11 E

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 08 day of MARCH, 2011, before the Fort Bend Commissioners Court came on to be heard and reviewed the accompanying notice of D. L. ELLIOTT ENTERPRISES, INC.

Job Location WEST AIRPORT BOULEVARD, CLOVER LODGE COURT, COBBLE SPRINGS COURT

Dated 02/24/11 BOND NO 58S201171 Permit No. 83912

to make use of certain Fort Bend County property subject to, "A Revised Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas, date the 3rd day of August, 1987, recorded in Volume _____ of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Article 1436a, Vernon's Texas Civil Statues. Upon Motion of Commissioner Meyers, seconded by Commissioner Patterson, duly put and carried, it is ORDERED, ADJUGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
   a. 48 hours in advance of construction start up, and
   b. When construction is completed and ready for final inspection

   Mail notices to: Permit Administrator
   Fort Bend County Engineering
   P.O. Box 1449
   Rosenberg, Texas 77471
   281-633-7500
3. This permit expires one (1) year from date of permit if construction has not commenced.

By _____
County Engineer

By N/A
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.
Recorded in Volume 3-8-11
Minutes of Commissioners Court.

Clerk of Commissioners Court
By _____
Deputy

(REVISED 5/30/08)

PERFORMANCE BOND COVERING ALL CABLE, CONDUIT AND/OR POLE LINE ACTIVITY IN, UNDER, ACROSS OR ALONG FORT BEND COUNTY ROADS AUTHORIZED

BOND NO 58S201171

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND §

THAT WE, D.L. Elliott Enterprises, Inc. whose address is 13405 SW Freeway* *Suite 210, Sugarland, Texas, hereinafter called the Principal, and Liberty Mutual Insurance Company, a Corporation existing under and by virtue of the laws of the State of MA and authorized to do an indemnifying business in the State of Texas, and whose principal office is located at 175 Berkeley St., Boston MA 02116, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought within said State is ** **Aaron Hawley and whose address is 7600 W. Tidwell, Suite 708, Houston, TX 77040, hereinafter called the Surety, and held and firmly bound unto, Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, in the full sum of Ninety Four Thousand Five Hundred Thirty-Seven Dollars ($94,537.50 & 50/100) current, lawful money of the United States of America, to be paid to said Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, to which payment well and truly to be made and done, we, the undersigned, bind ourselves and each of us, our heirs, executors, administrators, successors, assigns, and legal representatives, jointly and severally, by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, the above bounden principal contemplates laying, constructing, maintaining and/or repairing one or more cables, conduits, and/or pole lines in, under, across and/or along roads, streets and highways in the County of Fort Bend, and the State of Texas, under the jurisdiction of the Commissioners' Court of Fort Bend County, Texas, pursuant to the Commissioners' Court order adopted on the 1st day of December, A.D. 1980, recorded in Volume 13, of the Commissioners' Court Minutes of Fort Bend County, Texas, regulating same, which Commissioners' Court order is hereby referred to and made a part hereof for all purposes as though fully set out herein;

AND WHEREAS, the principal desires to provide Fort Bend County with a performance bond covering all such cable, conduit and/or pole line activity;

NOW, THEREFORE, if the above bounden principal shall faithfully perform all its cable, conduit and/or pole line activity (including, but not limited to the laying, construction, maintenance and/or repair of cables, conduits and/or pole lines) in, under, across and/or along roads, streets and highways in the County of Fort Bend and State of Texas, under the jurisdiction of the Commissioners Court of Fort Bend County, Texas, pursuant to and in accordance with minimum requirements and conditions of the above mentioned Commissioners' Court order set forth and specified to be by said principal done and performed, at the time and in the manner therein specified, and shall pay over and make good and reimburse Fort Bend County, all loss and damages which Fort Bend County may sustain by reason of any failure or default on the part of said principal, then this obligation shall be null and void, otherwise to remain in full force and effect.

This bond is payable at the County Courthouse in the County of Fort Bend and State of Texas.

It is understood that at any time Fort Bend County deems itself insecure under this bond, it may require further and/or additional bonds of the principal.

EXECUTED this 15th day of February, 20 11.

D.L. Elliott Enterprises, Inc.
PRINCIPAL

BY

Liberty Mutual Insurance Company
SURETY

BY Dennis M. Descant, Jr.
Attorney-in-Fact

2187714

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

LIBERTY MUTUAL INSURANCE COMPANY
BOSTON, MASSACHUSETTS
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Liberty Mutual Insurance Company (the "Company"), a Massachusetts stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint

DENNIS M. DESCANT, JR., JEFFREY LEE BRADY, CHERYL A. SANDERS, ALL OF THE CITY OF HOUSTON, STATE OF TEXAS

, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding **TWENTY FIVE MILLION AND 00/100**********_____ DOLLARS ($ **25,000,000.00*****_____) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article XIII, Section 5 of the By-Laws, Garnet W. Elliott, Assistant Secretary of Liberty Mutual Insurance Company, is hereby authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Liberty Mutual Insurance Company has been affixed thereto in Plymouth Meeting, Pennsylvania this 6th day of August, 2007.

LIBERTY MUTUAL INSURANCE COMPANY

By Garnet W. Elliott
Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 6th day of August, 2007, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Liberty Mutual Insurance Company; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Liberty Mutual Insurance Company thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

TERESA PASTELLA COMMONWEALTH OF PENNSYLVANIA NOTARY PUBLIC

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires Mar. 28, 2009
Member, Pennsylvania Association of Notaries

By Teresa Pastella
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article XIII, Section 5 of the By-laws of Liberty Mutual Insurance Company.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Liberty Mutual Insurance Company at a meeting duly called and held on the 12th day of March, 1980.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 15th day of February, 2011.

By David M. Carey
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual.

Important Notice

TO OBTAIN INFORMATION ABOUT THIS BOND OR TO MAKE A COMPLAINT:

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

800-252-3439

You may write the Texas Department of Insurance at:

P. O. Box 149104
Austin, TX 78714-9104

Your notice of claim against the attached bond may be given to the Surety Company that issued the bond by sending it to the following address:

Liberty Mutual Surety
Interchange Corporate Center
450 Plymouth Road, Suite 400
Plymouth Meeting, PA 19462-8284

You may contact the claim office by telephone at:

610-832-8240

Premium or Claim Disputes

If you have a dispute concerning a premium, you should contact the agent first. If you have a dispute concerning a claim, you should contact the company first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

This notice is for information purposes only and does not become a part of or a condition of the attached document. It is given to comply with Section 2253.048, Government Code, and Section 53.202, Property Code, Effective September 1, 2001

COUNTY OF FORT BEND

Engineering Department

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

Johnny Ortega
Permit Administrator

1124 Blume Road
Phone: (281) 341-7500

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

PERMIT NO. 083912

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

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

____ (2) Bond: ____
District Attorney, approval when applicable.
- ____ Perpetual bond currently posted.
  No. ____
  Amount ____
- X Performance bond submitted.
  No. 58S201171
  Amount $94,537.50
- ____ Cashier's Check.
  No. ____
  Amount ____

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

____ Precinct Engineer Acknowledgment ____ Date

____ Precinct Commissioner Acknowledgment ____ Date

____ (4) ____
Drainage District Approval when applicable

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

Johnny Ortega CFM / Permit Administrator — 02/24/2011 Date

(REVISED 5/30/08)

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

APPLICANT'S JOB NO. 222
PERMIT No. 83912 PCT. No. 4
BOND No. 585201171

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

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

Road or Ditch Name	Distance & Direction From Nearest Intersection	Length of Crossing	Type of Construction Bored	Jacked	Driven	Cased
West Airport Blvd	0 LF S of Cobble Springs	200 LF	✓			

Along Roads and/or Drainage Ditches

Road or Ditch Name	Distance & Direction From Nearest Intersection	To	Distance
Clover lodge Ct.	50LF South of West Airport Blvd	West Airport Blvd	250 LF
Cobble Springs	0 LF North of West Airport Blvd	West Airport BLVD	450 LF

General Description

Proposed 12" Waterline For NFBWA

The Location and description of the proposed installation and appurtenances is more fully shown on the attached detail drawings. The laying, construction, maintenance and/or repair of the proposed installation shall be subject to "A Revised Order Regulating the Laying, Construction, Maintenance and/or Repair of Cables, Conduits, and/or Pole Lines, In, Under, Across, or Along Roads, Streets, Highways and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by Commissioners Court of Fort Bend County, Texas, dated the 3rd. day of August, 1987, recorded in Volume 639 of the Minutes of the Commissioners Court of Fort Bend County, Texas.

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

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

Violation of requirements shall constitute grounds for job shut down.

COMPANY NAME: D.L. Elliott Enterprises, Inc.
AGENT and/or OWNER

(Signature)

NAME & TITLE Duayne Schroeder V.P.
(Please Print)

DATE 2/22/2011

ADDRESS 13405 Southwest Freeway, Suite 210
(Street/P.O. Box)

Sugar Land TX 77478
City State Zip

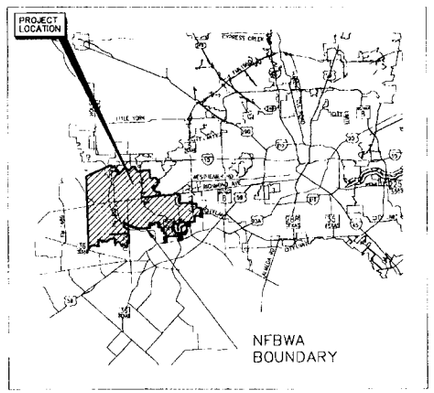
TELEPHONE NO: 281-838-4220
(accessible 24 hrs/day, 7 days/week)

Does project comply with Fort Bend County Outdoor Lighting Ordinance?

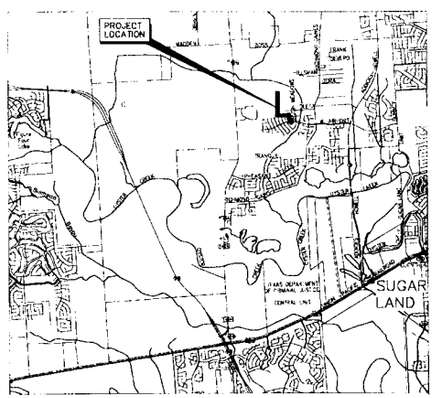
Yes (/)

No ( )

NORTH FORT BEND WATER AUTHORITY
FORT BEND COUNTY M.U.D. No. 41 CONNECTION
PROPOSED 12" WATERLINE



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE
KEY MAP NO 567 C
FEMA MAP No. 48157C0120J
GIMS TILES 4652 B
ZIP CODE 77478

NORTH FORT BEND WATER AUTHORITY

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston)
(New Statewide Number Outside Houston)
1-800-545-6005

NOTES:

1. Contractor shall notify the City of Houston, Department of Public Works and Engineering (713-837-7000) 48 hours before starting work on this project.
2. Contractor shall notify the City of Houston, Department of Public Works and Engineering, Engineering Construction Division (Telephone No. 713-863-1450) 48 hours before starting work on this project.
3. No proposed storm sewer or drainage work is shown, nor any proposed change in drainage path or pattern is in this project proposed work scope.
4. No known proposed wastewater line work is included in this project's work scope.

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

FORT BEND COUNTY

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

5/17/10
DATE

FIRM
FLOOD INSURANCE RATE MAP
PANEL (120 OF 550)
MAP# 48157C0120J
BFE ELEVATION 81.0

ISSUE DATE: JANUARY 2010

LVS NO: 09025842
LCG NO: 09-0226

F.B.C. M.U.D. No. 41 CONNECTION - PROPOSED 12" WATERLINE

SEE SHEET TWO FOR INDEX

JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr., Suite 550 Houston, Texas 77081 (713) 777-5337

STATE OF TEXAS
KENNETH J. MARTINEZ
87608
LICENSED
PROFESSIONAL ENGINEER

1/13/10

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER 1/22/10
WASTEWATER 1-21-10
STORM 1-21-10
STREET & BRIDGE
TRAFFIC & TRANSPORTATION
STORM WATER QUALITY
FACILITIES

CITY ENGINEER
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

FOR CITY OF HOUSTON USE ONLY
CITY DWG NO.:
RECEIVED
46954
CITY DRAWING NUMBER

SHEET No: 01 OF 43

JAS MOD-FEB: Jan 13, 2010 8:59am JY US K SA
DWG LOCATION: P:\PROJ\CITS\03462 North Fort Bend Water Authority\003 NFBWA FBMUD 41 Connection\Civil\Const Dwgs\
DWG NAME: CVR.dwg

SHEET NO.	DWG. NAME	REVISION DATE
01	COVER SHEET	
02	SHEET INDEX	
03	CONSTRUCTION NOTES	
04	SURVEY CONTROL SHEET 1 OF 2	
05	SURVEY CONTROL SHEET 2 OF 2	
06	OVERALL SITE LAYOUT	
07	BASELINE A STA 0+00 TO 5+00	
08	BASELINE A STA 5+00 TO 8+00	
09	BASELINE B STA 0+00 TO 5+00	
10	BASELINE B STA 5+00 TO 9+00	
11	BASELINE C STA 0+00 TO 5+00	
12	BASELINE C STA 5+00 TO 10+00	
13	BASELINE D STA 0+00 TO 2+50	
14	TRAFFIC CONTROL PLAN	
15	STORM WATER POLLUTION PREVENTION PLAN	
16	TREE PROTECTION PLAN SHEET 1 OF 2	
17	TREE PROTECTION PLAN SHEET 2 OF 2	
18	METER STATION LAYOUT	
19	CONTROL VALVE STATION LAYOUT	
20	METERING & CONTROL VALVE STATION STRUCTURAL & MECHANICAL DETAIL	
21 E1	METER/CONTROL VALVE STATION INSTALLATION & ROUTING	
22 E2	ELECTRICAL CONDUIT SCHEDULE	
23 E3	CONTROL DIAGRAM SHEET 1	
24 E4	CONTROL DIAGRAM SHEET 2	
25 E5	CONTROL DIAGRAM SHEET 3	
26 E6	CONTROL DIAGRAM SHEET 4	
27 E7	CONTROL DIAGRAM SHEET 5	
28 E8	CONTROL DIAGRAM SHEET 6	
29 E9	CONTROL DIAGRAM SHEET 7	
30 E10	CONTROL DIAGRAM SHEET 8	
31 E11	CONTROL DIAGRAM SHEET 9	
32 E12	CONTROL DIAGRAM SHEET 10	
33 E13	CONTROL DIAGRAM SHEET 11	
34 E14	ELECTRICAL CONTROL PANEL LAYOUT & SPECIAL DEVICE SCHEDULE	
35 E15	ELECTRICAL CONTROL PANEL LAYOUT	
36 E16	ELECTRICAL DETAILS SHEET 1	
37 E17	ELECTRICAL DETAILS SHEET 2	
38	PROJECT SIGN AND PIPELINE MARKER DETAILS	
39	STANDARD WATERLINE DETAILS	
40	TRENCHLESS CONSTRUCTION DETAILS	
41	EXCAVATION, BEDDING & BACKFILL, & PAVEMENT REPAIR DETAILS	
42	SIDEWALK REPAIR DETAIL	
43	STORM WATER POLLUTION PREVENTION DETAILS	

PRIVATE UTILITY LINES SHOWN

Date: 1-18-10

Centerpoint Energy/ Electric Facilities. (approved only for crossing underground pipelines, unless otherwise noted.)
Valid At Time Of Review Only

SBC UTILITY LINES SHOWN

Date: 1-20-10

SBC Approved for underground conduit facilities only.
Signature valid for one year.

Date: 1-18-10

Centerpoint Energy/ Gas Facilities
(Gas services lines are not shown.)

Date: 1-19-10

Comcast

Date: 1-14-10

Windstream

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

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

BENCHMARK: CONTROL POINT NO. 134 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134" LOCATED IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND CORBLE SPRINGS COURT, 2.3 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN.
ELEV. = 78.93' (NAVD-88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEC
87808
LICENSED
PROFESSIONAL ENGINEER

1/13/10

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6330 Gulfton Dr., Suite 160 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

SHEET INDEX

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 4/23/10
WASTEWATER: 12-10
STORM: 1-21-10
FACILITIES:

STREET & DRAINAGE:
TRAFFIC:
STORM WATER QUALITY:

F.F. NO:

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
HORZ.: NOT TO SCALE
VERT.:

ACCEPTED BY CITY
46954
CITY OF HOUSTON

SHEET NO. 02 OF 43

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

GENERAL CONSTRUCTION NOTES

1. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS, UNLESS SPECIFICALLY ESTABLISHED IN THE BID SECTION OF THE CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WORK THIS WORK IS A COMPONENT OR INCIDENTAL.

2. THE APPROXIMATE LOCATION OF EXISTING UTILITIES ARE GIVEN FOR REFERENCE ONLY. BEFORE COMMENCING THE WORK ON THIS CONTRACT, THE CONTRACTOR SHALL VERIFY BY FIELD INVESTIGATION THE ACTUAL LOCATIONS OF ALL UTILITY FACILITIES WITHIN AND ADJACENT TO THE LIMITS OF THE WORK THAT MAY BE AFFECTED BY THE WORK. CONDUITS WHICH RESULT DUE TO NEGLIGENCE BY THE CONTRACTOR TO LOCATE, HORIZONTALLY AND VERTICALLY, EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF REMEDIAL WORK, REMOVAL OF PORTIONS OF THE WORK OR EXTENSIVE DESIGN CHANGES OBTAINED BY THE FAILURE OF THE CONTRACTOR TO VERIFY THE LOCATION OF EXISTING UTILITIES AS DESCRIBED ABOVE SHALL BE BORN BY THE CONTRACTOR.

3. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.

4. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM SEWERS, DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, WITH NO COST TO THE CITY OF HOUSTON OR THE AUTHORITY.

5. CONTRACTOR SHALL REMOVE EXISTING PLUGS AND CONNECT PROPOSED UTILITY LINES AS INDICATED ON PLANS.

6. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES AND SHALL NOTIFY THE FOLLOWING AGENCIES 48 HOURS PRIOR TO EXCAVATING NEAR EXISTING FACILITIES:
   A) TEXAS ONE CALL SYSTEM AT 1-800-245-4545
   B) LONE STAR NOTIFICATION CENTER AT 713-223-4567
   C) TEXAS EXCAVATION SAFETY SYSTEM INC. AT 1-800-344-8377
   D) DISTRICT OPERATOR – SEE WATER LINE CONSTRUCTION NOTE #1

7. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL REGULATIONS OF UTILITY COMPANIES CONCERNING SAFETY AND HEALTH PRACTICES.

8. RELOCATION OR REPLACEMENT OF EXISTING UTILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NORTH FORT BEND WATER AUTHORITY STANDARD SPECIFICATIONS AND STANDARD DETAILS, UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS.

9. INCLUDE COST OF ALL BEDDING AND BACKFILL OF TYPE REQUIRED IN PRICE BID PER LINEAR FOOT OF PIPE.

10. ALL TRENCH EXCAVATION, BEDDING AND BACKFILL SHALL BE IN CONFORMANCE WITH NORTH FORT BEND WATER AUTHORITY STANDARD SPECIFICATION 02317-EXCAVATION AND BACKFILL FOR UTILITIES, No. 02320-UTILITY BACKFILL MATERIAL AND DETAIL Nos. 02317-02 THRU 02317-07 AS APPLICABLE.

11. ALL SEWER TRENCHES UNDER OR WITHIN ONE FOOT OF PROPOSED AND/OR FUTURE PAVEMENT OR CURB SHALL BE BACKFILLED WITH 1-1/2 SACKS OF CEMENT PER CUBIC YARD CEMENT STABILIZED SAND TO A POINT ONE FOOT BELOW PAVEMENT SUBGRADE. THE REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL.

12. BASIC CONSTRUCTION PRODUCTS AS DESIGNATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON PLANS, SHALL BE FURNISHED BY A MANUFACTURER OR SUPPLIER. THOSE PRODUCTS SHALL BE IN FULL COMPLIANCE WITH APPLICABLE TECHNICAL SPECIFICATION AND/OR STANDARD CONSTRUCTION DETAILS.

13. ALL MANHOLES IN UNPAVED AREAS SHALL BE ENCAPSULATED WITH CEMENT STABILIZED SAND A MINIMUM OF 1-FOOT BELOW BASE AND A MINIMUM OF 1 FOOT AROUND WALL UP TO 1-FOOT ABOVE THE HIGHEST ADJOINING TYPE STRUCTURE. THE REMAINING BACKFILL SHALL BE MADE WITH SELECT FILL MATERIAL PLACED IN UNIFORM 8 INCH MAXIMUM LOOSE LIFTS COMPACTED TO AT LEAST 90 PERCENT OF MAXIMUM STANDARD MOISTURE CONTENT. ALL MANHOLES IN PAVED AREAS SHALL BE ENCAPSULATED WITH CEMENT STABILIZED SAND A MINIMUM OF 1-FOOT BELOW BASE AND A MINIMUM OF 1-FOOT AROUND WALL AND UP TO WITHIN 1-FOOT OF PAVEMENT SUBGRADE. INCLUDE PRICE OF ALL BEDDING AND BACKFILL OF TYPE REQUIRED IN PRICE OF MANHOLE.

14. WHEN TRENCH CONDITION WARRANTS THE USE OF DEWATERING SYSTEMS, THEY USE SHALL BE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE PROGRAM MANAGER.

15. THE NORTH FORT BEND WATER AUTHORITY WILL FURNISH INITIAL LABORATORY TESTS. SUBSEQUENT TESTING DUE TO FAILED TESTS SHALL BE AT CONTRACTOR'S EXPENSE. A COPY OF ALL TEST RESULTS SHALL BE SUBMITTED TO THE PROGRAM MANAGER.

16. CONTRACTOR SHALL REMOVE ALL MUD, DIRT AND DEBRIS DEPOSITED OR DROPPED ON EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY DAILY. MATERIAL THAT IS HAZARDOUS TO TRAFFIC SHALL BE REMOVED IMMEDIATELY.

17. ALL TRAFFIC CONTROL AND WARNING SIGNS SHALL BE IN ACCORDANCE WITH TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST REVISION).

18. THESE PLANS PREPARED BY JONES & CARTER, INC. DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR HIS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEM(S).

19. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA. NO TREES SHALL BE REMOVED WITHOUT PERMISSION OF THE NORTH FORT BEND WATER AUTHORITY.

20. CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL OBTAIN ALL CONSTRUCTION PERMITS PRIOR TO STARTING CONSTRUCTION.

21. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY FORT BEND COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN COUNTY ROAD RIGHTS-OF-WAY, IF APPLICABLE.

22. FORT BEND COUNTY ENGINEERING DEPARTMENT SHALL BE NOTIFIED BY TELEPHONE (281) 342-3039 BY THE CONTRACTOR 48 HOURS IN ADVANCE OF STARTING CONSTRUCTION, FOLLOWED BY A LETTER OF CONFIRMATION. THE CONTRACTOR SHALL ALSO NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT BY TELEPHONE 24 HOURS IN ADVANCE OF SUBGRADE PREPARATION AND CONCRETE POURS. A COPY OF THE WRITTEN NOTIFICATION SHALL BE SENT TO THE AUTHORITY.

23. SURPLUS EXCAVATED MATERIAL FROM CONSTRUCTION OF WATER LINES AND SEWERS SHALL BECOME PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF LEGALLY AND OFF SITE BY THE CONTRACTOR.

24. CONTRACTOR RESPONSIBLE FOR HIRING CONTRACTORS NOT AND NOT WEEKLY INSPECTIONS, INSPECTIONS AFTER 0.5 INCHES OF RAINFALL, AND NOTIFICATION TO ENGINEER OR OWNER OF ANY INADEQUACIES OR FAILURES IN THE STORM WATER POLLUTION PREVENTION PLAN.

WATER LINE CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONTACT THE DISTRICT OPERATOR PRIOR TO MAKING ANY CONNECTION TO THE EXISTING WATER LINES OR ANYTIME A VALVE ON AN EXISTING WATER LINE IS TO BE OPENED OR CLOSED.

   DISTRICT NAME: FORT BEND COUNTY M.U.D. No. 41
   OPERATOR COMPANY: SOUTHWEST WATER COMPANY
   OPERATOR CONTACT: LARRY KELER
   CONTACT PHONE # (832) 384-0157

2. CONTRACTOR SHALL ALLOW A MINIMUM OF 2-FOOT VERTICAL AND 4-FOOT HORIZONTAL CLEARANCE BETWEEN PROPOSED WATER LINES AND OTHER UTILITIES.

3. WHEN A WATER LINE IS PLACED NEAR A SANITARY SEWER MANHOLE, IT SHALL HAVE A MINIMUM OF 9 FEET WALL TO WALL SEPARATION. WHERE A WATER LINE PARALLELS A SANITARY SEWER, 9 FEET OF SEPARATION WILL BE MAINTAINED IN ALL DIRECTIONS. IF THE 9-FOOT SEPARATION CANNOT BE ACHIEVED, BOTH THE SEWER PIPE AND JOINTS SHALL HAVE PRESSURE RATING OF 150 PSI, AND MANHOLES SHALL BE WATER TIGHT. VERTICAL SEPARATION SHALL BE A MINIMUM OF 2 FEET BETWEEN OUTSIDE DIAMETERS AND THE HORIZONTAL SEPARATION SHALL BE MINIMUM OF 4 FEET BETWEEN OUTSIDE DIAMETERS. THE SEWER SHALL BE LOCATED BELOW THE WATER LINE.

4. SEPARATION DISTANCES FOR INSTALLATION OF POTABLE WATER DISTRIBUTION LINES AND WASTEWATER COLLECTION LINES, WASTEWATER FORCE MAINS AND OTHER CONVEYANCES/APPURTENANCES IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION MUST CONFORM TO CURRENT COMMISSION (TCEQ) RULES.

   WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. WHEN ENCASED, ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN A MINIMUM FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASED PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.00% DEFLECTION. THE ENCASED PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE A LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATER LINE SHALL BE PROVIDED. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. BOTH THE WATERLINE AND WASTEWATER MAIN OR LATERAL MUST PASS A PRESSURE AND VACUUM TEST AS SPECIFIED IN AWWA C600 STANDARDS.

   WHERE A NEW POTABLE WATER LINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATER LINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE LOCATED AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE PIPE ARCHED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

5. ALL WATER LINES WITHIN THE DEDICATED EASEMENTS SHALL HAVE A MINIMUM 6-FOOT COVER FROM THE NATURAL GROUND. ALL WATER LINES WITHIN THE RIGHT-OF-WAY (ROW) WITH IMPROVED ROADWAY SHALL HAVE A MINIMUM 8-FOOT COVER FROM THE EXISTING OR PROPOSED TOP OF CURB (TOC). ALL WATER LINES WITHIN THE ROW WITH UNIMPROVED ROADWAY SHALL HAVE A MINIMUM 8-FOOT COVER FROM THE NATURAL GROUND.

6. CONSTRUCT WATER LINES WITH ONE JOINT OF PIPE BEYOND VALVES AND PLUG FOR FUTURE LINES, UNLESS SHOWN ON PLANS OTHERWISE.

7. VALVES SHALL BE SECURED WITH OPERATING NUT EXTENSIONS TO WITHIN FOUR FEET OF NATURAL GROUND. ALL VALVES SHALL OPEN COUNTER CLOCKWISE.

8. BACKFILL OF EXISTING STORM SEWER. WHEN CROSSING AN EXISTING STORM SEWER USING THE OPEN CUT METHOD, THE WATER LINE TRENCH ZONE SHALL BE BACKFILLED FOR A TO 5 FEET EITHER SIDE OF THE STORM SEWER WITH CEMENT STABILIZED SAND TO THE SPRINGLINE OF THE STORM SEWER.

9. ALL WATER LINES 20 INCHES AND SMALLER SHALL BE PVC PIPE OR DUCTILE IRON PIPE.

10. MECHANICAL RESTRAINED JOINTS TO BE USED IN LIEU OF WELDED RESTRAINED JOINTS IF DUCTILE IRON PIPE IS USED.

11. TRENCHLESS CONSTRUCTION IS DEFINED AS ANY APPROPRIATE NON-OPEN CUT METHODS, IE DIRECTIONAL DRILLING IS THE CONTRACTORS METHOD OF CHOICE, RESTRAINED JOINT PIPE (DARTA-1084, C900RJ) IS TO BE USED.

CONTRACTOR WORK ZONE NOTES

1. CONTRACTOR WILL BE REQUIRED TO MAINTAIN TWO LANES OPEN WHEN WORKING IN BOULEVARD SECTIONS. RESERVING SECTIONS ARE MAINTAIN ONE LANE OPEN WITH ADEQUATE SIGNAGE AND/OR FLAGMEN TO FACILITATE USE OF THE LANE.

2. DRIVEWAY ACCESS WILL BE MAINTAINED OPEN AFTER WORKING HOURS. A MINIMUM OF ONE DRIVEWAY ACCESS WILL BE MAINTAINED OPEN AT ALL TIMES TO COMMERCIAL, APARTMENTS, AND/OR NON-RESIDENTIAL DEVELOPMENTS.

3. THE LENGTH OF THE WORK ZONE MUST BE MINIMIZED WITHIN THE STREET ROW OR EASEMENTS. THERE SHALL NOT BE MORE THAN 200-FEET OF TRENCH OPEN AT ANY ONE TIME. THE CONSTRUCTION ZONE WILL BE A ROLLING CONSTRUCTION ZONE WITH APPROPRIATE TRANSITIONS ON EACH END.

4. SIGNALIZED INTERSECTIONS LANES WILL NOT BE CLOSED AT A SIGNALIZED INTERSECTION, UNLESS APPROVED BY THE PROGRAM MANAGER. AN APPROPRIATE TRANSITION AS DEFINED IN THE TRAFFIC CONTROL PLAN WILL BE PROVIDED AT SIGNALIZED INTERSECTIONS.

5. TEMPORARY PAVEMENT MARKERS: TEMPORARY EPOXY-GUIDE BOTTONS OR CONSTRUCTION GRADE TAPE PAVEMENT MARKERS SHOULD BE USED ON PERMANENT PAVEMENT TO REMAIN IN PLACE TO ELIMINATE GRINDING AND SCARRING OF THE SURFACE.

6. PEDESTRIAN TRAFFIC: CARE SHALL BE TAKEN TO PROVIDE FOR TEMPORARY PEDESTRIAN TRAFFIC AND CROSSING AT AREAS SUCH AS SCHOOLS, PARKS, AND SHOPPING AREAS.

7. CONSTRUCTION ITEMS WITHIN THE WATERLINE EASEMENTS LOCATED WITHIN THE FORT BEND COUNTY DRAINAGE DISTRICT CHANNEL EASEMENTS/RIGHT-OF-WAYS, OTHER PROPERTY EASEMENTS, AND HOSE WITHIN THE BOUNDARIES OF THE WATER PLANT SITE WILL BE DEFINED AS THE FULL WIDTH OF THE EASEMENT. ITEMS TO BE RESTORED WITHIN THESE LIMITS INCLUDE, BUT ARE NOT LIMITED TO, EXISTING STORM SEWER LINES, ALL TYPES OF FENCING, LANDSCAPING, SWAPPING SITES, BACKSLOPE, INFRASTRUCTURE, EXISTING SPRINKLER AND IRRIGATION SYSTEMS, WATERLINE SYSTEMS, AND TREES. ALL RESTORATION ITEMS NOT LISTED IN THE BID FORM ARE TO BE CONSIDERED INCIDENTAL TO THE CONTRACT. RESTORATION OUTSIDE THESE LIMITS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

STORM SEWER CONSTRUCTION NOTES

1. RELOCATION AND REPLACEMENT OF ALL STORM SEWERS SHALL BE IN ACCORDANCE WITH THE NORTH FORT BEND WATER AUTHORITY STANDARD SPECIFICATION NO. 02631 STORM SEWERS.

2. ALL STORM SEWER MANHOLE RIMS LOCATED OUTSIDE THE PAVED AREAS SHALL BE SET TO MATCH FINISHED GROUND ELEVATION.

3. ALL STORM SEWERS AND LEADS SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS III (ASTM C76), WITH RUBBER GASKET JOINTS (ASTM C443), UNLESS OTHERWISE NOTED ON PLANS.

4. ALL STORM SEWER LEADS SHALL BE 24-INCH DIAMETER MINIMUM, UNLESS OTHERWISE NOTED ON PLANS.

5. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNER. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE STORM WATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY FORT BEND COUNTY, FORT BEND COUNTY DRAINAGE DISTRICT AND THE CITY OF HOUSTON AND SHALL BE IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.

PAVING CONSTRUCTION NOTES

1. CONCRETE PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH APPROPRIATE GOVERNMENT AGENCY.

2. ALL ROAD WIDTHS, CURB RADII AND CURVE ALIGNMENT SHOWN INDICATES BACK OF CURB. THE INDICATES TOP OF CURB ELEVATION AND TP INDICATES TOP OF PAVEMENT ELEVATION.

3. CONTRACTOR SHALL USE CONTINUOUS LONGITUDINAL REINFORCING BAR FOR 6 INCH CURB.

4. ALL CONCRETE PAVEMENT SHALL BE 5.0 SACK MIX, REINFORCING STEEL TO CONFORM TO ASTM A615, GRADE 60. PROVIDE MINIMUM 30 BAR DIAMETER LAPS.

5. SUBGRADE STABILIZATION SHALL BE LIME AND/OR FIBER-FLY ASH MIXTURE AT A RATE AS ESTABLISHED BY LABORATORY TESTING OF SUBGRADE MATERIAL.

6. WHERE PROPOSED PAVEMENT IS TO MATCH EXISTING PAVEMENT, EXISTING BEAMS OR DOWELS PROJECTING FROM EXISTING PAVEMENT TO BE CLEANED AND TIED INTO PROPOSED PAVEMENT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS, 24 INCHES LONG, DRILLED AND EMBEDDED 8 INCHES INTO THE CENTER OF THE EXISTING SLAB WITH TOP ROW OF DOWELS AT 18 INCHES CENTER TO CENTER.

UTILITY NOTES

CENTERPOINT ENERGY (ELECTRICAL FACILITIES)

1. OVERHEAD LINES MAY EXIST ALONG THE PROJECT RIGHT OF WAY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE. CONTRACTOR SHALL LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH AND SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES SOME CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL "CENTER POINT" ENERGY AT 713-207-2222.

2. CONTRACTOR SHALL COORDINATE WITH CENTERPOINT ENERGY ELECTRIC BEFORE WORKING WITHIN TEN (10) FEET OF OVERHEAD POWER LINES. CONTACT CENTERPOINT ENERGY ELECTRIC REPRESENTATIVE AT (713) 207-7777 OR (713) 923-0397 FOR RATES TO BE BILLED AND LINES TO BE DE-ENERGIZED AND/OR MOVED. CONTRACTOR SHALL BE RESPONSIBLE TO "CENTERPOINT ENERGY" ELECTRIC FOR ANY COSTS ASSOCIATED WITH BRACING OF POWER POLES OR DE-ENERGIZING AND/OR MOVING ANY CONFLICTING OVERHEAD POWER LINES.

3. TO STAKE CENTERPOINT ENERGY ELECTRIC UNDERGROUND FACILITIES, PLEASE CALL THE LONE STAR INFORMATION CENTER AT (713) 223-4567, OR TOLL FREE AT (800) 669-8344. AT LEAST 48 HOURS BEFORE STARTING EXCAVATION.

4. PRIVATE UNDERGROUND ELECTRICAL FACILITIES MAY EXIST IN THE AREA AND THESE WILL NOT BE STAKED BY CENTERPOINT ENERGY ELECTRIC PERSONNEL.

CENTERPOINT ENERGY (GAS FACILITIES)

1. CONTRACTOR SHALL NOTIFY CENTERPOINT ENERGY GAS AT (281) 672-4816 AFTER UNCOVERING ANY GAS LINES NOT SHOWN ON THESE DRAWINGS. GAS LINES SHALL NOT BE DISTURBED BY THE CONTRACTOR UNTIL CENTERPOINT ENERGY GAS HAS VERIFIED THE STATUS OF THE LINE AND APPROPRIATE ACTION AUTHORIZED.

2. LOCATION OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE EASTERPOINT ENERGY, TRANSITER PIPELINE LLC WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICES LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT VERIFY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713-223-4567 OR 1-800-669-8344. A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

3. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713-967-8037 (7:00 AM TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

   a) WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

   b) WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS IN THE PIPING. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

4. CENTERPOINT ENERGY GAS ASSUMES NO RESPONSIBILITY FOR THE OWNERSHIP OR THE ACCURACY OF THE ABANDONED GAS LINES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL NOTIFY CENTERPOINT ENERGY GAS AT (281) 672-4816 IN THE APPROPRIATE ACTION IF ACTIVE GAS LINES THE GAS LINES SHALL NOT BE DISTURBED BY THE CONTRACTOR UNTIL CENTERPOINT ENERGY GAS HAS VERIFIED THE STATUS OF THE LINE.

AT&T FACILITIES

1. THE LOCATIONS OF AT&T FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

2. THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF SBC FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T FACILITIES.

4. WHEN AT&T FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGES TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

COMCAST OF HOUSTON, LLC. CABLE FACILITIES

1. THE LOCATIONS OF COMCAST CABLE FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

2. THE CONTRACTOR SHALL CALL TEXAS ONE-CALL AT 1-800-245-4545 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF COMCAST CABLE FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPANIED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE COMCAST CABLE FACILITIES.

4. WHEN COMCAST CABLE FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

5. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND FACILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES CAUSED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND FACILITIES.

NATURAL GAS PIPELINE NOTES

1. THE CONTRACTOR SHALL PERFORM CONSTRUCTION WITHIN THE KINDER MORGAN, INC. EASEMENT IN ACCORDANCE WITH THE KINDER MORGAN, INC. "GENERAL GUIDELINES FOR DESIGN AND CONSTRUCTION NEAR KINDER MORGAN, INC. FACILITIES" MEMORANDUM.

2. CONTRACTOR SHALL PERFORM CONSTRUCTION WITHIN THE HOUSTON PIPELINE COMPANY EASEMENTS IN ACCORDANCE WITH "ENERGY TRANSFER/ HOUSTON PIPELINE COMPANY LP GENERAL CROSSING REQUIREMENTS FOR CONSTRUCTION OR MAINTENANCE FACILITIES" MEMORANDUM.

3. A REPRESENTATIVE FROM BOTH KINDER MORGAN, INC. AND HOUSTON PIPELINE COMPANIES MUST BE PRESENT DURING CONSTRUCTION ACTIVITIES CROSSING EACH OF THE PIPELINE EASEMENTS.

4. CONTACT INFORMATION: CONTRACTOR SHALL CONTACT THESE REPRESENTATIVES A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION IN THE VICINITY OF THE PIPELINE EASEMENT.

   5. (713) 369-1799 OFFICE, JERRY PARTON WITH HOUSTON PIPELINE CO. (281-850-1747)
   6. (713) 369-9502 OFFICE, ROBERT THOMAS WITH KINDER MORGAN, INC. (713-369-9502 X231)

PRIVATE UTILITY LINES SHOWN

Centerpoint Energy/ Electric Facilities (approved only for crossing underground duct lines, unless otherwise noted.) Valid At Time Of Review Only
Date: 1-18-10

SBC UTILITY LINES SHOWN
Approved for underground conduit facilities only. Signature valid for one year.
Date: 1-18-10

Centerpoint Energy/ Gas Facilities (Gas service lines are not shown)
Date: 1-13-10

Company:
Date: 1-14-10
Written/Issued

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

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

BENCHMARK: CONTROL POINT NO. 134 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134" LOCATED IN THE MEDIAN EAST OF THE INTERSECTION WEST AIRPORT BOULEVARD AND GUIBEE SPRINGS COURT, 2.3 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN.
ELEV = 78.93' (NAVD-88, 2002 ADJUSTMENT)

STATE OF TEXAS — KENNETH J. MARTINEZ — 87808 — LICENSED PROFESSIONAL ENGINEER
1/18/10

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
4335 Gulfton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

CONSTRUCTION NOTES

NORTH FORT BEND WATER AUTHORITY

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

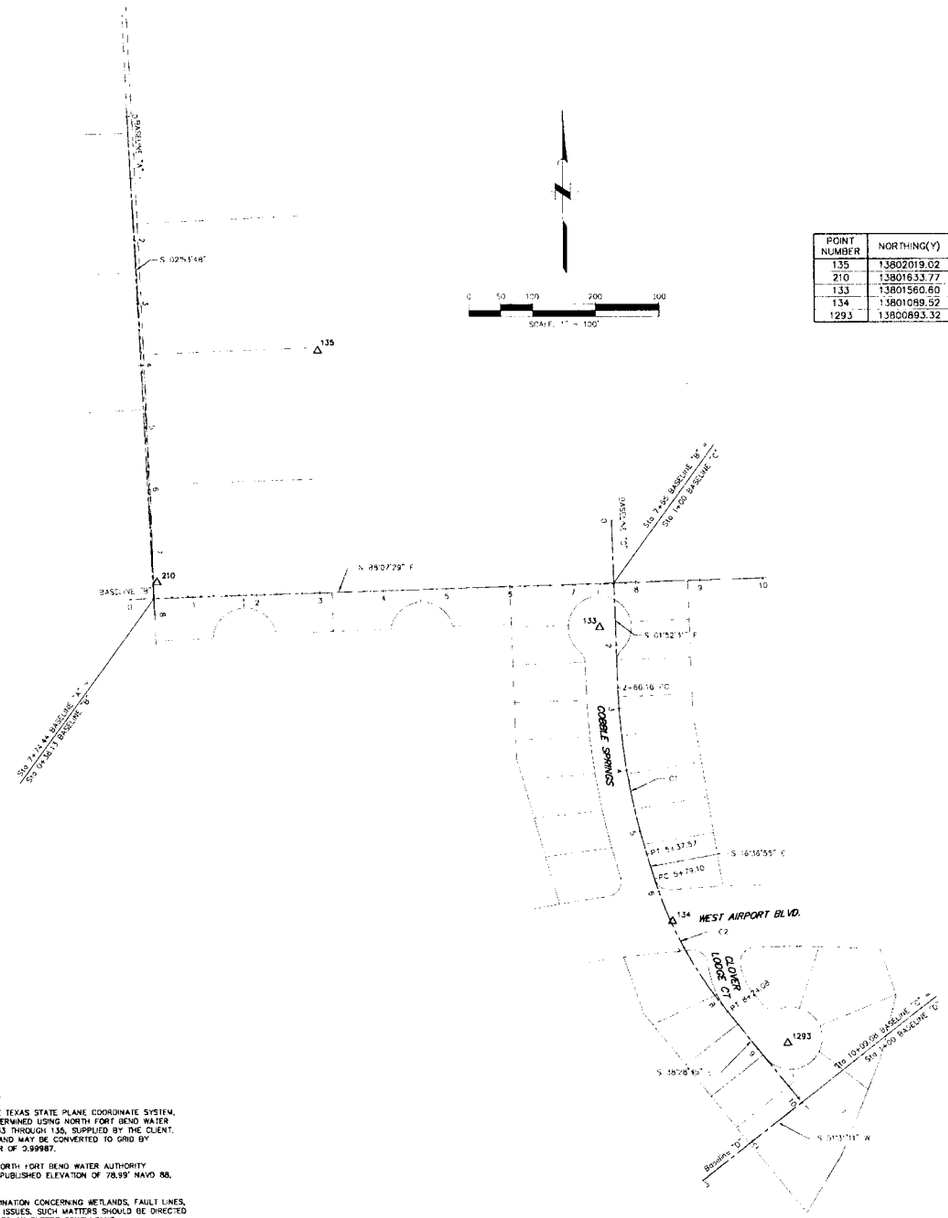
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/28/10	S. BRIDGE
ASST. DIRECTOR	TRAFFIC
DEPUTY 1-21-10	STORM WATER QUALITY
DIRECTOR 1-21-10	

FILE NO:
DRAWING SCALE
HORZ: NOT TO SCALE
VERT:

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING — RECEIVED — 46054 — CITY ENGINEER FILM/DATE

SHEET No. 03 OF 43



0 50 100 200 300
SCALE: 1" = 100'

POINT NUMBER	NORTHING(Y)	EASTING(X)	ELEVATION(Z)	DESCRIPTION	STATION, OFFSET
135	13802019.02	3027221.44	79.94	ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 135"	3+78.65, 320.03' LT - BASELINE "A"
210	13801633.77	3026926.78	78.82	5/8" IRON ROD WITH A CAP STAMPED COTTON SURVEYING	7+48.51, 6.27' LT - BASELINE "A"
133	13801560.60	3027625.58	78.99	ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 133"	1+69.98, 25.03' RT - BASELINE "C"
134	13801089.52	3027736.91	78.93	ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134"	6+53.49, 2.73' LT - BASELINE "C"
1293	13800893.32	3027916.97	78.23	P.K. NAIL WITH SHINER STAMPED COTTON SURVEYING	9+21.66, 42.24' LT - BASELINE "C"

CURVE	DELTA ANGLE	RADIUS	ARC LENGTH	TANGENT	CHORD BEARING	CHORD LENGTH
C1	74°44'24"	1050.0'	271.4'	138.46'	S 09°14'43" E	270.66'
C2	23°08'25"	606.14'	244.98'	124.19'	S 27°57'50" E	243.32'

GENERAL NOTES

1. BOUNDARY WORK WAS PERFORMED BY OTHERS.
2. BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE NUMBER 4204, AS DETERMINED USING NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINTS 133 THROUGH 135, SUPPLIED BY THE CLIENT. COORDINATES SHOWN HEREON ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99987.
3. ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 133 HAVING A PUBLISHED ELEVATION OF 78.99' NAVD 88, 2002 ADJUSTMENT.
4. THIS SURVEY DOES NOT PROVIDE ANY DETERMINATION CONCERNING WETLANDS, FAULT LINES, TOXIC WASTE, OR ANY OTHER ENVIRONMENTAL ISSUES. SUCH MATTERS SHOULD BE DIRECTED BY THE CLIENT OR PROSPECTIVE PURCHASER TO AN EXPERT CONSULTANT.

SURVEY CONTROL MAP
FOR
NORTH FORT BEND WATER AUTHORITY
F.B.C. M.U.D. No. 41 CONNECTION

FORT BEND COUNTY, TEXAS
NOVEMBER 2009

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

JONES & CARTER, Inc.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6330 Gulfton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

SURVEY CONTROL
SHEET 1 OF 2

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: Robert G. 4/22/10
WASTEWATER: M.C. Beck 4-21-10
STORM: L. Null 4.21.10
STREET & BRIDGE
TRAFFIC
STORM WATER QUALITY
FAC. NO.
FILE NO.
DRAWING SCALE
HORZ. 1"=100'
VERT.
SHEET No. 04 OF 43

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
APPROVED
46954
CITY ENGINEER

5/17/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

NORTH FORT BEND WATER AUTHORITY

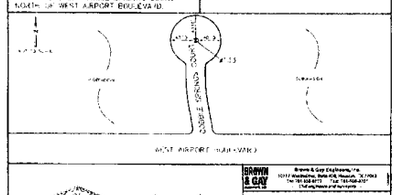
SEGMENT 4 CONTROL POINT 133 – SHEET 1

CONTROL POINT NUMBER 133 KEY MAP PAGE: 567-C	GRID COORDINATES Y: 13,799,766.93 X: 3,027,232.03	VERTICAL DATUM: NAVD-88
HORIZONTAL DATUM: NAD83		VERTICAL ADJUSTMENT: 2002 ADJ (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CORS 96 – EPOCH 2002)	SUR-ADJ COORDINATES Y: 13,801,563.63 X: 3,027,625.58	POINT ESTABLISHED BY RTK POINTS DIRECTLY 3RD
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 133"	ELEVATION 76.93 FT	19 & 20

GEODETIC COORDINATES:
LATITUDE: N 29° 39' 37.0"8800"
LONGITUDE: W 95° 39' 54.19658"

DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET IN THE CENTER OF THE CUL-DE-SAC AT THE END OF PEBBLE SPRINGS COURT NORTH OF WEST AIRPORT BOULEVARD.

VERTICAL NOTES: THIS SURVEY IS CONSTRAINED TO THE NGS PUBLISHED ELEVATION FOR THE NORTH-EAST 2250 CORS ARP ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID AJ8905, EPOCH DATE 2002



BROWN & GAY ENGINEERS, INC.
10777 Westheimer, Suite 400, Houston, Texas 77042
Tel 281.558.8700 Fax 281.558.8701
Texas Registered Firm F-1046

STATE OF TEXAS REGISTERED GLENN FISHER 4146 PROFESSIONAL LAND SURVEYOR

Glenn Fisher, RPLS No. 4146
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400
Houston, Texas 77042
Telephone: (281) 558-8700

NORTH FORT BEND WATER AUTHORITY

NORTH FORT BEND WATER AUTHORITY

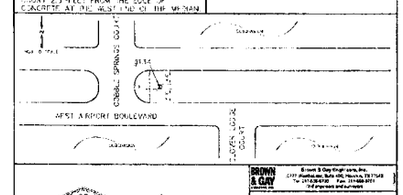
SEGMENT 4 CONTROL POINT 134 – SHEET 1

CONTROL POINT NUMBER 134 KEY MAP PAGE: 567-C	GRID COORDINATES Y: 13,799,299.74 X: 3,027,113.11	VERTICAL DATUM: NAVD-88
HORIZONTAL DATUM: NAD83		VERTICAL ADJUSTMENT: 2002 ADJ (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CORS 96 – EPOCH 2002)	SURVEY COORDINATES Y: 13,801,093.63 X: 3,027,720.88	POINT ESTABLISHED BY RTK POINTS DIRECTLY 3RD
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 134"	ELEVATION 78.93 FT	19 & 20

GEODETIC COORDINATES:
LATITUDE: N 29° 39' 33.9655"
LONGITUDE: W 95° 39' 50.8874"

DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND COBBLE SPRINGS COURT 2.3 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN

VERTICAL NOTES: THIS SURVEY IS CONSTRAINED TO THE NGS PUBLISHED ELEVATION FOR THE NORTH-EAST 2250 CORS ARP ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID AJ8905, EPOCH DATE 2002



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NORTH FORT BEND WATER AUTHORITY

NORTH FORT BEND WATER AUTHORITY

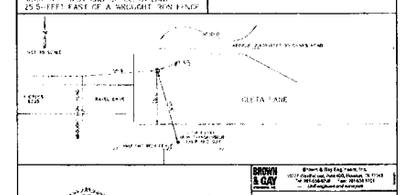
SEGMENT 4 CONTROL POINT 135 – SHEET 1

CONTROL POINT NUMBER 135 KEY MAP PAGE: 567-C	GRID COORDINATES Y: 13,800,225.00 X: 3,025,827.95	VERTICAL DATUM: NAVD-88
HORIZONTAL DATUM: NAD83		VERTICAL ADJUSTMENT: 2002 ADJ (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CORS 96 – EPOCH 2002)	SURVEY COORDINATES Y: 13,802,019.92 X: 3,027,021.15	POINT ESTABLISHED BY RTK POINTS DIRECTLY 3RD
MARKER: ALUMINUM CAP	SCALE FACTOR: 1.00013	
STAMPING: "NORTH FORT BEND WATER AUTHORITY 135"	ELEVATION 79.34 FT	19 & 20

GEODETIC COORDINATES:
LATITUDE: N 29° 39' 33.0818"
LONGITUDE: W 95° 40' 02.83980"

DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET 25.0-FEET NORTH OF THE SOUTH EDGE OF PAVEMENT NEAR THE WEST END OF SETA LANE 25.5-FEET EAST OF A WROUGHT IRON FENCE

VERTICAL NOTES: THIS SURVEY IS CONSTRAINED TO THE NGS PUBLISHED ELEVATION FOR THE NORTH-EAST 2250 CORS ARP ADJUSTED BY NGS IN 2002 AND PUBLISHED AS PID AJ8905, EPOCH DATE 2002



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NORTH FORT BEND WATER AUTHORITY

NORTH FORT BEND WATER AUTHORITY

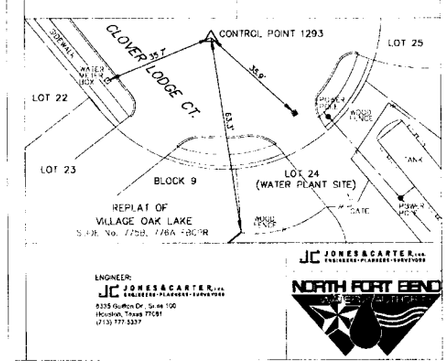
SEGMENT 4 CONTROL POINT 1293 – SHEET 1

CONTROL POINT NUMBER 1293 KEY MAP PAGE: 567-C	GRID COORDINATES Y: 13,799,989.44 X: 3,027,553.39	VERTICAL DATUM: NAVD-88
HORIZONTAL DATUM: NAD83		VERTICAL ADJUSTMENT: 2002 ADJ (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CORS 96 – EPOCH 2002)	SURFACE COORDINATES Y: 13,801,693.52 X: 3,027,916.37	SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON SECONDARY CONTROL POINTS 133 THRU 135 ESTABLISHED BY BROWN AND GAY ENGINEERS, INC
MARKER: 5/8" ROUND PLASTIC CAP	SCALE FACTOR: 1.00013	
STAMPING: P.K. NAIL (WITH SHINER STAMPED "COTTON SURVEYING")	ELEVATION 78.21 FT	

GEODETIC COORDINATES
LATITUDE: 29°39'44.4722"
LONGITUDE: 95°39'50.0705"

DESCRIPTION: CONTROL POINT IS A P.K. NAIL (WITH SHINER STAMPED COTTON SURVEYING) SET IN THE CENTER OF THE CUL-DE-SAC FOR CLOVER LODGE COURT

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 91 HAVING A PUBLISHED ELEVATION OF 91.03' NAVD 88, 2002 ADJUSTMENT



ENGINEER:
JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
6335 Gulfton Dr. Suite 100
Houston, Texas 77081
(713) 777-5337

NORTH FORT BEND WATER AUTHORITY

NORTH FORT BEND WATER AUTHORITY

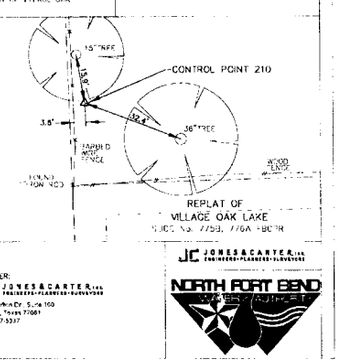
SEGMENT 4 CONTROL POINT 210 – SHEET 1

CONTROL POINT NUMBER 210 KEY MAP PAGE: 567-C	GRID COORDINATES Y: 13,799,870.79 X: 3,026,533.33	VERTICAL DATUM: NAVD-88
HORIZONTAL DATUM: NAD83		VERTICAL ADJUSTMENT: 2002 ADJ (SEE VERTICAL NOTES)
HORIZONTAL ADJUSTMENT: (CORS 96 – EPOCH 2002)	SURVEY COORDINATES Y: 13,801,633.77 X: 3,026,928.78	SUPPLEMENTAL SURVEY CONTROL DATA SHOWN HEREON IS BASED ON SECONDARY CONTROL POINTS 133 THRU 135 ESTABLISHED BY BROWN AND GAY ENGINEERS, INC
MARKER: 5/8"R (WITH PLASTIC CAP)	SCALE FACTOR: 1.00013	
STAMPING: 5/8"R (WITH CAP STAMPED "COTTON SURVEYING")	ELEVATION 76.82 FT	

GEODETIC COORDINATES
LATITUDE: 29°39'38.42193"
LONGITUDE: 95°40'01.05104"

DESCRIPTION: CONTROL POINT IS A 5/8-INCH IRON ROD (WITH CAP STAMPED "COTTON SURVEYING") SET APPROXIMATELY 25.5 FEET NORTH OF THE NORTHWEST CORNER OF THE REPLAT OF VILLAGE OAK LAKE

VERTICAL NOTES: ELEVATIONS SHOWN HEREON ARE BASED ON NORTH FORT BEND WATER AUTHORITY SURVEY CONTROL DATA POINT 91 HAVING A PUBLISHED ELEVATION OF 91.03' NAVD 88, 2002 ADJUSTMENT



ENGINEER:
JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
6335 Gulfton Dr. Suite 100
Houston, Texas 77081
(713) 777-5337

NO.	DATE	REVISION	APPROV.
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ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

SURVEY CONTROL
SHEET 2 OF 2

NORTH FORT BEND WATER AUTHORITY

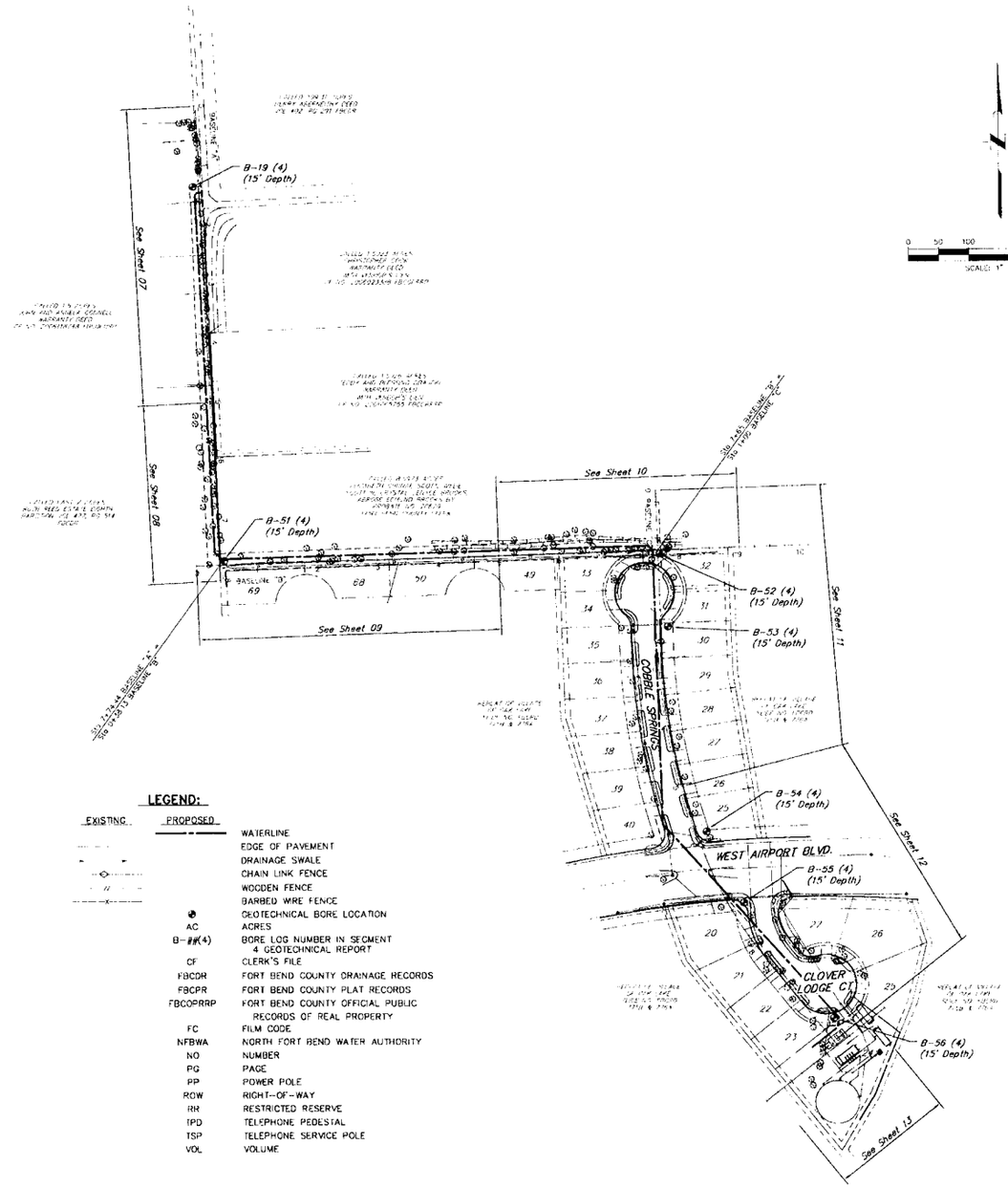
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 1/22/10	STREET & BRIDGE
ASSISTANT: 1-21-10	TRAFFIC
SIGNATURE: 1-21-10	STORM WATER QUALITY
CAPITAL IMPROVEMENTS	
FILE NO:	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
HORZ.: AS SHOWN	
VERT.:	
SHEET No: 05 OF 43	

PUBLIC WORKS AND ENGINEERING REGISTERED 46954 CITY OF HOUSTON HOUSTON, TEXAS

LAST MODIFIED: JAN 13, 2010 – 8:20AM BY: NAME: JA
FILE: J:\2042 North Fort Bend Water Authority\003 Arthur Street 41 Connection\Construction\
FILE NAME: SC4.dwg



LEGEND:

EXISTING	PROPOSED	
		WATERLINE
		EDGE OF PAVEMENT
		DRAINAGE SWALE
		CHAIN LINK FENCE
		WOODEN FENCE
		BARBED WIRE FENCE
		GEOTECHNICAL BORE LOCATION
	AC	ACRES
	B-##(4)	BORE LOG NUMBER IN SEGMENT 4 GEOTECHNICAL REPORT
	CF	CLERK'S FILE
	FBCDR	FORT BEND COUNTY DRAINAGE RECORDS
	FBCPR	FORT BEND COUNTY PLAT RECORDS
	FBCOPRRP	FORT BEND COUNTY OFFICIAL PUBLIC RECORDS OF REAL PROPERTY
	FC	FILM CODE
	NFBWA	NORTH FORT BEND WATER AUTHORITY
	NO	NUMBER
	PG	PAGE
	PP	POWER POLE
	ROW	RIGHT-OF-WAY
	RR	RESTRICTED RESERVE
	TPD	TELEPHONE PEDESTAL
	TSP	TELEPHONE SERVICE POLE
	VOL	VOLUME

PRIVATE UTILITY LINES SHOWN

Date 1-18-10

Centerpoint Energy/ Electric Facilities. (approved only for crossing underground utilities, unless otherwise noted.) Valid At Time Of Review Only

SBC UTILITY LINES SHOWN

Date: 1-20-10

SBC Approved for underground conduit facilities only. Signature valid for one year.

Date: 1-18-10

Centerpoint Energy/ Gas Facilities (GAS services, if any are not shown.)

Date: 1-19-10

Comcast

Date: 1-14-10

Windstream

NOTE:

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

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

BENCHMARK: CONTROL POINT NO. 134 (BEING A 5/8" IRON ROD W/ AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134" LOCATED IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND COBBLE SPRINGS COURT, 2.3 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN.
ELEV = 78.93' (NAVD-88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEZ
87808
LICENSED
PROFESSIONAL ENGINEER

1/13/10

NO.	DATE	REVISION	APPROV.
4			
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JONES & CARTER, Inc.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

OVERALL SITE LAYOUT

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

4/20/10	STREET & BRIDGE
1-21-10	TRAFFIC
1-21-10	STORM WATER QUALITY

FILE NO.

DRAWING SCALE
HORZ: 1" = 100'
VERT:

FOR CITY OF HOUSTON USE ONLY

PROFESSIONAL ENGINEER
ACCEPTED 1/21/10
46953
CITY OF HOUSTON

SHEET No. 06 OF 43

5/7/10

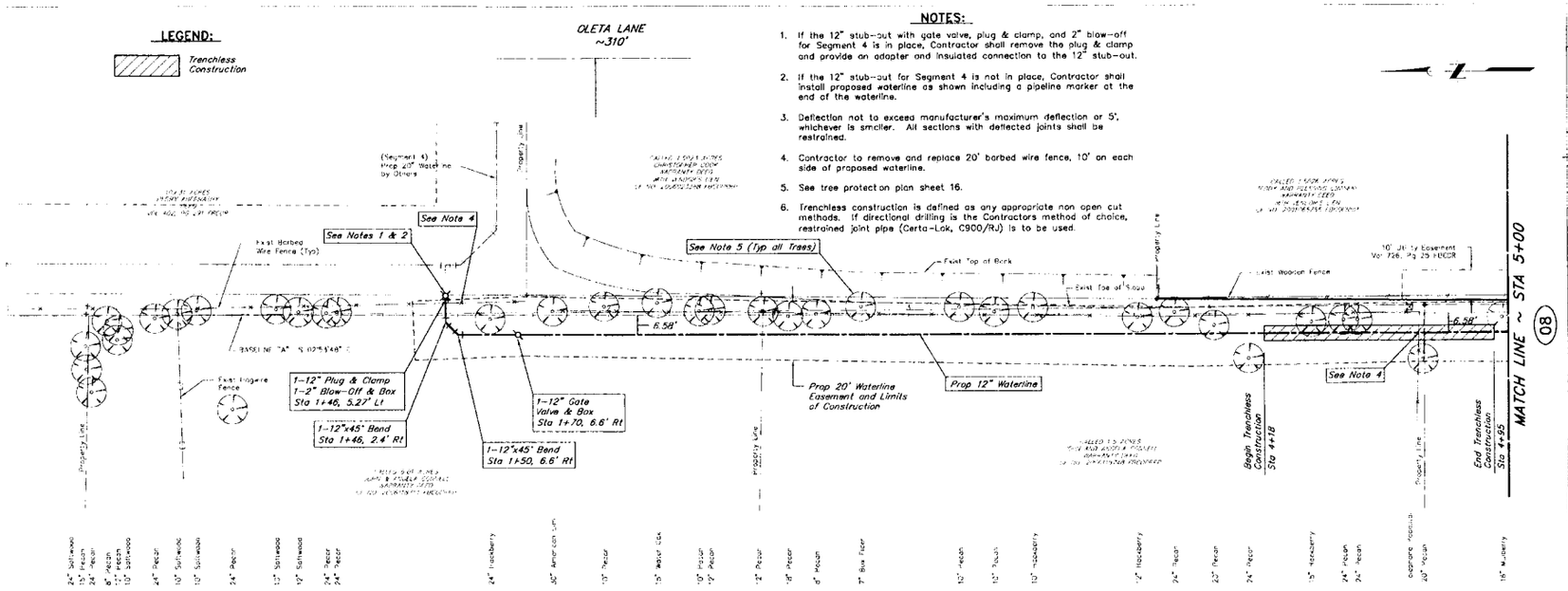
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

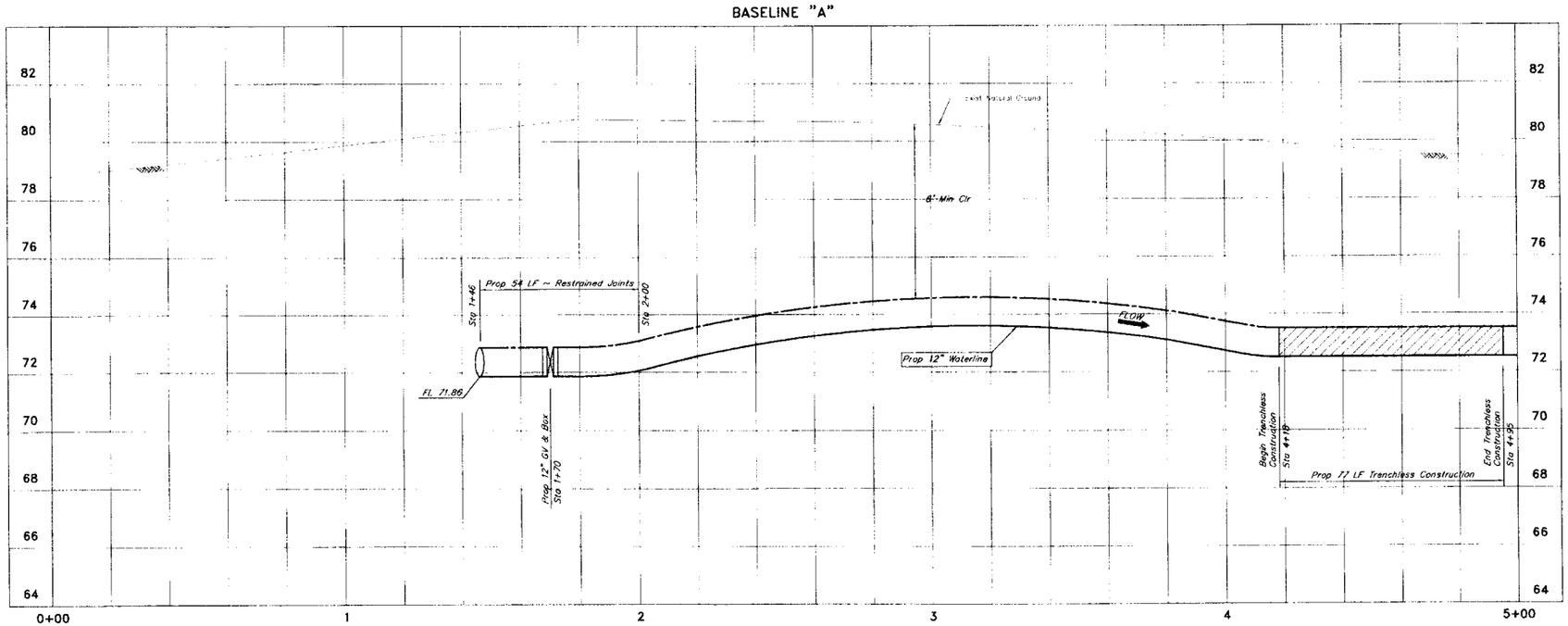
LEGEND:

Trenchless Construction

NOTES:

1. If the 12" stub-out with gate valve, plug & clamp, and 2" blow-off for Segment 4 is in place, Contractor shall remove the plug & clamp and provide an adapter and insulated connection to the 12" stub-out.
2. If the 12" stub-out for Segment 4 is not in place, Contractor shall install proposed waterline as shown including a pipeline marker at the end of the waterline.
3. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
4. Contractor to remove and replace 20' barbed wire fence, 10' on each side of proposed waterline.
5. See tree protection plan sheet 16.
6. Trenchless construction is defined as any appropriate non open cut methods. If directional drilling is the Contractors method of choice, restrained joint pipe (Certa-Lok, C900/RJ) is to be used.





PRIVATE UTILITY LINES SHOWN

Date: 1-19-10

Centerpoint Energy/ Electric Facilities (approved only for crossing underground electrics, unless otherwise noted.) Valid At Time Of Review Only

SBC UTILITY LINES SHOWN

Date: 1-20-10

SBC Approved for underground conduit facilities only. Signature valid for one year.

Date: 1-18-10

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

Date: 1-13-10

Comcast

Date: 1-19-10

Windstream

NOTICE:

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

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

BENCHMARK: CONTROL POINT IS A 5/8 INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET 25.0-FEET NORTH OF THE SOUTH EDGE OF PAVEMENT NEAR THE WEST END OF OLETA LANE 25.0-FEET EAST OF A WROUGHT IRON FENCE.
ELEV. = 79.94' (NAVD 88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEZ
87698
LICENSED
PROFESSIONAL ENGINEER

1/13/10

NO.	DATE	REVISION	APPROV.
4			
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F.B.C. M.U.D. No. 41 CONNECTION

BASELINE A STA 0+00 TO 5+00

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

4/28/10 STREET & BRIDGE

ASST. DIR. 1-22-10 TRAFFIC

STORM WATER QUALITY

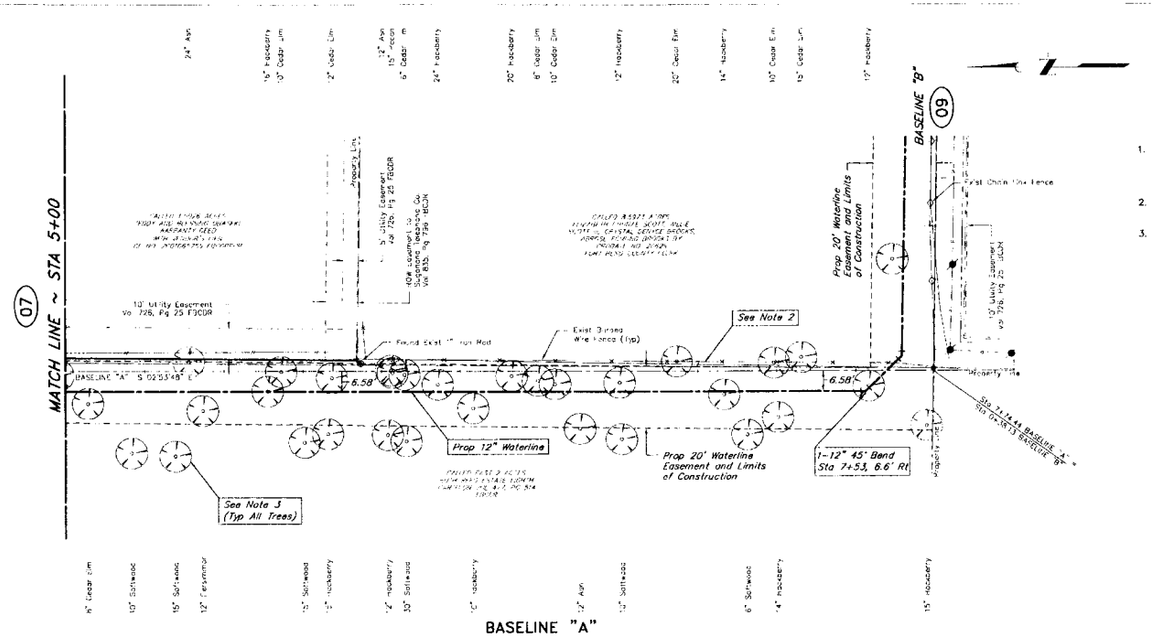
FACILITIES

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
SECTION 11112
46954
CITY OF HOUSTON
TEXAS

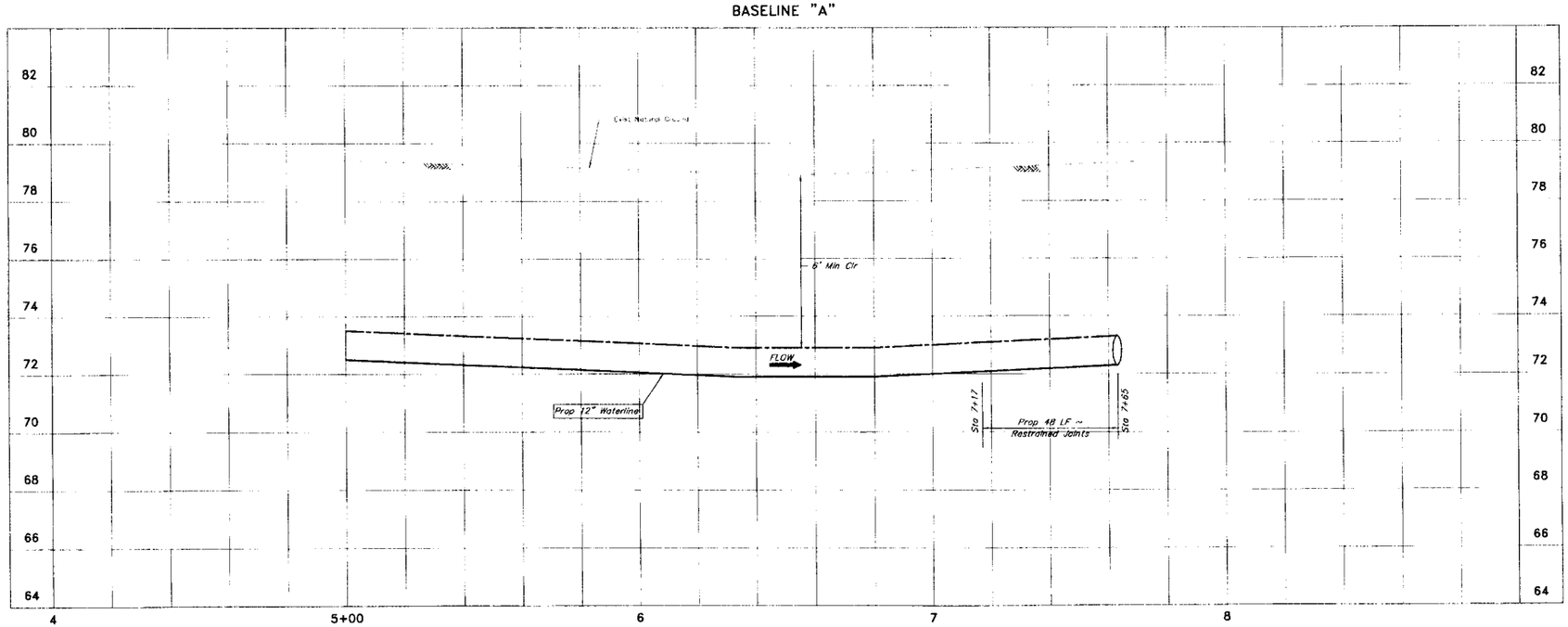
DRAWING SCALE:
HORZ: 1" = 20'
VERT: 1" = 2'

SHEET No. 07 OF 43



NOTES:

1. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
2. Contractor to remove and replace 20' barbed wire fence.
3. See tree protection plan sheet 16.



PRIVATE UTILITY LINES SHOWN

Centerpoint Energy/ Electric Facilities (approved only for crossing underground conduit lines, unless otherwise noted.) Valid At time Of Review Only — Date: 1-18-10

SBC UTILITY LINES SHOWN — Date: 1-20-10

SBC Approved for underground conduit facilities only. Signature valid for one year. — Date: 1-18-10

Centerpoint Energy/ Gas Facilities (AS service lines are not shown) — Date: 1-19-10

Comcast — Date: 1-14-10

Windstream

NOTICE:

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

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

BENCHMARK: CONTROL POINT IS A 5/8" IRON ROD (WITH CAP STAMPED COTTON SURVEYING) SET APPROXIMATELY 28.5 FEET NORTH OF THE NORTHWEST CORNER OF THE REPAIR OF VILLAGE OAK LAKE. ELEV = 78.82 (NAVD 88, 2002 ADJUSTMENT)

STATE OF TEXAS — KENNETH J. MARTINEC — 97808 — LICENSED PROFESSIONAL ENGINEER — 1/13/10

NO.	DATE	REVISION	APPROV.
4			
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JONES & CARTER, INC.
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Texas Board of Professional Engineers Registration No. F-439
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F.B.C. M.U.D. No. 41 CONNECTION

BASELINE A STA 5+00 TO 8+00

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 4/22/10 — STREET & DRAINAGE
WASTEWATER: 1-21-10 — TRAFFIC
STORM: 1-21-10 — STORM WATER QUALITY
FACILITIES

FILE NO:

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING — ACCEPTED BY CITY — 46954 — CITY CHAIRMAN/SUPERVISOR

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

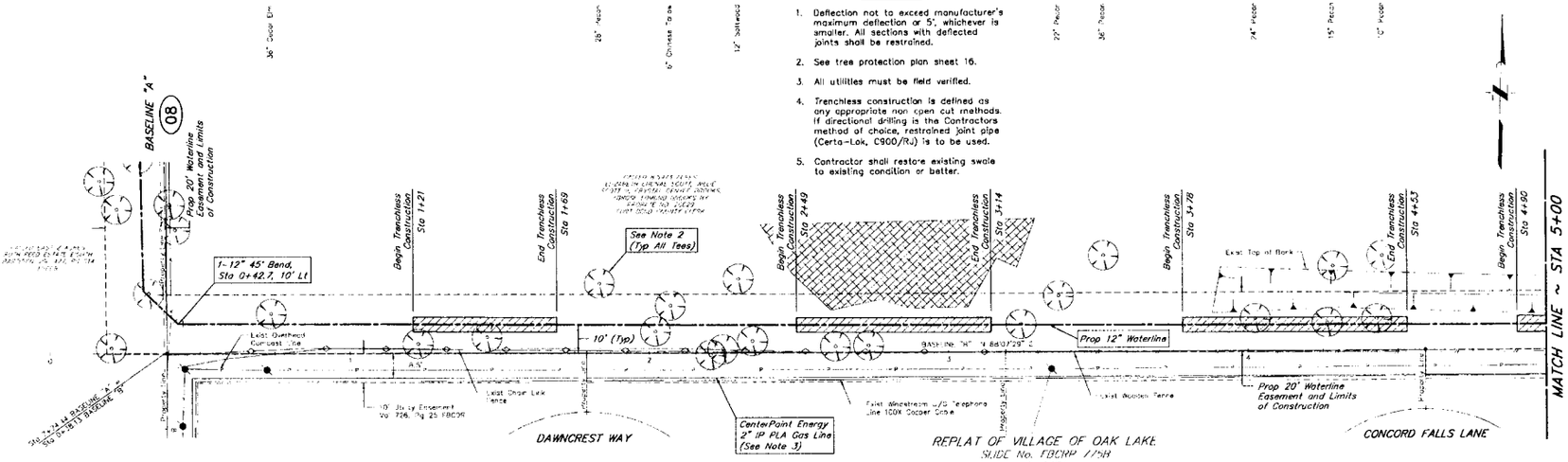
SHEET No. 08 OF 43

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

NOTES:

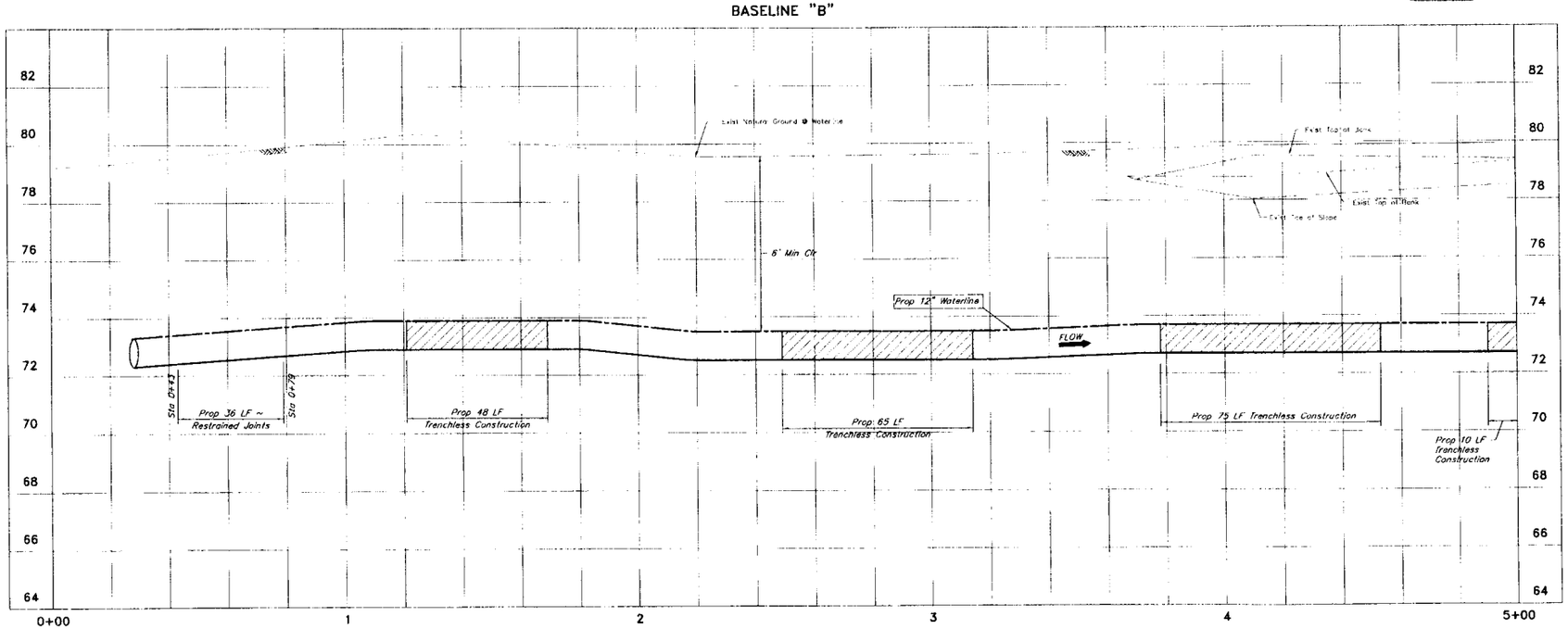
1. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
2. See tree protection plan sheet 16.
3. All utilities must be field verified.
4. Trenchless construction is defined as any appropriate non open cut methods. If directional drilling is the Contractors method of choice, restrained joint pipe (Certa-Lok, C900/RJ) is to be used.
5. Contractor shall restore existing swale to existing condition or better.



LEGEND:

- Delineated Wetlands
- Trenchless Construction

BASELINE "B"



PRIVATE UTILITY LINES SHOWN

Centerpoint Energy/ Electric Facilities (approved only for crossing underground electric, unless otherwise noted.) Valid At Time Of Review Only — Date: 1-18-10

SBC UTILITY LINES SHOWN — Date: 1-18-10
SBC Approved for underground conduit facilities only. Signature valid for one year.

Centerpoint Energy/ Gas Facilities GAS services lines are not shown) — Date: 1-18-10

Comcast — Date: 1-17-10

Windstream — Date: 1-14-10

NOTICE:

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

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

BENCHMARK: CONTROL POINT NO. 134 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134" LOCATED IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND CORPUS SPRINGS COURT, 2.3 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN. ELEV. = 78.93' (NAVD 88, 2002 ADJUSTMENT)

STATE OF TEXAS — KENNETH J. MARTINEC — 87808 — REGISTERED PROFESSIONAL ENGINEER — 1/19/10

NO.	DATE	REVISION	APPROV.
4			
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
4333 Gulf Fwy Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

BASELINE "B" STA 0+00 TO 5+00

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

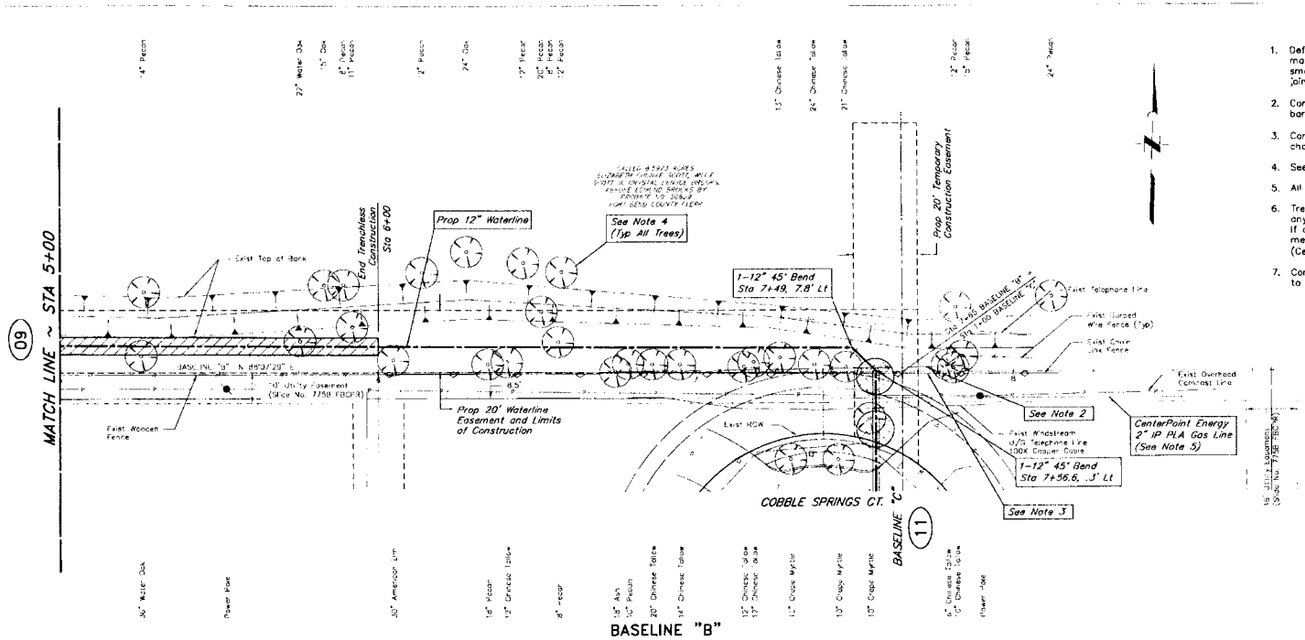
WATER — Robert G. 1/22/10 — STREET & BRIDGE
WASTEWATER — M.F. Ewell 1-21-10 — TRAFFIC
DRAINAGE — 1-21-10 — STORM WATER QUALITY
FACILITIES

FILE NO:

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

FOR CITY OF HOUSTON USE ONLY
PROFESSIONAL ENGINEER — 46054 — CITY OF HOUSTON — TEXAS

SHEET No: 09 OF 43



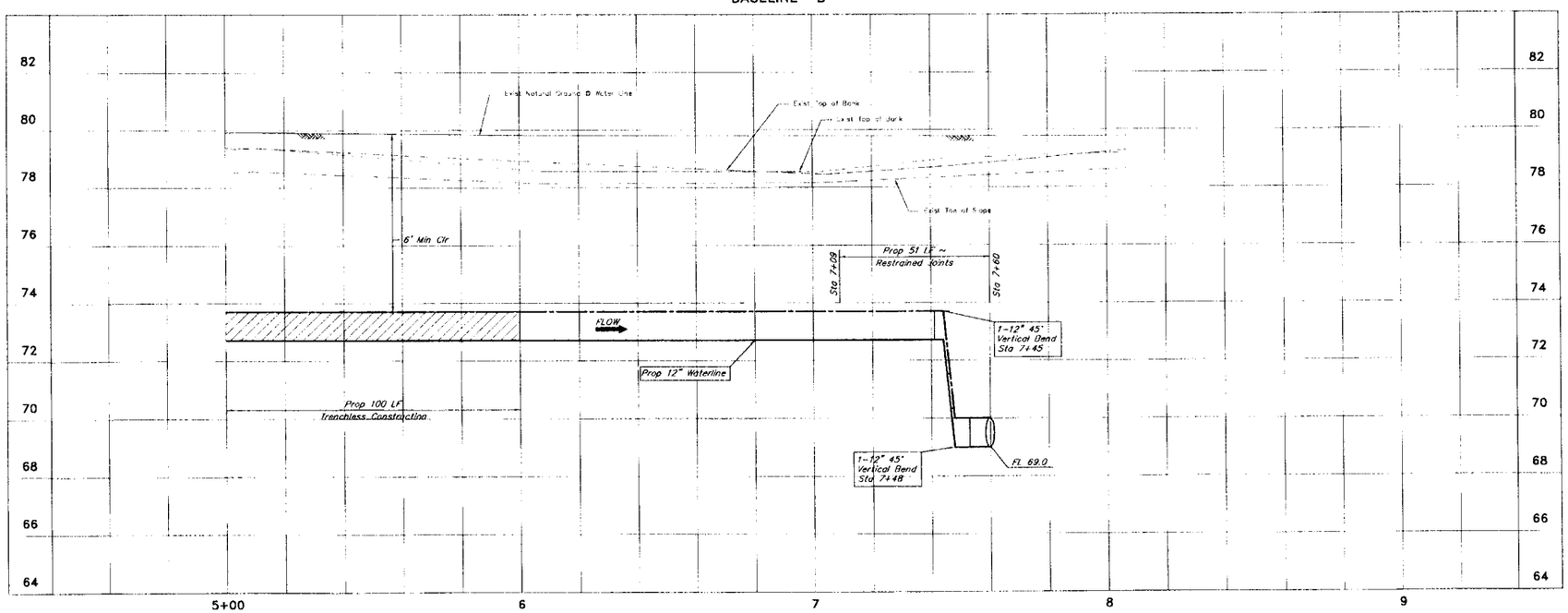
NOTES:

1. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
2. Contractor to remove and replace 20' barbed wire fence.
3. Contractor to remove and replace 20' chain link fence.
4. See tree protection plan sheet 16.
5. All utilities must be field verified.
6. Trenchless construction is defined as any appropriate non open cut methods. If directional drilling is the Contractors method of choice, restrained joint pipe (Certa-Lok, C900/RJ) is to be used.
7. Contractor shall restore existing swale to existing condition or better.

LEGEND:

Trenchless Construction

Critical Location See Spec 02317



PRIVATE UTILITY LINES SHOWN

Date: 1-18-10
Centerpoint Energy/ Electric Facilities (approved only for crossing underground electrics, unless otherwise noted) Valid At Time Of Review Only

SBC UTILITY LINES SHOWN
Date: 1-20-10
SBC Approved for underground conduit facilities only. Signature valid for one year.

Date: 1-18-10
Centerpoint Energy/ Gas Facilities (GAS service lines are not shown)

Date: 1-15-10
Comcast

Date 1-14-10
Windstream

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

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

BENCHMARK: CONTROL POINT IS A 5/8 INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET IN THE CENTER OF THE CUL DE SAC AT THE END OF COBBLE SPRINGS COURT NORTH OF WEST AIRPORT BOULEVARD
F.F.V. = 78.99 (NAVD-88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEZ
87808
LICENSED PROFESSIONAL ENGINEER

5/17/10

NO.	DATE	REVISION	APPROV.
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6330 Gulton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

BASELINE B STA 5+00 TO 9+00

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 4/22/10
WASTEWATER: 1-21-10
STORM FACILITIES: 1.31.10
STREET & BRIDGE
TRAFFIC
STORM WATER QUALITY

F.B. NO.:

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

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
ACCEPTANCE DATE
16954
CITY ENGINEER

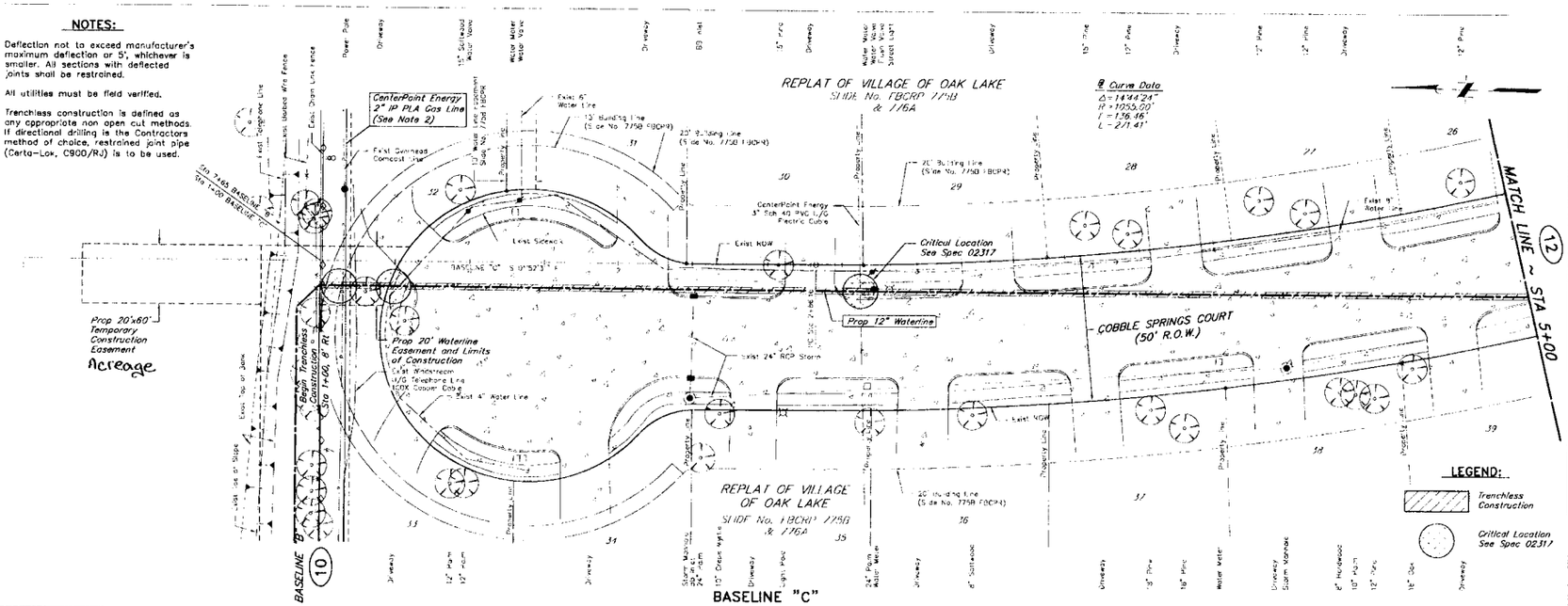
SHEET No. 10 OF 43

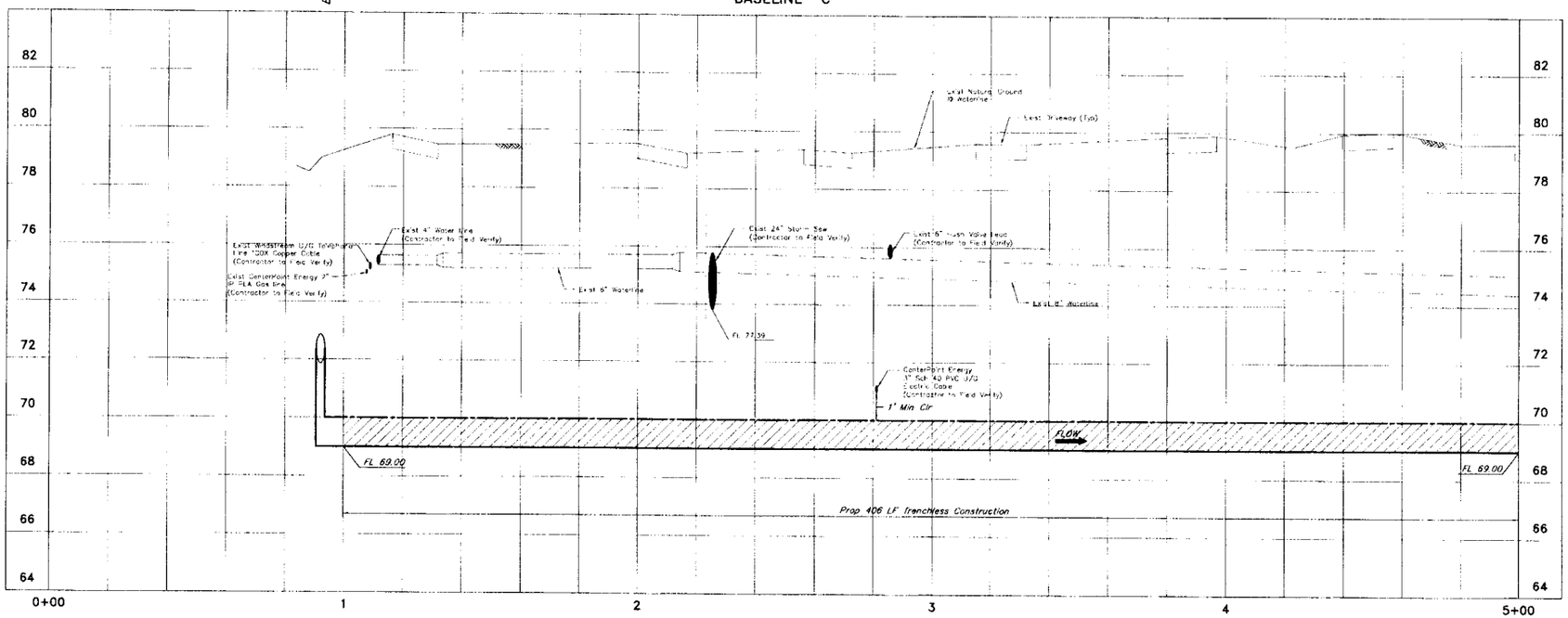
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

NOTES:

1. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
2. All utilities must be field verified.
3. Trenchless construction is defined as any appropriate non open cut methods. If directional drilling is the Contractors method of choice, restrained joint pipe (Certa-Lok, C900/RJ) is to be used.





PRIVATE UTILITY LINES SHOWN

Date: 1-18-10
Centerpoint Energy/ Electric Facilities. (approved only for crossing underground facilities, unless otherwise noted.) Valid At Time Of Review Only

SBC UTILITY LINES SHOWN
Date: 1-20-10
SBC Approved for underground conduit facilities only. Signature valid for one year.

Date: 1-19-10
Centerpoint Energy/ Gas Facilities (GAS service lines are not shown.)

Date: 1-13-10
Comcast

Date: 1-14-10
Windstream

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

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

BENCHMARK: CONTROL POINT IS A 3/8 INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET IN THE CENTER OF THE BLVD SAC AT THE END OF COBBLE SPRINGS COURT NORTH OF MILLS ARBOR BOULEVARD.
ELEV = 78.99' (NAVD 88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEZ
87608
LICENSED
PROFESSIONAL ENGINEER
Exp. 5/17/10
1/19/10

NO.	DATE	REVISION	APPROV.
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
5335 Gulfton Dr., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

BASELINE C STA 0+00 TO 5+00

NORTH FORT BEND WATER AUTHORITY

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

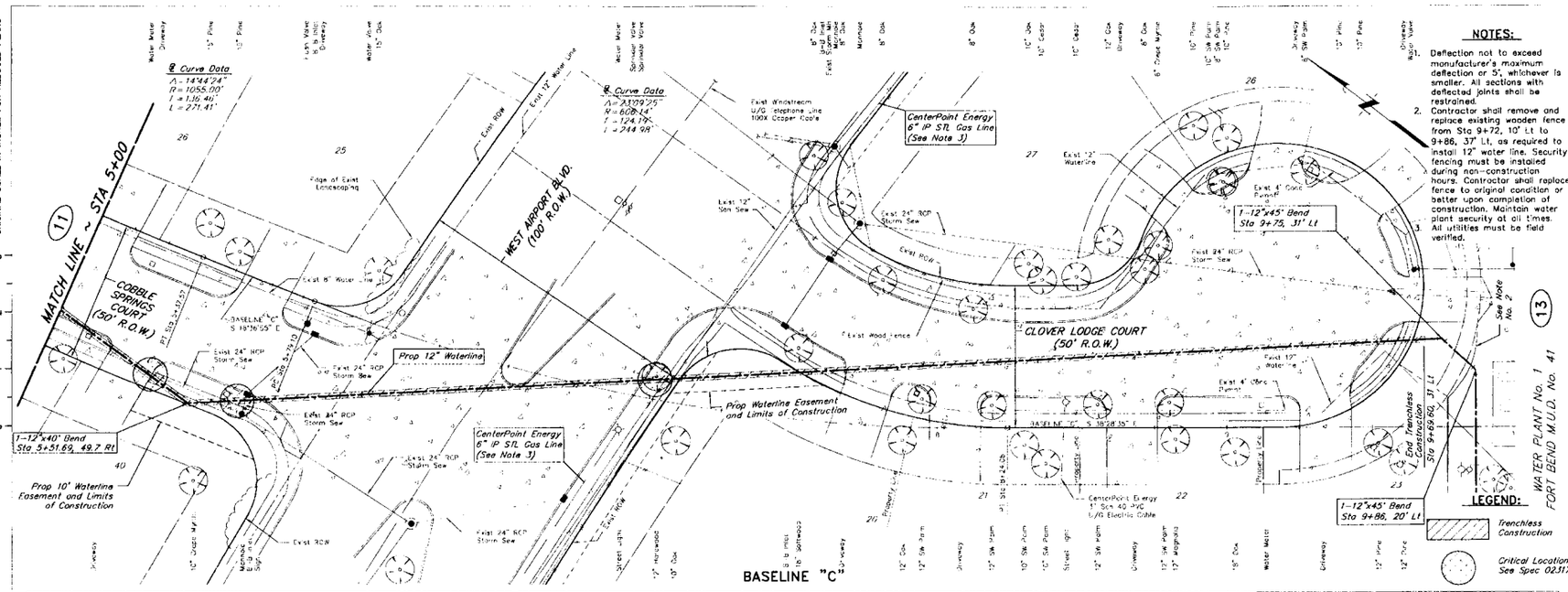
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 1/22/10
WASTEWATER: 1-21-10
STORM: 1-21-10
FACILITIES:
STREET & BRIDGE:
PARKS:
STORM WATER QUALITY:

F.F. NO.:
DRAWING SCALE
HORZ 1" = 20'
VERT 1" = 2'

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
ACCEPTED BY
46954
CITY DRAWING SUBMITTAL

SHEET No. 11 of 43



NOTES:

1. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
2. Contractor shall remove and replace existing wooden fence from Sta 9+72, 10' Lt to 9+86, 37' Lt, as required to install 12" water line. Security fencing must be installed during non-construction hours. Contractor shall replace fence to original condition or better upon completion of construction. Maintain water plant security at all times.
3. All utilities must be field verified.

LEGEND:

Trenchless Construction

Critical Location See Spec 02317

PRIVATE UTILITY LINES SHOWN

Date: 1-18-10
Centerpoint Energy/ Electric Facilities (approved only for crossing underground ductlines, unless otherwise noted.) Va a At time Of Review Only

SBC UTILITY LINES SHOWN — Date: 1-20-10
SBC Approved for underground conduit facilities only. Signature valid for one year.

Date: 1-19-10
Centerpoint Energy/ Gas Facilities (GAS service lines are not shown.)

Date: 1-15-10
Comcast

Date: 1-19-10
Windstream

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

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

BENCHMARK: CONTROL POINT IS A 5/8-INCH IRON ROD WITH A NORTH FORT BEND WATER AUTHORITY ALUMINUM CAP SET IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND COBBLE SPRINGS COURT 2.5 FEET FROM THE FACE OF CONCRETE AT THE WEST END OF THE MEDIAN
ELEV = 78.93' (NAVD 88, 2002 ADJUSTMENT)

NOTES (CONT.):

4. Trenchless construction is defined as any appropriate non open cut methods. If directional drilling is the Contractors method of choice, restrained joint pipe (Certa-Lok, C900/RJ) is to be used.

STATE OF TEXAS — KENNETH J. MARTINEZ — 87808 — LICENSED PROFESSIONAL ENGINEER
1/13/10

NO.	DATE	REVISION	APPROV.
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

BASELINE C STA 5+00 TO 10+00

NORTH FORT BEND WATER AUTHORITY

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

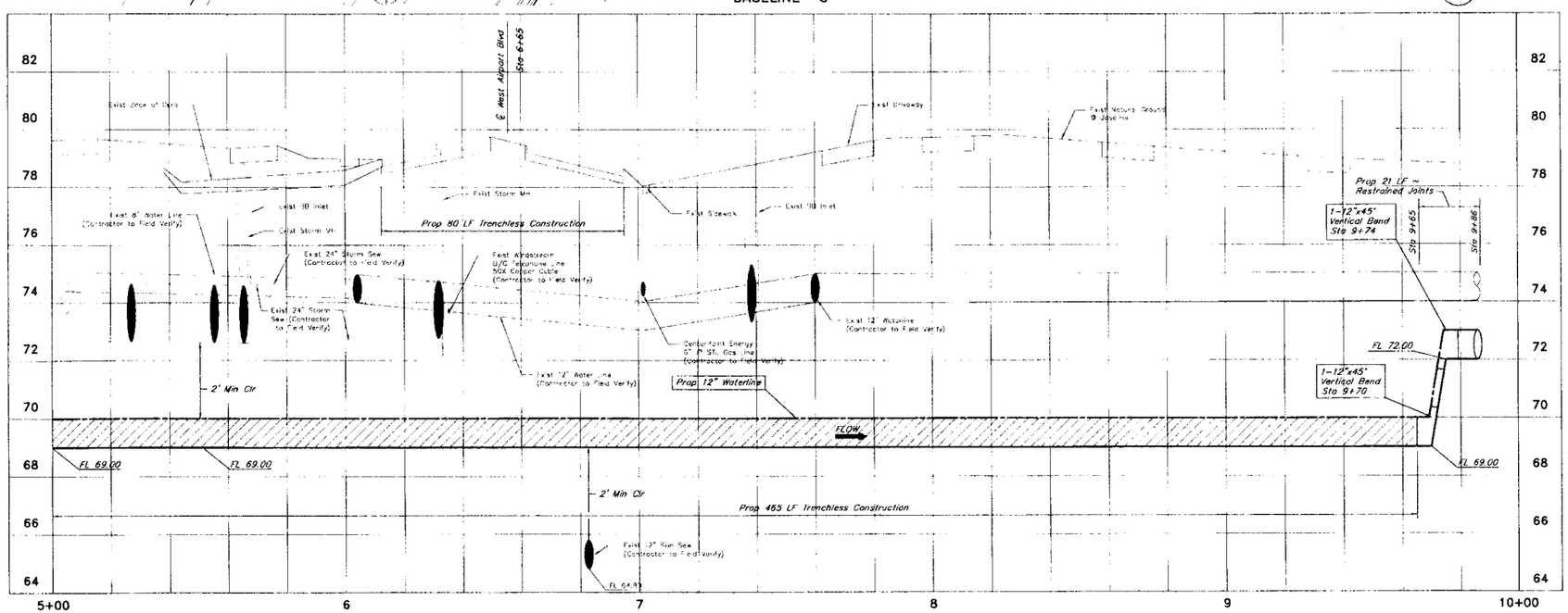
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

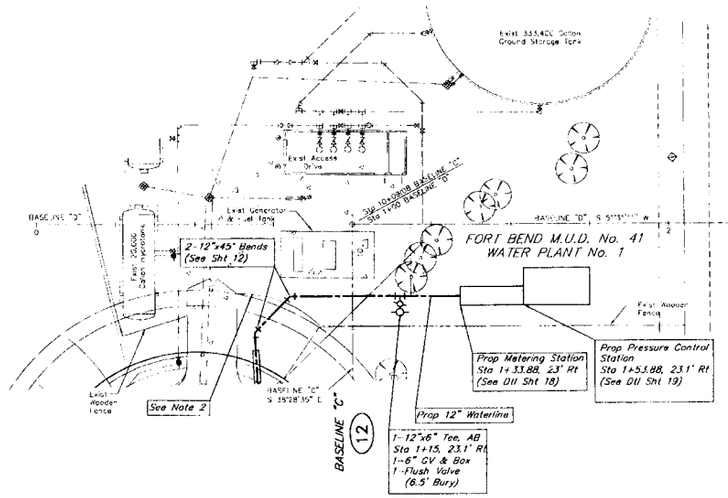
WATER — 1/28/10 — STREET & DRAINAGE
WASTEWATER — 1-21-10 — TRAFFIC
STORM — 1-21-10 — STORM WATER QUALITY
FACILITIES
FOR CITY OF HOUSTON USE ONLY

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

PUBLIC WORKS AND ENGINEERING — RECEIVED — 46954 — CITY LIBRARY MAPS

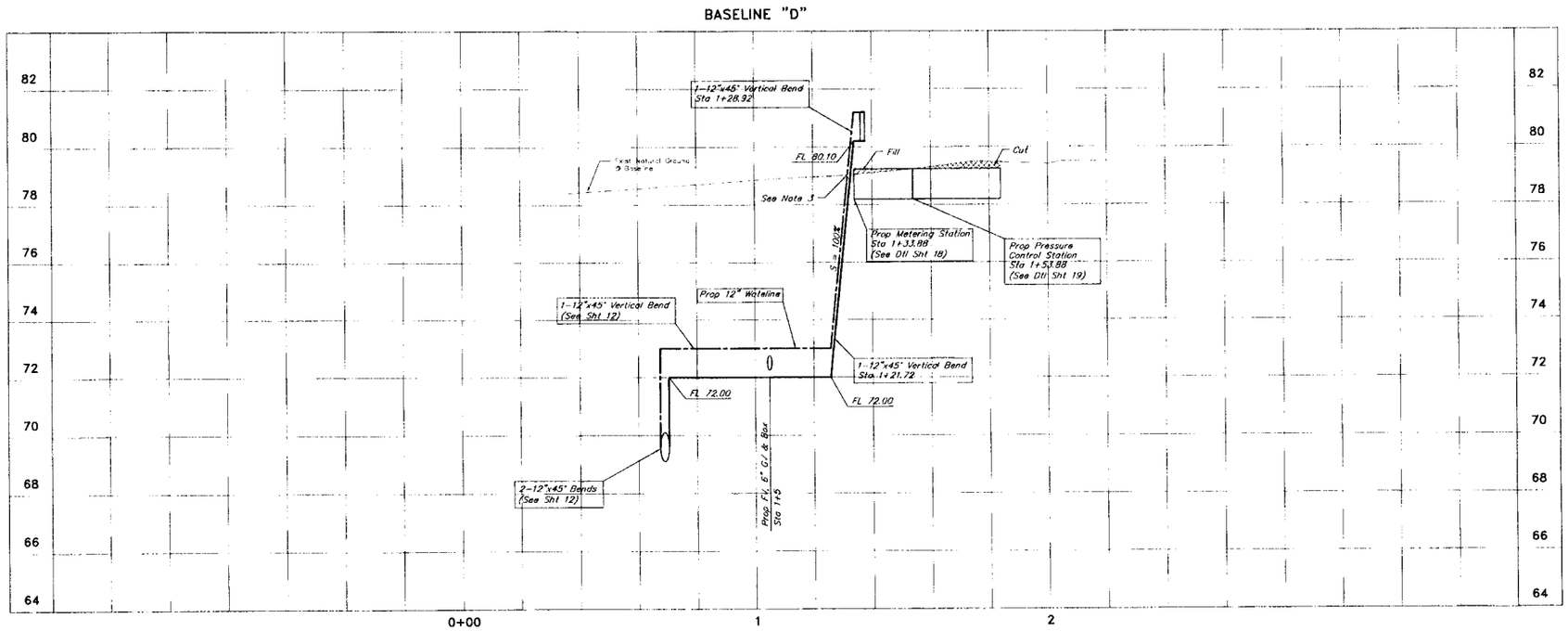
SHEET NO. 12 OF 43





NOTES:

1. Deflection not to exceed manufacturer's maximum deflection or 5°, whichever is smaller. All sections with deflected joints shall be restrained.
2. Contractor shall remove and replace existing wooden fence from Sta 9+72, 10' Lt to 9+86, 37' Lt, as required to install 12" water line. Security fencing must be installed during non-construction hours. Contractor shall replace fence to original condition or better upon completion of construction. Maintain water plant security at all times.
3. All below ground proposed 12" waterline to be restrained joint pipe. All above ground proposed 12" waterline to be steel pipe.



PRIVATE UTILITY LINES SHOWN

Date: 1-18-10

Centerpoint Energy/ Electric Facilities (approved only for crossing underground duct lines, unless otherwise noted.) Valid At Time Of Review Only

SBC UTILITY LINES SHOWN

Date: 1-20-10

SBC Approval for underground conduit facilities only. Signature valid for one year

Date: 1-18-10

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

Date: 1-17-10

Comcast

Date: 1-14-10

Windstream

NOTICE:

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

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

BENCHMARK: CONTROL POINT IS A PK NAIL (WITH SHINER STAMPED COTTON SURVEYING) SET IN THE CENTER OF THE CUL-DE-SAC FOR CLOVER LOOKE COURT.

ELEV 78.23' (NAVD 88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEC
87808
LICENSED PROFESSIONAL ENGINEER

5/17/10

1/19/10

NO.	DATE	REVISION	APPROV.
4			
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
8335 Gulfton Dr., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

BASELINE D STA 0+00 TO 2+50

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED Robert G. 1/22/10	STRUCT & TUNNEL
REVIEWED M.D. Gough 1-21-10	TRAFFIC
REVIEWED J. Nall 1.21.10	STORM WATER QUALITY
FACILITIES	

FILE NO.

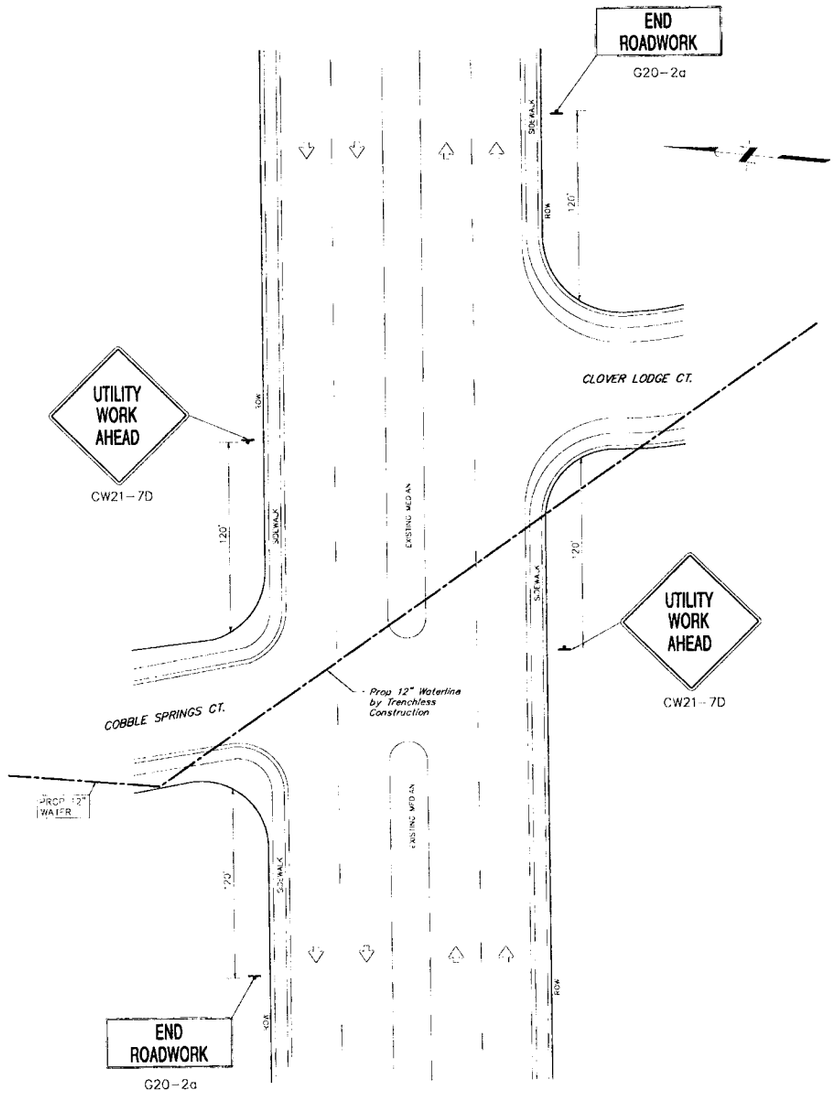
FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
RECEPTION STAMP
46954
CITY OF HOUSTON

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

SHEET No. 13 OF 43

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3



TRAFFIC CONTROL ALONG
WEST AIRPORT BLVD.
FOR BORING UNDER ROADWAY

NTS

POSTED SPEED 30 MPH

NOTES:

1. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVIES (TMUTCD – 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 FORT BEND COUNTY FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.

CONSTRUCTION WARNING SIGN SPACING

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

LEGEND

- OPEN TO TRAFFIC
- SIGN WITH POST
- TUBULAR MARKERS, CONES OR DRUMS

STATE OF TEXAS
D. M. KRUKEWITT
42724
REGISTERED PROFESSIONAL ENGINEER
1-13-10

NO.	DATE	REVISION	APPROV.
4			
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
8335 Dyllton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

TRAFFIC CONTROL PLAN

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/22/10 STREET & BRIDGE
DATE 1/21/10 TRAFFIC
DATE 1.21.10 STORM WATER QUALITY
FACILITIES

FILE NO.

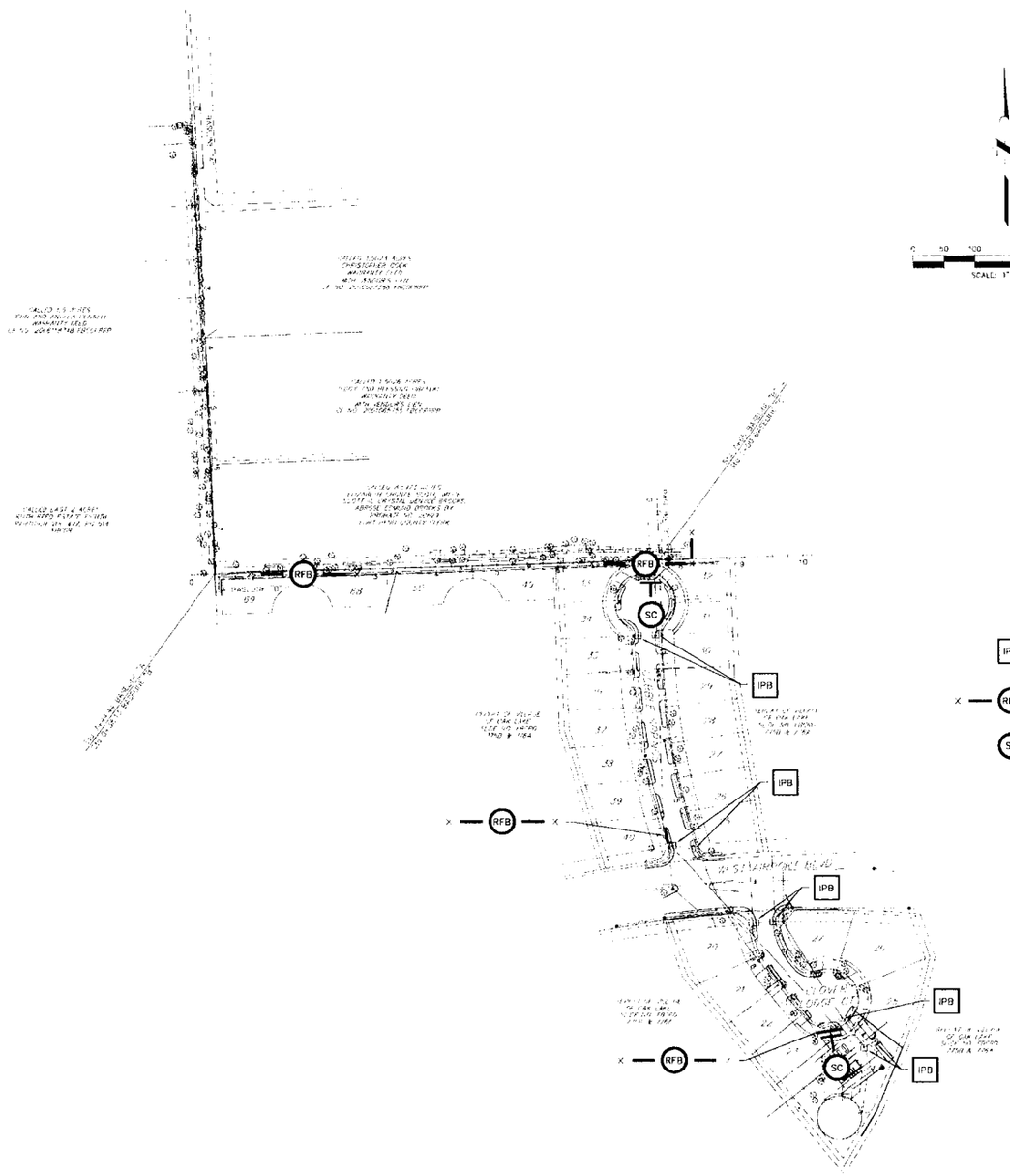
FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
HORZ. AS SHOWN
VERT.

PUBLIC WORKS AND ENGINEERING
INSPECTOR'S FILE
46954
CITY DRAWING NUMBER
HOUSTON, TEXAS

SHEET No. 14 OF 43

5/27/10



LEGEND:

IPB	INLET PROTECTION BARRIERS (SEE DETAIL SHT 43)
RFB	REINFORCED FILTER FABRIC BARRIER (SEE DETAIL SHT 43)
SC	STABILIZED CONSTRUCTION EXIT (SEE DETAIL SHT 43)

PRIVATE UTILITY LINES SHOWN

Date: 1-18-10

Centerpoint Energy/ Electric Facilities (approved only for crossing underground ductlines, unless otherwise noted)
Valid At Time Of Review Only

SBC UTILITY LINES SHOWN

Date: 1-20-10

SBC Approved for underground conduit facilities only.
Signature valid for one year.

Date: 1-18-10

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

Date: 1-13-10

Comcast

Date: 1-14-10

Windstream

NOTICE:

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

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

BENCHMARK: CONTROL POINT NO. 134 BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134" LOCATED IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND COBBLE SPRINGS COURT, 2.3 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN
ELEV. = 78.93' (NAVD 88, 2002 ADJUSTMENT)

NOTE:

1. Contractor shall place sandbags at all inlets along Cobble Springs, Clover Lodge Court, and any inlets located on water plant site.
2. Construction entrance may be relocated as directed by the Engineer to fit the conditions in the field.

STATE OF TEXAS
D. M. KRUEWITT
62724
REGISTERED PROFESSIONAL ENGINEER
1-13-10

NO.	DATE	REVISION	APPROV.
4			
3			
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1			

JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

STORM WATER POLLUTION PREVENTION PLAN

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	Robert G. 1/28/10	STREET & DRAINAGE	
WASTEWATER	M. Comer 1-20-10	TRAFFIC	
STORM	J. Hill 1.27.10	STORM WATER QUALITY	
FACILITIES			

FILE NO:

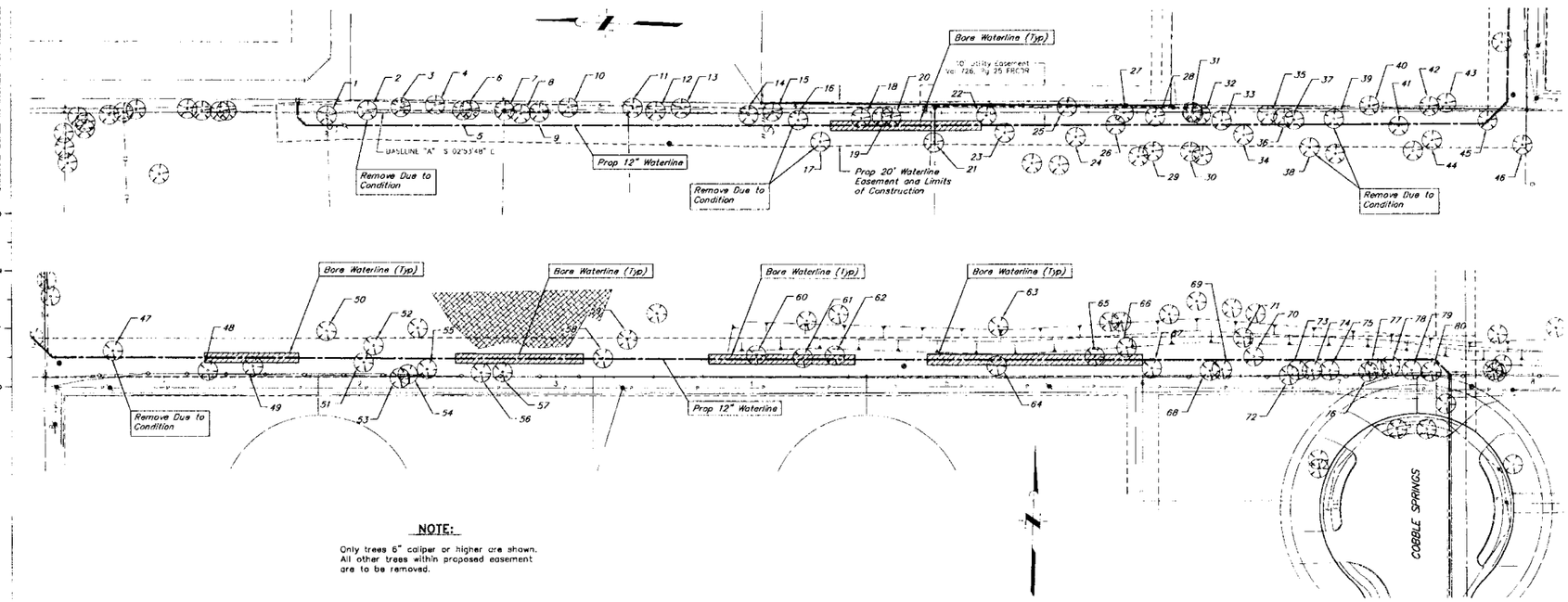
DRAWING SCALE
HORIZ: AS SHOWN
VERT:

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
ACCEPTED DATE
46954
CITY SECRETARY

SHEET No. 15 OF 43

5/17/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3



NOTE:

Only trees 6" caliper or higher are shown. All other trees within proposed easement are to be removed.

TREE #	SPECIES	SIZE	CONDITION/NOTES	LOCATION/STA#	TREE PROTECTION AND SERVICES
1	HACKBERRY	24"	FAIR	1+00 – 2+00	FENCE, ROOT PRUNE
2	AMERICAN ELM	–	POOR	1+00 – 2+00	REMOVE DUE TO CONDITION
3	PECAN	10"	FAIR – POOR	2+00 – 3+00	FENCE
4	WATER OAK	15"	GOOD	2+00 – 3+00	FENCE
5	PECAN	10"	FAIR – POOR	2+00 – 3+00	FENCE
6	PECAN	12"	FAIR	2+00 – 3+00	FENCE
7	PECAN	12"	FAIR	2+00 – 3+00	FENCE
8	PECAN	18"	FAIR	2+00 – 3+00	FENCE
9	PECAN	8"	FAIR – POOR	2+00 – 3+00	FENCE
10	BOX ELDER	7"	FAIR	3+00 – 3+00	FENCE
11	PECAN	10"	FAIR – POOR	3+00 – 4+00	FENCE
12	PECAN	10"	FAIR	3+00 – 4+00	FENCE
13	HACKBERRY	10"	FAIR	3+00 – 4+00	FENCE
14	HACKBERRY	12"	FAIR – POOR, DECAY AT BASE	3+00 – 4+00	FENCE, CLEARANCE PRUNE
15	PECAN	24"	FAIR	3+00 – 4+00	FENCE, CLEARANCE PRUNE
16	PECAN	20"	DEAD	3+00 – 4+00	REMOVE DUE TO CONDITION
17	PECAN	24"	DEAD	3+00 – 4+00	REMOVE DUE TO CONDITION
18	HACKBERRY	15"	FAIR	4+00 – 5+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
19	PECAN	24"	FAIR	4+00 – 5+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
20	PECAN	24"	FAIR – POOR	4+00 – 5+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
21	PECAN	20"	FAIR	4+00 – 5+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
22	MULBERRY	15"	FAIR – POOR	4+00 – 5+00	FENCE
23	CEDAR ELM	8"	FAIR – POOR	5+00 – 6+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
24	PERSIMMON	10"	FAIR	5+00 – 6+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
25	ASH	20"	FAIR	5+00 – 6+00	FENCE
26	HACKBERRY	15"	FAIR	5+00 – 6+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
27	CEDAR ELM	10"	FAIR	5+00 – 6+00	FENCE
28	CEDAR ELM	10"	FAIR	5+00 – 6+00	FENCE
29	HACKBERRY	15"	FAIR	5+00 – 6+00	FENCE
30	HACKBERRY	12"	POOR, BROKEN TOP	5+00 – 6+00	OUTSIDE OF EASEMENT, RECOMMEND REMOVAL
31	ASH	12"	FAIR	6+00 – 7+00	FENCE
32	CEDAR ELM	6"	FAIR	6+00 – 7+00	FENCE
33	HACKBERRY	–	POOR, SPLIT ON GROUND	6+00 – 7+00	REMOVE DUE TO CONDITION
34	HACKBERRY	10"	FAIR	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
35	HACKBERRY	20"	FAIR – POOR	6+00 – 7+00	FENCE
36	CEDAR ELM	8"	FAIR	6+00 – 7+00	FENCE
37	CEDAR ELM	10"	FAIR	6+00 – 7+00	FENCE
38	ASH	0	POOR, TRUNK ONLY	6+00 – 7+00	REMOVE DUE TO CONDITION
39	HACKBERRY	12"	POOR, TRUNK ONLY	6+00 – 7+00	REMOVE DUE TO CONDITION
40	CEDAR ELM	20"	FAIR – POOR	6+00 – 7+00	FENCE

TREE #	SPECIES	SIZE	CONDITION/NOTES	LOCATION/STA#	TREE PROTECTION AND SERVICES
41	HACKBERRY	14"	FAIR – POOR	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
42	CEDAR ELM	10"	FAIR	7+00 – 8+00	FENCE
43	CEDAR ELM	15"	FAIR	7+00 – 8+00	FENCE
44	HACKBERRY	14"	FAIR	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
45	HACKBERRY	12"	FAIR	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
46	HACKBERRY	15"	FAIR	7+00 – 8+00	FENCE
47	CEDAR ELM	36"	POOR	0+00 – 1+00	REMOVE DUE TO CONDITION & CONFLICT WITH PROPOSED WATER LINE
48	CHINESE TALLOW	10"	FAIR	1+00 – 2+00	FENCE
49	PECAN	24"	FAIR	1+00 – 2+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
50	PECAN	28"	DEAD	1+00 – 2+00	OUTSIDE OF EASEMENT, RECOMMEND REMOVAL
51	CHINESE TALLOW	8"	FAIR – GOOD	2+00 – 3+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
52	CHINESE TALLOW	6"	FAIR – GOOD	2+00 – 3+00	FENCE
53	CEDAR ELM	4"	POOR	2+00 – 3+00	FENCE
54	CEDAR ELM	8"	FAIR	2+00 – 3+00	FENCE
55	CEDAR ELM	8"	FAIR	2+00 – 3+00	FENCE
56	PECAN	8"	POOR	2+00 – 3+00	FENCE
57	AMERICAN ELM	18"	FAIR, MULTI TRUNK	2+00 – 3+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
58	PECAN	10"	POOR	3+00 – 4+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
59	PECAN	22"	FAIR – POOR	3+00 – 4+00	FENCE, ROOT PRUNE
60	PECAN	24"	FAIR	3+00 – 4+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
61	PECAN	20"	FAIR	4+00 – 5+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
62	PECAN	24"	FAIR	4+00 – 5+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
63	PECAN	14"	FAIR, MULTI TRUNK	5+00 – 6+00	FENCE
64	WATER OAK	36"	FAIR – GOOD	5+00 – 6+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
65	WATER OAK	22"	GOOD	5+00 – 6+00	FENCE, BORE WATER LINE WITHIN ROOT ZONE, PROJECT GRADE FROM COMPACTION AND RUTTING
66	PECAN	11"	FAIR	5+00 – 6+00	FENCE
67	AMERICAN ELM	30"	FAIR – POOR	6+00 – 7+00	REMOVE DUE TO CONDITION & CONFLICT WITH PROPOSED WATER LINE
68	PECAN	18"	FAIR, MULTI TRUNK	6+00 – 7+00	FENCE, ROOT PRUNE
69	CHINESE TALLOW	12"	FAIR	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
70	PECAN	8"	FAIR	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
71	PECAN	20"	FAIR	6+00 – 7+00	FENCE
72	ASH	18"	FAIR – POOR	6+00 – 7+00	FENCE, ROOT PRUNE
73	PECAN	10"	FAIR	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
74	CHINESE TALLOW	20"	FAIR, MULTI TRUNK	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
75	CHINESE TALLOW	14"	FAIR	6+00 – 7+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
76	CHINESE TALLOW	13"	FAIR	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
77	CHINESE TALLOW	12"	FAIR	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
78	CHINESE TALLOW	13"	FAIR	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
79	CHINESE TALLOW	24"	FAIR, MULTI TRUNK	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE
80	CHINESE TALLOW	21"	FAIR, MULTI TRUNK	7+00 – 8+00	REMOVE DUE TO CONFLICT WITH PROPOSED WATER LINE

PRIVATE UTILITY LINES SHOWN

Date: 1-18-10

Centerpoint Energy/ Electric Facilities. (approved only for crossing underground electrics, unless otherwise noted.) Valid At Time Of Review Only

SBC UTILITY LINES SHOWN

Date: 1-20-10

SBC Approved for underground conduit facilities only. Signature valid for one year

Date: 1-18-10

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

Date: 1-13-10

Comcast

Date: 1-19-10

Windstream

NOTICE:

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

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

BENCHMARK: CONTROL POINT NO. 134, BEING A SET 5/8" IRON ROD WITH AN ALUMINUM CAP STAMPED "NORTH FORT BEND WATER AUTHORITY 134" LOCATED IN THE MEDIAN EAST OF THE INTERSECTION OF WEST AIRPORT BOULEVARD AND COBBLE SPRINGS COURT, 2.5 FEET FROM THE EDGE OF CONCRETE AT THE WEST END OF THE MEDIAN. ELEV. = 78.93' (NAVD-88, 2002 ADJUSTMENT)

STATE OF TEXAS
KENNETH J. MARTINEZ
87808
LICENSED PROFESSIONAL ENGINEER

1/18/10

NO.	DATE	REVISION	APPROV.
4			
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1			

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ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton St., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. MUD. No. 41 CONNECTION

TREE PROTECTION PLAN
SHEET 1 OF 2

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

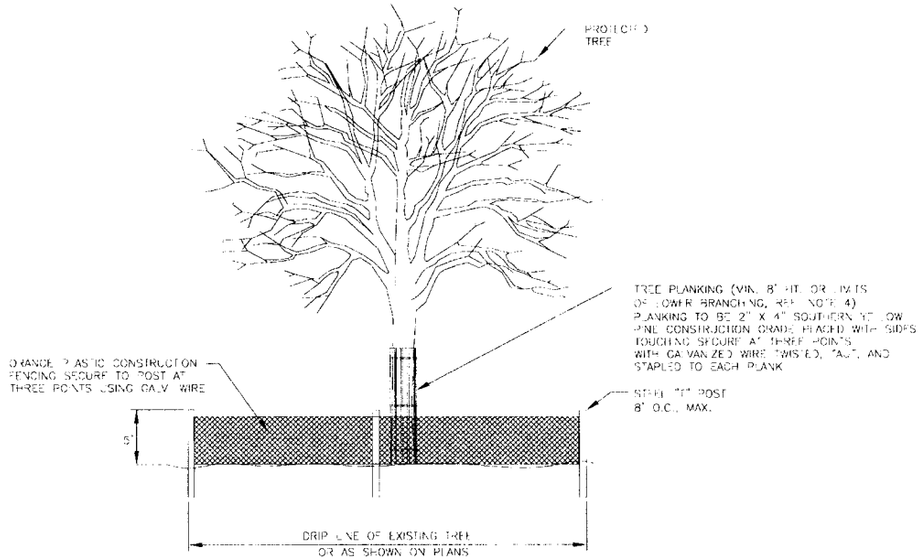
WATER — 4/22/10
WASTEWATER — 1-21-10
STORM — 1-21-10
STREET & BRIDGE
TRAFFIC
STORM WATER QUALITY
FACILITIES

FOR CITY OF HOUSTON USE ONLY
PWE CODES AND STANDARDS
ACCEPTED 1/13/10
46954
CITY DRAWING NUMBER
HOUSTON, TEXAS

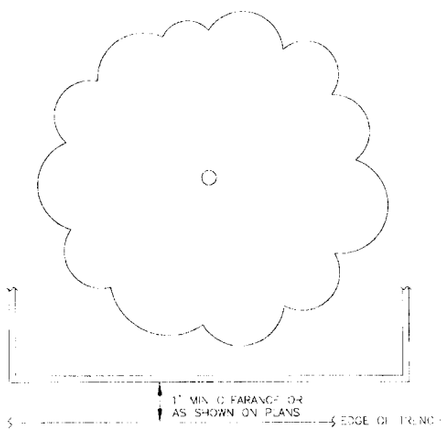
FILE NO.:
DRAWING SCALE:
HORZ.: AS SHOWN
VERT.:

SHEET No. 16 OF 43

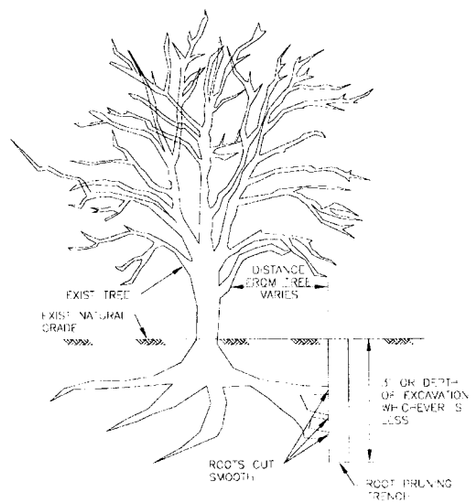
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3



1/7 TREE PROTECTION DETAIL



2/7 TREE PROTECTION DETAIL



3/7 ROOT PRUNE TRENCH

NOTES:

1. ALL TREES SHOWN ON THE TREE PROTECTION PLANS SHALL BE PROTECTED THROUGHOUT CONSTRUCTION WITH TREE PROTECTION.

2. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).

3. FENCING SHALL BE LOCATED AS SHOWN ON DRAWINGS, OR COMPLETELY SURROUND THE TREE OR CLUSTERS OF TREES AND WILL BE LOCATED AT THE OUTERMOST LIMITS OF THE TREE BRANCHES (DRIPLINE). THE DRIPLINE DEFINES THE "ROOT ZONE". WITHIN THE LIMITS OF FENCING, THE CONTRACTOR SHALL PREVENT THE FOLLOWING FROM OCCURRING WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE:

   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS.

   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 3" CUT OR FILL) OR TRENCHING NOT REVIEWED OR AUTHORIZED.

   C. WOUNDS TO EXPOSED ROOTS, TRUNK, OR LIMBS BY MECHANICAL EQUIPMENT.

   D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CONCRETE TRUCK CLEANING, AND FIRES.

4. WHERE EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN 4 FEET TO A TRUNK, PROTECT THE TRUNK WITH STRAPPED ON PLANKING TO A HEIGHT OF 8' (OR TO THE LIMITS OF THE LOWER BRANCHING) AS INDICATED ON TREE PROTECTION PLANS.

5. ALL GRADING WITHIN PROTECTED ROOT ZONE AREAS SHALL BE DONE BY HAND TO MINIMIZE ROOT DAMAGE AND SOIL COMPACTION. PRIOR TO GRADING, RELOCATE PROTECTIVE FENCING TO 2 FEET BEHIND THE GRADE CHANGE AREA. GRADES SHALL REMAIN UNCHANGED WHERE POSSIBLE.

6. ANY ROOTS SEVERED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN 2 DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES DRYING OF THE ROOT DUE TO EVAPORATION.

7. TREES IMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE WATERED THOROUGHLY ONCE A WEEK DURING PERIODS OF HOT AND/OR DRY WEATHER. TREE CROWNS SHALL BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.

8. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN 3" MAXIMUM SHALL BE PERMITTED WITHIN THE DRIPLINE OF TREES. NO PERMANENT SOIL OR MULCH IS PERMITTED ON THE ROOT FLARE OF ANY TREE.

9. PRUNING SHALL BE PERFORMED BY THE CONTRACTOR TO PROVIDE CLEARANCE FOR STRUCTURES OR CONSTRUCTION ACTIVITIES. PRUNING SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS, ONLY WITH PRIOR APPROVAL FROM AUTHORITY'S ENGINEER. ALL PRUNING MUST BE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE NAA PRUNING STANDARDS), AND BY AN EXPERIENCED AND QUALIFIED ARBORIST WHOSE PRIMARY BUSINESS IS TREE CARE.

10. PROVIDE CORRECTIVE PRUNING AT THE COMPLETION OF CONSTRUCTION TO REMOVE ANY BROKEN OR DAMAGED LIMBS, UNDER THE DIRECTION OF THE AUTHORITY'S ENGINEER.

11. IF REQUIRED, ROOT PRUNE BY TRENCHING A CLEAN 4" WIDE X 24" DEEP CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH IRRIGATION TRENCHER TO MINIMIZE DAMAGE TO REMAINING ROOTS. MARK AND REVIEW TRENCH LINE WITH AUTHORITY'S ENGINEER PRIOR TO TRENCHING.

12. AS SOON AS 4" WIDE X 24" DEEP TRENCH IS CUT, EXPOSED ROOTS SHALL BE HAND CUT TO CREATE CLEAN ROOT CUTS. AS SOON AS HAND CUTS ARE COMPLETE, BACKFILL TRENCH WITH A SANDY LOAM TOPSOIL PLACED IN 6" LIFTS, AND COMPACTED AS REQUIRED BY SPECIFICATIONS.

13. IN AREAS WHERE LIVE STABILIZATION ABUTS OR ENCROACHES UPON ROOT ZONES, AND WHERE ROOT PRUNING IS CALLED FOR, INSTALL 10-MIL PLASTIC SHEETING TO FULL DEPTH OF ROOT PRUNING TRENCH AND 6" OVER TOP. CUT AND REMOVE EXPOSED PLASTIC AT COMPLETION OF WORK.

STATE OF TEXAS
KENNETH L. MARTINEZ
87808
LICENSED PROFESSIONAL ENGINEER
1/13/10

NO.	DATE	REVISION	APPROV.
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Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr., Suite 190 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

TREE PROTECTION PLAN
SHEET 2 OF 2

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PARKS	Robert G. 4/22/10	STREET & DRAINAGE
HISTORICAL	M.E. Cook 12-1-10	TRAFFIC
HOUSING	1. Jul 1. 2013	STORM WATER QUALITY
FACILITIES		

FILE NO.:

FOR CITY OF HOUSTON USE ONLY

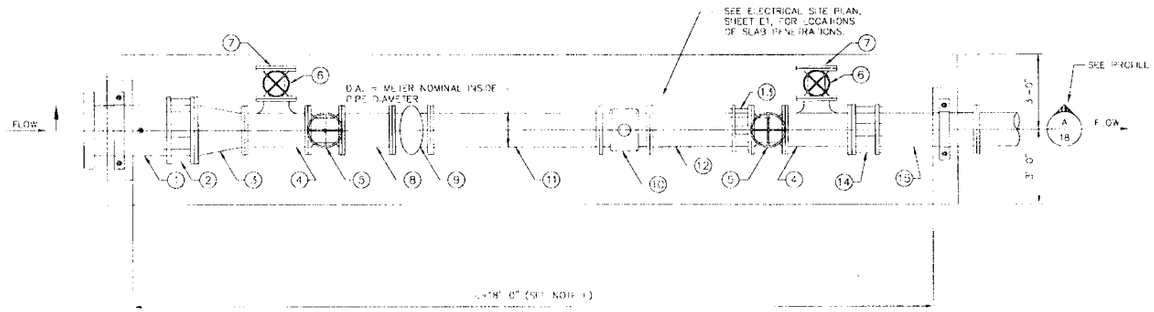
DRAWING SCALE
HORIZ.: AS SHOWN
VERT.:

PUBLIC WORKS AND ENGINEERING
RECEIVED 1/13/10
46954
CITY OF HOUSTON

SHEET No. 17 OF 43

See 5/7/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3



1 PLAN - SLAB ON GRADE METERING STATION

SCALE: NTS

SLAB ON GRADE METER STATION

PIPE RUN SIZE = METER NOMINAL INSIDE DIAMETER, DIA. (INCH) =		DIA. = 8 INCH
ITEM	FITTING DESCRIPTION	FITTING SIZE (INCH)
1	PIPE (DIAMETER) w/ 2" THREADED TAP	12
2	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	12
3	REDUCER	12X4
4	TEE W/BASE (DIAMETER, RUN X RUN X BRANCH)	4X4X4
5	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	4
6	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	4
7	BLIND FLANGE (SIZE)	4
8	PIPE SPOOL (DIAMETER)	4
9	STRAINER ASSEMBLY	4
10	FLOW METER SIZE (ELECTROMAGNETIC METER SEE NOTE C)	4
11	PIPE SPOOL (DIAMETER) LENGTH=(5 x D.A.) MINIMUM	4
12	PIPE SPOOL (DIAMETER) LENGTH=(3 x D.A.) MINIMUM	4
13	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	4
14	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	4
15	PIPE (DIAMETER)	4

NOTES:

(A) METER SIZE TO BE DETERMINED BY NBFWA ENGINEER. DESIGN CONSULTANT IS TO MODIFY FITTING SIZES IN THIS TABLE CONSISTENT WITH SPECIFIED METER SIZE AND SURFACE WATER SUPPLY LINE SIZE.

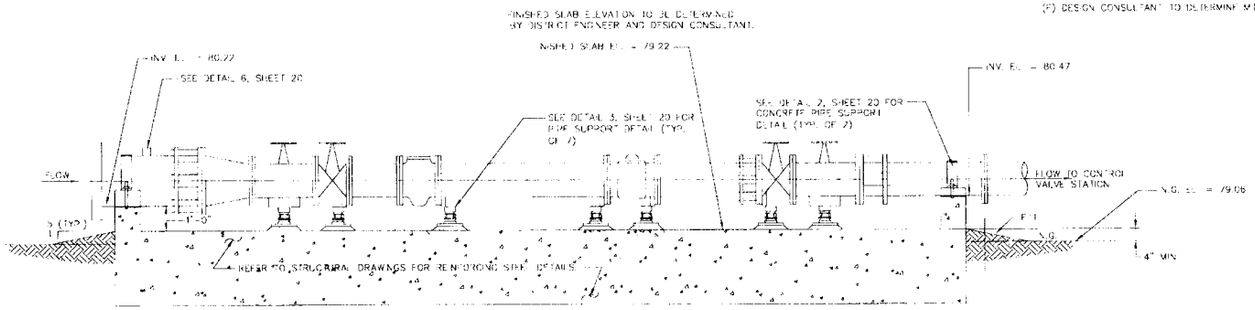
(B) DESIGN IS BASED ON AMERICAN R/D RESILIENT GATE VALVE, PATTERN 2002 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.

(C) DESIGN IS BASED ON THE KROHNE, FS 4000 XC (ENVIROMAG), McCROMETER ULTRA MAG aUM06, SIEMENS SITRANS FM 5100 W ELECTROMAGNETIC OR APPROVED EQUAL.

(D) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS. (IF REQUIRED)

(E) LENGTH (L) OF METER RUN IS APPROXIMATE, IT MAY BE ADJUSTED BASED ON PIPING SHOP DRAWINGS.

(F) DESIGN CONSULTANT TO DETERMINE MINIMUM THRUST RESTRAINT.



A SLAB ON GRADE METERING STATION

SCALE: NTS

* INCLUDE COST OF PIPE AND FITTINGS IN PRICE BID FOR METER/CONTROL VALVE STATION. SEE NOTE F.

INSTALLATION NOTES:

1. INSTALL PIPING, METER ETC. AS SHOWN, CONNECT, PRESSURE TEST AND VERIFY SATISFACTORY OPERATION.
2. ENSURE THAT AS A RESULT OF THE TESTING PROCESS, NO FLOW WILL BE ALLOWED TO ENTER THE DISTRICT'S GROUND STORAGE TANK.
3. AFTER COMPLETION OF WORK PER NOTE 1 AND WHEN AUTHORIZED BY OWNER, REMOVE PIPE SPOOL (ELEMENT 12) BETWEEN FLANGES AND INSTALL BLIND FLANGE AT EACH END. TAKE TRANSPORT AND PLACE PIPE SPOOL IN OWNER SUPPLIED STORAGE FACILITY.

STATE OF TEXAS
KENNETH J. MARTINEZ
97808
LICENSED PROFESSIONAL ENGINEER
1/13/10

NO.	DATE	REVISION	APPROV.
4			
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Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

METER STATION LAYOUT

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 7/22/10
WASTEWATER: 1-21-10
STORM FACILITIES: 1-21-10
STREET & DRAINAGE
TRAFFIC
STORM WATER QUALITY

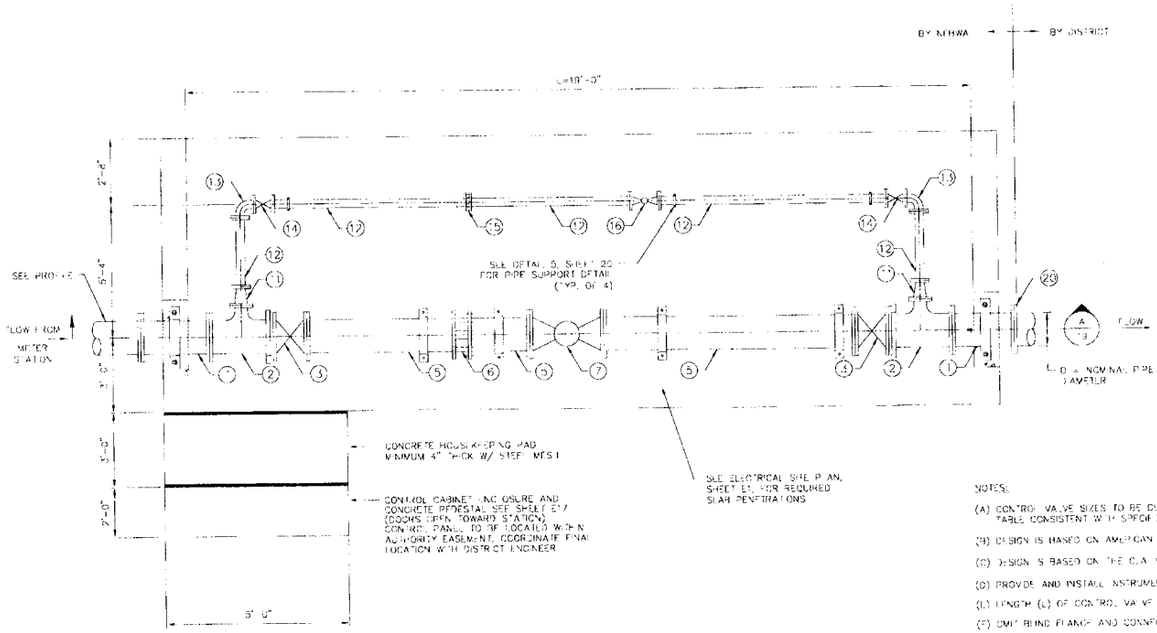
FIELD NO.
DRAWING SCALE
HORZ.: AS SHOWN
VERT.:

FOR CITY OF HOUSTON USE ONLY
APPROVED
46934
CITY ENGINEER
HOUSTON, TEXAS

SHEET No. 18 OF 43

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



SLAB ON GRADE CONTROL VALVE STATION

ITEM	FITTING DESCRIPTION	FITTING SIZE (INCH)
1	PIPE (DIAMETER) W/ 2" THREADED TAP (ONE PLACE)	4
2	TEE (DIAMETER, RUN X RUN X BRANCH)	4X4X4
3	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	4
4	(NOT USED)	
5	PIPE SPOOL (DIAMETER)	4
6	FLEXIBLE COUPLING (DIAMETER)	4
7	VALVE, FLOW CONTROL, FCV 1 (SEE NOTE C) (DIAMETER)	4
8	(NOT USED)	
9	(NOT USED)	
10	(NOT USED)	
11	REDUCER, CONCENTRIC	4X3
12	PIPE SPOOL (DIAMETER)	3
13	ELBOW, 90 DEGREE (DIAMETER)	3
14	VALVE, GATE GV-1 (SEE NOTE A) (DIAMETER)	3
15	FLEXIBLE COUPLING (DIAMETER)	3
16	VALVE, FLOW CONTROL, FCV 2 (SEE NOTE C) (DIAMETER)	3
17	(NOT USED)	
18	(NOT USED)	
19	(NOT USED)	
20	BLIND FLANGE (SEE NOTE F)	4

NOTES:

(A) CONTROL VALVE SIZES TO BE DETERMINED BY NFBWA ENGINEER. DESIGN CONSULTANT IS TO MODIFY FITTING SIZES IN THIS TABLE CONSISTENT WITH SPECIFIED SIZES.

(B) DESIGN IS BASED ON AMERICAN R/D RESILIENT GATE VALVE, PATTERN 2052 W/-AND WHEEL OPERATOR OR APPROVED EQUAL.

(C) DESIGN IS BASED ON THE CLA-VAL 92-59ABCSKG, BERMAD 730C2 03-18-49 2, OR APPROVED EQUAL. VALVES FAIL CLOSE.

(D) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS, IF REQUIRED.

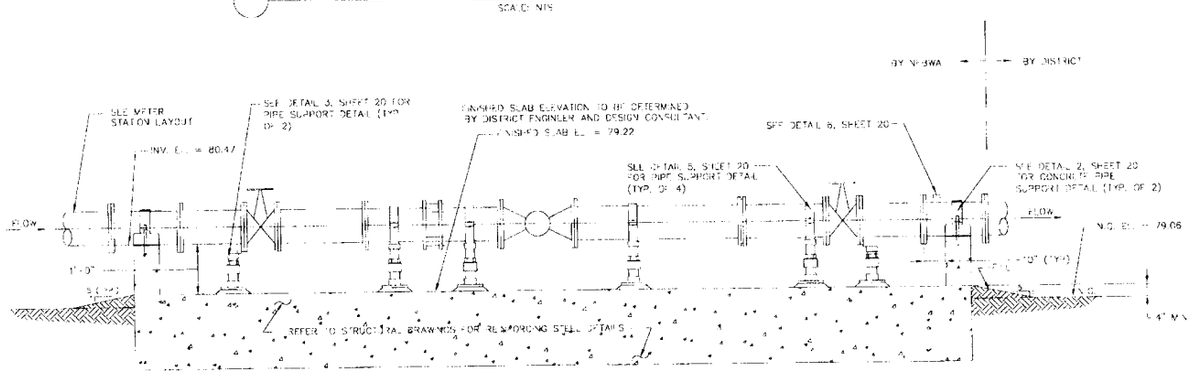
(E) LENGTH (L) OF CONTROL VALVE RUN IS APPROXIMATE. IT MAY BE ADJUSTED BASED ON FITTING SHOP DRAWINGS.

(F) OMIT BLIND FLANGE AND CONNECT TO DISTRICT PIPING IF IT EXISTS.

(G) CONTROL PANEL LOCATION MAY ONLY BE MODIFIED WITH APPROVAL OF NFBWA ENGINEER.

1 PLAN - SLAB ON GRADE CONTROL VALVE STATION

SCALE: NTS



A SLAB ON GRADE CONTROL VALVE STATION

SCALE: NTS

STATE OF TEXAS
KENNETH J. MARTINEZ
87808
LICENSED
PROFESSIONAL ENGINEER
1/12/10

NO.	DATE	REVISION	APPROV.
4			
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1			

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F.B.C. M.U.D. No. 41 CONNECTION

CONTROL VALVE STATION LAYOUT

NORTH FORT BEND WATER AUTHORITY

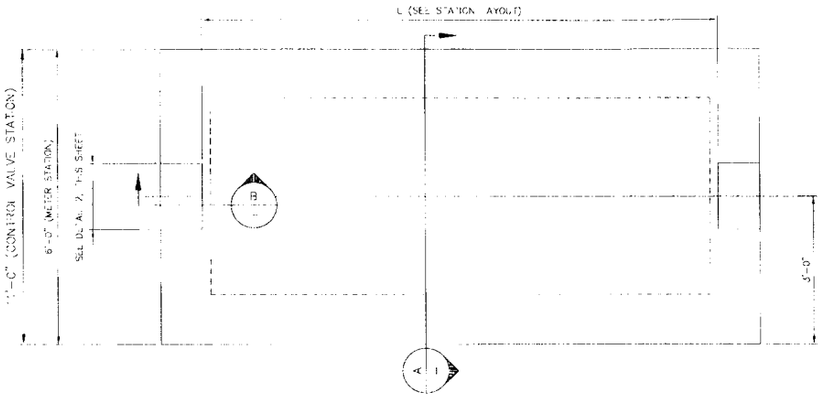
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

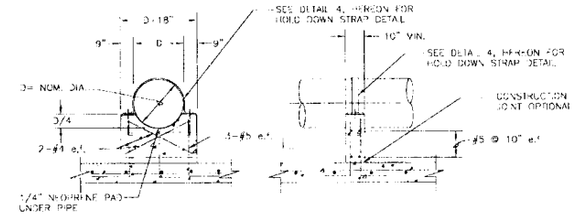
DATE	4/22/10	STREET & DRAINAGE	
RECEIVED BY		TRAFFIC	
CONTROL		STORM WATER QUALITY	
REVISIONS			
TYPE NO:		FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE			
HORZ: AS SHOWN			
VERT:			
SHEET No. 19 OF 43			

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ACCEPTED ON 4-22-10
18964
CITY ENGINEER OF HOUSTON
HOUSTON, TEXAS

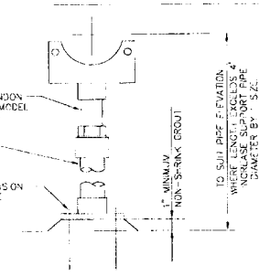
5/19/10



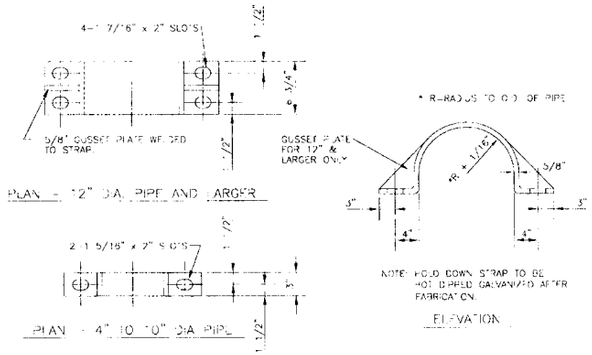
1 PLAN - METER AND CONTROL VALVE STRUCTURAL
SCALE: NTS



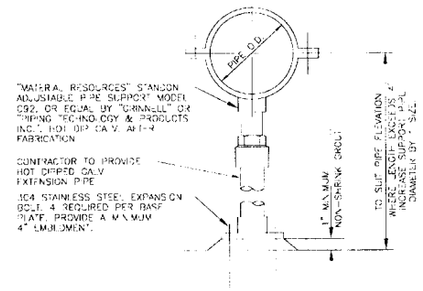
2 CONCRETE PIPE SUPPORT DETAIL



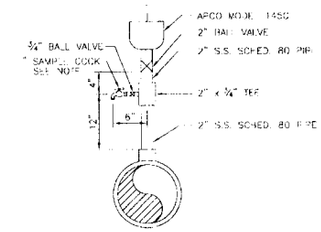
3 PIPE SUPPORT DETAIL



4 HOLD DOWN STRAP DETAIL

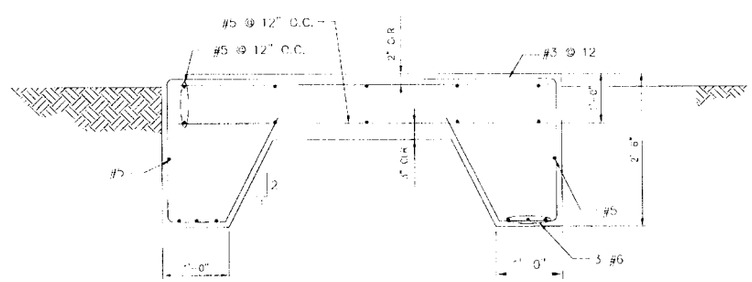


5 PIPE SUPPORT DETAIL W/STRAP



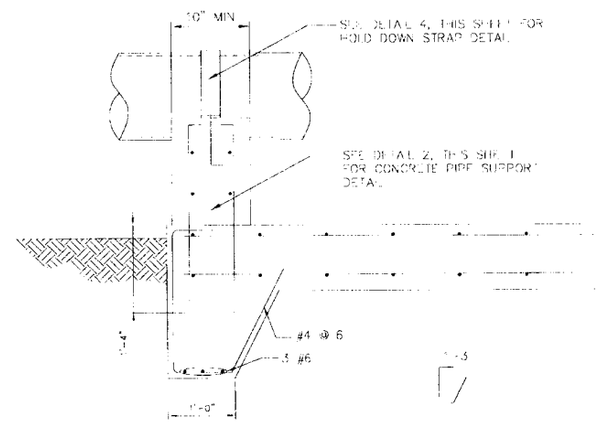
6 AIR VALVE DETAIL
SCALE: NTS

NOTE:
PROVIDE 3/4" BALL VALVE AND SAMPLE COOK AT DOWNSTREAM TEE ONLY.



NOTES:
1. CONCRETE STRENGTH AT 28 DAYS, f'c=4,000 psi
2. STEEL REINFORCEMENT, fy= 60,000 psi
3. ALL EXPOSED CORNERS SHALL BE CHAMFERED 1/2".

A STRUCTURAL DETAIL
SCALE: NTS



B STRUCTURAL DETAIL
SCALE: NTS

STATE OF TEXAS
KENNETH J. MARTINEZ
87809
LICENSED
1/13/10

NO.	DATE	REVISION	APPROV.
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JONES & CARTER, INC.
ENGINEERS • PLANNERS • SURVEYORS
Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr. Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

METERING & CONTROL VALVE STATION STRUCTURAL & MECHANICAL DETAIL

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER — 1/22/10 — STREET & BRIDGE
WW — 1-22-10 — TRAFFIC
CON — 1-22-10 — STORM WATER QUALITY
FACILITIES

REF. NO:

FOR CITY OF HOUSTON USE ONLY
ACCEPTED FOR CITY OF HOUSTON
46954
CITY ENGINEER

DRAWING SCALE
HORZ: AS SHOWN
VERT:

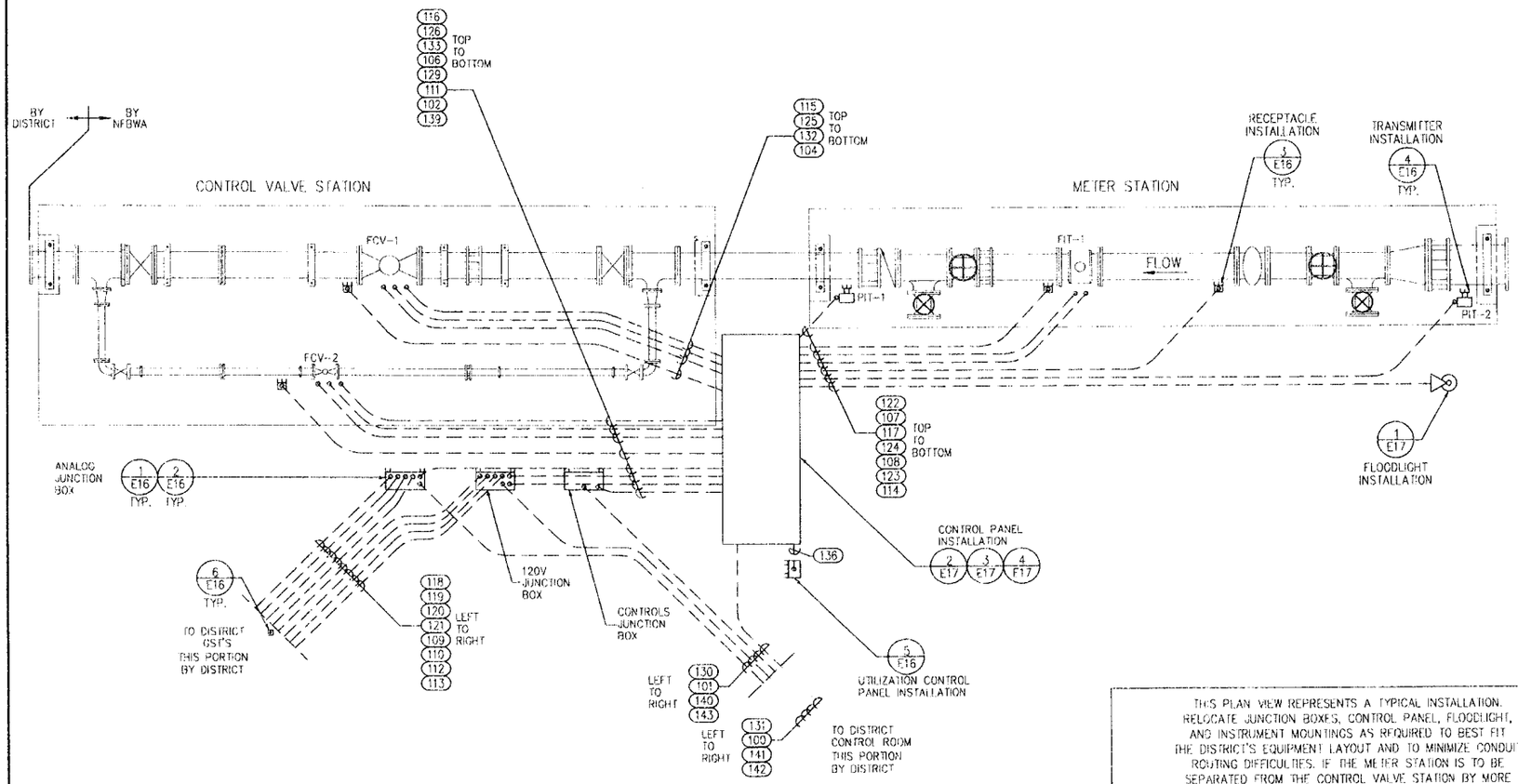
SHEET No. 20 OF 43

5/7/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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.
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 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.
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.



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.

TYPICAL ELECTRICAL SITE PLAN

N.T.S.

LEGEND

- ELECTRICAL DUCT BANK MARKER (SEE DTL SHT E16)
- GROUND CONDUCTOR
- ELECTRICAL DUCT BANK (SEE DTL SHT E17)
- CAPPED ELECTRICAL CONDUIT
- GROUND ROD
- WEATHERHEAD
- FLOODLIGHT (SEE DTL SHT E17)

NO.	DATE	REVISION	APPROV.
4			
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1			

BROWN & GAY ENGINEERS, INC
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
-- Civil engineers and surveyors --
Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
8020 White Road Beaumont, TX 77708 (409) 866-7096

METER AND CONTROL VALVE STATION INSTALLATION & ROUTING

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/22/10
STREET & ROAD
DRAFTING
SURVEY WATER QUALITY
PROJECT
FILE NO.
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY
ACCEPTED FOR FIELD
46954
CITY ENGINEER
HOUSTON, TEXAS

REF. NO. E1

SHEET 21 OF 45

DATE: NOVEMBER 12, 2009

CONDUIT SCHEDULE

CONDUIT NO.	DESCRIPTION	CONDUIT SIZE	POWER CONDUCTORS NO.	POWER CONDUCTORS SIZE	POWER CONDUCTORS NEUTRAL	POWER CONDUCTORS GROUND	CONTROL CONDUCTORS NO.	CONTROL CONDUCTORS SIZE	CONTROL CONDUCTORS GND.	ROUTING FROM	ROUTING METHOD	ROUTING TO	REMARKS
100	NFBWA CONTROL PANEL POWER FEED	1 1/2	2	6	6	6				DISTRICT CONTROL ROOM	UNDERGROUND DUCTBANK	DUCTBANK MARKER	BY DISTRICT, COMPLETE W/CONDUIT #101
101	NFBWA CONTROL PANEL POWER FEED	1 1/2	2	6	6	6				DUCTBANK MARKER	UNDERGROUND DUCTBANK	120V JUNCTION BOX	WIRE PROVIDED BY DISTRICT, CONTROL RM TO JB
102	NFBWA CONTROL PANEL POWER FEED	1 1/2	2	6	6	6				120V JUNCTION BOX	UNDERGROUND DUCTBANK	NFBWA CONTROL PANEL	
103	(NOT USED)												
104	FCV-1 HEAT TRACE POWER	1	1	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-1	
105	(NOT USED)												
106	FCV-2 HEAT TRACE POWER	1	1	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-2	
107	FLOWMETER HEAT TRACE POWER	1	1	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FIT-1 FLOWMETER	
108	FLOWMETER AREA UTILITY RECEPTACLE	1	1	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FLOWMETER UTILITY REC.	
109	GST No. 1 HEAT TRACE POWER	1	1	12	12	12				120V JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	CONDUIT & WIRE COMPLETED TO GST No. 1 BY DISTRICT
110	GST No. 2 HEAT TRACE POWER	1	1	12	12	12				120V JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	CONDUIT & WIRE COMPLETED TO GST No. 2 BY DISTRICT
111	GST HEAT TRACE POWER	1	2	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	120V JUNCTION BOX	
112	FUTURE GST No. 3 HEAT TRACE POWER	1	1	PULL WIRE ONLY						120V JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	EMPTY CONDUIT, FUTURE USE
113	FUTURE GST No. 4 HEAT TRACE POWER	1	1	PULL WIRE ONLY						120V JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	EMPTY CONDUIT, FUTURE USE
114	FLOODLIGHT	1	2	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FLOODLIGHT	ADD CONDUIT & SECOND FLOODLIGHT IF REQ'D, SEE E1
115	SPARE TO FCV-1	1								NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-1	
116	SPARE TO FCV-2	1								NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-2	
117	POWER TO FLOWMETER	1	1	12	12	12				NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FIT-1 FLOWMETER	
118	LIT-1 GST No. 1 SIGNAL TO NFBWA CONTROL PANEL	1					1	18 GA. 2 COND. SH. PR.		ANALOG JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	CONDUIT & WIRE COMPLETED TO GST No. 1 BY DISTRICT
119	LIT-2 GST No. 2 SIGNAL TO NFBWA CONTROL PANEL	1					1	18 GA. 2-COND. SH. PR.		ANALOG JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	CONDUIT & WIRE COMPLETED TO GST No. 2 BY DISTRICT
120	FUTURE LIT-3 GST No. 3 SIGNAL TO NFBWA CONTROL PANEL	1					1	PULL WIRE ONLY		ANALOG JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	EMPTY CONDUIT, FUTURE USE
121	FUTURE LIT-4 GST No. 4 SIGNAL TO NFBWA CONTROL PANEL	1					1	PULL WIRE ONLY		ANALOG JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	EMPTY CONDUIT FUTURE USE
122	PIT-1 DOWNSTREAM PRESS XMITTER SIGNAL TO CONT PNL	1					1	18 GA. 2-COND. SH. PR.		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	PIT-1	
123	PIT-2 UPSTREAM PRESS XMITTER SIGNAL TO CONT PNL	1					1	18 GA. 2-COND. SH. PR.		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	PIT-2	
124	FIT-1 FLOWMETER SIGNAL TO NFBWA CONTROL PANEL	1					1	18 GA. 2-COND. SH. PR.		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FIT-1	
125	FCV-1 TO CONT PNL	1					2	18GA 2-CON SH PR+2-#14		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-1	
126	FCV-2 TO CONT PNL	1					2	18GA 2-CON SH PR+2-#14		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-2	
127	(NOT USED)												
128	(NOT USED)												
129	ANALOG SIGNALS TO ANALOG JUNCTION BOX	2					6	18 GA. 2-COND. SH. PR.		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	ANALOG JUNCTION BOX	
130	ANALOG SIGNALS TO ANALOG JUNCTION BOX	2					1	PULL WIRE ONLY		ANALOG JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	FOR FUTURE CONNECTION TO CONDUIT #131
131	ANALOG SIGNALS TO ANALOG JUNCTION BOX	2					6	18 GA. 2-COND. SH. PR.		DUCTBANK MARKER	UNDERGROUND DUCTBANK	DISTRICT CONTROL ROOM	BY DISTRICT, WIRE LENGTH CONTROL ROOM TO JB
132	FCV-1 OPEN AND CLOSED LIMIT SOLENOID VALVES	1					4	14	14	NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-1	
133	FCV-2 OPEN AND CLOSED LIMIT SOLENOID VALVES	1					4	14	14	NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	FCV-2	
134	(NOT USED)												
135	(NOT USED)												
136	NFBWA WATER UTILIZATION PANEL	1					8	14	14	NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	NFBWA WATER UTIL. PANEL	
137	(NOT USED)												
138	(NOT USED)												
139	NFBWA CONTROLS TO DISTRICT	1					8	12	12	NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	CONTROLS JUNCTION BOX	
140	NFBWA CONTROLS TO DISTRICT	1					1	PULL WIRE ONLY		CONTROLS JUNCTION BOX	UNDERGROUND DUCTBANK	DUCTBANK MARKER	FOR FUTURE CONNECTION TO CONDUIT #141
141	NFBWA CONTROLS TO DISTRICT	1					8	12	12	DUCTBANK MARKER	UNDERGROUND DUCTBANK	DISTRICT CONTROL ROOM	BY DISTRICT, WIRE LENGTH CONTROL ROOM TO JB
142	TELEPHONE LINE (DEDICATED) TO NFBWA CONTROL PANEL	1					1	TEL PAIR		DUCTBANK MARKER	UNDERGROUND DUCTBANK	DISTRICT CONTROL ROOM	BY DISTRICT, COMPLETE W/CONDUIT #143
143	TELEPHONE LINE (DEDICATED) TO NFBWA CONTROL PANEL	1						PULL WIRE ONLY		NFBWA CONTROL PANEL	UNDERGROUND DUCTBANK	DUCTBANK MARKER	

DATE: NOVEMBER 1, 2009

REF. NO. E2

SHEET 22 OF 43

NO.	DATE	REVISION	APPROV.
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BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400 Houston, TX 77042
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TBPE Registration No. F-1375
8320 White Road Beaumont, TX 77708 (409) 866-7096

ELECTRICAL
CONDUIT SCHEDULE

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

APPR. Robert G. 1/22/10
APPR. M.S. Cancel 1-21-10
APPR. J. Hurd 1-21-10

DATE: 6-18-07
DRAWN: GROUNDWATER QUALITY

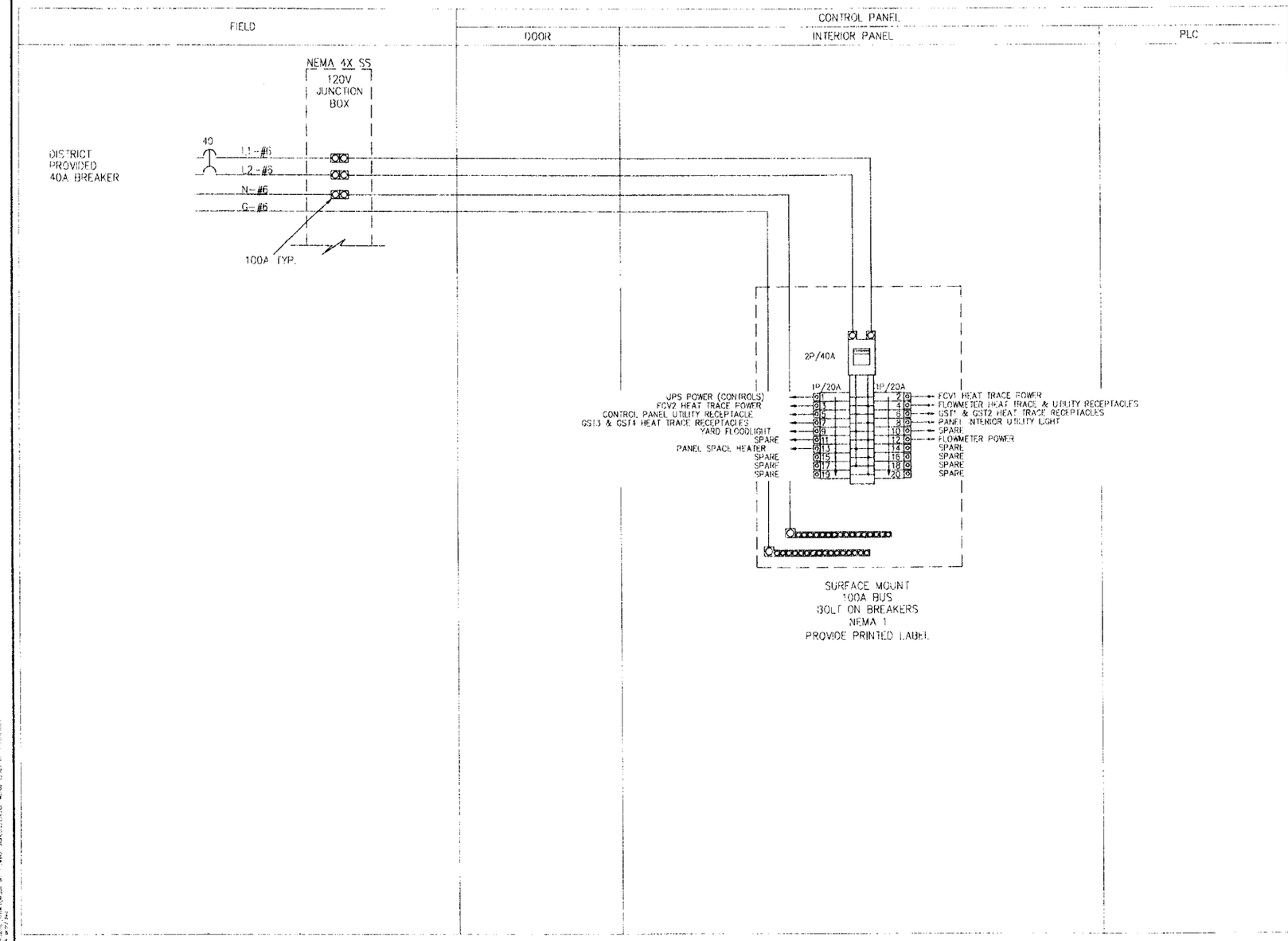
FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

PROJ. NO.

46054

SEE 3/17/10



NOTES:

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

LEGEND

129 3A FUSED TERMINAL BLOCK

3A 3B FUSED TERMINAL BLOCK

13 TERMINAL BLOCK

PLC TERMINAL

STATE OF TEXAS
MARK F. KENNEDY
48479
REGISTERED
PROFESSIONAL ENGINEER
11/13/09

NO.	DATE	REVISION	APPROV.
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8320 White Road Beaumont, TX 77703 (409) 866-7096

CONTROL DIAGRAM
SHEET 1

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/22/10 STREET & DRAINAGE
DATE 1-28-10 TRAFFIC
DATE 1-21-10 STORM WATER QUALITY
DATE

NO.

DRAWING SCALE

DATE
DATE

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
ACCEPTED
46954
CITY OF HOUSTON
HOUSTON, TEXAS

REF. NO. E3

SHEET 23 OF 43

DATE NOVEMBER 12, 2009

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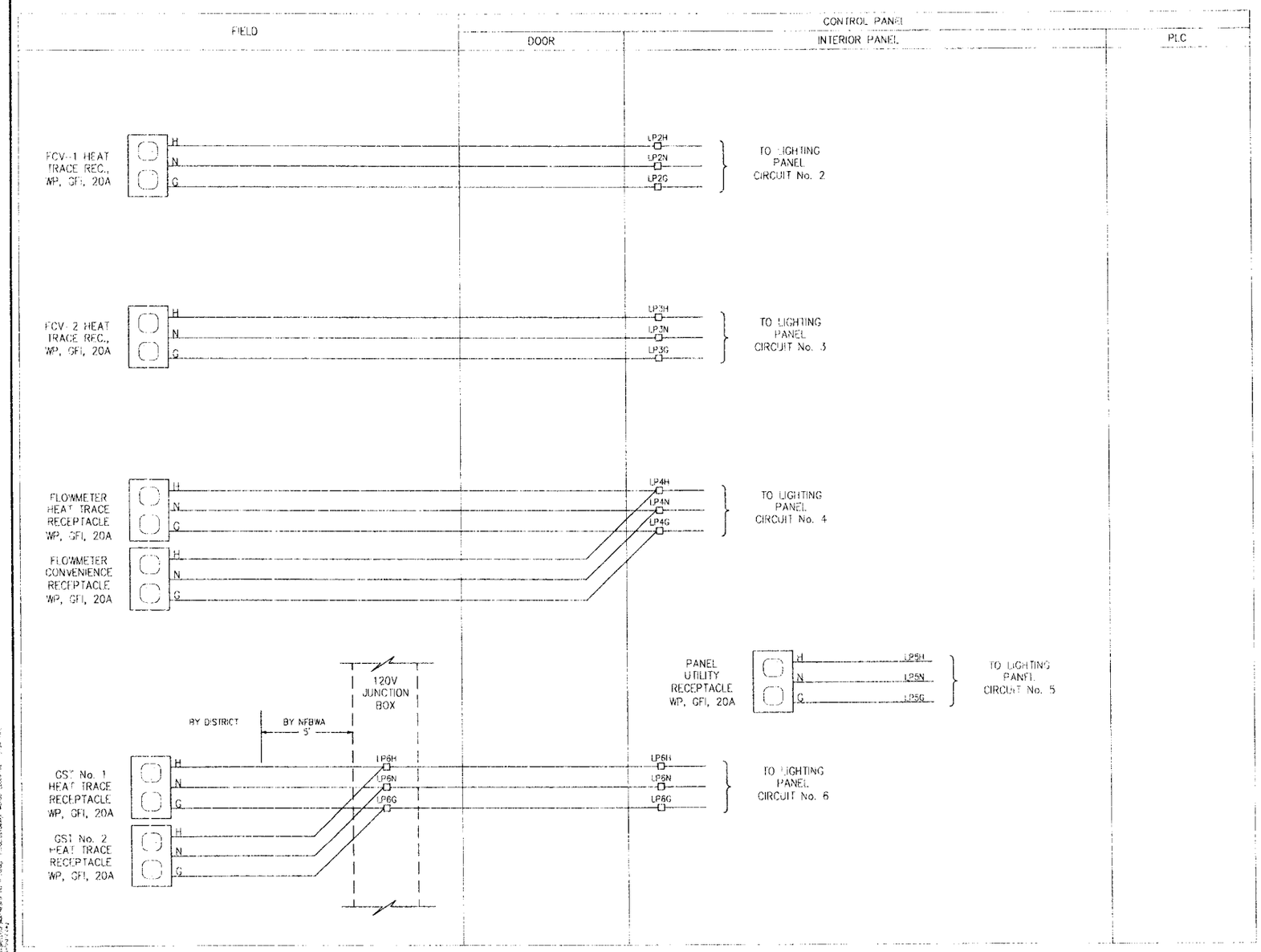
5/7/10



NOTES:

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LEGEND

129 3A — FUSED TERMINAL BLOCK

3A 38 — FUSED TERMINAL BLOCK

73 — TERMINAL BLOCK

◇ — PLC TERMINAL

STATE OF TEXAS
MARK F. KENNEDY
No. 48473
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	APPROV.
4			
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CONTROL DIAGRAM
SHEET 2

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

MAYOR Robert G. Lanier 1/22/10
DIRECTOR 1-21-10
CITY ENGINEER 1-21-10

STREET & BRIDGE
TRAFFIC
STORM WATER QUALITY

FILE NO.
DRAWING SCALE
HORZ.
VERT.

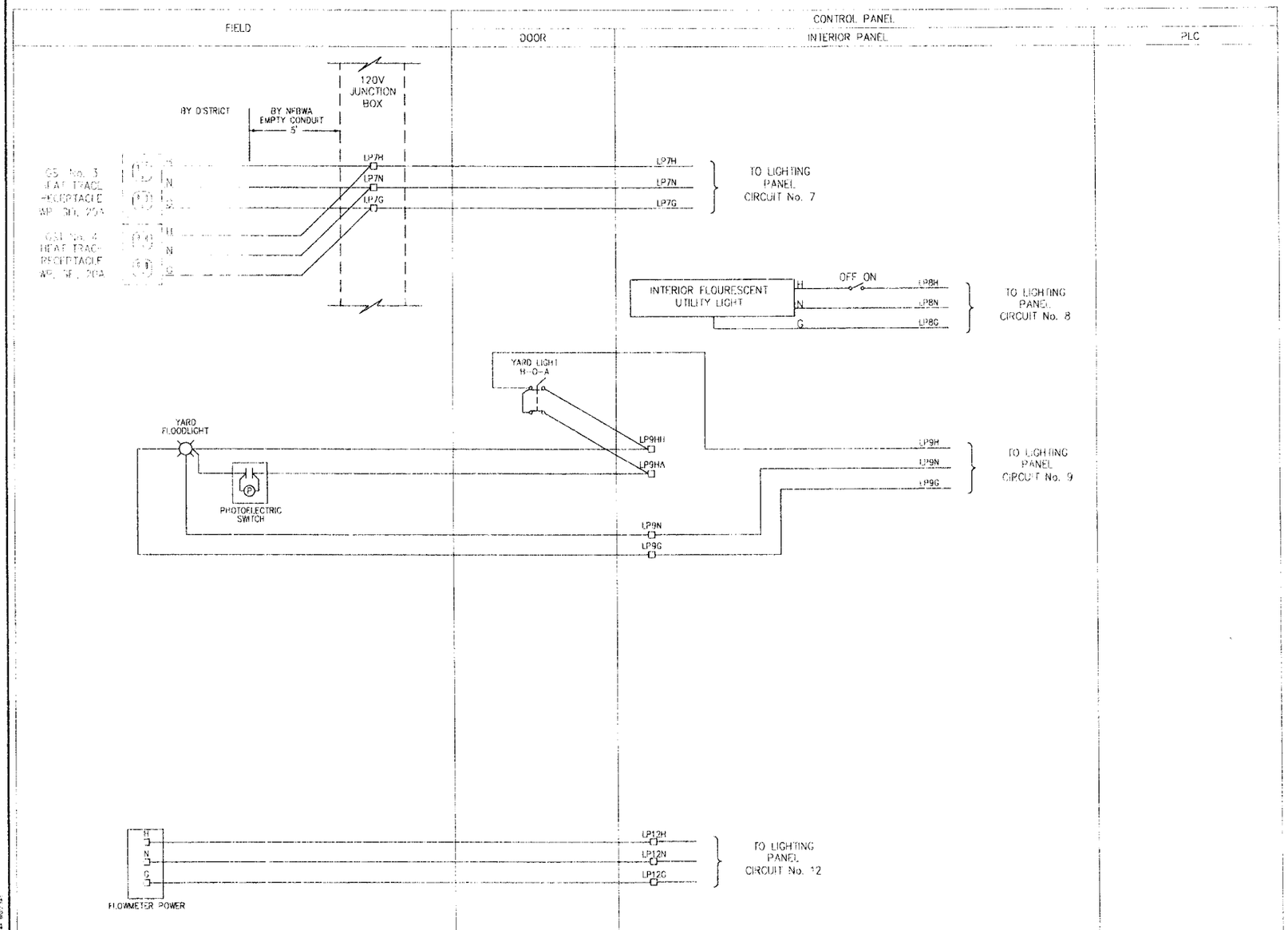
FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
INSPECTOR STAMP
46954
CITY SUBMITTAL REVIEWED
HOUSTON, TEXAS

See Sim110

REF. NO. E4

SHEET NO. 24 OF 43

DATE NOVEMBER 19, 2009



NOTES:

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LEGEND

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

STATE OF TEXAS — MARK E. KENNEDY — 48479 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	APPROV.
4			
3			
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1			

BROWN & GAY ENGINEERS, INC

Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-0701
— Civil engineers and surveyors —

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
8520 White Road Beaumont, TX 77708 (409) 866-7098

CONTROL DIAGRAM
SHEET 3

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/20/10
DIRECTOR
DATE 1-21-10
DATE

DISTRICT & SECTION
DISTRICT
STATE WATER QUALITY

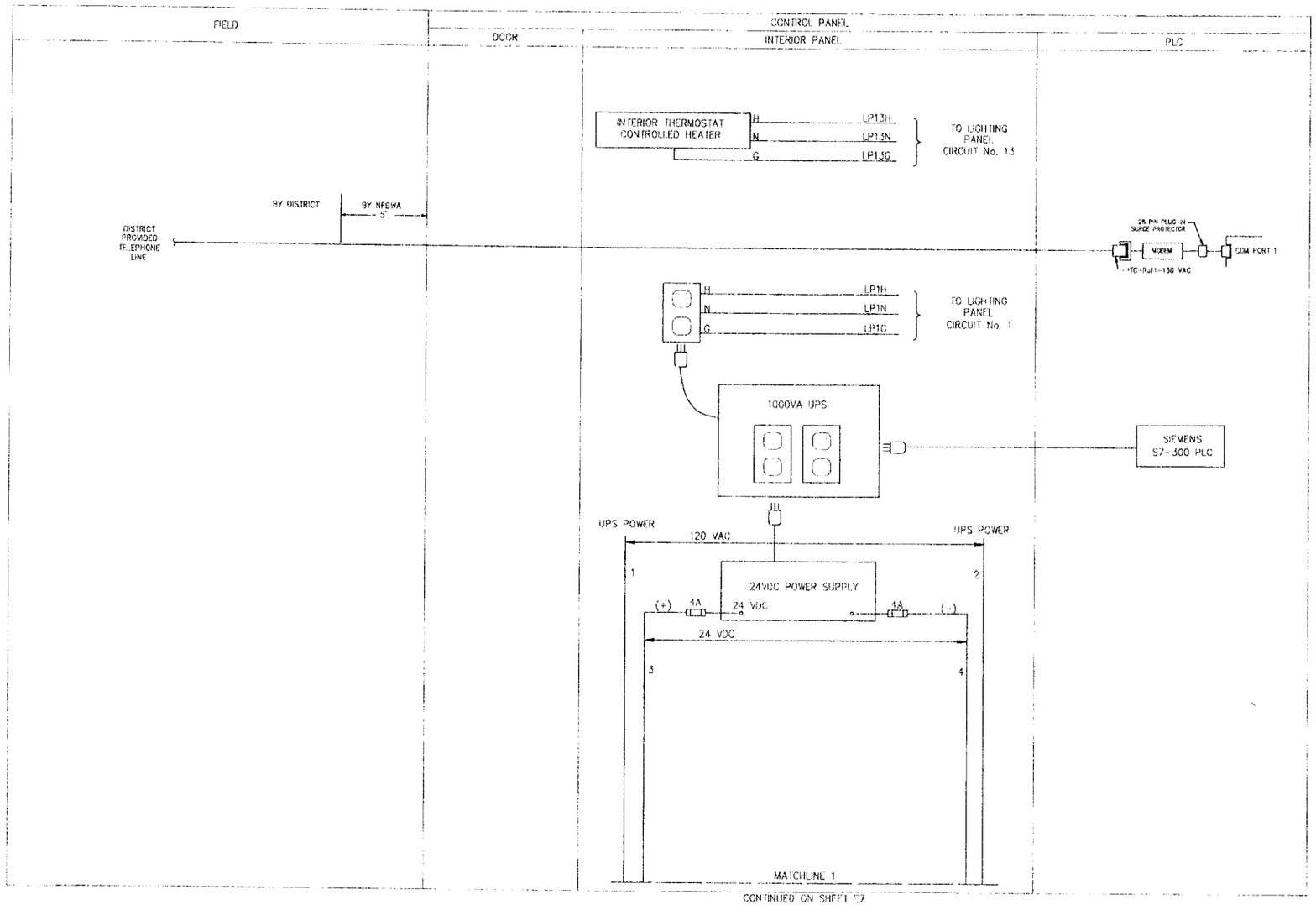
DRAWING NO.
DRAWING SCALE
HORIZ.
VERT.

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING — RECORDED — 46954 — CITY DRAWING NUMBER — HOUSTON TEXAS

REF. NO. E5

SHEET 25 OF 43

DATE NOVEMBER 12, 2009



NOTES:

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LEGEND

129 3A — FUSED TERMINAL BLOCK

3A 38 — FUSED TERMINAL BLOCK

23 — TERMINAL BLOCK

◇ — PLC TERMINAL

STATE OF TEXAS
MARK F. KENNEDY
48479
REGISTERED
PROFESSIONAL ENGINEER
11/13/09

NO.	DATE	REVISION	APPROV.
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2			
1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel. 281-558-8700 Fax: 281-558-9701
— Civil engineers and surveyors —

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Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
8120 White Road Beaumont, TX 77706 (409) 866-7056

CONTROL DIAGRAM
SHEET 4

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

MANAGER: Robert 1/22/10
MANAGER: M.P. Ganal 1-21-10
SECTION: 1-21-10
ENGINEER:

SHEET & SPECS
TRAFFIC
WASTEWATER COLLECT

FILE NO.
DRAWING SCALE
HORZ.
VERT.

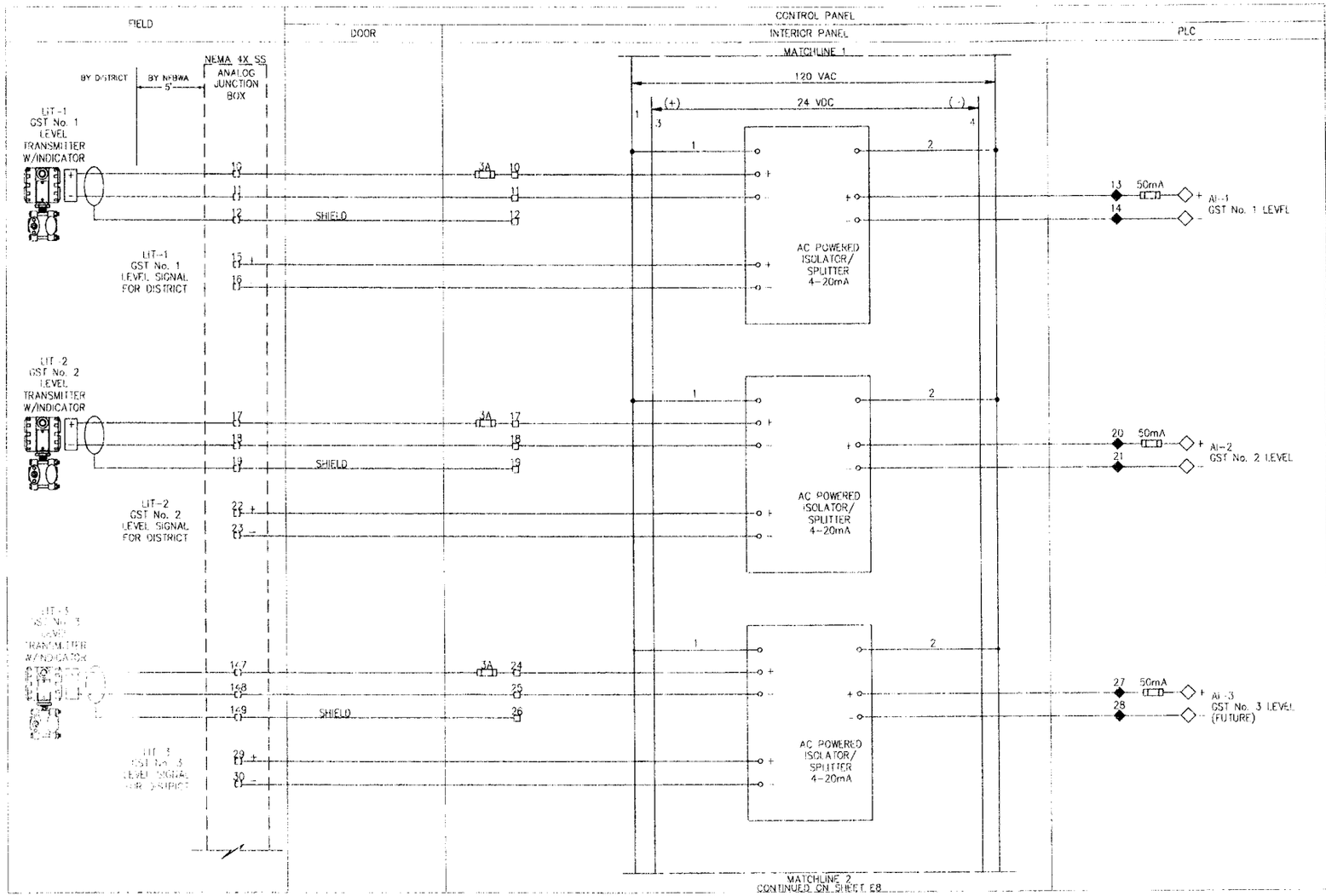
FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
HOUSTON, TEXAS
16954
CITY SYSTEM ENGINEER
HOUSTON, TEXAS

REF. NO. F6

SHEET 26 of 43

DATE: NOVEMBER 12, 2009

5/17/10



NOTES:

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

LEGEND

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

NO.	DATE	REVISION	APPROV.
4			
3			
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1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
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Electrical Engineering
TBPE Registration No. F-375
8320 White Road Beaumont, TX 77708 (409) 866-7096

CONTROL DIAGRAM
SHEET 5

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/22/10
DATE 4-21-10
DATE 4-21-10

SHEET & SHEETS
DATE
DATE WATER COMPANY

FOR CITY OF HOUSTON USE ONLY

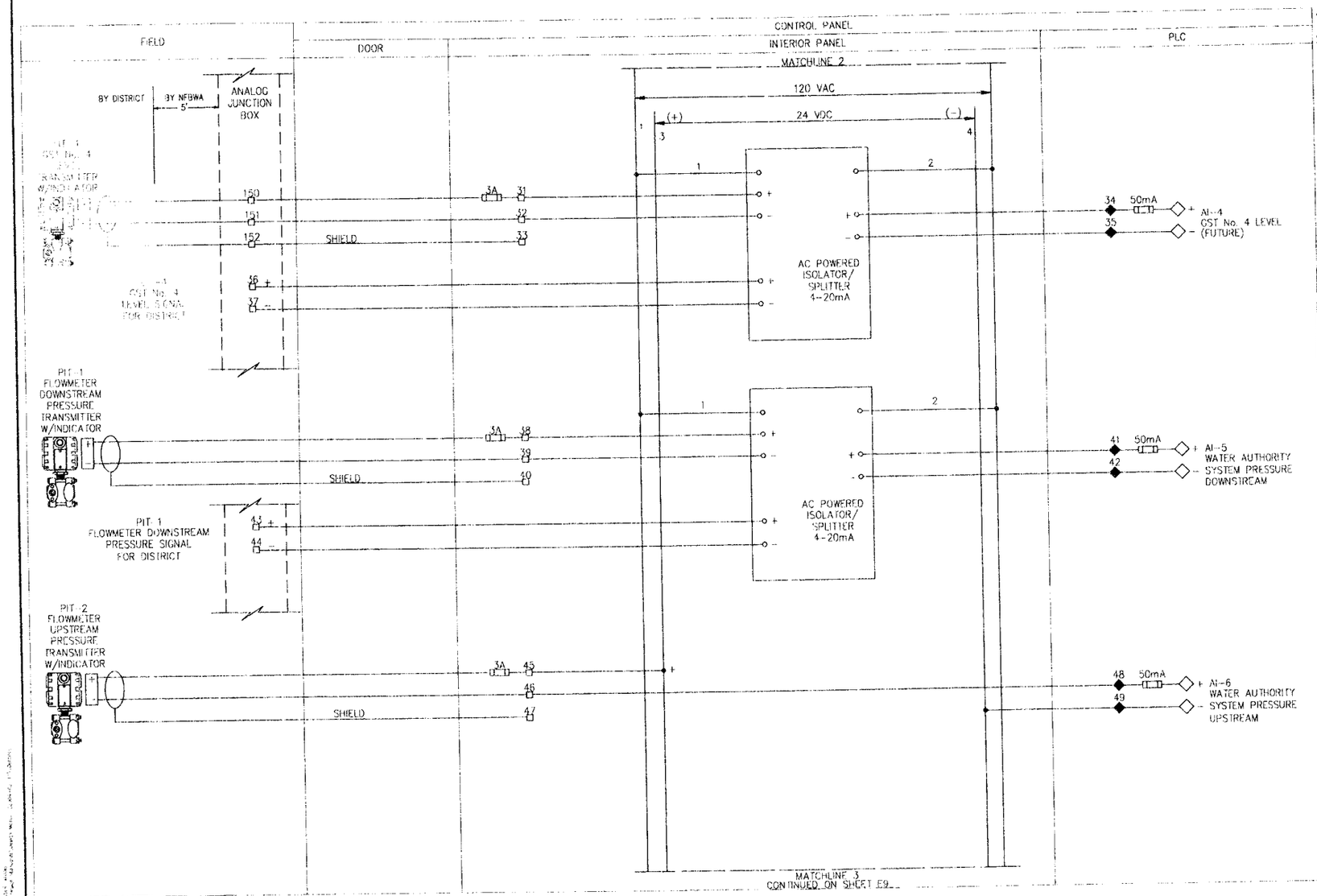
DRAWING SCALE
HORZ
VERT

5/7/10

REF. NO E7

SHEET 27 OF 43

DATE NOVEMBER 15, 2009



NOTES:

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LEGEND

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

STATE OF TEXAS
MARK F. KENNEDY
49479
REGISTERED PROFESSIONAL ENGINEER
SIGNAL ENGINEERING
11/13/09

NO.	DATE	REVISION	APPROV.
4			
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BROWN & GAY ENGINEERS, INC.

Brown & Gay Engineers, Inc.
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Electrical Engineering
TBPE Registration No. F-375
8320 Nine Road Beaumont, TX 77706 (409) 866-7096

CONTROL DIAGRAM
SHEET 6

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/20/10
MATERIALS
CITY ENGINEER

SHEET & RANGE
DATE
GROW WATER QUALITY

REF. NO.
DRAWING SCALE
HORIZ.
VERT.

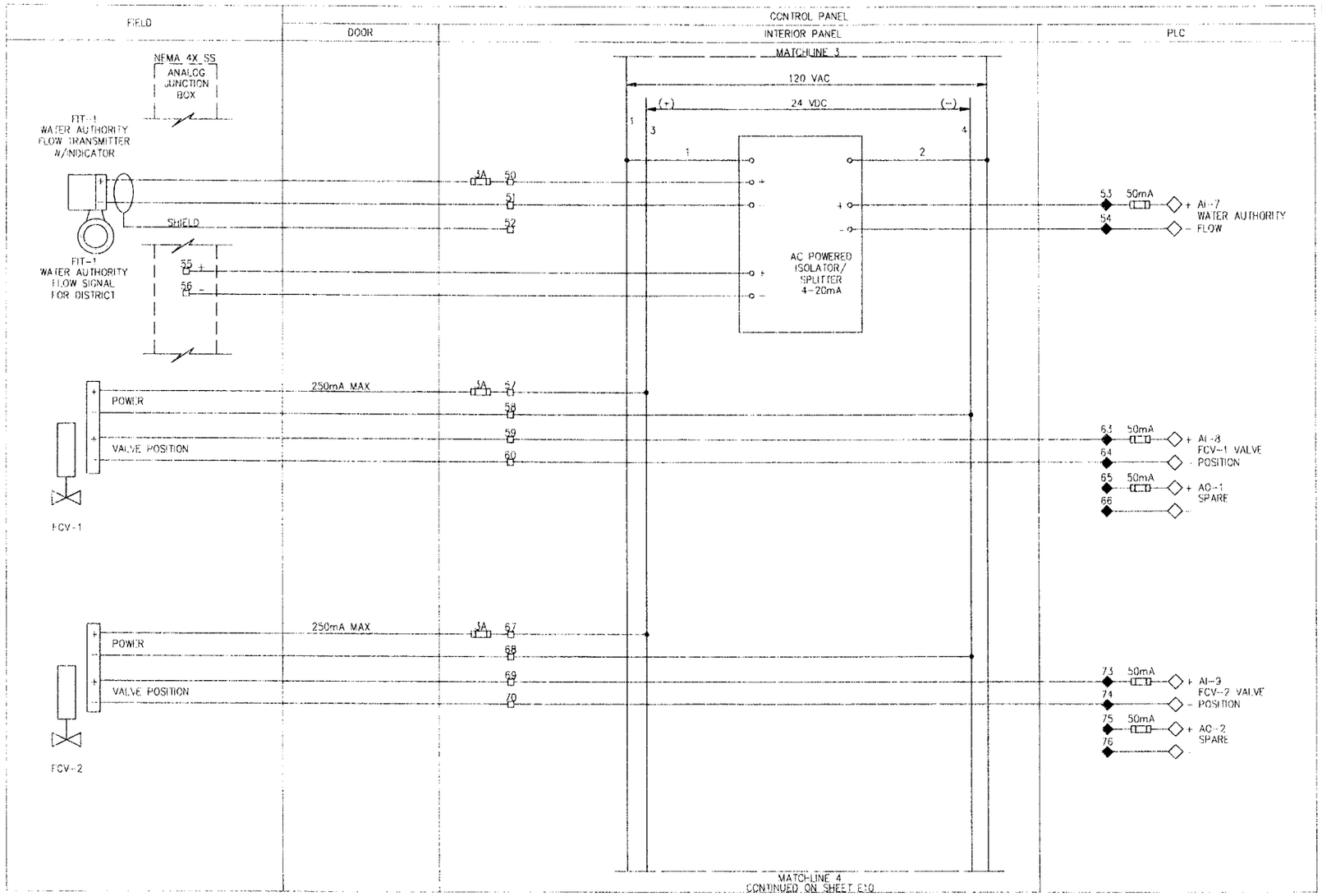
FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
ACCEPTED / FILED
46954
CITY ENGINEER
HOUSTON, TEXAS

5/14/10

REF. NO. E8

SHEET NO. 28 OF 43

DATE: NOVEMBER 12, 2009



NOTES:

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LEGEND

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

STATE OF TEXAS
MARK F. KENNEDY
48479
REGISTERED PROFESSIONAL ENGINEER
11/13/09

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
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Electrical Engineering
TBPE Registration No. F-375
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CONTROL DIAGRAM
SHEET 7

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 9/20/10 STREET & BRIDGE
APPROVED
DESIGN 1.21.10 TRAFFIC
INDEXES STORM WATER QUALITY
FILE NO.
DRAWING SCALE
PROJ.
REF.

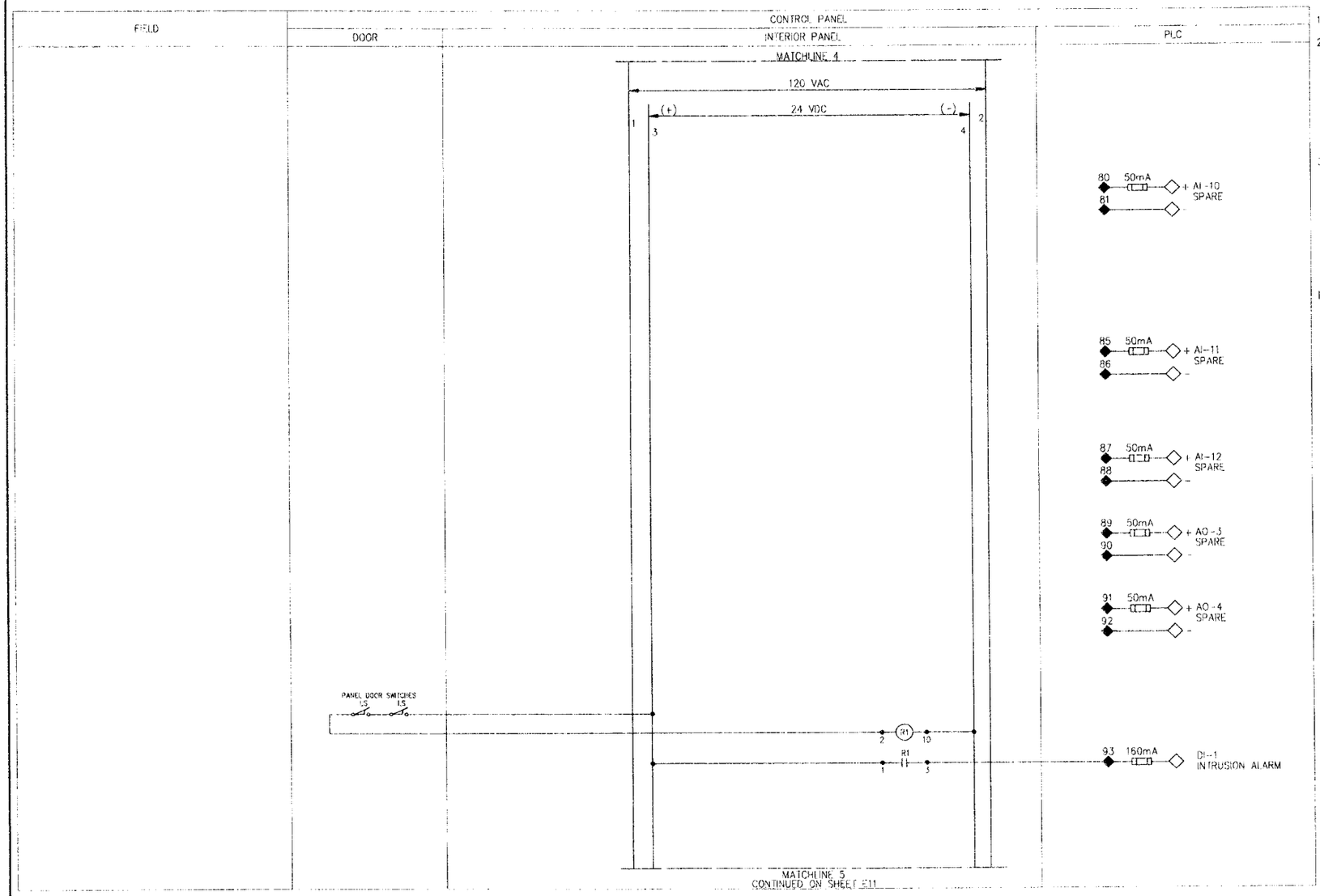
PUBLIC WORKS AND ENGINEERING
ACCEPTED FOR CITY
46954
CITY ENGINEER-PUBLIC WORKS

FOR CITY OF HOUSTON USE ONLY

DATE NOVEMBER 12, 2009

REF. NO. E9

SHEET NO. 29 OF 43



NOTES:

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LEGEND

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

STATE OF TEXAS
MARK E. KENNEDY
48479
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel. 281-558-0700 Fax. 281-558-9701
— Civil engineers and surveyors —

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

CONTROL DIAGRAM
SHEET 8

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/20/10
DATE 4-21-10
DATE 5-3-10

STATE & REGIS.
DISTRICT
STORM WATER QUALITY

FILE NO.

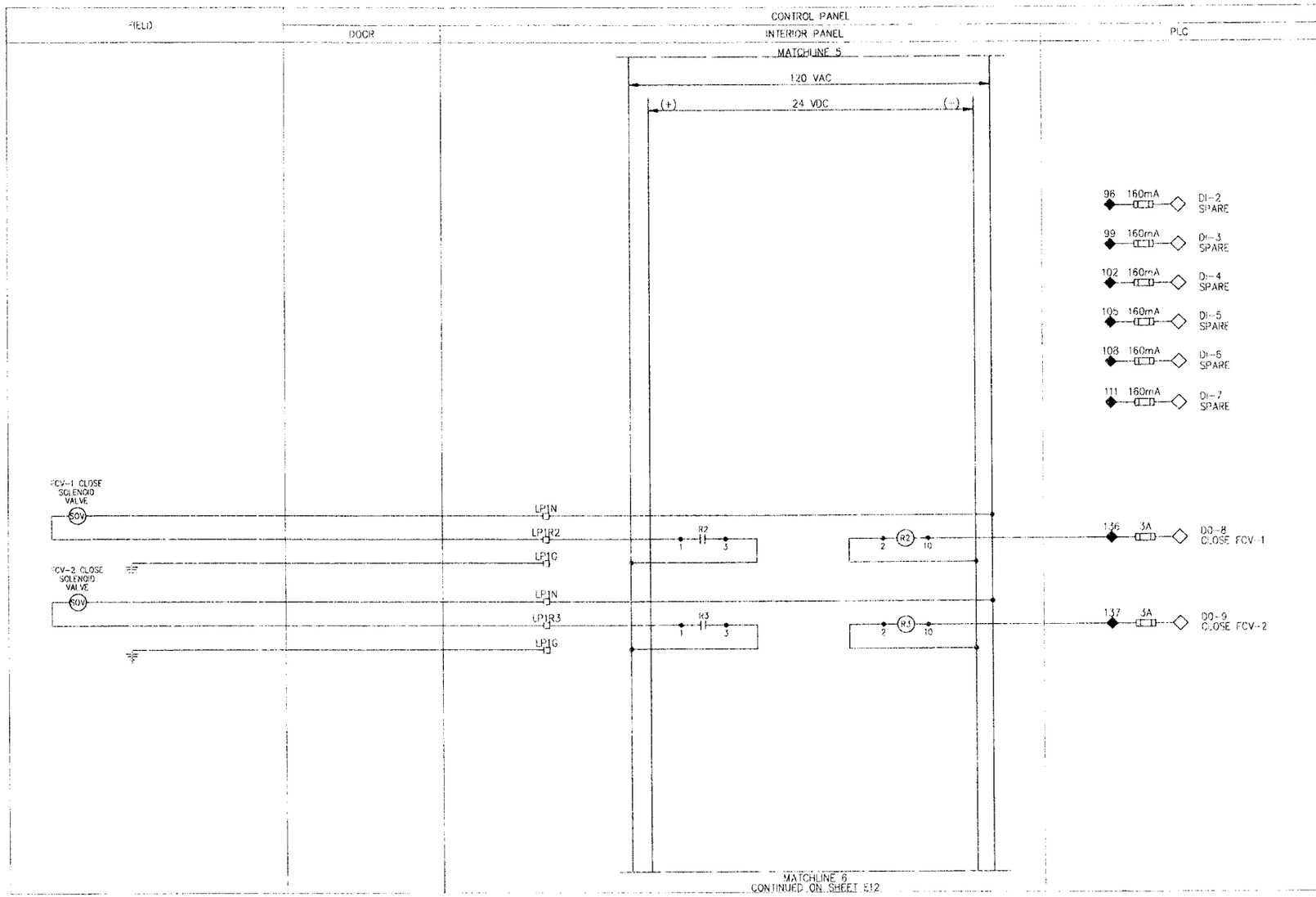
FOR CITY OF HOUSTON USE ONLY
PROFESSIONAL ENGINEER
46954

DRAWING SCALE
HORIZ.
VERT.

REF. NO. E10
SHEET 30 OF 43

DATE NOVEMBER 12, 2009

BE 5/17/10



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LEGEND

129 3A FUSED TERMINAL BLOCK
3A 48 FUSED TERMINAL BLOCK
TERMINAL BLOCK
PLC TERMINAL

STATE OF TEXAS
MARK E. KENNEDY
48479
REGISTERED PROFESSIONAL ENGINEER
11/13/09

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
-- Civil engineers and surveyors --

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

CONTROL DIAGRAM
SHEET 9

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

APPROVED 4/22/10
APPROVED 12-21-10
CONSULTING 1-31-10
CHIEF ENG.

STATE & SR. REP.
PARTIES
SYSTEM WATER QUALITY

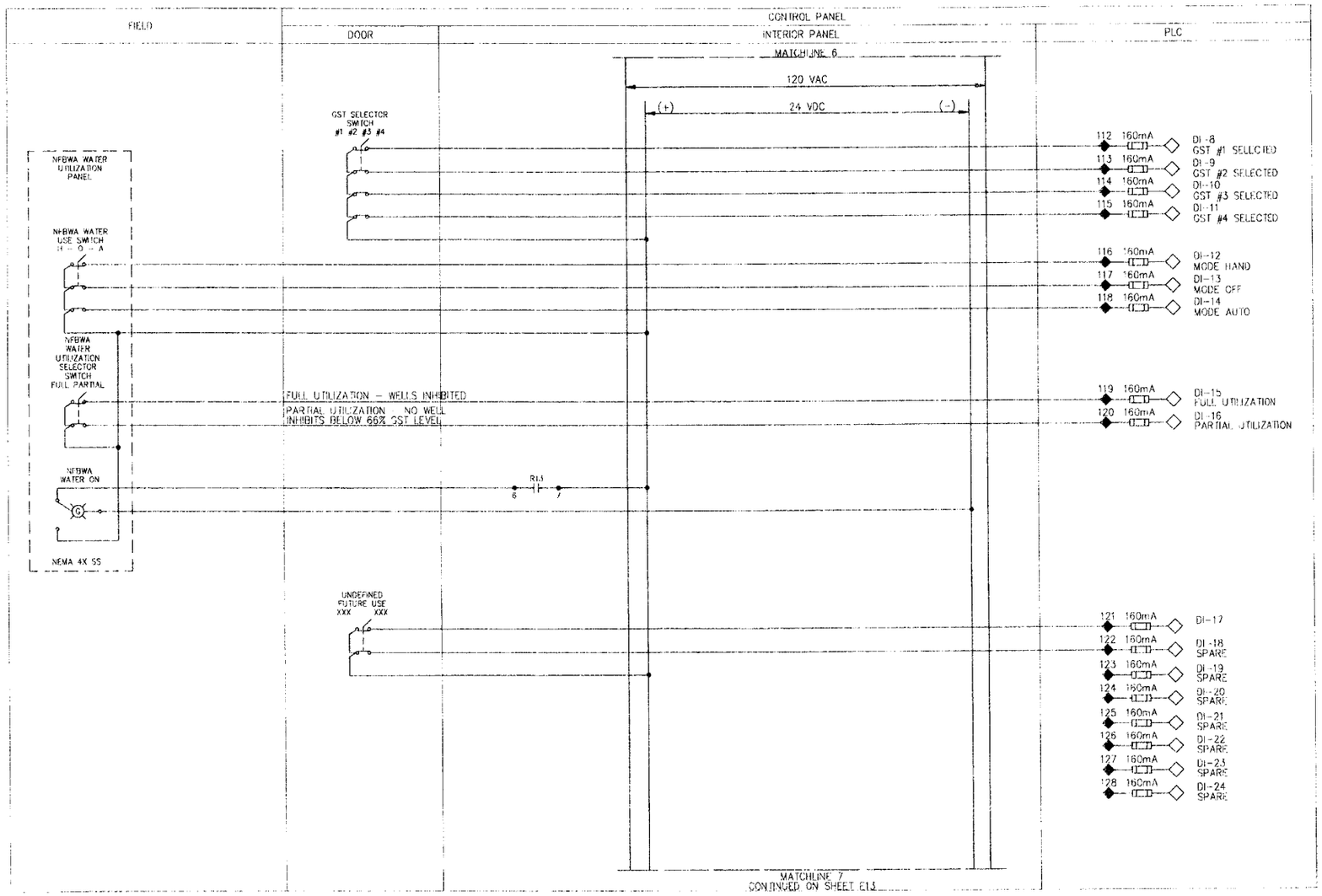
FILE NO.
DRAWING SCALE
NONE
VERT.

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
REGISTERED PROFESSIONAL ENGINEER
46954
CITY OF HOUSTON
TEXAS

REF. NO. E11
SHEET NO. 31 OF 43

DATE: NOVEMBER 13, 2009

5/17/10



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LEGEND

129 5A FUSED TERMINAL BLOCK
3A 18 FUSED TERMINAL BLOCK
TERMINAL BLOCK
PLC TERMINAL

STATE OF TEXAS
MARK E. KENNEDY
48479
REGISTERED PROFESSIONAL ENGINEER
11/13/09

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
— Civil engineers and surveyors —
Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-175
8320 White Road Beaumont, TX 77706 (409) 866-7036

CONTROL DIAGRAM
SHEET 10

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 4/22/10
DATE: 11-21-10
DATE: 11-21-10

STREET & BRIDGE
PARKS
SEWER WATER QUALITY

PLAT NO:

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

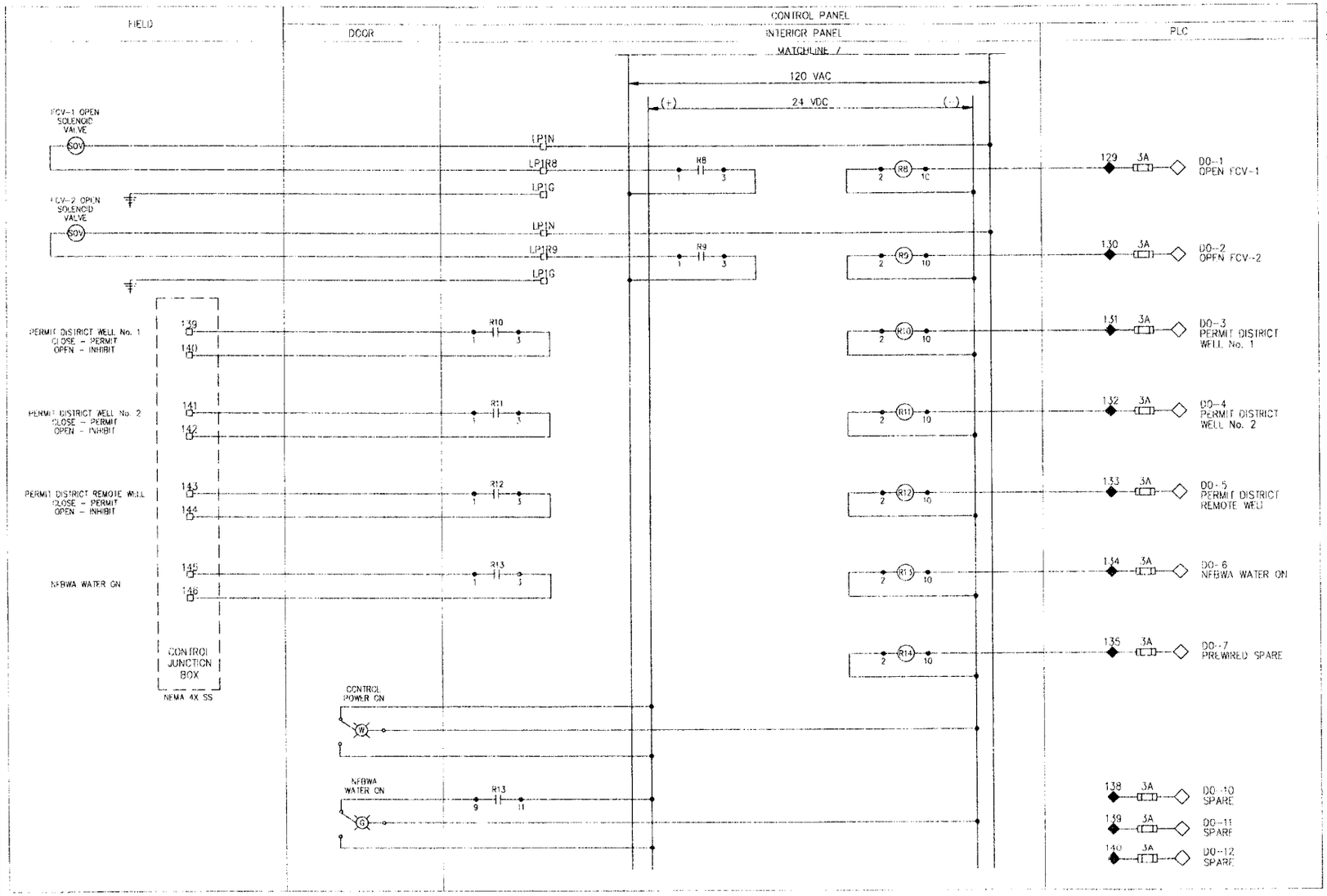
PUBLIC WORKS AND ENGINEERING
ENGINEERING TEAM
46054
CITY OF HOUSTON
NOV 13 2009

REF. NO. E12

SHEET NO. 32 OF 43

DATE: NOVEMBER 13, 2009

5/17/10



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LEGEND

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

STATE OF TEXAS — MARK E. KENNEDY — 48479 — REGISTERED PROFESSIONAL ENGINEER — 11/17/09

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC.

Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel. 281-558-8700 Fax. 281-558-9701
-- Civil engineers and surveyors --

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
8520 White Road Beaumont, TX 77706 (409) 866-7056

CONTROL DIAGRAM
SHEET 11

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DRAWING SCALE

REF. NO. E13

SHEET NO. 33 OF 43

DATE: NOVEMBER 12, 2009

CITY OF HOUSTON DEPT. OF PUBLIC WORKS AND ENGINEERING — REGISTERED PROFESSIONAL ENGINEER — 46954 — CITY OF HOUSTON — STATE OF TEXAS

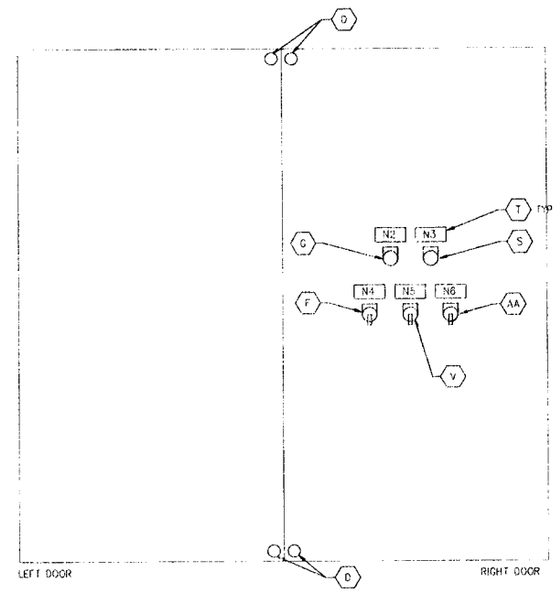
5/17/10

NOTES:

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

EQUIPMENT & DEVICE SCHEDULE

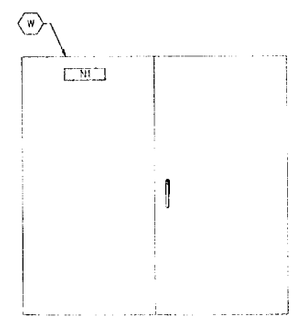
ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100 A, 20 CKTS
B	6	SIGNAL SPLITTER/ISOLATOR, DIN RAIL MOUNT, 120VAS, 4-20mA INPUT, DUAL ISOLATED 4-20mA OUTPUTS, ACROMAG 631T-0100 OR EQUAL
C	1	THERMOSTAT
D	4	QUARTER TURN CAPTIVE DOOR CLOSURE
E	1	120VAC - 24VDC POWER SUPPLY
F	2	HAND-OFF AUTO SWITCH, HEAVY DUTY OIL TIGHT W/120V, 20A RATING
G	1	INDICATING LIGHT, HEAVY DUTY OIL TIGHT, WHITE, 24 VDC, 2.5 WATT
H	1	STRIP HEATER
I	1	PROGRAMMABLE LOGIC CONTROLLER, SIEMENS S7-300
J	1	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	2	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED, GFCI TYPE
L	1	40 WATT FLUORESCENT STRIP LIGHT W/BALLAST SUITABLE FOR ZERO DEGREE OPERATION
M	1	SURGE PROTECTOR - INCOMING POWER
N	1	UNINTERRUPTABLE POWER SUPPLY 1000VA MINIMUM
P	LOT	FUSED TERMINAL BLOCKS, AS REQUIRED
Q	1	MODEM
R	14	CONTROL RELAY, TURCK 24 VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE
S	2	INDICATING LIGHT, HEAVY DUTY OIL TIGHT, GREEN, 24 VDC, 2.5 WATT
T	9	NAMEPLATES, 3/8" HIGH LETTERING IN WHITE LETTERS ON BLACK BAKELITE (SEE NAMEPLATE SCHEDULE) (SEE NOTE 1)
U	2	DOOR LIMIT SWITCH (SEE NOTE 2)
V	1	GST SELECTOR SWITCH, HEAVY DUTY OIL TIGHT, FOUR POSITION, W/120V, 20A RATING
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS, 60" X 72" X 24"
X	1	WATER UTILIZATION SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING
Y	LOT	TERMINAL BLOCKS AS REQUIRED
Z	1	WIRE DUCT 2" WIDE X 2" DEEP MINIMUM
AA	1	FUTURE USE SWITCH, HEAVY DUTY OIL TIGHT, TWO POSITION, W/120V, 20A RATING



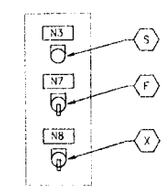
CONTROL PANEL
FRONT INNER DOOR ELEVATION
SCALE: NONE

NAMEPLATE SCHEDULE

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



CONTROL PANEL
EXTERIOR ELEVATION
SCALE: NONE



NFBWA WATER
UTILIZATION PANEL ELEVATION
SCALE: NONE

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
- Civil engineers and surveyors

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

ELECTRICAL
CONTROL PANEL
LAYOUT & SPECIAL
DEVICE SCHEDULE

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 4/22/10
DATE: 1-21-10
DATE: 1-21-10

STAFF & SERVICE
TRAFFIC
STORM WATER QUALITY

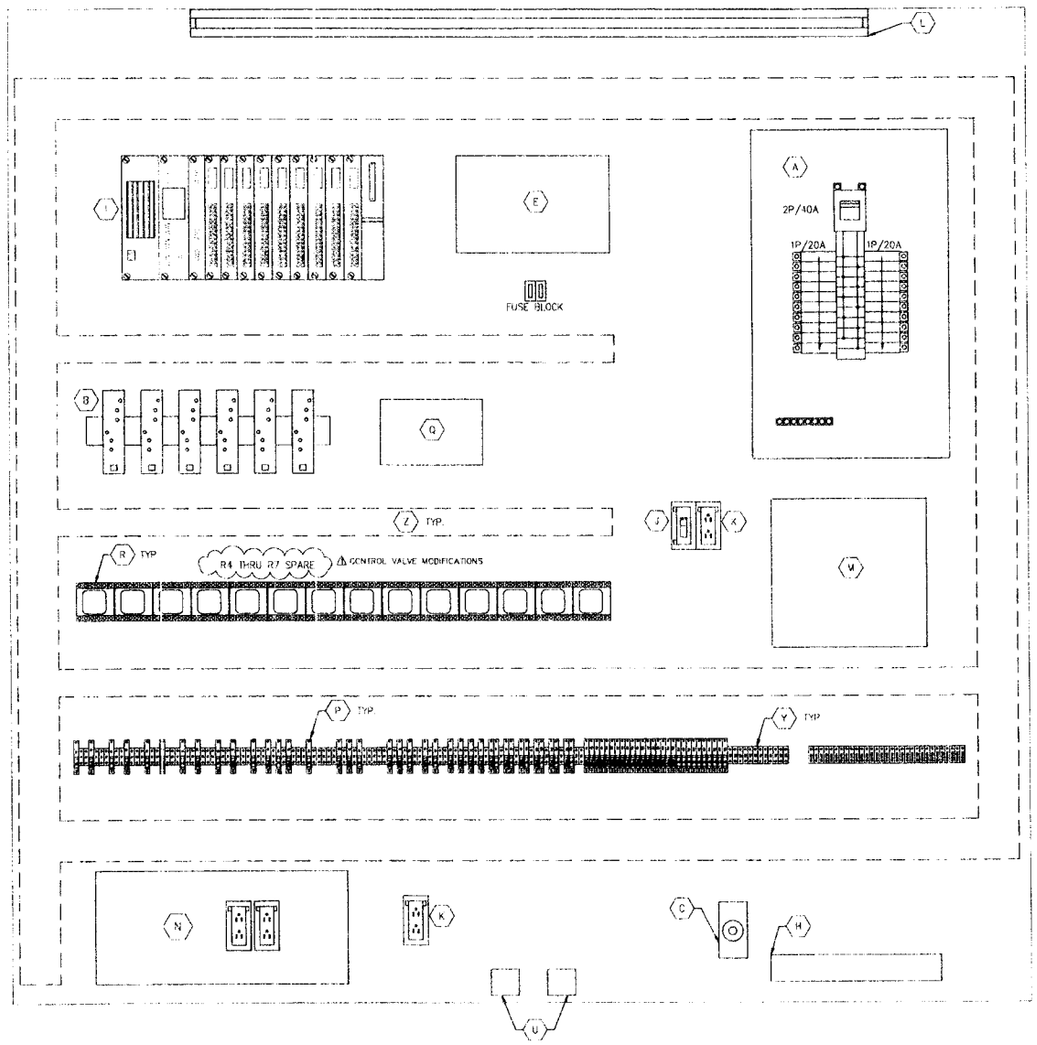
FILE NO.
DRAWING SCALE
HORIZ.
VERT.

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
REGISTERED PROFESSIONAL ENGINEER
46054
HOUSTON TEXAS

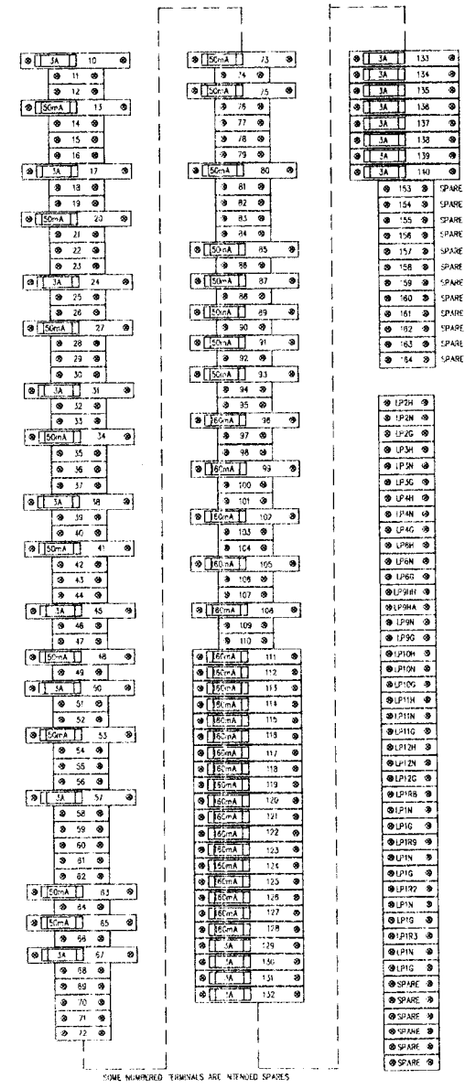
DATE: NOVEMBER 12, 2009
REF. NO. E14
SHEET NO. 34 of 43

NOTES:

1. SEE SHEET E14 FOR EQUIPMENT SCHEDULE



CONTROL PANEL ELEVATION


SPARE
LP2H
LP2N
LP2G
LP3H
LP3N
LP3G
LP4H
LP4N
LP4G
LP6H
LP6N
LP6G
LP9H
LP9N
LP9G
LP10H
LP10N
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LP1G
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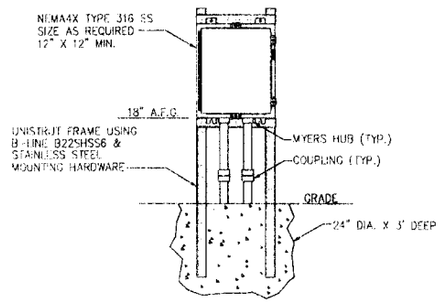
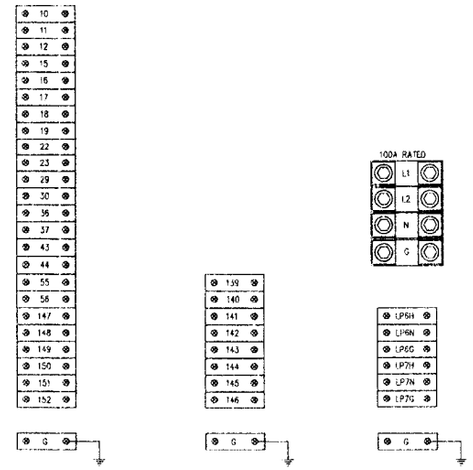
LP1G
SPARE
SPARE
SPARE



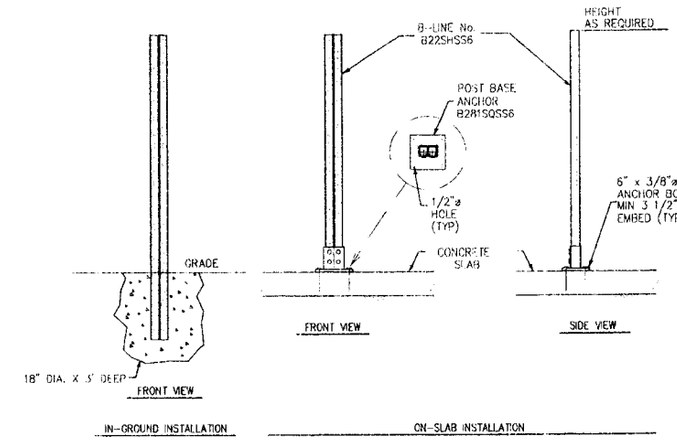
DISTRICT CONNECTION JUNCTION BOX DETAIL

DETAIL 1



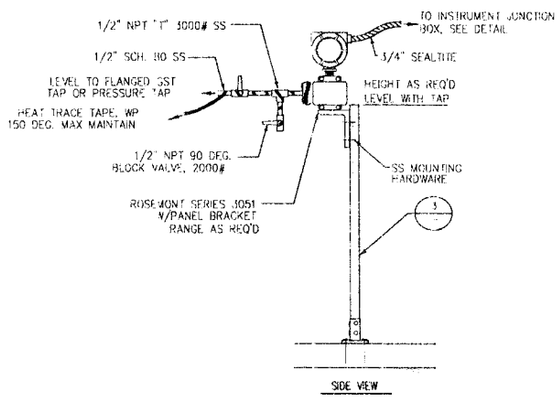
ANALOG JUNCTION BOX CONTROL JUNCTION BOX 120V JUNCTION BOX

DETAIL 2



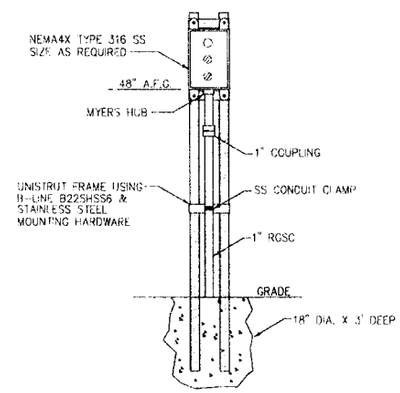
DEVICE MOUNTING POST DETAIL

DETAIL 3



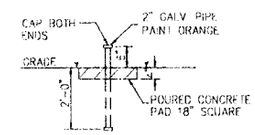
LIQUID LEVEL/PRESSURE/DIFFERENTIAL
TRANSMITTER INSTALLATION DETAIL

DETAIL 4



NFBWA UTILIZATION CONTROL PANEL

DETAIL 5



DUCTBANK MARKER DETAIL

DETAIL 6

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

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10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
Civil engineers and surveyors

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Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
4120 Airline Road Beaumont, TX 77708 (409) 898-7098

ELECTRICAL
DETAILS SHEET 1

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 4/22/10
DIRECTOR
MANAGER 4-21-10
ENGINEER 1-21-10
DATE

DIST & BADGE
TRAFFIC
CONN WATER SUPPL

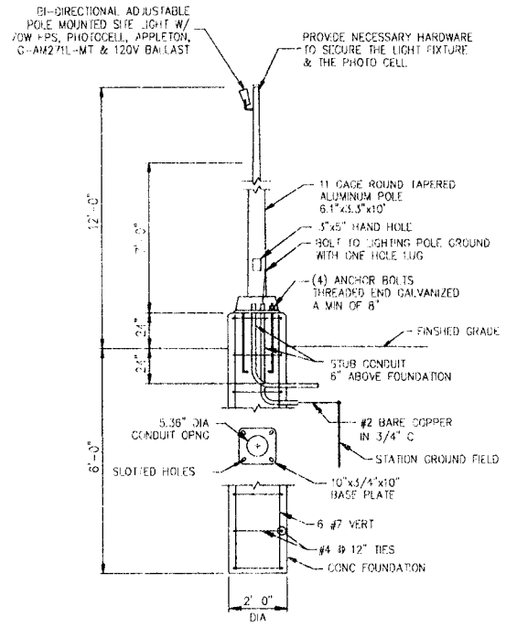
FILE NO.
DRAWING SCALE
REV
VER

REF. NO. E16
SHEET NO. 36 OF 43

5/17/10

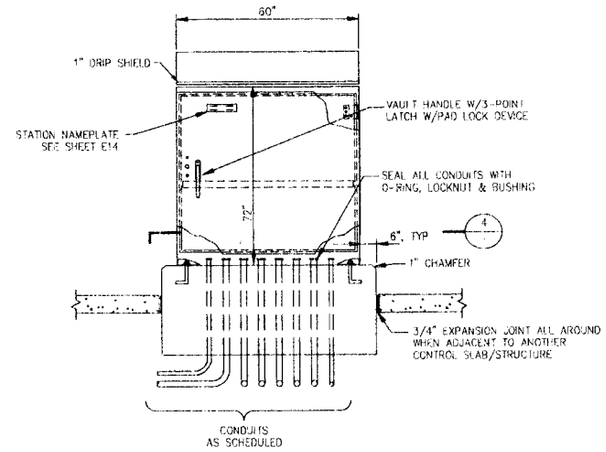
MARK F. KENNEDY 18479 STATE OF TEXAS REGISTERED PROFESSIONAL ENGINEER
11/13/09

PUBLIC WORKS AND ENGINEERING APPROVED 46954 CITY OF HOUSTON HOUSTON TEXAS

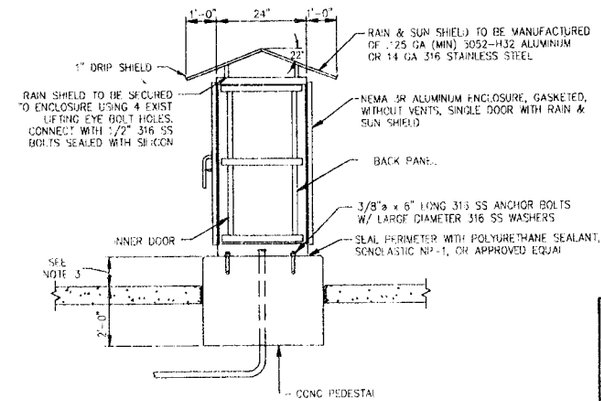


TYPICAL YARD LIGHT

DETAIL 1

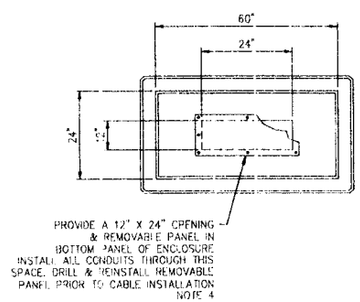


DETAIL 2

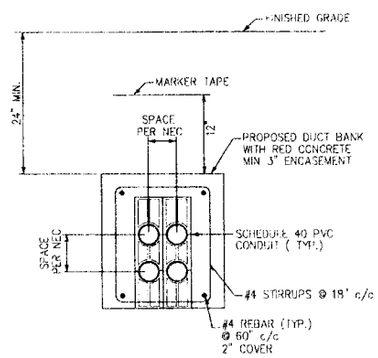


DETAIL 3

CONTROL CABINET ENCLOSURE & FOUNDATION



SECTION 4



TYPICAL DUCT BANK CONSTRUCTION

DETAIL 5

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 CUTOUT DIMENSIONS AS NEEDED TO ACCOMODATE ALL REQUIRED CONDUITS

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

BROWN & GAY ENGINEERS, INC.
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel: 281-558-6700 Fax: 281-558-9701
Civil engineers and surveyors —

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
4320 White Road Beaumont, TX 77706 (409) 866-7096

ELECTRICAL DETAILS SHEET 2

NORTH FORT BEND WATER AUTHORITY

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

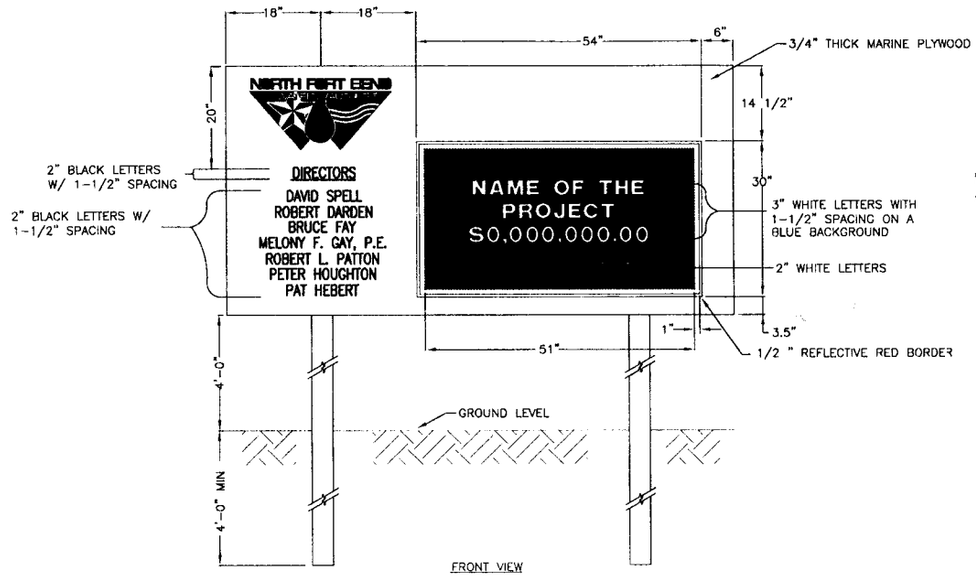
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

APPROVED: 4/22/10
APPROVED: 1-21-10
APPROVED: 1-21-10
DATE: 4-22-10
DRAWN:
CHECKED:
FOR CITY WATER QUALITY
NOTES:

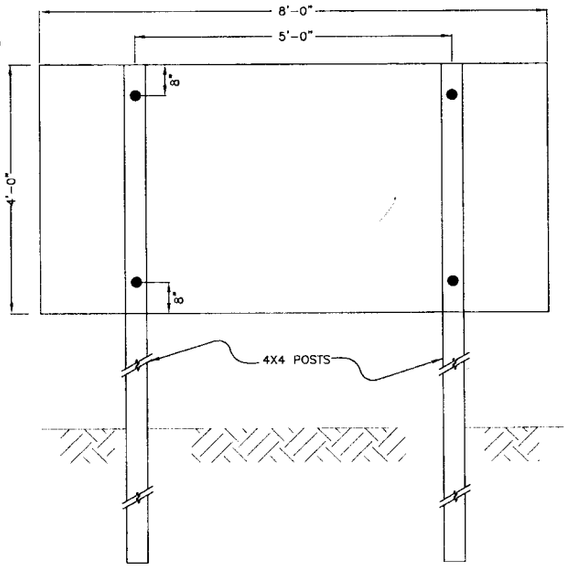
DRAWING NO.
DRAWING SCALE
NOTE:

FOR CITY OF HOUSTON USE ONLY
PROFESSIONAL ENGINEER
16954
CITY OF HOUSTON
HOUSTON, TEXAS

REF. NO. E17
SHEET 37 OF 43
DATE: NOVEMBER 12, 2009

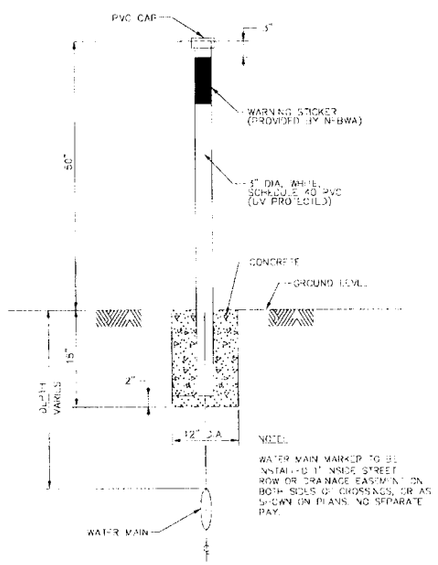


FRONT VIEW



BACK VIEW

LOCATIONS OF PROJECT SIGNS	
ROAD	APPROX. STATION
COBBLE SPRINGS CT.	STA 6+14 BASELINE "B"
CLOVER LODGE CT.	STA 6+92 BASELINE "B"



WATER LINE MARKER

PROJECT SIGN

SCALE: 1"=1'

STATE OF TEXAS
KENNETH J. MARTINEC
87808
LICENSED
PROFESSIONAL ENGINEER
1/13/10

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

JC JONES & CARTER, INC.
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Texas Board of Professional Engineers Registration No. F-439
6330 Westpark Dr., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

PROJECT SIGN AND PIPELINE MARKER DETAILS

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER 4/22/10 | STREET & DRAINAGE
WASTEWATER | TRAFFIC
STORM 1-21-10 | STORM WATER QUALITY
FACILITIES

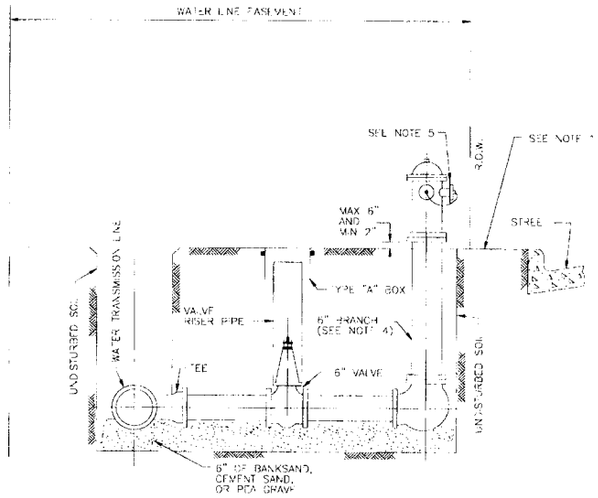
FILE NO:

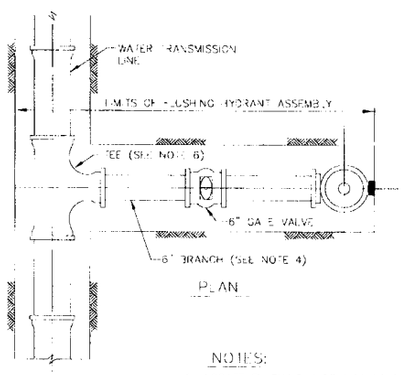
DRAWING SCALE
HORZ.: AS SHOWN
VERT.:

SHEET No: 38 OF 43

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
RECORDED DRAWING
16054
CITY OF HOUSTON
HOUSTON, TEXAS

5/17/10





PLAN

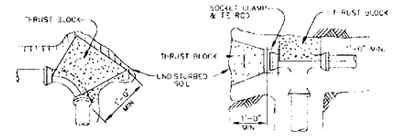
NOTES:

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 5 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 BUNNER NOZZLE AND LABEL "INFRAWATER FOR FLUSHING ONLY".
6. IF WATER TRANSMISSION LINE IS PVC OR DIP PIPE MATERIAL, INSTALL A BELL OR CONCRETE CYLINDER PIPE MATERIAL. INSTALL A MANUFACTURER'S FLANGED TEE AT THE SPRING LINE.

1 STANDARD FLUSHING HYDRANT ASSEMBLY
N.T.S.

NOTES:

1. FOR USE ON EXISTING PIPES AND PROPOSED LINES SMALLER THAN 12" DIA.
2. ALL THRUST BLOCKS TO BE CLASS B CONCRETE. ALL CONCRETE TO BE POURED AGAINST FIRM UNDISTURBED SOIL.
3. FOR PIPE SMALLER THAN 4" DIA USE 1 LINEAL FT BEARING AREA FOR ALL BENDS, TEES AND PLUGS.



90° BEND
(22 1/2° & 45° BENDS SIMILAR)

22 1/2° BEND	
PIPE SIZE	BEARING AREA
4"	1 S.F.
6"	2 S.F.
8"	3 S.F.
10"	4 S.F.
12"	6 S.F.
14"	8 S.F.
16"	11 S.F.
24"	24 S.F.

45° BEND	
PIPE SIZE	BEARING AREA
4"	1 S.F.
6"	3 S.F.
8"	5 S.F.
10"	8 S.F.
12"	12 S.F.
14"	16 S.F.
16"	20 S.F.
24"	47 S.F.

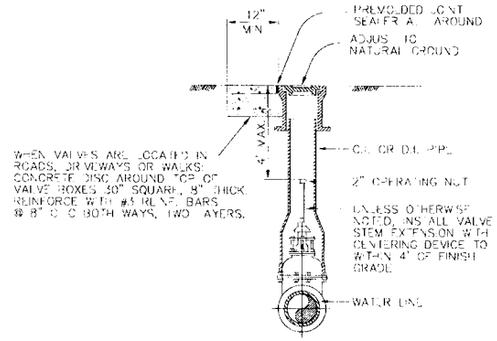
90° BEND	
PIPE SIZE	BEARING AREA
4"	3 S.F.
6"	6 S.F.
8"	10 S.F.
10"	16 S.F.
12"	22 S.F.
14"	30 S.F.
16"	40 S.F.
24"	87 S.F.

TEE & PLUG

TEE & PLUG	
PIPE SIZE	BEARING AREA
4"	2 S.F.
6"	4 S.F.
8"	7 S.F.
10"	11 S.F.
12"	15 S.F.
14"	21 S.F.
16"	34 S.F.
24"	62 S.F.

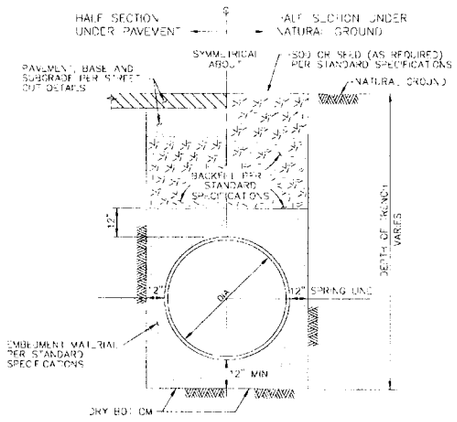
CONCRETE HORIZONTAL THRUST BLOCK

2 N.T.S.



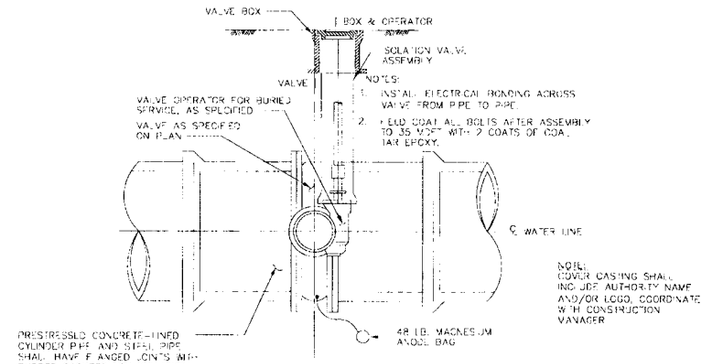
WHEN VALVES ARE LOCATED IN ROADS, DRIVEWAYS OR WALKS, CONCRETE DISC AROUND TOP OF VALVE BOXES 30" SQUARE, 8" THICK REINFORCE WITH #3 REINF. BARS @ 8" O.C. BOTH WAYS, TWO LAYERS.

3 VALVE BOX DETAIL
N.T.S.



WATER DISTRIBUTION LINE BEDDING AND BACKFILL FOR OPEN CUT TRENCHES

4 N.T.S.



NOTES:

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

NOTE: COVER CASTING SHALL INCLUDE AUTHORITY NAME AND/OR LOGO. COORDINATE WITH CONSTRUCTION MANAGER.

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

STATE OF TEXAS
KENNETH J. MARTINEZ
87808
LICENSED PROFESSIONAL ENGINEER

5/7/10

NO.	DATE	REVISION	APPROV.
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F.B.C. M.U.D. No. 41 CONNECTION

STANDARD WATERLINE DETAILS

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER & WASTEWATER | STREET & BRIDGE | NOTICE | STORM WATER QUALITY | ROADWAYS

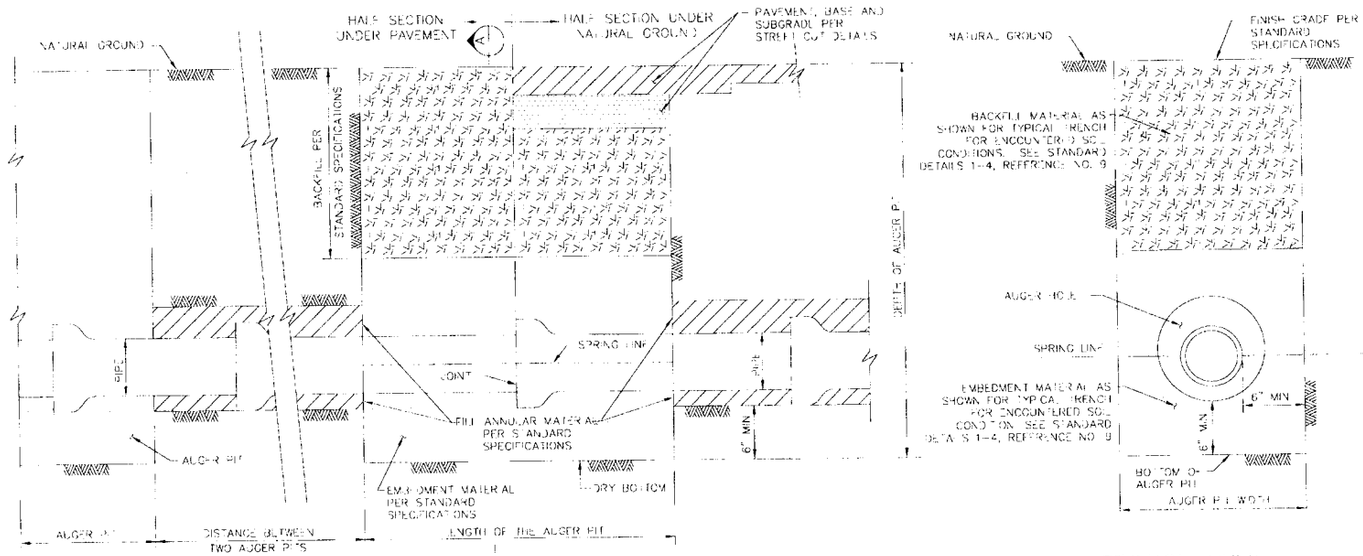
FILE NO: | FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
HORIZ: AS SHOWN
VERT:

PROFESSIONAL ENGINEER 46054 CITY OF HOUSTON HOUSTON, TEXAS

SHEET No. 39 OF 43

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

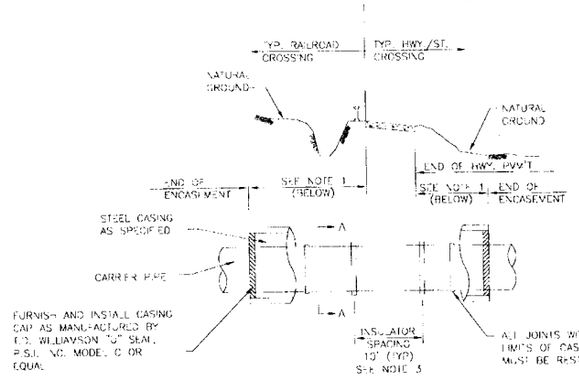


ELEVATION

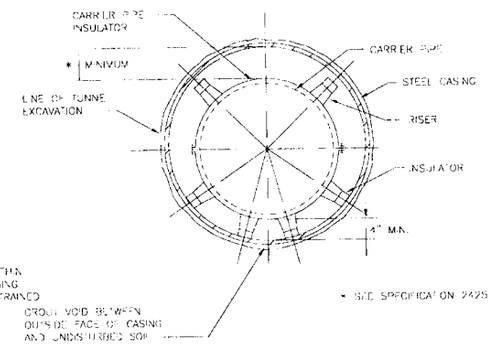
SECTION VIEW

BEDDING AND BACKFILL AUGER PIT & AUGER HOLE

N.T.S.



CASED PIPE ELEVATION



SECTION A-A

NOTES:

1. LENGTH OF ENCASEMENT SHALL BE AS SHOWN ON THE PLAN & PROFILE DRAWINGS.
2. LAY CASING PIPE IN OPEN CUT, TUNNEL OR BORE, AS NOTED ON PLAN & PROFILE DRAWINGS.
3. SEE SPECIFICATIONS FOR APPROPRIATE MODEL ACCORDING TO PIPE DIAMETER.
4. PROVIDE CATHODIC PROTECTION FOR CASING.

CASING DETAIL

(FOR WATER MAINS LESS THAN 36-INCHES IN DIAMETER)

STATE OF TEXAS
KENNETH J. MARTINEZ
87308
LICENSED PROFESSIONAL ENGINEER
1/13/10

NO.	DATE	REVISION	APPROV.
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2			
1			

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TRENCHLESS CONSTRUCTION DETAILS

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 4/22/10 — STREET & BRIDGE
WASTEWATER: 1-21-10 — WATER
STORM: 1-21-10 — STORM WATER QUALITY
FACILITIES

FILE NO:

DRAWING SCALE
HORIZ: AS SHOWN
VERT:

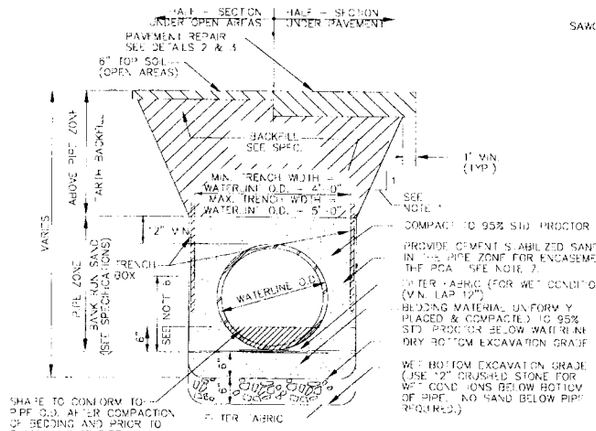
FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
REGISTERED
46954
CITY OF HOUSTON, TEXAS

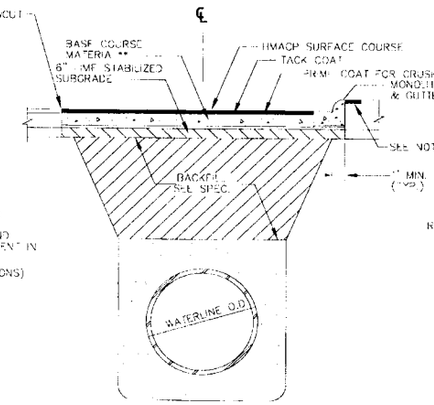
SHEET NO. 40 OF 43

5/17/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

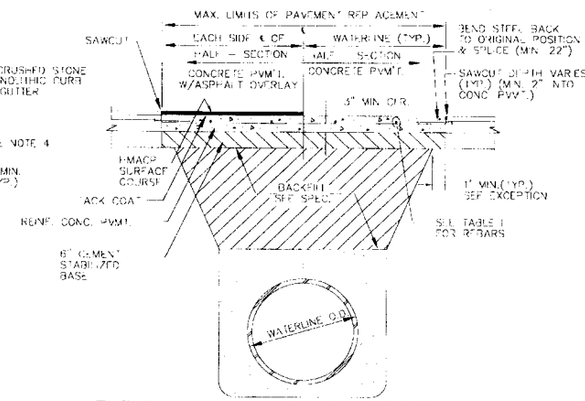


1 EXCAVATION & BACKFILL DETAIL
(FOR LARGE DIAMETER WATER LINE)



2 TYPICAL REPAIR OF FLEXIBLE BASE PAVEMENT

NOTES:
* OMIT CURB WHEN EXISTING ROADWAY DOES NOT HAVE ONE.
** BASE COURSE MATERIAL SHALL CONSIST OF THE FOLLOWING OPTIONS:
1. 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 UNTIL GRASS IS ESTABLISHED



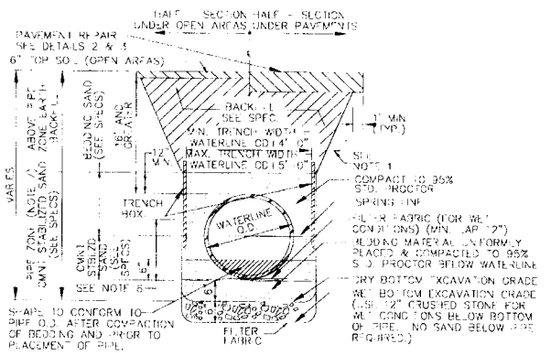
3 TYPICAL REPAIR OF CONCRETE PAVEMENT OR CONCRETE PAVEMENT W/ASPHALT OVERLAY

NOTES:
1. MIN. THICKNESS 6" FOR ROADWAY WIDTH LESS THAN OR EQUAL TO 22' FOR CURB.
2. MIN. THICKNESS 7" FOR ROADWAY WIDTH GREATER THAN 22' FOR CURB.
3. MIN. THICKNESS 8" FOR MAJOR THOROUGHFARES.
4. REINFORCING STEEL ARE SHOWN ON TABLE I & II.
5. SEAL CONCRETE JOINTS BEFORE APPLYING ASPHALT OVERLAY

TABLE I: REINFORCING STEEL INFORMATION FOR VARIOUS PAVEMENT THICKNESS (T) WITH			
= EXPANSION JOINT SPACING = 80 FT			
FC' = 3000 PSI AND FY = 60,000 PSI			
T (IN)	REBAR SIZE & SPACING		MIN LENGTH FOR LAP (IN.)
6	A) #3 AT 11 IN.	B) #4 AT 20 IN.	16 & 22
7	#4 AT 17 IN.		22
8	A) #5 AT 23 IN.	B) #4 AT 15 IN.	22
9	A) #5 AT 20 IN.	B) #4 AT 13 IN.	22
10	A) #4 AT 12 IN.	B) #5 AT 18 IN.	22 & 27
11	A) #4 AT 10 IN.	B) #5 AT 16 IN.	22 & 27
12	A) #4 AT 10 IN.	B) #5 AT 15 IN.	22 & 27

DOWELS AT EXPANSION JOINTS FOR REINFORCED PAVEMENT CHANGE THE DOWELS SIZES & SPACING AT EXPANSION JOINTS FOR REINFORCED PAVEMENTS FROM * IN. DIAMETER, 10 IN. LONG & SPACED AT 22 IN. ON CENTERS TO THE FOLLOWING: (SEE TABLE I, ABOVE)

TABLE II: DOWEL SIZES & SPACINGS AT EXPANSION JOINTS FOR VARIOUS PAVEMENT THICKNESS			
	DOWEL SIZES & SPACING		
PAVEMENT THICKNESS (IN.)	DIAMETER (IN.)	LENGTH (IN.)	SPACING (IN.)
6	3/4"	18	12
7	7/8"	18	12
8	1"	18	12
9	1 1/8"	20	12
10	1 1/4"	20	12
11	1 1/4"	20	12
12	1 1/4"	20	12



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

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

GENERAL NOTES:
1. ROADWAY EXCAVATION, SITE GRADING, AND HYDROMULCH SEEDING OR SODDING WITHIN R.O.W. AND/OR LIMITS OF CONSTRUCTION IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
2. MEASUREMENT AND PAYMENT (INCLUDING DRIVEWAYS) SHALL BE AS PER SPECIFICATION SECTIONS UNLESS OTHERWISE SHOWN ON BID FORM.
3. NEW ASPHALTIC PAVEMENTS SHALL BE MIN. 2" HMAC TOP, W/BASE AND SUBGRADE PER DETAILS AND SPECIFICATIONS.
4. NEW CONCRETE PAVEMENTS TO BE SAME THICKNESS AS EXISTING, UNLESS OTHERWISE DIRECTED BY THE NFBWA.
5. 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.
6. APPLICABLE TO EXISTING CONCRETE AREAS THAT REQUIRE REMOVAL AND REPLACEMENT CONCRETE DUE TO OPEN TRENCH (EXCLUDE THE MEDIAN ISLAND)
7. ANY REMOVAL AND REPLACEMENT OF PAVEMENT NOT IDENTIFIED ON THE DRAWINGS SHALL BE COORDINATED WITH THE PROJECT MANAGER AND THE NFBWA.
8. ALL PAVEMENT REPLACEMENT SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE COUNTY CONSTRUCTION SPECIFICATIONS.

STATE OF TEXAS
KENNETH J. MARTINEZ
87609
LICENSED PROFESSIONAL ENGINEER
1/13/10

NO.	DATE	REVISION	APPROV.
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1			

JC JONES & CARTER, inc.
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Texas Board of Professional Engineers Registration No. F-439
6335 Gulfton Dr., Suite 100 Houston, Texas 77081 (713) 777-5337

F.B.C. M.U.D. No. 41 CONNECTION

EXCAVATION, BEDDING & BACKFILL, & PAVEMENT REPAIR DETAILS

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 1-22-10 STREET & DRAIN
DATE: 1-21-10 WATER
DATE: 1-21-10 SYSTEM WATER QUALITY

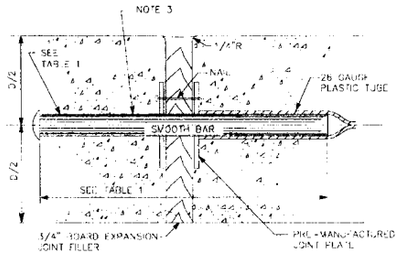
FILE NO:
DRAWING SCALE
HORZ: AS SHOWN
VERT:

FOR CITY OF HOUSTON USE ONLY
PROFESSIONAL ENGINEER 46054 STATE OF TEXAS

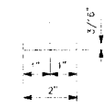
SHEET No. 41 OF 43

5/7/10

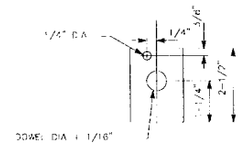
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3



SECTION
DOWEL TYPE EXPANSION JOINT
N.T.S.



PLAN - JOINT PLATE



ELEVATION - JOINT PLATE
N.T.S.

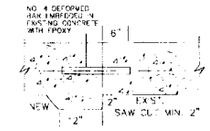
TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12

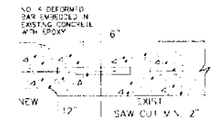
NOTES

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS.
2. EXPANSION JOINTS TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 36 FEET. MAXIMUM SPACING FOR CONTROL JOINTS SHALL BE 5 FEET.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE AS NEEDED TO MAINTAIN 2" MIN. COVER.

(1/42) SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS
C.O.H. STD. NO. C2752 02



SECTION SIDEWALK TO
EXISTING SIDEWALK
N.T.S.



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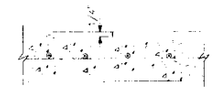
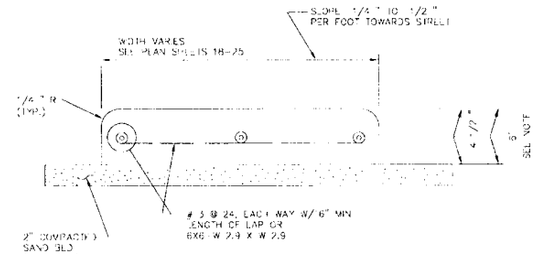
EXISTING DRIVEWAY
N.T.S.



SECTION
CONTROL JOINT
N.T.S.



(2/42) CONCRETE SIDEWALK

NOTE

6" REINFORCED CONCRETE SIDEWALK THRU DRIVEWAY OPENINGS ONLY. USE # 3 @ 1', EACH WAY 16" MIN LAP LENGTH OR # 4 @ 20, EACH WAY 22" MIN LAP LENGTH. PROVIDE 6" STABILIZED SUBGRADE IN DRIVEWAY OPENING.

STATE OF TEXAS
KENNETH J. MARTINEZ
87808
LICENSED
PROFESSIONAL ENGINEER
1/19/10

NO.	DATE	REVISION	APPROV.
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3			
2			
1			

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F.B.C. M.U.D. No. 41 CONNECTION

SIDEWALK REPAIR DETAIL

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 1/22/10 STREET & RIDGE
AS LOCKER M.F. Cook 1-21-10 TRAFFIC
SCM J. Hill 1-21-10 STORM WATER QUALITY
FACILITIES

FILE NO:

FOR CITY OF HOUSTON USE ONLY

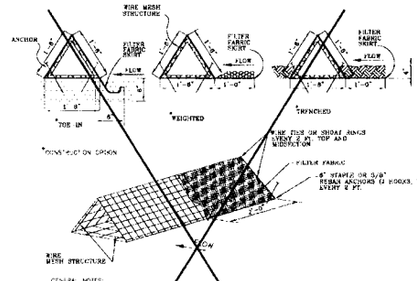
DRAWING SCALE
HORIZ: AS SHOWN
VERT:

PROFESSIONAL ENGINEER 46954 STATE OF TEXAS

SHEET No. 42 OF 43

5/17/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3



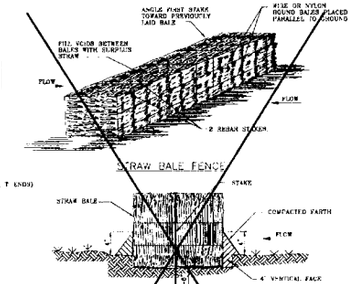
GENERAL NOTES:

1. PLACE BARRIER IN A POW AND TOE IN TO PREVENT THE ATTACHMENT BARRIER
2. USING ONE LONG UNBROKEN SECTION OF FILTER FABRIC WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO FRONT SKIRT ON THE UPSTREAM SIDE
3. WEIGHT SKIRT WITH A CONTINUOUS LAYER OF 3-INCH TO 5-INCH OPEN GRADED ROCK, ON TOP OF SKIRT WITH 12 INCHES WITH MECHANICALLY COMPACTED MATERIAL
4. SECURELY ANCHOR REBRAM AND SKIRT IN PLACE USING 5-FOOT MESH SPACES ON 2-FOOT CENTERS ON BOTH EDGES, ON STAKE USING 18-INCH BY 3/8 INCH REBARS (T-END 2-FOOT)
5. FILTER FABRIC WILL BE LAPPED OVER ENDS 6 INCHES TO DEVIDE SEGMENT JOINTS FASTEN JOINTS WITH DAMAGED 5-FOOT RINGS OR COLSAFTY
6. THE BARRIER STRUCTURE SHALL BE AT 0.00 WIRE MESH, 18 INCHES ON EACH SIDE

TRIANGULAR FILTER FABRIC FENCE

TFF

SYMBOL



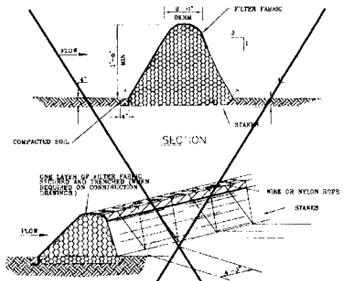
GENERAL NOTES:

1. LIMIT USE TO ONSITE SMALL DRAINAGE AREAS OR LOW FLOW VELOCITY SITUATION FOR EROSION CONTROL. USE STRAW BALE FENCES TO TREAT OVERLAND FLOW ONLY. DO NOT USE STRAW BALE FENCES TO TREAT FLOW IN CHANNELS.
2. PLACE BALES IN A ROW WITH ENDS TIGHT AGAINST ADJACENT BALES. IF THERE ARE VOIDS BETWEEN BALES WITH SURPLUS STRAW. PLACE BALES WITH BINDING PARALLEL TO GROUND SURFACE.
3. INSTALL EACH BALE AT LEAST 4 INCHES IN THE SOIL.
4. NEXT, ANCHOR BALES IN PLACE BY REBAR STAKES. DRIVE STAKES THROUGH THE BALES AND AT LEAST 18 INCHES INTO THE GROUND. TWICE THE STAKE IN EACH BALE TOWARD THE UPSTREAM BALE TO FORCE THE BALES TOGETHER.
5. BALE BALES WITH A PIECE OF WIRE TIED ACROSS THE STRAW BALES.
6. REPLACE WITH NEW STRAW BALE FENCE EVERY TWO MONTHS
7. WITH STAKES INTO THE GROUND ARE A PREFERRED SUBSTITUTE FOR STRAW BALE FENCES

STRAW BALE FENCE

SBF

SYMBOL



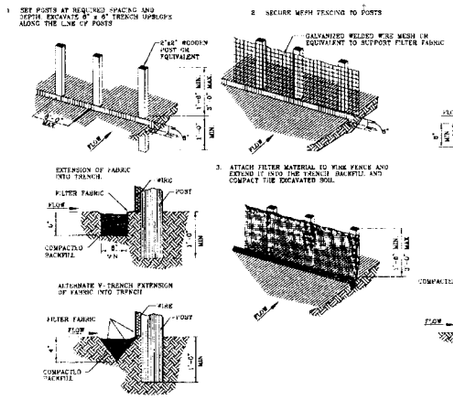
GENERAL NOTES

1. LIMIT USE TO ONSITE SMALL FOR PURPOSES OF LOW FLOW VELOCITY EROSION CONTROL. USE BRUSH BERMS TO TREAT OVERLAND FLOW ONLY. DO NOT USE BRUSH BERMS TO TREAT FLOW IN CHANNELS.
2. PLACE NOTCH BRUSH AND BRANCHES HAVING A DIAMETER OF LESS THAN 2 INCHES WITH A 3-INCH OVERLAP. AVOID INCORPORATION OF ANIMAL WEEDS AND SOIL INTO BRUSH BERM
3. MINIMUM HEIGHT OF THE BRUSH BERM IS 18 INCHES MEASURED FROM THE TOP OF THE EXISTING GROUND AT THE UPSLOPE SIDE TO THE TOP OF THE BERM.
4. HAND PLACE BRUSH BERMS ALONG CONTOUR LINES. MACHINE ALIGNMENT OF BRUSH BERMS IS NOT PERMITTED.
5. WIRE BRUSH BERM AT LEAST 4 INCHES INTO THE SOIL
6. ANCHOR BRUSH BERMS USING WIRE OR NYLON ROPE ACROSS THE BERM AT A MINIMUM DIVISION OF 50 POUNDS.
7. SECURE TOP SOIL TO BRUSH BERM STAKES DRIVEN INTO THE GROUND 1-FOOT APARTS ON BOTH SIDES OF THE BERM
8. PERFORM MAINTENANCE AS NEEDED.

BRUSH BERM

BB

SYMBOL



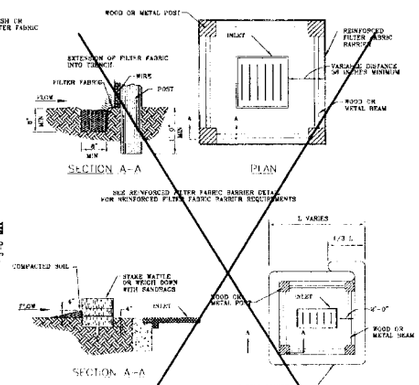
GENERAL NOTES.

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR WIRE TIES
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 DEPTH

REINFORCED FILTER FABRIC BARRIER

RFB

SYMBOL

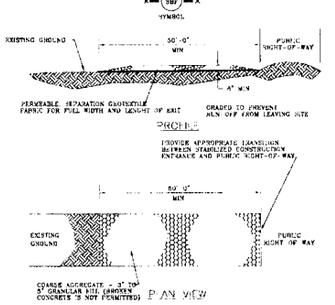


NOTE: TYPICAL 5 BALE BARRIERS ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB

SYMBOL



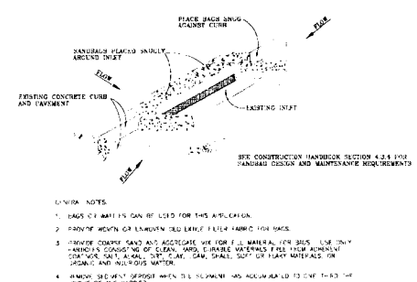
GENERAL NOTES

1. MINIMUM LENGTH IS AS SHOWN ON CONTRACT DRAWINGS OR 50 FEET, WHICHEVER IS MORE
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS ENTIRE INCLUDING ALL TURNS OR CURVES OR FORKS
3. UNLESS SHOWN ON THE CONTRACT DRAWINGS, STABILIZATION FOR OTHER AREAS MUST HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE START ZFO CONSTRUCTION EXIT
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN ON LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE WIDTH REQUIRED OR WHEN SURFACE BECOMES PACKED WITH MUD
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN LEAVING SURFACE
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE: CEMENT STABILIZED SOIL, COMPACTED CEMENT STABILIZED SOIL, UNIFORMLY AGGREGATE, OR OTHER FILL MATERIAL IN AN APPLICATION OF 10 CUBICS OF 8 INCHES. WOOD MATS, TIMBER OR OTHER HARDWOOD LUMBERS PLACED LENGTHWISE ACROSS EXPOSED GRADED AREA AND STAKED ON TOP OF EXISTING SOIL IN AN APPLICATION OF THICKNESS OF 8 INCHES. IS SELF MATS PERFORATED MATS PLACED ACROSS PERIMETER, AS SUPPORT MEMBERS

STABILIZED CONSTRUCTION ACCESS

SC

SYMBOL



GENERAL NOTES

1. BAGS OF MATERIALS CAN BE USED FOR THIS APPLICATION.
2. PROVIDE MORTAR OR EMBEDDED OLD BRICK FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE WITH FILL MATERIAL OFFER BAGS. USE ONLY HARDWOOD CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, SAW, SHALE, SOFT OR FLAKY MATERIALS OR ORGANIC AND INORGANIC MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN SILT SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB

SYMBOL

STATE OF TEXAS
D. M. KRUKEWITT
42724
REGISTERED PROFESSIONAL ENGINEER
1-13-10

NO.	DATE	REVISION	APPROV.
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Texas Board of Professional Engineers Registration No. F-439
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F.B.C. M.U.D. No. 41 CONNECTION

STORM WATER POLLUTION PREVENTION DETAILS

NORTH FORT BEND WATER AUTHORITY

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

APPROVED: 4/22/10 STREET & BRIDGE
APPROVED: 1-22-10 STORM WATER QUALITY
APPROVED:

FILE NO:
DRAWING SCALE
HORIZ : AS SHOWN
VERT :

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
HOUSTON, TEXAS
46954
CITY SURVEYOR-MAPPING
REGISTERED

SHEET No. 43 OF 43

SE 3/17/10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3