

10V

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 22 day of MAY, 20 12, before the Fort Bend Commissioners Court came on to be heard and reviewed the accompanying notice of E.P. BRADY, LTD

Job Location FULSHEAR - GASTON ROAD, BELLAIRE BOULEVARD

Dated 5/11/12 Bond No. 929549083, Permit No. 84148

to make use of certain Fort Bend County property subject to, "A Revised 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, date the 3rd day of August, 1987, recorded in Volume _____ of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Article 1436a, Vernon's Texas Civil Statues. Upon Motion of Commissioner Meyers, seconded by Commissioner Prestage, duly put and carried, it is ORDERED, ADJUGED 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.

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

Mail notices to: Permit Administrator
Fort Bend County Engineering
P.O. Box 1449
Rosenberg, Texas 77471
281-633-7500

3. This permit expires one (1) year from date of permit if construction has not commenced.

By [Signature]
County Engineer

By _____
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.
Recorded in Volume 5-22-12
Minutes of Commissioners Court.

Clerk of Commissioners Court
By [Signature]
Deputy

COUNTY OF FORT BEND

Engineering Department

P.O. BOX 1449
Rosenberg, Texas 77471-1449

Johnny Ortega
Permit Administrator

1124 Blume Road
Phone: (281) 341-7500

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

PERMIT NO. 084148

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.

X (1) Complete Application Form.
X a. Name of road, street, and/or drainage ditch affected.
X b. Vicinity map showing course of direction.
X c. Plans and specifications.

X (2) Bond:
District Attorney, approval when applicable.
X Perpetual bond currently posted.
No. 929549083
Amount \$50,000.00
Performance bond submitted.
No. _____
Amount _____
Cashier's Check.
No. _____
Amount _____


_____ (3) Verbal permission given for emergencies, to start construction before approved in Commissioner's Court.

_____ Precinct Engineer Acknowledgment _____ Date _____

_____ Precinct Commissioner Acknowledgment _____ Date _____

_____ (4) _____
Drainage District Approval when applicable

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


Johnny Ortega CFM/ Permit Administrator
(REVISED 5/30/08)

05/11/2012
Date

**NOTICE OF PROPOSED CABLE, CONDUIT AND/OR POLE LINE ACTIVITY
IN, UNDER, ACROSS OR ALONG ROADS, STREETS, HIGHWAYS AND DRAINAGE DITCHES
IN FORT BEND COUNTY**

APPLICANT'S JOB NO. _____
 PERMIT No. 54448 PCT. No. 3
 BOND No. 929549083

Formal notice is hereby given that E.P. Brady, Ltd.
 proposes to lay, construct, maintain and/or repair cable, conduit and/or pole line, in, under,
 across, or along roads, streets, highways and drainage ditches in Fort Bend County, as follows:

In, Under, or Across Roads and/or Drainage Ditches

Road or Ditch Name	Distance & Direction From Nearest Intersection	Length of Crossing	Type of Construction			
			Bored	Jacked	Driven	Cased
Fulshear-Gaston	220' West of Ashwood Crossing Dr.	125'	:Auger:	:	:	:
Fulshear-Gaston/ Bellaire Blvd.	F.M. 723	132'	:Auger:	:	:	:
Bellaire Blvd.	Rancho Bella Blvd.	106'	:Auger:	:	:	:

Along Roads and/or Drainage Ditches

Road or Ditch Name	Distance & Direction From Nearest Intersection	To	Distance
:	:	:	:
:	:	:	:
:	:	:	:

General Description

The Location and description of the proposed installation and appurtenances is more fully shown on the attached detail drawings. The laying, construction, maintenance and/or repair of the proposed installation shall be subject to "A Revised Order Regulating the Laying, Construction, Maintenance and/or Repair of Cables, Conduits, and/or 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 Commissioners Court of Fort Bend County, Texas, dated the 3rd. day of August, 1987, recorded in Volume 639 of the Minutes of the Commissioners Court of Fort Bend County, Texas.

Written notices are required: 1) 48 hours in advance of start of construction and
 2) when construction is complete and ready for final inspection.

Mail to: Permit Administrator/Fort Bend County Engineering
 P.O. Box 1449, Rosenberg, TX 77471.

Violation of requirements shall constitute grounds for job shut down.

COMPANY NAME: E.P. Brady, Ltd.
 AGENT and/or OWNER

Christopher New
 (Signature)

NAME & TITLE Christopher New - Project Manager
 (Please Print)

DATE 05/08/2012

ADDRESS 3414 Persimmon St.
 (Street/P.O. Box)

Houston Texas 77093
 City State Zip

TELEPHONE NO: (832) 596-7920
 (accessible 24 hrs/day, 7 days/week)

<p>Does project comply with Fort Bend County Outdoor Lighting Ordinance?</p> <p>Yes (X)</p> <p>No ()</p>
--

ITEM 10V

NORTH FORT BEND WATER AUTHORITY

SEGMENT 8B

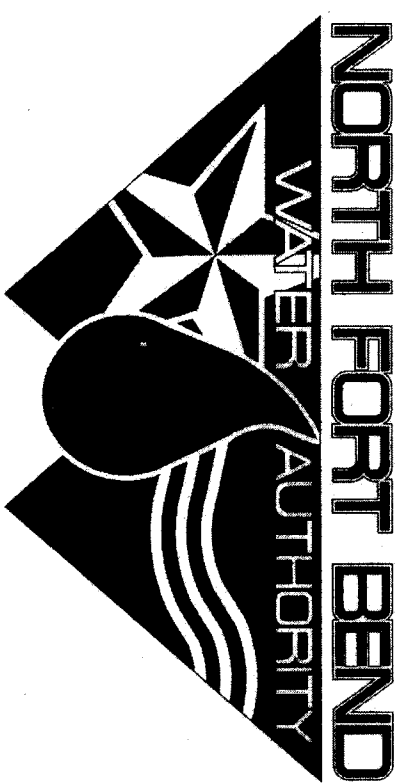
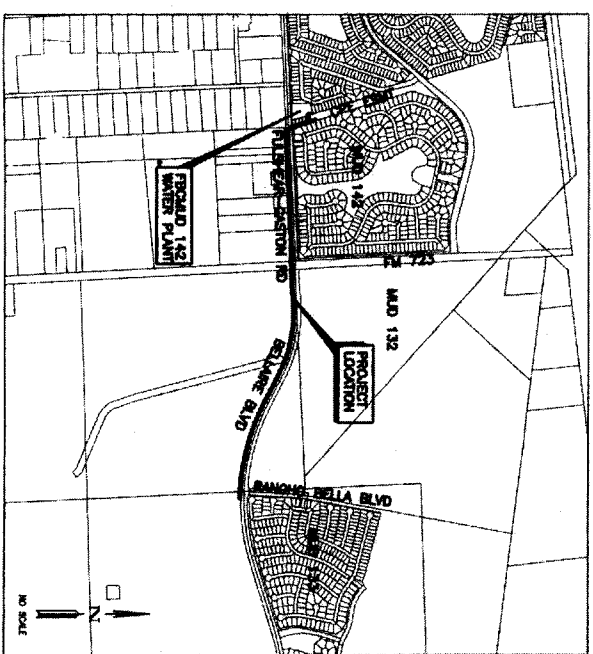
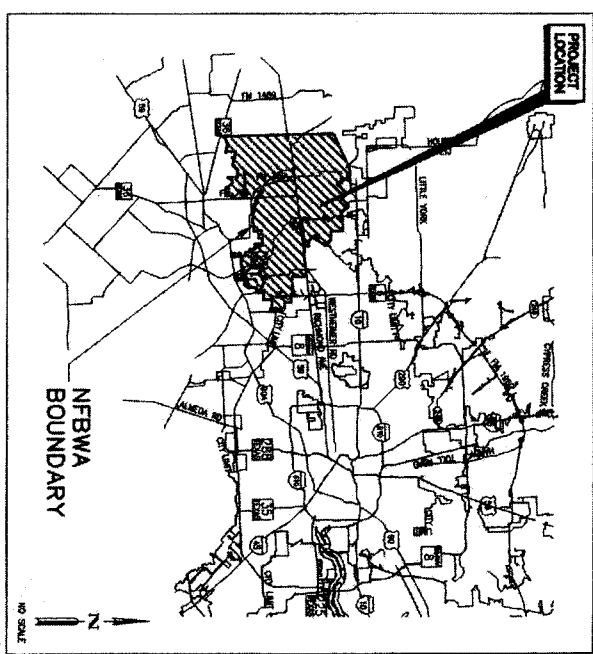
PROPOSED 36" WATER LINE ALONG FULSHEAR-GASTON RD/BELLAIRE BLVD FROM FBCMUD 142 WATER PLANT TO RANCHO BELLA BLVD

WORKING COPY

ALL ADDENDA NOTED

DATE 5/1/12 BY CP

(SEGMENT 8B)



- DIRECTORS**
- 1 DAVID SPELL
 - 2 ROBERT DARDEN
 - 3 BRUCE FAY
 - 4 MELONY F. GAY, P.E.
 - 5 ROBERT L. PATTON
 - 6 PETER HOUGHTON
 - 7 PAT HERBERT
- PRECINCT**

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
(713) 223-4367
(New Statewide Number Outside Houston)
1-800-545-6005

Contractor shall notify the City of Houston Department of Public Works and Engineering, Engineering Construction Division (Telephone No. 832-395-4405) 48 hours before starting work on this project.

FIRM
Flood Insurance Rate Map
Panel 100 of 550
4815700100 J
BFE Elevation: N/A due to Unshaded Zone X
1, Shelley L. Serras, P.E., certify that this project is entirely located outside the area with 100-year flood frequency.

Shelley L. Serras
City Engineer

APPROVAL IS IMPLIED FOR IMPROVEMENTS WITHIN FORT BEND COUNTY RIGHTS-OF-WAY ONLY. UTILITY AUTHORIZATION IS VALID FOR 1 YEAR.
APPROVED: _____
DATE: _____

Note: Prior to the construction of these facilities within or by the Authority, the Authority or its Engineer will give written notice by Registered or Certified Mail to the Director of Public Works and Engineering, City of Houston, stating the date such construction will begin.

REV. NO.	DATE	DESCRIPTION	P.E. APRR.
1			
2			
3			

IGN Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
2925 BRADPARK DRIVE
HOUSTON, TEXAS 77042
(713) 266-8900

STATE OF TEXAS
SHELLEY L. SERRAS
REGISTERED PROFESSIONAL ENGINEER
No. 43189
EXPIRES 08/31/12

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY.
AFTER DATE OF SIGNATURES

CITY ENGINEER
FOR CITY OF HOUSTON USE ONLY
48739

ISSUE DATE: NOVEMBER 2011

LMS NO: 09108078
LOG NO: 09-0925
DATE: AUGUST 31, 2010

REF. NO. G1
SHEET NO. 01 of 84

REF. NO.	SHEET NO.	DWG. NAME	REVISION DATE
01	01	COVER SHEET	08/31/10
02	02	INDEX OF DRAWINGS AND LEGEND	09/03/10
03	03	CONSTRUCTION NOTES	02/20/11
04	04	SHEET LAYOUT MAP AND CORE BORING PLAN	
05	05	SURVEY CONTROL STA 0+00 TO 35+00	
06	06	SURVEY CONTROL STA 35+00 TO END	
07	07	SURVEY CONTROL MONUMENTATION SWING TIES	
08	08	SURVEY CONTROL POINT CUT SHEETS	
09	09	CENTERPOINT EASEMENT PLAN STATION 0+20 TO 5+20	
10	10	CENTERPOINT EASEMENT PROFILE STATION 0+20 TO 5+20	
11	11	FULSHEAR-GASTON RD PLAN STATION 4+00 TO 9+00	
12	12	FULSHEAR-GASTON RD PROFILE STATION 4+00 TO 9+00	
13	13	FULSHEAR-GASTON RD PLAN AND PROFILE STATION 9+00 TO 14+00	
14	14	FULSHEAR-GASTON RD PLAN AND PROFILE STATION 14+00 TO 19+00	
15	15	FULSHEAR-GASTON RD PLAN AND PROFILE STATION 19+00 TO 23+00	
16	16	FULSHEAR-GASTON RD PLAN AND PROFILE STATION 23+00 TO 27+00	
17	17	BELLAIRE BVD PLAN STATION 27+00 TO 32+00	
18	18	BELLAIRE BVD PROFILE STATION 27+00 TO 32+00	
19	19	BELLAIRE BVD PLAN AND PROFILE STATION 32+00 TO 37+00	
20	20	BELLAIRE BVD PLAN STATION 37+00 TO 42+00	
21	21	BELLAIRE BVD PROFILE STATION 37+00 TO 42+00	
22	22	BELLAIRE BVD PLAN STATION 42+00 TO 47+00	
23	23	BELLAIRE BVD PROFILE STATION 42+00 TO 47+00	
24	24	BELLAIRE BVD PLAN AND PROFILE STATION 47+00 TO 52+00	
25	25	BELLAIRE BVD PLAN AND PROFILE STATION 52+00 TO 57+00	
26	26	BELLAIRE BVD PLAN AND PROFILE STATION 57+00 TO 61+00	
27	27	PROJECT SIGN DETAIL	
28	28	STANDARD WATER LINE DETAILS	
29	29	STEEL PIPE DETAILS	
30	30	PRESSRESSED CONCRETE CULINDER PIPE DETAILS	
31	31	TRENCHLESS CONSTRUCTION DETAILS	
32	32	AIR VALVE IN SERVICE MANHOLE DETAILS	
33	33	VALVE AND VENT PIPING AND SERVICE MANHOLE DETAILS	
34	34	HEAVY DUTY MANHOLE DETAILS	
35	35	EXCAVATION, BEDDING, BACKFILL, AND PAVEMENT REPAIR DETAILS	
36	36	METERING STATION LAYOUT	
37	37	METER AND CONTROL VALVE STATION STRUCTURAL AND MECHANICAL DETAILS	
38	38	METER AND CONTROL VALVE STATION LAYOUT	
39	39	VALVE HOTBOX DETAIL	
40	40	TREE PROTECTION PLAN SHEET 1 OF 3	
41	41	TREE PROTECTION PLAN SHEET 2 OF 3	
42	42	TREE PROTECTION PLAN SHEET 3 OF 3	
43	43	METER / CONTROL VALVE STATION INSTALLATION & ROUTING	
44	44	ELECTRICAL CONDUIT SCHEDULE	
45	45	CONTROL DIAGRAM SHEET 1	
46	46	CONTROL DIAGRAM SHEET 2	
47	47	CONTROL DIAGRAM SHEET 3	

REF. NO.	SHEET NO.	DWG. NAME	REVISION DATE
E6	48	CONTROL DIAGRAM SHEET 4	11/12/09
E7	49	CONTROL DIAGRAM SHEET 5	11/12/09
E8	50	CONTROL DIAGRAM SHEET 6	06/27/11
E9	51	CONTROL DIAGRAM SHEET 7	06/27/11
E10	52	CONTROL DIAGRAM SHEET 8	06/27/11
E11	53	CONTROL DIAGRAM SHEET 9	11/12/09
E12	54	CONTROL DIAGRAM SHEET 10	11/12/09
E13	55	REF. NO. E13 - CONTROL DIAGRAM SHEET 11	11/12/09
E14	56	ELECTRICAL CONTROL PANEL LAYOUT & SPECIAL DEVICE SCHEDULE	06/27/11
E15	57	ELECTRICAL CONTROL PANEL LAYOUT	11/12/09
E16	58	ELECTRICAL DETAILS SHEET 1	06/27/11
E17	59	ELECTRICAL DETAILS SHEET 2	11/12/09
CP-1	60	CATHODIC PROTECTION SCHEDULES	10/07/09
CP-2	61	CATHODIC PROTECTION TEST STATION DETAILS 1 OF 4	10/07/09
CP-3	62	CATHODIC PROTECTION TEST STATION DETAILS 2 OF 4	10/07/09
CP-4	63	CATHODIC PROTECTION TEST STATION DETAILS 3 OF 4	10/07/09
CP-5	64	CATHODIC PROTECTION TEST STATION DETAILS 4 OF 4	10/07/09
CP-6	65	CATHODIC PROTECTION RECIFIER DETAILS 1 OF 2	10/07/09
CP-7	66	CATHODIC PROTECTION RECIFIER DETAILS 2 OF 2	10/07/09
CP-8	67	CATHODIC PROTECTION INSULATING JOINT DETAILS	10/07/09
CP-9	68	CATHODIC PROTECTION JOINT BONDING	10/07/09
CP-10	69	CATHODIC PROTECTION MISCELLANEOUS DETAILS 1 OF 2	10/07/09
CP-11	70	CATHODIC PROTECTION MISCELLANEOUS DETAILS 2 OF 2	10/07/09
	71	STORM WATER POLLUTION PREVENTION PLAN 1 OF 3	
	72	STORM WATER POLLUTION PREVENTION PLAN 2 OF 3	
	73	STORM WATER POLLUTION PREVENTION PLAN 3 OF 3	
	74	STORM WATER POLLUTION PREVENTION PLAN DETAILS	
	75	TRAFFIC CONTROL PLAN GENERAL NOTES	
	76	TRAFFIC CONTROL PLAN OVERALL LAYOUT	
	77	TRAFFIC CONTROL PLAN PHASES 1	
	78	TRAFFIC CONTROL PLAN PHASES 2	
	79	TRAFFIC CONTROL PLAN PHASE 3	
	80	TRAFFIC CONTROL PLAN PHASE 4	
	81	TRAFFIC CONTROL PLAN PHASE 5	
	82	TRAFFIC CONTROL PLAN PHASE 6	
	83	TRAFFIC CONTROL PLAN PHASE 7	
	84	TRAFFIC CONTROL PLAN BARRICADE STANDARD	

STANDARD ABBREVIATIONS	EXISTING SYMBOLS
AT BUILDING LINE	○ TREE
B/L BLIND FLANGE	□ SIGN
B/S BACKSLOPE	□ BACK COLUMN
C/L CENTER LINE	□ SPRINKLER VALVE
C/C CENTER CUT	□ SPRINKLER
C/O CITY OF HOUSTON	□ MAN BOX
C/M CONCRETE	○ STREET LIGHT, GAS LIGHT
C/G CORRUGATED GALVANIZED METAL PIPE	○ CUT OF HOUSTON MANHOLE
D/E DIAMETER	○ 8-INLET/8-INLET
DESC. DESCRIPTION	○ E-INLET
DIA. DIAMETER	○ C-INLET
E.P. EDGE OF PAVEMENT	○ GRAVE INLET
ELEV. ELEVATION	○ GRAVE INLET
F.L. FLOOR LIGHT	○ CLEANOUT
F.M. FORCE MAIN OR FLOW METER	○ WATER VALVE
F.V. FLUSHING VALVE	○ FIRE HYDRANT
FL FLOW LINE	○ FLOOD LIGHT
H.C.F.C.D. HARRIS COUNTY FLOOD CONTROL DISTRICT	○ WATER METER
H.C.O.P.R. HARRIS COUNTY OFFICIAL PUBLIC RECORDS	○ GAS METER
H.M.A.C. HOT MIX ASPHALTIC CONCRETE	○ GAS VALVE
I.P. INTERMEDIATE PRESSURE	○ WP-ELECTRIC
I.R. IRON ROD	○ POWER POLE
INFL. INFLUENT	○ WP-WATER
INV. EL. INVERT ELEVATION	○ WATER POLE
L.F. LINE	○ WIRE POLE
L.F.S.T. LINE SET	○ BUTTERFLY VALVE
N.V. NON-VENTILATED	○ CLEANER
N.Y. NIGHT	○ DRIVEWAY
P.V. POINT OF VERTICAL INTERSECTION	○ LEFT SIDEWALK
P.C. POINT OF CURVATURE	○ MULTI-CONDUIT DUCT
P.O.C. POINT OF INTERSECTION	○ MANHOLE
P.L. PROPERTY LINE	○ MAXIMUM
P.L.C. POINT OF LINE CURVE	○ MINIMUM
P.L.T. POINT OF TANGENCY	○ NATURAL GROUND
P.P. PROPOSED	○ POINT OF CURVATURE
P.P.M.T. PAYMENT TOP OF CURB	○ POINT ON CURVE
T.P. TOP OF PAVEMENT	○ POINT OF INTERSECTION

EXISTING PLAN LEGEND

EXISTING PROFILE LEGEND

PROPOSED PLAN LEGEND


PROPOSED PROFILE LEGEND

PROPERTY LINE	IRON PIPE OR IRON ROD MONUMENTS	PROPERTY LINE
EASEMENT LINE	GAS METER	EASEMENT LINE
EDGE OF DITCHES	GAS VALVE	EDGE OF DITCHES
EDGE OF ASPHALT FENCE LINE, WOOD BARBED WIRE	MISCELLANEOUS UNDERGROUND PIPELINE LABEL	EDGE OF ASPHALT FENCE LINE, WOOD BARBED WIRE
EDGE OF CONCRETE ELECTRICAL AERIAL LINE	TREE (RADIUS OF TREE CANOPY ESTIMATED AS 1 FOOT FOR EACH INCH OF TRUNK DIAMETER)	EDGE OF CONCRETE ELECTRICAL AERIAL LINE
ELECTRICAL UNDERGROUND LINE	HEDGE	ELECTRICAL UNDERGROUND LINE
GAS LINE	WATER METER	GAS LINE
TELECOM CONDUIT	WATER VALVE	TELECOM CONDUIT
CABLE TV	WATER VALVE	CABLE TV
WATER LINE	WATER VALVE	WATER LINE
24" (AND SMALLER) WATER	FIRE HYDRANT/FLUSHING VALVE TAPPING SLEEVE & VALVE	24" (AND SMALLER) WATER
30" (AND LARGER) WATER	REDUCER	30" (AND LARGER) WATER
24" (AND SMALLER) WASTEWATER SEWER	STORM SEWER MANHOLE	24" (AND SMALLER) WASTEWATER SEWER
30" (AND LARGER) WASTEWATER SEWER	DITCH FLOW LINE	30" (AND LARGER) WASTEWATER SEWER
STORM SEWER LINE	INLET	STORM SEWER LINE

ELECTRICAL CONDUIT	WATER LINE	ELECTRICAL CONDUIT
GAS LINE	WASTEWATER SEWER LINE	GAS LINE
TELECOM CONDUIT	24" (AND SMALLER) WATER	TELECOM CONDUIT
WATER LINE	30" (AND LARGER) WATER	WATER LINE
24" (AND SMALLER) WASTEWATER SEWER	24" (AND SMALLER) WASTEWATER SEWER	24" (AND SMALLER) WASTEWATER SEWER
30" (AND LARGER) WASTEWATER SEWER	30" (AND LARGER) WASTEWATER SEWER	30" (AND LARGER) WASTEWATER SEWER
STORM SEWER LINE	STORM SEWER LINE	STORM SEWER LINE
DITCH FLOW LINE	DITCH FLOW LINE	DITCH FLOW LINE
INLET	INLET	INLET

CATHODIC PROTECTION RECIFIER AND DEEP ANODE TEST STATION POINT CALLOUT	WATER LINE	CATHODIC PROTECTION RECIFIER AND DEEP ANODE TEST STATION POINT CALLOUT
WATER LINE	WATER VALVE (GATE)	WATER LINE
WATER VALVE (GATE)	WATER VALVE (BUTTERFLY)	WATER VALVE (GATE)
WATER VALVE (BUTTERFLY)	FIRE HYDRANT/FLUSHING VALVE	WATER VALVE (BUTTERFLY)
FIRE HYDRANT/FLUSHING VALVE	WATER VALVE (GAV)	FIRE HYDRANT/FLUSHING VALVE
WATER VALVE (GAV)	WATER LINE BY TRENCHLESS CONSTRUCTION IN CASING	WATER VALVE (GAV)
WATER LINE BY TRENCHLESS CONSTRUCTION IN CASING	WATER LINE BY TRENCHLESS CONSTRUCTION	WATER LINE BY TRENCHLESS CONSTRUCTION IN CASING
WATER LINE BY TRENCHLESS CONSTRUCTION	WATER LINE BY OPEN CUT IN CASING	WATER LINE BY TRENCHLESS CONSTRUCTION
WATER LINE BY OPEN CUT IN CASING		WATER LINE BY OPEN CUT IN CASING

WATER LINE 24" (AND SMALLER)	WATER LINE BY TRENCHLESS CONSTRUCTION IN CASING
WATER LINE 30" (AND LARGER)	WATER LINE BY OPEN CUT IN CASING
WATER VALVE (GATE)	WATER VALVE (BUTTERFLY)
WATER VALVE (BUTTERFLY)	FIRE HYDRANT/FLUSHING VALVE
FIRE HYDRANT/FLUSHING VALVE	WATER VALVE (GAV)
WATER VALVE (GAV)	WATER LINE BY TRENCHLESS CONSTRUCTION
WATER LINE BY TRENCHLESS CONSTRUCTION	WATER LINE BY OPEN CUT IN CASING
WATER LINE BY OPEN CUT IN CASING	




CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

IGN & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

INDEX OF DRAWINGS AND LEGEND

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

FILE NO:	FOR CUT OF HOUSTON USE ONLY
DRAWING SCALE:	FOR CUT OF HOUSTON USE ONLY
HORIZ: NTS	FOR CUT OF HOUSTON USE ONLY
VERT: NTS	FOR CUT OF HOUSTON USE ONLY



DATE: SEPTEMBER 3, 2010

GENERAL CONSTRUCTION NOTES

- 1. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS...
2. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES...
3. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES...
4. OWNER SHALL PERFORM INITIAL LABORATORY TESTS...
5. CONTRACTOR SHALL REMOVE ALL MUD, DIRT AND DEBRIS...
6. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGN OR SYSTEMS...
7. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA...
8. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
9. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
10. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
11. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
12. FORT BEND COUNTY ENGINEERING DEPARTMENT SHALL BE NOTIFIED...
13. CONTRACTOR SHALL NOTIFY THE NORTH FORT BEND WATER AUTHORITY...

FORT BEND COUNTY DRAINAGE DISTRICT NOTES

- 1. SEPARATION DISTANCES FOR INSTALLATION OF POTABLE WATER DISTRIBUTION LINES...
2. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES...
3. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES...
4. OWNER SHALL PERFORM INITIAL LABORATORY TESTS...
5. CONTRACTOR SHALL REMOVE ALL MUD, DIRT AND DEBRIS...
6. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGN OR SYSTEMS...
7. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA...
8. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
9. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
10. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
11. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
12. FORT BEND COUNTY ENGINEERING DEPARTMENT SHALL BE NOTIFIED...
13. CONTRACTOR SHALL NOTIFY THE NORTH FORT BEND WATER AUTHORITY...

UTILITY NOTES

- 1. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES...
2. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES...
3. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES...
4. OWNER SHALL PERFORM INITIAL LABORATORY TESTS...
5. CONTRACTOR SHALL REMOVE ALL MUD, DIRT AND DEBRIS...
6. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGN OR SYSTEMS...
7. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA...
8. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
9. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
10. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
11. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
12. FORT BEND COUNTY ENGINEERING DEPARTMENT SHALL BE NOTIFIED...
13. CONTRACTOR SHALL NOTIFY THE NORTH FORT BEND WATER AUTHORITY...

CONSTRUCTION NOTES

- 1. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES...
2. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES...
3. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES...
4. OWNER SHALL PERFORM INITIAL LABORATORY TESTS...
5. CONTRACTOR SHALL REMOVE ALL MUD, DIRT AND DEBRIS...
6. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGN OR SYSTEMS...
7. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA...
8. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
9. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
10. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
11. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY REGULATION...
12. FORT BEND COUNTY ENGINEERING DEPARTMENT SHALL BE NOTIFIED...
13. CONTRACTOR SHALL NOTIFY THE NORTH FORT BEND WATER AUTHORITY...

PRIVATE UTILITY LINES SHOWN

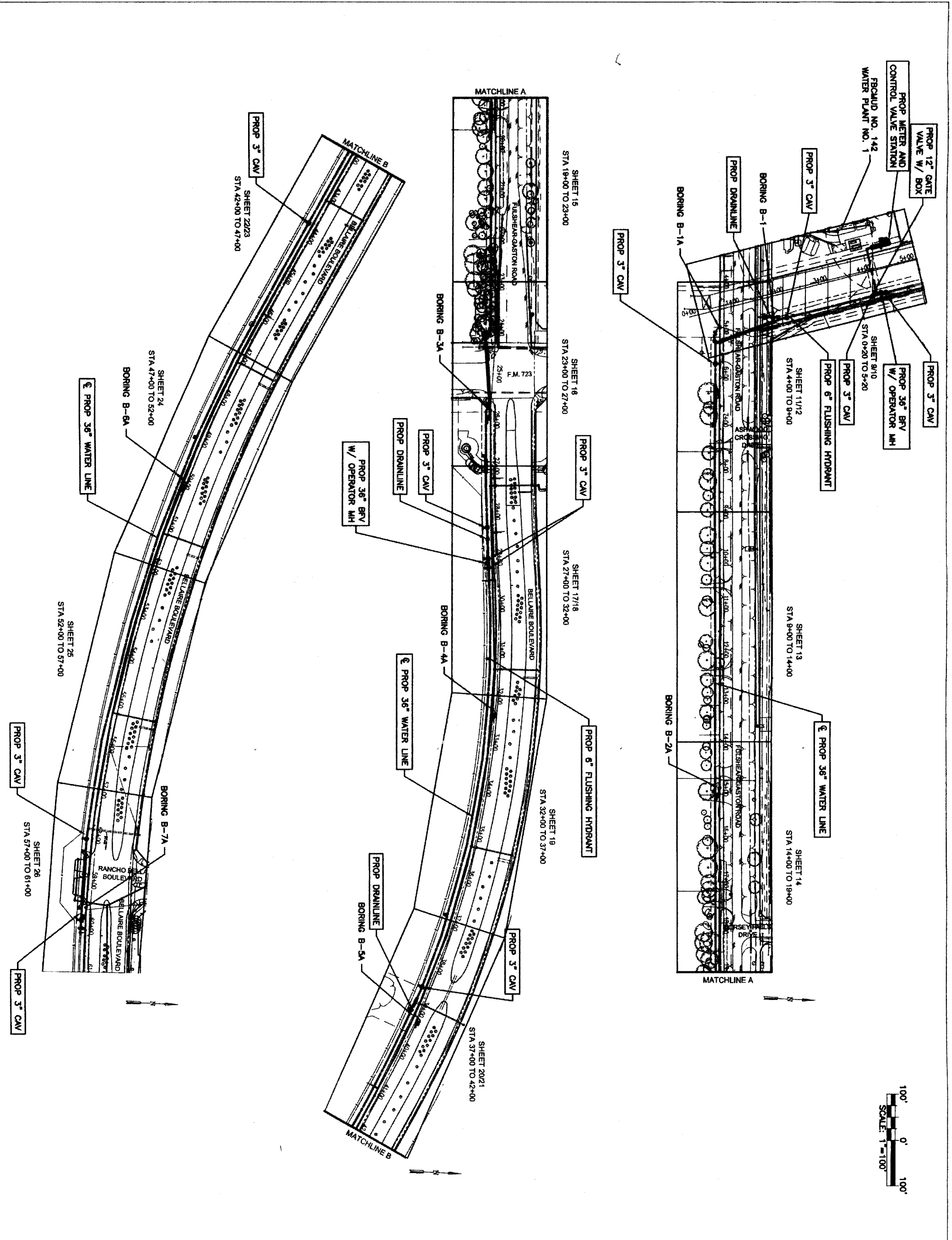
Date: 11/3/10
Contractor Energy/ Electric Facilities
Approved only for crossing underground utilities, unless otherwise noted. Void if from Texas only.

DATE: FEBRUARY, 2011

Lockwood, Andrews & Newmann, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
NORTH FORT BEND

LOCKWOOD, ANDREWS & NEWMANN, INC.
DRAWING SCALE
HORIZ: NO SCALE
VERT: NO SCALE
SHEET NO: 03 OF 84
DATE: FEBRUARY, 2011



PRIVATE UTILITY LINES SHOWN

U/A Centimeter Energy/ Electric Facilities
 (Approved only for crossing underground ductlines, unless otherwise noted.) Valid At Time Of Review Only
 Date: _____

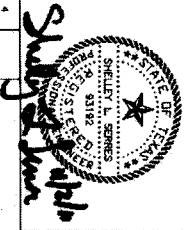
U/A AT&T/EAS/SSC UTILITY LINES SHOWN
 (Approved only for crossing underground conduit facilities only.)
 Signature valid for one year.
 Date: _____

Centimeter Energy/ Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET
 R.O.W. OR EASEMENTS CALL LOU LONE SIGN NOTIFICATION
 CENTER, (713) 223-4567 OR 1-800-669-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:

NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			



IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFEWA SEGMENT 8B

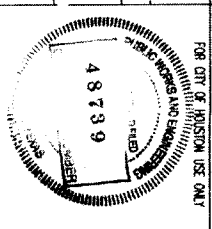


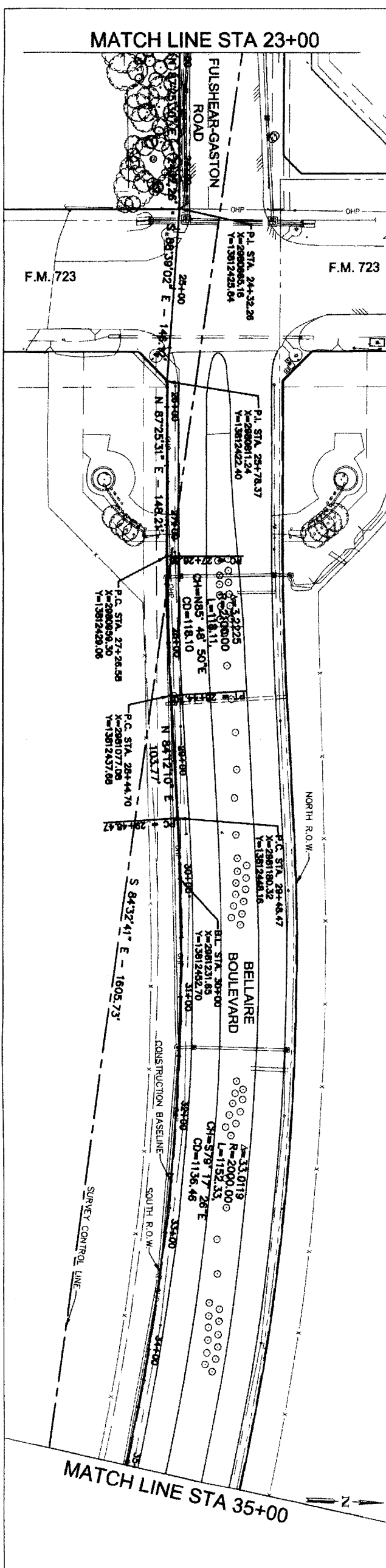
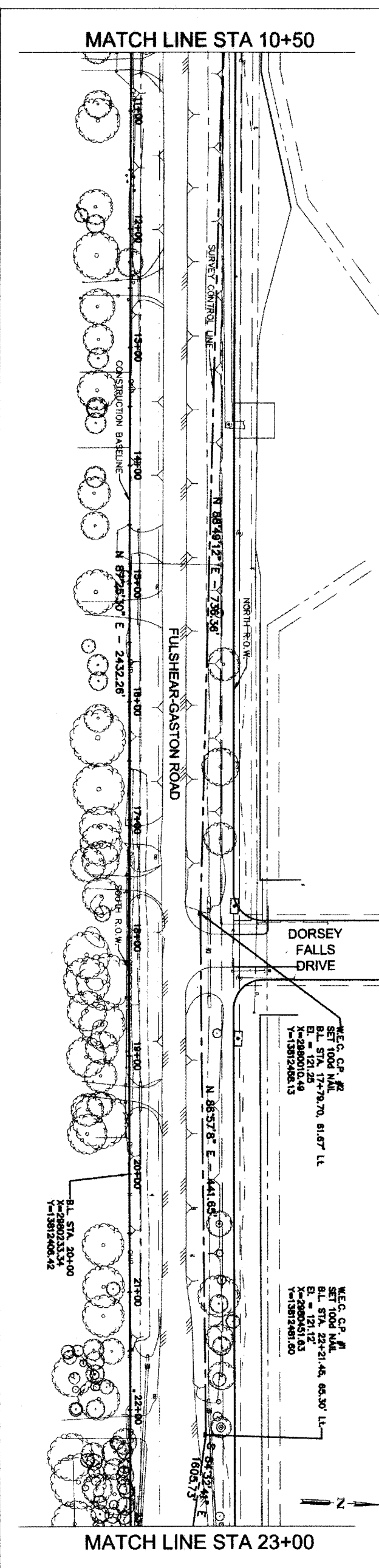
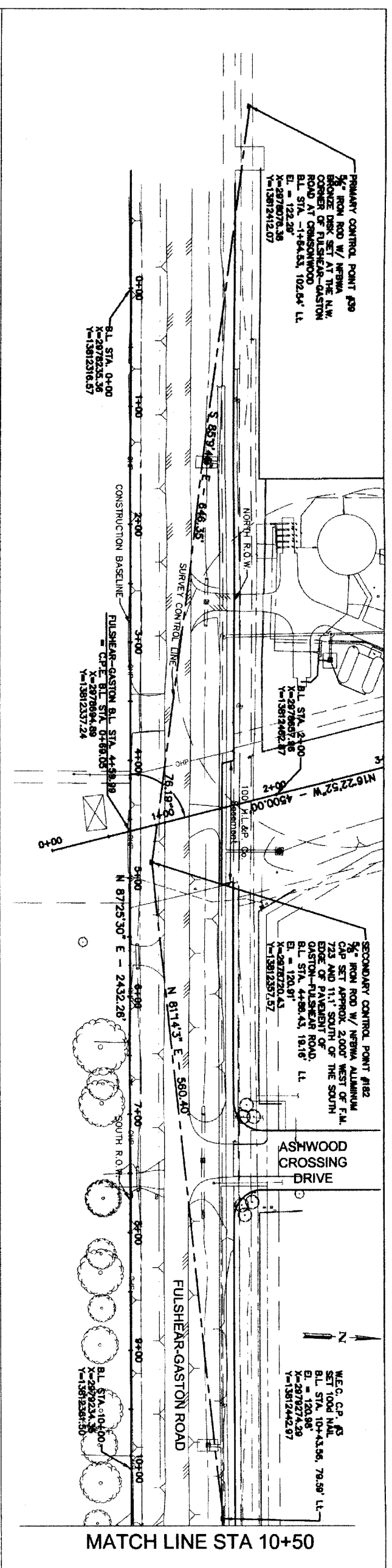
SHEET LAYOUT
 MAP AND CORE BORING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DATE: 10/27/2011
 SIGNATURE: [Signature]
 TITLE: [Title]

FILE NO.: _____
 DRAWING SCALE: _____
 HORIZ : 1" = 100'
 VERT : NTS
 SHEET No. 04 OF 84





PRIVATE UTILITY LINES SHOWN

DATE: _____

Centerpoint Energy/ Electric Facilities (Approved only for crossing underground ductlines, unless otherwise noted.) Valid in Harris County

DATE: _____

AT&T TEXAS/ SBC UTILITY LINES SHOWN (Approved for AT&T/SBC underground conduit facilities only.) Single-line valid for one year. Date: _____

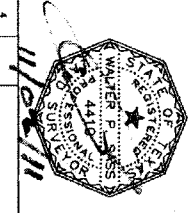
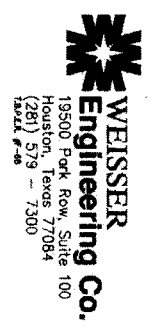
DATE: _____

Centerpoint Energy/ Gas Facilities (Gas service lines not shown.)

NOTICE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-659-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:

DATE: _____



NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			

IGN Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

SURVEY CONTROL
STA. 0+00 TO 35+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STREET & BRIDGE
THATIC
STATION WATER QUALITY
FOR CITY OF HOUSTON USE ONLY

FILE NO.: _____
DRAWING SCALE: _____
HORIZ : 1" = 50'
VERT : N/A

SHEET No. 05 OF 84
48789

PRIVATE UTILITY LINES SHOWN

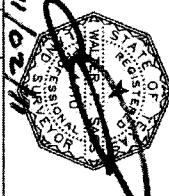
N/A
 Date:
 General Utility / Electric Facilities (underground and overhead facilities unless otherwise noted.) Valid At Time Of Review Only

N/A
 Date:
 A/E/C TEXAS/SSC UTILITY LINES SHOWN (Approval for A/E/C/SSC underground conduit facilities only.)
 N/A valid for one year.
 Date:
 Calligraphic Energy / Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER (713) 223-4567 OR 1-800-669-5344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTER/POINT AT 713-202-7777.

BENCHMARK INFORMATION:

WEISSER Engineering Co.
 19500 Park Row, Suite 100
 Houston, Texas 77064
 (281) 579-7300
 19262 P-04



NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DART COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 9B

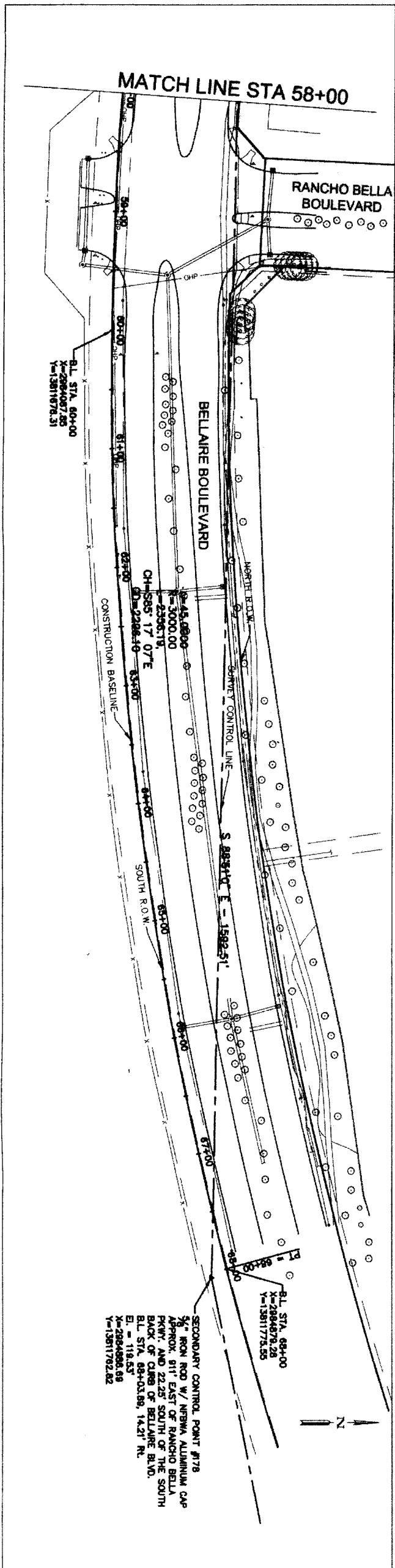
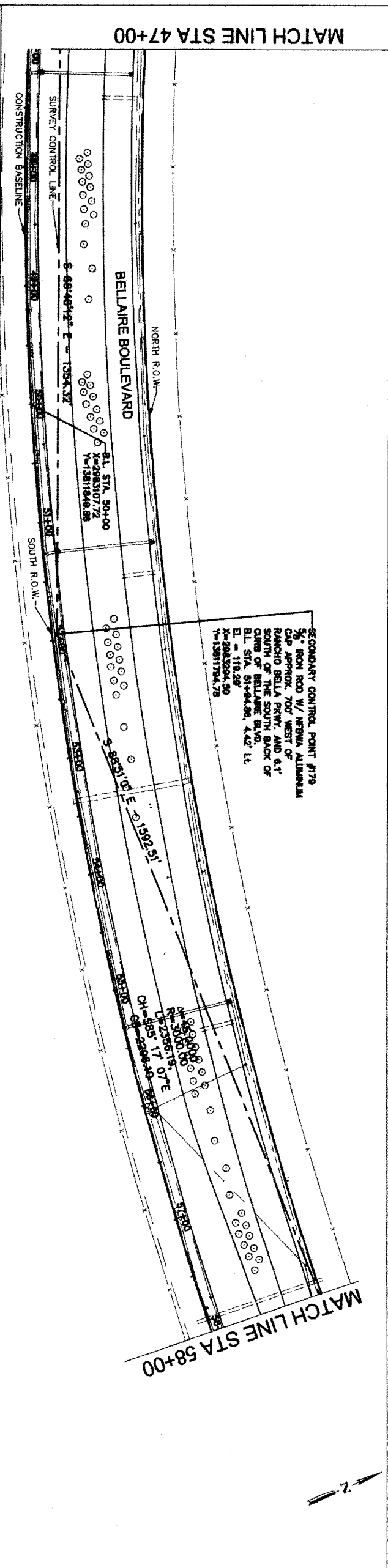
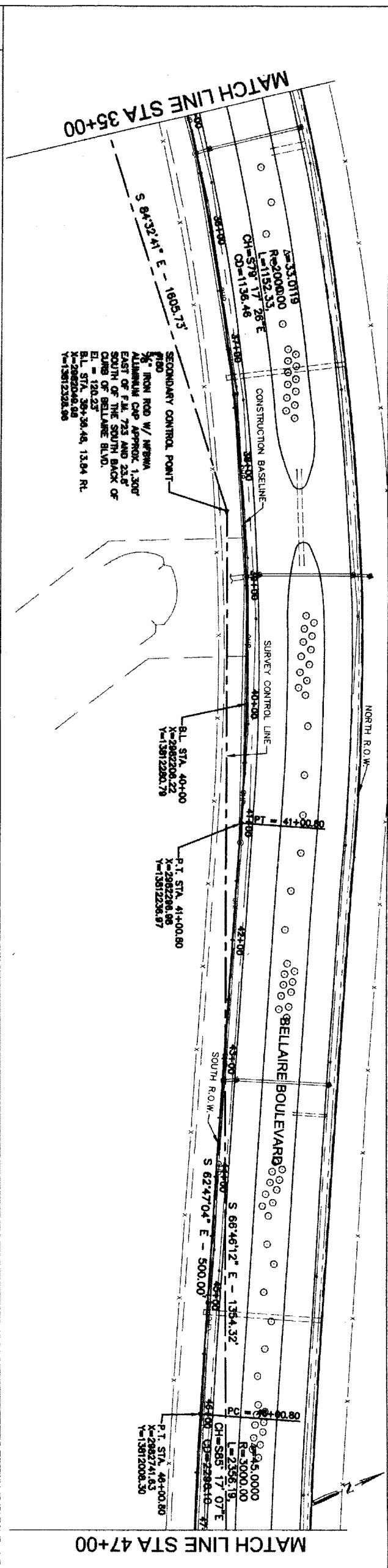
SURVEY CONTROL STA. 35+00 TO END



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

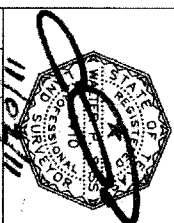
DATE: 11/11/11
 DRAWING SCALE: AS SHOWN
 HORIZ: 1" = 50'
 VERT: N/A

SHEET NO: 06 OF 84
 FOR CITY OF HOUSTON USE ONLY
 48739



PRIVATE UTILITY LINES SHOWN

NOTE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-689-6344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-202-7777.
 BENCHMARK INFORMATION:
 DATE: _____
 DATE: _____



NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			

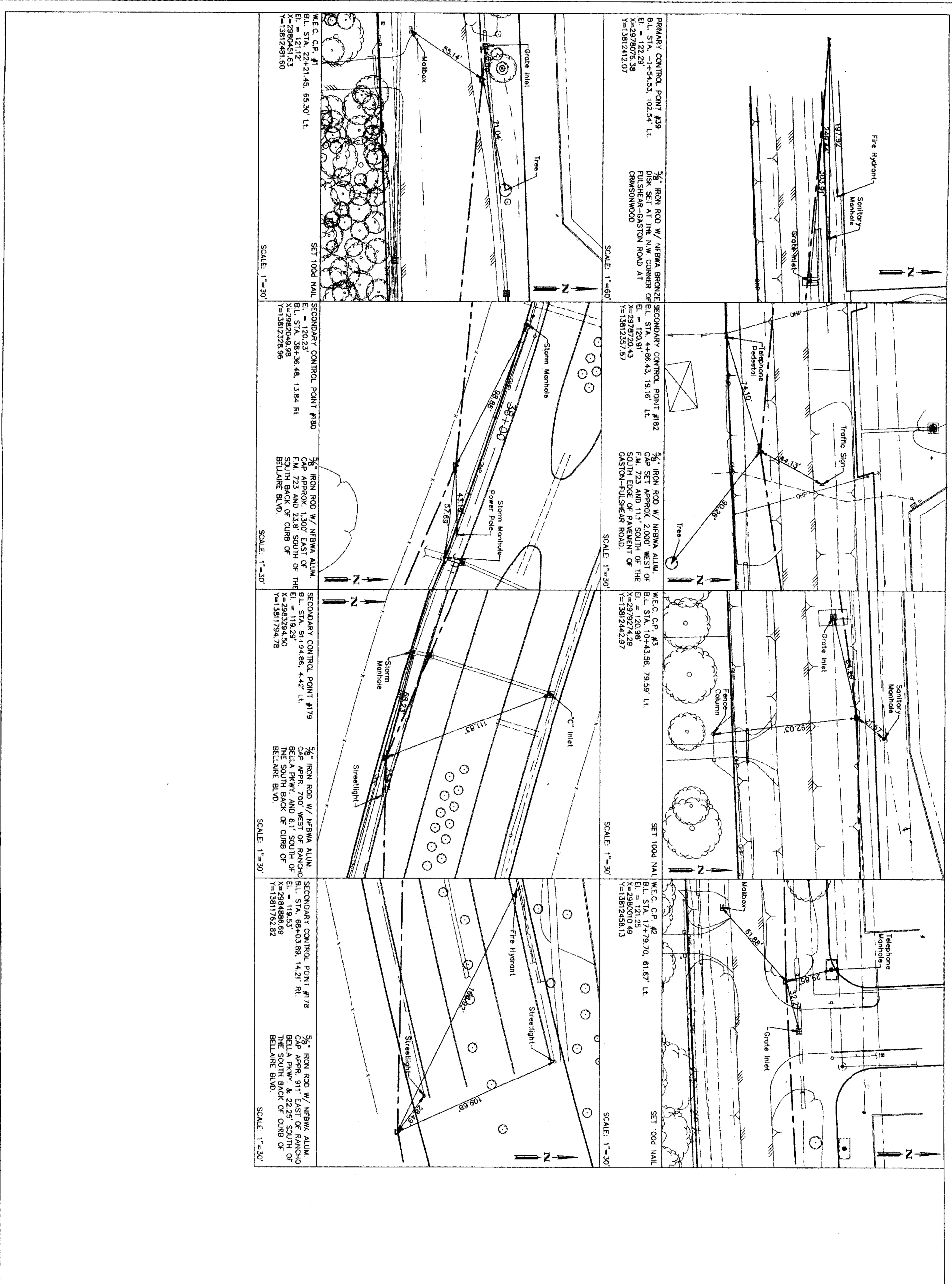
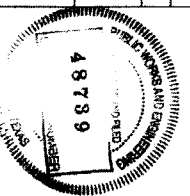
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 88



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DATE: _____
 DATE: _____

DRAWING SCALE: _____
 HORIZ: VARIES
 VERT: N/A

SHEET NO. 07 OF 84



Date: _____

NOTE: (Approved only for crossing underground facilities, unless otherwise noted.) Valid 90 days from issue date.

AT&T TEXAS/SEC UTILITY LINES SHOWN. (Approved only for crossing underground conduit facilities only.)

Approval valid for one year. Date: _____

Copyright Energy/ Gas Facilities (Gas service lines are not shown.)

NOTE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4587 OR 1-800-669-8344

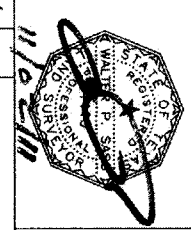
TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:

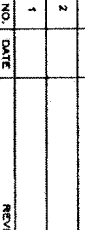
WEISSER Engineering Co. 19500 Park Row, Suite 100 Houston, Texas 77084 (281) 579-7300



19500 Park Row, Suite 100
Houston, Texas 77084
(281) 579-7300
FAX: 281-579-7300

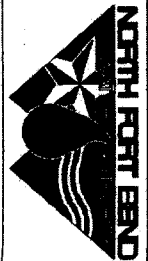


Green Fisher, P.E. No. 4146
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400
Houston, Texas 77042
Telephone: (281) 582-8700



Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

SURVEY CONTROL CONTROL POINT CUT SHEETS



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WITNESSES: _____
DATE: _____

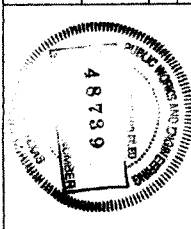
STATION: _____
DATE: _____

FILE NO.: _____

DRAWING SCALE: _____

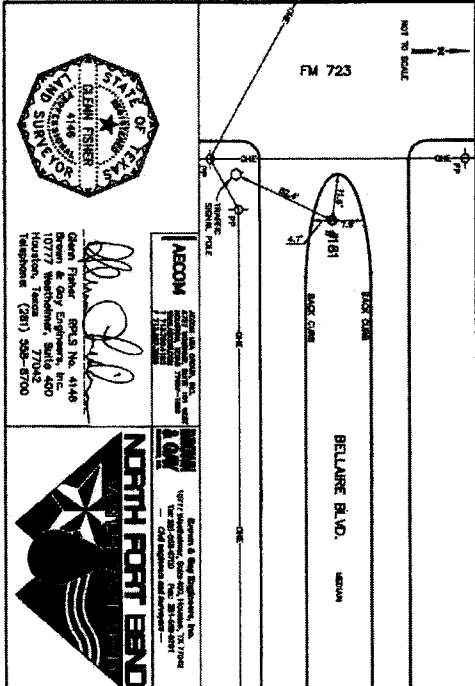
HORIZ. VARIES: _____

SHEET NO. 08 OF 84



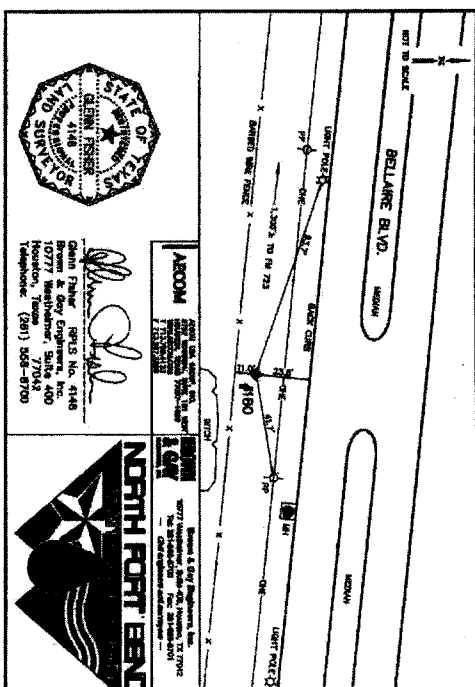
NORTH FORT BEND WATER AUTHORITY SEGMENT 8 CONTROL POINT 181 - SHEET 1

CONTROL POINT NUMBER 181 KEY MAP PAGE: 524-Q	GRID COORDINATES Y: 13,810,658.55 X: 2,980,408.86	VERTICAL DATUM: NAVD-88	VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CONS 98 - EPOCH 2002)	SURFACE COORDINATES Y: 13,812,444.18 X: 2,980,797.36	POINT ESTABLISHED BY: RTK.	POINTS DIRECTLY TIED: 28 & 27
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	ELEVATION 122.23 FT.	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 181"			
GEODETIC COORDINATES: LATITUDE: N 28° 41' 08.67041" LONGITUDE: W 95° 48' 45.33643"	VERTICAL NOTES: THIS SURVEY IS CONFINED TO THE NOS PUBLISHED CONTROL POINTS. THE NOS PUBLISHED CONTROL POINTS ARE ADJUSTED BY NOS IN 2002 AND PUBLISHED AS PID A48805, EPOCH DATE 2002.		
DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP APPROXIMATELY 41' WEST OF BELLAIR BLVD. ON EAST SIDE OF ITS INTERSECTION WITH FM 723			



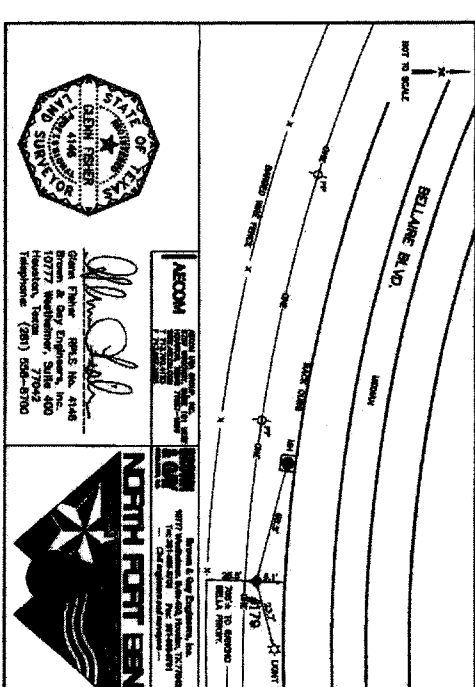
NORTH FORT BEND WATER AUTHORITY SEGMENT 8 CONTROL POINT 180 - SHEET 1

CONTROL POINT NUMBER 180 KEY MAP PAGE: 524-R	GRID COORDINATES Y: 13,810,633.62 X: 2,981,662.41	VERTICAL DATUM: NAVD-88	VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CONS 98 - EPOCH 2002)	SURFACE COORDINATES Y: 13,812,328.22 X: 2,982,056.08	POINT ESTABLISHED BY: RTK.	POINTS DIRECTLY TIED: 28 & 27
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	ELEVATION 120.27 FT.	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 180"			
GEODETIC COORDINATES: LATITUDE: N 28° 41' 08.98643" LONGITUDE: W 95° 48' 31.81717"	VERTICAL NOTES: THIS SURVEY IS CONFINED TO THE NOS PUBLISHED CONTROL POINTS. THE NOS PUBLISHED CONTROL POINTS ARE ADJUSTED BY NOS IN 2002 AND PUBLISHED AS PID A48805, EPOCH DATE 2002.		
DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP APPROXIMATELY 41' WEST OF BELLAIR BLVD. ON SOUTH SIDE OF THE SOUTH BACK OF BELLAIR BLVD.			



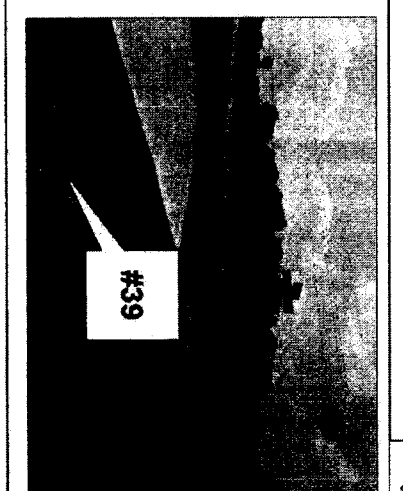
NORTH FORT BEND WATER AUTHORITY SEGMENT 8 CONTROL POINT 179 - SHEET 1

CONTROL POINT NUMBER 179 KEY MAP PAGE: 524-R	GRID COORDINATES Y: 13,809,698.46 X: 2,982,806.78	VERTICAL DATUM: NAVD-88	VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CONS 98 - EPOCH 2002)	SURFACE COORDINATES Y: 13,811,794.99 X: 2,983,294.59	POINT ESTABLISHED BY: RTK.	POINTS DIRECTLY TIED: 28 & 27
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	ELEVATION 119.16 FT.	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 179"			
GEODETIC COORDINATES: LATITUDE: N 28° 41' 01.37617" LONGITUDE: W 95° 48' 17.24300"	VERTICAL NOTES: THIS SURVEY IS CONFINED TO THE NOS PUBLISHED CONTROL POINTS. THE NOS PUBLISHED CONTROL POINTS ARE ADJUSTED BY NOS IN 2002 AND PUBLISHED AS PID A48805, EPOCH DATE 2002.		
DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP APPROXIMATELY 41' WEST OF THE SOUTH BACK OF CURB OF BELLAIR BLVD.			



NORTH FORT BEND WATER AUTHORITY CONTROL POINT 98 - SHEET 2

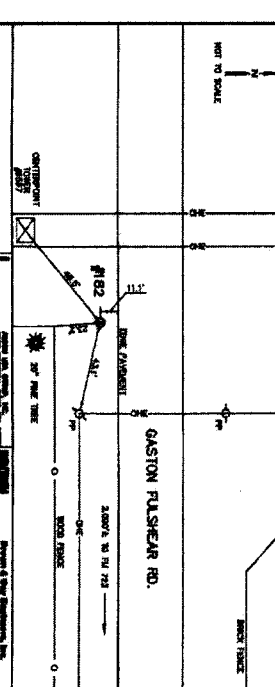
CONTROL POINT NUMBER 98 KEY MAP PAGE: 524-K	GRID COORDINATES Y: 13,810,616.89 X: 2,977,888.28	VERTICAL DATUM: NAVD-88	VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CONS 98 - EPOCH 2002)	SURFACE COORDINATES Y: 13,812,412.07 X: 2,978,076.38	ELLIPSOID HEIGHT: 32.37 FT.	POINTS DIRECTLY TIED: 28 & 27
MARKER: BROWN DISK	SCALE FACTOR: 1.00013	ELEVATION 122.29 FT.	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 98"			
GEODETIC COORDINATES: LATITUDE: N 28° 41' 08.89010" LONGITUDE: W 95° 48' 18.18746"	VERTICAL NOTES: THIS SURVEY IS CONFINED TO THE NOS PUBLISHED CONTROL POINTS. THE NOS PUBLISHED CONTROL POINTS ARE ADJUSTED BY NOS IN 2002 AND PUBLISHED AS PID A48805, EPOCH DATE 2002.		
DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A BROWN DISK MARKER APPROXIMATELY 41' WEST OF THE INTERSECTION OF FULSHEAR GASTON ROAD AND CRIMSONWOOD.			



Looking south-east toward Fulshear-Gaston Road

NORTH FORT BEND WATER AUTHORITY SEGMENT 8 CONTROL POINT 182 - SHEET 1

CONTROL POINT NUMBER 182 KEY MAP PAGE: 524-Q	GRID COORDINATES Y: 13,810,582.21 X: 2,978,333.22	VERTICAL DATUM: NAVD-88	VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CONS 98 - EPOCH 2002)	SURFACE COORDINATES Y: 13,812,307.82 X: 2,978,720.45	POINT ESTABLISHED BY: RTK.	POINTS DIRECTLY TIED: 28 & 27
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	ELEVATION 120.89 FT.	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 182"			
GEODETIC COORDINATES: LATITUDE: N 28° 41' 08.17789" LONGITUDE: W 95° 48' 04.80388"	VERTICAL NOTES: THIS SURVEY IS CONFINED TO THE NOS PUBLISHED CONTROL POINTS. THE NOS PUBLISHED CONTROL POINTS ARE ADJUSTED BY NOS IN 2002 AND PUBLISHED AS PID A48805, EPOCH DATE 2002.		
DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET APPROXIMATELY 2,000' WEST OF FM 723 AND APPROXIMATELY 2,000' WEST OF FM 723 AND 11.1' SOUTH OF EDGE PAVEMENT OF GASTON FULSHEAR RD.			

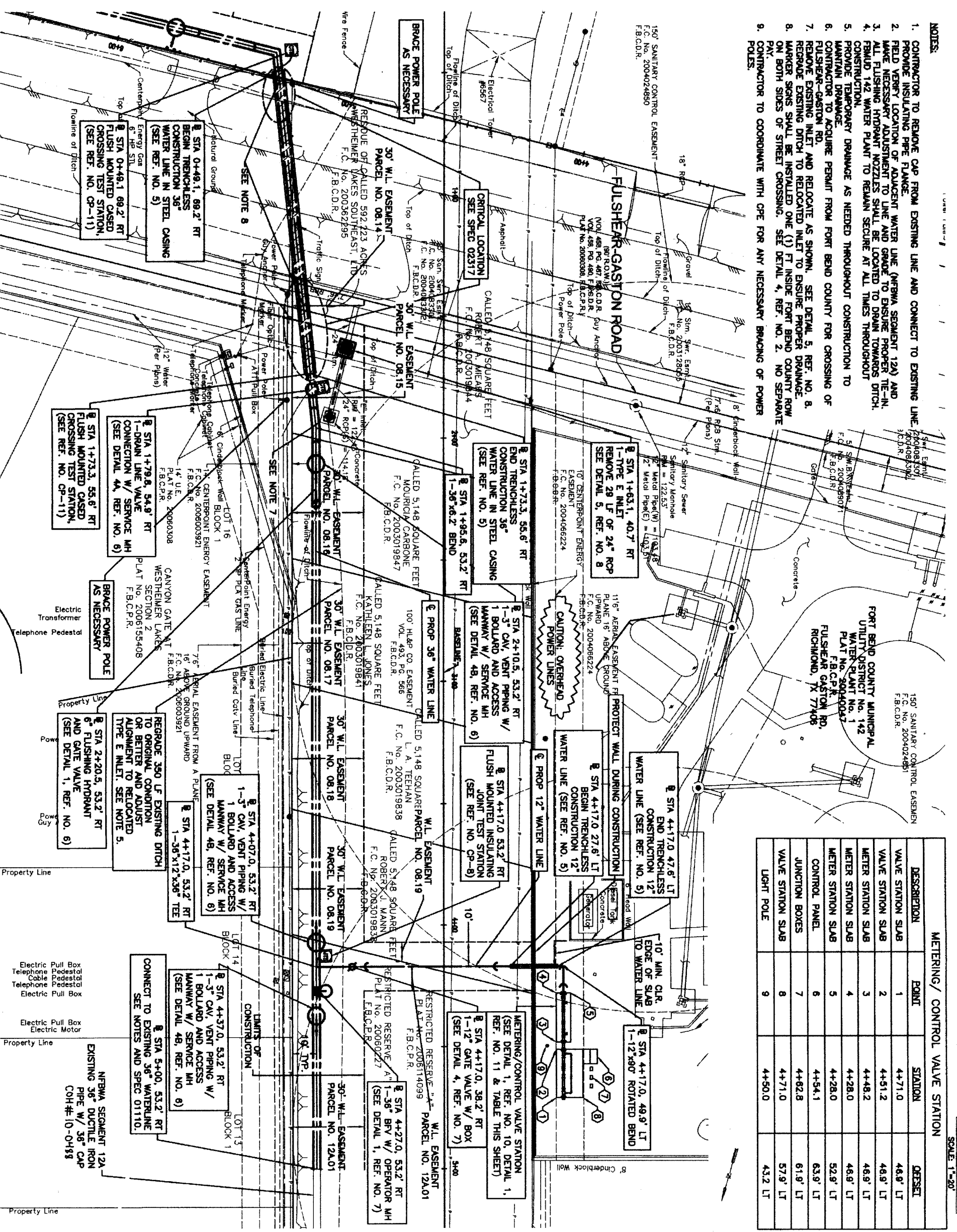


BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-582-8700 Fax: 281-668-8701
- Civil Engineers and Surveyors -

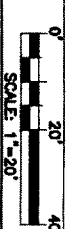
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

FOR CONTINUATION SEE SHEET 11

- NOTES:**
1. CONTRACTOR TO REMOVE CAP FROM EXISTING LINE AND CONNECT TO EXISTING LINE.
 2. PROVIDE INSULATING PIPE FLANGE.
 3. FIELD VERIFY LOCATION OF ADVANCE WATER LINE (NFBWA SEGMENT 12A) AND MAKE NECESSARY ADJUSTMENT TO LINE AND GRADE TO ENSURE PROPER DRAINAGE.
 4. ALL FLUSHING HYDRANT NOZZLES SHALL BE LOCATED TO DRAIN TOWARDS DITCH.
 5. REPAID 142 WATER PLANT TO REMAIN SECURE AT ALL TIMES THROUGHOUT CONSTRUCTION.
 6. PROVIDE TEMPORARY DRAINAGE AS NEEDED THROUGHOUT CONSTRUCTION TO MAINTAIN DRAINAGE.
 7. CONTRACTOR TO ACQUIRE PERMIT FROM FORT BEND COUNTY FOR CROSSING OF FULSHEAR-GASTON RD.
 8. REMOVE EXISTING INLET AND RELOCATE AS SHOWN. SEE DETAIL 5, REF. NO. 8.
 9. REGRADE EXISTING DITCH TO RELOCATED INLET TO ENSURE PROPER DRAINAGE. MARKER SIGNS SHALL BE INSTALLED ONE (1) FT INSIDE FORT BEND COUNTY ROW ON BOTH SIDES OF STREET CROSSING. SEE DETAIL 4, REF. NO. 2. NO SEPARATE PAV.
 10. CONTRACTOR TO COORDINATE WITH CPE FOR ANY NECESSARY BRACING OF POWER POLES.



METERING/ CONTROL VALVE STATION			
DESCRIPTION	POINT	STATION	DEESEL
VALVE STATION SLAB	1	4+71.0	46.9' LT
VALVE STATION SLAB	2	4+51.2	46.9' LT
METER STATION SLAB	3	4+48.2	46.9' LT
METER STATION SLAB	4	4+28.0	46.9' LT
METER STATION SLAB	5	4+28.0	52.9' LT
CONTROL PANEL	6	4+54.1	63.9' LT
JUNCTION BOXES	7	4+62.8	61.9' LT
VALVE STATION SLAB	8	4+71.0	57.9' LT
LIGHT POLE	9	4+50.0	43.2' LT

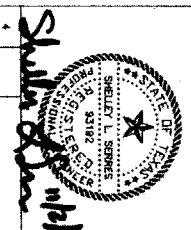


PRIVATE UTILITY LINES SHOWN

Date: 11/3/11
 Approved only for crossing underground utilities, unless otherwise noted. Valid At Time of Review Only
 Date: 11/3/11
 Date: 11/3/11

NOTE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET ROW, OR EASEMENTS CALL DONE START NOTIFICATION CENTER, (713) 223-4567 OR 1-800-689-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 PRIMARY CONTROL POINT #39
 N 3812.1207, E 297807.6238
 BASELINE STA. -1+54+53, 102.54' LT



NO. DATE REVISION APPROV.

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

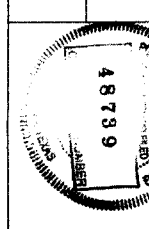
CENTERPOINT EASEMENT
 PLAN
 STA. 0+20 TO 5+20

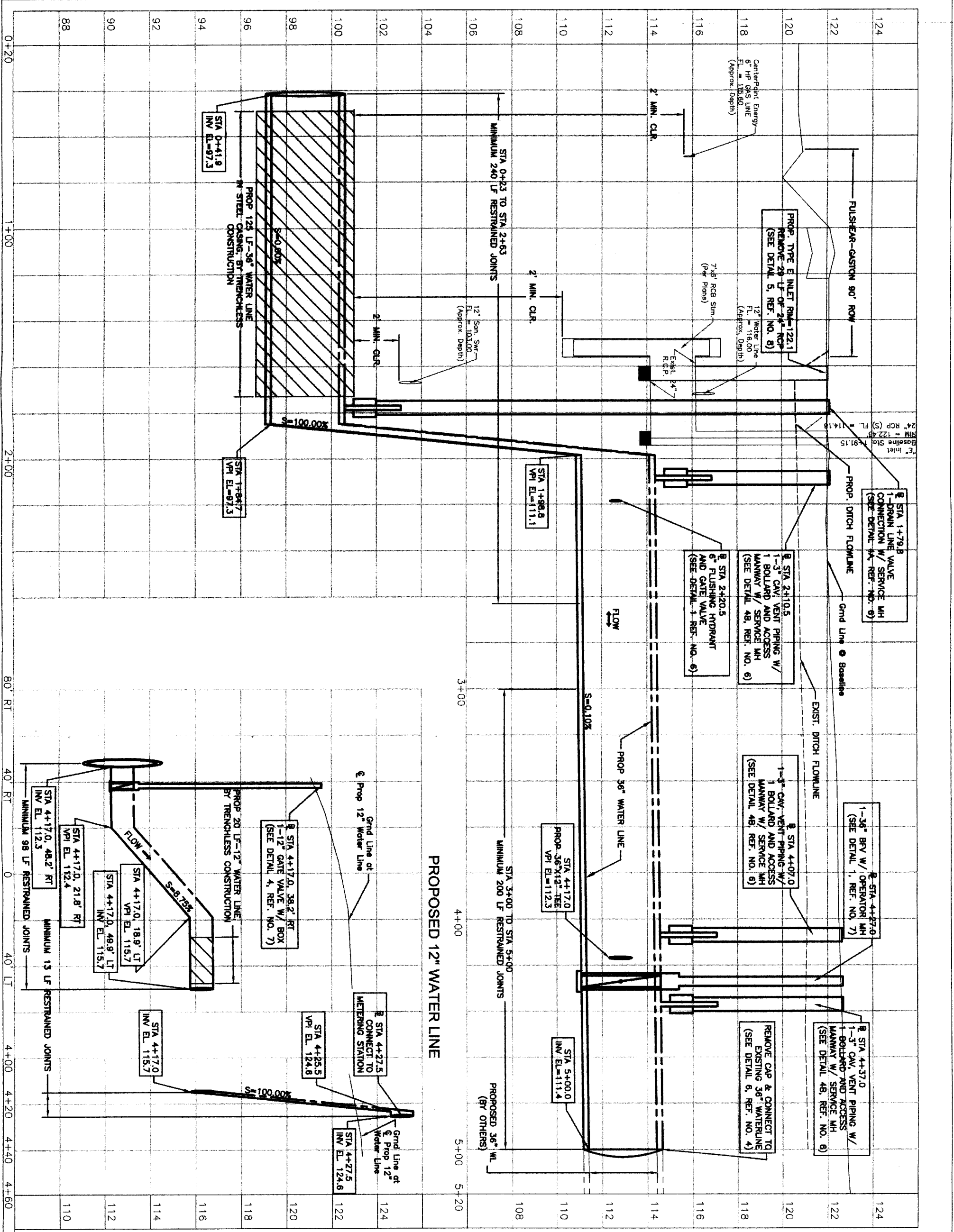


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

FILE NO.:
 DRAWING SCALE:
 HORIZ: 1" = 20'
 VERT: NTS
 SHEET NO. 09 OF 84





PRIVATE UTILITY LINES SHOWN

Date: 11/3/11
 Approved for A/E/C/Engineer: [Signature]
 Approved for A/E/C/Engineer: [Signature]
 Date: 11/3/11
 Centerpoint Energy/ Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER (713) 223-4567 OR 1-800-689-8344
 TO ARRANGE FOR LINES TO BE TORNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.
 BENCHMARK INFORMATION:

NOTES:
 1. PERMIT REQUIRED FBC CONTACT
 JOHNNY ORTEGA 281-633-7502

NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

CENTERPOINT EASEMENT PROFILE
 STA. 0+20 TO 5+20

NORTH FORT BAND

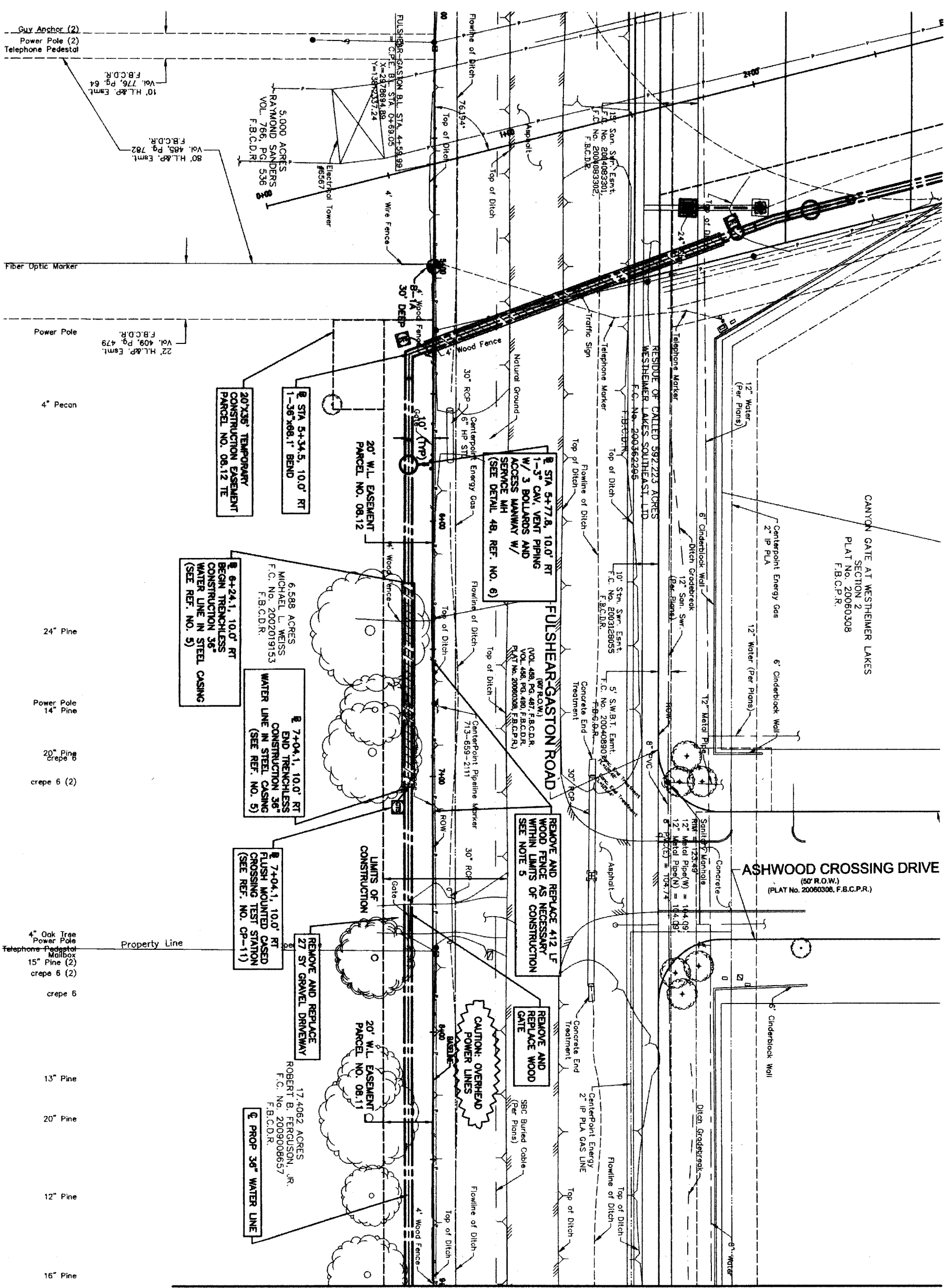
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

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

SHEET NO. 10 OF 84

FOR CONTINUATION SEE SHEET 9



MATCH LINE STA 9+00

SCALE 1"=20'

PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 DATE: 11/3/11
 DATE: 11/3/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-659-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #182
 5/8" IRON ROD, ELEV. 120.91'
 N 13612357.57, E 2978720.43
 BASELINE STA. 4+86.43, 19.16' LT

NOTES:
 1. RESTORE LIMITS OF CONSTRUCTION WITH BLOCK SODDING PER SPECIFICATION 02922 FROM STA 5+00 TO 19+70
 2. RESTORATION OF EXISTING DITCH SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
 3. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
 4. SEE TREE PROTECTION PLAN ON SHEETS 40-42
 5. PROVIDE TEMPORARY FENCING AS NECESSARY TO MAINTAIN ENCLOSURE OF LNESTOCK AT ALL TIMES.

LOCKWOOD & ANDREWS
 ENGINEERS, ARCHITECTS & PLANNERS
 1100 WEST 19TH STREET, SUITE 100
 HOUSTON, TEXAS 77002
 TEL: 713-865-1111
 FAX: 713-865-1112
 WWW.LAAND.COM

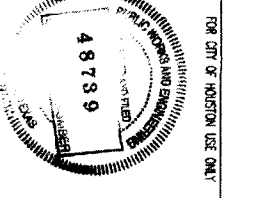
LOCKWOOD & ANDREWS
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

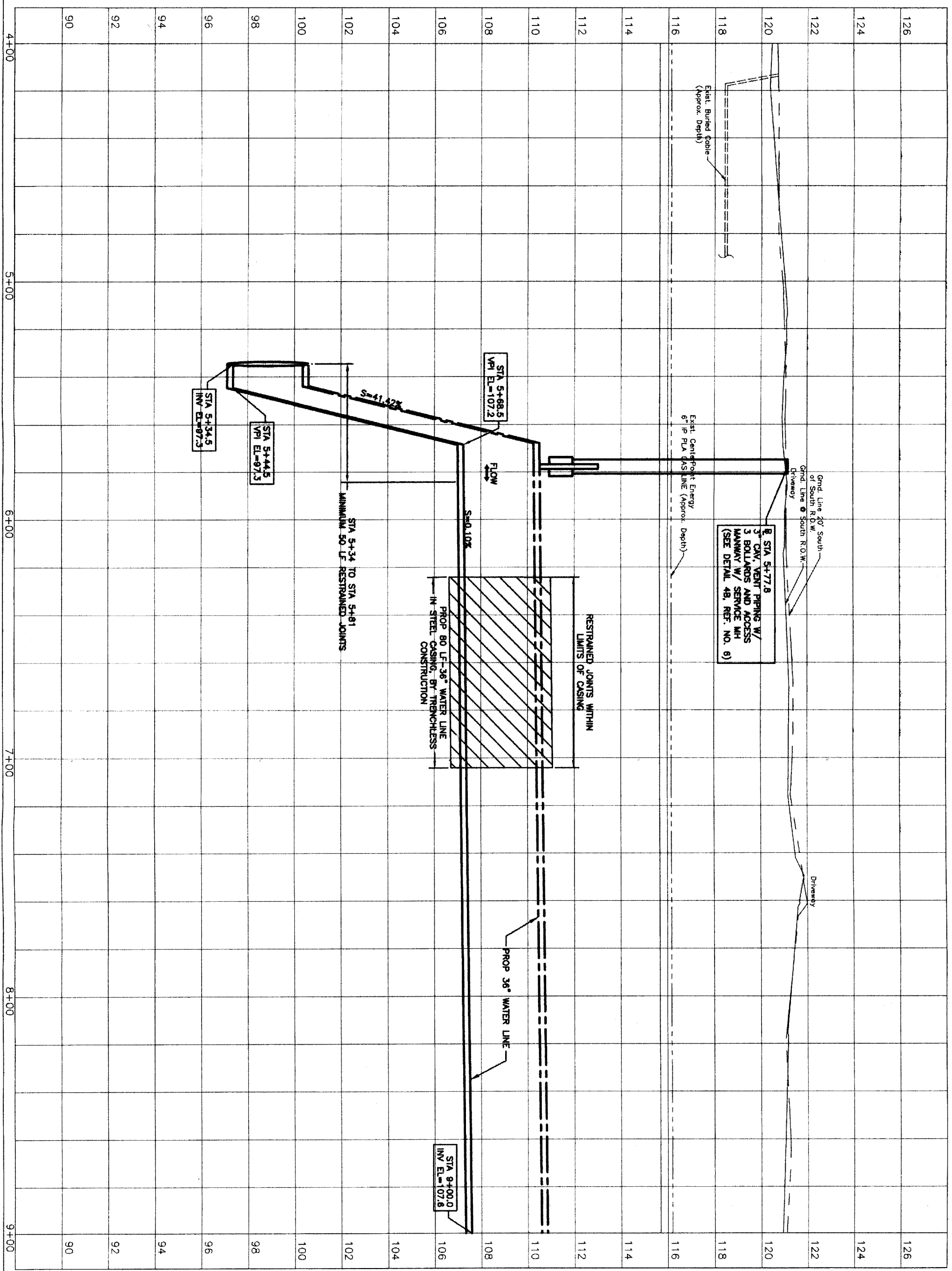
FULSHEAR-GASTON ROAD
 PLAN
 STA. 4+00 TO 9+00



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 TRAFFIC
 SIGNAL WATER QUALITY
 FACILITIES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 FILE NO.:
 DRAWING SCALE:
 HORIZ: 1" = 20'
 VERT: NTS
 SHEET No: 11 OF 84



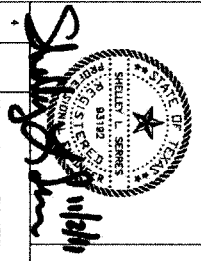


PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 DATE: 11-2-11
 AT/ET: GAS/SBG UTILITY LINES SHOWN
 (Approx. Depth)
 DATE: 11/3/11
 Centipoint Energy/ Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-689-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:



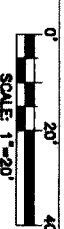
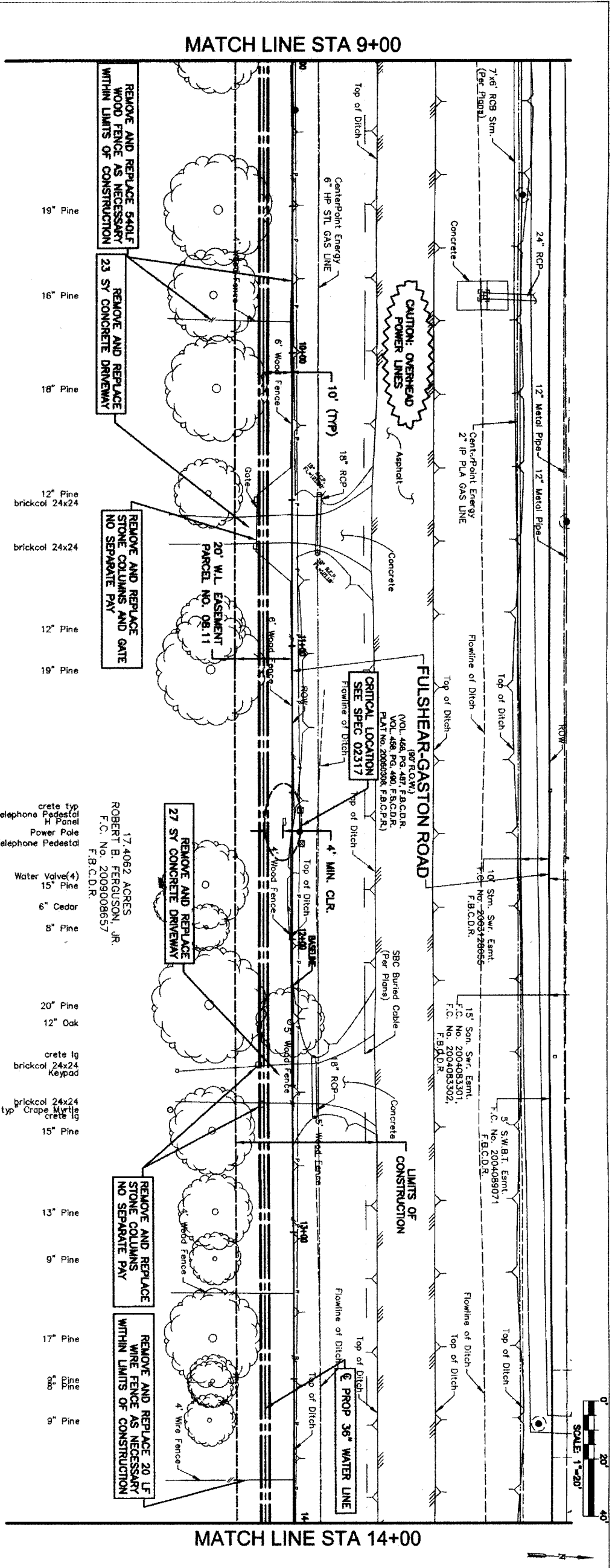
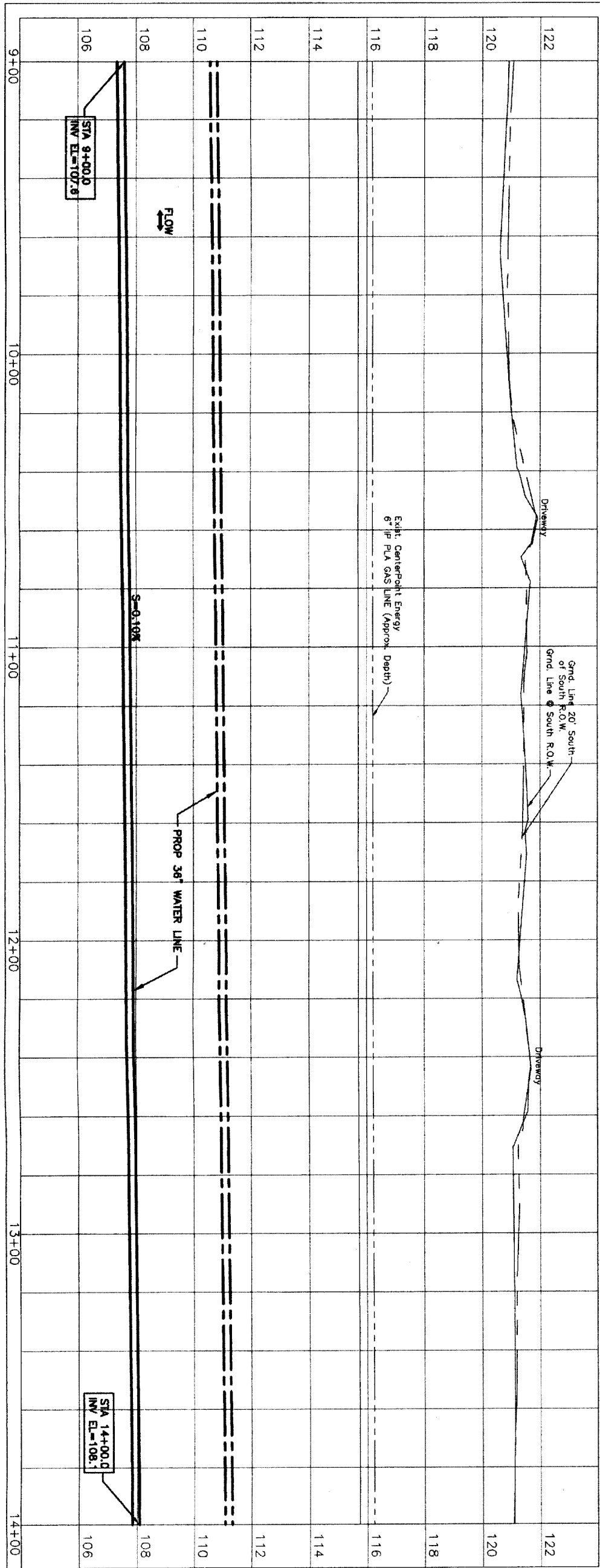
NO.	DATE	REVISION	APPROVED
1			
2			
3			

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT BB
FULSHEAR-GASTON ROAD
PROFILE
STA. 4+00 TO 9+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER 1504 STREET & SERVICE
 STORM 1504 STREET & SERVICE
 FILE NO: 211111.1.0.11

DRAWING SCALE
 HORIZ: 1" = 20'
 VERT: 1" = 2'
 SHEET NO. 12 OF 84
 FOR CITY OF HOUSTON USE ONLY
 48739



PRIVATE UTILITY LINES SHOWN

Date: 11/3/11
 Date: 11-3-11
 Date: 11/4/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-689-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

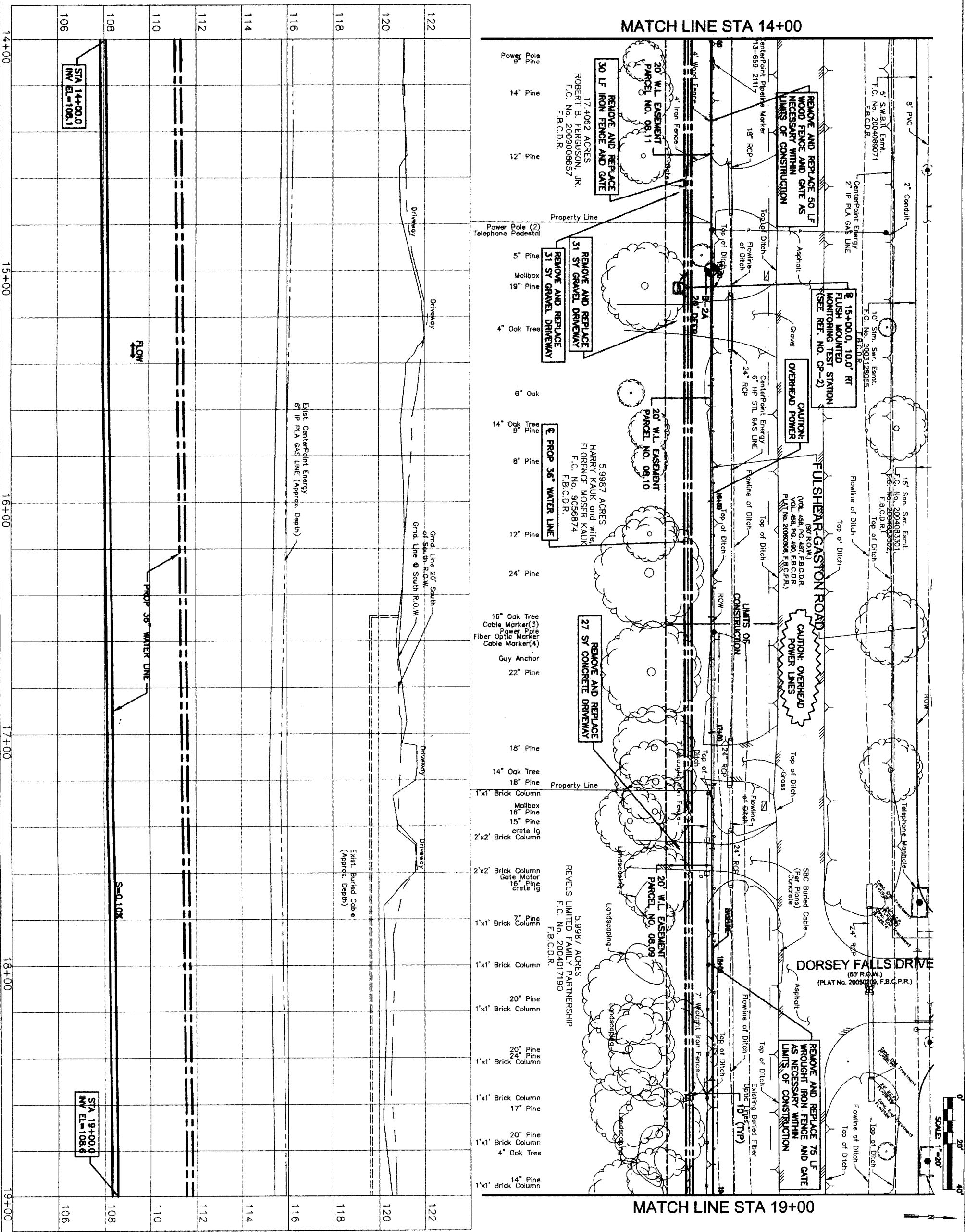
NOTES:
 1. RESTORE LIMITS OF CONSTRUCTION WITH BLOCK SODDING PER SPECIFICATION 02922 FROM STA 5+00 TO 19+70
 2. RESTORATION OF EXISTING DITCH SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
 3. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
 4. SEE TREE PROTECTION PLAN ON SHEETS 40-42.

REVISION TABLE:
 NO. DATE REVISION APPROVED

LGN Lockwood, Andrews & Newnam, Inc.
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

NORTH FORT BAND
 FULSHEAR-GASTON ROAD
 PLAN & PROFILE
 STA. 9+00 TO 14+00

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DRAWING SCALE
 SHEET No. 13 of 84



PRIVATE UTILITY LINES SHOWN

Date: 11/3/11

Date: 11-3-11

Date: 11/3/11

Date: 11/3/11

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL TOLL FREE NOTIFICATION CENTER (713) 223-4567 OR 1-800-669-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

NOTE: CENTERPOINT ENERGY / Gas Facilities (gas service lines are not shown).

W.C. C.P. #2
 SET 100d NAIL, ELEV. 121.25'
 N 1381258.13, E 2980010.49
 BASELINE STA. 17+79.70, 51.87' LT

NOTES:
 1. RESTORE LIMITS OF CONSTRUCTION WITH BLOCK SODDING PER SPECIFICATION 02922 FROM STA 5+00 TO 19+70
 2. RESTORATION OF EXISTING DITCH SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
 3. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
 4. REMOVAL OF DRIVEWAYS MUST BE AGREED UPON DURING EASEMENT AGREEMENT.
 5. SEE TREE PROTECTION PLAN ON SHEETS 40-42.

LOCKWOOD, ANDREWS & NEWMAN, INC.
 A LEAD A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

FULSHEAR-GASTON ROAD
 PLAN & PROFILE
 STA. 14+00 TO 19+00

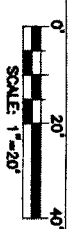
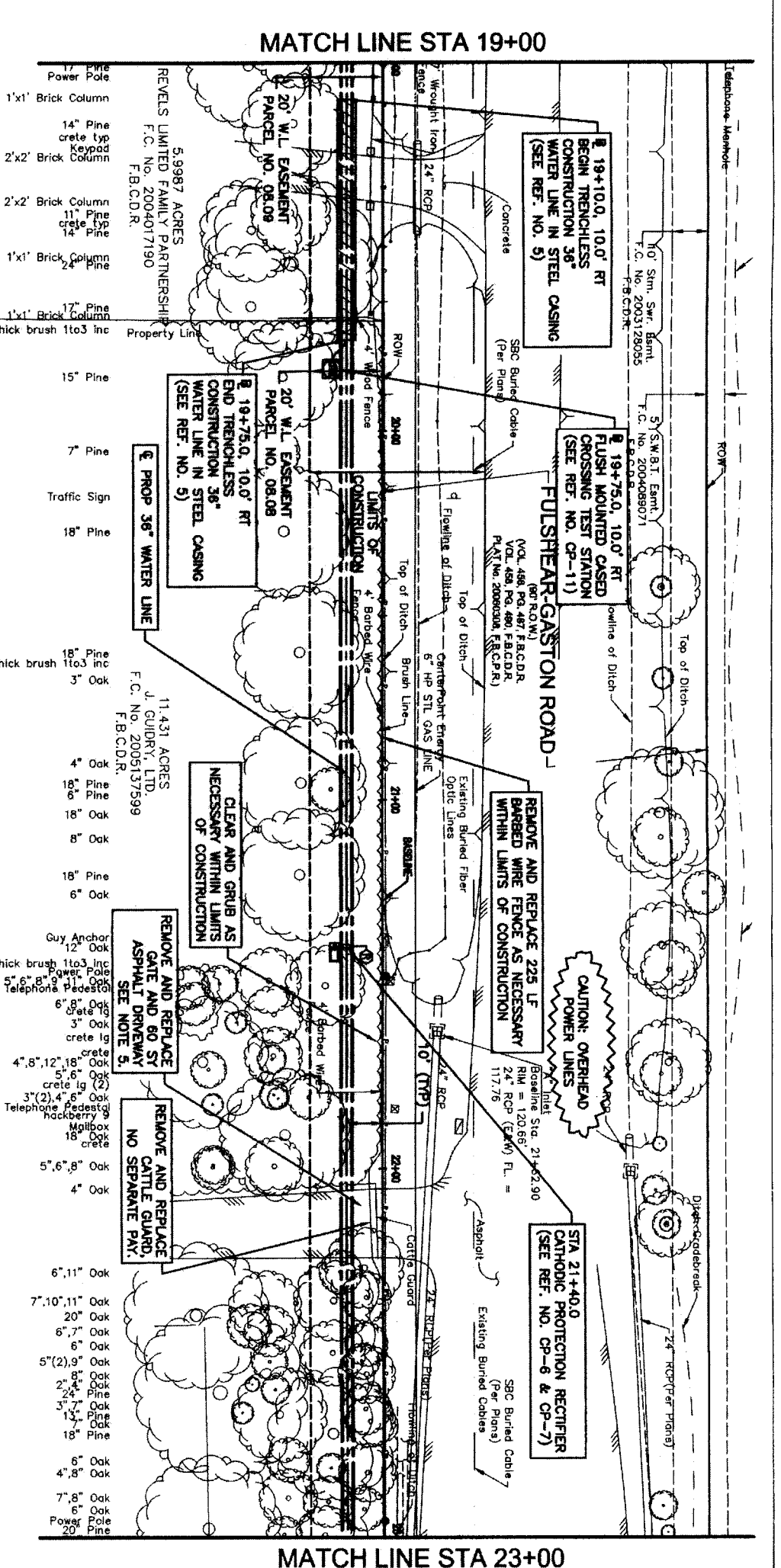
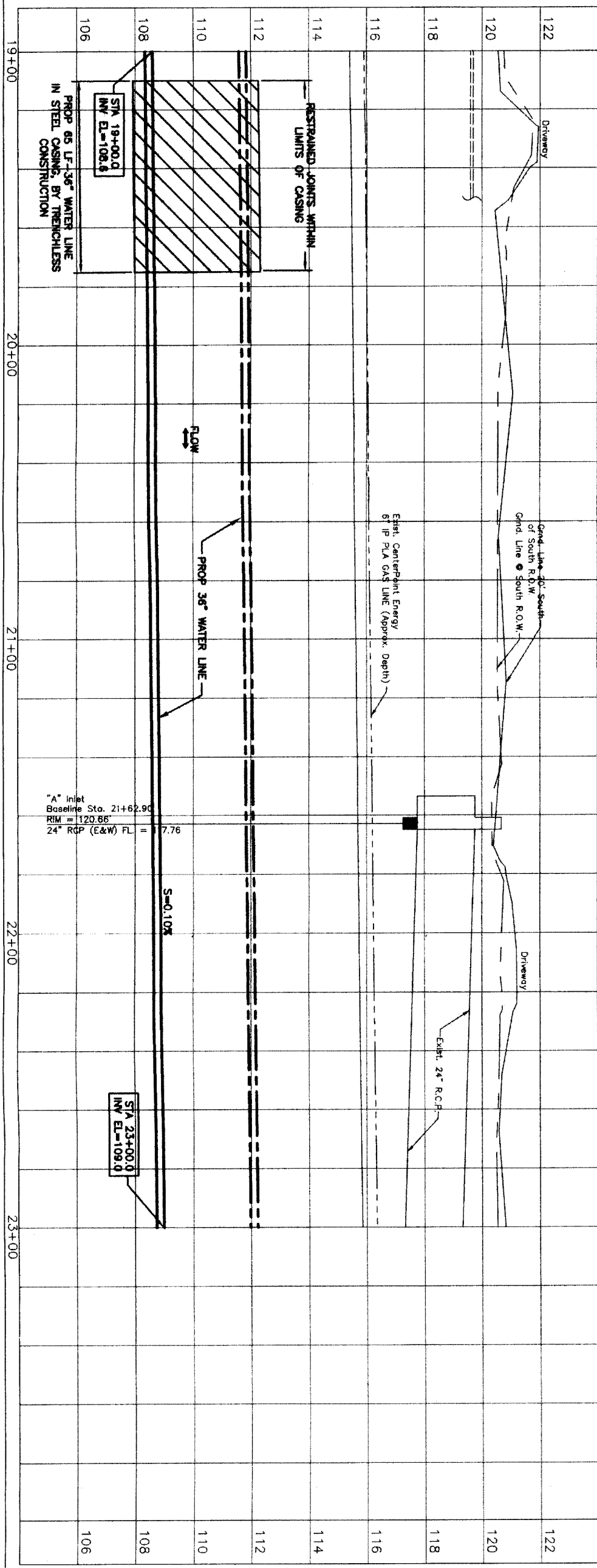
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 11/3/11
 DRAWN BY: JMBARBER
 CHECKED BY: JMBARBER
 STORE WATER QUALITY

FILE NO:
 DRAWING SCALE
 HORIZ: 1" = 20'
 VERT: 1" = 2'

SHEET NO. 14 OF 84

48739



PRIVATE UTILITY LINES SHOWN

Date: 11/3/11
 Date: 11-3-11
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER (713) 223-4587 OR 1-800-889-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

NOTICE:
 RESTORE LIMITS OF CONSTRUCTION WITH BLOCK SODDING PER SPECIFICATION 02922 FROM STA 5+00 TO 19+70
 RESTORATION OF EXISTING DITCH SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
 CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
 SEE TREE PROTECTION PLAN ON SHEETS 40-42.
 COORDINATE WITH BUSINESS OWNER TO MAINTAIN ACCESS AT ALL TIMES. SEE SPEC 01110 FOR REQUIREMENTS AT THIS DRIVEWAY.

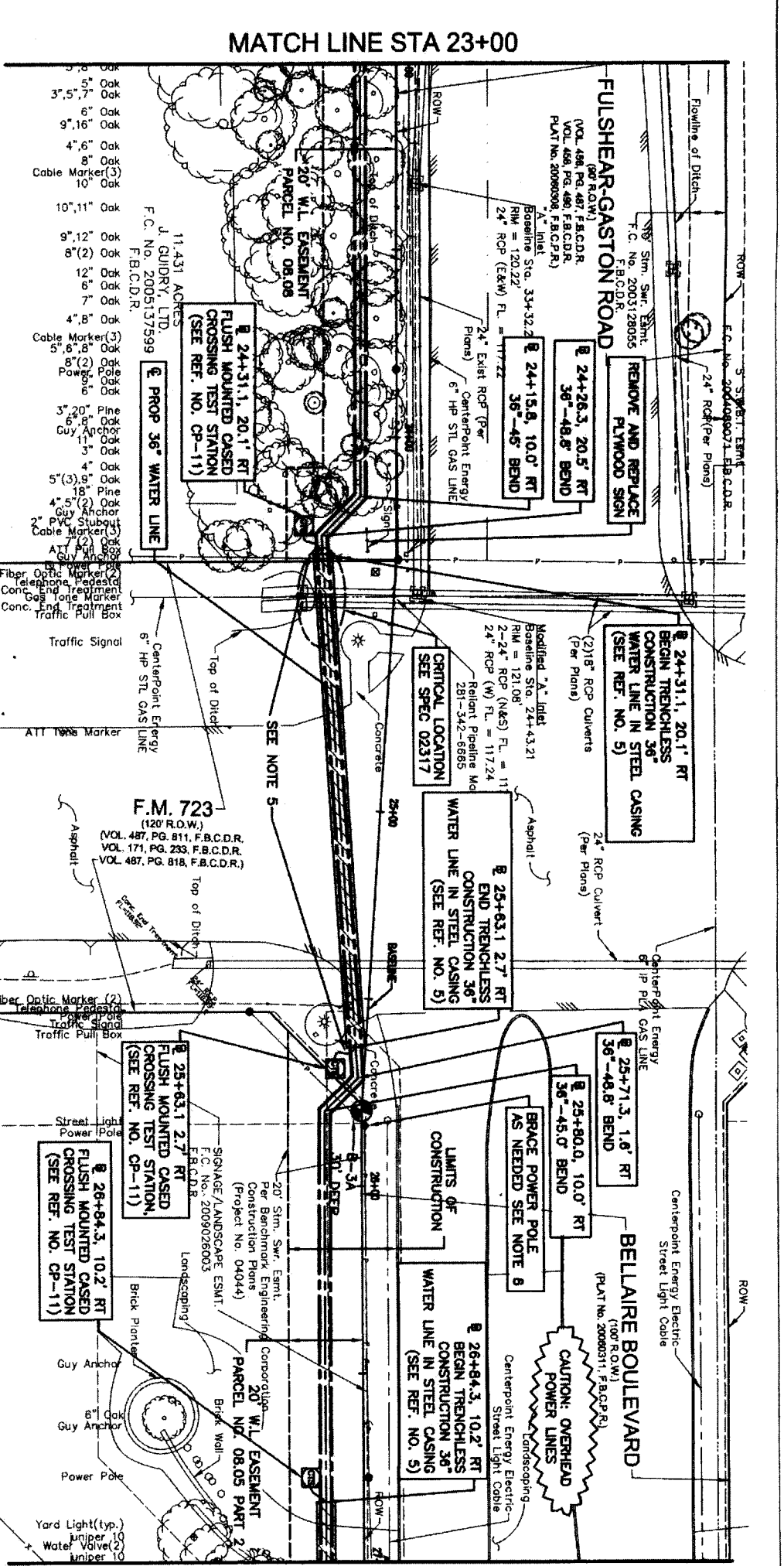
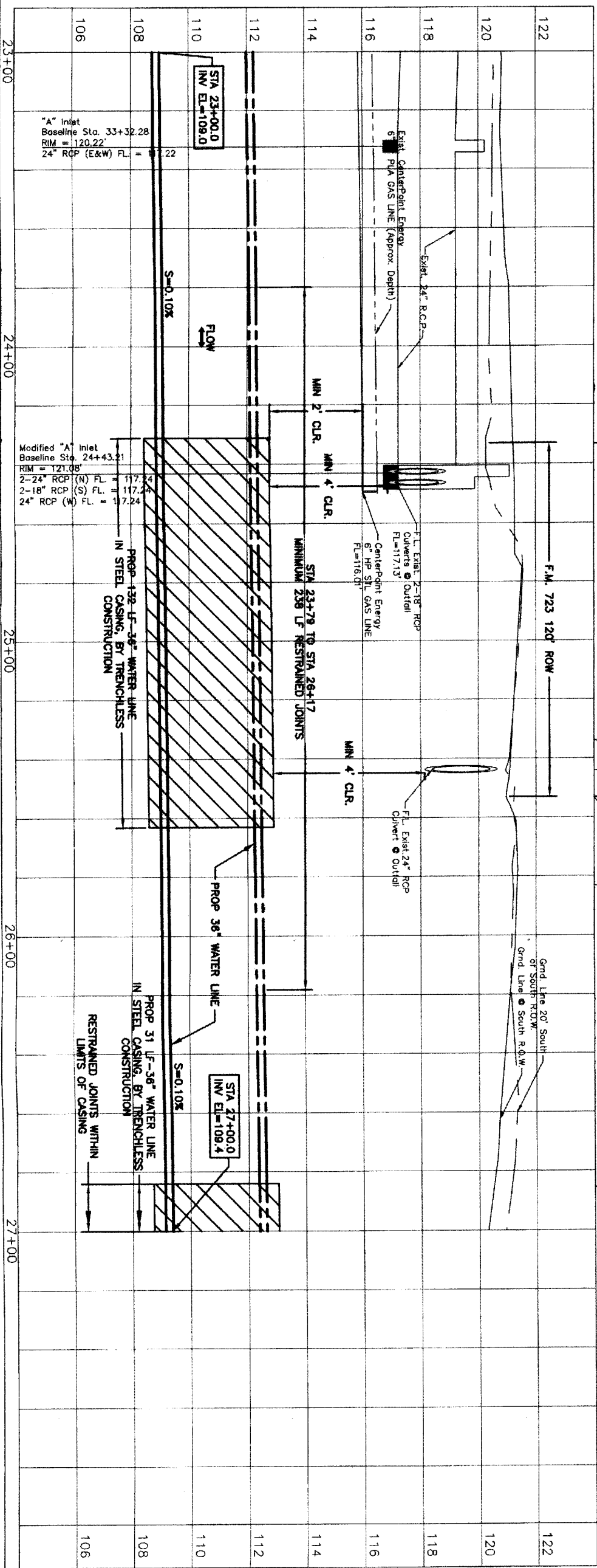
BENCHMARK INFORMATION:
 W.C. C.P. #1
 SET 1004 NAIL, ELEV. 121.12
 N 13812481 60, E 2980451 63
 BASELINE STA. 22+21.45, 65.30' LT

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DAILY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 SIGNATURE: [Signature]
 TITLE: [Title]

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

FOR CITY OF HOUSTON USE ONLY
 DRAWING SCALE
 HORIZ: 1" = 20'
 VERT: 1" = 2'
 SHEET NO. 15 OF 84



- NOTES:**
1. ANY DAMAGE TO EXISTING SIGNAL CONTROLS SHALL BE REPAIRED TO ORIGINAL CONDITION. NO SEPARATE PAY.
 2. RESTORATION OF EXISTING DITCH SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION. SEE TREE PROTECTION PLAN ON SHEETS 40-42.
 3. MARKER SIGNS SHALL BE INSTALLED ONE (1) FT INSIDE TYPICAL ROW ON BOTH SIDES OF HIGHWAY CROSSING. SEE DETAIL 4, REF. NO. 2.
 4. NO SEPARATE PAY.
 5. COORDINATE THE RELOCATION OF POWER POLE IF NEEDED FOR TRENCHLESS CONSTRUCTION OPERATIONS.
 6. CONTRACTOR TO REPAIR ANY IRRIGATION LINES DAMAGED DURING CONSTRUCTION. NO SEPARATE PAY.
 7. ANY DAMAGE TO EXISTING SIGNAL CONTROLS SHALL BE REPAIRED TO ORIGINAL CONDITION. NO SEPARATE PAY.

PRIVATE UTILITY LINES SHOWN

Date: 11/2/11

AT&T TEXAS/SEC UTILITY LINES SHOWN (Not for use for any underground conduit facilities unless otherwise noted) Valid At Time of Review Only

DATE: 11/2/11

NOTICE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-689-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 W.E.C. C.P. #1
 SET 1004 #VAL, ELEV. 121.12'
 N 12812481.60, E 2980491.53
 BASELINE STA. 22+21.45, 65.30' LT

Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

FULSHEAR-GASTON ROAD
 PLAN & PROFILE
 STA. 23+00 TO 27+00

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

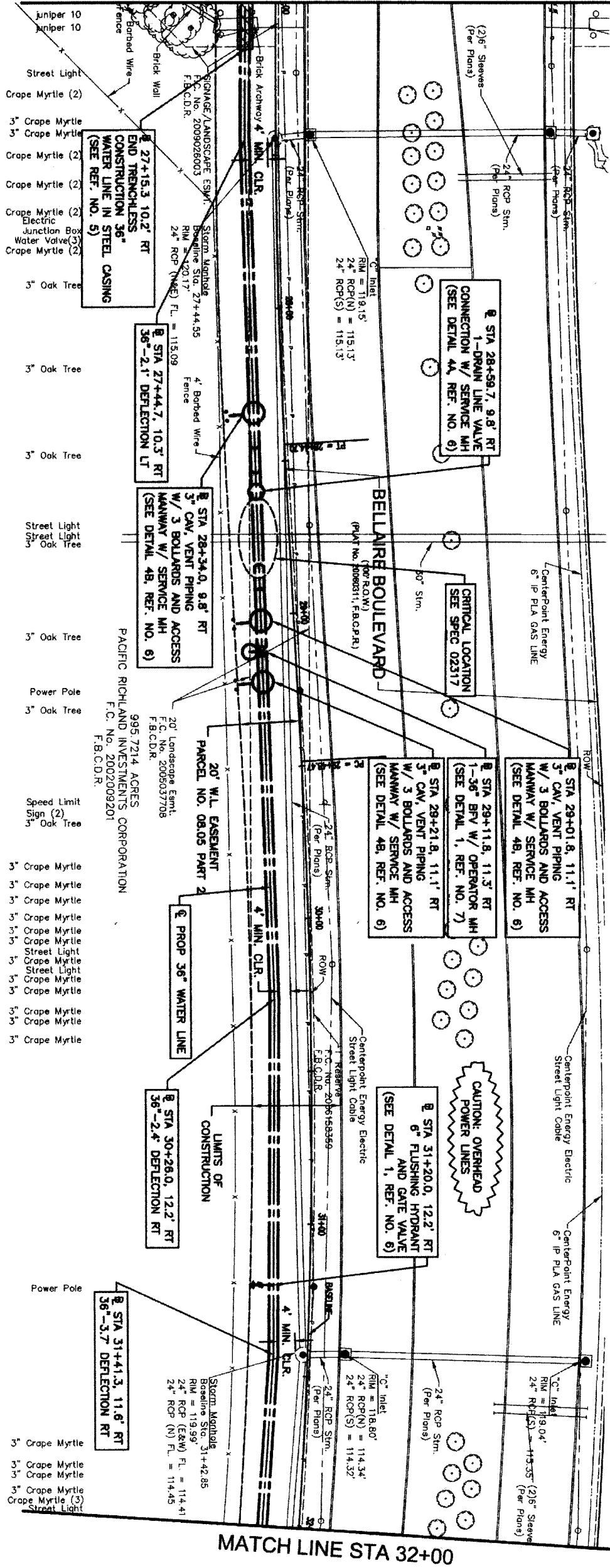
DATE: 11/2/11

FILE NO.:
 DRAWING SCALE:
 HORIZ: 1" = 20'
 VERT: 1" = 2'

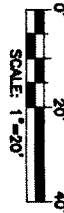
SHEET No. 16 OF 84

48739

MATCH LINE STA 27+00



MATCH LINE STA 32+00



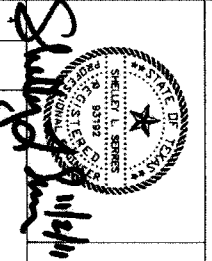
PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 DATE: 11/3/11
 APPROVED FOR A/E/C/S/SEC UNDERGROUND CONDUIT FACILITIES ONLY
 DATE: 11/3/11
 CENTERPOINT ENERGY / Gas Facilities (Gas service lines are not shown)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER (713) 223-4567 OR 1-800-669-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 W.E.C. C.P. #1
 SET 1000 NAIL ELEV. 121.12'
 N 13812481.60, E 2980451.63
 BASELINE STA. 22+21.45, 65.30' LT

NOTES:
 1. ALL FLUSHING HYDRANT NOZZLES SHALL BE LOCATED TO DRAIN TOWARDS DITCH OR STORM SEWER.



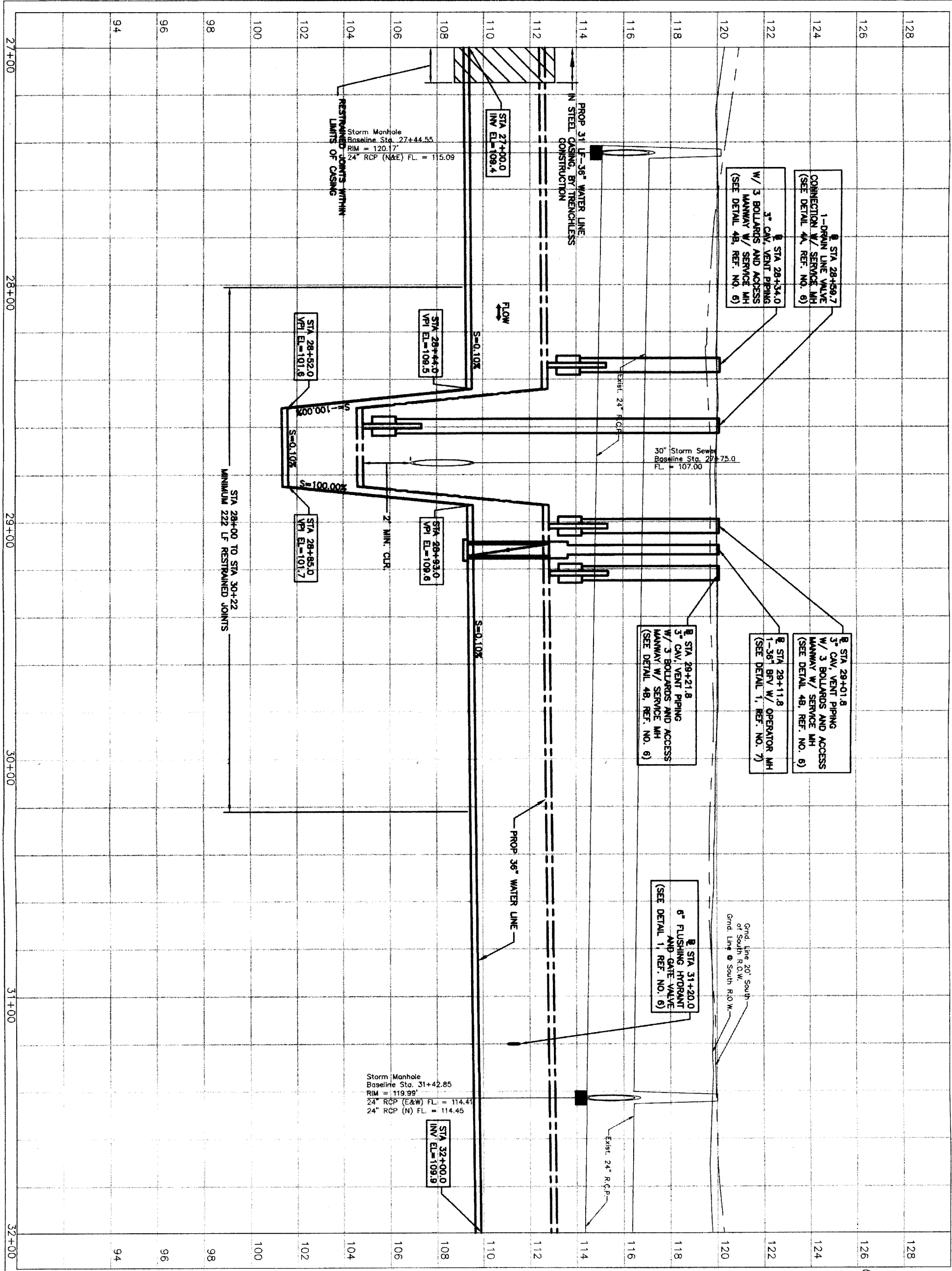
NO.	DATE	REVISION	APPROV.
1			
2			
3			

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B
BELLAIRE BOULEVARD
PLAN
STA. 27+00 TO 32+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 TRAFFIC
 STORM WATER QUALITY
 FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
 HORIZ : 1" = 20'
 VERT : 1" = 2'
 SHEET NO. 17 OF 84
 48739

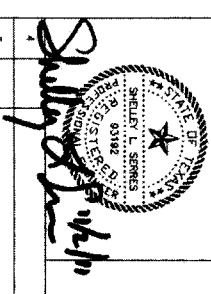


PRIVATE UTILITY LINES SHOWN

Date: 11/3/11
 Date: 11-3-11
 AT&T TEXAS/SBC UTILITY LINES SHOWN
 (Not valid for AT&T/SBC underground conduit facilities only)
 (Valid At Time of Reader Only)
 Call Centerpoint Energy/ Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONG STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-669-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 W.C. C.P. #1
 SET 100d NAIL, ELEV. 121.12'
 N 13812481.60, E 2980451.83, LT
 BASELINE STA. 22+21.45, 85.30' LT



NO.	DATE	REVISION	APPROV.
1			
2			
3			

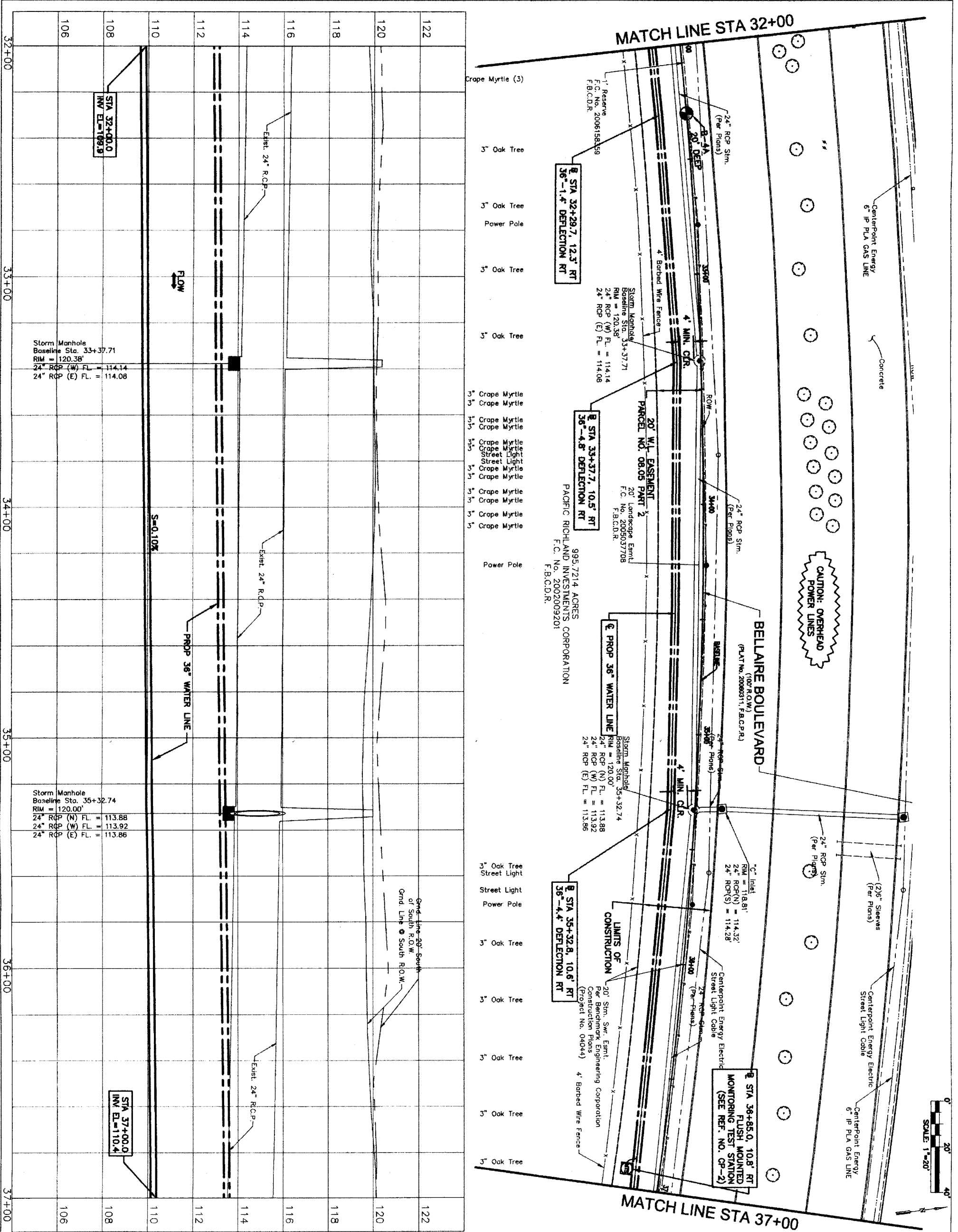
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

BELLAIRE BOULEVARD
 PROFILE
 STA. 27+00 TO 32+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER STREET & BRIDGE
 TRAFFIC
 STORM WATER QUALITY
 DATE: 11.8.11

FILE NO:
 DRAWING SCALE
 HORIZ: 1" = 20'
 VERT: 1" = 2'
 SHEET No. 18 of 84
 FOR CITY OF HOUSTON USE ONLY
 48789



PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET ROW, OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER: (713) 223-4567 OR 1-800-659-6344
 CALL CENTERPOINT AT 713-207-7777.

NOTE: CENTERPOINT ENERGY/ELECTRIC FACILITIES (Approved only for crossing underground ductlines, unless otherwise noted.) Valid At Time Of Review Only
 DATE: 11/3/11

SECONDARY CONTROL POINT #180
 S/RT IRON ROD ELEV. 120.23'
 N/13812328.98 E/2982049.98
 BASELINE STA. 36+36.48, 13.84' RT

APPROVED: [Signature]
 PROJECT NO. 04044

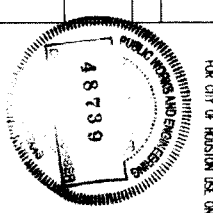
NO. DATE REVISION APPROV.

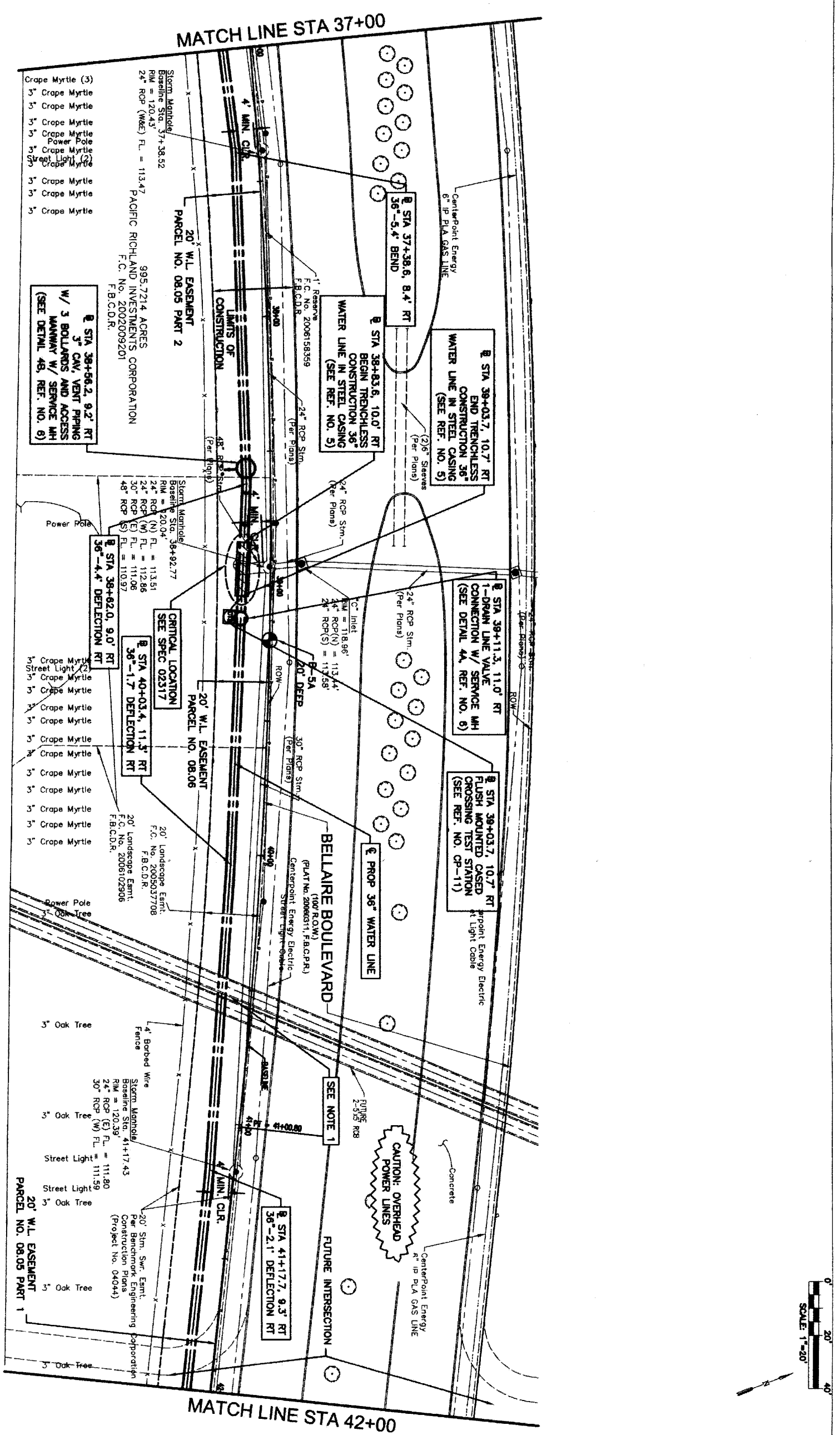
IGN & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 88
**BELLAIRE BOULEVARD
 PLAN & PROFILE
 STA. 32+00 TO 37+00**



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 [Signature]
 DATE: 11/3/11

DRAWING SCALE
 HORIZ: 1" = 20'
 VERT: 1" = 2'
 SHEET NO. 19 OF 84





PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 DATE: 11-3-11
 DATE: 11/9/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-699-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #190
 5/8\"/>

NOTES:
 1. FUTURE ROW MAY BE EXISTING AT TIME OF CONSTRUCTION FIELD VERIFY.

NO. DATE REVISION APPROV.
 1
 2
 3

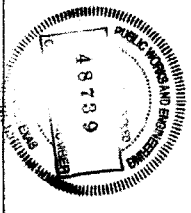
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DAILY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614

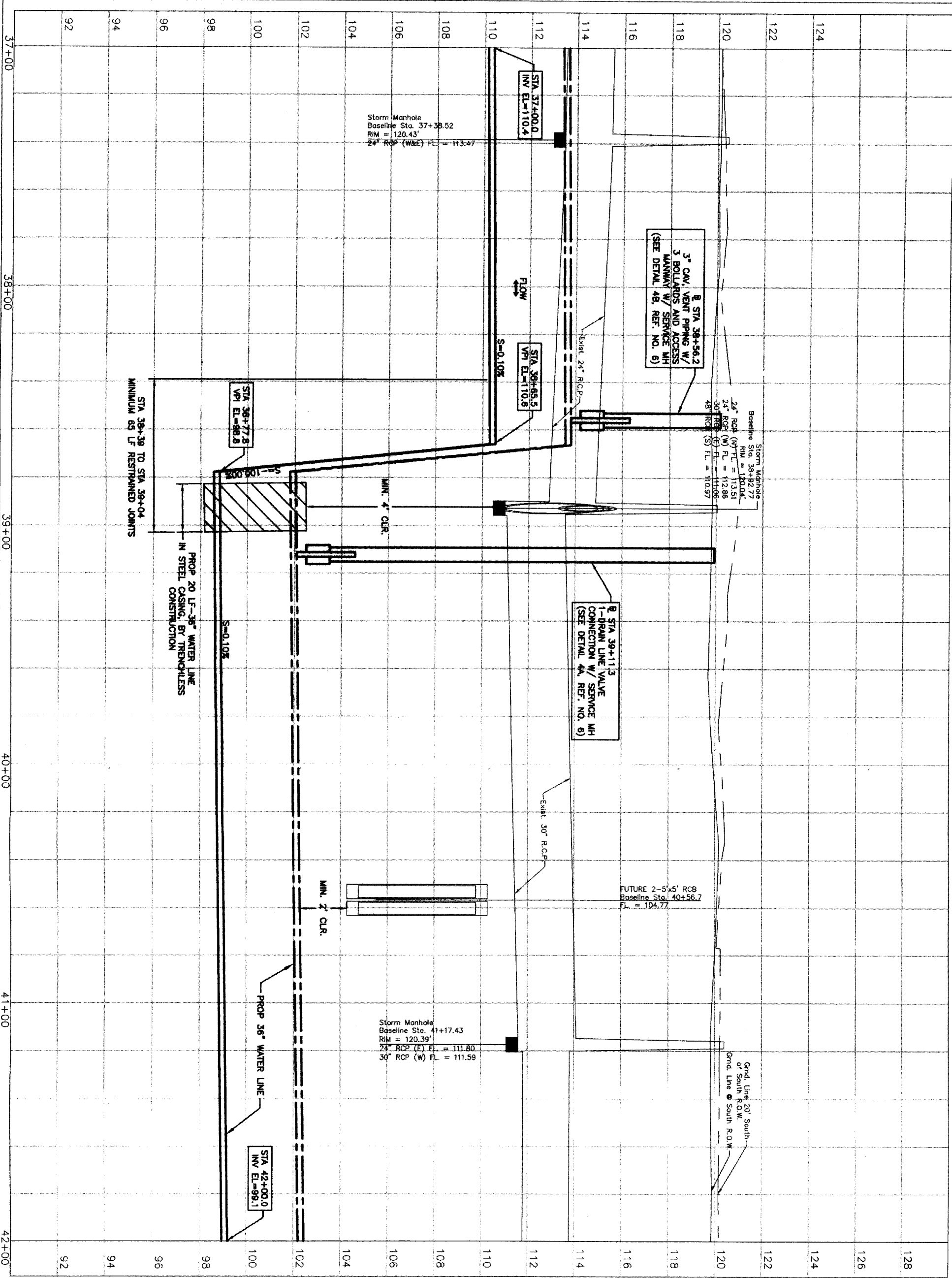
NFBWA SEGMENT 8B
 BELLAIRE BOULEVARD
 PLAN
 STA. 37+00 TO 42+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DRAWING SCALE
 HORIZ : 1" = 20'
 VERT : 1" = 2'
 SHEET NO: 20 OF 84





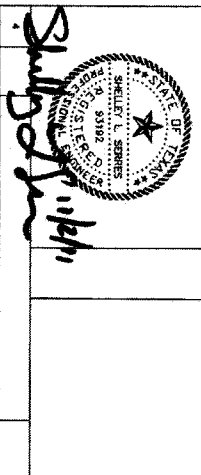
PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 DATE: 11/3/11
 APPROVED: [Signature]
 CHECKED: [Signature]
 DRAWN: [Signature]
 DATE: 11/3/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-669-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-297-7777.

BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #180
 5/8" IRON ROD, ELEV. 120.23'
 N 13812328.96, E 2982049.98
 BASELINE STA. 38+36.48, 13.84' RT

NOTES:
 1. FUTURE RCB MAY BE EXISTING AT TIME OF AS CONSTRUCTION. FIELD VERIFY AND BRACE AS NEEDED.



NO.	DATE	REVISION	APPROV.
1			
2			
3			

IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NPBWA SEGMENT 88

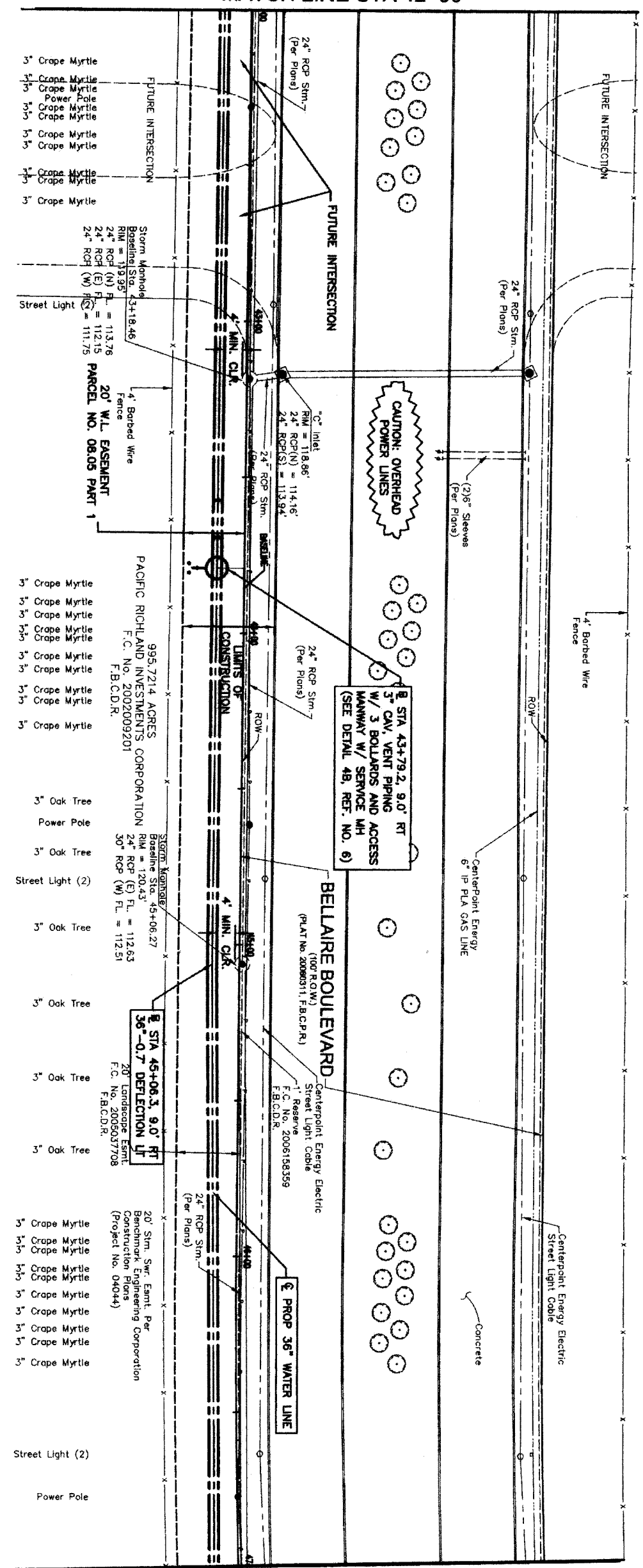
BELLAIRE BOULEVARD
PROFILE
 STA. 37+00 TO 42+00



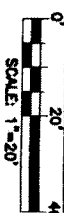
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 INVENT:
 STORM WATER QUALITY
 INCHES
 FILE NO.:

DRAWING SCALE
 HORIZ : 1" = 20'
 VERT : 1" = 2'
 SHEET NO. 21 OF 84
 48739
 FOR CRT OF HOUSTON USE ONLY

MATCH LINE STA 42+00



MATCH LINE STA 47+00



PRIVATE UTILITY LINES SHOWN

DATE: 11/11/11
 DATE: 1-3-11
 AT/EA/S/SBC UTILITY LINES SHOWN (Approved only for crossing underground ductlines, unless otherwise noted.) Valid At Time Of Review Only
 CenterPoint Energy/ Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-669-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.
 BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #179
 5/8" IRON ROD, ELEV. 119.29'
 N 13811794.78, E 2983294.50
 BASELINE STA. 51+94.66, 4.42' LT

NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			

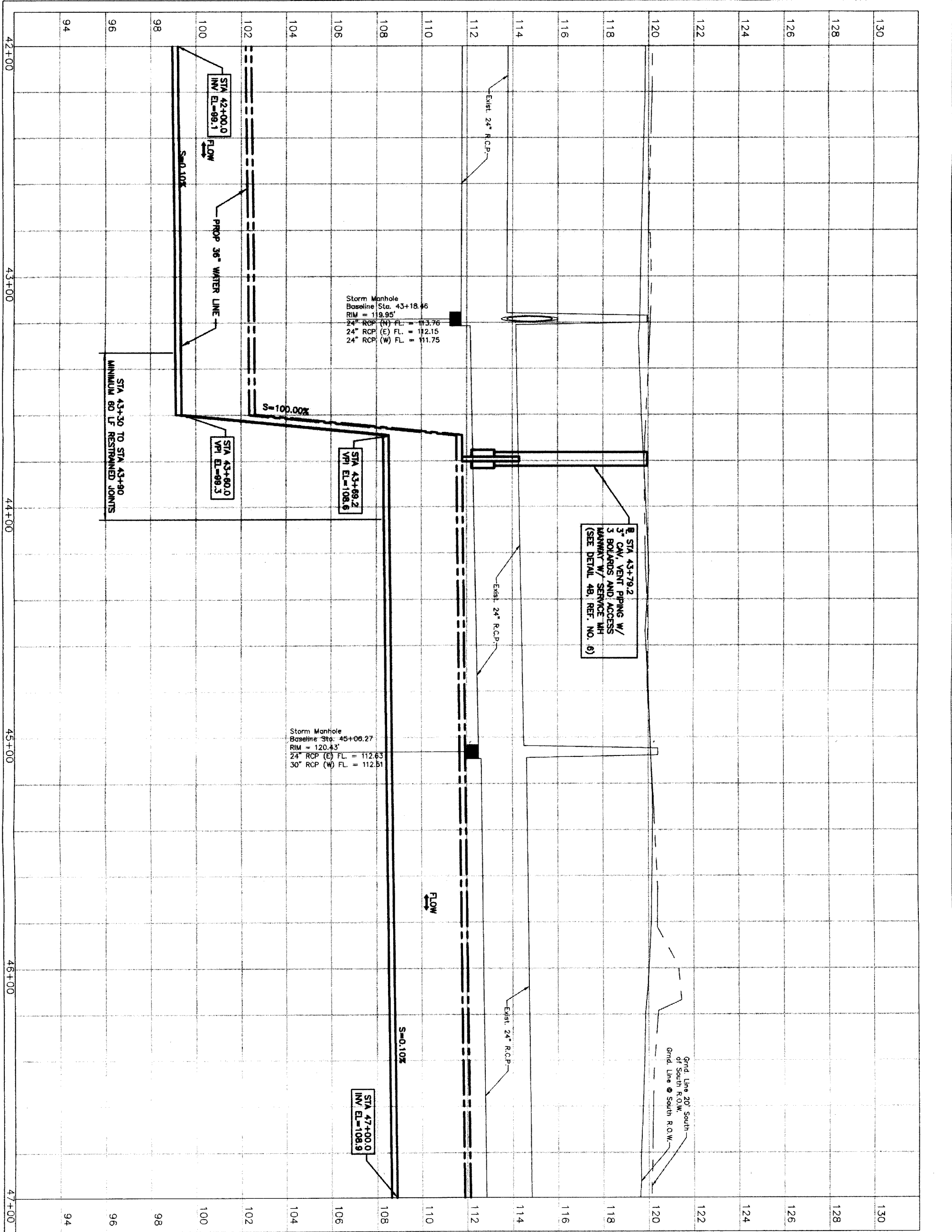
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

BELLAIRE BOULEVARD PLAN
 STA. 42+00 TO 47+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER
 STREET & BRIDGE
 TRAFFIC
 STORM WATER QUALITY
 FACILITIES
 FILE NO.:
 DRAWING SCALE
 HORIZ : 1" = 20'
 VERT : 1" = 2'
 SHEET NO. 22 OF 84

FOR CITY OF HOUSTON USE ONLY
 48739



PRIVATE UTILITY LINES SHOWN

DATE: 11/3/11
 DATE: 11-2-11
 AT&T, SBC, UTILITY LINES SHOWN
 (Approved only for crossing underground conduit facilities unless otherwise noted) Valid in terms of Texas City
 Date: 11/2/11
 Department Engineer/ Gas Facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-669-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.
 BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #179
 5/8" IRON ROD, ELEV. 119.29'
 N 13811794.78, E 2983294.50
 BASELINE STA. 51+94.86, 4.42' LT

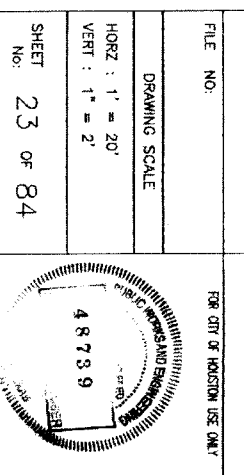
NO. DATE REVISION APPROV.
 1
 2
 3
 4
 5
 S. J. ...
 S. J. ...

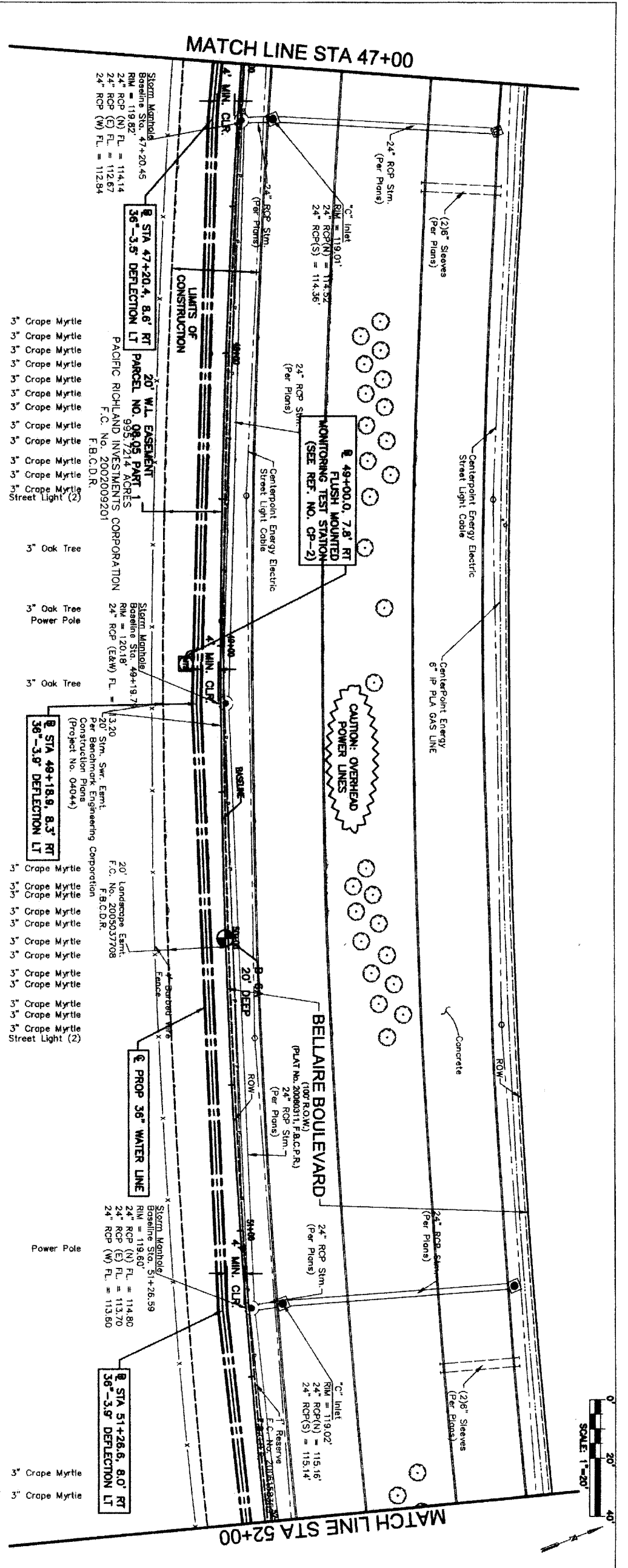
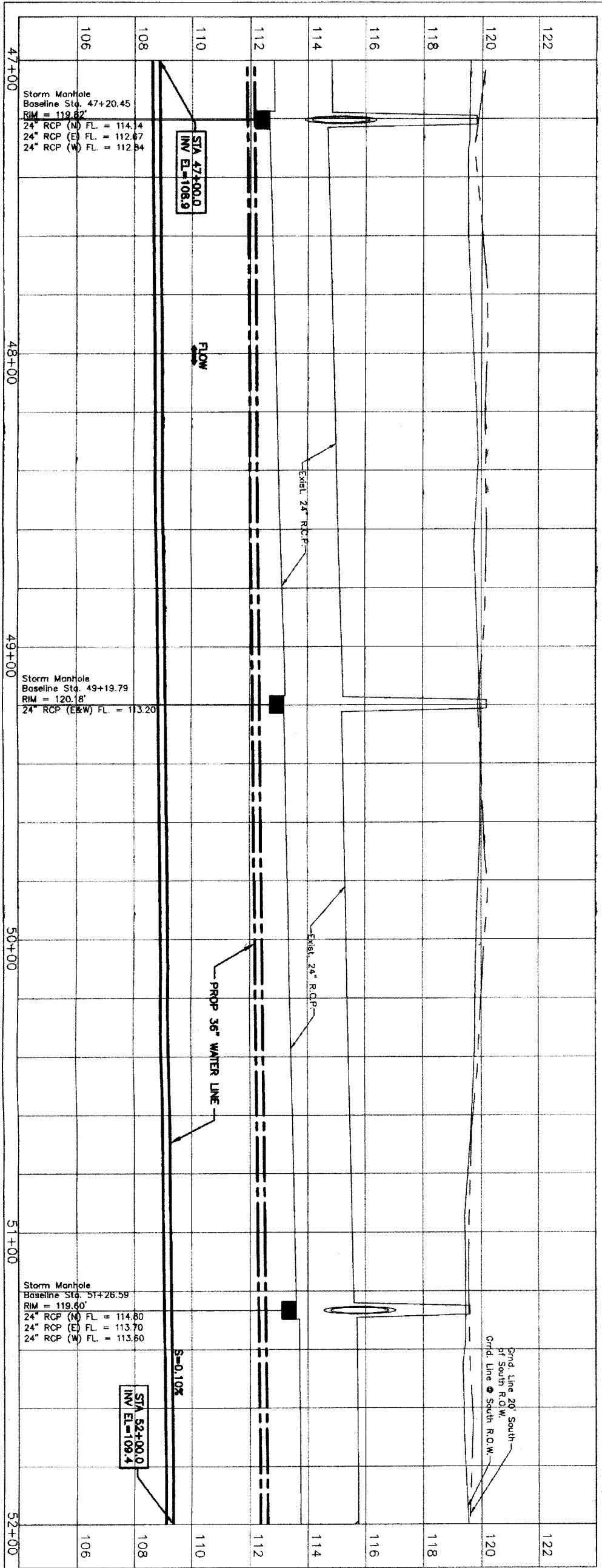
LGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

BELLAIRE BOULEVARD
 PROFILE
 STA. 42+00 TO 47+00



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER
 STREET & BRIDGE
 TRAFFIC
 STORM WATER QUALITY FACILITIES
 FILE NO.
 DRAWING SCALE
 HORIZ : 1" = 20'
 VERT : 1" = 2'
 SHEET No. 23 of 84





PRIVATE UTILITY LINES SHOWN

Date: 11/3/11

AT&T/TEXAS/SBC UTILITY LINES SHOWN
 Approved for AT&T/SBC underground conduit facilities only. Facilities are valid for one year.
 Date: 11/16/11

CenterPoint Energy/ Gas Facilities (Gas service lines are not shown.)
 Date: 11/3/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-689-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #179
 5/8" IRON ROD, ELEV. 119.29'
 N 13811794.78, E 2983294.50
 BASELINE STA. 51+94.86, 442' LT

LOCKWOOD, ANDREWS & NEWMAN, INC.
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

**BELLAIRE BOULEVARD
 PLAN & PROFILE
 STA. 47+00 TO 52+00**

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

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

NO. DATE REVISION APPROV.

1. DATE APPROV.

2. DATE APPROV.

3. DATE APPROV.

Lockwood, Andrews & Newman, Inc.
 A LEO A DALY COMPANY

NORTH FORT BEND

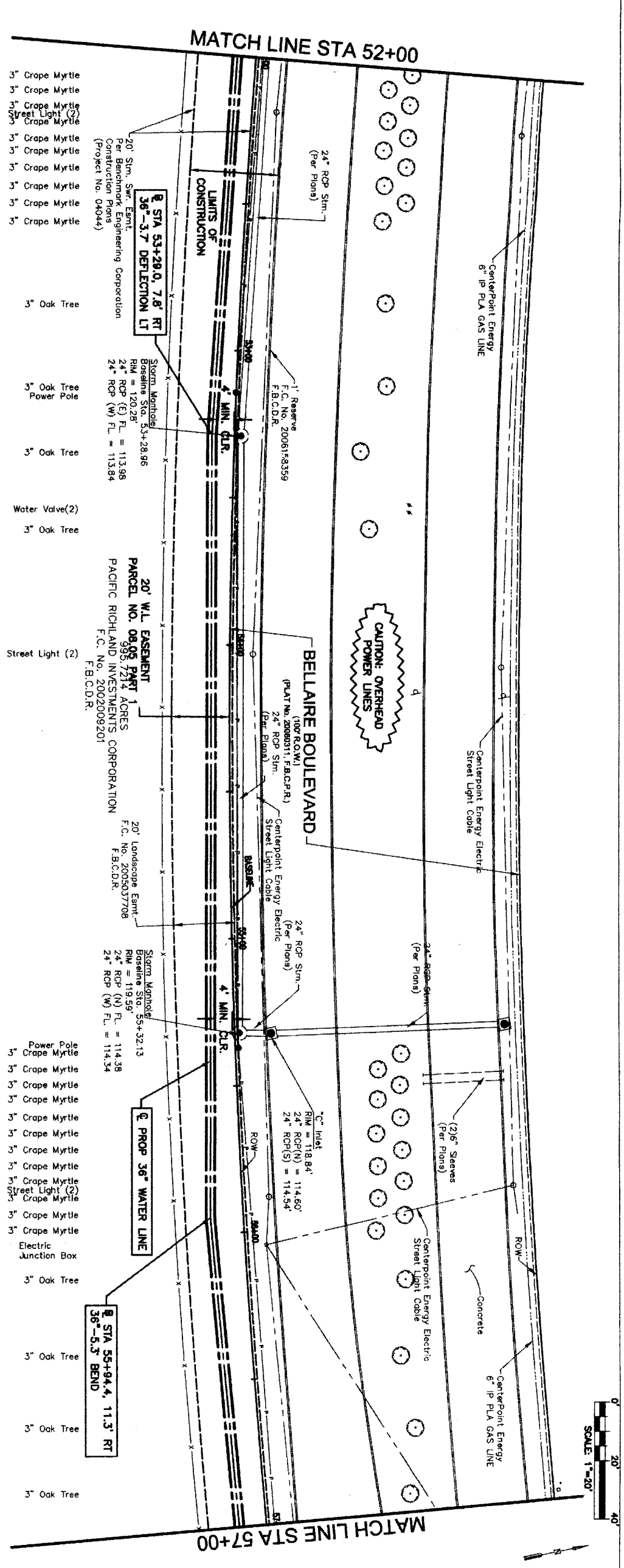
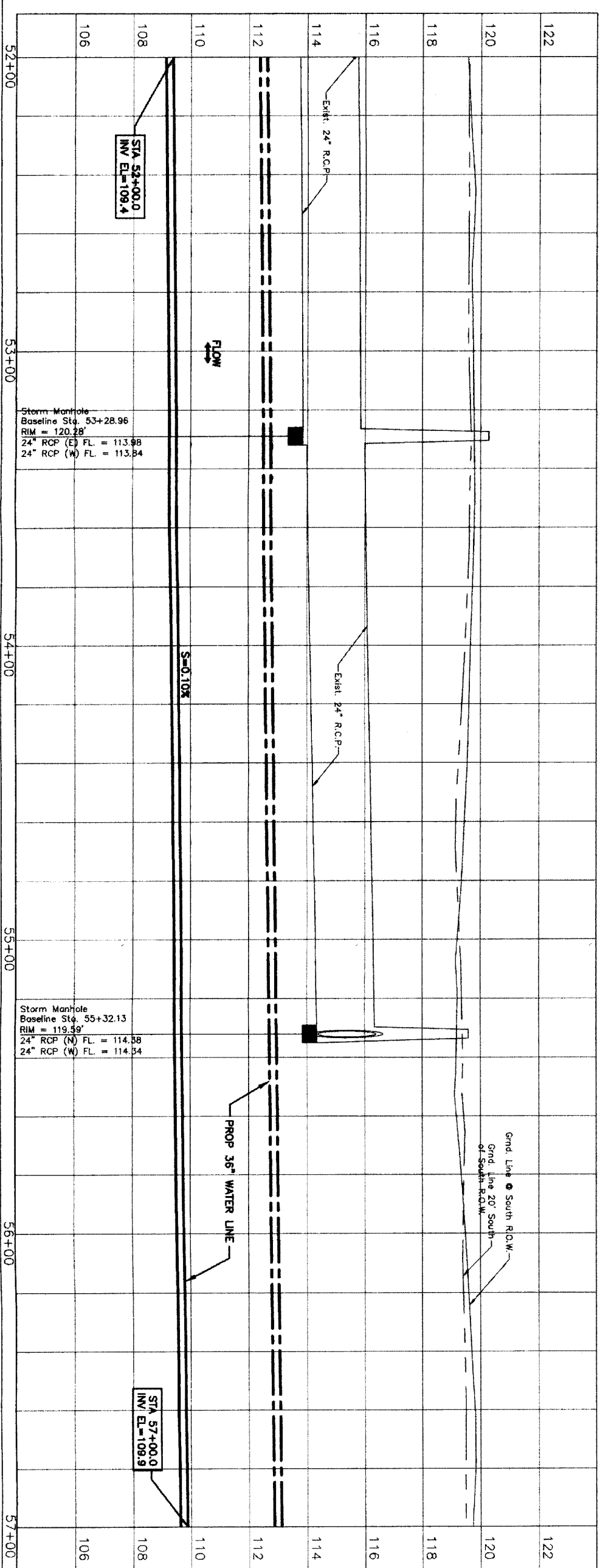
FILE NO.: FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

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

SHEET No. 24 OF 84

48739



PRIVATE UTILITY LINES SHOWN

Date: 11/2/11
 Date: 11-2-11
 AT&T/TEXAS/SBC UTILITY LINES SHOWN (Approved for AT&T/SBC underground conduit facilities only) (Approval void for one year. Date: 11/2/11)
 CenterPoint Energy/ Gas facilities (Gas service lines are not shown.)

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-659-6344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED.
 CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:
 SECONDARY CONTROL POINT #178
 5/8" IRON ROD, ELEV. 119.53'
 N 13611782.82, E 29848966.69
 BASELINE STA. 68+03.89, 14.21' RT

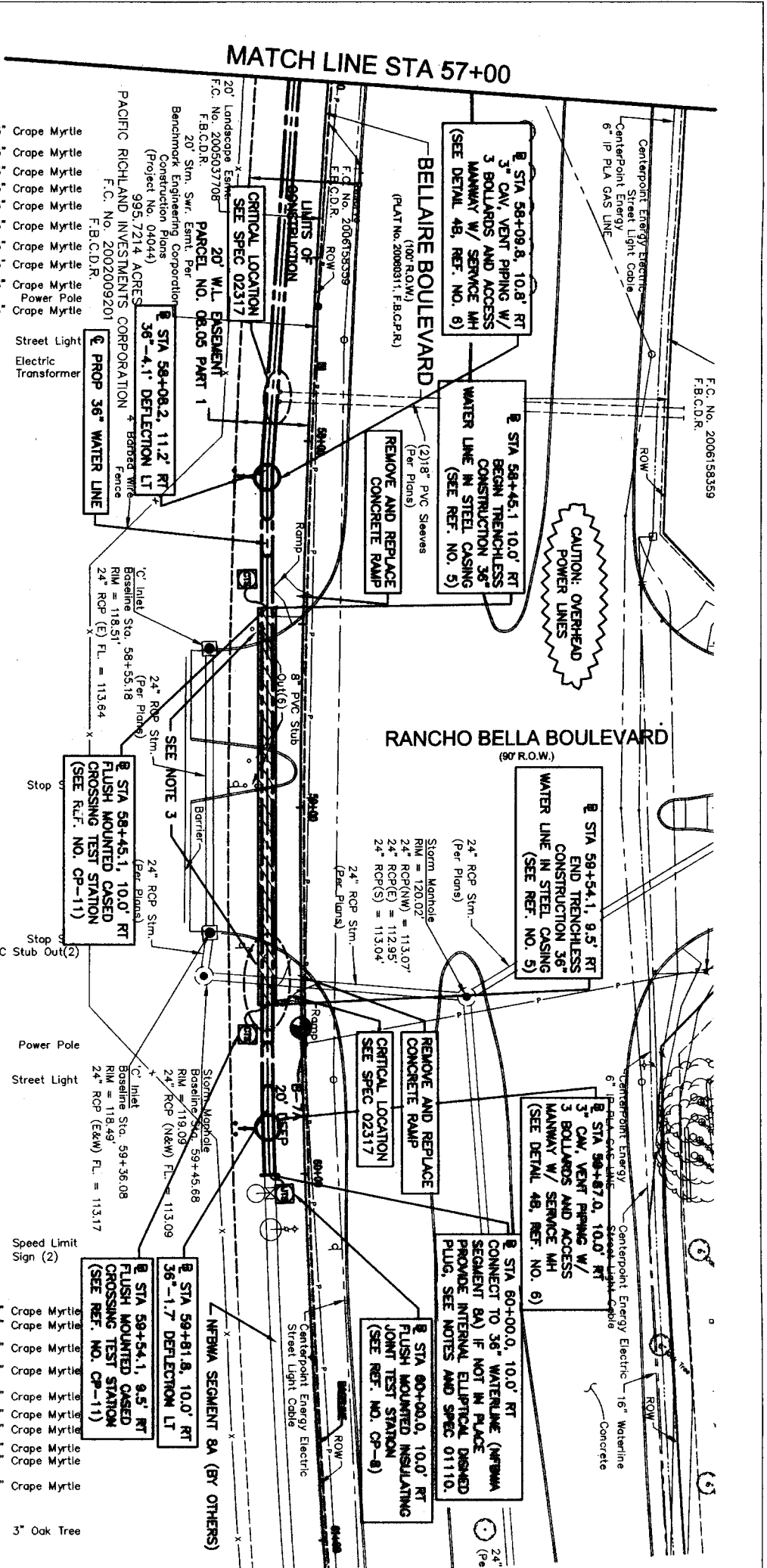
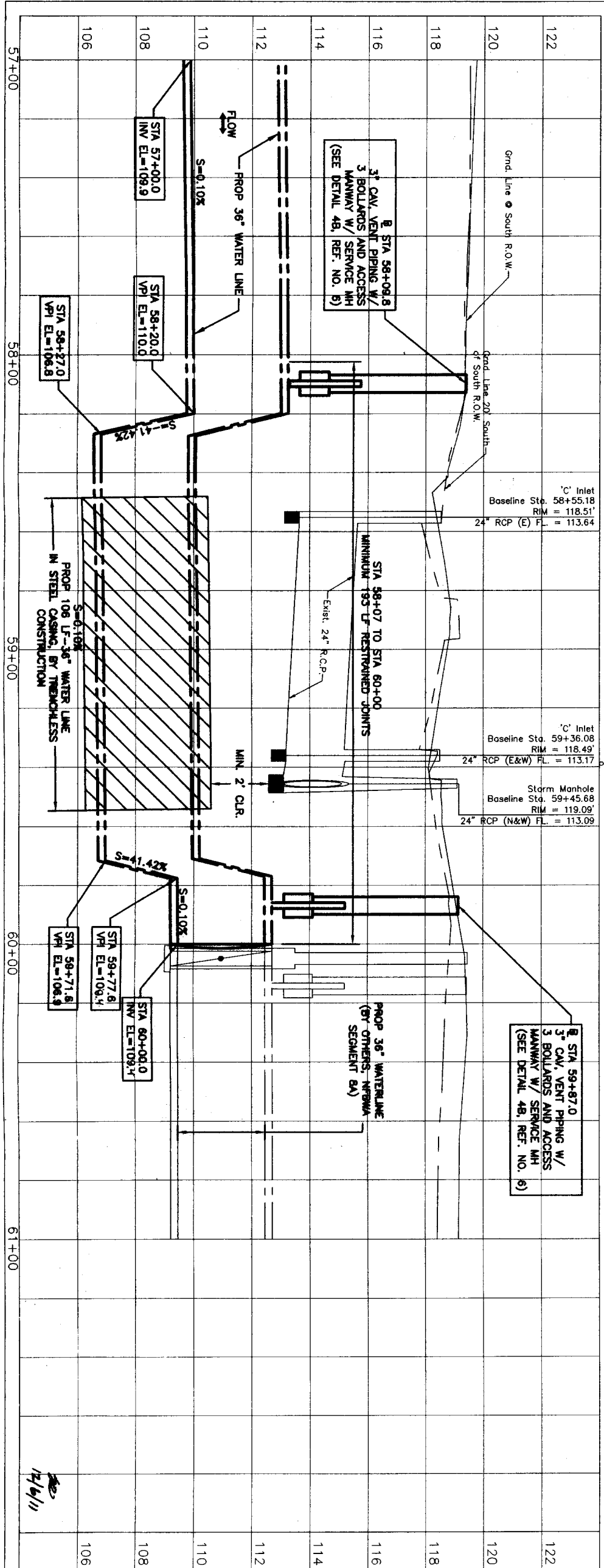
Lockwood, Andrews & Newnam, Inc.
 A LEO A DAILY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

IGN
 Lockwood, Andrews & Newnam, Inc.
 A LEO A DAILY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DATE: 11-2-11

SHEET 25 OF 84
 DRAWING SCALE
 HORIZ : 1" = 20'
 VERT : 1" = 2'
 48139



- NOTES:**
- CONTRACTOR TO INSTALL INTERNAL ELIMINAL DISHED HEAD PLUG IF PROPOSED 36" WATER MAIN (NFBWA SEGMENT 8A) IS NOT EXISTING AT THE TIME OF CONSTRUCTION. IF NFBWA SEGMENT 8A EXISTS AT TIME OF CONSTRUCTION, REMOVE PLUG FROM EXISTING LINE AND CONNECT TO EXISTING LINE. PROVIDE INSULATING PIPE ADAPTER.
 - FIELD VERIFY LOCATION OF ADJACENT WATER LINE (NFBWA SEGMENT 8A) AND MAKE NECESSARY ADJUSTMENT TO LINE AND GRADE TO ENSURE PROPER FIT-UP.
 - MARKER SHOULDS BE INSTALLED ONE (1) FT INSIDE PORT BEYOND COUNTY ROW ON BOTH SIDES OF STREET CROSSING. SEE DETAIL 4, REF. NO. 2. NO SEPARATE PAY.



PRIVATE UTILITY LINES SHOWN

Date: 11/11/11

AT&T EXAS/SBC UTILITY LINES SHOWN (Marked for AT&T/SBC underground conduit facilities only) (Marked for AT&T/SBC underground cables unless otherwise noted) See At. Item # for Review Only

Centerpoint Energy/Electric Facilities (Approved only for crossing underground facilities unless otherwise noted) See At. Item # for Review Only

Centerpoint Energy/ Gas Facilities (Gas service lines are not shown)

DATE: 11/11/11

NOTE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-669-8344

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT AT 713-207-7777.

BENCHMARK INFORMATION:

SECONDARY CONTROL POINT #178
 5/8" IRON ROD, ELEV 119.53'
 N 13811762.82, E 2298486.69
 BASELINE STA. 68+03.89, 14.21' RT

LOCKWOOD, Andrew & Newmann, Inc.
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

BELLAIRE BOULEVARD
 PLAN & PROFILE
 STA. 57+00 TO 61+00

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE

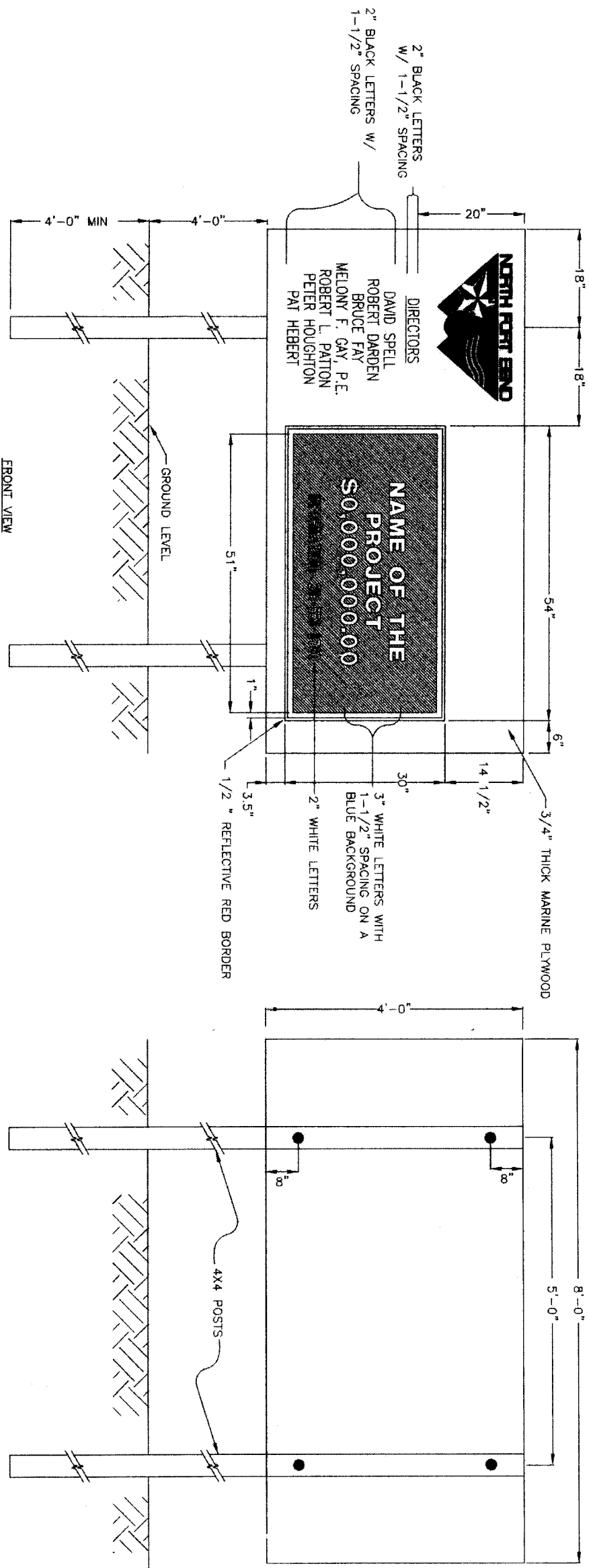
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE SIGNATURES

DATE: 11/11/11

FILE NO.: 1108

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

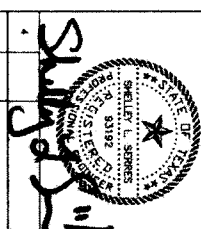
SHEET NO. 26 OF 84



PROJECT SIGN

SCALE: 1"=1'

NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			



IGN & Newnam, Inc.
 A LEAD & DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

PROJECT SIGN DETAIL



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: [Signature] 11-11
 MASTER: [Signature]
 STORM: [Signature]
 FINISHES: [Signature]

FILE NO.:
 DRAWING SCALE:
 HORIZ: 1"=1'
 VERT: 1"=1'

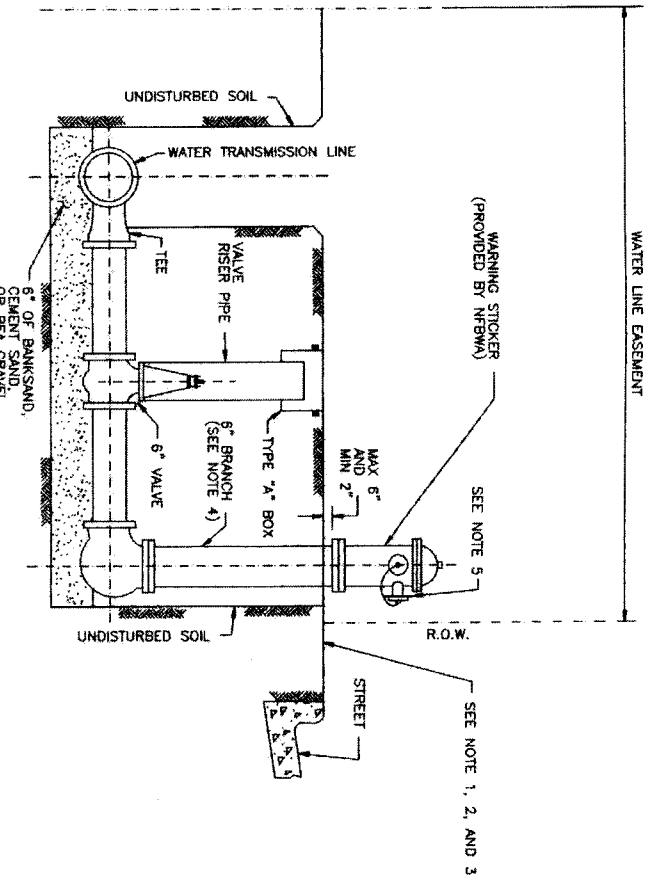
FOR CITY OF HOUSTON USE ONLY

DATE: JULY, 2010

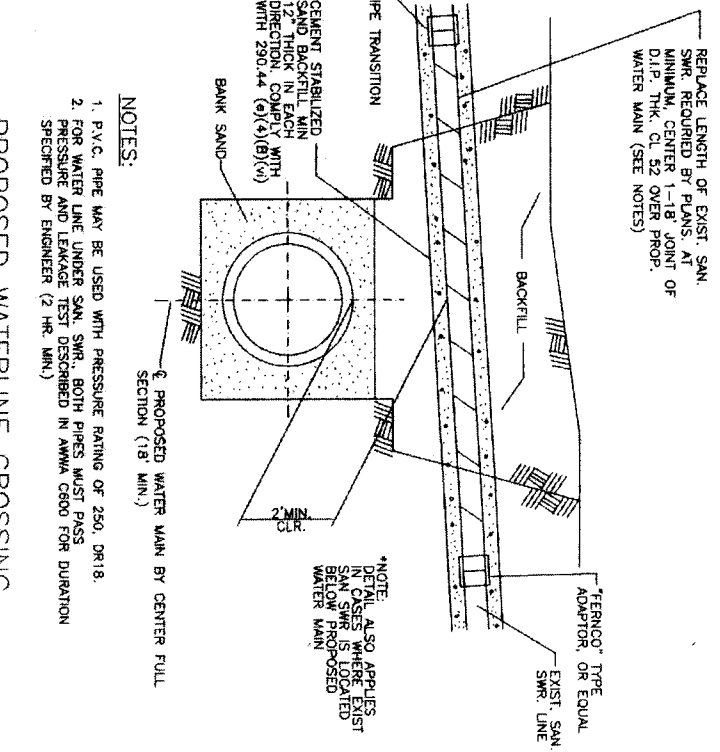
REF. NO. 01

SHEET 27 OF 84

48739

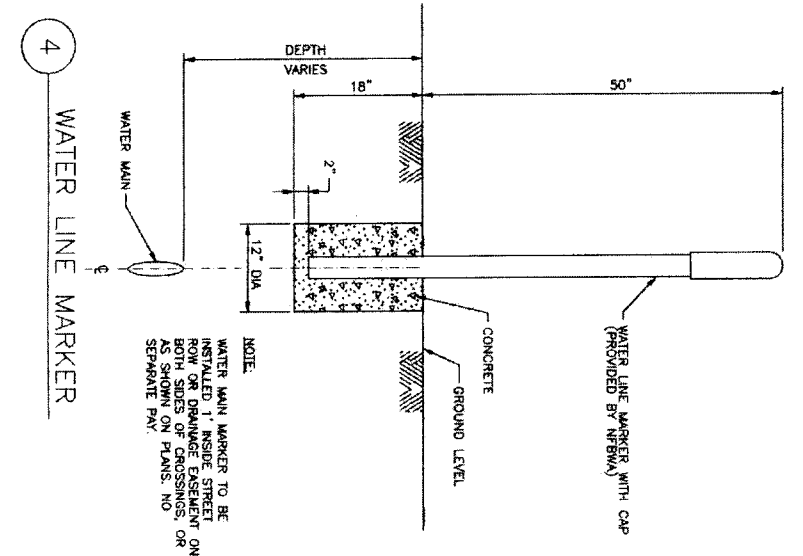


- 1** STANDARD FLUSHING HYDRANT ASSEMBLY
(FOR WATER LINES SMALLER THAN 36-INCHES IN DIAMETER)
- NOTES:
1. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE FLOW FROM HYDRANT AND PREVENT EROSION OF EXISTING GROUND DURING FLUSHING.
 2. ON OPEN-DITCH ROADWAYS OR OTHER CORRIDORS, SET THE FLUSHING HYDRANTS WITHIN 3 FEET OF RIGHTS-OF-WAY LINES. EASEMENT LINE OR AS SHOWN ON PLANS. INSIDE OF CENTERPOINT ENERGY RIGHTS-OF-WAY CONSTRUCT FLUSHING HYDRANTS OVER THE CENTERLINE OF PIPE. TURN BRANCH OF TEE POINTING UP AND PROVIDE 6" ELBOW AND ORIENT FLUSHING HYDRANT ASSEMBLY OVER THE CENTERLINE OF THE PROPOSED PIPE.
 3. THE FLUSHING HYDRANT STEAMER NOZZLE SHALL FACE THE STREET UNLESS DIRECTED OTHERWISE BY ENGINEER.
 4. PROVIDE RESTRAINED JOINTS FOR FLUSHING HYDRANT ASSEMBLY.
 5. PAINT FLUSHING HYDRANT BLACK. INSTALL DISK ON PUMPER NOZZLE AND LABEL "NFBWA - FOR FLUSHING ONLY".
 6. IF WATER TRANSMISSION LINE IS PVC OR D.I. PIPE MATERIAL, INSTALL A D.I. TEE. IF WATER TRANSMISSION LINE IS STEEL OR CONCRETE CYLINDER PIPE MATERIAL, INSTALL A MANUFACTURER'S FLANGED TEE AT THE SPRING LINE.



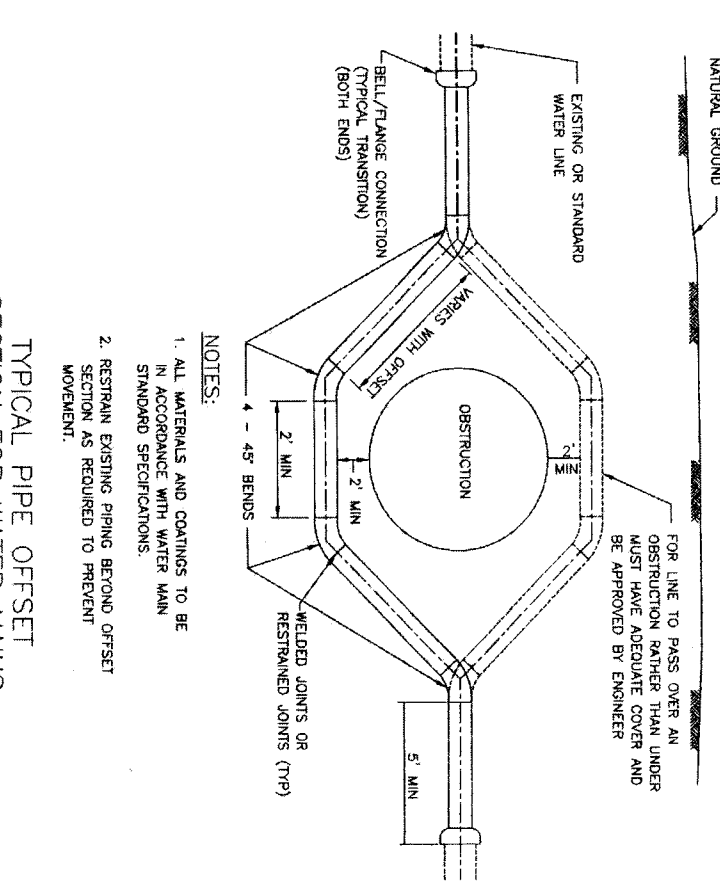
2 PROPOSED WATERLINE CROSSING UNDER EXISTING SANITARY SEWER

- NOTES:
1. P.V.C. PIPE MAY BE USED WITH PRESSURE RATING OF 250. DR18.
 2. FOR WATER LINE UNDER SAN. SMR, BOTH PIPES MUST PASS PRESSURE AND LEAKAGE TEST DESCRIBED IN AWWA C600 FOR DURATION SPECIFIED BY ENGINEER (2 HR. MIN.)



4 WATER LINE MARKER

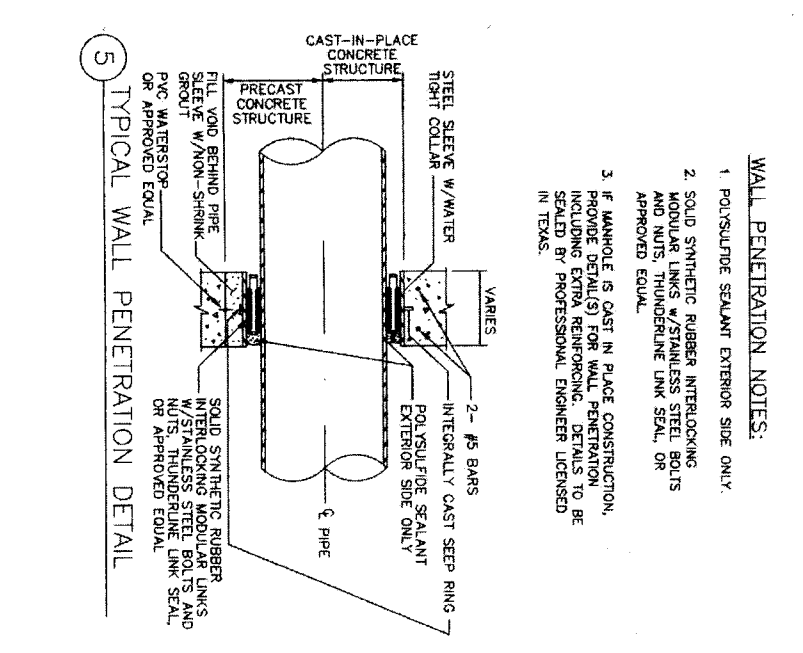
NOTE: WATER MAIN MARKER TO BE INSTALLED 1' INSIDE STREET ROW OR DRAINAGE EASEMENT ON BOTH SIDES OF CROSSINGS, OR AS SHOWN ON PLANS. NO SEPARATE PAN.



3 TYPICAL PIPE OFFSET SECTION FOR WATER MAINS

- NOTES:
1. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
 2. RESTRAIN EXISTING PIPING BEHIND OFFSET SECTION AS REQUIRED TO PREVENT MOVEMENT.

FOR LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER MUST HAVE ADEQUATE COVER AND BE APPROVED BY ENGINEER



5 TYPICAL WALL PENETRATION DETAIL

- WALL PENETRATION NOTES:
1. POLYSULFIDE SEALANT EXTERIOR SIDE ONLY.
 2. SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINKS w/STAINLESS STEEL BOLTS AND NUTS THUNDERBOLT LINK SEAL, OR APPROVED EQUAL.
 3. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAILS FOR WALL PENETRATION, INCLUDING EXTRA REINFORCING. DETAILS TO BE SEALED BY PROFESSIONAL ENGINEER LICENSED IN TEXAS.

DATE: JUNE 27, 2011

REF. NO. 02

SHEET 28 OF 84

DRAWING SCALE

HORZ : NTS

VERT : NTS

FOR CITY OF HOUSTON USE ONLY

48739

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURE

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DESIGNED BY: [Signature]

DRAWN BY: [Signature]

CHECKED BY: [Signature]

STAMP: STORM WATER QUALITY

NORTH FORT BEND

IGN & Newnam, Inc.
A LEO A DALY COMPANY

T.B.P.E. FIRM REGISTRATION #2614

NFBWA SEGMENT 8B

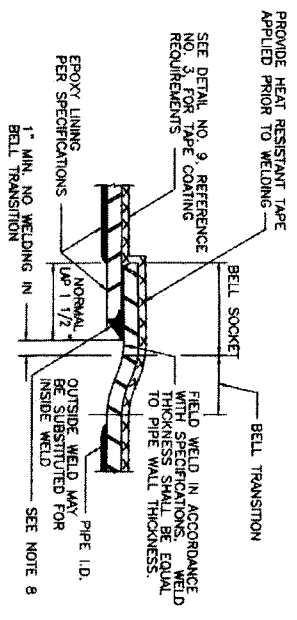
STANDARD WATER LINE DETAILS

NO. DATE REVISION APPROVED

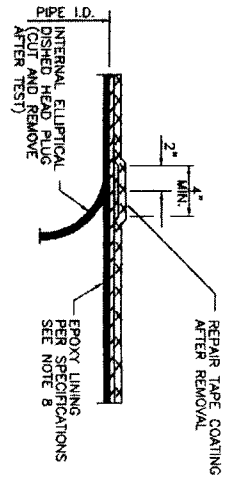
1. [Signature]

2. [Signature]

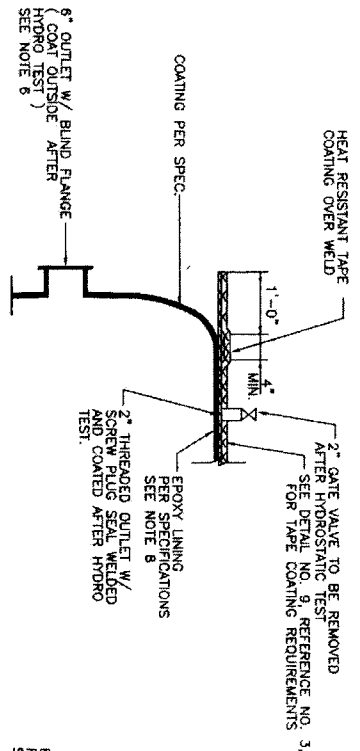
3. [Signature]



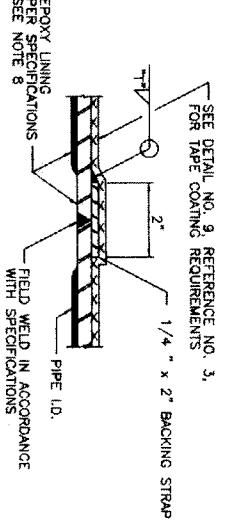
1 LAP-WELD FIELD JOINT - STEEL PIPE W/ EPOXY LINING (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



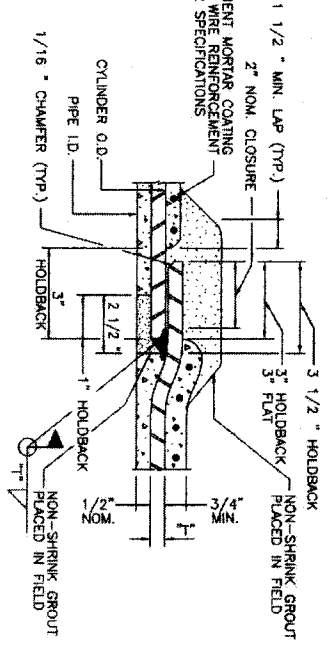
2 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



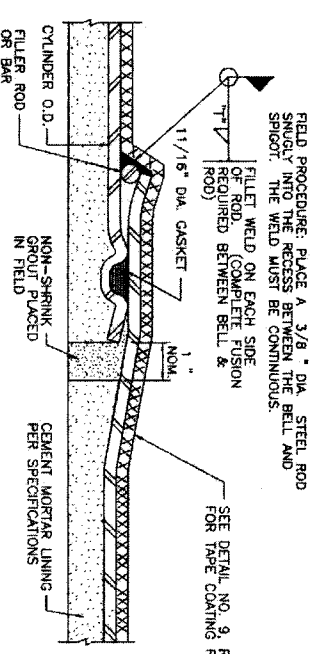
3 INTERNAL ELLIPTICAL DISHED HEAD PLUG (SEE NOTE 7)



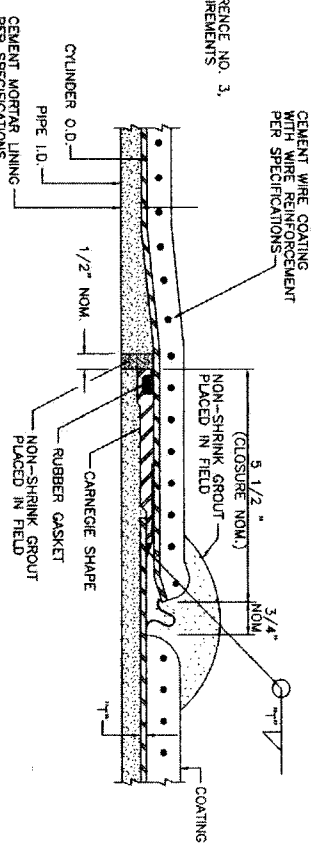
4 BUTT WELD FIELD JOINT - STEEL PIPE (TAPE COATED) (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



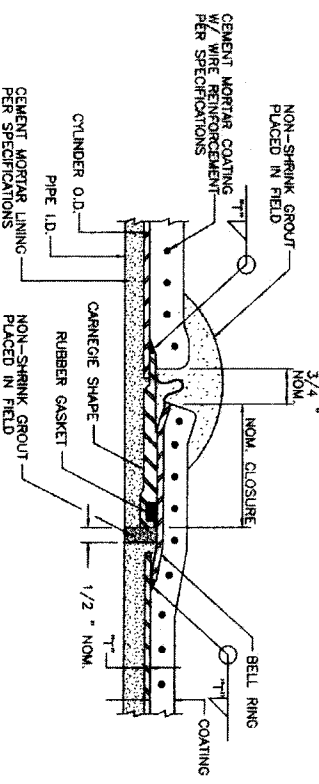
5 LAP-WELD FIELD JOINT - STEEL PIPE WITH CEMENT MORTAR COATING (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



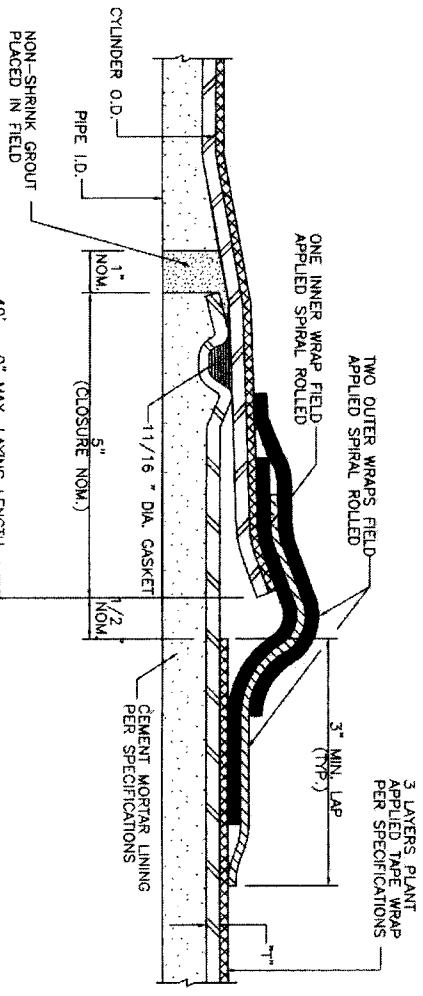
6 FIELD WELDED O-RING JOINT (FOR ADJUSTMENTS ONLY AS APPROVED BY ENGINEER AND PIPE MANUFACTURER. SEE DETAIL NO. 9, REFERENCE NO. 3, AND FOR DIMENSIONS) REFER TO DETAIL 1 OR 5 FOR STANDARD WELDED JOINTS (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



7 ROLLED JOINT STEEL PIPE



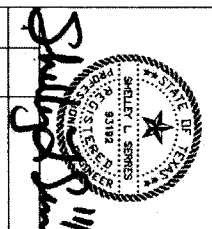
8 CARNEGIE JOINT - STEEL PIPE



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

- NOTES:
1. 1" = STEEL PIPE WALL THICKNESS AND SIZE OF FILET ATTACHMENT WELD.
 2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SHOW PIPE SIZE MEASURED TO INSIDE DIAMETER OF THE LINED 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 LINED PIPE, AS APPROVED BY ENGINEER.
 5. DETAILS 5, 6, 7 AND 8 SHOW CEMENT MORTAR COATING. TAPE COATING TO BE SIMILAR TO DETAIL 9, AS APPROVED BY ENGINEER.
 6. INSTALL 6 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 JOINTS OF THE PIPE TO PREVENT LEAKAGE OF WATER WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCLOSURE PIPE.
 10. SEE DETAIL NO. 7 REFERENCE NO. 4 FOR CLOSURE PIECE REQUIREMENTS.

NO.	DATE	REVISION	APPROV.
1			
2			
3			



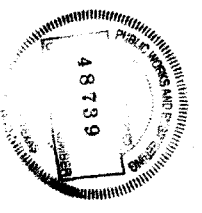
LGN Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

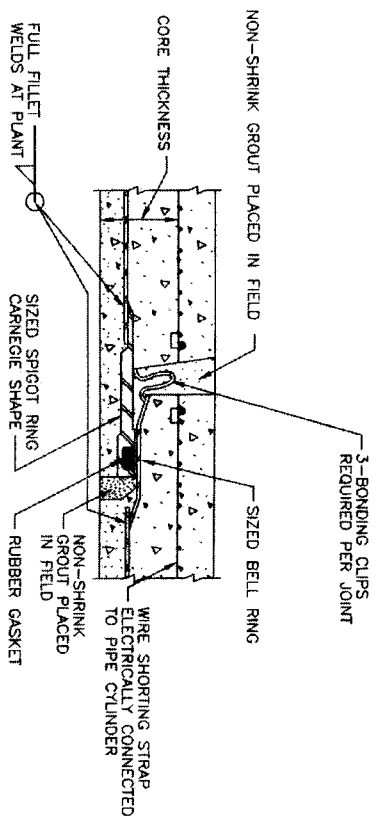


NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
WRITER: [Signature]
DESIGNER: [Signature]
CHECKER: [Signature]
STAMP: [Stamp]
FILE NO.:
DRAWING SCALE:
HORIZ: NTS
VERT: NTS
SHEET No. 29 OF 84

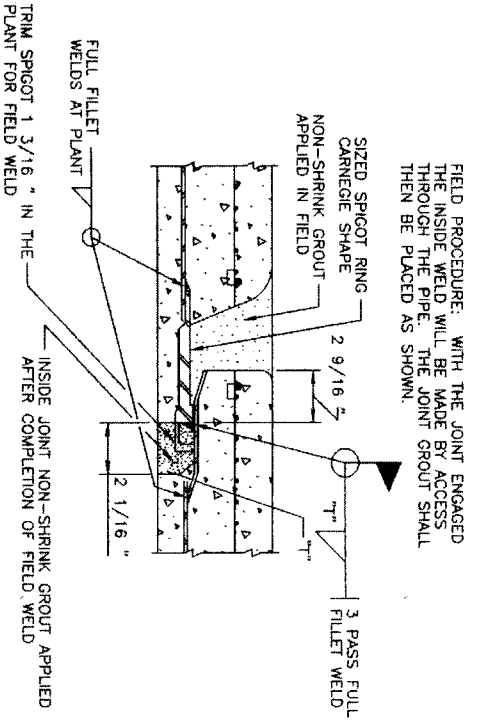
DATE: OCTOBER, 2008

REF. NO. 03
SHEET No. 29 OF 84

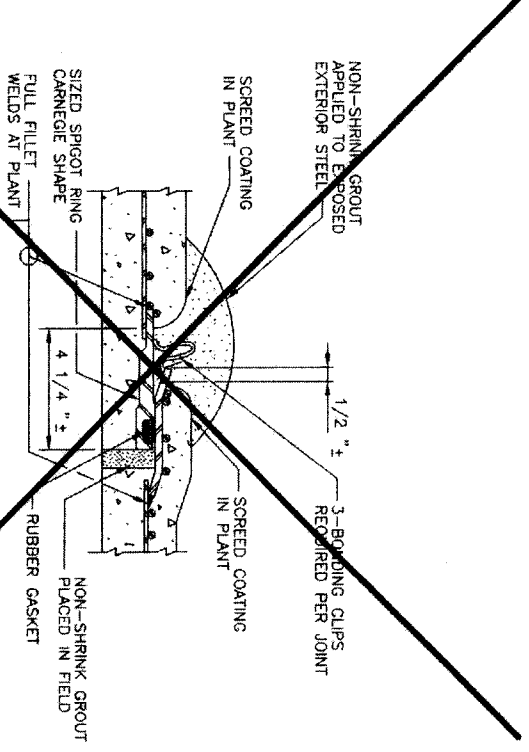




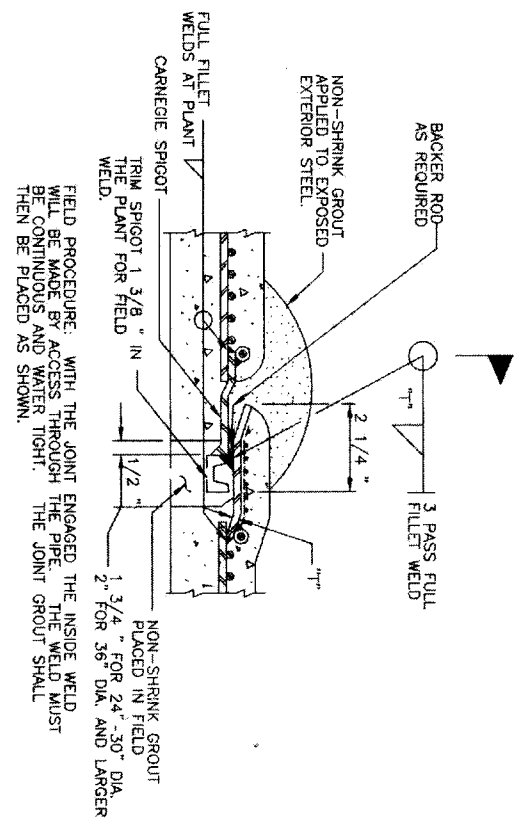
1 JOINT -- EMBEDDED CYLINDER PIPE



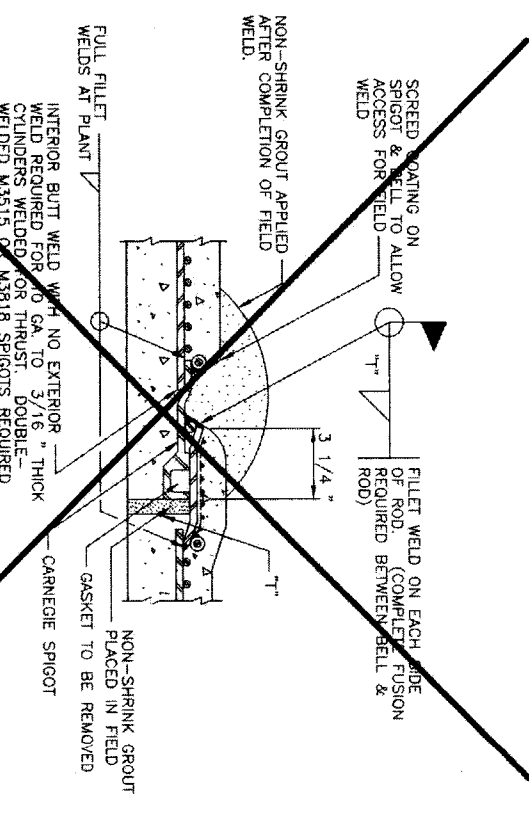
2 WELDED JOINT -- EMBEDDED CYLINDER PIPE (FOR WATER LINES 36-INCHES DIAMETER AND LARGER)



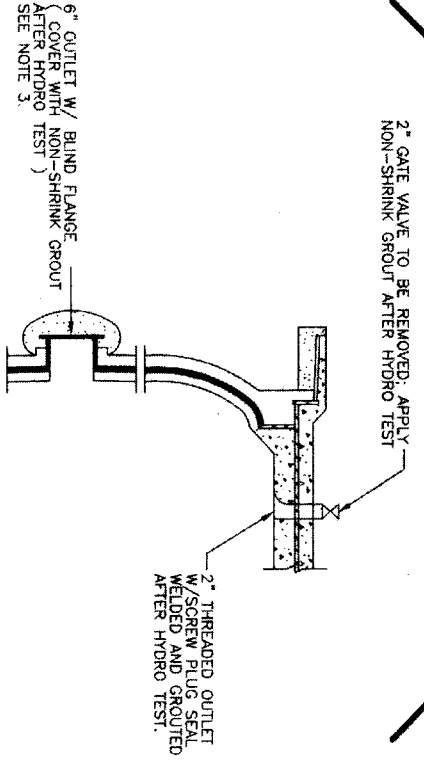
3 JOINT -- LINED CYLINDER PIPE (FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



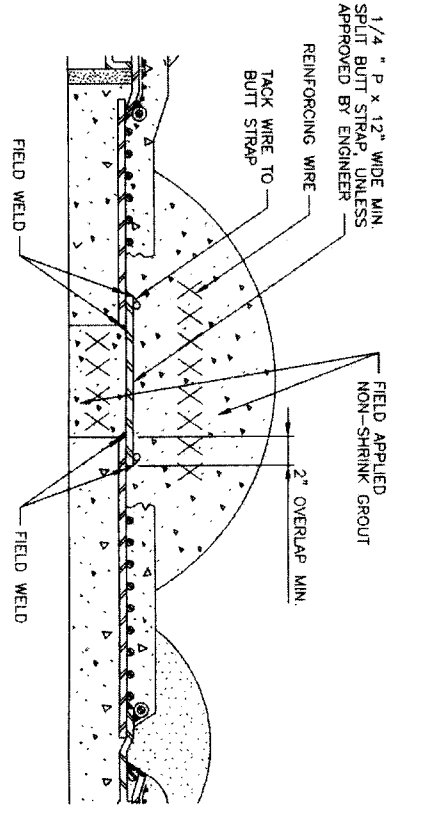
4 WELDED JOINT WITH TRIMMED SPIGOT -- LINED CYLINDER PIPE (FOR WATER LINES 36-INCHES DIAMETER AND LARGER)



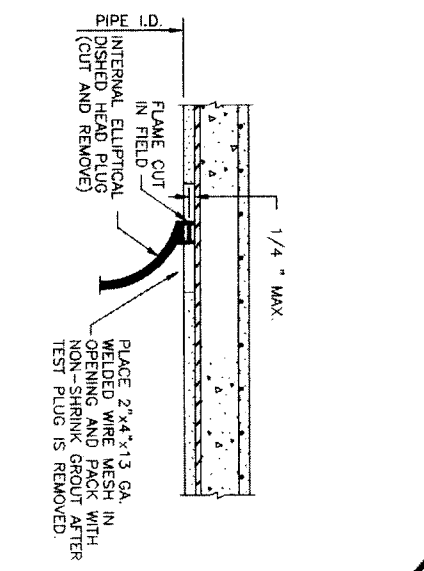
5 WELDED JOINT -- LINED CYLINDER PIPE (FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



6 INTERNAL ELLIPTICAL DISHED HEAD PLUG LINED CYLINDER PIPE (CONCRETE EMBEDDED CYLINDER PIPE IS SIMILAR, AS APPROVED BY ENGINEER) (SEE NOTE 4)



7 CLOSURE PIECE (STEEL PIPE SIMILAR)



8 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL EMBEDDED CYLINDER PIPE (CONCRETE EMBEDDED CYLINDER PIPE SHOWN, CONCRETE LINED CYLINDER PIPE IS SIMILAR, AS APPROVED BY ENGINEER)

- NOTES
1. T = PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
 2. P = STEEL CYLINDER PERIMETER.
 3. INSTALL 6-INCH FLANGED OUTLETS ON EITHER SIDE OF THE DISHED HEAD PLUG.
 4. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH 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 INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.

DATE: FEBRUARY 20, 2011

REF. NO. 04
SHEET No. 30 of 84

FOR CITY OF HOUSTON USE ONLY

48739

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DESIGNED BY: [Signature]
DRAWN BY: [Signature]
CHECKED BY: [Signature]
DATE: 1.1.11

STORM WATER QUALITY



PRESTRESSED CONCRETE CYLINDER PIPE DETAILS

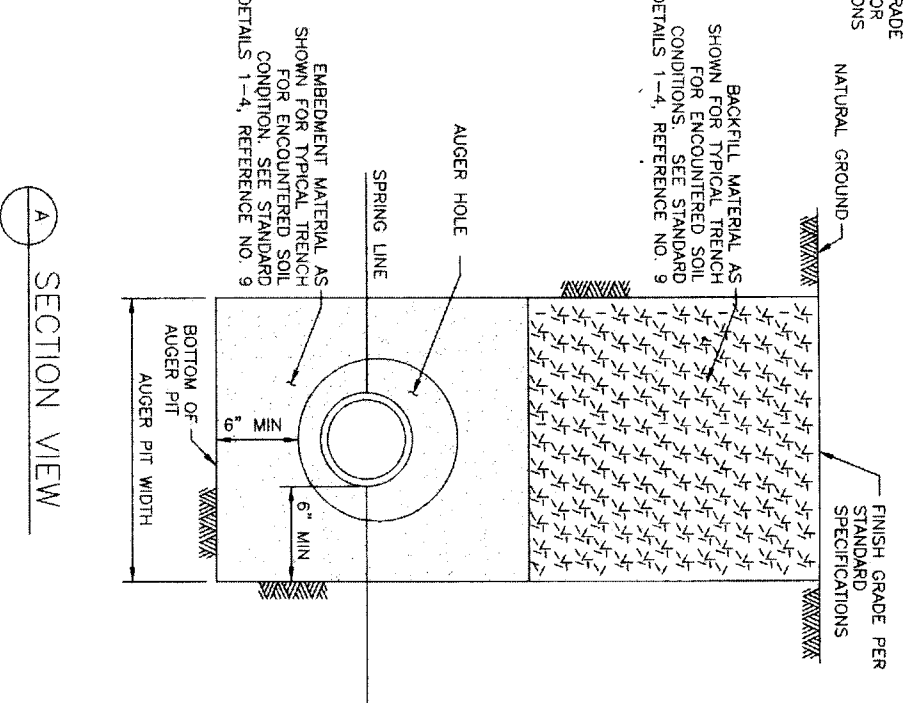
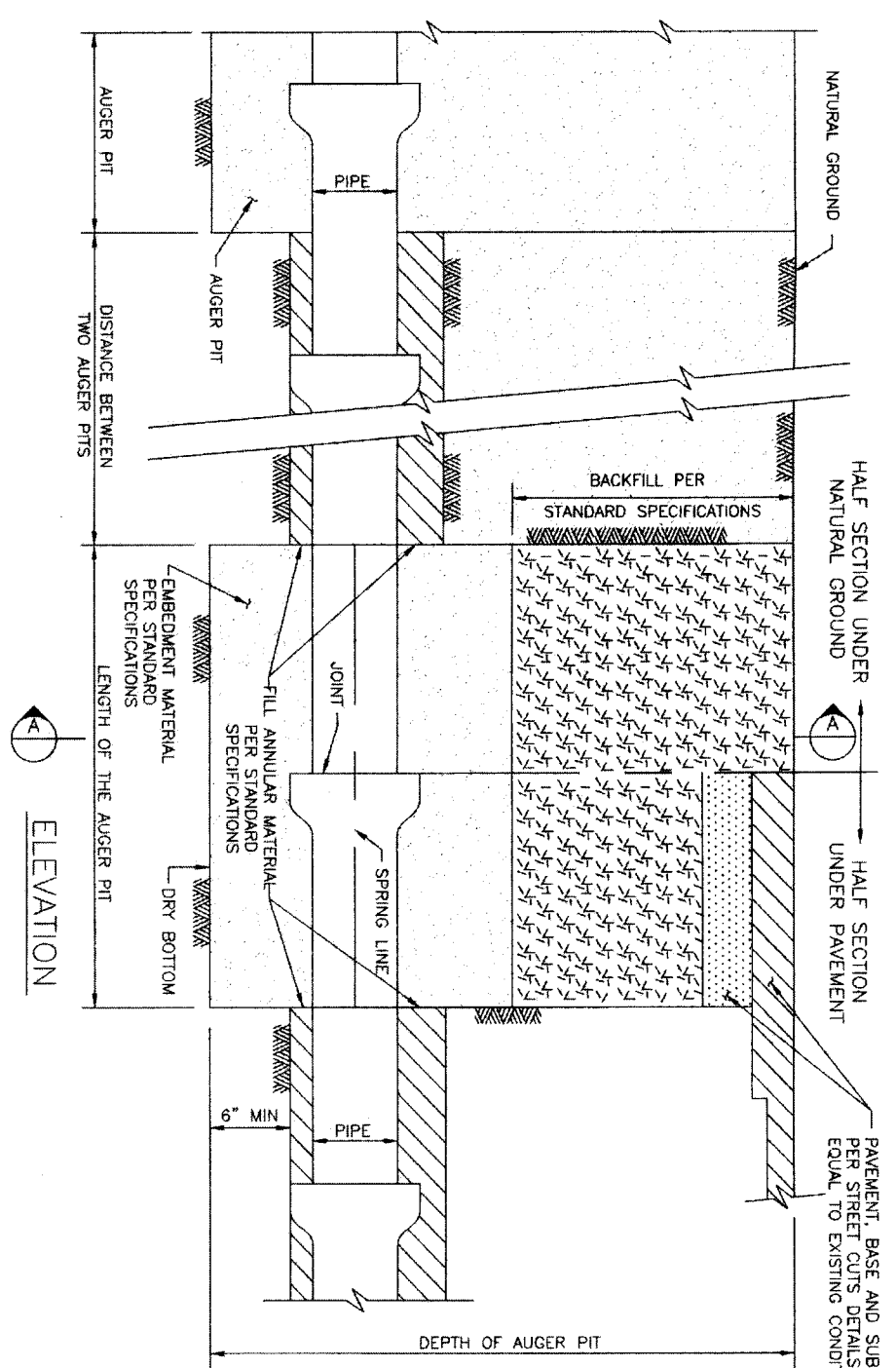
NBWVA SEGMENT 8B

IGN Lockwood, Andrews & Newmann, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614

NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			

[Signature] 1/2/11





1 BEDDING AND BACKFILL AUGER PIT & AUGER HOLE N.T.S.

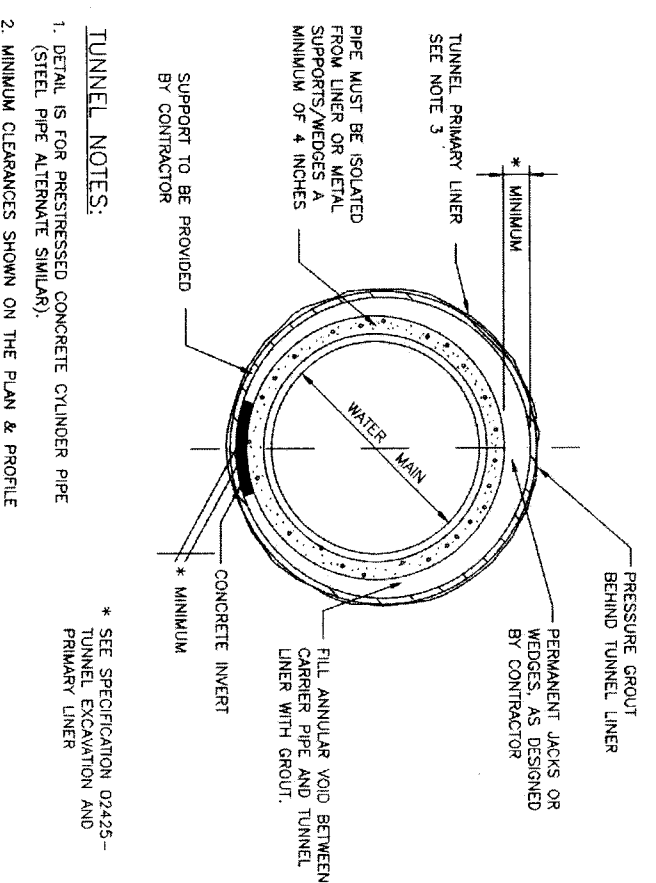
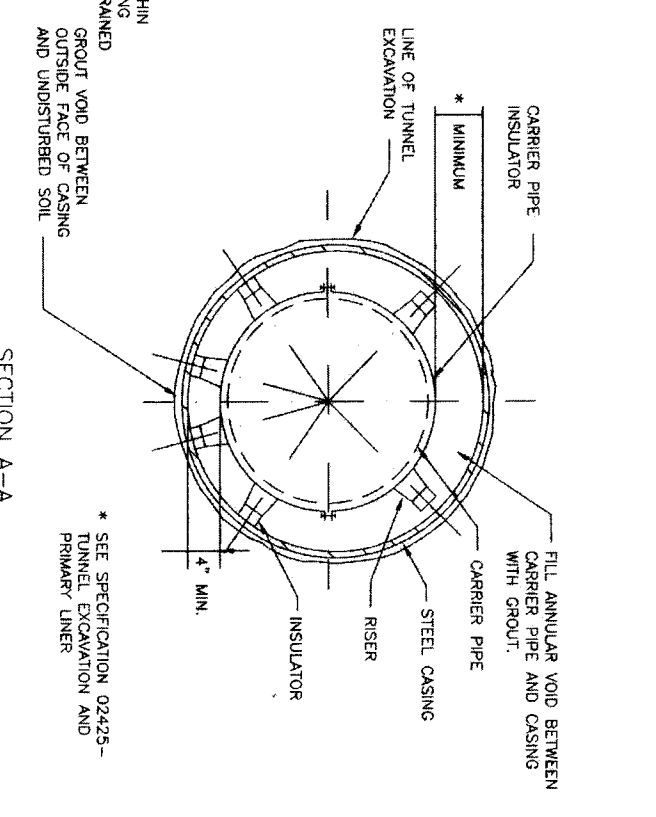
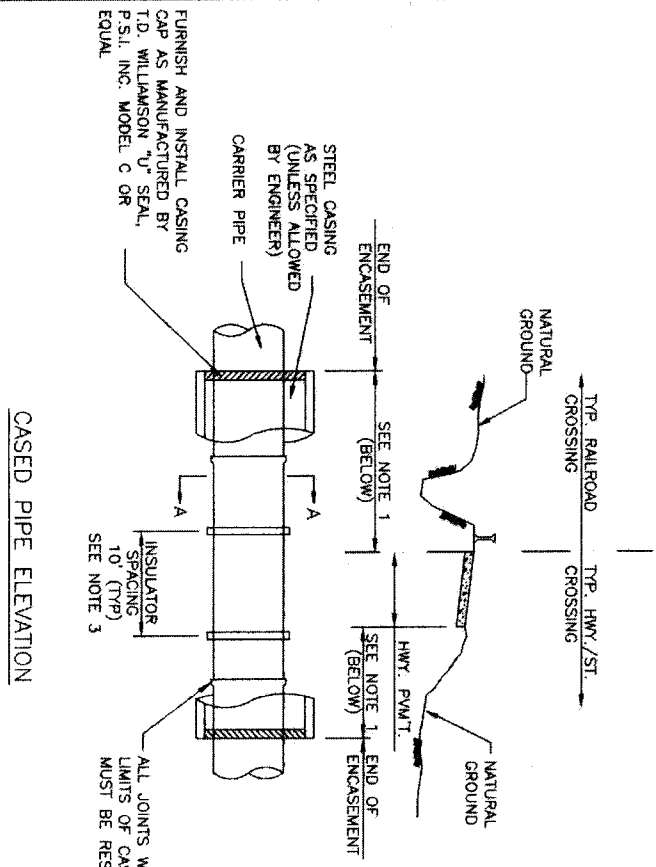
A SECTION VIEW

MINIMUM TUNNEL LINER/CASING SIZES AND THICKNESS

LOCATION	WATER LINE DIAMETER (IN.)	CASING I.D./WALL THICKNESS (IN.)
SIA 00+49.1 89.2' RT TO 01+73.3 56.6' RT	36	36
SIA 06+24.1 10.0' RT TO 07+04.1 10.0' RT	36	36
SIA 19+10.0 10.0' RT TO 19+75.0 10.0' RT	36	36
SIA 24+31.1 20.1' RT TO 25+63.1 02.7' RT	36	36
SIA 26+84.3 10.2' RT TO 27+15.3 10.2' RT	36	36
SIA 38+83.6 10.0' RT TO 39+03.7 10.7' RT	36	36
SIA 58+45.1 10.0' RT TO 59+54.1 09.5' RT	36	36

PIPE MATERIAL	NOMINAL DIA./WALL THICKNESS (NOTE 1)	2-FLANGE LINER PLATE (SEE NOTE 2)	4-FLANGE LINER PLATE	CASING I.D./WALL THICKNESS
PCCP	54/0.1046	54/0.1046	54/0.1046	54/0.3125
BAR-WRAPPED DIP	48/0.1046	48/0.1046	54/0.1046	48/0.3125
STEEL	48/0.1046	48/0.1046	48/0.1046	48/0.3125

NOTES:
 1. DIAMETER OF LINER PLATE IS AT NEUTRAL AXIS.
 2. LINER PLATE IS TWO FLANGE AND NOMINALLY 2-INCH CORRUGATION BY 6-INCH PROFILE.



3 TUNNEL DETAIL (FOR WATER MAINS 36-INCHES AND LARGER)

TUNNEL NOTES:

- CASING NOTES:
1. LENGTH OF ENCASMENT SHALL BE AS SHOWN ON THE PLAN & PROFILE DRAWINGS.
 2. LAY CASING PIPE IN OPEN CUT, TUNNEL OR BORE.
 3. SEE SPECIFICATIONS FOR APPROPRIATE MODEL ACCORDING TO PIPE DIAMETER.

CASED PIPE ELEVATION

2 CASING DETAIL

3 TUNNEL DETAIL (FOR WATER MAINS 36-INCHES AND LARGER)

DATE: JUNE 27, 2011

REF. NO. 05

SHEET NO. 31 OF 84

48789

NORTH FORT BAND

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

IGN & Newnam, Inc.
 T.B.P.E. FIRM REGISTRATION #2614
 A LEO A DALY COMPANY
 NFBWA SEGMENT 8B

TRENCHLESS CONSTRUCTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

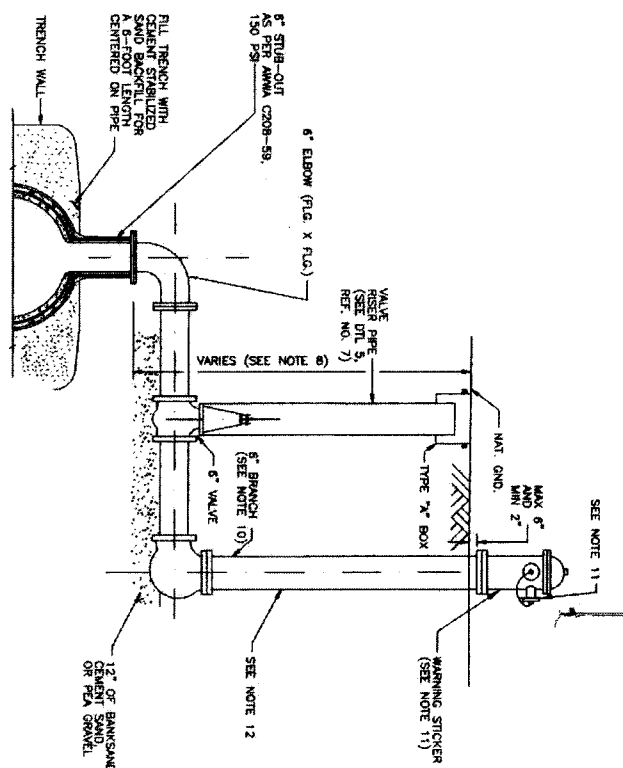
DESIGNED BY: [Signature]

CHECKED BY: [Signature]

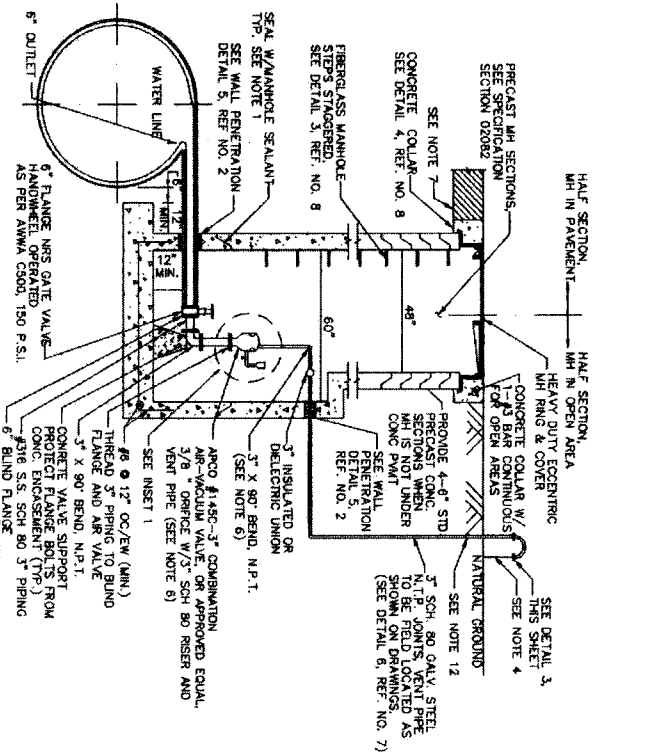
DATE: [Signature]

SCALE: [Signature]

FOR CITY OF HOUSTON USE ONLY



1
FLUSHING HYDRANT ASSEMBLY
WITH VERTICAL STUBOUT
(FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)



2
LOW PROFILE COMBINATION AIR-VACUUM VALVE ASSEMBLY
(FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)

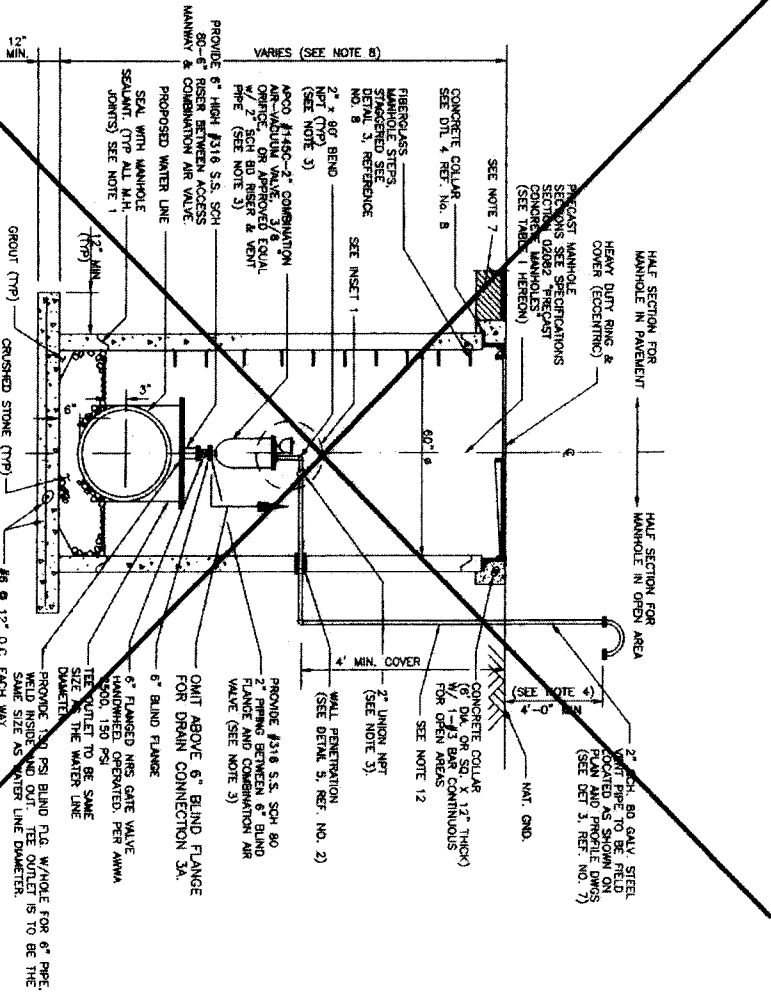
TABLE 1 - Air Valve & Types

Water Main Diameter	Air Valve Size	APCO Model	MH SIZE
<30"	2"	145C	60"
	3"	147C	60"
	3"	1503C	60"
	3"	1503TC	60"
≥30"	4"	1504C	60"

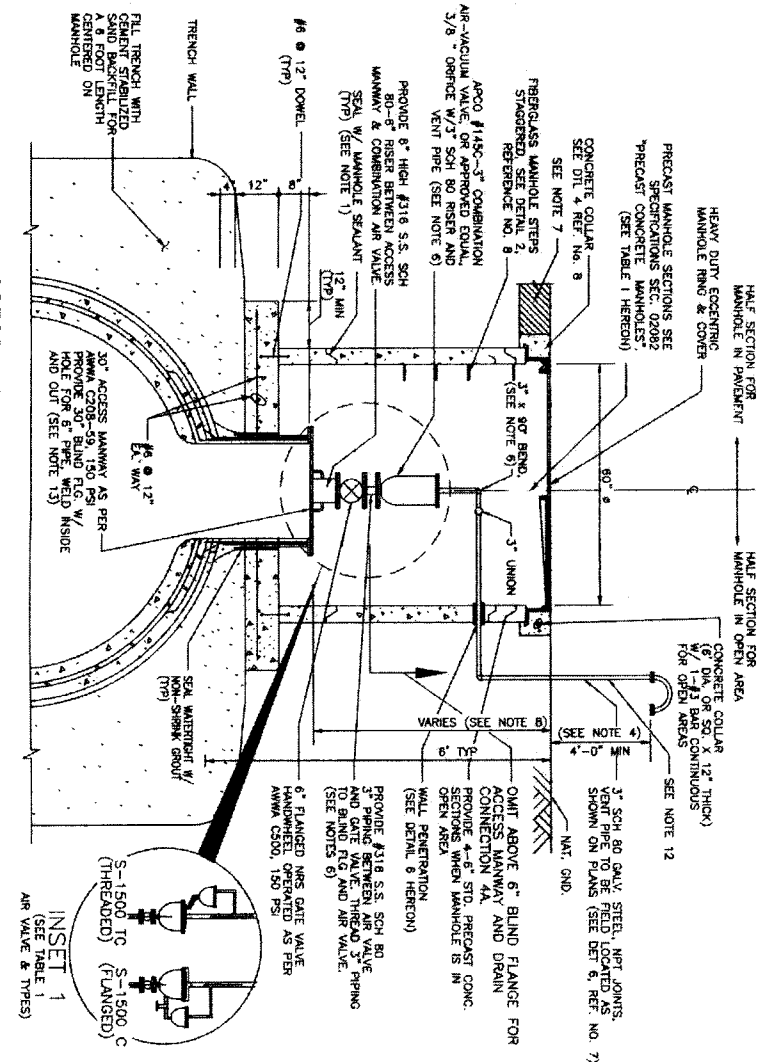
*or approved equal

NOTES:

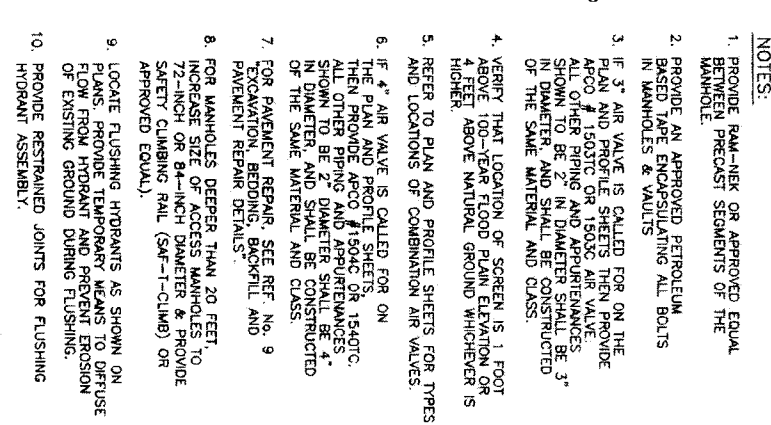
1. PROVIDE RAIN-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. PROVIDE AN APPROVED PETROLEUM BASED TAPE ENCAPSULATING ALL BOLTS IN MANHOLES & WALLS.
3. IF 3" AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS THEN PROVIDE APCO # 1503TC OR 1503C AIR VALVE. ALL OTHER PIPING AND APPURTENANCES SHOWN TO BE 2" IN DIAMETER SHALL BE 3" IN DIAMETER, AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
4. VERIFY THAT LOCATION OF SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.
5. REFER TO PLAN AND PROFILE SHEETS FOR TYPES AND LOCATIONS OF COMBINATION AIR VALVES.
6. IF 4" AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS, THEN PROVIDE APCO #1504C OR 1504TC. ALL OTHER PIPING AND APPURTENANCES SHOWN TO BE 2" IN DIAMETER SHALL BE 4" IN DIAMETER, AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
7. FOR PAVEMENT REPAIR, SEE REF. NO. 9 EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS.
8. FOR MANHOLES DEEPER THAN 20 FEET TO THE CENTER OF MANHOLE PROVIDE SAFETY CLIMBING RAIL (SAF-1-CLIMB) OR APPROVED EQUAL.
9. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE FLOW FROM HYDRANT AND PREVENT EROSION OF EXISTING GROUND DURING FLUSHING.
10. PROVIDE RESTRAINED JOINTS FOR FLUSHING HYDRANT ASSEMBLY.
11. PAINT FLUSHING HYDRANT BLACK. INSTALL DISK ON FLUSHER HANDLE AND LABEL "NFBWA - FOR FLUSHING ONLY".
12. FOR MANHOLES DEEPER THAN 20 FEET TO THE CENTER OF MANHOLE PROVIDE SAFETY CLIMBING RAIL (SAF-1-CLIMB) OR APPROVED EQUAL.
13. FOR 36" DIAMETER WATERLINE, USE 24" DIAMETER ACCESS MANWAY.



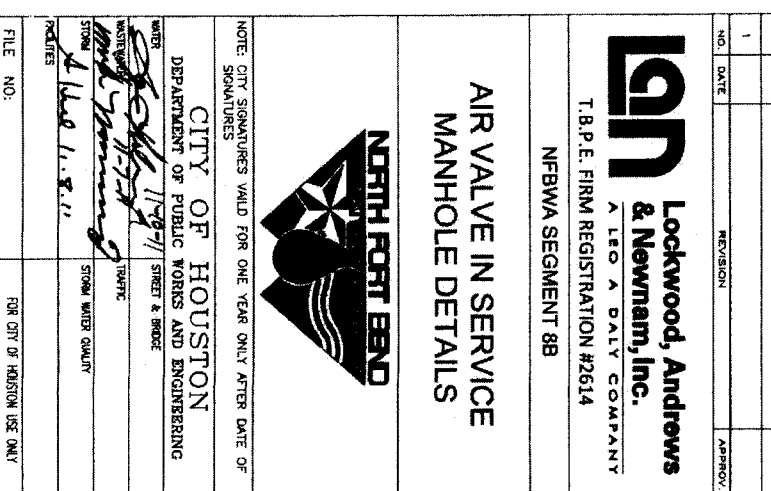
3A
DRAIN CONNECTION (W/OUT AIR VALVE)
IN SERVICE MANHOLE
(FOR WATER LINES SMALLER THAN 36-INCHES IN DIAMETER)



3B
ACCESS MANWAY AND DRAIN CONNECTION (W/OUT AIR VALVE) IN SERVICE MANHOLE
(FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)



4A
COMBINATION AIR-VACUUM VALVE ASSEMBLY IN SERVICE MANHOLE
(FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)



4B
COMBINATION AIR-VACUUM VALVE ASSEMBLY IN SERVICE MANHOLE
(FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)

DATE: FEBRUARY 20, 2011

REF. NO. 06

SHEET No. 32 OF 84

HORIZ : NTS
VERT : NTS

FOR CITY OF HOUSTON USE ONLY

48789

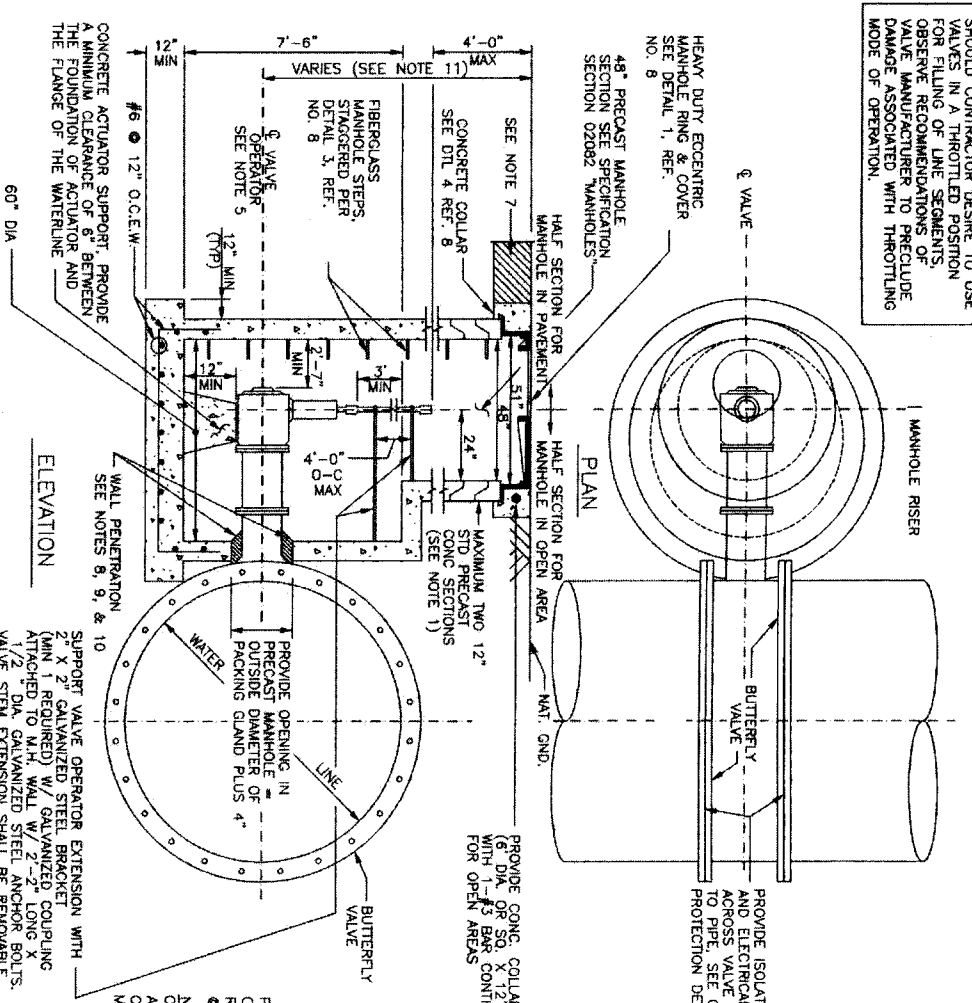


IGN Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

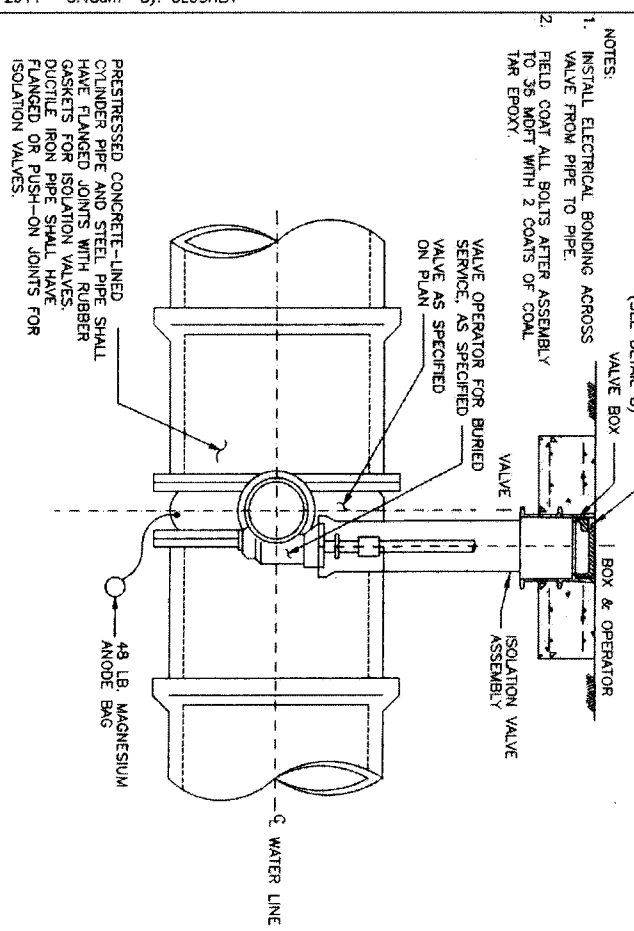
AIR VALVE IN SERVICE MANHOLE DETAILS

STATE OF TEXAS
REGISTERED PROFESSIONAL ENGINEER
No. 01328
Lockwood, Andrews & Newnam, Inc.
11/1/11

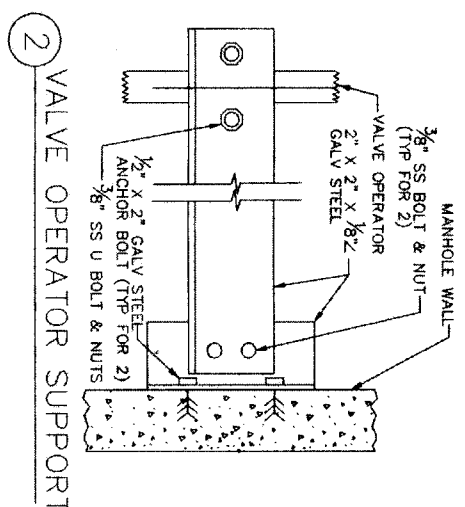
NOTE:
 SHOULD CONTRACTOR DESIRE TO USE VALVES IN A THROTTLED POSITION FOR FILLING OF LINE SEGMENTS, OBSERVE RECOMMENDATIONS OF VALVE MANUFACTURER TO PRECLUDE DAMAGE ASSOCIATED WITH THROTTLING MODE OF OPERATION.



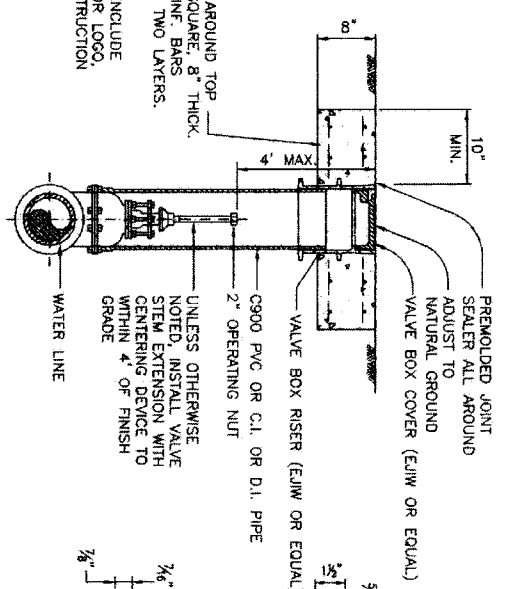
1 BUTTERFLY VALVES WITH ACTUATOR MANHOLE
 (FOR WATER LINES 30-INCHES AND LARGER IN DIAMETER)



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

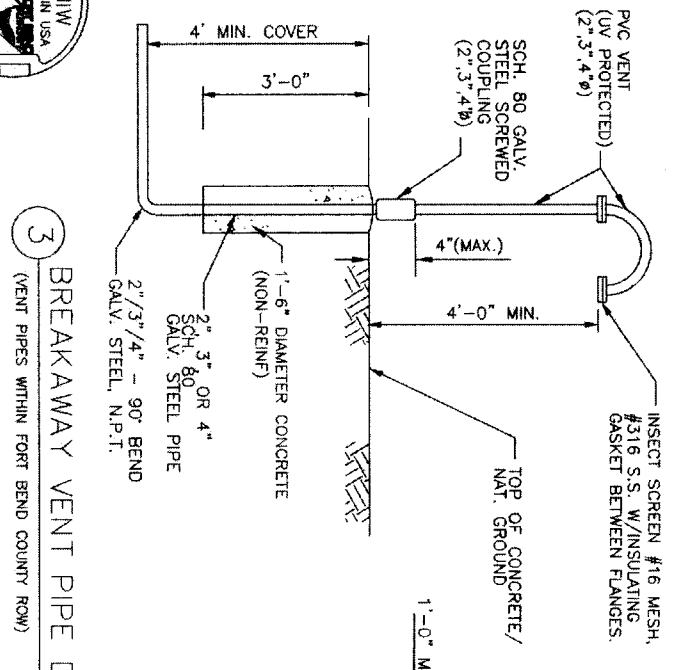


2 VALVE OPERATOR SUPPORT

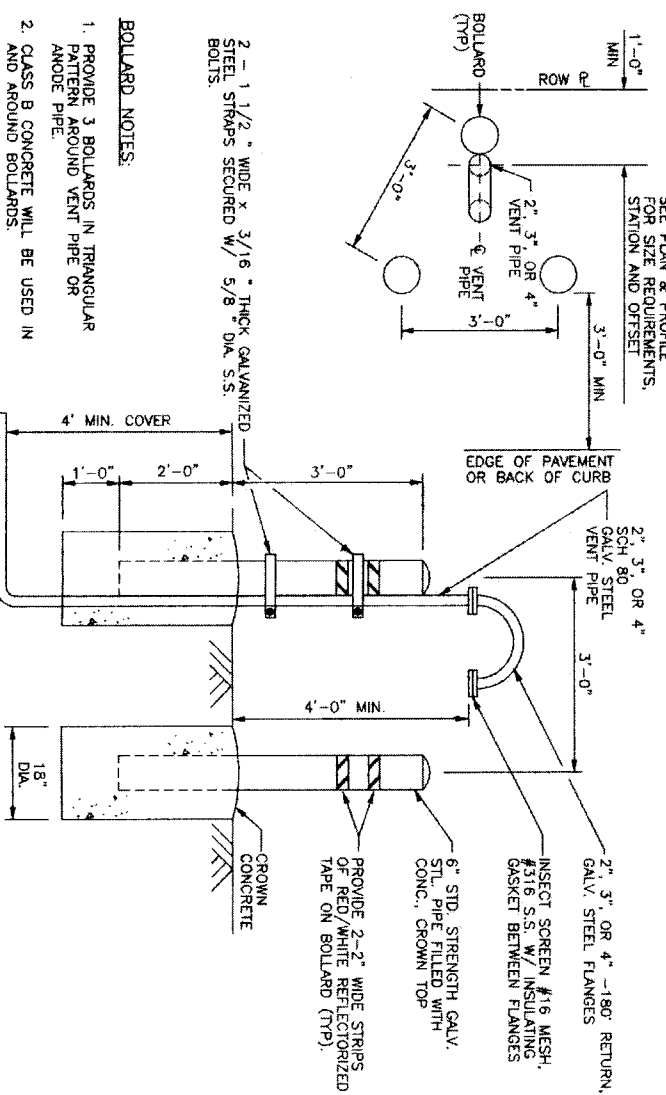


5 VALVE BOX DETAIL

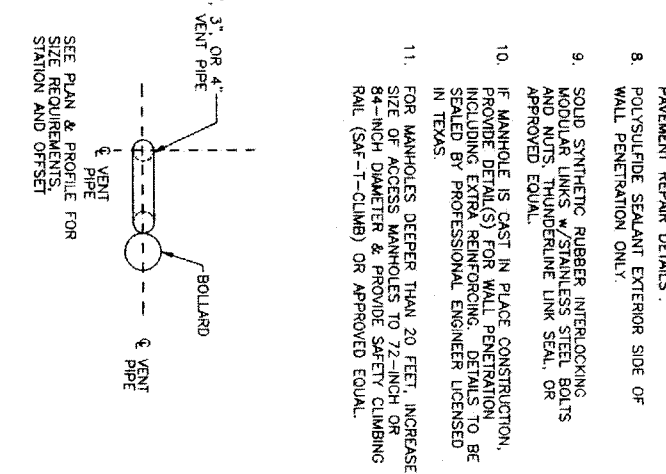
8 VALVE BOX COVER DETAIL
 (EAST JORDAN IRON WORKS (EJW) OR EQUAL)



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



6 VENT PIPE WITH 3 BOLLARDS DETAIL

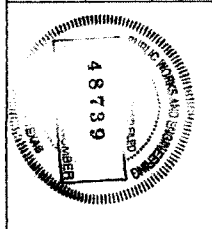


7 VENT PIPE WITH 1 BOLLARD DETAIL

- GENERAL NOTES:**
1. PROVIDE RAINNER OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
 2. PROVIDE AN APPROVED RETICULUM BASED TAPER ENCLOSURING ALL BOLTS IN MANHOLES & VAULTS.
 3. ALL JOINTS SHALL BE BONDED. SEE THE CATHODIC PROTECTION DETAILS.
 4. FIELD COAT ALL FLANGE BOLTS, FLANGE COUPLING, FLANGE COUPLING ADAPTER AND THRUST THE ASSEMBLY AFTER ASSEMBLY TO .35 MDT W/ 2 COATS OF COAL TAR EPOXY.
 5. 2\"/>
 6. PLACE MANHOLE ON COMPACTED (95% SPD) BOTTOM.
 7. FOR PAVENT REPAIR, SEE REF. NO. 9 EXCAVATION BEING DONE, ROCKFILL AND PAVENT REPAIR DETAILS.
 8. POLYSULFIDE SEALANT EXTERIOR SIDE OF WALL PENETRATION ONLY.
 9. SOLID SYNTHETIC RUBBER INTERLOCKING HOOD LINES W/ STAINLESS STEEL BOLTS AND NUTS THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
 10. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAIL(S) FOR WALL PENETRATION INCLUDING EXTRA REINFORCING. DETAILS TO BE SEALS BY PROFESSIONAL ENGINEER LICENSED IN TEXAS.
 11. FOR MANHOLES DEEPER THAN 20 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 22-INCH OR 84-INCH DIAMETER & PROVIDE SAFETY CLIMBING RAIL (SAF-1-CLIMB) OR APPROVED EQUAL.

DATE: FEBRUARY 20, 2011

REF. NO. 07
 SHEET No. 33 OF 84



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STREET & BRIDGE
 TWENTY
 STORM WATER QUALITY

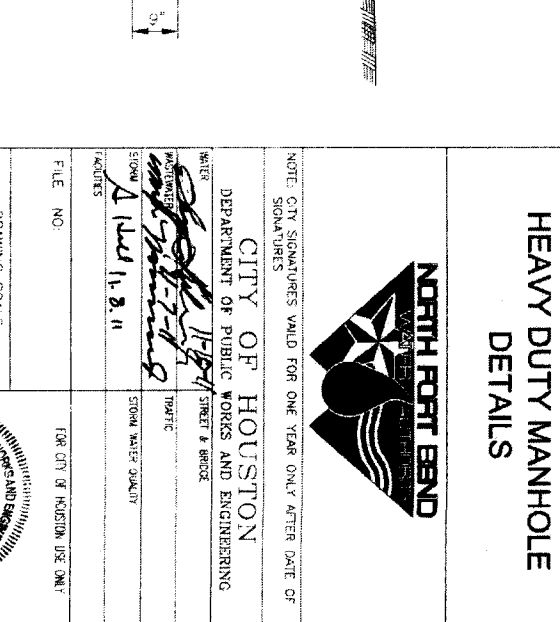
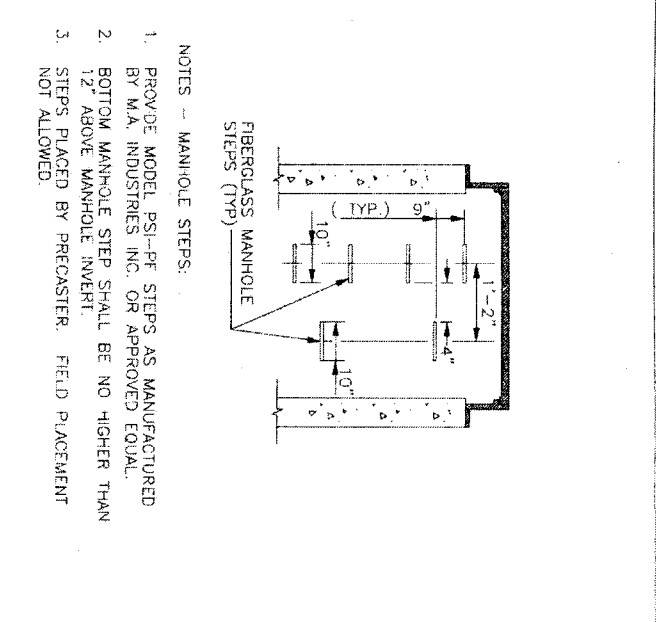
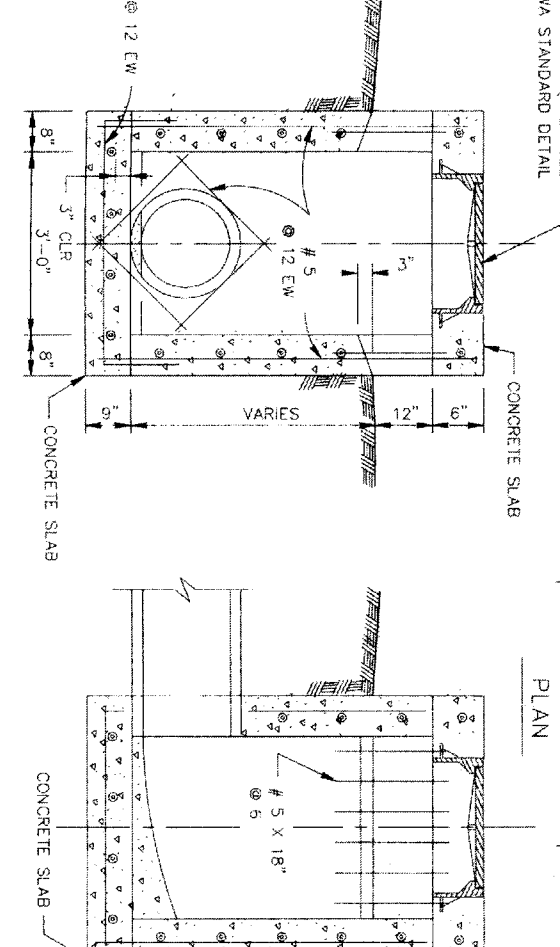
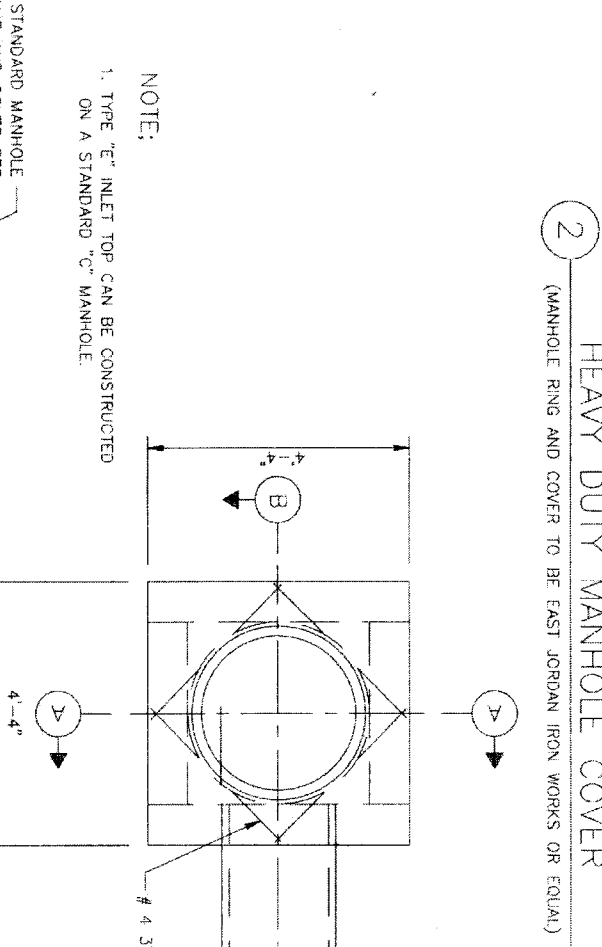
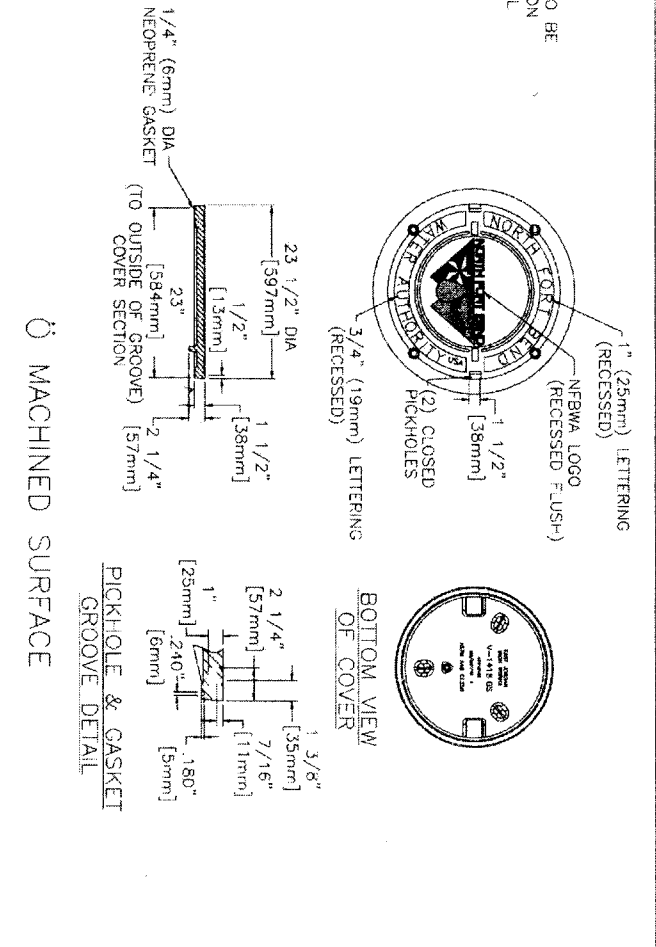
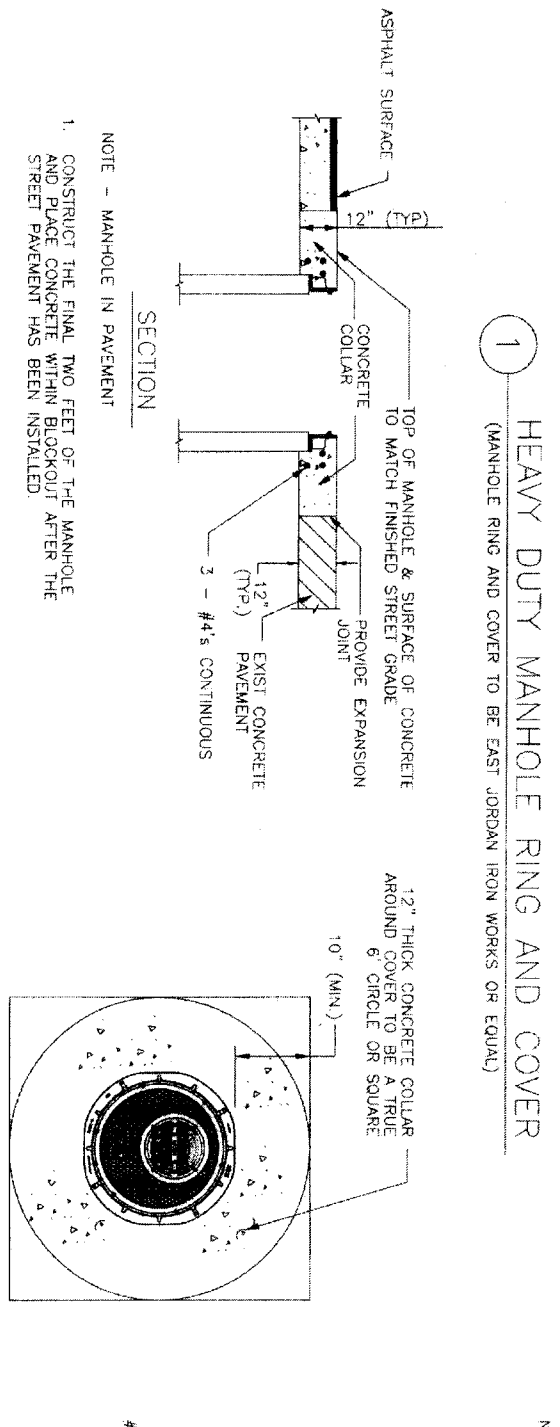
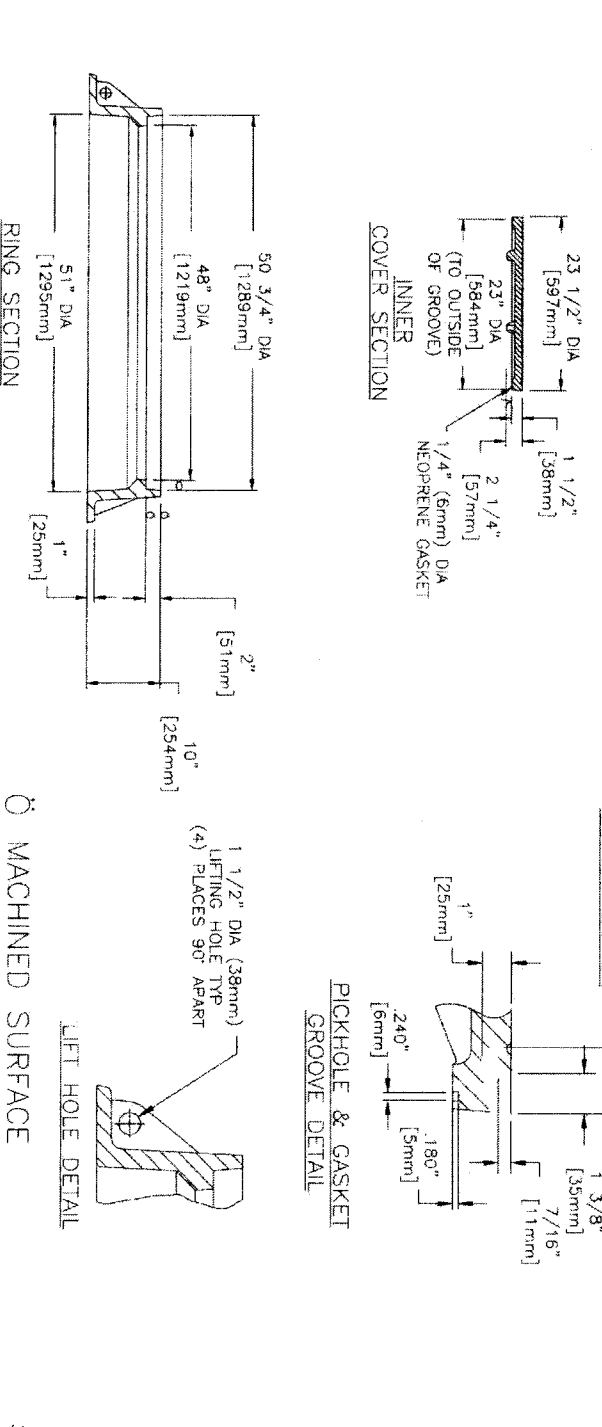
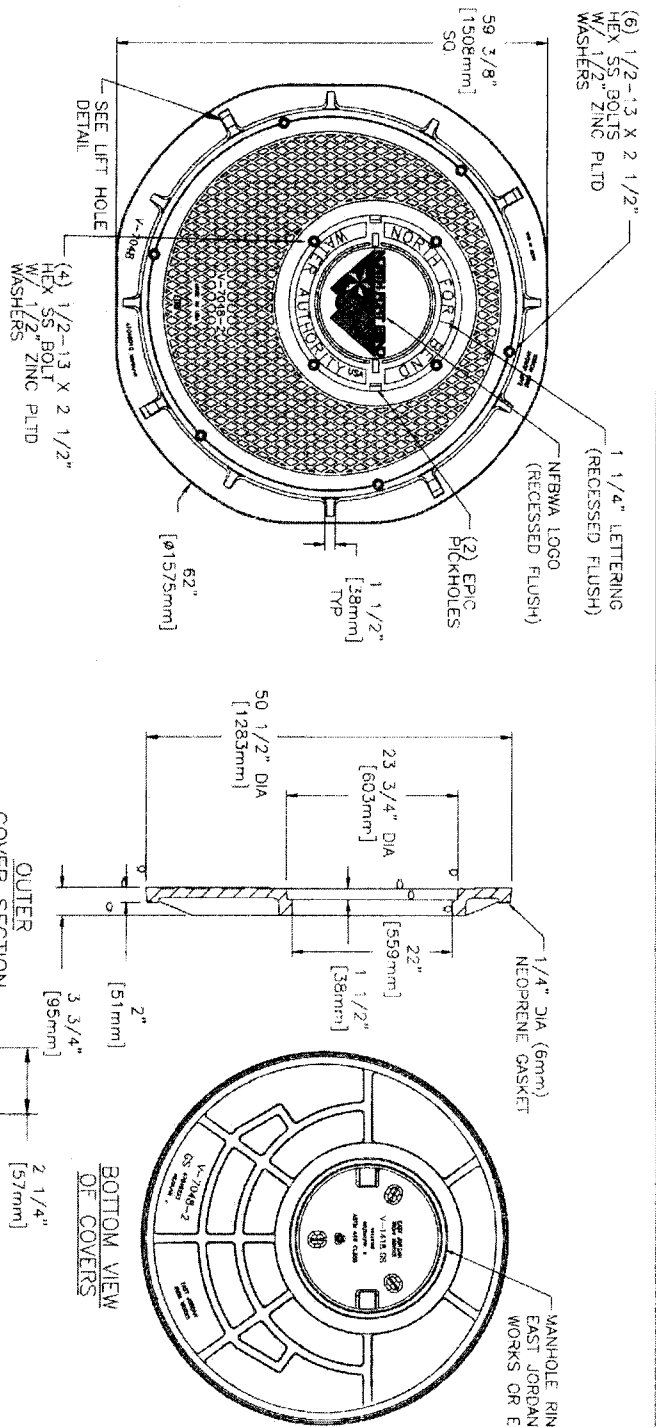
FILE NO.:
 DRAWING SCALE:
 HORIZ: NTS
 VERT: NTS

FOR CITY OF HOUSTON USE ONLY



GN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

VALVE AND VENT PIPING AND SERVICE MANHOLE DETAILS



NOTE - MANHOLE IN PAVEMENT
1. CONSTRUCT THE FINAL TWO FEET OF THE MANHOLE AND PLACE CONCRETE WITHIN BLOCKOUT AFTER THE STREET PAVEMENT HAS BEEN INSTALLED.

NOTE:
1. TYPE "E" INLET TOP CAN BE CONSTRUCTED ON A STANDARD "C" MANHOLE.

NOTES - MANHOLE STEPS:

1. PROVIDE MODEL PSI-PE STEPS AS MANUFACTURED BY M.A. INDUSTRIES INC. OR APPROVED EQUAL.
2. BOTTOM MANHOLE STEP SHALL BE NO HIGHER THAN 12" ABOVE MANHOLE INVERT.
3. STEPS PLACED BY PRECASTER. FIELD PLACEMENT NOT ALLOWED.

HEAVY DUTY MANHOLE DETAILS

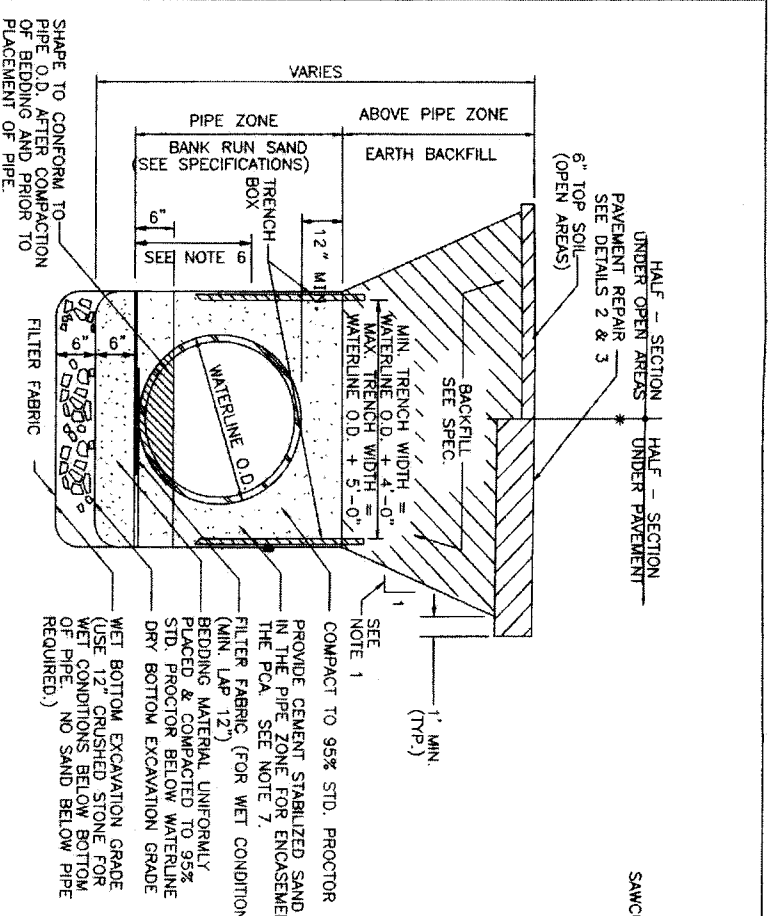


CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STREET & BRIDGE

DATE: SEPTEMBER, 2011
SHEET NO. 34 OF 84

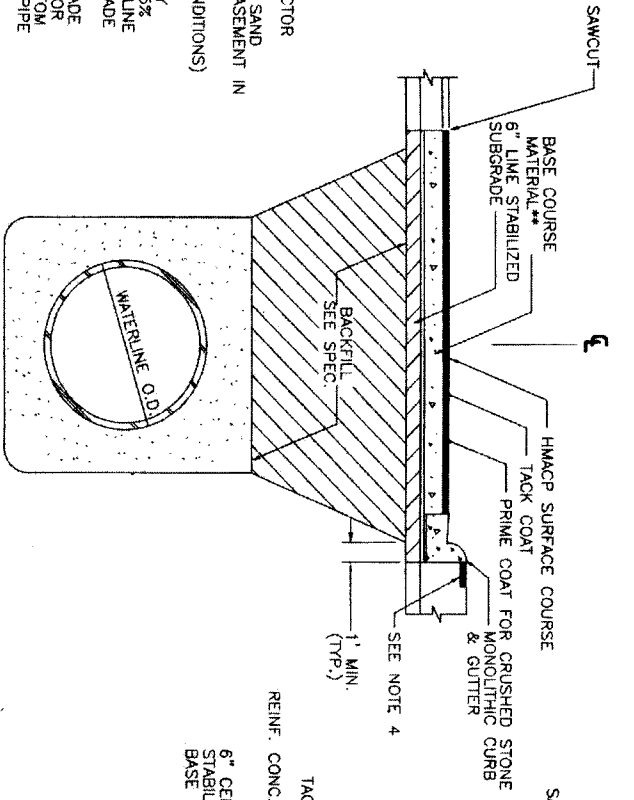
IGN
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

Professional Engineer Seal for Shelly L. Jones, State of Texas, No. 93192, Exp. 08/31/12.



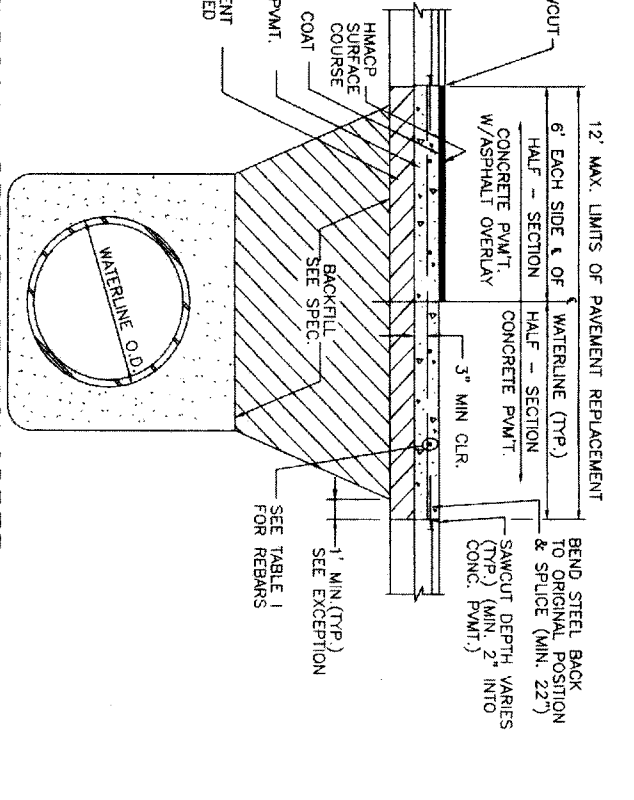
1 EXCAVATION & BACKFILL DETAIL
(FOR LARGE DIAMETER WATER LINE)

- NOTES:
- SEE TRENCH SAFETY SYSTEM SPECIFICATIONS FOR MAXIMUM ALLOWABLE SLOPES.
 - FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
 - KEY CONCRETE TRENCH DAM MINIMUM OF 6 INCHES INTO TRENCH BOTTOM AND WALLS.
 - TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING 6-INCH MINIMUM THICKNESS AND 6-INCH KEY DEPTH REQUIREMENTS.
 - TRENCH DAM SHALL BE PLACED AT LEAST 5 FT. AWAY FROM ANY PIPELINE STRUCTURE (EACH SIDE). SEE SECTION 02317 FOR OTHER REQUIREMENTS.
 - THIS PORTION OF PIPE EMBEDMENT ZONE MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
 - USE FILTER FABRIC AS A BOND BREAKER BETWEEN CEMENT STABILIZED SAND AND PIPE.



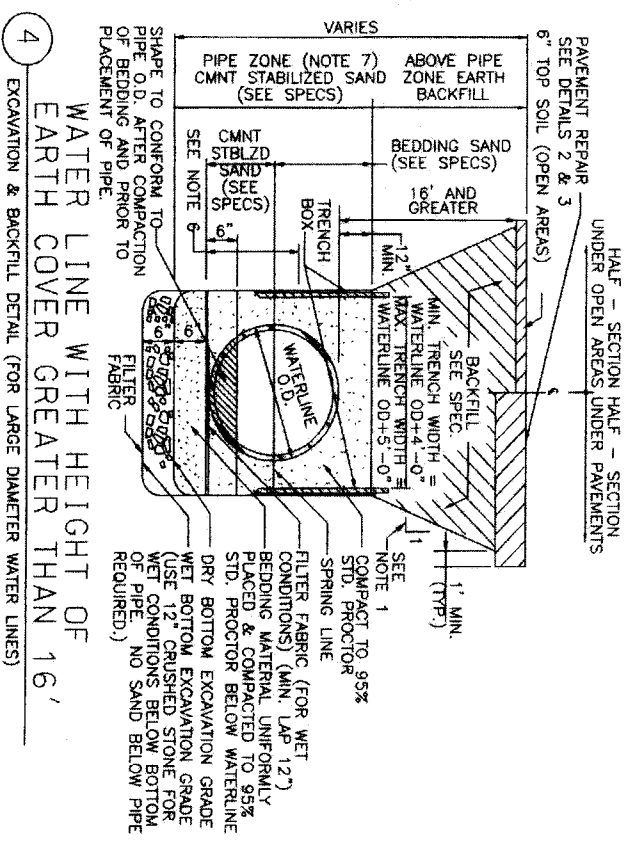
2 TYPICAL REPAIR OF FLEXIBLE BASE PAVEMENT

- NOTES:
- * OMIT CURB WHEN EXISTING ROADWAY DOES NOT HAVE ONE
 - ** BASE COURSE MATERIAL SHALL CONSIST OF THE FOLLOWING OPTIONS:
 1. 8\"/>



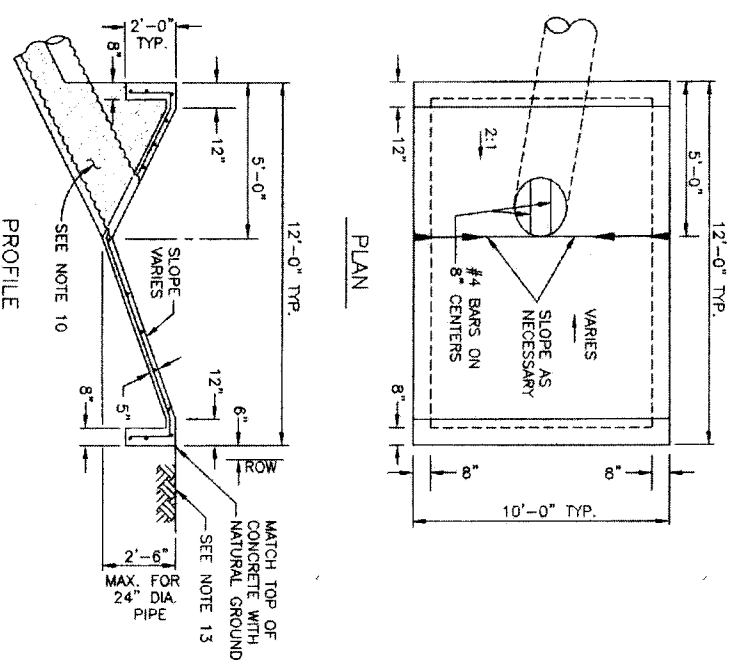
3 TYPICAL REPAIR OF CONCRETE PAVEMENT OR CONCRETE PAVEMENT W/ASPHALT OVERLAY

- NOTES:
1. MIN. THICKNESS 6\"/>
- GENERAL NOTES:
1. ROADWAY EXCAVATION, SITE GRADING, AND HYDROLOGIC SEEDING OR SOODING, WITHIN R.O.W. AND/OR LIMITS OF CONSTRUCTION IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
 2. MEASUREMENT AND PAYMENT (INCLUDING DRIVEWAYS) SHALL BE AS PER SPECIFICATION SECTIONS UNLESS OTHERWISE SHOWN ON BID FORM.
 3. NEW ASPHALTIC PAVEMENTS SHALL BE MIN. 2\"/>



4 WATER LINE WITH HEIGHT OF EARTH COVER GREATER THAN 16'

- NOTES:
1. SEE TRENCH SAFETY SYSTEM SPECIFICATIONS FOR MAXIMUM ALLOWABLE SLOPES.
 2. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
 3. KEY CONCRETE TRENCH DAM MINIMUM OF 6 INCHES INTO TRENCH BOTTOM AND WALLS.
 4. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING 6 INCH MIN. THICKNESS AND 6 INCH KEY DEPTH REQUIREMENTS.
 5. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT. AWAY FROM ANY PIPELINE STRUCTURE (EACH SIDE). SEE SECTION 02317 FOR OTHER REQUIREMENTS.
 6. THIS PORTION OF PIPE EMBEDMENT ZONE MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
 7. USE POLYETHYLENE WRAP AS A BOND BREAKER BETWEEN CEMENT STABILIZED SAND AND PIPE.



5 TYPICAL BACKSLOPE INTERCEPTOR STRUCTURE
(30 INCH MAX.)

TABLE I. REINFORCING STEEL INFORMATION FOR VARIOUS PAVEMENT THICKNESS (F) WITH L = EXPANSION JOINT SPACING = 80 FT. Fc = 5000 PSI AND Fy = 60,000 PSI

F (IN.)	REBAR SIZE & SPACING	MIN LENGTH OF LAP (IN.)
6. A)	#3 AT 11 IN., B) #4 AT 20 IN.	16 & 22
7. A)	#4 AT 17 IN.	22
8. A)	#5 AT 23 IN., B) #4 AT 15 IN.	22
9. A)	#5 AT 20 IN., B) #4 AT 13 IN.	22
10. A)	#4 AT 12 IN., B) #5 AT 18 IN.	22 & 27
11. A)	#4 AT 10 IN., B) #5 AT 16 IN.	22 & 27
12. A)	#4 AT 10 IN., B) #5 AT 15 IN.	22 & 27

DOWELS AT EXPANSION JOINTS FOR REINFORCED PAVEMENT. CHANGE THE DOWEL SIZES & SPACING AT EXPANSION JOINTS FOR REINFORCED PAVEMENTS FROM 3/4 IN. DIAMETER 10 IN. LONG & SPACED AT 22 IN. ON CENTERS TO THE FOLLOWING: (SEE TABLE II. BELOW)

TABLE II. DOWEL SIZES & SPACINGS AT EXPANSION JOINTS FOR VARIOUS PAVEMENT THICKNESS

PAVEMENT THICKNESS (IN.)	DOWEL DIAMETER (IN.)	LENGTH (IN.)	SPACING (IN.)
6	3/4"	18	12
7	7/8"	18	12
8	1"	18	12
9	1-1/8"	20	12
10	1-1/4"	20	12
11	1-1/4"	20	12
12	1-1/4"	20	12

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

EXCAVATION, BEDDING, BACKFILL, AND PAVEMENT REPAIR DETAILS

North Fort Bend

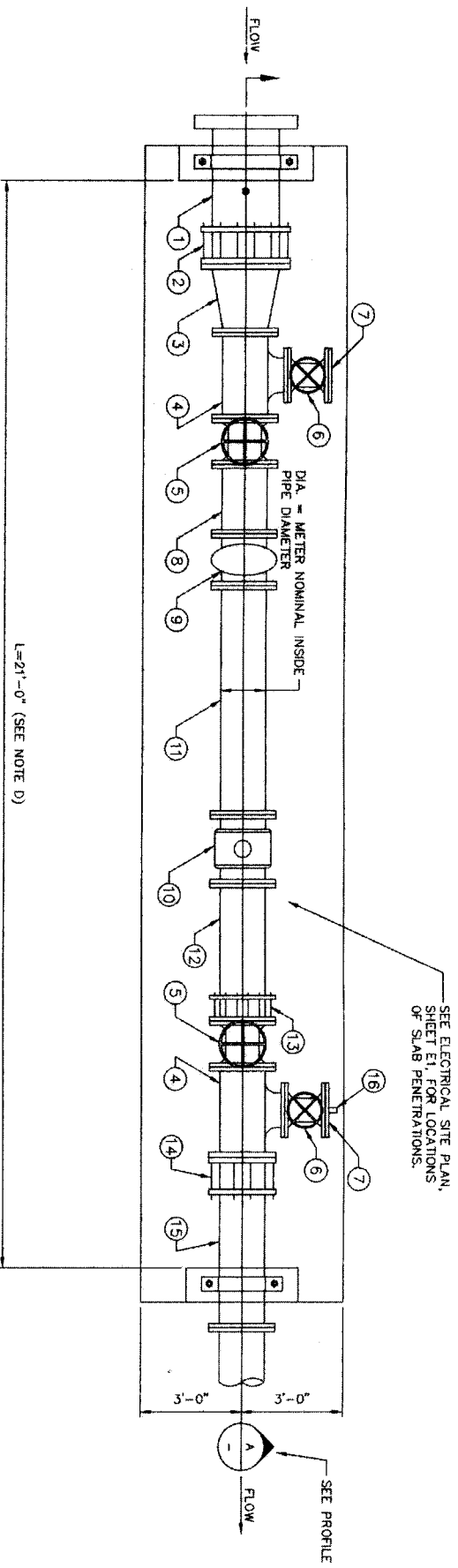
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: FEBRUARY, 2011

REF. NO. 09
SHEET No. 35 OF 84

DATE: FEBRUARY, 2011

48739



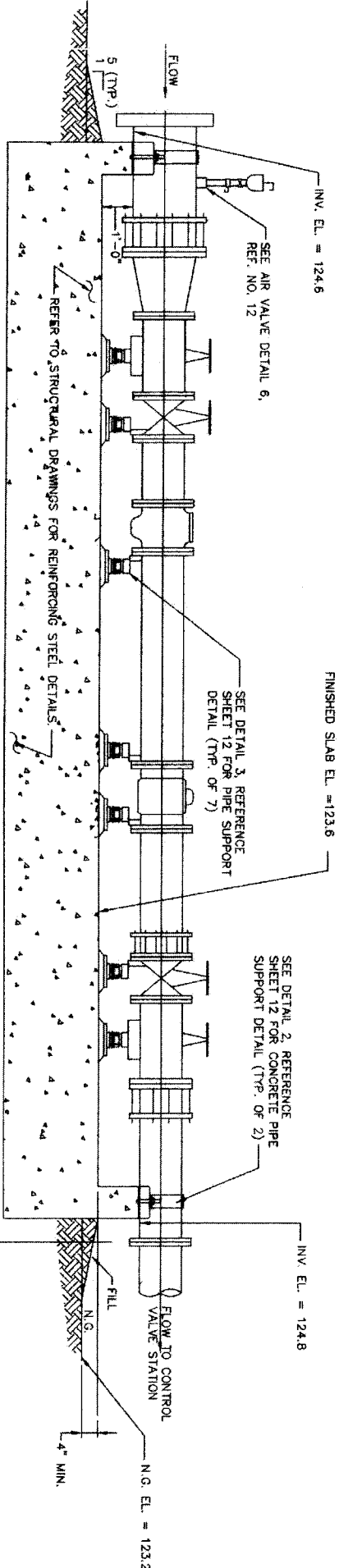
1 PLAN - SLAB ON GRADE METER STATION
SCALE: NTS

SLAB ON GRADE METER STATION

ITEM	FITTING DESCRIPTION	DIA. = 8 INCH FITTING SIZE (INCH)
1	PIPE (DIAMETER) w/ 2" THREADED TAP	12
2	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	12
3	REDUCER	12x8
4	TEE w/BASE (DIAMETER, RUN X RUN X BRANCH)	8x8x8
5	VALVE, GATE CV-1 (SEE NOTE A) (DIAMETER)	8
6	VALVE, GATE CV-1 (SEE NOTE A) (DIAMETER)	6
7	BLIND FLANGE (SIZE)	6
8	PIPE SPOOL (DIAMETER)	8
9	STRAINER ASSEMBLY	8
10	FLOW METER SIZE (ELECTROMAGNETIC METER SEE NOTE C)	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	BLIND FLANGE w/2" THREADED CONNECTION AND 2" HOSE ADAPTOR	6

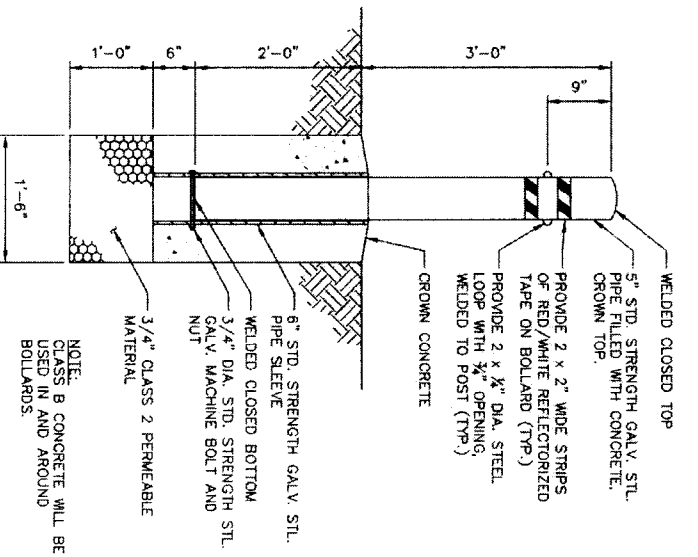
NOTES:

- (A) DESIGN IS BASED ON AMERICAN R/D RESIDENT GATE VALVE, PATTERN 2052 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.
- (B) DESIGN IS BASED ON THE KROHNE IFS 4000 KC (ENVIRONMAQ) OR SIEMENS STRAHS FM 5100 W ELECTROMAGNETIC.
- (C) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS, (IF REQUIRED).
- (D) LENGTH (L) OF METER RUN IS APPROXIMATE, IT MAY BE ADJUSTED BASED ON PIPING SHOP DRAWINGS.
- (E) RESTRAINED JOINT PIPING SHALL BE USED WITHIN WATER PLANT SITE.
- (F) APPLY SHERWIN WILLIAMS POLYMER BLUE SW 4055 TO ALL ABOVE GRADE PIPING AND APPURTENANCE IN ACCORDANCE WITH SECTION 09501-PROTECTIVE COATINGS.
- (G) ALL BOLLARDS INSTALLED WITHIN THE WATER PLANT SITE, SHALL BE REMOVABLE. SEE DETAIL 2, THIS SHEET.



A SLAB ON GRADE METER STATION
SCALE: NTS

- INITIAL INSTALLATION NOTES:
1. INSTALL PIPING, METER ETC AS SHOWN, DISINFECT, 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
SCALE: NTS

DATE: FEBRUARY 20, 2011

REF. NO. 10

SHEET NO. 36 OF 84

Shady S. Smith 01/19/10

LOCKWOOD, ANDREWS & NEWMANN, INC.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614

NFBWA SEGMENT 8B

METERING STATION LAYOUT

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER STREET & BRIDGE
THURFILL
STORM WATER QUALITY FACILITIES

FILE NO.:

DRAWING SCALE:

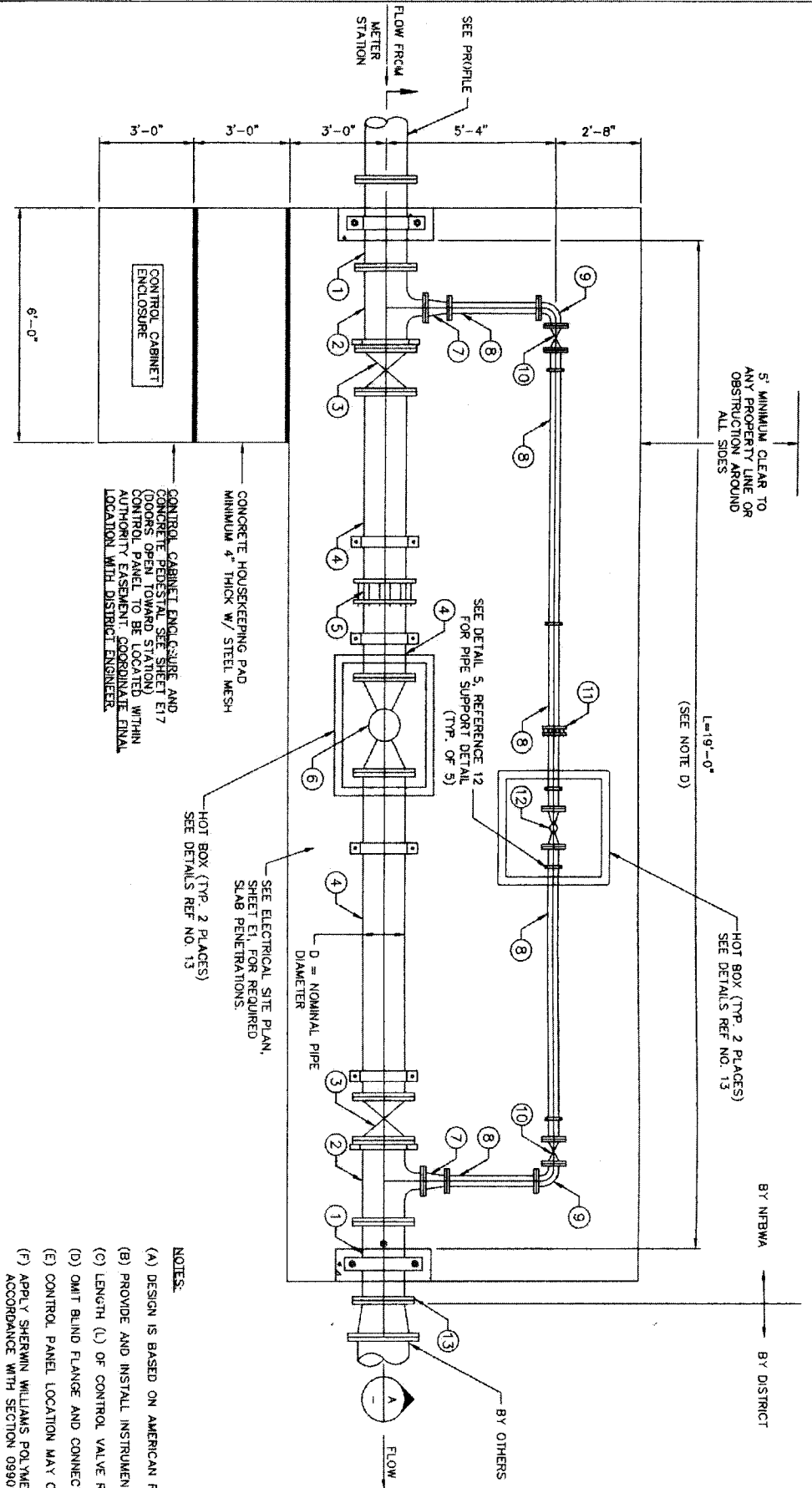
HORIZ: NTS
VERT: NTS

FOR CITY OF HOUSTON USE ONLY

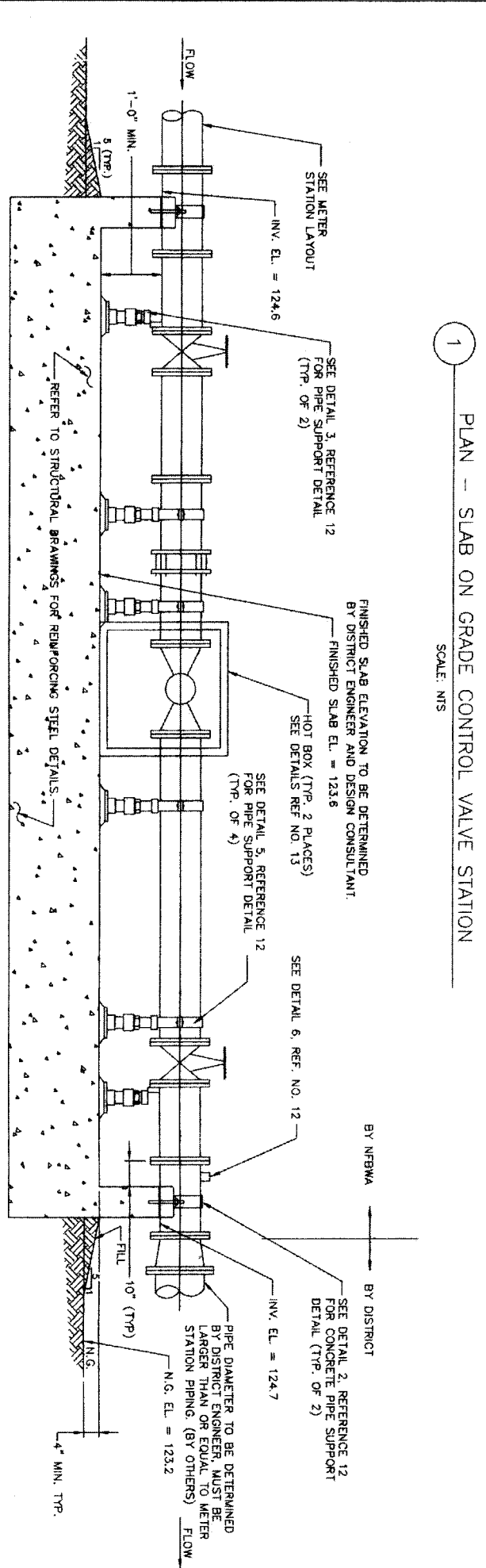
48739

SLAB ON GRADE CONTROL VALVE STATION

ITEM	FITTING DESCRIPTION	FITTING SIZE (INCH)
1	PIPE (DIAMETER) W/ 2" THREADED TAP (ONE PLACE)	8
2	TEE (DIAMETER, RUN X RUN X BRANCH)	8X8X4
3	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	8
4	PIPE SPOOL (DIAMETER)	8
5	FLEXIBLE COUPLING (DIAMETER) WITH RESTRAINT	8
6	VALVE, FLOW CONTROL, FCV-1 (DIAMETER)	8
7	REDUCER, CONCENTRIC	4X3
8	PIPE SPOOL (DIAMETER)	3
9	ELBOW, 90 DEGREE (DIAMETER)	3
10	VALVE, GATE GV-1 (SEE NOTE A) (DIAMETER)	3
11	FLEXIBLE COUPLING (DIAMETER) WITH RESTRAINT	3
12	VALVE, FLOW CONTROL, FCV-2 (DIAMETER)	3
13	BLIND FLANGE (SEE NOTE E)	8



- NOTES:
- (A) DESIGN IS BASED ON AMERICAN R/D RESILIENT GATE VALVE, PATTERN 2052 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.
 - (B) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS, IF REQUIRED.
 - (C) LENGTH (L) OF CONTROL VALVE RUN IS APPROXIMATE, IT MAY BE ADJUSTED BASED ON PIPING SHOP DRAWINGS.
 - (D) OMIT BLIND FLANGE AND CONNECT TO DISTRICT PIPING IF IT EXISTS.
 - (E) CONTROL PANEL LOCATION MAY ONLY BE MODIFIED WITH APPROVAL OF NFBWA ENGINEER.
 - (F) APPLY SHERWIN WILLIAMS POLYMER BLUE SW 4055 TO ALL ABOVE GRADE PIPING AND APPURTENANCE IN ACCORDANCE WITH SECTION 08901-PROTECTIVE COATINGS.



1 PLAN - SLAB ON GRADE CONTROL VALVE STATION
SCALE: NTS

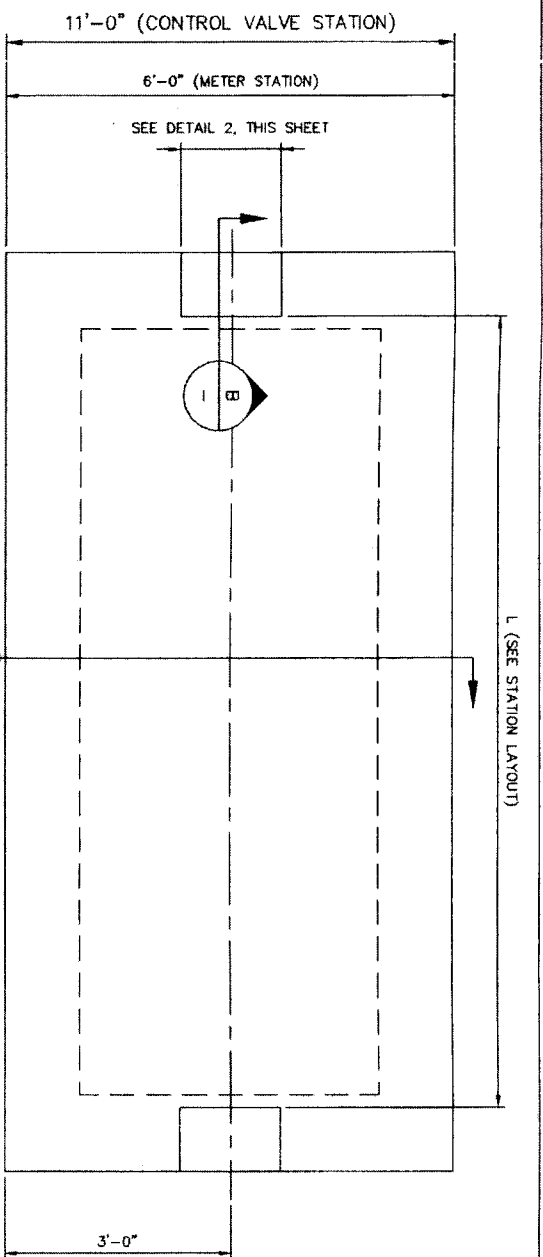
A SLAB ON GRADE CONTROL VALVE STATION
SCALE: NTS

Gregory L. Sperry
 P.E.
 Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

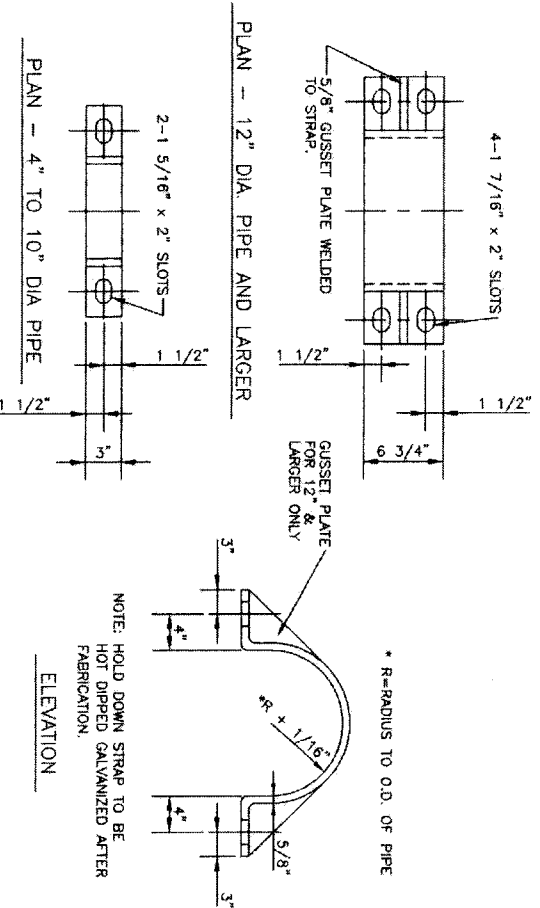
NORTH FORT BEND
 CONTROL VALVE STATION LAYOUT
 NFBWA SEGMENT 8B

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 TRAFFIC
 STORM WATER QUALITY
 11/11/11

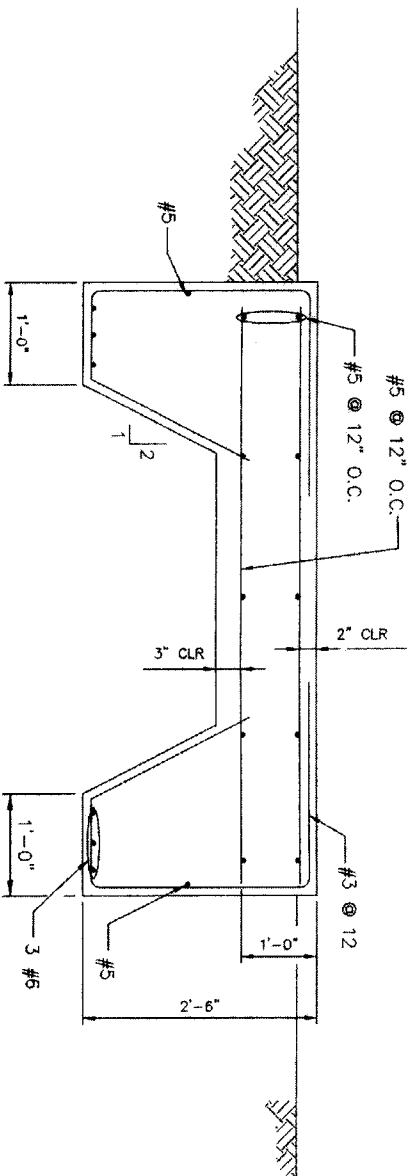
REF. NO. 11
 SHEET No. 37 OF 84
 DATE: JUNE 27, 2011
 DRAWING SCALE
 HORZ : NTS
 VERT : NTS
 48739
 FOR CITY OF HOUSTON USE ONLY



1 PLAN - METER AND CONTROL VALVE STRUCTURAL
SCALE: NTS

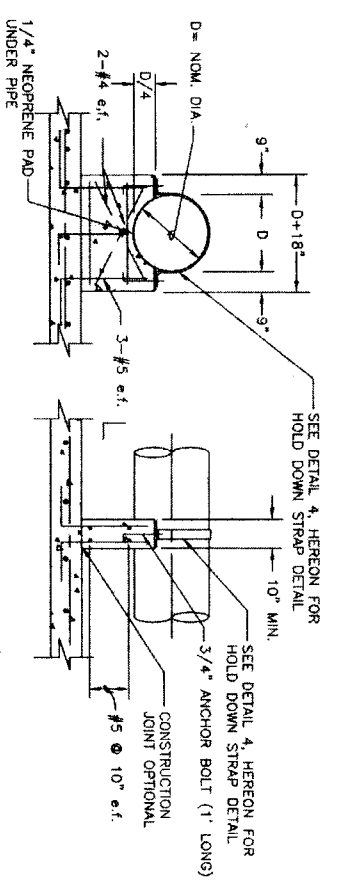


4 HOLD DOWN STRAP DETAIL
SCALE: NTS

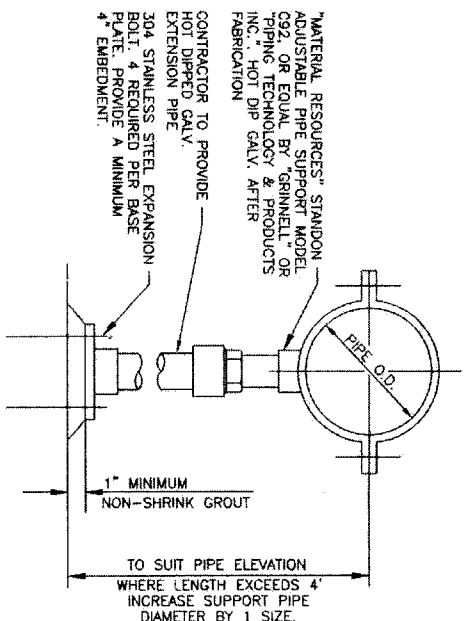


A STRUCTURAL DETAIL
SCALE: NTS

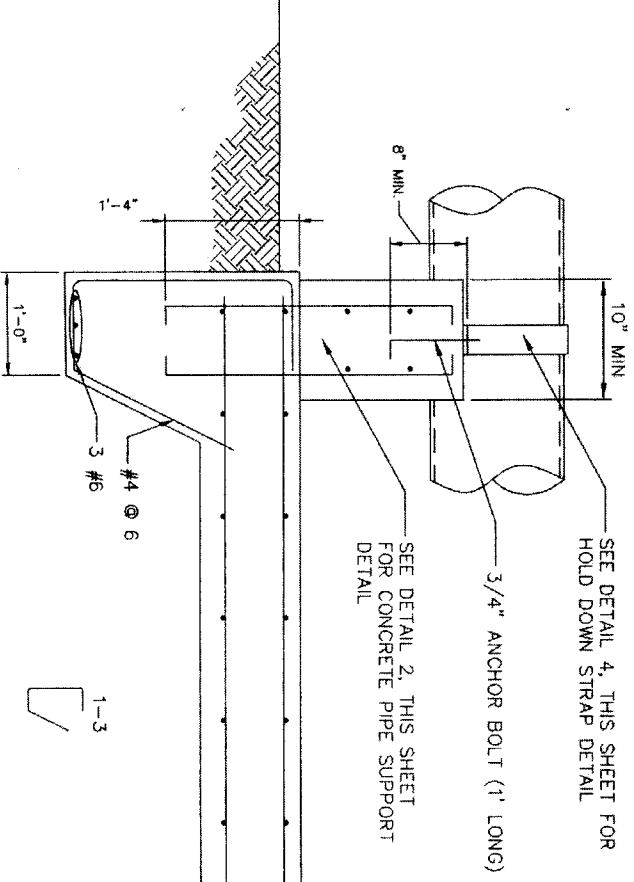
- NOTES:
1. CONCRETE STRENGTH AT 28 DAYS, $f_c=4,000$ psi
 2. STEEL REINFORCEMENT, $f_y=60,000$ psi
 3. ALL EXPOSED CORNERS SHALL BE CHAMFERED 1/2".



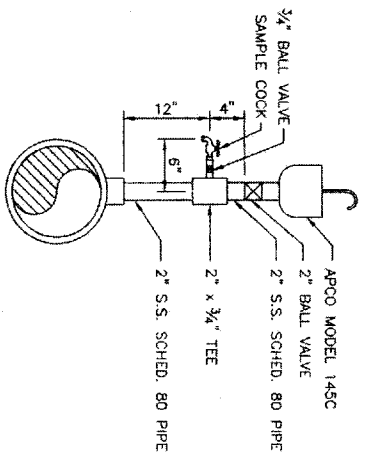
2 CONCRETE PIPE SUPPORT DETAIL
SCALE: NTS



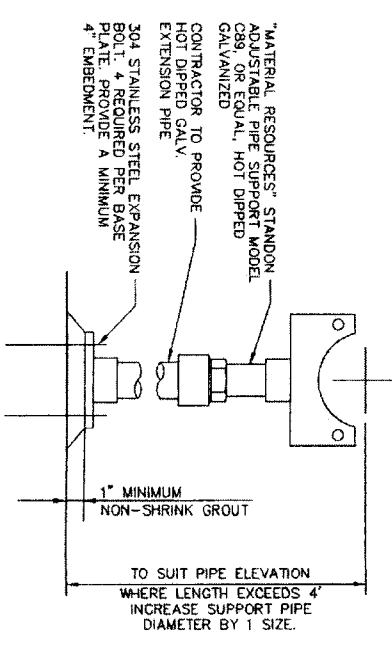
5 PIPE SUPPORT DETAIL W/STRAP
SCALE: NTS



B STRUCTURAL DETAIL
SCALE: NTS



6 AIR VALVE DETAIL
SCALE: NTS



3 PIPE SUPPORT DETAIL
SCALE: NTS

DATE: JUNE 27, 2011

REF. NO. 12
SHEET NO. 38 OF 84

DRAWING SCALE
HORIZ: NTS
VERT: NTS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER
STREET & BRIDGE
TRAFFIC
STORM WATER QUALITY

FILE NO.
DRAWING SCALE
HORIZ: NTS
VERT: NTS

FOR CITY OF HOUSTON USE ONLY
48739

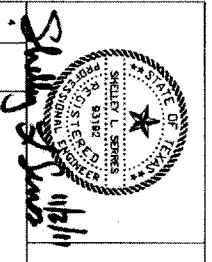


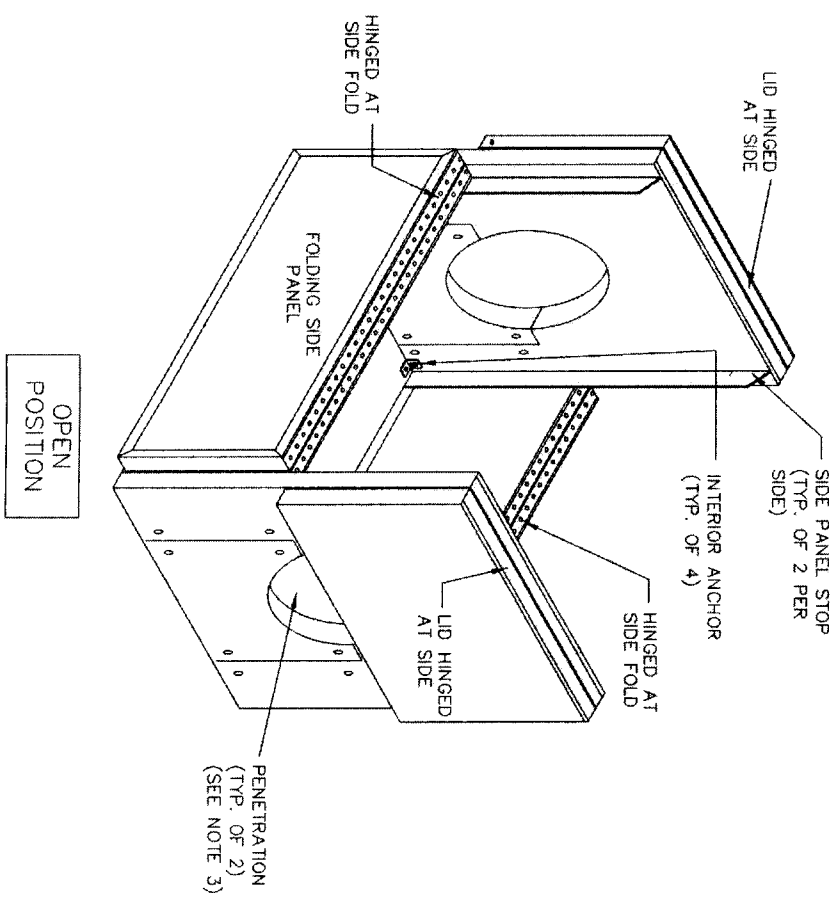
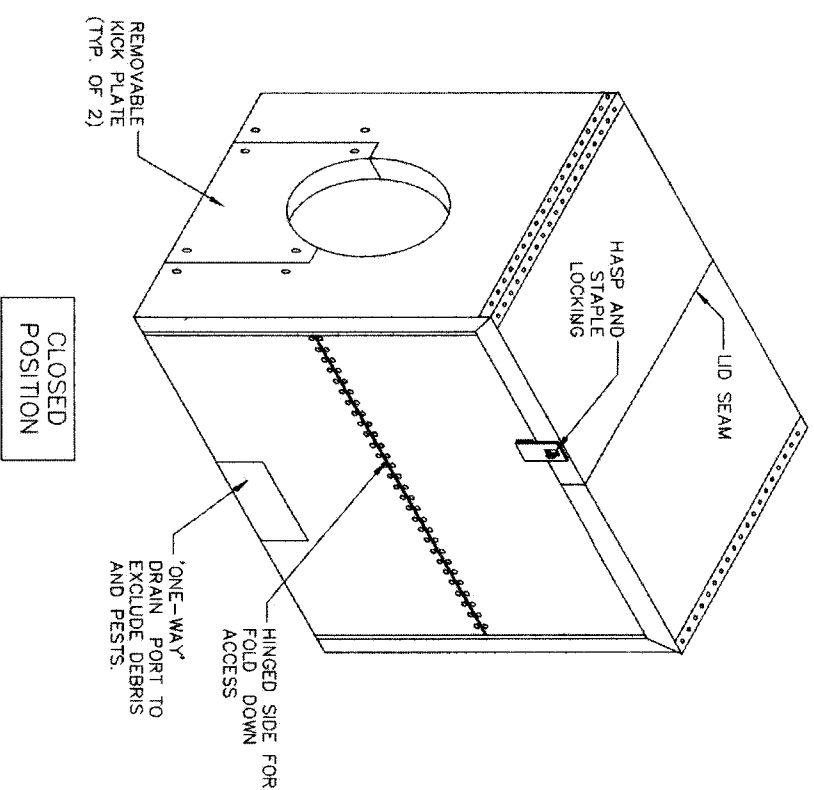
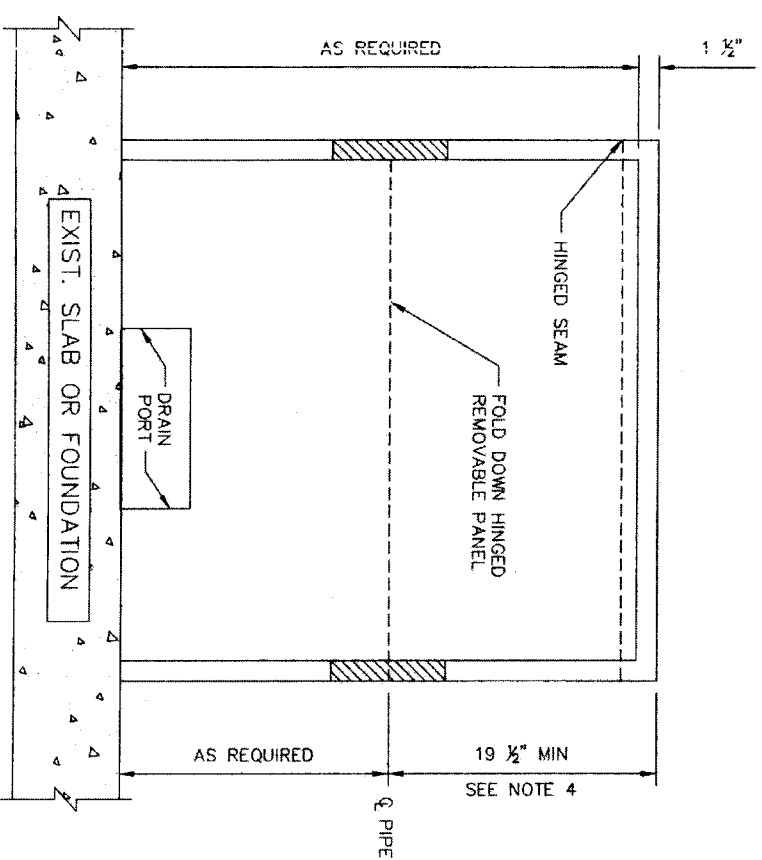
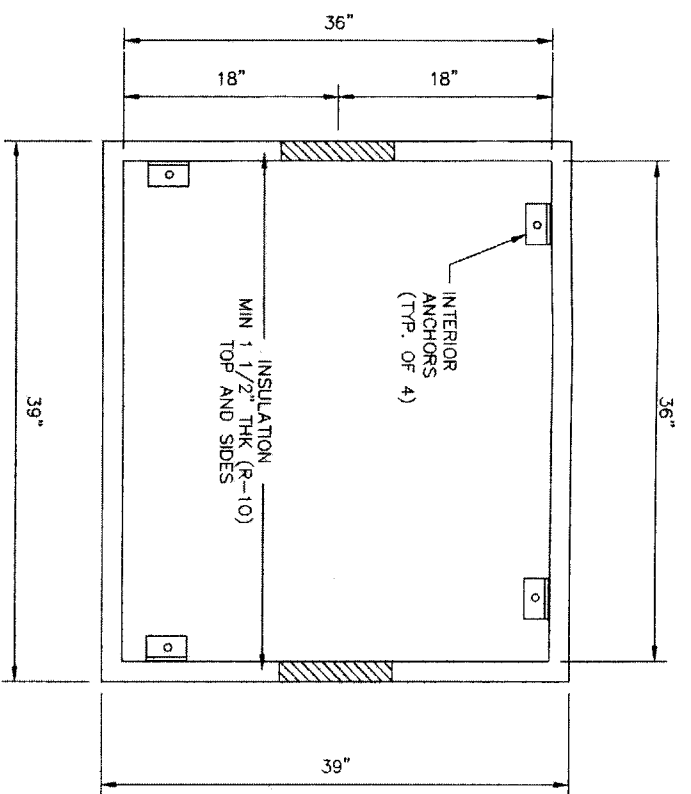
METER AND CONTROL VALVE
STATION STRUCTURAL AND
MECHANICAL DETAILS

NFBWA SEGMENT 9B

IGN Lockwood, Andrews
& Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614

NO.	DATE	REVISION	APPROV.
1			
2			
3			





NOTES:

1. PROVIDE HOT BOX MODIFIED MODEL MDF2DTL "DURA-FOLD" ALUMINUM ENCLOSURE 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 HOT BOXES. PROVIDE MINIMUM 4-INCH 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.

Shady S. J. Jones

NO.	DATE	REVISION	APPROV.
1			
2			
3			

IGN Lockwood, Andrews & Newnam, Inc.

 A LEO A DALY COMPANY

 T.B.P.E. FIRM REGISTRATION #2614

 NFBWA SEGMENT 8B



VALVE HOTBOX DETAIL

 NORTH FORT BEND

 CITY OF HOUSTON

 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

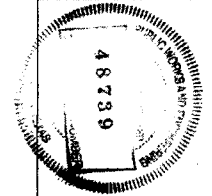
 SIGNATURES

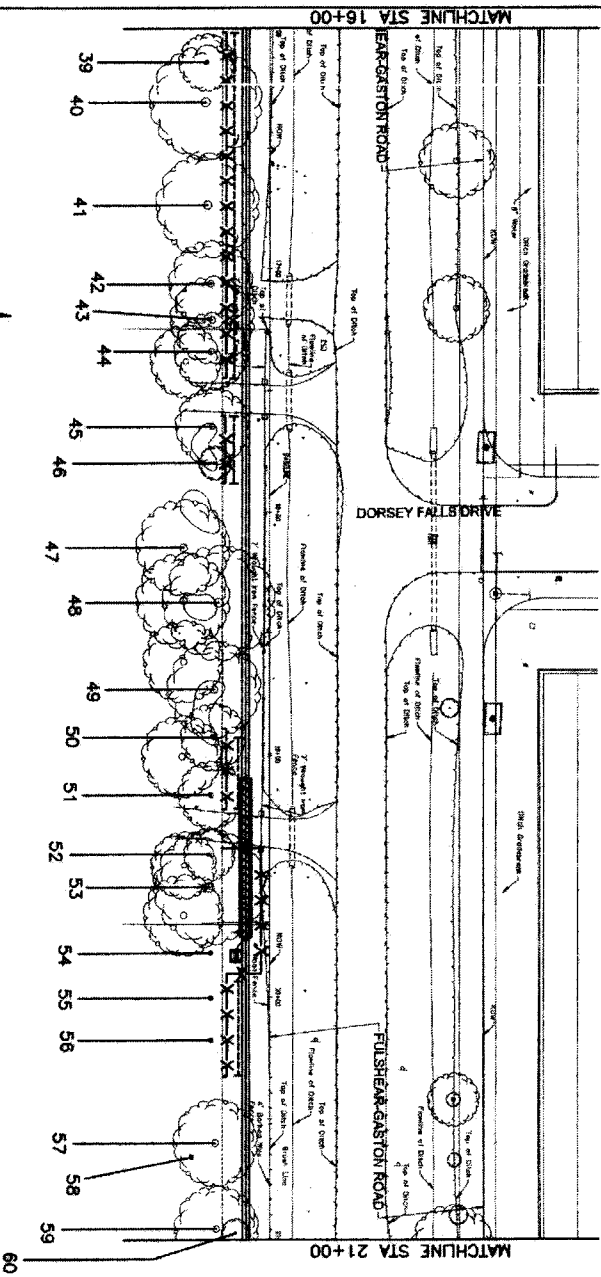
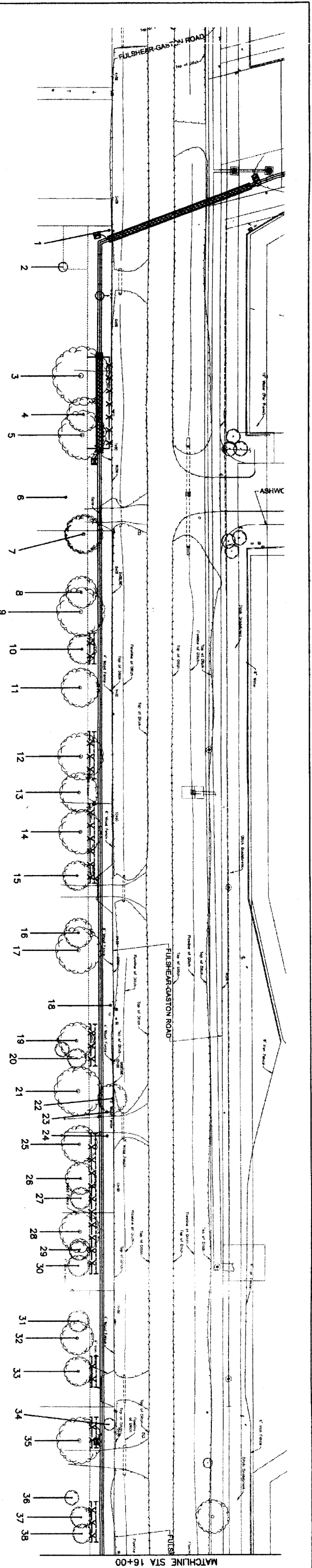
 NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

REF. NO. 13

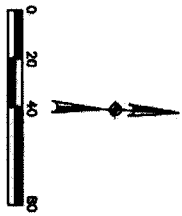
 SHEET NO. 39 OF 84

 DATE: FEBRUARY 20, 2011





TREE PRESERVATION PLAN LEGEND	
	TREE NUMBER/LOCATION
	TREE PROTECTION FENCE
	ROOT PRUNING TRENCH
	TRENCHLESS WATERLINE CONSTRUCTION



THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2011. THE PLAN CONSIDERS ALL FITTINGS, VERTICAL BENDS AND AREAS OF NECESSARY EXCAVATIONS, PLAN, CONDITION OF EACH TREE IS BASED ON VISUAL EVALUATION AT TIME OF DESIGN. CONDITION AND STRUCTURAL INTEGRITY OF EACH TREE IS NOT GUARANTEED BY DESIGNER AT ANY POINT IN THE FUTURE AS ENVIRONMENTAL AND MAINTENANCE INFLUENCES ON EACH TREE CANNOT BE DETERMINED BY DESIGNER

Tree No.	Location	Description	Comments	Treatment
1	25453 Fulshear-Gaston	3" Tallow	Private tree, will not be impacted	Remove in clearing and grubbing
2	25453 Fulshear-Gaston	4" Pecan	Private tree, protect to avoid liability	
3	25453 Fulshear-Gaston	25" Pine	Private tree, protect to avoid liability	Fence, trenchless construction
4	25453 Fulshear-Gaston	13" Pine	Private tree, protect to avoid liability	Fence, trenchless construction
5	25453 Fulshear-Gaston	23" Pine	Private tree, protect to avoid liability	Fence, trenchless construction
6	25453 Fulshear-Gaston	17" Pine	Dead, Private tree	
7	Not available	18", 13" Pine	Dead, Private tree	
8	Not available	15" Pine	Dead, Private tree	
9	Not available	16" Pine	Dead, Private tree	
10	Not available	12" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence, Clearance prune
11	Not available	18" Pine	Dead, Private tree	
12	Not available	16" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
13	Not available	14" Pine	Dead, Private tree	
14	25335 Fulshear-Gaston	21" Pine	Branches flagging, possible ice infestation, not good condition, Private tree	Root prune for waterline, Fence
15	25335 Fulshear-Gaston	11" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
16	25335 Fulshear-Gaston	12" Pine	Dead, Private tree	
17	25335 Fulshear-Gaston	20" Pine	Dead, Private tree	
18	25335 Fulshear-Gaston	2" Crepe Myrtle	Private tree, protect to avoid liability	Remove in clearing and grubbing
19	25335 Fulshear-Gaston	17" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
20	25335 Fulshear-Gaston	8" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
21	25335 Fulshear-Gaston	21" Pine	Top missing, Dead, Private tree	
22	25335 Fulshear-Gaston	10" Yucca		Remove in clearing and grubbing
23	25335 Fulshear-Gaston	6" Crepe Myrtle		Remove in clearing and grubbing
24	25335 Fulshear-Gaston	6" Crepe Myrtle		Remove in clearing and grubbing
25	25335 Fulshear-Gaston	14" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence, Clearance prune
26	25335 Fulshear-Gaston	13" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence, Clearance prune
27	25335 Fulshear-Gaston	8" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
28	Not available	21" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence, Clearance prune
29	Not available	(2) 9" Pines	Private tree, protect to avoid liability	Root prune for waterline, Fence
30	Not available	8" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
31	Not available	11" Pine	Dead, Private tree	
32	Not available	13" Pine	Dead, Private tree	
33	Not available	13" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
34	25231 Fulshear-Gaston	5" Virginia Pine	Private tree, protect to avoid liability	Remove in clearing and grubbing
35	25231 Fulshear-Gaston	22" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
36	25231 Fulshear-Gaston	6" Live Oak	Private tree, will not be impacted	Root prune for waterline, Fence
37	25231 Fulshear-Gaston	10" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
38	25231 Fulshear-Gaston	8" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
39	25231 Fulshear-Gaston	12" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
40	25231 Fulshear-Gaston	23" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence, Clearance prune
41	25231 Fulshear-Gaston	24" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence, Clearance prune
42	25231 Fulshear-Gaston	18" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
43	25231 Fulshear-Gaston	17" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
44	25145 Fulshear-Gaston	17" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
45	25145 Fulshear-Gaston	18" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
46	25145 Fulshear-Gaston	8" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
47	25145 Fulshear-Gaston	5" Palm	Private tree, will not be impacted	Root prune for waterline, Fence
48	25145 Fulshear-Gaston	25" Pine	Already removed by property owner	
49	25145 Fulshear-Gaston	24" Pine	Already removed by property owner	
50	25145 Fulshear-Gaston	15" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
51	25145 Fulshear-Gaston	12" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
52	25145 Fulshear-Gaston	10" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
53	25145 Fulshear-Gaston	24" Pine	Private tree, protect to avoid liability	Fence, trenchless construction
54	25145 Fulshear-Gaston	18" Pine	Private tree, protect to avoid liability	Fence, trenchless construction
55	Not available	7" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
56	Not available	15" Pine	Private tree, protect to avoid liability	Root prune for waterline, Fence
57	Not available	18" Pine	Dead, Private tree	
58	Not available	18" Pine	Dead, Private tree	
59	Not available	11" Pine	Branches flagging, possible ice infestation, not good condition, Private tree	
60	Not available	8" Pine		Remove in clearing and grubbing

C.N. Koehl
Urban Forestry, Inc.
3237 Carvasback Street • Katy, Texas 77493
281-961-0022 ckoehl@urbanforestry.com

APPROVED: *Craig E. Koehl* 10-27-11
NBWA SEGMENT 8B

IGN Lockwood, Andrews & Newnam, Inc.
A LEAD A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
PARK AND RECREATION

TREE PROTECTION PLAN
SHEET 1 OF 3

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: *11.29.11*
DRAWN BY: *11.29.11*
CHECKED BY: *11.29.11*

FOR CITY OF HOUSTON USE ONLY

48789

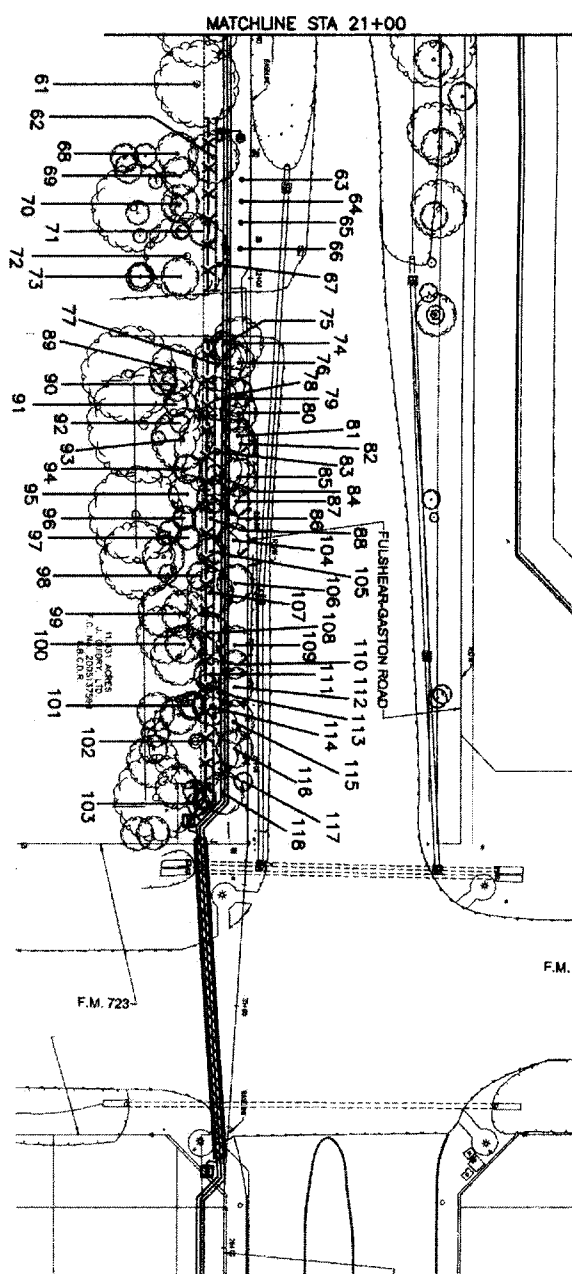
FILE NO: _____

DRAWING SCALE _____

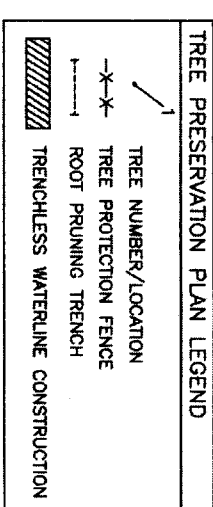
HORIZ: 1" = 40'

SHEET NO: 40 OF 84

48789



Tree No.	Location	Description	Comments	Treatment
61	Encore Landscaping	17' Pine	Dead, Private trees	
62	Encore Landscaping	12' Live Oak		Remove in clearing and grubbing
63	Encore Landscaping	8' Yaupon		Remove in clearing and grubbing
64	Encore Landscaping	8' Yaupon		Remove in clearing and grubbing
65	Encore Landscaping	5' Yaupon		Remove in clearing and grubbing
66	Encore Landscaping	7' Yaupon		Remove in clearing and grubbing
67	Encore Landscaping	11' Yellow		Remove in clearing and grubbing
68	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
69	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
70	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
71	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
72	Encore Landscaping	15' Live Oak		Root prune for waterline, Fence, Clearance prune
73	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
74	Encore Landscaping	11' Live Oak		Root prune for waterline, Fence, Clearance prune
75	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
76	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
77	Encore Landscaping	11' Live Oak		Root prune for waterline, Fence, Clearance prune
78	Encore Landscaping	7' Live Oak		Root prune for waterline, Fence, Clearance prune
79	Encore Landscaping	6' Live Oak		Root prune for waterline, Fence, Clearance prune
80	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
81	Encore Landscaping	5' Live Oak		Root prune for waterline, Fence, Clearance prune
82	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
83	Encore Landscaping	18' Pine		Remove in clearing and grubbing, root prune prior to removal
84	Encore Landscaping	5' Live Oak		Root prune for waterline, Fence, Clearance prune
85	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
86	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
87	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
88	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
89	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
90	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
91	Encore Landscaping	6' Live Oak		Root prune for waterline, Fence, Clearance prune
92	Encore Landscaping	6' Live Oak		Root prune for waterline, Fence, Clearance prune
93	Encore Landscaping	7' Live Oak		Root prune for waterline, Fence, Clearance prune
94	Encore Landscaping	6' Live Oak		Root prune for waterline, Fence, Clearance prune
95	Encore Landscaping	7' Live Oak		Root prune for waterline, Fence, Clearance prune
96	Encore Landscaping	5' Live Oak		Root prune for waterline, Fence, Clearance prune
97	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
98	Encore Landscaping	7' Live Oak		Root prune for waterline, Fence, Clearance prune
99	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
100	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
101	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
102	Encore Landscaping	21' Pine		Root prune for waterline, Fence, Clearance prune
103	Encore Landscaping	(2) 5' Live Oak		Root prune for waterline, Fence, Clearance prune
104	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
105	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
106	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
107	Encore Landscaping	12' Live Oak		Root prune for waterline, Fence, Clearance prune
108	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
109	Encore Landscaping	11' Live Oak		Root prune for waterline, Fence, Clearance prune
110	Encore Landscaping	8' Live Oak		Root prune for waterline, Fence, Clearance prune
111	Encore Landscaping	4' Live Oak		Root prune for waterline, Fence, Clearance prune
112	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
113	Encore Landscaping	11' Live Oak		Root prune for waterline, Fence, Clearance prune
114	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune
115	Encore Landscaping	3' Live Oak		Root prune for waterline, Fence, Clearance prune
116	Encore Landscaping	(2) 5' Yaupon		Root prune for waterline, Fence, Clearance prune
117	Encore Landscaping	10' Live Oak		Root prune for waterline, Fence, Clearance prune
118	Encore Landscaping	9' Live Oak		Root prune for waterline, Fence, Clearance prune



THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2011. THE PLAN CONSIDERS ALL FITTINGS, VERTICAL BENDS AND AREAS OF NECESSARY EXCAVATIONS. CHANGES MADE TO ORIGINAL DESIGN MAY COMPROMISE THE TREE PROTECTION PLAN. CONDITION OF EACH TREE IS BASED ON VISUAL EVALUATION AT TIME OF DESIGN. CONDITION AND STRUCTURAL INTEGRITY OF EACH TREE IS NOT GUARANTEED AND MAINTENANCE INFLUENCES IN THE FUTURE AS ENVIRONMENTAL AND MAINTENANCE INFLUENCES ON EACH TREE CANNOT BE DETERMINED BY DESIGNER

APPROVAL

DATE: 10/27/11

APPROVED BY: [Signature]

TITLE: [Title]

COMPANY: [Company Name]

Amendment Request #2

DATE: 10/27/11

APPROVED BY: [Signature]

TITLE: [Title]

COMPANY: [Company Name]

Amendment Request

DATE: 10/27/11

APPROVED BY: [Signature]

TITLE: [Title]

COMPANY: [Company Name]

Amendment Request

DATE: 10/27/11

APPROVED BY: [Signature]

TITLE: [Title]

COMPANY: [Company Name]

LOCKWOOD ANDREWS
 T.B.P.E. FIRM REGISTRATION #2614

C.N. Koehl
 Urban Forestry, Inc.
 3337 Cantavack Street • Katy, Texas 77493
 281-391-0022 ckoehl@urbanforestry.com

NFBWA SEGMENT 8B
 10/27/11

TREE PROTECTION PLAN
 SHEET 2 OF 3

NORTH FOOT BAND

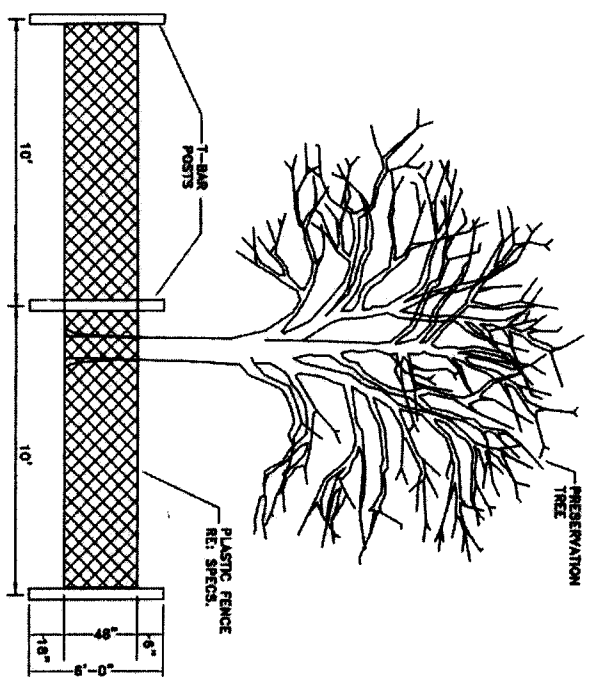
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BOND

FILE NO.:

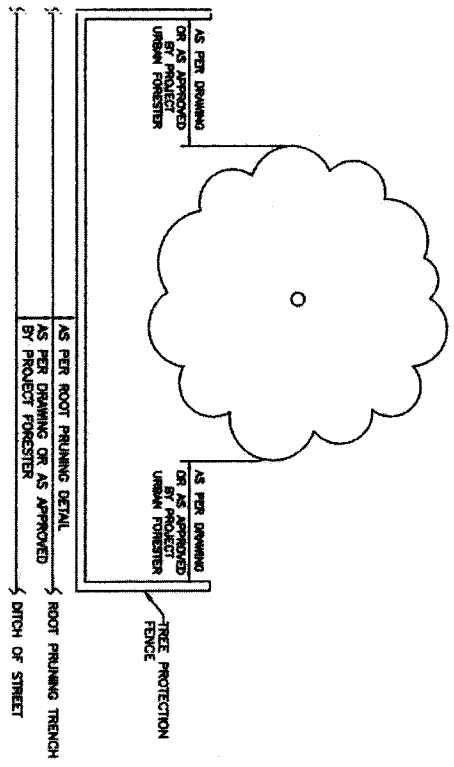
DRAWING SCALE:
 HORIZ: 1" = 40'

SHEET NO.: 41 OF 84

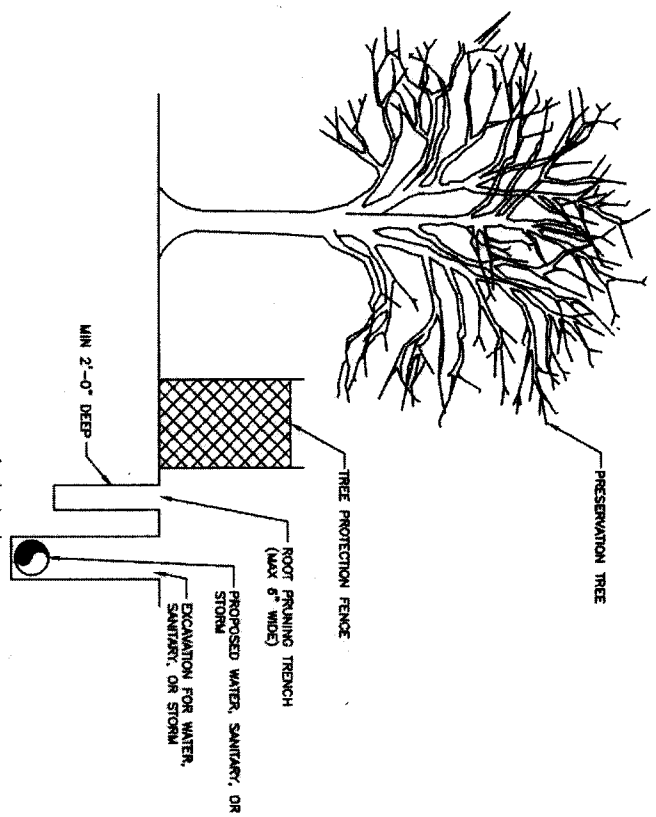
FOR CITY OF HOUSTON USE ONLY
 48739



TREE PROTECTION FENCING DETAIL A
NOT TO SCALE



TREE PROTECTION FENCING DETAIL B
NOT TO SCALE



ROOT PRUNE FOR WATER, SANITARY, OR STORM LINE
NOT TO SCALE

NO.	DATE	REVISION	APPROVAL
4			
3			
2			
1			

IGN
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
PARK AND RECREATION

C.N. Koehl
Urban Forestry, Inc.
3237 Cantavack Street • Katy, Texas 77493
281-361-0022 ckoehl@cohnurbanforestry.com

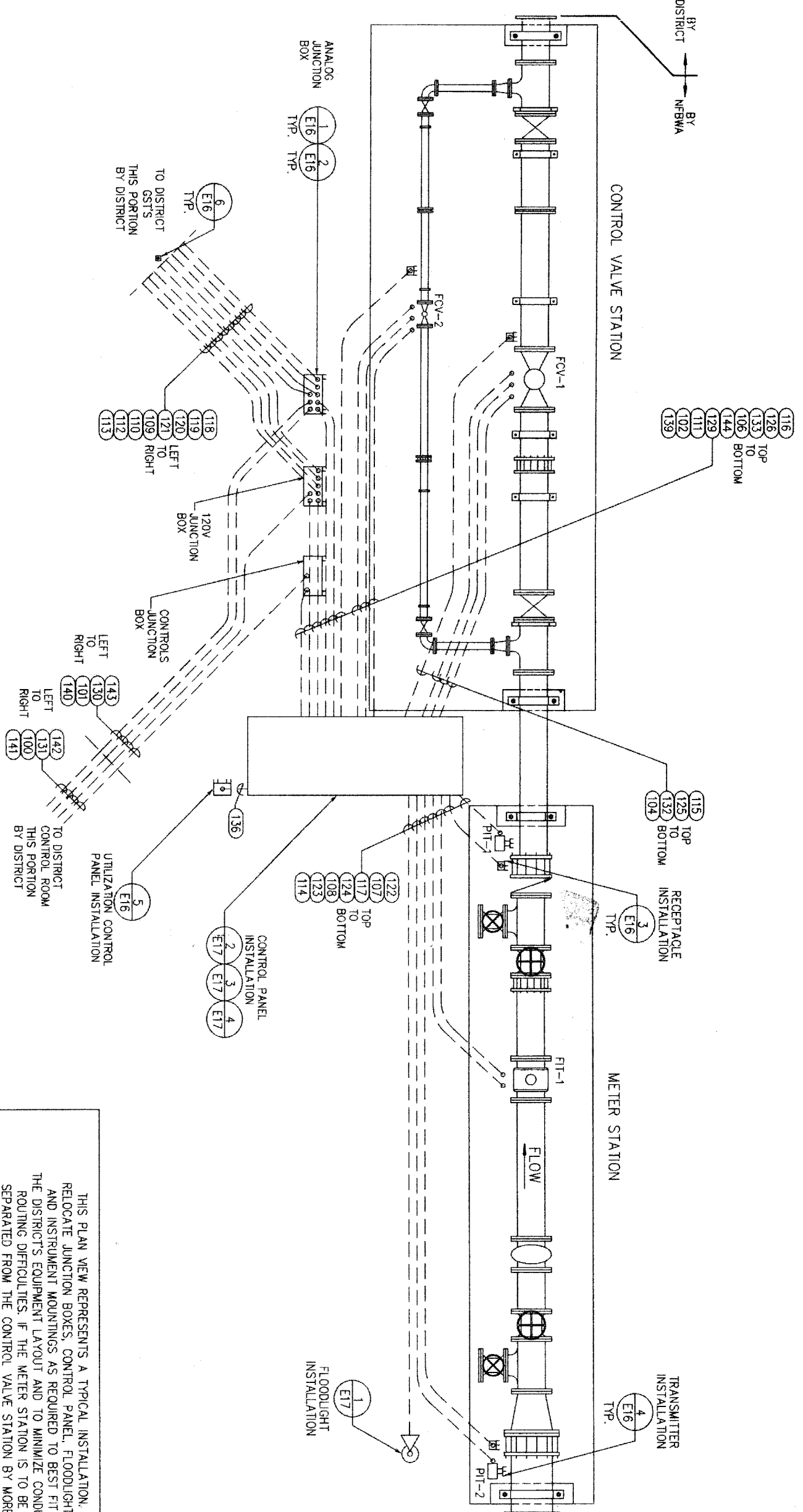
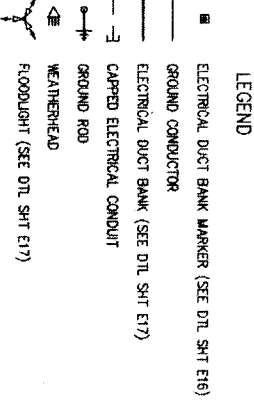
APPROVED: *Coy K. Koehl* 102411
NFBWA SEGMENT 8B

TREE PROTECTION PLAN
SHEET 3 OF 3



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DATE: *10/11/11*
DRAWN BY: *[Signature]*
CHECKED BY: *[Signature]*
SCALE: *1" = 8.11'*
SHEET: *11.3.11*

FILE NO.:
DRAWING SCALE:
HORIZ: 1" = 40'
SHEET NO: 42 OF 84
FOR CITY OF HOUSTON USE ONLY
48739



THIS PLAN VIEW REPRESENTS A TYPICAL INSTALLATION. RELOCATE JUNCTION BOXES, CONTROL PANEL, FLOODLIGHT, AND INSTRUMENT MOUNTINGS AS REQUIRED TO BEST FIT THE DISTRICT'S EQUIPMENT LAYOUT AND TO MINIMIZE CONDUIT ROUTING DIFFICULTIES. IF THE METER STATION IS TO BE SEPARATED FROM THE CONTROL VALVE STATION BY MORE THAN 50', PROVIDE A SECOND FLOODLIGHT SO BOTH AREAS ARE ILLUMINATED.

- NOTES:**
1. ALL ASPECTS OF THIS INSTALLATION SHALL COMPLY WITH LOCAL AND NATIONAL CODES.
 2. CONDUITS SHALL NOT BE ROUTED ACROSS WALKWAYS OR PATHS OF TRAVEL. ROUTE AROUND OR BENEATH EQUIPMENT. DO NOT ROUTE IN CONFLICT WITH OTHER PIPING, CONDUITS, EQUIPMENT OR STRUCTURES.
 3. 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.
 4. PLAN VIEW CONDUIT ROUTING IS DIAGRAMMATIC ONLY. ROUTE BEST WAY MINIMIZING BENDS. CONDUIT STUB-OUT SHOULD BE 2" FROM EXTREME EDGE OF PIPE AND/OR VALVE.
 5. ALL EXTERIOR ABOVE GROUND CONDUIT IS TO BE RIGID GALVANIZED STEEL.
 6. ALL MOUNTING HARDWARE, SUPPORTS, CLAMPS, BRACKETS & ANCHORS ARE TO BE STAINLESS STEEL UNLESS SHOWN OTHERWISE.
 7. ALL VALVES FAIL CLOSE.
 8. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GSTS AND TWO FUTURE GSTS. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GSTS. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
 9. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/FREEZE PROTECTION WITHOUT OVERHEATING.
 10. PROVIDE 25'-FEET LENGTH, 5 WATT/FOOT, 120 VAC, SELF-REGULATING TRACE CABLE WITH LINE PLUG TO HEATING CABLE CONNECTOR AT FCV-1 AND FCV-2 RECEPTACLES. EASYHEAT MODEL NO. SR51J WITH GST-1 CONNECTOR, OR APPROVED EQUAL.

DATE: JUNE 27, 2011

REF. NO. E1
 SHEET No. 43 of 84

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AS
 ENGINEERING DIVISION

North Fort Bend

NOTE: CITY ENGINEER'S SIGNATURE AND SEAL ARE REQUIRED FOR ALL CITY CONTRACTS.

DATE: 11-17-11

FILE NO. _____

STREET & BLOCK: _____

SCALE: _____

DRIVING SCALE: _____

DATE: _____

DESIGNER: _____

CHECKER: _____

PROJECT: _____

PROJECT NO.: _____

PROJECT NAME: _____

PROJECT ADDRESS: _____

PROJECT CITY: _____

PROJECT STATE: _____

PROJECT ZIP: _____

PROJECT COUNTY: _____

PROJECT DISTRICT: _____

PROJECT PHASE: _____

PROJECT STATUS: _____

PROJECT OWNER: _____

PROJECT CONTACT: _____

PROJECT PHONE: _____

PROJECT FAX: _____

PROJECT EMAIL: _____

PROJECT WEBSITE: _____

PROJECT ADDRESS: _____

PROJECT CITY: _____

PROJECT STATE: _____

PROJECT ZIP: _____

PROJECT COUNTY: _____

PROJECT DISTRICT: _____

PROJECT PHASE: _____

PROJECT STATUS: _____

PROJECT OWNER: _____

PROJECT CONTACT: _____

PROJECT PHONE: _____

PROJECT FAX: _____

PROJECT EMAIL: _____

PROJECT WEBSITE: _____

Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. F-375
 8320 White Road
 Beaumont, TX 77705 (409) 886-7066

MARK F. KENNEDY
 48478
 STATE OF TEXAS
 REGISTERED PROFESSIONAL ENGINEER
 11/2/11

NEFBWA SEGMENT 8B
 METER AND CONTROL VALVE
 STATION INSTALLATION &
 ROUTING

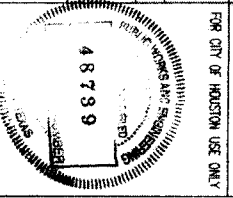


CONDUIT SCHEDULE

CONDUIT NO.	DESCRIPTION	CONDUIT SIZE	POWER CONDUCTORS				CONTROL CONDUCTORS			ROUTING	REMARKS
			NO.	SIZE	NEUTRAL	GROUND	NO.	SIZE	GND.		
100	NFBVA CONTROL PANEL POWER FEED	1 1/2	2	6	6	6					
101	NFBVA CONTROL PANEL POWER FEED	1 1/2	2	6	6	6					
102	NFBVA CONTROL PANEL POWER FEED	1 1/2	2	6	6	6					
103	(NOT USED)										
104	FCV-1 HEAT TRACE POWER	1	1	12	12	12					
105	(NOT USED)										
106	FCV-2 HEAT TRACE POWER	1	1	12	12	12					
107	FLOWMETER HEAT TRACE POWER	1	1	12	12	12					
108	FLOWMETER AREA UTILITY RECEPTACLE	1	1	12	12	12					
109	GST No. 1 HEAT TRACE POWER	1	1	12	12	12					
110	GST No. 2 HEAT TRACE POWER	1	1	12	12	12					
111	GST HEAT TRACE POWER	1	1	12	12	12					
112	FUTURE GST No. 3 HEAT TRACE POWER	1	1	12	12	12					
113	FUTURE GST No. 4 HEAT TRACE POWER	1	1	PULL WIRE ONLY							
114	FLOODLIGHT	1	1	12	12	19					
115	SPARE TO FCV-1	1									
116	SPARE TO FCV-2	1									
117	POWER TO FLOWMETER	1	1	12	12	12					
118	UT-1 GST No. 1 SIGNAL TO NFBVA CONTROL PANEL	1									
119	UT-2 GST No. 2 SIGNAL TO NFBVA CONTROL PANEL	1									
120	FUTURE UT-3 GST No. 3 SIGNAL TO NFBVA CONTROL PANEL	1									
121	FUTURE UT-4 GST No. 4 SIGNAL TO NFBVA CONTROL PANEL	1									
122	PIE-1 DOWNSTREAM PRESS METER SIGNAL TO CONT PNL	1									
123	PIE-2 DOWNSTREAM PRESS METER SIGNAL TO CONT PNL	1									
124	PIE-1 FLOWMETER SIGNAL TO NFBVA CONTROL PANEL	1									
125	FCV-1 TO CONT PNL	1									
126	FCV-2 TO CONT PNL	1									
127	(NOT USED)										
128	(NOT USED)										
129	ANALOG SIGNALS TO ANALOG JUNCTION BOX	2									
130	ANALOG SIGNALS TO ANALOG JUNCTION BOX	2									
131	ANALOG SIGNALS TO ANALOG JUNCTION BOX	2									
132	FCV-1 OPEN AND CLOSED LIMIT SOLENOID VALVES	1									
133	FCV-2 OPEN AND CLOSED LIMIT SOLENOID VALVES	1									
134	(NOT USED)										
135	(NOT USED)										
136	NFBVA WATER UTILIZATION PANEL	1									
137	(NOT USED)										
138	(NOT USED)										
139	NFBVA CONTROLS TO DISTRICT	1									
140	NFBVA CONTROLS TO DISTRICT	1									
141	NFBVA CONTROLS TO DISTRICT	1									
142	TELEPHONE LINE (DEDICATED) TO ANALOG JUNCTION BOX	1									
143	TELEPHONE LINE (DEDICATED) TO ANALOG JUNCTION BOX	1									
144	TELEPHONE LINE (DEDICATED) TO NFBVA CONTROL PANEL	1									

DATE: JUNE 27, 2011

REF. NO. E2
 SHEET No. 44 of 84



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DIVISION OF ELECTRICAL ENGINEERING

DATE: 11/27/11
 BY: [Signature]
 CHECKED: [Signature]

STREET & BLOCK: [Blank]
 SHEET: 44 of 84

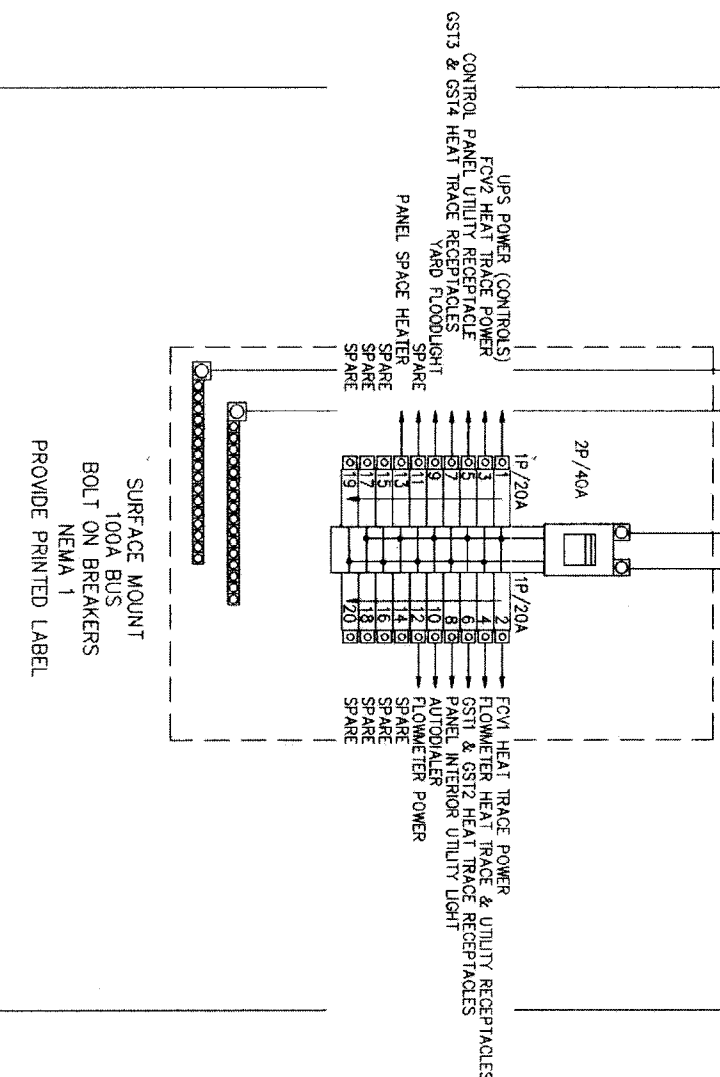
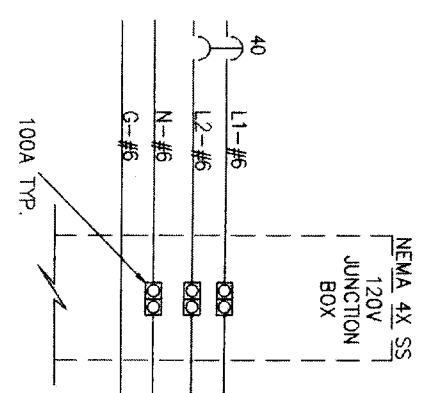
NORTH FORT BAND
 ELECTRICAL
 CONDUIT SCHEDULE

NFBVA SEGMENT 8B

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Houston, TX 77098
 (409) 986-7098

FIELD	DOOR	CONTROL PANEL	INTERIOR PANEL	PLC
-------	------	---------------	----------------	-----

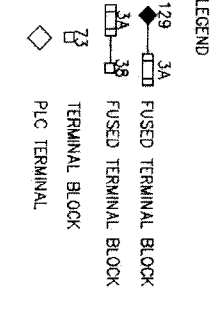
DISTRICT PROVIDED
 40A BREAKER



SURFACE MOUNT
 100A BUS
 BOLT ON BREAKERS
 NEMA 1
 PROVIDE PRINTED LABEL

NOTES:

- ALL VALVES FAIL CLOSE
- GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPILTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
- ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION, LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.



Brymcon, Inc.
 Electrical Engineering
 8320 White Road, Beaumont, TX 77708 (409) 866-7096



NFBWA SEGMENT 8B
 CONTROL DIAGRAM
 SHEET 1



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 PLANNING AND TRANSPORTATION

DATE: FEBRUARY 15, 2011

REF. NO. E3
 SHEET NO. 45 OF 84
 DATE: FEBRUARY 15, 2011

DRAWING SCALE: HORIZ: NTS, VERT: NTS

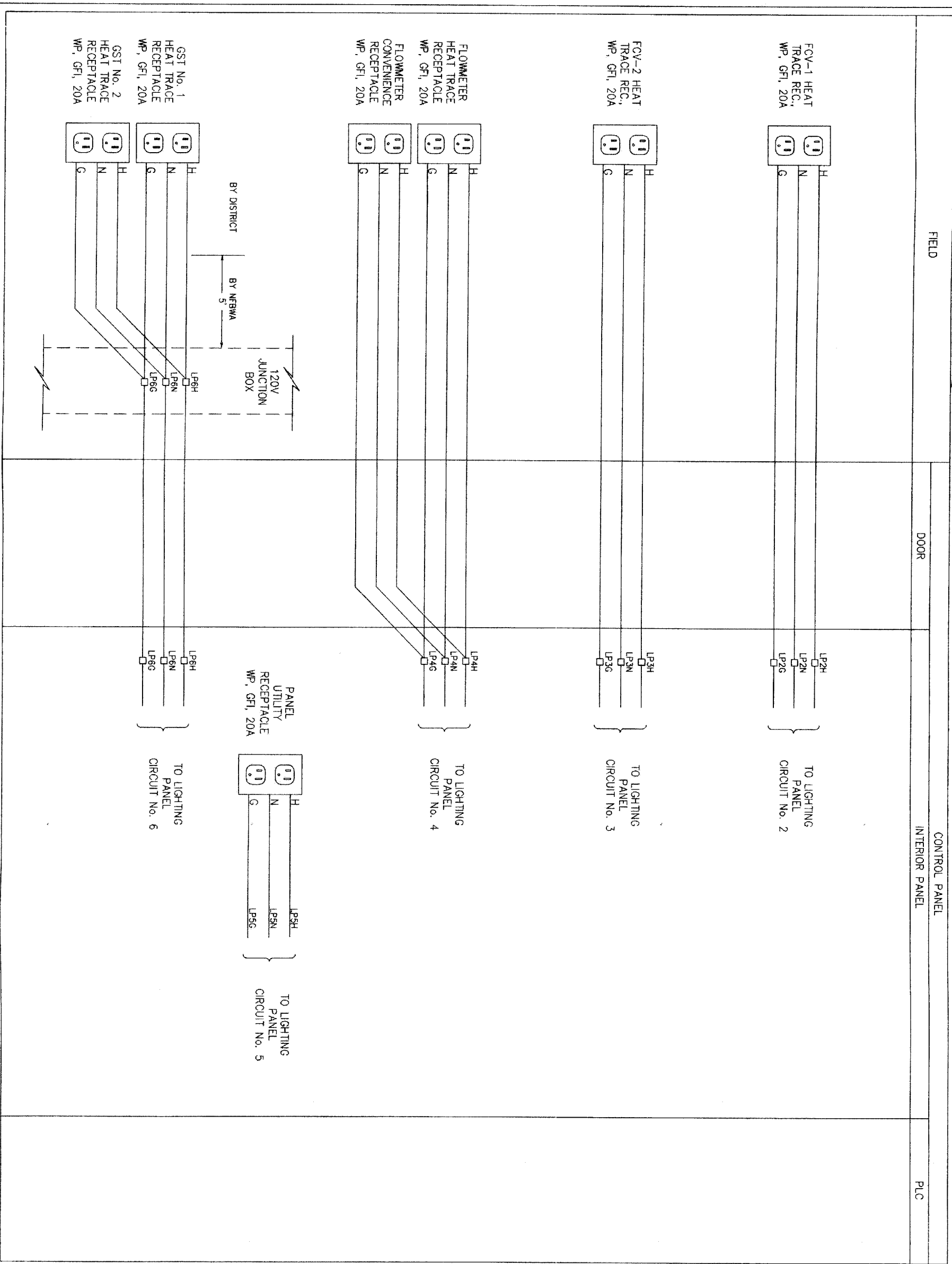
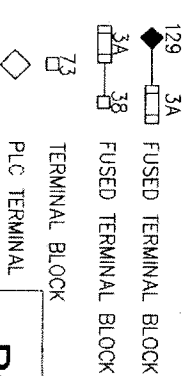
FOR CITY OF HOUSTON USE ONLY

48739

NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION, LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND



DATE: NOVEMBER 12, 2009

REF. NO. E4
 SHEET NO. 46 OF 84

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

NORTH FORT BEND

AGENT: *[Signature]*
 REGISTERED PROFESSIONAL ENGINEER
 NO. 48479
 STATE OF TEXAS

PROJECT: *[Signature]*
 11/2/09

STREET & BLOCK: *[Signature]*
 1. B. N.

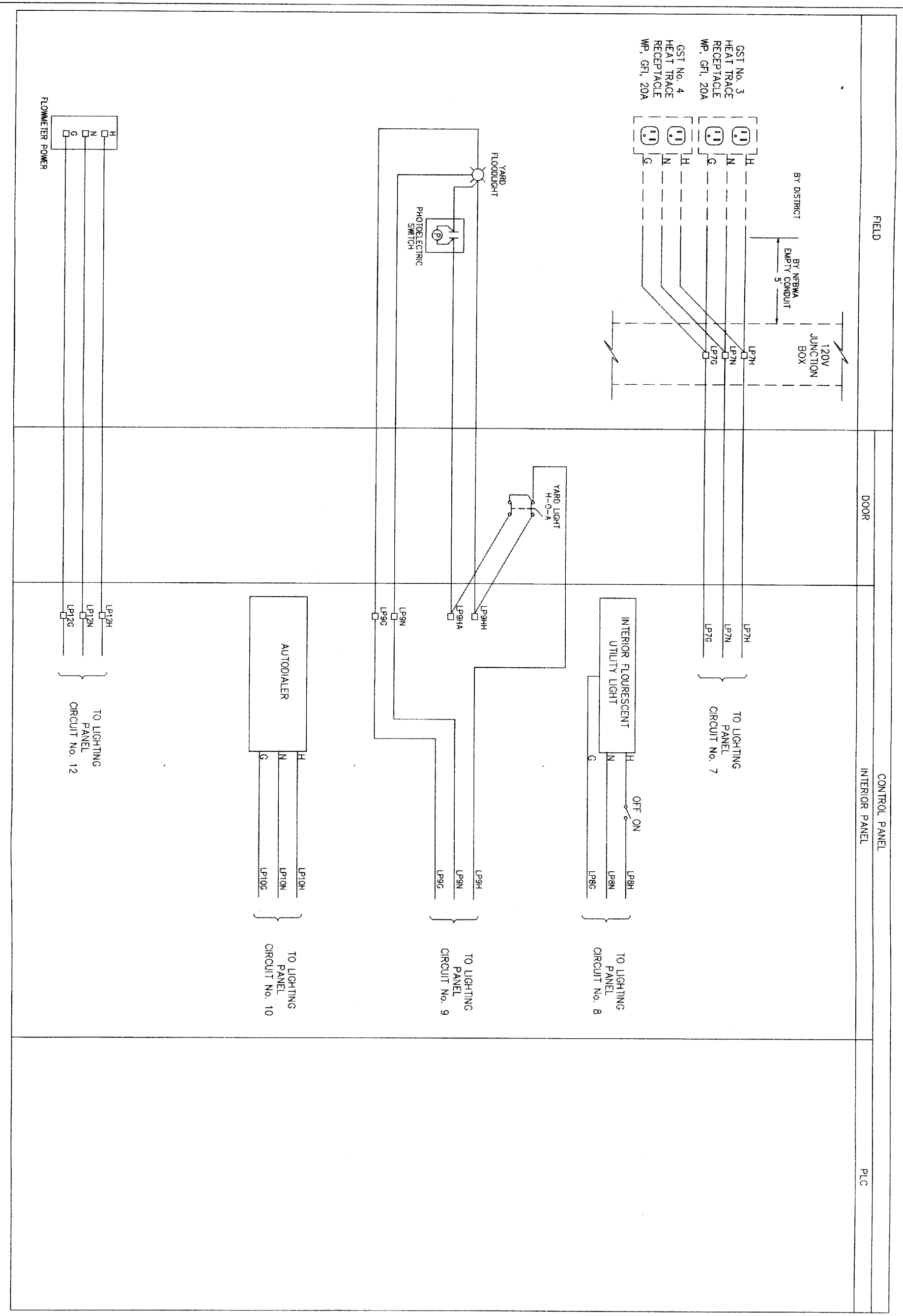
FOR CITY OF HOUSTON USE ONLY

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Beaumont, TX 77705 (409) 866-7086

CONTROL DIAGRAM
 SHEET 2

NFBWA SEGMENT 8B





GST No. 3
HEAT TRACE
RECEPTACLE
WP, GFI, 20A

GST No. 4
HEAT TRACE
RECEPTACLE
WP, GFI, 20A

BY DISTRICT
BY NFBWA
EMPTY CONDUIT
5'

120V
JUNCTION
BOX

FIELD

DOOR

CONTROL PANEL
INTERIOR PANEL

PLC

NOTES:
1. ALL VALVES FAIL CLOSE

2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL FILTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREPARE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.

3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND
 129 FUSED TERMINAL BLOCK
 3A FUSED TERMINAL BLOCK
 38 TERMINAL BLOCK
 38 TERMINAL BLOCK
 ◇ PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. E-375
 8320 White Road Beaumont, TX 77706 (409) 886-7066



NFBWA SEGMENT 8B

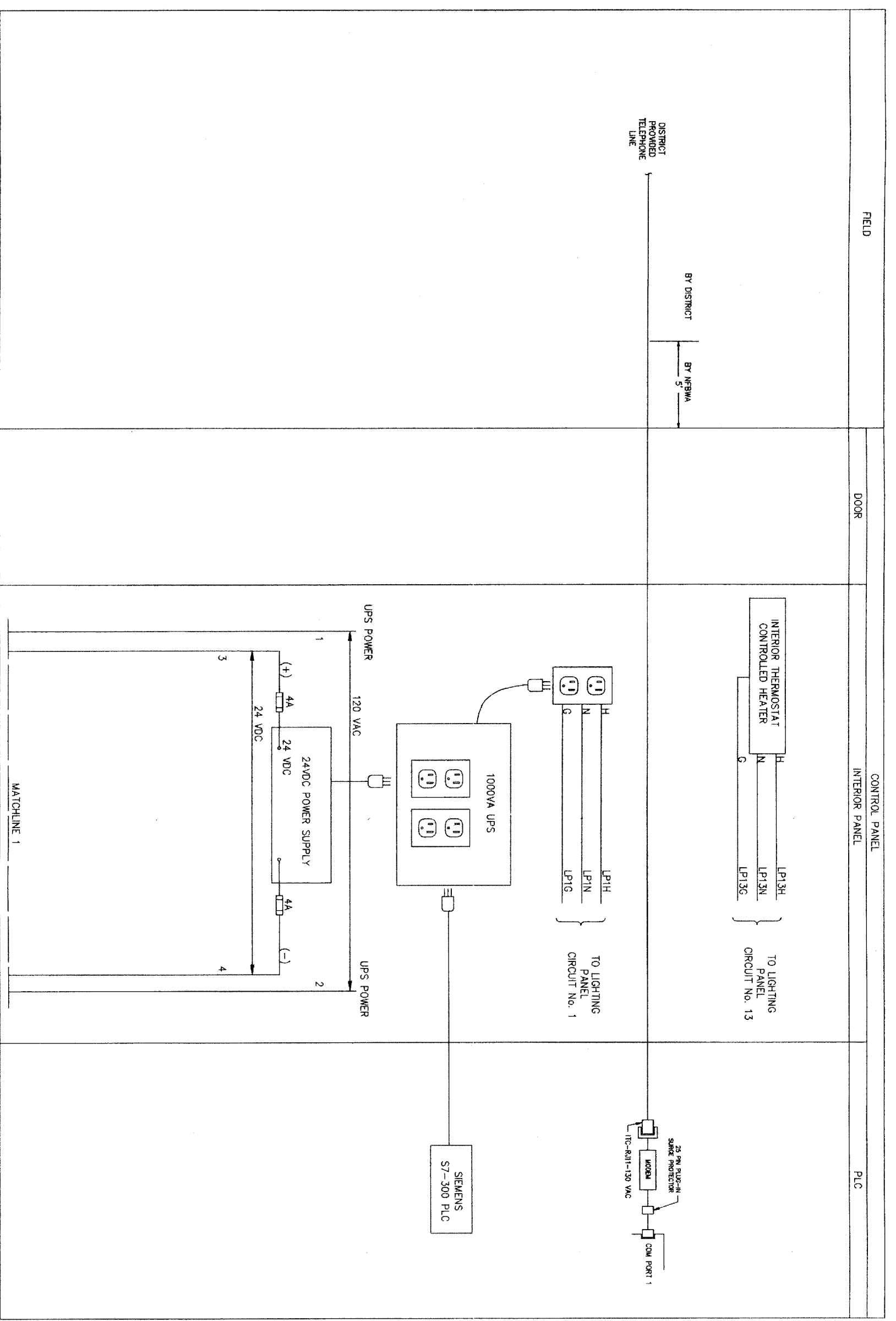
CONTROL DIAGRAM
SHEET 3



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

DATE: FEBRUARY 15, 2011
 REF. NO. E5
 SHEET No. 47 OF 84

DATE: FEBRUARY 15, 2011
 REF. NO. E5
 SHEET No. 47 OF 84



CONTINUED ON SHEET E7

FIELD

DOOR

CONTROL PANEL
INTERIOR PANEL

PLC

NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREPARE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

- 129 FUSED TERMINAL BLOCK
- 3A FUSED TERMINAL BLOCK
- 38 FUSED TERMINAL BLOCK
- 73 TERMINAL BLOCK
- 73 PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 TBE Registration No. F-375
 8320 White Road Beaumont, TX 77706 (409) 866-7096

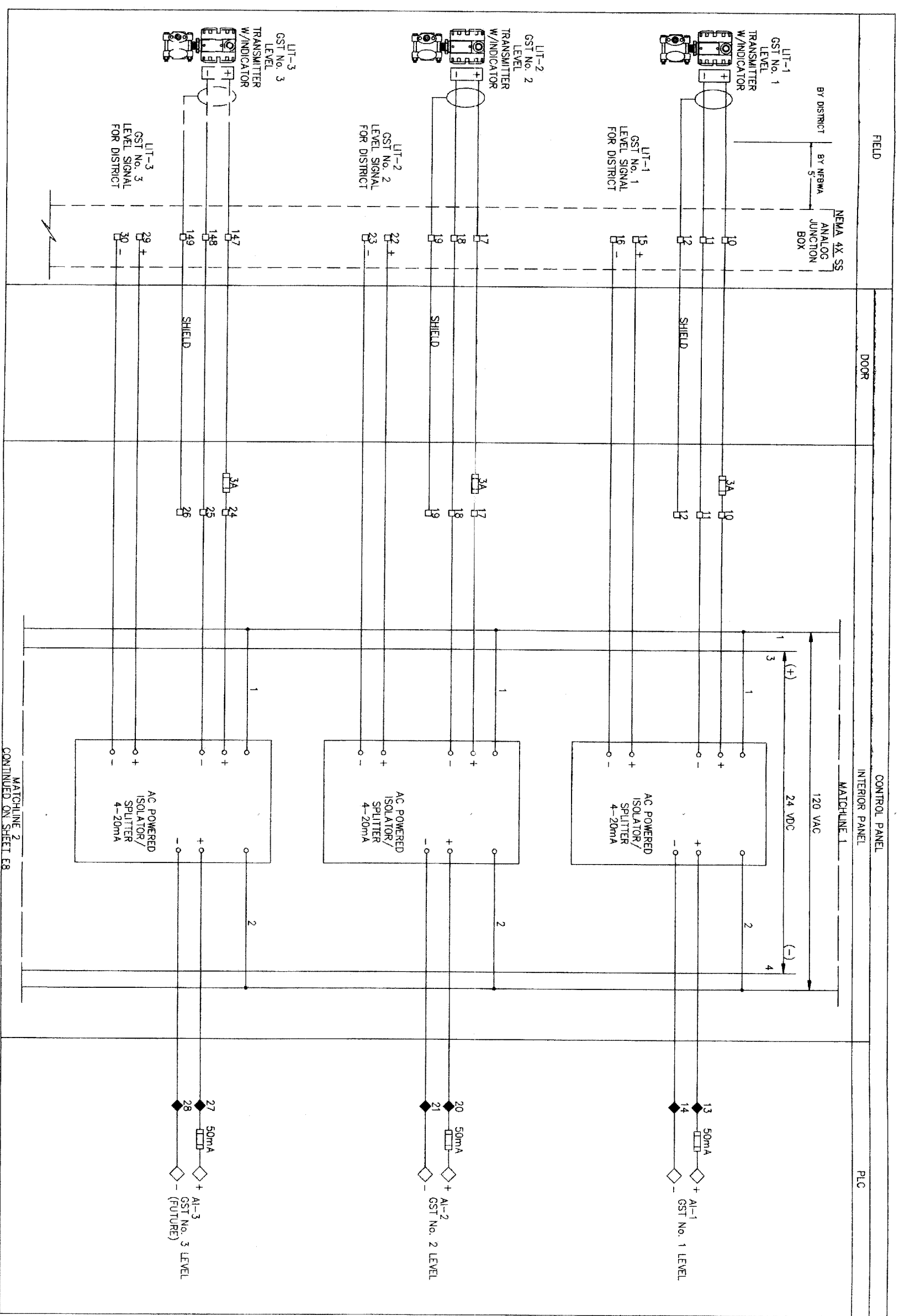


NFBWA SEGMENT 8B
 CONTROL DIAGRAM
 SHEET 4



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DIVISION OF TRAFFIC AND TRANSPORTATION
 MASTER: [Signature]
 DATE: 11-7-11
 DRAWN: [Signature]
 CHECKED: [Signature]
 SCALE: 1" = 8' 11"

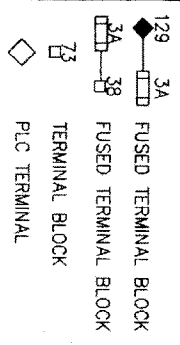
REF. NO. **E6**
 SHEET No. 48 of 84
 DATE: NOVEMBER 12, 2009
 FOR CITY OF HOUSTON USE ONLY
 48739



NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE DISTRICT MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREPARE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION, LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND



Brymcon, Inc.
 Electrical Engineering
 1395 Redwoodway No. 5, F472
 Seaman, TX 77586 (409) 866-7086



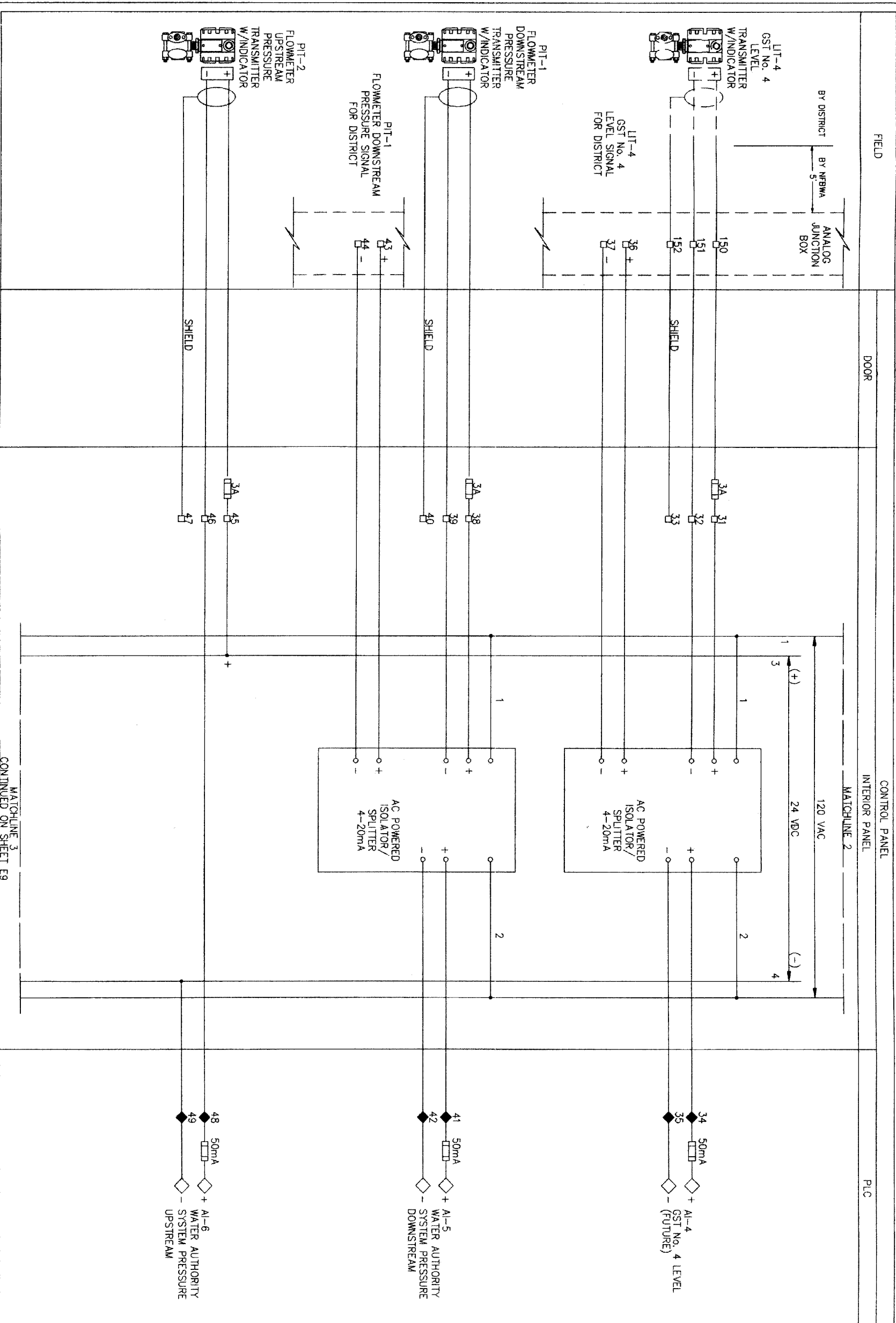
NFBWA SEGMENT 8B
 CONTROL DIAGRAM
 SHEET 5



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

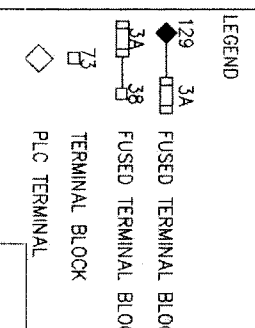
NOTE: CITY SPECIFICATIONS VALID FOR ONE YEAR DATE OF ISSUANCE
 DATE: 11/11/09
 DRAWING SCALE: AS SHOWN
 SHEET NO.: 49 OF 84

REF. NO. E7
 SHEET No. 49 of 84
 DATE: NOVEMBER 12, 2009
 DRAWING SCALE: AS SHOWN
 HORIZ: NTS
 VERT: NTS
 FOR CITY OF HOUSTON USE ONLY
 48789



NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREMISE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION, LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.



Brymcon, Inc.
 Electrical Engineering
 6320 White Road
 Houston, TX 77056 (409) 866-7050



NFBWA SEGMENT 88
 CONTROL DIAGRAM
 SHEET 6

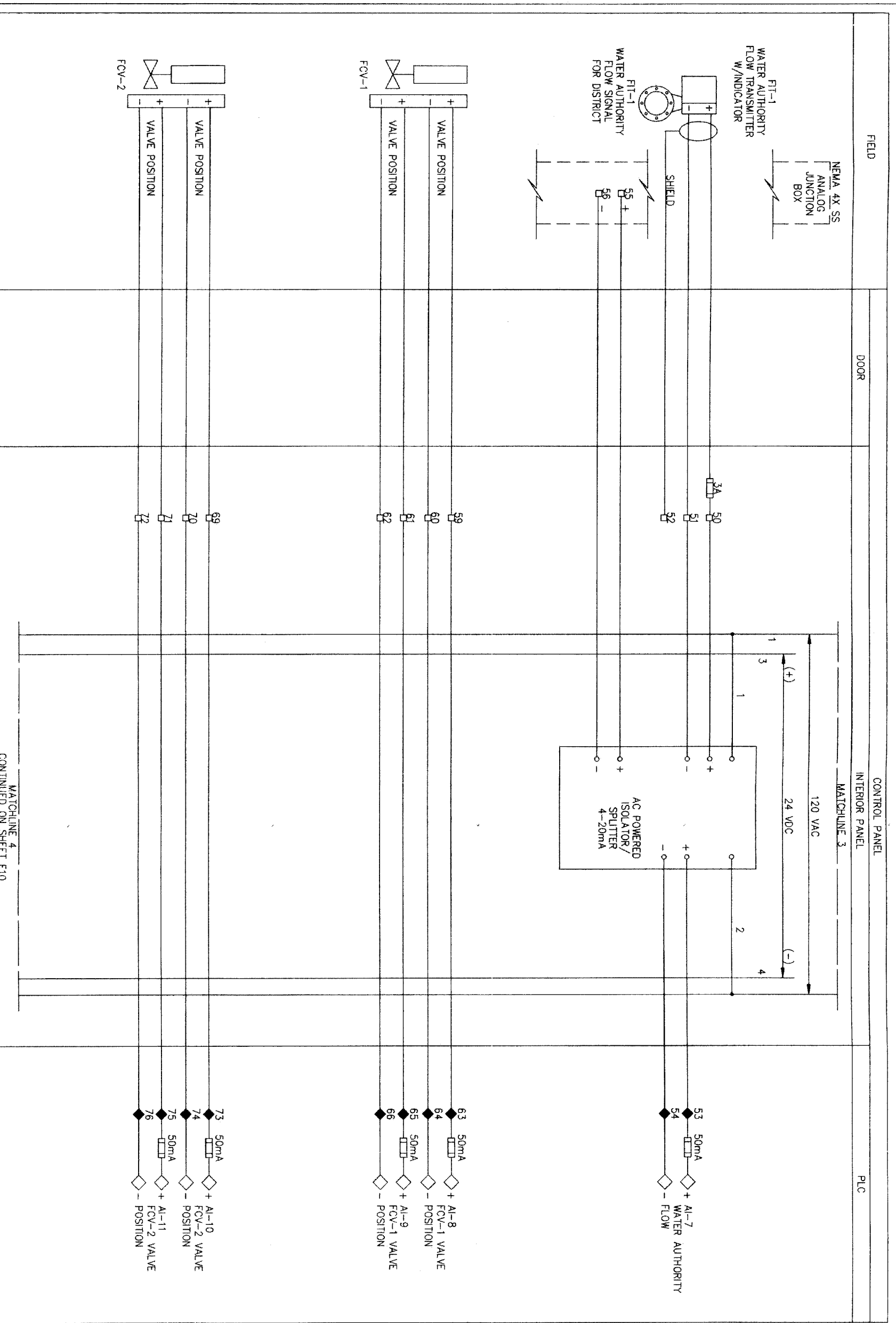


WORK CITY CONTRACTORS SHALL FOR THE WORK AND DATE OF SIGNATURE
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER DIVISION
 STORM WATER QUALITY
 DATE: 11/20/11
 DRAWING SCALE: AS SHOWN

FILE NO.:
 DRAWING SCALE:
 HORIZ: NTS
 VERT: NTS
 REF. NO.: E8
 SHEET No. 50 of 84
 FOR CITY OF HOUSTON USE ONLY
 48739

DATE: JUNE 27, 2011

MATCHLINE 3
 CONTINUED ON SHEET E9



MATCHLINE 4
 CONTINUED ON SHEET E10

NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICTS ANTICIPATED ULTIMATE NUMBER OF GST'S. PREPARE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION, LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

- 129-3A FUSED TERMINAL BLOCK
- 3A-38 FUSED TERMINAL BLOCK
- 73 TERMINAL BLOCK
- ◇ PLC TERMINAL

REF. NO. E9
 SHEET NO. 51 of 84
 DATE: JUNE 27, 2011

DRAWING SCALE
 HORZ: NTS
 VERT: NTS

FOR CITY OF HOUSTON USE ONLY

NOTE: CITY SPECIFICATIONS FOR THIS TYPE ONLY AFTER DATE OF REVISIONS

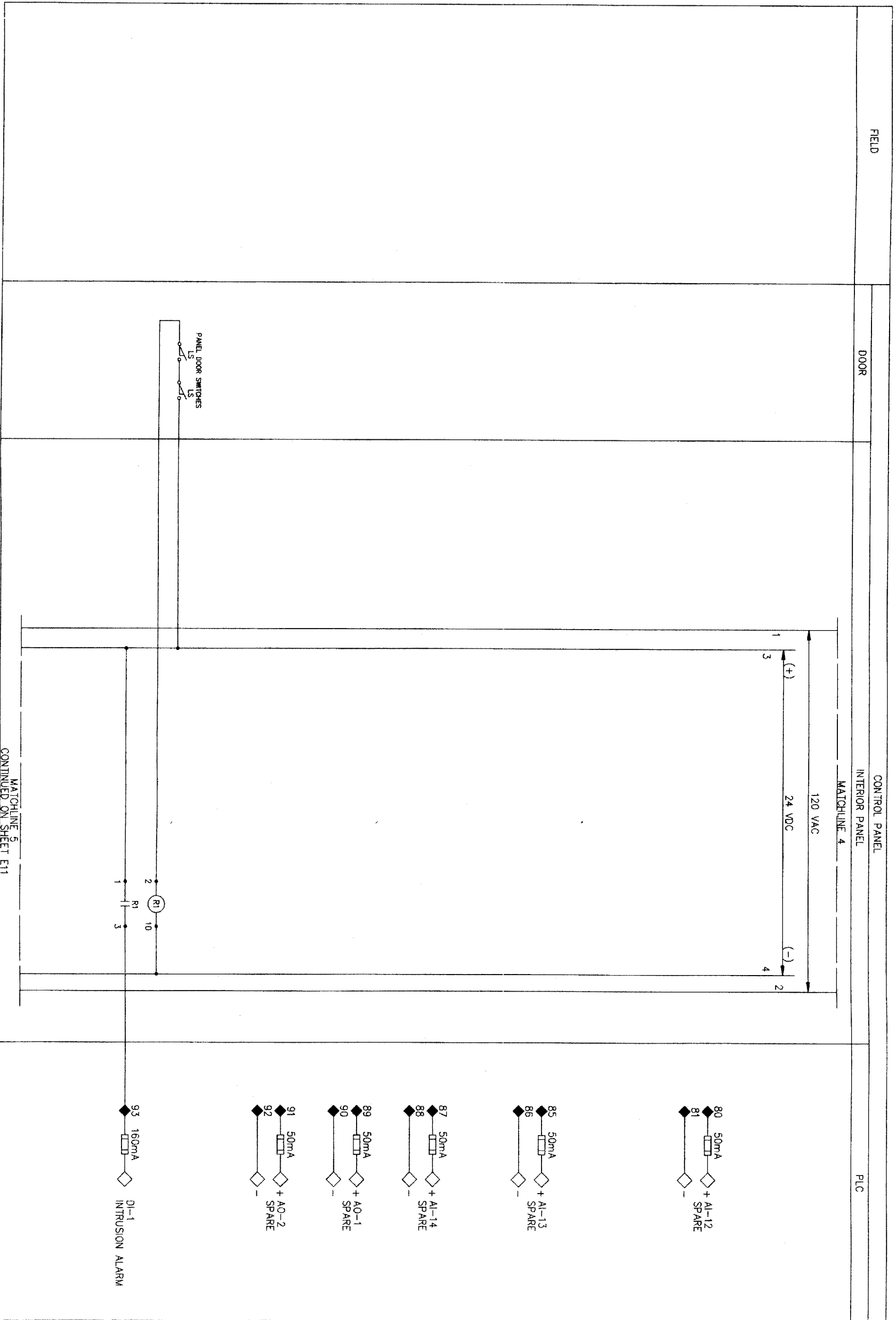
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

STREET & BRIDGE
 11-7-11g
 48739

CONTROL DIAGRAM
 SHEET 7

NFBWA SEGMENT 8B

Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. E-375
 8320 White Road
 Beaumont, TX 77706 (409) 885-7085



NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

- 129 3A FUSED TERMINAL BLOCK
- 3A 38 FUSED TERMINAL BLOCK
- TERMINAL BLOCK
- PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Houston, TX 77066 (409) 966-7066

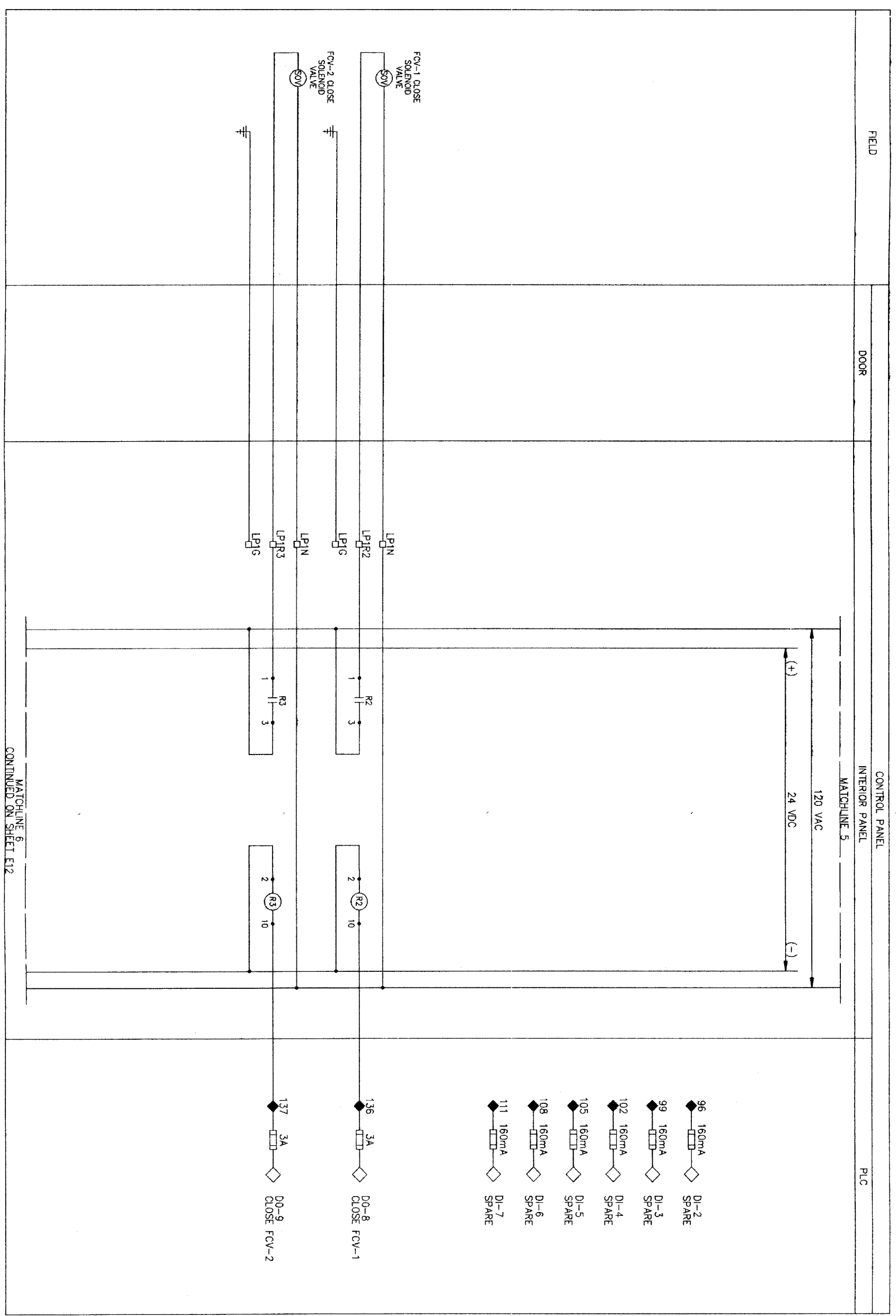


NFBWA SEGMENT 8B
 CONTROL DIAGRAM
 SHEET 8



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION
 STORM WATER QUALITY
 FACILITIES
 PROJECT: *Alhambra*
 SHEET & SCALE: *1.3.3*

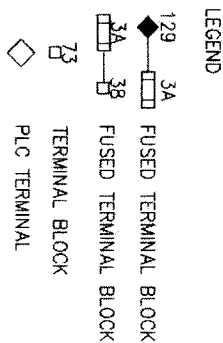
DATE: JUNE 27, 2011
 REF. NO. E10
 SHEET No. 52 of 84
 DRAWING SCALE: HORIZ: NTS, VERT: NTS
 FOR CITY OF HOUSTON USE ONLY
 48739



MATCHLINE 6
 CONTINUED ON SHEET E12

- 96 160mA DI-2 SPARE
- 99 160mA DI-3 SPARE
- 102 160mA DI-4 SPARE
- 105 160mA DI-5 SPARE
- 108 160mA DI-6 SPARE
- 111 160mA DI-7 SPARE
- 136 3A DO-8 CLOSE FCV-1
- 137 3A DO-9 CLOSE FCV-2

- NOTES:
1. ALL VALVES FAIL CLOSE
 2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
 3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.



Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. F-5275
 8320 Wilma Road
 Beaumont, TX 77706 (409) 866-7896

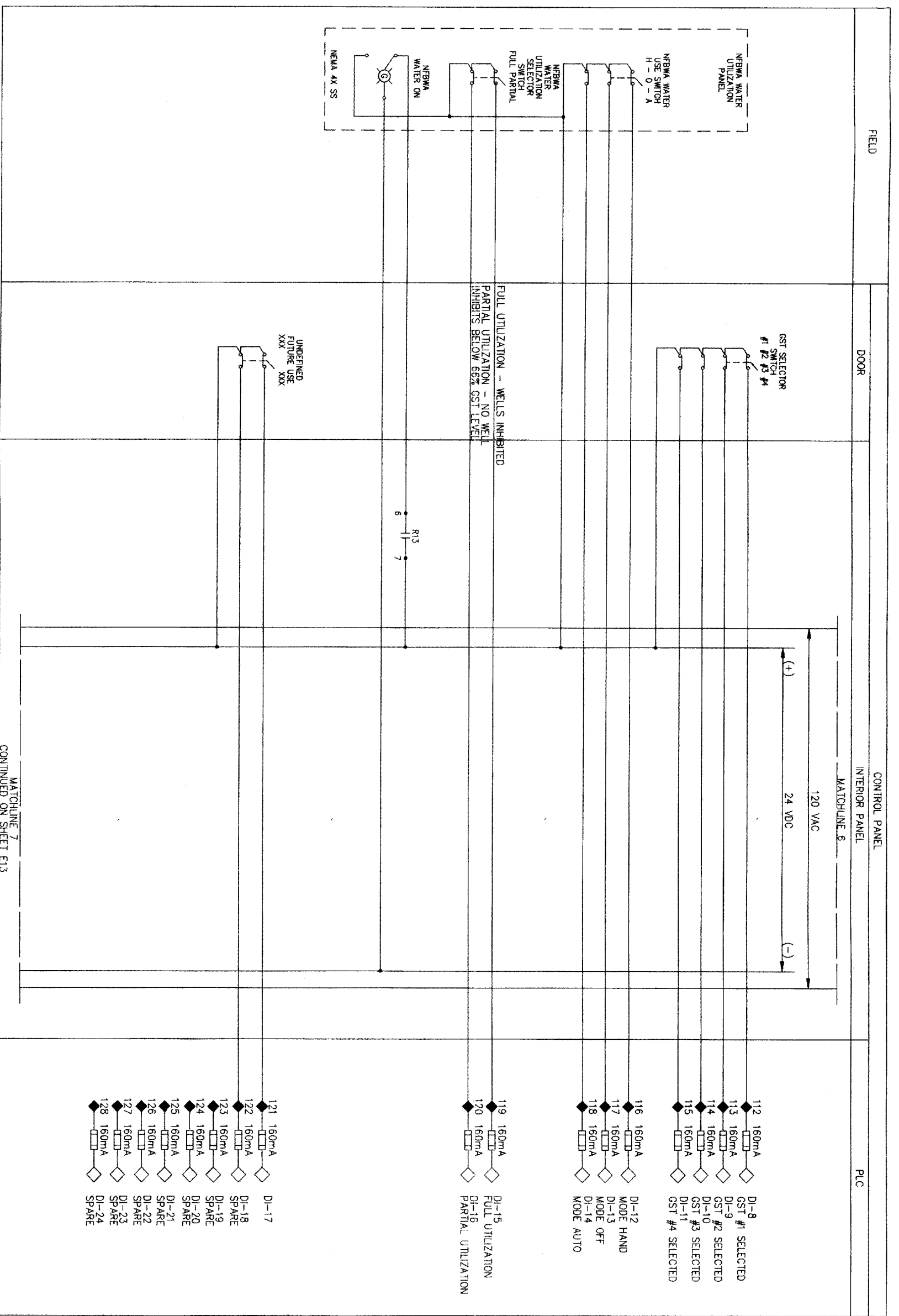


NFBWA SEGMENT 8B
 CONTROL DIAGRAM
 SHEET 9



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER, SEWER, TRAFFIC AND TRANSPORTATION
 STANDARD WATER QUALITY
 DATE: 11-7-11
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 SHEET & BLOCK: 1, 5, 11

NOTE: GDT STANDARDS VALID FOR ONE YEAR ONLY FROM DATE OF SIGNATURE
 FILE NO.: FOR GDT OF HOUSTON USE ONLY
 DRAWING SCALE:
 HORZ: NTS
 VERT: NTS
 REF. NO.: E11
 SHEET NO.: 53 of 84
 DATE: NOVEMBER 12, 2009
 48739



MATCHLINE 7
 CONTINUED ON SHEET E13

NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPITTERS & GST SELECTOR SWITCH POLES TO DISTRICTS ANTICIPATED. ULTIMATE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

- 129 3A FUSED TERMINAL BLOCK
- 3A FUSED TERMINAL BLOCK
- 3B FUSED TERMINAL BLOCK
- 73 TERMINAL BLOCK
- ◇ PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 6320 White Road
 Beaumont, TX 77706 (409) 866-7066
 TAFE Registration No. F-375

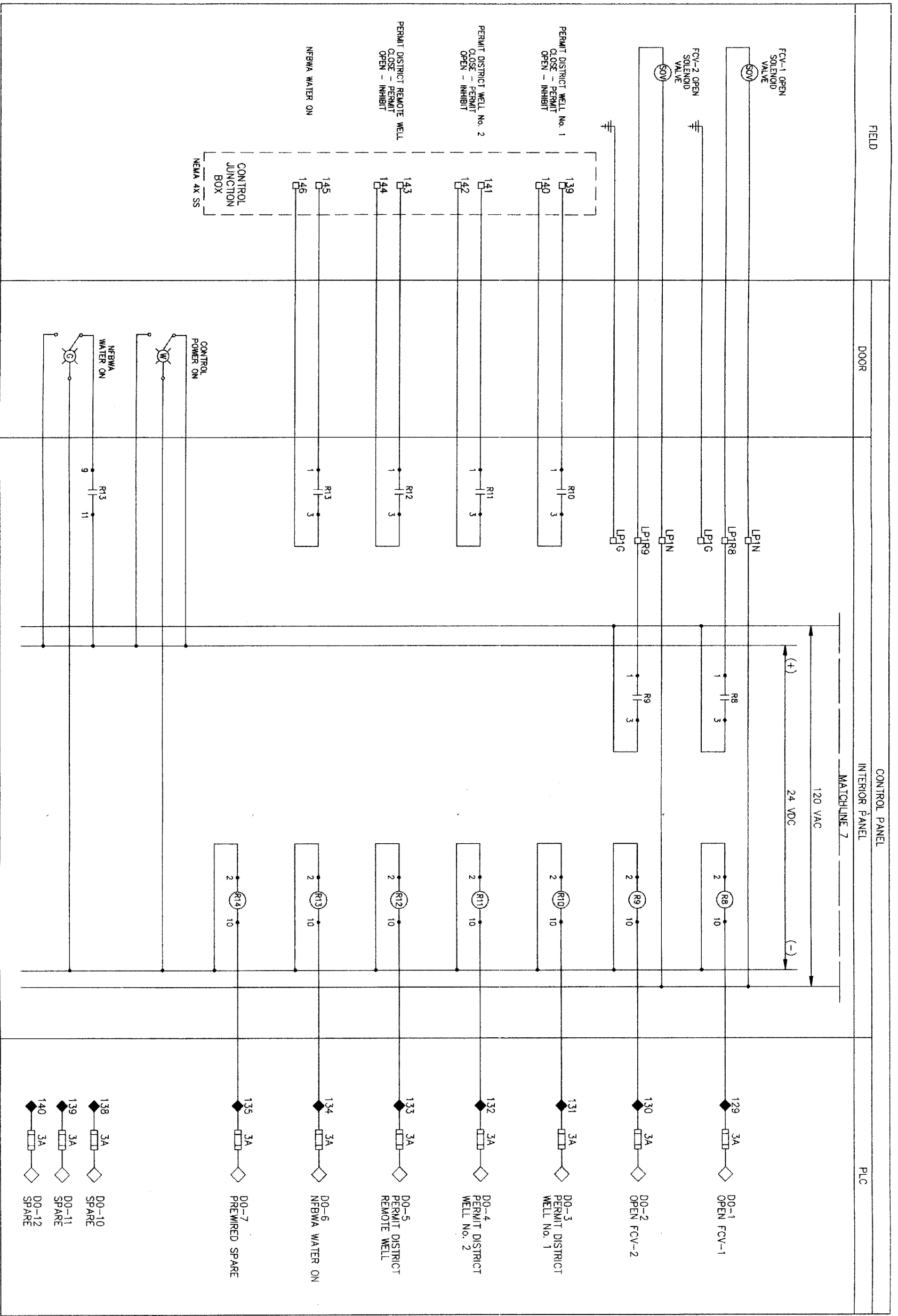


NFBWA SEGMENT 8B
 CONTROL DIAGRAM
 SHEET 10



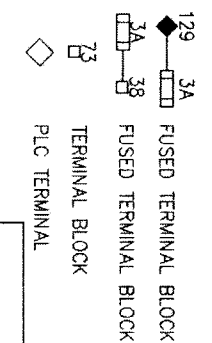
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION
 STORM WATER QUALITY
 FACILITIES
 STREET & BRIDGE
 A. H. ...

DATE: NOVEMBER 12, 2009
 REF. NO. E12
 SHEET No. 54 of 84
 DRAWING SCALE
 HORIZ : NTS
 VERT : NTS
 FOR CITY OF HOUSTON USE ONLY
 48739

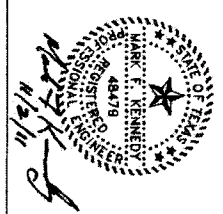


NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MAINTAIN. CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.



Brymcon, Inc.
 Electrical Engineering
 TYPE Registration No. 1-376
 Beaumont, TX 77705 (409) 986-7066



NFBWA SEGMENT 88
 CONTROL DIAGRAM
 SHEET 11



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

WATER
 WATER QUALITY
 STORM WATER QUALITY

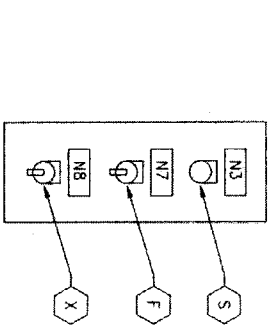
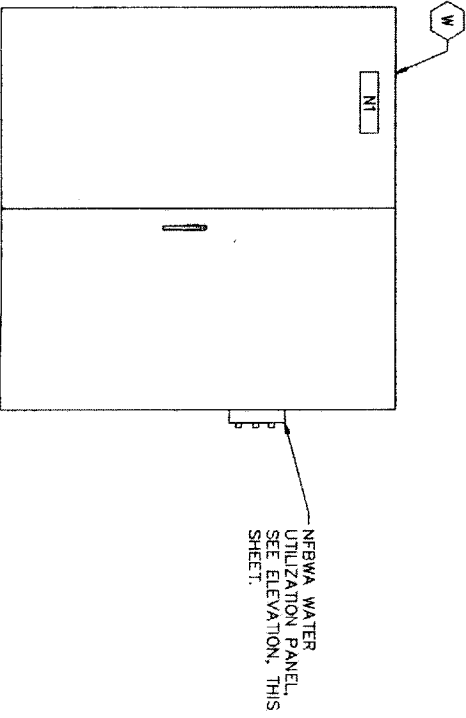
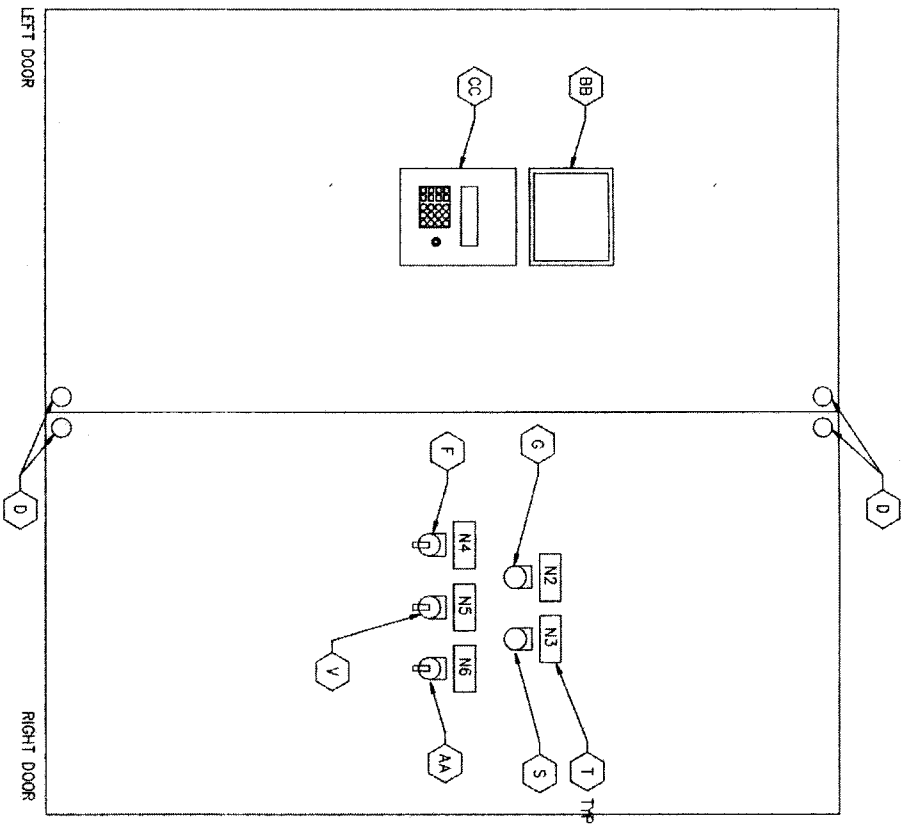
DATE: 11-7-10
 BY: [Signature]
 CHECKED: [Signature]
 APPROVED: [Signature]

FILE NO.: FOR CRT OF HOUSTON (SEE ONLY)
 DRAWING SCALE:
 HORIZ: NTS
 VERT: NTS

REF. NO. E13
 SHEET No. 55 of 84
 DATE: NOVEMBER 12, 2009

48739

EQUIPMENT & DEVICE SCHEDULE	
ITEM	DESCRIPTION
A	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100 A, 20 CKTS
B	SIGNAL SPLITTER/SOLATOR, DIN RAIL MOUNT, 120VMS, 4-20mA INPUT, DUAL ISOLATED 4-20mA OUTPUTS, ACRONAMG 633T-0100 OR EQUAL
C	THERMOSTAT
D	QUARTER TURN CAPTIVE DOOR CLOSURE
E	120VAC - 24VDC POWER SUPPLY
F	HAND-OFF-AUTO SWITCH, HEAVY DUTY OIL TIGHT W/120V, 20A RATING
G	INDICATING LIGHT, HEAVY DUTY OIL TIGHT, WHITE, 24 VDC, 2.5 WATT
H	STRIP HEATER
I	PROGRAMMABLE LOGIC CONTROLLER, SIEMENS ST-300
J	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	DUPLX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED, GFCI TYPE
L	40 WATT FLUORESCENT STRIP LIGHT W/BALLAST SUITABLE FOR ZERO DEGREE OPERATION
M	SURGE PROTECTOR - INCOMING POWER
N	UNINTERRUPTIBLE POWER SUPPLY 1000VA MINIMUM
P	FUSED TERMINAL BLOCKS, AS REQUIRED
Q	MODER
R	CONTROL RELAY, TURCK 24 VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE
S	INDICATING LIGHT, HEAVY DUTY OIL TIGHT, GREEN, 24 VDC, 2.5 WATT
T	NAMEPLATES, 3/8" HIGH LETTERING IN WHITE LETTERS ON BLACK BAKELITE (SEE NAMEPLATE SCHEDULE) (SEE NOTE 1)
U	DOOR LIMIT SWITCH (SEE NOTE 2)
V	GST SELECTOR SWITCH, HEAVY DUTY OIL TIGHT, FOUR POSITION, W/120V, 20A RATING
W	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT MOUNTS, 60" x 72" x 24"
X	WATER UTILIZATION SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING
Y	TERMINAL BLOCKS AS REQUIRED
Z	WIRE DUCT 2" WIDE X 2" DEEP MINIMUM
AA	FUTURE USE SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING
BB	HUMAN MACHINE INTERFACE (HMI)
CC	AUTODIALER



- NOTES:
1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE
 2. PROVIDE ONE LIMIT SWITCH PER EXTERIOR DOOR, WIRED IN PARALLEL.

NAMEPLATE SCHEDULE
 ENGRAVED

DESIGNATION

N1 NORTH FORT BEND WATER AUTHORITY
 N2 POWER ON
 N3 NFBWA WATER ON
 N4 FLOODLIGHT H-O-A
 N5 GSTI SELECTOR
 N6 GSTI GST12 GST13 GST14
 N7 FUTURE USE
 N8 NFBWA WATER USE H-O-A
 PARTIAL FULL

DATE: JUNE 27, 2011

REF. NO. E14

SHEET No. 56 OF 84

Brymcon, Inc.
 Electrical Engineering
 TBE Registration No. E-375
 8520 White Road
 Beaumont, TX 77705 (409) 694-7968

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER TRAFFIC AND TRANSPORTATION

NORTH FORT BEND
 ELECTRICAL CONTROL PANEL LAYOUT & SPECIAL DEVICE SCHEDULE

NFBWA SEGMENT 8B

DATE: JUNE 27, 2011

FILE NO. FOR CITY OF HOUSTON USE ONLY

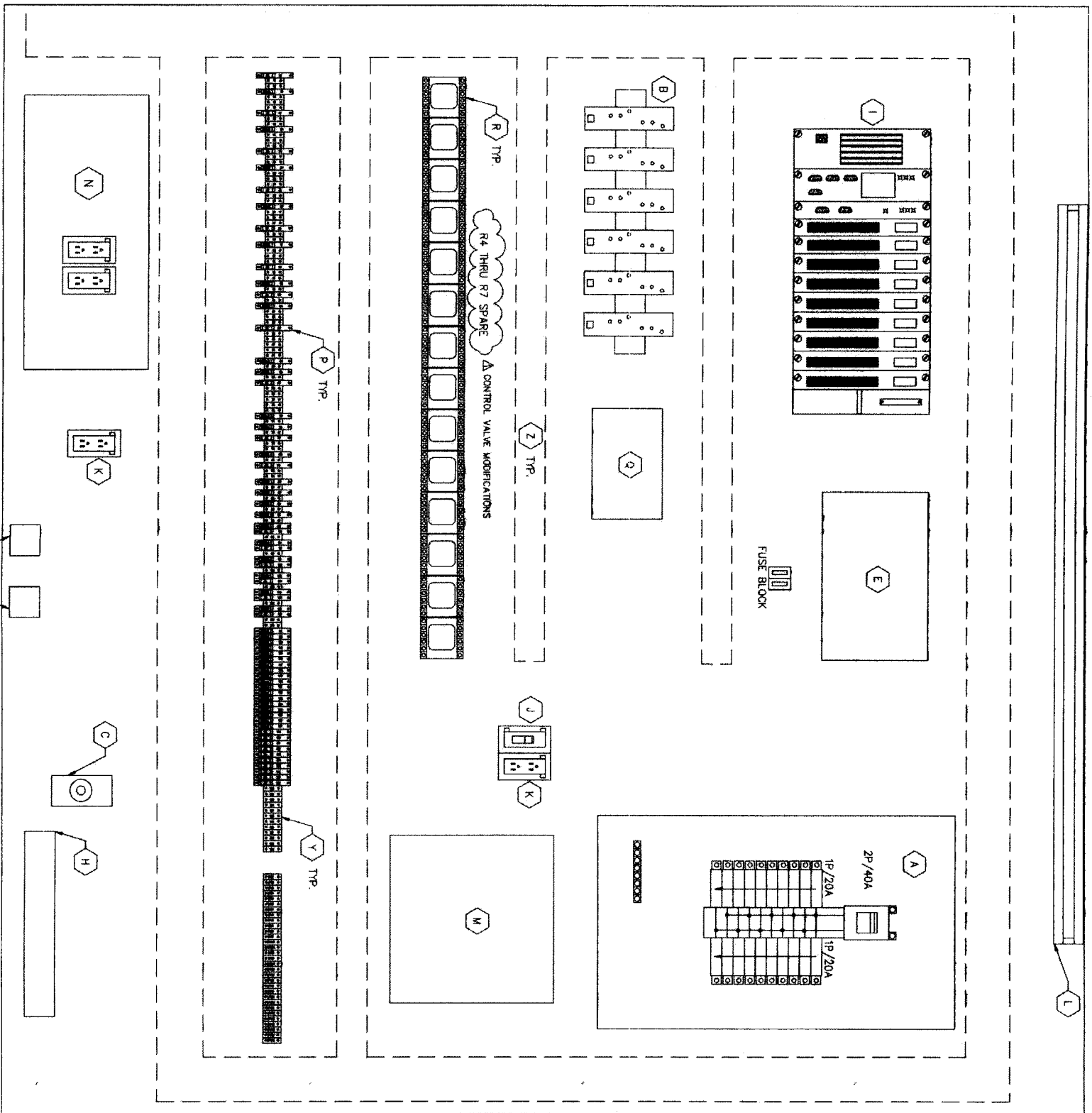
DRAWING SCALE

HORIZ: NTS

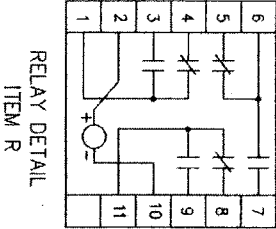
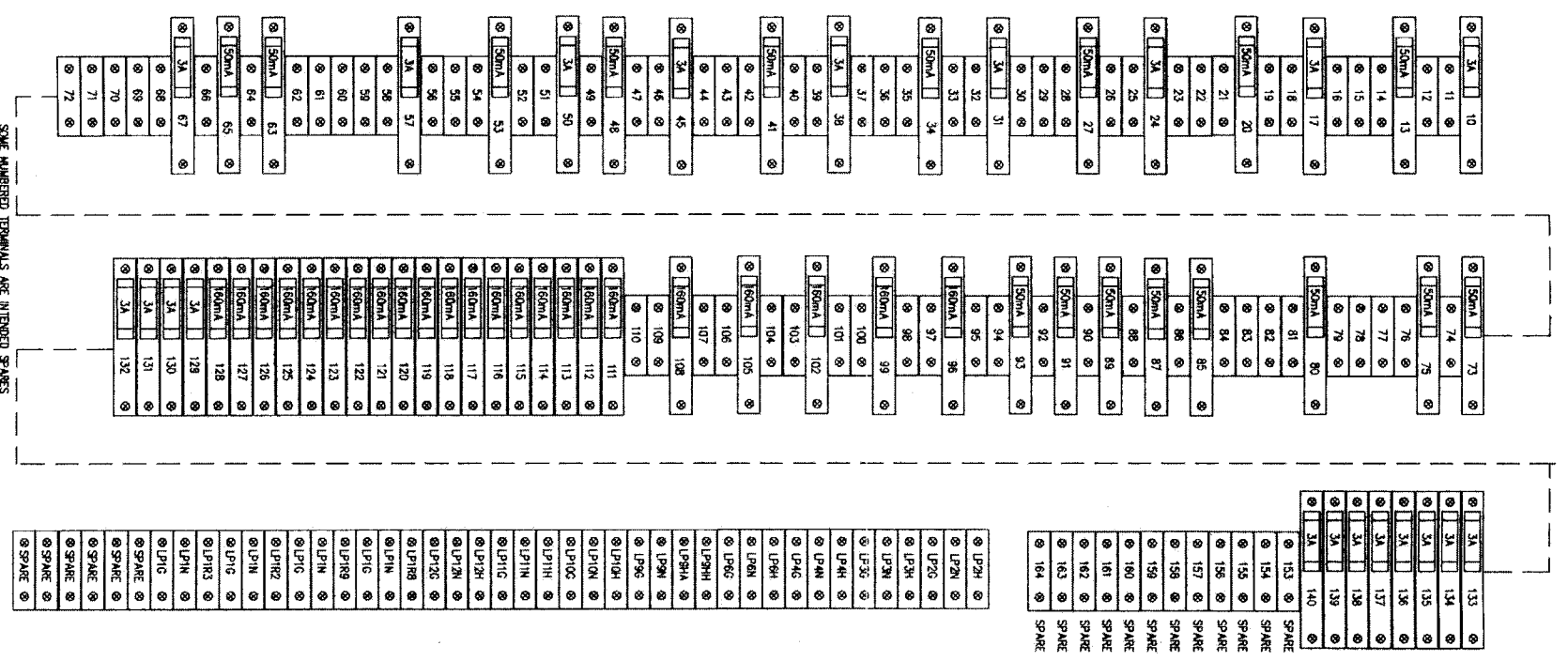
VERT: NTS

48739

CONTROL PANEL ELEVATION



CONTROL PANEL TERMINAL STRIP ENLARGED VIEW



NOTES:
 1. SEE SHEET E14 FOR EQUIPMENT SCHEDULE.

DATE: NOVEMBER 12, 2009

REF. NO. E15
 SHEET No. 57 of 84

FOR CITY OF HOUSTON USE ONLY

48739

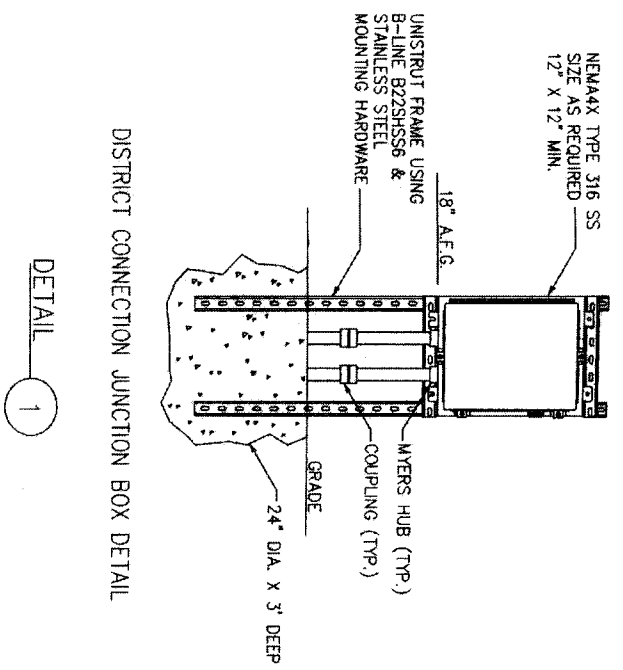
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER
 STORM WATER QUALITY
 FACILITIES

DATE: 11.11.09

NORTH FORT BAND
 ELECTRICAL CONTROL PANEL LAYOUT

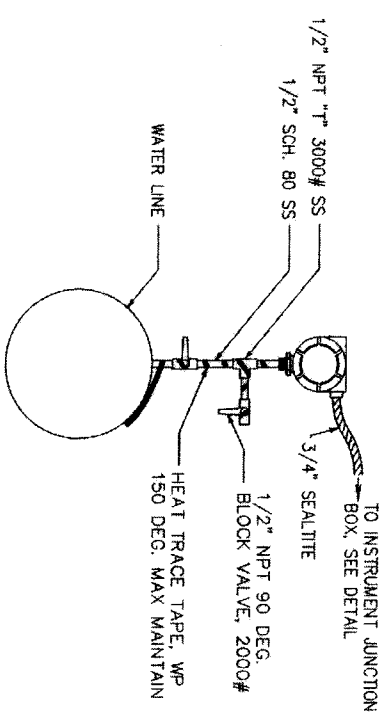
NFBWA SEGMENT 8B

Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. F-375
 8320 Wilbur Road Beaumont, TX 77705 (409) 868-7085



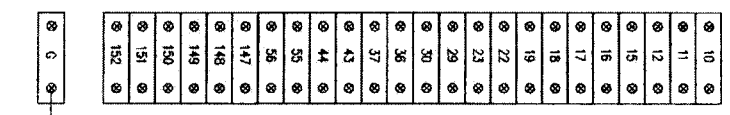
DISTRICT CONNECTION JUNCTION BOX DETAIL

DETAIL 1

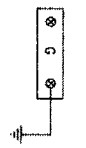


LIQUID LEVEL/PRESSURE/DIFFERENTIAL TRANSMITTER INSTALLATION DETAIL

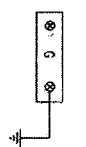
DETAIL 4



10	11	12	15	16	17	18	19	22	23	29	30	36	37	43	44	50	56	147	148	149	150	151	152
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----



138	140	141	142	143	144	145	146
-----	-----	-----	-----	-----	-----	-----	-----



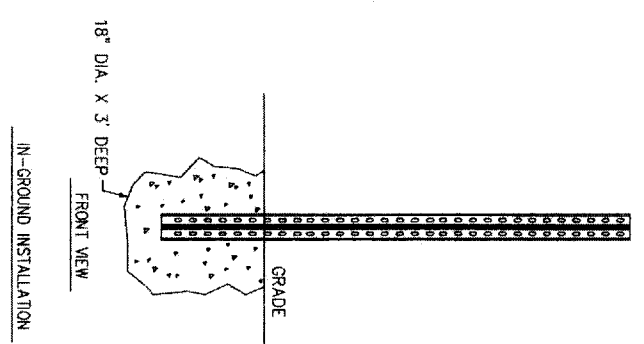
L1	L2	N	G
----	----	---	---

100A RATED

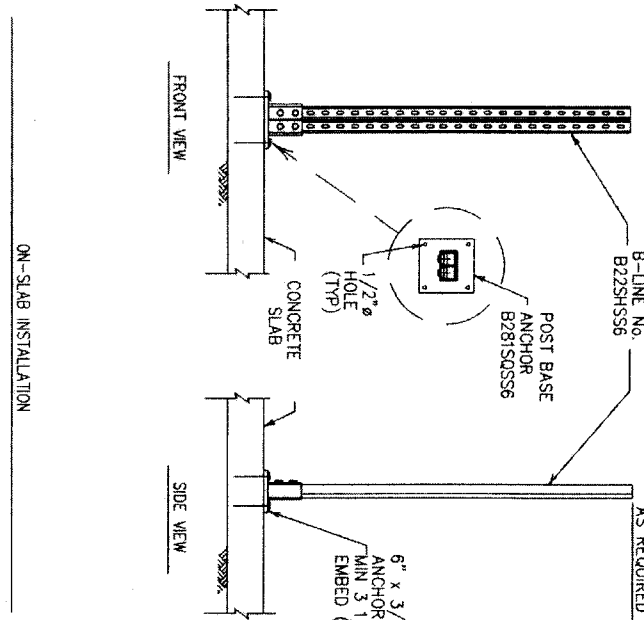
LP8H	LP8H	LP6G	LP7N	LP7C
------	------	------	------	------

ANALOG JUNCTION BOX CONTROL JUNCTION BOX 120V JUNCTION BOX

DETAIL 2



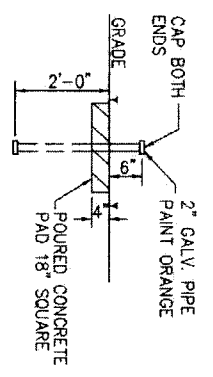
IN-GROUND INSTALLATION



ON-SLAB INSTALLATION

DEVICE MOUNTING POST DETAIL

DETAIL 3



DUCTBANK MARKER DETAIL

DETAIL 5

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Beaumont, TX 77705
 (409) 882-7888

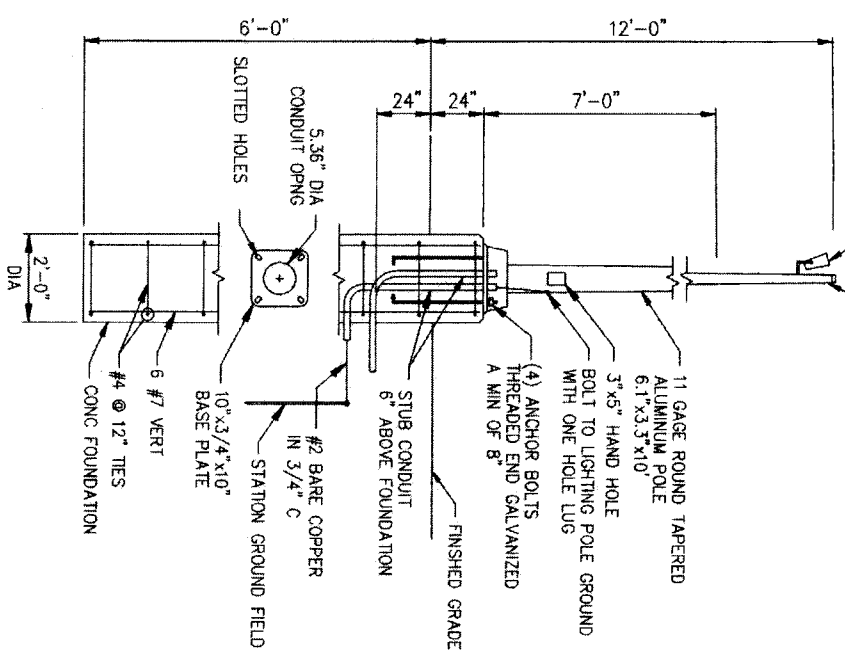
STATE OF TEXAS
 MARK L. KENNEDY
 48479
 PROFESSIONAL ELECTRICAL ENGINEER
 NFBWA SEGMENT 8B
 11/2/11

NORTH FORT BEND
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION
 STANDARD WATER QUALITY
 SWEET & ENOIG

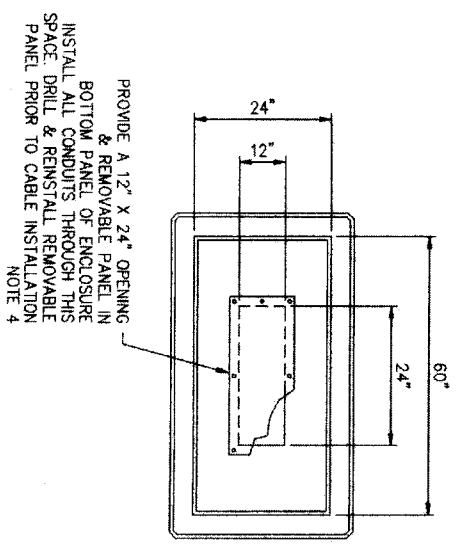
REF. NO. E16
 SHEET No. 58 of 84
 DATE: JUNE 27, 2011
 DRAWING SCALE
 HORIZ: NTS
 VERT: NTS
 FOR CITY OF HOUSTON USE ONLY
 48739

BI-DIRECTIONAL ADJUSTABLE
 POLE MOUNTED SITE LIGHT W/
 70W HPS, PHOTOCELL, APPLETON
 G-AM271L-MT & 120V BALLAST

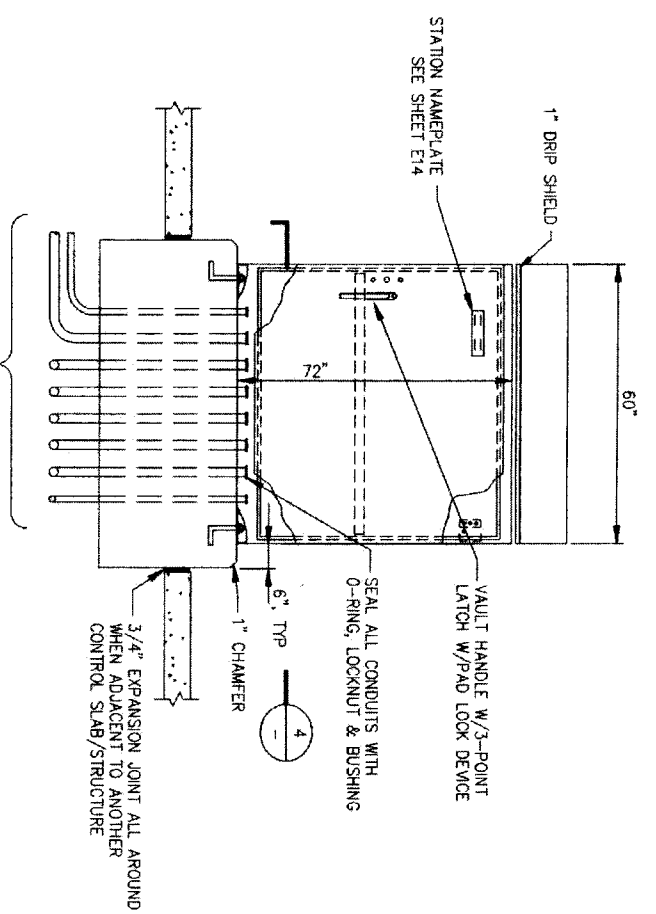
PROVIDE NECESSARY HARDWARE
 TO SECURE THE LIGHT FIXTURE
 & THE PHOTO CELL



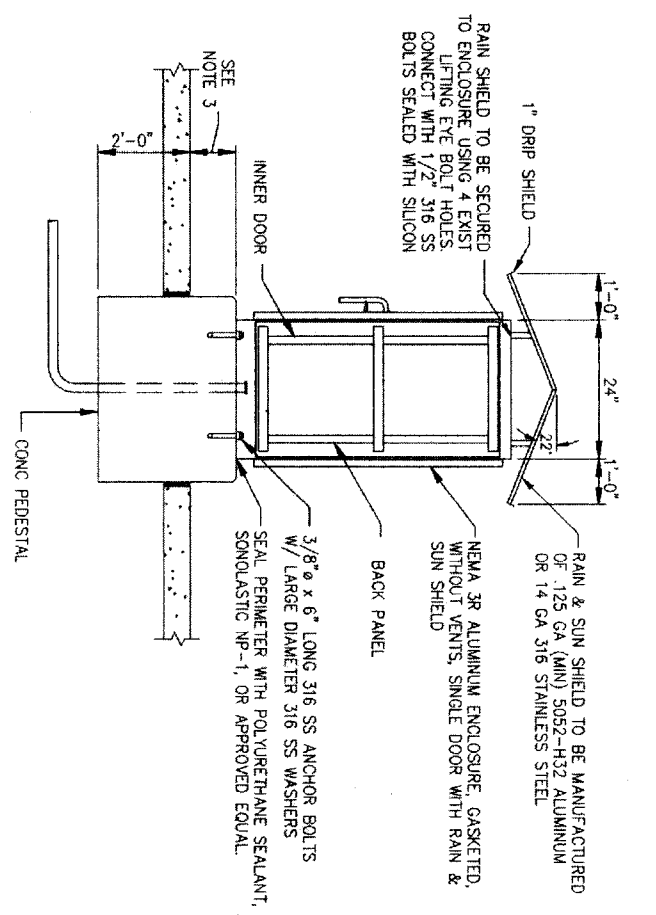
TYPICAL YARD LIGHT
 DETAIL 1



TYPICAL DUCT BANK CONSTRUCTION
 DETAIL 5



CONTROL CABINET ENCLOSURE & FOUNDATION
 DETAIL 2



DETAIL 3

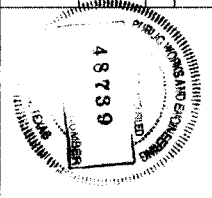
PROVIDE A 12\"/>

SECTION 4

- NOTES:
1. SEE SHEET E14 & E16 FOR CONTROL PANEL EQUIPMENT LAYOUT AND SCHEDULE.
 2. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
 3. TOP OF PEDESTAL TO BE A MINIMUM OF 6\"/>

DATE: NOVEMBER 12, 2009

REF. NO. E17
 SHEET NO. 59 OF 84



Brymcon, Inc.
 Electrical Engineering
 TBEPE Registration No. F-575
 8520 White Road
 Beaumont, TX 77706 (409) 866-1096

NFBWA SEGMENT 8B
 ELECTRICAL
 DETAILS SHEET 2

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 11-10-11
 11-7-11
 11-10-11
 11-7-11
 11-10-11
 11-7-11

FOR CITY OF HOUSTON USE ONLY
 48739

TEST STATION SCHEDULE

STATION	TYPE OF TEST STATION	POLE MOUNTED OR FLUSH	STRUCTURES	NUM. ANODES	SIZE ANODE	DETAILS
0+49*	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
1+73*	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
4+17*	INSULATING JOINT TEST STATION	FLUSH	12" WATER	16	132LB, 20" LONG (PACKAGE)	CP-8
5+00*	INSULATING JOINT TEST STATION	FLUSH	36" WATER	16	132LB, 20" LONG (PACKAGE)	CP-8
7+04	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
15+00	MONITORING TEST STATION	FLUSH	36" WATER	16	132LB, 20" LONG (PACKAGE)	CP-2
18+15	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
19+75	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
24+31	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
25+63	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
26+84	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
36+85	MONITORING TEST STATION	FLUSH	36" WATER	16	132LB, 20" LONG (PACKAGE)	CP-2
39+04	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
49+00	MONITORING TEST STATION	FLUSH	36" WATER	16	132LB, 20" LONG (PACKAGE)	CP-2
58+45	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
59+54	CASING TEST STATION	FLUSH	CASING	16	132LB, 20" LONG (PACKAGE)	CP-17
60+00	INSULATING JOINT TEST STATION	FLUSH	36" WATER	16	132LB, 20" LONG (PACKAGE)	CP-8

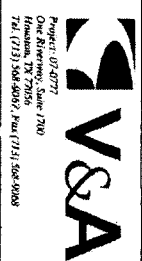
* STATIONING IS ON CENTERPOINT EASEMENT BASELINE

RECTIFIER SCHEDULE

PIPE MATERIAL	STATION	SIZE		ANODES		ANODE WELL DEPTH (FEET)	STRUCTURE	DETAILS
		VOLTS	AMPS	NUM.	TYPE			
STEEL PIPE WITH BONDED DIELECTRIC COATING	21+40	12	5	3	TA-3	108	36" WATER	3 CP-6
MORTAR-COATED STEEL PIPE	21+40	24	16	5	TA-3	120	36" WATER	3 CP-6
DUCTILE PIPE WRAPPED POLYETHYLENE BAG	21+40	12	5	3	TA-3	108	36" WATER	3 CP-6

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 WIRES, ANODES, TEST STATIONS OR STRUCTURES SHALL BE REPLACED BY THE CONTRACTOR. UNAPPROVED CABLE SPLICES ARE NOT ALLOWED.



JOHN LUIS VILLALBA
795225
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
EXPIRES 12/31/2011

VERA Consulting Engineers
P.O. Box 8104
Houston, TX 77241

CATHODIC PROTECTION SCHEDULES



NOTE: CITY SCHEDULES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURE.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
TRAINING AND TRANSPORTATION

WATER
STATION: 21+40
SHEET & GRID: A North 11, B, 11

STANDARD WATER QUALITY

DATE: 10/7/09

PROJECTS

DATE: OCTOBER 7, 2009

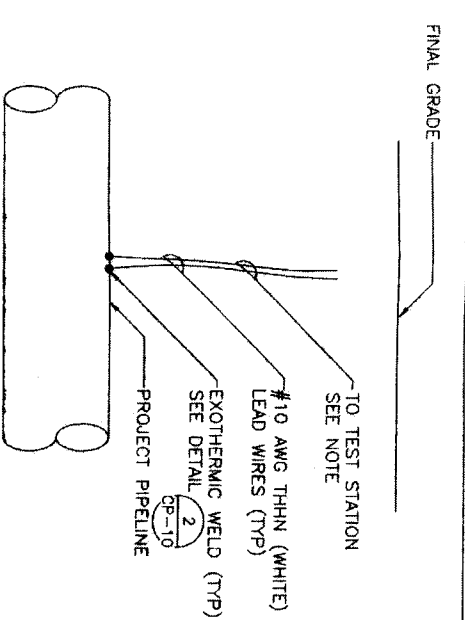
REF. NO.
CP-1

FILE NO. _____
DRAWING SCALE _____
HORIZ: NTS
VERT: NTS

FOR CITY OF HOUSTON USE ONLY

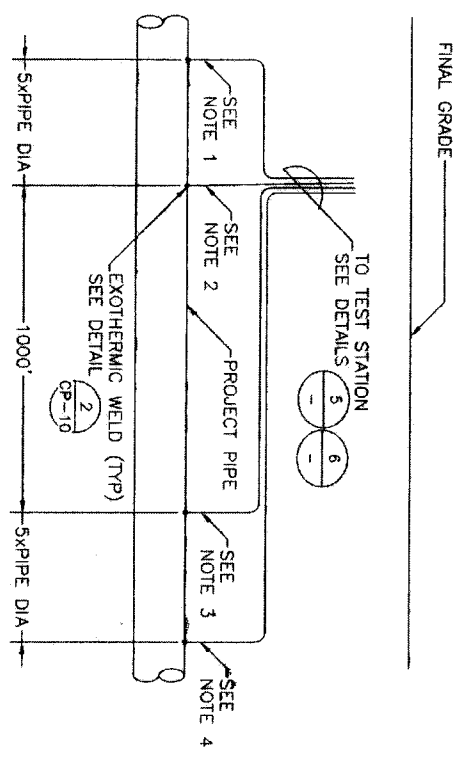
SHEET No. 60 of 84

48739



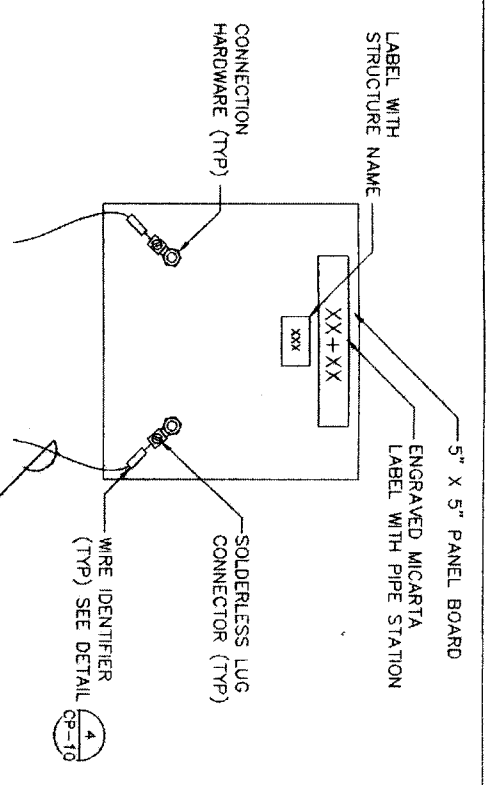
- NOTES:
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL CP-2
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL CP-10

MONITORING TEST STATION (MTS) 1
 NTS



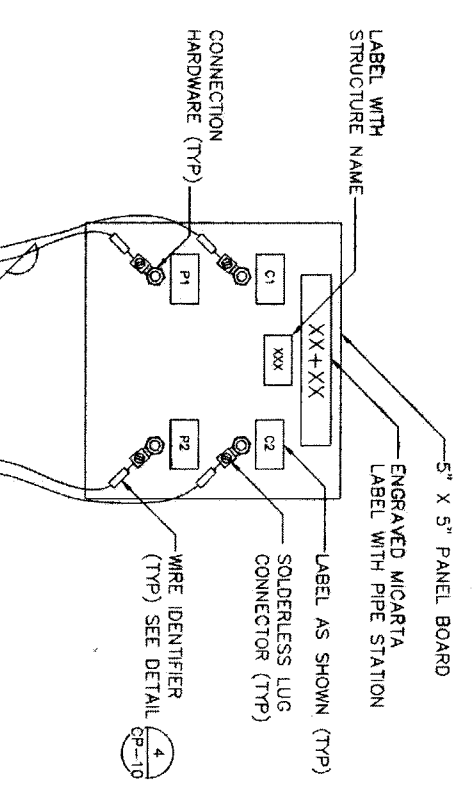
- NOTES:
1. LINE CURRENT TEST LEAD C1 AWG #10 THHN (BLUE)
 2. LINE CURRENT TEST LEAD P1 AWG #8 THHN (RED)
 3. LINE CURRENT TEST LEAD P2 AWG #8 THHN (YELLOW)
 4. LINE CURRENT TEST LEAD C2 AWG #10 THHN (WHITE)
 5. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL CP-4
 6. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL CP-10

LINE CURRENT TEST STATION (LCTS) 4
 NTS



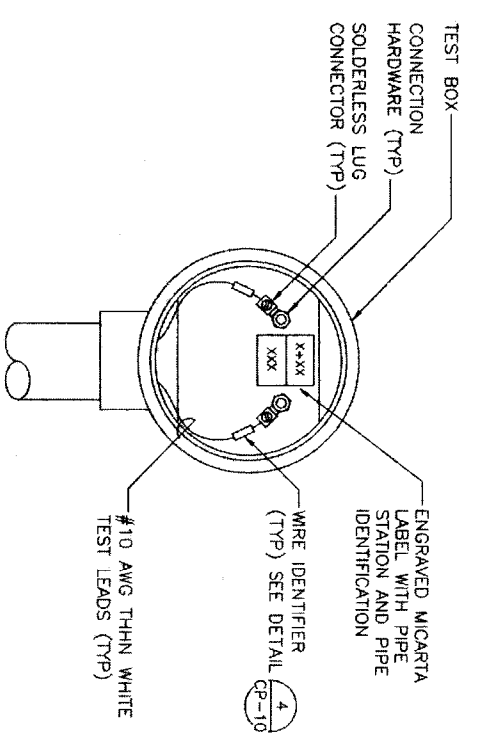
- NOTE:
- TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL CP-5

MTS TEST BOARD 2
 NTS



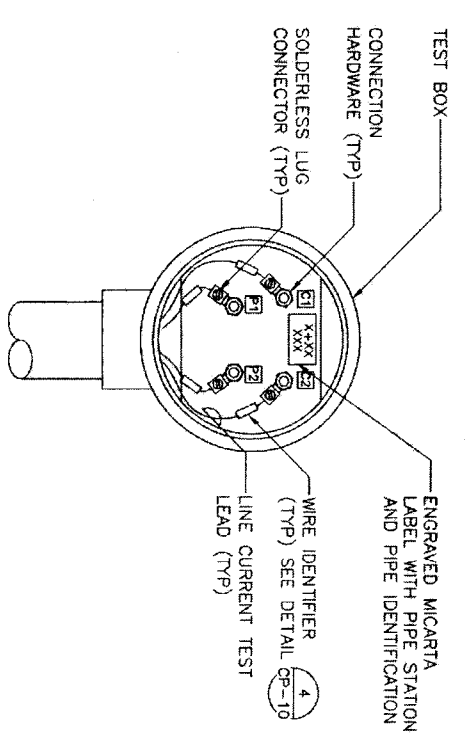
- NOTE:
- TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL CP-5

LCTS TEST BOARD 5
 NTS



- NOTE:
- TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL CP-9

POST MOUNTED MTS TEST BOX 3
 NTS



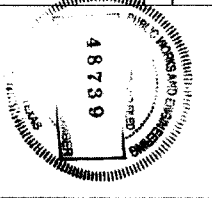
- NOTE:
- TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL CP-9

POST MOUNTED LCTS TEST BOX 6
 NTS

DATE: OCTOBER 7, 2009

REF. NO. CP-2

SHEET No. 61 OF 84



V&A
 Project: 07-0777
 1000 West Loop South, Suite 1700
 Houston, Texas 77027
 Tel: (713) 586-0001, Fax: (713) 586-0006

NORTH PORT SAN
 NFBWA SEGMENT 8B

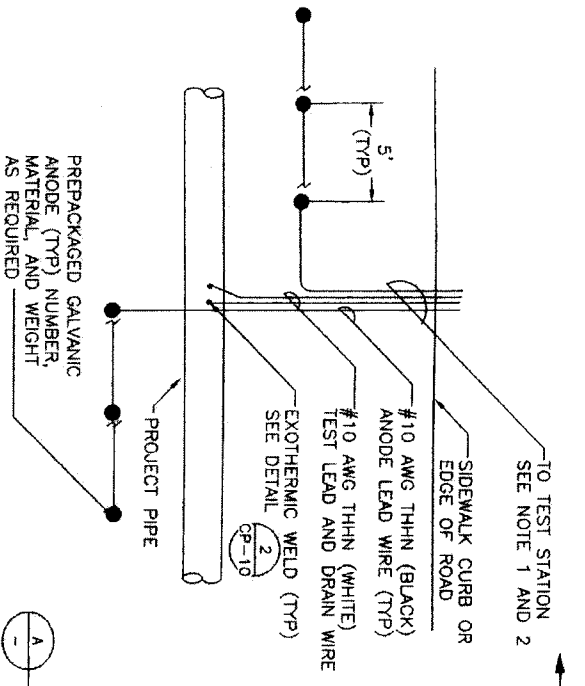
CATHODIC PROTECTION TEST STATION DETAILS
 1 OF 4

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SPECIFICATIONS MAILED FOR ONE YEAR ONLY AFTER DATE OF SIGNATURE

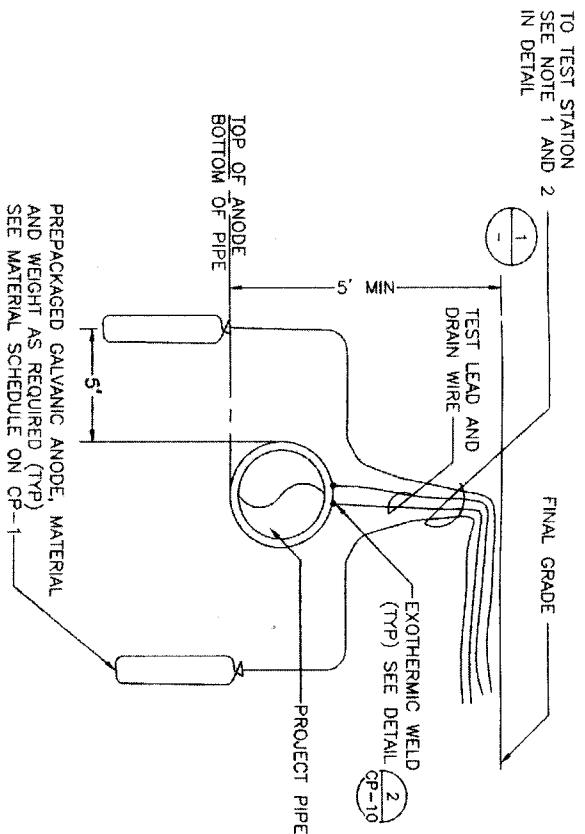
DATE: 10/7/09
 DRAWING SCALE: AS SHOWN
 HORIZ: NTS
 VERT: NTS

FILE NO.:
 DRAWING SCALE:
 THE CITY OF HOUSTON USE ONLY

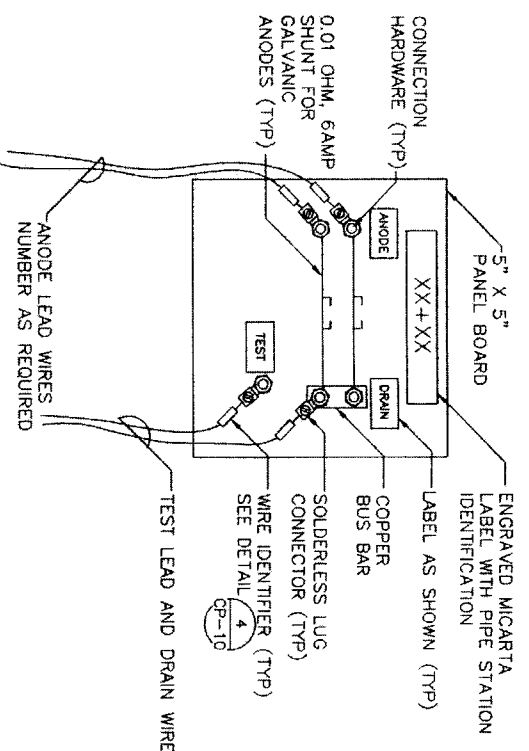


NOTE:
 1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL CP-3
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL CP-2

ANODE TEST STATION
 (ATS) PLAN
 NTS 1

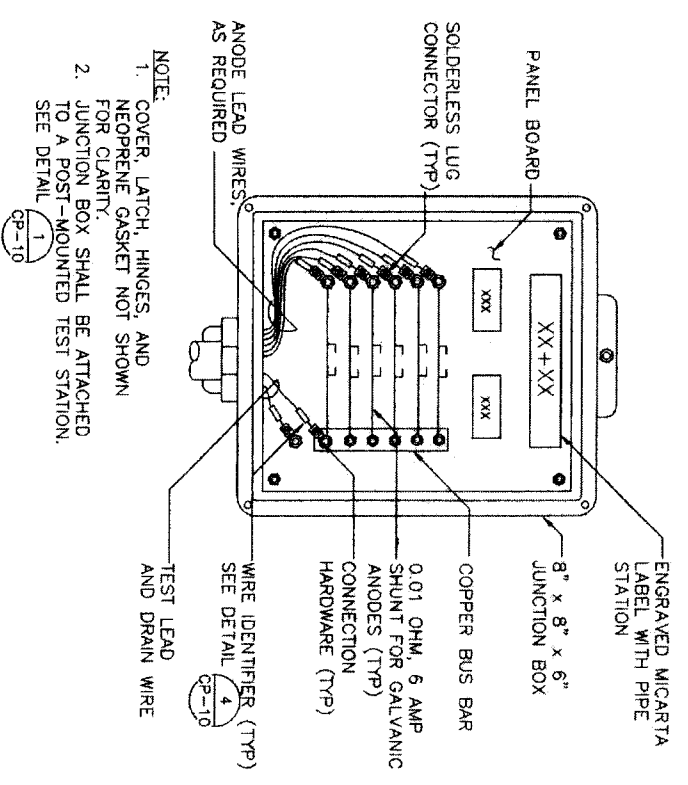


ATS SECTION
 NTS A



NOTE:
 TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL CP-5

ATS TEST BOARD
 NTS 2



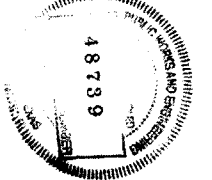
NOTE:
 1. COVER, LATCH, HINGES, AND NEOPRENE GASKET NOT SHOWN FOR CLARITY.
 2. JUNCTION BOX SHALL BE ATTACHED TO A POST-MOUNTED TEST STATION. SEE DETAIL CP-1

ATS JUNCTION BOX
 NTS 3

DATE: OCTOBER 7, 2009

REF. NO. CP-3

SHEET NO. 62 OF 84

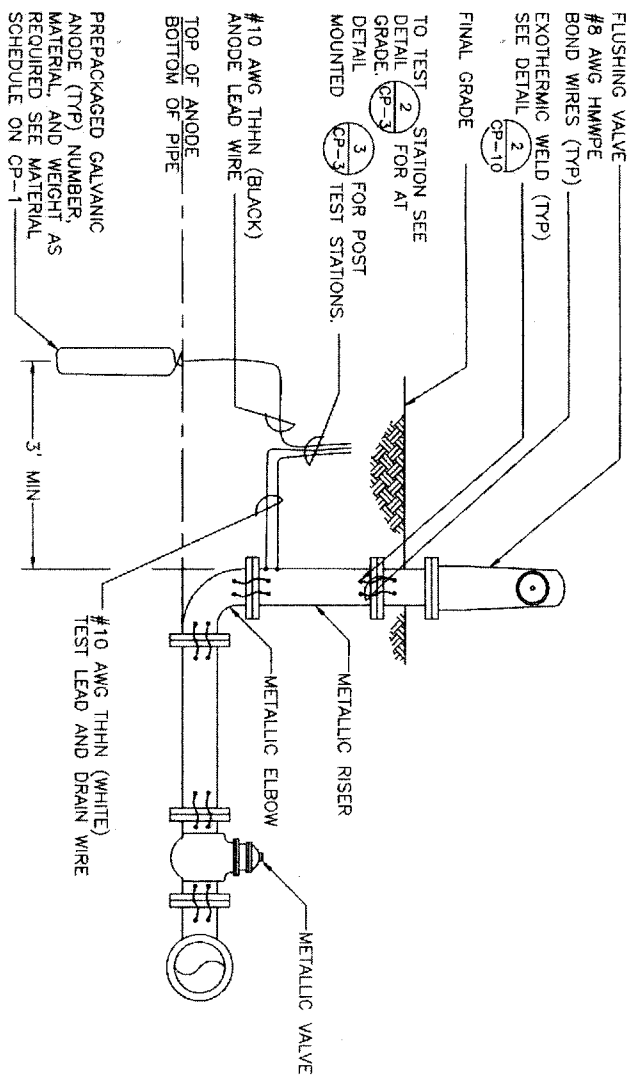


NOTE: CITY ENGINEERS VALID THE ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER DIVISION
 STORM WATER QUALITY
 PROJECT: NFBWA SEGMENT 8B
 DRAWING SCALE: AS SHOWN
 HORIZ: NTS
 VERT: NTS
 FILE NO.: FOR CITY OF HOUSTON USE ONLY

NORTH FORT BEN
 CATHODIC PROTECTION TEST STATION DETAILS
 2 OF 4

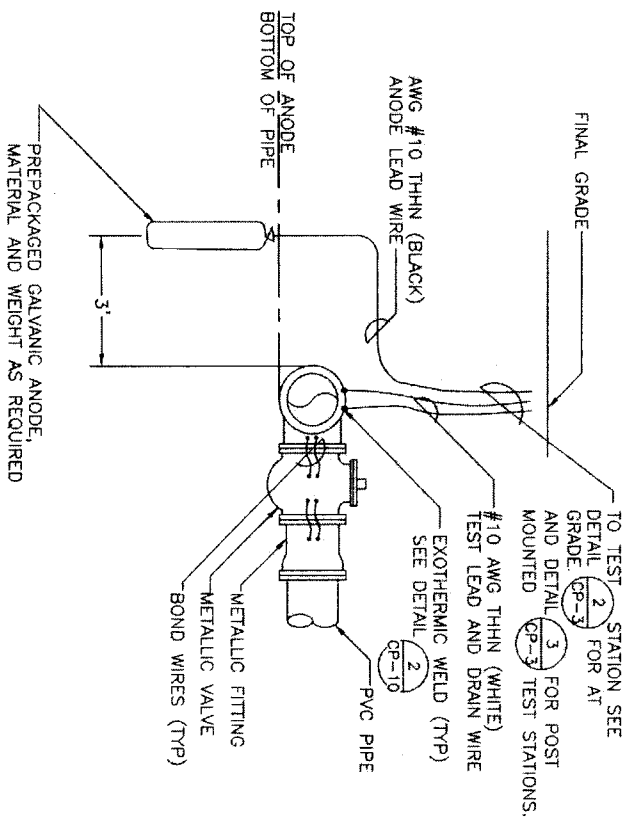
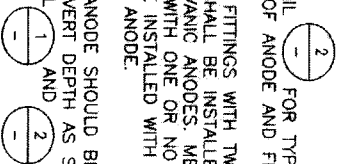
V&S&A
 Project 07-077
 NFBWA Segment 8B
 Houston, TX 77005
 TEL: (713) 948-8057 Fax: (713) 948-8004

u/s/ Jose L. Villalobos
 Jose L. Villalobos
 V&S&A Consulting Engineers
 F-9154
 NFBWA SEGMENT 8B

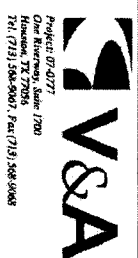


TYPICAL ANODE INSTALLATION
 AT FLUSHING VALVE (1)
 NTS

- GENERAL NOTES:**
1. THESE DETAILS ARE TYPICAL. THE NUMBER, AND ARRANGEMENT OF FITTINGS AND VALVES MAY VARY. THE DETAIL THAT IS MOST SIMILAR TO THE ACTUAL ARRANGEMENT SHOULD BE USED.
 2. INSTALL ANODES ON ALL METALLIC VALVES, FITTINGS, TEES, CROSSES, FIRE HYDRANTS, AND OTHER METALLIC APPURTENANCES AS SHOWN ON THE DRAWINGS AND INDICATED IN THE SPECIFICATIONS.
 3. SEE DETAIL (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 NO VALVES SHALL BE INSTALLED WITH ONE GALVANIC ANODE.
 5. TOP OF ANODE SHOULD BE AT THE PIPE'S INVERT DEPTH AS SHOWN ON DETAIL (1) AND (2).



ANODE INSTALLATION
 AT FITTING/VALVE (2)
 NTS



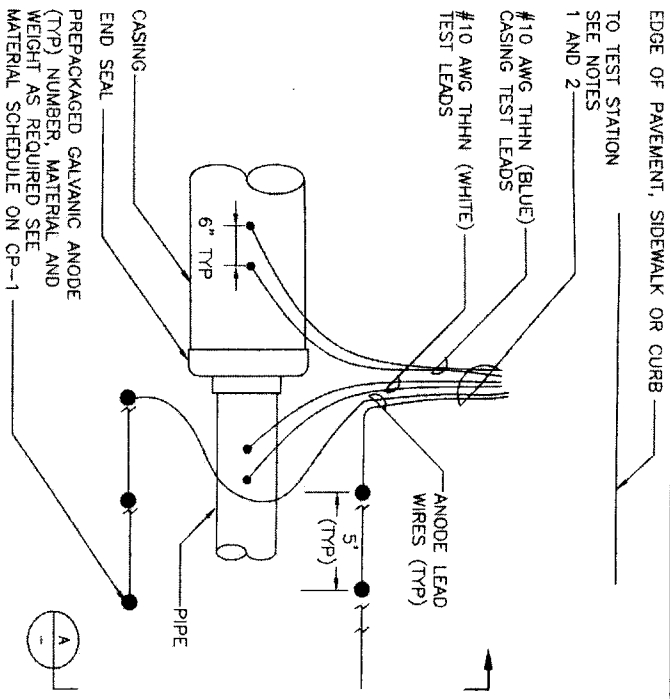
STATE OF TEXAS
 REGISTERED PROFESSIONAL ENGINEER
 No. 79525
 V&S&A Consulting Engineers
 F-8154
 NFBWA SEGMENT 8B

CATHODIC PROTECTION
 TEST STATION DETAILS
 3 OF 4

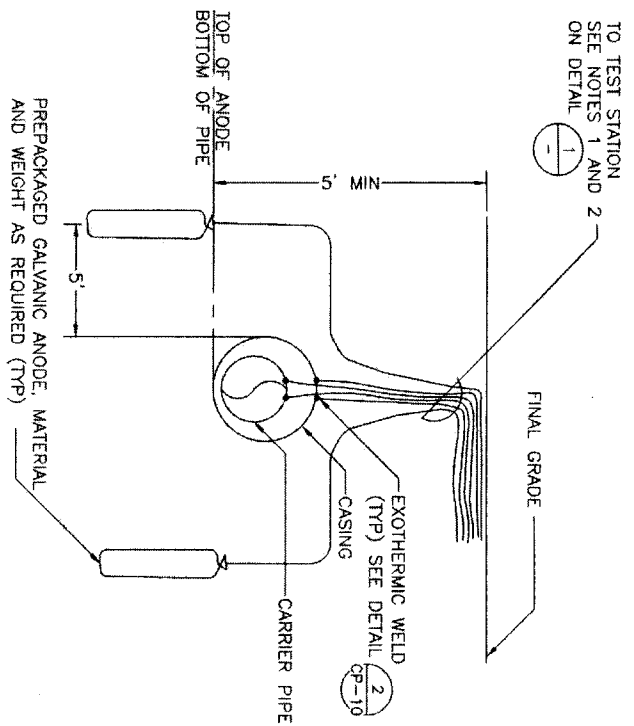


NOTE: CDT SERVICES VALID FOR ONE YEAR ONLY AFTER DATE OF COMPLETION
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER DIVISION
 STORM WATER QUALITY
 FACILITIES
 STORM
 STREET & SHOOK
 DATE: OCTOBER 7, 2009

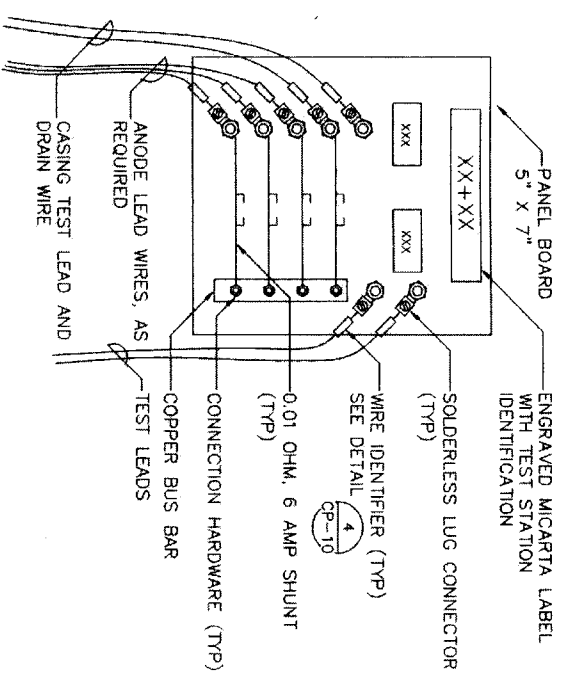
REF. NO. CP-4
 SHEET No. 63 of 84
 DRAWING SCALE: HORIZ: NTS, VERT: NTS
 FOR CDT OF HOUSTON USE ONLY
 48739



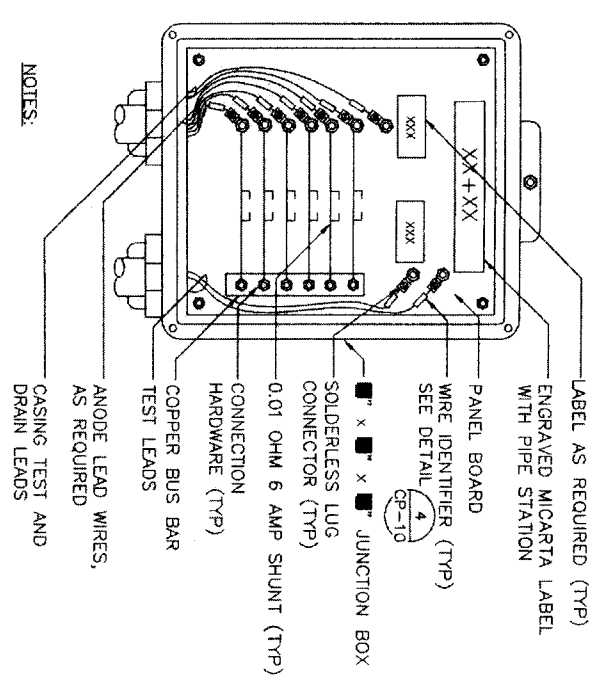
CASING ANODE TEST STATION (CATS) PLAN 1
 NTS



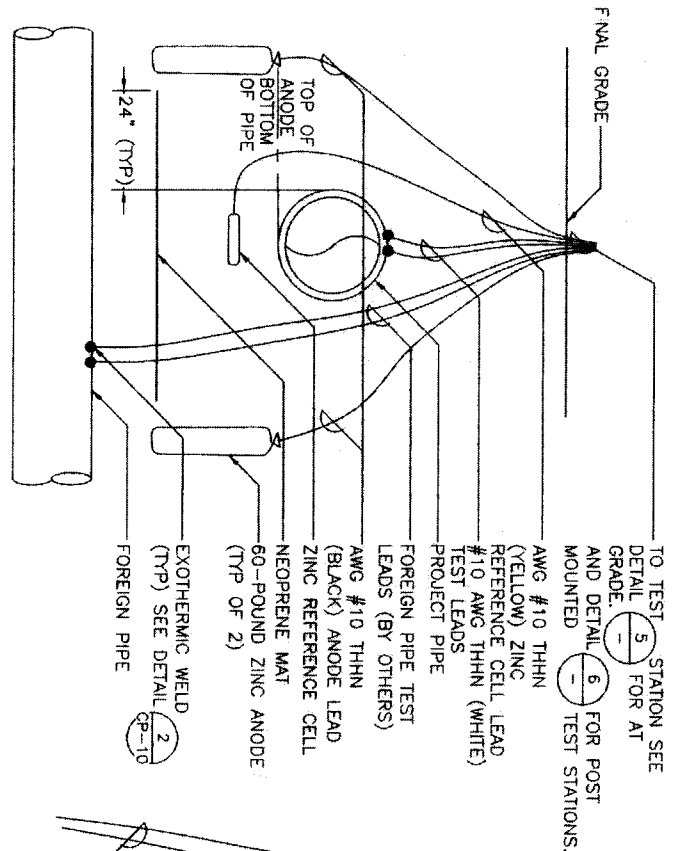
CATS SECTION A
 NTS



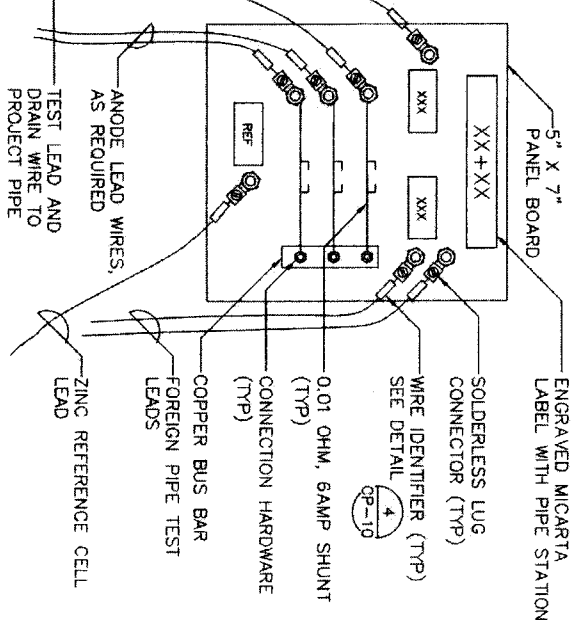
CATS TEST BOARD 2
 NTS



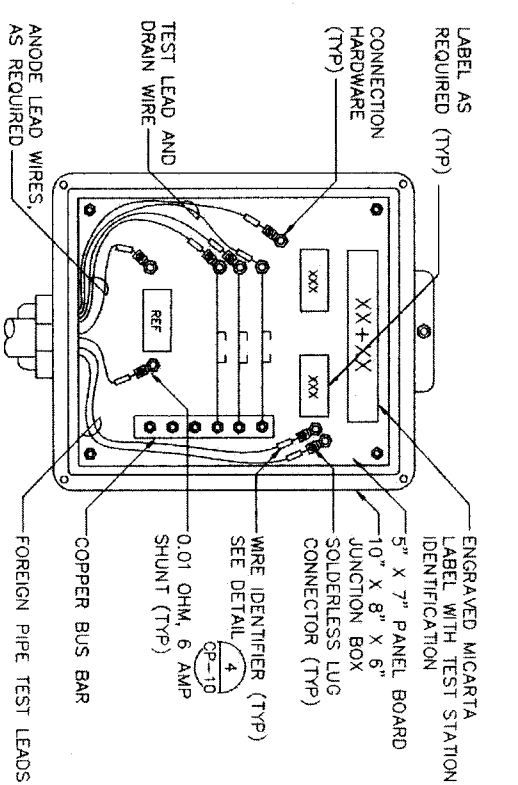
CATS JUNCTION BOX 3
 NTS



NOTES:
 1. CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY A REPRESENTATIVE OF THE FOREIGN PIPELINE OWNER.
 2. INSTALL ZINC REFERENCE CELL MIDWAY BETWEEN PROJECT PIPELINE AND NEOPRENE MAT.
 3. INSTALL ANODES FIVE FEET FROM PROJECT PIPE AND FOREIGN PIPE.
 FOREIGN PIPELINE TEST STATION-(FPTS) 4
 NTS



FPTS TEST BOARD 5
 NTS



FPTS JUNCTION BOX 6
 NTS

DATE: OCTOBER 7, 2009

REF. NO. CP-5

SHEET NO. 64 OF 84
 HORIZ: NTS
 VERT: NTS
 DRAWING SCALE
 FILE NO.
 FOR CITY OF HOUSTON USE ONLY
 48739

NOTE: CITY SOLUTIONS VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

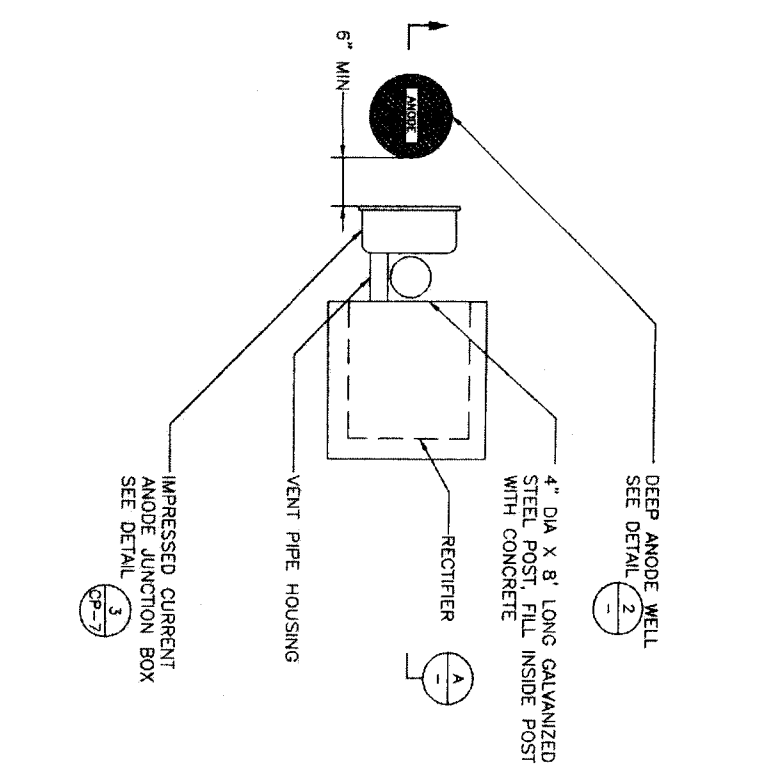
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER DIVISION

NORTH PORT BEND

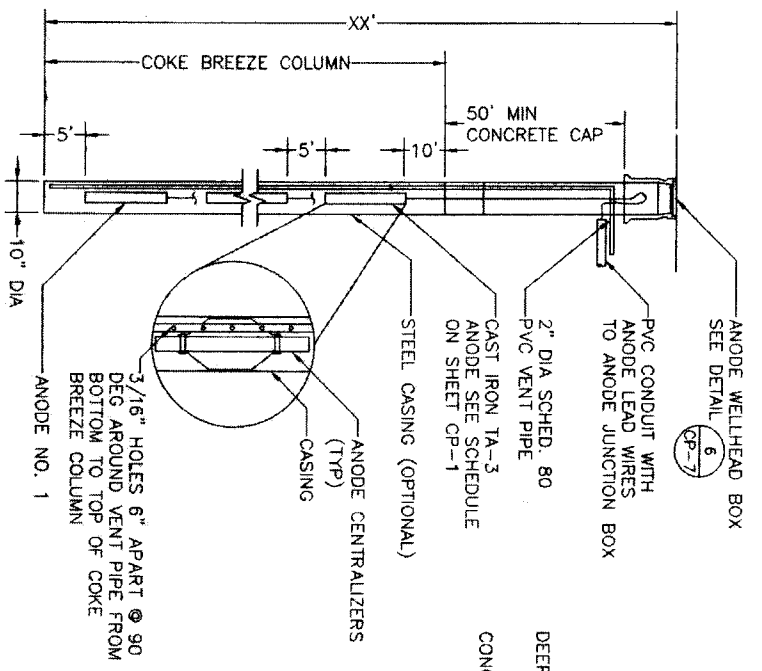
V&S&A
 Project: 024077
 One Riverside, Suite 700
 Houston, TX 77005
 Tel: (713) 558-9867, Fax: (713) 558-9868

REGISTERED PROFESSIONAL ENGINEER
 STATE OF TEXAS
 NO. 79523
 EXPIRES 12/31/2011

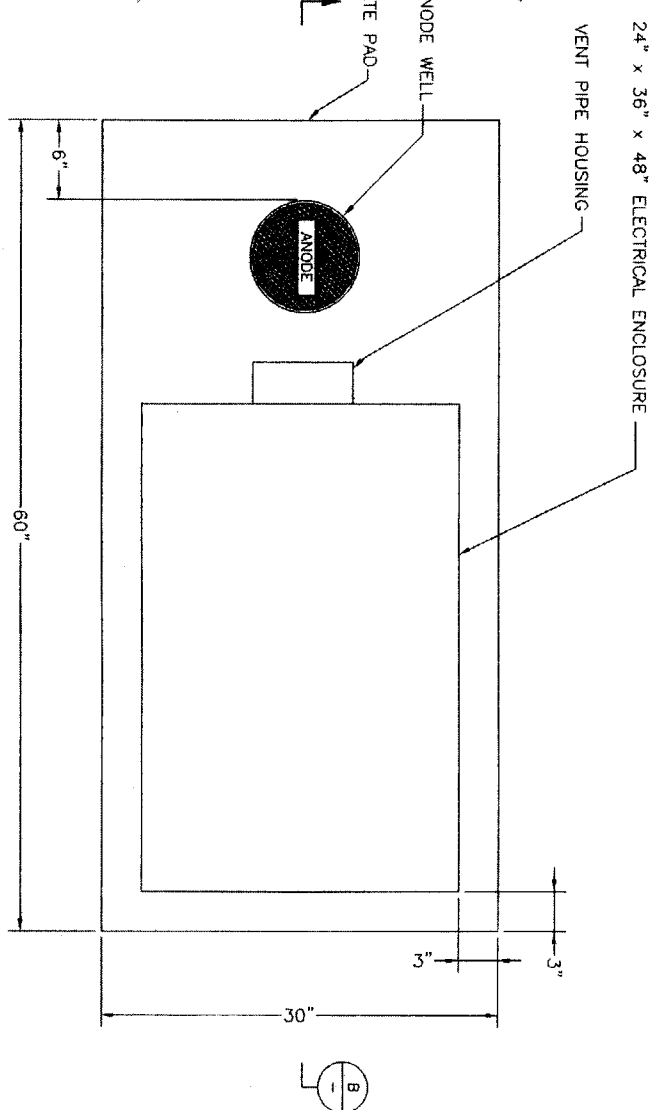
DATE: 10/7/09
 PROJECT: NFBWA SEGMENT 88
 DRAWING: CATHODIC PROTECTION TEST STATION DETAILS
 SHEET: 4 OF 4



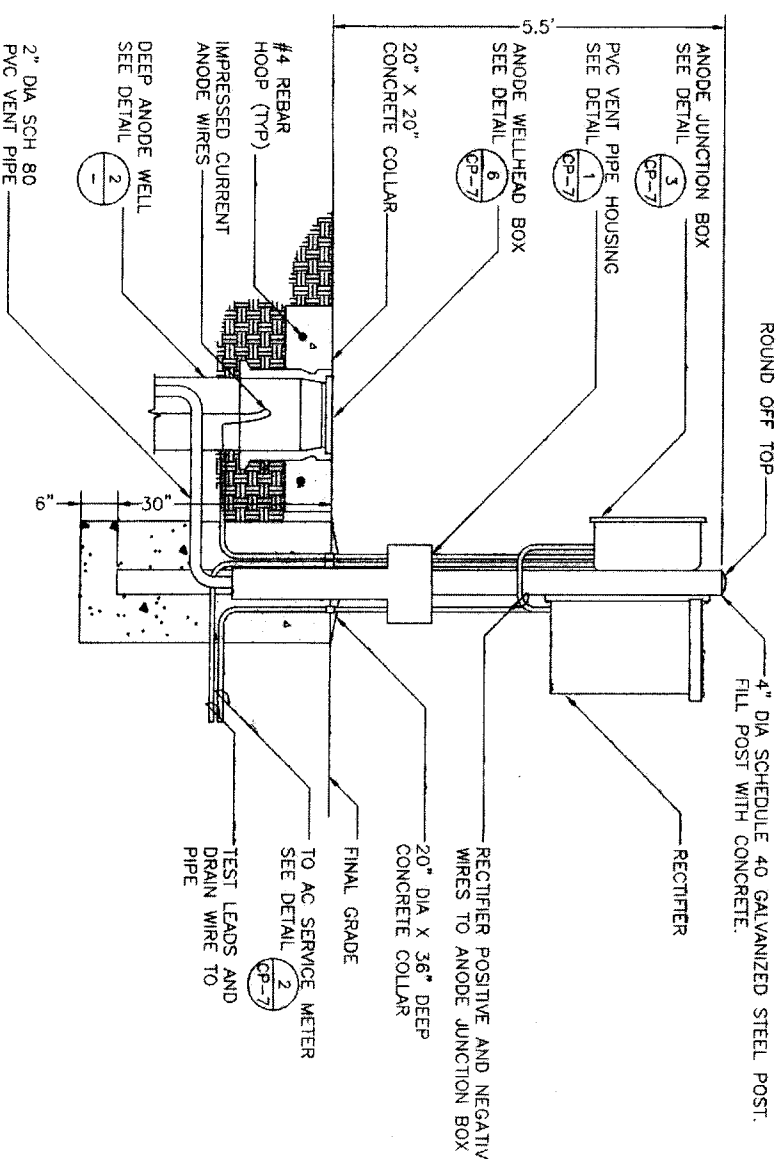
POST MOUNTED RECTIFIER INSTALLATION
 PLAN VIEW
 NTS
 1



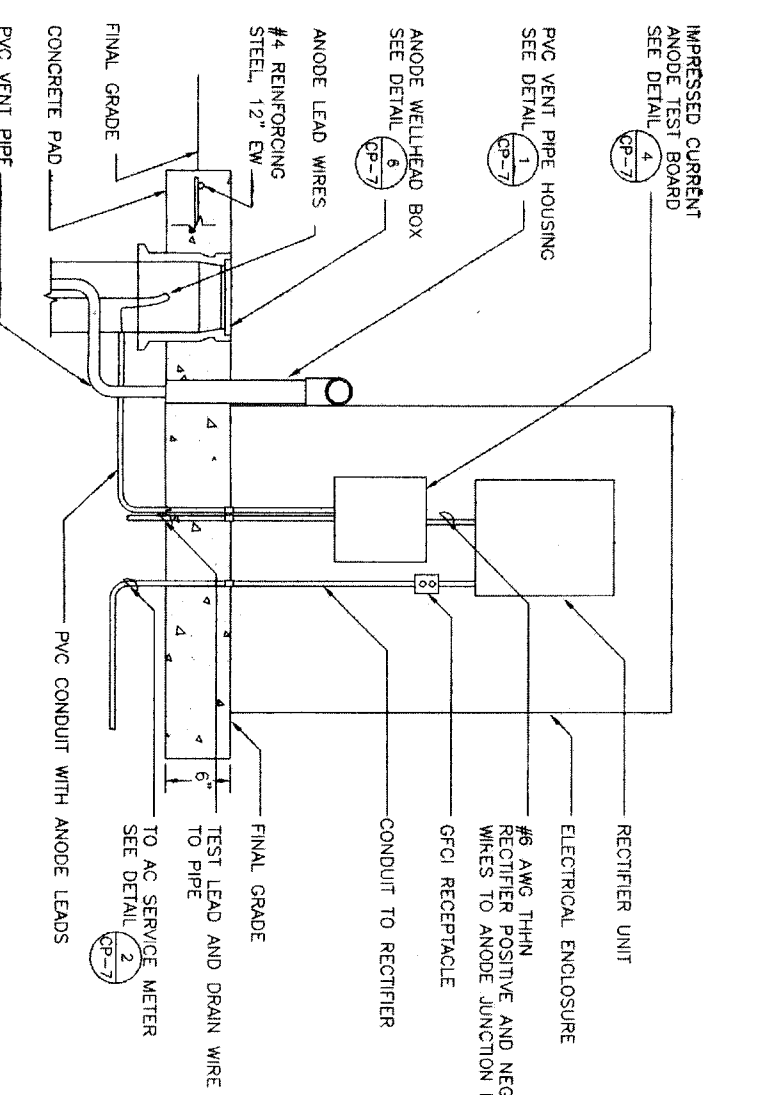
DEEP ANODE WELL
 NTS
 2



RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE
 PLAN VIEW
 NTS
 3



POST MOUNTED RECTIFIER INSTALLATION
 SECTION
 NTS
 A

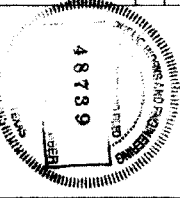


RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE
 ELEVATION VIEW
 NTS
 B

DATE: OCTOBER 7, 2009

REF. NO. CP-6

SHEET No. 65 of 84



V&S A
 Project: 07-0777
 One Riverway, Suite 1700
 The Woodlands, TX 77380
 Tel: (713) 566-9997 Fax: (713) 566-9506

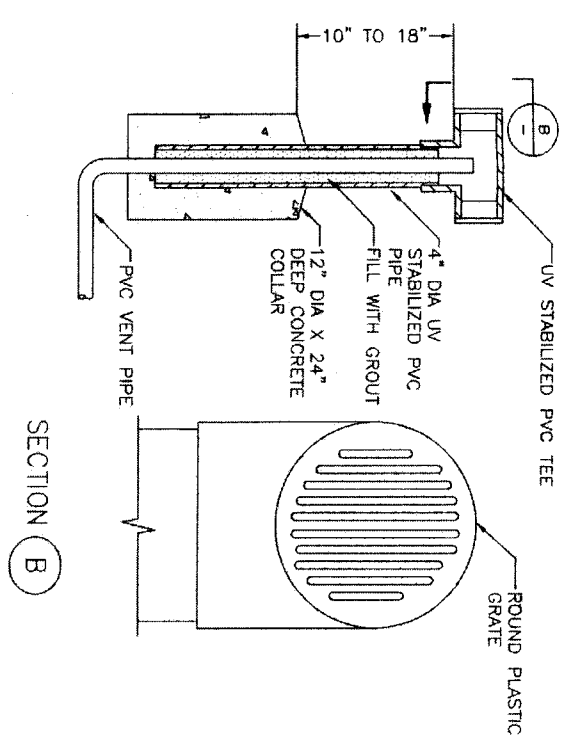
NORTH PORT CAN
 NFBWA SEGMENT 8B
 CATHODIC PROTECTION
 RECTIFIER DETAILS
 1 OF 2

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

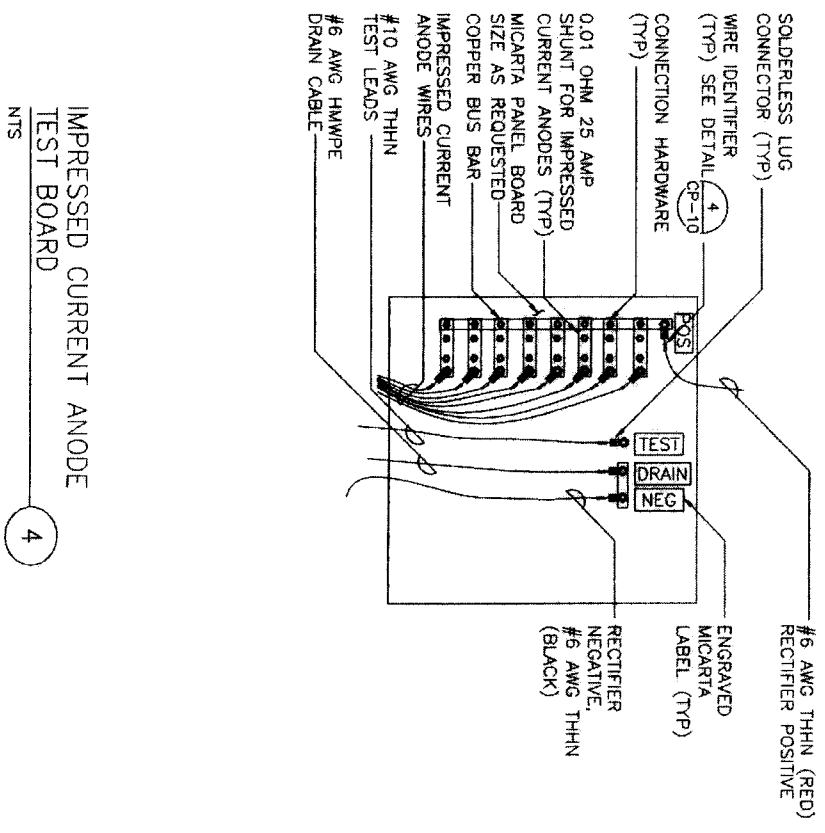
NOTICE: CITY ENGINEERS SHALL REVIEW THIS PLAN AFTER DATE OF SUBMITTAL
 DATE: 11-17-09
 STREET & BLOCK: A 1st St. 8.4

FOR CITY OF HOUSTON USE ONLY

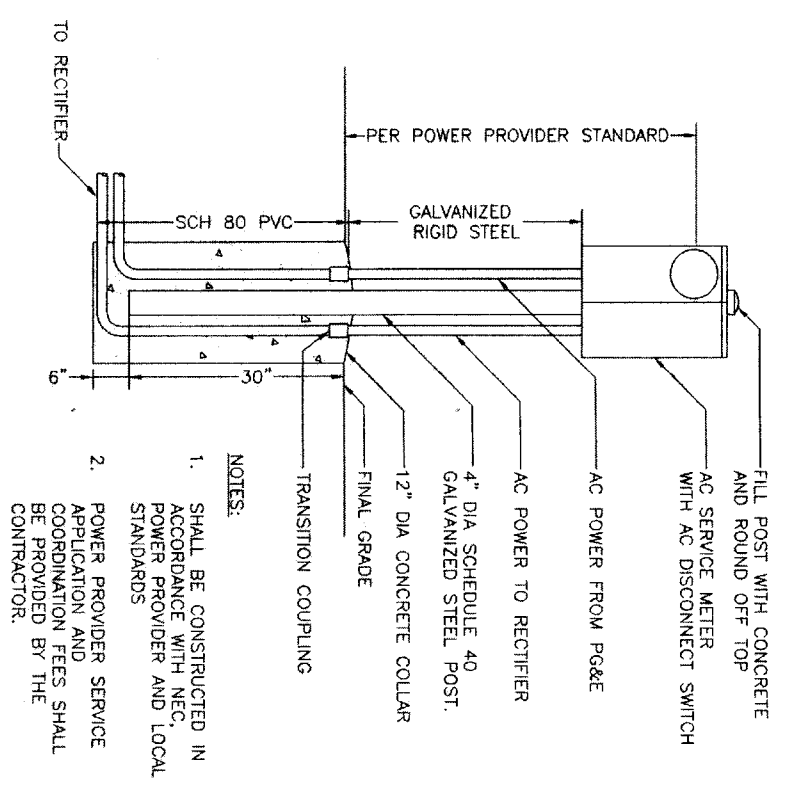
DRAWING SCALE: HORIZ: NTS, VERT: NTS
 FILE NO.:
 DRAWING NO.: 48789



VENT PIPE HOUSING
 NTS 1

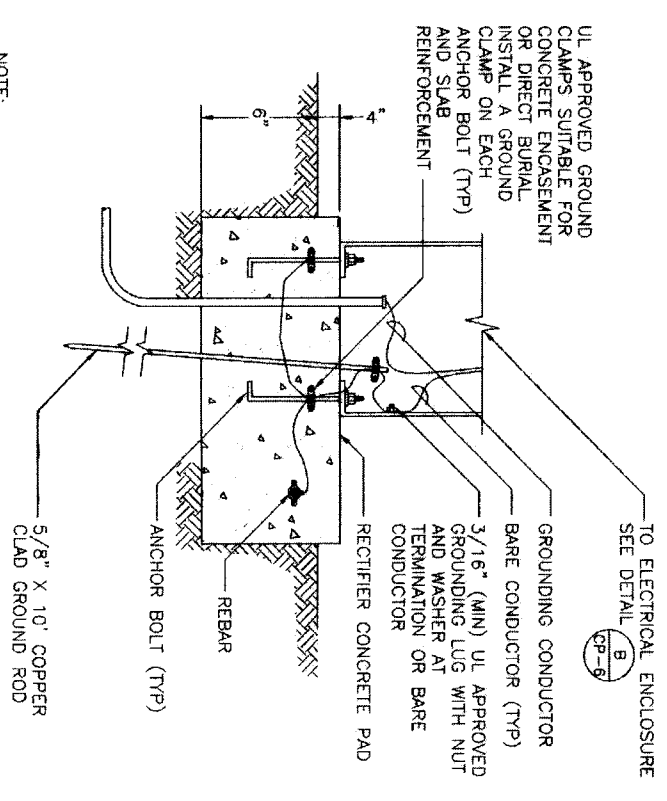


IMPRESSED CURRENT ANODE
 TEST BOARD
 NTS 4



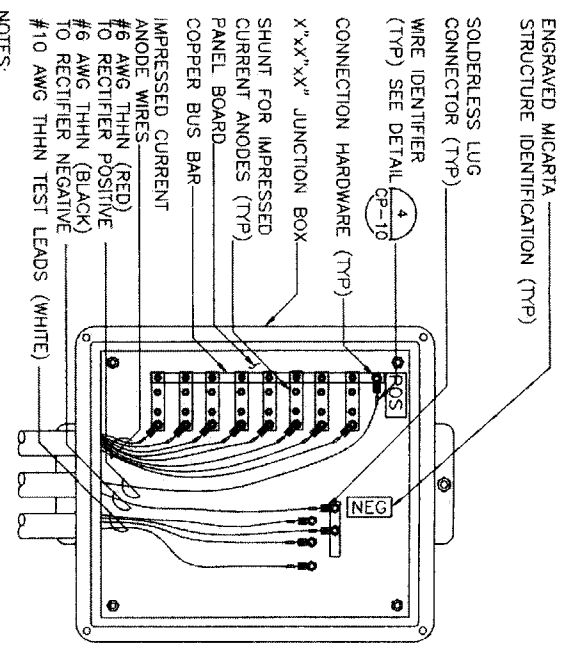
AC SERVICE METER
 NTS 2

- NOTES:
1. SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEC, POWER PROVIDER AND LOCAL STANDARDS
 2. POWER PROVIDER SERVICE APPLICATION AND COORDINATION FEES SHALL BE PROVIDED BY THE CONTRACTOR.



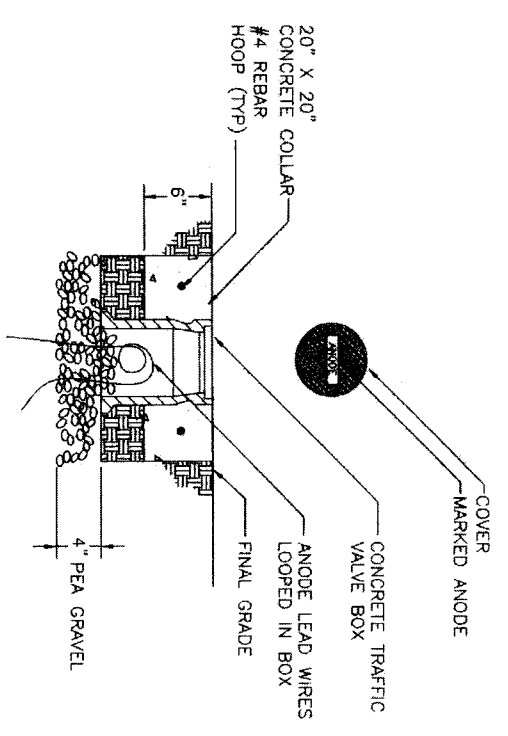
GROUND ROD
 NTS 5

NOTE:
 THE GROUND ROD SHALL BE INSTALLED OBLIQUELY THROUGH THE FOUNDATION IN UNDISTURBED SOIL AT AN ANGLE NOT TO EXCEED 45° FROM VERTICAL.



IMPRESSED CURRENT ANODE
 JUNCTION BOX
 NTS 3

- NOTES:
1. COVER, LATCH, HINGES, AND NEOPRENE GASKET NOT SHOWN FOR CLARITY
 2. SIZE THE JUNCTION BOX TO FIT THE SHUNTS.




ANODE WELLHEAD BOX
 NTS 6

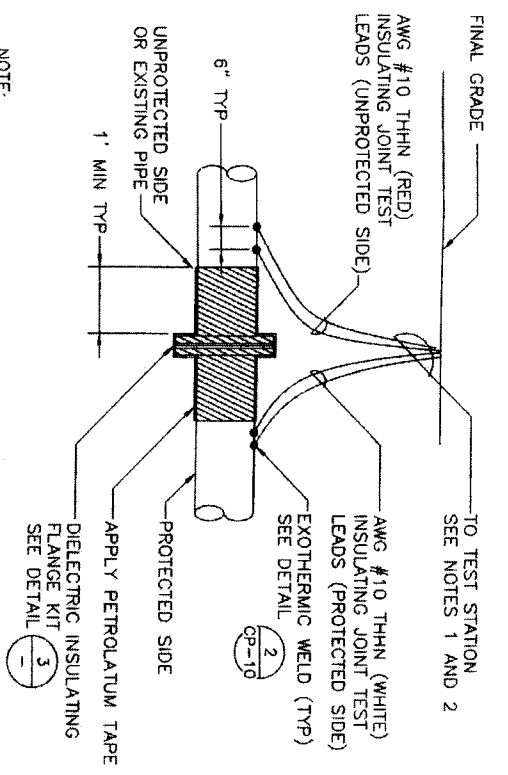
NOTE:
 CONCRETE COLLAR REQUIRED IF TRAFFIC VALVE BOX IS NOT LOCATED IN RECTIFIER'S CONCRETE PAD

DATE: OCTOBER 7, 2009

REF. NO.
 CP-7

SHEET No. 66 OF 84	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
HORIZ : NTS	
VERT : NTS	
48739	

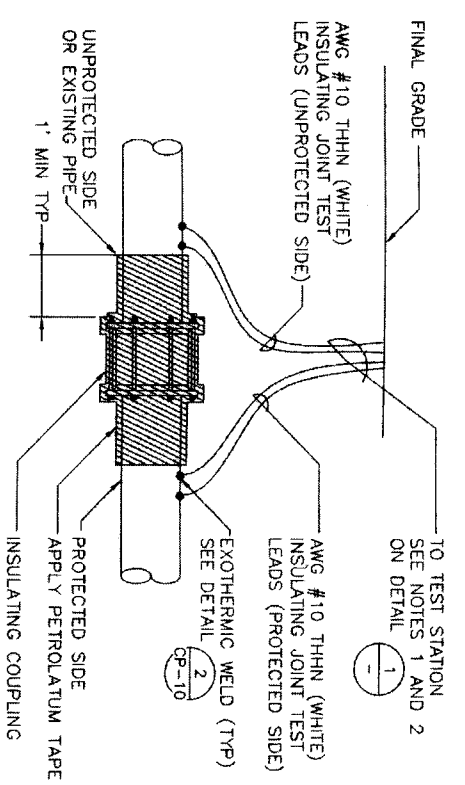

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION
 STORM WATER QUALITY
 NORTH FORT BEND
 PROJECT: 07-0777
 DATE: February, 2009
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 PROJECT ENGINEER: [Signature]
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF TEXAS
 NO. 79525
 F-9154
 NFBWA SEGMENT 8B
 CATHODIC PROTECTION
 RECTIFIER DETAILS
 2 OF 2



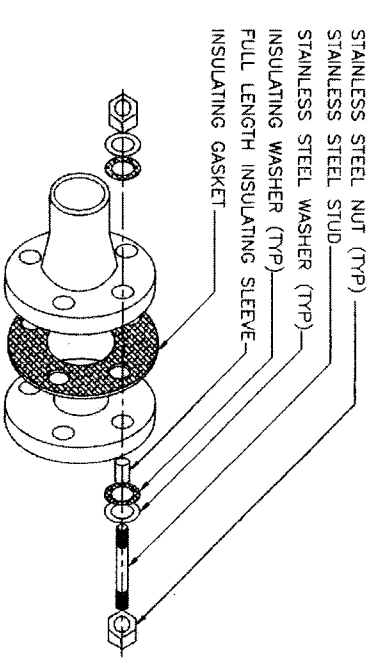
NOTE:
DO NOT APPLY PETROLATUM TAPE IF FLANGE IS LOCATED ABOVE GRADE OR IN A VAULT.

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

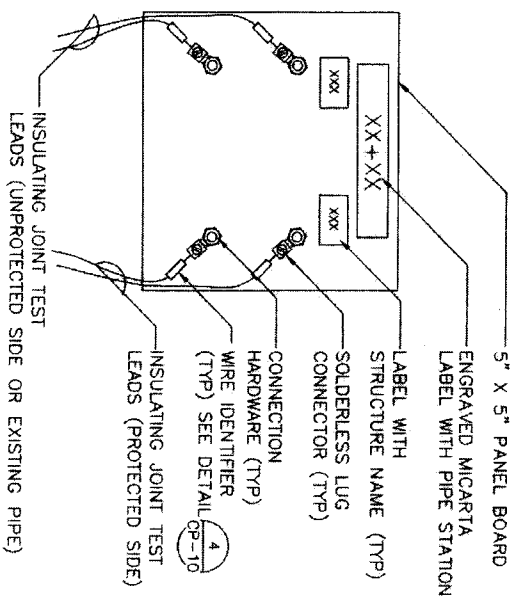
INSULATING JOINT FLANGE CONNECTION TEST STATION (JITS) 1 NTS



INSULATING JOINT FLANGE CONNECTION TEST STATION (JITS-COUPLING) 2 NTS

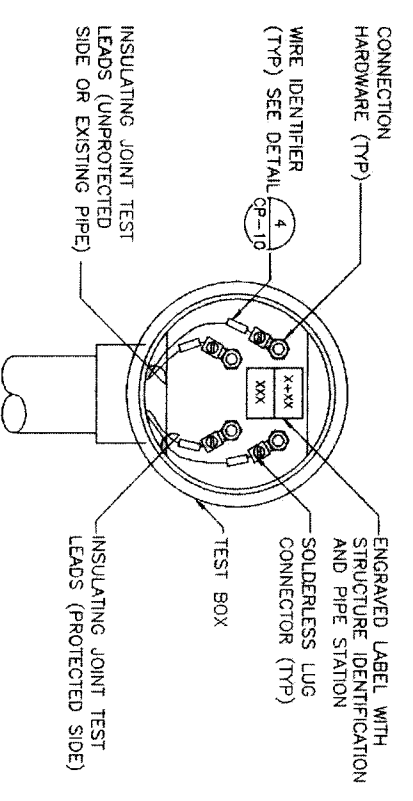


DIELECTRIC INSULATING FLANGE KIT 3 NTS



NOTE:
TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL (CP-5) 5

JITS TEST BOARD 4 NTS



NOTE:
TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL (CP-9) 1

POST MOUNTED JITS TEST BOX 5 NTS

DATE: OCTOBER 7, 2009

REF. NO. CP-8

SHEET No. 67 OF 84



NOTE: CITY ENGINEERS VALID FOR ONE YEAR AFTER DATE OF WORK/ISSUE

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
WATER DIVISION
STORM WATER QUALITY FACILITIES

PROJECT: *Aliso 11, 8, 11*

FILE NO.: _____

DRAWING SCALE: _____

HORIZ: NTS
VERT: NTS

FOR CITY OF HOUSTON USE ONLY

48739

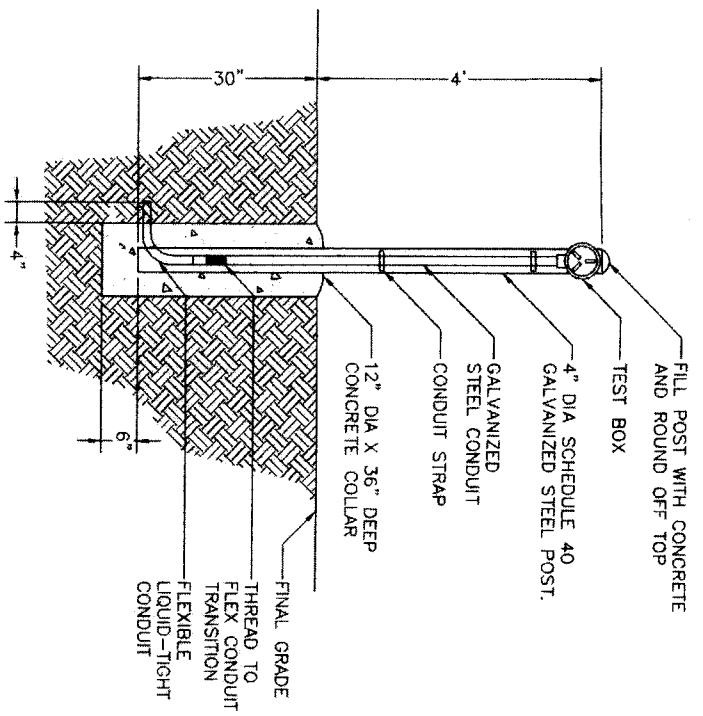
NORTH PORT BEN

CATHODIC PROTECTION INSULATING JOINT DETAILS

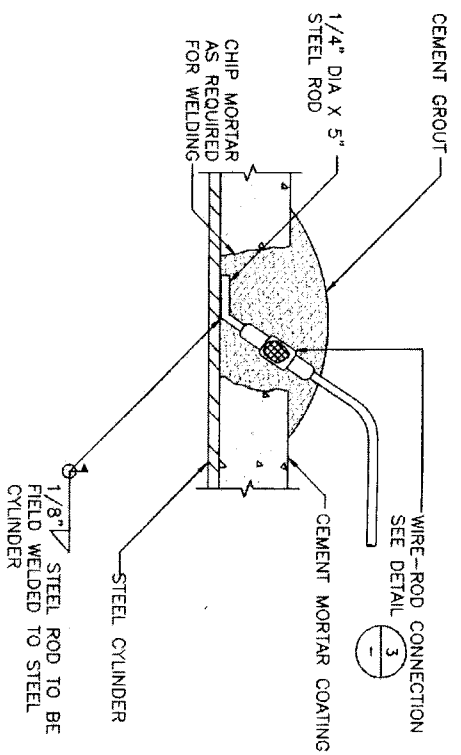
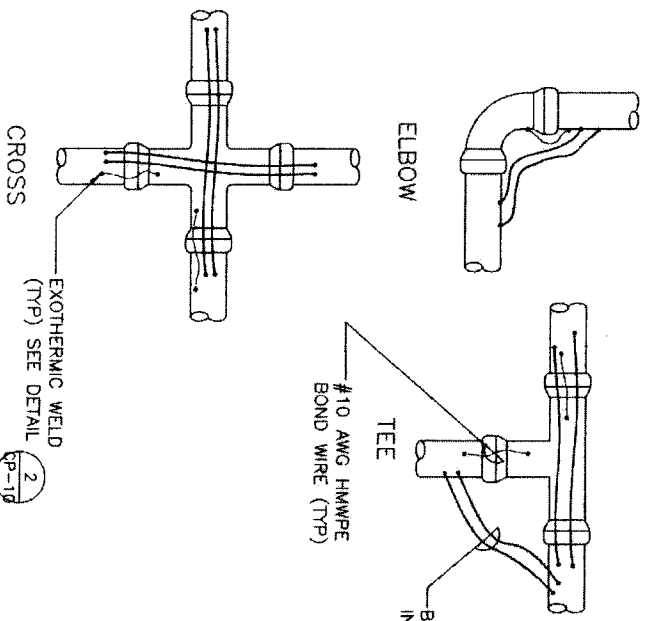
NFBWA SEGMENT 8B

Project: 07-077
One Riverway, Suite 1700
Houston, TX 77002
Tel: (713) 588-5000 Fax: (713) 588-5000

V&S A

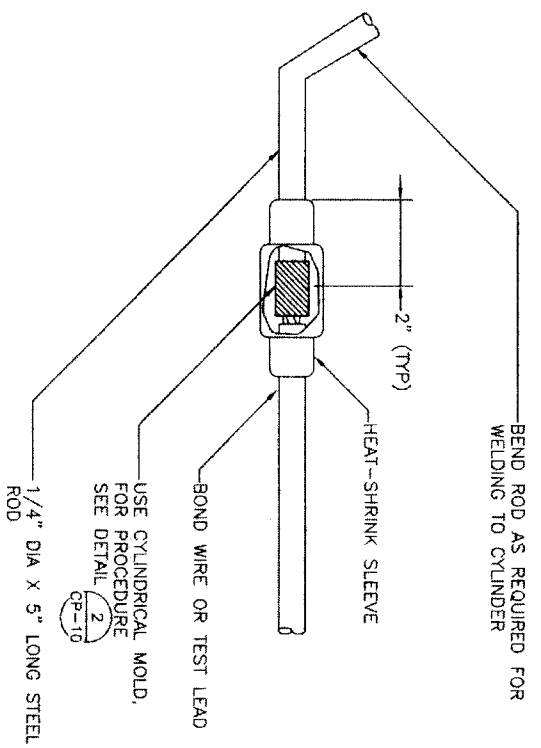
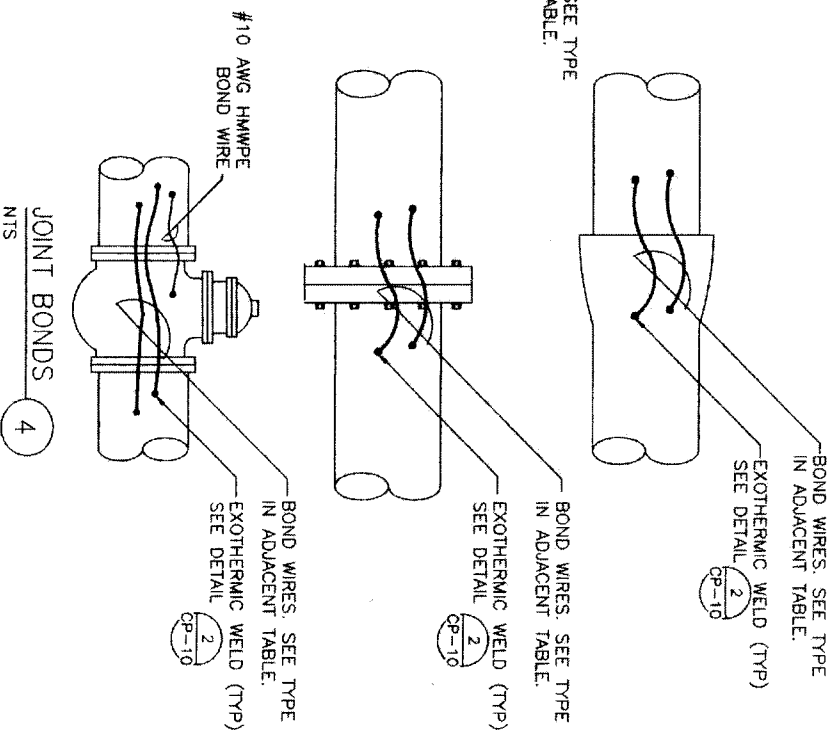


POST MOUNTED TEST STATION (1)
 NTS

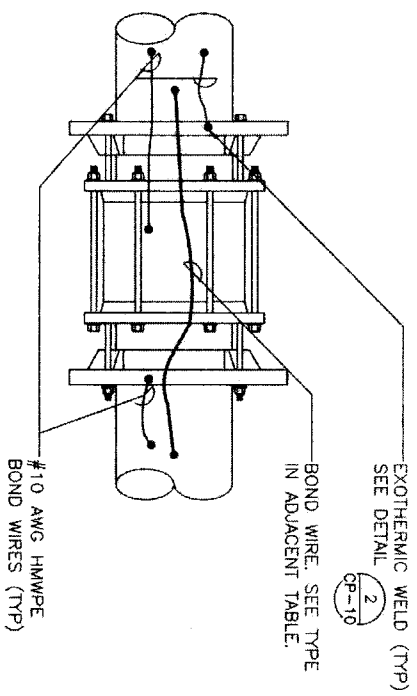


NOTES:
 1. REINFORCING WIRE NOT SHOWN FOR CLARITY.

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



WIRE-ROD CONNECTION (3)
 NTS

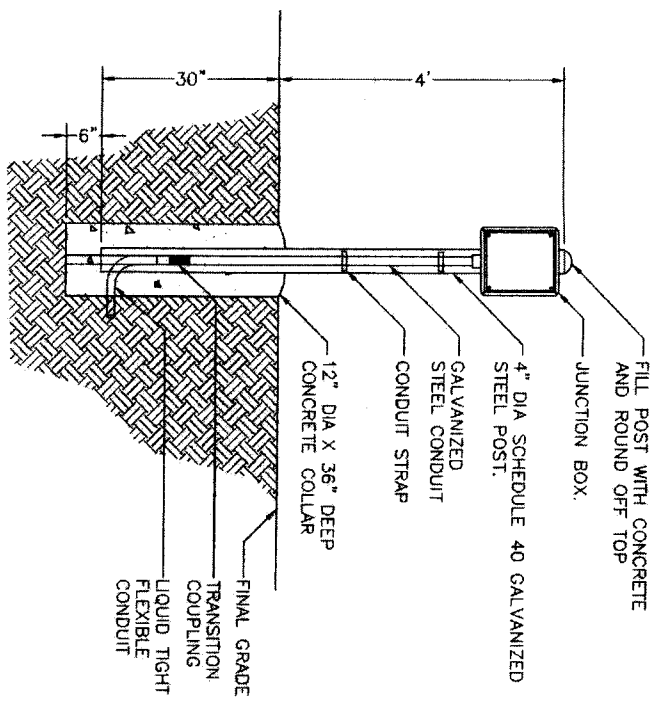


PIPE DIAMETER (INCHES)	CABLE SIZE (AWG)
14 OR LESS	6
16 TO 20	4
24 TO 30	2
36 TO 42	1/0
54	2/0

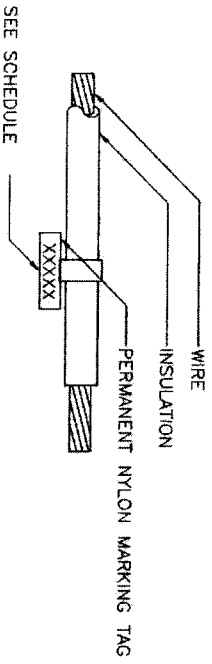
DATE: OCTOBER 7, 2009

REF. NO. CP-9

NORTH FORT BEND
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 PROJECT: 07-0777
 One Riverway, Suite 1700
 Houston, TX 77056
 Tel: (713) 588-8000 Fax: (713) 588-8008
 PROJECT ENGINEER: [Signature]
 DATE: 11/3/2011
 NFBWA SEGMENT 8B
 CATHODIC PROTECTION JOINT BONDING
 SHEET NO. 68 OF 84
 DRAWING SCALE: HORIZ: NTS, VERT: NTS
 FOR CITY OF HOUSTON USE ONLY
 48739



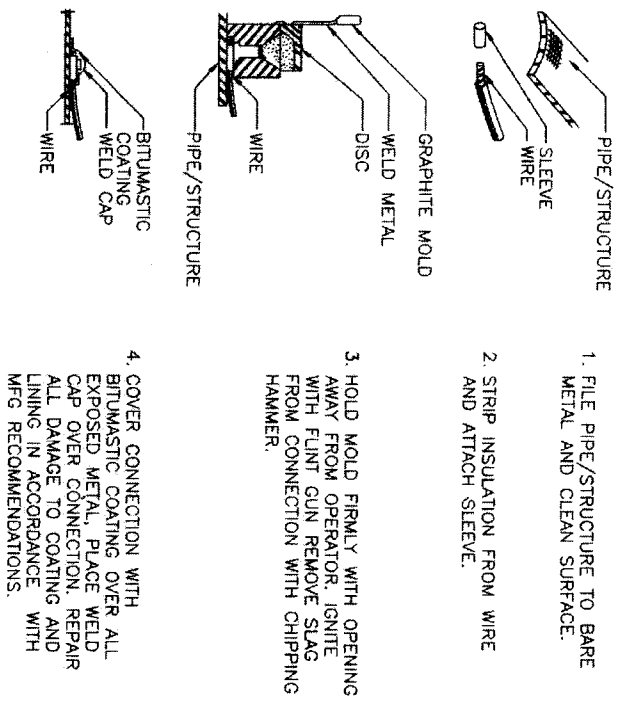
POST MOUNTED TEST STATION WITH JUNCTION BOX
NTS 1



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

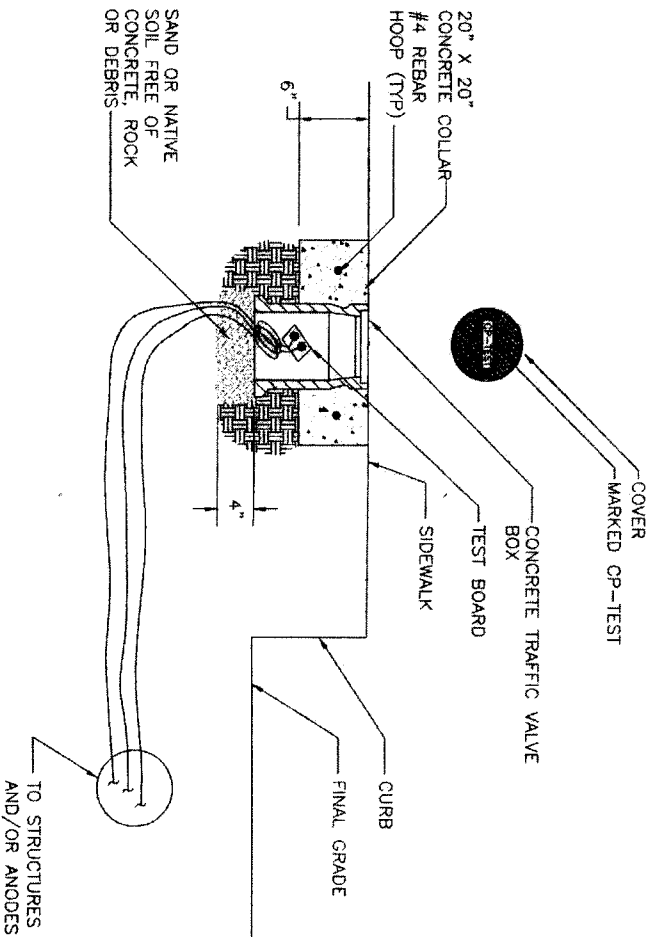
NOTE:
"XX" INDICATES PIPE DIAMETER IN INCHES.

WIRE IDENTIFIER
NTS 4

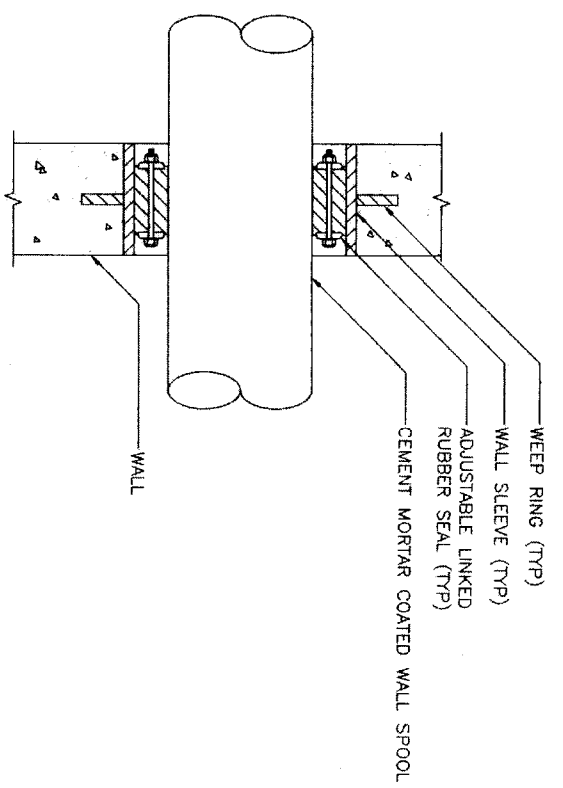


NOTE:
DETAIL SHOWS PROCEDURE FOR HORIZONTAL ORIENTATION. PROCEDURE FOR VERTICAL ORIENTATION IS SIMILAR.

EXOTHERMIC WELD
NTS 2



FLUSH-TO GRADE TEST STATION BOX
NTS 5

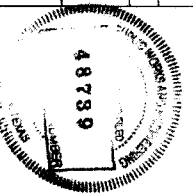


WALL PENETRATION
NTS 3

DATE: OCTOBER 7, 2009

REF. NO.
CP-10

SHEET No. 69 OF 84



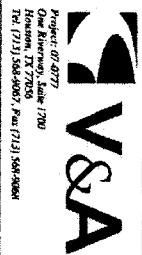
NOTE: CITY SCHEDULES VARY FOR ONE YEAR AFTER DATE OF SCHEDULES
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
WATER DIVISION
11/14/2007
STORM WATER QUALITY
STREET & BRIDGE
FILE NO:
DRAWING SCALE
HORIZ: NTS
VERT: NTS



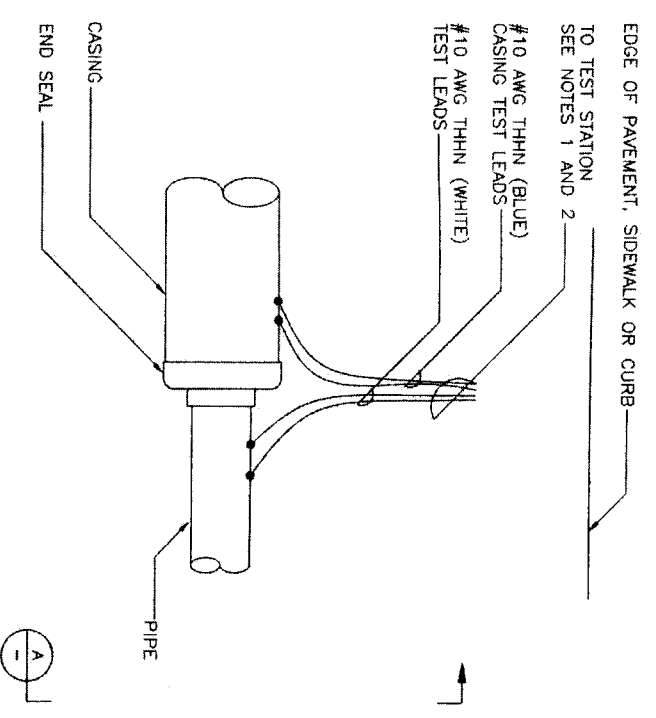
CATHODIC PROTECTION
MISCELLANEOUS DETAILS
1 OF 2

NFBWA SEGMENT 88

11/14/2007
12/14/2007
12/14/2007



Project: 07-077
Contract: 1209
Houston, TX 77060
Tel: (713) 584-0007, Fax: (713) 584-9000

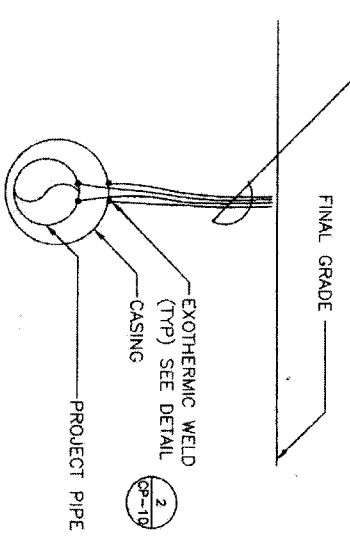


NOTES:

1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL (2)
2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL (3)

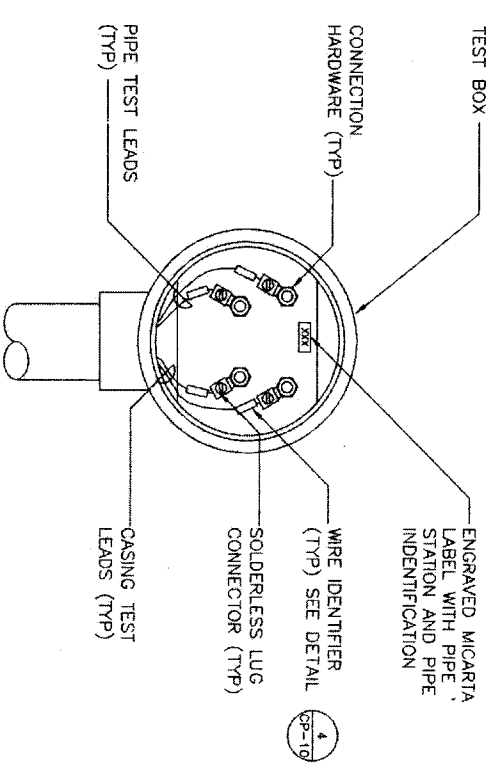
CASING TEST STATION (CTS) PLAN
 NTS (1)

TO TEST STATION SEE NOTES 1 AND 2 ON DETAIL

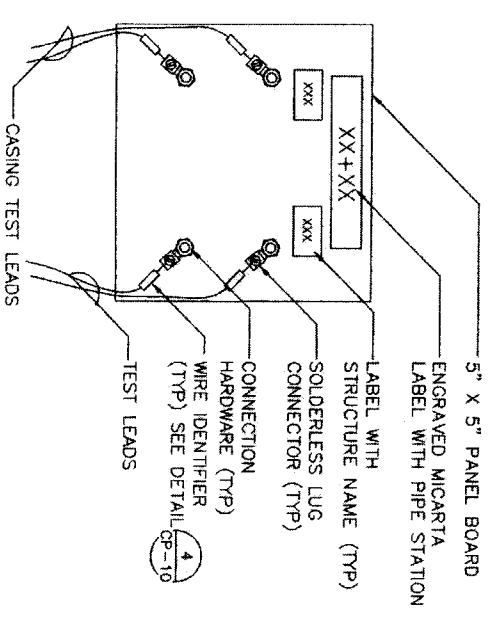


CASING TEST STATION (CTS) SECTION
 NTS (A)

NOTE:
 TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL (1)



POST MOUNTED CTS TEST BOX
 NTS (2)



NOTE:
 TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL (5)

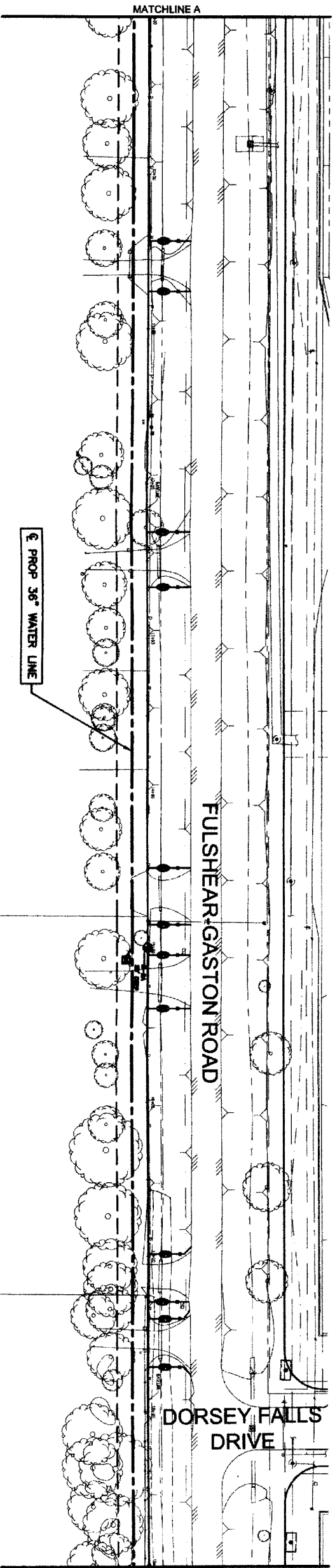
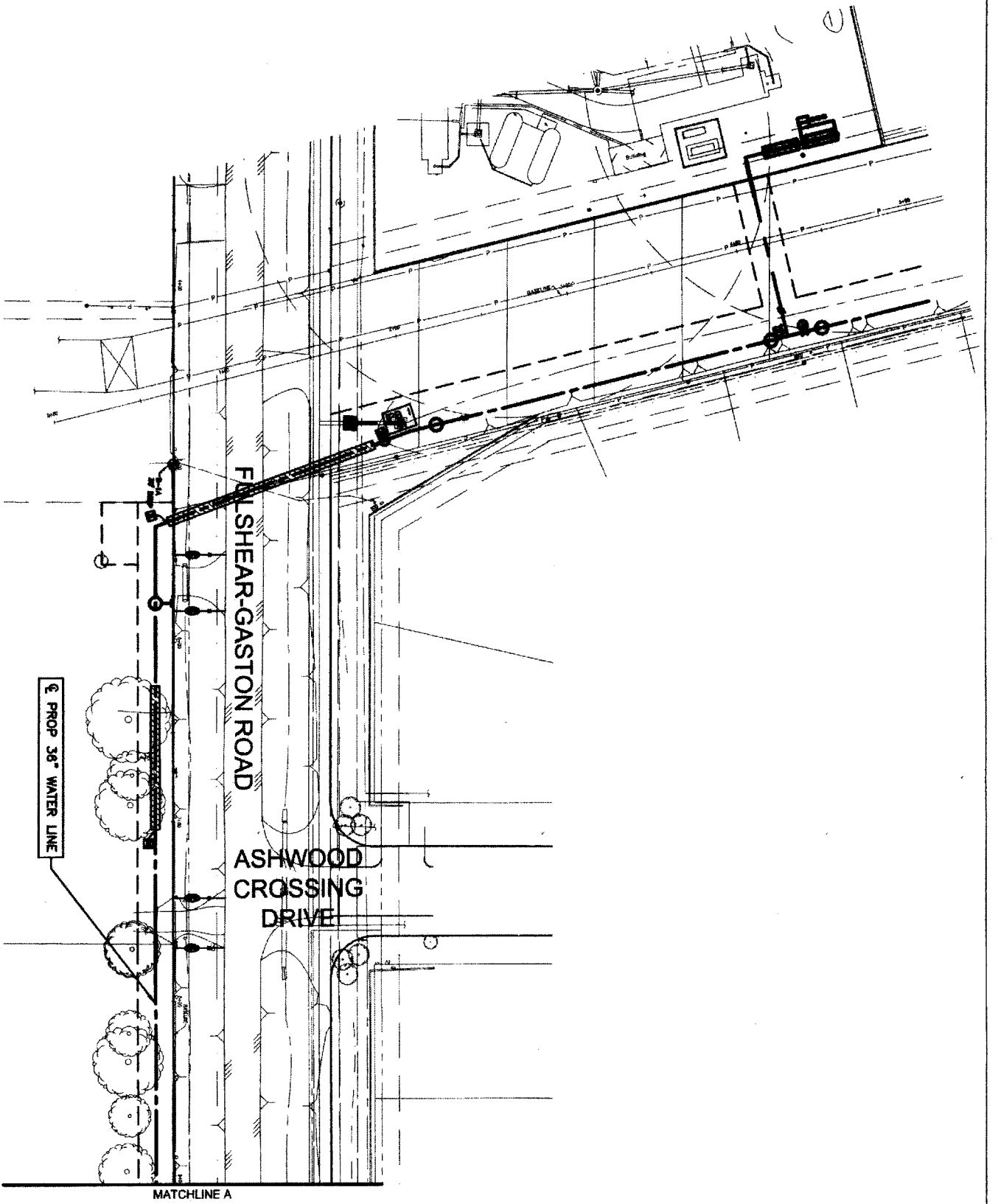
CTS TEST BOARD
 NTS (3)

DATE: OCTOBER 7, 2009

REF. NO. CP-11

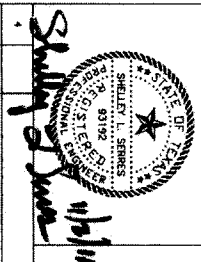
SHEET No. 70 OF 84

<p>Project 07-077 Houston, TX 77005 Tel (713) 588-8067, Fax (713) 588-8068</p>		<p>JOSE LUIS VELAZQUEZ 78325 100 WESTERN BLVD HOUSTON, TEXAS 77005</p>	
<p>Project 07-077 NFBWA SEGMENT 8B</p>		<p>of/Robert VSA Consulting Engineers P-9154 rj/k/Robert</p>	
<p>CATHODIC PROTECTION MISCELLANEOUS DETAILS 2 OF 2</p>			
<p>CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING SAFETY AND TRANSPORTATION</p>			
<p>NOTE: CITY ENGINEERS WALK FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES</p>			
<p>DATE: 11-07-11 BY: [Signature] CHECKED: [Signature] APPROVED: [Signature]</p>			
<p>STREET & BLOCK: [Blank]</p>		<p>STREET WATER QUALITY: [Blank]</p>	
<p>FILE NO.:</p>		<p>FOR CITY OF HOUSTON USE ONLY</p>	
<p>DRAWING SCALE:</p>			
<p>HORIZ : NTS</p>			
<p>VERT : NTS</p>			
<p>48739</p>			



- LEGEND
- INLET PROTECTION BARRIER (STAGE 1)
 - INLET PROTECTION BARRIER (STAGE II)
 - REINFORCED FILTER FABRIC BARRIER

NO.	DATE	REVISION	APPROVAL
1			
2			
3			



IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

STORM WATER POLLUTION PREVENTION PLAN
 1 OF 3

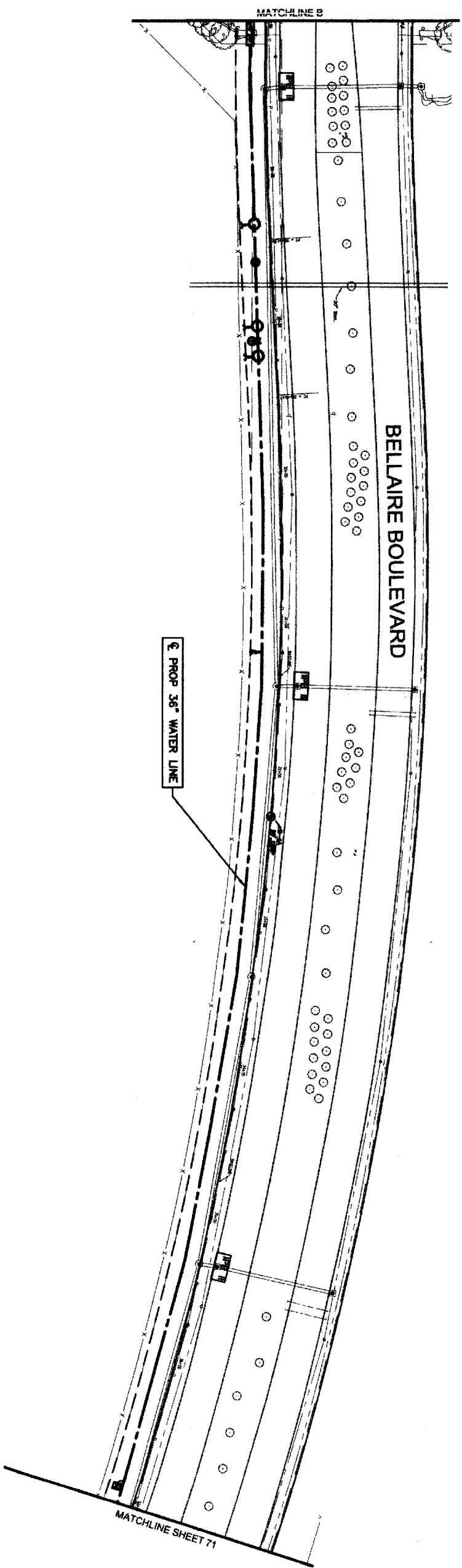
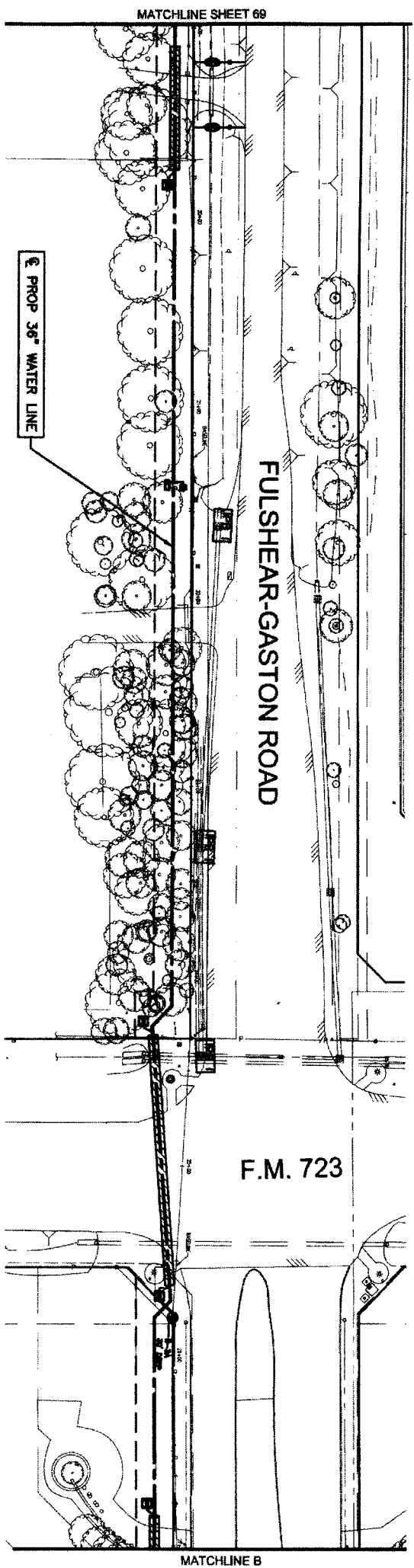


NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 PROJECT: STORM WATER QUALITY IMPROVEMENT
 DATE: 11.8.11
 FILE NO.:
 DRAWING SCALE:
 HORIZ : 1" = 40'
 VERT : NTS
 SHEET NO. 71 OF 84

FOR CITY OF HOUSTON USE ONLY

48739



- LEGEND**
- [PB I] INLET PROTECTION BARRIER (STAGE I)
 - [PB II] INLET PROTECTION BARRIER (STAGE II)
 - [RFB] REINFORCED FILTER FABRIC BARRIER

NO.	DATE	REVISION	APPROVAL
1			
2			
3			
4			

Study of Plans
 11/2/14

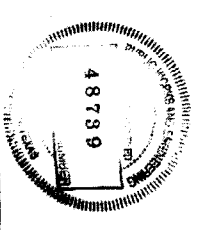
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

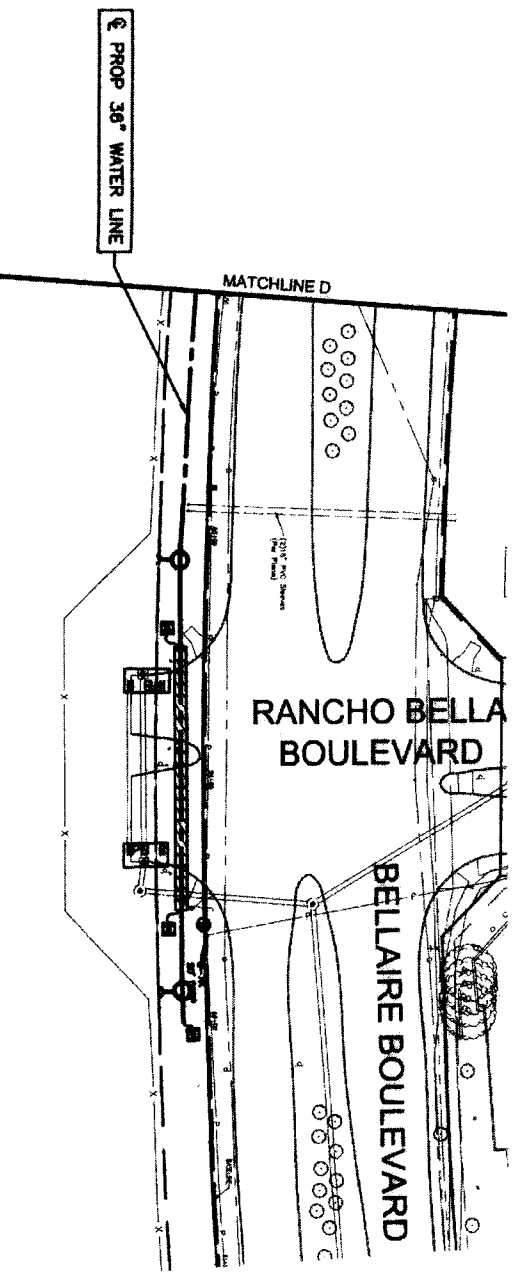
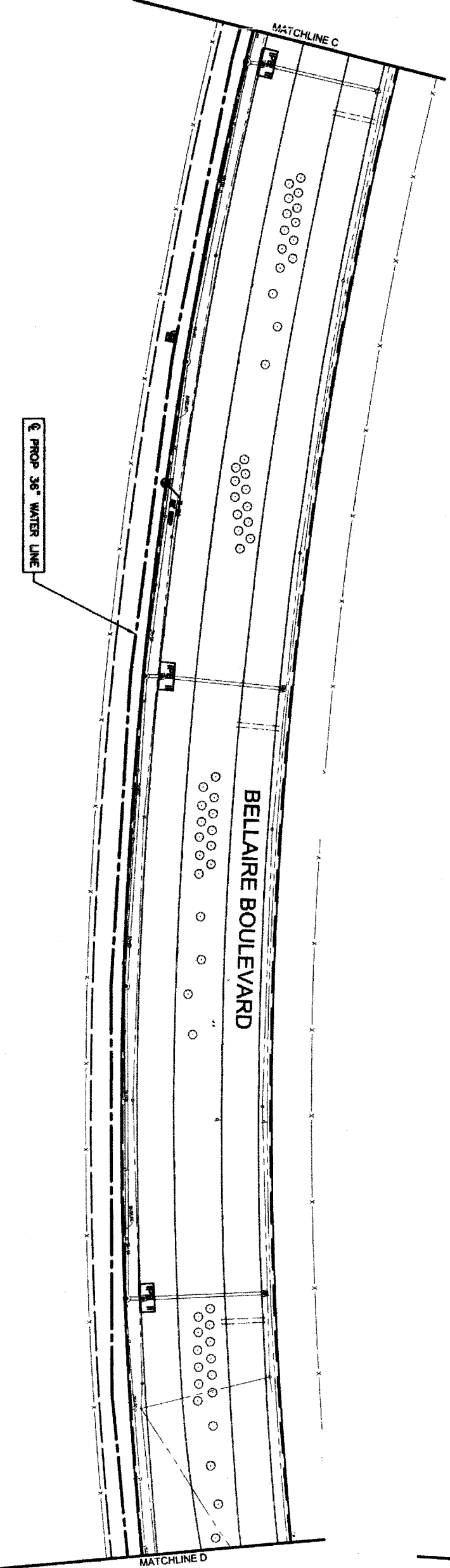
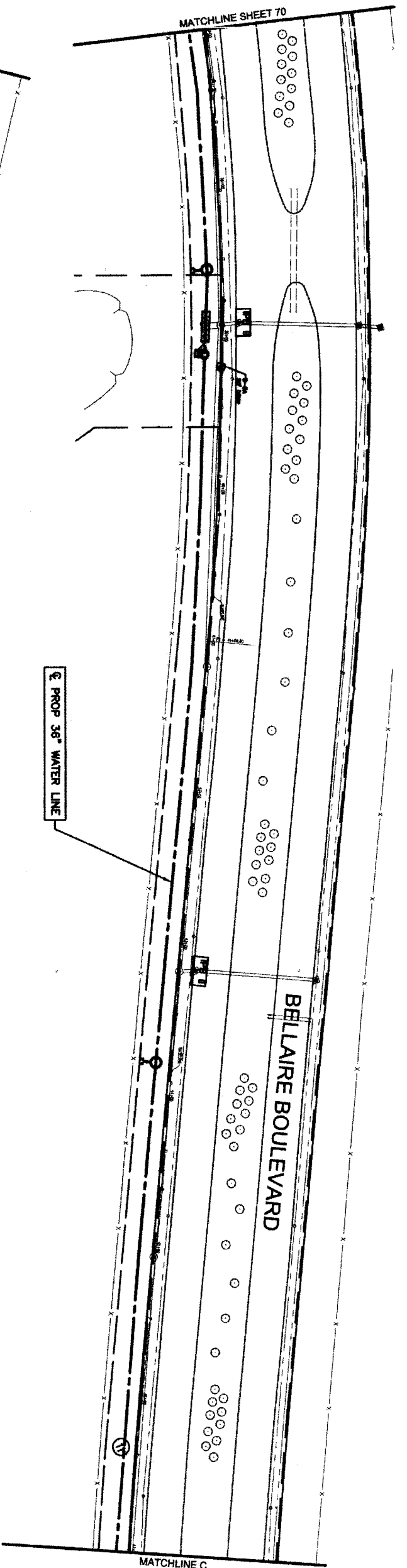
STORM WATER POLLUTION PREVENTION PLAN
 2 OF 3



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WRITER: *[Signature]* 11/2/14
 CHECKED: *[Signature]*
 SUPERVISOR: *[Signature]*
 ENGINEER: *[Signature]*
 TRAFFIC: *[Signature]*
 STORM WATER QUALITY: *[Signature]*
 INCHES: 1/4" = 1'-0"

FILE NO.:
 DRAWING SCALE:
 HORZ : 1" = 40'
 VERT : NTS
 SHEET 72 OF 84





- LEGEND**
- INLET PROTECTION BARRIER (STAGE II)
 - REINFORCED FILTER FABRIC BARRIER

NO.	DATE	REVISION	APPROV.
1			
2			
3			

Shelly Jones
 10/16/11



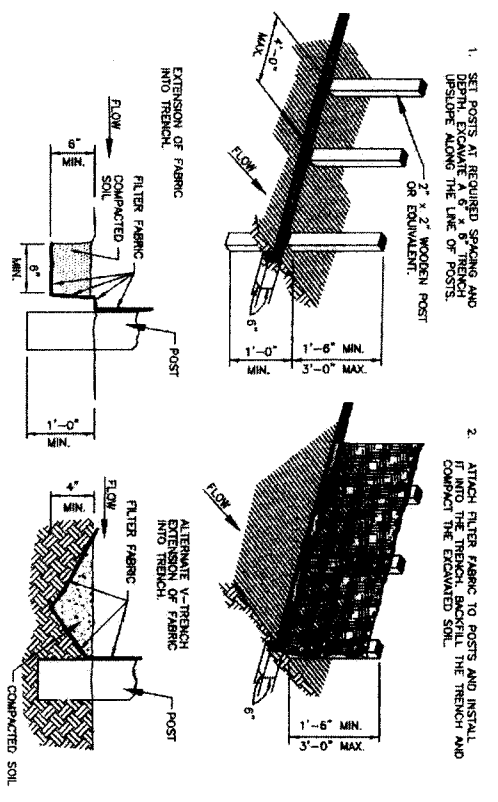
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 88

STORM WATER POLLUTION PREVENTION PLAN
 3 OF 3



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER DIVISION
 15071 STREET & BRIDGE
 HOUSTON, TEXAS 77057
 SIGNATURE: *Shelly Jones*
 TITLE: *Professional Engineer*
 STORM WATER QUALITY FACILITIES

FILE NO.: FOR CITY OF HOUSTON USE ONLY
 DRAWING SCALE
 HORIZ : 1" = 40'
 VERT : NTS
 SHEET NO. 73 OF 84
 48739

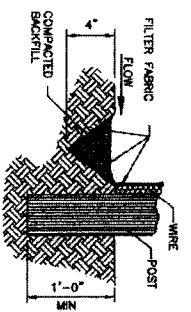
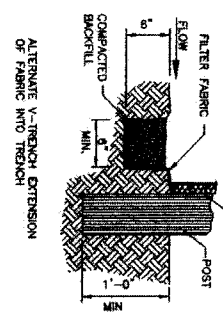
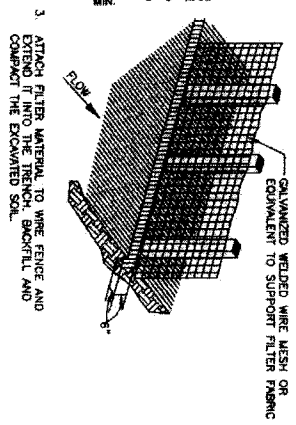
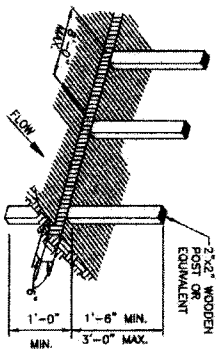


- GENERAL NOTES:
1. SET POSTS AT 4-FEET MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POSTS MAY BE INCREASED TO 8 FEET MAXIMUM.
 2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 8 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
 3. REMOVE SEDIMENT DEPOSITS WHEN SLIT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

FILTER FABRIC FENCE

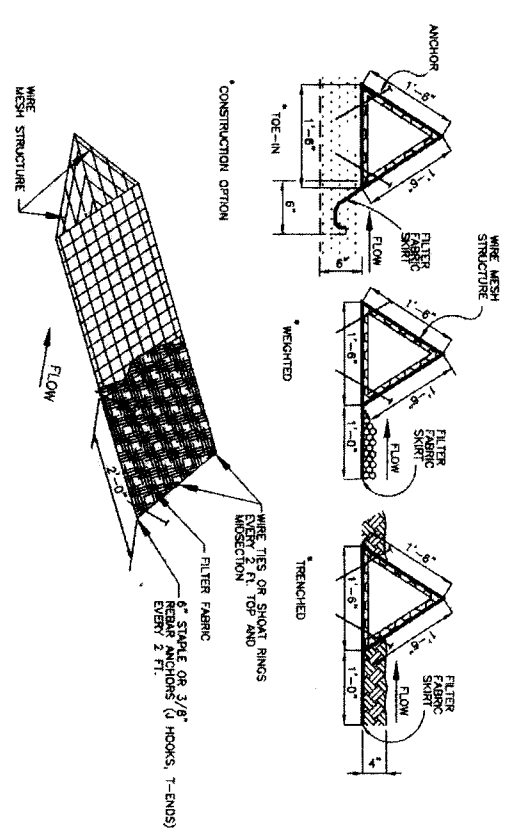


1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.
2. SECURE MESH FENCING TO POSTS



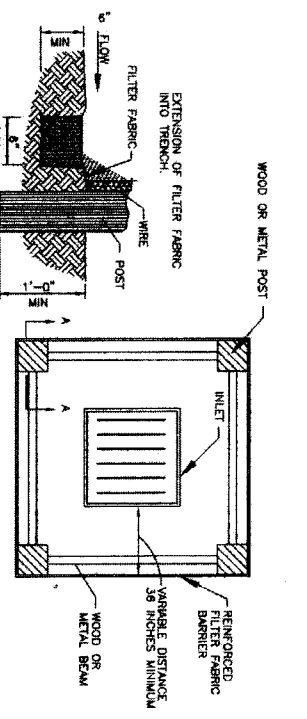
- GENERAL NOTES:
1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
 2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
 3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 8 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
 4. REMOVE SEDIMENT DEPOSITS WHEN SLIT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

REINFORCED FILTER FABRIC BARRIER

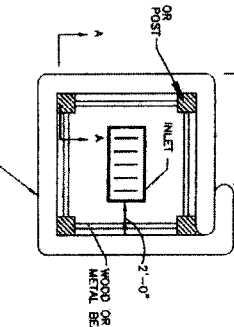
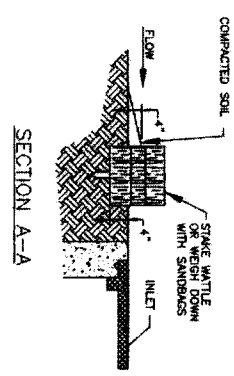


- GENERAL NOTES:
1. PLACE BARRIER IN A ROW WITH ENDS TIGHTLY ADJUSTING THE ADJACENT BARRIER.
 2. USING ONE CONTINUOUS SECTION OF FILTER FABRIC, WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO ROW SHIRT ON THE UPSLOPE SIDE.
 3. WEIGHT SHIRT WITH A CONTINUOUS LAYER OF 3-INCH TO 5-INCH OPEN GRADED ROCK, OR THE 1/2" SHIRT WITH SIX INCHES WITH MECHANICALLY COMPACTED MATERIAL.
 4. SECURELY ANCHOR BARRIER BAND SHIRT IN PLACE USING 6-INCH WIRE STAPLES ON (1-ENDS, J-HOOKS).
 5. FILTER FABRIC SHALL BE LAPPED OVER ENDS 6 INCHES TO COVER SEGMENT JOINTS. FASTEN JOINTS WITH GALVANIZED SHIRT FINES OR EQUIVALENT.
 6. THE BARRIER STRUCTURE SHALL BE WELDED WIRE MESH, 18 INCHES ON EACH SIDE.

TRIANGULAR FILTER FABRIC FENCE

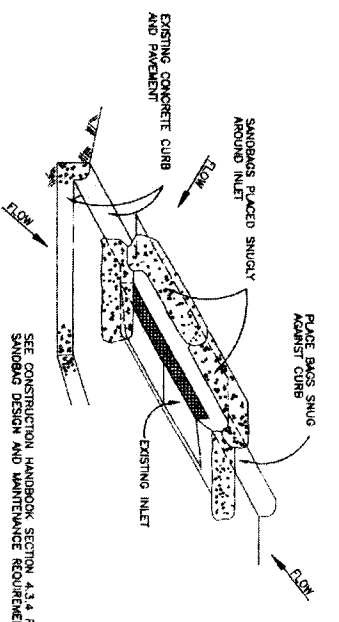


SECTION A-A



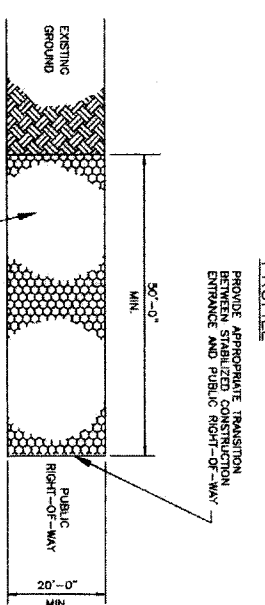
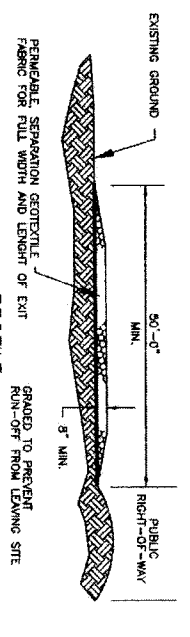
- NOTE: TYPICALLY STAKE BAILS ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

INLET PROTECTION BARRIERS FOR STAGE I INLETS



- GENERAL NOTES:
1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
 2. PROVIDE WORKER OR UNWORKER GEOTEXTILE FILTER FABRIC FOR BAGS.
 3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT ORGANICS AND FIBRIOUS MATTER.
 4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIERS FOR STAGE II INLETS



PLAN VIEW

- GENERAL NOTES:
1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE. MIN WIDTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 20 FEET MIN WHICHEVER IS MORE.
 2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
 3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME APPROPRIATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT WHEN SHOWN ON THE CONSTRUCTION DRAWINGS. WHEN OF LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA, PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
 5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
 6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRAINING SURFACE.
 7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE:
 - CENTRAL STABILIZED SOIL, COMPACTED SOIL, LIMESTONE AGGREGATE, OR OTHER STABILIZED MATERIALS.
 - WOOD MATS, OAK OR OTHER HARDWOOD THICKNESS PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
 - STEEL MATS, PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

STABILIZED CONSTRUCTION ACCESS



NO.	DATE	REVISION	APPROVAL
1			
2			
3			

Lockwood, Andrews & Newnam, Inc.
 A LEAD & BAILY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 88

STORM WATER POLLUTION PREVENTION PLAN DETAILS



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES.

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STREET & BROOK

STORM WATER QUALITY

FILE NO. FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

HORIZ: NTS

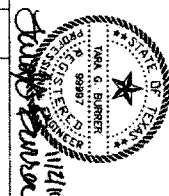
VERT: NTS

SHEET No. 74 of 84

GENERAL NOTES FOR TRAFFIC CONTROL

1. THE CONSTRUCTION TRAFFIC CONTROL SIGNS, DEVICES AND BARRICADES ON THESE DRAWINGS CONSTITUTE MINIMUM REQUIREMENTS AND ARE NOT INTENDED TO COVER SPECIAL CIRCUMSTANCES OR OTHER CONDITIONS THAT MAY ARISE DUE TO UNFORESEEN FIELD CONDITIONS. THE CONTRACTOR SHALL PLACE AND MAINTAIN SUFFICIENT ADDITIONAL SIGNS, BARRICADES, AND WARNING DEVICES TO WARN THE PUBLIC AND PROVIDE FOR THE SAFE MOVEMENT OF TRAFFIC AND THE CONSTRUCTION ZONE SAFETY.
 2. CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, MOST RECENT EDITION WITH REVISIONS, DURING CONSTRUCTION.
 3. BARRICADES, SIGNS, CHANNELIZING DEVICES, AND TRAFFIC HANDLING DEVICES AS SHOWN SHALL BE ADJUSTED TO FIT FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
 4. NO LANES SHALL BE BLOCKED DURING THE HOURS OF 6:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM, MONDAY THRU FRIDAY, UNLESS NOTED OTHERWISE.
 5. CONTRACTOR SHALL PROVIDE ACCESS TO ALL PROPERTY OWNERS ALONG THIS PROJECT AT ALL TIMES DURING CONSTRUCTION, UNLESS OTHERWISE AUTHORIZED SPECIFICALLY BY ENGINEER.
 6. ALL EXISTING STOP SIGNS, STREET NAME SIGNS, AND WARNING SIGNS SHALL BE MAINTAINED IN PLACE DURING THE ENTIRE PERIOD OF CONSTRUCTION BY THE CONTRACTOR.
 7. NO WORK WILL BE PERFORMED IN OPEN TRAVEL LANES INCLUDING LOADING AND UNLOADING OF TRUCKS.
 8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES, AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND CONSTRUCTION ZONE SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS, BARRICADES, ETC. SHALL BE CONSIDERED A PART OF THE LUMP SUM PAY ITEM.
 9. WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PROVIDE FLAGGERS TO DIRECT TRAFFIC. FLAGGERS SHALL BE OFF-DUTY UNIFORMED POLICE OFFICERS AND SHALL BE PAID FOR BY THE CONTRACTOR. THIS DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY OR TAKING OTHER STEPS AND PROVIDING OTHER PERSONNEL, WHICH THE CONTRACTOR MAY DEEM NECESSARY FOR PROTECTION OF WORK AND THE PUBLIC.
 10. CONTRACTOR SHALL ENSURE THAT ALL BARRICADES, SIGNS, CHANNELIZING DEVICES, WARNING LIGHTS, AND TRAFFIC HANDLING DEVICES ARE MAINTAINED IN A CLEAN FUNCTIONAL CONDITION AT ALL TIMES.
 11. ALL SIGNS, WARNING DEVICES, AND BARRICADES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING ACTS OF VANDALISM OR ACCIDENT.
 12. ALL CONSTRUCTION SIGNS MOUNTED ON BARRICADES SHALL BE EQUIPPED WITH TYPE "A" WARNING LIGHTS (TWO PER STRUCTURE).
 13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE TEMPORARY AND EXISTING PAVEMENT MARKINGS IN A GOOD VISIBLE CONDITION THROUGHOUT THE LENGTH OF THE PROJECT.
 14. THE CONTRACTOR SHALL SEQUENCE THE CONSTRUCTION IN SUCH A MANNER THAT NO ADJACENT CROSS STREETS AND MEDIAN OPENINGS ARE CLOSED AT THE SAME TIME.
 15. THE CONTRACTOR SHALL MAINTAIN BARRICADES AND SAFETY FENCES AT EACH SITE WHERE PEDESTRIAN TRAFFIC IS EVIDENT.
 16. TRAFFIC SIGNALS SHALL REMAIN IN OPERATION DURING ENTIRE PERIOD OF CONSTRUCTION.
 17. THE CONTRACTOR SHALL REMOVE ALL EXISTING SIGNS AND STRIPING, WHICH ARE IN CONFLICT WITH THE CONSTRUCTION SIGNS AND STRIPING. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED IN AREAS WHERE TRAFFIC IS DIRECTED TO CROSS THEM. THE SIGNS SHALL BE PROPERLY STORED IN A SAFE PLACE UNTIL THE CONSTRUCTION HAS BEEN COMPLETED.
 18. ALL CONSTRUCTION SIGNS, WARNING DEVICES, AND BARRICADES SHALL REMAIN IN PLACE UNTIL THEIR REMOVAL IS DIRECTED BY THESE PLANS OR BY THE ENGINEER.
 19. AT THE CONCLUSION OF CONSTRUCTION, THE CONTRACTOR SHALL RESTORE ALL PAVEMENT MARKINGS TO THEIR ORIGINAL CONDITION WITH TRAFFIC PAINT STRIPES, RAISED PAVEMENT MARKER BUTTONS, AND RE-INSTALL THE SIGNS AT THEIR EXISTING LOCATIONS.
 20. CONSTRUCTION IN ANY AREA THAT IS ADVERSELY AFFECTING TRAFFIC FLOW AND SAFETY MUST BE PURSUED DILIGENTLY BY THE CONTRACTOR. IF, IN THE OPINION OF THE ENGINEER, THE CONTRACTOR IS NOT DIRECTLY PURSUING THE CONSTRUCTION IN THOSE AREAS, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO CHANGE HIS/HER WORK SCHEDULE TO EXPEDITE COMPLETION IN THOSE AREAS OF CONCERN.
 21. CONTRACTOR TO DEPLOY ONLY THE QUANTITY OF TRAFFIC CONTROL DEVICES NECESSARY FOR THE APPLICABLE PHASE OF CONSTRUCTION.
 22. DO NOT INSTALL MORE THAN 2,000 L.F. OF WATER LINE, WITHOUT PREVIOUS 2,000 L.F. BEING RESTORED.
 23. MULTIPLE CREWS WILL NOT BE ALLOWED TO WORK IN CONSECUTIVE TRAFFIC CONTROL PHASES DURING CONSTRUCTION UNLESS APPROVED BY THE ENGINEER.
 24. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF TRAFFIC CONTROL PLAN DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN CONTRACT DRAWINGS, HE/SHE SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT ALTERNATE PLANS* TO FORT BEND COUNTY FOR CONSIDERATION TEN (10) BUSINESS DAYS PRIOR TO IMPLEMENTATION.
- * THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. PLANS WILL BECOME A PART OF THE CONTRACT DRAWINGS.
25. APPROVED COPIES OF "TRAFFIC CONTROL PLANS" AND LANE/SIDEWALK CLOSURE PERMITS SHALL BE AVAILABLE FOR INSPECTION AT JOB SITE AT ALL TIMES.
 26. CONTRACTOR MUST COORDINATE WITH AND SECURE LANE CLOSURE PERMITS FROM FORT BEND COUNTY PRIOR TO BEGINNING WORK IN THE AREA.

NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			



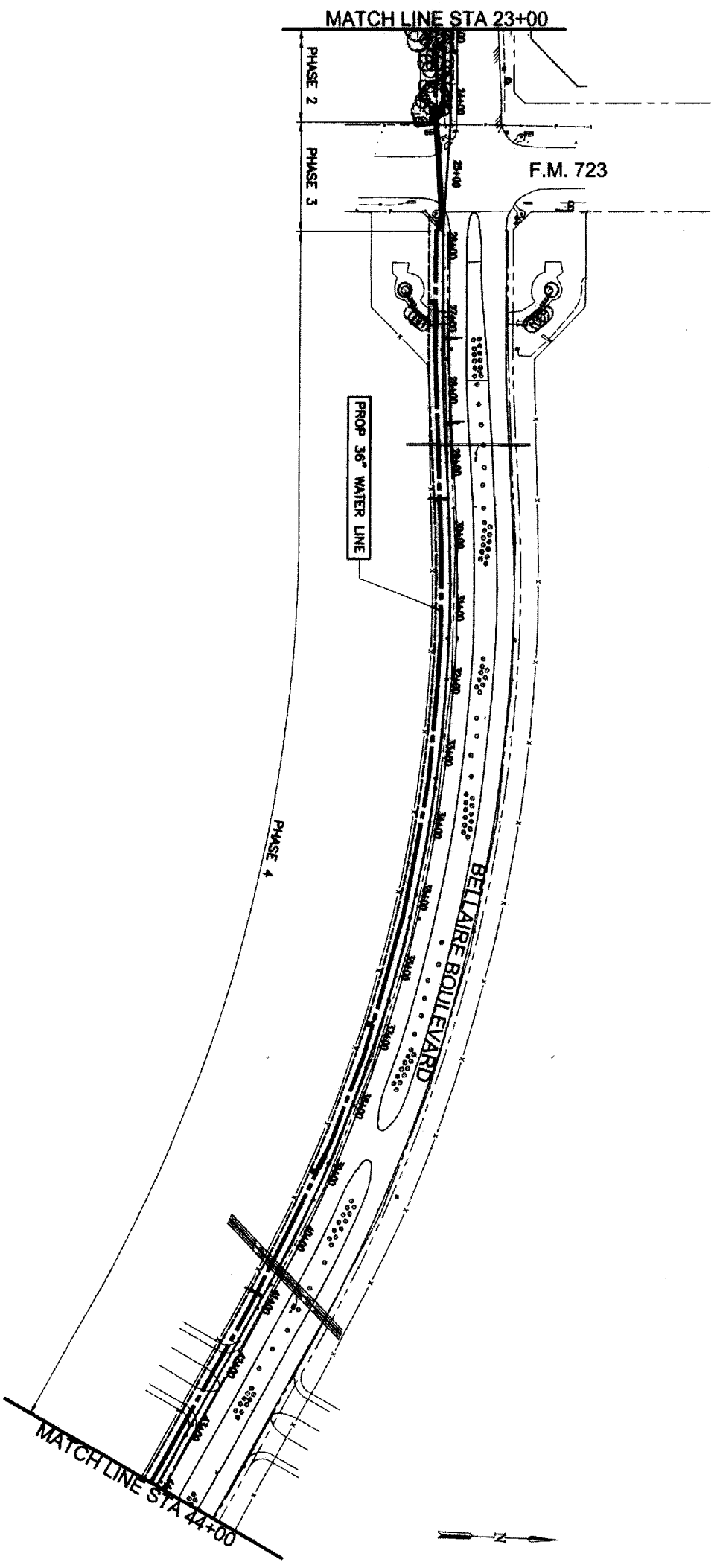
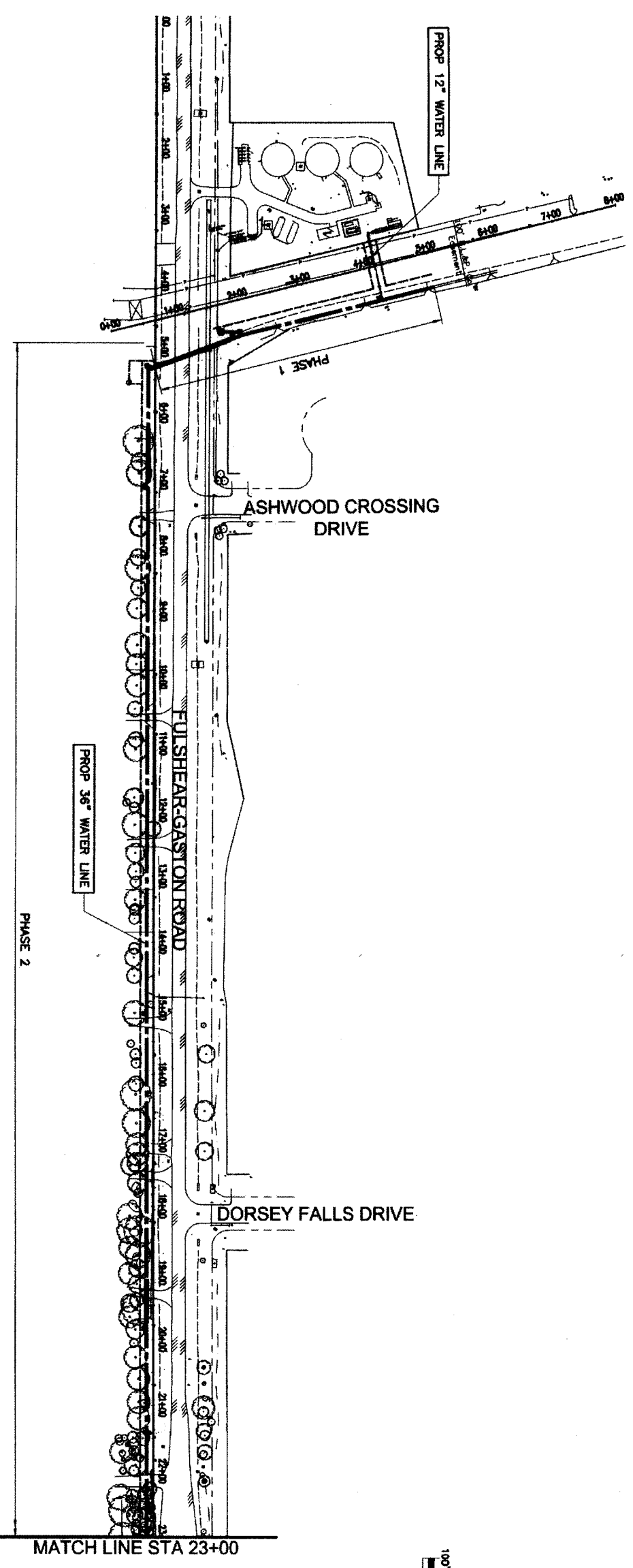
IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NEBWA SEGMENT 8B

**TRAFFIC CONTROL PLAN
 GENERAL NOTES**

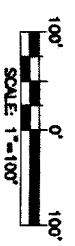
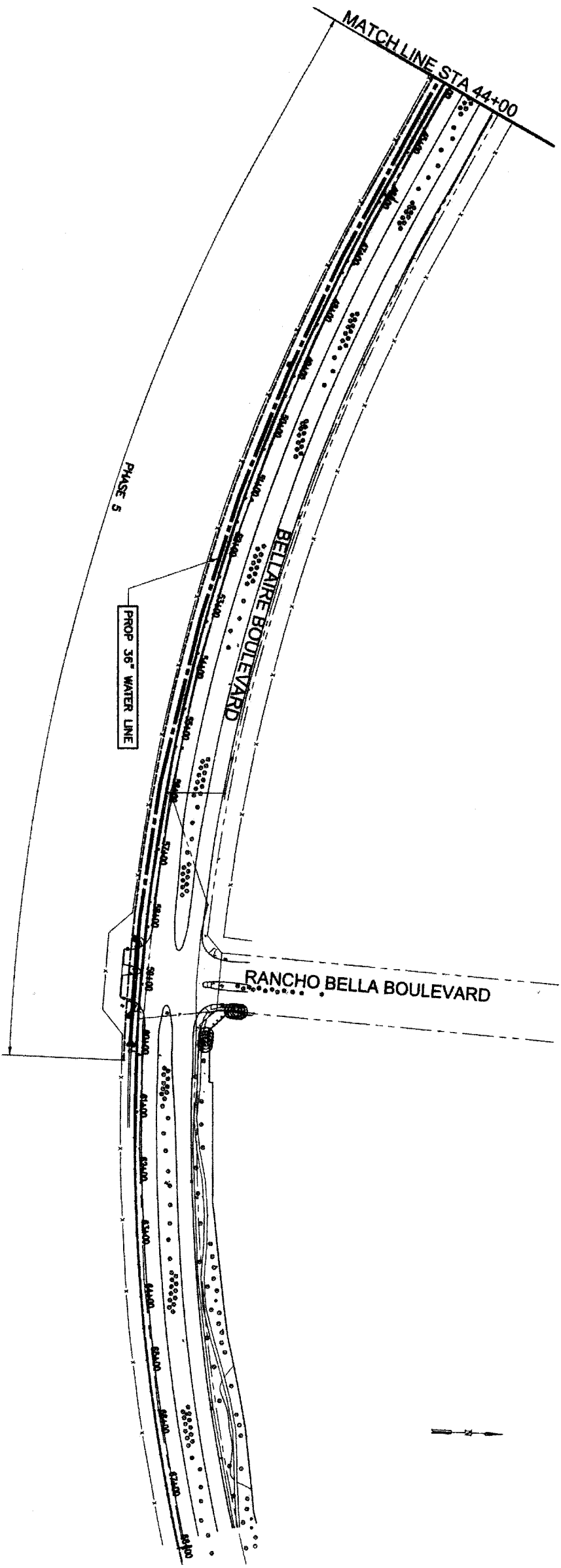


NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WHEN: [Signature]
 CHECKED BY: [Signature]
 DRAWN BY: [Signature]
 DATE: Nov 11, 2011

FILE NO.: FOR CITY OF HOUSTON USE ONLY
 DRAWING SCALE:
 HORZ: NTS
 VERT:
 SHEET NO. 75 OF 84
 48739



<p>IGN Lockwood, Andrews & Newnam, Inc. A LEO A DALY COMPANY T.B.P.E. FIRM REGISTRATION #2614 NFBWA SEGMENT 88</p>	
<p>TRAFFIC CONTROL PLAN OVERALL LAYOUT</p>	
<p>CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p>	
<p>DATE: 11/2/11 DRAWN BY: [Signature] CHECKED BY: [Signature] SCALE: 1" = 100'</p>	<p>NO. DATE REVISION APPROV.</p>
<p>NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES</p>	<p>FILE NO.: DRAWING SCALE: HORIZ: 1" = 100' VERT: 1" = 100'</p>
<p>SHEET No. 76 of 84</p>	<p>FOR CITY OF HOUSTON USE ONLY 48739</p>



PHASE	GENERAL DESCRIPTION	STREET	APPROXIMATE STATION
1	INSTALL 36-INCH & 12-INCH WATER LINE BY OPEN CUT CONSTRUCTION. USE TWO-WAY FLAGGING DETAIL AS NEEDED FOR LOADING AND UNLOADING OF TRUCKS. INSTALL 36-INCH WATER LINE ACROSS FULSHEAR-GASTON RD BY TRENCHLESS CONSTRUCTION. USE TYPICAL DETAILS FOR TUNNEL CONSTRUCTION* IN ALL AREAS REQUIRING TRENCHLESS CONSTRUCTION.	WATERLINE EASEMENT / FULSHEAR-GASTON RD	0+00 TO 5+00
2	INSTALL 36-INCH WATER LINE BY OPEN CUT CONSTRUCTION. USE TWO-WAY FLAGGING DETAIL AS NEEDED FOR LOADING AND UNLOADING OF TRUCKS. USE TYPICAL DETAILS FOR TUNNEL CONSTRUCTION* IN ALL AREAS REQUIRING TRENCHLESS CONSTRUCTION.	FULSHEAR-GASTON RD	5+00 TO 24+00
3	INSTALL 36-INCH WATER LINE BY TRENCHLESS CONSTRUCTION. USE TWO-WAY FLAGGING DETAIL AS NEEDED FOR LOADING AND UNLOADING OF TRUCKS. USE TYPICAL DETAILS FOR TUNNEL CONSTRUCTION* IN ALL AREAS REQUIRING TRENCHLESS CONSTRUCTION.	FULSHEAR-GASTON RD / BELLAIRE BLVD	24+00 TO 26+00
4	INSTALL 36-INCH WATER LINE BY OPEN CUT CONSTRUCTION. WHEN NO WORKERS ARE PRESENT, OPEN ALL LANES TO TRAFFIC. USE TYPICAL DETAILS FOR TUNNEL CONSTRUCTION* IN ALL AREAS REQUIRING TRENCHLESS CONSTRUCTION.	BELLAIRE BLVD	26+00 TO 44+00
5	INSTALL 36-INCH WATER LINE BY OPEN CUT CONSTRUCTION. WHEN NO WORKERS ARE PRESENT, OPEN ALL LANES TO TRAFFIC. USE TYPICAL DETAILS FOR TUNNEL CONSTRUCTION* IN ALL AREAS REQUIRING TRENCHLESS CONSTRUCTION.	BELLAIRE BLVD	44+00 TO 60+50

* TUNNEL CONSTRUCTION MAY BE PERFORMED OUTSIDE SPECIFIED CONSTRUCTION PHASE, AT ANY TIME DURING CONSTRUCTION.

IGN Lockwood, Andrews & Newman, Inc.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

NO.	DATE	REVISION	APPROV.

NORTH PORT BAND

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WRITER: *[Signature]*
DATE: 11/07/11

DESIGNER: *[Signature]*
DATE: 11/07/11

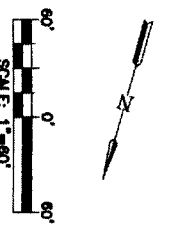
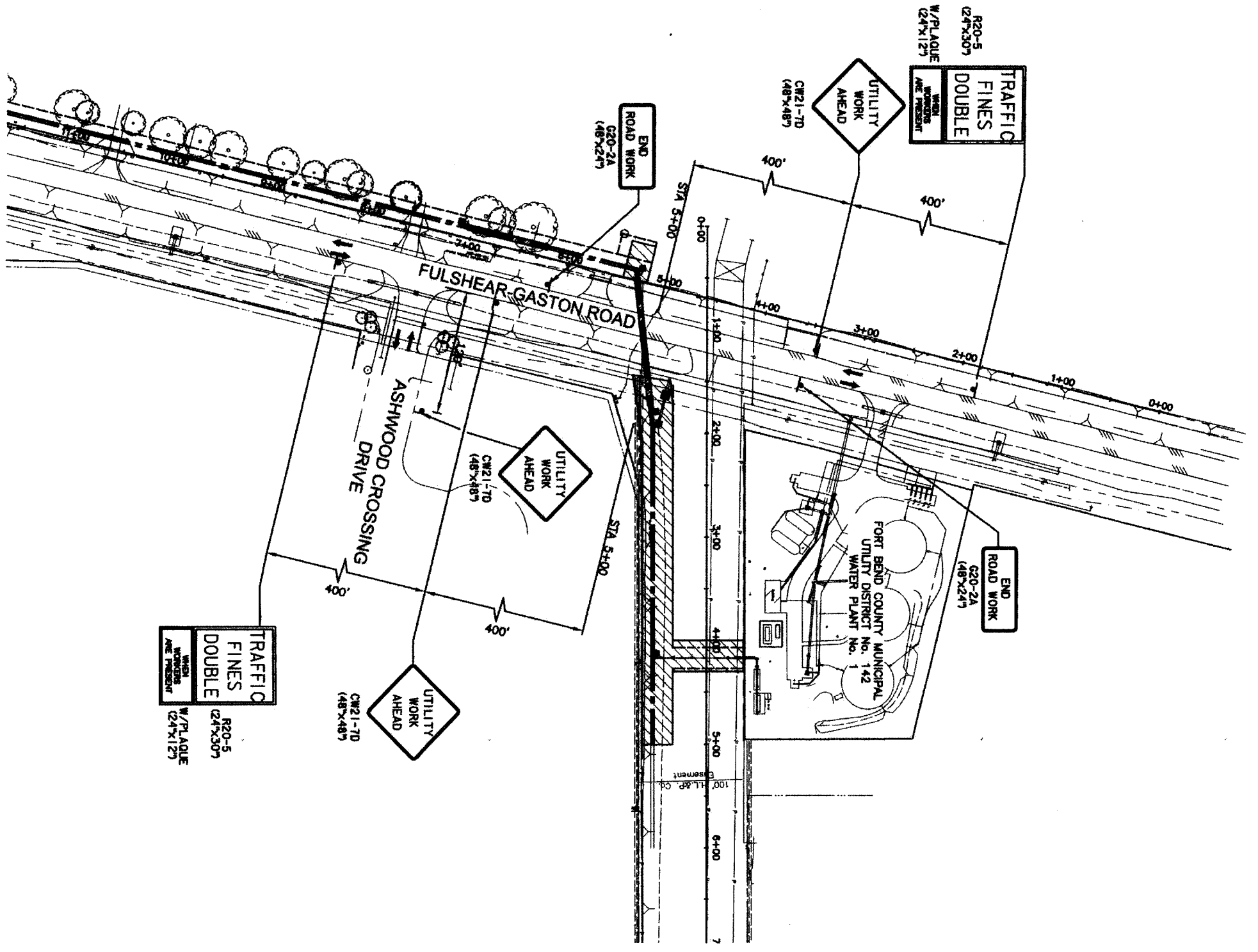
STATION: 11.3.11

PROJECT: TRAFFIC

FILE NO.: FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE: HORIZ : 1" = 100'
VERT : 1" = 100'

SHEET NO. 77 OF 84

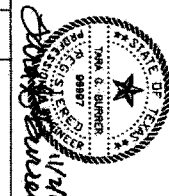


SPEED LIMITS
 FULSHEAR - GASTON ROAD - 50 MPH
 ASHWOOD CROSSING DR. - 30 MPH
 CONTRACTOR TO VERIFY SPEED LIMITS
 PRIOR TO BEGINNING WORK

- LEGEND**
- CHANNELIZING DEVICE WITH CHEVRONS OR VERTICAL PANELS
 - DIRECTIONAL ARROW
 - ▨ WORK ZONE
 - ⊥ TYPE III BARRICADE WITH TYPE "A" FLASHING WARNING LIGHTS.
 - ⊥ TRAFFIC CONTROL SIGN
 - ▬ LOW PROFILE CONC TRAFFIC BARRIER

- NOTES:**
1. MAINTAIN ACCESS TO RESIDENCES AT ALL TIMES.
 2. USE TWO-WAY FLAGGING DETAIL AS NEEDED FOR LOADING & UNLOADING OF TRUCKS. NO LANES SHALL BE BLOCKED BETWEEN THE HOURS OF 6 AM TO 9 AM AND 4 PM TO 6 PM, MONDAY THROUGH FRIDAY.
 3. FOR ADDITIONAL INFORMATION SEE DETAIL FOR TUNNEL CONSTRUCTION, TOP-9.
 4. PLACE PEDESTRIAN FENCE AROUND WORK ZONE IN ALL AREAS WHERE PEDESTRIAN TRAFFIC IS EVIDENT.

NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			



IGN Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

**TRAFFIC CONTROL PLAN
 PHASE 1**



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DATE: 11-24-11
 PROJECT: STREET & BRIDGE
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 STORM WATER QUALITY: [Signature]

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

FILE NO:

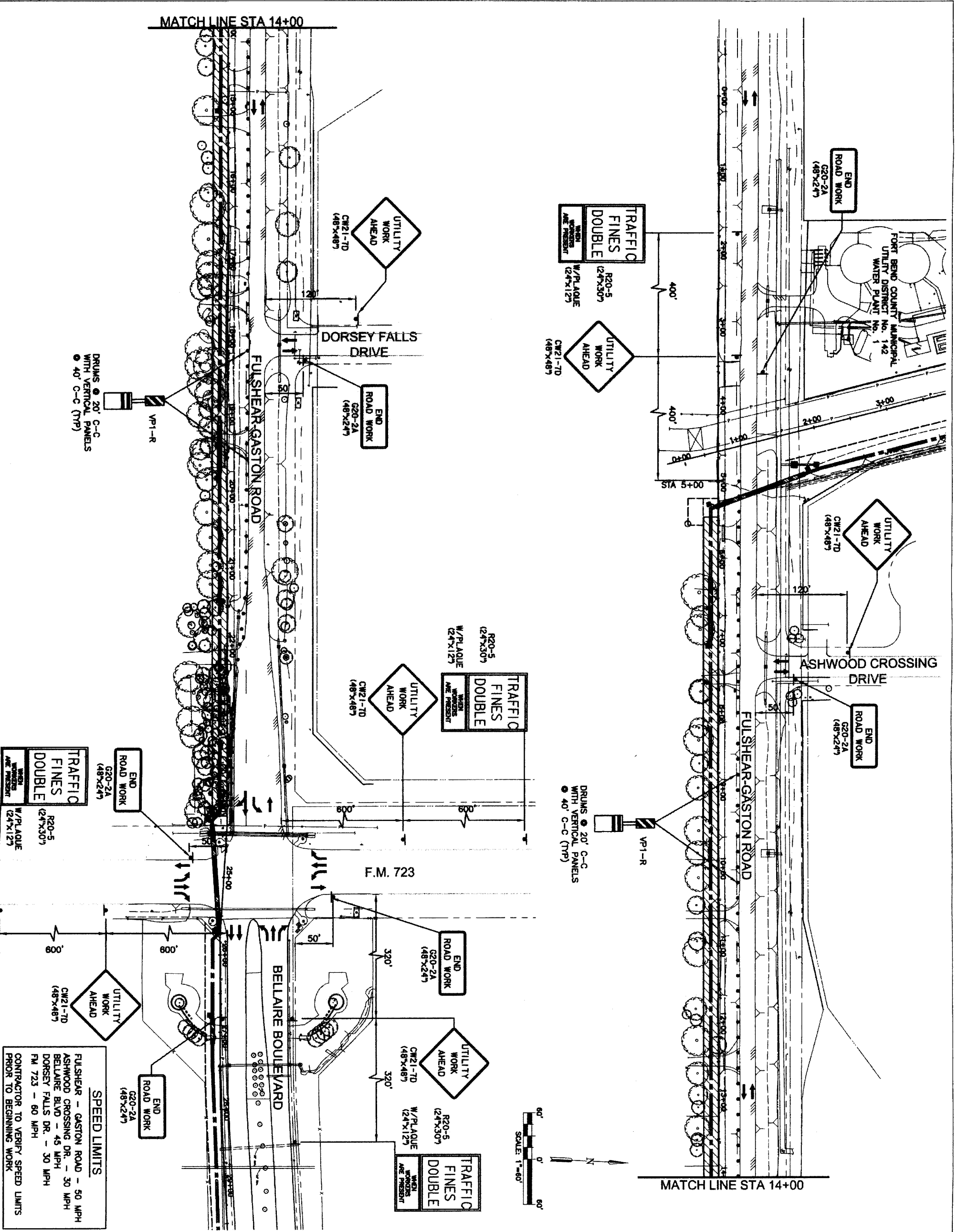
DRAWING SCALE:

HORIZ : 1" = 60'

VERT :

SHEET NO. 78 OF 84

FOR CITY OF HOUSTON USE ONLY
 48739



SPEED LIMITS

FULSHEAR - GASTON ROAD - 50 MPH
 ASHWOOD CROSSING DR. - 45 MPH
 BELLAIRE BLVD - 45 MPH
 DORSEY FALLS DR. - 30 MPH
 FM 723 - 60 MPH

CONTRACTOR TO VERIFY SPEED LIMITS PRIOR TO BEGINNING WORK

- LEGEND**
- CHANNELIZING DEVICE WITH CHEVRONS OR VERTICAL PANELS
 - DIRECTIONAL ARROW
 - ▨ WORK ZONE
 - ⊥ TYPE III BARRICADE WITH TYPE "A" FLASHING WARNING LIGHTS.
 - ⊥ TRAFFIC CONTROL SIGN
- NOTES:**
1. MAINTAIN ACCESS TO RESIDENCES AT ALL TIMES.
 2. USE TWO-WAY FLAGGING DETAIL AS NEEDED FOR LOADING & UNLOADING OF TRUCKS. NO LANES SHALL BE BLOCKED BETWEEN THE HOURS OF 6 AM TO 9 AM AND 4 PM TO 6 PM, MONDAY THROUGH FRIDAY.
 3. PLACE PEDESTRIAN FENCE AROUND WORK ZONE IN ALL AREAS WHERE PEDESTRIAN TRAFFIC IS EVIDENT.

NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			

IGN & Newnam, Inc.
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

TRAFFIC CONTROL PLAN
 PHASE 2

TOP-5

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

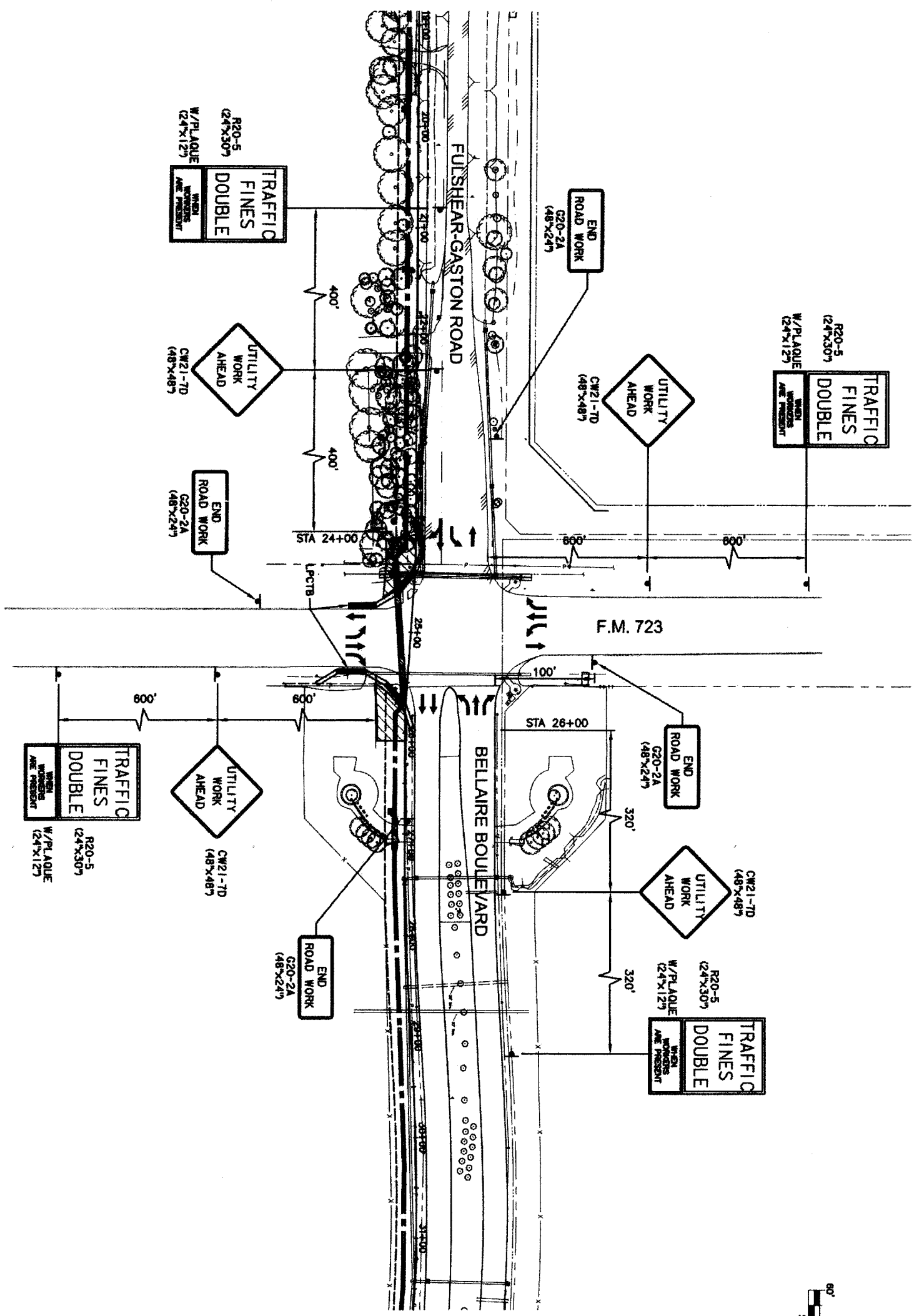
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

WATER: *[Signature]* STREET & BRIDGE
 STORM WATER QUALITY: *[Signature]*

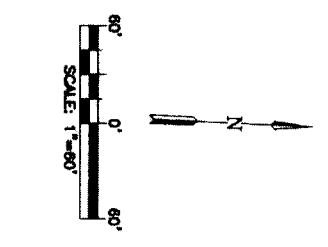
FILE NO.: _____
 DRAWING SCALE: _____
 HORIZ : 1" = 60'
 VERT : _____

SHEET No. 79 of 84

48739



SPEED LIMITS
 FULSHEAR - GASTON ROAD - 50 MPH
 BELLAIRE BLVD - 45 MPH
 FM 723 - 80 MPH
 CONTRACTOR TO VERIFY SPEED LIMITS
 PRIOR TO BEGINNING WORK



- LEGEND**
- CHANNELIZING DEVICE WITH CHEVRONS OR VERTICAL PANELS
 - ➔ DIRECTIONAL ARROW
 - ▨ WORK ZONE
 - ⊥ TYPE III BARRICADE WITH TYPE "A" FLASHING WARNING LIGHTS.
 - ⚡ TRAFFIC CONTROL SIGN
 - ▬ LOW PROFILE CONC TRAFFIC BARRIER

- NOTES:**
1. MAINTAIN ACCESS TO RESIDENCES AT ALL TIMES.
 2. USE TWO-WAY FLAGGING DETAIL AS NEEDED FOR LOADING & UNLOADING OF TRUCKS. NO LANES SHALL BE BLOCKED BETWEEN THE HOURS OF 6 AM TO 9 AM AND 4 PM TO 6 PM, MONDAY THROUGH FRIDAY.
 3. PLACE PEDESTRIAN FENCE AROUND WORK ZONE IN ALL AREAS WHERE PEDESTRIAN TRAFFIC IS EVENT.

STATE OF TEXAS
 SEAL OF THE STATE ENGINEER
 JOHN C. BLANKS
 REGISTERED PROFESSIONAL ENGINEER
 NO. 98997
 EXPIRES 11/2/11
 APPROVED

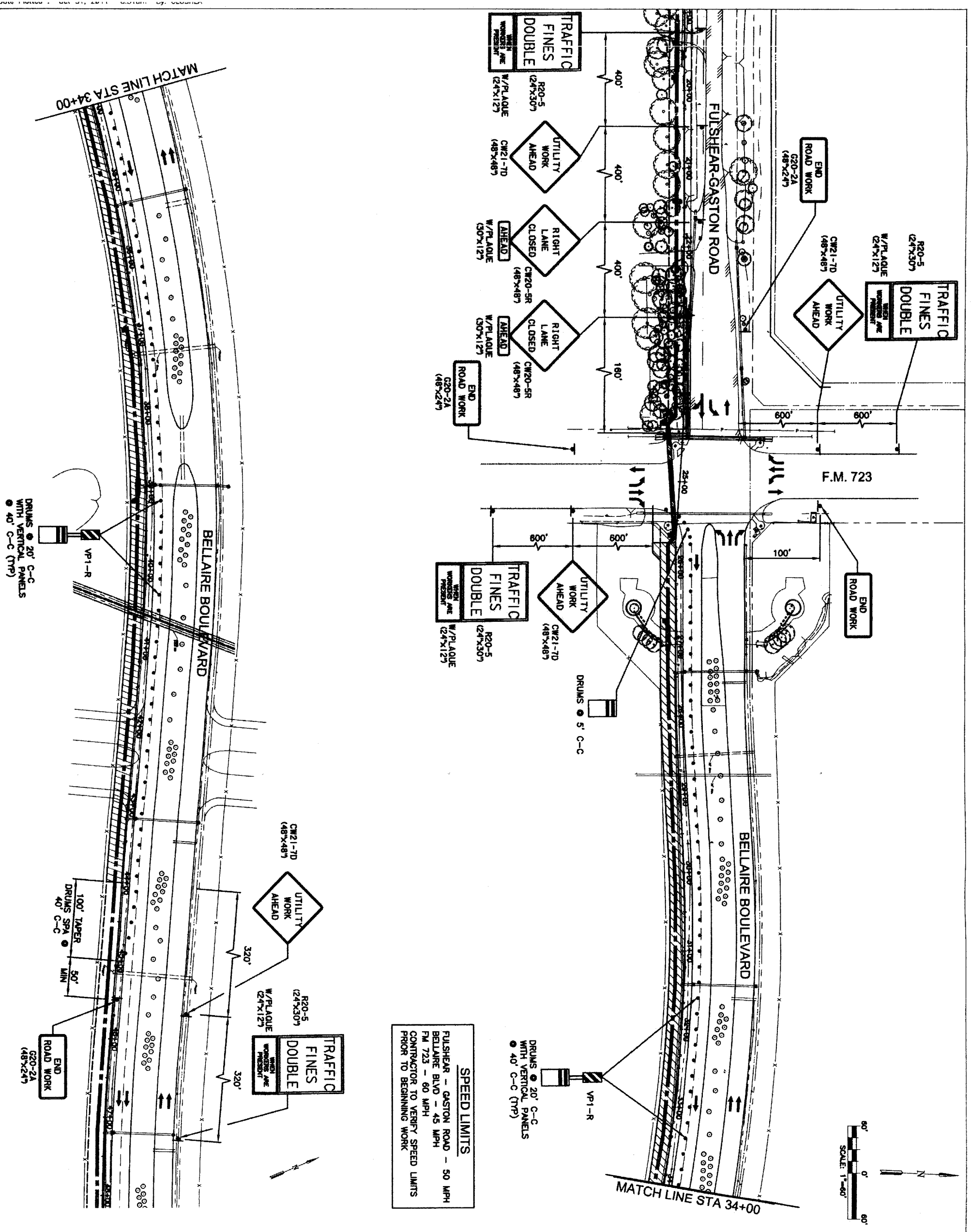
IGN
 Lockwood, Andrews & Newnam, Inc.
 A LEO A DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NEBWA SEGMENT 8B

TRAFFIC CONTROL PLAN
 PHASE 3
 TOP-6

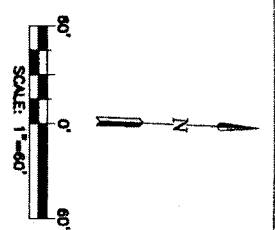


NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 SIGNATURE: [Signature]
 TITLE: CHIEF ENGINEER
 STAMP: STORM WATER QUALITY
 FACILES: 4 Nov 11, 8:4

FILE NO:
 DRAWING SCALE
 HORIZ : 1" = 60'
 VERT :
 SHEET No. 80 of 84
 FOR CITY OF HOUSTON USE ONLY
 48789



SPEED LIMITS
 FULSHEAR - GASTON ROAD - 50 MPH
 BELLAIRE BLVD - 45 MPH
 FM 723 - 60 MPH
 CONTRACTOR TO VERIFY SPEED LIMITS
 PRIOR TO BEGINNING WORK



- LEGEND**
- CHANNELIZING DEVICE WITH CHEVRONS OR VERTICAL PANELS
 - ➔ DIRECTIONAL ARROW
 - ▨ WORK ZONE
 - ⊥ TYPE III BARRICADE WITH TYPE "A" FLASHING WARNING LIGHTS.
 - ⚡ TRAFFIC CONTROL SIGN

- NOTES:**
1. MAINTAIN ACCESS TO RESIDENCES AT ALL TIMES.
 2. WHEN NO WORKERS ARE PRESENT, SECURE OPEN EXCAVATIONS, MOVE DRUMS BACK AND OPEN ALL LANES TO TRAFFIC.
 3. PLACE PEDESTRIAN FENCE AROUND WORK ZONE IN ALL AREAS WHERE PEDESTRIAN TRAFFIC IS EVIDENT.



NO.	DATE	REVISION	APPROV.
1			
2			
3			
4			

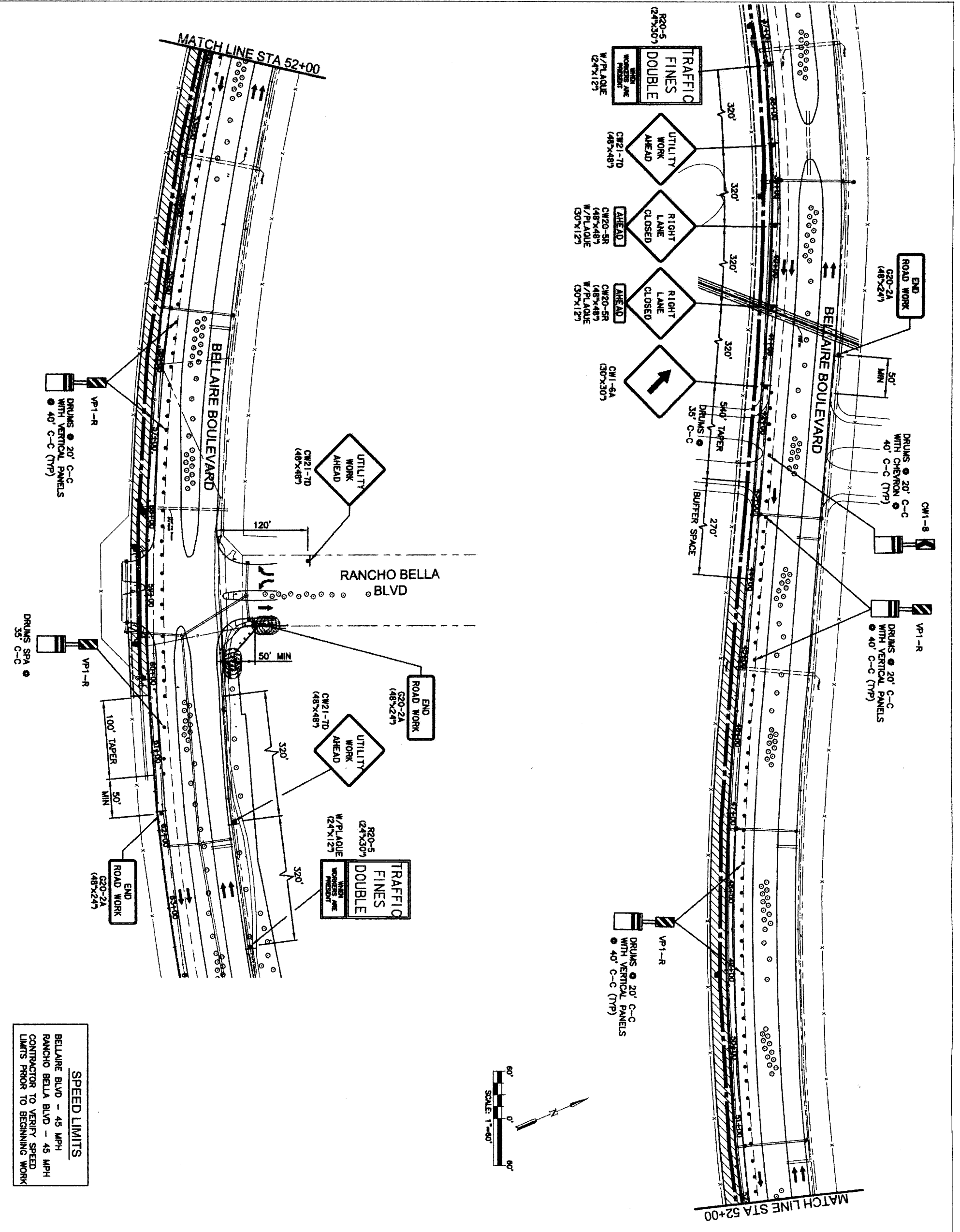
IGN Lockwood, Andrews & Newnam, Inc.
 A LEBO & DALY COMPANY
 T.B.P.E. FIRM REGISTRATION #2614
 NFBWA SEGMENT 8B

**TRAFFIC CONTROL PLAN
 PHASE 4**



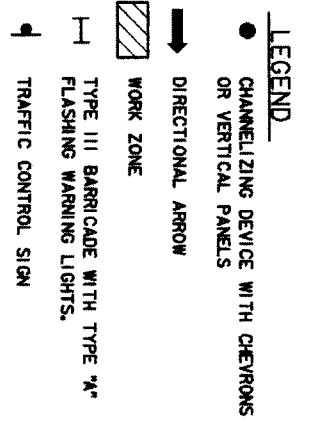
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 ENGINEER: [Signature]
 DATE: 11.11.11
 FILE NO.:
 DRAWING SCALE:
 HORIZ : 1" = 80'
 VERT :
 SHEET No. 81 OF 84

FOR CITY OF HOUSTON USE ONLY
 48739
 81 OF 84

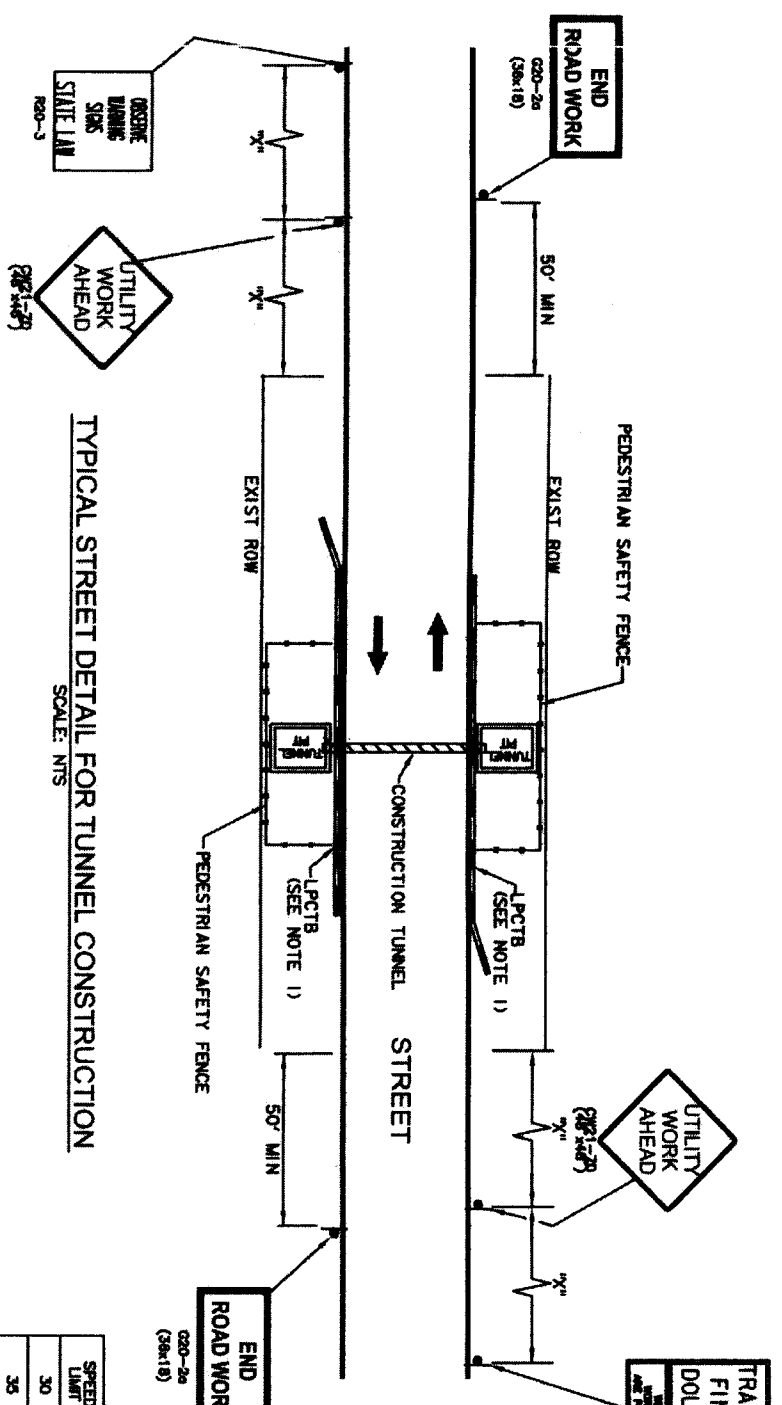


SPEED LIMITS
 BELLAIRE BLVD - 45 MPH
 RANCHO BELLA BLVD - 45 MPH
 CONTRACTOR TO VERIFY SPEED LIMITS PRIOR TO BEGINNING WORK

- NOTES:**
1. MAINTAIN ACCESS TO RESIDENCES AT ALL TIMES.
 2. WHEN NO WORKERS ARE PRESENT, SECURE OPEN EXCAVATIONS, MOVE DRUMS BACK AND OPEN ALL LANES TO TRAFFIC.
 3. PLACE PEDESTRIAN FENCE AROUND WORK ZONE IN ALL AREAS WHERE PEDESTRIAN TRAFFIC IS EVIDENT.

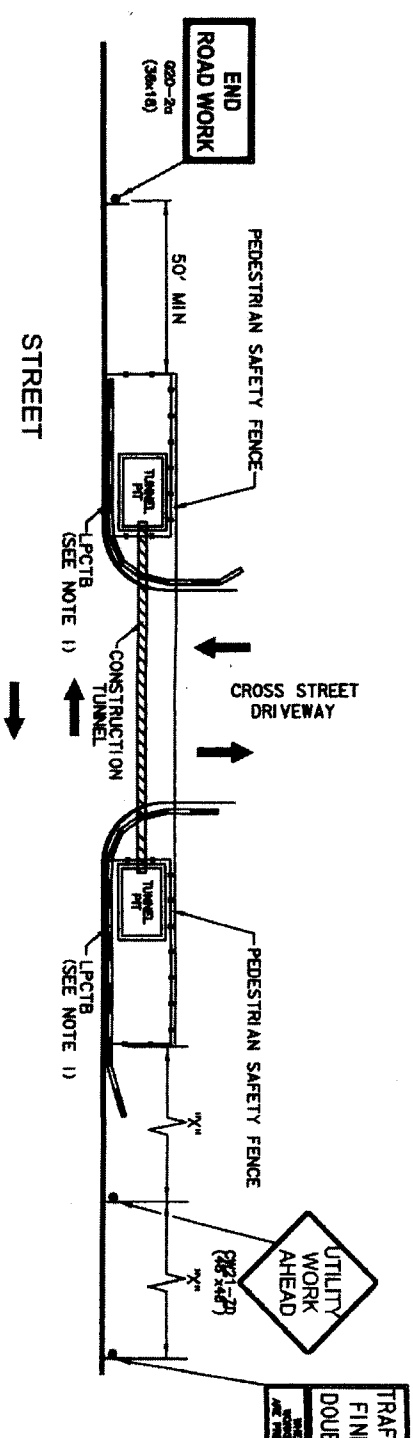


<p>Lockwood, Andrews & Newman, Inc. A LEO A DALY COMPANY T.B.P.E. FIRM REGISTRATION #2614 NFBWA SEGMENT 88</p>	
<p>TRAFFIC CONTROL PLAN PHASE 5</p>	
<p>TCP-8</p>	
<p>CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p>	
<p>NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES</p>	
<p>DATE: 8/17/11</p>	<p>SCALE: 1"=60'</p>
<p>NO. DATE REVISION APPROVED</p>	<p>FILE NO. DRAWING SCALE</p>
<p>FOR CITY OF HOUSTON USE ONLY</p>	<p>48739</p>
<p>SHEET NO. 82 OF 84</p>	<p>FOR CITY OF HOUSTON USE ONLY</p>



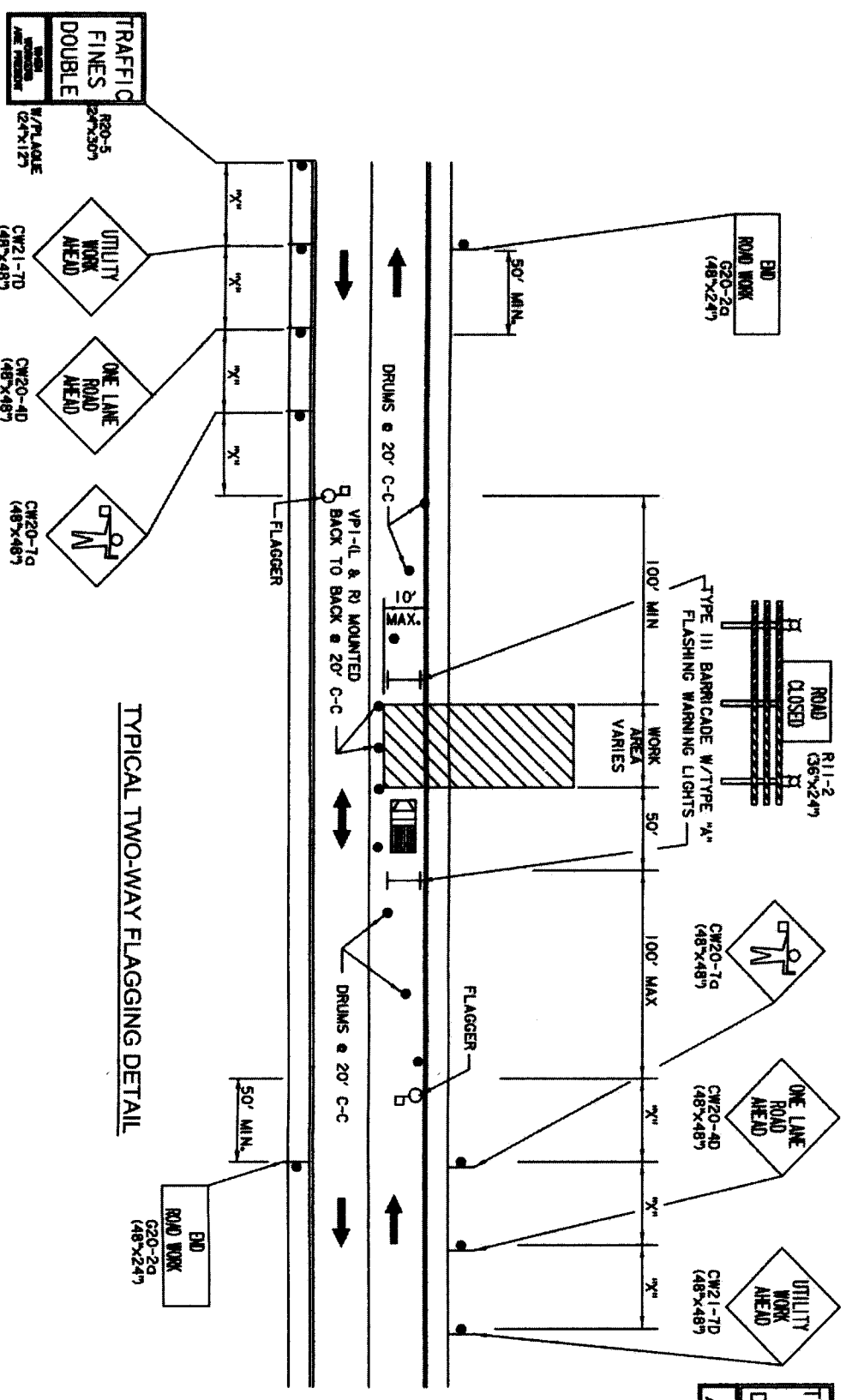
TYPICAL STREET DETAIL FOR TUNNEL CONSTRUCTION
SCALE: NTS

SPEED LIMIT	"X"
30	120
35	160
40	240
45	320
50	400
60	800



TYPICAL DRIVEWAY DETAIL FOR TUNNEL CONSTRUCTION
SCALE: NTS

NOTE:
1. USE LOW PROFILE CONCRETE TRAFFIC BARRIER IN ALL LOCATIONS THAT OPEN EXCAVATIONS ARE WITHIN 12 FEET OF OPEN TRAVEL LANE OR DRIVEWAY.



TYPICAL TWO-WAY FLAGGING DETAIL

LEGEND

- Ⓐ WK ZN PAY MARK REMOV DBL (V) 4" (SLD)
- Ⓑ WK ZN PAY MARK REMOV (W) 4" (SLD)
- DRUMS
- CHANNELIZING DEVICE WITH CHEVRONS OR VERTICAL PANELS
- DIRECTIONAL ARROW
- ▨ WORK ZONE
- ⊥ TYPE III BARRICADE WITH TYPE "X" FLASHING WARNING LIGHTS.
- ⚡ TRAFFIC CONTROL SIGN
- ▬ LOW PROFILE CONC TRAFFIC BARRIER
- PEDESTRIAN SAFETY FENCE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

LOCKWOOD, ANDREWS & NEWMANN, INC.
A LEO A DALY COMPANY
T.B.P.E. FIRM REGISTRATION #2614
NFBWA SEGMENT 8B

TRAFFIC CONTROL PLAN
DETAILS

TOP-9

FILE NO.:
DRAWING SCALE:
HORIZ : NTS
VERT :
SHEET NO. 83 OF 84

FOR CITY OF HOUSTON USE ONLY
48739

