Fort Bend County
Engineering Department
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

[ ] **Right of Way Permit**
[X] **Commercial Driveway Permit**
Permit No: 2016-10310

Applicant: **Harris Construction Company, LTD.**

Job Location Site: **Grand Parkway & Manderston Avenue, Richmond, TX 77407**

Bond No. [redacted] **Date of Bond:** **10/28/2016** **Amount:** **$5,000.00**

The above applicant came to make use of certain Fort Bend County property subject to, "The 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, of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistant with Chapter 181, Vernon's Texas Statutes and Codes Annoted.

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, submit notification to Permit Administrator thru MyGovernmentOnline.org portal.
3. This permit expires one (1) year from date of permit if construction has not commenced.

On this 25th day of July, 2017, Upon Motion of Commissioner Meyers, seconded by Commissioner Patterson, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Signature

By: Charles O. Dean
for County Engineer

N/A
By: _____
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.

Date Recorded 8-2-2017 Comm. Court No. 11G

Clerk of Commissioners Court
By: Linda Willis
Deputy

8-2-2017 Original sent to Charles Dean, Engineering dept.

Fort Bend County
Engineering Department
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

PERMIT APPLICATION REVIEW FORM FOR CABLE, CONDUIT, AND POLE LINE ACTIVITY IN FORT BEND COUNTY

[ ] **Right of Way Permit**

[X] **Commercial Driveway Permit**

Permit No: 2016-10310

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.

(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

(2) BOND:

[ ] County Attorney, approval when applicable.

[ ] Perpetual bond currently posted. Bond No: _____ Amount: _____

[X] Performance bond submitted. Bond [redacted] Amount: $5,000.00

[ ] Cashier's Check Check No: _____ Amount: _____

(3) DRAINAGE DISTRICT APPROVAL (WHEN APPLICABLE):

_____ Drainage District Approval

_____ Date

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

Charles O. Dy
Permit Administrator

7/17/17
Date

34

4 PGS
BOND

2017085329

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

AUTHORIZED

BOND NO [redacted]

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND § Grand Parkway and Manderston Ave.

THAT WE, Harris Construction Company, Ltd. **whose address is** 6602 Guhn Rd., Houston, TX 77040 **Texas, hereinafter called the Principal, And** Liberty Mutual Insurance Company **, a Corporation existing under and by virtue of the laws of the state of** Massachusetts **and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at** 175 Berkeley St., Boston, MA 02117 **, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought whining said state is and Whose address is** 13201 NW Freeway, Ste. 810, Houston, TX 77040 **, 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 & No/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 28th **day of** October **, 20** 16 **.**

Harris Construction Company, Ltd.
PRINCIPAL

BY

Liberty Mutual Insurance Company
SURETY

Michelle Ulery, Attorney in Fact

C:\Documents and Settings\cel.FORTBEND\Local Settings\Temporary Internet Files\Content.Outlook\080X5MWJ\ROW Application.doc

CCM 7-25-2017 # 116
Fort Bend County Clerk
Return Admin Serv Coord
RAC

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

Certificate No. 6937477

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

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, C.A. McClure; Kelly J. Brooks; Kenneth L. Meyer; Michelle Ulery

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

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of April, 2015.

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

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

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 7th day of April, 2015, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

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

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

By: Teresa Pastella
Teresa Pastella, Notary Public

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

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

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

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

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

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

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 28th day of October, 20 16.

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

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

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

LMS_12873_122013

Liberty Mutual.
SURETY

TEXAS
IMPORTANT NOTICE

To obtain information or make a complaint:

You may call toll-free for information or to make a complaint at
1-877-751-2640

You may also write to:

2200 Renaissance Blvd., Ste. 400
King of Prussia, PA 19406-2755

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
Consumer Protection (111-1A)
P. O. Box 149091
Austin, TX 78714-9091
FAX: (512) 490-1007
Web: http://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 first contact the agent or call 1-800-843-6446. 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.

TEXAS
AVISO IMPORTANTE

Para obtener informacion o para someter una queja:

Usted puede llamar al numero de telefono gratis para informacion o para someter una queja al
1-877-751-2640

Usted tambien puede escribir a:

2200 Renaissance Blvd., Ste. 400
King of Prussia, PA 19406-2755

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

Puede escribir al Departamento de Seguros de Texas Consumer Protection (111-1A)
P. O. Box 149091
Austin, TX 78714-9091
FAX # (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS SOBRE PRIMAS O RECLAMOS:

Si tiena una disputa concerniente a su prima o a un reclamo, debe comunicarse con el agente o primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI)

UNA ESTE AVISO A SU POLIZA:

Este aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.

FILED AND RECORDED
OFFICIAL PUBLIC RECORDS

Laura Richard

Laura Richard, County Clerk
Fort Bend County, Texas
July 31, 2017 04:14:42 PM
FEE: $0.00 EW
BOND

2017085329

FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 134 C
FORT BEND COUNTY, TEXAS

CONSTRUCTION PLANS FOR

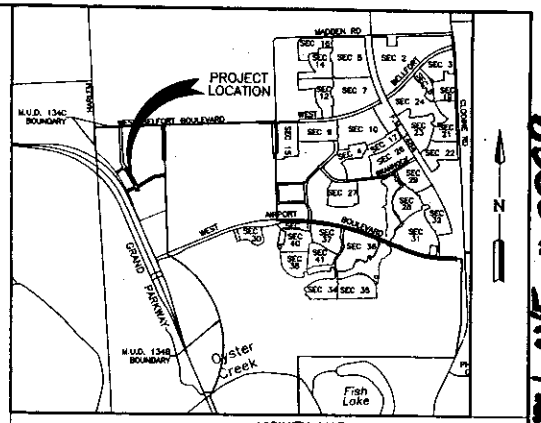
DRAINAGE FACILITIES
&
PAVING AND APPURTENANCES

TO SERVE

CLOUSTON AVENUE AND MANDERSTON AVENUE
CITY OF HOUSTON E.T.J.

RECEIVED
OCT 07 2016
By KVT

APPROVED



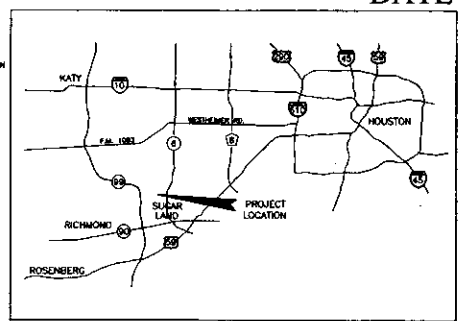
VICINITY MAP
FT BEND COUNTY KEY MAP - 526Y
MAP FILE NO. 4663-C & 4662-A
ZIP CODE: 77498

JOB NO. 1883-1042

DATE : SEPTEMBER 2016

NOTES

1. THESE PLANS WERE PREPARED TO MEET OR EXCEED FORT BEND COUNTY AND CITY OF HOUSTON SUBDIVISION RULES AND REGULATIONS (AS APPLICABLE) AS CURRENTLY AMMENDED.
2. CONSTRUCTION WILL BE MONITORED BY A PROFESSIONAL ENGINEER TO INSURE COMPLIANCE WITH THE CONSTRUCTION PLANS AND SPECIFICATIONS.
3. CONTRACTOR SHALL NOTIFY THE FOLLOWING ENTITIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
   CITY OF HOUSTON PUBLIC WORKS DEPARTMENT (713) 837-0050
   FORT BEND COUNTY DRAINAGE DISTRICT (DWAYNE GRIGAR) (281) 342-2863
   ASSISTANT TO THE FORT BEND COUNTY ENGINEER (281) 633-7500
4. ONLY AUTHORIZED INDIVIDUALS FROM EITHER THE TESTING COMPANY OR A REPRESENTATIVE OF LJA ENGINEERING, INC. HAVE THE AUTHORITY TO ADD WATER TO A CONCRETE TRUCK.
5. CONTRACTOR SHALL CONTACT ANY PERTINENT UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF EXCAVATION OR CONSTRUCTION IN THE VICINITY OF THEIR EASEMENTS AND/OR RIGHT-OF-WAYS.
6. THE OPENING AND CLOSING OF ALL VALVES ON EXISTING WATER LINES MUST BE PERFORMED EXCLUSIVELY BY THE DISTRICT OPERATOR.
7. THE DISTRICT OPERATOR MUST PERFORM ALL WATER LINE BACTERIOLOGICAL TESTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE DISTRICT.
8. PRIOR TO CONSTRUCTION OF THIS FACILITY, WITHIN OR BY THE DISTRICT, THE DISTRICT OR THE ENGINEER WILL GIVE A 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.
9. 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. TELEPHONE NO. (832) 394-9089



LOCATION MAP

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

FIRM
FLOOD INSURANCE MAP
PANEL 150 OF 575
MAP# 48157C0140L
FLOOD ZONE "X"

EIJ DETENTION PLANS INFORMATION
1) STORM WATER DETENTION PLANS
IS PROVIDED IN BULLHEAD BAYOU (OYSTER CREEK TRIBUTARY)
DRAINAGE FACILITIES PHASE 2
ENGINEERING FIRM LJA ENGINEERING & SURVEYING
DATE SIGNED MAY 2007, JANUARY 2012, DECEMBER 2013, FEBRUARY 2014
APPROVED BY FORT BEND COUNTY ENGINEERING DEPARTMENT
2) STORM WATER DRAINAGE DESIGN REPORT
REPORT TITLE MASTER DRAINAGE PLAN FOR ALIANA DEVELOPMENT
DATE APRIL 2015 ENGINEERING FORM REPORT
DATE OF ACKNOWLEDGEMENT BY FBC DRAINAGE DISTRICT JULY 2015
3) INCREASED IMPERVIOUS COVER = 142.0 ACRES
DETENTION RATE REQUIRED = 0.17 ACRE-FEET/ACRE
DETENTION RATE PROVIDED = 0.17 ACRE-FEET/ACRE

FORT BEND COUNTY ENGINEER

ENGINEER: for RICHARD W. STOLLER, P.E.

DATE: 10/6/16

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

APPROVED: DEVELOPMENT COORDINATION

DATE: 10/10/16

SHEET INDEX

1. COVER SHEET
2. GENERAL NOTES
3. WATER AND SANITARY SEWER LAYOUT
4. PAVING, DRAINAGE AND PERMANENT SIGNAGE LAYOUT
5. DRAINAGE AREA MAP
6. DRAINAGE CALCULATIONS (2-YR.) CITY OF HOUSTON
7. DRAINAGE CALCULATIONS (100-YR.) CITY OF HOUSTON
8. DRAINAGE CALCULATIONS (100-YR.) FORT BEND COUNTY
9. GRADING PLAN
10. STORM WATER POLLUTION PREVENTION PLAN

PLAN & PROFILE

11. CLOUSTON AVENUE..... STA. 00+00.00 TO END
12. GRAND PARKWAY DECELERATION LANE... STA. 00+00.00 TO END
13. MANDERSTON AVENUE..... STA. 00+00.00 TO END

TRAFFIC CONTROL

14. TEMPORARY TRAFFIC CONTROL PLAN

DETAILS

15. WATER MAIN CONSTRUCTION DETAILS
16. SANITARY AND STORM SEWER DETAILS (SHEET 1 OF 3)
17. SANITARY AND STORM SEWER DETAILS (SHEET 2 OF 3)
18. SANITARY AND STORM SEWER DETAILS (SHEET 3 OF 3)
19. PAVING CONSTRUCTION AND STORM SEWER DETAILS
20. PAVING CONSTRUCTION DETAILS
21. BARRICADE, PERMANENT SIGNAGE AND STRIPING DETAILS
22. STORM WATER POLLUTION PREVENTION PLAN DETAILS
23. PEDESTRIAN FACILITIES DETAILS
24. TRAFFIC CONTROL DETAILS (SHEET 1 OF 2)
25. TRAFFIC CONTROL DETAILS (SHEET 2 OF 2)
26. TXDOT INLET AND EROSION DETAILS
27. TXDOT PAVEMENT & SIGNAGE DETAILS
28. TXDOT PAVEMENT DETAILS

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

LJA Engineering, Inc.

SURVEYED BY:
FB NO.:

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

CITY ENGINEER

DIRECTOR OF PUBLIC WORKS AND ENGINEERING

FOR CITY OF HOUSTON USE ONLY

SHEET No. 1 OF 28

DEVELOPER:
ALIANA DEVELOPMENT COMPANY
11200 RICHMOND AVENUE SUITE 280
HOUSTON, TEXAS 77082

RECORD DRAWING
I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

APPROVED FOR CONSTRUCTION

BY _____ DATE _____

ENGINEER:
LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.9026
FRN-F-1386

PAVING & DRAINAGE CLOUSTON AVE. + MANDERSTON AVE. #2989

GENERAL CONSTRUCTION NOTES:

1. Water lines, wastewater collection systems, and drainage systems shall be constructed and tested in accordance with the City of Houston, Department of Public Works and Engineering "Standard Specifications" dated October 2002, and "Standard Construction Details for Wastewater Collection Systems, Water Lines, Storm Drainage and Street Paving" dated October 2002 unless otherwise noted and approved on these plans. This design is consistent with the minimum standards established in the "City of Houston Department of Public Works and Engineering Infrastructure Design Manual" dated January 2001.
   Note that plan signature expires after 1 year and the latest editions of design rules, specifications & manuals shall govern as of the date of resigning.
2. The contractor shall be fully responsible for any and all damage to existing public or private utility lines, including but not limited to 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" dated July 2001 with street addresses and environmental therefrom, with no cost to the public.
3. The Contractor shall notify the following at least 48 hours prior to beginning construction:
   City of Houston Engineer, Dept. of Public Works & Engineering ..... (832) 395-2511
   The City of Houston Engineer ..... (713) 837-9474
   Fort Bend County Engineering Dept. ..... Jack CONSTRUCTIONOFFORTBENDCOUNTY.TX.GOV
   Texas One-Call – Houston Metropolitan Area ..... (713) 223-4567
   NOTE: A verification number is required from the L.S.N.C.
   AT&T ..... (281) 490-9432
   (S.B.C., Reliant, Warner Cable, etc.) ..... or (800) 248-4646
   Notification to City of Houston Engineer shall be followed up with a letter; a copy of which shall be sent to the Engineer.
4. Existing utility information shown is not guaranteed to be accurate and all inclusive. All existing utility locations are approximate and should be verified by the Contractor in advance of his construction. Any conflict or discrepancy discovered must be immediately brought to the Engineer's attention.
5. Bracing, Overhead lines may exist in the project. We have not attempted to mark these lines since they are clearly visible. But the Contractor should decide then prior to beginning any construction. Texas Law, Section 752, Health and Safety Code, prohibits, in addition to which persons or equipment may come within feet of energized overhead power lines, and federal regulations, Title 29, Part 1910.180(1) and Part 1926.550(A)(15) require a minimum clearance of ten feet from facilities. The above laws carry both criminal and civil liabilities, with Contractors and Owners being fully responsible for the safety of workers under the laws. If the Contractor must work near overhead power lines, call (713) 228-7400 for the lines to be de-energized and/or moved at his expense.
6. Caution: Underground gas facilities, Location of Entex facilities are shown in an approximate location only. Service lines are usually not shown. The Contractor shall contact the One-Call Lone Star Notification Center at (713) 223-4567 a minimum of 48 hours prior to construction to have utilities field located. The Contractor shall determine the exact location before starting work and agree to be fully responsible for any damages caused by his failure to exactly locate and preserve these underground facilities.
7. Any damage to any of the existing pavement and/or utilities must be repaired immediately. The Contractor must notify the appropriate utility owner, who will make the repairs at the Contractor's expense.
8. The Contractor, on behalf of the Owner, is to obtain all permits required by Fort Bend County and the City of Houston, Texas, prior to starting construction of utilities and/or culverts within County road rights-of-way.
9. Guidelines set forth in the Texas Manual on Uniform Traffic Control Devices", as currently amended, shall be observed. The Contractor shall be responsible for providing adequate flagmen, signing, striping and warning devices, etc., during construction – both day and night.
10. The work areas with direct public access shall be barricaded and illuminated during darkness and periods of inactivity.
11. The Contractor shall be responsible for safeguarding and protecting all materials and equipment stored on the job site. The Contractor shall be responsible for the storage of materials in a safe and orderly manner to prevent damage during the day and after working hours, until project completion and Owner acceptance.
12. The contractor shall be responsible for the proper handling and storage of all pipe, valves, hydrants, manholes and other accessories shall be in accordance with the manufacturer's recommended practices and shall at all times be performed with care to avoid any damage to the material. It shall be the contractor's responsibility to examine each material at the point of delivery and to reject all defective materials. Any defective material incorporated into the work shall be removed and replaced at the Contractor's expense. There shall be no payment made for stored materials.
14. All pipe and reinforcement steel shall be kept free of dirt and other debris. Any damage to the coating of the various materials must be repaired.
15. Contractor shall be responsible for maintaining adequate and positive drainage at all times during construction of proposed facilities. Natural ground adjacent to utility trench excavation to be graded prior to placement of excess trench material. (No separate payment.)
16. Access to all existing streets and driveways shall be maintained at all times.
17. The Contractor is required to follow all applicable OSHA rules and regulations. Trench safety shall be done in accordance with OSHA 29 CFR Part 1926, as published in the Federal Register October 31,1989, and any subsequent revisions.
18. Unless otherwise noted, placement of utilities in easements shall be governed by the standard 10' utility easements as adopted by the Houston Coordinating Committee for the Houston Metropolitan Area, as currently amendated or revised.
19. No connections shall be made to existing water lines or sanitary sewers until all proposed lines or sewers have been thoroughly cleaned, tested, and approved by the Engineer.
20. All stations are centerline of street right-of-way unless otherwise noted.
21. All geotechnical reports for this project (if any) are available for reference at the office of the Engineer.
22. Surface restoration: At the end of all construction projects, the Contractor shall restore the existing facilities, i.e. the property, equal to or better than existing site conditions prior to construction.
23. Final acceptance of the utilities will not be given by the Contractor until they are inspected and approved by the Owner. Final acceptance of the paving will not be given to the Contractor until it is inspected and approved by Fort Bend County.
24. See the Erosion Control Plan and Sediment Control Layout for additional environmental notes and details.
25. These plans were prepared to meet or exceed City of Houston and Fort Bend County subdivision rules and regulations as currently amended.
26. Construction will be monitored by a registered Professional Engineer to insure compliance with the construction plans and specifications.
27. Approval by City of Houston will be deemed void if construction is not begun within one year of approval.
28. Contractor shall prepare a set of "Record" drawings showing any field changes made to the approved engineering plans and deliver to the Design Engineer for submittal to City Engineer.
29. All utilities presented on these drawings are shown based on the best available information. contractor shall verify in the field the exact locations prior to commencing construction. contractor shall notify Texas one call at 713-223-4567 at least 48 hours before proceeding with any construction.
30. Manholes shall be City of Houston Standard Precast as per City of Houston Standard Drawings 02082-02 and 02082-03 or as currently amended. The manholes must be precast with the base slab reinforced with No. 4 re-bars (grade 40) at 12" on center, each way. Brick manholes are not allowed.
31. Contractor shall take necessary precautions to protect root systems of shrubs, plants and trees along the area of excavation.
32. All unsatisfactory and/or waste materials including vegetation, roots, concrete and debris shall be disposed of offsite by the contractor; no debris payment will be made, but shall be considered as incidental to the various bid proposal items.
33. All manholes are to be constructed to allow for a minimum of 1 foot of vertical adjustment.
34. All sewer trenches under or within one foot of proposed and/or future pavement or curb shall be backfilled with 1-1/2" sackable cement per cubic yard cement-stabilized sand to a point one foot below pavement subgrade, the remaining backfill shall be made with compacted suitable material.
35. Contractor shall remove all mud, dirt and debris deposited or dropped on existing pavement due to his construction activity daily.
36. The use of wet point systems, when required by trench conditions, shall be requested by the contractor and approved by the engineer.
37. Contractor shall protect all trees adjacent to work area; no trees shall be removed without permission of owner.
38. Contractor shall provide 12" minimum clearance at storm sewer, sanitary sewer and water line crossings.
39. All areas disturbed along side and back-of-lot easements or other unnecessary disturbances as a result of construction work shall be sealed and fertilized in accordance with sealing specifications (no separate pay).
40. Rim elevations shown on the plans are approximate only. utility contractor shall adjust rim elevations to 2.5 inches above the finished grade at each manhole location after pavement contractor has completed final grading (no separate pay). sloped fill shall be added for storm water drainage away from the manhole.
41. Contractor shall be responsible for providing adequate flag men, signing, striping and warning devices, etc., during construction both day and night in accordance with the "manual on uniform traffic control devices."
42. Water, sanitary sewer, and drainage contractor shall at completion of his work fill and grade all utility easements (wet and dry) as well as his spoils in lots for positive drainage, as directed by the owner. (no separate pay)
43. Utility contractor shall provide temporary silt barrier fence on all non-curb streets which will remain in place after underground contract is complete.
44. Utility contractor shall provide silt barrier fence on all stage I curb inlets. (no separate pay)

SANITARY SEWER CONSTRUCTION NOTES:

1. Manholes shall be City of Houston Standard Precast as per City of Houston Standard Drawings as currently amended. All manholes must be precast with the base slab reinforced with No. 4 re-bars (grade 40) at 8" on center, each way. Brick manholes are not allowed.
2. All sanitary sewer pipe and associated appurtenances shall conform to the following requirements:
   SINGLE WALL PVC
   Pipe: 4" through 15" PVC, SDR 26, ASTM D-3034 (PR 160)
   Fittings: 4" through 15" PVC, SDR 26, ASTM D-3034
   Gaskets: Elastomeric seals conforming to the requirements of ASTM F-477
   Joints: Bell and spigot, push on type, conforming to the integral bell and spigot type and ASTM D-3212 for 18" through 27" pipe.
   PVC Material: cell classification 12454B as defined in ASTM D-1784.
   DUCTILE IRON PIPE
   Ductile Iron Pipe shall be used only when specifically called for in the plans and shall conform with AWWA C151 and AWWA C111 with bell and spigot push-on joints. D.I.P. shall have an exterior coating of 40 mils polyethylene. Special thickness class 50 for pipes less than 30" deep and class 52 for pipes greater than 30" deep.
   DOUBLE WALL PVC 30" ASTM D3034
   Perforated Corrugate (PVC) sanitary sewer fittings shall be manufactured from virgin polyvinyl chloride material with ASTM Specification M304-01,Corrugated polyethylene pipe and fittings shall be manufactured and tested in accordance with AASHTO Specification M294-91, Type S.
   The structural design of thermoplastic pipes shall be in accordance with AASHTO Standard Specifications for Highway Bridges Section 18 where "Soil-Thermoplastic Pipe Interaction Systems" is always being taken during structural properties. polyethylene pipe shall be manufactured from 335436C, 315412C or 324433C cell class material per ASTM D3350. PVC pipe shall be manufactured from 12454B, 12454C or 12364C cell class material per ASTM D1784.
3. All P.V.C. sanitary sewer pipes shall be installed per City of Houston Standard Drawing 02317-03 unless noted otherwise. No separate pay.
4. All D.I.P. for the proposed pipes should be encased in 8 mil polyethylene tubing. Where polyethylene tubing cannot be used, cost outside of pipe with polyethylene. No separate pay.
5. Sanitary sewers located under or within one-foot of proposed pavement shall be backfilled with cement stabilized sand (1.5 sacks/cubic yard) to within one foot of pavement subgrade. Lab verification shall be submitted to City of Houston Engineer prior to pavement construction.
6. All gravity sanitary sewers shall be air tested per specifications.
7. Deflection tests shall be performed on all flexible and semi-rigid pipe, except service leads. The test shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of 5%. The test is to be run using a mandrel having an outside diameter equal to 95% of the average inside diameter of the pipe. The mandrel must have a minimum of 9 prongs, only the correct length of each runner need be equal to or greater than the pipe's nominal diameter. The test shall be performed without mechanical pulling devices.
8. All sanitary sewer cleanouts shall be set at 2" to 5" above surrounding finished grade, and shall be sealed for storm water drainage away from the manhole rim and any pre-cast manholes are allowed in this project.
9. All sanitary sewer manholes shall have inflow protectors installed after final adjustment of manhole rims. (No Separate Pay.)
10. Sanitary lines parallel to water lines shall be installed with at least a 9-foot clearance and in separate trenches.
    (A) If vertical clearance is less than 2 feet:
        1) Minimum 18-foot joint of AWWA C-900 DR18 pvc pipe centered at the point of the crossing, 1-foot clearance minimum clearance.
    (B) If vertical clearance is between 2 to 9 feet:
        1) Use cement stabilized sand backfill for the wastewater line (minimum 2.5 sacks cement per cubic yard mix), 9-foot of clearance, and encase the bottom of sanitary sewer to 6 inches above the top of sanitary sewer. Center one joint of sanitary sewer pipe about the water line.
11. All sanitary service leads shall be 4" dia. min. and laid with a minimum grade of 0.70%
12. In wet sand construction, bedding and backfill for wet sand construction of sanitary sewer is as per City of Houston Dwg. No. 02317-01.
13. All manholes shall be tested for leakage in accordance with the Technical Specifications.
14. Prior to gravity sewer construction, the contractor shall contact the Department of Public works and Engineering at (713) 395-7675 or (713) 535-7800 and comply with all requirements for the issuance of necessary permits/work orders.
15. When crossing a connection to an existing sanitary sewer manhole the contractor shall plug down stream end of the proposed sanitary sewer. The sewer shall remain plugged until final acceptance by City of Houston.
16. Where a new sanitary pipe crosses a new, pressure rated waterline, one segment of the sanitary pipe shall be centered on the crossing with the joints of the sanitary pipe are equidistant and at least one foot horizontally from the centerline of the water line. The sanitary sewer pipe is the exception shall be constructed of AWWA C-900 DR18 pvc. Where AWWA C-900 pvc pipe will be connected to SDR26, ASTM 3034 sanitary sewer pipe. The contractor shall provide adapter coupling to make the proper connection.
17. Sanitary sewer bedding at waterline crossings must contain cement stabilized sand backfill (2.5 sack cement per cubic yard mix), 9-feet on either side of the waterline crossing.
18. All pavement shall be 5 1/2 sack - 3500 psi ; concrete 28 days.

STORM DRAINAGE CONSTRUCTION NOTES:

1. All storm sewers shall be reinforced concrete pipe, ASTM C-76, Class III and shall be installed, backfilled and tested in accordance with the City standards as defined in 02317-02, 02317-03, 02317-04, 02317-05, 02317-07 and 02317-07(Det. 2003) as applicable unless otherwise shown on the drawings.
2. All storm sewer constructed in public ROW or public easement shall be R.C.P. (C-76, Class III) and shall be backfilled in accordance with the City of Houston Standard Details 02317-02, 02317-03, 02317-05, 02317-06 and 02317-07 as applicable.
3. All sewer under proposed or future pavement and to a point (1) foot beyond back of all proposed or future curb lines shall be backfilled with cement stabilized sand to within one (1) foot of subgrade. The remaining depth of trench shall be backfilled with suitable soil material.
4. All trench backfills shall be in 8" lifts, with tests 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).
5. Circular and elliptical reinforced concrete pipe shall be installed using rubber gasket joints conforming to ASTM C443 and ASTM D3212 respectively.
6. All storm sewer pipes and inlet leads shall be 24-inch and larger R.C.P. (C-76, Class III) unless otherwise noted on plans.
7. All proposed pipe stub-outs from manholes and inlets are to be plugged with 8" brick walls unless otherwise noted.
8. Contractor shall provide 12" minimum clearance at storm sewer and water line crossings.
9. Adjust manhole covers to grade conforming to requirements of section 02088-adjusting manholes, inlets and valve boxes to grade.(No separate pay)
10. The contractor shall be responsible for protecting, maintaining, and restoring any back slope drainage systems disturbed as a result of his/her work.
11. All ditches shall be regraded to proposed elevations to insure proper drainage and suitable ditch bottom and side slopes are compacted. All disturbed area shall be regraded, seeded, and fertilized.
12. All driveways shall be located to avoid existing curb inlet structures.

TRAFFIC NOTES

1. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TEXAS MUTCD, MOST RECENT EDITION WITH REVISIONS) DURING CONSTRUCTION.
2. LANE CLOSURE PERMITS ARE TO BE OBTAINED WHEN REQUIRED (SEE NOTE 7)
   a. NO LANES SHALL BE CLOSED DURING THE HOURS OF 5:30 AM TO 7:00 PM MONDAY THRU FRIDAY IN DOWNTOWN/MIDTOWN AREAS.
   b. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 8:00 AM AND 4:00 PM TO 8:00 PM MONDAY THRU FRIDAY.
   c. NO LANES SHALL BE CLOSED IN RESIDENTIAL AREA FROM 7:00 PM TO 7:00 AM.
3. CONTRACTOR SHALL COVER EXCAVATIONS WITH STEEL PLATES, ANCHORED PROPERLY, DURING NON-WORKING HOURS AND DRIVEN LANES FOR TRAFFIC FLOW.
4. IF THE CONTRACTOR DESIRES TO BLOCK A LANE FOR WHICH NO "TRAFFIC CONTROL PLANS" WERE SUBMITTED, THEN THE CONTRACTOR SHALL SUBMIT REPRODUCIBLE MYLARS SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS TO PLAN REVIEW SECTION WITH THE ENTIRE APPROVED SET OF DRAWINGS FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
5. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT VERSION OF "TRAFFIC CONTROL PLANS" DURING CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THEN SHALL BE RESPONSIBLE TO SUBMIT AN ALTERNATE SET OF REPRODUCIBLE MYLARS SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS WITH THE ENTIRE APPROVED SET OF DRAWINGS TO PLAN REVIEW SECTION FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
6. APPROVED COPIES OF "TRAFFIC CONTROL PLANS" AND LANE/SIDEWALK CLOSURE PERMITS SHALL BE AVAILABLE FOR INSPECTION AT JOB SITE ALL TIMES.
7. THE REQUEST MUST BE MADE AT LEAST THREE DAYS PRIOR TO THE DATE FOR WHICH THE CLOSURE IS SOUGHT. CALL 281-633-7502 FOR AN APPLICATION.

PAVING CONSTRUCTION NOTES:

1. All paving shall be constructed in accordance with Fort Bend County and Fort Bend County requirements for hot-mix asphalt pavement as currently amended.
2. All temporary and permanent signage must comply with the "Texas Manual on Uniform Traffic Control Devices" as currently amended. At R1-1 stop signs shall be 30"X30" with diamond grade sheeting.
3. 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 elevations.
4. All intersection curb return radii shall be 25 feet and all cul-de-sac return radii shall be 30 feet unless noted otherwise.
5. Transverse expansion joints shall be installed at each curb return and at a maximum spacing of 60 feet.
6. When a 6" thick concrete roadway intersects with a 8" thick concrete roadway 8" thick concrete shall be constructed for the entire intersection, to the ends of all curb returns.
7. The Contractor shall protect all utilities and shall repair or replace at his expense any facilities damaged during paving or grading operations. All manholes and valves within the pavement area shall be adjusted to finished grade by the paving Contractor.
8. The paving Contractor shall clear and strip all lots and street rights-of-way of all organic (vegetation, roots, 3" and greater, organic soil layer) or no separate pay. The vegetation, roots, etc. shall be properly disposed of offsite. This organic soil (top soil) must be stockpiled during construction and used as top dressing to provide the minimum lot elevations shown on the Grading Plan.
9. Areas to be filled shall be scarified and compacted to at least 95% of maximum density per ASTM D-698, to a depth of 8" prior to fill placement. Fill material shall be placed in maximum 8" lift lifts (measured loose) and compacted to at least 95% of maximum density per ASTM D-698. Moisture content shall be within +3% of optimum unless otherwise directed by owner's testing lab or the Engineer. Fill shall be clean earth, sand, or a combination, and be free from trash, vegetation and large stones.
10. The 6-inch subgrade is to be scarified, lime stabilized (amount as determined by lab test) and compacted to 95% standard proctor density per ASTM D698.
11. Necessary testing of subgrade and asphalt pavement to prove that these items meet requirements shall be done by a commercial testing laboratory approved by the Engineer.
12. Reinforcement steel for pavement shall be supported with plastic chairs at 24-inch maximum spacing, each way.
13. A continuous longitudinal contracting bar shall be used in the curbs.
14. Street name signs shall be 9" blue with 6" white letters. Place sign at all intersections. Refer to recorded plat for correct spelling of street names. Street signs shall be supported from a post or return with a green sheeting.
15. General design mix and test data shall be submitted to Fort Bend County Engineer for approval.
16. Double reflectorized blue traffic markers shall be placed 6 inches offset of the centerline of all flushing valve locations by the paving contractor. Flushing valves located at intersections shall have a button placed on each street adjacent to the valve.
17. ADA – Handicap Ramps shall be installed with street paving at all intersections and comply to current A.D.A. regulations. Specification PED-12A
18. Any retaining penetration or footing shall be constructed on land come from the leading company or a representative of LJA Engineering Inc.
19. Concrete curb shall be 6" curb unless otherwise noted. See detail sheet title "PAVING DETAILS" 4"x12" Conc. Curb. to be placed in front of single family lots only. Paving shall be constructed in accordance with "Fort Bend County Standards and Requirements Relating to the Approval and Acceptance of Improvements in Unincorporated Areas" and amendments of same.
20. Contractor shall notify Wesley Crockford (281-633-7514), Fort Bend County Engineering Dept., 48 hours prior to construction and 24 hours prior to paving operation including sub-grade preparation, lime stabilization and placement of concrete pavement.

PERMIT NOTES

1. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF CITY OF HOUSTON AND FORT BEND COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT PRIOR TO STARTING CONSTRUCTION.
2. OWNER TO OBTAIN ALL PERMITS REQUIRED BY CITY OF HOUSTON AND FORT BEND COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR CULVERTS WITHIN FORT BEND COUNTY ROAD RIGHTS-OF-WAY. CONTACT JOHNNY ORTEGA 281-633-7502

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY, WILLIAMS PIPELINE LLC, ENRON, APPALACHIA) ARE SHOWN IN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. CENTERPOINT SIGNATURES ON THE PLANS DO NOT INDICATE THAT THE FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATOR COMMITTEE AT (713) 223-4567 OR (1-800-669-8344) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPELINE MARKERS ARE NOT VISIBLE, CALL (713) 967-6032 (7:00 AM TO 4:30 P.M.) FOR 519 OF LINE LOCATIONS BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

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

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT THE UTILITY DOES HAVE TO BE MADE PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH AND SAFETY CODE, FORBIDS ALL ACTIVITY IN WHICH PERSONS OR TOOLS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE ACTIVITY MUST NOTIFY THE UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222

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CAUTION: AT&T FACILITIES

The Location of Southwestern Bell Telephone Company utility are no longer provided by AT&T and are NOT shown on the plans and specifications. The contractor shall determine the exact location of these utilities prior to commencing work and agrees to be fully responsible for any and all damages caused by its failure to exactly locate and preserve these underground facilities. To have these facilities located call the Utility Coordinating Committee at (713) 223-4567, or toll free at 1-(800) 669-8344 at least 48 hours prior to any construction.

WARNING: UNDERGROUND ELECTRICAL FACILITIES

Underground electrical facilities exist in the area of the project. Do not begin construction until these facilities have been located and staked. To have these underground facilities staked call the Utility Coordinating Committee at (713) 223-4567, or toll free at 1-(800) 669-8344, at least 48 hours prior to any construction.

SPECIAL TRENCH BACKFILL NOTE:

All trench backfill for utilities shall be compacted to at least 95% of maximum density per ASTM D-698. Moisture content shall be within +/- 3% of optimum. Densities shall be taken at approximate 100-foot intervals for each lift, or as recommended by the testing lab,or as directed by the Engineer. The testing lab shall be paid by the owner except retests required due to the failure of the first test shall be paid by the Contractor. This shall be 2-inch maximum, undercut loose. All trench backfill shall be considered incidental to the pipe.

WATERLINE CONSTRUCTION NOTES:

1. PRIOR TO WATER MAIN ADJUSTMENT, THE INSTALLATION OF WATER METERS AND LEADS OR UNMETERED DEDICATED LINES, THE CONTRACTOR SHALL CONTACT WATER TAPS AND METERS SECTION AT 713-537-7675 FOR DETAILS OF PERMITS AND BONDS.
2. PRIOR TO WATER MAIN CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING AT 713-395-7675 TO MEET ALL REQUIREMENTS NECESSARY FOR THE ISSUANCE OF A WORK ORDER FOR THERESIMANCE OF A WORK ORDER FOR THE WATER MAIN CONSTRUCTION.
3. Unless otherwise noted, all water lines 12" and smaller shall have a minimum of 4' of cover, and water lines 16" and larger shall have a minimum of 5' of cover.
4. All appurtenances, after installation, shall be thoroughly disinfected according to AWWA Specification C-651 and then flushed before being placed into service. Water samples will be collected in sterile containers and submitted to the Texas State Department of Health and City of Houston requirements prior to placing the lines into service.
5. All waterlines are to be hydrostatically tested by the Contractor at 125 psi in accordance with City of Houston.
6. Pipe material (if not a steel section) shall be either PVC AWWA C-900 or mechanical ductile Iron AWWA C-151 and AWWA C-111, with bell and spigot push-on joints. PVC shall be DR 18, Class 150. DIP 4" and larger shall be standard class 350. DIP 3" is not allowed.
7. All valve mains under street pavement, if not steel section, shall be PVC pipe.
8. Concrete thrust blocks shall be provided at all underground tees, bends and laterals. They shall be built as per the details provided to prevent pipe movement.
9. All above ground ductile iron pipe connections shall be flanged. Underground ductile iron pipe connections shall be bolted and push-on after the first flanged fitting before grade unless noted otherwise on the plans.
10. All flanges below grade shall have stainless steel bolts and nuts.
11. All water valves shall open counterclockwise. All water valves shall be supplied and installed in accordance with the latest edition of AWWA C-500 and shall be of the resilient wedge type.
12. All hydrant leads shall be protected, hydrant gate valves with a cast iron box, except where hydrants are called out on the plans.
13. All hydrant branch grade shall be bagged.
14. All waterlines shall be encased in bank sand to at least 6" above the pipe. Cost of bank sand to be included in unit price of waterline.
15. Waterline trenches under pavement, or within one foot of proposed curbs shall be backfilled with cement stabilized sand (1-1/2 sack mix) to within one foot of pavement. Cost of backfill material to be paid directly by the Contractor, with the unit price of waterline.
16. Maintain minimum 9-foot horizontal clearance between outside of sanitary sewer and water line.
17. Water lines parallel to sanitary lines shall be installed with at least a 9-foot clearance and in separate trenches.
18. Center of fire hydrant to be located 3'-0" from back of curb with center line of wheelnut nozzle 22-inches above finished grade, unless otherwise shown.
19. Manholes shall be constructed such that all crouse and tees will not be located under proposed or future paving.
20. The contractor to turn fire hydrants and make all final adjustments after construction of paving. No separate pay.
21. Reinforced waterline pipe material shall be PVC AWWA C-900 with bell and spigot push-on joints. PVC shall be pipe Class 150 ("Purple Pipe").
22. It is the Contractor's obligation to ensure proper connection is made to meet design mark shown in the plans by water line contractor that exceeding manufacturer's specifications for bending and deflection.

FORT BEND COUNTY CONSTRUCTION – GENERAL NOTES

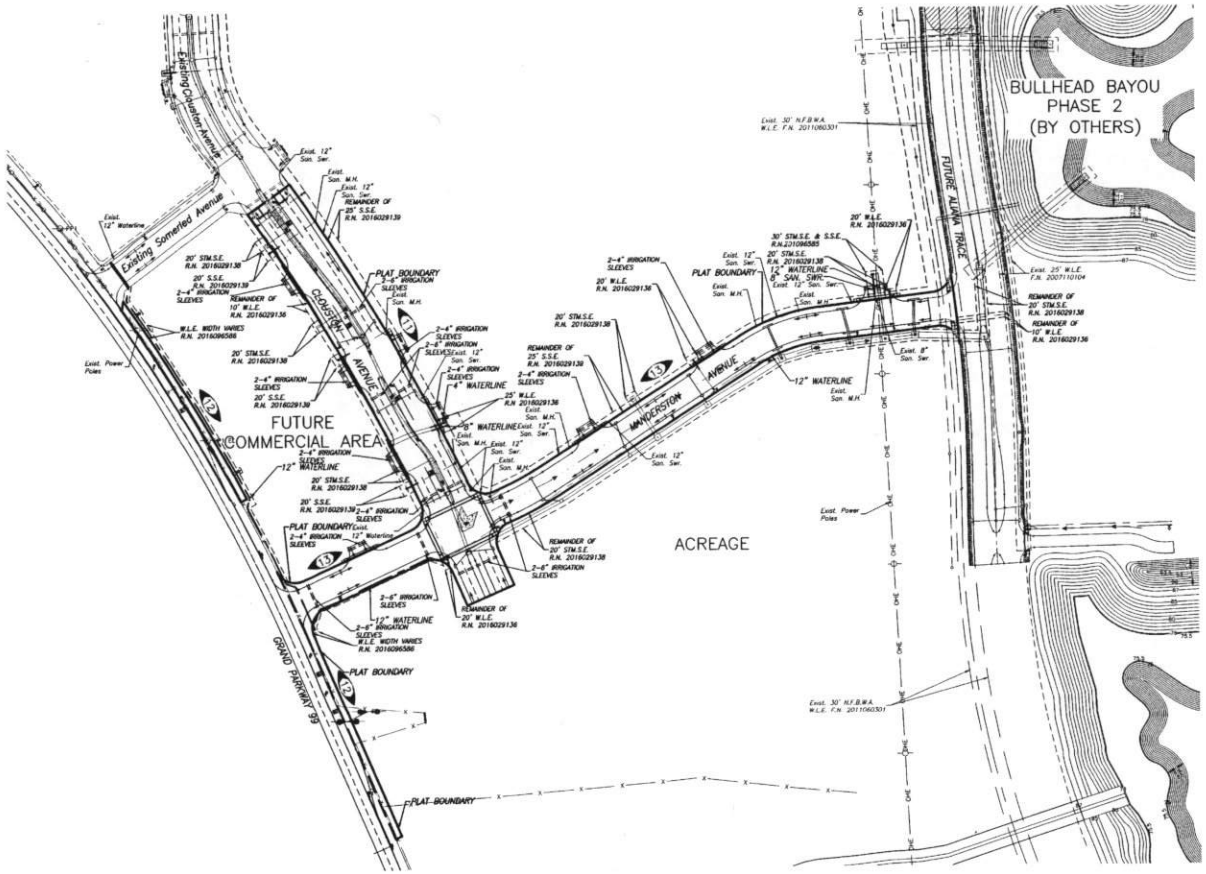
1. FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 48 HOUR NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN THE LIMITS OF THE PAVING AT CONSTRUCTIONOFFORTBENDCOUNTY.TX.GOV
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.
4. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS AS CURRENTLY AMENDED.
5. ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB
6. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
7. ALL CONCRETE PAVEMENT SHALL BE 5 1/ SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINT SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
8. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
9. "TOT" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
10. AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE PLACE IN ACCORDANCE WITH TXDOT-PED-12 STANDARD DETAIL SHEET, A.D.A. – PED-12A STANDARD DETAIL SHEET, AND TWO STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.
11. CURB RADIUS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO PERCEIVABLE "LIP" WITHIN 6" OF RAMPS.
12. ALL INTERSECTIONS UTILIZING TRAFFIC CONTROL MEASURES SHALL HAVE A.D.A. WHEEL CHAIR RAMPS INSTALLED.
13. GUIDELINES ARE SET FORTH IN THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT.
14. ALL R1-1 STOP SIGNS SHALL BE 30"X30" WITH DIAMOND GRADE SHEETING. STREET NAME SIGNS SHALL BE UPPER AND LOWER CASE LETTERS WITH DIAMOND GRADE SHEETING.
15. STREET NAME SIGNAGE SHALL BE ON A 9" HIGH SIGN FLAT BLADE W/REFLECTIVE GREEN BACKGROUND. STREET NAME SHALL BE UPPER AND LOWERCASE LETTERING WITH UPPERCASE LETTERS 6" HIGH MINIMUM AND LOWERCASE LETTERS OF 4.5" MINIMUM. THE LETTERS SHALL BE REFLECTIVE WHITE. STREET NAME SIGNS SHALL BE MOUNTED ON STOP SIGN POST.
16. A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE HYDRANT SIDE.

NOTE: FORT BEND COUNTY NOTES SUPERSEDE ANY CONFLICTING NOTES.

GENERAL NOTES

1. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS AS CURRENTLY AMENDED.
2. ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB
3. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
4. ALL CONCRETE PAVEMENT SHALL BE 5 1/ SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINT SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
5. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
6. "TOT" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
7. AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE PLACE IN ACCORDANCE WITH TXDOT-PED-12 STANDARD DETAIL SHEET, A.D.A. – PED-12A STANDARD DETAIL SHEET, AND TWO STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.
8. CURB RADIUS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO PERCEIVABLE "LIP" WITHIN 6" OF RAMPS.
9. ALL INTERSECTIONS UTILIZING TRAFFIC CONTROL MEASURES SHALL HAVE A.D.A. WHEEL CHAIR RAMPS INSTALLED.
10. GUIDELINES ARE SET FORTH IN THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT.
11. ALL R1-1 STOP SIGNS SHALL BE 30"X30" WITH DIAMOND GRADE SHEETING. STREET NAME SIGNS SHALL BE UPPER AND LOWER CASE LETTERS WITH DIAMOND GRADE SHEETING.
12. STREET NAME SIGNAGE SHALL BE ON A 9" HIGH SIGN FLAT BLADE W/REFLECTIVE GREEN BACKGROUND. STREET NAME SHALL BE UPPER AND LOWERCASE LETTERING WITH UP

CAUTION:
EXIST. OVERHEAD POWER LINES, MAIN LINES, CONDUIT LINES AND/OR UNDERGROUND CABLES SHOWN ARE APPROXIMATE AND ARE DANGEROUS. EXTREME CAUTION SHOULD BE EXERCISED WHEN WORKING IN THESE VICINITIES. CONTACT WITH THEM COULD CAUSE SERIOUS INJURY AND/OR DEATH TO PERSON OR PERSONS CONTACTING THEM. CONTRACTOR SHALL CONTACT ALL EXISTING UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION IN THOSE AREAS. IN THE EVENT OF CONFLICT BETWEEN EXISTING UTILITIES AND PROPOSED UTILITIES, THE CONTRACTOR SHALL SUSPEND CONSTRUCTION IN THE VICINITY OF THE CONFLICT, AND SHALL NOTIFY THE OWNER IMMEDIATELY. CONSTRUCTION IN THE VICINITY OF THE CONFLICT SHALL COMMENCE ONLY UPON AUTHORIZATION BY THE OWNER.



LEGEND

- PROPOSED WATER LINE AND GATE VALVE AND BOX
- PROPOSED WATER LINE W/BENDS
- PROPOSED WATER LINE W/TEE
- PROPOSED WATER LINE W/FIRE HYDRANT UNIT
  A. LINE SIZE X 6" TEE
  B. 6" GATE VALVE AND BOX
  C. FIRE HYDRANT
- 2" BLOW-OFF ASSEMBLY W/PLUG AND CLAMP
- EXISTING WATER LINE SYSTEM
- PROPOSED DOUBLE SANITARY SEWER LEAD
- PROPOSED SINGLE SANITARY SEWER LEAD
- PROPOSED SANITARY SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- (10) INDICATES SHEET REFERENCE NUMBER
- (1) INDICATES BLOCK NUMBER
- 1 INDICATES LOT NUMBER
- W.L.E. INDICATES WATERLINE EASEMENT
- STM.S.E. INDICATES STORM SEWER EASEMENT
- S.S.E. INDICATES SANITARY SEWER EASEMENT
- PROPOSED IRRIGATION SLEEVES

N

BENCHMARK:
A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 77.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD–29) 1973 ADJ.

TBM 6–TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD–29) 1973 ADJ.

NOTES:

RECORD DRAWING
I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Mary Ned
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016–0984
C.O.H. LOG NO. 16–0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

WATER AND SANITARY SEWER LAYOUT

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883–1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER DATE 9/1/16 — STREET & DRAINAGE
WASTEWATER DATE 9/1/16 — TRAFFIC
FACILITIES 9/1/16 — STORM WATER QUALITY

STATE OF TEXAS — JASON M. KELLY — 91021 — LICENSED PROFESSIONAL ENGINEER — 9/1/16

FILE NO.

DRAWING SCALE

SCALE: 1" = 100'

SHEET NO. 3 OF 28

FOR CITY OF HOUSTON USE ONLY
56578

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883–1042

3

Date/Time : Thu, 01 Sep 2016 - 1:11pm User Name : jorbes
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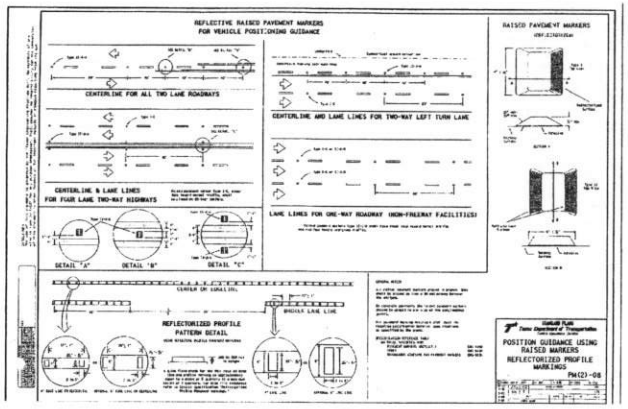
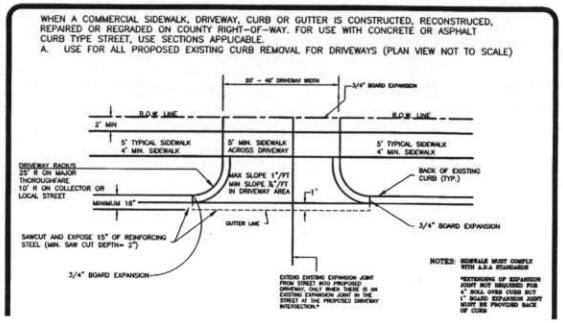




LEGEND

- PROPOSED STORM SEWER & MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- PROPOSED STORM SEWER, MANHOLE, AND "H-2" OR "C-1" INLETS
- PROPOSED PAVEMENT
- INDICATES PAVING SUMMIT
- 10' STM.S.E. — INDICATES STORM SEWER EASEMENT
- INDICATES WHEELCHAIR RAMP
- INDICATES STREET SIGNS
- 10 — INDICATES SHEET REFERENCE NUMBER
- 1 — INDICATES BLOCK NUMBER
- 1 — INDICATES LOT NUMBER
- INDICATES 5' WIDE CONC. SIDEWALK

N

BENCHMARK:

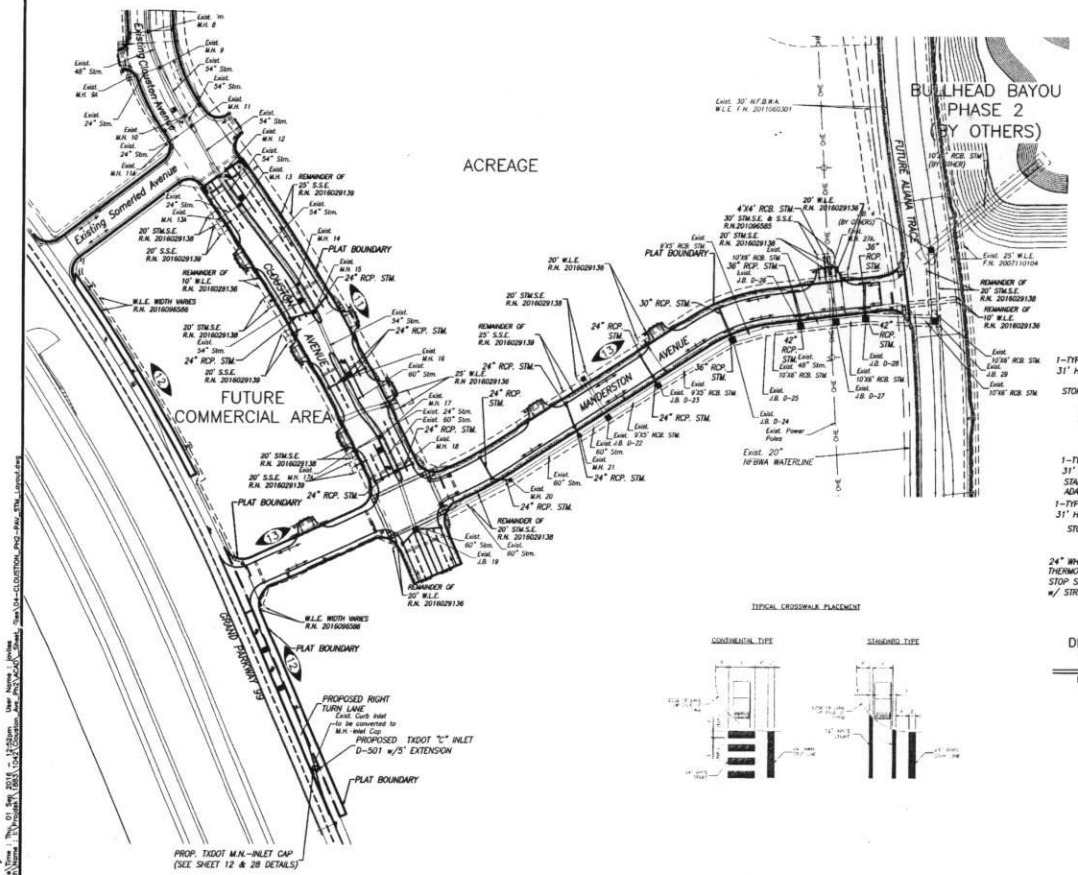
A-1212 — BRASS DISK, STAMPED A-1212, 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY. 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND ½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM 6-TOP OF A CHISSED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,140 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:



TYPICAL CROSSWALK PLACEMENT

CAUTION:
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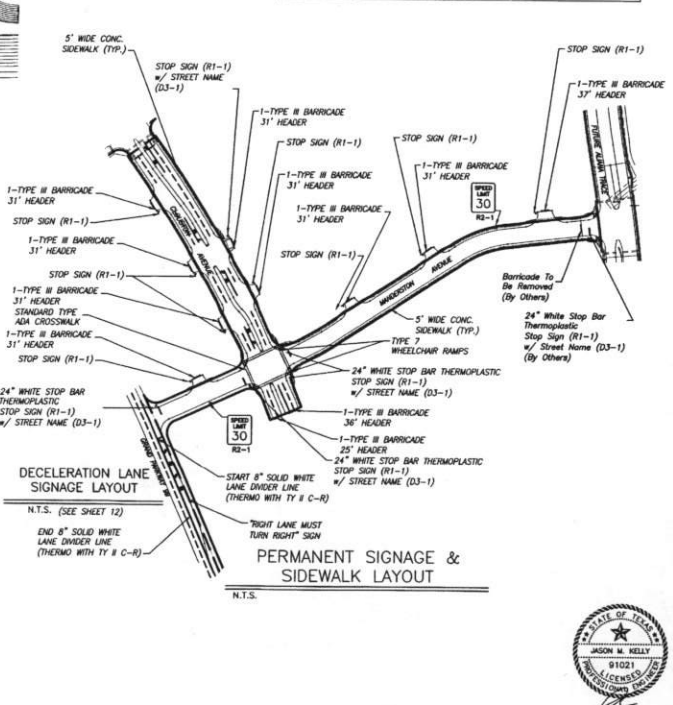


DECELERATION LANE SIGNAGE LAYOUT

N.T.S. (SEE SHEET 12)

PERMANENT SIGNAGE & SIDEWALK LAYOUT

N.T.S.

STATE OF TEXAS — JASON M. KELLY — 91021 — LICENSED PROFESSIONAL ENGINEER — 9/1/16

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Maggie Dod — DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

PAVING, DRAINAGE AND PERMANENT SIGNAGE LAYOUT

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/DH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 9/1/16	STREET & BRIDGE
DATE 9-7-16	TRAFFIC
DATE 9/1/16	STORM WATER QUALITY
FACILITIES	

FILE NO.

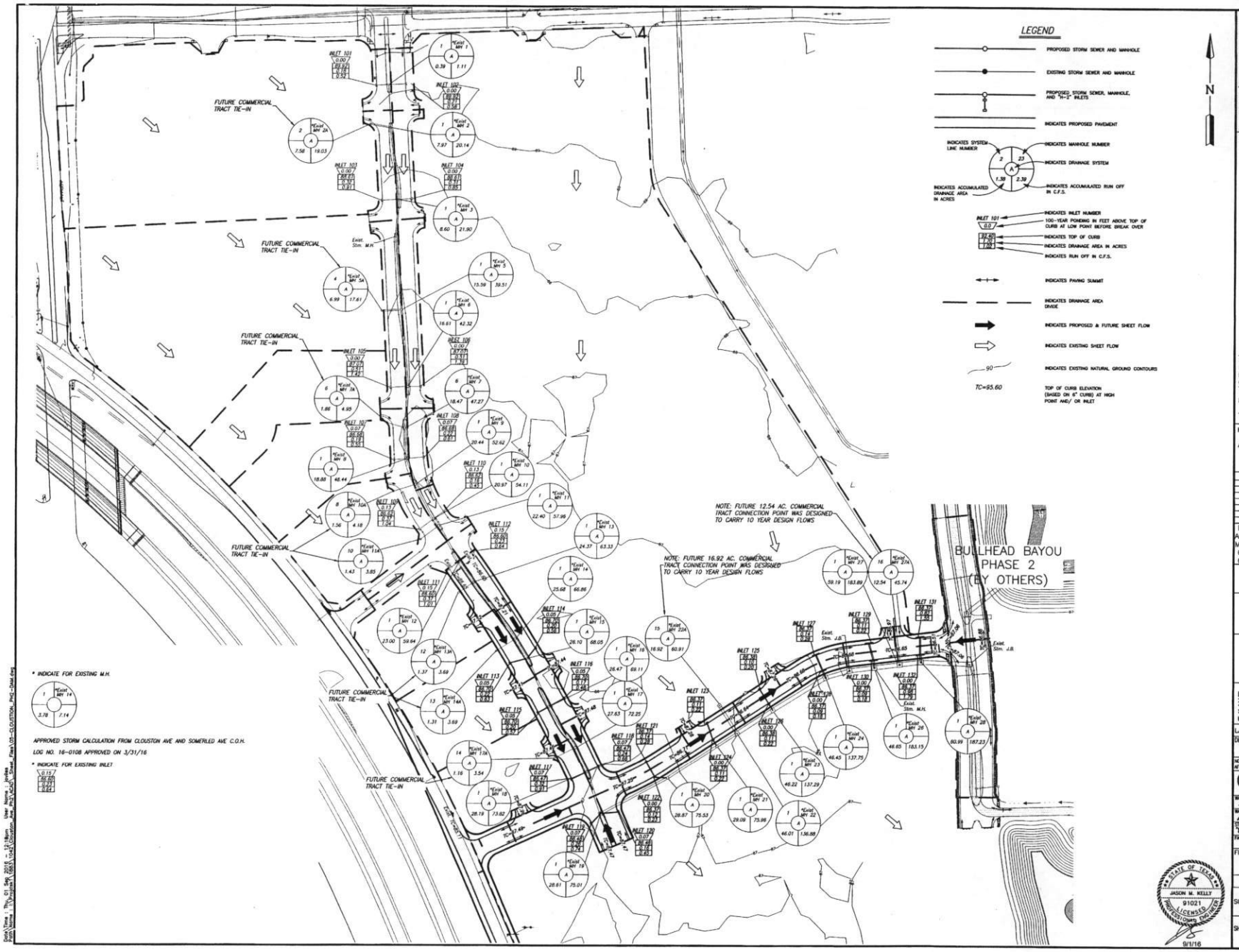
DRAWING SCALE

SCALE: 1" = 100'

FOR CITY OF HOUSTON USE ONLY — 56578

SHEET NO. 4 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE - JOB NO. 1883-1042



BENCHMARK:

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NOTES:

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BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Maggie Dod
DEVELOPMENT COORDINATOR

DATE: 10/10/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

DRAINAGE AREA MAP

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/DH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PROJ. MGR.	9/1/16	STREET & BRIDGE
MASTERPLAN	9-7-16	TRAFFIC
CONSTR.	9/1/16	STORM WATER QUALITY
FACILITIES		

FILE NO.

DRAWING SCALE

SCALE: 1" = 100'

SHEET NO. 5 OF 28

FOR CITY OF HOUSTON USE ONLY

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED PROFESSIONAL ENGINEER
9/1/16

56578
CITY OF HOUSTON

CLOUSTON AVENUE AND MANDERSTON AVENUE - JOB NO. 1883-1042

Date/Time : Thu, 01 Sep 2016 - 12:18am User Name : jjones
Path/Name : J:\Projects\1883\civil\Clouston_Ave_Proj\CAD\Sheet_Files\05-CLOUSTON_PH2-DAM.dwg

9

LJA Engineering, Inc.

Project: CLOUSTON PHASE 2
LJA Job No. 1883-1042
System: Storm
By: OHAAUA Date
Checked by: Date

Nominal POOL 76.00
25-YR W.S.E. 84.18

COH 2 YR
b= 75.01
d= 16.2
e= 0.8315

Manning's Roughness Coefficient for Concrete Pipes
n= 0.013

Design Frequency: 2 years

2 YR (Exist.) — 25-YR W.S.E. 84.18

FROM JUNCTION	TO JUNCTION	ADDED AREA ac	TOTAL AREA ac	TC min	Intensity	C	CI	Additional Q c/s	CUM Q(2 YR) c/s	REACH ft	LINE/BOX SIZE in	WIDTH FT	HEIGHT FT	SLOPE %	DESIGN Q c/s	V fps	D.S. FALL (ft)	OTHER LOSSES ft	FLOWLINE UP-STREAM	FLOWLINE DOWN-STREAM	ACT V fps	SLOPE HYD. GRAD (%)	delta H ft	ELEV. HYD. GRAD UP-STREAM	ELEV. HYD. GRAD DOWN-STREAM	TC UP-STREAM	HD DIST BELOW TC ft	Maximum Ponding Elevation	Method 1 (Y/N)	Maximum Allowable Sheetflow	Actual Sheetflow	Method 2 (Y/N)	Inlet Spread Width ft
SYSTEM A																																	
LINE 1																																	
101	Elist. 1	0.18	0.18	22.39	3.60	0.80	2.88	0.00	0.52	30	24			0.667	18.52	5.9	0.00		85.42	85.22	0.15	0.001	0.000	87.42	87.42	89.92	2.50	90.92	Yes	54.33	0.52	Method 1	6.20
102	Elist. 1	0.21	0.39	23.47	3.52	0.80	2.81	0.00	1.11	52	24			0.385	14.07	4.5	0.00		85.42	85.22	0.35	0.002	0.001	87.42	87.22	89.92	2.50	90.92	Yes	54.33	0.59	Method 1	9.22
Elist. 1	Elist. 2	0.00	0.39	23.47	3.52	0.80	2.81	0.00	1.11	106	24			0.15	8.82	3.1	1.00		82.46	82.26	0.35	0.002	0.003	86.64	86.64	89.92	3.28	90.92	Yes	54.33	0.00	Method 1	
Elist. 2	Elist. 3	0.00	7.07	29.41	3.13	0.80	2.50	0.00	20.13	176	36			0.10	21.15	3.0	0.50		81.26	81.08	2.84	0.060	0.161	86.48	86.48	93.72	4.08	91.72	Yes	54.33	19.03	Method 1	
Elist. 3	Elist. 4	0.00	8.60	29.61	3.12	0.80	2.50	0.00	21.90	96	36			0.10	21.15	3.0	0.50		81.08	80.98	3.09	0.107	0.097	86.48	86.38	93.61	2.13	89.61	Yes	54.33	1.76	Method 1	
Elist. 4	Elist. 5	0.00	8.60	29.61	3.12	0.80	2.50	0.00	21.90	161	36			0.10	21.15	3.0	0.50		80.98	80.81	3.09	0.107	0.194	86.38	85.19	93.06	3.48	90.06	Yes	54.33	0.00	Method 1	
Elist. 5	Elist. 6	0.00	15.59	31.32	3.03	0.80	2.42	0.00	36.51	168	42			0.08	28.53	3.0	0.50		80.31	80.16	4.10	0.153	0.289	85.19	85.90	88.33	2.14	89.33	Yes	54.33	17.61	Method 1	
Elist. 6	Elist. 7	0.00	16.61	31.49	3.02	0.80	2.42	0.00	42.32	102	48			0.07	38.11	3.0	0.00		79.66	79.59	3.36	0.086	0.088	85.90	85.81	87.07	1.17	88.07	Yes	54.33	2.81	Method 1	
Elist. 7	Elist. 8	0.00	16.47	31.71	3.00	0.80	2.40	0.00	47.27	76	48			0.07	38.11	3.0	0.00		79.59	79.54	3.75	0.107	0.081	85.81	85.73	87.33	1.52	88.33	Yes	54.33	4.95	Method 1	
Elist. 8	Elist. 9	0.00	16.88	31.78	3.00	0.80	2.40	0.00	48.44	56	48			0.07	38.11	3.0	0.49		79.54	79.49	3.85	0.113	0.075	85.73	85.66	86.56	0.95	87.66	Yes	54.33	1.16	Method 1	
Elist. 9	Elist. 10	0.00	20.44	32.01	2.99	0.80	2.39	0.00	52.82	95	54			0.06	48.30	3.0	0.00		79.00	78.95	3.30	0.071	0.067	85.66	85.59	87.31	1.68	88.31	Yes	54.33	4.18	Method 1	
Elist. 10	Elist. 11	0.00	20.07	32.06	2.99	0.80	2.39	0.00	54.11	21	54			0.06	48.30	3.0	0.00		78.95	78.93	3.40	0.075	0.016	85.59	85.57	86.62	1.03	87.62	Yes	54.33	1.49	Method 1	
Elist. 11	Elist. 12	0.00	22.40	32.29	2.98	0.80	2.38	0.00	57.96	101	54			0.06	48.30	3.0	0.00		78.93	78.88	3.64	0.086	0.067	85.57	85.49	87.28	1.71	88.28	Yes	54.33	3.85	Method 1	
Elist. 12	Elist. 13	0.00	23.00	32.37	2.97	0.80	2.38	0.00	59.64	61	54			0.06	48.30	3.0	0.22		78.88	78.84	3.74	0.091	0.056	85.49	85.43	86.56	1.13	87.60	Yes	54.33	1.68	Method 1	
Elist. 13	Elist. 14	0.00	24.37	32.55	2.96	0.80	2.37	0.00	63.33	172	54			0.06	48.30	3.0	0.00		70.62	70.52	3.98	0.103	0.177	85.43	85.25	86.50	1.07	87.50	Yes	54.33	3.66	Method 1	
Elist. 14	Elist. 15	0.00	25.88	32.71	2.95	0.80	2.36	0.00	66.96	55	54			0.06	48.30	3.0	0.00		70.52	70.49	4.29	0.115	0.064	85.25	85.19	86.41	1.16	87.41	Yes	54.33	3.34	Method 1	
Elist. 15	Elist. 16	0.00	26.10	32.76	2.95	0.80	2.36	0.00	68.05	129	54			0.06	48.30	3.0	0.00		70.49	70.41	4.29	0.115	0.153	85.19	85.04	86.76	1.33	87.76	Yes	54.33	1.15	Method 1	
Elist. 16	Elist. 17	0.00	26.47	32.81	2.95	0.80	2.36	0.00	69.11	119	60			0.05	58.39	3.0	0.00		70.41	70.35	3.51	0.070	0.063	85.04	84.95	87.10	2.06	88.10	Yes	54.33	1.05	Method 1	
Elist. 17	Elist. 18	0.00	27.53	32.94	2.94	0.80	2.35	0.00	72.35	66	60			0.05	58.39	3.0	0.00		70.35	70.32	3.67	0.075	0.050	84.95	84.90	87.60	2.55	88.60	Yes	54.33	3.14	Method 1	
Elist. 18	Elist. 19	0.00	28.18	33.00	2.94	0.80	2.35	0.00	73.82	107	60			0.05	58.47	3.0	0.00		70.32	70.27	3.75	0.080	0.086	84.90	84.82	86.98	1.78	87.98	Yes	54.33	1.37	Method 1	
Elist. 19	Elist. 20	0.00	28.61	33.06	2.94	0.80	2.35	0.00	75.01	166	60			0.05	58.47	3.0	0.00		70.27	70.18	3.82	0.082	0.153	84.82	84.67	87.60	2.78	88.60	Yes	54.33	1.18	Method 1	
Elist. 20	Elist. 21	0.00	28.87	33.08	2.94	0.80	2.35	0.00	75.76	144	60			0.05	58.47	3.0	0.00		70.18	70.11	3.85	0.084	0.121	84.67	84.54	87.10	2.43	88.10	Yes	54.33	0.75	Method 1	
Elist. 21	Elist. 22	0.00	29.09	33.10	2.93	0.80	2.35	0.00	76.40	59	60			0.05	58.47	3.0	1.51		70.11	70.08	3.89	0.085	0.050	84.54	84.49	86.37	1.83	87.37	Yes	54.33	0.64	Method 1	
Elist. 22	Elist. 23	0.00	46.01	34.63	2.86	0.80	2.29	0.00	127.31	105	54	9	5	0.04	141.53	3.1	0.00		68.56	68.52	3.06	0.036	0.039	84.49	84.46	86.50	2.00	87.50	Yes	54.33	60.91	Method 1	
Elist. 23	Elist. 24	0.00	46.22	34.64	2.86	0.80	2.29	0.00	127.92	153	54	9	5	0.04	141.53	3.1	0.00		68.52	68.46	3.06	0.036	0.058	84.46	84.40	85.37	1.91	87.37	Yes	54.33	0.61	Method 1	
Elist. 24	Elist. 25	0.00	46.45	34.66	2.86	0.80	2.29	0.00	128.50	61	54	9	5	0.04	141.53	3.1	2.24		68.46	68.44	3.08	0.036	0.023	84.40	84.37	85.37	1.91	87.37	Yes	54.33	0.68	Method 1	
Elist. 25	Elist. 26	0.00	46.45	34.66	2.86	0.80	2.29	0.00	128.58	61	54	10	6	0.03	174.97	2.9	0.00		66.20	66.18	2.31	0.018	0.011	84.37	84.36	85.37	2.09	87.37	Yes	54.33	0.00	Method 1	
Elist. 26	Elist. 27	0.00	46.65	34.67	2.86	0.80	2.29	0.00	129.16	62	54	10	6	0.03	174.97	2.9	0.00		66.18	66.17	2.32	0.018	0.011	84.36	84.35	85.37	2.09	87.37	Yes	54.33	0.56	Method 1	
Elist. 27	Elist. 28	0.00	58.19	35.52	2.82	0.80	2.26	0.00	164.90	53	10	6	0.03	174.97	2.9	0.00		66.17	66.15	3.08	0.031	0.016	84.35	84.34	85.37	2.02	87.37	Yes	54.33	45.74	Method 1	
Elist. 28	Elist. 29	0.00	60.99	35.62	2.82	0.80	2.25	0.00	169.76	122	10	6	0.03	174.97	2.9	0.00		66.15	66.11	3.16	0.033	0.040	84.34	84.30	85.37	2.03	87.37	Yes	54.33	4.86	Method 1	
Elist. 29	Elist. JB	0.00	60.99	35.62	2.82	0.80	2.25	0.00	169.76	116	10	6	0.03	174.97	2.9	0.00		66.11	66.07	3.16	0.033	0.038	84.30	84.26	85.37	2.07	87.37	Yes	54.33	0.00	Method 1	
Elist. JB	OUTFALL	0.00	60.99	35.62	2.82	0.80	2.25	0.00	169.76	234	10	6	0.03	174.97	2.9	0.00		66.07	66.01	3.16	0.033	0.077	84.26	84.18	85.37	2.11	87.37	Yes	54.33	0.00	Method 1	
LINE 2																																	
Elist. 2A	Elist. 2	7.58	7.58	29.29	3.14	0.80	2.51	0.00	19.03	51	36			0.10	21.15	3.0	END OF LINE		81.31	81.26	2.69	0.081	0.041	86.69	86.64	90.72	4.04	91.72	Yes	54.33	19.03	Method 1	
LINE 3																																	
Elist. 103	Elist. 3	0.32	0.32	23.18	3.54	0.80	2.83	0.00	0.91	41	24			0.466	15.84	5.0	0.00		84.12	83.92	0.29	0.002	0.001	86.48	86.48	88.61	2.13	89.61	Yes	54.33	0.91	Method 1	7.66
Elist. 104	Elist. 3	0.31	0.63	24.22	3.46	0.80	2.77	0.00	1.76	30	24			0.667	18.52	5.9	END OF LINE		84.12	83.92	0.56	0.006	0.002	86.48	86.46	88.61	2.13	89.61	Yes	54.33	0.86	Method 1	9.78
LINE 4																																	
Elist. 5A	Elist. 5	6.99	6.99	29.08	3.15	0.80	2.52	0.00	17.61	49	36			0.10	21.15	3.0	END OF LINE		80.86	80.81	2.49	0.069	0.034	86.22	86.19	88.32	2.11	89.33	Yes	54.33	17.61	Method 1	
LINE 5																																	
Elist. 105	Elist. 6	0.51	0.51	23.88	3.49	0.80	2.79	0.00	1.42	41	24			0.466	15.84	5.0	0.00		82.55	82.35	0.45	0.004	0.002	85.91	85.91	87.07	1.16	88.07	Yes	54.33	1.42	Method 1	9.06
Elist. 106	Elist. 6	0.51	1.02	25.03	3.40	0.80	2.72	0.00	2.81	30	24			0.667	18.52	5.9	END OF LINE		82.55	82.35	0.89	0.015	0.005	85.91	85.90	87.07	1.16	88.07	Yes	54.33	1.39	Method 1	11.64
LINE 6																																	
Elist. 7A	Elist. 7	1.86	1.86	26.15	3.33	0.80	2.66	0.00	4.95	47	24			0.180	9.62	3.1	END OF LINE		79.67	79.59	1.57	0.048	0.022	85.94	85.81	87.33	1.49	88.33	Yes	54.33	4.95	Method 1	
LINE 7																																	
Elist. 107	Elist. 8	0.19	0.19	22.46	3.59	0.80	2.87	0.00	0.55	30	24			0.662	18.45	5.9	0.00		82.08	81.88	0.17	0.001	0.000	85.73	85.73	86.66	0.95	87.66	Yes	54.33	0.55	Method 1	6.33
Elist. 108	Elist. 8	0.22	0.41	23.88	3.51	0.80	2.81	0.00	1.16	41	24			0.466	15.89	5.1	END OF LINE		82.08	81.88	0.37	0.003	0.001	85.73	85.73	86.66	0.95	87.66	Yes	54.33	0.62	Method 1	8.37
LINE 8																																	
Elist. 9A	Elist. 9	1.56	1.56	25.81	3.35	0.80	2.68	0.00	4.18	57	24			0.180	9.62	3.1	END OF LINE		79.11	79.01	1.33	0.034	0.019	85.68	85.66	87.31	1.64	88.31	Yes	54.33	4.18	Method 1	
LINE 9																																	
Elist. 109	Elist. 10	0.37	0.37	23.39	3.52	0.80	2.82	0.00	1.04	41	24			0.466	15.84	5.0	0.00		82.12	81.92	0.33	0.002	0.001	85.59	85.59	86.62	1.03	87.62	Yes	54.33	1.04	Method 1	8.06
Elist. 110	Elist. 10	0.16	0.53	23.94	3.48	0.80	2.78	0.00	1.46	30	24			0.667	18.52	5.9	END OF LINE		82.12	81.92	0.47	0.004	0.001	85.59	85.58	86.62	1.03	87.62	Yes	54.33	0.45	Method 1	9.16
LINE 10																																	
Elist. 11A	Elist. 11	1.43	1.43	25.66	3.36	0.80	2.69	0.00	3.85	56	24			0.180	9.62	3.1	END OF LINE		79.03	78.93	1.22	0.029	0.016	85.59	85.57	87.28	1.09	88.28	Yes	54.33	3.85	Method 1	
LINE 11																																	
Elist. 111	Elist. 12	0.37	0.37	23.39	3.52	0.80	2.82	0.00	1.04	30	24			0.667	18.52	5.9	0.00		82.95	82.75	0.33	0.002	0.001	85.49	85.49	86.60	1.11	87.60	Yes	54.33	1.04	Method 1	8.06
Elist. 112	Elist. 12	0.23	0.60	24.14	3.47	0.80	2.77	0.00	1.68	41	24			0.466	15.84	5.0	END OF LINE		82.95	82.75	0.53	0.005	0.002	85.49	85.49	86.60	1.11	87.60	Yes	54.33	0.94	Method 1	9.90
LINE 12																																	
Elist. 13A	Elist. 13	1.37	1.37	25.87	3.37	0.80	2.69	0.00	3.69	45	24			0.180	9.62	3.1	END OF LINE		73.20	73.12	1.17	0.026	0.012	85.44	85.43	86.50	1.06	87.50	Yes	54.33	3.69	Method 1	
LINE 13																																	
Elist. 14A	Elist. 14	1.31	1.31	25.49	3.37	0.80	2.70	0.00	3.54	55	24			0.180	9.62	3.1	END OF LINE		73.12	73.02	1.12	0.024	0.013	85.27	85.25	86.41	1.14	87.41	Yes	54.33	3.54	Method 1	
LINE 14																																	
Elist. 17A	Elist. 17	1.16	1.16	25.26	3.38	0.80	2.71	0.00	3.14	55	24			0.180	9.62	3.1	END OF LINE		73.45	73.35	1.00	0.019	0.011	84.97	84.96	87.50	2.53	88.50	Yes	54.33	3.14	Method 1	
LINE 15								Q (10 YR)(CFS)																Q (10 YR)(HGL)									
Elist. 22A	Elist. 22	16.92	16.92	31.46	4.50	0.80	3.60	0.00	60.91	60		5	4	0.050	69.46	2.9	END OF LINE		66.60	66.56	2.54	0.036	0.031	84.53	84.49	86.50	1.97	87.50	Yes	54.33	60.91	Method 1	
LINE 16								Q (10 YR)(CFS)																Q (10 YR)(HGL)									
Elist. 27A	Elist. 27	12.54	12.54	30.61	4.56	0.80	3.65	0.00	45.74	65		4	4	0.070	48.52	3.0	END OF LINE		66.23	66.17	2.66	0.062	0.053	84.43	84.37	86.37	1.94	87.37	Yes	54.33	45.74	Method 1	

2 YR (PROP.) — 25-YR W.S.E. 84.18

FROM JUNCTION	TO JUNCTION	ADDED AREA ac	TOTAL AREA ac	TC min	Intensity	C	CI	Additional Q c/s	CUM Q(2 YR) c/s	REACH ft	LINE/BOX SIZE in	WIDTH FT	HEIGHT FT	SLOPE %	DESIGN Q c/s	V fps	D.S. FALL (ft)	OTHER LOSSES ft	FLOWLINE UP-STREAM	FLOWLINE DOWN-STREAM	ACT V fps	SLOPE HYD. GRAD (%)	delta H ft	ELEV. HYD. GRAD UP-STREAM	ELEV. HYD. GRAD DOWN-STREAM	TC UP-STREAM	HD DIST BELOW TC ft	Maximum Ponding Elevation	Method 1 (Y/N)	Maximum Allowable Sheetflow	Actual Sheetflow	Method 2 (Y/N)	Inlet Spread Width ft
LINE 17																																	
113	Exist. 15	0.22	0.22	22.66	3.58	0.80	2.86	0.00	0.63	43	24			0.466	15.84	4.9	0.00		82.20	82.00	0.20	0.001	0.000	85.19	85.19	86.70	1.51	87.70	Yes	54.33	0.63	Method 1	6.67
114	Exist. 15	0.20	0.42	23.58	3.51	0.80	2.81	0.00	1.19	32	24			0.621	17.87	5.7	END OF LINE		82.20	82.00	0.38	0.003	0.001	85.19	85.19	86.70	1.51	87.70	Yes	54.33	0.56	Method 1	8.44
LINE 18																																	
115	Exist. 16	0.20	0.20	22.53	3.59	0.80	2.87	0.00	0.57	30	24			0.670	18.58	5.9	0.00		82.20	82.00	0.16	0.001	0.000	85.04	85.04	86.70	1.66	87.70	Yes	54.33	0.57	Method 1	6.45
116	Exist. 16	0.17	0.37	23.39	3.52	0.80	2.82	0.00	1.05	41	24			0.466	15.82	5.0	END OF LINE		82.20	82.00	0.33	0.002	0.001	85.04	85.04	86.70	1.66	87.70	Yes	54.33	0.48	Method 1	8.08
LINE 20																																	
117	Exist. 18	0.32	0.32	23.18	3.54	0.80	2.83	0.00	0.91	41	24			0.466	15.84	5.0	0.00		81.97	81.77	0.29	0.002	0.001	84.90	84.90	86.47	1.57	87.47	Yes	54.33	0.91	Method 1	7.65
118	Exist. 18	0.24	0.56	24.00	3.47	0.80	2.78	0.00	1.57	30	24			0.667	18.52	5.9	END OF LINE		81.97	81.77	0.50	0.005	0.001	84.91	84.90	86.47	1.56	87.47	Yes	54.33	0.67	Method 1	9.37
LINE 21																																	
119	Exist. 19	0.26	0.26	22.89	3.58	0.80	2.85	0.00	0.74	33	24			0.608	17.09	5.6	0.00		81.98	81.78	0.24	0.001	0.000	84.82	84.82	86.48	1.66	87.48	Yes	54.33	0.74	Method 1	7.09
120	Exist. 19	0.16	0.42	23.56	3.51	0.80	2.81	0.00	1.19	43	24			0.463	15.44	4.9	END OF LINE		81.98	81.78	0.38	0.003	0.001	84.82	84.82	86.48	1.66	87.48	Yes	54.33	0.45	Method 1	8.44
LINE 22																																	
121	122	0.14	0.14	22.07	3.62	0.80	2.90	0.00	0.41	40	24			0.500	16.04	5.1	0.00		78.28	78.08	0.13	0.000	0.000	84.67	84.67	86.37	1.70	87.37	Yes	54.33	0.41	Method 1	5.66
122	Exist. 20	0.12	0.26	22.44	3.56	0.80	2.85	0.00	0.75	33	24			0.615	17.75	5.7	END OF LINE		78.08	77.88	0.24	0.001	0.000	84.67	84.67	86.37	1.70	87.37	Yes	54.33	0.34	Method 1	7.13
LINE 23																																	
123	124	0.11	0.11	21.78	3.65	0.80	2.92	0.00	0.32	41	24			0.466	15.82	5.0	0.00		78.28	78.08	0.10	0.000	0.000	84.54	84.54	86.37	1.83	87.37	Yes	54.33	0.32	Method 1	5.18
124	Exist. 21	0.11	0.22	22.66	3.58	0.80	2.86	0.00	0.64	20	24			1.000	22.68	7.2	END OF LINE		78.08	77.88	0.20	0.001	0.000	84.54	84.54	86.37	1.83	87.37	Yes	54.33	0.31	Method 1	6.70
LINE 24																																	
125	126	0.10	0.10	21.67	3.05	0.80	2.92	0.00	0.29	40	24			0.500	16.04	5.1	0.00		78.28	78.08	0.09	0.000	0.000	84.46	84.46	86.38	1.92	87.38	Yes	54.33	0.29	Method 1	5.01
126	Exist. 23	0.11	0.21	22.00	3.58	0.80	2.86	0.00	0.61	20	24			1.000	22.68	7.2	END OF LINE		78.08	77.88	0.19	0.001	0.000	84.46	84.46	86.38	1.92	87.38	Yes	54.33	0.32	Method 1	6.59
LINE 25																																	
127	128	0.14	0.14	22.07	3.62	0.80	2.90	0.00	0.41	40	30			0.500	29.08	5.9	0.50		75.50	75.30	0.08	0.000	0.000	84.40	84.40	86.37	1.97	87.37	Yes	54.33	0.41	Method 1	5.66
128	Exist. 24	0.09	0.23	22.72	3.57	0.80	2.86	0.00	0.66	20	36			1.000	56.68	9.5	END OF LINE		74.80	74.60	0.09	0.000	0.000	84.40	84.40	86.37	1.97	87.37	Yes	54.33	0.28	Method 1	6.50
LINE 26																																	
129	130	0.11	0.11	21.78	3.65	0.80	2.92	0.00	0.32	40	36			0.494	47.03	6.7	0.50		75.25	75.05	0.05	0.000	0.000	84.36	84.36	86.37	2.01	87.37	Yes	54.33	0.32	Method 1	5.18
130	Exist. 26	0.09	0.20	22.53	3.59	0.80	2.87	0.00	0.58	20	42			1.000	100.86	10.5	END OF LINE		74.55	74.35	0.08	0.000	0.000	84.36	84.36	86.37	2.01	87.37	Yes	54.33	0.26	Method 1	6.47
LINE 27																																	
131	132	0.62	0.62	24.66	3.43	0.80	2.74	0.00	2.25	40	36			0.494	47.03	6.7	0.50		75.25	75.05	0.32	0.001	0.000	84.34	84.34	86.37	2.03	87.37	Yes	54.33	2.25	Method 1	10.75
132	Exist. 28	0.96	1.80	26.09	3.33	0.80	2.67	0.00	4.86	20	42			1.000	100.86	10.5	END OF LINE		74.55	74.35	0.50	0.002	0.000	84.34	84.34	86.37	2.03	87.37	Yes	54.33	2.61	Method 1	14.35

COH 10 YR
b= 93.53
d= 18.9
e= 0.7742

FROM JUNCTION	TO JUNCTION	ADDED AREA ac	TOTAL AREA ac	TC min	Intensity	C	CI	Additional Q c/s	CUM Q(10 YR) c/s
SYSTEM A									
26A	22	16.92	16.92	31.46	4.50	0.80	3.60	0.00	60.91
27A	27	12.54	12.54	30.61	4.56	0.80	3.65	0.00	45.74

NOTE: THE 16.92 AC. AND 12.54 AC. FUTURE COMMERCIAL TRACT REQUIRES FUTURE CONNECTION TIE-INS TO BE SIZ

LJA Engineering, Inc.

Project: CLOUSTON PHASE 2
LJA Job No. 1883-1042
System: Storm
By: OH/AA/JA Date:
Checked by: Date:

Design Frequency: 100 years

Normal POCL 76.00
25-YR W S E 84.18

COH 100 YR:
p= 125.4
d= 21.8
e= 0.75

25-YR W S E 84.18

FROM JUNCTION	TO JUNCTION	ADDED AREA ac	TOTAL AREA ac	TC min	Intensity	C	Ci	Additional Q cfs	CUM Q(Q7 YR) cfs	REACH ft	LINE/BOX SIZE in	WIDTH FT	HEIGHT FT	SLOPE %	DESIGN Q cfs	V fps	D.S. FALL (ft)	OTHER LOSSES ft	FLOWLINE UP-STREAM	FLOWLINE DOWN-STREAM	ACT V fps	SLOPE HYD. GRAD (%)	delta H ft	ELEV HYD. GRAD UP-STREAM	ELEV HYD. GRAD DOWN-STREAM	TC UP-STREAM	HG DIST BELOW TC ft	Maximum Ponding Elevation	Method 1 (Y/N)	Maximum Allowable Sheetflow	Actual Sheetflow	Method 2 (Y/N)
100YR (Exist.)																																
SYSTEM A																																
LINE 1																																
Exist. 101	Exist. 1	0.18	0.18	22.39	7.32	0.80	5.85	0.00	1.05	30	24			0.667	18.52	5.9	0.00		85.42	85.22	0.33	0.002	0.001	94.22	94.22	89.92	-4.30	90.92	No	54.33	1.05	Yes
Exist. 102	Exist. 1	0.21	0.39	23.47	7.18	0.80	5.75	0.00	2.26	52	24			0.385	14.07	4.5	0.00		82.48	82.26	0.72	0.010	0.010	94.21	94.20	89.92	-4.29	90.92	No	54.33	0.00	Yes
Exist. 1	Exist. 2	0.00	0.39	23.47	7.18	0.80	5.75	0.00	2.26	108	24			0.18	9.92	3.1	1.00		81.26	81.08	0.94	0.394	0.732	94.20	93.50	90.72	-3.49	91.72	No	54.33	38.50	Yes
Exist. 2	Exist. 3	0.00	7.87	29.41	6.55	0.80	5.24	0.00	42.06	178	36			0.10	21.15	3.0	0.00		81.08	80.89	0.45	0.466	0.420	93.50	93.08	88.61	-4.89	89.61	No	54.33	3.61	Yes
Exist. 3	Exist. 4	0.00	8.60	29.61	6.53	0.80	5.23	0.00	45.66	90	36			0.10	21.15	3.0	0.00		80.99	80.81	0.45	0.465	0.042	93.08	92.34	88.86	-3.22	89.86	No	54.33	0.00	Yes
Exist. 4	Exist. 5	0.00	8.60	29.61	6.53	0.80	5.23	0.00	45.66	181	36			0.10	21.15	3.0	0.50		80.31	80.16	0.56	0.666	1.259	92.34	90.98	88.33	-3.91	89.33	No	54.33	36.61	Yes
Exist. 5	Exist. 6	0.00	15.59	31.22	6.39	0.80	5.11	0.00	82.47	189	42			0.08	26.53	3.0	0.50		79.66	79.59	1.01	0.374	0.381	90.98	90.60	87.07	-3.91	88.07	No	54.33	5.77	Yes
Exist. 6	Exist. 7	0.00	16.61	31.40	6.37	0.80	5.09	0.00	88.24	102	48			0.07	38.11	3.0	0.00		79.59	79.54	1.63	0.466	0.302	90.60	90.25	87.33	-3.27	88.33	No	54.33	10.34	Yes
Exist. 7	Exist. 8	0.00	16.47	31.71	6.34	0.80	5.07	0.00	98.48	76	48			0.07	38.11	3.0	0.49		79.54	79.49	6.01	0.489	0.324	90.25	89.92	86.68	-3.57	87.68	No	54.33	2.37	Yes
Exist. 8	Exist. 9	0.00	16.88	31.78	6.33	0.80	5.07	0.00	100.85	66	48			0.07	38.11	3.0	0.00		79.00	78.95	6.87	0.307	0.202	89.92	89.63	87.31	-2.61	88.31	No	54.33	8.63	Yes
Exist. 9	Exist. 10	0.00	20.44	32.01	6.31	0.80	5.05	0.00	109.49	95	54			0.06	48.30	3.0	0.00		78.95	78.93	7.07	0.325	0.308	89.63	89.56	86.62	-3.01	87.62	No	54.33	3.04	Yes
Exist. 10	Exist. 11	0.00	20.57	32.09	6.30	0.80	5.04	0.00	112.53	21	54			0.06	48.30	3.0	0.00		78.93	78.88	7.56	0.372	0.376	89.56	89.19	87.28	-2.28	88.28	No	54.33	7.93	Yes
Exist. 11	Exist. 12	0.00	22.40	32.29	6.29	0.80	5.03	0.00	120.46	101	54			0.06	48.30	3.0	0.00		78.88	78.84	7.78	0.394	0.242	89.19	88.95	86.60	-2.59	87.60	No	54.33	3.44	Yes
Exist. 12	Exist. 13	0.00	23.00	32.37	6.28	0.80	5.02	0.00	123.50	61	54			0.06	48.30	3.0	0.22		78.62	78.52	8.26	0.444	0.164	88.95	88.18	86.50	-2.45	87.50	No	54.33	7.61	Yes
Exist. 13	Exist. 14	0.00	24.37	32.55	6.26	0.80	5.01	0.00	131.51	172	54			0.06	48.30	3.0	0.00		78.52	78.49	8.73	0.494	0.274	88.18	87.91	86.41	-1.77	87.41	No	54.33	7.29	Yes
Exist. 14	Exist. 15	0.00	25.88	32.71	6.25	0.80	5.00	0.00	138.80	55	54			0.06	48.30	3.0	0.00		78.49	78.41	8.87	0.512	0.559	87.91	87.25	86.70	-1.21	87.70	No	54.33	2.43	Yes
Exist. 15	Exist. 16	0.00	26.10	32.76	6.25	0.80	5.00	0.00	141.23	129	54			0.06	48.30	3.0	0.00		78.41	78.36	7.29	0.301	0.394	87.25	86.89	87.10	-0.15	88.10	Yes	54.33	2.15	Method 1
Exist. 16	Exist. 17	0.00	26.47	32.81	6.24	0.80	4.99	0.00	143.38	119	60			0.05	58.39	3.0	0.00		78.36	78.32	7.62	0.328	0.716	86.89	85.68	87.60	0.61	88.50	Yes	54.33	6.48	Method 1
Exist. 17	Exist. 18	0.00	27.63	32.94	6.23	0.80	4.98	0.00	149.65	86	60			0.05	58.39	3.0	0.00		78.32	78.27	7.79	0.343	0.368	85.68	85.31	86.68	0.00	87.68	Yes	54.33	3.22	Method 1
Exist. 18	Exist. 19	0.00	28.19	33.00	6.23	0.80	4.98	0.00	153.07	107	60			0.05	58.47	3.0	0.00		78.27	78.16	7.91	0.354	0.656	85.31	85.65	87.60	1.29	88.00	Yes	54.33	2.43	Method 1
Exist. 19	Exist. 20	0.00	28.61	33.05	6.22	0.80	4.98	0.00	155.50	186	60			0.05	58.47	3.0	0.00		78.16	78.11	7.99	0.361	0.520	85.65	85.13	87.10	1.45	88.10	Yes	54.33	1.52	Method 1
Exist. 20	Exist. 21	0.00	28.87	33.08	6.22	0.80	4.98	0.00	157.02	144	60			0.05	58.47	3.0	1.51		78.11	70.06	8.06	0.366	0.214	85.13	84.91	86.37	1.27	87.37	Yes	54.33	1.39	Method 1
Exist. 21	Exist. 22	0.00	29.09	33.10	6.22	0.80	4.97	0.00	158.31	59	60			0.05	58.47	3.0	0.00		68.56	68.52	4.87	0.096	0.100	84.91	84.81	86.50	1.59	87.50	Yes	54.33	60.91	Method 1
Exist. 22	Exist. 23	0.00	46.01	34.63	6.09	0.80	4.87	0.00	219.07	195		9	5	0.04	141.53	3.1	0.00		68.52	68.46	4.90	0.097	0.148	84.81	84.67	86.37	1.56	87.37	Yes	54.33	1.23	Method 1
Exist. 23	Exist. 24	0.00	46.22	34.64	6.09	0.80	4.87	0.00	220.46	157		9	5	0.04	141.53	3.1	2.24		68.46	68.44	4.93	0.098	0.060	84.67	84.61	85.37	1.70	87.37	Yes	54.33	1.35	Method 1
Exist. 24	Exist. 25	0.00	46.45	34.66	6.09	0.80	4.87	0.00	221.80	61		10	6	0.03	174.97	2.9	0.00		66.20	66.18	3.70	0.045	0.028	84.61	84.58	85.37	1.76	87.37	Yes	54.33	0.00	Method 1
Exist. 25	Exist. 26	0.00	46.45	34.66	6.09	0.80	4.87	0.00	221.80	61		10	6	0.03	174.97	2.9	0.00		66.18	66.17	3.72	0.045	0.028	84.58	84.56	85.37	1.79	87.37	Yes	54.33	1.18	Method 1
Exist. 26	Exist. 27	0.00	46.66	34.67	6.09	0.80	4.87	0.00	222.98	62		10	6	0.03	174.97	2.9	0.00		66.17	66.15	4.48	0.066	0.035	84.55	84.52	85.37	1.82	87.37	Yes	54.33	40.74	Method 1
Exist. 27	Exist. 28	0.00	59.19	35.52	6.02	0.80	4.82	0.00	268.72	53		10	6	0.03	174.97	2.9	0.00		66.15	66.11	4.65	0.071	0.066	84.52	84.43	85.37	1.85	87.37	Yes	54.33	0.02	Method 1
Exist. 28	Exist. 29	0.00	60.99	35.62	6.01	0.80	4.81	0.00	276.77	122		10	6	0.03	174.97	2.9	0.00		66.07	66.01	4.65	0.071	0.083	84.43	84.35	85.37	1.94	87.37	Yes	54.33	0.00	Method 1
Exist. 29	Exist. J8	0.00	60.99	35.62	6.01	0.80	4.81	0.00	276.74	116		10	6	0.03	174.97	2.9	0.00		66.07	66.01	4.65	0.071	0.167	84.35	84.18	85.37	2.02	87.37	Yes	54.33	0.00	Method 1
Exist. J8	OUTFALL	0.00	60.99	35.62	6.01	0.80	4.81	0.00	276.74	234		10	5	0.03	174.97	2.9	0.00		66.07	66.01	4.65	0.071	0.167	84.35	84.18	85.37	2.02	87.37	Yes	54.33	39.80	Yes
LINE 2																																
Exist. 2A	Exist. 2	7.58	7.58	29.29	6.56	0.80	5.25	0.00	39.80	51	36			0.10	21.15	3.0	END OF LINE		81.31	81.28	5.62	0.363	0.179	94.38	94.20	90.72	-3.66	91.72	No	54.33	39.80	Yes
LINE 3																																
Exist. 103	Exist. 3	0.32	0.32	23.18	7.22	0.80	5.78	0.00	1.85	41	24			0.488	15.84	5.0	0.00		84.12	83.82	0.59	0.007	0.003	93.51	93.51	88.61	-4.90	89.61	No	54.33	1.85	Yes
Exist. 104	Exist. 3	0.31	0.63	24.22	7.10	0.80	5.68	0.00	3.61	30	24			0.667	18.52	5.9	END OF LINE		84.12	83.82	1.15	0.025	0.008	93.51	93.50	88.61	-4.90	89.61	No	54.33	1.76	Yes
LINE 4																																
Exist. 5A	Exist. 5	6.99	6.99	29.06	6.58	0.80	5.27	0.00	36.81	49	36			0.10	21.15	3.0	END OF LINE		80.96	80.81	5.20	0.302	0.147	92.39	92.24	88.33	-4.06	89.33	No	54.33	36.81	Yes
LINE 5																																
Exist. 105	Exist. 6	0.51	0.51	23.88	7.14	0.80	5.71	0.00	2.91	41	24			0.488	15.84	5.0	0.00		82.55	82.38	0.93	0.016	0.007	91.01	91.00	87.07	-3.94	88.07	No	54.33	2.91	Yes
Exist. 106	Exist. 6	0.51	1.02	25.03	7.00	0.80	5.60	0.00	5.77	30	24			0.667	18.52	5.9	END OF LINE		82.55	82.35	1.83	0.065	0.019	91.00	90.98	87.07	-3.93	88.07	No	54.33	2.86	Yes
LINE 6																																
Exist. 7A	Exist. 7	1.86	1.86	26.15	6.88	0.80	5.51	0.00	10.24	47	24			0.180	9.92	3.1	END OF LINE		79.67	79.59	3.25	0.203	0.096	90.70	90.60	87.33	-3.37	88.33	No	54.33	10.24	Yes
LINE 7																																
Exist. 107	Exist. 8	0.19	0.19	22.46	7.31	0.80	5.85	0.00	1.11	30	24			0.662	18.45	5.9	0.00		82.08	81.88	0.35	0.002	0.001	90.25	90.25	86.68	-3.57	87.68	No	54.33	1.11	Yes
Exist. 108	Exist. 8	0.22	0.41	23.55	7.18	0.80	5.74	0.00	2.37	41	24			0.490	15.89	5.1	END OF LINE		82.08	81.88	0.75	0.011	0.004	90.25	90.25	86.68	-3.57	87.68	No	54.33	1.26	Yes
LINE 8																																
Exist. 9A	Exist. 9	1.56	1.56	25.61	6.92	0.80	5.53	0.00	8.63	57	24			0.180	9.92	3.1	END OF LINE		79.11	79.01	2.74	0.144	0.082	90.01	89.92	87.31	-2.69	88.31	No	54.33	8.63	Yes
LINE 9																																
Exist. 109	Exist. 10	0.37	0.37	23.39	7.19	0.80	5.76	0.00	2.13	41	24			0.488	15.84	5.0	0.00		82.12	81.92	0.68	0.009	0.004	89.64	89.64	86.62	-3.02	87.62	No	54.33	2.13	Yes
Exist. 110	Exist. 10	0.16	0.53	23.94	7.13	0.80	5.70	0.00	3.04	30	24			0.667	18.52	5.9	END OF LINE		82.12	81.92	0.97	0.018	0.005	89.64	89.63	86.62	-3.02	87.62	No	54.33	0.91	Yes
LINE 10																																
Exist. 11A	Exist. 11	1.43	1.43	25.65	6.94	0.80	5.55	0.00	7.93	56	24			0.180	9.92	3.1	END OF LINE		79.03	78.93	2.52	0.122	0.068	89.63	89.56	87.26	-2.35	88.26	No	54.33	7.93	Yes
LINE 11																																
Exist. 111	Exist. 12	0.37	0.37	23.39	7.19	0.80	5.76	0.00	2.13	30	24			0.667	18.52	5.9	0.00		82.95	82.75	0.66	0.006	0.003	89.20	89.20	86.60	-2.60	87.60	No	54.33	2.13	Yes
Exist. 112	Exist. 12	0.23	0.60	24.14	7.11	0.80	5.69	0.00	3.44	41	24			0.488	15.84	5.0	END OF LINE		82.95	82.75	1.06	0.023	0.009	89.20	89.19	86.60	-2.60	87.60	No	54.33	1.31	Yes
LINE 12																																
Exist. 13A	Exist. 13	1.37	1.37	25.57	6.94	0.80	5.56	0.00	7.61	45	24			0.180	9.92	3.1	END OF LINE		73.20	73.12	2.42	0.112	0.060	89.00	88.95	86.50	-2.50	87.50	No	54.33	7.61	Yes
LINE 13																																
Exist. 14A	Exist. 14	1.31	1.31	25.49	6.95	0.80	5.56	0.00	7.29	55	24			0.180	9.92	3.1	END OF LINE		73.12	73.02	2.32	0.103	0.057	88.34	88.18	86.41	-1.83	87.41	No	54.33	7.29	Yes
LINE 14																																
Exist. 17A	Exist. 17	1.16	1.16	25.28	6.96	0.80	5.56	0.00	6.48	55	24			0.180	9.92	3.1	END OF LINE		73.45	73.35	2.06	0.081	0.045	86.94	86.89	87.50	0.56	88.50	Yes	54.33	6.48	Method 1
LINE 15								Q (10 YR)(CFS)																		Q (10 YR)(HGL)						
Exist. 22A	Exist. 22	16.92	16.92	31.46	4.50	0.80	3.60	0.00	60.91	80		6	4	0.050	69.46	2.9	END OF LINE		68.60	68.56	2.54	0.038	0.031	84.95	84.91	86.50	1.55	87.50	Yes	54.33	60.91	Method 1
LINE 16								Q (10 YR)(CFS)																		Q (10 YR)(HGL)						
Exist. 27A	Exist. 27	12.54	12.54	30.81	4.56	0.80	3.65	0.00	45.74	85		4	4	0.070	48.52	3.0	END OF LINE		86.23	86.17	2.86	0.062	0.053	84.98	84.81	86.37	1.71	87.37	Yes	54.33	45.74	Method 1
100 YR (PROP.)																																
SYSTEM A																																
LINE 1																																
LINE 17	Exist. 15	0.22	0.22	22.66	7.28	0.80	5.83	0.00	1.28	43	24			0.469	15.54	4.9	0.00		82.20	82.00	0.41	0.003	0.001	87.91	87.91	86.70	-1.21	87.70	No	54.33	1.28	Yes
113	Exist. 15	0.20	0.42	23.38	7.17	0.80	5.74	0.00	2.43	32	24			0.621	17.87	5.7	END OF LINE		82.20	82.00	0.77	0.011	0.004	87.91	87.91	86.70	-1.21	87.70	No	54.33	1.15	Yes
114	Exist. 15																															
LINE 18																																
115	Exist. 16	0.20	0.20	22.53	7.30	0.80	5.84	0.00	1.17	30	24			0.615	18.56	5.9	0.00		82.20	82.00	0.37	0.003	0.001	87.25	87.25	86.70	-0.55	87.70	Yes	54.33	1.17	Method 1
116	Exist. 16	0.17	0.37	23.39	7.19	0.80	5.76	0.00	2.16	41	24			0.488	15.62	5.0	END OF LINE		82.20	82.00	0.68	0.009	0.004	87.25	87.25	86.70	-0.55	87.70	Yes	54.33	0.98	Method 1
LINE 20																																
117	Exist. 18	0.32	0.32	23.18	7.22	0.80	5.78	0.00	1.85	41	24			0.488	15.84	5.0	0.00		81.97	81.77	0.59	0.007	0.003	86.68	86.68	86.47	-0.21	87.47	Yes	54.33	1.85	Method 1
118	Exist. 18	0.24	0.56	24.03	7.12	0.80	5.70	0.00	3.22	30	24			0.667	18.52	5.9	END OF LINE		81.97	81.77	1.02	0.020	0.006	86.68	86.68	86.47	-0.21	87.47	Yes	54.33	1.37	Method 1
LINE 21																																
119	Exist. 19	0.26	0.26	22.86	7.26	0.80	5.80	0.00	1.51	33	24			0.808	17.69	5.6	0.00		81.98	81.78	0.48	0.004	0.001	86.31	86.31	86.48	0.17	87.48	Yes	54.33	1.51	Method 1
120	Exist. 19	0.16	0.42	23.58	7.17	0.80	5.74	0.00	2.43	43	24			0.463	15.44	4.9	END OF LINE		81.98	81.78	0.77	0.011	0.005	86.31	86.31	86.48	0.17	87.48	Yes	54.33	0.82	Method 1
LINE 22																																
121	122	0.14	0.14	22.07	7.36	0.80	5.88	0.00	0.82	40	24			0.500	16.04	5.1	0.00		78.28	78.08	0.26	0.001	0.001	85.65	85.65	86.37	0.72	87.37	Yes	54.33	0.82	Method 1
122	Exist. 20	0.12	0.26	22.89	7.26	0.80	5.80	0.00	1.52	33	24			0.613	17.75	5.7	END OF LINE		78.28	77.88	0.48	0.004	0.001	85.56	85.65	86.37	0.72	87.37	Yes	54.33	0.70	Method 1
LINE 23																																
123	124	0.11	0.11	21.78	7.39	0.80	5.91	0.00	0.65	41	24			0.488	15.82	5.0	0.00		78.28	78.08	0.21	0.001	0.000	85.13	85.13	86.37	1.24	87.37	Yes	54.33	0.65	Method 1
124	Exist. 21	0.11	0.22	22.68	7.28	0.80	5.83	0.00	1.29	20	24			1.000	22.68	7.2	END OF LINE		78.08	77.88	0.41	0.003	0.001	85.13	85.13	86.37	1.24	87.37	Yes	54.33	0.64	Method 1
LINE 24																																
125	126	0.10	0.10	21.67	7.41	0.80	5.93	0.00	0.53	40	24			0.500	16.04	5.1	0.00		78.28	78.08	0.19	0.001	0.000	84.82	84.81	86.55	1.56	87.36	Yes	54.33	0.59	Method 1
126	Exist. 23	0.11	0.21	22.60	7.29	0.80	5.83	0.00	1.23	20	24			1.000	22.68	7.2	END OF LINE		78.08	77.88	0.39	0.003	0.001	84.81	84.81	86.38	1.57	87.38	Yes	54.33	0.64	Method 1
LINE 25																																
127	128	0.14	0.14	22.07	7.36	0.80	5.88	0.00	0.82	40	30			0.500	29.06	5.9	0.50		75.50	75.30	0.17	0.000	0.000	84.67	84.67	86.37	1.70	87.37	Yes	54.33	0.82	Method 1
128	Exist. 24	0.09	0.23	22.12	7.28	0.80	5.82	0.00	1.35	20	36			1.000	66.88	9.5	END OF LINE		74.80	74.60	0.19	0.000	0.000	84.67	84.67	86.37	1.70	87.37	Yes	54.33	0.52	Method 1
LINE 26																																
129	130	0.11	0.11	21.78	7.39	0.80	5.91	0.00	0.65	40	36			0.494	47.03	6.7	0.50		75.25	75.05	0.08	0.000	0.000	84.58	84.58	86.37	1.79	87.37	Yes	54.33	0.65	Method 1
130	Exist. 26	0.09	0.20	22.53	7.30	0.80	5.84	0.00	1.18	20	42			1.000	100.88	10.5	END OF LINE		74.55	74.35	0.12	0.000	0.000	84.58	84.58	86.37	1.79	87.37	Yes	54.33	0.53	Method 1
LINE 27																																
131	132	0.82	0.82	24.96	7.06	0.80	5.64	0.00	4.62	40	36			0.494	47.03	6.7	0.50		75.25	75.05	0.66	0.005	0.002	84.52	84.52	86.37	1.85	87.37	Yes	54.33	4.62	Method 1
132	Exist. 28	0.98	1.80	26.09	6.89	0.80	5.51	0.00	10.02	20	42			1.000	100.88	10.5	END OF LINE		74.55	74.35	1.04	0.010	0.002	84.52	84.52	86.37	1.85	87.37	Yes	54.33	5.40	Method 1

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 15FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ. 1200C

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 84.15 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: _____ DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

DRAINAGE CALCULATIONS (100-YR) CITY OF HOUSTON

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
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FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA

LJA Engineering, Inc.

Project: CLOUSTON PHASE 2
LJA Job No.: 1883-1042
System: Storm
By: OH/AA/JA Date:
Checked By: Date:

Design Frequency: 2 years

Normal POD = 79.00 ft
25-YR W.S.E. = 84.18 ft

a=	75.01	
d=	16.2	
e=	0.0015	

2 YR (Exist.) — 25-YR W.S.E. 84.18

FROM JUNCTION	TO JUNCTION	AD&EQ AREA (ac)	TOTAL AREA (ac)	TC min	Intensity	C	CI	Additional Q	CUM Q Q2 YR) cfs	CUM Q (Q25 YR) cfs	REACH ft	SIZE n	LINE/SCH SHETH FT	HEIGHT FT	SLOPE %	DESIGN Q cfs	V fps	D.S. FALL (ft)	OTHER LOSSES ft	FLOWLINE UP STREAM	FLOWLINE DOWN STREAM	ACT V fps	SLOPE WSS GRAD (%)	delta H	ELEV. HYD. GRAD UP STREAM	ELEV. HYD. GRAD DOWN STREAM	TC UP STREAM	HG DIST BELOW TC ft	Maximum Ponding Elevation	Method 1 (Y/N)	Maximum Allowable Shedflow	Actual Shedflow	Method 2 (Y/N)
SYSTEM A																																	
LINE 1																																	
Exist. 101	Exist. 1	0.16	0.16	22.39	3.60	0.60		2.86	0.00	0.52	30	24			0.967	18.52	5.9	0.00		85.42	85.22	0.16	0.001	0.030	87.42	87.42	88.82	2.50	96.92	Yes	54.33	0.52	Method 1
Exist. 102	Exist. 1	0.31	0.36	23.47	3.52	0.60		2.81	0.00	1.11	52	24			0.385	14.07	4.5	0.00		85.42	85.22	0.36	0.002	0.081	87.42	87.32	89.52	2.50	96.92	Yes	54.33	0.59	Method 1
Exist. 1	Exist. 2	0.00	0.36	23.47	3.52	0.60		2.81	0.00	1.11	198	24			0.18	9.52	3.1	1.00		82.45	82.25	0.35	0.002	0.003	87.18	87.18	89.52	2.75	96.92	Yes	54.33	0.59	Method 1
Exist. 2	Exist. 3	0.30	7.02	28.41	3.13	0.60		2.50	0.00	36.13	174	36			0.12	21.15	3.0	0.00		81.28	81.08	2.84	0.060	0.101	87.02	87.02	90.73	3.52	91.72	Yes	54.33	16.03	Method 1
Exist. 3	Exist. 4	0.30	8.86	29.61	3.12	0.60		2.56	0.00	31.40	94	36			0.15	21.15	3.0	0.00		81.08	80.93	3.06	0.107	0.097	87.02	86.93	88.91	1.69	89.61	Yes	54.33	1.76	Method 1
Exist. 4	Exist. 5	0.00	8.86	29.61	3.12	0.60		2.56	0.00	31.80	181	36			0.10	21.15	3.0	0.00		80.93	80.81	3.06	0.107	0.194	86.93	86.73	88.86	1.69	90.89	Yes	54.33	1.76	Method 1
Exist. 5	Exist. 6	0.00	15.58	31.22	3.03	0.60		2.42	0.00	39.53	199	42			0.08	25.52	3.0	0.50		80.31	80.16	4.10	0.153	0.299	86.73	86.44	88.33	1.69	89.33	Yes	54.33	17.81	Method 1
Exist. 6	Exist. 7	0.00	16.51	31.46	3.02	0.60		2.42	0.00	42.32	102	48			0.07	38.11	3.0	0.50		79.66	79.59	3.36	0.086	0.088	86.44	86.36	87.57	0.63	88.07	Yes	54.33	2.81	Method 1
Exist. 7	Exist. 8	0.00	16.47	31.71	3.00	0.60		2.40	0.00	47.27	78	48			0.07	38.11	3.0	0.00		79.59	79.54	3.76	0.107	0.081	86.36	86.28	87.33	0.97	88.33	Yes	54.33	4.65	Method 1
Exist. 8	Exist. 9	0.00	16.55	31.78	3.00	0.60		2.40	0.00	48.44	68	48			0.07	38.11	3.0	0.40		79.54	79.49	3.96	0.113	0.075	86.28	86.22	87.08	0.42	87.58	Yes	54.33	5.18	Method 1
Exist. 9	Exist. 10	0.00	20.44	32.91	2.94	0.60		2.36	0.00	52.62	85	54			0.06	48.30	3.0	0.00		79.00	78.95	3.30	0.071	0.061	86.20	86.12	87.31	1.11	88.31	Yes	54.33	4.18	Method 1
Exist. 10	Exist. 11	0.00	20.57	32.98	2.93	0.60		2.36	0.00	54.11	21	54			0.06	48.30	3.0	0.00		78.95	78.93	3.42	0.078	0.018	86.12	86.12	86.92	0.49	87.42	Yes	54.33	1.49	Method 1
Exist. 11	Exist. 12	0.00	22.42	33.29	2.88	0.60		2.36	0.00	57.96	151	54			0.06	48.30	3.0	0.00		78.93	78.84	3.84	0.098	0.087	86.12	86.03	87.28	1.16	88.28	Yes	54.33	3.85	Method 1
Exist. 12	Exist. 13	0.00	23.00	33.37	2.87	0.60		2.36	0.00	59.64	61	54			0.06	48.30	3.0	0.22		78.68	78.64	3.74	0.091	0.056	86.03	85.97	86.92	0.42	87.42	Yes	54.33	3.66	Method 1
Exist. 13	Exist. 14	0.00	24.07	33.58	2.86	0.60		2.37	0.00	63.53	172	54			0.06	48.30	3.0	0.00		78.63	78.52	3.96	0.103	0.177	85.97	85.80	86.80	0.55	87.50	Yes	54.33	3.69	Method 1
Exist. 14	Exist. 15	0.00	33.68	35.71	2.65	0.60		2.36	0.00	89.86	93	54			0.06	48.30	3.0	0.00		78.52	78.49	4.35	0.118	0.064	85.80	85.73	86.41	0.61	87.41	Yes	54.33	3.34	Method 1
Exist. 15	Exist. 16	0.00	35.12	32.76	2.95	0.60		2.36	0.00	68.05	126	54			0.06	48.30	3.0	0.00		78.49	78.41	4.27	0.119	0.153	85.73	85.58	86.70	0.97	87.70	Yes	54.33	1.19	Method 1
Exist. 16	Exist. 17	0.00	35.47	32.91	2.94	0.60		2.36	0.00	68.11	119	60			0.05	58.34	3.0	0.00		78.41	78.35	3.51	0.072	0.083	85.58	85.50	87.42	1.03	88.10	Yes	54.33	1.65	Method 1
Exist. 17	Exist. 18	0.00	37.63	32.94	2.94	0.60		2.35	0.00	72.25	68	60			0.05	58.34	3.0	0.00		78.35	78.32	3.87	0.075	0.050	85.50	85.45	87.60	0.50	88.10	Yes	54.33	3.14	Method 1
Exist. 18	Exist. 19	0.00	38.10	33.00	2.94	0.60		2.35	0.00	73.62	107	60			0.05	58.47	3.0	0.00		78.32	78.27	3.78	0.080	0.086	85.45	85.36	86.98	1.23	87.98	Yes	54.33	1.07	Method 1
Exist. 19	Exist. 20	0.00	38.61	33.06	2.94	0.60		2.35	0.00	75.01	186	60			0.05	58.47	3.0	0.00		78.27	78.18	3.82	0.082	0.153	85.36	85.21	87.60	2.24	88.60	Yes	54.33	1.10	Method 1
Exist. 20	Exist. 21	0.00	38.87	33.08	2.94	0.60		2.35	0.00	75.39	144	60			0.05	58.47	3.0	0.00		78.18	78.11	3.91	0.086	0.121	85.21	85.09	87.33	1.58	88.10	Yes	54.33	0.72	Method 1
Exist. 21	Exist. 22	0.00	39.05	33.15	2.93	0.60		2.35	0.00	76.40	59	60			0.05	58.47	3.0	1.51		78.11	78.08	3.96	0.095	0.059	85.09	85.04	86.37	1.38	87.37	Yes	54.33	0.54	Method 1
Exist. 22	Exist. 23	0.00	46.21	34.63	2.85	0.60		2.29	0.00	137.33	108		8	5	0.04	141.53	3.1	0.00		64.96	64.12	3.48	0.028	0.030	85.04	85.00	86.80	1.49	87.50	Yes	54.33	60.91	Method 1
Exist. 23	Exist. 24	0.00	46.22	34.64	2.85	0.60		2.29	0.00	137.92	153		8	5	0.04	141.53	3.1	0.00		64.52	64.46	3.06	0.018	0.028	85.00	84.94	86.37	1.37	87.37	Yes	54.33	0.61	Method 1
Exist. 24	Exist. 25	0.00	46.45	34.66	2.85	0.60		2.29	0.00	139.25	61		8	5	0.04	141.53	3.1	0.24		63.96	63.74	3.14	0.051	0.031	84.94	84.88	86.37	1.47	87.37	Yes	54.33	51.73	Method 1
Exist. 25	Exist. 26	0.00	46.47	34.66	2.85	0.60		2.29	0.00	139.65	61		10	5	0.03	174.97	2.9	0.00		66.20	66.18	3.18	0.053	0.003	84.88	84.86	86.37	1.47	87.37	Yes	54.33	0.80	Method 1
Exist. 26	Exist. 27	0.00	46.65	34.67	2.85	0.60		2.29	0.00	140.32	62		10	5	0.03	174.97	2.9	0.00		66.18	66.17	4.31	0.081	0.038	84.86	84.84	86.37	1.49	87.37	Yes	54.33	66.67	Method 1
Exist. 27	Exist. 28	0.00	50.10	35.52	2.82	0.60		2.25	0.00	377.02	204		10	5	0.03	174.97	2.9	0.00		66.17	66.11	6.24	0.144	0.244	84.84	84.70	86.37	1.53	87.37	Yes	54.33	45.14	Method 1
Exist. 28	Exist. 29	0.00	50.58	35.62	2.82	0.60		2.25	0.00	377.02	122		10	5	0.03	174.97	2.9	0.00		66.11	66.11	6.28	0.130	0.158	84.70	84.64	86.37	1.58	87.37	Yes	54.33	72.96	Method 1
Exist. 29	Exist. 30	0.00	50.58	35.62	2.82	0.60		2.25	0.00	377.02	118		10	5	0.03	174.97	2.9	0.00		66.11	66.07	6.28	0.130	0.151	84.64	84.49	86.37	1.58	87.37	Yes	54.33	0.00	Method 1
Exist. 30	OUTFALL	0.00	50.58	35.62	2.82	0.60		2.25	0.00	377.02	234		10	5	0.03	174.97	2.9	0.00		66.07	66.01	6.28	0.130	0.305	84.49	84.18	86.37	1.69	87.37	Yes	54.33	0.00	Method 1
LINE 2																																	
Exist. 2A	Exist. 2	7.58	7.58	29.39	3.14	0.60		2.81	0.00	18.03	51	36			0.13	21.15	3.0	END OF LINE		81.31	81.26	2.96	0.081	0.141	87.23	87.18	89.72	3.49	91.72	Yes	54.33	16.03	Method 1
LINE 3																																	
Exist. 103	Exist. 3	0.32	0.32	23.18	3.54	0.60		2.83	0.00	0.91	41	24			0.485	15.84	5.0	0.00		84.12	83.92	0.28	0.002	0.001	87.63	87.53	88.81	1.58	89.81	Yes	54.33	0.91	Method 1
Exist. 104	Exist. 3	0.31	0.63	24.22	3.48	0.60		2.77	0.00	1.78	32	24			0.967	19.52	5.9	END OF LINE		84.17	83.82	0.58	0.003	0.032	87.53	87.22	89.53	1.58	89.51	Yes	54.33	0.88	Method 1
LINE 4																																	
Exist. 5A	Exist. 5	8.99	8.99	29.08	3.15	0.60		2.52	0.00	17.61	49	36			0.13	21.15	3.0	END OF LINE		80.86	80.81	2.46	0.055	0.054	86.77	86.73	89.33	1.58	89.33	Yes	54.33	17.61	Method 1
LINE 5																																	
Exist. 105	Exist. 6	0.31	0.31	23.98	3.48	0.60		2.79	0.00	1.42	41	24			0.485	15.84	5.0	0.00		82.55	82.35	0.46	0.004	0.002	86.45	86.43	87.87	0.92	88.37	Yes	54.33	1.42	Method 1
Exist. 106	Exist. 6	0.31	1.22	25.83	3.40	0.60		2.72	0.00	2.81	32	24			0.967	19.52	5.9	END OF LINE		82.55	82.35	0.86	0.015	0.005	86.45	86.43	87.87	0.62	88.37	Yes	54.33	1.39	Method 1
LINE 6																																	
Exist. 7A	Exist. 7	1.80	1.80	26.16	3.33	0.60		2.66	0.00	4.95	47	24			0.180	9.52	3.1	END OF LINE		79.87	79.59	1.07	0.049	0.022	86.38	86.36	87.38	0.95	88.33	Yes	54.33	4.95	Method 1
LINE 7																																	
Exist. 107	Exist. 8	0.18	0.18	22.48	3.59	0.60		2.87	0.00	0.93	30	24			0.962	19.45	5.9	0.00		82.06	81.88	0.17	0.001	0.000	88.28	88.28	88.88	0.40	87.88	Yes	54.33	0.55	Method 1
Exist. 108	Exist. 8	0.22	0.40	23.56	3.51	0.60		2.81	0.00	1.16	41	24			0.490	15.99	5.1	END OF LINE		82.08	81.88	0.37	0.003	0.001	88.28	88.28	88.88	0.40	87.88	Yes	54.33	0.62	Method 1
LINE 8																																	
Exist. 9A	Exist. 9	1.36	1.36	25.81	3.36	0.60		2.68	0.00	4.19	57	24			0.180	9.52	3.1	END OF LINE		79.11	79.01	1.53	0.034	0.019	86.22	86.20	87.31	1.09	88.31	Yes	54.33	4.18	Method 1
LINE 9																																	
Exist. 109	Exist. 10	0.37	0.37	23.39	3.50	0.60		2.82	0.00	1.04	41	24			0.485	15.84	5.0	0.00		82.12	81.92	0.33	0.002	0.001	86.14	86.13	86.62	0.48	87.62	Yes	54.33	1.04	Method 1
Exist. 110	Exist. 10	0.16	0.53	23.94	3.46	0.60		2.79	0.00	1.49	30	24			0.967	19.52	5.9	END OF LINE		82.12	81.92	0.47	0.004	0.001	86.13	86.13	86.62	0.49	87.62	Yes	54.33	0.45	Method 1
LINE 10																																	
Exist. 10A	Exist. 11	1.43	1.43	25.60	3.38	0.60		2.69	0.00	3.85	56	24			0.180	9.52	3.1	END OF LINE		79.03	78.93	1.32	0.029	0.016	86.13	86.12	87.28	1.15	88.28	Yes	54.33	3.85	Method 1
LINE 11																																	
Exist. 111	Exist. 12	0.37	0.37	23.39	3.50	0.60		2.82	0.00	1.04	30	24			0.967	19.52	5.9	0.00		82.55	82.75	0.33	0.002	0.001	86.63	86.62	86.88	0.27	87.88	Yes	54.33	1.04	Method 1
Exist. 112	Exist. 12	2.25	2.60	24.14	3.47	0.60		2.77	0.00	1.82	41	24			0.485	15.84	5.0	END OF LINE		82.98	82.75	0.52	0.005	0.002	86.63	86.00	86.58	0.07	87.58	Yes	54.33	0.84	Method 1
LINE 12																																	
Exist. 12A	Exist. 13	1.37	1.37	25.37	3.37	0.60		2.69	0.00	3.69	45	24			0.180	9.52	3.1	END OF LINE		73.20	73.12	1.17	0.025	0.012	85.95	85.87	86.95	0.01	87.50	Yes	54.33	3.69	Method 1
LINE 13																																	
Exist. 14A	Exist. 14	1.31	1.31	25.49	3.37	0.60		2.70	0.00	3.54	55	24			0.180	9.52	3.1	END OF LINE		73.12	73.02	1.12	0.024	0.013	85.81	85.80	86.41	0.60	87.41	Yes	54.33	3.54	Method 1
LINE 14																																	
Exist. 17A	Exist. 17	1.16	1.16	29.39	3.36	0.60		2.71	0.00	3.14	53	24			0.180	9.52	3.1	END OF LINE		73.45	73.38	1.00	0.019	0.011	85.51	85.50	87.58	1.99	88.58	Yes	54.33	3.14	Method 1
LINE 15								Q (10 YR)(CFS)												Q (10 YR)(HG)													
Exist. 25A	Exist. 32	16.92	16.92	0.00	0.00	0.33		0.00	0.00	60.51	80		6	4	0.200	66.46	2.0	END OF LINE		68.60	68.06	2.54	0.038	0.031	85.07	85.04	86.50	1.43	87.50	Yes	54.33	#VALUE!	Method 1
LINE 16								Q (10 YR)(CFS)												Q (10 YR)(HG)													
Exist. 27A	Exist. 27	12.64	12.64	0.00	0.00	0.33		0.00	0.00	45.74	65		4	4	0.070	46.52	3.0	END OF LINE		68.23	68.17	2.66	0.062	0.053	84.95	84.90	86.37	1.42	87.37	Yes	54.33	#VALUE!	Method 1

2 YR (PROP.) — 25-YR W.S.E. 84.18

FROM JUNCTION	TO JUNCTION	AD&EQ AREA (ac)	TOTAL AREA (ac)	TC min	Intensity	C	CI	Additional Q	CUM Q Q2 YR) cfs	CUM Q (Q25 YR) cfs	REACH ft	SIZE n	LINE/SCH SHETH FT	HEIGHT FT	SLOPE %	DESIGN Q cfs	V fps	D.S. FALL (ft)	OTHER LOSSES ft	FLOWLINE UP STREAM	FLOWLINE DOWN STREAM	ACT V fps	SLOPE WSS GRAD (%)	delta H	ELEV. HYD. GRAD UP STREAM	ELEV. HYD. GRAD DOWN STREAM	TC UP STREAM	HG DIST BELOW TC ft	Maximum Ponding Elevation	Method 1 (Y/N)	Maximum Allowable Shedflow	Actual Shedflow	Method 2 (Y/N)
LINE 17																																	
113	Exist. 15	0.22	0.22	22.46	3.59	0.60		2.86	0.00	0.63	43	24			0.485	15.84	4.9	0.00		82.20	82.00	0.20	0.001	0.005	85.73	85.73	86.70	0.97	87.70	Yes	54.33	0.63	Method 1
114	Exist. 15	0.20	0.42	23.58	3.51	0.60		2.81	0.00	1.19	32	24			0.621	17.87	5.7	END OF LINE		82.20	82.00	0.38	0.003	0.001	85.73	85.73	86.70	0.97	87.70	Yes	54.33	0.92	Method 1
LINE 18																																	
115	Exist. 16	0.20	0.20	22.53	3.59	0.60		2.87	0.00	0.57	30	24			0.970	19.58	5.9	0.00		82.20	82.00	0.18	0.001	0.000	85.58	85.58	86.70	1.12	87.70	Yes	54.33	0.57	Method 1
116	Exist. 16	0.17	0.37	23.39	3.52	0.60		2.82	0.00	1.05	41	24			0.485	15.84	5.0	END OF LINE		82.20	82.00	0.33	0.002	0.001	85.58	85.58	86.70	1.12	87.70	Yes	54.33	0.48	Method 1
LINE 20																																	
117	Exist. 18	0.32	0.32	23.18	3.54	0.60		2.83	0.00	0.91	41	24			0.485	15.84	5.0	0.00		81.97	81.77	0.29	0.002	0.001	85.45	85.45	86.47	1.02	87.47	Yes	54.33	0.91	Method 1
118	Exist. 18	0.24	0.56	24.03	3.47	0.60		2.79	0.00	1.57	30	24			0.967	19.52	5.9	END OF LINE		81.97	81.77	0.50	0.005	0.001	85.45	85.45	86.47	1.02	87.47	Yes	54.33	0.67	Method 1
LINE 21																																	
119	Exist. 19	0.26	0.26	22.99	3.56	0.60		2.85	0.00	0.74	33	24			0.608	17.69	5.6	0.00		81.98	81.79	0.24	0.001	0.000	85.36	85.36	86.48	1.12	87.48	Yes	54.33	0.74	Method 1
120	Exist. 19	0.16	0.42	23.58	3.51	0.60		2.81	0.00	1.19	42	24			0.463	15.44	4.9	END OF LINE		81.98	81.79	0.38	0.003	0.001	85.36	85.36	86.48	1.12	87.48	Yes	54.33	0.45	Method 1
LINE 22																																	
121	122	0.14	0.14	22.37	3.62	0.60		2.90	0.00	0.41	40	24			0.530	16.04	5.1	0.00		78.28	78.08	0.13	0.000	0.000	85.21	85.21	86.37	1.16	87.37	Yes	54.33	0.41	Method 1
122	Exist. 20	0.12	0.26	22.99	3.56	0.60		2.85	0.00	0.75	33	24			0.613	17.75	5.7	END OF LINE		78.08	77.88	0.24	0.001	0.000	85.21	85.21	86.37	1.16	87.37	Yes	54.33	0.34	Method 1
LINE 23																																	
123	124	0.11	0.11	21.79	3.65	0.60		2.92	0.00	0.32	41	24			0.485	15.84	5.0	0.00		78.28	78.08	0.10	0.000	0.000	85.08	85.08	86.28	1.20	87.28	Yes	54.33	0.32	Method 1
124	Exist. 21	0.11	0.22	22.46	3.58	0.60		2.86	0.00	0.64	20	24			1.000	22.68	7.2	END OF LINE		78.08	77.88	0.20	0.001	0.000	85.08	85.08	86.28	1.20	87.28	Yes	54.33	0.31	Method 1
LINE 24																																	
125	126	0.10	0.10	21.67	3.65	0.60		2.92	0.00	0.29	40	24			0.530	16.04	5.1	0.00		78.28	78.08	0.09	0.000	0.000	85.05	85.05	86.38	1.38	87.38	Yes	54.33	0.29	Method 1
126	Exist. 23	0.11	0.21	22.50	3.58	0.60		2.86	0.00	0.61	20	24			1.000	22.68	7.2	END OF LINE		78.08	77.88	0.19	0.001	0.000	85.05	85.05	86.38	1.38	87.38	Yes	54.33	0.32	Method 1
LINE 25																																	
127	128	0.16	0.16	22.37	3.62	0.60		2.90	23.54	25.84	40	30			0.530	29.68	6.9	0.50		75.50	75.30	0.29	0.007	0.159	86.23	86.08	86.77	1.28	87.37	Yes	54.33	25.84	Method 1
128	Exist. 24	0.34	0.33	22.72	3.57	0.60		2.86	23.54	51.73	20	36			1.028	60.88	8.6	END OF LINE		74.80	74.60	1.21	0.007	0.119	86.08	84.94	86.37	1.31	87.37	Yes	54.33	28.79	Method 1
LINE 26																																	
129	130	0.11	0.11	21.79	3.65	0.60		2.92	34.05	34.37	40	36			0.884	47.03	8.7	0.50		75.25	75.05	0.19	0.003	0.107	86.08	84.87	86.37	1.28	87.37	Yes	54.33	34.37	Method 1
130	Exist. 26	0.34	0.33	22.39	3.59	0.60		2.87	34.05	66.07	20	42			1.339	106.98	10.5	END OF LINE		74.55	74.35	1.13	0.002	0.061	84.87	84.86	86.37	1.40	87.37	Yes	54.33	34.37	Method 1
LINE 27																																	
131	132	0.62	0.62	24.98	3.43	0.60		2.74	34.05	36.30	40	36			0.494	47.03	8.7	0.50		75.25	75.05	0.13	0.294	0.119	85.02	84.90	86.37	1.35	87.37	Yes	54.33	36.30	Method 1
132	Exist. 28	0.68	1.80	36.36	3.33	0.60		2.67	34.05	72.86	20	42			1.339	106.98	10.5	END OF LINE		74.55	74.35	1.07	0.522	0.104	84.90	84.79	86.37	1.47	87.37	Yes	54.33	36.56	Method 1

ULTIMATE 100-YEAR DRAINAGE CALCULATIONS

Contributing Area	Area (Ac)	Land Usage	Area (Ac)	"C" Factor
CLOUSTON	60.99	Commercial	60.99	0.80
TOTAL			60.99	0.80

Time of Concentration:

Flow Type	Distance (ft)	Slope (%)	Figure 2-6	(min)
Grass Flow	25	2.00%	1	0.42
Pavement Flow	2700	0.50%	1.4	32.14
Time of Concentration				32.56

Rainfall Intensity, inch/hour: 5.9

Fort Bend County Rational Method 100-Year Drainage

Actual Flow Over Down Stream High

Q=1.25*CIA = 359.84 cfs

Inlet Design Size

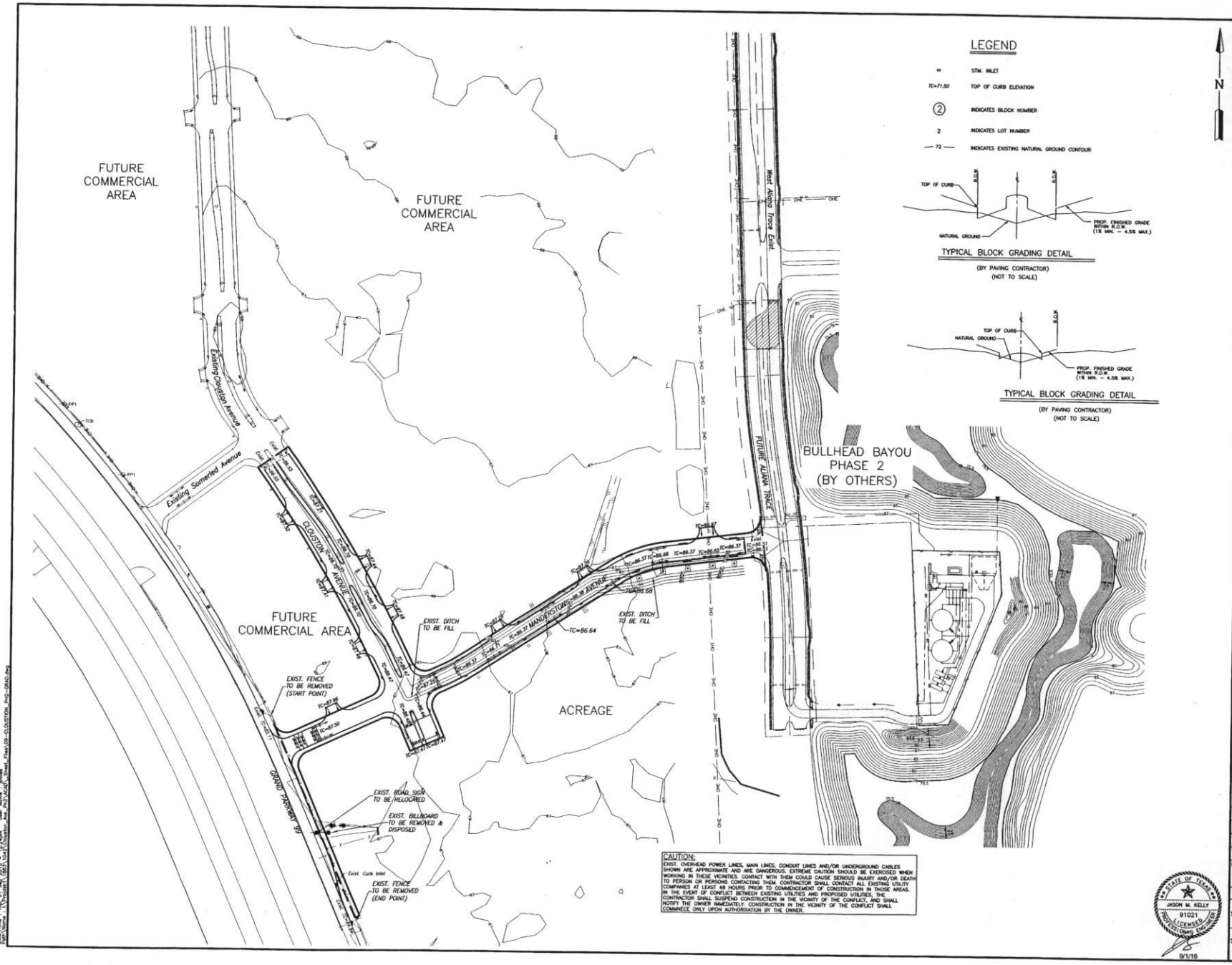
Q 100-Year 359.84 cfs
Q 2-Year 187.23 cfs
Anticipated Sheet Flow 172.61 cfs

Number of 100-Year Inlets = 6

Anticipated Sheet Flow/Inlet = 28.77 cfs

Ponding Elev = 86.37

| Inlet | c | Inlet Length, ft | A, sf | TC | Inlet Centroid


FUTURE COMMERCIAL AREA
FUTURE COMMERCIAL AREA
FUTURE COMMERCIAL AREA
ACREAGE
BULLHEAD BAYOU PHASE 2 (BY OTHERS)
Existing Clouston Avenue
Existing Somerted Avenue
CLOUSTON AVENUE
MANDERSTON AVENUE
GRAND PARKWAY 99
West Alonte Trace Exist.
FUTURE ALIANA TRACE
EXIST. DITCH TO BE FILL
EXIST. DITCH TO BE FILL
EXIST. FENCE TO BE REMOVED (START POINT)
EXIST. ROAD SIGN TO BE RELOCATED
EXIST. BILLBOARD TO BE REMOVED & DISPOSED
EXIST. FENCE TO BE REMOVED (END POINT)
Exist. Curb Inlet
TC=86.64
TC=86.68
TC=86.65
TC=86.37
TC=86.57
TC=87.50
TC=87.47
TC=87.37
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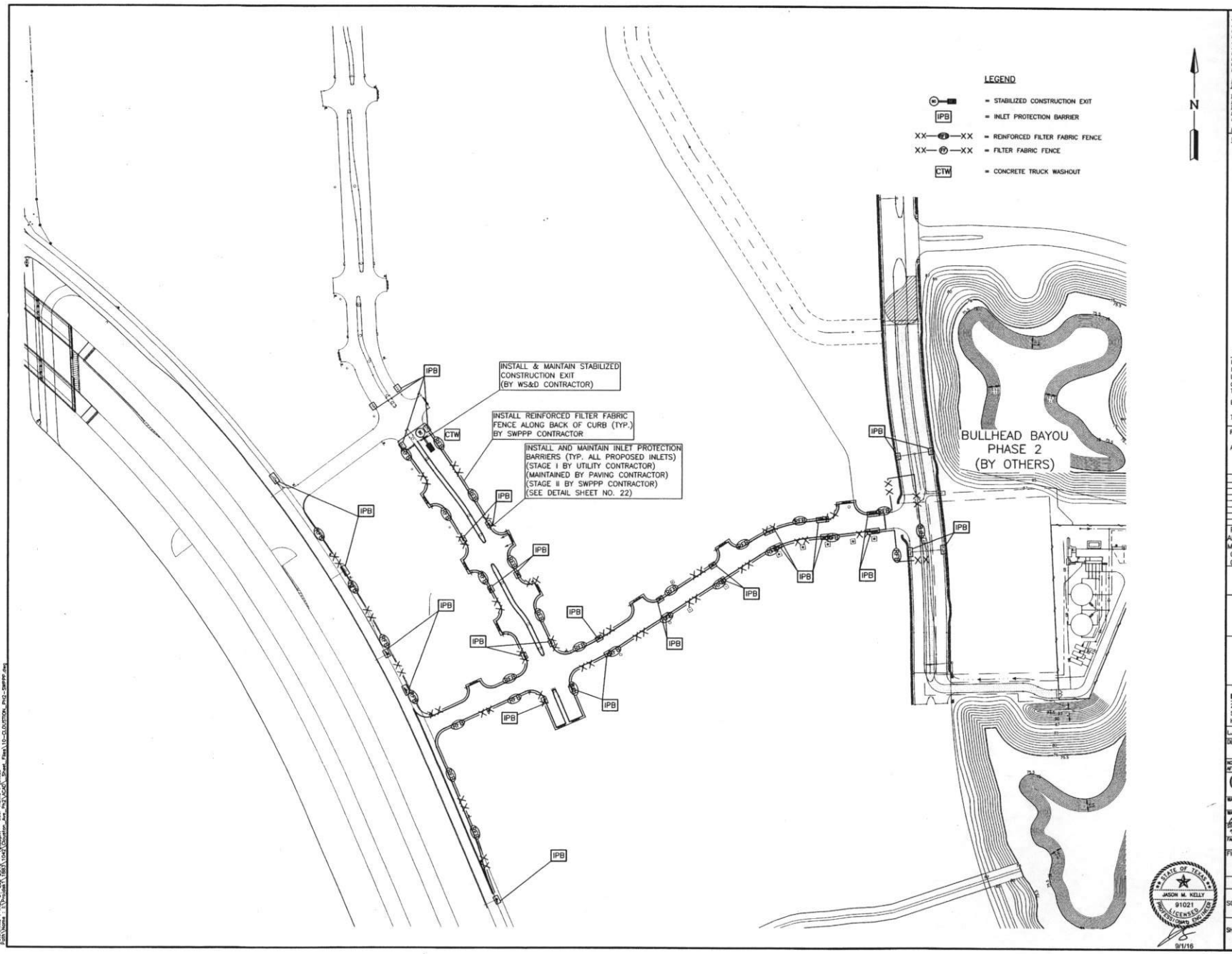


BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY. 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 15FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM:

TBM 6-TOP OF A CHISSLED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,440 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: _____ DEVELOPMENT COORDINATOR

DATE: 10/10/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

STORM WATER POLLUTION PREVENTION PLAN

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER — 9/1/16 — STREET & BRIDGE
WASTEWATER — 9/1/16 — DRAINAGE
FACILITIES — for 9/1/16 — STORM WATER QUALITY

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

FILE NO.

DRAWING SCALE:

SCALE: 1" = 100'

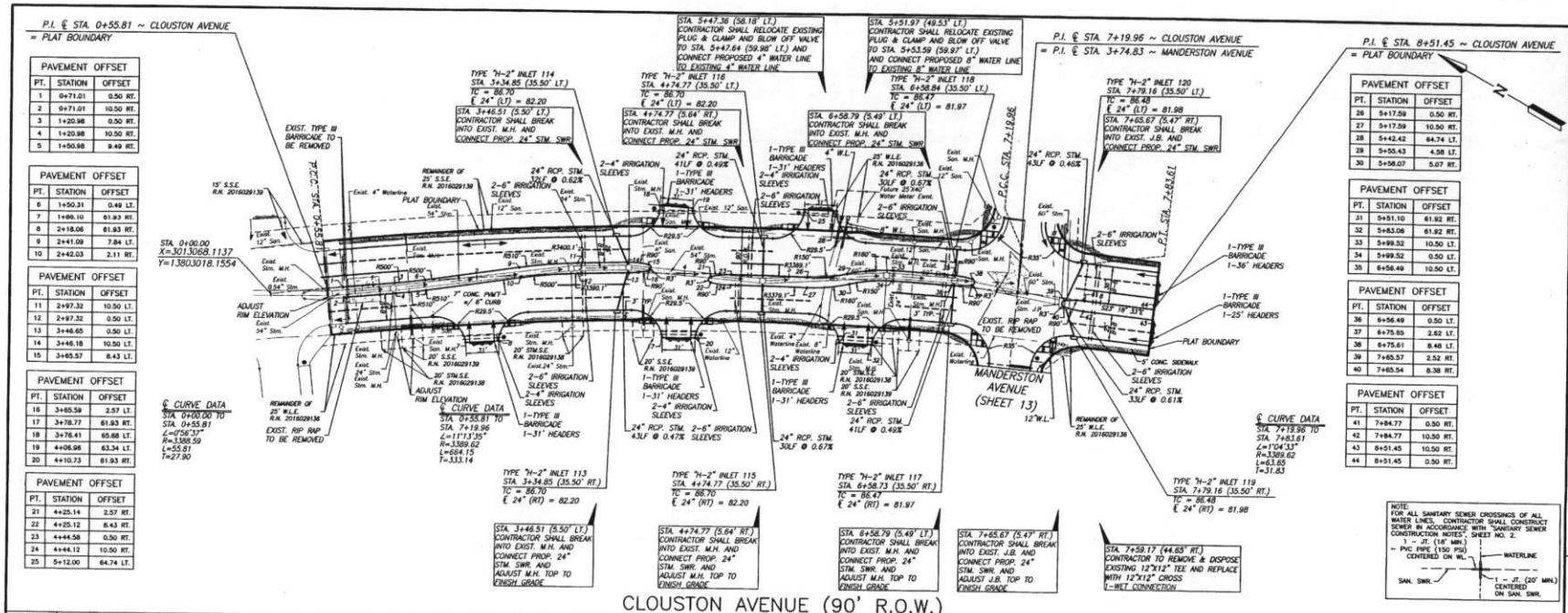
SHEET NO. 10 OF 28

FOR CITY OF HOUSTON USE ONLY

56578

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

10



PAVEMENT OFFSET		
PT.	STATION	OFFSET
1	0+71.01	0.50 RT.
2	0+71.01	10.50 RT.
3	1+20.98	10.50 RT.
4	1+20.98	10.50 RT.
5	1+50.98	9.49 RT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
6	1+50.31	0.49 LT.
7	1+86.10	61.93 RT.
8	2+18.06	61.93 RT.
9	2+41.09	7.84 LT.
10	2+42.03	2.11 RT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
11	2+97.32	10.50 LT.
12	2+97.32	0.50 LT.
13	3+46.65	0.50 LT.
14	3+46.18	10.50 LT.
15	3+65.57	8.43 LT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
16	3+65.59	2.57 LT.
17	3+78.77	61.93 RT.
18	3+78.41	65.68 LT.
19	4+06.98	63.34 LT.
20	4+10.73	61.93 RT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
21	4+25.14	2.57 RT.
22	4+25.12	8.43 RT.
23	4+44.58	0.50 RT.
24	4+44.12	10.50 RT.
25	5+12.00	64.74 LT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
26	5+17.59	0.50 RT.
27	5+17.59	10.50 RT.
28	5+42.42	64.74 LT.
29	5+55.43	4.58 LT.
30	5+58.07	5.07 RT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
31	5+51.10	61.92 RT.
32	5+83.06	61.92 RT.
33	5+99.52	10.50 LT.
34	5+99.52	0.50 LT.
35	6+56.49	10.50 LT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
36	6+56.49	0.50 LT.
37	6+75.65	2.62 LT.
38	6+75.61	8.48 LT.
39	7+65.57	2.52 RT.
40	7+65.54	8.38 RT.

PAVEMENT OFFSET		
PT.	STATION	OFFSET
41	7+84.77	0.50 RT.
42	7+84.77	10.50 RT.
43	8+51.45	10.50 RT.
44	8+51.45	0.50 RT.

BENCHMARK:
A-1212 ~ BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 19FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

BM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT ROAD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 84.55 FEET (NGVD-29) 1973 ADJ.

NOTES:
ADJUST ALL EXISTING MANHOLES RIM ELEVATIONS AND FIRE HYDRANTS TO FINISH GRADE.

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Maggie Dodd
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

CLOUSTON AVENUE
STA. 0+00.00 TO END

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5025
FRN-F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER 9/1/16 STREET & BRIDGE
WASTEWATER TRAFFIC
ROADWAY STORM WATER QUALITY
FACILITIES

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

FILE NO.

DRAWING SCALE
HORZ: 1" = 50'
VERT: 1" = 5'

FOR CITY OF HOUSTON USE ONLY
56578
CITY OF HOUSTON

SHEET NO. 11 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

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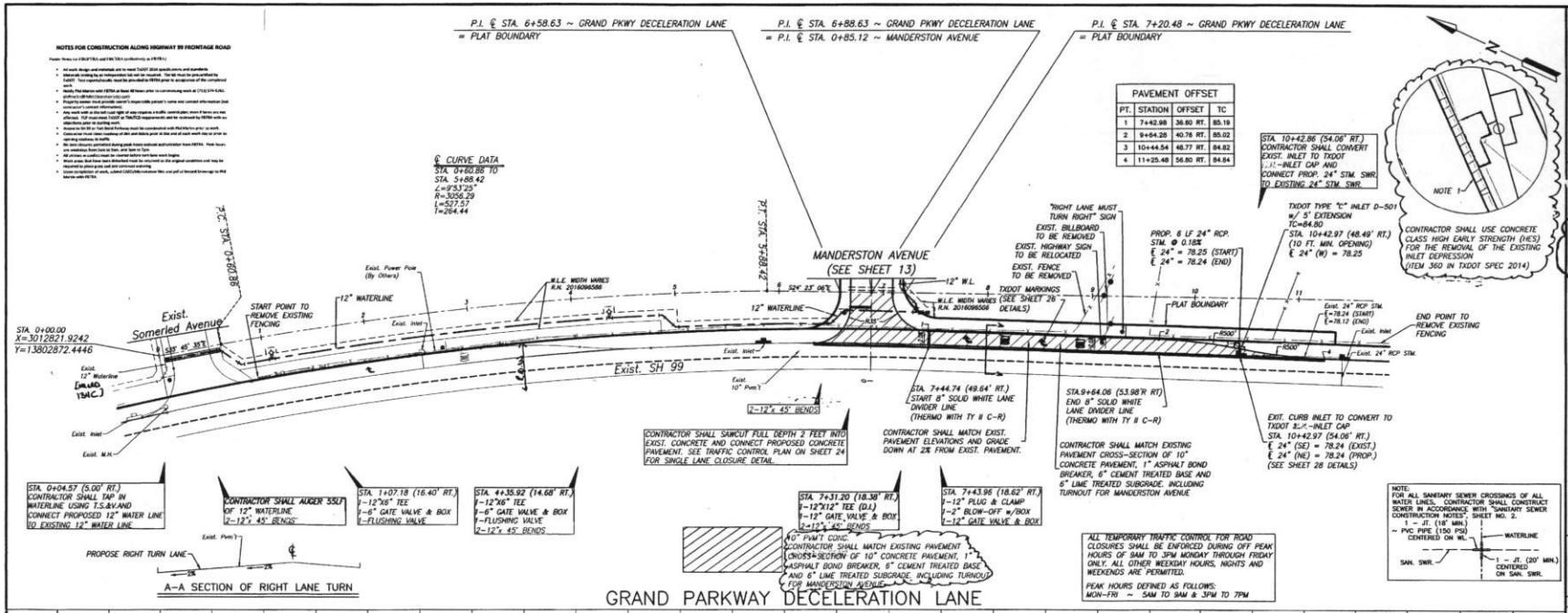
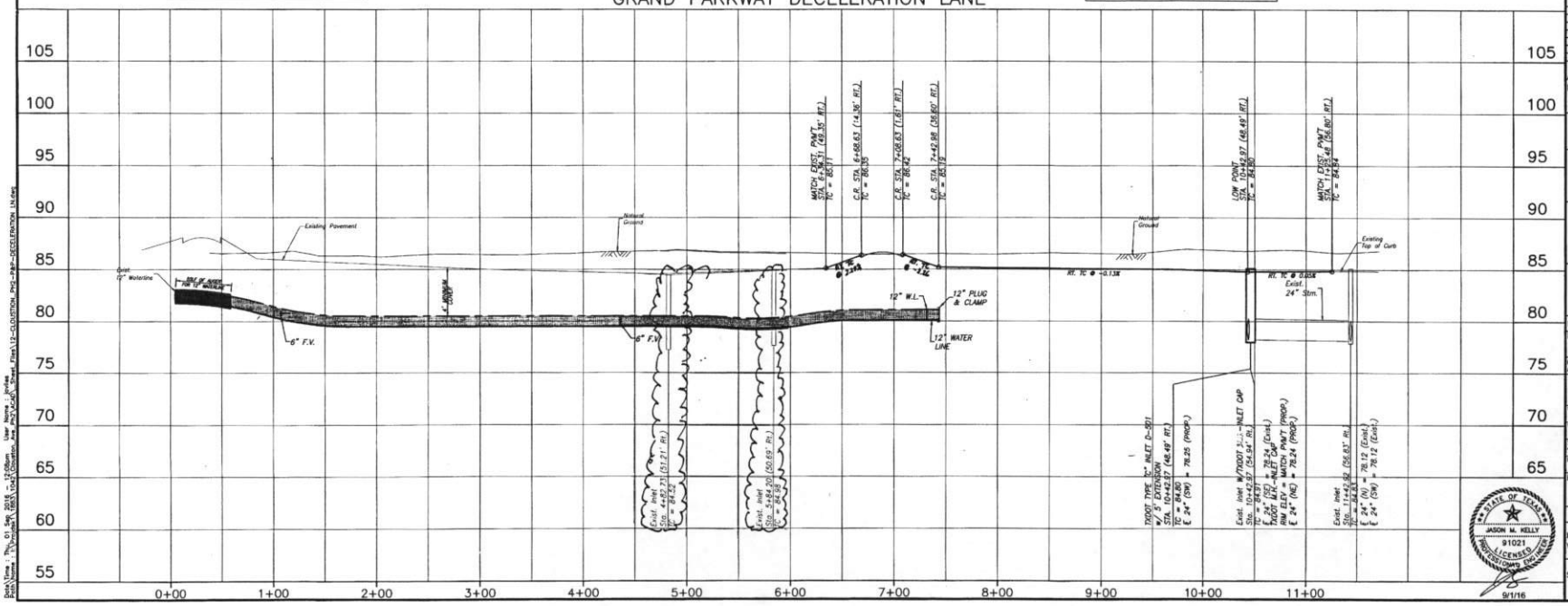


PAVEMENT OFFSET			
PT.	STATION	OFFSET	TC
1	7+42.98	36.60 RT.	85.19
2	9+64.28	40.76 RT.	85.02
3	10+44.54	46.77 RT.	84.82
4	11+25.48	56.80 RT.	84.84



BENCHMARK:

A-1212 ~ BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. ± 1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 19FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM:

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

ADJUST ALL EXISTING MANHOLES RIM ELEVATIONS AND FIRE HYDRANTS TO FINISH GRADE.

NOTE 1

DESIGN CLASS HES TO MEET THE REQUIREMENTS OF CLASS P AND MIN. AVERAGE COMPRESSIVE STRENGTH OF 3,200PSI OR A MIN. AVERAGE FLEXURAL STRENGTH OF 450PSI IN 24 HR.

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: _____ DEVELOPMENT COORDINATOR

DATE: 10/16/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY I

CLOUSTON AVENUE AND MANDERSTON AVENUE

GRAND PARKWAY DECELERATION LANE
STA. 0+00.00 TO END

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	STREET & BRIDGE
WASTEWATER	TRAFFIC
FACILITIES	STORM WATER QUALITY

FILE NO.

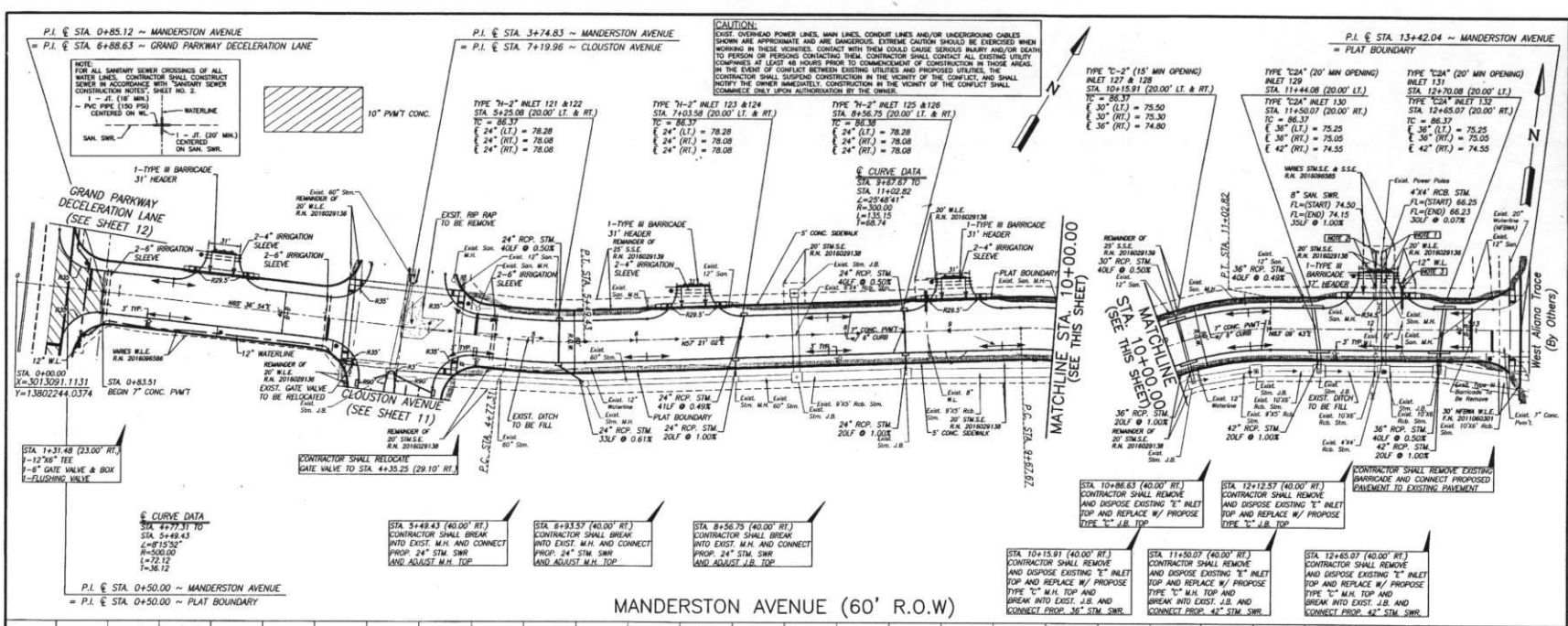
DRAWING SCALE
HORZ: 1" = 50'
VERT: 1" = 5'

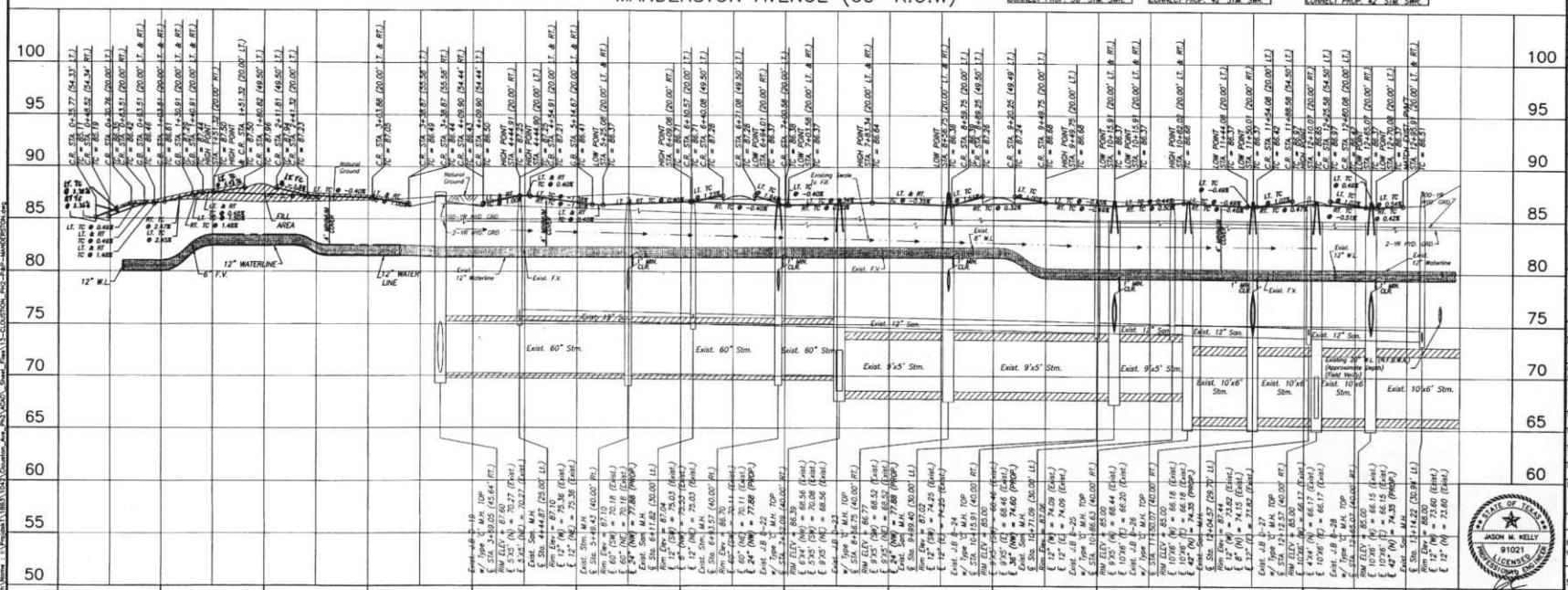
FOR CITY OF HOUSTON USE ONLY

56578 CITY OF HOUSTON

SHEET NO. 12 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE - JOB NO. 1883-1042





BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A APPROX. ±1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 15FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM:

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 60 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

ADJUST ALL EXISTING MANHOLES RIM ELEVATIONS AND FIRE HYDRANTS TO FINISH GRADE.

NOTES 1

–STA. 12+12.57 (75.00' LT.) CONTRACTOR TO INSTALL 8" THICK BRICK PLUG

–STA. 12+12.57 (45.00' LT.) CONTRACTOR SHALL BREAK INTO EXIST. M.H. AND CONNECT PROP. 4'X4' RCB. SWR.

NOTES 2

–STA. 12+04.57 (75.00' LT.) 1–8" SAN. SWR. PLUG

–STA. 12+04.57 (40.00' LT.) CONTRACTOR SHALL REMOVE EXIST. 8" SAN. SWR. PLUG. AND CONNECT PROP. SAN. SWR.

NOTES 3

–STA. 12+30.07 (45.00' LT.) 1–12" PLUG & CLAMP 1–2" BLOW–OFF w/BOX

–STA. 12+30.07 (40.00') 1–12" GATE VALVE & BOX

–STA. 12+30.07 (40.00') CONTRACTOR SHALL EXIST. PLUG AND CLAMP & BLOW OFF VALVE & CONNECT PROP. 12" WATERLINE TO EXIST. 12" WATERLINE.

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Maggie Dee
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016–0984
C.O.H. LOG NO. 16–0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

MANDERSTON AVENUE
STA. 0+00.00 TO END

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5025
FRN-F-1386

LJA PROJECT NO.: 1883–1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 9/1/16 — STREET & BRIDGE
WASTEWATER: 9/1/16 — TRAFFIC
HYDRO: 9/1/16 — STORM WATER QUALITY
FACILITIES

THE STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

FILE NO.

DRAWING SCALE
HORZ: 1" = 50'
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56578
CITY OF HOUSTON

SHEET NO. 13 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883–1042

TEMPORARY TRAFFIC CONTROL SIGNAGE

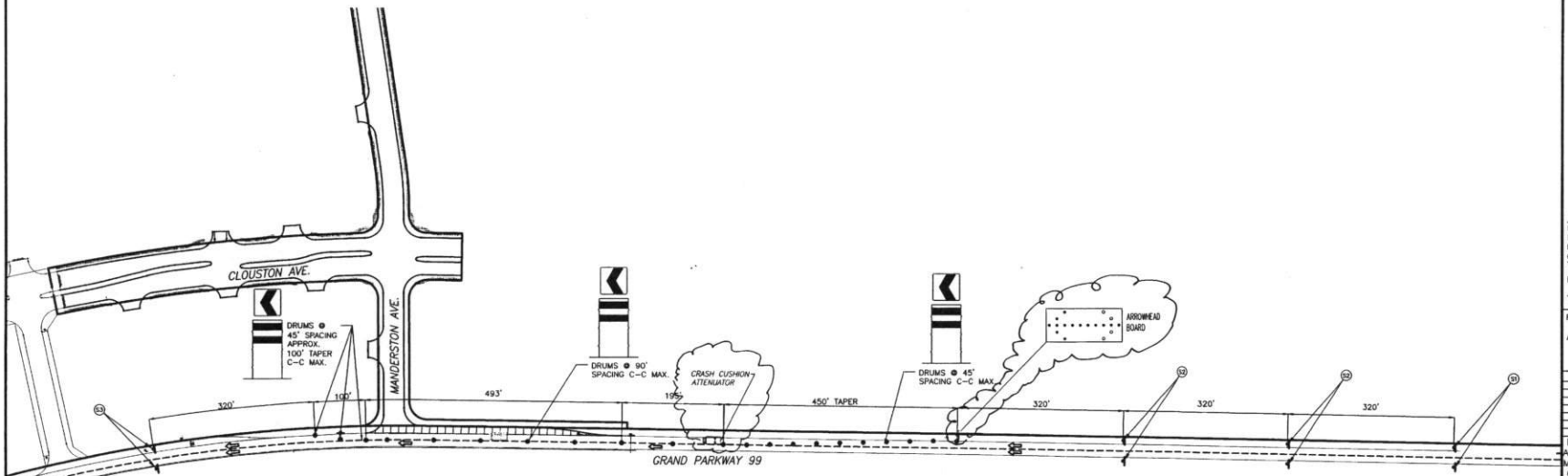
PLAN ID	SIGN	PLAN ID	SIGN	PLAN ID	SIGN
S1	ROAD WORK AHEAD CW20-1D	S2	RIGHT LANE CLOSED 320 FT CW20-5TR CW16-3aP	S3	END ROAD WORK G20-2

REA ALL TEMPORARY TRAFFIC CONTROL FOR ROAD CLOSURES SHALL BE ENFORCED DURING OFF PEAK HOURS OF 9AM TO 3PM MONDAY THROUGH FRIDAY ONLY. ALL OTHER WEEKDAY HOURS, NIGHTS AND WEEKENDS ARE PERMITTED.

PEAK HOURS DEFINED AS FOLLOWS:
MON–FRI ~ 5AM TO 9AM & 3PM TO 7PM

LEGEND

- CHANNELIZING DEVICE WITH CHEVRONS OR VERTICAL PANELS, SEE THIS SHEET FOR SPACING OF CHANNELING DEVICES
- WORK ZONE
- TRAFFIC CONTROL SIGN
- OPEN TO TRAFFIC
- HEAVY WORK VEHICLE



PERMIT REQUIREMENTS
(September 2016)

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
AND
FORT BEND COUNTY TOLL ROAD AUTHORITY

- A pre-construction meeting with Authority's staff will be required before commencing work. Contact Phil Martin with FBTRA as Phil Martin, (713) 574-5281 office; (832) 867 0726 cell; (713) 574-5291, pmartin@fbtraffic@gmail.com, to schedule the meeting.
- All work within the right-of-way shall be performed in accordance with TxDOT standards and specifications as to the installation and materials used. All materials and mix designs to be placed in TxDOT right-of-way must be obtained from TxDOT approved sources and be of approved TxDOT mix designs.
- At least five (5) working days prior to any excavation, permittee shall request the location of all underground utilities within the work area by calling 811, and contacting local municipalities, utility districts, school districts, or any other utility owners. TxDOT-owned fiber optic, communications, power, illumination, and traffic signal cabling and conduit, can be located by calling the TxDOT Houston District Traffic Operations Office at 713-802-5662. Do not perform underground work on the project until these areas have been located and marked. Use caution when excavating near these areas to avoid damaging or interfering with existing facilities. Permittee shall be responsive for relocating and/or adjusting any utilities within the work area.
- Any work with in the toll road right of way requires a traffic control plan, even if lanes are not affected.
- This permit is subject to a separate traffic control plan being approved by the Authority's Engineer. All work must follow the TxDOT Traffic Control Plan Barricade, Laser Revision, or if applicable, the Authority's Standard Traffic Control Plan Barricade, Laser Revision, or if applicable, Lane Closure, Chapter 5-H. The advanced warning signage shown on standards BC (1)-14 thru BC (12)-14 will be required. It is mutually agreed and understood that the implementation and maintenance of the traffic control plan shall be the responsibility of the Permittee. Contractor is required to supply all sub-contractors with a copy of this permit and approved traffic control plan.
- No lane closures permitted during peak hours without authorization from the Authority. Peak hours are weekdays from 5am to 9am, and 3pm to 7pm. No lane closures on holidays or holiday weekends.
- Designee in writing, a Contractor's Responsible Person (CRP) and an alternate to be the representative of the Contractor who is responsible for taking or directing corrective measures regarding the traffic control. The CRP or alternate must be accessible by phone 24 hr per day and work is required when notified. The CRP and alternate must comply with the requirements of TxDOT Specification, Section 7.2.8.5., "Training."
- Flaggers must be courteous and able to effectively communicate with the public. When directing traffic, flaggers must dress appropriately, wear high-visibility safety apparel, use flags, signs, stop-slow paddles, and other hand-held devices, and follow the flagging procedures in the TMUTCD. Comply with the requirements of TxDOT Specification Section 7.2.8.5., "Training."
- Workers involved with traffic control, including the maintenance of the traffic control, must comply with the requirements of TxDOT Specification, Section 7.2.8.5., "Training."

Page 1 of 4

- Provide a copy of the certification of completion to the Engineer, except in the case of Contractor-developed Training. Ensure the certification of completion includes the following:
  - name of provider and course title,
  - name of participant,
  - date of completion, and
  - date of expiration.

  For Contractor-developed Training, maintain a log of attendees. Make the log available upon request. Ensure the log is legible and includes the following:
  - print name and signature of participant,
  - name and title of trainer, and
  - date of training.
- The Permittee shall coordinate the sequence of construction and traffic control plan with any adjacent construction or maintenance projects. No overnight lane closures will be permitted, unless otherwise approved by the Authority's Engineer.
- Work performed within the waterways, such as rivers, creeks, bayous, and drainage ditches, is subject to the concurrence of appropriate regulatory agencies.
- The Permittee certifies that its drainage system meets all storm water quality criteria of the County and/or City where the permit is located.
- All excavations within the right-of-way shall be backfilled according to the *TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (SPEC)*, Item 400, as currently amended. All surplus material shall be removed from the right-of-way, and the excavation finished flush with surrounding natural ground.
- No no work will an edge drop-off be permitted during the hours of darkness. If the Contractor is unable to complete a section before the end of the work day, base material capable of vehicle support shall be pulled back to the existing edge on a 4:1 or flatter slope, to provide for driver and pedestrian safety.
- The Contractor shall not create a dirt nuisance or safety hazard in any roadway. The pavement shall be cleaned daily.
- All exposed dirt surfaces shall be sodded, unless otherwise approved by the Authority's Engineer. A slope of 4:1, or flatter, shall be required on the ditch front slope.
- No trees, expansion, valves, meter boxes, cleanouts, ground boxes, handholes, manhole covers, etc. will be allowed in the pavement. These appurtenances shall be relocated elsewhere within the right-of-way, unless otherwise approved by the Authority's Engineer.
- The Texas Universal Triangular Slip-Base Sign Supports shall be required for all signage within the right of way. Proposed signs, or those which require relocation, shall be done in accordance with the following TxDOT standards: *SMD (GSN)-08, SMD (SLIP-1)-08, SMD (SLIP-2)-08, and SMD (SLIP-3)-08*.
- All work zone pavement markings shall meet the requirements of TxDOT Specification, Item 662. All permanent pavement markings shall meet the requirements of TxDOT Specification, Item 666, and be placed in accordance with the following standards: *PM (1)-12, PM (3-12, PM (8-12, and PM (10-12* All raised pavement markers shall meet the requirements of TxDOT Specification, Item 672.

Page 2 of 4

- Existing pavement markings shall be removed according to the requirements of TxDOT Specification, Item 677, or to the satisfaction of the Authority's Engineer. All pavement surfaces shall be cleaned and prepared in accordance with TxDOT Specification, Item 678.
- The Contractor shall employ an in-house, on-site, or approved commercial testing laboratory to perform all tests required by the Authority's Engineer. Test all soil and asphaltic concrete and test concrete in accordance with TxDOT Specifications. Certified reports of all test results shall be submitted to the Authority's Engineer. Make at least one set of test specimens for each element cast each day. Core these specimens under the same conditions as the portion of the structure involved for all stages of construction. Ensure safe handling, curing, and storage of all test specimens.
- Should the existing roadway pavement or other feature be damaged, it shall be repaired as specified by the Authority's Engineer.
- Inlet depressions in concrete pavement must be removed to prevent ponding in the pavement.
- All Pipes used shall be Reinforced Concrete Pipe (RCP).
- Culvert crossings within the 30-foot clear zone (parallel culverts) shall be required to have minimum 6:1 sloping ends known as Safety End Treatments (SETs). The culvert shall have sufficient length to allow the 6:1 slope to be achieved from the edge of pavement to the front/rear at the end of the SET. Culverts that exceed 30' in length shall have a junction box for clean out as specified by the Area Engineer.
- Concrete larger than single 33-inch diameter, double 30-inch diameter, or three or more 12-inch diameter shall require safety pipe runners.
- Riprap or stabilizing material shall be provided and installed by grantee at time of construction as directed by Area Engineer.
- Full-depth saw cuts may be made as needed to facilitate removal of the concrete within the zone of the required full-depth cuts. Concrete adjacent to the patch shall not be spalled or fractured by the removal procedure.
- Work areas that have been disturbed shall be returned to the original condition and may be required to place grass sod and continual watering.
- Placement or removal of beautification on right of way shall be under the direction of the Authority.
- The Grantee certifies that its storm water runoff to the right of way (Authority's/County/State) shall not be contaminated by any industrial processes or significant pollutants, and the Authority/County/State shall not be held liable for any pollutants entering the right of way through storm water connections.
- Grantee shall meet all Americans with Disabilities Act (ADA) and Texas Department of Licensing Regulation (TDLR) requirements for items including but not limited to sidewalks and wheelchair ramps.
- Grantee shall obtain overall environmental clearance with all appropriate regulatory agencies prior to beginning construction. Approval of this request by the Authority/County does not relieve the Grantee or its agents of this obligation.

Page 3 of 4

- Work performed on railroad right-of-way or easements controlled by others is subject to the concurrence of the owner of said properties. Approval of this request by the Authority/County does not relieve the Grantee of this obligation.
- The complete permit package shall be on the project site at all times and available for review by Authority/County representatives.
- Upon completion of work, submit CADD/Microstation files and pdf of Record Drawings to Phil Martin with the Authority.
- The Permittee shall indemnify and save harmless the Authority, County and State from any and all damages or losses that may develop due to this project.
- All TxDOT standards are available online for free download:
  Statewide: http://www.dot.state.tx.us/business/standards/forms.htm
  Houston District: http://www.dot.state.tx.us/houston/contractors.htm

The Authority will assist as follows:

1. Provide inspection of construction.
2. This permit issued subject to a traffic control plan, which will be approved by the Authority's Engineer. No work within the right of way shall begin until this approval has been granted.

ADDITIONAL REQUIREMENTS FOR UTILITIES

- All work must meet TxDOT / State of Texas utility accommodation requirements
- Utility owner must provide owner's responsible person's name and contact information (not contractor's contact information).
- Access to SH 99 or Fort Bend Parkway must be coordinated with Phil Martin prior to work.
- Bore pits within the right of way must be protected during non work hours.

Page 4 of 4

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:
A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND ½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ. TBM:

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,440 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Mary Dent
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

TEMPORARY TRAFFIC CONTROL PLAN

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 9/1/16	STREET & BRIDGE
DATE 10-7-16	TRAFFIC
DATE 9/1/16	STORM WATER QUALITY
FACILITIES	

FILE NO.

DRAWING SCALE

SCALE: 1" = 100'

SHEET NO. 14 OF 28

FOR CITY OF HOUSTON USE ONLY

56578
CITY OF HOUSTON

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

Date/Time: Thu, 01 Sep 2016 - 12:01pm User Name: jmillar
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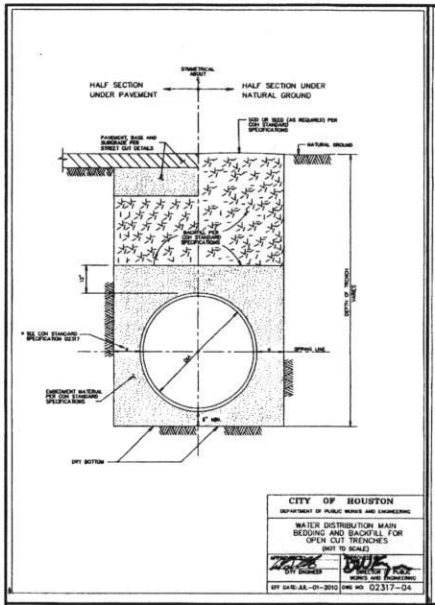
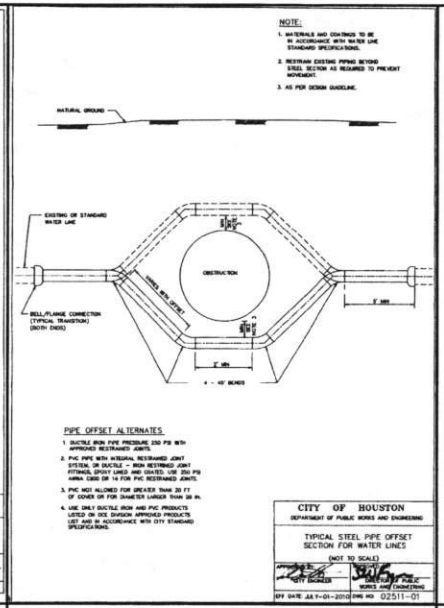
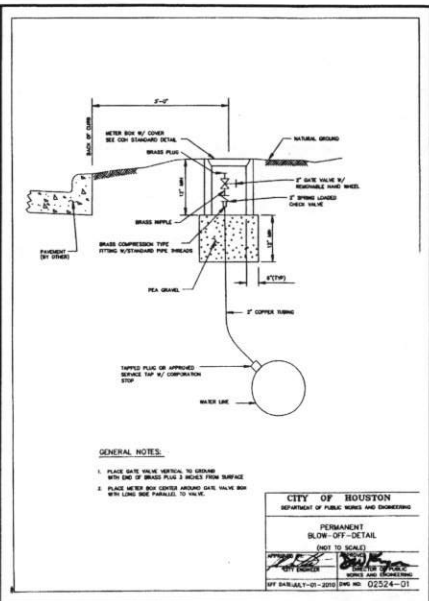


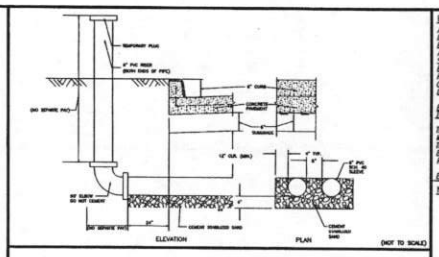
WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES



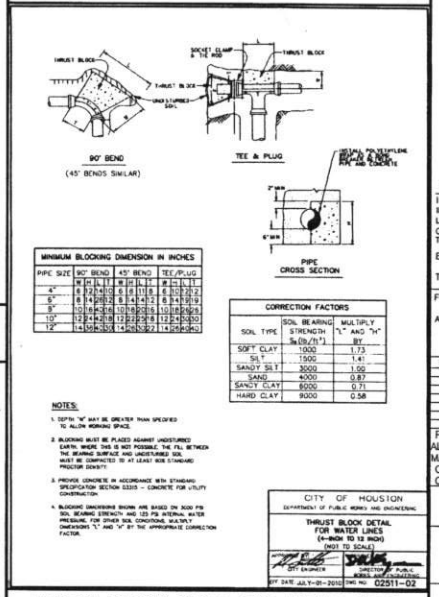
TYPICAL STEEL PIPE OFFSET SECTION FOR WATER LINES



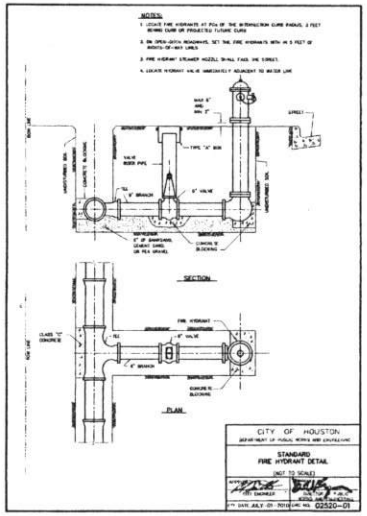
PERMANENT BLOW-OFF DETAIL



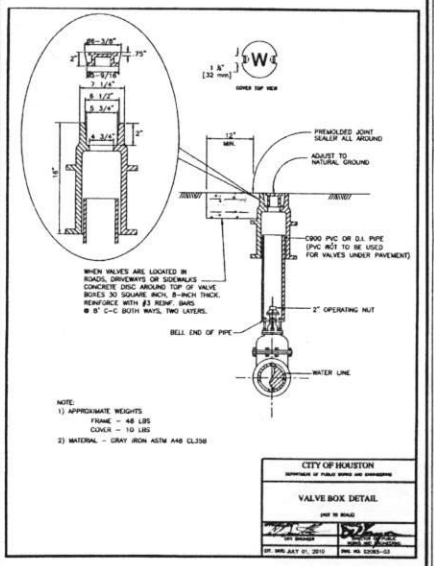
IRRIGATION SLEEVES



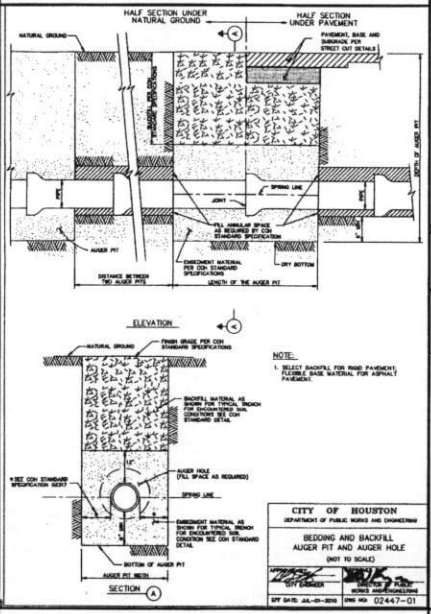
THRUST BLOCK DETAIL FOR WATER LINES (4-INCH TO 12-INCH)



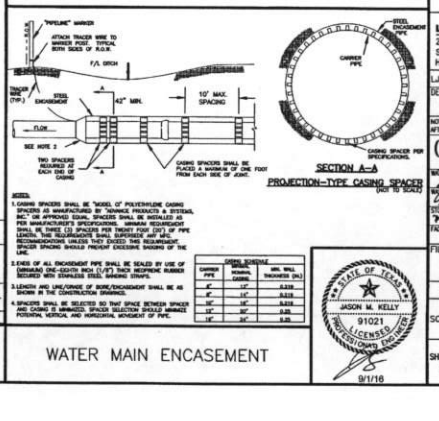
STANDARD FIRE HYDRANT DETAIL



VALVE BOX DETAIL



BEDDING AND BACKFILL AUGER PIT AND AUGER HOLE



WATER MAIN ENCASEMENT

BENCHMARK:

A-1212 - BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY. 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND ½FOOT LOWER THAN THE ROAD.

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NOTES:

RECORD DRAWING

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BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: _____ DEVELOPMENT COORDINATOR

DATE: 10/10/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

WATER MAIN CONSTRUCTION DETAILS

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 9/1/16	STREET & BRIDGE
WASTEWATER:	TRAFFIC
STORM FACILITIES: 9/1/16	STORM WATER QUALITY

FILE NO.

DRAWING SCALE

SCALE: NONE

FOR CITY OF HOUSTON USE ONLY

56578

SHEET NO. 15 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE - JOB NO. 1883-1042

15

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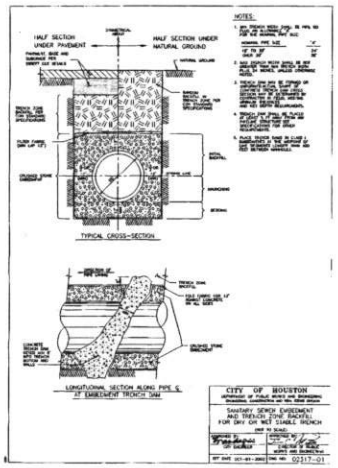
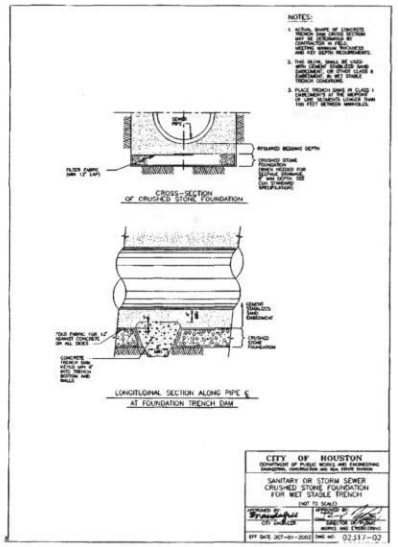
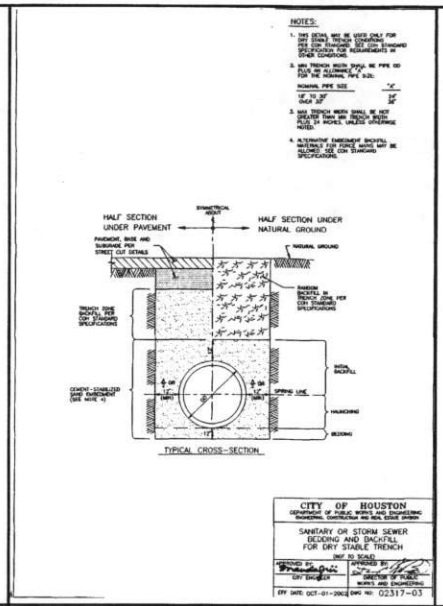


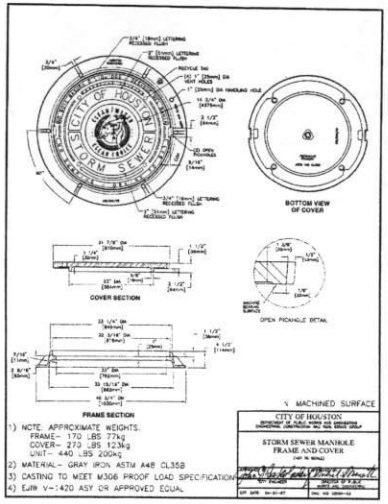
SANITARY SEWER EMBEDMENT AND TRENCH ZONE BACKFILL FOR DRY OR WET STABLE TRENCH



SANITARY OR STORM SEWER CRUSHED STONE FOUNDATION FOR WET STABLE TRENCH



SANITARY OR STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH



STORM SEWER MANHOLE FRAME AND COVER

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212, 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND ½FOOT LOWER THAN THE ROAD.

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BY _____ DATE _____

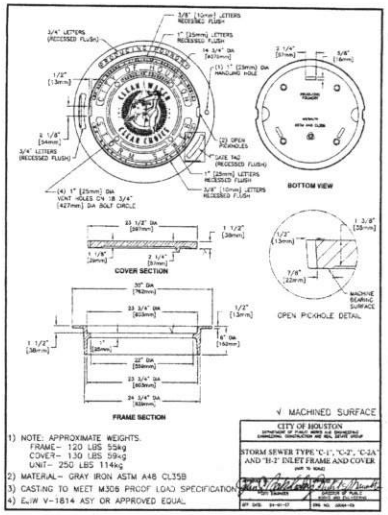
TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

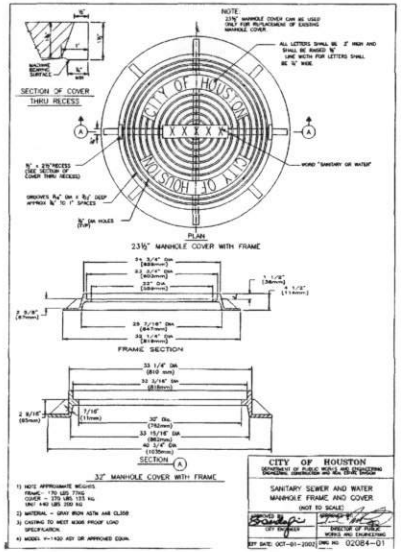
APPROVED: Mary Dost
DEVELOPMENT COORDINATOR

DATE: 10/6/16

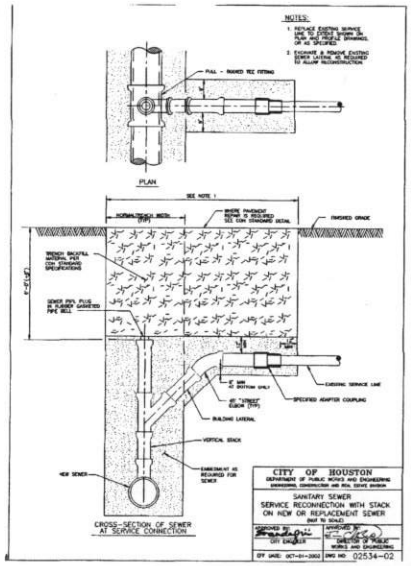
DATE	REVISION	BY



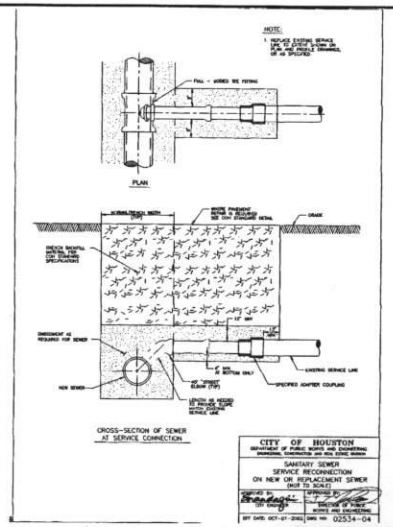
STORM SEWER TYPE "C-1", "C-2", "C-2A" AND "H-2" INLET FRAME AND COVER



SANITARY SEWER AND WATER MANHOLE FRAME AND COVER



SANITARY SEWER SERVICE RECONNECTION WITH STACK ON NEW OR REPLACEMENT SEWER



SANITARY SEWER SERVICE RECONNECTION ON NEW OR REPLACEMENT SEWER

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

SANITARY AND STORM SEWER DETAILS
(SHEET 1 OF 3)

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5028
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

9/1/16	STREET & BRIDGE
9-7-16	TRAFFIC
9/1/16	STORM WATER QUALITY
FACILITIES	

FILE NO.

DRAWING SCALE

SCALE: NONE

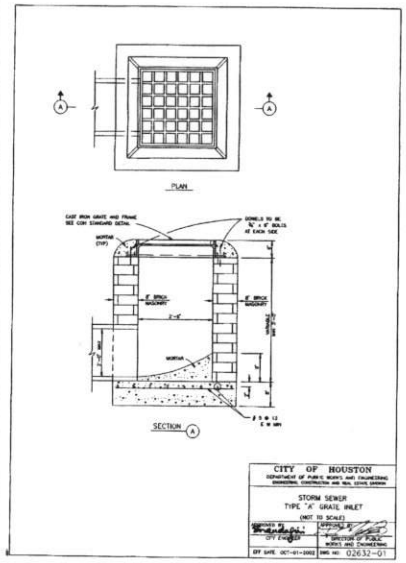
SHEET NO. 16 OF 28

FOR CITY OF HOUSTON USE ONLY

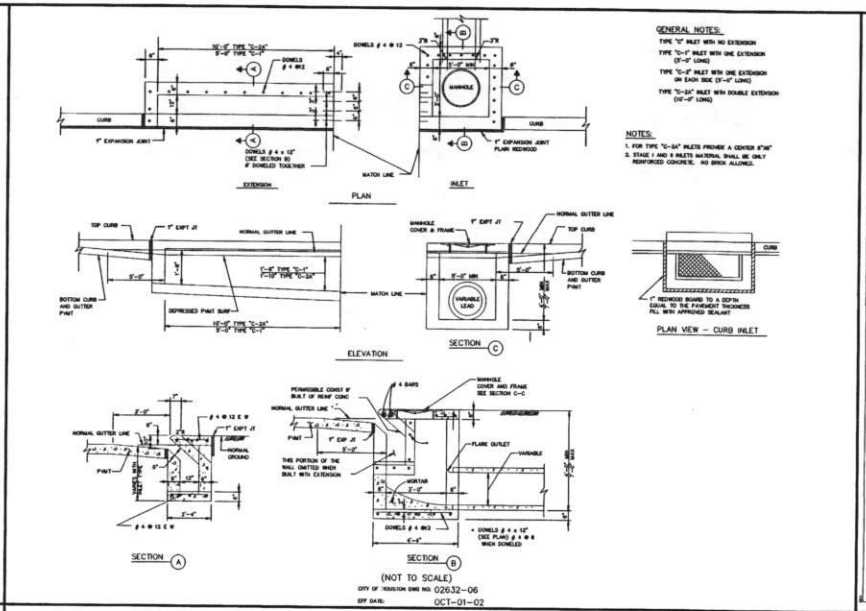
56578

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

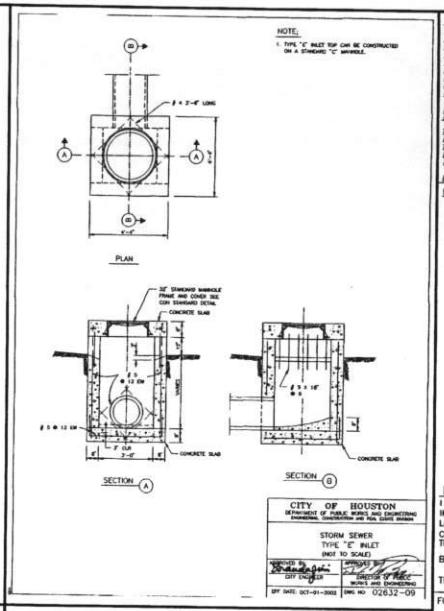
Date: Sep 01, 2016 - 12:44am User: None Jobfile: 1883-1042 Path: J:\Projects\1883-1042\Clouston_Ave_Phase2\CAD\Sheet_Files\16-CLOUSTON_PH2-SANITARY1.dwg



STORM SEWER TYPE "A" GRATE INLET



MODIFIED STORM SEWER TYPE "C-1", "C-2" AND "C-2A" INLETS



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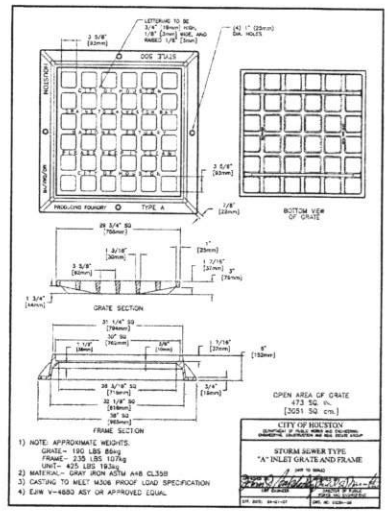
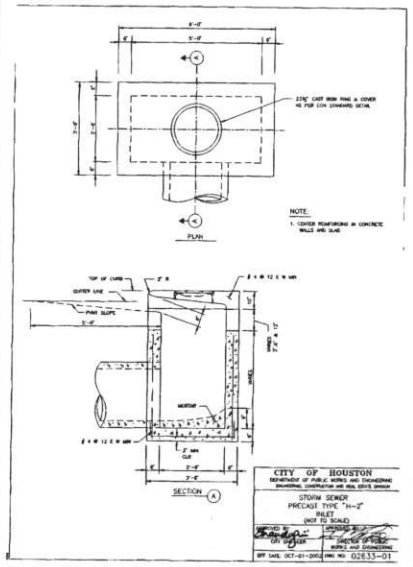


STORM SEWER TYPE "A" INLET
GRATE AND FRAME



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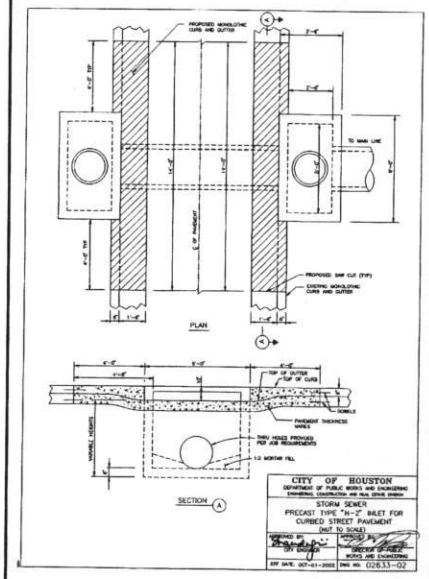
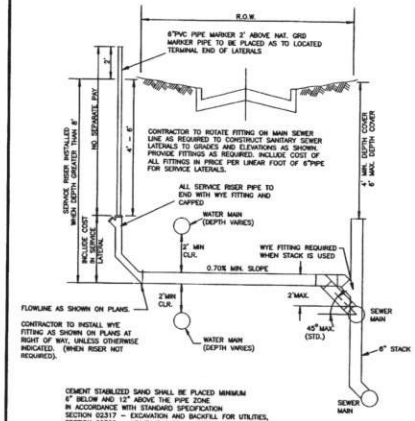


STORM SEWER PRECAST TYPE "H-2" INLET
FOR CURBED STREET PAVEMENT



(NOT TO SCALE)

FAR SIDE SANITARY
SEWER CONNECTION

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212, 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST SOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM 6–TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: DEVELOPMENT COORDINATOR

DATE: 10/16/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016–0984
C.O.H. LOG NO. 16–0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE
AND
MANDERSTON AVENUE

SANITARY AND STORM
SEWER DETAILS
(SHEET 2 OF 3)

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883–1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 9/1/16 — STREET & BRIDGE
WASTEWATER — TRAFFIC
STORM SEWER — STORM WATER QUALITY
FACILITIES 9/1/16

FILE NO.

DRAWING SCALE

SCALE: NONE

FOR CITY OF HOUSTON USE ONLY
56578
CITY OF HOUSTON

SHEET NO. 17 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883–1042

17

Date/Time: Thu, 01 Sep 2016 - 12:47pm User Name: jjones
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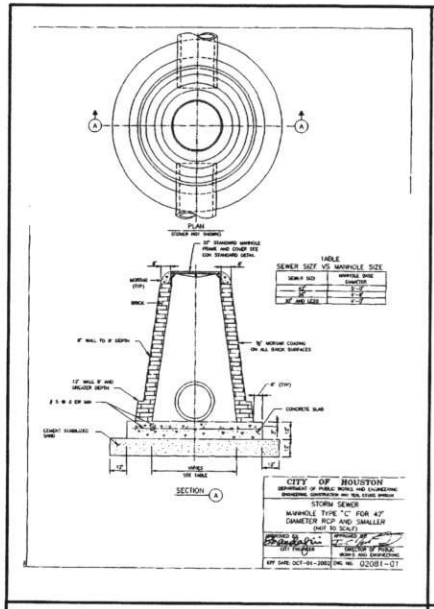
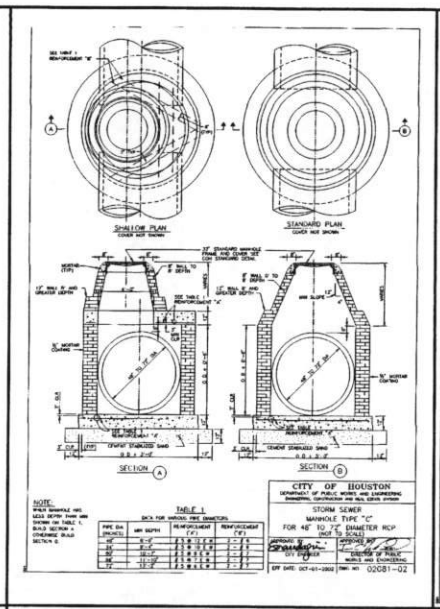
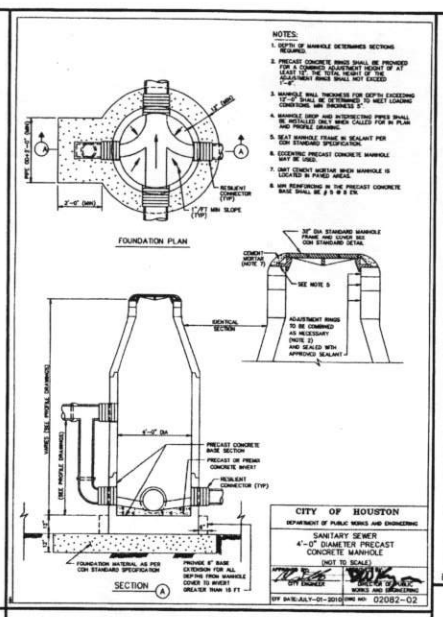


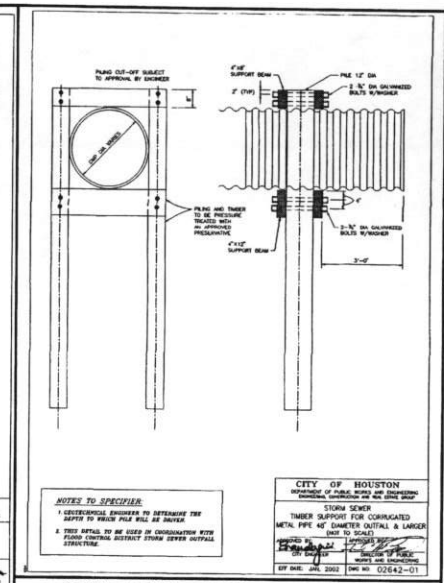
STORM SEWER MANHOLE TYPE "C" FOR 42" DIAMETER RCP AND SMALLER



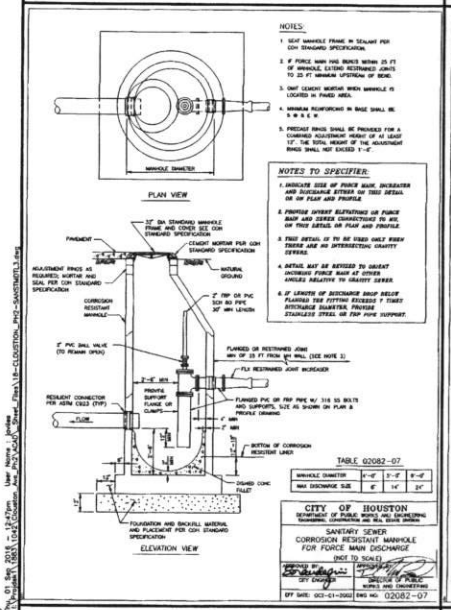
STORM SEWER MANHOLE TYPE "C" FOR 48" TO 72" DIAMETER RCP



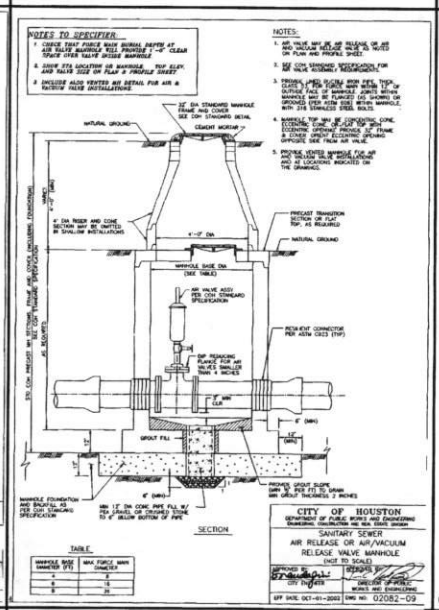
SANITARY SEWER 4'-0" DIAMETER PRECAST CONCRETE MANHOLE



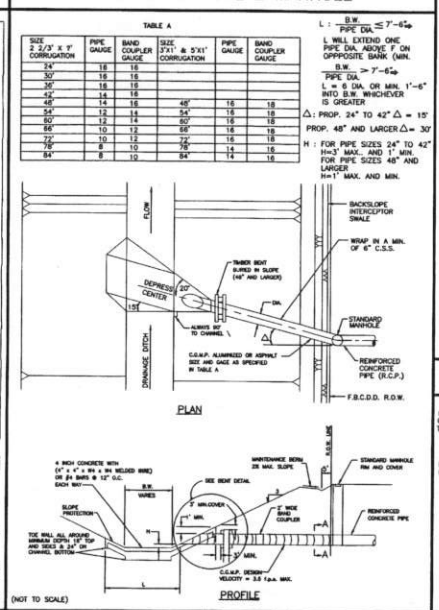
STORM SEWER TIMBER SUPPORT FOR CORRUGATED METAL PIPE 48" DIAMETER OUTFALL AND LARGER



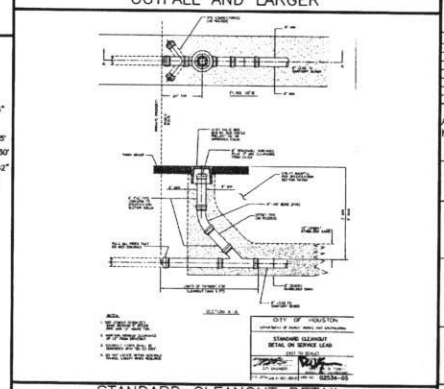
SANITARY SEWER CORROSION RESISTANT MANHOLE FOR FORCE MAIN DISCHARGE



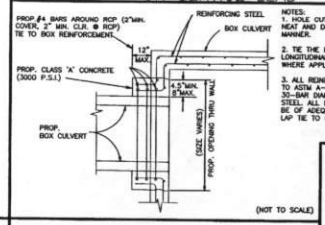
SANITARY SEWER AIR RELEASE VALVE MANHOLE



STORM SEWER OUTFALL



STANDARD CLEANOUT DETAIL ON SERVICE LEAD



STORM SEWER / BOX CULVERT CONCRETE COLLAR

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

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TBM 6–TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED @ 1,480 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND 1.40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

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BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Mary Ford
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

SANITARY AND STORM SEWER DETAILS
(SHEET 3 OF 3)

LJA Engineering, Inc.
2929 Briarpark Drive, Suite 600, Houston, Texas 77042
Phone 713.953.5200, Fax 713.953.5026, FRN-F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: Dhorman 9/1/16 — STREET & BRIDGE
WASTEWATER: 9-1-16 — WATER
STORM: Jason Jon 9/1/16 — STORM WATER QUALITY
FACILITIES

FILE NO.

DRAWING SCALE

SCALE: NONE

FOR CITY OF HOUSTON USE ONLY

56578

SHEET NO. 18 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

18

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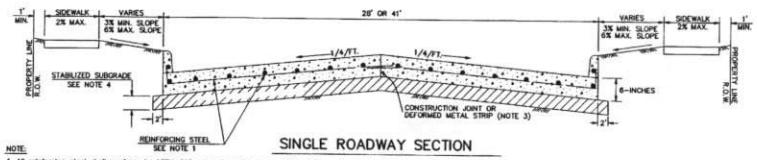


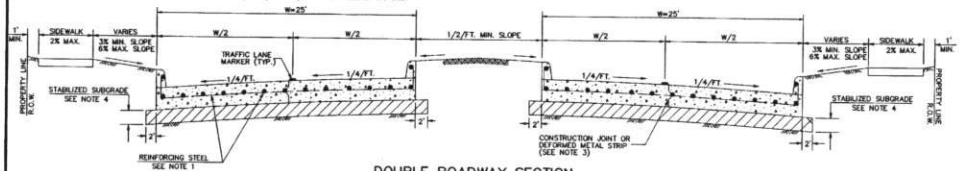
SINGLE ROADWAY SECTION

NOTE:

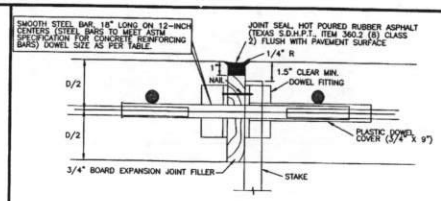
1. All reinforcing steel shall conform to ASTM-615, current revision, grade 60. Minimum lap lengths shall be as shown in table. For 9-inch concrete pavement, No. 5 bars shall be placed with longitudinal steel spacing at 22.5-inches and transverse steel spacing at 36-inches on center. For 8-inch concrete pavement, No. 5 bars shall be placed with longitudinal steel spacing at 24-inches and transverse steel spacing at 36-inches on center. For 7-inch concrete pavement, No. 4 bars shall be placed with longitudinal spacing at 18-inches and transverse steel spacing at 36-inches on center. For 6-inch concrete pavement, No. 4 bars shall be placed with longitudinal spacing at 20.5-inches and transverse steel spacing at 36-inches on center.
2. Concrete shall have a minimum compressive strength of 3,500 p.s.i. at 28 days.
3. Contractor may sawcut in lieu of deformed metal strip. The location of construction joints and deformed metal strips may be varied, with the approval of the Engineer, to suit the proposed construction methods of the Contractor.
4. 8-inch stabilized subgrade for major thoroughfares. 6-inches stabilized subgrade for all other roadways. The actual stabilization requirements should be verified in the field and approved by the geotechnical engineer.
5. The slope behind pavement may be increased, with approval from the Engineer.
6. The maximum width between longitudinal joints shall not exceed 15'-0".
7. Dummy grove joints are recommended to control cracking in spans in excessof 30-ft in length. Dummy joints may be sawed to a depth equal to 1/4 the thickness of the slab.

MINIMUM LAP LENGTHS (L):

1. #4 BARS: L=22 INCHES.
2. #5 BARS: L=27 INCHES.
3. #6 BARS: L=32 INCHES.



DOUBLE ROADWAY SECTION

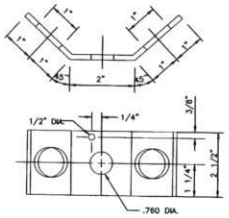


PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
6	3/4	18	12
7	1	18	12
8	1	18	12
9	1 1/4	18	12
10	1 1/4	18	12
11	1 1/4	18	12
12	1 1/4	18	12

BOARD EXPANSION JOINT

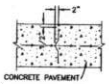
NOTES:

1. SMOOTH DOWELS SHALL BE CUT TO LENGTH IN A MANNER TO PRODUCE A SMOOTH, STRAIGHT AND EVEN BAR DIAMETER THROUGHOUT THEIR FULL LENGTH.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED A MAXIMUM OF 60'-0" APART.
3. STAKES FOR TRANSVERSE JOINTS SHALL NOT BE PLACED CLOSER THAN 6" TO A LONGITUDINAL JOINT. THE TOP OF EACH STAKE SHALL NOT BE LESS THAN 1" BELOW THE FINISH SURFACE.
4. EXPANSION BOARD SHALL BE1" REDWOOD AND ANCHORED TO PREVENT MOVEMENT.



DOWEL FITTING

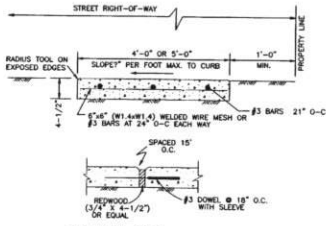
N.T.S.



NOTE:

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. MAXIMUM LONGITUDE SPACING FOR DEFORMED STRIPS IS 15'-0". DEFORMED METAL STRIPS SHALL BE PLACED VERTICALLY ALONG A STRAIGHT ALIGNMENT.

DEFORMED METAL STRIP

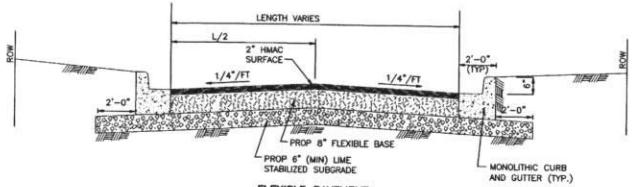


EXPANSION JOINT

NOTES:

1. Location of sidewalk shall be constructed at the owner's specification.
2. Concrete shall have five (5) sacks of cement per cubic yard of concrete
3. Control joint spacing shall not exceed 7.5' O.C. between expansion joints. the pavement Control joint may be scored, tooled, or sawed. Joint shall be 1/4" thickness

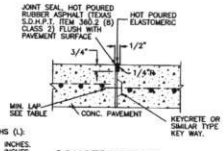
CONCRETE SIDEWALK



FLEXIBLE PAVEMENT

NOTE:

1. FLEXIBLE BASE SHALL BE 8" CRUSHED LIMESTONE.



MINIMUM LAP LENGTHS (L):

1. #4 BARS: L=22 INCHES.
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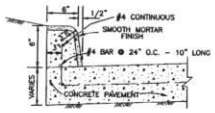
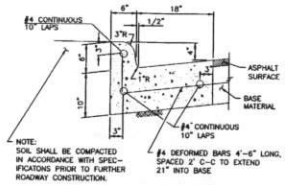
CONSTRUCTION JOINT



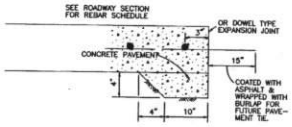
NOTES:

1. Mortar finish not required when curb is poured by a machine, but curb will have the same outside dimensions.
2. When concrete curb is to be placed on existing concrete base #4 deformed bars, 10" long, 24" O.C. dowelled and set in quick setting cement.
3. Redwood expansion joints shall be installed at all pavement expansion joints, and sealed as per dowel type expansion joint detail.

CONCRETE CURB



MONOLITHIC CONCRETE CURB & GUTTER DETAIL



PAVING HEADER

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ. TBM

RM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. TIE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

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BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Maggie Dal
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
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ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

PAVING CONSTRUCTION DETAILS
(SHEET 1 OF 2)

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN-F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

DATE 9/1/16	STREET & BRIDGE
9-1-16	TRAFFIC
	STORM WATER QUALITY
FACILITIES	

FILE NO.

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE:

SCALE: NONE

STATE OF TEXAS
JASON M. KELLY
50576
LICENSED
PROFESSIONAL ENGINEER

SHEET NO. 19 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE - JOB NO. 1883-1042

19

Date/Time: Thu, 01 Sep 2016 13:45:40pm User Name: jjones
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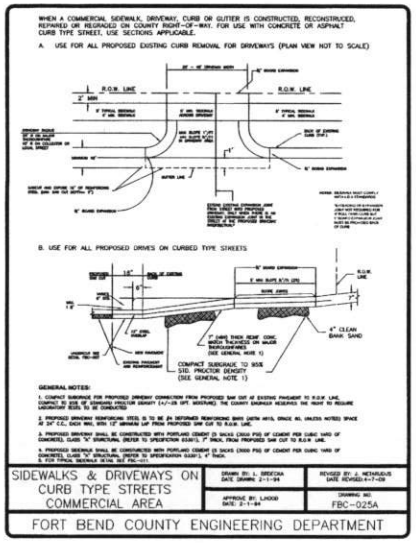


GENERAL NOTES FOR SIDEWALKS AND DRIVEWAYS

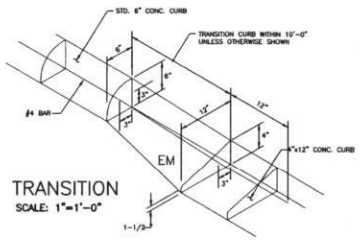
1. SAW CUT EXISTING CURB AT EACH END AND KNOCK OUT CURB FROM BEGINNING TO END OF PROPOSED DRIVEWAY.
2. SAW CUT EXISTING PAVEMENT A MINIMUM OF 18" INCHES AWAY FROM BACK OF CURB (GUTTER LINE) AND BREAK OUT TO EXPOSE EXISTING REINFORCEMENT STEEL.
3. COMPACT SUBGRADE FOR PROPOSED DRIVEWAY CONNECTION FROM PROPOSED SAW CUT AT EXISTING PAVEMENT TO RIGHT-OF-WAY LINE, COMPACT TO 95% OF STANDARD PROCTER DENSITY (+/- 2% OPT. MOISTURE). THE COUNTY ENGINEER RESERVES THE RIGHT TO REQUIRE LABORATORY TESTS TO BE CONDUCTED.
4. PLACE AND COMPACT 4" CLEAN BANK SAND.
5. MAINTAIN GUTTER LINE WITH FACE OF EXISTING CURB.
6. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE TIED TO EXISTING ROADWAY REINFORCING STEEL WITH A MINIMUM LAP OF 12 INCHES.
7. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE #4 DEFORMED RE-INFORCING BARS (ASTM A615 GRADE 60, UNLESS NOTED) SPACED AT 24 INCHES C.C., EACH WAY, WITH 12 INCHES MINIMUM LAP (8" x 6" W6 x W6 AS ALTERNATE) FROM PROPOSED SAW CUT TO RIGHT-OF-WAY LINE.
8. PROPOSED DRIVEWAY, CURB, GUTTER LINE, AND GRADE SHALL MATCH EXISTING STREET.
9. PROPOSED DRIVEWAY SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE, CLASS "A" STRUCTURAL (REFER TO SPECIFICATION 03301), 7 INCHES THICK, FROM PROPOSED SAW CUT TO RIGHT-OF-WAY LINE (PROPERTY LINE).
10. PROPOSED SIDEWALK SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE, CLASS "A" STRUCTURAL (REFER TO SPECIFICATION 03301), 4 INCHES THICK AND 4 FEET MINIMUM WIDTH. SEE DRAWING NO. FBC 24A FOR ADDITIONAL INFORMATION AND DETAILS.

CONSTRUCTION NOTES FOR SIDEWALKS & DRIVEWAYS WITH CURB TYPE STREETS COMMERCIAL AREA	DRAWN BY: L BRDECKA DATE DRAWN: 2-1-94	REVISED BY: L BRDECKA DATE REVISED: 3-10-05
	APPROVED BY: L. HOOD DATE: 2-1-94	DRAWING NO. FBC-025B

FORT BEND COUNTY ENGINEERING DEPARTMENT

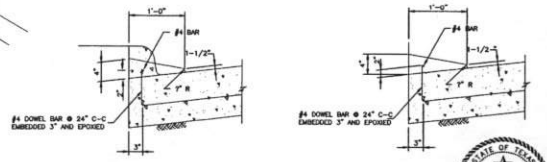
GENERAL NOTES:

1. PROPOSED DRIVEWAY SHALL MATCH EXISTING TOP OF CURB.
2. PROPOSED DRIVEWAY SHALL BE BUILT WITH PORTLAND CEMENT CONCRETE, 4-1/2" SACK MIN. CEMENT PER CUBIC YARD, 6 INCHES THICK, FROM EXISTING PAVEMENT TO RIGHT-OF-WAY LINE WITH A 10-INCH THICKENED EDGE FOR 2 FEET, AND TO BE REINFORCED WITH #3 DEFORMED REINFORCING BARS (MINIMUM ASTM A615 GRADE 40, UNLESS NOTED) SPACED AT 24 INCHES C.C. EACH WAY, WITH 6 INCHES MINIMUM LAP
3. COMPACT 6" OF SUBGRADE TO 95% OF STANDARD PROCTOR DENSITY (+2% OPTIMUM MOISTURE) FOR PROPOSED DRIVEWAY CONNECTION FROM EXISTING PAVEMENT TO RIGHT-OF-WAY LINE.
4. PROPOSED DRIVEWAY TO BE LOCATED ON A CORNER LOT SHALL NOT BE LOCATED WITHIN ANY PORTION OF THE PUBLIC STREET INTERSECTION RADII.
5. THE OUTER DOWEL BARS ARE TO BE LOCATED 3" FROM END OF PROPOSED EDGE OF DRIVEWAY RETURN. EXTEND DOWEL 3" INCHES INTO PROPOSED DRIVEWAY AND BEND REMAINING BAR TO EXTEND AWAY FROM RADIUS RETURN BOTH SIDES.



TRANSITION
SCALE: 1"=1'-0"

1. 6-inch concrete curb to be constructed on all esplanades, islands and non-residential streets. Residential streets may be constructed with either 6-inch concrete curb or 4-inch x 12-inch concrete curb as noted on drawings.
2. All 4-inch x 12-inch concrete curbs to be poured separate from proposed concrete pavement.
3. Transitions from 6-inch concrete curb to 4-inch x 12-inch concrete curb to be accomplished within 10 feet, unless otherwise shown. If this 10-foot transition curb is not poured monolithicly with the pavement, then reinforcing steel as shown above in typical detail 4-inch x 12-inch transition curb is to be installed.



TYPICAL DETAIL
4" x 12" TRANSITION CURB
N.T.S.

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:
A-1212 - BRASS DISK, STAMPED A-1212 1973. SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.
ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.
TBM
TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,440 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.
ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.
NOTES:

RECORD DRAWING
I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS
BY _____ DATE _____
TITLE _____
FORT BEND COUNTY ENGINEERING DEPARTMENT
APPROVED: Mark Vasek DEVELOPMENT COORDINATOR
DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

PAVING CONSTRUCTION DETAILS
(SHEET 2 OF 2)

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
WATER: 9/1/16 STREET & BRIDGE
WASTEWATER: 9-1-16 TRAFFIC
FACILITIES: 9/1/16 STORM WATER QUALITY

FILE NO.
DRAWING SCALE
SCALE: NONE
SHEET NO. 20 OF 28

FOR CITY OF HOUSTON USE ONLY
56578

CLOUSTON AVENUE AND MANDERSTON AVENUE - JOB NO. 1883-1042

20
Date/Time: Thu, 01 Sep 2016 - 12:49pm User Name: jvillas
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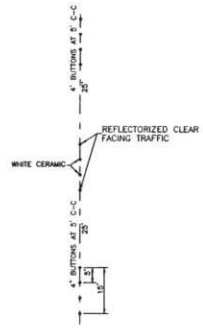
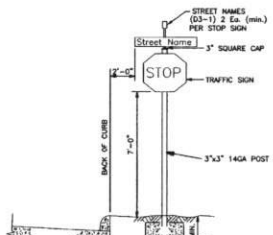


LANE SEPARATION BUTTON DETAIL FOR SAME TRAFFIC DIRECTION

N.T.S.

(WHITE BUTTONS) REQUIRED ON ALL ESPLANADE SECTIONS

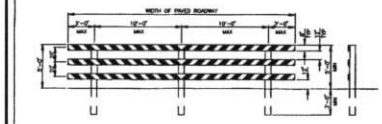


NOTE: INSTALLATION OF STOP SIGN INCLUDES PAINTED 24" STOP BAR (NO EXTRA PAY)

POST, POST CAP, AND REAR FACE OF ALUMINUM SIGNS SHALL BE POWDER COATED BLACK

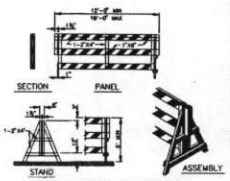
TYPICAL SIGN MOUNT DETAIL

N.T.S



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 STRIPED ON SIDE FACING TRAFFIC



DEMOUNTABLE TYPE III BARRICADE

BARRICADE NOTES

THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND IT'S SUPPLEMENT, SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.

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

BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC. OTHER CHANNELIZING DEVICES SUCH AS DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. IN ALL CASES, THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.

BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL IN A MANNER APPROVED BY THE DEPARTMENT OF TRAFFIC AND TRANSPORATION. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADE RAILS. THE SIZE OF RAILS, SPACING, SLOPE, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.

BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL. ALL SURFACES VISIBLE EXCEPT WHICH ARE NOT STRIPED, SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED.

COMPONENTS MADE OF LUMBER SHALL BE PAINTED WITH A MINIMUM OF TWO COATS OF AN APPROVED BRAND OF WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.

THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (METAL OR PLASTIC) STRIPES FOR HORIZONTAL PANELS AND VERTICAL PANELS SHALL BE COMMERCIAL GRADE, HIGH INTENSITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOIT.

THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.

BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.

DRUMS

DRUMS, SET ON END, AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM STEEL BARRELS OR BLACK POLYETHYLENE PLASTIC DRUM LINERS WEIGHING APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, REFLECTORIZED ORANGE AND REFLECTORIZED WHITE. THE ORANGE STRIPE SHALL BE 6" WIDE. TWO REFLECTORIZED STRIPE SHALL START BEHIND THE TOP OF THE DRUM. THE TOP OF THE DRUM, THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. METAL DRUMS SHALL BE PAINTED BLACK OR ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS ARE PLACED IN THE ROADWAY, APPROPRIATE WARNING LIGHTS SHALL BE USED. DURING HOURS OF DARKNESS, A FLASHING WARNING LIGHT SHOULD BE PLACED ON TOP OF DRUM. ORIGINALLY AS A WARNING DEVICE, STEADY BURN ELECTRIC LIGHTS OR DELINEATORS SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHTED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.

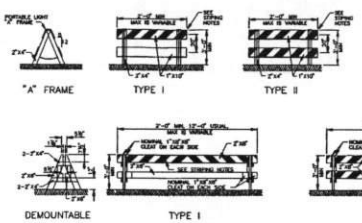
CW-8 CHEVRON SIGNS, CW-5A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.

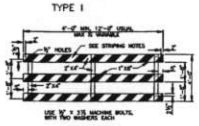
CONES

TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADBASED BASE, AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZED DEVICES SHOULD BE USED WHERE THEY ARE TO BE SEEN FROM ROADWAYS WHERE OVER 40 MPH OPERATING SPEEDS ARE PRESENT. WHERE CONSPICUOUS PLACEMENT IS NEEDED, ORANGE SHALL BE THE PREDOMINANT COLOR OF CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAXIMUM VISIBILITY. THE REFLECTIVE OR LUMINOUS MATERIAL ON THESE DEVICES SHOULD BE DISPOSED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.

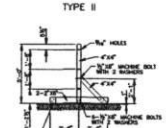
REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO EQUAL-WIDE BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MIN OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 4" BAND PLACED A MAX OF 2" FROM THE TOP.

CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 6 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES. WHEN USED FOR LONGER TERM USAGE, THEY SHOULD BE TIED DOWN TO ENSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.

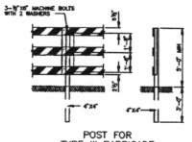




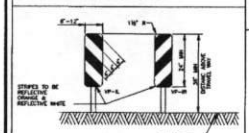
PANEL FOR TYPE III BARRICADE



STAND FOR TYPE III BARRICADE

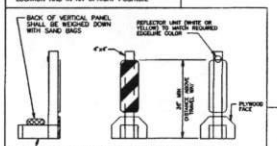


POST FOR TYPE III BARRICADE



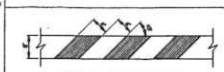
VERTICAL PANELS (VP)

VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT ON NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUCH AREAS AS LANE TRANSITIONS WHERE POSITIVE GUIDANCE AND DELINEATION MAY BE REQUIRED. VERTICAL PANELS SHOULD NORMALLY BE PLACED ON THE RIGHT AT THE EDGE OF CUTS ADJACENT TO TWO-WAY TWO LANE ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED OR DIRECTED BY THE CON DEPT OF TRAFFIC AND TRANSPORTATION



STRIPING FOR BARRICADE

FOR ALL TYPES OF BARRICADES WITH RAILS LESS THAN 8'-0" LONG, STRIPES 4" WIDE SHALL BE USED. DIVERSIFICATION MARKINGS MAY BE SHOWN ONLY ON BACK SIDE OF BARRICADE RAILS.

STRIPING SHOULD COVER THE FULL WIDTH OF THE RAIL. SLOPING OF RAILS, PARALLEL TO SLOPE, 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 DESCENDING WITH BOTH RIGHT AND LEFT TURNS. PROVIDED FOR THE CHEVRON STRIPES MAY BE SLOPED DOWNWARD FROM DIRECTIONS FROM THE CENTER OF THE BARRICADE.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

BARRICADE STANDARD

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER — APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 01580-01

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY. 6 IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND ½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ. TBM:

TBN 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED 3.1 MILES NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND 1.40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

BARRICADE, PERMANENT SIGNAGE AND STRIPING DETAILS

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 900
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

9/1/16	STREET & BRIDGE	
9/1/16	TRAFFIC	
9/1/16	STORM WATER QUALITY	
	FACILITIES	

FILE NO.

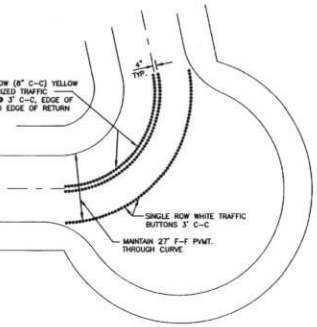
DRAWING SCALE

SCALE: NONE

FOR CITY OF HOUSTON USE ONLY

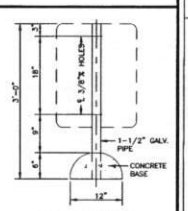
56578

SHEET NO. 21 OF 28



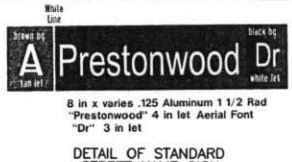
TYPICAL BUTTON DETAIL FOR KNUCKLE CUL-DE-SAC

N.T.S.



SIGN PEDESTAL

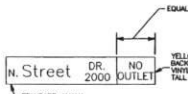
N.T.S.



8 in x varies .125 Aluminum 1 1/2 Rad
"Prestonwood" 4 in let Aerial Font
"Dr" 3 in let

DETAIL OF STANDARD STREET NAME SIGN (INTERNAL STREETS, COLLECTORS, AND THOROUGHFARES)

N.T.S.



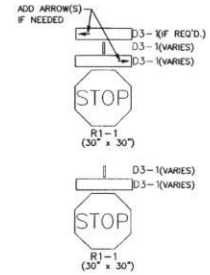
STREET SIGN WITH NO OUTLET DESIGNATION

N.T.S.

NOTE: 1. ALUMINUM SIGNS MUST BE 0.125-INCH BLANKS FLAT BLASTED WITH 1.5" ROUNDED CORNERS

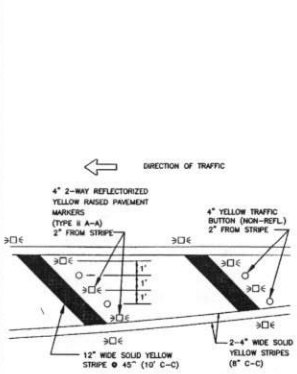
2. STREETS WITHOUT OUTLET MUST HAVE NO OUTLET SIGN POSTED.

NOTE: CONFORM TO COUNTY STANDARD FOR SIGN SHEETING (STOP SIGNS MUST BE DIAMOND GRADE).



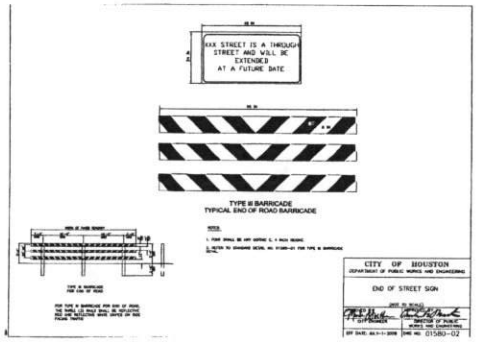
STOP SIGN LOCATION DETAIL

N.T.S



CROSSHATCHING DETAIL

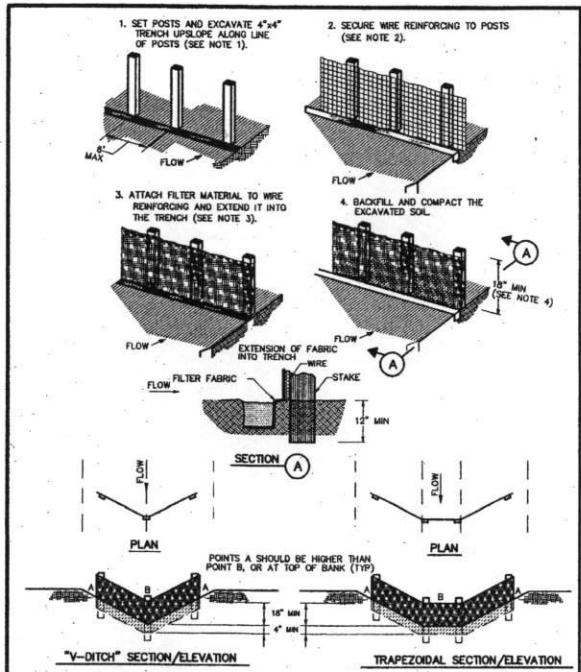
N.T.S.



STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

21

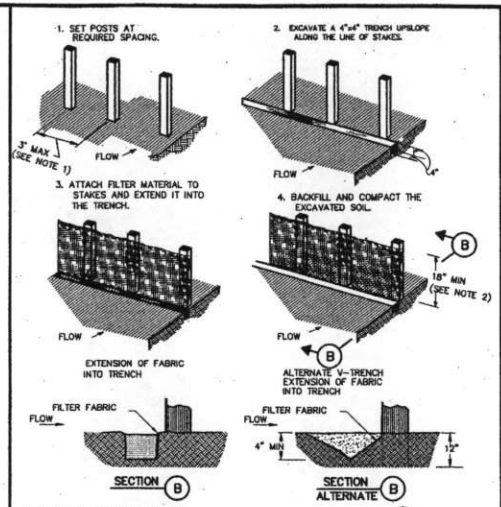


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

X—(RFB)—X
SYMBOL

REINFORCED FILTER FABRIC BARRIER

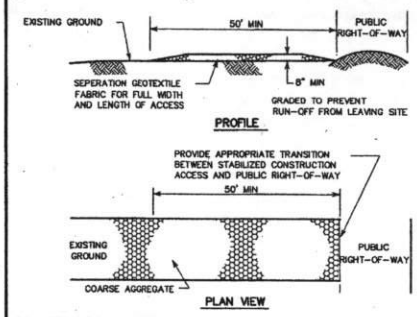


X—(FF)—X
SYMBOL

CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

FILTER FABRIC BARRIER

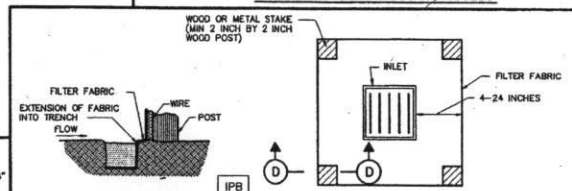


CONSTRUCTION NOTES:

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ACCESS, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
6. COH STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION ACCESS.
7. STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

(SC)
SYMBOL

STABILIZED CONSTRUCTION ACCESS

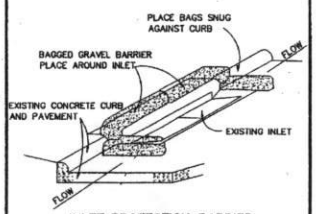


IPB
SYMBOL

SILT FENCE INLET PROTECTION BARRIER

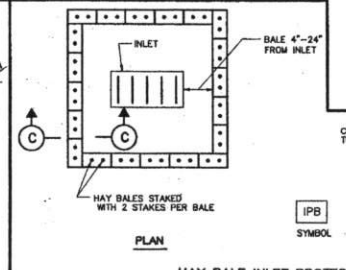
CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.



INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



IPB
SYMBOL

HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED: CITY ENGINEER — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 01571-01

STATE OF TEXAS — JASON M. KELLY — 91021 — LICENSED PROFESSIONAL ENGINEER — 9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL, ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM:

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,480 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: DEVELOPMENT COORDINATOR

DATE: 10/10/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

STORM WATER POLLUTION PREVENTION PLAN DETAILS

LJA Engineering, Inc.
2929 Briarpark Drive, Suite 600, Houston, Texas 77042
Phone 713.953.5200, Fax 713.953.5026, FRN-F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER — 9/1/16 — STREET & BRIDGE
WASTEWATER — 9/1/16 — TRAFFIC
9/1/16 — STORM WATER QUALITY
FACILITIES

FILE NO.

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

SCALE: NONE

56578 CITY DRAWING NO.

SHEET NO. 22 OF 28

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

22

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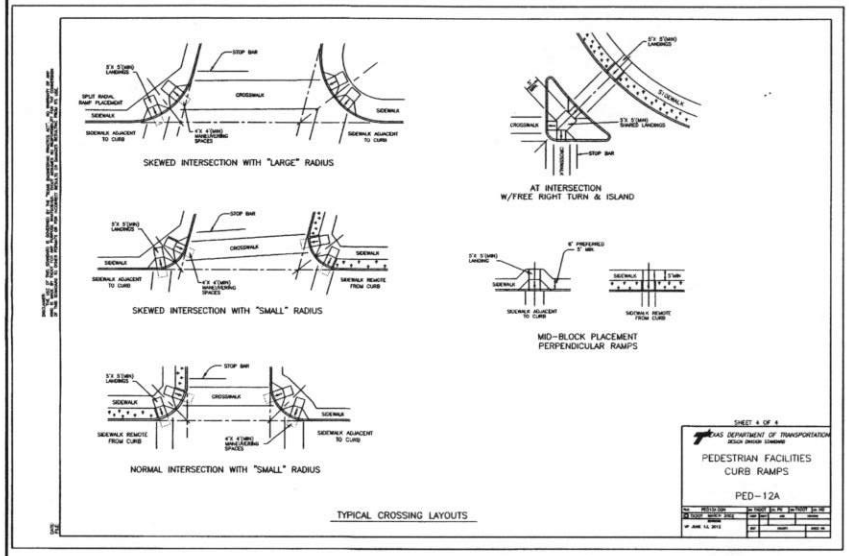
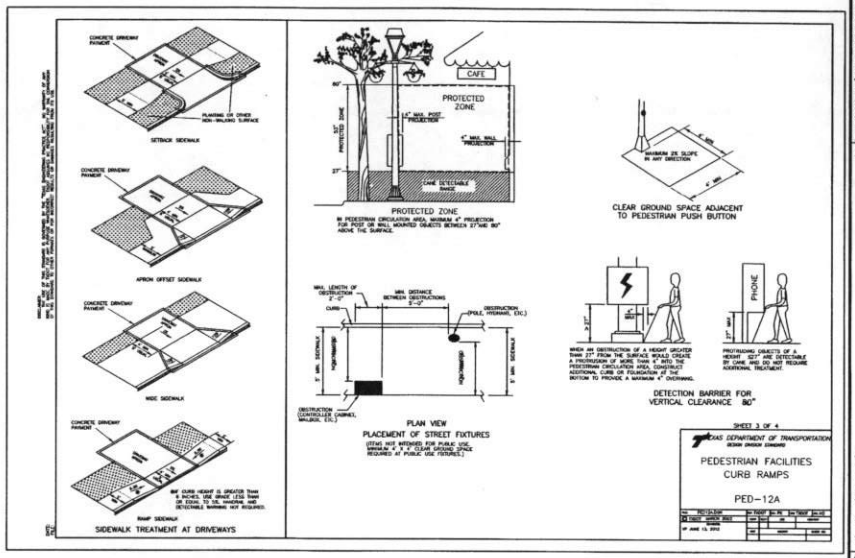
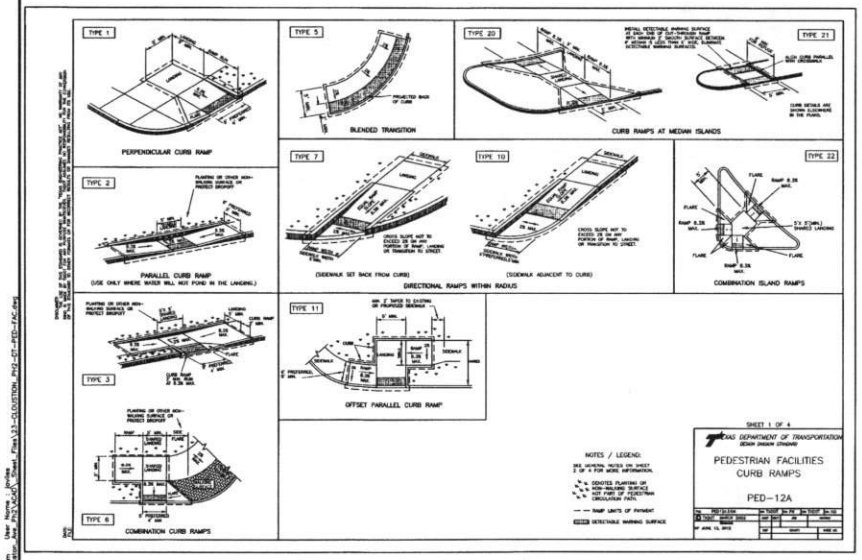
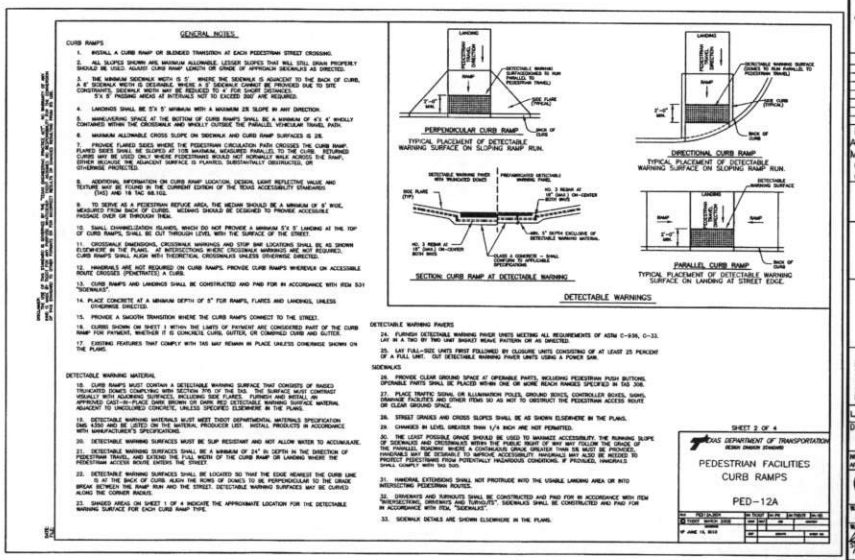








BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212, 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 3.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 15FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,480 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Mary Dost
DEVELOPMENT COORDINATOR

DATE: 10/16/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY I

CLOUSTON AVENUE AND MANDERSTON AVENUE

PEDESTRIAN FACILITIES DETAILS

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 9/1/16 — STREET & BRIDGE
WASTEWATER: 9/1/16 — TRAFFIC
FLOOD: 9/1/16 — STORM WATER QUALITY
FACILITIES

FILE NO.

DRAWING SCALE

SCALE: NONE

FOR CITY OF HOUSTON USE ONLY

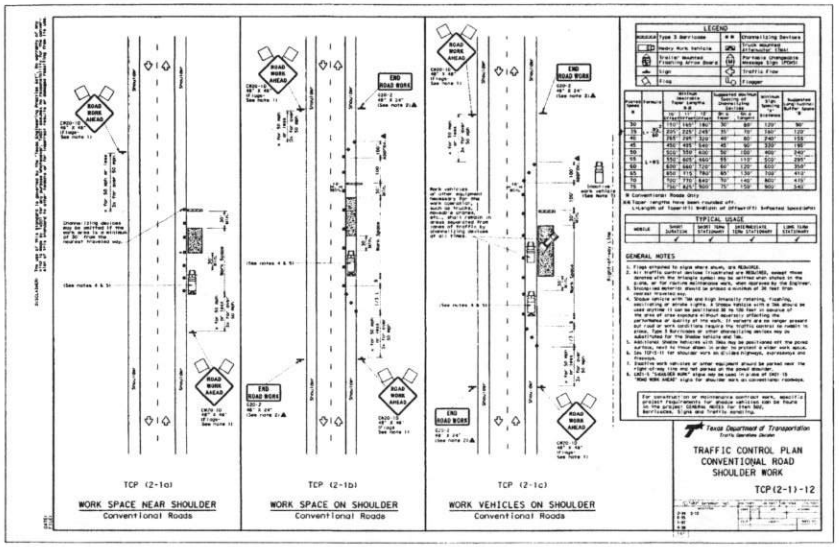
5,6578

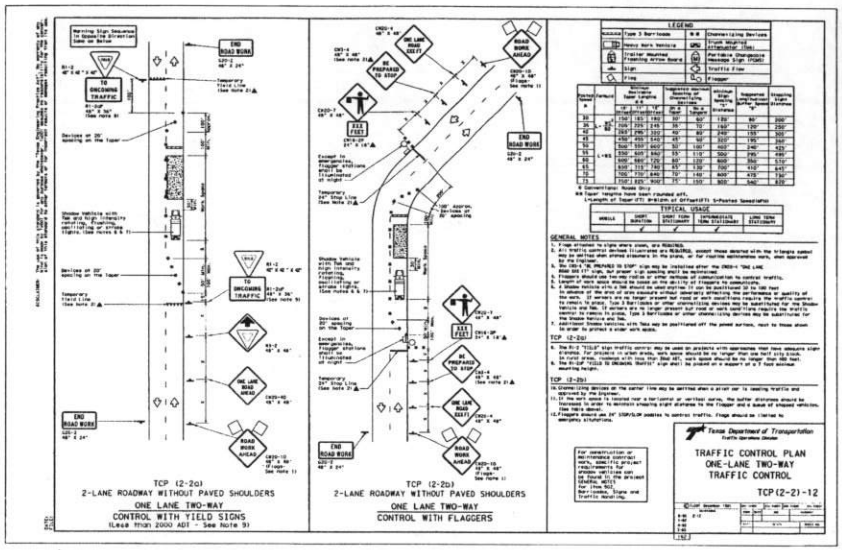
SHEET NO. 23 OF 28

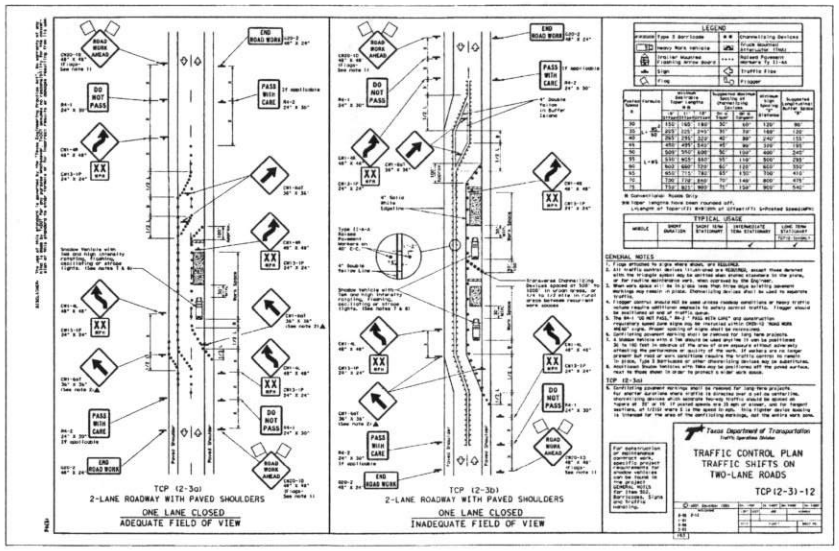
STATE OF TEXAS — JASON M. KELLY — 91021 — LICENSED PROFESSIONAL ENGINEER — 9/1/16

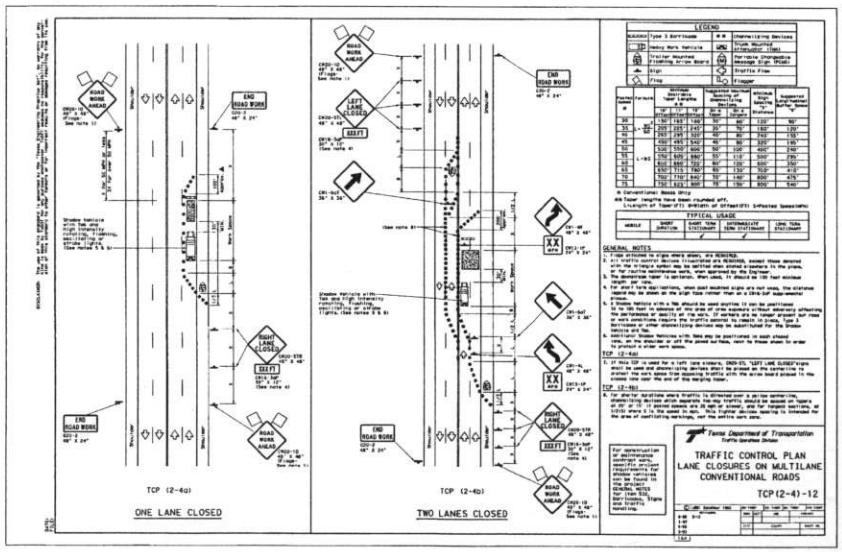
CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

23









STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND ½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM 6–TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: _____
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016–0984
C.O.H. LOG NO. 16–0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

TRAFFIC CONTROL DETAILS
(SHEET 1 OF 2)

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883–1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

MAYOR	9/7/16	STREET & BRIDGE
MAYOR'S ASST.		TRAFFIC
CITY ENGINEER	9/1/16	STORM WATER QUALITY
FACILITIES		

FILE NO.

DRAWING SCALE

SCALE: AS SHOWN

SHEET NO. 24 OF 28

FOR CITY OF HOUSTON USE ONLY

56578

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883–1042

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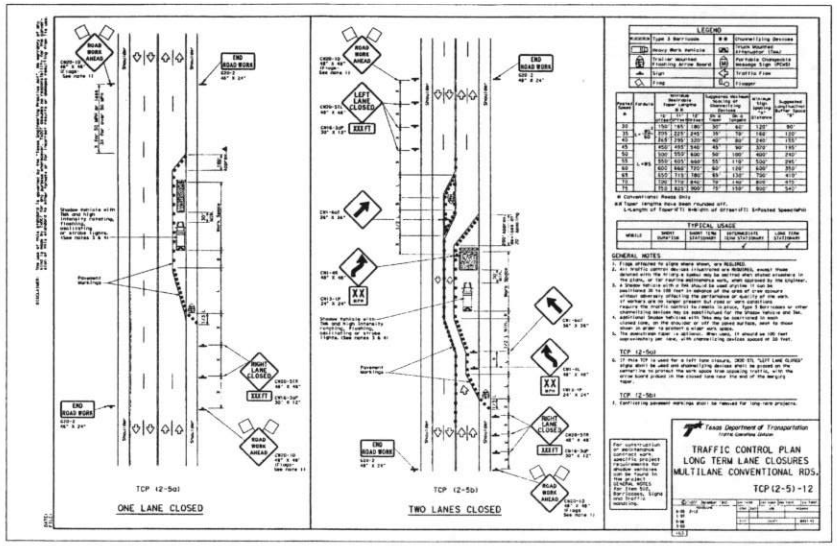

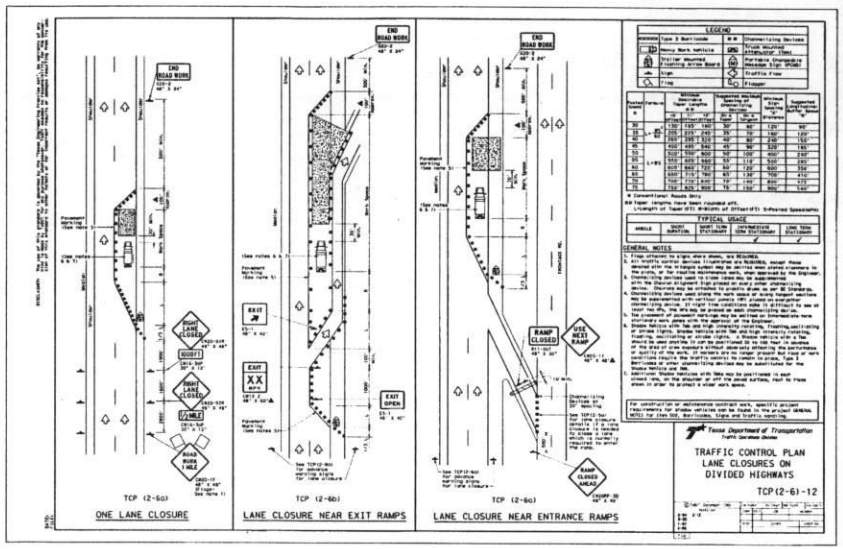

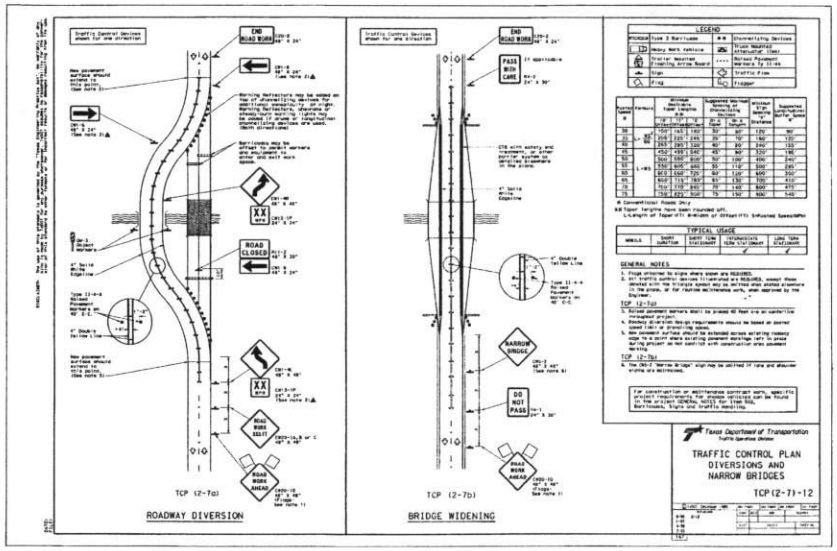

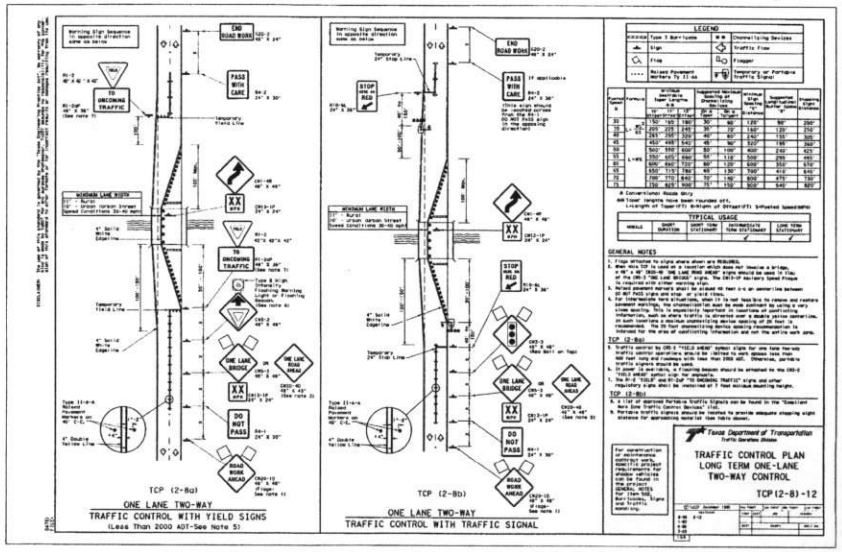

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

FBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. SE POINT IS LOCATED 1,440 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: _____ DEVELOPMENT COORDINATOR

DATE: 10/18/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

TRAFFIC CONTROL DETAILS
(SHEET 2 OF 2)

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

MANAGER:	STREET & BRIDGE
MANAGER:	TRAFFIC
MANAGER:	STORM WATER QUALITY
FACILITIES	

FILE NO.

DRAWING SCALE:

SCALE: AS SHOWN

SHEET NO. 25 OF 28

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS AND ENGINEERING
56578
CITY DRAWING TAKE

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

25

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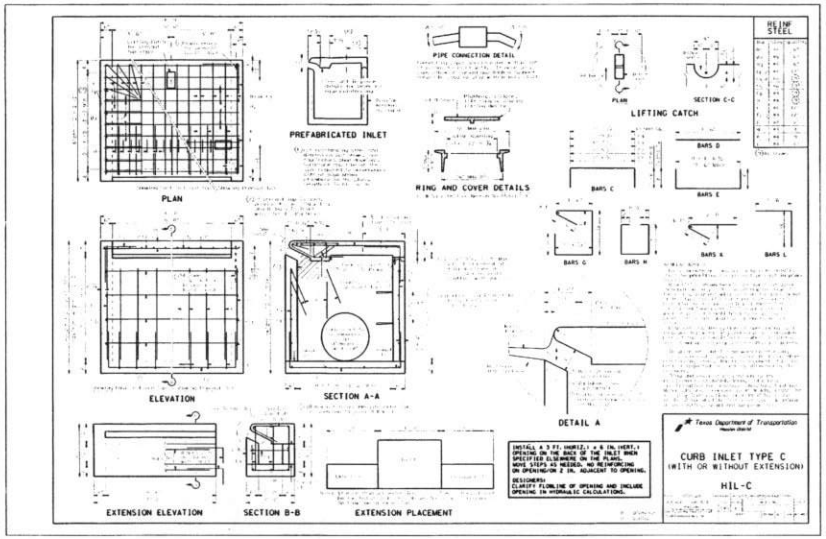

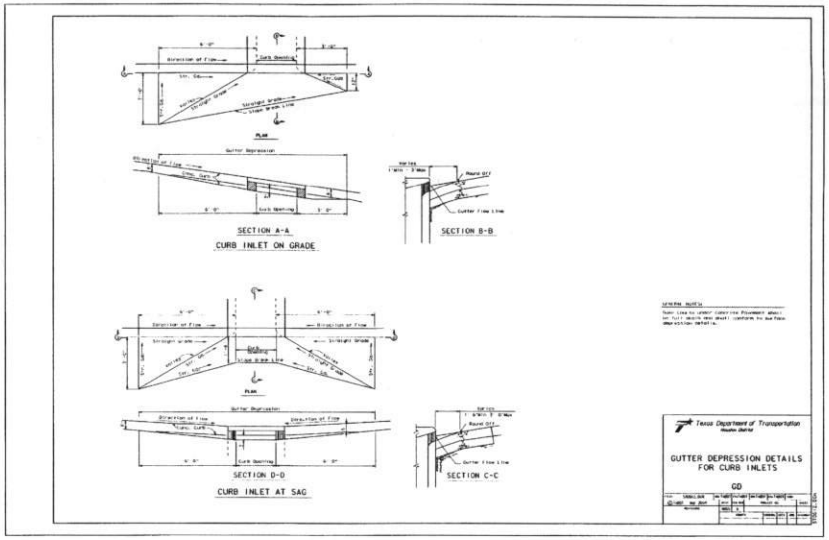

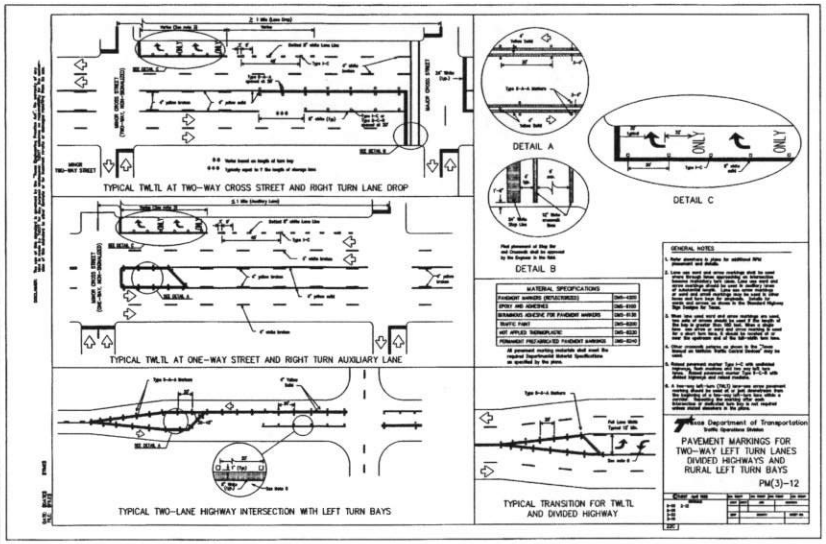

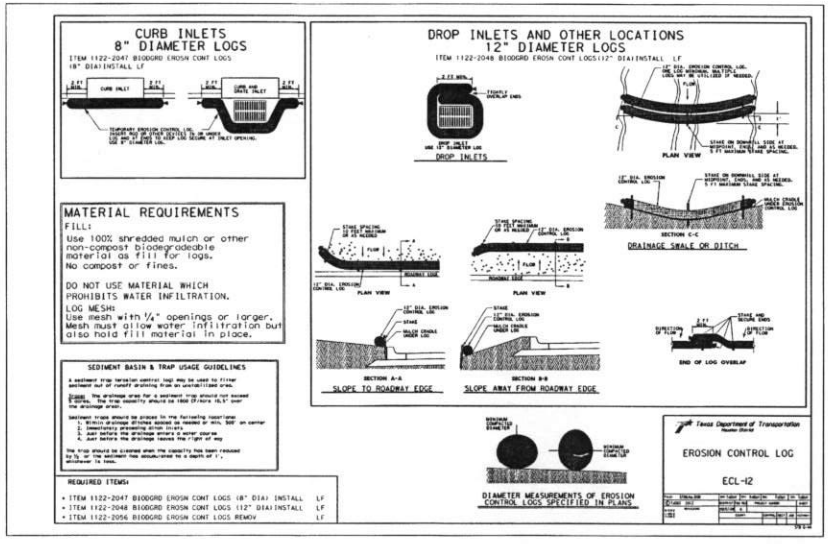

STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212, 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,480 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Mazi Nat
DEVELOPMENT COORDINATOR

DATE: 10/6/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

TXDOT INLET AND EROSION CONTROL DETAILS

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 9/1/16 — STREET & DRAINAGE
WASTEWATER: 9/1/16 — TRAFFIC
9/1/16 — STORM WATER QUALITY
FACILITIES

FILE NO.

DRAWING SCALE

SCALE: AS SHOWN

SHEET NO. 26 OF 28

FOR CITY OF HOUSTON USE ONLY
56578
CITY ENGINEER

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

26

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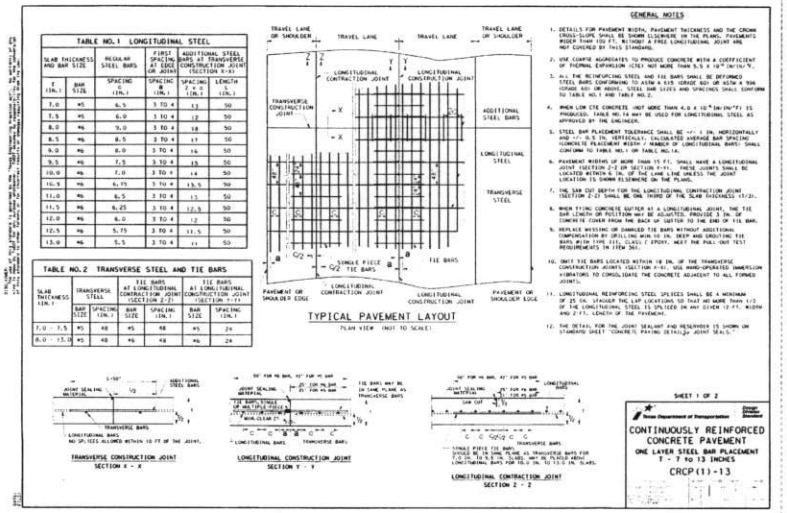
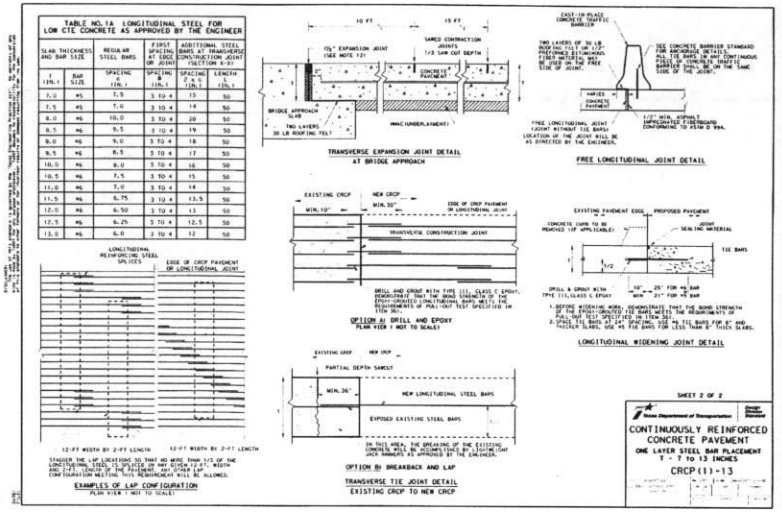
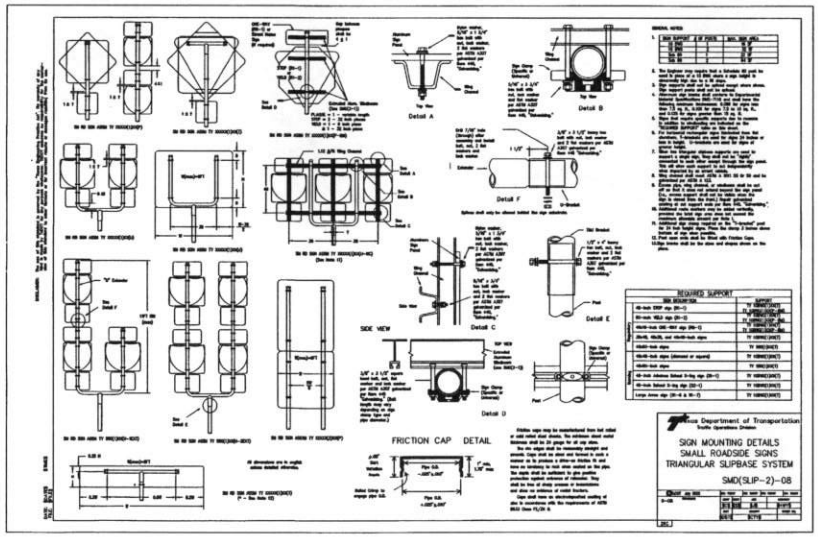
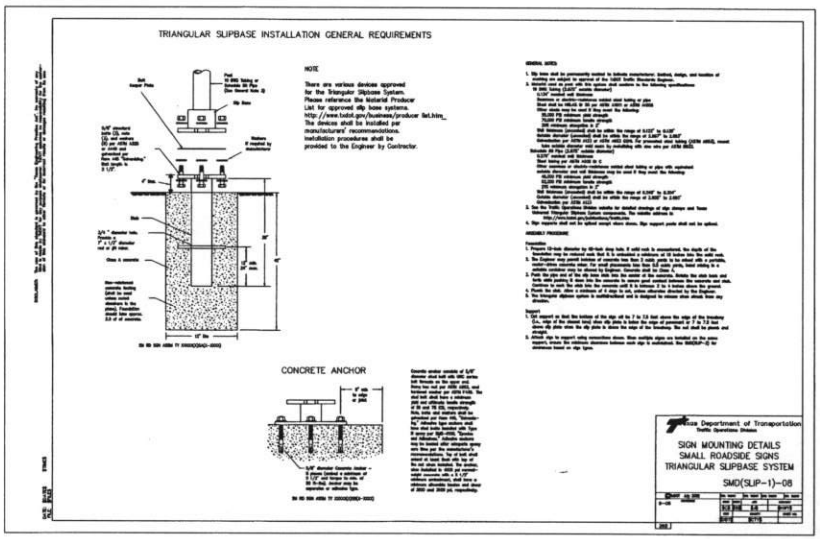








BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A, APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY. 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END, OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

ELEV. = 78.65 FEET (NGVD-29) 1973 ADJ.

TBM 6-TOP OF A CHISELED BOX SET ON THE NORTHERN NOSE OF A MEDIAN AT FM 1464. THE POINT IS LOCATED ± 1,460 FEET NORTH OF THE CENTERLINE OF THE INTERSECTION OF FM 1464 AND W AIRPORT BLVD AND ± 40 FEET EAST OF THE WEST EDGE OF CONCRETE PAVEMENT FOR THE SOUTHBOUND LANE OF FM 1464.

ELEV. = 88.55 FEET (NGVD-29) 1973 ADJ.

NOTES:

RECORD DRAWING

I CERTIFY THAT THIS DRAWING REFLECTS THE IMPROVEMENTS CONSTRUCTED AS TO SIZE, LOCATION AND GRADE AND THAT THE CONSTRUCTION WAS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS.

BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Massiot
DEVELOPMENT COORDINATOR

DATE: 10/10/16

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

TXDOT PAVEMENT AND SIGNAGE DETAILS

LJA Engineering, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER 9/1/16	STREET & BRIDGE
WASTEWATER 9/1/16	TRAFFIC
STORM	STORM WATER QUALITY
FACILITIES Tony Dan 9/1/16	

FILE NO.

DRAWING SCALE

SCALE: AS SHOWN

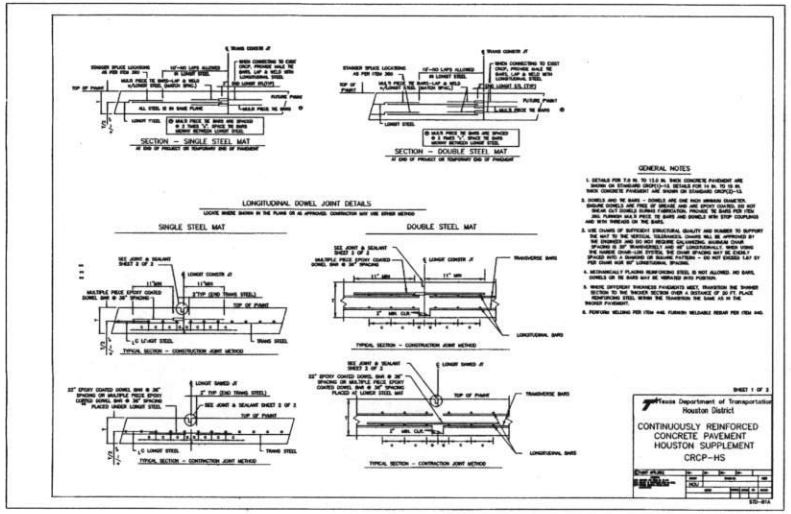
SHEET NO. 27 OF 28

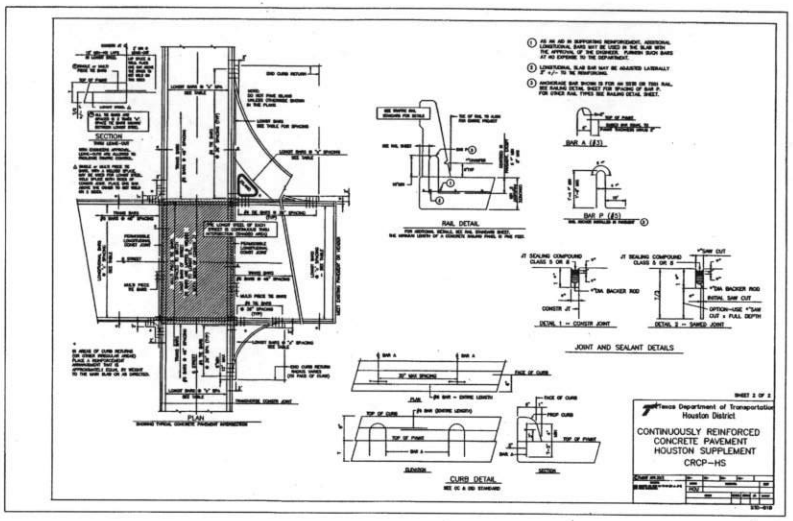
FOR CITY OF HOUSTON USE ONLY

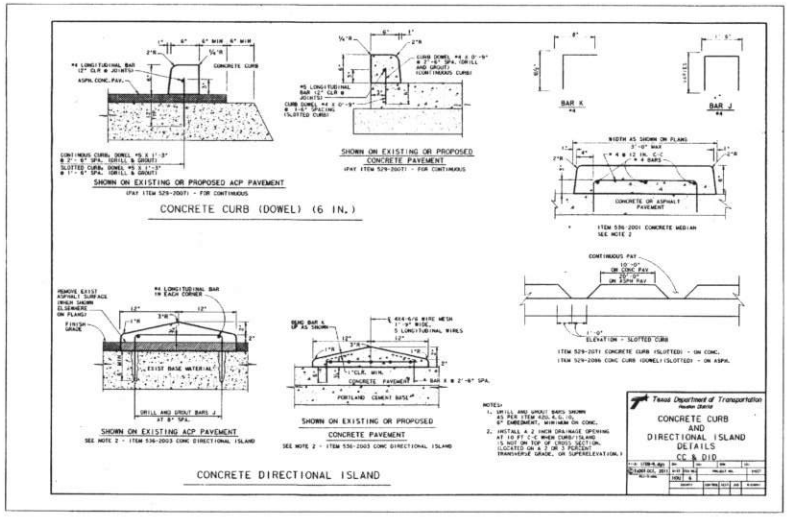
56578

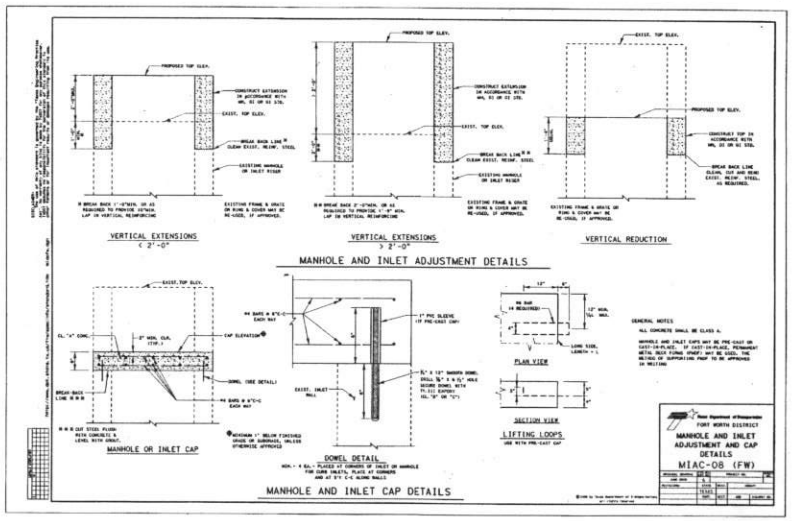
STATE OF TEXAS
JASON M. KELLY
91021
LICENSED PROFESSIONAL ENGINEER
9/1/16

CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042









STATE OF TEXAS
JASON M. KELLY
91021
LICENSED
PROFESSIONAL ENGINEER
9/1/16

BENCHMARK:

A-1212 – BRASS DISK, STAMPED A-1212 1973, SET IN THE TOP OF A CONCRETE HEADWALL ON THE WEST BOUND LANES OF HWY 90A APPROX. 4.1 MILES WEST ALONG HWY 90A FROM THE JUNCTION OF HWY 6, IN SUGARLAND, TEXAS. THE DISK IS SET 2.0 FEET EAST OF THE WEST END OF THE NORTH CONCRETE HEADWALL, AND 27.0 FEET NORTH OF THE CENTERLINE OF THE WESTBOUND LANES, AND 1½FOOT LOWER THAN THE ROAD.

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NOTES:

RECORD DRAWING

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BY _____ DATE _____

TITLE _____

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED: Maggie Dean
DEVELOPMENT COORDINATOR

DATE: 10/6/2016

DATE	REVISION	BY

PLAT NAME:
ALIANA CLOUSTON AVENUE AND MANDERSTON AVENUE STREET DEDICATION
CPC 101 FILE NO. 2016-0984
C.O.H. LOG NO. 16-0715

ALIANA DEVELOPMENT COMPANY

CLOUSTON AVENUE AND MANDERSTON AVENUE

TXDOT PAVEMENT DETAILS

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FRN - F-1386

LJA PROJECT NO.: 1883-1042

DESIGNED BY:	DRAWN BY:	DATE:
AA/OH/JA	JA	SEPT. 2016

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER: 9/1/16 — STREET & DRAINAGE
WASTEWATER: 9/1/16 — TRAFFIC
STORM: Reg Dm 9/1/16 — STORM WATER QUALITY
FACILITIES

FILE NO.

DRAWING SCALE

SCALE: AS SHOWN

SHEET NO. 28 OF 28

FOR CITY OF HOUSTON USE ONLY

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CLOUSTON AVENUE AND MANDERSTON AVENUE – JOB NO. 1883-1042

28

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