

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 04 day of JANUARY, 2011, before the Fort Bend Commissioners Court came on to be heard and reviewed the accompanying notice of D.L. ELLIOTT ENTERPRISES, INC.

Job Location McKASKLE, OLD RICHMOND, DORA LANE

Dated 12/17/10 BOND NO 6641787 Permit No. 83871
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 Statutes. Upon Motion of Commissioner Prestage, seconded by Commissioner Morrison, 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 Ronald P. Pancher
for County Engineer

By N/A
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.

Recorded in Volume 1-4-11
Minutes of Commissioners Court.

Clerk of Commissioners Court
By Mary Fisk
Deputy

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

AUTHORIZED
BOND NO 6641787

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND §

THAT WE, D.L. Elliott Enterprises, Inc. whose
address is 13405 SW Freeway, #210, Sugarland, TX 77478, Texas, hereinafter called the Principal,
and Safeco Insurance Company of America, a Corporation existing under and by virtue of
the laws of the State of Washington and authorized to do an indemnifying business in the State of
Texas, and whose principal office is located at Seattle, WA, whose
officer residing in the State of Texas, authorized to accept service in all suits and actions brought
within said State is Liberty Mutual Insurance Company, Att: Surety Claims Dept., 1001 4th Avenue #1700
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 One Hundred Five Thousand One
Dollars (\$ 105,167.50) current, lawful money of the United States of America, to be paid to said
Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, to which
payment well and truly to be made and done, we, the undersigned, bind ourselves and each of us,
our heirs, executors, administrators, successors, assigns, and legal representatives, jointly and
severally, by these presents.

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

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

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

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

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

EXECUTED this 16th day of December, 2010.

D.L. Elliott Enterprises, Inc.
PRINCIPAL

Darryl Elliott
BY Darryl Elliott, President

Safeco Insurance Company of America

SURETY

Kimberly J. Smith
BY Kimberly J. Smith
Attorney-In-Fact



POWER
OF ATTORNEY

Safeco Insurance Company of America
General Insurance Company of America
1001 4th Avenue
Suite 1700
Seattle, WA 98154

No. 12684

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

*****NANCY T. BERRY; STEVE BERRY; MORRIS D. PLAGENS, JR.; KIMBERLY J. SMITH; BARBARA A. BURCHAM;
Houston, Texas; CHUCK BLAIR; HELEN M. RUBIOLA; LETTIE TOVAR; San Antonio, Texas; SEAN SASSIN;
LISA WILLIAMS; Austin, Texas*****

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 21st day of March, 2009

Dexter R. Legg

Timothy A. Mikolajewski

Dexter R. Legg, Secretary

Timothy A. Mikolajewski, Vice President

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA**:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Dexter R. Legg, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 16th day of December, 2010



Dexter R. Legg

Dexter R. Legg, Secretary

Figure: 28 TAC §1.601(a)(3)

1 IMPORTANT NOTICE

To obtain information or make a complaint:

2 You may contact Home Office Surety at
1-206-473-3799

3 You may call (company)'s toll-free telephone
number for information or to make a complaint
at:

(800) 472-5357 Surety Option #7

4 You may also write to Liberty Mutual Surety
at:

1001 4th Avenue, Suite 1700
Seattle, WA 98154

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

(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) (company) (agent or the company)
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 información o para someter
una queja:

Usted puede contactar a servicio de la
oficina principal de Surety al: 1-206-473-3799

Usted puede llamar al número de teléfono
gratis de (company)'s para información o
para someter una queja al:

(800) 472-5357 Surety Opción De #7

Usted también puede escribir a Liberty
Mutual Surety

1001 4th Avenue, Suite 1700
Seattle, WA 98154

Puede comunicarse con el Departamento de
Seguros de Texas para obtener información
acerca de compañías, coberturas, derechos
o quejas al:

(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) (la
compañía) (agente o la compañía) primero. Si no
se resuelve la disputa, puede entonces
comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA:

Este aviso

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. 083871

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. 6641787
- Amount \$105,167.50
- Cashier's Check.
- No.
- Amount

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

 Precinct Engineer Acknowledgment Date

 Precinct Commissioner Acknowledgment Date

- (4)
- Drainage District Approval when applicable

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


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

12/17/2010
Date

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

APPLICANT'S JOB NO. 223
 PERMIT No. 83821 PCT. No. 3
 BOND No. 6641781

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

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

Road or Ditch Name	Distance & Direction From Nearest Intersection	Length of Crossing	Type of Construction Bored: Jacked: Driven: Cased
Mckaskle	30' E. of Old Richmond	46'	: : : ✓
Mckaskle	10' E. of Dora Ln	66'	✓ : : :

Along Roads and/or Drainage Ditches

Road or Ditch Name	Distance & Direction From Nearest Intersection	To	Distance
Old Richmond	40' S. to Mckaskle	Mckaskle	40'
Mckaskle	25 E.	Old Richmond	2575'
Dora Ln	5' E.	Mckaskle	300'

General Description

16" WL along Mckaskle Road

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

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

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

Violation of requirements shall constitute grounds for job shut down.

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

[Signature]
 (Signature)

NAME & TITLE Wayne Schroeder, V.P.
 (Please Print)

DATE _____

ADDRESS 13405 Southwest Freeway, #210
 (Street/P.O. Box)
Sugar Land Tx 77478
 City State Zip

TELEPHONE NO: 281-27838-4220
 (accessible 24 hrs/day, 7 days/week)

Does project
 comply with Fort
 Bend County
 Outdoor Lighting
 Ordinance?

Yes ()

No ()

**FORT BEND COUNTY ENGINEERING
PERMIT DEPARTMENT
CONSTRUCTION OF DRIVEWAYS AND CULVERTS ON COUNTY EASEMENTS AND RIGHT OF WAYS
COMMERCIAL PIPE PERMIT APPLICATION
P.O. BOX 1449 • 1124 BLUME ROAD
ROSENBERG, TX 77471
(Phone) 281-633-7502 or 7503 • (Fax) 281-342-7366**

APPLICANT INFORMATION

Application No. 83871
(County Use Only)

Applicant Name D.L. Elliott Enterprises, Inc.
Applicant Mailing Address 13405 Southwest Freeway, #210
City Sugar Land State Tx Zip 77478
Work Phone 281-277-4414 Daytime Phone 281-838-4220
Property Owner's Name FB MUD #119 C/O Brown + Gay Phone _____
Property Owner's Mailing Address 10777 Westheimer Rd, Suite 400
City Houston State Tx Zip 77042

LOCATION OF PROPERTY

Subdivision Restricted Reserve B Sec _____ Lot _____ Blk _____
Physical Address 15050 Malasko, Sugar Land, Tx 77498

(ATTACH A SITE MAP)

SITE USE

Driveway Curb & Gutter Section _____ Driveway - Open Ditch Section 1
Culvert Only _____

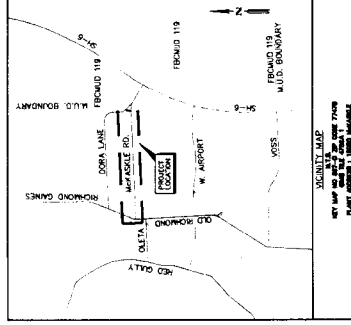
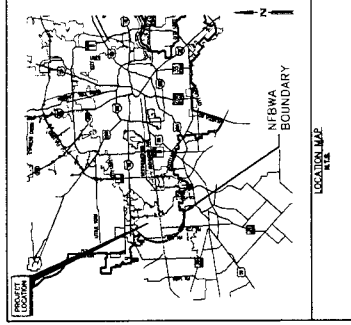
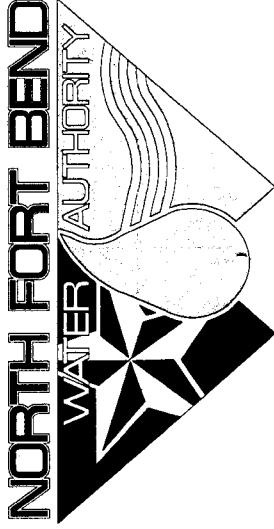
DRIVEWAY REQUIREMENTS

Length 20' minimum and 40' maximum Number of drives 1
(See - Fort Bend County Procedures to be followed for Commercial Driveway, and Median Openings or Modifications)
Available on website www.co-fort-bend.tx.us

Does project comply with Fort Bend County Lighting Regulation Yes (✓) No ()
(See- Fort Bend County Outdoor Lighting Regulation on website www.co.fort-bend.tx.us)

- By signing and submitting this permit application, I am stating that I am the owner of this property and I am aware of and agree to abide by the Fort Bend County Regulations of Subdivisions and I am aware of Section 2, Item F in the Permits for the Construction of Driveways & Culverts on County Easements and Right of Ways in Fort Bend County, and am responsible to obtain all other required permits associated with the above mentioned property. Driveway and Pipe Permits shall provide that construction pursuant to the permit will be commenced within six months and be completed within nine months from the date of the permit and that fees collected for said permits shall not be refundable or transferable. I further understand the permit fee, in the form of CASH or PERSONAL CHECK or COMPANY CHECK or a CASHIERS CHECK or MONEY ORDER payable to FORT BEND COUNTY, must be attached.
- The undersigned applicant, agent or attorney hereby certifies to Commissioners' Court to be strictly bound to Commissioners' Court to construct the driveway and/or culvert in strict conformity with the plans, specifications, terms, provisions and conditions of the permit and any other written material incorporated by reference in this application.
- Other permits may be required for development. Please contact the Fort Bend County Road & Bridge Department for pipe sizing or the Fort Bend County Health Department for information on On-Site Sewage Facility permits prior to planning construction.
- Failure to possess or obtain required permits will result in legal action against the property owner as allowed by law.


Signature of Applicant, Agent or Attorney _____ Date _____
Duwayne Schroeder
Printed Name _____



APPROVED
FORT BEND COUNTY

Mr. Jesse Hegemier
DATE: 4/18/10
FORT BEND COUNTY ENGINEER
D. JESSE HEGEMIER

DIRECTORS

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

PRECINCT No.

1 2 3 4 5 6 7

ETJ
Flood Notes

FIRM
FLOOD INSURANCE RATE MAP
PANEL (48157C0120 J) OF (550)
MAP#

I SAIB Y. SAOUR, P.E., CERTIFY THAT THIS PROJECT IS ENTIRELY LOCATED OUTSIDE THE AREA WITH A 100 YEAR FLOOD FREQUENCY.

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

Note:

1. Prior to the construction of these facilities within or by the District, the District or its Engineer will give written notice by Registered or Certified Mail to the Director of Public Works and Engineering, City of Houston, stating the date such construction will begin.
2. No drainage proposed in this plan set.
3. No known proposed wastewater work shown or involved.

MARCH, 2010

ILMS NO: 09059637
LOG NO: 09-0509

SHEET
No: 1 OF 66

 **BENCHMARK ENGINEERING CORPORATION**
Consulting Engineers-Planners-Surveyors
2401 Fountaintree Suite 500
Houston, Texas 77057 U.S.A.
(713) 266-9930 Fax (713) 266-3804
INX 1/84 M P. 676



March 15, 2010

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	2.0	+	3/25/10	TRAFFIC & TRANSPORTATION
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WASTEWATER	3-25-2020	STORM WATER QUALITY
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STORM	Windy & rain	FACILITIES
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CITY ENGINEER	FOR CITY OF HOUSTON USE ONLY CITY DWG NO. _____
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Director of Public Works and Engineering

SHEET 1 OF 66
No:
CITY ENGINEERING

CITY ENGINEERS NUMBER
48330
BOSTON

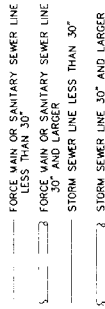
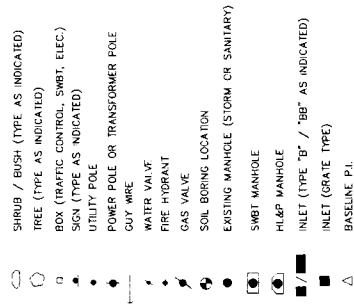
SHEET INDEX		
REF. NO.	DWG. NAME	
1	COVER SHEET	
2	SHEET INDEX	
3	GENERAL CONSTRUCTION NOTES	
4	LEGEND AND ABBREVIATIONS	
5	OVERALL WATER LINE LAYOUT	
6	SURVEY CONTROL MAP	
7	OLD RICHMOND ROAD STA. 0+00 TO 2+00	
8	McKASKLE ROAD STA. 0+00 TO 5+00	
9	McKASKLE ROAD STA. 5+00 TO 10+00	
10	McKASKLE ROAD STA. 10+00 TO 15+00	
11	McKASKLE ROAD STA. 15+00 TO 20+00	
12	McKASKLE ROAD STA. 20+00 TO 25+00	
13	McKASKLE ROAD STA. 25+00 TO 30+00	
14	DORA LANE STA. 0+00 TO 3+00	
15	STORM WATER POLLUTION PREVENTION PLAN AND TREE PROTECTION PLAN	
16	STANDARD STORM WATER POLLUTION PREVENTION PLAN DETAILS	
17	PROJECT SIGN AND GATE DETAIL	
18	STANDARD WATER LINE DETAILS	
19	STEEL PIPE DETAILS	
20	PRESTRESSED CONCRETE CYLINDER PIPE DETAILS	
21	TRENCHLESS CONSTRUCTION DETAILS	
22	AIR VALVE IN SERVICE MANHOLE DETAILS	
23	VALVE AND VENT PIPING AND SERVICE MANHOLE DETAILS	
24	HEAVY DUTY MANHOLE DETAILS	
25	EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS	
26	METER STATION LAYOUT	
27	CONTROL VALVE STATION LAYOUT	
28	METER AND CONTROL VALVE STATION STRUCTURAL AND MECHANICAL DETAILS	
29	TREE PROTECTION DETAILS	
30	METER AND CONTROL VALVE STATION INSTALLATION & ROUTING	
31	ELECTRICAL CONDUIT SCHEDULE	
32	CONTROL DIAGRAM SHEET 1	
33	CONTROL DIAGRAM SHEET 2	
34	CONTROL DIAGRAM SHEET 3	
35	CONTROL DIAGRAM SHEET 4	
36	CONTROL DIAGRAM SHEET 5	
37	CONTROL DIAGRAM SHEET 6	
38	CONTROL DIAGRAM SHEET 7	
39	CONTROL DIAGRAM SHEET 8	
40	CONTROL DIAGRAM SHEET 9	
41	CONTROL DIAGRAM SHEET 10	
42	CONTROL DIAGRAM SHEET 11	
43	ELECTRICAL CONTROL PANEL LAYOUT & SPECIAL DEVICE SCHEDULE	
44	ELECTRICAL CONTROL PANEL LAYOUT	
45	ELECTRICAL DETAILS SHEET 1	
46	ELECTRICAL DETAILS SHEET 2	
47	CATHODIC PROTECTION SCHEDULES	
48	CATHODIC PROTECTION TEST STATION DETAILS 1 OF 4	
49	CATHODIC PROTECTION TEST STATION DETAILS 2 OF 4	
50	CATHODIC PROTECTION TEST STATION DETAILS 3 OF 4	
51	CATHODIC PROTECTION TEST STATION DETAILS 4 OF 4	
52	CATHODIC PROTECTION RECTIFIER STATION DETAILS 1 OF 2	
53	CATHODIC PROTECTION RECTIFIER STATION DETAILS 2 OF 2	
54	CATHODIC PROTECTION INSULATION JOINT DETAILS	
55	CATHODIC PROTECTION JOINT BONDING	
56	CATHODIC PROTECTION MISCELLANEOUS DETAILS 1 OF 2	
57	CATHODIC PROTECTION MISCELLANEOUS DETAILS 2 OF 2	
58	TRAFFIC CONTROL PLAN	
59	TRAFFIC CONTROL PLAN DETAILS	
60	TRAFFIC CONTROL PLAN	
61	TRAFFIC CONTROL PLAN TCI(1-1) 98	
62	TRAFFIC CONTROL PLAN TCI(1-2) 98	
63	TRAFFIC CONTROL PLAN TCI(1-4) 98	
64	TRAFFIC CONTROL PLAN TCI(2-1) 98	
65	TRAFFIC CONTROL PLAN TCI(2-2) 98	
66	TRAFFIC CONTROL PLAN TCI(2-4) 03	

 TEXAS BOARD OF PROFESSIONAL ENGINEERS BENCHMARK ENGINEERING CORPORATION 10000 N. FORT BEND HOUSTON, TEXAS 77060-1000	 BENCHMARK ENGINEERING CORPORATION Consulting Engineers-Planners-Surveyors 401 Riverchase Drive, Suite 300 Houston, Texas 77060-1000 (713) 968-9800 Fax (713) 968-1004 TOLL FREE 1-877-678-9750	<table><tr><td>4</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>NO.</td><td>DATE</td><td>REVISION</td><td>APPROVED</td><td colspan="2"></td></tr></table>	4						3						2						1						NO.	DATE	REVISION	APPROVED			<table><tr><td colspan="2">FBCMUD No. 119 CONNECTION</td></tr><tr><td colspan="2">PROPOSED 16" WATER LINE ALONG</td></tr><tr><td colspan="2">McKASKIEF ROAD TO FBCMUD No.119</td></tr><tr><td colspan="2">WATER PLANT</td></tr></table>	FBCMUD No. 119 CONNECTION		PROPOSED 16" WATER LINE ALONG		McKASKIEF ROAD TO FBCMUD No.119		WATER PLANT			NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURE CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING STREET & BRIDGE TENTATIVE PROJECT: 119-10 DATE: 3-15-10 DRAWN BY: J. Smith CHECKED BY: J. Smith FILE NO. 032570 DRAWING SCALE HORZ. N.T.S. VERT. N.T.S. FOR CITY OF HOUSTON USE ONLY  SHEET No. 2 OF 66
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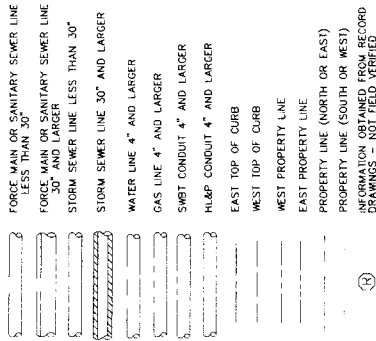
2-12-10
4/6/10

EXISTING LEGEND

PLAN

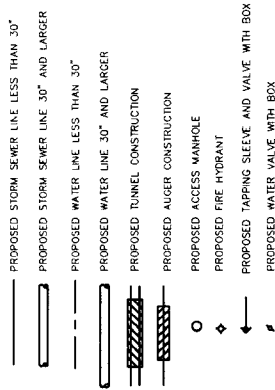


PROFILE

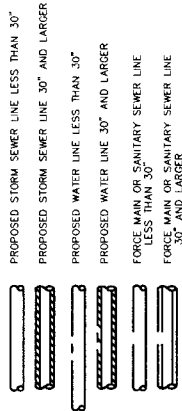


PROPOSED LEGEND

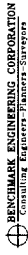
PLAN



PROFILE



ABBREVIATIONS

[illegible]

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

**FBCMUD No. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FBCMUD No.119
WATER PLANT**

LEGEND AND ABBREVIATIONS



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

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

JONES & BROS.

571

100

FROM WATER QUALITY

0-0000-0000-0000-0000

FOR CITY OF HO

10

35



4/16/16





A 3/8-INCH IRON ROD WITH A FORT BEND WATER AUTHORITY ALUMINUM CAP SET AT THE NORTHEAST CORNER OF THE INTERSECTION OF OLD RICHMOND ROAD AND MEKASKLE ROAD, 10.6 FEET NORTHEAST OF A POWER POLE. ELEV.=84.47 (NAVD 1988, 2002 ADJUSTMENT)

Date: 4/6/10
 Carpenters Energy/ Electric Facilities: (approved only
 for crossing underground ductlines, unless otherwise noted)
 Valid At Time of Review Only

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

Date: _____

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

CALL AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET ROW, OR EASEMENTS
CALL LONG STAR NOTIFICATION CENTER, (713) 223-4587 OR
1-800-669-8344
TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED. CALL CENTERPOINT

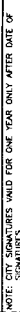


 **Consulting Engineers-Planners-Surveyors**
2401 Fourtaintview Suite 500
Houston, Texas 77057 U.S.A.
(713)266-9930 Fax (713)266-5004
1307 515th Ave. E. 6788

[illegible]

PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FBCMUD No.119
WATER PLANT

STA. 0+00 TO 5+00



WATER	3/25/10	STREET & BRIDGE
WASTEWATER	3-25-10	TRAFFIC

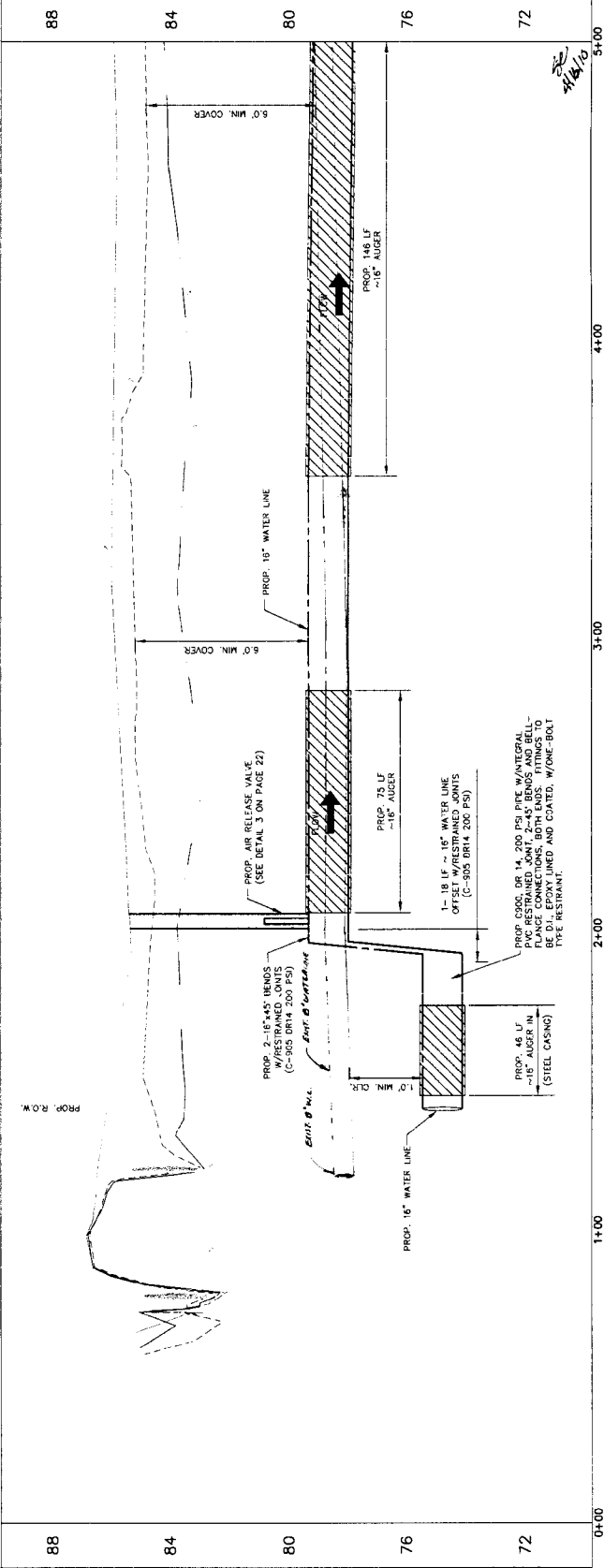
FILE NO:	632570
FOR CITY OF HOUSTON USE ONLY	

DRAWING SCALE

HORIZ : 1" = 20'

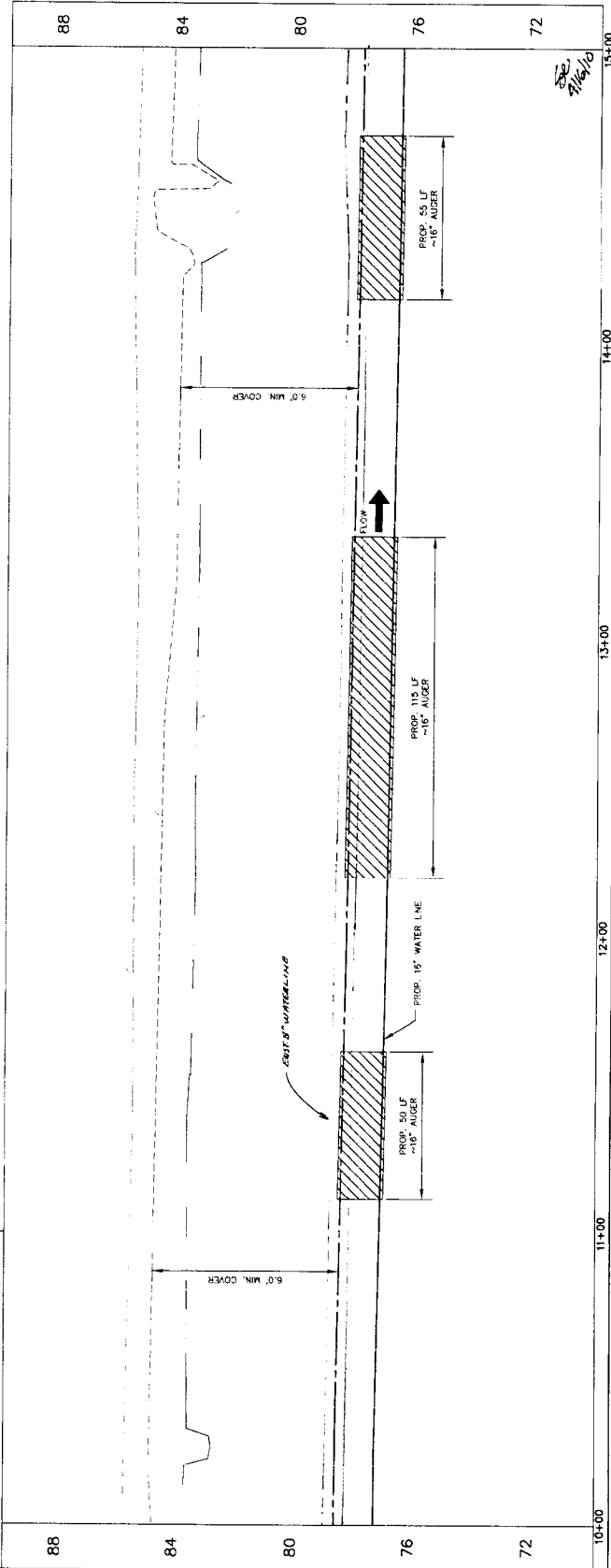
SHEET NO: 8 OF 66

CITY UNIVERSITY LIBRARY
OCT 10 1966



NOTE:
1. BRACE AND SUPPORT EXISTING POWER POLES AND/OR RELOCATE GUY WIRES AS

LAST MODIFIED: Mon 11, 2010 - 11:27am
 DRG LOCATION: L:\5084-05\Drug\pdrfz\
 DRG NAME: (S) MCOLAHL 04-00 to 3-00.dmg
 BT US2X mmdmz



LAST MODIFIED: Mar 11, 2010 - 11:20am BY USER: mmanish
ORG LOCATION: L:\83064-05\0-gg-janet\
ORG NAME: (10) Mammals vL 10+CD to 15+CD.org



STATE OF TEXAS
SAB YACOB SAGUR
40094
REGISTERED
INTER

TEXAS BOARD OF PROFESSIONAL ENGINEERS
BENCHMARK ENGINEERING CORPORATION
REGISTRATION NUMBER F-6788

BENCHMARK ENGINEERING CORPORATION
Consulting Engineers—Planners—Surveyors
2401 Fourteenth Suite 400
Houston, Texas 77087 U.S.A.
(713) 266-9950 Fax (713) 266-3604

NO.	DATE	REASON	APPROV
4			
3			
2			
1			

FBCMUD No. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FBCMUD No.119
WATER PLANT

MCKASKLE ROAD
STA. 20+00 TO 25+00



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	Robert G	3/25/10	STREET & BRIDGE
WASTEWATER	Robert G	3-25-10	TRAFFIC

STORM	11-25-10	ALUMINUM WATER ANALYSIS
11/24/2010		

FACILITIES	032570
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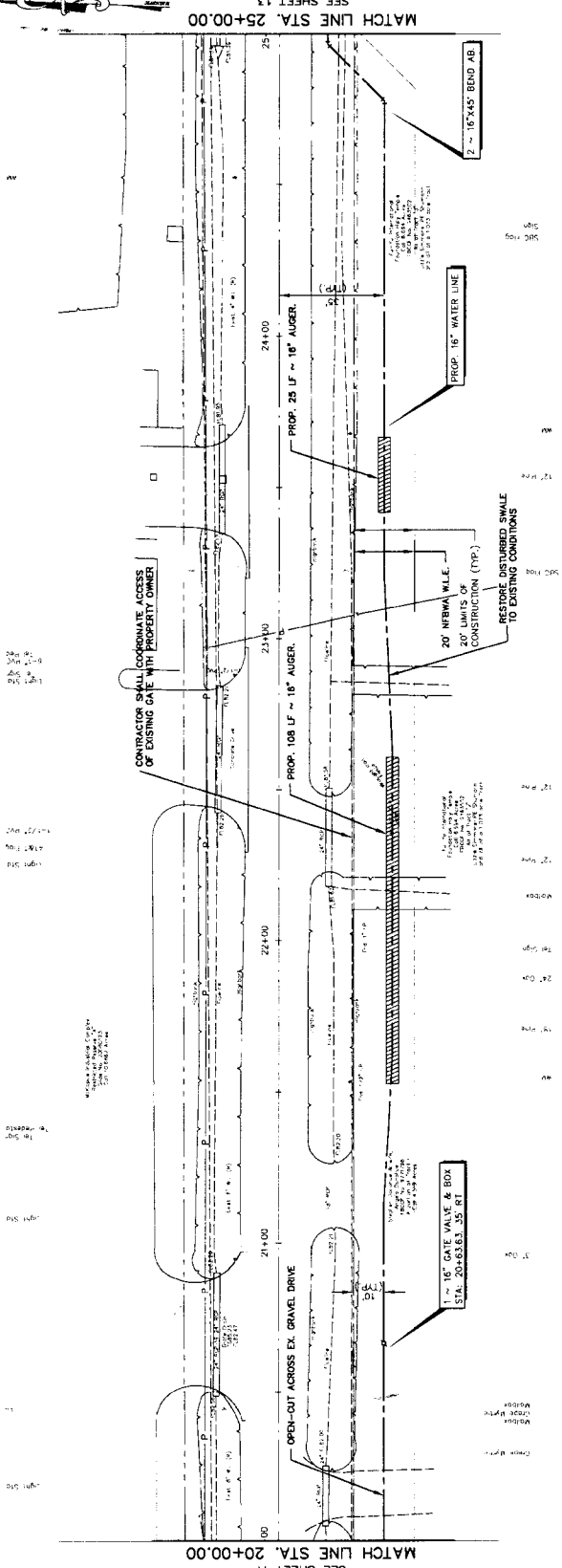
FILE NO: PP-01.DWG

DRAWING SCALE	

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

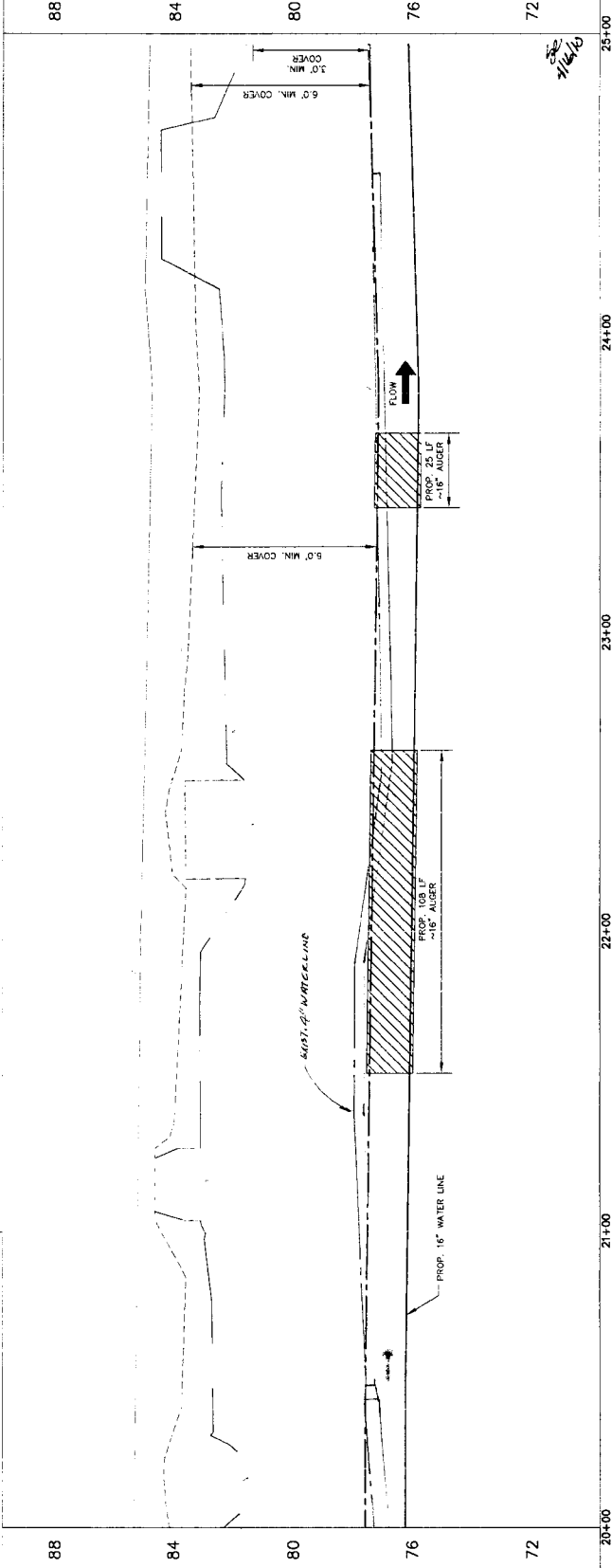
SHEET 12 OF 66

NO.	DATE	DESCRIPTION	AMOUNT
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3	10/3/19	10/3/19	10/3/19
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5	10/5/19	10/5/19	10/5/19
6	10/6/19	10/6/19	10/6/19
7	10/7/19	10/7/19	10/7/19
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73	12/12/19	12/	

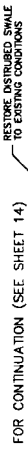


McKASKLE ROAD

NOTE:
1. BRACE AND SUPPORT EXISTING POWER POLES AND/OR RELOCATE GUY WIRES AS



LAST MODIFIED: Mar 11, 2010 - 11:18am
 BT US2C, mirrored
 DIR. LOCATION: L:\85064-05\Dir\Public\
 DIR. NAME: (12) Williams Rd 20+00 to 25+00.dwg



NOTE:
1. BRACE AND SUPPORT EXISTING POWER POLES AND/OR RELOCATE GUY WIRES AS

McKASKLE ROAD

4		
3		
2		
1		
NO	DATE	REVISION
		APPROV.

+ BCMUD No. 119 CONNECTION

PROPOSED 16" WATER LINE ALONG
MCKASKLE ROAD TO FBGMUD No.119
WATER PLANT

McKASKLE ROAD
STA. 25+00 TO 30+00



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

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
WATER at 325710 STREET & BRIDGE

WASTEWATER	TRAFFIC
18000 3-25-78	
40000 3-25-78	

STORM	3.25-1.0	STORM WATER QUANTITY
FACILITIES	11/1	

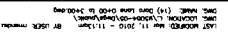
FILE NO:	8662 032310
FOR CITY OF HOUSTON USE ONLY	

DRAWING SCALE	
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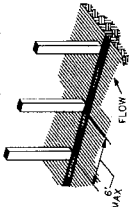
HORZ : 1" = 20'

VERT : 1" = 2'

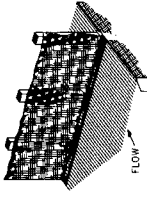
SHEET No: 13 OF 66



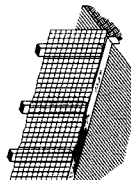
1. SET POSTS AND ENCASE 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES (SEE NOTE 1).



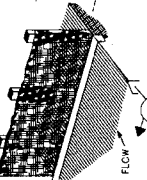
3. ATTACH FILTER MATERIAL TO WIRE FENCE AND EXTEND IT INTO THE TRENCH (SEE NOTE 3).



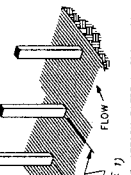
2. SECURE WIRE FENCING TO POSTS (SEE NOTE 2).



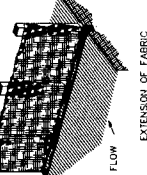
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



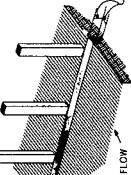
1. SET POSTS AT REQUIRED SPACING.



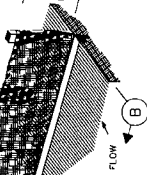
3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.



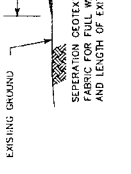
2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



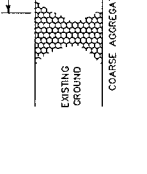
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



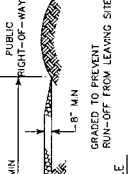
1. SET POSTS AT REQUIRED SPACING.



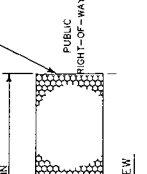
3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.



2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



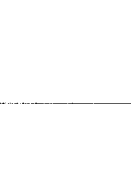
1. SET POSTS AT REQUIRED SPACING.



3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.



2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



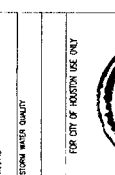
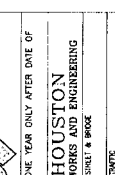
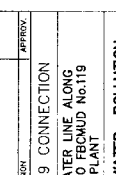
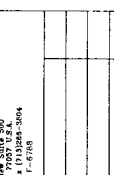
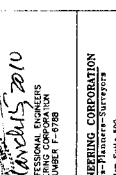
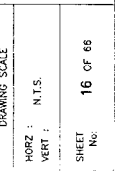
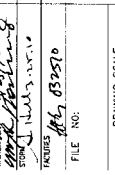
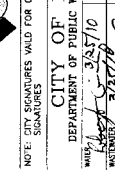
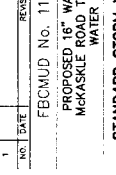
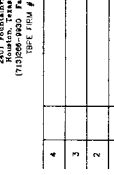
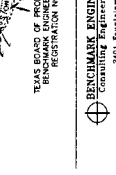
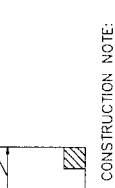
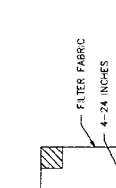
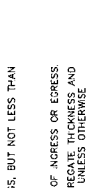
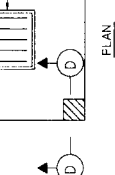
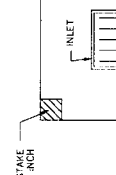
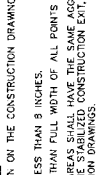
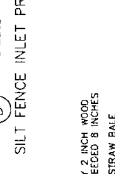
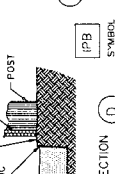
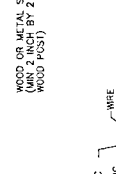
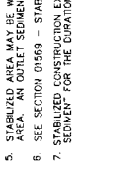
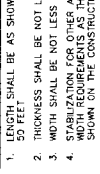
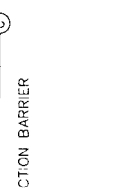
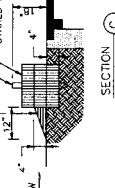
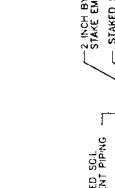
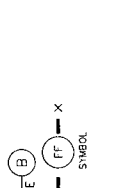
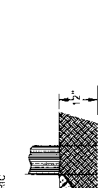
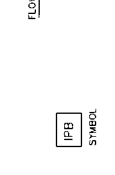
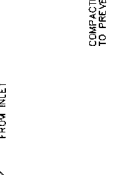
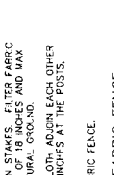
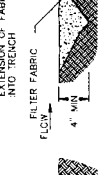
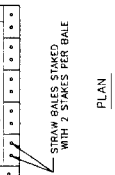
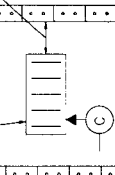
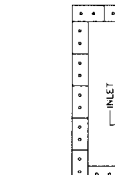
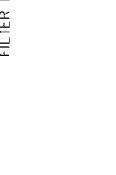
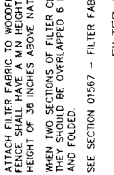
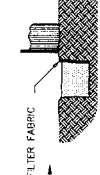
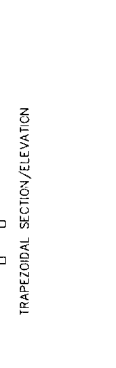
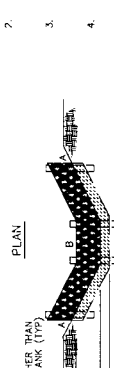
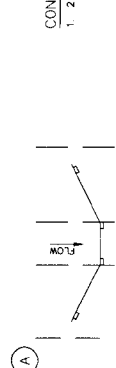
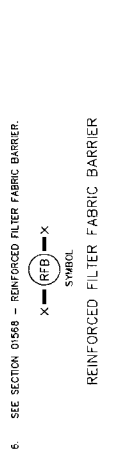
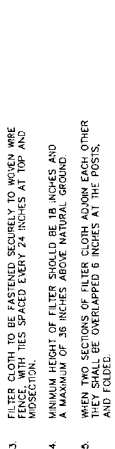
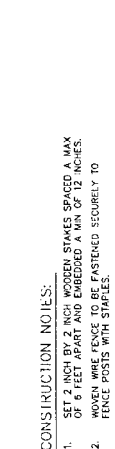
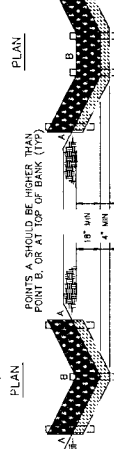
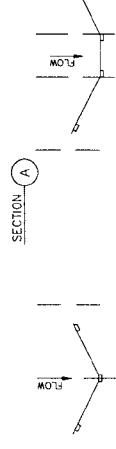
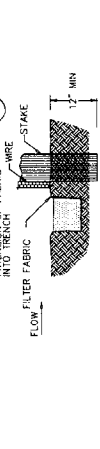
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

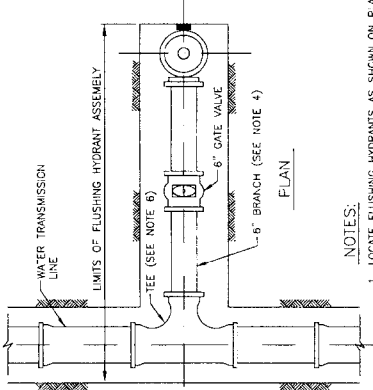
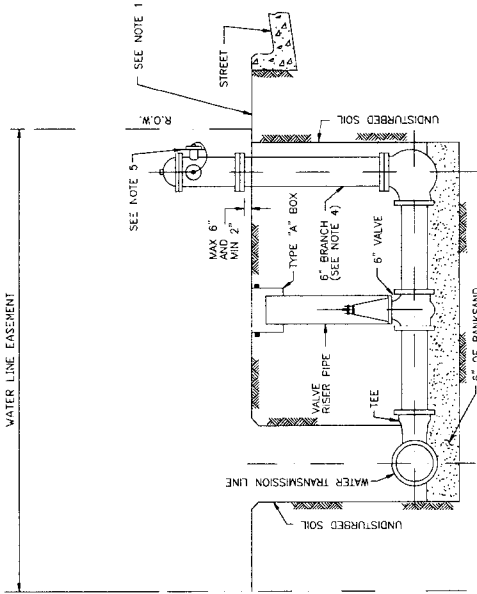


1. SET POSTS AT REQUIRED SPACING.



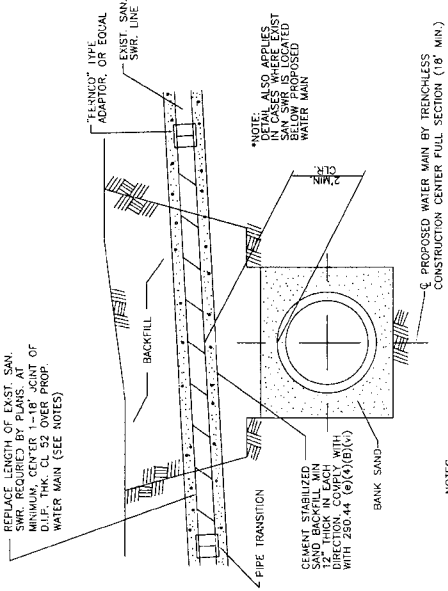
3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.





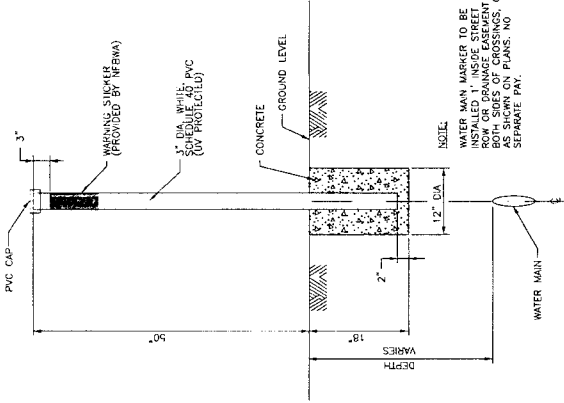
- NOTES:
1. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE FLOW FROM HYDRANT AND PREVENT EROSION OF EXISTING GROUND DURING FLUSHING.
 2. ON OPEN-DITCH ROADWAYS OR OTHER CORRIDORS, SET THE FLUSHING HYDRANT NOZZLE AT THE STREET CURB OR SIDEWALK, EASEMENT LINE OR AS SHOWN ON PLANS.
 3. THE FLUSHING HYDRANT STEAMER NOZZLE SHALL FACE THE STREET UNLESS DIRECTED OTHERWISE BY ENGINEER.
 4. PROVIDE RESTRAINED JOINTS FOR FLUSHING HYDRANT ASSEMBLY.
 5. PAINT FLUSHING HYDRANT BLACK. INSTALL DISK ON PUMPER NOZZLE AND LABEL "NFWA" - FOR FLUSHING ONLY.
 6. IF WATER TRANSMISSION LINE IS PVC OR D.I. PIPE MATERIAL, THE FLUSHING HYDRANT SHALL BE STEEL. IF WATER TRANSMISSION LINE IS STEEL OR CONCRETE CYLINDER PIPE MATERIAL, INSTALL A MANUFACTURER'S FLANGED TEE AT THE SPRING LINE.

1 STANDARD FLUSHING HYDRANT ASSEMBLY
N.T.S.

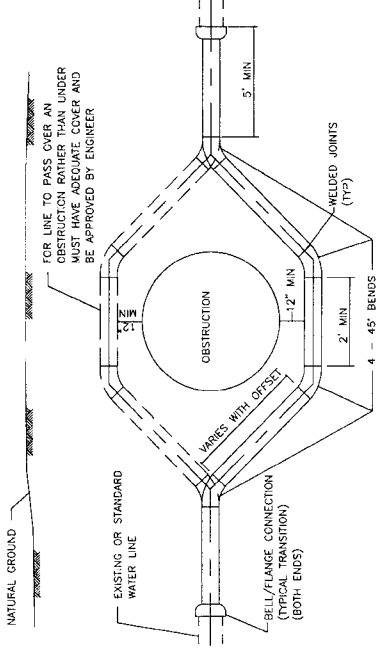


- NOTES:
1. P.V.C. PIPE WITH PRESSURE RATING OF 250. DR18 MAY BE USED.
 2. FOR WATER LINE UNDER SAN. SWR, BOTH PIPES MUST PASS PRESSURE AND LEAKAGE TEST DESCRIBED IN ANNA C500 FOR DURATION SPECIFIED BY ENGINEER (2 HR. MIN.)

2 PROPOSED WATERLINE CROSSING UNDER EXISTING SANITARY SEWER
N.T.S.



4 WATER LINE MARKER
N.T.S.

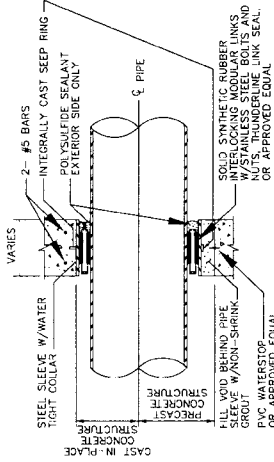


- NOTES:
1. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
 2. RESTRAIN EXISTING PIPING BEYOND OFFSET SECTION AS REQUIRED TO PREVENT MOVEMENT.

3 TYPICAL PIPE OFFSET SECTION FOR WATER MAINS
N.T.S.

WALL PENETRATION NOTES:

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



5 TYPICAL WALL PENETRATION DETAIL
N.T.S.



TRAVIS R. JONES
STATE OF TEXAS
NO. 15052
MECHANICAL ENGINEERING
REGISTRATION NUMBER T-6788

BRANDMANN ENGINEERING CORPORATION
CORPORATE OFFICE
2401 Fountainside Suite 200
Houston, Texas 77055-2401
(713) 861-5200
FAX (713) 861-5204
TYPE FIRM # T-5785

NO.	DATE	REVISION	APPROVED
4			
3			
2			
1			

FROM: NO. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
MCKASKLE ROAD FROM ROAD NO. 119
WATER PLANT

STANDARD WATERLINE DETAILS



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WITH: *W. J. G. 3/27/10* SHEET & BRIDGE

WATERWAY: *W. J. G. 3/27/10* TRAYCE

SHOW WATER QUALITY

FILE NO: *119-119*

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

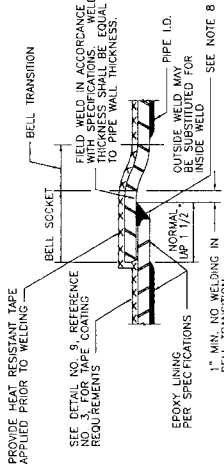
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VERT: N.T.S.

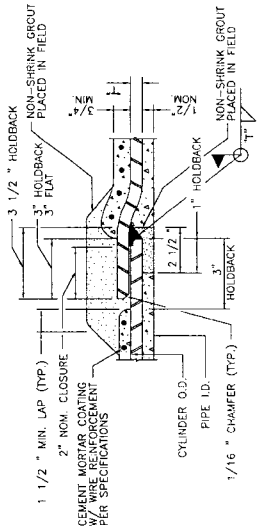
SHEET 18 OF 66

REF. NO. 02

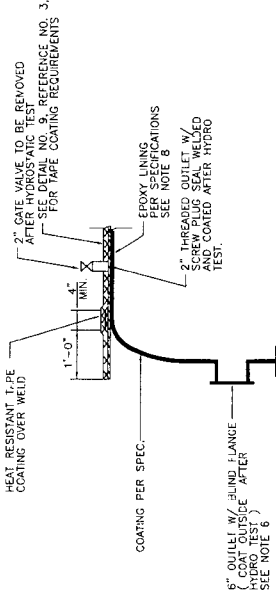
DATE: NOVEMBER 17, 2009



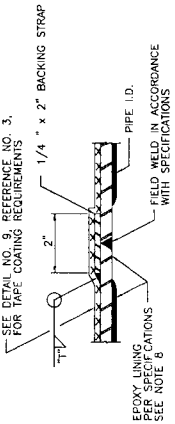
1 LAP-WELD FIELD JOINT - STEEL PIPE W/ EPOXY LINING
(FOR WATER LINES 36-INCH DIAMETER AND LARGER)



2 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL - STEEL PIPE
(SEE NOTE 7)

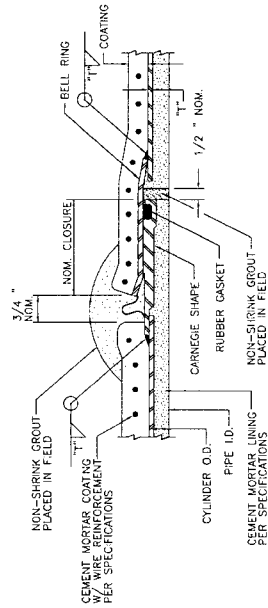


3 INTERNAL ELLIPTICAL DISHED HEAD PLUG - STEEL PIPE
(SEE NOTE 7)



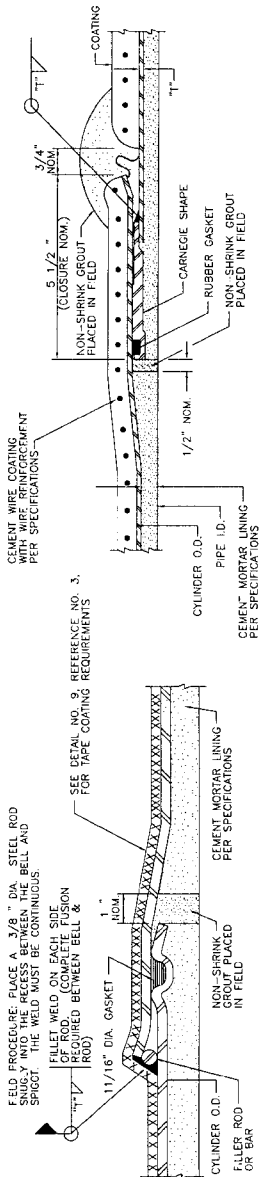
4 BUILT WELD FIELD JOINT - STEEL PIPE (TAPE COATED)
(FOR WATER LINES 36-INCH DIAMETER AND LARGER)

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



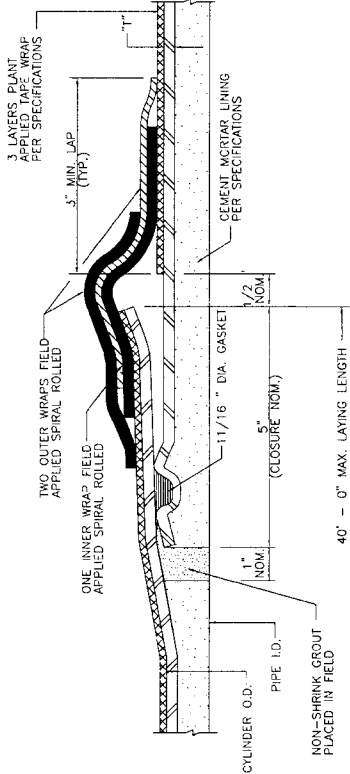
8 CARNEGIE JOINT - STEEL PIPE

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



7 ROLLED JOINT STEEL PIPE

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



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



BENCHMARK ENGINEERING CORPORATION
CORPORATE OFFICE
2843 Fondren Road, Suite 600
Houston, Texas 77057 USA
(713) 861-0944
FAX: (713) 861-0944
TYPE FIRM # F-6798

NO.	DATE	REVISION	APPROV.
4			
3			
2			
1			

FBCMUD No. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FBCMUD No.119
WATER PLANT

STEEL PIPE DETAILS



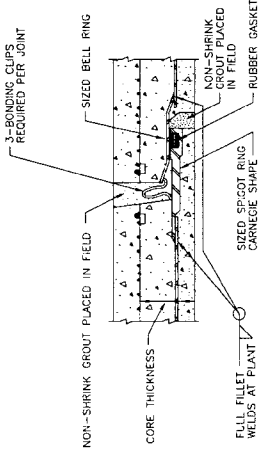
NOTE: CITY SIGNATURES WELD FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STREET & BRIDGE
NAME: *W. J. Smith*
SIGNATURE: *W. J. Smith*
DATE: 11-14-2010
STAMP: *11-14-2010*

FIGURES: *444* 032270
FILE NO.:
FOR CITY OF HOUSTON USE ONLY

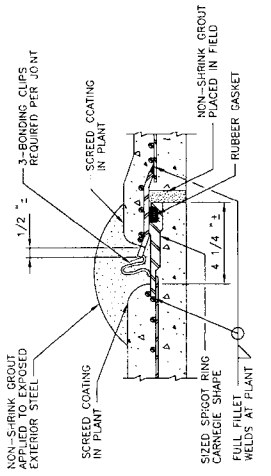


DRAWING SCALE
HORIZ: N.T.S.
VERT:
SHEET: 19 OF 66
No.

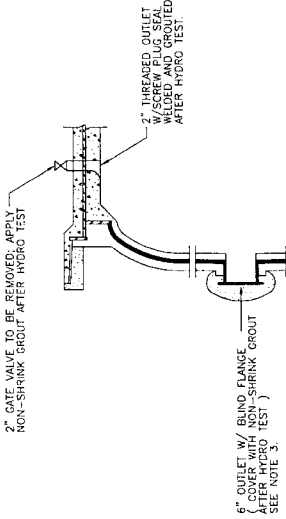
REF. NO. 03



1 JOINT — EMBEDDED CYLINDER PIPE



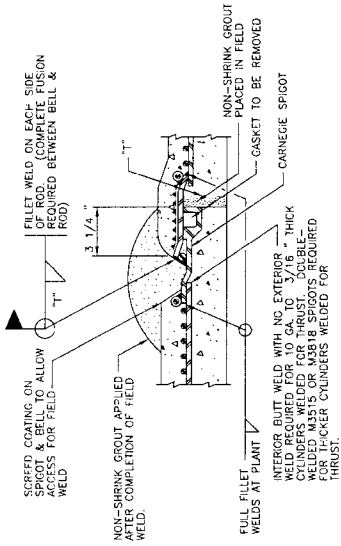
3 JOINT — LINED CYLINDER PIPE
(FOR WATER LINES LESS THAN 36-INCHES IN DIAMETER)



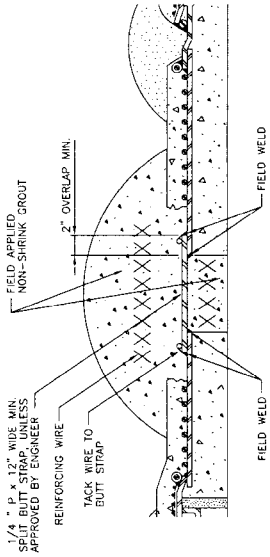
6 INTERNAL ELLIPTICAL LINED CYLINDER PIPE
INTERNAL ELLIPTICAL DISHED HEAD PLUG
(CONCRETE EMBEDDED CYLINDER PIPE IS SIMILAR, AS APPROVED BY ENGINEER)
(SEE NOTE 4)

NOTES

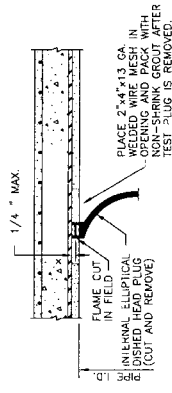
1. T = PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. P = STEEL CYLINDER PERIMETER.
3. INSTALL 6-INCH FLANGED OUTLETS ON EITHER SIDE OF THE DISHED HEAD PLUG
4. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING HYDROSTATIC TEST PRESSURE FROM EITHER SIDE WITH THE OPPOSITE SIDE EMPTY OF WATER.
5. FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASE - MENT PIPE.



5 WELDED JOINT — LINED CYLINDER PIPE
FIELD PROCEDURE: GRAB A 3/8\"/>



7 CLOSURE PIECE
(INTERNAL WELD NOT REQUIRED FOR 30\"/>



8 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL
EMBEDDED CYLINDER PIPE
CONCRETE EMBEDDED CYLINDER PIPE SHOWN AS APPROVED BY ENGINEER

BENJAMIN ENGINEERING CORPORATION
 801 Foundation Suite 200
 Houston, Texas 77061
 (713) 994-7000 • (713) 994-3044
 TYPE FRN # F-4788

NO.	DATE	REVISION	APPROVAL
4			
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2			
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FBCMUD No. 119 CONNECTION
 PROPOSED 16" WATER LINE ALONG
 McKASKLE ROAD TO FBCMUD No.119
 WATER PLANT
**PRESTRESSED CONCRETE CYLINDER
PIPE DETAILS**

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

WATER <i>Robert G. Goff</i> PROJECT ENGINEER STATE LICENSE # 12345 EXPIRATION DATE 12/31/2024	SIGNATORY QUALITY <i>John J. J. J.</i> SIGNATORY QUALITY	FILE NO: DRAWING SCALE HORIZ : N.T.S. VERT : SHEET: 20 OF 66 FOR CITY OF HOUSTON USE ONLY
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NOTES:

1. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.

2. PROVIDE AN APPROVED FIBERGLASS BASED TAPE ENCAPSULATING ALL BOLTS IN MANHOLES & VAULTS.

3. IF 3" AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS THEN PROVIDE APPROVED EQUAL 4" AIR VALVE. ALL OTHER PIPING AND APPURTENANCES SHOWN TO BE 2" IN DIAMETER SHALL BE 3" IN DIAMETER AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.

4. VERIFY THAT LOCATION OF SORENSON IS 1 FOOT ABOVE 100-YEAR FLOOD PLAN ELEVATION OR HIGHER.

5. REFER TO PLAN AND PROFILE SHEETS FOR TYPES AND LOCATIONS OF COMBINATION AIR VALVES.

6. IF AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS, THEN PROVIDE APOC 1504C OR 1540TC. ALL OTHER PIPING AND APPURTENANCES SHOWN TO BE 2" IN DIAMETER SHALL BE 3" IN DIAMETER, AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
7. FOR PAVEMENT REPAIR SEE REF. NO. 12 EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS.

8. FOR MANHOLES DEEPER THAN 20 FEET, 18-INCH OR 24-INCH DIAMETER, PROVIDE 72-INCH OR 84-INCH DIAMETER & PROVIDE SAFETY CLIMBING RAIL (SAF-T-CLIMB) OR APPROVED EQUAL).

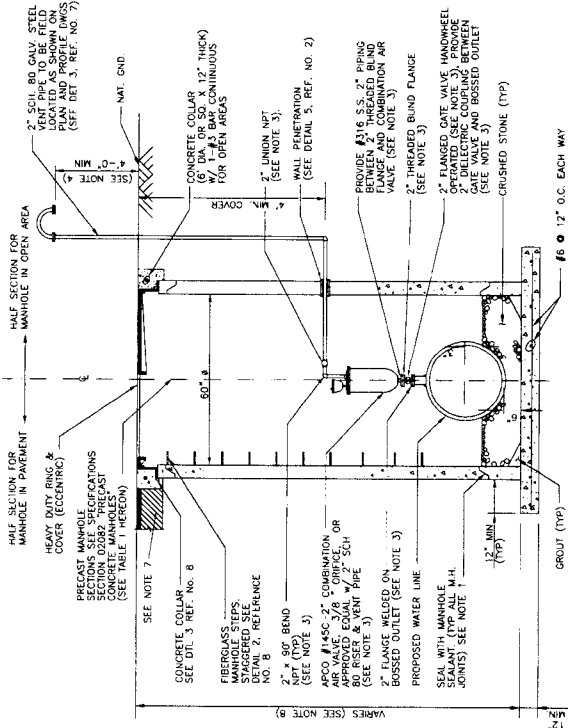
9. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE EXISTING GROUND SURFACE DURING FLUSHING OF EXISTING GROUND DURING FLUSHING.

10. PROVIDE RESTRAINED JOINTS FOR FLUSHING HYDRANT ASSEMBLY.

11. PAINT FLUSHING HYDRANT BLACK. INSTALL DISK ON PUMPER NOZZLE AND LABEL "NFBWA - FOR FLUSHING ONLY".

TABLE 1 - Air Valve & Types				
Water Main Diameter	Air Valve Size	APOC Model	WVF Size	
<30"	2"	145C	60"	
	3"	147C	60"	
	4"	1503C	60"	
≥30"	3"	1503C	60"	
	4"	1504C	60"	

*or approved equal



COMBINATION AIR VALVE ASSEMBLY
IN SERVICE MANHOLE

(FOR WATER LINES SMALLER THAN 30-INCHES IN DIAMETER)



BENCHMARK ENGINEERING CORPORATION
Certified Professional Engineers-Supervisors
1100 West Loop South, Suite 200
Houston, Texas 77027 U.S.A.
(713) 866-1100 • Fax: (713) 866-3861
Lic. E. No. # 16185

NO.	DATE	REVISION	APPROVED
4			
3			
2			
1			

FBCMUD No. 119 CONNECTION
PROPOSED 18" WATER LINE ALONG
MCASKLE RD. TO FLOOD NO.119
WATER PLANT
**AIR VALVE IN SERVICE MANHOLE
DETAILS**



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER
Street: 383710
TIME: 3:25 PM
DATE: 11/17/09
PAINTING: HHOA 052590

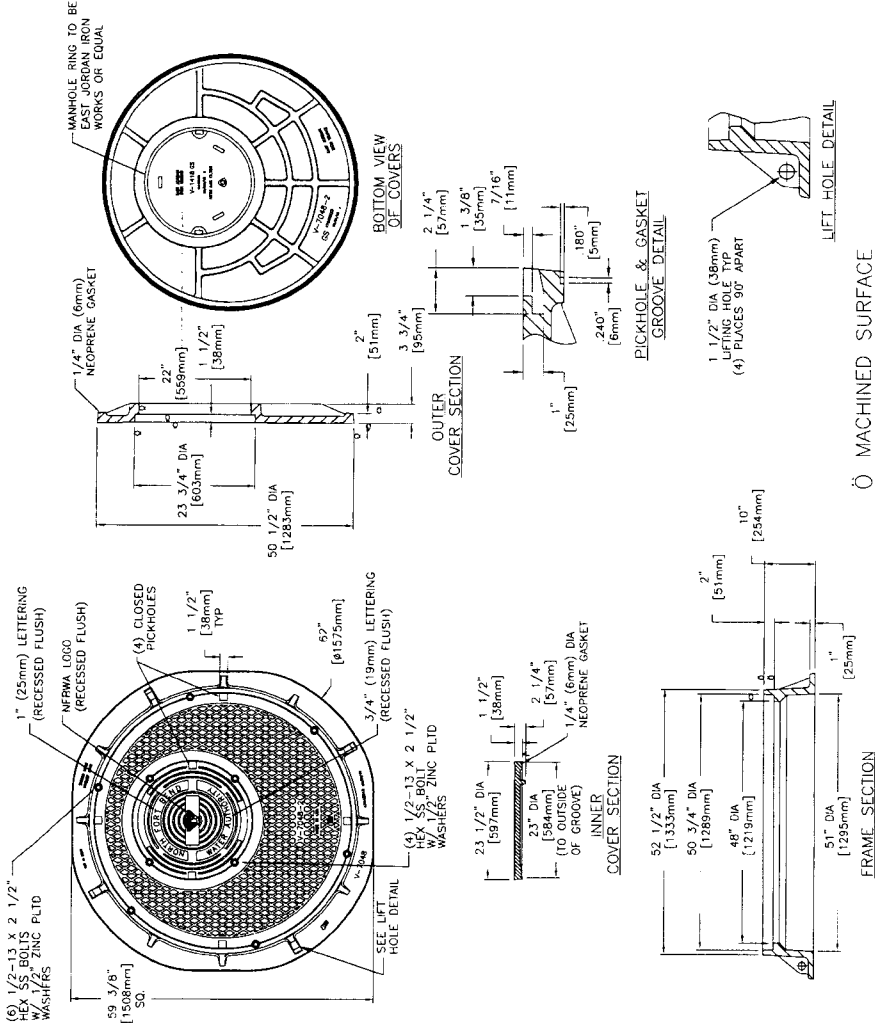
FILE NO:
DRAWING SCALE
HORIZ: N.T.S.
VERT:
SHEET 22 OF 66
REF. NO. 06

FOR CITY OF HOUSTON USE ONLY

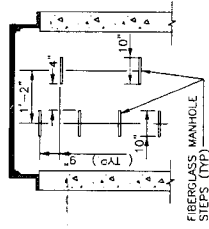
18889
BENCHMARK ENGINEERING CORPORATION

1100 West Loop South, Suite 200
Houston, Texas 77027 U.S.A.
(713) 866-1100 • Fax: (713) 866-3861

DATE: NOVEMBER 17, 2009

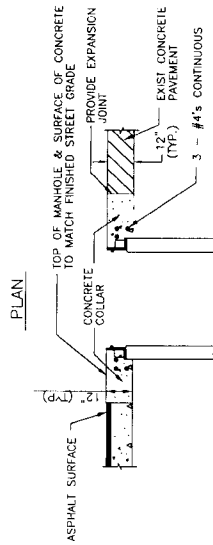
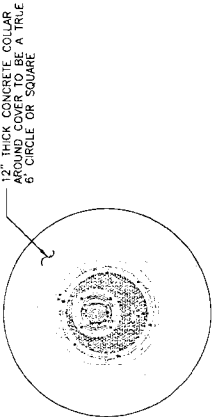


1 HEAVY DUTY MANHOLE RING AND COVER
(MANHOLE RING AND COVER TO BE EAST JORDAN IRON WORKS OR EQUAL)



- NOTES - MANHOLE STEPS:
1. PROVIDE MODEL PSI-PT STEPS AS MANUFACTURED BY M.A. INDUSTRIES INC. OR APPROVED EQUAL.
 2. BOTTOM MANHOLE STEP SHALL BE NO HIGHER THAN 10" ABOVE MANHOLE INVERT.
 3. STEPS PLACED BY PRECASTER. FIELD PLACEMENT NOT ALLOWED.

2 MANHOLE STEP DETAIL



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

3 MANHOLE IN PAVEMENT



BENJAMIN ENGINEERING CORPORATION
Consulting Engineers - Professional Surveyors
11111 North Loop West, Suite 200
Houston, Texas 77030-2342
(713) 865-1111
FAX: (713) 865-1111
E-MAIL: info@benjeng.com

NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			

FBCMUD No. 119 CONNECTION
PROPOSED 18" WATER LINE ALONG
MCKASKLE ROAD TO FBCMUD NO.119
WATER PLANT

HEAVY DUTY MANHOLE DETAILS



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 3/17/10
DRAWN: [Signature]
CHECKED: [Signature]
INCHES: 1" = 3'-0"

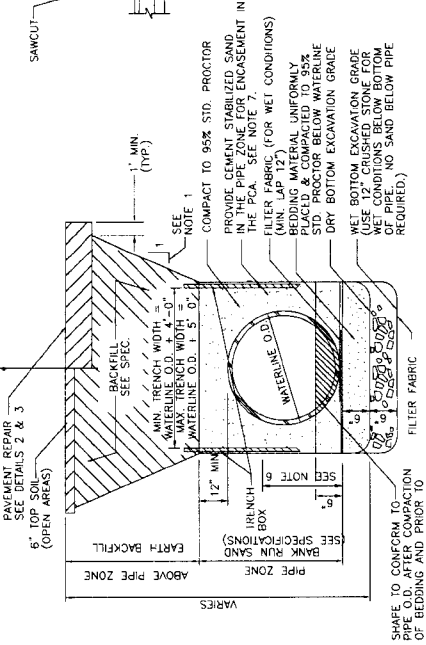
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SHEET NO.: 24 OF 66

FOR CITY OF HOUSTON USE ONLY



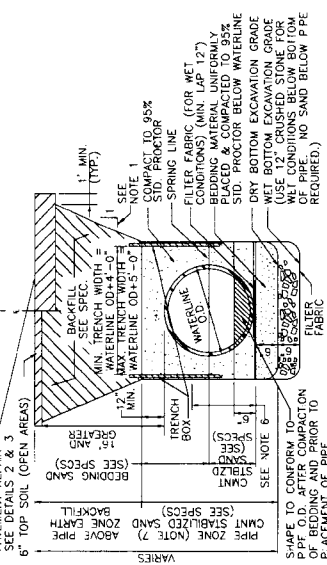
HALF - SECTION UNDER OPEN AREAS - SEE DETAILS 2 & 3



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

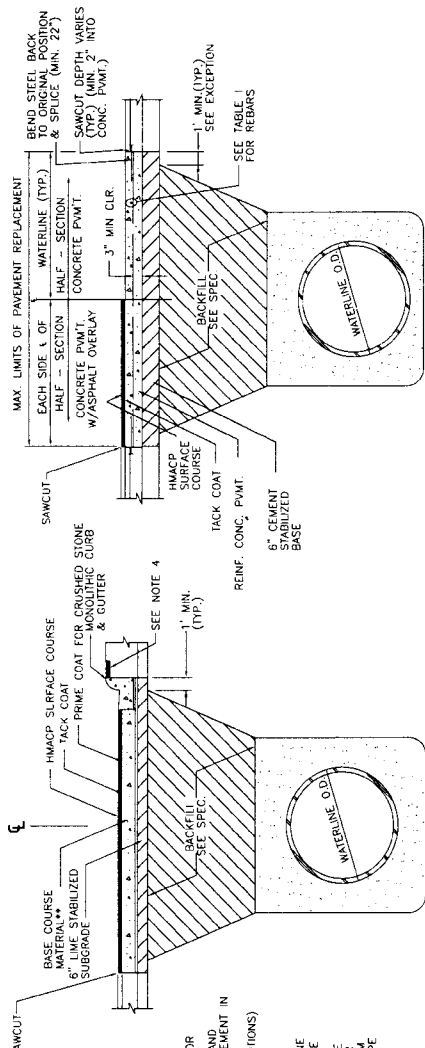
- NOTES:
1. TRENCH SAFETY SYSTEM SPECIFICATIONS FOR MAXIMUM ALLOWABLE SLOPES.
 2. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
 3. KEY CONCRETE TRENCH DAM MINIMUM OF 6 INCHES INTO TRENCH BOTTOM AND WALLS.
 4. TRENCH CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING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

HALF - SECTION UNDER OPEN AREAS UNDER PAVEMENTS



4 EXCAVATION & BACKFILL DETAIL (FOR LARGE DIAMETER WATER LINES)

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



3 TYPICAL REPAIR OF CONCRETE PAVEMENT W/ASPHALT OVERLAY

- NOTES:
1. MIN. THICKNESS 8\"/>
 2. MIN. THICKNESS 7\"/>
 3. 2\"/>
 4. REINFORCING STEEL ARE SHOWN ON TABLE I & II.
 5. SEAL CONCRETE JOINTS BEFORE APPLYING ASPHALT OVERLAY.

2 TYPICAL REPAIR OF FLEXIBLE BASE PAVEMENT

- NOTES:
1. CURB WHEN EXISTING ROADWAY DOES NOT HAVE ONE.
 2. BASE COURSE MATERIAL SHALL CONSIST OF THE FOLLOWING OPTIONS:
 3. 8\"/>
 4. UNTIL GRASS IS ESTABLISHED.

TABLE 1. REINFORCING STEEL INFORMATION FOR VARIOUS PAVEMENT THICKNESS (T) WITH 12\"/>

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

TABLE 2. DOWEL SIZES & SPACINGS VARIOUS PAVEMENT THICKNESS.

PAVEMENT THICKNESS (IN.)	DOWEL DIAMETER (IN.)	LENGTH (IN.)	SPACING (IN.)
6	3/4"	18	12
7	7/8"	18	12
8	1"	18	12
9	1 1/8"	20	12
10	1 1/4"	20	12
11	1 1/2"	20	12
12	1 3/4"	20	12

- GENERAL NOTES:
1. ROADWAY EXCAVATION, SITE GRADING, AND HYDROMULCH SEEDING OR SODDING SHALL BE IN ACCORDANCE WITH THE CITY OF HOUSTON SPECIFICATIONS.
 2. MEASUREMENT AND PAYMENT (INCLUDING DRIVEWAYS) SHALL BE AS PER SPECIFICATION SECTIONS UNLESS OTHERWISE SHOWN ON BID FORM.
 3. NEW ASPHALTIC PAVEMENTS SHALL BE MIN. 2\"/>
 4. NEW CONCRETE PAVEMENTS TO BE SAME THICKNESS AS EXISTING, UNLESS OTHERWISE DIRECTED BY THE NFBWA.
 5. STREETS OR DRIVEWAYS SHALL BE REPAIRED OR REPLACED USING HIGH EARLY STRENGTH CONCRETE AS INDICATED ON DRAWINGS, ACCORDING TO PAVEMENT REPLACEMENT SCHEDULE WHERE PROVIDED, OR AS DIRECTED BY NFBWA.
 6. APPLICABLE TO EXISTING CONCRETE AREAS THAT REQUIRE REMOVAL AND REPLACEMENT CONCRETE DUE TO OPEN TRENCH (EXCLUDE THE MEDIAN ISLAND).
 7. ANY REMOVAL AND REPLACEMENT OF PAVEMENT NOT IDENTIFIED ON THE DRAWINGS SHALL BE COORDINATED WITH THE PROJECT MANAGER AND THE NFBWA.
 8. ALL PAVEMENT REPLACEMENT SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE COUNTY CONSTRUCTION SPECIFICATIONS.



TEXAS BOARD OF PROFESSIONAL ENGINEERS
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
REGISTRATION NUMBER 14744

BRIGGSMAK ENGINEERING CORPORATION
1401 Pennsylvania Drive, Suite 200
Houston, Texas 77057
(713) 866-0000 FAX: (713) 866-0004
SHE: 1004 # C-6-245

NO.	DATE	REVISION	APPROVED
1			
2			
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4			

FBCMUD No. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
MCKASKLE ROAD TO FBCMUD No.119
WATER PLANT



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

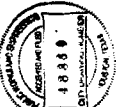
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DATE: 10/15/2010
DRAWN: 10/15/2010
CHECKED: 10/15/2010
SCALE: 1" = 10' - 0"

FILE NO.: 10/15/2010

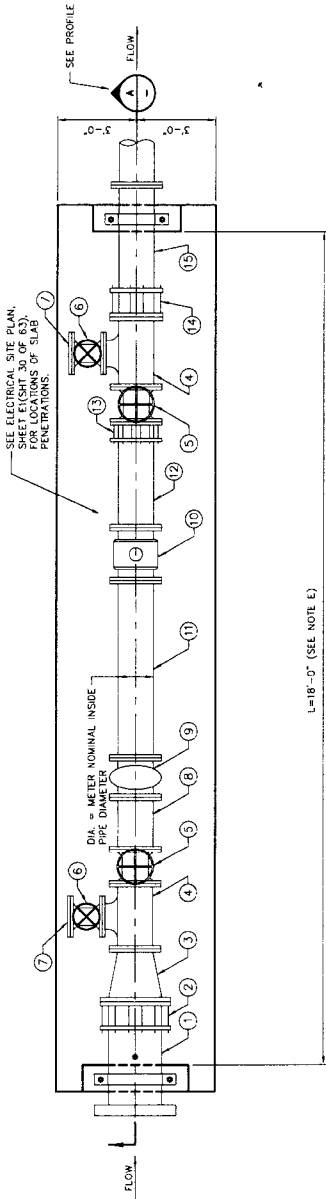
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NO. OF SHEETS: 25 OF 66

REF. NO.: 10/15/2010

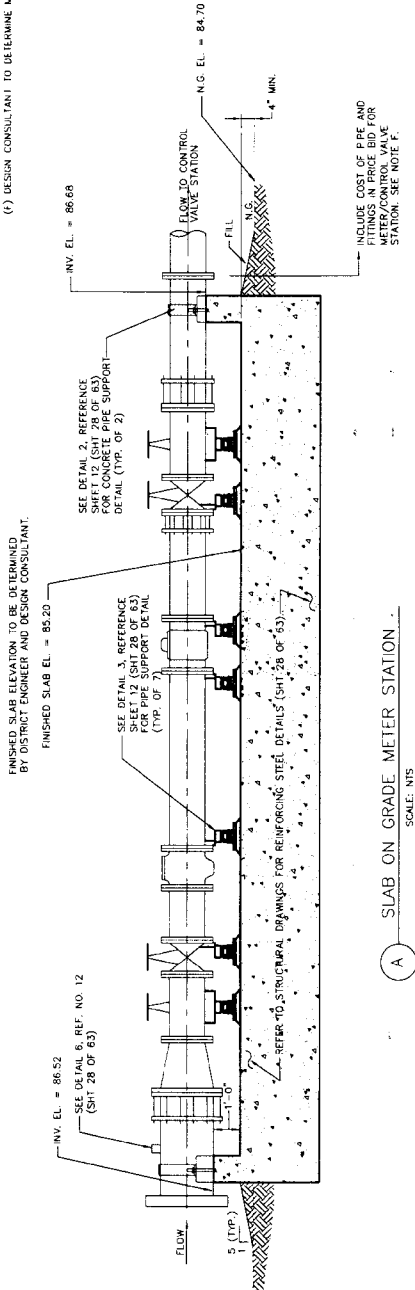


FOR CITY OF HOUSTON USE ONLY
10/15/2010
10/15/2010
10/15/2010
10/15/2010



1 PLAN - SLAB ON GRADE METER STATION

SCALE: NTS

 $L=18'-0"$ (SEE NOTE E)

SLAB ON GRADE METER STATION

SCALE: NTS

SLAB ON GRADE MEIER STATION			
PIPE RUN SIZE = MEIER NOMINAL INSIDE DIAMETER, DIA. (INCH) =			DIA. = 6 INCH
ITEM	FITTING DESCRIPTION	FITTING SIZE (INCH)	
1	PIPE (DIAMETER) W/ 2" THREADED TAP	16	
2	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	16	
3	REDUCER	16X6	
4	TEE W/BASE (DIAMETER, RUN X RUN X BRANCH)	6X6X6	
5	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	6	
6	VALVE, GATE GV-1 (SEE NOTE B) (DIAMETER)	6	
7	BLIND FLANGE (SIZE)	6	
8	PIPE SPOOL (DIAMETER)	6	
9	STRAINER ASSEMBLY	6	
10	FLOW METER SIZE (ELECTROMAGNETIC METER SEE NOTE C)	6	
11	PIPE SPOOL (DIAMETER) LENGTH=(5 x DIA.) MINIMUM	6	
12	PIPE SPOOL (DIAMETER) LENGTH=(3 x DIA.) MINIMUM	6	
13	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	6	
14	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	6	
15	PIPE (DIAMETER)	6	

NOTES

- (a) Meter size to be determined by NFWA Engineer. Design consultant is to modify fitting sizes in this table consistent with specified meter size and surface water supply's line size.
- (b) Design is based on American R/D Resident Gate Valve, Pattern 2052 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.
- (c) DESIGN IS BASED ON THE AMERICAN R/D 4000 X-C (IN-ROWING), MCGROMETER ULTRA WAG #4-MOB, SIEMENS STRANS F5100 W ELECTROMAGNETIC OR APPROVED EQUAL.
- (d) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS, (IF REQUIRED).
- (e) LENGTH (L) OF METER RUN IS APPROXIMATE. IT MAY BE ADJUSTED BASED ON PIPING SHOP DRAWINGS.
- (f) DESIGN CONSULTANT IS TO DETERMINE MINIMUM THROUST RESTRAINT.

(b) DESIGN IS BASED ON AMERICAN R/D RESISTENT GATE VALVE, PATTERN 2052 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.

(c) DESIGN IS BASED ON THE KROHNE TFS 4000 KC (ENVIROMAG), MICROMETER ULTRA MAG #LM06, SIEMENS SITRANS FM 5100 W ELECTROMAGNETIC OR APPROVED EQUAL.

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

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

(f) DESIGN CONSULTANT TO DETERMINE MINIMUM THRUST RESTRAINT.

INITIAL INSTALLATION NOTES:

1. INSTALL PUMP, WATER ETC. AS SHOWN. DISINFECT, PRESSURE TEST AND VERIFY SATISFACTORY OPERATION.
2. ENSURE THAT AS A RESULT OF THE TESTING PROCESS NO FLOW WILL BE ALLOWED TO ENTER THE DISTRICT'S GROUND STORAGE TANK.
3. AFTER COMPLETION OF WORK PER NOTE 1 AND WHEN AUTHORIZED BY OWNER, REMOVE PIPE SPOOL (ITEM 11-12) BETWEEN FLANGES AND INSTALL BOND FLANGE AT EACH END, LABEL, TRANSPORT AND PLACE PIPE SPOOL IN OWNER SUPPLIED STORAGE FACILITY.

2. ENSURE THAT AS A RESULT OF THE TESTING PROCESS, NO FLOW WILL BE ALLOWED TO ENTER THE DISTRICT'S GROUND STORAGE TANK

3. AFTER COMPLETION OF WORK PER NOTE 1 AND WHEN AUTHORIZED BY OWNER, REMOVE PIPE SPOOL (ITEM 11-12) BETWEEN FLANGES AND INSTALL BLIND FLANGE AT EACH END. LABEL, TRANSPORT AND PLACE PIPE SPOOL IN OWNER SUPPLIED STORAGE FACILITY.



March 13, 2010
TEXAS BOARD OF PROFESSIONAL ENGINEERS
BENCHMARK ENGINEERING CORPORATION
REGISTRATION NUMBER F-6788

 **BENCHMARK ENGINEERING CORPORATION**
Consulting Engineers-Planners-Surveyors
3401 Foundersview Suite 500
Houston, Texas 77057 U.S.A.
(713)266-9930 Fax (713)266-3664
TELE FIRM # F-6788

	Nº.	DATE	REVISION	APPROV.
1				
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3				
4				

FBCMUD No. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FBCMUD No.119
WATER PLANT

METER STATION LAYOUT



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WASTEWATER	TRAFFIC
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STORMS	01-11-1987	STORM WATER QUALITY
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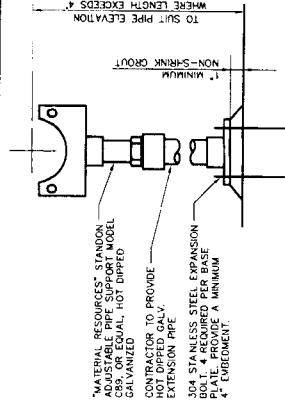
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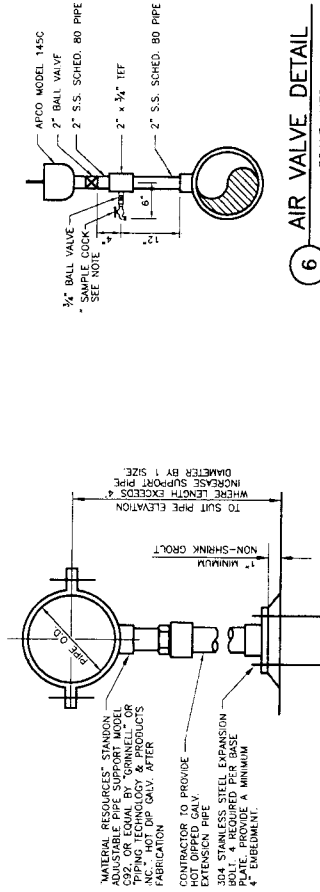
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SHEET 26 OF 66



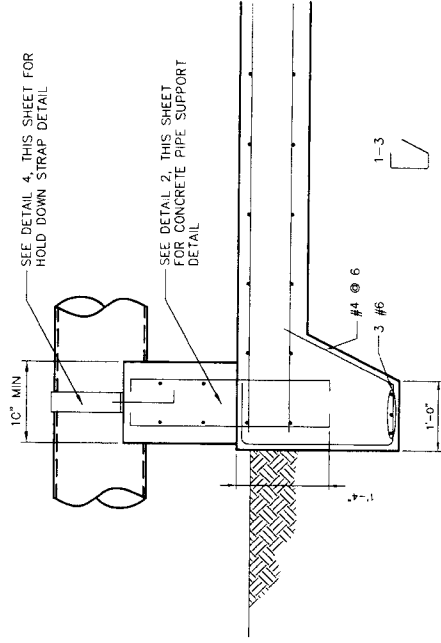
2 CONCRETE PIPE SUPPORT DETAIL



⑤ AIR VALVE DETAIL



⑤ PIPE SUPPORT DETAIL W/STRAP



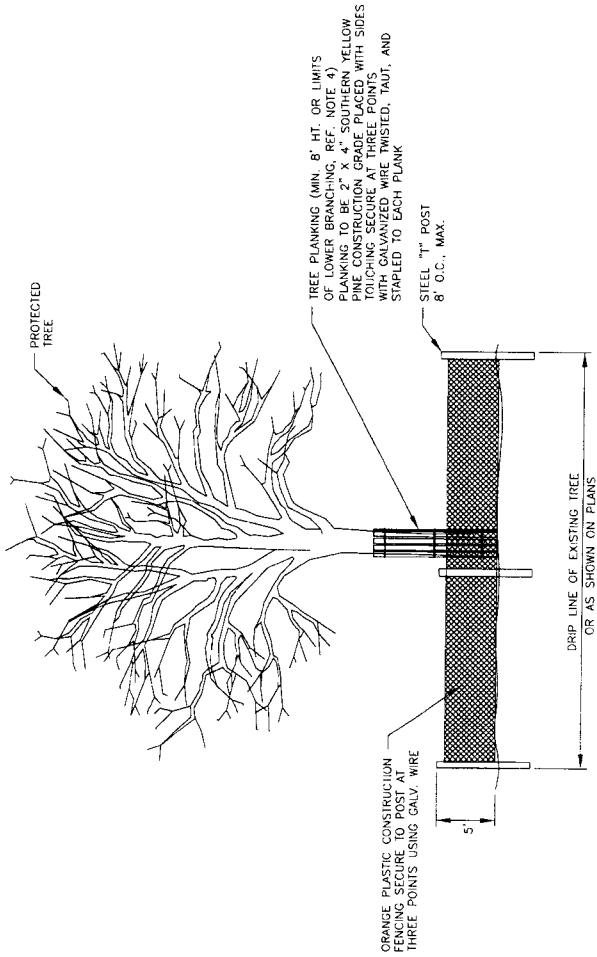
STRUCTURAL DETAIL

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 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING</p> | |
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| SEWER | SEWER |
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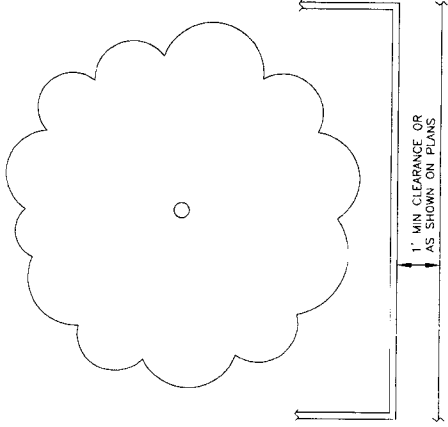


NOTES:

1. ALL TREES SHOWN ON THE TREE PROTECTION PLANS SHALL BE PROTECTED THROUGHOUT CONSTRUCTION WITH TREE PROTECTION.
2. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
3. FENCING SHALL BE LOCATED AS SHOWN ON DRAWINGS, OR COMPLETELY SURROUND THE TREE OR CLUSTERS OF TREES AND WILL BE LOCATED AT THE OUTERMOST LIMITS OF THE TREE BRANCHES (DRIPLINE). THE DRIPLINE DEFINES THE "ROOT ZONE". WITHIN THE LIMITS OF FENCING, THE CONTRACTOR SHALL PREVENT THE FOLLOWING FROM OCCURRING, WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE:
 - A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS.
 - B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 3" OF CUT OR FILL) OR TRENCING NOT REVIEWED OR AUTHORIZED.
 - C. WOUNDS TO EXPOSED ROOTS, TRUNK, OR LIMBS BY MECHANICAL EQUIPMENT.
 - D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CONCRETE TRUCK CLEANING, AND FIRES.
4. WHERE EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN 4 FEET TO A TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A MINIMUM OF 6 FEET 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, REGRADE PROTECTIVE FENCING TO 2 FEET BEHIND THE GRADE CHANGE AREA. GRADE SHALL REMAIN UNCHANGED WHERE POSSIBLE.
6. ANY ROOT SEVERED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT ZONE AREAS ARE NOT BACKFILLED, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES TEMPERATURE AND MINIMIZES DRYING OF THE ROOT DUE TO EVAPORATION.
7. TREES IMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE WATERED THOROUGHLY ONCE A WEEK DURING PERIODS OF HOT AND/OR DRY WEATHER. TREE CROWNS SHALL BE SERVED WITH WATER PERIODICALLY TO REDUCE FUEL ACCUMULATION ON THE LEAVES.
8. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN 3" MAXIMUM SHALL BE PERMITTED WITHIN THE DRIPLINE OF TREES. NO PERMANENT SOIL OR MULCH IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
9. PRUNING SHALL BE PERFORMED BY THE CONTRACTOR TO PROVIDE CLEARANCE FOR STRUCTURES OR CONSTRUCTION ACTIVITIES. PRUNING SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS, ONLY WITH PRIOR APPROVAL FROM AUTHORITY'S ENGINEER. ALL PRUNING MUST BE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE "NAA PRUNING STANDARDS"), AND BY AN EXPERIENCED AND QUALIFIED ARBOREST SPECIALIST 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 TRENCING A CLEAN 4" WIDE X 24" DEEP CUT BETWEEN THE UNDISTURBED ROOT ZONES AND THE EXISTING GRADE TO MINIMIZE DAMAGED ROOTS. THIS MARK AND REVIEW TRENCH LINE WITH AUTHORITY'S ENGINEER PRIOR TO TRENCING.
12. AS SOON AS 4" WIDE X 24" DEEP TRENCH IS CUT, EXPOSED ROOTS SHALL BE CUT WITHIN 24 HOURS. EXPOSED ROOT CUTS, AS SOON AS HAND CUTS ARE COMPLETE, BACKFILL WITH A 6" DEEP LAYER OF TOPSOIL PLACED IN 6" LIFTS, AND COMPACTED AS REQUIRED BY SPECIFICATIONS.
13. IN AREAS WHERE LIME STABILIZATION ABUTS, OR ENCROACHES UPON, THE EXISTING TRENCH, PRUNING IS CALLED FOR. INSTALL 10-MIL PLASTIC SHEETING TO FLUSH WITH EXISTING TRENCH AND 6" OVER TOP. CUT AND REMOVE EXPOSED PLASTIC AT COMPLETION OF WORK.



① TREE PROTECTION DETAIL



② TREE PROTECTION DETAIL



TEXAS BOARD OF PROFESSIONAL ENGINEERS
BENCHMARK ENGINEERING CORPORATION
REGISTRATION NUMBER F-8788



2401 Fountainview Suite 500
Houston, Texas 77057 U.S.A.
(713) 258-9930 Fax (713) 258-3804
Cable FAX # 1-6758

NO.	DATE	REVISION	REVISION
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1			

FBCMUD No. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FBCMUD No.119
WATER PLANT

TREE PROTECTION DETAILS



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

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

0 - 325/10 STREET & BRIDGE

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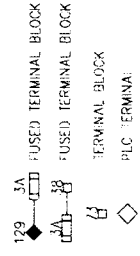
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- ## LEGEND



BROWN & GAY
Brown & Gay Engineers, Inc.
10771 Westheimer, Suite 400, Houston, TX 77042
Tel. 281-558-2700 Fax. 281-558-3701
• Civil engineers and surveyors •

Brymcon, Inc.
Electrical Engineering
Fig-E Registration No. F 376
Residence TX 77066 (A/C) 868-7966
A/C 301-30-2100

NFBWA SEGMENT 4

CONTROL DIAGRAM
SHEET 1



570-1105
55 END QUAY ROAD (BY) THE NEW ZEALAND AIR MAIL LINE

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

[Handwritten signature]
6/5/90
[Handwritten initials]

DATE 3/25/90
BY Mr. Hanning

SAMPLE WATER QUALITY

(Handwritten) 100-86790
100-86790

Author	Year
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Adams, J. S.	2085
Adams, J. S.	2086
Adams, J. S.	2087
Adams, J. S.	2088
Adams, J. S.	2089
Adams, J. S.	2090
Adams, J. S.	2091
Adams, J. S.	2092
Adams, J. S.	2093
Adams, J. S.	2094
Adams, J. S.	2095
Adams, J. S.	2096
Adams, J. S.	2097
Adams, J. S.	2098
Adams, J. S.	2099
Adams, J. S.	2100
Adams, J. S.	2101
Adams, J. S.	2102
Adams, J. S.	2103
Adams, J. S.	2104



1567

N.T.S.

32 of 63

$$E_{\text{eff}}^{(1)} = \frac{\partial}{\partial t} \left[\frac{1}{2} \int d^3x \left(\frac{1}{2} \dot{\phi}^2 + \frac{1}{2} (\nabla \phi)^2 + V(\phi) \right) \right]$$

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

3. ALL HEAT TRACE TAPE IS TO BE 150 DEGREE MAX MANTAIN. 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.

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



53

Abstract



BROWN & GAY
Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400, Houston, TX 77042
Tel. 281-453-8700 Fax 281-558-1701
— Civil Engineers and Surveyors —

Brymcon, Inc.
Electrical Engineering
TYPE Registration No. F-375
8320 W. 7th Road Houston, TX 77056 (713) 666-1266

NFBWA SEGMENT 4

CONTROL DIAGRAM
SHEET 3



2011 CITY SCALARIES PAID FOR ONE YEAR ONLY AFTER DATE OF

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Print 6/25/10
Print 7/25/10
Print 8/25/10

015250 W444 5/10/10
015250 W444 5/10/10

LEARNING SCALE



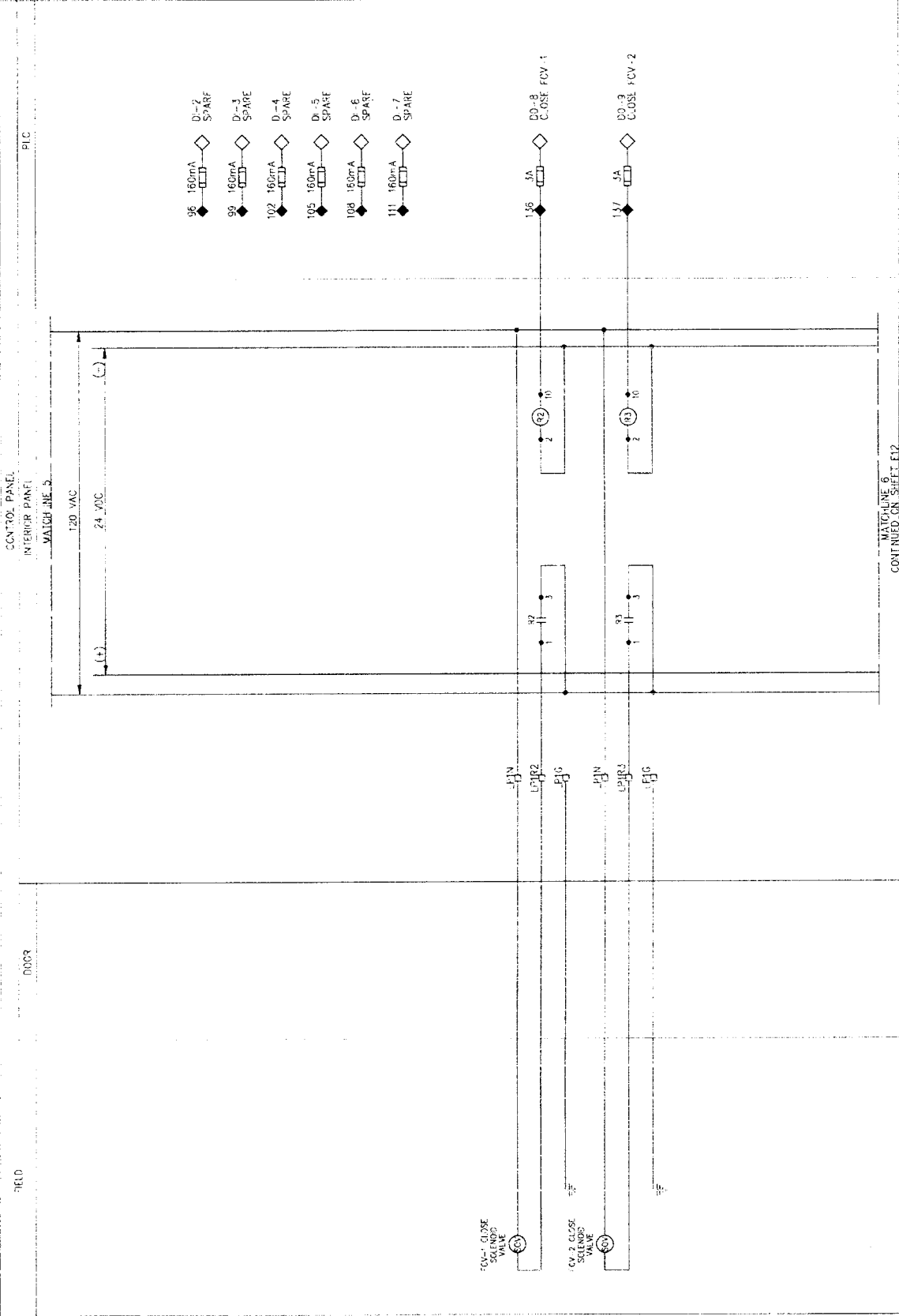
34 10 63

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 & WATERSHED SIGNAL SPLITTERS TO EXISTING DISTRICTS. ULTIMATE NUMBER OF GST'S PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT INAKE (APL) 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

- 120 3A FUSED TERMINAL BLOCK
108 3A FUSED TERMINAL BLOCK
73 TERMINAL BLOCK
◇ PLC TERMINAL



BROWN & GAY
Brown & Gay Engineers, Inc.
10777 Westchase Lane, Suite 100
Houston, Texas 77036
Tel: 281.556.1001
Fax: 281.556.1001
www.brownandgay.com

Brymcon, Inc.
Brymcon, Inc.
10777 Westchase Lane, Suite 100
Houston, Texas 77036
Tel: 281.556.1001
Fax: 281.556.1001
www.brymcon.com

8330 Olive Road
Bastrop, LA 71718
(504) 688-7005

NEBWA SEGMENT 4

CONTROL DIAGRAM
SHEET 9

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 08/27/10
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

48880

40 1.63

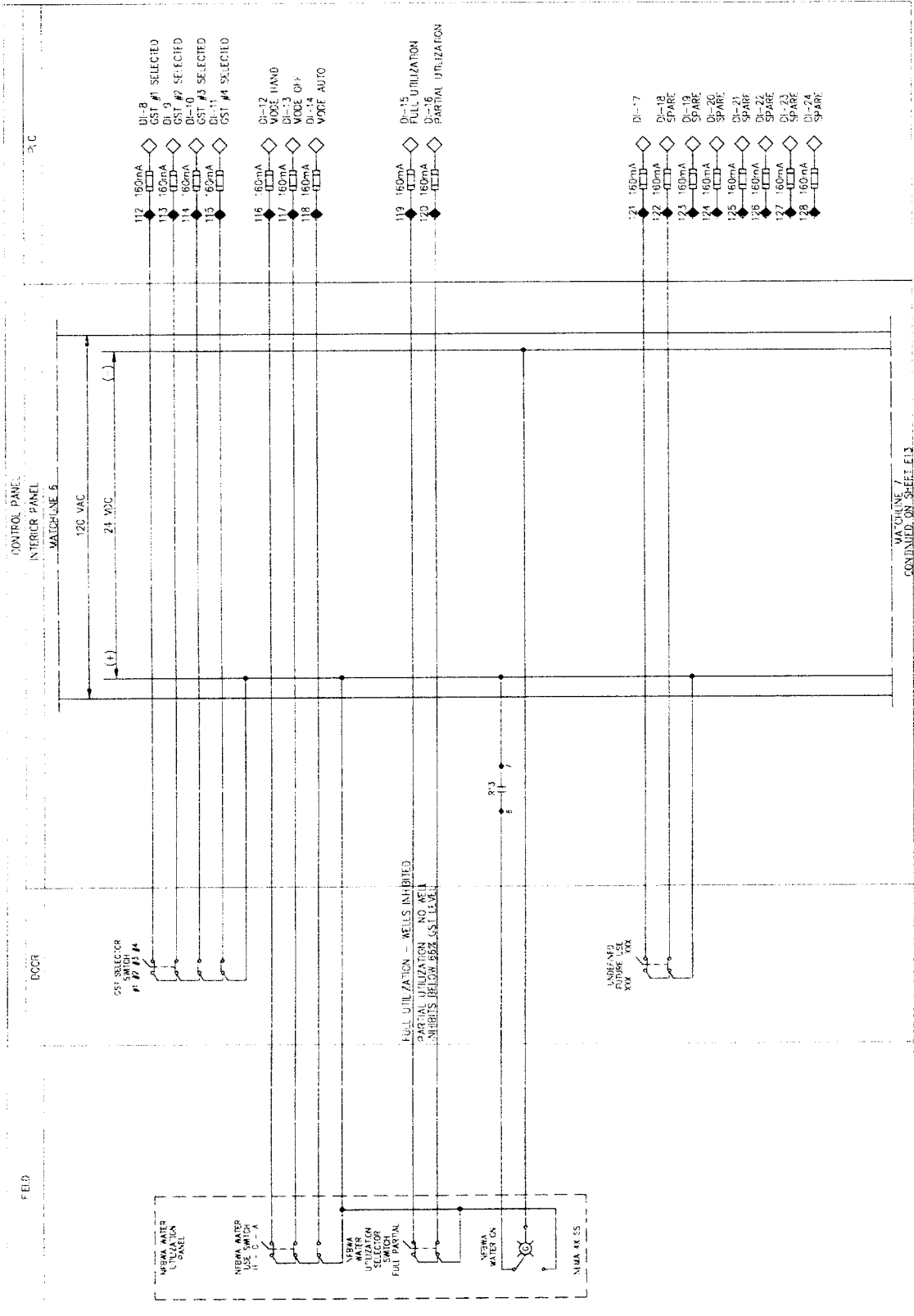


NOTES:

1. ALL VALVES TAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. MATCH SIGNAL SWITCHES & GST SELECTOR SWITCHES TO EXISTING AND FUTURE PLANT. INDICATE NUMBER OF GST'S PREWIRE FOR FUTURE TO THE FULLEST EXTENT POSSIBLE.
3. ALL HEAT TRATE TAPE IS 10 RE 150 DEGREE MAX MAINTAIN. CONTRACTIONS TO PROVIDE VALVE & TRANSMITTER INSULATION, HOT BOX, OR INSULATION BLANKETS IN A FASHION TO ALLOW EASE OF OPERATION & CALIBRATION. LONG TERM WEATHERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

- 129 FUSED TERMINAL BLOCK
 TERMINAL BLOCK
 PLC TERMINAL



BROWN & GAY
Brown & Gay Engineers, Inc.
10771 Highway 290, Suite 100, Houston, TX 77055
Tel: 281.558.8700 Fax: 281.558.1701
www.brownandgay.com
- Civil Engineers and Surveyors -

Brymcon, Inc.
1818 E. Houston Rd. No. 177A
Houston, TX 77058
Tel: 281.558.8700 Fax: 281.558.1701

NEBWA SEGMENT 4

CONTROL DIAGRAM
SHEET 10



NOTES: SEE SEGMENT 3 AND SEGMENT 4 FOR THE ONLY OTHER DATE 31

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PROJECT NO. 33570

DATE: 10/1/10

BY: [Signature]

APPROVED: [Signature]

DATE: 10/1/10

BY: [Signature]

APPROVED: [Signature]

DATE: 10/1/10

BY: [Signature]

APPROVED: [Signature]

DATE: 10/1/10

BY: [Signature]

APPROVED: [Signature]

DATE: 10/1/10

BY: [Signature]

APPROVED: [Signature]

DATE: 10/1/10

BY: [Signature]

APPROVED: [Signature]

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BY: [Signature]

APPROVED: [Signature]

DATE: 10/1/10

BY: [Signature]

10/1/10

10/1/10

10/1/10

10/1/10

10/1/10

NOTES:

1. ALL VALVES FAIL CLOSE
2. GST COMPONENTS SHOWN HERE ARE TWO EXISTING DISTRICT GST'S AND TWO FUTURE GST'S. WATCH 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 WATERPROOF DURABILITY W/ FREEZE PROTECTION WITHOUT OVERHEATING.

LEGEND

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



BROWN & GAY

Brown & Gay Engineers, Inc.
10777 Westheimer, Suite 400 Houston, TX 77042
Tel. 281.559.8700 Fax. 281.559.9701
— CHARTERS AND SUBSIDIARIES —

Brymcon, Inc.

Electrical Engineering
1801 West Loop South, Suite 200
Houston, TX 77056
Tel. 713.866.1000 Fax. 713.866.1008

INBWA SEGMENT 4

CONTROL DIAGRAM
SHEET 11



CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

1001 West Loop South, Suite 200 Houston, TX 77056

DATE: 08/20/02 BY: [Signature]

REVISION: 08/20/02

PROJECT: 08-02-00

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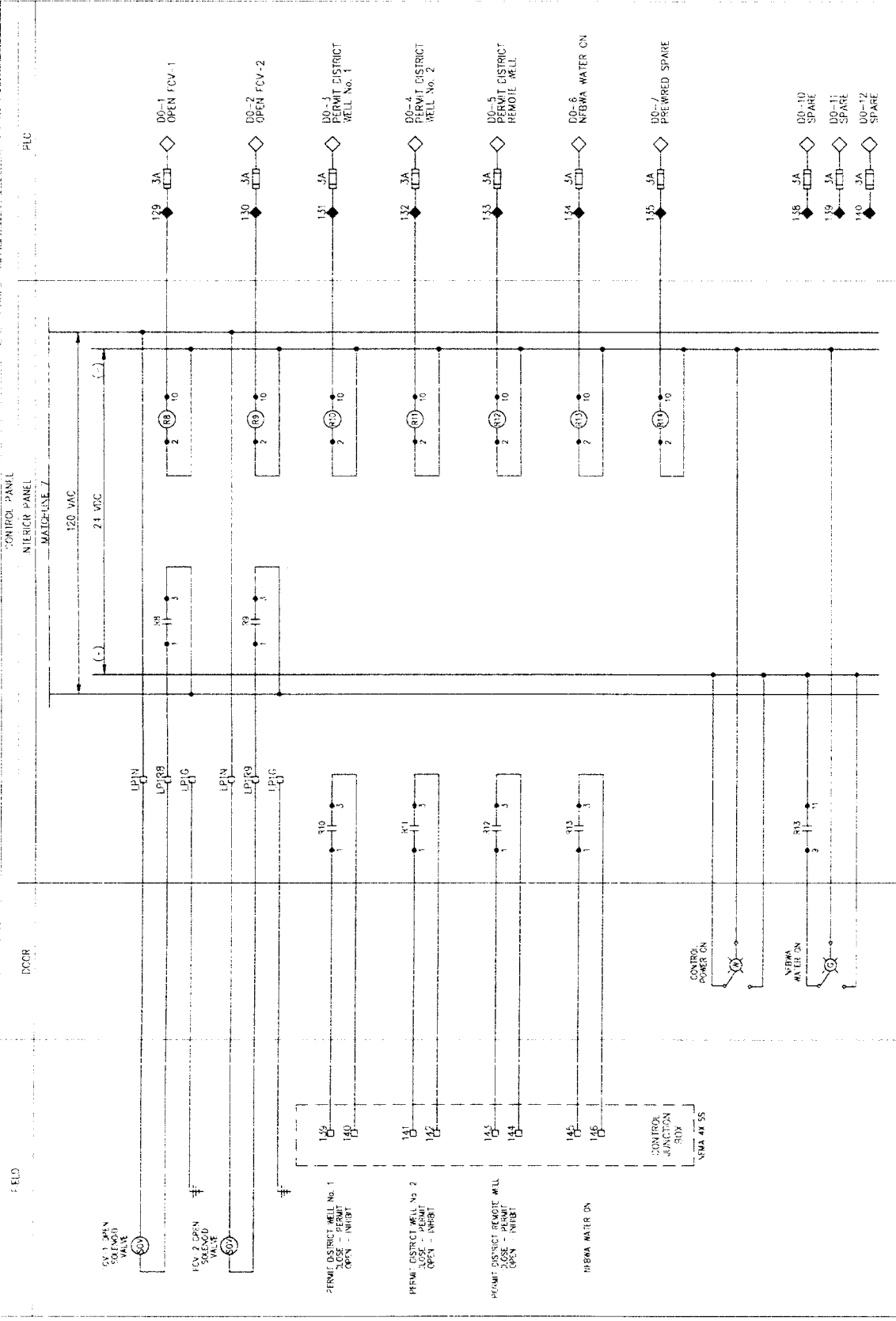
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DATE: 10/20/02

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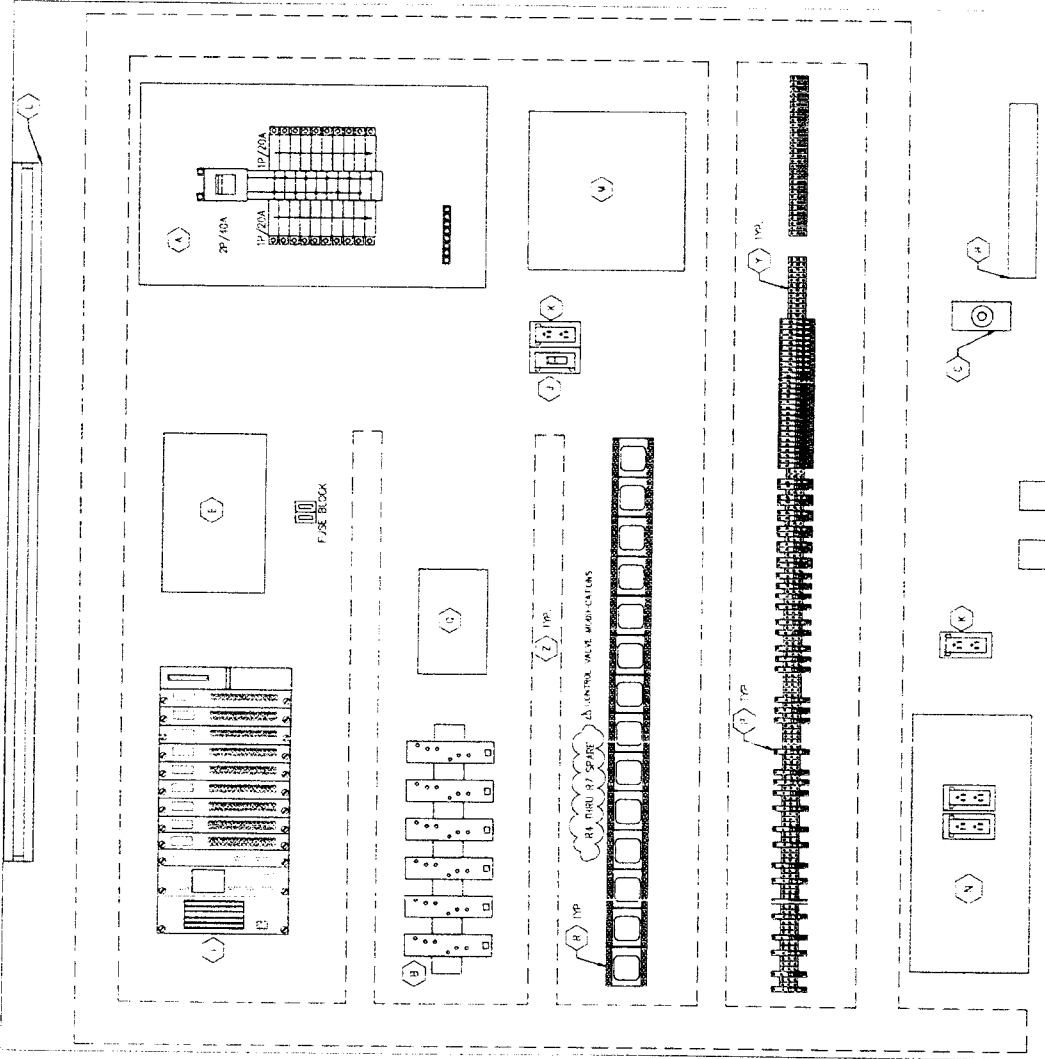
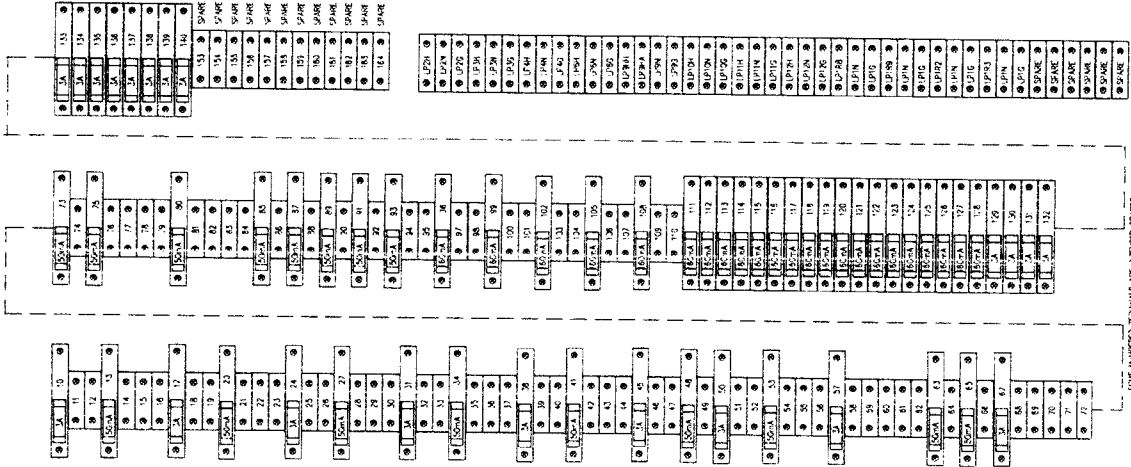
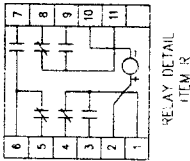
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NOTES
1. SEE SHEET EN FOR EQUIPMENT SCHEDULE.



BROWN & GAY
Brown & Gay Engineers, Inc.
10777 West Loop South, Suite 100
Houston, Texas 77042
Tel: 281.558.0100 Fax: 281.558.0101
www.brymcon.com

Brymcon, Inc.
Electrical Engineering
1846 Regal Court, Suite 100
Houston, Texas 77058
Tel: 281.558.0100 Fax: 281.558.0101
www.brymcon.com

PROJECT INFORMATION
NFBWA SEGMENT 4
ELECTRICAL CONTROL PANEL LAYOUT

CLIENT INFORMATION
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
1001 Poydras Street, Suite 1500
Houston, Texas 77002
Tel: 713.949.1000 Fax: 713.949.1001
www.houstontx.gov

APPROVALS
Mark T. Bryncon, P.E.
Professional Engineer
No. 44143
State of Texas
11/16/10

CONTROL PANEL TERMINAL STRIP ENLARGED VIEW

CONTROL PANEL ELEVATION



Brymcon, Inc.

NFRWA SEGMENT 4

ELECTRICAL
DETAILS SHEET 1

SECRET
TO THE DIRECTOR FOR SPECIAL SERVICES AND PERSONNEL

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

01/07/20

3/25/09
Koching

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3.25.10

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AN: 321 NO. 24 6. 2. 201



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Abstract

N.T.S.

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45 05 63

○

6.8.2.2. *Staphylococcus aureus* – 3.0%

TEST STATION SCHEDULE

TEST STATION SCHEDULE

EXAMPLE

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

EXAMPLE

[illegible]

NFBWA SEGMENT 4

CATHODIC PROTECTION SCHEDULES



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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE	TIME	SONG	SONG METER QUALITY
01/25/13	9:20 AM	01/25/13	01/25/13

✓ 1400 3.35.19
140185
4400 B32570

FILE NO:	FOR CITY OF OUSTON USE ONLY
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CRATING SCALE

1981

VER. N.T.S. 18880

S.E.T. 17

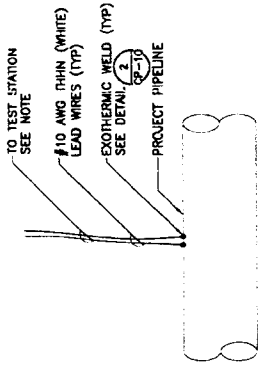
(QTY) UNITS NUMBER

47 OF 63

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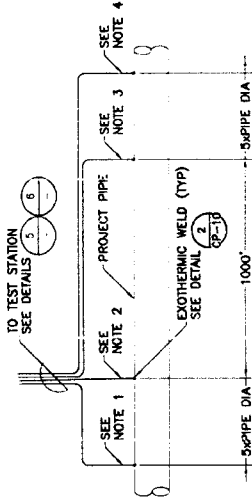
FINAL GRADE



- NOTES:
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL (3-10)
 2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL (2-10)

MONITORING TEST STATION (NTS) (1)

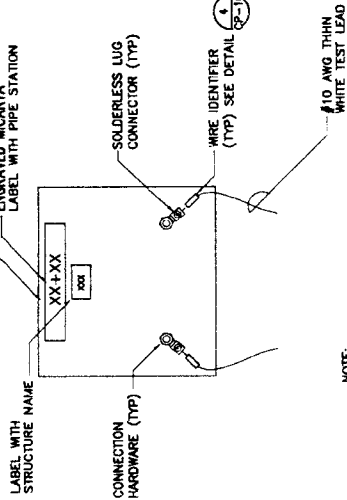
FINAL GRADE



- NOTES:
1. LINE CURRENT TEST LEAD C1 AWG #10 THIN (BLUE)
 2. LINE CURRENT TEST LEAD P1 AWG #8 THIN (RED)
 3. LINE CURRENT TEST LEAD C2 AWG #8 THIN (YELLOW)
 4. LINE CURRENT TEST LEAD C3 AWG #10 THIN (WHITE)
 5. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL (3-10)
 6. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL (2-10)

LINE CURRENT TEST STATION (LCIS) (NTS) (4)

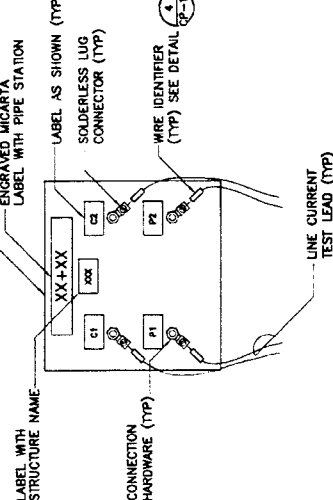
5" X 5" PANEL BOARD



- NOTE:
- TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL (2-10)

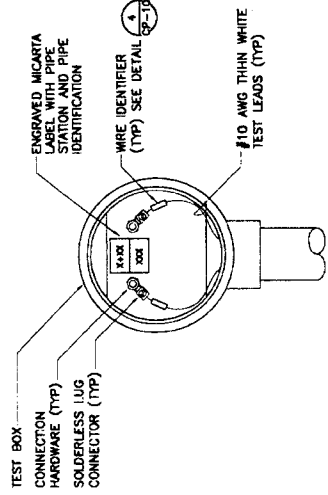
MTS TEST BOARD (NTS) (2)

5" X 5" PANEL BOARD



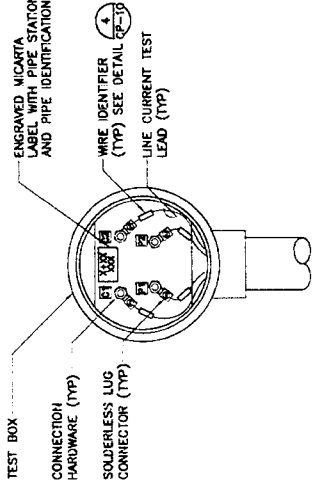
- NOTE:
- TEST BOARD SHALL BE SET IN A FLUSH-TO-GRADE TEST STATION. SEE DETAIL (2-10)

LCIS TEST BOARD (NTS) (5)



- NOTE:
- TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL (3-10)

POST MOUNTED MTS TEST BOX (NTS) (3)



- NOTE:
- TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL (3-10)

POST MOUNTED LCIS TEST BOX (NTS) (6)



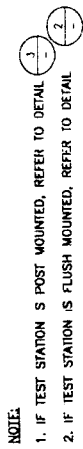
V&A

NFBWA SEGMENT 4
CATHODIC PROTECTION
TEST STATION DETAILS
1 OF 4

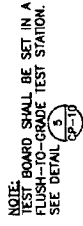


NOTE: CITY SEGMENTS VALID FOR ONE YEAR ONLY AFTER DATE OF SEGMENTS

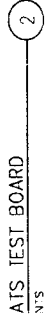
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
TEST STATION
WIRE
WIRE WITH SHIELD
DATE: 11/16/16
TIME: 3:35 PM
FILE NO: 4444 030170
DRAWING SCALE: N.T.S.
SHEET: 48 OF 63
REF. NO. CP-2



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



SEE DETAIL 5



7/16/10



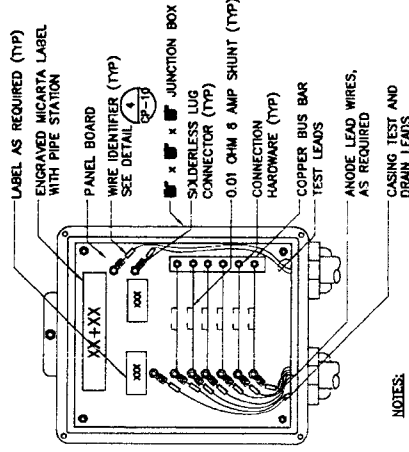
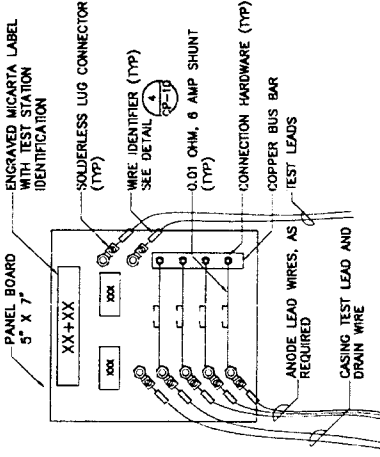
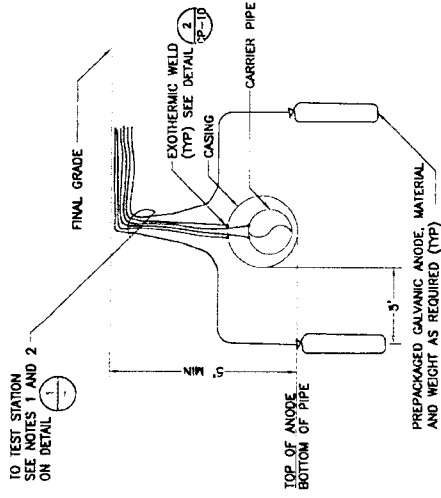
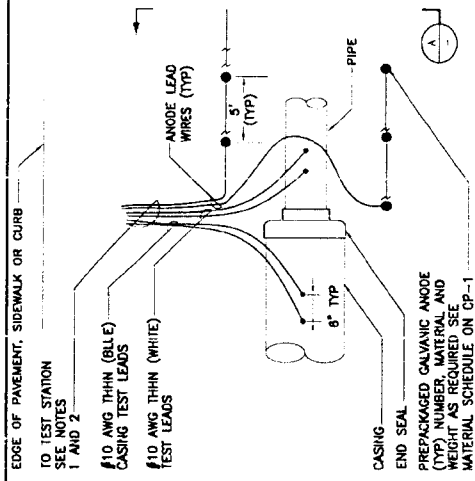
NFBWA SEGMENT 4

CATHODIC PROTECTION
TEST STATION DETAILS
2 OF 4

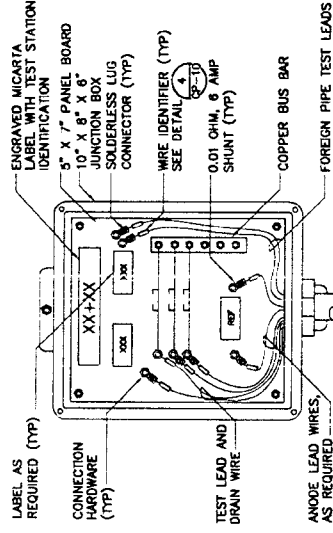
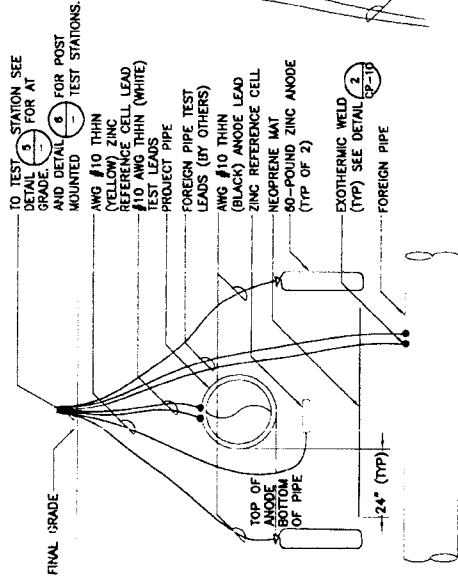


NOTE: THIS SCHEDULES WARD FOR ONE YEAR ONLY AFTER DATE OF EXPIRATION.	CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING STREET & RAIL	DATE 3/25/2010	BY [Signature]	DATE 3/25/2010	BY [Signature]
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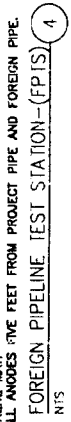
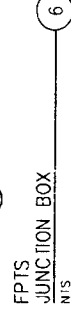
FILE NO.	DRAWING SCALE	DATE : N.T.S.	SHEET 49 OF 63
		VER.	P.O.



1. COVER, LATCH, HINGES, AND NEOPRENE GASKET NOT SHOWN FOR CLARITY.
2. SIZE THE JUNCTION BOX TO FIT THE SHUNTS.
3. JUNCTION BOX SHALL BE ATTACHED TO A POST-MOUNTED TEST STATION.



- NOTES:**
1. COVER, LATCH, HINGES, AND NEOPRENE GASKET NOT SHOWN FOR CLARITY.
 2. SIZE THE JUNCTION BOX TO FIT THE SHUNTS.
 3. JUNCTION BOX SHALL BE ATTACHED TO A POST-MOUNTED TEST STATION.



NFBWA SEGMENT 4

CATHODIC PROTECTION
TEST STATION DETAILS

4 OF 4

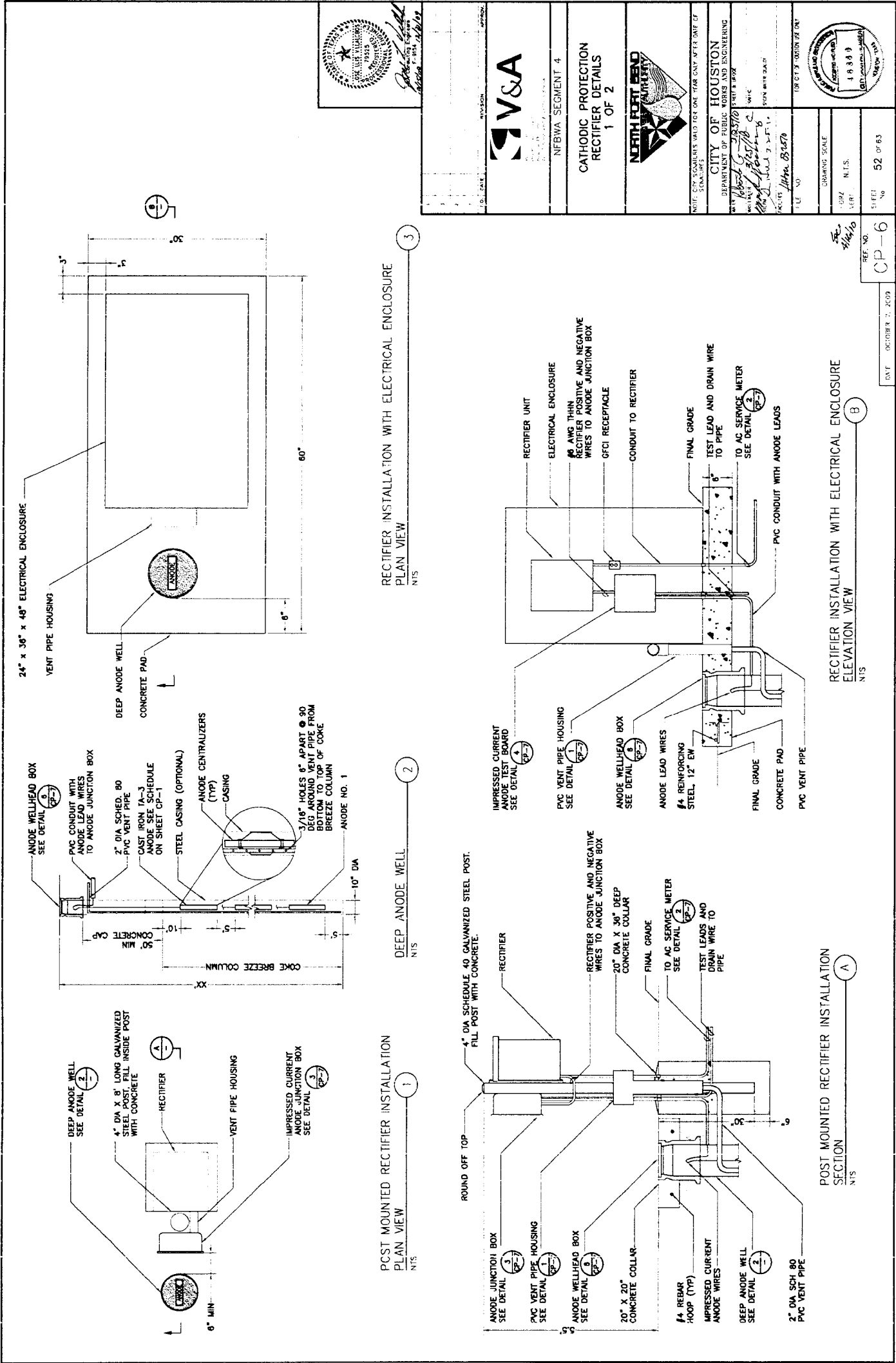


NO F: CITY SIGMA UNITS VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING[illegible][illegible]

F I F NO. 44700-052570	FOR CITY OF HOUSTON USE ONLY
---------------------------	------------------------------





Paul E. V&A
Professional Engineer
State of Texas, No. 19230
Exp. 12/31/99



V&A
VOLTAGE & AMPERAGE
ELECTRICAL ENGINEERING
1000 WEST 10TH STREET
HOUSTON, TEXAS 77001
713-521-1111

NFBWA SEGMENT 4
CATHODIC PROTECTION
RECTIFIER DETAILS
1 OF 2



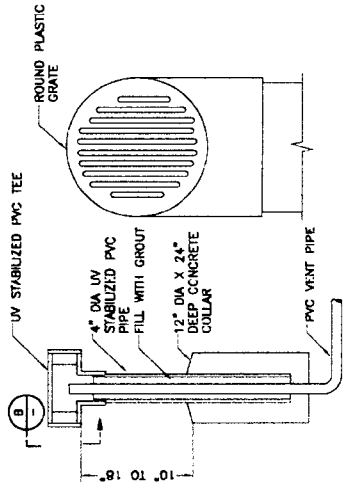
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ELECTRIC DIVISION
1000 WEST 10TH STREET
HOUSTON, TEXAS 77001
713-521-1111

DATE: 10/14/96
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

FOR CITY'S USE ONLY
DRAWING SCALE
N.T.S.
SHEET NO. 52 OF 63

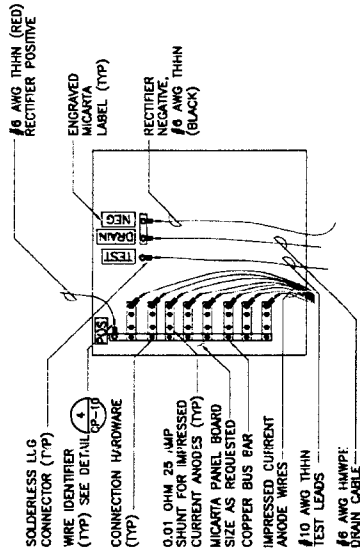


DATE: OCTOBER 1, 2009
REF. NO. CP-6
N.T.S.

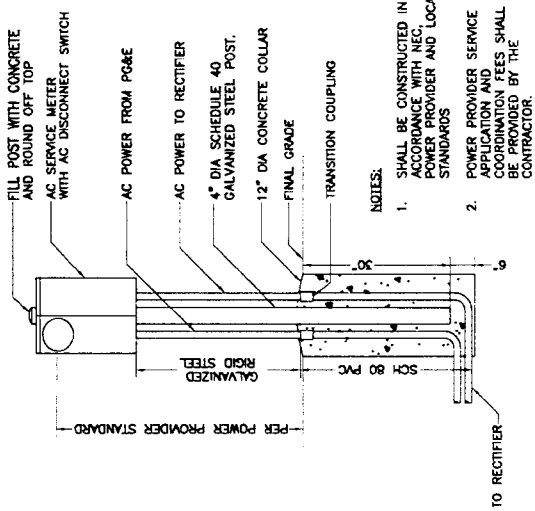


SECTION B

VENT PIPE HOUSING 1

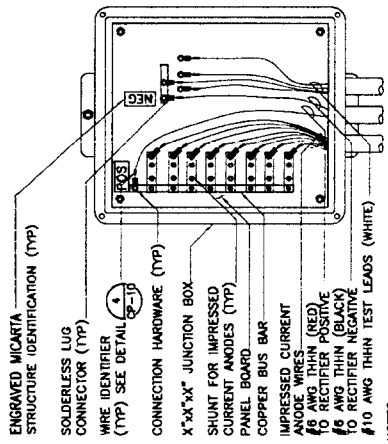


IMPRESSED CURRENT ANODE TEST BOARD 4



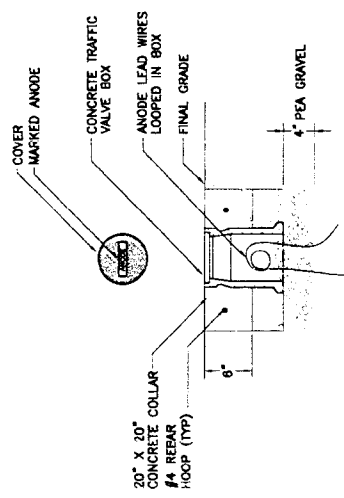
- NOTES:
1. SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL POWER PROVIDER AND LOCAL STANDARDS
 2. POWER PROVIDER SERVICE APPLICATION AND COORDINATION FEES SHALL BE PROVIDED BY THE CONTRACTOR.

AC SERVICE METER 2



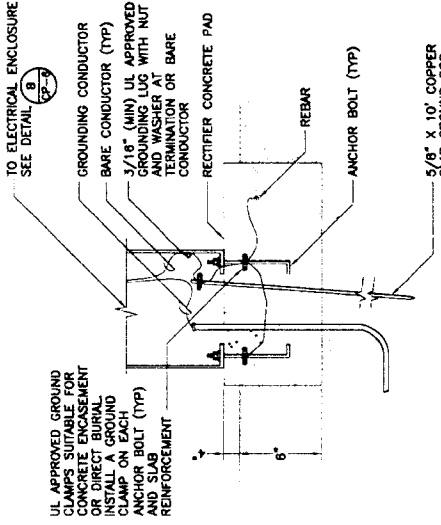
- NOTES:
1. COVER, LATCH, HINGES, AND NEOPRENE GASKET NOT SHOWN FOR CLARITY
 2. SIZE THE JUNCTION BOX TO FIT THE SHUNTS.

IMPRESSED CURRENT ANODE JUNCTION BOX 3



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

ANODE WELLHEAD BOX 6

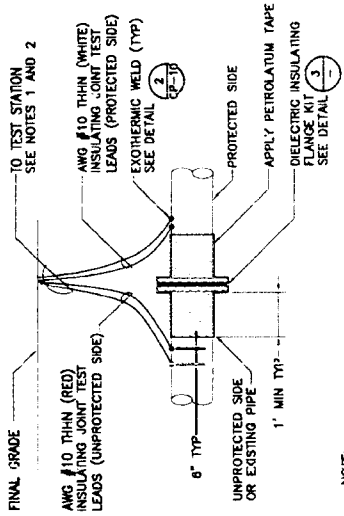


- NOTE:
- THE GROUND ROD SHALL BE INSTALLED OBliquely THROUGH THE FOUNDATION IN UNDISTURBED SOIL AT AN ANGLE NOT TO EXCEED 45° FROM VERTICAL

GROUND ROD 5



NO. 1	DATE	REVISION	APPROVAL
1			V&A
2			
3			
NFBWA SEGMENT 4			
CATHODIC PROTECTION RECTIFIER DETAILS 2 OF 2			
NORTH FORT BEND AUTHORITY			
NO CITY ENGINEER AND/OR OTHER ONE YEAR AFTER DATE OF SIGNATURES			
CITY OF HOUSTON			
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING			
PROJECT NO. 2055770			
DATE 03/25/19			
DRAWING SCALE			
SHEET NO. 53 OF 63			
PROJECT NO. CP-7			
DATE 03/25/19			

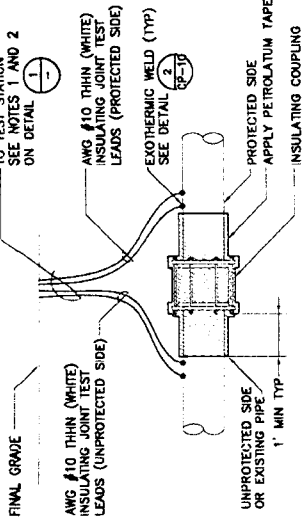


NOTE:
DO NOT APPLY PETROLATUM TAPE IF FLANGE IS LOCATED ABOVE GRADE OR IN A VAULT.

NOTES:

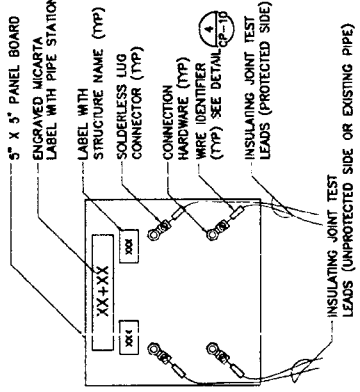
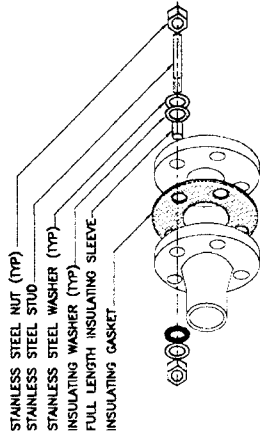
1. IF TEST STATION IS POST MOUNTED, REFER TO DETAIL 5
2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 4

INSULATING JOINT FLANGE CONNECTION TEST STATION (IJTS)
N/S



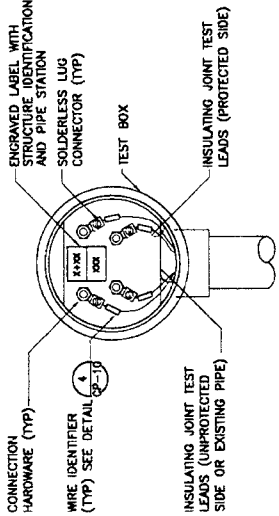
INSULATING JOINT TEST STATION-COUPLING CONNECTION (IJTS-COUPLING)
N/S

DIELECTRIC INSULATING FLANGE KIT
N/S



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

IJTS TEST BOARD
N/S



NOTE:
TEST BOX SHALL BE ATTACHED TO A POST MOUNTED TEST STATION. SEE DETAIL 5

POST MOUNTED IJTS TEST BOX
N/S

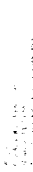
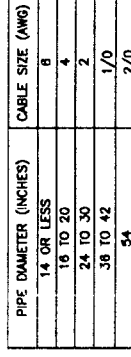
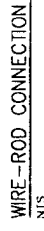
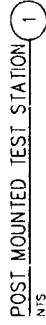


DESIGNER	PROJECT NO.	DATE
V&A		
NFBWA SEGMENT 4		
CATHODIC PROTECTION INSULATING JOINT DETAILS		
NORTH FORT BEAD		
NO. OF COPIES MADE FOR ONE YEAR ONLY AFTER DATE OF SIGNATURE		
CITY OF HOUSTON		
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING		
DATE	PROJECT NO.	SHEET NO.
10/25/08	032170	8
DESIGNED BY	DATE	SCALE
11/11/08	11/11/08	N.T.S.
CHECKED BY	DATE	SCALE
11/11/08	11/11/08	N.T.S.
IN CHARGE	DATE	SCALE
11/11/08	11/11/08	N.T.S.
PROJECT NO.	DATE	SCALE
032170	11/11/08	N.T.S.
DRAWING SCALE	DATE	SCALE
N.T.S.	DATE	SCALE
SHEET NO.	DATE	SCALE
54 OF 83	DATE	SCALE

ae
11/11/08

REF. NO.
CP-8

DATE
OCTOBER 7, 2003



NFBWA SEGMENT 4



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

[illegible]

3/25/109
3/25/110

EX-108 46m B2570

UNIT NO:	FOR USE OF POST OFFICE ONLY
----------	-----------------------------

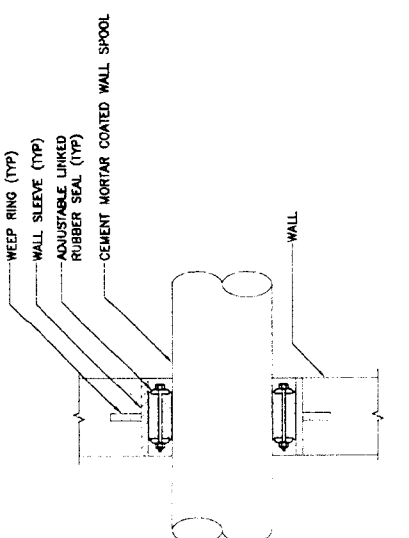
DRAWING SCALE

CPZ N.I.S. 48880

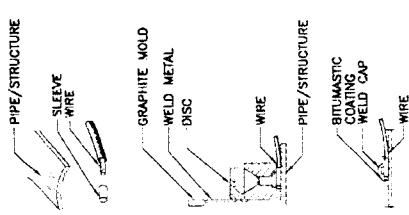
11/15/2015

55 of 63

DATE: OCTOBER 1, 2009

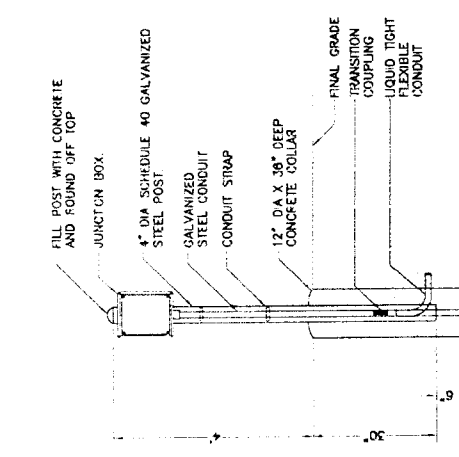


1. FILE PIPE/STRUCTURE TO BARE METAL AND CLEAN SURFACE.
2. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
3. HOLD WELD FIRMLY WITH OPENING AND FROM STRUCTURE (WIRE) WITH FLUNT GUN REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER.
4. COVER CONNECTION WITH BITUMASTIC COATING OVER ALL EXPOSED METAL, PLACE WELD CAP OVER CONNECTION, REPAIR ALL DAMAGED COATING AND LINING IN ACCORDANCE WITH MFG RECOMMENDATIONS.

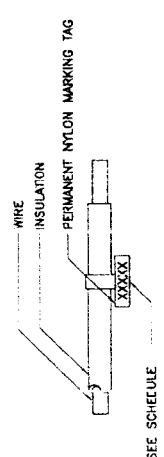


NOTE:
DETAIL SHOWS PROCEDURE FOR HORIZONTAL ORIENTATION. PROCEDURE FOR VERTICAL ORIENTATION IS SIMILAR.

WALL PENETRATION 3



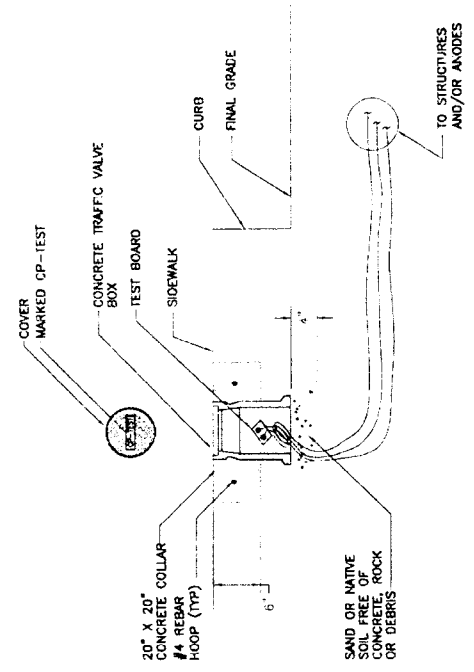
POST MOUNTED TEST STATION WITH JUNCTION BOX 1



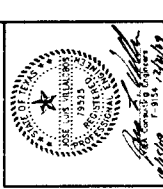
STRUCTURE	LABEL
XX" DIP WATER LINE	XX" OI
X" STEEL GAS LINE	X" G
XX" WATER	XX" W
GALVANIC ANODE	GA
REFERENCE ELECTRODE	RE
IMPRESSIONED CURRENT ANODE	ICA

NOTE:
"XX" INDICATES PIPE DIAMETER IN INCHES.

WIRE IDENTIFIER 4



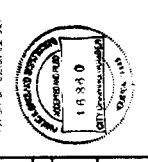
FLUSH-TO GRADE TEST STATION BOX 5



NFBWA SEGMENT 4
CATHODIC PROTECTION
MISCELLANEOUS DETAILS
1 OF 2



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STREET & BOND
NO. 1
NO. 2
NO. 3
NO. 4
NO. 5
NO. 6
NO. 7
NO. 8
NO. 9
NO. 10
NO. 11
NO. 12
NO. 13
NO. 14
NO. 15
NO. 16
NO. 17
NO. 18
NO. 19
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NO. 94
NO. 95
NO. 96
NO. 97
NO. 98
NO. 99
NO. 100



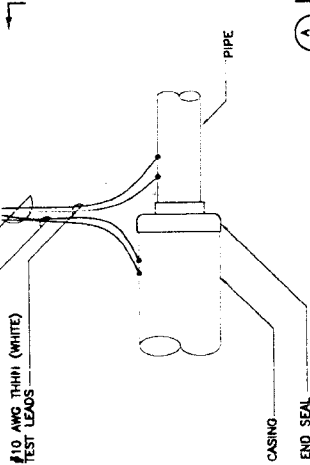
56 63
CP 10

EDGE OF PAVEMENT, SIDEWALK OR CURB

TO TEST STATION
SEE NOTES 1 AND 2

#10 AWG THHN (BLUE)
CASING TEST LEADS

#10 AWG THHN (WHITE)
TEST LEADS



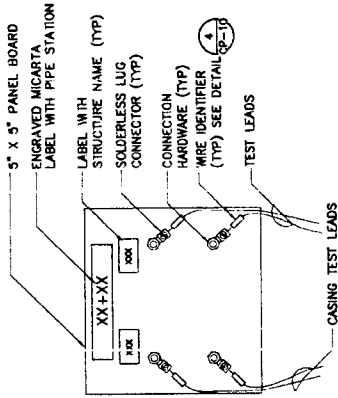
NOTES:

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

2. IF TEST STATION IS FLUSH MOUNTED, REFER TO DETAIL 3

CASING TEST STATION (CTS) PLAN 1

N.T.S.



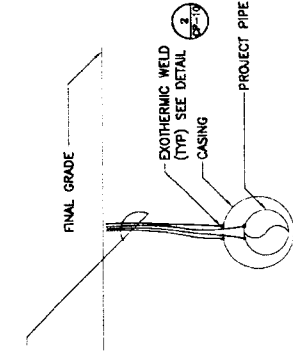
NOTE:
TEST BOARD SHALL BE SET
IN FLUSH-TO-GRADE TEST
STATION. SEE DETAIL 5

C.T.S. TEST BOARD

N.T.S.

3

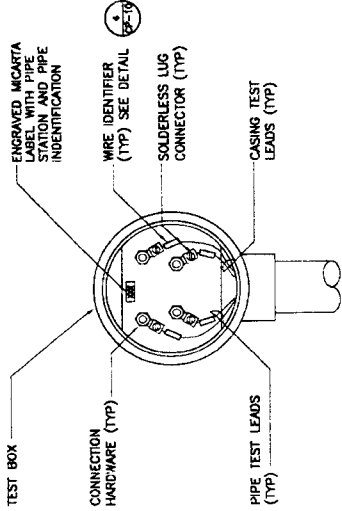
TO TEST STATION
SEE NOTES 1 AND 2
ON DETAIL



CASING TEST STATION (CTS)
SECTION

N.T.S.

A



NOTE:
TEST BOX SHALL BE ATTACHED TO
A POST MOUNTED TEST STATION.
SEE DETAIL 4

POST MOUNTED
C.T.S. TEST BOX

N.T.S.

2



APPROVED
10/10/88
10/10/88

V&A

NFBWA SEGMENT 4

CATHODIC PROTECTION
MISCELLANEOUS DETAILS
2 OF 2



NOTE: C.T.S. STATIONS VALID FOR ONE YEAR ONLY AFTER DATE OF
SUBMITTAL

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

3103710

W.P.E.

10/10/88

10/10/88

10/10/88

10/10/88

10/10/88

10/10/88

10/10/88

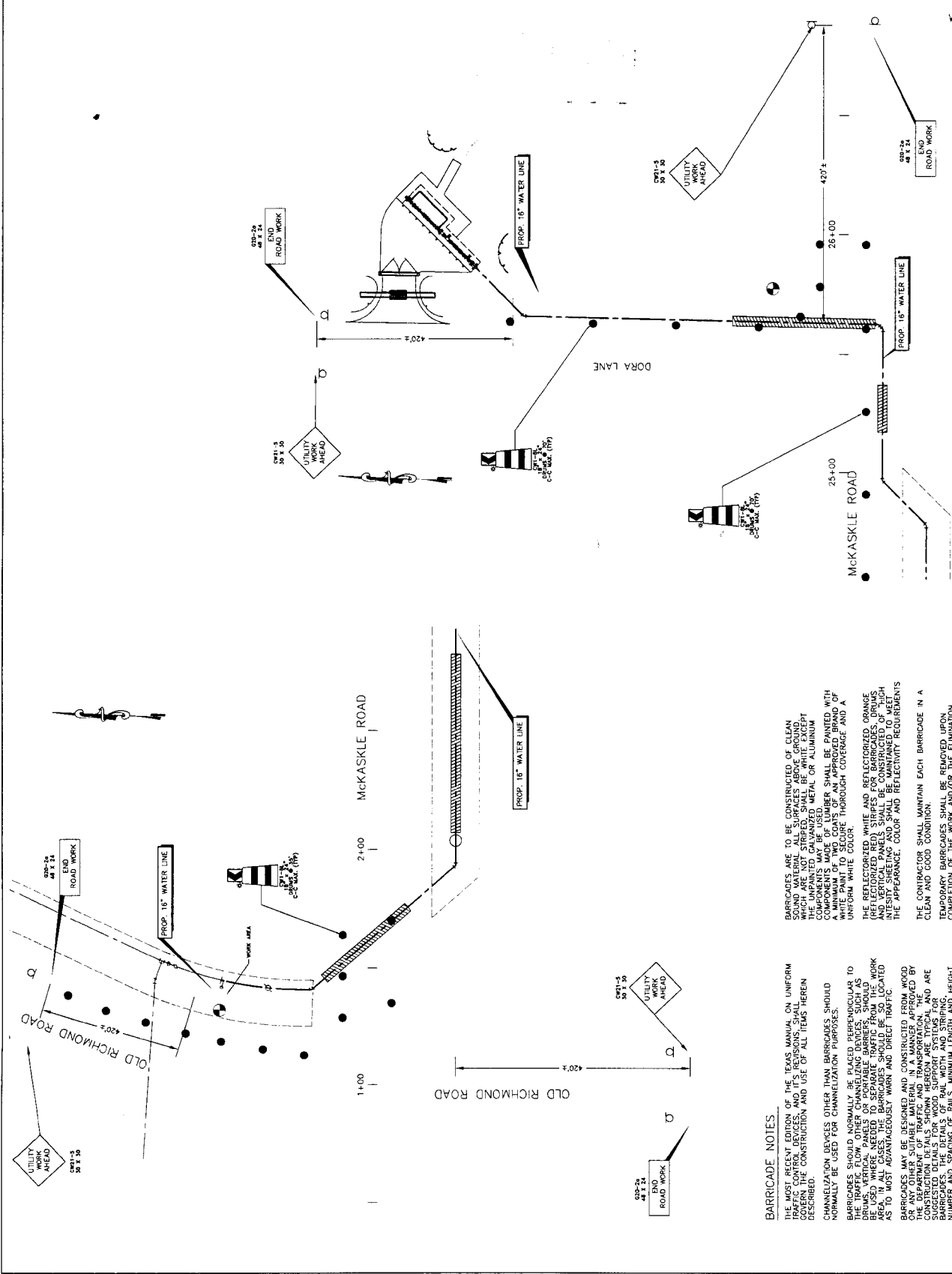
10/10/88

10/10/88

10/10/88

10/10/88

10/10/88



BARRICADE NOTES

THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ITS REQUIREMENTS SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.

CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.

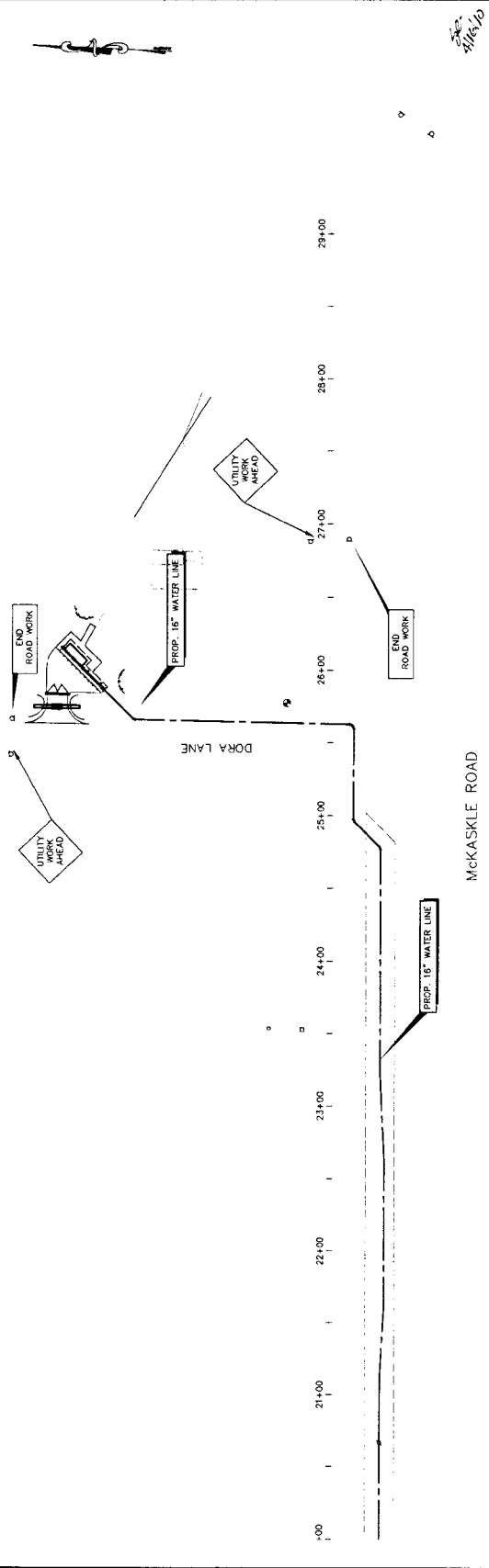
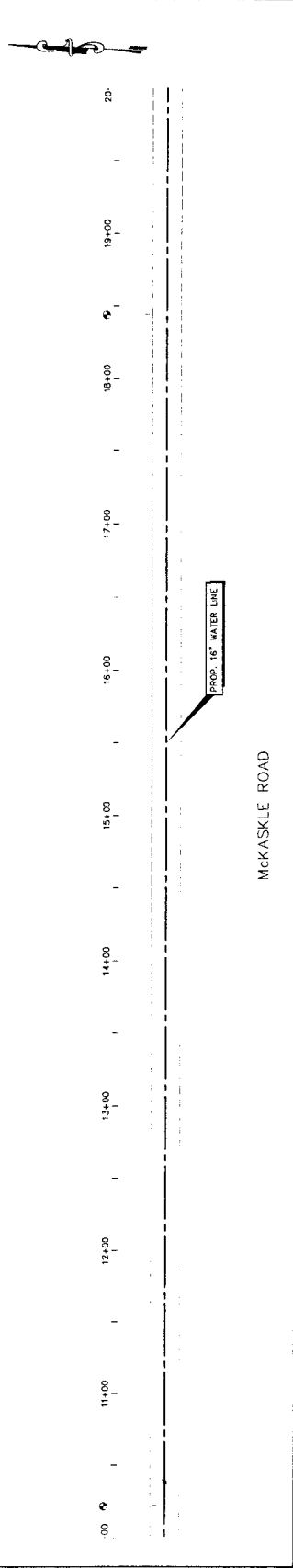
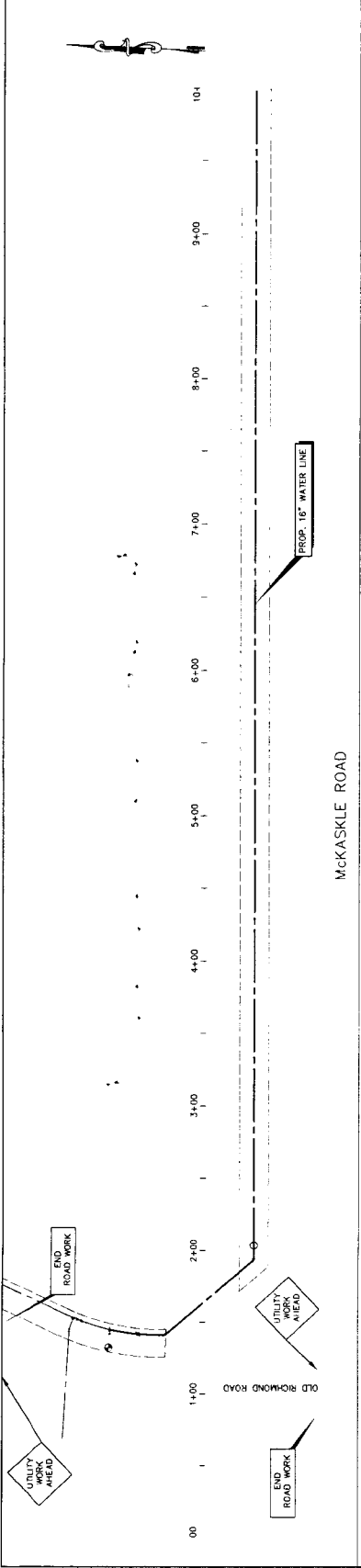
BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAVEL DIRECTION. BARRICADES SHOULD BE CONSTRUCTED OF DUMPS, DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS. SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. BARRICADES SHOULD BE CONSTRUCTED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.

BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL IN A MANNER APPROVED BY THE CITY ENGINEER. BARRICADES SHOULD BE CONSTRUCTED TO WITHSTAND THE IMPACT OF A 10,000 LB. TRUCK TRAILER AT 5 MPH. BARRICADES SHOULD BE CONSTRUCTED TO WITHSTAND THE IMPACT OF A 10,000 LB. TRUCK TRAILER AT 5 MPH. BARRICADES SHOULD BE CONSTRUCTED TO WITHSTAND THE IMPACT OF A 10,000 LB. TRUCK TRAILER AT 5 MPH.

CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. BARRICADES SHOULD BE CONSTRUCTED TO WITHSTAND THE IMPACT OF A 10,000 LB. TRUCK TRAILER AT 5 MPH. BARRICADES SHOULD BE CONSTRUCTED TO WITHSTAND THE IMPACT OF A 10,000 LB. TRUCK TRAILER AT 5 MPH. BARRICADES SHOULD BE CONSTRUCTED TO WITHSTAND THE IMPACT OF A 10,000 LB. TRUCK TRAILER AT 5 MPH.

NUMBER AND SPACING OF BAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.

BENTHANE ENGINEERING CORPORATION 10000 Katy Freeway, Suite 200 Houston, Texas 77059 U.S.A. Tel: 281-460-0444 Fax: 281-460-0444 E-Mail: info@benthanecorp.com			
NO.	DATE	REVISION	APPROVED
4			
3			
2			
1			
FBCMD No. 119 CONNECTION PROPOSED 18" WATER LINE ALONG McKASKLE ROAD TO FBCMD No.119 WATER PLANT			
TRAFFIC CONTROL PLAN			
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES			
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING WORKS SECTION CITY ENGINEER CITY OF HOUSTON TEXAS CITY ENGINEER CITY OF HOUSTON TEXAS			
FILE NO. 14141 B3290			
DRAWING SCALE			
HORIZ : 1" = 40'			
VERT : 1" = 40'			
SHEET 58 OF 66			



TEXAS BOARD OF PROFESSIONAL ENGINEERS
REGISTERED PROFESSIONAL ENGINEER
REGISTRATION NUMBER 16890

March 2010

BENCHMARK ENGINEERING CORPORATION
CONSULTING ENGINEERS - PROFESSIONAL ENGINEERS
17100 FM 1970, SUITE 100
HOUSTON, TEXAS 77057-1000
(713) 861-1100
FAX: (713) 861-1101
WWW.BENCHMARK-ENG.COM

NO.	DATE	REVISION	APPROVED
1			
2			
3			
4			

FROM: NO. 119 CONNECTION
PROPOSED 16" WATER LINE ALONG
McKASKLE ROAD TO FROM NO. 119
WATER PLANT

TRAFFIC CONTROL PLAN

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DESIGNED BY: *3/23/10* CHECKED BY: *3/23/10*
DRAWN BY: *3/23/10* DATE: *3/23/10*
SCALE: 1" = 40'

FILE NO.: *16890*

DRAWING SCALE: *1" = 40'*

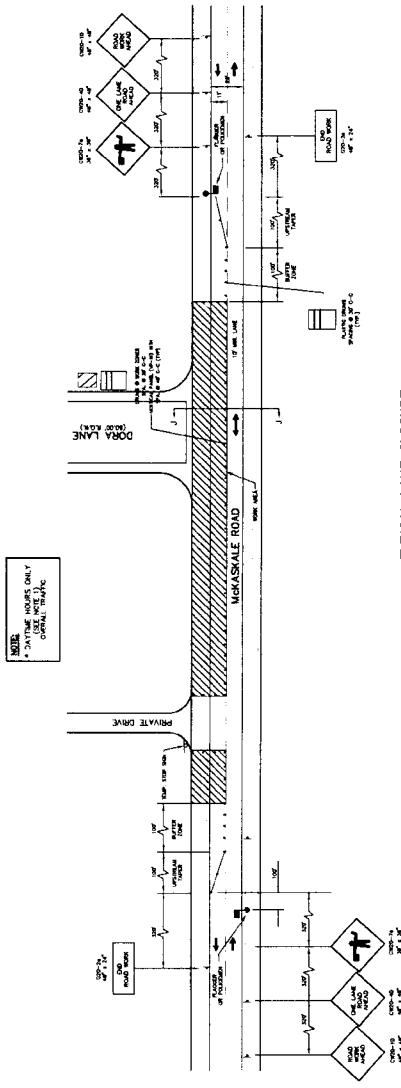
HORIZ: 1" = 40'
VERT: 1" = 40'

SHEET 59 OF 66

FOR CITY OF HOUSTON USE ONLY

TRAFFIC CONTROL NOTES

1. NO WORK SHALL BE DONE ON ROADWAY BETWEEN HOURS OF 7:00 A.M. TO 3:00 A.M. AND 4:00 P.M. TO 10:00 P.M. TO MAINTAIN FREE FLOW OF TRAFFIC.
2. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 1995 EDITION, AND THE STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL DEVICES, 1995 EDITION, WITH THE FOLLOWING EXCEPTIONS:
3. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH PART 4 OF THE STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL DEVICES, 1995 EDITION, WITH THE FOLLOWING EXCEPTIONS:
4. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
5. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
6. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
7. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
8. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
9. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
10. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
11. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
12. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
13. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:
14. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN CONFORMANCE WITH THE FOLLOWING:



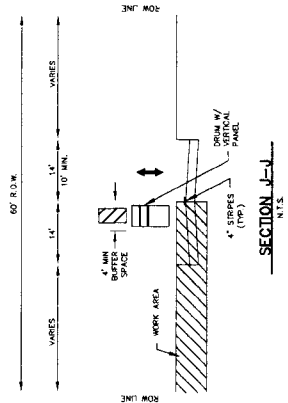
TYPICAL LANE CLOSURE

PHASE 1 - EXTENSION OF PROP. ASPHALT LANE

PHASE 2 - PROP. STRIPING FOR LEFT TURN LANE

SCALE: 1" = 10'

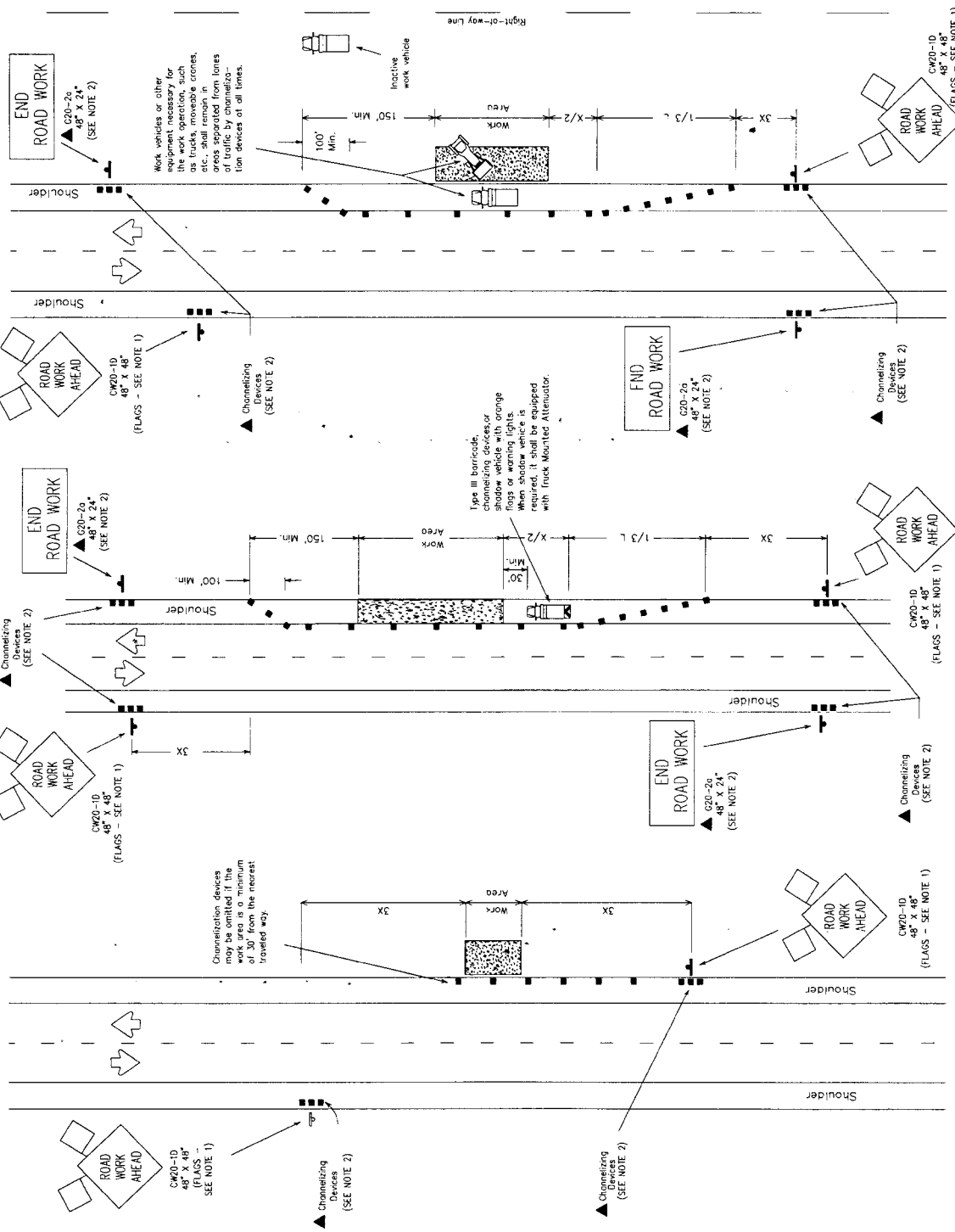
SPEED LIMIT
30 MPH



 STATE OF TEXAS JAN 15 2010 TEAS BEAS BENCHMARK ENGINEERING CORPORATION REGISTRATION NUMBER 1-6708		 BENCHMARK ENGINEERING CORPORATION Consulting Engineer-Planners-Surveyors 1401 Pennington, Suite 200 Houston, Texas 77055 (713)246-0000 Fax: (713)246-0001 TYPE: EBM # T-538	
NO. DATE		REVISION	
1		APPROVED	
FBCMD NO. 119 CONNECTION			
PROPOSED 16" WATER LINE ALONG			
McKASKLE ROAD TO FBCMD NO.119			
WATER PLANT			
TRAFFIC CONTROL DETAILS			
			
NOTE: CITY SCHEDULES VALID FOR ONE YEAR ONLY AFTER DATE OF SUBMITTAL			
CITY OF HOUSTON			
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING			
PROJECT: FBCMD NO. 119 STREET & BRIDGE			
LOCATION: 16" WATER LINE			
DATE: 01/15/2010			
BY: [Signature]			
FOR: [Signature]			
FILE NO: 446-03-870			
DRAWING SCALE			
HORIZ: N.T.S.			
VERT: N.T.S.			
SHEET 50 OF 86			

DATE: 10/07/2009
DRAWN BY: J. B. B. 10/07/2009
CHECKED BY: J. B. B. 10/07/2009
DESIGNED BY: J. B. B. 10/07/2009
IN CHARGE: J. B. B. 10/07/2009
PROJECT: 43330
SHEET: 61

DISCLAIMER
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TCP (1-1a) Work Area Near Shoulder
TCP (1-1b) Work Area on Shoulder
TCP (1-1c) Work Vehicles on Shoulder

LEGEND

Type III Barricade

Heavy Work Vehicle

Trailer Mounted Flashing Arrow Panel

Flagger

Sign Post

Channelizing Devices

Truck Mounted Attenuator

Portable Changeable Message Sign

Flag

Device	Minimum Spacing	Minimum Offset	Minimum Spacing	Minimum Offset	Minimum Spacing	Minimum Offset
1	150'	165'	180'	30'	60'-75'	120'
2	35'	205'	225'	35'	70'-90'	160'
3	45'	265'	295'	40'	80'-100'	240'
4	55'	450'	495'	45'	90'-110'	320'
5	60'	500'	550'	50'	100'-125'	400'
6	65'	550'	605'	55'	110'-140'	500'
7	70'	600'	660'	60'	120'-150'	600'
8	75'	650'	715'	65'	130'-165'	700'
9	80'	700'	770'	70'	140'-175'	800'

TYPICAL USAGE

MOBILE	SHORT DURATION	INTERMEDIATE TERM	STATIONARY	LONG TERM

- GENERAL NOTES:**
- Unless otherwise stated in the plans, flags attached to signs are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
 - On high speed facilities advance warning signs should be installed approximately 3X from the work area or from the beginning of a lane or shoulder taper. On low speed facilities the advance warning signs should be placed based on the "X" minimum distance.
 - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division - IE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@tdd.state.tx.us

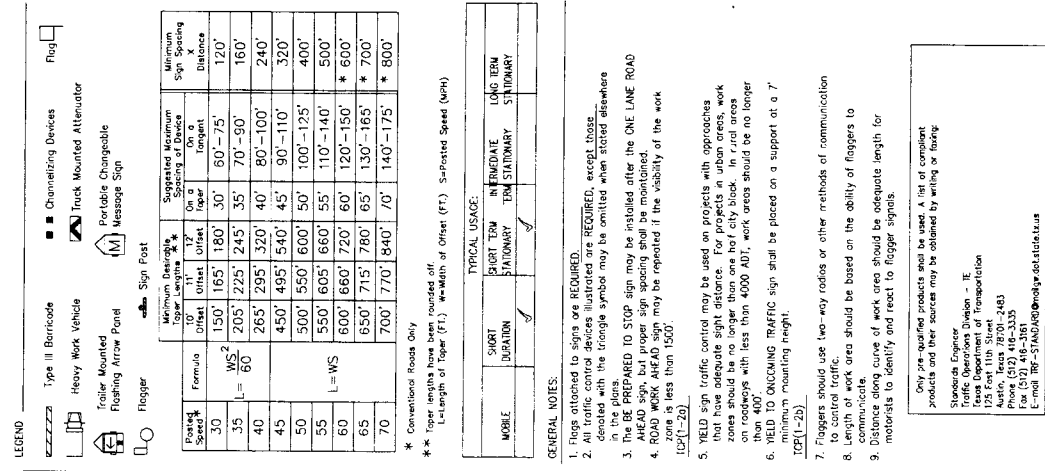
The requirement for shadow vehicles will be listed in the project GENERAL NOTES, Item 502, Barricades, Signs and Traffic Handling.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC CONTROL PLAN

TCP(1-1)-98

REV.	NO.	DATE	BY	CHKD.	APP'D.
1	1	10/07/2009	J. B. B.	J. B. B.	J. B. B.



STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC CONTROL PLAN

TCP(1-2)-98

4'-0" 6" C
4'-0" 6" D
4'-0" 6" E
4'-0"

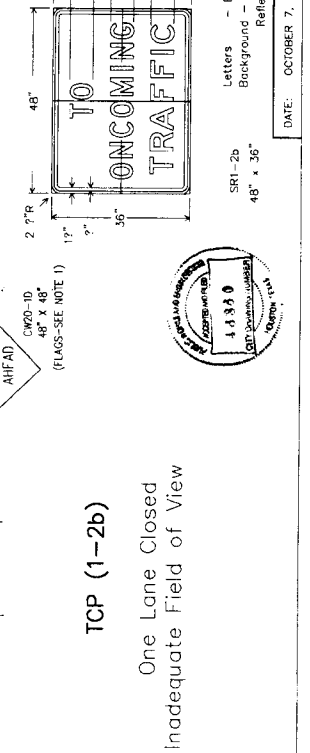
TRAFFIC CONTROL PLAN

TCP(1-2)-98

4'-0" 6" C
4'-0" 6" D
4'-0" 6" E
4'-0"

TRAFFIC CONTROL PLAN

TCP(1-2)-98



48" X 48"
(TAGS-SEE NOTE 1)



LEGEND

Type III Barricade
Heavy Work Vehicle
Trailer Mounted Flashing Arrow Panel
Flagger
Channelizing Devices
Truck Mounted Attenuator
Portable Changeable Message Sign
Sign Post

Paving Speed, ft/min	Formula	Minimum Distance, ft	Minimum Spacing, ft	Minimum Sign Spacing, ft
30	$WS^2/60$	150'	180'	30'
35	$L=WS^2/60$	205'	225'	35'
40		265'	295'	40'
45		450'	495'	45'
50		500'	550'	50'
55	$L=WS^2/60$	550'	605'	55'
60		600'	660'	60'
65		650'	715'	65'
70		700'	770'	70'

TYPICAL USAGE			
MOBILE	SHORT DURATION	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓	✓	✓	✓

- GENERAL NOTES:
- Unless otherwise stated in the plans, flags attached to signs are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
 - Type III barricades are required on both sides of work area at all times. (See BC Standards for barricade details.)
 - Stockpiled material should be placed a minimum 50' from nearest traveled way.
 - On high speed facilities advance warning signs should be installed approximately 3X from the work area or from the beginning of a lane or shoulder taper. On low speed facilities the advance warning sign should be placed on the X' minimum distance.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
800 North Loop West
Austin, Texas 78701-2483
Phone (512) 476-3335
Fax (512) 416-3161
E-mail TRR-STANDARD@tdot.state.tx.us

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC CONTROL PLAN

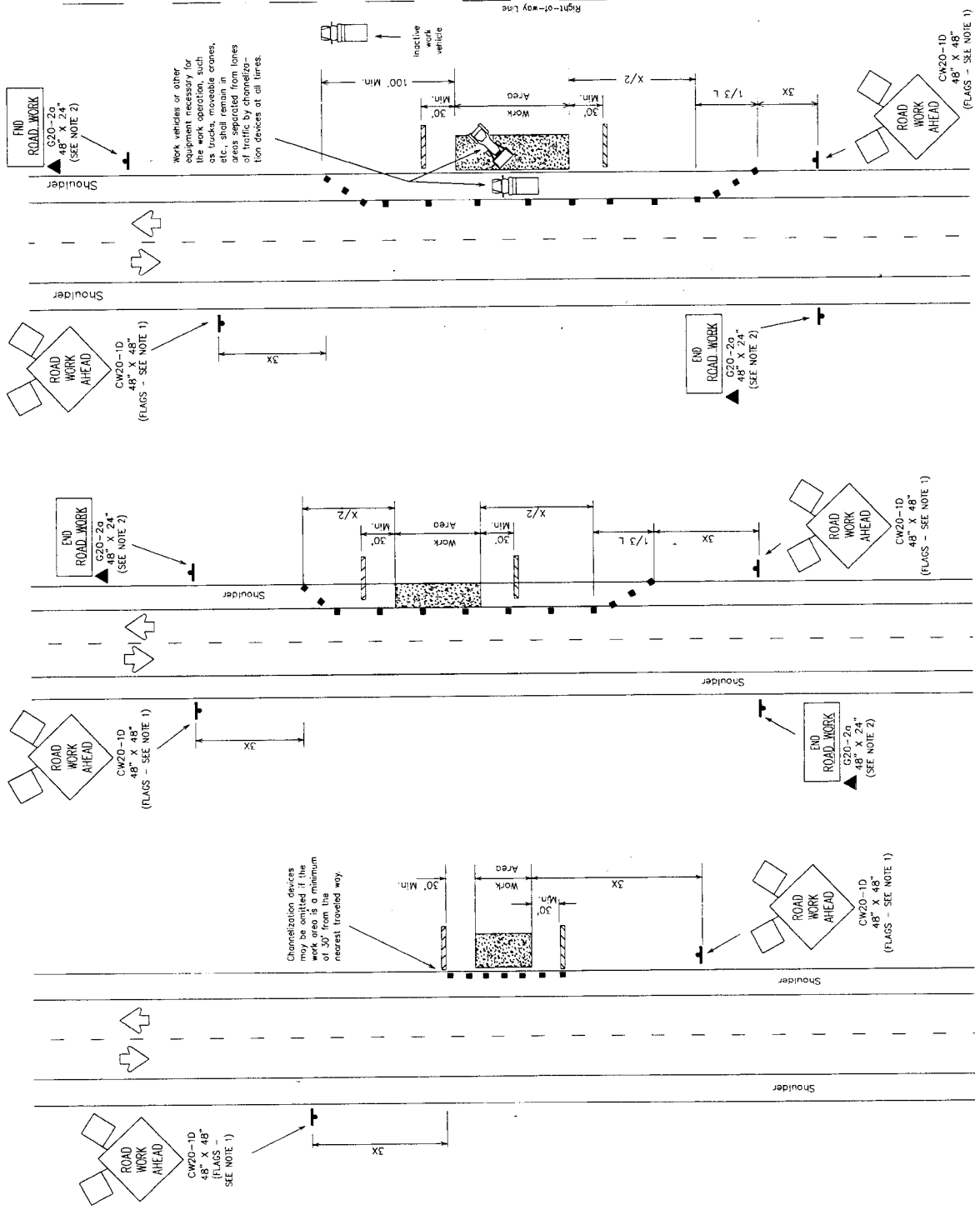
TCP(2-1)-98

REVISED	DATE	BY	CHKD
1	2-94	8-95	1-97
2	4-98		

REF. NO. T4

DATE: OCTOBER 7, 2009

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TCP (2-1a)

TCP (2-1b)

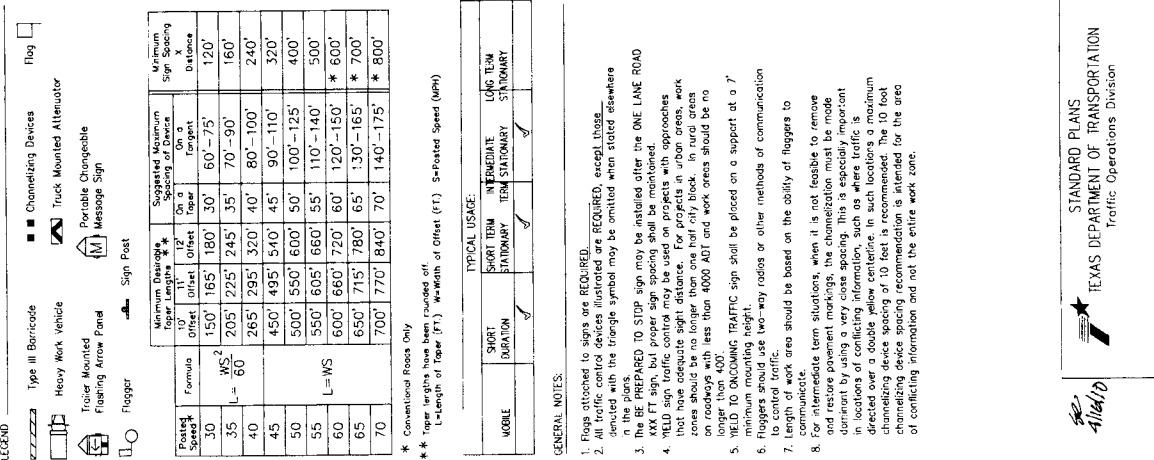
TCP (2-1c)

Work Area Near Shoulder

Work Area on Shoulder

Work Vehicles on Shoulder

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Proposed Speed ¹	Formula	Minimum Design ² 10' Offset 11' Offset 12' Offset	Suggested Maximum Spacing of Devices ³	Minimum Sign Spacing ⁴
30	WS^2	150' 165' 185'	30' 60'-75'	120'
35	$L = 60$	205' 225' 245'	35' 70'-90'	160'
40		285' 295' 320'	40' 80'-100'	240'
45		450' 495' 540'	45' 90'-110'	320'
50		500' 550' 600'	50' 100'-125'	400'
55		550' 605' 660'	55' 110'-140'	500'
60	$L = WS$	600' 660' 720'	60' 120'-150'	* 600'
65		650' 715' 780'	65' 130'-165'	* 700'
70		700' 770' 840'	70' 140'-175'	* 800'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper (FT), W=Width of Offset (FT), S=Posted Speed (MPH)

TYPICAL USAGE:								
	MOBILE	SHORT DURATION	SHORT TERM		INTERMEDIATE TERM		LONG TERM	
			STATIONARY	STATIONARY	STATIONARY	STATIONARY	STATIONARY	STATIONARY
		✓			✓			✓

1. Flaga attached to signs are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be installed when stated elsewhere.
3. The BAY PREPARED TO STOP sign may be omitted after the ONE LANE ROAD sign.
4. XXX FT sign, but proper sign spacing shall be maintained.
5. XXX FT sign traffic control may be used on projects with approaches that have adequate sight distances. For projects in urban areas, work zones on roadways with less than 4000 AADT and work areas should be no longer than 400'.
6. YIELD TO ONCOMING TRAFFIC sign shall be placed on a support at a 7' minimum mounting height.
7. Work area shall be located away from the mainline travel lanes to avoid communication to control traffic.
8. Length of work area should be based on the ability of flaggers to communicate.
9. For intermediate term situations, when it is not feasible to remove the work zone signs, the work zone signage should be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline, in such locations a maximum channelizing device spacing of 10 feet is recommended for the area of conflicting information and stop the entire work zone.

TRAFFIC CONTROL PLAN

2-Lane Roadway Without Paved Shoulders
One Lane Closed
Inadequate Field of View

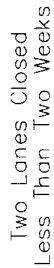
2-Lane Roadway Without Paved Shoulders
One Lane Closed
Adequate Field of View

TCP(2-2)-98

DATE: OCTOBER 7, 2009		REF. NO. T5		⑥ GOOD: December 1985 8-95 1-97 4-98 3-03		⑦ COUNTRY: 6 ⑧ AREA: 1005 ⑨ PROJECT:		⑩ L3: ⑪ L4: ⑫ L5: ⑬ L6: ⑭ L7: ⑮ L8: ⑯ L9: ⑰ L10: ⑱ L11: ⑲ L12: ⑳ L13: ㉑ L14: ㉒ L15: ㉓ L16: ㉔ L17: ㉕ L18: ㉖ L19: ㉗ L20: ㉘ L21: ㉙ L22: ㉚ L23: ㉛ L24: ㉜ L25: ㉝ L26: ㉞ L27: ㉟ L28: ㊱ L29: ㊲ L30: ㊳ L31: ㊴ L32: ㊵ L33: ㊶ L34: ㊷ L35: ㊸ L39: ㊹ L40: ㊺ L41: ㊻ L42: ㊼ L43: ㊽ L44: ㊾ L45: ㊿ L50: ㊿ L51: ㊿ L52: ㊿ L53: ㊿ L54: ㊿ L55: ㊿ L56: ㊿ L57: ㊿ L58: ㊿ L59: ㊿ L60: ㊿ L61: ㊿ L62: ㊿ L63: ㊿ L64: ㊿ L65: ㊿ L66: ㊿ L67: ㊿ L68: ㊿ L69: ㊿ L70: ㊿ L71: ㊿ L72: ㊿ L73: ㊿ L74: ㊿ L75: ㊿ L76: ㊿ L77: ㊿ L78: ㊿ L79: ㊿ L80: ㊿ L81: ㊿ L82: ㊿ L83: ㊿ L84: ㊿ L85: ㊿ L86: ㊿ L87: ㊿ L88: ㊿ L89: ㊿ L90: ㊿ L91: ㊿ L92: ㊿ L93: ㊿ L94: ㊿ L95: ㊿ L96: ㊿ L97: ㊿ L98: ㊿ L99: ㊿ L100: ㊿ L101: ㊿ L102: ㊿ L103: ㊿ L104: ㊿ L105: ㊿ L106: ㊿ L107: ㊿ L108: ㊿ L109: ㊿ L110: ㊿ L111: ㊿ L112: ㊿ L113: ㊿ L114: ㊿ L115: ㊿ L116: ㊿ L117: ㊿ L118: ㊿ L119: ㊿ L120: ㊿ L121: ㊿ L122: ㊿ L123: ㊿ L124: ㊿ L125: ㊿ L126: ㊿ L127: ㊿ L128: ㊿ L129: ㊿ L130: ㊿ L131: ㊿ L132: ㊿ L133: ㊿ L134: ㊿ L135: ㊿ L136: ㊿ L137: ㊿ L138: ㊿ L139: ㊿ L140: ㊿ L141: ㊿ L142: ㊿ L143: ㊿ L144: ㊿ L145: ㊿ L146: ㊿ L147: ㊿ L148: ㊿ L149: ㊿ L150: ㊿ L151: ㊿ L152: ㊿ L153: ㊿ L154: ㊿ L155: ㊿ L156: ㊿ L157: ㊿ L158: ㊿ L159: ㊿ L160: ㊿ L161: ㊿ L162: ㊿ L163: ㊿ L164: ㊿ L165: ㊿ L166: ㊿ L167: ㊿ L168: ㊿ L169: ㊿ L170: ㊿ L171: ㊿ L172: ㊿ L173: ㊿ L174: ㊿ L175: ㊿ L176: ㊿ L177: ㊿ L178: ㊿ L179: ㊿ L180: ㊿ L181: ㊿ L182: ㊿ L183: ㊿ L184: ㊿ L185: ㊿ L186: ㊿ L187: ㊿ L188: ㊿ L189: ㊿ L190: ㊿ L191: ㊿ L192: ㊿ L193: ㊿ L194: ㊿ L195: ㊿ L196: ㊿ L197: ㊿ L198: ㊿ L199: ㊿ L200: ㊿ L201: ㊿ L202: ㊿ L203: ㊿ L204: ㊿ L205: ㊿ L206: ㊿ L207: ㊿ L208: ㊿ L209: ㊿ L210: ㊿ L211: ㊿ L212: ㊿ L213: ㊿ L214: ㊿ L215: ㊿ L216: ㊿ L217: ㊿ L218: ㊿ L219: ㊿ L220: ㊿ L221: ㊿ L222: ㊿ L223: ㊿ L224: ㊿ L225: ㊿ L226: ㊿ L227: ㊿ L228: ㊿ L229: ㊿ L230: ㊿ L231: ㊿ L232: ㊿ L233: ㊿ L234: ㊿ L235: ㊿ L236: ㊿ L237: ㊿ L238: ㊿ L239: ㊿ L240: ㊿ L241: ㊿ L242: ㊿ L243: ㊿ L244: ㊿ L245: ㊿ L246: ㊿ L247: ㊿ L248: ㊿ L249: ㊿ L250: ㊿ L251: ㊿ L252: ㊿ L253: ㊿ L254: ㊿ L255: ㊿ L256: ㊿ L257: ㊿ L258: ㊿ L259: ㊿ L260: ㊿ L261: ㊿ L262: ㊿ L263: ㊿ L264: ㊿ L265: ㊿ L266: ㊿ L267: ㊿ L268: ㊿ L269: ㊿ L270: ㊿ L271: ㊿ L272: ㊿ L273: ㊿ L274: ㊿ L275: ㊿ L276: ㊿ L277: ㊿ L278: ㊿ L279: ㊿ L280: ㊿ L281: ㊿ L282: ㊿ L283: ㊿ L284: ㊿ L285: ㊿ L286: ㊿ L287: ㊿ L288: ㊿ L289: ㊿ L290: ㊿ L291: ㊿ L292: ㊿ L293: ㊿ L294: ㊿ L295: ㊿ L296: ㊿ L297: ㊿ L298: ㊿ L299: ㊿ L300: ㊿ L301: ㊿ L302: ㊿ L303: ㊿ L304: ㊿ L305: ㊿ L306: ㊿ L307: ㊿ L308: ㊿ L309: ㊿ L310: ㊿ L311: ㊿ L312: ㊿ L313: ㊿ L314: ㊿ L315: ㊿ L316: ㊿ L317: ㊿ L318: ㊿ L319: ㊿ L320: ㊿ L321: ㊿ L322: ㊿ L323: ㊿ L324: ㊿ L325: ㊿ L326: ㊿ L327: ㊿ L328: ㊿ L329: ㊿ L330: ㊿ L331: ㊿ L332: ㊿ L333: ㊿ L334: ㊿ L335: ㊿ L336: ㊿ L337: ㊿ L338: ㊿ L339: ㊿ L340: ㊿ L341: ㊿ L342: ㊿ L343: ㊿ L344: ㊿ L345: ㊿ L346: ㊿ L347: ㊿ L348: ㊿ L349: ㊿ L350: ㊿ L351: ㊿ L352: ㊿ L353: ㊿ L354: ㊿ L355: ㊿ L356: ㊿ L357: ㊿ L358: ㊿ L359: ㊿ L360: ㊿ L361: ㊿ L362: ㊿ L363: ㊿ L364: ㊿ L365: ㊿ L366: ㊿ L367: ㊿ L368: ㊿ L369: ㊿ L370: ㊿ L371: ㊿ L372: ㊿ L373: ㊿ L374: ㊿ L375: ㊿ L376: ㊿ L377: ㊿ L378: ㊿ L379: ㊿ L380: ㊿ L381: ㊿ L382: ㊿ L383: ㊿ L384: ㊿ L385: ㊿ L386: ㊿ L387: ㊿ L388: ㊿ L389: ㊿ L390: ㊿ L391: ㊿ L392: ㊿ L393: ㊿ L394: ㊿ L395: ㊿ L396: ㊿ L397: ㊿ L398: ㊿ L399: ㊿ L400: ㊿ L401: ㊿ L402: ㊿ L403: ㊿ L404: ㊿ L405: ㊿ L406: ㊿ L407: ㊿ L408: ㊿ L409: ㊿ L410: ㊿ L411: ㊿ L412: ㊿ L413: ㊿ L414: ㊿ L415: ㊿ L416: ㊿ L417: ㊿ L418: ㊿ L419: ㊿ L420: ㊿ L421: ㊿ L422: ㊿ L423: ㊿ L424: ㊿ L425: ㊿ L426: ㊿ L427: ㊿ L428: ㊿ L429: ㊿ L430: ㊿ L431: ㊿ L432: ㊿ L433: ㊿ L434: ㊿ L435: ㊿ L436: ㊿ L437: ㊿ L438: ㊿ L439: ㊿ L440: ㊿ L441: ㊿ L442: ㊿ L443: ㊿ L444: ㊿ L445: ㊿ L446: ㊿ L447: ㊿ L448: ㊿ L449: ㊿ L450: ㊿ L451: ㊿ L452: ㊿ L453: ㊿ L454: ㊿ L455: ㊿ L456: ㊿ L457: ㊿ L458: ㊿ L4	
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DN:	DATE:	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
CK:	ACC:	7 6 9 20 21 22 23 24 25 26 27 28 29 30 31 32
CK:	FILE:	33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
DW:		19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
CK:		34 35 36 37 38 39 40 41 42 43 44 45 46 47



TRAFFIC CONTROL PLAN

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