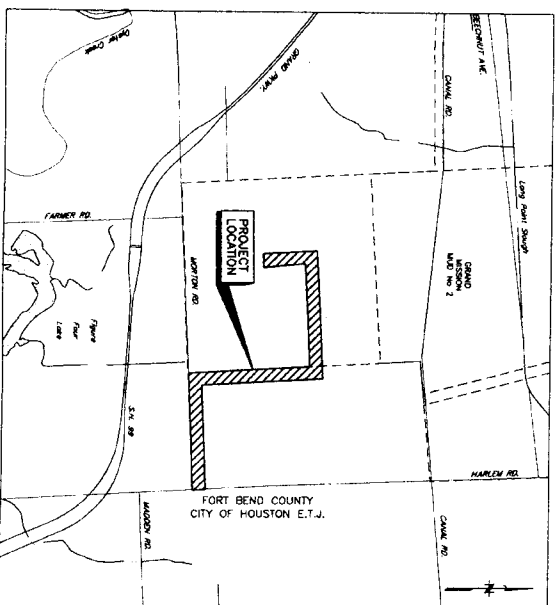
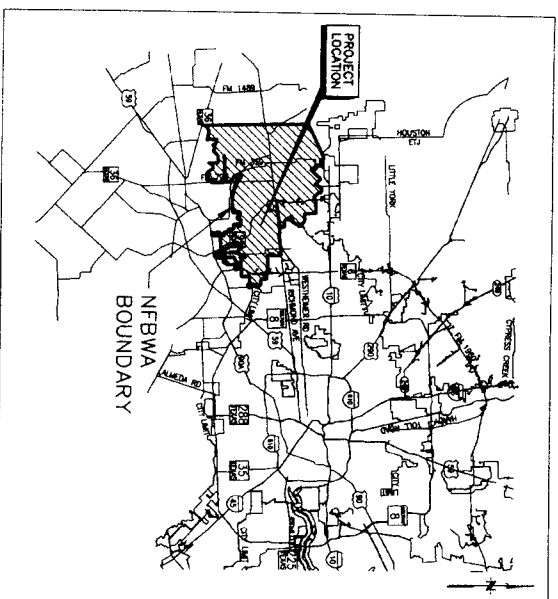
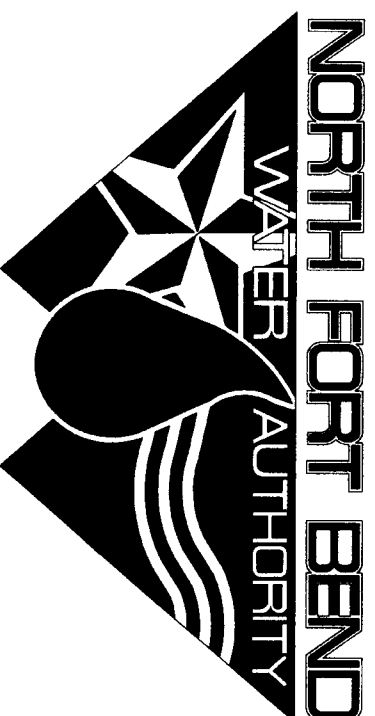


NORTH FORT BEND WATER AUTHORITY SEGMENT 7A

PROPOSED 16", 24", AND 42" WATERLINES FROM GRAND MISSION M.U.D. NO. 1 WATER PLANT NO. 2 ALONG DRAINAGE CHANNELS, CENTERPOINT ENERGY CORRIDOR, AND WEST BELFORT TO HARLEM ROAD



KEY MAP NO 526 T, U, & Y
 FEMA MAP NO. 4815700115J
 GMS TILES 4554 B, C, & D
 ZIP CODE 77469



ONE-CALL NOTIFICATION SYSTEM
 CALL BEFORE YOU DIG!!!
 (713) 223-4567 (In Houston)
 (New Stateland Number Outside Houston)
 1-800-545-8005

- NOTES:**
- Contractor shall notify the City of Houston, Department of Public Works and Engineering, Engineering Construction Division (Telephone No. 713-853-1450) 48 hours before starting work on this project.
 - No proposed storm sewer or drainage work is shown, nor any proposed change in drainage path or pattern in this project proposed work scope.
 - No known proposed wastewater line work is included in this project's work scope.
 - Prior to the construction of these facilities within or by the authority, the authority or its Engineer will give the Director of Public Works and Engineering, City of Houston, stating the date such construction will begin.

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.



FORT BEND COUNTY

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

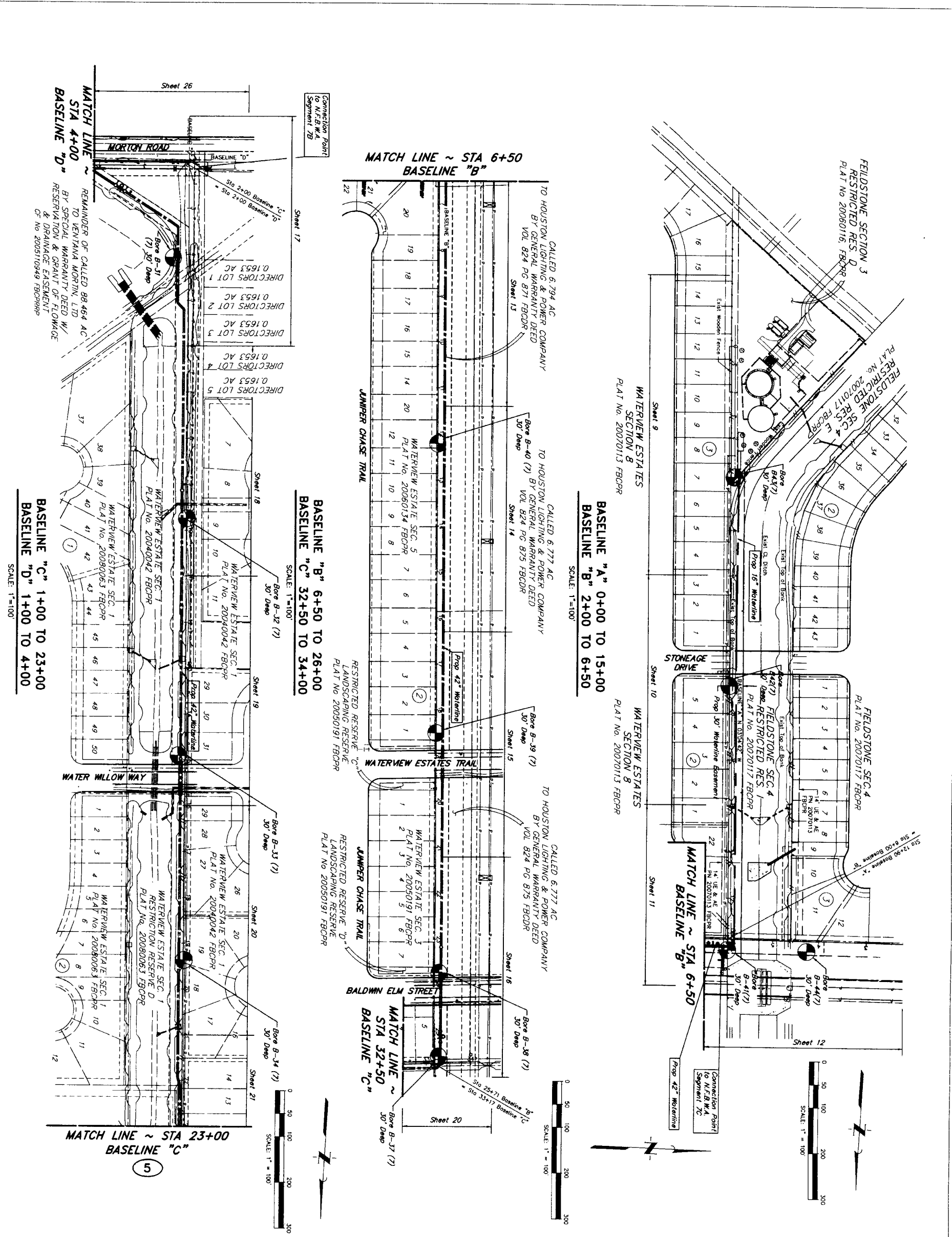
D. JESSE HEGEMIER, P.E.
 Fort Bend County Engineer

DATE _____
 FIRM _____
 FLOOD INSURANCE RATE MAP
 PANEL (115) OF (550)
 MAP# 4815700115J
 BFE ELEVATION 93.0
 I, _____ JAMES C. JONES, P.E., certify that this project is
 entirely located outside the area with a 100 year flood frequency.

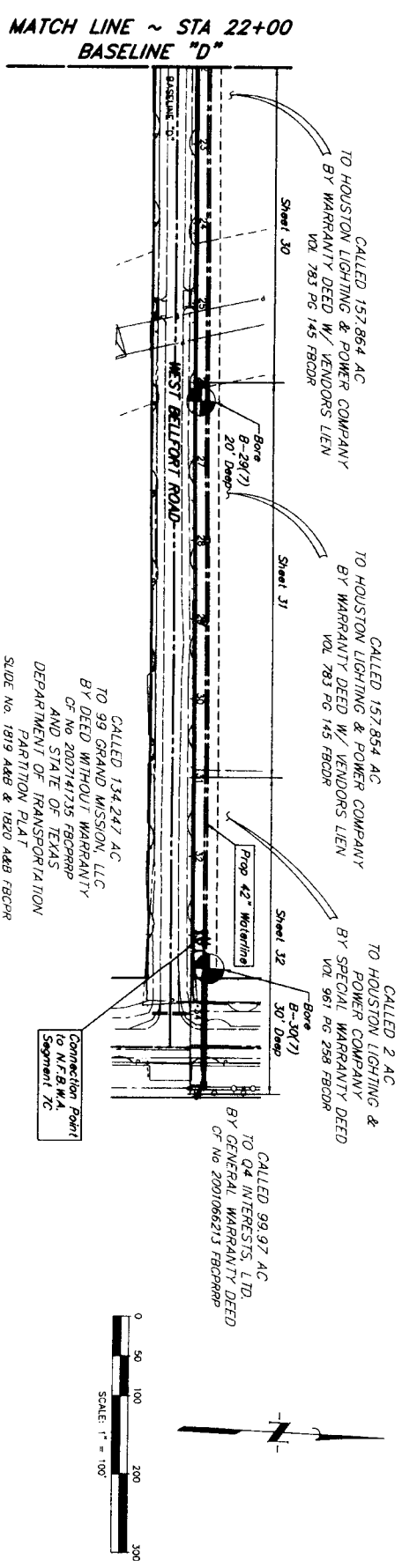
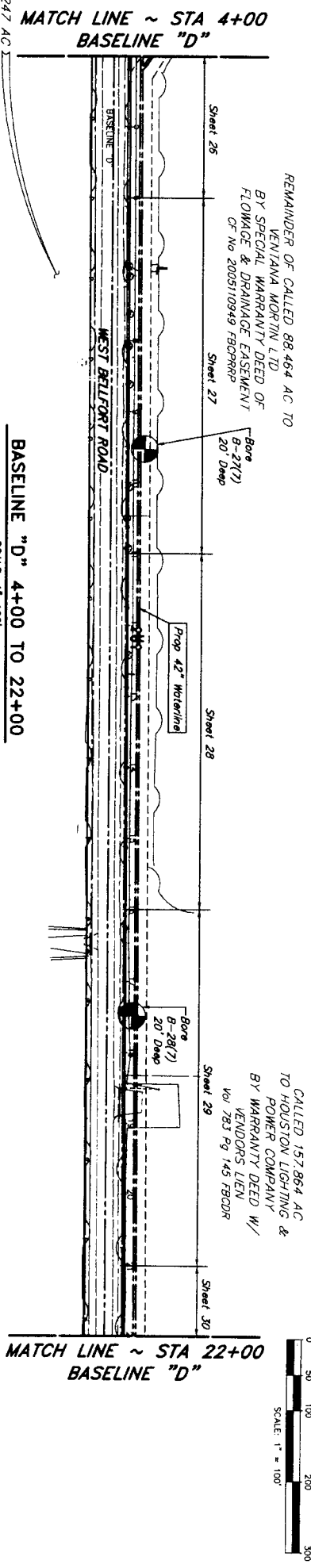
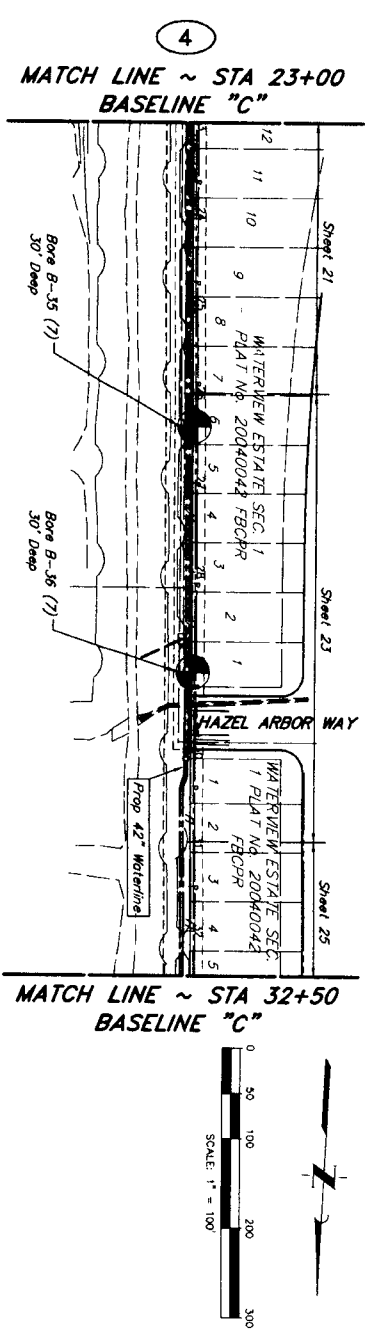
ISSUE DATE: AUGUST 2011

ILKS NO.: 10007811
 LOG NO.: 10-0078

| | |
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| | |
| J. C. JONES & CARTER, P.C. ENGINEERS & ARCHITECTS - SURVEYORS Texas Board of Professional Engineers Registration No. 2-429 6305 Galien Dr., Suite 100, Houston, Texas 77061 (713) 771-8237 | |
| f.g. miller Houston, Texas 77079 (713) 461-8600 TEXAS PAID REGISTRATION NO. F-447 | |
| 12121 Michbacher Lane Houston, Texas 77079 (713) 461-8600 | |
| SINCE 1968 engineers | |
| CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING | |
| WORKS & IMPROVEMENTS | |
| SPECIAL INSPECTION QUALITY | |
| REVIEWED | |
| CHECKED & APPROVED | |
| CITY ENGINEER | |
| DIRECTOR OF PUBLIC WORKS AND ENGINEERING | |
| FOR CITY OF HOUSTON USE ONLY CITY DWG NO.: | |
| SHEET No. 1 of 80 | |



| | | | |
|---|--|--|--|
| <p>PRIVATE UTILITY LINES SHOWN</p> <p>Date: <i>8/31/11</i></p> <p>Centerpoint Energy/Electric Facilities (approved copy for crossing underground ductlines, unless otherwise noted)</p> <p>AT&T TEXAS/SBC UTILITY LINES SHOWN</p> <p>Date: <i>8/31/11</i></p> <p>Centerpoint Energy/Gas Facilities (Gas service lines are not shown.)</p> <p>Date: <i>8/31/11</i></p> <p>Contract:</p> | | <p>NOTICE:</p> <p>AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-688-9344</p> <p>TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-7777.</p> <p>BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5.67' HIGH ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER WILLLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. (NAD-88, 2002 ADJUSTMENT) ELEV. = 93.33'</p> <p>(NAD-88, 2002 ADJUSTMENT)</p> | |
| <p>CITY OF HOUSTON</p> <p>DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p> <p>NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES</p> <p>DATE: _____</p> | | <p>JONES & CARTER, P.C.</p> <p>ENGINEERS-PLANNERS-SURVEYORS</p> <p>1900 West Loop West, Suite 100, Houston, Texas 77057 (713) 777-8537</p> <p>SEGMENT 7A</p> | |
| <p>OVERALL SITE LAYOUT</p> <p>SHEET 1 OF 2</p> | | <p>GENERAL NOTES:</p> <p>1. ALL UTILITIES SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD SURVEY.</p> <p>2. VERIFY ALL UTILITIES PRIOR TO EXCAVATION.</p> <p>3. MAINTAIN PROPER RECORDING OF ALL UTILITIES DISCOVERED.</p> | |



CALLED 134,247 AC
 TO 99 GRAND MISSION, LLC
 BY DEED WITHOUT WARRANTY
 OF No. 2007141735 FBCPRRP
 AND STATE OF TEXAS
 DEPARTMENT OF TRANSPORTATION
 PARTITION PLAT
 SLIDE No. 1819 A48B & 1820 A48B FBCPR

REMAINDER OF CALLED 88,464 AC TO
 VENIYANA MORITIN LTD
 BY SPECIAL WARRANTY DEED OF
 FLOWAGE & DRAINAGE EASEMENT
 OF No. 2005110949 FBCPRRP

BASELINE "D" 4+00 TO 22+00
 SCALE: 1"=100'

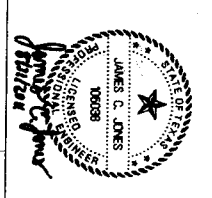
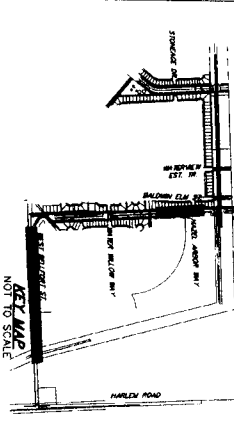
BASELINE "C" 23+00 TO 32+50
 SCALE: 1"=100'

BASELINE "D" 22+00 TO 35+00
 SCALE: 1"=100'

PRIVATE UTILITY LINES SHOWN

Date: 9/6/11
 Centerpoint Energy/Electrical Facilities (Approved only)
 Valid At Time Of Review Only
 AT&T TEXAS/ERC UTILITY LINES SHOWN
 Date: 9/6/11
 Centerpoint Energy/Gas Facilities
 Gas service lines are not shown
 Date: 9/6/11
 Centerpoint

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET P.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 713-207-1777.
 BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON
 ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER
 AUTHORITY" IS LOCATED APPROXIMATELY 350 FEET NORTH OF
 WATER WILLOW WAY 7.0 FEET EAST OF THE DASH HIGH BANK OF
 DITCH.
 ELEV = 93.33'
 (NAVD-88, 2002 ADJUSTMENT)



NO. DATE REVISION APPROVAL

1
 2
 3
 4

J.C. JONES & CARTER, P.E.
 ENGINEERING PLANNERS SURVEYORS
 8206 Gleditsia, Suite 100, Houston, Texas 77061 (713) 771-8207

SEGMENT 7A



OVERALL SITE LAYOUT
 SHEET 2 OF 2

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

| | |
|-------------|---------------------|
| WATER | STREET & BROOK |
| MASTERPIECE | TRAFFIC |
| STORM | STORM WATER QUALITY |
| UTILITIES | |

FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY DWG NO.)

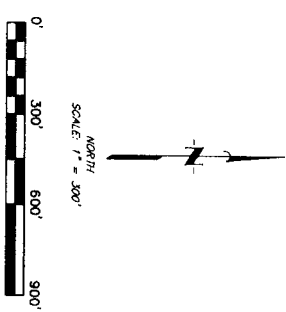
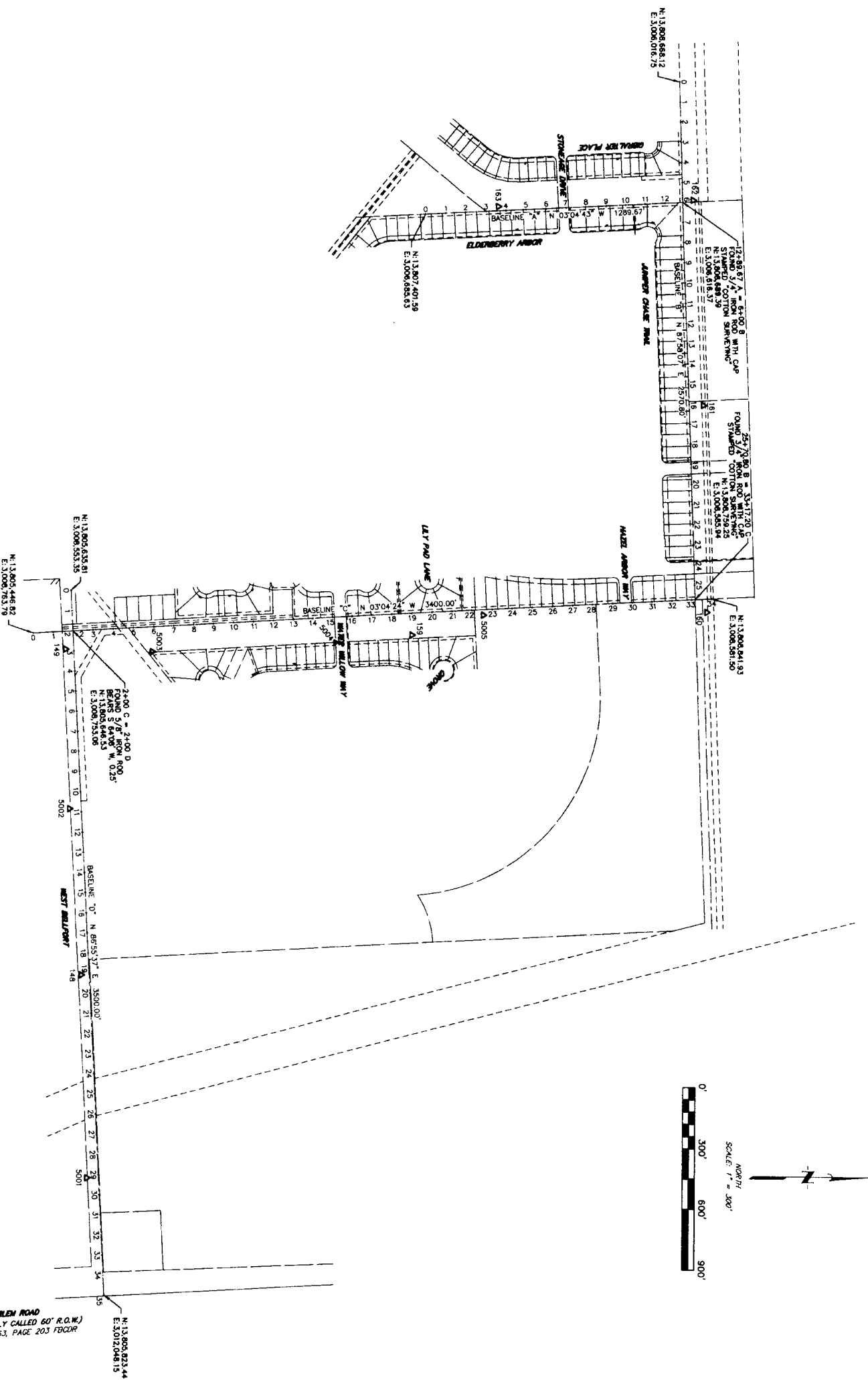
DRAWING SCALE

HORIZ : 1" = 100'

VERT :

SHEET No. 5 OF 80

- GENERAL NOTES:
1. BENCHMARKS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE NUMBER 420445 DETERMINED USING NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINTS 148, 149, 159 THRU 163, SUPPLIED BY CLIENT. BENCHMARK POINT 159 IS LOCATED APPROXIMATELY 330 FEET NORTH OF WATER AUTHORITY MAINTENANCE BUILDING BY THE COMBINED SCALE FACTOR OF 0.99987.
 2. ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 148 HAVING A REDUCED ELEVATION OF 2125.4400 DD, 2002 ROD.



| Point No. | Northing(Y) | Easting(X) | Elev(Z) | Description | Station Offset |
|-----------|---------------|--------------|---------|---|---------------------|
| 148 | 13,805,698.61 | 3,010,458.60 | 92.58 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 148" | 18+00.77, 41.48 FT |
| 149 | 13,805,609.18 | 3,008,843.88 | 93.38 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 148" | 2+00.48, 43.17 FT |
| 159 | 13,807,343.10 | 3,008,770.89 | 93.33 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 159" | 18+43.18, 108.56 FT |
| 160 | 13,808,816.77 | 3,008,647.20 | 94.70 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 160" | 28+31.07, 53.32 FT |
| 161 | 13,808,794.41 | 3,007,820.32 | 93.59 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 161" | 16+07.04, 80.37 FT |
| 162 | 13,808,740.45 | 3,006,604.44 | 94.08 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 162" | 13+41.28, 83.97 FT |
| 163 | 13,807,782.59 | 3,005,644.44 | 93.76 | ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 163" | 3+42.50, 217.5 FT |
| 5001 | 13,805,731.73 | 3,011,444.83 | 91.88 | 5/8" IRON ROD WITH PLASTIC CAP STAMPED COTTON SURVEYING | 22+12.43, 80.30 FT |
| 5002 | 13,805,634.08 | 3,008,436.43 | 92.82 | 5/8" IRON ROD WITH PLASTIC CAP STAMPED COTTON SURVEYING | 10+48.45, 39.79 FT |
| 5003 | 13,805,040.00 | 3,008,286.12 | 95.08 | 5/8" IRON ROD WITH PLASTIC CAP STAMPED COTTON SURVEYING | 5+49.26, 124.00 FT |
| 5004 | 13,805,861.77 | 3,008,808.43 | 94.47 | 5/8" IRON ROD WITH PLASTIC CAP STAMPED COTTON SURVEYING | 15+10.28, 125.80 FT |
| 5005 | 13,807,898.27 | 3,008,808.14 | 94.41 | 5/8" IRON ROD WITH PLASTIC CAP STAMPED COTTON SURVEYING | 22+43.29, 28.20 FT |

SURVEY CONTROL MAP
 FOR
NORTH FORT BEND WATER AUTHORITY
 SEGMENT 7A

FORT BEND COUNTY, TEXAS
 January 2010

[Signature]

REVISION

| NO. | DATE | REVISION | APPROV. |
|-----|------|----------|---------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

J. JONES & CARTER, INC.
 ENGINEERS - P.L.L.C.
 6535 Galloway Dr., Suite 100 Houston, Texas 77061 (713) 777-6537



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

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY Dwg No.)

DRAWING SCALE

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

SHEET NO. **6** OF **80**

| | | | |
|---|--|---|---|
| NORTH FORT BEND WATER AUTHORITY | | SEGMENT 7 CONTROL POINT 148 - SHEET 1 | |
| CONTROL POINT NUMBER 148 KEY MAP PAGE: 526-Y | GRID COORDINATES Y: 13,803,901.87 X: 3,010,088.24 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES Y: 13,805,698.61 X: 3,010,459.60 | POINT ESTABLISHED BY RTK. POINTS DIRECTLY TIED: 12 & 40 | |
| HORIZONTAL ADJUSTMENT: (CONS 96 - EPOCH 2002) | SCALE FACTOR: 1.00013 | ELEVATION: 92.58 FT. | |
| MARKER: ALUMINUM CAP | STAMPING: "NORTH FORT BEND WATER AUTHORITY 148" | ELEVATION: 92.58 FT. | |
| GEODETIC COORDINATES: LATITUDE: N 29° 39' 53.58613" LONGITUDE: W 95° 43' 11.34734" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET APPROXIMATELY 40 FEET SOUTH OF THE EDGE OF PAVEMENT ON MARTIN ROAD APPROXIMATELY 1522 FEET WEST OF HARLEM ROAD. | | | |
| VERTICAL NOTES: THIS SURVEY IS CONDUCTED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORNERS ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID A18895, EPOCH DATE 2002. | | | |

| | | | |
|--|--|---|---|
| NORTH FORT BEND WATER AUTHORITY | | SEGMENT 7 CONTROL POINT 160 - SHEET 1 | |
| CONTROL POINT NUMBER 160 KEY MAP PAGE: 526-T | GRID COORDINATES Y: 13,807,021.62 X: 3,008,256.07 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES Y: 13,808,018.77 X: 3,008,647.20 | POINT ESTABLISHED BY RTK. POINTS DIRECTLY TIED: 12 & 40 | |
| HORIZONTAL ADJUSTMENT: (CONS 96 - EPOCH 2002) | SCALE FACTOR: 1.00013 | ELEVATION: 94.70 FT. | |
| MARKER: ALUMINUM CAP | STAMPING: "NORTH FORT BEND WATER AUTHORITY 160" | ELEVATION: 94.70 FT. | |
| GEODETIC COORDINATES: LATITUDE: N 29° 40' 24.98307" LONGITUDE: W 95° 43' 30.89172" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET APPROXIMATELY 221 FEET EAST OF BALDWIN ELM STREET AND 88.9 FEET NORTHWEST OF A POWER POLE UNDER ELECTRIC TOWER LINE. | | | |
| VERTICAL NOTES: THIS SURVEY IS CONDUCTED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORNERS ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID A18895, EPOCH DATE 2002. | | | |

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|--|--|---|---|
| NORTH FORT BEND WATER AUTHORITY | | SEGMENT 7 CONTROL POINT 149 - SHEET 1 | |
| CONTROL POINT NUMBER 149 KEY MAP PAGE: 526-X | GRID COORDINATES Y: 13,803,814.43 X: 3,008,482.51 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES Y: 13,806,609.16 X: 3,008,843.88 | POINT ESTABLISHED BY RTK. POINTS DIRECTLY TIED: 12 & 40 | |
| HORIZONTAL ADJUSTMENT: (CONS 96 - EPOCH 2002) | SCALE FACTOR: 1.00013 | ELEVATION: 93.58 FT. | |
| MARKER: ALUMINUM CAP | STAMPING: "NORTH FORT BEND WATER AUTHORITY 149" | ELEVATION: 93.58 FT. | |
| GEODETIC COORDINATES: LATITUDE: N 29° 39' 53.16903" LONGITUDE: W 95° 43' 29.85343" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET 310 FEET SOUTH OF THE EDGE OF PAVEMENT ON MARTIN ROAD APPROXIMATELY 5140 FEET WEST OF HARLEM ROAD. | | | |
| VERTICAL NOTES: THIS SURVEY IS CONDUCTED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORNERS ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID A18895, EPOCH DATE 2002. | | | |

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|---|--|---|---|
| NORTH FORT BEND WATER AUTHORITY | | SEGMENT 7 CONTROL POINT 161 - SHEET 1 | |
| CONTROL POINT NUMBER 161 KEY MAP PAGE: 526-T | GRID COORDINATES Y: 13,806,999.27 X: 3,007,228.33 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES Y: 13,808,794.41 X: 3,007,620.32 | POINT ESTABLISHED BY RTK. POINTS DIRECTLY TIED: 12 & 40 | |
| HORIZONTAL ADJUSTMENT: (CONS 96 - EPOCH 2002) | SCALE FACTOR: 1.00013 | ELEVATION: 93.59 FT. | |
| MARKER: ALUMINUM CAP | STAMPING: "NORTH FORT BEND WATER AUTHORITY 161" | ELEVATION: 93.59 FT. | |
| GEODETIC COORDINATES: LATITUDE: N 29° 40' 25.02634" LONGITUDE: W 95° 43' 42.53426" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET APPROXIMATELY 110 FEET WEST OF WATERVIEW ESTATES TRAIL AND 171.3 FEET SOUTH EAST OF A ELECTRIC TOWER. | | | |
| VERTICAL NOTES: THIS SURVEY IS CONDUCTED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORNERS ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID A18895, EPOCH DATE 2002. | | | |

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|--|--|---|---|
| NORTH FORT BEND WATER AUTHORITY | | SEGMENT 7 CONTROL POINT 159 - SHEET 1 | |
| CONTROL POINT NUMBER 159 KEY MAP PAGE: 526-T | GRID COORDINATES Y: 13,805,548.15 X: 3,008,379.55 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES Y: 13,807,343.10 X: 3,008,720.69 | POINT ESTABLISHED BY RTK. POINTS DIRECTLY TIED: 12 & 40 | |
| HORIZONTAL ADJUSTMENT: (CONS 96 - EPOCH 2002) | SCALE FACTOR: 1.00013 | ELEVATION: 93.33 FT. | |
| MARKER: ALUMINUM CAP | STAMPING: "NORTH FORT BEND WATER AUTHORITY 159" | ELEVATION: 93.33 FT. | |
| GEODETIC COORDINATES: LATITUDE: N 29° 40' 10.34683" LONGITUDE: W 95° 43' 29.98017" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET APPROXIMATELY 330 FEET NORTH OF THE EAST HIGH BANK OF DITCH. | | | |
| VERTICAL NOTES: THIS SURVEY IS CONDUCTED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORNERS ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID A18895, EPOCH DATE 2002. | | | |

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|---|--|---|---|
| NORTH FORT BEND WATER AUTHORITY | | SEGMENT 7 CONTROL POINT 162 - SHEET 1 | |
| CONTROL POINT NUMBER 162 KEY MAP PAGE: 526-T | GRID COORDINATES Y: 13,806,945.31 X: 3,006,213.78 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES Y: 13,808,740.45 X: 3,006,604.64 | POINT ESTABLISHED BY RTK. POINTS DIRECTLY TIED: 12 & 40 | |
| HORIZONTAL ADJUSTMENT: (CONS 96 - EPOCH 2002) | SCALE FACTOR: 1.00013 | ELEVATION: 94.08 FT. | |
| MARKER: ALUMINUM CAP | STAMPING: "NORTH FORT BEND WATER AUTHORITY 162" | ELEVATION: 94.08 FT. | |
| GEODETIC COORDINATES: LATITUDE: N 29° 40' 24.77341" LONGITUDE: W 95° 43' 54.06801" DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET APPROXIMATELY 72 FEET WEST OF WATERVIEW ESTATES TRAIL AND 27 FEET NORTHWEST OF WOOD FENCE CORNER. | | | |
| VERTICAL NOTES: THIS SURVEY IS CONDUCTED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORNERS ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID A18895, EPOCH DATE 2002. | | | |

LOG NO: 10-0078

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| CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING | |
| NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES | |
| WATER: STREET & BRIDGE WASTEWATER: RAINFALL STORM: STORM WATER QUALITY | DRAWING SCALE: FOR CITY OF HOUSTON USE ONLY CITY DWG NO.: HORIZ: AS SHOWN VERT: AS SHOWN SHEET NO: 7 OF 80 |

| | |
|--|---|
| JONES & CARTER, P.A. ENGINEERS-PLANNERS-SURVEYORS Texas Board of Professional Engineering Registration No. 4-429 6555 Goliath Dr., Suite 100 Houston, Texas 77061 (713) 777-6587 | SURVEY SHEET 2 OF 3 NORTH FORT BEND |
|--|---|

NORTH FORT BEND WATER AUTHORITY

| | | | |
|---|--|--|--|
| CONTROL POINT NUMBER 163 KEY MAP PAGE: 526-T | | SEGMENT 7A CONTROL POINT 163 - SHEET 1 | |
| GRID COORDINATES X: 3,006,253.58 Y: 13,805,967.98 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) | |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES X: 3,006,644.45 Y: 13,807,762.39 | POINT ESTABLISHED BY: RTK. | |
| HORIZONTAL ADJUSTMENT: (CORES 98-EPOCH 2002) | SCALE FACTOR: 1.00013 | POINTS DIRECTLY TIED: 12 & 40 | |
| MARKER: ALUMINUM CAP | ELEVATION: 93.76 FT. | | |
| STAMPING: "COTTON SURVEYING" | | | |

GEODETIC COORDINATES:
 LATITUDE: N 29° 40' 15.08442"
 LONGITUDE: W 95° 43' 53.91877"

VERTICAL NOTES: THIS SURVEY IS CONSIDERED TO BE THE MOST ACCURATE ELEVATION FOR THE NORTHEAST 2250 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET STORAGE DRIVE 2250 5/8 INCH SET OF NORTHWEST CORNER OF FENCE CORNER OF WATER PLANT.

DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET STORAGE DRIVE 2250 5/8 INCH SET OF NORTHWEST CORNER OF FENCE CORNER OF WATER PLANT.

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

NORTH FORT BEND WATER AUTHORITY

| | | | |
|---|--|--|--|
| CONTROL POINT NUMBER 5001 KEY MAP PAGE: 526-T | | SEGMENT 7A CONTROL POINT 5001 - SHEET 1 | |
| GRID COORDINATES X: 3,001,073.34 Y: 13,803,336.89 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) | |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES X: 3,001,464.83 Y: 13,805,231.73 | SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS. | |
| HORIZONTAL ADJUSTMENT: (CORES 98-EPOCH 2002) | SCALE FACTOR: 1.00013 | POINT ESTABLISHED BY: BROWN AND GAY ENGINEERS, INC. | |
| MARKER: 5/8" IR (WITH PLASTIC CAP) | ELEVATION: 91.69 FT. | | |
| STAMPING: "COTTON SURVEYING" | | | |

GEODETIC COORDINATES:
 LATITUDE: 29°35'55.654"
 LONGITUDE: 95°42'59.944"

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS.

DESCRIPTION: CONTROL POINT IS A 5/8" IR (WITH PLASTIC CAP) ESTABLISHED BY BROWN AND GAY ENGINEERS, INC.

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

NORTH FORT BEND WATER AUTHORITY

| | | | |
|---|--|--|--|
| CONTROL POINT NUMBER 5002 KEY MAP PAGE: 526-T | | SEGMENT 7A CONTROL POINT 5002 - SHEET 1 | |
| GRID COORDINATES X: 3,009,245.20 Y: 13,803,336.35 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) | |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES X: 3,009,538.45 Y: 13,805,634.08 | SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS. | |
| HORIZONTAL ADJUSTMENT: (CORES 98-EPOCH 2002) | SCALE FACTOR: 1.00013 | POINT ESTABLISHED BY: BROWN AND GAY ENGINEERS, INC. | |
| MARKER: 5/8" IR (WITH PLASTIC CAP) | ELEVATION: 92.62 FT. | | |
| STAMPING: "COTTON SURVEYING" | | | |

GEODETIC COORDINATES:
 LATITUDE: 29°35'20.694"
 LONGITUDE: 95°43'20.694"

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS.

DESCRIPTION: CONTROL POINT IS A 5/8" IR (WITH PLASTIC CAP) ESTABLISHED BY BROWN AND GAY ENGINEERS, INC.

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

NORTH FORT BEND WATER AUTHORITY

| | | | |
|---|--|--|--|
| CONTROL POINT NUMBER 5003 KEY MAP PAGE: 526-T | | SEGMENT 7A CONTROL POINT 5003 - SHEET 1 | |
| GRID COORDINATES X: 3,008,464.97 Y: 13,804,245.21 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) | |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES X: 3,008,856.12 Y: 13,805,040.00 | SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS. | |
| HORIZONTAL ADJUSTMENT: (CORES 98-EPOCH 2002) | SCALE FACTOR: 1.00013 | POINT ESTABLISHED BY: BROWN AND GAY ENGINEERS, INC. | |
| MARKER: 5/8" IR (WITH PLASTIC CAP) | ELEVATION: 95.08 FT. | | |
| STAMPING: "COTTON SURVEYING" | | | |

GEODETIC COORDINATES:
 LATITUDE: 29°35'7.439"
 LONGITUDE: 95°43'29.406"

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS.

DESCRIPTION: CONTROL POINT IS A 5/8" IR (WITH PLASTIC CAP) ESTABLISHED BY BROWN AND GAY ENGINEERS, INC.

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

NORTH FORT BEND WATER AUTHORITY

| | | | |
|---|--|--|--|
| CONTROL POINT NUMBER 5004 KEY MAP PAGE: 526-T | | SEGMENT 7A CONTROL POINT 5004 - SHEET 1 | |
| GRID COORDINATES X: 3,008,417.28 Y: 13,805,166.86 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) | |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES X: 3,008,808.43 Y: 13,806,961.77 | SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS. | |
| HORIZONTAL ADJUSTMENT: (CORES 98-EPOCH 2002) | SCALE FACTOR: 1.00013 | POINT ESTABLISHED BY: BROWN AND GAY ENGINEERS, INC. | |
| MARKER: 5/8" IR (WITH PLASTIC CAP) | ELEVATION: 94.47 FT. | | |
| STAMPING: "COTTON SURVEYING" | | | |

GEODETIC COORDINATES:
 LATITUDE: 29°40'06.463"
 LONGITUDE: 95°43'29.654"

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS.

DESCRIPTION: CONTROL POINT IS A 5/8" IR (WITH PLASTIC CAP) ESTABLISHED BY BROWN AND GAY ENGINEERS, INC.

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

NORTH FORT BEND WATER AUTHORITY

| | | | |
|---|--|--|--|
| CONTROL POINT NUMBER 5005 KEY MAP PAGE: 526-T | | SEGMENT 7A CONTROL POINT 5005 - SHEET 1 | |
| GRID COORDINATES X: 3,008,278.01 Y: 13,801,698.27 | VERTICAL DATUM: NAVD-88 | VERTICAL ADJUSTMENT: 2002 ADJ. (SEE VERTICAL NOTES) | |
| HORIZONTAL DATUM: NAD83 | SURFACE COORDINATES X: 3,008,689.14 Y: 13,803,692.27 | SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS. | |
| HORIZONTAL ADJUSTMENT: (CORES 98-EPOCH 2002) | SCALE FACTOR: 1.00013 | POINT ESTABLISHED BY: BROWN AND GAY ENGINEERS, INC. | |
| MARKER: 5/8" IR (WITH PLASTIC CAP) | ELEVATION: 94.41 FT. | | |
| STAMPING: "COTTON SURVEYING" | | | |

GEODETIC COORDINATES:
 LATITUDE: 29°43'30.988"
 LONGITUDE: 95°43'30.988"

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 148 HAVING A PUBLISHED ELEVATION OF 92.58 NAVD 88, 2002 ADJUSTMENT (SEE VERTICAL NOTES). RESTRICTED RESERVE E PLAT NUMBER 20080063 OF THE FORT BEND COUNTY PLAT RECORDS.

DESCRIPTION: CONTROL POINT IS A 5/8" IR (WITH PLASTIC CAP) ESTABLISHED BY BROWN AND GAY ENGINEERS, INC.

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

* MORTON ROAD HAS CHANGED TO WEST BELLFORT ROAD

ENGINEER:
JC JONES & CARTER, INC.
 6333 Galloway Dr., Suite 100
 Houston, Texas 77061
 (713) 777-4337

SEGMENT 7A
SURVEY SHEET 3 OF 3

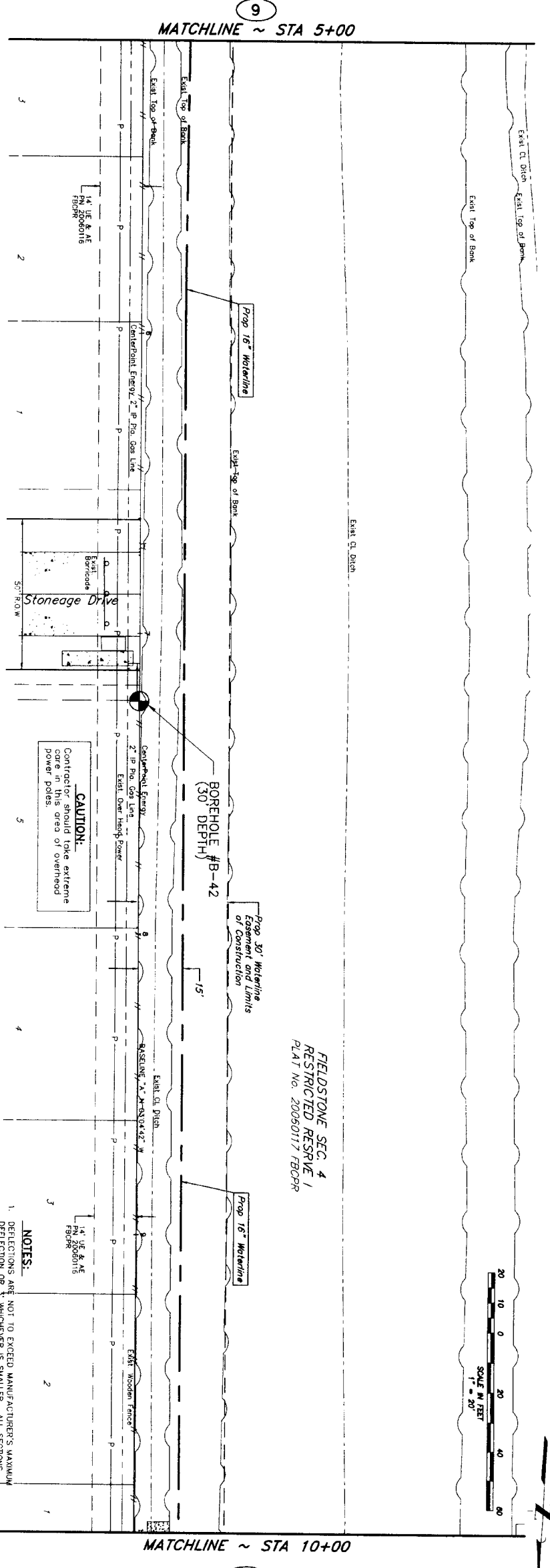
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

WATER: STREET & BROOK
WASTEWATER: TRAILS
STORM: STORM WATER QUALITY

FILE NO.: FOR CITY OF HOUSTON USE ONLY (ON DWG NO.)
DRAWING SCALE:
 HORIZ: AS SHOWN
 VERT:

SHEET 8 OF 80

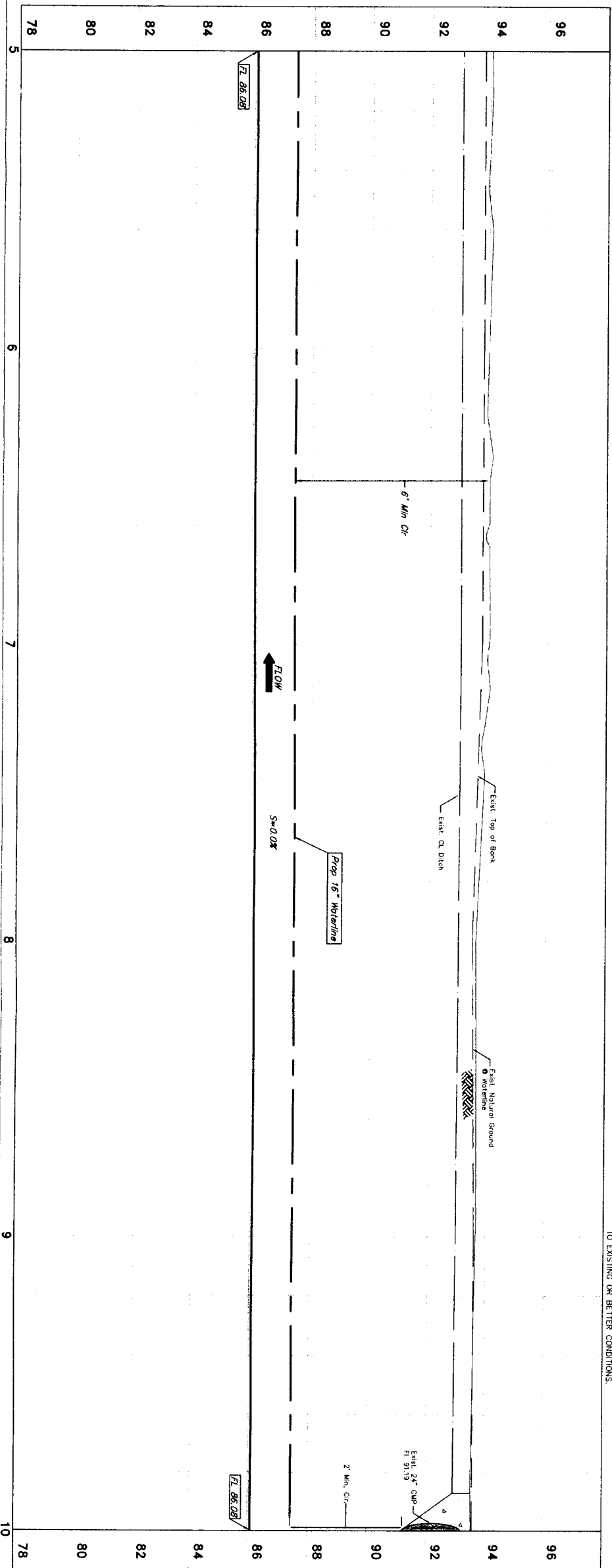


FIELDSTONE SEC. 4
 RESTRICTED RESERVE 1
 PLAT NO. 20050117 FBOPR

CAUTION:
 Contractor should take extreme care in this area of overhead power poles.

WATERMENN ESTATES
 SECTION B
 PLAT NO. 20050113 FBOPR

- NOTES:**
1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 3" WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING THE DITCHES ALONG THE EASTERN SIDE OF FIELDSTONE SECTION 4.
 3. CONTRACTOR TO REMOVE AND REPLACE 24" CORRUGATED METAL WATERLINE TO BEST FIT WITHIN WATER LINE EASEMENT TO EXISTING OR BETTER CONDITIONS.



PRIVATE UTILITY LINES SHOWN

Date: 9/6/11
 Signature: [Signature]
 Title: [Title]

NOTICE
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET ROW OR EASEMENTS CALL LONG STAR NOTIFICATION CENTER: (713) 223-4281 OR 1-800-689-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.

BENCHMARK: CONTROL POINT NO. 94 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 94" LOCATED APPROXIMATELY 700 FEET SOUTHEAST OF THE SOUTH END OF SHADY LAKE GROVE, 4.5 FEET NORTH OF THE BANK OF LONG POINT SLough. (NAND-88, 2002 ADJUSTMENT) ELEV = 91.18

DATE: 9/11/11

12121 Wickshester Lane
 Houston, Texas 77079
 (713) 461-9800
 TITLE: PWD REGISTRATION NO. F-402

PLAN & PROFILE
BASELINE "A"
 FROM STA.5+00 TO STA.10+00

NORTH FORT BEND

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

NO. DATE REVISION APPROVED

1. DATE

2. DATE

3. DATE

4. DATE

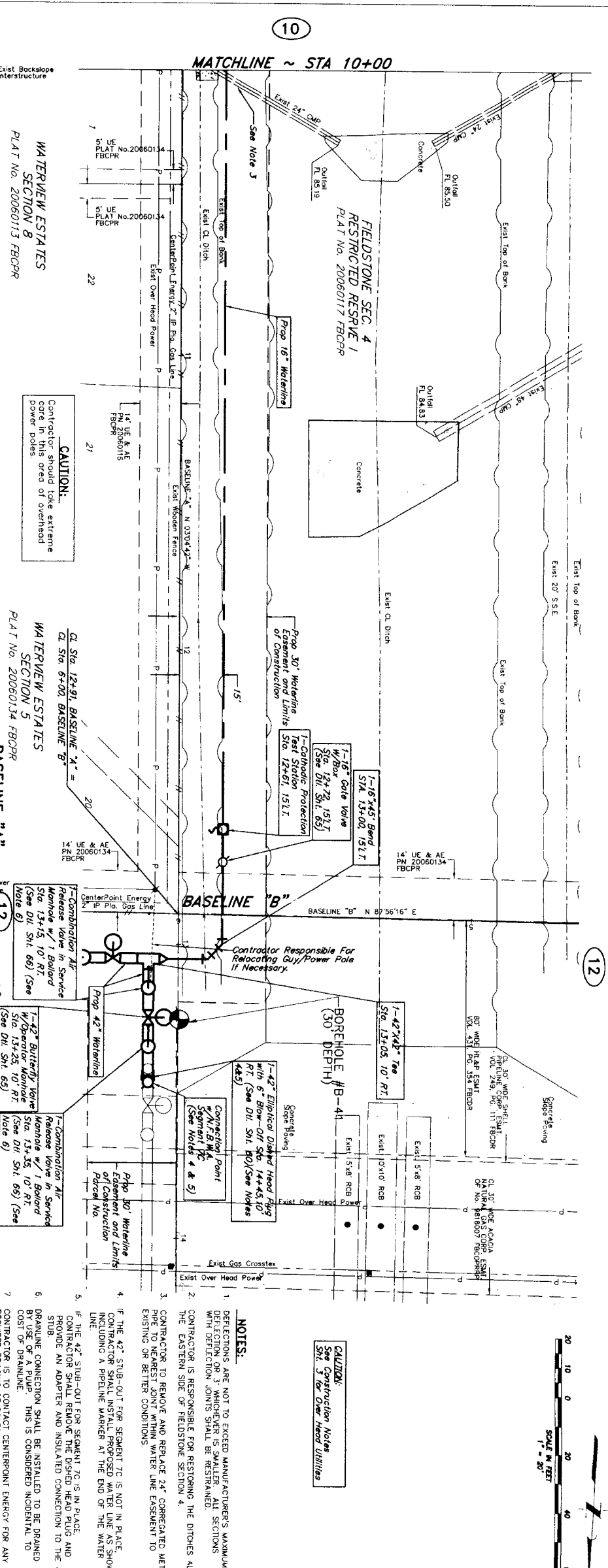
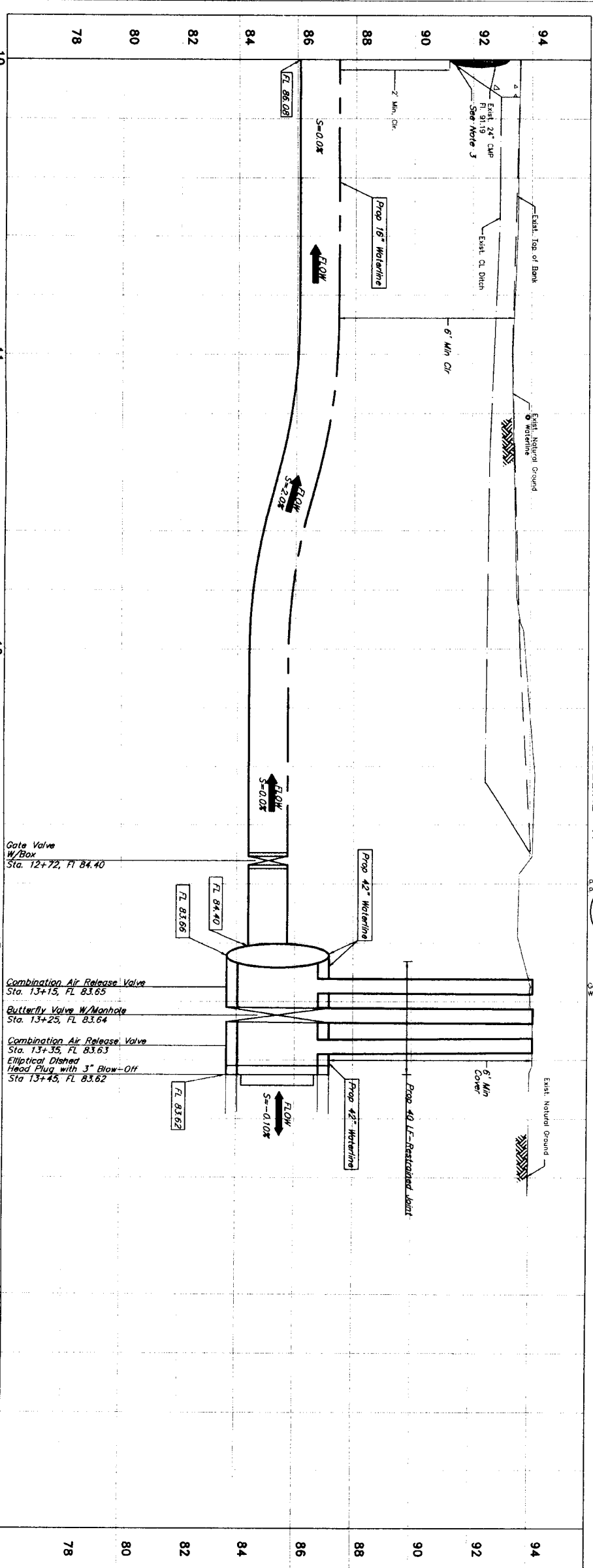
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DRAWING SCALE: [Blank]

HORIZ : 1" = 20'

VERT : 1" = 2'

SHEET No. 10 OF 80



WATERMAIN ESTATES
 SECTION 8
 PLAT No. 20060113 FBOPR

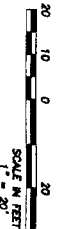
WATERMAIN ESTATES
 SECTION 5
 PLAT No. 20060134 FBOPR

WATERMAIN ESTATES
 SECTION 6
 PLAT No. 20060134 FBOPR

- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 3" WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING THE DITCHES ALONG THE EASTERN SIDE OF FIELDSTONE SECTION 4.
 - CONTRACTOR TO REMOVE AND REPLACE 24" CORRUGATED METAL PIPE TO EXISTING WATER MAIN LINE EASEMENT TO EXISTING OR BETTER CONDITIONS.
 - IF THE 42" STUB-OUT FOR SEGMENT 7C IS NOT IN PLACE, CONTRACTOR SHALL INSTALL AND RESTRAINED TO THE WATER MAIN LINE.
 - IF THE 42" STUB-OUT FOR SEGMENT 7C IS IN PLACE, CONTRACTOR SHALL REMOVE THE DISHD HEAD PLUG AND PROVIDE AN ADAPTER AND INSULATED CONNECTION TO THE 42" STUB.
 - DRAWLINE CONNECTION SHALL BE INSTALLED TO BE DRAWN BY USE OF A PUMP. THIS IS CONSIDERED INCIDENTAL TO COST OF DRAWLINE.
 - CONTRACTOR IS TO CONTACT CENTERPOINT ENERGY FOR ANY REQUIRED BRACING OF POLES.

10

12

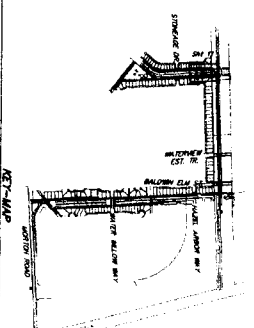


CAUTION:
 See Construction Notes
 Sta. 13+05, 10' RT.
 See Over Head Utilities

PRIVATE UTILITY LINES SHOWN

Date: 9/20/11
 Centerpoint Energy/Electric Facilities (approved only for crossing underground ductlines, unless otherwise noted.)
 Date: 9/20/11
 Date: 9/20/11
 Date: 9/20/11

NOTE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL TONE STAR NOTIFICATION CENTER (713) 223-4267 OR 1-800-689-6344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL BENCHMARK: CONTROL POINT NO. 94 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 94" LOCATED APPROXIMATELY 700 FEET SOUTHEAST OF THE SOUTH END OF SHADY LAKE GROVE 4.5 FEET NORTH OF THE BANK OF LONG POINT SLOUGH. (NAD83-88, 2002 ADJUSTMENT) ELEV = 91.18



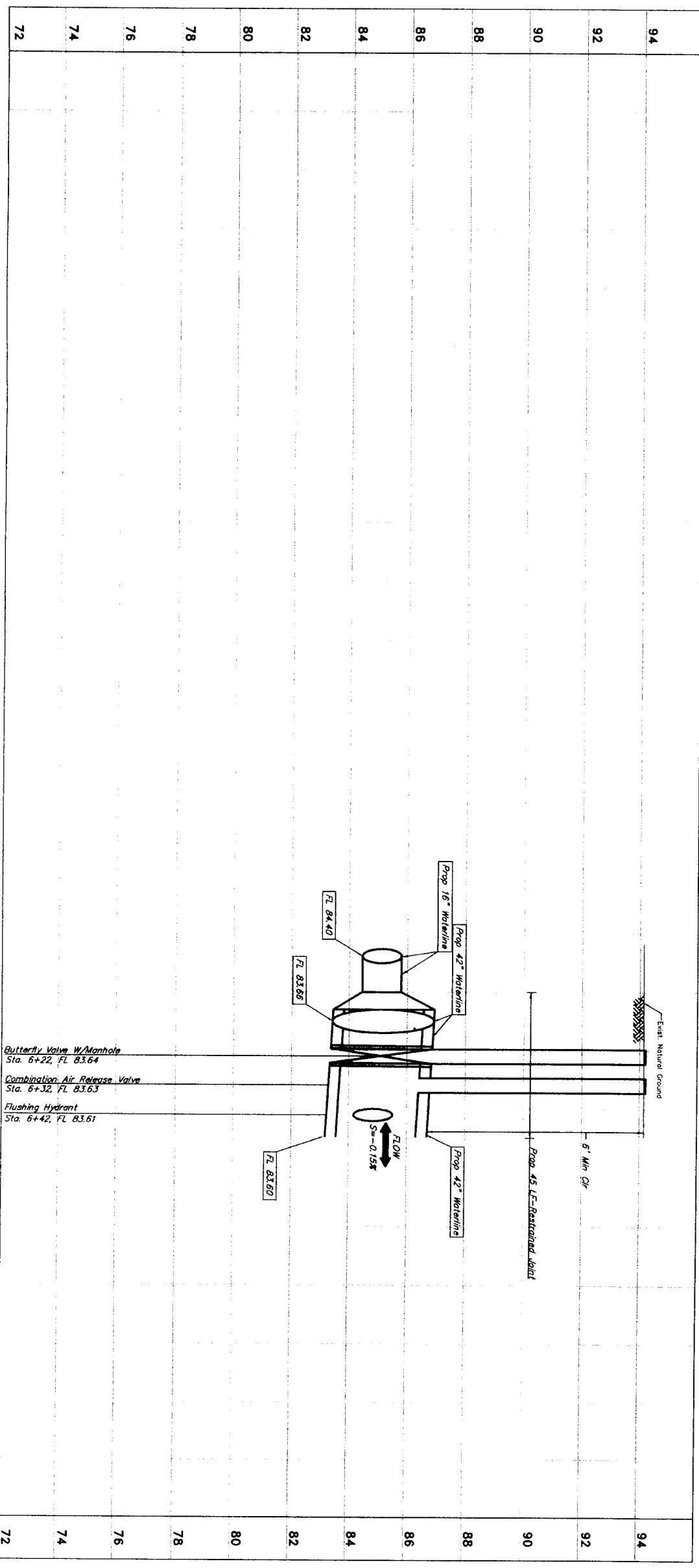
MADE IN MEXICO
 93700
 4-1-11

JNE T. G. Miller
 engineers
 12121 Wicklander Lane
 Houston, Texas 77079
 (713) 461-9000
 TEXAS REG. REGISTRATION NO. 1-487
 NFBWA SEGMENT 7A

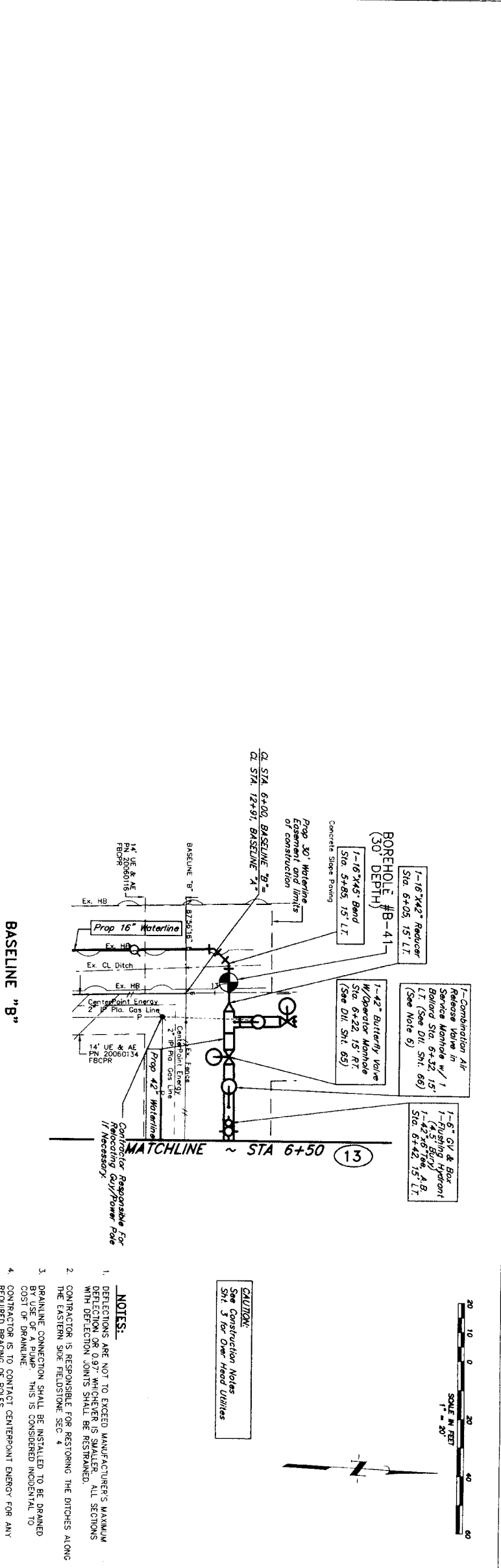


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 SHEET & BRIDGE
 TREATING
 SIGN AND QUALITY
 FOR CITY OF HOUSTON USE
 DATE ON DWG. NO.

DRAWING SCALE
 HORZ. : 1" = 20'
 VERT. : 1" = 2'
 SHEET NO: 11 OF 80
 LOG NO.: 10-0078



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| 72 | |
| 74 | |
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| 92 | |
| 94 | |



PRIVATE UTILITY LINES SHOWN

Date: 9/10/11
 Centerpoint Energy/ Electric Facilities (Approved only for crossing underground facilities, unless otherwise noted.)
 SPC UTILITY LINES SHOWN
 Date: 9/10/11
 Date: 9/10/11
 Date: 9/10/11

NOTE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-688-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.
 BENCHMARK: CONTROL POINT NO. 94 BEING A SET 5/8" ROD WITH AN ALUMINUM CAP STAMPED NORTH POINT SOUTHWEST OF THE SOUTH END OF SHADY LAKE GROVE 4.5 FEET NORTH OF THE BANK OF LONG POINT SLough. (NAND-88, 2002 ADJUSTMENT) ELEV = 91.18

CONTRACTOR IS TO CONTACT CENTERPOINT ENERGY FOR ANY REQUIRED BRANCHES OR TAPS.

NOTES:
 1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97" WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING THE DITCHES ALONG THE EASTERN SIDE FIELDSTONE SEC. 4
 3. BRANLINE CONNECTION SHALL BE INSTALLED TO BE DRAINED COST OF DRAINAGE THIS IS CONSIDERED INCIDENTAL TO REQUIRED BRANLINE OR TAPS.
 4. CONTRACTOR IS TO CONTACT CENTERPOINT ENERGY FOR ANY REQUIRED BRANLINE OR TAPS.

CAUTION:
 See Construction Notes Sht. 3 for Over Head Utilities

CONTRACTOR RESPONSIBLE FOR RELOCATING GUY/POWER POLE IF NECESSARY.

SCALE IN FEET
 1" = 20'

DATE: 9-1-11

12121 Wilkshire Lane
 Suite 200 77079
 Houston, Texas 77058
 (713) 481-9000
 100% TIME REGISTRATION NO. F-407

NFBWA SEGMENT 7A
 BASELINE "B"
 FROM STA. 5+85 TO STA. 6+50

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

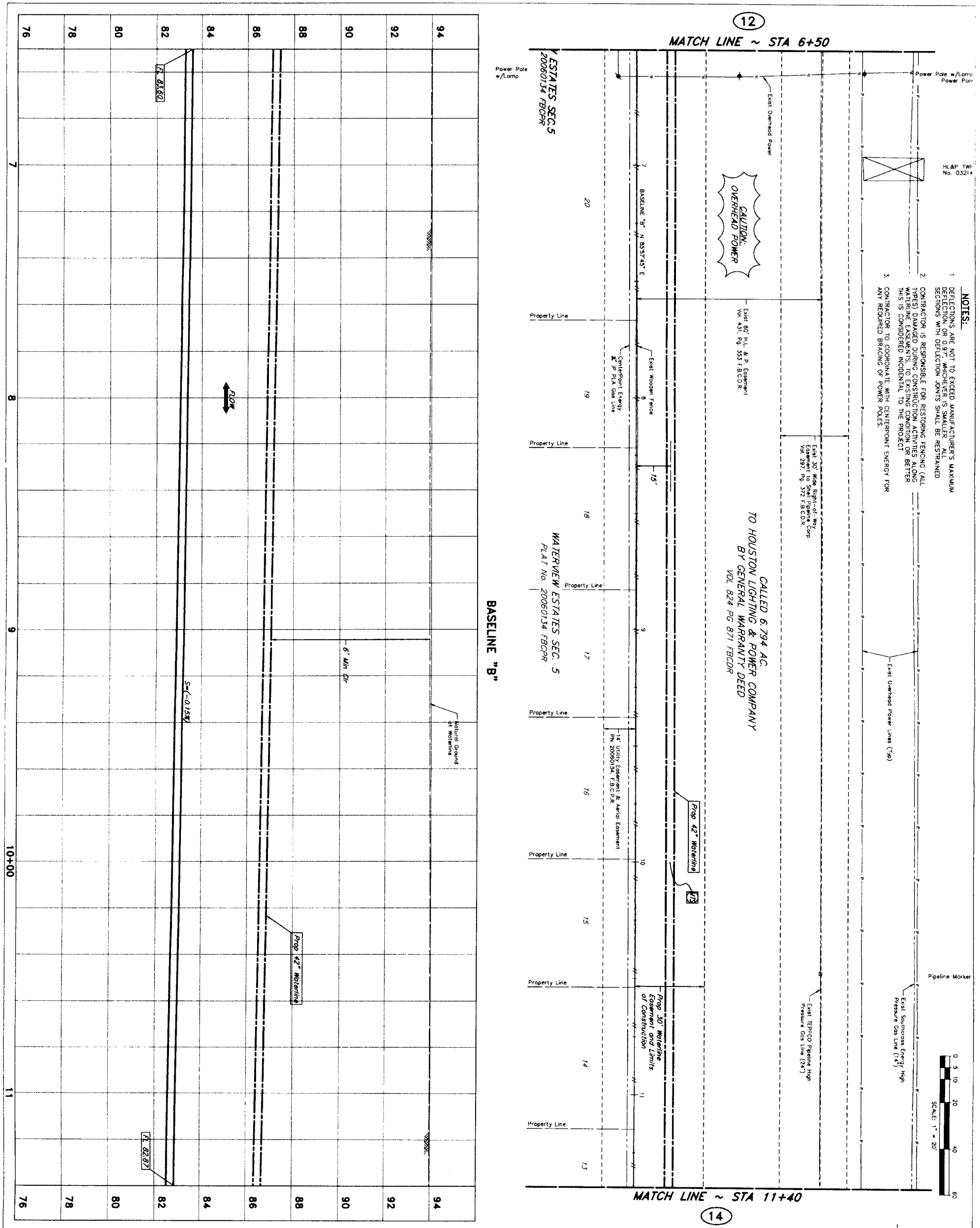
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

WATER: STREET & BRIDGE
 WASTEWATER: TRAFFIC
 SPOW: STORM WATER QUALITY
 FACILITIES: FACILITIES

FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY DWG NO.)
 DRAWING SCALE

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

SHEET NO. 12 OF 80

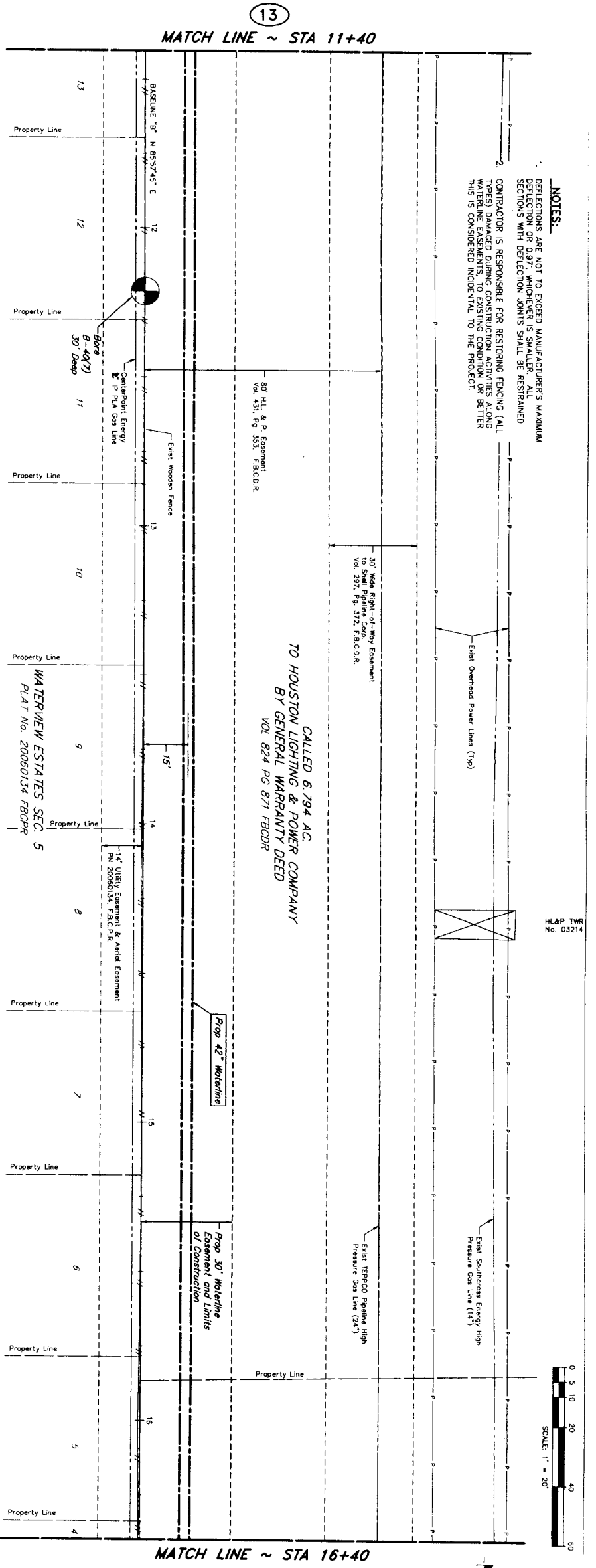
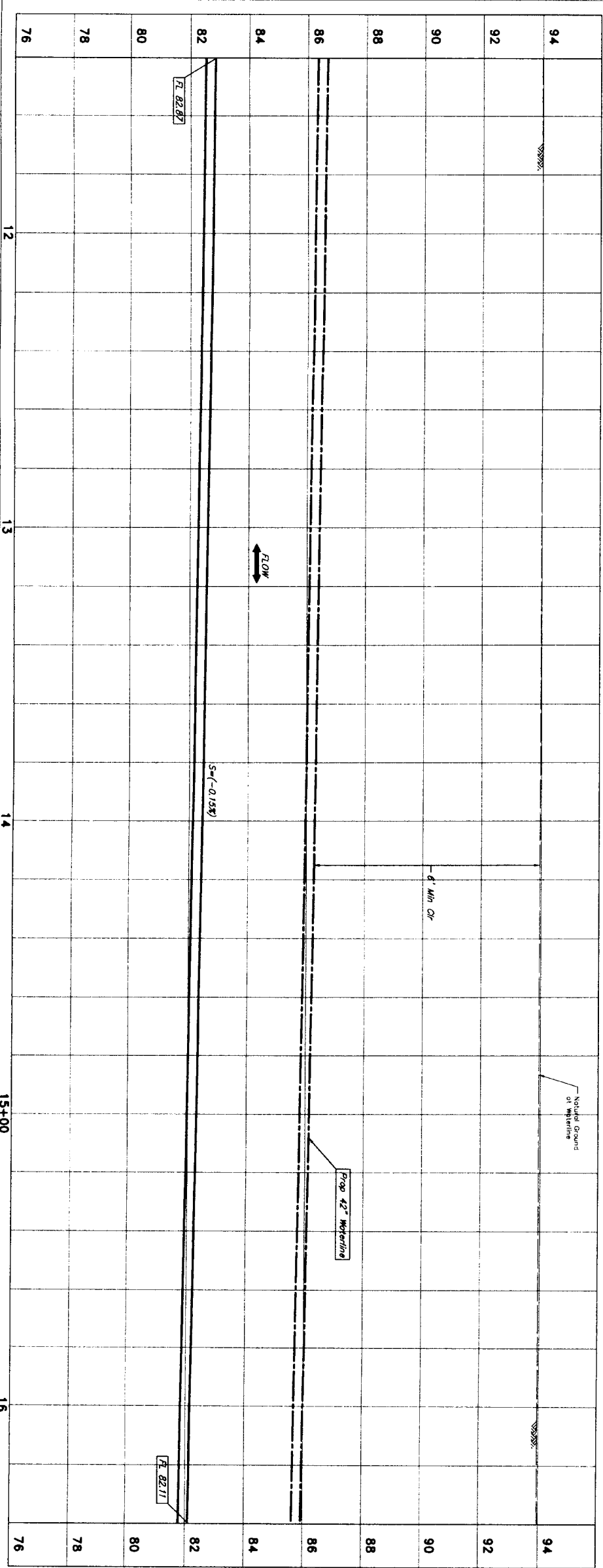


- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97" WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG THIS PROJECT. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.
 - ANY REQUIRED BRACING OF POWER POLES.



| <p>PRIVATE UTILITY LINES SHOWN</p> <p>Date: <i>9/2/11</i></p> <p>Centerpoint Energy / Electric Facilities (Approved only notes) Valid At Time Of Review Only</p> <p>AT&T TEXAS/SEC UTILITY LINES SHOWN</p> <p>Date: _____</p> <p>AT&T TEXAS/SEC Approved for underground conduit facilities only. Signature valid for one year.</p> <p>Date: <i>9/2/11</i></p> <p>Centerpoint Energy / Gas Facilities (Approved only notes) Valid At Time Of Review Only</p> <p>Date: _____</p> <p>Centerpoint Energy / Gas Facilities (Approved only notes) Valid At Time Of Review Only</p> <p>Date: <i>9/2/11</i></p> | | | | | | | | | | | | | | | | | | | | | |
|--|------|----------|----------|----------|----------|---|--|--|--|---|--|--|--|---|--|--|--|---|--|--|--|
| <p>NOTICE:</p> <p>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</p> <p>TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.</p> <p>BENCHMARK CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM POINT SPOUTTED BEHIND WATER AUTHORITY 156' LOCATED APPROXIMATELY 330 FEET N80D WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. (NAD-83, 2002 ADJUSTMENT)</p> <p>ELEV = 93.33'</p> | | | | | | | | | | | | | | | | | | | | | |
| <p>REVISION</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>REVISION</th> <th>APPROVED</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> </tr> </table> | | NO. | DATE | REVISION | APPROVED | 1 | | | | 2 | | | | 3 | | | | 4 | | | |
| NO. | DATE | REVISION | APPROVED | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | |
| <p>J. JONES & CARTER, INC. ENGINEERS & PLANNERS, L.L.P. Texas Board of Professional Engineers Registration No. F-299 6335 Outdoor Dr. Suite 100 Houston, Texas 77061 (713) 773-6337</p> | | | | | | | | | | | | | | | | | | | | | |
| <p>SEGMENT 7A</p> <p>BASELINE "B" STA 6+50 TO STA 11+40</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>WATER: STREET & BRIDGE</p> <p>WASTEWATER: POINTS</p> <p>STORM: STORM WATER DUALITY</p> <p>UTILITIES: FACILITIES</p> <p>FILE NO.: _____</p> <p>DRAWING SCALE: _____</p> <p>HORIZ : 1" = 20'</p> <p>VERT : 1" = 2'</p> <p>SHEET NO. 13 OF 80</p> | | | | | | | | | | | | | | | | | | | | | |

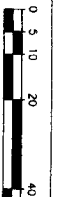
LOG NO: 10-0078



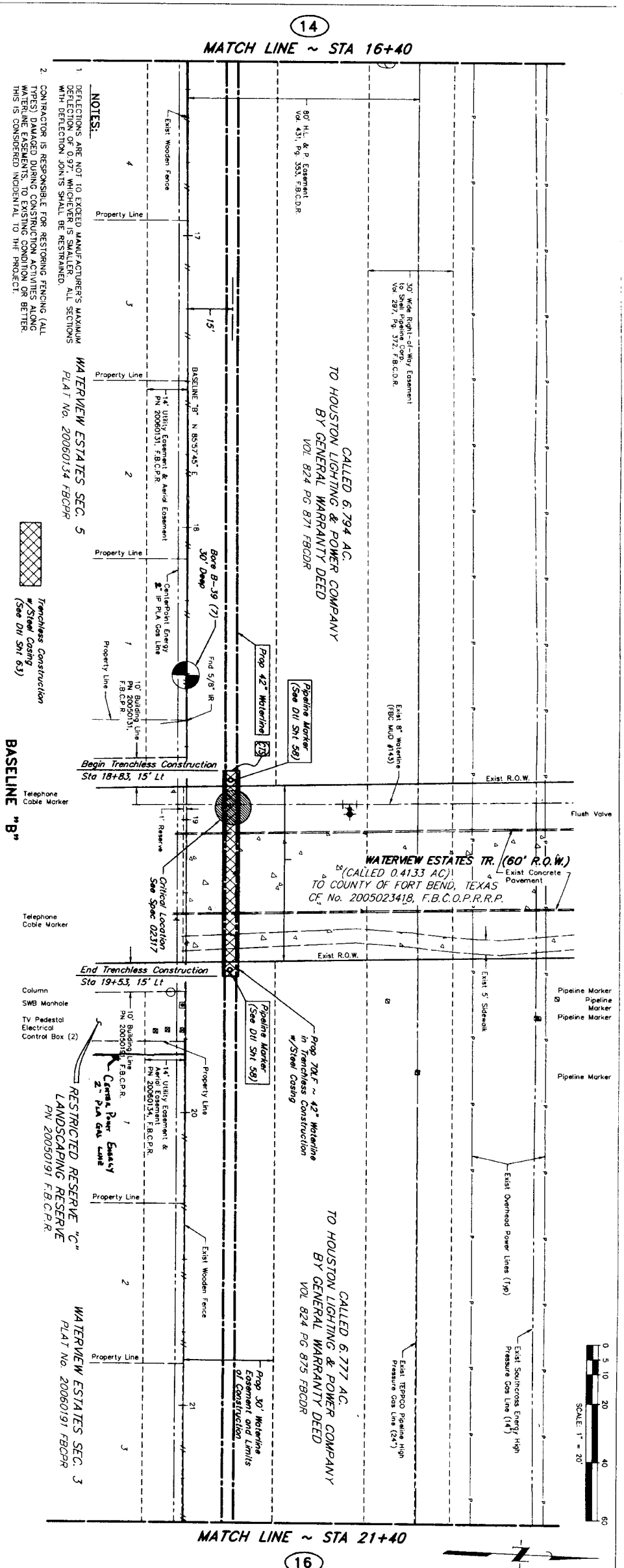
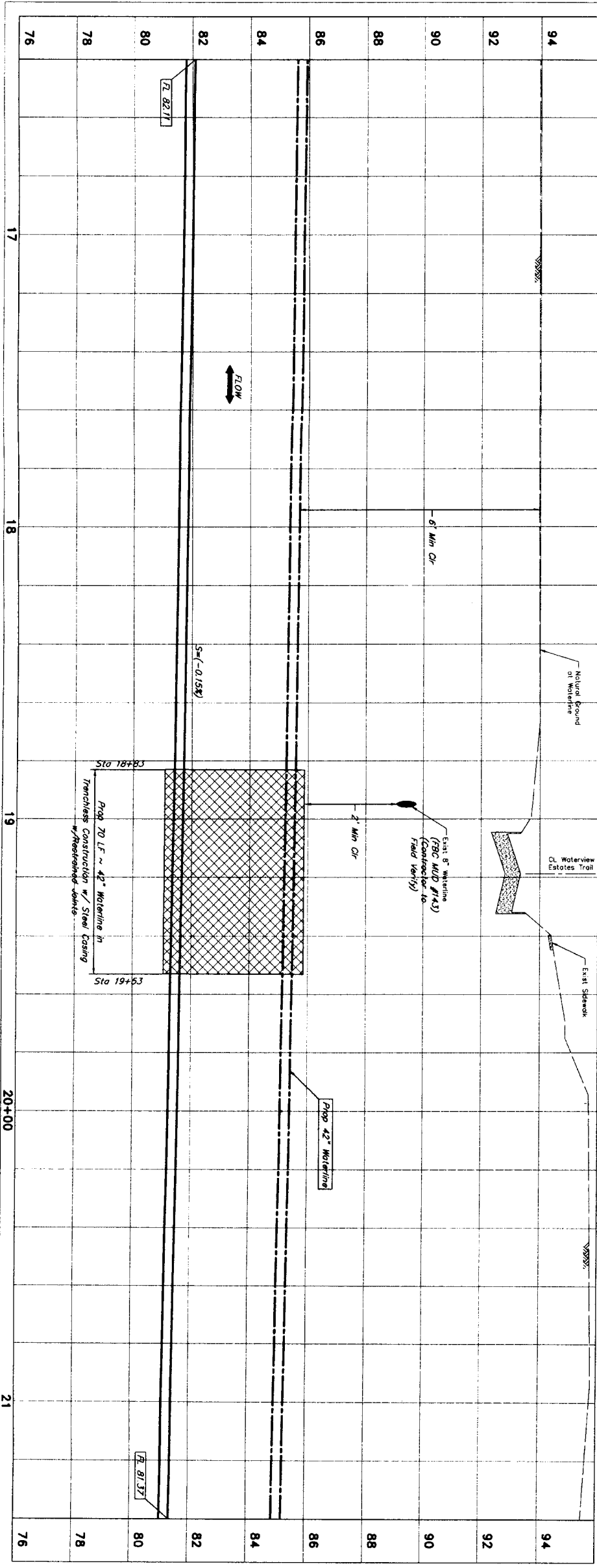
NOTES:
 1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97", WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL EXISTING AND NEW) TO ORIGINAL CONDITION OR BETTER. WATER DAMAGE TO FENCING IS NOT COVERED BY THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.

CALLED 6.794 A.C.
 TO HOUSTON LIGHTING & POWER COMPANY
 BY GENERAL WARRANTY DEED
 VOL 824 PG 871 FBODR

HL&P TWR
 No. 05214



| | |
|---|--|
| PRIVATE UTILITY LINES SHOWN | |
| <p>DATE: 9/24/11 CENTERPOINT ENERGY / Electric Facilities (operated only) VALID AT TIME OF REVIEW ONLY ALL TXAS/REG UTILITY LINES SHOWN DATE: 9/24/11 CENTERPOINT ENERGY / Gas Facilities GAS SERVICE LINES ARE NOT SHOWN. DATE: 9/24/11</p> | <p>NOTICE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STATE UTILITY CENTER, (713) 223-4587 OR 1-800-669-8344. TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-7171. BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY" IS LOCATED APPROXIMATELY 350 FEET NORTH OF WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. ELEV = 93.33' (NAVD-88, 2002 ADJUSTMENT)</p> |
| | |
| <p>J.C. JONES & CARTER, L.P.C. ENGINEERS-PLANNERS-SURVEYORS 8505 GARDEN DR., SUITE 100 HOUSTON, TEXAS 77030 (713) 777-8831</p> | |
| <p>SEGMENT 7A BASELINE "B" STA 11+40 TO STA 16+40</p> | |
| | |
| <p>NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES</p> | |
| <p>CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p> | |
| <p>WATER: STREET & BRIDGE WASTEWATER: PUBLIC STORM: STORM WATER QUALITY</p> | |
| <p>FILE NO.: DRAWING SCALE: HORIZ : 1" = 20' VERT : 1" = 2' SHEET 14 OF 80</p> | |
| <p>FOR CITY OF HOUSTON USE ONLY CITY Dwg NO.:</p> | |



PRIVATE UTILITY LINES SHOWN

Date: 9/26/11

AT&T TEXAS/SBC Approved for underground conduit
 (signature) only. Signature valid for one year.
 Date: 9/26/11

Centerpoint Energy/Gas Facilities
 (signature) only. Signature valid for one year.
 Date: 9/26/11

Contractor: _____ Date: _____

NOTICE

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER, (713) 223-4567 OR 1-800-589-8344

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

BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ADJUSTED DEPARTMENT OF TRANSPORTATION WATER WILLOW WHY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH = 93.33' (NAVD-88, 2002 ADJUSTMENT)

NOT TO SCALE

Professional Engineer Seal:
 JAMES L. JONES
 LICENSED PROFESSIONAL ENGINEER
 STATE OF TEXAS
 No. 15808
 EXPIRES 08/31/2012

| NO. | DATE | REVISION | APPROVED |
|-----|------|----------|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

SEGMENT 7A

BASELINE "B"
 STA 16+40 TO STA 21+40

NORTH FORT BEND

JONES & CARTER, INC.
 ENGINEERS-PLANNERS-SURVEYORS
 Texas Board of Professional Engineers Registration No. F-429
 6555 Galveston Dr., Suite 100 Houston, Texas 77061 (713) 777-5837

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

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

WATER: STREET & SEWAGE

WASTEWATER: TRAFFIC

STORM: STORM WATER QUALITY

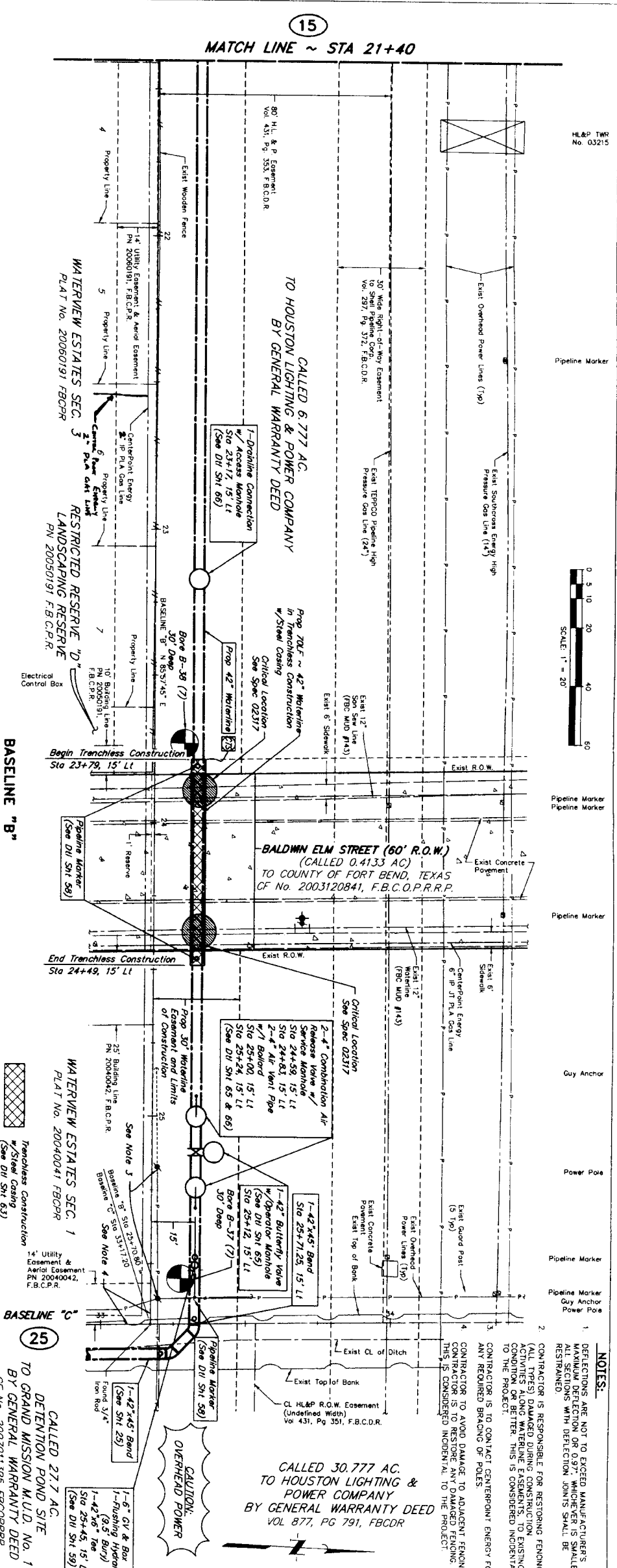
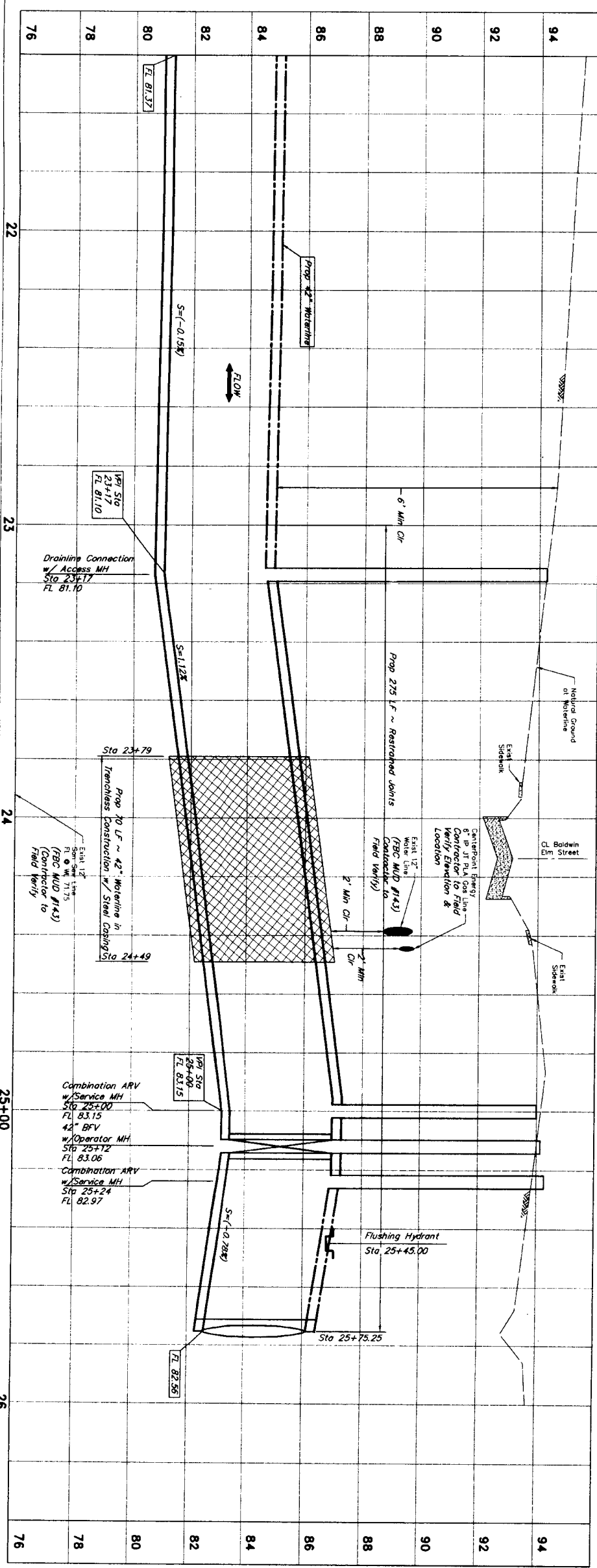
FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY DMC NO.)

DRAWING SCALE

HORIZ : 1" = 20'

VERT : 1" = 2'

SHEET 15 OF 80



| | | | |
|-----|------|----------|----------|
| NO. | DATE | REVISION | APPROVAL |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

J.C. JONES & CARTER, INC.
 ENGINEERS - PLANNERS - SURVEYORS
 6333 Oakley Dr., Suite 100 Houston, Texas 77061 (713) 777-8887
 SEGMENT 7A
 BASELINE "B"
 STA 21+40 TO STA 26+00

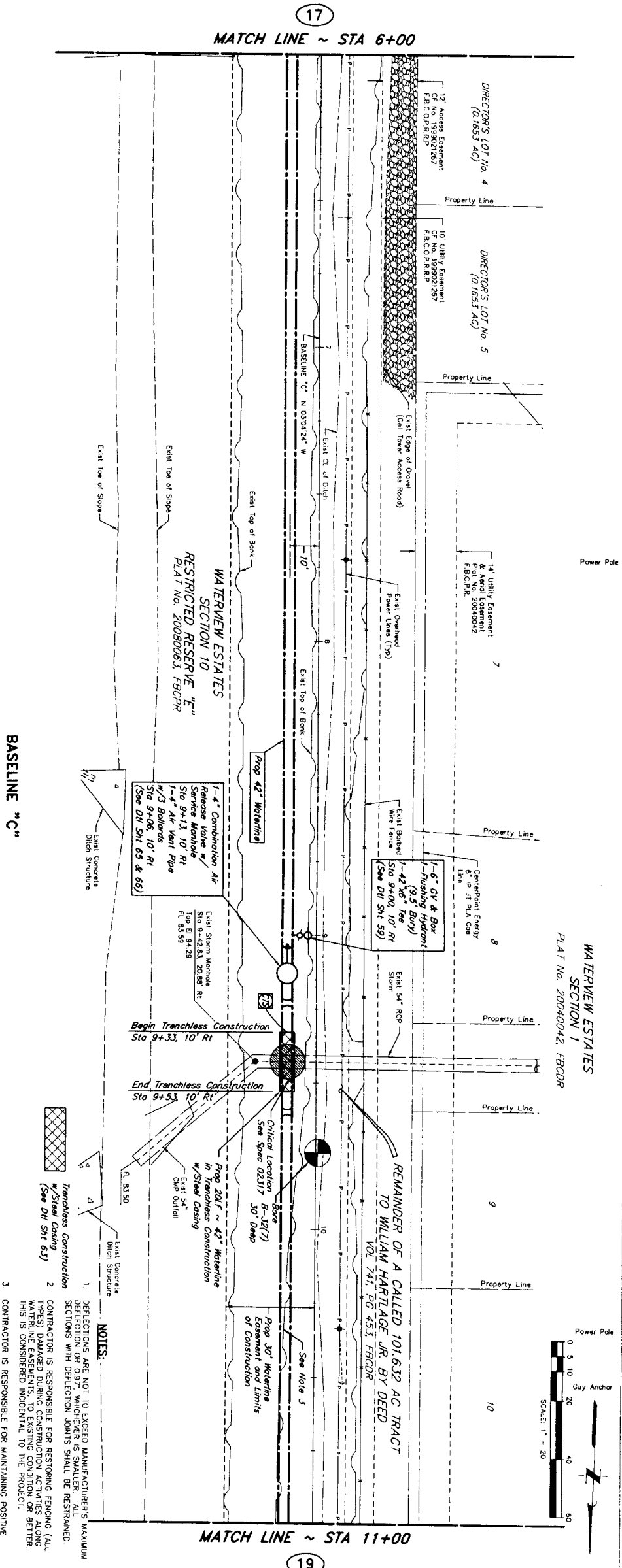
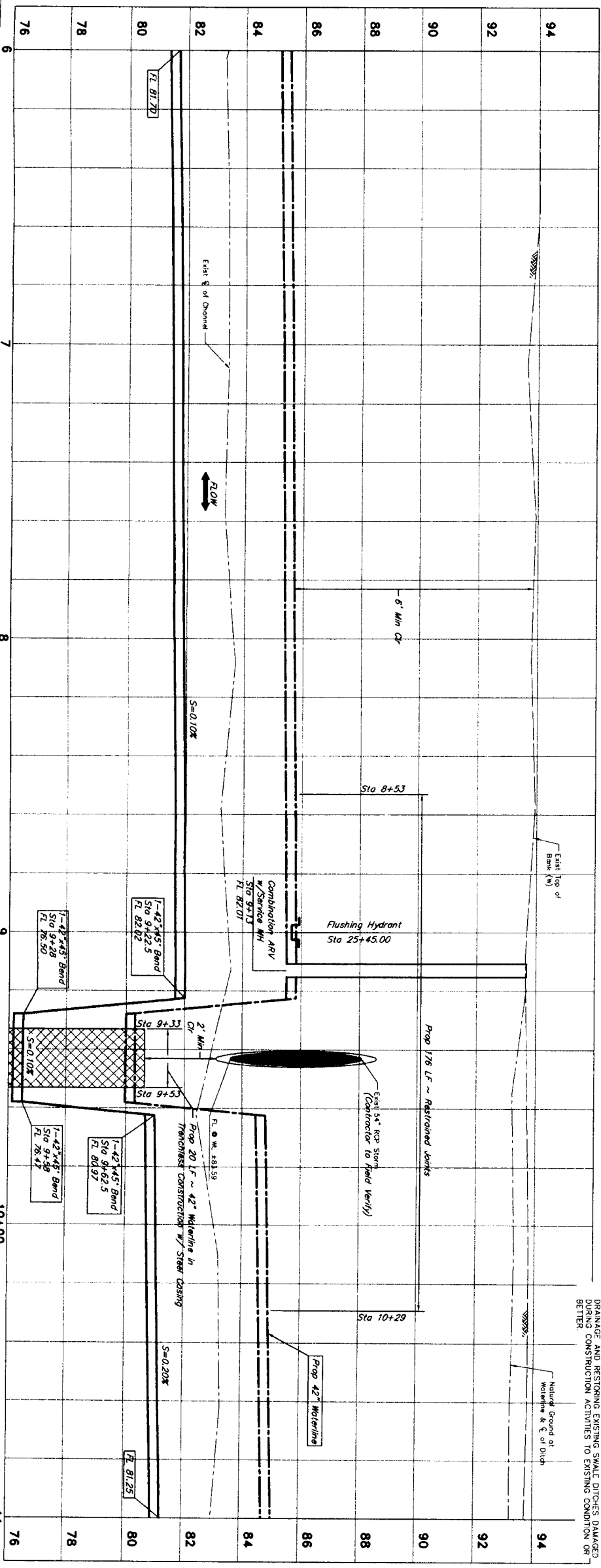
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 FOREMAN
 STORM WATER QUALITY

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 FILE NO.:
 DRAWING SCALE:
 HORIZ: 1" = 20'
 VERT: 1" = 2'
 SHEET NO. 16 OF 80

PRIVATE UTILITY LINES SHOWN
 Date: 9/16/11
 Date: 9/16/11
 Date: 9/16/11

NOTES:
 1. AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENT FOR ANY UTILITIES, CONTACT UTILITY CENTER (713) 223-4557 OR 1-800-859-8344.
 2. TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL UTILITY CENTER AT 713-207-7777.
 BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY 159" LOCATED APPROXIMATELY 330 FEET NORTH OF WATER WILLOW WAY 710 FEET EAST OF THE EAST HIGH BANK OF DITCH (NWD - 88, 2002 ADJUSTMENT) ELEV. = 93.33'

DATE: 9/16/11
 DATE: 9/16/11
 DATE: 9/16/11



BASELINE "C"

- NOTES:**
1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTIONS. DEFLECTIONS SHALL BE MEASURED AT SMALLER SPACINGS WITH DEFLECTION SPANS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG MAINTENANCE EASEMENTS. TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.
 3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AND RESTORING EXISTING SMALL DITCHES DAMAGED DURING CONSTRUCTION ACTIVITIES TO EXISTING CONDITION OR BETTER.

PRIVATE UTILITY LINES SHOWN

Date: 9/6/11

AT&T TEXAS/SBC Approved for underground conduit.
 Date: 9/6/11
 Date: 9/6/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET P.O.W. OR EASEMENTS CALL LONG BEACH NOTIFICATION CENTER: (713) 223-4587 OR 1-800-669-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT AT 713-207-2777.

BENCHMARK CONTROL POINT NO. 158 BEING A SET 5/8" IRON ROD. AN ALUMINUM CAP SHARDED NORTH FORT BEND WATER AUTHORITY. 1.69' ABOVE THE 2.31' HIGH POINT OF WATER WILLOW WAY 7.2 FEET EAST OF THE EAST HIGH POINT OF DITCH. (NAVD-88, 2002 ADJUSTMENT)
 ELEV. = 93.33'

DATE: 9/6/11
 NOT TO SCALE

NO. DATE RETURN APPROV.

J. JONES & CARTER, P.C.
 ENGINEERS-PLANNERS-SURVEYORS
 Texas Board of Professional Engineer Registration No. F-429
 6335 Galena Dr., Suite 100 Houston, Texas 77061 (713) 777-6337

SEGMENT 7A

BASELINE "C"
 STA 6+00 TO STA 11+00

NORTH FORT BEND

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

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER STREET & BRIDGE

STORM TRENCH

UTILITIES STORM WATER QUALITY

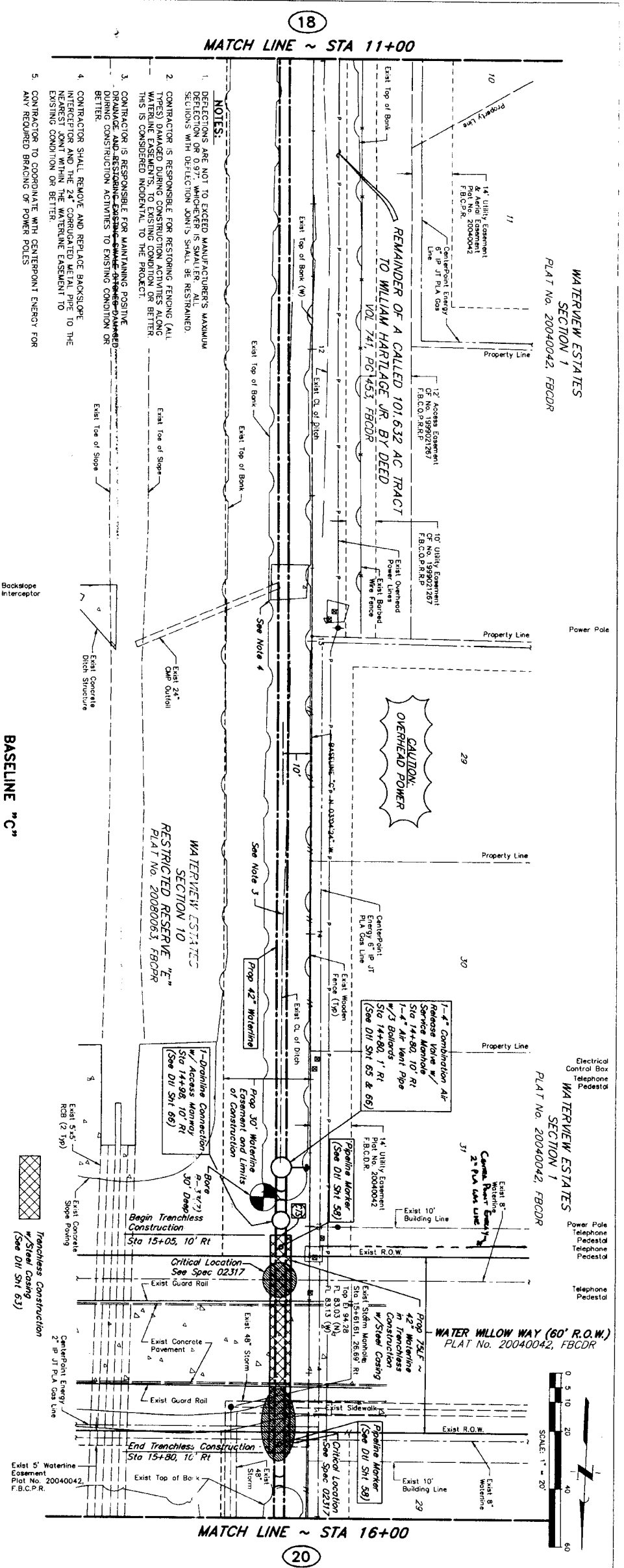
FILE NO. FOR CITY OF HOUSTON USE ONLY (CITY DWG. NO.)

DRAWING SCALE

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

SHEET No. 18 OF 80

LOG NO.: 10-0078



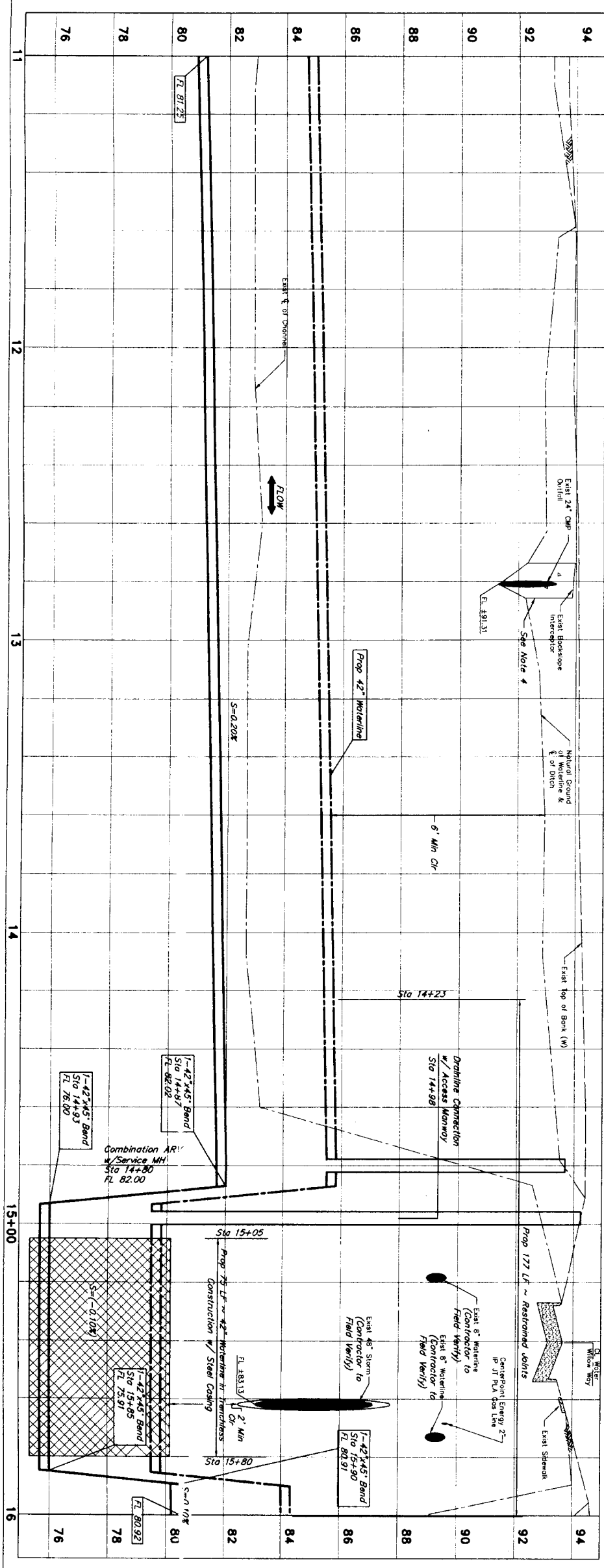
PRIVATE UTILITY LINES SHOWN

Date: 7/26/11
 AT&T TEXAS/SEC Approved for underground conduit facilities only. Signature valid for one year.
 Date: 7/26/11
 Date: 7/26/11

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

BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED NORTH FORT BEND WATER AUTHORITY CENTER POINT 50 FEET NORTH OF WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. (NAD-88, 2002 ADJUSTMENT)
 ELEV = 93.33'

DATE: 7/26/11
 TIME: 10:00 AM
 BY: JAMES C. JONES
 LICENSE NO. 10080
 STATE OF TEXAS



BASELINE "C"
 STA 11+00 TO STA 16+00

SEGMENT 7A

J. JONES & CARTER, INC.
 ENGINEERS - PLANNERS - SURVEYORS
 Texas Board of Professional Engineers Registration No. E-429
 6330 Oaklawn Dr., Suite 100, Houston, Texas 77061 (713) 777-6337

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

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

NO. DATE APPROVED

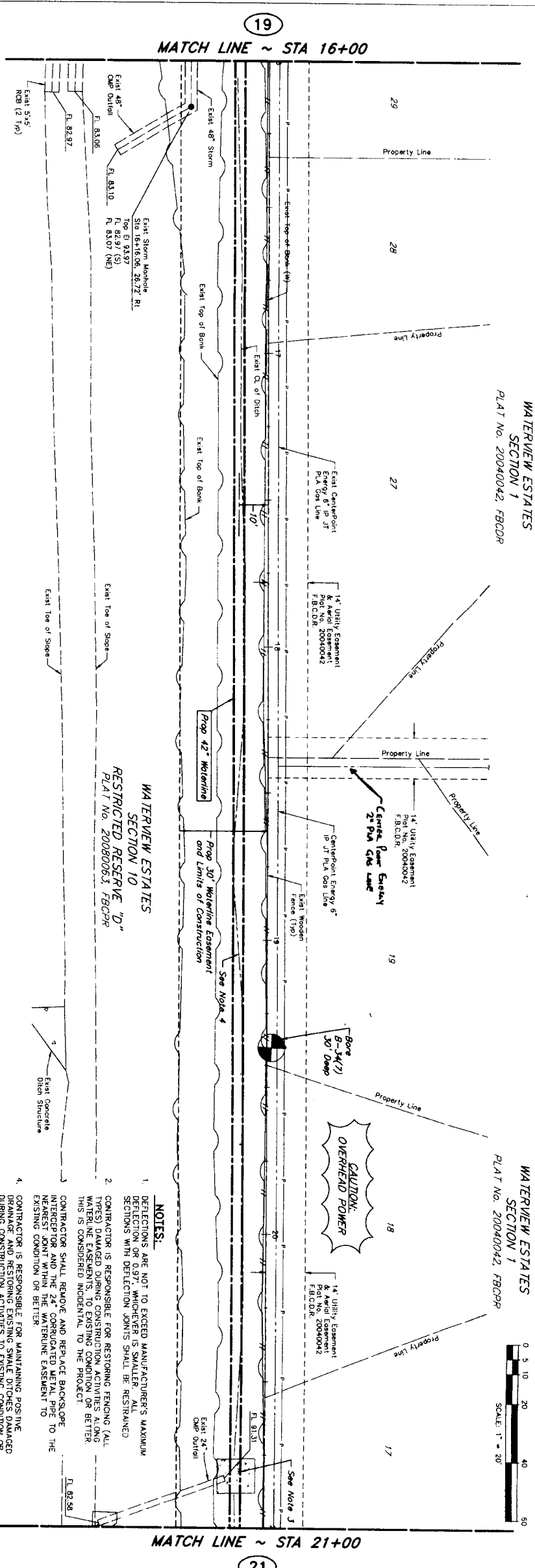
NO. DATE APPROVED

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

SHEET No. 19 OF 80

WATERVIEW ESTATES
SECTION 1
PLAT No. 20040042, FBGDR

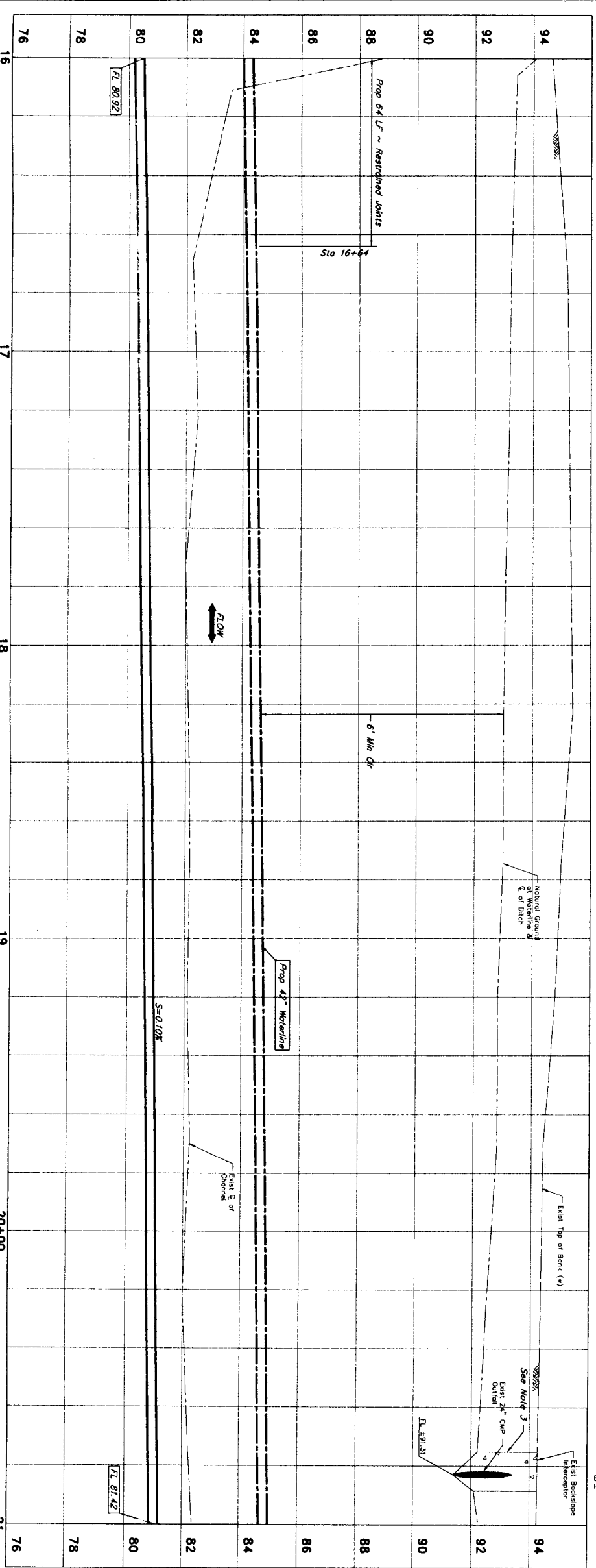
WATERVIEW ESTATES
SECTION 1
PLAT No. 20040042, FBGDR



WATERVIEW ESTATES
SECTION 10
RESTRICTED RESERVE "D"
PLAT No. 20080063, FBGDR

BASELINE "C"

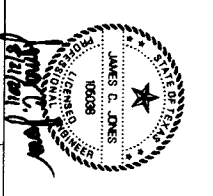
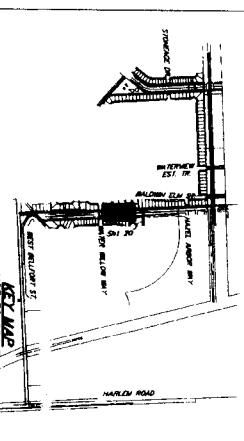
- NOTES:**
1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97", WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENTS, TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.
 3. CONTRACTOR SHALL REMOVE AND REPLACE BACKSLOPE INTERCEPTOR AND THE 24" CORRUGATED METAL PIPE TO THE NEAREST JOINT WITHIN THE WATERLINE EASEMENT TO EXISTING CONDITION OR BETTER.
 4. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AND RESTORING EXISTING SMALL DITCHES DAMAGED DURING CONSTRUCTION ACTIVITIES TO EXISTING CONDITION OR BETTER.
 5. CONTRACTOR TO COORDINATE WITH CENTERPOINT ENERGY FOR ANY REQUIRED BRACING OF POWER POLES.



PRIVATE UTILITY LINES SHOWN

DATE: 9/16/11
DATE: 9/16/11
DATE: 9/16/11

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER (713) 223-4957 OR 1-800-669-8344
TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777
BACKSLOPE CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAKED APPROXIMATELY 330 FEET NORTH OF WATER WILLLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. ELEV = 93.33' (NAMD-88, 2002 ADJUSTMENT)

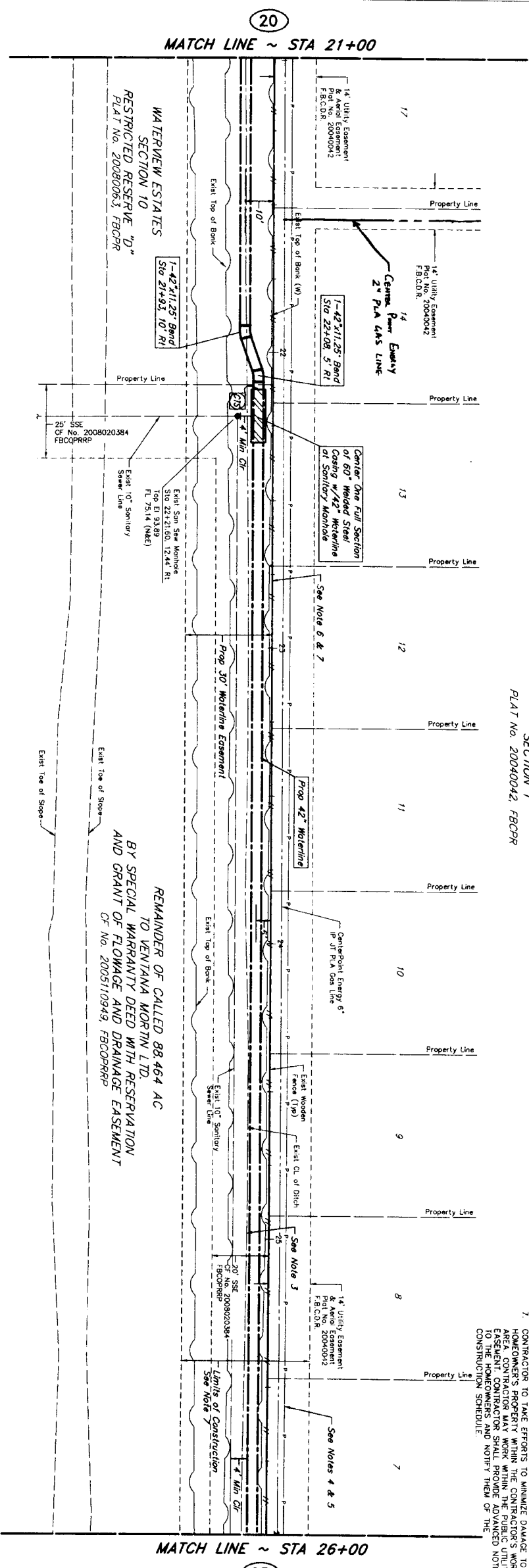


J. JONES & CARTER, P.E.
ENGINEERS-PLANNERS-SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6338 Galton Dr., Suite 100, Houston, Texas 77061 (713) 773-8387



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

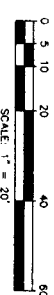
NOTE: CITY SIGNATURES WOULD FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
DRAWING SCALE
HORZ: 1" = 20'
VERT: 1" = 2'
SHEET No. 20 OF 80



CAUTION:
OVERHEAD POWER

WATERVIEW ESTATES
SECTION 1
PLAT No. 20040042, FBOPR

BASELINE "C"
(See Sht 22 for Profile View)



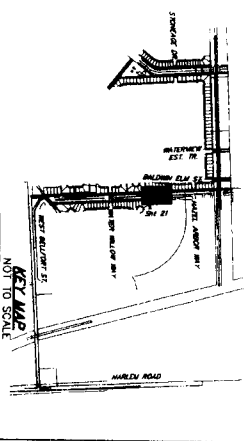
Open Cut Construction
w/ Welded Steel Casing

- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97", WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING REMOVED (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENTS, TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 - CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AND RESTORING EXISTING SMALL DITCHES DAMAGED DURING CONSTRUCTION ACTIVITIES TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 - EXISTING OVERHEAD POWER LINES ARE IN VERY CLOSE PROXIMITY TO THE CONTRACTOR'S WORK AREA. THE EXISTING OVERHEAD POWER LINES ARE NOT TO BE TOUCHED OR DAMAGED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL ADJACENT RESIDENTIAL LOTS. POWER LINE LOCATIONS HAVE NOT BEEN SURVEYED IN THE FIELD. CONTRACTOR TO VERIFY LOCATION OF ALL POWER LINES AND POWER POLES LOCATED WITHIN THE ADJACENT 1/4 U.E.
 - CONTRACTOR TO EXERCISE EXTREME CAUTION IN THE VICINITY OF OVERHEAD POWER. CONTRACTOR TO COORDINATE WITH CENTREPOINT ENERGY FOR THE BRACING, RELOCATING OR DE-ENERGIZING OF THE POWER LINES AS MAY BE REQUIRED FOR CONSTRUCTION OR AT THE REQUEST OF CENTREPOINT ENERGY.
 - A SECURE TEMPORARY FENCE WILL BE REQUIRED IF THE EXISTING WOODEN FENCE IS DAMAGED OR REMOVED DURING CONSTRUCTION. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 - CONTRACTOR TO TAKE EFFORTS TO MINIMIZE DAMAGE TO THE EXISTING WOODEN FENCE WITHIN THE CONTRACTOR'S WORK AREA. CONTRACTOR SHALL NOTIFY THE HOMEOWNERS AND NOTIFY THEM OF THE CONSTRUCTION SCHEDULE.

PRIVATE UTILITY LINES SHOWN

Date: 8/24/11
 Contract: AT&T TEXAS/SEC UTILITY LINES SHOW
 Date: 7/26/11
 Date: 7/26/11
 Date: 7/26/11

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL ONE STAR NOTIFICATION CENTER: (713) 223-4567 OR 1-800-659-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTREPOINT AT 713-201-7777.
 BENCHMARK: CONTROL POINT NO. 139 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY" APPROXIMATELY 230 FEET NORTH OF WATER WILSON HWY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. ELEV = 93.33'
 (NAD-83, 2002 ADJUSTMENT)



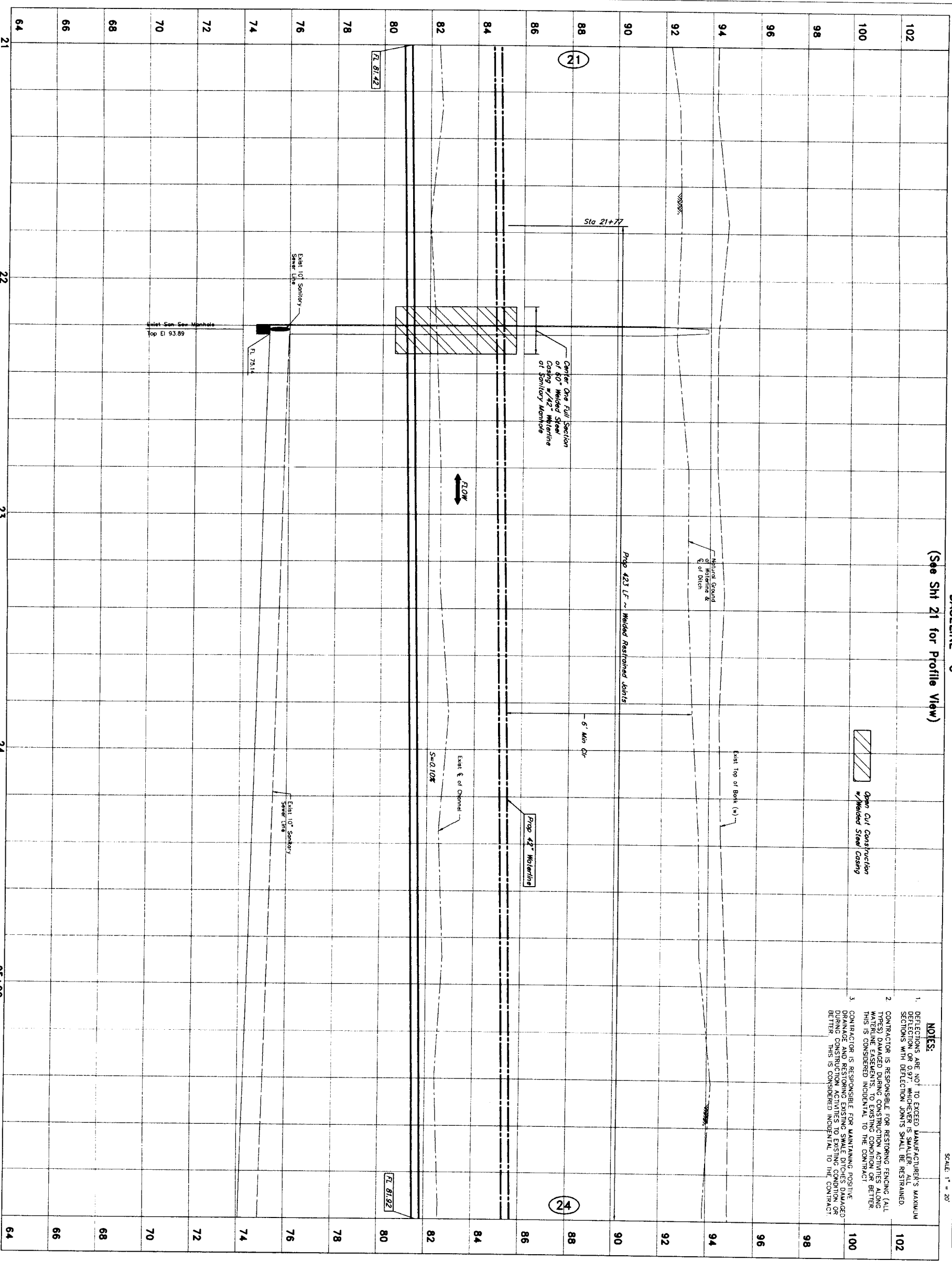
J.C. JONES & CARTE R.L. INC.
 ENGINEERS-PLANNERS-SURVEYORS
 Texas Board of Professional Engineers Registration No. F-49
 8005 Galloway Dr. Suite 100 Houston, Texas 77061 (713) 771-6387

SEGMENT 7A
 BASELINE "C" PLAN VIEW
 STA 21+00 TO STA 26+00



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 WATER
 WASTEWATER
 STORM
 FACILITIES
 FILE NO.: FOR CITY OF HOUSTON USE ONLY
 DWT Dwg No.:

DRAWING SCALE
 HORZ : 1" = 20'
 VERT : 1" = 2'
 SHEET NO. **21 OF 80**



(See Sht 21 for Profile View)

BASELINE "C"

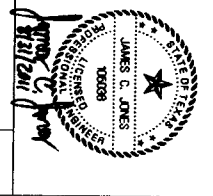
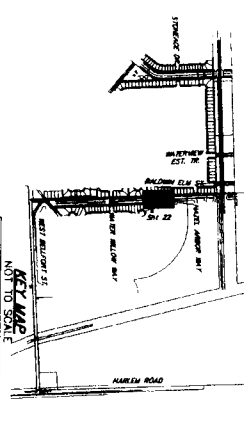


- NOTES:**
1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.37" WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING FINING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENTS. TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AND RESTORING EXISTING SMALL DITCHES/DAMAGED DURING CONSTRUCTION ACTIVITIES TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.

PRIVATE UTILITY LINES SHOWN

DATE: 9/26/11
 DATE: 9/26/11
 DATE: 9/26/11

NOTE: AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL 1-800-659-8344 OR 1-800-659-8344 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-267-1777.
 BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 159" LOCATED APPROXIMATELY 330 FEET NORTH OF DITCH MARK W/AN 7.0' FEET EAST OF THE EAST HIGH BANK OF ELEV = 93.33'
 (NAAD-88, 2002 ADJUSTMENT)



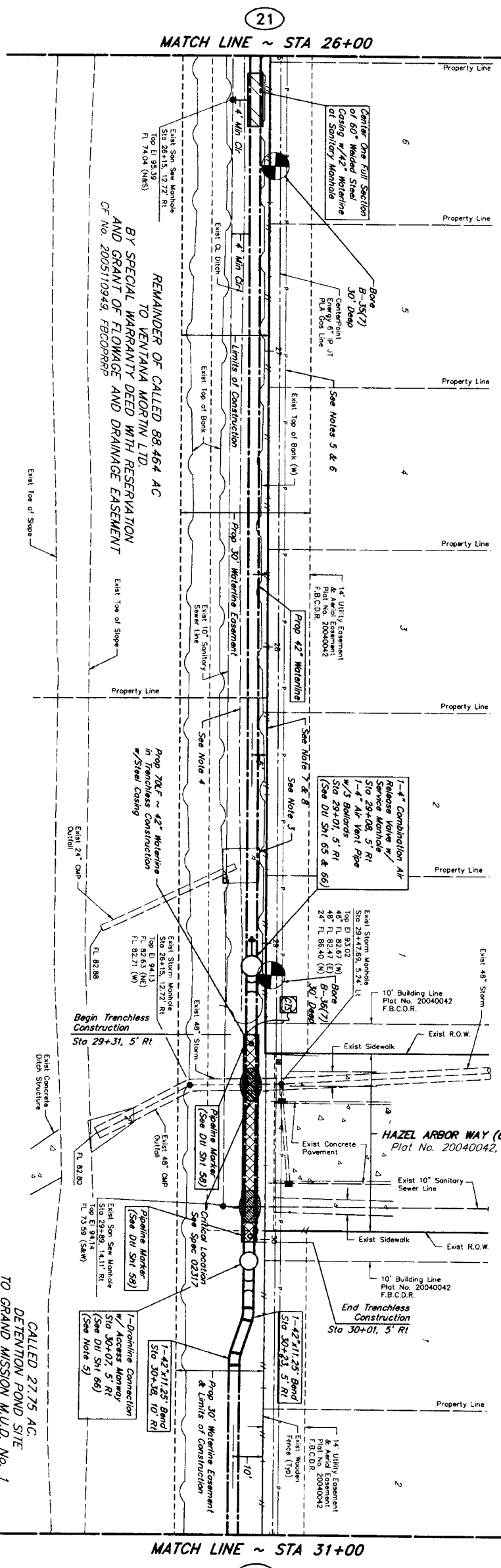
J. JONES & CARTER, P.C.
 ENGINEERS, PLANNERS, SURVEYORS
 Texas Board of Professional Engineers Registration No. F-459
 6500 Oldham Dr., Suite 100 Houston, Texas 77051 (713) 777-8337

SEGMENT 7A
 BASELINE "C" PROFILE VIEW
 STA 21+00 TO STA 26+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
 WASTEWATER: TRUNK
 STORM: STORM WATER QUALITY
 FACILITIES:
 FILE NO.:
 DRAWING SCALE:
 HORZ: 1" = 20'
 VERT: 1" = 2'
 SHEET NO. 22 OF 80



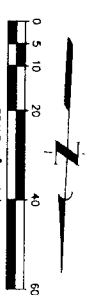
CAUTION:
OVERHEAD POWER

WATERVIEW ESTATES
SECTION 1
PLAT No. 20040042, FBCPR

WATERVIEW ESTATES
SECTION 1
PLAT No. 20040042, FBCPR

Trenchless Construction
w/Steel Casing
(See DII SH 63)

Open Cut Construction
w/Reinforced Steel Casing



BASELINE "C"
(See Sht 24 for Profile View)

- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97", WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENTS, TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 - CONTRACTOR SHALL REMOVE AND REPLACE BACKSLOPE INTERCEPTOR AND THE 24" CORRUGATED METAL PIPE TO THE NEAREST JOINT WITHIN THE WATERLINE EASEMENT TO EXISTING CONDITION OR BETTER.
 - CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AND RESTORING EXISTING SMALL DITCHES DAMAGES DURING CONSTRUCTION ACTIVITIES TO EXISTING CONDITIONS OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 - EXISTING OVERHEAD POWER LINES ARE IN VERY CLOSE PROXIMITY TO THE CONTRACTOR'S WORK AREA. THE EXISTING OVERHEAD POWER IS SHOWN IN AN APPROXIMATE LOCATION WITHIN THE GENERAL RESIDENTIAL LOTS POWER LINE LOCATIONS AND SHOULD BE VERIFIED BY THE CONTRACTOR. THE LOCATION OF ALL POWER LINES AND POWER POLES LOCATED WITHIN THE ADJACENT 14' U.E.
 - CONTRACTOR TO ENERGIZE EXTREME CAUTION IN THE VICINITY OF OVERHEAD POWER LINES. ALL ELECTRICAL WORK SHALL BE DE-ENERGIZED OF THE POWER LINES AS MAY BE REQUIRED FOR CONSTRUCTION OR AT THE REQUEST OF CENTERPOINT ENERGY.
 - A SECURE TEMPORARY FENCE WILL BE REQUIRED IF THE EXISTING WOODEN FENCE IS DAMAGED OR REMOVED DURING CONSTRUCTION. PLASTIC CONSTRUCTION FENCING IS NOT ACCEPTABLE. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT.
 - CONTRACTOR TO TAKE EFFORTS TO MINIMIZE DAMAGE TO THE HOMEOWNER'S PROPERTY WITHIN THE CONTRACTOR'S WORK AREA. CONTRACTOR SHALL PROVIDE ADVANCED NOTICE TO THE HOMEOWNERS AND NOTIFY THEM OF THE CONSTRUCTION SCHEDULE.

CALLED 27.75 AC.
DETENTION POND SITE
TO GRAND MISSION M.I.D. No. 1
BY GENERAL WARRANTY DEED
OF No. 2007071395 FBCPRRP

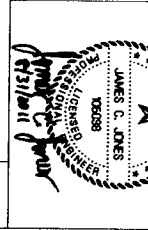
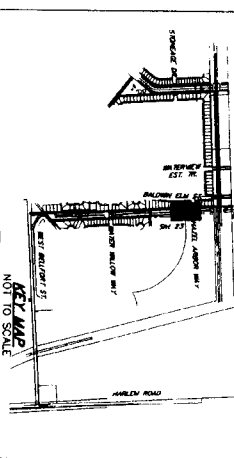
LOG NO: 10-0078

PRIVATE UTILITY LINES SHOWN

Date: 9/2/11
 Date: 9/2/11
 Date: 9/2/11

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

BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP SHARPED NORTH FORT BEND WATER AUTHORITY CENTER POINT 330 FEET NORTH OF WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. ELEV = 93.33'
 (NMD-88, 2002 ADJUSTMENT)



J. JONES & CARTER, INC.
 ENGINEERS-PLANNERS-SURVEYORS
 Texas Board of Professional Engineers Registration No. F-499
 8038 Oakton Dr., Suite 100, Houston, Texas 77061 (713) 773-8887

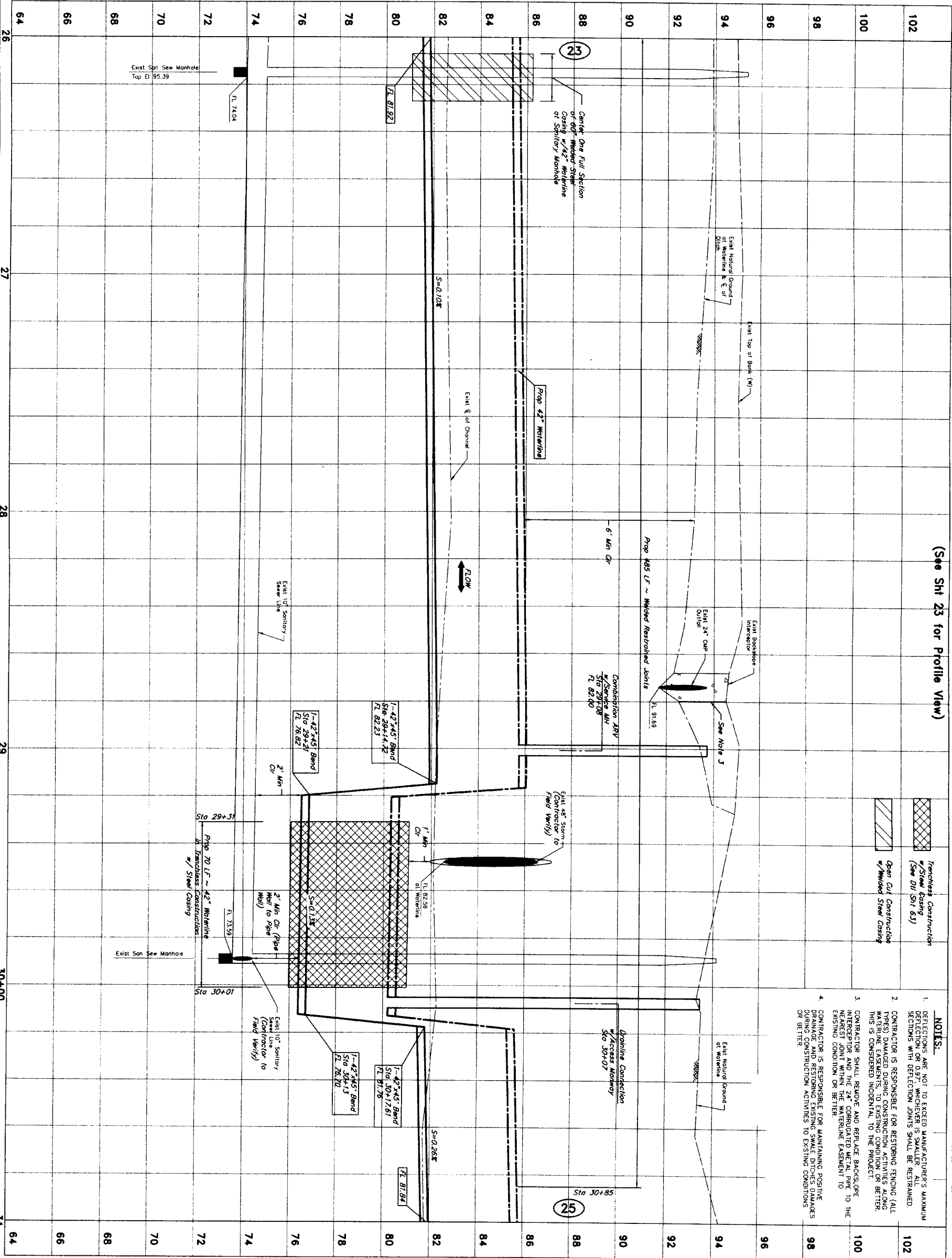


NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 WATER
 WASTEWATER
 STORM
 UTILITIES
 FILE NO.: FOR CITY OF HOUSTON USE ONLY (DIT. DR. NO.)
 DRAWING SCALE

HORIZ: 1" = 20'
 VERT: 1" = 2'
 SHEET NO. 23 OF 80

BASELINE "C"

(See SH2 23 for Profile View)

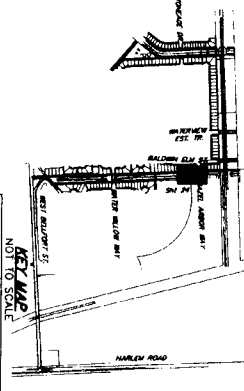


- NOTES:**
1. DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97", WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 2. CONTRACTOR IS RESPONSIBLE FOR RESTORING FINISHING (ALL MATERIALS AND CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENT) TO ORIGINAL CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.
 3. CONTRACTOR SHALL REMOVE AND REPLACE BACKSCLOPE INTERCEPTOR AND THE 24" CORRUGATED METAL PIPE TO THE EXISTING CONDITION OR BETTER.
 4. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AND RESTORING EXISTING SWALE DITCHES DAMAGES OR BETTER.

PRIVATE UTILITY LINES SHOWN

DATE: 9/2/11
 AT&T TEXAS/SBC Approved for underground conduit facility only. Signature valid for one year. Date: 9/2/11
 Contract Energy/ Gas Facilities (Gas service lines are not shown.)
 Date: _____

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONE STAR NOTIFICATION CENTER: (713) 223-4967 OR 1-800-669-8344
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT AT 713-207-7777.
 BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "LONE STAR NOTIFICATION CENTER" 159' LOCATED APPROXIMATELY 330 FEET NORTH WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. ELEV = 93.33'
 (NAMD-88, 2002 ADJUSTMENT)



J. JONES & CARTER, INC.
 ENGINEERS-PLANNERS-SURVEYORS
 Texas Board of Professional Engineers Registration No. F-459
 8255 Galloway Dr., Suite 100 Houston, Texas 77061 (713) 777-8887

SEGMENT 7A

BASELINE "C" PROFILE VIEW
 STA 26+00 TO STA 31+00

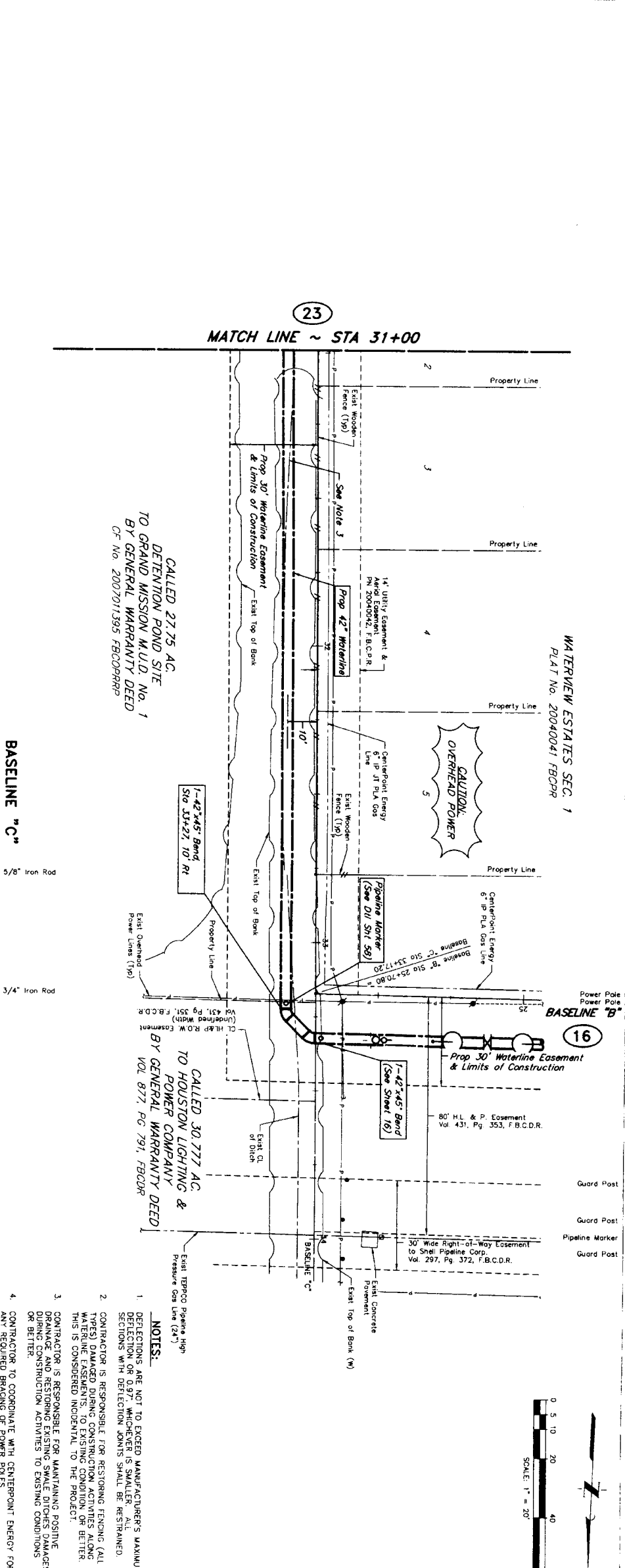
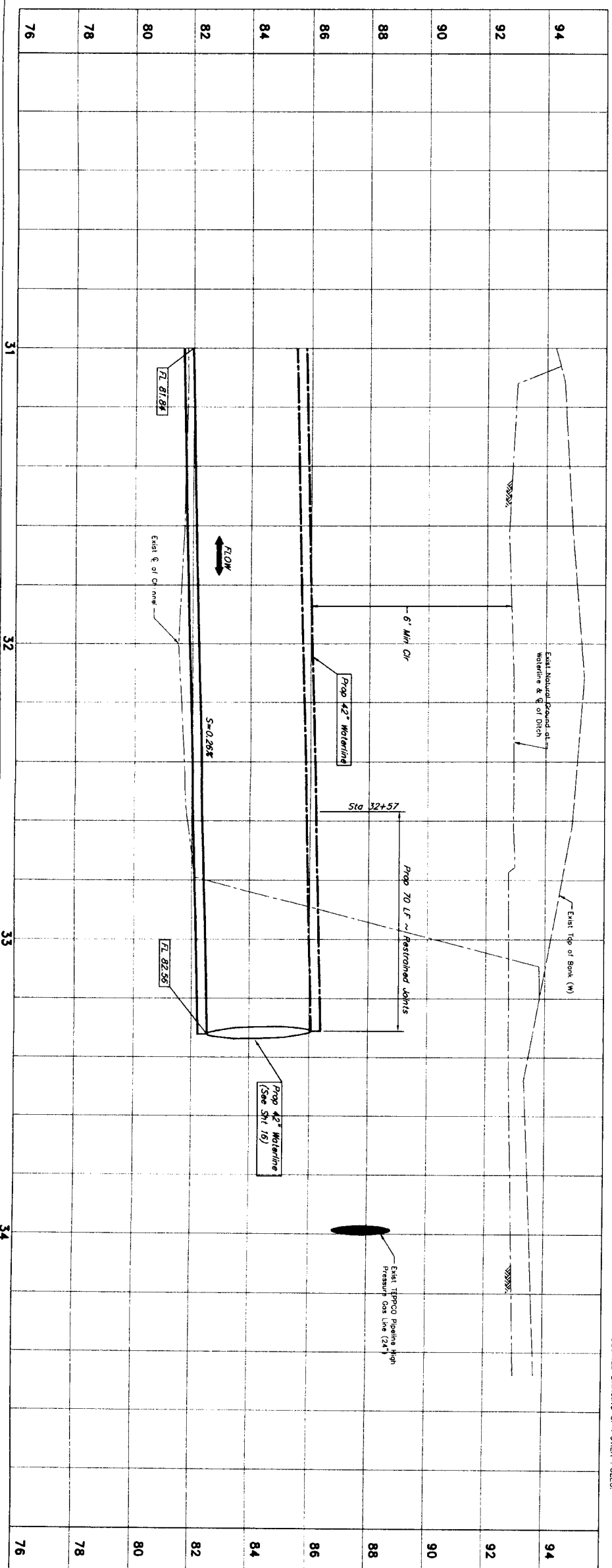


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 WATER: STREET & BRIDGE
 WASTEWATER: TOWNE
 STORM: STORM WATER CULVERT
 FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY DWG. NO.)
 DRAWING SCALE: _____

HORIZ : 1" = 20'
 VERT : 1" = 2'
 SHEET NO. **24 OF 80**
 LOG NO: 10-0078

LAST MODIFIED: Aug 31, 2011 - 3:46pm BY USER: CDC
 DWG. LOCATION: F:\PROJECTS\05462 North Fort Bend Water Authority\004 NFBWA Segment 7A\Civil\Const_Dwg\DWG. NAME: BASE2.dwg



PRIVATE UTILITY LINES SHOWN

Date: *8/16/11*

AT&T TEXAS/SBC Approved for underground conduit (for use only, Signature valid for one year.) Date: *8/16/11*

Centerpoint Energy / Gas Facilities (Gas service lines are not shown.) Date: _____

Contract: _____

NOTICE:

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR SIDEWALKS CALL LONG STAR NOTIFICATION CENTER. (713) 223-4587 OR 1-800-853-8344

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

BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STRAPPED NORTH FORT BEND WATER AUTHORITY 159' LOCATED APPROXIMATELY 330 FEET NORTH OF WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH. (NAND-88, 2002 ADJUSTMENT) ELEV. = 93.33'

(NAND-88, 2002 ADJUSTMENT)

NOTES:

- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97" WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
- CONTRACTOR IS RESPONSIBLE FOR RESTORING TENDING (ALL TYPES) DAMAGED BY CONSTRUCTION ACTIVITIES TO EXISTING MATERIALS AND CONDITIONS TO EXISTING CONDITIONS OR BETTER.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE DURING CONSTRUCTION ACTIVITIES TO EXISTING CONDITIONS OR BETTER.
- CONTRACTOR TO COORDINATE WITH CENTERPOINT ENERGY FOR ANY REQUIRED BRACING OF POWER POLES.

APPROVALS:

NO. DATE REVISION APPROV.

JC JONES & CARTER, INC.
 ENGINEERS-PLANNERS-SURVEYORS
 Texas Board of Professional Engineers Registration No. F-439
 6588 Galena Dr., Suite 100 Houston, Texas 77051 (713) 777-8337

SEGMENT 7A

BASELINE "C"
 STA 31+00 TO STA 34+00

NORTH FORT BEND

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

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: _____

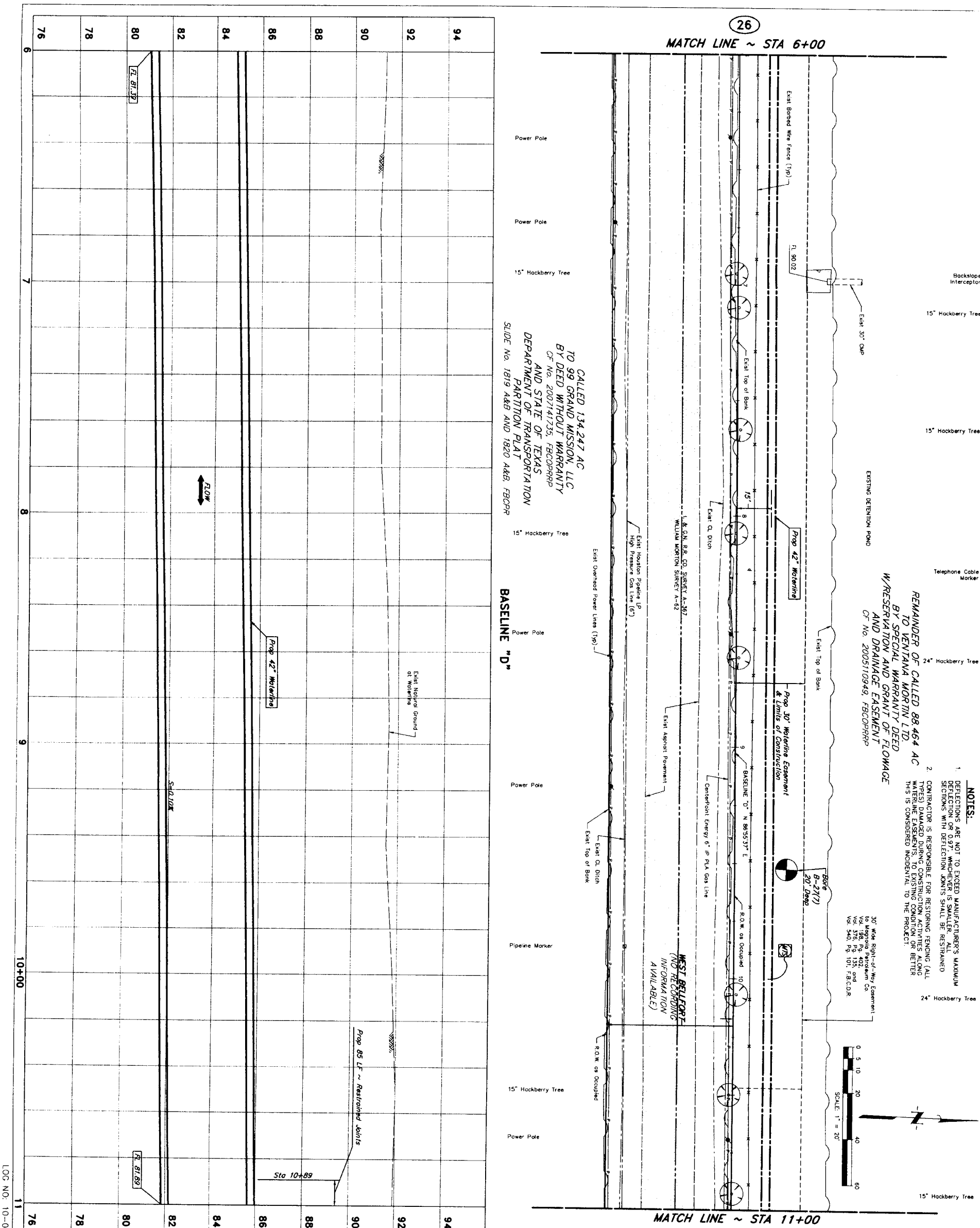
SCALE: 1" = 20'

DRAWING SCALE

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

SHEET No. 25 OF 80

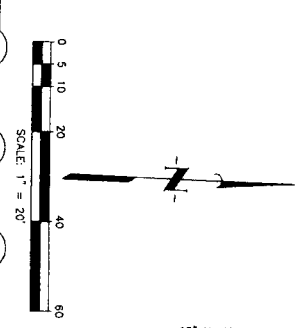
FOR CITY OF HOUSTON USE ONLY CITY DWG NO.



REMANDEE OF CALLED 88 464 AC
 TO VENTANA HORTON LTD
 BY SPECIAL WARRANTY DEED
 W/RESERVATION AND GRANT OF FLOWAGE
 AND DRAINAGE EASEMENT
 OF No. 200510949, FBOPRRP

CALLLED 134,247 AC
 TO 99 GRAND MISSION, LLC
 BY DEED WITHOUT WARRANTY
 OF No. 200714735, FBOPRRP
 AND STATE OF TEXAS
 DEPARTMENT OF TRANSPORTATION
 PARTITION PLAT
 SLIDE No. 1819 A&B AND 1820 A&B, FBOPRRP

- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97", WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL WATER MAINS AND GAS LINES) TO ORIGINAL CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.



PRIVATE UTILITY LINES SHOWN

Date: *8/24/11*

DATE: *8/24/11*

NOTICE:

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR FACILITY'S CALL LANE, STAKE 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: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 159" LOCATED APPROXIMATELY 330 FEET NORTH OF WATER WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH ELEV = 93.33'

(MAND-88, 2002 ADJUSTMENT)

DATE: *8/24/11*

DATE: *8/24/11*

DATE: *8/24/11*

DATE: *8/24/11*

DATE: *8/24/11*

DATE: *8/24/11*

BASELINE "D"

STA 6+00 TO STA 11+00

SEGMENT 7A

JC JONES & CARTER, P.C.
 ENGINEERS-PLANNERS-SURVEYORS
 7338 Oldham Dr., Suite 100 Houston, Texas 77061 (713) 777-8337

| NO. | DATE | REVISION | APPROVED |
|-----|------|----------|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

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

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: _____

DATE: _____

DATE: _____

DATE: _____

DATE: _____

DATE: _____

DATE: _____

DATE: _____

DATE: _____

DATE: _____

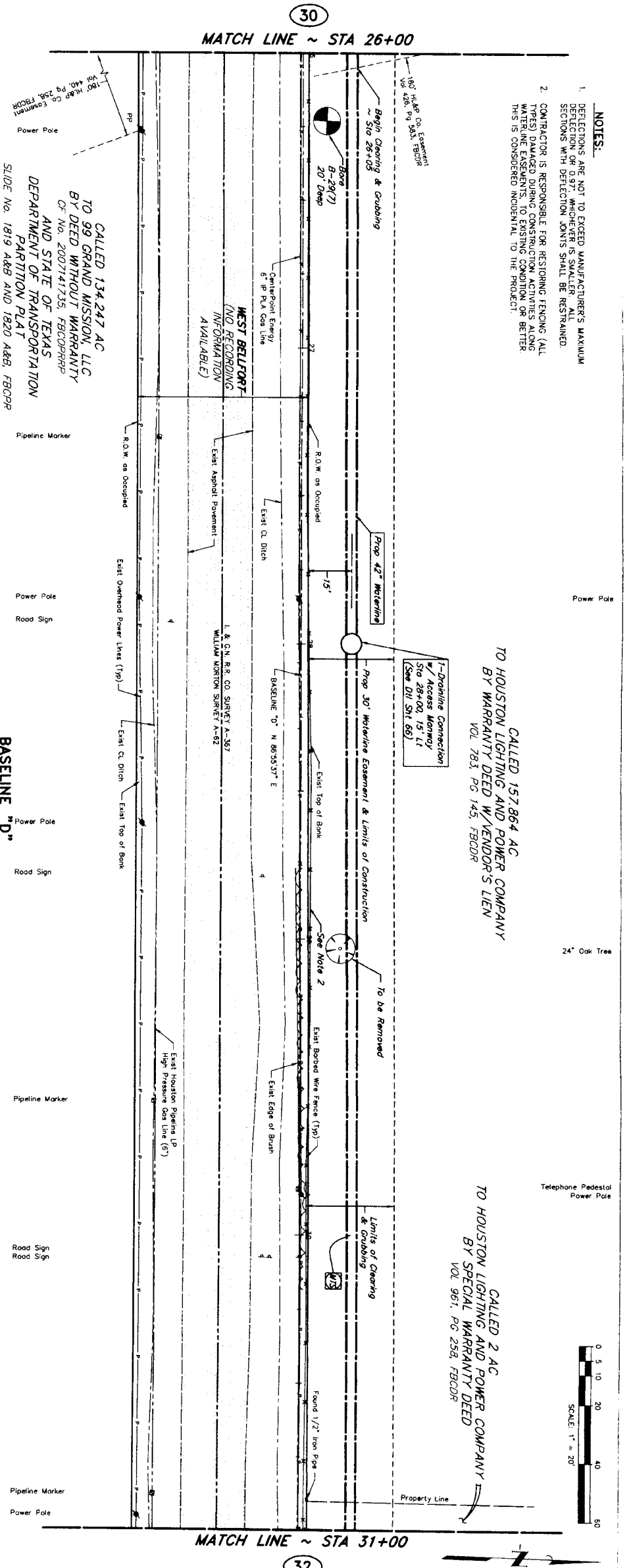
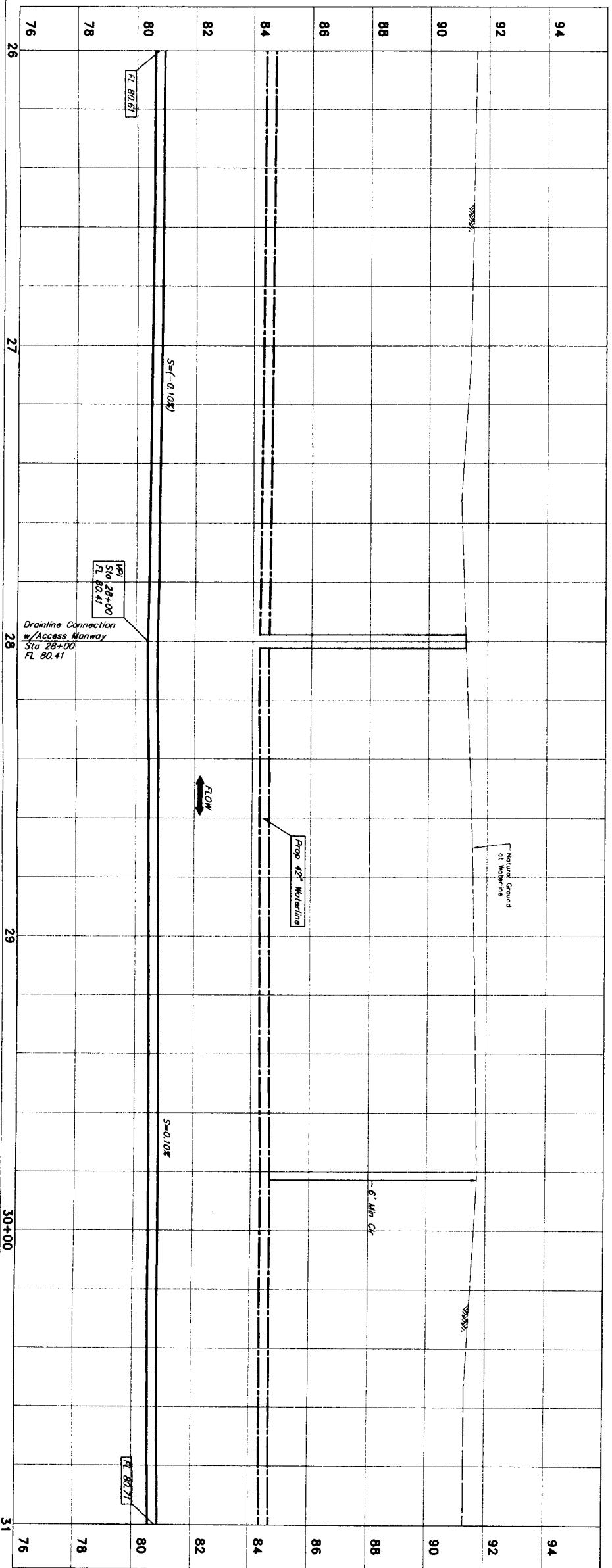
FILE NO.: _____

DRAWING SCALE: _____

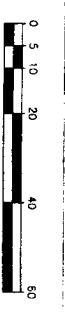
HORIZ : 1" = 20'

VERT : 1" = 2'

SHEET NO. **27** OF **80**



- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURERS' MAXIMUM DEFLECTION AND SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING FENCING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENTS, TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.



PRIVATE UTILITY LINES SHOWN

Date: 9/2/11

AT&T TEXAS/SBC Approved for underground conduit:
 Date: 9/2/11
 Signature: [Signature]

CenterPoint Energy/ Gas Facilities
 Date: 9/2/11
 Signature: [Signature]

NOTICE:
 AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL LONG STAR NOTIFICATION CENTER, (713) 223-1527 OR 1-800-888-5044
 TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT AT 713-207-1777.
 BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 159" LOCATED APPROXIMATELY 330 FEET NORTH OF 100' WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH (NAVD-88 2002 ADJUSTMENT) ELEV = 93.33'

APPROVED

J.C. JONES
 ENGINEER-IN-CHARGE
 J.C. JONES ENGINEERS-PLANNERS-SURVEYORS
 6308 Oxford Dr., Suite 100 Houston, Texas 77057 (713)777-5837

SEGMENT 7A

BASELINE "D"
 STA 26+00 TO STA 31+00

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

WATER: STREET & BRICK

WASTEWATER: TRINITY

STORM: STORM WATER QUALITY

FRANCHISES:

FILE NO.: FOR CITY OF HOUSTON USE ONLY (DTI DWG NO.):

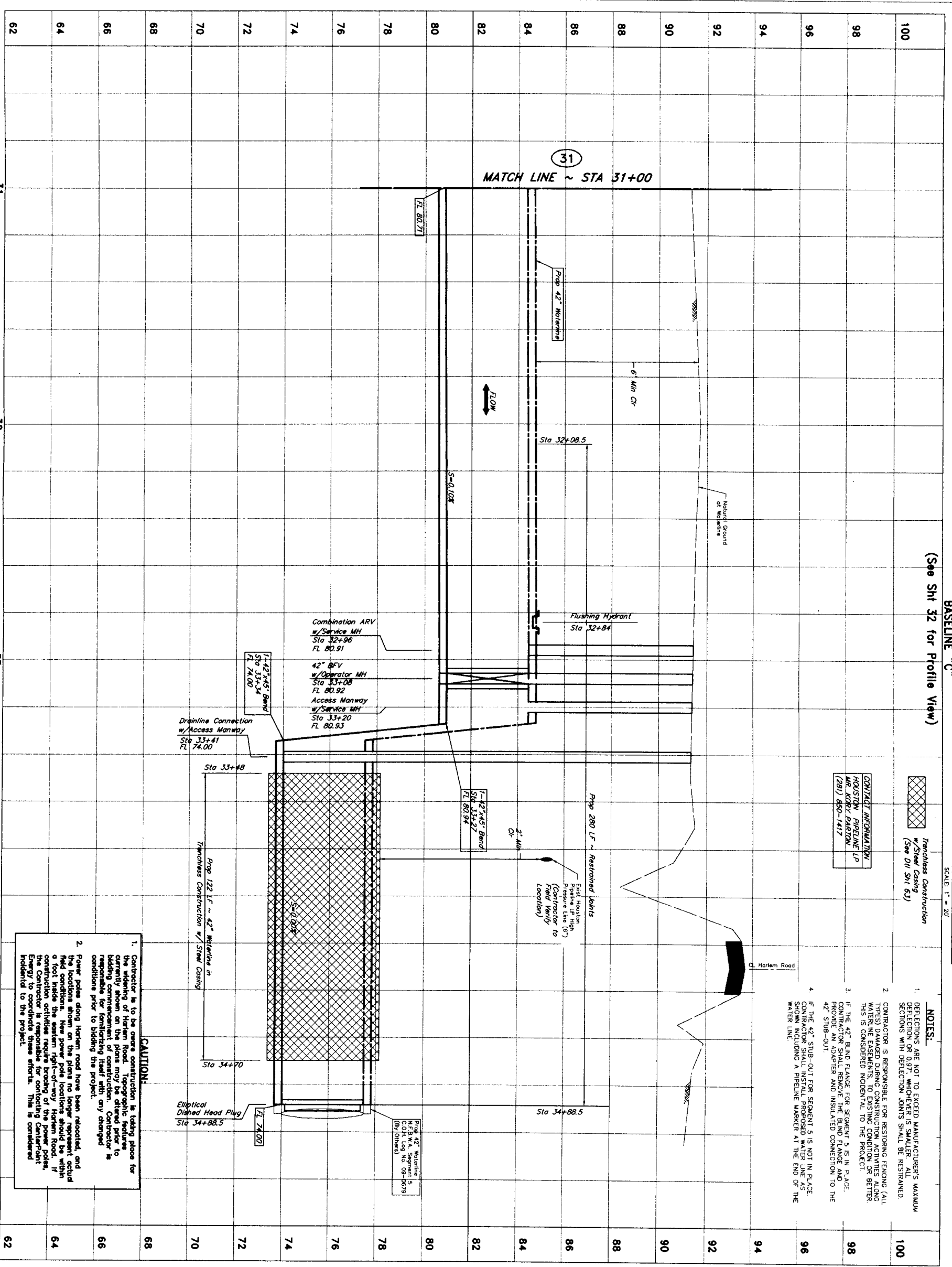
DRAWING SCALE:

HORIZ : 1" = 20'

VERT : 1" = 2'

SHEET NO.: 31 OF 80

LOG NO.: 10-0078



BASELINE "C"
 (See Sht 32 for Profile View)



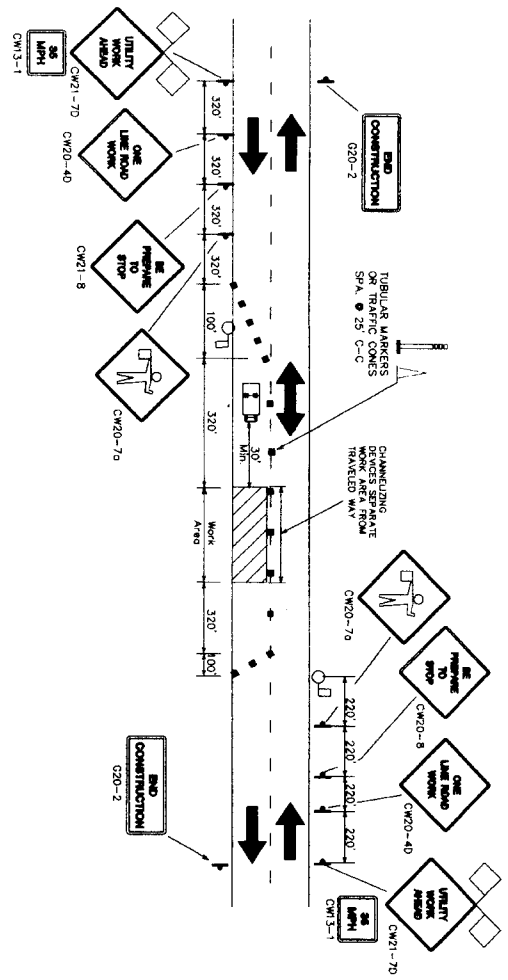
CONTRACTOR RESPONSIBILITY
 HOUSTON PIPELINE LP
 MR. ROBERT FARRER
 (281) 850-1417

- NOTES:**
- DEFLECTIONS ARE NOT TO EXCEED MANUFACTURER'S MAXIMUM DEFLECTION OR 0.97, WHICHEVER IS SMALLER. ALL SECTIONS WITH DEFLECTION JOINTS SHALL BE RESTRAINED.
 - CONTRACTOR IS RESPONSIBLE FOR RESTORING EXISTING (ALL TYPES) DAMAGED DURING CONSTRUCTION ACTIVITIES ALONG WATERLINE EASEMENTS, TO EXISTING CONDITION OR BETTER. THIS IS CONSIDERED INCIDENTAL TO THE PROJECT.
 - IF THE 42" BOND FLANGE FOR SEGMENT 5 IS IN PLACE, CONTRACTOR SHALL RESTRAINED WATER LINE AS SHOWN, PROVIDE AN ADAPTER AND INSULATED CONNECTION TO THE 42" STUB-OUT.
 - IF THE 42" STUB-OUT FOR SEGMENT 5 IS NOT IN PLACE, CONTRACTOR SHALL INSTALL PROPOSED WATER LINE AS SHOWN, PROVIDING A PIPELINE MARKER AT THE END OF THE WATER LINE.

CAUTION:

- Contractor is to be aware construction is taking place for the widening of Harlem Road. Topographic features currently shown on the plans may be altered prior to the commencement of construction. Contractor is responsible for identifying itself with any changed conditions prior to bidding the project.
- Power poles along Harlem road have been relocated, and the locations shown on the plans no longer represent actual field conditions. New power pole locations should be within a foot inside the eastern right-of-way Harlem Road. If construction activities require broaching of the power poles, the Contractor is responsible for contacting CentralPoint Energy to coordinate these efforts. This is considered incidental to the project.

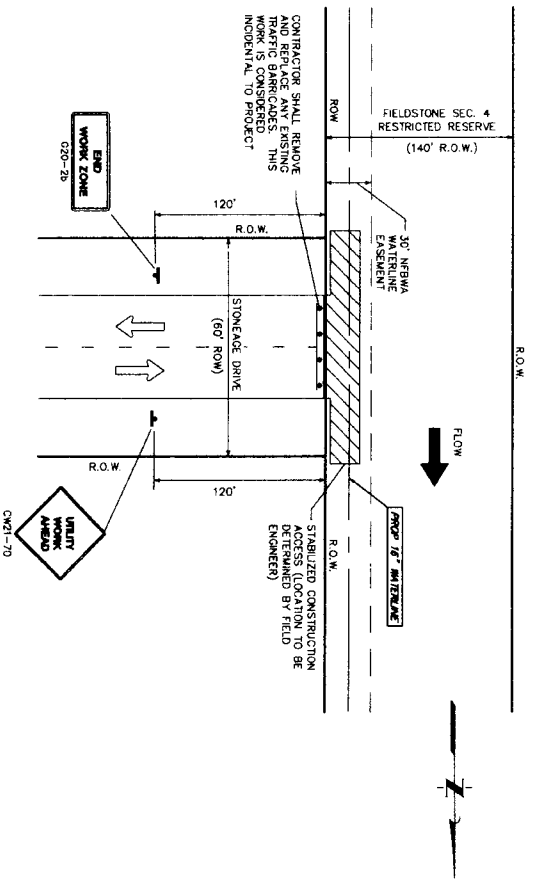
| | | | |
|---|--|---|--|
| <p>PRIVATE UTILITY LINES SHOWN</p> <p>Date: <i>9/26/11</i></p> <p>CentralPoint Energy/ Electric Facilities (Approved only Valid At Time Of Review Only)</p> <p>AT&T TEXAS/990 UTILITY LINES SHOWN</p> <p>Date: _____</p> <p>AT&T TEXAS/990 UTILITY LINES SHOWN</p> <p>Date: _____</p> <p>CentralPoint Energy/ Gas Facilities (Gas service lines are not shown)</p> <p>Date: <i>9/26/11</i></p> <p>Contractor: _____</p> | | <p>NOTE:</p> <p>AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS, CONTRACTOR SHALL NOTIFY THE UTILITY CENTER. (713) 223-4527 OR 1-800-669-8341</p> <p>TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL BENCHMARK: CONTROL POINT NO. 159 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 159" LOCATED APPROXIMATELY 230 FEET NORTH OF MAIN WILLOW WAY 7.0 FEET EAST OF THE EAST HIGH BANK OF DITCH (NAVD-88 2002 ADJUSTMENT) ELEV = 93.33'</p> | |
| <p>NO. DATE REVISION APPROVED</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> | | <p>JC JONES & CARTER, INC. ENGINEERS-PLANNERS-SURVEYORS 10000 Katy Road, Suite 100, Houston, Texas 77057 (713) 777-8833</p> <p>SEGMENT 7A</p> <p>BASELINE "D" PROFILE VIEW STA 31+00 TO STA 35+00</p> <p>NORTH FORT BEND</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>WATER: STREET & BRIDGE</p> <p>WASTEWATER: TRAFFIC</p> <p>STORM: STORM WATER QUALITY</p> <p>FILE NO.: _____</p> <p>DRAWING SCALE: _____</p> <p>HORIZ. 1" = 20'</p> <p>VERT. 1" = 2'</p> <p>SHEET NO. 33 OF 80</p> <p>LOG NO.: 10-0078</p> | |



**ONE LANE CLOSURE (2 LANE ROAD)
 MOVING OPERATION
 FOR WEST BELLFORT**

NOT TO SCALE

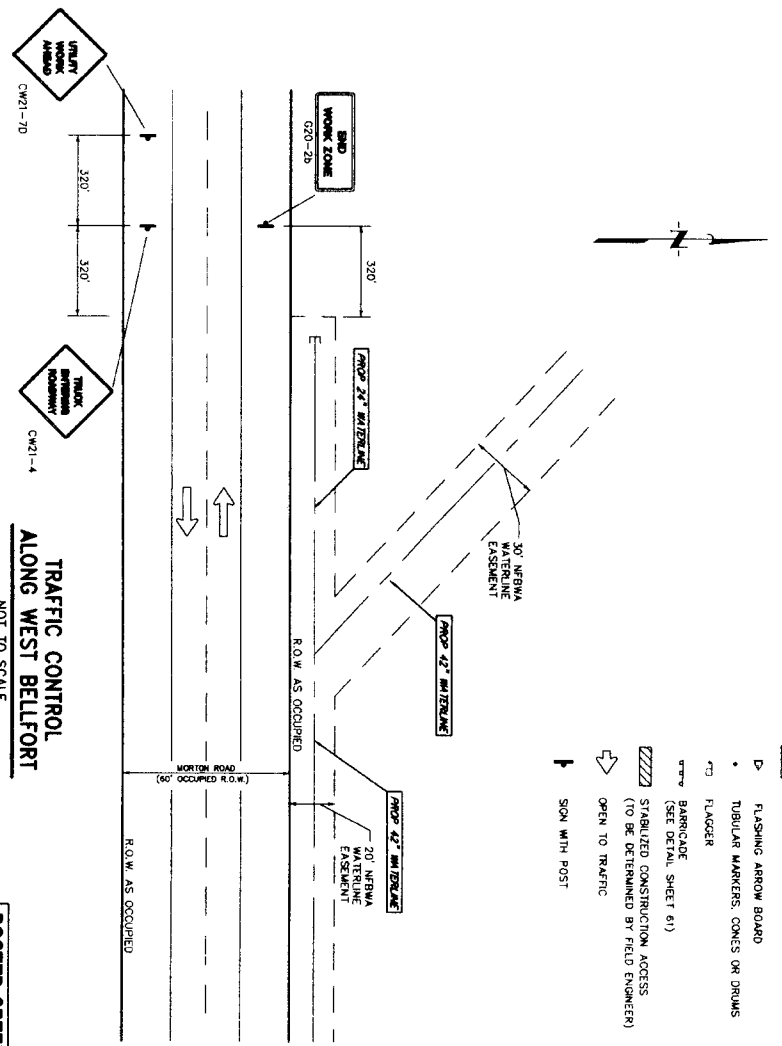
POSTED SPEED 45 MPH



**TRAFFIC CONTROL ALONG
 STONEAGE DRIVE**

NOT TO SCALE

POSTED SPEED 30 MPH



**TRAFFIC CONTROL
 ALONG WEST BELLFORT**

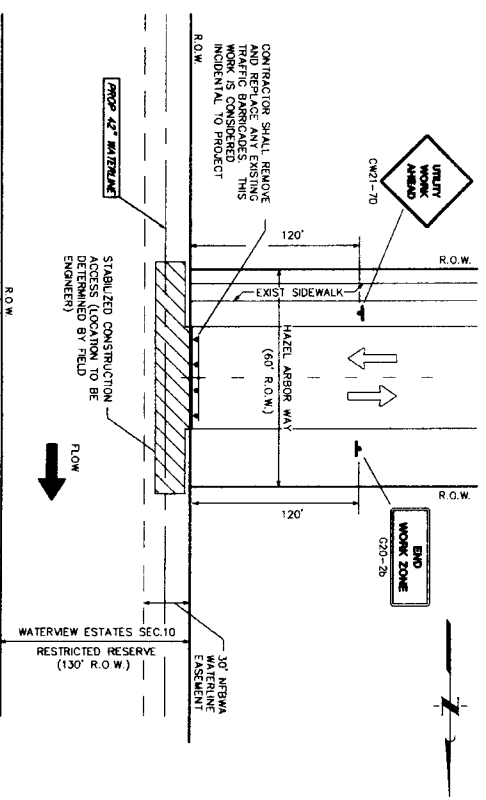
NOT TO SCALE

POSTED SPEED 45 MPH

LEGEND

- CONSTRUCTION AREA
- OPEN TO TRAFFIC
- HEAVY WORK VEHICLE
- FLASHING ARROW BOARD
- TUBULAR MARKERS, CONES OR DRUMS
- FLAGGER
- BARRICADE (SEE DETAIL SHEET 61)
- STABILIZED CONSTRUCTION ACCESS (TO BE DETERMINED BY FIELD ENGINEER)
- OPEN TO TRAFFIC
- SIGN WITH POST

- NOTES:**
1. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUDCD) - LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.
 2. NO LANES SHALL BE BLOCKED FROM 7 A.M. TO 9 A.M. AND 4 P.M. TO 6:30 P.M. MONDAY THRU FRIDAY.
 3. OFF DUTY POLICE OFFICERS/FLAGGERS ARE REQUIRED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED.
 4. CONTRACTOR SHALL COVER THE EXCAVATION WITH STEEL PLATES ANCHORED PROPERLY DURING NON-WORKING HOURS AND ALLOW NORMAL TRAFFIC FLOW.
 5. APPROVED COPIES OF "TRAFFIC CONTROL PLANS" SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES.
 6. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF TRAFFIC CONTROL PLAN DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, (S)HE SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT ALTERNATE PLANS TO TRAFFIC SECTION OF HARD FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
 7. IF THE PROJECT IS WITHIN 400 FEET FROM A SIGNALIZED INTERSECTION, THE CONTRACTOR SHALL CONTACT FORT BEND COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT, SIGNAL DIVISION AT 281-653-7500 FIVE (5) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
 8. ANY DAMAGE TO ROADS OR SIDEWALKS OR CURBS AS A RESULT OF ACCESS SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER. NO SEPARATE PAY.



**TRAFFIC CONTROL ALONG
 HAZEL ARBOR WAY**

NOT TO SCALE

POSTED SPEED 30 MPH

CONSTRUCTION WARNING SIGN SPACING

| Posted Speed or 85% Speed (MPH) | Min. Distance (feet) | X |
|---------------------------------|----------------------|---|
| 30 or less | 120 | |
| 35 | 160 | |
| 40 | 240 | |
| 45 | 320 | |
| 50 | 400 | |
| 55 | 500 | |
| 65 | 700 | |

| NO. | DATE | REVISION | APPROVAL |
|-----|------|----------|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

J. JONES & CARTER, INC.
 ENGINEERS - PLANNERS - SURVEYORS
 Texas Board of Professional Engineers Registration No. F-439
 6300 Oaklawn Dr., Suite 100 Houston, Texas 77061 (713) 777-8387

**TRAFFIC CONTROL
 SHEET 1 OF 2**



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

WATER: STREET & GROSS

WESTWATER: TRAFFIC

STORM: STORM WATER QUALITY

FACTURES:

FILE NO.:

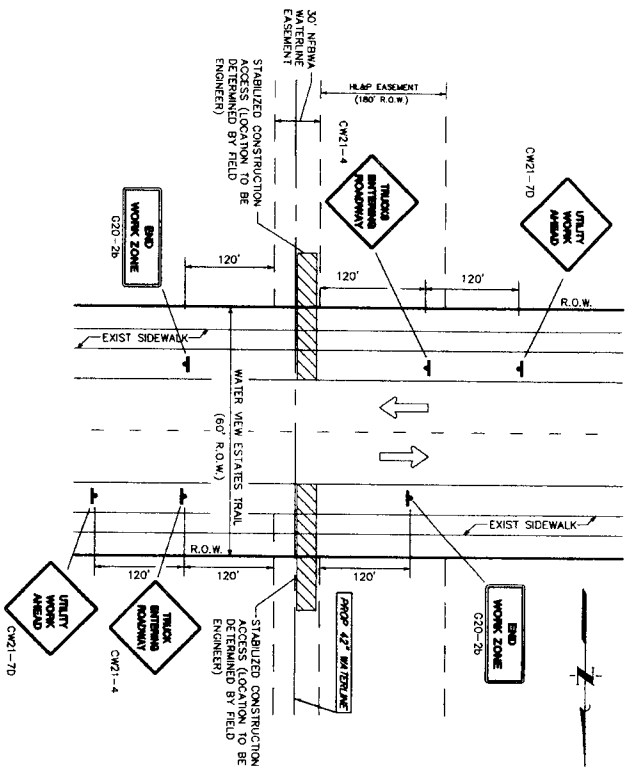
DRAWING SCALE:

HORIZ: AS SHOWN

FOR CITY OF HOUSTON USE
 ONE (1) ON DWE NO.:

SHEET No. **34** OF **80**

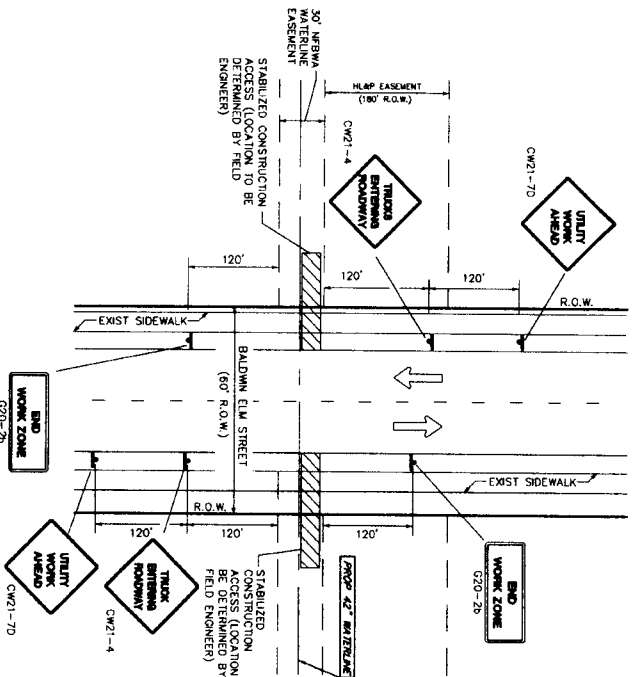
TRAFFIC CONTROL ALONG WATERVIEW ESTATES TRAIL
 NOT TO SCALE



POSTED SPEED 30 MPH

POSTED SPEED 30 MPH

TRAFFIC CONTROL ALONG BALDWIN ELM STREET
 NOT TO SCALE



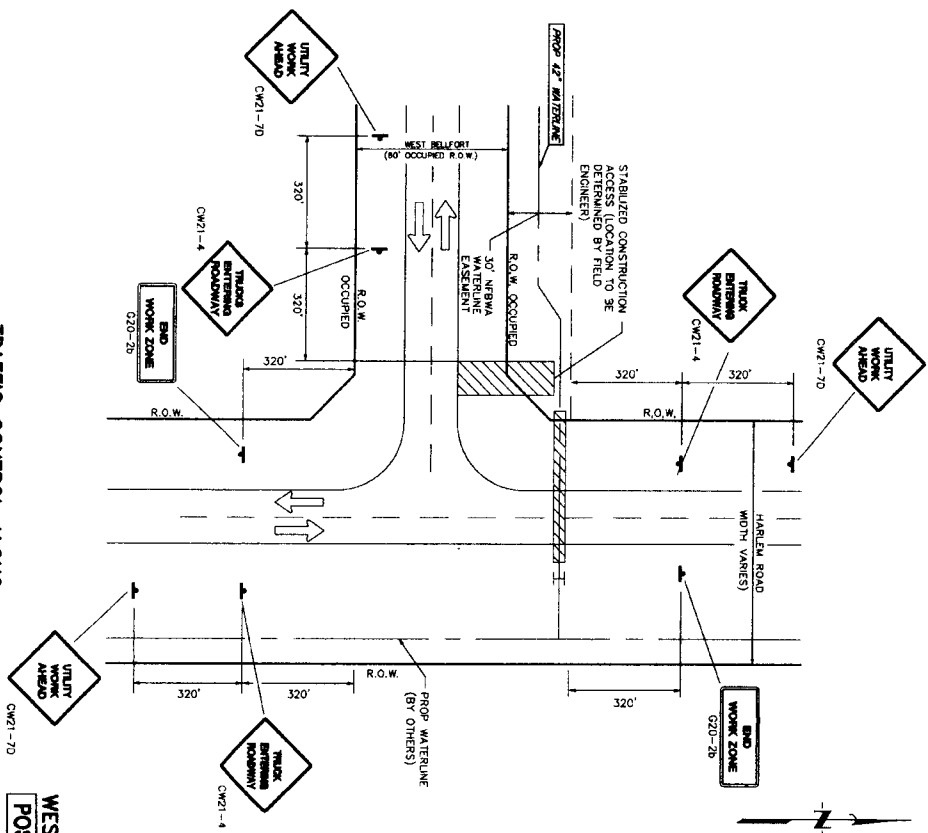
CONSTRUCTION WARNING SIGN SPACING

| Posted Speed or 85% Speed (MPH) | Min. Distance (feet) |
|---------------------------------|----------------------|
| 30 or less | 120 |
| 35 | 160 |
| 40 | 240 |
| 45 | 320 |
| 50 | 400 |
| 55 | 500 |
| 65 | 700 |

- LEGEND**
- CONSTRUCTION AREA
 - OPEN TO TRAFFIC
 - HEAVY WORK VEHICLE
 - FLASHING ARROW BOARD(TOTAL)
 - TUBULAR MARKERS, CONES OR SHAUNTS
 - FLAGGER
 - BARRICADE (SEE DETAIL SHEET 61)
 - STABILIZED CONSTRUCTION ACCESS (TO BE DETERMINED BY FIELD ENGINEER)
 - OPEN TO TRAFFIC
 - SIGN WITH POST

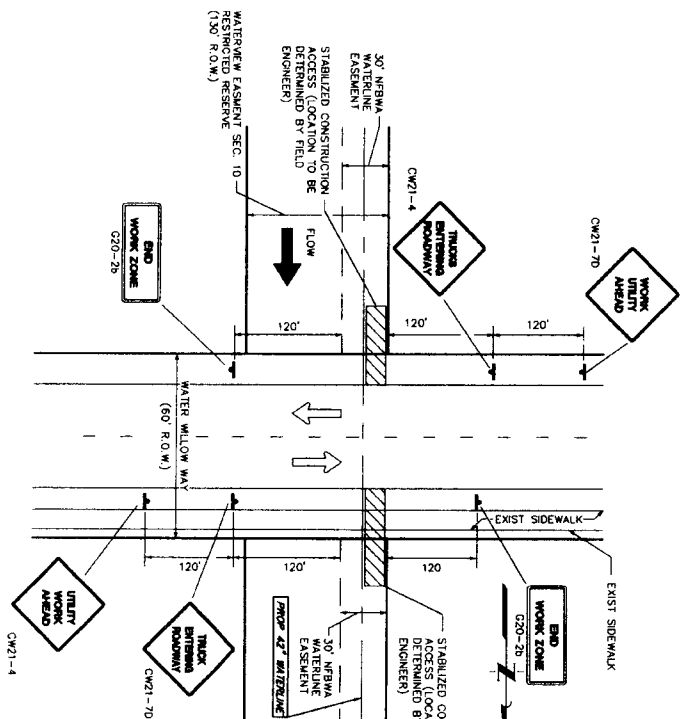
- NOTES**
- CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART V OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUD) - LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.
 - NO LANES SHALL BE BLOCKED FROM 7 A.M. TO 9 A.M. AND 4 P.M. TO 6.30 P.M. MONDAY THRU FRIDAY.
 - OFF DUTY POLICE OFFICERS/FLAGGERS ARE REQUIRED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED.
 - CONTRACTOR SHALL COVER THE EXCAVATION WITH STEEL PLATES ANCHORED PROPERLY DURING NON-WORKING HOURS AND ALLOW NORMAL TRAFFIC FLOW.
 - APPROVED COPIES OF "TRAFFIC CONTROL PLANS" SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES.
 - IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF TRAFFIC CONTROL PLAN DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS (S)HE SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT ALTERNATE PLANS TO TRAFFIC SECTION OF HAPUD FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
 - IF THE PROJECT IS WITHIN 400 FEET FROM A SIGNALIZED INTERSECTION, THE CONTRACTOR SHALL CONTACT FORT BEND COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT, SIGNAL DIVISION AT 281-633-7500 FIVE (5) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
 - ANY DAMAGE TO ROADS OR SIDEWALKS OR CURBS AS A RESULT OF ACCESS SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER. NO SEPARATE PAY.

TRAFFIC CONTROL ALONG WEST BELLFORT & HARLEM ROAD
 NOT TO SCALE

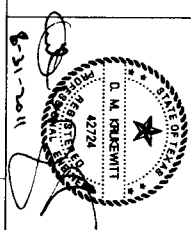


**WEST BELLFORT
 POSTED SPEED 45 MPH**
**HARLEM ROAD
 POSTED SPEED 45 MPH**

TRAFFIC CONTROL ALONG WATER WILLOW WAY
 NOT TO SCALE



POSTED SPEED 30 MPH



J.C. JONES & CARTER, P.C.
 ENGINEERS-PLANNERS-SURVEYORS
 7000 West Loop South, Suite 100, Houston, Texas 77056 (713) 777-6507

SEGMENT 7A

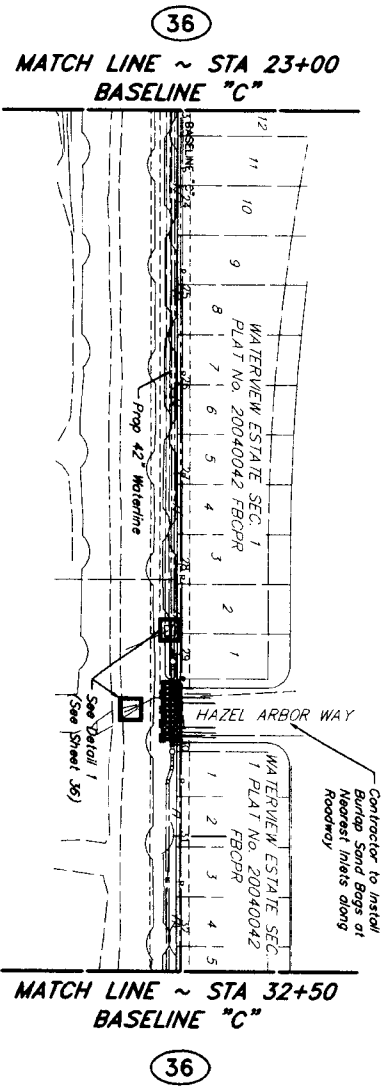
TRAFFIC CONTROL SHEET 2 OF 2



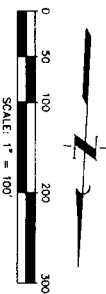
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 WATER: SMELT & SPOCKE
 WASTEWATER: FRATEC
 STORM: STORM WATER QUALITY
 FACILITIES:
 FILE NO.:
 DRAWING SCALE:
 HORZ: AS SHOWN
 SHEET NO: 35 OF 80
 FOR CITY OF HOUSTON USE ONLY (CITY DWG NO.)

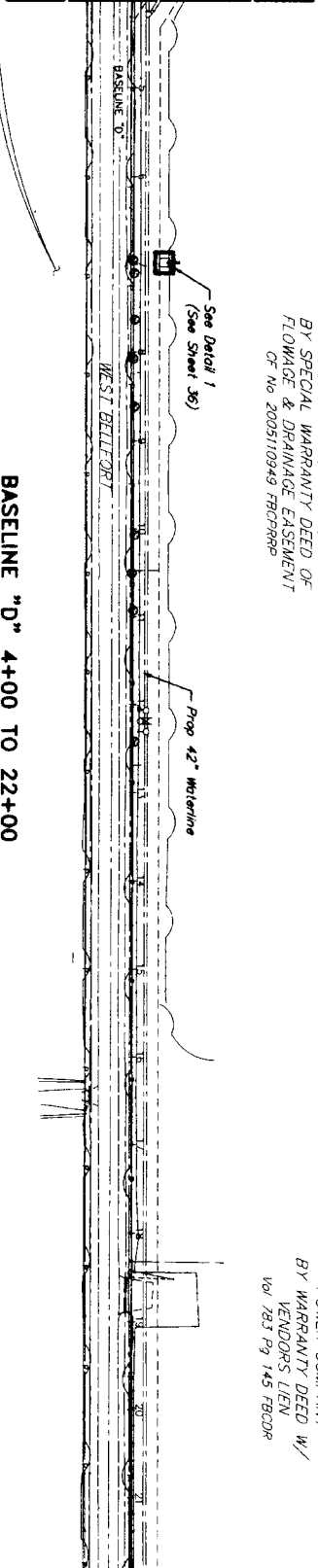
LEGEND
 STABILIZED CONSTRUCTION ACCESS
 REINFORCED FILTER FABRIC BARRIER



BASELINE "C" 23+00 TO 32+50
 SCALE: 1"=100'

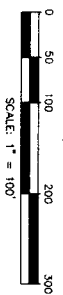


**MATCH LINE ~ STA 4+00
 BASELINE "D"**

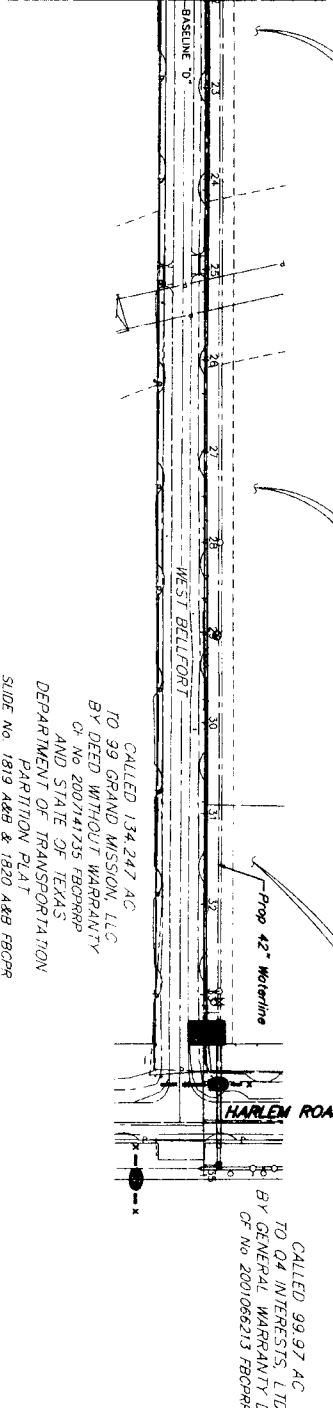


BASELINE "D" 4+00 TO 22+00
 SCALE: 1"=100'

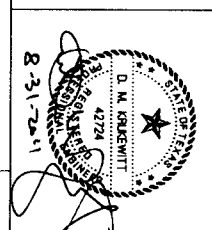
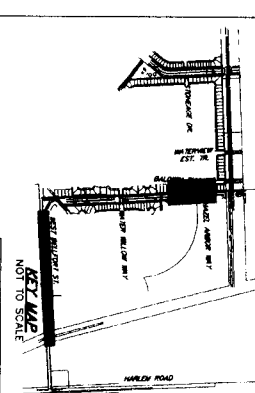
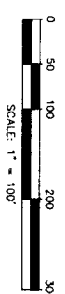
**MATCH LINE ~ STA 22+00
 BASELINE "D"**



**MATCH LINE ~ STA 22+00
 BASELINE "D"**



BASELINE "D" 22+00 TO 35+00
 SCALE: 1"=100'



| NO. | DATE | REVISION | APPROVED |
|-----|------|----------|----------|
| 1 | | | |
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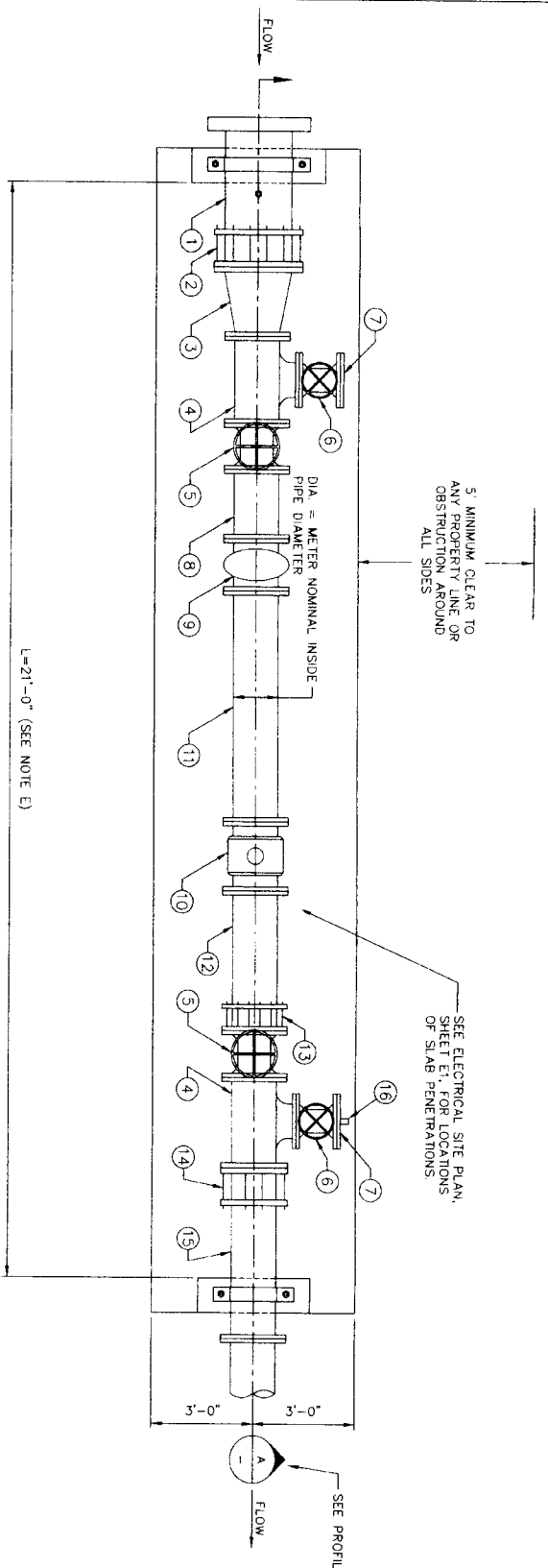
SEGMENT 7A
 STORM WATER
 POLLUTION PREVENTION
 PLAN SHEET 2 OF 2



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

WATER: STREET & BRIDGE
 MASTERPIECE: FINISH
 STORM: STORM WATER QUALITY
 FEATURES:
 FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY DMC NO.)
 DRAWING SCALE:
 HORIZ: 1" = 100'
 VERT: 1" = 100'

SHEET NO: **37** OF **80**



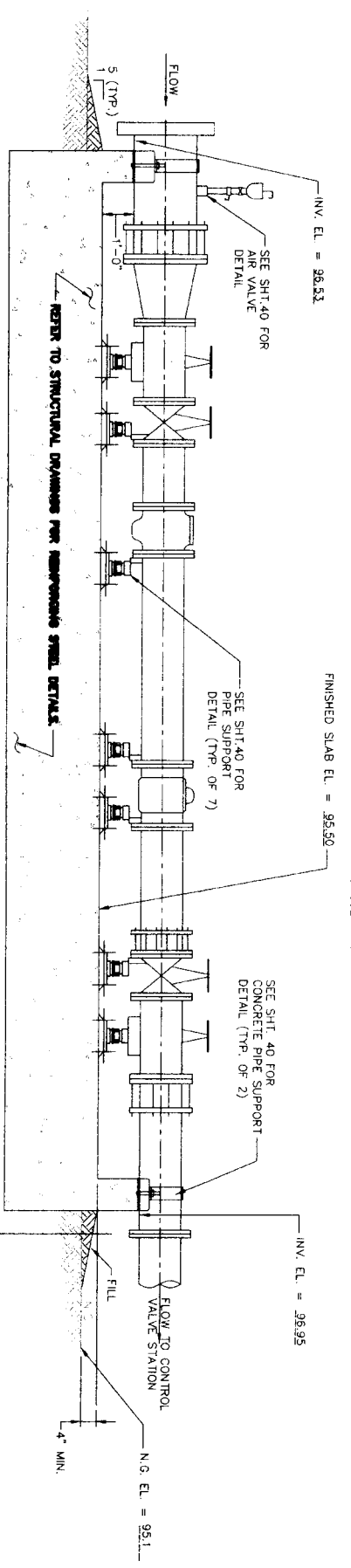
SLAB ON GRADE METER STATION

| ITEM | FITTING DESCRIPTION | DIA. = 8 INCH FITTING SIZE (INCH) |
|------|--|---|
| 1 | PIPE (DIAMETER) w/ 2" THREADED TOP | 18 |
| 2 | FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER) | 18 |
| 3 | REDUCER | 18x6 |
| 4 | TEE w/ BASE (DIAMETER, RUN X RUN X BRANCH) | 6x6x6 |
| 5 | VALVE, GATE 6x-1 (SEE NOTE A) (DIAMETER) | 6 |
| 6 | VALVE, GATE 6x-1 (SEE NOTE A) (DIAMETER) | 6 |
| 7 | BLIND FLANGE (SIZE) | 6 |
| 8 | PIPE SPOOL (DIAMETER) | 6 |
| 9 | STRAIGHT ASSEMBLY | 6 |
| 10 | FLOW METER SIZE (ELECTROMAGNETIC METER SEE NOTE B) | 6 |
| 11 | PIPE SPOOL (DIAMETER) LENGTH-(6 x DIA.) MINIMUM | 6 |
| 12 | PIPE SPOOL (DIAMETER) LENGTH-(3 x DIA.) MINIMUM | 6 |
| 13 | FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER) | 6 |
| 14 | FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER) | 6 |
| 15 | PIPE (DIAMETER) | 6 |
| 16 | BLIND FLANGE w/ 2" THREADED CONNECTION AND 2" HOSE ADAPTER | 6 |

NOTES TO DESIGN CONSULTANT:
(REMOVE THESE NOTES BEFORE BOX SUBMITTAL)

- METER SIZE TO BE DETERMINED BY METRA ENGINEER. DESIGN CONSULTANT TO VERIFY FITTING SIZES IN THIS TABLE CORRELATE TO APPROVED FITTING SIZES AND SURFACE WATER SUPPLY LINE SIZE.
- ORIENT TEE'S TOWARD SITE DRAINAGE SWALE SHOW/ADD SWALE PAID, F' DETERM'D.

1 PLAN - SLAB ON GRADE METER STATION
SCALE: NTS

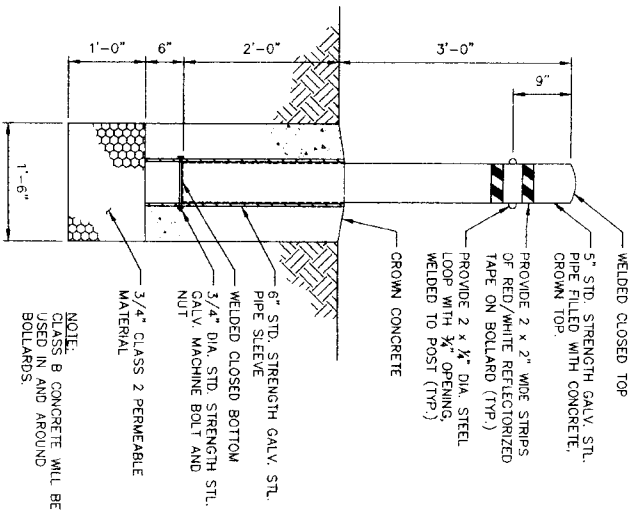


A SLAB ON GRADE METER STATION
SCALE: NTS

- INITIAL INSTALLATION NOTES:**
- INSTALL PIPING, METER ETC AS SHOWN, DISINFECT, PRESSURE TEST AND VERIFY SATISFACTORY OPERATION.
 - ENSURE THAT AS A RESULT OF THE TESTING PROCESS, NO FLOW WILL BE ALLOWED TO ENTER THE DISTRICTS GROUND STORAGE TANK.

- DESIGN IS BASED ON AMERICAN R/D RESIDENT GATE VALVE, PATTERN 2002 w/ HAND WHEEL OPERATOR OR APPROVED EQUAL.
- DESIGN IS BASED ON THE INCHES PER 4000 KG (EMERGENCY) OR SEDENS STRAINS PU 8100 W/ ELECTROMAGNETIC.
- PROVIDE AND INSTALL INSTALLATION AND CONTROLS PER TECHNICAL SPECIFICATIONS.
- LENGTH (L) OF METER RUN IS APPROXIMATE, IT MAY BE ADJUSTED BASED ON PIPING SHOP DRAWINGS.
- RESTRAINED JOINT PIPING SHALL BE USED WITHIN WATER PLANT SITE.
- APPLY SHERWIN WILLIAMS POLYMER BLUE SW 4005 TO ALL ABOVE GRADE PIPING AND APPURTENANCE IN ACCORDANCE WITH SECTION 08001-PROTECTIVE COATINGS.
- ALL BOLLARDS INSTALLED WITHIN THE WATER PLANT SITE SHALL BE REMOVABLE. SEE DETAIL 2, THIS SHEET.

2 REMOVABLE BOLLARD DETAIL
SCALE: NTS



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

Wade A. Morgan
93700
STATE OF TEXAS
REGISTERED PROFESSIONAL ENGINEER

9-1-11

| | | | |
|-----|------|----------|---------|
| NO. | DATE | REVISION | APPROX. |
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METER STATION LAYOUT

NFBWA SEGMENT 7A

R. G. MILLER
engineers
12121 Mickelthaler Lane
Houston, Texas 77079
(713) 481-9800
Texas P.E. Registration No. 1-487

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

WATER: SHEET & BOX
WASTEWATER: TREATIC
STORM: STORM WATER QUALITY

FACTORS: STORM WATER QUALITY

FILE NO.: FOR CITY OF HOUSTON USE ONLY (CITY ENG. NO.)

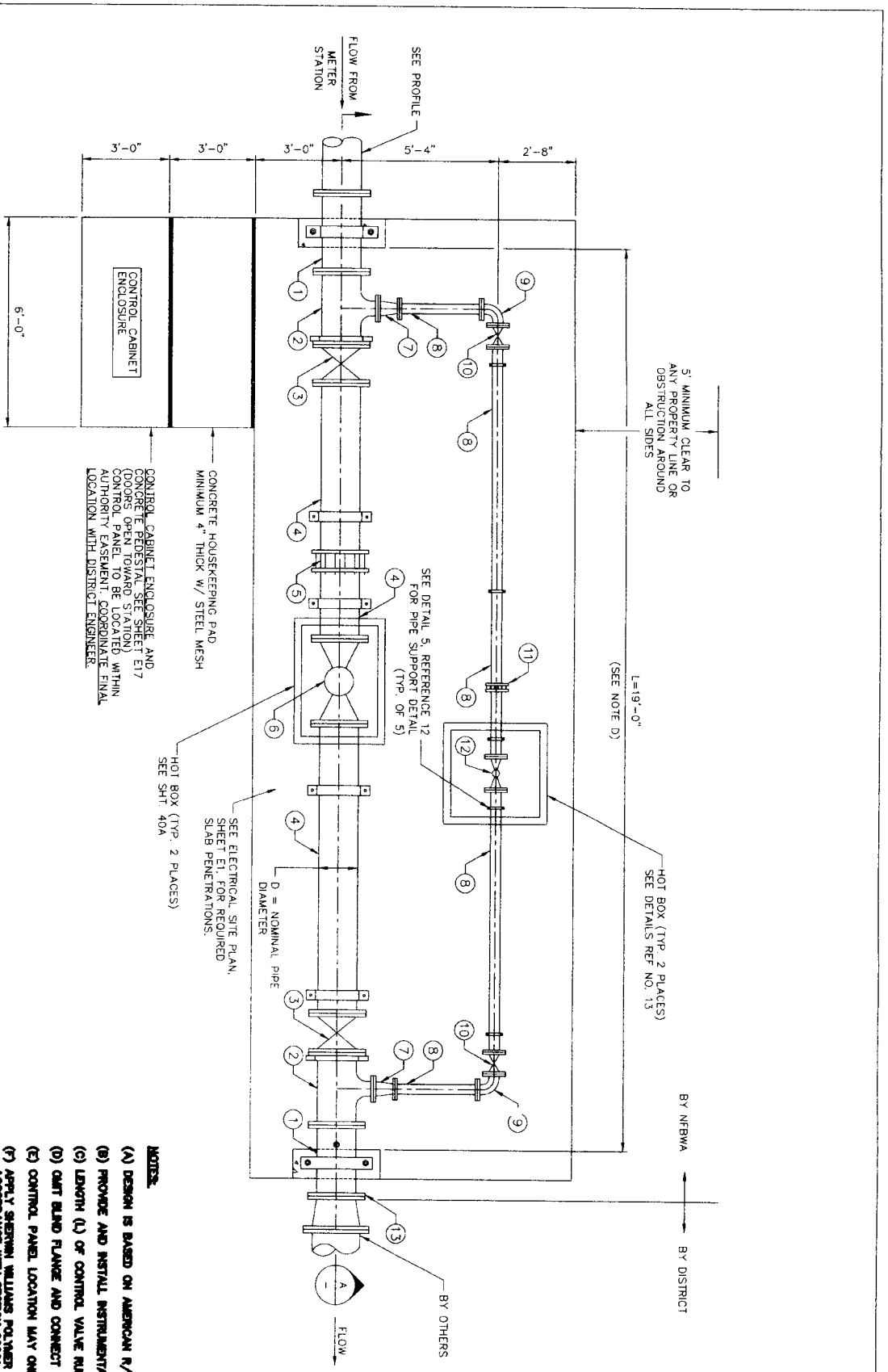
DRAWING SCALE: N.T.S.

HORIZ: N.T.S.

VERT: N.T.S.

SHEET NO: 38 OF 80

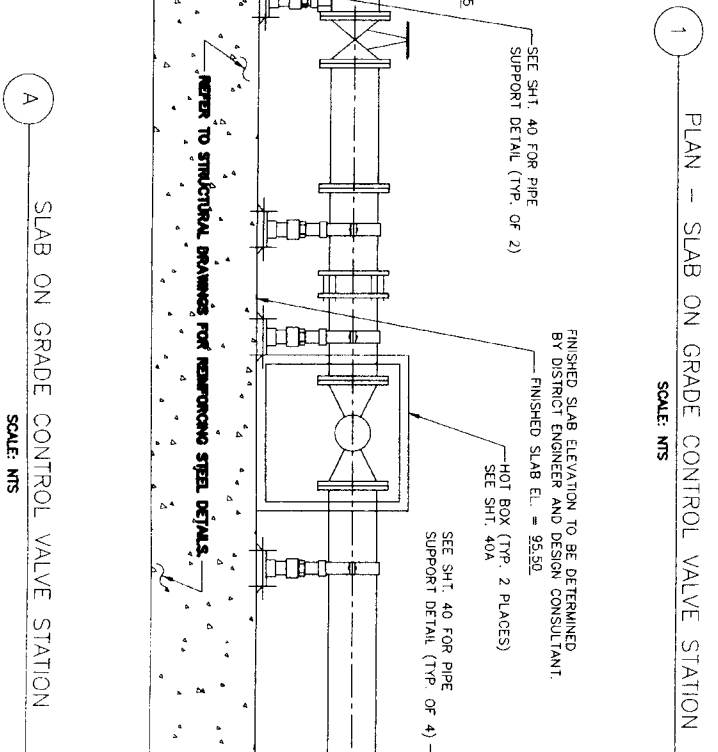
LOG NO.: 10-0078



SLAB ON GRADE CONTROL VALVE STATION

| ITEM | FITTING DESCRIPTION | FITTING SIZE (INCH) |
|------|--|---------------------|
| 1 | PIPE (DIAMETER) W/ 2" THREADED TAP (ONE PLACE) | 6 |
| 2 | TEE (DIAMETER, RUN X RUN X BRANCH) | 6x6x4 |
| 3 | VALVE, GATE 6V-1 (SEE NOTE B) (DIAMETER) | 6 |
| 4 | PIPE SPOOL (DIAMETER) | 6 |
| 5 | FLEXIBLE COUPLING (DIAMETER) WITH RESTRAINT | 6 |
| 6 | VALVE, FLOW CONTROL, FCV-1 (DIAMETER) | 6 |
| 7 | REDUCER, CONCENTRIC | 4x3 |
| 8 | PIPE SPOOL (DIAMETER) | 3 |
| 9 | ELBOW, 90 DEGREE (DIAMETER) | 3 |
| 10 | VALVE, GATE 6V-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) | 6 |

- NOTES:**
- (A) DESIGN IS BASED ON AMERICAN R/D RESILIENT GATE VALVE, PATTERN 2082 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) GATE BLIND FLANGE AND CONNECT TO DISTRICT PIPING IF IT EXISTS.
 - (E) CONTROL PANEL LOCATION MAY ONLY BE MOVED WITH APPROVAL OF NFBWA ENGINEER.
 - (F) APPLY SHERWIN WILLIAMS POLYMER BLUE SW 4065 TO ALL ABOVE GRADE PIPING AND APPROPRIANCE IN ACCORDANCE WITH SECTION 05800-PROTECTIVE COATINGS.



SLAB ON GRADE CONTROL VALVE STATION

SCALE: NTS

CONTROL VALVE STATION LAYOUT

NFBWA SEGMENT 7A

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

WATER: STREET & BROOK
WASTEWATER: TOWNE
SEWER: SPECIAL WATER QUALITY
FACTORIES:

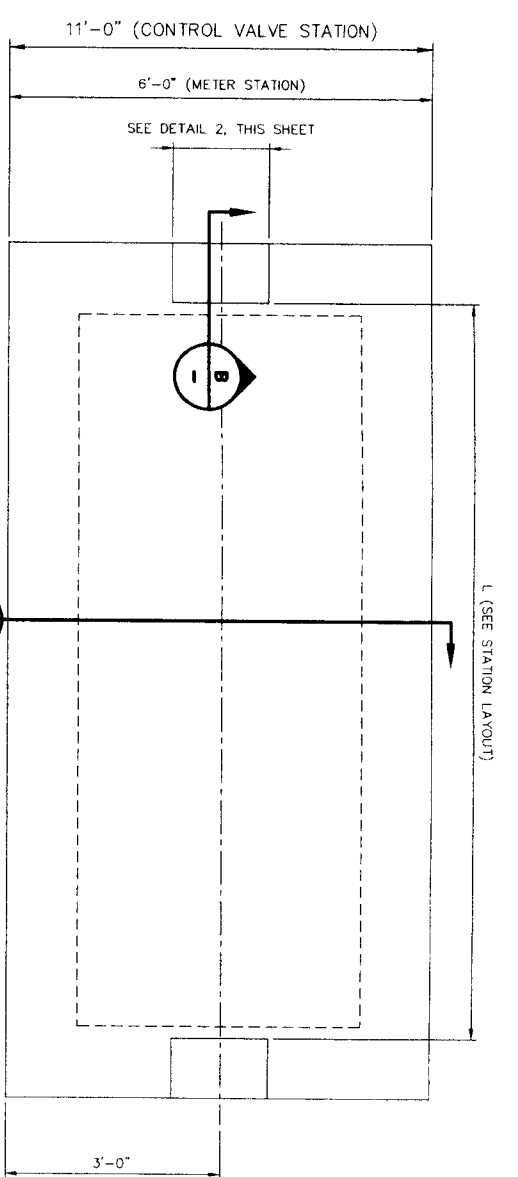
FILE NO.:
DRAWING SCALE:
HORZ: N.T.S.
VERT: N.T.S.

SHEET No. 39 OF 80

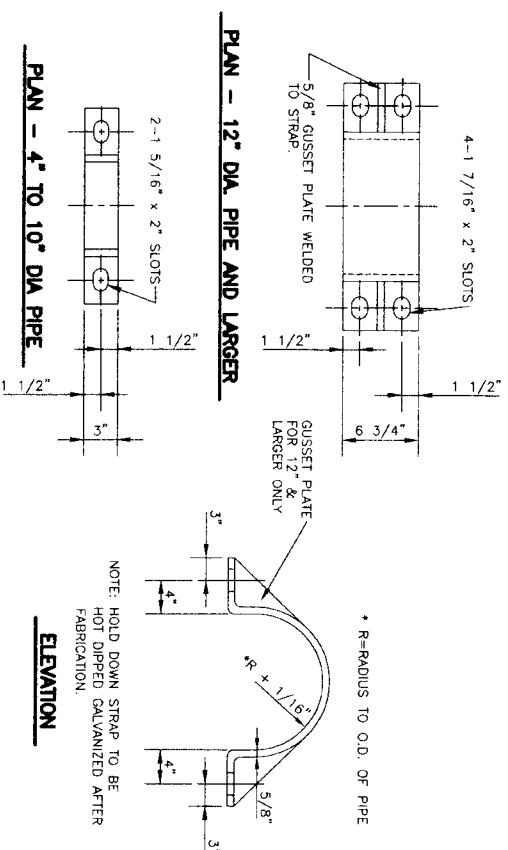
R.G. Miller
engineers
12121 Wickenheiser Lane
Houston, Texas 77079
(713) 461-6800
Texas P.E. Registration No. F-487

APPROVED:

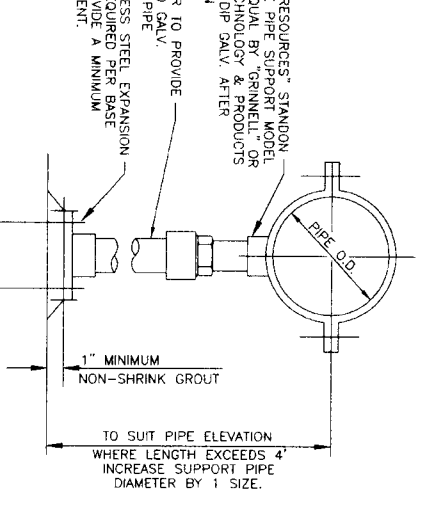
DATE:



1 PLAN - METER AND CONTROL VALVE STRUCTURAL
SCALE: NTS

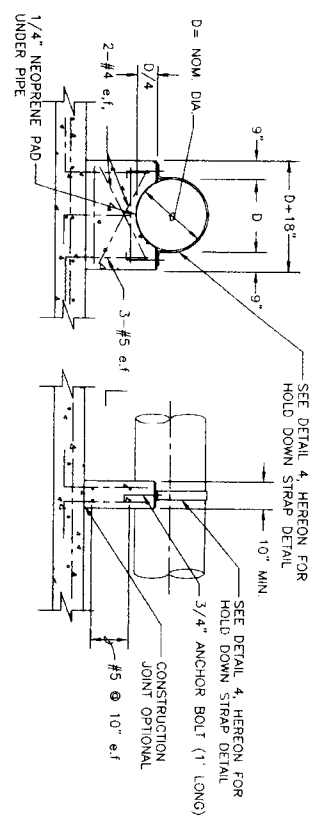


4 HOLD DOWN STRAP DETAIL

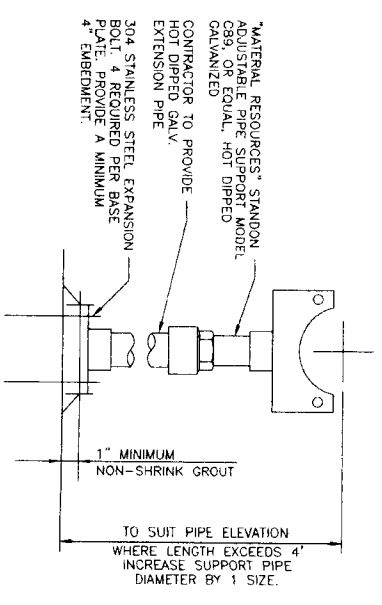


5 PIPE SUPPORT DETAIL W/STRAP
SCALE: NTS

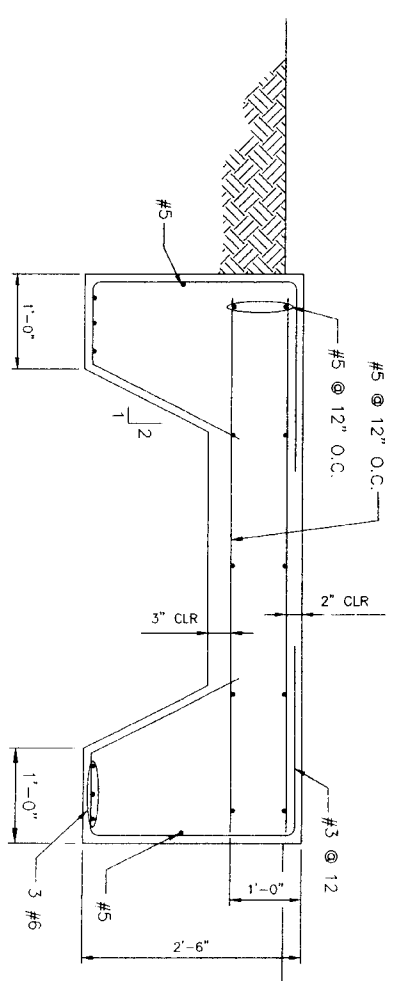
2 CONCRETE PIPE SUPPORT DETAIL



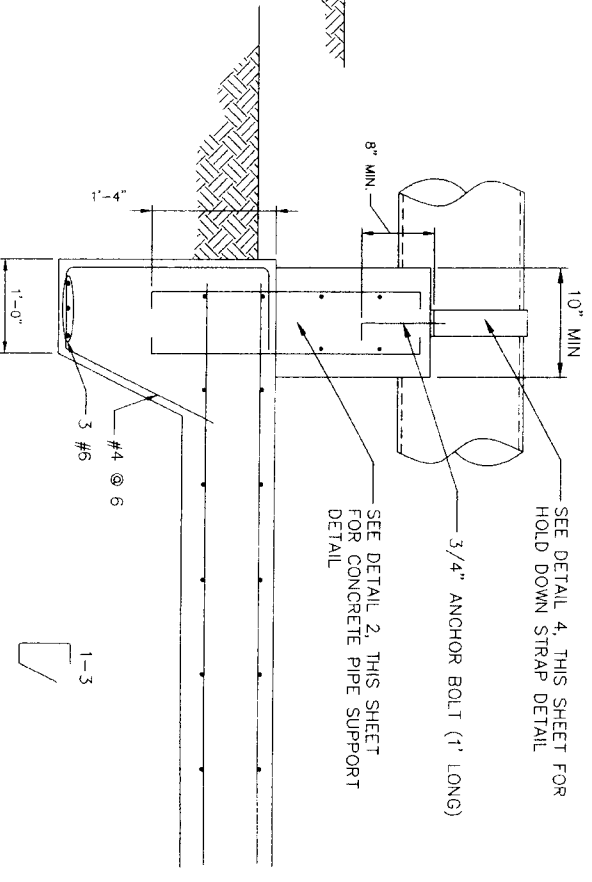
3 PIPE SUPPORT DETAIL



6 AIR VALVE DETAIL
SCALE: NTS



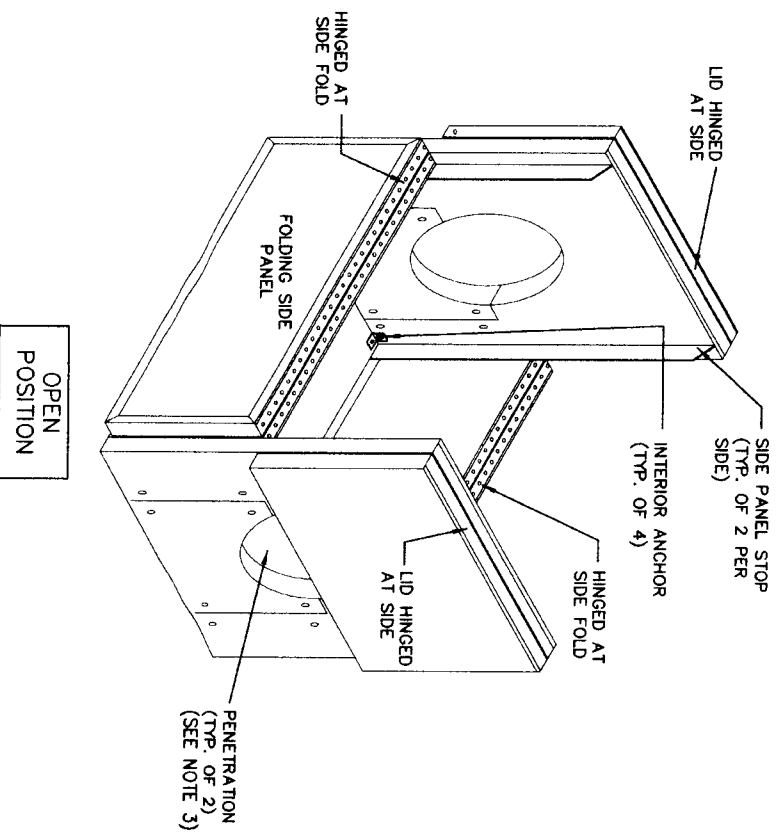
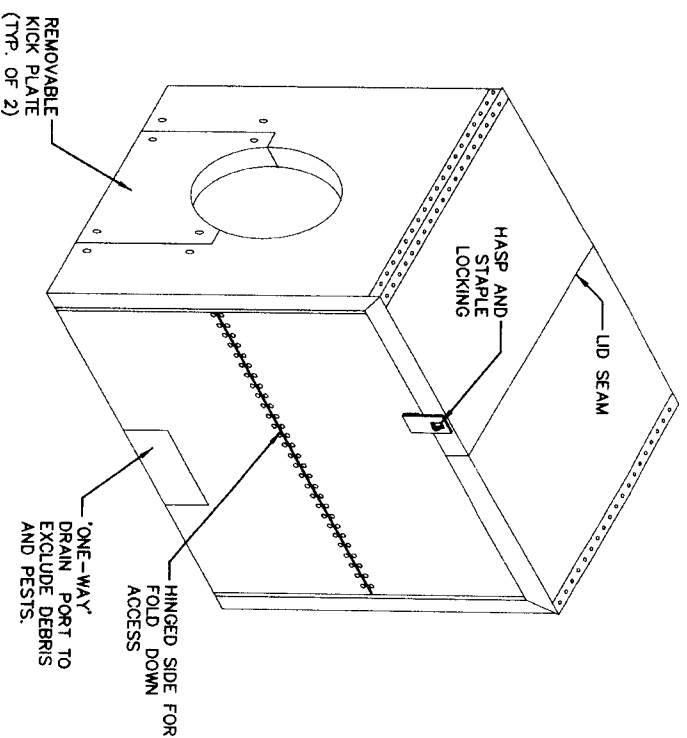
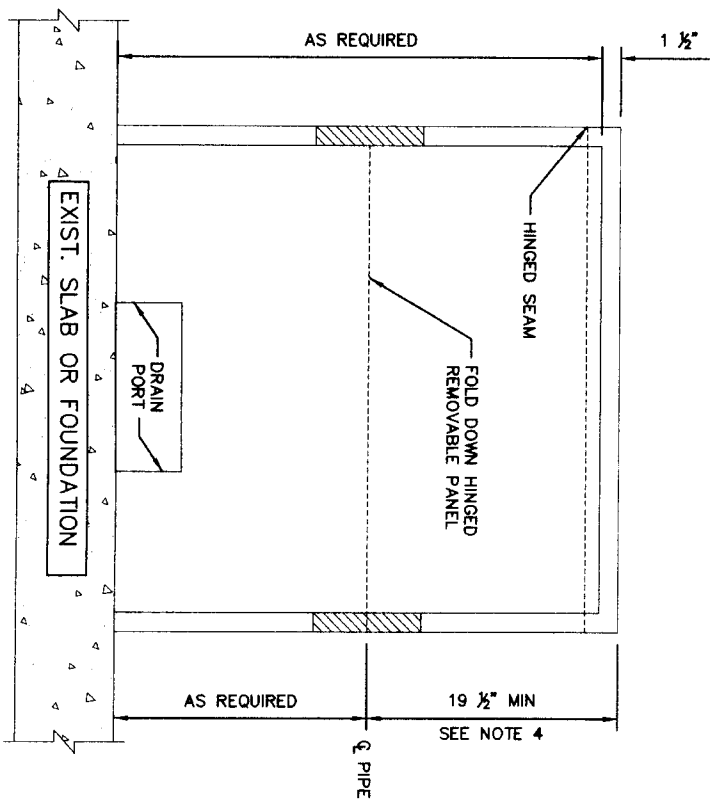
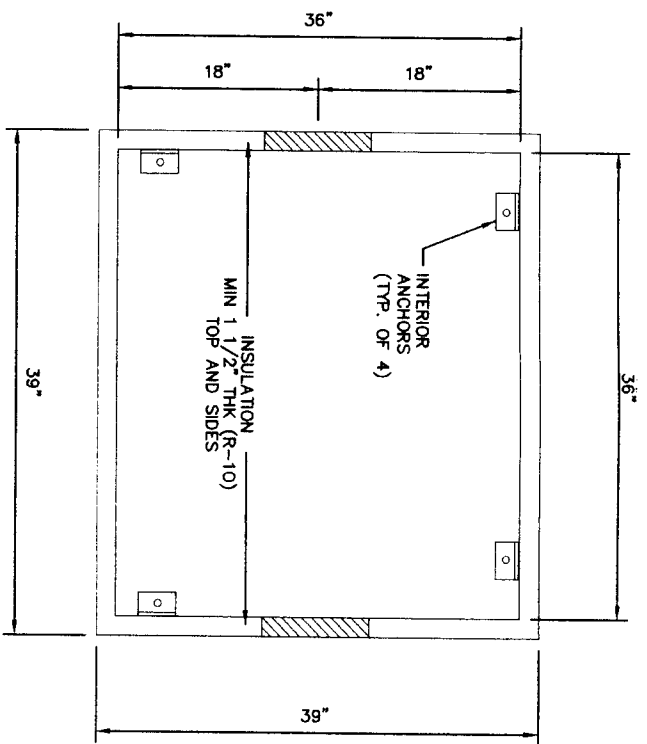
A STRUCTURAL DETAIL
SCALE: NTS



B 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 $1/2"$.

| | |
|---|---|
| | |
| T.G. Miller Engineers 12121 Wickenheiser Lane Suite 200 Houston, Texas 77079 (713) 481-9800 Texas Firm Registration No. F-467 Since 1986 | NFBWA SEGMENT 7A METER AND CONTROL VALVE STATION STRUCTURAL AND MECHANICAL DETAILS NORTH FORT BAND |
| 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 | 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 |
| FILE NO: DRAWING SCALE: | FOR CITY OF HOUSTON USE ONLY (DTM NO.) |
| SHEET NO: 40 OF 80 | |



NOTES:

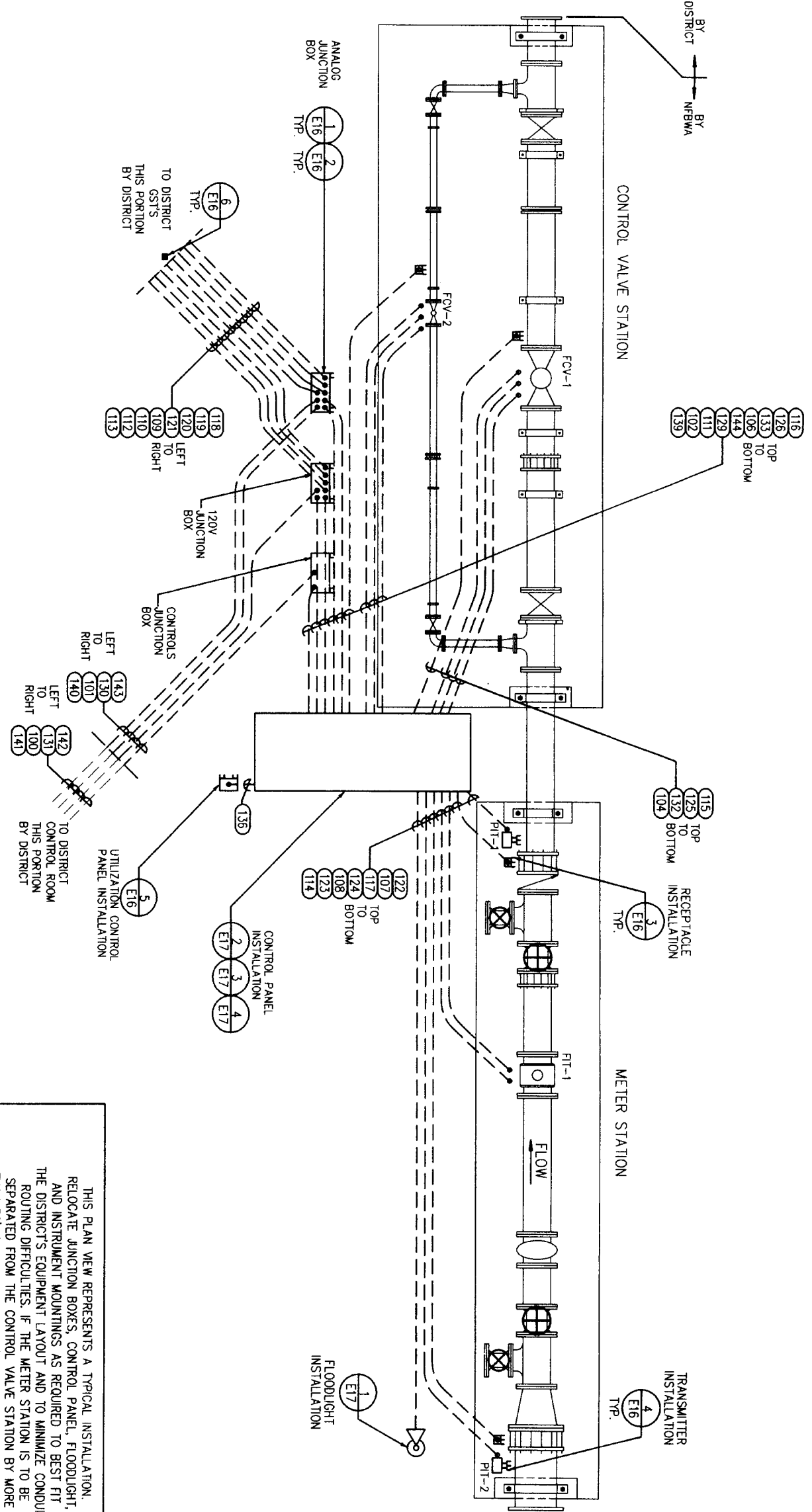
1. PROVIDE HOT BOX MODIFIED MODEL MDF2DTL "DURA-FOLD" ALUMINUM ENCLOSURE OR EQUIVALENT.
2. ANCHOR BOX IN PLACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. CENTER PENETRATION FOR PIPE HORIZONTALLY IN SIDE OF BOX. SIZE DIAMETER OF PENETRATION TO FIT THE PIPE. FILL SPACE BETWEEN PENETRATION HOLE AND 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.

| | | |
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| NO. | REVISION | APPROVED |
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| 4 | | |
| <p>12121 Wilshire Lane Suite 200 Houston, Texas 77079 (713) 461-9600 TEXAS REG. REGISTRATION NO. 1-407</p> | | |
| <p>ENGINEERS R.G. Miller engineers</p> | | |
| <p>NFBWA SEGMENT 7A</p> | | |
| <p>TYPICAL HOTBOX DETAIL</p> | | |
| | | |
| <p>NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES</p> | | |
| <p>CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p> | | |
| DATE | STREET & BOX | |
| DESIGNER | PROJECT | |
| SIGNAL | STANDARD WATER QUALITY | |
| FRANCHISE | | |
| FILE NO. | 108-CITY OF HOUSTON USE ONLY (BY DWG. NO.) | |
| DRAWING SCALE | | |
| HORIZ : N.T.S. | | |
| VERT : N.T.S. | | |
| SHEET NO. 40A OF 80 | | |

- LEGEND**
- ELECTRICAL DUCT BANK MARKER (SEE DTL SHIT E16)
 - GROUND CONDUCTOR
 - ELECTRICAL DUCT BANK (SEE DTL SHIT E17)
 - CAPPED ELECTRICAL CONDUIT
 - GROUND ROD
 - ☐ WEATHERHEAD
 - ☐ FLOODLIGHT (SEE DTL SHIT E17)

TYPICAL ELECTRICAL SITE PLAN
N.T.S.

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. PREMISE 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 BLUE HEATING CABLE CONNECTOR AT FCV-1 AND FCV-2 RECEPTACLES. EASYHEAT MODEL NO. SR91J WITH GST-1 CONNECTOR, OR APPROVED EQUAL.

DATE: JUNE 27, 2011

REF. NO. E1
SHEET NO. 41 OF 80

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Beaumont, TX 77705 (409) 886-7068

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

NORTH FORT BEND

SEGMENT 7A
 METER AND CONTROL VALVE STATION INSTALLATION & ROUTING

| | |
|---------------|---------------|
| DATE | DATE |
| SCALE | SCALE |
| FILE NO. | FILE NO. |
| DRAWING SCALE | DRAWING SCALE |
| HORIZ. | HORIZ. |
| VERT. | VERT. |

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

CONDUIT SCHEDULE

| CONDUIT NO. | DESCRIPTION | CONDUIT SIZE | POWER CONDUCTORS | | | CONTROL CONDUCTORS | | | ROUTING METHOD | REMARKS |
|-------------|---|--------------|------------------|----------------|---------|--------------------|-----|------|----------------|--|
| | | | NO. | SIZE | NEUTRAL | GROUND | NO. | SIZE | | |
| 100 | NFBWA CONTROL PANEL POWER FEED | 1 1/2 | 2 | 6 | 6 | 6 | | | | |
| 101 | NFBWA CONTROL PANEL POWER FEED | 1 1/2 | 2 | 6 | 6 | 6 | | | | BY DISTRICT, COMPLETE W/CONDUIT #101 WIRE PROVIDED BY DISTRICT, CONTROL RM TO JB |
| 102 | NFBWA 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 RECEIPTAGE | 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 | 2 | 12 | 12 | 12 | | | | |
| 112 | FUTURE GST No. 3 HEAT TRACE POWER | 1 | 1 | PULL WIRE ONLY | | | | | | |
| 113 | FUTURE GST No. 4 HEAT TRACE POWER | 1 | 1 | PULL WIRE ONLY | | | | | | |
| 114 | FLOODLIGHT | 1 | 2 | 12 | 12 | 12 | | | | |
| 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 NFBWA CONTROL PANEL | 1 | | | | | | | | |
| 119 | UT-2 GST No. 2 SIGNAL TO NFBWA CONTROL PANEL | 1 | | | | | | | | |
| 120 | FUTURE UT-3 GST No. 3 SIGNAL TO NFBWA CONTROL PANEL | 1 | | | | | | | | |
| 121 | FUTURE UT-4 GST No. 4 SIGNAL TO NFBWA CONTROL PANEL | 1 | | | | | | | | |
| 122 | PI-1 DOWNSTREAM PRESS METER SIGNAL TO CONT PNL | 1 | | | | | | | | |
| 123 | PI-2 UPSTREAM PRESS METER SIGNAL TO CONT PNL | 1 | | | | | | | | |
| 124 | FI-1 FLOWMETER SIGNAL TO NFBWA CONTROL PANEL | 1 | | | | | | | | |
| 125 | FCV-1 TO CONT PNL | 1 | 1 | | | | | | | |
| 126 | FCV-2 TO CONT PNL | 1 | 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 | NFBWA WATER UTILIZATION PANEL | 1 | | | | | | | | |
| 137 | (NOT USED) | | | | | | | | | |
| 138 | (NOT USED) | | | | | | | | | |
| 139 | NFBWA CONTROLS TO DISTRICT | 1 | | | | | | | | |
| 140 | NFBWA CONTROLS TO DISTRICT | 1 | | | | | | | | |
| 141 | NFBWA 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 NFBWA CONTROL PANEL | 1 | | | | | | | | |

DATE: JUNE 27, 2011

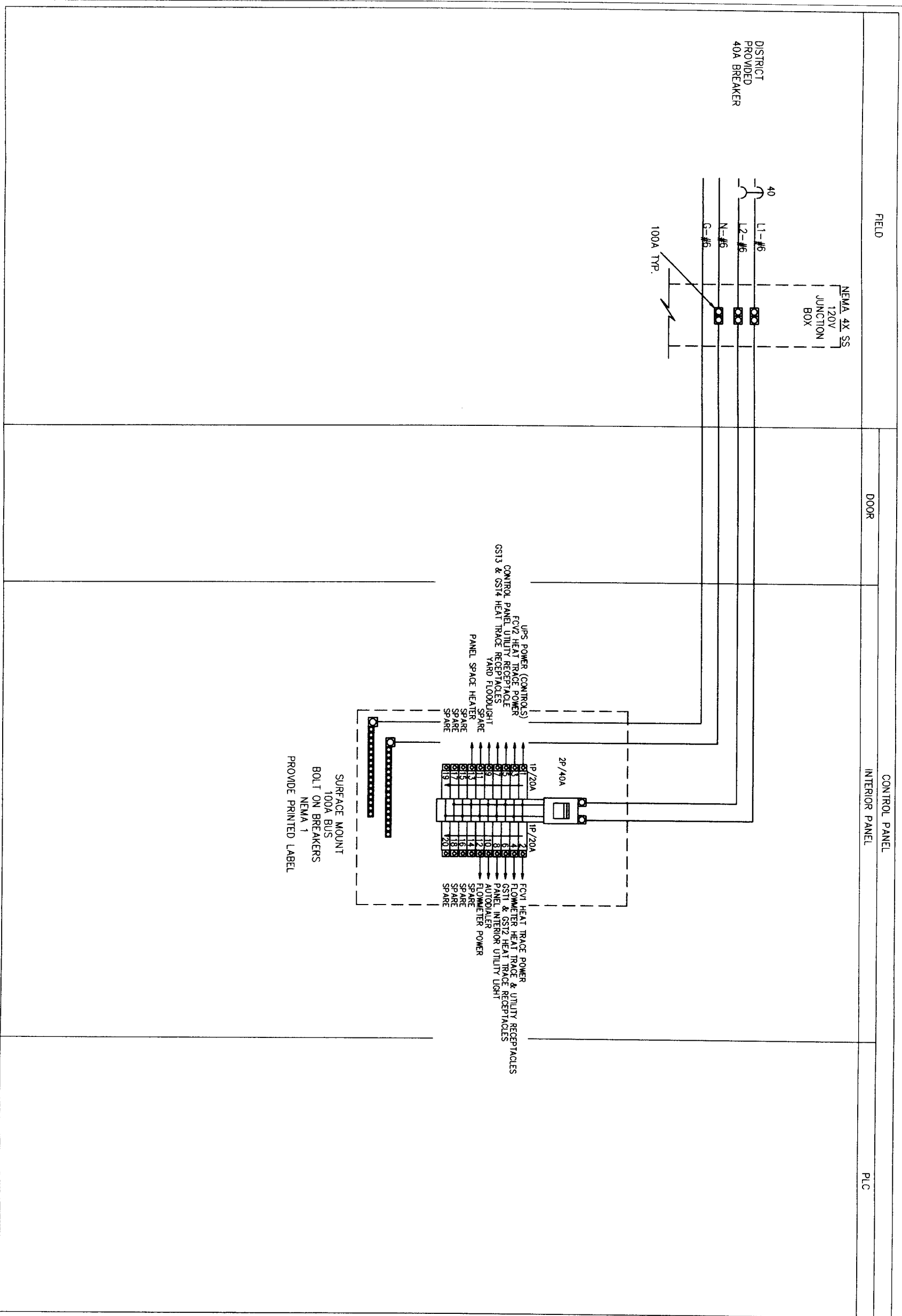
REF. NO. E2
 SHEET 42 OF 80

STON WILD QUALITY
 STONE
 STREET & BRIDGE
 FILE NO.
 DRAWING SCALE
 H-09Z
 VERT.
 FOR CITY OF HOUSTON USE ONLY

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

SEGMENT 7A
 ELECTRICAL
 CONDUIT SCHEDULE

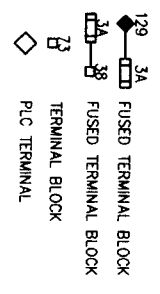
Brymcon, Inc.
 Electrical Engineering
 TBEPE Registration No. F-375
 8320 White Road
 Beaumont, TX 77706
 (409) 966-7096



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



Brymcon, Inc.
 Electrical Engineering
 TBE Registration No. F-375
 8320 White Road
 Baytown, TX 77708 (409) 666-7066

STATE OF TEXAS
 MARK T. KENNEDY
 PROFESSIONAL ENGINEER
 REGISTRATION NO. 48479
 EXPIRES 08/31/12
 8/25/11

SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 1

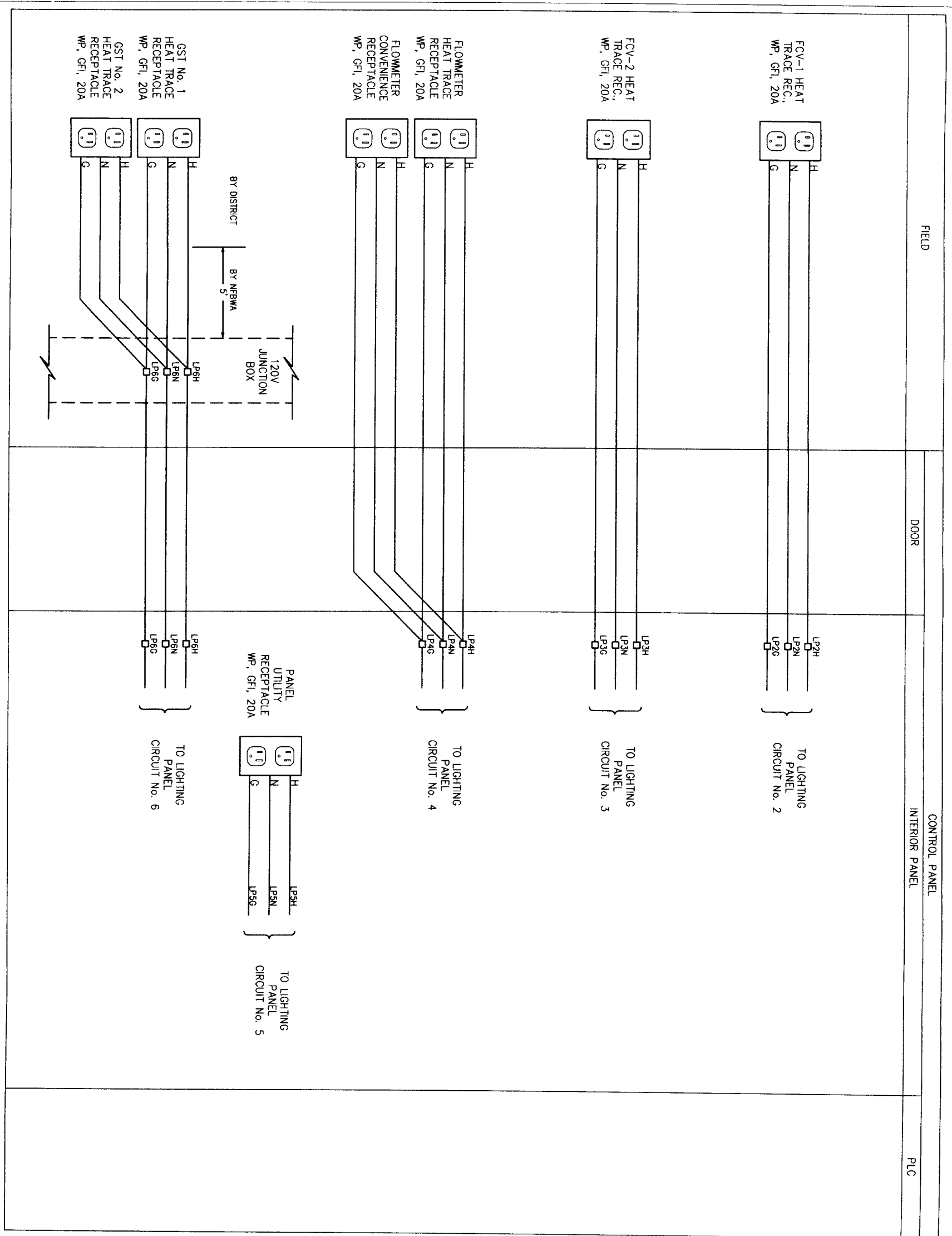


NOTE: CITY REQUIREMENTS VARY FOR ONE YEAR ONLY AT THE DATE OF INSTALLATION

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

| | |
|---------------|-----------------------------|
| ALTERNATE | STANDARD QUALITY |
| STOWN | EXAMINERS |
| SHEET & GROUP | |
| FILE NO: | 198 C17 OF 40-STON USE ONLY |
| DRAWING SCALE | |
| DATE | FEBRUARY 15, 2011 |

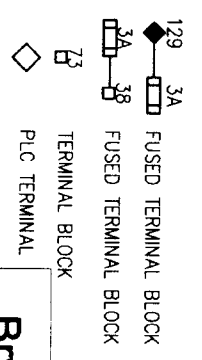
REF. NO. E3
 SHEET 43 OF 80



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 44 OF 80

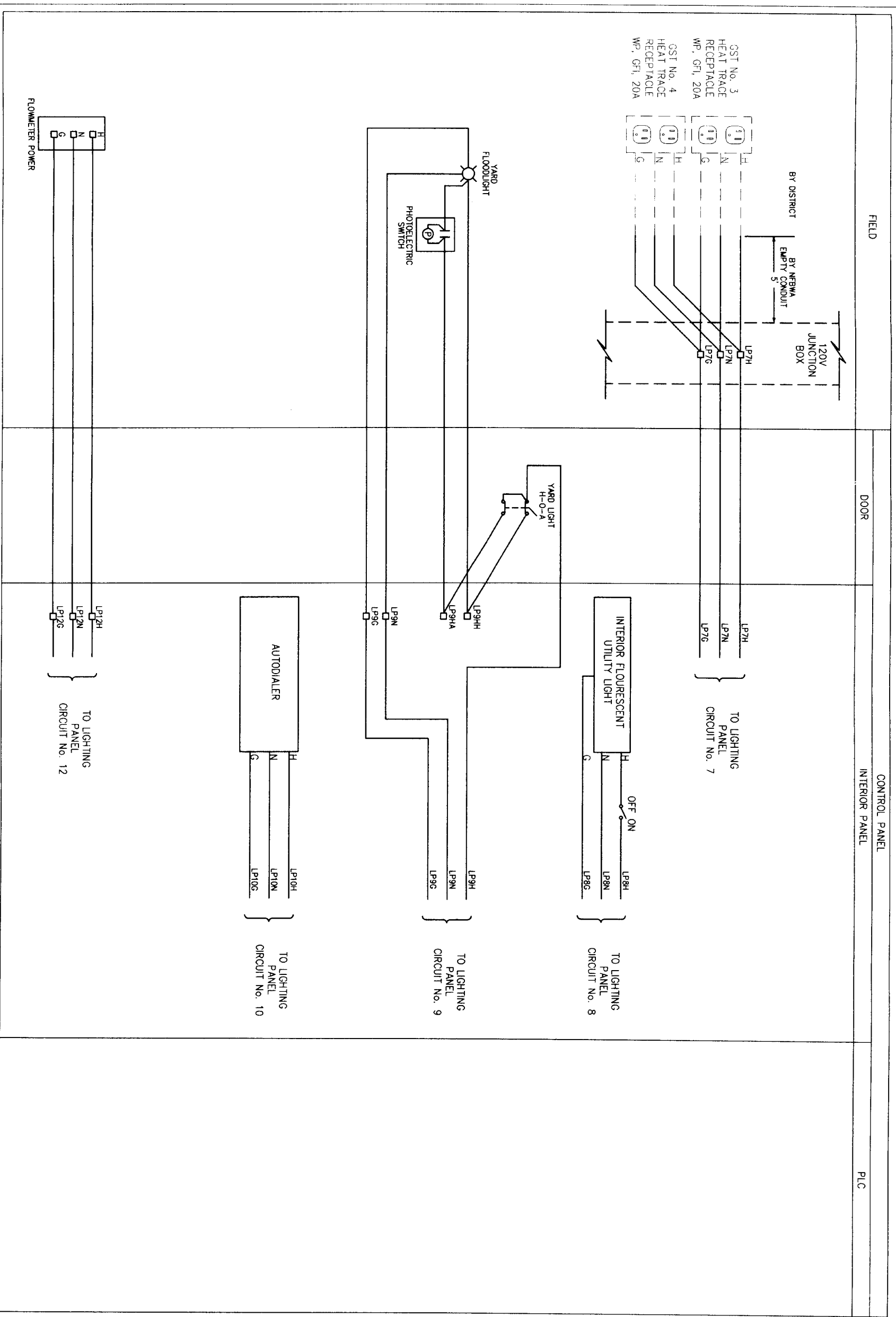
DRAWING SCALE
 HORIZ
 VERT

Brymcon, Inc.
 Electrical Engineering
 TBE Registration No. F-375
 8320 White Road
 Beaumont, TX 77706 (409) 866-7098

SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 2

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

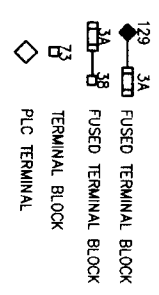
| | |
|-----------------|------------------------------|
| WATER | STORM WATER QUALITY |
| STORM | WASTEWATER |
| STREET & BRIDGE | PLUMBING |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ | |
| VERT | |



NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GSTS AND TWO FUTURE GSTS. MATCH SIGNAL SWITCHES & GST SELECTOR SWITCH POLES TO DISTRICTS ANTICIPATED ULTIMATE NUMBER OF GSTS. 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
 TBEPE Registration No. F-375
 6320 White Road Beaumont, TX 77706 (409) 865-7096



CONTROL DIAGRAM SHEET 3

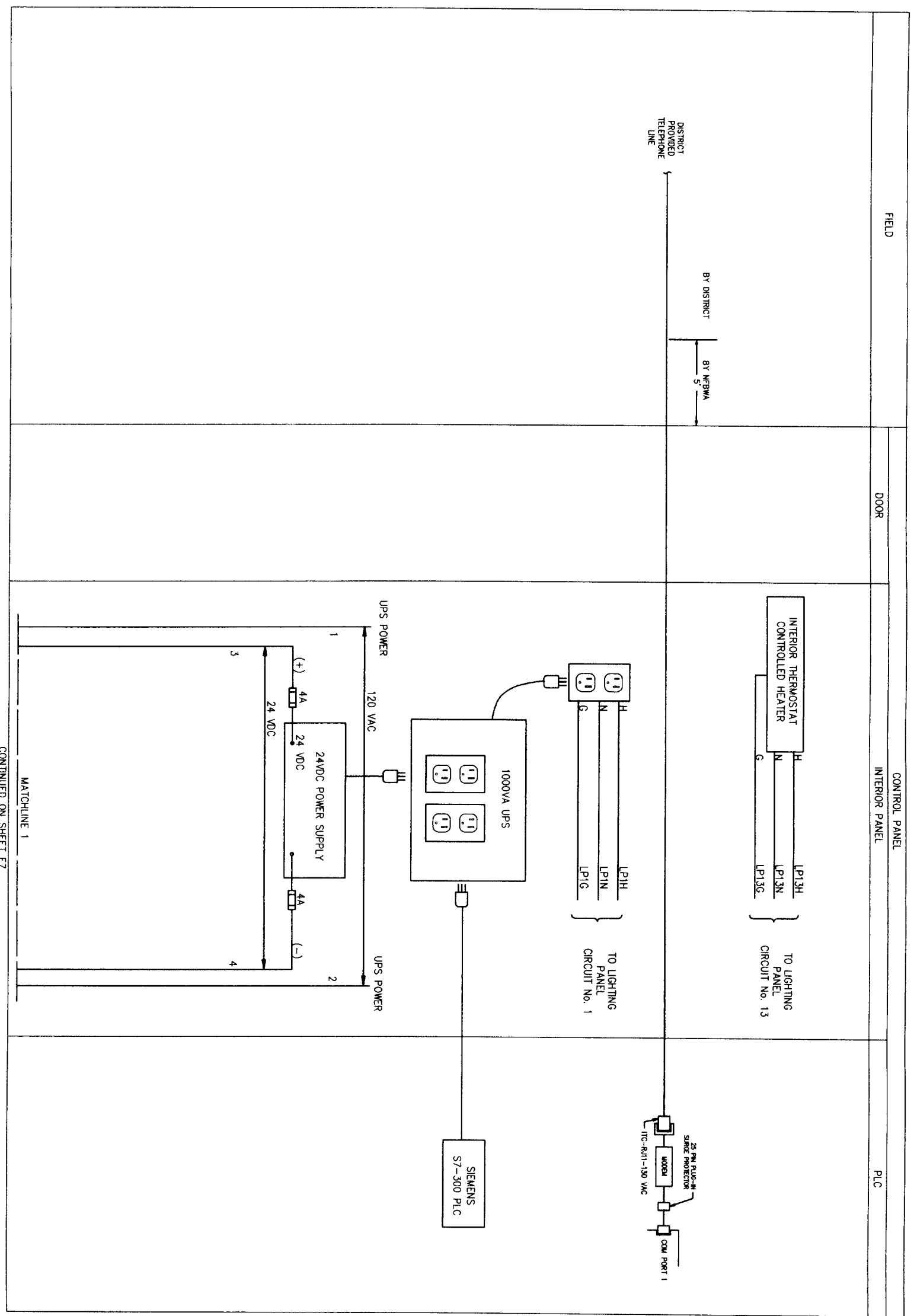


NOTE: CITY SEAL/STAMP IS VALID FOR ONE YEAR ONLY. AFTER DATE OF EXPIRATION, CITY OF HOUSTON SHALL BE RESPONSIBLE FOR OBTAINING A NEW SEAL/STAMP.

| | |
|--|------------------------------|
| CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING | |
| WATER | TRAFFIC AND TRANSPORTATION |
| WASTEWATER | STORM WATER QUALITY |
| STORM | FACILITIES |
| STREET & BRIDGE | |
| FILE NO: | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE: | |
| HORIZ: | |
| VERT: | |

DATE: FEBRUARY 15, 2011

REF. NO. **E5**
 SHEET 45 OF 80



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
- TERMINAL BLOCK
- PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 TPE Registration No. F-375
 8320 White Road
 Beaumont, TX 77708 (409) 866-7096



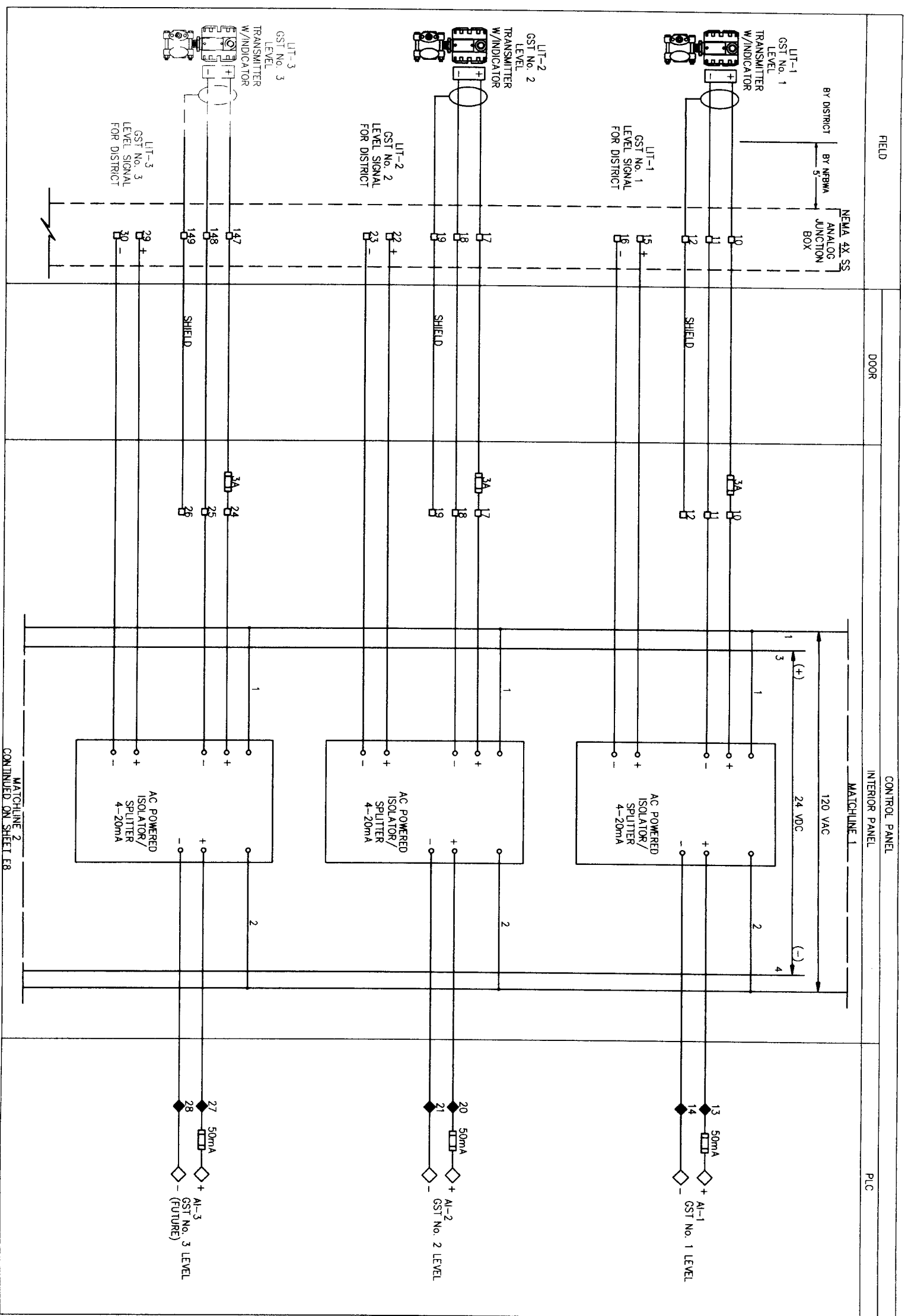
**CONTROL DIAGRAM
 SHEET 4**



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

| | |
|---------------|------------------------------|
| DATE | NOVEMBER 12, 2009 |
| REF. NO. | E6 |
| SHEET NO. | 46 OF 80 |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ. | |
| VERT. | |

CONTINUED ON SHEET E7



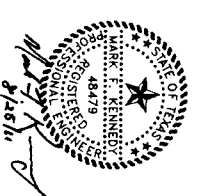
NOTES:

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.
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LEGEND

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

Brymcon, Inc.
 Electrical Engineering
 TSP# Registration No. F-375
 8320 White Road Beaumont, TX 77705 (409) 886-7086

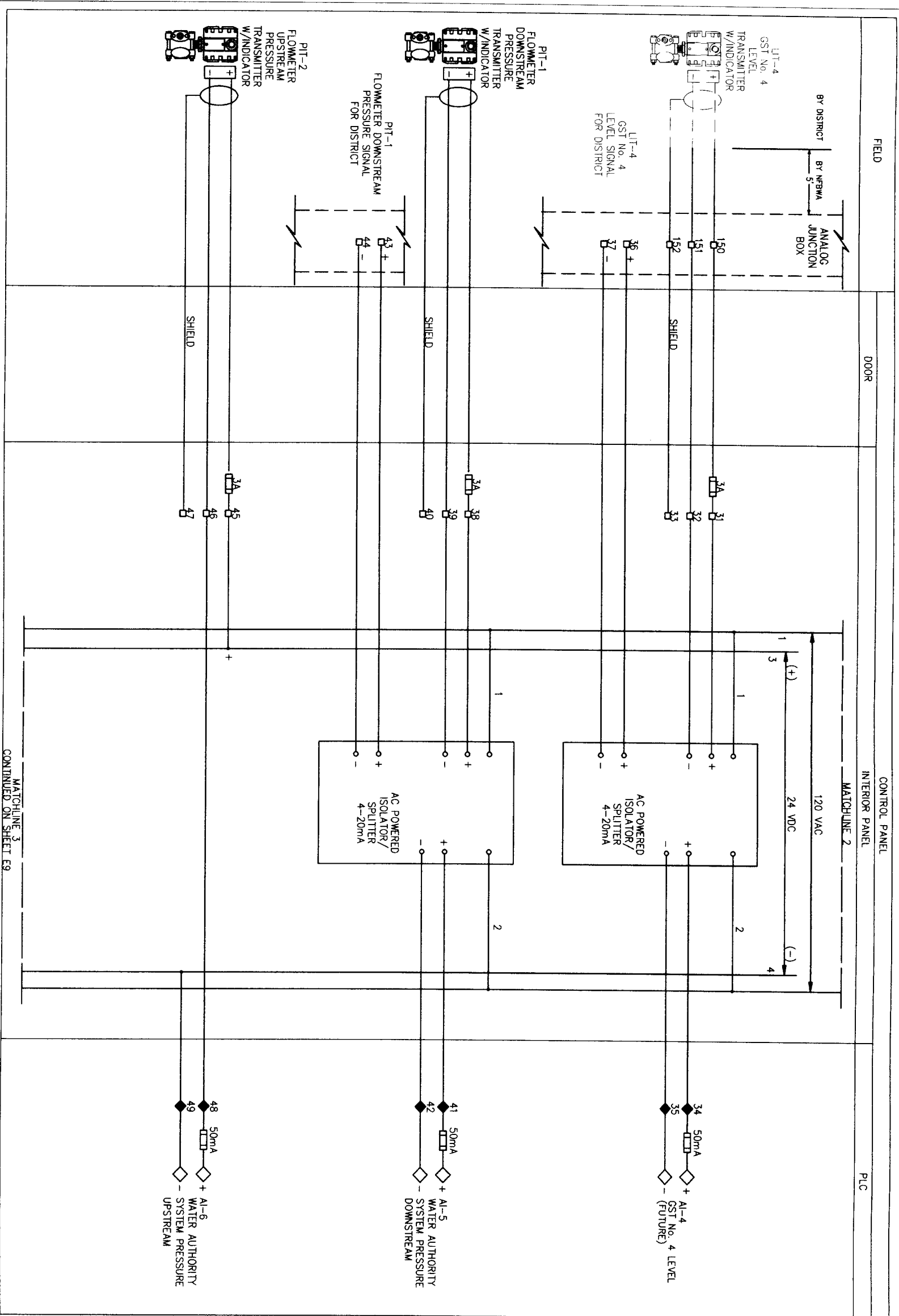


SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 5



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

| | |
|--|------------------------------|
| NOTE: CITY REGULATIONS VALID FOR ONE YEAR ONLY AFTER DATE OF SQA/PAF | STORM WATER QUALITY |
| DATE: NOVEMBER 12, 2009 | TRAFFIC AND TRANSPORTATION |
| REF. NO. E7 | STORM |
| SHEET NO. 47 OF 80 | STREET & BRIDGE |
| | FILE NO. |
| | DRAWING SCALE |
| | FOR CITY OF HOUSTON USE ONLY |



MATCHLINE 3
 CONTINUED ON SHEET E9

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 GSTS. 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
- ◇ PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 T8PE Registration No. F-375
 6320 White Road
 Beaumont, TX 77706 (409) 866-7068



SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 6

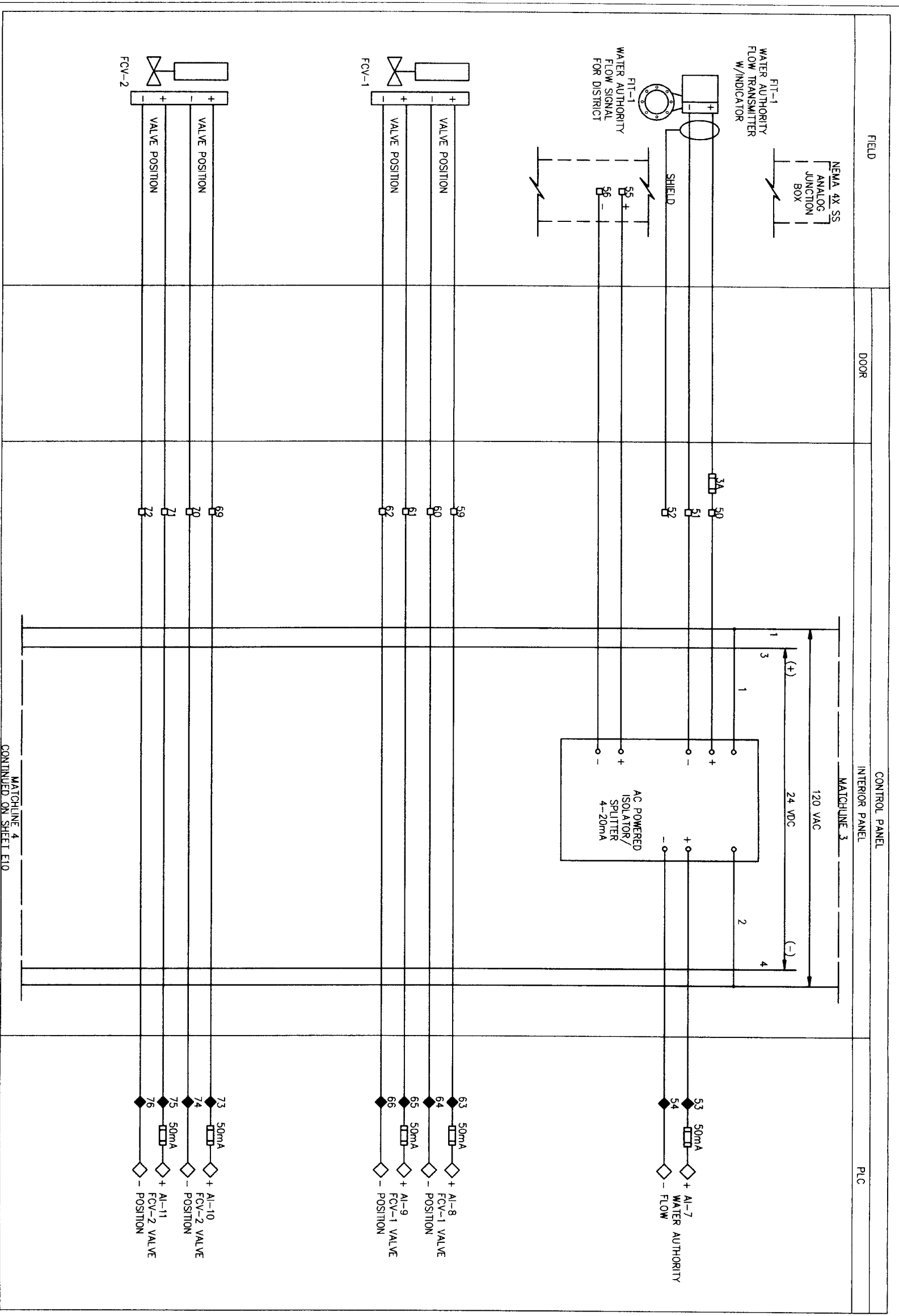


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER
 PLUMBING AND TRANSPORTATION

| | |
|---|------------------------------|
| NOTE: CITY SPECIFICATIONS VALUED FOR ONE YEAR ONLY AFTER DATE OF ISSUANCE | 5000 WATER QUALITY |
| WATERWORKS | FACTORY |
| STORM | |
| STREET & BRIDGE | |
| FILE NO: | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE: | |
| HORIZ: | |
| VERT: | |

DATE: JUNE 27, 2011

REF. NO. E8
 SHEET 48 OF 80



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. 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 3B FUSED TERMINAL BLOCK
- 73 TERMINAL BLOCK
- ◇ PLC TERMINAL

Brymcon, Inc.
 Electrical Engineering
 TBE Registration No. F-375
 6320 White Road
 Beaumont, TX 77708 (409) 866-7086



SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 7

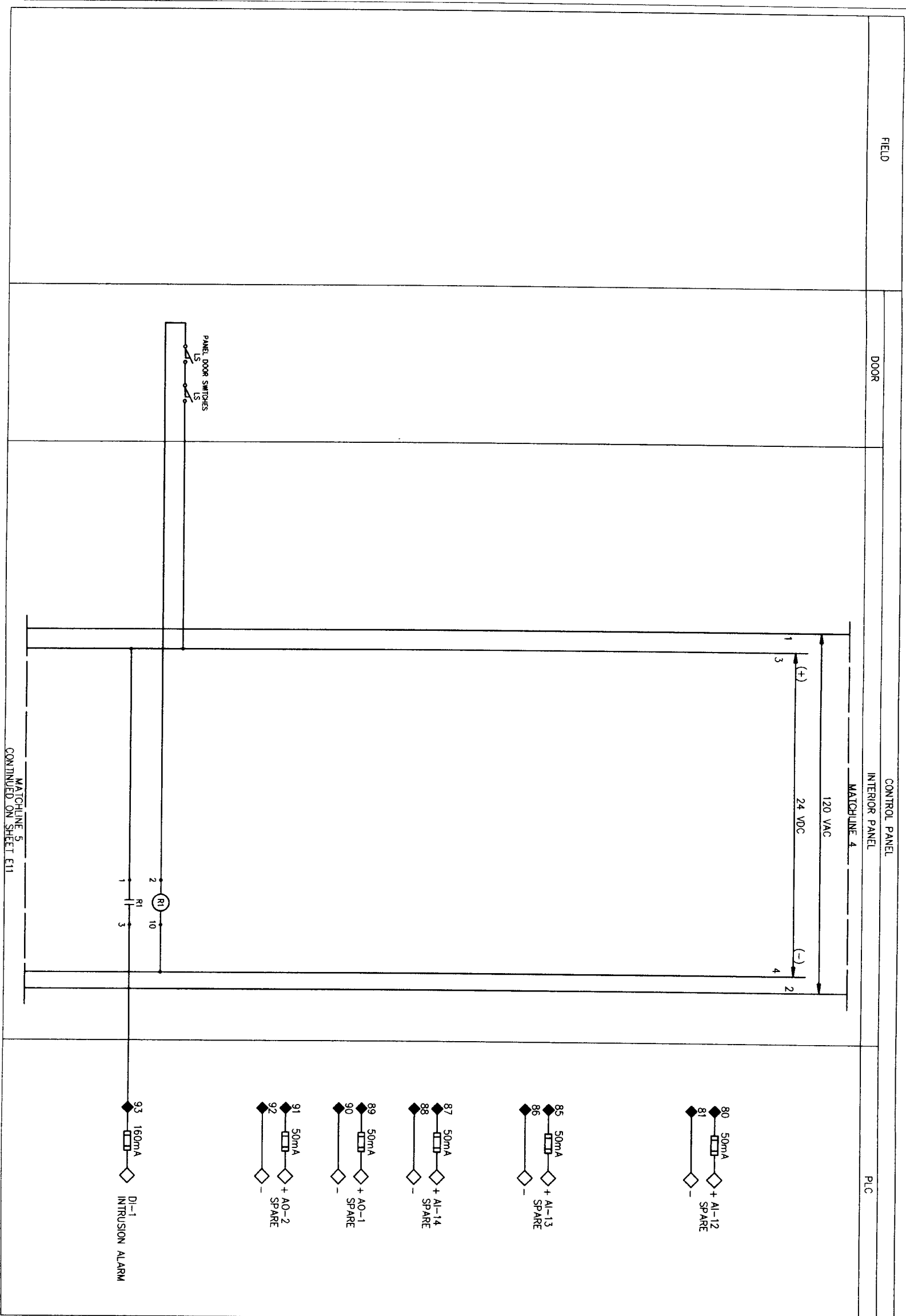


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 SAFETY AND TRANSPORTATION
 WATER
 SYSTEMS
 FACILITIES
 STREET & BRIDGE
 FILE NO.: FOR CITY OF HOUSTON USE ONLY

DATE: JUNE 27, 2011

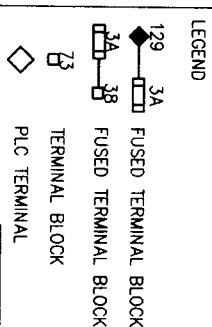
REF. NO. E9
 SHEET 49 OF 80

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 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.



DATE: JUNE 27, 2011

REF. NO. E10
 SHEET NO. 50 OF 80

Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. F-375
 8320 White Road
 Beaumont, TX 77708 (409) 886-7088

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER TREATMENT PLANTS AND TRANSPORTATION

NORTH FORT BEND
 WATER TREATMENT PLANTS AND TRANSPORTATION

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

SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 8

DATE: JUNE 27, 2011

REF. NO. E10
 SHEET NO. 50 OF 80

FILE NO.: FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

HORIZ.:

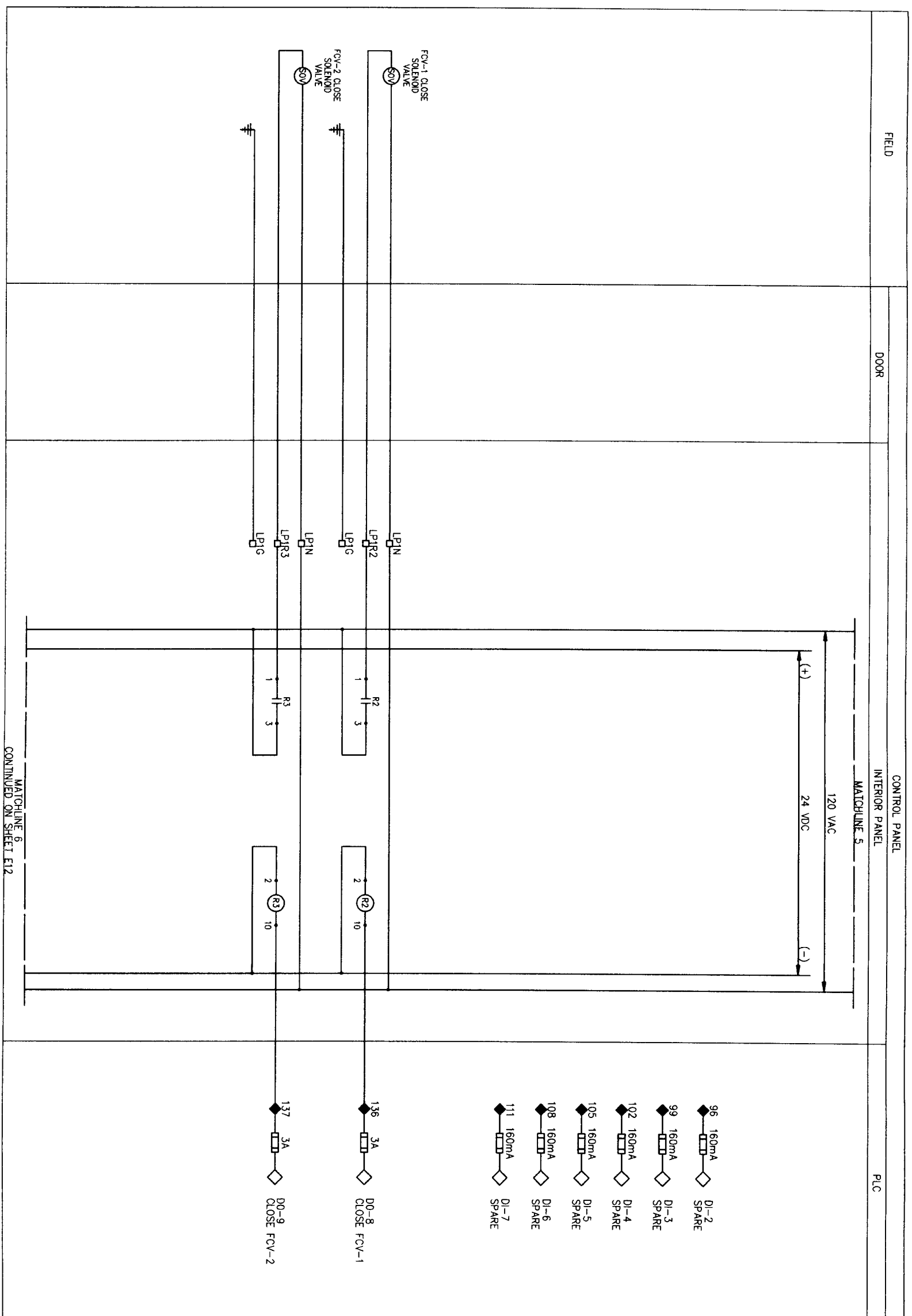
VERT.:

SHEET & BLOCK

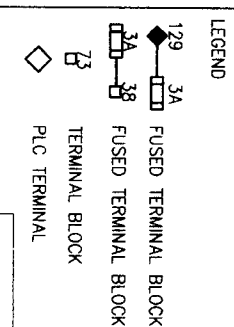
1:1

SYSTEM WATER QUALITY

1:1



- 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 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.



Bymcon, Inc.
 Electrical Engineering
 TBE Registration No. F-375
 6320 White Road
 Beaumont, TX 77706
 (409) 866-7096



SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 9



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

NOTE: CITY SIGNALERS TAKE OVER ONE YEAR ONLY AFTER DATE OF SIGNALING

WATER

STANDARD WATER QUALITY

STORM

FAUNTLISS

STREET & BRIDGE

FILE NO. FOR CITY OF HOUSTON USE ONLY

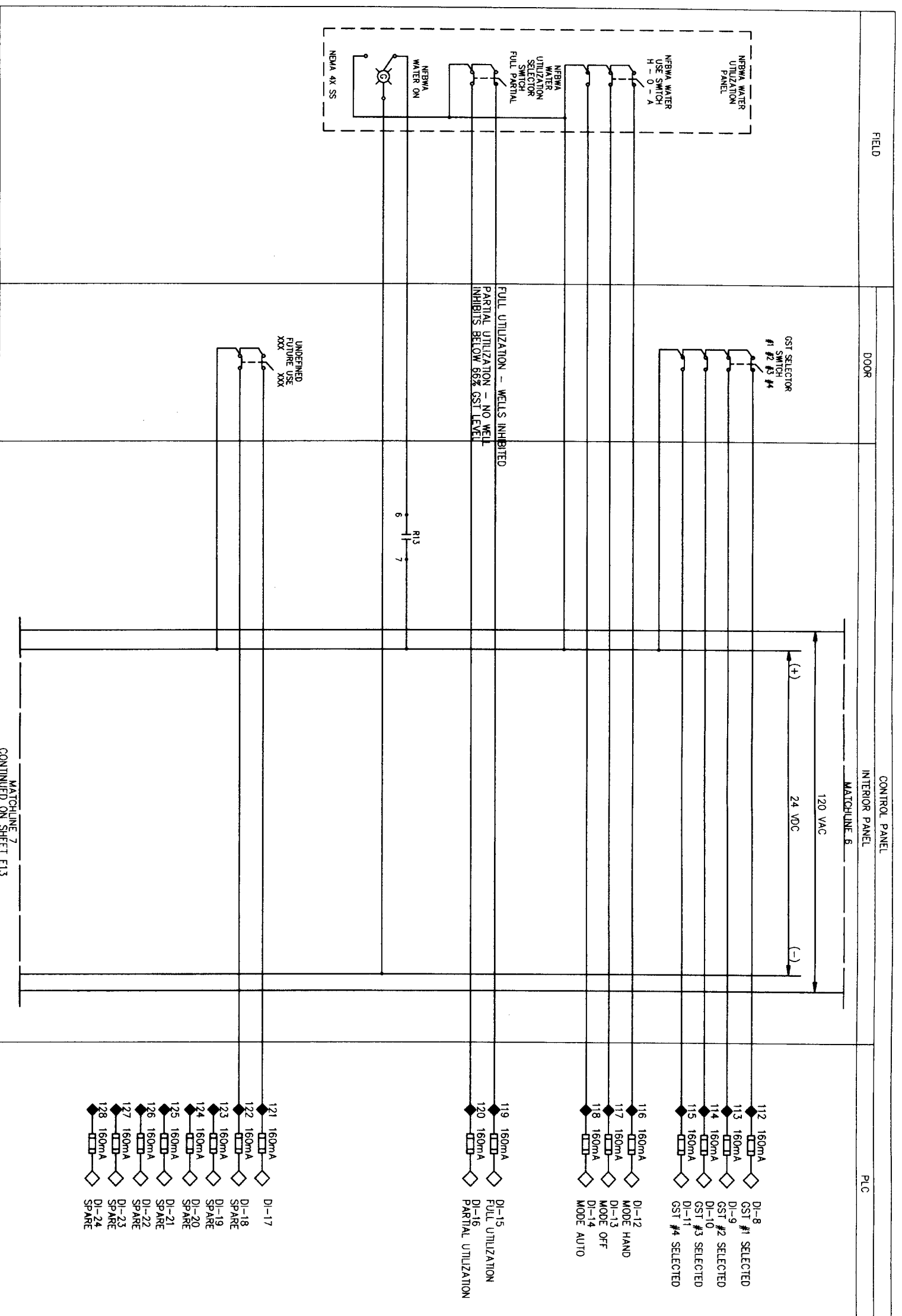
DRAWING SCALE

HORIZ

VERT

DATE: NOVEMBER - 2, 2009

REF. NO. E11
 SHEET No. 51 OF 80



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

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Houston, TX 77061 (409) 986-7095



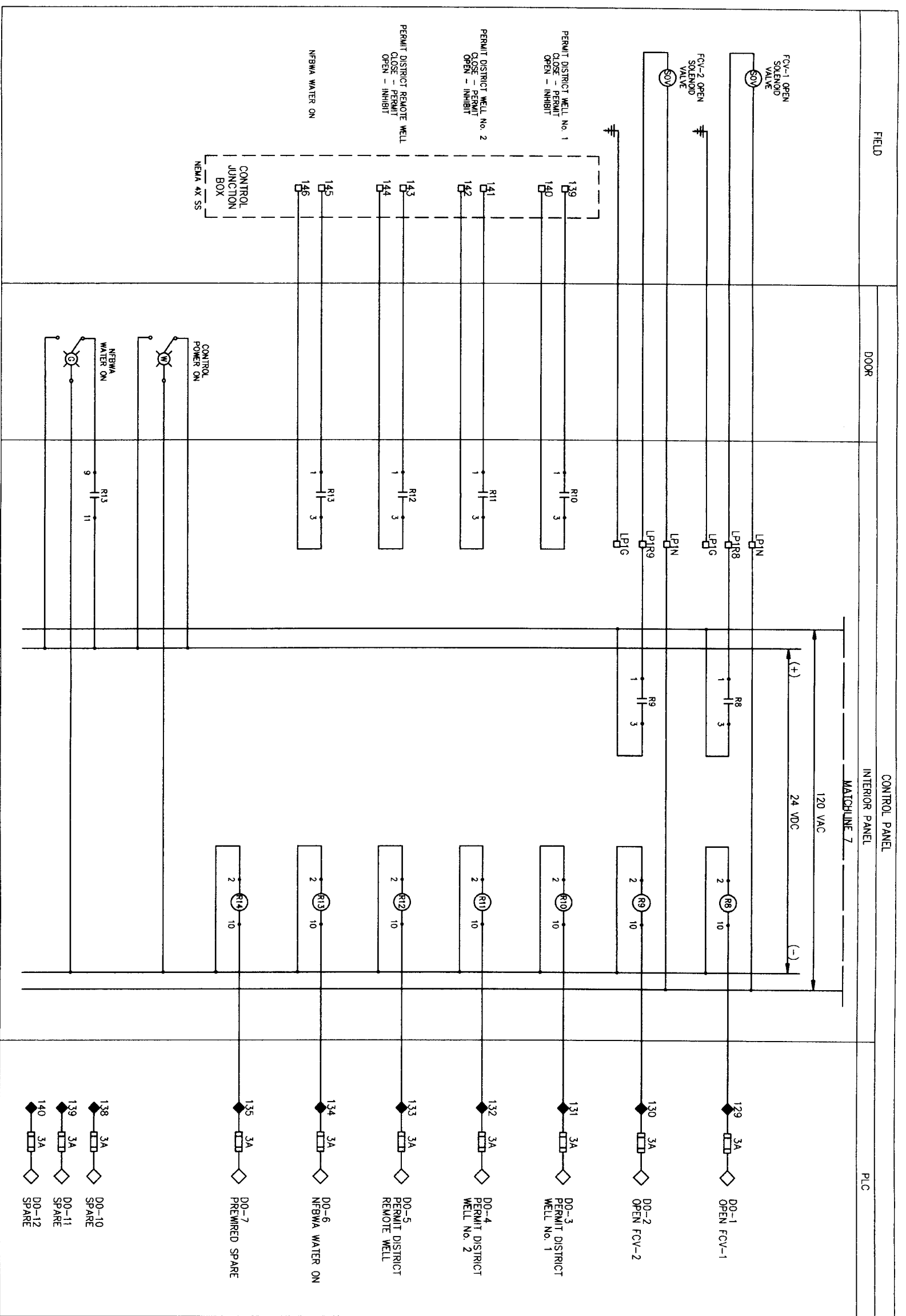
SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 10



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER DIVISION

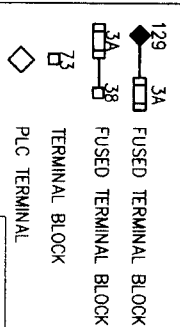
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|----------------|-----------------------------|
| DATE: | NOVEMBER 12, 2009 |
| REF. NO.: | E12 |
| SHEET NO.: | 52 OF 80 |
| DRAWING SCALE: | |
| FILE NO.: | FOR OFFICE HOUSTON USE ONLY |

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 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.



DATE: NOVEMBER 12, 2009

REF. NO. E13
 SHEET No. 53 OF 80

Brymcon, Inc.
 Electrical Engineering
 TYPE Registration No. F-318
 8300 White Road
 Seaman, TX 77708 (409) 968/988



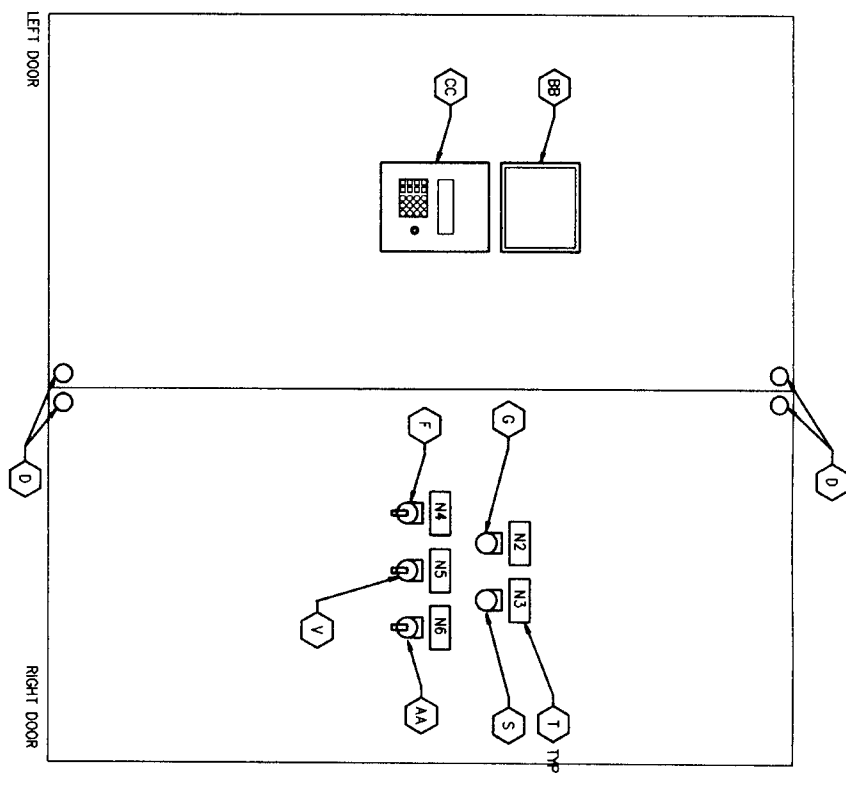
SEGMENT 7A
 CONTROL DIAGRAM
 SHEET 11



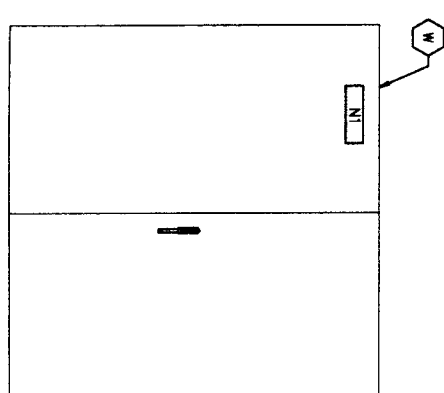
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

| | |
|---------------|------------------------------|
| WATER | STORM WATER QUALITY |
| STORM | FACTORIES |
| TRUCK & BARGE | |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ. | |
| VERT. | |

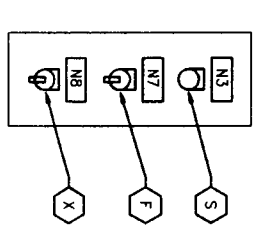
| EQUIPMENT & DEVICE SCHEDULE | |
|-----------------------------|--|
| ITEM | DESCRIPTION |
| A | PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100 A, 20 CIRTS |
| B | SIGNAL SPLITTER/ISOLATOR, DIN RAIL MOUNT, 120VAC, 4-20mA INPUT, DUAL ISOLATED 4-20mA OUTPUTS, AOROMAC 6331-0100 OR EQUAL |
| C | THERMOSTAT |
| 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 S7-300 |
| J | SWITCH FOR CABINET LIGHT, 120V, 20A, SPST |
| K | DUPLEX 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 | LOTT |
| Q | FUSED TERMINAL BLOCKS, AS REQUIRED |
| R | MOCKUP |
| S | CONTROL RELAY, TURCK 24 VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE |
| T | INDICATING LIGHT, HEAVY DUTY OIL TIGHT, GREEN, 24 VDC, 2.5 WATT |
| U | NAMEPLATES, 3/8" HIGH LETTERING IN WHITE LETTERS ON BLACK BAKELITE (SEE NAMEPLATE SCHEDULE) (SEE NOTE 1) |
| V | DOOR LIMIT SWITCH (SEE NOTE 2) |
| W | GST SELECTOR SWITCH, HEAVY DUTY OIL TIGHT, FOUR POSITION, W/120V, 20A RATING |
| X | HEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS, 60" X 72" X 24" |
| Y | WATER UTILIZATION SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING |
| Z | TERMINAL BLOCKS AS REQUIRED |
| AA | WIRE DUCT 2" WIDE X 2" DEEP MINIMUM |
| BB | FUTURE USE SWITCH HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING |
| CC | HUMAN MACHINE INTERFACE (HMI) |
| CC | AUTOVALER |



CONTROL PANEL
 FRONT INNER DOOR ELEVATION
 SCALE: NONE



CONTROL PANEL
 EXTERIOR ELEVATION
 SCALE: NONE



NBWA WATER
 UTILIZATION PANEL ELEVATION
 SCALE: NONE

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

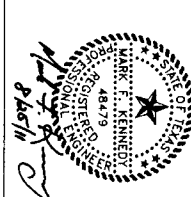
- NAMEPLATE SCHEDULE
- ENGRAVED
- NORTH FORT BEND WATER AUTHORITY
- N1 POWER ON
 - N2 NBWA WATER ON
 - N3 FLOODLIGHT H-O-A
 - N4 GST SELECTOR
 - N5 GST1 GST2 GST3 GST4
 - N6 FUTURE USE
 - N7 NBWA WATER USE H-O-A
 - N8 NBWA WATER UTILIZATION PARTIAL FULL

DATE: JUNE 27, 2011

REF. NO. E14

SHEET NO. 54 OF 80

Brymcon, Inc.
 Electrical Engineering
 8320 White Road
 Beaumont, TX 77706 (409) 666-7086



SEGMENT 7A
 ELECTRICAL
 CONTROL PANEL
 LAYOUT & SPECIAL
 DEVICE SCHEDULE



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY STANDARDS VALID FOR ONE YEAR ONLY AFTER DATE OF COMPLETION

WATER TRAFFIC AND TRANSPORTATION

STORM WATER QUALITY

STORM FACILITIES

STREET & BRIDGE

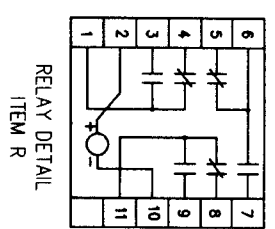
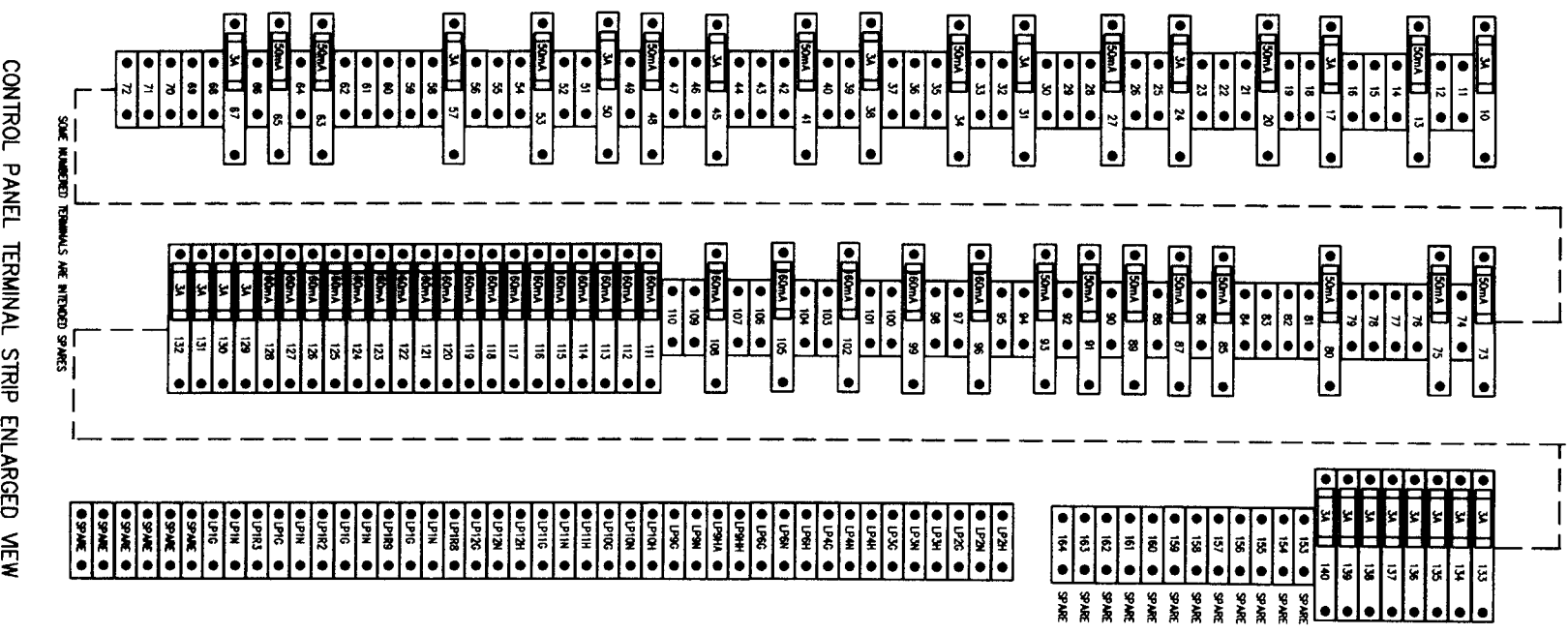
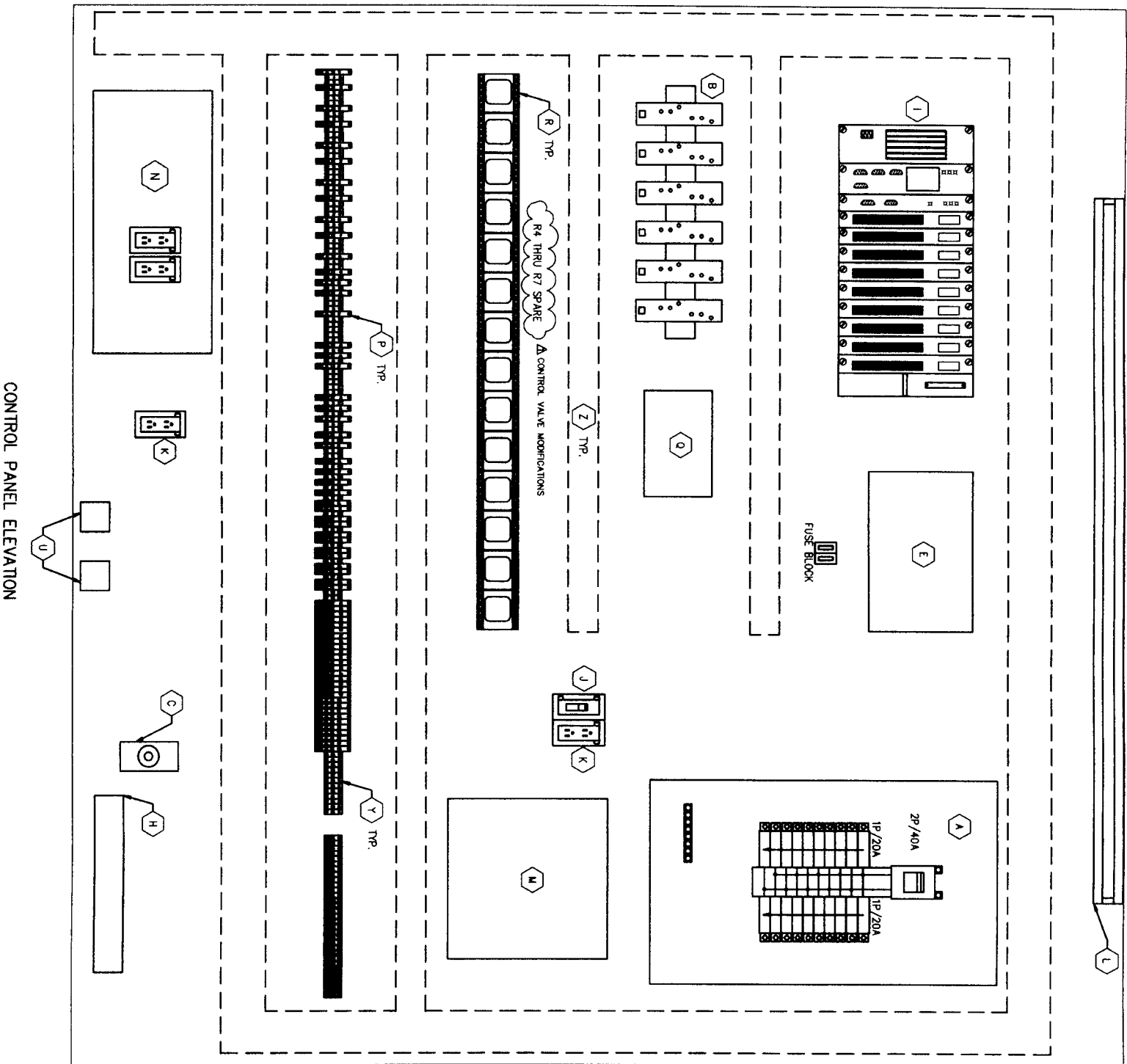
FILE NO.:

DRAWING SCALE:

HORIZ.:

VERT.:

FOR CITY OF HOUSTON USE ONLY



NOTES:
 1. SEE SHEET E14 FOR EQUIPMENT SCHEDULE.

DATE: NOVEMBER 12, 2009

REF. NO. E15
 SHEET NO. 55 OF 80

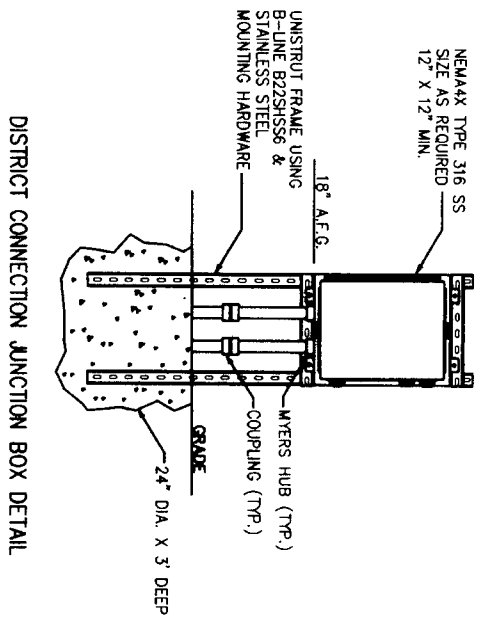
Brymcon, Inc.
 Electrical Engineering
 TYPE Registration No. E-378
 8220 White Road
 Beaumont, TX 77708 (409) 686-7066

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

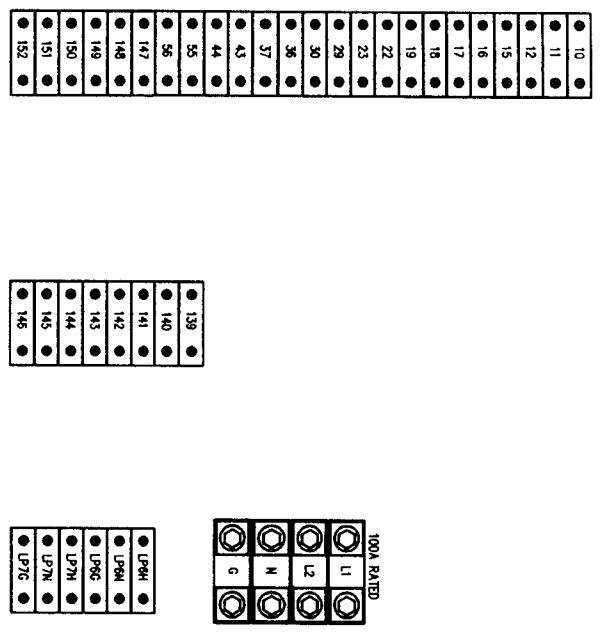
NORTH FORT BEND

SEGMENT 7A
 ELECTRICAL CONTROL PANEL LAYOUT

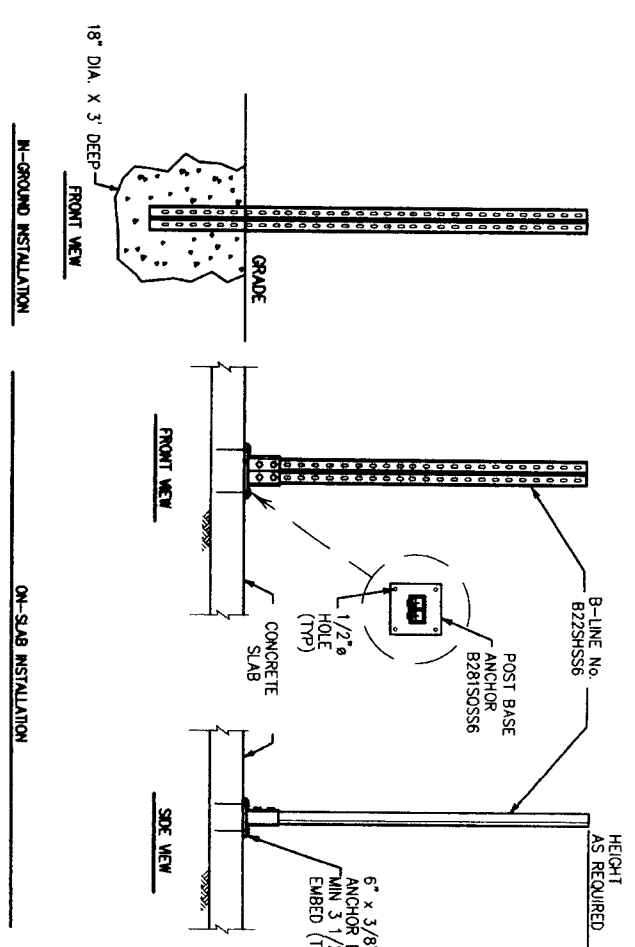
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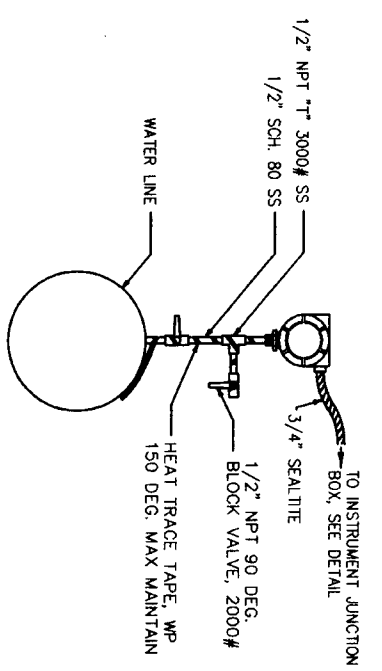
DETAIL 1



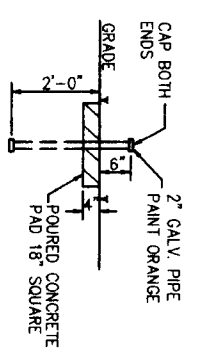
DETAIL 2



DETAIL 3



DETAIL 4



DETAIL 5

LIQUID LEVEL/PRESSURE/DIFFERENTIAL TRANSMITTER INSTALLATION DETAIL

ANALOG JUNCTION BOX CONTROL JUNCTION BOX 120V JUNCTION BOX

DEVICE MOUNTING POST DETAIL

DUCTBANK MARKER DETAIL

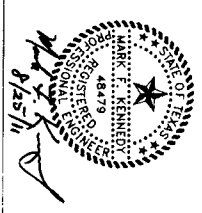
DATE: JUNE 27, 2011

REF. NO. E16
 SHEET NO. 56 OF 80

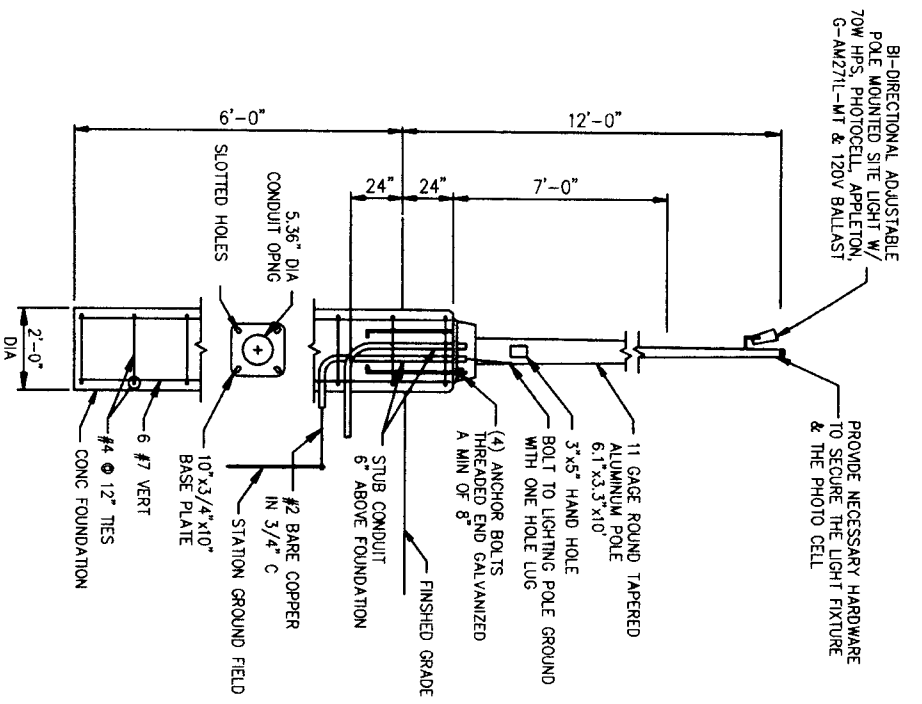
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|--|------------------------------|
| NOTE: CITY REQUIREMENTS VARY FOR ONE YEAR ONLY AFTER DATE OF COMPLETION | |
| CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING TRAFFIC AND TRANSPORTATION | |
| MAINTAINER: | STANDARD MATERIAL QUALITY |
| STANDARD: | FACILITIES |
| SHEET # 56 OF 80 | |
| FILE NO.: | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE: | |
| HORIZ.: | |
| VERT.: | |



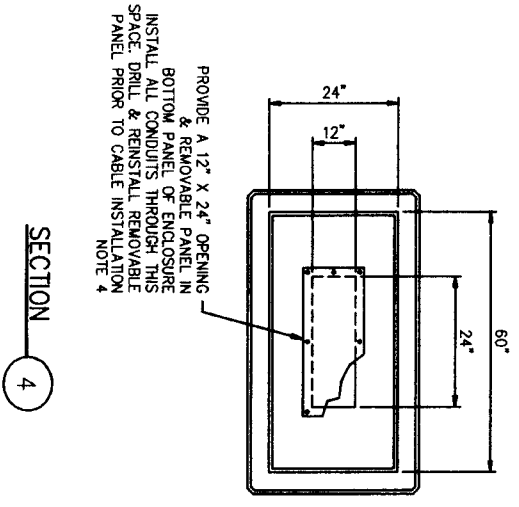
SEGMENT 7A
 ELECTRICAL
 DETAILS SHEET 1



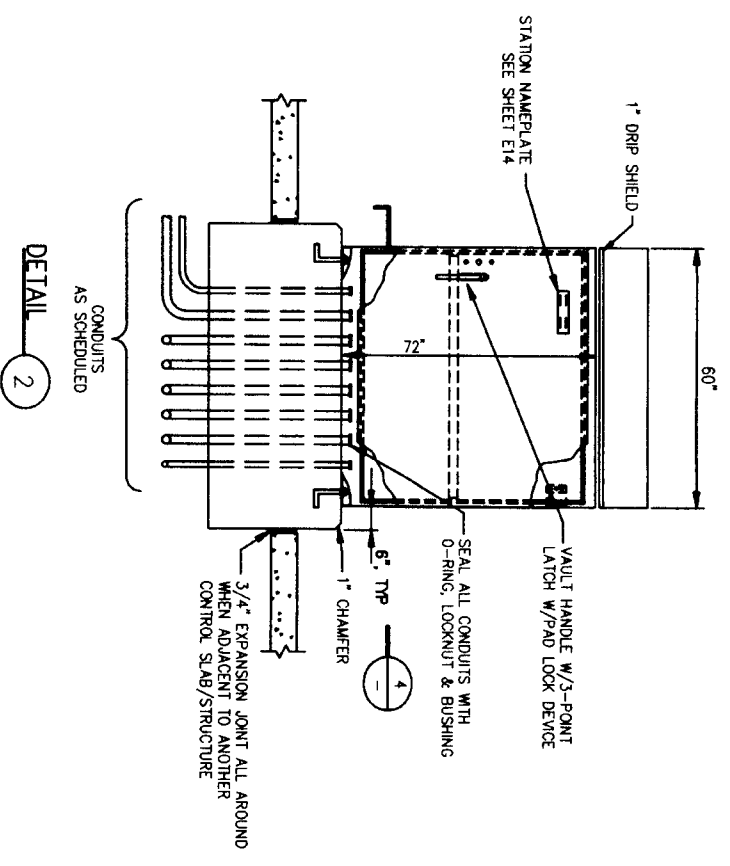
Brymcon, Inc.
 Electrical Engineering
 8330 White Road
 Baytown, TX 77025 (409) 885-7065



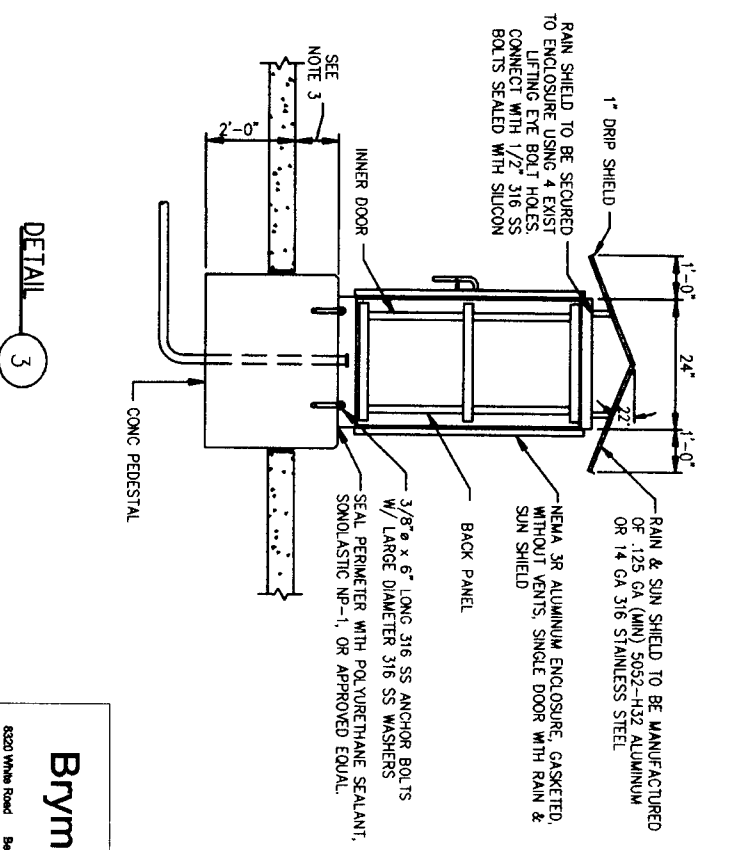
TYPICAL YARD LIGHT
 DETAIL 1



TYPICAL DUCT BANK CONSTRUCTION
 DETAIL 5



CONTROL CABINET ENCLOSURE & FOUNDATION
 DETAIL 2



DETAIL 3

- NOTES:
1. SEE SHEET E14 & E15 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" ABOVE SURROUNDING GRADE OR GREATER THAN 1" ABOVE 100 YEAR FLOOD PLAIN, WHICHEVER IS GREATER.
 4. ADJUST OUTPUT DIMENSIONS AS NEEDED TO ACCOMMODATE ALL REQUIRED CONDUITS.

DATE: NOVEMBER 12, 2009

REF. NO. E17

SHEET NO. 57 OF 80

FOR CITY OF HOUSTON USE ONLY

Brymcon, Inc.
 Electrical Engineering
 TBP# Registration No. F-375
 8320 White Road
 Beaumont, TX 77708
 (409) 896-7096

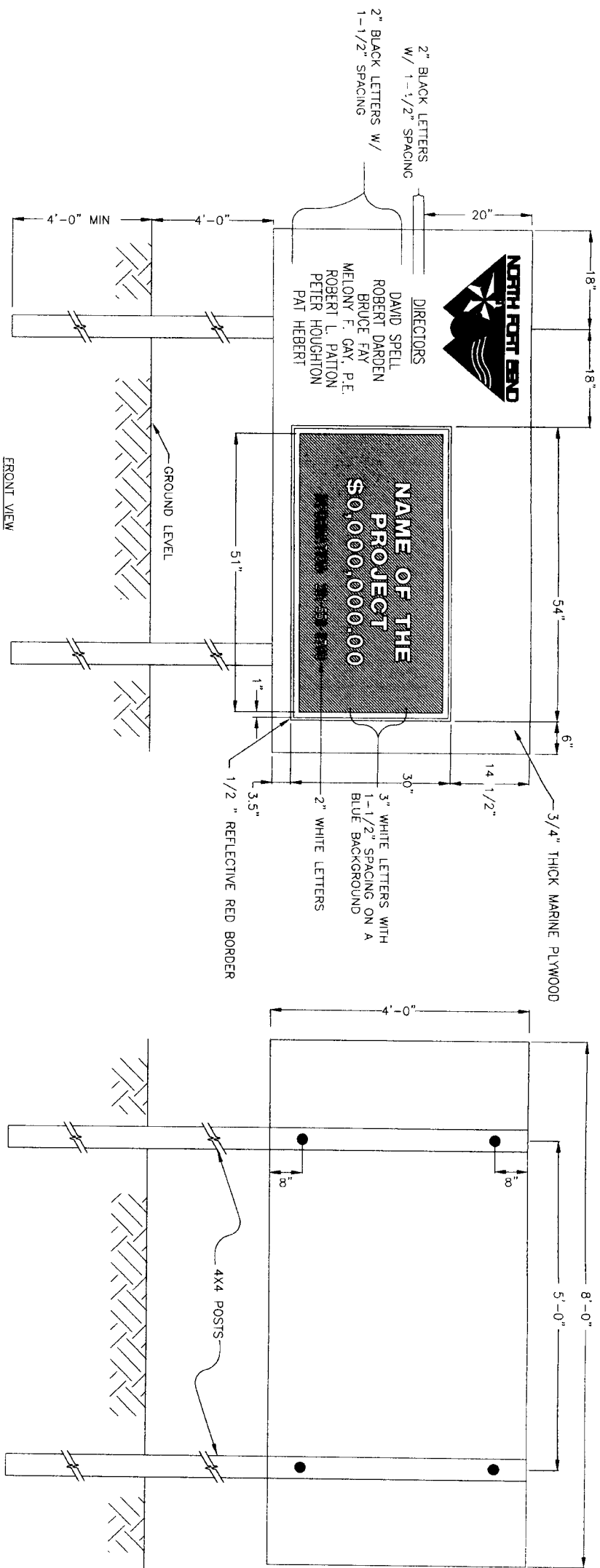


SEGMENT 7A
 ELECTRICAL
 DETAILS SHEET 2



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 DRAWING AND MANAGERIAL

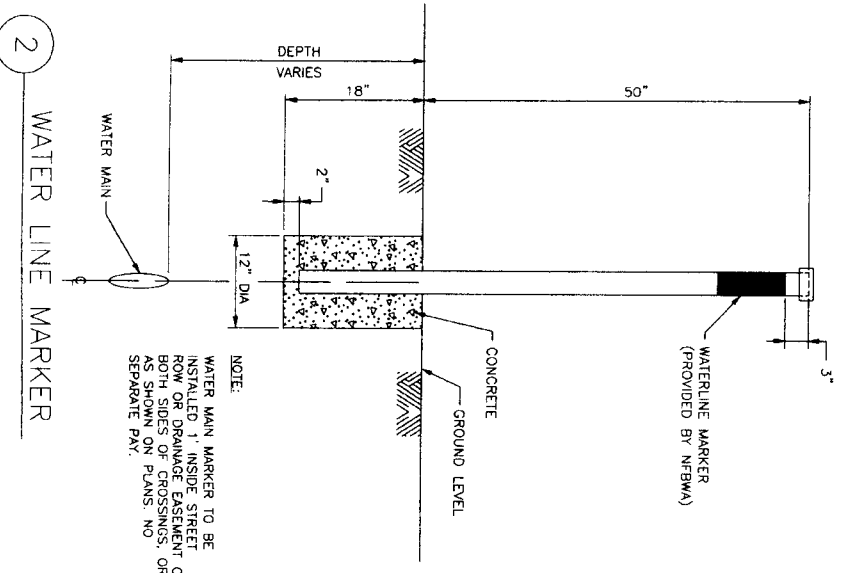
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|------------------------------|-------------------|
| DATE | NOVEMBER 12, 2009 |
| REF. NO. | E17 |
| SHEET NO. | 57 OF 80 |
| FOR CITY OF HOUSTON USE ONLY | |



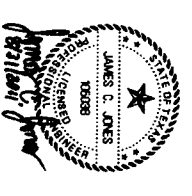
1 PROJECT SIGN
 SCALE: 1"=1'

PROJECT SIGN LOCATION

| APPROX. STA. | LOCATION/STREET | BASELINE |
|--------------|-----------------------------|----------|
| 19+00 | WATERVIEW ESTATES TRAIL | "B" |
| 15+30 | WATERWILLOW WAY | "C" |
| 1+00 | MORTON ROAD | "D" |
| 34+00 | MORTON ROAD AND HARLEM ROAD | "D" |



2 WATER LINE MARKER



J.C. JONES & CARTER, INC.
 ENGINEERS-PLANNERS-SURVEYORS
 6339 Quaker Dr., Suite 100 Houston, Texas 77051 (713) 777-8837

SEGMENT 7A

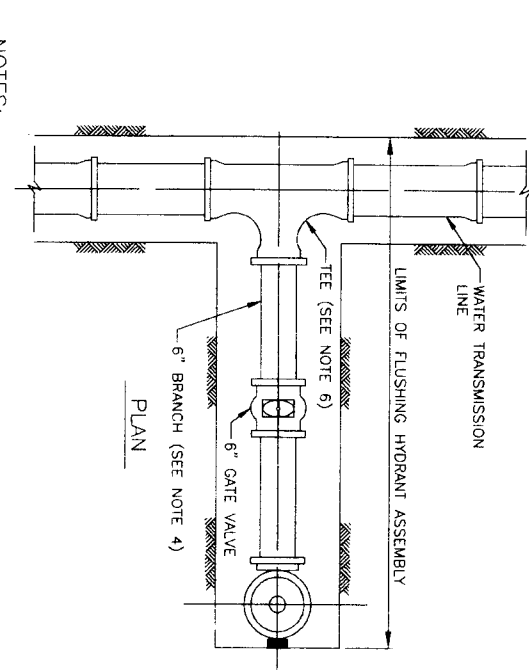
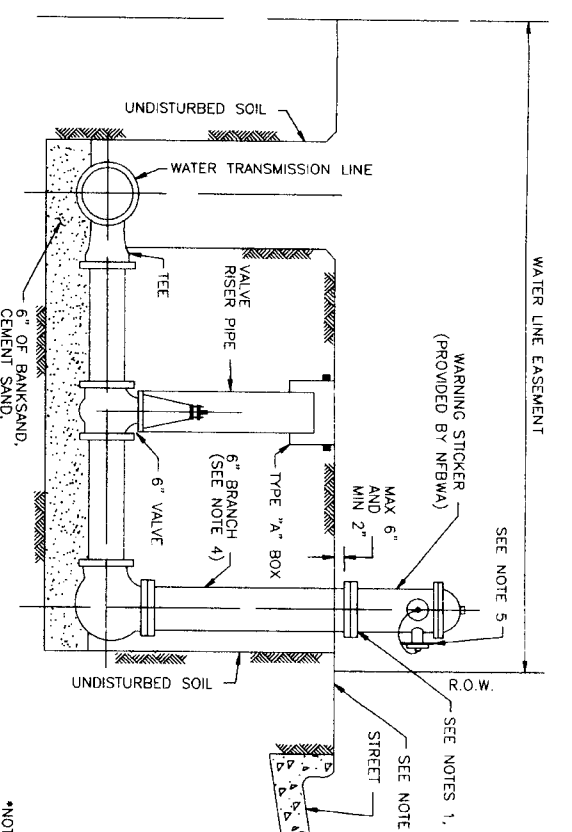
PROJECT SIGN AND PIPELINE MARKER DETAILS



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

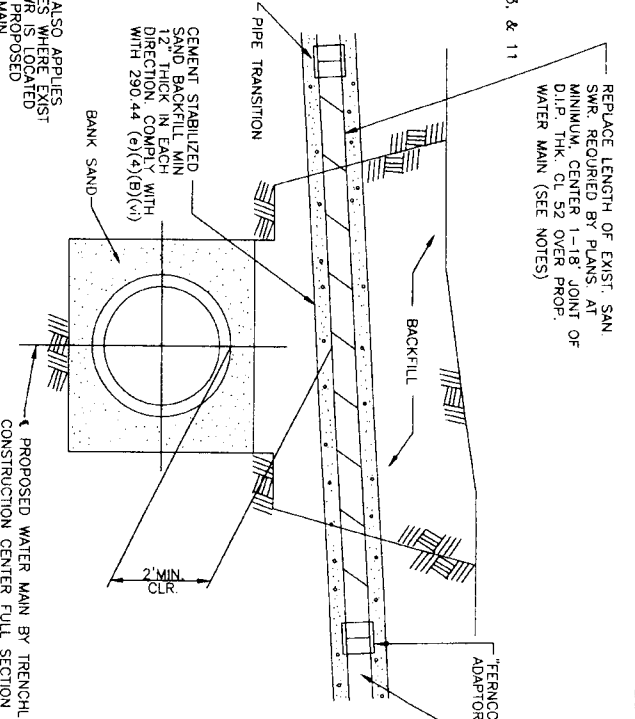
WATER MAIN
 WATER MAIN QUALITY
 DRAWING SCALE
 HORIZ : AS SHOWN

SHEET NO. 58 OF 80



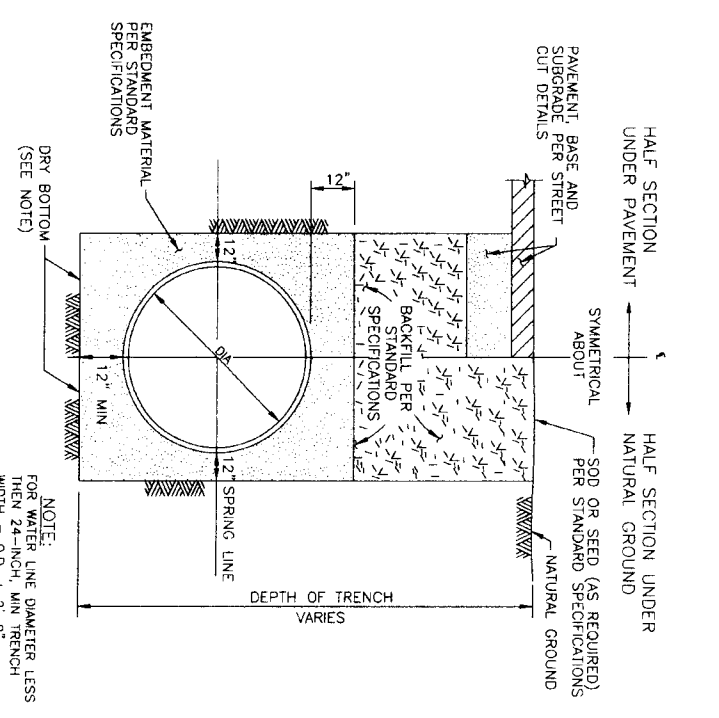
- NOTES:**
1. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE FLOW FROM HYDRANT AND PREVENT EROSION OF EXISTING GROUND DURING FLUSHING.
 2. ON OPEN-DITCH ROADWAYS OR OTHER CORRIDORS, SET THE FLUSHING HYDRANTS WITHIN 3 FEET OF RIGHTS-OF-WAY LINES, EASEMENT LINE OR AS SHOWN ON PLANS.
 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 "NFBA" - 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.
 7. FOR PAVEMENT REPAIR, SEE REF. NO. 12 "EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS."
 8. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
 9. FOR MANHOLES DEEPER THAN 20 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 72-INCH OR 84-INCH DIAMETER & PROVIDE SAFETY CLIMBING RAIL (SAF-T-CLIMB) OR APPROVED EQUAL).
 10. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE OF EXISTING GROUND DURING FLUSHING.
 11. INSIDE CENTERPOINT ENERGY RIGHTS-OF-WAY, CONSTRUCT FLUSHING HYDRANTS OVER THE CENTERLINE OF THE PIPE TURN BRANCH OF TEE POINT UP AND PROVIDE 6-INCH ELBOW AND ORIENT FLUSHING HYDRANT ASSEMBLY OVER CENTERLINE OF PROPOSED PIPE.

1 STANDARD FLUSHING HYDRANT ASSEMBLY
 (FOR WATERLINES SMALLER THAN 30-INCHES IN DIAMETER)

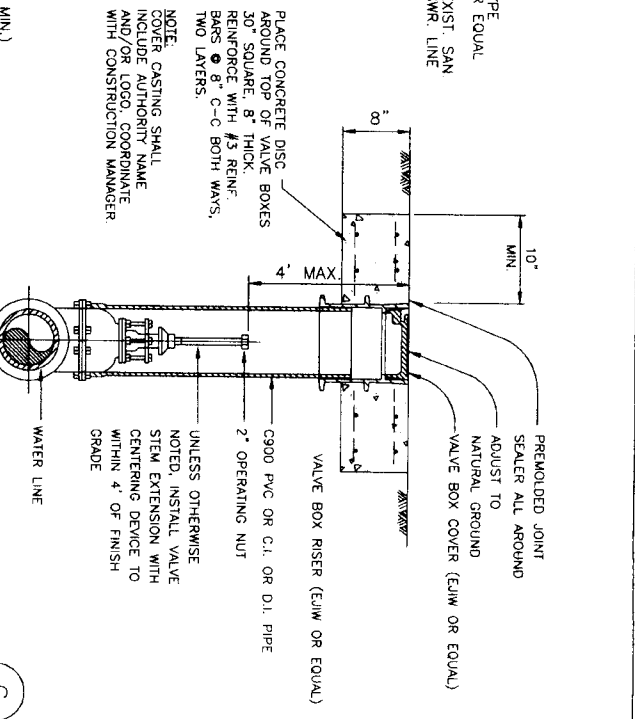


- NOTES:**
1. P.V.C. PIPE WITH PRESSURE RATING OF 250. DR18 MAY BE USED.
 2. FOR WATER LINE UNDER SAN. SMR. BOTH PIPES MUST PASS PRESSURE AND LEAKAGE TEST DESCRIBED IN ANNA G900 FOR DURATION SPECIFIED BY ENGINEER (2 HR. MIN.)

2 PROPOSED WATERLINE CROSSING UNDER EXISTING SANITARY SEWER

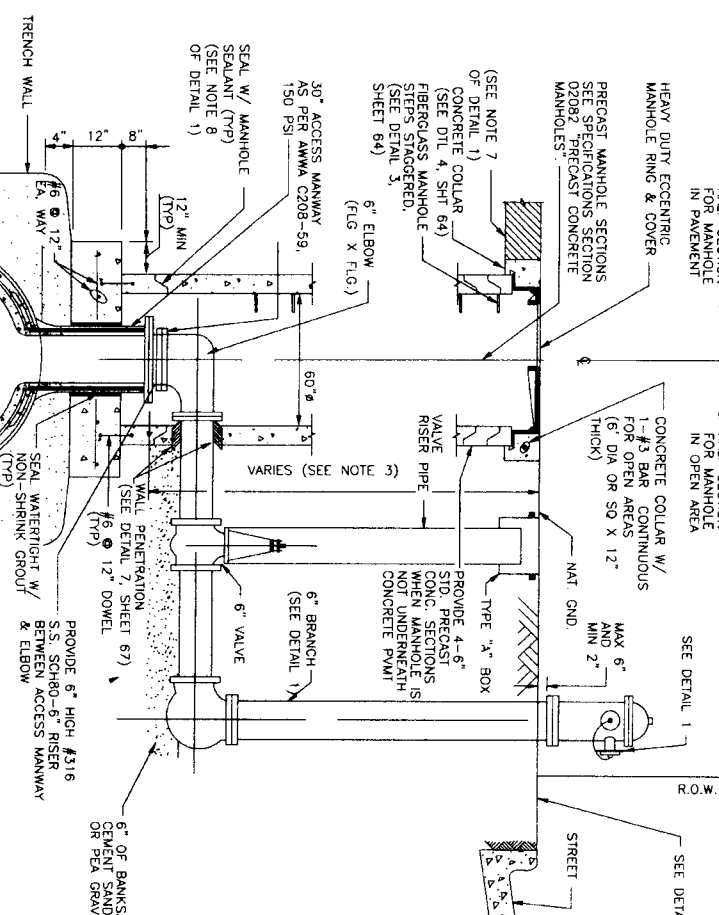


4 WATER DISTRIBUTION LINE BEDDING AND BACKFILL FOR OPEN CUT TRENCHES
 (FOR SMALL DIAMETER WATERLINE)



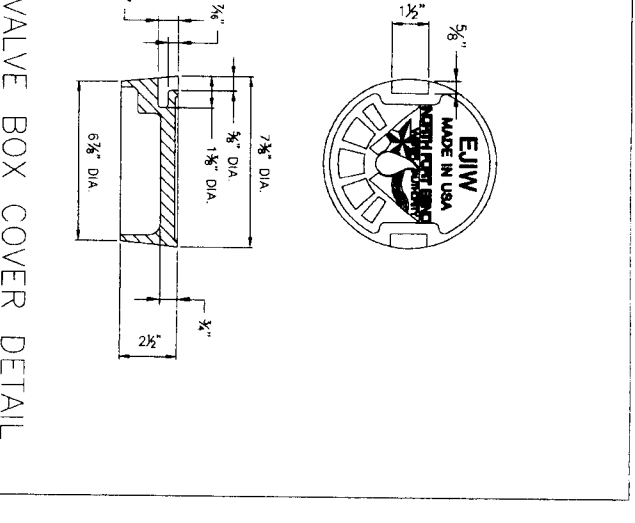
- NOTES:**
1. COVER CASTING SHALL INCLUDE AUTHORITY NAME AND/OR LOGO, COORDINATE WITH CONSTRUCTION MANAGER.
 2. UNLESS OTHERWISE NOTED, INSTALL VALVE STEM EXTENSION WITH CENTERING DEVICE TO WITHIN 4\"/>

3 VALVE BOX DETAIL
 N.T.S.



- NOTES:**
1. FOR PAVEMENT REPAIR, SEE REF. NO. 12 "EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS."
 2. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
 3. FOR MANHOLES DEEPER THAN 20 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 72-INCH OR 84-INCH DIAMETER & PROVIDE SAFETY CLIMBING RAIL (SAF-T-CLIMB) OR APPROVED EQUAL).

5 FLUSHING HYDRANT WITH ACCESS MANWAY IN SERVICE MANHOLE
 (FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)



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

| | | | |
|-----|------|----------|----------|
| NO. | DATE | REVISION | APPROVED |
| 1 | | | |
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| 3 | | | |
| 4 | | | |

J.E. JONES & CARTER, P.L.L.C.
 ENGINEERS & LANDSCAPE ARCHITECTS
 Texas Board of Professional Engineers Registration No. F-439
 6550 Dallas Dr., Suite 100, Houston, Texas 77057 (713) 778-6527

SEGMENT 7A

STANDARD WATERLINE DETAILS

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

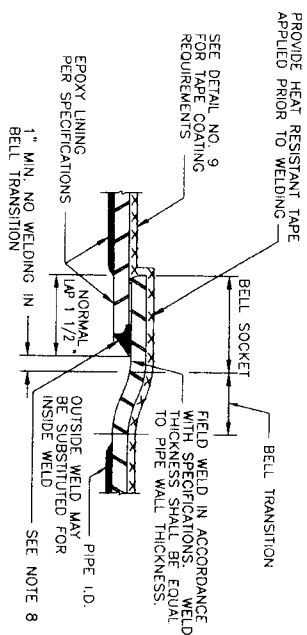
NORTH FORT BEND

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

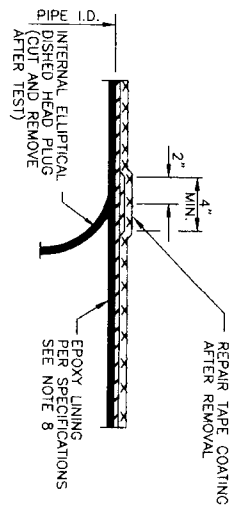
WATER: STREET & SPACE
 WASTEWATER: TRENCH
 STORM: STORM WATER QUALITY

FILE NO.: FOR CITY OF HOUSTON USE ONLY (SEE SHEET NO.)
 DRAWING SCALE:
 HORZ.: AS SHOWN

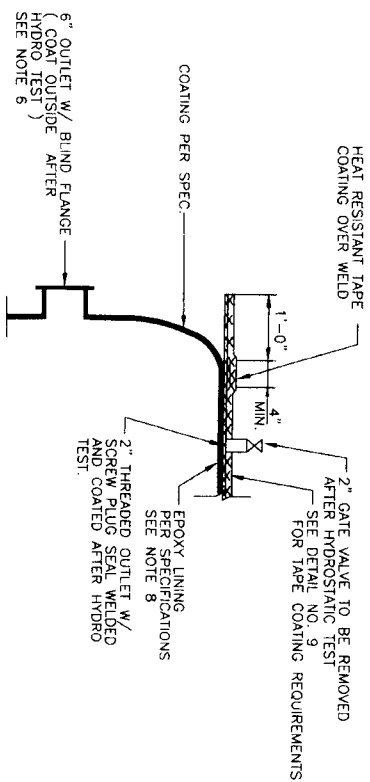
SHEET NO. **59** OF **80**



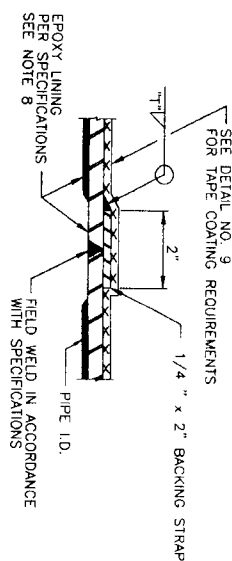
1
 LAP-WELD FIELD JOINT - STEEL PIPE W/ EPOXY LINING
 (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



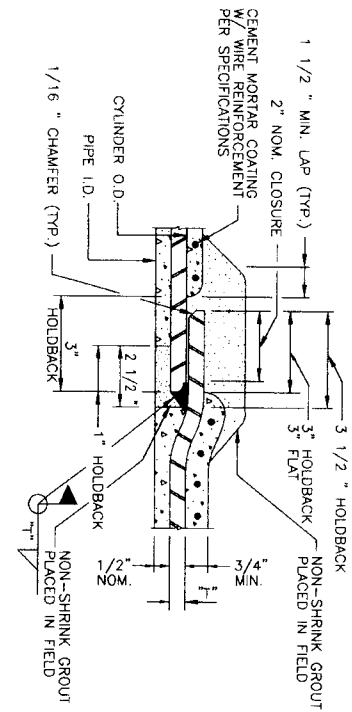
2
 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL
 STEEL PIPE



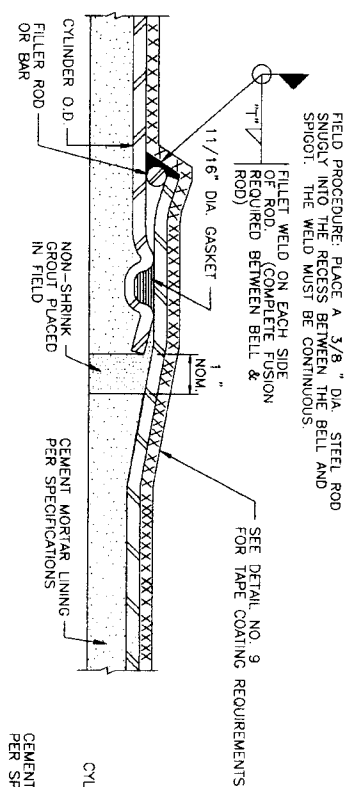
3
 INTERNAL ELLIPTICAL DISHED HEAD PLUG STEEL PIPE
 (SEE NOTE 7)



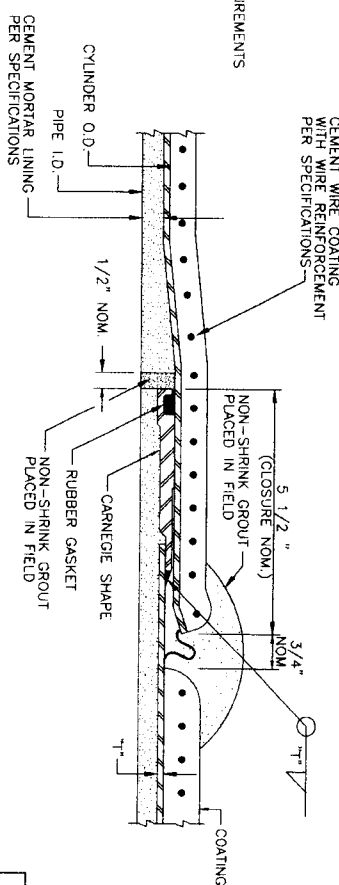
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 BUTT WELD FIELD JOINT - STEEL PIPE (TAPE COATED)
 (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



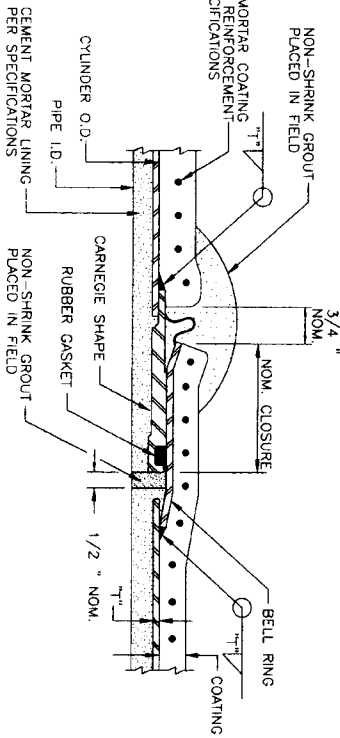
5
 LAP-WELD FIELD JOINT - STEEL PIPE WITH CEMENT MORTAR COATING
 (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



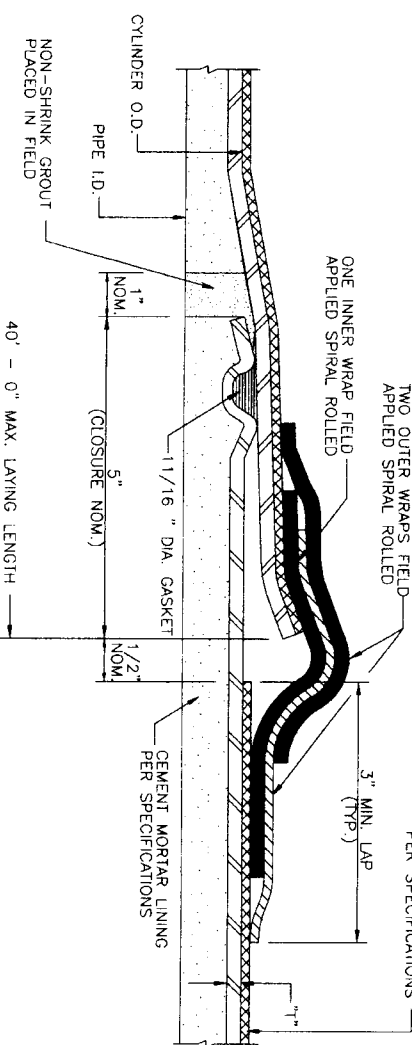
6
 FIELD WELDED O-RING JOINT
 (FOR ADJUSTMENTS ONLY AS APPROVED BY ENGINEER AND PERMITTED LUBRICANTS SEE DETAIL NO. 9 FOR DIMENSIONS) REFER TO DETAIL 1 OR 5 FOR STANDARD WELDED JOINTS.
 (FOR WATER LINES 36-INCH DIAMETER AND LARGER)



7
 ROLLED JOINT STEEL PIPE



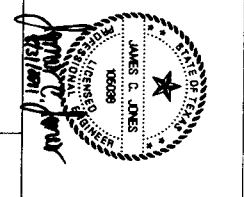
8
 CARNEGIE JOINT - STEEL PIPE



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

- NOTES:
1. 1/2" STEEL PIPE WALL THICKNESS AND SIZE OF FILET ATTACHMENT WELD.
 2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE UNED 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 AS APPROVED BY ENGINEER.
 5. DETAILS 5, 6, 7 AND 8 SHOW CEMENT MORTAR COATING. TAPE COATING TO BE SIMILAR TO DETAIL 6.
 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 PERFORMED FROM EITHER SIDE WITH THE OPPOSITE SIDE EMPTY OR WATER.
 8. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING.
 9. WHEN CEMENT MORTAR COATING IS USED FOR STEEL PIPE, EXTERIOR AND INTERIOR SHALL BE APPLIED TO THE EXTERIOR AND INTERIOR OF THE PIPE WHEN INSTALLED IN A TUNNEL OR ENCLOSURE PIPE.
 10. SEE DETAIL SHEET 61 FOR CLOSURE PIECE REQUIREMENTS.

| NO. | DATE | REVISION | APPROVED |
|-----|------|----------|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |



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 Texas Board of Professional Engineers Registration No. E-439
 6339 Oldham Dr., Suite 100, Houston, Texas 77011 (713) 777-6587

STEEL PIPE DETAILS



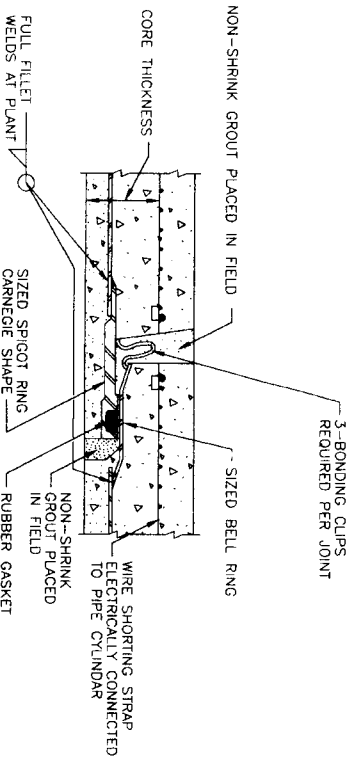
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

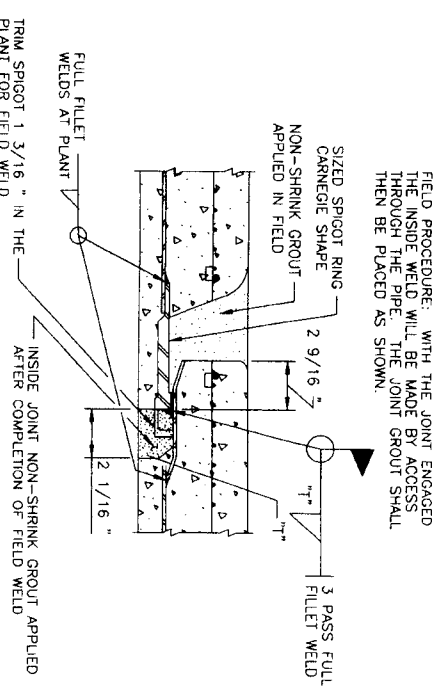
WATER
 WASTEWATER
 STORM

FILE NO.:
 FOR CITY OF HOUSTON USE ONLY (DATE DWG. NO.)

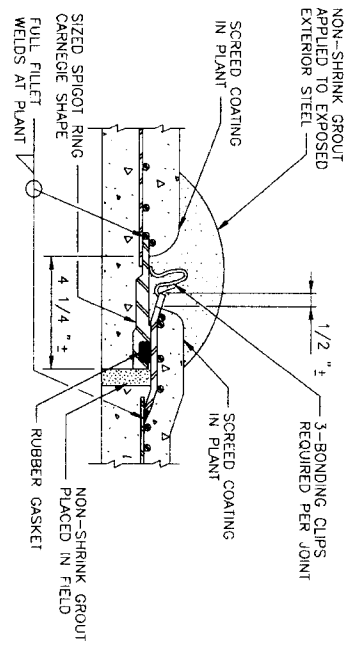
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| SHEET NO. | 60 OF 80 |
| DRAWING SCALE | |
| HORIZ. : AS SHOWN | |



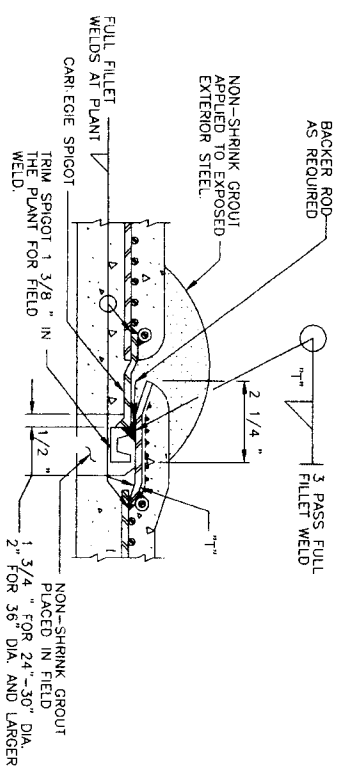
1 JOINT - EMBEDDED CYLINDER PIPE



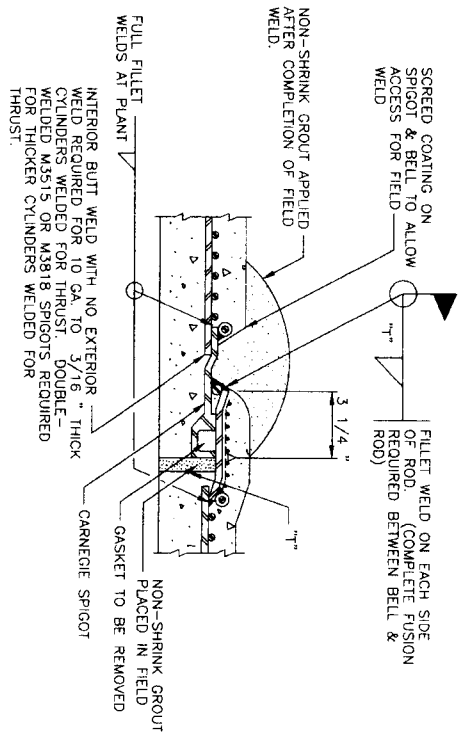
2 WELDED JOINT - EMBEDDED CYLINDER PIPE
 (FOR WATERLINES 36-INCHES DIAMETER AND LARGER)



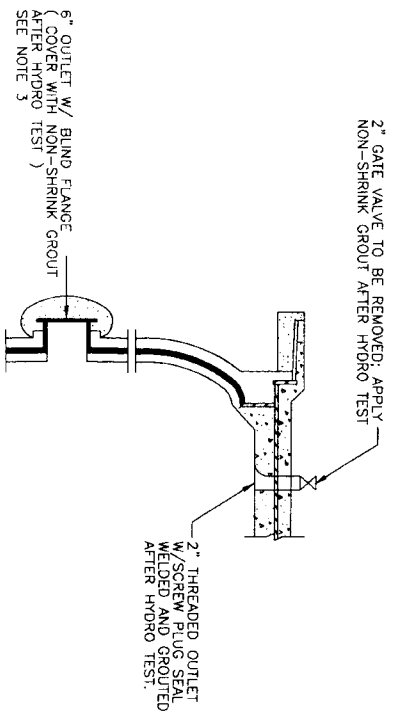
3 JOINT - LINED CYLINDER PIPE
 (FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



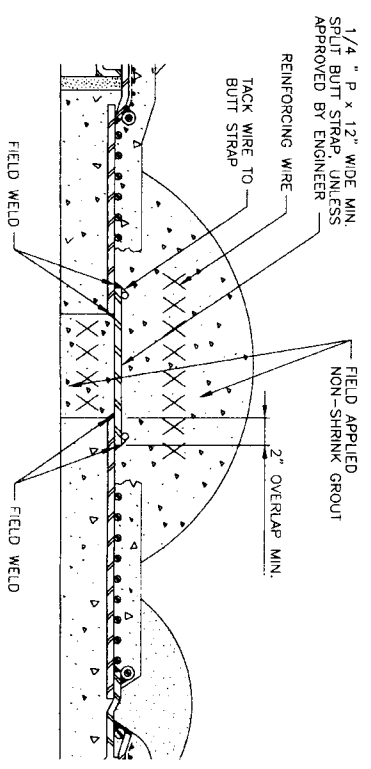
4 WELDED JOINT WITH TRIMMED SPIGOT - LINED CYLINDER PIPE
 (FOR WATERLINES 36-INCHES DIAMETER AND LARGER)



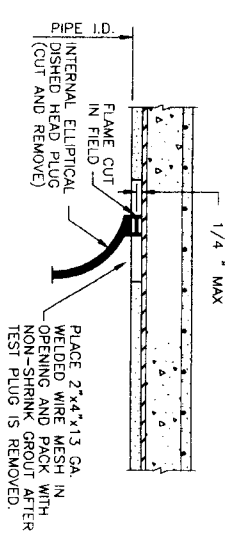
5 WELDED JOINT - LINED CYLINDER PIPE
 (FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



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

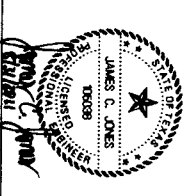


7 CLOSURE PIECE
 (STEEL PIPE SIMILAR)



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 OF 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.

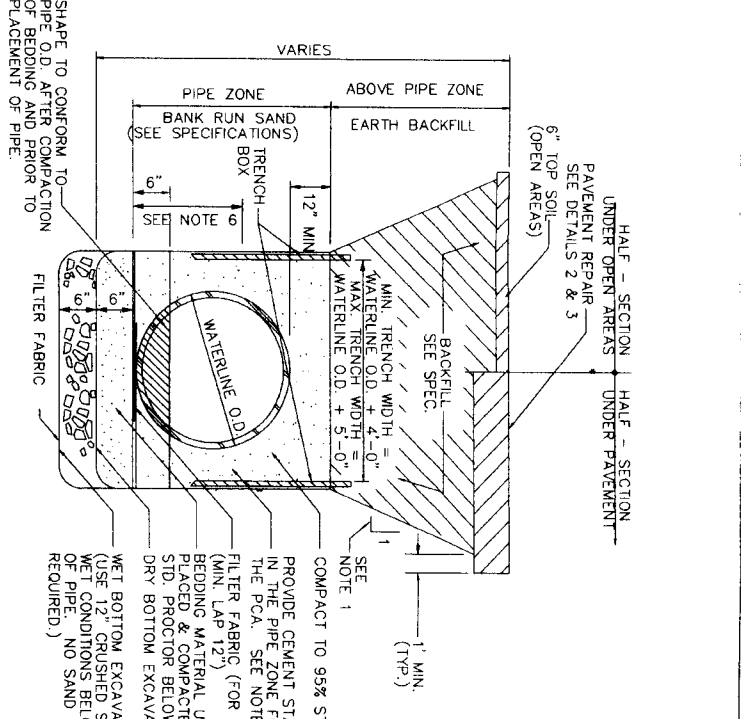


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 Texas Board of Professional Engineers Registration No. F-439
 6306 Oldham Dr., Suite 100 Houston, Texas 77061 (713) 771-5837



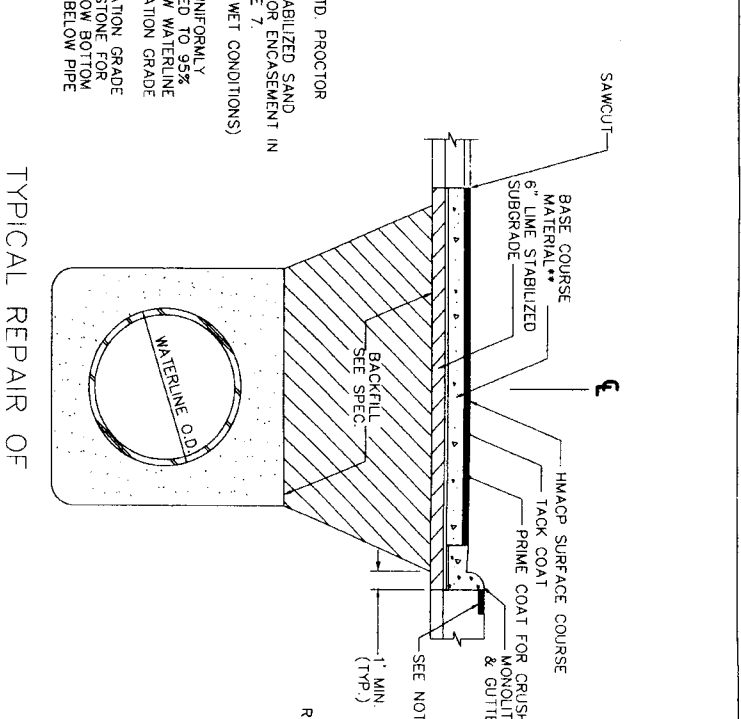
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 FILE NO.:
 DRAWING SCALE:
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 SHEET NO. 61 OF 80



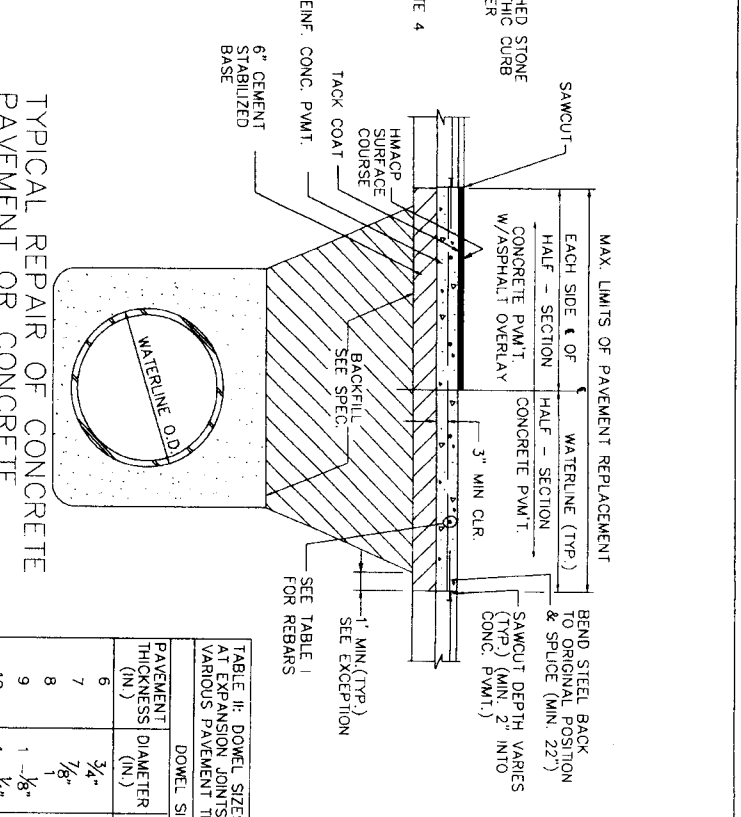
1 EXCAVATION & BACKFILL DETAIL
 (FOR LARGE DIAMETER WATER LINE)

- 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.
 - HIS PORTION OF PIPE EMBEDMENT SYSTEM 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:
 1. 6" HOT MIX ASPHALTIC BASE COURSE (BLACK BASE)
 2. 8" RECYCLED CRUSHED CONCRETE BASE COURSE
 3. FOR ENTIRE ROADWAY REPLACEMENT
 4. INSTALL 1 FOOT STRIP OF SOD GRASS TO PREVENT EROSION



3 TYPICAL REPAIR OF CONCRETE PAVEMENT W/ ASPHALT OVERLAY

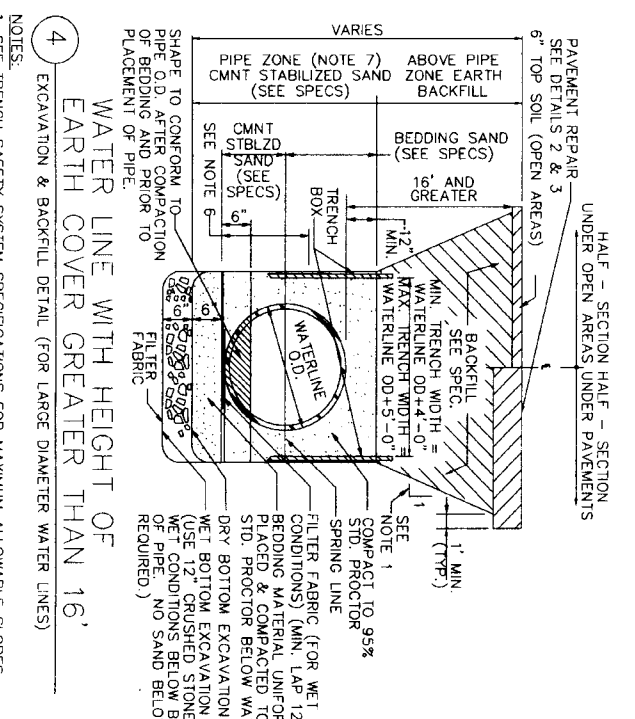
- NOTES:
- MIN. THICKNESS 6" FOR ROADWAY WIDTH LESS THAN OR EQUAL TO 27' F/F OF CURB.
 - MIN. THICKNESS 7" FOR ROADWAY WIDTH GREATER THAN 27' F/F OF CURB.
 - MIN. THICKNESS 8" FOR MAJOR THOROUGHFARES.
 - REINFORCING STEEL ARE SHOWN ON TABLE I & II.
 - SEAL CONCRETE JOINTS BEFORE APPLYING ASPHALT OVERLAY

TABLE I: REINFORCING STEEL INFORMATION FOR VARIOUS PAVEMENT THICKNESS (F) WITH EXPANSION JOINT SPACING = 80 FT. Fc = 3000 PSI AND Fy = 60,000 PSI.

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

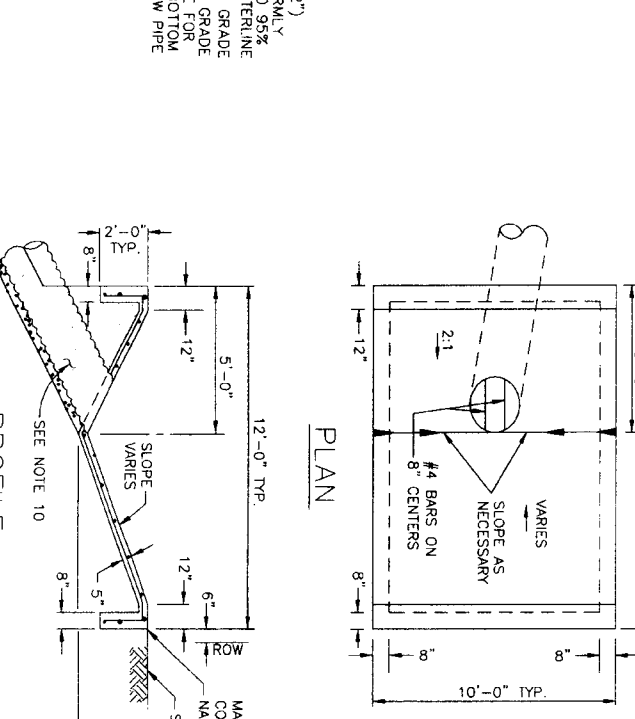
TABLE II: DOWEL SIZES & SPACINGS AT EXPANSION JOINTS FOR VARIOUS PAVEMENT THICKNESS.

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



4 WATER LINE WITH HEIGHT OF EARTH COVER GREATER THAN 16' EXCAVATION & BACKFILL DETAIL (FOR LARGE DIAMETER WATER LINES)

- 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.
 - HIS PORTION OF PIPE EMBEDMENT SYSTEM MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
 - USE POLYETHYLENE WRAP AS A BOND BREAKER BETWEEN CEMENT STABILIZED SAND AND PIPE.



5 TYPICAL BACKSLOPE INTERCEPTOR STRUCTURE
 (30 INCH MAX.)

- GENERAL NOTES:
- ROADWAY EXCAVATION, SITE GRADING, AND HYDROLOGICAL SEEDING OR SODDING WITHIN R.O.W. AND/OR LIMITS OF CONSTRUCTION IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
 - MEASUREMENT AND PAYMENT (INCLUDING DRIVEWAYS) SHALL BE AS PER SPECIFICATION SECTIONS UNLESS OTHERWISE SHOWN ON BID FORM.
 - NEW ASPHALTIC PAVEMENTS SHALL BE MIN. 2" HMA TOP, W/BASE AND SUBGRADE PER DETAILS AND SPECIFICATIONS.
 - NEW CONCRETE PAVEMENTS TO BE SAME THICKNESS AS EXISTING, UNLESS OTHERWISE DIRECTED BY THE NFBWA.
 - STREETS OR DRIVEWAYS SHALL BE REPAIRED OR REPLACED USING HIGH EARLY STRENGTH CONCRETE AS INDICATED ON DRAWINGS, ACCORDING TO PAVEMENT REPLACEMENT SCHEDULE WHERE PROVIDED, OR AS DIRECTED BY NFBWA.
 - APPLICABLE TO EXISTING CONCRETE AREAS THAT REQUIRE REMOVAL AND REPLACEMENT CONCRETE DUE TO OPEN TRENCH (EXCLUDE THE MEDIAN ISLAND).
 - ANY REMOVAL AND REPLACEMENT OF PAVEMENT NOT IDENTIFIED ON THE DRAWINGS SHALL BE COORDINATED WITH THE PROJECT MANAGER AND THE NFBWA.
 - ALL PAVEMENT REPLACEMENT SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE COUNTY CONSTRUCTION SPECIFICATIONS.
 - BACKSLOPE INTERCEPTOR OUTFALL PIPES SHALL BE CMP OR HDPE PIPE IN ACCORDANCE WITH SPECIFICATIONS 02642-CORRUGATED METAL PIPE AND CITY OF HOUSTON 02505-HIGH DENSITY POLYETHYLENE (HDPE) PIPE, OR APPROVED EQUAL.
 - PROVIDE AND PLACE CEMENT STABILIZED SAND IN ACCORDANCE WITH SPECIFICATIONS 02321-CEMENT STABILIZED SAND AND 02316-EXCAVATION AND BACKFILL FOR STRUCTURES.
 - EXCAVATION, FILL, AND BACKFILL FOR STORM SEWER OUTFALLS SHALL BE IN ACCORDANCE WITH SPECIFICATION 02315-EXCAVATION AND BACKFILL FOR STRUCTURES.
 - CONCRETE SHALL BE STRUCTURAL CONCRETE IN ACCORDANCE WITH SPECIFICATION 03310-STRUCTURAL CONCRETE.
 - BACKSLOPE INTERCEPTOR STRUCTURES:
 - ADJUST LENGTH AND WIDTH IN FIELD AS NECESSARY.
 - 2-FEET DEEP x 8-INCH WIDE TOE ALL AROUND STRUCTURE.
 - STEEL REINFORCING - #4 BARS (GRADE 40) AT 12 INCHES ON CENTER, EACH WAY.
 - BACKSLOPE SWALE AND BACKSLOPE INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO REMOVAL AND REPLACEMENT.

LOG NO: 10-0078

SHEET No. **62** OF **80**

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

JONES & CARTER, INC.
 LICENSED PROFESSIONAL ENGINEERS
 2200 West Loop South, Suite 100, Houston, Texas 77019 (713) 776-4237

SEGMENT 7A
 EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS

NORTH FORT BEND

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

DATE: _____

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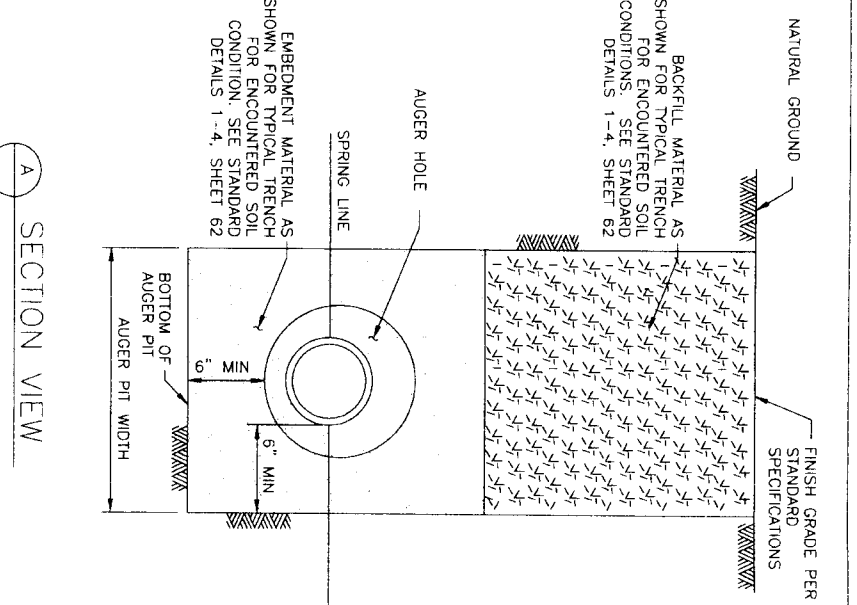
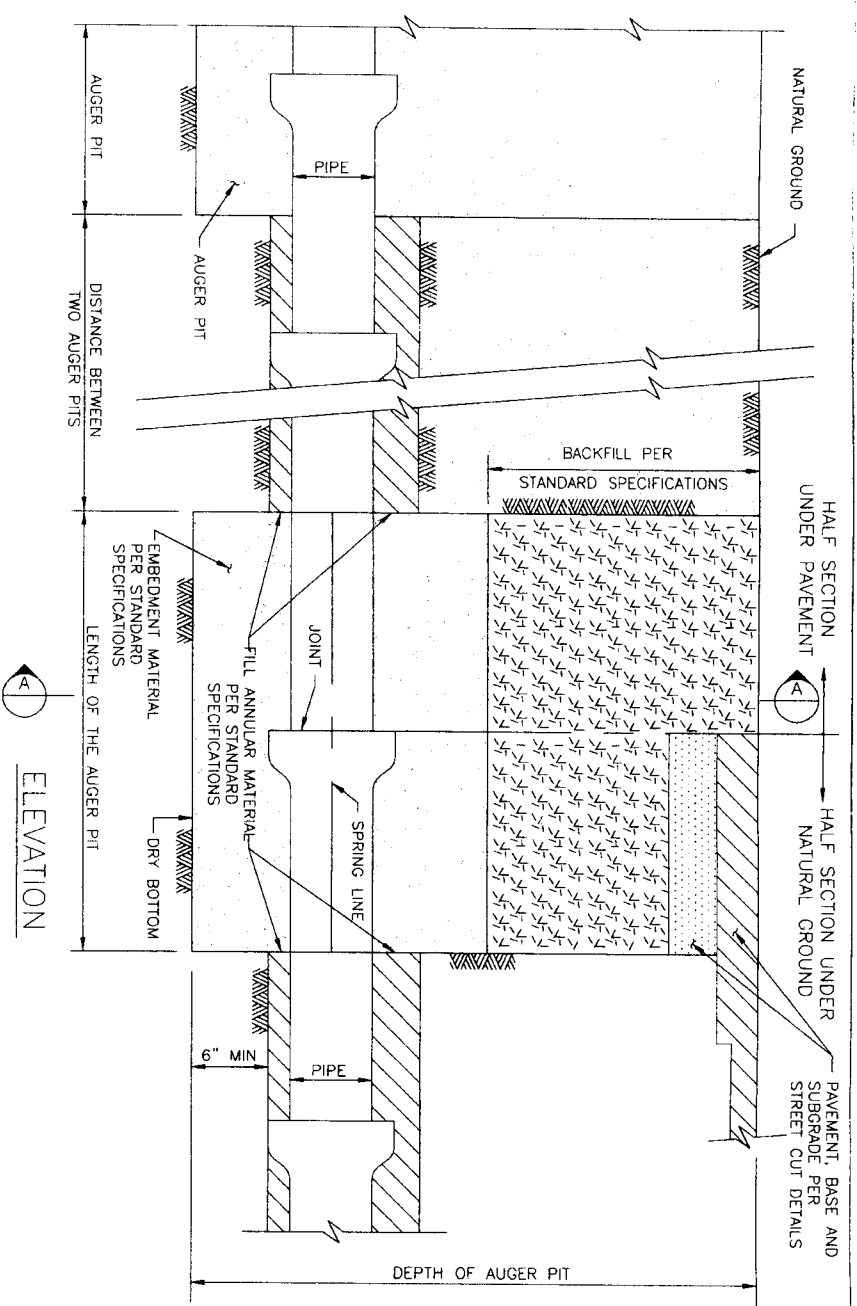
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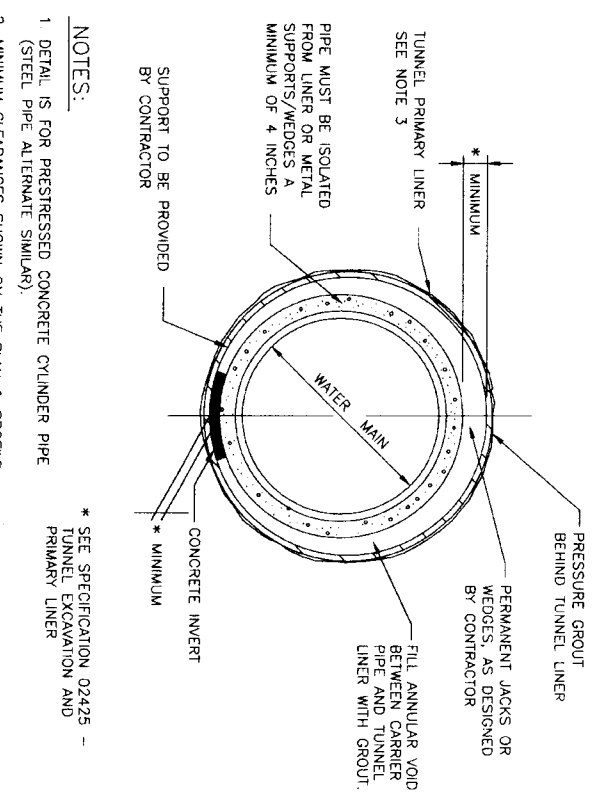
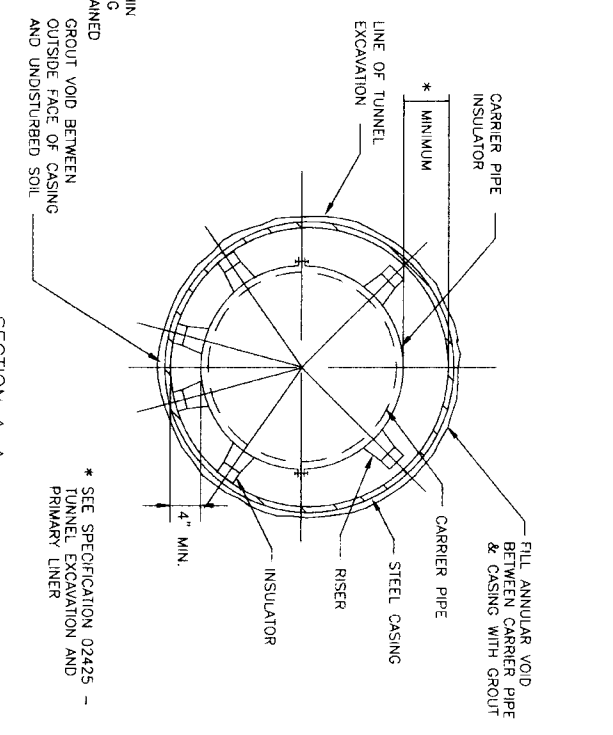
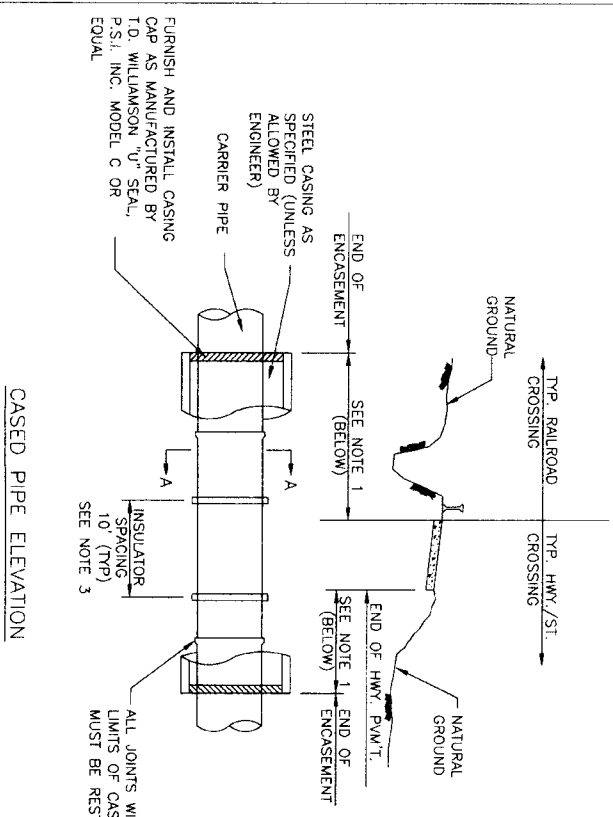
FOR CITY OF HOUSTON USE ONLY (CITY ENG. NO.): _____



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

A SECTION VIEW

| Location | Casing Type | Watermain Diameter | Watermain Material | Casing L/D, Wall Thickness (in/in) | 3-Flange Liner Diameter/Thickness (in/in) |
|--|-----------------------------------|--------------------|--------------------|------------------------------------|---|
| Wheatley Station Trail (Sheet 15 Sta. 16+83 to 19+43) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |
| Bagdoin Elm Street (Sheet 16 Sta. 23+72 to 24+49) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |
| South Creek Energy Pipeline (Sheet 17 Sta. 4+13 to 5+00) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |
| 54' Storm Sewer Crossing (Sheet 13 Sta. 9+33 to 9+53) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |
| Water Willow Way Crossing (Sheet 19 Sta. 15+06 to 15+40) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |
| Hazel Arbor Way Crossing (Sheet 23 Sta. 20+31 to 20+01) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |
| Harden Road Crossing (Sheet 32 Sta. 33+48 to 34+70) | Steel Casing/Primary Tunnel Liner | 42 | Steel PCPP | 600.375 600.500 | 560.0747 in. 640.0747 in. |



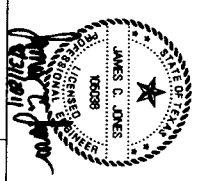
- NOTES:
1. LENGTH OF ENGAGEMENT SHALL BE AS SHOWN ON THE PLAN & PROFILE DRAWINGS.
 2. LAY CASING PIPE IN OPEN CUT, TUNNEL, OR BORE.
 3. SEE SPECIFICATIONS FOR APPROPRIATE MODEL ACCORDING TO PIPE DIAMETER.

2 CASING DETAIL (FOR WATER MAINS LESS THAN 36-INCHES IN DIAMETER UNLESS ALLOWED BY ENGINEER)

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

- NOTES:
1. DETAIL IS FOR PRESTRESSED CONCRETE CYLINDER PIPE (STEEL PIPE ALTERNATE SIMILAR).
 2. MINIMUM CLEARANCES SHOWN ON THE PLAN & PROFILE DRAWINGS ARE TO THE O.D. OF TUNNEL LINER. ADJUST PROFILE AS REQUIRED TO MAINTAIN CLEARANCES IDENTIFIED. NO SEPARATE PAY.
 3. CONTRACTOR TO PROVIDE SUBMITTAL OF THE TUNNEL LINER DESIGN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
 4. PROVIDE CATHODIC PROTECTION FOR LINER.
 5. ALL JOINTS WITHIN LIMITS OF CASING MUST BE RESTRAINED.

* SEE SPECIFICATION 02425 - TUNNEL EXCAVATION AND PRIMARY LINER



J.C. JONES & CARTER R., INC.
 ENGINEERS-PLANNERS-SURVEYORS
 635 Calhoun Dr., Suite 100, Houston, Texas 77061 (713) 777-8287

TRENCHLESS CONSTRUCTION DETAILS



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

| | | | |
|-----|------|----------|----------|
| NO. | DATE | REVISION | APPROVAL |
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NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

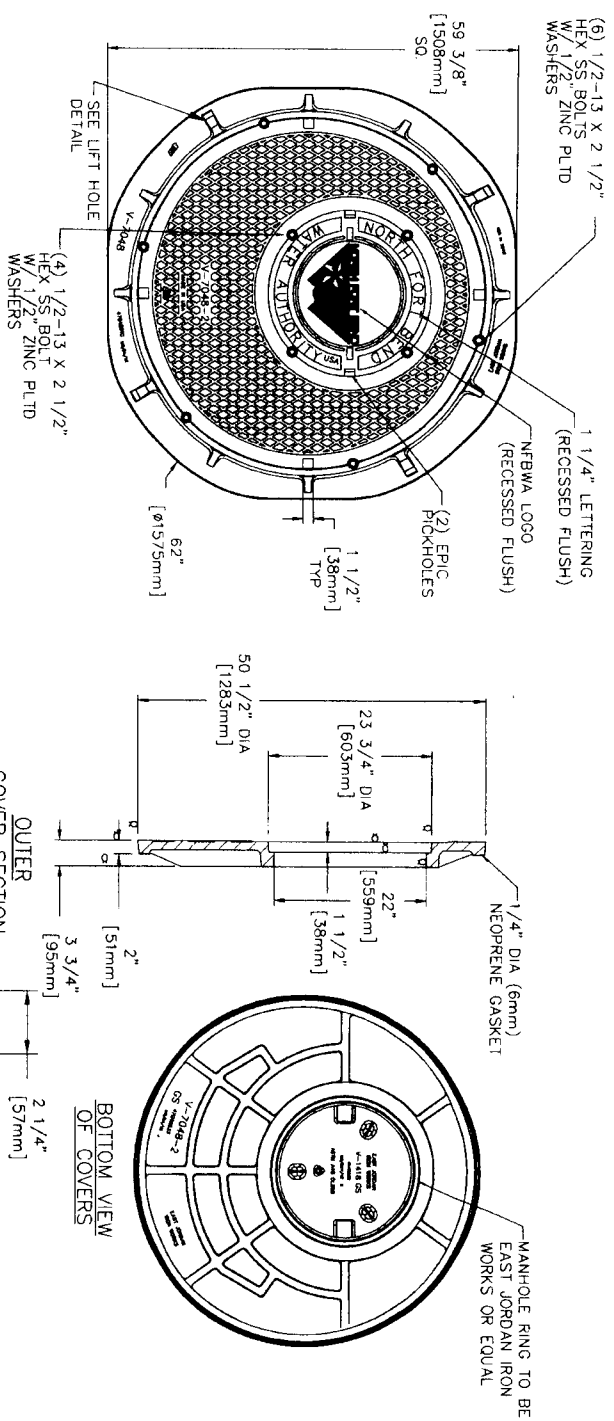
DESIGNER: STREET & BORDE

SCALE: STORM WATER QUALITY

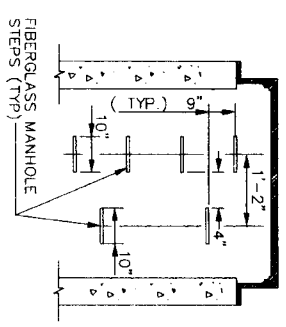
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SHEET NO. 63 OF 80

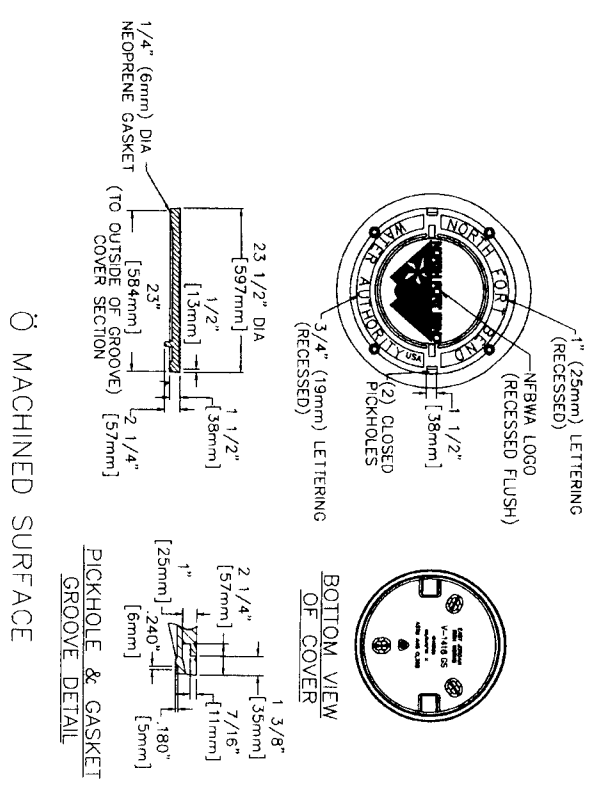


1 HEAVY DUTY MANHOLE RING AND COVER (MANHOLE RING AND COVER TO BE EAST JORDAN IRON WORKS OR EQUAL)

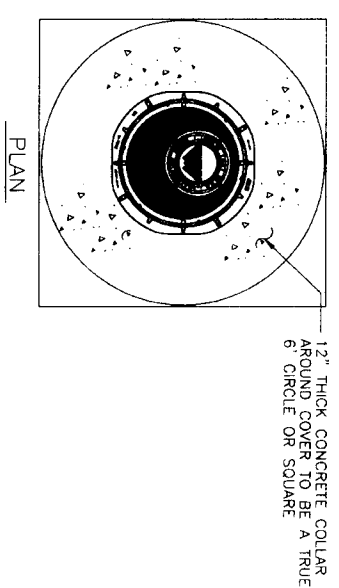


3 MANHOLE STEP DETAIL

- NOTES - MANHOLE STEPS:
1. PROVIDE MODEL PSI-PF 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.



2 HEAVY DUTY MANHOLE COVER (MANHOLE RING AND COVER TO BE EAST JORDAN IRON WORKS OR EQUAL)



4 MANHOLE IN PAVEMENT

| | | | |
|-----|------|----------|---------|
| NO. | DATE | REVISION | APPROV. |
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J. JONES & CARTER R. IES
 ENGINEERS - PLANNERS - SURVEYORS
 Texas Board of Professional Engineers License No. P-439
 636 Galton Dr. Suite 100 Houston, Texas 77061 (713) 773-8337



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

WATER: STREET & BRIDGE

SEWER: STREET & BRIDGE

STORM: STREET & BRIDGE

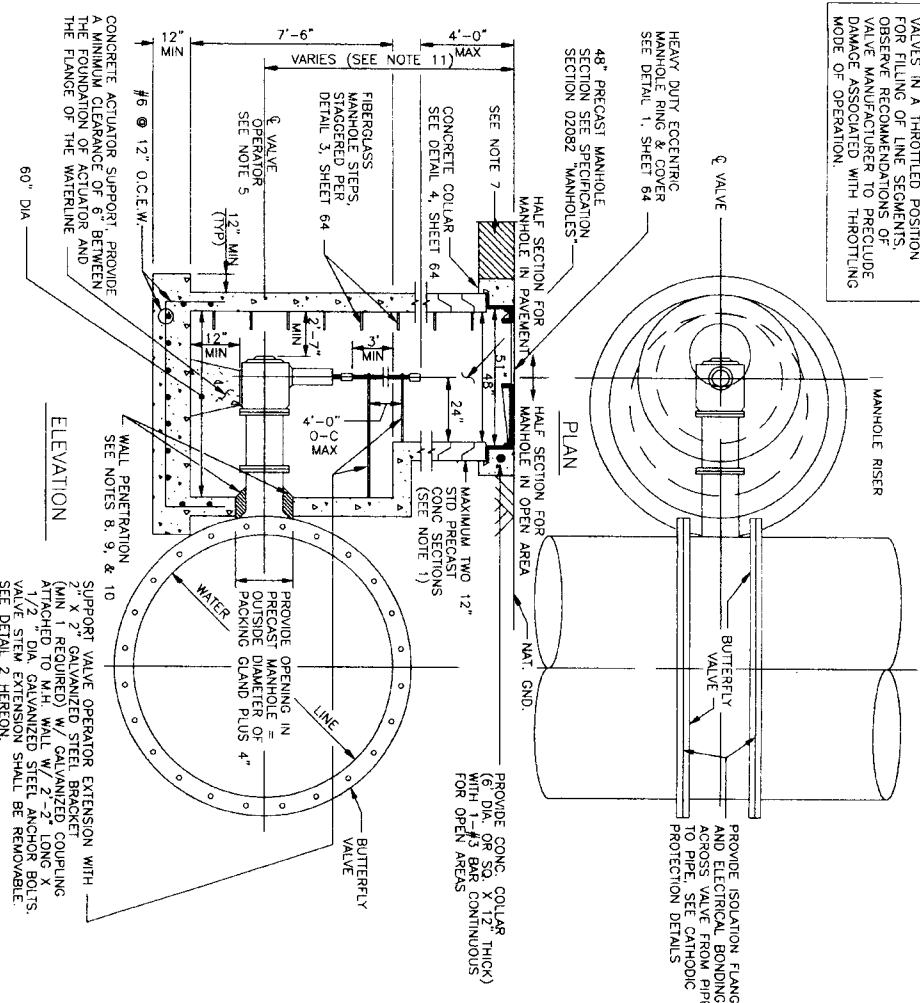
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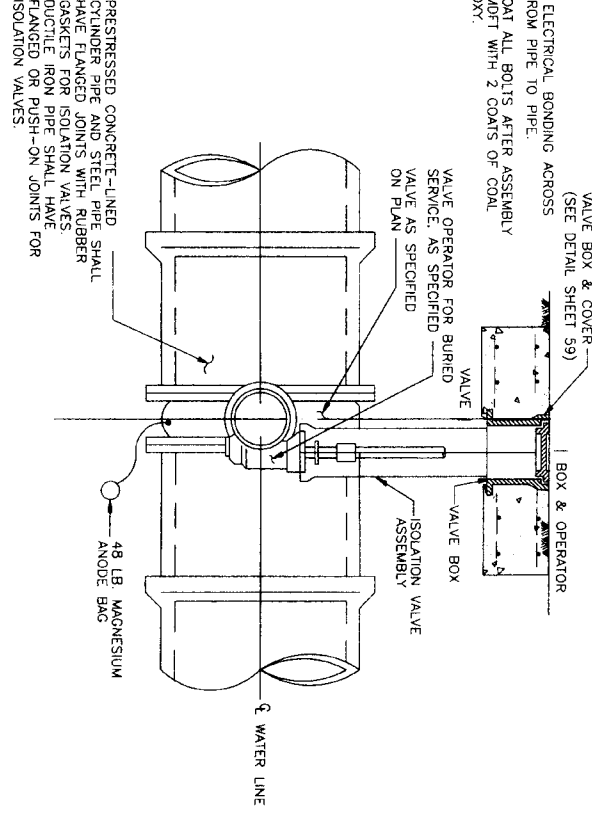
SHEET No. 64 OF 80

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

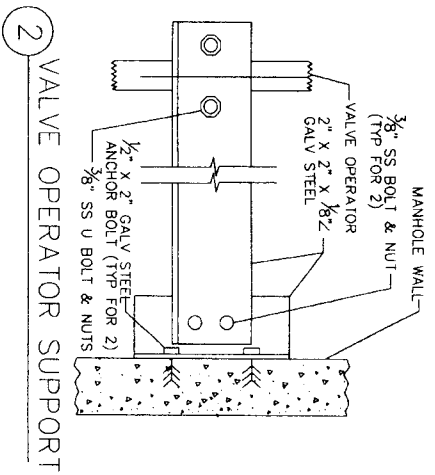


1 MAINLINE VALVES WITH OPERATOR MANHOLE
 (FOR WATER LINES 30-INCHES AND LARGER IN DIAMETER)

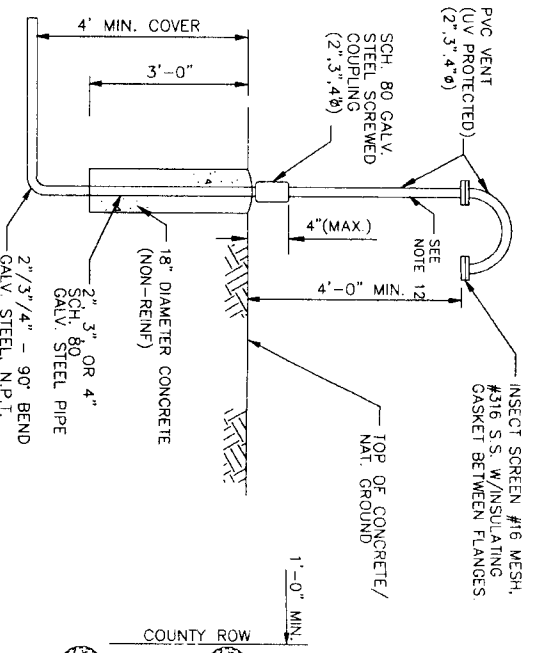
- NOTES:**
1. INSTALL ELECTRICAL BONDING ACROSS VALVE FROM PIPE TO PIPE.
 2. FIELD COAT ALL BOLTS AFTER ASSEMBLY TO 35 MDT WITH 2 COATS OF COAL TAR EPOXY.



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

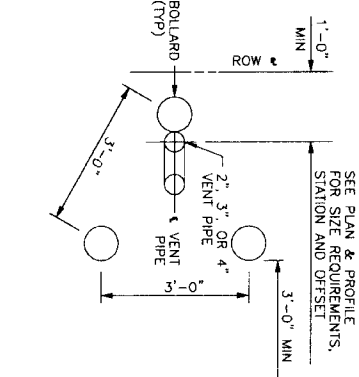


2 VALVE OPERATOR SUPPORT



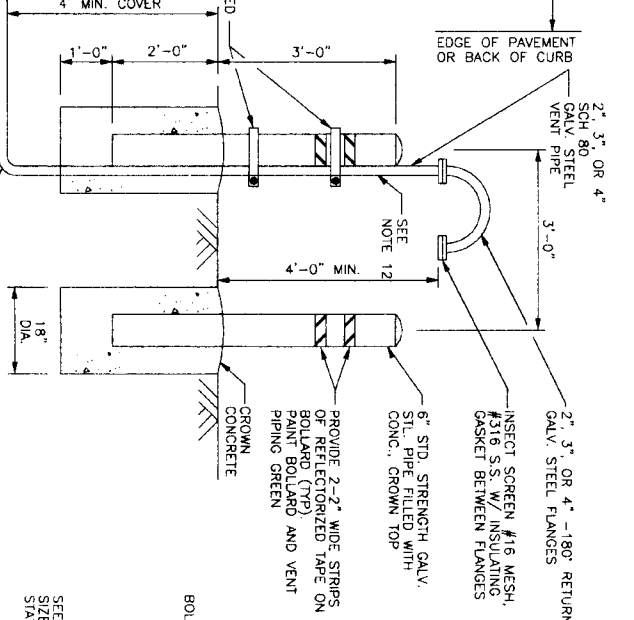
3 BREAKAWAY VENT PIPE DETAIL
 (VENT PIPES WITHIN FORT BEND COUNTY ROW)

- NOTES:**
1. PROVIDE RAINNER OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
 2. PROVIDE AN APPROVED RETROULM BASED TAPER ENCLOSED LATH AND BOLTS IN MANHOLES & VALVES.
 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. OPERATING NUT ON LARGE DIAMETER BUTTERFLY VALVES SHALL TURN COUNTER CLOCKWISE TO OPEN VALVE.
 6. PLACE MANHOLE ON NEW COMPACTED (95% SP) BOTTOM.
 7. FOR PAVEMENT REPAIR, SEE SHEET 62 EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS.
 8. POLYURETHANE SEALANT EXTERIOR SIDE OF WALL PENETRATION ONLY.
 9. SOLID SYNTHETIC RUBBER INTERLOCKING AND NOTS THROUGH THE LINE SEAL, OR APPROVED EQUAL.
 10. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, INCLUDE 2\"/>



- NOTES:**
1. PROVIDE 3 BOLLARDS IN TRIANGULAR PATTERN AROUND VENT PIPE OR ANODE PIPE.
 2. CLASS B CONCRETE WILL BE USED IN AND AROUND BOLLARDS.
 3. SEE DETAIL 6 FOR LOCATION OF ONE BOLLARD AROUND VENT PIPE.

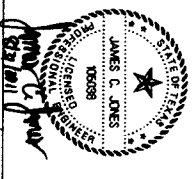
5 VENT PIPE WITH 3 BOLLARDS DETAIL



6 VENT PIPE WITH 1 BOLLARD DETAIL

- NOTES:**
1. PROVIDE 3 BOLLARDS IN TRIANGULAR PATTERN AROUND VENT PIPE OR ANODE PIPE.
 2. CLASS B CONCRETE WILL BE USED IN AND AROUND BOLLARDS.
 3. SEE DETAIL 6 FOR LOCATION OF ONE BOLLARD AROUND VENT PIPE.

6 VENT PIPE WITH 1 BOLLARD DETAIL



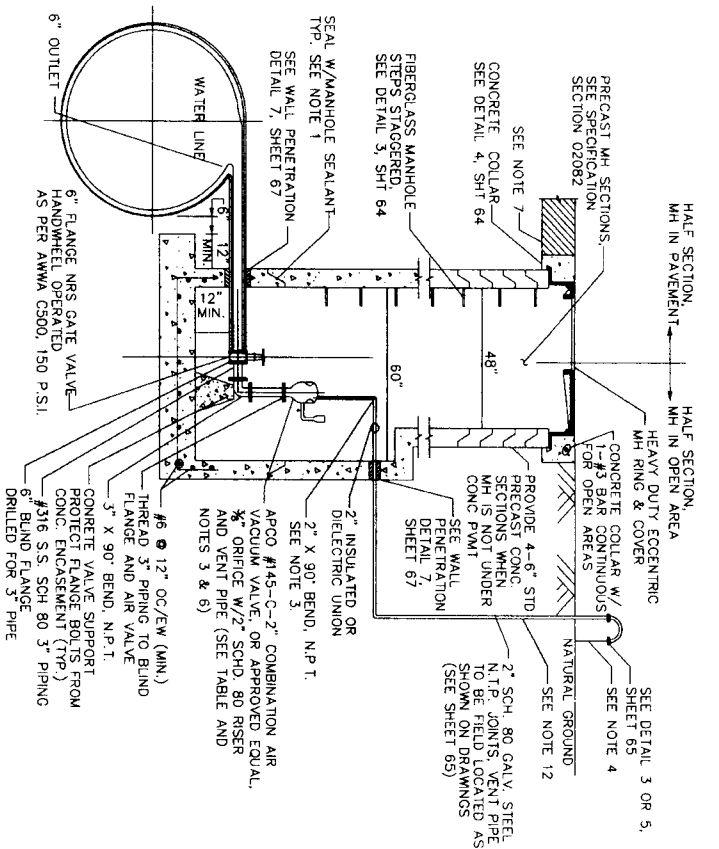
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 Texas Board of Professional Engineers Registration No. 7-439
 6330 Oaklawn Dr., Suite 100 Houston, Texas 77057 (713) 777-6287



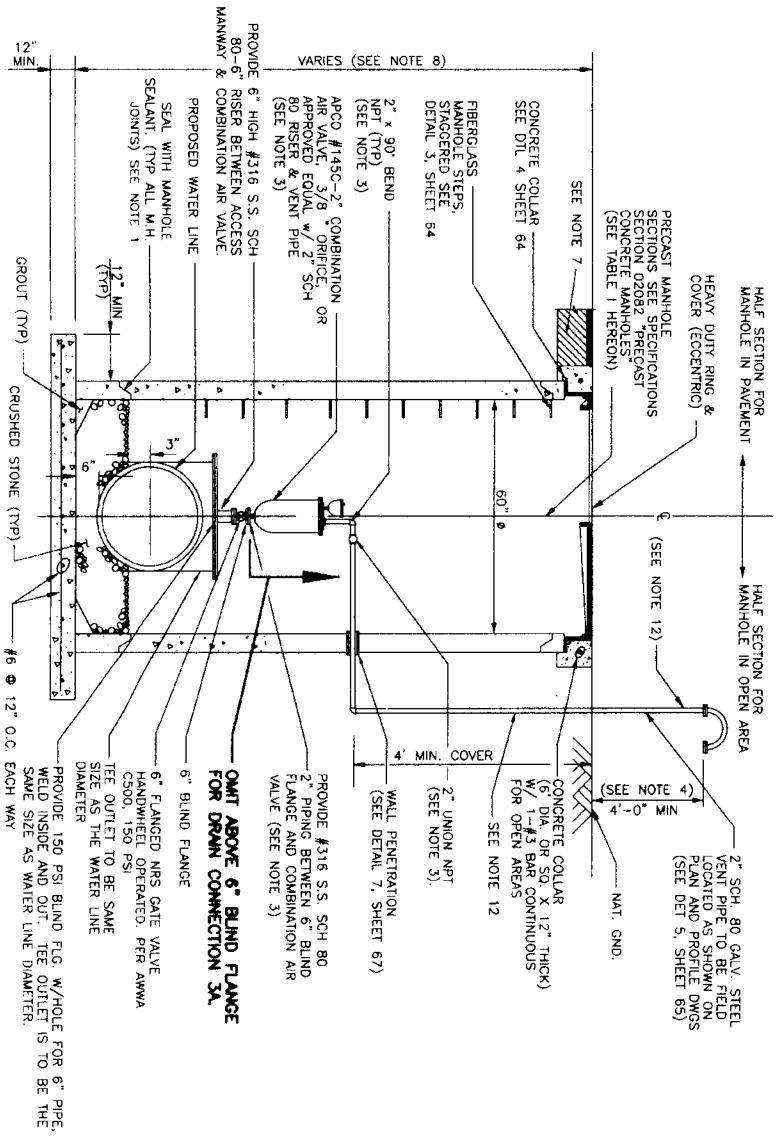
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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| NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES | |
| WATER | SHEET & BRIDGE |
| WASTEWATER | TOWNSHIP |
| STORM | STORM WATER QUALITY |
| UTILITIES | |
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| DRAWING SCALE | |
| HORIZ. AS SHOWN | |

SHEET No. **65** OF **80**

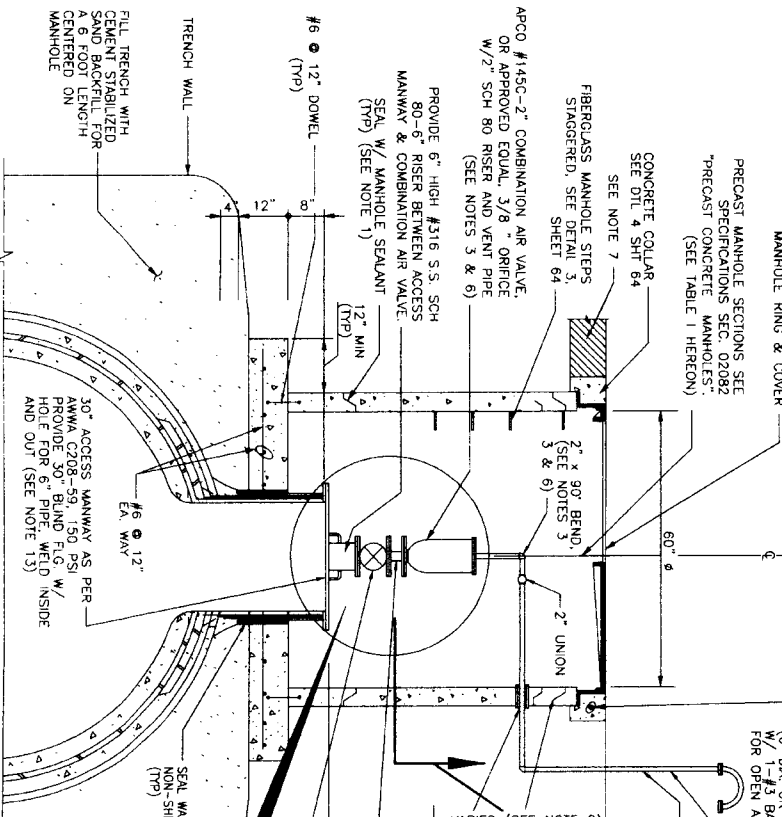


1
 LOW PROFILE COMBINATION
 AIR-VACUUM VALVE ASSEMBLY
 (FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)



2A
 DRAIN CONNECTION (W/OUT AIR VALVE)
 IN SERVICE MANHOLE
 (FOR WATER LINES SMALLER THAN 36-INCHES IN DIAMETER)

2B
 COMBINATION AIR-VACUUM VALVE
 ASSEMBLY IN SERVICE MANHOLE
 (FOR WATER LINES SMALLER THAN 36-INCHES IN DIAMETER)



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

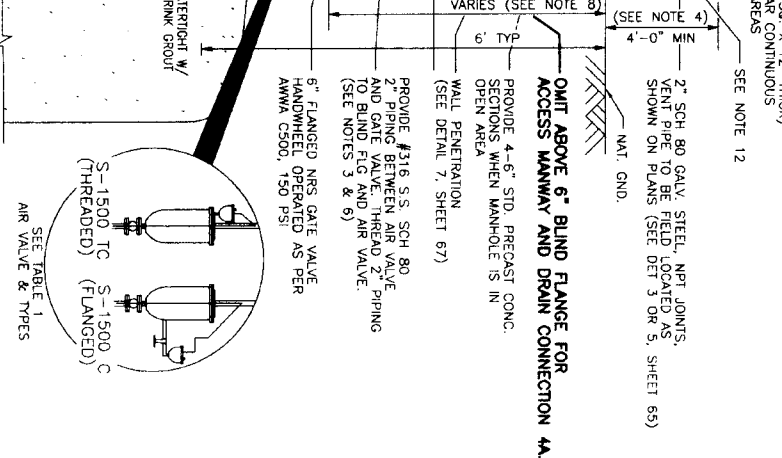
3B
 COMBINATION AIR-VACUUM VALVE
 ASSEMBLY IN SERVICE MANHOLE
 (FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)

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" |
| 230" | 4" | 1504C | 60" |

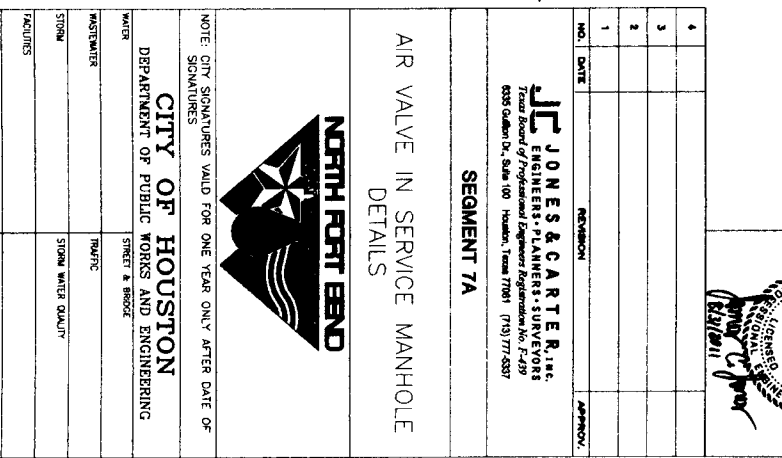
*or approved equal

- NOTES:
1. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
 2. PROVIDE AN APPROVED PETROLEUM BASED TAPE ENCAPSULATING ALL BOLTS IN MANHOLES & VALVS.
 3. IF 3" AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS THEN PROVIDE APCO #1503IC OR 1503C AIR VALVE. ALLOW FOR PIPING AND OFFSETS TO 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 #1504IC OR 1504C AIR VALVE. ALLOW FOR PIPING AND OFFSETS TO BE 4" IN DIAMETER AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
 7. FOR PAVEMENT REPAIR, SEE REF. NO. 12 "EXCAVATION BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS."
 8. FOR MANHOLES DEEPER THAN 20 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 72-INCH OR 84-INCH DIAMETER & PROVIDE SAFETY CLIMBING RAIL (SM-1-CUMB) 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 PUMPER NOZZLE AND LABEL "NFBWA - FOR FLUSHING ONLY."
 12. VENT PIPING, BOLLARD AND WALL PENETRATION SHALL BE ALONG CENTERLINE OF PIPE WHEN LOCATED INSIDE CENTERPOINT ENERGY EASEMENTS.
 13. FOR 36" DIAMETER WATERLINE, USE 24" DIAMETER ACCESS MANWAY.

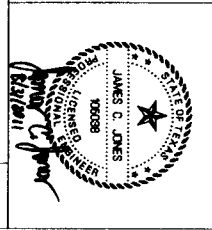


4A
 OMIT ABOVE 6" BLIND FLANGE FOR
 ACCESS MANWAY AND DRAIN CONNECTION
 (FOR WATER LINES 36-INCHES AND LARGER IN DIAMETER)

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



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

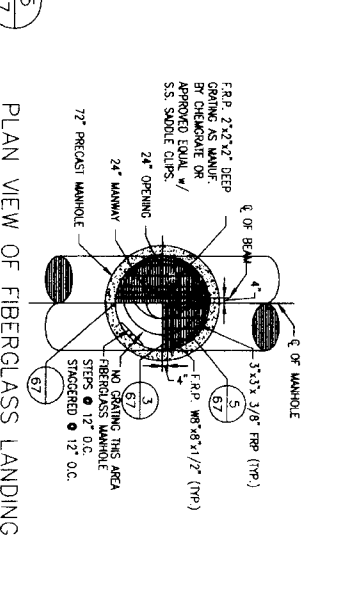
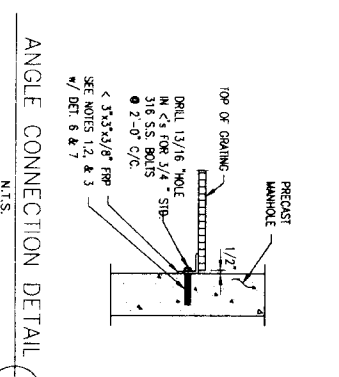
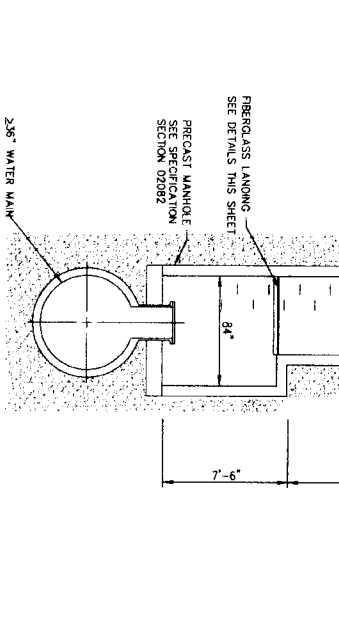
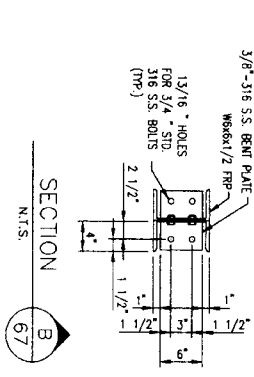
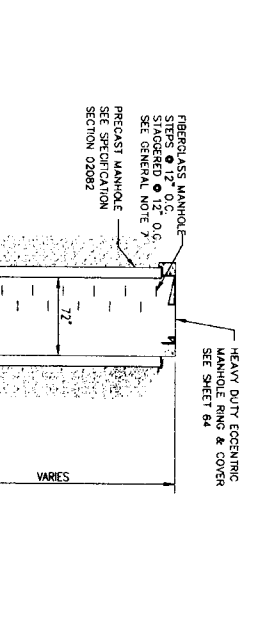
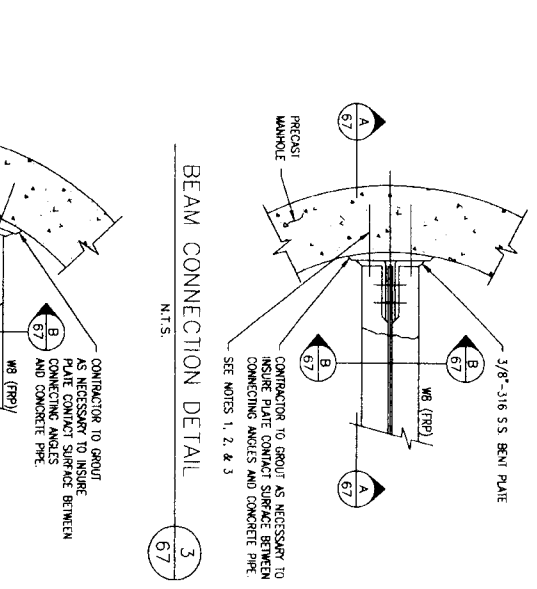
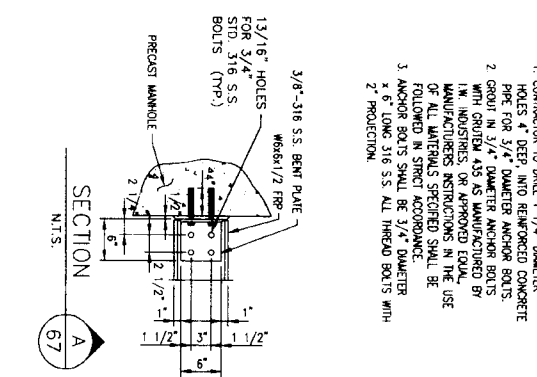
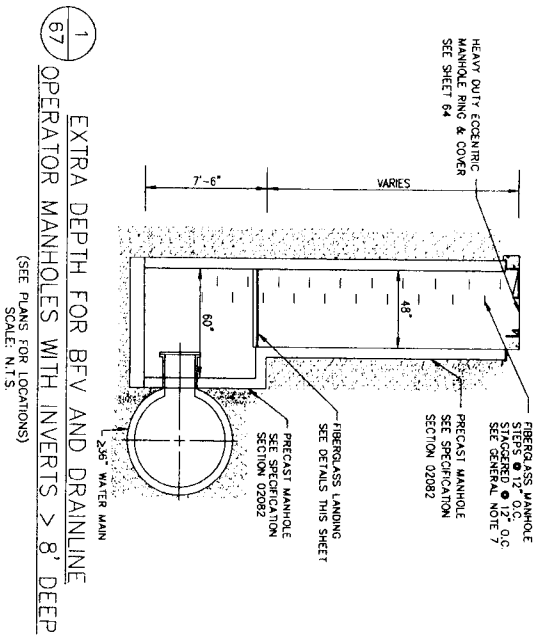


J. JONES & CARTER, INC.
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 6555 Golden Dr., Suite 100 Houston, Texas 77037 (713) 777-6287



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 WATER
 MASTER
 STORM
 FACILITIES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 FILE NO.:
 DRAWING SCALE:
 HORIZ. AS SHOWN
 SHEET No. 66 OF 80
 FOR CITY OF HOUSTON USE ONLY CITY DWG NO.:



2 67 SERVICE MANHOLES WITH INVERTS > 8' DEEP
 (SEE PLANS FOR LOCATIONS)
 SCALE: N.T.S.

5 67 ANGLE CONNECTION DETAIL
 N.T.S.

3 67 BEAM CONNECTION DETAIL
 N.T.S.

7 67 TYPICAL WALL PENETRATION DETAIL

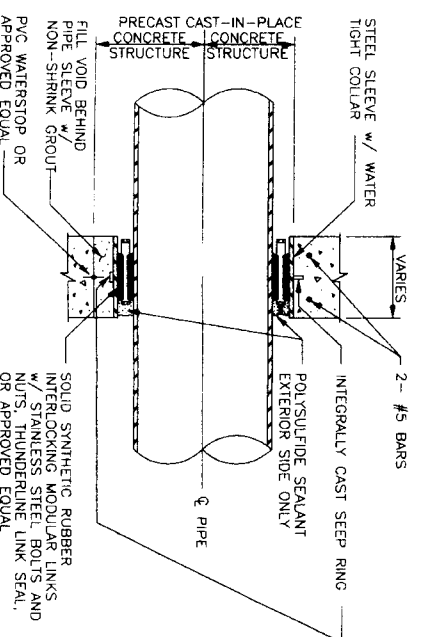
- NOTES:
- CONTRACTOR TO DRILL 1 1/4" DIAMETER HOLES 4" DEEP, INTO REINFORCED CONCRETE PIPE FOR 3/4" DIAMETER ANCHOR BOLTS.
 - GROUT IN 3/4" DIAMETER ANCHOR BOLTS WITH GROUT 4" AS MANUFACTURED BY MANUFACTURER'S INSTRUCTIONS. IN THE USE OF ALL MATERIALS SPECIFIED SHALL BE FOLLOWED IN STRICT ACCORDANCE.
 - ANCHOR BOLTS SHALL BE 3/4" DIAMETER x 6" LONG 316 S.S. ALL THREAD BOLTS WITH 2" PROJECTION.

CONTRACTOR TO GROUT AS NECESSARY TO INSURE PLATE CONTACT SURFACE BETWEEN PRECAST MANHOLE AND CONCRETE PIPE.
 SEE NOTES 1, 2, & 3

CONTRACTOR TO GROUT AS NECESSARY TO INSURE PLATE CONTACT SURFACE BETWEEN PRECAST MANHOLE AND CONCRETE PIPE.
 SEE NOTES 1, 2, & 3

- NOTE:
- ALL STEEL TO BE GRADE 40
 - ALL CONCRETE TO BE CLASS "C"
 - COORDINATE THE LOCATION AND TYPE JOINTS BETWEEN OFFSET BOX AND PRECAST SECTIONS
 - PROVIDE GASKET OR APPROVED EQUAL BETWEEN PRECAST SECTIONS OF THE MANHOLE

- WALL PENETRATION NOTES:
- POLYSULFIDE SEALANT EXTERIOR SIDE ONLY.
 - SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINKS W/ STAINLESS STEEL BOLTS AND NUTS, THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
 - 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.



| NO. | DATE | REVISION | APPROVED |
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 Texas Board of Professional Engineers Registration No. F-439
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MISCELLANEOUS MANHOLE DETAILS
 SEGMENT 7A



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

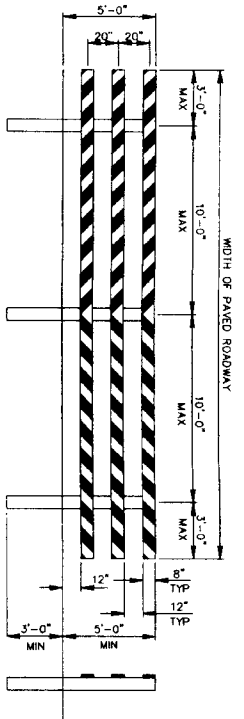
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

WATER: STREET & BRIDGE
 WASTEWATER: TRAFFIC
 STORM: STORM WATER QUALITY

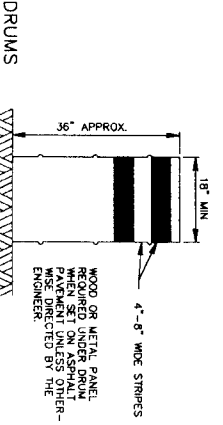
FILE NO.:
 DRAWING SCALE:
 HORIZ.: AS SHOWN

FOR CITY OF HOUSTON USE ONLY CITY DWG. NO.

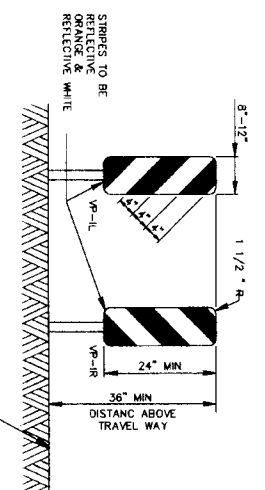
SHEET No. 67 of 80



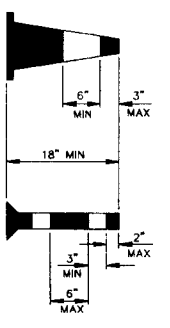
TYPE III BARRICADE
 FOR END OF ROAD
 FOR TYPE III BARRICADE FOR END OF ROAD, THE THREE (3) RAILS SHALL BE REFLECTIVE RED AND REFLECTIVE WHITE STRIPES ON SIDE FACING TRAFFIC



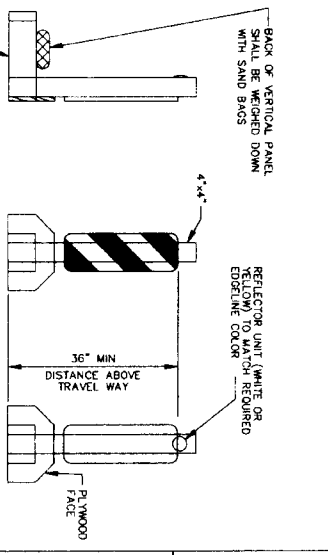
DRUMS
 DRUMS SET ON END AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM METAL BARRIERS APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES 4 TO 6 INCHES WIDE. THE FIRST REFLECTORIZED TOP OF THE DRUM THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL, ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. DRUMS SHALL BE PLACED IN A LINE ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS SHOULD BE USED DURING HOURS OF DARKNESS, A FLASHING AS WARNING DEVICE SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
 CM-8 CHEVRON SIGNS, CM-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



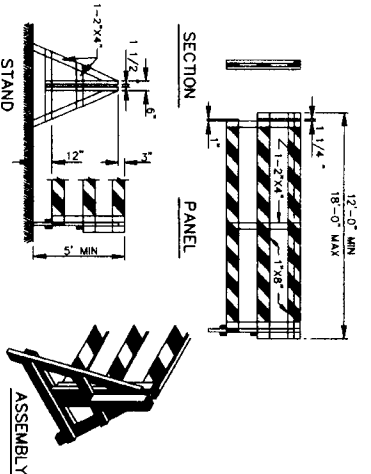
VERTICAL PANELS (VP)
 VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO CONTROL TRAFFIC AND TO MAINTAIN PROPER ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE END OF ROADWAYS, AT THE ENDS OF OTHER ROADWAYS, AT THE ENDS OF BRIDGES, AND AT OTHER PLACES WHERE DELINEATION MAY BE REQUIRED. VERTICAL PANELS SHOULD BE MOUNTED BACK TO BACK IF USED AT ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



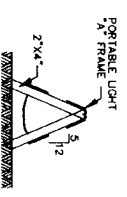
CONES
 TRAFFIC CONES AND TUBULAR MARKERS SHALL BE PLACED TO CONTROL TRAFFIC AND TO MAINTAIN PROPER ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. CONES AND TUBULAR MARKERS SHALL BE PLACED TO CONTROL TRAFFIC AND TO MAINTAIN PROPER ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. CONES AND TUBULAR MARKERS SHALL BE PLACED TO CONTROL TRAFFIC AND TO MAINTAIN PROPER ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME.



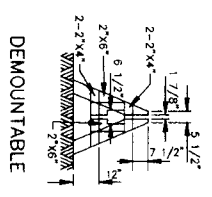
TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR
 OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED OR DIRECTED BY THE COH DEPT OF TRAFFIC AND TRANSPORTATION



DEMOUNTABLE TYPE III BARRICADE



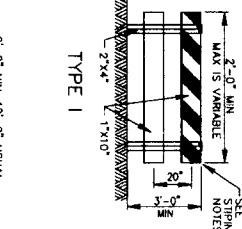
"A" FRAME



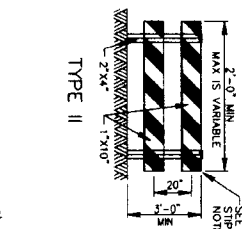
DEMOUNTABLE

BARRICADE NOTES
 THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ITS REVISIONS SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.
 CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
 BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC FLOW. OTHER CHANNELIZING DEVICES SUCH AS TRAFFIC CONES, TUBULAR MARKERS, PORTABLE LIGHTS, AND PORTABLE VERTICAL PANELS OR DELINEATORS SHOULD BE USED IN ALL CASES. THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.
 BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL IN A MANNER APPROVED BY THE DEPARTMENT OF TRAFFIC AND TRANSPORTATION. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUBJECT TO THE DETAIL DESIGNER'S JUDGMENT. THE NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.

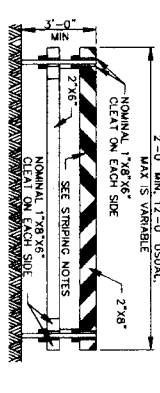
BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL ALL SURFACES OF BARRICADES WHICH ARE NOT STRIPPED SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. COMPONENTS SHALL BE PAINTED WITH WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.
 THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY TADOT.
 THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
 BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



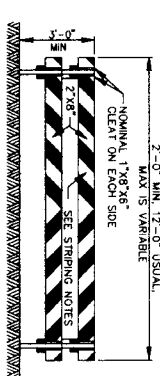
TYPE I



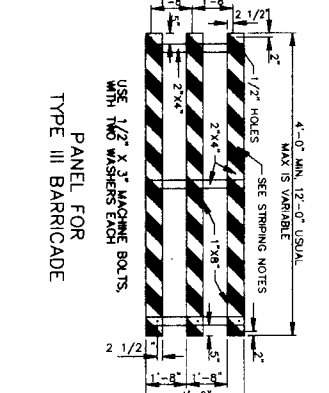
TYPE II



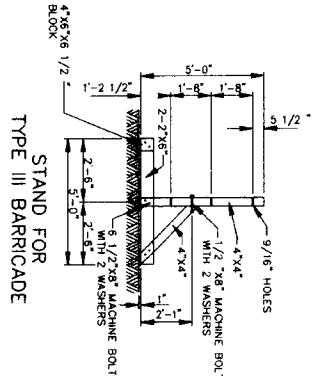
TYPE I



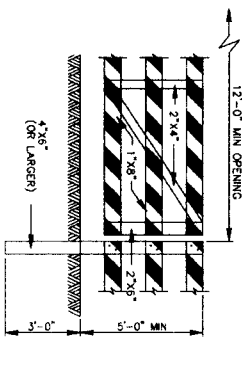
TYPE II



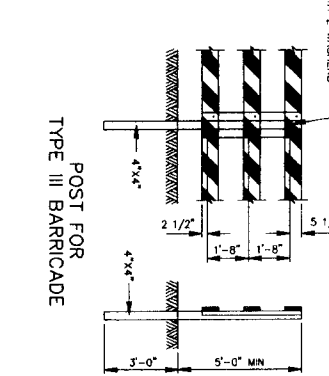
TYPE III BARRICADE



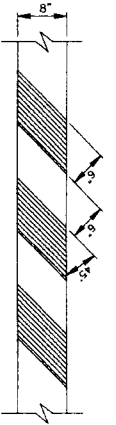
TYPE III BARRICADE



GATE FOR TYPE III BARRICADE



POST FOR TYPE III BARRICADE



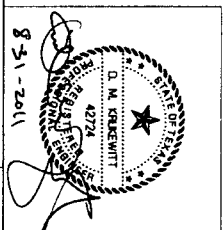
STRIPING FOR BARRICADE
 FOR ALL TYPES OF BARRICADES WITH RAILS LESS THAN 3'-0" LONG, STRIPES 4" WIDE SHALL BE USED. IDENTIFICATION MARKINGS ON THE BACK SIDE OF BARRICADE RAILS.

| NO. | DATE | REVISION | APPROVED |
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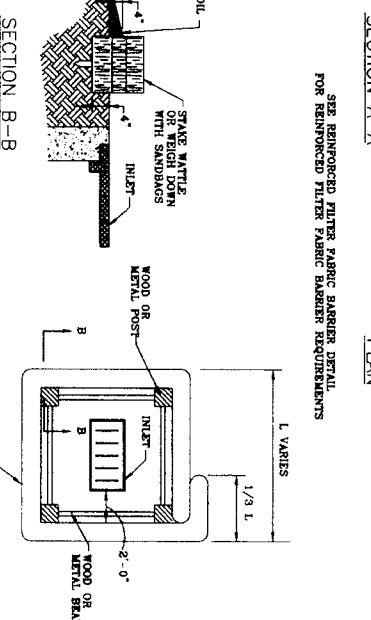
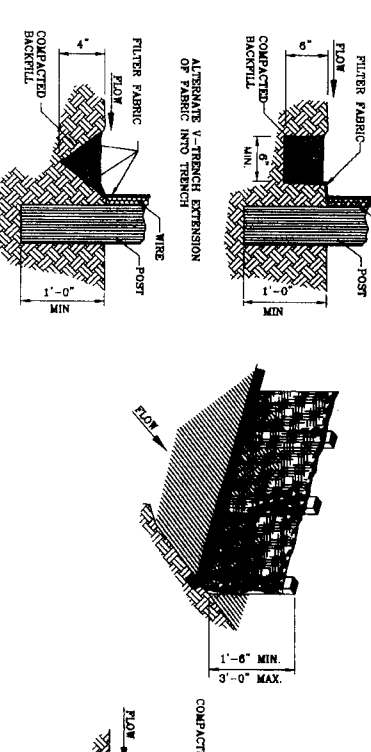
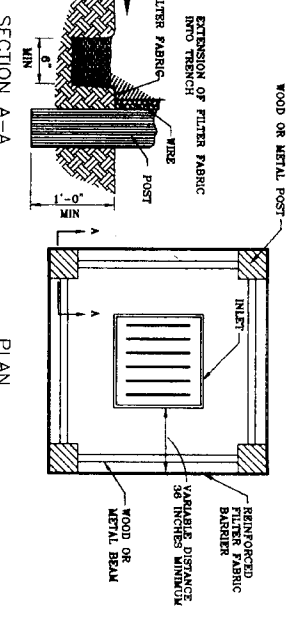
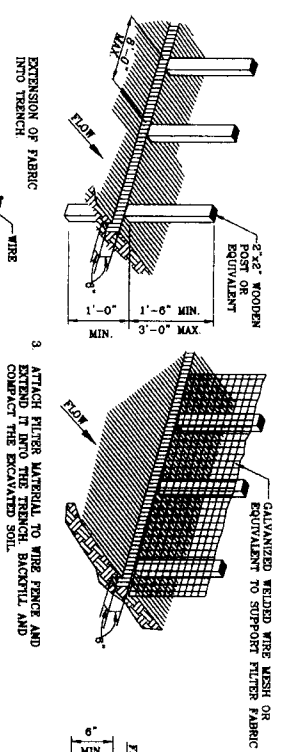


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 STREET & BRIDGE
 TRAFFIC
 STORM WATER QUALITY

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
 FILE NO:
 DRAWING SCALE
 HORIZ: AS SHOWN
 SHEET NO: 68 OF 80



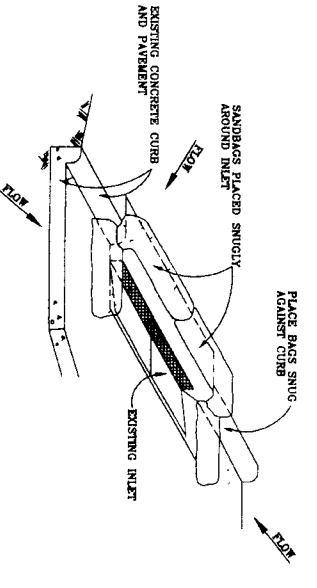
1. SET POSTS AT REQUIRED SPACING AND DEPTH EXCAVATE & 3" TRENCH UPSLOPE ABOVE THE LINE OF POSTS
2. SECURE MESH FENCING TO POSTS



- GENERAL NOTES:
1. SECURELY FASTEN WATTLE FENCING TO POSTS WITH STAPLES OR THE WIRES
 2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING
 3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST
 4. REMOVE SEDIMENT DEPOSITS WHEN Silt REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DOWN

REINFORCED FILTER FABRIC BARRIER

SC (R9) X SYMBOL



- GENERAL NOTES:
1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION
 2. PROVIDE WOVEN OR UNWOVEN 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 COATINGS, SALT, ALKALI, OIL, CLAY, LOAM, SHALE, SILT OR FLAKY MATERIALS, OR ORGANIC AND HAZARDOUS 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

IPB SYMBOL

INLET PROTECTION BARRIERS FOR STAGE I INLETS

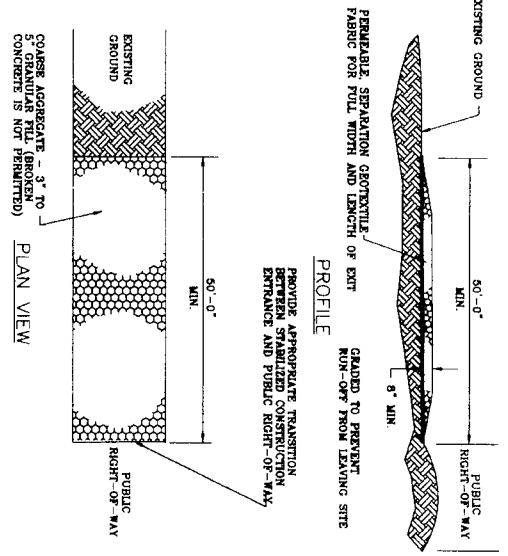
IPB SYMBOL

NOTE: TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

SEE REINFORCED FILTER FABRIC BARRIER REQUIREMENTS FOR REINFORCED FILTER FABRIC BARRIER DETAILS

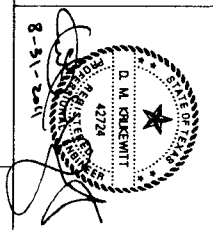
STABILIZED CONSTRUCTION ACCESS

SC (H) SYMBOL



- GENERAL NOTES:
1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, 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 AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT
 4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDTH OR LENGTH 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 ON WHICH SURFACE BECOMES PACKED WITH SAND
 6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRAINING SURFACE
 7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE:
 - CEMENT STABILIZED SOIL. COMPACTED CEMENT OF 8 INCHES
 - FILL LAYERED IN AN APPLICATION OF THICKNESS OF 8 INCHES
 - LIME STABILIZED SOIL. COMPACTED LIME OF 8 INCHES
 - WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
 - STEEL WATTS. PERFORATED WATTS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

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J.C. JONES & CARTER, L.P.
 ENGINEERS-PLANNERS-SURVEYORS
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SEGMENT 7A

STORM WATER POLLUTION PREVENTION DETAILS



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

| | |
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| WATER | SHEET & BROOD |
| WASTEWATER | TYPING |
| STORM | STORM WATER QUALITY |
| FAULTS | |

FILE NO. _____ FOR CITY OF HOUSTON USE ONLY (CITY Dwg. NO. _____)

DRAWING SCALE _____

HORIZ : AS SHOWN

SHEET No. **69** OF **80**

TEST STATION SCHEDULE

| STATION | BASELINE | STRUCTURE | TYPE OF TEST STATION | DETAIL |
|---------|----------|---|--|-----------|
| 2+16 | A | 16" WATER LINE / FORT BEND MUD 165 | FLUSH MOUNTED U TEST STATION | ① CP8 |
| 12+61 | A | 16" WATER LINE | FLUSH MOUNTED MONITORING TEST STATION | ① CP2 |
| 10+00 | B | 42" WATER LINE | FLUSH MOUNTED MONITORING TEST STATION | ① CP8 |
| 18+83 | B | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 23+79 | B | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 4+13 | C | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 9+33 | C | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 15+05 | C | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 22+08 | C | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 29+31 | C | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP17 |
| 1+60 | D | 24" WATER LINE SEGMENT 7A / SEGMENT 7B | FLUSH MOUNTED U TEST STATION | ① CP8 |
| 10+00 | D | 42" WATER LINE | FLUSH MOUNTED MONITORING TEST STATION | ① CP2 |
| 20+00 | D | 42" WATER LINE | FLUSH MOUNTED MONITORING TEST STATION | ① CP2 |
| 30+00 | D | 42" WATER LINE | FLUSH MOUNTED MONITORING TEST STATION | ① CP2 |
| 33+53 | D | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 34+64 | D | CASING - 42" WATER LINE | FLUSH MOUNTED CASING TEST STATION | ① CP11 |
| 34+88 | D | 42" WATER LINE SEGMENT 7A / SEGMENT 5 | FLUSH MOUNTED U TEST STATION | ① CP8 |

RECTIFIER SCHEDULE

| PIPE MATERIAL | NUMBER OF RECTIFIER | SEGMENT | STATION NUMBER | SIZE OF RECTIFIER | NUMBER OF TAs ANODES | ANODE WELL DEPTH (FEET) | DETAILS |
|--|---------------------|---------|------------------|-------------------|----------------------|-------------------------|----------|
| STEEL PIPE WITH BONDED DIELECTRIC COATING | 1 | 7A | BASELINE C 33+00 | 12V/8A | 4 | 108 | ③ CP8 |
| MORTAR-COATED STEEL PIPE / AND BAR-WRAPPED STEEL CYLINDER PIPE | 1 | 7A | BASELINE C 33+00 | 18V/22A | 12 | 204 | ③ CP8 |

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.
3. CONTRACTOR SHALL INSTALL THE CATHODIC PROTECTION SYSTEM (IF NECESSARY) IN ACCORDANCE WITH THE INFORMATION PROVIDED IN THE TEST STATION SCHEDULE AND RECTIFIER SCHEDULE. FINAL LOCATION TO BE APPROVED BY THE AUTHORITY'S ENGINEER.



Project: CP-0777
 One Blinnway, Suite 1700
 Houston, TX 77056
 Tel: (713) 588-9500; Fax: (713) 588-9068

Signature
 VEA Consulting Engineers
 F-8154
 SEGMENT 7A

CATHODIC PROTECTION SCHEDULE



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

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 PLANS AND INSPECTION

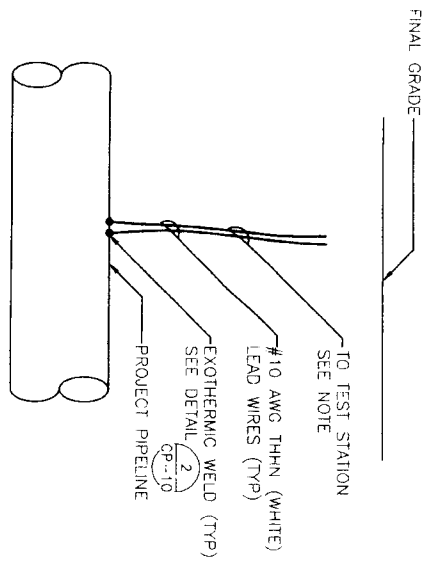
WATERWAYS: STORM WATER QUALITY
 STORM: FACILITIES
 STREET & BRIDGE: FACILITIES



FILE NO.: FOR CITY OF HOUSTON USE ONLY
 DRAWING SCALE:
 HORIZ: :
 VERT: :


DATE: AUGUST 2011

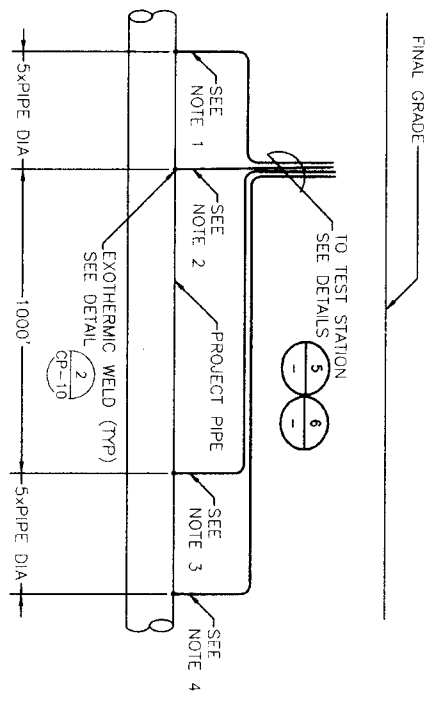
REF. NO. CP-1



SHEET No. 70 OF 80



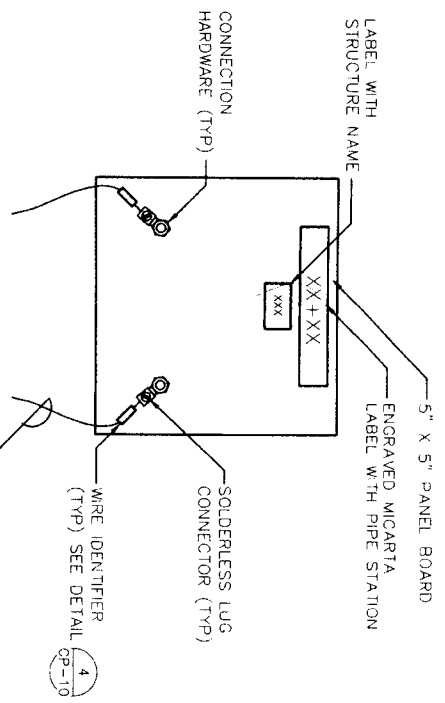
- NOTES:
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 

MONITORING TEST STATION (MTS) 
 NTS




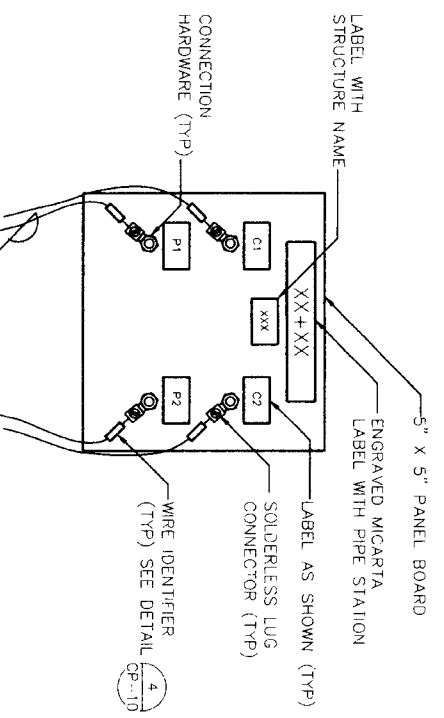
- NOTES:
1. LINE CURRENT TEST LEAD C1 AWG #10 THHN (BLUE)
 2. LINE CURRENT TEST LEAD P1 AWG #8 THHN (RED)
 3. LINE CURRENT TEST LEAD P2 AWG #8 THHN (YELLOW)
 4. LINE CURRENT TEST LEAD C2 AWG #10 THHN (WHITE)
 5. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 
 6. IF TEST STATION IS FLUSH MOUNTED, REFER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


LINE CURRENT TEST STATION (LCTS) 
 NTS




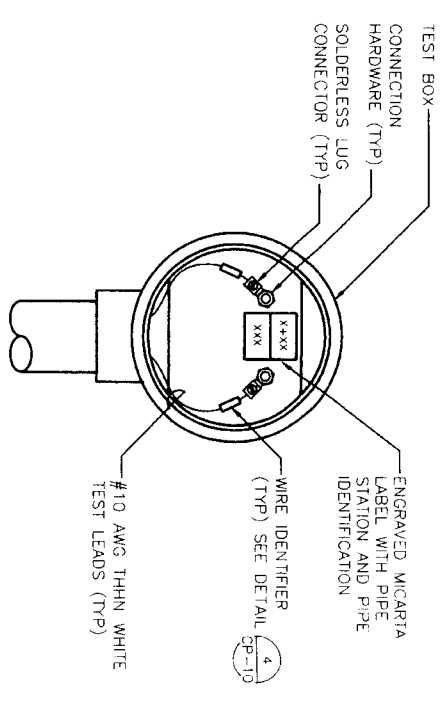
- NOTE:
- TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL 

MTS TEST BOARD 
 NTS



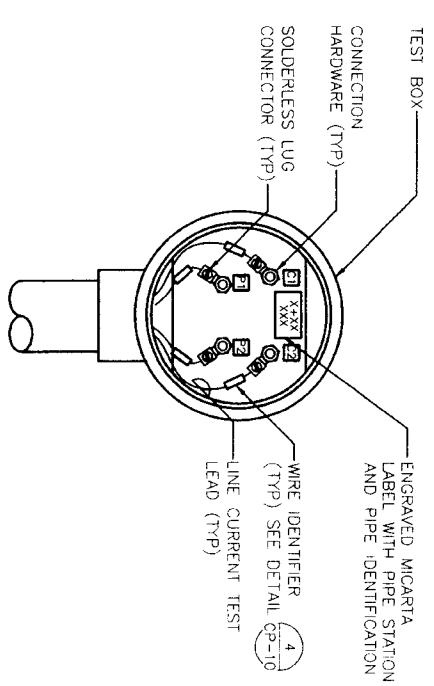
- NOTE:
- TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL 

LCTS TEST BOARD 
 NTS




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

POST MOUNTED MTS TEST BOX 
 NTS



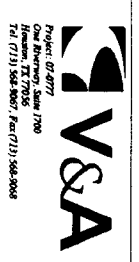
- NOTE:
- TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL 

POST MOUNTED LCTS TEST BOX 
 NTS

DATE: OCTOBER 7, 2009

REF. NO. CP-2

SHEET No. 71 OF 80



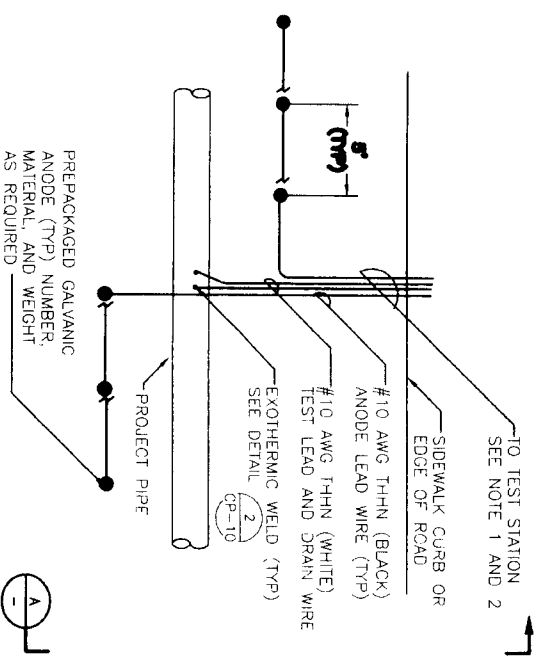
Steel case
 V&S&A Consulting Engineers
 P.O. Box 8154
 Houston, Texas 77266-8154
 12/31/2011
 SEGMENT 7A

CATHODIC PROTECTION TEST STATION DETAILS
 1 OF 4



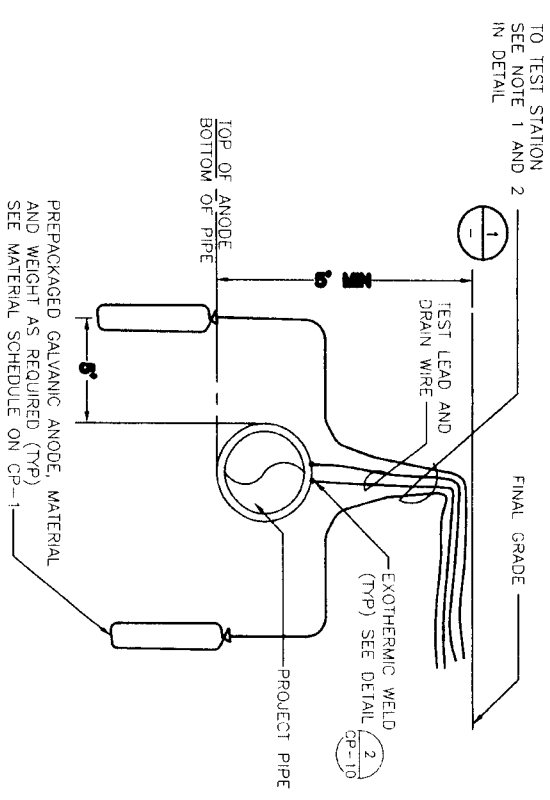
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 PLANNING AND INSPECTION

| | |
|-----------------|------------------------------|
| WESTERLY | STONE WATER QUALITY |
| STONE | FACTORY |
| STREET & BRIDGE | |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ | |
| VERT | |

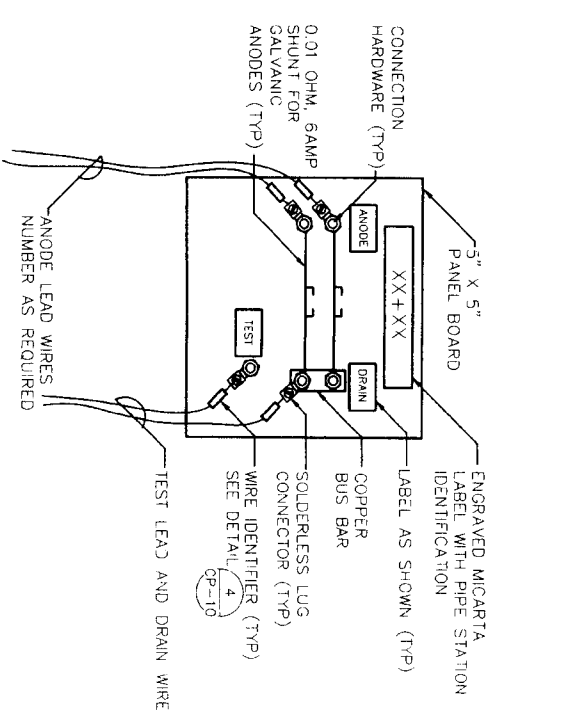


- NOTE:
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL CP-3
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL CP-2

ANODE TEST STATION
 (ATS) PLAN
 NTS 1

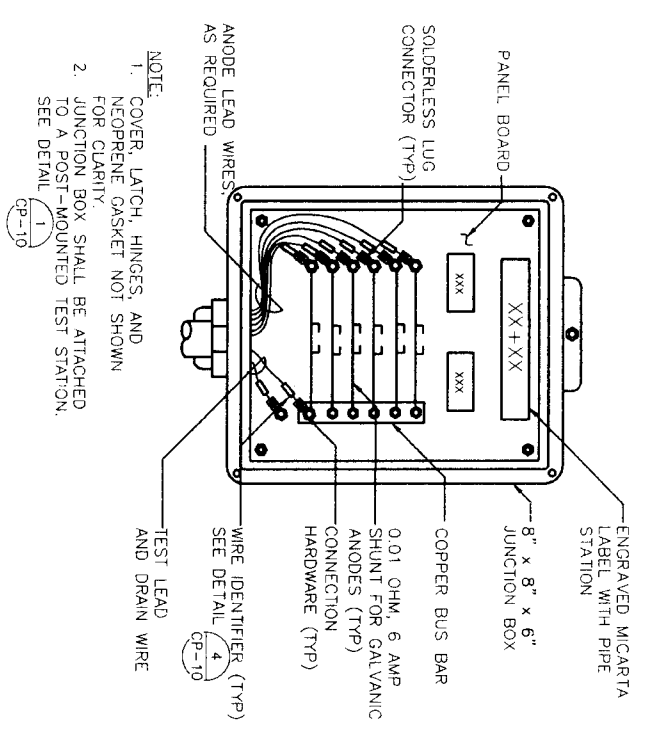


ATS SECTION
 NTS A



- NOTE:
1. 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-10

ATS JUNCTION BOX
 NTS 3

DATE: OCTOBER 7, 2009

REF. NO.
 CP-3

SHEET NO.
 72 OF 80

DRAWING SCALE
 HORIZ :
 VERT :

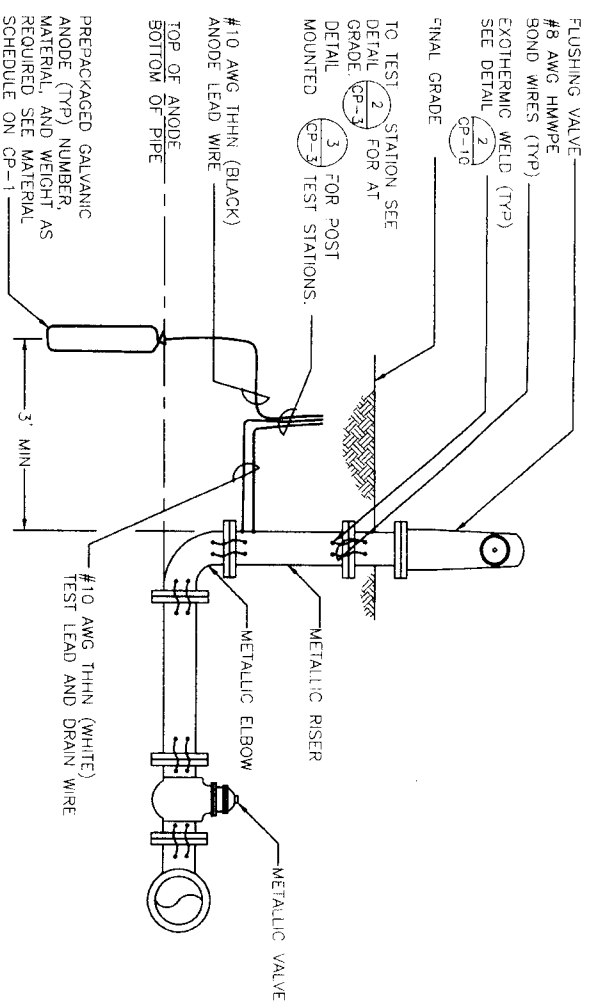
W&A
 Project: 07077
 Date: 08/22/11
 12000 West Loop South, Suite 700
 Dallas, Texas 75243
 Tel: (714) 566-9007 Fax: (714) 566-9008

Professional Engineer
 License No. 79523
 State of Texas
 Joe Luis Villalobos
 12/14/2011

SEGMENT 7A
 CATHODIC PROTECTION
 TEST STATION DETAILS
 2 OF 4

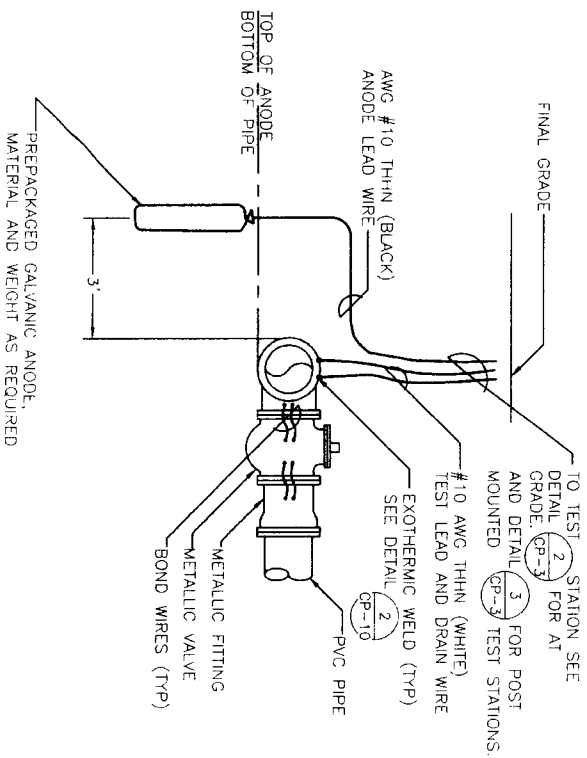
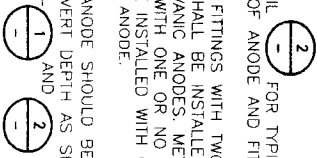


| | |
|---|------------------------------|
| NOTE: CITY SPECIFICATIONS VALID FOR ONE YEAR ONLY AFTER DATE OF SOW/STARTING DATE | |
| CITY OF HOUSTON | TRAFFIC AND TRANSPORTATION |
| DEPARTMENT OF PUBLIC WORKS AND ENGINEERING | |
| MATERIALS | STORM WATER QUALITY |
| STORM | TRAFFIC |
| STREET & BRIDGE | |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ : | |
| VERT : | |



TYPICAL ANODE INSTALLATION
 AT FLUSHING VALVE
 NTS 1

- 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
 NTS 2



Blair
 VEA Consulting Engineers
 1-9154
 Blair/Beall

CATHODIC PROTECTION
 TEST STATION DETAILS
 3 OF 4

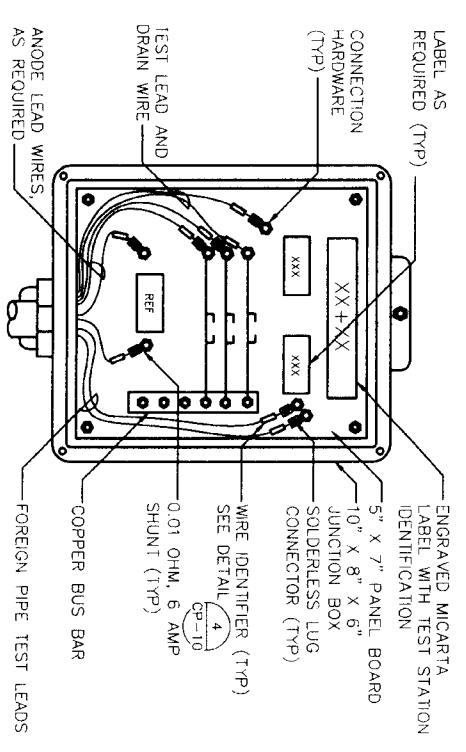
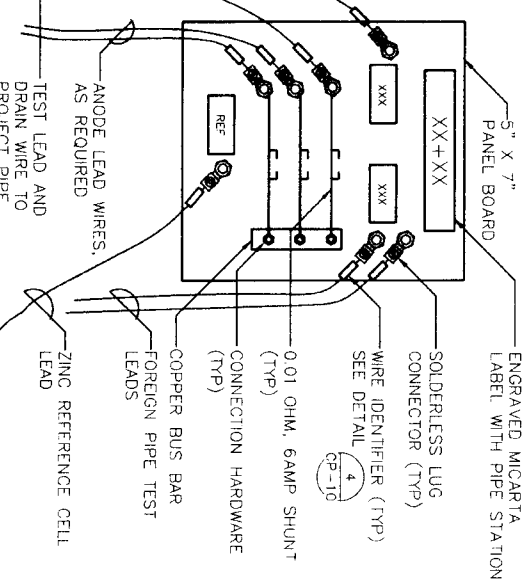
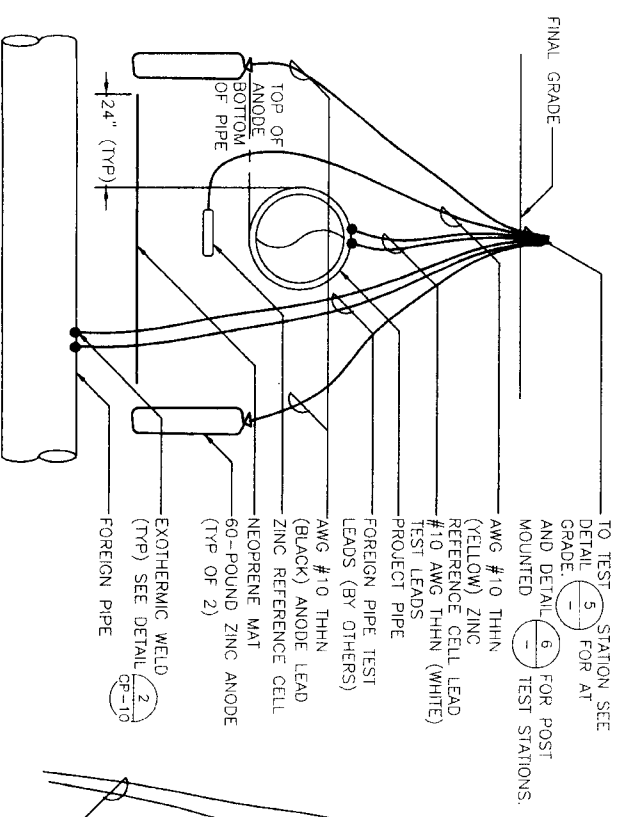
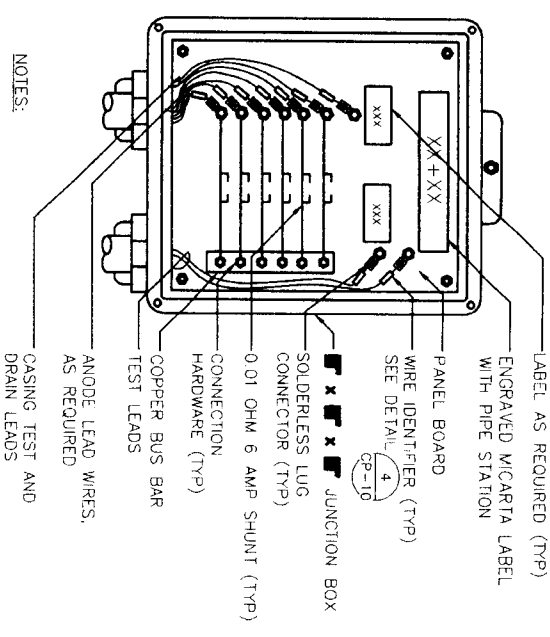
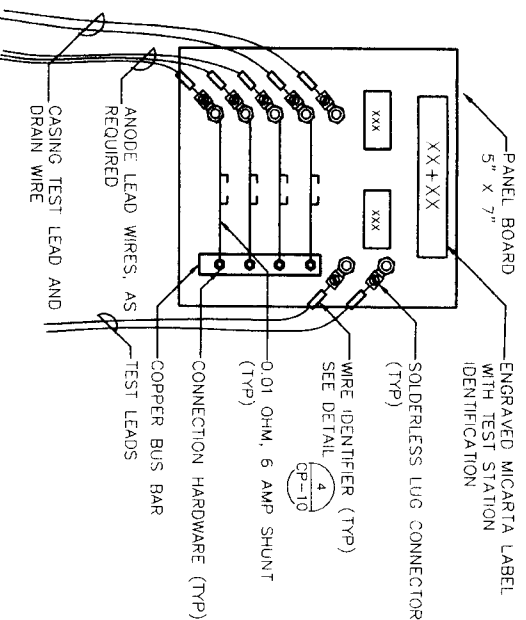
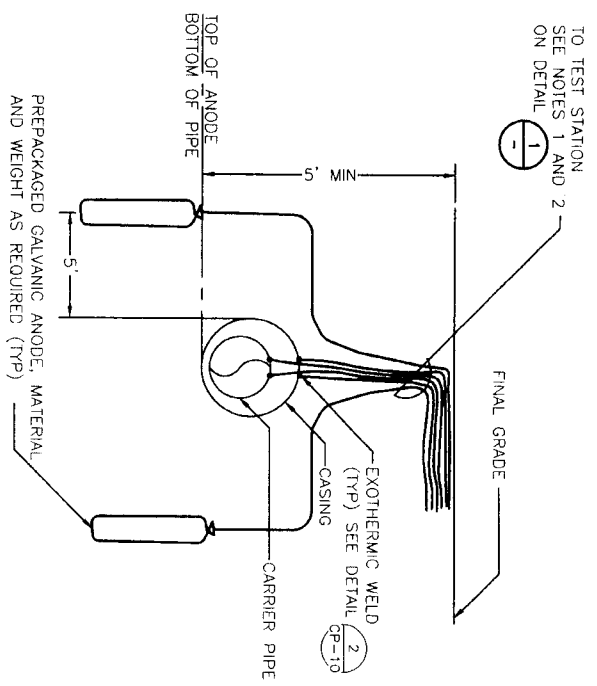
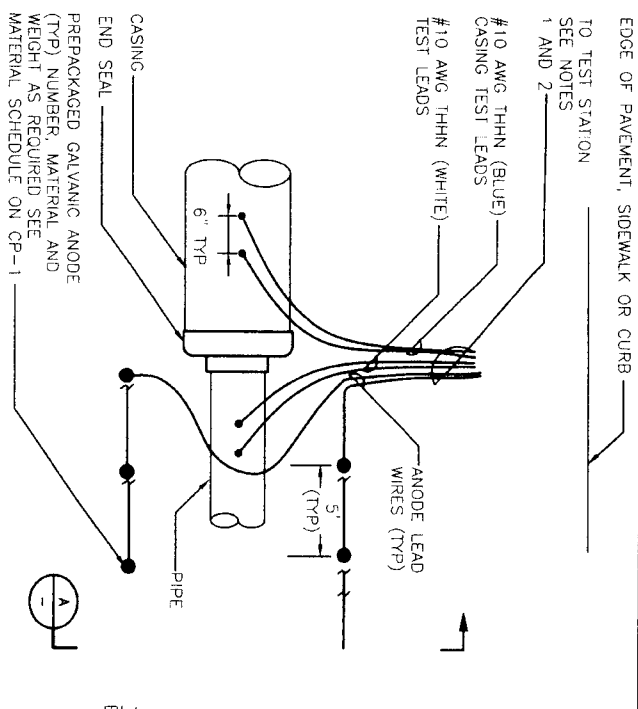


NOTE: CITY SPECIFICATIONS VARY FROM ONE YEAR TO YEAR. AFTER DATE OF COMPLETION
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER
 PLUMBER AND TRANSPORTATION

| | |
|----------------|----------------|
| DATE: | DATE: |
| TIME: | TIME: |
| FILE NO: | FILE NO: |
| DRAWING SCALE: | DRAWING SCALE: |
| HORIZ: | HORIZ: |
| VERT: | VERT: |

REF. NO. CP-4
 SHEET No. 73 OF 80
 FOR CITY OF HOUSTON ISL DWG

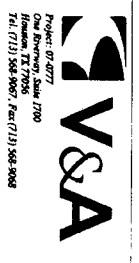
DATE: OCTOBER 7, 2009



DATE: OCTOBER 7, 2009

REF. NO. CP-5

SHEET No 74 OF 80

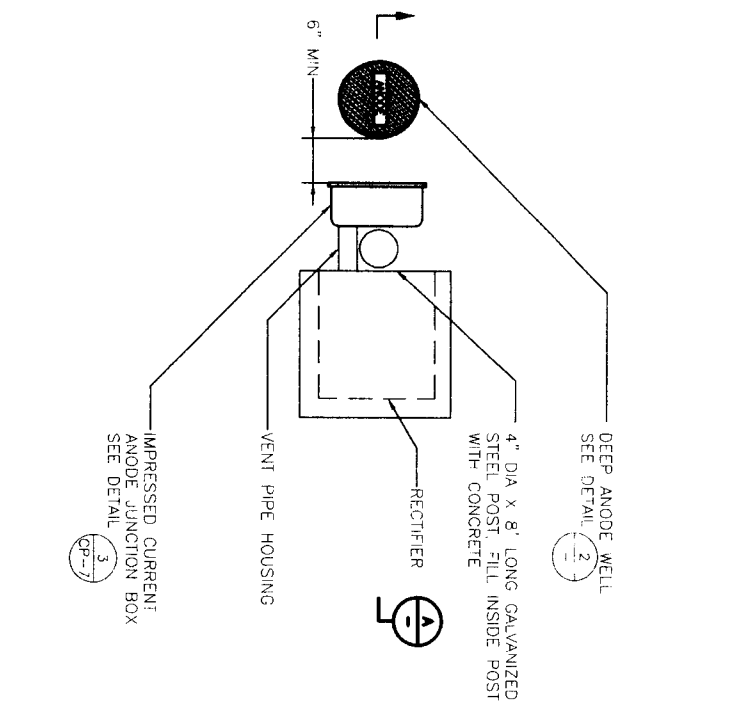


SEGMENT 7A
 CATHODIC PROTECTION TEST STATION DETAILS
 4 OF 4

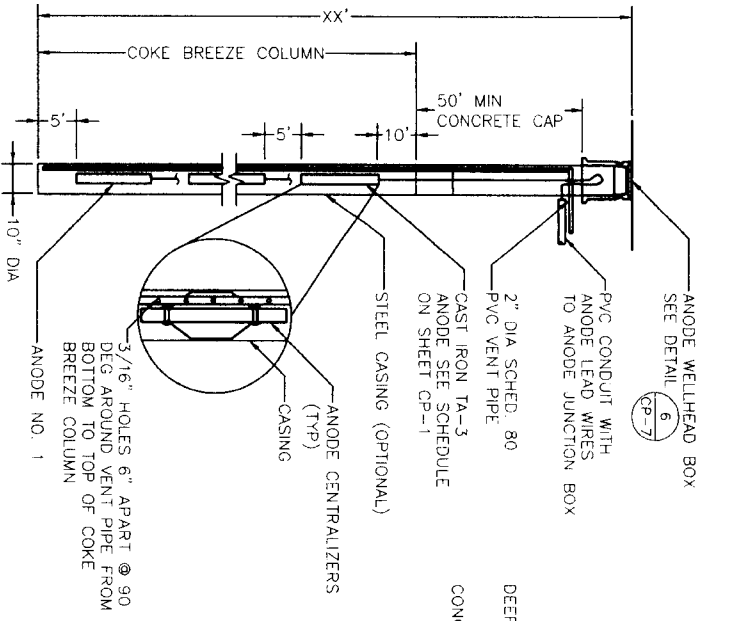


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

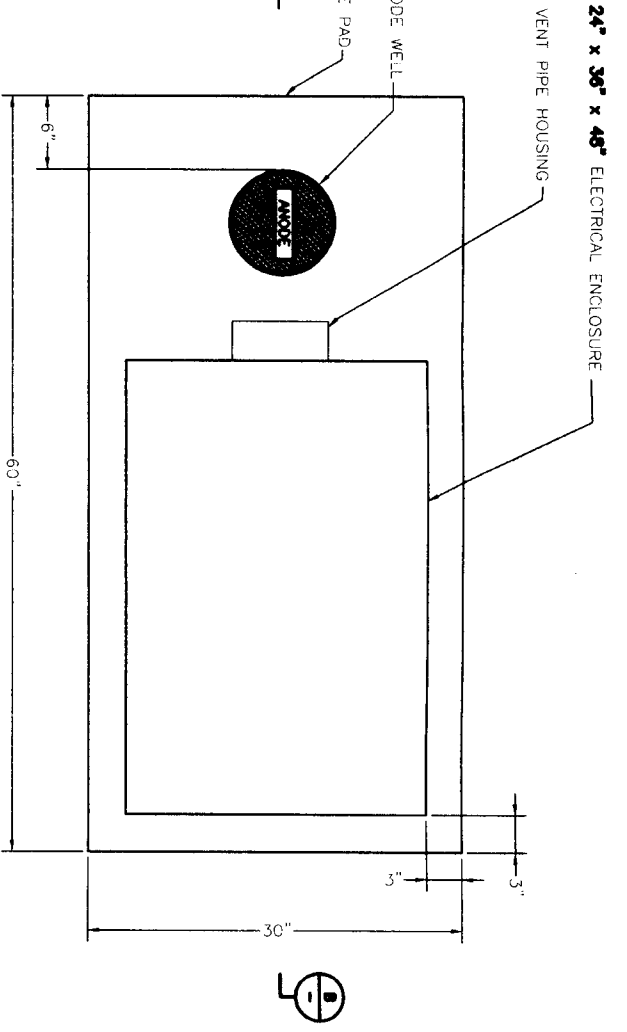
| | |
|-----------------|------------------------------|
| WATER | STORM WATER QUALITY |
| WATER | STORM WATER QUANTITY |
| STORM | FAUNES |
| STREET & BRIDGE | |
| SHEET NO: | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ. VERT.: | |



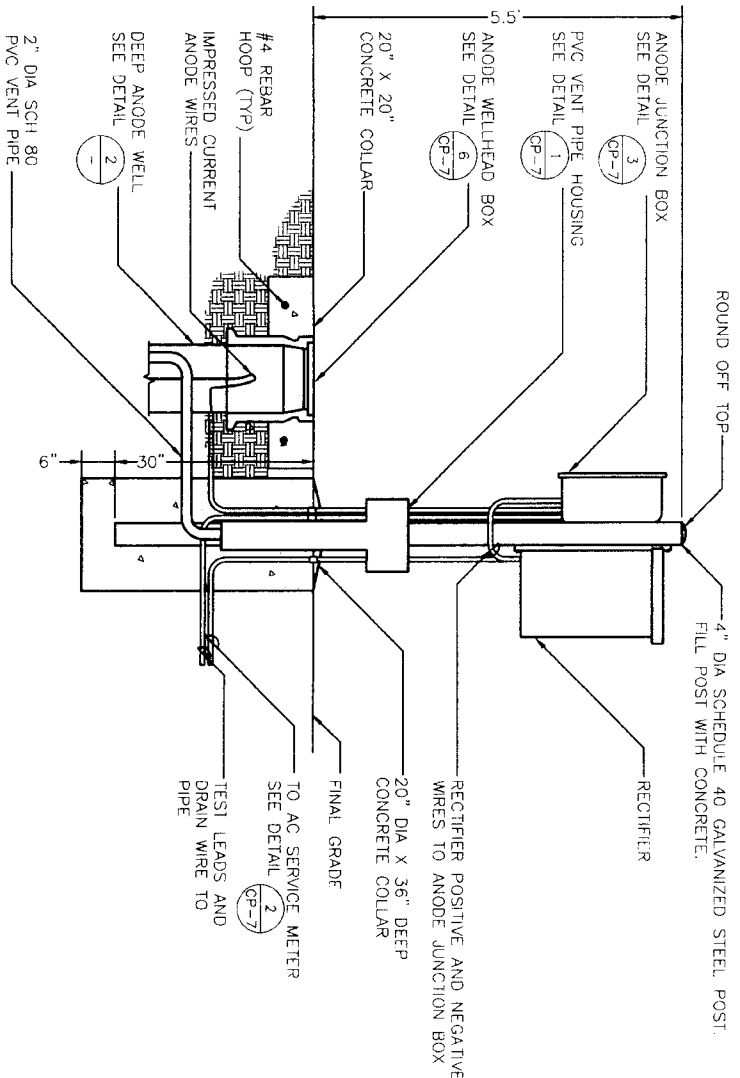
POST MOUNTED RECTIFIER INSTALLATION
 PLAN VIEW
 1
 NTS



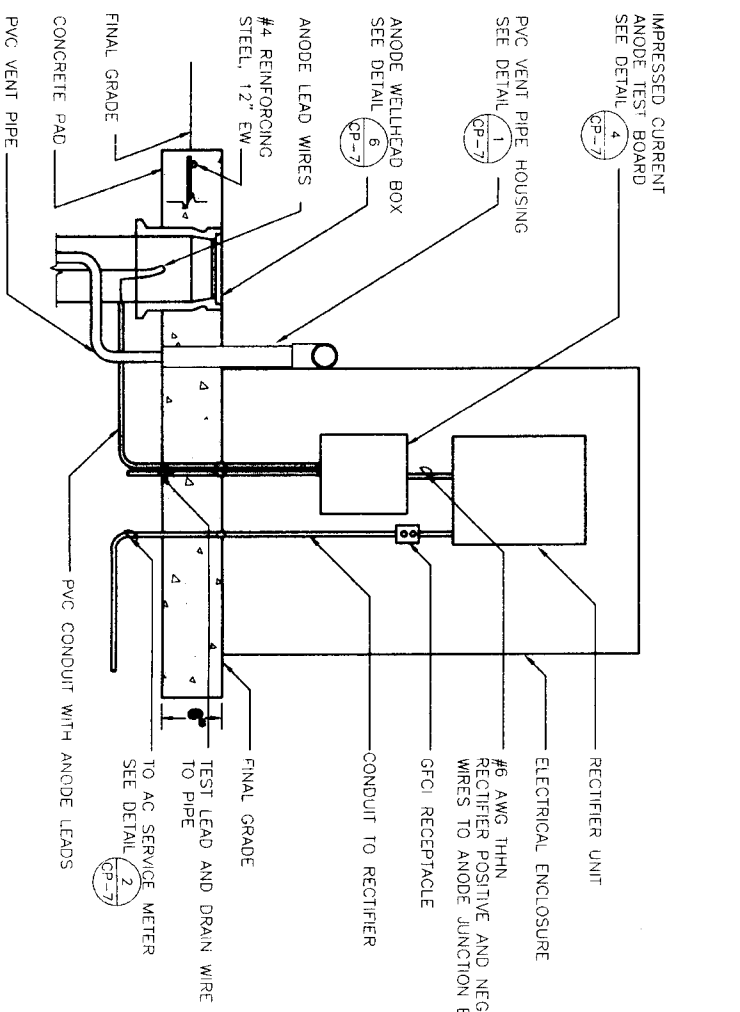
DEEP ANODE WELL
 2
 NTS



RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE
 PLAN VIEW
 3
 NTS



POST MOUNTED RECTIFIER INSTALLATION
 SECTION
 A
 NTS



RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE
 ELEVATION VIEW
 B
 NTS

V&A
 Project: 8-0777
 One Brewery Lane, 77060
 Houston, TX 77060
 Tel: (713) 866-9997 Fax: (713) 866-8888

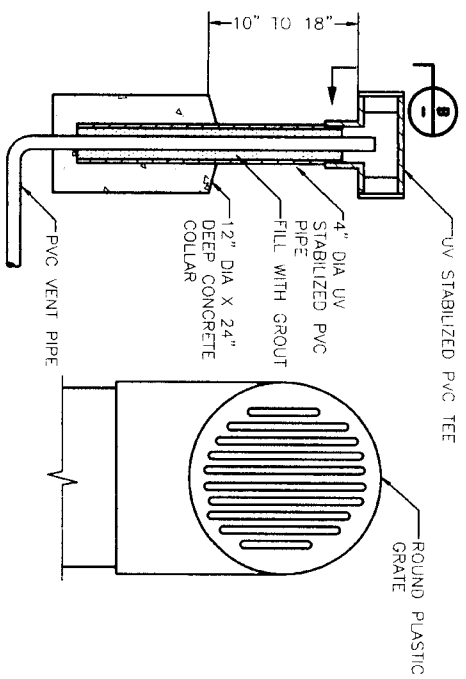
STATE OF TEXAS
 COUNTY OF HARRIS
 JAMES EARL VAUGHN
 1939-2008
 REGISTERED PROFESSIONAL ENGINEER
 No. 12528
 Electrical Engineering
 8/15/2011
 V&A Consulting Engineers
 8157 Bessie
 Houston, TX 77054
 SEGMENT 7A
 8/15/2011

CATHODIC PROTECTION
 RECTIFIER DETAILS
 1 OF 2

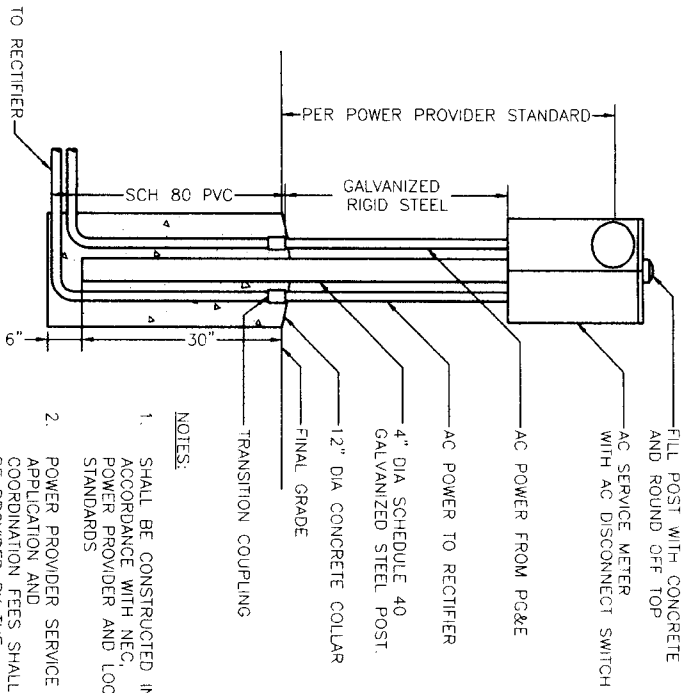


NOTE: CITY CONTRACTORS SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF HOUSTON.

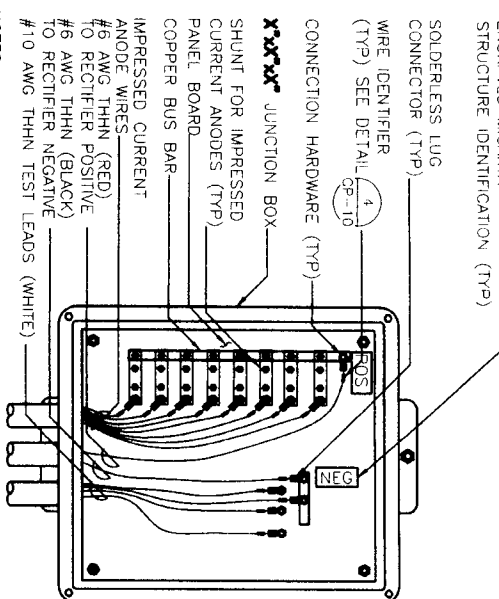
| | |
|-----------------|------------------------------|
| WATER | STORM WATER QUALITY |
| WIND | TRADING |
| STORM | TRADING |
| STREET & BRIDGE | |
| FILE NO.: | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE: | |
| HORIZ.: | |
| VERT.: | |



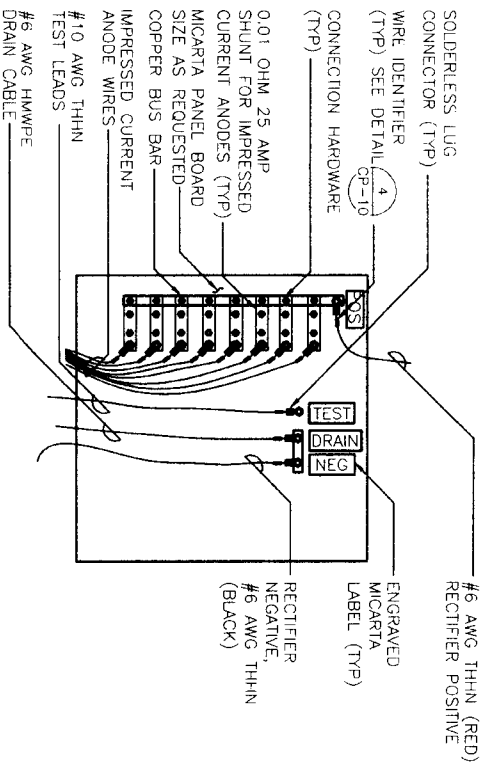
VENT PIPE HOUSING
 NTS 1



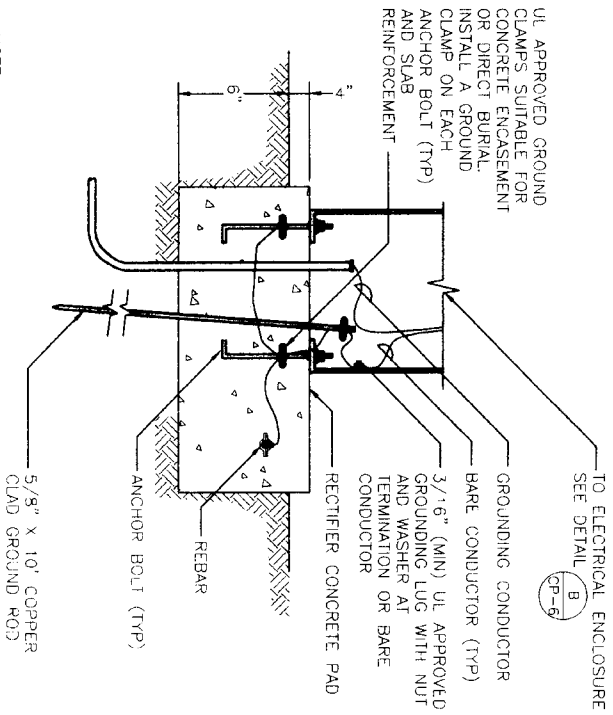
AC SERVICE METER
 NTS 2



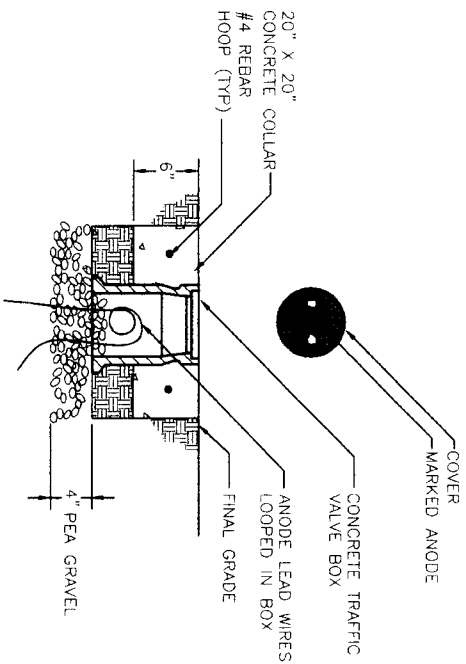
IMPRESSED CURRENT ANODE
 JUNCTION BOX
 NTS 3



IMPRESSED CURRENT ANODE
 TEST BOARD
 NTS 4



GROUND ROD
 NTS 5



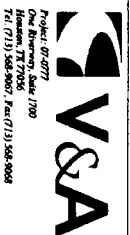
ANODE WELLHEAD BOX
 NTS 6

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

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

- 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.

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



Michael M. Williams, P.E.
 V&A Consulting Engineers
 F-9154 12/31/2011



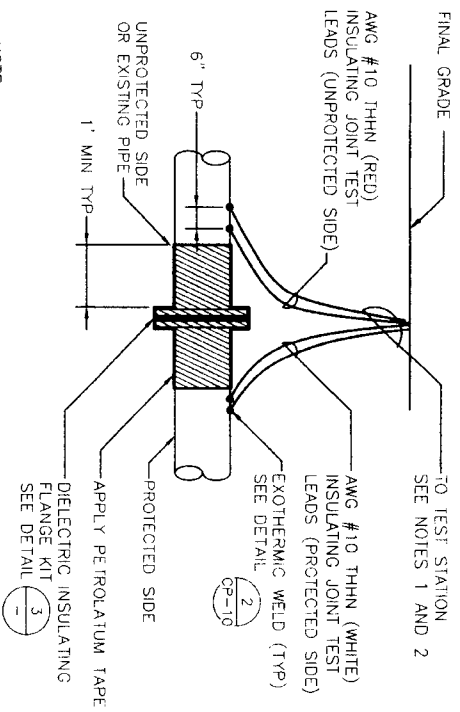
CATHODIC PROTECTION
 RECTIFIER DETAILS
 2 OF 2



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

| | |
|---------------|-----------------------------|
| WATERWAY | STORM WATER DRAINAGE |
| STONE | FACTORIES |
| SHEET & BLOCK | |
| FILE NO. | FOR OFF OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| H-ORT: | |
| VERT: | |

REF. NO. CP-7
 SHEET 76 OF 80
 DATE: OCTOBER 7, 2009

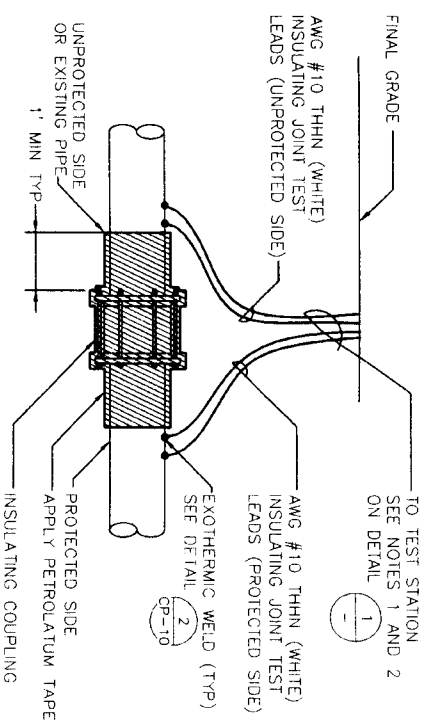


NOTE:
 DO NOT APPLY PETROLATUM TAPE IF FLANGE IS LOCATED ABOVE GRADE OR IN A VAULT

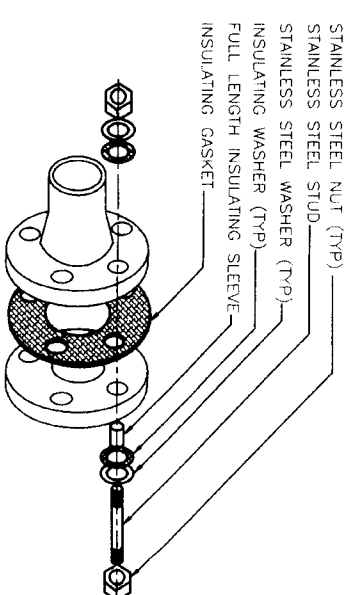
NOTES:

1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL CP-9
2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL CP-10

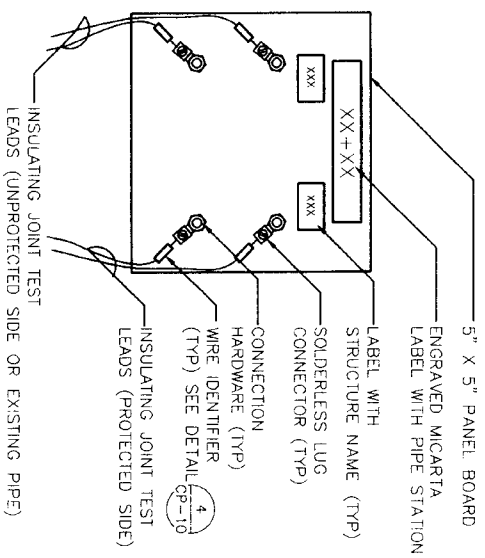
INSULATING JOINT FLANGE CONNECTION TEST STATION (IJS) 1



INSULATING JOINT TEST STATION-COUPLING CONNECTION (IJS-COUPLING) 2

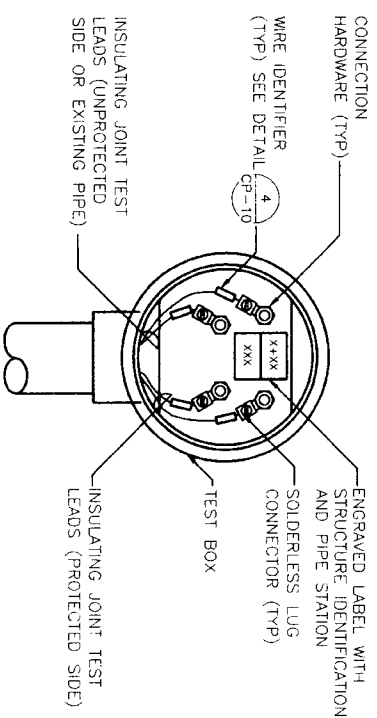


DIELECTRIC INSULATING FLANGE KIT 3



NOTE:
 TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL CP-10

IJS TEST BOARD 4



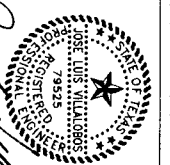
NOTE:
 TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL CP-9

POST MOUNTED IJS TEST BOX 5

DATE: OCTOBER 7, 2009

REF. NO. CP-8

SHEET 77 OF 80



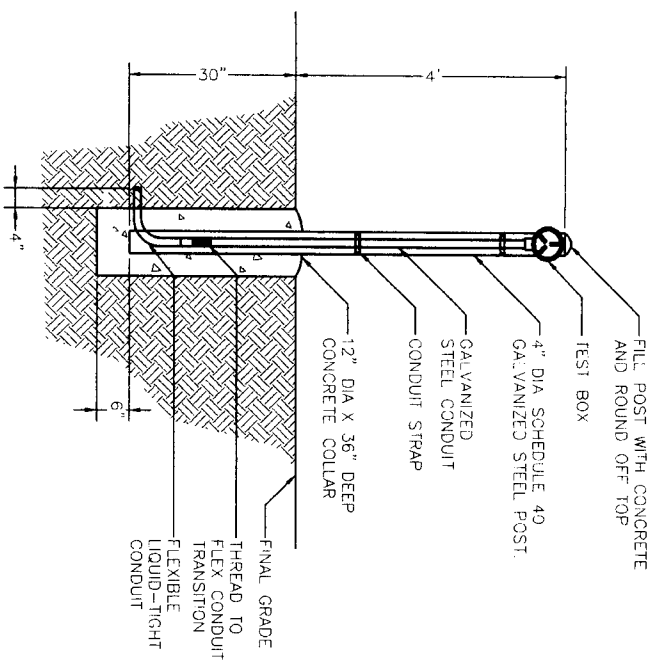
Checked: *[Signature]* V&A Consulting Engineers, Inc. F-9154 12/11/2009
 SEGMENT 7A

CATHODIC PROTECTION INSULATING JOINT DETAILS

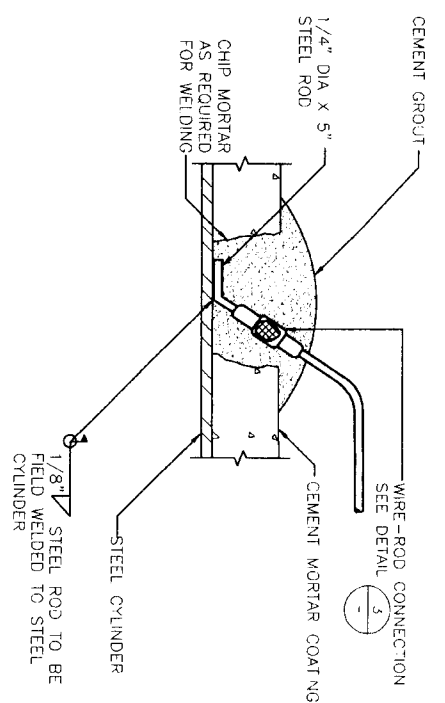


CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 TRAFFIC AND TRANSPORTATION

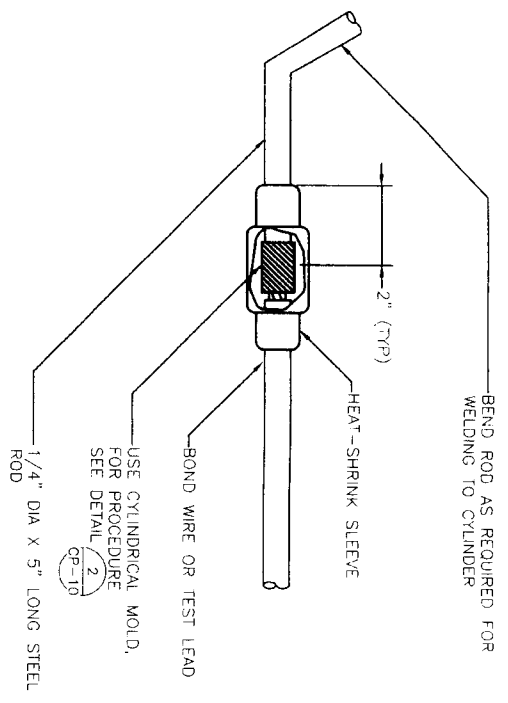
| | |
|---|------------------------------|
| NOTE: CITY ENGINEERS VALID FOR ONE YEAR ONLY AFTER DATE OF EXPIRATION | |
| WATER | STORM WATER QUALITY |
| STORM | FACILITIES |
| STREET & BRIDGE | |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ. VERT. | |



POST MOUNTED TEST STATION 1
NTS

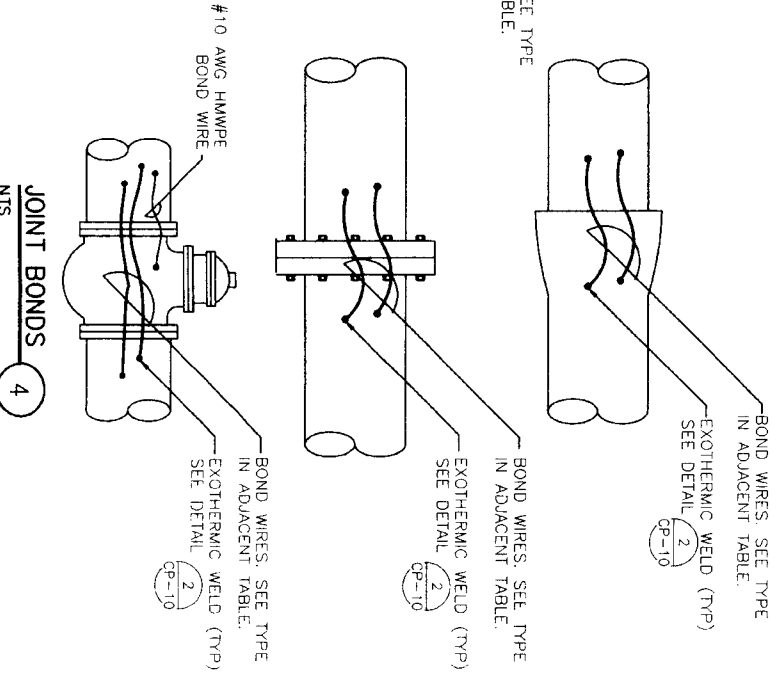
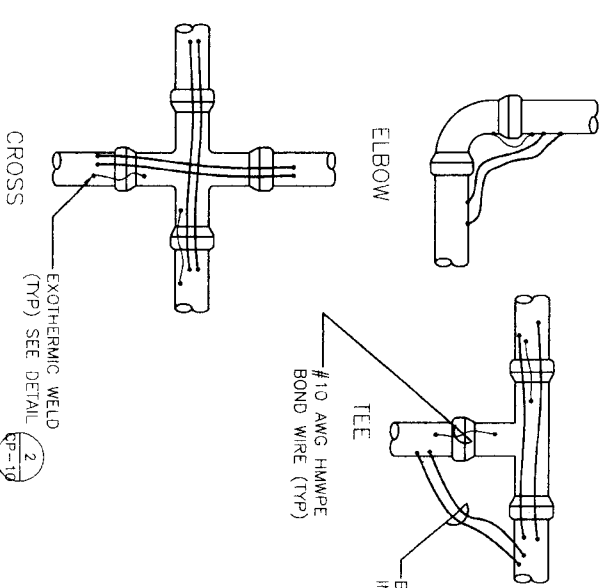


TEST LEAD CONNECTION MORTAR COATED STEEL PIPE AND AWWA C-303 2
NTS

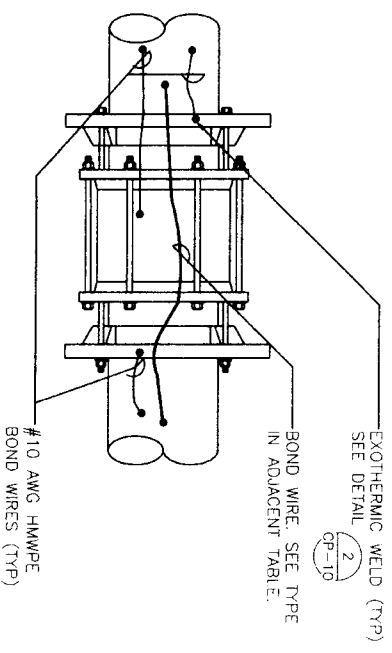


WIRE-ROD CONNECTION 3
NTS

NOTES:
1. REINFORCING WIRE NOT SHOWN FOR CLARITY.



JOINT BONDS 4
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 |

REF. NO.
CP-9

DATE: OCTOBER 7, 2009
 SHEET 78 OF 80

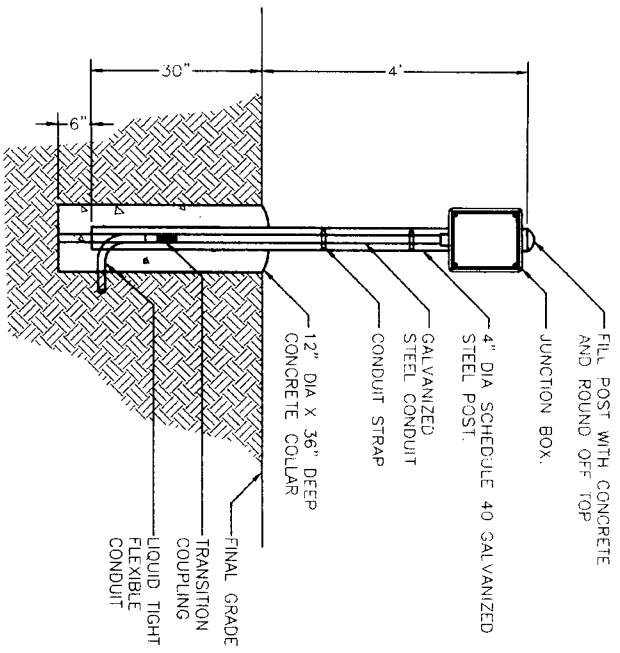
V&A
 Project 07-0777
 One Building, Suite 1700
 Houston, TX 77006
 Phone: (713) 968-9600 Fax: (713) 968-9002

Professional Engineer
 License No. 29855
 State of Texas
 Jose Luis Villalobos
 12/21/2011
 F-9154
 12/21/2011

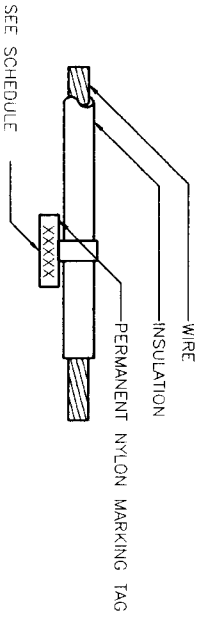
NORTH FORT BEND
 CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 WATER
 TREATMENT AND DISTRIBUTION
 WATER
 SEGMENT 7A
 CATHODIC PROTECTION
 JOINT BONDING

NOTE: CITY SEGMENTS VARY FOR THE YEAR END. AFTER DATE OF INSTALLATION

| | |
|-----------------|------------------------------|
| WATERWORKS | STORM WATER QUALITY |
| TYPICAL | 1400123 |
| STREET & BRIDGE | |
| FILE NO: | RDG CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ. DATE: | |
| VERT. DATE: | |



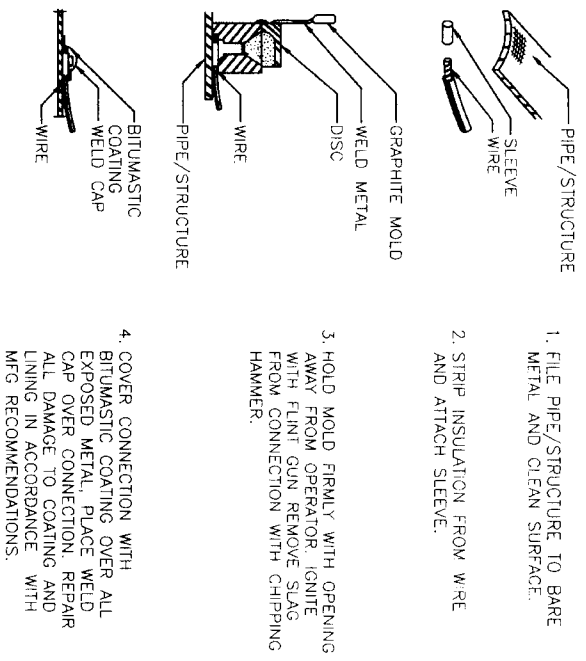
POST MOUNTED TEST STATION WITH JUNCTION BOX
 NTS 1



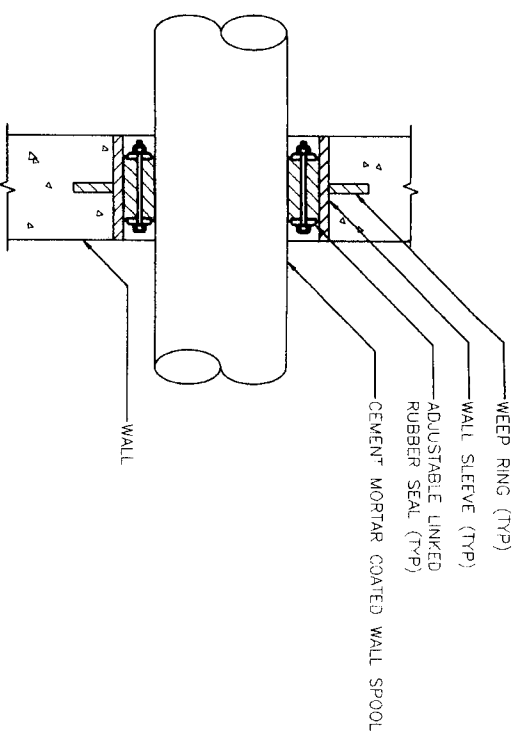
| STRUCTURE | LABEL |
|-------------------------|--------|
| XX" DIP WATER LINE | XX" DI |
| X" STEEL GAS LINE | X" G |
| XX" WATER | XX" W |
| GALVANIC ANODE | GA |
| REFERENCE ELECTRODE | RE |
| IMPRESSED CURRENT ANODE | ICA |

NOTE:
 "XX" INDICATES PIPE DIAMETER IN INCHES.

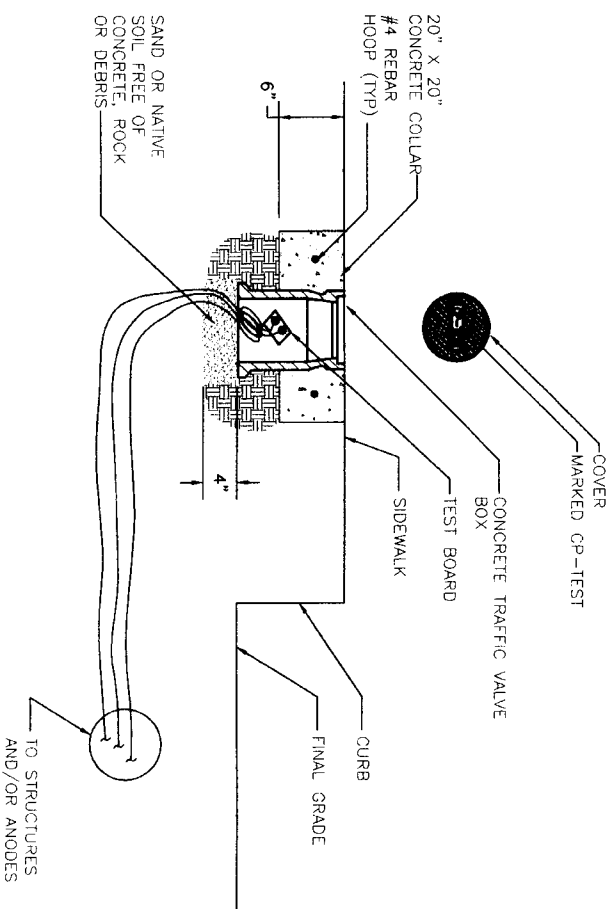
WIRE IDENTIFIER
 NTS 4



EXOTHERMIC WELD
 NTS 2



WALL PENETRATION
 NTS 3

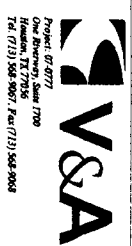


FLUSH-TO GRADE TEST STATION BOX
 NTS 5

DATE: OCTOBER 7, 2009

REF. NO.
 CP-10

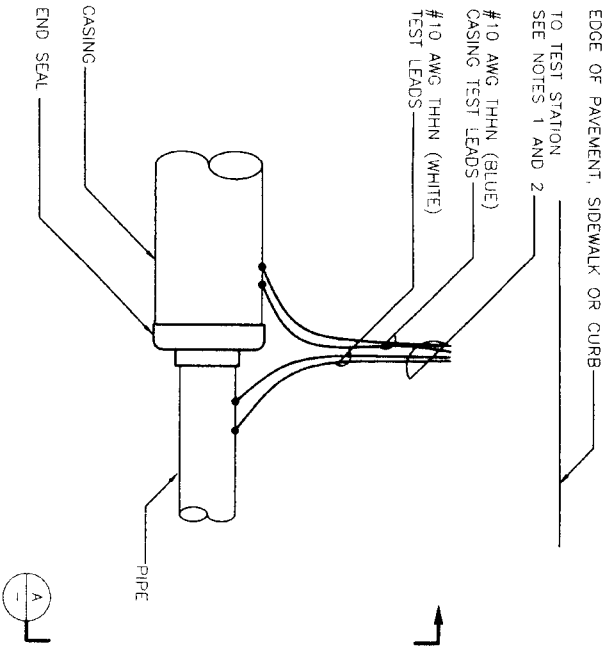
SHEET NO. 79 OF 80





CATHODIC PROTECTION MISCELLANEOUS DETAILS
 1 OF 2



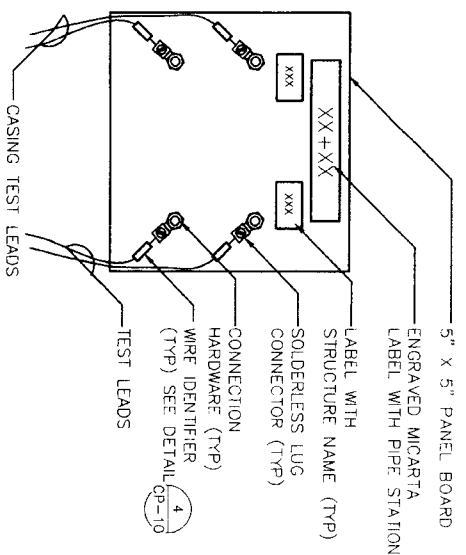
| | |
|--|------------------------------|
| NOTE: CITY STANDARDS VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURE | |
| CITY OF HOUSTON | |
| DEPARTMENT OF PUBLIC WORKS AND ENGINEERING | |
| TRAFFIC AND TRANSPORTATION | |
| WATERWAYS | STORM WATER QUALITY |
| STORM | FAULTS |
| STREET & BRIDGE | |
| FILE NO. | FOR CITY OF HOUSTON USE ONLY |
| DRAWING SCALE | |
| HORIZ : | |
| VERT : | |





NOTES:

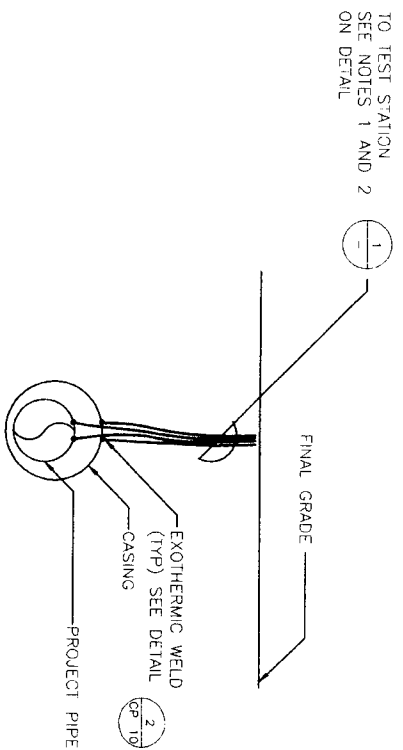
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 
2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 


CASING TEST STATION (CTS) PLAN 
NTS

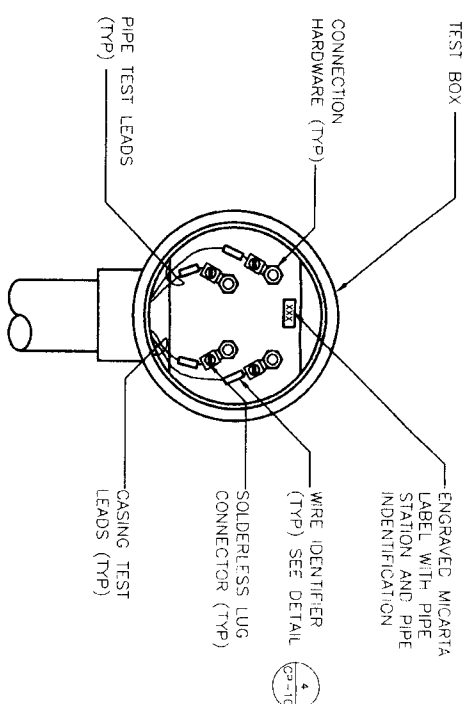


NOTE:
TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL 


CTS TEST BOARD 
NTS

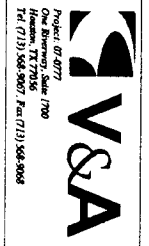


CASING TEST STATION (CTS) SECTION 
NTS



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

POST MOUNTED CTS TEST BOX 
NTS



José Villalobos
 V&A Consulting Engineers
 License No. 78525
 12/31/2011
 SEGMENT 7A

CATHODIC PROTECTION
 MISCELLANEOUS DETAILS
 2 OF 2



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

| | |
|--------------|---------------------|
| WATERWAY | STORM WATER QUALITY |
| STORM | WASTEWATER |
| SHEET & GRID | POUNDS |

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
 HORZ :
 VERT :

REF. NO. CP-11
 SHEET NO. 80 OF 80
 DATE: OCTOBER 7, 2009