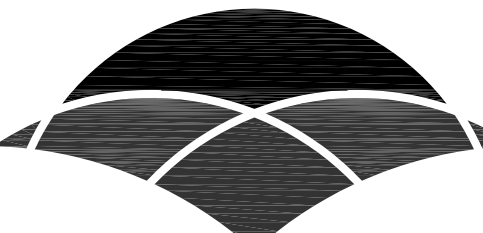


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 Performance of this review does not relieve the applicant from full responsibility to comply with all applicable codes, ordinances and regulations 05/21/19

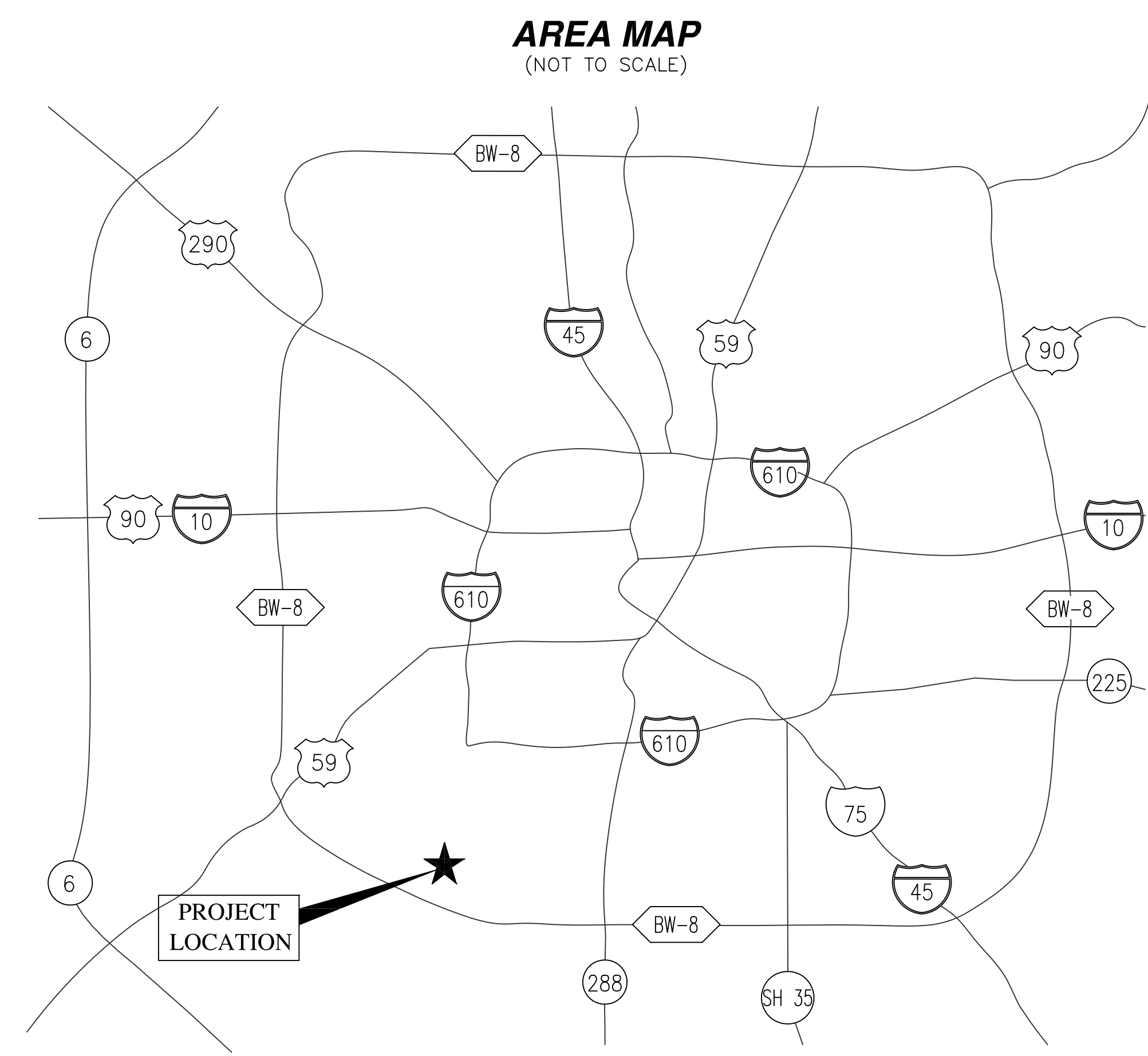
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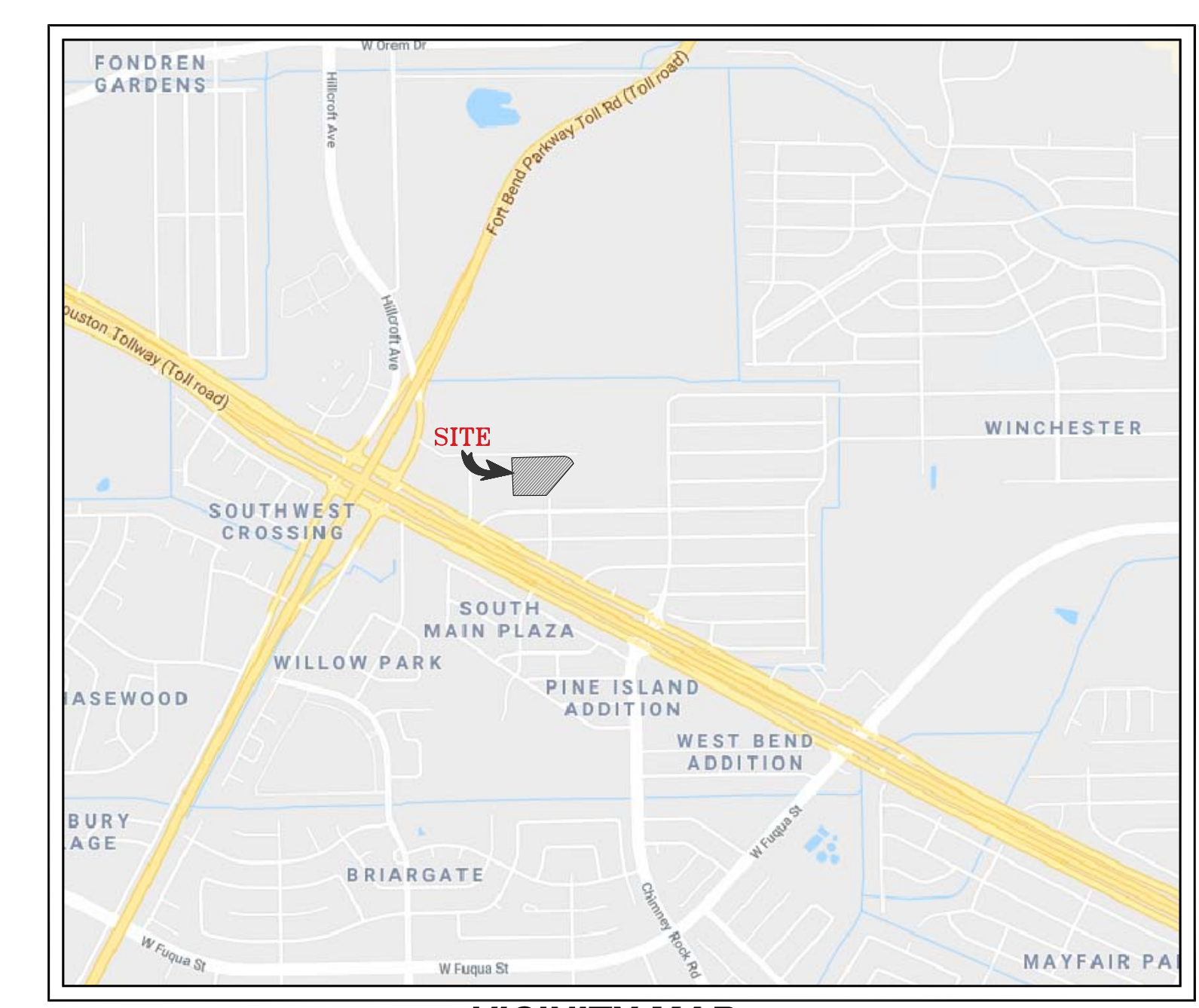
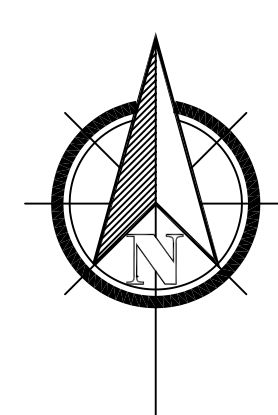
T.B.P.E. FIRM # 19146  
 inquiry@ceengineers.com  
 www.CEENGINEERS.com  
 (O): 832-491-1458  
 (C): 713-540-6639

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# CIVIL CONSTRUCTION PLANS FOR PROPOSED WATER, SANITARY, PAVING, GRADING & DRAINAGE FOR WAREHOUSE 1 @ BRASADA DRIVE 6907 BRASADA DRIVE HOUSTON, TEXAS 77040



INDEX OF DRAWINGS	
DRAWING NUMBER	DRAWING TITLE
AC0.1	COVER SHEET
AC1.0	GENERAL CONSTRUCTION NOTES
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AC2.5	GRADING AND PAVING PLAN
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AC4.0	STORM WATER POLLUTION PREVENTION PLAN & DETAIL
AC5.0	SITE CONSTRUCTION DETAILS I
AC5.1	SITE CONSTRUCTION DETAILS II



**WAREHOUSE 1 @ BRASADA DRIVE**  
 6907 BRASADA DRIVE  
 HOUSTON, TEXAS. 77085



CHEN WANG  
 127458  
 04-17-2019

REVISIONS		
No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	04-17-19	COH COMMENTS 04-05-19

GENERAL NOTES		
Scale: HORIZ: N/A	Issue Date:	04-17-19
VERT: N/A	CEEDC Project Number:	181001A
	CEEDC File Number:	181001AC01
Designed By:	CW	Date: 09-17-18
Checked By:	CW	Date: 09-17-18

**COVER SHEET**

DRAWING: **AC0.1**  
 SHEET: **1 / 9**



## GENERAL CONSTRUCTION NOTES

- CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
- THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT MUST BE CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF THE PUBLIC WORKS AND ENGINEERING, STABILIZE SUBGRADE PER SOILS REPORT OR GEOTECHNICAL ENGINEERS RECOMMENDATION.
- UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567(811) OR 800-344-8377 AND LOGNE STAR NOTIFICATION CENTER AT 800-469-8344 AT LEAST 48 HOURS BEFORE PROCEEDINGS WITH ANY EXCAVATION. UTILITIES MARKED WITH THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
- CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.
- CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING @ 832-394-9098 OR VIA FAX AT 832-395-4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.
- CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.
- CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
- CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.
- THE CONTRACTOR, ON BEHALF OF THE OWNER, IS TO OBTAIN ALL NECESSARY PERMITS REQUIRED BY THE CITY OF HOUSTON OR HARRIS COUNTY, PRIOR TO STARTING CONSTRUCTION.
- 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 FLAG MEN, SIGNAGE, STRIPING, AND WARNING DEVICES, ETC., DURING CONSTRUCTION - BOTH DAY AND NIGHT.
- THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES, AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. THE CONTRACTOR SHALL LOCATE AND PROVIDE THE NECESSARY STORAGE AREAS FOR THE MATERIALS AND EQUIPMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHIPPING AND STORING OF ALL MATERIALS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE SUCH MATERIAL AT THE POINT OF DELIVERY AND TO REJECT ALL DEFECTIVE MATERIAL. 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 MATERIAL.
- 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.
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE FINAL DRAFT OF STORMWATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY HARRIS COUNTY METRO, AND THE CITY OF HOUSTON ALL IN COMPLIANCE WITH THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (PDES) REQUIREMENTS.
- ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
- CONTRACTOR IS TO MAINTAIN A CLEAN PROJECT AREA, FREE FROM WORKMAN TRASH AND REFUSE, AT ALL TIMES.
- THE CONTRACTOR IS REQUIRED TO FOLLOW ALL APPLICABLE OSHA RULES AND REGULATIONS. TRENCH SAFETY SHALL BE DONE IN ACCORDANCE WITH OSHA STANDARDS.
- CONTRACTOR SHALL PREPARE A SET OF "AS-BUILT" DRAWINGS SHOWING ANY FIELD CHANGES MADE TO THE APPROVED ENGINEERING PLANS AND SUBMIT TO THE DESIGN CONSULTANT FOR SUBMISSION TO CITY ENGINEER.
- CONTRACTOR SHALL REVIEW & BECOME THOROUGHLY FAMILIAR W/ THE CONTENTS OF REFERENCED SOILS REPORT, WHICH WILL BE CONSIDERED AN INTEGRAL PART OF THE CONSTRUCTION DOCUMENTS. ANY PROBLEMS ARISING FROM THE CONTRACTOR'S LACK OF FAMILIARITY WITH SOILS REPORT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- NATURAL GROUND ADJACENT TO UTILITY TRENCH EXCAVATION TO BE CLEARED AND GRUBBED PRIOR TO PLACEMENT OF EXCESS TRENCH MATERIAL.

## SANITARY SEWER CONSTRUCTION NOTES:

- ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC" AND ALL CURBS AND INLETS THEREON AND BE SUBJECT TO A STANDARD EXFILTRATION TEST. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF SEWER LINE INCLUDED IN THE PROJECT. REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE, TITLE 30 CHAPTER 317, "DESIGN CRITERIA FOR SEWERAGE SYSTEMS", SHALL GOVERN WHERE CONFLICTS EXIST EXCEPT WHERE CITY REQUIREMENTS ARE MORE STRINGENT.
- ALL MANHOLES ARE TO BE PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02082-01, 02082-02, 02082N-02, 02082-03, AND 02082N-03 UNLESS OTHERWISE NOTED. USE 2010 VERSION AS APPLICABLE.
- SANITARY SEWER MANHOLES WILL HAVE BEDDING AND BACKFILL PER CITY OF HOUSTON STANDARD DETAILS DRAWING NO. 02317-08 UNLESS OTHERWISE NOTED.
- SANITARY SEWER PIPE 6" AND SMALLER SHALL BE SCHEDULE 40 PVC. SANITARY SEWER PIPE 8" AND LARGER SHALL BE SDR-26 PVC.
- ALL SDR-26 PVC PIPE SHALL MEET ASTM SPECIFICATION D2634 AND USE "FULL BODIED" SDR-26 PVC FITTINGS WITH APPROPRIATE ADAPTERS AND SHALL HAVE A CELL CLASSIFICATION OF 1234-B AS DEFINED IN ASTM D-1784 AND SHALL HAVE DIP SIZE OD AND RUBBER GASKET BELL-AND-SPIGOT TYPE JOINT ENDS, UNLESS OTHERWISE NOTED.
- AWWA C-900 DR-18 PVC PIPE USES EITHER AWWA C900 DR-18 PVC FITTINGS OR DIP FITTINGS.
- ALL SANITARY SEWER LINES UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL HAVE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02317-01, 02317-02, OR 02317-03 AS APPLICABLE, WITH 1% SACK CEMENT/10% STABILIZED SAND/BACKFILL UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE, 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED.
- ALL SANITARY SEWERS CROSSING WATER LINE WITH A CLEARANCE BETWEEN 12 INCHES AND 9' FEET SHALL HAVE A MINIMUM OF ONE 18" JOINT OF 150 PSI DUCTILE IRON OR (GREEN) C900 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER PROVIDE MINIMUM 2 FOOT SEPARATION.
- CONTRACTOR SHALL PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 9' FEET BETWEEN WATER LINES AND SANITARY SEWER MANHOLES AND LINES.
- SANITARY SEWER MANHOLE RIMS OUTSIDE OF PROPOSED PAVING WILL BE SET 3" - 6" ABOVE THE SURROUNDING LEVEL FINISHED GRADE AFTER PAVING WITH SLOPED BACKFILL ADDED FOR STORM WATER TO DRAIN AWAY FROM MANHOLE RIM.
- IN WET STABLE TRENCH AREAS USE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBER 02317-02 (2002).
- DEFLECTION TEST: DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID SEWER PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 0.5% IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID MANDREL. IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED AS PER 30 TAC 317.2 LATEST AMENDMENT AND WITHOUT MECHANICAL PULLING DEVICES. NO BALL-TYPE MANDREL IS ALLOWED.
- INFILTRATION, EXFILTRATION OR LOW-PRESSURE AIR TEST: EITHER OF THE FOLLOWING TESTS SHALL BE PERFORMED AS PER TAC, TITLE 30 317.2 WITHIN THE SPECIFIED TOLERANCES ON ALL GRAVITY SEWERS.
  - INFILTRATION OR EXFILTRATION TEST: TOTAL LEAKAGE AS DETERMINED BY A HYDROSTATIC HEAD TEST SHALL NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO (2) FEET.
  - LOW-PRESSURE AIR TEST: PERFORMANCE TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:

A.	6" 340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
B.	8" 454 SECONDS OR 1.520(L) FOR TEST LENGTHS GREATER THAN 298'
C.	10" 567 SECONDS OR 2.374(L) FOR TEST LENGTHS GREATER THAN 239'
D.	15" 850 SECONDS OR 3.342(L) FOR TEST LENGTHS GREATER THAN 159'
E.	18" 1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133'

WHERE L = LENGTH OF LINE OF SAME PIPE SIZE IN FEET.
- "SAN, S, E," INDICATES "SANITARY SEWER EASEMENT"

- FOR SANITARY MANHOLE (MH) RIMS SET INSIDE OF OR @ CURB & GUTTER PAVEMENT AND/OR BELOW T.C., MH RIMS WILL BE SET FINISHED WITH AN ABUTTING PAVED SURFACE. THE WALL CURB, MENDRIL OR EQUAL HEAVY DUTY BOLTED SOLID MH COVER SHALL BE PROPERLY (AND SECURELY) ATTACHED AND SEALED TO ITS COMPATIBLE GASKETED FRAME BY USING BOTH A NEOPRENE GASKET AND (AT LEAST) A COUNTER-SUNK HEX HEAD COARSE THREADED 1/2"-3 UNC STAINLESS STEEL BOLT. THE HEAVY DUTY FRAME WITH RIMS SET SOLID (NO AIR HOLES), SAID FRAME SHALL BE BOTH EMBEDDED INTO THE MH'S TOP AND ALSO SECURELY ANCHORED TO THE UNDERLYING MH STRUCTURE WITH EITHER SECURELY ATTACHED EMBEDDED ANCHOR BOLTS OR THE CONCRETE MH'S EXPOSED REBARS WELDED TO THE FRAME OR OTHER EQUALLY SECURED METHODS TO PREVENT MH COVER/FRAME BLOW-OFFS/EJECTIONS.

## STORM SEWER CONSTRUCTION NOTES

- STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARD DETAILS DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 (OCT. 2009) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- ALL STORM SEWER CONSTRUCTED IN SIDE LOT EASEMENT SHALL BE R.C.P. (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARD DETAILS DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
- ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/10% STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
- ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN 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).
- CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
- ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII).
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL PROVIDE 12" MINIMUM VERTICLE CLEARANCE AT STORM SEWER AND WATER LINE CROSSINGS.
- ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING-MANHOLES, INLETS, AND VALVE BOXES TO GRADE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
- ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO ENSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
- ALL DRIVEWAYS SHALL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURE.
- ALL DITCHES SHALL BE REGRADED TO PROPOSED ELEVATIONS TO ENSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.

## WATER CONSTRUCTION NOTES

- WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL, STANDARD SPECIFICATION, AND CONSTRUCTION DETAILS.
- 4" THRU 12" WATER LINES SHALL BE P.V.C. CLASS 150, DR-18, AWWA C-900 AND 1" THRU 3" DOUBLE WRAPPED IN-BL PVC SCHEDULE 40, 4" THRU 54" D.I.P. WATER LINES SHALL BE AWWA C151 (ANSI A21.51) AND WATER LINES SHALL BE MINIMUM POLYETHYLENE PIPE SHALL BE LINED IN ACCORDANCE WITH AWWA C104 (ANSI A21.4).
- CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED JOINTS WHERE PREVENTING MOVEMENT OF 16" OR GREATER PIPE IS NECESSARY DUE TO THRUST.
- ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT OF ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE ENCASED IN BANK SAND TO 12" OVER PIPE AND BACKFILLED WITH CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
- ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ
- REGULATIONS ALL WATER VALVES SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
- ALL WATER LINES TO BE DISINFECTED IN CONFORMANCE WITH AWWA C-651 AND THE TEXAS STATE DEPARTMENT OF HEALTH. AT LEAST ONE BACTERIOLOGICAL SAMPLE SHALL BE COLLECTED FOR EVERY 1,000 LINEAR FEET OF WATER LINE AND SHALL BE REPEATED IF CONTAMINATION PERSISTS.
- ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB-END GATE VALVES WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE CALLED OUT ON THE PLANS.
- 4" THRU 12" FIT TINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI A21.53, OR PUSH ON FITTINGS PER ANSI A21.10 PRESSURE RATED AT 250 PSIG.
- HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE ENTIRE FOOTAGE OF WATER PIPE LINE INCLUDED IN THE PROJECT.
- ALL WATER LINES TO HAVE 6" MINIMUM COVER TO FINISHED GRADE AND MINIMUM 12" CLEARANCE TO OTHER UTILITIES AT CROSSINGS UNLESS OTHERWISE NOTED ON PLANS. ALL WATER LINE INSTALLED OVER 6" DEEP SHALL UTILIZE RESTRAINED JOINT FITTINGS.
- CONTRACTOR SHALL KEEP WATER PIPE CLEAN AND CAPPED (OR OTHERWISE EFFECTIVELY COVERED) OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.

## SWPPP CONSTRUCTION NOTES

- CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.
- DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORTLY SECTIONS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEEP BACK INTO THE EXCAVATED AREA.
- CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.
- CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
- CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN(14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.
  - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
  - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
  - STRUCTURAL CONTROL MEASURES.
  - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
- CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

## GRADING CONSTRUCTION NOTES

- GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE STARTING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
- BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL VERIFY BENCHMARK ELEVATION AND NOTIFY ENGINEER IF ANY DISCREPANCY AND/OR CONFLICT IS FOUND.
- CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS, AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.
- CONTRACTOR SHALL PROTECT ALL MANHOLE COVERS, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, POWER POLES, GUY WIRES, AND TELEPHONE BOXES THAT ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION.
- ALL EXISTING CONCRETE PAVING, SIDEWALK, AND CURB DEMOLITION SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. DISPOSAL SHALL BE AT AN APPROVED OFF-SITE, LAWFUL LOCATION, UNLESS DIRECTED OTHERWISE BY THE OWNER.
- CONTRACTOR SHALL REFERENCE GEOTECHNICAL REPORT AND ALL ADDENDA FOR BUILDING PAD LIMITS AND PREPARATION REQUIREMENTS.
- ALL SPOOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
- ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL CONFORM TO ALL APPLICABLE AMERICANS WITH DISABILITIES ACT STANDARDS AND THE TEXAS ACCESSIBILITY STANDARDS. IF ANY DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO POURING ANY PAVEMENT.
- ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL NOT EXCEED A RUNNING SLOPE OF 5% (1:20) WITHOUT A RAMP, AND SHALL NOT EXCEED A 2% CROSS SLOPE (1:50).
- THE ACCESSIBLE PARKING AND PASSENGER LOADING AREAS SHALL NOT EXCEED A SLOPE OF 2% (1:50) IN ANY DIRECTION.
- ALL EXISTING APPURTENANCES ON SITE SHALL BE ADJUSTED TO PROPOSED GRADE AS APPLICABLE.

## CENTERPOINT ENERGY GAS & ELECTRIC

### CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY, INTRASTATE PIPELINE, LLC, WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 947-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
  - WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
  - WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

### WARNING: OVERHEAD ELECTRICAL LINES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:

- ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX(6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
- OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

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

### ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN, IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

## AT&T TEXAS/SWBT FACILITIES

- THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
- THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
- WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLES FOR SUPPORT.
- THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
- PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER MR. ROOSEVELT LEE, JR. AT (713)567-4552 OR E-MAIL HIM AT RJ2759@att.com, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

## PAVING CONSTRUCTION NOTES

- CONTRACTOR SHALL OBTAIN ENGINEERS OR OWNERS APPROVAL OF GRADES PRIOR TO PLACEMENT OF ANY PAVEMENT. IF APPROVAL IS NOT OBTAINED CONTRACTOR SHALL BE RESPONSIBLE FOR PAVEMENT PLACED.
- ALL TEMPORARY AND PERMANENT SIGNAGE MUST COMPLY WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, MOST RECENT EDITION WITH REVISIONS.
- ALL PAVING WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN INDICATE FACE OF CURB. T.C. INDICATES TOP OF CURB. T.P. INDICATES TOP OF PAVEMENT ELEVATIONS.
- THE CONTRACTOR SHALL PROTECT ALL UTILITIES, SIDEWALKS, PAVEMENT, ETC., AND SHALL REPAIR OR REPLACE AT CONTRACTOR'S EXPENSE FOR ANY FACILITIES DAMAGED DURING PAVING OR GRADING OPERATIONS.
- DRIVEWAY CONNECTIONS IN CITY OF HOUSTON STREET RIGHT-OF-WAY SHALL COMPLY WITH CITY OF HOUSTON DRAWING NO. 17201-1 OR DRIVEWAY DETAILS ON THESE PLANS.
- AREAS TO BE FILLED SHALL BE SCARIFIED AND COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY (+3% OF OPTIMUM MOISTURE) PER ASTM D-698 TO A DEPTH OF 6" PRIOR TO FILL PLACEMENT. FILL MATERIAL SHALL BE PLACED IN MAXIMUM 8" THICK LIFTS (MEASURED LOOSE) AND COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY (+3% OF OPTIMUM MOISTURE) PER ASTM D-698. FILL SHALL BE CLEAN EARTH AND BE FREE FROM TRASH, VEGETATION AND LARGE TEST REPORTS SHALL BE SUBMITTED PRIOR TO PLACEMENT OF PAVEMENT.
- NECESSARY TESTING OF SUBGRADE AND PAVEMENT TO PROVE THAT THESE ITEMS MEET REQUIREMENTS SHALL BE DONE BY A COMMERCIAL TESTING LABORATORY ENGAGED BY THE CONTRACTOR.
- WHERE PROPOSED PAVEMENT IS TO MEET EXISTING PAVEMENT, THE EXISTING REBAR OR DOWELS SHALL BE CLEANED AND TIED INTO THE PROPOSED PAVEMENT, USING A MINIMUM OF 30 BAR DIAMETERS RAPS, WHERE PROPOSED CONCRETE ENDS AT A CONSTRUCTION JOINT OR EXPANSION JOINT, THE REBAR SHALL BE EXTENDED A MINIMUM LENGTH OF 30 BAR DIAMETERS, COATED WITH ASPHALT AND WRAPPED WITH BURLAP.
- ALL CONCRETE PAVEMENT SHALL BE OF SPECIFIED THICKNESS SHOWN. ALL CONCRETE SHALL BE 5.5 SACKS MIX WITH A MINIMUM 500 P.S.I. FLEXURAL STRENGTH AT 7 DAYS AND A MINIMUM 3,500 COMPRESSIVE STRENGTH AT 28 DAYS. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
- ALL CUL-DE-SAC ISLANDS AND MEDIANS SHALL HAVE STANDARD 6" CONCRETE CURBS UNLESS NOTED OTHERWISE ON PLAN.
- SIDEWALKS SHALL BE BUILT IN ACCORDANCE WITH CITY OF HOUSTON AND HARRIS COUNTY DESIGN STANDARDS. ALL INTERSECTIONS SHALL BE CONSTRUCTED WITH WHEELCHAIR RAMPS. IN CONFORMANCE WITH THE GOVERNOR'S OFFICE OF TRAFFIC SAFETY MEMORANDUM DATED MAY 6, 1976 (HIGHWAY SAFETY ACT, 1973, SEC 288), AMERICANS WITH DISABILITIES ACT (ADA) AND TEXAS ACCESSIBILITY STANDARDS (TAS) SHALL BE COMPLIED WITH IN ALL SIDEWALK CONSTRUCTION.
- CONCRETE WASH-OUT AREAS ARE TO BE PROVIDED BY THE CONTRACTOR AT A LOCATION ACCEPTABLE TO THE OWNER. UNDER NO CIRCUMSTANCES IS THE CONTRACTOR TO PERMIT CONCRETE TRUCKS TO WASH AT ANY AREA OTHER THAN THAT DESIGNATED.
- STREET NAME SIGNS SHALL BE BUILT IN ACCORDANCE WITH CITY OF HOUSTON REQUIREMENTS AND SPECIFICATIONS, AND BEAR STREET NAMES AS PER RECORDED PLAT.
- A DOUBLE-REFLECTORIZED BLUE TRAFFIC MARKER SHALL BE PLACED ON A ONE FOOT OFFSET OF THE PAVEMENT CENTERLINE AT ALL FIRE HYDRANT LOCATIONS BY THE CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS HAVE A MARKER PLACED ON EACH STREET.

## STANDARD PERMIT NOTES

- CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT PRIOR TO STARTING CONSTRUCTION.
- OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR CULVERTS WITHIN HARRIS COUNTY ROAD RIGHT OF WAY. NOTE:
  - "AUTHORIZATION NOTICE ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE ENGINEERING DEPARTMENT PERMIT OFFICE REQUIRED PRIOR TO CONSTRUCTION OF UTILITIES OR LEFT TURN LANES WITHIN HARRIS COUNTY RIGHT-OF-WAY. CONTACT HARRIS COUNTY PERMIT OFFICE (713-956-3000)

## DEPARTMENT OF PUBLIC WORKS AND ENG STREET & BRIDGE NOTES

- DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE "INFRASTRUCTURE DESIGN MANUAL" REFERENCED AT [http://www.publicworks.houstontx.gov/document-center/cat\\_view/861818176262/90-design-manuals/364-city-of-houston-infrastructure-design-manual.html](http://www.publicworks.houstontx.gov/document-center/cat_view/861818176262/90-design-manuals/364-city-of-houston-infrastructure-design-manual.html) SHALL BE AS GOOD A REFERENCE AS ANY OTHER STANDARD ESTABLISHED IN THE CITY OF HOUSTON.
- FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 6" PER LIFT. STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL AREA SHALL BE SEEDED AND FERTILIZED WITH 10 WORKING DAYS.
- UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL EXISTING AND NEW EXCAVATIONS TO REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
- CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL EXISTING AND NEW EXCAVATIONS TO REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
- EXISTING PAVEMENTS, CURBS, DRIVEWAYS, AND SIDEWALKS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDA AND AMENDMENTS THEREOF, AT NO COST TO THE CITY OF HOUSTON.
- CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY UPON COMPLETION OF THIS SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO SATISFACTION OF THE OWNING AUTHORITY.
- EXPOSED 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS 24" LONG 24" C-C DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB WITH "90 ROC" OR EQUAL.
- CONTRACTOR TO TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG AREAS OF EXCAVATION.
- CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAWS CONCERNING EXCAVATION, TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE #87-1457.
- WHEEL CHAIR RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS AT ALL INTERSECTIONS WHERE SIDEWALKS EXIST AND THE EXISTING CURB OR SIDEWALK IS DAMAGED OR REMOVED DURING CONSTRUCTION.
- WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S STANDARD CONSTRUCTION SPECIFICATIONS AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN SHALL BE CONSISTENT WITH THE MINIMUM STANDARD ESTABLISHED IN THE "DESIGN MANUAL FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING".
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES TO EXISTING WATER, WASTEWATER, STORM SEWER AND TRAFFIC SIGNAL CONDUITS. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPT. OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THEREOF, AT NO COST TO THE CITY OF HOUSTON.
- PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING AT (PHONE) 832-394-9098 OR 832-395-4424(FAX) AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS FOR STREET CONSTRUCTION.
- DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 6-INCHES OFFSET OF THE CENTERLINE OF ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

## DEPARTMENT OF PUBLIC WORKS AND ENGINEERING TRAFFIC NOTES

- 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.
- NO TRAFFIC LANES SHALL BE CLOSED DURING THE HOURS OF 5:30AM TO 7:00PM MONDAY THRU FRIDAY IN DOWNTOWN/MIDTOWN AREA.
- NO LANES ON MAJOR THOROUGHFARES MAY BE BLOCKED FROM 6:00AM TO 9:00AM AND 4:00PM TO 7:00PM UNLESS OUTLINED IN THE MOBILITY PERMIT.
- NO TRAFFIC LANES SHALL BE CLOSED IN ALL RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM.
- CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS.
- CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH STEEL PLATES ANCHORED PROPERLY DURING ON-WORKING HOURS, AND OPEN THE LANES FOR NORMAL TRAFFIC FLOW.
- OFF-DUTY UNIFORMED POLICE OFFICER(S)/FLAGGER(S) IS/ARE REQUIRED TO DIRECT TRAFFIC WHEN THE LANES ARE BLOCKED.
- IN THE EVENT THAT NO "TRAFFIC CONTROL PLANS" EXIST AS A PART OF CONTRACT DRAWINGS, CONTRACTOR MAY PREPARE PLANS AND SUBMIT TO THE PLAN REVIEW SECTION FOR APPROVAL TEN DAYS PRIOR TO IMPLEMENTATION.
- IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, HE/SHE SHALL BE RESPONSIBLE FOR PREPARING AND SUBMITTING AN ALTERNATE SET OF PLANS TO THE PLAN REVIEW SECTION FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
- APPROVED COPIES OF TRAFFIC CONTROL PLANS AND MOBILITY PERMITS SHALL BE MADE AVAILABLE FOR INSPECTION AT THE JOB SITE AT ALL TIMES. CONTRACTORS MUST SECURE MOBILITY PERMITS FROM THE CITY'S TRAFFIC MANAGEMENT AND MAINTENANCE BRANCH BEFORE CLOSING A LANE/SIDEWALK. THE REQUEST MUST BE MADE AT LEAST 10 DAYS IN ADVANCE OF THE CLOSURE. NOTE THAT WORKING HOURS MAY BE RESTRICTED OR THE REQUEST MAY BE DENIED. CALL 832-395-5020 FOR AN APPLICATION OR LOGON TO WWW.GHWS.HOUSTONTX.GOV.

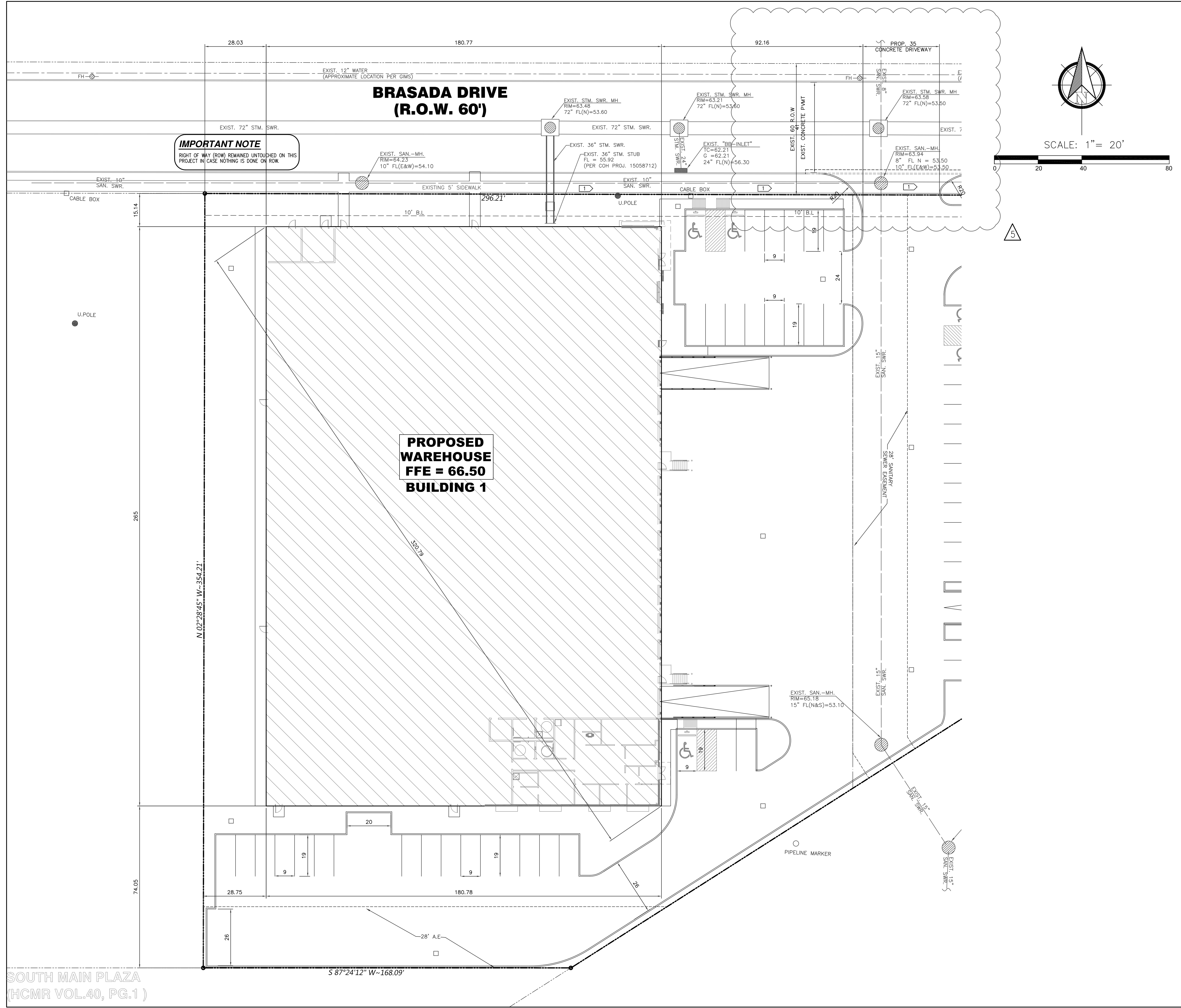
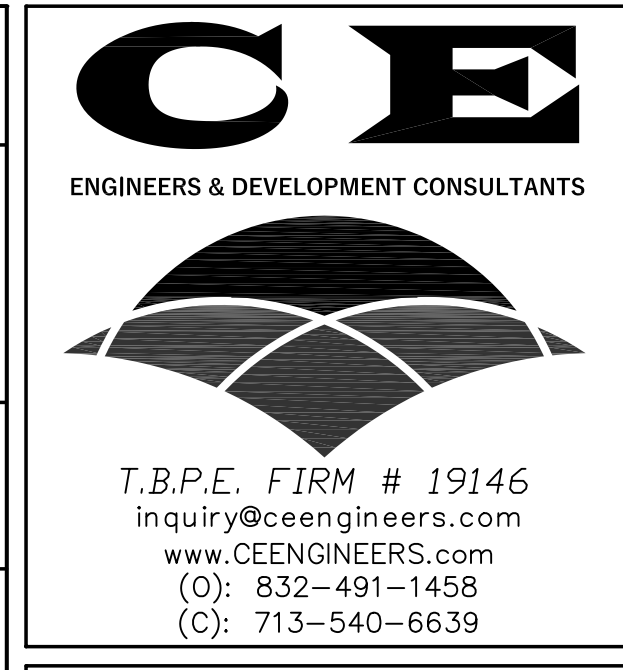
## STANDARD HCFCD CONSTRUCTION NOTES

- OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL PERMITS AND APPROVALS, WITH ASSISTANCE FROM ENGINEER, IF NECESSARY. OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.
- NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT, IF APPLICABLE TO HCFCD. 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092 ATTN: PROPERTY MANAGEMENT DEPT. BY HAND DELIVERY, OR FAX TO 713-684-4129 (FAX NUMBER).
- ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT-OF-WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
- PROTECT, MAINTAIN AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
- BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
- ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERKMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
- BACKFILL IN ACCORDANCE WITH THE HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATION, SECTION 02315-EXCAVATING AND BACKFILLING OR EQUIVALENT.
- EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL. SO THE FACILITY WILL FUNCTION AS INTENDED. FOR WET BOTTOM DETENTION BASINS, ENSURE NO WATER IS ABOVE THE DESIGN LEVEL IN THE WET BOTTOM DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL.
- MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.
- REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD CONTROL DISTRICT OR DRAINAGE RIGHT-OF-WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN AREA WITHOUT.
- FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

City of Houston Texas







A SUBDIVISION OF 3.512 ACRES BUSINESS PARK, SECTION 1, TEXAS.

FLOODPLAIN REFERENCE MAP LOCATED FROM THE INTERSECT OF NORTH IN SYNOTT ROAD AP LOCATED ON THE EAST HEAD OF BOULEVARD.

TEMPORARY BENCHMARK - 18147695 NEAR THE SOUTHWEST CORNER OF THE SUBJECT TRACT ALONG THE R.O.W. OF BELLAIRE BOULEVARD.

ALL OF THIS PROPERTY LIES IN ZONE "X" (UNSHADED) OF THE FLOOD INSURANCE RATE MAP, COMMUNALITY 13007. UNSHADED AREAS ARE NOT IN A FLOOD HAZARD ZONE. THE SHADING IS FOR INFORMATION ONLY AND DOES NOT CONSTITUTE THE APPLICABLE FLOOD PLAN.

ALL DIMENSIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODES, ORDINANCES AND REGULATIONS.

**LEGEND 05/21/19**

**REVISIONS**

No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	02-06-19	COH REVIEW COMMENTS
4	04-17-19	COH COMMENTS 04-05-19
5	05-02-19	COH COMMENTS 04-27-19

**GENERAL NOTES**

Scale: HORIZ = 20' Issue Date: 02-06-19  
 VERT: N/A  
 CEEDC Project Number: 181001A CEEDC File Number: 181001AC17  
 Designed By: CW Date: 09-17-18  
 Checked By: CW Date: 09-17-18

**GENERAL NOTES**

Scale: HORIZ = 20' Issue Date: 02-06-19  
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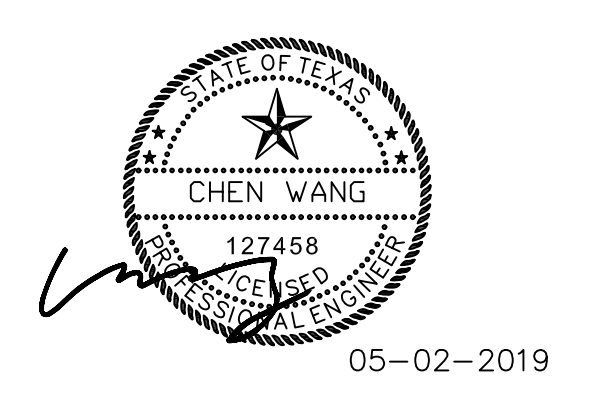
**OVERALL SITE PLAN BUILDING 1**

DRAWING: **AC1.7**

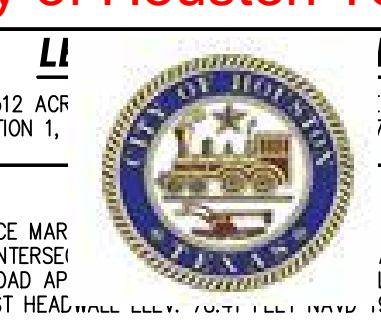
SHEET: **3 / 9**

**WAREHOUSE 1 @ BRASADA DRIVE**

**6907 BRASADA DRIVE HOUSTON, TEXAS. 77085**







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**CE**  
ENGINEERS & DEVELOPMENT CONSULTANTS

T.B.P.E. FIRM # 19146  
inquiry@ceengineers.com  
www.CEENGINEERS.com  
(C): 832-491-1458  
(O): 713-540-6639

**KEYED PLAN NOTES:**

- CONTRACTOR SHALL CONNECT ALL DOWNSPOUTS W/ 8" HDPE PIPE TO UNDERGROUND STM SWR (TYP).  
RE: ARCH.PLAN FOR DOWNSPOUT SIZE AND LOCATION.
- GRATE INLET SKIMMER BOX ARE TO BE INSTALLED AND PERMANENTLY MAINTAINED AFTER SITE IS STABILIZED AND INLET EROSION CONTROL IS REMOVED.  
BRAND: SUNTREE TECHNOLOGIES INC.  
MOEDL# GISB-18-18-18, (QTY:1)  
MOEDL# GISB-24-24-24, (QTY:1)  
MOEDL# GISB-30-30-25, (QTY:1)  
SEE DETAIL ON SHEET AC5.0.  
AS MANUFACTURED BY (OR EQUAL):  
SUNTREE TECHNOLOGIES INC.  
798 CLEARLAKE RD, SUITE #2  
PHONE: (321) 637-7552 EMAIL: INFO@SUNTREE TECH.COM

**ANALYSIS OF IMPERVIOUS COVER**

IMPERVIOUS TYPE	AREA OF EXISTING IMPERVIOUS COVER	AREA OF PROPOSED IMPERVIOUS COVER
BUILDING	0	47,700
PARKING LOT/DRIVEWAY	0	34,557
SIDEWALKS/PATIO	0	4,396
DETENTION POND	0	0
TOTAL AREA	0	86,653

SIZE OF LOT SF. OR ACRES	TOTAL IMP. COVER SF. OR ACRES	PERCENTAGE OF IMPERVIOUS COVER
2.29	1.99	86.90%

\* DETENTION IS BEING PROVIDED FOR FUTURE PAD (PLEASE REFER TO THE ATTACHED LETTER FROM THE BUSINESS PARK.)

**PAVEMENT AREA = 34,557 SF**



August 24, 2015

Mr. Bradley Davis  
Hines  
811 Main Street  
Houston, Texas 77002

RE: South Houston Industrial Regional Detention Service Area

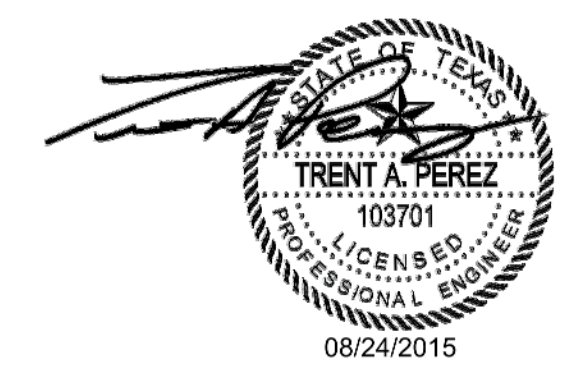
Dear Mr. Davis:

As part of the infrastructure package for the South Houston Industrial subDivision we included the design of a regional storm water detention pond. The pond is sized based on Harris County Flood Control District (HCFCD) Criteria for a pond that outfalls into a HCFCD channel and includes a pump outfall.

The detention was sized to serve the entire 73.28 acre tract and is based on the total area of the tract as opposed to increased impervious cover. Therefore no development that is proposed in the South Houston Industrial Subdivision that is designed to flow into the regional detention pond will be required to provide onsite detention. This is true regardless of how the future lots are subdivided and regardless of how much impervious cover is proposed.

Regards,

Trent Perez, P.E.  
Project Manager



**REVIEW FOR COMPLIANCE**  
FLOOD PLAN DATA  
Performance of this review does not relieve the applicant of compliance with applicable codes, ordinances and regulations.  
**NOTE: PRIOR TO CONSTRUCTION**  
All dimensions shown on this drawing may vary in case of a discrepancy, the contractor shall contact the engineer immediately.

- LEGEND 05/21/19**
- STORM SEWER PIPE
  - HIGH POINT
  - FLOW DIRECTION
  - STORM GRATE INLET
  - STORM JUNCTION BOX
  - STORM/SANITARY SEWER MANHOLE
  - DRAINAGE AREA DESIGNATION
  - DRAINAGE AREA (ACRES)
  - DRAINAGE AREA FLOW RATE (CFS)
  - ACCUM FLOW RATE (CFS)
  - 100-YR SHEET FLOW
  - OFF-SITE SHEET FLOW ARROWS
  - EXISTING GRADE ELEVATIONS
  - FFE 88.00 FINISH FLOOR ELEVATION
  - TG 88.00 PROPOSED TOP OF GRATE ELEVATION
  - FL 88.00 FLOW LINE ELEVATION
  - G 88.00 PROPOSED GUTTER ELEVATION
  - TP 88.00 PROPOSED TOP OF PAVEMENT ELEVATION
  - FC 88.00 PROPOSED TOP OF CURB ELEVATION
  - TW 88.00 PROPOSED TOP OF SIDEWALK ELEVATION
  - FG 88.00 PROPOSED FINISHED GRADE ELEVATION
  - ME 88.00 MATCH EXISTING ELEVATION

**GENERAL NOTES**

- ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
- ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL CONFORM TO ALL APPLICABLE AMERICANS WITH DISABILITIES ACT STANDARDS AND THE TEXAS ACCESSIBILITY STANDARDS. IF ANY DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO POURING ANY PAVEMENT.
- ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL NOT EXCEED A RUNNING SLOPE OF 5% (1:20) WITHOUT A RAMP, AND SHALL NOT EXCEED A 2% (1:50) IN ANY DIRECTION.
- THE ACCESSIBLE PARKING AND PASSENGER LOADING AREAS SHALL NOT EXCEED A SLOPE OF 2% (1:50) IN ANY DIRECTION.
- ALL EXISTING APPURTENANCES ON SITE SHALL BE ADJUSTED TO PROPOSED GRADE AS APPLICABLE.
- CONTRACTOR SHALL REFERENCE GEOTECHNICAL REPORT AND ALL ADDENDA FOR BUILDING PAD LIMITS AND PREPARATION REQUIREMENTS.
- CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDING IN ALL AREAS. CONTRACTOR SHALL NOTIFY THE ENGINEER IN THE EVENT OF ANY DISCREPANCY PRIOR TO COMMENCEMENT OF CONSTRUCTION.

**IMPORTANT NOTES**

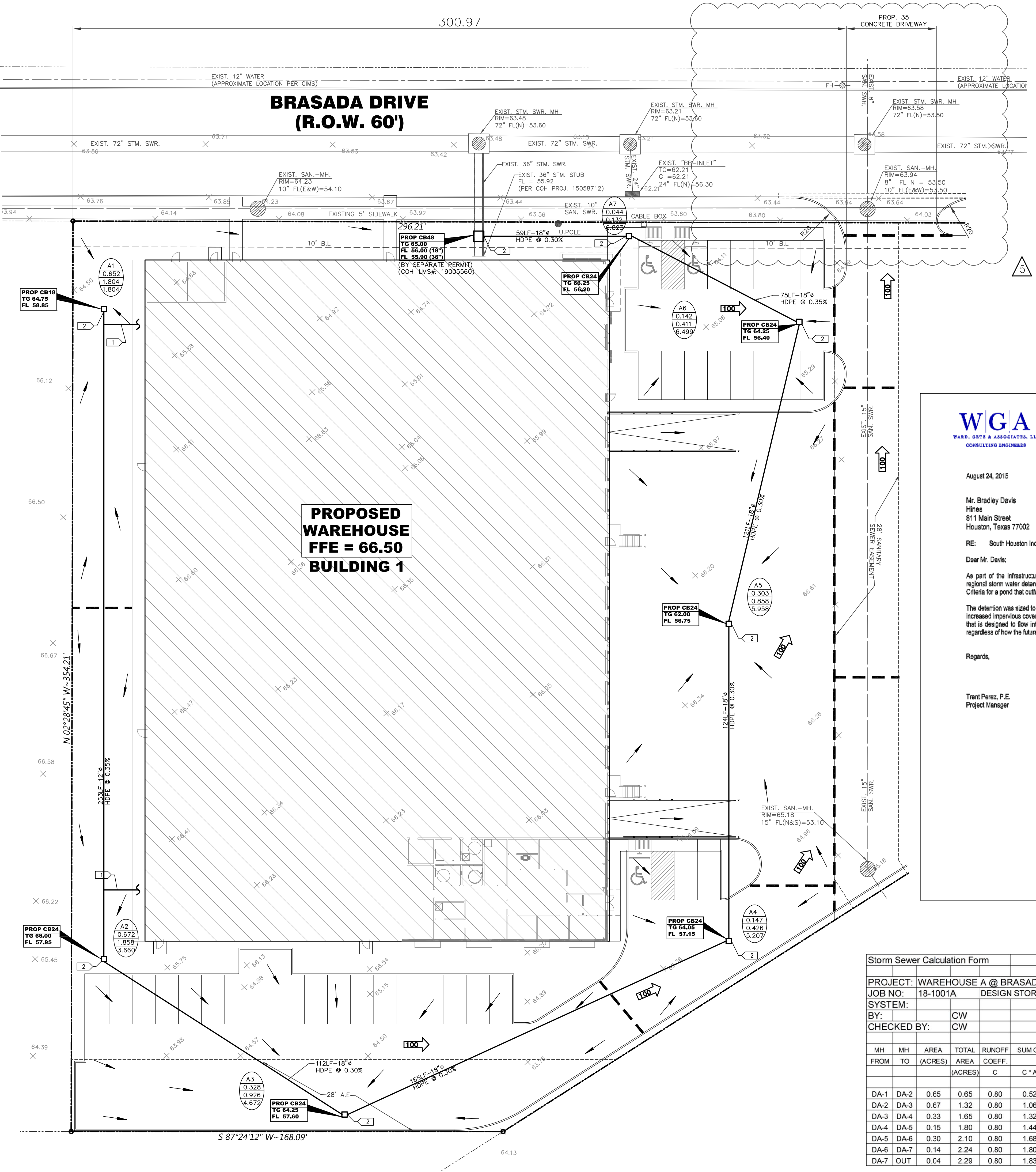
- CONTRACTOR SHALL REVIEW ARCHITECTURAL AND CIVIL DRAWINGS JOINTLY TO ENSURE COORDINATION OF ALL PHASES OF CONSTRUCTION DESCRIBED IN THESE DRAWINGS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF BOTH ARCHITECT AND ENGINEER, PRIOR TO PROCEEDING WITH CONSTRUCTION WORK.
- CONTRACTOR SHALL FIELD-VERIFY ALL EXISTING DIMENSIONS & CONDITIONS & SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES THAT MAY AFFECT THE WORK DESCRIBED HEREIN.
- 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 ALL EXISTING UTILITIES IN THE VICINITY OF THE PROJECT, PRIOR TO BEGINNING CONSTRUCTION, OR DEMOLITION IF ANY DISCREPANCIES EXIST, NOTIFY ENGINEER IMMEDIATELY.

SCALE: 1" = 20'

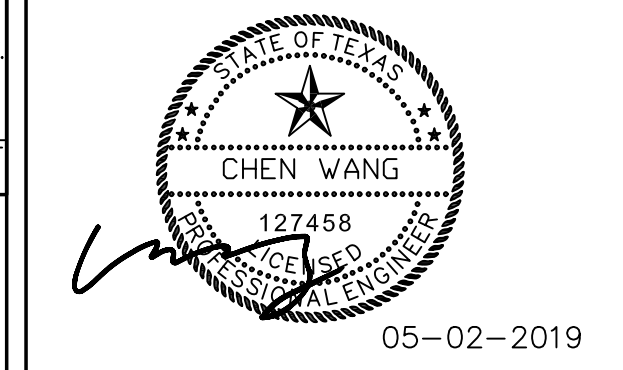
Storm Sewer Calculation Form

PROJECT: WAREHOUSE A @ BRASADA DRIVE  
JOB NO: 18-1001A DESIGN STORM = 2 YEAR CURVE

MH FROM	MH TO	AREA (ACRES)	TOTAL AREA (ACRES)	RUNOFF COEFF.	SUM OF C * A	2 YR		100 YR		REACH LENGTH (FT)	DIAM. OR RISE (IN)	Slope %	Manning's "n"	Design Capacity (CFS)	Design Velocity (ft/s)	Design Fall (FT)	FL Elev. (FT)	Actual Velocity (ft/s)		
						INTENSITY (INHR)	SUM OF FLOWS (CFS)	INTENSITY (INHR)	SUM OF FLOWS (CFS)											
DA-1	DA-2	0.65	0.65	0.80	0.52	24.28	3.46	1.804	7.09	3.700	253	12	0.35	0.011	2.50	3.18	0.89	58.86	57.97	2.30
DA-2	DA-3	0.67	1.32	0.80	1.06	25.51	3.45	3.660	6.95	7.367	112	18	0.30	0.011	6.82	3.86	0.34	57.97	57.63	2.07
DA-3	DA-4	0.33	1.65	0.80	1.32	25.92	3.53	4.672	6.91	9.128	165	18	0.30	0.011	6.82	3.86	0.50	57.53	57.14	2.84
DA-4	DA-5	0.15	1.80	0.80	1.44	26.09	3.62	5.207	6.89	9.916	124	18	0.30	0.011	6.82	3.86	0.37	57.14	56.77	2.95
DA-5	DA-6	0.30	2.10	0.80	1.68	26.40	3.54	5.958	6.86	11.528	121	18	0.30	0.011	6.82	3.86	0.36	56.77	56.40	3.37
DA-6	DA-7	0.14	2.24	0.80	1.80	26.53	3.62	6.499	6.84	12.280	75	18	0.30	0.011	6.82	3.86	0.23	56.40	56.18	3.68
DA-7	OUT	0.04	2.29	0.80	1.83	26.57	3.73	6.823	6.84	12.516	59	18	0.30	0.011	6.86	3.88	0.18	56.18	56.00	3.86



**WAREHOUSE 1 @ BRASADA DRIVE**  
**6907 BRASADA DRIVE**  
**HOUSTON, TEXAS. 77085**



**REVISIONS**

No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	02-06-19	COH REVIEW COMMENTS
4	04-17-19	COH COMMENTS 04-05-19
5	05-02-19	COH COMMENTS 04-27-19

**GENERAL NOTES**


Scale: HORIZ<sup>1</sup> = 20' Issue Date: 02-06-19  
VERT: N/A CEEDC File Number: 181001A  
CEEDC Project Number: 181001AC20  
Designed by: CW Date: 09-17-18  
Checked by: CW Date: 09-17-18

**DRAINAGE PLAN**

DRAWING: **AC2.0**  
SHEET: **4 / 9**



LI N  
A SUBDIVISION OF 3.512 ACRES  
BUSINESS PARK, SECTION 1,  
TEXAS.




DISK STAMPED DTZ BM04  
AND SNOITT ROAD TRAVEL  
NORTH IN SNOITT ROAD AP  
LOCATED ON THE EAST HEAD  
TEMPORARY BENCHMARK - TBM 18147005  
NEAR THE SOUTHWEST CORNER OF THE SUBJECT TRACT ALONG THE R.O.W. OF BELLAIRE  
BOULEVARD. TBM HAS AN ELEVATION OF 84.46 FEET.

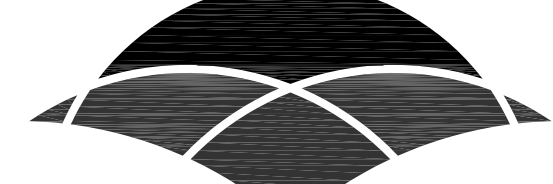
**REVIEWED FOR COMPLIANCE  
FLOOD PLAN DATA**

**PERFORMANCE OF THIS REVIEW  
DOES NOT RELIEVE THE APPLICANT  
NOTE: PRIOR TO CONSTRUCTION  
COMPLY WITH ALL APPLICABLE  
CODES, ORDINANCES AND  
REGULATIONS** 05/21/19

ALL DIMENSIONS AND LOCATIONS ARE TO BE SHOWN AS SHOWN UNLESS OTHERWISE NOTED.  
IN CASE OF A DISCREPANCY BETWEEN THE DRAWING AND THE WORK, THE DRAWING SHALL CONTROL.



**ENGINEERS & DEVELOPMENT CONSULTANTS**




T.B.P.E. FIRM # 19146  
inquiry@ceengineers.com  
www.CEENGINEERS.com  
(O): 832-491-1458  
(C): 713-540-6639

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**WAREHOUSE 1 @ BRASADA DRIVE**

**6907 BRASADA DRIVE  
HOUSTON, TEXAS. 77085**



CHEN WANG  
127458  
12/14/18  
12/14/18  
05-02-2019

**REVISIONS**

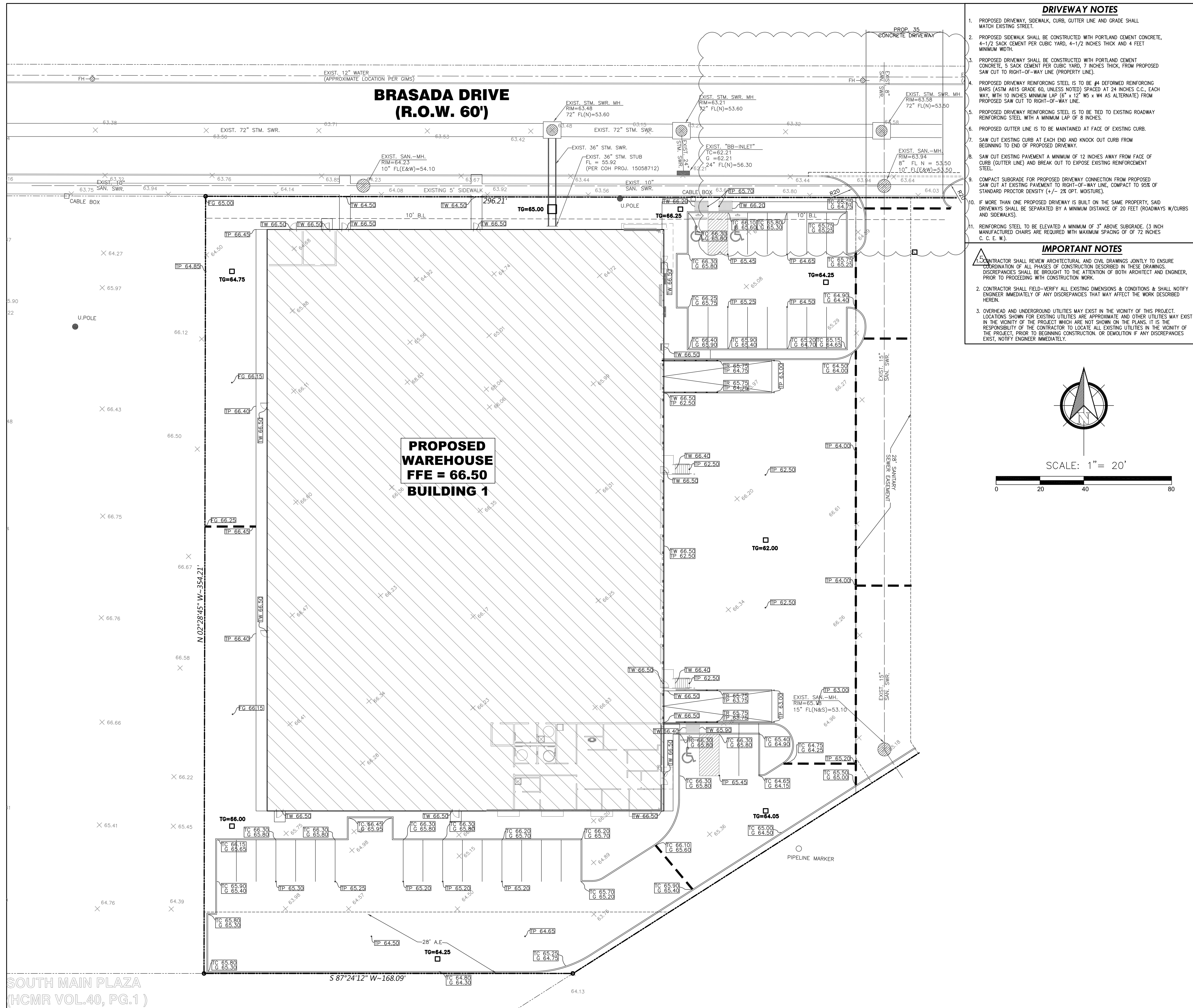
No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	02-06-19	COH REVIEW COMMENTS
4	04-17-19	COH COMMENTS 04-05-19
5	05-02-19	COH COMMENTS 04-27-19

**GENERAL NOTES**

Scale	Issue Date
Scale: H02R11' = 20"	Issue Date: 02-06-19
VERT: N/A	CEEDC Project Number: 181001A
CEEDC Project Number: 181001A	CEEDC File Number: 181001AC25
Designed by: CW	Date: 09-17-18
Checked by: CW	Date: 09-17-18

**GRADING & PAVING PLAN**

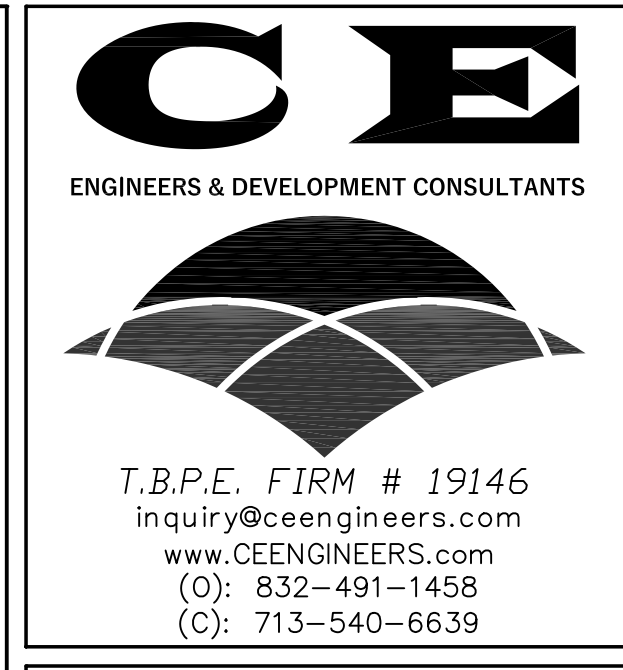
DRAWING: **AC2.5**  
SHEET: **5 / 9**





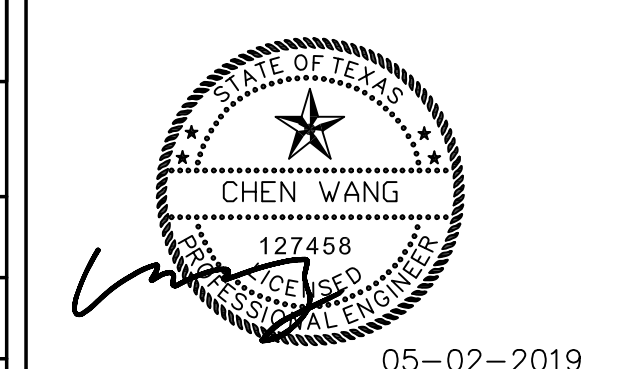






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**WAREHOUSE 1 @ BRASADA DRIVE**  
6907 BRASADA DRIVE  
HOUSTON, TEXAS. 77085



**REVISIONS**

No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	02-06-19	COH REVIEW COMMENTS
4	04-17-19	COH COMMENTS 04-05-19
5	05-02-19	COH COMMENTS 04-27-19

**GENERAL NOTES**

Scale: HO2R(1" = 20')	Issue Date: 02-06-19
VERT: N/A	CEEDC File Number: 181001AC40
CEEDC Project Number: 181001A	181001AC40
Designed By: CW	Date: 09-17-18
Checked By: CW	Date: 09-17-18

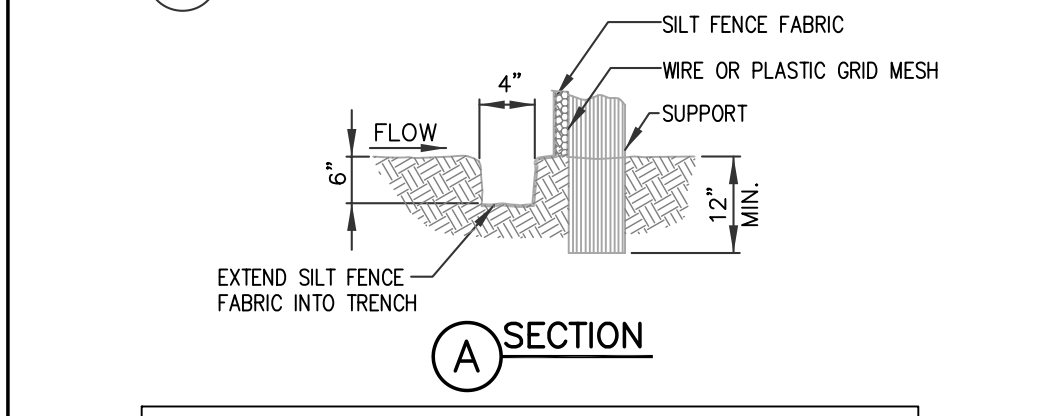
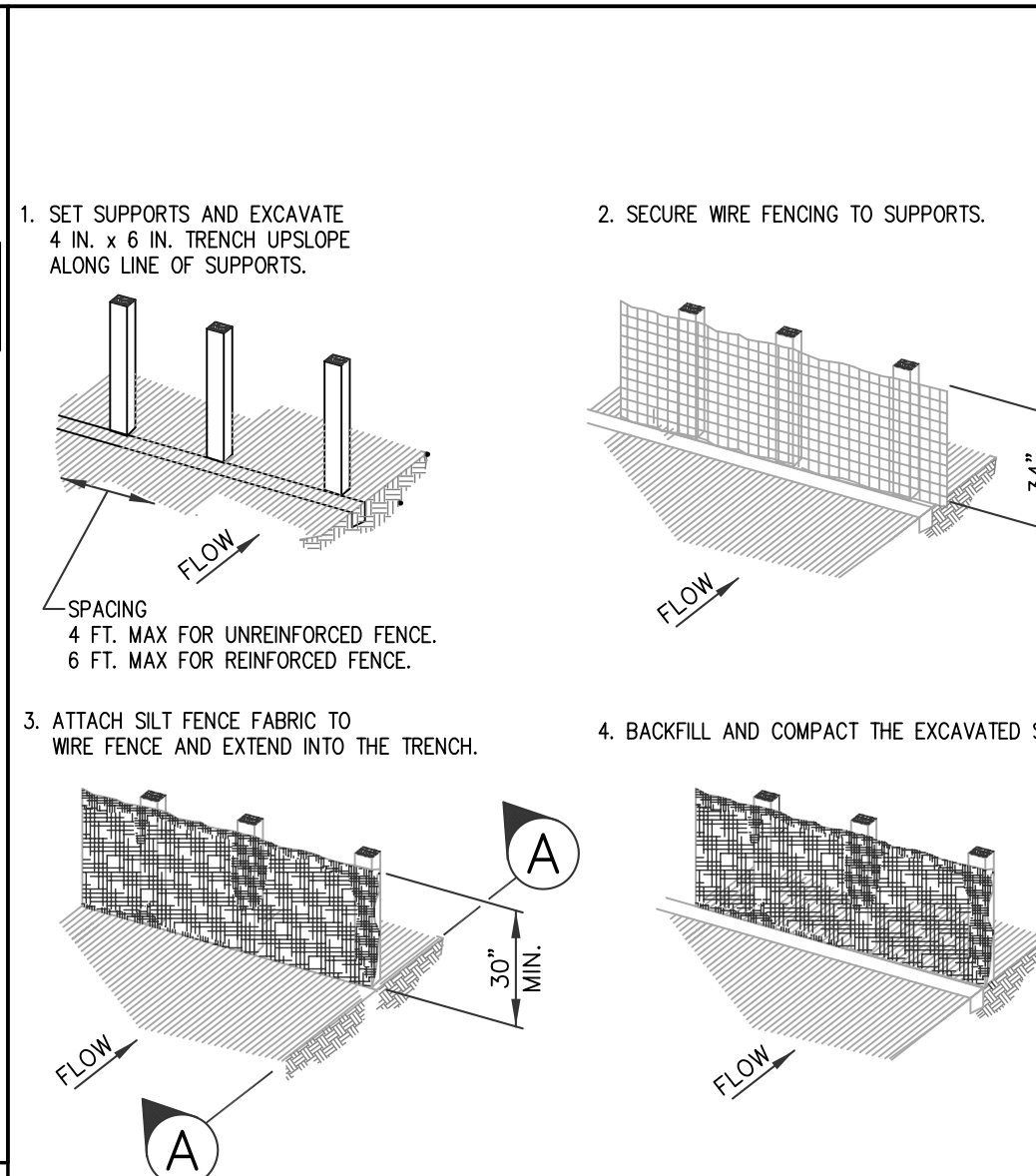
**STORM WATER POLLUTION PREVENTION PLAN & DETAIL**

DRAWING: **AC4.0**  
SHEET: **7 / 9**

- EROSION AND SEDIMENT CONTROL MEASURES**
1. SEDIMENT WILL BE RETAINED AND MAINTAINED IN ACCORDANCE WITH BEST PRACTICES. IF DAMAGED, CONTROLS WILL BE REPAIRED.
  2. CONTROL MEASURE WILL BE MORE THAN 21 DAYS. THE STREET RIGHT-OF-WAY WILL BE MAINTAINED OR OTHERWISE STABILIZED WITHIN THE 14 DAYS.
  3. WHEN PUMPING (DEWATER) FROM THE SITE, THE OPERATOR SHALL USE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) FROM THE STORM WATER MANUAL (SECTION 205) TO ADDRESS Dewatering ACTIVITIES. UNTREATED EFFLUENT DISCHARGE INTO A STREAM SHALL NOT BE ALLOWED.
  4. IF THE INTERIOR BETWEEN CONSTRUCTION OF STREETS AND STREET CONSTRUCTION WILL BE MORE THAN 21 DAYS, THE STREET RIGHT-OF-WAY WILL BE MAINTAINED OR OTHERWISE STABILIZED WITHIN THE 14 DAYS.
  5. AFTER PAVING COMPLETION, NEW SEWER LINES AND UNTESTED SOILS WILL BE COMPACTED TO THE SAME DENSITY AS THE EXISTING SOILS.
  6. CONTROL MEASURES WILL BE INSTALLED ALONG BACK OF CURB TO ADEQUATELY PREVENT EROSION AND SEDIMENTATION.
  7. CONCRETE CURBS OR DISCHARGE PLUS CONCRETE OR DRUM WASH WATER ON PUBLIC AREAS THEY ARE TO BE USED AS DESIGNATED BY THE CITY OF HOUSTON.
  8. EROSION AND SEDIMENT CONTROL MEASURES THAT HAVE BEEN IMPROPERLY INSTALLED OR HAVE BEEN DISABLED, RUN-OVER, REMOVED, OR OTHERWISE RENDERED INEFFECTIVE MUST BE REPLACED OR CORRECTED IMMEDIATELY.
  9. MAINTENANCE AND REPAIRS WILL BE CONDUCTED WITHIN 24 HOURS OF INSPECTION REPORT.
  10. SEDIMENT WILL BE REMOVED FROM BEHIND THE FILTER FABRIC FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE.
  11. SEDIMENT WILL BE REMOVED AROUND THE INLET BARRIERS AND DIKES WHEN THE STORAGE CAPACITY HAS BEEN APPROXIMATELY 50% FILLED.
  12. INSPECTIONS OF ALL BMP'S WILL BE CONDUCTED EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER; OR EVERY 7 CALENDAR DAYS.
  13. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLANS WILL BE INSPECTED TO INSURE EFFECTIVE OPERATION.
  14. THE SWPPP WILL BE AMENDED TO REPLACE INEFFECTIVE BMP'S IDENTIFIED THROUGH INSPECTIONS WITHIN 7 DAYS OF IDENTIFYING THE DEFICIENCY.
  15. REPORTS WILL INCLUDE WHAT MAINTENANCE WAS DONE AS A RESULT OF THE INSPECTION.
  16. ALL LITTER, TRASH AND FLOATABLE DEBRIS WILL BE CONTAINED WITHIN THE SITE.
  17. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING BEAMS, SILT FENCES, STRAW BALES, OR OTHER MEANS TO PREVENT EROSION FROM REACHING ADJACENT PROPERTY. IN THE EVENT THE PREVENTION MEASURES ARE NOT EFFECTIVE, THE CONTRACTOR SHALL REMOVE ANY EROSION DEBRIS AND RESTORE ADJACENT PROPERTY AND/ OR THE RIGHT-OF-WAY TO ORIGINAL OR BETTER CONDITION.
  18. EROSION CONTROL FEATURES SHOWN ARE THE MINIMUM REQUIREMENTS ACCEPTABLE PLACE ADDITIONAL EROSION CONTROL DEVICES AS RUNOFF AND DRAINAGE PATTERNS CHANGES DURING CONSTRUCTION TO PROHIBIT LOSS OF SOIL FROM THE SITE.
  19. CONTRACTOR WILL ADVISE OWNER IMMEDIATELY, VERBALLY, AND IN WRITING, OF ANY FUEL SPILLS ON TO THE PROJECT/ CONSTRUCTION AREAS AND THE ACTIONS TAKES TO REMEDY THE PROBLEM. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL ENVIRONMENTAL LAWS.
  20. CONTRACTOR IS RESPONSIBLE FOR DISPOSING FUELS, MATERIALS, AND EXCAVATIONS IN A LEGALLY APPROVED MANNER.
  21. CONTRACTOR WILL PROVIDE STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER POTENTIALLY TOXIC MATERIALS.
  22. FILTER FABRIC (SILT FENCE) FLOW RATE WILL BE 30 GALLONS PER SQUARE FOOT PER MINUTE.
  23. FILTER FABRIC WILL BE STAPLED OVER BOARDS ON ALL STAGE ONE STORM SEWER INLETS.
  24. PROTECT ALL DESIGNATED SPECIMEN TREES WITH PROTECTIVE FENCING.

**ROL NOTE**

REVIEWED FOR COMPLIANCE  
Performance of this review is not a guarantee of the applicant from full responsibility to comply with all applicable codes, ordinances and regulations.

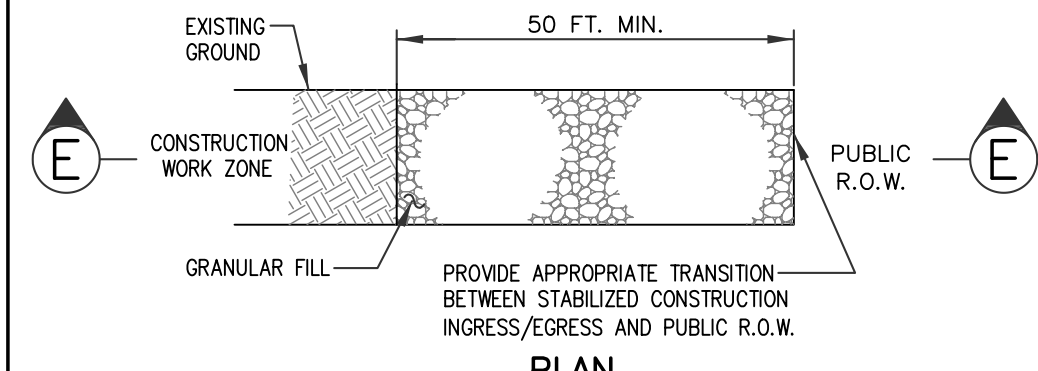
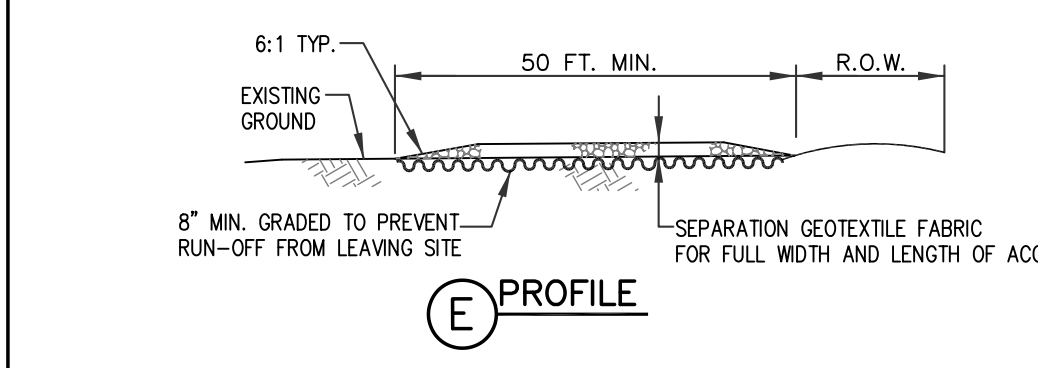


**CONSTRUCTION NOTES:**

1. SEE SPECIFICATION SECTION NO. 02361-SILT FENCES.

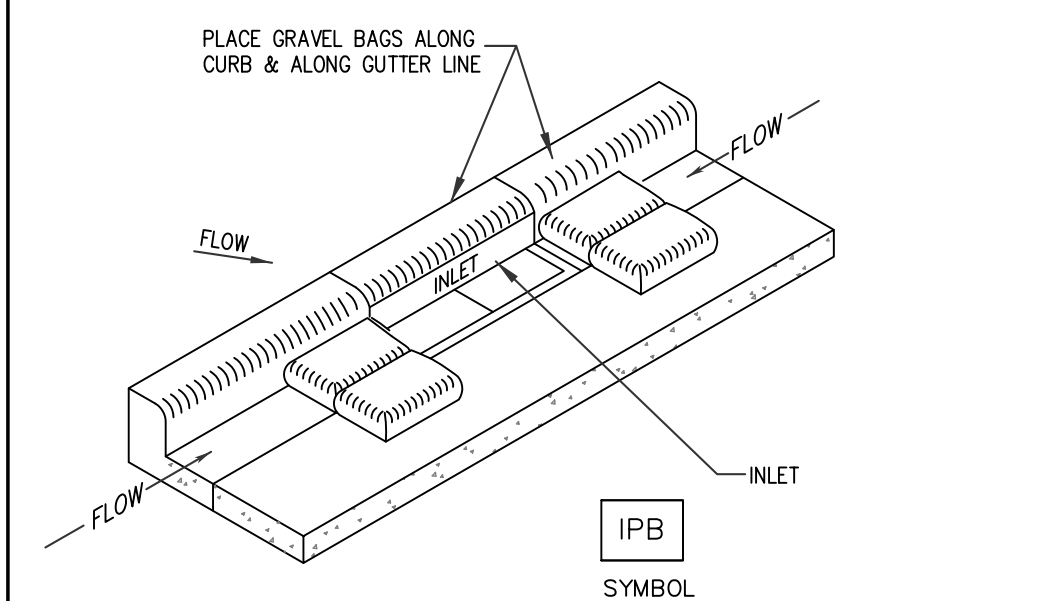
—X RSF X— DESIGNATES REINFORCED SILT FENCE  
—X SF X— DESIGNATES SILT FENCE

**SILT FENCE**  
(NOT TO SCALE)



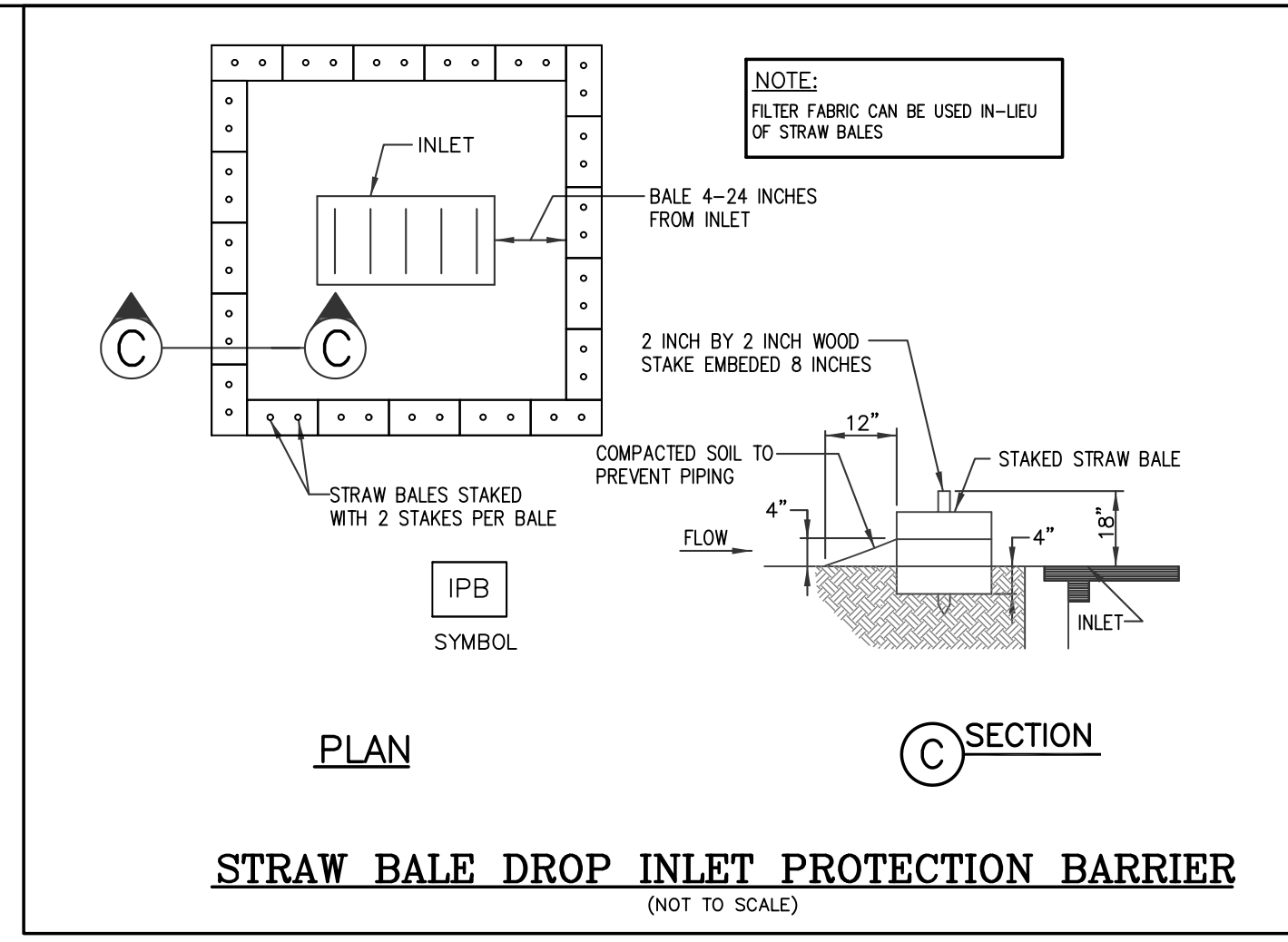
- GENERAL NOTES:**
1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
  2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIST WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS.
  3. STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIST.
  4. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
  5. MINIMUM 14' WIDTH FOR ONE WAY TRAFFIC AND 20' WIDTH FOR TWO WAY TRAFFIC.

**STABILIZED CONSTRUCTION ACCESS**  
(NOT TO SCALE)

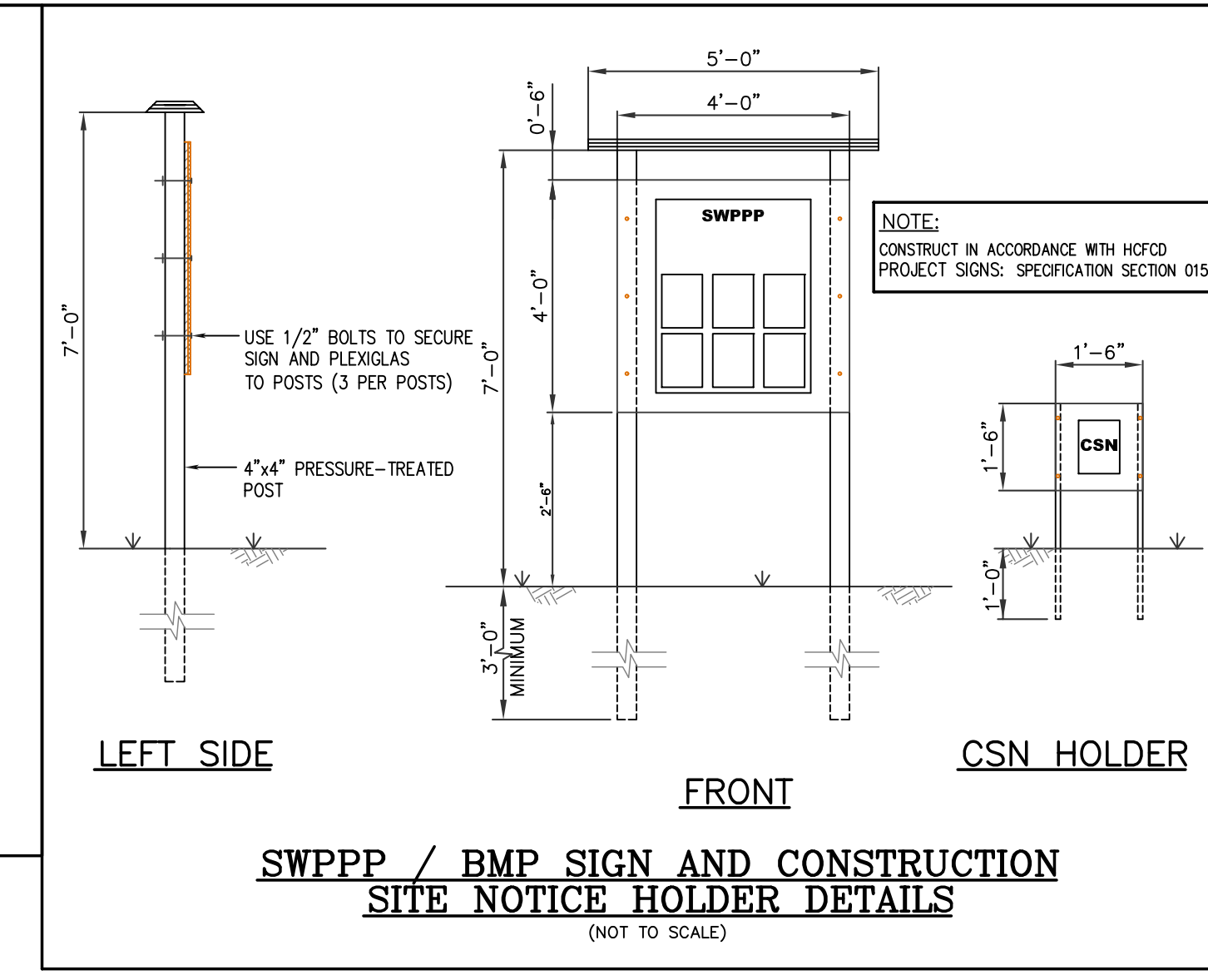


- GENERAL NOTES:**
1. PLACE GRAVEL BAGS IN THE GUTTER ON EACH SIDE OF THE INLET OPENING. GRAVEL BAGS SHALL BE PLACED TIGHTLY AGAINST THE CURB.
  2. PLACE GRAVEL BAGS AT BACK OF CURB ALONG INLET.
  3. GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET, UNLESS DIRECTED BY ENGINEER.
  4. IF THE LANE ADJACENT TO THE INLET IS CLOSED TO TRAFFIC, THEN ADDITIONAL GRAVEL BAGS SHALL BE PLACED CONTINUOUSLY ACROSS THE FRONT OF THE INLET, BUT SHALL NOT BLOCK THE THROAT OF THE INLET.

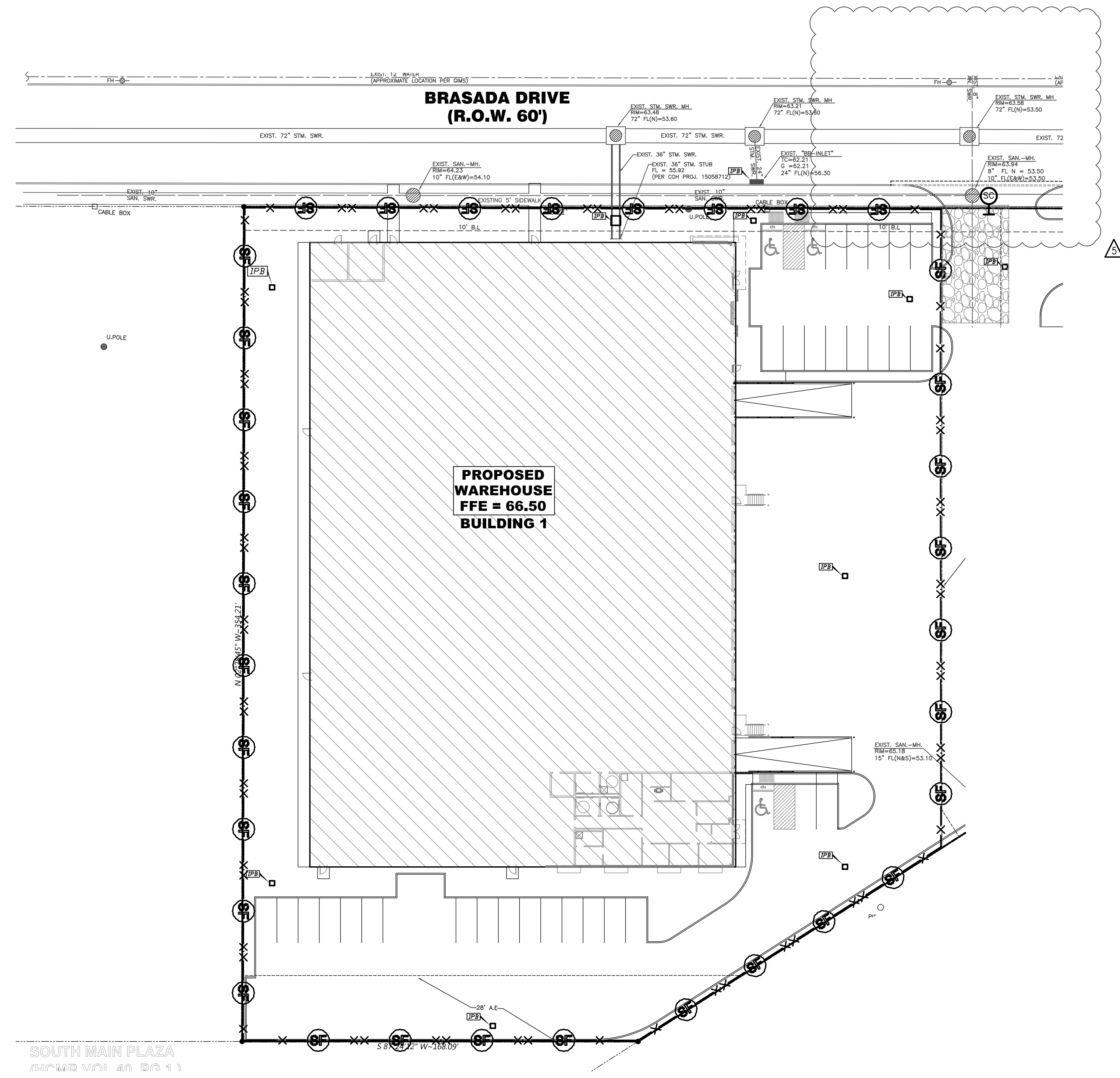
**GRAVEL BAG INLET PROTECTION BARRIER**  
(NOT TO SCALE)



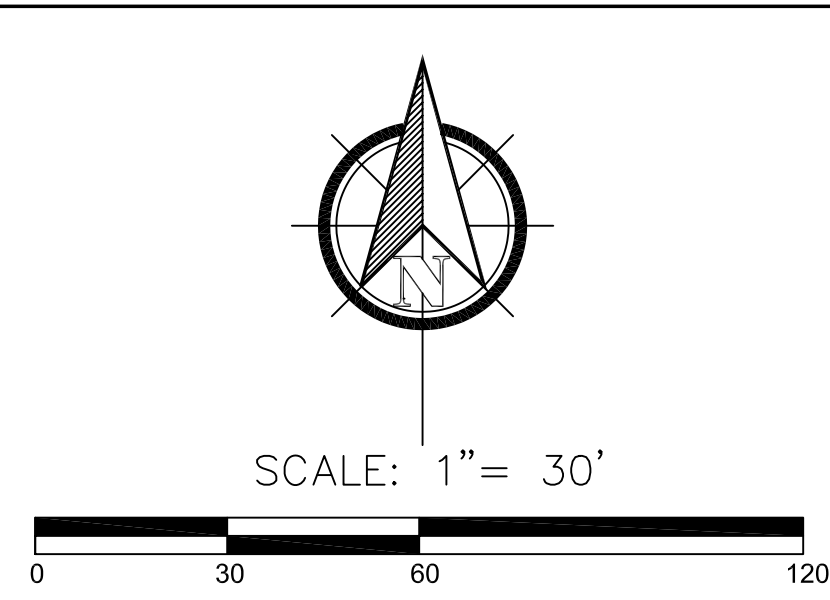
**STRAW BALE DROP INLET PROTECTION BARRIER**  
(NOT TO SCALE)



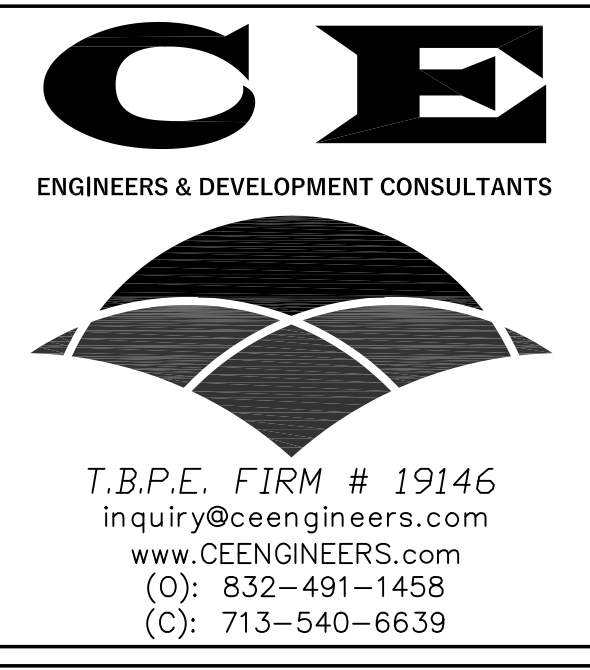
**SWPPP / BMP SIGN AND CONSTRUCTION SITE NOTICE HOLDER DETAILS**  
(NOT TO SCALE)



SOUTH MAIN PLAZA  
4400 W-118.09



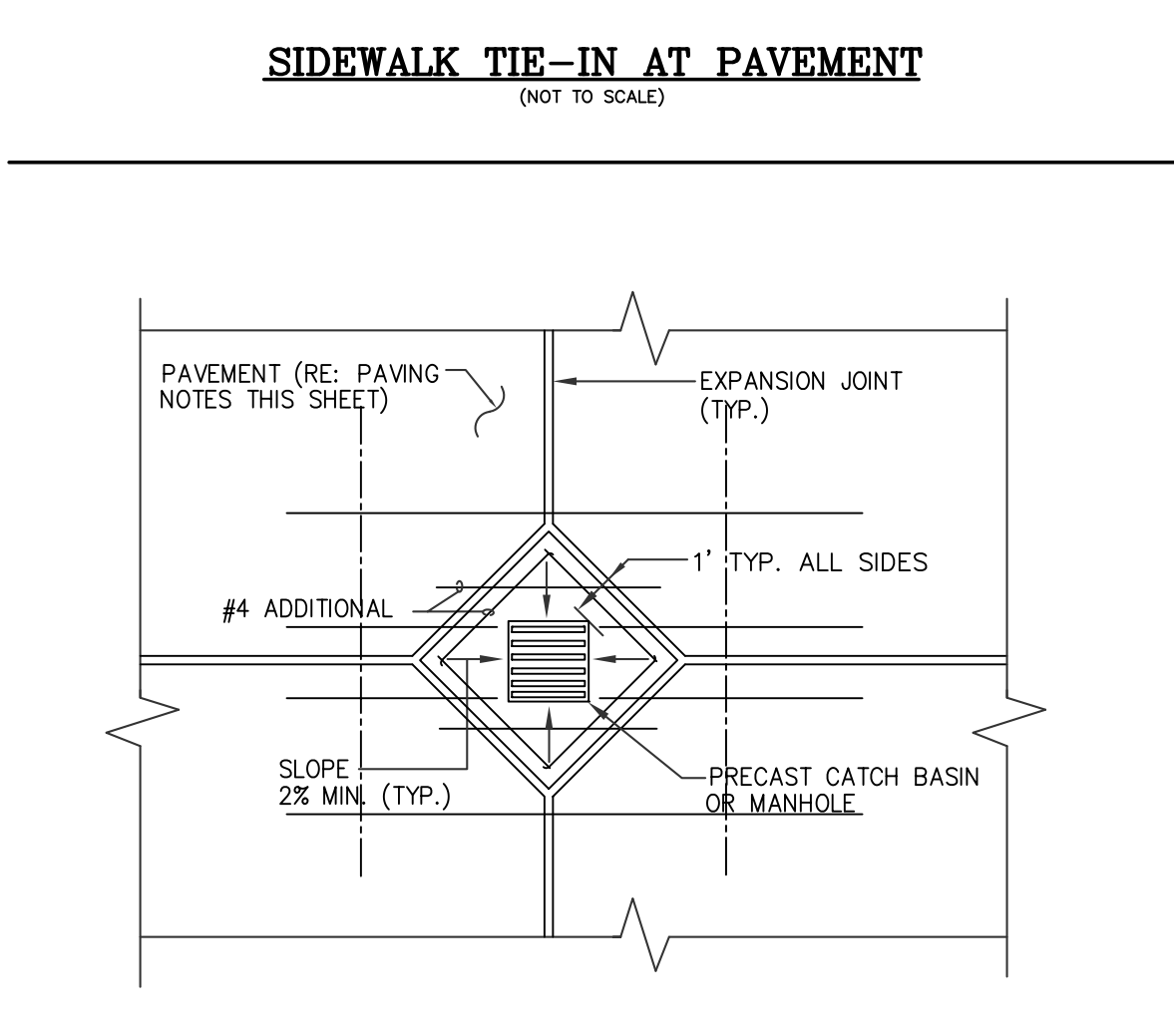
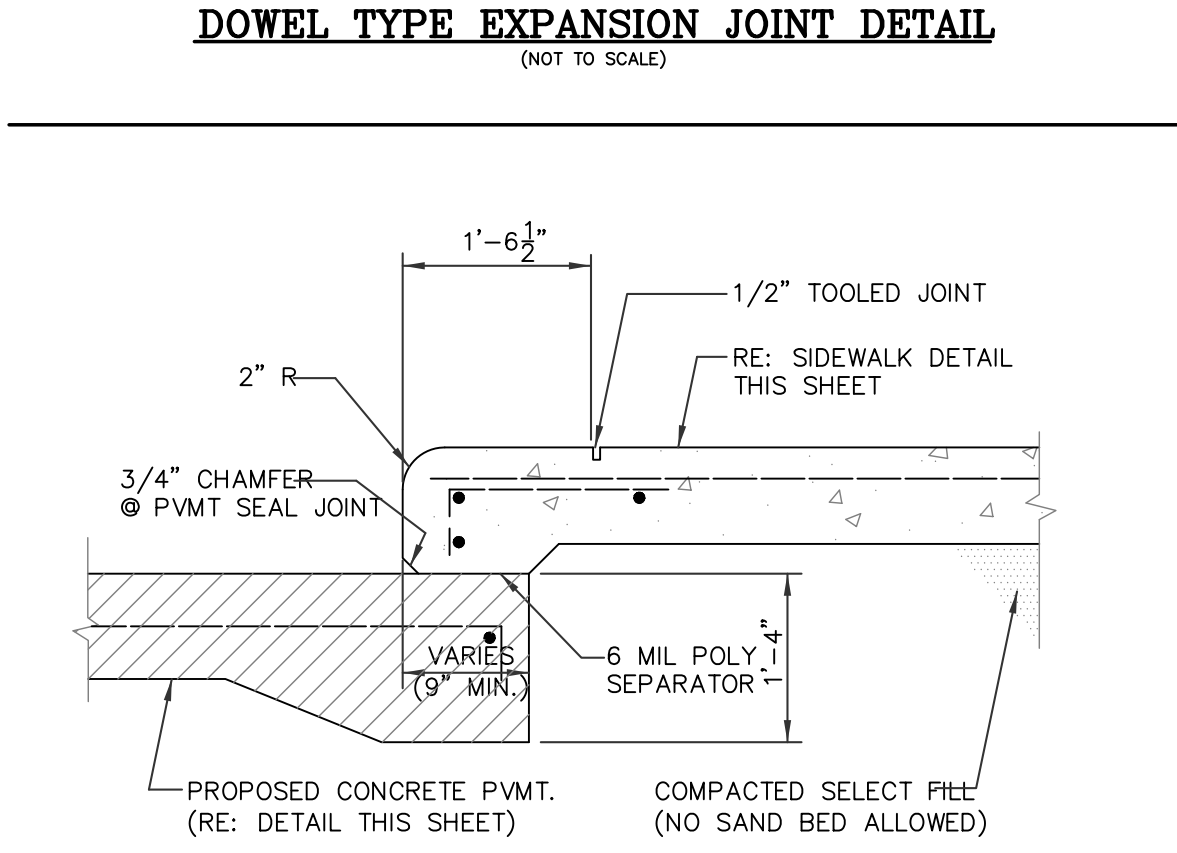
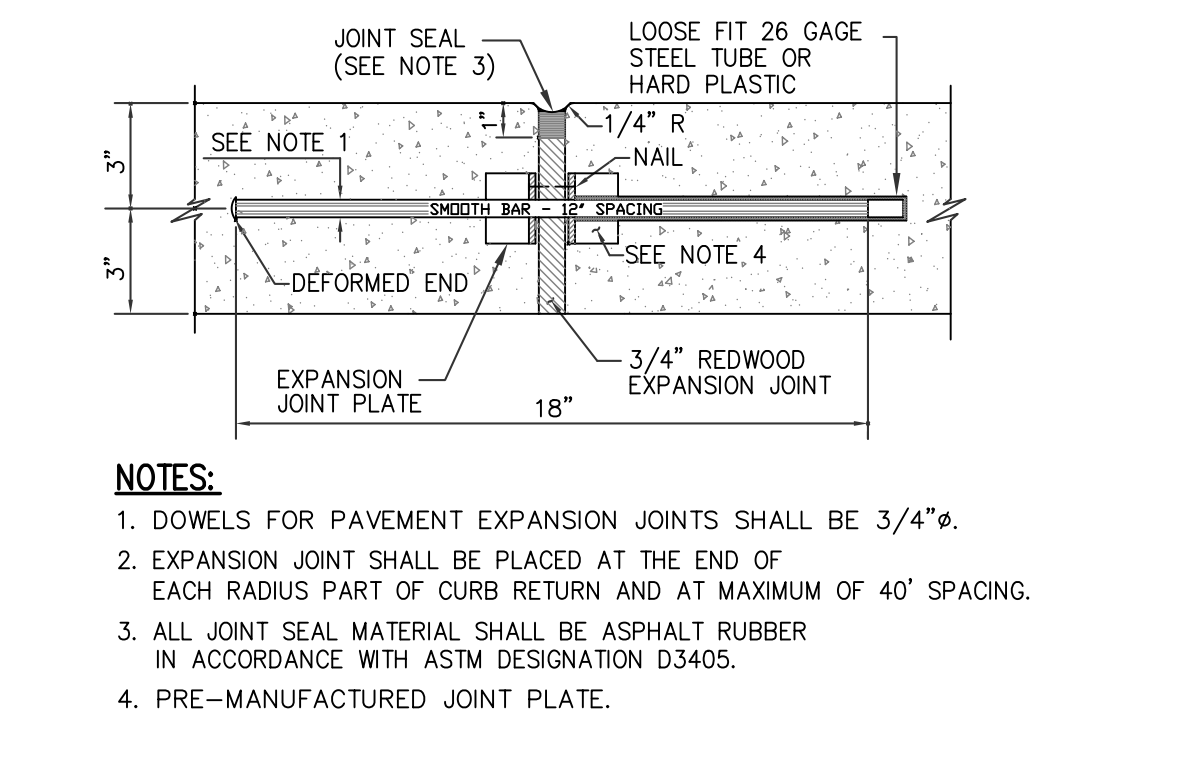
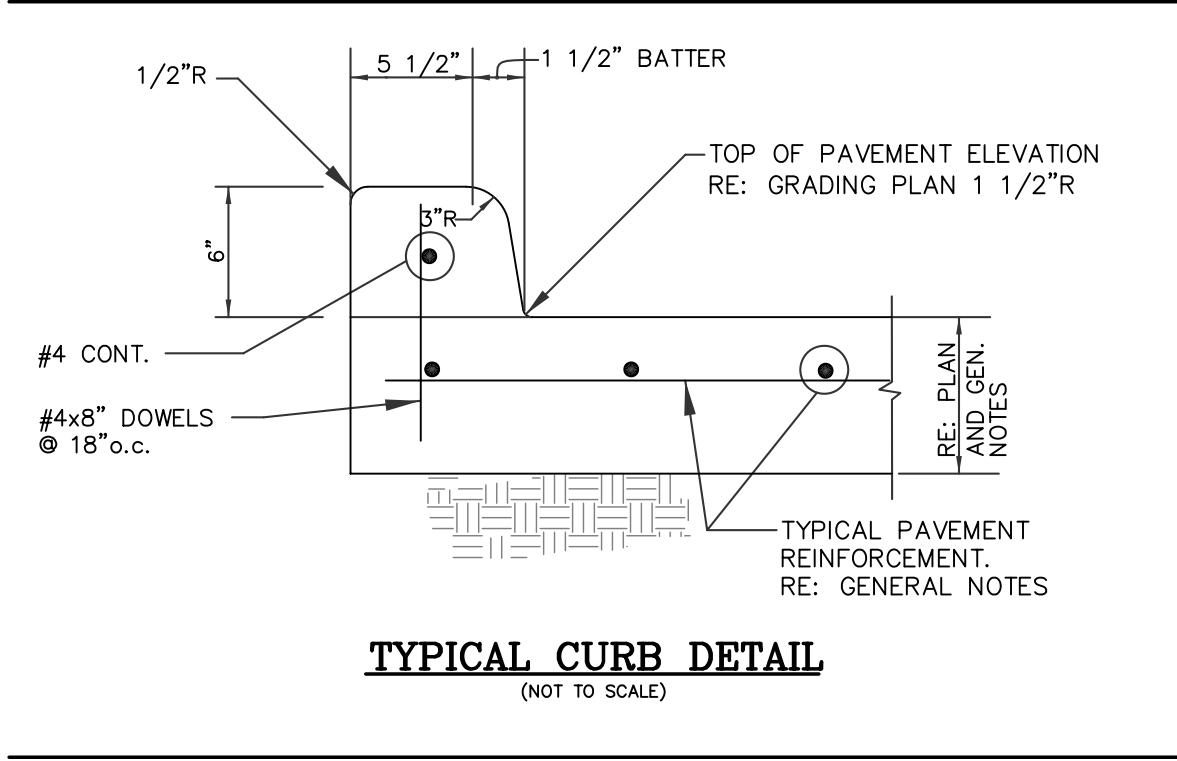
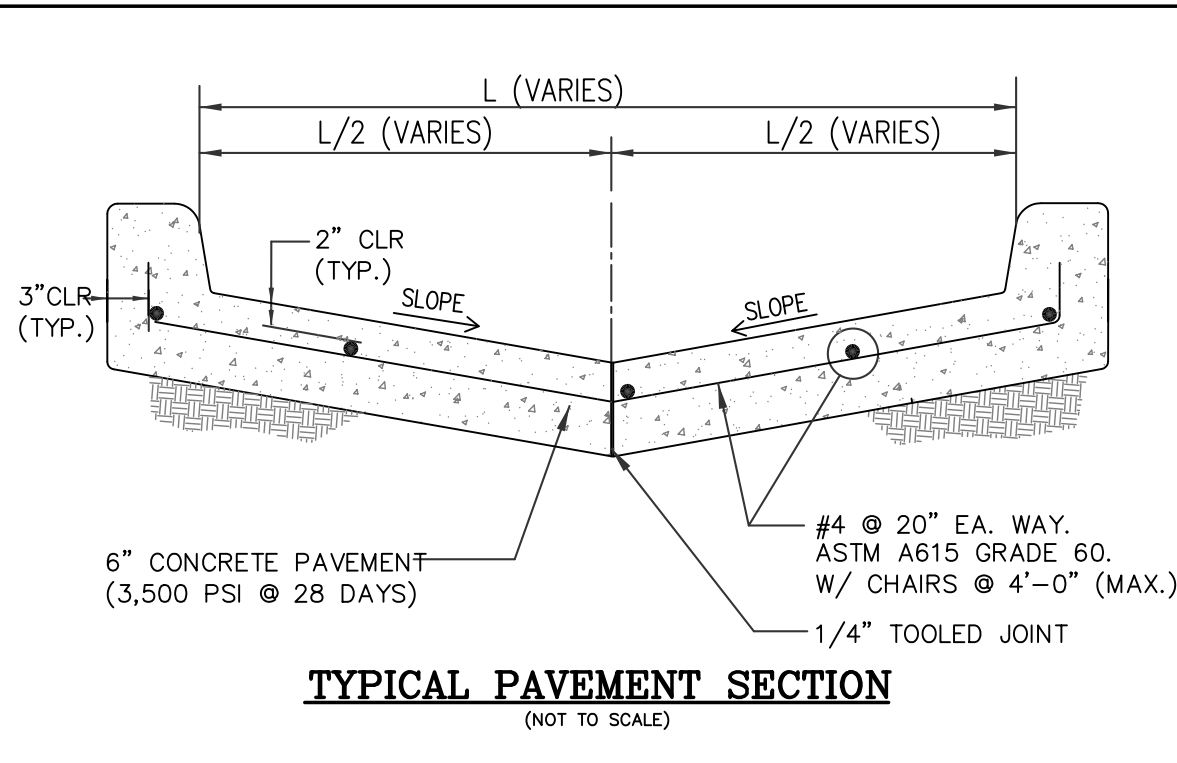




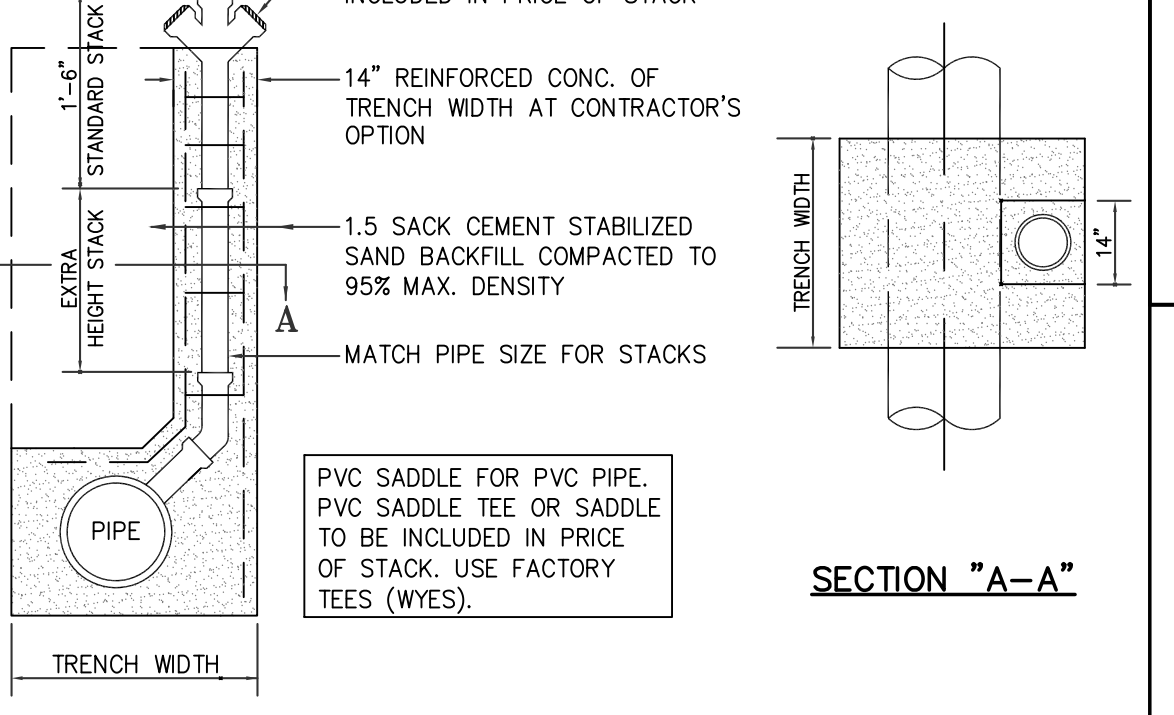
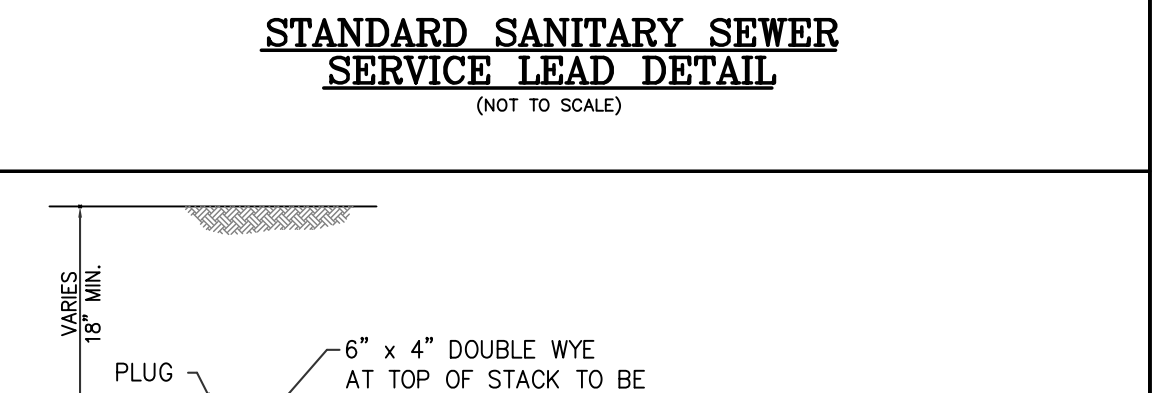
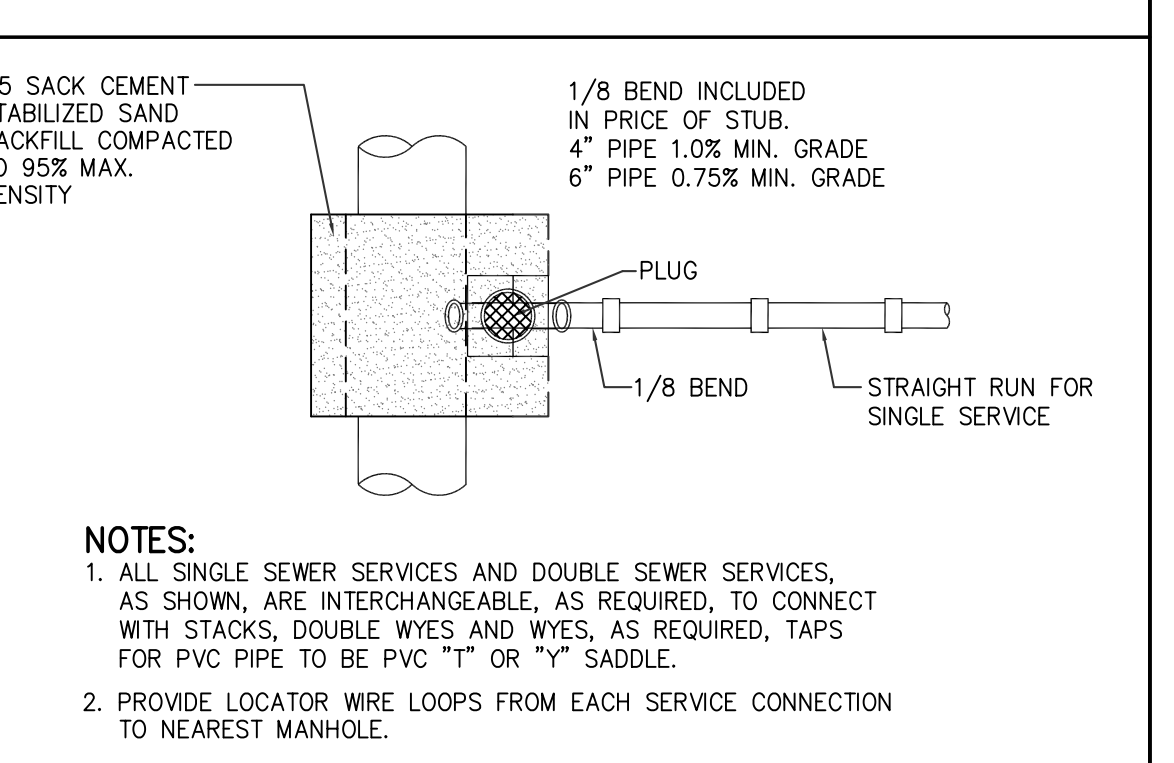
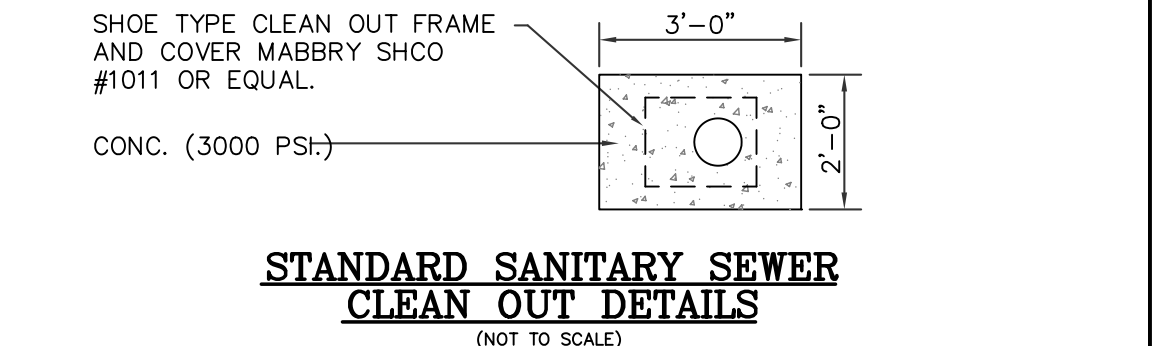
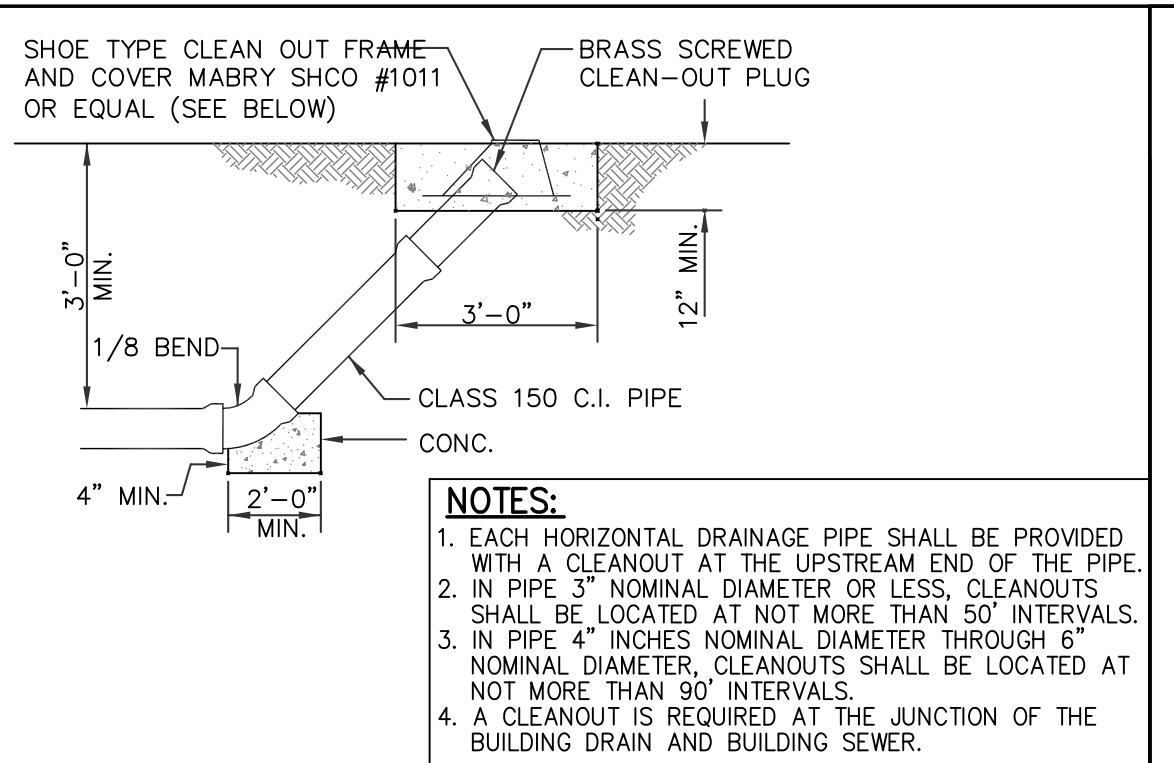
18117625  
REVIEWED FOR COMPLIANCE  
Performance of this review does not relieve the applicant from full responsibility to comply with all applicable codes, ordinances and regulations 05/21/19

Part # 18117625  
TOP VIEW  
SIDE VIEW  
STORM SEWER  
CONCRETE STRUCTURE  
REINFORCING STEEL  
PVC LEAD  
CONNECT TO STORM SEWER SYSTEM (RE: PLANS FOR SIZE & TYPE)

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**MANHOLE / INLET BLOCKOUT DETAIL**  
(NOT TO SCALE)



**SANITARY SEWER STACK DETAIL**  
(NOT TO SCALE)

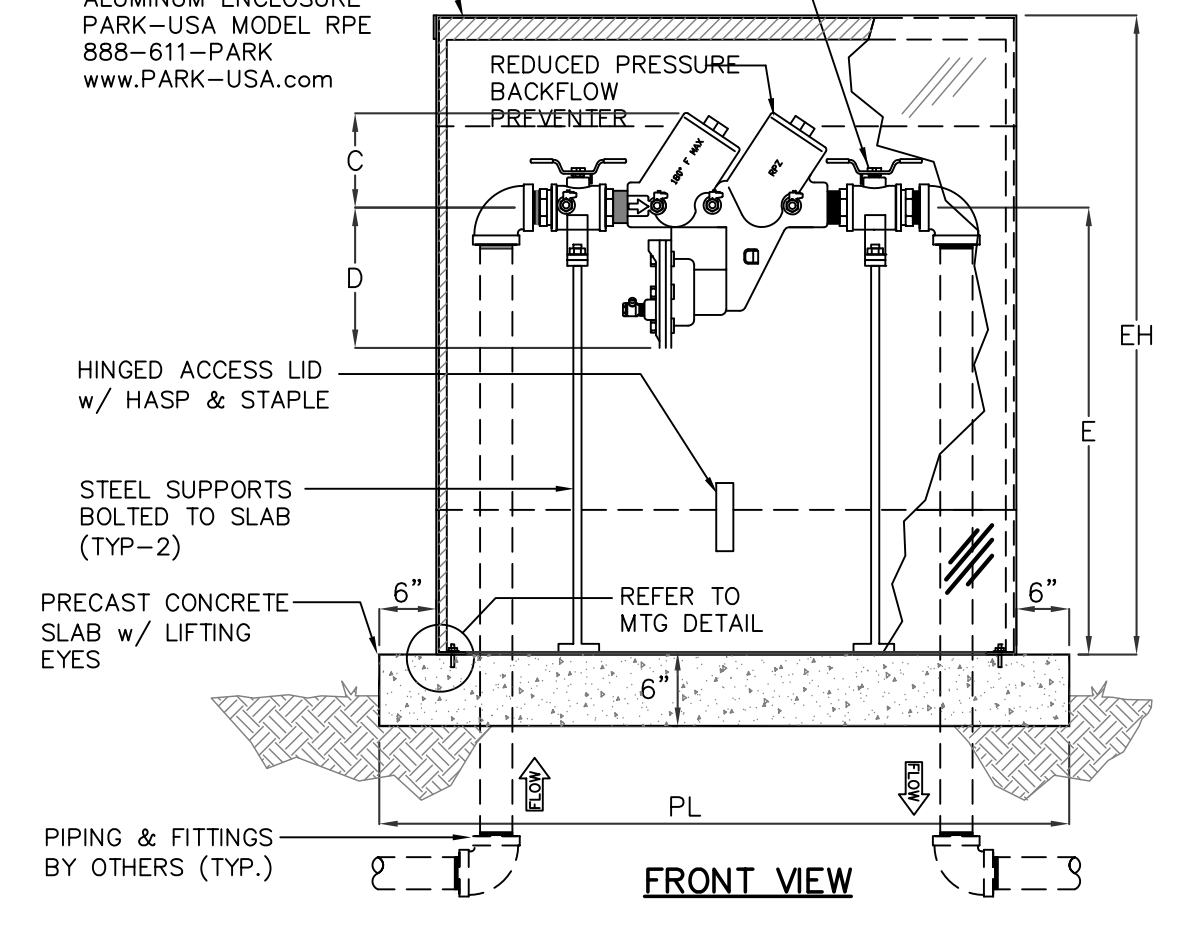
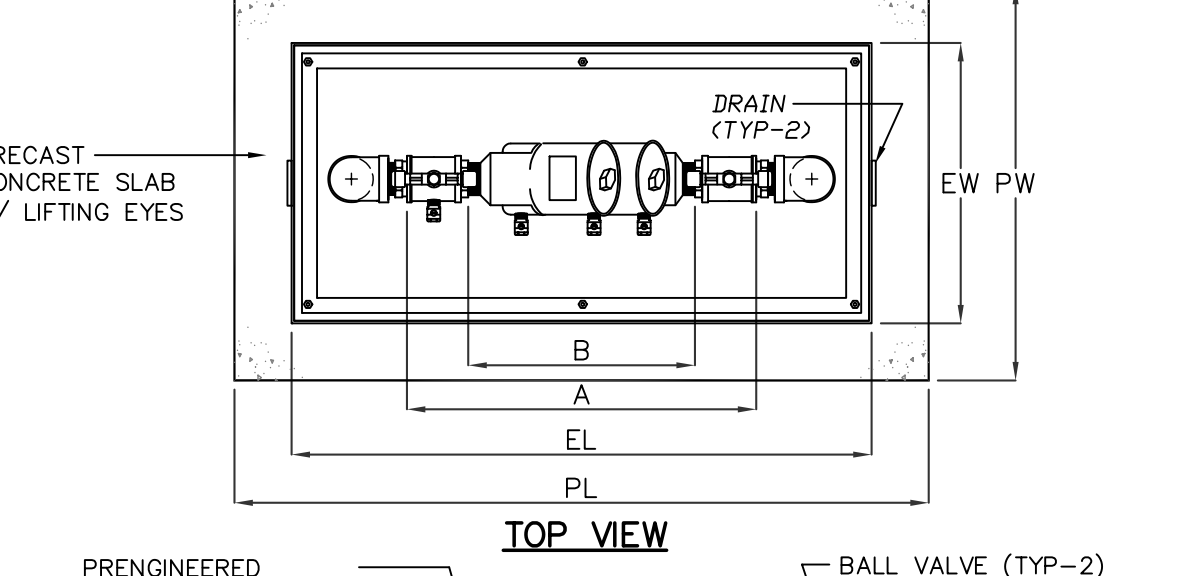
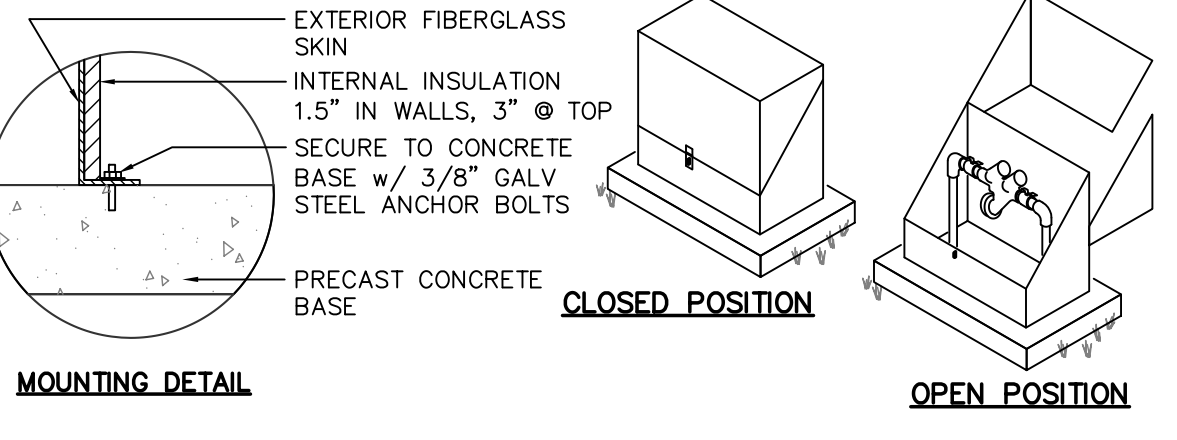
CONCRETE SIDEWALK DETAIL (NOT TO SCALE)

PROP. CURB VARIES RE: TABLE 1  
2% MAX. SLOPE  
1/4" R (TYP.)  
2" COMPACTED SAND BED  
SEE TABLE FOR TRANSVERSE STEEL  
SEE TABLE FOR LONGITUDINAL STEEL  
NOTE: 6x6 - W2.9xW2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL GIVEN IN TABLE WITH OWNER'S APPROVAL.

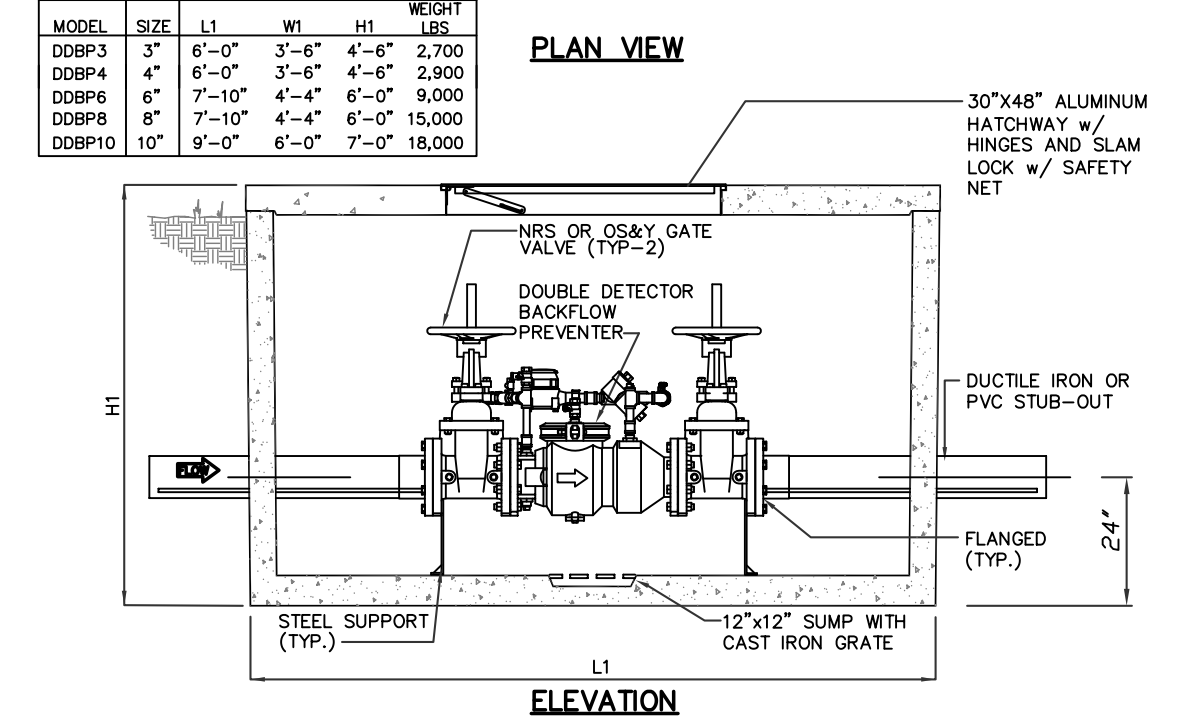
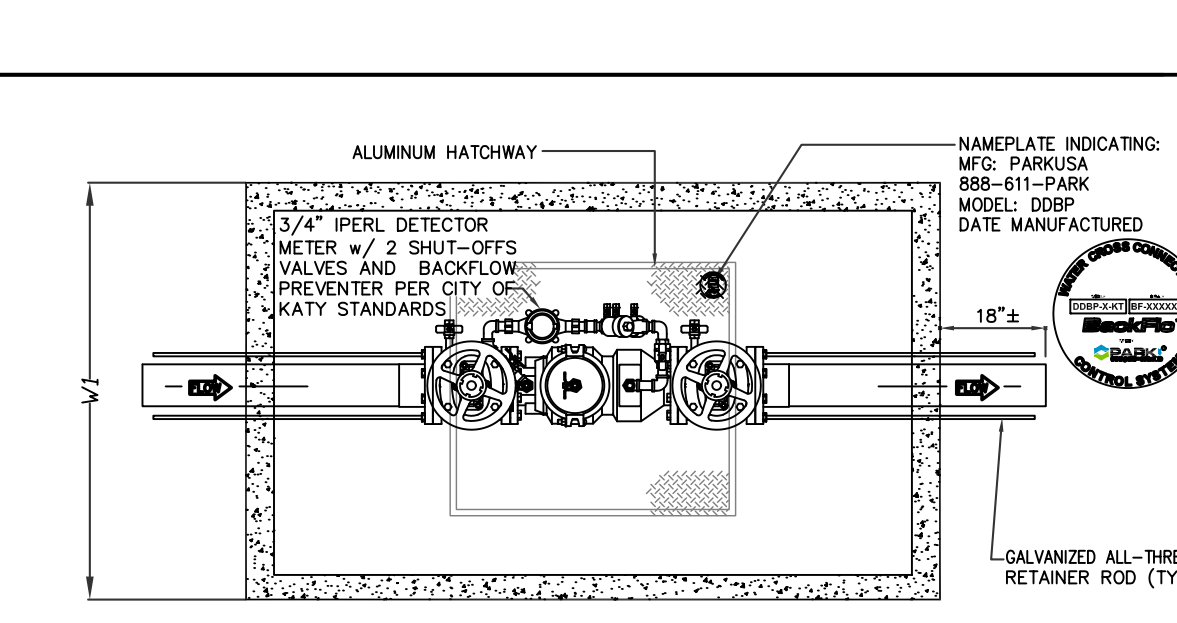
LONGITUDINAL STEEL				TRANSVERSE STEEL	
SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	# 3 BARS SPACING (IN)
4.5	4	3	21	3	48
4.5	5	3	27	3	48
4.5	6	4	22	3	48
4.5	7	4	19.5	3	48
4.5	8	4	22.5	3	48
4.5	9	5	20	3	48
4.5	10	6	19	3	48

**CONCRETE SIDEWALK DETAIL**  
(NOT TO SCALE)

MODEL NO.	BFP SIZE	BACKFLOW DIMENSIONS					ENCLOSURE DIMENSIONS				PAD DIMENSIONS	
		A	B	C	D	E	EL	EW	EH	PL	PW	
RPE34	3/4"	12 1/4"	7 3/4"	4 1/8"	3 1/4"	28"	27"	13"	35"	42"	28"	
RPE10	1"	13 5/8"	7 3/4"	4 1/8"	3 1/4"	28"	27"	13"	35"	42"	28"	
RPE14	1 1/4"	14 1/4"	7 3/4"	4 1/8"	3 1/4"	28"	27"	13"	35"	42"	28"	
RPE15	1 1/2"	18 1/4"	10 5/8"	5 1/4"	4 1/4"	28"	27"	13"	35"	42"	28"	
RPE20	2"	19"	10 5/8"	5 1/4"	3 1/4"	28"	27"	13"	35"	42"	28"	



**REDUCED PRESSURE BACKFLOW PREVENTOR**  
(NOT TO SCALE)



Specifications

CONCRETE: Class 1/11 concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

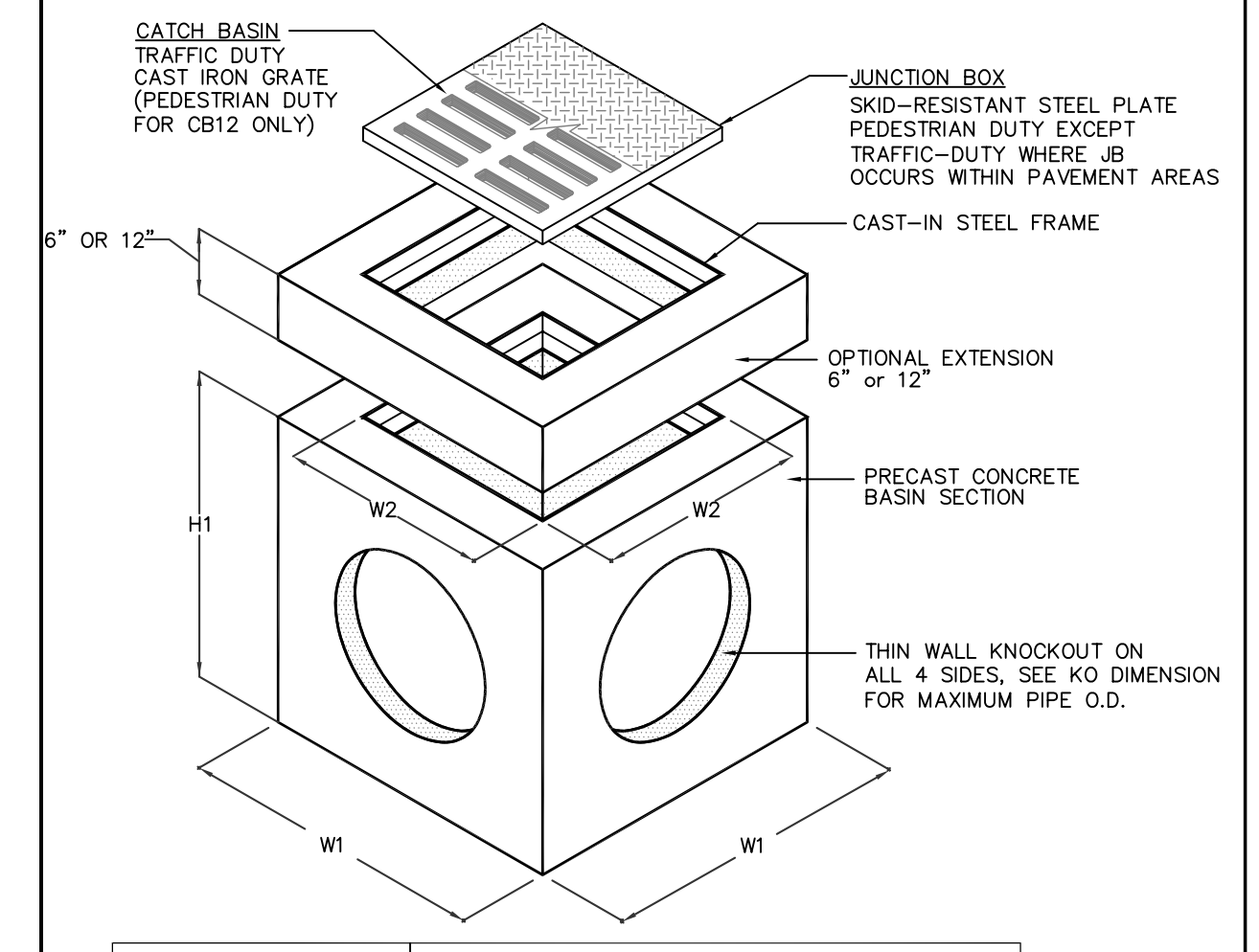
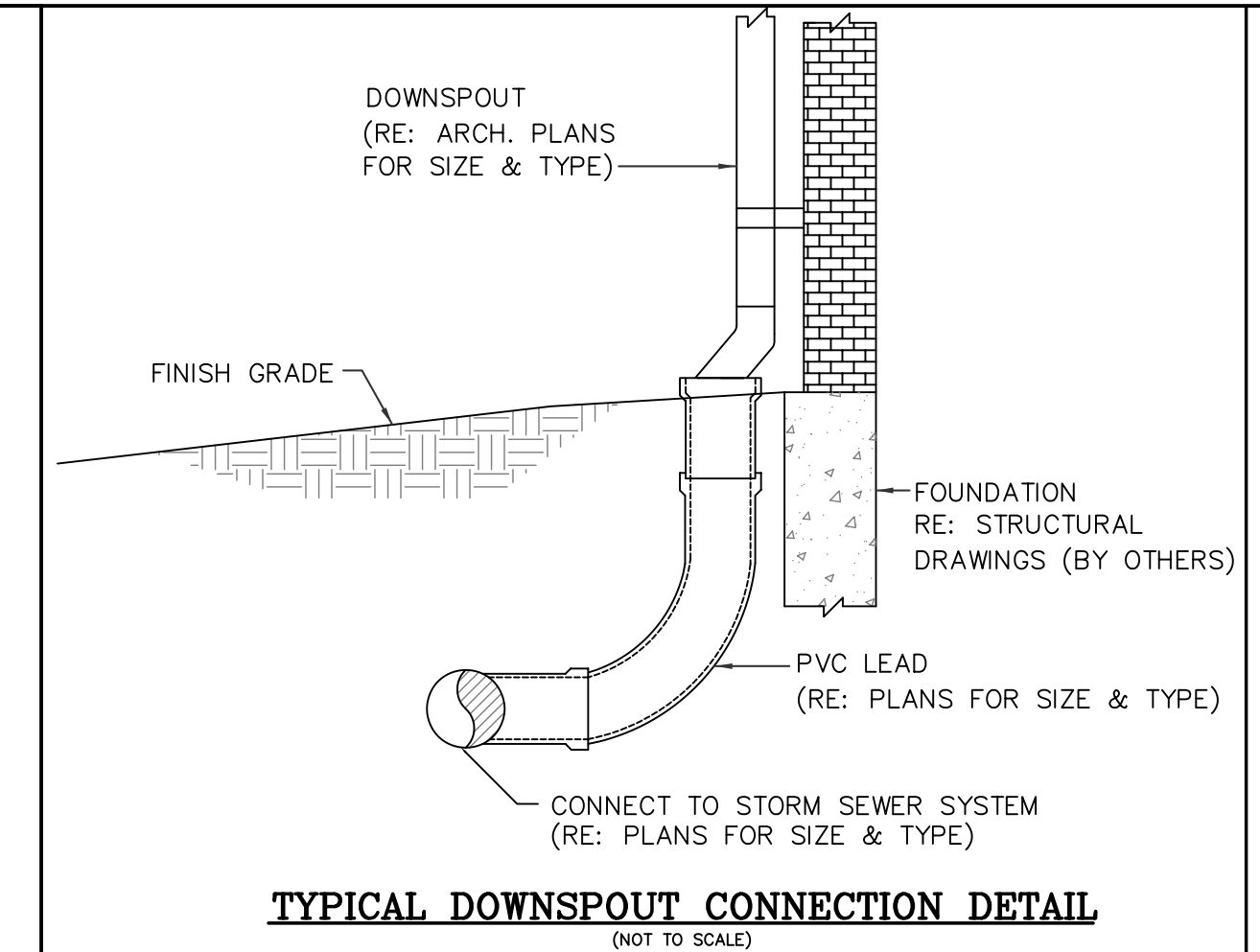
REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

HATCHWAY: Aluminum diamond plate cover with extruded aluminum frame furnished with dog handle, open door support and slam lock. (200 P.S.F. live load)

Engineering Data  
The backflow assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field reconnection & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

AWWA	UL	ICC	FM
------	----	-----	----

Product: CUSTOMER: LOCATION: ORDER #: PROJ #: DATE: MFG. PART NO. 888-611-PARK www.PARK-USA.com  
DOUBLE CHECK BACKFLOW PREVENTOR ASSEMBLY  
PW DRN ENG DWG. NO. REV. DATE 09/16 DBBP-1-KT A



MODEL #	JUNCTION BOX?	W1	W2	H1	KO	GRATE SIZE	WEIGHT LBS
CB12	JB12	15"	10"	21"	10"	12"x12"x1"	180
CB14	JB14	20"	14"	28"	12"	14"x14"x1-1/2"	600
CB18	JB18	24"	16"	34"	15"	18"x18"x1-1/2"	1,000
CB20	JB20	26"	18"	34"	17"	20"x20"x1-1/2"	1,335
CB24	JB24	32"	22"	41"	22"	24"x24"x2"	2,245
CB27	JB27	37"	25"	42"	24"	27"x27"x2"	2,875
CB30	JB30	42"	30"	42"	30"	32"x32"x2"	3,675
CB36	JB36	48"	36"	42"	32"	38"x38"x2"	4,585
CB48	JB48	60"	48"	54"	48"	38"x38"x2"	8,900
CB60	JB60	72"	60"	66"	60"	38"x38"x2"	13,650
CB72	JB72	84"	72"	78"	72"	38"x38"x2"	19,000
CB84	JB84	96"	83"	78"	84"	38"x38"x2"	23,000

1. CB12 CATCHBASIN IS RATED FOR PEDESTRIAN LOADING, ALL OTHERS ARE TRAFFIC DUTY.  
2. ALL JUNCTION BOXES ARE STANDARD PEDESTRIAN DUTY OR OPTIONAL TRAFFIC DUTY.

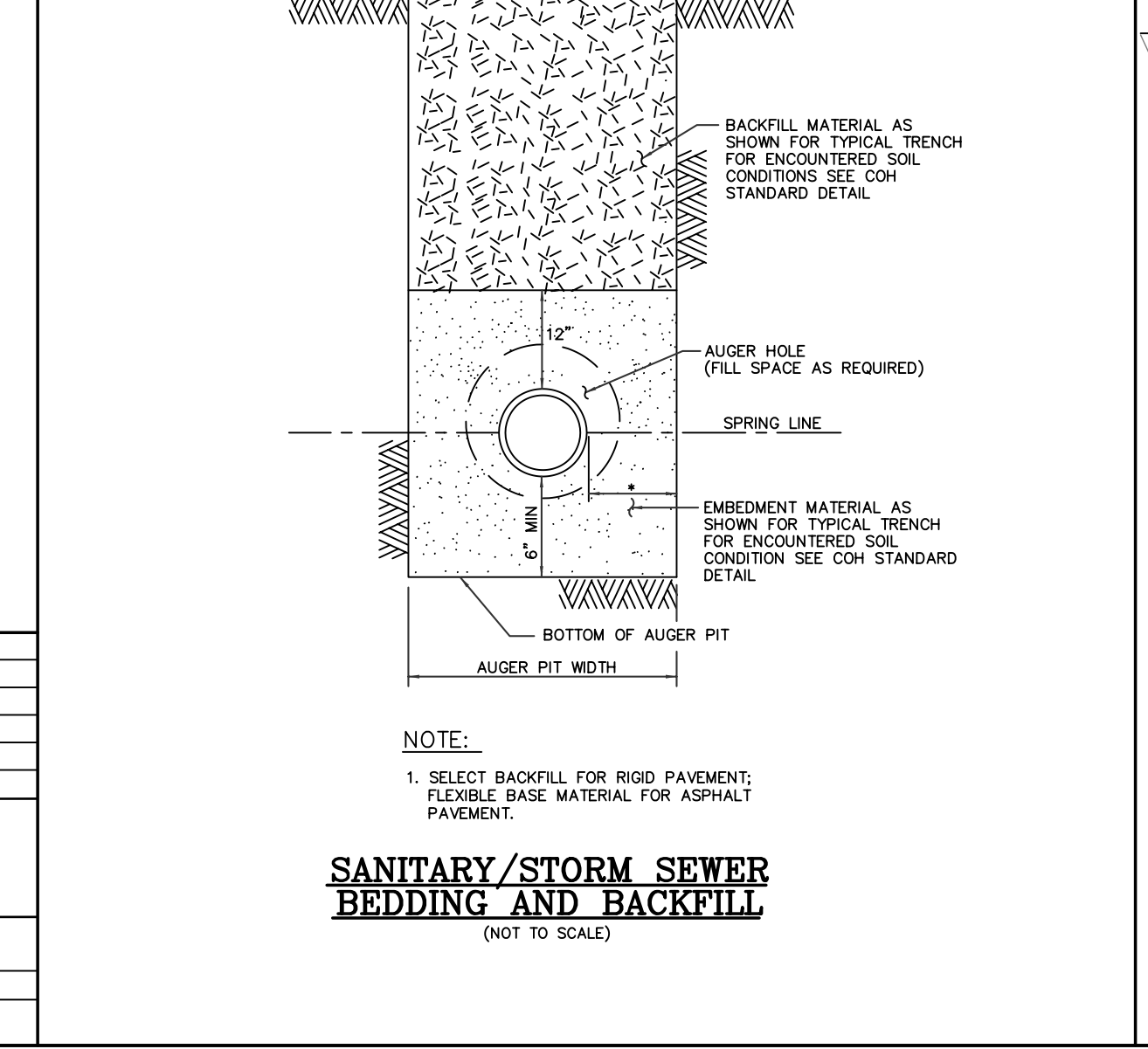
SPECIFICATIONS:  
GENERAL:  
1. BASE SECTION SHALL BE OF MONOLITHIC CONSTRUCTION AT FLOOR AND WALLS, WITH SECTIONAL RISERS (EXTENSIONS) TO REQUIRED DEPTH.  
2. MANUFACTURER: PARK USA, HOUSTON (800-256-8041) OR EQUAL.

CONCRETE: CLASS 1/11 CONCRETE WITH DESIGN STRENGTH OF 4,500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTION RISER TO REQUIRED DEPTH.

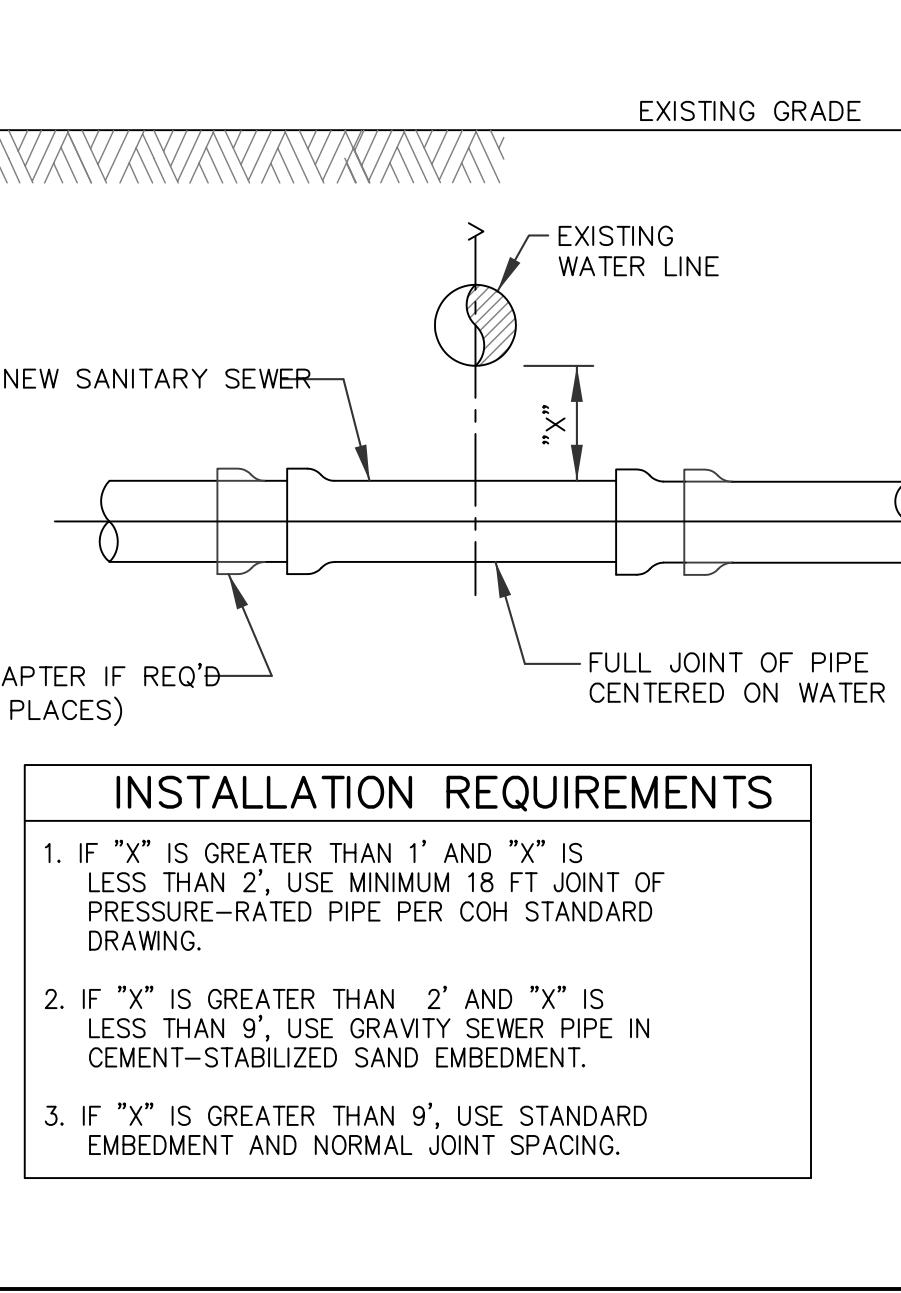
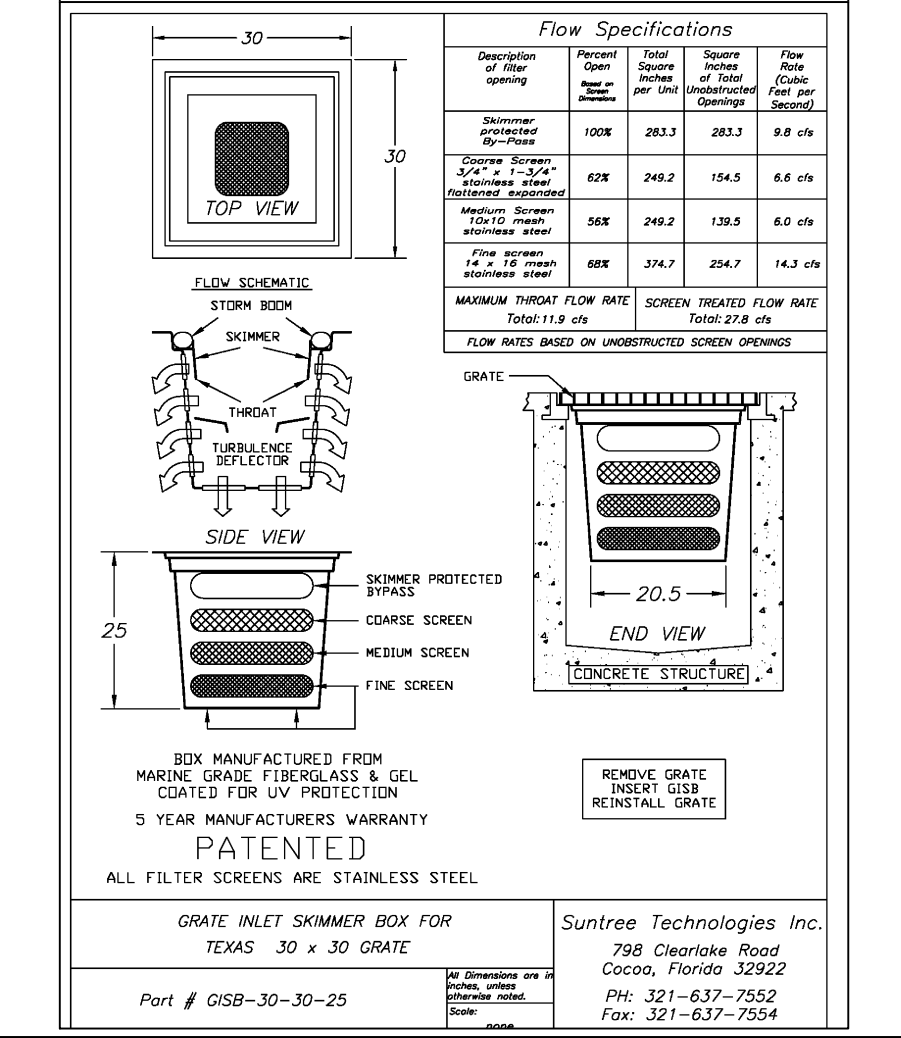
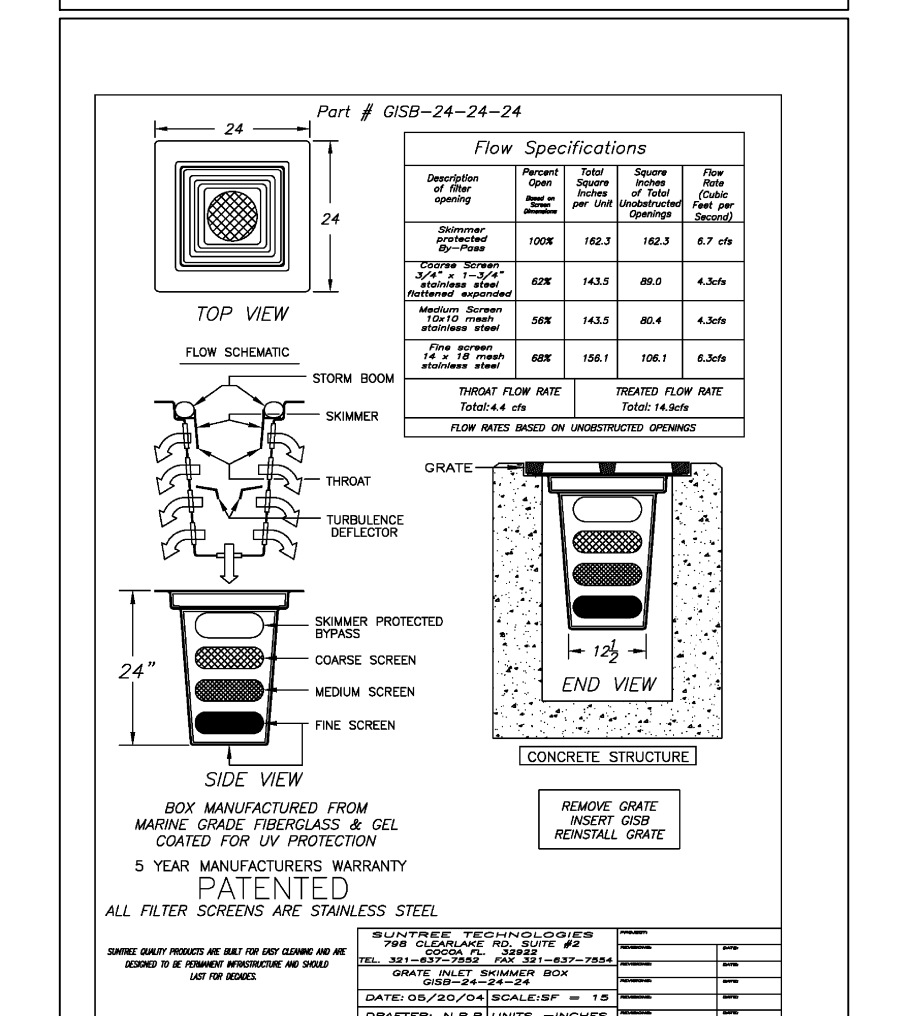
REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 35.

**PRECAST CONCRETE CATCHBASIN/JUNCTION BOX**  
(NOT TO SCALE)

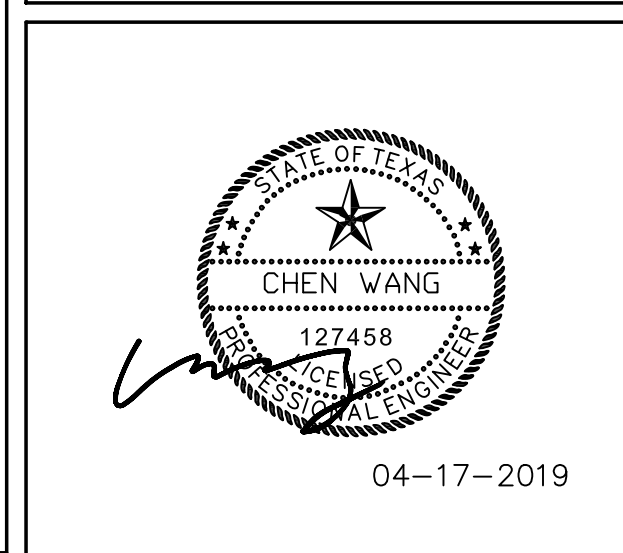


**SANITARY/STORM SEWER BEDDING AND BACKFILL**  
(NOT TO SCALE)



**INSTALLATION REQUIREMENTS**

WAREHOUSE 1 @ BRASADA DRIVE  
6907 BRASADA DRIVE  
HOUSTON, TEXAS. 77085



REVISIONS

No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	02-06-19	COH REVIEW COMMENTS
4	04-17-19	COH COMMENTS 04-05-19

GENERAL NOTES  
Scale: HOZ/1" = 20'  
VECT: N/A  
CEEDC Project Number: 181001A  
181001AC50  
Designed by: CW  
Checked by: CW  
Issue Date: 02-06-19  
CEEDC File Number: 181001AC50  
Date: 09-17-18  
Date: 09-17-18

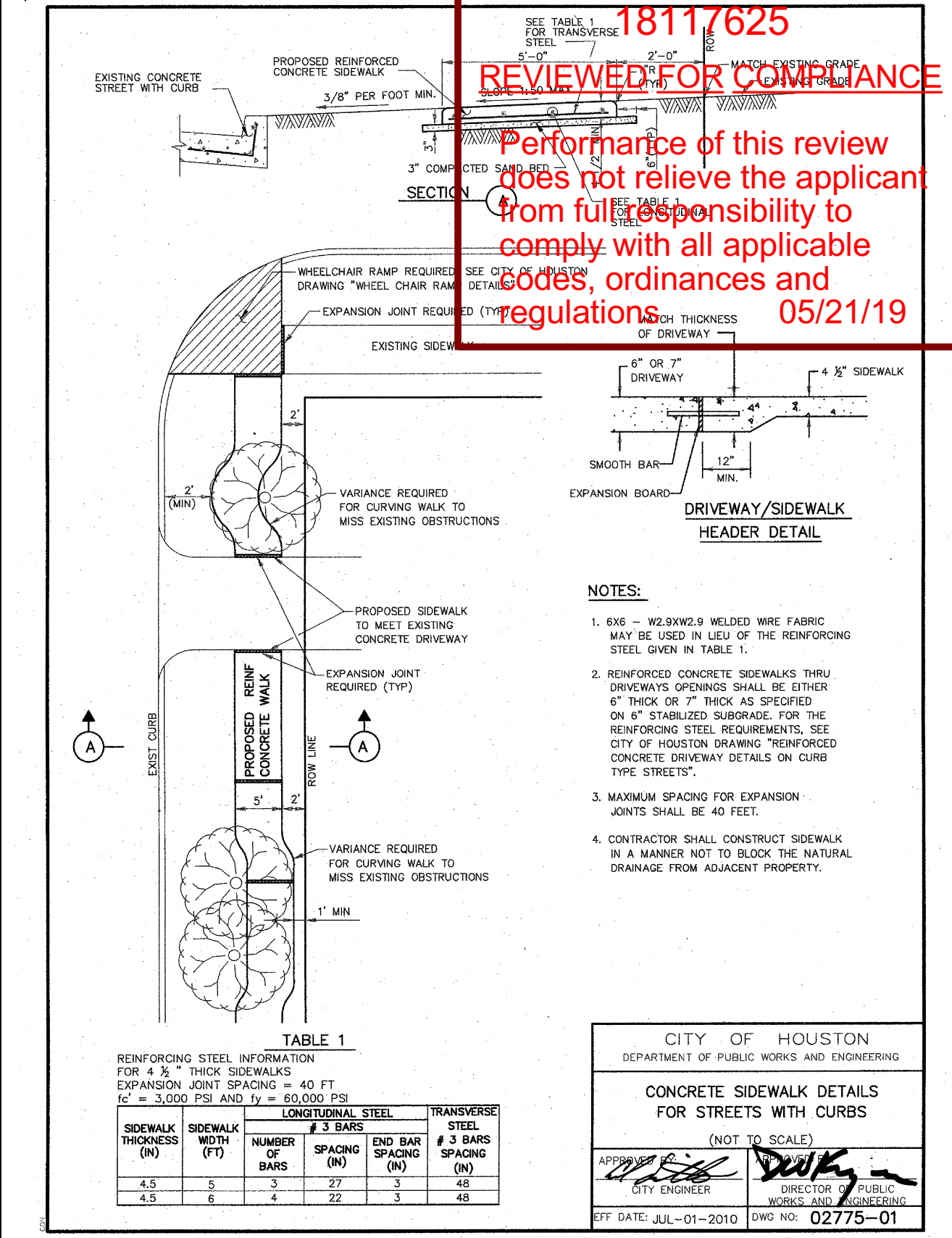
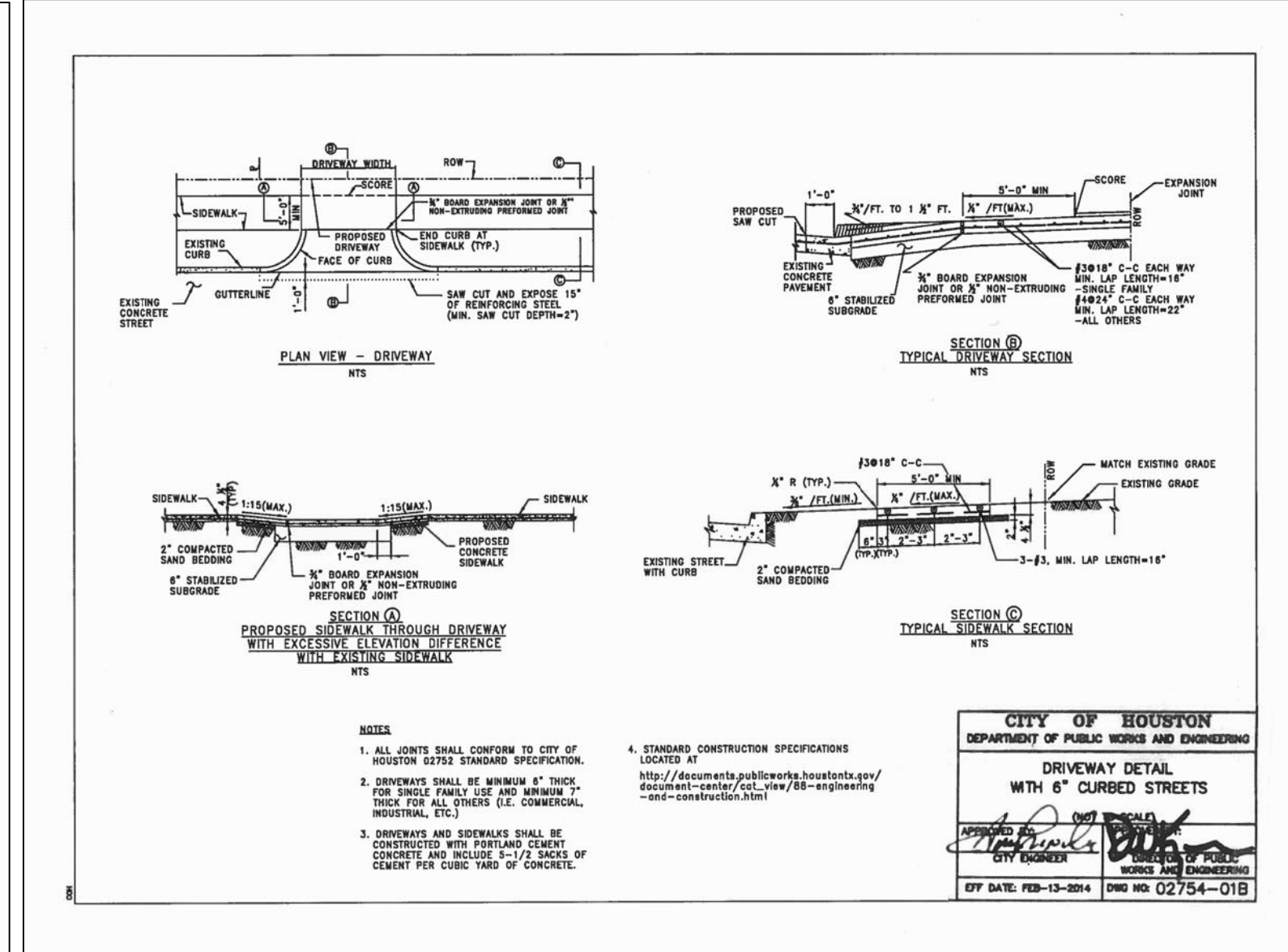
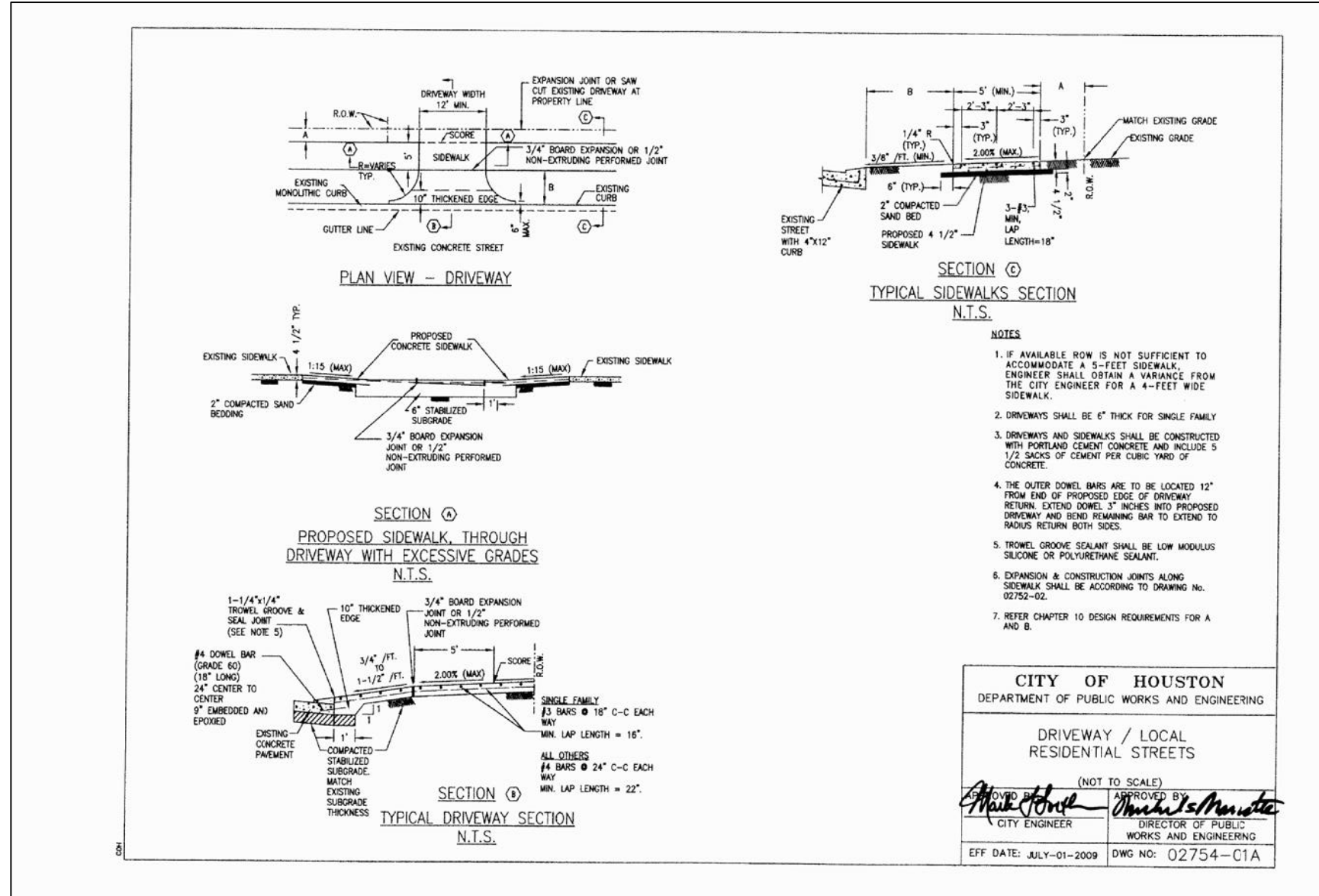
SITE CONSTRUCTION DETAILS I  
DRAWING: AC5.0  
SHEET: 8 / 9



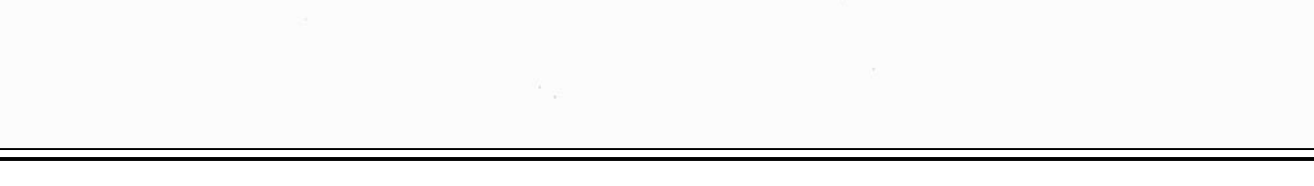
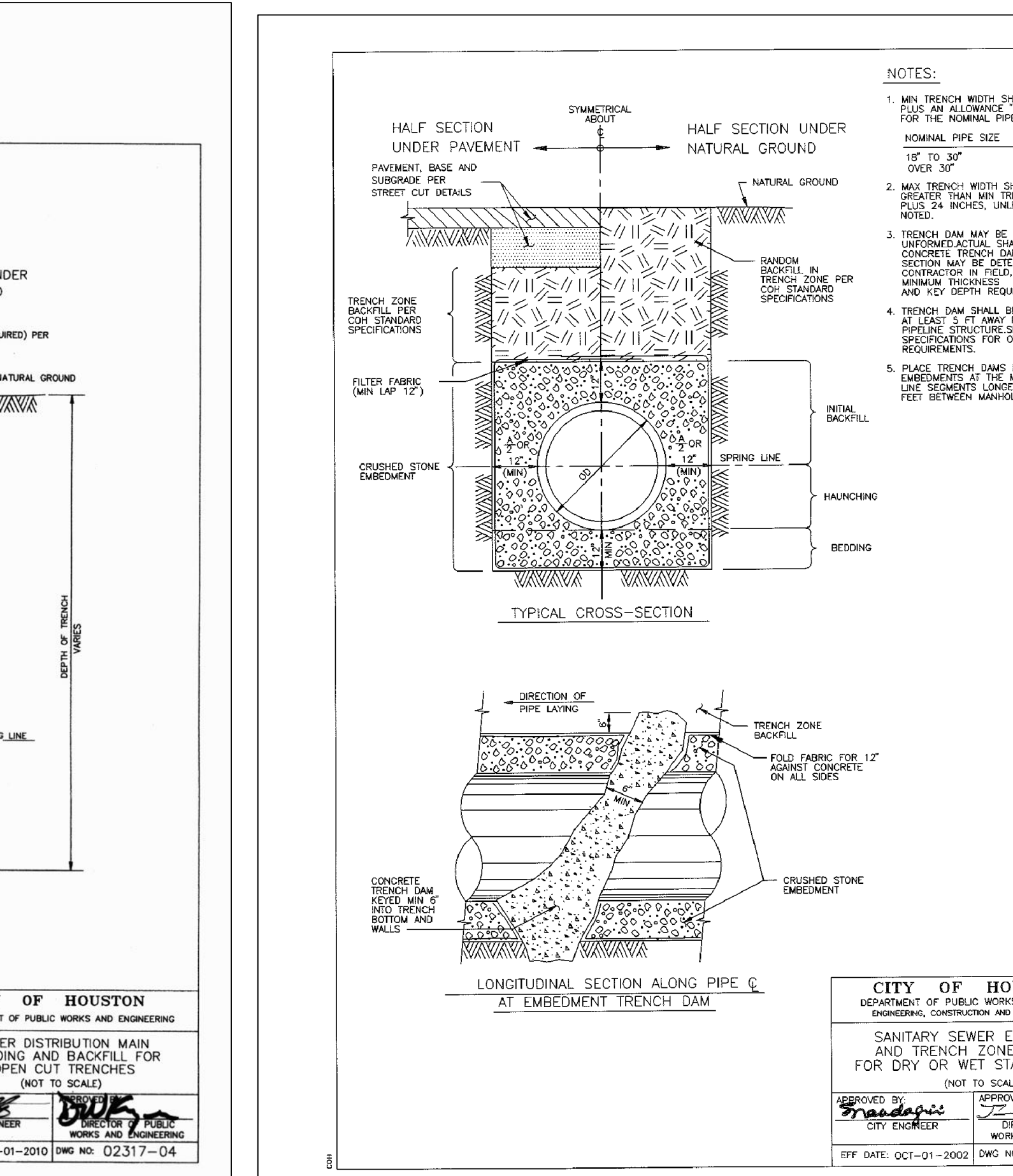
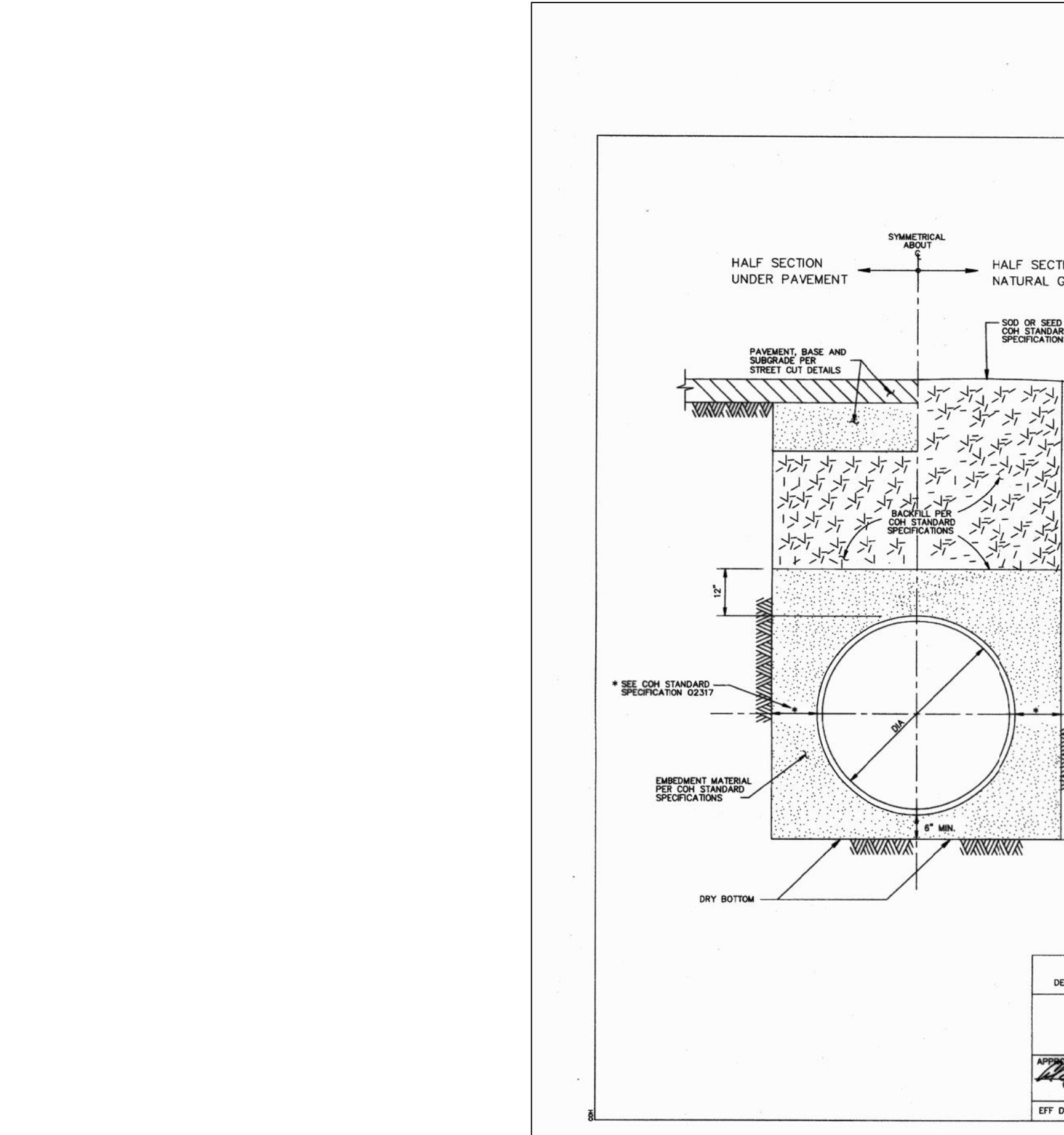
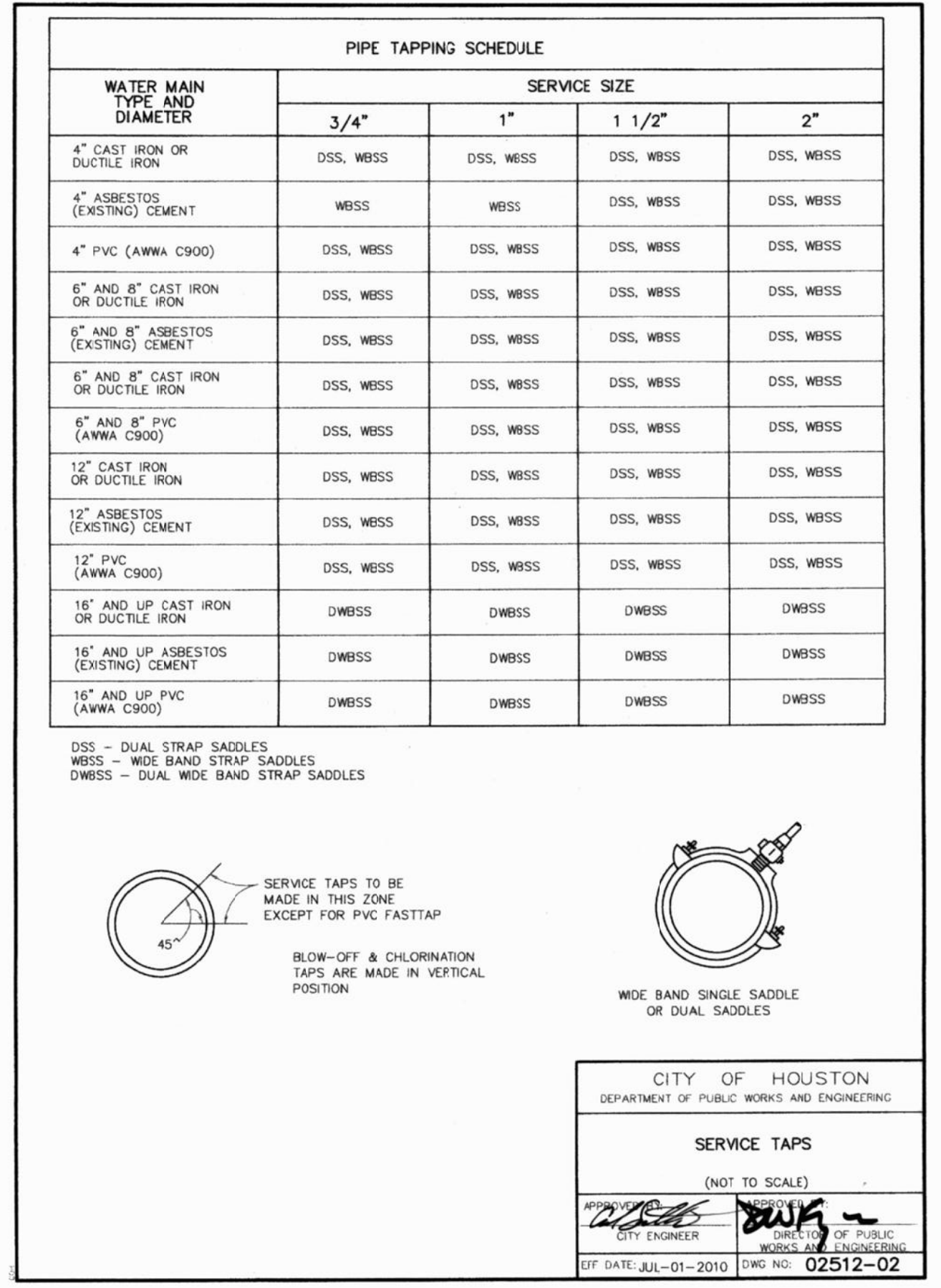
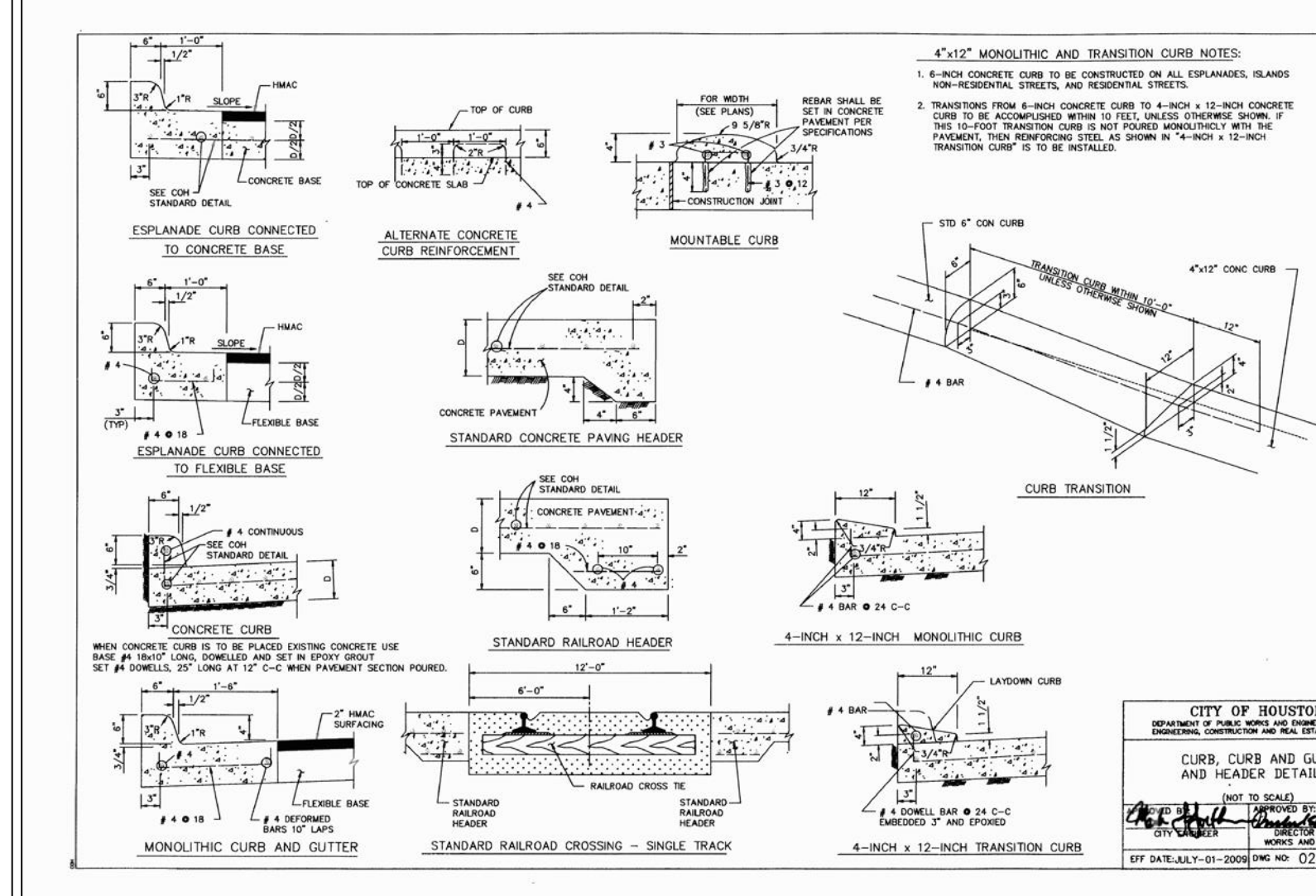
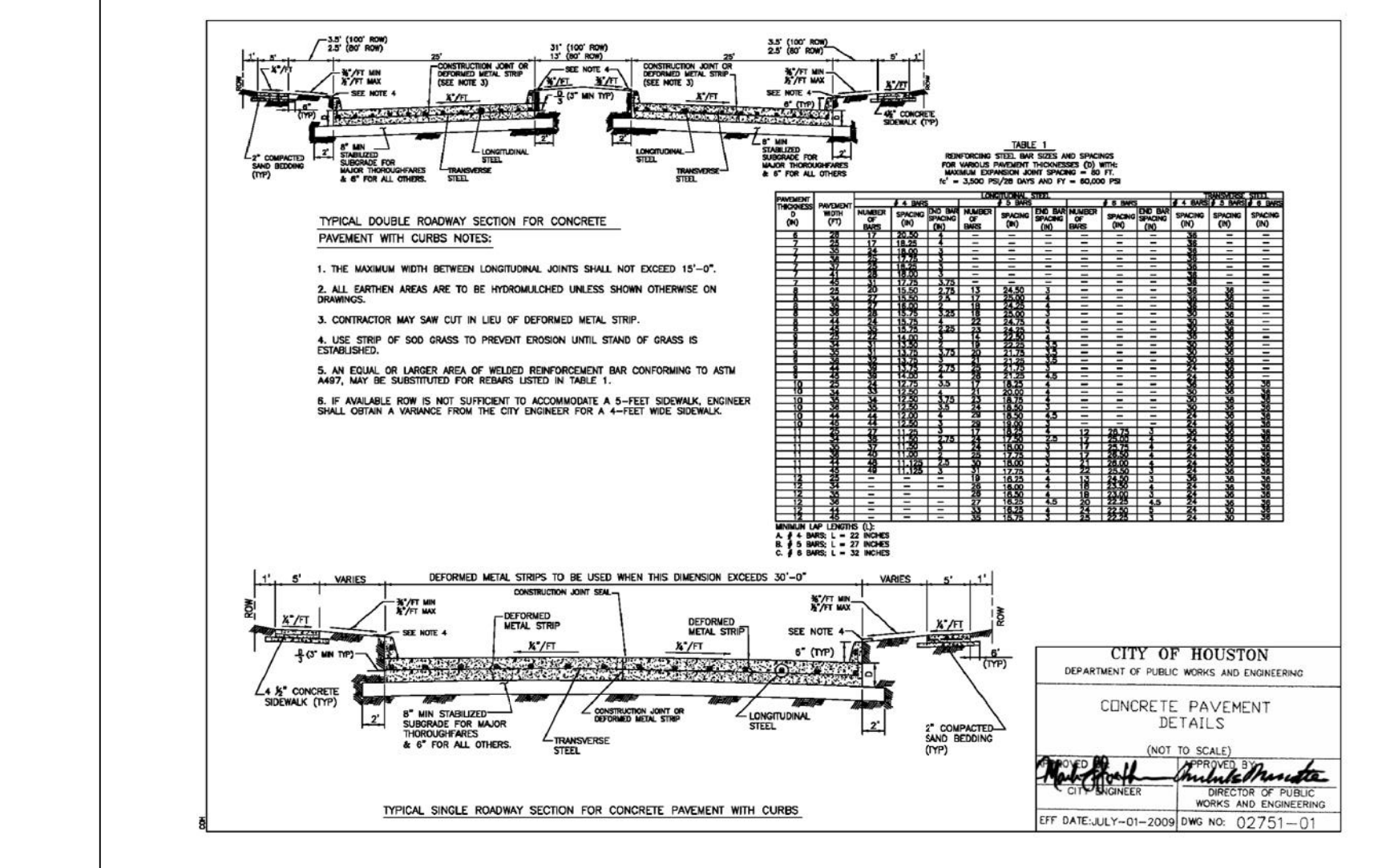


**CE**  
ENGINEERS & DEVELOPMENT CONSULTANTS

T.B.P.E. FIRM # 19146  
inquiry@ceengineers.com  
www.CEENGINEERS.com  
(C): 832-491-1458  
(O): 713-540-6639



18117625  
REVIEWED FOR COMPLIANCE  
Performance of this review does not relieve the applicant from full responsibility to comply with all applicable codes, ordinances and regulations.  
05/21/19



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**WAREHOUSE 1 @ BRASADA DRIVE**  
6907 BRASADA DRIVE  
HOUSTON, TEXAS, 77085

**CHEN WANG**  
REGISTERED PROFESSIONAL ENGINEER  
127458  
04-17-2019

**REVISIONS**

No.	DATE	DESCRIPTION
1	07-31-18	ADDENDUM D
2	09-17-18	ISSUE FOR PERMIT
3	02-06-19	COH REVIEW COMMENTS
4	04-17-19	COH COMMENTS 04-05-19

**GENERAL NOTES**

Scale: HOZ/RI1" = 20'  
VERT: N/A  
Issue Date: 02-06-19  
CEEDC Project Number: 181001A  
CEEDC File Number: 181001AC51  
Designed by: CW  
Date: 09-17-18  
Checked by: CW  
Date: 09-17-18

**SITE CONSTRUCTION DETAILS II**

DRAWING: **AC5.1**

SHEET: **9 / 9**