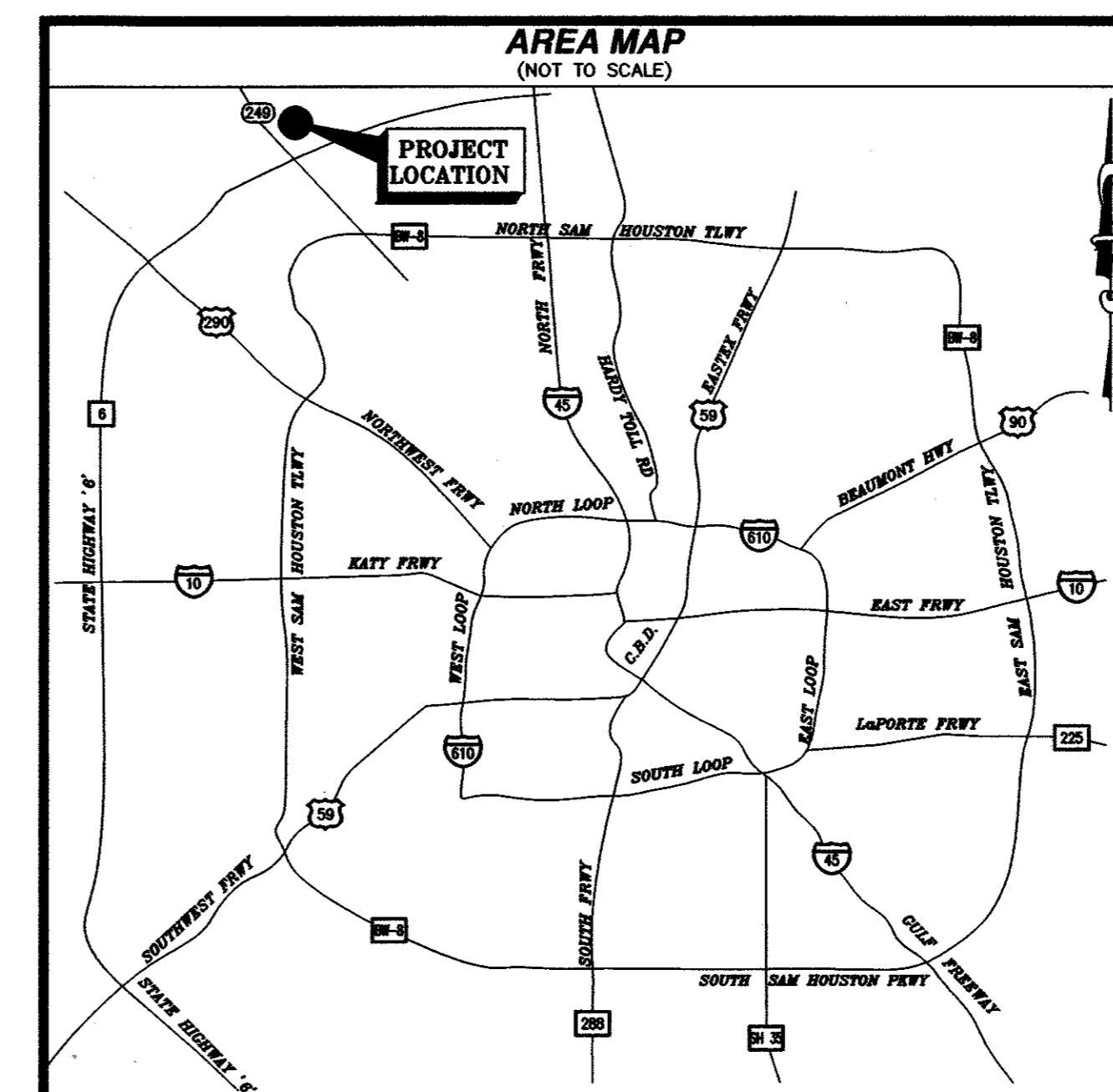
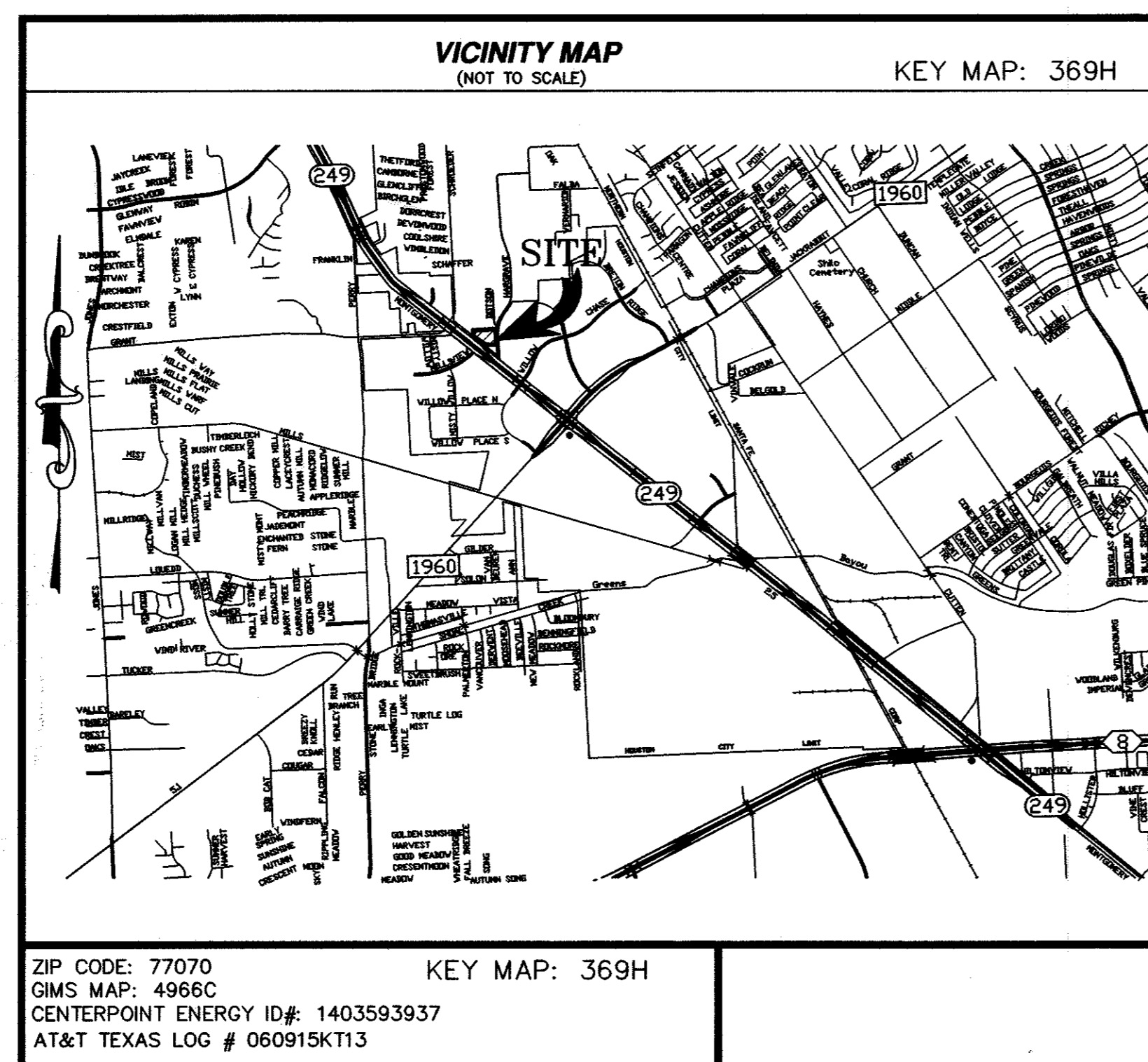


CONSTRUCTION PLANS TO SERVICE HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 191 FOR PROP. 8" WATER LINE AND 8" SANITARY SEWER ALONG HARGRAVE ROAD & S.H. 249 HOUSTON, TEXAS 77070 JANUARY 2016



ACCORDING TO MAP NO. 48201C0435M OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAPS FOR HARRIS COUNTY AND INCORPORATED AREAS, DATED OCTOBER 16, 2013, THE SUBJECT TRACT IS SITUATED WITHIN: ZONE X-UNSHADED

INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	CONSTRUCTION NOTES
3	HARRIS COUNTY EXPRESS REVIEW SHEET
4	OVERALL WATER & SANITARY LAYOUT
5	STORMWATER POLLUTION PREVENTION PLAN
6	PLAN & PROFILE: HARGRAVE ROAD-BASELINE #1: 0+00 TO END
7	PLAN & PROFILE: HARGRAVE ROAD-BASELINE #2 & BASELINE #3: 0+00 TO END
8	PLAN & PROFILE: S.H. 249-BASELINE #4: 0+00 TO END
9	WATERLINE CONSTRUCTION DETAILS
10	SANITARY SEWER CONSTRUCTION DETAILS
11	STORMWATER POLLUTION PREVENTION DETAILS

ONE CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!
CALL AT LEAST 2 WORKING DAYS (48 HOURS) BEFORE YOU DIG:
TEXAS811 (DIG TESS) (1-800-344-8377)
OR
LONE STAR NOTIFICATION CENTER (1-800-669-8344)

48 HOURS NOTICE PRIOR TO START OF CONSTRUCTION.
CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OCE 48 HOURS BEFORE STARTING WORK ON THIS PROJECT.
TEL NO: 832-394-9096

48 HOUR NOTICE:
CONTRACTOR SHALL NOTIFY HARRIS COUNTY PRIOR TO COMMENCING CONSTRUCTION AND/OR BACK-FILLING ANY UTILITIES.
CONTRACTOR(S) TO CONTACT MARC BARBE WITH PUBLIC REVIEW DEPARTMENT @ (713-274-3823) OR (MARC.BARBE@HCPID.ORG).

Chad Walker
HARRIS COUNTY MUD NO. 191 ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

6/13/16
DATE

C.O.H. LOG#: 15-1136
ILMS#: 15089701

01/19/16

HEIGHTS ENGINEERING LLC
CONSULTING ENGINEERS
7324 SOUTHWEST FWY SUITE 995 HOUSTON, TX 77074
PHONE: (713) 333-0393 FAX: (281) 274-9153
www.HEIGHTSENGINEERING.com
TEXAS FIRM F-12333

PROP. 8" WATER LINE & 8" SANITARY SEWER
ALONG HARGRAVE ROAD & S.H. 249
TO SERVICE HARRIS COUNTY MUD #191
HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190100

SURVEYED BY: FB NO.:
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	
CITY ENGINEER	FOR CITY OF HOUSTON USE ONLY CITY DWG NO. _____ ACCEPTED AND FILED

55439
CITY DRAWING NUMBER

DIRECTOR OF PUBLIC WORKS & ENGINEERING

SHEET NO: 1 OF 11

1. PAVING
I. DESIGN THICKNESS OF PAVING
II. STABILIZED SUBGRADE TO A DEPTH OF
III. DESIGN STRENGTH OF CONCRETE
IV. TYPE AND PLACEMENT OF STEEL
DRIVEWAYS N.A.
I. NUMBER OF DRIVEWAY APPROACHES PROPOSED
II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET
FIRE APPARATUS ACCESS ROAD
CURBING
TRAFFIC CONSIDERATIONS
I. MEDIAN CUTS
II. LEFT / RIGHT TURN LANE
III. TRAFFIC CONTROL PLAN
IV. TRAFFIC SIGNAL
V. TRAFFIC IMPACT ANALYSIS

2. RESIDENTIAL / SUBDIVISION DRAINAGE
I. DRAINAGE SYSTEM TYPE N.A.
II. DESIGN METHOD USED
III. DRAINAGE SYSTEM OUTFALL
IV. STORM SEWER OUTFALL
V. DRAINAGE SYSTEM FLOW RATE

3. COMMERCIAL / OTHER SITE DRAINAGE
I. PROPOSED DRAINAGE AREA
II. DETENTION VOLUME
III. OUTFALL
IV. PUMPED DETENTION FACILITIES
V. FLOW RESTRICTOR SIZE

4. WATER AND WASTEWATER
I. TYPE OF SERVICE PROPOSED
II. PROOF OF CAPACITY
III. AMOUNT OF FLOW
IV. H.C. ACCOUNT NOS. (ALL)

5. DESCRIPTION OF PROPERTY
I. LEGAL DESCRIPTION
II. PLATTING
III. JURISDICTIONS

6. STORM WATER QUALITY
I. CONSTRUCTION PROTECTIVE MEASURES
II. APPLICABILITY FOR PERMANENT FEATURES
III. PERMANENT STORM WATER QUALITY FEATURES

7. FLOOD PLAIN DISTRICT CRITERIA
I. DETENTION SUMMARY
II. HCFCD STANDARD NOTES
III. HCFCD STANDARD DETAILS
IV. REFER TO PLAN SHEETS

8. FLOOD PLAIN STATUS
I. GENERAL INFORMATION
II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
III. FLOODPLAIN STORAGE SUMMARY

9. WORK IN HCFCD RIGHT-OF-WAY
I. TYPE OF WORK TO BE PERFORMED IN CHANNEL
II. PERMIT
III. REFERENCE / BASIS OF DETERMINATION

10. PERMITS REQUIRED
I. STORM WATER QUALITY
II. PHASE II PERMIT CLASS I
III. NOTICE OF DETENTION REQUIRED
IV. BUILDING PERMITS

11. CURB RAMPS / SIDEWALK
I. CURB RAMPS PROPOSED
II. SIDEWALKS PROPOSED

12. LANDSCAPING
I. REQUIRED AND SHOWN ON SHEET(S)
II. NOT REQUIRED
HARRIS COUNTY FLOOD CONTROL DISTRICT
HCPID SIGNATURE BLOCK
WATER & SANITARY EXTENSION TO SERVE HC MUD 191
ENGINEER'S CERTIFICATION
REVISIONS

NOTES:
I. COMPLETE FOR ALL PROJECTS
II. COMPLETE ONLY IF PROJECT IS ADJACENT TO 100-YEAR FLOOD PLAIN
III. FOR PROJECTS LOCATED IN ANY FLOODPLAIN

HARRIS COUNTY ENGINEERING DEPARTMENT EXPRESS REVIEW SHEET
VERSION April 01, 2015

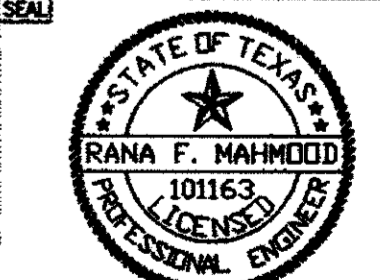
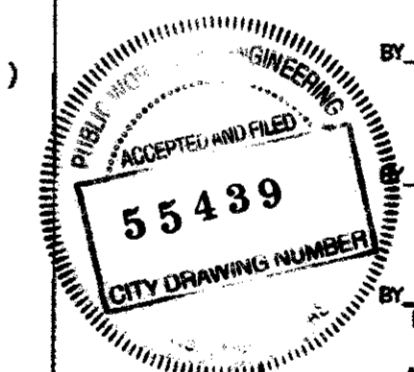


Table with columns: DATE, SHEET NO., DESCRIPTION, P.E. INITIAL, H.C. APPROVED DATE. Includes project number 2046353 and sheet number C3 of 11.

FLOOD PLAIN DATA
 ALL OF THIS PROPERTY LIES WITHIN ZONE "X-UNSHADED" FLOODPLAIN PER THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 48201C043-M, WHICH BEARS AN EFFECTIVE DATE OCTOBER 16, 2013. ZONE "X-UNSHADED" DENOTES AREA OUTSIDE THE 500 YEAR FLOODPLAIN.

BENCHMARK
 RM 150770: FLOODPLAIN REFERENCE MARK NUMBER 150770 IS AN HGCS2 STAINLESS STEEL ROD STAMPED HGCS2 11 1986 AT INTERSECTION OF FM 1860 AND BRETON RIDGE STREET LOCATED IN THE GROUND, NORTH OF INTERSECTION, WEST OF JARED JEWELER PARKING LOT IN KEYMAP 370E IN THE GREENS WATERSHED NEAR STREAM P150-00-00 ELEVATION = 120.92' (NAVD 1988, 2001 ADJUSTED)

NOTE:
 SQUARE CHISELED ON TOP OF INLET AT THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF S.H. 249 AS INDICATED. ELEVATION = 122.36

CONTRACTOR SHALL CONFIRM NO CONFLICTS BETWEEN EXISTING AND PROPOSED DRY/WET UTILITIES IN PUBLIC R.O.W. BEFORE STARTING SITE WORK CONSTRUCTION.

HYDROMULCH NOTE:
 CONTRACTOR SHALL HYDROMULCH ALL NEWLY GRADED AREAS AND EXPOSED SOILS UPON UTILITY INSTALLATION COMPLETION.

LINE	DISTANCE	BEARING
L1	1.84'	S 03°19'57" E
L2	114.08'	N 03°05'41" W

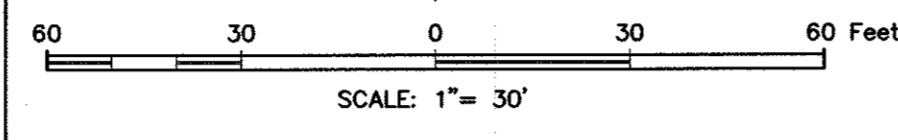
RULES AND REGULATIONS RELATING TO PERMITS, PLUMBING AND MAKING CONNECTIONS TO WATER AND SEWER FACILITIES OF HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 191

Permit Required. A permit issued by the District is required for: (1) making a new connection to the District's water or sanitary sewer system; or (2) altering the facilities (or their uses) served by an existing connection or making another change affecting the load on the water or sanitary sewer system of the District (e.g., changing fixtures or space served, changing the use of fixtures or space, changing type of occupancy, etc.).

Permit Conditions. Permit conditions include:
 A. ONLY THE DISTRICT OR ITS OPERATOR OR A PERSON AUTHORIZED BY THE OPERATOR MAY DISTURB, TAP, ALTER OR CONNECT TO THE DISTRICT'S FACILITIES.
 B. CONNECTION MAY NOT BE MADE, AND SERVICE MAY NOT BE PROVIDED OR CONTINUED, UNLESS: (1) THE ENTIRE PERMITTED PARCEL HAS BEEN DULY PLANNED AND RECORDED AS REQUIRED BY CITY OF HOUSTON SUBDIVISION REGULATIONS; (2) PLANS AND SPECIFICATIONS FOR ALL BUILDINGS AND OTHER IMPROVEMENTS AND ALL WATER AND SANITARY SEWER FACILITIES (ON-SITE AND OFF-SITE) HAVE BEEN SUBMITTED TO, AND HAVE RECEIVED WRITTEN APPROVAL FROM, THE DISTRICT'S ENGINEER (AND SUCH FACILITIES AND FIXTURES MUST INCLUDE METERS AND PROTECTIVE EQUIPMENT AS MAY BE PRESCRIBED BY THE ENGINEER, E.G., METERS, VALVES, VALVES, BACKFLOW PREVENTERS, FLOW DETECTORS, GRI CHAMBERS, GRASS TRAPS, SAMPLING WELLS, ETC.); (3) EACH POINT OF CONNECTION TO DISTRICT FACILITIES HAS BEEN DESIGNATED BY THE DISTRICT'S ENGINEER; (4) ALL FACILITIES AND FIXTURES ON THE DISTRICT'S SIDE OF A DESIGNATED POINT OF CONNECTION HAVE BEEN COMPLETED AT PERMITSSEE'S SOLE EXPENSE (IF ANY CONSTRUCTION OR ALTERATION IS NECESSARY), INSPECTED BY THE DISTRICT OPERATOR, APPROVED BY THE DISTRICT OPERATOR AND ENGINEER, CONVEYED TO THE DISTRICT BY INSTRUMENT APPROVED BY THE ATTORNEY FOR THE DISTRICT, ACCEPTED BY THE DISTRICT'S BOARD AND PLACED IN SERVICE; (5) ALL WATER AND SEWER FACILITIES AND FIXTURES LOCATED ON THE CUSTOMER SIDE OF A DESIGNATED POINT OF CONNECTION—including any water facilities, gravity sewer facilities, sewer pumping facilities and sewer force mains—HAVE BEEN COMPLETED (AT PERMITSSEE'S SOLE EXPENSE) INSPECTED BY THE DISTRICT OPERATOR AND PASSED (IT BEING UNDERSTOOD THAT OWNERSHIP OF SUCH FACILITIES AND FIXTURES—AND RESPONSIBILITY FOR THEIR OPERATION, MAINTENANCE, REPLACEMENT AND REPAIR—WILL REMAIN WITH PERMITSSEE OR THE CUSTOMER AND NOT BE TRANSFERRED TO THE DISTRICT); (6) ALL ON-SITE WATER, SANITARY SEWER AND DRAINAGE FACILITIES AND FIXTURES, INCLUDING PLUMBING OF ALL BUILDINGS TO BE SERVED, HAVE BEEN COMPLETED, INSPECTED BY THE DISTRICT'S OPERATOR AND PASSED; HOWEVER, IF ONLY SOME OF THE FACILITIES, FIXTURES AND PLUMBING HAVE BEEN COMPLETED, THE REMAINDER MAY NOT BE SERVED UNDER THIS PERMIT UNLESS THEY ARE COMPLETED, INSPECTED AND PASSED BEFORE THE END OF THE PERMIT PERIOD; (7) ACTUAL CAPACITY NEEDED TO SERVE THE PERMITTED USE (AND ALL BUILDINGS, IMPROVEMENTS AND FIXTURES ON THE PERMITTED PARCEL) MUST BE LESS THAN OR EQUAL TO THE PERMITTED CAPACITY, IN THE OPINION OF THE DISTRICT'S ENGINEER; (8) ALL TAP FEES, PERMIT FEES, PLAN REVIEW FEES, INSPECTION FEES AND OTHER FEES AND DEPOSITS HAVE BEEN PAID, FOR THE ENTIRE PERMITTED PARCEL AND THE ENTIRE PERMITTED USE; (9) SERVICE AGREEMENTS COVERING THE ENTIRE PERMITTED PARCEL HAVE BEEN DULY SIGNED AS REQUIRED BY THE DISTRICT'S REGULATIONS; (10) IF REQUIRED BY THE DISTRICT OPERATOR, A SERVICE AGREEMENT OR NOTICE REGARDING OPERATION, MAINTENANCE, REPLACEMENT AND REPAIR RESPONSIBILITIES HAS BEEN SIGNED AND ACKNOWLEDGED BY THE PROPERTY OWNER AND RECORDED IN THE REAL PROPERTY RECORDS; AND (11) ALL OTHER APPLICABLE REGULATIONS HAVE BEEN COMPLIED WITH.

C. ALL PERMIT CONDITIONS—including the requirements to submit plans, arrange inspections and obtain approvals—MAY BE REVOKED IF THE PERMITTED USE (AND ALL BUILDINGS, IMPROVEMENTS AND FIXTURES ON THE PERMITTED PARCEL) IS ADDED OR CHANGED, OR IF ADDITIONAL BUILDING SPACE IS FINISHED OR BUILT-OUT, OR IF THE TYPE OF OCCUPANCY CHANGES. SUCH CONDITIONS MUST BE FILLED BEFORE FACILITIES ARE ADDED OR CHANGED AND BEFORE ANY CHANGE IN OCCUPANCY. A NEW PERMIT MAY ALSO BE REQUIRED.

D. OTHER: (1) a permit is only a conditional permission to proceed; (2) all work and connections must comply with the approved plans and all applicable laws, rules and regulations, including the District's rate order and other regulations; (3) permits can be revoked or suspended; they do not confer any property right or vested right of any kind.



RESTRICTED RESERVE 'A'
 DOTSON PARK SEC. 2
 FILM CODE NUMBER 594240
 M.R.H.C.

STEEL CASING NOTE:
 STEEL CASING SHALL BE AT LEAST TWO NOMINAL SIZES LARGER THAN THE CARRIER PIPE PER CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING DESIGN MANUAL SECTION 7.03.J.

HAMMETT INVESTMENTS, L.P.
 RESIDUE OF 7.1784 ACRES
 H.C.C.F. NO. U944551

LEGEND:

A = ASPHALT
 AC = AIR CONDITIONER
 AP = AT&T PULL HOLE
 B = BOLLARD
 BH = BORE HOLE
 C/CONC = CONCRETE
 CTB = CONTROL BOX
 CLD = CENTERLINE OF DITCH
 CLRD = CENTERLINE OF ROAD
 CLM = COLUMN
 CLVT = CULVERT
 CD = CLEAN OUT
 D = DRAIN
 DG = DOWN GUY
 DR.H.C. = DEED RECORDS HARRIS COUNTY, TEXAS
 EA = EDGE OF ASPHALT
 EM = ELECTRIC METER
 EJB = ELECTRIC JUNCTION BOX
 FF = FINISHED FLOOR
 FDC = FIBER OPTIC CABLE
 FDCM = FIBER OPTIC CABLE MARKER
 GP = GATE POST
 GL = GROUND LIGHT
 GM = GAS METER
 GT = GREASE TRAP
 GPM = GAS PAINT MARKER
 GV = GAS VALVE
 HB = HIGH BANK
 H.C.C.F. = HARRIS COUNTY CLERK'S FILE
 HB = HALL BOX
 M.R.H.C. = MAP RECORDS HARRIS COUNTY, TEXAS
 NG = NATURAL GROUND
 NI = NUMBER
 DPW = ORANGE PAINT MARKER
 DVH = DVERHANG
 PP = POWER POLE
 RPF = RED PINTFLAG
 RPM = RED PAINT MARKER
 SL = SEPTIC LTD
 SM = SIGN
 SMH = STORM MANHOLE
 TBM = TEMPORARY BENCHMARK
 TC = TIE OF CURB
 TP = TELEPHONE PEDESTAL
 TPD = T-POST
 UP = UTILITY POLE
 WT = WATER TANK
 WV = WATER WELL
 VP = WOOD POST
 VPS = YELLOW PAINT STRIPE
 -DPW = DRANGE PAINT MARKER (COMMUNICATION)
 -DPF = DRANGE PINTFLAG (COMMUNICATION)
 -YPM = YELLOW PAINT MARKER (GAS/CENTERPOINT)
 -YPF = YELLOW PINTFLAG (GAS/CENTERPOINT)
 -RPF = RED PINTFLAG (ELECTRIC/CENTERPOINT)
 -RPM = RED PAINT MARKER (ELECTRIC/CENTERPOINT)

LEGEND

PROPERTY LINE
 STORM SEWER
 WASTEWATER
 WATER LINE
 NOT IN CONTRACT
 FIRE HYDRANT (FH)
 GATE VALVE
 WASTEWATER MANHOLE
 STORM SEWER MANHOLE
 CLEAN-OUT
 INLINE CLEAN OUT
 PROPOSED WATER METER

N.I.C.
 NOT IN CONTRACT
 FIRE HYDRANT (FH)
 GATE VALVE
 WASTEWATER MANHOLE
 STORM SEWER MANHOLE
 CLEAN-OUT
 INLINE CLEAN OUT
 PROPOSED WATER METER

EXIST.=FILLED
 PROP.=OPEN
 C.O.
 C.O.

WARNING
 OVERHEAD AND UNDERGROUND UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT. LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE AND OTHER UTILITIES MAY EXIST IN THE VICINITY OF THE PROJECT WHICH ARE NOT SHOWN ON THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE EXACTLY ALL EXISTING UTILITIES IN THE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. IF ANY DISCREPANCY EXISTS, NOTIFY ENGINEER.

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG
 48 HOURS NOTICE BEFORE YOU DIG,
 DRILL OR BLAST - STOP CALL
 TEXAS811 (DIG TESS) (1-800-344-8377)
 OR
 LONE STAR NOTIFICATION CENTER (1-800-669-8344)

NO.	REVISIONS	DATE

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT 713-207-2222

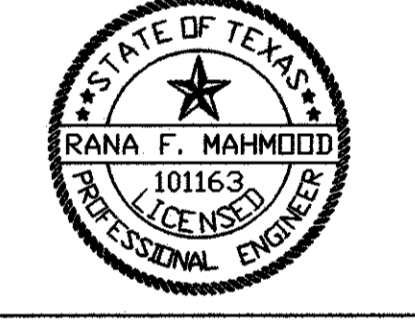
NOTICE:
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

PRIVATE UTILITY LINES SHOWN

AT&T Date: 1-27-16
 AT&T TEXAS/SWBT FACILITIES
 Approved for AT&T/SBC underground conduit facilities ONLY
 SIGNATURE VALID FOR ONE YEAR.

Thomson Date: 1/27/16
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.
 (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN ONP NATURAL GAS LINES CORRECTLY.) NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS

Thomson Date: 1/21/16
 CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.



HEIGHTS ENGINEERING LLC
 CONSULTING ENGINEERS
 7324 SOUTHWEST FWY SUITE 995 HOUSTON, TX 77074
 PHONE: (713) 333-0393 FAX: (281) 274-9153
 WWW.HEIGHTSENGINEERING.COM
 TEXAS REG. F-12333

PROP. 8" WATER LINE & 8" SANITARY SEWER
 ALONG HARGRAVE ROAD & S.H. 249
 TO SERVICE HARRIS COUNTY MUD #191
 OVERALL UTILITIES PLAN
 HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190400
 NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

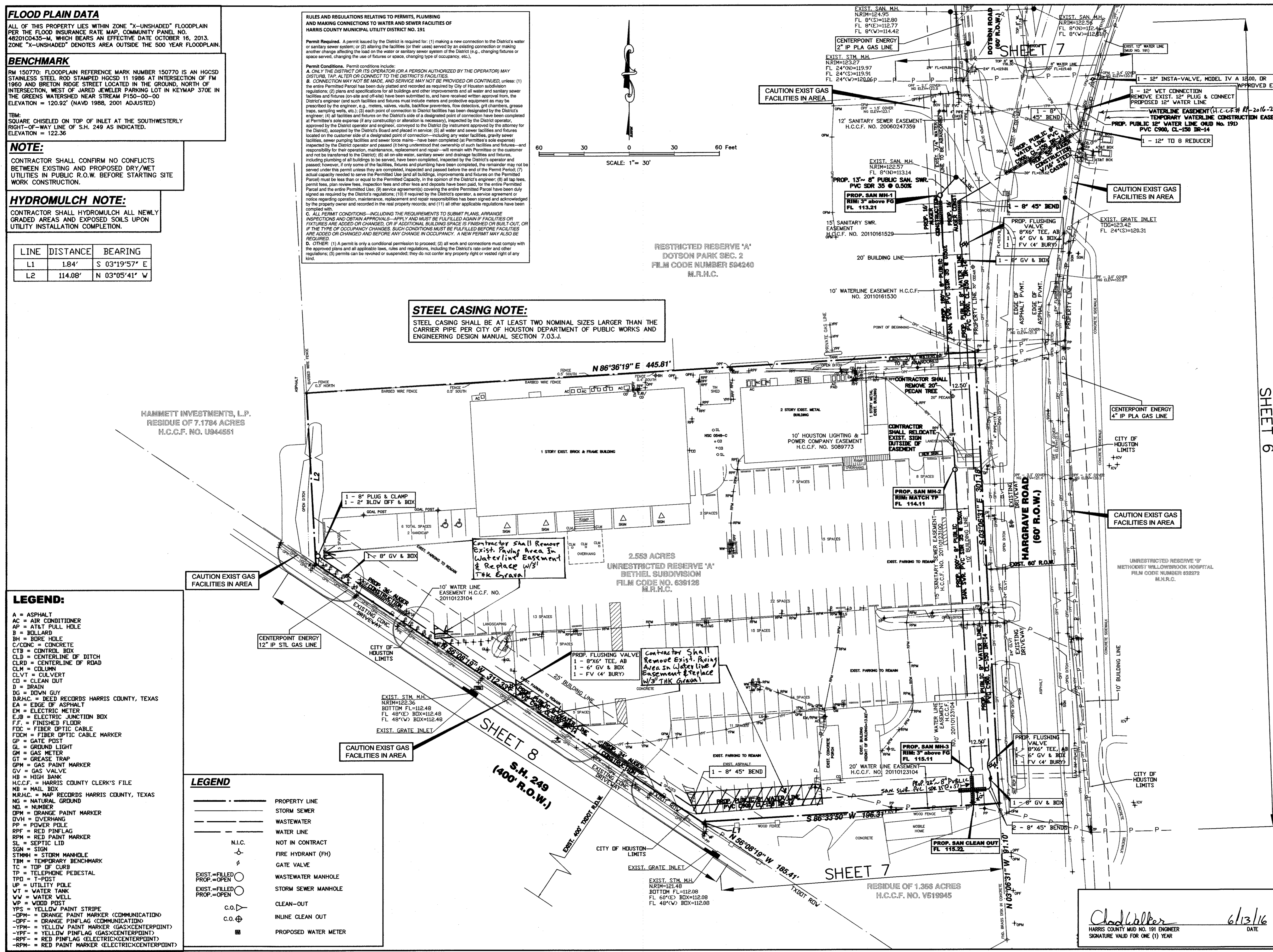
WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	

FILE NO:
 DRAWING SCALE
 HORIZ: 1" = 30'
 VERT: NA

DRAWN BY: AHS
 CHECKED BY: RM

CON LOG# 15-1136
 SHEET NO. 4 OF 11

CITY DRAWING NUMBER
 55489



Chad Wilber
 HARRIS COUNTY MUD NO. 191 ENGINEER
 SIGNATURE VALID FOR ONE (1) YEAR
 DATE: 6/13/16

FLOOD PLAIN DATA

ALL OF THIS PROPERTY LIES WITHIN ZONE "X-UNSHADED" FLOODPLAIN PER THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 48201C0435-M, WHICH BEARS AN EFFECTIVE DATE OCTOBER 16, 2013. ZONE "X-UNSHADED" DENOTES AREA OUTSIDE THE 500 YEAR FLOODPLAIN.

BENCHMARK

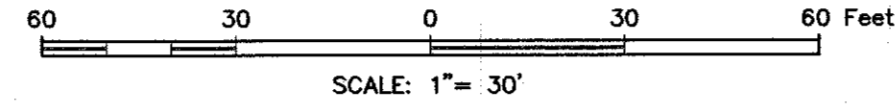
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TBM: SQUARE CHISEL ON TOP OF INLET AT THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF S.H. 249 AS INDICATED. ELEVATION = 122.36

LINE	DISTANCE	BEARING
L1	1.84'	S 03°19'57" E
L2	114.08'	N 03°05'41" W

TRAFFIC NOTES

- CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD-LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.
- NO LANES SHALL BE BLOCKED DURING CONSTRUCTION.



WARNING

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NO.	REVISIONS	DATE

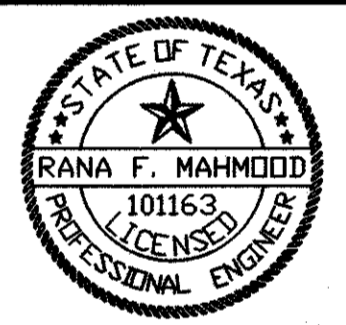
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PRIVATE UTILITY LINES SHOWN

C.M. Curran Date: 1-27-16
AT&T TEXAS/SWBT FACILITIES
Approved for AT&T/SBC underground conduit facilities ONLY
SIGNATURE VALID FOR ONE YEAR.

Hanna Date: 1/27/16
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(THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CMP NATURAL GAS LINES CORRECTLY. NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS.

Hanna Date: 1/27/16
CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.



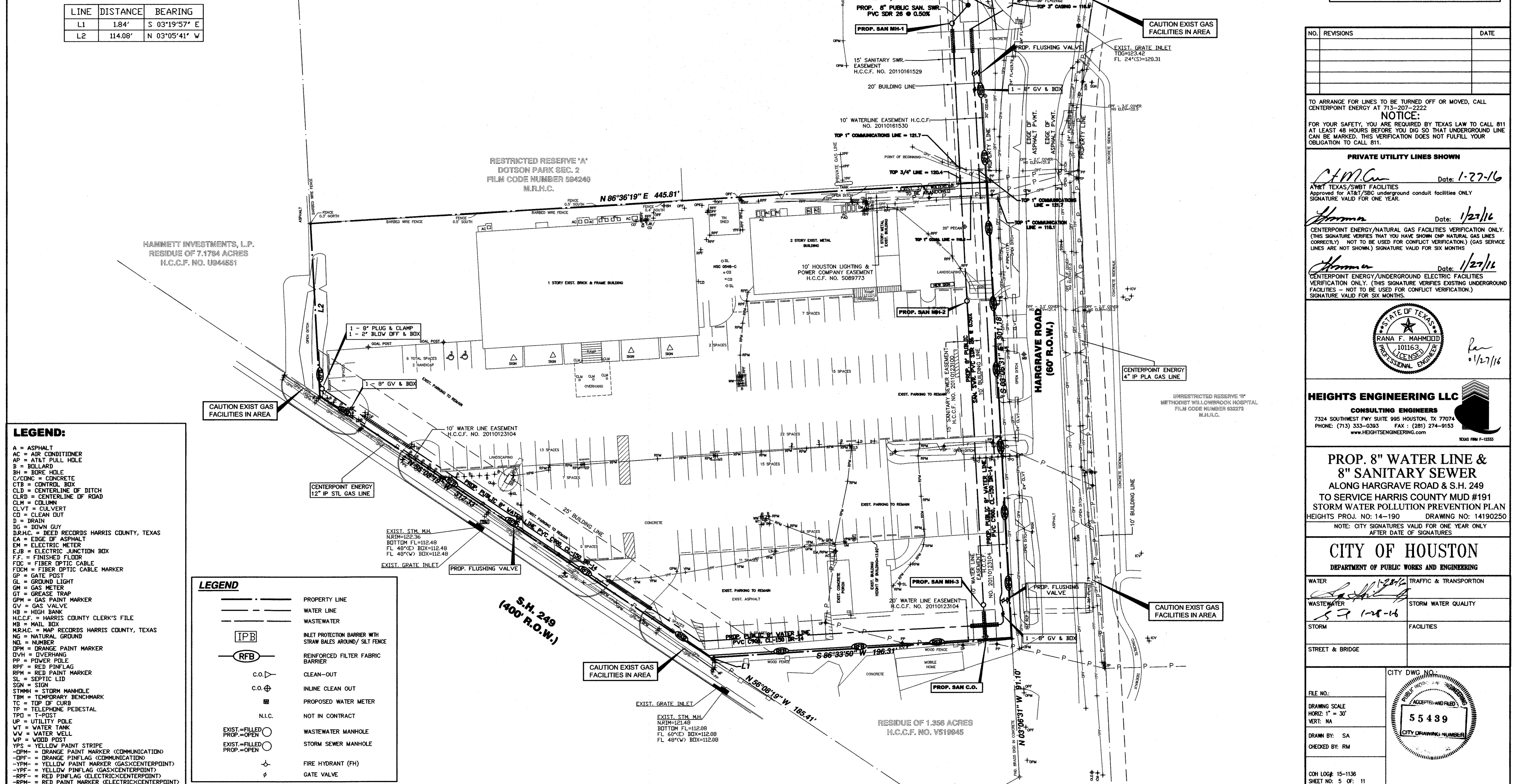
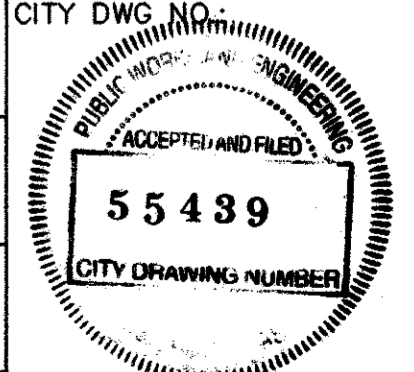
HEIGHTS ENGINEERING LLC
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PROP. 8" WATER LINE & 8" SANITARY SEWER
ALONG HARGRAVE ROAD & S.H. 249
TO SERVICE HARRIS COUNTY MUD #191
STORM WATER POLLUTION PREVENTION PLAN
HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190250
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	1-28-16	TRAFFIC & TRANSPORTATION
WASTEWATER	5-7-16	STORM WATER QUALITY
STORM		FACILITIES
STREET & BRIDGE		

FILE NO.:
DRAWING SCALE:
HORIZ: 1" = 30'
VERT: NA
DRAWN BY: SA
CHECKED BY: RM
CITY DWG. NO. 15-1136
SHEET NO. 5 OF 11

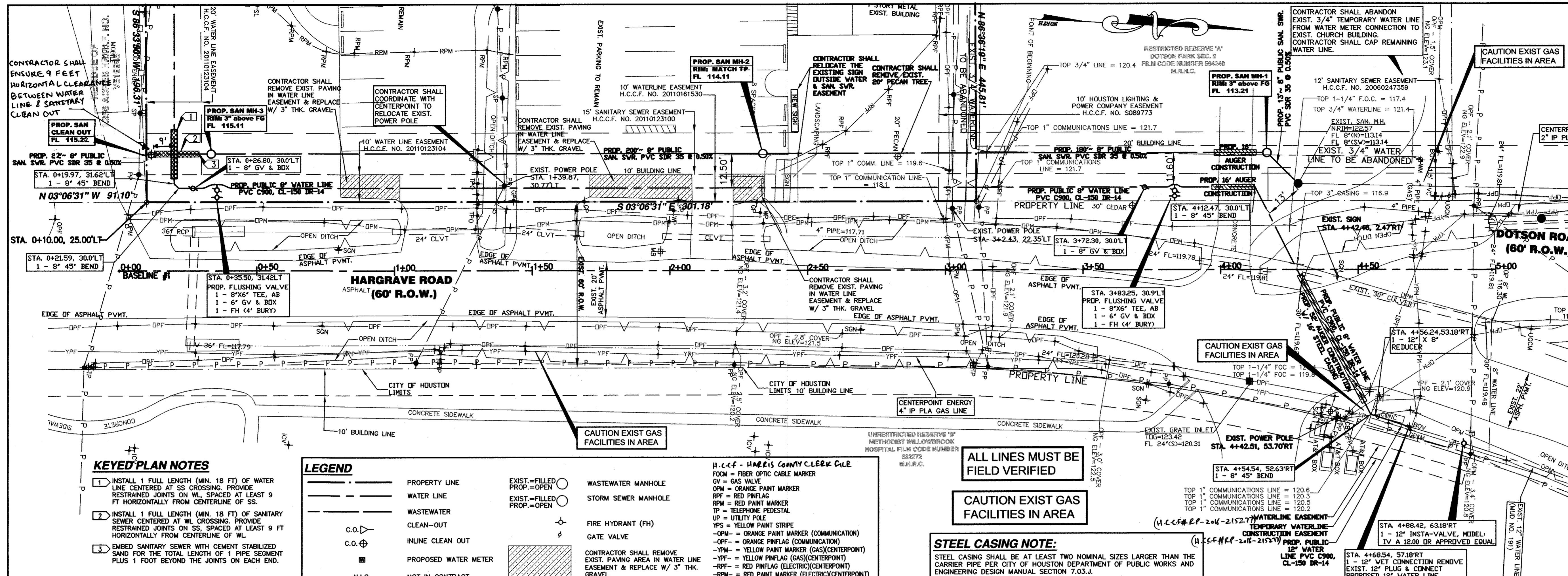


LEGEND:

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- CLVT = CULVERT
- CD = CLEAN OUT
- D = DRAIN
- DG = DOWN GUY
- D.R.H.C. = DEED RECORDS HARRIS COUNTY, TEXAS
- EA = EDGE OF ASPHALT
- EM = ELECTRIC METER
- E.J.B. = ELECTRIC JUNCTION BOX
- F.F. = FINISHED FLOOR
- FDCM = FIBER OPTIC CABLE MARKER
- GP = GATE POST
- GL = GROUND LIGHT
- GM = GAS METER
- GT = GREASE TRAP
- GPM = GAS PAINT MARKER
- GV = GAS VALVE
- HB = HIGH BANK
- HB = MAIL BOX
- H.C.C.F. = HARRIS COUNTY CLERK'S FILE
- MR.H.C. = MAP RECORDS HARRIS COUNTY, TEXAS
- NG = NATURAL GROUND
- NO. = NUMBER
- DPM = ORANGE PAINT MARKER
- DVH = OVERHANG
- PP = POWER POLE
- RPF = RED PINFLAG
- RPM = RED PAINT MARKER
- SL = SEPTIC LID
- SGN = SIGN
- STMH = STORM MANHOLE
- TBM = TEMPORARY BENCHMARK
- TC = TOP OF CURB
- TP = TELEPHONE PEDESTAL
- TPD = T-POST
- UP = UTILITY POLE
- WT = WATER TANK
- WV = WATER WELL
- WP = WOOD POST
- YPS = YELLOW PAINT STRIPE
- DPM = ORANGE PAINT MARKER (COMMUNICATION)
- DPF = ORANGE PINFLAG (COMMUNICATION)
- YPM = YELLOW PAINT MARKER (GAS/CENTERPOINT)
- YPF = YELLOW PINFLAG (GAS/CENTERPOINT)
- RPF = RED PINFLAG (ELECTRIC/CENTERPOINT)
- RPM = RED PAINT MARKER (ELECTRIC/CENTERPOINT)

LEGEND

- PROPERTY LINE
- WATER LINE
- WASTEWATER
- IPB --- INLET PROTECTION BARRIER WITH STRAW BALES AROUND/ SLT FENCE
- RFB --- REINFORCED FILTER FABRIC BARRIER
- C.O. --- CLEAN-OUT
- C.O. --- INLINE CLEAN OUT
- PROPOSED WATER METER
- N.I.C. --- NOT IN CONTRACT
- WASTEWATER MANHOLE
- STORM SEWER MANHOLE
- FIRE HYDRANT (FH)
- GATE VALVE



WARNING
 OVERHEAD AND UNDERGROUND UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT. LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE AND OTHER UTILITIES MAY EXIST IN THE VICINITY OF THE PROJECT WHICH ARE NOT SHOWN ON THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE EXACT ALL EXISTING UTILITIES IN THE VICINITY OF THE PROJECT, PRIOR TO BEGINNING CONSTRUCTION. IF ANY DISCREPANCY EXISTS, NOTIFY ENGINEER.

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG
 48 HOURS NOTICE BEFORE YOU DIG,
 DRILL OR BLAST - STOP CALL
 TEXAS811 (DIG TRESS)(1-800-344-8377)
 OR
 LONE STAR NOTIFICATION CENTER (1-800-669-8344)

NO.	REVISIONS	DATE

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT 713-207-2222
NOTICE:
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

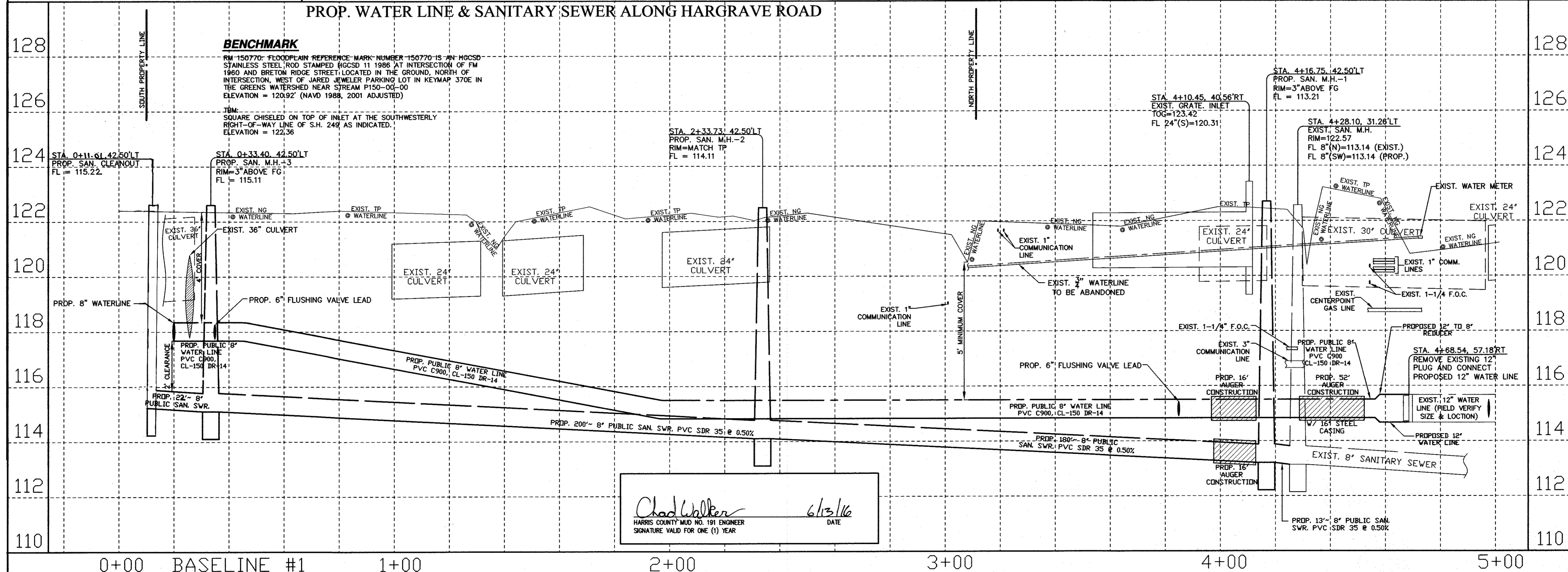
PRIVATE UTILITY LINES SHOWN
 AT&T TEXAS/SWGT FACILITIES
 Approved for AT&T/SBC underground conduit facilities ONLY
 SIGNATURE VALID FOR ONE YEAR.
 Date: 1-27-16

[Signature]
 Date: 1/27/16

CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.
 (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY.) NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS.

[Signature]
 Date: 1/27/16

CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.



HEIGHTS ENGINEERING LLC
 CONSULTING ENGINEERS
 7324 SOUTHWEST FRY SUITE 995 HOUSTON, TX 77074
 PHONE: (713) 333-0393 FAX: (281) 274-9153
 www.HEIGHTSENGINEERING.com
 TEXAS REG. NO. 12333

PROP. 8" WATER LINE & 8" SANITARY SEWER
 ALONG HARGRAVE ROAD
 TO SERVICE HARRIS COUNTY MUD #191
 HARGRAVE-BASELINE #1 STATION 0+00 TO END
 HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190401
 NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

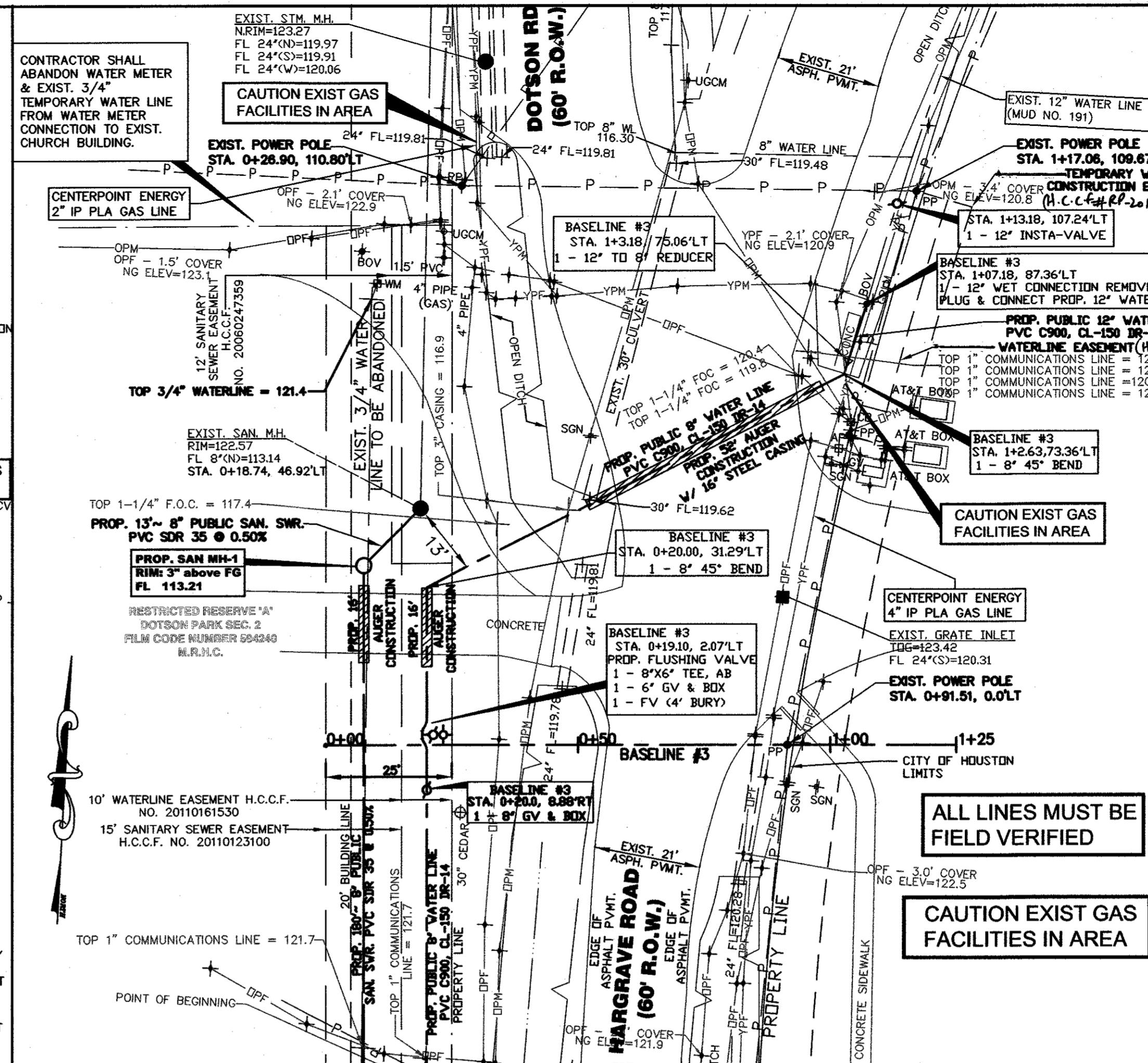
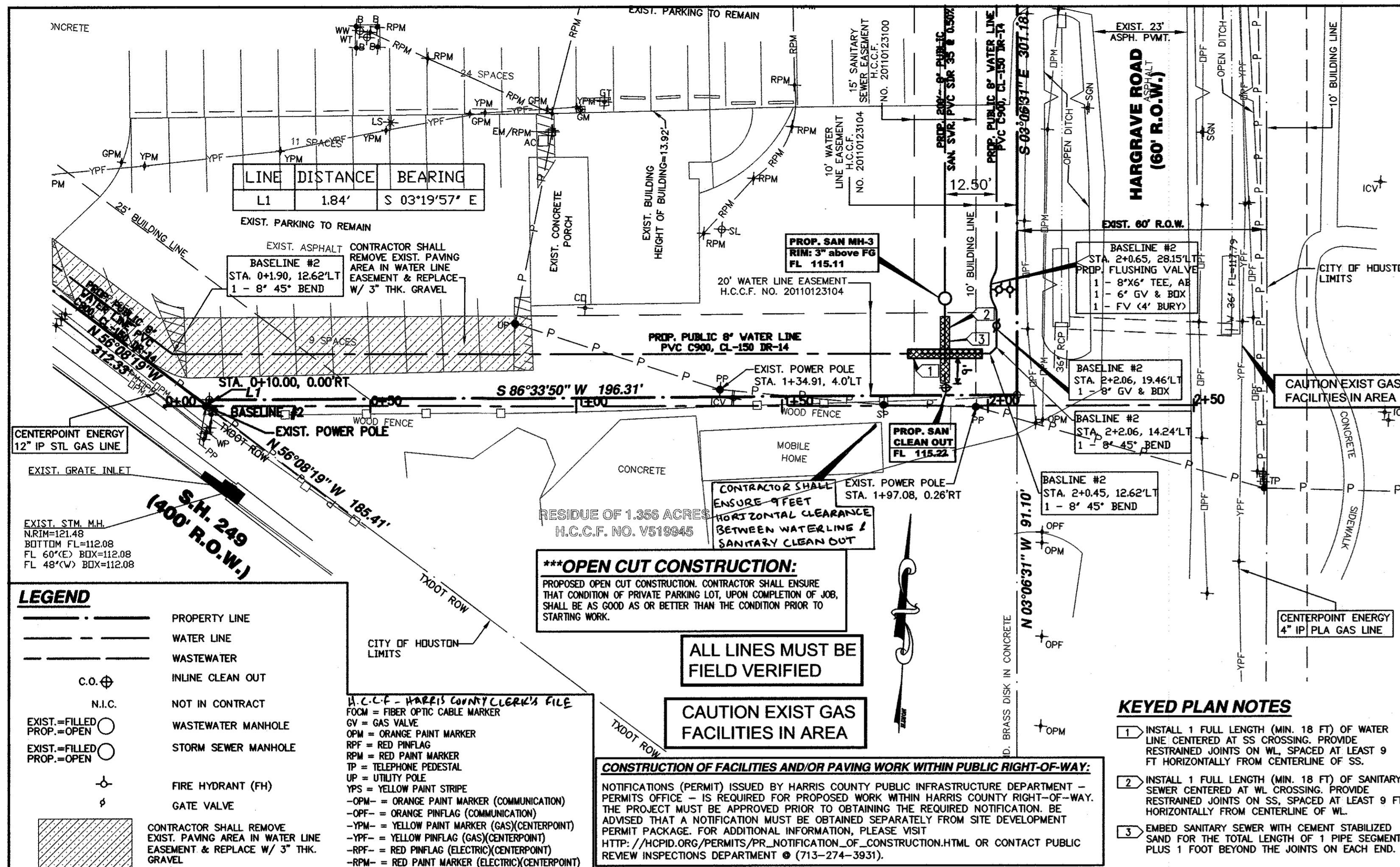
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	

CITY DWG NO.:
 FILE NO.:
 DRAWING SCALE:
 HORIZ: 1" = 20'
 VERT: 1" = 2'
 DRAWN BY: SA
 CHECKED BY: RM

COH LOG# 15-1136
 SHEET NO. 6 OF 11

55439
 CITY DRAWING NUMBER



WARNING
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ONE-CALL NOTIFICATION SYSTEM CALL BEFORE YOU DIG
48 HOURS NOTICE BEFORE YOU DIG, DRILL, OR BLAST - STOP CALL TEXAS811 (DIG TRSS)(1-800-844-8377) OR LONE STAR NOTIFICATION CENTER (1-800-669-8344)

STEEL CASING NOTE:
STEEL CASING SHALL BE AT LEAST TWO NOMINAL SIZES LARGER THAN THE CARRIER PIPE PER CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING DESIGN MANUAL SECTION 7.03.3.

NO.	REVISIONS	DATE

NOTICE:
TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT 713-207-2222

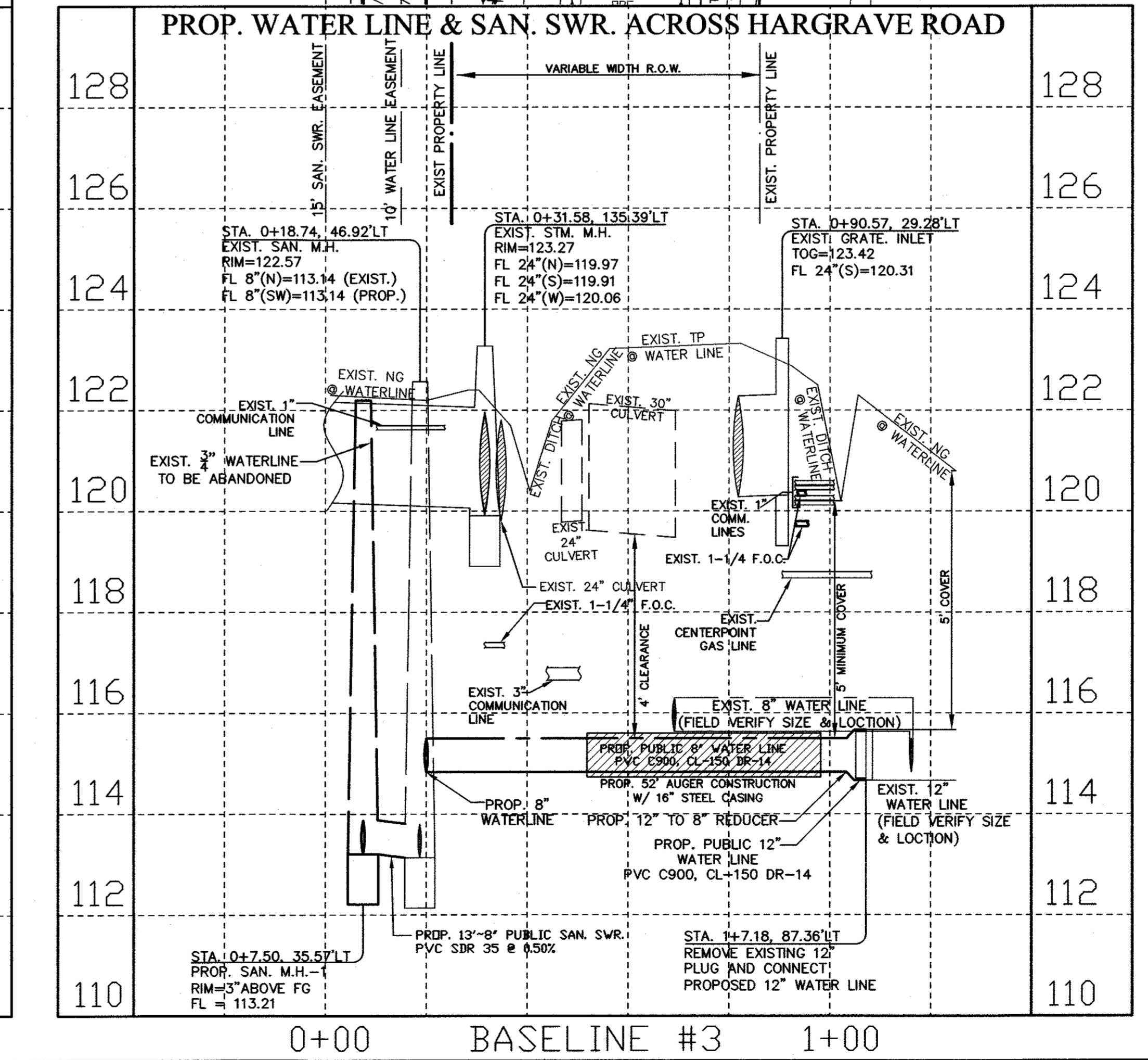
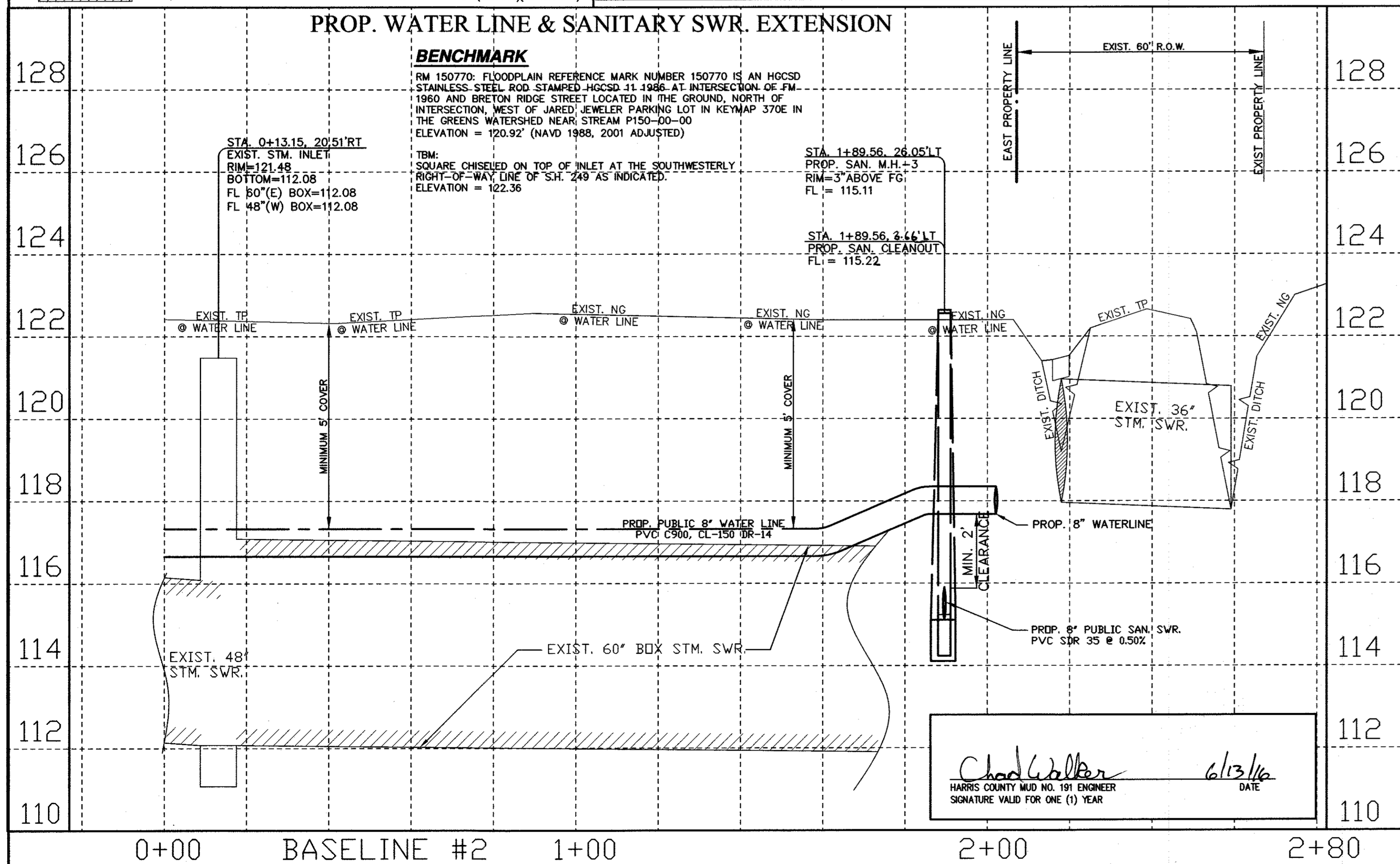
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PRIVATE UTILITY LINES SHOWN

At&T Date: 1-27-16
AT&T TEXAS/SWBT FACILITIES
Approved for AT&T/SBC underground conduit facilities ONLY
SIGNATURE VALID FOR ONE YEAR.

Home Date: 1/27/16
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.
(THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CMP NATURAL GAS LINES CORRECTLY.) NOT TO BE USED FOR CONFLICT VERIFICATION. (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS.

Home Date: 1/27/16
CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.



STATE OF TEXAS
RANA F. MAHMOOD
101163
PROFESSIONAL ENGINEER
Date: 01/27/16

HEIGHTS ENGINEERING LLC
CONSULTING ENGINEERS
7324 SOUTHVIEW Fwy SUITE 995 HOUSTON, TX 77074
PHONE: (713) 333-0383 FAX: (281) 274-9153
www.HEIGHTSENGINEERING.com
TEXAS FIRM #12333

PROP. 8" WATER LINE & 8" SANITARY SEWER ALONG HARGRAVE ROAD
TO SERVICE HARRIS COUNTY MUD #191
BASELINE #2 STATION 0+00 TO END
HARGRAVE-BASELINE #3 STATION 0+00 TO END
HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190402
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

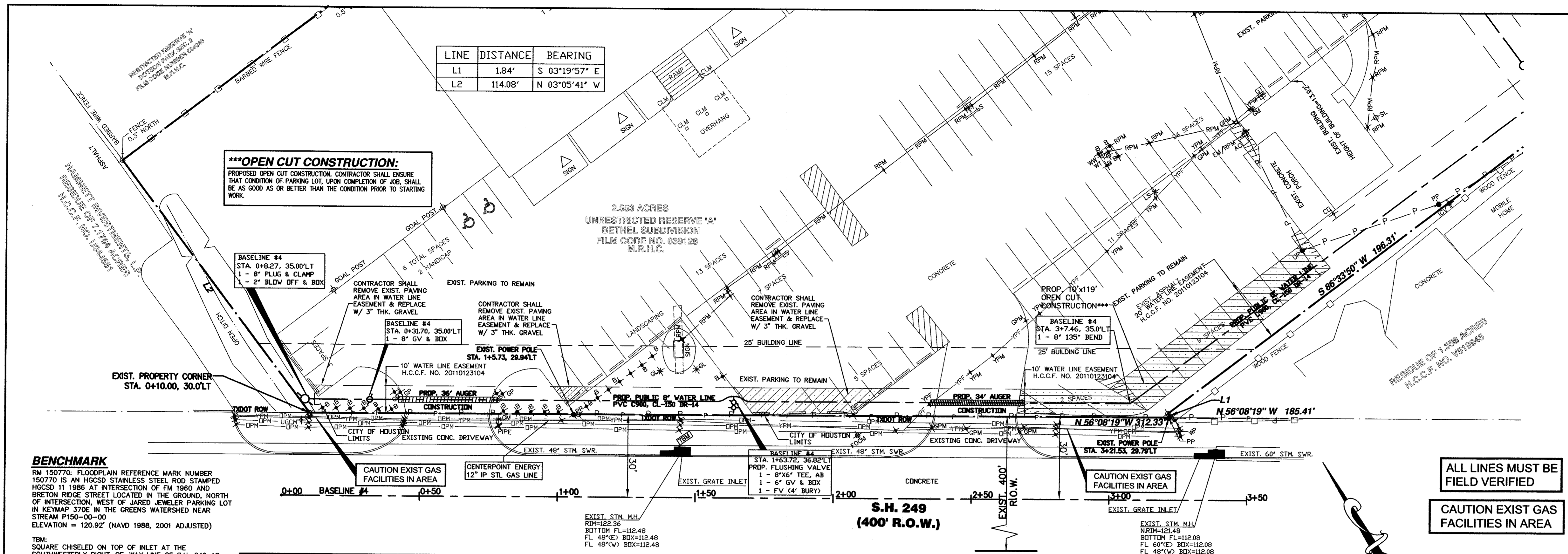
WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	

FILE NO.:
DRAWING SCALE
HORIZ: 1" = 20'
VERT: 1" = 2'

DRAWN BY: SA
CHECKED BY: RM

CITY DWG NO.:
ACCEPTED AND FILED
54539
CITY DRAWING NUMBER

COH LOG# 15-1136
SHEET NO. 7 OF 11



WARNING
 OVERHEAD AND UNDERGROUND UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT. LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE AND OTHER UTILITIES MAY EXIST IN THE VICINITY OF THE PROJECT WHICH ARE NOT SHOWN ON THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE EXACT ALL EXISTING UTILITIES IN THE VICINITY OF THE PROJECT, PRIOR TO BEGINNING CONSTRUCTION. IF ANY DISCREPANCY EXISTS, NOTIFY ENGINEER.

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 OR
 LONE STAR NOTIFICATION CENTER (1-800-669-8344)

NO.	REVISIONS	DATE

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PRIVATE UTILITY LINES SHOWN

C.M. Co. Date: 1-27-16
 AT&T TEXAS/SWBT FACILITIES
 Approved for AT&T/SBC underground conduit facilities ONLY
 SIGNATURE VALID FOR ONE YEAR.

Shoma Date: 1/27/16
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.
 (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY) NOT TO BE USED FOR CONFLICT VERIFICATION. (GAS SERVICE LINES ARE NOT SHOWN) SIGNATURE VALID FOR SIX MONTHS

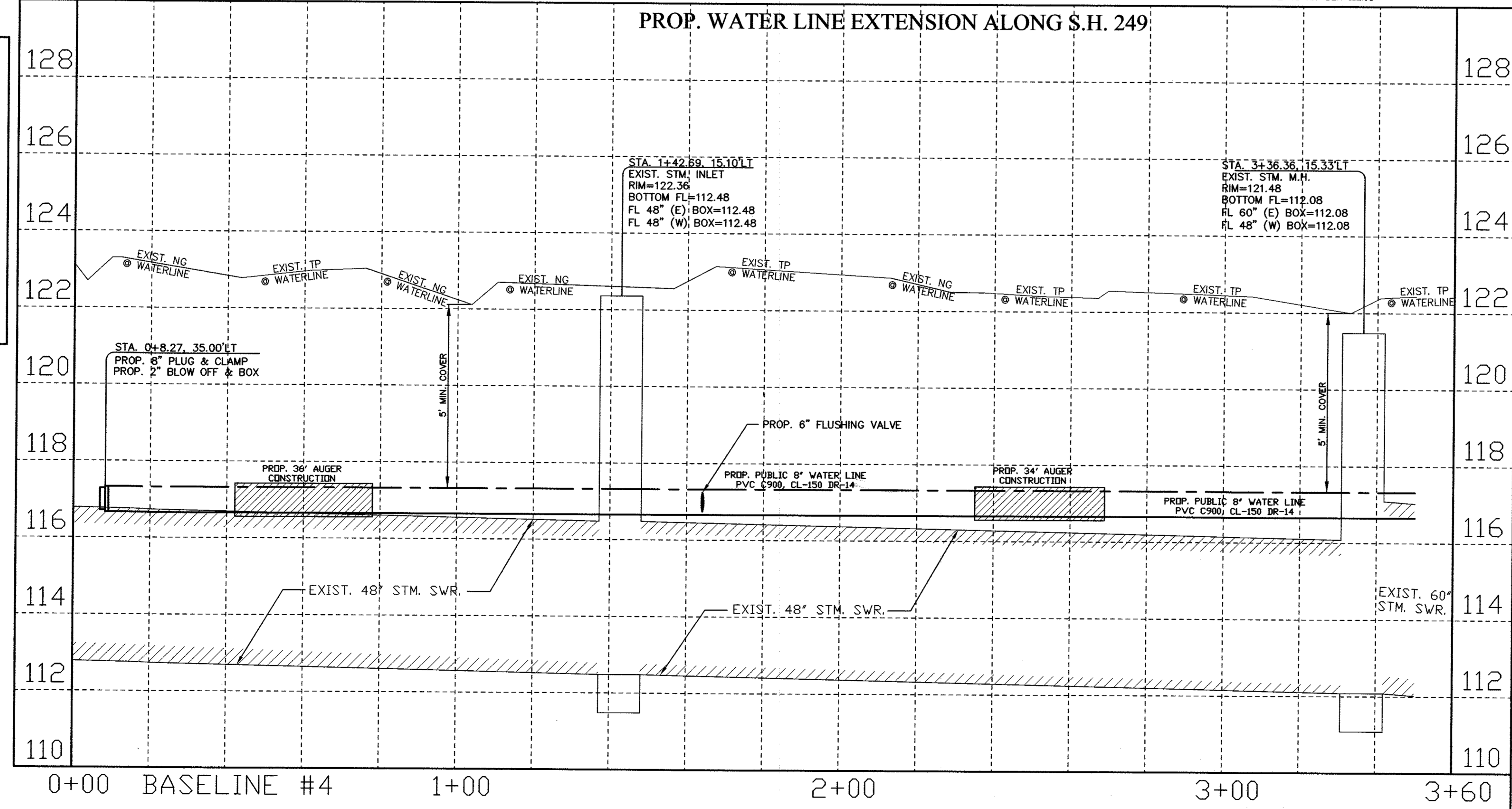
Shoma Date: 1/27/16
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ALL LINES MUST BE FIELD VERIFIED

CAUTION EXIST GAS FACILITIES IN AREA

LEGEND

	PROPERTY LINE
	WATER LINE
	PROPOSED WATER METER
	NOT IN CONTRACT
	WASTEWATER MANHOLE
	STORM SEWER MANHOLE
	FIRE HYDRANT (FH)
	GATE VALVE
	CONTRACTOR SHALL REMOVE EXIST. PAVING AREA IN WATER LINE EASEMENT & REPLACE W/ 3" THK. GRAVEL



Charles... DATE: 6/13/16
 HARRIS COUNTY MUD NO. 191 ENGINEER
 SIGNATURE VALID FOR ONE (1) YEAR

HEIGHS ENGINEERING LLC
 CONSULTING ENGINEERS
 7324 SOUTHWEST Fwy SUITE 995 HOUSTON, TX 77074
 PHONE: (713) 333-0393 FAX: (281) 274-9153
 www.HEIGHTSENGINEERING.com

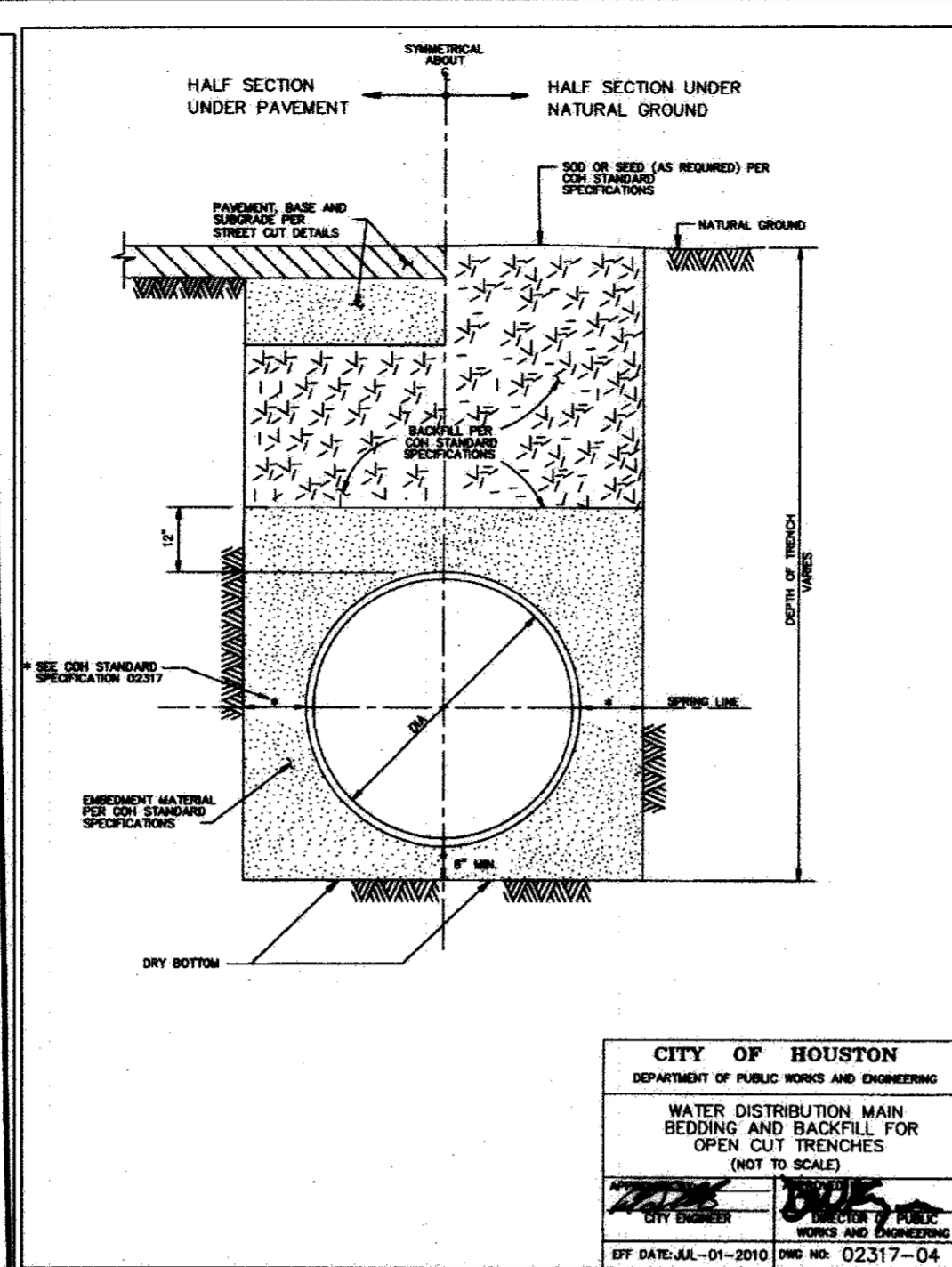
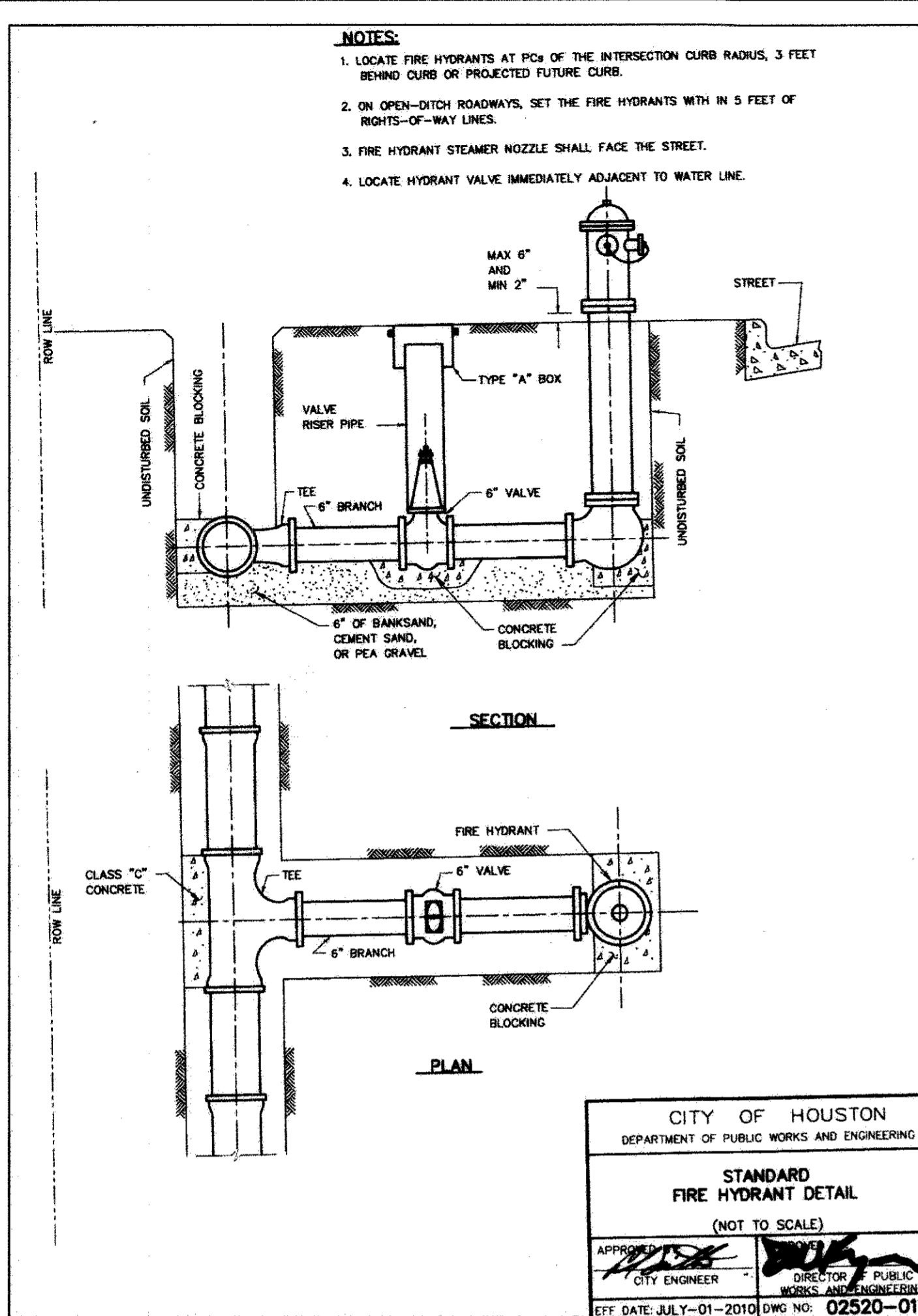
RANA F. MAHMOOD
 101163
 LICENSED PROFESSIONAL ENGINEER

PROP. 8" WATER LINE & 8" SANITARY SEWER
 ALONG S.H. 249
 TO SERVICE HARRIS COUNTY MUD #191
 S.H. 249-BASELINE #4 STATION 0+00 TO END
 HEIGHTS PROJ. NO. 14-190 DRAWING NO: 14190403
 NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	

CITY DWG NO. 55439
 DRAWING SCALE: HORIZ. 1" = 20', VERT. 1" = 2'
 DRAWN BY: SA
 CHECKED BY: RM
 CITY DRAWING NUMBER



TCEQ WATER DISTRIBUTION GENERAL CONSTRUCTION NOTES:

TCEQ WATER DISTRIBUTION SYSTEM
GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS, AT A MINIMUM, MEET TCEQ'S RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS.
2. AN APPOINTED ENGINEER SHALL NOTIFY IN WRITING THE LOCAL TCEQ'S REGIONAL OFFICE WHEN CONSTRUCTION WILL START. PLEASE KEEP IN MIND THAT UPON COMPLETION OF THE WATER WORKS PROJECT, THE ENGINEER OR OWNER SHALL NOTIFY THE COMMISSION'S WATER SUPPLY DIVISION, IN WRITING, AS TO ITS COMPLETION AND ATTEST TO THE FACT THAT THE WORK HAS BEEN COMPLETED ESSENTIALLY ACCORDING TO THE PLANS AND CHANGE ORDERS ON FILE WITH THE COMMISSION AS REQUIRED IN 30 TAC §290.39(H)(3).
3. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI, AS REQUIRED BY 30 TAC §290.44(A)(1).
4. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS, AS REQUIRED BY 30 TAC §290.44(A)(2).
5. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY, AS REQUIRED BY 30 TAC §290.44(A)(3).
6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE, AS REQUIRED BY 30 TAC §290.44(A)(4), REVISED MARCH 4, 2015.
7. PURSUANT TO 30 TAC §290.44(A)(5), THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE. INCLUDE THE FORMULAS IN THE NOTES ON THE PLANS.
8. THE HYDROSTATIC LEAKAGE RATE FOR POLYVINYL CHLORIDE (PVC) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-605 AS REQUIRED IN 30 TAC §290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE:

$$Q = \frac{LD\sqrt{P}}{148,000}$$

WHERE:
 • Q = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR.
 • L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET.
 • D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
 • P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

9. THE HYDROSTATIC LEAKAGE RATE FOR DUCTILE IRON (DI) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-600 AS REQUIRED IN 30 TAC §290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE:

$$L = \frac{SD\sqrt{P}}{148,000}$$

WHERE:
 • L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR.
 • S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET.
 • D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
 • P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).
- 10. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES TO 0.25 PERCENT.
- 11. THE SYSTEM MUST BE DESIGNED TO MAINTAIN A MINIMUM PRESSURE OF 35 PSI AT ALL POINTS WITHIN THE DISTRIBUTION NETWORK AT FLOW RATES OF AT LEAST 1.5 GALLONS PER MINUTE PER CONNECTION. WHEN THE SYSTEM IS INTENDED TO PROVIDE FIREFIGHTING CAPABILITY, IT MUST ALSO BE DESIGNED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI UNDER COMBINED FIRE AND DRINKING WATER FLOW CONDITIONS AS REQUIRED BY 30 TAC §290.44(D), REVISED MARCH 4, 2015.
- 12. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES IN THE DISTRIBUTION SYSTEM AT ALL POINTS WHERE TOPOGRAPHY OR OTHER FACTORS MAY CREATE AIR LOCKS IN THE LINES. ALL VENT OPENINGS TO THE ATMOSPHERE SHALL BE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT AS REQUIRED BY 30 TAC §290.44(D)(1).
- 13. PURSUANT TO 30 TAC §290.44(D)(4), ACCURATE WATER METERS SHALL BE PROVIDED. SERVICE CONNECTIONS AND METER LOCATIONS SHOULD BE SHOWN ON THE PLANS.
- 14. PURSUANT TO 30 TAC §290.44(D)(5), SUPPLEMENT VALVES AND BLOWOFFS TO MAKE REPAIRS. THE ENGINEERING REPORT SHALL ESTABLISH CRITERIA FOR THIS DESIGN.
- 15. PURSUANT TO 30 TAC §290.44(D)(6), THE SYSTEM SHALL BE DESIGNED TO AFFORD EFFECTIVE CIRCULATION OF WATER WITH A MINIMUM OF DEAD ENDS. ALL DEAD-END MAINS SHALL BE PROVIDED WITH ACCEPTABLE FLUSH VALVES AND DISCHARGE PIPING. ALL DEAD-END LINES LESS THAN TWO INCHES IN DIAMETER WILL NOT REQUIRE FLUSH VALVES IF THEY END AT A CUSTOMER SERVICE. WHERE DEAD ENDS ARE NECESSARY AS A STAGE IN THE GROWTH OF THE SYSTEM, THEY SHALL BE LOCATED AND ARRANGED TO ULTIMATELY CONNECT THE ENDS TO PROVIDE CIRCULATION.
- 16. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES AND SEPTIC TANK DRAINFIELDS. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET 30 TAC §290.44(E)(1-4) OF THE CURRENT RULES.
- 17. PURSUANT TO 30 TAC §290.44(E)(5), THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET, WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT.
- 18. PURSUANT TO 30 TAC §290.44(E)(6), FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER LINE, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION.
- 19. PURSUANT TO 30 TAC §290.44(E)(7), SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE.
- 20. PURSUANT TO 30 TAC §290.44(E)(8), WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS. REVISED MARCH 4, 2015.
- 21. PURSUANT TO 30 TAC §290.44(F)(1), THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION.
- 22. PURSUANT TO 30 TAC §290.44(F)(2), WHEN WATERLINES ARE LAID UNDER ANY FLOWING OR INTERMITTENT STREAM OR SEMI-PERMANENT BODY OF WATER THE WATER MAIN SHALL BE INSTALLED IN A SEPARATE WATERTIGHT PIPE ENCASEMENT. VALVES MUST BE PROVIDED ON EACH SIDE OF THE CROSSING WITH FACILITIES TO ALLOW THE UNDERWATER PORTION OF THE SYSTEM TO BE ISOLATED AND TESTED.
- 23. THE CONTRACTOR SHALL DISINFECT THE NEW WATER MAINS IN ACCORDANCE WITH AWWA STANDARD C-851 AND THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATER LINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER, IN ACCORDANCE WITH 30 TAC §290.44(F)(3).

NO.	REVISIONS	DATE

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PRIVATE UTILITY LINES SHOWN

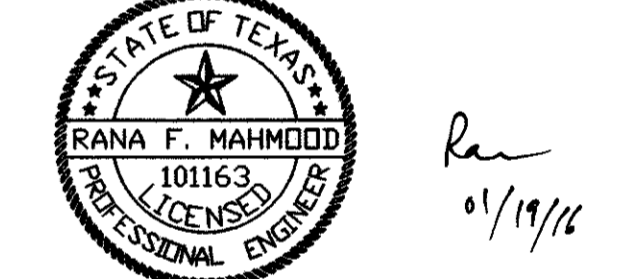
AT&T TEXAS/SWBT FACILITIES
 Approved for AT&T/SBC underground conduit facilities ONLY
 SIGNATURE VALID FOR ONE YEAR.

N/A Date: _____

CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.
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N/A Date: _____

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 CONSULTING ENGINEERS
 7324 SOUTHWEST FWY SUITE 995 HOUSTON, TX 77074
 PHONE: (713) 333-0393 FAX: (281) 274-9153
 www.HEIGHTSENGINEERING.com

PROP. 8" WATER LINE & 8" SANITARY SEWER
 ALONG HARGRAVE ROAD & S.H. 249
 TO SERVE HARRIS COUNTY MUD #191
 WATERLINE CONSTRUCTION DETAILS
 HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190501
 NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

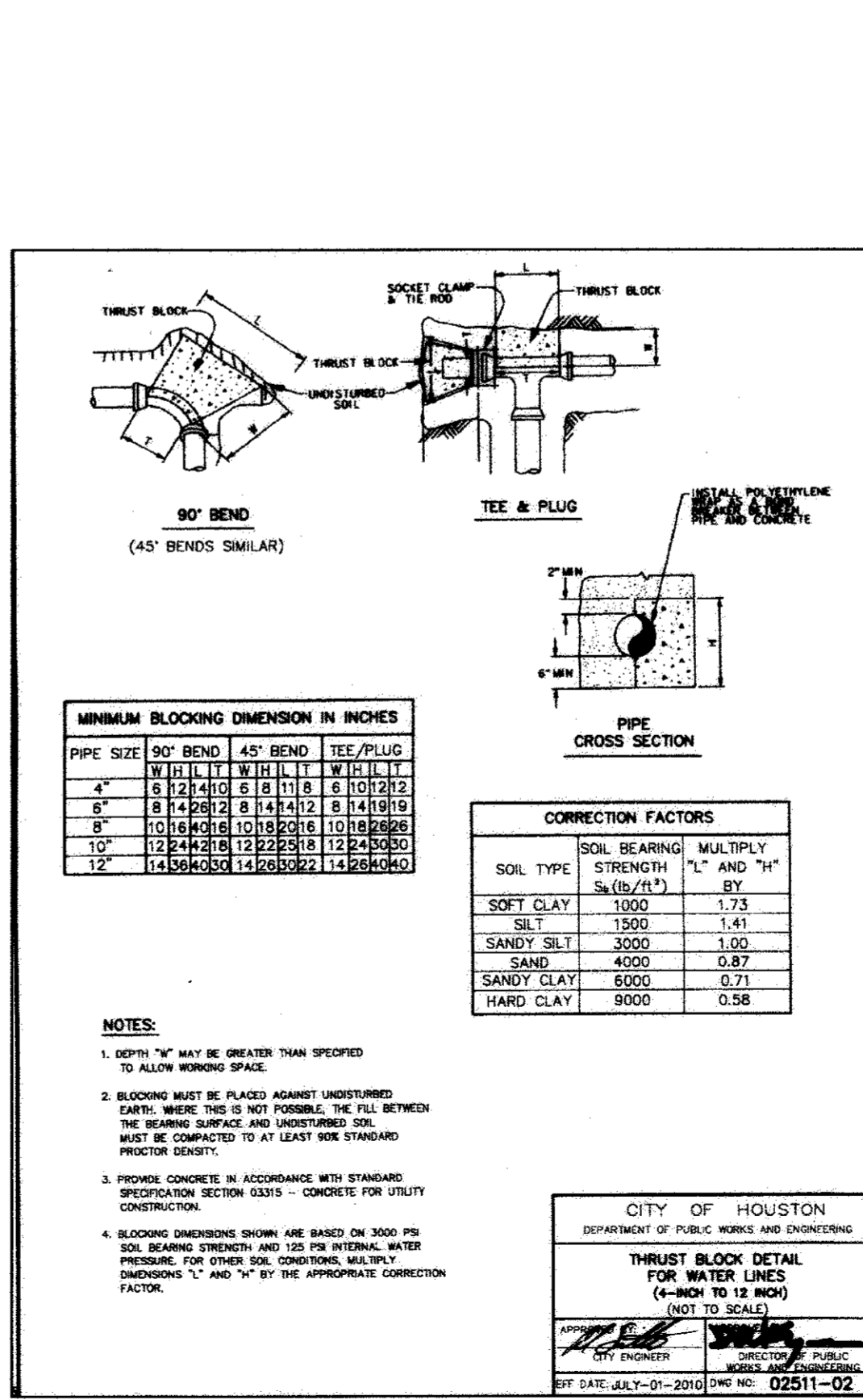
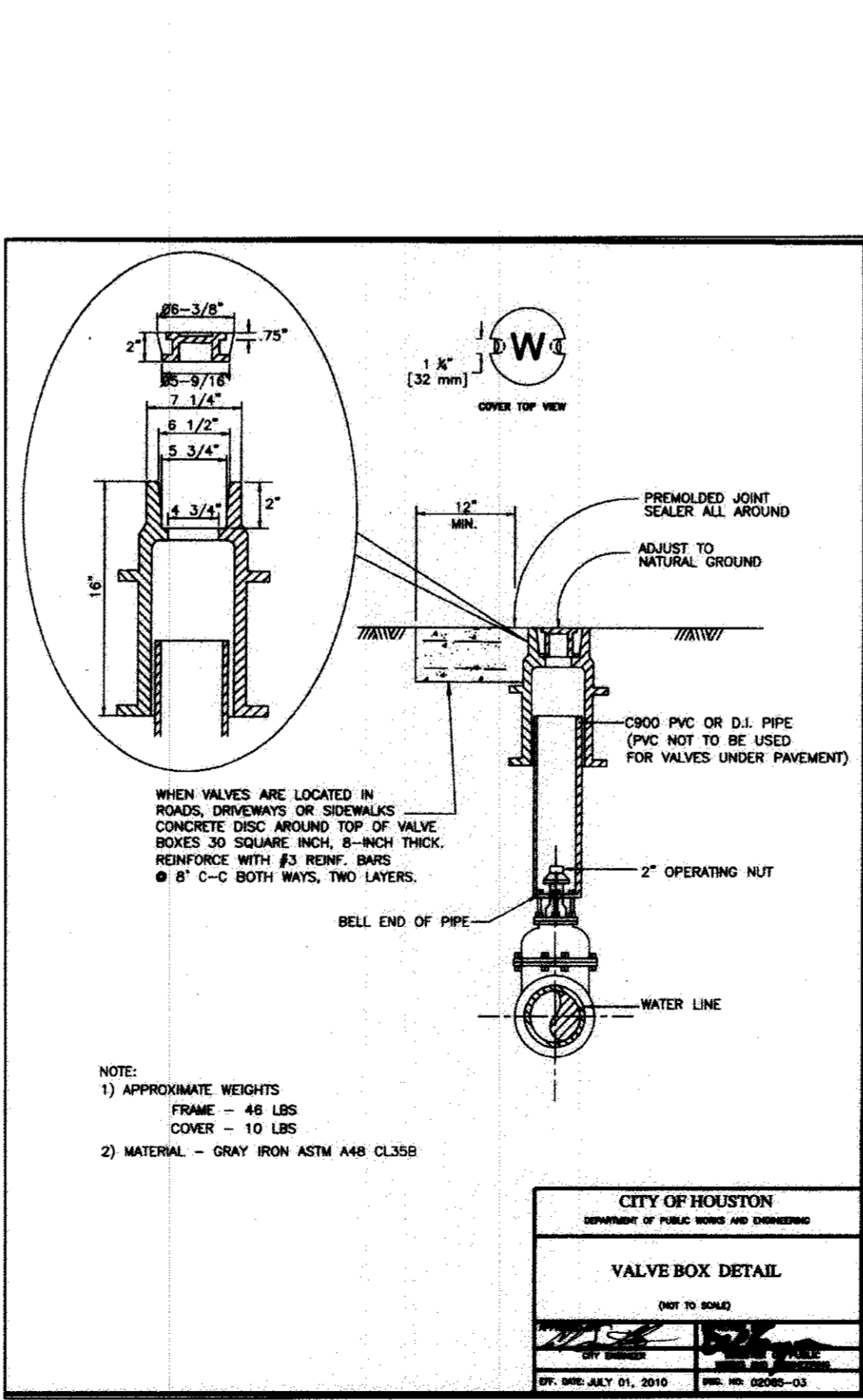
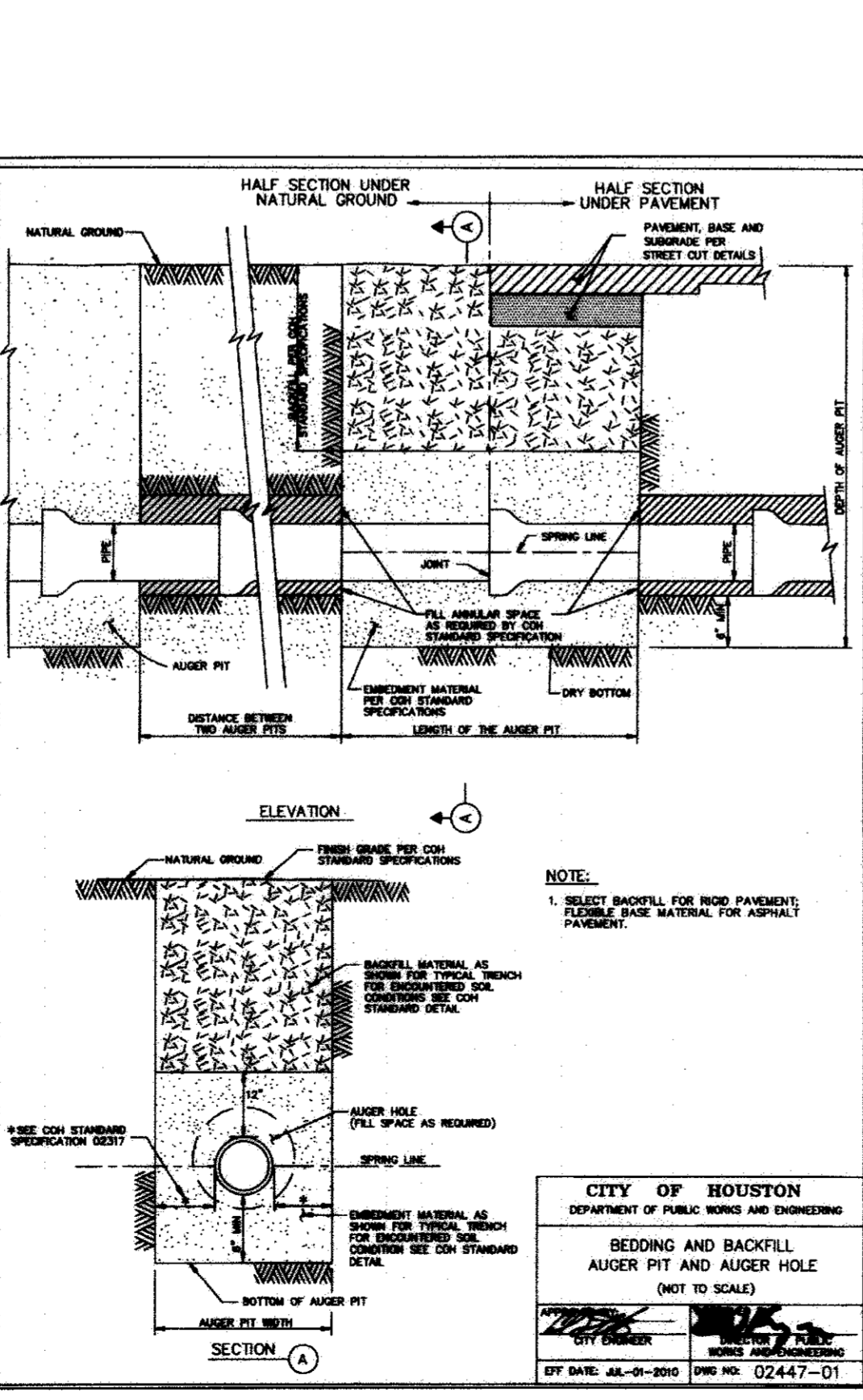
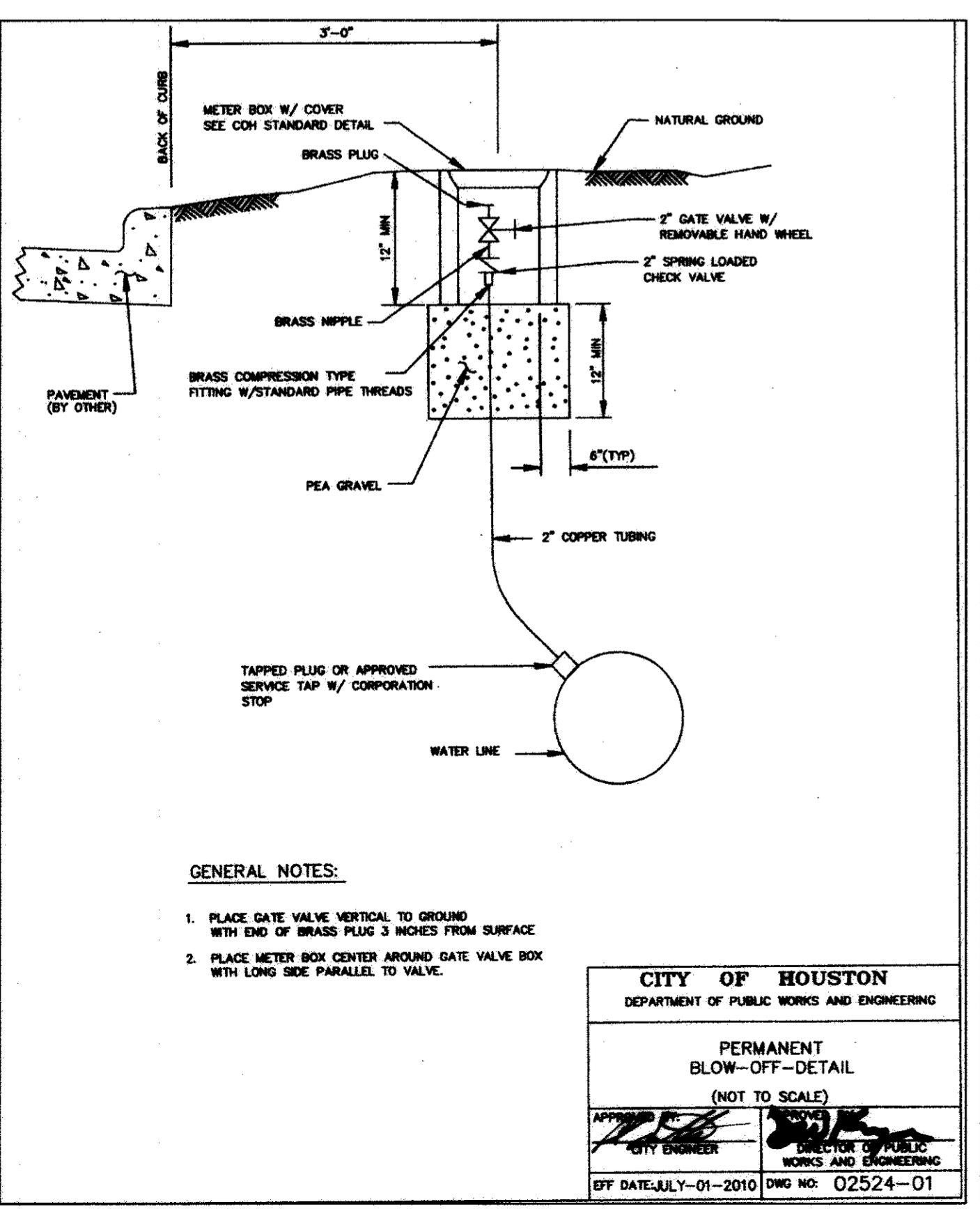
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STORM	FACILITIES
STREET & BRIDGE	

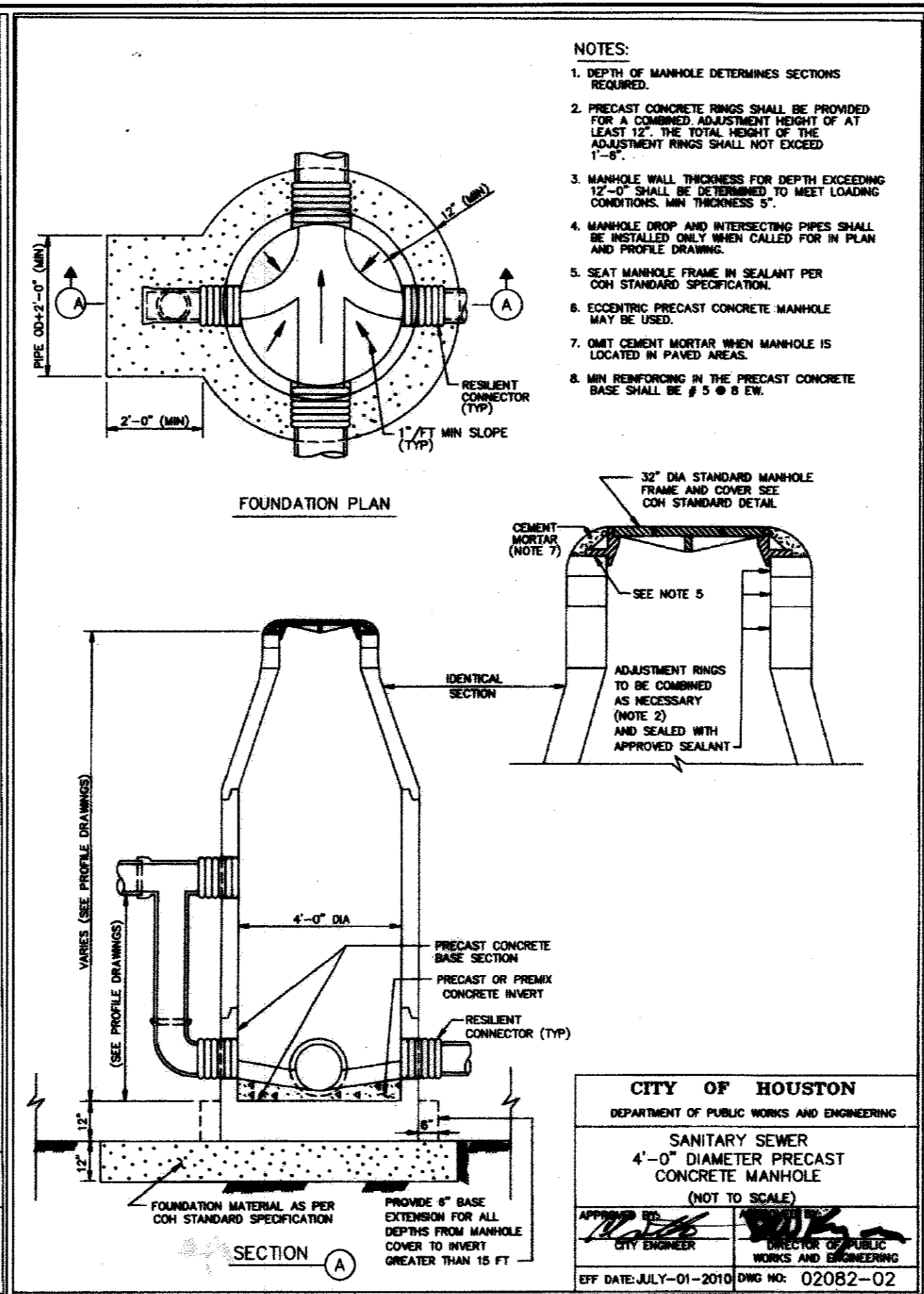
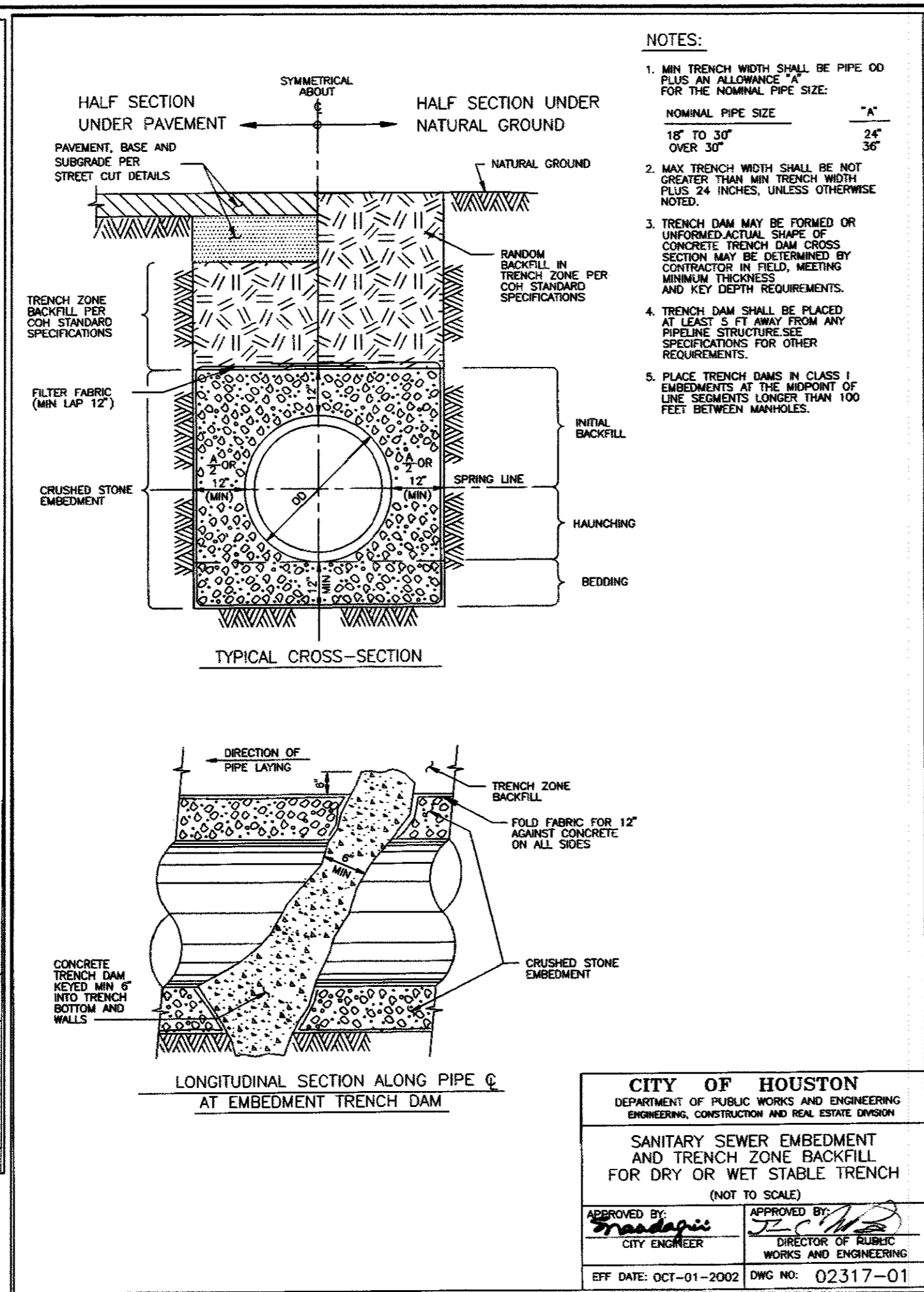
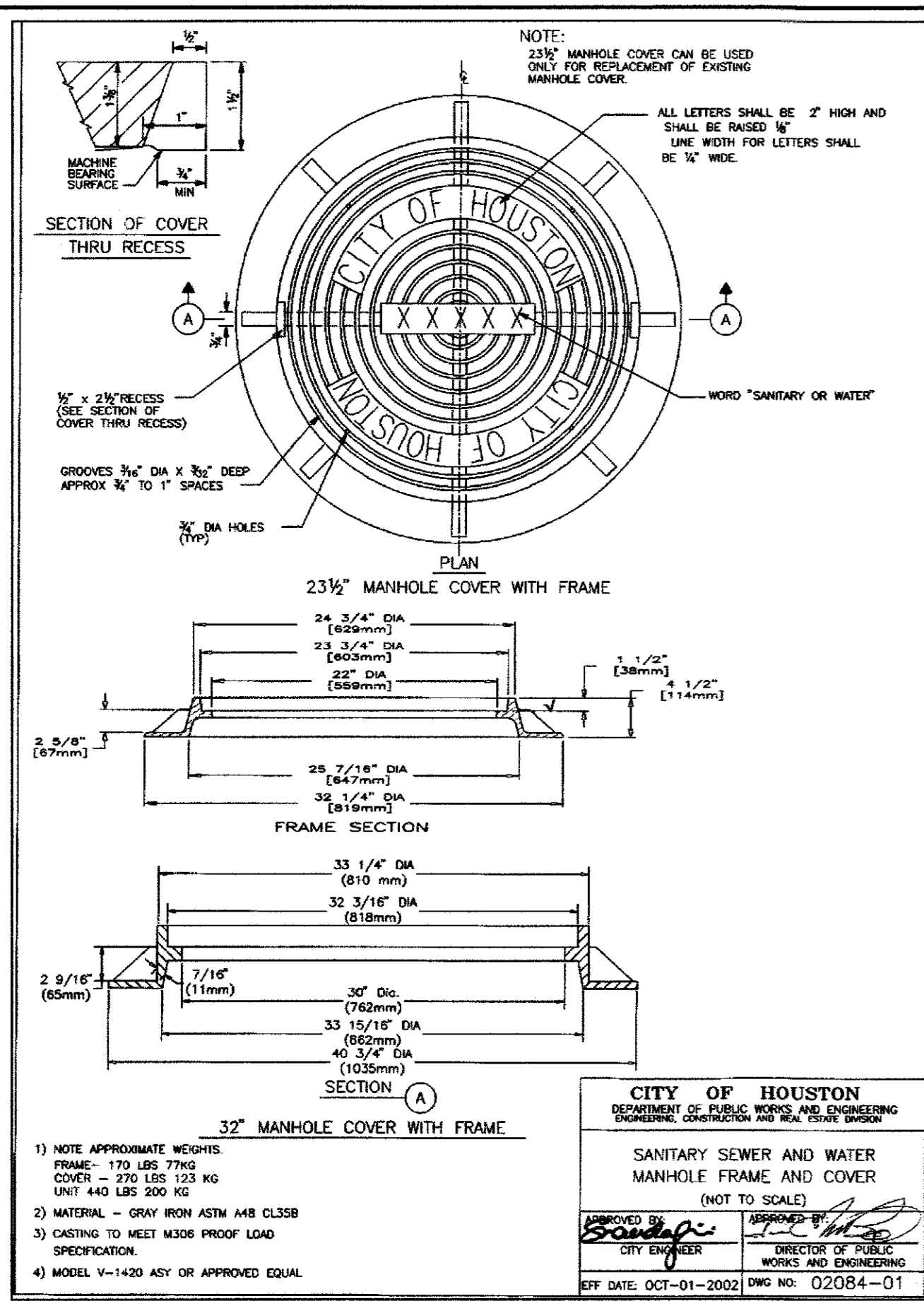
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 VERT: _____
 DRAWN BY: SA
 CHECKED BY: RM

CITY DWG NO.: _____

ACCEPTED AND FILED
 55439
 CITY DRAWING NUMBER

COH LOG# 15-1136
 SHEET NO: 9 OF: 11





HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 191 GENERAL CONSTRUCTION NOTES:

- POLY-VINYL-CHLORIDE (PVC) PIPE SHALL CONFORM TO ASTM SPECIFICATIONS D3034 AND BE INSTALLED ACCORDING TO ASTM D2321.
- ALL SANITARY SEWER SERVICE LINES SHALL BE CONSTRUCTED TO TRUE ALIGNMENT AND GRADE. WARPED AND SAGGING LINES WILL NOT BE PERMITTED.
- BUILDING TIE-ON CONNECTION WILL BE MADE DIRECTLY TO THE STUB-OUT FROM THE BUILDING PLUMBING AT THE FOUNDATION ON ALL WASTES OUTLETS.
- WATER-TIGHT ADAPTERS OF A TYPE COMPATIBLE WITH THE MATERIALS BEING JOINED WILL BE USED AT THE POINT OF CONNECTION OF THE SERVICE LINE TO THE BUILDING PLUMBING. NO CEMENT GROUT MATERIALS ARE PERMITTED.
- NO BENDS OR TURNS AT ANY POINT WILL BE GREATER THAN 45 DEGREES.
- EACH CLEANOUT WILL BE INSTALLED SO THAT IT OPENS IN A DIRECTION OPPOSITE TO THE FLOW OF THE WASTE AND, EXCEPT IN THE CASE OF "WYE" BRANCH AND END-OF-THE-LINE CLEANOUTS, CLEANOUTS WILL BE INSTALLED VERTICALLY ABOVE THE FLOW LINE OF THE PIPE.
- CLEANOUT WILL BE MADE WITH AIRTIGHT MECHANICAL PLUG.
- APPLICATION FOR WATER AND SEWER SERVICE MUST BE FILED PRIOR TO CONSTRUCTION OF THE SERVICE LINE, AND ALL APPLICABLE FEES AND DEPOSITS (AND A SIGNED AGREEMENT) SHOULD ACCOMPANY THIS APPLICATION (FORMS ARE AVAILABLE FROM THE DISTRICT'S OPERATOR, HAYS UTILITY SOUTH, (281)-353-9809). CONSTRUCTION MUST NOT BEGIN UNTIL AUTHORIZED BY THE DISTRICT'S OPERATOR.
- WHEN FACILITIES HAVE BEEN INSTALLED BUT NOT YET COVERED, THE APPLICANT MUST ARRANGE AND OBTAIN AN INSPECTION OF THE INSTALLATION BY THE DISTRICT'S OPERATOR. REQUESTS FOR INSPECTIONS SHALL BE MADE TO THE DISTRICT'S OPERATOR, HAYS UTILITY SOUTH, (281)-353-9809 AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE OF THE INSPECTION.
- THE PHYSICAL CONNECTION TO THE DISTRICT'S FACILITIES MAY ONLY BE MADE BY THE DISTRICT'S OPERATOR (UNLESS OTHERWISE EXPRESSLY APPROVED IN WRITING BY THE OPERATOR) AND MUST BE BY USE OF AN ADAPTER OF A TYPE COMPATIBLE WITH MATERIALS BEING JOINED. THE CONNECTION SHALL BE WATER-TIGHT. NO CEMENT GROUT MATERIALS ARE PERMITTED.
- BACKFILLING OF SERVICE LINES TRENCHES MUST BE ACCOMPLISHED WITHIN TWENTY-FOUR (24) HOURS OF INSPECTION AND APPROVAL. NO DEBRIS WILL BE PERMITTED IN THE TRENCH.
- BEFORE CONNECTION TO ANY DISTRICT FACILITIES, ALL REQUIREMENTS OF THE DISTRICT'S RULES AND REGULATIONS MUST BE MET, IN THE OPINION OF THE DISTRICT'S OPERATOR.
- THE USE OF PIPE OR PIPE FITTINGS THAT CONTAIN MORE THAN 0.25 PERCENT LEAD, OR SOLDER AND FLUX THAT CONTAIN MORE THAN 0.2 PERCENT LEAD, ARE PROHIBITED FOR INSTALLATION OR REPAIR OF ANY PLUMBING IN ANY FACILITY PROVIDING WATER FOR HUMAN CONSUMPTION AND CONNECTED TO THE DISTRICT'S WATER SUPPLY SYSTEM.
- THE CUSTOMER IS RESPONSIBLE FOR ARRANGING FOR THE DISTRICT'S OPERATOR TO INSTALL AND TEST ANY BACKFLOW PREVENTION ASSEMBLY REQUIRED TO BE INSTALLED AT ANY CONNECTION AND TO CONDUCT ANNUAL TESTS OF THE

NO.	REVISIONS	DATE

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT 713-207-2222.

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

PRIVATE UTILITY LINES SHOWN

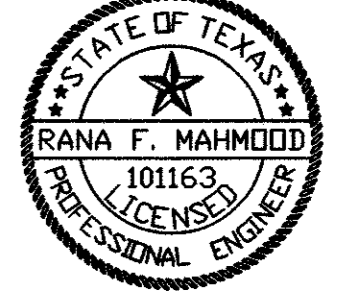
AT&T TEXAS/SWB/T FACILITIES
Approved for AT&T/SWB/T underground conduit facilities ONLY
SIGNATURE VALID FOR ONE YEAR.

N/A Date: _____

CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.
(THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY.) NOT TO BE USED FOR CONFLICT VERIFICATION. (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS.

N/A Date: _____

CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.



HEIGHTS ENGINEERING LLC
CONSULTING ENGINEERS
7324 SOUTHWEST FWY SUITE 995 HOUSTON, TX 77074
PHONE: (713) 333-0393 FAX: (281) 274-9153
www.HEIGHTSENGINEERING.com

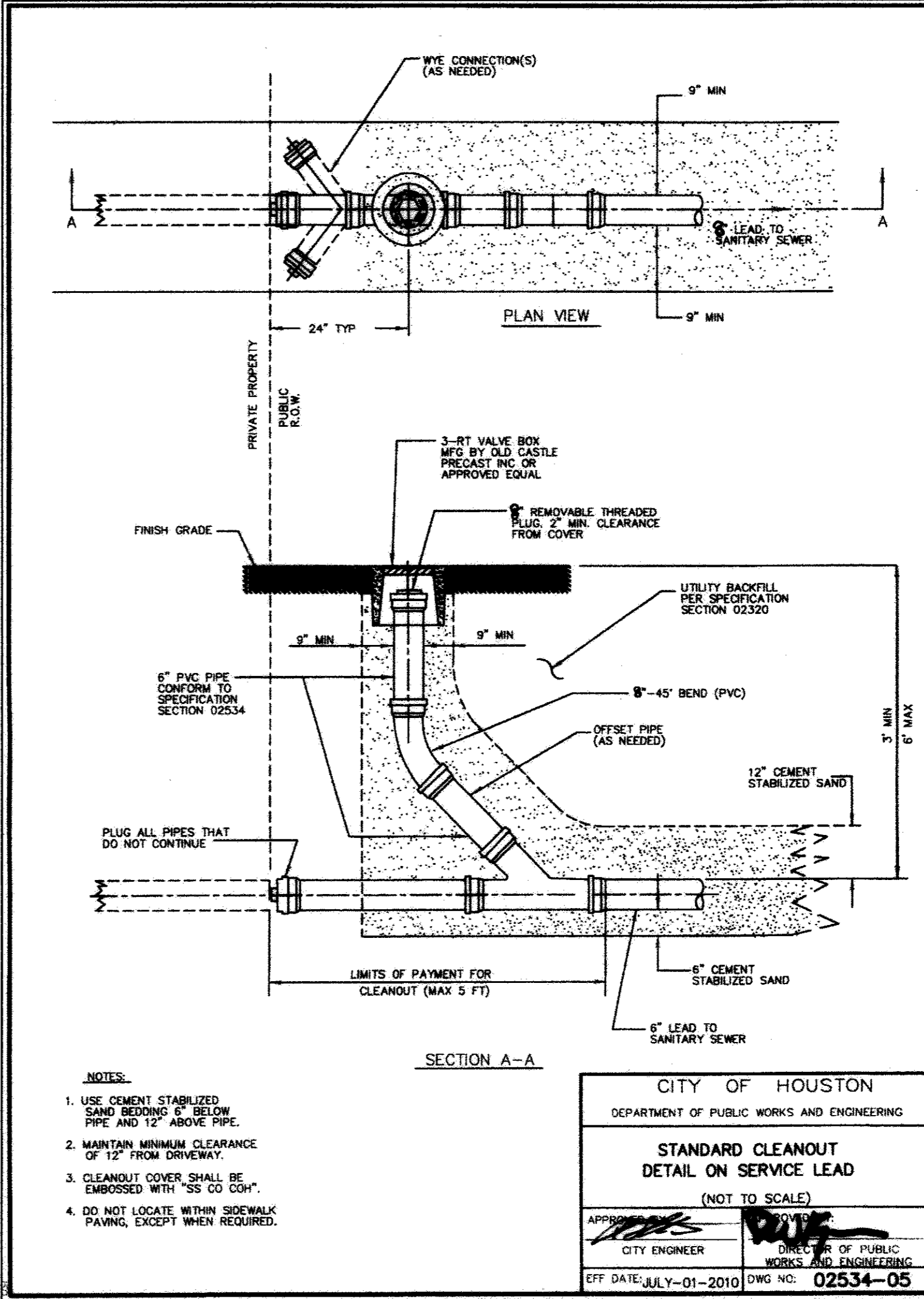
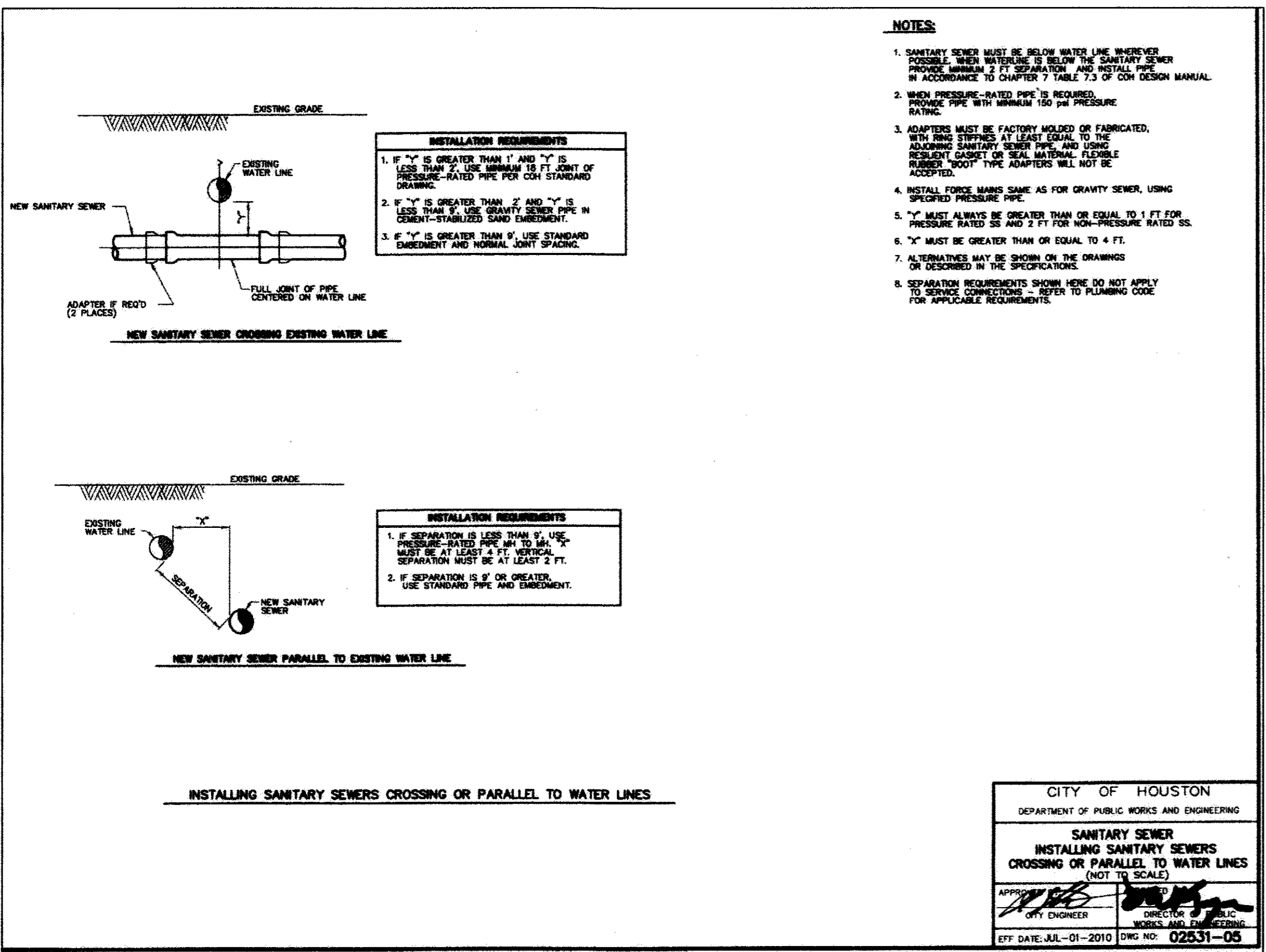
PROP. 8" WATER LINE & 8" SANITARY SEWER
ALONG HARGRAVE ROAD & S.H. 249
TO SERVE HARRIS COUNTY MUD #191
SANITARY SEWER CONSTRUCTION DETAILS
HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190502

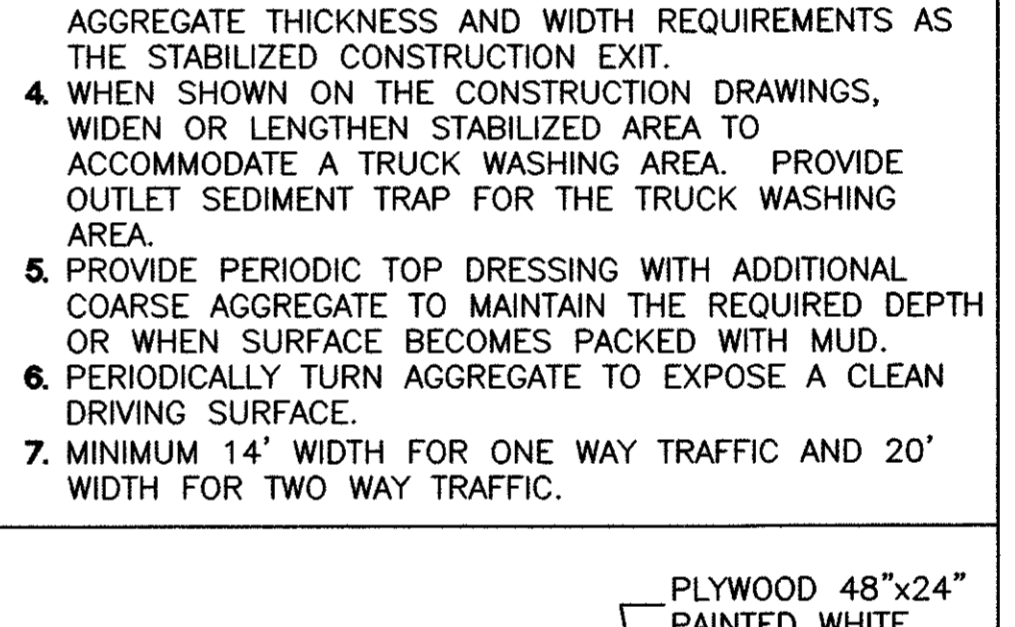
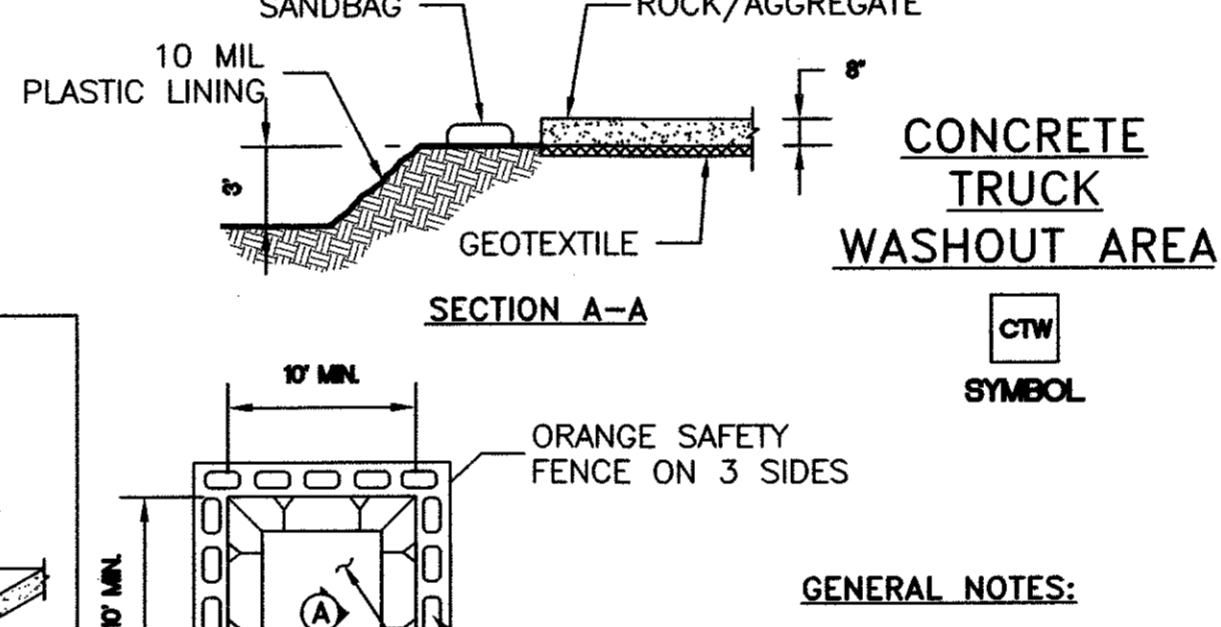
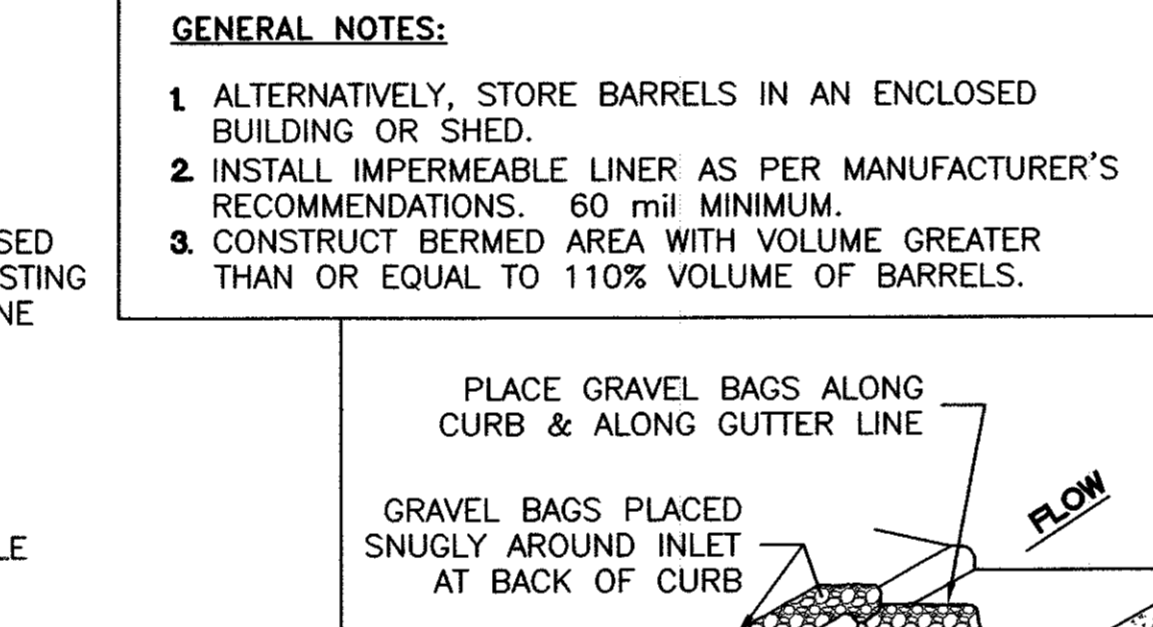
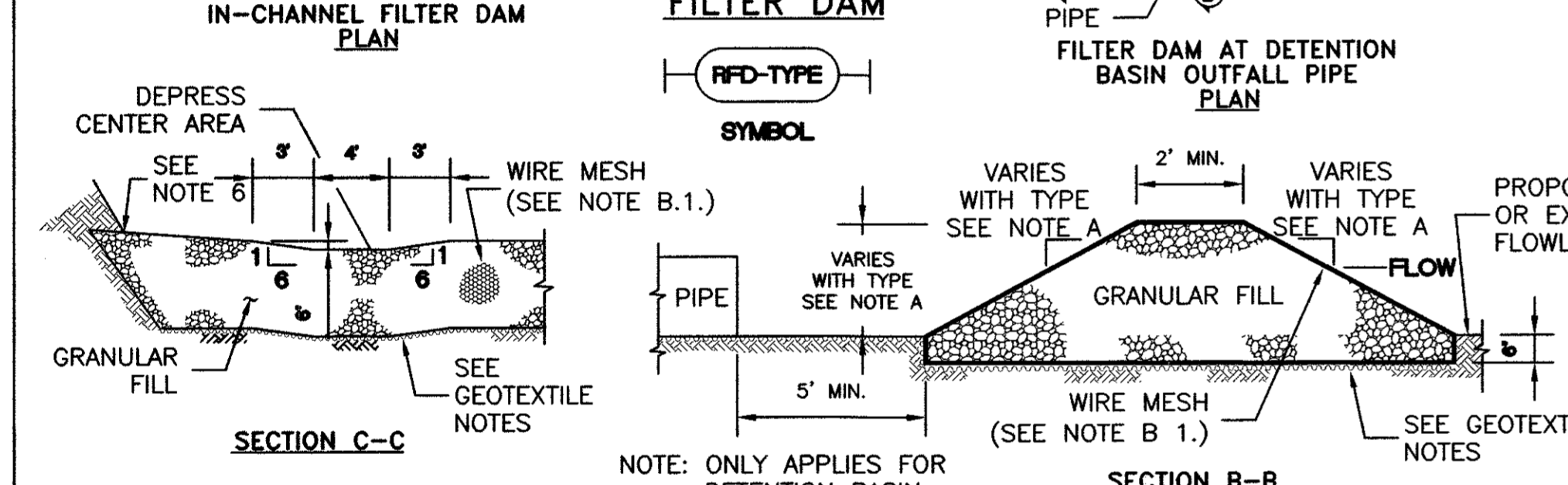
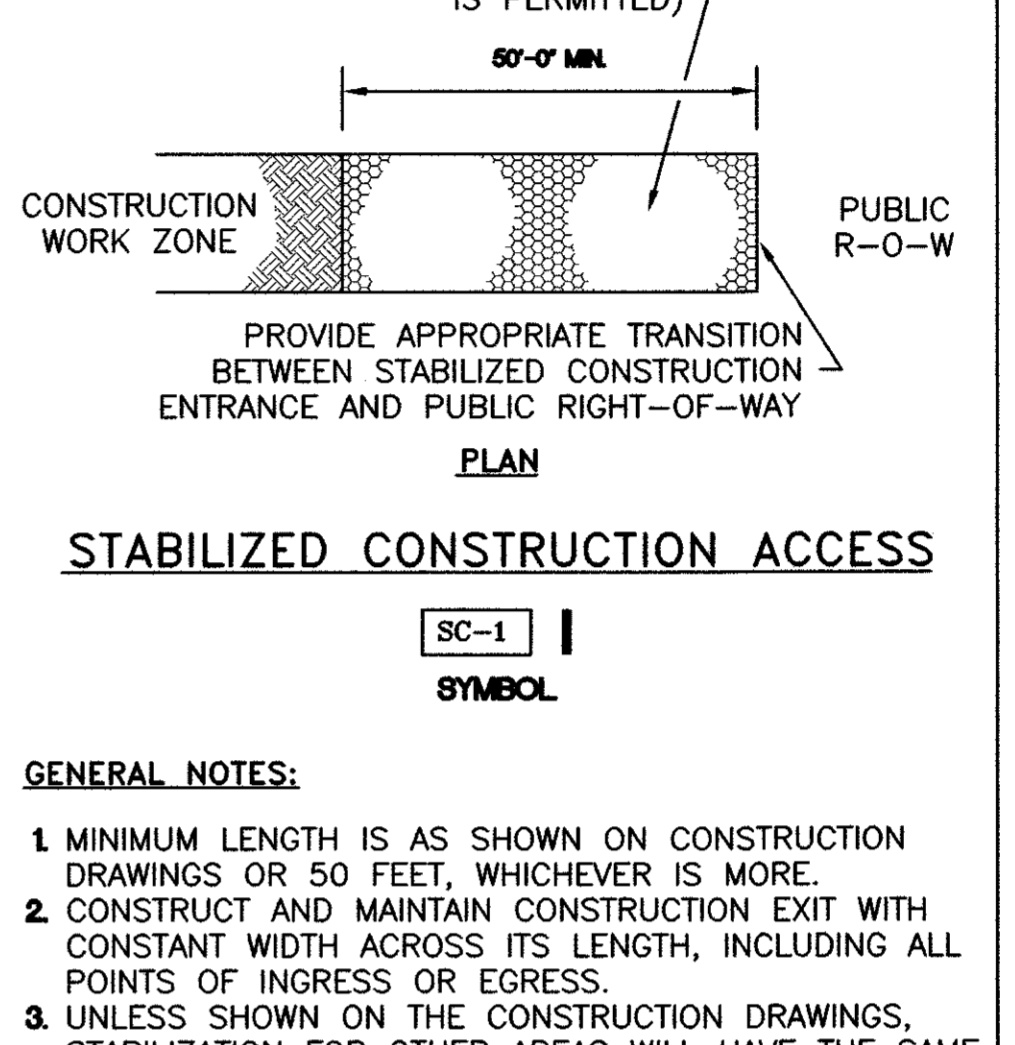
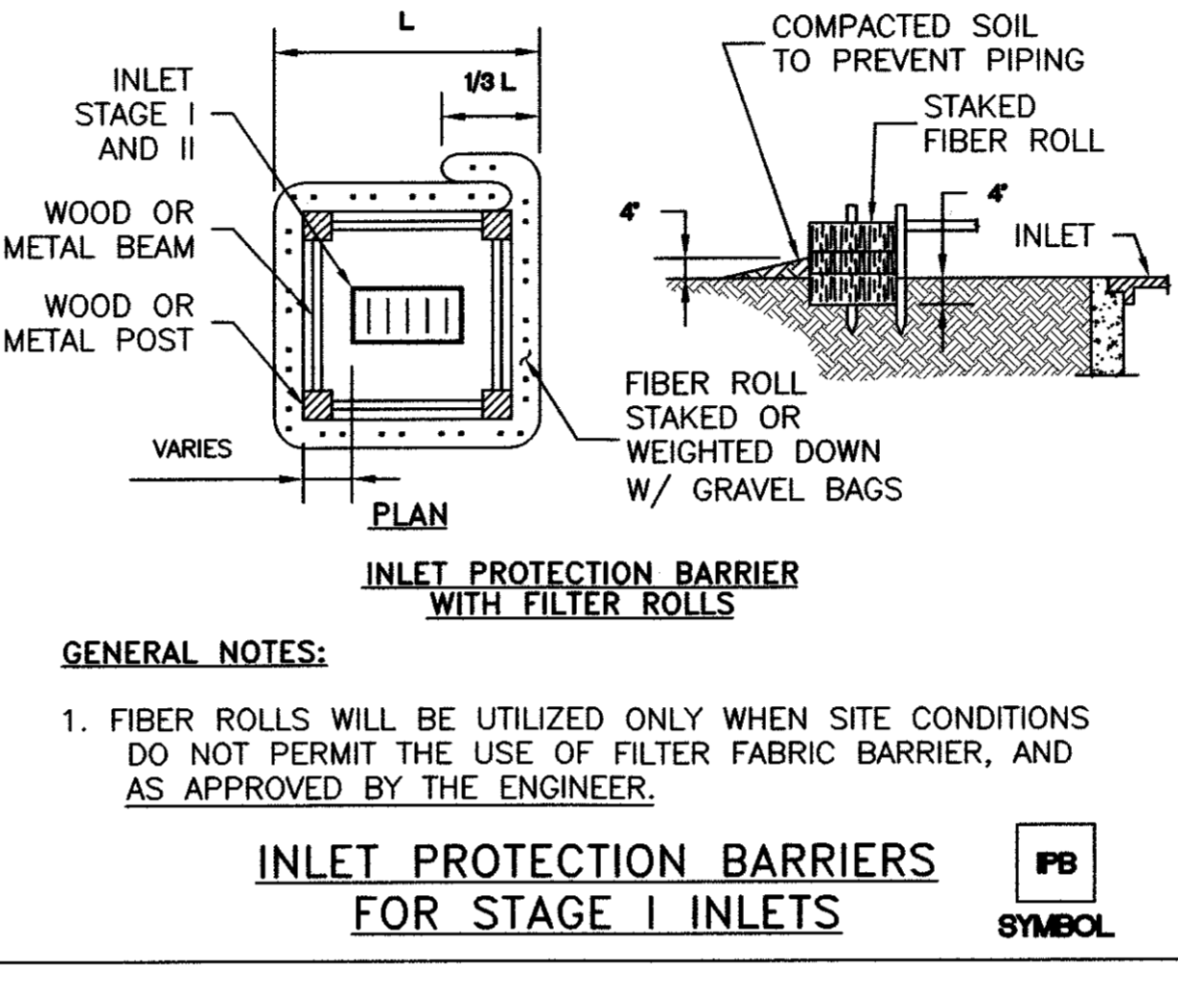
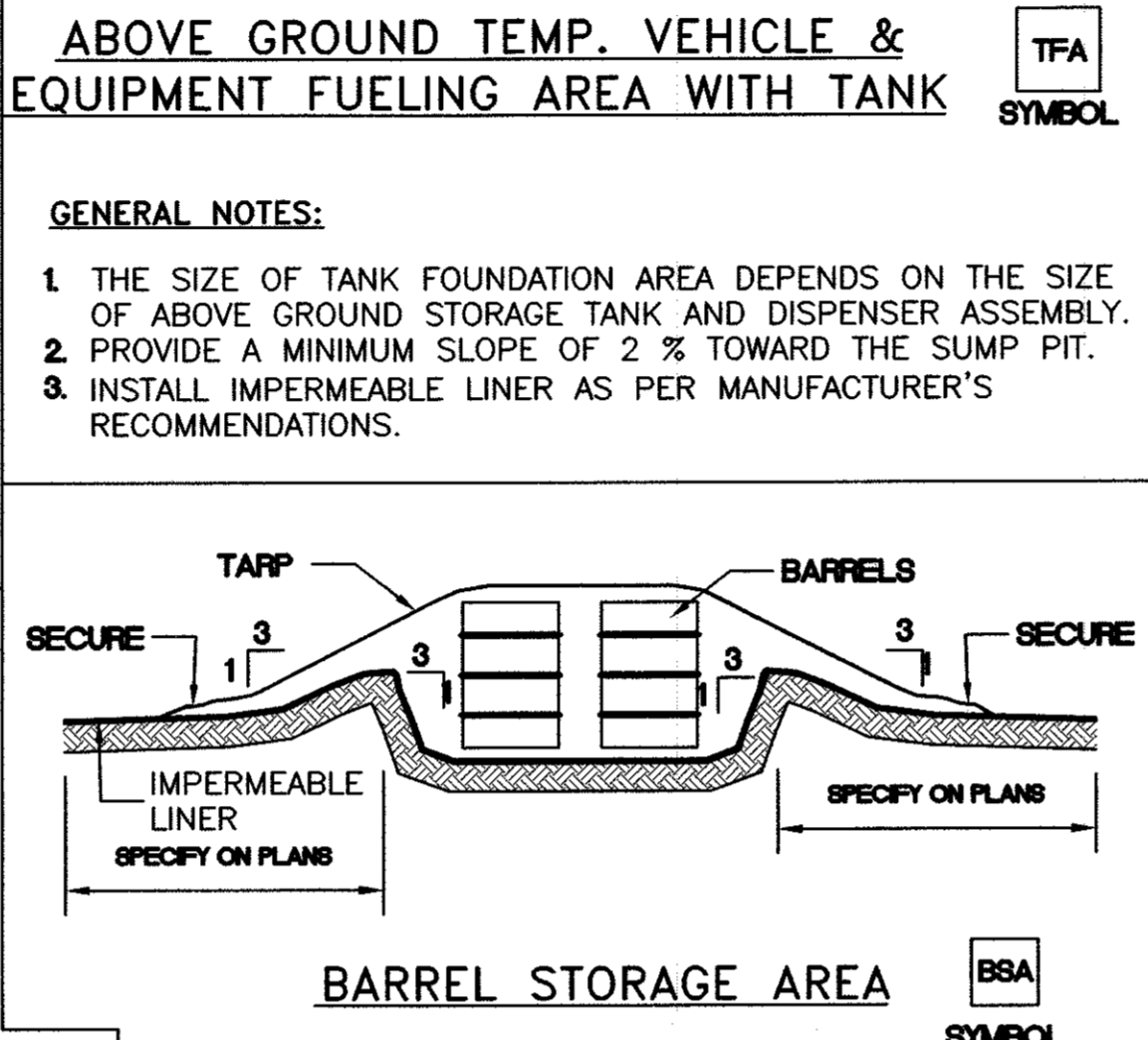
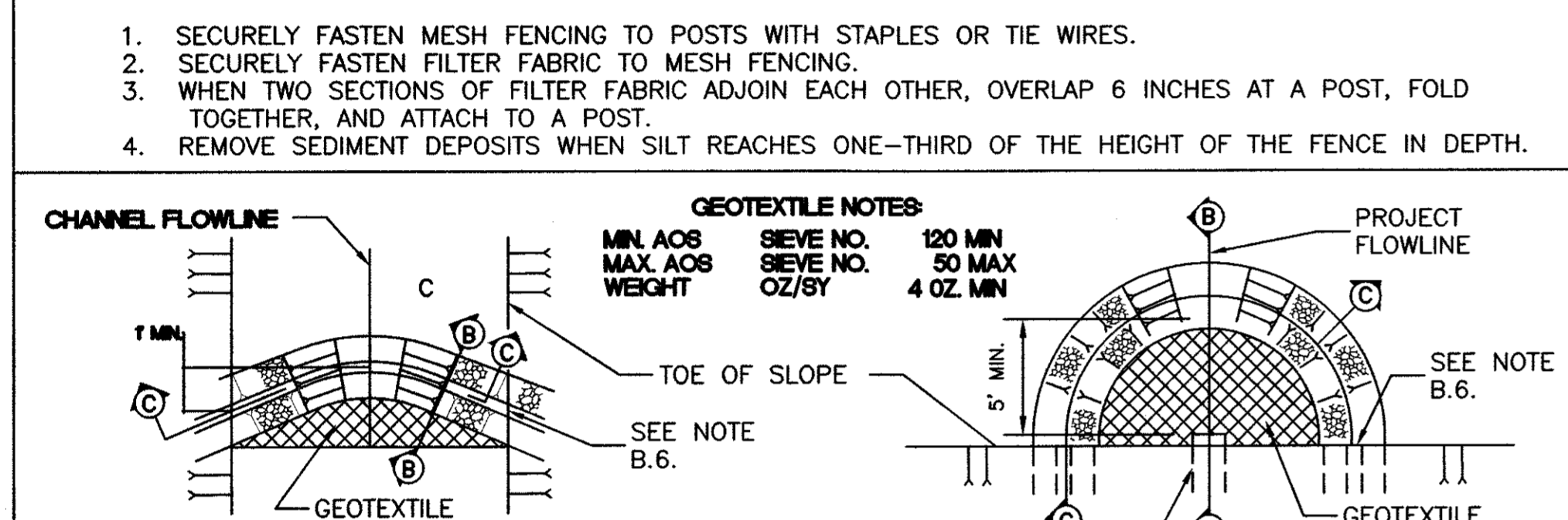
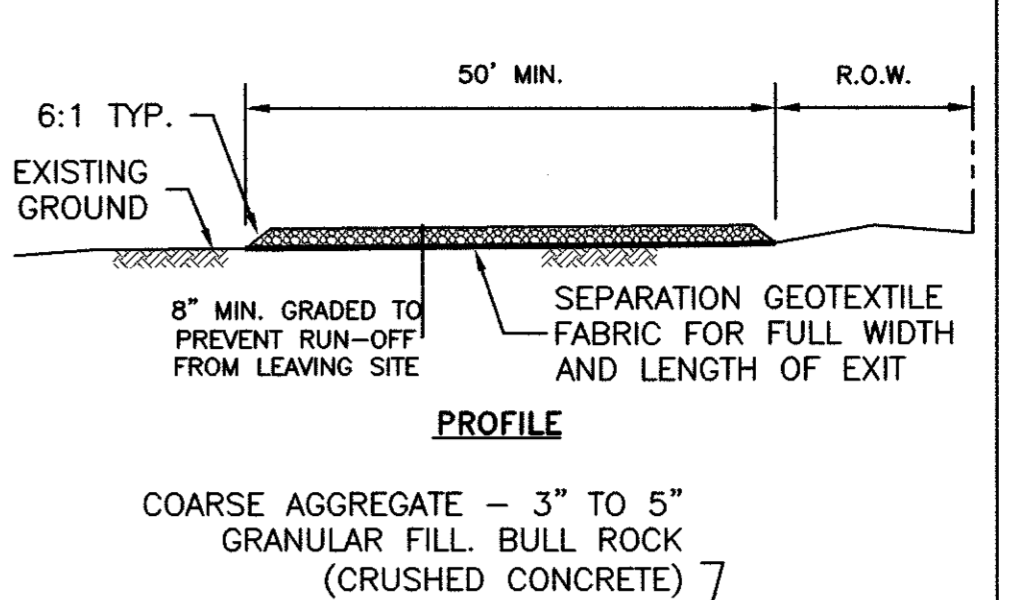
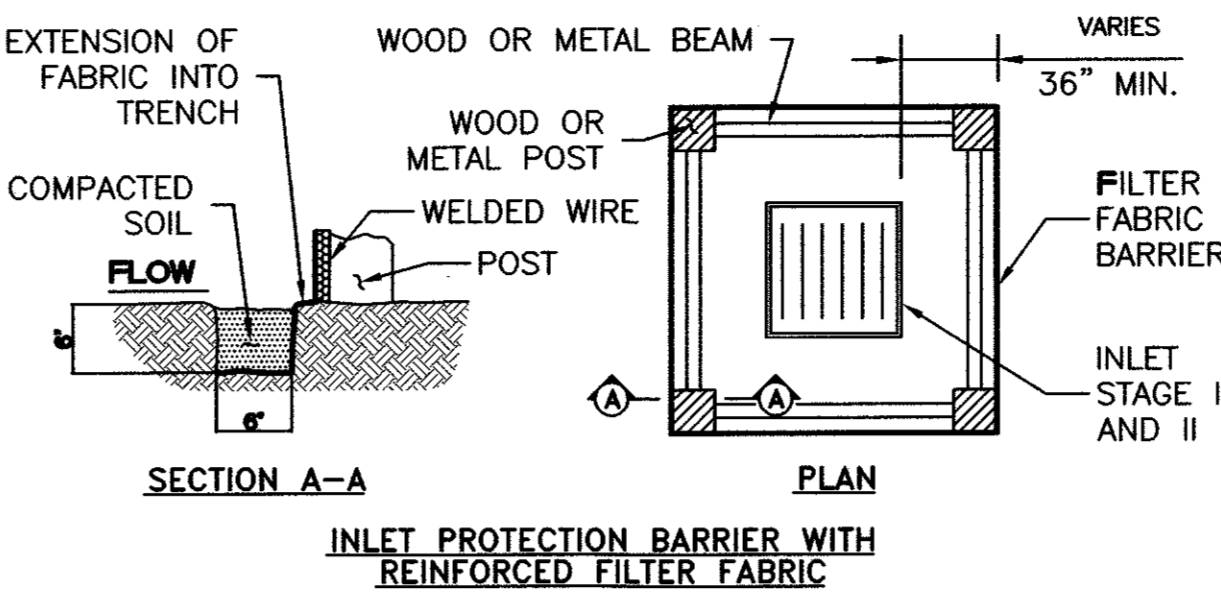
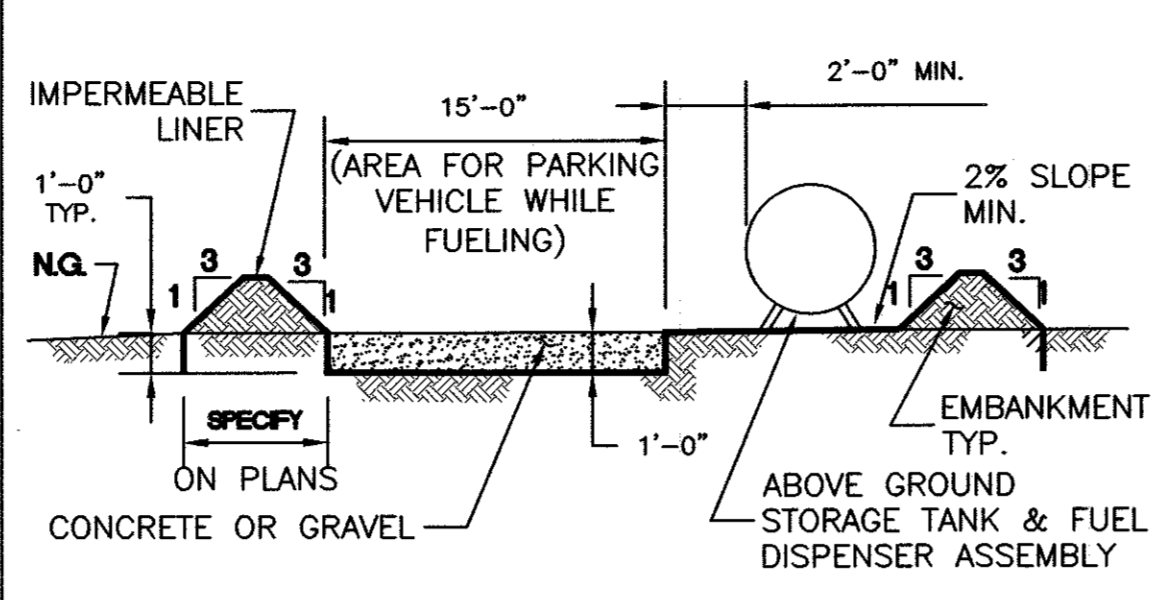
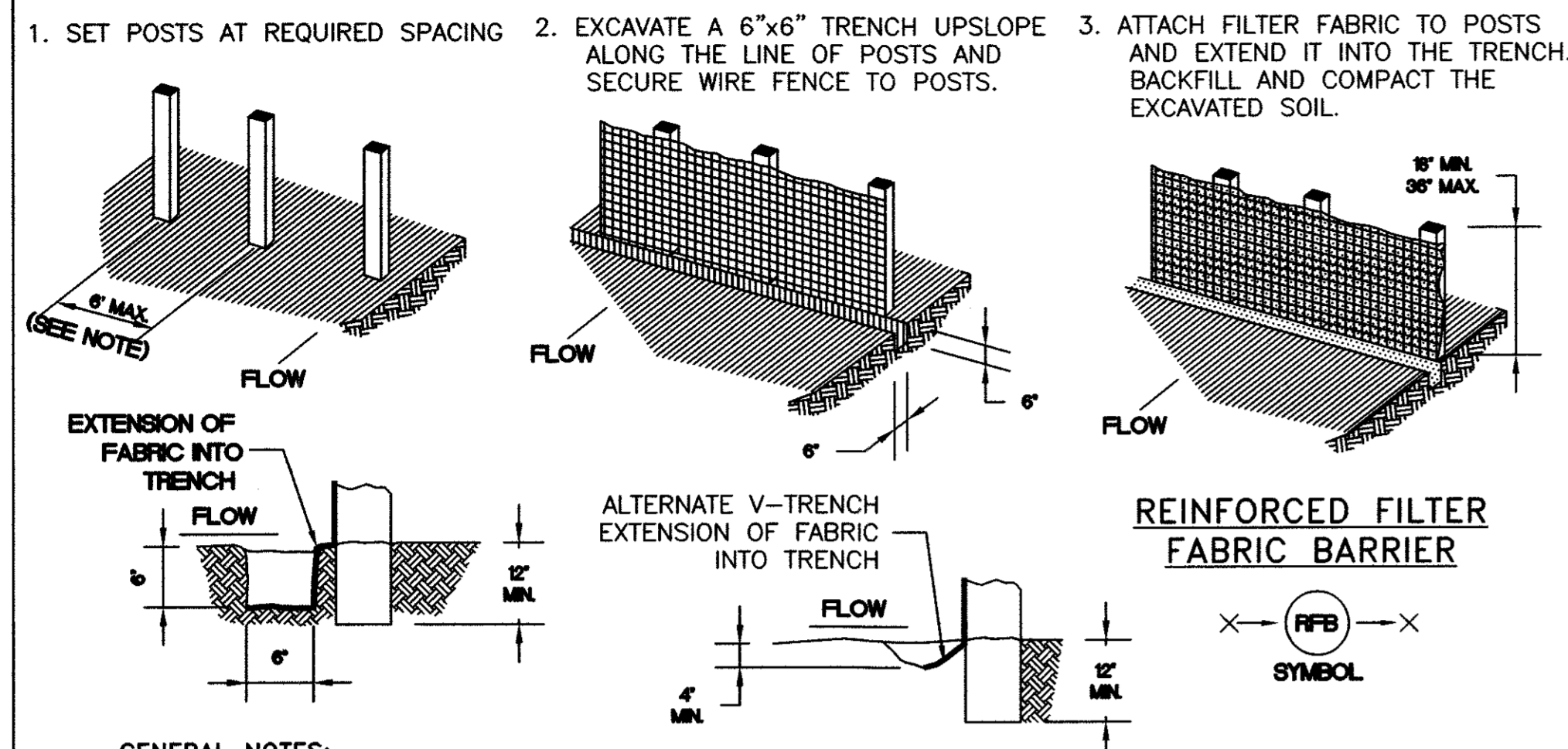
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

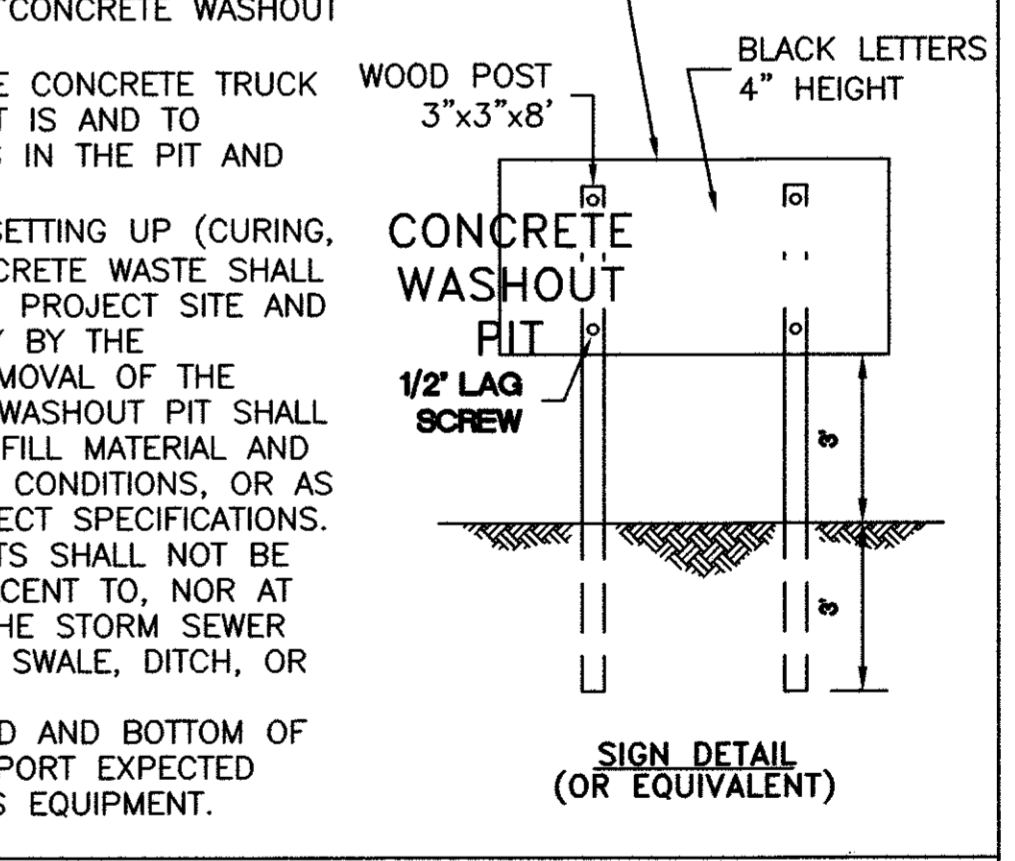
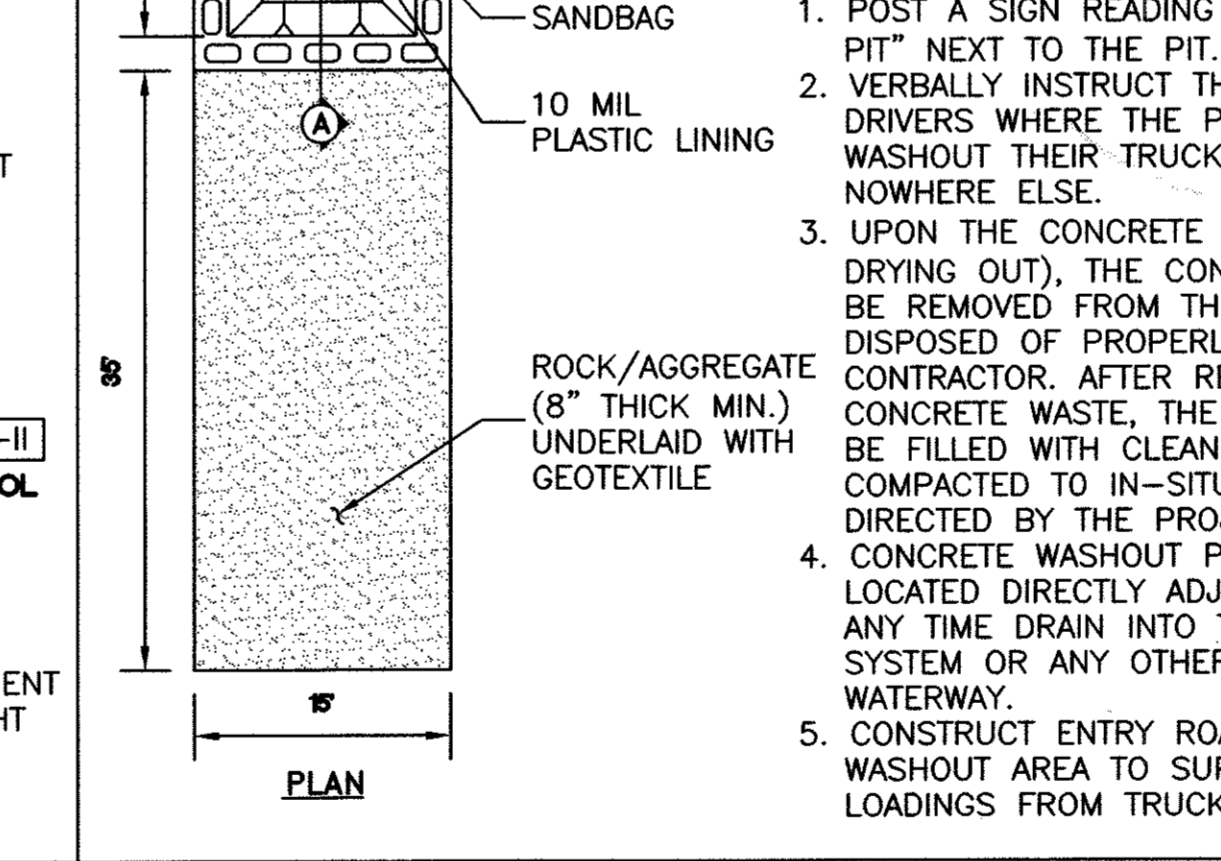
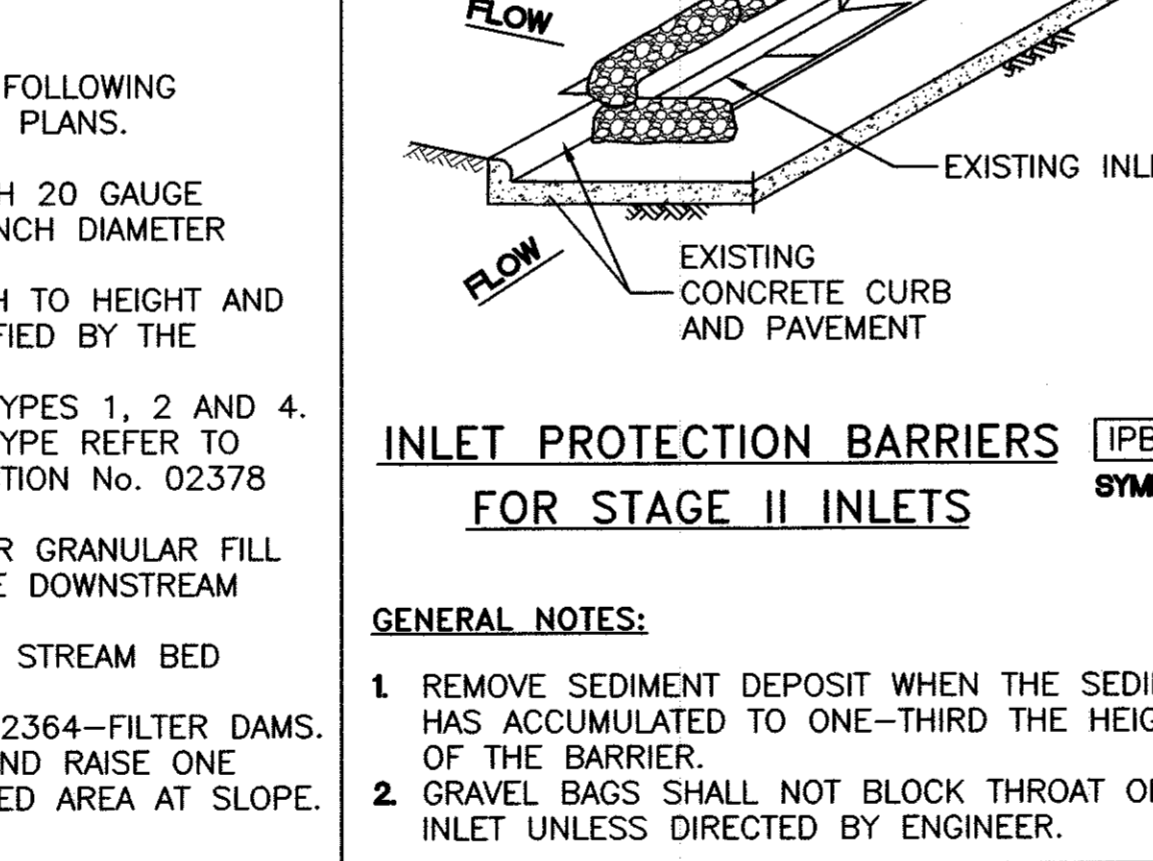
WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	

FILE NO.: _____
DRAWING SCALE: _____
HORIZ: NTS
VERT: _____
DRAWN BY: SA
CHECKED BY: RM
CITY DWG NO. 55489
CITY DRAWING NUMBER





NO.	REVISIONS	DATE	NAME



NO.	REVISIONS	DATE	NAME

HARRIS COUNTY
ENGINEERING DEPARTMENT



NO.	REVISIONS	DATE	NAME

NO.	REVISIONS	DATE	NAME

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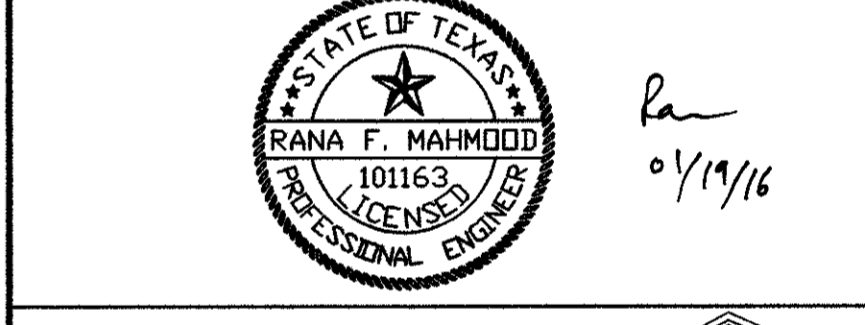
AT&T TEXAS/SWBT FACILITIES
Approved for AT&T/SEC underground conduit facilities ONLY
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[Signature] Date: 01/19/16

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PROP. 8" WATER LINE & 8" SANITARY SEWER
ALONG HARGRAVE ROAD & S.H. 249
TO SERVICE HARRIS COUNTY MUD #191
STORMWATER POLLUTION PREVENTION DETAILS
HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190503
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
WATER	TRAFFIC & TRANSPORTATION
WASTEWATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	

FILE NO.:
DRAWING SCALE
HORIZ: NTS
VERT:
DRAWN BY: SA
CHECKED BY: RM

COH LOG# 15-1136
SHEET NO: 11 OF: 11

CITY DWG. NO. 14190503
ACCEPTED AND FILED
55439
CITY DRAWING NUMBER