

TOMBALL INDEPENDENT SCHOOL DISTRICT PLANS FOR CONSTRUCTION OF PROPOSED L109-00-00 CHANNEL TO SERVE JUERGEN ROAD EDUCATIONAL CAMPUS

Development Table

Juergen Road Educational Campus

Project #
2207070050

1	Total: Acreage within the tract owned by the Developer within the Little Cypress Creek Service Area	205.7700	acres
2	Subtotal: Acreage developed prior to February 11, 2014 (as shown on plans) and all new ROW dedicated according the Master Thoroughfare Plan	0.7571	acres
3	Subtotal: Acreage developed in a previous phase under the LCCIG	0.0000	
4	Subtotal: Acreage Proposed to be Developed in this phase	205.0129	acres
5	Subtotal: Remaining undeveloped acreage owned by Developer within the Little Cypress Creek Watershed after completion of this development (Line1-Line2-Line3-Line4-Line5)	0.0000	acres
6	Little Cypress Creek Impact Fee	\$ 4,000.00	per acre
7	Total Impact Fee Due for Development Acreage (Line 4 times Line 6)	\$ 820,051.72	
8	Subtotal Impact Fees Previously Paid	\$ -	
9	Total TRE to be provided in this development phase (Line 10+Line 11)	182.46	ac-ft
10	Required mitigation detention for this development phase (Line 4 times 0.55 ac-ft/ac)	112.76	ac-ft
11	Required Conveyance detention for this development phase (Line 4 times 0.34 ac-ft/ac)	69.70	ac-ft
12	Remaining developable Property after this development phase without previously provided TRE (Line 5)	0.00	acres
13	TRE Volume for total remaining developable property after this development phase (Line 14+Line 15)	0.00	ac-ft
14	Required mitigation detention for entire developable Property (Line 5 times 0.55 ac-ft/ac)	0.00	ac-ft
15	Required Conveyance detention for entire developable Property (Line 5 times 0.34 ac-ft/ac)	0.00	ac-ft

SEPTEMBER 2025

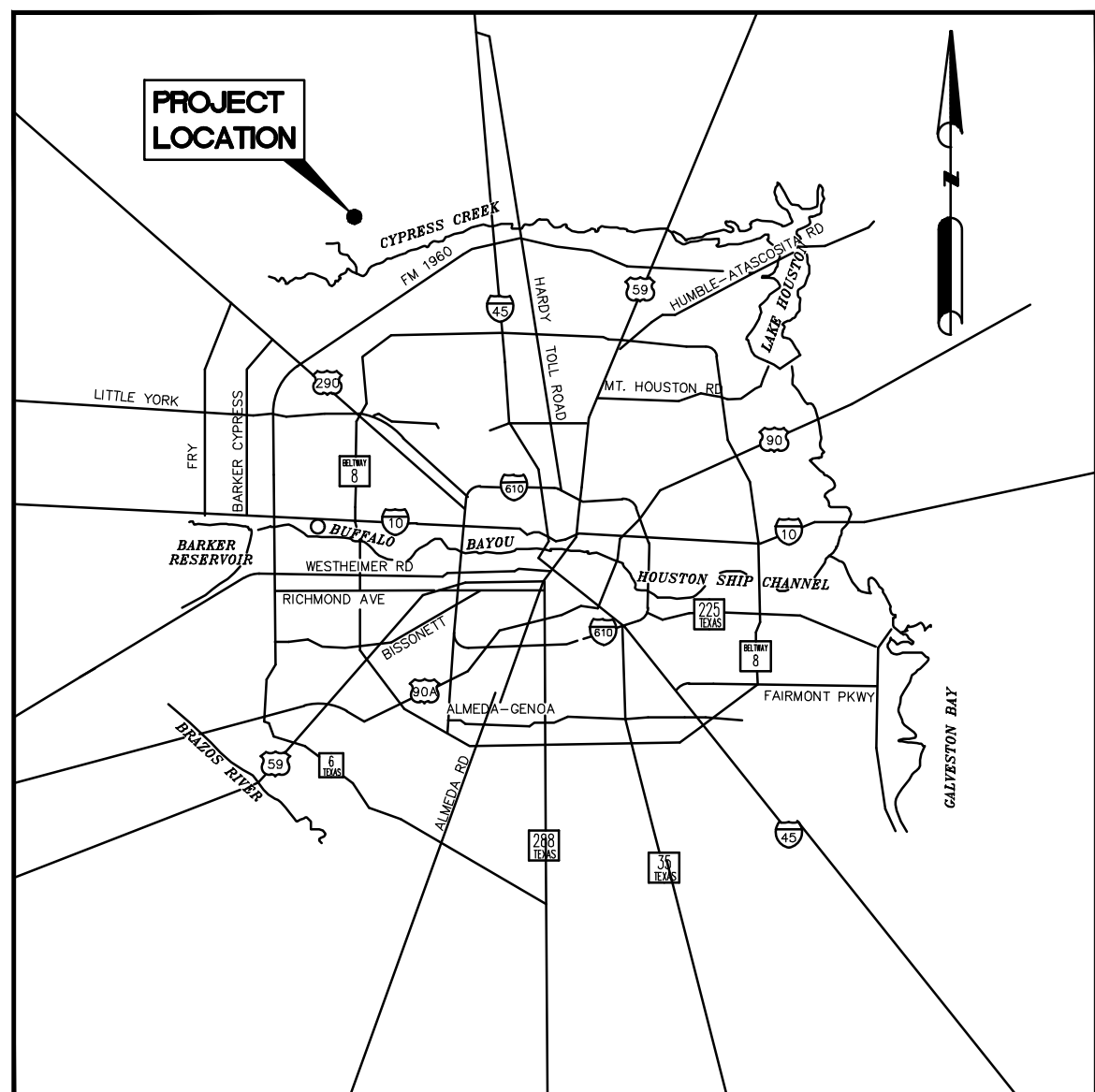
*CONSTRUCTION OF FEATURES WITHIN FUTURE HARRIS COUNTY FLOOD CONTROL DISTRICT ROW:

A 48-HOUR PRE-CONSTRUCTION NOTICE MUST BE PROVIDED TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT (HCFCD) IN ORDER TO SCHEDULE APPLICABLE INSPECTIONS DURING CONSTRUCTION OF THE PROPOSED FEATURE. FAILURE TO PROVIDE THIS NOTIFICATION MAY RESULT IN THE FACILITY NOT BEING ACCEPTED FOR HCFCD MAINTENANCE.

THE 48-HOUR PRE-CONSTRUCTION NOTIFICATION FORM TO HCFCD AT DCID@HCFCD.ORG.

PLEASE CONTACT THE HCFCD DEVELOPMENT & CONSTRUCTION INSPECTIONS DEPARTMENT (DCID) AT DCID@HCFCD.ORG FOR THE LATEST FORM.

NOTIFICATIONS (PERMIT) ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT - PERMITS OFFICE - IS REQUIRED FOR PROPOSED WORK WITHIN HARRIS COUNTY RIGHT-OF-WAY. THE PROJECT MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED NOTIFICATION. BE ADVISED THAT A NOTIFICATION MUST BE OBTAINED SEPARATELY FROM SITE DEVELOPMENT PERMIT PACKAGE. FOR ADDITIONAL INFORMATION, PLEASE VISIT http://hcpid.org/permits/pr_notification_of_construction.html OR CONTACT PUBLIC REVIEW INSPECTIONS DEPARTMENT @ (713-274-3931 OR public.review@hcpid.org)

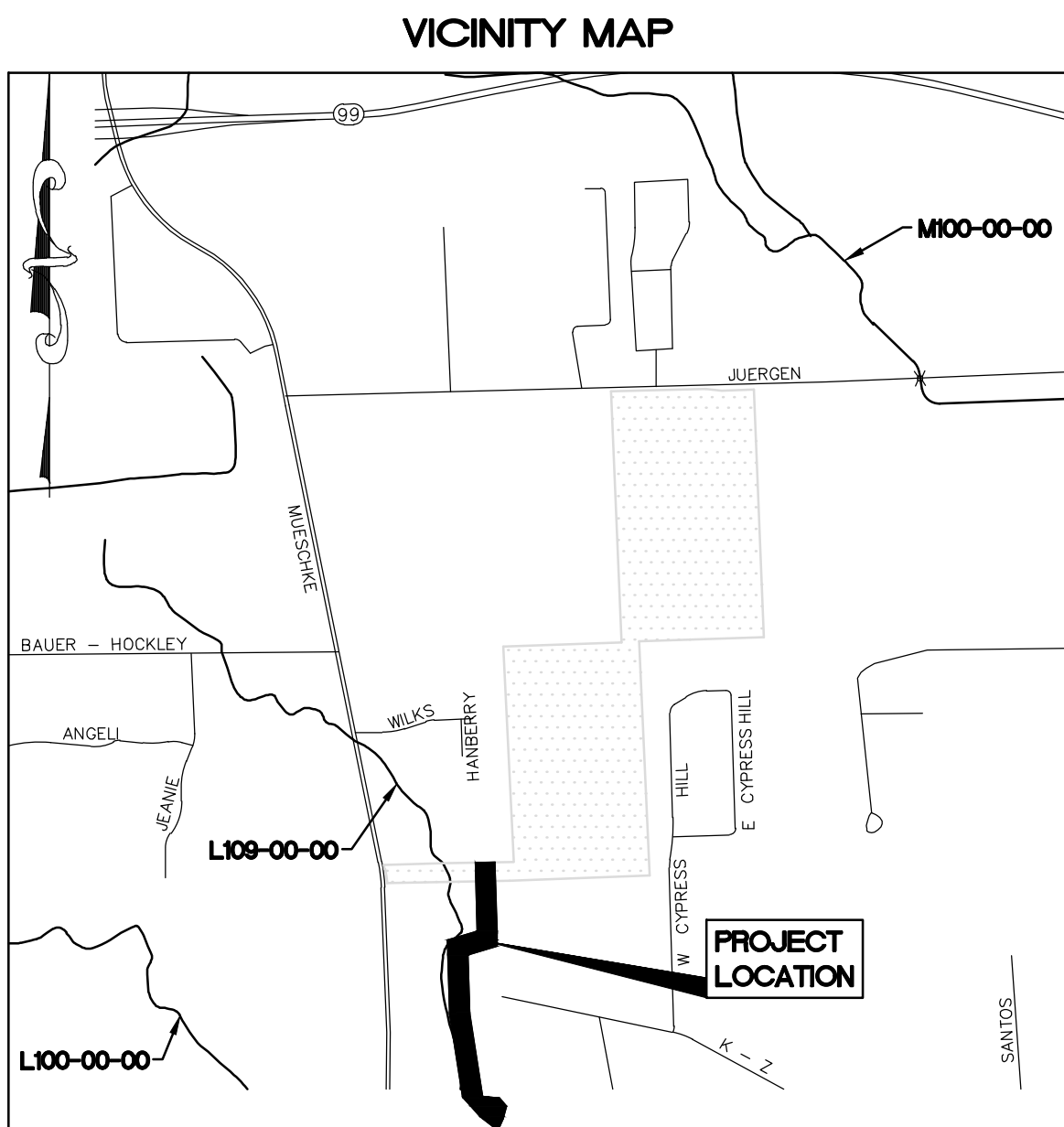


LOCATION MAP

N.T.S.

48 HOUR NOTICE:

CONTRACTOR SHALL NOTIFY HARRIS COUNTY PRIOR TO COMMENCING CONSTRUCTION AND/OR BACKFILLING ANY UTILITIES. CONTRACTOR(S) TO CONTACT PUBLIC REVIEW DEPARTMENT @ (713-274-3931) OR (public.review@cpid.org).

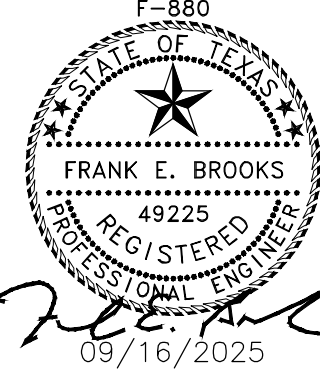


KEY MAP 326 C, D, G & H
ZIP CODE: 77433, 77377
SCALE N.T.S.

BROOKS & SPARKS, INC.
CONSULTING ENGINEERING

TEXAS REGISTERED ENGINEERING FIRM F-880

BROOKS & SPARKS, INC.
F-880



INDEX

SHEET NO.	DESCRIPTION
1.	COVER SHEET
2.	HARRIS COUNTY EXPRESS REVIEW SHEET
3.	HARRIS COUNTY FLOOD CONTROL DISTRICT EXPRESS REVIEW SHEET
4.	GENERAL NOTES
5.	PROJECT LAYOUT
6.	SHEET INDEX
7.	DEMOLITION PLAN
8.	SERVICE AREA MAP
9.	TYPICAL SECTIONS
10.	L109-00-00 PLAN AND PROFILE STA. 1+00 TO STA. 10+00
11.	L109-00-00 PLAN AND PROFILE STA. 10+00 TO STA. 20+00
12.	L109-00-00 PLAN AND PROFILE STA. 20+00 TO STA. 26+00
13.	L109-00-00 PLAN AND PROFILE STA. 26+00 TO END
14.	L109-00-00 OUTFALL PLAN AND PROFILE STA. 7+00 TO 15+00
15.	STORM WATER POLLUTION PREVENTION PLAN
16.	STORM WATER POLLUTION PREVENTION DETAILS
17.	CONCRETE WINGWALL WITH STRAIGHT WINGS
18.	HCFCD OUTFALL AND INTERCEPTOR STRUCTURE DETAILS
19.	HCFCD CONCRETE CHANNEL LINING DETAILS
20.	HCFCD STORM SEWER AND RIPRAP DETAILS
21.	CROSS SECTIONS STA. 2+00 TO STA. 9+00
22.	CROSS SECTIONS STA. 10+00 TO STA. 18+00
23.	CROSS SECTIONS STA. 19+00 TO STA. 27+00
24.	CROSS SECTIONS STA. 28+00 TO STA. 33+00

18 Sep 2025 3:21PM Robertv
F:\project\BROOK_SP\Tomball ISD\866018-Juergen Tract\Civil\HCFCD CHANNEL\866-0018 - L109 - GN.dwg
Includes Xref(s): 866018-X-L109 - BRD.dwg; 866018-X-L109 - SCAL.dwg

GENERAL NOTES – OUTSIDE CITY LIMITS

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES AND STORM DRAINAGE 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.
2. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/800-245-4545 AND LONE STAR ONE CALL AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER AND STORM DRAINAGE LINES. 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.
4. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING IN WRITING PRIOR TO COMMENCING CONSTRUCTION.
5. 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.
6. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.

GENERAL CONSTRUCTION NOTES

1. WASTEWATER COLLECTION SYSTEMS, WATER, PAVING, TRAFFIC SIGNALS AND DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING CITY DOCUMENTS. THESE DOCUMENTS ARE "STANDARD CONSTRUCTION SPECIFICATIONS (MOST RECENT ISSUE OCTOBER 2002) WITH ALL SUBSEQUENT AMENDMENTS ADDED THERETO UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN MUST AGREE WITH THE MINIMUM STANDARDS ESTABLISHED IN THE LATEST ISSUE OF THE "INFRASTRUCTURE DESIGN MANUAL" (MOST RECENT ISSUE OCTOBER 2002)
2. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO PAVING, WATER LINES, WASTEWATER COLLECTION SYSTEMS, STORM SEWER, AND TRAFFIC SIGNALS, DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH CURRENT EDITIONS OF CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS, DESIGN DETAILS AND DESIGN MANUALS. REPAIRS SHALL BE AT NO COST TO THE PUBLIC.
3. CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT FORTY-EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION AT TELEPHONE NUMBER (713-274-3823).
4. CONTRACTOR SHALL NOTIFY THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 FOR LOCATION OF EXISTING FACILITIES THAT MAY NOT BE SHOWN ON THE PLANS AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES
5. CONTRACTOR SHALL OBTAIN ALL DEVELOPMENT, RIGHT-OF-WAY AND CONSTRUCTION PERMITS REQUIRED BY THE REGULATIONS OF HARRIS COUNTY, TEXAS AT HIS EXPENSE PRIOR TO COMMENCEMENT OF WORK.
6. CONTRACTOR SHALL COMPLY WITH O.S.H.A. REGULATIONS AND TEXAS STATE LAW CONCERNING TRENCH SAFETY SYSTEMS.
7. ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE AND THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES CAUSED BY HIS FAILURE TO LOCATE AND MAINTAIN THE EXISTING UNDERGROUND UTILITIES.
8. ALIGNMENT, CENTERLINE CURVE DATA AND STATIONING TO BE VERIFIED FROM APPROVED SUBDIVISION PLAT OR APPROVED PLAT OR RECORDED INSTRUMENT FOR OFFSITE EASEMENTS.

HARRIS COUNTY PERMIT NOTES

1. PAVING SHALL BE IN ACCORDANCE WITH THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE" AND/OR AMENDMENTS OF SAME.
2. GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE
3. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION.
4. OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN HARRIS COUNTY'S ROAD RIGHTS-OF-WAY.
5. "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 (713-274-3931)
6. "AS PER FIRM PANEL NO. 48201CO – 605M, DATED November 15, 2019, THIS TRACT IS NOT IS, IS PARTIALLY WITHIN THE 100-YEAR FLOOD PLAIN, AND THE NEAREST APPLICABLE 100-YEAR FLOOD PLAIN ELEVATION IS 129 (1973 DATUM ADJUSTMENT)."
7. CULVERT TO BE SIZED AND GRADE CONFIRMED BY HARRIS COUNTY PRECINCT NUMBER

SWPPP CONSTRUCTION NOTES

1. 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.
2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT 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.
3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.
4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
5. 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.
6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION OR BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

STANDARD HCFCD NOTES FOR CONSTRUCTION DRAWINGS

1. 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.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICTS DEVELOPMENT COORDINATION AND INSPECTION 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 OR COMPLIANCE WITH NATIONWIDE PERMIT. IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092. ATTN: DEVELOPMENT COORDINATION AND INSPECTION DEPT. BY HAND DELIVERY, BY EMAIL DDO@HCFCD.ORG, OR FAX TO 713-684-4129 (FAX NUMBER).
3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICTS DEVELOPMENT COORDINATION AND INSPECTION SECTION 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.
4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
5. 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.
6. 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 BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
7. PERFORM ALL ACTIVITIES WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY IN ACCORDANCE WITH THE MOST RECENT HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATIONS BOOK.
8. 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.
9. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.
10. 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.

PRIVATE UTILITY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE: CENTERPOINT ENERGY INTRASTATE PIPELINE, LL) 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 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (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.
- FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-3552 OR (713) 207-4200.

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

WARNING: OVERHEAD ELECTRICAL FACILITIES

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 792, 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

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN THE AREA. FOLLOW THE DIRECT BURIED CABLE PROCEDURES TO LOCATE THE AT&T TEXAS/SWBT DIRECT BURIED CABLES AS INDICATED IN THE AT&T TEXAS RESEARCH AND SIGNATURE PROCESS FOR AT&T TEXAS/SWBT FACILITIES.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER MR. ROOSEVELT LEE JR. AT (713)567-4552 OR EMAIL HIM AT RL259@att.com, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATION NEAR OUR AT&T TEXAS/SWBT FACILITIES.

STORM SEWER CONSTRUCTION NOTES

1. ON SITE STORM SEWERS 12-INCH DIAMETER AND LARGER SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE (PER AASHTO M-284, TYPE S, HANCOR SURE-LOK F477 PIPE, OR APPROVED EQUAL,) UNLESS OTHERWISE SHOWN ON PLANS. PRODUCT MUST HAVE GASKET JOINTS.
2. ON SITE STORM SEWERS 10-INCH DIAMETER AND LESS SHALL BE PVC (POLY-VINYL CHLORIDE) PIPE MEETING A.S.T.M. SPECIFICATIONS, ASTM D3034 AND HAVING A S.D.R. OF 26, UNLESS OTHERWISE SHOWN ON PLANS.
3. ANY CONCRETE PIPE USED ON THIS PROJECT SHALL BE REINFORCED CONCRETE MEETING ASTM C-76 CLASS III, AND HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS. CONCRETE PIPE IS ONLY TO BE USED WHERE REQUIRED IN PUBLIC RIGHT-OF-WAY AND/OR AT TIES TO PUBLIC STORM SEWER SYSTEMS. BEDDING BACKFILLING AND INSTALLATION OF PIPE AND CONSTRUCTION OF APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CIVIL DETAIL SHEETS.
4. THE CONTRACTOR SHALL USE PRECAST 4000 PSI REINFORCED CONCRETE STORM SEWER MANHOLES AND INLETS. INVERT SHALL BE INSTALLED WITH NON-SHRINK GROUT AND SLOPED TO ENSURE POSITIVE DRAINAGE FROM INLET TO STORM SEWER LINE. WITH SMOOTH FINISH AND NO STANDING WATER IN INLET. BRICK MANHOLES AND/OR INLETS MAY BE USED AS APPROVED BY THE ENGINEER WHEN SETTING STRUCTURES ON EXISTING UTILITY LINE. BRICK STRUCTURES MUST BE MORTARED INSIDE AND OUT. COORDINATE EACH INCIDENT WITH ENGINEER.
5. ALL INLETS, MANHOLES, CLEANOUTS, AND HEADWALLS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND. CEMENT STABILIZED SAND FILL SHALL BE AT LEAST 12" ON BOTTOM OF STRUCTURE AND 12" AROUND OUTSIDE OF STRUCTURE.
6. NO CORNER CONNECTIONS WILL BE ALLOWED TO ANY INLETS, JUNCTION BOXES OR BOX MANHOLES
7. CONTRACTOR SHALL CUT OFF PIPE FLUSH WITH INSIDE FACE OF INLETS AND MANHOLES. ALL PIPE PENETRATIONS SHALL BE GROUTED INSIDE AND OUT WITH NON-SHRINK GROUT.
8. CONCRETE FOR DRAINAGE STRUCTURES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.
9. CULVERT CROSSINGS LOCATED WITHIN 30 FEET OF THE RIGHT-OF-WAY SHALL HAVE MINIMUM 6:1 SLOPING ENDS KNOWN AS SAFETY END TREATMENTS (SETS). THE CULVERT SHALL HAVE SUFFICIENT LENGTH TO ALLOW THE 6:1 SLOPE TO BE ACHIEVED FROM THE EDGE OF PAVEMENT TO THE FLOWLINE AT THE END OF THE SET.
10. CULVERTS LARGER THAN SINGLE 30-INCH DIAMETER (OR LARGER THAN MULTIPLE 24- INCH DIAMETER CULVERTS) SHALL REQUIRE SAFETY PIPE RUNNERS.
11. CONTRACTOR SHALL FLUSH AND CLEAN ALL STORM SEWER LINES AND STRUCTURES PRIOR TO ACCEPTANCE.
12. UTILITIES ARE TO BE TAKEN TO WITHIN FIVE (5) FEET OF BUILDING. SEE PLUMBING SHEETS FOR CONTINUATION OF SERVICE CONNECTIONS INTO BUILDING.
13. TE-IN'S TO EXISTING MANHOLES SHALL BE MADE SUCH THAT THE FINAL CONDITIONS UPON COMPLETION OF THE JOB SHALL BE AS GOOD OR BETTER THAN PRIOR TO STARTING WORK.
14. THE CONTRACTOR IS TO INSTALL WATER-TIGHT ADAPTORS OF A TYPE COMPATIBLE WITH THE MATERIALS BEING JOINED AT THE POINT OF CONNECTION OF THE SERVICE LINE TO THE BUILDING PLUMBING. NO CEMENT GROUT MATERIALS ARE PERMITTED.
15. THE CONTRACTOR IS TO INSTALL EACH CLEANOUT SO THAT IT OPENS IN A DIRECTION OPPOSITE TO THE FLOW OF THE WASTE AND, EXCEPT IN THE CASE OF A "WYE" BRANCH AND END-OF-THE-LINE CLEANOUTS, CLEANOUTS WILL BE INSTALLED VERTICALLY ABOVE THE FLOW LINE OF THE PIPE. CLEANOUTS WILL BE MADE WITH AIR-TIGHT MECHANICAL PLUG.
16. ALL STORM SEWER MANHOLES LOCATED OUTSIDE OF PAVED AREAS SHALL BE SET AT FINISH GRADE WITH CONCRETE COLLAR UNLESS OTHERWISE NOTED ON PLANS.
17. ALL INLETS AND JUNCTION BOXES LOCATED OUTSIDE OF PAVED AREAS SHALL HAVE A PRE-CAST TOP WITH CAST-IN FRAME.
18. CONTRACTOR SHALL GROUT ALL JOINTS INSIDE OF ALL INLETS, JUNCTION BOXES, AND MANHOLES WITH NON-SHRINK GROUT.
19. ALL TYPE "A" GRATE INLETS SHALL HAVE SLOTTED GRATE TOPS (MODEL V-4880-3).
20. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS EIGHT (8) INCHES THICK MAXIMUM AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
21. CONTRACTOR IS RESPONSIBLE FOR PUMPING OUT STORM WATER QUALITY UNITS AND PROVIDING THE ENGINEER WITH A MANIFEST STATING THAT THE SILT AND DEBRIS HAS BEEN DISPOSED OF IN A LEGAL MANNER. MANIFEST AND TIME STAMPED PICTURES OF THE CLEAN UNITS MUST BE PROVIDED PRIOR TO ENGINEER SUBMITTING THE STORM WATER QUALITY AS-BUILT CERTIFICATE. CONTRACTOR TO NOTIFY ENGINEER WHEN PUMP OUT WILL TAKE PLACE.

PRIVATE UTILITY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (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.
- FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-2111 OR (713) 207-4200.

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 792, 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.

WARNING: UNDERGROUND ELECTRICAL UTILITIES

THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- ALL INFORMATION CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED. CONTRACTORS ARE RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND PIPELINES, CONDUITS, AND STRUCTURES BY CONTACTING OWNERS OF UNDERGROUND UTILITIES OR BY EXCAVATING IN ADVANCE OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES WHEN AND WHERE THEY FALL IN THE PATH OF CONSTRUCTION.
- THE CONTRACTOR IS ALSO RESPONSIBLE FOR CONTACTING THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 AND TEXAS ONE CALL AT 1-800-245-4545, FORTY-EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION.
- THE LOCATION OF ANY CENTERPOINT ENERGY UTILITIES ARE SHOWN IN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. THEY AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
- ALL PROPOSED FACILITIES SHALL MAINTAIN 12" CLEAR FROM ALL EXISTING UTILITIES



FLOODPLAIN INFORMATION:

ACCORDING TO F.I.R.M. MAP NO. 48201C0215L (COMMUNITY-PANEL NO. 4802870215L), MAP REVISED DATE: JUNE 18, 2007, THE SUBJECT PROPERTY LIES WITHIN THE AREAS DESIGNATED AS ZONE "X" UNSHADED, DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD. ZONE X SHADED. AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. ZONE AE. BASE FLOOD ELEVATIONS DETERMINED. AND FLOODWAY. THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

REFERENCE BENCHMARK:

RM111050 – ALUMINUM ROD WITH LOGO CAP STAMPED "111050" LOCATED ON THE NORTH SIDE OF BAUER-HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGELO DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED. ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

TEMPORARY BENCHMARKS:

TBM "A" – BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 169.64'

NOTE: THE LOCATIONS OF THE PRIVATE UTILITY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE ALSO ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES INCURRED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UTILITIES.

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 LINES CAN BE MARKED. THE VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.
VERIFICATION OF PRIVATE UTILITY LINES
Date: _____
CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This Signature verifies that you have shown 240" Natural Gas lines correctly. Not to be used for conduit verification.) (See service lines are not shown.) Signature Valid for six months.
Date: _____
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities. Not to be used for conduit verification.) Signature Valid for six months.
Date: _____
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.

BROOKS & SPARKS, INC.
F-880



TOMBALL ISD
L109-00-00 TO SERVE
JUERGEN ROAD EDUCATIONAL
CAMPUS

GENERAL NOTES

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: N/A		SHEET 4 OF 24	

18 Sep 2025 4:07PM robertv
F:\project\BROOK\SP\Tomball ISD\B66018-Juergen Tract\Civil\HCFCO CHANNEL\B66-0018 - L109- LA VOUT (2).dwg
Includes Xref(s): 866018-X-L109 CHANNEL.dwg; 866018-X-L109 - BRD.dwg; 866018-X-L109 - SEAL.dwg; 866018-X-L109 - TOPO.dwg; 866018-X-ROADWAY.dwg; 866018-X-X-L109 -TEXT.dwg; 866018-X-X-TOPO.dwg

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Area1	full	1.000	1.150	617681.47	144205.74	0.00*	144205.74*
Area2	full	1.000	1.150	16782.63	4809.77	0.00*	4809.77*
Totals							
				2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total				634464.10	149015.51	0.00*	149015.51*

* Value adjusted by cut or fill factor other than 1.0

NOTES:

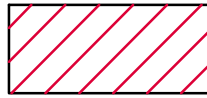
1. ALL EXCAVATION TO BE DISPOSED OF OFFSITE.
2. MITIGATION VOLUME IS NOT BEING PROVIDED.

100-YEAR BASE FLOOD ELEVATION 167.00' - 170.17'
500-YEAR BASE FLOOD ELEVATION 168.41' - 171.17'

LEGEND:



OFF-SITE SHEET FLOW (100YR)



TOTAL AREA OF CUT IN FLOODPLAIN
149015.51 CU. YDS

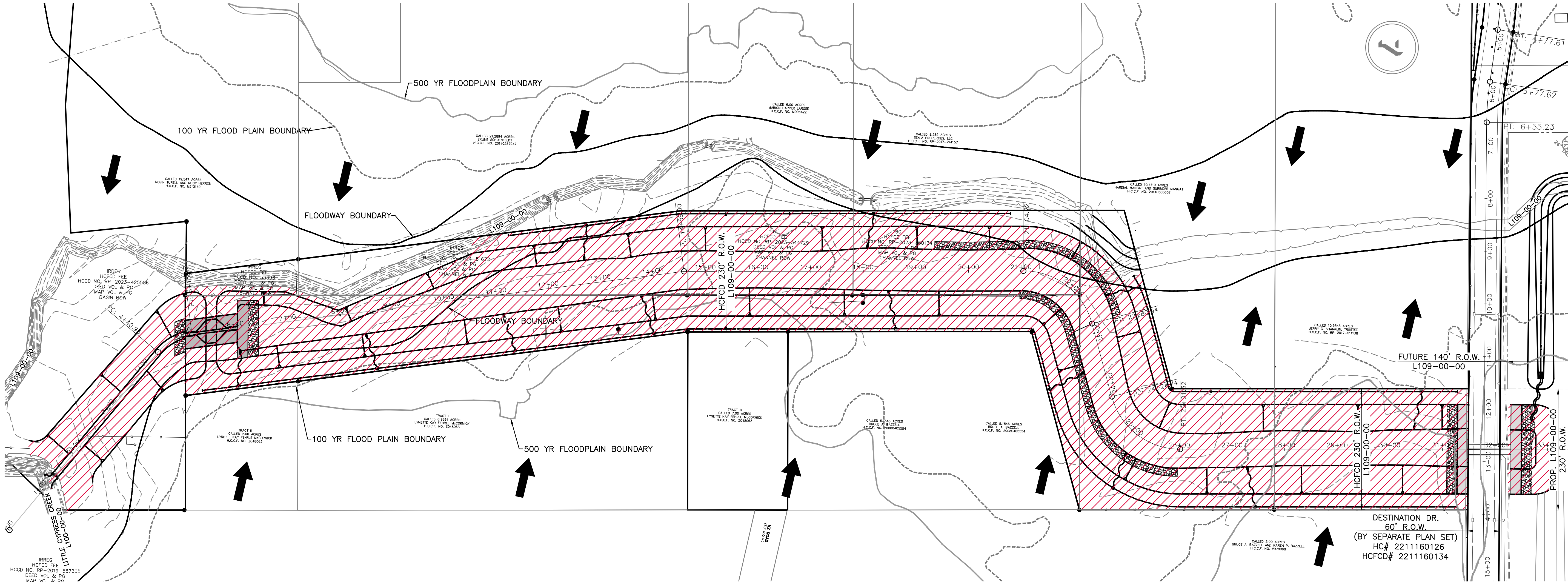
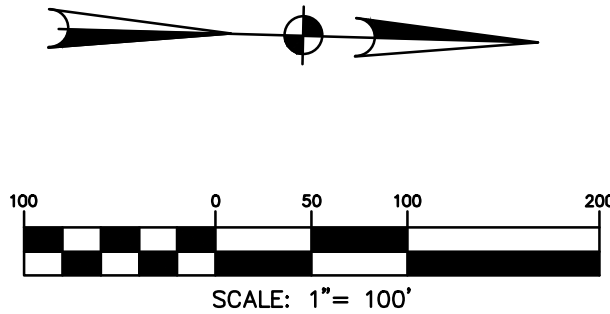


Table B-3: Detention Summary Table for Onsite Storage Ditch

Project Name: Tomball ISD Tract on Juergen Road and Mueschke Road		Date: 08/30/2022	
Detention Basin Service Area		161.7 acres	
Offsite Drainage Area		115.5 acres	
Flow (cfs)	Storm Event	50% (2-Yr)	10% (10-Yr)
		10% (10-Yr)	1% (100-Yr)
	Post Development Inflow	122.7	207.0
	Maximum Allowable Outflow (pre-development peak flow)	N/A	N/A
Elevations (NAVD 88, 2001 Adj.)	Maximum Outflow Provided (peak flow from the basin)	117.0	198.2
		318.8	
	Lowest Natural or Finished Ground Elevation Estimate	N/A	
	Maximum Allowable Water Surface	172.8	
Storage	Based on:	2018 LIDAR	
	Design Water Surface Elevation	171.8	171.8
	Water Surface Elevation Calculated	164.7	166.4
	Minimum Storage Required (ac-ft)	N/A	N/A
Outflow Structure	Detention Storage Provided (ac-ft)	12.8	20.2
	Storage Rate Provided (ac-ft/acre)	0.05	0.07
	Restrictor Size, if applicable (ft or ft²)	N/A	
	Outflow Pipe Size (ft or ft²)	Staged: 2 ft (low) and 7'x4' (high)	
Storage	Outflow Velocity into Channel (ft/second)	5.9	6.6
		10.5	
	Weir Description, if applicable (type, size, elevation, etc.)	N/A	
	Drain Time - 1% only (hours)	12 hours	
Outflow Structure	Emergency Overflow (type, size, elevation, etc.)	Broad-Crested Weir¹	
		¹Details of emergency overflow will be determined during design phase.	

Table B-2: Detention Summary Table for North Pond 2

Project Name: Tomball ISD Tract on Juergen Road and Mueschke Road		Date: 08/30/2022	
Detention Basin Service Area		79.9 acres	
Offsite Drainage Area		0 acres	
Flow (cfs)	Storm Event	50% (2-Yr)	10% (10-Yr)
		10% (10-Yr)	1% (100-Yr)
	Post Development Inflow	49.0	75.2
	Maximum Allowable Outflow (pre-development peak flow)	N/A	N/A
Elevations (NAVD 88, 2001 Adj.)	Maximum Outflow Provided (peak flow from the basin)	10.6	15.6
		23.7	
	Lowest Natural or Finished Ground Elevation Estimate	N/A	
	Maximum Allowable Water Surface	174.6	
Storage	Based on:	2018 LIDAR	
	Design Water Surface Elevation	173.6	173.6
	Water Surface Elevation Calculated	167.0	168.8
	Minimum Storage Required (ac-ft)	N/A	N/A
Outflow Structure	Detention Storage Provided (ac-ft)	12.0	21.9
	Storage Rate Provided (ac-ft/acre)	0.15	0.27
	Restrictor Size, if applicable (ft or ft²)	N/A	
	Outflow Pipe Size (ft or ft²)	2 ft	
Storage	Outflow Velocity into Channel (ft/second)	3.3	4.9
		7.4	
	Weir Description, if applicable (type, size, elevation, etc.)	N/A	
	Drain Time - 1% only (hours)	42 hours	
Outflow Structure	Emergency Overflow (type, size, elevation, etc.)	N/A	

Table B-1: Detention Summary Table for North Pond 1

Project Name: Tomball ISD Tract on Juergen Road and Mueschke Road		Date: 08/30/2022	
Detention Basin Service Area		79.9 acres	
Offsite Drainage Area		0 acres	
Flow (cfs)	Storm Event	50% (2-Yr)	10% (10-Yr)
		10% (10-Yr)	1% (100-Yr)
	Post Development Inflow	49.0	75.2
	Maximum Allowable Outflow (pre-development peak flow)	N/A	N/A
Elevations (NAVD 88, 2001 Adj.)	Maximum Outflow Provided (peak flow from the basin)	14.3	18.6
		16.4	
	Lowest Natural or Finished Ground Elevation Estimate	N/A	
	Maximum Allowable Water Surface	176.8	
Storage	Based on:	2018 LIDAR	
	Design Water Surface Elevation	175.8	175.8
	Water Surface Elevation Calculated	168.6	170.1
	Minimum Storage Required (ac-ft)	N/A	N/A
Outflow Structure	Detention Storage Provided (ac-ft)	6.2	12.0
	Storage Rate Provided (ac-ft/acre)	0.08	0.15
	Restrictor Size, if applicable (ft or ft²)	N/A	
	Outflow Pipe Size (ft or ft²)	2 ft	
Storage	Outflow Velocity into Channel (ft/second)	5.2	5.9
		5.3	
	Weir Description, if applicable (type, size, elevation, etc.)	N/A	
	Drain Time - 1% only (hours)	30 hours	
Outflow Structure	Emergency Overflow (type, size, elevation, etc.)	N/A	

*CONSTRUCTION OF FEATURES WITHIN FUTURE HARRIS COUNTY FLOOD CONTROL DISTRICT ROW:

A 48-HOUR PRE-CONSTRUCTION NOTICE MUST BE PROVIDED TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT (HCFCO) IN ORDER TO SCHEDULE APPLICABLE INSPECTIONS DURING CONSTRUCTION OF THE PROPOSED FEATURE. FAILURE TO PROVIDE THIS NOTIFICATION MAY RESULT IN THE FACILITY NOT BEING ACCEPTED FOR HCFCO MAINTENANCE.

THE 48-HOUR PRE-CONSTRUCTION NOTIFICATION FORM TO HCFCO AT DCID@HCFCO.ORG. PLEASE CONTACT THE HCFCO DEVELOPMENT & CONSTRUCTION INSPECTIONS DEPARTMENT (DCID) AT DCID@HCFCO.ORG FOR THE LATEST FORM.

FLOODPLAIN INFORMATION:

ACCORDING TO F.I.R.M. MAP NO. 48201C0215L (COMMUNITY-PANEL NO. 4802870215L), MAP REVISED DATE: JUNE 18, 2007, THE SUBJECT PROPERTY LIES WITHIN THE AREAS DESIGNATED AS ZONE "X" UNSHADED, DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD, ZONE X SHADED, AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD, ZONE AE, BASE FLOOD ELEVATIONS DETERMINED, AND FLOODWAY, THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

REFERENCE BENCHMARK:

RM111050 - ALUMINUM ROD WITH LOGO CAP STAMPED "111050" LOCATED ON THE NORTH SIDE OF BAUER-HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGELI DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED. ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

TEMPORARY BENCHMARKS:

TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 169.64'

UTILITY ONE CALL

CONTRACTOR TO CALL BEFORE DIGGING !!!
PHONE: HOUSTON (713) 223-4567 (STATEWIDE OUTSIDE HOUSTON)
1-(800)-545-6005

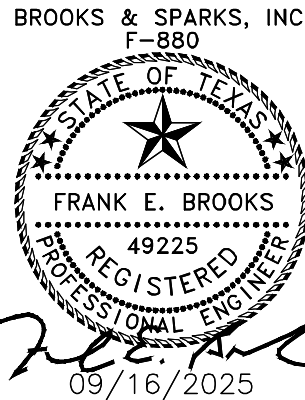


NOTE: THE LOCATIONS OF THE PRIVATE UTILITY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE ALSO ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES INCURRED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UTILITIES.

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 LINES CAN BE MARKED. THE VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

VERIFICATION OF PRIVATE UTILITY LINES

Date: _____
CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This Signature verifies that you have shown 200 Natural Gas lines correctly. Not to be used for conflict verification.) (See service lines are not shown.) Signature Valid for six months.
Date: _____
CenterPoint Energy/Underground Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities, not to be used for conflict verification.) Signature Valid for six months.
Date: _____
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.



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CAMPUS

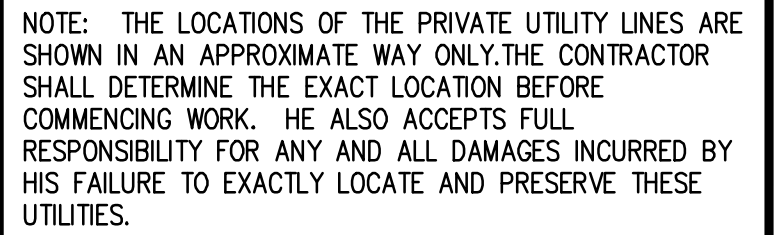
PROJECT LAYOUT

NO.	DATE	REVISIONS	BY
DRAWN BY: RV	CHECKED BY: CSM, JAE		
DESIGNED BY: CSM	APPROVED BY: FEB		
PROJECT NO. 866-0018	SEPTEMBER 2025		
SCALE: 1" = 100'	SHEET 5 OF 24		

TEMPORARY BENCHMARKS:

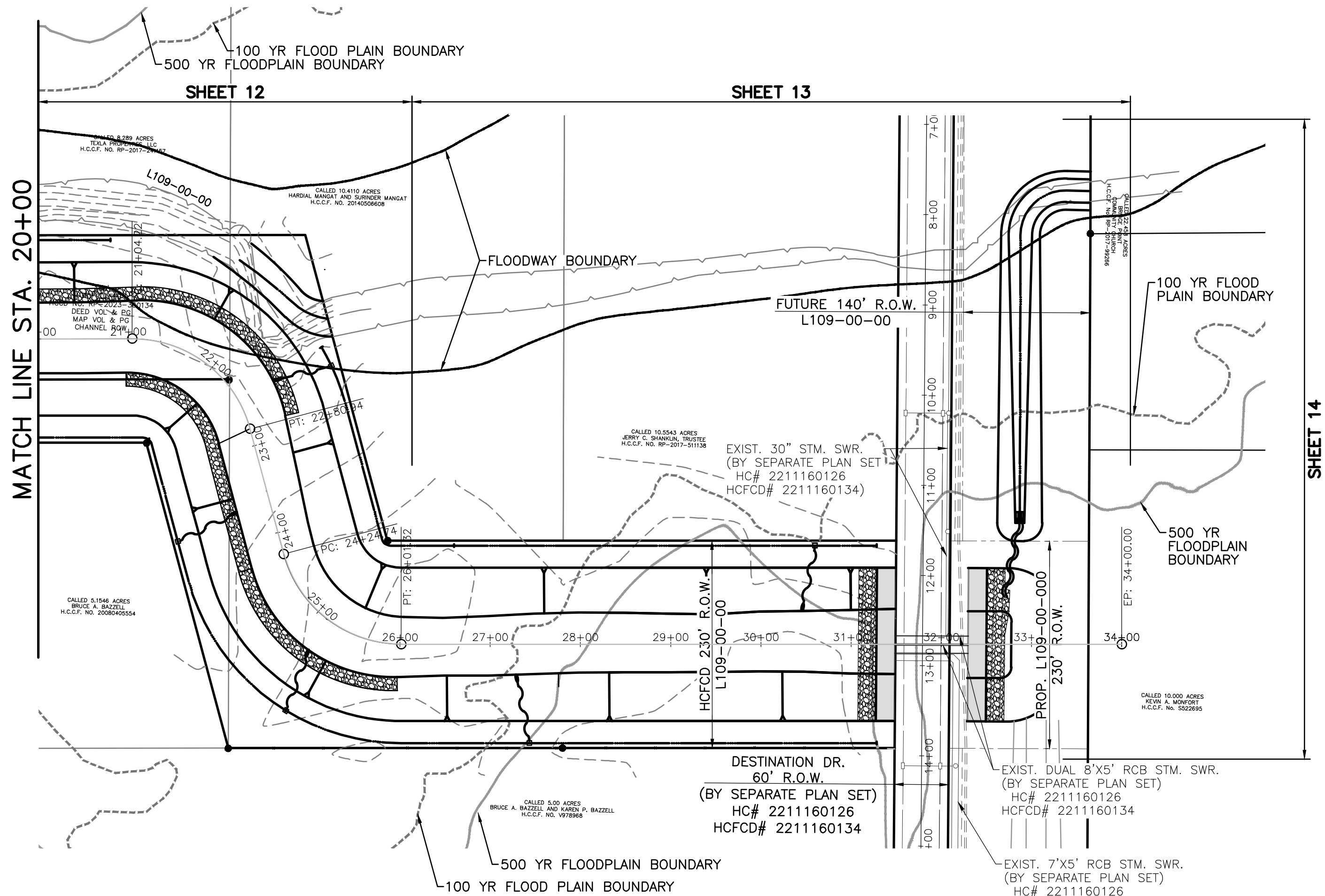
TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD $\pm 50'$ SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT.
ELEVATION = 169.64'

CONTRACTOR TO CALL
BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005



VERIFICATION OF PRIVATE UTILITY LINES	
	Date: _____
CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This Signature verifies that you have shown ONY Natural Gas lines correctly. NOT to be used for conflict verifications) (line service lines are not shown) Signature Valid for six months.	
	Date: _____
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities. NOT to be used for conflict verifications) Signature Valid for six months.	
	Date: _____
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.	

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: 1" = 100'		SHEET 6 OF 24	



RM111050 - ALUMINUM ROD WITH LOGO CAP
STAMPED "111050" LOCATED ON THE NORTH SIDE
OF BAUER-HOCKLEY ROAD $\pm 75'$ EAST OF ITS
INTERSECTION WITH ANGELI DRIVE AND $\pm 120'$ WEST
OF A POWER POLE IN KEY MAP 326B IN THE
CYPRESS CREEK WATERSHED.
ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD $\pm 50'$ SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT.
ELEVATION = 169.64'

CONTRACTOR TO CALL
BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005

NOTE: THE LOCATIONS OF THE PRIVATE UTILITY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE ALSO ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES INCURRED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UTILITIES.

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

NOTICE:

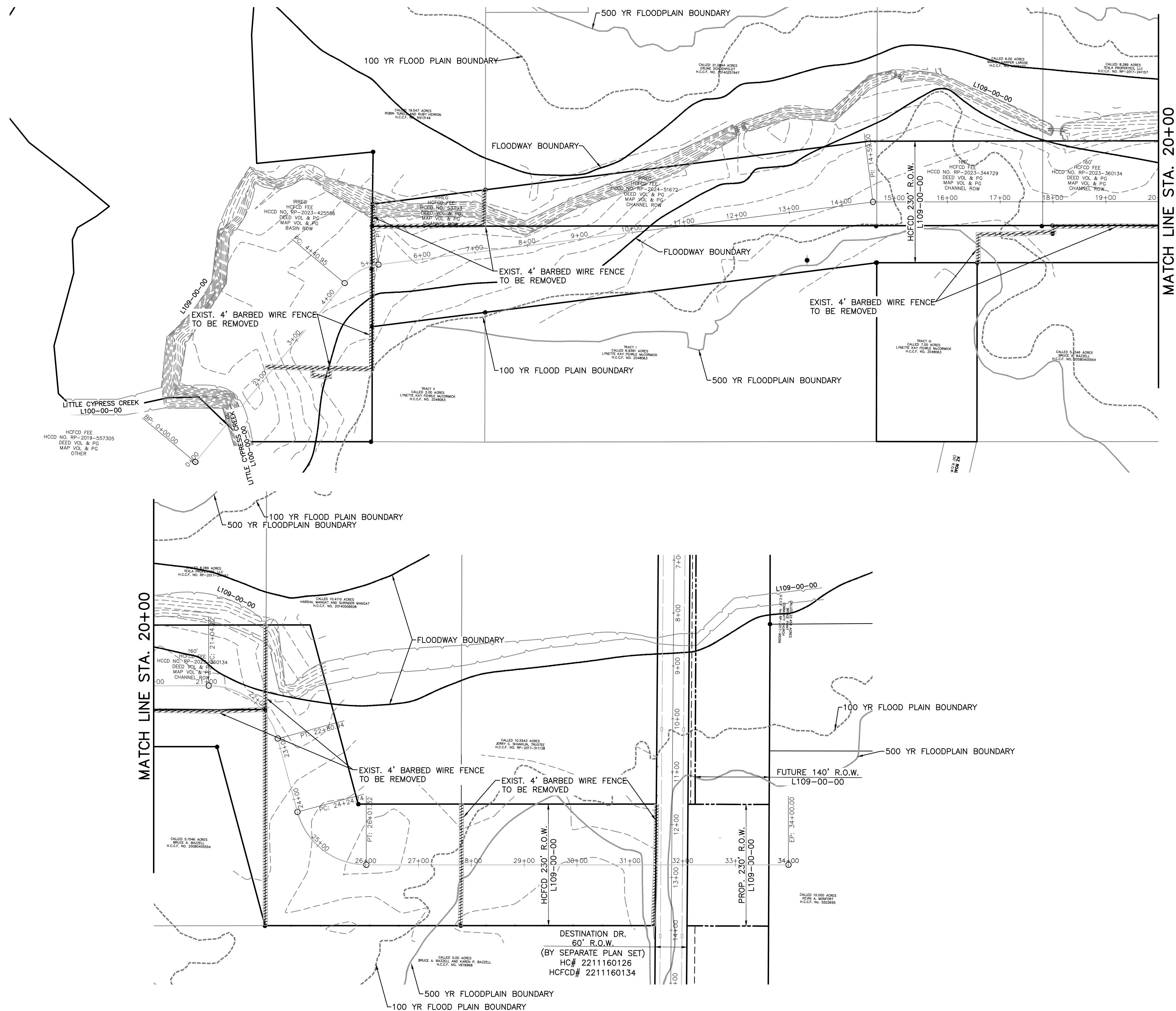
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

<p>Date:</p> <p>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.</p>
<p>Date:</p> <p>CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities. Not to be used for conflict verification.) Signature Valid for six months.</p>
<p>Date:</p> <p>APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.</p>

TOMBALL ISD
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CAMPUS

DEMOLITION PLAN

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: 1" = 100'		SHEET 7 OF 24	



TEMPORARY BENCHMARKS:


TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT.
ELEVATION = 169.64'

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 LINES CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

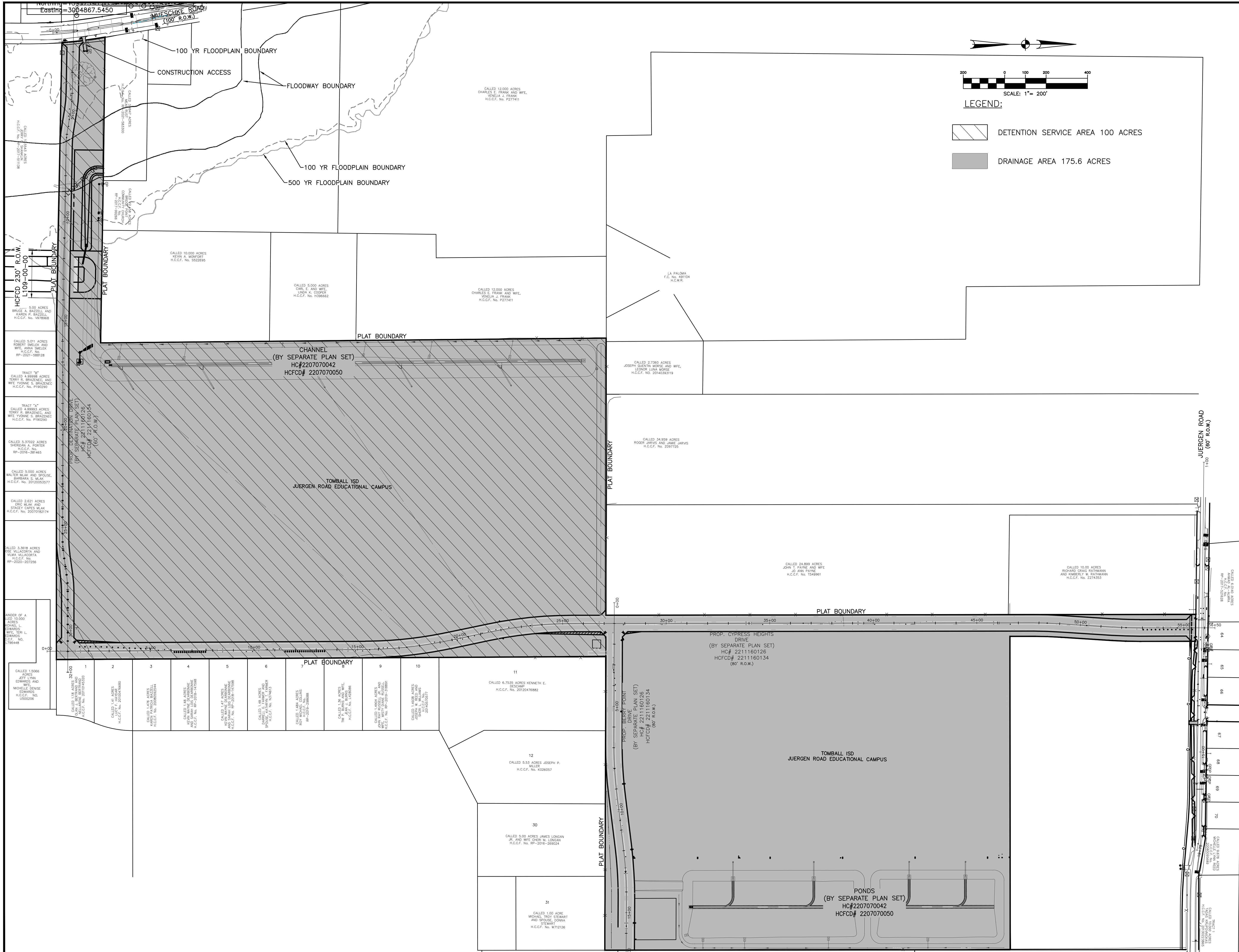
VERIFICATION OF PRIVATE UTILITY LINES	
Date: _____	
CenterPoint Energy/Natural Gas Facilities Verification ONLY (This Signature verifies that you have shown CPE Natural Gas lines correctly. Not to be used for conflict verifications) (Gas service lines are not shown). Signature Valid for six months.	
Date: _____	
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY (This Signature verifies that existing underground facilities. Not to be used for conflict verifications) Signature Valid for six months.	
Date: _____	
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY, Signature valid for one year.	

BROOKS & SPARKS, INC.
 F-880

 09/16/2025

TOMBALL ISD
 L109-00-00 TO SERVE
 JUERGEN ROAD EDUCATIONAL
 CAMPUS

SERVICE AREA MAP
FOR REFERENCE ONLY

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: 1"=200'		SHEET 8 OF 24	



TEMPORARY BENCHMARKS:

TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT.
ELEVATION = 169.64'


CONTRACTOR TO CALL
BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005

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 THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

<p>Date:</p> <p>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.</p>
<p>Date:</p> <p>CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities. Not to be used for conflict verification.) Signature Valid for six months.</p>
<p>Date:</p> <p>APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.</p>



TYPICAL SECTIONS

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: AS SHOWN		SHEET 9 OF 24	



HCFC D 230' R.O.W.
L109-00-00

R.O.W. 5' PROP. 30' MAINT. BERM 12' 12' 5' R.O.W.

CL BACKSLOPE DRAINAGE SWALE
HYDRO-MULCH (TYP)
HIGH BANK
SOD (TYP)
TOE
HYDRO-MULCH (TYP)
TOE
SOD (TYP)
HIGH BANK
CL BACKSLOPE DRAINAGE SWALE
HYDRO-MULCH (TYP)

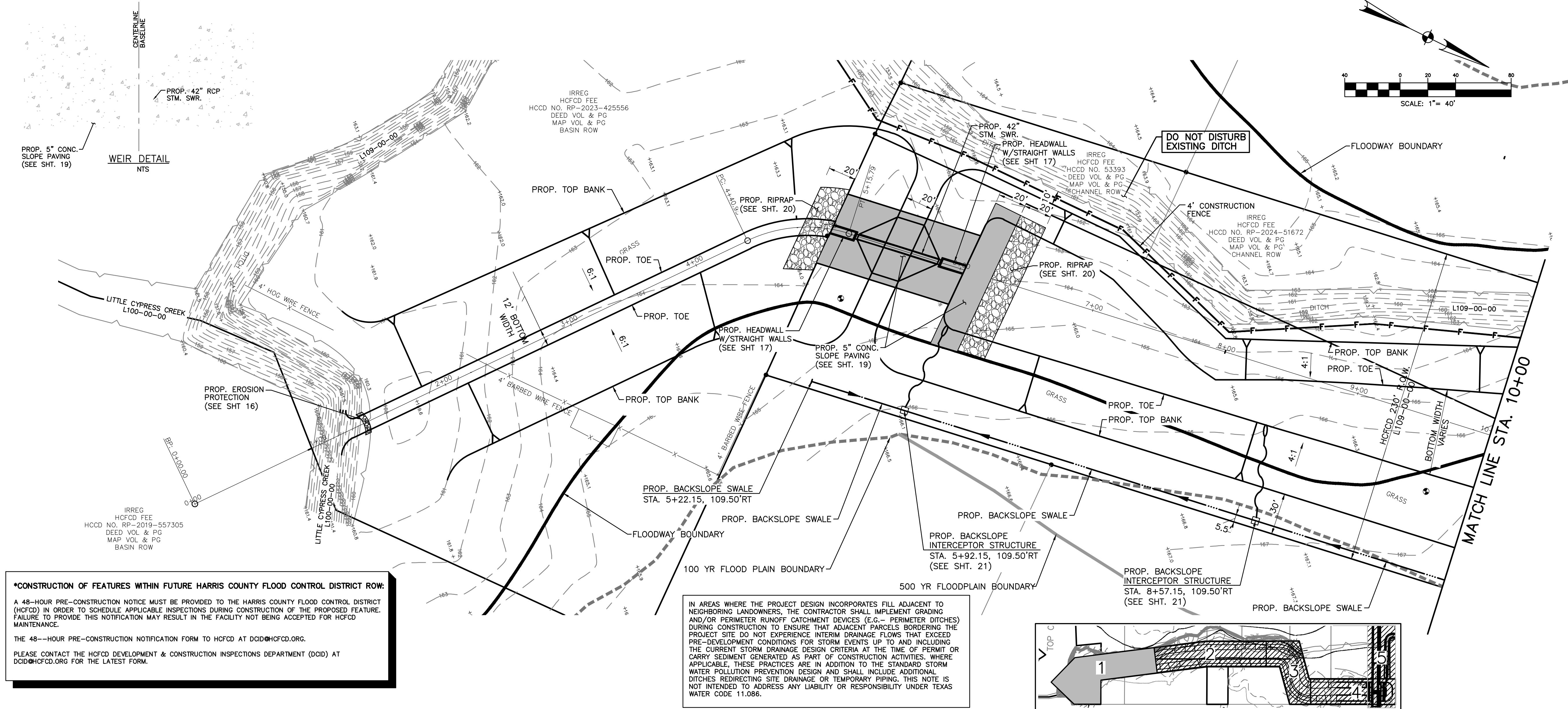
4 1 1 4

CONTRACTOR TO INSTALL A 2' CLAY LINER PLACED AS SHOWN. THE 2' CLAY LINER SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D-698 PROCEDURE. HATCH AREA INDICATES LIMITS OF CLAY LINER.

CHANNEL TYPICAL SECTION
STA. 7+00 TO STA. 21+00
SCALE: H = 1" = 10'
V = 1" = 5'

CONTRACTOR TO INSTALL A 2' CLAY LINER
PLACED AS SHOWN. THE 2' CLAY LINER
SHALL BE COMPACTED TO AT LEAST 95%
OF THE MAXIMUM DENSITY AS DETERMINED
BY ASTM D-698 PROCEDURE. HATCH AREA
INDICATES LIMITS OF CLAY LINER.

18 Sep 2025 3:25PM robertv
F:\Project\BROOK_SP\Tomball ISD\Civil\HCFCD CHANNEL\11 866-0018 - L109 - PP01 - HP-PageWideXL-24x36 (3).dwg
Includes Xref(s): 866018-X-L109 CHANNEL.dwg; 866018-X-L109 PROF.dwg; 866018-X-L109 -BRD.dwg; 866018-X-L109 -TOPO.dwg; 866018-X-ROADWAY.dwg



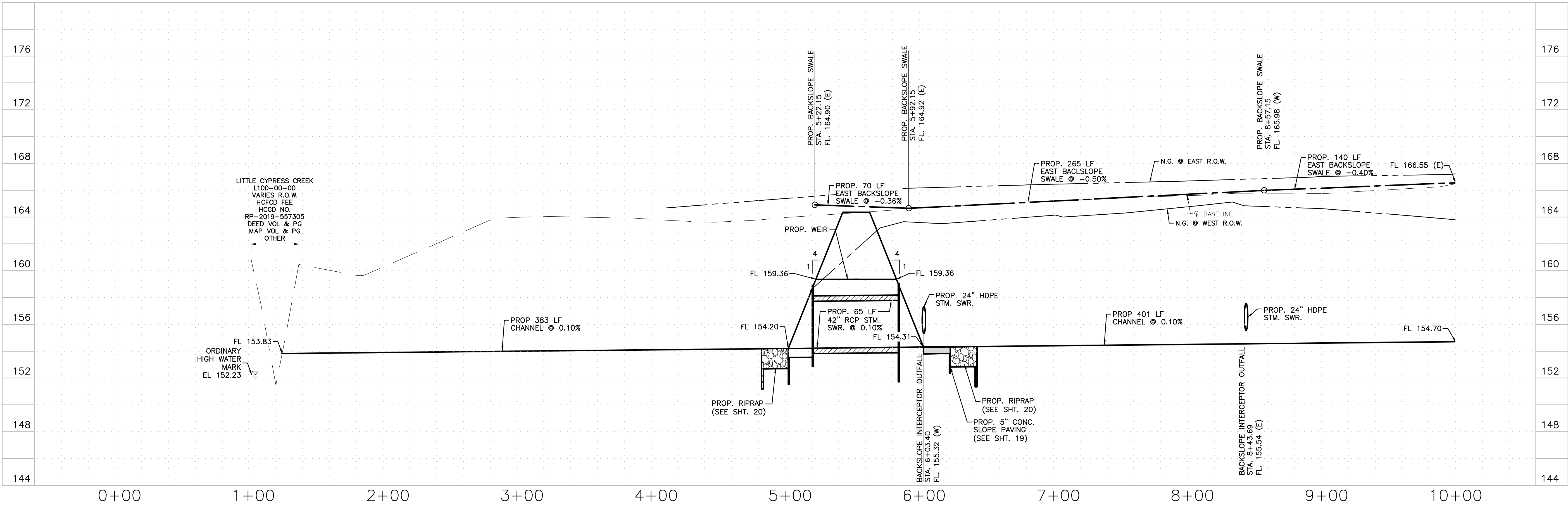
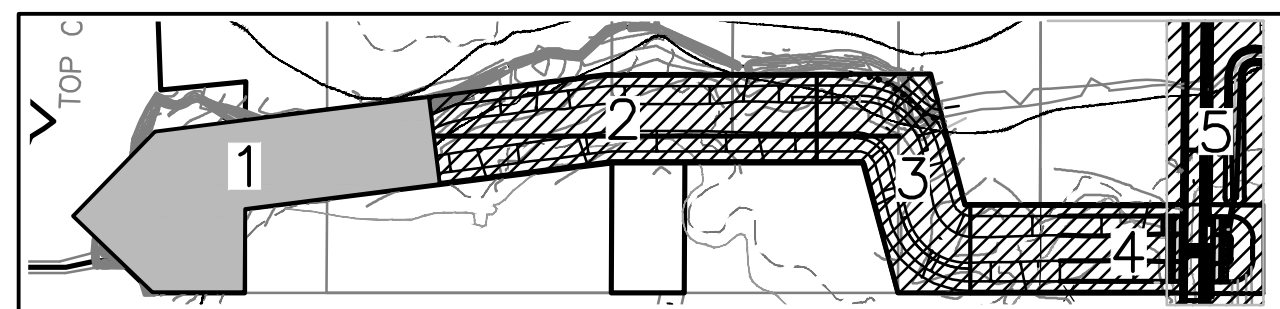
***CONSTRUCTION OF FEATURES WITHIN FUTURE HARRIS COUNTY FLOOD CONTROL DISTRICT ROW:**

A 48-HOUR PRE-CONSTRUCTION NOTICE MUST BE PROVIDED TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT (HCFCD) IN ORDER TO SCHEDULE APPLICABLE INSPECTIONS DURING CONSTRUCTION OF THE PROPOSED FEATURE. FAILURE TO PROVIDE THIS NOTIFICATION MAY RESULT IN THE FACILITY NOT BEING ACCEPTED FOR HCFCD MAINTENANCE.

THE 48-HOUR PRE-CONSTRUCTION NOTIFICATION FORM TO HCFCD AT DCID@HCFCD.ORG.

PLEASE CONTACT THE HCFCD DEVELOPMENT & CONSTRUCTION INSPECTIONS DEPARTMENT (DCID) AT DCID@HCFCD.ORG FOR THE LATEST FORM.

IN AREAS WHERE THE PROJECT DESIGN INCORPORATES FILL ADJACENT TO NEIGHBORING LANDOWNERS, THE CONTRACTOR SHALL IMPLEMENT GRADING AND/OR PERIMETER RUNOFF CATCHMENT DEVICES (E.G.- PERIMETER DITCHES) DURING CONSTRUCTION TO ENSURE THAT ADJACENT PARCELS BORDERING THE PROJECT SITE DO NOT EXPERIENCE INTERIM DRAINAGE FLOWS THAT EXCEED PRE-DEVELOPMENT CONDITIONS FOR STORM EVENTS UP TO AND INCLUDING THE CURRENT STORM DRAINAGE DESIGN CRITERIA AT THE TIME OF PERMIT OR CARRY SEDIMENT GENERATED AS PART OF CONSTRUCTION ACTIVITIES. WHERE APPLICABLE, THESE PRACTICES ARE IN ADDITION TO THE STANDARD STORM WATER POLLUTION PREVENTION DESIGN AND SHALL INCLUDE ADDITIONAL DITCHES REDIRECTING SITE DRAINAGE OR TEMPORARY PIPING. THIS NOTE IS NOT INTENDED TO ADDRESS ANY LIABILITY OR RESPONSIBILITY UNDER TEXAS WATER CODE 11.096.



CONSULTING ENGINEERING

TEXAS REGISTERED ENGINEERING FIRM F-880

21020 PARK ROW

KATY, TX 77449

PHONE: (281) 578-9595

FAX: (281) 578-9686

FLOODPLAIN INFORMATION:

ACCORDING TO F.I.R.M. MAP NO. 48201C0215L (COMMUNITY-PANEL NO. 4802870215L), MAP REVISED DATE: JUNE 18, 2007, THE SUBJECT PROPERTY LIES WITHIN THE AREAS DESIGNATED AS ZONE "X" UNSHADED, DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD, ZONE X SHADED, AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD, ZONE AE, BASE FLOOD ELEVATIONS DETERMINED, AND FLOODWAY, THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

REFERENCE BENCHMARK:

RM111050 - ALUMINUM ROD WITH LOGO CAP STAMPED "111050" LOCATED ON THE NORTH SIDE OF BAUER-HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGELI DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED. ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

TEMPORARY BENCHMARKS:

TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 169.64'

UTILITY ONE CALL

CONTRACTOR TO CALL BEFORE DIGGING !!!

PHONE: HOUSTON (713) 223-4567 (STATEWIDE OUTSIDE HOUSTON) 1-(800)-545-6005

NOTE: THE LOCATIONS OF THE PRIVATE UTILITY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE ALSO ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES INCURRED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UTILITIES.

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 DO SO THAT UNDERGROUND LINES CAN BE MARKED. THE VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

VERIFICATION OF PRIVATE UTILITY LINES

Date:

CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This Signature verifies that you have shown "On" Natural Gas lines correctly. Not to be used for conflict verification.) (See service lines are not shown.) Signature Valid for six months.

Date:

CenterPoint Energy/Underground Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities, Not to be used for conflict verification.) Signature Valid for six months.

Date:

APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.

BROOKS & SPARKS, INC.

F-880

STATE OF TEXAS

REGISTERED PROFESSIONAL ENGINEER

19225

09/16/2025

TOMBALL ISD

L109-00-00 TO SERVE

JUERGEN ROAD EDUCATIONAL CAMPUS

L109-00-00

PLAN AND PROFILE

STA. 1+00 TO STA. 10+00

NO.	DATE	REVISIONS	BY

DRAWN BY: RV

CHECKED BY: CSM, JAE

DESIGNED BY: CSM

APPROVED BY: FEB

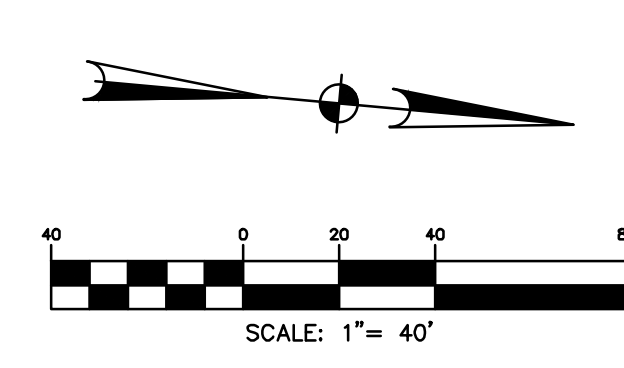
PROJECT NO. 866-0018

SEPTEMBER 2025

SCALE: H: 1" = 40'
V: 1" = 40'

SHEET 10 OF 24

PLEASE CONTACT THE HCFC DEVELOPMENT & CONSTRUCTION INSPECTIONS DEPARTMENT (DCID) AT
DCID@HCFC.ORG FOR THE LATEST FORM.



TEMPORARY BENCHMARKS:

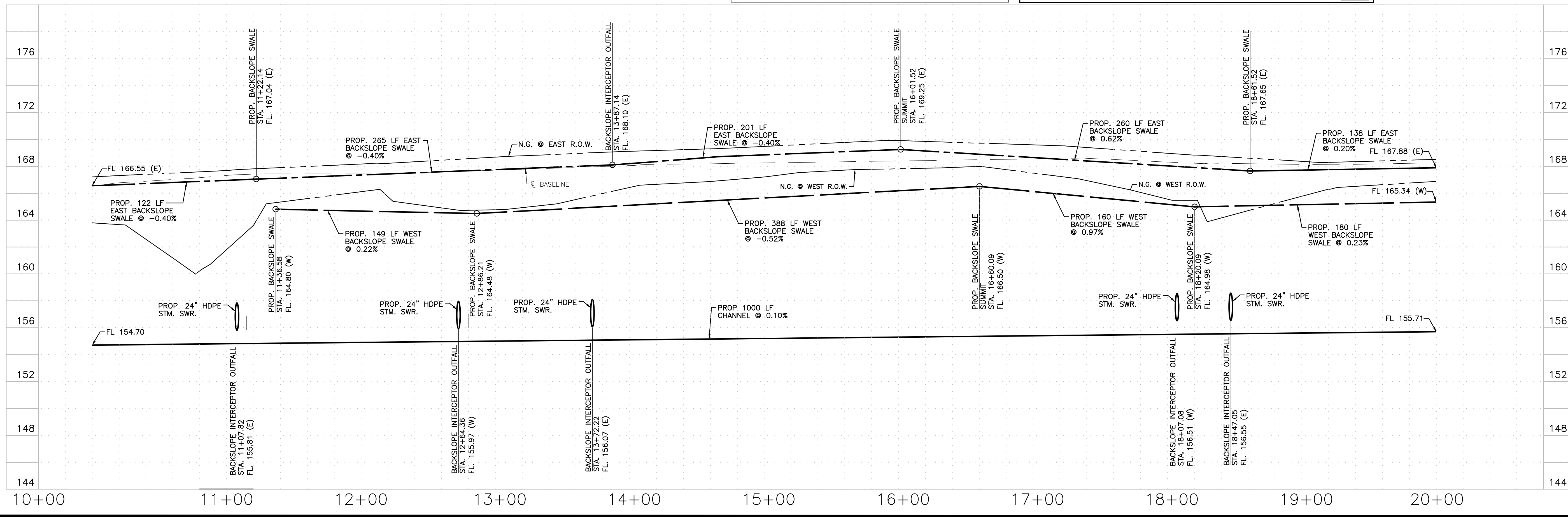
TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD $\pm 50'$ SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT.
ELEVATION = 169.64'

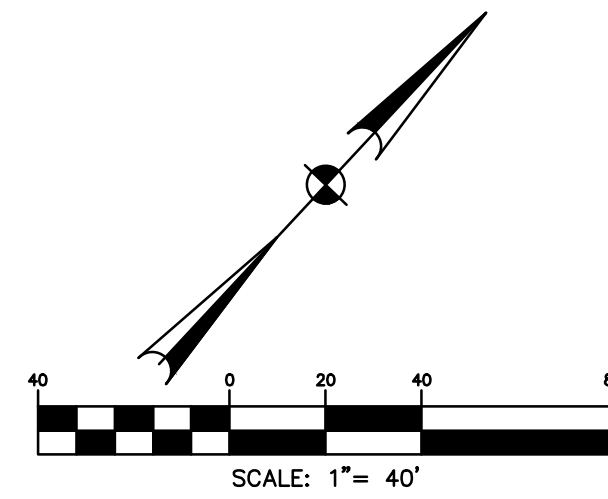
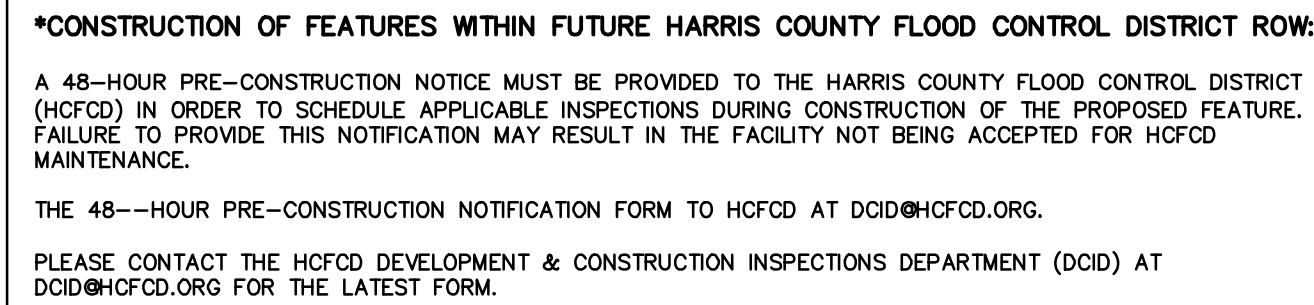
VERIFICATION OF PRIVATE UTILITY LINES

BROOKS & SPARKS, INC.
F-850

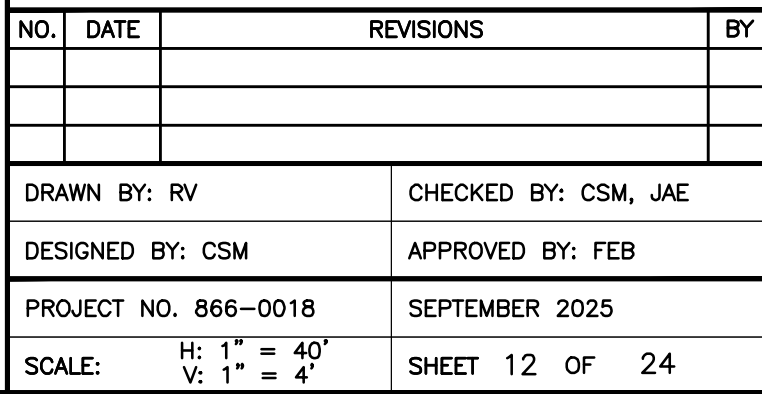
STATE OF TEXAS
49225
FRANK E. BROOKS
PROFESSIONAL ENGINEER
REG. NO. 49225
09/16/2025

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: H: 1" = 40' V: 1" = 4'		SHEET 11 OF 24	





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FLOODPLAIN INFORMATION:

ACCORDING TO F.I.R.M. MAP NO. 48201C0215L (COMMUNITY-PANEL NO. 4802870215L), MAP REVISED DATE: JUNE 18, 2007, THE SUBJECT PROPERTY LIES WITHIN THE AREAS DESIGNATED AS ZONE X UNSHADED, DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD. ZONE X UNSHADED, AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD, ZONE AE, BASE FLOOD. ELEVATION DETERMINED AND FLOODWAY. THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

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STAMPED "111050" LOCATED ON THE NORTH SIDE
OF BAUER-HOCKLEY ROAD ±75' EAST OF ITS
INTERSECTION WITH ANGELI DRIVE AND ±120' WEST
OF A POWER POLE IN KEY MAP 326B IN THE
CYPRESS CREEK WATERSHED.
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CONTRACTOR TO CALL
BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005



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VERIFICATION OF PRIVATE UTILITY LINES

Date: _____

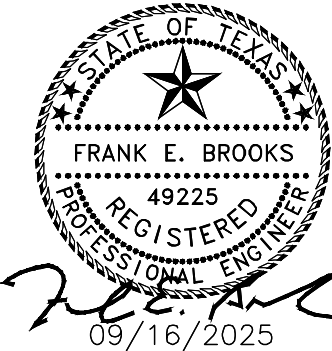
CenterPoint Energy/Natural Gas Facilities Verification (ONLY). (This Signature verifies that you have shown CNP Natural Gas lines correctly. Not to be used for conflict verification.) [Gas service lines are not shown.] Signature Valid for six months.

Date: _____

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities. Not to be used for conflict verification.) Signature Valid for six months.

APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY,
Signature valid for one year.

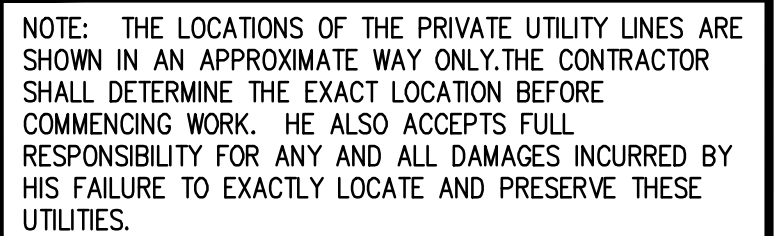
BROOKS & SPARKS, INC.
E-880



TOMBALL ISD
L109-00-00 TO SERVE
JUERGEN ROAD EDUCATIONAL
CAMPUS

L109-00-00
PLAN AND PROFILE
STA. 20+00 TO STA. 26+00

CONTRACTOR TO CALL
BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005



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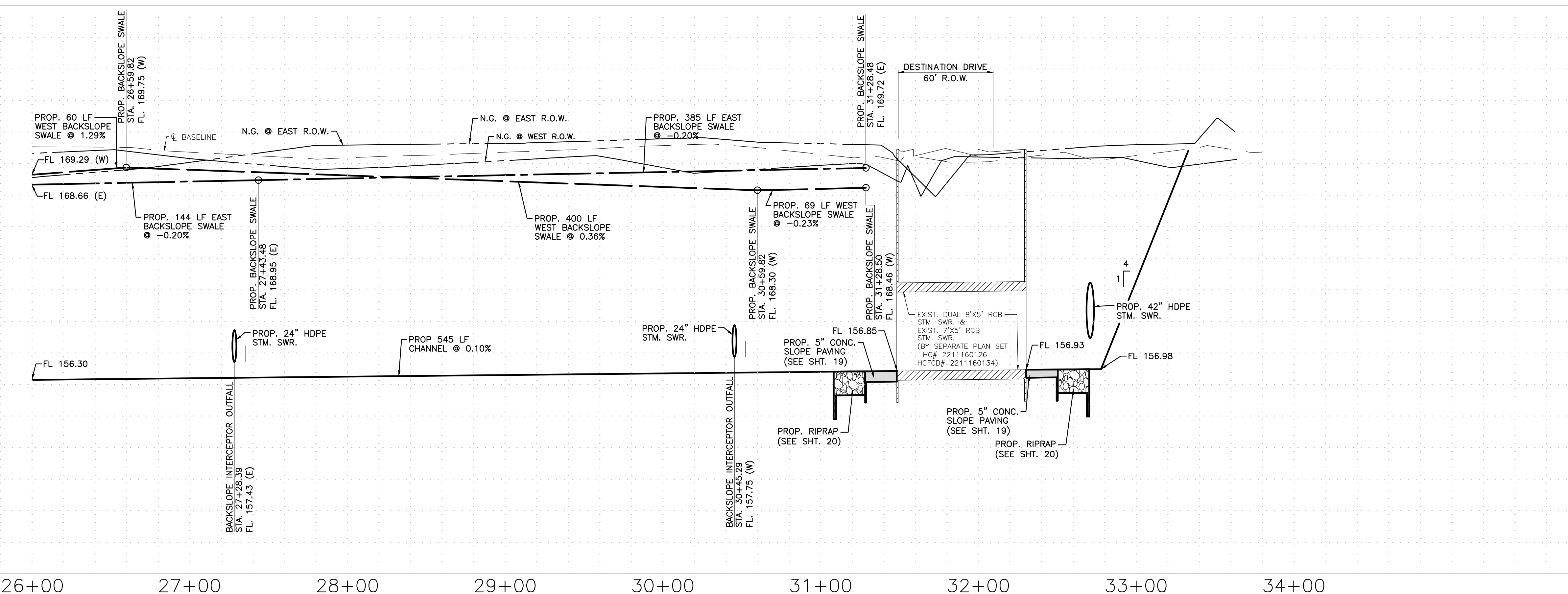
STATE OF TEXAS

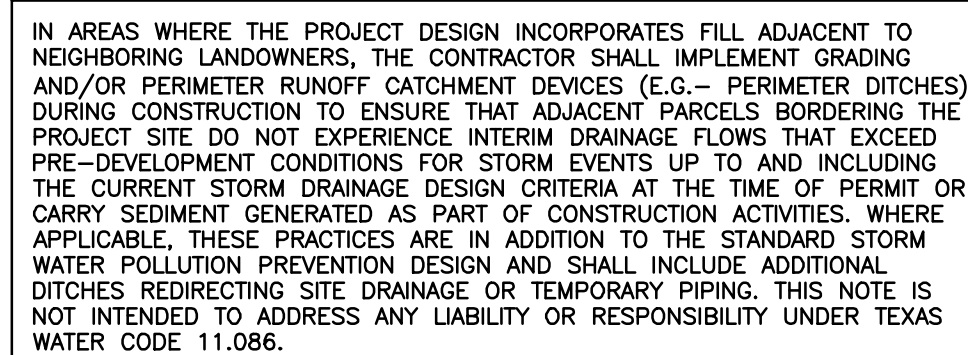
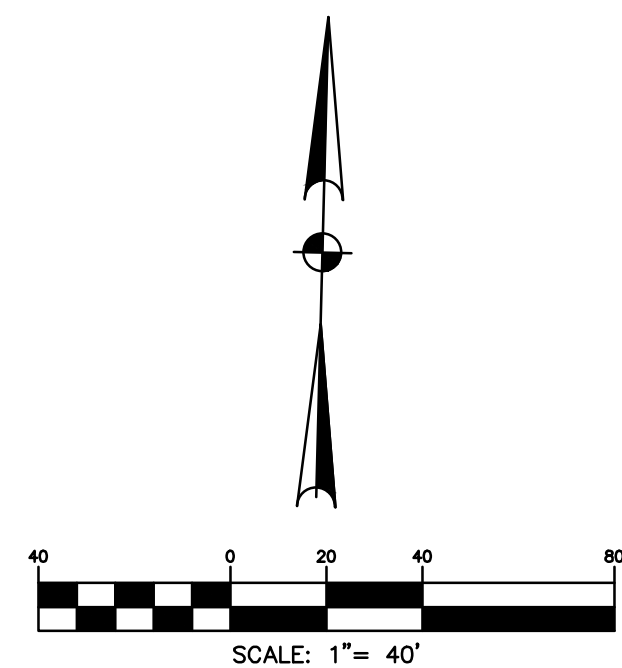
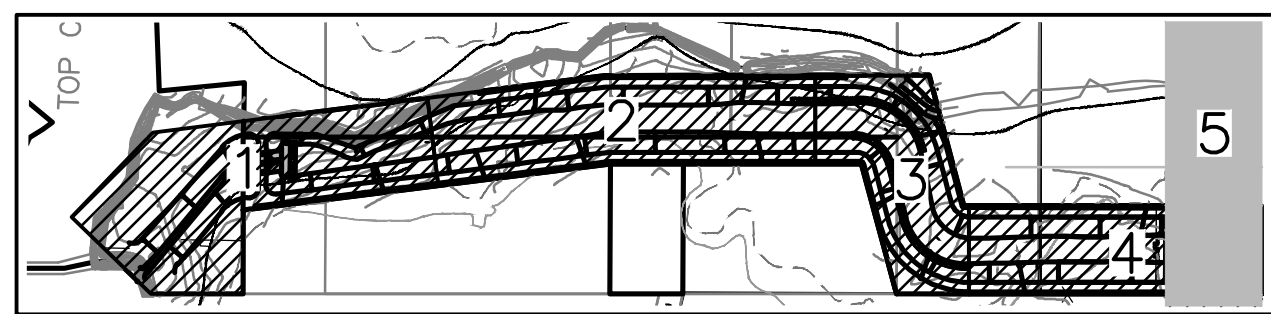


TOMBALL ISD
L109-00-00 TO SERVE
JUERGEN ROAD EDUCATIONAL
CAMPUS

L109-00-00
PLAN AND PROFILE
STA. 26+00 TO END

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: H: 1" = 40' V: 1" = 4'		SHEET 13 OF 24	





NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: 1"=40"		SHEET 14 OF 24	

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

TABLE OF DIMENSIONS & REINFORCING STEEL
(Wings for One Structure End)

Dimensions					Variable Reinforcing				Estimated Quantities ⁽³⁾ per ft of wing length (2~Wings)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
					Size	Spa	Size	Spa		
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~Wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

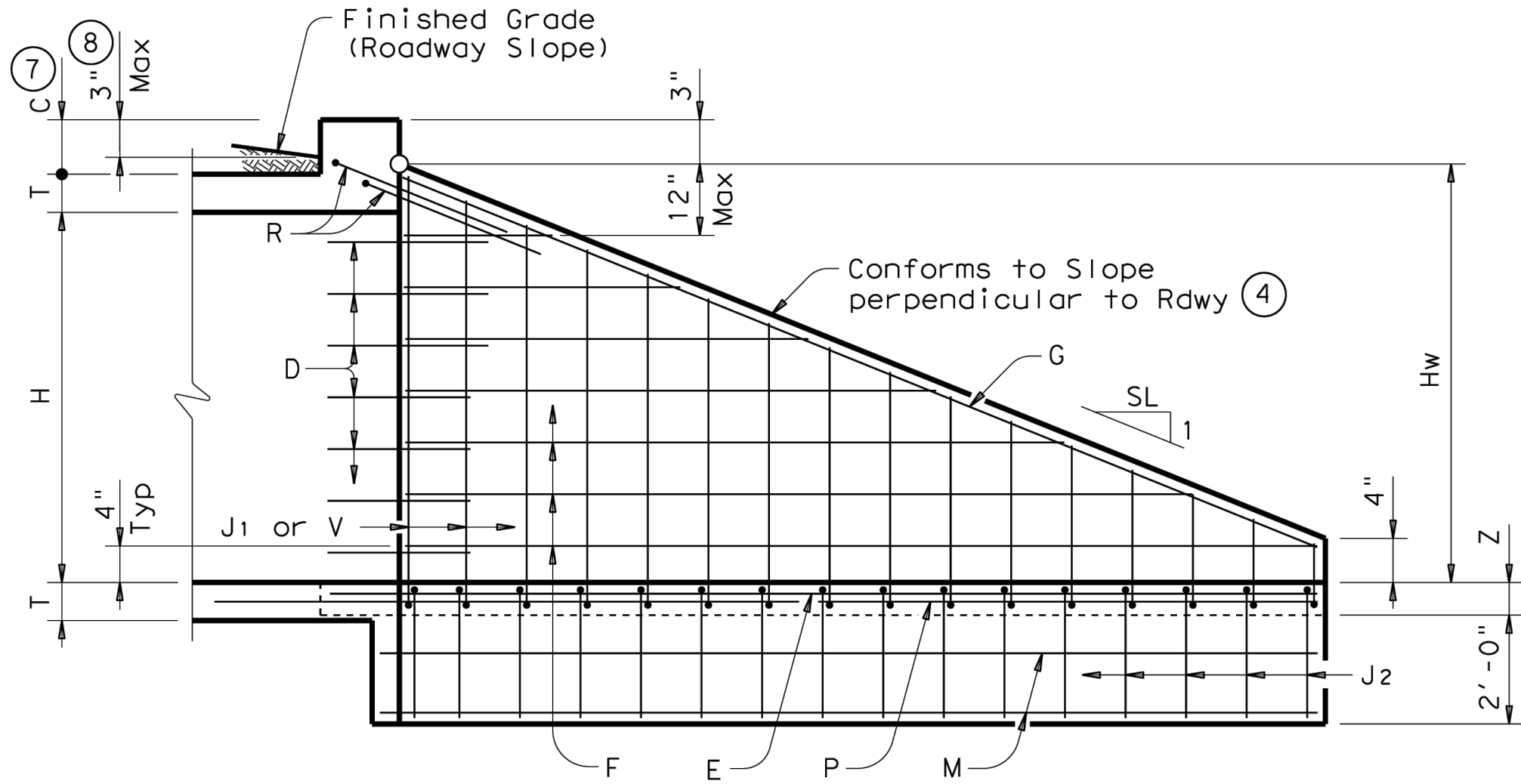
WING DIMENSION CALCULATIONS:

Formulas: (All values are in Feet)
 $Hw = H + T + C - 0.250'$
 $Lw = (Hw - 0.333') (SL)$
For Cast-in-place culverts:
 $Ltw = (N) (S) + (N+1) (U)$
For Precast culverts:
 $Ltw = (N) (2U + S) + (N-1) (0.5')$
Total Wingwall Area (Two Wings ~ S.F.) = $(Hw + 0.333') (Lw)$

Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
Lw = Length of Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans

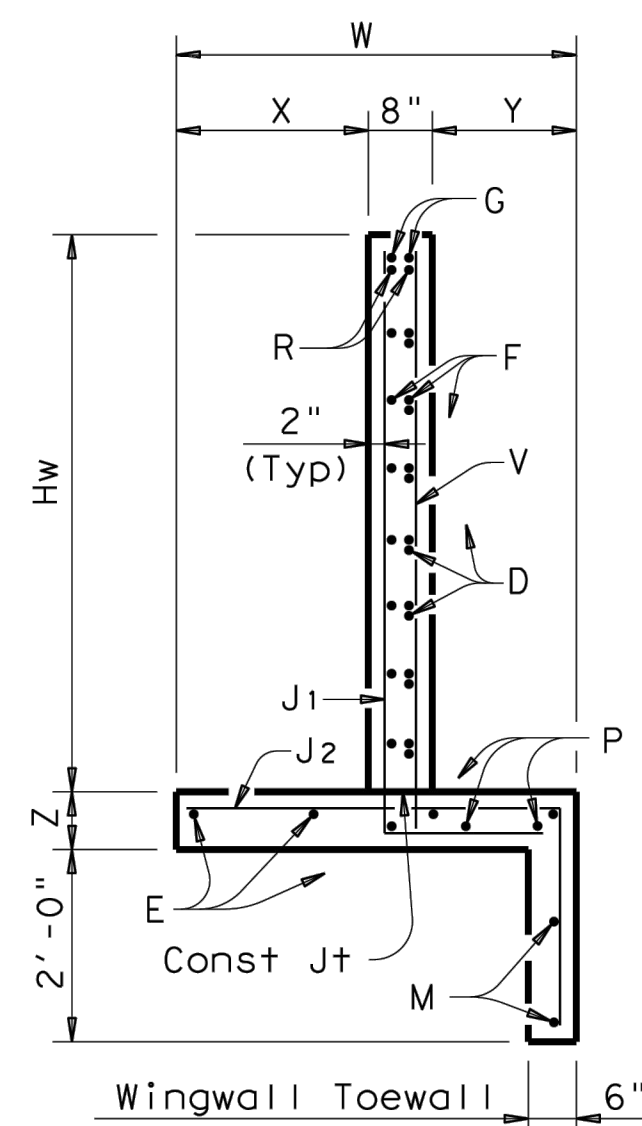
See applicable box culvert standard for H, S, T, and U values.

- Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.
- Adjust to fit as necessary to maintain 1 1/4" clear cover and 4" minimum between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
- Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.
- When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
- At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.
- 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.
- For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

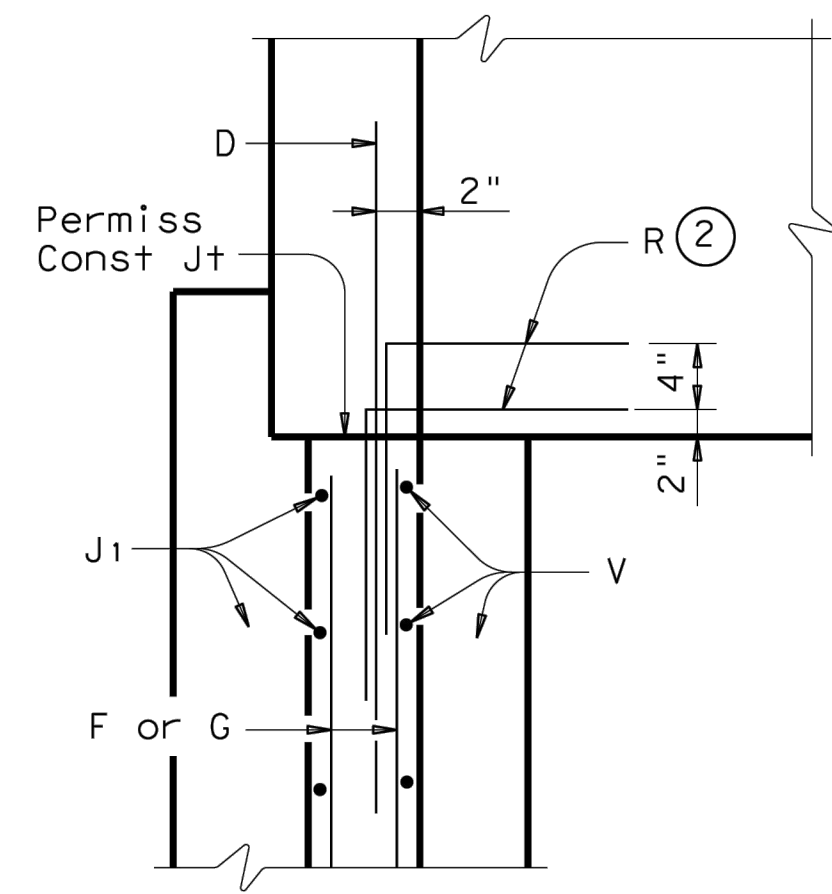


INSIDE ELEVATION

(Showing reinforcing. Culvert and Culvert Toewall reinforcing not shown for clarity.)

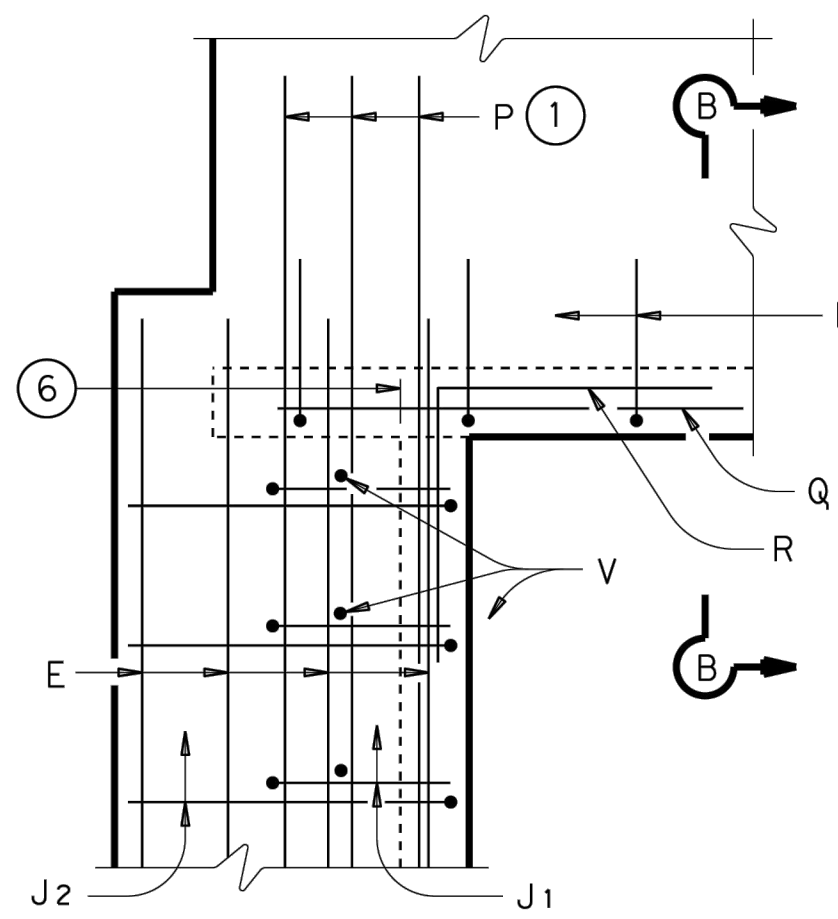


SECTION A-A

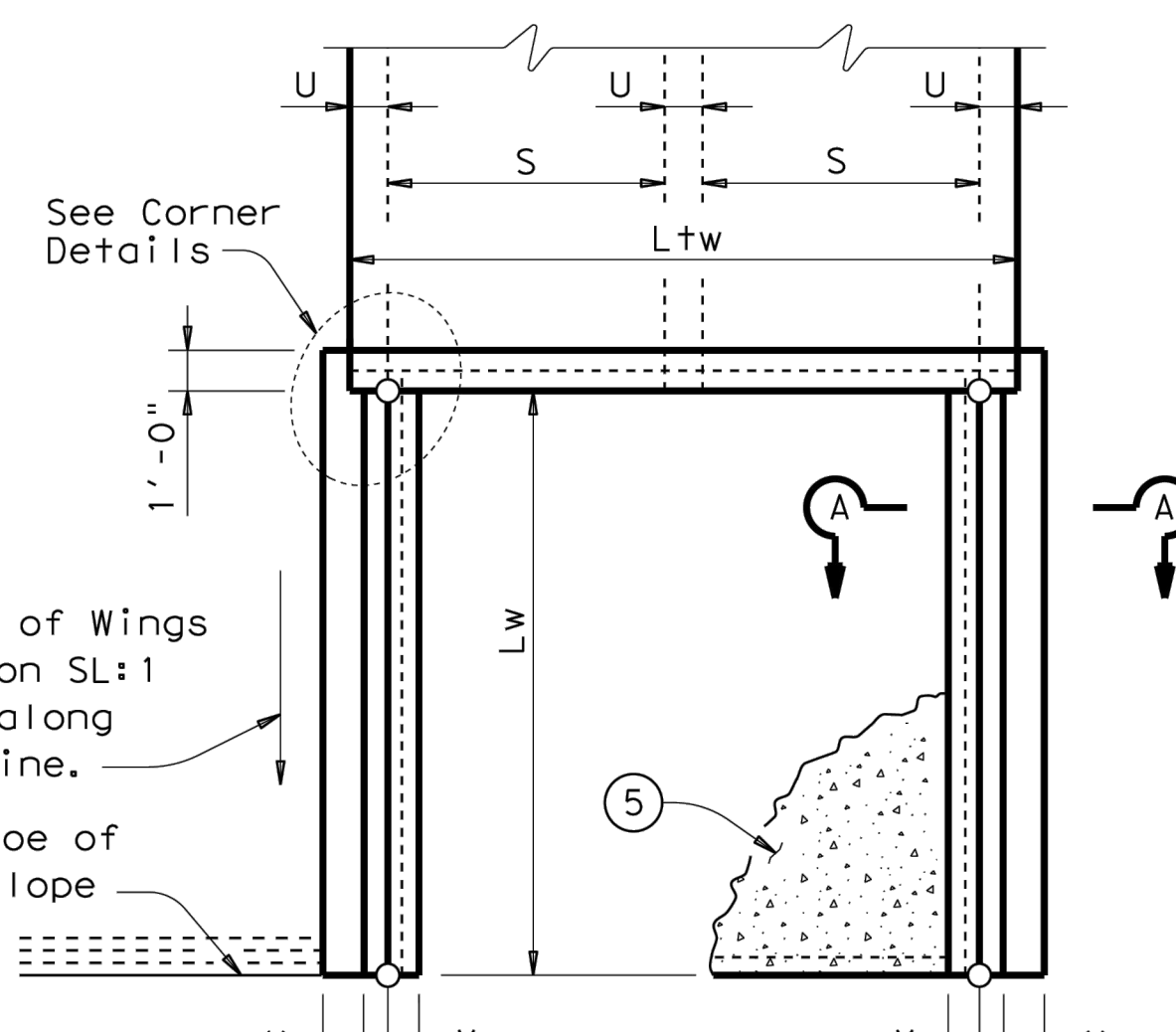


WINGWALL

CORNER DETAILS

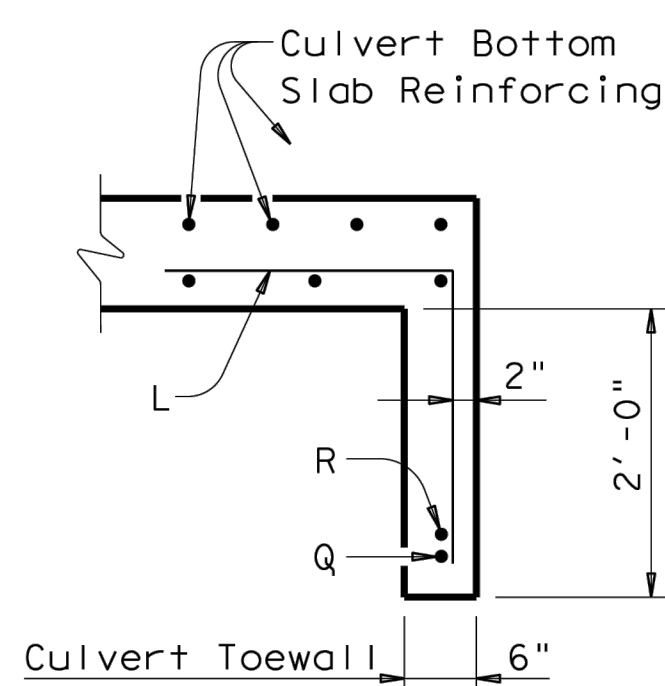


FOOTINGS AND TOEWALL

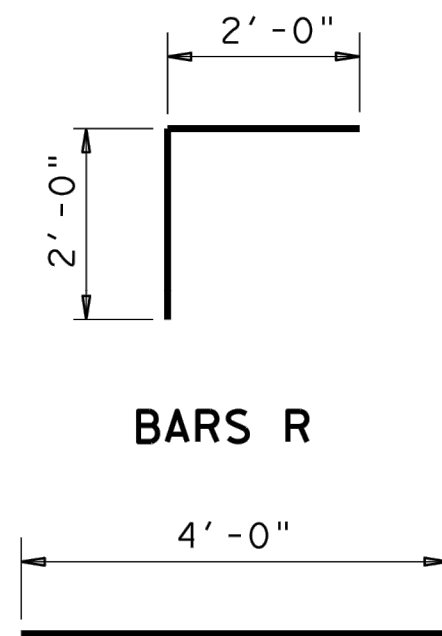


PLAN

(Showing Dimensions)

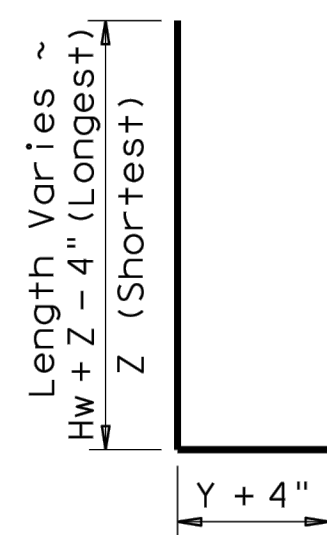


SECTION B-B



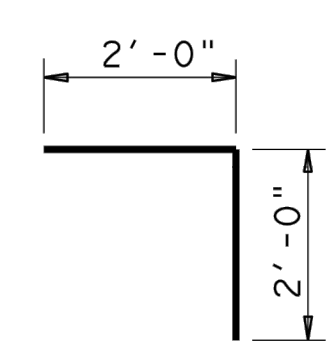
BARS R

BARS D



BARS J1

BARS V



BARS L

BARS J2

GENERAL NOTES:


Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
All reinforcing bars shall be adjusted to provide a minimum of 1 1/4" clear cover.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See BCS sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

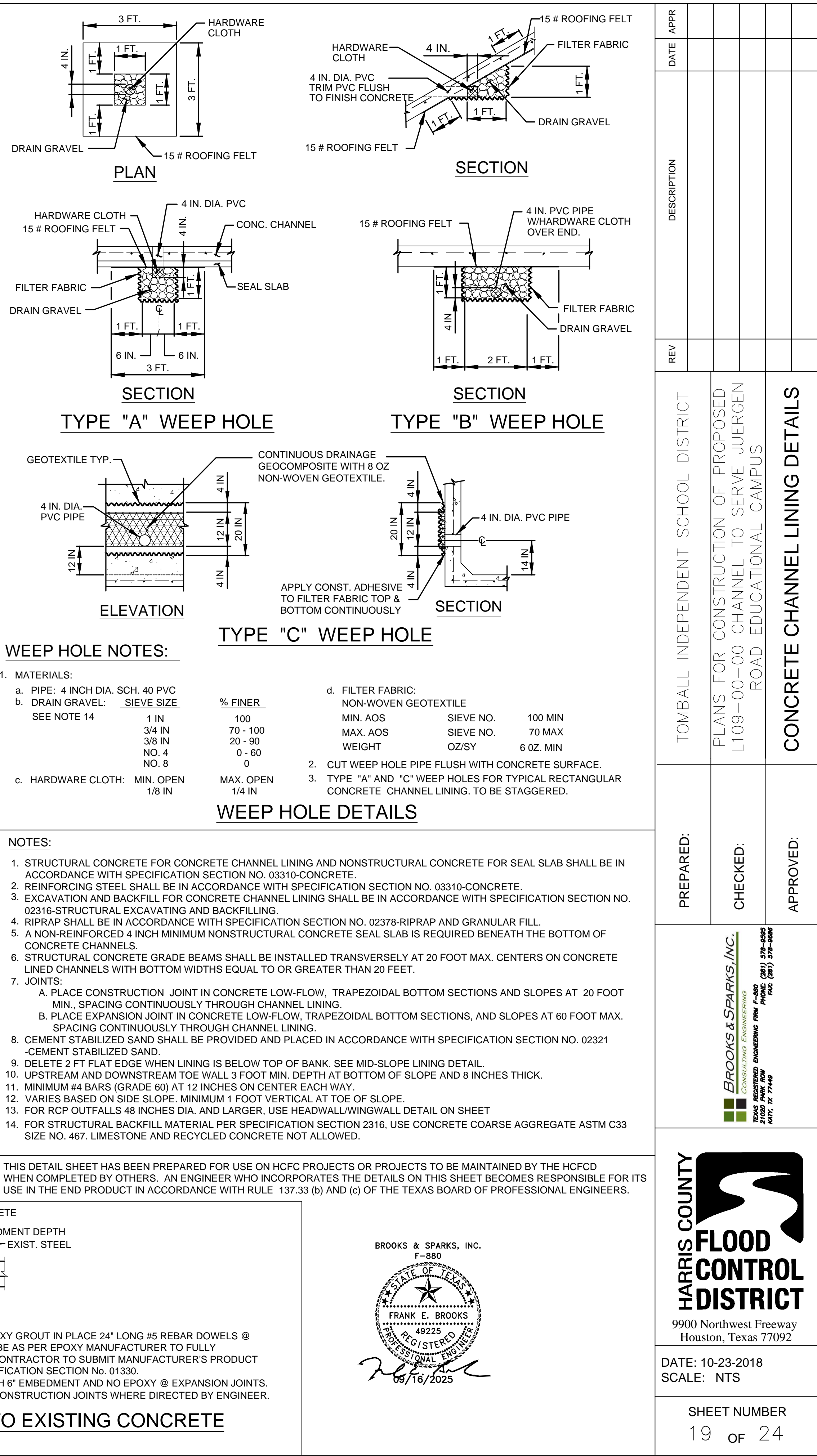



CONCRETE WINGWALLS
WITH STRAIGHT WINGS FOR
0° SKEW BOX CULVERTS

SW-O

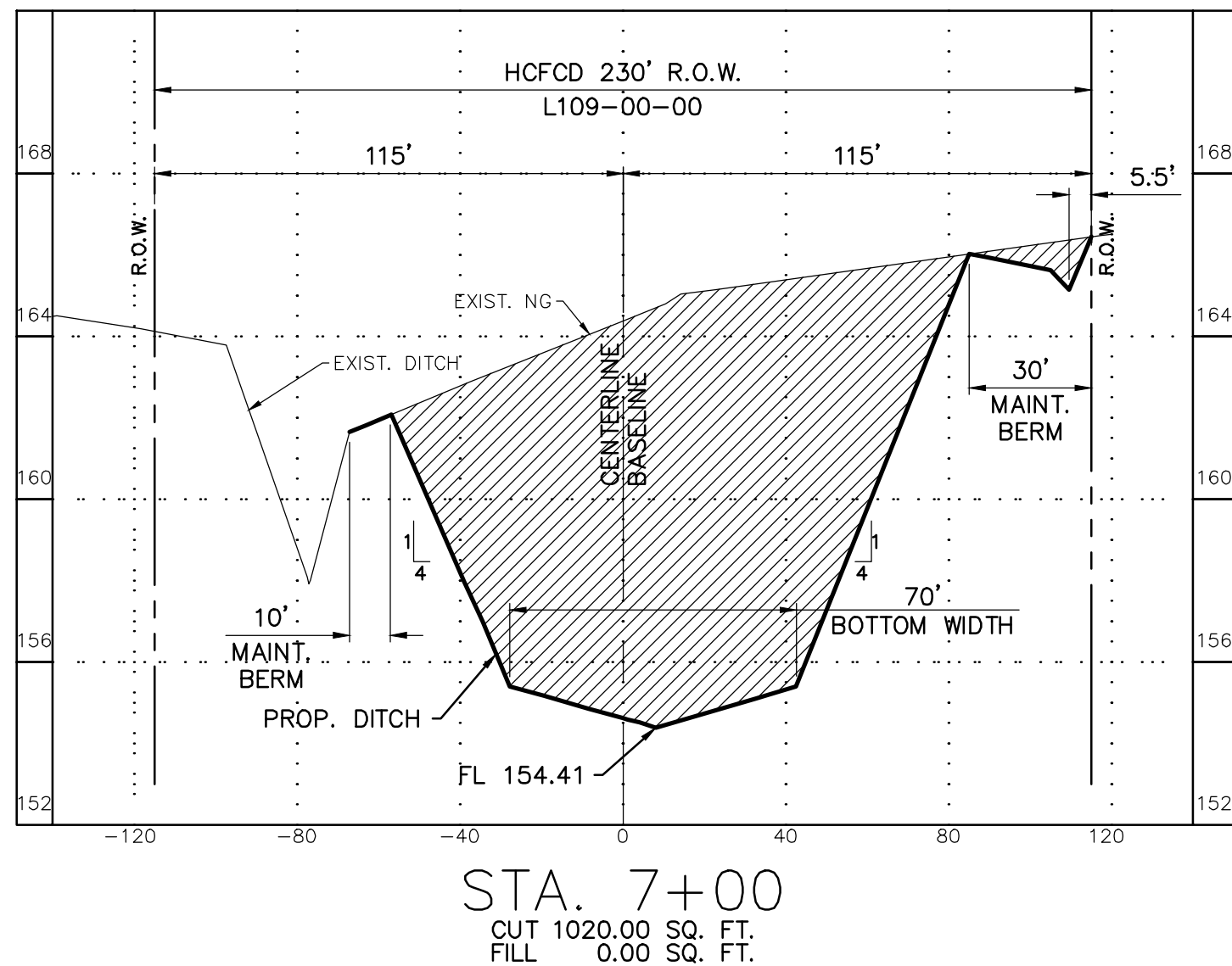
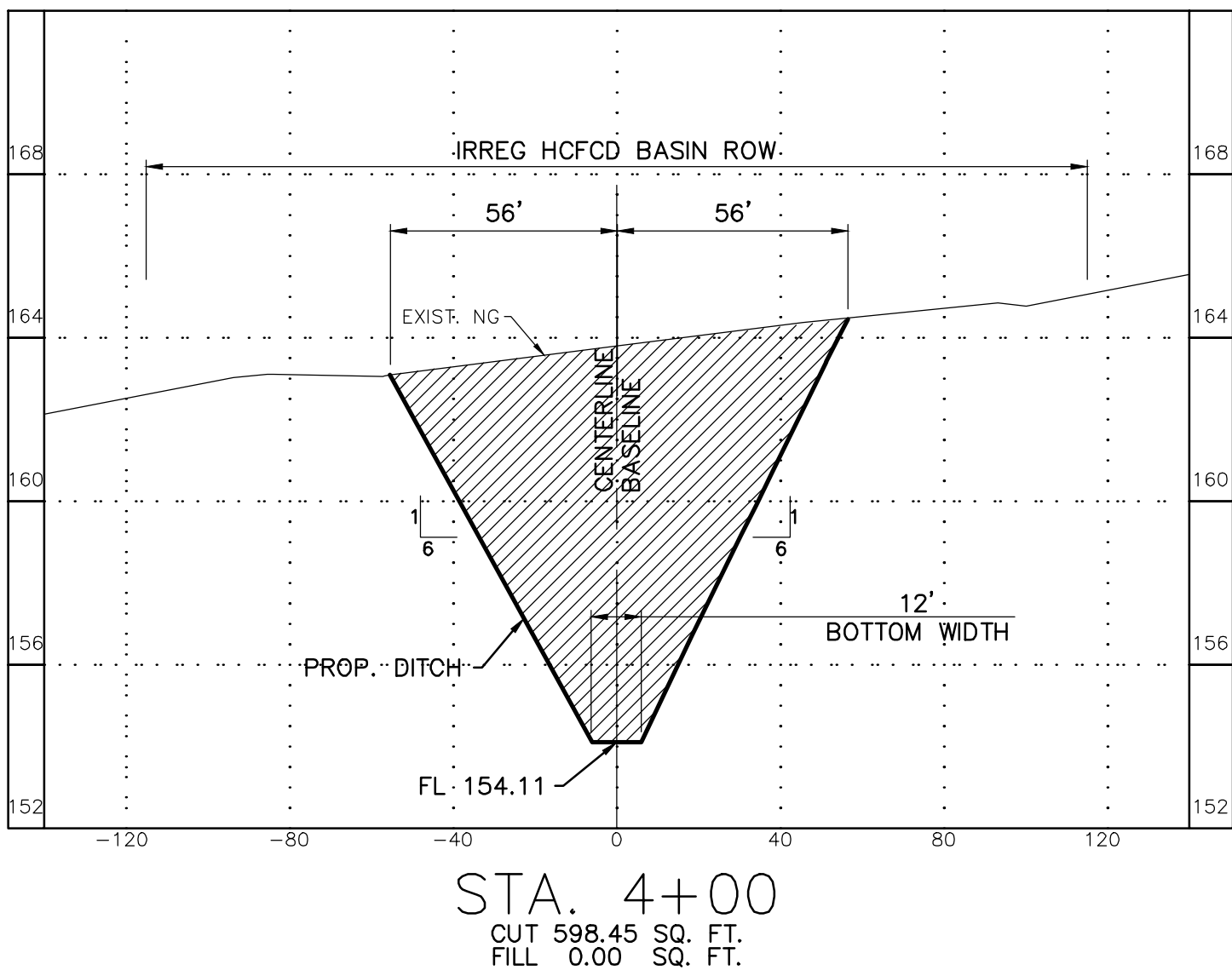
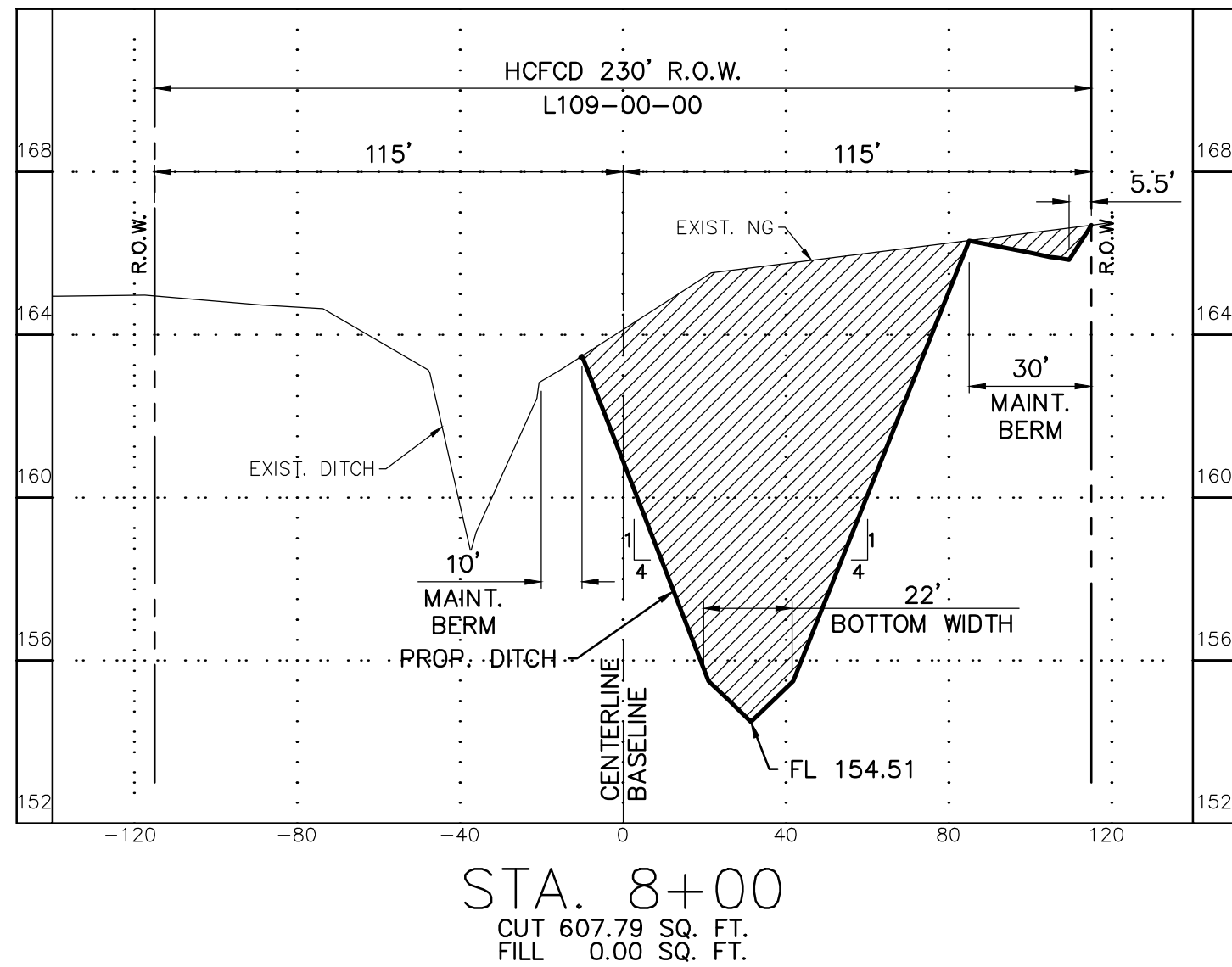
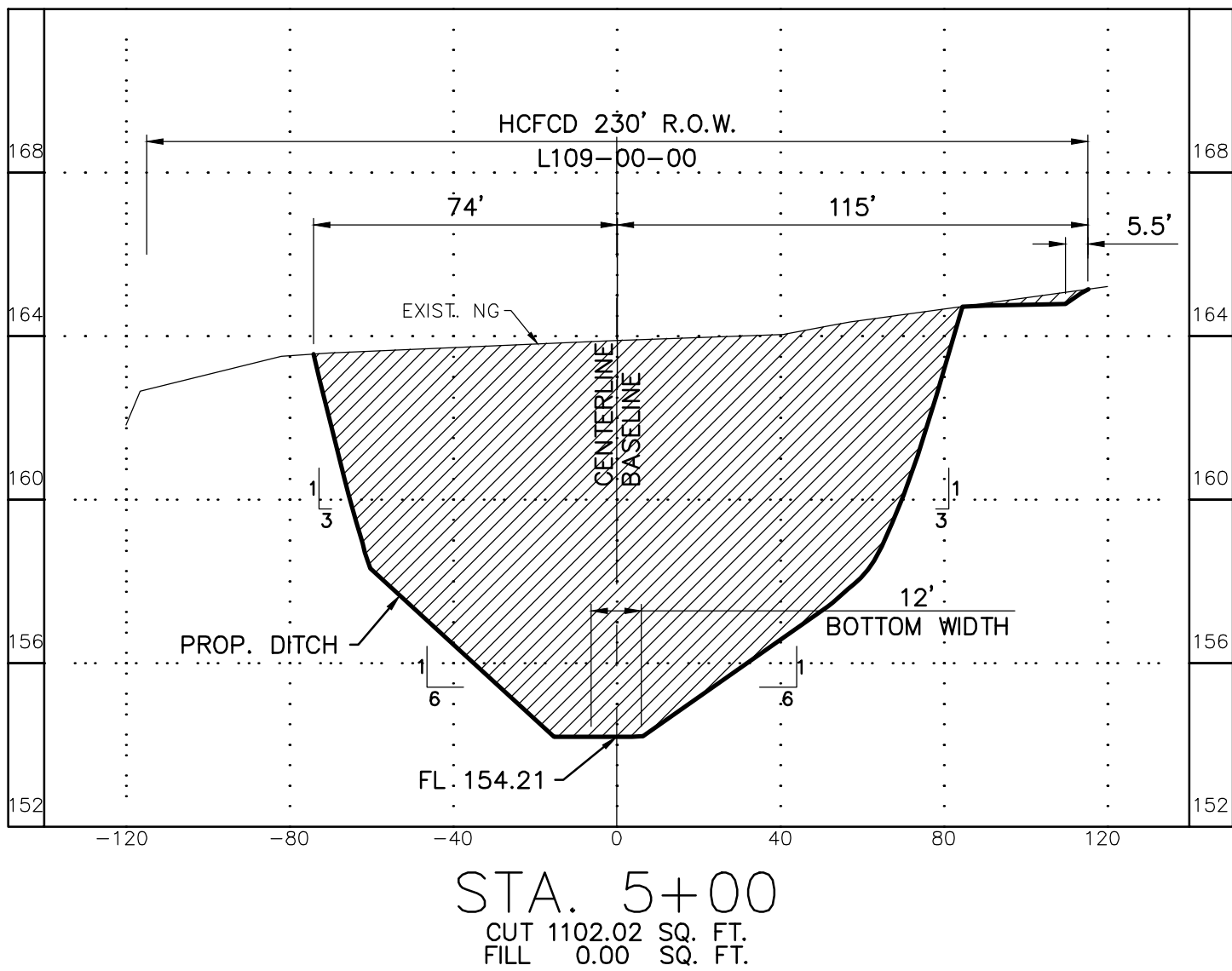
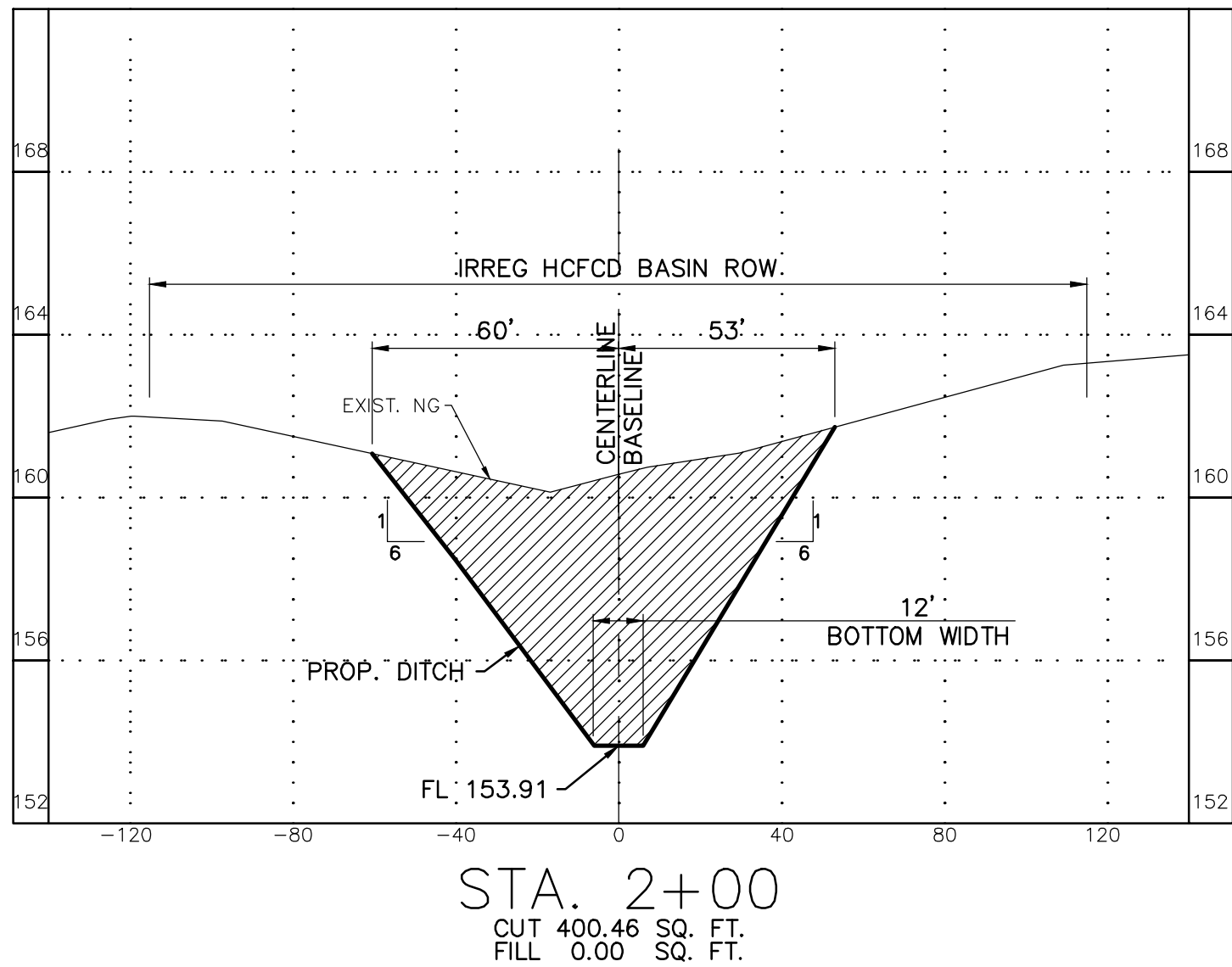
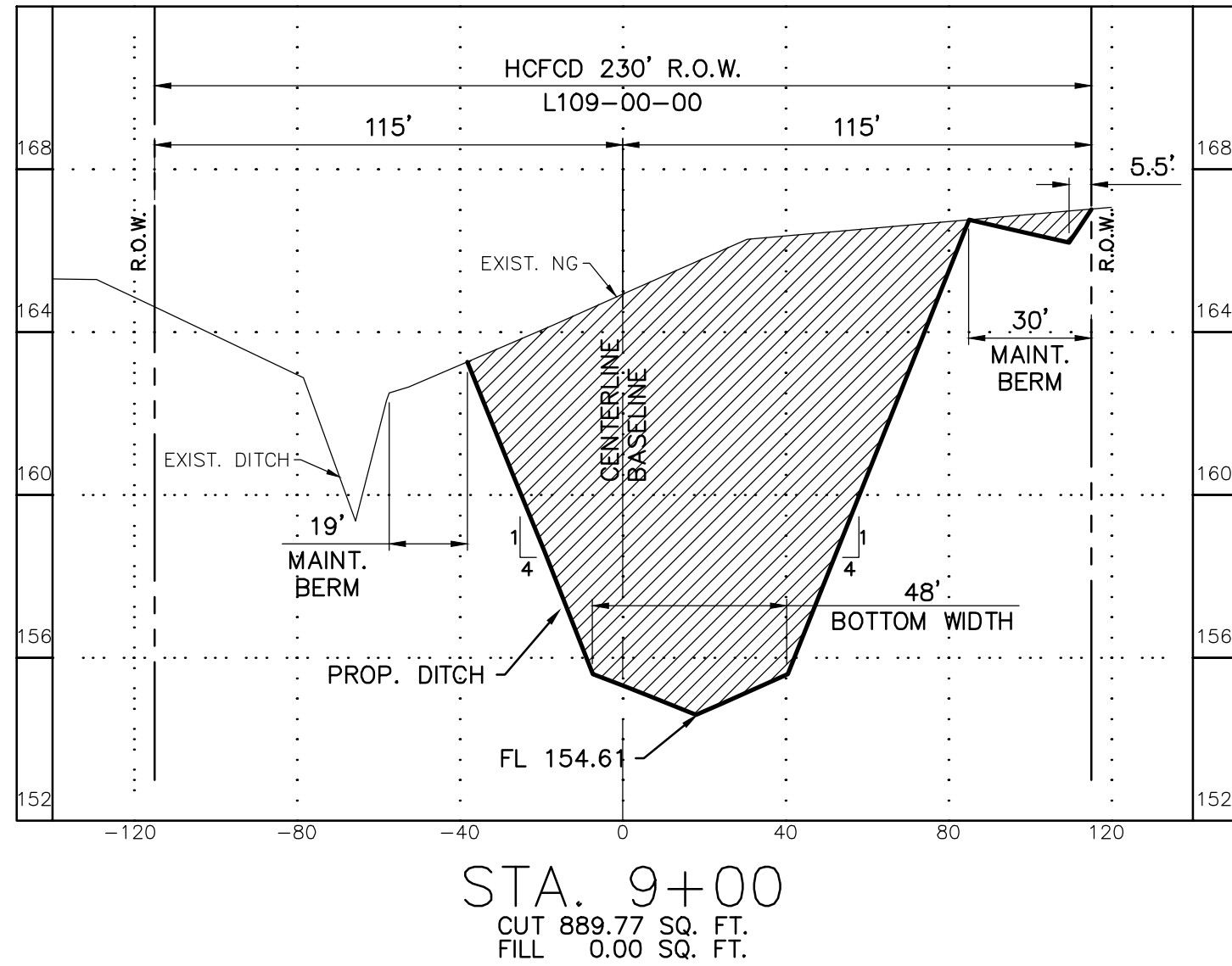
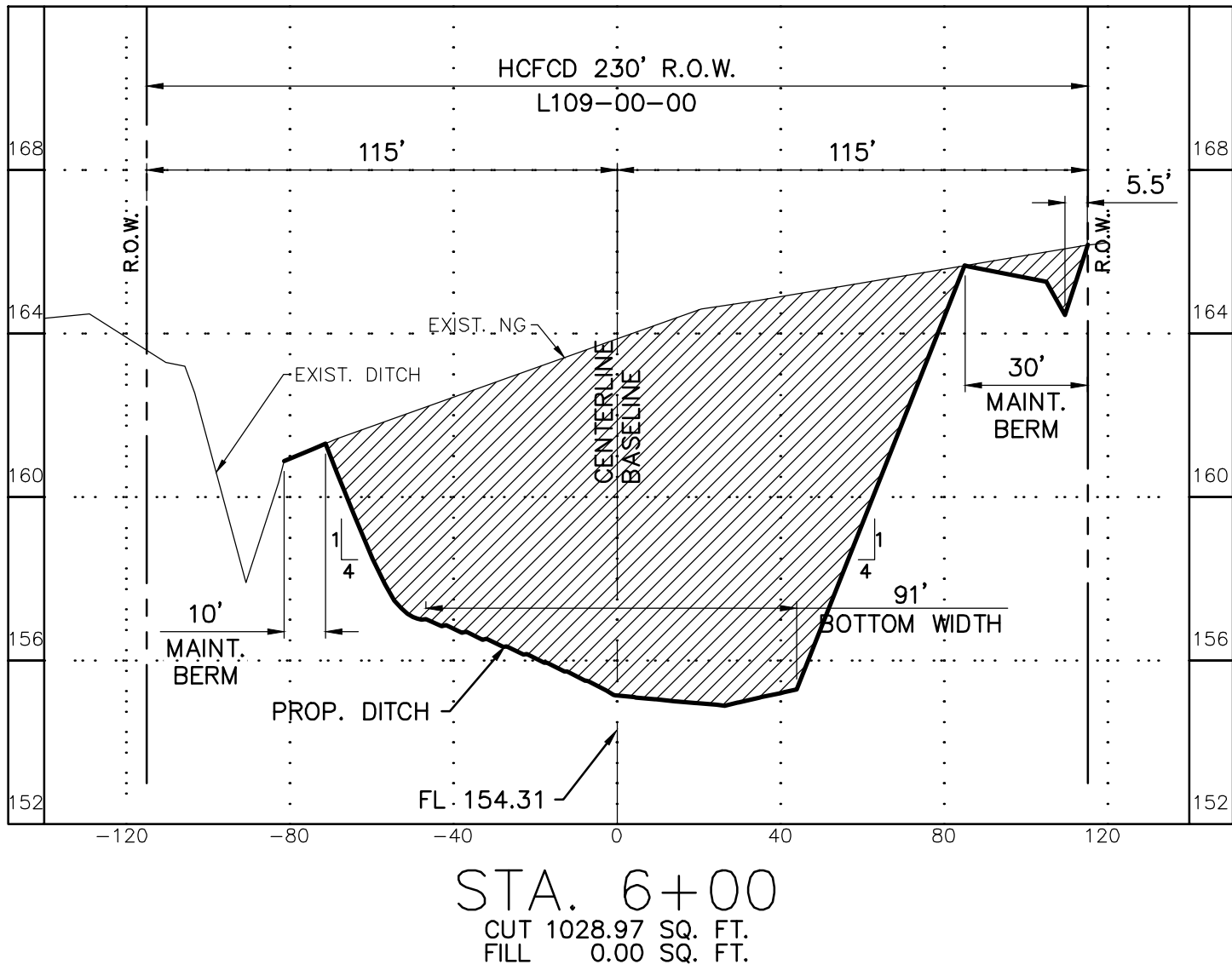
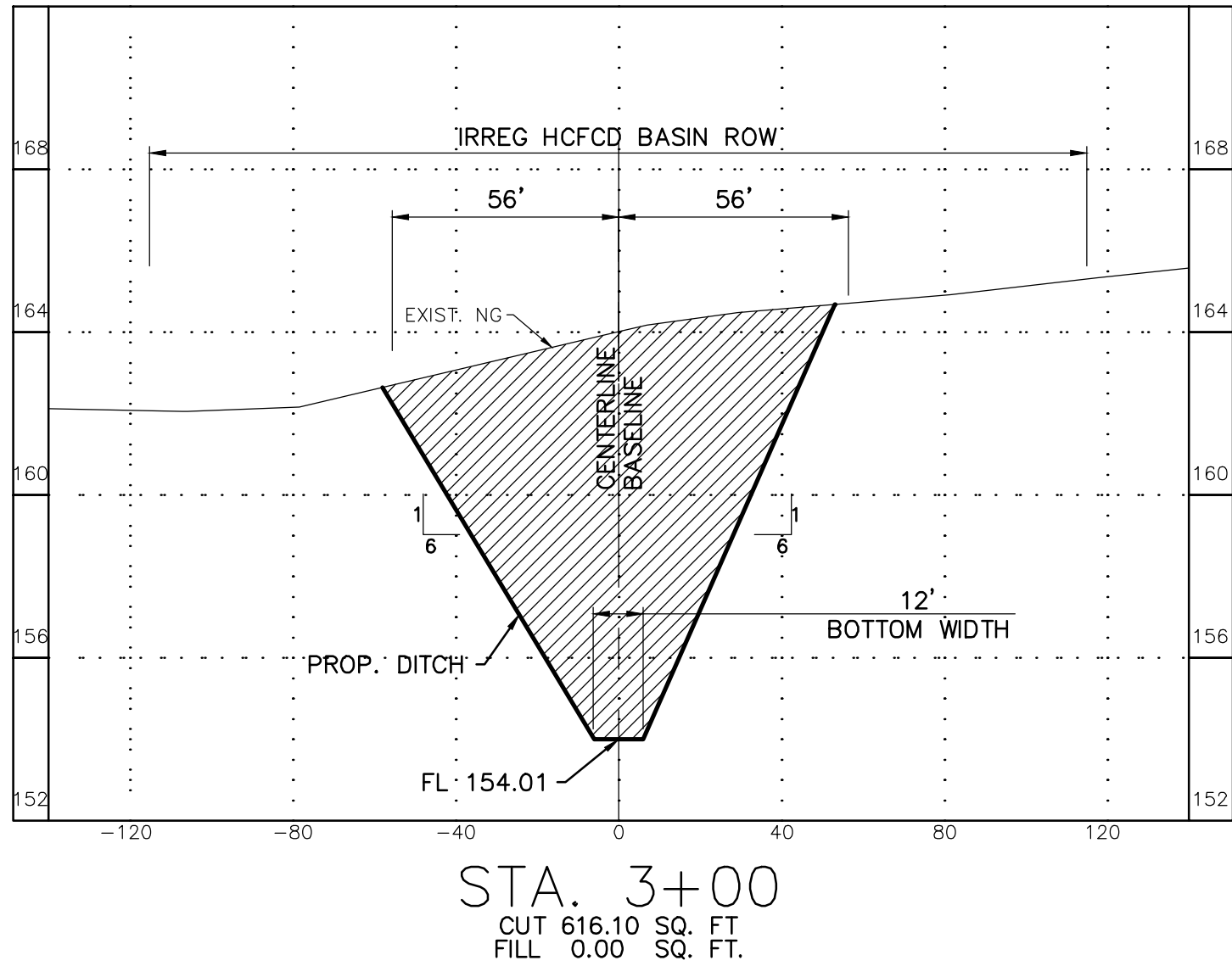
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©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	
			17 OF 24	

<p>HARRIS COUNTY FLOOD CONTROL DISTRICT</p> <p>9900 Northwest Freeway Houston, Texas 77092</p>		<p>BROOKS & SPARKS, INC. CONSULTING ENGINEERS</p> <p>TEXAS REGISTERED ENGINEERING FIRM E-480 21020 HWY. 190 W PHOENIX, ARIZ. 85027 PHONE (602) 579-6599 FAC. (602) 579-9686</p>	<p>PREPARED:</p>
			<p>CHECKED:</p>
			<p>APPROVED:</p>
<p>DATE: 10-23-2018</p> <p>SCALE: AS NOTED</p>		<p>SHEET NUMBER</p> <p>18 OF 24</p>	



PREPARED:	CHECKED:	APPROVED:
 <p>BROOKS & SPARKS INC. CONSULTING ENGINEERING TEXAS REGISTERED FIRM #680 1901 578-4000 1901 578-4000 FAC: (281) 578-4000 KATY, TX 77449</p>		
 <p>HARRIS COUNTY FLOOD CONTROL DISTRICT</p> <p>9900 Northwest Freeway Houston, Texas 77092</p>		
<p>DATE: 10-23-2018 SCALE: NTS</p>		
<p>SHEET NUMBER</p> <p>20 OF 24</p>		

18 Sep 2025 3:30PM robert.v
F:\project\BROOK.SP\Tomball ISD\866018-Juergen Tract\Civil\HCFCD CHANNEL\16 866-0018 - L109- X-SEC - HP-PogewideXL-24x36 (4).dwg
Includes Xref(s): 866018-X-L109 -BRD.dwg; 866018-X-L109 XSEC.dwg; 866018-X-L109 -SEAL.dwg



LEGEND
CUT
FILL

CONSULTING ENGINEERING

TEXAS REGISTERED ENGINEERING FIRM F-880

21020 PARK TOW

PHONE: (281) 578-9595

KATY, TX 77449

FAX: (281) 578-9586

FLOODPLAIN INFORMATION:

ACCORDING TO F.I.R.M. MAP NO. 48201C0215L (COMMUNITY-PANEL NO. 4802870215L), MAP REVISED DATE: JUNE 18, 2007, THE SUBJECT PROPERTY LIES WITHIN THE AREAS DESIGNATED AS ZONE "X" UNSHADED, DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD, ZONE X SHADED, AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD, ZONE AE, BASE FLOOD ELEVATIONS DETERMINED, AND FLOODWAY, THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

REFERENCE BENCHMARK:

RM111050 - ALUMINUM ROD WITH LOGO CAP STAMPED "111050" LOCATED ON THE NORTH SIDE OF BAUER-HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGEL DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED. ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

TEMPORARY BENCHMARKS:

TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 169.64'

UTILITY ONE CALL

CONTRACTOR TO CALL BEFORE DIGGING !!!
PHONE: HOUSTON (713) 223-4567 (STATEWIDE OUTSIDE HOUSTON)
1-(800)-545-6005

CALL BEFORE YOU DIG

CALL BEFORE YOU DIG

NOTE: THE LOCATIONS OF THE PRIVATE UTILITY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE ALSO ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES INCURRED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UTILITIES.

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 BE AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THE VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL BE.

VERIFICATION OF PRIVATE UTILITY LINES

Date:

CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This Signature verifies that you have shown 240" Natural Gas lines correctly. Not to be used for conflict verification) (Site service lines are not shown.) Signature Valid for six months.

Date:

CenterPoint Energy/Underground Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities, Not to be used for conflict verification.) Signature Valid for six months.

Date:

APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. Signature valid for one year.

BROOKS & SPARKS, INC.

F-880

STATE OF TEXAS

FRANK E. BROOKS

19225

REGISTERED PROFESSIONAL ENGINEER

09/16/2025

TOMBALL ISD

L109-00-00 TO SERVE

JUERGEN ROAD EDUCATIONAL CAMPUS

L109-00-00

CROSS SECTIONS

STA. 2+00 TO STA. 9+00

NO.	DATE	REVISIONS	BY

DRAWN BY: RV

CHECKED BY: CSM, JAE

DESIGNED BY: CSM

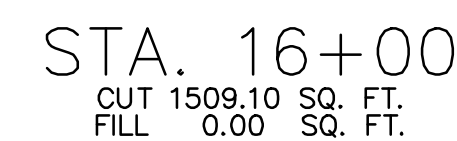
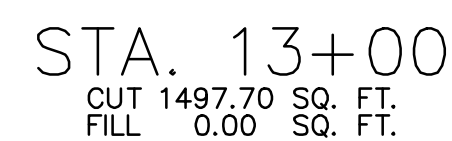
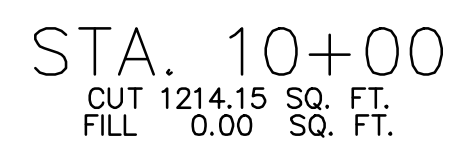
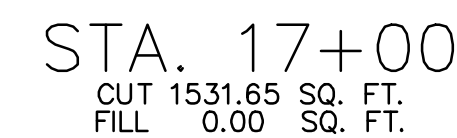
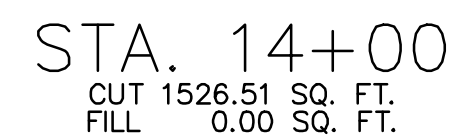
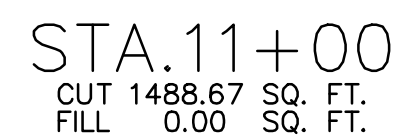
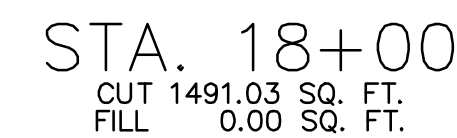
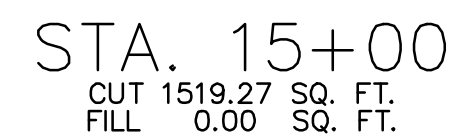
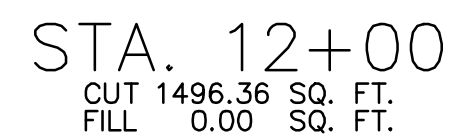
APPROVED BY: FEB

PROJECT NO. 866-0018

SEPTEMBER 2025

SCALE: H: 1"=40', V: 1"=4'

SHEET 21 OF 24



CONTRACTOR TO CALL
BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005

NOTE: THE LOCATIONS OF THE PRIVATE UTILITY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE ALSO ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES INCURRED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UTILITIES.

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 LINES CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

VERIFICATION OF PRIVATE UTILITY LINES

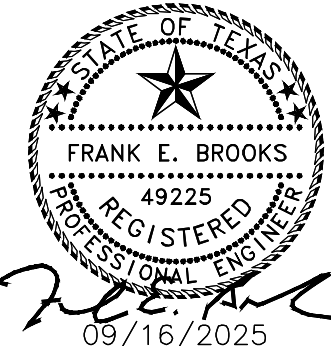
CenterPoint Energy/Natural Gas Facilities Verification ONLY. (THIS Signature verifies that you have shown CNP Natural Gas lines correctly. Not to be used for conflict verification.) (Gas service lines are not shown.)
Signature Valid for six months.

Date: _____

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This Signature verifies that existing underground facilities. Not to be used for conflict verification.) Signature Valid for six months.

APPROVED FOR AT&T TEXAS/SWB UNDERGROUND CONDUIT FACILITIES ONLY,
Signature valid for one year.

BROOKS & SPARKS, INC.



TOMBALL ISD
L109-00-00 TO SERVE
JUERGEN ROAD EDUCATIONAL
CAMPUS

L109-00-00
CROSS SECTIONS
STA. 10+00 TO STA. 18+00

NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: H: 1"=40', V: 1"=4'		SHEET 22 OF 24	

LEGEND

RM111050 - ALUMINUM ROD WITH LOGO CAP
STAMPED "111050" LOCATED ON THE NORTH SIDE
OF BAUER-HOCKLEY ROAD $\pm 75'$ EAST OF ITS
INTERSECTION WITH ANGELI DRIVE AND $\pm 120'$ WEST
OF A POWER POLE IN KEY MAP 326B IN THE
CYPRESS CREEK WATERSHED.
ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

TBM "A" - BOX CUT ON "BB" INLET LOCATED ON THE EAST SIDE OF MUESCHKE ROAD ±50' SOUTH OF THE MOST NORTHERLY SOUTHWEST CORNER OF THE SUBJECT TRACT.
ELEVATION = 169.64'

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(STATEWIDE OUTSIDE
HOUSTON)
1-(800)-545-6005

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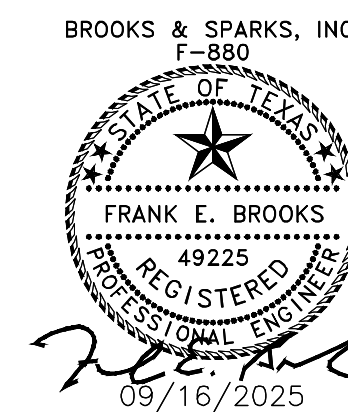
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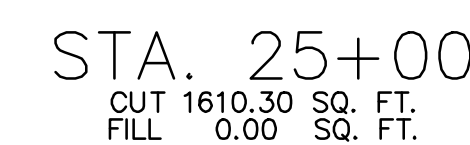
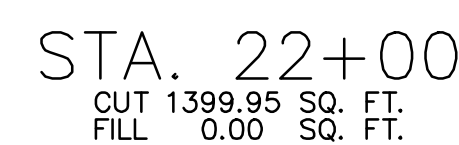
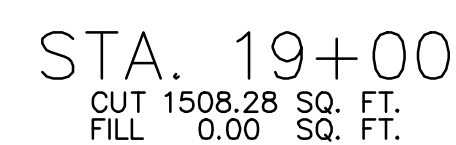
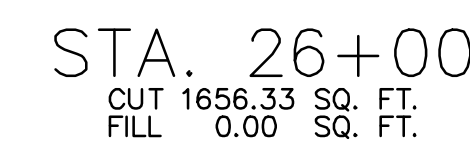
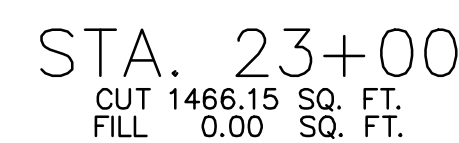
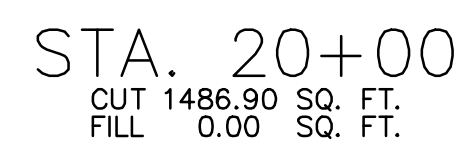
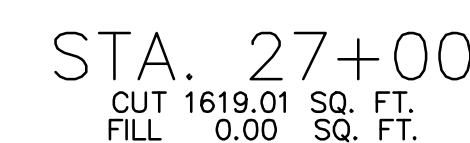
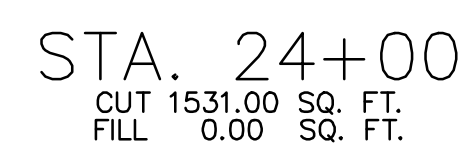
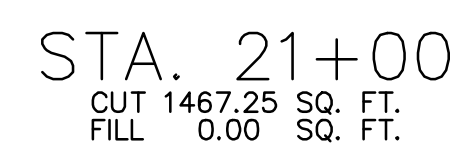


TOMBALL ISD
L109-00-00 TO SERVE
JUERGEN ROAD EDUCATIONAL
CAMPUS

L109-00-00
CROSS SECTIONS
STA. 19+00 TO STA. 27+00

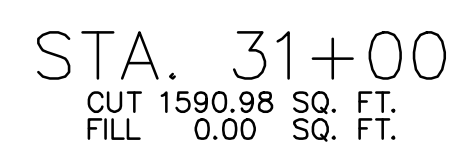
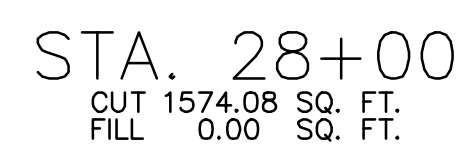
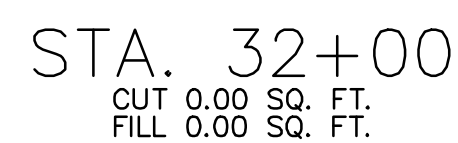
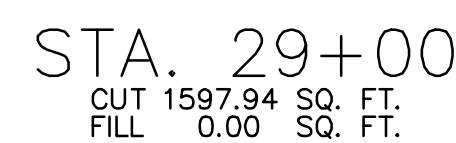
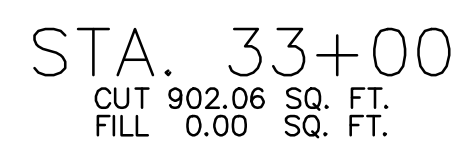
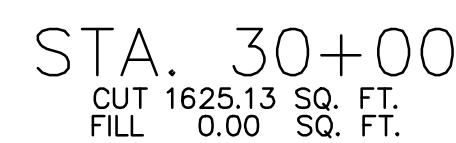
NO.	DATE	REVISIONS	BY

DRAWN BY: RV	CHECKED BY: CSM, JAE
DESIGNED BY: CSM	APPROVED BY: FEB
PROJECT NO. 866-0018	SEPTEMBER 2025
SCALE: H: 1"=40', V: 1"=4'	SHEET 23 OF 24



LEGEND

	CUT
	FILL



NO.	DATE	REVISIONS	BY
DRAWN BY: RV		CHECKED BY: CSM, JAE	
DESIGNED BY: CSM		APPROVED BY: FEB	
PROJECT NO. 866-0018		SEPTEMBER 2025	
SCALE: H: 1"=40', V: 1"=4'		SHEET 24 OF 24	

18. Sep 2025 3:30PM robertv