12T

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 24 day of AUGUST, 2010, before the Fort Bend Commissioners Court came on to be heard and reviewed the accompanying notice of REDDICO CONSTRUCTION COMPANY, INC.

Job Location OLD VILLAGE LANE, SPANISH GRANT DRIVE, TOWNEWEST BLVD, DITCH VII-A-1 AND DITCH VII-A-1a

Dated 08/10/10 BOND NO.230 85 76 Permit No. 83804

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

Notes:

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

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

By _____
County Engineer

By _____
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.
Recorded in Volume 8-24-10
Minutes of Commissioners Court.

Clerk of Commissioners Court
By Sherry Fior
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 230 85 76

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND §

THAT WE, Reddico Construction Company, Inc. **whose address is** 10083 FM 1484, Conroe, Texas 77303 **,Texas, hereinafter called the Principal, and** Insurance Company of the West **, a Corporation existing under and by virtue of the laws of the State of** California **and authorized to do an indemnifying business in the State of Texas, and whose principal office is located at** 11455 El Camino Real, San Diego, CA 92130 **whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought within said State is** Jim Miller **and whose address is** 6575 W Loop S, #230, Bellaire, Texas 77401**, 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** Two Hundred Sixty-nine* **Dollars ($** 269,207.05 **) 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.** *Thousand, Two Hundred Seven and 05/100 Dollars---

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 5th **day of** August **, 20**10**.**

Reddico Construction Company, Inc.
PRINCIPAL

BY Michael A. Gruy, Executive Vice President

Insurance Company of the West
SURETY

BY Nancy T. Berry, Attorney-In-Fact

No. 0001828

ICW GROUP
Power of Attorney
Insurance Company of the West
Explorer Insurance Company **Independence Casualty and Surety Company**

KNOW ALL MEN BY THESE PRESENTS: That Insurance Company of the West, a Corporation duly organized under the laws of the State of California, Explorer Insurance Company, a Corporation duly organized under the laws of the State of California, and Independence Casualty and Surety Company, a Corporation duly organized under the laws of the State of Texas, (collectively referred to as the "Companies"), do hereby appoint

STEVEN W BERRY, NANCY T. BERRY, MORRIS D. PLAGENS, JR., KIMBERLY J. SMITH, BARBARA A. BURCHAM

their true and lawful Attorney(s)-in-Fact with authority to date, execute, sign, seal, and deliver on behalf of the Companies, fidelity and surety bonds, undertakings, and other similar contracts of suretyship, and any related documents.

In witness whereof, the Companies have caused these presents to be executed by its duly authorized officers this 2nd day of January, 2008.

INSURANCE COMPANY OF THE WEST INCORPORATED MARCH 1, 1972 CALIFORNIA
EXPLORER INSURANCE COMPANY CORPORATE SEAL CALIFORNIA 1961
INDEPENDENCE CASUALTY AND SURETY COMPANY TEXAS

INSURANCE COMPANY OF THE WEST
EXPLORER INSURANCE COMPANY
INDEPENDENCE CASUALTY AND SURETY COMPANY

Jeffrey D. Sweeney, Assistant Secretary

J. Douglas Browne, Senior Vice President

State of California } ss.

County of San Diego

On May 21, 2009, before me, JoAnn Pache, Notary Public, personally appeared J. Douglas Browne and Jeffrey D. Sweeney, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that they executed the same in their authorized capacities, and that by their signatures on the instrument, the entity upon behalf of which the persons acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

Witness my hand and official seal.

CSC1 JOANN PACHE COMM. #1846804 NOTARY PUBLIC-CALIFORNIA SAN DIEGO COUNTY My Commission Expires APRIL 30, 2013 CSC1

JoAnn Pache, Notary Public

RESOLUTIONS

This Power of Attorney is granted and is signed, sealed and notarized with facsimile signatures and seals under authority of the following resolutions adopted by the respective Boards of Directors of each of the Companies:

"RESOLVED: That the President, an Executive or Senior Vice President of the Company, together with the Secretary or any Assistant Secretary, are hereby authorized to execute Powers of Attorney appointing the person(s) named as Attorney(s)-in-Fact to date, execute, sign, seal, and deliver on behalf of the Company, fidelity and surety bonds, undertakings, and other similar contracts of suretyship, and any related documents.

RESOLVED FURTHER: That the signatures of the officers making the appointment, and the signature of any officer certifying the validity and current status of the appointment, may be facsimile representations of those signatures; and the signature and seal of any notary, and the seal of the Company, may be facsimile representations of those signatures and seals, and such facsimile representations shall have the same force and effect as if manually affixed. The facsimile representations referred to herein may be affixed by stamping, printing, typing, or photocopying."

CERTIFICATE

I, the undersigned, Assistant Secretary of Insurance Company of the West, Explorer Insurance Company, and Independence Casualty and Surety Company, do hereby certify that the foregoing Power of Attorney is in full force and effect, and has not been revoked, and that the above resolutions were duly adopted by the respective Boards of Directors of the Companies, and are now in full force.

IN WITNESS WHEREOF, I have set my hand this 5th day of August, 2010.

Jeffrey D. Sweeney, Assistant Secretary

To verify the authenticity of this Power of Attorney you may call 1-800-877-1111 and ask for the Surety Division. Please refer to the Power of Attorney Number, the above named individual(s) and details of the bond to which the power is attached. For information or filing claims, please contact Surety Claims, ICW Group, 11455 El Camino Real, San Diego, CA 92130-2045 or call (858) 350-2400.

1 IMPORTANT NOTICE

To obtain information or make a complaint:

2 You may contact your Agent at 713-569-0237.

3 You may call Insurance Company of the West/Independence Casualty & Surety Company's toll-free telephone number for information or to make a complaint at:

1-800-877-1111

4 You may also write to Insurance Company of the West/Independence Casualty & Surety Company at:

11455 El Camino Real
San Diego, CA 92130-2045

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

1-800-252-3439

6 You may write the Texas Department of Insurance:

P. O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: http://www.tdi.state.tx.us
E-mail: ConsumerProtection@tdi.state.tx.us

7 **PREMIUM OR CLAIM DISPUTES:**
Should you have a dispute concerning your premium or about a claim you should contact the Agent first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

8 **ATTACH THIS NOTICE TO YOUR POLICY:**
This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener informacion o para someter una queja:

Puede comunicarse con su (title) al (telephone number).

Usted puede llamar al numero de telefono gratis de Insurance Company of the West/Independence Casualty & Surety Company's para informacion o para someter una queja al:

1-800-877-1111

Usted tambien puede escribir a Insurance Company of the West/Independence Casualty & Surety Company al:

11455 El Camino Real
San Diego, CA 92130

Puede Comunicarse con el Departamento de Seguros de Texas para obtener informacion acerca de companias, coberturas, derechos o quejas al:

1-800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P. O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: http://www.tdi.state.tx.us
E-mail: ConsumerProtection@tdi.state.tx.us

DISPUTAS SOBRE PRIMAS O RECLAMOS:
Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el (agente) primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA: Este aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.

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. 83804

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. 230 85 76
  Amount $269,207.05
- ____ 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.

_____ 08/10/2010
Johnny Ortega CFM/ Permit Administrator 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. _____
PERMIT No. 83804 PCT. No. 3
BOND No. 230 85 76

Formal notice is hereby given that _____ 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
Old Village Ln	FBC Drainage Ditch	60'	X			
Spanish Grant Dr	FBC Drainage Ditch	60'	X			
Townewest Blvd	FBC Drainage Ditch	80'	X			

Along Roads and/or Drainage Ditches

Road or Ditch Name	Distance & Direction From Nearest Intersection	To	Distance
FBC Drainage Ditch	250' North of Old Village Lane	Old Richmond Road	5,600'

General Description

Installataion of 12" Water Line for Fort Bend County Water Authority

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: Reddico Construction Company, Inc.
AGENT and/or OWNER

(Signature)

NAME & TITLE Ryan Redd, Project Manager
(Please Print)

DATE 8/4/2010

ADDRESS 10083 FM 1484
(Street/P.O. Box)

Conroe TX 77303
City State Zip

TELEPHONE NO: 936-441-9500
(accessible 24 hrs/day, 7 days/week)

Does project comply with Fort Bend County Outdoor Lighting Ordinance?

Yes ( )

No ( )

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

APPLICANT'S JOB NO. _____

PERMIT No. _____ PCT. No. _____

BOND No. _____

Formal notice is hereby given that _____ 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
FBC Drain Ditch	FBC Drainage Ditch	80'	X			X
Old Towne Lane	FBC Drainage Ditch	60'	X			

Along Roads and/or Drainage Ditches

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

General Description

Installataion of 12" Water Line for Fort Bend County Water Authority

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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: Reddico Construction Company, Inc.

AGENT and/or OWNER

(Signature)

NAME & TITLE Ryan Redd, Project Manager
(Please Print)

DATE 8/4/2010

ADDRESS 10083 FM 1484
(Street/P.O. Box)

Conroe TX 77303
City State Zip

TELEPHONE NO: 936-441-9500
(accessible 24 hrs/day, 7 days/week)

Does project comply with Fort Bend County Outdoor Lighting Ordinance?

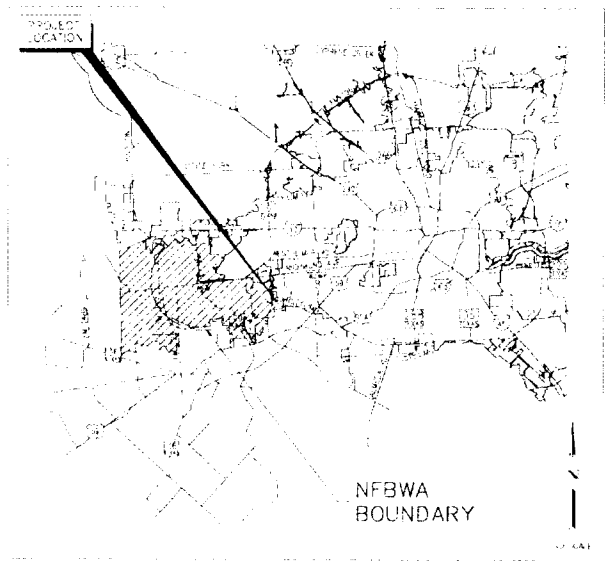
Yes ( )

No ( )

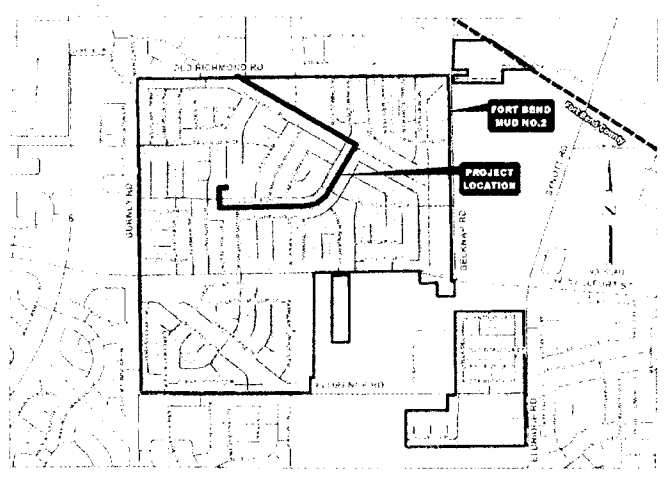
12T

NORTH FORT BEND WATER AUTHORITY
FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 2
CONNECTION LINE
PROPOSED 12" WATER LINE ALONG A DRAINAGE CHANNEL FROM OLD RICHMOND RD. TO FBCMUD NO. 2 WATER PLANT

NFBWA - FBCMUD NO. 2 CONNECTION LINE



LOCATION MAP
NTS



VICINITY MAP
NTS

KEY MAP 528 S T.W&X ZIPCODE 77498
Grids 4753 B,D

DIRECTORS	PRECINCT
DAVID SNELL	1
ROBERT TARLEN	2
BRUCE FAY	3
METLOCK F. SAYLES	4
ROBERT PATTON	5
PETER HOUGHTON	6
PAT HEBERT	7

ISSUE DATE: DECEMBER, 2009

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!
(713)223-4567 (IN HOUSTON)
(NEW STATEWIDE NUMBER OUTSIDE HOUSTON)
1-800-545-6005

CONTRACTOR STAKED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERS, ENGINEERING CONSTRUCTION DIVISION (TELEPHONE NO. 713-837-7450) 48 HOURS PRIOR TO STARTING WORK ON THIS PROJECT

FLOOD PLAIN NOTE:

ACCORDING TO FLOOD INSURANCE RATE MAP NO. 48157C0105L DATED JANUARY 03, 1997 PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, THE PROPERTY SHOWN ON THESE PLANS IS WITHIN ZONE X, DEFINED AS AREA DETERMINED TO BE OUTSIDE THE 500 YEAR FLOOD PLAIN

2/25/10
D. JESSE HEGEMIER, P.E.
FORT BEND COUNTY ENGINEER
DATE

NO DRAINAGE PROPOSED IN THIS PLAN SET
NO INDIAN PROPERTY AFFECTED WITH THIS PLAN SET

FORT BEND DRAINAGE DISTRICT CONDITIONAL APPROVAL OBTAINED FEBRUARY 4, 2010 BY DWAYNE GRIGAR.

PATE ENGINEERS

PATE JOB NO. 187100100

STATE OF TEXAS
CHRISTOPHER A. PRAM
94905
LICENSED
PROFESSIONAL ENGINEER
12/1/09

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

2/4/10
2-4-10
2-4-10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
16691
CITY SECRETARY

CONSTRUCTION NOTES

1. [illegible] TO OBTAIN EASEMENT FOR WORK SHOWN ON THESE PLANS, UNLESS SPECIFICALLY ESTABLISHED IN THE PROVISION OF THE CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.

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

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

4. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES 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 713-227-4567
   C) TEXAS EXCAVATION SAFETY SYSTEM INC. AT 1-800-344-8377
   D) DS RIOT OPERATOR - MUNICIPAL DISTRICT SERVICES AT 281-820-1726

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

6. CONTRACTOR SHALL PERFORM WITH INDEPENDENT TESTS. SUBSEQUENT TESTING OF PIPELINES PREVIOUS TESTING SHALL BE AT CONTRACTORS EXPENSE. A COPY OF ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER.

7. CONTRACTOR SHALL PROVIDE ALL MOLDINGS AND JERKS REQUIRED FOR PROPOSED ON EXISTING PAVEMENT DUE TO THIS CONSTRUCTION ACTIVITY. DAMAGE MATERIAL THAT IS HAZARDOUS TO TRAFFIC SHALL BE REMOVED IMMEDIATELY.

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

9. INCLUDE PRICE OF ALL BEDDING AND BACKFILL OF PIPE PROVIDED 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, AND 02522 UTILITY BACKFILL MATERIAL AND DETAILS NOS. 02517 TO TYPICAL 02517-01 AS APPROPRIATE.

11. ALL SEWER TRENCHES UNDER OR WITHIN ONE FOOT OF PROPOSED AND/OR FUTURE PAVEMENT OF 20TH STREET 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. BEING CONSTRUCTED PRODUCTS AS DESIGNATED IN THE TEXAS DOT SPECIFICATIONS OR AS SHOWN ON PLANS SHALL BE FURNISHED BY A MANUFACTURER OR SUPPLIER THOSE PRODUCTS SHALL BE IN FULL CONFORMANCE WITH SUCH PARTS THE NOTED SPECIFICATION AND/OR STANDARD CONSTRUCTION DETAILS.

13. ALL MANHOLES IN UNPAVED AREAS SHALL BE ENCASED WITH CONCRETE STABILIZED SAND A MINIMUM OF 1 FOOT BELOW BASE AND A MINIMUM OF 1 FOOT AROUND WALL UP TO 1 FOOT ABOVE THE FLOWS ADJOINING PIPE STRUCTURE. THE REMAINING BACKFILL SHALL BE MADE WITH SELECT FILL MATERIAL PLACED UNIFORM BLOCK MAXIMUM LOOSE LIFTS COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM STANDARD PROCTOR DENSITY. 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 WITH 1 FOOT OF PAVEMENT SUBGRADE INCLUDE PRICE OF ALL BEDDING AND BACKFILL OF PIPE REQUIRED IN PRICE OF MANHOLE.

14. WHEN TRENCH EXCAVATION WARRANTS THE USE OF TRAMPER OR SHEETING, THEIR USE SHALL BE REQUIRED BY THE CONTRACTOR AND APPROVED BY THE PROGRAM MANAGER.

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

16. THESE PLANS PREPARED BY PATE ENGINEERS, INC. DO NOT EXTEND TO OR INCLUDE DESIGNS ON SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR, HIS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE LICENSED PROFESSIONAL ENGINEER 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 SYSTEMS.

17. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA. NO TREES OUTSIDE THE WORK AREA SHALL BE REMOVED WITHOUT PERMISSION OF OWNER.

18. CONTRACTOR SHALL GIVE NOTICE TO ALL PUBLIC UTILITIES, SUPERINTENDENTS, OR OWNERS 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.

19. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF FORT BEND COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT PRIOR TO STARTING CONSTRUCTION.

20. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED BY FORT BEND COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF CUTLETS AND/OR CULVERTS WITHIN COUNTY ROAD RIGHTS-OF-WAY. IF APPLICABLE CONTACT JOHNNY ORTEGA AT 281-633-7502.

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

    NOTE: AUTHORIZATION NOTICE ISSUED BY FORT BEND COUNTY ENGINEERING DEPARTMENT PERMIT OFFICE REQUIRED PRIOR TO CONSTRUCTION OF CUTLETS OR LEFT TURN LANES WITHIN FORT BEND COUNTY RIGHT-OF-WAY. CONTACT FORT BEND COUNTY PERMIT OFFICE (713) 633-7500.

22. FORT BEND COUNTY FOND-ING PERPAVEMENT PHASE BE NOTIFIED BY WRITTEN NOTIFICATION BY THE CONTRACTOR 48 HOURS IN ADVANCE OF STARTING CONSTRUCTION, FOLLOWED BY TELEPHONE NOTIFICATION 24 HOURS IN ADVANCE OF STARTING CONSTRUCTION. A COPY OF THE WRITTEN NOTIFICATION SHALL BE SENT TO THE OWNER. CONTACT JOHNNY ORTEGA AT 281-633-7502.

23. CONTRACTOR SHALL NOTIFY THE NORTH FORT BEND WATER AUTHORITY C/O BROWN AND CALDWELL ENGINEERS, INC. (281-558-8200) AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION.

24. ***PROVIDE TEMPORARY SAFETY FENCING TO BE INSTALLED NIGHTLY DURING THE CONSTRUCTION OF THE WATER LINE. REPLACEMENT OF FENCING TO BE PERFORMED SUBSEQUENT TO COMPLETION OF THE WATER LINE CONSTRUCTION.***

25. SURPLUS EXCAVATED MATERIAL FROM CONSTRUCTION OF WATER LINE AND TOWERS SHALL BE DISPOSED OF OFF SITE BY THE CONTRACTOR.

26. CONTRACTOR RESPONSIBLE FOR PLANS CONTRACTOR SHALL NOT AND NOT ACCEPT INSPECTIONS, INSPECTIONS IN EXCESS OF 48 HOURS OF RAINFALL AND NOTIFICATION TO ENGINEER OR OWNER OF ANY HAZARDOUS OR UNSAFE IN THE STORM WATER POLLUTION PREVENTION PLAN.

27. CONTRACTOR SHALL KEEP PLANT ACCESS GATES LOCKED AT ALL TIMES WHILE ON THE PROJECT. THE PLANT ACCESS GATES SHALL BE LOCKED WHEN THE CONTRACTOR LEAVES THE SITE AT THE END OF EACH DAY.

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 MUD NO. 2
   OPERATOR NAME: MUNICIPAL DISTRICT SERVICES, LLC
   CONTACT PERSON: REBECCA MARCOTT
   CONTACT PHONE #: (281) 290-5126

2. CONTRACTOR SHALL ALLOW A MINIMUM OF 2-FOOT VERTICAL AND 4-FOOT HORIZONTAL CLEARANCE BETWEEN PROPOSED WATER LINES AND OTHER UTILITIES. FOR ADDITIONAL SEPARATION NOTES BETWEEN WATER LINES AND SANITARY SEWERS, REFER SANITARY CONSTRUCTION NOTES.

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 SCHEMA ON CHANGE OF ALTITUDES, BOTH THE SEWER PIPE AND JOINTS SHALL HAVE PRESSURE RATING OF 150 PSI AND MANHOLES SHALL BE WATER TIGHT. THE 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 CONTAMINANTS/IMPURITIES DEPENDS ON POTENTIAL DEGREES 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 ONE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18 FOOT LONG FENCING SECTION OF PIPE. PIPE ENCASED PIPE SHALL HAVE A MINIMUM OF 150 PSI AT 73.4°F OPERATION. THE ENCASED PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST 30 INCHES IN DIAMETER. AT LEAST THAN THE WATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT EVERY FOOT OR LESS) INTERVALS WITH SPACERS OR FILLED TO THE SPRING LINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ADDITIONAL MINIMUM SEPARATION DISTANCE OF ONE INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE 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 LEAKAGE TEST AS SPECIFIED IN AWWA PUBLIC STANDARDS.

   WHEN A NEW POTABLE WATERLINE CROSSES AN EXISTING PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE AND WASTEWATER MAIN OR LATERAL ARE AT LEAST ONE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST 18 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 JOINTS WASTEWATER MAIN OR LATERAL CANNOT BE SEALED, IT SHALL BE REPLACED FOR A LEAST ONE FEET IN EACH DIRECTION OR THE FIRST JOINT 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 UNIMPROVED 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 EQUIPPED WITH OPERATING NUT EXTENSIONS TO WITHIN FOUR FEET OF NATURAL GROUND.

8. BACKFILL OF TRENCH IS SHOWN ABOVE. WHEN CROSSING AN EXISTING STORM SEWER, ALONG THE OPEN CUT PIPE, THE WATER LINE TRENCH ZONE SHALL BE BACKFILLED FOR 3 TO 5 FEET EITHER SIDE OF THE STORM SEWER WITH CEMENT STABILIZED SAND TO THE SPRING LINE OF THE STORM SEWER.

9. ALL WATER LINES 30 INCHES AND SMALLER SHALL BE PRESTRESSED CONCRETE CYLINDER PIPE, BAR WRAPPED CONCRETE CYLINDER PIPE, STEEL PIPE, OR DUCTILE IRON PIPE.

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

11. CONTRACTOR TO FIELD VERIFY ALIGNMENT FOR PROPOSED BENDS AND FITTINGS PRIOR TO CONSTRUCTION.

12. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ANY ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL WORK ON STORM SEWER SHALL COMPLY WITH THE CONTRACTOR MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AND SHALL BE IN COMPLIANCE WITH THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) REQUIREMENTS.

CONTRACTOR WORK ZONE NOTES

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

2. DRIVEWAY ACCESS WILL BE MAINTAINED WHEN 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 FORT BEND COUNTY 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 COUNTY ENGINEER. AN APPROPRIATE TRANSITION AS DEFINED IN THE TRAFFIC CONTROL PLAN WILL BE PROVIDED AT SIGNALIZED INTERSECTIONS.

5. TEMPORARY PAVEMENT MARKERS. TEMPORARY EPOXY TYPE PAVEMENT OR CONSTRUCTION GRADE PAVEMENT MARKERS SHOULD BE USED ON PERMANENT PAVEMENT TO REMAIN IN PLACE TO REMOVE CHANGING AND CLEANING 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.

FORT BEND COUNTY DRAINAGE DISTRICT NOTES

1. NOTIFY THE FORT BEND COUNTY DRAINAGE DISTRICT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

2. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.

3. BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.

4. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY (EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED). MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF COMMON BERMUDA GRASS AND NO EROSION OR RILLS WIDER THAN 4".

5. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.

6. REMOVE ALL EXCAVATED MATERIAL FROM THE FORT BEND COUNTY DRAINAGE DISTRICT RIGHT-OF-WAY. NO FILL MAY BE PLACED WITHIN A DESIGNATED 100-YEAR FLOOD AREA WITHOUT FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

7. MAINTAIN AND COMPLY WITH ALL APPLICABLE FORT BEND COUNTY, STATE AND FEDERAL PERMITS AND APPROVALS. WITH ASSISTANCE FROM ENGINEER, IF NECESSARY.

8. ALL VENT PIPES AND BULKHEADS ARE TO BE INSTALLED AT THE EXPENSE OF THE FORT BEND COUNTY DRAINAGE DISTRICT RIGHT-OF-WAY FOR APPLICABLE WITHIN FORT BEND COUNTY DRAINAGE DISTRICT RIGHT-OF-WAY. COORDINATION OF APPROPRIATE DRAINAGE SYSTEM SHALL NOT BE IMPACTED BY THE PLACEMENT OF VENT PIPES WITH BULKHEADS AND TEST STATIONS.

9. ALL SEWER MANHOLES WITHIN FORT BEND COUNTY DRAINAGE DISTRICT RIGHT-OF-WAY MUST BE FLUSH WITH NATURAL GROUND. ALL SEWER MANHOLES CONNECTED WITHIN THE BACKSLOPE SWALE SYSTEM SHALL BE CONSTRUCTED WITH THE FINAL FLOW ELEVATION OF THE MANHOLE TO MATCH THE FLOWLINE OF THE PERTINENT BACKSLOPE SWALE SYSTEM. ALL MANHOLES WITHIN THE FORT BEND COUNTY DRAINAGE DISTRICT RIGHT-OF-WAY SHALL BE SEALED AND BOLTED WITH NON-LOW PROTECTORS INSTALLED.

CENTER POINT ENERGY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY INTRASTATE PIPELINE LLC. WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE GENERALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATOR (COMPLETE LIST) 713-207-1511 OR 800-669-5704 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO LOCATE MAINS AND SERVICE LINES FOR DETAILS.

WHEN CENTER POINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, USE EPAL (EST. 1952) CALL AT 713-207-2222 FOR STATUS OF THE FIELD OR REQUEST REPORT. EXCAVATION BEGINS.

WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE NOTIFIED LOCATION OF CENTER POINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANICAL EXCAVATION PROCEDURES.

WHEN CENTER POINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPE.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE MAY NOT ALWAYS BE ABLE TO MARK THOSE LINES WHICH ARE NOT READILY VISIBLE. BUT YOU SHOULD ASSUME THAT PRIOR TO BEGINNING ANY WORK PLEASE TAKE ALL SUCH PRECAUTIONS AND SAFETY CODE PROVIDED. ALL ACTIVITIES WHICH PERSONS OR EQUIPMENT MAY COME WITHIN SIX (6) FEET OF ANY EXPOSED HIGH VOLTAGE LINES. YOU ARE RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE TOTALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS CARRIES HIGH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED, CALL CENTERPOINT ENERGY AT (713) 207-2222.

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

CONSTRUCTION NOTES

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PATE ENGINEERS

STATE OF TEXAS
G.L. ABRAM
44694
PROFESSIONAL ENGINEER
12/17/09

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY OF HOUSTON
TEXAS

2/23/10

REF. NO.	DWG. NAME	REVISION DATE
01	COVER SHEET	08/01/09
02	CONSTRUCTION NOTES	08/01/09
03	INDEX AND LEGEND	08/01/09
04	SHEET LAYOUT AND CORE BORING PLAN	08/01/09
05	BASELINES/BENCHMARK	08/01/09
06	PLAN AND PROFILE - 12" WATER LINE - STA. 0+00.00 TO STA. 2+00.00	08/01/09
06A	PLAN AND PROFILE - 12" WATER LINE - STA. 2+00.00 TO STA. 5+00.00	08/01/09
07	PLAN AND PROFILE - 12" WATER LINE - STA. 5+00.00 TO STA. 10+00.00	08/01/09
08	PLAN AND PROFILE - 12" WATER LINE - STA. 10+00.00 TO STA. 14+00.00	08/01/09
09	PLAN AND PROFILE - 12" WATER LINE - STA. 15+00.00 TO STA. 20+00.00	08/01/09
10	PLAN AND PROFILE - 12" WATER LINE - STA. 20+00.00 TO STA. 25+00.00	08/01/09
11	PLAN AND PROFILE - 12" WATER LINE - STA. 25+00.00 TO STA. 30+00.00	08/01/09
12	PLAN AND PROFILE - 12" WATER LINE - STA. 30+00.00 TO STA. 35+00.00	08/01/09
13	PLAN AND PROFILE - 12" WATER LINE - STA. 35+00.00 TO STA. 40+00.00	08/01/09
14	PLAN AND PROFILE - 12" WATER LINE - STA. 40+00.00 TO STA. 45+00.00	08/01/09
15	PLAN AND PROFILE - 12" WATER LINE - STA. 45+00.00 TO STA. 50+00.00	08/01/09
16	PLAN AND PROFILE - 12" WATER LINE - STA. 50+00.00 TO STA. 55+00.00	08/01/09
17	PROJECT SIGN DETAILS	08/01/09
18	STANDARD WATER LINE DETAILS	08/01/09
19	TUNNEL AND CASING DETAILS	08/01/09
20	CONNECTION TO VALVE AND DETAILS	08/01/09
21	HEAVY DUTY MANHOLE RING AND COVER DETAILS	08/01/09
22	VALVE AND SERVICE MANHOLE DETAILS	08/01/09
23	METERING STATION (4400)	08/01/09
24	CONTROL VALVE STATION (4400)	08/01/09
25	METERING STATION AND CONTROL VALVE STRUCTURE	08/01/09
26	TREE PROTECTION PLAN	08/01/09
27	STORMWATER POLLUTION PREVENTION PLAN	08/01/09
28	SWPPP DETAILS	08/01/09
29	1" METER/CONTROL VALVE STATION INSTALLATION AND ROUTING	
30	ELECTRICAL CONDUIT SCHEDULE	
31	CONTROL DIAGRAM SHEET 1	
32	CONTROL DIAGRAM SHEET 2	
33	CONTROL DIAGRAM SHEET 3	
34	CONTROL DIAGRAM SHEET 4	
35	CONTROL DIAGRAM SHEET 5	
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37	CONTROL DIAGRAM SHEET 7	
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40	CONTROL DIAGRAM SHEET 10	
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42	ELECTRICAL CONTROL PANEL TARGET & SPECIAL POWER SCHEDULE	
43	ELECTRICAL CONTROL PANEL TARGET	
44	ELECTRICAL DETAILS SHEET 1	
45	ELECTRICAL DETAILS SHEET 2	

ABBREVIATIONS

[illegible]	BASELINE OR BEGINNING LINE	[illegible]	CENTER OF CURVATURE
[illegible]	BEGINNING OF PROJECT	[illegible]	POINT OF INTERSECTION
[illegible]	BLIND FLANGE	[illegible]	POINT ON CURVE
[illegible]	CONCRETE	[illegible]	POINT OF REVERSE CURVE
[illegible]	CONNECT	[illegible]	POINT OF TANGENCY
[illegible]	DIAMETER	[illegible]	RATIO
[illegible]	DRAINAGE EASEMENT	[illegible]	RADIUS POINT
[illegible]	EAST	[illegible]	ROUND
[illegible]	EDGE OF PAVEMENT	[illegible]	RIGHT
[illegible]	ELEVATION	[illegible]	RIGHT OF WAY
[illegible]	FLOWLINE	[illegible]	SANITARY
[illegible]	END OF PROJECT	[illegible]	SANITARY SEWER EASEMENT
[illegible]	EXISTING	[illegible]	SAMPLE
[illegible]	FENCE LINE	[illegible]	SIDE SLOPE
[illegible]	FLOWING WATER	[illegible]	SECTION
[illegible]	GATE VALVE	[illegible]	STATION
[illegible]	HARRIS COUNTY LOCAL PUBLIC RECORDS OF REAL PROPERTY	[illegible]	STEEL
[illegible]	HIT	[illegible]	STORM
[illegible]	INTERSECTION	[illegible]	TOP OF CURB
[illegible]	INVERT	[illegible]	TEMPORARY EASEMENT
[illegible]	NATURAL GROUND	[illegible]	UTILITY EASEMENT
[illegible]	NORTH	[illegible]	WATER LINE
[illegible]	NOT TO SCALE	[illegible]	WATER LINE EASEMENT
[illegible]	PAVEMENT	[illegible]	WEST
[illegible]	POINT OF INTERSECTION		

EXISTING SYMBOL LEGEND

[illegible]	ELECTRICAL SIGN	[illegible]	GAS LAMP	[illegible]	SERVICE POLE
[illegible]	8" NIPPLE	[illegible]	GAS METER	[illegible]	SIGN STANCHION
[illegible]	8" NIPPLE	[illegible]	GAS SERVICE LINE MARKER	[illegible]	SMART MAP
[illegible]	BLOW OFF	[illegible]	GAS VALVE	[illegible]	STORM MH
[illegible]	BOX	[illegible]	GATE	[illegible]	STREET BATTERY CASE
[illegible]	CABLE (TELE)	[illegible]	GREASE TRAP	[illegible]	STREET LIGHT STANDARD
[illegible]	CABLE TV JUNCTION BOX	[illegible]	GUY WIRE	[illegible]	TELEPHONE POLE
[illegible]	CABLE TV MARKER	[illegible]	HAND HOLES	[illegible]	TELEPHONE JUNCTION BOX
[illegible]	CABLE TV VAULT MARKER	[illegible]	HAND HOLE CATV	[illegible]	TRAFFIC SIGN
[illegible]	CATCH BASIN	[illegible]	HAND HOLE CABLE MARKER	[illegible]	TRAFFIC SIGNAL CONTROL BOX
[illegible]	CENTER LINE OF STREET	[illegible]	JUNCTION	[illegible]	TRAFFIC FIBER STANDARD
[illegible]	CORE HOLE	[illegible]	MAIL BOX	[illegible]	TRANSFORMER BOX
[illegible]	8" NIPPLE	[illegible]	METAL POST BOLLARD	[illegible]	TREE
[illegible]	ELECTRICAL JUNCTION BOX	[illegible]	OVERHEAD POWER LINES	[illegible]	UNDERGROUND CABLE MARKER
[illegible]	FIRST SANITARY MH	[illegible]	PIPELINE MARKER	[illegible]	VENT PIPE
[illegible]	FENCE CORNER	[illegible]	POWER POLE	[illegible]	WATER METER
[illegible]	FENCE NEIGHBOR LOAD	[illegible]	PUBLIC TELEPHONE	[illegible]	WATER VALVE
[illegible]	FENCE UNLOADED	[illegible]	RAIL RELAY MAST	[illegible]	WATER WELL
[illegible]	FIRE HYDRANT	[illegible]	SANITARY CLEAN OUT	[illegible]	WELLHEAD
[illegible]	FLAG POLE				

PLAN LEGEND

- CENTERLINE EASEMENT
- CENTERLINE FILL STRIP
- [illegible] CULVERT
- BASELINE
- BARBED WIRE FENCE
- CHAIN LINK WOOD FENCE
- GAS LINE OR PIPE LINE
- SWBT LINE
- HL & P CO CONTACT
- HL & P CO OVERHEAD LINES
- PROPERTY LINE (ROW)
- SANITARY SEWER LINE 24" DIA AND SMALLER
- SANITARY SEWER LINE 30" DIA AND LARGER
- STM SEWER LINE 24" DIA AND SMALLER
- STM SEWER LINE 30" DIA AND LARGER
- WATER LINE 24" DIA AND SMALLER
- WATER LINE 30" DIA AND LARGER

EXISTING PROFILE LEGEND

- EXISTING GRADE AT ℄ WATER MAIN
- SAN SEWER LINE 24" DIA AND SMALLER
- SAN SEWER LINE 30" DIA AND LARGER
- WATER LINE 24" DIA AND SMALLER
- WATER LINE 30" DIA AND LARGER
- STM SEWER LINE 24" DIA AND SMALLER
- STM SEWER LINE 30" DIA AND LARGER
- SWBT CONDUIT
- GAS LINE

(10) INDICATES NUMBERS FROM PROFILE ENHANCED NOT FIELD VERIFIED

PROPOSED LEGEND

- GATE VALVE
- TEE AND HOE
- BUTTERFLY VALVE WITH ACCESS MANHOLE
- STORM INLET
- IN CESS MANHOLE
- AIR VENT WITH WHEEL BOLLARDS
- AIR VENT WITH LINE BOLLARD
- CULVERT
- WATER LINE 24" DIA AND SMALLER
- WATER LINE 30" DIA AND LARGER
- STM SEWER LINE 24" DIA AND SMALLER
- STM SEWER LINE 30" DIA AND LARGER
- FLUSH MOUNTED CASED BORE AND LARGER IN CASING
- SANITARY SEWER REPLACEMENT
- FLUSH MOUNTED CASED BORE WITH TEST STATION
- FLUSH MOUNTED POTENTIAL TEST STATION
- FLUSH MOUNTED FLANGE ISOLATION TEST STATION
- FLUSH MOUNTED FOREIGN LINE TEST STATION
- (16) FIGURE NUMBER

STATE OF TEXAS
G.L. ASRAM
94905
LICENSED
PROFESSIONAL ENGINEER
12/1/09

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

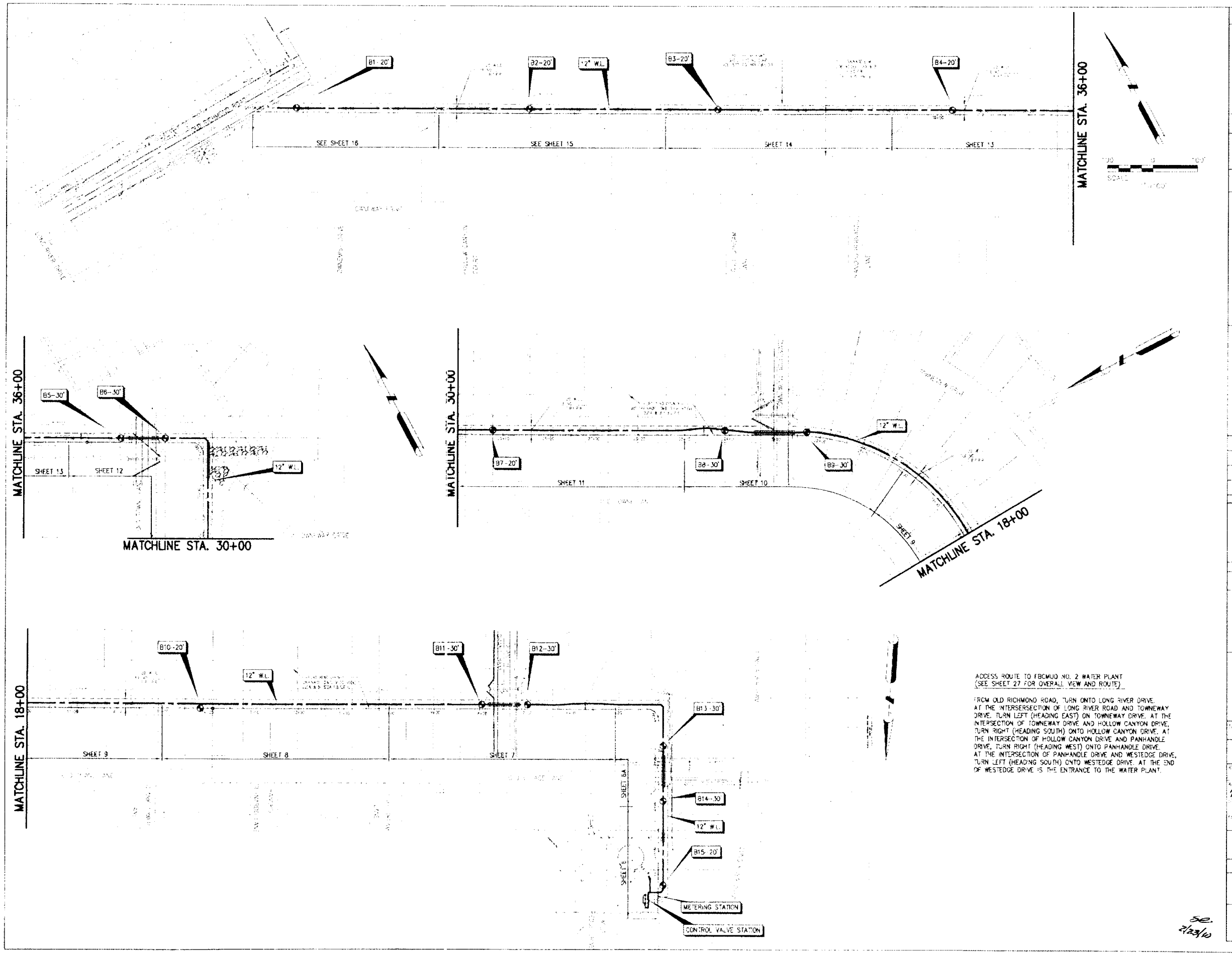
INDEX AND LEGEND

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PUBLIC WORKS AND ENGINEERING
ACCEPT
46693
CITY OF HOUSTON, TEXAS

2/23/10



ACCESS ROUTE TO FBCMUD NO. 2 WATER PLANT
(SEE SHEET 27 FOR OVERALL VIEW AND ROUTE)

FROM OLD RICHMOND ROAD, TURN ONTO LONG RIVER DRIVE. AT THE INTERSERSECTION OF LONG RIVER ROAD AND TOWNEWAY DRIVE, TURN LEFT (HEADING EAST) ON TOWNEWAY DRIVE. AT THE INTERSECTION OF TOWNEWAY DRIVE AND HOLLOW CANYON DRIVE, TURN RIGHT (HEADING SOUTH) ONTO HOLLOW CANYON DRIVE. AT THE INTERSECTION OF HOLLOW CANYON DRIVE AND PANHANDLE DRIVE, TURN RIGHT (HEADING WEST) ONTO PANHANDLE DRIVE. AT THE INTERSECTION OF PANHANDLE DRIVE AND WESTEDGE DRIVE, TURN LEFT (HEADING SOUTH) ONTO WESTEDGE DRIVE. AT THE END OF WESTEDGE DRIVE IS THE ENTRANCE TO THE WATER PLANT.

STATE OF TEXAS
D.E. ABRAM
94703
LICENSED
PROFESSIONAL ENGINEER
12/7/09

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

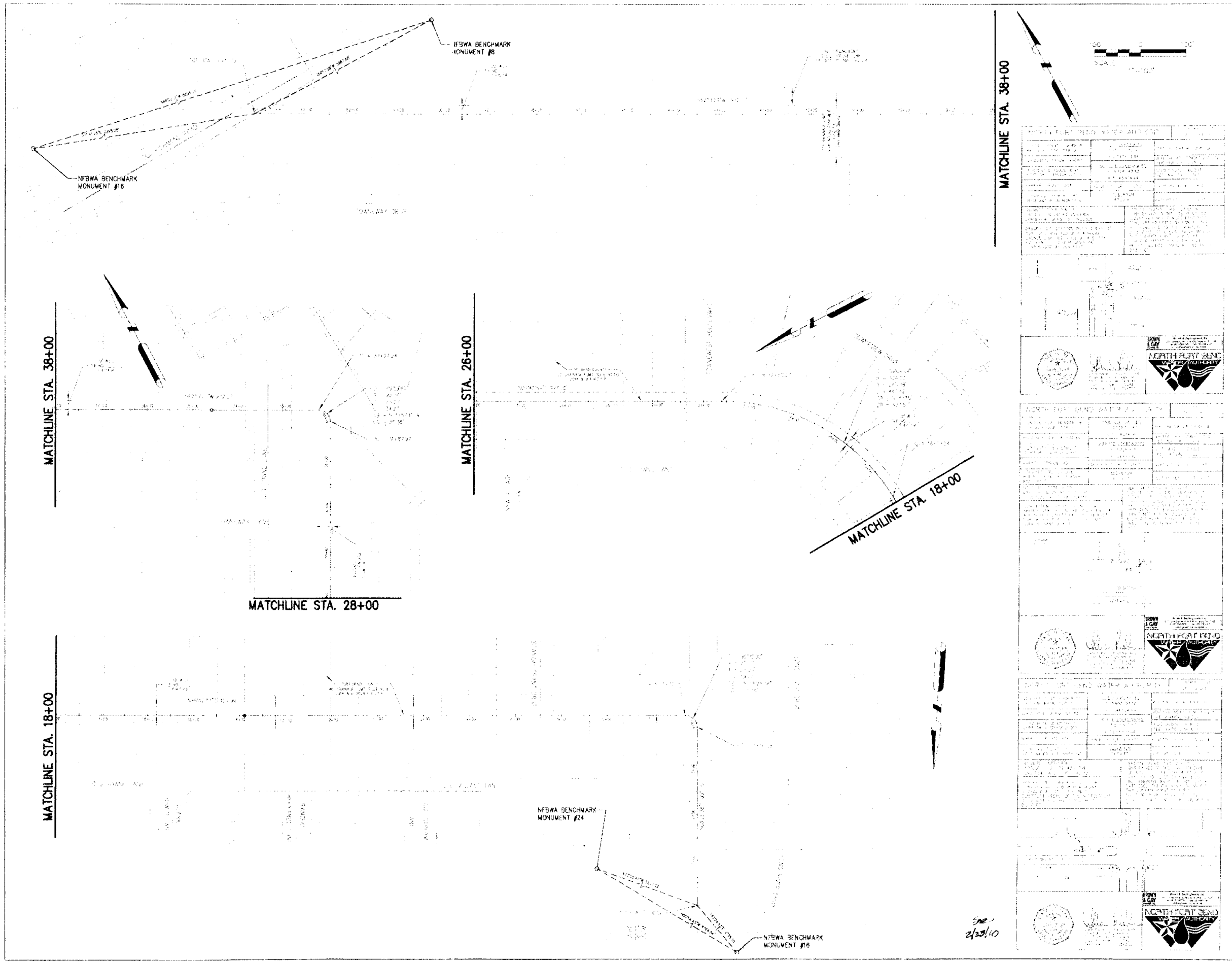
SHEET LAYOUT AND CORE BORING PLAN

NORTH FORT BEND WATER AUTHORITY

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
HOUSTON, TEXAS

SE
2/23/10



PATE ENGINEERS

PATE JOB NO. 187100100

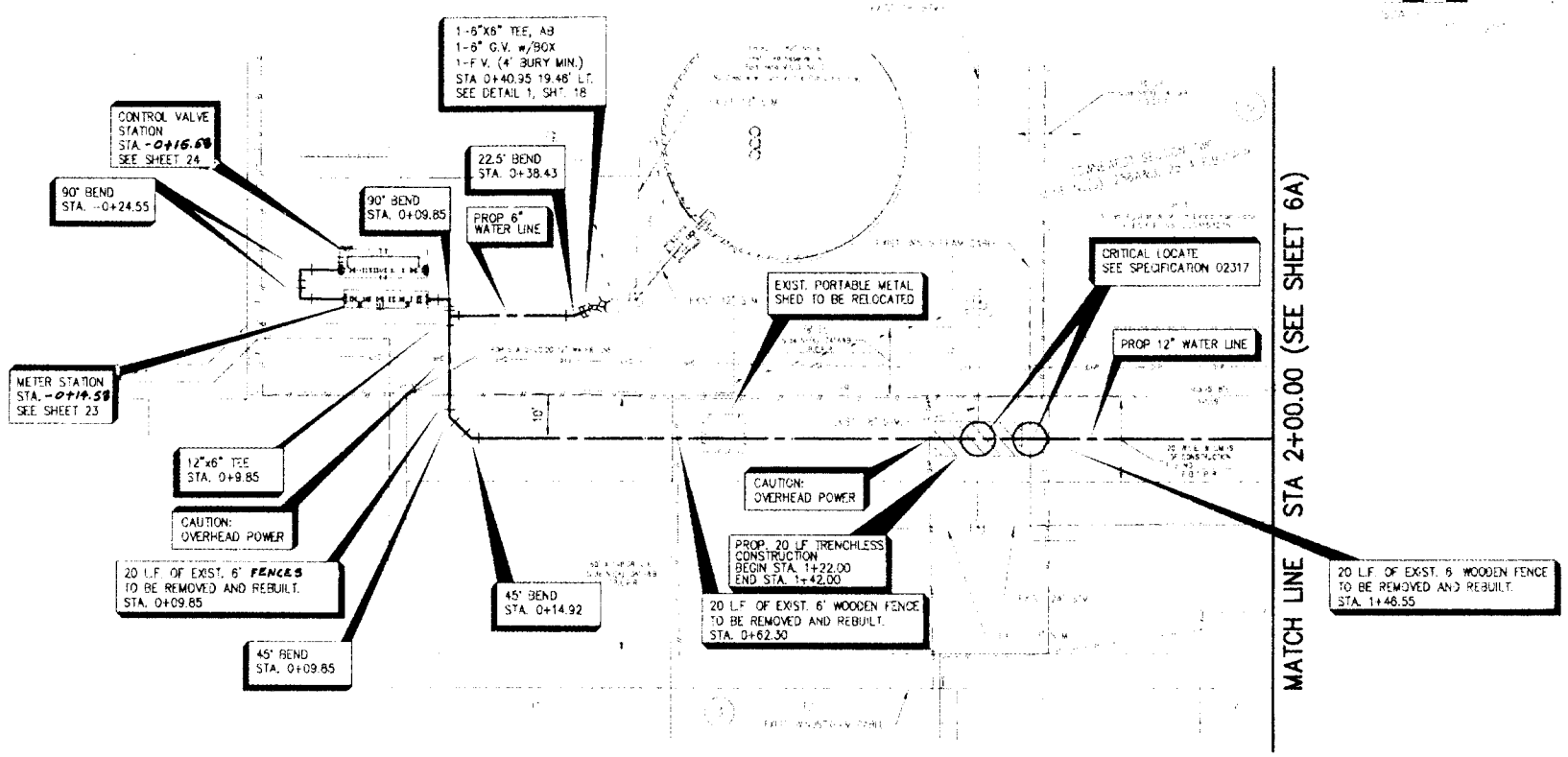
NFBWA- FBCMUD NO. 2

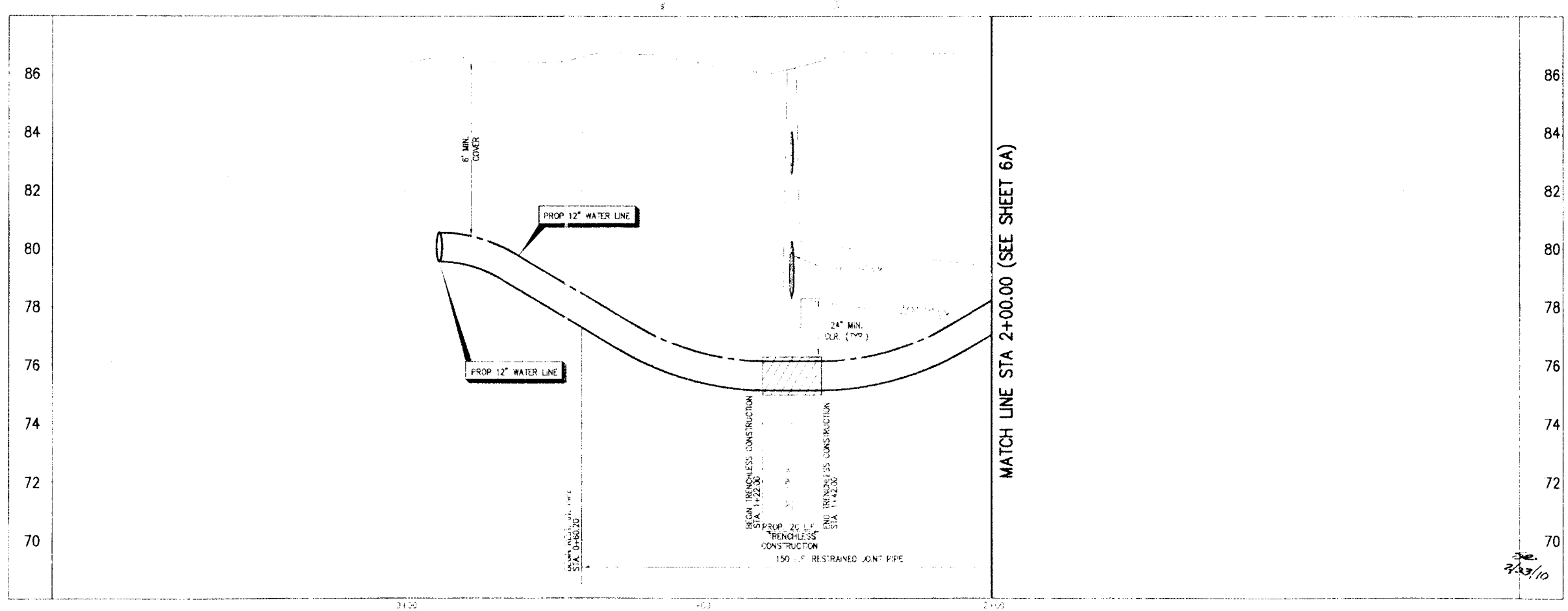
BASELINE TIES/BENCHMARK

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

46694





PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 0+00.00 TO STA. 2+00.00

NORTH FORT BEND WATER AUTHORITY

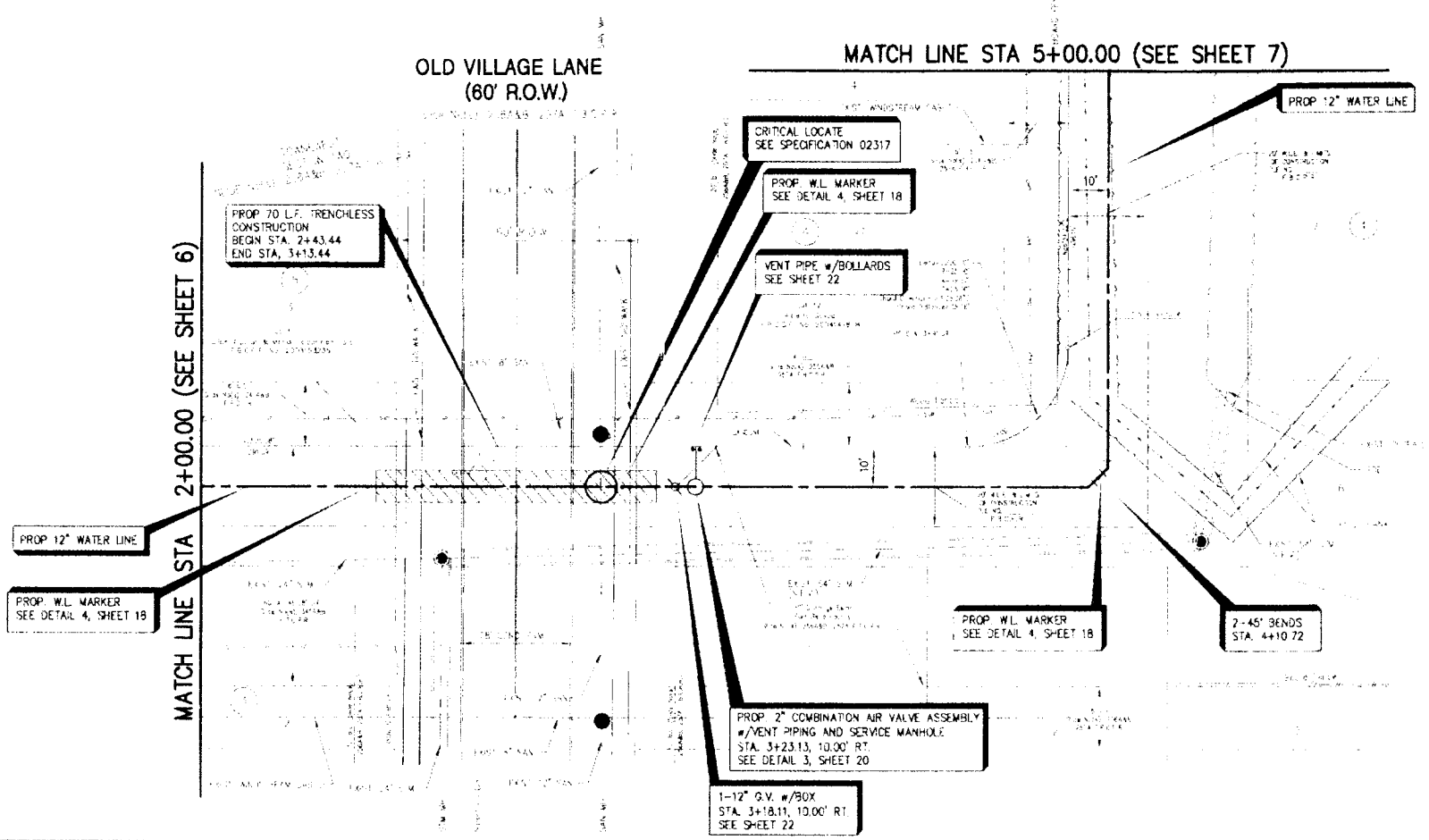
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

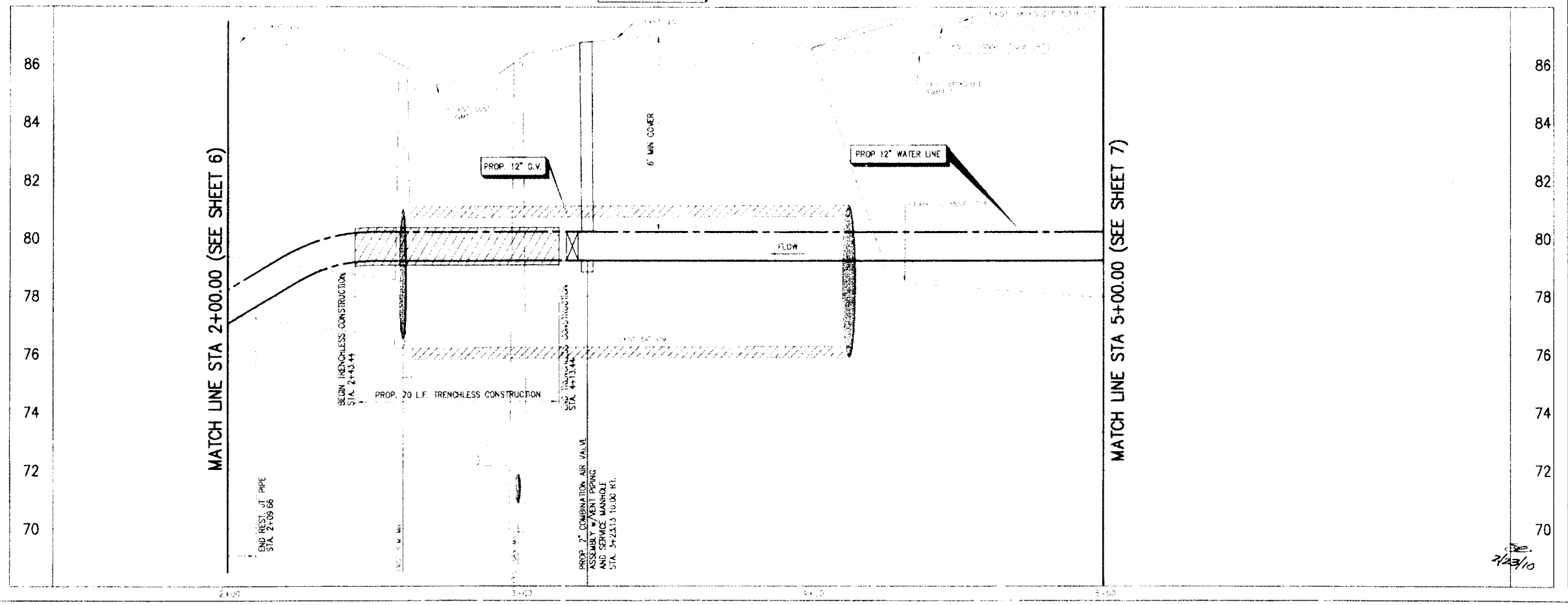
STATE OF TEXAS
LICENSED PROFESSIONAL ENGINEER
12-7-09

PUBLIC WORKS AND ENGINEERING
ACCEPT
46694
CITY OF HOUSTON
HOUSTON, TEXAS

2/23/10

NOTE: CONTRACTOR TO RESTORE EXIST. DITCH TO ORIGINAL CONDITION OR BETTER.





STATE OF TEXAS
G.L. ABRAV
94905
LICENSED
PROFESSIONAL ENGINEER
121709

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 2+00.00 TO STA. 5+00.00

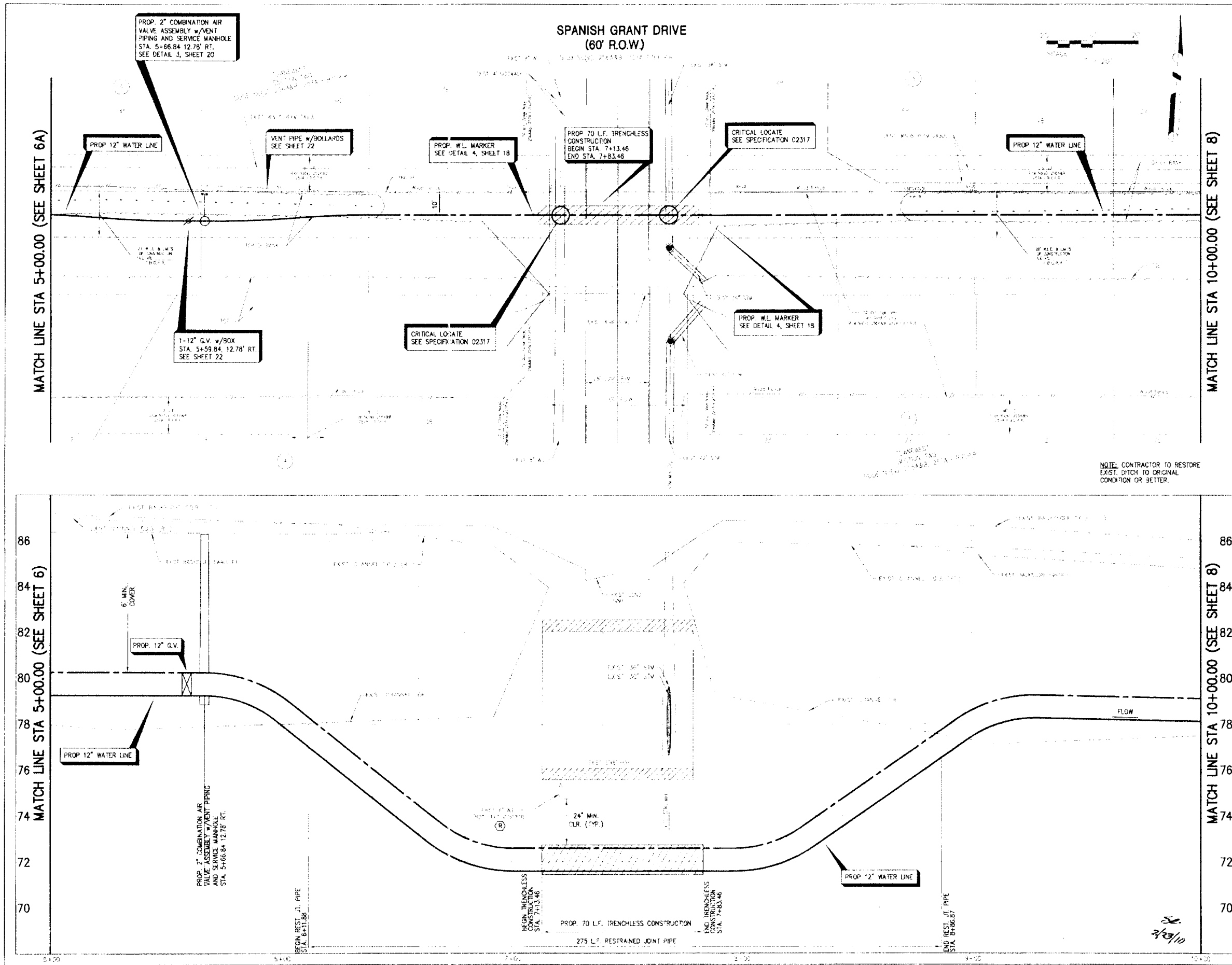
NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 2/4/10
M.R. Rand 2-4-10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
16694
CITY ENGINEER

2/23/10



STATE OF TEXAS
ALI ABRAM
94305
LICENSED
PROFESSIONAL ENGINEER
2/23/09

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 5+00.00 TO STA. 10+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PUBLIC WORKS AND ENGINEERING
ACCEPT
46694
CITY SECRETARY
HOUSTON, TEXAS

MATCH LINE STA 10+00.00 (SEE SHEET 7)

PROP 12" WATER LINE

125 L.F. OF EXIST. 6' WOODEN FENCE, LOCATED WITHIN W.L. ESMT., TO BE REMOVED AND REBUILT ON W.L. ESMT. LINE.

EXIST. BACKSLOPE INTERCEPTOR TO BE REMOVED AND REPLACED INCLUDING 24" CMP

CRITICAL LOCATE SEE SPECIFICATION 02317

PROP 12" WATER LINE

MATCH LINE STA 15+00.00 (SEE SHEET 9)

NOTE: CONTRACTOR TO RESTORE EXIST. DITCH TO ORIGINAL CONDITION OR BETTER.

MATCH LINE STA 10+00.00 (SEE SHEET 7)

86
84
82
80
78
76
74
72
70

6' MIN. COVER

FLOW

PROP 12" WATER LINE

MATCH LINE STA 15+00.00 (SEE SHEET 9)

10+00 11+00 12+00 13+00 14+00 15+00

2/23/10

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 10+00.00 TO STA. 15+00.00

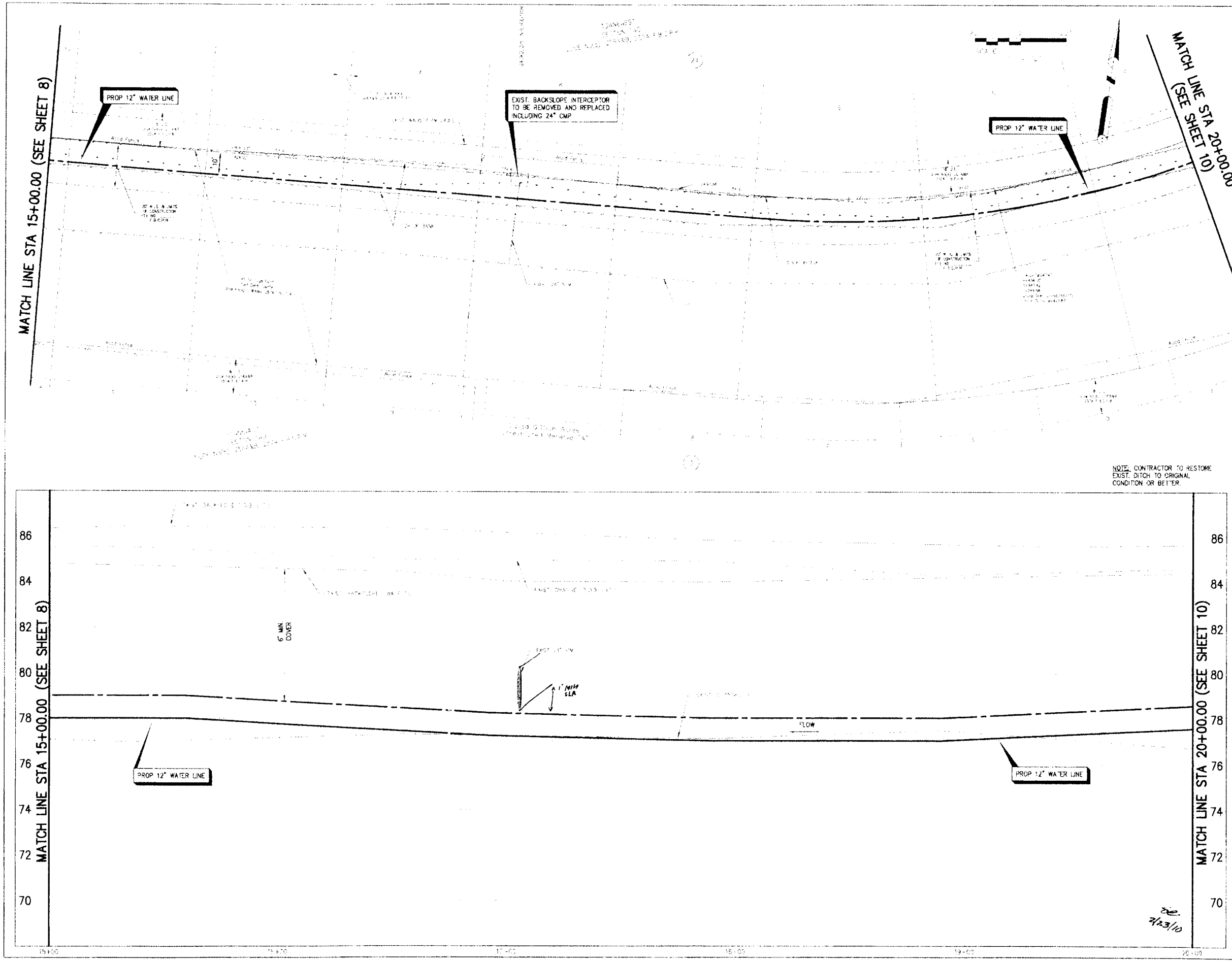
NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 3/4/10
M.E. Rapol 2-24-10

46694

12-109



PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

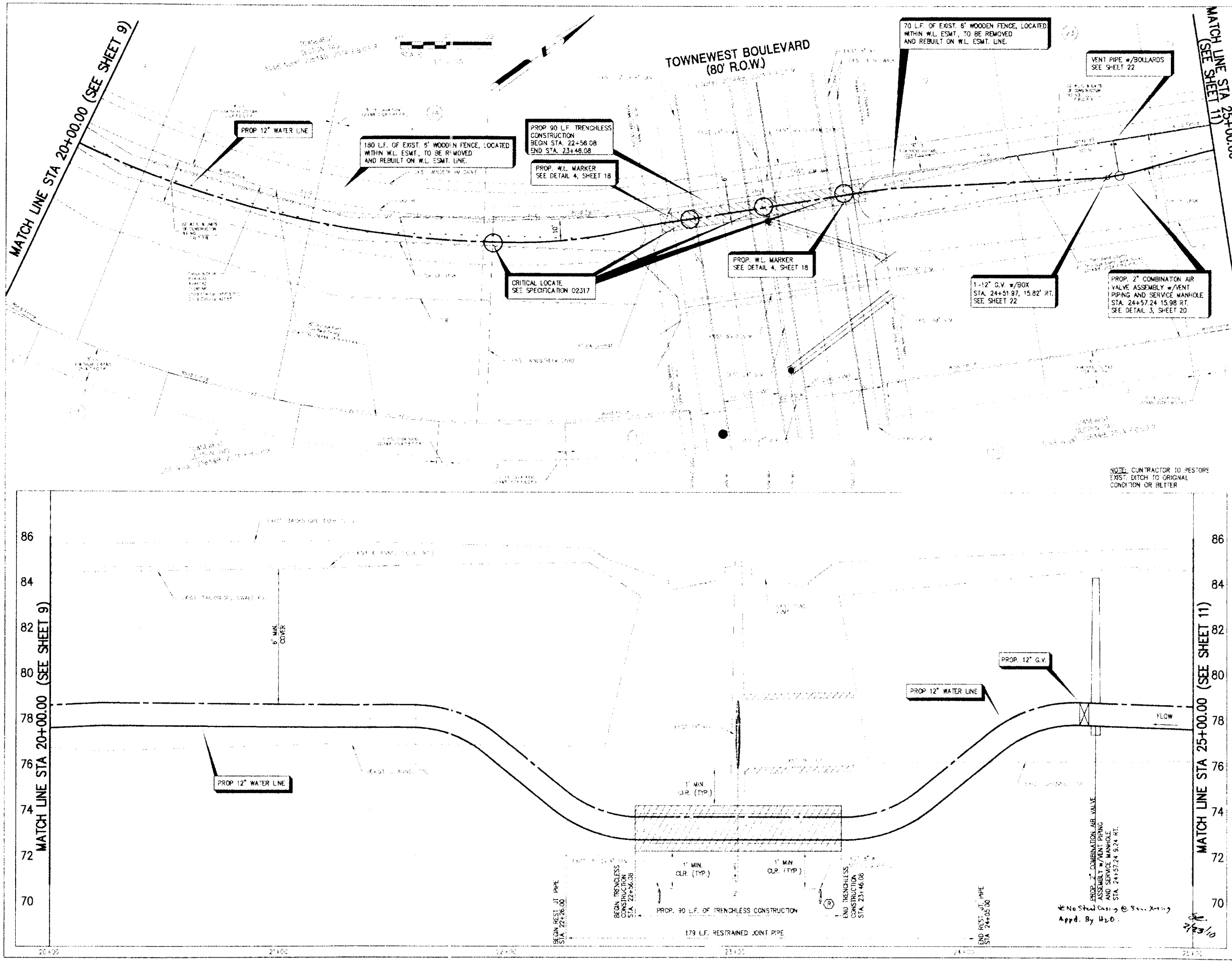
PLAN AND PROFILE
12" WATER LINE
STA. 15+00.00 TO STA. 20+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STATE OF TEXAS
PROFESSIONAL ENGINEER

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694



PRIVATE UTILITY NOTES

NOTES:

STATE OF TEXAS
C.F. ABRAM
94935
LICENSED
PROFESSIONAL ENGINEER

12.17.09

PATE ENGINEERS

PATE JOB NO. 187100.00

NFBWA- FBCMUD NO. 2

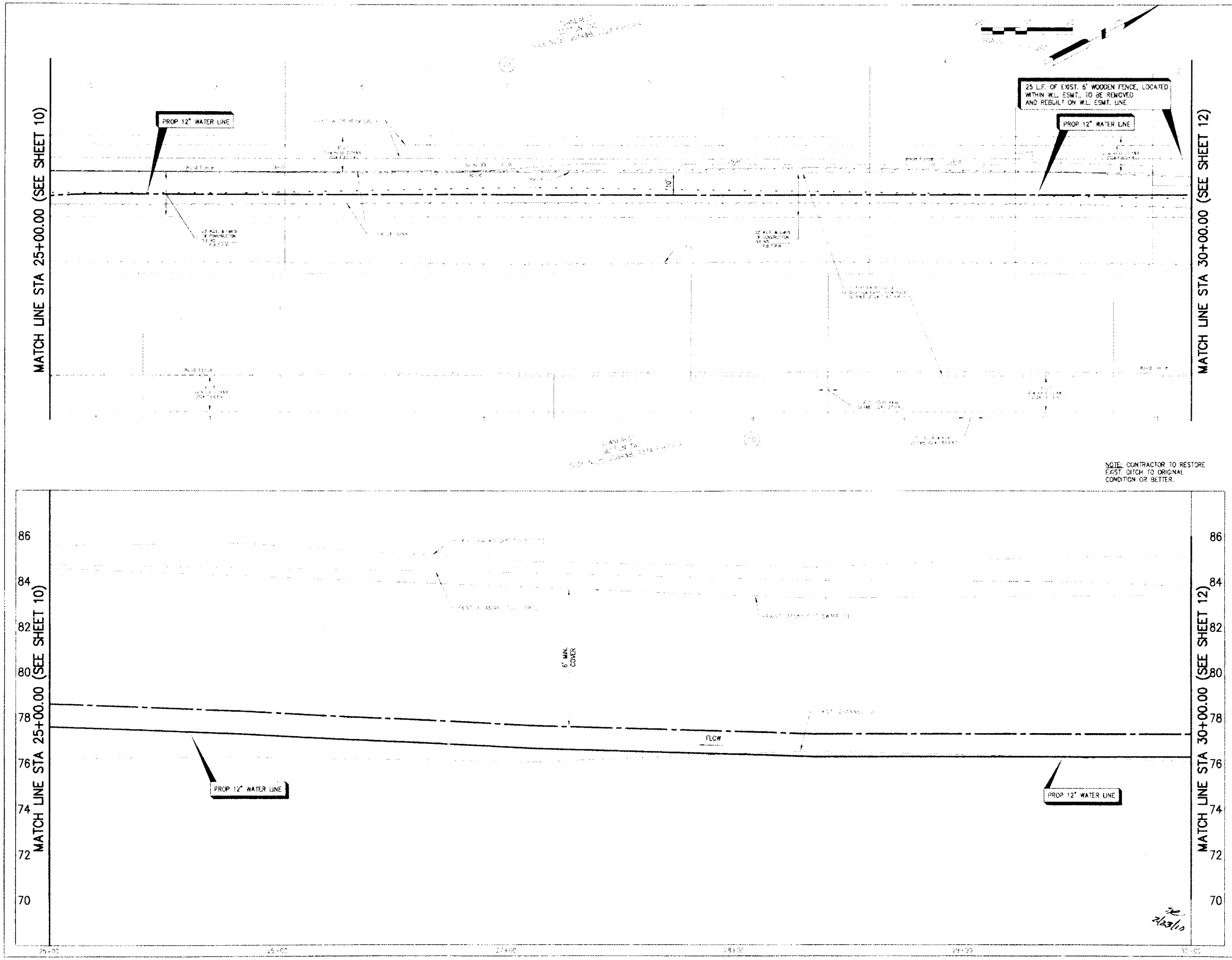
PLAN AND PROFILE
12" WATER LINE
STA. 20+00.00 TO STA. 25+00.00

NORTH BOAT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 2/19/10
M.P. Gauch 2-4-10
2/23/10

PUBLIC WORKS AND ENGINEERING
RECEIVED
46694
CITY SECRETARY
HOUSTON, TEXAS



PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

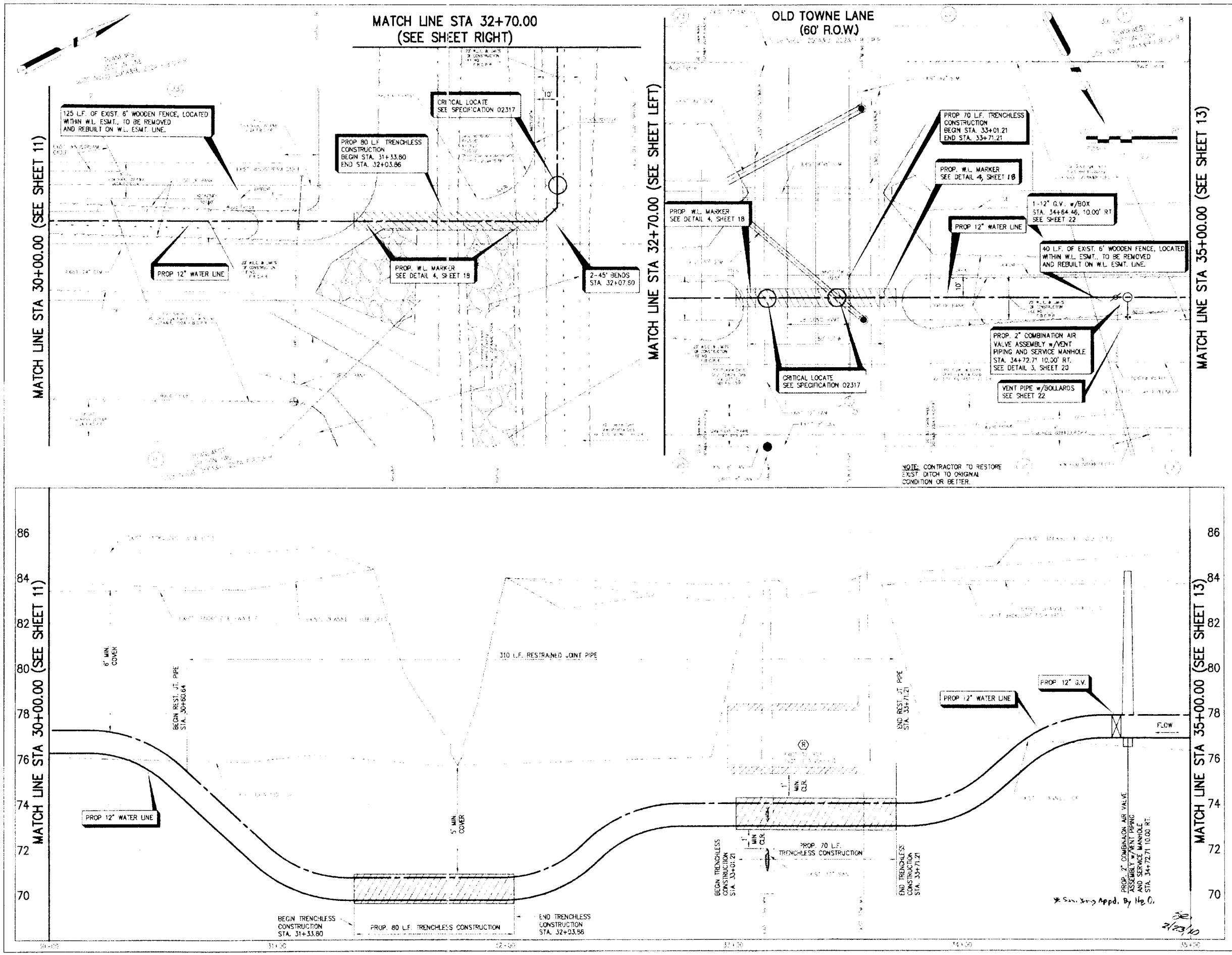
PLAN AND PROFILE
12" WATER LINE
STA. 25+00.00 TO STA. 30+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STATE OF TEXAS
P.E. ABRAM
94905
LICENSED
PROFESSIONAL ENGINEER
12-7-09

PUBLIC WORKS AND ENGINEERING
ACCEPTS
46694
CITY ENGINEER
HOUSTON TEXAS



PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 30+00.00 TO STA. 35+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STATE OF TEXAS
C.F. ABRAM
94305
LICENSED
PROFESSIONAL ENGINEER
121709

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY ENGINEER
HOUSTON TEXAS

MATCH LINE STA 35+00.00 (SEE SHEET 12)

PROP 12" WATER LINE

195 L.F. OF EXIST. 6' WOODEN FENCE, LOCATED WITHIN W.L. ESMT. TO BE REMOVED AND REBUILT ON W.L. ESMT. LINE.

PROP 12" WATER LINE

EXIST. BACKSLOPE INTERCEPTOR TO BE REMOVED AND REPLACED INCLUDING 24" RCP

MATCH LINE STA 40+00.00 (SEE SHEET 14)

NOTE: CONTRACTOR TO RESTORE EXIST. DITCH TO ORIGINAL CONDITION OR BETTER.

86
84
82
80
78
76
74
72
70

MATCH LINE STA 35+00.00 (SEE SHEET 12)

6' MIN. COVER

FLOW

PROP 12" WATER LINE

MATCH LINE STA 40+00.00 (SEE SHEET 14)

2/23/10

35+00 35+50 36+00 36+50 37+00 37+50 38+00

STATE OF TEXAS
G. ABRAV
94415
LICENSED
PROFESSIONAL ENGINEER
12/7/09

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

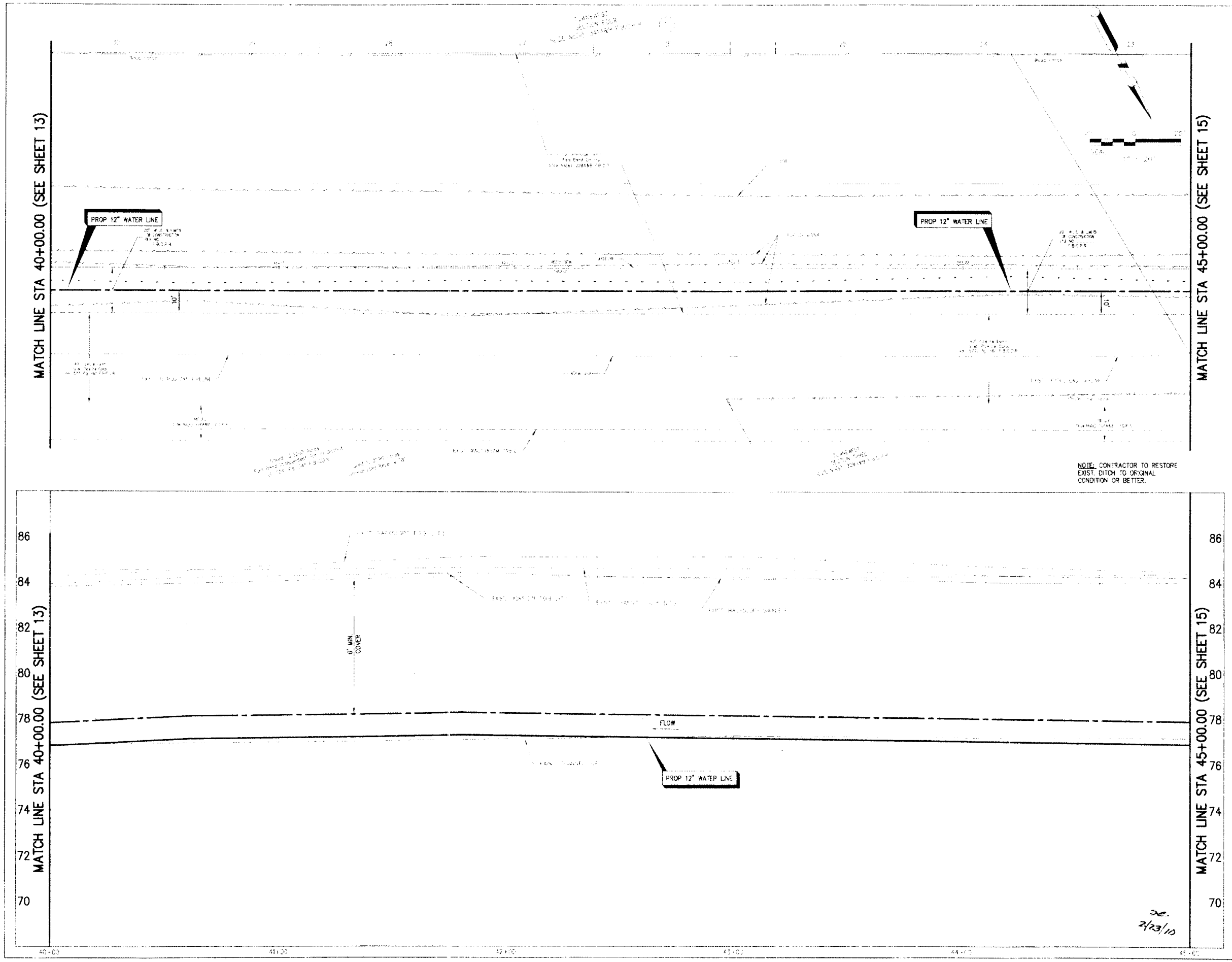
PLAN AND PROFILE
12" WATER LINE
STA. 35+00.00 TO STA. 40+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

2-4-10
2-4-10

PUBLIC WORKS AND ENGINEERING
46694
CITY ENGINEER
HOUSTON, TEXAS



PATE ENGINEERS

PATE JOB NO. 187100100

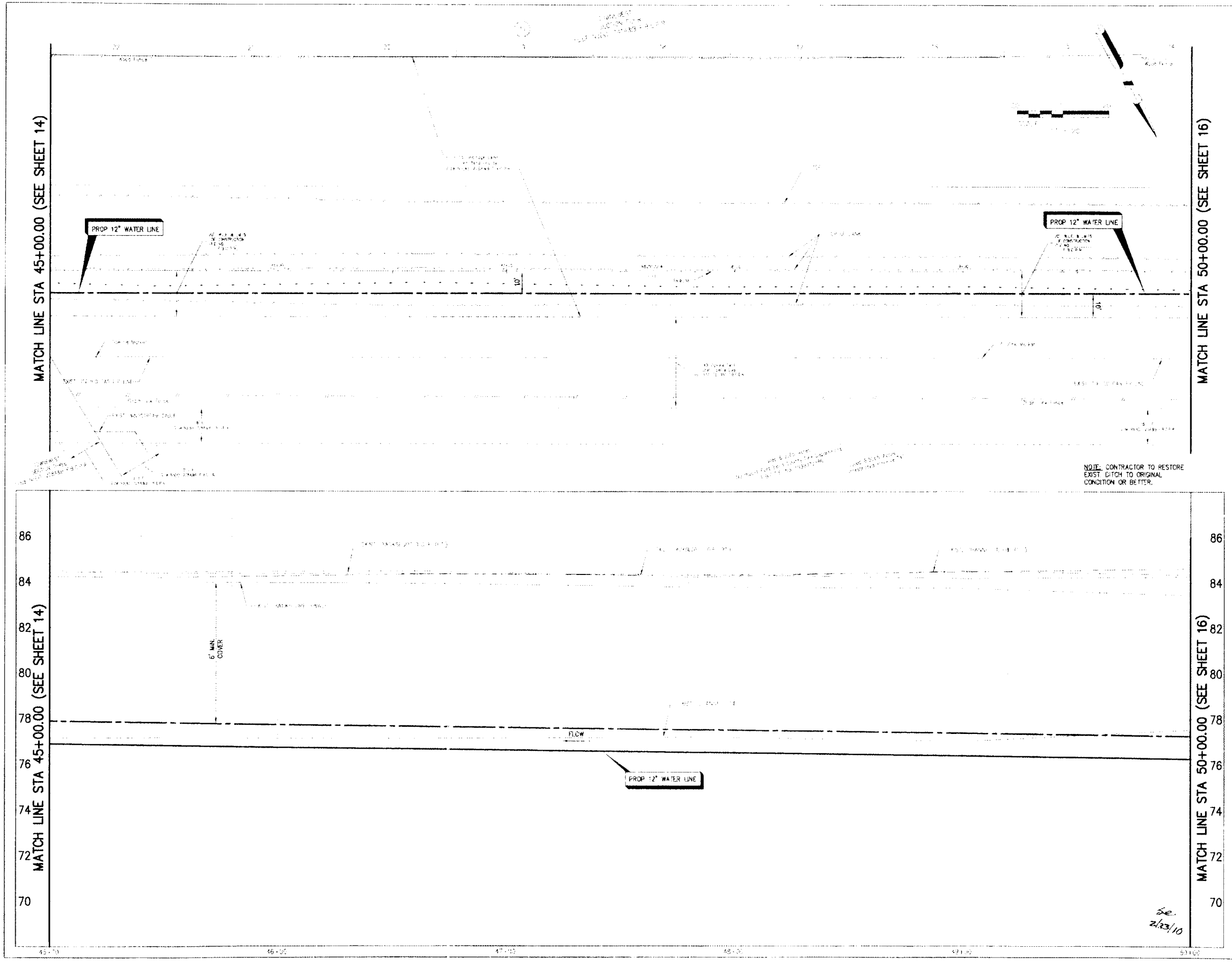
NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 40+00.00 TO STA. 45+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PUBLIC WORKS AND ENGINEERING ACCEPT 46694 HOUSTON, TEXAS



STATE OF TEXAS
C.E. ABRAM
94385
LICENSED
PROFESSIONAL ENGINEER

121-109

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PLAN AND PROFILE
12" WATER LINE
STA. 45+00.00 TO STA. 50+00.00

NORTH FORT BEND

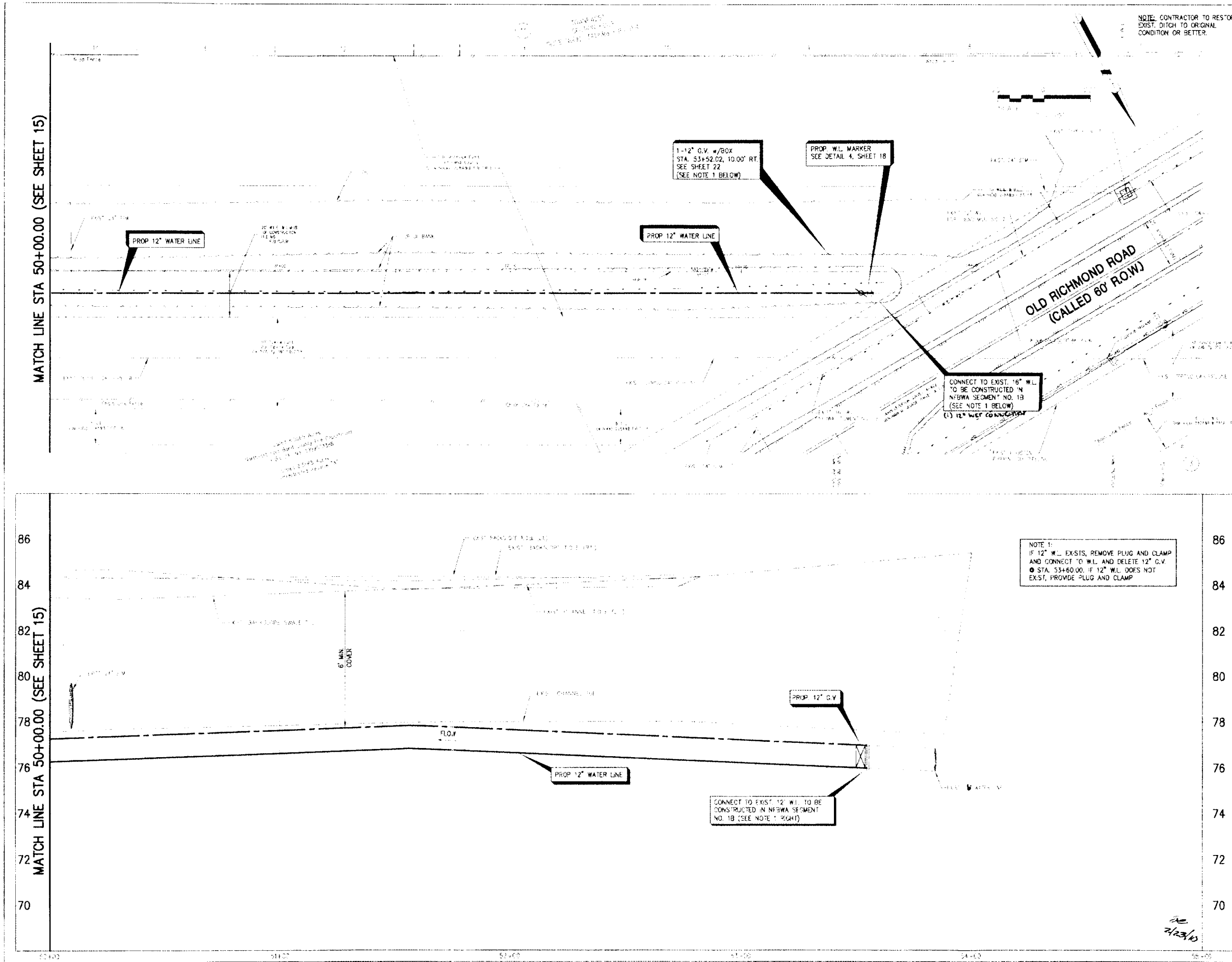
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

2/24/10

2-24-10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY OF HOUSTON, TEXAS

Se.
2/23/10



PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

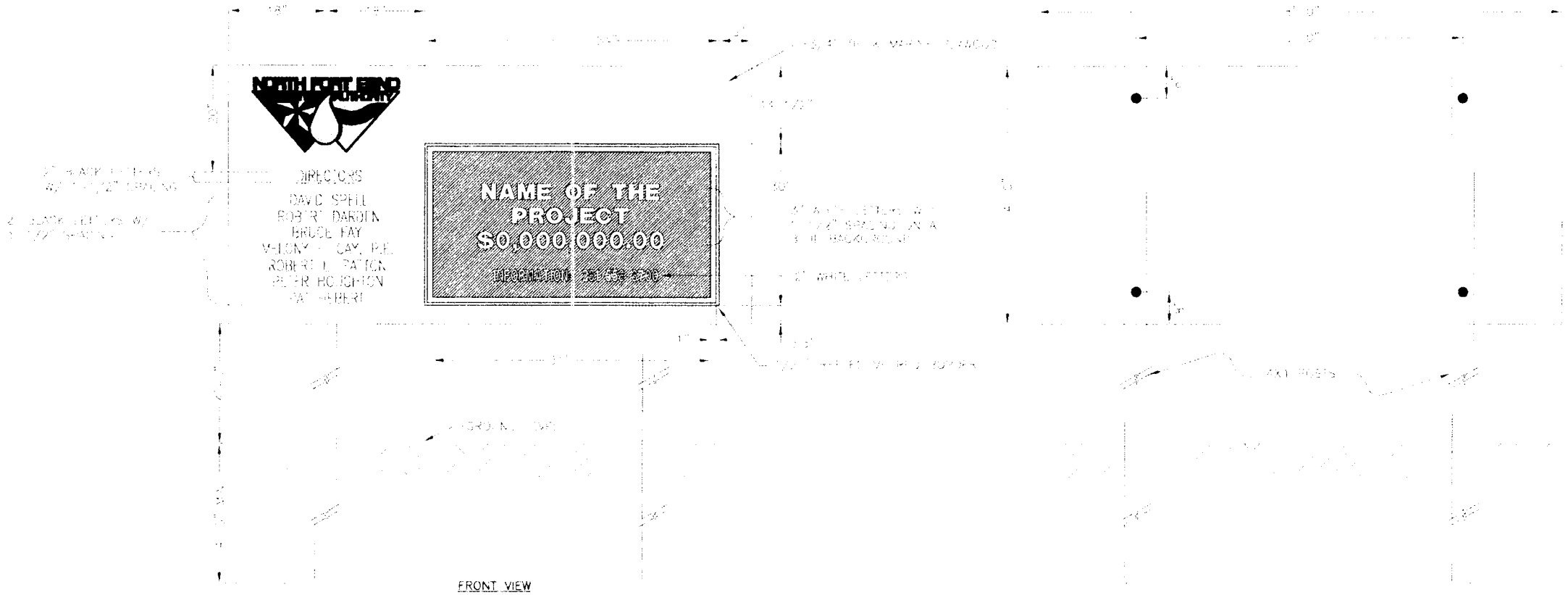
PLAN AND PROFILE
12" WATER LINE
STA. 50+00.00 TO STA. 55+00.00

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STATE OF TEXAS
JEF ABRAM
94904
LICENSED
PROFESSIONAL ENGINEER
12/17/09

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY ENGINEER NUMBER
HOUSTON, TEXAS



PROJECT SIGN

SCALE: 1"=1'

STATE OF TEXAS
J.E. ABRAM
34905
LICENSED
PROFESSIONAL ENGINEER
12/7/09

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

PROJECT SIGN DETAIL

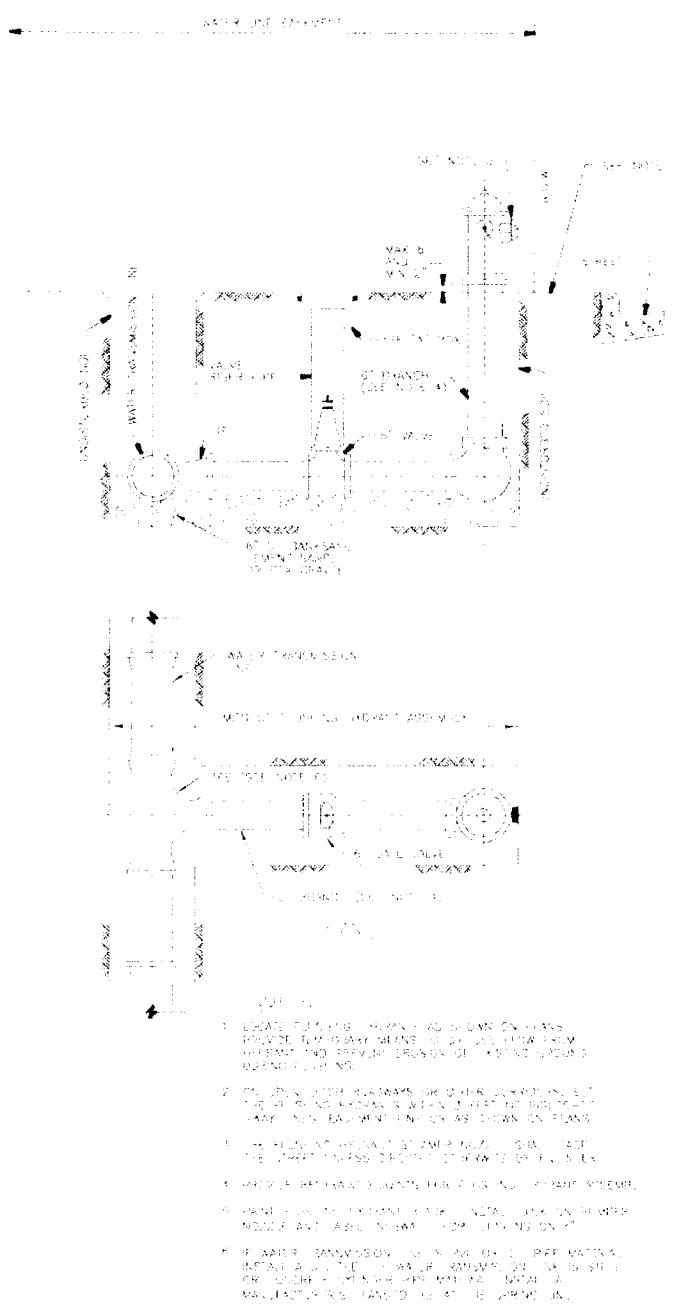
NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

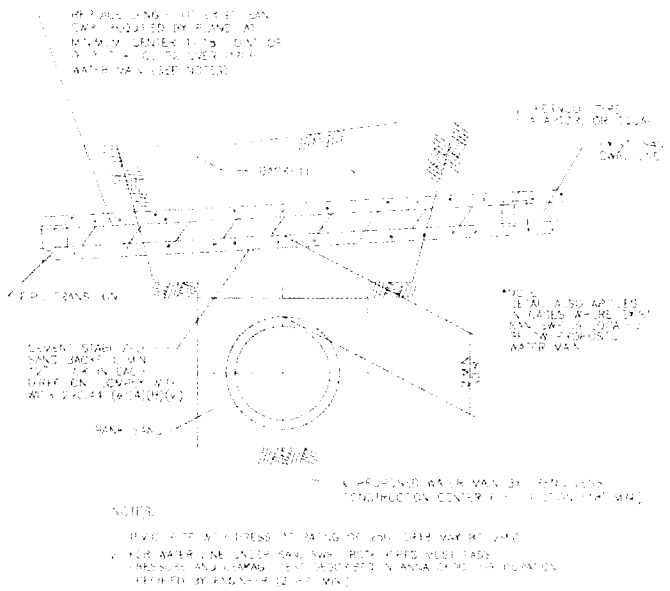
3/11/10
2-4-10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY ENGINEER MANAGER
HOUSTON, TEXAS

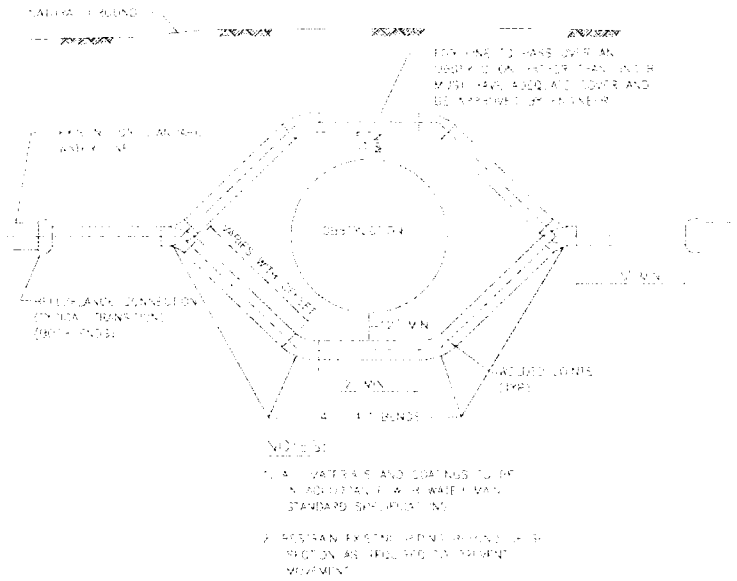
2/23/10



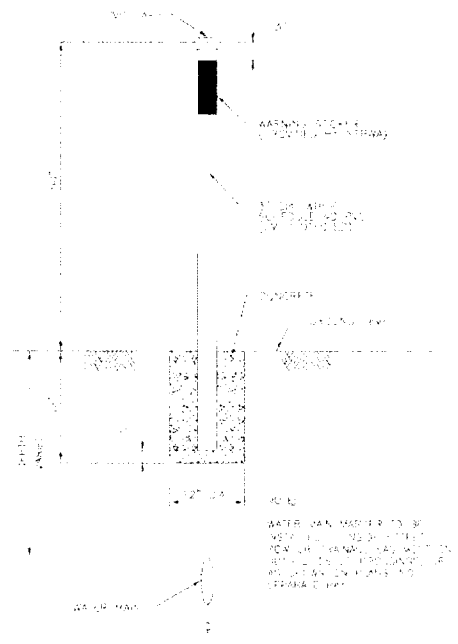
1 STANDARD FLUSHING HYDRANT ASSEMBLY



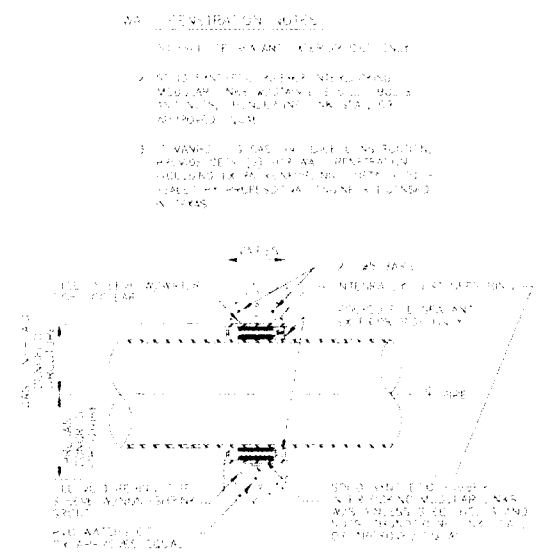
2 PROPOSED WATERLINE CROSSING UNDER EXISTING SANITARY SEWER



3 TYPICAL PIPE OFFSET SECTION FOR WATER MAINS



4 WATER LINE MARKER



5 TYPICAL WALL PENETRATION DETAIL

STATE OF TEXAS
C.E. JEPSEN
94905
LICENSED
PROFESSIONAL ENGINEER
12/17/09

NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			
5			

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

STANDARD WATER LINE DETAILS

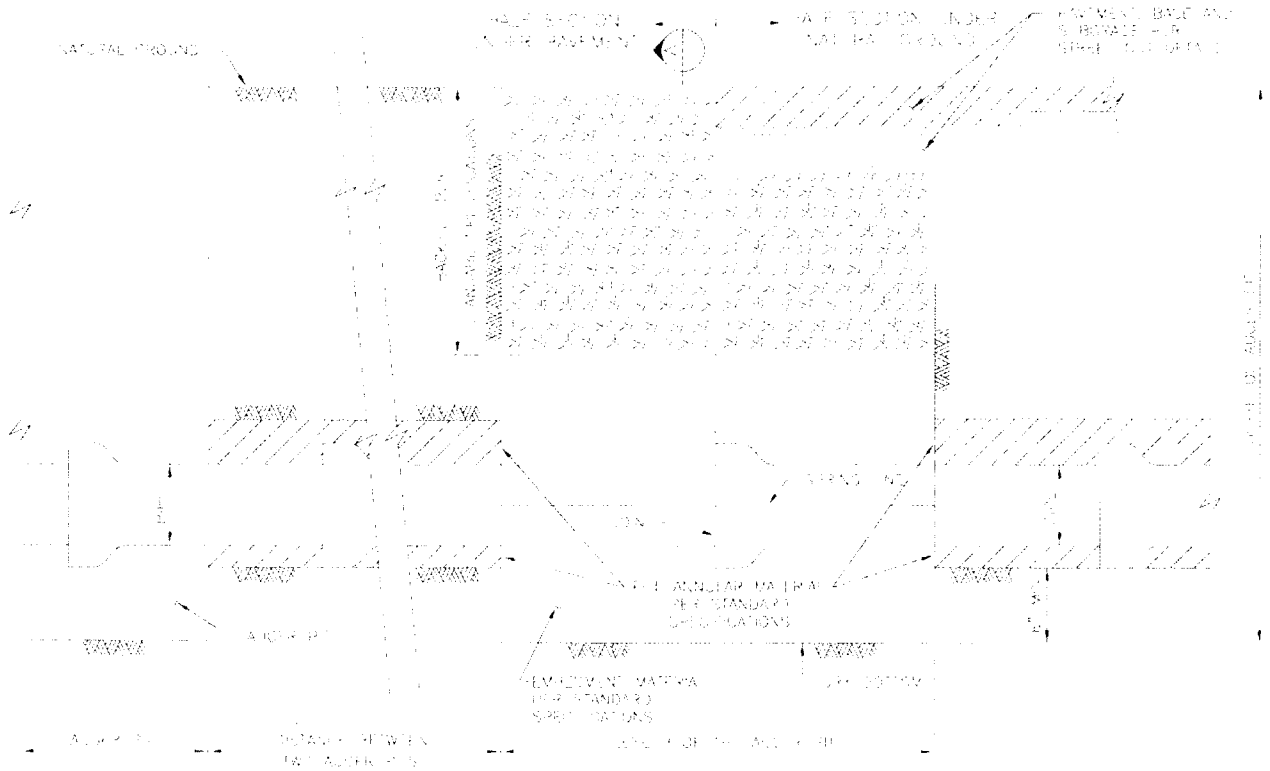
NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

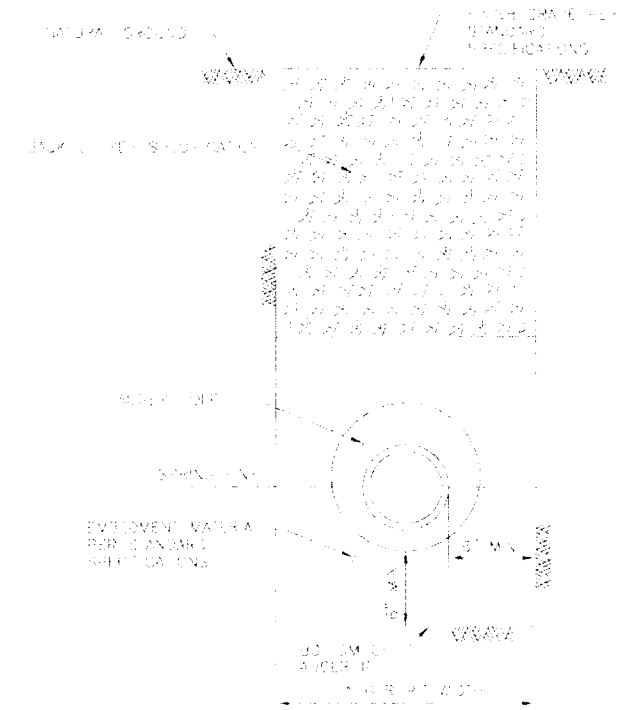
Robert C. 3/4/10
M.R. Cook 2-24-10
J. Nell 3-4-10

PUBLIC WORKS AND ENGINEERING
46694
HOUSTON, TEXAS

2/23/10

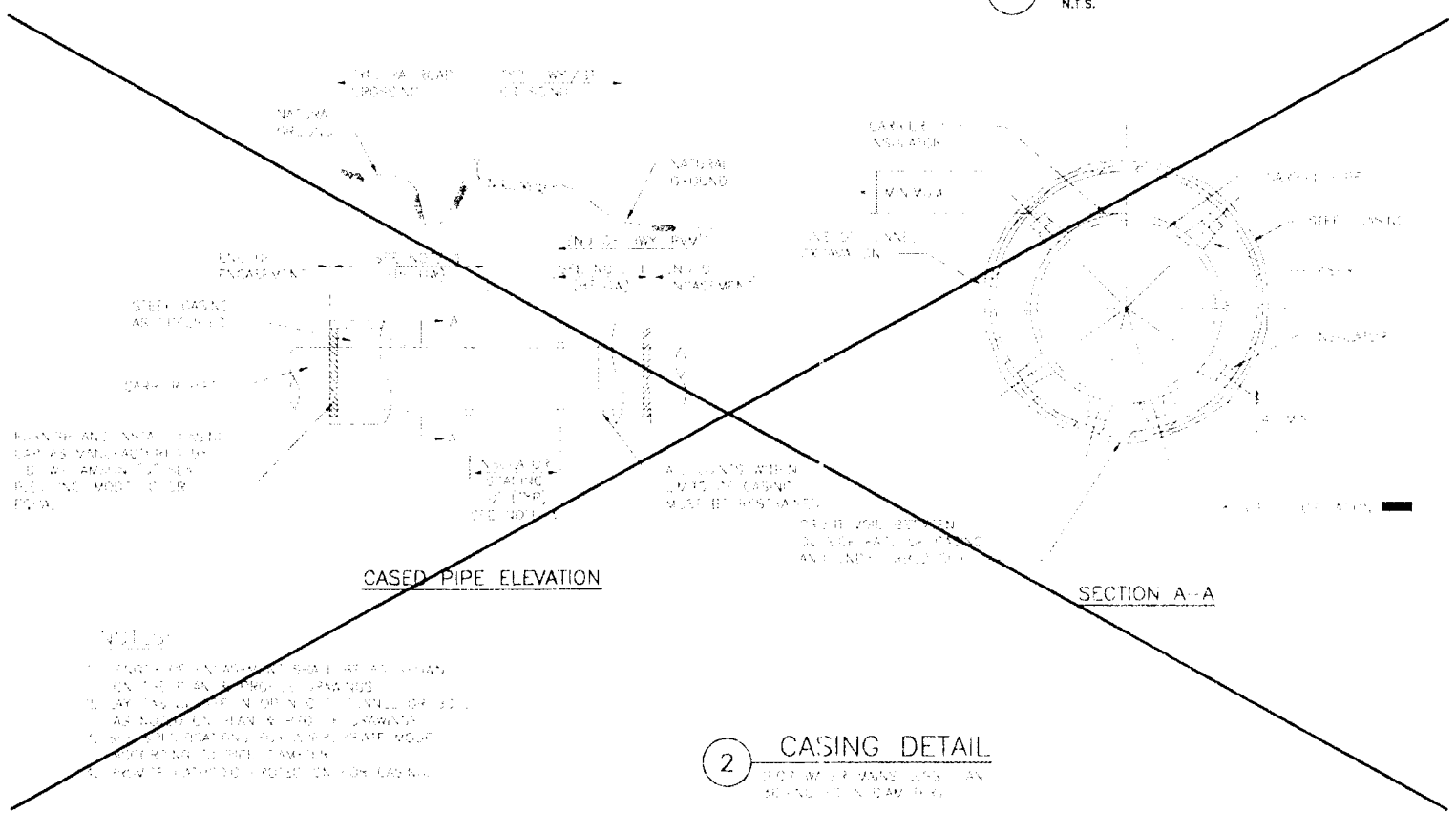


ELEVATION



SECTION VIEW

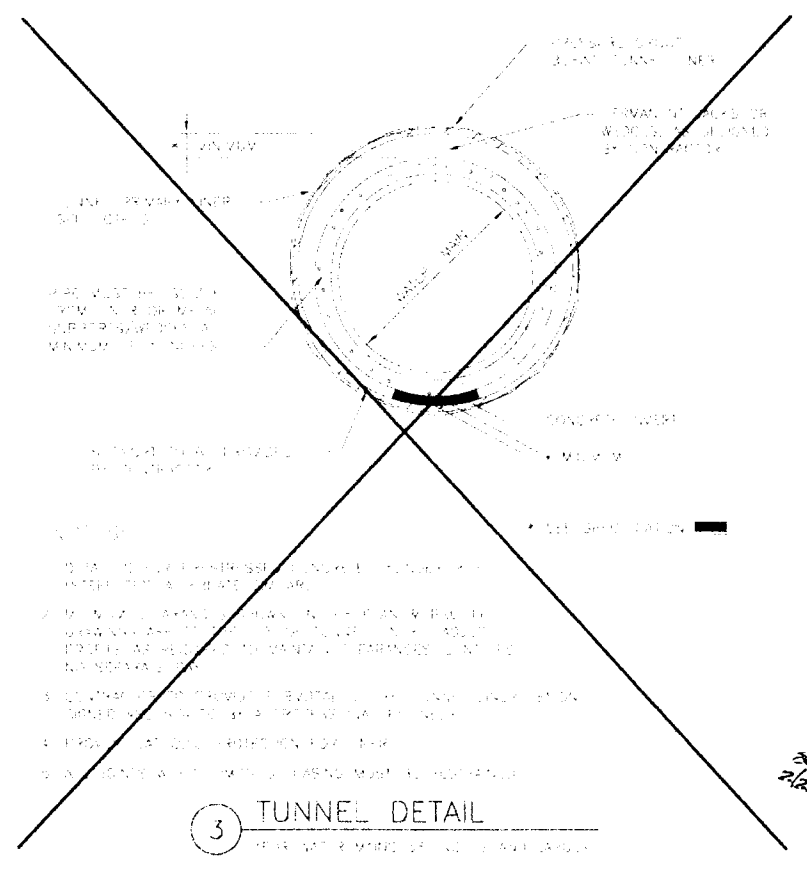
1 BEDDING AND BACKFILL
AUGER PIT & AUGER HOLE
N.T.S.



CASED PIPE ELEVATION

SECTION A-A

2 CASING DETAIL



3 TUNNEL DETAIL

2/23/10

STATE OF TEXAS
G.E. ABNEY
34505
LICENSED
PROFESSIONAL ENGINEER
12/1/09

4			
3			
2			
1			
NO.	DATE	REVISION	APPROVED

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

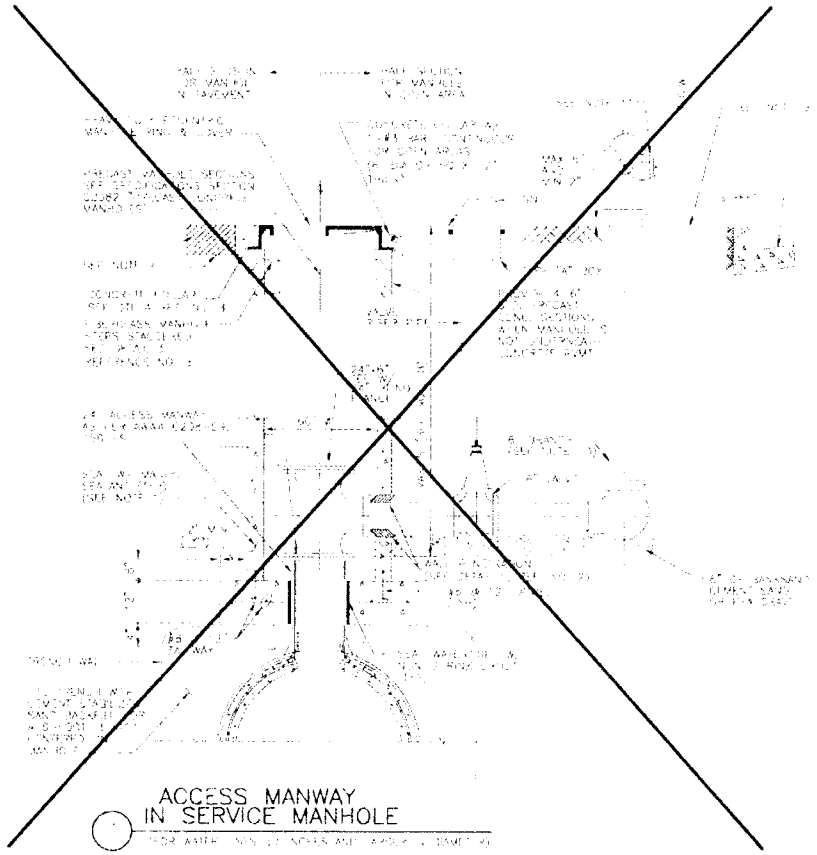
TUNNEL AND CASING DETAILS

NORTH FORT BEND

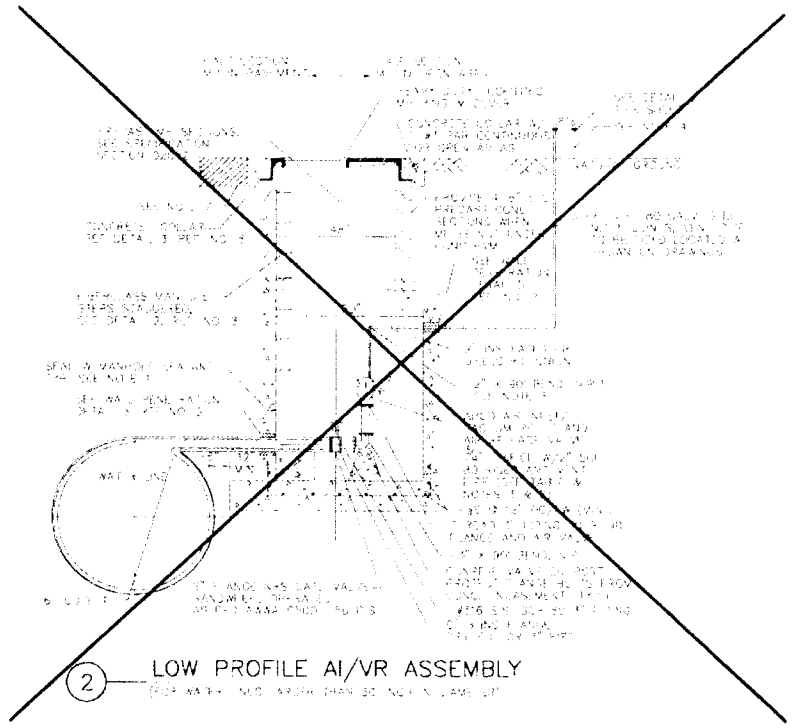
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 3/4/10
MZ Check 2-4-10

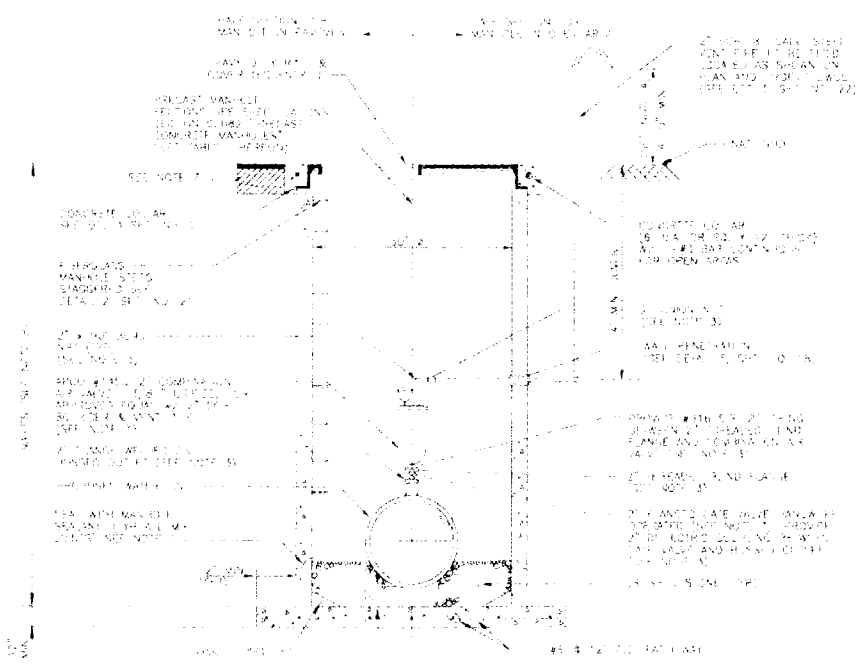
PUBLIC WORKS AND ENGINEERING
16694



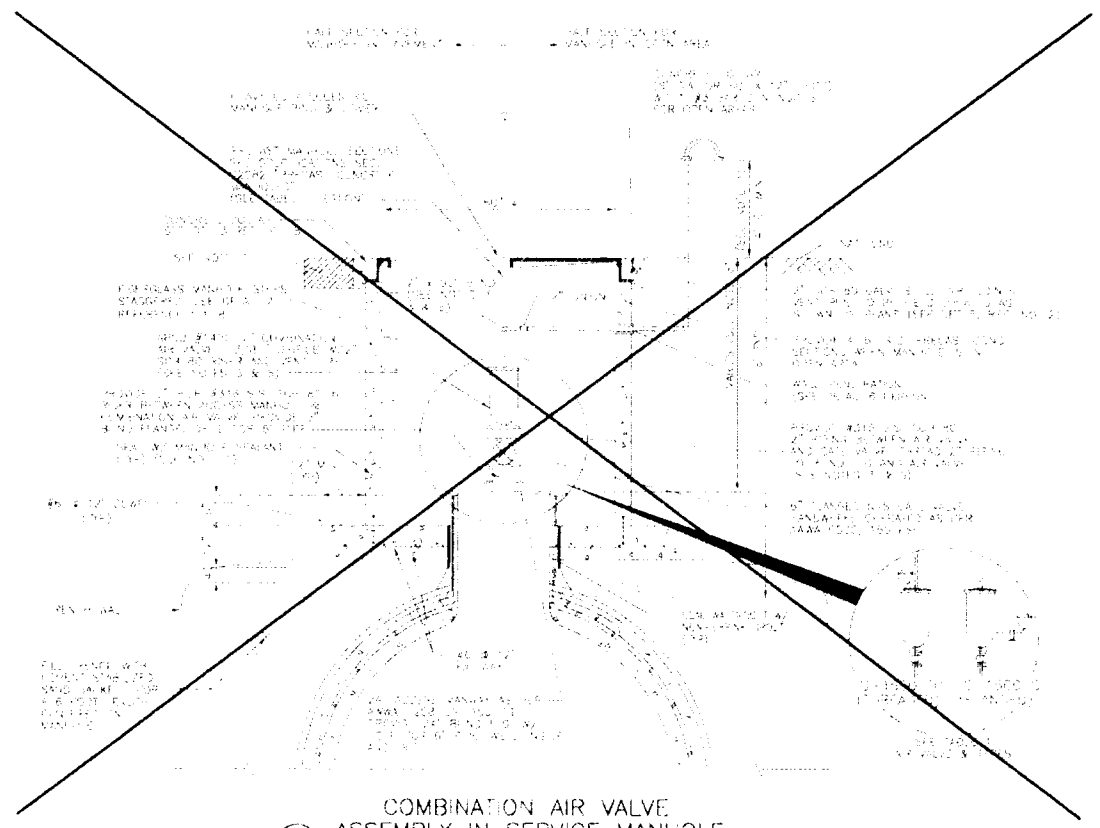
1 ACCESS MANWAY IN SERVICE MANHOLE



2 LOW PROFILE AI/VR ASSEMBLY



3 COMBINATION AIR VALVE ASSEMBLY IN SERVICE MANHOLE



4 COMBINATION AIR VALVE ASSEMBLY IN SERVICE MANHOLE

STATE OF TEXAS
L.E. ASHAW
94305
LICENSED
PROFESSIONAL ENGINEER
12/17/09

5			
4			
3			
2			
1			
NO.	DATE	REVISION	APPROVED

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

COMBINATION AIR VALVE AND DETAILS

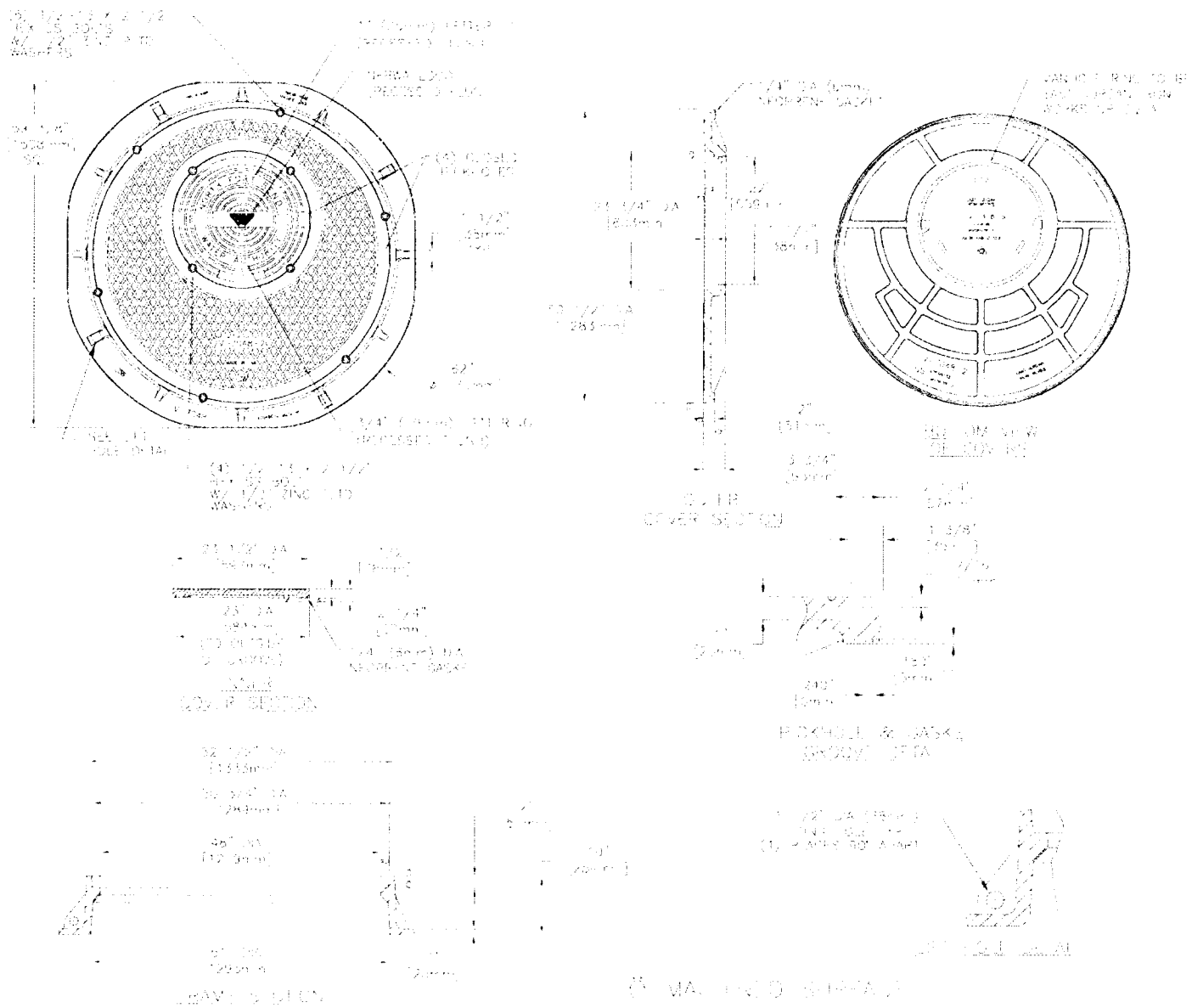
NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

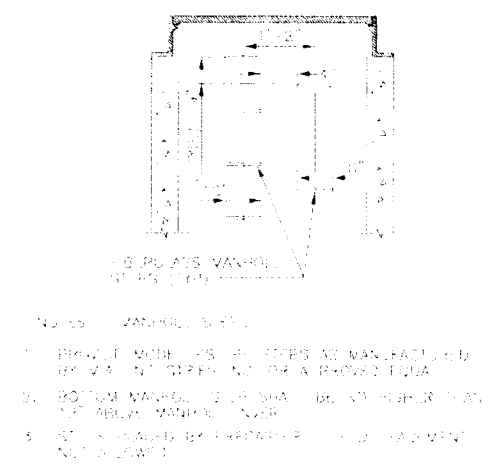
Robert G. 2/9/10
M.C. Cook 2-9-10
J. Lill 2-9-10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY SECRETARY
HOUSTON, TEXAS

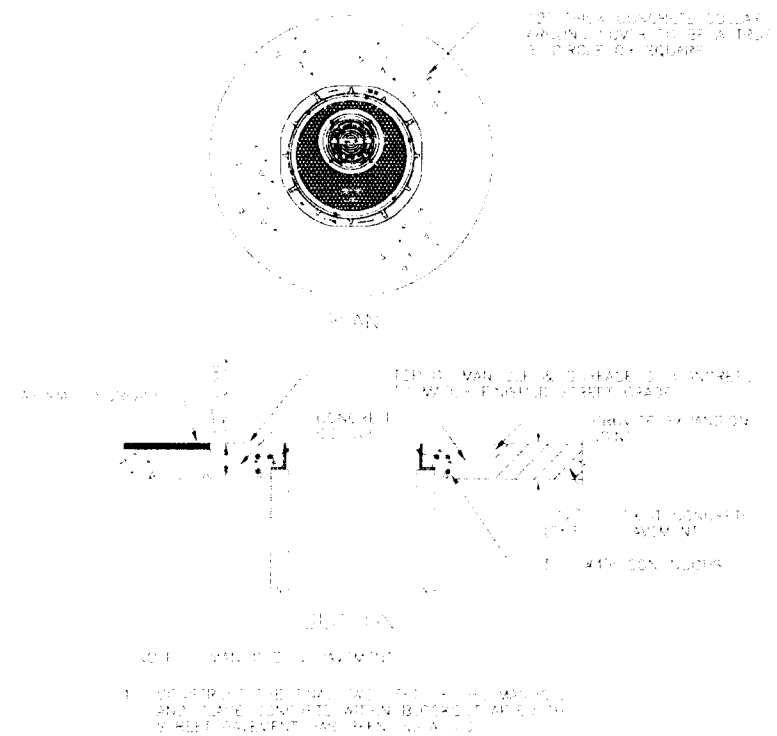
2/23/10



1 HEAVY DUTY MANHOLE RING AND COVER



2 MANHOLE STEP DETAIL



3 MANHOLE IN PAVEMENT

STATE OF TEXAS
C.E. ABRAM
54903
LICENSED
PROFESSIONAL ENGINEER
12/7/09

1			
2			
3			
4			
5			
6			
NO.	DATE	REVISION	APPROVED

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

HEAVY DUTY MANHOLE RING AND COVER DETAILS

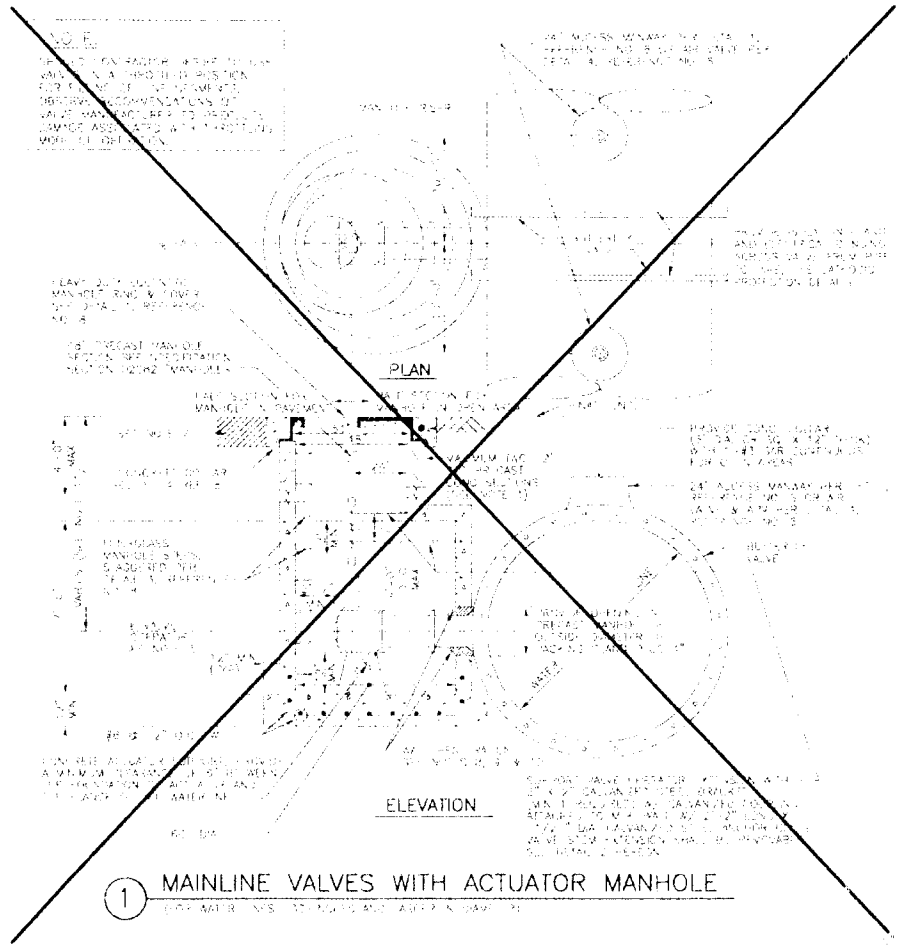
NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

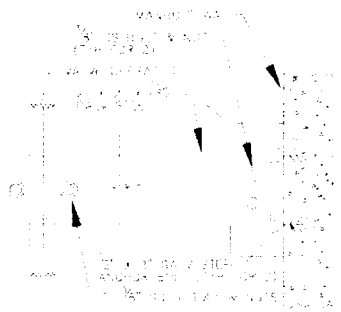
2/24/10
2/24/10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY ENGINEER
HOUSTON, TEXAS

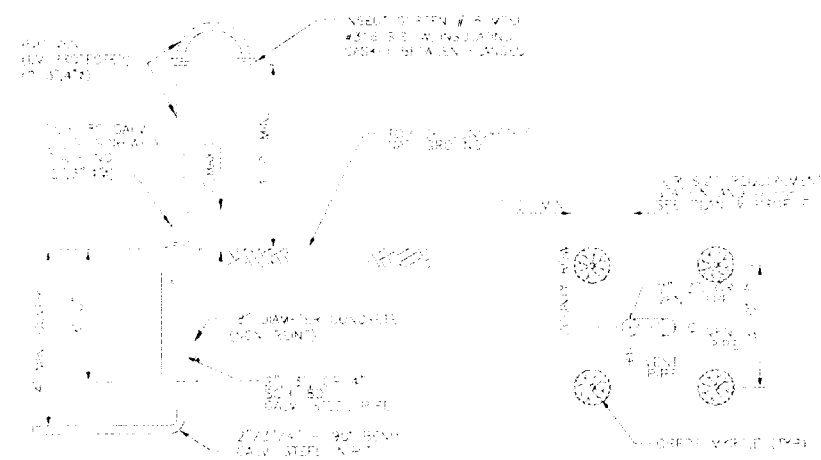
2/23/10



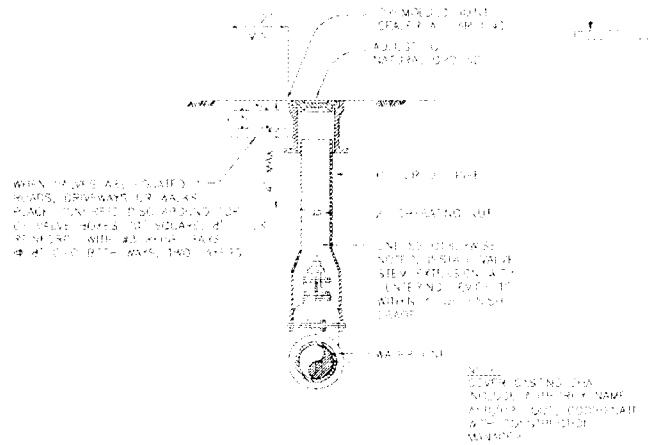
1 MAINLINE VALVES WITH ACTUATOR MANHOLE



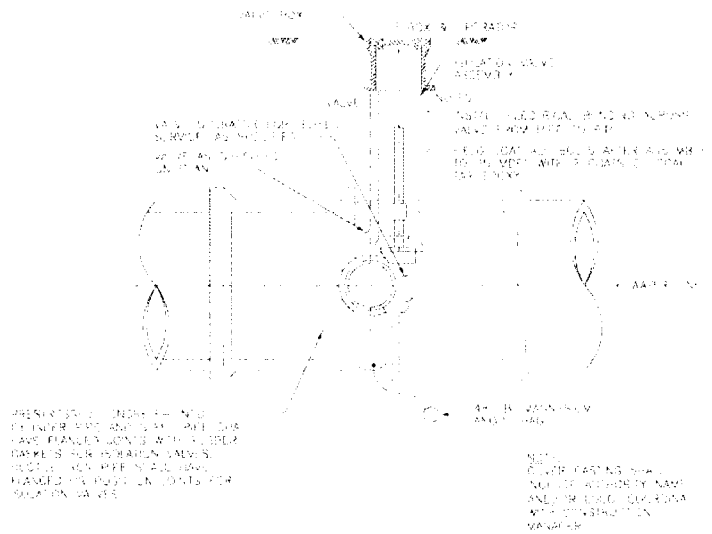
2 VALVE OPERATOR SUPPORT



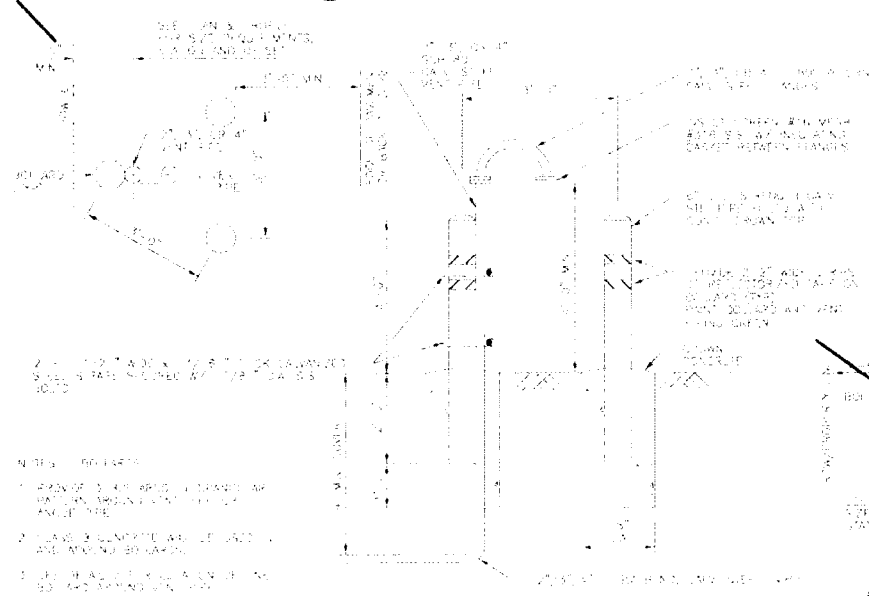
3 BREAKAWAY VENT PIPE DETAIL



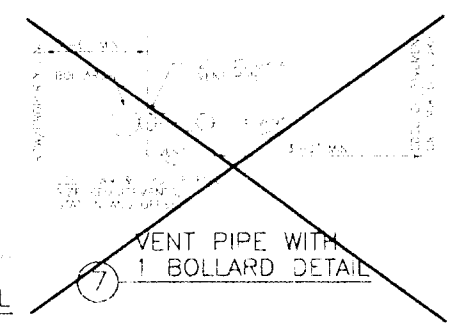
5 VALVE BOX DETAIL



4 ISOLATION VALVE ASSEMBLY



6 VENT PIPE WITH 3 BOLLARDS DETAIL



7 VENT PIPE WITH 1 BOLLARD DETAIL

STATE OF TEXAS
C.P. ARRAY
LICENSED
PROFESSIONAL ENGINEER
12/1/09

NO.	DATE	REVISION	APPROVED

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

VALVE AND SERVICE MANHOLE DETAILS

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 2/4/10
M.P. Ranch 2-4-10
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PUBLIC WORKS AND ENGINEERING
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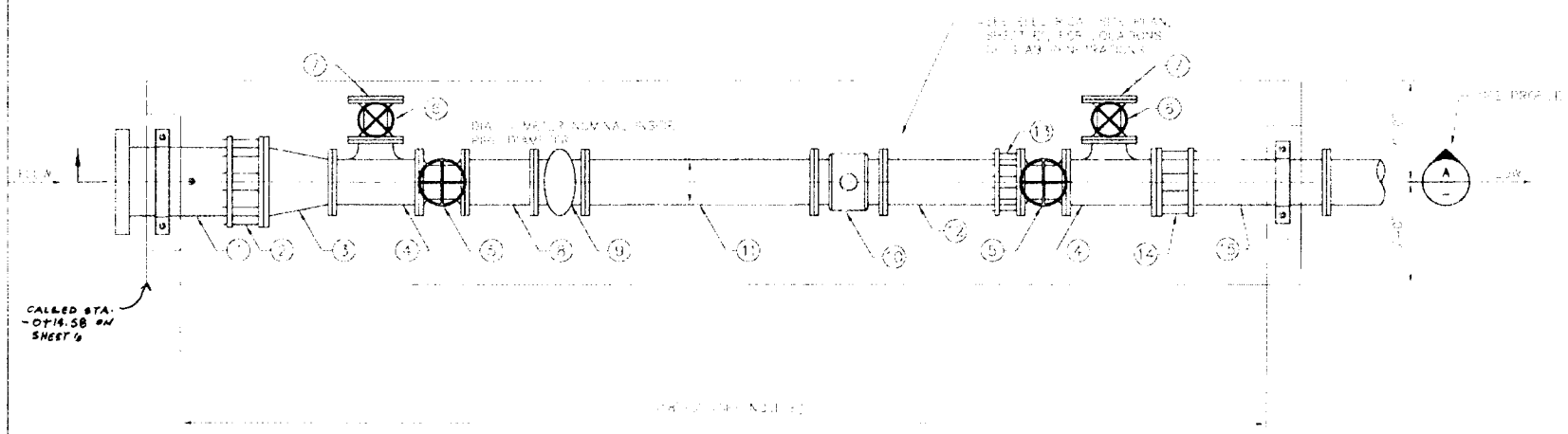

1 PLAN – SLAB ON GRADE METER STATION

SCALE: 1/5

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	12X8
4	TEE W/BASE (DIAMETER, RUN X RUN X BRANCH)	8X8X8
5	VALVE, GATE SV-1 (SEE NOTE 8) (DIAMETER)	8
6	VALVE, GATE SV-1 (SEE NOTE 8) (DIAMETER)	8
7	BLIND FLANGE (SIZE)	8
8	PIPE SPOOL (DIAMETER)	8
9	STRAINER ASSEMBLY	8
10	FLOWMETER SIZE (ELECTROMAGNETIC METER SEE NOTE 9)	8
11	PIPE SPOOL (DIAMETER) LENGTH=(3 X DIA.) MINIMUM	8
12	PIPE SPOOL (DIAMETER) LENGTH=(3 X DIA.) MINIMUM	8
13	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	8
14	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	8
15	PIPE (DIAMETER)	8

NOTES:

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

(B) DESIGN IS BASED ON AMERICAN R/D RESILIENT GATE VALVE, PATTERN 2952 W/ HAND WHEEL OPERATOR OR APPROVED EQUAL.

ELECTROMAGNETIC OR APPROVED EQUAL

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

(F) LENGTH (L) OF METER RUN IS APPROXIMATE. IT MAY BE ADJUSTED BASED ON FITTING SHOP DRAWINGS.

(G) DESIGN CONSULTANT TO DETERMINE MINIMUM THRUST RESTRAINT

A SLAB ON GRADE METER STATION

SCALE: 1/5

NOTES:

1. [illegible]

2. [illegible]

3. [illegible]

STATE OF TEXAS
C.E. ABRAM
94905
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PROFESSIONAL ENGINEER
12/1/09

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PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

METERING STATION LAYOUT

NORTH FORT BEND WATER AUTHORITY

NOTE: [illegible]

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 2/4/10
M.P. Crouch 2-4-10

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DRAWING NO.

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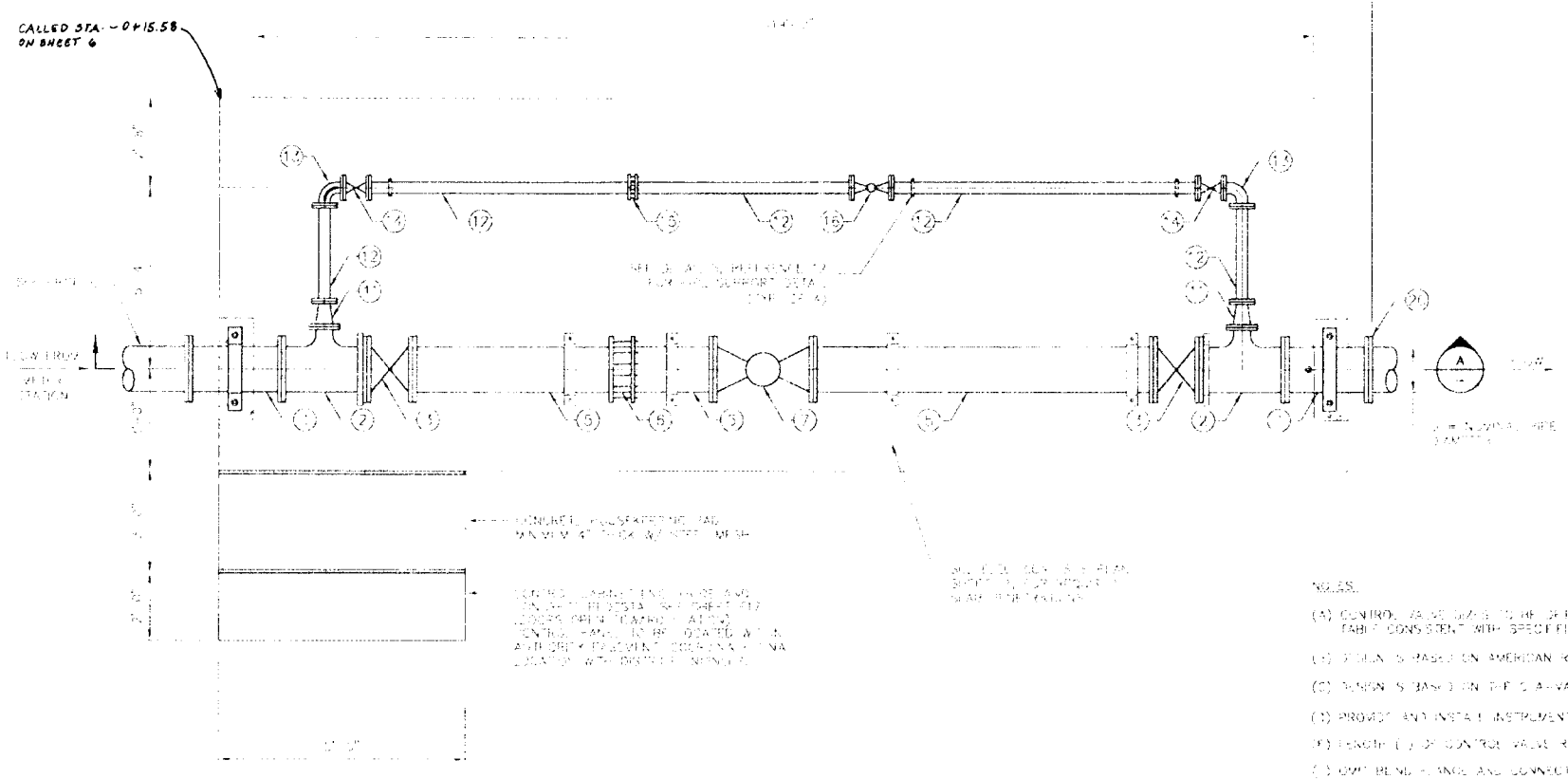
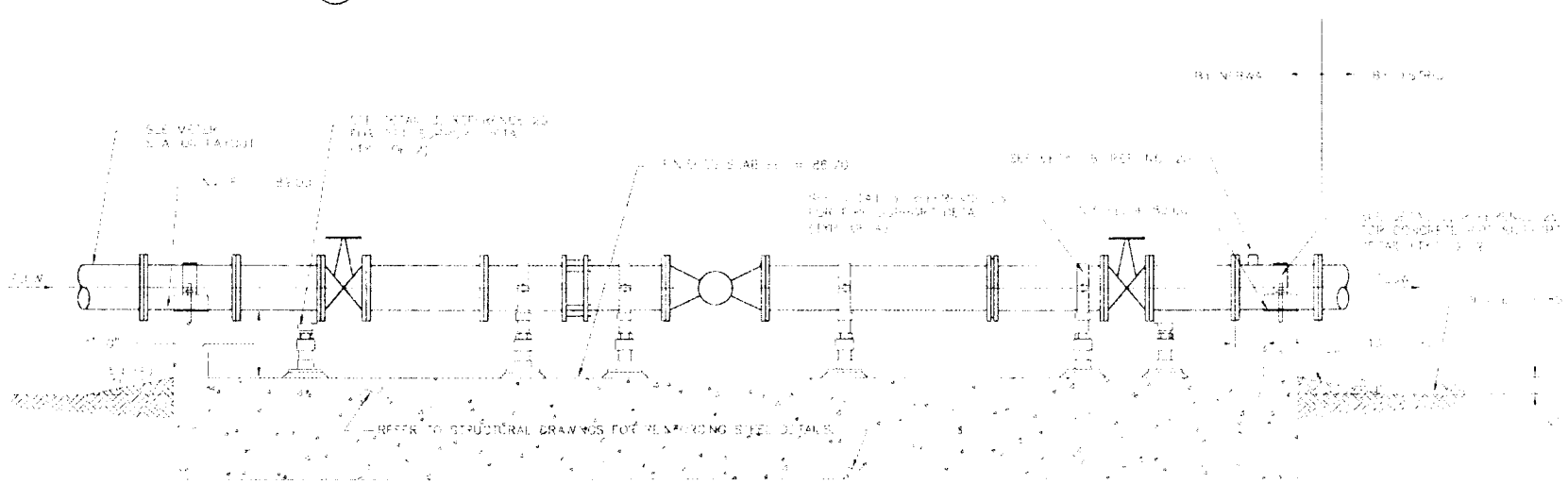


1 PLAN – SLAB ON GRADE CONTROL VALVE STATION

SCALE: 1/8"



A SLAB ON GRADE CONTROL VALVE STATION

SCALE: 1/8"

SLAB ON GRADE CONTROL VALVE STATION

ITEM	FITTING DESCRIPTION	FITTING SIZE (NOM)
1	ELL (DIAMETER) W/ 2" THREADED TAP (ONE PLACE)	8
2	TEE (DIAMETER, RUN X RUN X BRANCH)	8X8X4
3	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	8
4	(NOT USED)	
5	PIPE SPOOL (DIAMETER)	8
6	FLEXIBLE COUPLING (DIAMETER)	8
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 E)	8

NOTES:

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

(B) FURNISH & INSTALL ON AMERICAN R/D RESILIENT GATE VALVE PATTERN 2952 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.

(C) FURNISH & INSTALL ON DFC S.A.-VA 92-89ABCFKO, PERMAD 75002 33-18 49-0 OR APPROVED EQUAL. VALVES TAG LIST.

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

(E) LENGTH (L) OF CONTROL VALVE RUN IS APPROXIMATE. IT MAY BE MODIFIED RADIO BY FIELD SHOP DRAWINGS.

(F) COMPLETE FLANGE AND CONNECT TO DISTRICT PIPING AT THIS JOB.

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

STATE OF TEXAS
C.E. ABRAM
24302
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PROFESSIONAL ENGINEER
12/17/09

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PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

CONTROL VALVE STATION LAYOUT

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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46694
HOUSTON, TEXAS

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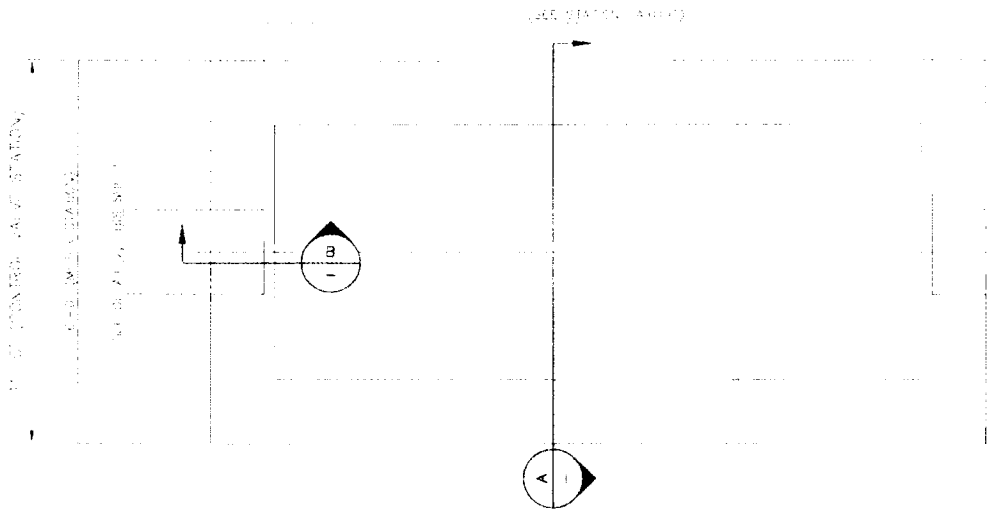
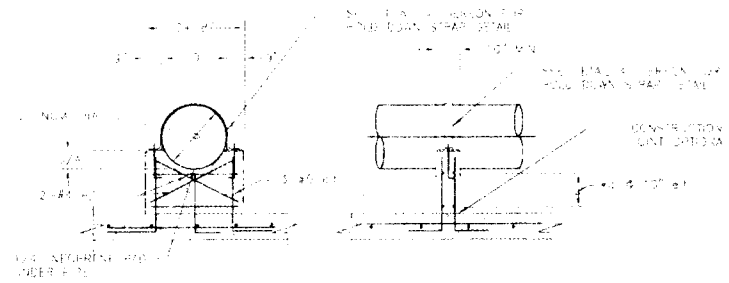
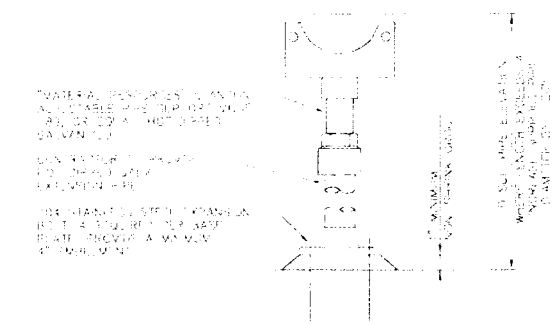


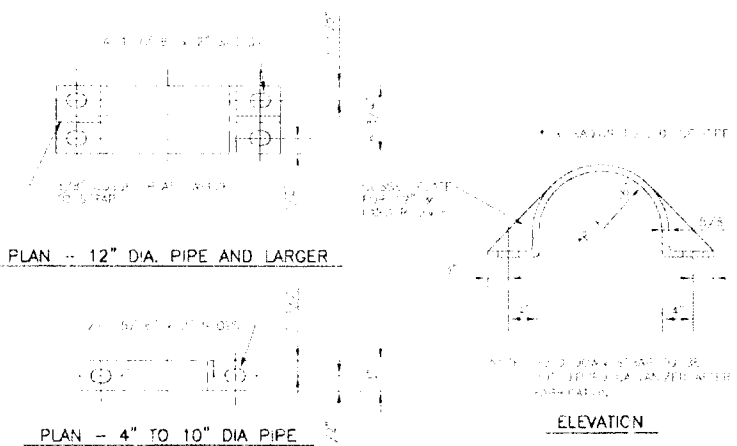
1 PLAN – METER AND CONTROL VALVE STRUCTURAL
SCALE: NTS



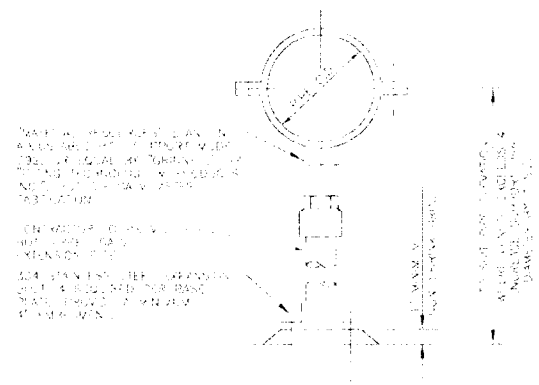
2 CONCRETE PIPE SUPPORT DETAIL



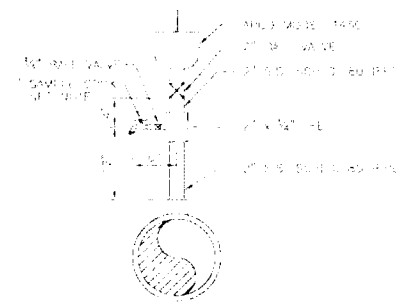
3 PIPE SUPPORT DETAIL



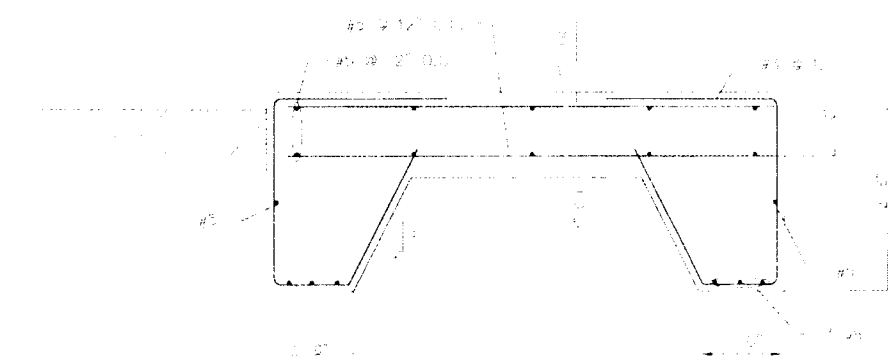
4 HOLD DOWN STRAP DETAIL



5 PIPE SUPPORT DETAIL W/STRAP



6 AIR VALVE DETAIL
SCALE: NTS



A STRUCTURAL DETAIL
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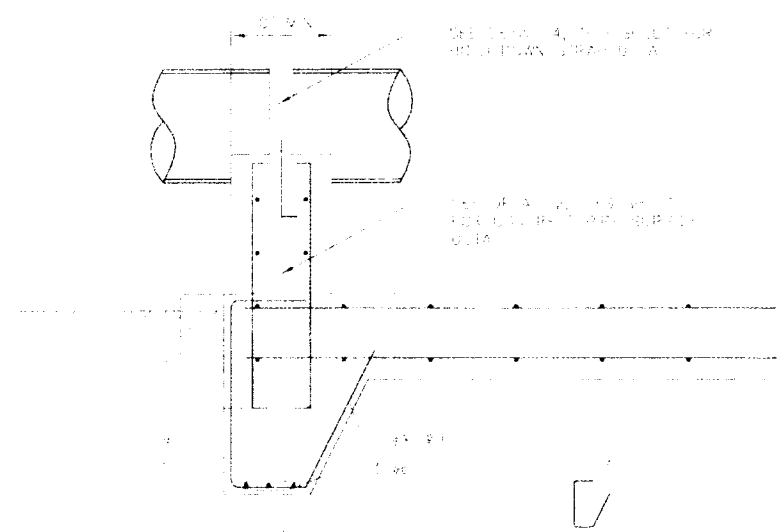

B STRUCTURAL DETAIL
SCALE: NTS

STATE OF TEXAS
C.E. ABRAM
14905
LICENSED
PROFESSIONAL ENGINEER
12/7/09

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PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

METERING STATION AND
CONTROL VALVE STRUCTURAL

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 2/4/10
M.B. Gould 2-4-10
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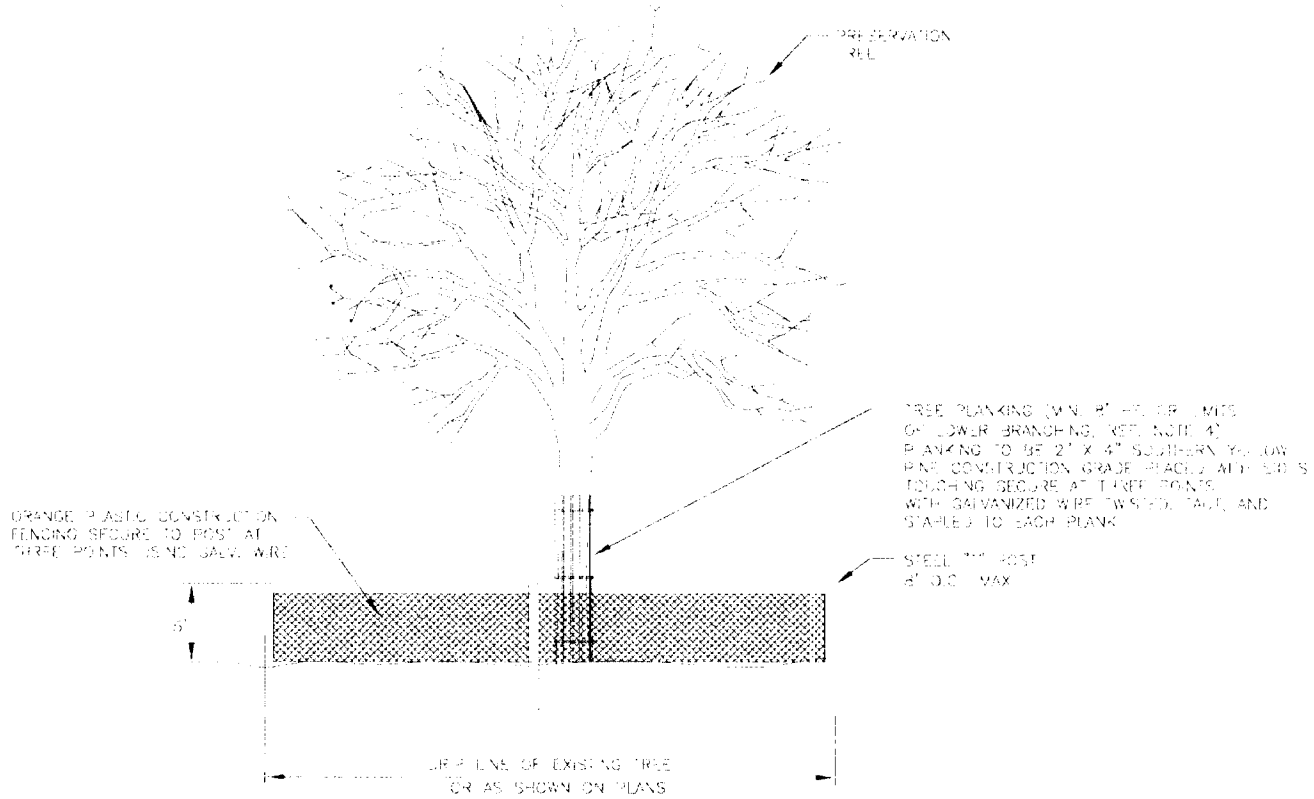
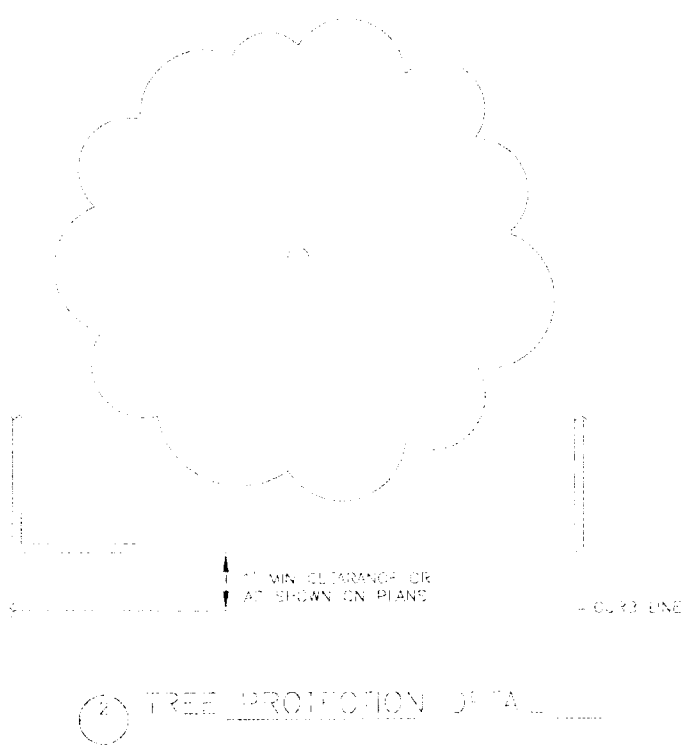


TREE PROTECTION DETAIL



TREE PROTECTION DETAIL

NOTES:

1. ALL TREES SHOWN ON THIS TREE PRESERVATION PLANS WITH A SHALL BE PROTECTED THROUGH-OUT 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 (OR PLANK). 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 4" 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 6 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 EXTENT BEYOND THE GRADE CHANGE AREA. GRADE SHALL REMAIN UNCHANGED WHERE POSSIBLE.

6. ANY ROOT DISCOVERED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT REMAIN 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 WOUNDED 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 PROVIDED BY THE CONTRACTOR TO PROVIDE CLEARANCE FOR EXPLORING OR CONSTRUCTION ACTIVITIES. PRUNING SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS, ONLY WITH PRIOR APPROVAL FROM AUTHORITY'S ENGINEER. ALL PRUNING MUST BE DONE 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 PRIOR ON TRENCHER TO MINIMIZE DAMAGE TO REMAINING ROOTS. WORK AND REVIEW TRENCHING WITH AUTHORITY'S ENGINEER PRIOR TO TRENCHING.

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

13. IN AREAS WHERE COMPACTION ALREADY HAS OCCURRED UPON ROOT ZONES, AND WHERE ROOT PRUNING IS CALLED FOR, INSTALL 10-MIL PLASTIC SHEETING TO THE NORTH OF ROOT PRUNING TRENCH AND 6" OVER TOP. CUT AND REMOVE EXPOSED PLASTIC AT COMPLETION OF WORK.

STATE OF TEXAS
CHRISTOPHER A. PATE
94905
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PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

TREE PROTECTION PLAN

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DRAWING SCALE

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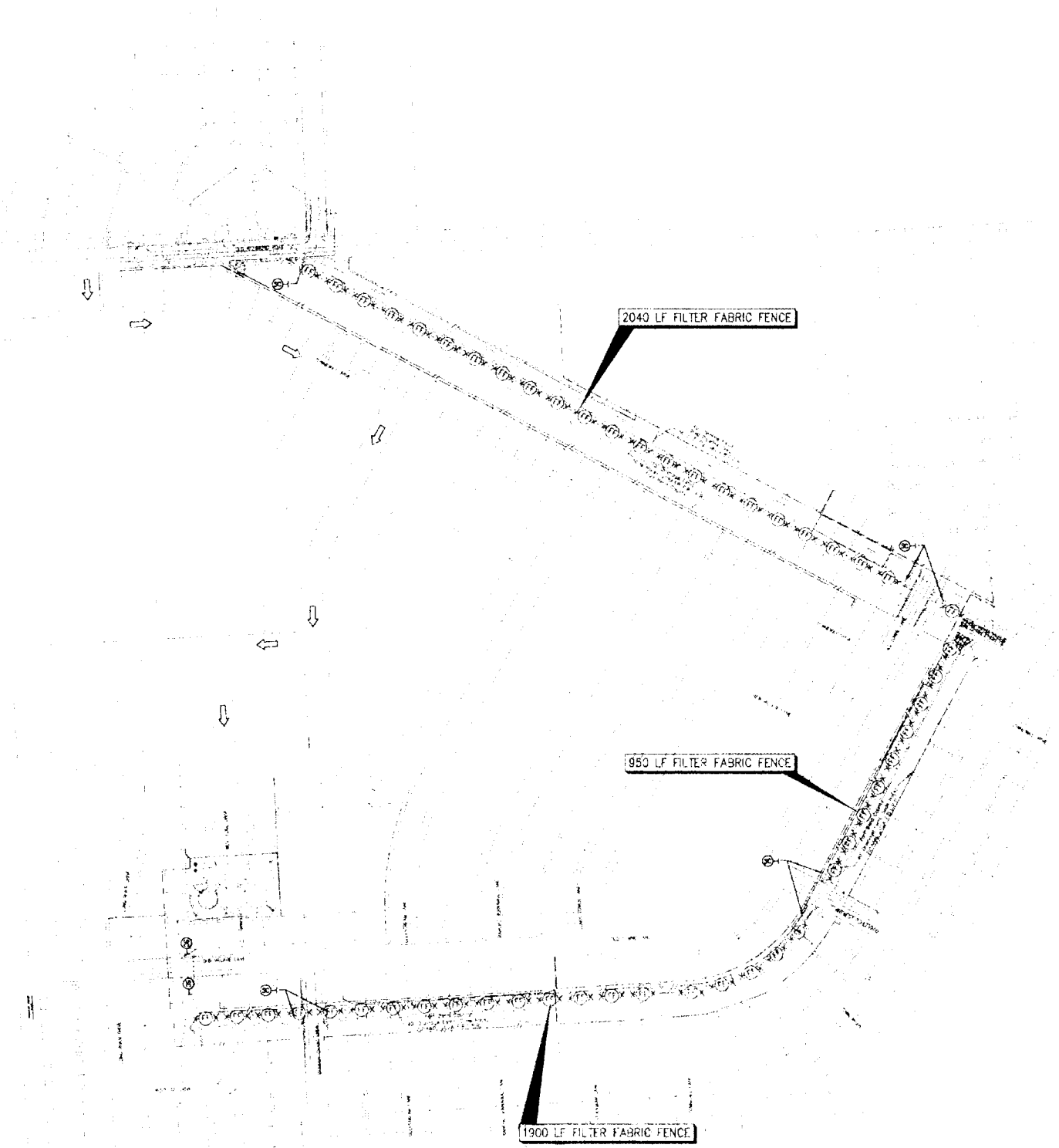

LEGEND

- STABILIZED CONSTRUCTION ACCESS
- FILTER FABRIC FENCE
- CTW — CONCRETE TRUCK WASHOUT (TO BE LOCATED BY CONTRACTOR)
- TC — TRASH CONTAINER (TO BE LOCATED BY CONTRACTOR)
- FC — CONTAINER FUEL CELL (TO BE LOCATED BY CONTRACTOR)
- ACCESS ROUTE TO WATER PLANT

STATE OF TEXAS
34905
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12/7/09

PATE ENGINEERS

PATE JOB NO. 187100100

NFBWA- FBCMUD NO. 2

STORMWATER POLLUTION PREVENTION PLAN

NORTH FORT BEND WATER AUTHORITY

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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HOUSTON, TEXAS

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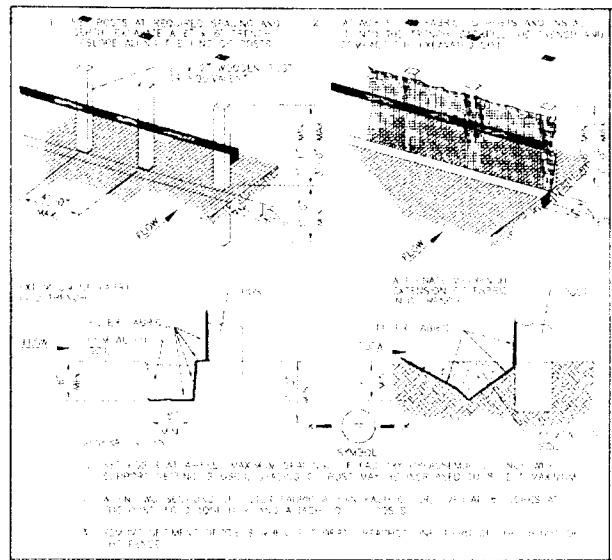
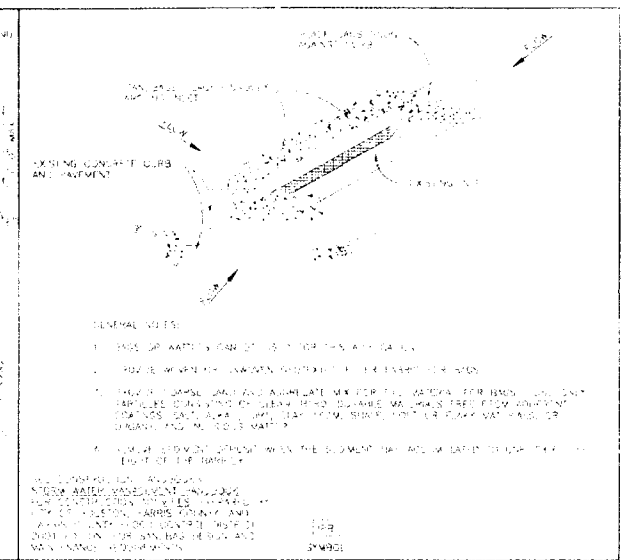
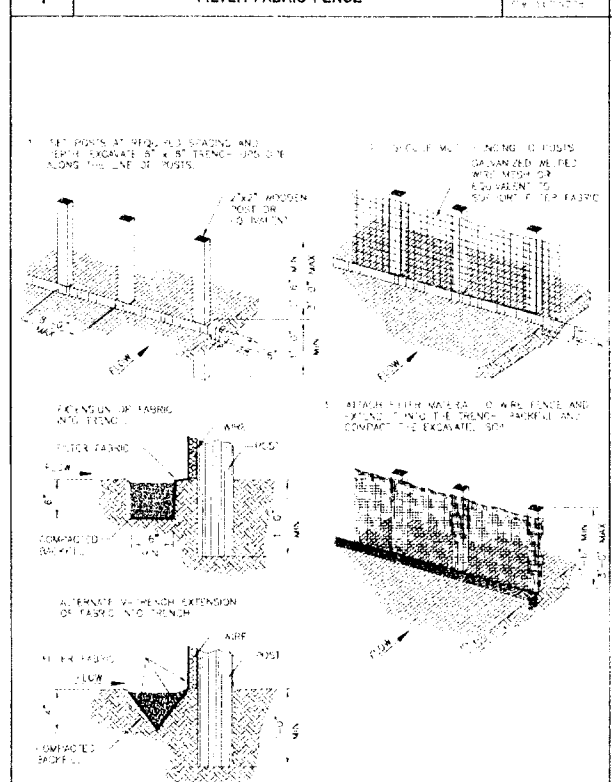


1 FILTER FABRIC FENCE

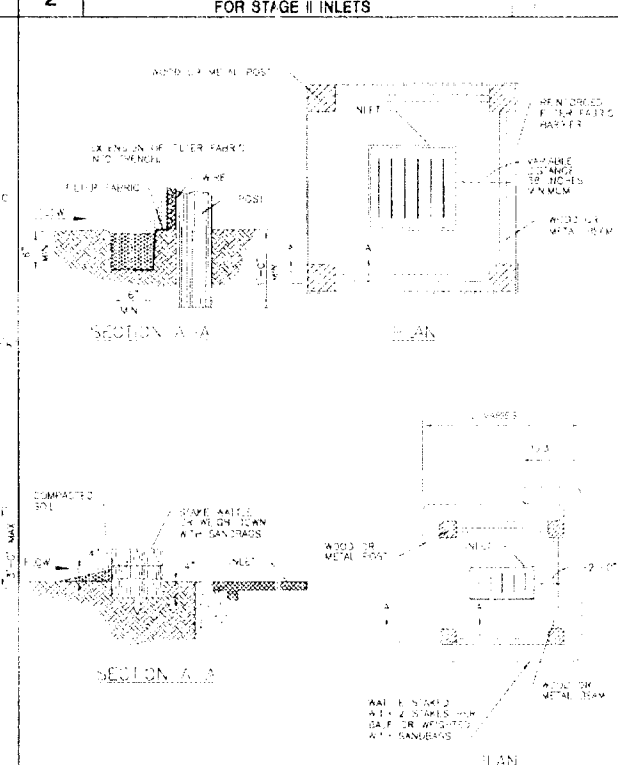


2 INLET PROTECTION BARRIERS FOR STAGE II INLETS

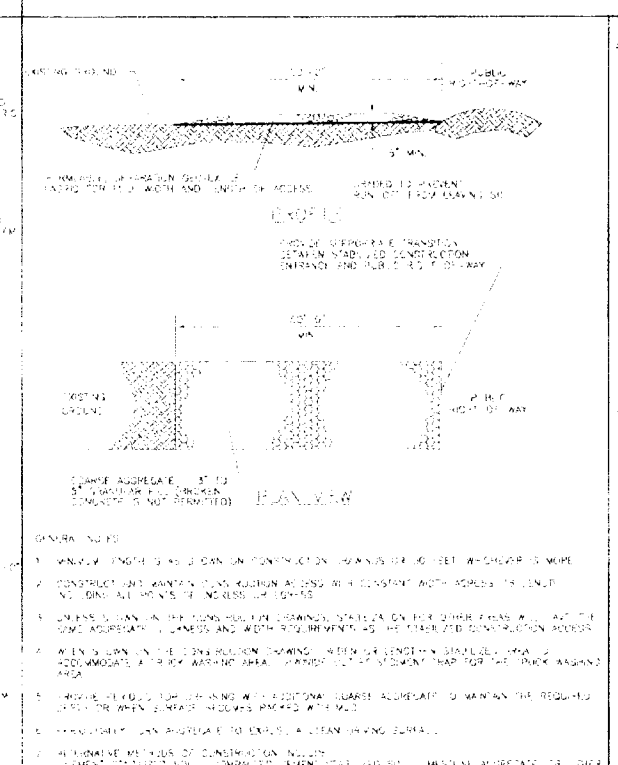


REINFORCED FILTER FABRIC BARRIER

3 REINFORCED FILTER FABRIC BARRIER



4 INLET PROTECTION BARRIERS FOR STAGE I INLETS



5 STABILIZED CONSTRUCTION ACCESS

EROSION AND SEDIMENTATION CONTROL NOTES:

1. PROVISIONS SHALL BE MADE TO PREVENT TRANSITORY WATER POLLUTION, EROSION, SEDIMENTATION, SILTATION, AND LANDS, ETC. FROM SEDIMENT RUNOFF DEVELOPED FROM THE CONSTRUCTION PROCESS. PROVISIONS INCLUDE, BUT ARE NOT LIMITED TO: STRUCTURAL CONTROLS SUCH AS SILT FENCING, GEOTEXTILE FABRIC PROTECTION OF STORM SEWERS, HAY BALES, DIKES, AND SANDBAG BERMS, AND/OR VEGETATION CONTROLS SUCH AS MOWING OR EXISTING VEGETATIVE BUFFER STRIPS (MINIMUM 25 FEET WIDE).
2. PROJECT SITE EROSION CONTROL CONTRACTOR SHALL INSTALL THE ON-SITE SEDIMENTATION CONTROLS AT LOCATIONS SHOWN ON PLANS.
3. CONTRACTOR SHALL SWEEP DAILY TO KEEP CLEAN ROADS AND STREETS ADJACENT TO THE PROJECT WHEN HAVE BEEN USED AS ACCESS ROUTES FOR CONSTRUCTION TRAFFIC. IF DIRT AND MUD IS NOT ADEQUATELY REMOVED FROM VEHICLES AT THE STABILIZED CONSTRUCTION ACCESS LOCATIONS.
4. LOCATE FUEL/WATER ALL STORAGE AREAS AWAY FROM STORMWATER DRAINAGE SYSTEMS. USE A MINIMUM 60 MILS POLYETHYLENE LINER UNDER ABOVE GROUND STORAGE TANKS. USE 2-FOOT HIGH BERMS AROUND FUEL STORAGE TANKS.
5. CONTRACTOR WILL ADVISE OWNER IMMEDIATELY, VERBALLY, AND IN WRITING, OF ANY FUEL SPILLS INTO THE PROJECT CONSTRUCTION AREA AND THE ACTIONS TAKEN TO REMEDY THE PROBLEM.
6. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL ENVIRONMENTAL LAWS.
7. CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF FUELS, MATERIALS, AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER.
8. CONTRACTOR SHALL INSPECT ALL STRUCTURAL CONTROLS WITHIN 24 HOURS OF ANY STORM EVENT THAT MEETS OR EXCEEDS 0.5 INCHES OF RAINFALL IN A 24 HOUR PERIOD. DURING PROLONGED RAINFALL EVENTS, CONTRACTOR SHALL INSPECT STRUCTURAL CONTROLS ON A DAILY BASIS. AT A MINIMUM, STRUCTURAL CONTROLS SHOULD BE INSPECTED ONCE EVERY 14 CALENDAR DAYS. A QUALIFIED REPRESENTATIVE OF THE CONTRACTOR IS ALLOWED AT THE OWNER'S SOLE PROVIDE THESE INSPECTIONS. SHOULD CONTROLS BECOME INEFFECTIVE, NECESSARY REPAIRS SHALL BE PERFORMED TO RETAIN THE INTEGRITY OF THE STRUCTURAL CONTROLS. REMOVE ALL SEDIMENT OF ITS ACCUMULATES TO 1/2 THE HEIGHT OF THE SILT FENCE. MATERIALS MAY BE SPREAD ON ADJACENT PROPERTY.
9. CONTRACTOR SHALL MAINTAIN, REPAIR AND/OR REPLACE DAMAGED EROSION AND SEDIMENTATION CONTROL SYSTEMS THROUGHOUT THE DURATION OF THE CONTRACT.
10. CONTRACTOR WILL PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER POTENTIALLY TOXIC MATERIALS.
11. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATELY MAINTAINED SANITARY FACILITIES.
12. EQUIPMENT STAGING AREAS TO BE DESIGNATED BY CONTRACTOR AND APPROVED BY OWNER PRIOR TO CONSTRUCTION.
13. AT DIRECTION OF THE CONTRACT, OWNER AND/OR OWNER'S REPRESENTATIVE WITH THE CONTRACTOR SHALL EXAMINE EROSION AND SEDIMENTATION CONTROL SYSTEMS BEFORE RELIEVING CONTRACTOR OF THIS MAINTENANCE RESPONSIBILITIES. PRIOR TO CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF SEDIMENTATION CONTROL SYSTEMS AFTER THE PROJECT HAS BEEN ACCEPTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
14. EROSION AND SEDIMENTATION CONTROL SYSTEMS ON EXISTING NON-PUBLIC CONTRACTS, OWNER AND OR OWNER'S REPRESENTATIVE WITH THE CONTRACTOR SHALL EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS FOR DAMAGE PRIOR TO CONTRACTOR STARTING CONSTRUCTION OF THE CONTRACT. ANY DAMAGE NOTED AT THIS TIME SHALL BE REPAIRED AT OWNER'S EXPENSE.
15. CONTRACTOR SHALL PROVIDE STAGE I INLET PROTECTION BARRIERS AT ALL PROPOSED INLETS AS PER DETAILS SHOWN ON THIS SHEET.
16. CONTRACTOR SHALL PROVIDE STAGE II INLET PROTECTION BARRIERS AT ALL PROPOSED INLETS AS PER DETAILS SHOWN ON THIS SHEET.
17. CONTRACTOR SHALL PROVIDE DUST CONTROL FOR ALL DISTURBED AREAS OF OPEN CURB AND DITCH.

STATE OF TEXAS
C. P. ADKAM
34405
LICENSED
PROFESSIONAL ENGINEER
12.17.01

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PATE ENGINEERS

PATE JOB NO. 187100100

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SWPPP DETAILS

NORTH FORT BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DRAWING STATUS

NA

SHEET NO. 28 OF 45

PUBLIC WORKS AND ENGINEERING
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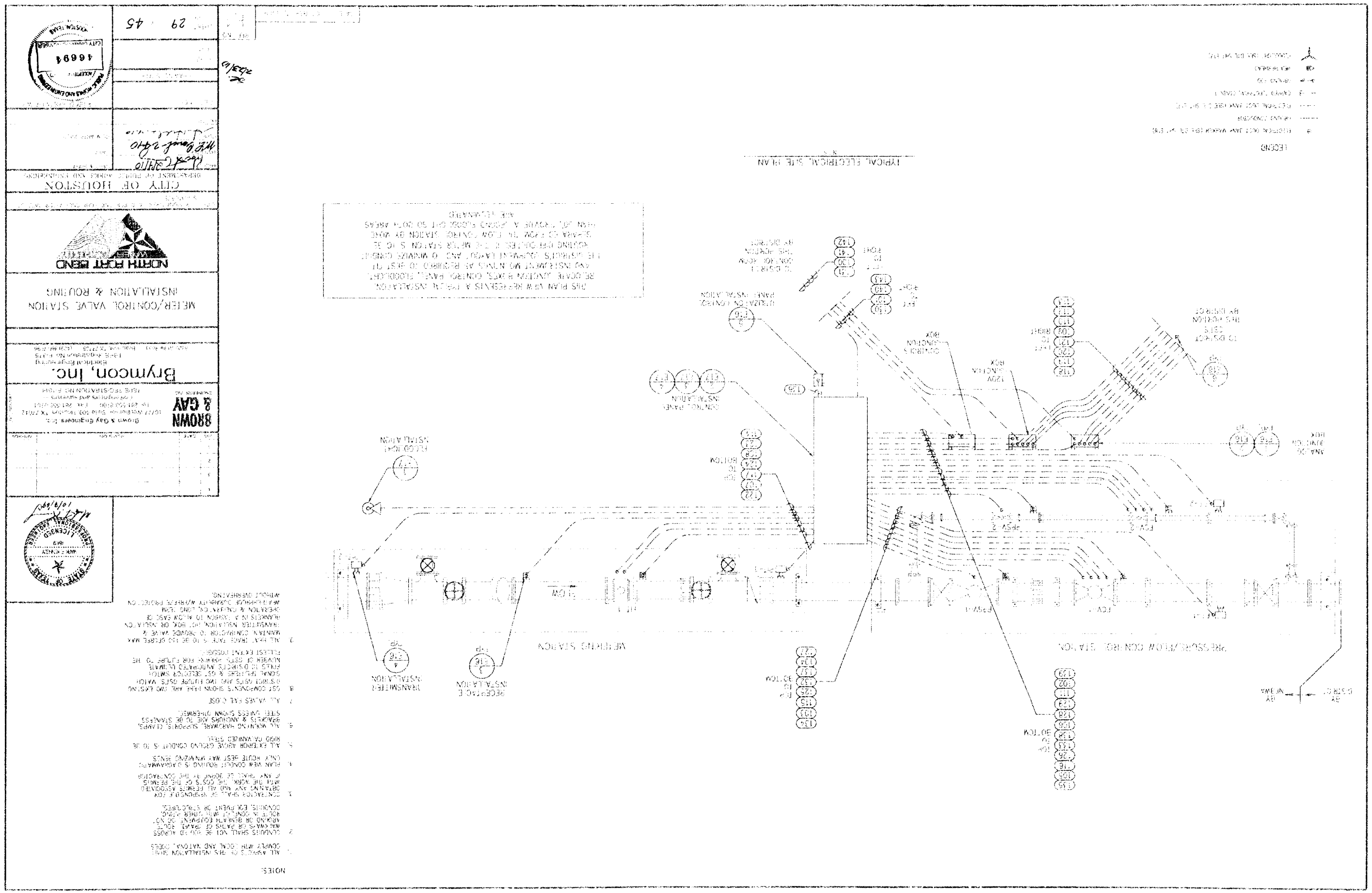
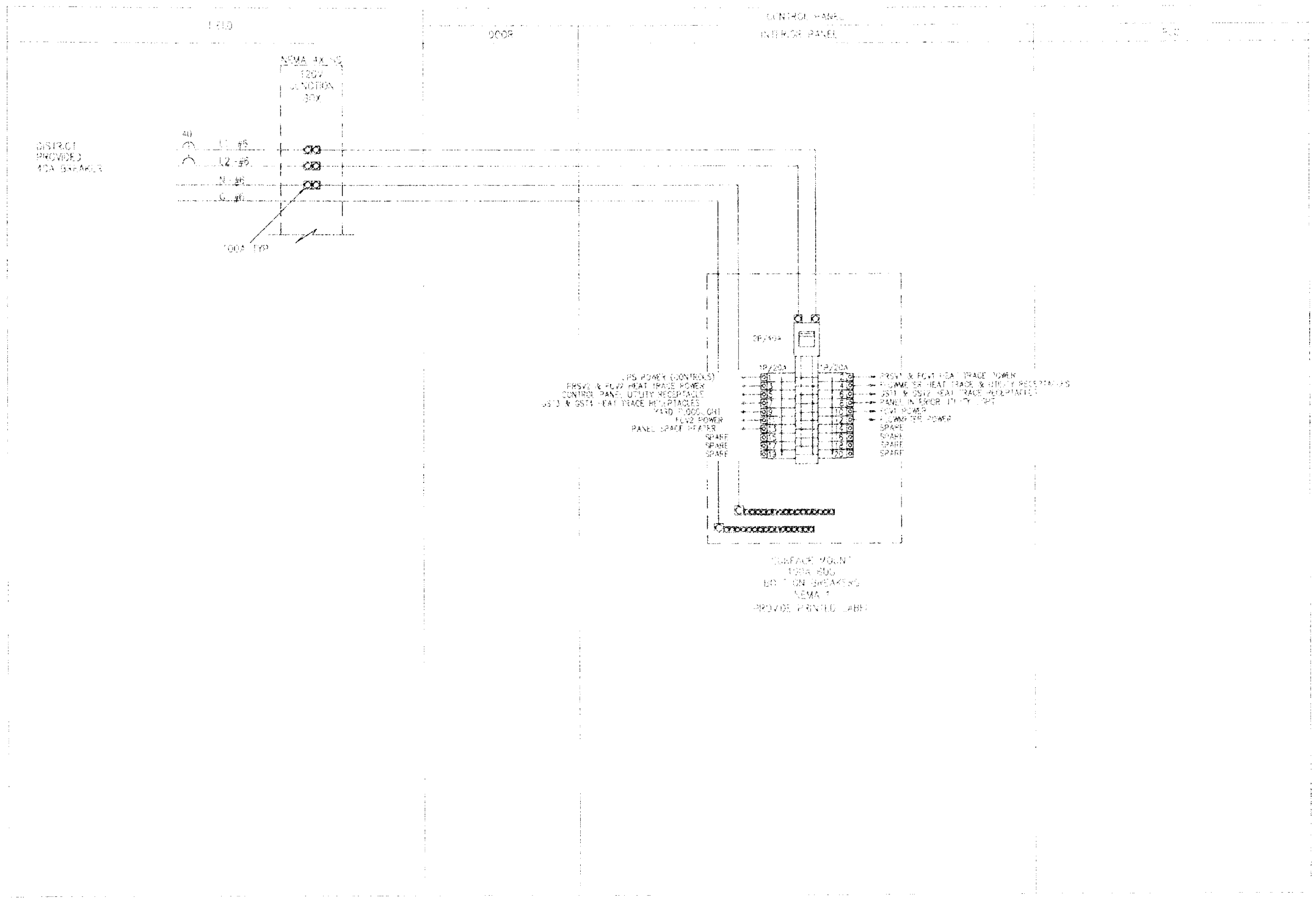
46694
CITY ENGINEER-REVIEWER
EASTON TEXAS

2/23/10


NOTES:
1. ALL ASPECTS OF THIS INSTALLATION SHALL COMPLY WITH LOCAL AND NATIONAL CODES
2. DRAWINGS SHALL NOT BE USED TO SCALE DIMENSIONS OR DETERMINE LOCATIONS OF PARTS OF PROJECT. DRAWINGS DO NOT REPRESENT THE EXACT LOCATION OF EQUIPMENT.
3. ALL EXTERNAL CONDUITS TO BE 150 DEGREE MAX. MANUFACTURER NEUTRALIZATION JACKET BOX OR NEUTRALIZER MANUFACTURER'S TAPERED TO ALLOW EASY OF INSTALLATION & CONNECTION LONG TERM MAINTENANCE AND ACCESSIBILITY WITHOUT DAMAGING
4. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS ASSOCIATED WITH THE WORK. THE COSTS OF THE PERMITS IF ANY TAKES TO BE BORNE BY THE CONTRACTOR
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 FULL CLOSE
8. ALL COMPONENTS SHOWN HERE ARE TO BE EXISTING & SHALL PERFORM SAME FUNCTIONS AS THEY DO WITH NEW EQUIPMENT
9. SONIC VELOCITY & GAS DENSITY SWITCH FULLEST EXTENT POSSIBLE
10. ALL PIPE TAPS TO BE 150 DEGREE MAX. MANUFACTURER NEUTRALIZATION JACKET BOX OR NEUTRALIZER MANUFACTURER'S TAPERED TO ALLOW EASY OF INSTALLATION & CONNECTION LONG TERM MAINTENANCE AND ACCESSIBILITY WITHOUT DAMAGING
TYPICAL ELECTRICAL SITE PLAN
LEGEND
ELECTRICAL DUCT BANK WHICH DEPICTS 6 SPT CONDUITS
ELECTRICAL DUCT BANK WHICH DEPICTS 4 SPT CONDUITS
CONDUIT
CAMERA DIRECTIONAL CONTROL
CAMERA
MOTION SENSOR
CONDUIT TO DEL VAL STA.
PRESSURE/FLOW CONTROL STATION
REFUELING STATION
TRANSMITTER INSTALLATION
RECEIVING E INSTALLATION
FLOW INSTALLATION
CONTROL PANEL INSTALLATION
SOLENOID INSTALLATION
12W SUNCHECK BOX
SOLENOID BOX
TO DISPENSER SITE'S BUS PORTION BY DISPENSER
INSTALLATION CONTROL PANEL INSTALLATION
TO DISPENSER SITE'S BUS PORTION BY DISPENSER
THIS PLAN VIEW REPRESENTS A TYPICAL INSTALLATION RELOCATE LOCATION & TYPE CONTROL PANEL, FLOODLIGHT AND INSTRUMENT MOUNTING AS REQUIRED TO ADAPT TO THE SITE'S DIMENSIONS. DEPENDING ON THE SITE'S LAYOUT AND OWNER'S CONCERN, YOU MAY HAVE A PROPOSED FLOOD OFF 50 TOTAL AREAS AND TO MANAGE
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
NORTH PORT BEND
WATER AUTHORITY
MEIER/CONTROL VALVE STATION
INSTALLATION & ROUTING
Brymcon, Inc.
Electrical Engineering
Electrical Engineering
BROWN & GAY
Brown & Gay Engineers Inc.
10777 Westheimer, Suite 100 Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-0411
Civil Engineers and Surveyors
TBPE Registration No. F-1094
SCALE: NONE
DATE: 10/9/09
LICENSED
STATE OF TEXAS
JAMES E. KINSEY
3949
29 45
14694
PUBLIC WORKS AND ENGINEERING
HOUSTON, TEXAS

CONDUIT SCHEDULE

CONDUIT NO.	DESCRIPTION	CONDUIT SIZE	POWER CONDUCTORS NO.	SIZE	NEUTRAL	GROUND	CONTROL CONDUCTORS NO.	SIZE	GND	FROM	TO	BONDING METHOD	BONDING TO	REMARKS
100	NEMA CONTROL PANEL POWER FEED	1-1/2	5	6								UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
101	NEMA CONTROL PANEL POWER FEED	1-1/2	5	6								UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
102	NEMA CONTROL PANEL POWER FEED	1-1/2	5	6								UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
103	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
104	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
105	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
106	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
107	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
108	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
109	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
110	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
111	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
112	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
113	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
114	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
115	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
116	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
117	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
118	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
119	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
120	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
121	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
122	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
123	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
124	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
125	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
126	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
127	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
128	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
129	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
130	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
131	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
132	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
133	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
134	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
135	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
136	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
137	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
138	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
139	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
140	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
141	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
142	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	
143	480V 2 POLE 30A CIRCUIT BREAKER	1	2	12	12	12						UNDERGROUND DUCTBANK	NEMA CONTROL PANEL	



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 SIX PACK MATCH 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 F MAX MAINTAIN CONTINUITY 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

29 — 5A	FUSED TERMINAL BLOCK
5A — 29	FUSED TERMINAL BLOCK
	TERMINAL BLOCK
◇	PLC TERMINAL

STATE OF TEXAS
MATTHEW MAG
LICENSED
PROFESSIONAL ENGINEER
10/9/09

DATE	DESCRIPTION	BY

BROWN & GAY ENGINEERS, INC

Brown & Gay Engineers, Inc
10777 Westheimer, Suite 400 Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-1011
For Authorized Engineering Information
TBPE REGISTRATION NO. F-1046

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-1975
2500 Wilcrest, Suite 170 Houston, TX 77042 (713) 952-7758

CONTROL DIAGRAM
SHEET 1

NORTH FORT BEND WATER AUTHORITY

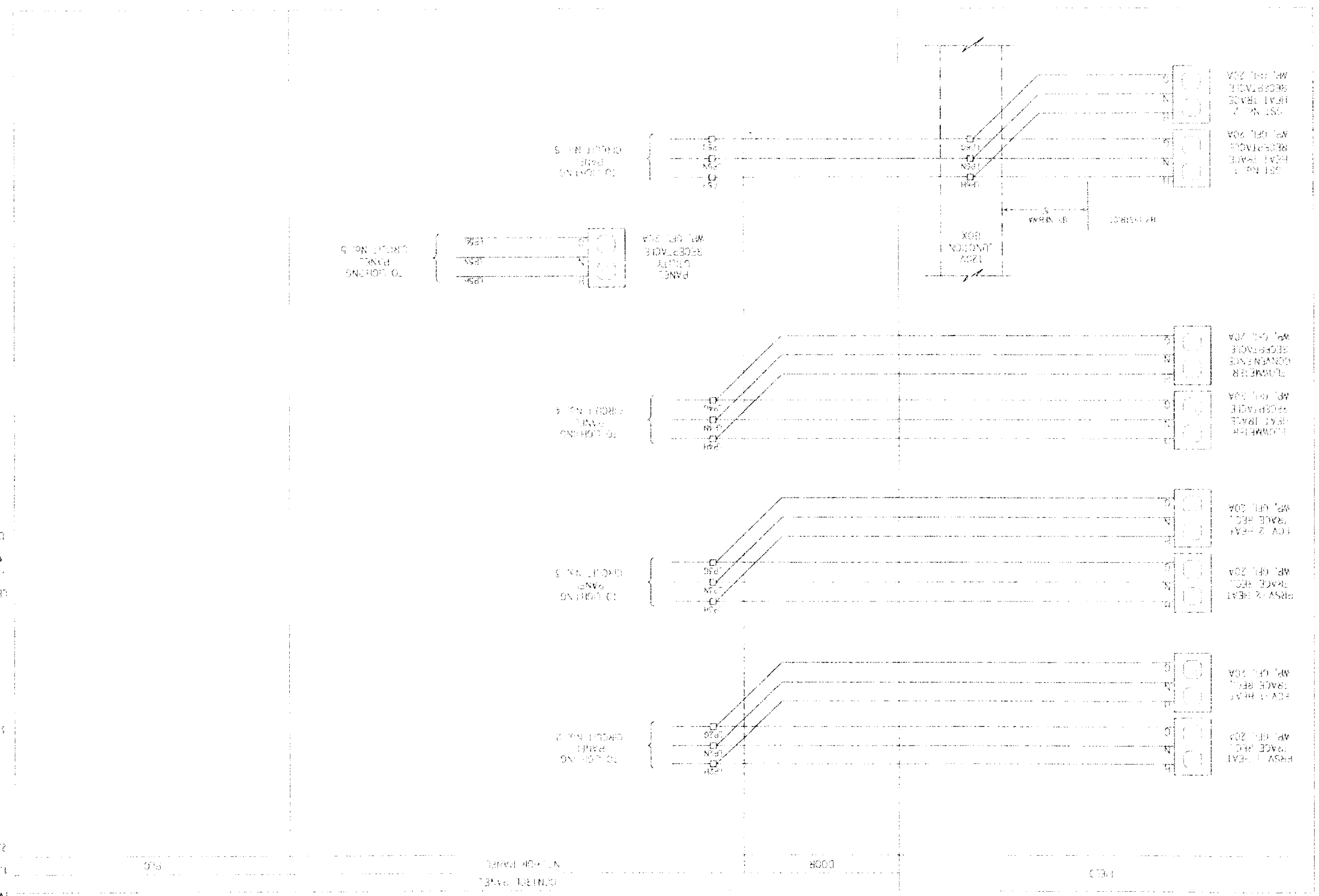
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. 2/4/10
M.R. Cook 2-4-10
J. Hill 2-4-10

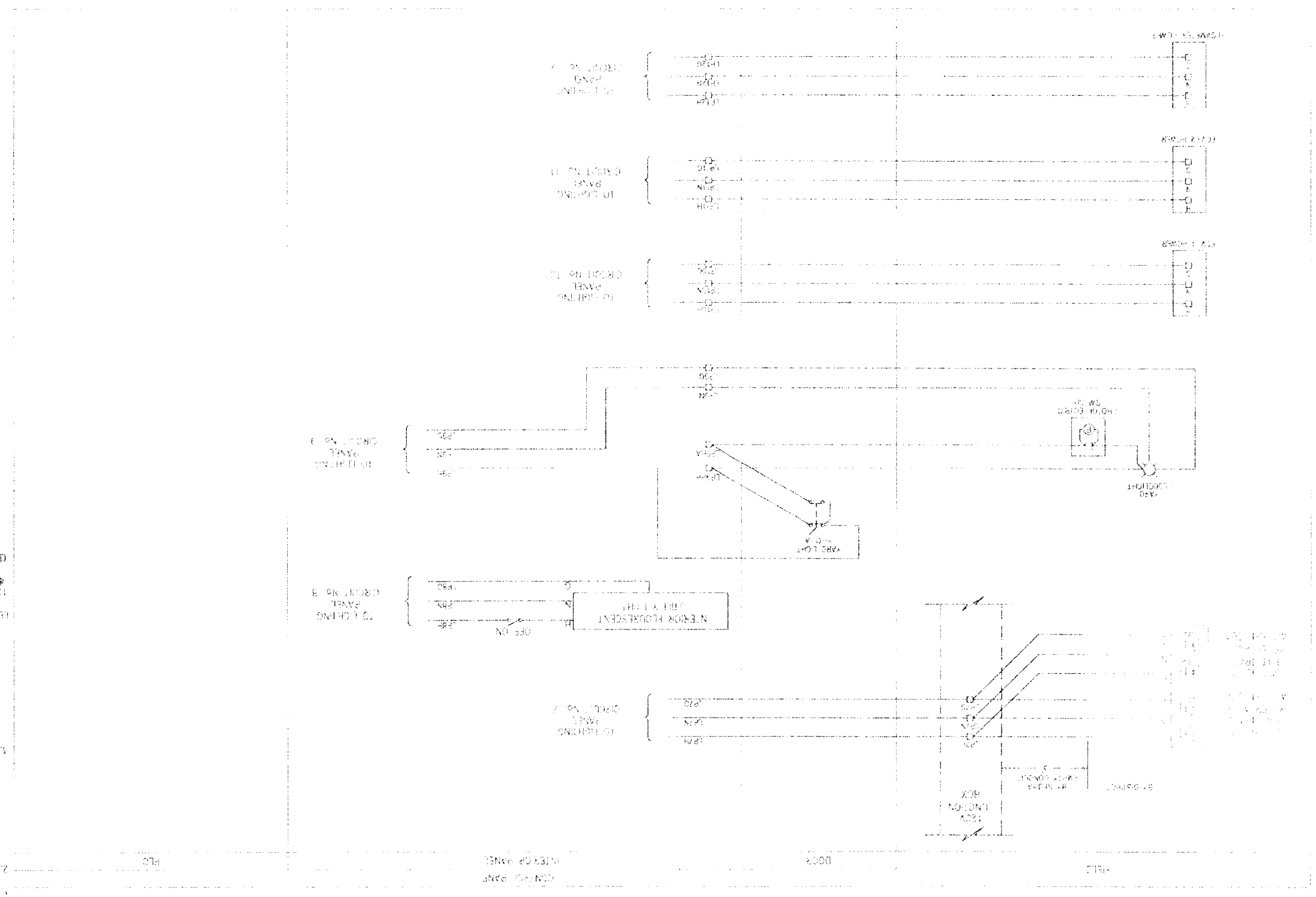
2/23/10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46691
CITY COUNCIL OF HOUSTON
HOUSTON, TEXAS

31 45



BROWN & CAY
Brymcon, Inc.
CONTROL DIAGRAM
SHEET 2
NORTH FORT BEND
CITY OF HOUSTON
32 45
46694



BROWN & GAY

Brown & Gay Engineers, Inc.

Brymcon, Inc.

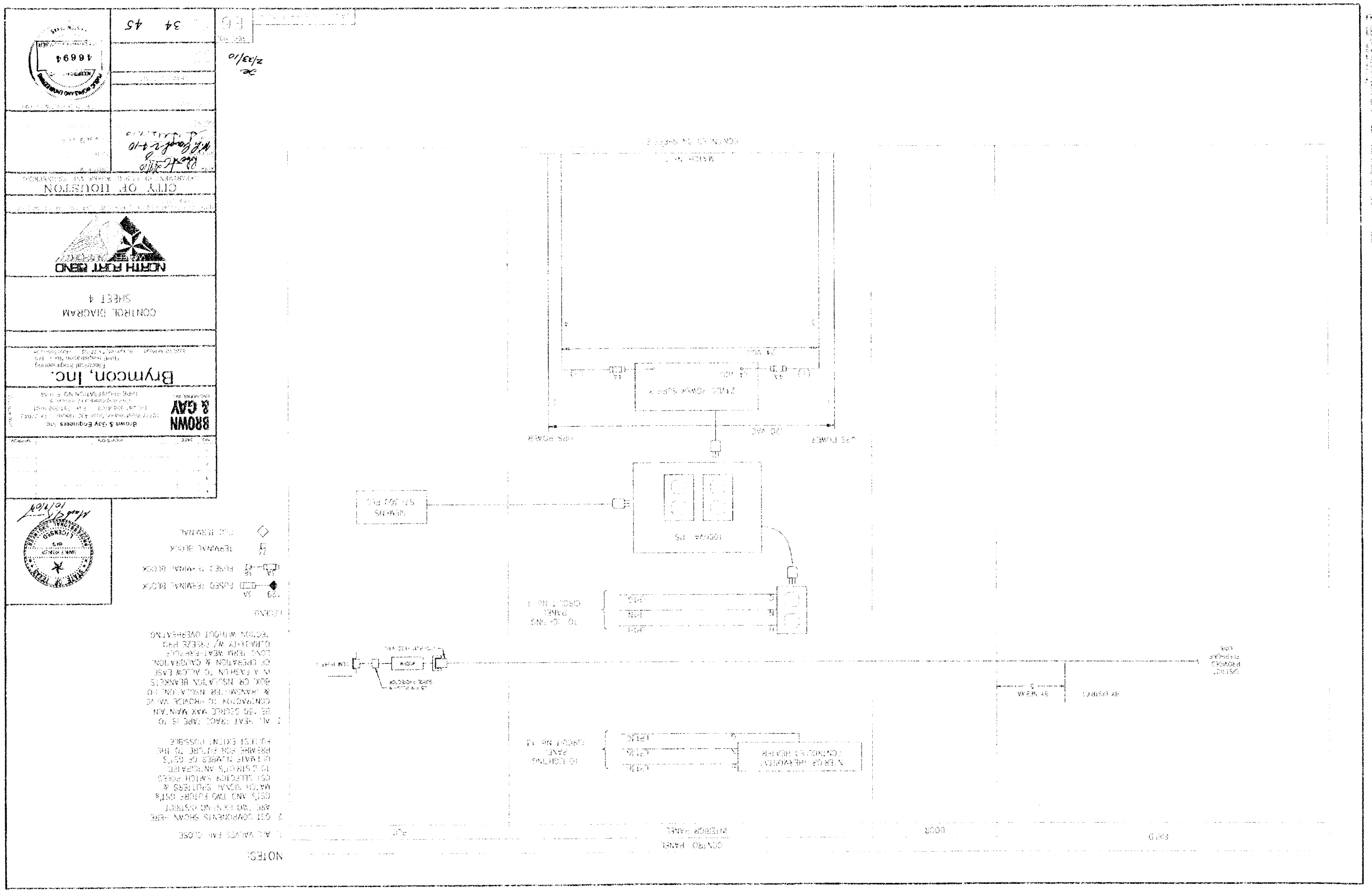
CONTROL DIAGRAM
SHEET 3

NORTH FORT BEND WATER AUTHORITY

CITY OF HOUSTON

33 45

46694



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, HO BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

◆ 129 5A	FUSED TERMINAL BLOCK
3A 38	FUSED TERMINAL BLOCK
7A	TERMINAL BLOCK
◇	PLC TERMINAL

MARK F. KENNEDY
Mark F Kennedy 10/7/08

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: 281-558-8701
Civil engineers and surveyors
TBPE REGISTRATION NO. F-1046

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
8320 White Road Beaumont, TX 77705

CONTROL DIAGRAM
SHEET 4

NORTH FORT BEND WATER AUTHORITY

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

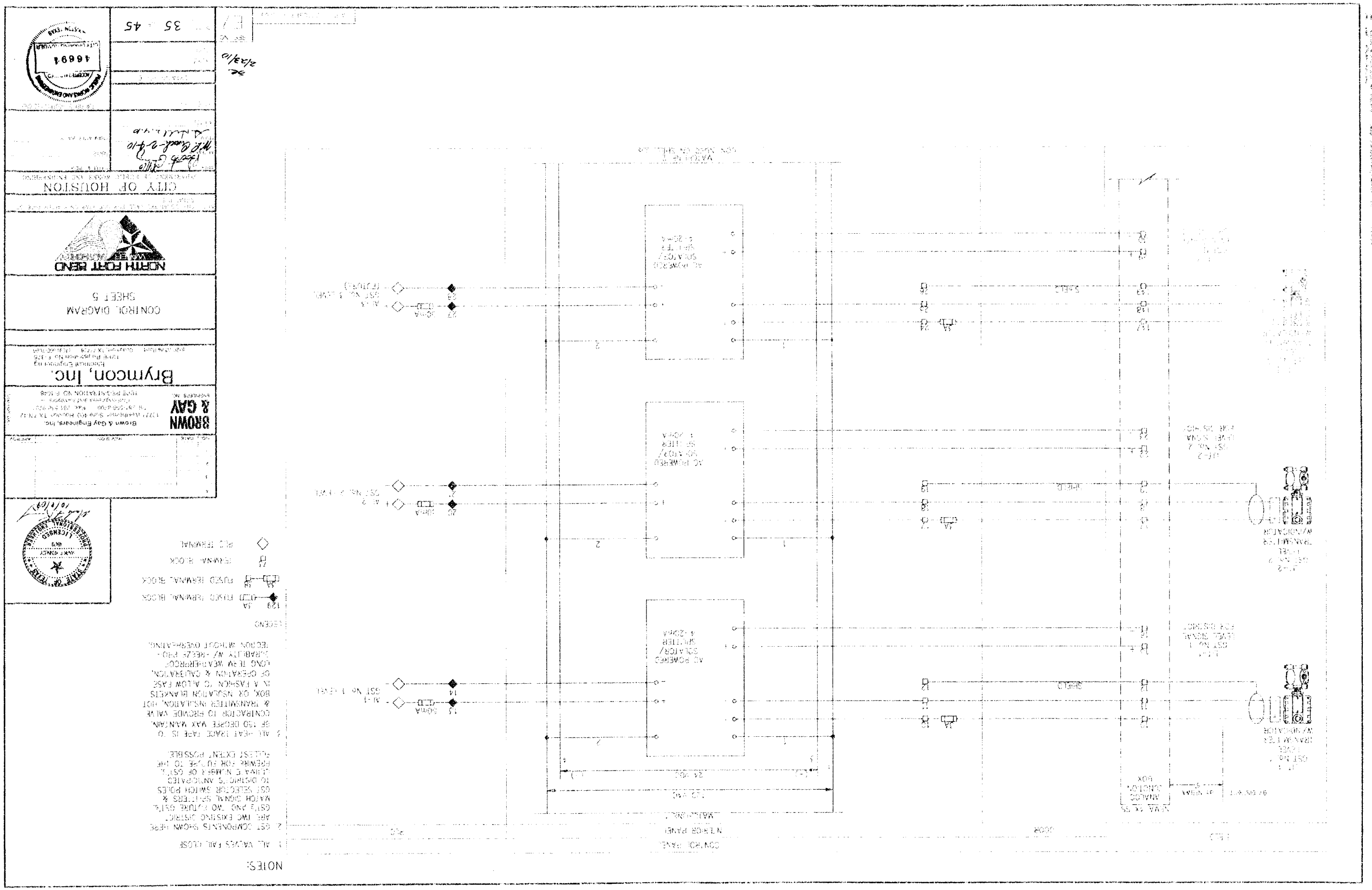
Robert G 2/11/10
W.L. Gangl 2-4-10

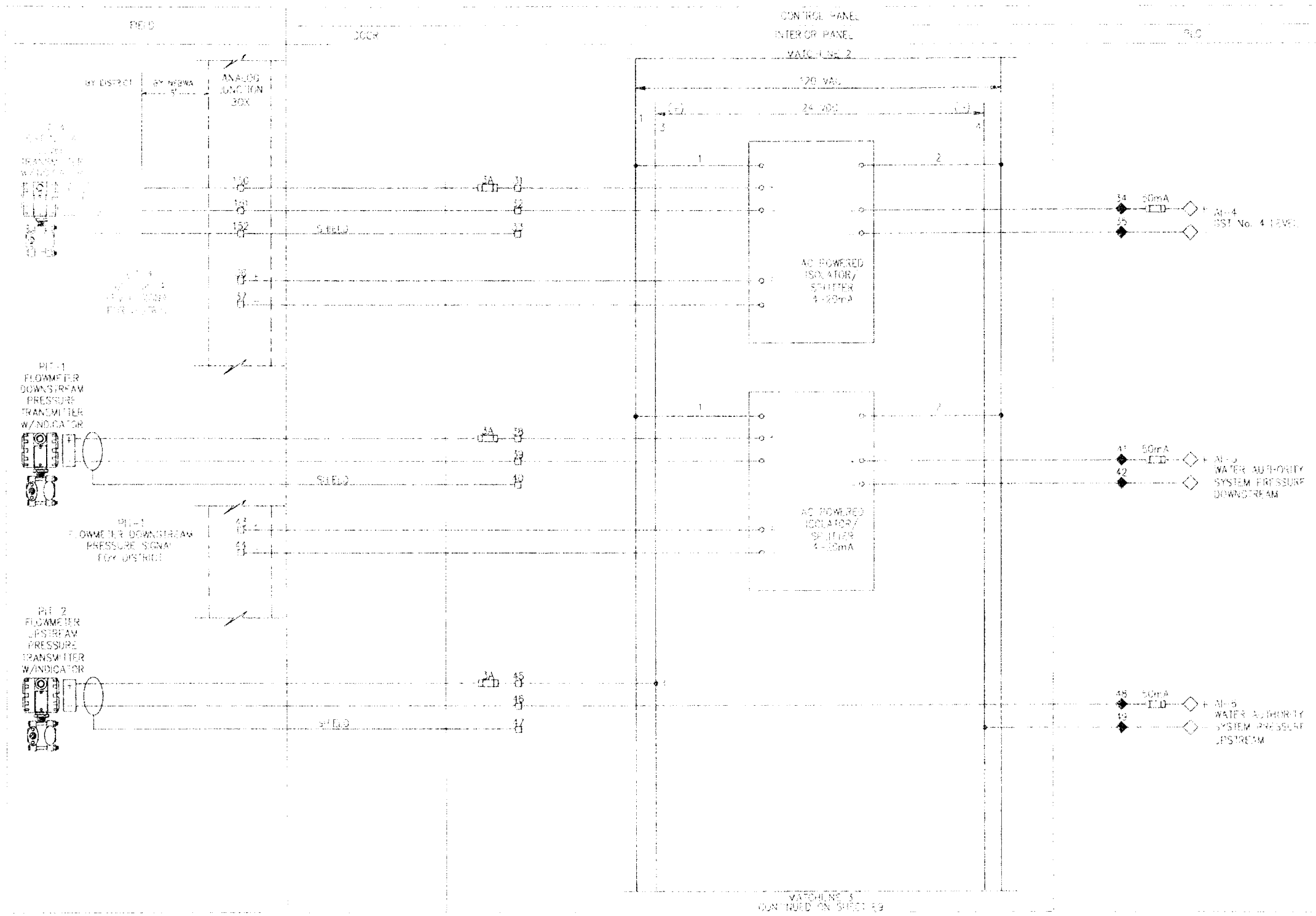
PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
HOUSTON, TEXAS

xe
2/23/10

REF. NO.
E6

34 45


NOTES:
1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING SYSTEM: GST#1 AND TWO FUTURE GST'S. MATCH SIGNAL SPLITTERS & GST SELECTOR SWITCH POLES TO DISPATCH'S ANTICIPATED FUTURE NUMBER OF GST'S. PREWIRE FOR FUTURE TO THE GREATEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS 10 SF 150 DEGREE MAX MAINTAIN CONTINUATION TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM MEATHERPROOF DURABILITY W/ MEETS PRO-TECTION WITHOUT OPERATING.
LEGEND
FUSED TERMINAL BLOCK
FUSED TERMINAL BLOCK
TERMINAL BLOCK
PLC TERMINAL
CONTROL PANEL
MAIN CONTROL
N.T.S.
SOLAR/ SPLITTER
AC POWERED
SOLAR/ SPLITTER
AC POWERED
SHELD
SHELD
MAGOS JUNCTION BOX
TRANSMITTER/ MODULATOR
TRANSMITTER/ MODULATOR
GST No. 1 LOCAL SIGNAL FOR DISPATCH
GST No. 2 LOCAL SIGNAL FOR DISPATCH
GST No. 1 TANK
GST No. 2 TANK
BROWN & GAY
Brymcon, Inc.
NORTH FORT BEND
CONTROL DIAGRAM
SHEET 5
CITY OF HOUSTON
35 - 45
14691



NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S WATER 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 34 — FUSED TERMINAL BLOCK
- 77 — TERMINAL BLOCK
- ◇ — P.C. TERMINAL

STATE OF TEXAS — WALTER SINOR — 3879 — LICENSED PROFESSIONAL ENGINEER — 10/3/09

NO.	DATE	REVISION	APPROV.

BROWN & GAY ENGINEERS, INC.

Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400 Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-9701
Civil/Water/Gas/Instrumentation
BPE REGISTRATION NO. F-1046

Brymcon, Inc.

Electrical Engineering
TBPE Registration No. F-375
3320 White Oak Houston TX 77008 (281)597-7998

CONTROL DIAGRAM
SHEET 6

NORTH FORT BEND WATER AUTHORITY

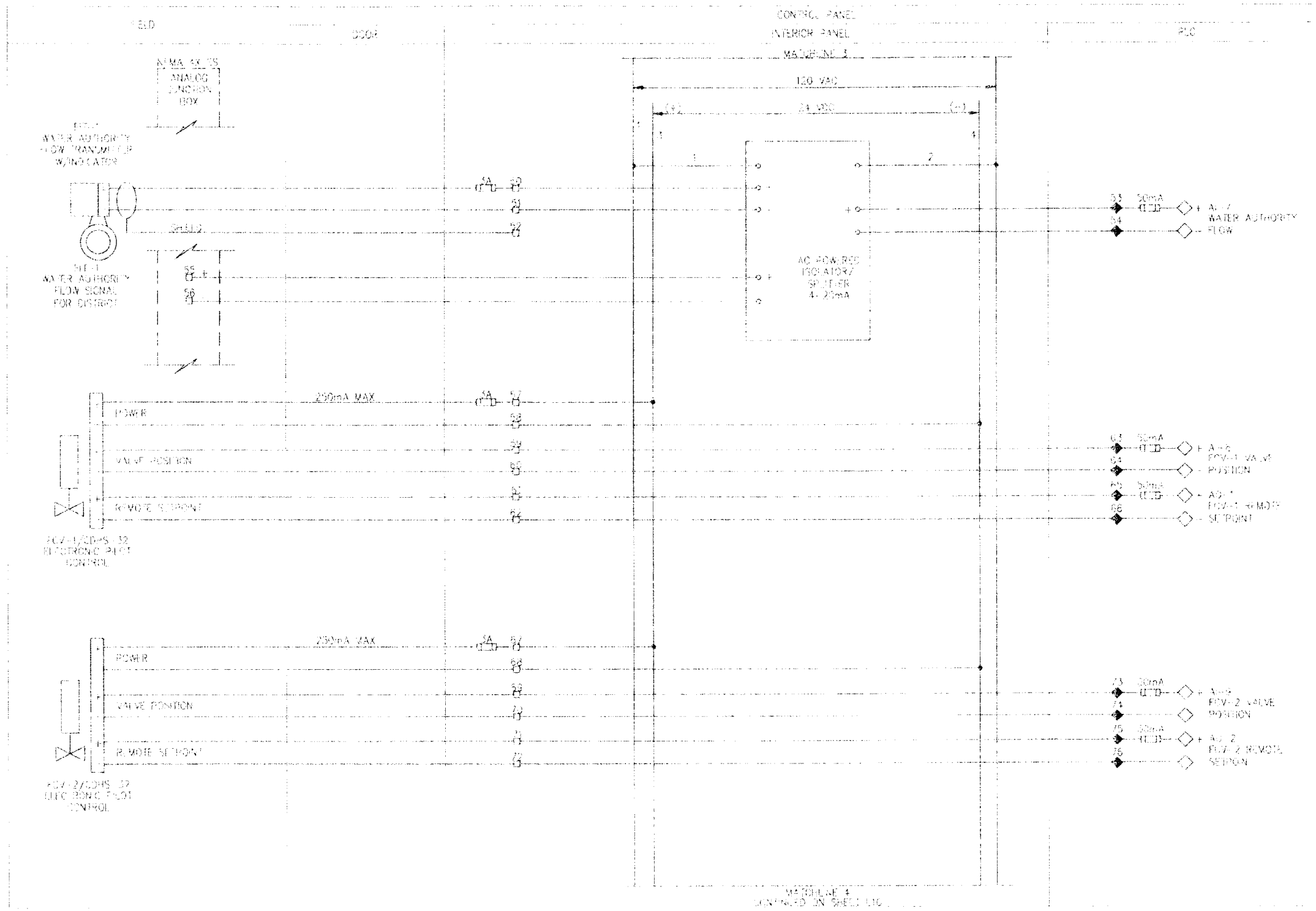
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PUBLIC WORKS AND ENGINEERING — ACCEPTED — 46694 — CITY ENGINEER — HOUSTON, TEXAS

2/23/10

L6

36 of 45



NOTES:

1. ALL VALVES FAIL CLOSE
2. DST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT DST'S AND TWO FUTURE DST'S WATCH SIGNAL SPLITTERS & DST SELECTOR SWITCH POLES TO DISTRICT'S ANTICIPATED ULTIMATE NUMBER OF DST'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

- 1/2 3A — FUSED TERMINAL BLOCK
- 3A 1B — FUSED TERMINAL BLOCK
- 25 — TERMINAL BLOCK
- PLC TERMINAL

STATE OF TEXAS — JAKE KINNEY — 1947 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	APPROV
1			
2			
3			
4			
5			
6			
7			
8			

BROWN & GAY ENGINEERS, INC.

Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 130, Houston, TX 77042
Tel: 281-558-3751 Fax: 281-558-2701
Civil engineers and surveyors
TBPE REGISTRATION NO. F-1018

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-1373
4420 White Road Houston, TX 77092 (713) 316-7098

CONTROL DIAGRAM
SHEET 7

NORTH FORT BEND WATER AUTHORITY

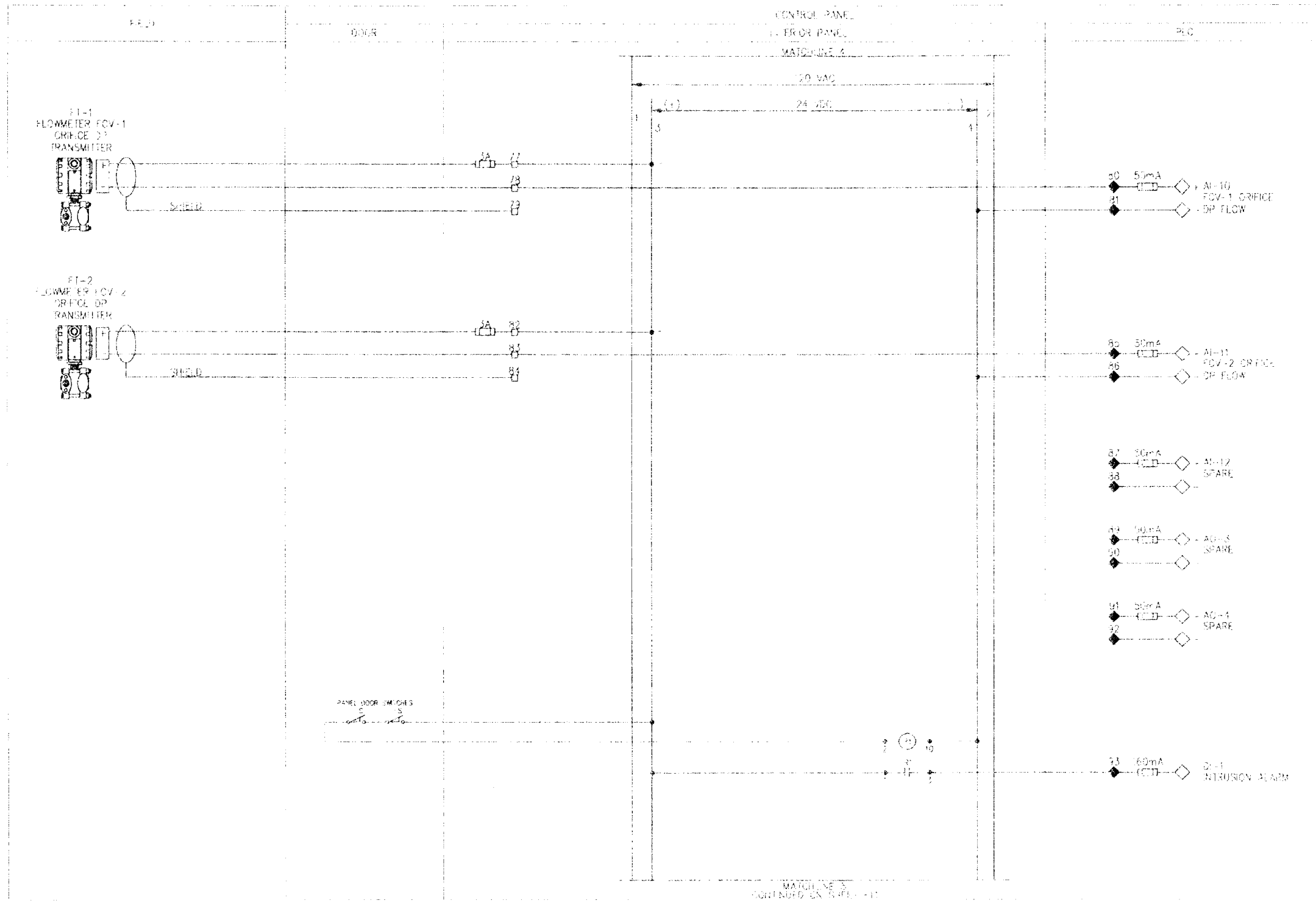
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Roots 2/4/10
W.E. Gaub 2-4-10
J. Dunn

PUBLIC WORKS AND ENGINEERING — ACCEPTED — 46694 — CITY ENGINEER — HOUSTON, TEXAS

REF. NO. 10

37 45



NOTES:

1. ALL VALVES FAIL CLOSE.
2. OST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT OSTs AND TWO FUTURE OSTs WITH SIGNAL SPLITTERS & OST SELECTOR SWITCH POLES TO DISTRICTS ANTICIPATED ULTIMATE NUMBER OF OSTs. 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 INSULATED 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
- TERMINAL BLOCK
- PLC TERMINAL

STATE OF TEXAS
MARK KINNEY
LICENSED
PROFESSIONAL ENGINEER
10/9/09

NO.	DATE	REVISION	APPROV

BROWN & GAY ENGINEERS, INC

Brown & Gay Engineers, Inc
1770 Gemini Blvd., Suite 400, Houston, TX 77058
Tel. 281-554-3290 Fax 281-532-4107
Civil Engineers and Surveyors
TBPE REGISTRATION NO. F-1046

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-375
6500 Gulf Fwy, Houston, TX 77036 (281) 926-7000

CONTROL DIAGRAM
SHEET 8

NORTH FORT BEND WATER AUTHORITY

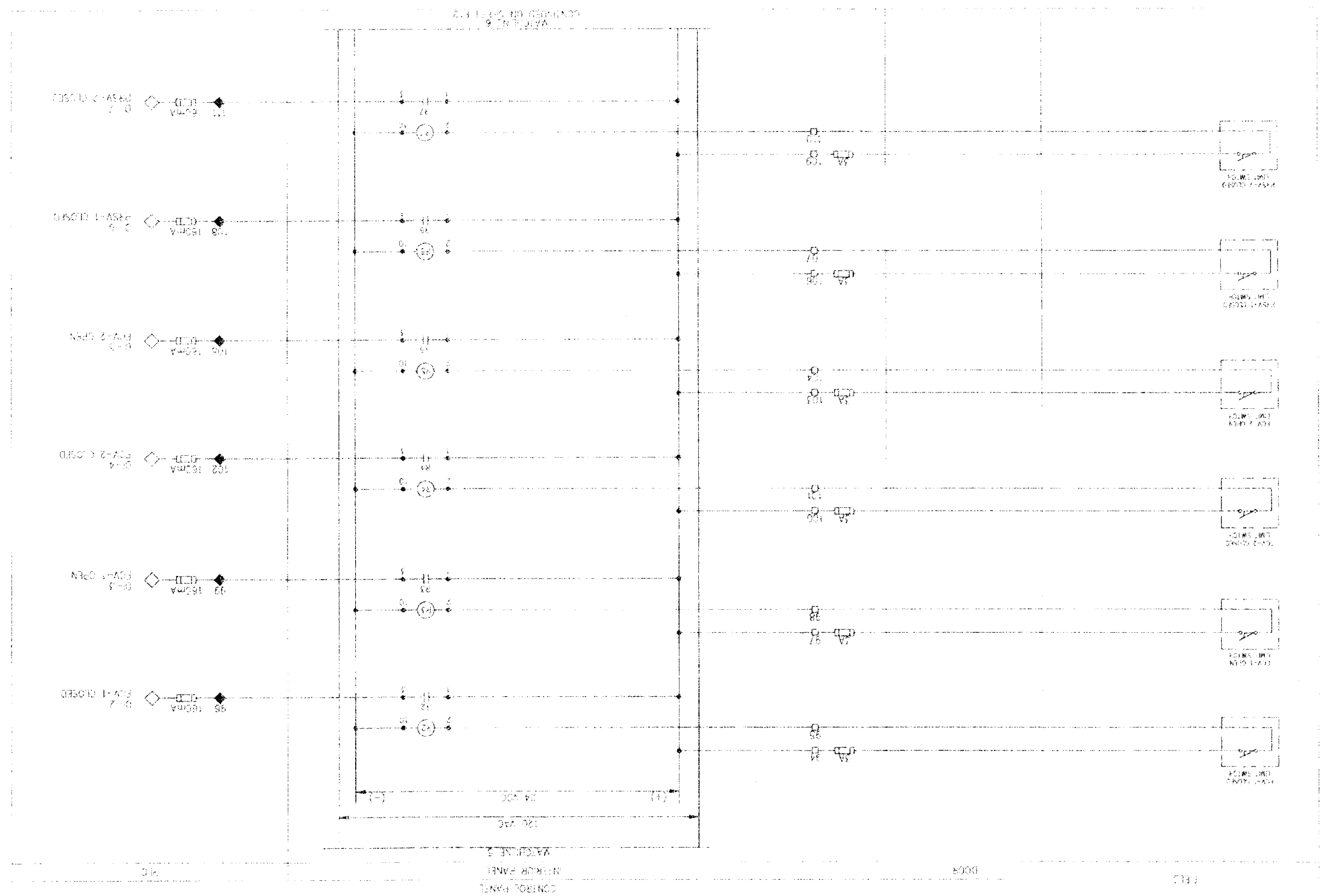
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Robert G. Gaul 2-24-10
W.H. Gaul 2-24-10
L. Del 2-24-10

PUBLIC WORKS AND ENGINEERING
ACCEPTED
46694
CITY ENGINEER
HOUSTON, TEXAS

2/23/10

38 - 45



NOTES:

1. ALL VALVES FAIL CLOSE.
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING SYNCH. GSTs AND TWO FUTURE GSTs MATCH SIGNAL OPTIONS GSTs TO STATE'S AUTHORIZED GST SELECTOR SWITCH PORTS
UL VALVE MANAGER OF GSTs REQUIRED FOR FUTURE TO BE FULLEST EXTENT POSSIBLE
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MANUAL CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASY FULL TERM WEATHERPROOF OF OPERATION & CALIBRATION. DURABILITY W/ SPECIE PRO-TECTION AGAINST OVERHEATING.

LEGEND

123 5A FUSED TERMINAL BLOCK
24 5A FUSED TERMINAL BLOCK
TERMINAL BLOCK
PLC TERMINAL

BROWN & GAY
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 1100 Houston, TX 77042
Tel: 281-558-8700 Fax: 281-558-5045
Civil/Structural/Mechanical/Electrical
Texas Registration No. F-1046

Brymcon, Inc.
Building Engineering
Texas Registration No. F-325
2400 Dallas Pkwy, Suite 270 Plano, TX 75093 (469) 361-7286

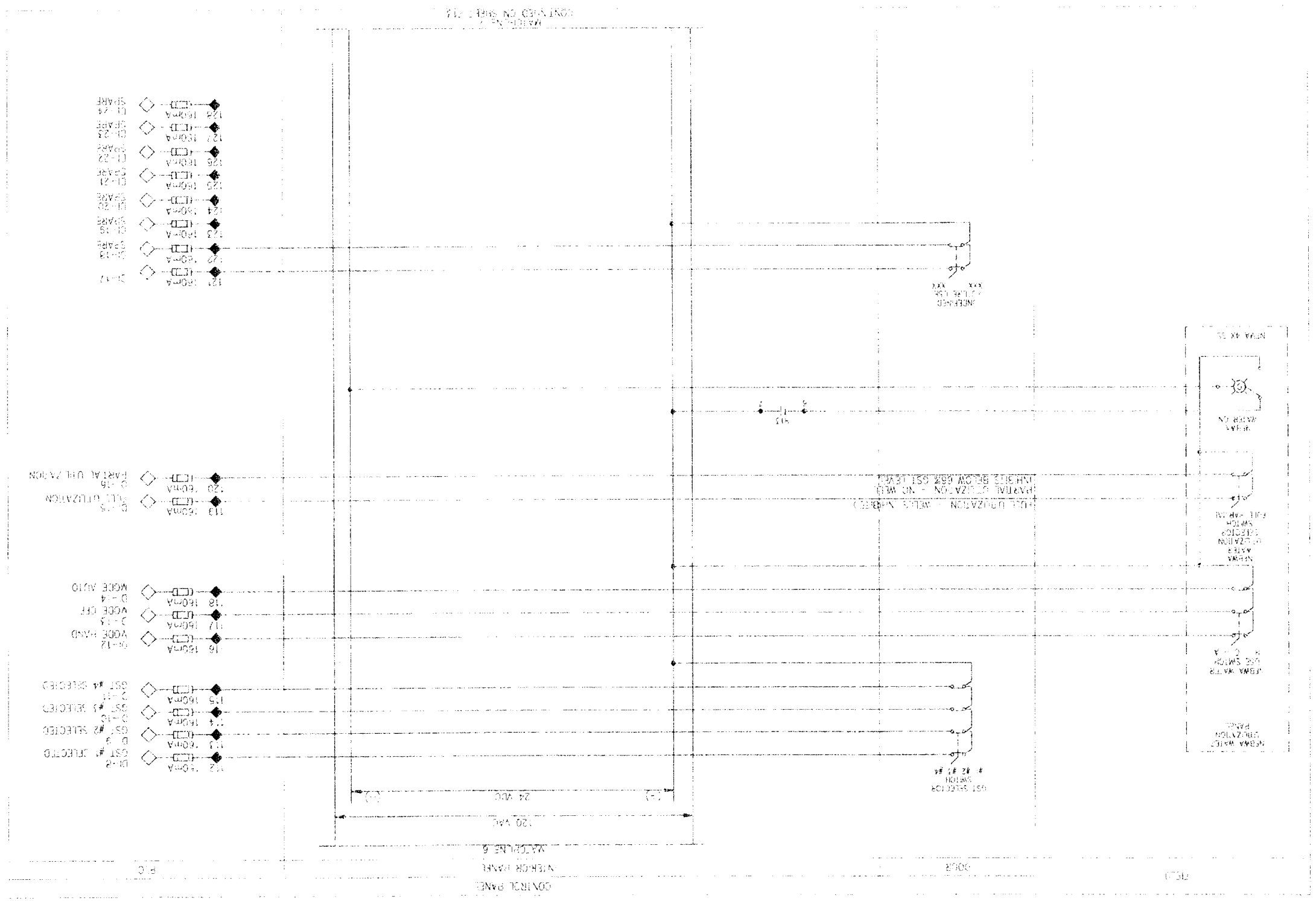
CONTROL DIAGRAM
SHEET 9

NORTH FORT BEND WATER AUTHORITY

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Approved
Approved-2-4-10
Approved-2-4-10

45 39

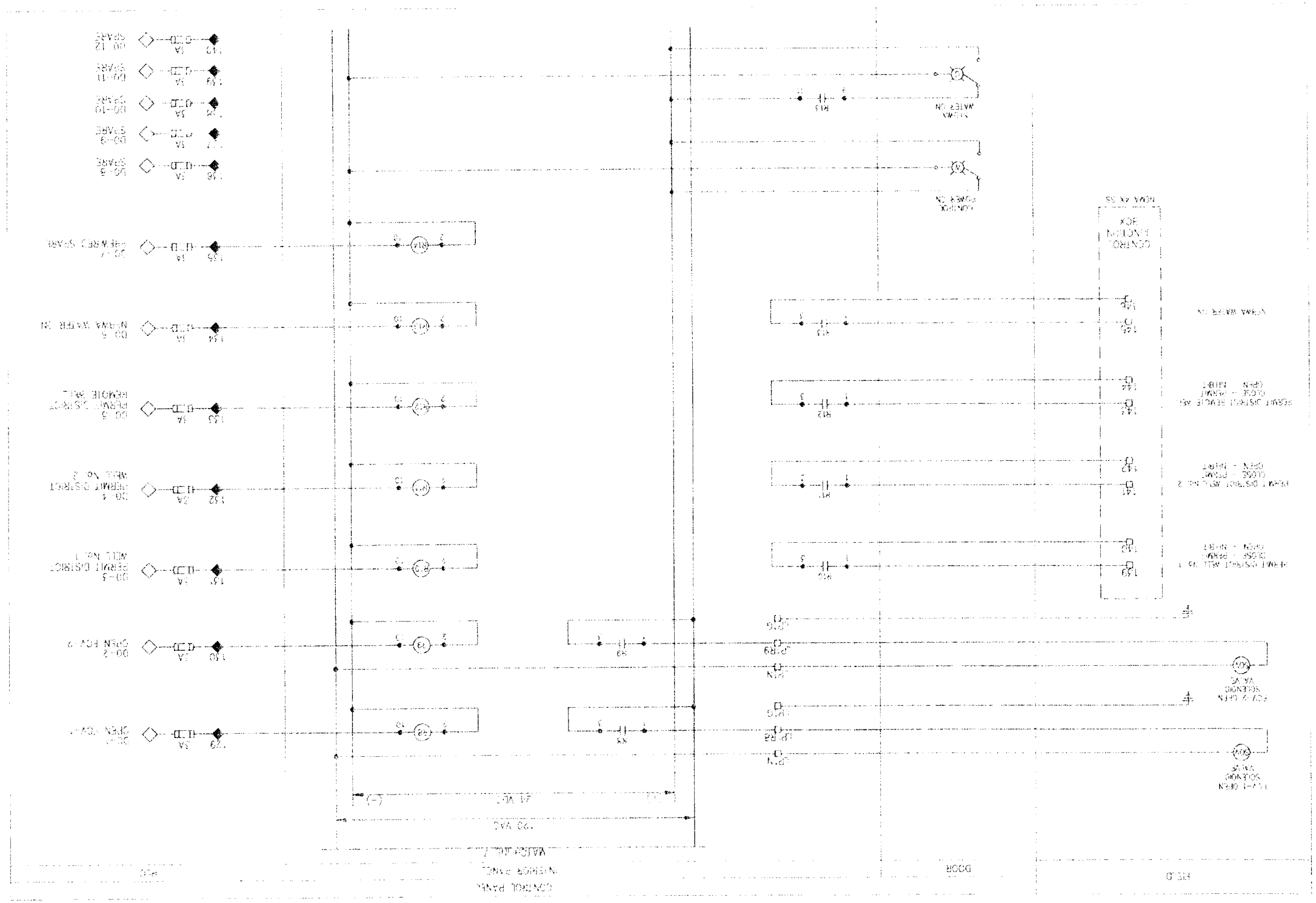

CONTROL PANEL
VENTOR PANEL
MAGNELINE 6
120 VAC
24 VDC
(-)
(+)
GST #1 SELECTED
GST #2 SELECTED
GST #3 SELECTED
GST #4 SELECTED
VODE HAND
VODE OFF
VODE AUTO
FUSED TERMINAL BLOCK
FUSED TERMINAL BLOCK
TERMINAL BLOCK
PLC SPARE
LEGEND
NORTH FORT BEND
CONTROL DIAGRAM
SHEET 10
Brymcon, Inc.
BROWN & GAY
CITY OF HOUSTON
NOTES:

NOTES:

1. ALL VALVES FAIL CLOSE.
2. GST COMMUNICATES SHOWN HERE ARE TWO EXISTING DISTRICT GSTS AND TWO FUTURE DISTRICT GSTS.
GST SUPPLY SWITCH POLES MATCH BOTH SPLITTERS & CLIMATE VIOLATE OF GSTS TO ASSIGNS ANTICIPATED SHOWER FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX WATTAN CONTRACTOR TO PROVIDE VALVE & TRANSMITTER INSULATION. NOT A FASHION TO ALLOW FAST ROC OR INSULATION BLANKETS OF OPERATION & CALIBRATION. DURABILITY W/ FREEZE PROTECTION TEMP MEASUREPROOF LONG TERM WATERPROOF FROM MID-OUT DEGRADATAG.

LEGEND:

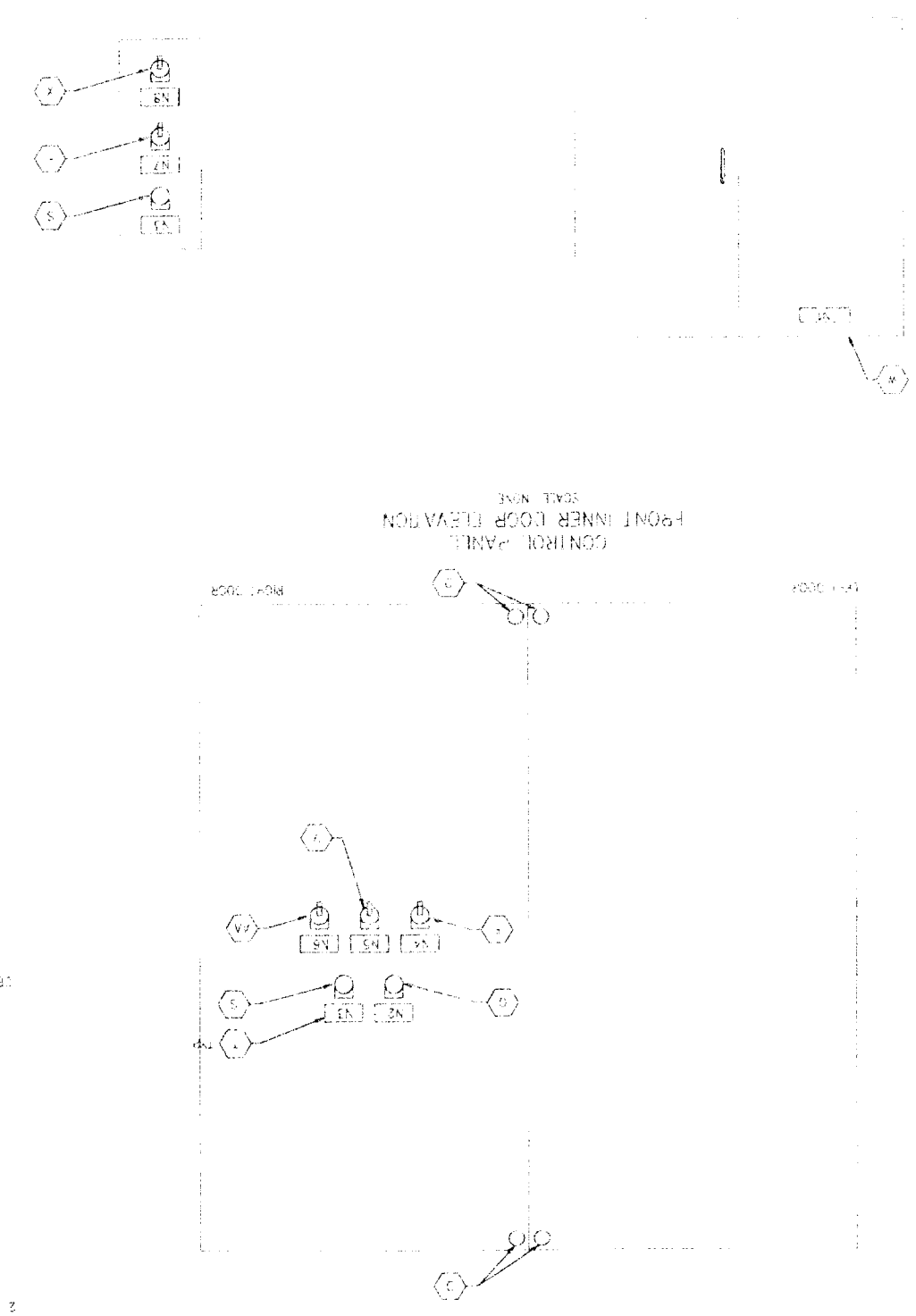
	FUSED TERMINAL BLOCK
	FUSED TERMINAL BLOCK
	TERMINAL BLOCK
	PLC TERMINAL



BROWN & CAV
Brown & Cay Engineers, Inc.
Bryncon, Inc.
CONTROL DIAGRAM
SHEET 11
NORTH FORT POND
WATER AUTHORITY
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
41 - 45
46694

EQUIPMENT & DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
1	1	PANEL BOARD, 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
2	2	200AMP SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
3	1	PANEL BOARD
4	1	1 PHASE 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
5	1	200AMP SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
6	1	5 HP PROTECTOR - MOUNTING POWER
7	1	2HP Contractor 4 POLE 120V 100VA MAINTAIN
8	1	5 HP PROTECTOR - MOUNTING POWER
9	1	40 AMP, 480V/240V, 3 PHASE, 4 WIRE, SOLENOID, MAGNETIC SOLENOID TYPE LEVEL SENSOR OPERATION
10	2	1 PHASE 480/240VAC, 120V 20A, 2 WIRE, SOLENOID, OFF TYPE
11	1	LIMITS FOR CONTROL 0 TO 120V 20A, 3 WIRE
12	1	PROGRAMMABLE LOGIC CONTROLLER, SPARKS STYLED
13	1	STOP - EATON
14	2	MOTOR TYPE 480-1 HEAVY DUTY ON 100HP MAT 20 MIN 25 AMP
15	2	HAND-OFF-AUTO SWITCH, HEAVY DUTY ON 1 SHT M/120V 20A RATING
16	1	120VAC - 24VDC POWER SUPPLY
17	4	OCCUPIED CLOSED PAPER DOOR CLOSURE
18	1	DAYMOSTAT
19	2	20AMP SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
20	1	PANEL BOARD, 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
21	1	100A SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
22	1	1 PHASE 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
23	1	100A SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
24	1	10 HP SPLIT SWITCH, HEAVY DUTY ON 1 SHT, 120 20A 20A RATING
25	1	1 PHASE 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
26	1	100A SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
27	1	10 HP SPLIT SWITCH, HEAVY DUTY ON 1 SHT, 120 20A 20A RATING
28	1	1 PHASE 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
29	1	100A SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
30	1	10 HP SPLIT SWITCH, HEAVY DUTY ON 1 SHT, 120 20A 20A RATING
31	1	1 PHASE 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
32	1	100A SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
33	1	10 HP SPLIT SWITCH, HEAVY DUTY ON 1 SHT, 120 20A 20A RATING
34	1	1 PHASE 120/240V 1 PHASE, 1 MPS, 100 A, 20 CKTS
35	1	100A SPLIT BUS/ISOLATED GROUND AND NEUTRAL BAR, 1200A MAIN BREAKER, 6 20-A INLETS, 480VAC, 63KA-SCCR OF POWER
36	1	10 HP SPLIT SWITCH, HEAVY DUTY ON 1 SHT, 120 20A 20A RATING



NAMEPLATE SCHEDULE

DESIGNATION	ENGRAVED
N1	NORTH FORT BEND WATER AUTHORITY
N2	PUMP ON
N3	NFRWA WATER ON
N4	FLOODLIGHT ON-OFF
N5	SET SLIDER
N6	SET SLIDER
N7	NFRWA WATER USE HIGH
N8	FILTER USE
N9	NFRWA WATER UTILIZATION
	SARTAL PLL

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE
2. PROVIDE UNF LOST SAMPSH PER EXTERIOR DOOR, MED N PARAMETER

BROWN & GAY
Brown & Gay Engineers, Inc.
17177 Westheimer Suite 150 Houston TX 77084
Civil Drainage and Surveys
TBPE REGISTRATION NO. F-1046

Brymcon, Inc.
Electrical Engineering
TBPE Registration No. F-1195
8700 Tesoro Drive - San Antonio, TX 78217 - (210) 826-2260

ELECTRICAL
CONTROL PANEL
LAYOUT & SPECIAL
DEVICE SCHEDULE

NORTH FORT BEND WATER AUTHORITY

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

42 45

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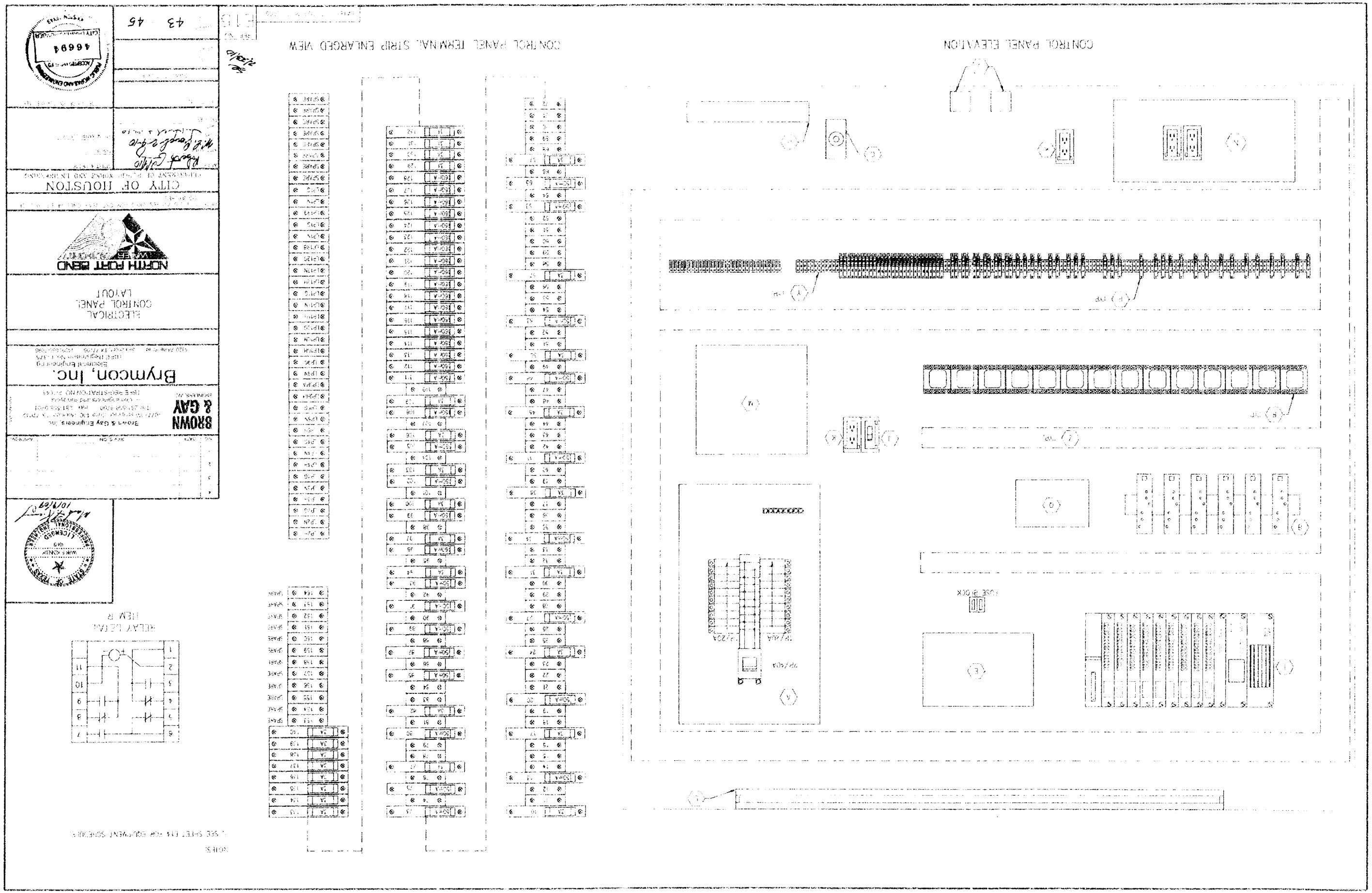
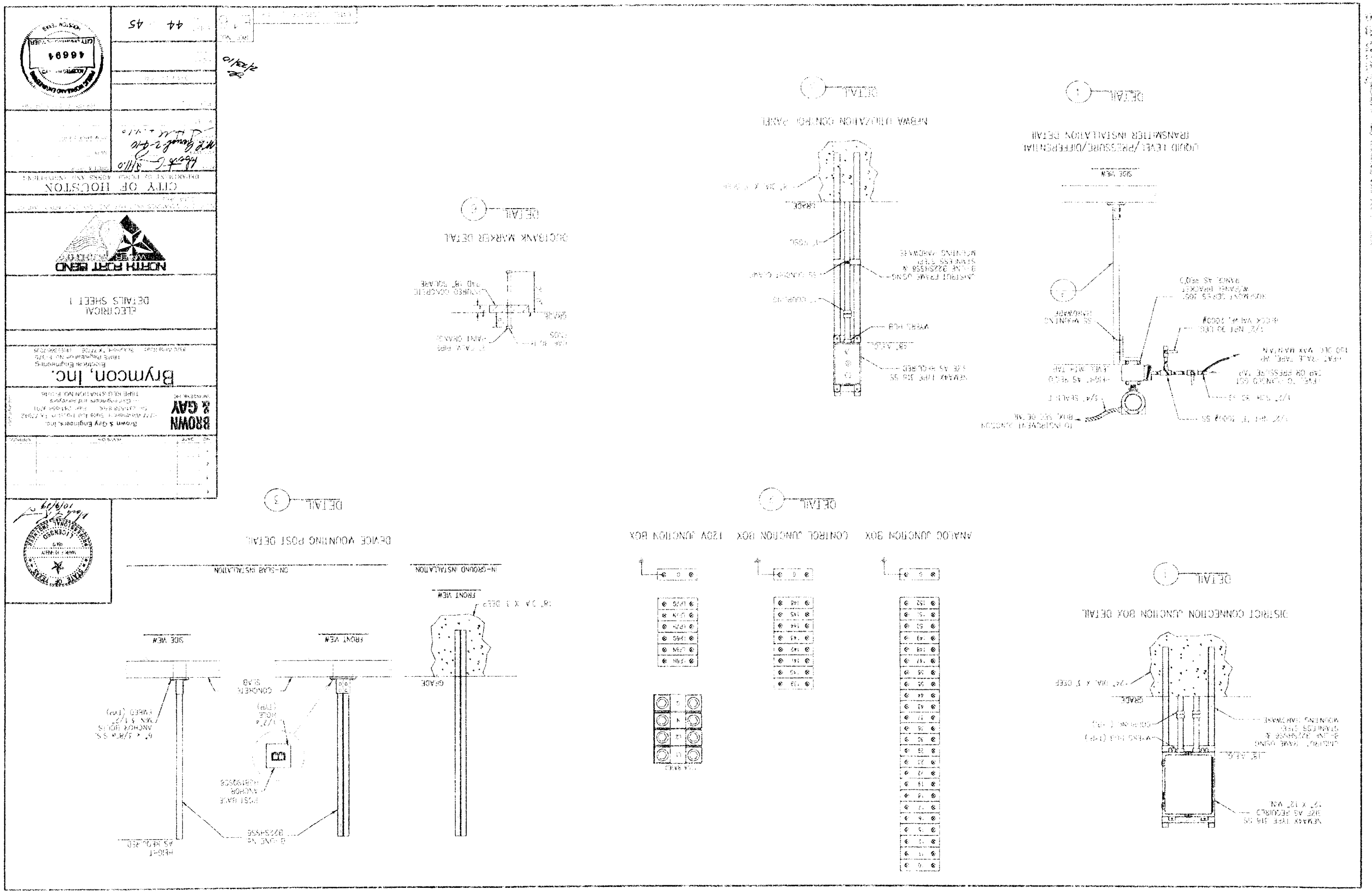
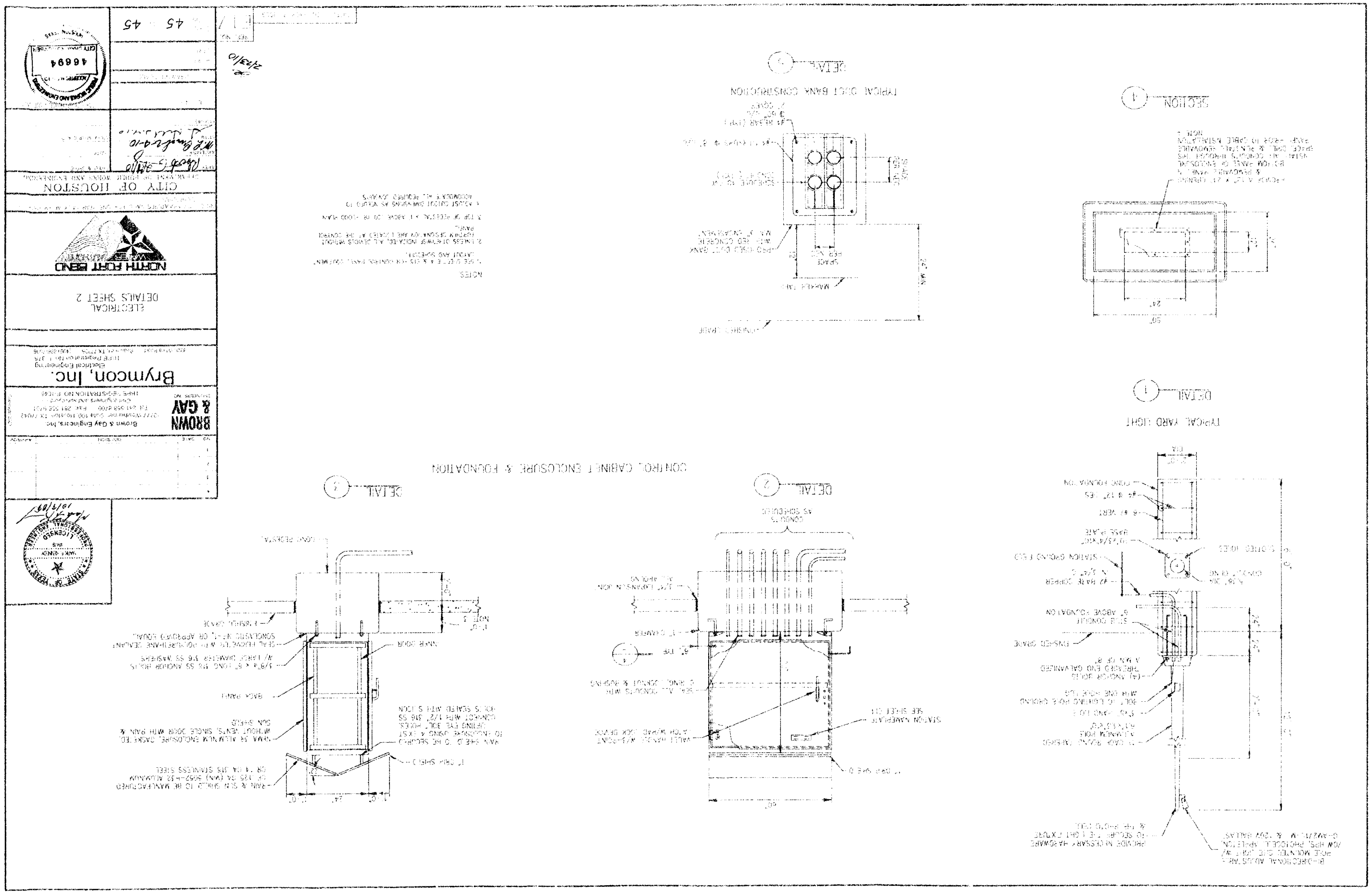

CONTROL PANEL ELEVATION
CONTROL PANEL TERMINAL STRIP ENLARGED VIEW
RELAY DETAIL
ITEM P
NOTES:
1. SEE SHEET E14 FOR EQUIPMENT SCHEDULE
BROWN & GAY
Brown & Gay Engineers, Inc.
Brymcon, Inc.
ELECTRICAL
CONTROL PANEL
LAYOUT
NORTH FORT MEND
CITY OF HOUSTON
43 45
46694


DETAIL 1
LIQUID LEVEL/PRESSURE/DIFFERENTIAL TRANSMITTER INSTALLATION DETAIL
SIDE VIEW
DETAIL 2
NEMA DILUTION CONTROL PANEL
DETAIL 3
DOCTRANK MARKER DETAIL
DETAIL 4
DISTRICT CONNECTION JUNCTION BOX DETAIL
DETAIL 5
DEVICE MOUNTING POST DETAIL
IN-GROUND INSTALLATION
ON-SLAB INSTALLATION
FRONT VIEW
SIDE VIEW
DETAIL 6
ANALOG JUNCTION BOX
CONTROL JUNCTION BOX
120V JUNCTION BOX
BROWN & CAY
Brymcon, Inc.
NORTH FORT LEGNO
ELECTRICAL DETAILS SHEET 1
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
44 45
46694


TYPICAL YARD LIGHT
DETAIL 1
TYPICAL DOCK BANK CONSTRUCTION
DETAIL 2
SECTION 1
CONTROL CABINET ENCLOSURE & FOUNDATION
DETAIL 3
DETAIL 4
NOTES
CITY OF HOUSTON
NORTH FORT BEND
ELECTRICAL
DETAILS SHEET 2
Brymcon, Inc.
Electrical Engineering
BROWN & GAY
Brown & Gay Engineers, Inc.
45 45