

**REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT**

On this 27th day of October, 2015, Commissioners Court came on to be heard and reviewed the accompanying notice of Reddico Construction Company, Inc. Job Location 2926 Greenbusch Rd, Katy, TX 77494 Date 10/13/2015 Bond No. 70117948, Permit No. 2015-3578 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 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 Meyers, seconded by Commissioner Patterson, duly put and carried, it is ORDERED, ADJUDGED 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  
 301 Jackson Street  
 Richmond, Texas 77469  
 281-633-7500
- 3. This permit expires one (1) year from date of permit if construction has not commenced.

By: Rich J. Stangle, PE, PTOE  
for County Engineer

Presented to Commissioners Court and approved.  
Recorded in Volume 10-27-15  
Minutes of Commissioners Court

By: N/A  
Drainage District Engineer/Manager

Clerk of Commissioners Court  
By: Shonda Welles  
Deputy



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

AUTHORIZED

BOND NO 70117948

THE STATE OF TEXAS

§

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND

§

THAT WE, Reddico Construction Co., Inc. whose address is 10083 Airport Road, Conroe, Texas 77303 Texas, hereinafter called the Principal, And The Guarantee Company of North America USA, a Corporation existing under and by virtue of the laws of the state of Michigan and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at One Towne Square, #1470, Southfield, Michigan 48076, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought whining said state is Richard Sauer and Whose address is 350 Glenborough Dr., #138, Houston, TX 77067, 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 Twenty-Five Thousand and No/100 Dollars (\$ 25,000.00 ) 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, commercial driveway and median openings or modifications 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, commercial driveway and median openings or modifications;

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, commercial driveway and median openings or modifications 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 12th day of October, 2015.

Reddico Construction Co., Inc.

PRINCIPAL

BY Michael A. Gruy, Executive Vice President

The Guarantee Company of North America USA

SURETY

BY Nancy T. Berry, Attorney-In-Fact



The Guarantee Company of North America USA  
Southfield, Michigan

POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS: That THE GUARANTEE COMPANY OF NORTH AMERICA USA, a corporation organized and existing under the laws of the State of Michigan, having its principal office in Southfield, Michigan, does hereby constitute and appoint

Richard D. Bright, Nancy T. Berry, Steven W Berry, Kimberly J. Smith  
Guaranty Insurance Services, Inc.

its true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise.

The execution of such instrument(s) in pursuance of these presents, shall be as binding upon THE GUARANTEE COMPANY OF NORTH AMERICA USA as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at the principal office.

The Power of Attorney is executed and may be certified so, and may be revoked, pursuant to and by authority of Article IX, Section 9.03 of the By-Laws adopted by the Board of Directors of THE GUARANTEE COMPANY OF NORTH AMERICA USA at a meeting held on the 31<sup>st</sup> day of December, 2003. The President, or any Vice President, acting with any Secretary or Assistant Secretary, shall have power and authority:

- 1. To appoint Attorney(s)-in-fact, and to authorize them to execute on behalf of the Company, and attach the Seal of the Company thereto, bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof; and
- 2. To revoke, at any time, any such Attorney-in-fact and revoke the authority given, except as provided below
- 3. In connection with obligations in favor of the Florida Department of Transportation only, it is agreed that the power and authority hereby given to the Attorney-in-Fact includes any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts required by the State of Florida Department of Transportation. It is fully understood that consenting to the State of Florida Department of Transportation making payment of the final estimate to the Contractor and/or its assignee, shall not relieve this surety company of any of its obligations under its bond.
- 4. In connection with obligations in favor of the Kentucky Department of Highways only, it is agreed that the power and authority hereby given to the Attorney-in-Fact cannot be modified or revoked unless prior written personal notice of such intent has been given to the Commissioner – Department of Highways of the Commonwealth of Kentucky at least thirty (30) days prior to the modification or revocation.

Further, this Power of Attorney is signed and sealed by facsimile pursuant to resolution of the Board of Directors of the Company adopted at a meeting duly called and held on the 6th day of December 2011, of which the following is a true excerpt:

RESOLVED that the signature of any authorized officer and the seal of the Company may be affixed by facsimile to any Power of Attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, contracts of indemnity and other writings obligatory in the nature thereof, and such signature and seal when so used shall have the same force and effect as though manually affixed.



IN WITNESS WHEREOF, THE GUARANTEE COMPANY OF NORTH AMERICA USA has caused this instrument to be signed and its corporate seal to be affixed by its authorized officer, this 23rd day of February, 2012.

THE GUARANTEE COMPANY OF NORTH AMERICA USA

*Stephen C. Ruschak*

*Randall Musselman*

STATE OF MICHIGAN  
County of Oakland

Stephen C. Ruschak, Vice President

Randall Musselman, Secretary

On this 23rd day of February, 2012 before me came the individuals who executed the preceding instrument, to me personally known, and being by me duly sworn, said that each is the herein described and authorized officer of The Guarantee Company of North America USA; that the seal affixed to said instrument is the Corporate Seal of said Company; that the Corporate Seal and each signature were duly affixed by order of the Board of Directors of



Cynthia A. Takai  
Notary Public, State of Michigan  
County of Oakland  
My Commission Expires February 27, 2018  
Acting in Oakland County

IN WITNESS WHEREOF, I have hereunto set my hand at The Guarantee Company of North America USA offices the day and year above written.

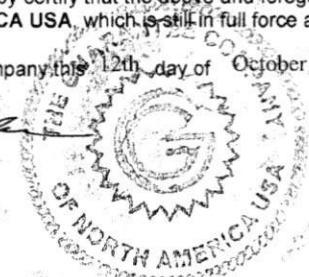
*Cynthia A. Takai*

I, Randall Musselman, Secretary of THE GUARANTEE COMPANY OF NORTH AMERICA USA, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney executed by THE GUARANTEE COMPANY OF NORTH AMERICA USA, which is still in full force and effect.



IN WITNESS WHEREOF, I have thereunto set my hand and attached the seal of said Company this 12th day of October, 2015.

*Randall Musselman*  
Randall Musselman, Secretary





THE  
**GUARANTEE**

**The Guarantee Company of North America USA**

One Towne Square, Suite 1470

Southfield, Michigan 48076

Phone: 248-281-0281 Fax: 248-750-0431

**Texas Consumer Notice**

**1 IMPORTANT NOTICE**

To obtain information or make a complaint:

2 You may contact your **agent** at:

3 You may call The Guarantee Company of North America USA's toll-free telephone number for information or to make a complaint at: 1-866-328-0567

4 You may also write to The Guarantee Company of North America USA at:

One Towne Square, Suite 1470

Southfield, Michigan 48076

Web: [www.gcna.com](http://www.gcna.com)

E-mail: [Info@gcna.com](mailto:Info@gcna.com)

Fax: 248-750-0431

5 You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at: 1-800-252-3439

6 You may write the Texas Department of Insurance:

P.O. Box 149104

Austin, TX 78714-91 04

Fax: (512) 475-1771

Web: <http://www.tdi.state.tx.us>

E-mail: [ConsumerProtection@tdi.state.tx.us](mailto: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 informacion o para someter una q ueja:

Puede comunicarse con su **agent** al

Usted puede llamar al numero de telefono gratis de The Guarantee Company of North America USA's para informacion o para someter una queja al: 1-866-328-0567

Usted tambien puede escribir a The Guarantee Company of North America USA:

One Towne Square, Suite 1470

Southfield, Michigan 48076

Web: [www.gcna.com](http://www.gcna.com)

E-mail: [Info@gcna.com](mailto:Info@gcna.com)

Fax: 248-750-0431

Puede comunicarse con el Departamento de Seguros de Texas para obtener informacion acerca de companias, coberturas, derechos o quejas al: 1 - 800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149104

Austin, TX 78714-91 04

Fax: (512) 475-1771

Web: <http://www.tdi.state.tx.us>

E-mail: [ConsumerProtection@tdi.state.tx.us](mailto:ConsumerProtection@tdi.state.tx.us)

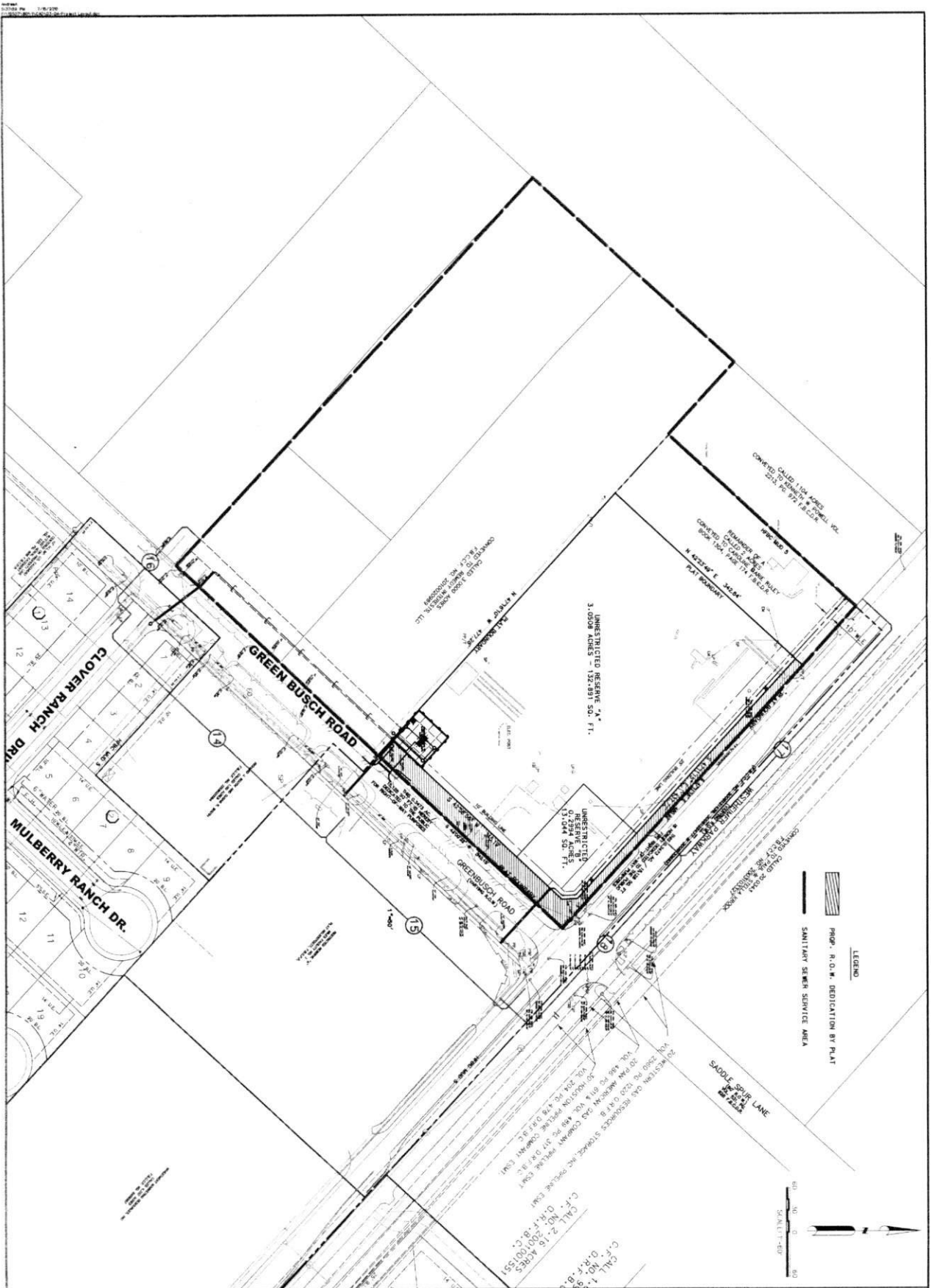
**DISPUTAS SOBRE PRIMAS O RECLAMOS:**

Si tiene una disputa concniente a su prima o a un reclamo, debe comunicarse con el (agente) (la compania) (agente o la compania) primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TD I).

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







**NOTES**

1. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
2. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
3. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
4. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
5. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
6. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
7. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
8. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
9. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.
10. THE CITY OF HOUSTON HAS REVIEWED THIS PLAN AND APPROVES THE SAME FOR THE CITY OF HOUSTON.

**LEGEND**

- PROP. R.O.W. DEDICATION BY PLAT
- SANITARY SEWER SERVICE AREA

**SCALE**

1" = 60'

**DATE**

7-2-13

**DESIGNED BY**

W.D. WOOD

**CHECKED BY**

W.D. WOOD

**APPROVED BY**

W.D. WOOD

**PROJECT**

OVERALL PROJECT LAYOUT AND SANITARY SEWER SERVICE AREA MAP

**CITY OF HOUSTON**

**HARRIS FORT BEND COUNTIES MUNICIPAL UTILITY DISTRICT NO. 5**

LIFT STATION FORCE MAIN & WATERLINE TO SERVE 4.6 AC COMMERCIAL TRACT

**FILE NO.**

54467

**SHEET**

3 OF 37

**DATE**

7/2/13

**SCALE**

1" = 60'

**PROJECT**

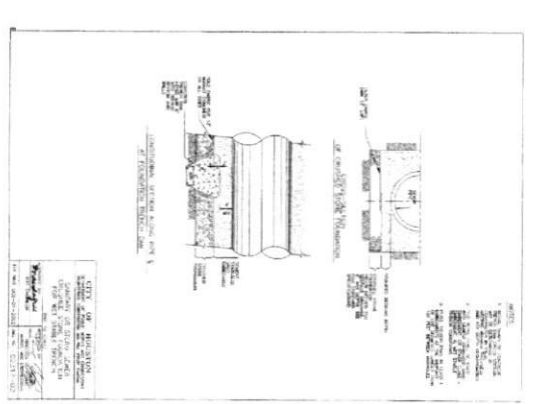
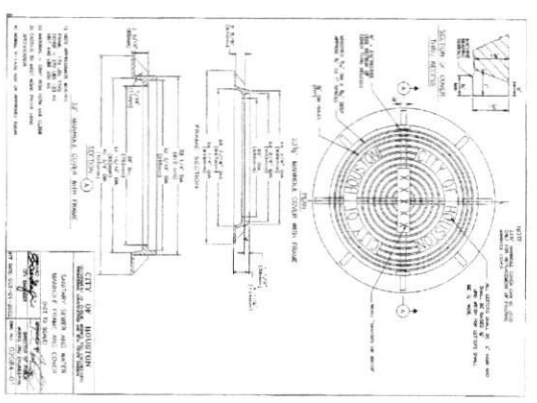
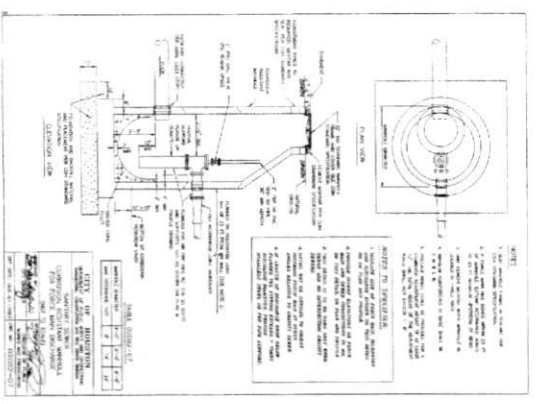
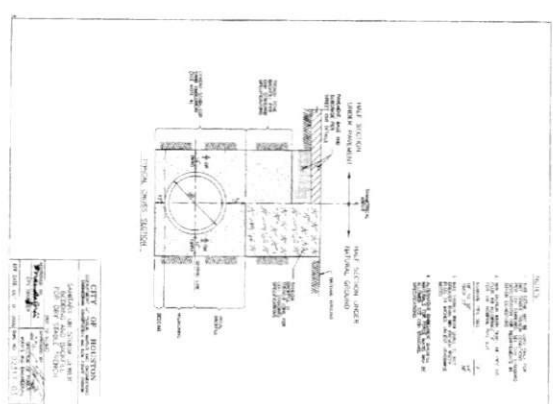
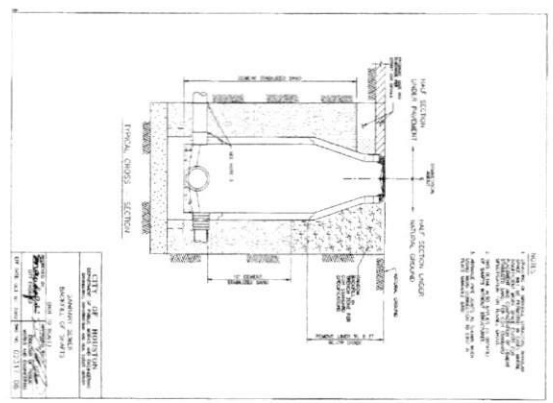
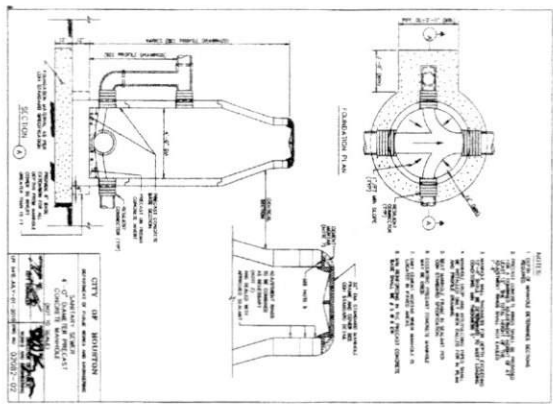
OVERALL PROJECT LAYOUT AND SANITARY SEWER SERVICE AREA MAP

**CITY OF HOUSTON**

**HARRIS FORT BEND COUNTIES MUNICIPAL UTILITY DISTRICT NO. 5**

LIFT STATION FORCE MAIN & WATERLINE TO SERVE 4.6 AC COMMERCIAL TRACT





**Ward & Associates**  
**Engineers & Architects**  
**1000 WEST 17TH STREET, SUITE 1000, HOUSTON, TEXAS 77019**  
**PHONE: 713-865-1111**

**HARRIS-FORT BEND COUNTIES**  
**MUNICIPAL UTILITY DISTRICT NO. 5**  
**LIFT STATION FOR MAIN & WATERLINE**  
**TO SERVE 4.8 AC COMMERCIAL TRACT**

**SANITARY SEWER**  
**DETAILS**

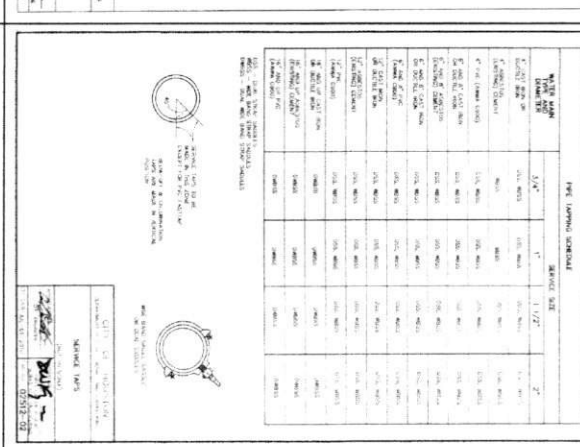
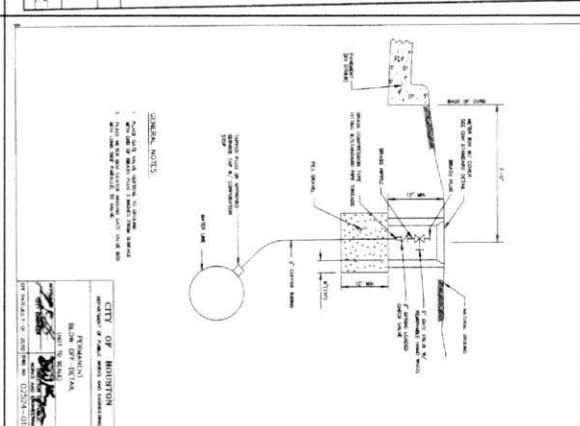
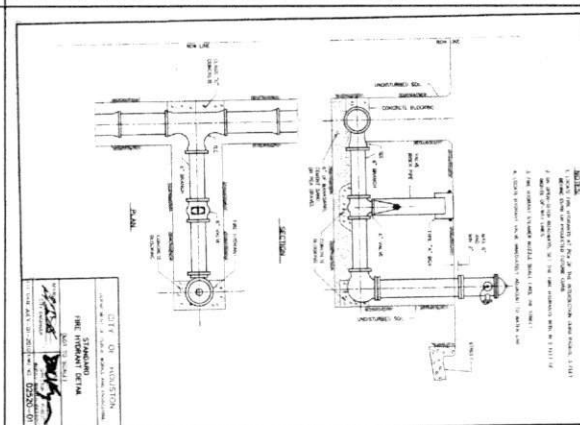
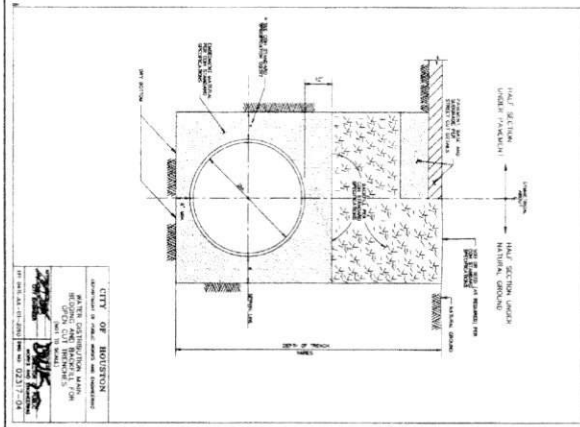
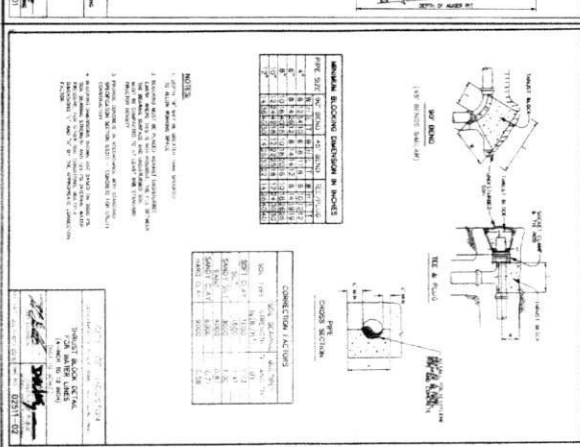
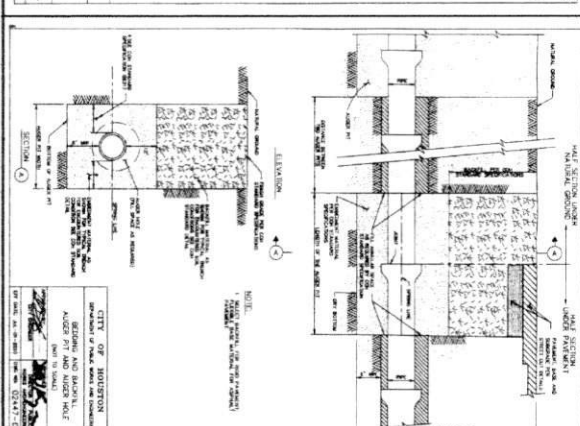
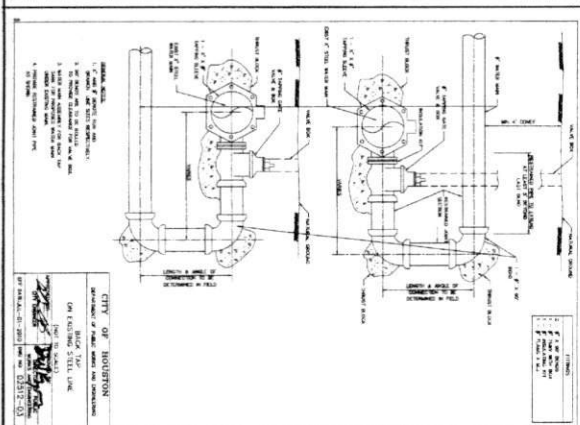
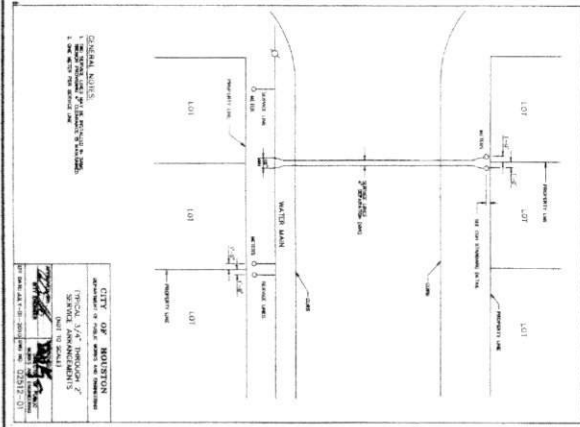
**CITY OF HOUSTON**  
**DEPARTMENT OF PUBLIC WORKS AND ENGINEERING**  
**OFFICE OF THE CITY ENGINEER**  
**1000 WEST 17TH STREET, SUITE 1000, HOUSTON, TEXAS 77019**

**PROJECT NO. 1000-0000-0000**  
**DATE: 01/01/00**

**DRAWING SCALE: 1" = 1'-0"**  
**DATE: 01/01/00**  
**BY: [Signature]**  
**CHECKED: [Signature]**

**FILE NO. 1000-0000-0000**

**5 of 37**



**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
 WATER MAINS DIVISION  
 PROJECT NO. 15000000000000000000  
 SHEET NO. 6 OF 37

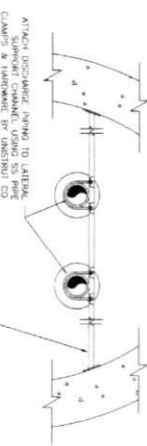
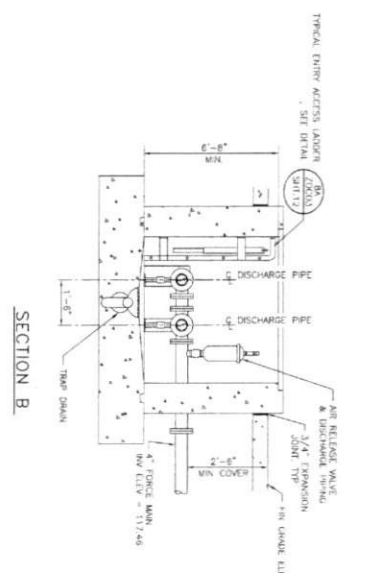
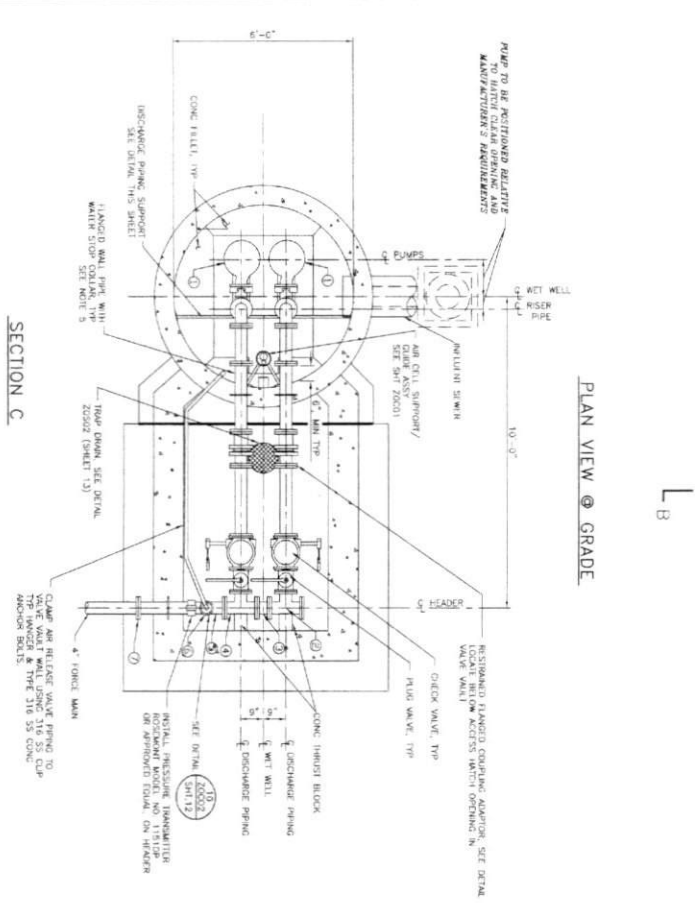
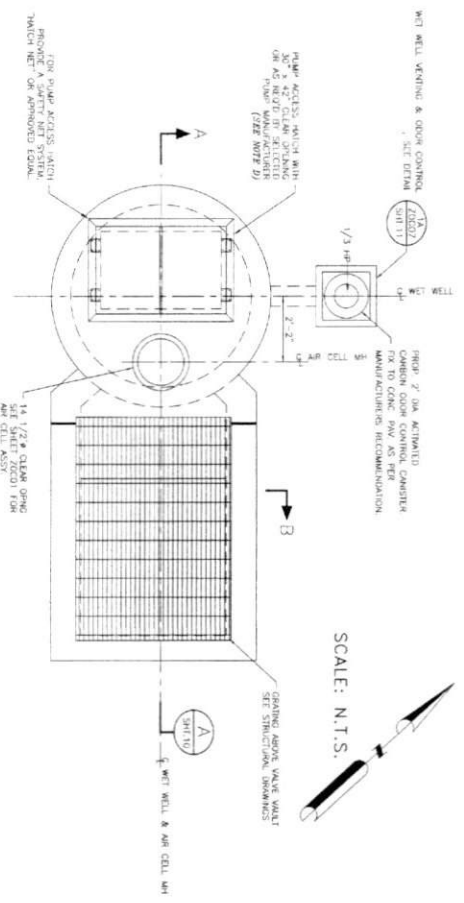
**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
 WATER MAINS DIVISION  
 PROJECT NO. 15000000000000000000  
 SHEET NO. 6 OF 37

**NOTES**

1. ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.
2. ALL MATERIALS SHALL BE AS SHOWN ON THE DRAWINGS.
3. ALL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. ALL VALVES SHALL BE FULL PORT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
5. ALL TRENCHES SHALL BE BACKFILLED WITH COMPACTED SAND OR SAND AND GRAVEL.
6. ALL TRENCHES SHALL BE PROTECTED BY CURBS AND GUTTERS.
7. ALL TRENCHES SHALL BE PROTECTED BY CONCRETE SLABS.
8. ALL TRENCHES SHALL BE PROTECTED BY CONCRETE SLABS.
9. ALL TRENCHES SHALL BE PROTECTED BY CONCRETE SLABS.
10. ALL TRENCHES SHALL BE PROTECTED BY CONCRETE SLABS.







PIPING AND FITTINGS SCHEDULE

MARK	SIZE/TYPE	DESCRIPTION
1	KSB Amerex NF-80-220034ULG-150 or Equivalent	As Per Pump Manufacturer
2	4"x4"x4" FE/FE	D. I. Tee & Blind Flange
3	4" FE/FE	D. I. Spool Piece
4	4"x4"x4" FE/FE	D. I. Tee
5	4" FE/FE	D. I. Spool Piece
6	4" FE/FE	Air and Vacuum Release Valve (See Detail)
7	4" FE/FE	D. I. Wall Flanged Wall Pipe and Waterstop Collar

CD2

**NOTES**

1. DRAWINGS AND SPECIFICATIONS, INCLUDING LIST OF MATERIALS, SHALL BE THE PROPERTY OF THE CITY OF HOUSTON AND SHALL BE RETURNED TO THE CITY OF HOUSTON UPON COMPLETION OF THE PROJECT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF HOUSTON AND THE STATE OF TEXAS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF HOUSTON AND THE STATE OF TEXAS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF HOUSTON AND THE STATE OF TEXAS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF HOUSTON AND THE STATE OF TEXAS.

**DESIGNER:** *[Signature]*  
**CHECKED:** *[Signature]*  
**DATE:** 1/16/15

**City of Houston**  
**Department of Public Works and Engineering**  
**Water and Sewer Division**

**Plan View & Base Section**

**HARRIS-FORT BEND COUNTIES MUNICIPAL UTILITY DISTRICT NO. 5**  
**TO SERVE 4.8 AC COMMERCIAL TRACT**

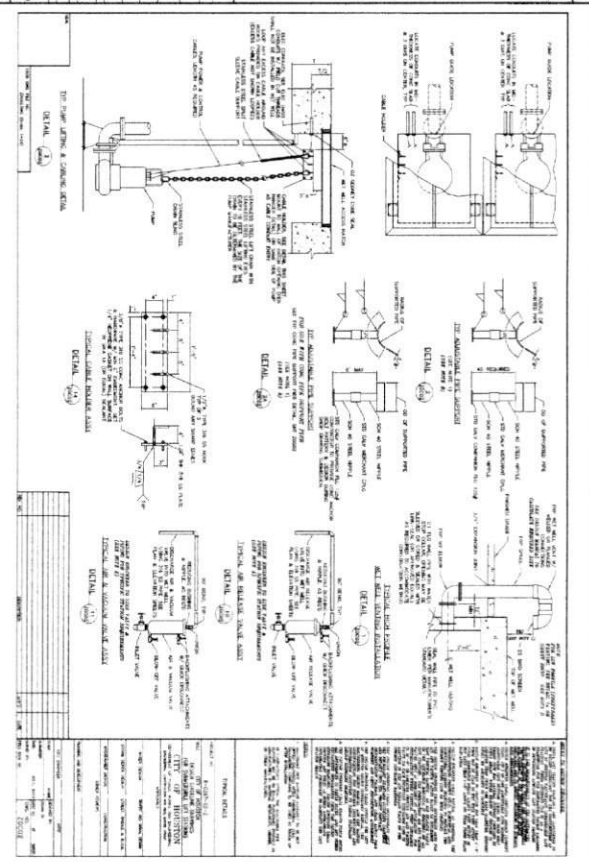
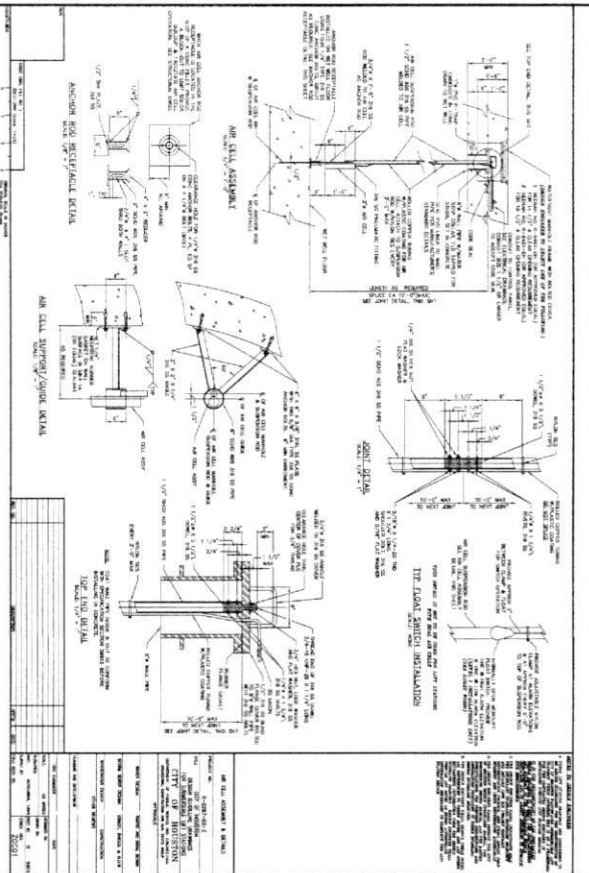
**VanDyke & Weger**  
**Engineering**  
**1100 West Loop West, Suite 200**  
**Houston, Texas 77027**

**FILE NO.:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_  
**SCALE:** \_\_\_\_\_  
**HEET:** 9 OF 37

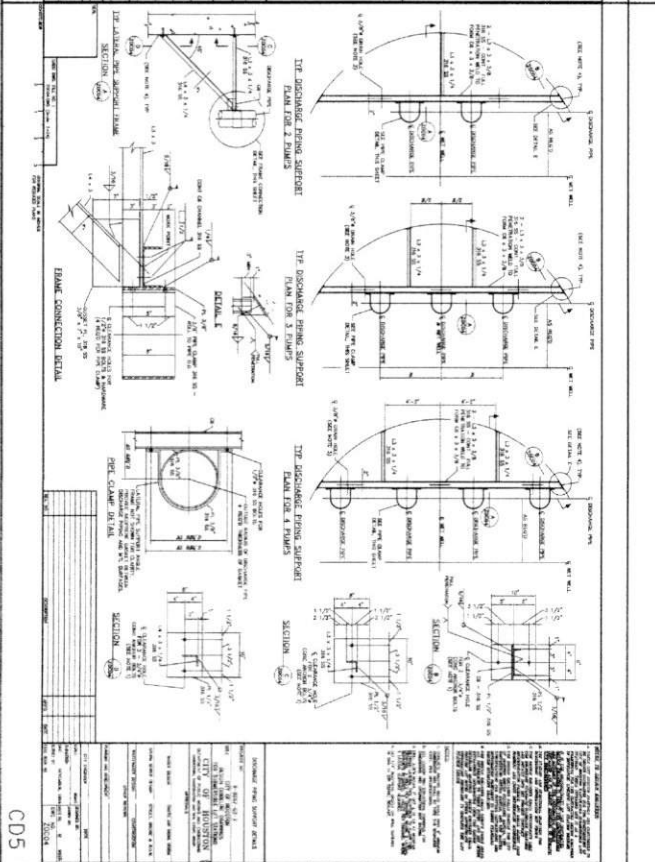
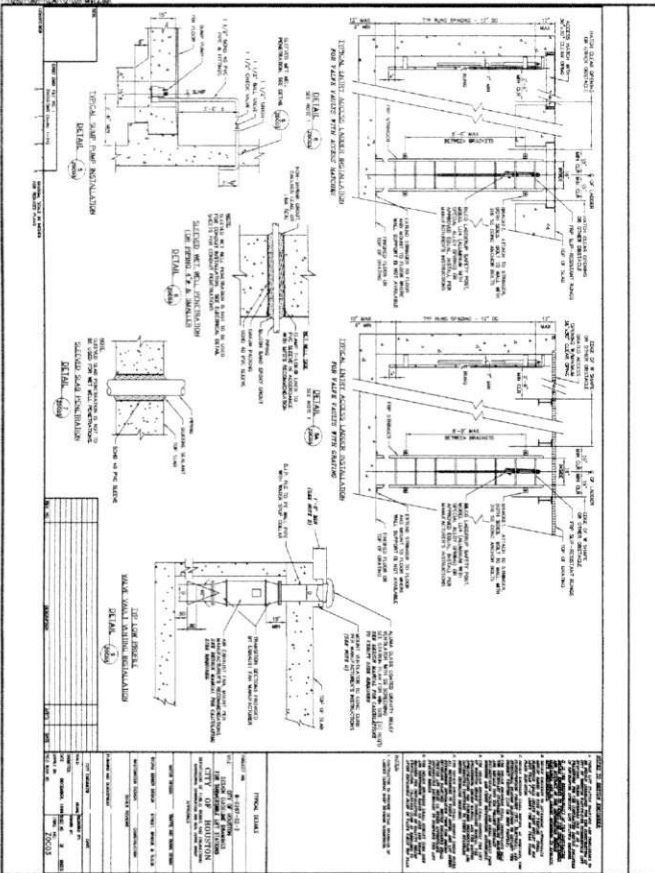
**54467**







NO.	DATE	REVISION	BY



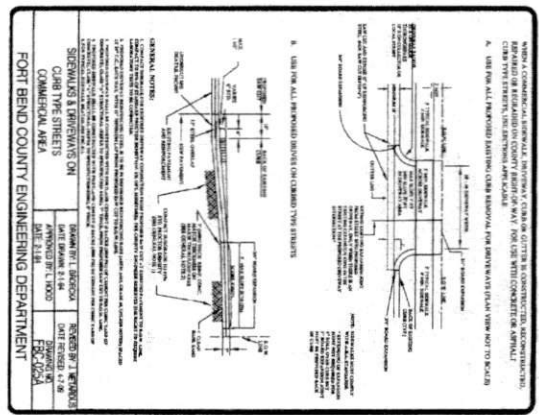
**Van Dyke & Hoyer**  
 Incorporated  
 Consulting Engineers  
 1100 West 19th Street  
 Houston, Texas 77002  
 Phone: 770-621-1100

**HARRIS FORT BEND COUNTIES**  
**MUNICIPAL UTILITY DISTRICT NO. 5**  
**LEFT STATION FORCE MAIN & WATERLINE**  
**TO SERVE 4.6 AC COMMERCIAL TRACT**

**MISCELLANEOUS**  
**DETAILS**  
**(SHEET 2 OF 3)**

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
 TITLE: *Left Station Force Main & Waterline*  
 DATE: *12/12/11*  
 DRAWN BY: *[Signature]*  
 CHECKED BY: *[Signature]*  
 APPROVED BY: *[Signature]*

SHEET NO. **12 OF 37**  
 DRAWING SCALE: **AS SHOWN**  
 PROJECT NO. **54467**  
 CITY OF HOUSTON, TEXAS



**GENERAL NOTES FOR SIDEWALKS AND CURBS**

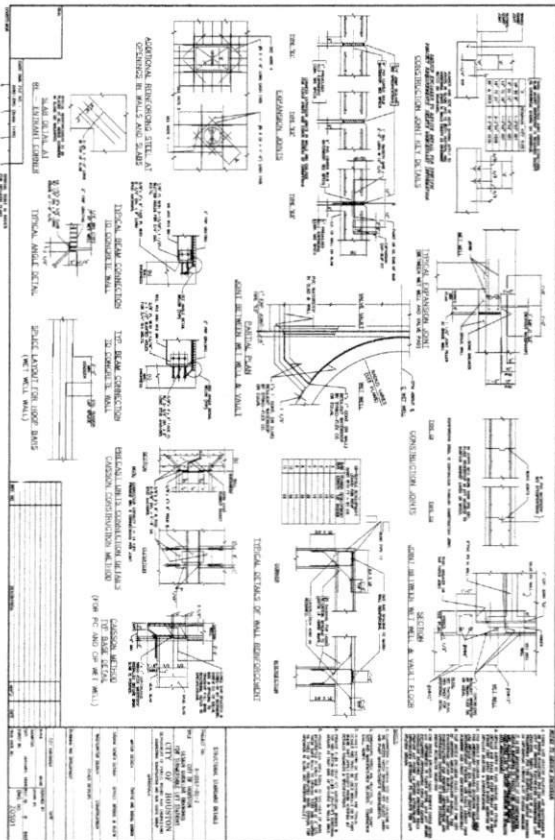
1. SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE (PCC) WITH 4% STEEL FIBERS.
2. CURBS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE (PCC) WITH 4% STEEL FIBERS.
3. ALL CONCRETE SHALL BE 4000 PSI STRENGTH WITH 4% STEEL FIBERS.
4. REINFORCE WITH #4 BARS @ 12" ON CENTER.
5. FINISH SHALL BE AS SHOWN.
6. CURB HEIGHT SHALL BE 6" ABOVE FINISH GRADE.
7. SIDEWALK WIDTH SHALL BE 5' MINIMUM.
8. GUTTER WIDTH SHALL BE 18" MINIMUM.
9. GUTTER DEPTH SHALL BE 4" MINIMUM.
10. SLOPE SHALL BE AS SHOWN.
11. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

**CONSTRUCTION NOTES FOR SIDEWALKS & DRIVEWAYS WITH CURB TYPE STREETS**

1. SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE (PCC) WITH 4% STEEL FIBERS.
2. CURBS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE (PCC) WITH 4% STEEL FIBERS.
3. ALL CONCRETE SHALL BE 4000 PSI STRENGTH WITH 4% STEEL FIBERS.
4. REINFORCE WITH #4 BARS @ 12" ON CENTER.
5. FINISH SHALL BE AS SHOWN.
6. CURB HEIGHT SHALL BE 6" ABOVE FINISH GRADE.
7. SIDEWALK WIDTH SHALL BE 5' MINIMUM.
8. GUTTER WIDTH SHALL BE 18" MINIMUM.
9. GUTTER DEPTH SHALL BE 4" MINIMUM.
10. SLOPE SHALL BE AS SHOWN.
11. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

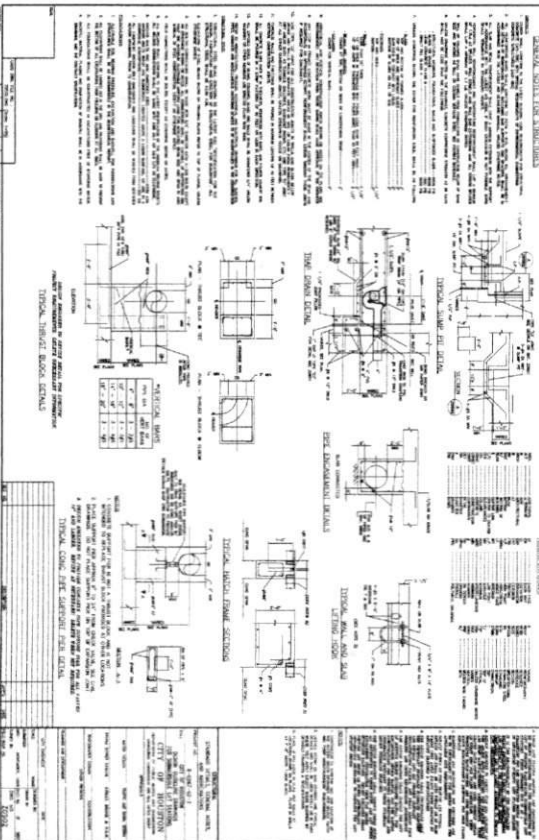
**FORT BEND COUNTY ENGINEERING DEPARTMENT**

APPROVED BY: L. BROWN  
DATE: 11/10/2023  
PROJECT NO: FBC-2023-001



**GENERAL NOTES FOR LIFT STATION**

1. LIFT STATION SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE (PCC) WITH 4% STEEL FIBERS.
2. CURBS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE (PCC) WITH 4% STEEL FIBERS.
3. ALL CONCRETE SHALL BE 4000 PSI STRENGTH WITH 4% STEEL FIBERS.
4. REINFORCE WITH #4 BARS @ 12" ON CENTER.
5. FINISH SHALL BE AS SHOWN.
6. CURB HEIGHT SHALL BE 6" ABOVE FINISH GRADE.
7. SIDEWALK WIDTH SHALL BE 5' MINIMUM.
8. GUTTER WIDTH SHALL BE 18" MINIMUM.
9. GUTTER DEPTH SHALL BE 4" MINIMUM.
10. SLOPE SHALL BE AS SHOWN.
11. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.



**GENERAL NOTES FOR MISCELLANEOUS DETAILS**

1. ALL CONCRETE SHALL BE 4000 PSI STRENGTH WITH 4% STEEL FIBERS.
2. REINFORCE WITH #4 BARS @ 12" ON CENTER.
3. FINISH SHALL BE AS SHOWN.
4. CURB HEIGHT SHALL BE 6" ABOVE FINISH GRADE.
5. SIDEWALK WIDTH SHALL BE 5' MINIMUM.
6. GUTTER WIDTH SHALL BE 18" MINIMUM.
7. GUTTER DEPTH SHALL BE 4" MINIMUM.
8. SLOPE SHALL BE AS SHOWN.
9. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

**FORT BEND COUNTY ENGINEERING DEPARTMENT**

APPROVED BY: L. BROWN  
DATE: 11/10/2023  
PROJECT NO: FBC-2023-001

**MISCELLANEOUS DETAILS (3 OF 3)**

**HARRIS-FORT BEND COUNTIES MUNICIPAL UTILITY DISTRICT NO. 5**  
LIFT STATION FORCE MAIN & WATERLINE TO SERVE A 8 AC COMMERCIAL TRACT

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

DATE: 11/10/2023  
PROJECT NO: FBC-2023-001

FILE NO: FBC-2023-001  
DRAWING SCALE: 1" = 1'-0"

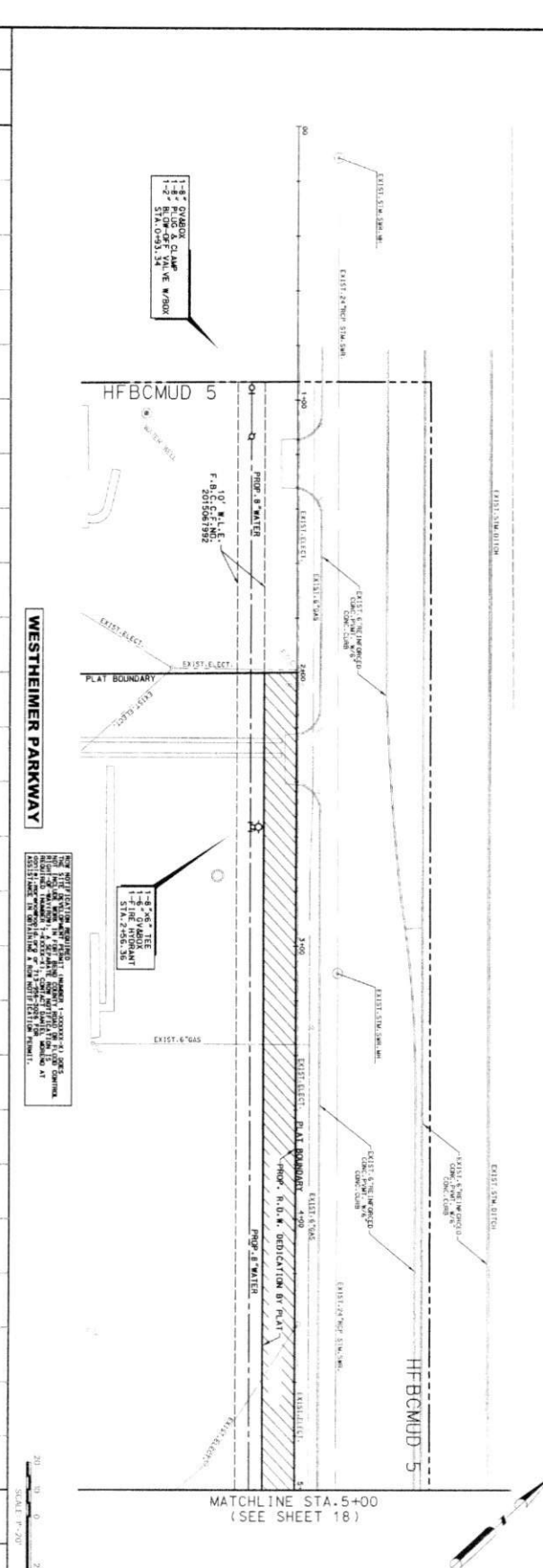
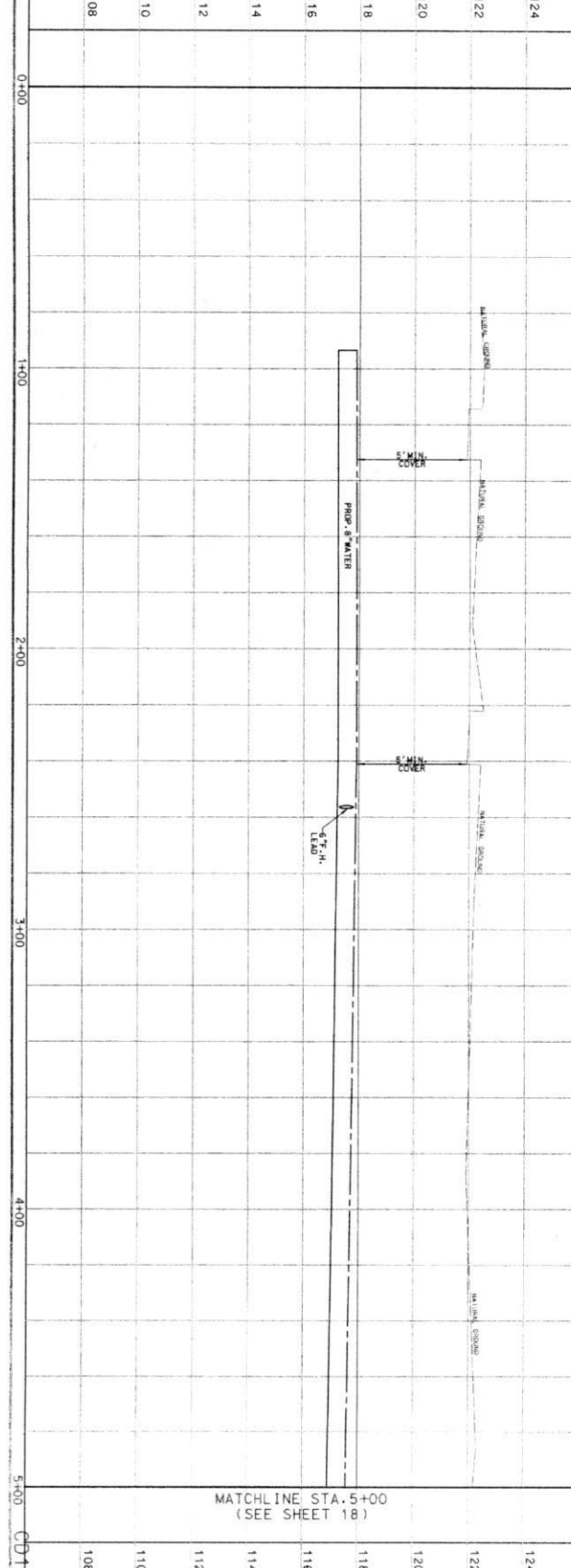
CD6 SHEET NO. 13 OF 37

54467









MATCHLINE STA. 5+00  
(SEE SHEET 18)

MATCHLINE STA. 0+00  
(SEE SHEET 17)

CD10

SHEET NO. 17 OF 37

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

54487

DATE: 11/15/18

DRAWN BY: [Signature]

CHECKED BY: [Signature]

DESIGNED BY: [Signature]

APPROVED BY: [Signature]

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

PROJECT: WESTMEIER PARKWAY  
 STA. 0+00 TO STA. 5+00

DRAWING NO. 54487

DATE: 11/15/18

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

SHEET NO. 17 OF 37

MATCHLINE STA. 5+00  
(SEE SHEET 18)

MATCHLINE STA. 0+00  
(SEE SHEET 17)

CD10

SHEET NO. 17 OF 37

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

54487

DATE: 11/15/18

DRAWN BY: [Signature]

CHECKED BY: [Signature]

DESIGNED BY: [Signature]

APPROVED BY: [Signature]

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

PROJECT: WESTMEIER PARKWAY  
 STA. 0+00 TO STA. 5+00

DRAWING NO. 54487

DATE: 11/15/18

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

SHEET NO. 17 OF 37

**NOTES**

1. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
2. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
3. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
4. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
5. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
6. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
7. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
8. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
9. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.
10. THE PROPOSED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS AND SPECIFICATIONS FOR UTILITIES.

**REVISIONS**

NO.	DATE	DESCRIPTION
1	11/15/18	ISSUED FOR PERMIT

**DESIGNER:** [Signature]

**CHECKER:** [Signature]

**APPROVER:** [Signature]

**DATE:** 11/15/18

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

**SHEET NO.:** 17 OF 37

**DRAWING NO.:** 54487

**PROJECT:** WESTMEIER PARKWAY  
 STA. 0+00 TO STA. 5+00

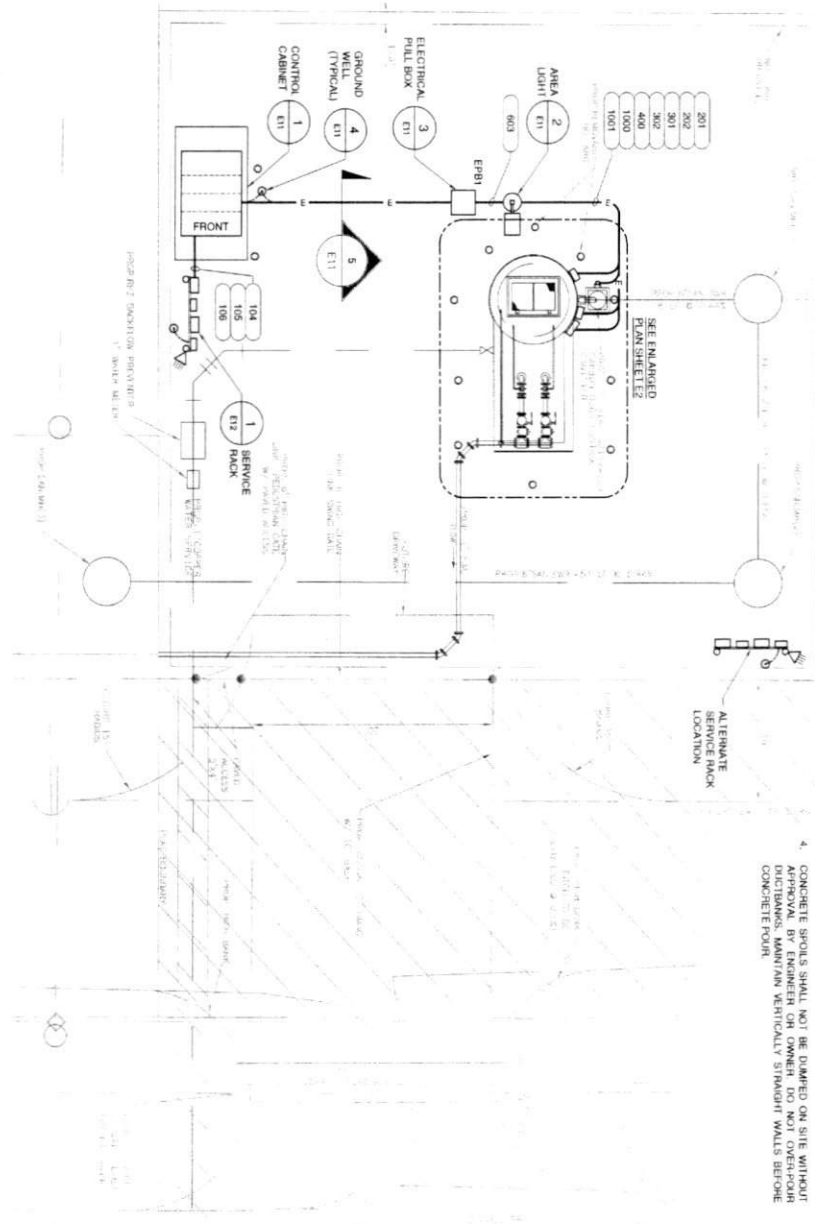
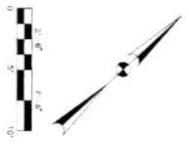
**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
 DIVISION OF ENGINEERING







VICINITY MAP  
 PROJECT ADDRESS  
 3000 GUEBELSCH RD.  
 KATY, TX 77494



- NOTES:**
- CONCRETS SHALL NOT BE ROUTED ACROSS WALKWAYS, PATHS OF ACCESS, TRAVEL OR EGRESS. ROUTE IN CONCRETE STRUCTURES OR AROUND EQUIPMENT. DO NOT ROUTE IN CONTACT WITH OTHER PIPING, CONDUITS, EQUIPMENT OR STRUCTURES.
  - FIELD VERIFY EXACT LOCATION OF ALL UNDERGROUND PIPES, CONDUITS, AND STRUCTURES BEFORE DRESSING, REPAIR ANY DAMAGE DONE TO ORIGINAL CONDITION.
  - ALL UNDERGROUND DISTURBANCES REQUIRE INSPECTION PRIOR TO CONCRETE POUR AND INSPECTION PRIOR TO COVERING THE CONCRETE. CONTRACT THE INSPECTOR OR, IF NOT AVAILABLE, MINIMUM 48 HOURS ADVANCING. INSPECTIONS SHOULD BE CONDUCTED BY ENGINEER REGARDLESS OF STATUS OF CONCRETE SLABS OR FOUNDATIONS.
  - CONCRETE SPILLS SHALL NOT BE DUMPED ON SITE WITHOUT APPROVAL BY ENGINEER OR OWNER. DO NOT OVER-POUR DISTURBANCES. MAINTAIN VERTICALLY STRAIGHT WALLS BEFORE CONCRETE POUR.
  - DO NOT COVER SEWER LINES WITH CONCRETE FOUNDATIONS. FIELD LOCATE AND MARK ALL LINES BEFORE CONSTRUCTION.
  - DO NOT SCALE ELECTRICAL EQUIPMENT, DEVICES AND FOUNDATIONS. DIMENSIONS, SPACING OR LOCATION ON ELECTRICAL SITE PLAN. SEE ELECTRICAL PLAN SHEETS AND DETAIL SHEETS FOR EXACT INFORMATION. SEE CIVIL PLANS FOR DIMENSIONS, WHEN APPLICABLE. CONSTRUCTION SHALL BE SUBMITTED WITH ALL DIMENSIONS AND SPECIFICATIONS TO THE ENGINEER. SUBMITTALS ARE REVIEWED BY ENGINEER.
  - ALL CONCRETE FOUNDATIONS AND PADS FOR ELECTRICAL EQUIPMENT ARE SHOWN AS MINIMUM ABOVE FINISHED GRADE AND DO NOT INCLUDE THE MINIMUM ELEVATION REQUIRED BY FLOOD PLAIN LEVEL. REFER TO CIVIL PLANS FOR FLOOD PLAIN PADS AND THE FLOOD PLAIN ELEVATIONS FOR ELECTRICAL PADS.
  - DO NOT CONSTRUCT WITHIN ELECTRICAL EASEMENTS, WHERE ENGINEER HAS DETERMINED UTILITY LINES EXIST. CONTACT ANY CONDUITS OR PIPING TOWARD THE LOCATION OF EXISTING UTILITIES.
  - PROVIDE GROUND CONNECTIONS FOR SERVICE ENTRANCE, CONTROL PANEL, CABINET, VARD LIGHT, PIPING AND ALL METAL PARTS.

**ELECTRICAL SITE PLAN**

SCALE: 1/4" = 5' FT

E1

<p><b>SHRADER ENGINEERING</b>          ELECTRICAL &amp; COMMERCIAL DESIGN &amp; TECHNOLOGY          10000 WESTHELL BLVD., SUITE 100, HOUSTON, TX 77036          (281) 415-1100          www.shrader-engineering.com</p>	
<p>Van DeWick &amp; Vignier Incorporated          10000 Westhell Blvd., Suite 100          Houston, TX 77036          (281) 415-1100</p>	
<p>HARRIS-FORT BEND COUNTIES          MUNICIPAL UTILITY DISTRICT NO. 5          TO SERVE 4.8 AC COMMERCIAL TRACT</p>	
<p><b>ELECTRICAL SITE PLAN</b></p>	
<p>DATE: 11/11/2013          TIME: 11:11 AM          DRAWING NO.: 20-37</p>	
<p>CITY OF HOUSTON          DEPARTMENT OF PUBLIC WORKS AND ENGINEERING          1000 WESTHELL BLVD., SUITE 100, HOUSTON, TX 77036          (281) 415-1100</p>	
<p>FILE NO.: 178-CITY-9-PROJ-001-001          DRAWING SCALE: AS NOTED          SHEET 20 OF 37</p>	



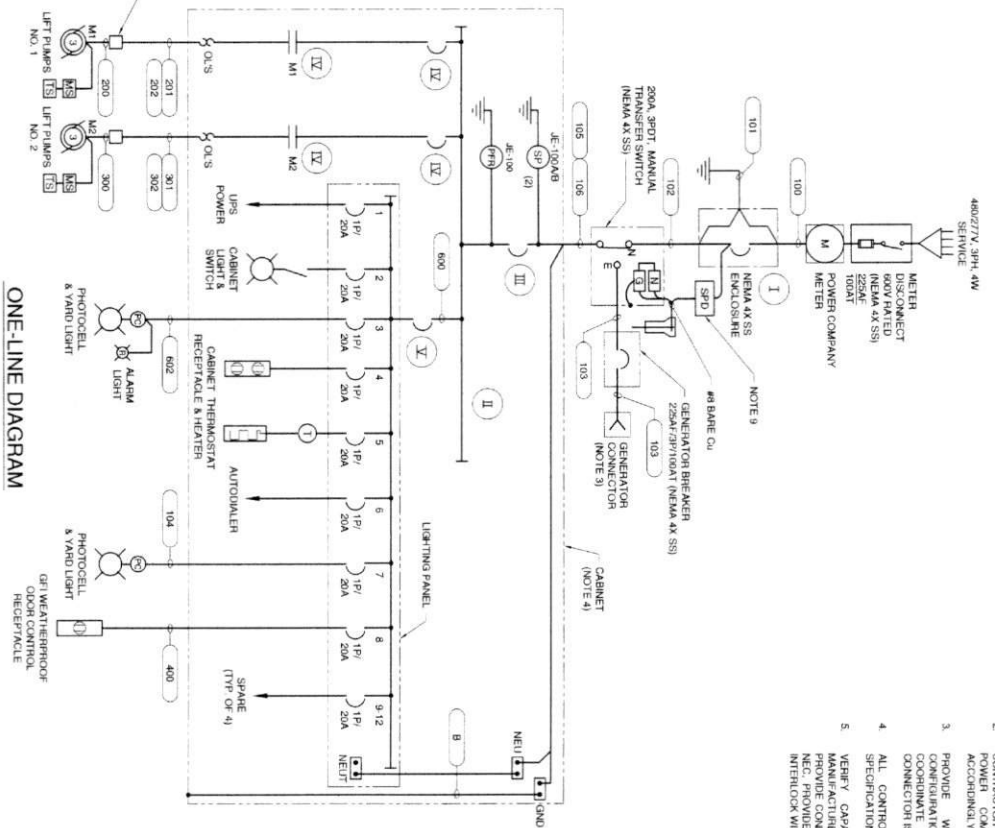
**480/277V, 3PH, 4W SERVICE  
(NOTE 2)**

ITEM	DESCRIPTION	RATING
I	MAIN SERVICE BREAKER	MOLDED CASE MOUNTING
II	3 POLE - TYPE	FIXED
III	VOLTAGE RATING	600V
IV	FRAME SIZE	225A
V	TRIP SETTING	100A
VI	INTERLUPT CAPACITY (NOTE 2)	22KA SWM
VII	MOTOR CONTROL CENTER	600V
VIII	MAIN BREAKER	600V
IX	VOLTAGE RATING	600V
X	CURRENT RATING	100A
XI	NEUTRAL SIZE & TYPE	300A LUG
XII	RIG BRACING	22KA SWM
XIII	MAIN BREAKER	MOLDED CASE MOUNTING
XIV	3 POLE - TYPE	FIXED
XV	VOLTAGE RATING	600V
XVI	FRAME SIZE	225A
XVII	TRIP SETTING	100A
XVIII	INTERLUPT CAPACITY	22KA SWM
XIX	OPTIONS	NONE
XX	POW MOTOR STARTERS	PANEL MOUNTED
XXI	SHORT CIRCUIT PROTECTION	MC-P
XXII	3 POLE - TYPE	600V
XXIII	VOLTAGE RATING	180A
XXIV	FRAME SIZE	FIELD ADJ.
XXV	TRIP SETTING	22KA SWM
XXVI	INTERLUPT CAPACITY	AIR
XXVII	MOTOR STARTING CONTACTOR	600V
XXVIII	3 POLE - TYPE	NEHA SPEED
XXIX	VOLTAGE RATING	NEHA SPEED
XXX	SEC/CURRENT RATING	NEHA SPEED
XXXI	OVERLOAD PROTECTION	THERMAL
XXXII	CONTROL FEEDER BREAKER	2
XXXIII	NO. OF POLES	MOLDED CASE
XXXIV	VOLTAGE RATING	600V
XXXV	FRAME SIZE	150A
XXXVI	TRIP SETTING	40A
XXXVII	INTERLUPT CAPACITY	22KA SWM
XXXVIII	MANUAL TRANSFER SWITCH	600V
XXXIX	USE SPECIFICATIONS	100A
XL	VOLTAGE RATING	100A
XLI	CURRENT RATING	100A
XLII	INTERLUPT CAPACITY	22KA SWM

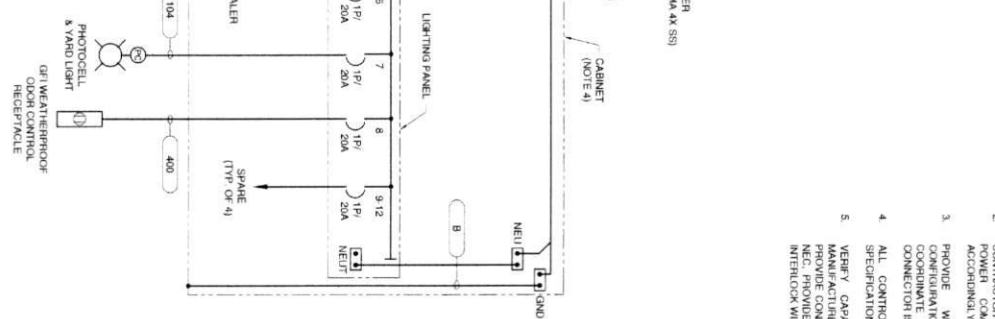
**ELECTRICAL LOAD ANALYSIS**

LOAD	L1	L2	L3
LIFT PUMP NO. 1	3HP	5	5
LIFT PUMP NO. 2	3HP	5	5
MISC. LOAD	24	24	24
25% OF LARGEST MOTOR	3	3	3
TOTAL LOAD	37	37	37
SERVICE AMPCITY @ 480/277V, 3PH, 4W	100	100	100
SPARE AMPCITY	88	87	83

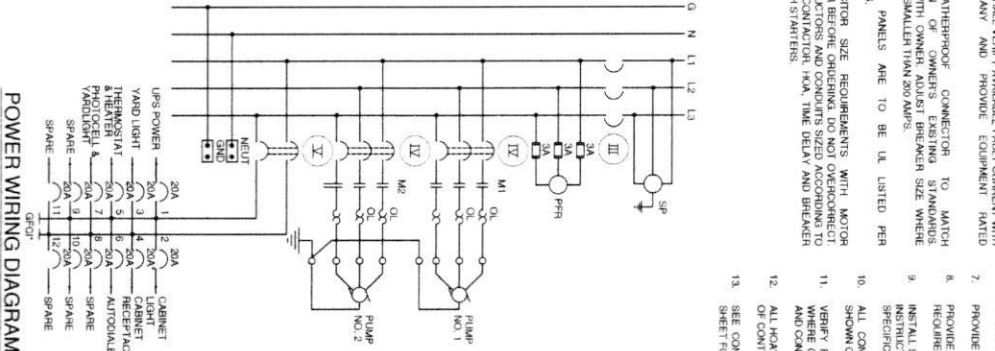
CALCULATED MAXIMUM AVAILABLE FAULT CURRENT = 10513 AMPS.  
USE 22 KVAIC RATED DEVICES AND BRACING (NOTE 2)



**ONE-LINE DIAGRAM**



**POWER WIRING DIAGRAM**



- NOTES:**
- VERIFY PUMP CABLE SIZE WITH PUMP MANUFACTURER AND VERIFY CONDUIT & CABLE SIZE AS REQUIRED.
  - CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND PROVIDE EQUIPMENT RATED ACCORDINGLY.
  - PROVIDE WEATHERPROOF CONNECTOR TO MATCH CONFIGURATION OF OWNER'S EXISTING STANDARDS COORDINATE WITH OWNER ADJUST BREAKER SIZE WHERE CONNECTOR IS SMALLER THAN 20 AMP'S.
  - ALL CONTROL PANELS ARE TO BE UL LISTED PER SPECIFICATIONS.
  - VERIFY CAPACITOR SIZE REQUIREMENTS WITH MOTOR MANUFACTURER AND PROVIDE CONDUCTORS AND CONDUITS SIZED ACCORDING TO NEC. PROVIDE CONDUITS 1/4" DIA. THE DELAY AND BREAKER INTERLOCK WITH STARTERS.
  - CONTRACTOR SHALL READ ENTIRE CONTENTS OF SPECIFICATION SECTION ENTITLED "ELECTRICALS" AND OTHER REVISIONS BEFORE BIDDING ON THIS PROJECT.
  - PROVIDE SPINNALET CIRCUIT WHERE REQUIRED.
  - PROVIDE CIRCUITS AND SWITCH FOR VENT FAN WHERE REQUIRED.
  - INSTALL SURGE PROTECTOR ACCORDING TO MANUFACTURER'S INSTRUCTION. SURGE PROTECTOR MUST CONFORM TO SPECIFICATION "1600".
  - ALL CONDUITS, CONDUCTORS AND DEVICES MAY NOT BE SHOWN ON THIS SHEET.
  - VERIFY PUMP MOTOR CURRENT WITH MANUFACTURER AND WHERE GREATER THAN NEC VALUE INCREASE CONDUCTORS AND CONDUIT SIZES ACCORDINGLY.
  - ALL HOAS, ETV'S, AND RUN LIGHTS TO BE MOUNTED ON FACE OF CONTROL PANEL.
  - SEE CONDUIT SCHEDULE AND MOTOR DATA ON SCHEDULE SHEET FOR CONDUIT AND CONDUCTOR REQUIREMENTS.

**SE SHRADER ENGINEERING**

REGISTERED PROFESSIONAL ENGINEER

NO. 12345

STATE OF TEXAS

**Van Derveld**

Incorporated

2017 A.S. No. 12345

2017 A.S. No. 12345

**HARRIS-FORT BEND COUNTIES**

**MUNICIPAL UTILITY DISTRICT NO. 5**

LEFT STATION, FORCE MAIN & WATERLINE

TO SERVE #4 AC COMMERCIAL TRACT

**ELECTRICAL ONE-LINE DIAGRAM**

DATE: 08/22/2017

PROJECT: N/A

DESK: N/A

SCALE: 1" = 10'

54167

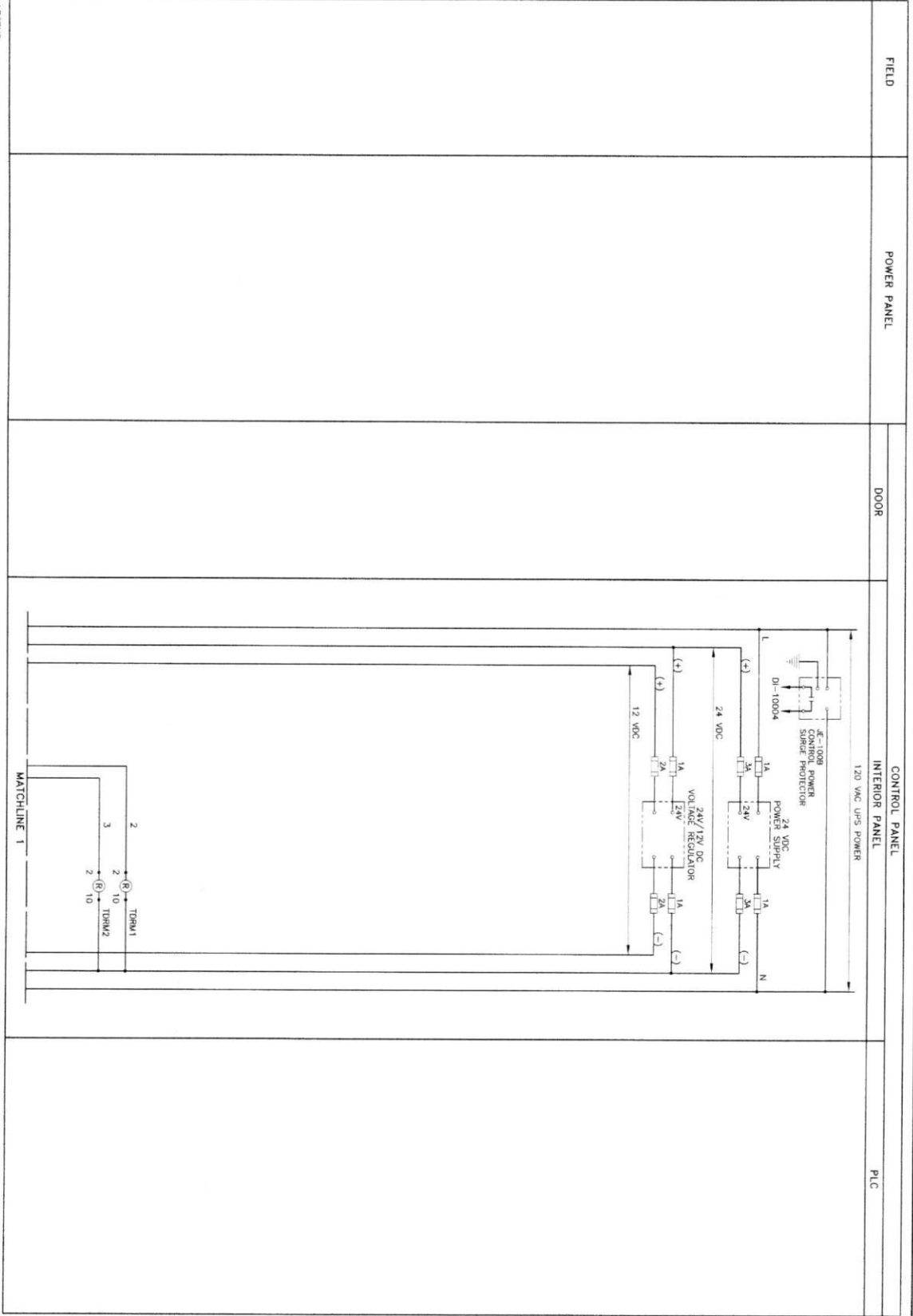
FILE NO: 17-017-0-0000-0000

DATE: 08/22/2017

SCALE: 1" = 10'

54167

- LEGEND**
- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
  - \* DEVICE OR FIELD TERMINAL LOCATED REMOTE
  - DEVICE OR FIELD TERMINAL LOCATED AT MCC
  - FIELD TERMINAL LOCATED AT CONTROL PANEL
  - ▲ REMOTE TERMINAL
  - DEVICE TERMINAL NO.
  - ◆ PLC INTERFACE TERMINAL



DRAWING SCALE: N/A  
 SHEET NO. 23 of 31  
 PROJECT NO. 1853

THE CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
 DIVISION OF ELECTRICAL ENGINEERING  
 PROJECT NO. 1853  
 SHEET NO. 23 OF 31

**ELECTRICAL CONTROL DIAGRAMS**  
**SHEET 1**  
 HARRIS-FORT BEND COUNTIES  
 MUNICIPAL UTILITY DISTRICT NO. 5  
 LIFT STATION FORCE MAIN & WATERLINE  
 TO SERVE 4.8 AC COMMERCIAL TRACT

Van DeWick  
 & Vetter  
 Incorporated  
 ENGINEERS  
 1100 WEST 19TH STREET  
 HOUSTON, TEXAS 77002  
 PHONE: 713-865-1100  
 FAX: 713-865-1101  
 WWW: www.vdw.com

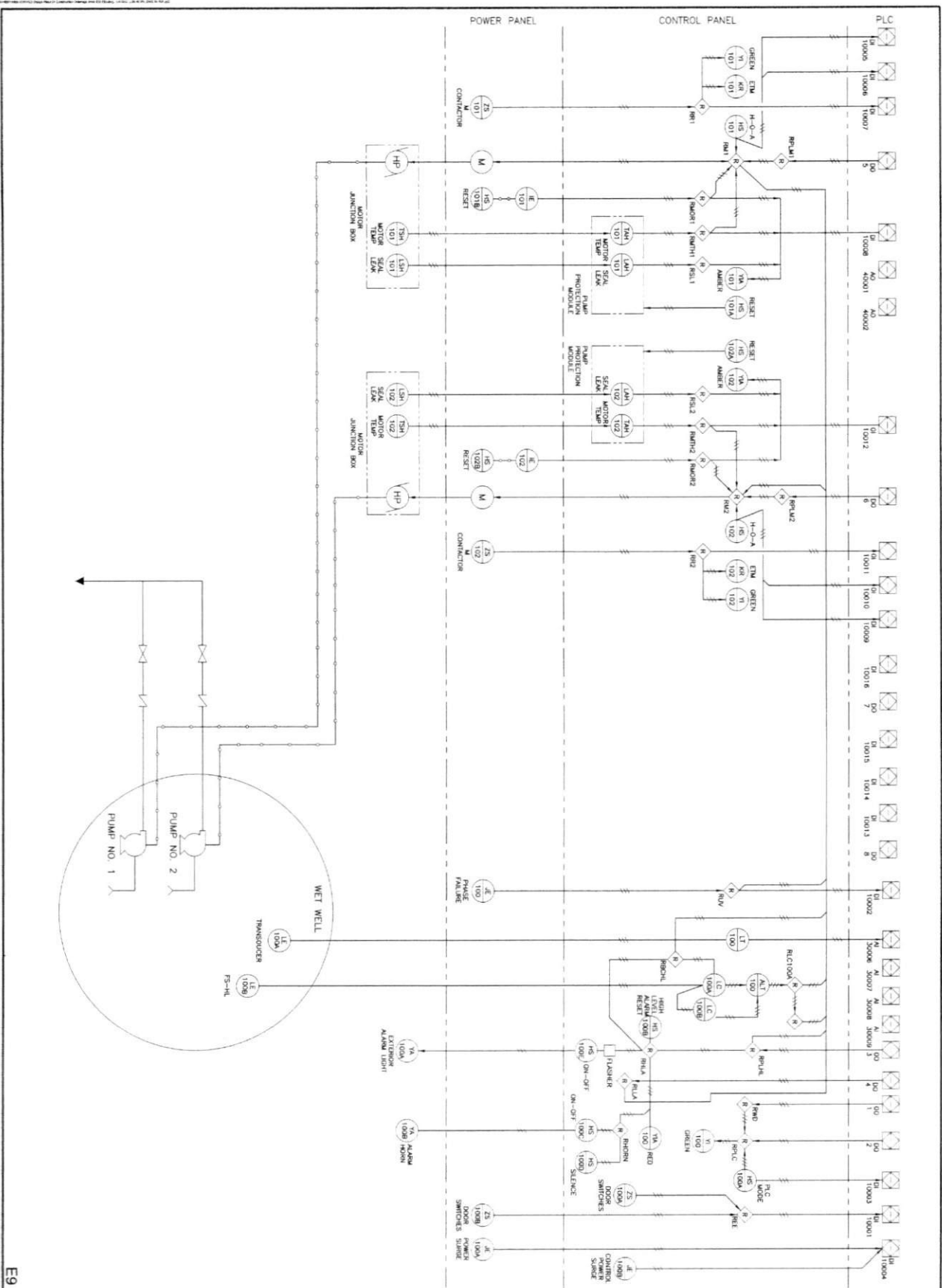
**SHRADER ENGINEERING**  
 ELECTRICAL ENGINEERING, INC. (TIES TO E&E)  
 1100 WEST 19TH STREET  
 HOUSTON, TEXAS 77002  
 PHONE: 713-865-1100  
 FAX: 713-865-1101  
 WWW: www.shrader-engineering.com











**SHRADER ENGINEERING**

Van Dyke & Volder  
Independent Engineers

11111 RICHMOND AVE., SUITE 100  
HOUSTON, TEXAS 77042  
PHONE: 713-865-1111  
FAX: 713-865-1112  
WWW.SHRADERENG.COM

**CITY OF HOUSTON**

HARRIS-FORT BEND COUNTIES  
MUNICIPAL UTILITY DISTRICT NO. 5  
LEFT STATION, FORCE MAIN & WATERLINE  
TO SERVE 4 & 6 AC COMMERCIAL TRACT

**ELECTRICAL PROCESS AND INSTRUMENTATION DIAGRAM**

DATE: 11/11/11  
DRAWING SCALE: AS SHOWN  
SHEET: 1 OF 1  
REV: 1

PROJECT: 11111 RICHMOND AVE., SUITE 100  
HOUSTON, TEXAS 77042

DATE: 11/11/11

PROJECT: 11111 RICHMOND AVE., SUITE 100  
HOUSTON, TEXAS 77042

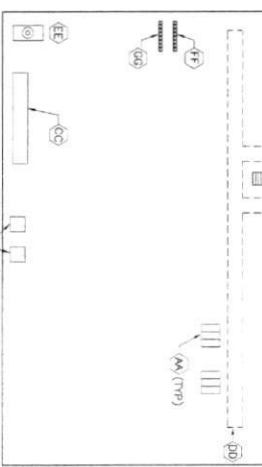
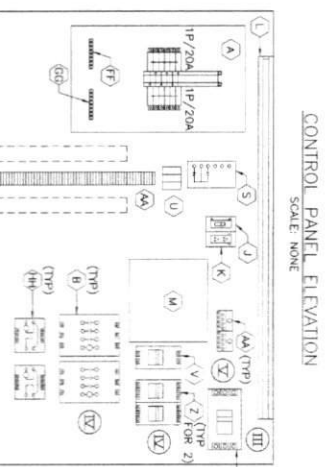
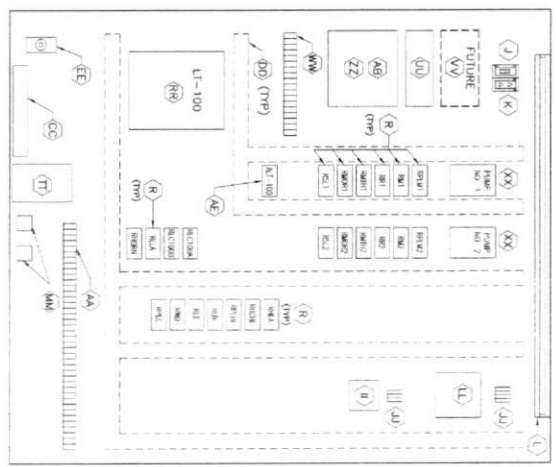
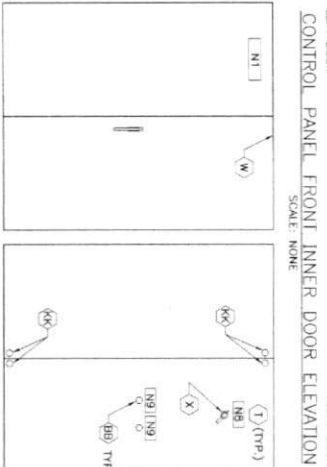
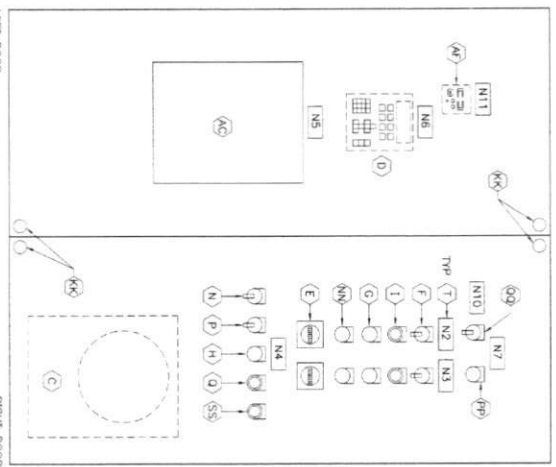
**EQUIPMENT & DEVICE SCHEDULE**

ITEM	DESCRIPTION
A	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100 A, 12 CIRTS
B	1PH, 120V, 100A, NON REVERSING, SINGLE PHASE, AUTOMATIC MOTOR STARTER W/120V VOLT CONTROL COIL, NAME SIZE AS SCHEDULED
C	CHART RECORDER (FUTURE)
D	BACKUP CONTROLLER (FUTURE)
E	ELECTRIC MACHINERY TYPE CAPPED THE WATER
F	HAND-OFF-AUTO SWITCH, HEAVY DUTY, OILTIGHT W/120V, 20A W/120V
G	WARNING LIGHT, HEAVY DUTY, GREEN, 24 VOLT, 2.5 WATT WITH "SAFE" LEGEND
H	WARNING LIGHT, HEAVY DUTY, RED, 24 VOLT, 2.5 WATT WITH "DANGER" LEGEND
I	PUMP PROTECTION MODULE RESET PRESSURE SWITCH
J	SWITCH FOR CIRCUIT BREAKERS, 120V, 20A, 2PST
K	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDING, GFCI TYPE
L	40 WATT FLUORESCENT STRIP LIGHT W/BALAST SUITABLE FOR 270V CIRCUIT OPERATION
M	SHOCK PROTECTION - INCOMING POWER (SEE SPECIFICATIONS)
N	ALARM BELL, 2 POSITION TOGGLE SWITCH 120V, WITH "ALARM BELL ON-OFF" LEGEND
O	"ALARM BELL" SWITCH, 2 POSITION TOGGLE SWITCH 24 VOLT, WITH "ALARM BELL ON-OFF" LEGEND
P	"ALARM BELL" SWITCH, 2 POSITION TOGGLE SWITCH 24 VOLT, WITH "ALARM BELL ON-OFF" LEGEND
Q	"ALARM BELL" SWITCH, 2 POSITION TOGGLE SWITCH 24 VOLT, WITH "ALARM BELL ON-OFF" LEGEND
R	CONDUCTIVE ALUMINUM BUSHING WITH THREE HOLES
S	THREE PHASE VOLTAGE SENSITIVE FUSE/FUSIBLE RELAY (SEE SPECIFICATIONS)
T	NAMEPLATES, 3/16" HIGH LETTERING IN WHITE LETTERS ON BLACK BACKGROUND (SEE NAMEPLATE SCHEDULE) (SEE NOTE 1)
U	TYPE REBAR & TIES - FUSED TRAILING
V	TYPE REBAR & TIES - FUSED TRAILING
W	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH
X	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH
Y	TERMINAL - MOUNTED, WELDED CASE MAIN CIRCUIT BREAKER, 225A/100A
Z	ADJUSTABLE RESISTANCE/IMPEDANCE TRIP MOTOR CIRCUIT PROTECTION
AA	TERMINAL BLOCK
AB	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
AC	STRIP HEATER
AD	WIRE DUCT, 2" WIDE X 2" DEEP W/ALUMINUM
AE	TERMINAL BOX
AF	INDUCTION BELL
AG	MOTOR OVERLOAD MODULE
AH	120V, 120 - 12/24VAC, 1PH, CONTROL POWER TRANSFORMER
AI	CONTROL POWER TRANSFORMER
AJ	CONTROL POWER TRANSFORMER
AK	CONTROL POWER TRANSFORMER
AL	CONTROL POWER TRANSFORMER
AM	CONTROL POWER TRANSFORMER
AN	CONTROL POWER TRANSFORMER
AO	CONTROL POWER TRANSFORMER
AP	CONTROL POWER TRANSFORMER
AQ	CONTROL POWER TRANSFORMER
AR	CONTROL POWER TRANSFORMER
AS	CONTROL POWER TRANSFORMER
AT	CONTROL POWER TRANSFORMER
AU	CONTROL POWER TRANSFORMER
AV	CONTROL POWER TRANSFORMER
AW	CONTROL POWER TRANSFORMER
AX	CONTROL POWER TRANSFORMER
AY	CONTROL POWER TRANSFORMER
AZ	CONTROL POWER TRANSFORMER
BA	CONTROL POWER TRANSFORMER
BB	CONTROL POWER TRANSFORMER
BC	CONTROL POWER TRANSFORMER
BD	CONTROL POWER TRANSFORMER
BE	CONTROL POWER TRANSFORMER
BF	CONTROL POWER TRANSFORMER
BG	CONTROL POWER TRANSFORMER
BH	CONTROL POWER TRANSFORMER
BI	CONTROL POWER TRANSFORMER
BJ	CONTROL POWER TRANSFORMER
BK	CONTROL POWER TRANSFORMER
BL	CONTROL POWER TRANSFORMER
BM	CONTROL POWER TRANSFORMER
BN	CONTROL POWER TRANSFORMER

DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	NAME OF LEFT STATION	N7	P.L.C. - BACKUP
N2	PUMP NO. 1	N8	RESET
N3	HIGH LEVEL ALARM	N9	SEE DETAIL
N4	AUTOMATED	N10	POWER MONITOR
N5	OPERATOR P.L.C. INTERFACE	N11	POWER MONITOR

**NAMEPLATE SCHEDULE**

MANUAL RESET - CHECK AND CORRECT ALARM TO PRIMARY MODE BY TURNING SWITCH TO PRIMARY MODE, THEN BACK TO PRIMARY MODE.



- DETAILS:**
1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
  2. PROVIDE ONE LIMIT SWITCH PER EXTERIOR DOOR, WIRED IN PARALLEL.
  3. ALL HOLES, E.T.W.'S, AND RUN LIGHTS TO BE MOUNTED ON FACE OF CONTROL PANEL.
  4. PROVIDE ADEQUATE SPACE FOR FUTURE COH CHART RECORDER.
  5. PROVIDE ADEQUATE SPACE FOR FUTURE COH SIGNAL GENERATOR AND CONDITIONER.
  6. PROVIDE SPACE FOR FUTURE COH BACKUP PUMP CONTROLLER.

E10

**SHRADER ENGINEERING**

1500 A.W. Beck  
Incorporated

1500 A.W. Beck  
Incorporated

1500 A.W. Beck  
Incorporated

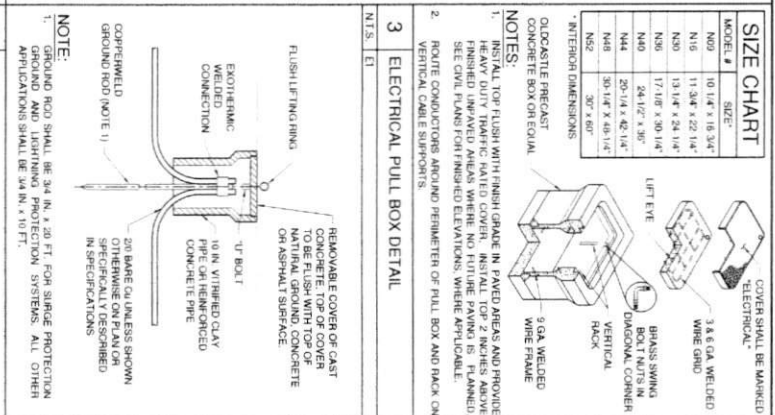
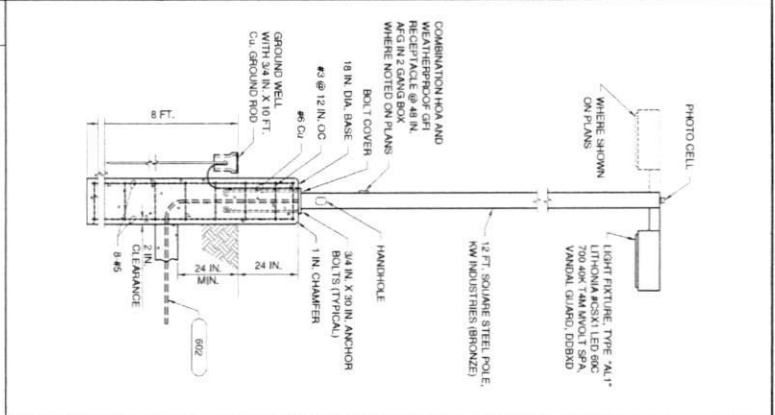
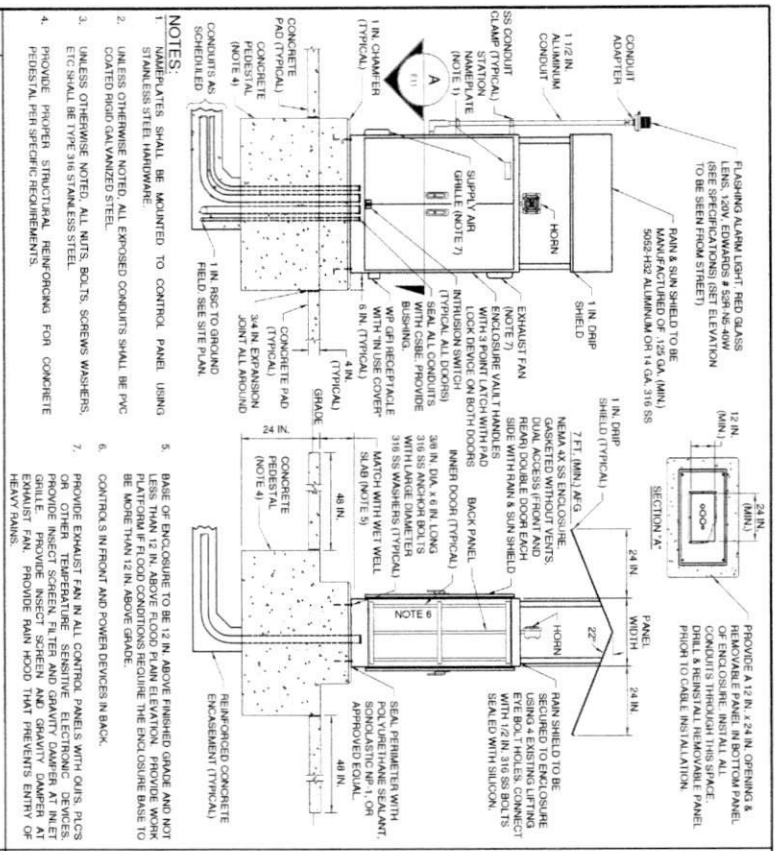
**CITY OF HOUSTON**

HARRIS FORT BEND COUNTIES  
MUNICIPAL UTILITY DISTRICT NO.5

LEFT STATION FORCE MAIN & WATERLINE  
TO SERVE 4.8 AC COMMERCIAL TRACT

**ELECTRICAL CABINET EQUIPMENT LAYOUT**

DATE: 11/11/11  
DRAWN BY: SCALE: 1/8" = 1'-0"  
SHEET 1 OF 2  
NO. 29 of 37



SIZE CHART	
MODEL #	SIZE
N01	10 1/4" x 18 3/4"
N15	11 3/4" x 22 1/4"
N20	13 1/4" x 24 1/4"
N35	17 1/8" x 30 1/4"
N40	24 1/2" x 35"
N44	25 1/4" x 42 1/4"
N48	30 1/4" x 48 1/4"
N52	30" x 60"

COVER SHALL BE MARKED "ELECTRICAL"

1.3 & 6 GA WELDED WIRE GRID

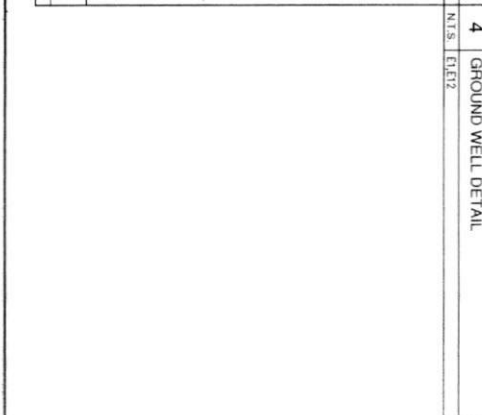
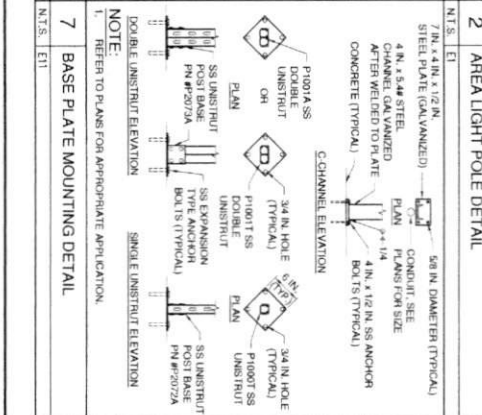
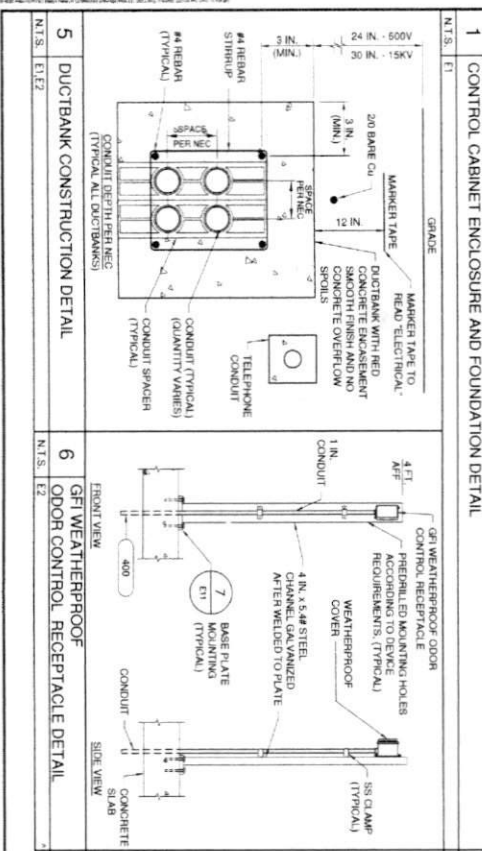
BRASS SWING BOLT WITH IN DIAGONAL CORNER

VERTICAL WIRE FRAME

5 GA WELDED WIRE FRAME

NOTES:

- INSTALL TOP FLUSH WITH FINISH GRADE IN PAVED AREAS AND PROVIDE FINISHED UNPAVED AREAS WHERE NO FINISH PAVING IS PLANNED. SEE CIVIL PLANS FOR FINISHED ELEVATIONS, WHERE APPLICABLE.
- ROUTE CONDUITORS AROUND PERIMETER OF PULL BOX AND PACK ON VERTICAL CABLE SUPPORTS.



SIZE CHART	
MODEL #	SIZE
N01	10 1/4" x 18 3/4"
N15	11 3/4" x 22 1/4"
N20	13 1/4" x 24 1/4"
N35	17 1/8" x 30 1/4"
N40	24 1/2" x 35"
N44	25 1/4" x 42 1/4"
N48	30 1/4" x 48 1/4"
N52	30" x 60"

COVER SHALL BE MARKED "ELECTRICAL"

1.3 & 6 GA WELDED WIRE GRID

BRASS SWING BOLT WITH IN DIAGONAL CORNER

VERTICAL WIRE FRAME

5 GA WELDED WIRE FRAME

NOTES:

- INSTALL TOP FLUSH WITH FINISH GRADE IN PAVED AREAS AND PROVIDE FINISHED UNPAVED AREAS WHERE NO FINISH PAVING IS PLANNED. SEE CIVIL PLANS FOR FINISHED ELEVATIONS, WHERE APPLICABLE.
- ROUTE CONDUITORS AROUND PERIMETER OF PULL BOX AND PACK ON VERTICAL CABLE SUPPORTS.

NOTES:

- NAMEPLATES SHALL BE MOUNTED TO CONTROL PANEL USING STAINLESS STEEL NAMEPLATE.
- UNLESS OTHERWISE NOTED, ALL EXPOSED CONDUITS SHALL BE PVC COATED RIBBON GALVANIZED STEEL.
- UNLESS OTHERWISE NOTED, ALL WTS. BOLTS, SCREWS WASHERS, ETC. SHALL BE TYPE 316 STAINLESS STEEL.
- PROVIDE PROPER STRUCTURAL REINFORCEMENT FOR CONCRETE PERISTAL PER SPECIFIC REQUIREMENTS.
- BASE OF ENCLOSURE TO BE 12 IN ABOVE FINISHED GRADE AND NOT LESS THAN 12 IN ABOVE FLOOD PLAIN ELEVATION. PROVIDE WORK PLATFORM IF FLOOD CONDITIONS REQUIRE THE ENCLOSURE BASE TO BE MORE THAN 12 IN ABOVE GRADE.
- CONTROL'S IN FRONT AND POWER DEVICES IN BACK.
- PROVIDE EXHAUST FAN IN ALL CONTROL PANELS WITH GATS, FICS OR OTHER TEMPERATURE SENSITIVE ELECTRONIC DEVICES. PROVIDE INSULATION TO EXHAUST FAN. PROVIDE INSECT SCREEN AND GRAVITY DAMPER AT EXHAUST FAN. PROVIDE RAIN HOOD THAT PREVENTS ENTRY OF HEAVY RAIN.

1 CONTROL CABINET ENCLOSURE AND FOUNDATION DETAIL N.T.S. | E1

2 AREA LIGHT POLE DETAIL N.T.S. | E1

3 ELECTRICAL PULL BOX DETAIL N.T.S. | E1

4 GROUND WELL DETAIL N.T.S. | E1

5 DUCTBANK CONSTRUCTION DETAIL N.T.S. | E2

6 GFI WEATHERPROOF ODOR CONTROL RECEPTACLE DETAIL N.T.S. | E2

7 BASE PLATE MOUNTING DETAIL N.T.S. | E1

11

**SHRADER ENGINEERING**

Van Dyke & Taylor Incorporated

HARRIS-FORT BEND COUNTIES MUNICIPAL UTILITY DISTRICT No. 5 LEFT STATION FORCE MAIN & WATERLINE TO SERVE 6.8 AC COMMERCIAL TRACT

**ELECTRICAL DETAILS SHEET 1**

CITY OF HOUSTON

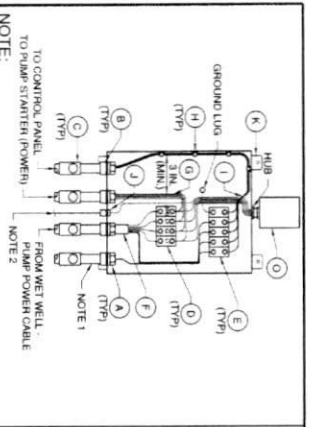
DATE: 01/11/2017

PROJECT: 17171

SCALE: AS NOTED

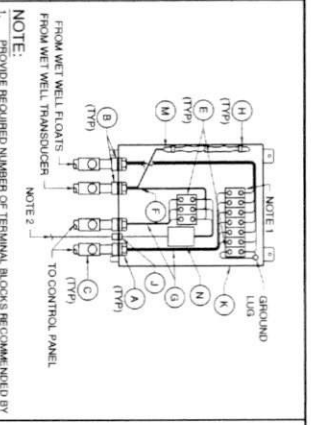
NO. 30 B 31





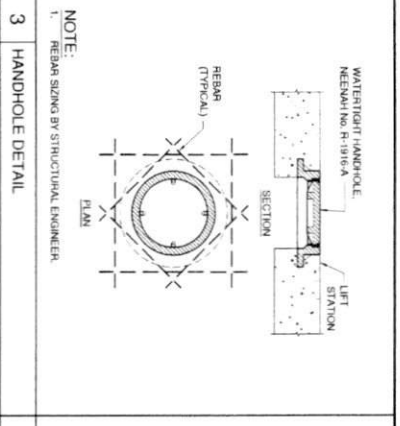
**1 LIFT PUMP TERMINAL BOX DETAIL**

NOTE:  
 1. PROVIDE SURGE PROTECTION DEVICE GROUND CONDUCTION STRAIGHT FROM WET WELL TO PUMP STATION (POWER).  
 2. ROUTE SURGE PROTECTION DEVICE GROUND CONDUCTION STRAIGHT FROM WET WELL THROUGH STRUCTURAL STEEL AND TO SS FT. GROUND POOL.



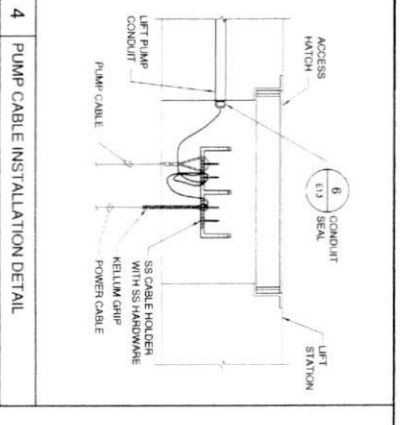
**2 FLOATS/TRANSDUCER TERMINAL BOX DETAIL**

NOTE:  
 1. LEVEL SENSOR PROBE MANUFACTURER.  
 2. ROUTE SURGE PROTECTION DEVICE GROUND CONDUCTION STRAIGHT FROM WET WELL THROUGH STRUCTURAL STEEL AND TO SS FT. GROUND POOL.



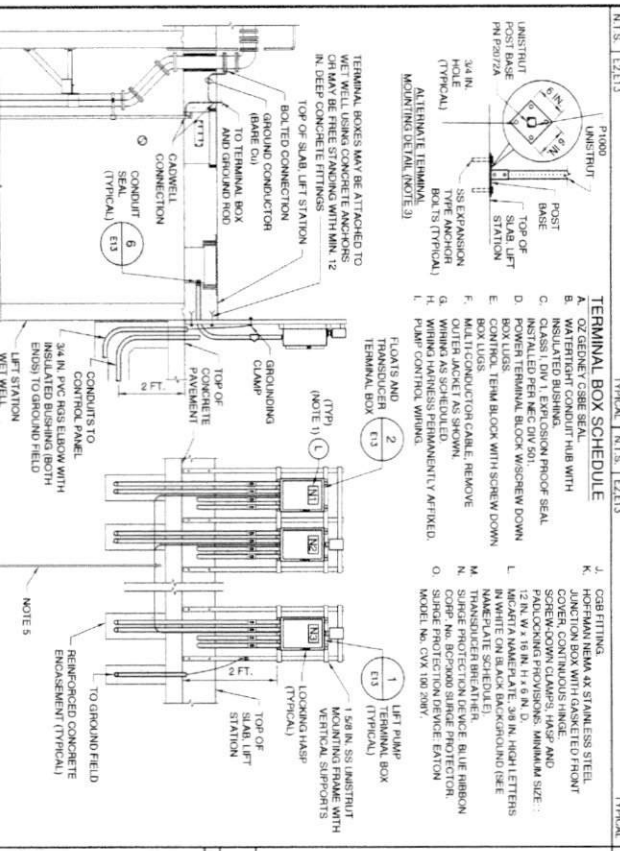
**3 HANDHOLE DETAIL**

NOTE:  
 1. REBAR SIZE BY STRUCTURAL ENGINEER.



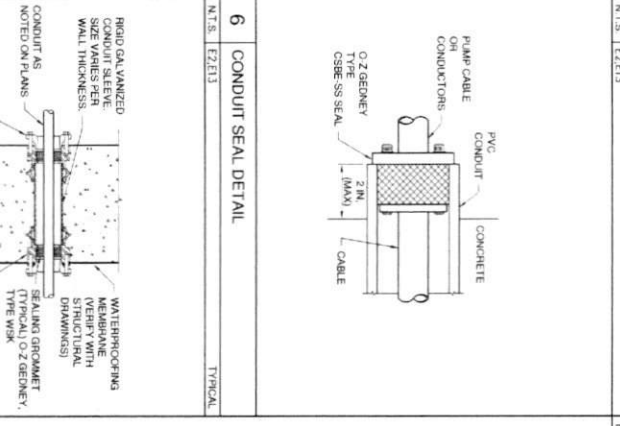
**4 PUMP CABLE INSTALLATION DETAIL**

NOTE:  
 1. PROVIDE SURGE PROTECTION DEVICE GROUND CONDUCTION STRAIGHT FROM WET WELL THROUGH STRUCTURAL STEEL AND TO SS FT. GROUND POOL.



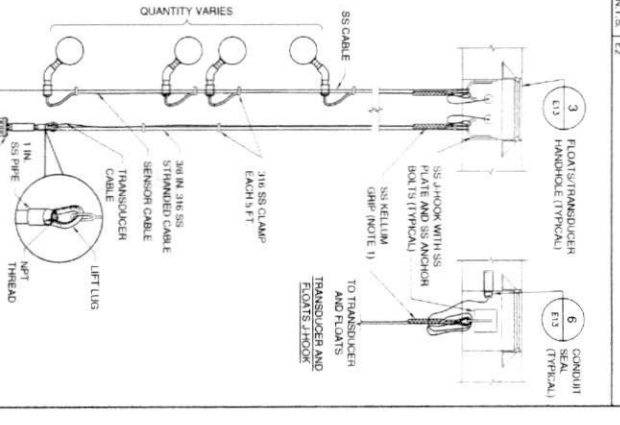
**5 TERMINAL BOX INSTALLATION DETAIL**

NOTE:  
 1. TERMINAL BOXES MAY BE ATTACHED TO WET WELL USING CONCRETE ANCHORS OR MAY BE FREE STANDING WITH MIN. 12 IN. DEEP CONCRETE FITTINGS.  
 2. TOP OF SLAB LIFT STATION.  
 3. GROUND CONNECTION (RAME BOX) NOT TERMINAL BOX AND NOT GROUND ROD.  
 4. CONDUIT CONNECTION (RAME BOX) NOT TERMINAL BOX AND NOT GROUND ROD.  
 5. CONDUIT SEAL (TYPICAL) E13.  
 6. CONDUIT SEAL (TYPICAL) E13.  
 7. CONDUIT SEAL (TYPICAL) E13.  
 8. CONDUIT SEAL (TYPICAL) E13.  
 9. CONDUIT SEAL (TYPICAL) E13.  
 10. CONDUIT SEAL (TYPICAL) E13.  
 11. CONDUIT SEAL (TYPICAL) E13.  
 12. CONDUIT SEAL (TYPICAL) E13.  
 13. CONDUIT SEAL (TYPICAL) E13.  
 14. CONDUIT SEAL (TYPICAL) E13.  
 15. CONDUIT SEAL (TYPICAL) E13.  
 16. CONDUIT SEAL (TYPICAL) E13.  
 17. CONDUIT SEAL (TYPICAL) E13.  
 18. CONDUIT SEAL (TYPICAL) E13.  
 19. CONDUIT SEAL (TYPICAL) E13.  
 20. CONDUIT SEAL (TYPICAL) E13.



**6 CONDUIT SEAL DETAIL**

NOTE:  
 1. SEALANT TYPE O-Z GENEVEY.



**7 CONDUIT SEALS DETAIL**

NOTE:  
 1. SEALANT TYPE O-Z GENEVEY.



**8 FLOATS & TRANSDUCER INSTALLATION DETAIL**

NOTE:  
 1. REBAR GRIPS ARE REQUIRED ON ALL CABLES.  
 2. INSTALL FLOATS AND TRANSDUCER CLEAR OF PUMP INTAKE.

**GENERAL NOTES:**

1. MAINTAIN MINIMUM SEPARATION UNDER NEC ARTICLE 334, WIRING AND NON-INTERMIXED SAFE MOTOR FEEDER WIRING.
2. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SPACERS, WASHERS, ETC. SHALL BE STAINLESS STEEL.
3. UNLESS OTHERWISE NOTED, ALL COATED RIGID GALVANIZED STEEL.
4. UNLESS OTHERWISE NOTED, ALL CONDUIT SHALL BE RIGID GALVANIZED STEEL.

**ELECTRICAL DETAILS SHEET 3**

**CITY OF HOUSTON**

**HARRIS-FORT BEND COUNTIES MUNICIPAL UTILITY DISTRICT NO. 5**

**LIFT STATION FORCE MAIN & WATERLINE TO SERVE 4.8 AC COMMERCIAL TRACT**

**DATE: 02/27/25**

**SCALE: AS NOTED**

**PROJECT NO: 32 09 37**

**DRAWING NO: 54467**

**DATE: 02/27/25**

**CONDUIT SCHEDULE**

TAG	DESCRIPTION	ROUTING	
		FROM	TO
A	MAIN BONDING JUMPER	MAIN BREAKER NEUTRAL	MAIN BREAKER GROUND
B	EQUIPMENT BONDING JUMPER	PANEL GROUND	PANEL ENCLOSURE
100	SERVICE ENTRANCE	POWER COMPANY METERING	MAIN SERVICE BREAKER
101	GROUND ELECTRODE CONDUCTOR	GROUND FIELD	MANUAL TRANSFER SWITCH
102	SERVICE ENTRANCE	MANUAL TRANSFER BREAKER	GENERATOR CONNECTOR
103	GENERATOR CONNECTOR	MANUAL TRANSFER SWITCH	GENERATOR CONNECTOR
104	SERVICE YARD LIGHT	PHLP CONTROL PANEL	SERVICE YARD LIGHT
105	TELEPHONE SERVICE	TELEPHONE COMPANY	CONTROL PANEL
106	PHLP CONTROL PANEL POWER	MANUAL TRANSFER SWITCH	PHLP CONTROL PANEL
200	PHLP NO. 1 POWER	PHLP NO. 1 TERMINAL BOX	PHLP NO. 1
201	PHLP NO. 1 CONTROL	PHLP CONTROL PANEL	PHLP NO. 1
202	PHLP NO. 2 POWER	PHLP STARTER	PHLP NO. 1 TERMINAL BOX
300	PHLP NO. 2 CONTROL	PHLP CONTROL PANEL	PHLP NO. 2
301	PHLP NO. 2 POWER	PHLP STARTER	PHLP NO. 2 TERMINAL BOX
400	DOOR CONTROL LIGHT RECEPTACLE	PHLP CONTROL PANEL	PHLP NO. 2 TERMINAL BOX
400	DOOR CONTROL LIGHT RECEPTACLE	PHLP CONTROL PANEL	PHLP NO. 2 TERMINAL BOX
600	LIGHTING TRANSFORMER GROUND	LIGHTING PANEL	GROUND FIELD
602	YARD LIGHT & ALARM	PHLP CONTROL PANEL	YARD LIGHT & ALARM LIGHTING
1000	LEVEL TRANSducer	PHLP CONTROL PANEL	TERMINAL BOX
1001	LEVEL FLOATS	PHLP CONTROL PANEL	TERMINAL BOX
1002	LEVEL TRANSducer	TERMINAL BOX	TRANSducer
1003	LEVEL FLOATS	TERMINAL BOX	FLOATS

**3 PHASE FEEDER CONDUCTOR AND DEVICE TABLE**

CURRENT RATING	CONDUIT		PHASE CONDUCTOR		NEUTRAL CONDUCTOR		GROUND ELECTRODE CONDUCTOR		EQUIP GND SERVICE SUPPLY		EQUIP GND SERVICE SUPPLY		MAXIMUM CONDUCTOR DISTANCE BASED ON 100% VOLTAGE DROP AT 85% P.F.
	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	
100	1	2 IN.	3	#1	1	#1	1	#6	1	#6	1	#6	350 FT.
150	1	2-1/2 IN.	3	#2	1	#2	1	#4	1	#4	1	#4	350 FT.
200	1	2-1/2 IN.	3	#3	1	#3	1	#4	1	#4	1	#4	300 FT.
225	1	2-1/2 IN.	3	#4	1	#4	1	#4	1	#4	1	#4	300 FT.
250	1	3 IN.	3	#5	1	#5	1	#4	1	#4	1	#4	300 FT.
300	1	3 IN.	3	#6	1	#6	1	#4	1	#4	1	#4	300 FT.
400	1	4 IN.	3	#8	1	#8	1	#4	1	#4	1	#4	300 FT.
600	2	3 IN.	3	#6	1	#6	1	#4	1	#4	1	#4	300 FT.
800	2	4 IN.	3	#8	1	#8	1	#4	1	#4	1	#4	300 FT.
1000	3	3-1/2 IN.	3	#10	1	#10	1	#4	1	#4	1	#4	300 FT.
1200	3	4 IN.	3	#12	1	#12	1	#4	1	#4	1	#4	300 FT.
1600	4	4 IN.	3	#14	1	#14	1	#4	1	#4	1	#4	300 FT.
2000	5	4 IN.	3	#16	1	#16	1	#4	1	#4	1	#4	300 FT.

- SERVICE FEEDER NOTES:**
1. 1/0 MINIMUM FOR PARALLEL PHASE, NEUTRAL, OR GROUNDING ELECTRODE CONDUCTORS PER NEC.
  2. SERVICE SUPPLY SIDE EQUIPMENT GROUNDING CONDUCTORS ARE BASED ON THE PHASE CONDUCTOR SIZE IN EACH PHASE.
  3. SERVICE SUPPLY SIDE EQUIPMENT GROUNDING CONDUCTORS ARE BASED ON THE PHASE CONDUCTOR SIZE IN EACH PHASE.
  4. POWER FEEDER CONDUCTORS TO BE THHW-2, 600V RATED.
  5. BRANCH CIRCUIT CONDUCTORS TO BE THHW, 600V RATED.


**460V MOTOR DEVICE TABLE**

HP	LOAD APPX	LOAD +25%	START RISE	START RISE	CND QTY	CND SIZE	CONDUITS		MAXIMUM CONDUCTOR DISTANCE BASED ON 100% VOLTAGE DROP AT 85% P.F.		
							PHASE	GROUND			
1/2.5	1.8	2.10	15	FVNH 1	1	1 IN.	3	#12	1	#12	300 FT.
2.1/2	1.1	1.4	20	FVNH 1	1	1 IN.	3	#10	1	#10	375 FT.
10	14	18	30	FVNH 1	1	1 IN.	3	#10	1	#10	275 FT.
15	21	27	40	FVNH 2	1	1 IN.	3	#8	1	#10	150 FT.
20	25	34	43	FVNH 3	1	1 IN.	3	#8	1	#10	225 FT.
30	40	50	70	FVNH 3	1	1-1/2 IN.	3	#6	1	#8	225 FT.
40	52	65	100	FVNH 3	1	1-1/2 IN.	3	#6	1	#8	225 FT.
50	65	82	150	FVNH 3	1	1-1/2 IN.	3	#6	1	#8	250 FT.
60	77	97	200	FVNH 4	1	1-1/2 IN.	3	#6	1	#8	275 FT.
75	96	120	250	FVNH 4	1	2 IN.	3	#6	1	#8	275 FT.
100	124	155	250	FVNH 4	1	2 IN.	3	#6	1	#8	300 FT.
125	156	195	250	SERV 5	1	2-1/2 IN.	3	#4	1	#4	350 FT.
150	180	225	300	SERV 5	1	3 IN.	3	#4	1	#4	350 FT.
200	240	300	300	SERV 6	1	2-1/2 IN.	3	#4	1	#4	300 FT.
250	302	378	450	SERV 6	2	2-1/2 IN.	3	#4	1	#4	375 FT.
300	361	452	600	SERV 6	2	3 IN.	3	#4	1	#4	425 FT.
350	414	518	750	SERV 6	2	3 IN.	3	#4	1	#4	475 FT.
400	477	597	900	SERV 6	2	3-1/2 IN.	3	#4	1	#4	425 FT.
450	515	644	1000	SERV 7	3	3-1/2 IN.	3	#4	1	#4	425 FT.
500	560	706	1000	SERV 7	3	3 IN.	3	#4	1	#4	425 FT.


- WHERE CND SIZE IS GREATER THAN THE MOTOR MANUFACTURER'S ADJUST GROUND CONDUCTOR SIZE ACCORDINGLY:**
- \* COORDINATE SIZE WITH MOTOR MANUFACTURER'S ADJUST GROUND CONDUCTOR SIZE ACCORDINGLY.
  - \* WHERE CND SIZE IS GREATER THAN THE MOTOR MANUFACTURER'S ADJUST GROUND CONDUCTOR SIZE ACCORDINGLY.
  - \* BRANCH CIRCUIT CONDUCTORS TO BE THHW, 600V RATED.

- NOTES:**
1. POWER CONDUCTORS TO BE THHW-2, 600V BRANCH CIRCUIT TO CONDUCTORS TO BE THHW, 600V.
  2. WHERE PUMP MOTOR CURRENT WITH MANUFACTURER AND WHERE GREATER THAN NEC VALUE, INCREASE CONDUCTORS AND CONDUIT SIZES ACCORDINGLY.

E14



**CITY OF HOUSTON**  
ELECTRICAL SCHEDULES



**SHRADER ENGINEERING**

HARRIS FORT BEND COUNTIES  
MUNICIPAL UTILITY DISTRICT NO. 5  
LEFT STATION FORCE MAIN & WATERLINE  
TO SERVE 4 & 8 AC COMMERCIAL TRACT

DATE: 11/11/2011  
TIME: 10:00 AM  
PROJECT: 33 @ 37

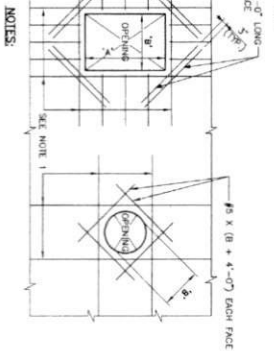
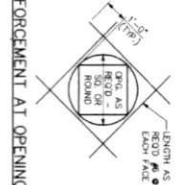
SCALE: AS SHOWN  
SHEET: 51467



## GENERAL NOTES FOR STRUCTURES

1. CONCRETE SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING.
2. ALL REINFORCEMENT SHALL BE DEVELOPED TO A MINIMUM OF 1.25 TIMES THE DEVELOPMENT LENGTH AS SHOWN IN THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL BE DEVELOPED TO THE SUPPORT.
4. DEVELOPMENT OF WALL REINFORCEMENT AND THROUGH-BARRIER REINFORCEMENT SHALL LAP A MINIMUM OF 1.25 TIMES THE DEVELOPMENT LENGTH AS SHOWN IN THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
5. WALL OR COLUMN SHALL HAVE CORNERS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL.
6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:
  - STRUCTURAL WALLS, FOUNDATIONS, WALLS AND SUPPORTED SLABS --- 4000 PSI
  - SLABS --- 3000 PSI
  - BEAMS AND GIRDERS --- 4000 PSI
  - LEAN CONCRETE CLASS B --- 1500 PSI
  - GROUT FILL CLASS B --- 3000 PSI
7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
  - SLABS --- 2"
  - TOP AND BOTTOM OF FORMED SLABS --- 2"
  - TOP AND BOTTOM OF CAST-IN-PLACE CONCRETE --- 2"
  - SPACES IN CONTACT WITH LOAD --- 2"
  - BOTTOM OF SLABS ON FILL OR SOIL --- 3"
  - EXPOSURE --- 3"
  - SOILS --- 3 1/2"
  - FLOORING --- 3"
  - WALLS --- 2"
  - LESS THAN 12" THICK WITH PROTECTIVE COATINGS --- 2"
  - 12" OR OVER IN THICKNESS WITH PROTECTIVE COATINGS --- 3"
  - BEAMS AND GIRDERS --- 2"
  - COVER AT TOP OF BOTTOM OR SIDES OF LONGITUDINAL REINFORCEMENT --- 2"
  - COLUMNS --- 2"
  - COVER FOR VERTICAL BARS --- 2"
8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN ON THE PLANS ARE RECOMMENDED, ANY DEVIATION FROM THOSE SHOWN SHOULD BE APPROVED BY THE ENGINEER.
9. ANY STEP IN FORMED CONCRETE WORK MUST BE MADE IN THE CENTER OF THE SPAN AND SHALL BE REINFORCED WITH REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS.
10. USE THE 1/2" JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LOADS FROM PERMANENTLY EXISTING STRUCTURES. ALL CONSTRUCTION JOINTS SHALL BE REINFORCED WITH 2# BARS PER FOOT OF JOINT.
11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.
12. ALL CONCRETE SLABS, ONE FT. IN THICKNESS, REINFORCED WITH BARS AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.
13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
14. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND ELECTRICAL DRAWINGS FOR ALL STEELERS, PARTS, CONCRETE AND INSTALLATIONS AND/OR OTHERS TO BE RECOMMENDED IN THE CONSTRUCTION.

### STD. REINFORCEMENT AT OPENINGS < 12"

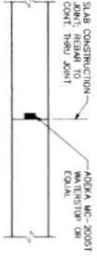


- NOTES:
1. PROVIDE ADDL. BARS EQUAL TO ONE-HALF OF BARS INTERFERED AT EACH SIDE OF OPENING AT 3" O.C. AS THOSE OF THE INTERFERED BARS (TYPICAL FOR OPENINGS IN PRESSURE WALLS).
- ADDITIONAL REINFORCING STEEL AT OPENINGS IN PRESSURE WALLS OR OPENINGS > 12"**

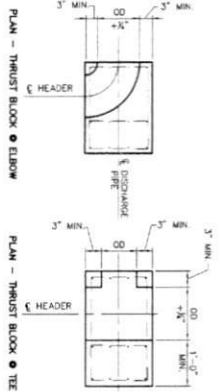
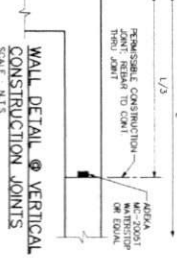
### REINFORCEMENT DEVELOPMENT LENGTH

CONCRETE DEVELOPMENT LENGTH FOR REBAR	MINIMUM DEVELOPMENT LENGTH FOR REBAR
1	12
2	12
3	12
4	12
5	12
6	12
7	12
8	12
9	12
10	12
11	12

### DETAIL OF SLAB CONSTRUCTION JOINTS

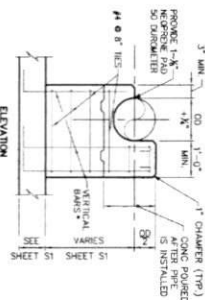


### WALL DETAIL OF VERTICAL CONSTRUCTION JOINTS

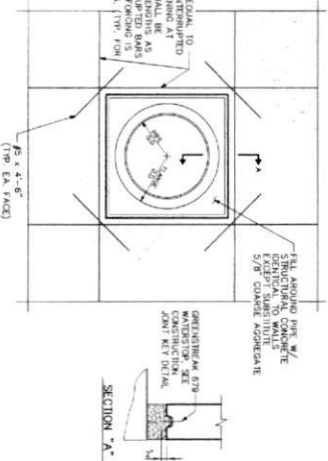


PIPE DIA.	MIN. BAR SIZE	MIN. BAR SPACING
4" - 6"	3 # 2B	3 x 2B
6" - 12"	3 # 3B	3 x 3B
12" - 18"	3 # 4B	3 x 4B
18" - 24"	3 # 5B	3 x 4B

### TYPICAL THRUST BLOCK DETAILS



### TYP. REINFORCING STEEL AT PIPE OPENINGS



**STANLEY SIRMING & HAMILTON, INC.**  
 Consulting Engineering Services  
 1100 West 11th Street, Suite 200, Houston, Texas 77003  
 P.O. Box 1100, Houston, Texas 77003  
 Tel: (713) 861-1100 Fax: (713) 861-1101  
 E-mail: info@stanley-sirming.com

**City of Houston**  
 Department of Public Works  
 1500 West Loop West, Suite 1000, Houston, Texas 77006  
 Tel: (713) 861-1100 Fax: (713) 861-1101  
 E-mail: info@cityofhouston.com

**APPROVED FOR CONSTRUCTION:**  
 [Signature] **City Engineer**

**APPROVED FOR CONSTRUCTION:**  
 [Signature] **City Engineer**

**DATE:** 7-2-2015

**DESIGNED BY:** [Signature]

**CHECKED BY:** [Signature]

**DATE:** 7-2-2015

**SCALE:** AS SHOWN

**SHEET:** 35 OF 37



