRUNK, OR LIMBS BY MECHANICAL EQUIPMENT.
 - D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CONCRETE TRUCK CLEANING, AND FIRES.
4. WHERE EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN 4 FEET TO THE TREE TRUNK, THE MINIMUM CLEARANCE SHALL BE MAINTAINED AT A HEIGHT OF 8' (OR TO THE LIMITS OF THE LOWER BRANCHING) AS INDICATED ON TREE PROTECTION PLANS.
5. ALL GRADING WITHIN PROTECTED ROOT ZONE AREAS SHALL BE DONE BY HAND TO MINIMIZE ROOT DAMAGE AND SOIL COMPACTION. PRIOR TO GRADING, RELOCATE PROTECTIVE FENCING TO 2 FEET BEHIND THE GRADE CHANGE AREA. GRADE SHALL REMAIN UNCHANGED WHERE POSSIBLE.
6. ANY ROOT SEVERED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL, SOIL COMPACTION IS NOT ALLOWED. EXPOSED ROOT AREAS NOT BACKFILLED SHALL BE COVERED WITH MULCH. MULCH SHALL BE APPLIED IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES DRYING OF THE ROOT DUE TO EVAPORATION.
7. TREES IMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE WATERED THOROUGHLY ONCE A WEEK DURING PERIODS OF HOT AND/OR DRY WEATHER. TREE GROUNDS SHALL BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.
8. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN 3" MAXIMUM SHALL BE PERMITTED WITHIN THE DRIPLINE OF TREES. NO PERMANENT SOIL OR MULCH IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
9. PRUNING SHALL BE PERFORMED BY THE CONTRACTOR TO PROVIDE CLEARANCE FOR STRUCTURES OR CONSTRUCTION ACTIVITIES. PRUNING SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS, ONLY WITH PRIOR APPROVAL OF THE ARBORIST. PRUNING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ARBORIST ASSOCIATION (N.A.A.) STANDARDS (REFER TO THE NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS), AND BY AN EXPERIENCED AND QUALIFIED ARBORIST WHOSE PRIMARY BUSINESS IS TREE CARE.
10. PROVIDE CORRECTIVE PRUNING AT THE COMPLETION OF CONSTRUCTION TO REMOVE ANY BROKEN OR DAMAGED LIMBS, WITH THE DIRECTION OF THE ARBORIST'S ENGINEER.
11. IF REQUIRED, "ROOT PRUNE" BY TRENCHING A CLEAN 4" WIDE X 24" DEEP CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES, WITH IRRIGATION TRENCHER TO MINIMIZE DAMAGE TO REMAINING ROOTS. PROVIDE REVIEW TRENCH LINE WITH AUTHORITY'S ENGINEER PRIOR TO TRENCHING.
12. AS SOON AS 4" WIDE X 24" DEEP TRENCH IS CUT, EXPOSED ROOTS SHALL BE CUT BACK TO THE UNDISTURBED ROOT ZONE. ALL EXPOSED HAND CUTS ARE COMPLETE BACKFILL TRENCH WITH A SAND/LOAM TOPSOIL PLACED IN 6" LIFTS, AND COMPACTED AS REQUIRED BY SPECIFICATIONS.
13. IN AREAS WHERE LINE STABILIZATION ABUTS OR ENCLOSES UPON ROOT ZONES, AND WHERE ROOT PRUNING IS CALLED FOR, INSTALL 10-MIL PLASTIC SHEETING TO FULL DEPTH OF ROOT PRUNING TRENCH TO PREVENT SOIL FROM BEING WASHED AWAY. PROVIDE PLASTIC COMPLETION OF TRENCH.

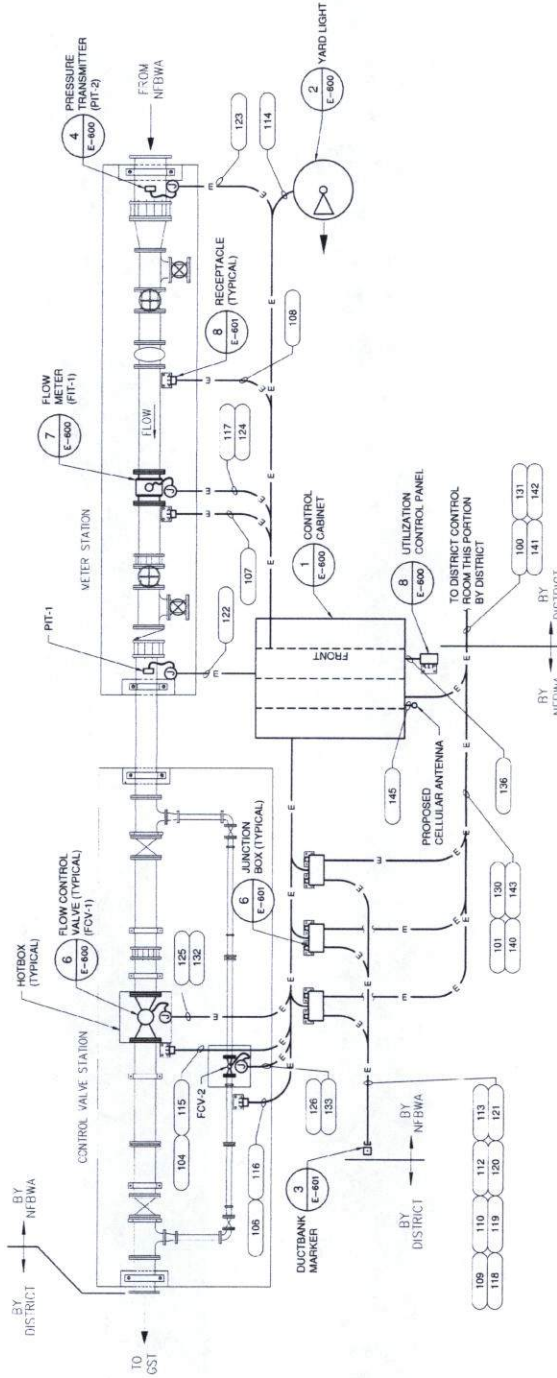
NORTH FORT BEND COUNTY ENGINEERING DEPARTMENT APPROVED: <i>[Signature]</i> DECEMBER 10, 2017		DATE: 7/10/17		APPROVED: <i>[Signature]</i> JULY 10, 2017 Bureau & Gay Engineers, Inc. 10717 Highway 13, Suite 200 Houston, Texas 77060 Tel: 281-469-9900 Fax: 281-469-9901				FBOID NO. 24 CONNECTION LINE		TREE PROTECTION DETAILS	
BGE		FBOID NO. 24 CONNECTION LINE		NORTH FORT BEND COUNTY 		CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING TREE AND LAND MANAGEMENT		NORTH FORT BEND COUNTY ENGINEERING DEPARTMENT APPROVED: <i>[Signature]</i> DECEMBER 10, 2017		DATE: 7/10/17	
BGE		FBOID NO. 24 CONNECTION LINE		NORTH FORT BEND COUNTY 		CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING TREE AND LAND MANAGEMENT		NORTH FORT BEND COUNTY ENGINEERING DEPARTMENT APPROVED: <i>[Signature]</i> DECEMBER 10, 2017		DATE: 7/10/17	

REF. NO.	14
DATE: FEBRUARY 20, 2011	

Aug 21/17

NOTES:

- CONDUITS SHALL NOT BE ROUTED ACROSS WALKWAYS OR PATHS OF TRAVEL ROUTE AROUND OR BENEATH EQUIPMENT OR STRUCTURES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS ASSOCIATED WITH THE WORK. THE COSTS OF THE PERMITS, IF ANY, SHALL BE BORNE BY THE CONTRACTOR.
- PLAN NEW CONDUIT ROUTING IS DIAGRAMMATIC ONLY. CONTRACTOR TO FIELD VERIFY AND PROVIDE OPTIONAL CONDUIT ROUTING.
- ALL EXTERIOR ABOVE GROUND CONDUIT IS TO BE RIGID GALVANIZED STEEL.
- ALL MOUNTING HARDWARE, SUPPORTS, CLAMPS, BRACKETS & ANCHORS ARE TO BE STAINLESS STEEL UNLESS SHOWN OTHERWISE.
- ALL VALVES FAIL CLOSE.
- GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GSTS AND TWO FUTURE GSTS. MATCH SIGNAL SPLITTERS & USE SIGNAL SPLITTER TOOLS TO DISTRICTS ANTICIPATED ULTIMATE NUMBER OF GSTS. PREPARE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
- ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO MAINTAIN PROPER TENSIONING OF HEAT TRACE TAPE. HOT BOX OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.
- PROVIDE 25-FEET LENGTH, 5 WATTFOOT, 120 VAC, SELF-REGULATING TRACE CABLE WITH LINE PLUG TO HEATING CABLE CONNECTOR AT FCV-1 AND FCV-2 RECEPTACLES. FURNISH MODEL NO. 5951J WITH GST-1 CONNECTOR, OR APPROVED EQUAL.



TYPICAL ELECTRICAL PLAN

N.T.S.

SHRADER ENGINEERING
ELECTRICAL, COMMUNICATIONS & TECHNOLOGY
SHRADER ENGINEERING, INC. TYPE NO. E-247
10000 Katy Freeway, Suite 100, Houston, Texas 77054
Tel: 281.460.1234 Fax: 281.460.1235
www.shrader-engineering.com

BCE

Barrett & Co. Engineers, Inc.
10000 Katy Freeway, Suite 100, Houston, Texas 77054
Tel: 281.460.1234 Fax: 281.460.1235
www.barrett-engineers.com

NORTH FORT BEND
COUNTY
SEAL

NO. 1 DATE: _____ REGION: _____ APPROVED: _____

FDID NO. 24 CONNECTION LINE

ELECTRICAL
TYPICAL
SITE PLAN

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
10000 Katy Freeway, Suite 100, Houston, Texas 77054
Tel: 281.460.1234 Fax: 281.460.1235
www.cityofhouston.gov

FILE NO.: _____

DESIGNING SCALE: _____

NAME: N.T.S.

VERT: _____

THE CITY OF HOUSTON USE ONLY

87404

SHEET NO. 28 OF 48

DATE: JANUARY 12, 2017

1/12/2017 2:16:17

1. ALL CONDUITS, CONDUCTORS AND DEVICES MAY NOT BE SHOWN ON THIS SHEET. SEE CONDUIT SCHEDULE ON SCHEDULE SHEET FOR CONDUIT AND CONDUCTOR REQUIREMENTS.

2. INSTALL SURGE PROTECTOR ACCORDING TO MANUFACTURERS INSTRUCTIONS. SURGE PROTECTOR MUST CONFORM TO SPECIFICATION 16290. DO NOT INCLUDE "FILTER" WITH SURGE PROTECTION DEVICE AT WELL.

3. ONLY MANUFACTURERS LISTED IN APPLICABLE SPECIFICATIONS ARE ACCEPTABLE TO CONTROL PANELS FOR THIS PROJECT. NO EXCEPTIONS.



PANEL LVP		PHASE BUS RATING		WIRE SIZE #B		WIRE		WTH:	
SERVICE VOLTAGE	120/240V	NEUTRAL BUS RATING	22.5KAC	NEUTR WIRE SIZE	#10	POLE AMP		100% NEUTRAL	SOLID NEUTRAL & GROUND BUS
MAIN BREAKER SIZE	40A	SHORT CIRCUIT RATING	22.5KAC	PHASE 1		BREAKER		200% NEUTRAL	
LOCATION		CONTROL PANEL		MOUNTING				NOTE: ADJ. CKTS. TO BAL. PH.	
CKT. DESCRIPTION	WIRE	BREAKER		WAWATTS		VAVATTS		B KNO.	CKT. DESCRIPTION
		POLE AMP	A B	A B	NO.	NO.	A B		
CONTROLS UPS	12 1	20	500	1	2	50	1	20	HEAT TRACE FCV-1
HEAT TRACE FCV-2	12 1	20	50	3	4	540	1	20	CABINET RECEPTACLE GFI
FLOW METER RECEPTACLE	12 1	20	540	5	6	540	1	20	GST1 & 2 HEAT TRACE RECEPT.
GST3 & 4 HEAT TRACE RECEPT.	12 1	20	540	7	8	50	1	20	CABINET LIGHT AND SWITCH
PHOTOCELL AND VANDOLIGHT	12 1	20	500	9	10	50	1	20	FLOW METER
CABINET HEATER	12 1	20	50	11	12	50	1	20	CABINET FAN
CONTROLS	12 1	20	200	13	14	-	1	20	SPARE
SPARE	1	20	SPARE	15	16	-	1	20	SPARE
SPARE	1	20	-	17	18	-	1	20	SPARE
SPARE	1	20	-	19	20	-	1	20	SPARE

TOTAL PHASE A: 1760 VOLT AMPS

TOTAL PHASE B: 1760 VOLT AMPS

TOTAL PHASE C: 1760 VOLT AMPS

TOTAL CONNECTED LOAD: 4650 VA

REGISTRATION NO. 10-1-2017 - 8.25mm
By USER: Stephen J. Jones
Design: Pave/Id Construction
Drawings/Pave/Id Construction
REG. NO.: 10-1-2017 - 8.25mm

29 of 48
No.

DATE: JANUARY 10, 2017

Mass: 2/10/17

92-926

Mass: 2/10/17

LUMINAIRE FIXTURE SCHEDULE

LUMINAIRE FIXTURE SCHEDULE					
MARK	FIXTURE DESCRIPTION	LAMP TYPE	WATTAGE	VOLTAGE	COMMENTS
ALI	LITHONIA ® CSX1 LED 60C 700 40K 1M 4M 8M 16M	LED	134	120	DARK BRONZE FINISH, SINGLE FUSE, WITH VANDAL GUARD (DARK SKY COMPLIANT)

SE SHRADER
ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY

SHRADER ENGINEERING, INC. TYPE NO. P-527
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Brown & Gay Engineers, Inc.
4777 Westmore, Suite 400
Houston, TX 77042
Tel: 281-558-8750 • www.browngay.com
HARRIS CORPORATION (No. F-344)

FRID NO 24 CONNECTION LINE

ELECTRICAL
SCHEDULES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 1100 NORTH HOUSTON STREET, SUITE 1000
 HOUSTON, TEXAS 77002-1100
 TEL: 713/847-1100 FAX: 713/847-1101

Signature: _____

11-12-79
ALFONSO MORALES

Wm. H. Lawrence

STERN
FACILITIES

1/10/11

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FILE NO:	FOR CITY OF HOUSTON
----------	---------------------

100

DRAWING SCALE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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HURZ N/A
 K740

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SHEET 30 of 48

ON

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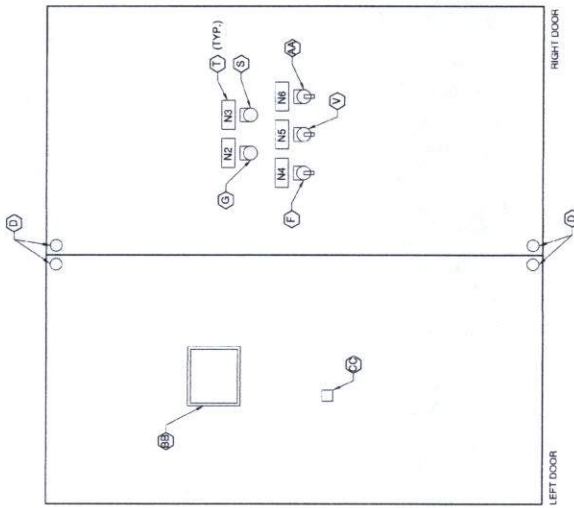
2/10/17

3

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100 A, 25 CKTS
B	6	SIGNAL SPLITTER/ISOLATOR, DIN RAIL MOUNT, 120VAC, 4-20mA INPUT, DUAL ISOLATED 4-20mA OUTPUTS, ACRIMAG 6337 0100 OR EQUIV
C	1	THERMOSTAT
D	4	QUARTER TURN CAPTIVE DOOR CLOSURE
E	1	120VAC - 24VDC POWER SUPPLY
F	2	HAND-OFF AUTO SWITCH, HEAVY DUTY OIL TIGHT, W/120V, 20A RATING
G	1	INDICATING LIGHT, HEAVY DUTY OIL TIGHT, WHITE, 24 VDC, 2.5 WATT
H	1	STRIP HEATER
I	1	PROGRAMMABLE LOGIC CONTROLLER, SIEMENS S7-1500
J	1	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	2	DUPLEX RECEPTACLE, 120V, 20A, 3 WIRE, GROUNDING, GFCI TYPE
L	1	40 WATT FLUORESCENT STRIP LIGHT W/BACKLIT SUITABLE FOR ZERO DEGREE OPERATION
M	1	SURGE PROTECTOR - INCOMING POWER
N	1	UNINTERRUPTIBLE POWER SUPPLY 1000VA MINIMUM
O	1	FUSED TERMINAL BLOCKS, AS REQUIRED
P	LOT	CELLULAR ROUTER W/ INTEGRATED 300G MODEM
Q	1	CONTROL RELAY, TURCK 24 VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE
R	14	INDICATING LIGHT, HEAVY DUTY OIL TIGHT, GREEN, 24 VDC, 2.5 WATT
S	2	NAMEPLATES, 3/8" HIGH LETTERING IN WHITE LETTERS ON BLACK BAKELITE (SEE NAMEPLATE SCHEDULE) (SEE NOTE 1)
T	9	DOOR LIMIT SWITCH (SEE NOTE 2)
U	2	GST SELECTOR SWITCH, HEAVY DUTY OIL TIGHT, FOUR POSITION, W/120V, 20A RATING
V	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS, 60" X 72" X 24"
W	1	WATER UTILIZATION SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING
X	1	TERMINAL BLOCKS AS REQUIRED
Y	LOT	WIRE DUCT 2" WIDE X 2" DEEP MINIMUM
Z	1	FUTURE USE SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING
AA	1	HUMAN MACHINE INTERFACE (HMI)
BB	1	PROGRAMMING PORT W/ WEATHER PROOF COVER (IP67) PANEL MOUNT (4:5 COUPLES)
CC	1	SIGNAL AMPLIFIER (40:1 X)
DD	1	E-THERNET SWITCH
EE	1	UPS SUPPORT BRACKET
FF	1	PHASE FAIL RELAY
GG	1	DRAWING POCKET
HH	1	MSK SWITCH
II	1	

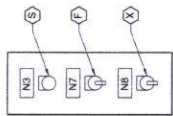
1999

N.T.S.



CONTROL PANEL
EXTERIOR ELEVATION
N.T.S.

NFBWA WATER
UTILIZATION PANEL ELEVATION



NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. PROVIDE ONE LIMIT SWITCH PER EXTERIOR DOOR, WIRED IN PARALLEL.
3. REFER TO ELECTRICAL SPECIFICATIONS FOR SPECIFIC DEVICE REQUIREMENTS.

ENGRAVED

N1	NORTH FORT BEND WATER AUTHORITY
N2	POWER ON
N3	NFBWA WATER ON
N4	FLOODLIGHT H-O-A
N5	GST SELECTOR
N6	GST11 GST12 GST13 GST4
N7	FUTURE USE
N8	NFBWA WATER USE H-O-A
	NFBWA WATER UTILIZATION
	PARTIAL FULL

NO	DATE	REVISION	APPROV
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FBID NO. 24 CONNECTION LINE

ELECTRICAL
CONTROL CABINET
SHEET 1 OF 2



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

with ICA	<i>[Signature]</i>	12/17	GOOD WATER QUALITY
		12/17	NOISE
		12/17	TRAFFIC AND TRANSPORTATION

7-27-90	FACILITIES
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STREET & BRIDGE

FILE NO:	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE

ORZ : N.T.S.

VERT 74

51 of 48

2/10/17

E-400

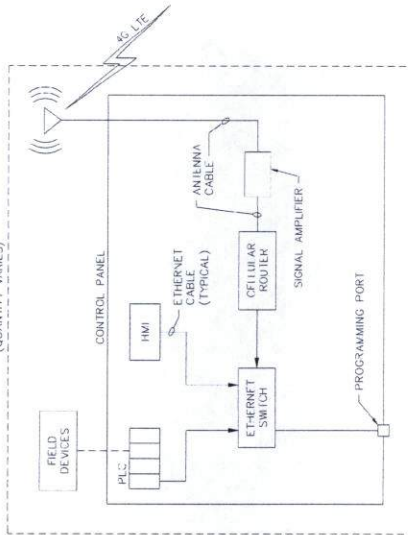
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Alexis Dost 2/10/17

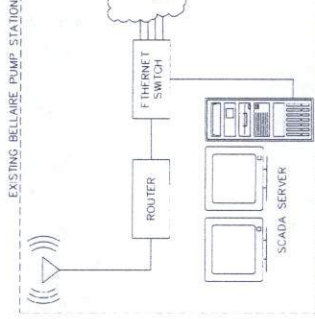
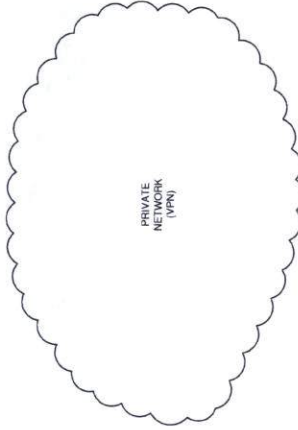
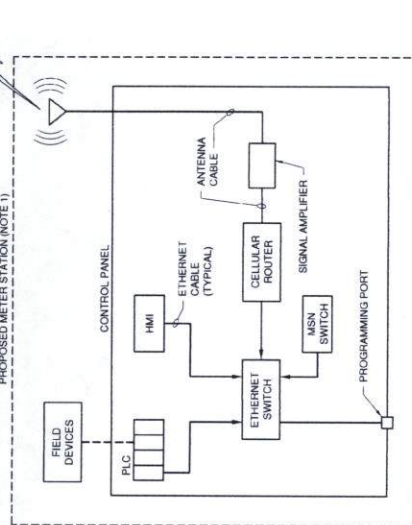
Alexis Dost 2/10/17

NOTE:
1. REFER TO SPECIFICATIONS FOR EXACT DEVICE REQUIREMENTS

EXISTING METER STATION
(QUANTITY VARIES)



PROPOSED METER STATION (NOTE 1)



SHRADER ENGINEERING
ELECTRICAL & COMMUNICATIONS TECHNOLOGY
SHRADER ENGINEERING, INC. TYPE NO. E-507
11000 N. FORT BEND ROAD, SUITE 100, HOUSTON, TX 77060
713.464.1100 FAX 713.464.1101
www.shrader-engineering.com

NO.	DATE	REVISION	APPROVAL
1			
2			
3			
4			

ECE
Bryan & Gay Engineers, Inc.
11000 N. FORT BEND ROAD, SUITE 100, HOUSTON, TX 77060
713.464.1100 FAX 713.464.1101
www.bryan-gay.com

FBID NO. 24 CONNECTION LINE
NETWORK DIAGRAM

NORTH FORT BEND COUNTY
COUNTY CLERK
JANET T. DIXON
11000 N. FORT BEND ROAD, SUITE 100, HOUSTON, TX 77060
713.464.1100 FAX 713.464.1101
www.nfbctx.gov

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND BUILDING
1001 RICE AVENUE, SUITE 100, HOUSTON, TX 77001
713.858.1100 FAX 713.858.1101
www.houstontx.gov

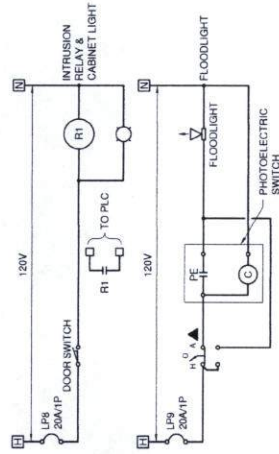
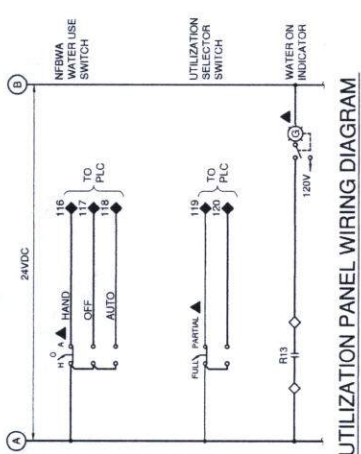
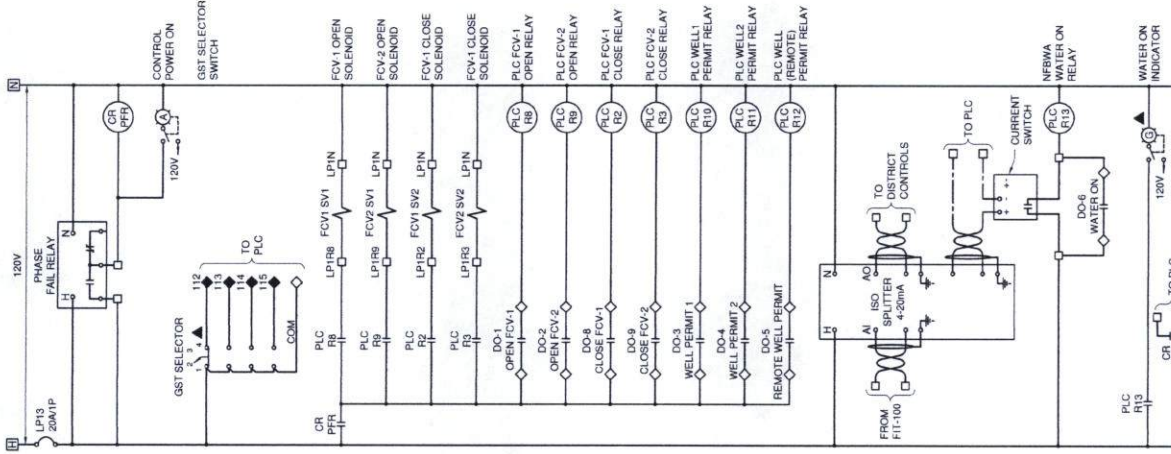
FILE NO.
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MORE: N/A
VERT: N/A

FOR CITY OF HOUSTON USE ONLY
SHEET NO. 33 OF 48
DATE: JANUARY 10, 2017

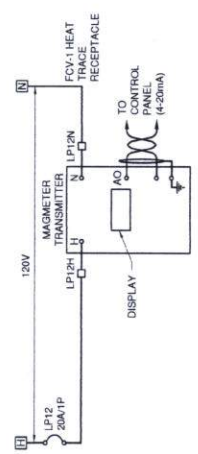
METER STATION COMMUNICATION NETWORK ARCHITECT

2/10/17

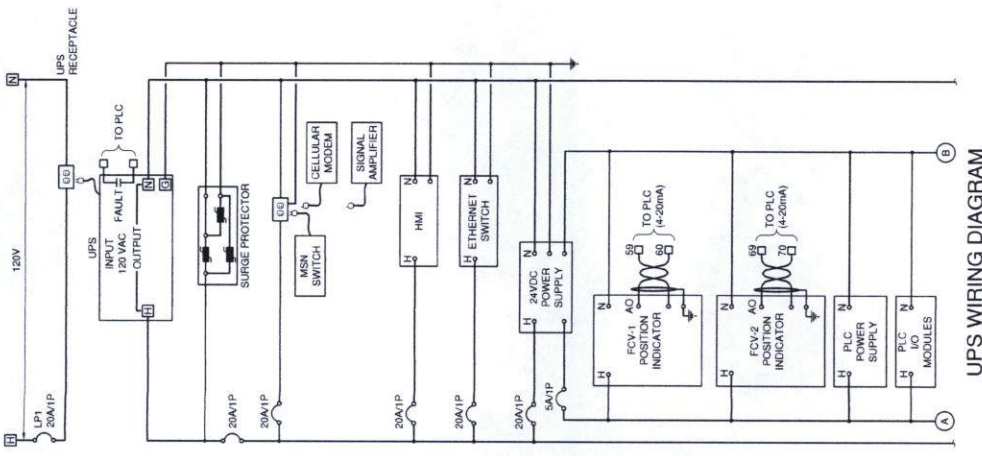
- GENERAL NOTES:**
- WHERE ADDITIONAL CONTACTS ARE REQUIRED, PROVIDE ADDITIONAL CONTACT BLOCKS OR ADDITIONAL RELAYS WITH COILS WIRED IN PARALLEL.
 - CONTRACTOR SHALL READ ENTIRE CONTENTS OF SPECIFICATION SECTION ENTITLED "ELECTRICAL WORK 16.01.2" AND ALL OTHER RELEVANT SPECIFICATIONS CONTAINED THEREIN BEFORE BIDDING ON THIS PROJECT.



LIGHTING CONTROL DIAGRAMS



FLOW METER (FIT-100) WIRING DIAGRAM



UPS WIRING DIAGRAM

PANEL CONTROL DIAGRAM

CONTROL PANELS SHALL BE FABRICATED ONLY BY MANUFACTURERS LISTED IN SPECIFICATION 16012.2.01.F. NO EXCEPTIONS.

REF. NO. E-501
DATE: JANUARY 10, 2017
SHEET 34 OF 48

SHRADER ENGINEERING
ELECTRICAL, COMMUNICATIONS & TECHNOLOGY

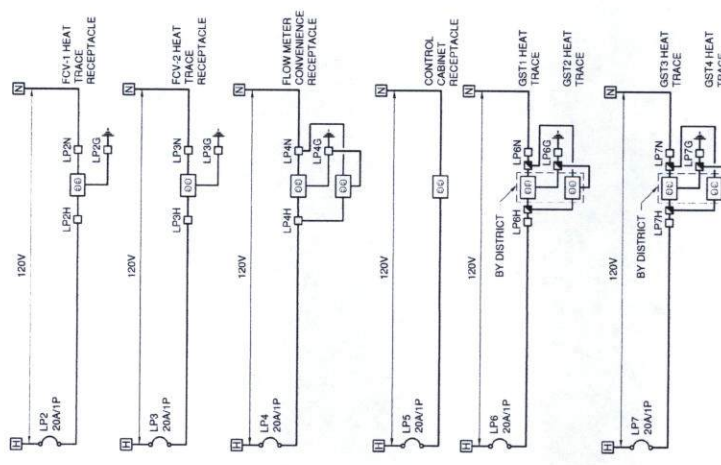
SHRADER ENGINEERING, INC. TYPE: F-427
10000 Katy Freeway, Suite 100, Houston, TX 77054
Tel: 281-460-1100 Fax: 281-460-1101
www.shrader-engineering.com

EGE
Brown & Gray Engineers, Inc.
10000 Katy Freeway, Suite 100, Houston, TX 77054
Tel: 281-460-1100 Fax: 281-460-1101
www.brownandgray.com

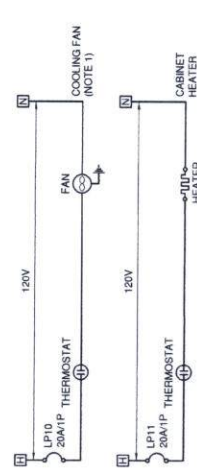
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PROJECT: 16012.2.01.F
SHEET: 34 OF 48
DATE: 1/10/17

May 2/10/17

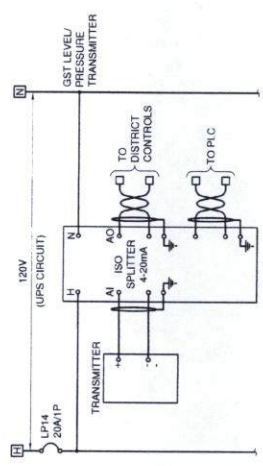


RECEPTACLE WIRING DIAGRAMS



NOTE: 1. PROVIDE MINIMUM OF ONE AIR CHANGE PER MINUTE INSIDE CONTROL PANEL. PROVIDE EXHAUST FAN MOUNTED HIGH ON SIDE OF ENCLOSURE WITH RAIN CAP. BACK DRAFT DAMPER AND INSECT SCREEN. PROVIDE SUPPLY VENT ON OPPOSITE LOWER SIDE OF ENCLOSURE WITH RAIN CAP, GRAVITY DAMPER, FILTER AND INSECT SCREEN.

HEATING AND VENTILATION CONTROL DIAGRAMS



LEVEL/PRESSURE TRANSMITTER WIRING DIAGRAM (TYPICAL)

SHRADER ENGINEERING
ELECTRICAL ENGINEERING
11111 FORT MEADE BLVD, SUITE 100
HOUSTON, TEXAS 77060
TEL: 281-410-1111 FAX: 281-410-1112
WWW.SHRADEENGINEERING.COM

NO. DATE REVISION APPROVAL

4			
3			
2			
1			

BCE
Brown & Gay Engineers, Inc.
11111 FORT MEADE BLVD, SUITE 100
HOUSTON, TEXAS 77060
TEL: 281-410-1111 FAX: 281-410-1112
WWW.BCEENGINEERS.COM

PROJECT: 11111 FORT MEADE BLVD, SUITE 100
SHEET NO. 24 CONNECTION LINE

ELECTRICAL CONTROL DIAGRAMS
SHEET 2 OF 2

NORTH FORT BBND
NORTH FORT BBND
11111 FORT MEADE BLVD, SUITE 100
HOUSTON, TEXAS 77060
TEL: 281-410-1111 FAX: 281-410-1112
WWW.NORTHFORTBBND.COM

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 11/12/17
BY: [Signature]
CHECKED: 11/12/17
APPROVED: 11/12/17

FILE NO.:
DRAWING SCALE:
HORIZ: N/A
VERT: N/A

DATE: JANUARY 10, 2017

SHEET 35 OF 48

E-502

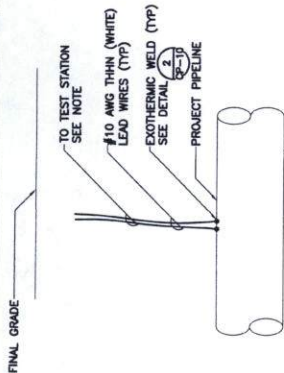
GENERAL NOTES

1. THE LOCATIONS FOR RECTIFIERS, ANODES AND TEST STATIONS INDICATED ON THE SITE PLANS ARE APPROXIMATE. FIELD LOCATE AND MARK THE FINAL LOCATIONS FOR NFBWA APPROVAL.
2. PROTECT EXISTING TEST STATIONS AND EXISTING ANODE WIRES. DAMAGE TO EXISTING TEST STATIONS AND EXISTING ANODE WIRES SHALL BE REPLACED BY THE CONTRACTOR. UNAPPROVED CABLE SPLICES ARE NOT ALLOWED.

TEST STATION SCHEDULE

STATION	TYPE OF TEST STATION	POLE MOUNTED OR FLUSH	STRUCTURES	NUM. ANODES	SIZE ANODE	DETAILS
1+00	ANODE TEST STATION/UTS	POLE	12" WATER	3	70LB	1 2 3
1+70.92	MONITORING TEST STATION	FLUSH	12" WATER			1 2 3
10+00	ANODE TEST STATION	FLUSH	12" WATER	3	70LB	1 2 3
15+87.90	MONITORING TEST STATION	FLUSH	12" WATER			1 2 3
20+88.68	MONITORING TEST STATION	FLUSH	12" WATER			1 2 3
21+88.03	ANODE TEST STATION/UTS	POLE	12" WATER	3	70LB	1 2 3

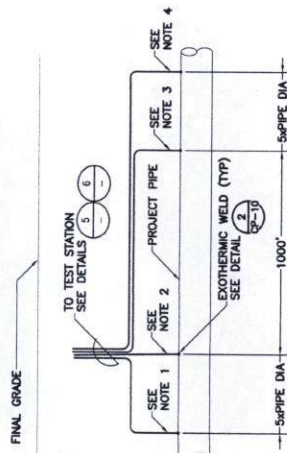
FORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 2/10/17			
B. J. Smith Professional Engineer No. 10177 State of Texas			
FBCD NO. 24 CONNECTION LINE		NORTH FORT BEND AUTHORITY	
CATHODIC PROTECTION SCHEDULES		CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE	
DATE: 12-17-16		DATE: 12-17-16	
FILE NO.		DRAWING SCALE	
SHEET NO. 38 OF 48		REF. NO. CP-1	



NOTES:

1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 1.
2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 2.

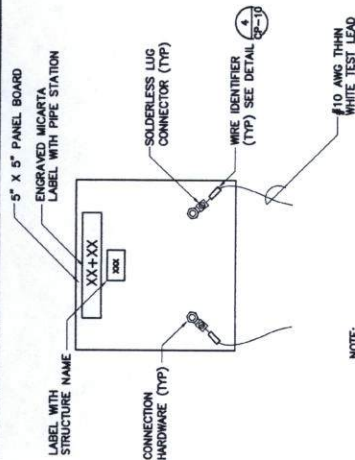
MONITORING TEST STATION (MTS) 1



NOTES:

1. LINE CURRENT TEST LEAD C1 AND 10 THHN (BLUE)
2. LINE CURRENT TEST LEAD C2 AND 10 THHN (RED)
3. LINE CURRENT TEST LEAD C3 AND 10 THHN (WHITE)
4. LINE CURRENT TEST LEAD C4 AND 10 THHN (WHITE)
5. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 1.
6. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 2.

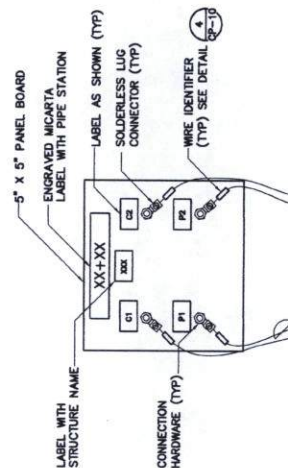
LINE CURRENT TEST STATION (LCTS) 4



NOTES:

1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 1.
2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 2.

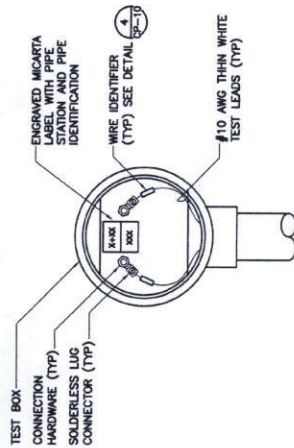
MTS TEST BOARD 2



NOTES:

1. LINE CURRENT TEST LEAD C1 AND 10 THHN (BLUE)
2. LINE CURRENT TEST LEAD C2 AND 10 THHN (RED)
3. LINE CURRENT TEST LEAD C3 AND 10 THHN (WHITE)
4. LINE CURRENT TEST LEAD C4 AND 10 THHN (WHITE)
5. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 1.
6. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 2.

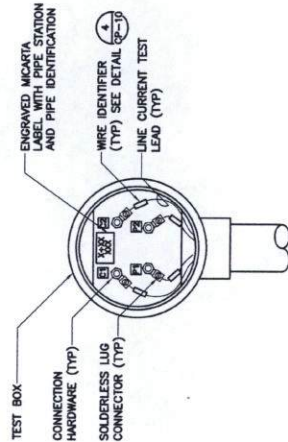
LCTS TEST BOARD 5



NOTE:

1. TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL 1.

POST MOUNTED MTS TEST BOX 3

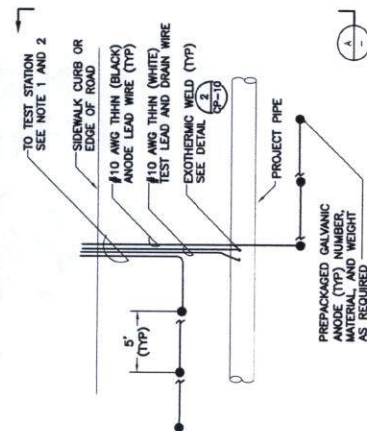


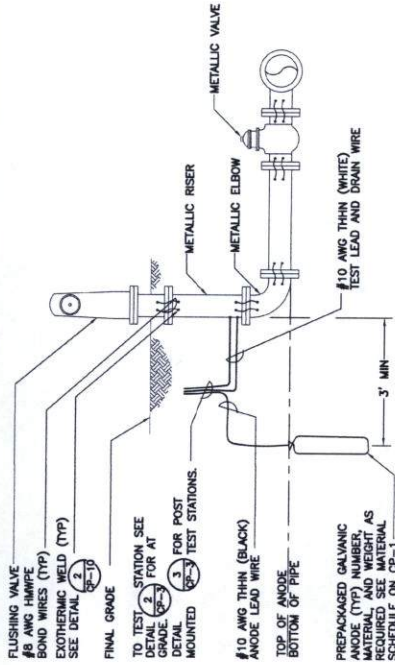
NOTE:

1. TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL 1.

POST MOUNTED LCTS TEST BOX 6

FORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY.	
APPROVED: <i>[Signature]</i> DATE: 2/10/17	DEVELOPER: <i>[Signature]</i> DATE: 2/10/17
MOD. DATE: _____ MOD. DATE: _____ MOD. DATE: _____	REVISION: _____ REVISION: _____ REVISION: _____
BGE BROWN & GALT ENGINEERS, INC. 10777 Highway 290, Suite 400 Houston, Texas 77055 Tel: 281-468-1100 • Fax: 281-468-1101 www.brownandgalt.com	APPROVED: <i>[Signature]</i> DATE: 2/10/17 PROJECT NO. 24 CONNECTION LINE CATHODIC PROTECTION TEST STATION DETAILS (SHEET 1 OF 4)
NORTH FORT BEND COUNTY AUTHORITY	CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND UTILITIES PROJECT NO. 24 CONNECTION LINE CATHODIC PROTECTION TEST STATION DETAILS (SHEET 1 OF 4)
FILE NO.: _____ DRAWING SCALE: _____ N.T.S.	SHEET NO. 39 OF 48 REF. NO. CP-2 DATE: OCTOBER 7, 2009



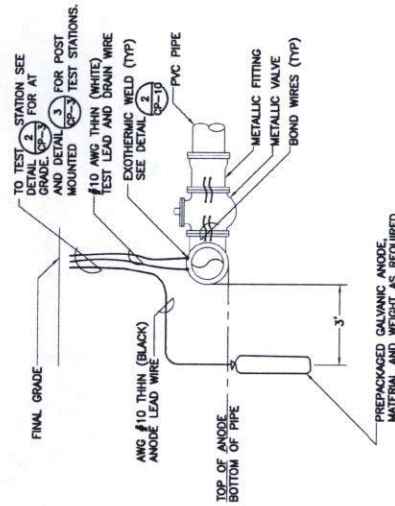


TYPICAL ANODE INSTALLATION
AT FLUSHING VALVE

NTS

GENERAL NOTES

1. THESE DETAILS ARE TYPICAL THE NUMBER, AND ARRANGEMENT OF FITTINGS, AND VALVES MAY VARY. THE ACTUAL ARRANGEMENT SHOULD BE USED.
2. INSTALL ANODES ON ALL METALLIC VALVES, FITTINGS, TEES, COUPLERS, FIRE HYDRANTS, AND OTHER METALLIC APPURTENANCES AS SHOWN ON THE DRAWINGS AND INDICATED IN THE SPECIFICATIONS.
3. SEE DETAIL 2-2 FOR TYPICAL SECTION OF ANODE AND FITTING.
4. METALLIC FITTINGS WITH TWO OR MORE VALVES SHALL BE INSTALLED WITH TWO GALVANIC ANODES. METALLIC FITTINGS WITH ONE OR TWO VALVES SHALL BE INSTALLED WITH ONE GALVANIC ANODE.
5. TOP OF ANODE SHOULD BE AT THE PIPE'S INVERT DEPTH AS SHOWN ON DETAIL 2-1 AND 2-2.



ANODE INSTALLATION
AT FITTING/VALVE

NTS

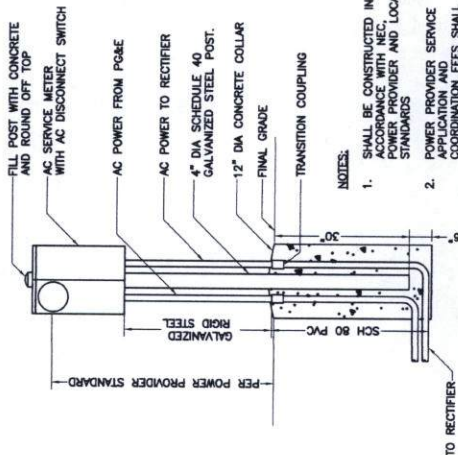
FORT BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DEVELOPMENT COORDINATOR DATE: 2/10/17		REVISION 1 2 3 4	APPROVAL BGE BROWN & GALT ENGINEERS, INC. 10717 Alameda Drive, Suite 200 Houston, Texas 77036 281-464-8888 www.brownandgalt.com	FBOID NO. 24 CONNECTION LINE CATHODIC PROTECTION TEST STATION DETAILS (SHEET 3 OF 4)	NORTH FORT BEND COUNTY ENGINEERING DEPARTMENT 10717 Alameda Drive, Suite 200 Houston, Texas 77036 281-464-8888 www.brownandgalt.com	CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING 1001 FOSTER STREET, SUITE 100 HOUSTON, TEXAS 77002 713-858-1234 www.houstontx.gov	FILE NO. DRAWING SCALE N.T.S. SHEET 41 OF 48
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REF. NO.
CP-4

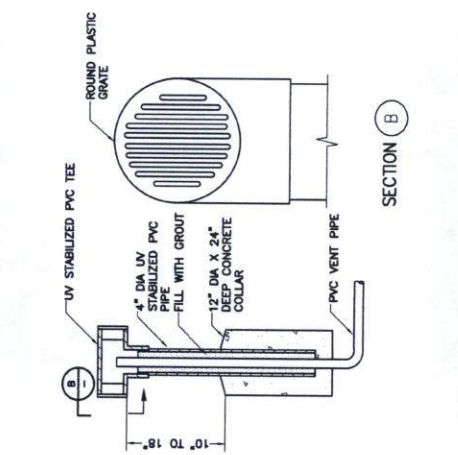
DATE: OCTOBER 7, 2008



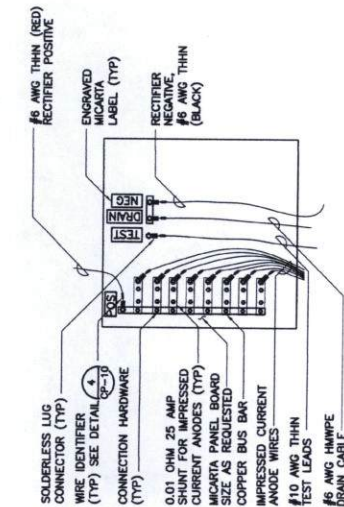




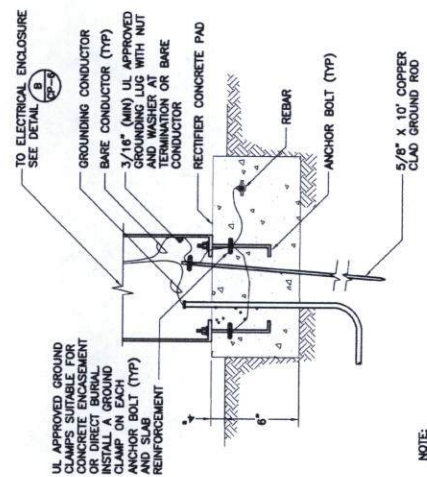
AC SERVICE METER
NTS



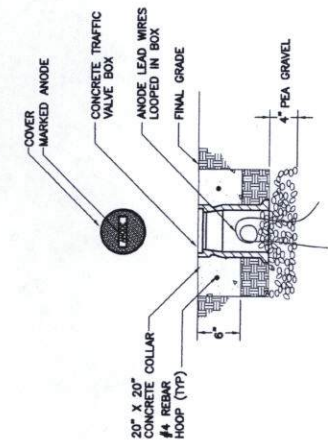
VENT PIPE HOUSING
NTS



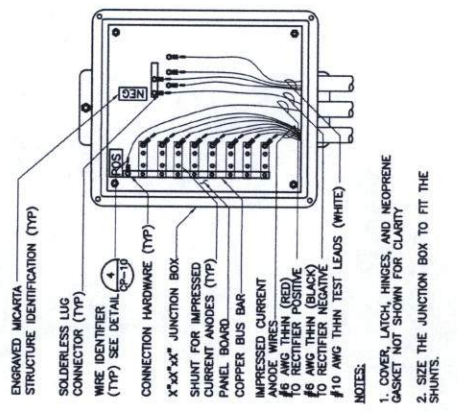
IMPRESSED CURRENT ANODE
TEST BOARD
NTS



GROUND ROD
NTS



ANODE WELLHEAD BOX
NTS



IMPRESSED CURRENT ANODE
JUNCTION BOX
NTS

LOCAL BOARD COUNTY ENGINEERING DEPARTMENT
AUTORIZATION VALID FOR ONE YEAR ONLY

APPROVED: *[Signature]*
ENGINEER

DATE: 2/10/17

NO. DATE REVISION

1		
2		
3		
4		

APPENDIX

BCE

Bentley & Co. Engineers, Inc.
100213
10000 Highway 100, Suite 100
Houston, Texas 77055
Tel: 281-444-1111 • Fax: 281-444-1112
Email: info@bce-engineers.com

FB001 NO. 24 CONNECTION LINE

CATHODIC PROTECTION
RECTIFIER DETAILS
(SHEET 2 OF 2)

NORTH FORT BEACH

FLORIDA

CITY OF HOUSTON

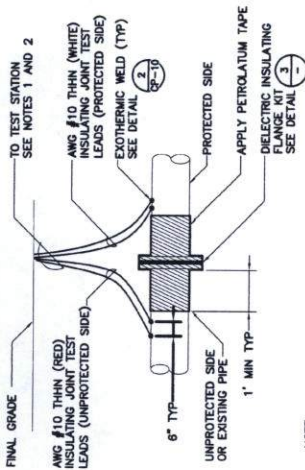
ENGINEERED BY: *[Signature]*
DATE: 1/12/17
CHECKED BY: *[Signature]*
DATE: 1/12/17

FILE NO.

DRAWING SCALE

N.T.S.

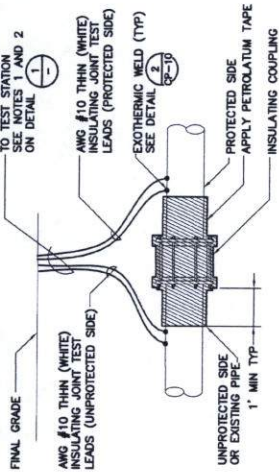
SHEET 44 OF 48



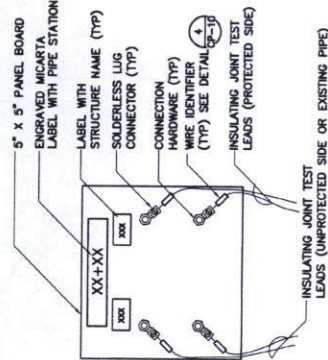
NOTE:
DO NOT APPLY PETROLIUM TAPE IF FLANGE IS LOCATED ABOVE GRADE OR IN A VAULT.

- NOTES:
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 5
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 4

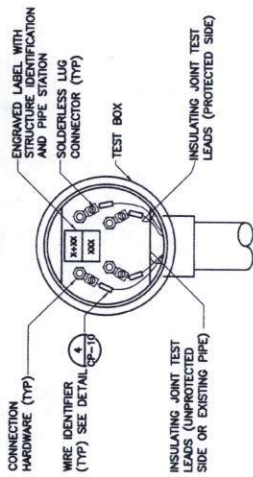
INSULATING JOINT FLANGE CONNECTION TEST STATION (IJTS) NTS 1



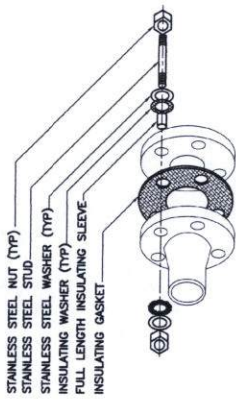
INSULATING JOINT TEST STATION-COUPLING CONNECTION (IJTS-COUPLING) NTS 2



IJTS TEST BOARD NTS 4

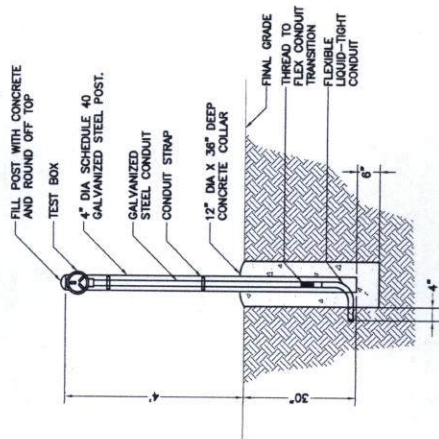


POST MOUNTED IJTS TEST BOX NTS 5

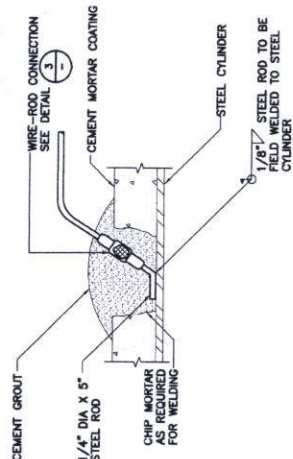


DIELECTRIC INSULATING FLANGE KIT NTS 3

EAST BEND COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> DATE: 2/15/17		4 5 6 7 8 9 10 11 12	REVISION APPROVAL NO. DATE	BCE BROWN & GALT ENGINEERS, INC. 10711 Highway 139, Suite 100 Houston, Texas 77033 (281) 416-1100 www.brownandgalt.com	NORTH FORT BEND COUNTY AUTHORITY COUNTY OF BEND COUNTY CLERK JAMES L. BROWN 10711 Highway 139, Suite 100 Houston, Texas 77033 (281) 416-1100 www.brownandgalt.com	FBOD NO. 24 CONNECTION LINE CATHODIC PROTECTION INSULATING JOINT DETAILS	CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE DIVISION OF WATER QUALITY PROJECT NO. 17-17 DATE: 2/15/17 DRAWING NO. 17-17-17 FILE NO. 17-17-17 FOR CITY OF HOUSTON USE ONLY	REF. NO. CP-8 SHEET 45 OF 48 DATE: OCTOBER 7, 2009
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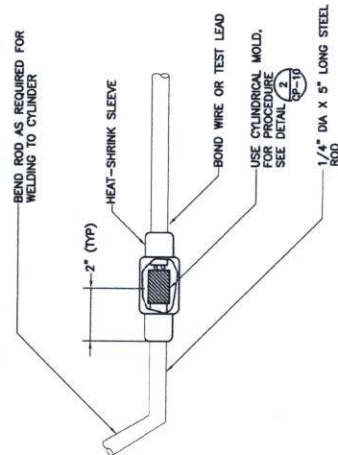


POST MOUNTED TEST STATION (1)

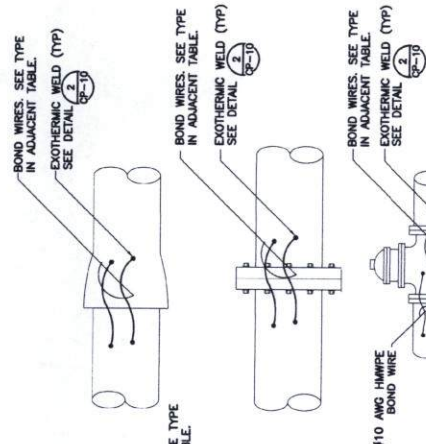
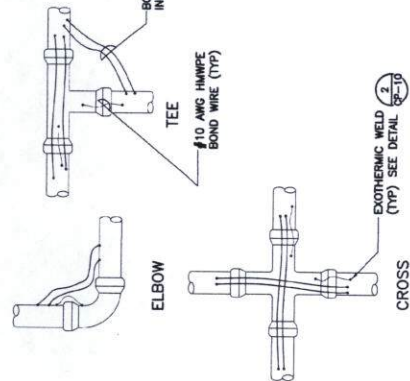


NOTES:
1. REINFORCING WIRE NOT SHOWN FOR CLARITY.

TEST LEAD CONNECTION MORTAR COATED STEEL PIPE AND AWWA C-303 (2)



WIRE-ROD CONNECTION (3)



JOINT BONDS (4)

PIPE DIAMETER (INCHES)	CABLE SIZE (AWG)
14 OR LESS	8
16 TO 20	4
24 TO 30	2
36 TO 42	1/0
54	2/0

POST BOND COUNTY ENGINEERING DEPARTMENT
REGISTRATION IS VALID FOR ONE YEAR ONLY.

APPROVED: *[Signature]*
ENGINEER

DATE: 2/10/17

BCE
Bond County Engineering, Inc.

CATHODIC PROTECTION JOINT BONDING

NORTH FORT BEND
TEXAS

CITY OF HOUSTON
UTAH

FBOD NO. 24 CONNECTION LINE

DATE: 2/10/17

NO. DATE REVISION APPROVED

1. 1. 1. 1.

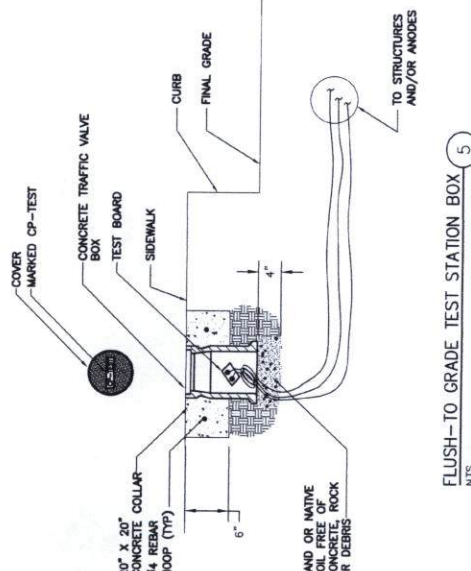
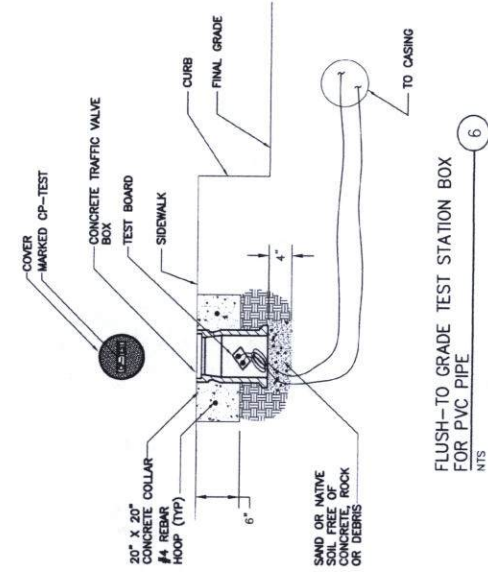
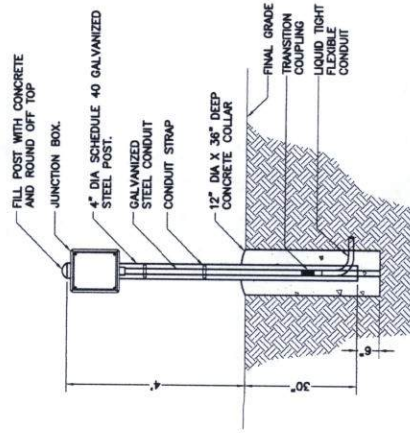
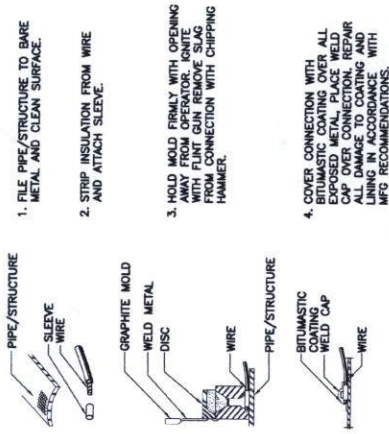
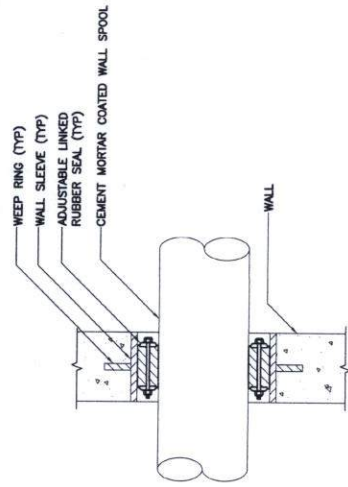
FOR CITY OF HOUSTON USE ONLY

57404

DATE: OCTOBER 7, 2008

REF. NO. CP-9

SHEET 46 OF 48



STRUCTURE	LABEL
XX" DIP WATER LINE	XX" DI
X" STEEL GAS LINE	X" G
XX" WATER	XX" W
GALVANIC ANODE	GA
REFERENCE ELECTRODE	RE
IMPRESSIONED CURRENT ANODE	ICA

NOTE:
"XX" INDICATES PIPE DIAMETER IN INCHES

WIRE IDENTIFIER
NTS

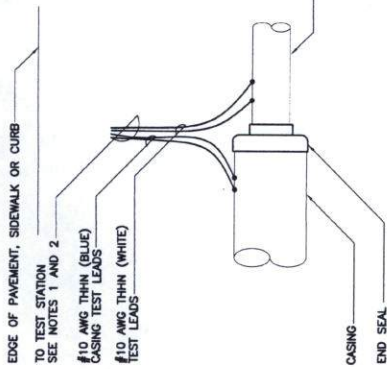
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REF. NO. CP-10

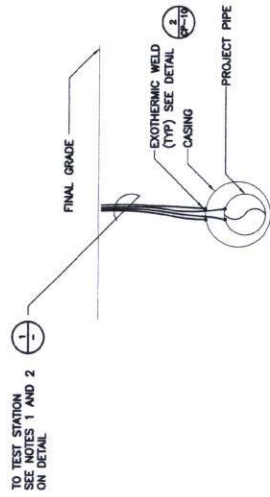
DATE: OCTOBER 7, 2009

DATE: OCTOBER 7, 2009

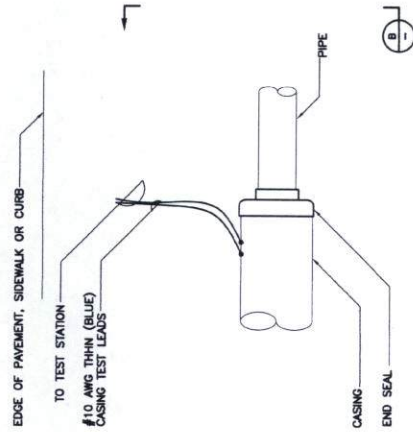
SHEET 47 OF 48
No:



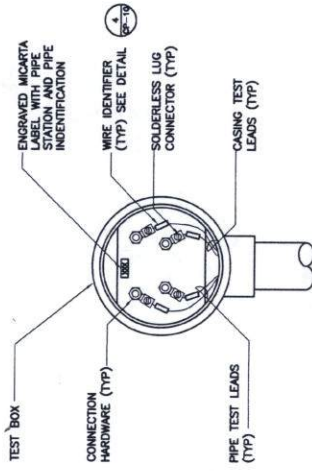
- NOTES:
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 2 (20-19)
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 3 (20-19)
- CASING TEST STATION (CTS) PLAN 1
NTS



CASING TEST STATION (CTS) SECTION A
NTS

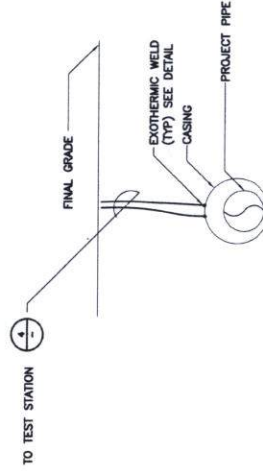


CASING TEST STATION (CTS) SECTION B
NTS



NOTE: TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL 4 (20-19)

POST MOUNTED CTS TEST BOX 2
NTS



CASING TEST STATION (CTS) SECTION D
NTS

ELECTRIC COUNTY ENGINEERING DEPARTMENT AUTHORIZATION IS VALID FOR ONE YEAR ONLY. APPROVED: <i>[Signature]</i> EXCISEMENT COMMISSIONER DATE: 2/10/17		NO. DATE REVISION APPROVAL 1 2 3 4
BCE BROWN & GAY ENGINEERING, INC. 100213 10017 Houston, Texas 77036 Tel: 281-484-1111 • Fax: 281-484-1112 SBC Registration No. 7-1486		FBOD NO. 24 CONNECTION LINE CATHODIC PROTECTION MISCELLANEOUS DETAILS (SHEET 2 OF 2)
CITY OF HOUSTON 10017 Houston, Texas 77036 Tel: 281-484-1111 • Fax: 281-484-1112 SBC Registration No. 7-1486		FILE NO. DRAWING SCALE N.T.S. SHEET NO. 48 OF 48

REF. NO. CP-11
DATE: OCTOBER 7, 2009