## REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 13th day of September, 2016, Commissioners Court came on to be heard and reviewed the accompanying notice
of Cadence McShane Construction Company, LLC
Job Location 18702 Beechnut Street, Richmond, TX 77407
Date 8/25/2017 Bond No. 268008146, Permit No. 2016-8975 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 _____, seconded by Commissioner _____, 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: for _____
County Engineer

By: N/A
_____
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.
Recorded in Volume
_____
Minutes of Commissioners Court

Clerk of Commissioners Court

By: _____
Deputy

# County of Fort Bend

Engineering Department

301 Jackson Street
Richmond, Texas 77469

Phone: (281) 633-7500

**Permit Application Review Form For**
**Cable, Conduit, and Pole Line Activity**
**In Fort Bend County**

Permit No. 2016-8975

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 directions

X c. Plans and specifications

X (2) Bond:

District Attorney, approval when applicable.

Perpetual bond currently posted.

No:

Amount:

X Performance bond submitted.

No: 268008146

Amount: $20,000.00

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.**

Assistant County Engineer — 9/7/16 Date

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

**BOND NO** 268008146

**THE STATE OF TEXAS** §

**KNOW ALL MEN BY THESE PRESENTS:**

**COUNTY OF FORT BEND** §

**THAT WE,** Cadence McShane Construction Company, LLC **whose address is** 11757 Katy Fwy #675, Houston, TX 77079 **Texas, hereinafter called the Principal, And** Liberty Mutual Insurance Company **, a Corporation existing under and by virtue of the laws of the state of** MA **and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at** 175 Berkeley Street, Boston, MA 02116 **, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought whining said state is** Jessica Rosser **and Whose address is** 5151 Belt Line Rd, Dallas, TX 75254 **, 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 Thousand and 00/100 **Dollars ($** 20,000.00 **) current, lawful money of the United Stated 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** 25th **day of** August **, 20** 16 **.**

Cadence McShane Construction Company, LLC
**PRINCIPAL**

**BY**

Liberty Mutual Insurance Company
**SURETY**

Robert T. Pearson
**BY** Robert T. Pearson, Attorney-In-Fact

ACKNOWLEDGEMENT OF PRINCIPAL – IF A CORPORATION

STATE OF .....} SS
COUNTY OF.....}

On this..... day of....., ..... before me personally appeared ..... to be known, who, being by me duly sworn, did depose and say; that he/she resides at ....., that he/she is the ..... of ..... the corporation described in and which executed the within insurance instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order.

.....

ACKNOWLEDGEMENT FOR PRINCIPAL, IF LIMITED LIABILITY COMPANY

STATE OF .....} SS

COUNTY OF .....}

On this 24th day of August 2016 before me personally appeared Colby ROSE to me known and known to me to be the Vice President of Cadence McShane Construction, a Limited Liability Company, described in and who executed the foregoing insurance instrument and acknowledged to me that he/she executed the foregoing insurance instrument and acknowledged to me that he/she executed the same as and for the act and deed of said Limited Liability Company.

CASILENA OCHOA
Notary Public, State of Texas
Comm. Expires 12-02-2019
Notary ID 130456068

Casilena Ochoa

ACKNOWLEDGMENT OF SURETY COMPANY

STATE OF New York } SS
COUNTY OF Nassau }

On this August 25, 2016, before me personally came Robert T. Pearson to me known, who, being by me duly sworn, did depose and say; that he/she resides in Nassau County, State of New York at he/she is the Attorney-In-Fact of the Liberty Mutual Insurance Company the corporation described in which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by order of the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order; and the affiant did further depose and say that the Superintendent of Insurance of the State of New York, has, pursuant to Section 1111 of the Insurance Law of the State of New York, issued to Liberty Mutual Insurance Company (Surety) his/her certificate of qualification evidencing the qualification of said Company and its sufficiency under any law of the State of New York as surety and guarantor, and the propriety of accepting and approving it as such; and that such certificate has not been revoked.

.....
Notary Public

GRACE ACKERSON
Notary Public-State of New York
No. 01AC6111590
Qualified in Nassau County
Commission Expires 6/14/2020

NY acknowledgment

**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**
**This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.**

Certificate No. 7343436

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

# POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Camille Maitland; Colette R. Chisholm; Desiree Cardlin; George O. Brewster; Gerard S. Macholz; Lee Ferrucci; Mia Woo-Warren; Nelly Renchiwich; Peter F. Jones; Rita Sagistano; Robert T. Pearson; Susan Lupski; Thomas Bean; Vincent A. Walsh

all of the city of Uniondale, state of NY each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of April, 2016.

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

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

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 26th day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

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

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

**ARTICLE IV – OFFICERS** – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

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

**Certificate of Designation** – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed the seals of said Companies this _____ day of AUG 25 2016, 20_____.

By: Gregory W. Davenport
Gregory W. Davenport, Assistant Secretary

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

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



LMS_12873_122013

Liberty Mutual SURETY

# LIBERTY MUTUAL FIRE INSURANCE COMPANY

## FINANCIAL STATEMENT — DECEMBER 31, 2015

### Assets

| | | |
|---|---|---|
| Cash and Bank Deposits | $ | 62,585,459 |
| *Bonds — U.S Government | | 498,222,200 |
| *Other Bonds | | 3,029,457,678 |
| *Stocks | | 412,472,088 |
| Real Estate | | 0 |
| Agents' Balances or Uncollected Premiums | | 637,046,294 |
| Accrued Interest and Rents | | 30,269,520 |
| Other Admitted Assets | | 807,718,887 |
| **Total Admitted Assets** | | **$ 5,477,772,126** |

### Liabilities

| | | |
|---|---|---|
| Unearned Premiums | | $1,052,883,251 |
| Reserve for Claims and Claims Expense | | 2,706,742,189 |
| Funds Held Under Reinsurance Treaties | | 0 |
| Reserve for Dividends to Policyholders | | 0 |
| Additional Statutory Reserve | | 0 |
| Reserve for Commissions, Taxes and Other Liabilities | | 319,155,723 |
| **Total** | | **$ 4,078,781,163** |
| Special Surplus Funds | $ 10,862,551 | |
| Capital Stock | 10,000,000 | |
| Paid in Surplus | 511,250,000 | |
| Unassigned Surplus | 866,878,413 | |
| **Surplus to Policyholders** | | **1,398,990,964** |
| **Total Liabilities and Surplus** | | **$5,477,772,127** |

LIBERTY MUTUAL FIRE INSURANCE COMPANY INCORPORATED 1908 WISCONSIN

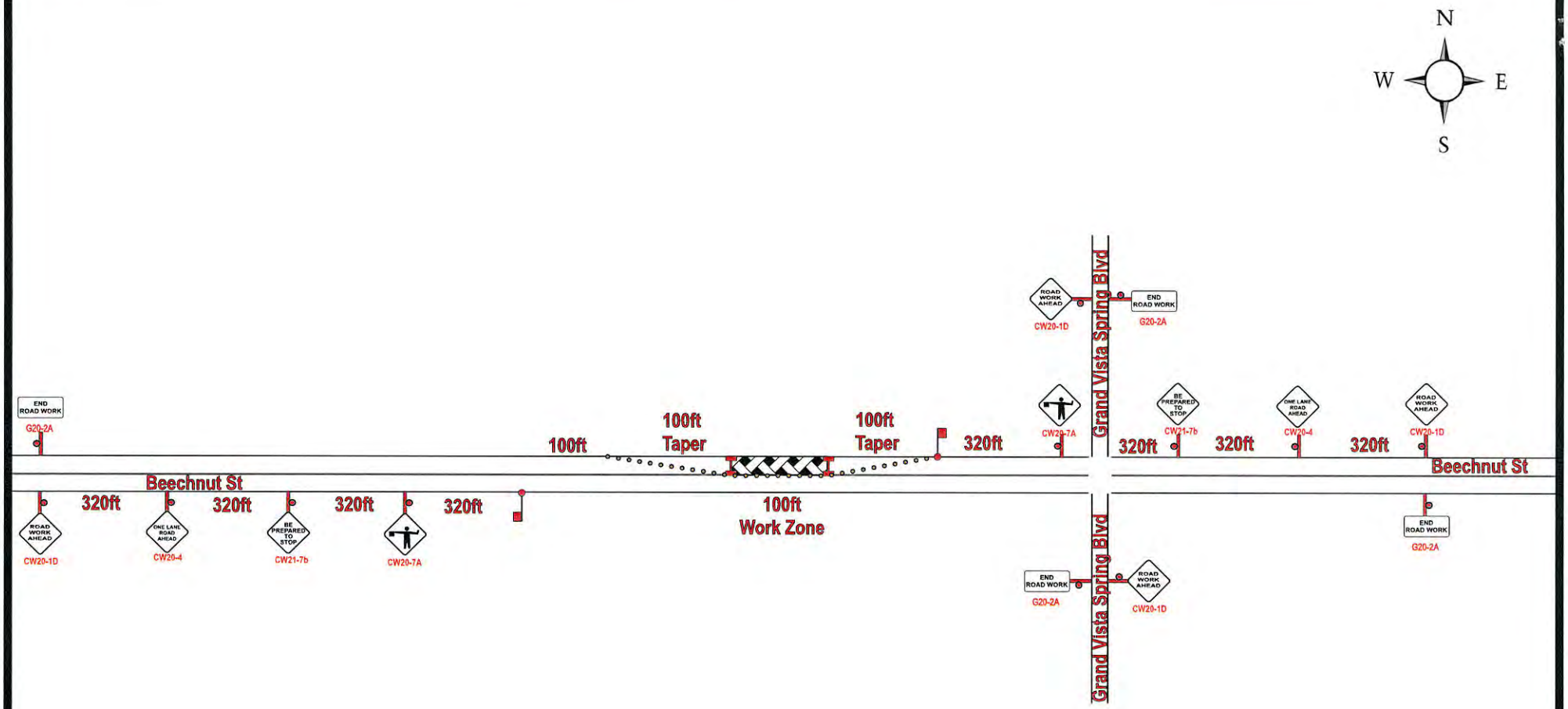
* Bonds are stated at amortized or investment value; Stocks at Association Market Values.
The foregoing financial information is taken from Liberty Mutual Fire Insurance Company's financial statement filed with the state of Wisconsin Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Fire Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2015, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 15th day of March, 2016.

T A Mikolajewski

Assistant Secretary




SALESMAN/EXECUTIVE

**Rebekah Matamoros**

TCP DESIGNER

**Michael Cooper**

THIS PLAN IS FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT INTENDED TO RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND HIS RESPONSIBILITY TO TRAFFIC AND IS PROPERT OF BUYERS BARRICADES, INC.

## NOTES

Devices Spaced on 35ft Centers

| | |
|---|---|
| | Type III |
| | Navigator |

CITY
**Richmond**

CONTRACTOR
**Cadence McShane**

JOB NAME
Elementary School No. 50

DATE
08/17/16

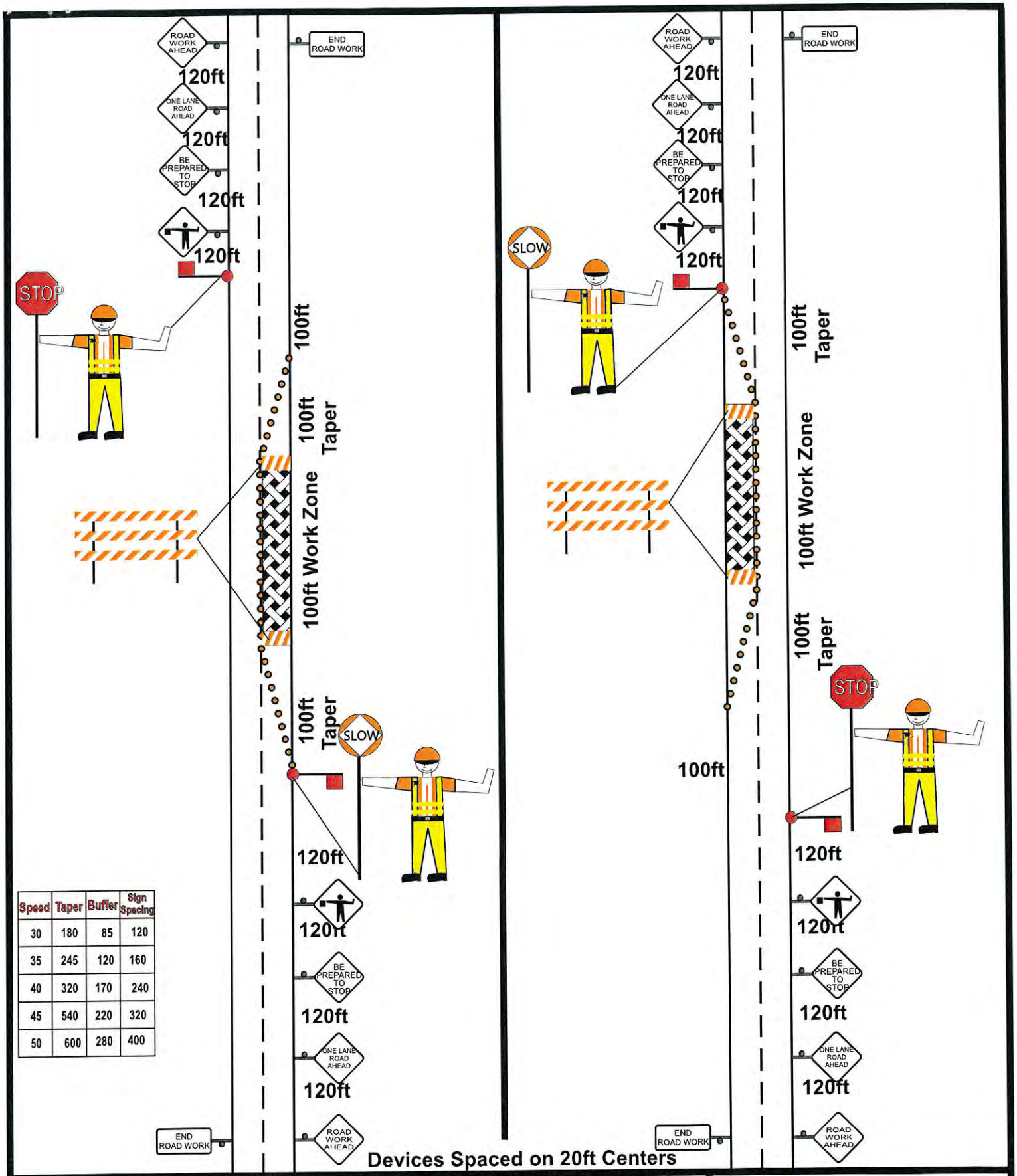
Traffic Control Plans(TCP's) are included with Buyers Barricades rental agreements. Traffic Control Plans issued without rental agreement will be charged to the customer.

ROAD CLOSED

BUYERS

EST. BARRICADES 1984

817.535.3939




| Speed | Taper | Buffer | Sign Spacing |
|---|---|---|---|
| 30 | 180 | 85 | 120 |
| 35 | 245 | 120 | 160 |
| 40 | 320 | 170 | 240 |
| 45 | 540 | 220 | 320 |
| 50 | 600 | 280 | 400 |

**Devices Spaced on 20ft Centers**

SALESMAN/EXECUTIVE
Blake Tuggle

TCP DESIGNER
Martin Taylor

THIS PLAN IS FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT INTENDED TO RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND HIS RESPONSIBILITY TO TRAFFIC AND IS PROPERTY OF BUYERS BARRICADES INC.

**NOTES**

N W E S

CITY
Richmond

CONTRACTOR
**Cadence McShane**

JOB NAME
Elementary School No. 50

DATE
08/18/16

Traffic Control Plans(TCP's) are included with Buyers Barricades rental agreements. Traffic Control Plans issued without rental agreement will be charged to the customer.

ROAD CLOSED
BUYERS
EST. BARRICADES 1984
817.535.3939

# FORT BEND INDEPENDENT SCHOOL DISTRICT

## PROPOSED PRIVATE SANITARY SEWER, WATER LINE, STORM SEWER, AND GRADING TO SERVE GRAND VISTA ELEMENTARY SCHOOL

### GRAND VISTA SPRINGS BLVD AT BEECHNUT RD
### RICHMOND, TX 774007

JUNE 2016

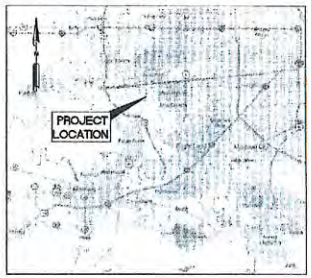
BOARD OF TRUSTEES

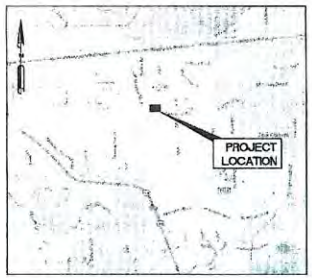
| | |
|---|---|
| GRAYLE JAMES | PRESIDENT |
| DAVE ROSENTHAL | VICE PRESIDENT |
| KRISTIN TASSIN | SECRETARY |
| ADDIE HEYLINGER | MEMBER |
| JASON BURDINE | MEMBER |
| KP GEORGE | MEMBER |
| JIM RICE | MEMBER |
| CHARLES E. DUPRE, Ed.D. | SUPERINTENDENT |

BROOKS & SPARKS, INC.
F-930
FRANK E. BROOKS
83720
REGISTERED
PROFESSIONAL ENGINEER
05/14/2016

BROOKS & SPARKS, INC.
Consulting Your Community

TEXAS REGISTERED ENGINEERING FIRM F-930
21320 FARM ROAD 2978 Phone: (281) 379-9345
KATY, TX 77449 Fax: (281) 379-9328




LOCATION MAP
N.T.S.

KEY MAP No. 526Q & 526R
ZIP CODE 77407

INDEX


| SHEET NO. | DESCRIPTION |
|---|---|
| C1.0 | COVER SHEET |
| C2.0 | GENERAL NOTES |
| C3.0 | TOPOGRAPHIC SURVEY |
| C4.0 | SITE PLAN |
| C5.0 | GRADING PLAN – SHEET 1 OF 2 |
| C5.1 | GRADING PLAN – SHEET 2 of 2 |
| C5.2 | JOINT LAYOUT PLAN |
| C6.0 | STORM SEWER PLAN – SHEET 1 of 2 |
| C6.1 | STORM SEWER PLAN – SHEET 2 of 2 |
| C7.0 | DRAINAGE AREA MAP – SHEET 1 of 3 |
| C7.1 | DRAINAGE AREA MAP – SHEET 2 of 3 |
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| C8.0 | WATER AND SANITARY SEWER PLAN – SHEET 1 of 2 |
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| C9.0 | STORM WATER POLLUTION PREVENTION PLAN |
| C10.0 | PAVING DETAILS |
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| C10.3 | STORM SEWER DETAILS |
| C10.4 | STORM WATER POLLUTION PREVENTION PLAN DETAILS |
| C10.5 | TXDOT PED 12A DETAILS |


FORT BEND COUNTY SIGNATURE BLOCK:

ENGINEER: Richard W. Stelles, P.E. — DATE: 7/13/16
FOR: RICHARD W. STELLES, P.E.

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEAR FROM DATE OF APPROVAL

APPROVED: Margaret A. — DATE: 7/25/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR

NOTIFICATION OF PRE-CONSTRUCTION MEETING AND ALL PAVING ACTIVITIES. EMAIL: CONSTRUCTION@FORTBENDCOUNTYTX.GOV

## GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION SCHEDULE WITH THE ENGINEER AND/OR ARCHITECT PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL CONTACT ALL GOVERNING AGENCIES A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION AND COORDINATE ALL WORK WITH THE SAME.
3. WHETHER SHOWN OR DRAWINGS OR NOT THE CONTRACTOR SHALL PROVIDE ALL PIPING, APPURTENANCES, AND MISCELLANEOUS FITTINGS REQUIRED TO ACCOMPLISH THE DESIGN AS DRAWN AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL CONTACT ENGINEER IF UNSURE OF PIPING LAYOUT, SIZES OR LENGTHS.
4. VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD BEFORE COMMENCING ANY WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPORT ANY DISCREPANCIES TO THE ENGINEER IN A TIMELY MANNER.
5. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE VERIFIED BY THE CONTRACTOR. CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT ARE TO BE APPROVED BY THE ENGINEER.
6. THE DRAWINGS SHOW AS MUCH INFORMATION AS CAN BE REASONABLY OBTAINED FROM AN ON THE GROUND OBSERVATION, SURVEY AND EXISTING CONSTRUCTION DRAWINGS REGARDING THE TOPOGRAPHIC FEATURES, ELEVATIONS AS WELL AS THE LOCATION AND NATURE OF PIPELINES, NATURAL GAS LINES, UNDERGROUND CABLES, UTILITIES, ETC. HOWEVER, THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO PREVENT DAMAGE TO EXISTING UTILITIES. IN THE EVENT THAT UNDERGROUND UTILITIES NOT SHOWN ON THE DRAWINGS ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK IN ANY RIGHT-OF-WAY OR EXISTING EASEMENT. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567, 1-800-545-6005 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
8. SOME OF THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON HAVE NOT BEEN FIELD VERIFIED.
9. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE CONFLICT POINTS WELL AFTER COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.
10. IN THE EVENT OF DAMAGE TO UNDERGROUND UTILITIES OR FACILITIES, WHETHER SHOWN OR NOT ON THE DRAWINGS, THE CONTRACTOR SHALL MAKE THE NECESSARY REPAIRS TO REPLACE THE UTILITY OR FACILITY BACK IN SERVICE AT NO INCREASE IN THE CONTRACT PRICE. ALL SUCH REPAIRS SHALL CONFORM TO THE REQUIREMENTS OF THE COMPANY OR AGENCY SERVICING THE FACILITY.
11. ALL EXISTING POWER POLES, LIGHT STANDARDS, SIGNS, ETC. WHICH AFFECT THE PROPOSED CONSTRUCTION, SHALL BE REMOVED AND/OR RELOCATED AS REQUIRED WHETHER SHOWN ON DRAWINGS OR NOT AT NO ADDITIONAL COST TO THE OWNER.
12. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL ADHERE TO THE STANDARDS OF THE GOVERNING AUTHORITY.
13. INGRESS AND EGRESS SHALL BE PROVIDED AT ALL TIMES FOR THE PROPERTY OWNERS AND BUSINESSES OF THE ABUTTING PROPERTY AND THE CROSS STREETS WHICH ARE AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.
14. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR MAINTAINING A SAFE PROJECT SITE 24 HOURS A DAY.
15. DURING THE ENTIRE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL MAINTAIN OBSTRUCTION WARNING SIGNS AT EACH END OF THE PROJECT TO WARN MOTORING AND PEDESTRIAN TRAFFIC THAT CONSTRUCTION IS IN PROGRESS AND OF POSSIBLE HAZARDOUS CONDITIONS GENERATED BY THE CONSTRUCTION.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DELINEATING THE PERIMETER OF CONSTRUCTION AREA WITH CONSTRUCTION FENCING AT NO ADDITIONAL COST. CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION AND REMOVED UPON COMPLETION.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING TRAFFIC IN THE IMMEDIATE VICINITY OF CONSTRUCTION. ALL WORK SHALL BE DONE IN SUCH A MANNER AND SEQUENCE AS TO PROVIDE MAXIMUM PROTECTION TO TRAFFIC AND PEDESTRIANS. CONTROLS SHALL BE CONSISTENT WITH THE TYPE OF WORK BEING PERFORMED.
18. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (TEXAS M.U.T.C.D. MOST RECENT EDITION WITH REVISIONS) DURING CONSTRUCTION.
19. DELINEATORS SHALL BE INSTALLED ALONG THE PAVEMENT EDGE TO WARN TRAFFIC OF ANY ROADSIDE OBJECTS OR HAZARDS AND TO DELINEATE THE ROADWAY EDGE DURING HOURS OF DARKNESS.
20. THE WORK AREA SHALL BE BARRICADED AND ILLUMINATED DURING DARKNESS AND PERIODS OF INACTIVITY, WHEN IN AN AREA OF DIRECT PUBLIC ACCESS.
21. UNGUARDED TRENCHES SHALL BE SECURED WITH SAFETY "SNOW" FENCING OR OTHER APPROPRIATE MEANS AT ALL TIMES. TRENCHES WHICH ARE NOT IMMEDIATELY BACKFILLED SHALL BE SECURELY COVERED OVERNIGHT AND BE SURROUNDED BY SAFETY "SNOW" FENCING.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT AND WORK IN PROGRESS.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ADEQUATE DRAINAGE BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE GOVERNING AUTHORITY AND/OR ENGINEER.
24. CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION OF ANY TEMPORARY DITCH OR DRAINAGE FACILITIES REQUIRED TO MAINTAIN OR CREATE SITE DRAINAGE DURING CONSTRUCTION AT NO ADDITIONAL COST TO OWNER
25. THE CONTRACTOR IS TO INSTALL GROUND WATER CONTROL FACILITIES IF NEEDED, AT DIRECTION OF ENGINEER, AT NO ADDITIONAL COST TO OWNER.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE PERMITS REQUIRED BY ALL GOVERNING AGENCIES.
27. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION AND SUBMISSION OF ALL APPLICABLE STATE AND FEDERAL FORMS REQUIRED FOR STORM WATER POLLUTION PREVENTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, IMPLEMENTATION, AND MONITORING OF THE STORM WATER POLLUTION PREVENTION CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, EROSION AND SEDIMENT CONTROLS, STORM WATER MANAGEMENT PLANS, WASTE COLLECTION AND DISPOSAL, OFF-SITE VEHICLE TRACKING, AND OTHER PRACTICES.
28. THE CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING AND SHORING.
29. THE CONTRACTOR SHALL DESIGN AND PROVIDE A TRENCH SAFETY SYSTEM TO MEET APPROPRIATE REQUIREMENTS ESTABLISHED IN OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) SAFETY & HEALTH REGULATIONS, 29 CFR 1926, SUBPART P – EXCAVATIONS, TRENCHING AND SHORING, AND OSHA'S PROPOSED STANDARDS ON TRENCHING, EXCAVATION PUBLISHED IN VOLUME 53, NO. 72 OF THE FEDERAL REGISTER, APRIL 15, 1987, PAGES 12258-12339. IN DOING THE REFERENCED OSHA STANDARDS BE MODIFIED OR AMENDED, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
30. CONTRACTOR SHALL PROVIDE SHEETING, SHORING AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION.
31. IN ORDER TO COMPLY WITH HANDICAP REGULATIONS, THE CONTRACTOR SHALL ENSURE THAT THE SLOPE OF THE SIDEWALK AND/OR PAVING IN THE FIRST FIVE FEET OUTSIDE ANY DOOR DOES NOT EXCEED 2% IN ANY DIRECTION.
32. THE TEXAS DEPARTMENT OF TRANSPORTATION "JUNE 2004 STANDARD SPECIFICATIONS AND STANDARDS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL BE CONSIDERED PART OF THESE PLANS AND USED AS THE SPECIFICATIONS FOR ITEMS EXCEPT AS SHOWN OTHERWISE ON PLANS OR IN THE PROJECT SPECIFICATIONS.
33. NO CONSTRUCTION WHICH BLOCKS TRAFFIC ON ANY STREET, ALLEY, OR DRIVEWAY WILL BE ALLOWED DURING THE HOURS OF 6:30 A.M. – 8:30 A.M. AND 3:30–6:00 P.M.
34. THE CONTRACTOR MUST CLEAN MUD, DIRT OR DEBRIS TRACKED ONTO EXISTING STREETS BY HIMSELF OR SUBCONTRACTOR'S VEHICLES AND EQUIPMENT DAILY OR AS DIRECTED BY ENGINEER.
35. DEMOLITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB SHALL BE AS GOOD OR BETTER THAN PRIOR TO STARTING WORK.
36. ALL AREAS DISTURBED BY CONSTRUCTION WHICH ARE NOT TO BE REPAVED OR OTHERWISE COVERED SHALL BE HYDROMULCHED.
37. CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL. TOPSOIL SHALL BE SPREAD OVER ALL AREAS RECEIVING SOD AND OR HYDROMULCH. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AN 80% STAND OF GRASS WITH NO AREAS OF EROSION BEFORE FINAL ACCEPTANCE.
38. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL WASTE MATERIAL GENERATED DURING CONSTRUCTION. WASTE MATERIAL MUST BE REMOVED FROM THE WORK SITE AND DISPOSED OF IN SUCH A MANNER AS TO NOT DAMAGE THE OWNER OR OTHER PERSONS AT NO ADDITIONAL COST.
39. ALL FILL PLACED ON SITE SHALL BE ENGINEERED FILL PER THE RECOMMENDATION OF THE SOILS REPORT OR AS INDICATED IN THE SPECIFICATIONS.
40. FINISH GRADE ELEVATIONS INDICATE FINAL GRADE OF PROPOSED MATERIAL (I.E. SOD, DIRT, MULCH, ETC.). LANDSCAPED AREAS ADJACENT TO BUILDING, INCLUDING, DIRT, MULCH, AND/OR BEDDING MATERIALS SHALL NOT COVER WEEPHOLES AREAS ADJACENT TO BUILDING. LANDSCAPED, OR OTHERWISE SHALL SHEET FLOW AWAY FROM BUILDING WITH NO AREAS OF STANDING WATER ADJACENT TO BUILDING.
41. GRADING AROUND BUILDINGS INCLUDING WALKWAYS SHALL BE COORDINATED WITH ENGINEER AND/OR ARCHITECT AND FINAL APPROVAL OF GRADES IN GRASS AREAS AND SWALES SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION OF LANDSCAPING MATERIALS.
42. AFTER INSTALLATION OF DRAINAGE SYSTEM, CONTRACTOR SHALL PERFORM FINAL GRADING AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY ENGINEER OR OWNER TO INSURE POSITIVE DRAINAGE OF ENTIRE SITE. FINAL GRADING SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION OF GRASS.
43. THE CONTRACTOR SHALL COORDINATE FINAL GRADING OF LANDSCAPED AREAS WITH THE LANDSCAPE ARCHITECT.
44. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING FINAL GRADES TO ENSURE POSITIVE DRAINAGE.
45. PLACE BACKFILL AS PROMPTLY AS PRACTICABLE AFTER COMPLETION OF EACH STRUCTURE OR PORTION OF A STRUCTURE. DO NOT PLACE BACKFILL AGAINST CONCRETE WALLS OR SMALL STRUCTURES UNTIL CONCRETE HAS CURED AT LEAST SEVEN (7) DAYS.
46. ALL STRUCTURES AND SEWER PIPE UNDER OR WITHIN TWO (2) FEET OF PROPOSED OR FUTURE PAVEMENT SHALL BE BEDDED AND BACKFILLED WITH CEMENT STABILIZED SAND UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE.
47. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS EIGHT (8) INCHES THICK MAXIMUM AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
48. WHERE PAVEMENT OR CURB IS BEING REMOVED AND REPLACED FULL DEPTH SAW CUT SHALL BE PERFORMED AT STREET CONNECTION.
49. CONCRETE PAVEMENT SHALL HAVE MINIMUM OF FIVE AND ONE-HALF SACKS OF CEMENT PER CUBIC YARD AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
50. ALL STEEL REINFORCEMENT SHALL CONFORM TO ASTM A615 GRADE 60.
51. DETAILING AND FABRICATION OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI-318 LATEST EDITION.
52. LAP ALL CONTINUOUS REINFORCING STEEL 36 DIAMETERS AT SPLICES, TEES, AND CORNERS UNLESS NOTED OTHERWISE ON PLANS.
53. WHERE CONCRETE CURB OR WALK IS INDICATED, ELEVATION SHALL BE 6 INCHES ABOVE TOP OF PAVEMENT ELEVATION SHOWN, UNLESS OTHERWISE SHOWN ON DRAWINGS.
54. MOW STRIPS SHALL BE INSTALLED SO AS NOT TO BLOCK ANY SHEET FLOW PATTERNS AS DESIGNED. ANY MOW STRIPS THAT BLOCK DRAINAGE SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER. IF CONTRACTOR HAS ANY QUESTIONS ON CORRECT ELEVATIONS FOR MOW STRIPS, CONTACT ENGINEER OR ARCHITECT.
55. A PREMOLDED EXPANSION JOINT SHALL BE PLACED BETWEEN THE BUILDING FOUNDATION AND THE CONCRETE PAVEMENT.
56. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL PROPOSED UTILITIES ENTERING BUILDING PRIOR TO COMMENCING WORK ON SITE UTILITIES. UPON ANY DISCREPANCIES, ENGINEER IS TO BE NOTIFIED.
57. ELECTRIC METER AND SERVICE LINE INSTALLATION TO BE COORDINATED WITH ELECTRICAL PROVIDER BY THE CONTRACTOR.
58. GAS METER AND SERVICE LINE INSTALLATION TO BE COORDINATED WITH GAS COMPANY BY THE CONTRACTOR.
59. ALL EXISTING STORM SEWER MANHOLES OR STRUCTURES ON SITE SHALL BE ADJUSTED TO FINISH GRADE. ALL EXISTING SANITARY SEWER MANHOLES SHALL BE ADJUSTED TO 2' ABOVE FINISH GRADE.

## FORT BEND COUNTY CONSTRUCTION – GENERAL NOTES

1. FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY INSPECTIONS DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 48 HOUR NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN THE LIMITS OF RIGHT-OF-WAY. (281-342-4137 OR 281-633-7514 AFTER HOURS)
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY, PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.
4. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY RULES, REGULATIONS AND MONUMENTATION RELATIVE TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS AS DULY ADOPTED.
5. ALL ROAD WIDTHS, CURB FACE AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB
6. A MINIMUM ADDITIONAL RIGHT-OF-WAY SHALL BE USED IN THE CURVE.
7. ALL CONCRETE PAVEMENT SHALL BE 6 SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS, MONOLITHIC EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURVE RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
8. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
9. 4'X 12' REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
10. AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE PLACE IN ACCORDANCE WITH DOOT M(2)-12A STANDARD DETAIL SHEET. ADA – HANDICAP RAMPS SHALL BE INSTALLED WITH STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.
11. CURB HEADERS ARE REQUIRED AT ALL CONNECTIONS TO HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF RAMPS.
12. ALL INTERSECTIONS EXISTING TRAFFIC CONTROL MEASURES SHALL HAVE A.D.A. WHEEL CHAIR RAMPS INSTALLED.
13. DRIVEWAYS ARE NOT PERMITTED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGGERS, SIGNING, STRIPING AND WARNING DEVICES, ETC. DURING CONSTRUCTION – BOTH DAY AND NIGHT.
14. ALL 90-1 2'DOUBLE SIDED SIGNS SHALL BE 30"X30" WITH DIAGONAL GRADE STRIPING PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
15. STREET NAME SIGNAGE SHALL BE ON A 9" HIGH GREEN FLAT BLADE RETROREFLECTIVE (WHITE BACKGROUND) STREET NAMES SHALL BE UPPER AND LOWERCASE LETTERING WITH UPPERCASE LETTERS OF 6" MINIMUM AND LOWERCASE LETTERS OF 4.5" MINIMUM. THE LETTERS SHALL BE REFLECTIVE WHITE. STREET NAME SIGNS SHALL BE MOUNTED ON STOP SIGN POST.
16. A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.

NOTE: FORT BEND COUNTY NOTES SUPERSEDE ANY CONFLICTING NOTES.

INSPECTION: ALL PROJECT AND ALL PARTS THEREOF SHALL BE SUBJECT TO INSPECTION FROM TIME TO TIME BY INSPECTORS DESIGNATED BY FORT BEND COUNTY. NO AGENT INSPECTIONS SHALL RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER. WITHOUT FAILURE TO INSPECT AND FAILURE TO DISCOVER OR REJECT ANY OF THE WORK AS NOT IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, REQUIREMENTS AND SPECIFICATIONS OF FORT BEND COUNTY OR ANY PROVISION OF THIS PROJECT SHALL BE CONSTRUED TO IMPLY AN ACCEPTANCE OF SUCH WORK OR TO WAIVE THE ENFORCEMENT OF ANY OF ITS PROVISIONS HEREUNDER.

APPROVED: _____ 7/25/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE

## PRIVATE UTILITY NOTES

AT&T TEXAS / SWBT FACILITIES

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 WORKING PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR SHALL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN THE AREA. FOLLOW THE DIRECT BURIED CABLE PROCEDURES TO LOCATE THE AT&T TEXAS/SWBT DIRECT BURIED CABLES AS INDICATED IN THE AT&T TEXAS RESEARCH AND SIGNATURE PROCESS FOR AT&T TEXAS/SWBT FACILITIES.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER MR. ROOSEVELT LEE JR. AT (713)567-4552 OR EMAIL HIM AT RL7359@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATION NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY INTRASTATE PIPELINE, LLC. WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567, 1-800-669-8344 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 945-6036 OR (713) 945-8537 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-3302 OR (713) 207-4200

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

MAINARD OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES MAY NOT BE SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, WEATHA SAYS THAT CERTAIN ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:

- ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN TEN(10) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
- OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES

PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY TO MEMBERS FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.

ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT OF WAY DIVISION AT (713) 207-6248 OR (713) 207-5795.

## SANITARY SEWER CONSTRUCTION NOTES

1. SANITARY SEWER SHALL BE SCHEDULE 40 PVC FOR 6" AND SMALLER PIPES, AND SDR 26 FOR PIPES 8" AND LARGER UNLESS OTHERWISE SHOWN ON PLANS. BEDDING BACKFILLING AND INSTALLATION OF PIPE AND CONSTRUCTION OF APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CIVIL DETAIL SHEETS.
2. THE CONTRACTOR SHALL USE 4000 PSI REINFORCED CONCRETE PRECAST SANITARY SEWER MANHOLES.
3. ALL MANHOLES AND CLEANOUTS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND. CEMENT STABILIZED SAND FILL SHALL BE AT LEAST 12" ON BOTTOM OF STRUCTURE AND 12" AROUND OUTSIDE OF STRUCTURE.
4. CONTRACTOR SHALL CUT OFF PIPE FLUSH WITH INSIDE FACE OF MANHOLES. ALL PIPE PENETRATIONS SHALL BE GROUTED INSIDE AND OUT WITH NON-SHRINK GROUT.
5. CONTRACTOR SHALL SEAL INTERIOR SURFACE OF PROPOSED SANITARY SEWER MANHOLES WITH THANECOAT OR RAVEN LINER 405.
6. ALL SANITARY SEWER MANHOLES SHALL BE VACUUM TESTED.
7. ALL SANITARY SEWER LINES SHALL BE MANDREL AND AIR TESTED. ALL SANITARY SEWER LINES SHALL ALSO BE INSPECTED VIA CAMERA.
8. UTILITIES ARE TO BE TAKEN TO WITHIN FIVE (5) FEET OF BUILDING. SEE PLUMBING SHEETS FOR CONTINUATION OF SERVICE CONNECTIONS INTO BUILDING.
9. TIE-INS TO EXISTING MANHOLES SHALL BE MADE SUCH THAT THE FINAL CONDITIONS UPON COMPLETION OF THE JOB SHALL BE AS GOOD OR BETTER THAN PRIOR TO STARTING WORK.
10. THE CONTRACTOR IS TO INSTALL WATER-TIGHT ADAPTORS OF A TYPE COMPATIBLE WITH THE MATERIALS BEING JOINED AT THE POINT OF CONNECTION OF THE SERVICE LINE TO THE BUILDING PLUMBING. NO CEMENT GROUT MATERIALS ARE PERMITTED.
11. THE CONTRACTOR IS TO INSTALL EACH CLEANOUT SO THAT IT OPENS IN A DIRECTION OPPOSITE TO THE FLOW OF THE WASTE AND, EXCEPT IN THE CASE OF A "WYE" BRANCH AND END-OF-THE-LINE CLEANOUTS, CLEANOUTS WILL BE INSTALLED VERTICALLY ABOVE THE FLOW LINE OF THE PIPE. CLEANOUTS WILL BE MADE WITH AIR-TIGHT MECHANICAL PLUG.
12. ALL SANITARY SEWER MANHOLES LOCATED OUTSIDE OF PAVED AREAS SHALL BE SET AT FINISH GRADE WITH CONCRETE COLLAR.
13. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS EIGHT (8) INCHES THICK MAXIMUM AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

## STORM SEWER CONSTRUCTION NOTES

1. ON SITE STORM SEWERS 12-INCH DIAMETER AND LARGER SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) AASHTO M-294, TYPE S, HANCOR SURE-LOK #472 PIPE, OR APPROVED EQUAL) UNLESS OTHERWISE SHOWN ON PLANS. PRODUCT MUST HAVE GASKET JOINTS.
2. ON SITE STORM SEWERS 10-INCH DIAMETER AND LESS SHALL BE PVC (POLY-VINYL CHLORIDE) PIPE MEETING ASTM SPECIFICATIONS, ASTM D3034 AND HAVING A S.D.R. OF 26 UNLESS OTHERWISE SHOWN ON PLANS.
3. ANY CONCRETE PIPE USED ON THIS PROJECT SHALL BE REINFORCED CONCRETE MEETING ASTM C-76 CLASS III, AND HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS. CONCRETE PIPE IS ONLY TO BE USED WHERE REQUIRED IN PUBLIC RIGHT-OF-WAY AND/OR AT TIES TO PUBLIC STORM SEWER SYSTEMS. BEDDING BACKFILLING AND INSTALLATION OF PIPE AND CONSTRUCTION OF APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CIVIL DETAIL SHEETS.
4. THE CONTRACTOR SHALL USE PRECAST 4000 PSI REINFORCED CONCRETE STORM SEWER MANHOLES AND INLETS. INVERT SHALL BE INSTALLED WITH NON-SHRINK GROUT AND SLOPED TO ENSURE POSITIVE DRAINAGE FROM INLET TO STORM SEWER LINE, WITH SMOOTH FINISH AND NO STANDING WATER IN INLET. KNOCK MANHOLES AND/OR INLETS MAY BE USED AS APPROVED BY THE ENGINEER WHEN SETTING STRUCTURES ON EXISTING UTILITY LINE. KNOCK STRUCTURES MUST BE MORTARED INSIDE AND OUT. COORDINATE EACH INCIDENT WITH ENGINEER.
5. ALL INLETS, MANHOLES, CLEANOUTS, AND HEADWALLS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND. CEMENT STABILIZED SAND FILL SHALL BE AT LEAST 12" ON BOTTOM OF STRUCTURE AND 12" AROUND OUTSIDE OF STRUCTURE.
6. NO CORNER CONNECTIONS WILL BE ALLOWED TO ANY INLETS. JUNCTION BOXES OR BOX MANHOLES.
7. CONTRACTOR SHALL CUT OFF PIPE FLUSH WITH INSIDE FACE OF INLETS AND MANHOLES. ALL PIPE PENETRATIONS SHALL BE GROUTED INSIDE AND OUT WITH NON-SHRINK GROUT.
8. CONCRETE FOR DRAINAGE STRUCTURES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.
9. CULVERT CROSSINGS LOCATED WITHIN 30 FEET OF THE RIGHT-OF-WAY SHALL HAVE MINIMUM 6:1 SLOPING ENDS (KNOWN AS SAFETY END TREATMENTS (SETS)). THE CULVERT SHALL HAVE SUFFICIENT LENGTH TO ALLOW THE 6:1 SLOPE TO BE ACHIEVED FROM THE E

| Revision / Date | |
|---|---|
| Addendum 02 | 03/10/16 |
| Addendum 01 | 03/11/16 |
| Fort Bend County Comment Response | 04/12/16 |
| Addendum 04 + Cost Savings/ Fort Bend County Comment Response | 05/11/16 |
| Fort Bend County Drainage District Comment Response | 06/21/16 |

GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

Project

Huckabee

OVERALL TOPOGRAPHIC SURVEY

Job No. 1483-0009
Date 6/24/16
Sheet No. C3.0

FORT BEND COUNTY DRAINAGE DISTRICT
APPROVED: [signature]
FORT BEND COUNTY DEVELOPMENT COORDINATOR
DATE 7/19/16

Curve Table: Alignments

| Curve # | Radius | Length | Chord Direction |
|---|---|---|---|
| C1 | 20.00 | 31.42 | S44° 33' 31"E |
| C2 | 1000.00 | 109.88 | S83° 37' 29"E |
| C3 | 1967.33 | 201.88 | S75° 14' 48"E |
| C4 | 975.27 | 223.72 | S77° 21' 15"E |
| C5 | 20.00 | 43.64 | N49° 52' 14"E |
| C6 | 1500.00 | 254.14 | N7° 33' 49"E |
| C7 | 1000.00 | 48.92 | N10° 31' 25"E |

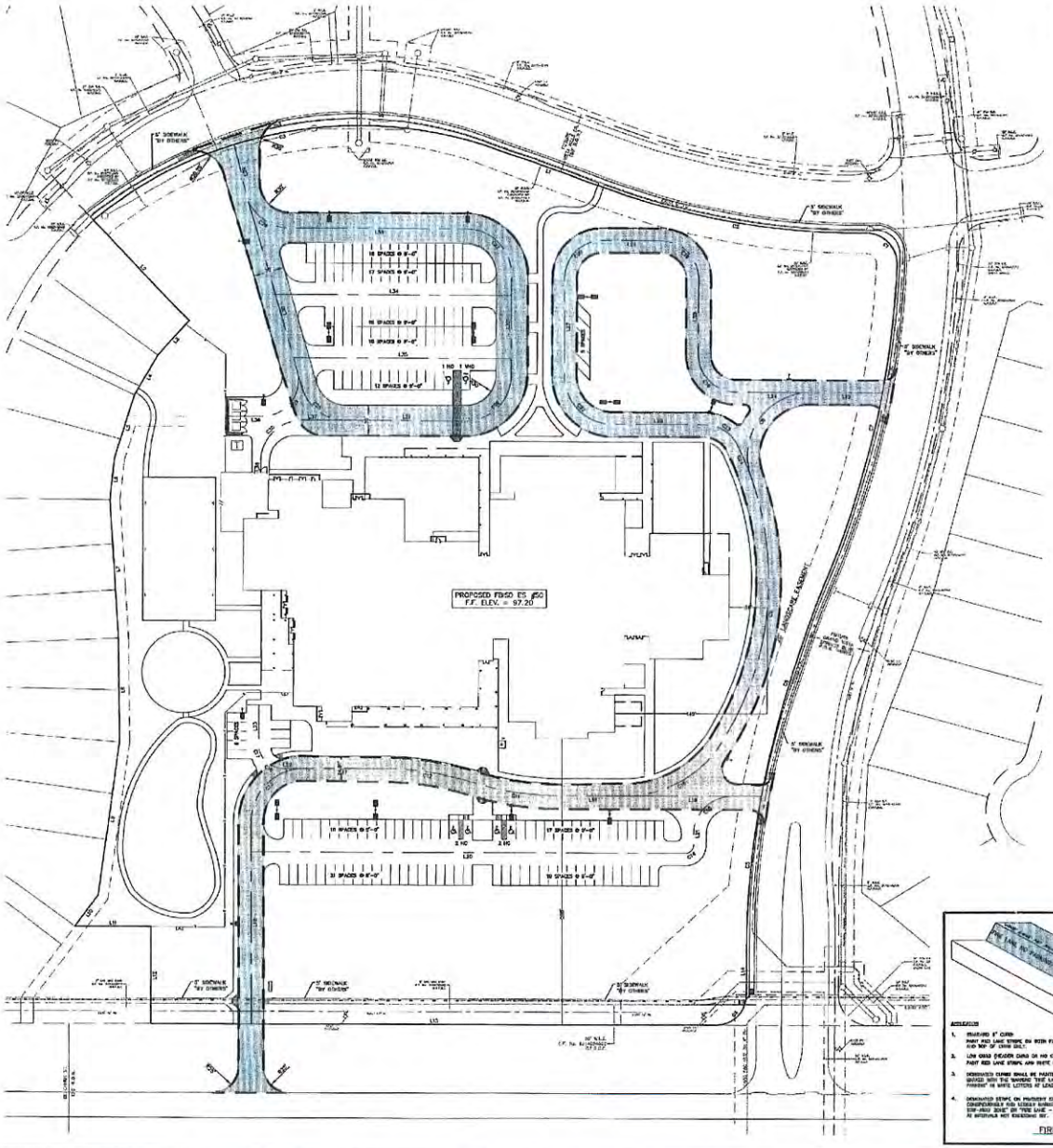
Line Table: Alignments

| Line # | Length | Direction |
|---|---|---|
| L1 | 100.88 | S0° 33' 46"E |
| L2 | 44.62 | N89° 56' 08"E |
| L3 | 179.97 | N10° 31' 08"E |
| L4 | 135.16 | S46° 00' 11"W |
| L5 | 45.38 | N44° 33' 22"W |
| L6 | 45.71 | N44° 33' 26"E |
| L7 | 83.07 | N87° 53' 40"E |
| L8 | 45.75 | N87° 27' 10"E |
| L9 | 135.61 | S86° 00' 18"E |
| L10 | 102.07 | S89° 01' 05"E |
| L11 | 151.07 | N87° 27' 46"E |
| L12 | 37.99 | N54° 10' 23"E |
| L13 | 71.00 | S0° 06' 40"E |
| L14 | 65.68 | S84° 31' 19"E |

FOR REFERENCE ONLY



13 Jul 2016 9:06am tawny
P:\Drawings\Grand_Vista_Elementary_482-2009-00 Fbisd Exam 50\Civil\C3.0-SURVEY.dwg
Xrefs: xref($X-Topo.dwg $X-Blake




APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE

SCALE: 1"= 40'

| LINE TABLE | | |
|---|---|---|
| Line # | Length | Direction |
| L1 | 175.87 | N19° 52' 30.43"E |
| L2 | 139.96 | S40° 00' 11.08"W |
| L3 | 45.16 | N54° 33' 37.57"W |
| L4 | 45.16 | N64° 58' 28.57"W |
| L5 | 65.07 | N17° 53' 42.57"W |
| L6 | 40.75 | N38° 22' 10.57"W |
| L7 | 138.61 | S60° 49' 18.43"W |
| L8 | 161.07 | S83° 59' 06.43"W |
| L9 | 151.97 | N87° 27' 49.57"W |
| L10 | 37.89 | N59° 16' 23.57"W |
| L11 | 75.00 | S5° 20' 40.57"E |
| L12 | 95.00 | S04° 31' 19.43"W |
| L13 | 300.09 | S5° 28' 40.57"E |
| L14 | 48.62 | N84° 30' 06.54"E |
| L15 | 69.40 | N5° 28' 40.21"W |
| L16 | 60.92 | N5° 28' 40.15"W |
| L17 | 77.97 | N5° 28' 11.26"W |
| L18 | 160.15 | S84° 31' 19.43"W |
| L19 | 134.00 | N5° 28' 40.57"W |
| L20 | 424.84 | N5° 28' 40.57"W |
| L21 | 10.83 | S84° 31' 19.43"W |
| L22 | 77.27 | N5° 28' 40.57"W |
| L23 | 42.02 | N84° 31' 19.43"E |
| L24 | 72.27 | N5° 28' 24.36"W |
| L25 | 74.15 | N84° 31' 19.43"E |
| L26 | 57.58 | N5° 28' 14.04"W |
| L27 | 95.78 | S84° 31' 19.43"W |
| L28 | 88.01 | S5° 30' 25.76"E |
| L29 | 56.57 | S71° 00' 02.39"W |
| L30 | 188.78 | S08° 17' 56.98"W |
| L31 | 117.91 | S5° 28' 40.05"E |
| L32 | 08.03 | N84° 31' 19.85"E |
| L33 | 122.28 | N5° 28' 40.15"W |
| L34 | 232.07 | S5° 28' 40.57"E |
| L35 | 214.03 | S5° 28' 40.15"E |
| L36 | 30.43 | S5° 28' 40.57"E |
| L37 | 43.06 | S5° 28' 39.84"E |
| L38 | 11.33 | N84° 33' 54.73"E |

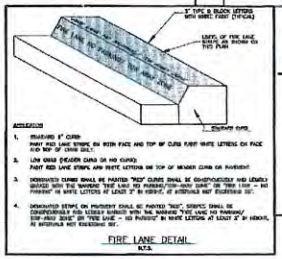
| CURVE TABLE | | | |
|---|---|---|---|
| Curve # | Radius | Length | Chord Direction |
| C16 | 24.00 | 22.85 | N24° 43' 30.29"E |
| C17 | 23.96 | 9.70 | N64° 01' 39.28"E |
| C1 | 30.00 | 46.64 | S40° 25' 37.71"E |
| C2 | 730.00 | 254.14 | N3° 55' 09.63"E |
| C3 | 407.56 | 498.92 | N36° 29' 03.47"W |
| C4 | 30.00 | 45.96 | S53° 19' 17.00"E |
| C5 | 800.00 | 103.05 | S69° 20' 09.05"E |
| C6 | 1187.33 | 294.88 | S76° 43' 31.10"E |
| C7 | 913.27 | 202.72 | S76° 57' 36.21"E |
| C8 | 62.00 | 118.70 | N85° 18' 26.54"W |
| C9 | 287.91 | 271.39 | N59° 18' 48.95"W |
| C10 | 112.02 | 113.48 | N24° 30' 16.14"E |
| C11 | 298.24 | 28.93 | N3° 01' 06.19"E |
| C12 | 300.02 | 89.99 | N7° 01' 13.25"E |
| C13 | 52.43 | 31.82 | N50° 28' 40.05"W |
| C14 | 8.00 | 12.57 | N50° 28' 40.36"W |
| C15 | 31.96 | 58.12 | N50° 28' 40.15"W |
| C16 | 37.96 | 59.14 | N39° 20' 36.31"E |
| C18 | 36.25 | 57.85 | N38° 54' 09.61"E |
| C20 | 37.19 | 58.05 | N50° 28' 33.06"W |
| C22 | 47.92 | 74.85 | S38° 07' 51.57"W |
| C23 | 30.48 | 47.21 | S38° 28' 01.87"W |
| C24 | 288.72 | 33.87 | S51° 28' 28.30"W |
| C25 | 45.00 | 57.90 | S31° 23' 03.05"W |
| C26 | 45.00 | 70.69 | S54° 28' 40.15"E |
| C27 | 45.00 | 26.69 | N34° 31' 19.85"E |
| C28 | 45.62 | 31.92 | N77° 17' 23.49"E |
| C29 | 35.39 | 55.78 | S34° 01' 24.44"W |
| C30 | 45.09 | 62.83 | S50° 28' 40.36"W |

PARKING ANALYSIS
PARKING SPACES PROVIDED

| | |
|---|---|
| 166 | REGULAR SPACES |
| 5 | REGULAR HANDICAP SPACES |
| 1 | VAN ACCESSIBLE HC SPACE |
| 172 | TOTAL PARKING SPACES |

FIRE LANE SIGN

NOTES:
1. At the beginning and end of the fire lane, signs shall be placed with the words FIRE LANE pointing in the direction the inspector is to travel. The Sheriff's signs shall have double headed arrows pointing in both directions.
2. The maximum spacing of the signs shall be 75', contingent upon fire lane/no parking curbs and approval.
3. The sign shall be set at an angle of not less than 30° and more than 45° with the curb or line of traffic flow.
4. The clearance to the bottom of the sign shall be 7 feet. There shall be no other signs attached to the legs of the sign pole.
5. The sign plate shall be a minimum of 12" x 18" with a thickness of 0.08".




NOTES:
1. STRIPING 6" CURB:
PAINT RED LANE STRIPE ON WORK FACE AND TOP OF CURB FIRST WHITE LETTERS ON FACE AND TOP OF CURB ONLY.
2. LOW CURB (MEDIAN CURB OR NO CURB):
PAINT RED LANE STRIPE AND WHITE LETTERS ON TOP OF MEDIAN CURB OR PAVEMENT
3. DESIGNATED CURBS SHALL BE PAINTED "RED" CURBS SHALL BE CONSPICUOUSLY AND LEGIBLY MARKED WITH THE WARDING "FIRE LANE NO PARKING/TOW-AWAY ZONE" OR "FIRE LANE – NO PARKING" IN WHITE LETTERS AT LEAST 3" IN HEIGHT, AS APPROVED NOT EXCEEDING 50'.
4. DESIGNATED STRIPE ON PAVEMENT SHALL BE PAINTED "RED" STRIPES SHALL BE CONSPICUOUSLY AND LEGIBLY MARKED WITH THE WARDING "FIRE LANE NO PARKING/TOW-AWAY ZONE" OR "FIRE LANE – NO PARKING" IN WHITE LETTERS AT LEAST 3" IN HEIGHT, AS APPROVED NOT EXCEEDING 50'.

FIRE LANE DETAIL
N.T.S.

LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | ACCESS ROAD/FIRE LANE |
| | PAINT RED LANE STRIPE |
| | PROPOSED FIRE HYDRANT |
| | EXISTING FIRE HYDRANT |

CURBS LOCATED ON OTHER SIDE OF A FIRE LANE SHALL BE PAINTED RED OR A RED STRIPE SHALL BE PLACED ALONG THE PAVEMENT WHERE THERE IS NO CURB, WHERE A FIRE LANE PASSES BEHIND SIDE OF BUILDING, THE CURB FACE NEAREST THE BUILDING SHALL BE PAINTED RED. FRONT OF CURVE SPACES SLIGHTLY BEYOND THE FIRE LANE, PAINTED CURBS ALSO FIRE LANE STRIPES SHALL ALSO BE CONSPICUOUSLY AND LEGIBLY MARKED WITH THE WARDING "FIRE LANE NO PARKING/TOW AWAY ZONE" OR "FIRE LANE – NO PARKING" OR WHITE LETTERS AT LEAST 3" IN HEIGHT, AS APPROVED NOT EXCEEDING 50' INTERVALS. WHERE THE FIRE LANE IS NOT CLEARLY DEFINED BY CURB/PAVEMENT STRIPING, FIRE LANE SIGNS ARE REQUIRED. FIRE LANE SIGNS SHALL BE PLACED EVERY 100 FEET, ALTERNATING PLACEMENT OF SIGNS ON EACH SIDE OF FIRE ACCESS LANE.

NOT CURB CURBS WHERE FIRE LANE IS NOT CLEARLY DEFINED BY "NO PARKING" SIGNS THAT ARE NOT APPROVED FIRE LANES, ALL CURBED CURBS PARALLEL TO FIRE LANES SHALL BE PAINTED RED. ALL CURBS NOT PAINTED RED ARE APPROVED FIRE LANES. THE FIRE LANE AS SHOWN ON THIS PLAN SHALL NOT BE REVISED BY FIRE CODE REVIEW, BY THE BUILDING OFFICIAL.

| Revision / Date | |
|---|---|
| 1 | 03/10/16 |
| 2 | 04/25/16 |
| 3 | 05/11/16 |
| 4 | 06/21/16 |

Addendum 02
Addendum 03 – Addendum
Addendum 04 – Cost Savings/
Fort Bend County Comment Response
Fort Bend County Drainage District Comment Response

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC
F-4390
FRANK E. BROOKS
68278
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
06-24-16

Huckabee

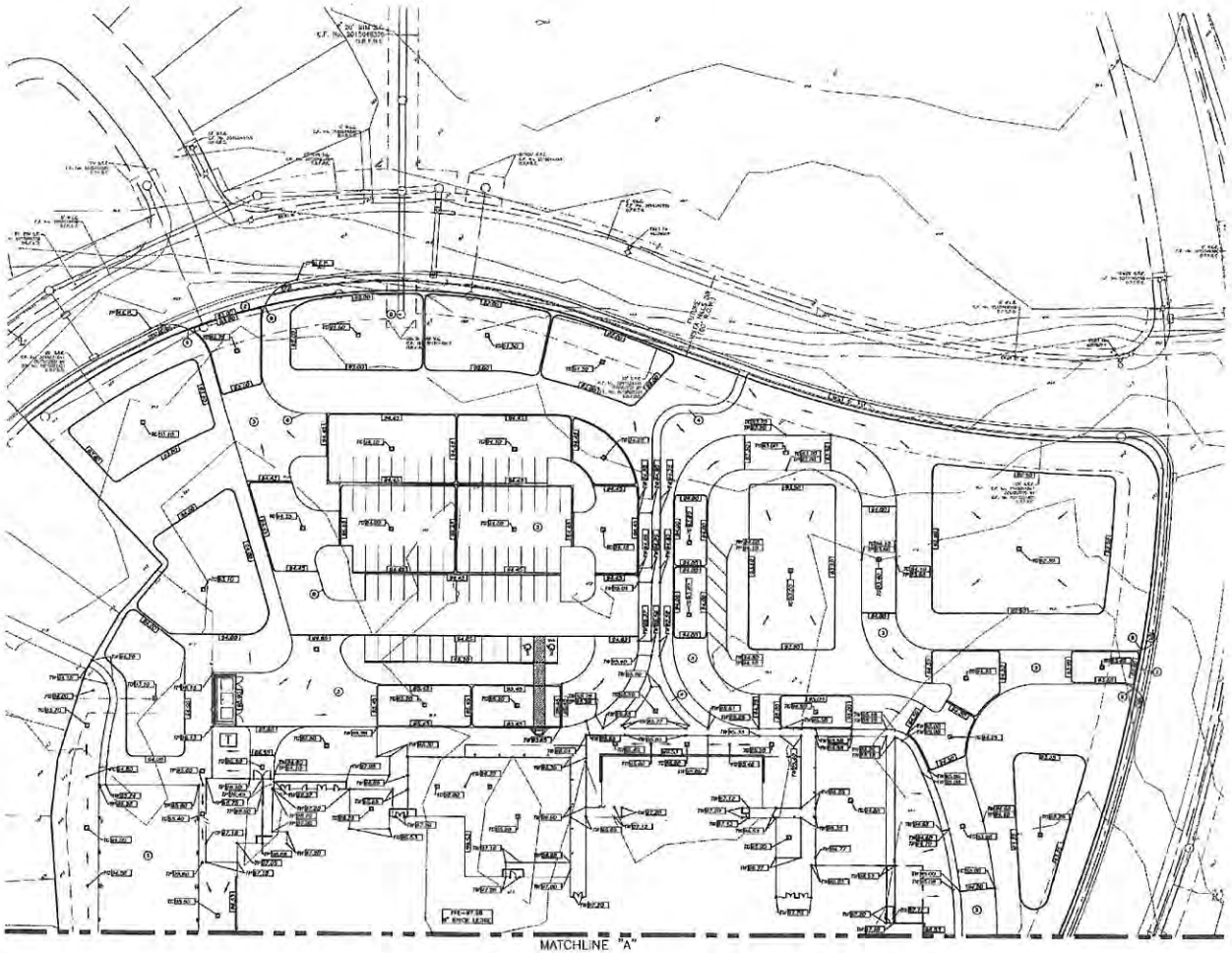
SITE PLAN

| | |
|---|---|
| Job. No. | 482-0009 |
| Drawn By | DSC |
| Date | 5/24/16 |
| Sheet No. | C4.0 |
| Sheet | of 21 |

T:_All 2016 BLDGS_16\482-0009-Grand Vista Elementary\482-0009-00 PRINT Plan 50\Civil\C4.0 SITE.dwg
Tuesday, June 21, 2016 - 11:02am - DSC
Xrefs: X-TB.dwg - T:\482-0009-00 PRINT Plan 50\Civil\X-SITE.dwg

FORT BEND COUNTY
DEVELOPMENT COORDINATOR

DATE




SCALE: 1" = 30'

LEGEND:

- PROPOSED GRATE/CURB INLET
- PROPOSED STORM SEWER MANHOLE WITH DROP TOP
- PROPOSED NYLOPLAST DRAIN
- PROPOSED TOP OF CURB ELEV.
- PROPOSED TOP OF PAVEMENT ELEV.
- PROPOSED TOP OF WALK ELEV.
- PROPOSED FLOWLINE ELEV.
- PROPOSED FINISHED GRADE ELEV.
- PROPOSED TOP OF GRATE ELEV.
- PROPOSED CONTOUR
- PROPOSED CONTOUR OPEN AREA
- MATCH EXIST. CURB & GUTTER
- MATCH EXIST. PAVEMENT
- MATCH EXIST. WALK
- DIRECTION OF FLOW

GENERAL NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR EXITUTE, BUT WERE OBTAINED FROM BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. ALL EXISTING CONCRETE OR ASPHALT PAVEMENT REMOVED SHALL INCLUDE FULL DEPTH SAW CUT.

GENERAL CONTRACTORS (GC) NOTES TO THIS SHEET:

1. CONTRACTOR SHALL CONTRACT KINDER-MORGAN PIPELINE COMPANY PRIOR TO CONSTRUCTION OVER THEIR FACILITIES.
2. PROPOSED CONCRETE DRIVEWAY AS PER FORT BEND COUNTY ENGINEERING DETAILS.
3. PROPOSED CONCRETE PAVEMENT (REINFORCED) WITH STABILIZED SUBGRADE. REFERENCE SHEET C11.1 FOR JOINT LAYOUT AND PAVEMENT THICKNESS.
4. PROPOSED CONCRETE SIDEWALK. REFERENCE SHEET C11.1 FOR DETAILS.
5. PROPOSED CONCRETE PLAYGROUND. REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
6. CONTRACTOR SHALL ADJUST STM. SWR MANHOLE TO 0.30' ABOVE FINISHED.
7. CONTRACTOR SHALL ADJUST MANHOLE RIM TO FINISHED GRADE.
8. PROPOSED 6" DOWELED ON CURB. REFERENCE SHEET C11.1 FOR DETAILS.
9. PROPOSED 6" DOWELED ON CURB SHALL TRANSITION FROM 6" TO 0" IN 2'-0".

| Revision / Date | |
|---|---|
| 1 03/16/16 | Addendum 02 |
| 2 04/12/16 | Post-Bid Addendum |
| 3 05/11/16 | Addendum 04 - Dan Storey/ Fort Bend County Response |
| 4 06/21/16 | Fort Bend County Drainage District Comment Response |

Project:

GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC
F-4988
FRANK E. BROOKS
LICENSED PROFESSIONAL ENGINEER
05-24-16

Huckabee

GRADING PLAN

| Job. No. | Sheet No. |
|---|---|
| 482-0009 | C5.0 |
| Drawn By: DSC | |
| Date: 5/24/16 | |
| Sheet of 21 | |

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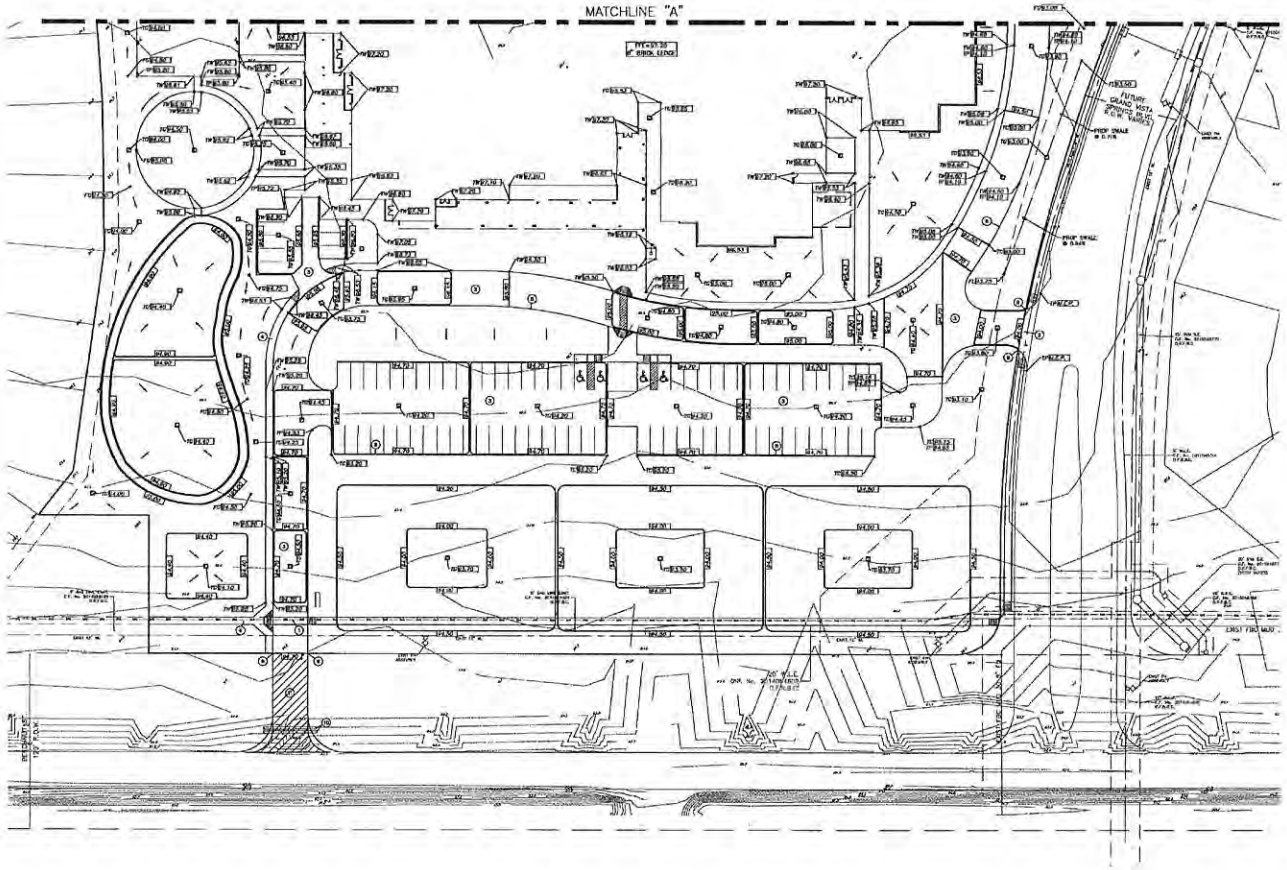
FORT BEND COUNTY
DEVELOPMENT COORDINATOR

DATE




SCALE: 1" = 30'

LEGEND:

| | |
|---|---|
| ▫ | PROPOSED GRATE/CURB INLET |
| ◎ | PROPOSED STORM SEWER MANHOLE WITH GRATE TOP |
| ● | PROPOSED NYLOPLAST DRAIN |
| TC24.00 | PROPOSED TOP OF CURB ELEV. |
| TP23.50 | PROPOSED TOP OF PAVEMENT ELEV. |
| TW24.75 | PROPOSED TOP OF WALK ELEV. |
| FL23.50 | PROPOSED FLOWLINE ELEV. |
| FG23.00 | PROPOSED FINISHED GRADE ELEV. |
| TG22.50 | PROPOSED TOP OF GRADE ELEV. |
| 23.50 | PROPOSED CONTOUR |
| W.F.C. | PROPOSED CONTOUR OPEN AREA |
| W.F.C. | MATCH EXIST. CURB & GUTTER |
| W.F.A. | MATCH EXIST. PAVEMENT |
| W.F.W. | MATCH EXIST. WALK |
| — | DIRECTION OF FLOW |

GENERAL NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR DEFINITE, BUT WERE OBTAINED FROM BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. ALL EXISTING CONCRETE OR ASPHALT PAVEMENT REMOVED SHALL INCLUDE FULL DEPTH SAW CUT.

GENERAL CONTRACTORS (GC) NOTES TO THIS SHEET:

1. CONTRACTOR SHALL CONTACT KINDER-MORGAN PIPELINE COMPANY PRIOR TO CONSTRUCTION OVER THEIR FACILITIES.
2. PROPOSED CONCRETE DRIVEWAY AS PER FORT BEND COUNTY ENGINEERING DETAILS.
3. PROPOSED CONCRETE PAVEMENT (REINFORCED) WITH STABILIZED SUBGRADE. REFERENCE SHEET C11.1 FOR JOINT LAYOUT AND PAVEMENT THICKNESS.
4. PROPOSED CONCRETE SIDEWALK. REFERENCE SHEET C11.1 FOR DETAILS.
5. PROPOSED CONCRETE PLAYGROUND. REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
6. CONTRACTOR SHALL ADJUST STM. SWR MANHOLE TO 0.30' ABOVE FINISHED.
7. CONTRACTOR SHALL ADJUST MANHOLE RIM TO FINISHED GRADE.
8. PROPOSED 8" DOWELED ON CURB. REFERENCE SHEET C11.1 FOR DETAILS.
9. PROPOSED 6" DOWELED ON CURB SHALL TRANSITION FROM 6" TO 8" IN 2'-0".
10. PROPOSED DUAL 18" CULVERTS WITH SAFETY END TREATMENTS. SEE DETAILS SHT C10.0.
11. PROPOSED ASPHALT DRIVEWAY AS PER FORT BEND COUNTY ENGINEERING DETAILS.

| Revision / Date | |
|---|---|
| 1 03/10/16 | Addendum 02 |
| 2 04/12/16 | Post-Bid Addendum |
| 3 05/11/16 | Addendum 04 – Cost Savings/ Value Engineering Incorporation |
| 4 06/01/16 | Fort Bend County Drainage District Comment Response |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC.
T-8961
STATE OF TEXAS
FRANK E. BROOKS
49135
REGISTERED
PROFESSIONAL ENGINEER
05-24-16

Huckabee

GRADING PLAN

| | |
|---|---|
| Job No. 482-0009 | Sheet No. C5.1 |
| Drawn By: DSC | |
| Date: 5/24/16 | |
| Sheet | of 21 |

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| Revision / Date |
| --- |
| 1 03/10/16 Addendum 03 |
| 2 04/12/16 Post-Bid Addendum |
| 3 05/11/16 Addendum 04 – Dust Scarring/ Fort Bend County Comment Response |
| 4 05/21/16 Fort Bend County Drainage District Comment Response |

GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

Project:

Huckabee

JOINT LAYOUT PLAN

Job No. 1382-0009 | Sheet No. C5.2
Drawn By: DSM
Date: 5/24/16
Sheet 9 of 21

APPROVED 11/16/16
FORT BEND COUNTY
DEVELOPMENT COORDINATOR
DATE

LEGEND:

SAWED JOINT
EXPANSION JOINT
7" REINFORCED CONCRETE PAVEMENT
6" REINFORCED CONCRETE PAVEMENT
5" REINFORCED CONCRETE PAVEMENT

NOTES:

1. LOCATE EXPANSION JOINTS AS SHOWN. SAWED JOINTS SHALL BE SPACED EQUALLY BETWEEN EXPANSION JOINTS AT 15' MAXIMUM SPACING.
2. ALL CURBS TO BE 6" UNLESS OTHERWISE NOTED.
3. USE 1/2" JOINTS IN SIDEWALK w/ JOINTS IN PARKING LOT.
4. PROPOSED 4'x10' LAYDOWN CURB CONTRACTOR TO TIE EXTRA FRONT C.I.P. CONCRETE CURB WHERE 10' IS NOT SHOWN.
5. ASTRAL EXPANSION JOINTS IN ALL SIDEWALKS AT NON USE.
6. SEE ARCHITECTS PLANS FOR WHEELSTOP LOCATIONS AND SIDEWALK JOINTING.

PROP. INLET

PROP. EXPANSION JOINT (SEE DETAIL ON THIS SHEET AT 10' O.C.)

D = 24" FOR MANHOLES & GRATE INLETS
D = 12" FOR AREA INLETS & AREA DRAINS

STORM SEWER INLET
W/ EXPANSION JOINT
N.T.S.

24" EXPANSION JOINT (SEE DETAIL ON THIS SHEET)

PROP. INLET

CURB INLET
W/ EXPANSION JOINT
N.T.S.

SCALE: 1" = 40'

(c) AE 2016 Huckabee Copyright
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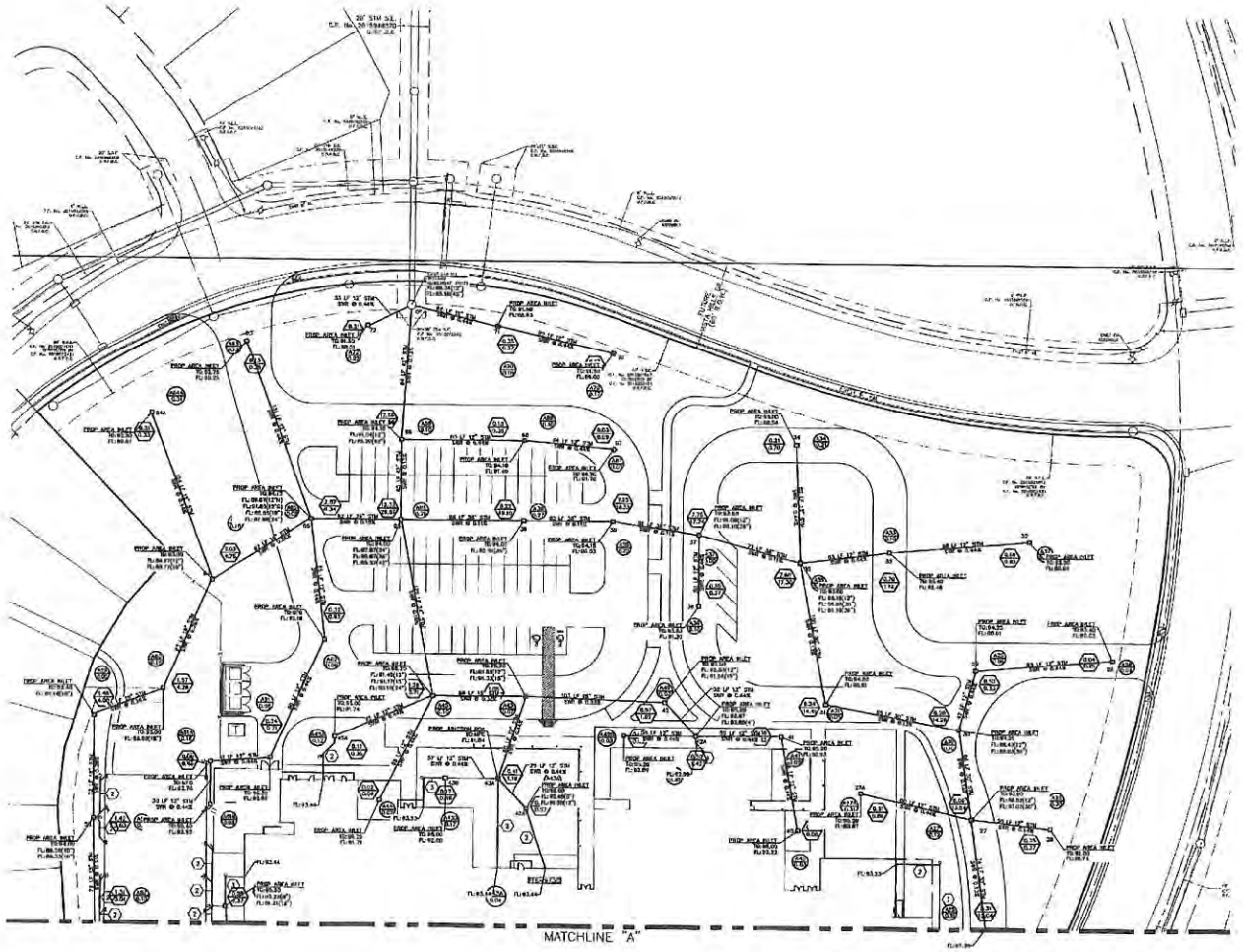
Xrefs Dyn(s): X-TBdwg, X-TBdwg, Z-UT dwg, Z-Sitedwg




APPROVED: [signature] 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE

SCALE: 1" = 30'

LEGEND:

- PROPOSED MANHOLE
- PROPOSED MANHOLE W/GRATE "SDR"
- PROPOSED GRATE/CURB INLET
- PROPOSED MYLOPLAST INLET
- DIRECTION OF FLOW
- FL — FLOW LINE
- PROPOSED CLEANOUT
- (1) PROP. 4" STM. SWR. @ 1.00% MIN.
- (2) PROP. 6" STM. SWR. @ 1.00% MIN.
- (3) PROP. 8" STM. SWR. @ 1.00% MIN.
- (4) PROP. 10" STM. SWR. @ 1.00% MIN.
- (5) PROP. 12" STM. SWR. @ 1.00% MIN.
- (6) PROP. 15" STM. SWR. @ 0.50% MIN.

GENERAL NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR DEFINITE, BUT WERE OBTAINED FROM BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. ALL EXISTING CONCRETE OR ASPHALT PAVEMENT REMOVED SHALL INCLUDE FULL DEPTH SAW CUT.

| Revision / Date | |
|---|---|
| 1 03/10/16 | Addendum 02 |
| 2 04/12/16 | Post-Bid Addendum |
| 3 05/11/16 | Addendum 04 – Cost Savings/ |
| | First Bend County Comment Response |
| 4 06/21/16 | Fort Bend County Drainage District Comment Response |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC.
F-3991
STATE OF TEXAS
BRIAN C. BROOKS
REGISTERED
PROFESSIONAL
ENGINEER
05-24-16

Huckabee

STORM SEWER PLAN

| Job. No. | Sheet No. |
|---|---|
| 482-0009 | C6.0 |
| Drawn By: DSC | |
| Date: 5/24/16 | |

Sheet of 21

13 Jul 2016 3:07PM (dgray)
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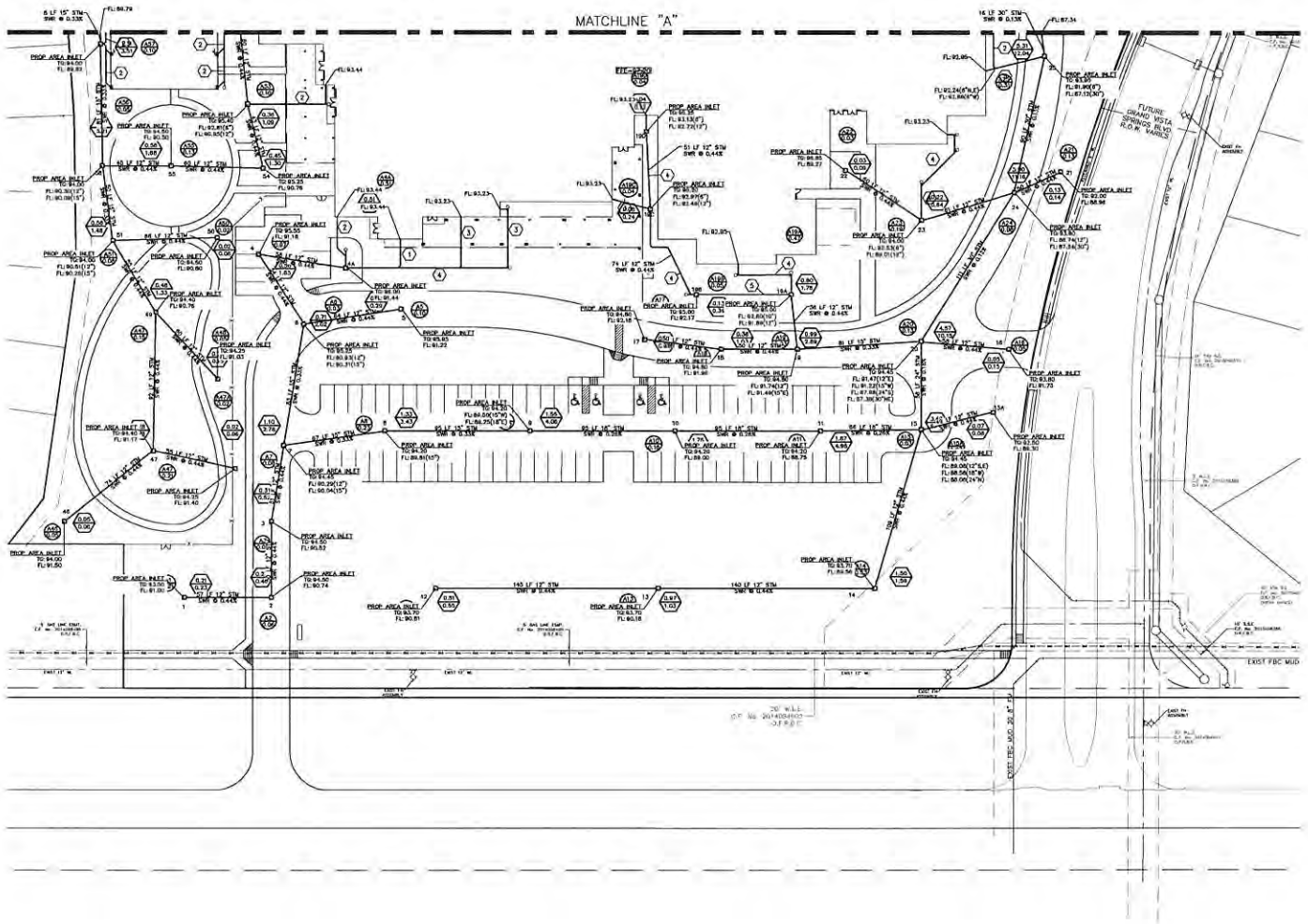
FORT BEND COUNTY SIGNATURE BLOCK:

APPROVED: _____
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE




SCALE: 1" = 30'

LEGEND:

| | |
|---|---|
| ○ | PROPOSED MANHOLE |
| ◎ | PROPOSED MANHOLE W/GRATE TOP |
| □ | PROPOSED GRATE/CURB INLET |
| ⊗ | PROPOSED NYLOPLAST INLET |
| — | DIRECTION OF FLOW |
| FL | FLOW LINE |
| °C.O. | PROPOSED CLEANOUT |
| (1) | PROP. 4" STM. SWR. @ 1.00% MIN. |
| (2) | PROP. 6" STM. SWR. @ 1.00% MIN. |
| (3) | PROP. 8" STM. SWR. @ 1.00% MIN. |
| (4) | PROP. 10" STM. SWR. @ 1.00% MIN. |
| (5) | PROP. 12" STM. SWR. @ 1.00% MIN. |
| (6) | PROP. 15" STM. SWR. @ 0.50% MIN. |

GENERAL NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR DEFINITE, BUT WERE OBTAINED FROM BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. ALL EXISTING CONCRETE OR ASPHALT PAVEMENT REMOVED SHALL INCLUDE FULL DEPTH SAW CUT.

| Revision / Date | |
|---|---|
| 1 | 03/10/16 |
| 2 | 04/12/16 |
| 3 | 05/11/16 |
| 4 | 06/21/16 |

Addendum 02
Post-Bid Addendum
Add Sidewalk Savings/
Fort Bend County Comment Response
Fort Bend County Drainage District Comment Response

Project:

GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC.
T-850

STATE OF TEXAS
TRAVIS E. BROOKS
49125
REGISTERED
PROFESSIONAL ENGINEER

05-24-16

Huckabee

STORM SEWER PLAN

| | |
|---|---|
| Job. No. 482-0009 | Sheet No. C6.1 |
| Drawn By: DSC | |
| Date: 5/24/16 | |

Sheet: of 21

10 Aug 2016 3:32PM (gsilva)
F:\project\BROOK_SP\Huckabee\482-0009-00 FBISD Elem SO\Civil\C6 STM.dwg
Includes Xref(s): X-TB.dwg; X-Topo.dwg; X-Site.dwg; d7 dom.dwg; X-UT.dwg

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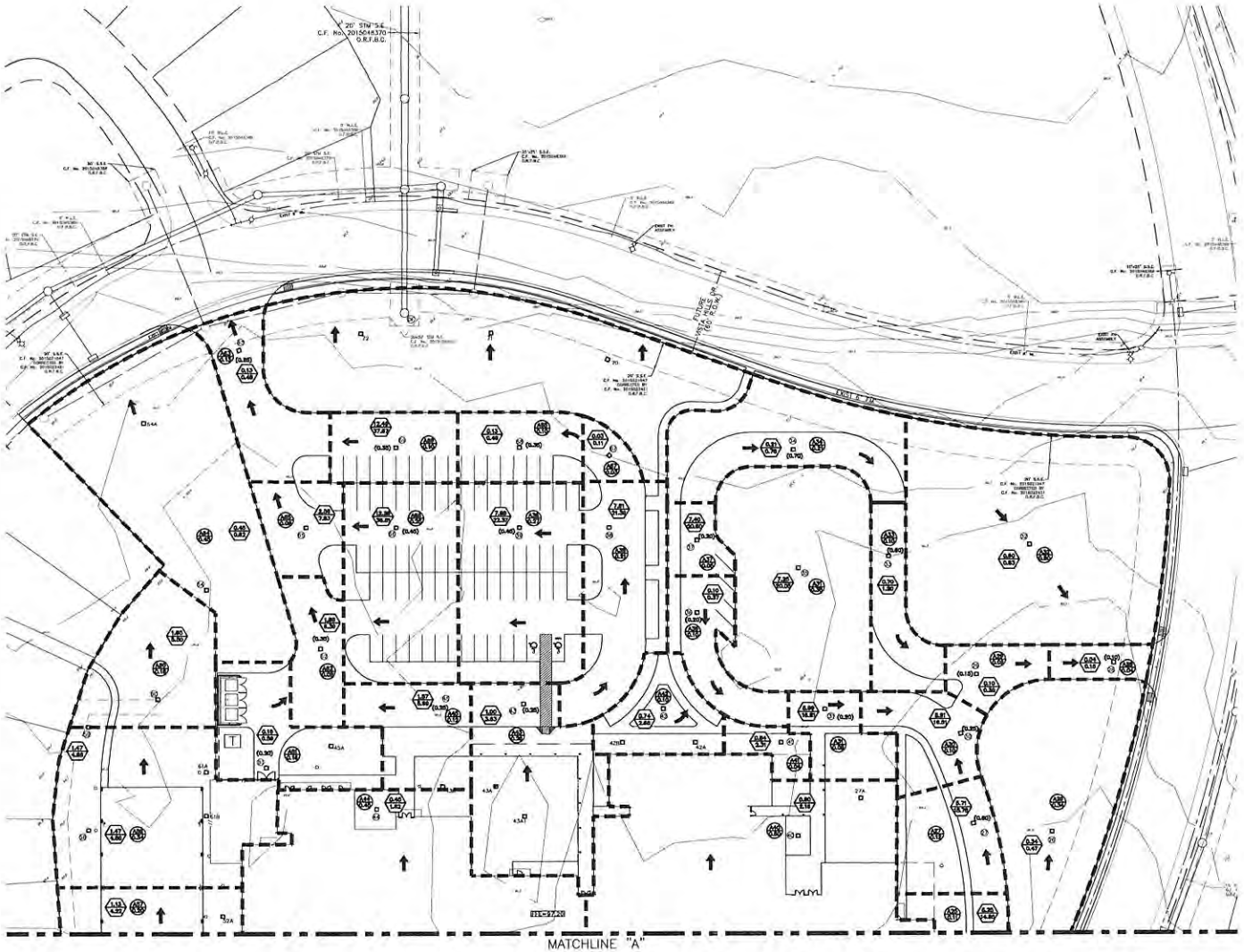
FORT BEND COUNTY SIGNATURE BLOCK:

APPROVED: _____
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE




SCALE: 1" = 30'

LEGEND:

- XX / 0.00 — AREA (No.) / AREA (AC)
- 0.00 / 0.00 — CUMULATIVE (AC) / CUMULATIVE (CFS)
- SYSTEM AREA
- SUB-SYSTEM AREA
- DIRECTION OF 100YR EXTREME EVENT FLOW
- (0.20) — PONDING DEPTH IN STREET

| Revision | Date | |
|---|---|---|
| 1 | 04/12/16 | Addendum #2 |
| 2 | 05/11/16 | Post-Bid Addendum |
| 3 | 05/11/16 | Addendum #4 – Cost Savings/ Fort Bend County Comment Response |
| 4 | 06/21/16 | Fort Bend County Drainage District Comment Response |

Project:

GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC. F-852
STATE OF TEXAS
FRANK E. BROOKS
49225
REGISTERED
PROFESSIONAL ENGINEER
05-24-16

Huckabee

DRAINAGE AREA MAP (1 OF 2)

| | |
|---|---|
| Job. No. | 482--0009 |
| Drawn By: | DSC |
| Date: | 5/24/16 |
| Sheet No. | C7.0 |
| Sheet: | of 21 |

10 Aug 2016 3:32PM tapley
F:\project\BROOK_SP\Huckabee\482-0009-00 FBISD Elem. SO\Civil\C7 DAM.dwg
Includes Xref(s): X-TB.dwg; X-Topo.dwg; X-UT.dwg; X-Site.dwg

| Revision / Date | |
|---|---|
| Addendum 02 | 03/10/16 |
| Post-Bid Addendum | 04/12/16 |
| Addendum 04 – Cost Savings/ Fort Bend County Comment Response | 05/13/16 |
| Fort Bend County Drainage District Comment Response | 06/21/16 |

Project

GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

Huckabee

DRAINAGE AREA MAP (2 OF 2)

Job No. 4320-00-00
Drawn By: DRC
Date: 07/24/16
Sheet No. C7.1
Sheet of 21

LEGEND:

AREA (Ac)
AREA (AC)

DRAINAGE (AC)
CUMULATIVE (DP2)

SYSTEM AREA

SUB-SYSTEM AREA

DIRECTION OF SOUTH OUTSIDE FLOW
FINISHING GUTTER SLOPE

(SLOPE)

FORT BEND COUNTY
DEVELOPMENT COORDINATOR

DATE

MATCHLINE "A"



12 Jul 2016 5:08PM tsayer
P:\Projects\BROOK Sprv\Landscape\4320-0000-00 FBISD Elem SC\Civil\07 DAU.dwg
Xrefs: Xref(s) X-Wwwg X-Tbsd dwg X-Utdwg X-Stadwg

**BROOKS AND SPARKS, INC.**
*Consulting Engineering*

STORM SEWER DESIGN

Project Information
Project: Fort Bend ISD ES #40
Job No.: 482-0009
System:
Designed: SSC
Checked: SWG
Date: 2/19/2016
Date:

Min Cover (ft) = 2
Match Crn Pr: N/A
Min. Tc (min) =
Default n: 0.013
Default Junction K: 0.5

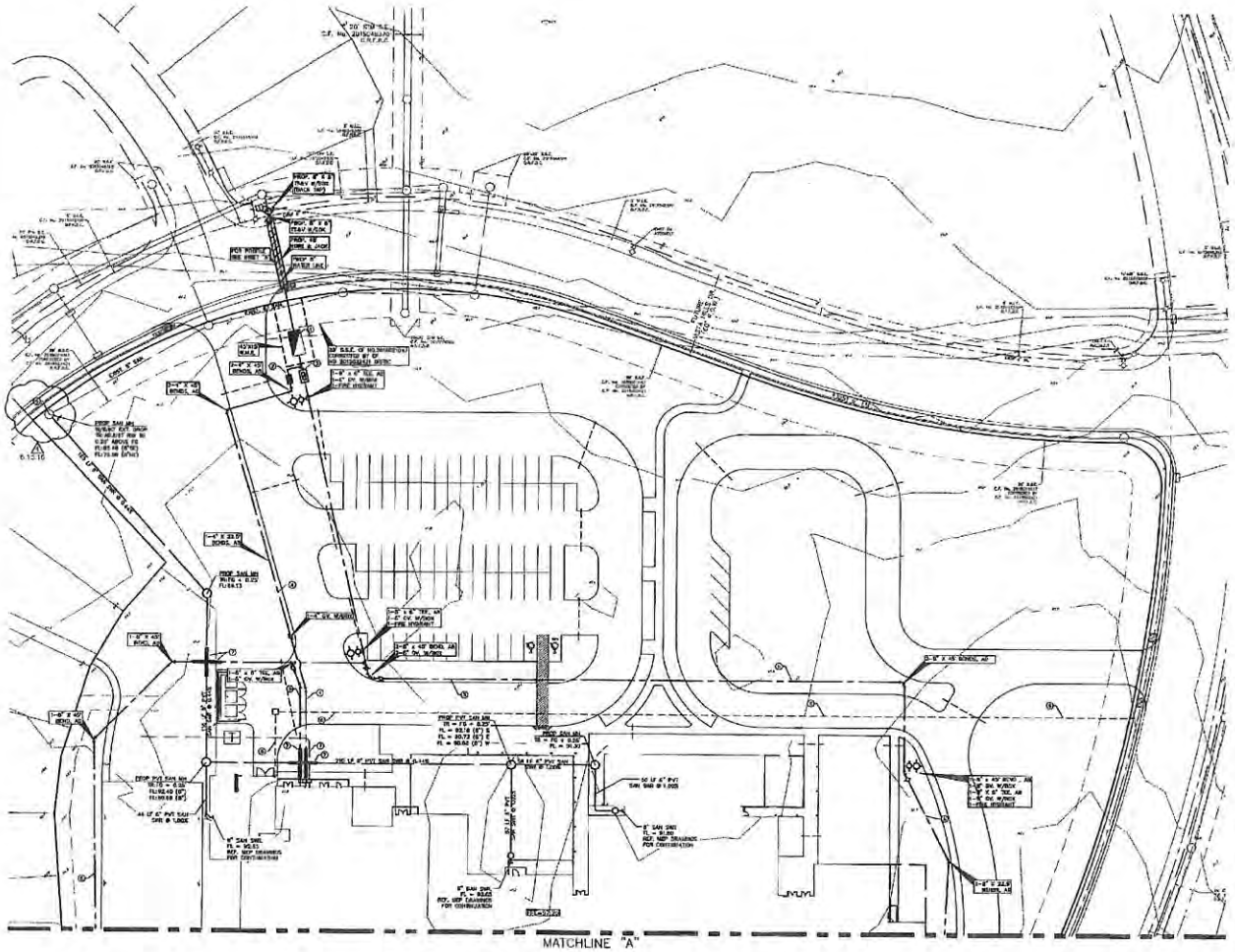
25 YR HGL Starting Elev. (ft): 89.91
Absolute Intensity (in/hr):
Design Storm: 2
5 = 25.01
4 = 10.35
e = 0.60

STORM PIPES ARE DESIGNED TO ZOB EVENT WITH THE 100 YR EVENT ROUTED
EXCEPT AS 25 YR REVIVT HGL'S DIRECTED BY FBCDD

| From M.H. | To M.H. | Area No. | Area (acres) Area Acc. Area | C | Tc (min) Area Pipe Total | I (in/hr) | Flow (cfs) Area Acc. Flow | Pipe Shape (inch) | Pipe Size (in) | Span (ft) | n | Slope (%) | Design Cap. (cfs) | Dist. (ft) Actual Vel. Pipe | HGL Slope (%) | Junction Loss K | Junction Loss (ft) | Change in HGL (ft) | UPSTREAM STRUCTURES Flowline Elev. Up (ft) | Build Elev. Up (ft) | Grate Top Elev. Up (ft) | HGL Elev. Up (ft) | DOWNSTREAM STRUCTURES Flowline Elev. Down (ft) | Build Elev. Down (ft) | Grate Top Elev. Down (ft) | HGL Elev. Down (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | A1 | 0.21 0.21 | 0.90 | 22.00 0.00 22.00 | 3.56 | 0.73 0.73 | R | 12 | | 0.013 | 0.44 | 2.37 | 97 | 0.29 | 0.00 | 0.50 | 0.00 | 0.00 | 94.00 | 94.50 | 99.00 | 94.07 | 90.74 | 91.24 | 94.50 | 94.07 |
| 2 | 3 | A2 | 0.06 0.27 | 0.90 | 21.00 0.00 22.00 | 3.56 | 0.87 0.87 | R | 12 | | 0.013 | 0.44 | 2.37 | 90 | 0.60 | 0.01 | 0.50 | 0.00 | 0.01 | 93.74 | 91.74 | 94.50 | 94.07 | 90.52 | 91.02 | 94.00 | 94.06 |
| 3 | 7 | A3 | 0.04 0.31 | 0.90 | 20.67 0.00 20.67 | 3.74 | 0.93 0.93 | R | 12 | | 0.013 | 0.44 | 2.37 | 51 | 0.69 | 0.02 | 0.50 | 0.00 | 0.02 | 90.52 | 91.02 | 94.00 | 94.06 | 90.29 | 91.29 | 94.45 | 94.05 |
| 4A | 4 | A4A | 0.11 0.42 | 0.90 | 20.00 0.28 20.28 | 3.56 | 1.44 1.44 | R | 12 | | 0.013 | 0.44 | 2.37 | 98 | 1.63 | 0.16 | 0.50 | 0.00 | 0.12 | 90.44 | 92.44 | 95.55 | 94.42 | 91.18 | 92.18 | 95.54 | 94.35 |
| 4 | 6 | A4 | 0.07 0.49 | 0.90 | 21.00 0.28 20.28 | 3.71 | 1.65 1.65 | R | 12 | | 0.013 | 0.44 | 2.37 | 54 | 2.10 | 0.21 | 0.50 | 0.00 | 0.15 | 90.17 | 92.17 | 95.55 | 94.30 | 90.93 | 91.93 | 95.25 | 94.15 |
| 5 | 7 | A5 | 0.19 0.19 | 0.90 | 21.00 0.00 21.00 | 3.65 | 0.69 0.69 | R | 12 | | 0.013 | 0.44 | 2.37 | 44 | 0.37 | 0.01 | 0.50 | 0.00 | 0.01 | 91.21 | 92.21 | 95.55 | 94.15 | 90.93 | 91.93 | 95.25 | 94.15 |
| 6 | 7 | A6 | 0.09 0.21 | 0.90 | 20.30 0.00 20.30 | 3.83 | 0.70 0.70 | R | 12 | | 0.013 | 0.31 | 2.02 | 93 | 1.05 | 0.10 | 0.50 | 0.02 | 0.10 | 90.31 | 91.56 | 95.75 | 94.15 | 90.64 | 91.29 | 94.45 | 94.05 |
| 7 | 8 | A7 | 0.06 1.19 | 0.90 | 21.01 0.00 21.01 | 3.68 | 2.64 2.64 | R | 18 | | 0.013 | 0.33 | 3.72 | 97 | 2.36 | 0.18 | 0.50 | 0.04 | 0.16 | 90.01 | 91.28 | 94.45 | 94.05 | 89.81 | 91.06 | 94.26 | 93.88 |
| 8 | 9 | A8 | 0.25 1.84 | 0.90 | 21.72 0.00 22.72 | 3.64 | 3.37 3.37 | R | 18 | | 0.013 | 0.33 | 3.72 | 91 | 3.66 | 0.25 | 0.50 | 0.06 | 0.20 | 89.81 | 91.06 | 94.20 | 93.94 | 89.56 | 90.72 | 94.20 | 93.59 |
| 9 | 10 | A9 | 0.02 1.86 | 0.90 | 22.00 0.00 22.00 | 3.58 | 3.47 3.47 | R | 18 | | 0.013 | 0.28 | 3.57 | 95 | 3.12 | 0.13 | 0.50 | 0.03 | 0.15 | 89.26 | 90.75 | 94.20 | 93.59 | 89.00 | 90.50 | 94.20 | 93.43 |
| 10 | 11 | A10 | 0.15 1.71 | 0.90 | 22.34 0.00 22.34 | 3.54 | 3.74 4.95 | R | 18 | | 0.013 | 0.26 | 3.37 | 91 | 2.97 | 0.15 | 0.50 | 0.04 | 0.19 | 89.00 | 90.50 | 94.20 | 93.43 | 88.76 | 90.25 | 94.20 | 93.24 |
| 11 | 15 | A11 | 0.10 1.97 | 0.90 | 22.34 0.00 22.34 | 3.51 | 0.95 4.90 | R | 18 | | 0.013 | 0.26 | 3.37 | 145 | 2.63 | 0.20 | 0.50 | 0.05 | 0.25 | 88.75 | 90.25 | 94.20 | 93.24 | 88.38 | 90.08 | 94.45 | 93.08 |
| 12 | 13 | A12 | 0.51 0.51 | 0.90 | 23.00 0.37 22.41 | 3.58 | 0.65 0.65 | R | 12 | | 0.013 | 0.44 | 2.37 | 145 | 0.78 | 0.02 | 0.50 | 0.00 | 0.04 | 89.62 | 91.62 | 93.70 | 93.47 | 89.18 | 91.18 | 93.70 | 93.43 |
| 13 | 14 | A13 | 0.40 0.90 | 0.90 | 21.72 0.00 21.72 | 3.56 | 0.88 1.53 | R | 12 | | 0.013 | 0.44 | 2.37 | 142 | 1.31 | 0.08 | 0.50 | 0.01 | 0.13 | 89.18 | 91.18 | 93.70 | 93.43 | 88.58 | 90.58 | 97.00 | 93.38 |
| 14 | 15 | A14 | 0.92 1.82 | 0.90 | 23.84 0.00 21.84 | 3.48 | 1.59 1.59 | R | 12 | | 0.013 | 0.44 | 2.37 | 109 | 2.02 | 0.20 | 0.50 | 0.03 | 0.28 | 88.58 | 90.58 | 93.70 | 93.38 | 88.08 | 90.08 | 94.45 | 93.06 |
| 15A | 15 | A15A | 0.00 0.50 | 0.90 | 21.28 0.00 21.28 | 3.66 | 0.08 0.08 | R | 12 | | 0.013 | 0.44 | 2.37 | 46 | 0.10 | 0.00 | 0.50 | 0.00 | 0.00 | 88.30 | 90.30 | 93.70 | 93.06 | 88.08 | 90.08 | 94.45 | 93.06 |
| 15 | 20 | A15 | 0.86 3.40 | 0.90 | 20.96 0.00 20.96 | 3.76 | 0.06 6.43 | R | 24 | | 0.013 | 0.10 | 3.62 | 97 | 2.64 | 0.08 | 0.50 | 0.03 | 0.08 | 88.08 | 90.08 | 94.45 | 93.06 | 87.98 | 89.98 | 94.49 | 92.98 |
| 16 | 20 | A16 | 0.01 0.15 | 0.90 | 20.00 0.32 20.72 | 3.73 | 0.15 0.15 | R | 12 | | 0.013 | 0.44 | 2.37 | 98 | 0.19 | 0.00 | 0.50 | 0.00 | 0.00 | 90.23 | 92.73 | 93.01 | 92.95 | 91.47 | 92.47 | 94.45 | 92.86 |
| 17 | 18 | A17 | 0.28 0.28 | 0.90 | 20.00 0.00 22.00 | 3.59 | 0.89 0.89 | R | 12 | | 0.013 | 0.44 | 2.37 | 30 | 1.02 | 0.05 | 0.50 | 0.01 | 0.03 | 92.18 | 93.14 | 94.83 | 93.15 | 91.96 | 92.96 | 94.83 | 93.12 |
| 18 | 19 | A18 | 0.06 0.34 | 0.90 | 21.61 0.28 21.28 | 3.53 | 1.02 1.02 | R | 12 | | 0.013 | 0.44 | 2.37 | 99 | 1.31 | 0.06 | 0.50 | 0.01 | 0.05 | 91.96 | 92.96 | 94.83 | 93.12 | 91.74 | 92.74 | 94.80 | 93.07 |
| 19D | 19C | A19D | 0.04 0.54 | 0.90 | 20.67 0.00 20.67 | 3.74 | 1.09 1.62 | R | 12 | | 0.013 | 0.44 | 2.37 | 31 | 0.15 | 0.00 | 0.50 | 0.00 | 0.00 | 93.71 | 93.71 | 96.25 | 93.45 | 92.46 | 93.46 | 96.20 | 93.39 |
| 19C | 19B1 | A19C | 0.04 0.58 | 0.90 | 20.67 0.28 20.68 | 3.71 | 0.99 2.61 | R | 12 | | 0.013 | 0.44 | 2.37 | 78 | 0.27 | 0.00 | 0.50 | 0.00 | 0.00 | 93.53 | 93.53 | 96.20 | 93.17 | 92.37 | 93.17 | 96.00 | 93.17 |
| 19B | 19A | 19B1 | 0.05 0.63 | 0.90 | 20.95 0.00 20.95 | 3.72 | 0.03 2.79 | R | 12 | | 0.013 | 0.44 | 2.37 | 62 | 0.34 | 0.01 | 0.50 | 0.00 | 0.00 | 92.18 | 93.18 | 96.00 | 93.09 | 91.92 | 92.89 | 95.90 | 93.09 |
| 19A | 18 | A19A | 0.47 0.50 | 0.90 | 20.79 0.34 21.24 | 3.65 | 0.82 0.79 | R | 12 | | 0.013 | 0.44 | 2.37 | 26 | 1.00 | 0.05 | 0.50 | 0.01 | 0.03 | 91.96 | 92.96 | 95.00 | 93.09 | 91.71 | 92.76 | 94.80 | 93.07 |
| 18 | 20 | A18 | 0.00 0.50 | 0.90 | 20.37 0.00 20.29 | 3.76 | 0.00 0.79 | R | 15 | | 0.013 | 0.33 | 3.72 | 61 | 1.55 | 0.08 | 0.50 | 0.02 | 0.06 | 91.63 | 92.74 | 94.80 | 93.07 | 91.22 | 92.47 | 94.40 | 92.98 |
| 20 | 24 | A20 | 0.13 0.63 | 0.90 | 20.00 0.00 21.98 | 3.63 | 1.80 2.84 | R | 30 | | 0.013 | 0.13 | 14.93 | 111 | 1.52 | 0.05 | 0.50 | 0.00 | 0.00 | 87.28 | 89.89 | 94.40 | 92.98 | 87.24 | 89.74 | 93.90 | 92.00 |
| 21 | 24 | A21 | 0.13 0.13 | 0.90 | 21.98 0.00 21.98 | 3.53 | 0.14 0.14 | R | 12 | | 0.013 | 0.44 | 2.37 | 30 | 0.18 | 0.00 | 0.50 | 0.00 | 0.00 | 94.96 | 95.96 | 97.90 | 92.90 | 93.74 | 93.96 | 97.90 | 92.90 |
| 22 | 23 | A22 | 0.03 0.03 | 0.90 | 20.30 0.00 21.26 | 3.81 | 0.09 0.09 | R | 12 | | 0.013 | 0.44 | 2.37 | 60 | 0.11 | 0.00 | 0.50 | 0.00 | 0.00 | 90.27 | 90.27 | 96.90 | 92.91 | 89.01 | 90.01 | 94.50 | 92.91 |
| 23 | 24 | A23 | 0.19 0.22 | 0.90 | 22.65 0.00 22.65 | 3.56 | 0.71 0.71 | R | 12 | | 0.013 | 0.19 | 2.37 | 61 | 0.36 | 0.01 | 0.50 | 0.00 | 0.01 | 89.01 | 90.01 | 94.50 | 92.91 | 89.74 | 89.74 | 93.90 | 92.90 |
| 24 | 25 | A24 | 0.08 0.90 | 0.90 | 21.41 0.00 21.41 | 3.60 | 0.91 2.91 | R | 30 | | 0.013 | 0.13 | 14.93 | 90 | 1.94 | 0.05 | 0.50 | 0.00 | 0.00 | 87.24 | 89.74 | 93.90 | 92.90 | 87.12 | 89.62 | 93.90 | 92.82 |
| 25 | 27 | A25 | 0.01 0.91 | 0.90 | 23.14 0.00 23.14 | 3.54 | 0.89 3.79 | R | 30 | | 0.013 | 0.13 | 14.93 | 74 | 2.12 | 0.06 | 0.50 | 0.00 | 0.00 | 87.12 | 89.62 | 93.90 | 92.82 | 87.02 | 89.52 | 93.90 | 92.74 |
| 26 | 27 | A26 | 0.39 0.39 | 0.90 | 20.31 0.41 20.55 | 3.61 | 0.97 0.97 | R | 12 | | 0.013 | 0.44 | 2.37 | 50 | 0.47 | 0.01 | 0.50 | 0.00 | 0.01 | 88.74 | 89.74 | 92.76 | 92.74 | 88.52 | 89.52 | 93.00 | 92.73 |
| 27A | 27 | A27A | 0.31 0.31 | 0.90 | 21.07 0.00 22.14 | 3.54 | 0.98 0.98 | R | 12 | | 0.013 | 0.44 | 2.37 | 80 | 1.12 | 0.06 | 0.50 | 0.01 | 0.05 | 88.87 | 89.87 | 94.80 | 92.78 | 88.52 | 89.52 | 93.90 | 92.73 |
| 27 | 29 | A27 | 0.12 0.55 | 0.90 | 21.60 0.00 21.86 | 3.54 | 0.91 1.96 | R | 30 | | 0.013 | 0.13 | 14.93 | 90 | 2.44 | 0.08 | 0.50 | 0.00 | 0.10 | 87.02 | 89.52 | 93.90 | 92.73 | 86.90 | 89.40 | 94.25 | 92.63 |
| 28 | 29 | A28 | 0.04 0.04 | 0.90 | 20.67 0.37 22.23 | 3.91 | 0.12 0.12 | R | 12 | | 0.013 | 0.44 | 2.37 | 95 | 0.15 | 0.00 | 0.50 | 0.00 | 0.00 | 89.63 | 90.23 | 93.40 | 92.84 | 88.81 | 89.81 | 94.25 | 92.84 |
| 29 | 30 | A29 | 0.10 0.10 | 0.90 | 21.00 0.00 21.00 | 3.75 | 0.32 0.32 | R | 12 | | 0.013 | 0.44 | 2.37 | 42 | 0.42 | 0.01 | 0.50 | 0.00 | 0.00 | 88.81 | 89.81 | 94.25 | 92.84 | 88.43 | 89.43 | 94.25 | 92.63 |
| 30 | 31 | A30 | 0.19 0.29 | 0.90 | 21.07 0.00 21.07 | 3.63 | 0.79 1.11 | R | 30 | | 0.013 | 0.13 | 14.93 | 95 | 2.57 | 0.09 | 0.50 | 0.05 | 0.14 | 86.93 | 89.43 | 94.25 | 92.63 | 86.81 | 89.31 | 94.80 | 92.49 |
| 31 | 33 | A31 | 0.00 0.29 | 0.90 | 20.00 0.00 20.00 | 3.72 | 0.13 12.05 | R | 30 | | 0.013 | 0.13 | 14.93 | 100 | 2.40 | 0.10 | 0.50 | 0.05 | 0.15 | 86.81 | 89.31 | 94.80 | 92.49 | 86.63 | 89.16 | 93.04 | 92.34 |
| 32 | 33 | A32 | 0.00 0.00 | 0.90 | 24.14 0.00 21.46 | 3.67 | 0.00 0.00 | R | 12 | | 0.013 | 0.44 | 2.37 | 50 | 0.06 | 0.00 | 0.50 | 0.01 | 0.00 | 88.89 | 90.30 | 92.34 | 92.34 | 88.45 | 89.45 | 93.40 | 92.28 |
| 33 | 35 | A33 | 0.00 0.70 | 0.90 | 20.00 0.00 21.07 | 3.63 | 0.00 2.52 | R | 12 | | 0.013 | 0.44 | 2.37 | 62 | 1.43 | 0.10 | 0.50 | 0.02 | 0.09 | 88.45 | 89.45 | 92.40 | 92.28 | 88.19 | 89.19 | 92.90 | 92.20 |
| 34 | 35 | A34 | 0.21 0.21 | 0.90 | 22.86 0.33 22.53 | 3.63 | 0.69 0.69 | R | 12 | | 0.013 | 0.44 | 2.37 | 62 | 0.90 | 0.05 | 0.50 | 0.01 | 0.05 | 88.54 | 88.84 | 93.00 | 92.20 | 88.18 | 88.38 | 93.00 | 92.16 |
| 35 | 37 | A35 | 0.35 7.90 | 0.90 | 21.00 0.00 21.31 | 3.53 | 0.37 10.03 | R | 36 | | 0.013 | 0.13 | 32.90 | 73 | 2.13 | 0.05 | 0.50 | 0.04 | 0.07 | 86.18 | 88.18 | 93.00 | 92.16 | 86.10 | 88.10 | 92.80 | 92.08 |
| 36 | 37 | A36 | 0.00 0.00 | 0.90 | 21.00 0.00 21.61 | 3.63 | 0.00 0.00 | R | 12 | | 0.013 | 0.44 | 2.37 | 97 | 0.31 | 0.01 | 0.50 | 0.00 | 0.00 | 91.36 | 92.30 | 93.80 | 92.08 | 91.04 | 92.05 | 93.80 | 92.08 |

| From M.H. | To M.H. | Area No. | Area (acres) Area Acc. Area | C | Tc (min) Area Pipe Total | I (in/hr) | Flow (cfs) Area Acc. Flow | Pipe Shape (inch) | Pipe Size (in) | Span (ft) | n | Slope (%) | Design Cap. (cfs) | Dist. (ft) Actual Vel. Pipe | HGL Slope (%) | Junction Loss K | Junction Loss (ft) | Change in HGL (ft) | UPSTREAM STRUCTURES Flowline Elev. Up (ft) | Build Elev. Up (ft) | Grate Top Elev. Up (ft) | HGL Elev. Up (ft) | DOWNSTREAM STRUCTURES Flowline Elev. Down (ft) | Build Elev. Down (ft) | Grate Top Elev. Down (ft) | HGL Elev. Down (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | 38 | A37 | 0.00 7.75 | 0.90 | 20.00 0.00 20.00 | 3.72 | 0.15 13.47 | R | 36 | | 0.013 | 0.11 | 32.90 | 64 | 2.19 | 0.09 | 0.50 | 0.04 | 0.07 | 85.10 | 85.10 | 93.00 | 89.84 | 84.93 | 84.93 | 94.15 | 89.54 |
| 38 | 39 | A38 | 0.00 7.80 | 0.90 | 20.00 0.34 21.24 | 3.69 | 0.00 13.08 | R | 36 | | 0.013 | 0.11 | 32.90 | 82 | 2.27 | 0.09 | 0.50 | 0.04 | 0.08 | 84.93 | 84.93 | 94.15 | 89.91 | 83.96 | 83.96 | 94.50 | 89.43 |
| 39 | 40 | A39 | 0.27 8.22 | 0.90 | 22.94 0.00 22.94 | 3.56 | 0.77 13.63 | R | 36 | | 0.013 | 0.11 | 32.90 | 82 | 2.38 | 0.09 | 0.50 | 0.04 | 0.12 | 83.96 | 83.96 | 94.00 | 89.43 | 83.87 | 83.87 | 94.00 | 89.23 |
| 40 | 41 | A40 | 0.01 8.23 | 0.90 | 20.39 0.42 23.41 | 3.52 | 0.58 14.21 | R | 42 | | 0.013 | 0.44 | 2.37 | 100 | 0.19 | 0.00 | 0.50 | 0.00 | 0.00 | 83.22 | 84.22 | 88.00 | 93.03 | 82.93 | 83.30 | 95.20 | 92.62 |
| 41 | 42A | A41 | 0.00 0.00 | 0.40 | 20.90 0.00 20.90 | 3.72 | 0.11 0.11 | R | 12 | | 0.013 | 0.44 | 2.37 | 99 | 0.24 | 0.00 | 0.50 | 0.00 | 0.00 | 92.99 | 93.92 | 95.20 | 93.07 | 92.67 | 93.67 | 95.20 | 93.67 |
| 41B | 42A | A42B | 0.10 0.10 | 0.40 | 20.39 0.30 20.39 | 3.69 | 0.07 0.07 | R | 12 | | 0.013 | 0.44 | 2.37 | 50 | 0.11 | 0.00 | 0.50 | 0.00 | 0.00 | 92.89 | 93.89 | 95.40 | 93.67 | 92.67 | 93.67 | 95.20 | 93.67 |
| 42A | 42 | A42A | 0.00 0.36 | 0.40 | 23.47 0.00 23.47 | 3.52 | 0.52 1.80 | R | 12 | | 0.013 | 0.44 | 2.37 | 37 | 1.41 | 0.10 | 0.50 | 0.02 | 0.03 | 92.67 | 93.67 | 96.20 | 93.58 | 92.53 | 93.53 | 93.50 | 93.53 |
| 42 | 43 | A43 | 0.07 0.57 | 0.90 | 21.00 0.00 21.00 | 3.69 | 0.91 4.31 | R | 18 | | 0.013 | 0.33 | 3.72 | 103 | 1.57 | 0.04 | 0.50 | 0.03 | 0.03 | 91.67 | 92.92 | 95.50 | 92.93 | 91.33 | 92.58 | 96.00 | 92.56 |
| 43A1 | 43A | A43A | 0.30 0.30 | 0.90 | 22.61 0.00 22.61 | 3.66 | 1.32 0.57 | R | 12 | | 0.013 | 0.44 | 2.37 | 29 | 0.73 | 0.03 | 0.50 | 0.00 | 0.01 | 91.87 | 92.87 | 95.50 | 92.93 | 91.84 | 92.84 | 96.00 | 92.84 |
| 43B | 43A | A43B | 0.17 0.47 | 0.90 | 20.92 0.00 22.53 | 3.61 | 0.30 0.48 | R | 12 | | 0.013 | 0.44 | 2.37 | 30 | 0.02 | 0.00 | 0.50 | 0.00 | 0.01 | 92.00 | 93.00 | 96.00 | 92.85 | 91.84 | 92.84 | 96.00 | 92.84 |
| 43A | 43 | A43A | 0.04 0.41 | 0.90 | 20.67 0.00 20.67 | 3.69 | 0.12 1.18 | R | 12 | | 0.013 | 0.44 | 2.37 | 90 | 0.50 | 0.11 | 0.50 | 0.02 | 0.06 | 91.84 | 92.84 | 96.00 | 92.85 | 91.56 | 92.56 | 93.22 | 92.68 |
| 43 | 45 | A43 | 0.07 1.06 | 0.90 | 21.39 0.00 21.39 | 3.66 | 0.21 2.70 | R | 18 | | 0.013 | 0.33 | 3.72 | 90 | 3.26 | 0.17 | 0.50 | 0.04 | 0.12 | 91.34 | 92.59 | 95.20 | 92.84 | 91.17 | 92.42 | 93.22 | 92.42 |
| 44 | 45 | A44 | 0.02 0.02 | 0.90 | 20.22 0.38 21.84 | 3.68 | 0.06 0.06 | R | 12 | | 0.013 | 0.44 | 2.37 | 84 | 0.06 | 0.00 | 0.50 | 0.00 | 0.00 | 91.79 | 92.79 | 96.25 | 92.42 | 91.42 | 92.42 | 93.29 | 92.42 |
| 45A | 45 | A45A | 0.02 0.52 | 0.90 | 21.88 0.00 21.88 | 3.64 | 0.03 0.03 | R | 12 | | 0.013 | 0.44 | 2.37 | 73 | 0.45 | 0.01 | 0.50 | 0.00 | 0.01 | 91.74 | 92.74 | 95.50 | 92.45 | 91.42 | 92.42 | 93.20 | 92.42 |
| 45 | 50 | A45 | 0.10 1.39 | 0.90 | 21.67 0.00 21.67 | 3.65 | 0.29 3.40 | R | 24 | | 0.013 | 0.19 | 9.62 | 126 | 1.68 | 0.02 | 0.50 | 0.01 | 0.04 | 88.30 | 90.10 | 93.20 | 92.51 | 87.97 | 89.82 | 94.00 | 89.82 |
| 46 | 47 | A46 | 0.00 0.05 | 0.90 | 20.00 0.00 20.00 | 3.72 | 0.05 0.05 | R | 12 | | 0.013 | 0.44 | 2.37 | 74 | 0.07 | 0.00 | 0.50 | 0.00 | 0.00 | 91.50 | 92.50 | 94.00 | 92.17 | 91.17 | 92.17 | 94.25 | 92.17 |
| 47A | 47 | A47A | 0.00 0.00 | 0.90 | 29.02 0.41 29.31 | 3.69 | 0.00 0.05 | R | 12 | | 0.013 | 0.44 | 2.37 | 55 | 0.09 | 0.00 | 0.50 | 0.00 | 0.00 | 91.41 | 92.41 | 94.25 | 92.17 | 91.17 | 92.17 | 94.40 | 92.17 |
| 47 | 49 | A47 | 0.21 0.28 | 0.90 | 22.50 0.41 21.91 | 3.66 | 0.92 0.73 | R | 12 | | 0.013 | 0.44 | 2.37 | 62 | 0.94 | 0.04 | 0.50 | 0.01 | 0.02 | 91.46 | 92.58 | 94.40 | 91.81 | 90.79 | 91.78 | 94.40 | 91.26 |
| 48 | 49 | A48 | 0.00 0.00 | 0.90 | 20.00 0.00 20.00 | 3.72 | 0.00 0.00 | R | 12 | | 0.013 | 0.44 | 2.37 | 90 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 91.22 | 92.07 | 94.25 | 91.76 | 90.76 | 91.76 | 94.40 | 91.76 |
| 49 | 51 | A49 | 0.15 0.43 | 0.90 | 22.58 0.53 21.53 | 3.66 | 0.98 1.72 | R | 12 | | 0.013 | 0.44 | 2.37 | 55 | 1.31 | 0.11 | 0.50 | 0.02 | 0.06 | 90.75 | 91.75 | 94.40 | 91.54 | 90.51 | 91.51 | 94.00 | 91.51 |
| 50 | 53 | A50 | 0.00 0.20 | 0.90 | 23.02 0.00 20.72 | 3.76 | 0.00 0.00 | R | 12 | | 0.013 | 0.44 | 2.37 | 68 | 0.08 | 0.00 | 0.50 | 0.00 | 0.00 | 90.91 | 91.91 | 94.50 | 91.51 | 90.51 | 91.51 | 94.00 | 91.33 |
| 51 | 52 | A51 | 0.00 0.50 | 0.40 | 21.41 0.28 20.42 | 3.78 | 0.00 1.54 | R | 12 | | 0.013 | 0.33 | 3.72 | 50 | 1.00 | 0.04 | 0.50 | 0.01 | 0.03 | 90.26 | 91.61 | 94.00 | 91.37 | 90.01 | 91.34 | 94.00 | 91.34 |
| 52 | 53 | A52 | 0.28 0.28 | 0.90 | 22.98 0.00 22.98 | 3.65 | 0.92 0.92 | R | 12 | | 0.013 | 0.44 | 2.37 | 86 | 1.02 | 0.05 | 0.50 | 0.01 | 0.04 | 91.23 | 92.21 | 93.90 | 91.96 | 90.80 | 91.80 | 93.25 | 91.83 |
| 53 | 54 | A53 | 0.10 0.38 | 0.90 | 21.07 0.00 21.07 | 3.66 | 0.25 1.00 | R | 12 | | 0.013 | 0.44 | 2.37 | 45 | 1.39 | 0.06 | 0.50 | 0.02 | 0.06 | 90.55 | 91.55 | 96.25 | 91.82 | 90.76 | 91.76 | 95.25 | 91.76 |
| 54 | 55 | A54 | 0.00 0.45 | 0.90 | 21.39 0.00 21.39 | 3.66 | 0.21 1.50 | R | 12 | | 0.013 | 0.44 | 2.37 | 99 | 1.65 | 0.13 | 0.50 | 0.02 | 0.10 | 90.75 | 91.75 | 93.25 | 91.80 | 90.50 | 91.50 | 94.50 | 91.50 |
| 55 | 56 | A55 | 0.13 0.58 | 0.90 | 21.98 0.00 21.88 | 3.65 | 0.29 1.58 | R | 12 | | 0.013 | 0.44 | 2.37 | 45 | 2.02 | 0.09 | 0.50 | 0.03 | 0.12 | 90.50 | 91.50 | 94.50 | 91.42 | 90.30 | 91.30 | 94.00 | 91.30 |
| 56 | 57 | A56 | 0.00 1.58 | 0.90 | 20.00 0.00 20.00 | 3.72 | 0.00 2.68 | R | 18 | | 0.013 | 0.33 | 3.72 | 81 | 2.63 | 0.21 | 0.50 | 0.05 | 0.22 | 90.99 | 91.94 | 94.00 | 91.79 | 89.82 | 91.07 | 94.00 | 91.07 |
| 57 | 58 | A57 | 0.10 1.68 | 0.90 | 21.67 0.00 21.67 | 3.65 | 0.29 3.27 | R | 18 | | 0.013 | 0.33 | 3.72 | 73 | 2.67 | 0.24 | 0.50 | 0.06 | 0.24 | 89.67 | 91.07 | 94.00 | 91.07 | 89.56 | 90.83 | 94.00 | 90.83 |
| 58 | 59 | A58 | 0.11 1.79 | 0.90 | 21.70 0.00 21.70 | 3.65 | 0.32 3.59 | R | 18 | | 0.013 | 0.30 | 3.59 | 72 | 2.53 | 0.12 | 0.50 | 0.03 | 0.12 | 89.33 | 90.83 | 94.00 | 90.76 | 89.14 | 90.64 | 93.70 | 90.64 |
| 59 | 60 | A59 | 0.00 1.79 | 0.90 | 21.00 0.00 21.00 | 3.70 | 0.33 3.73 | R | 18 | | 0.013 | 0.32 | 3.55 | 90 | 2.11 | 0.13 | 0.50 | 0.02 | 0.10 | 89.13 | 90.82 | 93.70 | 90.59 | 88.99 | 90.49 | 93.10 | 90.49 |
| 60 | 61 | A60 | 0.15 1.97 | 0.90 | 22.96 0.40 22.58 | 3.61 | 0.96 2.98 | R | 18 | | 0.013 | 0.28 | 3.37 | 92 | 2.42 | 0.13 | 0.50 | 0.04 | 0.14 | 88.99 | 90.49 | 93.10 | 90.49 | 88.77 | 90.27 | 93.10 | 90.27 |
| GAS | 61 | A58 | 0.00 0.51 | 0.90 | 23.54 0.00 23.54 | 3.54 | 0.52 0.52 | R | 12 | | 0.013 | 0.44 | 2.37 | 124 | 0.62 | 0.01 | 0.50 | 0.00 | 0.01 | 89.62 | 90.62 | 93.10 | 90.26 | 89.27 | 90.27 | 93.10 | 90.27 |
| 61 | 64 | A61 | 0.15 2.63 | 0.90 | 22.15 0.00 22.15 | 3.62 | 0.95 4.05 | R | 18 | | 0.013 | 0.30 | 3.37 | 82 | 2.48 | 0.16 | 0.50 | 0.04 | 0.19 | 89.79 | 90.26 | 93.10 | 90.23 | 89.55 | 90.05 | 94.15 | 89.61 |
| 61A | 61 | A61A | 0.00 0.00 | 0.90 | 21.41 0.00 21.41 | 3.64 | 0.24 0.24 | R | 12 | | 0.013 | 0.44 | 2.37 | 30 | 0.31 | 0.00 | 0.50 | 0.00 | 0.00 | 92.90 | 93.89 | 95.40 | 93.76 | 92.76 | 93.76 | 95.50 | 93.76 |
| 61A | 61 | A61A | 0.00 0.15 | 0.90 | 21.41 0.00 21.41 | 3.64 | 0.24 0.24 | R | 12 | | 0.013 | 0.44 | 2.37 | 41 | 0.51 | 0.02 | 0.50 | 0.00 | 0.01 | 92.78 | 93.76 | 95.50 | 93.35 | 92.58 | 93.58 | 96.30 | 93.58 |
| 61 | 62 | A61 | 0.00 0.24 | 0.90 | 21.41 0.00 21.41 | 3.66 | 0.34 0.71 | R | 12 | | 0.013 | 0.44 | 2.37 | 90 | 0.96 | 0.04 | 0.50 | 0.01 | 0.04 | 92.58 | 93.58 | 96.30 | 93.22 | 92.10 | 93.10 | 94.95 | 93.10 |
| 62 | 63 | A62 | 0.00 0.32 | 0.90 | 21.61 0.00 21.61 | 3.66 | 0.34 0.66 | R | 12 | | 0.013 | 0.44 | 2.37 | 85 | 1.20 | 0.07 | 0.50 | 0.01 | 0.07 | 92.17 | 93.17 | 94.95 | 92.87 | 91.80 | 92.80 | 94.15 | 92.80 |
| 63 | 64 | A63 | 0.13 0.45 | 0.90 | 21.98 0.00 21.98 | 3.65 | 0.30 0.96 | R | 12 | | 0.013 | 0.44 | 2.37 | 101 | 0.45 | 0.01 | 0.50 | 0.00 | 0.02 | 90.25 | 91.25 | 92.75 | 92.80 | 89.87 | 90.87 | 94.15 | 92.67 |
| 64 | 65 | A64 | 0.00 2.87 | 0.90 | 21.98 0.00 21.54 | 3.64 | 0.26 6.92 | R | 24 | | 0.013 | 0.19 | 9.62 | 92 | 1.88 | 0.07 | 0.50 | 0.03 | 0.07 | 87.98 | 89.98 | 94.15 | 93.04 | 87.82 | 89.82 | 94.05 | 89.97 |
| 65 | 66 | A65 | 0.28 12.50 | 0.90 | 22.63 0.34 21.92 | 3.64 | 0.73 20.79 | R | 42 | | 0.013 | 0.12 | 26.39 | 86 | 2.29 | 0.07 | 0.50 | 0.06 | 0.11 | 85.37 | 86.87 | 94.00 | 91.33 | 85.29 | 86.79 | 94.10 | 91.25 |
| 67 | 66 | A67 | 0.00 0.00 | 0.40 | 20.34 0.00 20.55 | 3.75 | 0.06 0.06 | R | 12 | | 0.013 | 0.44 | 2.37 | 94 | 0.11 | 0.00 | 0.50 | 0.00 | 0.00 | 91.86 | 92.86 | 94.20 | 92.40 | 91.40 | 92.40 | 94.10 | 92.40 |
| 66 | 68 | A66 | 0.00 0.12 | 0.90 | 21.07 0.00 21.07 | 3.75 | 0.30 0.36 | R | 12 | | 0.013 | 0.44 | 2.37 | 105 | 0.45 | 0.01 | 0.50 | 0.00 | 0.01 | 91.41 | 92.41 | 94.10 | 92.05 | 91.04 | 92.04 | 94.10 | 92.04 |
| 68 | 69 | A68 | 0.10 0.10 | 0.90 | 21.07 0.00 21.67 | 3.65 | 0.29 27.47 | R | 42 | | 0.013 | 0.13 | 26.39 | 94 | 2.86 | 0.07 | 0.50 | 0.06 | 0.13 | 85.29 | 86.79 | 94.10 | 91.23 | 85.19 | 86.69 | 91.50 | 89.53 |
| 70 | 71 | A70 | 0.17 0.17 | 0.90 | 22.32 0.41 22.13 | 3.62 | 0.55 0.55 | R | 12 | | 0.013 | 0.44 | 2.37 | 82 | 0.23 | 0.00 | 0.50 | 0.00 | 0.00 | 89.68 | 89.88 | 91.55 | 89.63 | 89.63 | 91.50 | 89.63 |
| 71 | 72 | A71 | 0.18 0.35 | 0.90 | 22.96 0.00 22.39 | 3.60 | 0.68 1.23 | R | 12 | | 0.013 | 0.44 | 2.37 | 85 | 0.48 | 0.01 | 0.50 | 0.00 | 0.01 | 88.83 | 89.83 | 91.50 | 89.37 | 88.50 | 88.50 | 93.00 | 89.36 |
| 72 | DP | A72 | 0.21 0.56 | 0.90 | 22.60 0.34 22.26 | 3.57 | 0.72 1.95 | R | 12 | | 0.013 | 0.44 | 2.37 | 35 | 0.28 | 0.00 | 0.50 | 0.00 | 0.00 | 89.53 | 89.91 | 91.50 | 89.36 | 89.36 | 89.36 | 93.00 | 89.36 |

APPROVED: FORT BEND COUNTY DEVELOPMENT CO




APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE

SCALE: 1" = 30'

LEGEND:

| | |
|---|---|
| MH | PROPOSED MANHOLE |
| C.O. | PROPOSED CLEANOUT |
| | PROPOSED FIRE HYDRANT |
| | PROPOSED GATE VALVE |
| | PROPOSED T.S.&V. |
| FL | FLOW LINE |
| | DIRECTION OF FLOW |
| MFG | MATCH FINISH GRADE |
| FG | FINISH GRADE |
| | WATER LINE PROTECTION AT SAN. CROSSING – SEE GC NOTE ⑦ |
| | 6" IRRIGATION SLEEVE (RD. LANDSCAPE PLANS) |

GENERAL NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR EXACT, BUT WERE OBTAINED FROM BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. ALL EXISTING CONCRETE OR ASPHALT PAVEMENT REMOVED SHALL INCLUDE FULL DEPTH SAW CUT.

GENERAL CONTRACTORS (GC) NOTES TO THIS SHEET:

① PROPOSED 8" COMBINATION DOMESTIC/FIRE METER, TAP AND METER TO BE INSTALLED BY DISTRICT OPERATOR. TAP & METER FEES WILL BE BILLED BY THE MUD TO THE APPLICANT FOR SERVICE. PROVIDE BACnet INTERFACE CAPABILITY TO ALLOW THE CONTROLS CONTRACTOR TO TIE INTO THE BUILDING AUTOMATION SYSTEM TO VIEW WATER CONSUMPTION.

② PROPOSED 4" REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY (FARK MODEL 909RPAE-1). SEE DETAIL SHEET C10.3. (INSTALLED BY CONTRACTOR, INSPECTED BY MUD.)

③ PROPOSED 8" DETECTOR CHECK BACKFLOW PREVENTER ASSEMBLY W/PIV & FDC (FARK MODEL 005YYF-DC). SEE DETAIL SHEET C10.3. (INSTALLED BY CONTRACTOR, INSPECTED BY MUD.

④ PROPOSED 4" PRIVATE DOMESTIC WATERLINE. SEE SHEET C10.3 FOR BEDDING DETAIL.

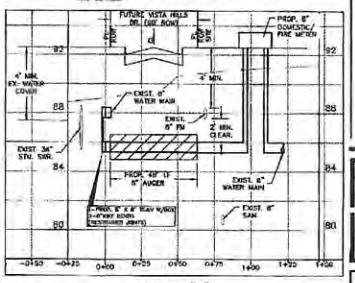
⑤ PROPOSED 8" PRIVATE FIRE LINE. SEE SHEET C10.3 FOR BEDDING DETAIL.

⑥ PROPOSED GAS LINE. RE-MEP PLANS.

⑦ CONTRACTOR SHALL CENTER 9'-18" JOINT OF SAN. SWR. LINE ON PROPOSED WATER LINE. CONTRACTOR SHALL CENTER 9'-30" JOINT OF WATER LINE ON PROPOSED SANITARY SEWER. CONTRACTOR SHALL MAINTAIN 18" MIN. CLEARANCE.

⑧ CONTRACTOR SHALL CORE DRILL THE SANITARY MANHOLE CONNECTION AND USE A WATER TIGHT RESILIENT CONNECTOR. CONTRACTOR SHALL PROVIDE AN INTERNAL DROP.

⑨ PROPOSED 2" IRRIGATION METER WITH 2" REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE BY TO THE 6" RECLAIMED (NON-POTABLE) WATER LINE IN GRAND VISTA SPRINGS BLVD. CONTRACTOR SHALL REFERENCE IRRIGATION PLANS FOR SPECS AND DETAILS.




INSET "A"
8" WATER LINE PROFILE
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

| Revison / Date | |
|---|---|
| 1 03/10/16 | Addendum 02 |
| 2 04/12/16 | Post-BG Addendum |
| 3 05/11/16 | Addendum 04 - Civil Sketches |
| 4 06/29/16 | Addendum 05 - Civil Sketches, Comm. Response and Fort Bend County Comments |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

ERNEST E. SPEERS, INC. F-465
REGISTERED PROFESSIONAL ENGINEER — ERNEST E. SPEERS — 83251 — STATE OF TEXAS
07-24-16

Huckabee

WATER & SANITARY SEWER PLAN (1 OF 2)

| | |
|---|---|
| Job No. | 482-0009 |
| Drawn By | BSC |
| Date | 5/24/16 |
| Sheet No. | C8.0 |

Sheet of 21

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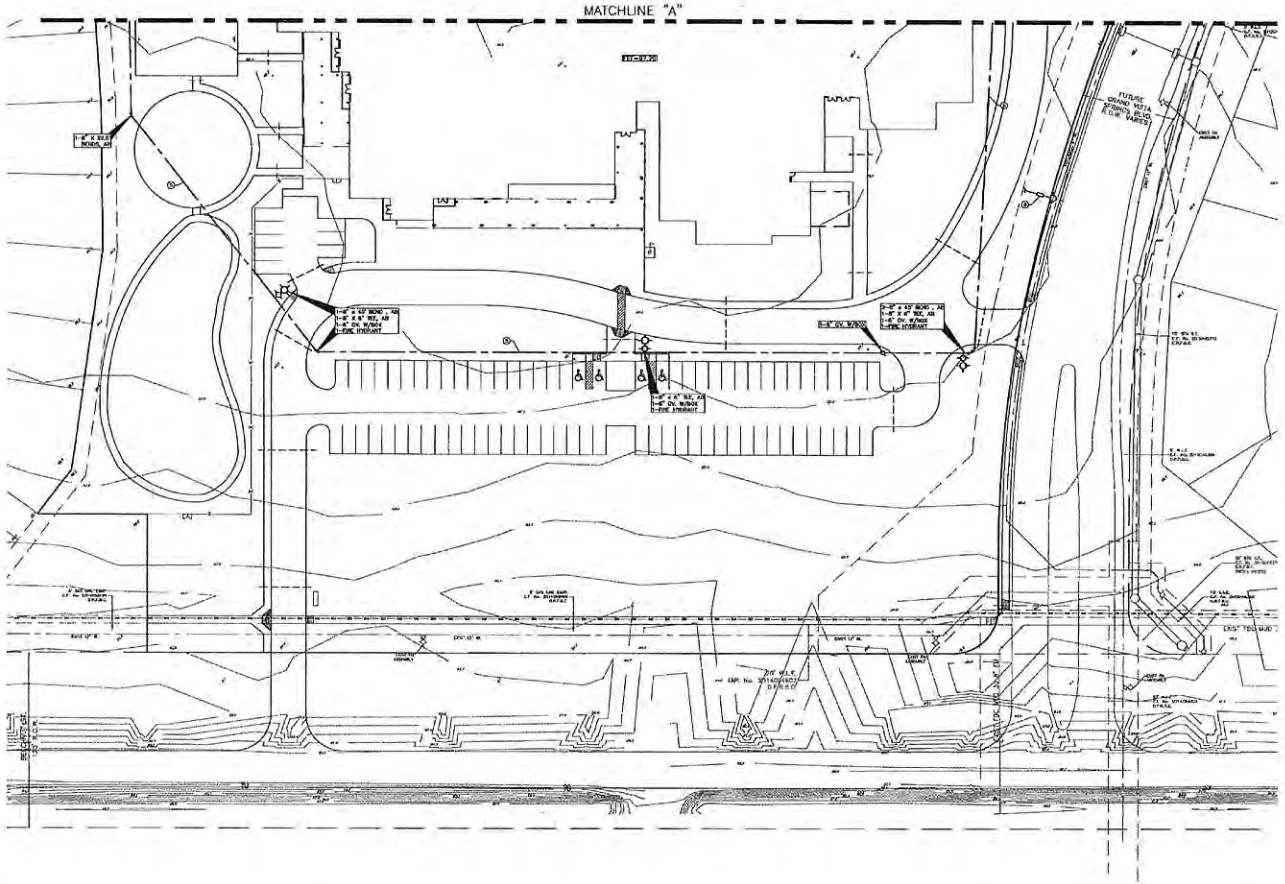
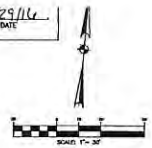
P:\projects\1800s_SP\studies\482-0009-00 FERST Elem SCH\civil\08 UTILities
Related Sheets: X-TPP.dwg, X-TOpo.dwg, X-GTrench.dwg, X-Site.dwg, X-MPOTLE.dwg

APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE




LEGEND:

- PROPOSED MANHOLE
- PROPOSED CLEANOUT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED T.S.&V.
- FLOW LINE
- DIRECTION OF FLOW
- 6" IRRIGATION SLEEVE (NO LANDSCAPE PLANS)

GENERAL NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR CORRECT, BUT WERE OBTAINED FROM BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. ALL EXISTING CONCRETE OR ASPHALT PAVEMENT REMOVED SHALL INCLUDE FULL DEPTH SAW CUT.

GENERAL CONTRACTORS (GC) NOTES TO THIS SHEET:

(5) PROPOSED 8" PRIVATE FIRE LINE. SEE SHEET C10.3 FOR BEDDING DETAIL.

(6) PROPOSED 2" IRRIGATION METER.

RICHMOND No. 30 District Operator Notice:

- The contractor shall contact WCID Rattler Services Department at 281.250.6503 option 3 or via email at fbdcrewcut@wcidgroup.com 48 hours prior to cleanout installation and to request required inspections. All site sanitary sewer shall be inspected by WCID prior to backfill.
- The owner or his contractor shall install appropriate backflow prevention devices in accordance with state plumbing codes or as required by the District's operator. Backflow Test Reports must be available at the time of inspection. Copies of annual test reports must be forwarded to the District.
- No pipes, pipe fittings, plumbing fittings, and fixtures which contain more than a weighted average of .25% lead when used with respect to wetted surfaces exist in potable water distribution facilities installed on or after January 4, 2014

| Revision / Date | |
|---|---|
| 1 07/19/16 | Addendum 02 |
| 2 07/22/16 | Addendum 03 |
| 3 05/11/16 | Addendum 04 – Cost Savings/ Fort Bend County Comment Response |
| 4 06/21/16 | Fort Bend County Drainage District Comment Response |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC. T-3855
REGISTERED TO PRACTICE ENGINEERING
FRANK E. BROOKS
07-24-16

Huckabee

WATER & SANITARY SEWER PLAN (2 OF 2)

| Job. No. | Sheet No. |
|---|---|
| 482-0009 | C8.1 |
| Drawn By: DSC | |
| Date: 5/24/16 | |

Sheet of 21

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Includes: xref(s): X-TB.dwg; X-TBase.dwg; X-Util.dwg; X-Site.dwg; X-PROFILE.dwg

| Revision / Date | Addendum 02 |
|---|---|
| 3 | 03/10/16 |
| 2 | 04/12/16 |
| 1 | 05/11/16 |
| | Post-Bid Addendum |
| | Addendum 04 – Cost Savings/ |
| | Fort Bend County Comment Response |
| 4 | 06/21/16 |
| | Fort Bend County Drainage District Comment Response |

Project:

# GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC. TEXAS REGISTERED ENGINEERING FIRM F-2937 — 07-24-15

Huckabee

| | |
|---|---|
| Job No. | 1612-0009 |
| Date | 07/14/16 |
| Drawn By | DSC |
| Check By | |
| Sheet | of |

SWPPP PLAN

Sheet No. C9.0

APPROVED: FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE 7/14/16

LEGEND:

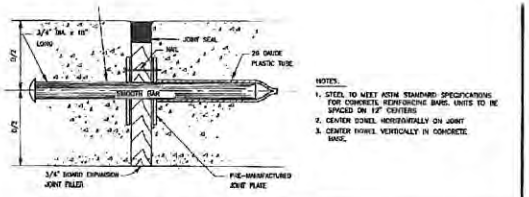
- PROPOSED INLET
- PROPOSED SILT FENCE / FABRIC FENCE (SILT FENCE)
- PROPOSED STRAW BALE FENCE
- STABILIZED CONSTRUCTION ACCESS
- INLET PROTECTION BARRIER
- BLUE PROTECTION BARRIER (OVER INLET/CURB OF PAVEMENT)
- CONCRETE WASHOUT PIT

## SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL MAINTAIN AND PROTECT ALL EXISTING AND PROPOSED STORM SEWER INLETS, DRAINAGE DITCHES, AND DETENTION PONDS AT ALL TIMES DURING CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS FROM ALL INLETS, DRAINAGE DITCHES, AND DETENTION PONDS PRIOR TO THE END OF EACH WORKING DAY.
2. SILT FENCE SHALL BE INSTALLED ALONG ALL DOWNHILL PROPERTY LINES AND AT THE TOP OF ALL SLOPES AS SHOWN ON THE PLANS. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING OPERATIONS. SILT FENCE SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES DURING CONSTRUCTION AND UNTIL ALL DISTURBED AREAS ARE STABILIZED. SILT FENCE SHALL BE REMOVED AFTER ALL DISTURBED AREAS ARE STABILIZED.
3. CONTRACTOR SHALL CLEAN UP ANY EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY AS NECESSARY. NO MUDDY PAVEMENT SHALL BE ALLOWED TO REMAIN OVERNIGHT. SILT AND MUD TRACKED FROM THE EXCAVATION AREA SHALL BE REMOVED FROM THE PAVEMENT BY SCRAPING AND SWEEPING.
4. CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENT CONTROL MEASURES AS NECESSARY TO PREVENT SILT FROM LEAVING THE PROJECT. ALL SILT AND DEBRIS REMOVED FROM THE EXCAVATION AREA SHALL BE DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE PROPOSED DISPOSAL LOCATION PRIOR TO REMOVAL OF ANY MATERIAL. NO SPOIL MATERIAL SHALL BE DISPOSED OF IN WATERS OF THE U.S. INCLUDING WETLANDS.
5. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL NOTIFY THE ENGINEER AT THE TOP OF EACH MAJOR PHASE OF CONSTRUCTION.
6. CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAINAGE PATTERNS AND SHALL NOT ALTER FINISH ELEVATIONS OR GRADES WITHOUT PRIOR APPROVAL FROM THE ENGINEER. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY DRAINAGE PATTERNS ARE ALTERED DURING CONSTRUCTION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT PROPERTY AND SHALL REPAIR ANY DAMAGE TO THE SATISFACTION OF THE OWNER OF THE PROPERTY.
8. CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL EROSION DURING ALL CONSTRUCTION ACTIVITIES. ALL DISTURBED AREAS SHALL BE STABILIZED WITH SOD, SEED AND MULCH, OR EQUIVALENT MEASURES AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 14 DAYS OF COMPLETION OF CONSTRUCTION IN THAT AREA.

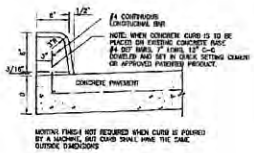



© Brooks & Sparks, Inc. 2016
P:\projects\BROOK SP\Huckabee\1612-0009-00 GRSD Elem SD\Civil\09.0 SWPPP.dwg
Modified: Xrefs: X-TBLdwg, X-TOPOdwg, X-STRMdwg, X-UTLdwg




NOTES:
1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS. UNITS TO BE SPACED ON 12" CENTERS.
2. CENTER DOWEL HORIZONTALLY ON JOINT.
3. CENTER DOWEL VERTICALLY IN CONCRETE BASE.

DOWEL TYPE EXPANSION JOINT
N.T.S.



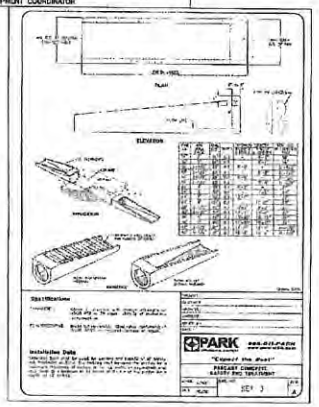

NOTE: WHEN CONCRETE CURB IS TO BE PLACED ON EXISTING CONCRETE BASE #4 BAR, 3' LONG, 12" C-C DOWELED AND SET IN QUICK SETTING CEMENT OR APPROVED PREFERED PRODUCT.

MOWING FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT GRADE SHALL MAKE THE SAME OUTSIDE STANDARDS

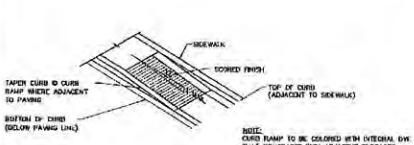
CONCRETE CURB
N.T.S.

DOWELED-ON CONCRETE CURB
N.T.S.

APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE

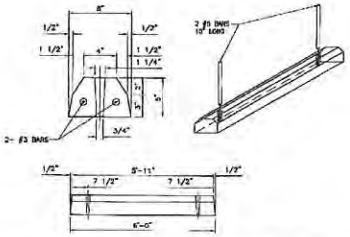



| Revision / Date | |
|---|---|
| 03/30/16 | Addendum 02 |
| 05/12/16 | Post-Bid Addendum |
| 05/31/16 | Addendum 04 – Cost Savings/ |
| 06/21/16 | Fort Bend County Comment Response |
| 06/21/16 | Fort Bend County Drainage District Comment Response |




NOTE: CURB RAMP TO BE COLORED WITH INTEGRAL DYE THAT CONTRASTS WITH ADJACENT SURFACES.

DIRECTIONAL CURB RAMP
N.T.S.




PRECAST CONCRETE WHEEL STOP
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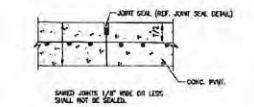
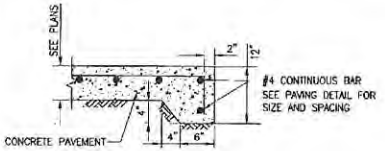
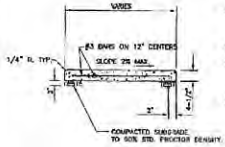



SAWED JOINTS 1/4" WIDE OR LESS SHALL NOT BE SEALED.

SAWED JOINT
N.T.S.

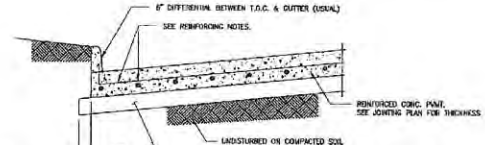



STANDARD CONCRETE PAVING HEADER
N.T.S.




NOTES:
1. 1/2" FIBERBOARD EXPANSION MATERIAL REQUIRED WHERE SIDEWALK ABUTS BUILDING. 3/4" REDWOOD MATERIAL REQUIRED WHERE SIDEWALK ABUTS CURBS, DRIVEWAYS OR EXISTING SIDEWALKS.
2. WHERE NEW SIDEWALK IS PLACED AGAINST EXISTING SIDEWALK, SAWCUT EXISTING SIDEWALK TO AN EVEN STRAIGHT LINE PRIOR TO INSTALLATION OF THE NEW SIDEWALK AND INSTALL EXPANSION JOINT.
3. 1" MAX AGGREGATE.
4. CONTRACTOR SHALL INSTALL SIDEWALK EXPANSION JOINTS AT 20' MAX. INTERVALS AND CONSTRUCTION (SAWED JOINTS) ON 5' CENTERS FOR 5' WIDE SIDEWALKS AND 10' FOR ALL OTHER SIDEWALKS WIDER THAN 5'.
5. LINE UP JOINTS IN SIDEWALK W/ PAVING JOINTS.

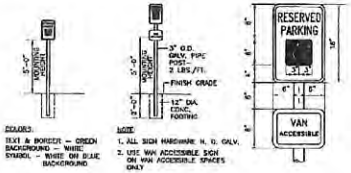
TYPICAL CONCRETE SIDEWALK
N.T.S.




REINFORCING NOTES:
1. FOR 6" PAVEMENT PROVIDE #4 BARS @ 18" O.C.E.W.
2. FOR 7" PAVEMENT PROVIDE #5 BARS @ 18" O.C.E.W.

PROP. 8" STABILIZED SUBGRADE. SUBGRADE SHALL BE STABILIZED WITH LIME FOR CLAY SOILS AND CEMENT FOR SILTY SAND TO ACHIEVE A PI OF 20 OR LESS AND COMPACTED TO A MINIMUM OF 95% OF THE STANDARD MOISTURE DENSITY RELATION (ASTM D 698) AT A MOISTURE CONTENT FROM ABOUT OPTIMUM TO 3 PERCENTAGE POINTS GREATER THAN THE OPTIMUM MOISTURE CONTENT. ACTUAL LIME CONTENT SHALL BE DETERMINED IN FIELD PRIOR TO CONSTRUCTION. LIME PLACEMENT AND MIXING SHALL BE IN ACCORDANCE WITH TXDOT ITEM 260. SEE SOILS REPORT FOR DETAILS. (GEOTECHNICAL ENGINEERING REPORT FINED ELEMENTARY SCHOOL NO. 50 FM 359 AND FULSHEAR–GASTON ROAD, FORT BEND COUNTY, TEXAS. TERRACON PROJECT NO. 92155331)

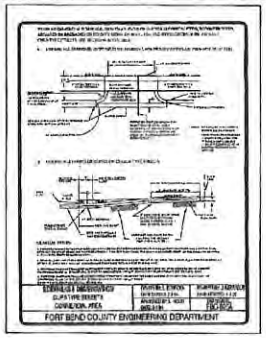
TYPICAL CONCRETE PAVEMENT
N.T.S.

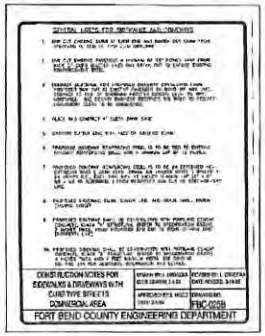



COLORS:
TEXT & BORDER – GREEN
BACKGROUND – WHITE
SYMBOL – WHITE ON BLUE BACKGROUND

NOTE
1. ALL SIGN HARDWARE H. D. GALV.
2. USE VAN ACCESSIBLE SIGN ON VAN ACCESSIBLE SPACES ONLY

HANDICAPPED PARKING SIGN
N.T.S.




Project: GRAND VISTA ELEMENTARY SCHOOL FOR FORT BEND ISD RICHMOND, TEXAS

Huckabee

PAVING DETAILS

Job. No. 482–0009 | Sheet No. C10.0
Drawn By: DSC
Date: 5/24/16
Sheet 16 of 21

I:\jobs\482-0009\engineering\Construction\482-0009-00 FBISD Vern Schofield HS\Paving Details.dwg
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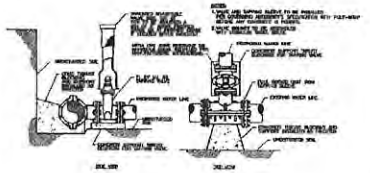
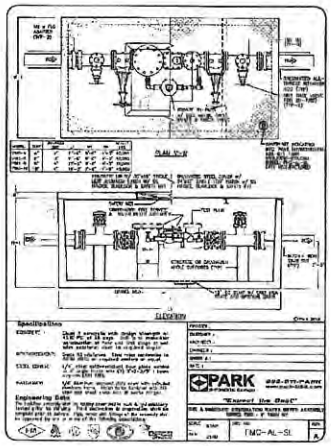
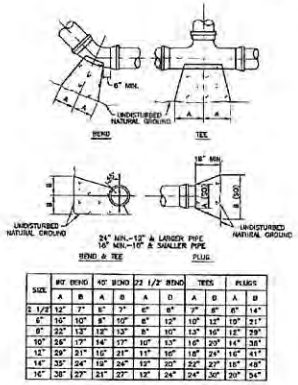


TAPPING SLEEVE AND VALVE
N.T.S.



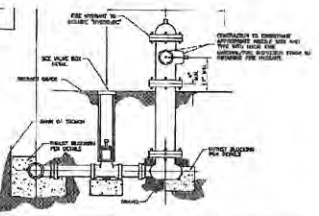
DOMESTIC WATER METER ASSEMBLY
N.T.S.



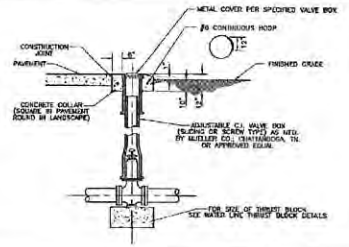
| SIZE | 90° BEND A | 90° BEND B | 45° BEND A | 45° BEND B | 22 1/2° BEND A | 22 1/2° BEND B | TEES A | TEES B | PLUGS A | PLUGS B |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 1/2" | 12" | 7" | 8" | 7" | 6" | 6" | 7" | 6" | 6" | 14" |
| 6" | 16" | 10" | 9" | 10" | 8" | 12" | 10" | 12" | 10" | 21" |
| 8" | 22" | 13" | 12" | 13" | 8" | 10" | 13" | 16" | 12" | 29" |
| 10" | 26" | 17" | 14" | 17" | 10" | 13" | 16" | 20" | 14" | 36" |
| 12" | 29" | 21" | 16" | 21" | 11" | 16" | 18" | 24" | 16" | 41" |
| 14" | 35" | 24" | 19" | 24" | 12" | 20" | 22" | 27" | 18" | 48" |
| 16" | 38" | 27" | 21" | 27" | 13" | 24" | 24" | 30" | 20" | 54" |

ALL CONCRETE SHALL BE MIN. 28K, 3,000 P.S.I.

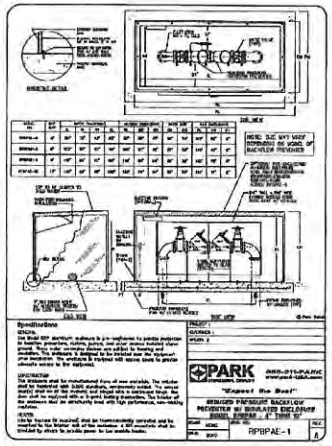
WATER LINE THRUST BLOCK
N.T.S.



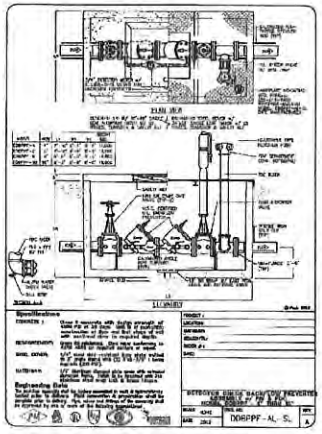
FIRE HYDRANT – ELEVATION
N.T.S.



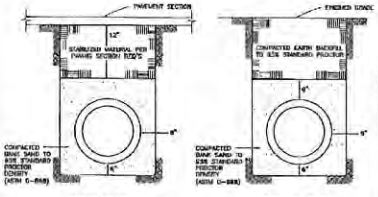
VALVE BOX
N.T.S.



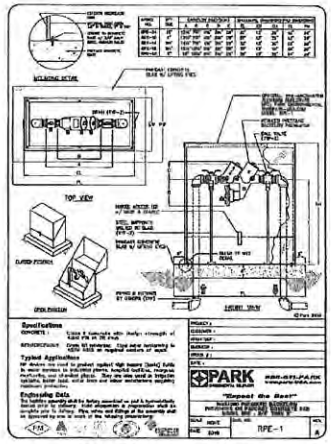
DOMESTIC BACKFLOW PREVENTER
N.T.S.



BACKFLOW PREVENTER W/ PIV & FDC
N.T.S.



WATER LINE TRENCH
N.T.S.



IRRIGATION BACKFLOW PREVENTER
N.T.S.

| Revision / Date | |
|---|---|
| 1 | 03/10/16 Addendum 02 |
| 2 | 04/12/16 Post-Bid Addendum |
| 3 | 05/11/16 Addendum 04 – Cost Savings/ Fort Bend County Comment Response |
| 4 | 06/21/16 Fort Bend County Drainage District Comment Response |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

Huckabee

WATER DETAILS

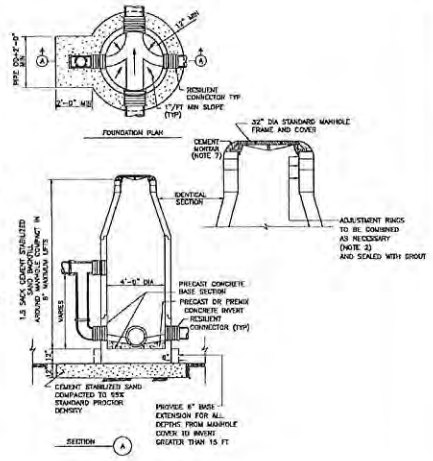
Job No. 482-0009
Drawn By: JSC
Date: 5/24/16
Sheet No. C10.1

Sheet 17 of 21

13 Jul 2016 3:09:24 mgarry
F:\projects\13ROCK_ISD\Microstation\482-0009-00 FSSD Elem SD\Civil\C10.2 Water Details.dwg
Xrefs: Xrefs: X-TB.dwg

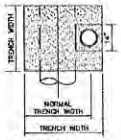
NOTES:

1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12", THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS, MIN THICKNESS 5".
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR ON DRAWINGS OR WHEN DIFFERENCE IN FLOW LINE ELEVATIONS OF MANHOLE EXCEEDS 24".
5. SEAL MANHOLE FRAME IN SEALANT.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USED.
7. GMT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 6" EW.
9. INTERIOR SURFACE OF MANHOLE SHALL BE SEALED WITH THANE COAT OR APPROVED EQUAL AS PER MANUFACTURERS SPECIFICATIONS.



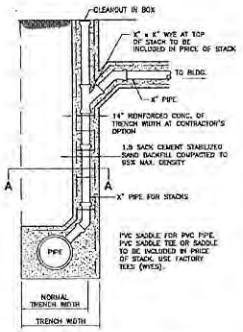

SANITARY SEWER MANHOLE 4'-0" DIA

N.T.S.




SECTION "A-A"

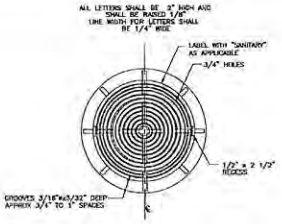
N.T.S.




SANITARY SEWER STACK FOR BUILDING CONNECTIONS

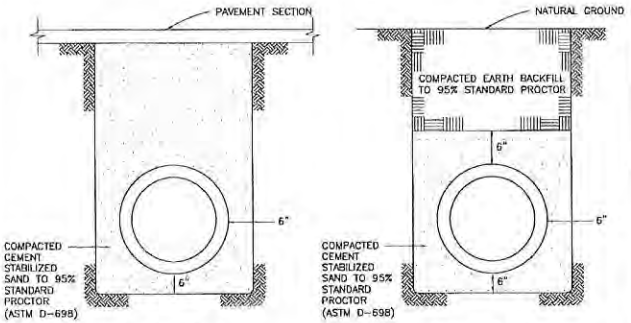
N.T.S.

APPROVED: _____ 7/19/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE




SANITARY SEWER MANHOLE COVER

N.T.S.

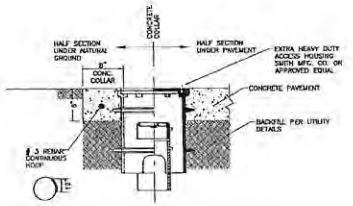



BEDDING AND BACKFILL UNDER PROPOSED PAVING

BEDDING AND BACKFILL UNDER UNPAVED AREA

SANITARY SEWER TRENCH

N.T.S.




SANITARY SEWER CLEANOUT

N.T.S.

| Revision / Date |
|---|
| 1 03/10/16 Addendum 02 |
| 2 04/12/16 Post-Bid Addendum |
| 3 05/11/16 Addendum 04 Cost Summary/ Addendum 03 Comment Responses |
| 4 06/21/16 Fort Bend County Drainage District Comment Responses |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

PERRY A. SPARKS, INC. F-6950
STATE OF TEXAS
FRANK E. SPARKS
REGISTERED PROFESSIONAL ENGINEER
05-24-16

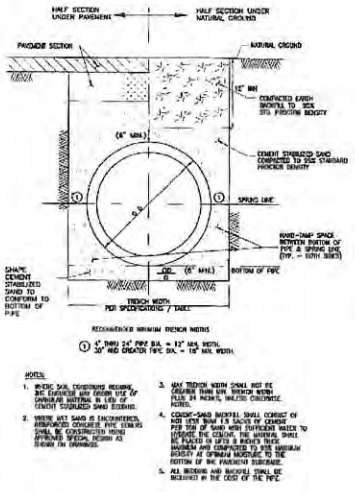
Huckabee

SANITARY SEWER DETAILS

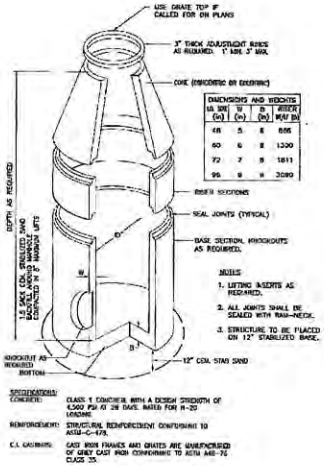
| Job. No. 482-0009 | Sheet No. |
|---|---|
| Drawn By: DSC | |
| Date: 5/24/16 | C10.2 |

Sheet 15 of 21

3 Jul 2016 5:05PM dgray
T:\Projects\DRDC_SA\Huckabee\482-0009-00 FBISD Elem SA\Civil\C10.3 Sanitary Sewer Details.dwg
Layout: Arch D - 1 Bldg

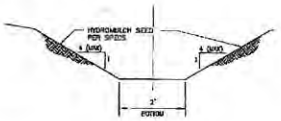



BEDDING FOR STORM SEWER
N.T.S.



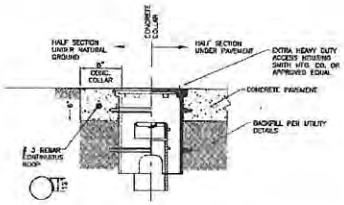

PRECAST CONCRETE STORM SEWER MANHOLE
N.T.S.

APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATION
DATE




TYPICAL SWALE

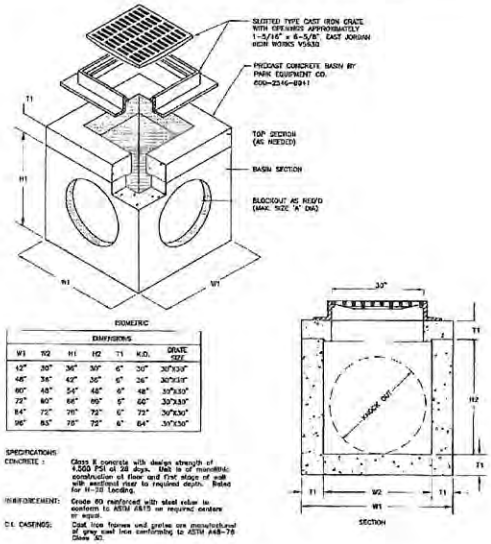
N.T.S.




STORM SEWER CLEANOUT
N.T.S.

| Revision | Date | |
|---|---|---|
| 1 | 03/10/16 | Addendum 02 |
| 2 | 04/12/16 | Post-Bid Addendum |
| 3 | 05/11/16 | Addendum 04 - Cost Savings/ Fort Bend County Comment Response |
| 4 | 08/31/16 | Fort Bend County Drainage District Comment Response |

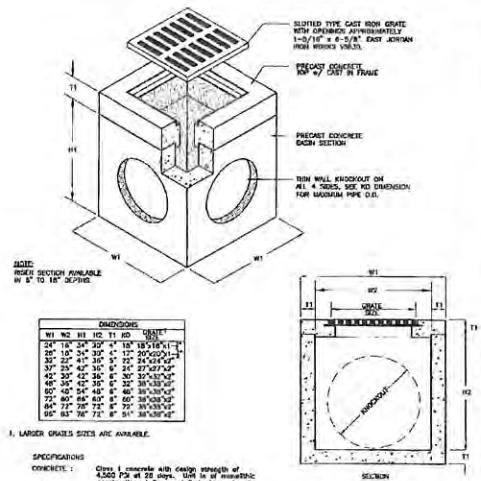
Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS




| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| W1 | W2 | H1 | H2 | T1 | K.O. | GRATE SIZE |
| 42" | 30" | 36" | 30" | 6" | 30" | 30"X30" |
| 48" | 36" | 42" | 36" | 6" | 36" | 30"X30" |
| 60" | 48" | 54" | 48" | 6" | 48" | 30"X30" |
| 72" | 60" | 66" | 60" | 6" | 60" | 30"X30" |
| 84" | 72" | 78" | 72" | 6" | 72" | 30"X30" |
| 96" | 83" | 78" | 72" | 6" | 84" | 30"X30" |

SPECIFICATIONS
CONCRETE : Class B concrete with design strength of 4,500 PSI at 28 days. Used in all monolithic construction at floor and first stage of wall with sectional pour to required depth. Rated for H-20 loading.
REINFORCEMENT: Grade 60 reinforced with steel rebar in conform to ASTM A615 or required centers or equal.
C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

GRATE INLET IN PAVEMENT
N.T.S.

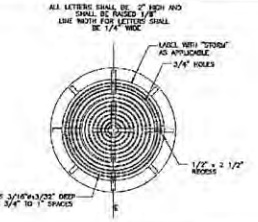



| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| W1 | W2 | H1 | H2 | T1 | KO | GRATE* SIZE |
| 24" | 18" | 24" | 20" | 4" | 18" | 18"X18"(1) |
| 30" | 19" | 34" | 30" | 4" | 12" | 20"X20"(1) |
| 30" | 22" | 41" | 36" | 5" | 25" | 24"X24"(1) |
| 30" | 25" | 42" | 36" | 6" | 24" | 27"X27"(2) |
| 42" | 30" | 42" | 36" | 6" | 30" | 30"X30"(2) |
| 48" | 36" | 42" | 36" | 6" | 36" | 30"X30"(2) |
| 60" | 48" | 54" | 48" | 6" | 48" | 30"X30"(2) |
| 72" | 60" | 66" | 60" | 6" | 60" | 30"X30"(2) |
| 84" | 72" | 78" | 72" | 6" | 72" | 30"X30"(2) |
| 96" | 83" | 78" | 72" | 6" | 84" | 30"X30"(2) |

1. LARGER GRATES SIZES ARE AVAILABLE.

SPECIFICATIONS
CONCRETE : Class I concrete with design strength of 4,500 PSI at 28 days. Used in all monolithic construction at floor and first stage of wall with sectional pour to required depth. Rated for H-20 Loading.
REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 or required centers or equal.
C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

GRATE INLET IN GRASS/LANDSCAPED AREAS
N.T.S.




STORM SEWER MANHOLE COVER
N.T.S.

EAST JORDAN IRON WORKS V5630 GRATE TOP
N.T.S.

BROOKS & SPARKS, INC. F-950
FRANK E. BROOKS
REGISTERED PROFESSIONAL ENGINEER
07-29-16

Huckabee

STORM SEWER DETAILS

| Job No. | Sheet No. |
|---|---|
| 482-0009 | C10.3 |
| Drawn By: JGC | |
| Date: 5/24/16 | |

Sheet 18 of 33

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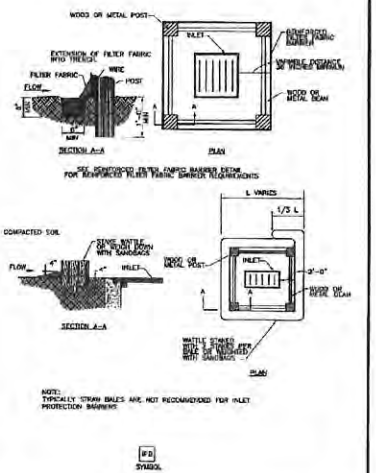
Includes Xref(s) X-TB.dwg

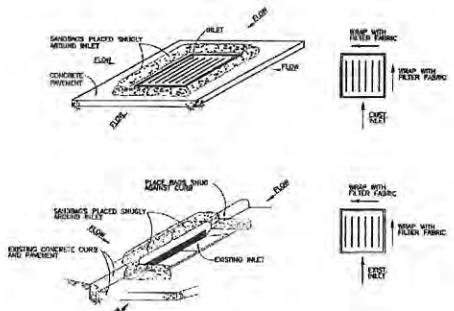



NOTE:
TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS

IPD
SYMBOL

## INLET PROTECTION BARRIERS FOR STAGE I INLETS

N.T.S.




GENERAL NOTES:

1. BAGS OR ROLLS CAN BE USED FOR THIS APPLICATION.
2. PREMADE WOVEN OR LIGHTWEIGHT CONCRETE FILTER FABRIC FOR BAGS.
3. FABRIC COARSE BURLAP AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF SOLAR, WIND, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SUCH AS OIL, ASPHALT, TAR, CLAY, LYING DIRT, DIRT OR PLANT MATERIALS, OR ORGANIC AND HARMFUL MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

IPSD
STAGE II
SYMBOL

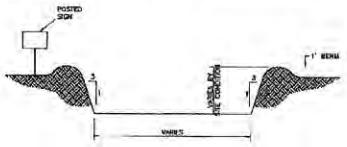
## INLET PROTECTION BARRIERS FOR STAGE II INLETS

N.T.S.

APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION AND SUBMISSION OF ALL APPLICABLE STATE AND FEDERAL FORMS REQUIRED FOR STORM WATER POLLUTION PREVENTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, IMPLEMENTATION, MAINTENANCE, AND INSPECTION OF STORM WATER POLLUTION PREVENTION CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, EROSION AND SEDIMENT CONTROLS, STORM WATER MANAGEMENT PLANS, WASTE COLLECTION AND DISPOSAL, OFF-SITE VEHICLE TRACKING, AND OTHER PRACTICES.
2. CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL ADDITIONAL STORM WATER POLLUTION PREVENTION AND STORM WATER CONTROL MEASURES AND SUBMITTALS TO ALL GOVERNING AGENCIES INCLUDING THE EPA REQUIRED DURING CONSTRUCTION TO MEET THE GUIDELINES SET FORTH IN THE STORM WATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES PREPARED BY THE CITY OF HOUSTON, HARRIS COUNTY AND HARRIS COUNTY FLOOD CONTROL DISTRICT, LATEST EDITION.



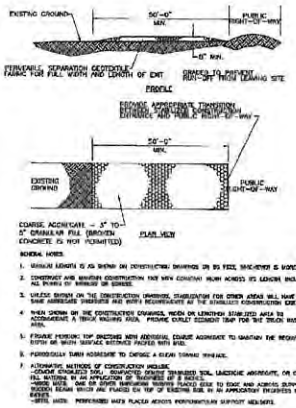

GENERAL NOTES:

1. POST A SIGN READING "CONCRETE WASH OUT ONLY" NEXT TO THE PIT.
2. VISUALLY INSPECT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WHERE ONCE THERE TRUCKS IN THE PIT AND HOWMORE CLOSE.
3. UPON THE CONCRETE SETTING UP (CHANGE, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. WASTE MATERIAL SHALL NOT BE DISPOSED OF IN STORM SEWER SYSTEMS OR WATERWAYS. WASTE MATERIAL SHALL NOT BE BURIED ON SITE. WASTE CONCRETE SHALL NOT BE PLACED WITH CLEAN FILL MATERIAL AND CONSTRUCTED AS FILL-DIRT EMBANKMENT, BUT AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASH OUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SURFACE WATER OR WATERWAYS.
5. CONTRACTOR ENTRY ROAD AND BOTTOM OF WASH OUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS AND EQUIPMENT.

CTW
SYMBOL

## CONCRETE TRUCK WASH OUT AREA

N.T.S.



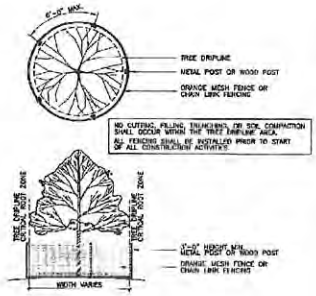

GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT ANY ADDITIONAL CONSTRUCTION THAT MAY CONSTRUCT FLOW ACROSS ITS LENGTH INCLUDING ALL POINTS OF ENTRANCE OR EXPRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH RECOMMENDED AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING RACK. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. ENSURE PERMANENT TOP DRESSING WITH APPROVED COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OF THICK SURFACE DISTANCE PROVED WITH USE.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN TURNING SURFACE.
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE:
   - WOVEN GEOTEXTILE FABRIC PLACED OVER COMPACTED SOIL, LANDSCAPE AGGREGATE, OR OTHER SUITABLE STABILIZING APPLICATION TO A DEPTH OF 8 INCHES.
   - TIRE MATS – ONE OR OTHER SUBSTANTIAL WOODEN PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS SPACED AND PLACED ON TOP OF EXISTING SOIL IN AN APPROPRIATE THICKNESS OF 6 INCHES.
   - METAL MATS – PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

SC-1

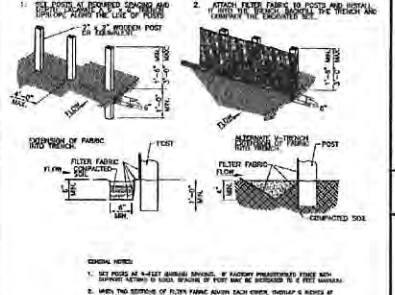
## STABILIZED CONSTRUCTION ACCESS

N.T.S.




## TREE PROTECTION DETAIL

N.T.S.




GENERAL NOTES:

1. SET POSTS AT 6'-0" (MAXIMUM) SPACING, OR FACTORY PRESCRIBED FENCE WITH SUPPORT METHOD TO HOLD SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POSTS, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REINFORCE EXTREME SUPPORTS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

SF
SYMBOL

## FILTER FABRIC FENCE

N.T.S.

| Revision / Date | |
|---|---|
| 1. 03/10/16 | Addendum 02 |
| 2. 04/12/16 | Post-Bid Addendum |
| 3. 05/11/16 | Architect Civil Engineer Structural / Fort Bend County Comment Response |
| 4. 06/21/16 | Fort Bend County Drainage District Comment Response |

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & STAHL, INC. F-3284
FRANK E. BROOKS 43221 REGISTERED PROFESSIONAL ENGINEER
07-29-16

Huckabee

SWPPP DETAILS

| | |
|---|---|
| Job No. 1612-0009 | Sheet No. C10.4 |
| Drawn By DSC | |
| Date 5/24/16 | |

Sheet 30 of 31

13 Jul 2016 3:08PM tgray
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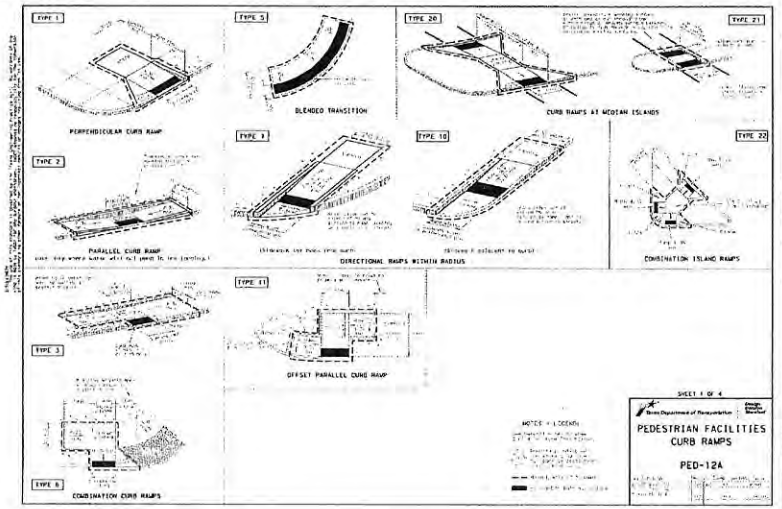
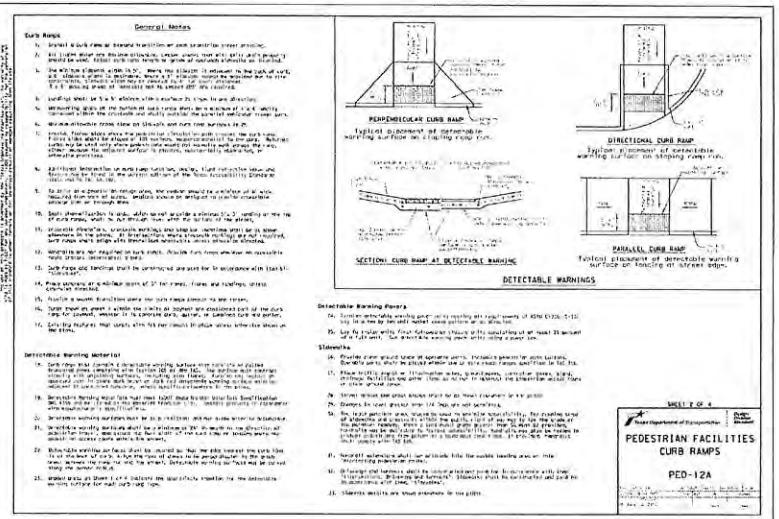
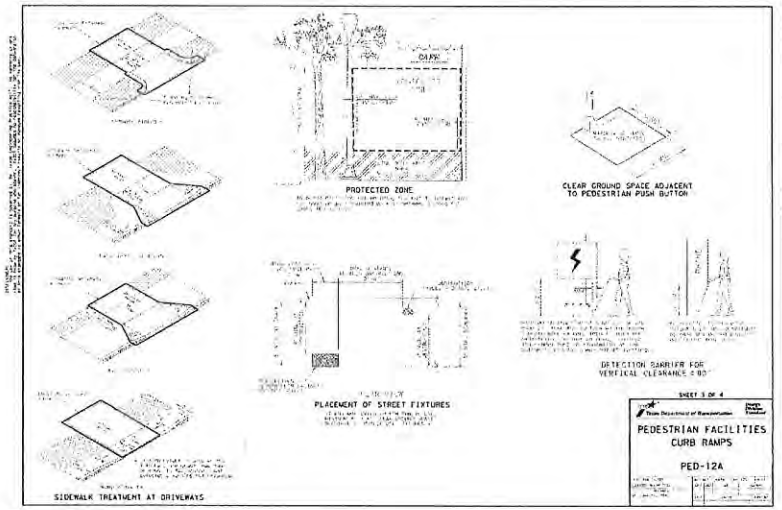
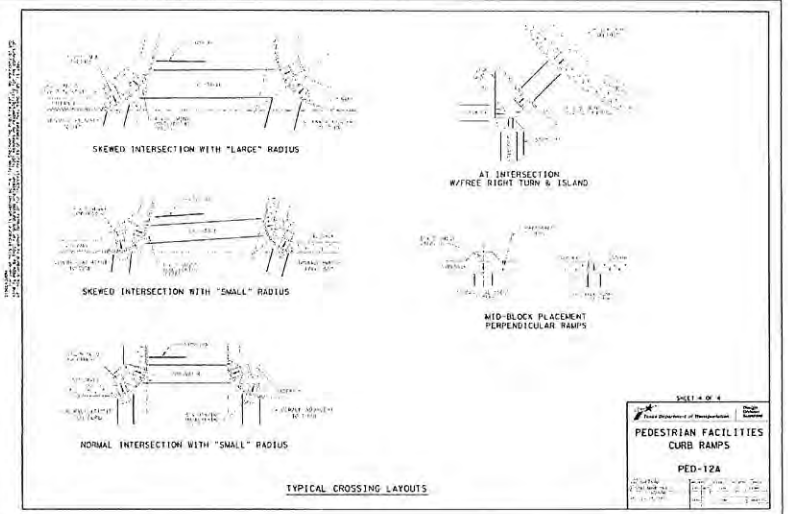
Xrefs: PATIO | JTB.dwg

APPROVED: _____ 7/29/16
FORT BEND COUNTY DEVELOPMENT COORDINATOR — DATE




| Revision | Date |
|---|---|
| 1 | 03/10/16 |
| 2 | 04/15/16 |
| 3 | 05/11/16 |
| 4 | 06/21/16 |

Addendum 02
Addendum 03
Addendum 04 – Cost Savings/
Fort Bend County Comment Response
Fort Bend County Drainage District Comment Response

Project:
GRAND VISTA ELEMENTARY SCHOOL
FOR
FORT BEND ISD
RICHMOND, TEXAS

BROOKS & SPARKS, INC.
F-3900
STATE OF TEXAS
FRANK E. BROOKS
REGISTERED
PROFESSIONAL
ENGINEER
05-24-16

Huckabee

TXDOT PED 12A DETAILS

Job. No. 482-0009
Sheet No. C10.5
Drawn By: JSC
Date: 5/24/16

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