REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 9th day of August, 2016, Commissioners Court came on to be heard and reviewed the accompanying notice
of Lischka Utilities LLC
Job Location 8600 Grand Mission Blvd, Richmond, TX 77407
Date 7/29/2016 Bond No. LPM9210953, Permit No. 2016-8626 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 Charles O. D
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

Johnny Ortega
Permit Administrator

Phone: (281) 633-7500

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

Permit No. 2016-8626

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: LPM9210953

Amount: $5,000.00

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.

Johny Ortega CFM

Johnny Ortega CFM/Permit Administrator

7/29/2016

Date

Grand Vista Section 16 (PO 26034) and obo FBCMUD No. 30

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

AUTHORIZED

BOND NO LPM9210953

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND §

THAT WE, Lischka Utilities, LLC **whose address is** P.O Box 853, Bellville **Texas, hereinafter called the Principal, And** Fidelity and Deposit Company of Maryland **, a Corporation existing under and by virtue of the laws of the state of** MD **and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at** 1400 American Lane, Tower I, 18th Floor , Schaumburg, IL 60196-1056 **, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought whining said state is** Tracey Lee Haley **and Whose address is** 15303 Dallas Parkway;Suite 800; Addison TX 75001 **, 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** Five Thousand Dollars and 00/100 **Dollars ($**5,000.00 **) 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** July **,** 2016 **.**

Lischka Utilities, LLC
PRINCIPAL

BY

Fidelity and Deposit Company of Maryland
SURETY

Denise Baker
BY Denise Raker , Attorney-in-Fact

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **GERALD F. HALEY, Vice President,** in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Larry H. SENKEL, Laura E. SUDDUTH, Jo Ann PARKER, Denise RAKER and David S.J. WIGHTMAN, all of Houston, Texas, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings, EXCEPT bonds on behalf of Independent Executors, Community Survivors and Community Guardians.** and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 24th day of March, A.D. 2016.

ATTEST:

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: _____

Secretary
Michael McKibben

_____

Vice President
Gerald F. Haley

State of Maryland
County of Baltimore

On this 24th day of March, A.D. 2016, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **GERALD F. HALEY, Vice President, and MICHAEL MCKIBBEN, Secretary,** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

_____

Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019

POA-F 168-7051A

Disclosure Statement

NOTICE OF DISCLOSURE FOR AGENT & BROKER COMPENSATION

If you want to learn more about the compensation Zurich pays agents and brokers visit:

http://www.zurichnaproducercompensation.com

or call the following toll-free number: (866) 903-1192.

This Notice is provided on behalf of Zurich American Insurance Company

and its underwriting subsidiaries.

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify of revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 25th day of July, 20 16.

Michael Bond, Vice President

ZURICH

Texas Important Notice

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Zurich North America's toll-free telephone number for information or to make a complaint at:

1-800-382-2150

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

1-800-252-3439

You may write the Texas Department of Insurance:
P.O. Box 149104
Austin, TX 78714-9104
Fax: (512) 490-1007
Web: www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIM DISPUTES:

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

ATTACH THIS NOTICE TO YOUR POLICY:

This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener información o para presentar una queja:

Usted puede llamar al número de teléfono gratuito de Zurich North America's para obtener información o para presentar una queja al:

1-800-382-2150

Usted puede comunicarse con el Departamento de Seguros de Texas para obtener información sobre compañías, coberturas, derechos, o quejas al:

1-800-252-3439

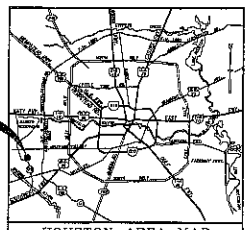
Usted puede escribir al Departamento de Seguros de Texas a:
P.O. Box 149104
Austin, TX 78714-9104
Fax: (512) 490-1007
Sitio web: www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS POR PRIMAS DE SEGUROS O RECLAMACIONES:

Si tiene una disputa relacionada con su prima de seguro o con una reclamación, usted debe comunicarse con la compañía primero. Si la disputa no es resuelta, usted puede comunicarse con el Departamento de Seguros de Texas.

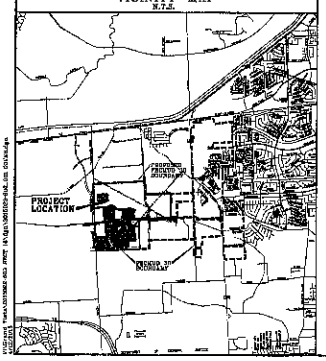
ADJUNTE ESTE AVISO A SU PÓLIZA: Este aviso es solamente para propósitos informativos y no se convierte en parte o en condición del documento adjunto.

CONSTRUCTION PLANS
FOR
WATER, SEWER, FORCE MAIN, DRAINAGE AND PAVING IMPROVEMENTS
FOR
GRAND VISTA SECTION 16
WITHIN
FORT BEND COUNTY M.U.D. No. 30
FORT BEND COUNTY, TEXAS



HOUSTON AREA MAP
N.T.S.

MAP REF: F.B.C. KEY MAP 526 U, 526 R, ZIP CODE 77407
VICINITY MAP
N.T.S.



NOTE:
FLOOD INSURANCE RATE MAP: FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS.
PANEL 140 OF 425
MAP NO.: 48157C0140L
MAP REVISED: APRIL 2, 2014
THIS PROJECT IS LOCATED IN ZONE X, OUTSIDE THE 500-YEAR FLOOD PLAIN.

NOTES:
1. ALL BEARINGS ARE BASED ON THE TEXAS STATE PLANE COORDINATE GRID SYSTEM, SOUTH CENTRAL ZONE.
2. PRIOR TO THE CONSTRUCTION OF THESE FACILITIES WITHIN OR BY THE DISTRICT, THE DISTRICT OR ITS ENGINEER WILL GIVE WRITTEN NOTICE BY REGISTERED OR CERTIFIED MAIL TO THE DIRECTOR OF PUBLIC WORKS AND ENGINEERING, CITY OF HOUSTON, STATING THE DATE SUCH CONSTRUCTION WILL COMMENCE.
3. CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OFFICE OF THE CITY ENGINEER, 48 HOURS BEFORE STARTING WORK ON THIS PROJECT, PHONE NO. 832-394-9088.
4. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY 48 HOURS BEFORE STARTING WORK AT CONSTRUCTION@FORTBENDTX.GOV.

INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
1.	COVER SHEET
2.	CONSTRUCTION NOTES
3.	WATER AND SANITARY LAYOUT
4.	PAVING AND DRAINAGE LAYOUT
5.	DRAINAGE CALCULATIONS
5A.	F.M.E. STORM CALCULATIONS
6.	PAVEMENT MARKING AND SIGNAGE LAYOUT
7.	TRAFFIC CONTROL PLAN PHASE I
7A.	TRAFFIC CONTROL PLAN PHASE II
8.	OVERALL SANITARY SEWER LAYOUT
	PLAN AND PROFILE
9.	SUMMER CREAK CROSSING AND WHITEHAVEN BEND LANE STA. 0+00 TO STA. 5+00
10.	WHITEHAVEN BEND LANE STA. 5+00.00 TO STA. 9+54.18 AND PERALTA VALLEY COURT STA. 0+54.18 TO 15+58.74
11.	ARDENTOWN KNOLL TRACE STA. 0+00.00 TO STA. 7+65.19 AND FAIRFIELD MANOR WAY STA. 7+25.18 TO STA. 9+00.33
12.	MANSFIELD MANOR WAY STA. 0+00.00 TO STA. 15+85.33 AND 50' STA TO GRAND VISTA LANES OUTFALL
13.	IRIS CHASE TRAIL STA. 0+00.00 TO STA. 2+43.33, 24" STORM SEWER AND MAGNOLIA WAY CROSS
14.	GRAND VISTA LANES DRIVE STA. 2+00.77 TO STA. 8+01.46
15.	GRAND MANOR BOULEVARD LEFT TURN LANE
	MISCELLANEOUS
16.	DRAINAGE DETAILS
17.	CATCH DETAILS
18.	MANOR MAIN DETAILS
19.	MANOR AND FORT BEND COUNTY RESIDENTIAL DRIVEWAY DETAILS
20.	MATCHLINE DETAILS
21.	SANITARY SEWER DETAILS
22.	*TYPICAL RESIDENTIAL CONCRETE CURB RAMPS (PED-12A)
23.	*TYPICAL STANDARD PAVEMENT MARKINGS
24.	POLLUTION PREVENTION PLAN
24.	POLLUTION PREVENTION DETAILS
25.	FAIRFIELD MANOR WAY JUNCTION BOX 10011 DETAIL
26.	AT STA. 7+00.85, 24.39' LT GRAND VISTA LANES DRIVE JUNCTION BOX 10023 DETAIL
27.	AT STA. 0+57.18, 25.00' LT JUNCTION BOX DETAILS
28.	LOT GRADING LAYOUT
29.	PLAT

JOB No.: 2016022-000-691,691 APRIL 2016

THE STANDARD SHEET SPECIFICALLY IDENTIFIED BY A TBPE HAS BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.
650 STATEWIDE TxDOT STANDARD
DEBORAH P. SHERWOOD P.E. 91005 — DATE 4/21/16

811 Know what's below. Call before you dig.

TLMS NO. 15100000
LOG NO. 15-1706

FORT BEND COUNTY ENGINEER
SIGNATURE: for Richard V. Stavinoha P.E.
DATE: 5/24/16
THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED ON ONE (1) YEAR FROM DATE OF APPROVAL
APPROVED: Development Coordinator
DATE: 5/24/16

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

Costello
SURVEYED BY: COSTELLO, INC.
FB NO.:

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
WATER: 04-14-16 — WATER & WASTEWATER
WASTEWATER: 4/21/16 — STORM WATER QUALITY
STORM: 4/21/16 — PAVING / TRAFFIC
SHEET & GRADE: 4-14-16
CITY ENGINEER
FOR CITY OF HOUSTON USE ONLY
CITY CWO NO.:
DIRECTOR OF PUBLIC WORKS AND ENGINEERING
55895

SHEET No: 1 OF 29

GRAND VISTA SECTION 16 - JOB NO.2016022-000-691,691

F.B.C.M.U.D. No. 30

GENERAL CONSTRUCTION NOTES

1 WATER LINES, WASTEWATER COLLECTION SYSTEMS AND DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S LATEST EDITION OF "STANDARD CONSTRUCTION SPECIFICATIONS" , AND "STANDARD NOTIFICATION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING" WITH ALL SUBSEQUENT AMENDMENTS ADOPTED UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN MUST COMPLY WITH THE MINIMUM STANDARDS CONTAINED IN THE LATEST EDITION OF "INFRASTRUCTURE DESIGN MANUAL", NOTE THAT PLAN SIGNATURES EXPIRE AFTER 1 YEAR AND THE LATEST EDITIONS OF DESIGN RULES, SPECIFICATIONS & MANUALS SHALL GOVERN AS OF THE DATE OF REVISIONS.

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

3 THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS UNLESS SPECIFICALLY ESTABLISHED IN THE CONTRACT DOCUMENTS. ALL OTHER IMPROVEMENTS REQUIRED FOR COMPLETION AND ACCEPTANCE OF THE W.S.D. AND PAVING CONTRACTS SHALL BE CONSIDERED INCIDENTAL TO EACH PROJECT UNLESS THE CONTRACTOR NOTIFIES THE ENGINEER IN WRITING PRIOR TO EXECUTING THE CONTRACT.

4 CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT TWENTY-FOUR (24) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION VIA EMAIL AT CONSTRUCTIONNOTIFICATION@FTC.GOV AND ANSWER NOTIFICATION FORTY-EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.

5 CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY "REGULATIONS OF FORT BEND COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION. NOTIFY@FORTBENDCOUNTYTX.GOV.

6 CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY FORT BEND COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR DRIVEWAYS WITHIN COUNTY ROAD RIGHT-OF-WAY.

7 CONTRACTOR SHALL GIVE ENGINEER FIVE (5) WORKING DAYS NOTICE FOR CONSTRUCTION CONTROL STAKING, AND FORTY-EIGHT (48) HOURS NOTICE IN ADVANCE OF BEGINNING CONSTRUCTION.

8 ALL UNSATISFACTORY AND/OR WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE, AND DEBRIS SHALL BE HAULED OFF SITE BY THE CONTRACTOR. INCLUDE COST OF THIS WORK, INCLUDING HAUL, IN OTHER ITEMS OF THIS PROJECT.

9 CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES.

10 CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. CONTRACTOR SHALL NOTIFY UTILITY COMPANIES 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTACT 811.

11 CONTRACTOR SHALL CONFINE ALL WORK EFFORTS WITHIN THE DESIGNATED AREA UNLESS SPECIFICALLY AUTHORIZED BY THE OWNER. EXTREME CARE SHOULD BE EXERCISED NEAR ADJACENT PROPERTY TO PROTECT EXISTING TREES, FENCES, LANDSCAPING AND OTHER EXISTING FEATURES.

12 ALL EXISTING LANDSCAPING, SIDEWALKS, FENCES, UTILITIES AND OTHER EXISTING FACILITIES DAMAGED DURING CONSTRUCTION WILL BE REPLACED OR REPAIRED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR AT HIS EXPENSE.

13 ALL CONSTRUCTION WHICH HINDERS TRAFFIC OR REQUIRES TRAFFIC DIVERSIONS SHALL BE IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

14 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PURCHASING ANY WATER NEEDED FOR CONSTRUCTION OR TESTING. THE PURCHASE OF WATER FOR CONSTRUCTION OR TESTING WILL BE CONSIDERED INCIDENTAL TO THE VARIOUS OTHER ITEMS OF WORK.

15 ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE COUNTY OF FORT BEND, THE CITY OF HOUSTON, THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, THE ENGINEER, AND THE OWNER.

16 ALL FINAL SANITARY MANHOLE RIM ELEVATIONS ARE TO BE SET AT 0.5-FOOT ABOVE FINISHED GRADE. ALL STORM MANHOLE RIM ELEVATIONS SHALL BE SET AT 0.10-FEET ABOVE FINISH GRADE, EXCEPT THOSE WITHIN PAVEMENT. ALL EXISTING MANHOLES WITHIN OR ADJACENT TO THE PROJECT ARE TO BE ADJUSTED TO 0.5-FEET ABOVE FINISHED GRADE AFTER FINAL GRADING IS COMPLETE. IF THIS NOTE CONFLICTS WITH THE ELEVATIONS ON NOTES ON THE PLANS, THIS NOTE SHALL GOVERN (NO SEPARATE PAY).

17 MAINTAIN A MINIMUM OF 12" CLEARANCE BETWEEN ALL UTILITIES, EXCEPT 24" CLEARANCE FOR SANITARY SEWER CROSSING OVER WATERLINE.

18 INCLUDE PRICE OF ALL BEDDING AND BACKFILL REQUIRED FOR WATERLINES, SANITARY SEWERS, AND STORM SEWERS IN PRICE BID PER LINEAR FOOT OF PIPE.

19 ALIGNMENT, CENTERLINE CURVE DATA, AND STATIONING FOR ALL STREETS AND BASE LOT EASEMENTS TO BE VERIFIED BY CONTRACTOR FROM APPROVED SUBDIVISION PLAT.

20 FLOW LINE ELEVATIONS AT MANHOLES ARE BASED ON DISTANCE BETWEEN MANHOLES AND NOT CENTERLINE RIGHT-OF-WAY STATIONING.

21 UPON PROJECT COMPLETION AND PRIOR TO FINAL RELEASE OF RETAINAGE, CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF "PROJECT'S RECORD DOCUMENTS" THE CONTRACT AS THEY RELATE TO THE RESPECTIVE CONTRACTOR (NO SEPARATE PAY).

GENERAL CONSTRUCTION NOTES (CONT.)

22 DELIVERY TICKETS FOR ALL MATERIALS (E.G. CONCRETE, CEMENT STABILIZED SAND, ETC.) SHALL BE MAINTAINED BY THE CONTRACTOR AND UPON REQUEST, BE MADE AVAILABLE FOR REVIEW BY THE ENGINEER OR THE OWNER.

23 PRIOR TO FINAL RELEASE OF RETAINAGE, THE CONTRACTOR SHALL PROVIDE A NOTARIZED CERTIFICATION THAT ALL MATERIALS INSTALLED IN THE PROJECT ARE COMPLETE IN PLACE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.

24 ALL WATER, SANITARY AND STORM SEWER STUBS ARE TO BE MARKED WITH FOUR (4) FOOT LONG 2" P.V.C. MARKERS WITH A MINIMUM OF TWO (2) FEET EXPOSED. MARKERS ARE TO BE CAPPED.

25 6" PVC IRRIGATION SLEEVES ARE TO BE 3-FEET BELOW SUBGRADE. BACKFILLED WITH CEMENT-STABILIZED SAND AND MARKED BY TURNING UP A 90° BEND, EXPOSED 3" ABOVE FINISHED GRADE AND CAPPED.

26 ALL FILL AREAS SHALL BE PROOF ROLLED AND BE PLACED IN MAXIMUM 8-INCH LIFTS AND COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY AT +/-2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT.

27 OWNER WILL PROVIDE CONTROL STAKING ONLY. CONTRACTOR TO BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING SUPERVISED BY A LICENSED SURVEYOR IN THE STATE OF TEXAS. SURVEYOR MUST CHECK GRADE AND OFFSETS DIAGRAMS. INCLUDE THE COST FOR CONSTRUCTION STAKING IN THE BASE BID (NO SEPARATE PAY).

28 UTILITY CONTRACTOR SHALL HAUL, SPREAD AND COMPACT UTILITY SPOIL AS DIRECTED BY THE ENGINEER.

29 ALL TRENCHES LOCATED WITHIN 5' OF BACK OF CURB SHALL BE BACKFILLED WITH 2 SACK CEMENT STABILIZED SAND PER TCP TO THE BOTTOM OF PAVEMENT SUBGRADE.

30 THESE PLANS, PREPARED BY COSTELLO, INC., DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR SUBCONTRACTORS IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE LICENSED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING THE PLANS AND SPECIFICATIONS REQUIRED BY THE HOUSE BILLS 450 AND 998 ENACTED BY THE TEXAS LEGISLATURE AS WELL AS THE LEGISLATURE REGULAR SESSION AND CURRENT OSHA STANDARDS FOR TRENCH SAFETY. DESIGN OF TRENCH SAFETY SYSTEMS, SEALED BY A LICENSED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO EXECUTION OF A CONTRACT FOR THIS WORK.

WATER MAIN AND RECLAIMED WATER LINE CONSTRUCTION NOTES

1 ALL POTABLE WATER LINES, AFTER INSTALLATION, SHALL BE THOROUGHLY DISINFECTED ACCORDING TO A.W.W.A STANDARDS C-651 AND THEN FLUSHED BEFORE BEING PLACED INTO SERVICE. WATER SAMPLES SHALL BE COLLECTED FOR BACTERIOLOGIC ANALYSIS; A MINIMUM OF ONE (1) SAMPLE PER EVERY 1000' OF LINE; AND LINES WILL NOT BE ACCEPTED FOR SERVICE UNTIL WATER SAMPLES MEET THE REQUIREMENTS OF THE TEXAS DEPARTMENT OF HEALTH.

2 ALL WATER AND RECLAIMED WATER LINES 4" TO 16" SHALL BE POLYVINYL CHLORIDE (P.V.C.) CONFORMING TO A.W.W.A. STANDARDS C-900-DOT 36 AS CURRENTLY REVISED. ALSO THE RECLAIMED WATER LINE SHALL BE PURPLE PVC CONSTRUCTED WITH GREEN AND SILVER METAL TAPE 2" WIDE THE TOP OF PIPE STRIP NEXT TO ONE OTHER LINE. ALL HYDROSTATIC WATER TESTS SHALL CONFORM TO A.W.W.A. C-600 IN ACCORDANCE WITH D.D.S. REGULATIONS. PRESSURE TESTS FOR ALL WATER MAINS SHALL BE AT 150PSI FOR A DURATION OF 2 HOURS.

3 MAINTAIN MINIMUM NINE (9) FOOT HORIZONTAL CLEARANCE BETWEEN OUTSIDE OF SANITARY SEWER MANHOLES AND WATER LINE. MAINTAIN MINIMUM ONE (1) FOOT HORIZONTAL CLEARANCE BETWEEN OUTSIDE OF SANITARY SEWER MANHOLES AND RECLAIMED WATER LINES. MAINTAIN MINIMUM (9) FOOT HORIZONTAL CLEARANCE BETWEEN RECLAIMED WATER LINE AND POTABLE WATER LINE.

4 ALL WATER AND RECLAIMED WATER LINES SHALL BE BEDDED WITH SAND. WATER AND IRRIGATION LINES WITHIN SIDE LOT EASEMENTS SHALL BE BACKFILLED WITH SAND. NO SEPARATE PAY.

5 WATER AND RECLAIMED WATER LINE TRENCHES UNDER PAVEMENT OR WITHIN THREE (3) FEET OF BACK OF CURB SHALL BE BACKFILLED WITH 2 SACK CEMENT STABILIZED SAND PER TCP TO PAVEMENT SUBGRADE.

6 CHANGING OF FLOWING VALVES SHALL BE LOCATED 3'-0" FROM BACK OF CURB WITH THE BASE AT THE ELEVATION INDICATED ON THE DETAIL SHEET IS DRAWING NO. 02320-03.

7 PLUGS VALVES ARE TO HAVE A" MINIMUM RISE, BUT IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO ADJUST WATER FACILITIES TO OBTAIN PROPER VERTICAL LOCATION OF PLUGS VALVE IN RELATION TO THE TOP OF CURB AFTER PAVEMENT CONSTRUCTION. SEE DETAIL ON SHEET 50.

8 CONTRACTOR TO ALLOW A MINIMUM OF 12 INCHES CLEARANCE BETWEEN PROPOSED WATER AND RECLAIMED WATER LINES AND EXISTING AND PROPOSED UTILITIES.

9 ALL GATE VALVES ARE TO BE RESILIENT-SEATED GATE VALVES AS PER A.W.W.A. C-509.

10 WHENEVER POSSIBLE, ALL MAIN LINE GATE VALVES ARE TO BE LOCATED OPPOSITE PAVING CURB RETURNS AS INDICATED ON THE CONSTRUCTION PLANS.

11 4-INCH THROUGH 12-INCH WATER AND RECLAIMED WATER LINE FITTINGS SHALL BE DUCTILE IRON COMPANT FITTINGS AS PER A.W.W.A. C-153.

12 MINIMUM OF TWO JOINTS OF PIPE SHALL BE INSTALLED BETWEEN GATE VALVE AND PLUG ON DEAD-END LINES.

13 CONTRACTOR SHALL MINIMIZE DOWN TIME OF THE EXISTING WATER LINES WHEN MAKING ADJUSTMENTS AND TIES TO THE LINES.

14 ALL WATER MAIN SHUT-OFF VALVES ARE TO BE LOCATED AS INDICATED ON THE PLANS AT A LOT LINE AND 3-FEET OFF THE BACK OF CURB.

15 THE OPENING AND CLOSING OF ALL WATER AND IRRIGATION VALVES ON THE EXISTING SYSTEM SHALL BE PERFORMED BY THE DISTRICT OPERATOR ONLY. CONTACT MEMORIA MONDOCA WITH MUNICIPAL DISTRICT SERVICES AT 281-290-5653.

STORM SEWER CONSTRUCTION NOTES

1 STORM SEWERS SHALL BE REINFORCED CONCRETE PIPE (R-C-P), CLASS III AND SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS NOS. 02317-02, AND 02317-03 (DOT. 2002) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

2 ALL STORM SEWERS CONSTRUCTED IN STREET EASEMENT SHALL BE R.C.P. (C-76, CLASS III) AND SHALL BE BEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS.02317-02, AND 02317-03 AS APPLICABLE.

3 ALL SEWERS LOCATED PROPOSED ON FUTURE PAVEMENT AND TO A POINT THREE (3) FEET OUTSIDE OF THE FUTURE PAVEMENT SHALL BE BACKFILLED WITH 2 SACKS CEMENT STABILIZED SAND PER TCP TO SUBGRADE WITHIN THE 1-1/2 FOOT BEHIND SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.

4 ALL TRENCH BACKFILLS SHALL BE IN MAXIMUM 8" LIFTS, WITH TEST TAKEN AT 100 FOOT INTERVALS ON EACH LIFT AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM-D-698/AASHTO T99). ADJUST MOISTURE CONTENT OF MATERIAL 2% OPTIMUM MOISTURE CONTENT.

5 CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINTS CONFORMING TO ASTM D-443 AND ASTM C67 RESPECTIVELY.

6 ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 18" AND LARGER R.C.P.(C-76, CLASS III).

7 ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE SHOWN.

8 CONTRACTOR SHALL PROVIDE 12" MINIMUM CLEARANCE AT STORM SEWER AND WATER CROSSINGS.

9 ADJUST MANHOLE COVERS TO 0.5' ABOVE FINISHED GRADE CONFORMING TO DRAWING NO. 02317-01 "BOTTOM DOWN-ADJUSTING MANHOLES". DELETE ANY VALVE BOXES TO GRADE.

10 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF HIS WORK.

11 ALL DITCHES SHALL BE REGRADED TO PROPOSED ELEVATIONS TO ENSURE PROPER DRAINAGE. ALL DITCHES SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.

12 ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING OUTS INLET STRUCTURES.

13 ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE CONTROL AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE FINAL DRAFT OF STORMWATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY FORT BEND/HGAC, AND THE CITY OF HOUSTON ALL IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.

14 EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO FORT BEND COUNTY STANDARDS.

15 CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.

16 STATIONING FOR TYPE "C" INLETS IS AT THE CENTERLINE OF THE MANHOLE FARTHER OF THE INLET.

17 BEDDING AND BACKFILL AS TO BE CONSIDERED SUBSIDIARY TO PAY ITEMS FOR PIPE AND INLETS AND SHALL NOT BE PAID FOR DIRECTLY. BACK SAND BACKFILL SHALL BE USED FOR ALL STORM SEWER LOCATED IN SIDELOT EASEMENTS. MINIMUM 20' EASEMENTS SHALL BE OPEN.

18 ALL STORM SEWER MANHOLES SHALL BE STANDARD TYPE "C" UNLESS OTHERWISE NOTED.

SANITARY SEWER CONSTRUCTION NOTES

1 ALL SANITARY SEWERS SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH CITY OF HOUSTON DESIGN MANUAL, SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING STANDARD CONSTRUCTION SPECIFICATIONS, AND THE LATEST EDITION OF THE STANDARD CONSTRUCTION NOTIFICATION DETAILS FOR WATER LINES, STORM DRAINAGE AND STREET PAVING. A MANDREL TEST WILL BE REQUIRED. 3% MAXIMUM DEFLECTION.

2 ALL SANITARY SEWERS IN THIS PROJECT SHALL BE OF UNDER COLOR CONSTRUCTED OF PVC SDR 26 DESIGNATION CEMS OF AS NOTED ON THE PLANS. ALL JOINTS SHALL CONFORM TO ASTM D-3212. JOINTS SHALL BE BELL AND SPIGOT TYPE WITH RUBBER RING GASKETS CONFORMING TO ASTM F-477. SOLVENT CEMENT PIPE JOINTS ARE NOT ACCEPTABLE. ALL SANITARY SEWER SERVICE LEADS TO BE CONSTRUCTED OF SDR 26 PPR 1600 PVC UNLESS OTHERWISE NOTED.

3 BEDDING AND BACKFILL SHALL BE CONSIDERED SUBSIDIARY TO PAY ITEMS FOR PIPE AND SHALL NOT BE PAID FOR DIRECTLY. ALL PIPES ARE TO BE BEDDED AS PER DRAWING NO. 02317-01 AND/OR DRAWING NO.02317-03.

4 ALL SANITARY SEWERS LOCATED OR WITHIN THREE (3) FEET OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 2 SACKS CEMENT STABILIZED SAND PER TCP TO PAVEMENT SUBGRADE.

5 NO STORM MANHOLES WILL BE ALLOWED ON SANITARY SEWERS.

6 SANITARY MANHOLE COVERS SHALL BE LABELED "SANITARY".

7 IN AREAS WHERE THE COVER BETWEEN THE TOP OF SANITARY SEWER PIPE AND EXISTING NATURAL GROUND IS LESS THAN 4 FEET, THE UTILITY CONTRACTOR SHALL PLACE ADDITIONAL COMPACTED SOIL OVER THE SANITARY SEWER AS REQUIRED TO PROVIDE A MINIMUM COVER OF 4 FEET.

8 AT ALL LOTS NOT ACCESSIBLE TO A MANHOLE, WHERE FLOW LINE IS GREATER THAN 5'-0" BELOW FINISHED GRADE, PROVIDE A 6" STANDARD SANITARY SEWER STUB. LOCATION TO BE MARKED AS PER GENERAL NOTE 24.

9 SANITARY SEWER MANHOLE RIM ELEVATIONS SHALL BE SET AT 0.5-FEET ABOVE FINISHED GRADE. IF THIS NOTE CONFLICTS WITH THE ELEVATION SHOWN ON THE PLANS, THIS NOTE SHALL GOVERN.

10 WHEN MAKING A TIE TO AN EXISTING SANITARY SEWER MANHOLE, THE UTILITY CONTRACTOR SHALL PLUG THE DOWNSTREAM END OF THE PROPOSED SANITARY LINE WITH A MATERIAL MEDIAN-FREE PLUG. THIS PLUG SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) IS OBTAINED. (NO SEPARATE PAY).

11 CITY OF HOUSTON SIGNATURES AFFIXED TO PLANS SHALL BE VALID FOR 1 YEAR ONLY AFTER THE DATE OF SAID SIGNATURES. ANY CHANGES MADE TO PLANS AFTER SAID DATE WILL REQUIRE REPLACEMENT AND OR UPDATE OF THE SIGNATURES ON THE PLANS. WHEN THE SIGNATURES ARE BEING UPDATED, DESIGN CHANGES MAY BE REQUIRED FOR ANY OBSOLETE ITEMS FOUND ON THE PLANS.

12 IN WET SAND AREAS USE SPECIAL BEDDING & MANHOLE SUPPORT AS PER CURRENT CITY OF HOUSTON DETAILS.

13 DUCTILE IRON PIPE SHALL BE LINED WITH 40 TO 50 MILS OF POLYETHYLENE OR CERAMIC EPOXY. THE EXTERIOR OF BURIED DUCTILE IRON PIPE AND FITTINGS SHALL HAVE A PRIME COAT AND OUTSIDE ASPHALTIC COATING CONFORMING TO AWWC AZT-104, AWWC AZ2-12, OR AWWC AZ1.81. PROVIDE MINIMUM OF TWO COMPLETE WRAPS OF 8-MILL-THICK POLYETHYLENE ENCASEMENT MATERIAL IN ACCORDANCE WITH AWWA C105.

PAVING CONSTRUCTION NOTES

1 PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL FORT BEND COUNTY RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE AND THE LATEST REVISIONS AND/OR AMENDMENTS OF SAME. ALL WORK DONE AND MATERIALS FURNISHED SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY FORT BEND COUNTY. THE OWNER'S FINAL ACCEPTANCE OF THE COMPLETE WORK SHALL BE CONTINGENT UPON FORT BEND COUNTY'S FORMAL ACCEPTANCE OF STREETS FOR COUNTY MAINTENANCE.

2 ALL ROAD WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN INDICATE BACK OF CURB. T/C INDICATES TOP OF CURB. T/P. INDICATES TOP OF PAVEMENT.

3 GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.

4 TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 80 FEET. IF THIS NOTE CONFLICTS WITH SPECIFICATIONS ON PAVING DETAILS ON SHEET 54, THIS NOTE SHALL GOVERN.

5 TOP 8" OF SUBGRADE TO BE SCARIFIED AND STABILIZED AS DETERMINED BY PLASTICITY OF SUBGRADE MATERIAL, AND COMPACTED TO A MINIMUM 95% OF MAXIMUM DENSITY AT +/- 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT.

6 ALL CURB JOINTS SHALL BE 25' AND 30' ON MAJOR THOROUGHFARES UNLESS OTHERWISE NOTED. MINIMUM SLOPE AROUND CURB RETURN IS 1.0%.

7 8-6 (-INCH PAVEMENT SHALL BE REINFORCED CONCRETE WITH NO. 4 BARS AT 60" O.C. IN TRANSVERSE DIRECTION, 108 BAR SPACING IN LONGITUDINAL DIRECTION. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS (6.5 SACKS OF CEMENT PER TON).

8 THE QUANTITY OF STREET CUT IN THE CONTRACT DOCUMENTS IS BASED UPON EXISTING TOPOGRAPHY PRIOR TO UTILITY CONSTRUCTION. THE PAVING CONTRACTOR SHALL INCLUDE ANY CONSIDERATIONS FOR UTILITY SPOIL AS INCIDENTAL TO OTHER ITEMS IN THIS PROJECT. THERE WILL BE NO SEPARATE PAYMENT FOR THE PAVING CONTRACTOR TO HANDLE UTILITY SPOIL ON SITE.

9 CROSS SLOPES FOR ROADWAY SECTIONS SHALL BE AS FOLLOWS:
A. LEFT TURN LANE AND/OR CROSSOVER AT ONE-EIGHTH INCH (1/8") PER FOOT.
B. INSIDE TRAFFIC LANES AND ONE-WAY AND MEDIANBOUTS AT ONE QUARTER INCH (1/4") PER FOOT.

10 CONTRACTOR TO CLEAN AND GRUB ALL FILL AREAS AND FOOT RAKE TO A MINIMUM DEPTH OF ONE FOOT BELOW NATURAL GRADE.

11 WHERE PROPOSED PAVEMENT ENDS AT A CONSTRUCTION JOINT, EXTEND BARS 15", COAT WITH ASPHALT AND WRAP WITH BUILDER'S PAPER AT EXPANSION JOINTS; EXTEND DOWELS 9" COAT AND WRAP AS CONSTRUCTION JOINT (NO SEPARATE PAY).

12 WHERE PROPOSED PAVEMENT MEETS EXISTING PAVEMENT, EXISTING REBAR OR DOWELS PROJECTING FROM PAVEMENT SHALL BE CLEANED AND TIED INTO PROPOSED PAVEMENT. WHERE EXISTING REINFORCING IS ABSENT, OR IS IN UNSATISFACTORY CONDITION, EXISTING PAVEMENT SHALL BE DRILLED AT 24-INCHES C-C, AND HORIZONTAL DOWELS WILL BE EMBEDDED 12-INCHES AND EPOXIED. DOWELS SHALL BE NO. 6 BARS, 36-INCHES LONG. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE VARIOUS OTHER ITEMS OF WORK.

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES ARE EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES MAY NOT BE SHOWN ON THESE DRAWINGS AS THE LINES ARE CLOSELY VISUAL. YOU MUST BOUND LOCATE THEM PRIOR TO DEPENDING ANY CONSTRUCTION ACTIVITY IN THE VICINITY TO AVOID POSSIBLE LOSS, SERIOUS INJURY OR DEATH IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES. SPECIFICALLY:

A. DO NOT OPERATE ANY VEHICLE OR EQUIPMENT ANY CLOSE WITHIN SIX (6) FEET OF ANY ELECTRICAL WIRE, CABLE, OR LINES; AND
B. OPERATION A CRANE, HOISTER, PUMPER SUCKER, DRILLING RIG, PILE DRIVER, SCAFFOLD EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LINE THAT YOU DO NOT OWN.

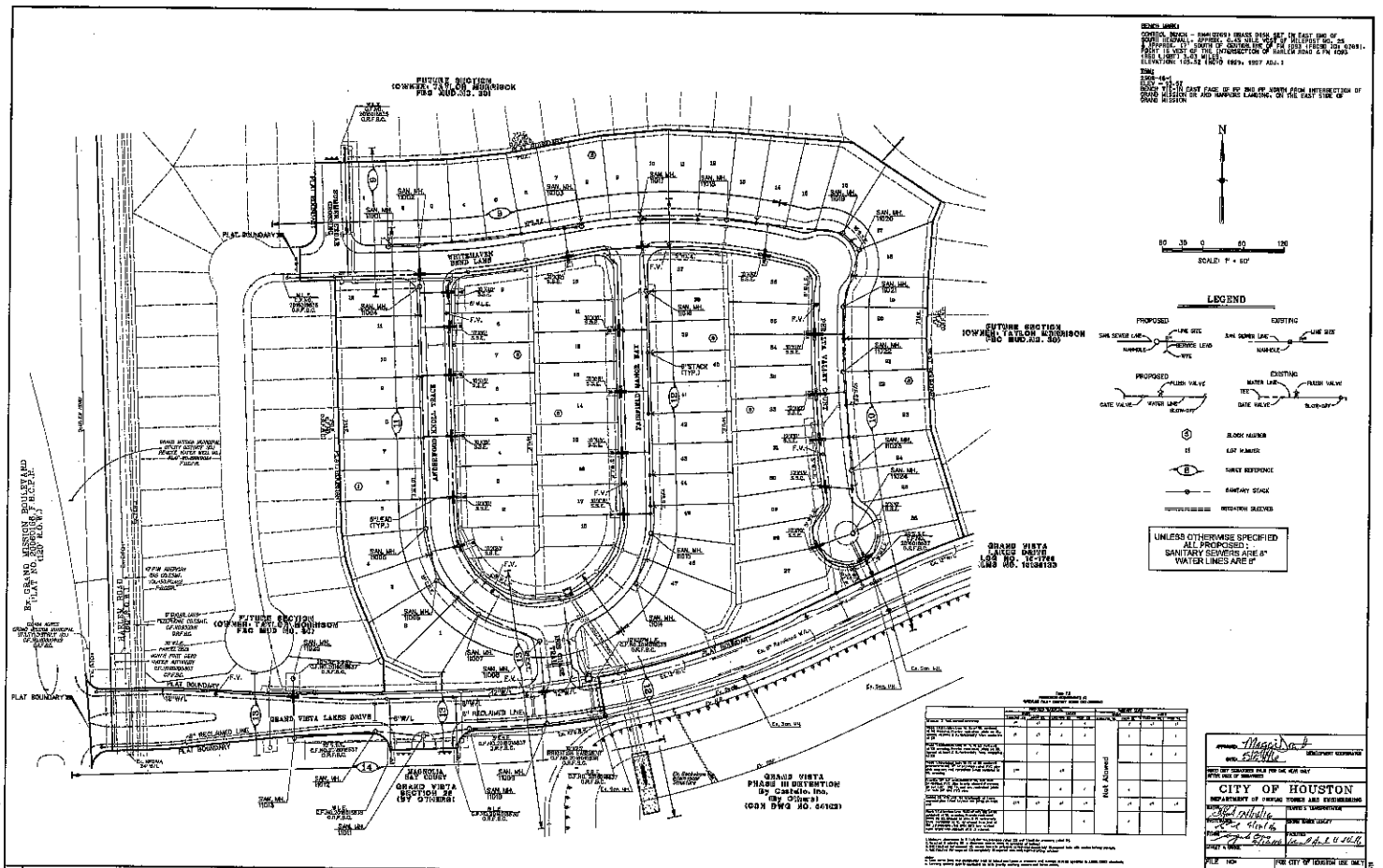
PARTIES RESPONSIBLE FOR WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES SERIOUS PERSONAL AND CIVIL LIABILITY. TO ASSURE FOR YOUR OWN SAFETY, REFER TO THE REFERENCED SALT DEVELOPMENT EXHIBIT AT WWW.SALT.NET.

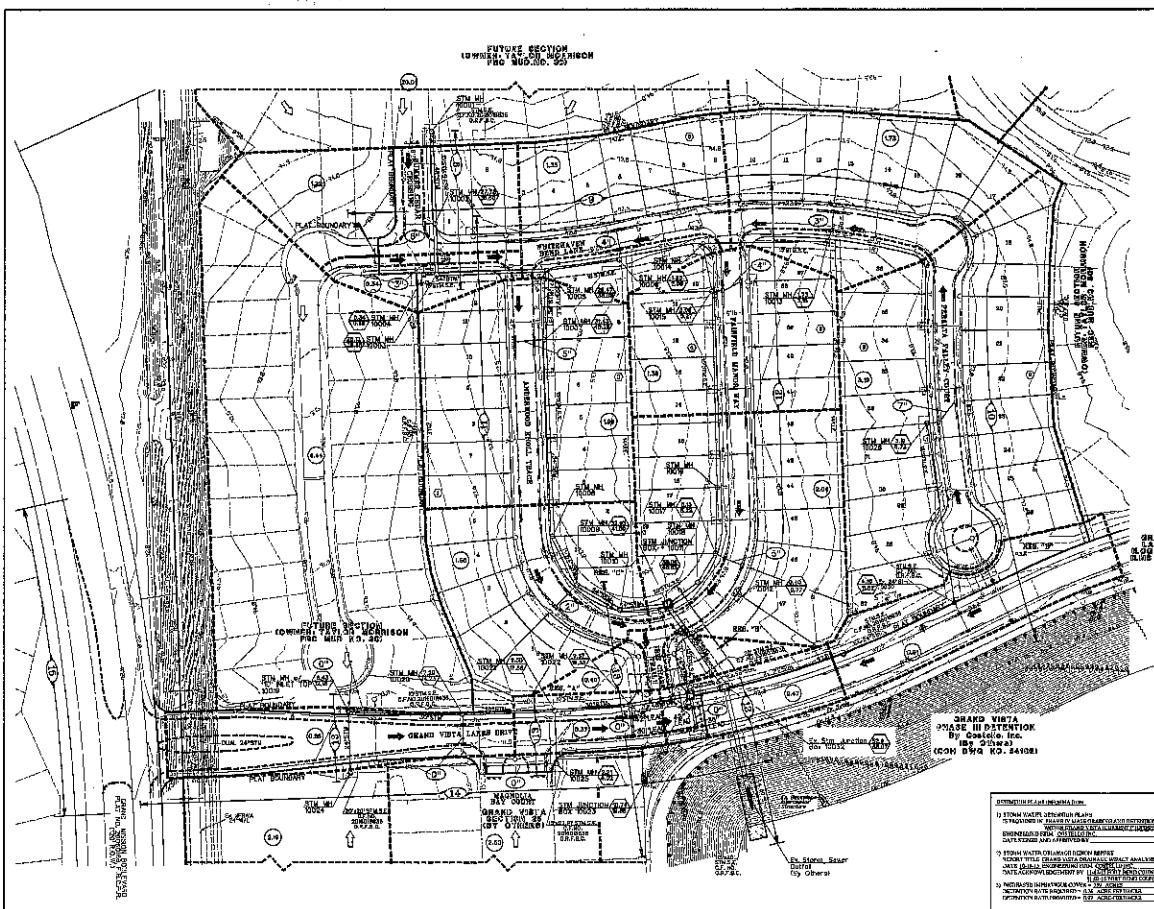
FORT BEND COUNTY GENERAL NOTES

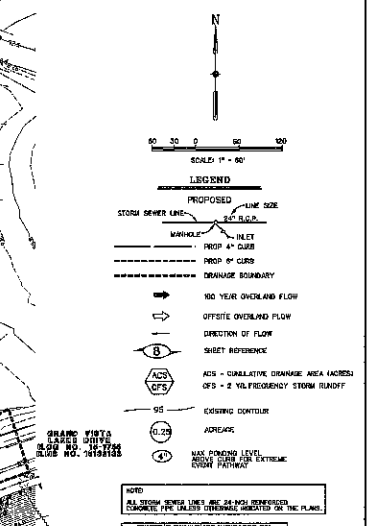
1. FORT BEND COUNTY MUST BE NOTIFIED TO THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 48 HOURS NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN THE LIMITS OF THE PARKS AT CONSTRUCTIONNOTIFICATION@FTC.GOV.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO START OF CONSTRUCTION. TRANSFER OF OWNERSHIP OF PERMITS IS NOT ALLOWED.
4. ANY PARKING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY TRESS REGULATIONS AND REQUIREMENTS RELATIVE TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS AND EXTENSIONS AS DEFINED BY AMENDMENT.
5. SIDEWALKS WITHIN CUL-DE-SACS AND CURVES ARE AS PER SHOWN AND GRADES EXCEPTIONAL.
6. ALL PAVING MATERIALS AND DESIGNS SHALL BE SUBJECT TO REVIEW AND ACCEPTANCE BY FORT BEND COUNTY.
7. ALL CONCRETE PAVEMENT SHALL BE 6.5 INCHES THICK WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE CONTRACTION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 80 FEET.
8. ALL WEATHER ACCESS TO ALL DWELLING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
9. 4"X12" REINFORCED CONCRETE CURB MAY BE USED IN LIEU OF REINFORCED SINGLE FAMILY LOTS ONLY. ALL CURVES MUST BE A MINIMUM 4" REINFORCED CONCRETE CURB.
10. SEE ALL INTERSECTION LOCATIONS, STREET PAVING SHALL BE PLACED IN ACCORDANCE WITH FORT BEND COUNTY AND OTHER SHEET, A.D.A. - HANDICAP RAMPS SHALL BE INSTALLED WITH STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.
11. CURB RADII AND ALIGNMENT AT FUTURE CONNECTIONS TO HANDICAP RAMPS, INTERSECTION CONTRACTOR CONTINUITY OF SIDEWALK.
12. ALL INTERSECTIONS LEGEND TRAFFIC CONTROL MEASURES SHALL HAVE A D.A. RAMPS, CURB RAMPS DETAILED.
13. CONCRETE MIXES ARE SET FORTH IN THE TEXAS TRANSPORTATION INSTITUTE CONTRACTION NOTES, AS CURRENTLY AMENDED, INCLUDE CITRACELL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE ELEVATION, CURVATURE, STRENGTH AND WEARING SURFACE, ALL PAVING CONSTRUCTION ROBUST AND RIGIDITY.
14. ALL CURB STOP BEGIN SHALL BE 30" X 30" WITH DIAMOND GRADE SHEETING. STREET MAKE SIGNS SHALL BE 4 PIPES AND KNOWED GRADE LETTERS WITH STANDARD GRADE SHEETING.
15. STREET NAME SIGNS SHALL BE 6" HIGH SIGN FLAT MADE WITH REFLECTIVE GREEN BACKGROUND. STREET NAMES SHALL DISPLAY AND DIMENSIONS BETWEEN WITH LUMINOUS LETTERS OF 7" MINIMUM AND COMPUTER LETTERING AT A MINIMUM. THE LETTERS SHALL BE NOT LESS THAN 4" WIDE. STREET SIGNS SHALL BE ALIGNED ON SIGN POST SIGN POST.
16. ALL BLUE DIAMOND REFLECTORS BE BOTTOM SHALL BE PLACED AT MIL PRE HYDRANT LOCATIONS. THE BUTTON WILL REPLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.

NO.	REVISION	DATE	BY

DESIGNED BY: RD, AS
DESIGN CHECKED BY: AD, AS
DRAWN BY: AL, DJD
C


FUTURE SECTION
(OWNER: TAYLOR MORRISON)
FBC MUD NO. 30
WESTHEATER DRIVE
FUTURE SECTION
(OWNER: TAYLOR MORRISON)
FBC MUD NO. 30
GRAND VISTA
LEAKED DATE
LEAKED NO. 1-1766
LMS NO. 10138135
FUTURE SECTION
(OWNER: TAYLOR MORRISON)
FBC MUD NO. 30
GRAND VISTA LAKES DRIVE
GRAND VISTA
SECTION 20
(BY OTHERS)
GRAND VISTA
PHASE III DETENTION
By Costello, Inc.
(By Others)
(COA DWG NO. 541023)
FLAT BOUNDARY
SCALE: 1" = 60'
LEGEND
PROPOSED
EXISTING
SAN. SEWER LINE
LINE SIZE
MANHOLE
SERVICE LEAD
WYE
WATER LINE
TEE
FLUSH VALVE
GATE VALVE
BLOW-OFF
BLOCK NUMBER
LOT NUMBER
SURVEY REFERENCE
SANITARY STACK
RESTRAINED SLEEVES
UNLESS OTHERWISE SPECIFIED
ALL PROPOSED:
SANITARY SEWERS ARE 8"
WATER LINES ARE 8"
Not Allowed
CITY OF HOUSTON
DEPARTMENT OF PARKING TOWNES AND ENVIRONMENTAL
DEVELOPMENT COORDINATOR
DRAWING SCALE
1" = 60'
SHEET NO. 3 OF 29
FILE NO.
FOR CITY OF HOUSTON USE ONLY
DESIGNED BY: RD
DRAWN BY: JB
QA/QC BY: DATE: 6-7-16
Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450
North Building
Houston Texas 77042
(713) 783-7788 (713) 783-3680, Fax
TEXAS PE BOARD FIRM
REGISTRATION No. 280
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16
WATER AND SANITARY LAYOUT
NO.
REVISION
DATE
BY





NOTE:
ALL STORM SEWER LINES ARE 24-INCH REINFORCED CONCRETE PIPE UNLESS OTHERWISE INDICATED ON THE PLANS.

EXISTING CONTOURS INDICATED ON THIS SHEET ARE FROM PHASE II A MASS GRADING / DETENTION EXCAVATION.

DETENTION PLAN INFORMATION:
1) STORM WATER DETENTION PLANS
TITLE: GRAND VISTA DRAINAGE ANALYSIS
ENGINEER: CLIFTON R. SAVAGE
DATE: 1/1/2001
2) STORM WATER DRAINAGE FLOW REPORT
TITLE: GRAND VISTA DRAINAGE IMPACT ANALYSIS (PHASE III)
DATE: 1/1/2001
3) INFILTRATION INFILTRATION COVER = 75% ZONE
DETENTION RATE REQUIRED = 0.34 ACRE FOOT/ACRE
DETENTION RATE PROVIDED = 0.37 ACRE FOOT/ACRE

APPROVED: [signature] DEVELOPMENT COORDINATOR
DATE: 5/18/2016
NON-CONFORMANCE WAIVERS VALID FOR THE NOW ONLY AFTER DATE OF ISSUANCE

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DATE & TEMPERATURE
DATE SITE VISITED
PRINTED: [signature] 5/18/2016
FILENO.
FOR CITY OF HOUSTON USE ONLY

NO.	REVISION	DATE	BY

DESIGNED BY: AO, DS
DESIGN CHECKED BY: AO, DS
DRAWN BY: JB, DLS
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: JG DATE 12-2-16
QA/QC REVISIONS BY: JB, TJ, TS

Costello
Engineering and Surveying
9950 Richmond Avenue, Suite 450
North Building
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TEXAS PE BOARD FIRM REGISTRATION NO. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

PAVING AND DRAINAGE LAYOUT

CLIFTON R. SAVAGE
STATE OF TEXAS
56685
LICENSED PROFESSIONAL ENGINEER

FILE NO.
DRAWING SCALE
1" = 60'
SHEET NO. 4 OF 20

JOB NO. 2010102-400-00.01

STORM SEWER CALCULATIONS
CITY OF HOUSTON CRITERIA
Storm Event: 2-YEAR
Project: Grand Vista Section 16
Date: April 21, 2016
By: ARD

Runoff Coefficients	
Rational Method	C
5-yr	0.61
10-yr	0.63
25-yr	0.65
Peaking Factor	1.00

Manning's n	0.013
Inlet Efficiency	0.90
Weir Coefficient	3.0
Orifice Coefficient	0.6
Gravity	32.2

Min. Velocity (fps)	2.50
Max. Velocity (fps)	8.00
Min. Cover (ft)	2.50

Street Inlet	Inlet No.	Station	Rational Method Drainage Area (Acres)	Rational Method Runoff Coefficient	Rational Method Runoff (cfs)	Time of Concentration (min)	Intensity (in/hr)	Pipe Length (ft)	Pipe Slope (ft/ft)	Pipe Diameter (inches)	Manning's n	Inlet Eff.	Weir Coefficient	Orifice Coefficient	Gravity	Flow Depth (ft)	Flow Velocity (fps)	Flow Capacity (cfs)	Actual Flow (cfs)	Hydraulic Gradient Elev.	Hydraulic Gradient Elev.	Top of Curb Elev.	Gutter Elev.	Natural Ground Elev.	HGL Above/Below Gutter Elev.
Sycamore Cedar Crossing	16	MH 100001	MH 100002	0.22	16.41	0.61	9.46	6.4	46.9	2.42	21	48	RCP	0.013	12.57	1.00	0.670	1.0	3.00	0.00	0.000	85.34	85.45	91.74	90.33	87.70	83.30	89.40	-2.10
Sycamore Cedar Crossing	16	MH 100002	MH 100003	1.22	77.31	0.61	15.16	6.7	46.7	2.40	30.69	72	48	RCP	0.013	12.57	1.00	0.670	1.0	39.00	0.06	0.000	85.15	85.71	92.66	90.23	2.21	0.062	0.072	90.33	87.70	83.30	89.40	-2.10
Whitehouse Bend Lane	16	MH 100003	MH 100004	0.84	53.13	0.61	12.47	20.9	47.1	2.28	74.84	152	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.21	86.01	93.31	90.43	2.13	0.065	0.075	90.43	87.70	83.30	89.40	-2.10
Whitehouse Bend Lane	16	MH 100004	MH 100007	1.03	65.13	0.61	11.11	16.6	49.3	2.14	30.48	70	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.31	86.20	93.61	90.58	2.01	0.057	0.067	90.58	87.70	83.30	89.40	-2.10
Sycamore Cedar Trace	16	MH 100007	MH 100008	1.03	65.13	0.61	10.18	0.1	49.3	2.14	40.21	215	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.35	86.23	93.61	90.58	2.01	0.057	0.067	90.58	87.70	83.30	89.40	-2.10
Sycamore Cedar Trace	16	MH 100008	MH 100009	1.03	65.13	0.61	9.97	0.1	49.3	2.14	40.21	215	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.35	86.23	93.61	90.58	2.01	0.057	0.067	90.58	87.70	83.30	89.40	-2.10
Ice Chase Drive	16	MH 100010	MH 100011	0.40	25.60	0.61	10.86	14.7	52.6	2.24	42.68	187	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.37	86.30	93.61	90.61	1.97	0.054	0.064	90.61	87.70	83.30	89.40	-2.10
Grand Vista Lane	16	Ex. MH 10011	CUTBALL	10.58	11.00	0.61	10.04	16.3	56.3	2.13	65.17	198	66	RCP	0.013	23.76	1.50	0.690	1.0	76.14	0.04	0.000	85.19	86.60	93.94	90.83	1.74	0.048	0.058	90.83	87.70	83.30	89.40	-2.10
Mt Vernon Bend Lane	16	MH 100013	MH 100012	1.73	1.76	0.61	0.09	10.0	26.3	3.34	3.19	290	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.42	0.000	86.23	90.33	94.33	94.07	1.61	0.040	0.047	91.05	88.30	90.00	91.83	-2.42
Fairfield Manor Way	16	MH 100015	MH 100012	1.20	3.06	0.61	1.70	0.1	10.1	2.10	0.37	300	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.50	91.00	95.11	91.05	1.40	0.034	0.039	91.05	88.30	90.00	91.83	-2.42
Fairfield Manor Way	16	MH 100012	MH 100013	2.04	4.91	0.61	2.82	3.8	33.2	2.21	0.32	42	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.85	91.77	97.01	91.77	1.42	0.032	0.037	91.80	88.30	90.00	91.83	-2.12
Fairfield Manor Way	16	MH 100013	MH 100014	0.81	1.23	0.61	1.22	0.3	33.5	2.20	0.32	16	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.77	91.87	97.07	91.87	1.42	0.032	0.037	91.90	88.30	90.00	91.83	-2.12
Grand Vista Lane	16	MH 100016	MH 100020	1.10	0.42	0.61	0.28	10.0	29.3	2.00	19.15	108	30	RCP	0.013	4.91	0.625	0.470	1.0	14.79	0.13	0.000	86.67	91.95	95.87	92.08	1.40	0.030	0.035	92.10	89.25	92.00	93.26	-2.16
Grand Vista Lane	16	MH 100020	MH 100021	0.26	7.31	0.61	4.68	1.0	31.2	2.05	12.23	127	30	RCP	0.013	4.91	0.625	0.470	1.0	14.79	0.13	0.000	87.28	92.20	96.50	92.30	1.38	0.029	0.034	92.32	89.25	92.00	93.26	-2.14
Grand Vista Lane	16	MH 100021	MH 100022	2.21	0.13	0.61	0.07	17.3	31.3	2.00	17.43	100	30	RCP	0.013	7.07	0.750	0.610	1.1	20.32	0.01	0.000	87.70	92.55	96.90	92.56	1.49	0.035	0.040	92.60	89.25	92.00	93.26	-2.14
Grand Vista Lane	16	MH 100022	MH 100023	3.07	0.87	0.61	0.16	0.7	31.6	1.97	16.61	94	30	RCP	0.013	10.13	1.000	0.810	1.3	30.50	0.00	0.000	87.85	92.83	97.23	92.83	1.48	0.035	0.040	92.87	89.25	92.00	93.26	-2.14
Grand Vista Lakes	16	MH 100023	EXISTING LINE	3.07	13.76	0.61	2.58	7.0	34.3	1.95	15.6	100	30	RCP	0.013	10.13	1.000	0.810	1.3	30.50	0.07	0.000	88.02	93.12	97.53	93.12	1.44	0.033	0.037	93.14	89.25	92.00	93.33	-2.19
Grand Vista Lakes	16	MH 100024	MH 100025	1.10	1.13	0.61	1.75	21.0	10.3	3.31	5.50	18	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.16	0.000	87.79	91.87	95.72	91.87	1.64	0.046	0.055	91.94	90.45	95.50	92.45	-0.45
Grand Vista Lakes	16	MH 100025	MH 100026	1.21	1.24	0.61	1.21	19.4	16.5	3.21	4.02	12	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.13	0.000	88.00	92.27	95.90	92.27	1.38	0.032	0.038	92.33	90.45	95.50	92.23	-0.88
Pyrolly Valley Circle	16	MH 100026	EXISTING LINE	2.10	1.10	0.61	1.76	17.2	17.1	3.16	5.72	140	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.45	0.000	88.77	93.23	96.70	93.23	1.02	0.016	0.018	93.41	90.25	95.50	93.30	-3.05
Whitehouse Bend Lane	16	MH 100004	MH 100002	0.24	0.14	0.61	0.19	21.0	11.3	3.31	0.61	17	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.03	0.000	87.00	92.00	96.54	92.00	0.21	0.001	0.000	92.07	89.47	92.50	91.70	0.30	-2.23
Whitehouse Bend Lane	16	MH 100002	MH 100001	1.21	1.23	0.61	0.24	23.0	11.3	3.31	1.20	100	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.13	0.000	87.00	92.00	96.54	92.00	0.40	0.002	0.002	92.00	89.00	92.50	91.70	0.30	-1.93
Ice Chase Drive	16	MH 100010	MH 100009	1.40	0.00	0.61	0.00	0.1	11.3	3.31	0.77	12	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.00	0.000	87.00	92.00	96.54	92.00	0.00	0.000	0.000	92.00	89.00	92.50	91.70	0.30	-1.93

STORM SEWER CALCULATIONS
CITY OF HOUSTON CRITERIA
Storm Event: 100-YEAR
Project: Grand Vista Section 16
Date: April 21, 2016
By: ARD

Runoff Coefficients	
Rational Method	C
5-yr	0.61
10-yr	0.63
25-yr	0.65
Peaking Factor	1.00

Manning's n	0.013
Inlet Efficiency	0.90
Weir Coefficient	3.0
Orifice Coefficient	0.6
Gravity	32.2

Min. Velocity (fps)	2.50
Max. Velocity (fps)	8.00
Min. Cover (ft)	2.50

Street Inlet	Inlet No.	Station	Rational Method Drainage Area (Acres)	Rational Method Runoff Coefficient	Rational Method Runoff (cfs)	Time of Concentration (min)	Intensity (in/hr)	Pipe Length (ft)	Pipe Slope (ft/ft)	Pipe Diameter (inches)	Manning's n	Inlet Eff.	Weir Coefficient	Orifice Coefficient	Gravity	Flow Depth (ft)	Flow Velocity (fps)	Flow Capacity (cfs)	Actual Flow (cfs)	Hydraulic Gradient Elev.	Hydraulic Gradient Elev.	Top of Curb Elev.	Gutter Elev.	Natural Ground Elev.	HGL Above/Below Gutter Elev.
Sycamore Cedar Crossing	16	MH 100001	MH 100002	0.22	33.91	0.63	10.10	6.4	18.3	8.54	19.80	7.04	VitrifiC	0.013	0.347	0.90	0.28	0.00	0.000	85.34	85.45	91.74	90.33	87.70	83.30
Sycamore Cedar Crossing	16	MH 100002	MH 100003	0.72	77.31	0.63	15.16	6.7	46.7	2.40	30.69	72	48	RCP	0.013	12.57	1.00	0.670	1.0	39.00	0.06	0.000	85.15	85.71	92.66	90.23	2.21	0.062	0.072	90.33	87.70	83.30
Whitehouse Bend Lane	16	MH 100003	MH 100004	0.84	53.13	0.63	12.47	20.9	47.1	2.28	74.84	152	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.21	86.01	93.31	90.43	2.13	0.065	0.075	90.43	87.70
Whitehouse Bend Lane	16	MH 100004	MH 100007	1.03	65.13	0.63	11.11	16.6	49.3	2.14	30.48	70	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.31	86.20	93.61	90.58	2.01	0.057	0.067	90.58	87.70
Sycamore Cedar Trace	16	MH 100007	MH 100008	1.03	65.13	0.63	10.18	0.1	49.3	2.14	40.21	215	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.35	86.23	93.61	90.58	2.01	0.057	0.067	90.58	87.70
Sycamore Cedar Trace	16	MH 100008	MH 100009	1.03	65.13	0.63	9.97	0.1	49.3	2.14	40.21	215	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.35	86.23	93.61	90.58	2.01	0.057	0.067	90.58	87.70
Ice Chase Drive	16	MH 100010	MH 100011	0.40	25.60	0.63	10.86	14.7	52.6	2.24	42.68	187	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.37	86.30	93.61	90.61	1.97	0.054	0.064	90.61	87.70
Grand Vista Lane	16	Ex. MH 10011	CUTBALL	10.58	11.00	0.63	10.04	16.3	56.3	2.13	65.17	198	66	RCP	0.013	23.76	1.50	0.690	1.0	76.14	0.04	0.000	85.19	86.60	93.94	90.83	1.74	0.048	0.058	90.83	87.70
Mt Vernon Bend Lane	16	MH 100013	MH 100012	1.73	1.76	0.63	0.09	10.0	26.3	3.34	3.19	290	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.42	0.000	86.23	90.33	94.33	94.07	1.61	0.040	0.047	91.05	88.30
Fairfield Manor Way	16	MH 100015	MH 100012	1.20	3.06	0.63	1.70	0.1	10.1	2.10	0.37	300	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.50	91.00	95.11	91.05	1.40	0.034	0.039	91.05	88.30
Fairfield Manor Way	16	MH 100012	MH 100013	2.04	4.91	0.63	2.82	3.8	33.2	2.21	0.32	42	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.85	91.77	97.01	91.77	1.42	0.032	0.037	91.80	88.30
Fairfield Manor Way	16	MH 100013	MH 100014	0.81	1.23	0.63	1.22	0.3	33.5	2.20	0.32	16	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.77	91.87	97.07	91.87	1.42	0.032	0.037	91.90	88.30
Grand Vista Lane	16	MH 100016	MH 100020	1.10	0.42	0.63	0.28	10.0	29.3	2.00	19.15	108	30	RCP	0.013	4.91	0.625	0.470	1.0	14.79	0.13	0.000	86.67	91.95	95.87	92.08	1.40	0.030	0.035	92.10	89.25
Grand Vista Lane	16	MH 100020	MH 100021	0.26	7.31	0.63	4.68	1.0	31.2	2.05	12.23	127	30	RCP	0.013	4.91	0.625	0.470	1.0	14.79	0.13	0.000	87.28	92.20	96.50	92.30	1.38	0.029	0.034	92.32	89.25
Grand Vista Lane	16	MH 100021	MH 100022	2.21	0.13	0.63	0.07	17.3	31.3	2.00	17.43	100	30	RCP	0.013	7.07	0.750	0.610	1.1	20.32	0.01	0.000	87.70	92.55	96.90	92.56	1.49	0.035	0.040	92.60	89.25
Grand Vista Lane	16	MH 100022	MH 100023	3.07	0.87	0.63	0.16	0.7	31.6	1.97	16.61	94	30	RCP	0.013	10.13	1.000	0.810	1.3	30.50	0.00	0.000	87.85	92.83	97.23	92.83	1.48	0.035	0.040	92.87	89.25
Grand Vista Lakes	16	MH 100023	EXISTING LINE	3.07	13.76	0.63	2.58	7.0	34.3	1.95	15.6	100	30	RCP	0.013	10.13	1.000	0.810	1.3	30.50	0.07	0.000	88.02	93.12	97.53	93.12	1.44	0.033	0.037	93.14	89.25
Grand Vista Lakes	16	MH 100024	MH 100025	1.10	1.13	0.63	1.75	21.0	10.3	3.31	5.50	18	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.16	0.000	87.79	91.87	95.72	91.87	1.64	0.046	0.055	91.94	90.45
Grand Vista Lakes	16	MH 100025	MH 100026	1.21	1.24	0.63	1.21	19.4	16.5	3.21	4.02	12	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.13	0.000	88.00	92.27	95.90	92.27	1.38	0.032	0.038	92.33	90.45
Pyrolly Valley Circle	16	MH 100026	EXISTING LINE	2.10	1.10	0.63	1.76	17.2	17.1	3.16	5.72	140	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.45	0.000	88.77	93.23	96.70	93.23	1.02	0.016	0.018	93.41	90.25
Whitehouse Bend Lane	16	MH 100004	MH 100002	0.24	0.14	0.63	0.19	21.0	11.3	3.31	0.61	17	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.03	0.000	87.00	92.00	96.54	92.00	0.21	0.001	0.000	92.07	89.47
Whitehouse Bend Lane	16	MH 100002	MH 100001	1.21	1.23	0.63	0.24	23.0	11.3	3.31	1.20	100	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.13	0.000	87.00	92.00	96.54	92.00	0.40	0.002	0.002	92.00	89.00
Ice Chase Drive	16	MH 100010	MH 100009	1.40	0.00	0.63	0.00	0.1	11.3	3.31	0.77	12	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.00	0.000	87.00	92.00	96.54	92.00	0.00	0.000	0.000	92.00	89.00

STORM SEWER CALCULATIONS
CITY OF HOUSTON CRITERIA
Storm Event: 100-YEAR
Project: Grand Vista Section 16
Date: April 21, 2016
By: ARD

Runoff Coefficients	
Rational Method	C
5-yr	0.61
10-yr	0.63
25-yr	0.65
Peaking Factor	1.00

Manning's n	0.013
Inlet Efficiency	0.90
Weir Coefficient	3.0
Orifice Coefficient	0.6
Gravity	32.2

Min. Velocity (fps)	2.50
Max. Velocity (fps)	8.00
Min. Cover (ft)	2.50

Street Inlet	Inlet No.	Station	Rational Method Drainage Area (Acres)	Rational Method Runoff Coefficient	Rational Method Runoff (cfs)	Time of Concentration (min)	Intensity (in/hr)	Pipe Length (ft)	Pipe Slope (ft/ft)	Pipe Diameter (inches)	Manning's n	Inlet Eff.	Weir Coefficient	Orifice Coefficient	Gravity	Flow Depth (ft)	Flow Velocity (fps)	Flow Capacity (cfs)	Actual Flow (cfs)	Hydraulic Gradient Elev.	Hydraulic Gradient Elev.	Top of Curb Elev.	Gutter Elev.	Natural Ground Elev.	HGL Above/Below Gutter Elev.
Sycamore Cedar Crossing	16	MH 100001	MH 100002	0.22	33.91	0.63	10.10	6.4	18.3	8.54	19.80	7.04	VitrifiC	0.013	0.347	0.90	0.28	0.00	0.000	85.34	85.45	91.74	90.33	87.70	83.30
Sycamore Cedar Crossing	16	MH 100002	MH 100003	0.72	77.31	0.63	15.16	6.7	46.7	2.40	30.69	72	48	RCP	0.013	12.57	1.00	0.670	1.0	39.00	0.06	0.000	85.15	85.71	92.66	90.23	2.21	0.062	0.072	90.33	87.70
Whitehouse Bend Lane	16	MH 100003	MH 100004	0.84	53.13	0.63	12.47	20.9	47.1	2.28	74.84	152	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.21	86.01	93.31	90.43	2.13	0.065	0.075	90.43	87.70
Whitehouse Bend Lane	16	MH 100004	MH 100007	1.03	65.13	0.63	11.11	16.6	49.3	2.14	30.48	70	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.31	86.20	93.61	90.58	2.01	0.057	0.067	90.58	87.70
Sycamore Cedar Trace	16	MH 100007	MH 100008	1.03	65.13	0.63	10.18	0.1	49.3	2.14	40.21	215	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.35	86.23	93.61	90.58	2.01	0.057	0.067	90.58	87.70
Sycamore Cedar Trace	16	MH 100008	MH 100009	1.03	65.13	0.63	9.97	0.1	49.3	2.14	40.21	215	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.35	86.23	93.61	90.58	2.01	0.057	0.067	90.58	87.70
Ice Chase Drive	16	MH 100010	MH 100011	0.40	25.60	0.63	10.86	14.7	52.6	2.24	42.68	187	54	RCP	0.013	15.90	1.25	0.690	1.0	43.17	0.06	0.000	85.37	86.30	93.61	90.61	1.97	0.054	0.064	90.61	87.70
Grand Vista Lane	16	Ex. MH 10011	CUTBALL	10.58	11.00	0.63	10.04	16.3	56.3	2.13	65.17	198	66	RCP	0.013	23.76	1.50	0.690	1.0	76.14	0.04	0.000	85.19	86.60	93.94	90.83	1.74	0.048	0.058	90.83	87.70
Mt Vernon Bend Lane	16	MH 100013	MH 100012	1.73	1.76	0.63	0.09	10.0	26.3	3.34	3.19	290	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.42	0.000	86.23	90.33	94.33	94.07	1.61	0.040	0.047	91.05	88.30
Fairfield Manor Way	16	MH 100015	MH 100012	1.20	3.06	0.63	1.70	0.1	10.1	2.10	0.37	300	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.50	91.00	95.11	91.05	1.40	0.034	0.039	91.05	88.30
Fairfield Manor Way	16	MH 100012	MH 100013	2.04	4.91	0.63	2.82	3.8	33.2	2.21	0.32	42	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.85	91.77	97.01	91.77	1.42	0.032	0.037	91.80	88.30
Fairfield Manor Way	16	MH 100013	MH 100014	0.81	1.23	0.63	1.22	0.3	33.5	2.20	0.32	16	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.18	0.000	86.77	91.87	97.07	91.87	1.42	0.032	0.037	91.90	88.30
Grand Vista Lane	16	MH 100016	MH 100020	1.10	0.42	0.63	0.28	10.0	29.3	2.00	19.15	108	30	RCP	0.013	4.91	0.625	0.470	1.0	14.79	0.13	0.000	86.67	91.95	95.87	92.08	1.40	0.030	0.035	92.10	89.25
Grand Vista Lane	16	MH 100020	MH 100021	0.26	7.31	0.63	4.68	1.0	31.2	2.05	12.23	127	30	RCP	0.013	4.91	0.625	0.470	1.0	14.79	0.13	0.000	87.28	92.20	96.50	92.30	1.38	0.029	0.034	92.32	89.25
Grand Vista Lane	16	MH 100021	MH 100022	2.21	0.13	0.63	0.07	17.3	31.3	2.00	17.43	100	30	RCP	0.013	7.07	0.750	0.610	1.1	20.32	0.01	0.000	87.70	92.55	96.90	92.56	1.49	0.035	0.040	92.60	89.25
Grand Vista Lane	16	MH 100022	MH 100023	3.07	0.87	0.63	0.16	0.7	31.6	1.97	16.61	94	30	RCP	0.013	10.13	1.000	0.810	1.3	30.50	0.00	0.000	87.85	92.83	97.23	92.83	1.48	0.035	0.040	92.87	89.25
Grand Vista Lakes	16	MH 100023	EXISTING LINE	3.07	13.76	0.63	2.58	7.0	34.3	1.95	15.6	100	30	RCP	0.013	10.13	1.000	0.810	1.3	30.50	0.07	0.000	88.02	93.12	97.53	93.12	1.44	0.033	0.037	93.14	89.25
Grand Vista Lakes	16	MH 100024	MH 100025	1.10	1.13	0.63	1.75	21.0	10.3	3.31	5.50	18	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.16	0.000	87.79	91.87	95.72	91.87	1.64	0.046	0.055	91.94	90.45
Grand Vista Lakes	16	MH 100025	MH 100026	1.21	1.24	0.63	1.21	19.4	16.5	3.21	4.02	12	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.13	0.000	88.00	92.27	95.90	92.27	1.38	0.032	0.038	92.33	90.45
Pyrolly Valley Circle	16	MH 100026	EXISTING LINE	2.10	1.10	0.63	1.76	17.2	17.1	3.16	5.72	140	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.45	0.000	88.77	93.23	96.70	93.23	1.02	0.016	0.018	93.41	90.25
Whitehouse Bend Lane	16	MH 100004	MH 100002	0.24	0.14	0.63	0.19	21.0	11.3	3.31	0.61	17	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.03	0.000	87.00	92.00	96.54	92.00	0.21	0.001	0.000	92.07	89.47
Whitehouse Bend Lane	16	MH 100002	MH 100001	1.21	1.23	0.63	0.24	23.0	11.3	3.31	1.20	100	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.13	0.000	87.00	92.00	96.54	92.00	0.40	0.002	0.002	92.00	89.00
Ice Chase Drive	16	MH 100010	MH 100009	1.40	0.00	0.63	0.00	0.1	11.3	3.31	0.77	12	24	RCP	0.013	3.14	0.500	0.400	1.1	3.40	0.00	0.000	87.00	92.00	96.54	92.00	0.00	0.000	0.000	92.00	89.00

TOWN SEWER CALCULATIONS PER CITY CRITERIA
Storm Event: 100-YEAR
Date: 2016-04

Street	Inlet No.	Q	Length (ft)	Slope (ft/ft)	Actual Flow	Hyd. Grad.	Hyd. Grad.	Rim Elev.	Top of Curb Elev.	Gutter Elev.	Ground Elev.	HGL Above/Below Gutter
Inlet 2	Inlet 2	43.15	6	0.3	3.

FORT BEND COUNTY, TEXAS

Storm Event: 5-YEAR DESIGN STORM

Project: Grand Vista Section 16, Grand Vista Estates

Date: February 24, 2016

By: AJO

Initial Rational Method Runoff Table

Time Step Routing Method: Kinematic Wave

Time Step Routing Method: Kinematic Wave

Hydraulic Grade Line Computation

Check Hydraulic Grade Line Elevations

Structure	Structure #	Drainage Area Name	Drainage Area #	Contributing Drainage Area (Acres) Delta	Total	Increment	Accumulated	Runoff Coefficient Delta	Total	Time of Concentration (Min) Delta	Total	Rainfall Intensity (In/Hr)	Flow Rate (CFS) Delta	Total	Manning Coefficient n	Pipe Diameter (In)	Pipe Length (Ft)	Pipe Slope (Ft/Ft)	Pipe Flow Velocity (Ft/Sec)	Pipe Flow Capacity (Cfs)	Design Capacity Ratio	Design Capacity (Cfs)	Inlet Flow Depth (In)	Inlet Flow Depth (Ft)	Pipe Flow Depth (In)	Pipe Flow Depth (Ft)	Pipe Flow Velocity (Ft/Sec)	Pipe Flow Capacity (Cfs)	Actual Velocity (Ft/Sec)	Velocity Check	Hydraulic Gradient Elevation (Ft)	Hydraulic Gradient Elevation (Ft)	Hydraulic Gradient Elevation (Ft)	Hydraulic Gradient Elevation (Ft)	Top of Curb (Ft)	Gutter (Ft)	Natural Ground (Ft)	HGL Above Gutter (Ft)
FUTURE	FUTURE	Next	MH 13921	22.19	26.55	0.10	0.24	0.69	0.8	15.0	0.0	5.0	2.8	2.8	0.013	12.0	1.000	0.070	3.0	26.29	0.06	0.1250	11.70	15.04	12.70	15.88	1.25	Valid	0.013	0.009	25.05	25.04	92.54	92.44	93.10	-2.28
Summer Cedar Crossi	16	MH 13100	MH 13100	0.00	26.55	0.00	0.24	0.00	0.8	15.0	0.0	5.0	0.0	2.8	0.013	12.0	1.000	0.070	3.0	26.29	0.00	0.0000	11.64	15.05	11.64	14.55	1.19	Valid	0.013	0.008	25.07	25.06	92.20	92.10	92.90	-2.10
Summer Cedar Crossi	16	MH 13100	MH 13063	3.33	27.78	1.04	0.30	0.35	1.2	15.7	7.0	4.8	2.0	4.8	0.013	12.0	1.000	0.070	3.0	26.29	0.15	0.2500	11.98	15.31	12.00	15.31	1.41	Valid	0.013	0.011	25.03	25.02	92.06	91.94	92.90	-2.04
MH Northwest Bend Gri	16	MH 13223	MH 13063	0.14	26.93	0.00	0.24	0.35	1.2	15.1	0.0	5.1	0.7	4.8	0.013	12.0	1.000	0.070	3.0	26.29	0.03	0.0500	11.81	14.95	11.81	14.95	1.17	Valid	0.013	0.009	25.04	25.03	92.40	92.31	92.90	-2.10
Meadow and Wind Thac	16	MH 13003	MH 13047	2.56	25.47	0.00	0.24	0.35	1.2	15.7	0.0	5.0	0.7	4.8	0.013	12.0	1.000	0.070	3.0	26.29	0.18	0.3000	11.81	15.00	11.81	15.00	1.19	Valid	0.013	0.011	25.02	25.01	92.69	92.31	92.90	-2.02
Meadow and Wind Thac	16	MH 13023	MH 13003	1.55	23.41	1.01	0.21	0.35	1.2	15.9	5.0	4.8	1.7	4.8	0.013	12.0	1.000	0.070	3.0	26.29	0.13	0.2500	11.82	15.18	11.82	15.18	1.19	Valid	0.013	0.010	25.03	25.02	92.50	92.20	92.90	-2.02
Meadow and Wind Thac	16	MH 13023	MH 13043	1.50	22.53	1.00	0.20	0.35	1.2	16.1	4.0	4.8	1.6	4.8	0.013	12.0	1.000	0.070	3.0	26.29	0.14	0.2500	11.62	14.87	11.62	14.87	1.24	Valid	0.013	0.010	25.04	25.03	92.25	92.15	92.40	-2.20
Ice Chest Trail	16	MH 13223	Ex. MH 13000	5.15	30.98	0.00	0.31	0.35	1.2	15.0	0.0	5.1	2.0	5.1	0.013	12.0	1.000	0.070	3.0	26.29	0.27	0.3000	11.97	15.29	11.97	15.29	1.16	Valid	0.013	0.009	25.13	25.12	92.31	92.05	92.40	-2.10
Grand Vista Lakes	16	Ex. MH 13000	OUTFALL	19.84	52.30	0.00	0.52	0.35	1.2	16.8	0.0	4.7	2.0	7.1	0.013	12.0	1.000	0.070	3.0	26.29	0.27	0.3000	12.74	15.97	12.74	15.97	1.34	Valid	0.013	0.012	25.11	25.10	92.31	91.10	92.50	-2.40
MH Northwest Bend Gri	16	MH 13223	MH 13070	1.75	3.73	1.14	0.04	0.35	1.2	15.0	5.0	5.1	0.2	5.1	0.013	12.0	0.500	0.050	2.5	18.59	0.27	0.3000	11.97	15.29	11.97	15.29	1.16	Valid	0.013	0.009	25.13	25.12	92.31	91.61	92.40	-1.07
[illegible]	16	MH 13200	MH 13017	1.25	2.08	1.14	0.02	0.35	1.2	15.0	5.0	5.1	0.1	5.1	0.013	12.0	0.500	0.050	2.5	18.59	0.15	0.2500	11.96	15.28	11.96	15.28	1.16	Valid	0.013	0.009	25.12	25.11	92.31	91.67	92.37	-1.23
Fairfield Manor Wa	16	MH 13017	MH 13018	2.56	1.23	1.00	0.01	0.35	1.2	15.0	4.7	5.1	0.1	5.1	0.013	12.0	0.500	0.050	2.5	18.59	0.08	0.0000	11.77	15.07	11.77	15.07	1.18	Valid	0.013	0.009	25.06	25.05	92.31	91.31	92.30	-0.37
Fairfield Manor Wa	16	MH 13018	MH 13018	0.00	1.23	0.00	0.01	0.35	1.2	15.1	0.0	5.1	0.0	5.1	0.013	12.0	0.500	0.050	2.5	18.59	0.00	0.0000	11.77	15.07	11.77	15.07	1.18	Valid	0.013	0.009	25.05	25.04	92.31	91.31	92.30	-0.41
Grand Vista Lakes	16	MH 13000	MH 13000	2.18	6.48	0.00	1.79	0.00	0.0	15.7	1.0	5.0	0.0	9.0	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	14.97	19.15	17.07	19.86	1.00	Valid	0.013	0.015	25.47	25.36	92.31	90.43	92.90	-2.03
Grand Vista Lakes	16	MH 13000	MH 13000	0.00	7.18	1.07	1.00	0.35	1.2	15.7	1.0	5.0	0.1	9.1	0.013	12.0	0.500	0.050	3.0	18.79	0.07	0.0000	15.16	19.39	17.70	20.06	1.00	Valid	0.013	0.015	25.21	25.17	92.31	90.30	92.90	-2.59
Grand Vista Lakes	16	MH 13000	MH 13000	0.21	0.21	0.00	0.00	0.35	1.2	15.7	1.0	5.0	0.0	9.1	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	15.16	19.39	17.70	20.06	1.00	Valid	0.013	0.015	25.21	25.17	92.31	90.30	92.90	-2.59
Grand Vista Lakes	16	MH 13000	MH 13000	0.37	0.37	0.00	0.00	0.35	1.2	15.7	1.0	5.0	0.0	9.1	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	15.16	19.39	17.70	20.06	1.00	Valid	0.013	0.015	25.12	25.11	92.30	90.60	92.90	-2.197
Grand Vista Lakes	16	MH 13000	Ex. MH 13000	0.69	10.24	1.05	0.26	0.35	1.2	15.8	1.0	5.0	0.1	9.2	0.013	12.0	0.500	0.050	3.0	18.79	0.13	0.2500	15.13	19.34	17.66	20.00	1.00	Valid	0.013	0.015	25.11	25.10	92.30	91.00	92.90	-2.597
Grand Vista Lakes	16	MH 13000	MH 13000	1.10	2.20	1.00	0.00	0.35	1.2	15.0	1.0	5.1	0.0	9.2	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	14.35	18.17	17.00	19.30	1.00	Valid	0.013	0.015	25.10	25.09	92.30	90.40	92.90	-2.502
Grand Vista Lakes	16	MH 13000	MH 13000	1.10	2.20	1.00	0.00	0.35	1.2	15.0	1.0	5.1	0.0	9.2	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	14.35	18.17	17.00	19.30	1.00	Valid	0.013	0.015	25.09	25.08	92.30	90.40	92.90	-2.502
Vista Pine Valley Circl	16	MH 13000	EX MH 13000	5.00	5.39	1.34	1.06	0.35	1.2	16.0	1.0	5.1	2.0	11.2	0.013	12.0	0.500	0.050	3.0	18.79	0.40	0.5000	16.00	20.25	18.00	20.25	1.20	Valid	0.013	0.017	25.26	25.25	92.10	91.60	92.90	-0.90
Grand Vista Lakes	16	MH 13000	EX MH 13000	4.00	4.79	0.46	0.46	0.35	1.2	16.0	1.0	5.1	0.9	12.1	0.013	12.0	0.500	0.050	3.0	18.79	0.36	0.4500	16.23	20.44	18.23	20.69	1.20	Valid	0.013	0.016	25.27	25.26	92.10	91.60	92.90	-1.750
Vista Pine Valley Circl	16	EX MH 13000	EX MH 13000	0.50	0.84	1.34	0.00	0.35	1.2	16.0	1.0	5.1	0.2	12.3	0.013	12.0	0.500	0.050	3.0	18.79	0.05	0.0000	17.00	21.07	19.00	21.00	1.20	Valid	0.013	0.017	25.28	25.27	92.10	91.70	92.90	-1.270
Vista Pine Valley Circl	16	EX MH 13000	MH 13000	0.26	0.34	1.34	0.00	0.35	1.2	16.0	1.0	5.1	0.1	12.3	0.013	12.0	0.500	0.050	3.0	18.79	0.02	0.0000	17.00	21.07	19.00	21.00	1.20	Valid	0.013	0.017	25.29	25.28	92.10	91.70	92.90	-1.270
Vista Pine Trail	16	MH 13000	MH 13000	2.00	0.00	1.34	0.00	0.35	1.2	16.0	1.0	5.1	0.0	12.3	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	17.00	21.07	19.00	21.00	1.20	Valid	0.013	0.017	25.29	25.28	92.10	91.80	92.90	-1.149

Structure	Structure #	Drainage Area Name	Drainage Area #	Contributing Drainage Area (Acres) Delta	Total	Increment	Accumulated	Runoff Coefficient Delta	Total	Time of Concentration (Min) Delta	Total	Rainfall Intensity (In/Hr)	Flow Rate (CFS) Delta	Total	Manning Coefficient n	Pipe Diameter (In)	Pipe Length (Ft)	Pipe Slope (Ft/Ft)	Pipe Flow Velocity (Ft/Sec)	Pipe Flow Capacity (Cfs)	Design Capacity Ratio	Design Capacity (Cfs)	Inlet Flow Depth (In)	Inlet Flow Depth (Ft)	Pipe Flow Depth (In)	Pipe Flow Depth (Ft)	Pipe Flow Velocity (Ft/Sec)	Pipe Flow Capacity (Cfs)	Actual Velocity (Ft/Sec)	Velocity Check	Hydraulic Gradient Elevation (Ft)	Hydraulic Gradient Elevation (Ft)	Hydraulic Gradient Elevation (Ft)	Hydraulic Gradient Elevation (Ft)	Top of Curb (Ft)	Gutter (Ft)	Natural Ground (Ft)	HGL Above Gutter (Ft)
Grand Vista Lakes	16	MH 13000	MH 13000	0.00	0.00	1.00	0.00	0.35	1.2	16.0	1.0	5.1	0.0	12.3	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	17.00	21.07	19.00	21.00	1.20	Valid	0.013	0.017	25.29	25.28	92.10	91.80	92.90	-1.149
Grand Vista Lakes	16	MH 13000	MH 13000	0.00	0.00	1.00	0.00	0.35	1.2	16.0	1.0	5.1	0.0	12.3	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	17.00	21.07	19.00	21.00	1.20	Valid	0.013	0.017	25.29	25.28	92.10	91.80	92.90	-1.149
Grand Vista Lakes	16	MH 13000	MH 13000	0.00	0.00	1.00	0.00	0.35	1.2	16.0	1.0	5.1	0.0	12.3	0.013	12.0	0.500	0.050	3.0	18.79	0.00	0.0000	17.00	21.07	19.00	21.00	1.20	Valid	0.013	0.017	25.29	25.28	92.10	91.80	92.90	-1.149

DESIGNED BY: AJO DJS

DESIGN CHECKED BY: AJO DJS

DRAWN BY: JJA DJR

CDOD CHECKED BY:

SURVEY CHECKED BY:

QA/QC BY: RS DATE 4-1-16

QA/QC REVISIONS BY: JJA DJR

NO.	REVISION	DATE	BY

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450
North Building
Houston, Texas 77042
(713) 783-7788 (713) 783-3980, Fax

TEXAS PE BOARD FIRM REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

F.B.C. DRAINAGE CALCULATIONS

SHEET 5A OF 20

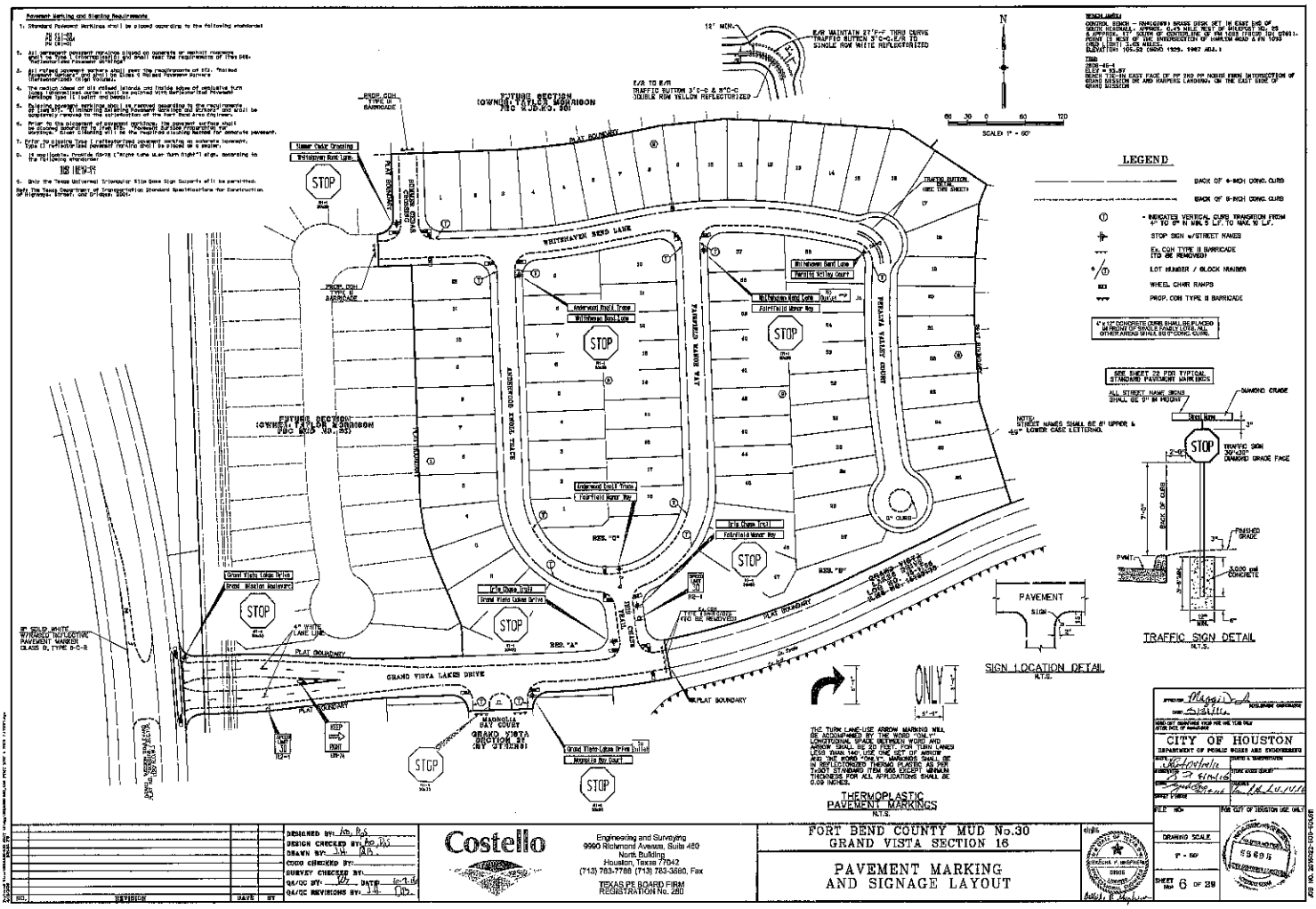
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

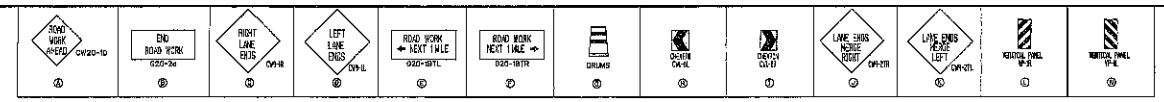
FOR CITY OF HOUSTON USE ONLY

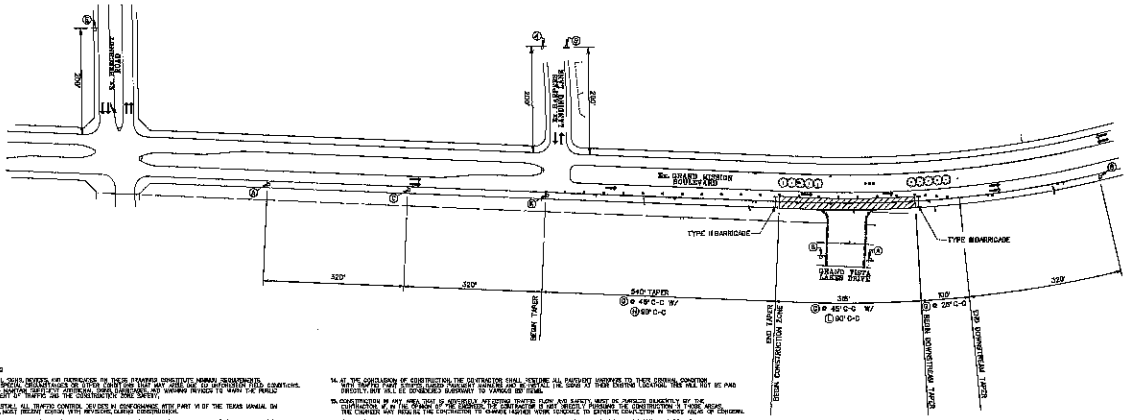
DRAWING SCALE

FILE NO.

JOB NO. 2015-0306-00-FBMUD-JOB NO. 2015-0306


Pavement Marking and Signing Requirements
1. Standard Pavement Markings shall be placed according to the following standards:
TM 01-93
TM 02-93
TM 03-93
2. All permanent pavement marking stripes on roadways or asphalt concrete, shall be Type I (Waterborne) and shall meet the requirements of TxDot Item "Reflectorized Pavement Markings".
3. All other permanent pavement marking requirements of TxDot "Traffic Control Plan Standards" Class B Marks Pavement Markers (Reflectorized) range footages.
4. The radius lines of all curbed islands and traffic islands of conducting turn lanes (striping) shall be painted with Reflectorized Pavement Markings Type II (paint and beads).
5. Existing pavement markings shall be removed according to the requirements of Item 677 "Eliminating Existing Pavement Markings and Markers" and shall be completely removed to the satisfaction of the Fort Bend Area Engineers.
6. Prior to the placement of pavement markings, the pavement surface shall be swept and cleaned of all dirt, debris and other contaminants. Sandblasting or other approved methods for concrete pavement.
7. Prior to applying Type I (waterborne) pavement marking on asphalt pavement, Type II (reflectorized) pavement marking shall be applied as a sealer.
8. If applicable, Provide 60-FT ("Maple Lane Main Path") sign, according to the following specifications:
TM 10-93
9. Only the Texas Uniformed Triangular Slip Base Sign Supports will be permitted.
Refer the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets, and Bridges, 2001.
FUTURE SECTION (OWNER: FT. BEND COUNTY MUD #30 PBC 6.00 AC. 301)
FUTURE SECTION (OWNER: FT. BEND COUNTY MUD #30 PBC 6.00 AC. 302)
WHITEWATER BEND LANE
GRAND VISTA LAKES DRIVE
PLAT BOUNDARY
SCALE 1" = 60'
LEGEND
BACK OF 6-INCH CONC. CURB
BACK OF 8-INCH CONC. CURB
- INDICATES VERTICAL CURB TRANSITION FROM 4" TO 6" IN MIN. 5 L.F. TO MAX. 10 L.F.
STOP SIGN w/STREET NAMES
EX. CON TYPE II BARRICADE (TO BE REMOVED)
LOT NUMBER / BLOCK NUMBER
WHEEL CHAIR RAMPS
PROP. CON TYPE II BARRICADE
4" x 12" CONCRETE CURB SHALL BE PLACED IN FRONT OF WHEELCHAIR RAMPS, ALL OTHER AREAS SHALL BE 6" CONC. CURB.
SEE SHEET 7A FOR TYPICAL STREETS PAVEMENT MARKINGS
ALL STREET NAME SIGNS SHALL BE 9" IN PROPER
NOTE: STREET NAMES SHALL BE 6" UPPER & 4.5" LOWER CASE LETTERING.
DIAMOND GRADE
TRAFFIC SIGN 30"x30" DIAMOND GRADE FACE
FINISHED GRADE
CONC. CURB
TRAFFIC SIGN DETAIL
N.T.S.
PAVEMENT SIGN
SIGN LOCATION DETAIL
N.T.S.
ONLY
THE TURN LANE-USE ARROW MARKING WILL BE ACCOMPANIED BY THE WORD "ONLY" LONGITUDINAL SPACE BETWEEN WORD AND ARROW SHALL BE 20 FEET. FOR TURN LANES LESS THAN 140' USE ONE SET OF ARROW AND THE WORD "ONLY". MARKINGS SHALL BE IN REFLECTORIZED THERMA PLASTIC AS PER TxDOT STANDARD ITEM 666 EXCEPT MINIMUM THICKNESS FOR ALL APPLICATIONS SHALL BE 0.09 INCHES.
THERMOPLASTIC PAVEMENT MARKINGS
N.T.S.
Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 400
North Building
Houston, Texas 77042
(713) 783-7788 (713) 783-3680, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 280
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16
PAVEMENT MARKING AND SIGNAGE LAYOUT
CITY OF HOUSTON
DRAWING SCALE 1" = 60'
SHEET NO. 6 OF 29





GENERAL NOTES FOR TRAFFIC HANDLING

1. THE CONSTRUCTION TRAFFIC CONTROL DEVICES SHOWN HEREON ARE INTENDED TO PROVIDE SUFFICIENT MINIMUM INFORMATION. THE CONTRACTOR SHALL PROVIDE ADDITIONAL DEVICES AS DEEMED NECESSARY TO ADEQUATELY INFORM THE PUBLIC OF CONDITIONS. THE CONTRACTOR SHALL PLACE AND MAINTAIN SUFFICIENT WARNING DEVICES TO WARN THE PUBLIC OF ANY HAZARDOUS CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFE MOVEMENT OF TRAFFIC ON THE CONSTRUCTION ZONE SAFELY.
2. CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, WITH REVISIONS, DURING CONSTRUCTION.
3. BARRICADES, SIGNS, CONTROLLING DEVICES, AND TRAFFIC HANDLING DEVICES AS SHOWN SHALL BE ADJUSTED TO FIT FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
4. LANES SHALL BE CLOSED DURING THE HOURS OF 9:00 AM TO 3:00 PM EXCEPT THROUGH FRIDAY.
5. CONTRACTOR SHALL PROVIDE ACCESS TO ALL SERVICES AND DRIVEWAYS ALONG THE PROJECT AT ALL TIMES DURING CONSTRUCTION UNLESS OTHERWISE APPROVED INDIVIDUALLY BY THE ENGINEER.
6. ALL EXISTING TRAFFIC SIGNS, STREET NAME SIGNS, AND WARNING SIGNS SHALL BE MAINTAINED IN PLACE DURING THE ENTIRE PERIOD OF CONSTRUCTION BY THE CONTRACTOR.
7. NO WORK WILL BE PERFORMED IN THE TRAVELED WAY INCLUDING LOADING AND UNLOADING OF TRUCKS.
8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO PLACE ADDITIONAL SIGNS, BARRICADES, AND CONTROLLING DEVICES, OR REMOVE OR RELOCATE SIGNS AND CONSTRUCTION ZONE SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS, BARRICADES, ETC. SHALL BE CONSIDERED A PART OF THE LUMP SUM PAY ITEM.
9. CONTRACTOR SHALL ENSURE THAT ALL BARRICADES, SIGNS, CHANNELIZING DEVICES, WARNING LAMPS, AND TRAFFIC HANDLING DEVICES ARE MAINTAINED IN A CLEAN FUNCTIONAL CONDITION AT ALL TIMES.
10. ALL SIGNS, WARNING DEVICES, AND BARRICADES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING ACTS OF VANDALISM OR ACCIDENT.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE TEMPORARY AND EXISTING PAVEMENT MARKINGS IN A GOOD VISIBLE CONDITION THROUGHOUT THE LENGTH OF THE PROJECT.
12. THE CONTRACTOR SHALL MAINTAIN BARRICADES AND SAFETY FENCES AT EACH SITE WHERE PEDESTRIAN TRAFFIC IS CURRENT.
13. ALL CONSTRUCTION SIGNS, WARNING DEVICES, AND BARRICADES SHALL REMAIN IN PLACE UNTIL THEIR REMOVAL IS DIRECTED BY THESE PLANS OR BY THE ENGINEER.
14. AT THE CONCLUSION OF CONSTRUCTION, THE CONTRACTOR SHALL RESTORE ALL PAVEMENT MARKINGS TO THEIR ORIGINAL CONDITION. NOTE: THE PAINT STRIPING SHOWN HEREON IS INTENDED TO REPLACE THE ORIGINAL STRIPING. THE SIGNS AT THEIR EXISTING LOCATIONS, THEY WILL NOT BE PAID SEPARATELY BUT WILL BE CONSIDERED INCIDENTAL TO VARIOUS BID ITEMS.
15. CONSTRUCTION OF ANY AREA ONLY OF ADEQUATE MITIGATING TRAFFIC FLOW AND SAFETY MUST BE COMPLETED SUBSEQUENT BY THE CONTRACTOR. THE CONTRACTOR MUST ADHERE TO THE CONSTRUCTION SCHEDULE SUBMITTED PRIOR TO THE PRE-CONSTRUCTION MEETING. THE CONTRACTOR MAY ADJUST THE CONSTRUCTION SCHEDULE TO REFLECT RESOURCE CHANGES, WEATHER WORK DELAYS, OR CONTROL.
16. THE TRAFFIC CONTROL PLANS SHOWN ARE A PART OF THE CONTRACT DOCUMENTS. THE DRAWINGS ARE TO BE USED AS A GUIDE AND DEPICT TYPICAL TRAFFIC FLOW TO THE CONSTRUCTION AREA. SUBMIT THE CONSTRUCTION SCHEDULE TO THE ENGINEER FOR REVIEW. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SIGNS, BARRICADES, AND CONTROLLING DEVICES AS DIRECTED BY THE ENGINEER. THE CONTRACTOR MUST ADHERE TO THE CONSTRUCTION SCHEDULE. IF THE CONTRACTOR DEVIATES FROM THE PLAN, THE CONTRACTOR MUST PROVIDE A DIFFERENT PLAN, SUBMITTED BY A REGISTERED PROFESSIONAL ENGINEER AND SHOWN TO BE AN ACCEPTABLE SCALE, ON REPRODUCIBLE MYLARS, AND SHALL BECOME PART OF THE CONTRACT DOCUMENTS.
17. CONTRACTOR SHALL MAINTAIN DRAINAGE OF STORM RUNOFF DURING ALL PHASES OF CONSTRUCTION.
18. THE CONTRACTOR SHALL COORDINATE THE SEQUENCE OF CONSTRUCTION AND TRAFFIC CONTROL PLAN WITH ANY ADJACENT CONSTRUCTION PROJECTS TO ENSURE THE UNINTERRUPTED FLOW OF TRAFFIC.
19. OFF DUTY POLICE OFFICERS/FLAGMEN ARE REQUIRED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED.
20. AS APPLICABLE, CONTRACTOR SHALL SCHEDULE THE EXCAVATION, WITH STEEL PLATES (APPROVED INDIVIDUALLY DURING CONSTRUCTION) AND ALLOW TEMPORARY TRAFFIC FLOW, IF REQUIRED TO AVOID TRAFFIC OR PROPERTY DAMAGE, OR PROVIDE TO APPROVED PLANS, WITH SHORING AND BRIDGE PLATES TO PAVEMENT NEAT OF EXCAVATION DURING NON-WORKING HOURS.

LEGEND

- SIGN (ON SKID-MOUNTED SUPPORT OR APPROVED POST TYPE)
- TRAFFIC CONTROL DEVICE
- DIRECTION OF TRAFFIC FLOW
- TYPE III BARRICADE
- CONSTRUCTION ZONE

NO.	REVISION	DATE	BY

DESIGNED BY: AD
DESIGN CHECKED BY: AD
DRAWN BY: DB
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DB DATE: 6-2-04
QA/QC REVIEWED BY: DB

Costello

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TEXAS PE BOARD FIRM REGISTRATION NO. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

TRAFFIC CONTROL PLAN
PHASE I

DEVELOPMENT COORDINATOR

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE: AS SHOWN

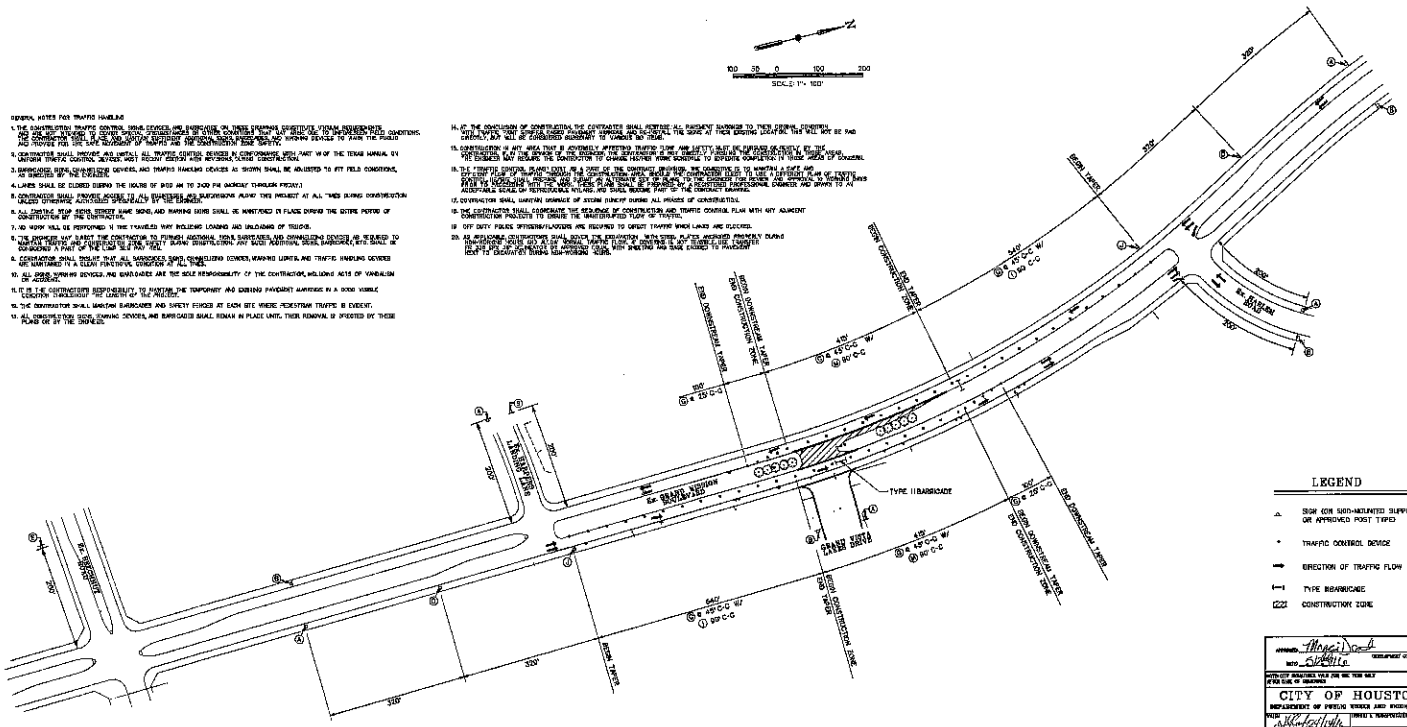
SHEET NO. 7 OF 39

JOB NO. 3270-02-10-01

ROAD WORK AHEAD W20-1	END ROAD WORK G20-2a	RIGHT LANE ENDS W4-1R	LEFT LANE ENDS W4-1L	ROAD WORK NEXT 1 MILE G20-1BTL	ROAD WORK NEXT 1 MILE G20-1BTR	DRUMS	DIRECTIONAL CONE	DIRECTIONAL CONE	LANE ENDS MERGE RIGHT W4-2R	LANE ENDS MERGE LEFT W4-2L	VERTICAL PANEL W-8	VERTICAL PANEL W-8
A	B	C	D	E	F	G	H	I	J	K	L	M

GENERAL NOTES FOR TRAFFIC HANDLING

1. THE SUBMITTED TRAFFIC CONTROL SIGNS, DEVICES, AND BARRICADE ON THESE DRAWINGS CONSTITUTE MINIMUM REQUIREMENTS AND ARE NOT INTENDED TO CONTROL TRAFFIC UNDER ADVERSE OR OTHER CONDITIONS THAT MAY BE DUE TO UNFORESEEN FIELD CONDITIONS. THE CONTRACTOR SHALL PLACE ADDITIONAL SIGNS, DEVICES, AND BARRICADES AS NEEDED TO ASSIST THE PUBLIC AND PROVIDE FOR THE SAFE MOVEMENT OF TRAFFIC AND THE CONSTRUCTION ZONE SAFETY.
2. CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, MOST RECENT EDITION AND REVISIONS, DURING CONSTRUCTION.
3. IMPROPERLY PLACED OR INEFFECTIVE DEVICES, AND TRAFFIC HANDLING DEVICES AS SHOWN SHALL BE ADJUSTED TO FIT FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
4. LANES SHALL BE CLOSED DURING THE HOURS OF 9:00 AM TO 3:00 PM (MORNING TRANSITION PERIOD).
5. CONTRACTOR SHALL PROVIDE ACCESS TO ALL BUSINESSES AND RESIDENCES ALONG THIS PROJECT AT ALL TIMES DURING CONSTRUCTION UNLESS OTHERWISE AUTHORIZED SPECIFICALLY BY THE ENGINEER.
6. ALL TRAFFIC CONTROL SIGNS, DEVICES, LANE SIGNS, AND WARNING SIGNS SHALL BE MAINTAINED IN PLACE DURING THE ENTIRE PERIOD OF CONSTRUCTION BY THE CONTRACTOR.
7. NO WORK WILL BE PERFORMED IN THE TRAVELED WAY INCLUDING LOADING AND UNLOADING OF TRUCKS.
8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL TRAFFIC BARRICADES AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND PROTECT THE PUBLIC SAFETY. SUCH CONSTRUCTION AND SUCH ADDITIONAL SIGNS, BARRICADES, ETC. SHALL BE CONSIDERED A PART OF THE LINE ITEM PAY ITEM.
9. CONTRACTOR SHALL INSURE THAT ALL BARRICADES, SIGNS, CHANNELIZING DEVICES, WARNING LIGHTS, AND TRAFFIC HANDLING DEVICES ARE MAINTAINED IN A CLEAN FUNCTIONAL CONDITION AT ALL TIMES.
10. ALL SIGNS, WARNING DEVICES, AND BARRICADES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING ACTS OF VANDALISM OR ACCIDENT.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PLANTER THE TEMPORARY AND EXISTING PAVEMENT MARKINGS IN A GOOD VISIBLE LOCATION THROUGHOUT THE LENGTH OF THE PROJECT.
12. THE CONTRACTOR SHALL MAINTAIN BARRICADES AND SAFETY FENCES AT EACH SITE WHERE PEDESTRIAN TRAFFIC IS EVIDENT.
13. ALL CONSTRUCTION SIGNS, WARNING DEVICES, AND BARRICADES SHALL REMAIN IN PLACE UNTIL THEIR REMOVAL IS DIRECTED BY THESE PLANS OR BY THE ENGINEER.
14. AT THE CONCLUSION OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL PAVEMENT MARKINGS TO THEIR ORIGINAL CONDITION. WITH TRAFFIC, THAT SPECIFIC SHEET PAVEMENT MARKING AND BACKFILL THE SIGNS AT THEIR EXISTING LOCATION THAT WILL NOT BE PAID SEPARATELY, BUT WILL BE CONSIDERED INCIDENTAL TO VARIOUS BID ITEMS.
15. CONSTRUCTION IN ANY AREA THAT IS ADVERSELY AFFECTING TRAFFIC FLOW AND SAFETY MUST BE REPAIRED IMMEDIATELY BY THE CONTRACTOR. PLAN THE SERVICE OF THE ENGINEER THE ENVIRONMENT IS NOT DIRECTLY AFFECTING THE CONSTRUCTION IN THOSE AREAS. THE ENGINEER MAY REQUIRE THE CONTRACTOR TO CHANGE REGULAR WORK SCHEDULE TO EXPEDITE COMPLETION IN THOSE AREAS OF CONCERN.
16. THE TRAFFIC CONTROL PLAN SHALL INCLUDE THE CONTRACTOR'S PLAN OF THE CONTROL OF TRAFFIC THROUGH THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A SAFE AND EFFICIENT FLOW OF TRAFFIC THROUGH THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A DIVERSION PLAN OF TRAFFIC FLOW IN THE CONSTRUCTION ZONE. THE PLAN SHALL BE PREPARED BY A REGISTERED PROFESSIONAL ENGINEER AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. THE PLAN SHALL BE PREPARED IN ACCORDANCE WITH THE WORK ZONE TRAFFIC CONTROL PLANS AND SHALL INCLUDE A DETAILED SCHEDULE OF REPRODUCIBLE WORKING PLANS. THE PLANS SHALL BE PREPARED BY A REGISTERED PROFESSIONAL ENGINEER AND SUBMITTED TO AN ACCEPTABLE SCALE OF REPRODUCIBLE WORKING PLANS. THE PLANS SHALL INCLUDE PART OF THE CONTRACT DRAWING.
17. CONTRACTOR SHALL MAINTAIN DRAINAGE OF STORM RUNOFF DURING ALL PHASES OF CONSTRUCTION.
18. CONTRACTOR SHALL COORDINATE THE SEQUENCE OF CONSTRUCTION AND TRAFFIC CONTROL PLAN WITH ANY ADJACENT CONSTRUCTION PROJECTS TO ENSURE THE UNINTERRUPTED FLOW OF TRAFFIC.
19. OFF DUTY POLICE OFFICERS/FLAGGERS ARE REQUIRED TO DIRECT TRAFFIC WHEN LANES ARE CLOSED.
20. AS REASONABLE CONSTRUCTION SHALL BEGIN THE EXCAVATION WITH STEEL PLATES ANCHORED PROPERLY DURING THE CONSTRUCTION WORK SO AS TO ALLOW SMOOTH TRAFFIC FLOW. IF UNFORTUNATE ANY DEFECTS THE CONTRACTOR MUST REPAIR THE PAVEMENT IMMEDIATELY. THE PAVEMENT REPAIR SHALL BE DONE WITH SMOOTHING AND SAME EVENLY TO PAVEMENT NEAT TO CONTRACTOR DURING REMOVING SIGNS.



LEGEND

- SIGN (ON SIGN-MOUNTED SUPPORT OR APPROVED POST TYPE)
- TRAFFIC CONTROL DEVICE
- DIRECTION OF TRAFFIC FLOW
- TYPE III BARRICADE
- CONSTRUCTION ZONE

APPROVED: Mangi Dodd DEVELOPMENT COORDINATOR
DATE: 5/28/16

NOTE: CITY OF HOUSTON TITLE BLOCK FOR USE THIS ONLY IF THE SEAL OF ENGINEER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 5/16/16	PROJECT MANAGER	
DATE: 5/16/16	CHIEF ENGINEER	
DATE: 5/16/16	DIRECTOR	
DATE: 5/16/16		

FILE NO.:
DRAWING SCALE: AS SHOWN
SHEET No. 7 A OF 29

FOR CITY OF HOUSTON USE ONLY

NO.	REVISION	DATE	BY

DESIGNED BY: AD, DS
DESIGN CHECKED BY: AD, DS
DRAWN BY: DA, DA
CADD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DS DATE: 5/16/16
QA/QC REVISIONS BY: DS, DA

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TEXAS PE BOARD FIRM REGISTRATION No. 350

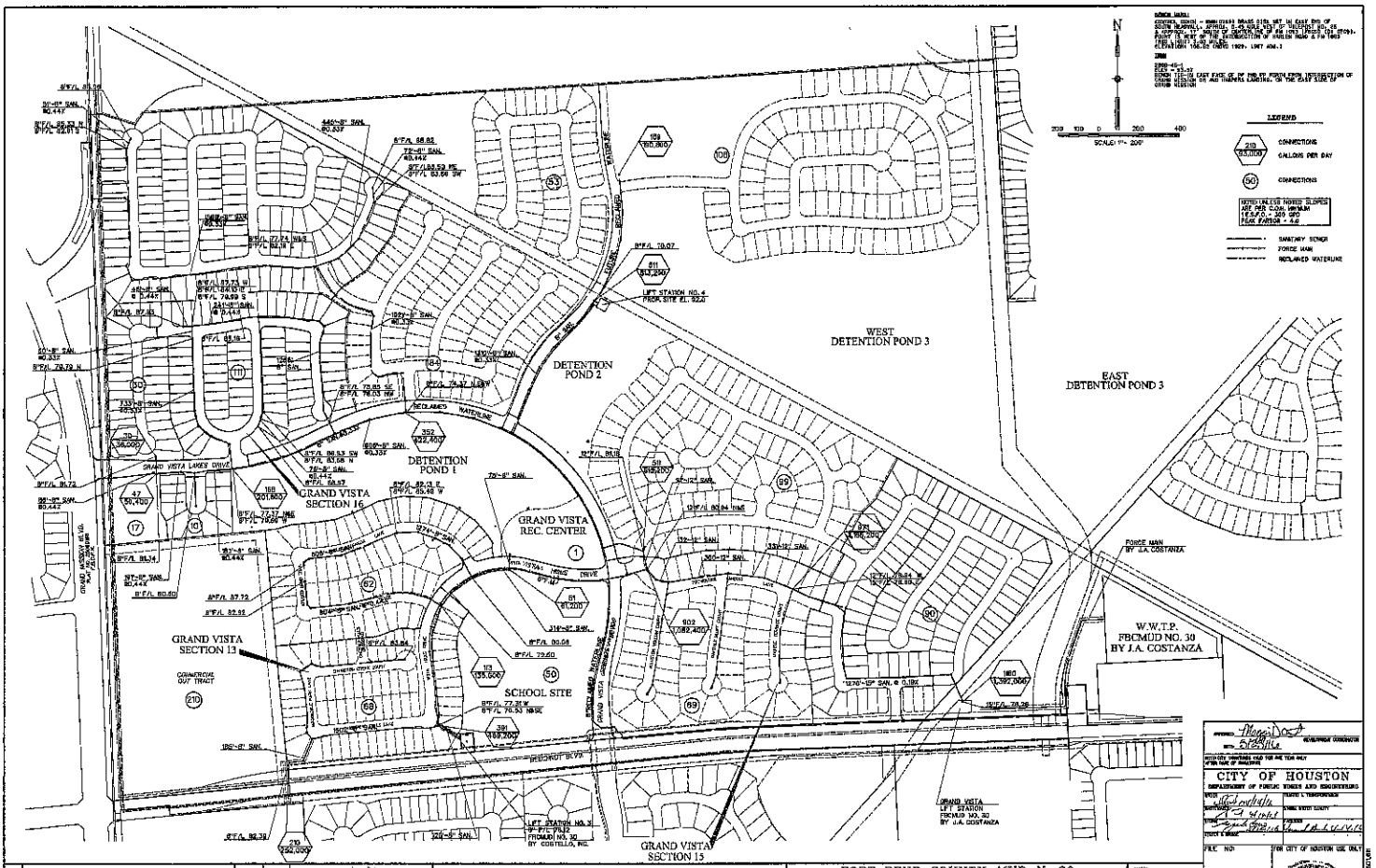
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

TRAFFIC CONTROL PLAN
PHASE II

STATE OF TEXAS
JOHN L. HALL-BAKER
85695
LICENSED PROFESSIONAL ENGINEER

85695

JOB NO. 5016.02-400-SE1.DWG



NO.	REVISION	DATE	BY

DESIGNED BY: AP
DESIGN CHECKED BY: AP
DRAWN BY: JH
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: CL DATE: 8-7-06
QA/QC REVISIONS BY: JH

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(713) 783-7788 ,713) 783-3580, Fax
TEXAS PE BOARD FIRM
REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

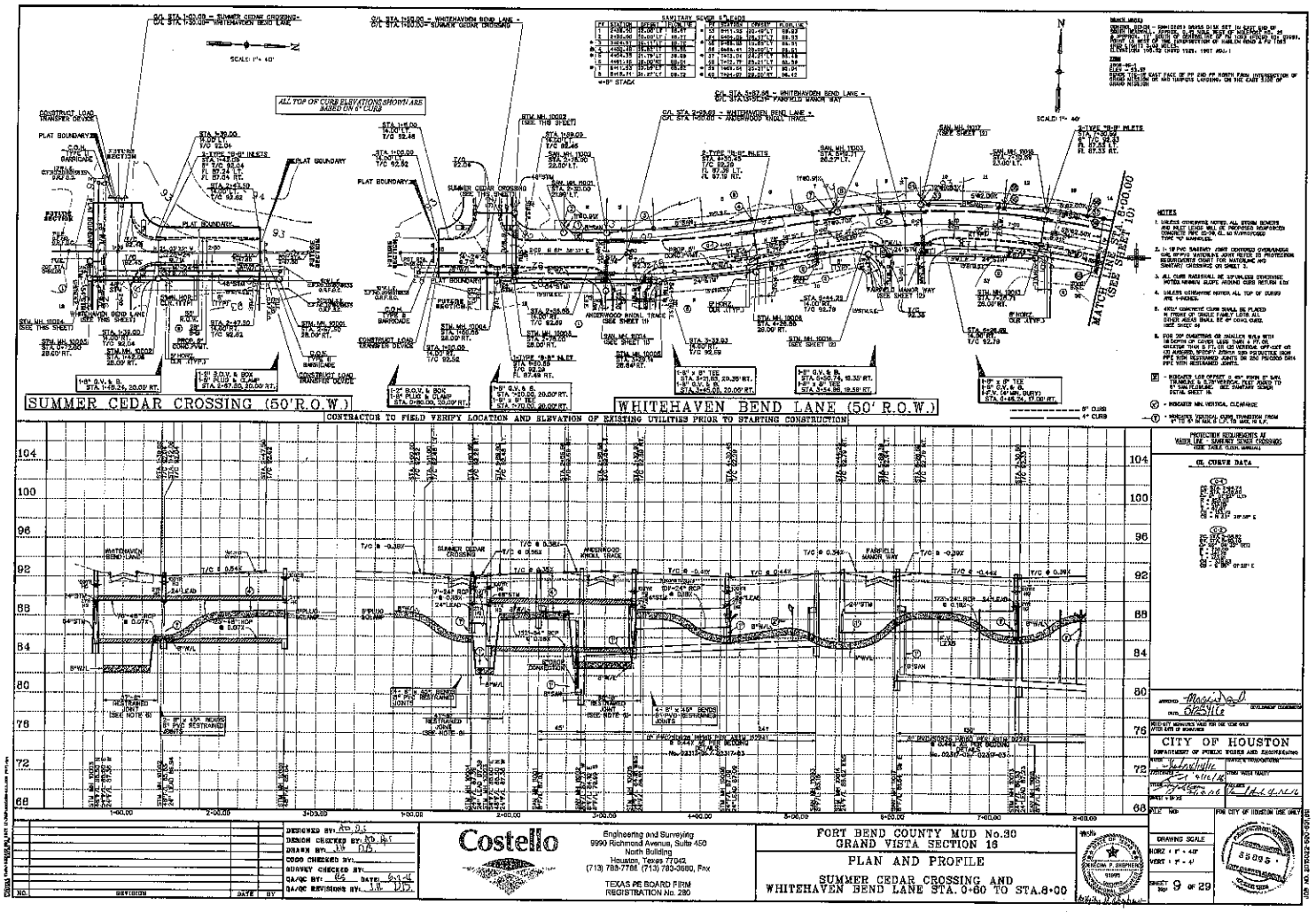
OVERALL SANITARY SEWER LAYOUT

DRAWING SCALE: 1"=200'

SHEET No. 8 OF 29

FOR CITY OF HOUSTON USE ONLY

JOB NO. 2010CEP-R03-SE10B


SUMMER CEDAR CROSSING (50'R.O.W.)
WHITEHAVEN BEND LANE (50' R.O.W.)
ALL TOP OF CURB ELEVATIONS SHOWN ARE BASED ON 6" CURB
CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION
SANITARY SEWER STACKS
NOTES
CURVE DATA
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
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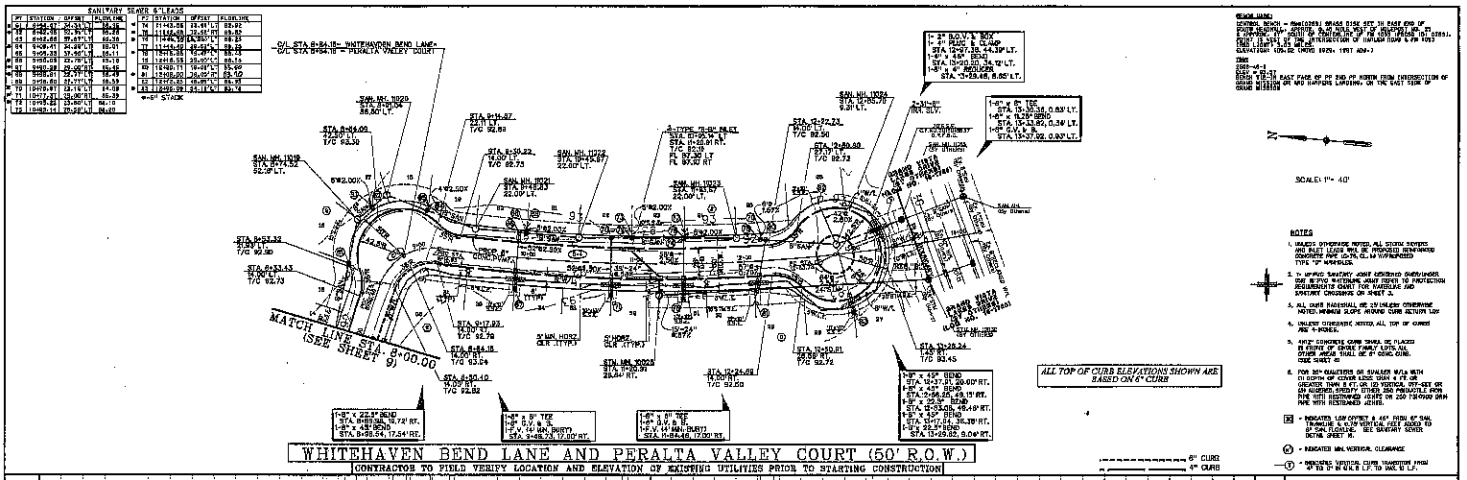
TEXAS PE BOARD FIRM
REGISTRATION No. 280
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16
PLAN AND PROFILE
SUMMER CEDAR CROSSING AND
WHITEHAVEN BEND LANE STA. 0+60 TO STA.8+00
DRAWING SCALE
HORZ 1" = 40'
VERT 1" = 4'
SHEET 9 OF 29
DESIGNED BY:
DRAWN BY:
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY:
QA/QC REVISIONS BY:
DATE:
NO. DIVISION DATE BY
FOR CITY OF HOUSTON USE ONLY
85095

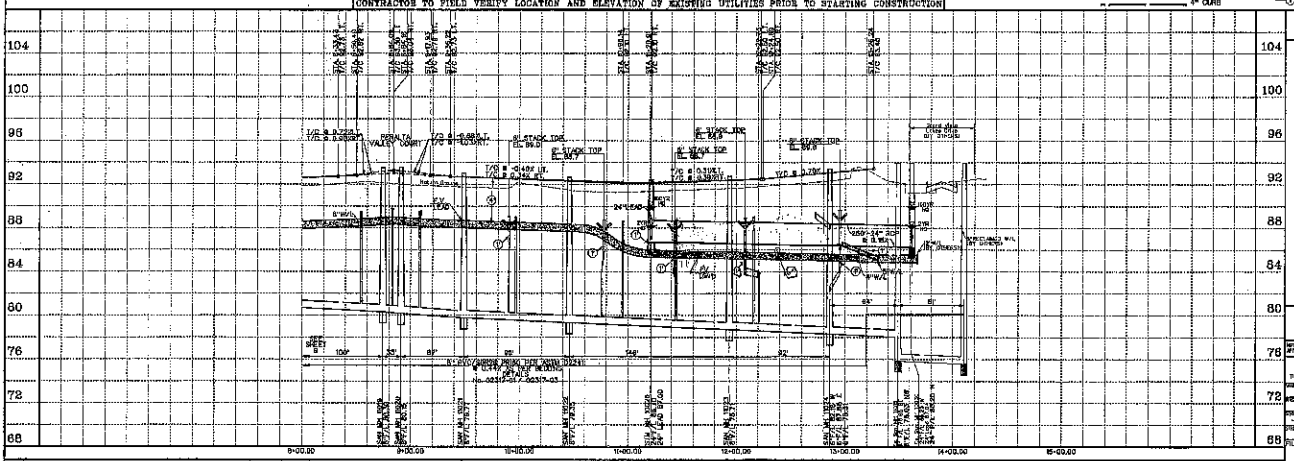
SANITARY SEWER 6" LEADS

PT	STATION	OFFSET	FLOWLINE
40	8+00.47	24.31' LT.	92.38
41	8+02.81	22.31' RT.	92.28
42	8+02.66	37.63' LT.	92.38
43	8+06.41	34.69' LT.	92.31
44	8+06.41	37.69' LT.	92.31
45	9+05.33	37.50' LT.	95.11
46	9+05.33	34.50' LT.	95.11
47	9+05.33	31.50' LT.	95.11
48	9+05.33	28.50' LT.	95.11
49	9+05.33	25.50' LT.	95.11
50	9+05.33	22.50' LT.	95.11
51	10+07.21	33.50' LT.	95.39
52	10+08.34	33.50' LT.	95.17
53	10+08.34	30.50' LT.	95.00

PT	STATION	OFFSET	FLOWLINE
74	11+43.56	23.61' LT.	99.92
75	11+44.09	23.61' RT.	99.92
76	11+44.09	24.61' RT.	99.92
77	11+44.09	25.61' RT.	99.92
78	11+44.09	26.61' RT.	99.92
79	11+45.55	35.00' LT.	99.14
80	11+45.55	35.00' LT.	99.14
81	12+00.71	19.00' LT.	99.97
82	12+05.00	25.00' LT.	99.50
83	12+05.00	24.00' LT.	99.50
84	12+05.00	23.00' LT.	99.50

* = 6" STUB





PROJECTION REQUIREMENTS AT MATCH LINE - CONTACT SURVEY DESIGNERS (SEE TABLE CLOSE DWGS)

CL CURVE DATA

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DESIGNED BY: AD, BJ
DESIGN CHECKED BY: AD, BJ
DRAWN BY: JL, DLB
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DS DATE 9-1-04
QA/QC REVISIONS BY: JL, DLB

NO.	REVISION	DATE	BY

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TEXAS PE BOARD FIRM REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

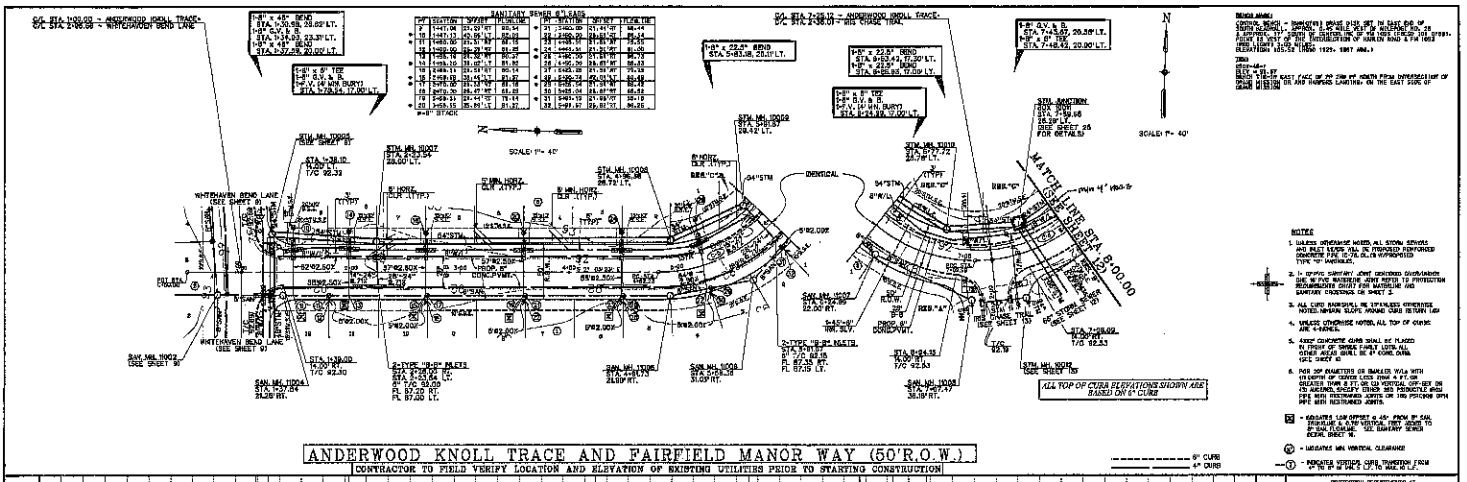
PLAN AND PROFILE

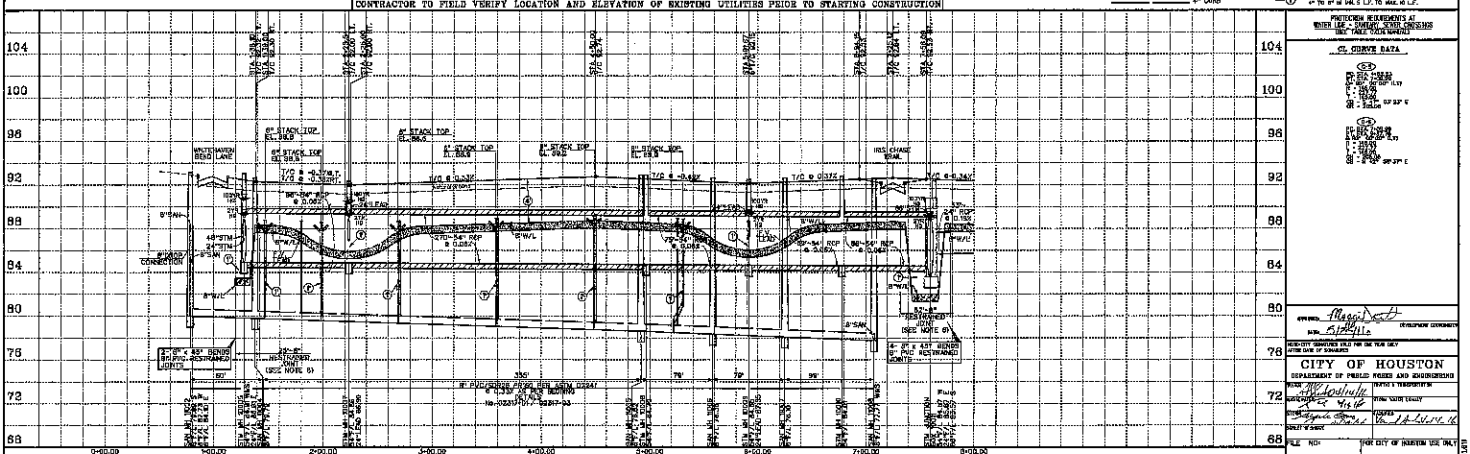
WHITEHAVEN BEND LANE STA. 8+00.00 TO STA. 8+84.16
PERALTA VALLEY COURT STA. 8+54.16 TO 15+26.24

DRAWING SCALE
HORZ. 1" = 40'
VERT. 1" = 4'

SHEET No. 10 OF 29

JOB NO. 03-0202-600-001





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REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

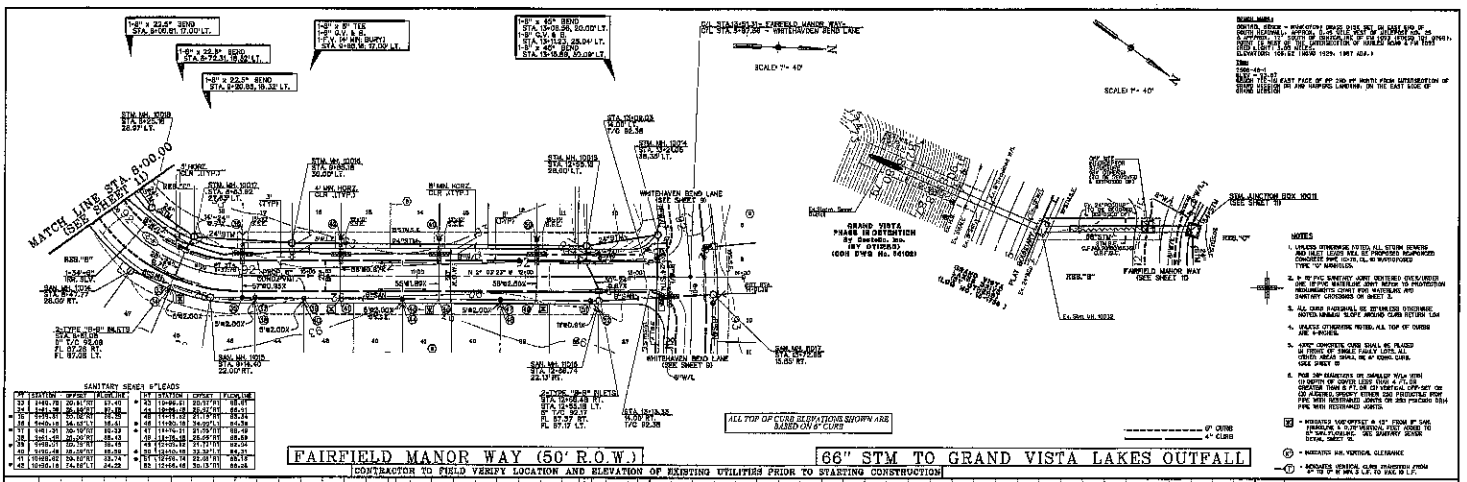
PLAN AND PROFILE

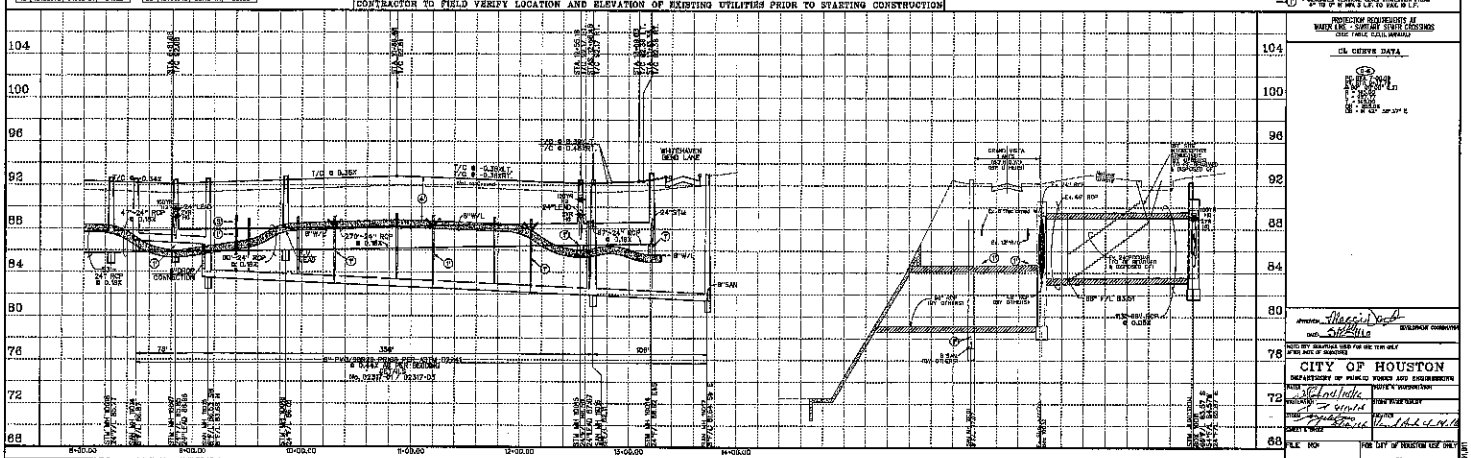
ANDERWOOD KNOLL TRACE, STA. 0+36.00 TO STA. 7+25.12
AND FAIRFIELD MANOR WAY STA. 7+25.12 TO STA. 8+00.00

DRAWING SCALE
HORIZ 1" = 40'
VERT 1" = 4'

SHEET No. 11 OF 29

NO.	REVISION	DATE	BY





DESIGNED BY: RO
DESIGN CHECKED BY: RO
DRAWN BY: DA
CADD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: RZ DATE: 10-2-96
QA/QC REVISIONS BY: DA

NO.	REVISION	DATE	BY

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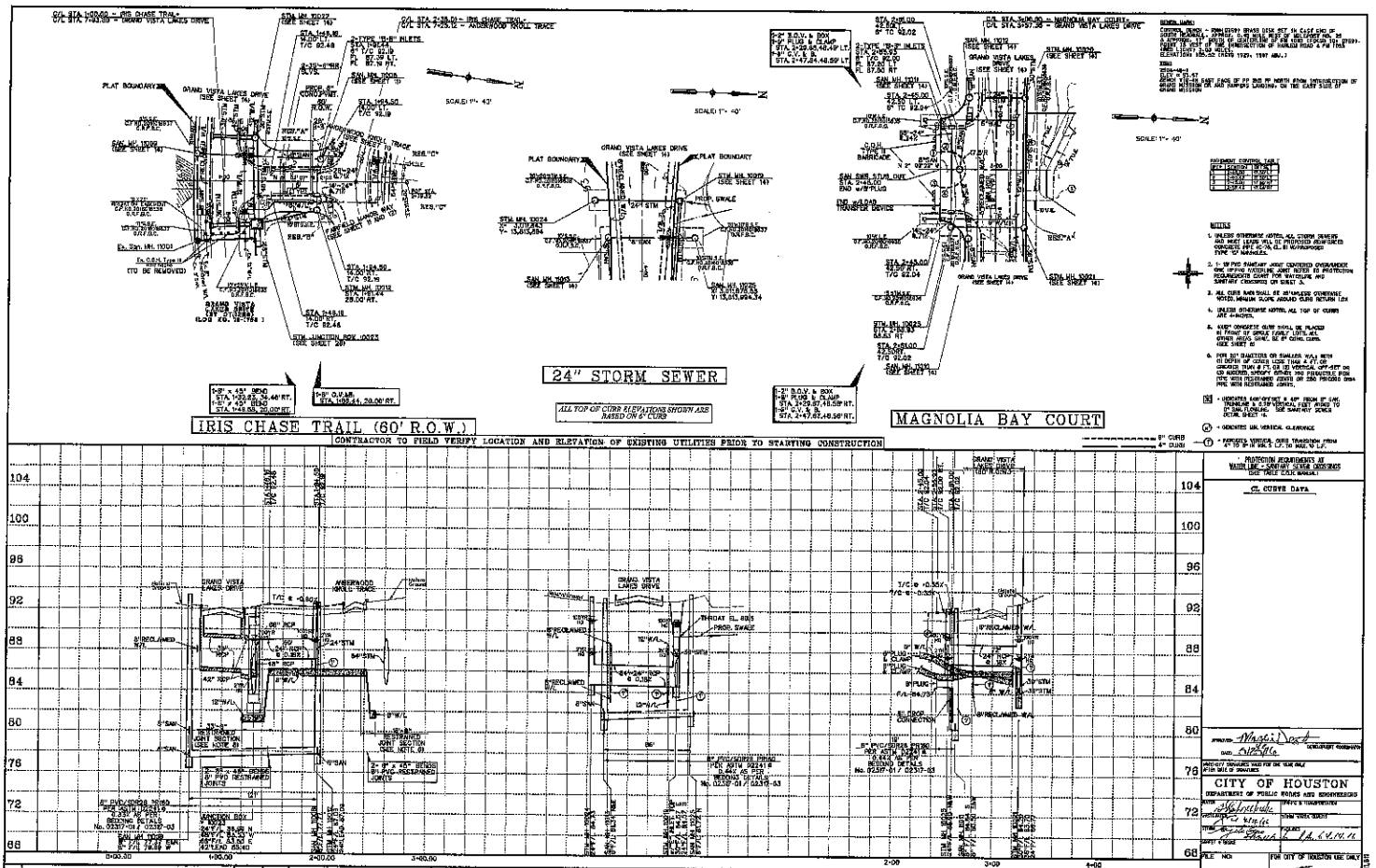
(713) 783-7788 (713) 783-3690, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

PLAN AND PROFILE
FAIRFIELD MANOR WAY-
STA. 8+00.00 TO STA. 13+65.33 AND
66" STM TO GRAND VISTA LAKES OUTFALL

DRAWING SCALE
HORIZ 1" = 40'
VERT 1" = 4'

SHEET NO. 12 OF 29


24" STORM SEWER
IRIS CHASE TRAIL (60' R.O.W.)
MAGNOLIA BAY COURT
CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION
ALL TOP OF CURB ELEVATIONS SHOWN ARE BASED ON 6" CURB
GRAND VISTA LAKES DRIVE
PLAT BOUNDARY
SCALE: 1" = 40'
SCALE: 1" = 43'
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
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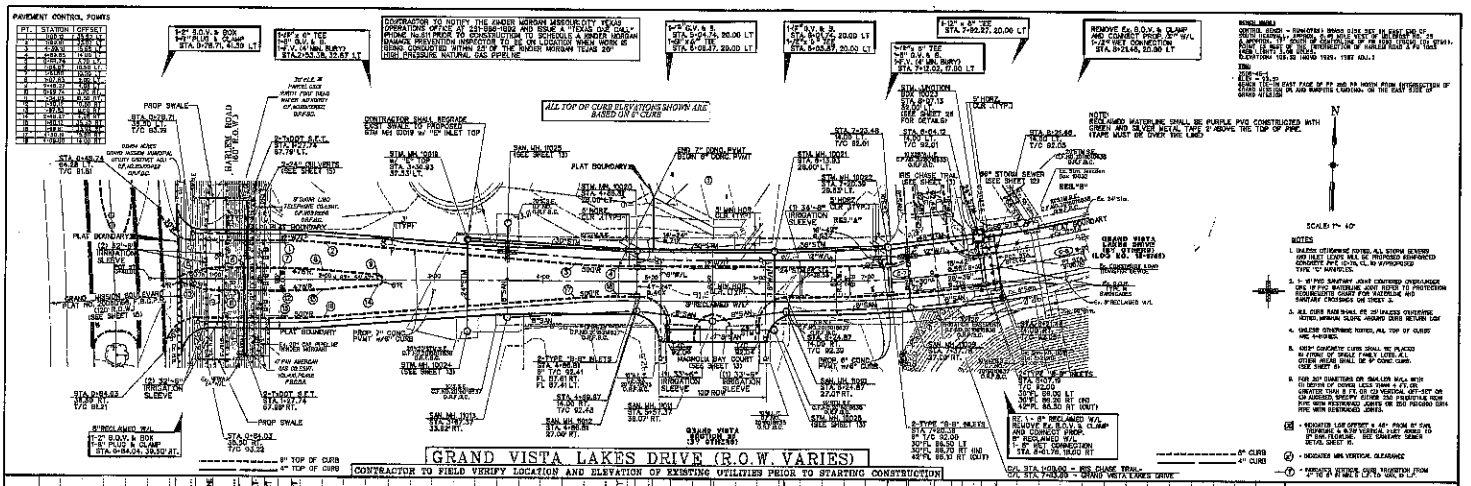
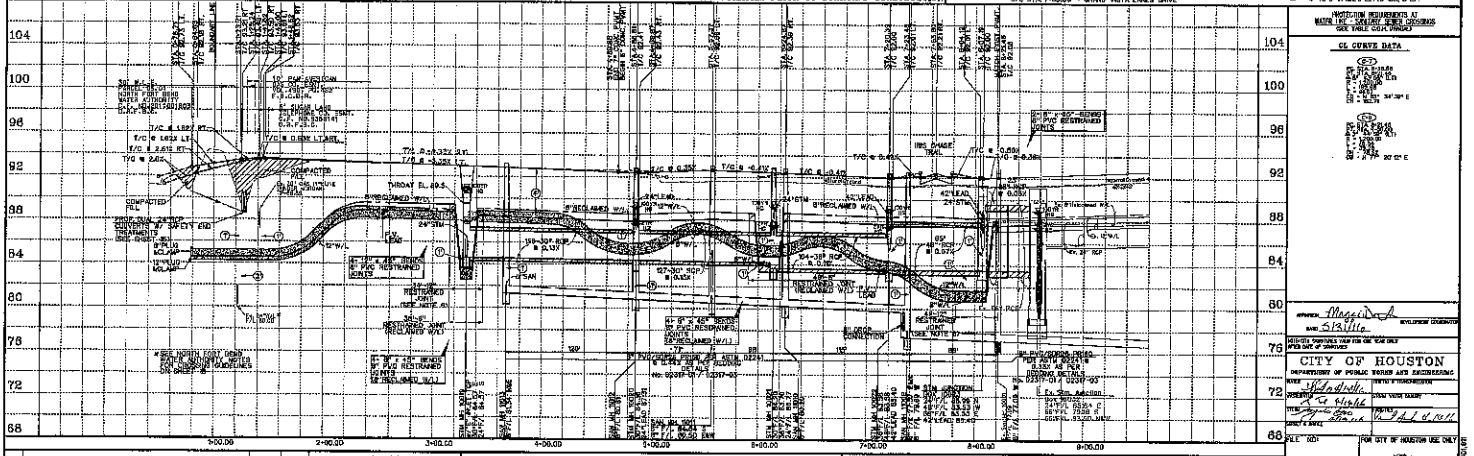
TEXAS PE BOARD FIRM
REGISTRATION No. 280
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16
PLAN AND PROFILE
IRIS CHASE TRAIL STA. 0+79.50 TO STA. 2+43.32
24" STORM SEWER, AND MAGNOLIA BAY COURT
SHEET 13 OF 29





NO.	REVISION	DATE	BY

DESIGNED BY: KSG
DESIGN CHECKED BY: KSG
DRAWN BY: JLB
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVIEWER BY: DATE:

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450
North Building
Houston, Texas 77042
(713) 783-7788 (713) 783-3980, Fax

TEXAS PE BOARD FIRM
REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

PLAN AND PROFILE
GRAND VISTA LAKES DRIVE
STA. 0+48.77 TO STA. 8+21.46

REGISTERED PROFESSIONAL ENGINEER
KEVIN S. GRIFFITH
55338
TEXAS

DRAWING SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

SHEET 14 OF 29

FOR CITY OF HOUSTON USE ONLY

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

JOB NO. 2016-02-0

SAWCUT NOTES

1. SAWCUT EXIST. CONCRETE PAVEMENT. REMOVE EXIST. PAVEMENT WITH CURB. DISPOSE OFF-SITE. AND LEAVE STEEL EXPOSED A MINIMUM OF 12-INCHES.
2. TIE PROPOSED PAVEMENT LONGITUDINAL BARS TO EXPOSED EXIST. BARS USING 18" MIN. LAPS 18" C-C #18 x DOWEL #4 BARS IF NECESSARY.
3. ALL CONSTRUCTION WHICH HINDERS TRAFFIC OR REQUIRES TRAFFIC DIVERSION SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL.

NOTES:

1. EXISTING UTILITIES ALONGSIDE TOWN GRAND MISSION. ARE NOT INDICATED. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATIONS OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. CONTACT TEXAS ONE CALL (713-223-4567).
2. THE CONTRACTOR SHALL THOROUGHLY PROOF ROLL ALL AREAS TO LOCATE ANY SOFT OR WEAK AREAS. ALL SOFT OR WEAK AREAS DETECTED SHALL BE EXCAVATED TO FIRM SOIL AND REPLACED WITH MATERIAL OF SIMILAR CLASSIFICATION AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY AT +/- 2 POINTS OF OPTIMUM MOISTURE CONTENT.

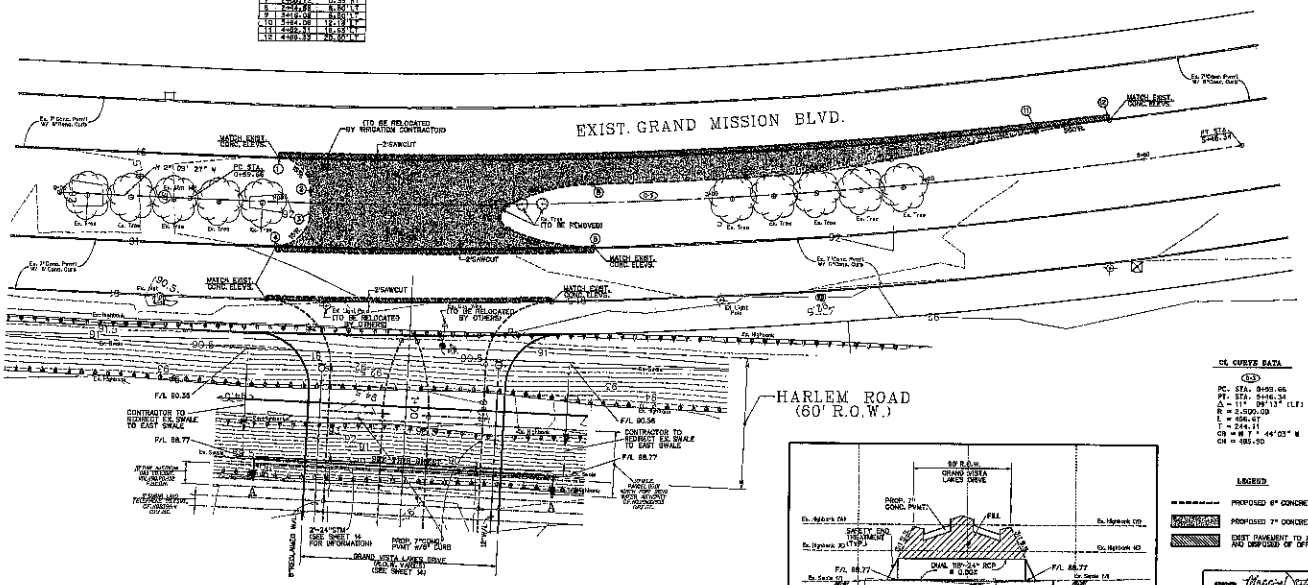
BENCHMARKS

CONTROL BENCH - MONUMENTAL BRASS DISK SET IN EAST END OF BRIDGE (SOUTH) - APPROX. 0.25 MILE WEST OF QUITMAN ST., IN GRAND MISSION BOULEVARD. (ELEVATION 100.56 (NGVD 1929, 1947 ADJ.)

TBM
SCM-40-1
BENCH TIE-IN EAST FACE OF PC AND PT AND MEDIAN CURB INTERSECTION OF GRAND MISSION BLVD AND HARLEM CANDLES. ON THE EAST SIDE OF GRAND MISSION

SCALE: 1" = 20'

PTM	STATION	OFFSET
1	0+93.55	20.19'LT
2	1+00.00	5.23'RT
3	1+04.87	2.23'RT
4	1+00.00	15.77'RT
5	3+48.67	20.00'RT
6	3+56.81	11.18'RT
7	3+60.43	0.35'RT
8	3+64.89	5.50'LT
9	3+69.08	24.50'LT
10	3+64.08	12.19'LT
11	4+00.33	18.53'LT
12	4+00.33	26.50'LT



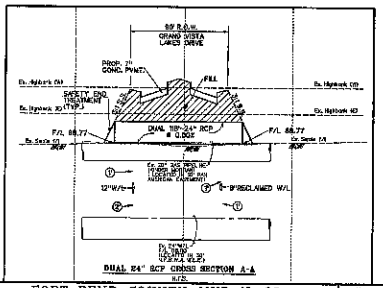
CL CURVE DATA

(B3)

PC. STA. 0+93.55
PT. STA. 3+46.34
Δ = 11° 09'13" (LT)
R = 2,500.00
L = 486.41
T = 244.11
CN = N 7° 44'03" W
CH = 485.50

LEGEND

- PROPOSED 6" CONCRETE CURB
- PROPOSED 7" CONCRETE PAVEMENT
- EXIST. PAVEMENT TO BE REMOVED AND DISPOSED OF OFFSITE.



DUAL 24" RCP CROSS SECTION A-A

NO.	REVISION	DATE	BY

DESIGNED BY: RO.AS
DESIGN CHECKED BY: RO.AS
DRAWN BY: JM D.LS
CADD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: RO DATE: 6-7-16
QA/QC REVISIONS BY: JM D.LS

Costello

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(713) 783-7788 (713) 783-3580, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 280

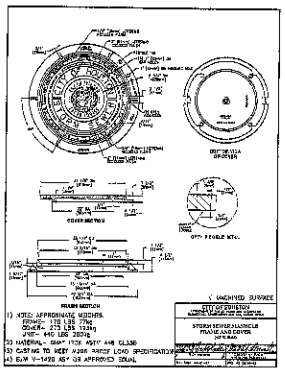
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

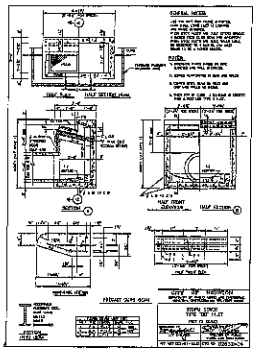
GRAND MISSION BOULEVARD
LEFT TURN LANE

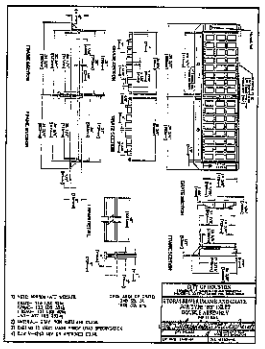
48 HRS
CALL BEFORE YOU DIG!
TEXAS ONE

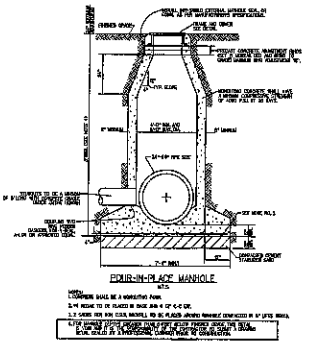
DESIGN R. SHEVRIN
DATE 6-7-16

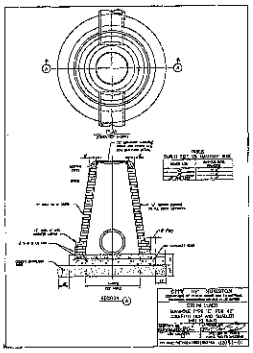
DEVELOPER'S ENGINEER
DEVELOPER'S SURVEYOR
APPROVALS VALID FOR ONE YEAR ONLY AFTER DATE OF APPROVAL
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DIRECTOR
DEPUTY DIRECTOR
CITY ENGINEER
PROJECT MANAGER
PROJECT ENGINEER
PROJECT CHIEF
FILE No.
FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE
AS SHOWN
SHEET No. 15 OF 29
PROFESSIONAL ENGINEER
93383
STATE OF TEXAS

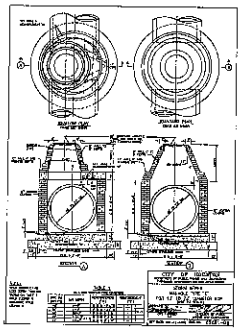


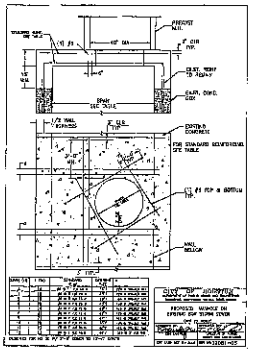


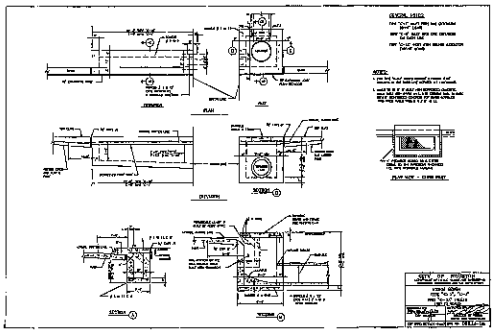












DESIGNED BY:	AD, DJ		
DRAWN BY:	JW		
CODE CHECKED BY:			
SURVEY CHECKED BY:			
QA/QC BY:	DJ	DATE	12-3-96
QA/QC REVISIONS BY:	JW		

NO.	REVISION	DATE	BY

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TEXAS PE BOARD FIRM REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

DRAINAGE DETAILS

DEVELOPER CONCURRENCE

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

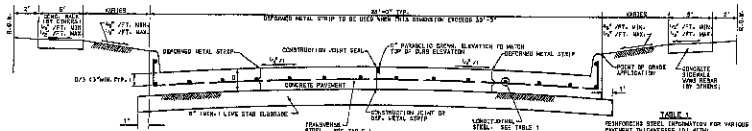
FILE: NON

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE: N.T.S.

SHEET No. 16 OF 29

JOB NO. 2202022-600-16-0.01



NOTES:
1. ALL REINFORCED STEEL SHALL CONFORM TO ASTM DESIGNATION A615, GRADE 60. FOR ALL #4 & #5 BARTING USE #4 & #5 DEFORMED BARS. SPACING TO CONF.
2. THE POSITION OF CONSTRUCTION JOINTS AND DEFORMED METAL STRIPS MAY BE THOUGH MODIFIED BY THE ENGINEER TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR. THE MAXIMUM ALLOWED DEFORMED LONGITUDINAL JOINTS SHALL NOT EXCEED 10'-0".
3. ALL EARTHEN AREAS ARE TO BE HYDROMULCHED.
4. CONTRACTOR MAY SAW CUT IN LIEU OF DEFORMED METAL STRIP.

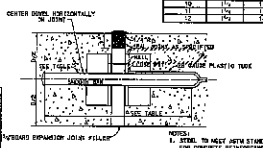
TYPICAL SINGLE ROADWAY SECTION

TABLE 1
REINFORCING STEEL DEPENDANTS FOR VARIOUS PAVEMENT THICKNESSES (01 WITH)
L= EXPANSION JOINT SPACING = 60 FT.
fc' = 3,500 PSI AND fy = 60,000 PSI

PAVEMENT THICKNESS (IN)	PAVEMENT (FT)	LONGITUDINAL STEEL			TRANSVERSE STEEL
		NUMBER OF BARS	SPACING (IN)	CUT BAR SPACING (IN)	# 4 BARS SPACING (IN)
6	18	17	20.33	4	34
7	19	17	19.33	4	32
8	20	14	16.00	3	26
9	21	15	14.50	3	24
10	22	16	13.33	3	22
11	23	17	12.50	3	21
12	24	18	11.75	3	20
13	25	19	11.20	3	19
14	26	20	10.67	3	18
15	27	21	10.25	3	17
16	28	22	9.80	3	16
17	29	23	9.40	3	15
18	30	24	9.00	3	15
19	31	25	8.70	3	14
20	32	26	8.40	3	14
21	33	27	8.10	3	13
22	34	28	7.86	3	13
23	35	29	7.60	3	12
24	36	30	7.40	3	12
25	37	31	7.20	3	12

VERTICAL LAP LENGTHS (L)
A: # 3 BARS L = 22 INCHES
B: # 4 BARS L = 29 INCHES
C: # 5 BARS L = 32 INCHES

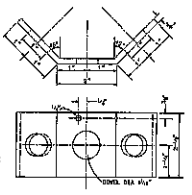
PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
6	¾	18	12
7	1	18	12
8	1	18	12
9	1¼	18	12
10	1¼	18	12
11	1½	18	12
12	1½	18	12



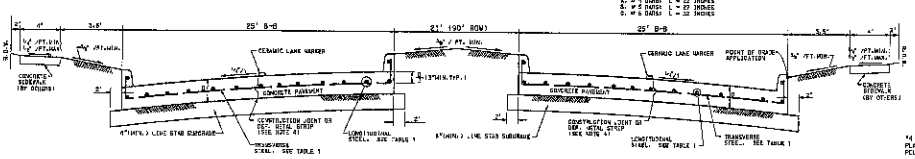
NOTES:
1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS. UNITS TO BE SPACED ON 12" CENTERS.
2. CENTER DOWEL VERTICALLY IN CONCRETE BASE. EXISTING THICKNESS CONCRETE AS FOUND TO MAINTAIN 3" MIN. COVER

DOWEL TYPE EXPANSION JOINT

LIGHTCLEVER TYPE, CAST MALLEABLE IRON LOAD TRANSMISSION UNIT STAR LUG MODEL R-DT OR EQUAL OR SIM C-C ACCEPTABLE AS ALTERNATE



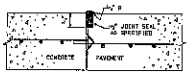
EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED APPROX. 60'-0" APART.



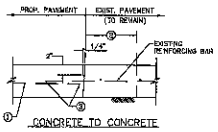
TYPICAL DOUBLE ROADWAY SECTION

DEFORMED METAL STRIP

THE LOCATION OF CONSTRUCTION JOINTS AND DEFORMED STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE ENGINEER, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR



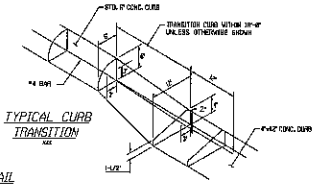
CONSTRUCTION JOINT SEAL



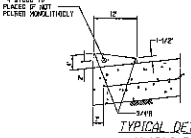
CONCRETE TO CONCRETE STANDARD PAVEMENT TIE-IN

(SEE NOTES)

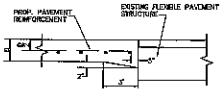
NOTES FOR TIE-IN:
1. REINFORCING CENTERED IN PROPOSED PAVEMENT, 3" CLEAR AT EDGES.
2. SAW-CUT 3" DEEP AND REMOVE 3" EXISTING PAVEMENT OR PAVEMENT WITH CURB. EXPOSE AND CLEAN EXISTING REINFORCING.
3. 24xBAR DIAMETER "AP" OR WIDE, IF DIRECTED.
4. IF NO EXPOSED REINFORCING STEEL EXISTS, HORIZONTAL DOWELS SHALL BE #6 BARS, GRADE 60, 30" LONG DRILLED AND EMBEDDED 15" INTO THE CENTER OF THE EXIST CONCRETE SLAB WITH EPOXY OR APPROVED EQUAL. DOWELS SHALL BE PLACED 24" CENTER TO CENTER.



TYPICAL CURB TRANSITION



TYPICAL DETAIL 4"x12" CURB



TYPICAL PAVING HEADER

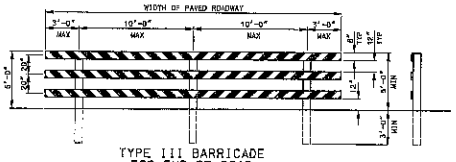
NOTES FOR PAVING HEADER
1. ADDITIONAL CONCRETE FOR PAVING HEADER SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.
2. DISTURBED MATERIAL IN THE FLEXIBLE PAVEMENT WILL BE BACKFILLED WITH ASPHALT CONCRETE PAVEMENT (ACP). THE ACP WILL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.

STRIPING SHOULD COVER THE FULL WIDTH OF THE RAIL, STRIPING OF RAILS, PANELS, ETC. SHOULD SLOPE DOWNWARD AT AN ANGLE OF 45 DEGREES IN DIRECTIONS TRAFFIC IS TO PASS.

WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, IT IS DESIRABLE THAT THE STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING, WHEN BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, THE CHEVRON STRIPING MAY SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.

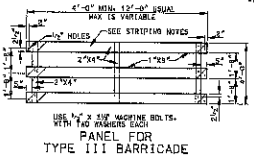
STRIPING FOR BARRICADE

FOR ALL TYPES OF BARRICADES WITH RAILS LESS THAN 3'-0" LONG, STRIPES 2" WIDE SHALL BE USED. IDENTIFICATION MARKINGS MAY BE SHOWN ONLY ON BACK SIDE OF BARRICADE RAILS.

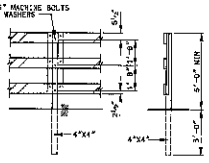


TYPE III BARRICADE FOR END OF ROAD

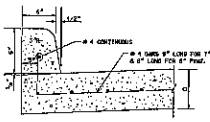
FOR TYPE III BARRICADE FOR END OF ROAD, THE THREE (3) RAILS SHALL BE REFLECTIVE RED AND REFLECTIVE WHITE STRIPES ON SIDE FACING TRAFFIC (HIGH INTENSITY SHEETING ON BARRICADE OR NICKOLITE)



PANEL FOR TYPE III BARRICADE



POST FOR TYPE III BARRICADE



CONCRETE CURB

REVISION	DATE	BY

DESIGNED BY: MD, DJS
DESIGN CHECKED BY: MD, DJS
DRAWN BY: JAL, DJS
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DS DATE: 6/7/10
QA/QC REVISIONS BY: DJS, DJS

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(713) 783-7788 (713) 783-3580, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

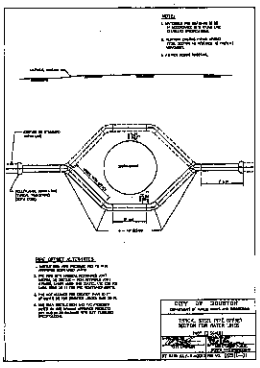
PAVING DETAILS

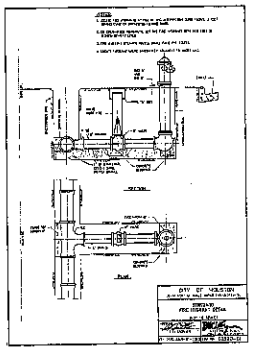
DRAWING SCALE: N.T.S.

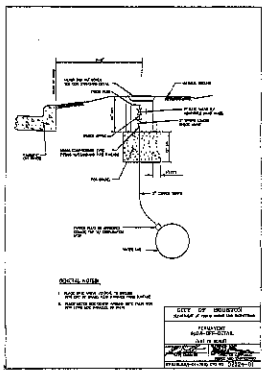
SHEET No. 17 OF 29

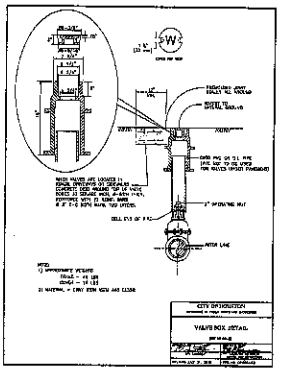
APPROVED: [signature] DEVELOPMENT COORDINATOR
DATE: 6/24/10
WITH KEY INDICATED SHEET FOR ONE YEAR ONLY AFTER DATE OF APPROVAL
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
CHIEF: [signature] CHIEF ENGINEER
DIVISION: [signature] DIVISION ENGINEER
PROJECT ENGINEER: [signature] PROJECT MANAGER
FILE NO:
FOR CITY OF HOUSTON USE ONLY

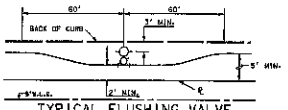
JOB NO. 2006023-400-00.01









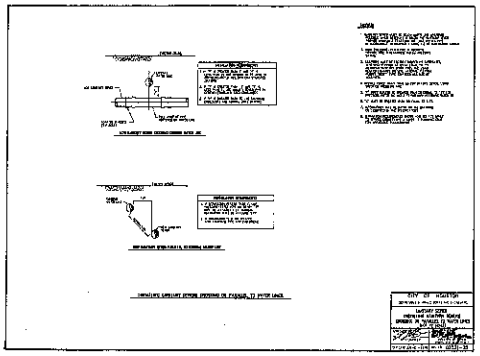


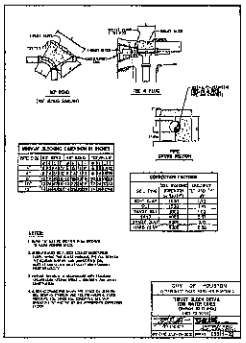
TYPICAL FLUSHING VALVE LOCATION IN R.O.W.

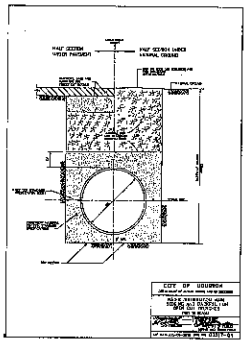
N.T.S.

NORTH FORT BEND WATER AUTHORITY
GENERAL NOTES FOR CROSSING AGREEMENT

1. UTILITY WILL CONTACT NORTH FORT BEND WATER AUTHORITY'S ("AUTHORITY") OPERATOR DIVERSITY NET SERVICES 281-916-2955 TO INDICATE AND MARK AUTHORITY'S WATER LINE PRIOR TO ANY CONSTRUCTION. AUTHORITY ACCEPTS NO RESPONSIBILITY REGARDING THE LOCATION OF ANY OTHER FACILITIES WITHIN THE AUTHORITY'S EASEMENT.
2. UTILITY WILL COORDINATE WITH AUTHORITY REGARDING USE OF HEAVY EQUIPMENT ON OR ACROSS WATERLINE WITHIN THE EASEMENT TO PREVENT POTENTIAL DAMAGE TO AUTHORITY FACILITIES. THIS MAY INCLUDE USE OF MATS, PLATES, OR SPECIAL EQUIPMENT.
3. ANY OPEN CUT CONSTRUCTION FOR A UTILITY CROSSING ABOVE AN AUTHORITY WATERLINE WILL NOT DISTURB SOIL WITHIN 36 INCHES OF AUTHORITY'S LINE. UTILITY'S EXCAVATION SHALL HAVE A PLATE WELDED OVER THE TOP OF UTILITY EXCAVATION BLOCKOUT, AND THE SIDE CUTTERS MUST BE REMOVED PRIOR TO EXCAVATION TO NOT PROTECT PREVENT DAMAGE. ANY EXCAVATION TAKING PLACE WITHIN 24 INCHES OF THE OUTER EDGE OF THE WATERLINE SHALL BE DONE BY HAND (NO AUTOMOBILE, VEHICLE, OR MACHINE EXCAVATION ALLOWED) WITH WRITTEN APPROVAL OF THE AUTHORITY ON SITE REPRESENTATIVE.
4. CONSTRUCTION ACTIVITIES THAT GENERATE GROUND VIBRATIONS, INCLUDING PILE DRIVING, SHEET PILING, SOIL COMPACTION WORK, HACK HAMMERING, REWORKING, SCRAPING AND JIGGING SHALL BE COORDINATED WITH AND APPROVED BY THE AUTHORITY'S ENGINEER.
5. LETTER OF NO OBJECTION MUST BE OBTAINED PRIOR TO ANY WORK ACTIVITY WITHIN AUTHORITY'S EASEMENT. AUTHORITY MUST REVIEW AND APPROVE PROPOSED EASEMENT AND CONSTRUCTION DRAWINGS BEFORE ISSUING A LETTER OF NO OBJECTION. A COPY OF THIS LETTER MUST BE IN THE POSSESSION OF UTILITY'S (AND ITS CONTRACTOR) WORK CREWS WHILE CONDUCTING CONSTRUCTION ACTIVITY WITHIN AUTHORITY'S EASEMENT. A LETTER OF NO OBJECTION IS NOT NECESSARY FOR SURVEY WORK OR OR ASSESSMENT OF THE USAGE OF THE EASEMENT.
6. UTILITY MUST NOTIFY AUTHORITY 48 HRS IN ADVANCE OF UTILITY CONDUCTING ACTIVE CONSTRUCTION WITHIN THE AUTHORITY'S EASEMENT. AUTHORITY'S ATTENDANCE MAY BE REQUIRED DURING ACTIVE CONSTRUCTION WITHIN AUTHORITY EASEMENT. UTILITY WILL REIMBURSE AUTHORITY FOR THE COST OF HIS REPRESENTATIVE TO BE PRESENT DURING ACTIVE CONSTRUCTION WITHIN AUTHORITY'S EASEMENT.
7. UTILITY MAY NOT STORE CONSTRUCTION MATERIALS INCLUDING SOIL SPOILS, AND EQUIPMENT ON AUTHORITY EASEMENT.
8. ALL PROPOSED CROSSINGS SHALL BE REASONABLY PERPENDICULAR TO AUTHORITY'S EASEMENT.
9. PROPOSED SURFACE GRADE OR ELEVATION WITHIN AUTHORITY EASEMENT MUST BE APPROVED BY THE AUTHORITY. NO CONSTRUCTION WILL BE ALLOWED THAT RESULTS IN THE EROSION OF SOIL OR EARTHFILL OF ANY TRANSGRESSIONS WITHIN THE AUTHORITY'S EASEMENT. RESTORE AUTHORITY'S EASEMENT TO EXISTING CONDITION OR BETTER TO ENSURE POSITIVE DRAINAGE WITHOUT ADVERSELY AFFECTING ADJACENT PROPERTIES.
10. NO TEMPORARY OR PERMANENT CROSSING BUILDINGS, ROADWAYS, SIDEWALKS, RETAINING WALLS, PARKING LOTS, ETC. SHALL BE CONSTRUCTED ALONG AUTHORITY'S EASEMENT WITHOUT WRITTEN APPROVAL. ALL CROSSINGS SHALL BE RESTRICTED TO NO REASONABLY PERPENDICULAR TO THE WATER LINE AND MAINTAIN A MINIMUM OF 6' COMPACTED COVER OVER THE WATER LINE.
11. REQUESTS FOR VARIANCE FROM THESE CROSSING GUIDELINES MAY BE SUBMITTED TO THE AUTHORITY'S BOARD OF DIRECTORS FOR CONSIDERATION ON A CASE-BY-CASE BASIS AND MUST (I) PROVIDE AN EXPLANATION OF THE NEED FOR THE VARIANCE, (II) BE IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES IN THE HOUSTON REGION, (III) NOT CREATE AN UNREASONABLE RISK OF HARM TO THE GENERAL PUBLIC OR THE AUTHORITY'S FACILITIES, AND (IV) NOT UNREASONABLY RESTRICT OR INTERFERE WITH THE AUTHORITY'S EASEMENT OR FACILITIES, OR THE OPERATION AND MAINTENANCE OF THE AUTHORITY'S FACILITIES.







APPROVED: Maggie Dalton
DATE: 6/29/16
DEVELOPMENT COORDINATOR

APPROVED BY CITY OF HOUSTON
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DATE: 6/29/16
DIRECTOR: Carol Haslam
DATE: 6/29/16
DATE: 6/29/16
DATE: 6/29/16

NO.	REVISION	DATE	BY

DESIGNED BY: AD
DRAWN BY: DB
CODE CHECKED BY:
SURVEY CHECKED BY:
CA/QC BY: DS DATE 6-7-16
CA/QC REVISIONS BY: DA

Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450
North Building
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 280

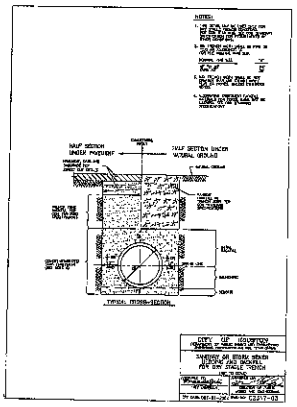
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

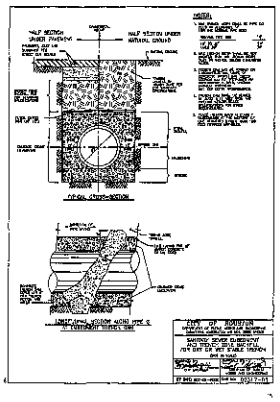
WATER MAIN DETAILS

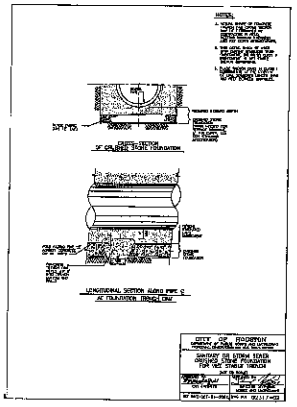
FILE NO:
DRAWING SCALE: N.T.S.
SHEET No 18 OF 28

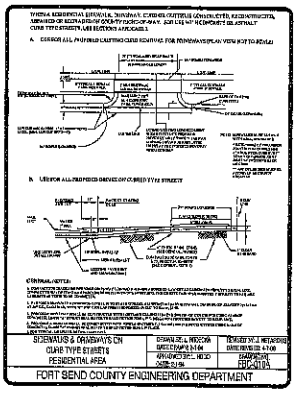
FOR CITY OF HOUSTON USE ONLY
REGISTERED PROFESSIONAL ENGINEER 65989 STATE OF TEXAS

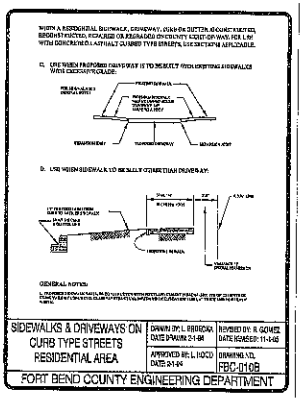
JOB NO. 2016022-600-0181

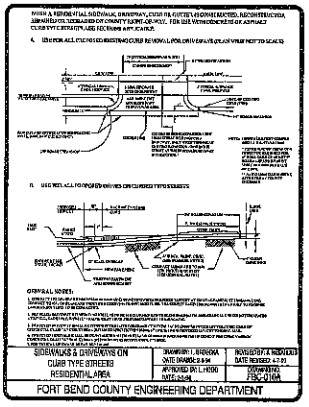












NO.	REVISION	DATE	BY

DESIGNED BY: [illegible]
DESIGN CHECKED BY: [illegible]
DRAWN BY: [illegible]
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: [illegible] DATE: 6-7-96
QA/QC REVISIONS BY: [illegible]

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(713) 783-7788 (713) 783-3580, Fax

TEXAS PE BOARD FIRM
REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

BEDDING AND
FORT BEND COUNTY
RESIDENTIAL DRIVEWAYS DETAILS

STATE OF TEXAS
VIRGINIA P. SHEPARD
6995

APPROVED: [illegible] DEVELOPMENT COORDINATOR
DATE: [illegible]
NOTE: CITY ENGINEER'S SEAL FOR ONE YEAR ONLY AFTER DATE OF ENGINEER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE	SUBJECT	TRANSMITTAL
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

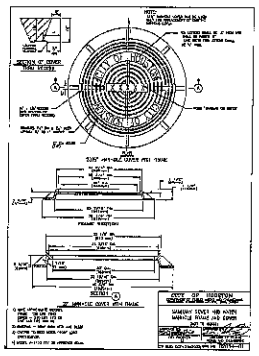
FILE NO:

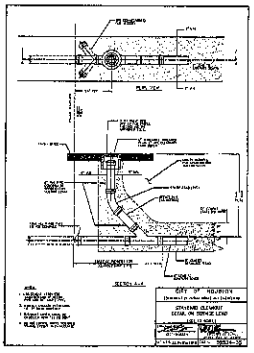
FOR CITY OF HOUSTON USE ONLY

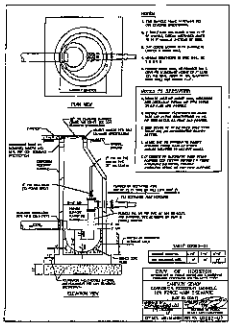
DRAWING SCALE: N.T.S.

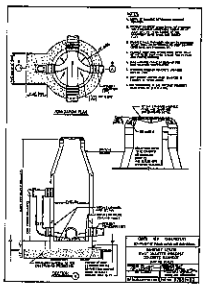
SHEET No. 19 OF 29

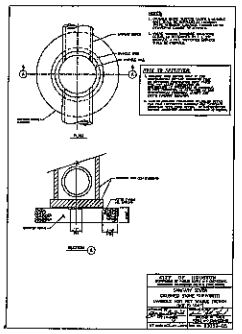
13096

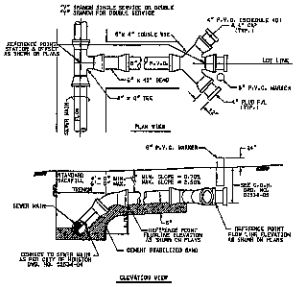




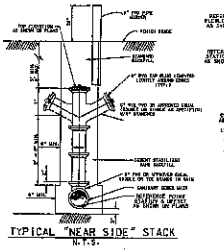








SANITARY SEWER SERVICE CONNECTION
N.T.S.



TYPICAL "NEAR SIDE" STACK
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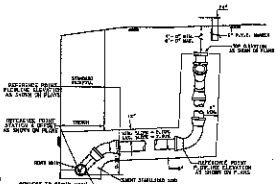

TYPICAL LEAD TO "FAR SIDE" STACK
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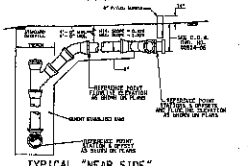

TYPICAL "NEAR SIDE" STACK W/LEAD TO FAR SIDE
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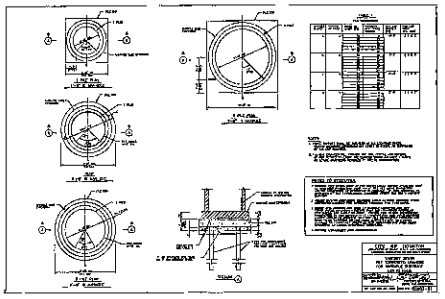

NO.	REVISION	DATE	BY

DESIGNED BY: RG
DESIGN CHECKED BY: RG
DRAWN BY: JA
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: RG DATE 6-1-16
QA/QC REVISIONS BY: JA JA

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TEXAS PE BOARD FIRM REGISTRATION No. 2381

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

SANITARY SEWER DETAILS

STATE OF TEXAS
DARRELL G. SMITH
PROFESSIONAL ENGINEER
No. 66095

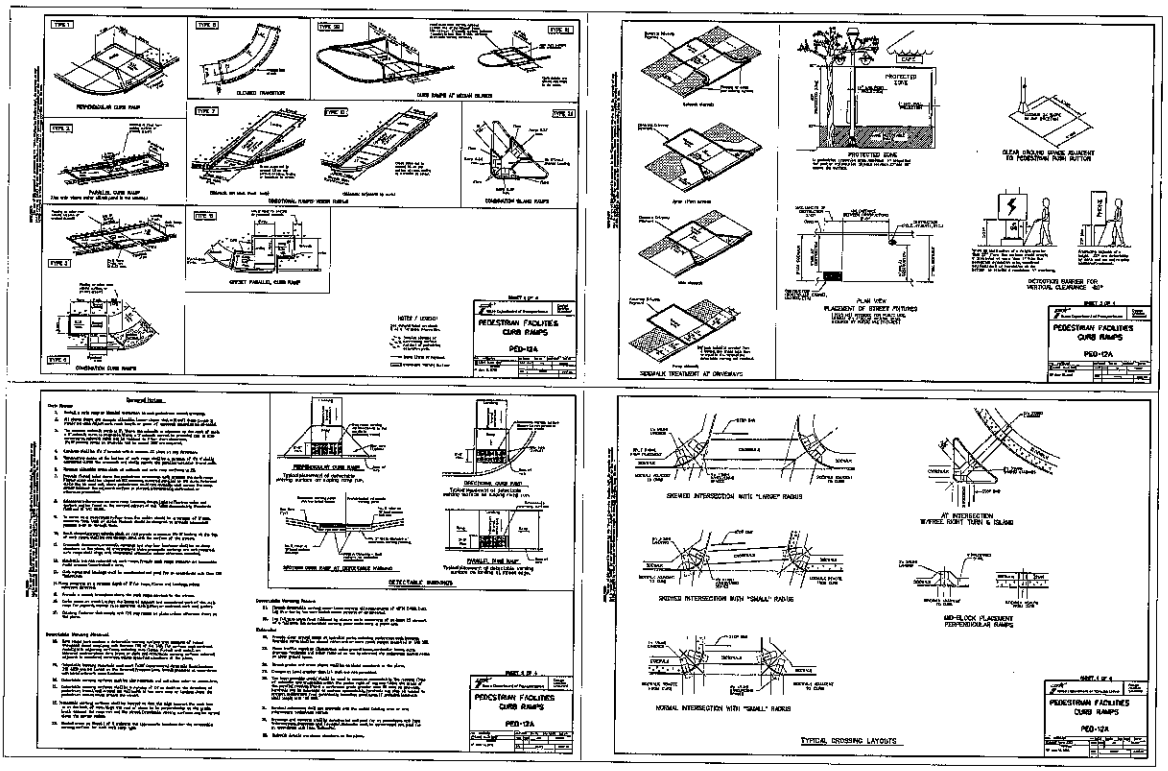
APPROVED: 5/26/2016
DEVELOPER OVERSEER

NOTE: NO CONFIRMATION VALID FOR USE WITHOUT AFTER DATE OF REVISION

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DATE: 6/6/16
CITY'S REPRESENTATIVE
DATE: 6/6/16
CITY'S ENGINEER

FILE NO.:
FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE
N.T.S.
SHEET No. 20 OF 29

ADP NO. 2015020-00-00-01-01



NO.	REVISION	DATE	BY

DESIGNED BY: RD.DS
DESIGN CHECKED BY: RD.DS
DRAWN BY: D.B.
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: RG DATE: 1-7-14
QA/QC REVISIONS BY: D.B. DD

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TEXAS PE BOARD FIRM
REGISTRATION No. 280

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

TXDOT - PEDESTRIAN FACILITIES
CURB RAMPS (PED-12A)

APPROVED: DEVELOPMENT COORDINATOR
DATE:
NOTE: CONSENT VALID FOR ONE YEAR ONLY AFTER DATE OF APPROVAL

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DIVISION: DIVISION 1 TRANSPORTATION
REVIEWED:
DATE:
DIVISION MANAGER:
DATE:
DIRECTOR:
DATE:

FILE NO:
DRAWING SCALE
N.T.S.
SHEET No. 21 OF 39

FOR CITY OF HOUSTON USE ONLY

JOB NO. 2010015-460-001

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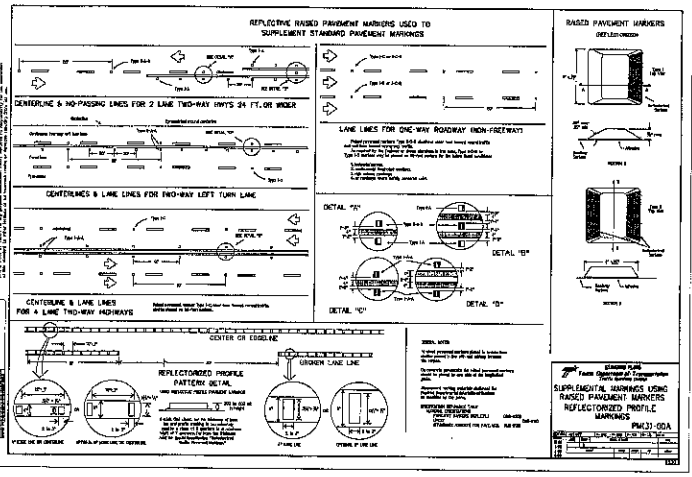
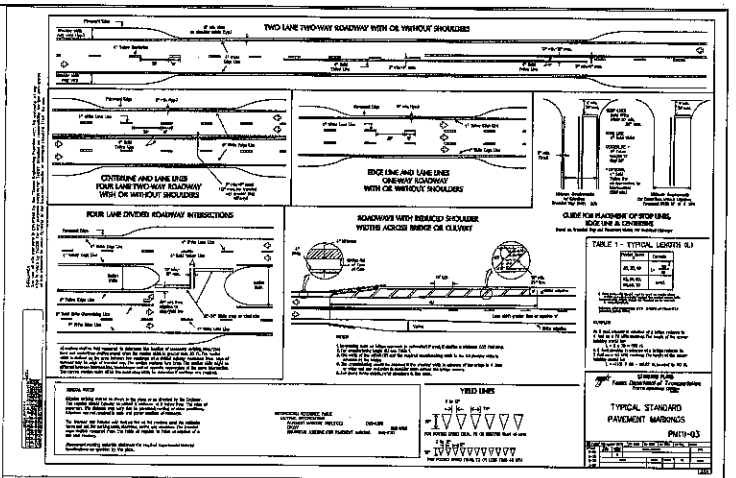




STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

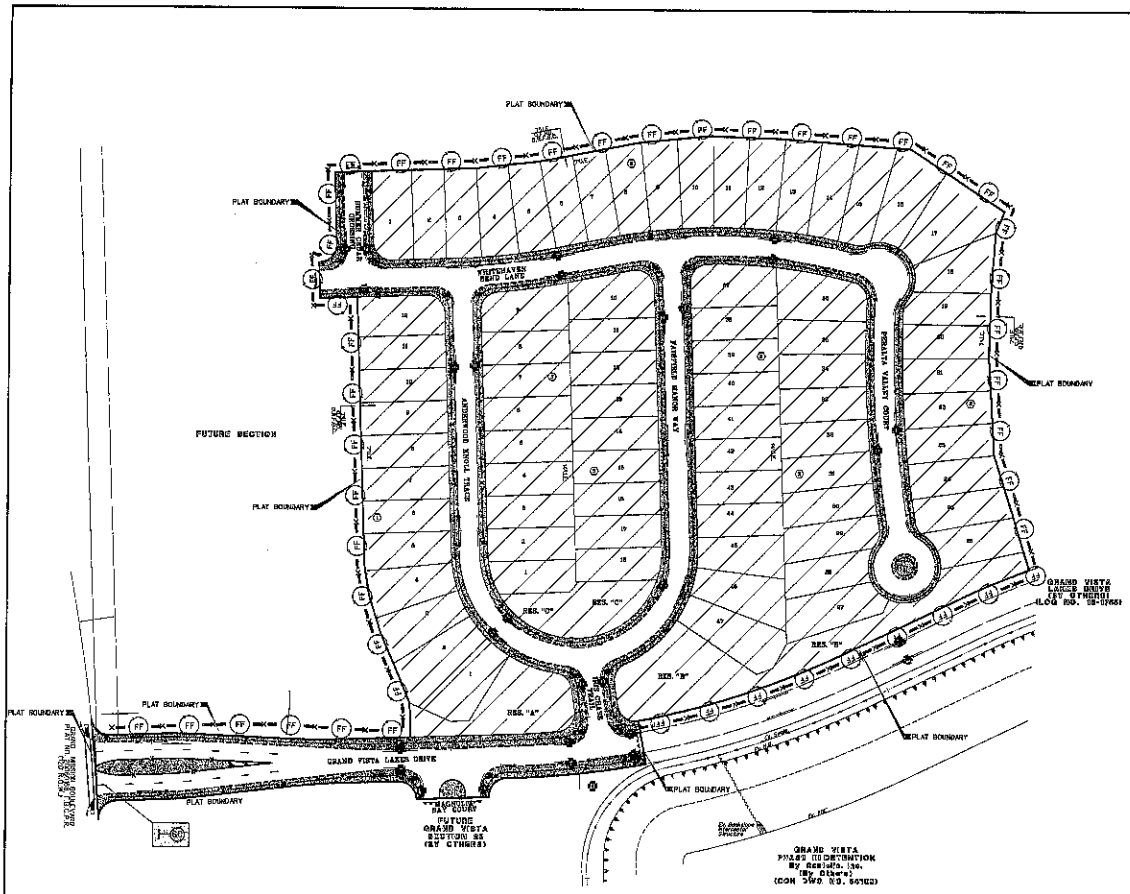
TYPICAL STANDARD PAVEMENT MARKINGS

© TxDOT March 2001	DN: CRH	CK: FDR	CK: GAL
REVISIONS	FEDERAL AID PROJECT		SHEET
	STATE		
	COUNTY	CONTROL	SECTION
		SCHEDULE	JOB	HIGHWAY

SHEET 22 OF 29

BENCH MARK:
CONTROL BENCH - BM#DF093 BRASS DISC SET IN EAST END OF SOUTH MEADOWALL APPROX. 0.45 MILE WEST OF W.U.POST NO. 38 & APPROX. 27 FEET N. OF CENTERLINE OF FM 1093 (BROAD ST.) (PROJ. POINT IS WEST OF THE INTERSECTION OF HARLEM ROAD & FM 1093 (AREA LIGHT) 3.05 MILES.
ELEVATION: 100.59 (NGVD 1929, 1987 ADJ.)

TBM:
DGN-46-1
ALEY - 03-52
MARK: 12-IN. EAST EDGE OF PC END OF NORTH CROWN INTERSECTION OF GRAND MISSION DR AND HARPERS CROSSING, ON THE EAST SIDE OF GRAND MISSION



N

SCALE: 1" = 60'

LEGEND

SEDIMENT SECURE

TYPICAL SILT FENCE (AT CURB)

BLOCK NUMBER/LOT NUMBER

FILTER FABRIC FENCE

STABILIZED CONSTRUCTION ACCESS

INLET PROTECTION BARRIER

FILTER FABRIC FENCE TO BE PLACED IN BEHIND WALK OR CURB OF INLET AND FENCE

APPROVED: [signature] DATE: 5/28/96 DEVELOPMENT COORDINATOR

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DESIGNED BY:		DESIGN CHECKED BY:	
DRAWN BY:		CODE CHECKED BY:	
SURVEY CHECKED BY:		QA/QC BY:	DATE:
QA/QC REVISIONS BY:			

NO.	REVISION	DATE	BY

Costello
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9990 Richmond Avenue, Suite 450
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Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 2312

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

POLLUTION PREVENTION PLAN

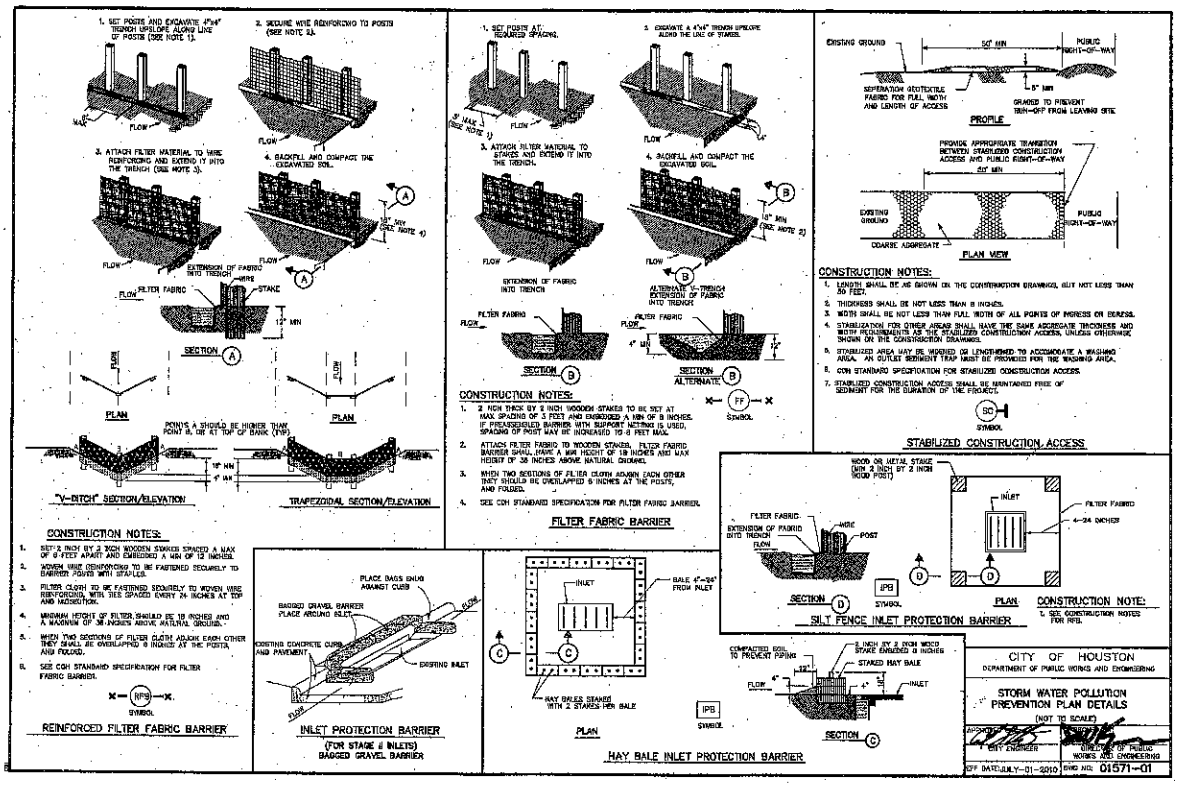
FILE NO.

DRAWING SCALE 1" = 60'

SHEET 23 OF 29

FOR CITY OF HOUSTON USE ONLY

JOB NO. 2016002-500-01-01



NO.	REVISION	DATE	BY

DESIGNED BY: AD
DESIGN CHECKED BY: AD
DRAWN BY: AD
CODE CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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(713) 783-7788 (713) 783-3980, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 2651

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

POLLUTION PREVENTION DETAILS

DRAWING SCALE: N.T.S.

SHEET 24 OF 29

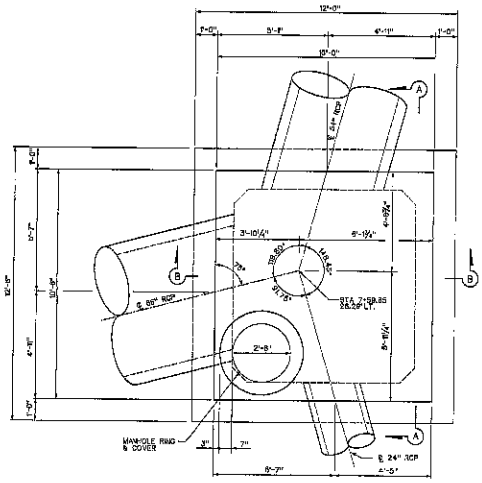
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

FILE NO:

FOR CITY OF HOUSTON USE ONLY

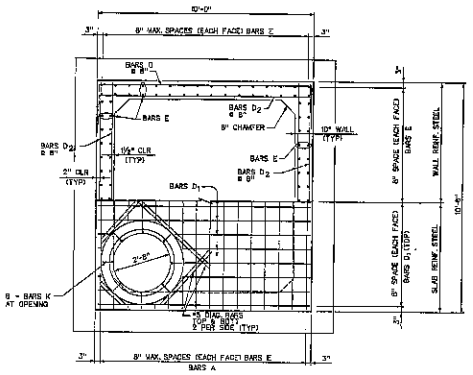
53836

2010-0-00-00-00



PLAN

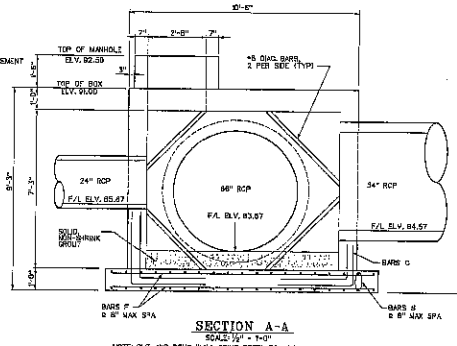
SCALE: ½" = 1'-0"



TYPICAL TOP SLAB/WALL SECTION

SCALE: ½" = 1'-0"

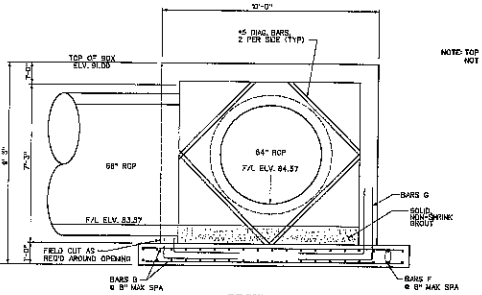
NOTE: TOP SLAB AND WALL REINFORCEMENT NOT SHOWN FOR CLARITY.



SECTION A-A

SCALE: ½" = 1'-0"

NOTE: CUT AND BEND WALL REINF. STEEL TO CLEAR OPENING



NOTE: TOP SLAB AND WALL REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION B-B

SCALE: ½" = 1'-0"

NOTE: CUT AND BEND SLAB REINF. STEEL TO CLEAR OPENING

S1

NO	REVISION	DATE	BY

DESIGNED BY: AO, JAS
DESIGN CHECKED BY: AO, CLF
DRAWN BY: JL, CJG
LOGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: JAS DATE: 6-9-10
QA/QC SURVEYOR BY: DATE:

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-9600, Fax

TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 10046B

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

FAIRFIELD MANOR WAY
JUNCTION BOX #10011
AT STA 7+59.65, 26.29' LT.

RONNIE L. FREEMAN
56813

APPROVED: 4/26/11
DIRECTOR

DATE OF CONVEYANCE TO CITY FOR OR ON AFTER DATE OF APPROVAL

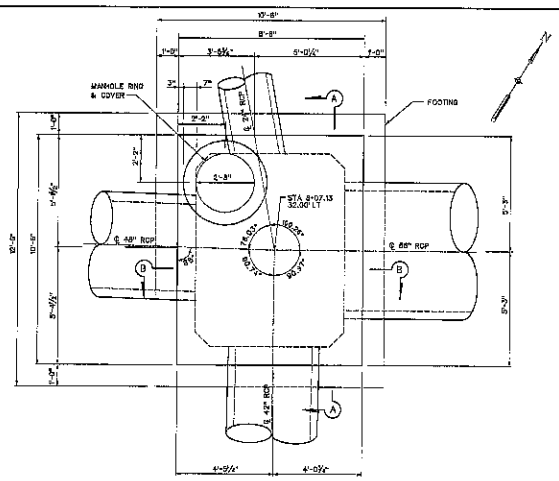
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE: 4/26/11
PROJECT MANAGER
DATE: 4/26/11
SUPV. WATER QUALITY
DATE: 4/26/11
DIRECTOR
DATE: 4/26/11

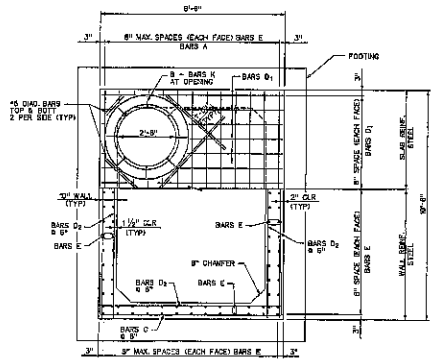
FILE NO:
DRAWING SCALE
HORZ: 1
VERT: 1
SHEET NO. 25 OF 29

FOR CITY OF HOUSTON USE ONLY

55868

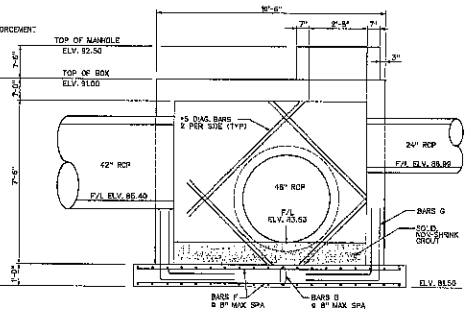


PLAN
SCALE: 1/2" = 1'-0"

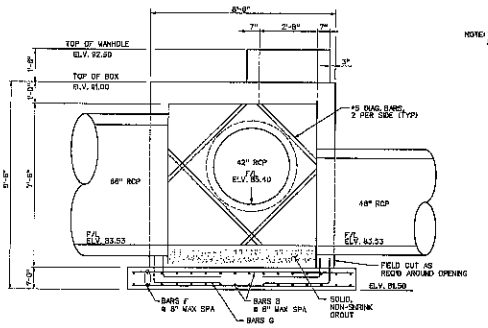


TYPICAL TOP SLAB/WALL SECTION
SCALE: 1/2" = 1'-0"

NOTE: TOP SLAB AND WALL REINFORCEMENT NOT SHOWN FOR CLARITY.



SECTION A-A
SCALE: 1/2" = 1'-0"
NOTE: CUT AND BEND WALL REINF. STEEL TO CLEAR OPENING



NOTE: TOP SLAB AND WALL REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION B-B
SCALE: 1/2" = 1'-0"
NOTE: CUT AND BEND SLAB REINF. STEEL TO CLEAR OPENING

S2

NO.	REVISION	DATE	BY

DESIGNED BY: KO, JAS
DESIGN CHECKED BY: KO, CLF
DRAWN BY: JH, DR
CDOD CHECKED BY:
SURVEY CHECKED BY: DATE: 10-9-16
QA/QC BY: JH, DR
QA/QC REVISIONS BY:

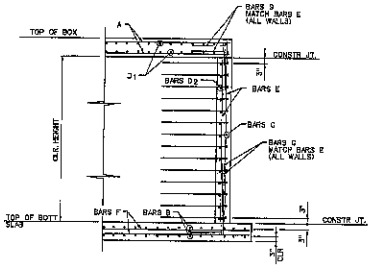
Costello
Engineering and Surveying
9999 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100495

FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 18

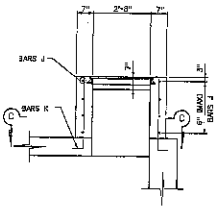
GRAND VISTA LAKES DR
JUNCTION BOX #10023
AT STA 8+07.13, 32.00' LT

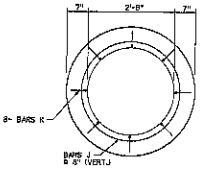
APPROVED: Maggie Dalton
DATE: 12/21/16
DEVELOPMENT COORDINATOR
APPROVAL FORWARDED VALID FOR ONE YEAR DATE OF ISSUANCE
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DATE: 12/21/16
INSPECTOR: 12-21-16
DATE: 12/21/16
SHEET 26 OF 29

FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE
HORIZ.:
VERT.:
SHEET NO.: 26 OF 29
JOB NO. 2250D3-400-B0-01



TYPICAL REINFORCING DETAIL
N.T.S.





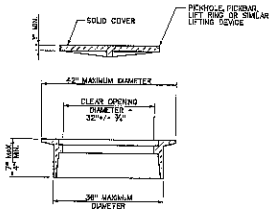
SECTION C-C
N.T.S.

GENERAL NOTES:

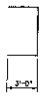
1. RING AND COVER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M306, "STANDARD SPECIFICATION FOR DRAINAGE STRUCTURE CASTINGS" MATERIALS SHALL CONFORM TO ASTM A48, CLASS 35B FOR GRAY IRON CASTINGS OR ASTM A536, GRADE 65-45-12 FOR DUCTILE IRON CASTINGS. ALUMINUM ALLOY CASTINGS SHALL NOT BE PERMITTED.
2. ALL CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM DESIGNATION C39/C39M CHROMIC SHALL NOT BE USED AS ADDITIVE.
3. ALL REINFORCEMENT SHALL BE GRADE 60.

BAR TABLE

BARS	SIZE
A	#6
B	#5
C	#8
D1	#8
D2	#6
E	#6
F	#8
G	#8
J	#5
K	#5



RING AND COVER DETAILS
N.T.S.



BARS C

BARS G

BARS K

S3

NO.	REVISION	DATE	BY

DRAWN BY: AD, JAS
DESIGN CHECKED BY: AD, GFE
DRAWN BY: JN DR
CHKD CHECKED BY:
SURVEY / TIED BY:
QA/QC BY: BZ DATE: 6-1-06
QA/QC REVISIONS BY: JN DR

Costello

Engineering and Surveying
8880 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3380, Fax

TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100468

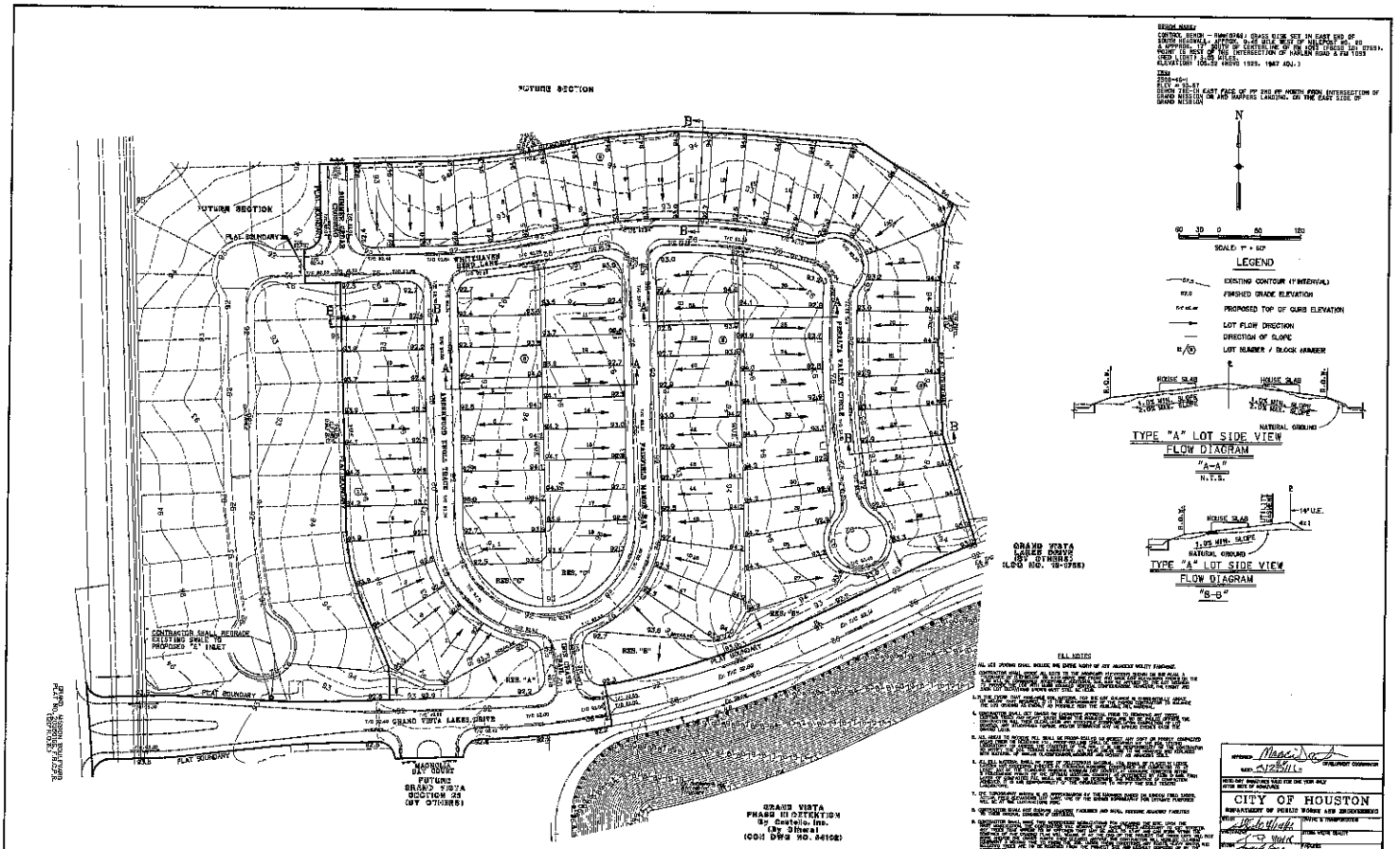
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16

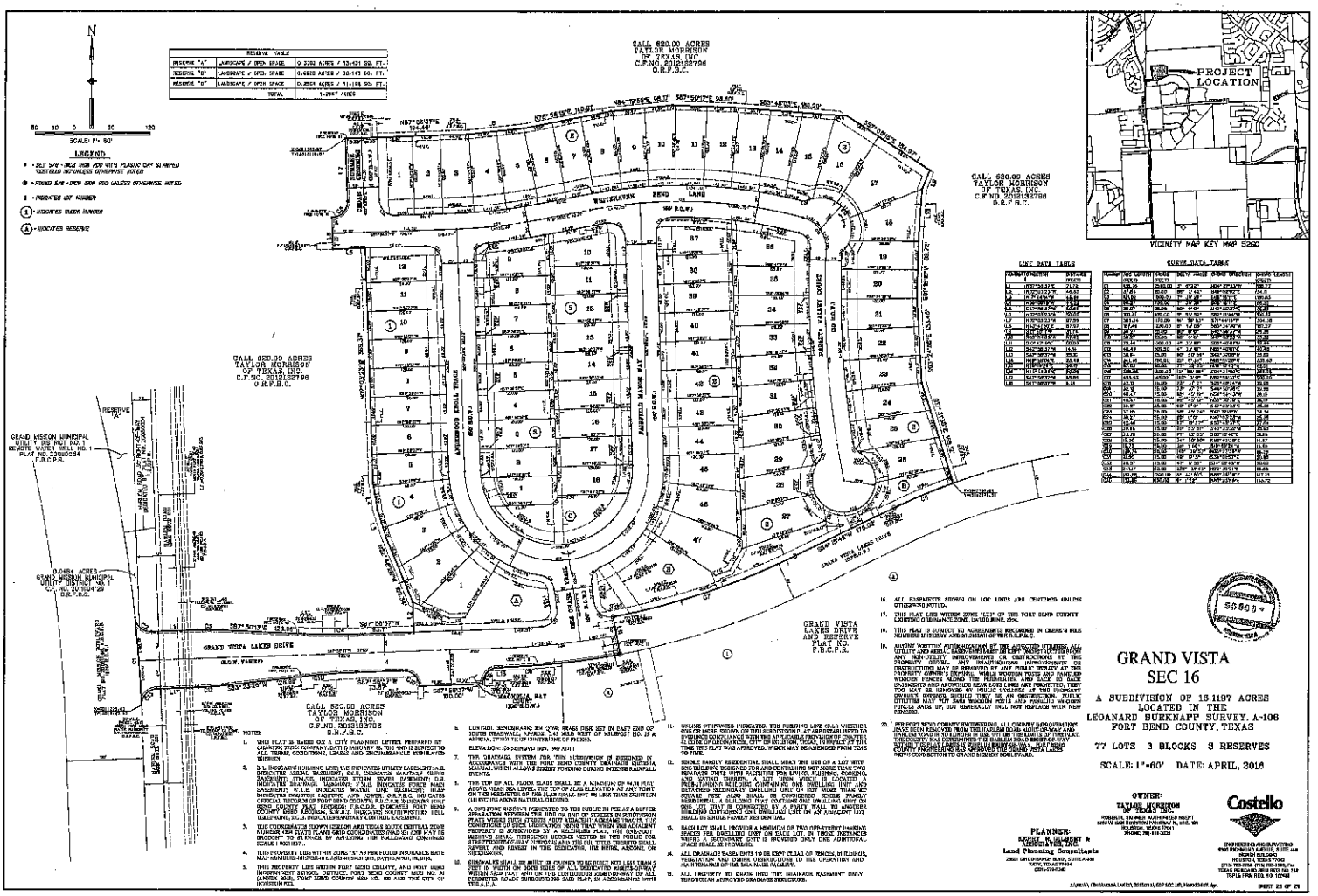
JUNCTION BOX DETAILS

CHRISTIE L. FINCHER
92910
LICENSED
PROFESSIONAL ENGINEER

APPROVED: Manager
DEVELOPMENT COORDINATOR
FOR: DEWWM
ACCEPTANCE MADE FOR ONE YEAR ONLY AFTER DATE OF APPROVAL
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DIRECTOR
DEPUTY DIRECTOR
CONS. MAINT. DIVISION
DATE
FILE NO.
FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE
HORZ :
VERT :
SHEET No. 27 OF 29
SEAL

JOB NO. 2006CC-400-00-00


FUTURE SECTION
PLAT BOUNDARY
WHITEHAVEN BEND LANE
GRAND VISTA LAKES DRIVE
MAGNOLIA BAY COVE
FUTURE GRAND VISTA SECTION 18 (BY OTHERS)
GRAND VISTA PHASE III DETENTION By Costello, Inc. (By Others) (CCHI DWG NO. 84102)
GRAND VISTA LAKES DRIVE (BY OTHERS) (LDG SEC. 18-UPSR)
CONTRACTOR SHALL REGRADE EXISTING SWALE TO PROPOSED "E" INLET
N
SCALE: 1" = 60'
LEGEND
EXISTING CONTOUR (1' INTERVAL)
FINISHED GRADE ELEVATION
PROPOSED TOP OF CURB ELEVATION
LOT FLOW DIRECTION
DIRECTION OF SLOPE
LOT NUMBER / BLOCK NUMBER
TYPE "A" LOT SIDE VIEW
FLOW DIAGRAM
"A-A"
N.T.S.
TYPE "A" LOT SIDE VIEW
FLOW DIAGRAM
"B-B"
NATURAL GROUND
HOUSE SLAB
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
DEVELOPMENT COORDINATION
DRAINAGE
STREET
WATER
WASTEWATER
FOR CITY OF HOUSTON USE ONLY
DESIGNED BY
DESIGN CHECKED BY
DRAWN BY
CODE CHECKED BY
SURVEY CHECKED BY
QA/QC BY
QA/QC REVISIONS BY
NO. REVISION DATE BY
Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 480
North Building
Houston, Texas 77042
(713) 783-7788 (713) 783-3560, Fax
TEXAS PE BOARD FIRM REGISTRATION No. 280
FORT BEND COUNTY MUD No.30
GRAND VISTA SECTION 16
LOT GRADING LAYOUT
DRAWING SCALE
1" = 60'
SHEET No. 28 OF 29


N
SCALE 1"= 60'
LEGEND
CALL 620.00 ACRES
TAYLOR MORRISON
OF TEXAS, INC.
C.F.NO. 2012132796
O.R.F.B.C.
WHITEHAVEN BEND LANE
FAIRFIELD MARINE WAY
PRESCOTT VALLEY CORNER
GRAND VISTA LAKES DRIVE
GRAND VISTA LAKES DRIVE
GRAND VISTA LAKES DRIVE AND RESERVE PLAT NO. P.B.C.P.R.
GRAND MISSION MUNICIPAL UTILITY DISTRICT NO. 1 REMOTE WATER WELL NO. 1 PLAT NO. 2020-0034 P.B.C.P.R.
GRAND MISSION MUNICIPAL UTILITY DISTRICT NO. 1 C.F. NO. 2016041429 O.R.F.B.C.
PROJECT LOCATION
VICINITY MAP KEY MAP 5290
LINE DATA TABLE
CURVE DATA TABLE
GRAND VISTA
SEC 16
A SUBDIVISION OF 16.1197 ACRES
LOCATED IN THE
LEONARD BURKNAPP SURVEY, A-106
FORT BEND COUNTY, TEXAS
77 LOTS 3 BLOCKS 3 RESERVES
SCALE: 1"=60' DATE: APRIL, 2016
OWNER:
TAYLOR MORRISON OF TEXAS INC.
ROBERTS SHUMES AUTHORIZED AGENT
PLANNER:
KERRY R. GILBERT & ASSOCIATES, INC.
Land Planning Consultants
Costello
SHEET 2 OF 2