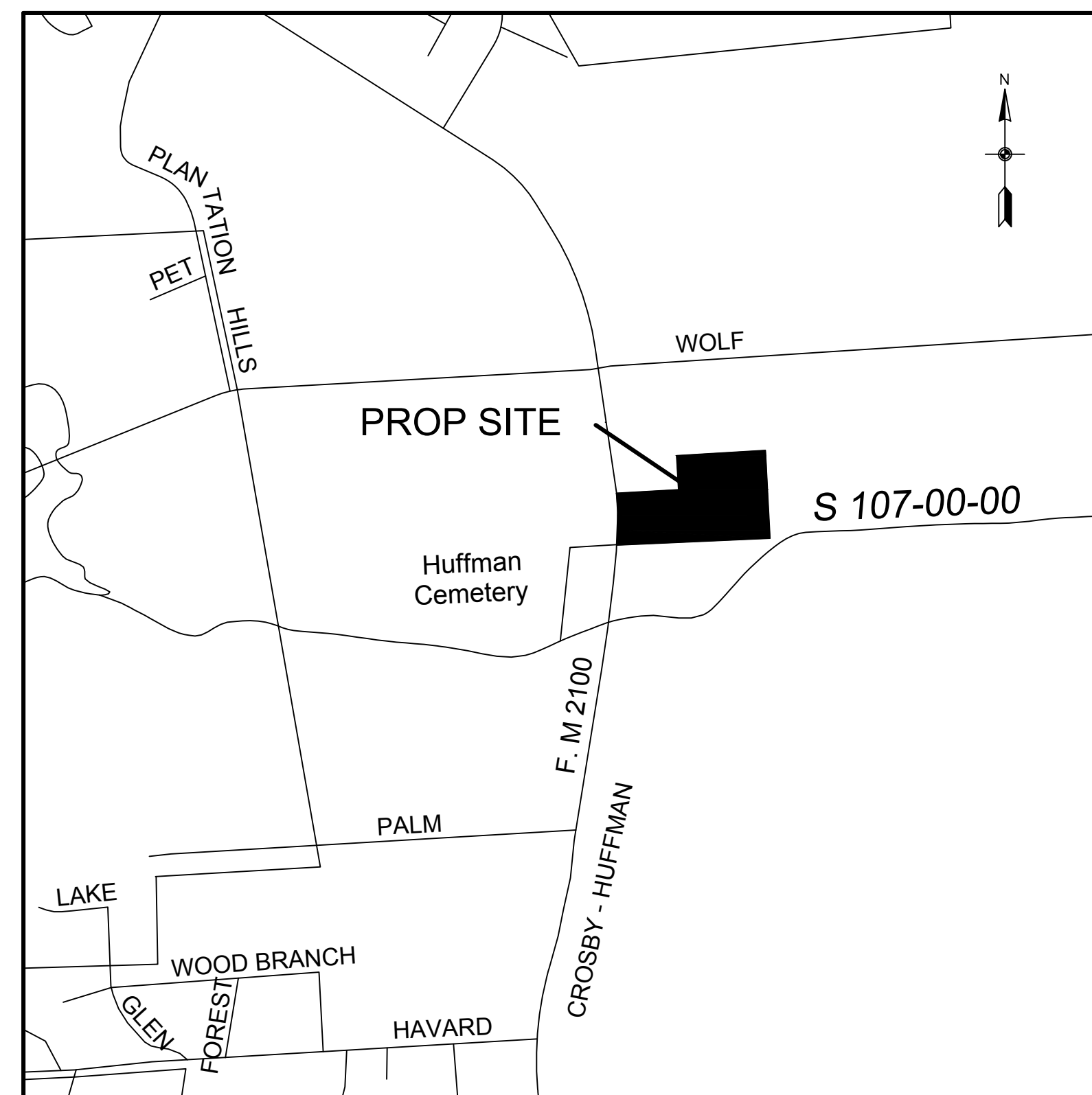


# HUFFMAN BUSINESS PARK

A SUBDIVISION OF 13.375 ACRES IN THE G. BROOKS SURVEY, ABSTRACT 6, HARRIS COUNTY, TEXAS  
1 BLOCK THREE RESERVES

<u>DRAWING TITLE</u>	<u>SHEET</u>
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VICINITY MAP  
KEY MAP PG. 339 B  
SCALE 1" = 1000'



COVER SHEET HUFFMAN BUSINESS PARK HARRIS COUNTY, TEXAS				
<b>HANS CONSULTING COMPANY</b>				
<small>Professional Engineers TBPE Firm # F4537 Registered Professional Land Surveyors TBPLS #101295 P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net</small>				
DRAWN BY GWH	DATE 3/22/16	SHEET 1	OF 15	REVISED
DESIGNED BY	SCALE 1" = 40'	PROJECT NO. 1583		
	CHK'D BY			

# HUFFMAN BUSINESS PARK

A SUBDIVISION OF 13.375 ACRES IN THE GILBERT BROOKS SURVEY, ABSTRACT 6 HARRIS CO. TX.  
 SCALE: 1" = 100' 1 BLOCK 3 RESERVES MARCH 5, 2016  
 OWNER / DEVELOPER: STAN AND FRANCES OLIVER

HANS CONSULTING COMPANY  
 PROFESSIONAL ENGINEERS AND LAND SURVEYORS  
 P.O. BOX 1324 BAYTOWN, TEXAS 77522 (281) 427-6054 EMAIL ghans@teleshare.net TBPE F4537, TBPLS No. 10129500

STATE OF TEXAS  
 COUNTY OF HARRIS

We, Stanley A. Oliver and Frances A. Oliver, owner (or owners) hereinafter referred to as Owners (whether one or more) of the 13.735 acre tract described in the above and foregoing map of Huffman Business Park, do hereby make and establish said subdivision and development plan of said property according to all lines, dedications, restrictions, and notations on said maps or plat and hereby dedicate to the use of the public forever, all streets (except those streets designated as private streets, or permanent access easements), alleys, parks, water courses, drains, easements and public places shown thereon for the purposes and considerations therein expressed; and do hereby bind ourselves, our heirs, successors and assigns to warrant and forever defend the title on the land so dedicated.

FURTHER, Owners have dedicated and by these presents do dedicate to the use of the public for public utility purpose forever unobstructed aerial easements. The aerial easements shall extend horizontally an additional eleven feet, six inches (11' 6") for ten feet (10' 0") perimeter ground easements or seven feet, six inches (7' 6") for fourteen feet (14' 0") perimeter ground easements or five feet, six inches (5' 6") for sixteen feet (16' 0") perimeter ground easements, from a plane sixteen feet (16' 0") above the ground level upward, located adjacent to and adjoining said public utility easements that are designated with aerial easements (U.E. and A.E.) as indicated and depicted hereon, whereby the aerial easement totals twenty one feet, six inches (21' 6") in width.

FURTHER, Owners have dedicated and by these presents do dedicate to the use of the public for public utility purpose forever unobstructed aerial easements. The aerial easements shall extend horizontally an additional ten feet (10' 0") for ten feet (10' 0") back-to-back ground easements, or eight feet (8' 0") for fourteen feet (14' 0") back-to-back ground easements or seven feet (7' 0") for sixteen feet (16' 0") back-to-back ground easements, from a plane sixteen feet (16' 0") above ground level upward, located adjacent to both sides and adjoining said public utility easements that are designated with aerial easements (U.E. and A.E.) as indicated and depicted hereon, whereby the aerial easement totals thirty feet (30' 0") in width.

FURTHER, Owners do hereby covenant and agree that all of the property within the boundaries of this plat is hereby restricted to prevent the drainage of any septic tanks into any public or private street, permanent access easement, road or alley, or any drainage ditch, either directly or indirectly.

FURTHER, Owners do hereby dedicate to the public a strip of land fifteen feet (15') wide on each side of the center line of any and all bayous, creeks, gullies, ravines, draws, sloughs or other natural drainage courses located in said plat, as easements for drainage purposes, giving the City of Houston, Harris County, or any other governmental agency, the right to enter upon said easement at any and all times for the purpose of construction and maintenance of drainage facilities and structures.

FURTHER, Owners do hereby covenant and agree that all of the property within the boundaries of this plat and adjacent to any drainage easement, ditch, gully, creek or natural drainage way shall hereby be restricted to keep such drainage ways and easements clear of fences, buildings, planting and other obstructions to the operations and maintenance of the drainage facility and that such abutting property shall not be permitted to drain directly into this easement except by means of an approved drainage structure.

FURTHER, Owners do hereby covenant and agree that those streets located within the boundaries of this plat specifically noted as private streets or permanent access easements shall be hereby established and maintained as private streets or permanent access easements by the owners, heirs, successors, and assigns to property located within the boundaries of this plat and always available for the general use of said owners and to the public for fire fighters, fire fighting equipment, police and emergency vehicles of whatever nature at all times and do hereby bind ourselves, our heirs, successors and assigns to warrant and forever defend the title to the land so designated and established as private streets or permanent access easements.

FURTHER, Owners certify and covenant that they have complied with or will comply with existing Harris County Road Law, Section 31-C as amended by Chapter 614, Acts of 1973, 63rd Legislature and all other regulations heretofore on file with the Harris County Engineer and adopted by the Commissioners' Court of Harris County.

WITNESS my (or our) hand in the city of Houston, Texas, this \_\_\_\_\_ day of \_\_\_\_\_, 2016.

Stanley A. Oliver  
 Frances A. Oliver

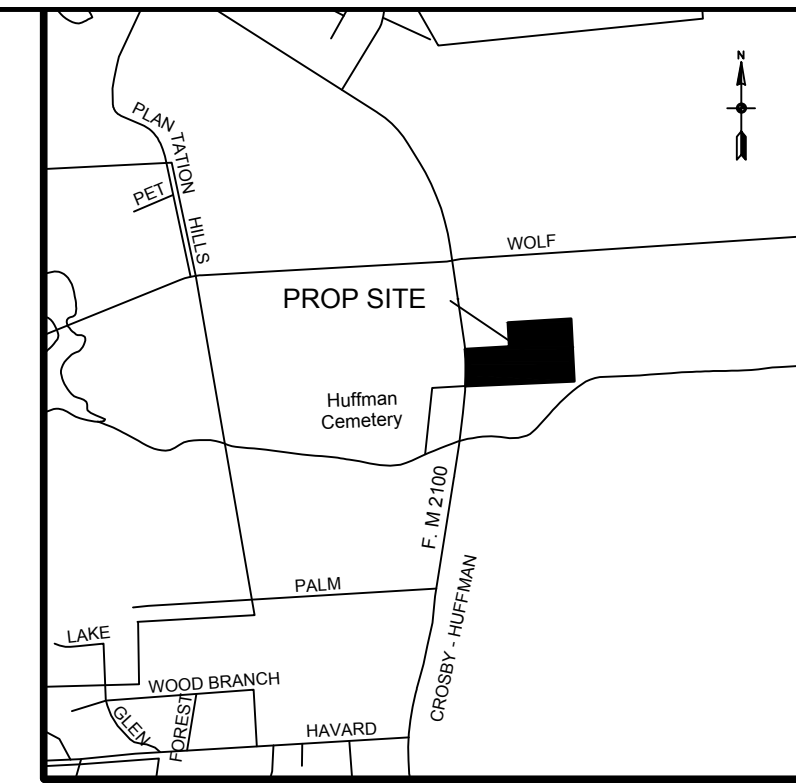
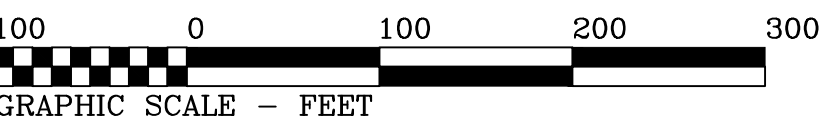
I, Marvin L. Mardock, am registered under the laws of the State of Texas to practice the profession of surveying and hereby certify that the above subdivision is true and accurate; was prepared from an actual survey of the property made under my supervision on the ground; that, except as shown all boundary corners, angle points, points of curvature and other points of reference have been marked with iron (or other objects of a permanent nature) pipes or rods having an outside diameter of not less than five eighths (5/8) inch and a length of not less than three (3) feet, and that the plat boundary corners have been tied to the Texas Coordinate System of 1983, south central zone.

Marvin L. Mardock  
 Registered Professional Land Surveyor  
 Texas Registration No. 5008  
 S Oliver & Associates, L.P.  
 Firm Registration Number 10061800  
 7507 Bayway Drive  
 Baytown, Texas 77520  
 281-420-3132

This is to certify that the Planning Commission of the City of Houston, Texas, has approved this plat (or instrument when appropriate) and subdivision of Huffman Business Park in conformance with the laws of the State of Texas and the ordinances of the City of Houston, as shown hereon, and authorized the recording of this plat (or instrument when appropriate) this \_\_\_\_\_ day of \_\_\_\_\_, 2016.

By: Martha L. Stein (or) M. Sonny Garza  
 Title Chair or Vice Chairman

By: Patrick Walsh, P.E.  
 Secretary



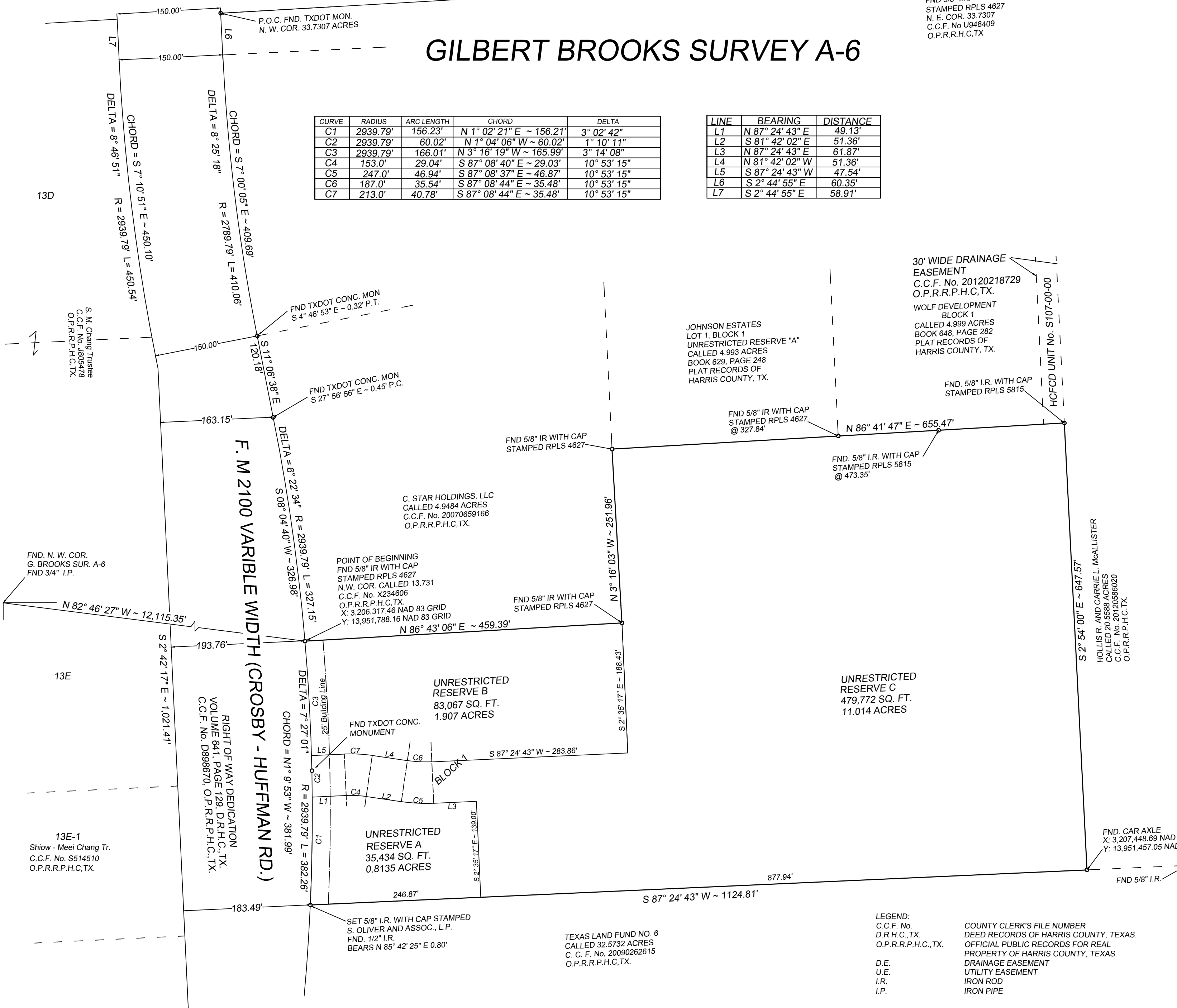
VICINITY MAP  
 KEY MAP 339B  
 SCALE 1" = 2000'

WOLF ROAD R/W 80'

GILBERT BROOKS SURVEY A-6

CURVE	RADIUS	ARC LENGTH	CHORD	DELTA
C1	2939.79'	156.23'	N 1° 02' 21" E ~ 156.21'	3° 02' 42"
C2	2939.79'	60.02'	N 1° 04' 06" W ~ 60.02'	1° 10' 11"
C3	2939.79'	166.01'	N 3° 16' 19" W ~ 165.99'	3° 14' 08"
C4	153.0'	29.04'	S 87° 08' 40" E ~ 29.03'	10° 53' 15"
C5	247.0'	46.94'	S 87° 08' 37" E ~ 46.87'	10° 53' 15"
C6	187.0'	35.54'	S 87° 08' 44" E ~ 35.48'	10° 53' 15"
C7	213.0'	40.78'	S 87° 08' 44" E ~ 35.48'	10° 53' 15"

LINE	BEARING	DISTANCE
L1	N 87° 24' 43" E	49.13'
L2	S 81° 42' 02" E	51.36'
L3	N 87° 24' 43" E	61.87'
L4	N 81° 42' 02" W	51.36'
L5	S 87° 24' 43" W	47.54'
L6	S 2° 44' 55" E	60.35'
L7	S 2° 44' 55" E	58.91'



F. M 2100 VARIABLE WIDTH (CROSBY - HUFFMAN RD.)  
 RIGHT OF WAY DEDICATION  
 VOLUME 641, PAGE 128 D.R.P.H.C.T.X.  
 C.C.F. No. D898670, O.P.R.P.H.C.T.X.

LEGEND:  
 C.C.F. No. D.R.H.C.T.X. O.P.R.P.H.C.T.X. COUNTY CLERK'S FILE NUMBER DEED RECORDS OF HARRIS COUNTY, TEXAS. OFFICIAL PUBLIC RECORDS FOR REAL PROPERTY OF HARRIS COUNTY, TEXAS.  
 O.E. DRAINAGE EASEMENT  
 U.E. UTILITY EASEMENT  
 I.R. IRON ROD  
 I.P. IRON PIPE

I, Stan Stanart, County Clerk of Harris County and ex officio clerk of the Harris County Commissioners' Court, do hereby certify that the within instrument was approved at a legally convened meeting of the Harris County Commissioners' Court held on \_\_\_\_\_, 20\_\_\_\_ by an order entered into the minutes of the court.

Stan Stanart  
 County Clerk  
 Of Harris County, Texas

By: \_\_\_\_\_  
 Deputy

I, Stan Stanart, County Clerk of Harris County, do hereby certify that the within instrument with its certificate of authentication was filed for registration in my office on \_\_\_\_\_, 20\_\_\_\_ at \_\_\_\_\_ o'clock, \_\_\_\_\_ M., and duly recorded on \_\_\_\_\_, 20\_\_\_\_ at \_\_\_\_\_ o'clock, \_\_\_\_\_ M., and at Film Code Number \_\_\_\_\_ of the Map Records of Harris County for said county.

Stan Stanart  
 County Clerk  
 Of Harris County, Texas

By: \_\_\_\_\_  
 Deputy

Witness my hand and seal of office, at Houston, the day and date last above written.

PLAT NOTES

- SITE DRAINAGE PLANS FOR THESE RESERVES MUST BE SUBMITTED TO HARRIS COUNTY FLOOD CONTROL DISTRICT AND HARRIS COUNTY ENGINEERING DEPARTMENT.
- ANY NEW DEVELOPMENT WITHIN THE SUBDIVISION PLAT SHALL OBTAIN A STORM WATER QUALITY PERMIT BEFORE THE ISSUANCE OF ANY DEVELOPMENT PERMITS.
- THIS PLAT REQUIRES COMPLIANCE WITH LANDSCAPING REQUIREMENTS PRIOR TO OCCUPANCY OF STRUCTURES AS MANDATED IN REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE.
- A PRIVATE WATER WELL MUST BE PRESSURE CEMENTED AND CANNOT BE CONSTRUCTED WITHIN 50 FEET TO THE PROPERTY LINE. A PRIVATE NON-PRESSURE CEMENTED WATER WELL CANNOT BE CONSTRUCTED WITHIN 100 FEET OF THE PROPERTY LINE.
- THE COORDINATES SHOWN HEREON ARE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE NO. 4204, STATE PLANE GRID COORDINATES AND MAY BE BROUGHT TO SURFACE BY APPLYING THE FOLLOWING COMBINED SCALE OF 1.0000574442.
- UNLESS OTHERWISE INDICATED, THE BUILDING LINES (BL), WHETHER ONE OR MORE, SHOWN ON THIS SUBDIVISION PLAT ARE ESTABLISHED TO EVIDENCE COMPLIANCE WITH THE APPLICABLE PROVISIONS OF CHAPTER 42, CODE ORDINANCES, CITY OF HOUSTON, TEXAS, IN EFFECT AT THE TIME THIS PLAT WAS APPROVED, WHICH MAY BE AMENDED FROM TIME TO TIME.
- ABSENT WRITTEN AUTHORIZATION BY THE AFFECTED UTILITIES, ALL CENTERPOINT ENERGY AND CITY OF HOUSTON UTILITY EASEMENTS MUST BE KEPT UNOBSTRUCTED FROM ANY NON-UTILITY IMPROVEMENTS OR OBSTRUCTIONS BY THE PROPERTY OWNER. ANY UNAUTHORIZED IMPROVEMENTS OR OBSTRUCTIONS MAY BE REMOVED BY THE UTILITY AT THE OWNER'S EXPENSE.

STATE OF TEXAS  
 COUNTY OF HARRIS

BEFORE ME, the undersigned authority, on this day personally appeared Stanley A. Oliver, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this \_\_\_\_\_ day of \_\_\_\_\_, 2016

Notary Public in and for the State of Texas  
 Print Name \_\_\_\_\_

My Commission expires: \_\_\_\_\_

STATE OF TEXAS  
 COUNTY OF HARRIS

BEFORE ME, the undersigned authority, on this day personally appeared Frances A. Oliver, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this \_\_\_\_\_ day of \_\_\_\_\_, 2016

Notary Public in and for the State of Texas  
 Print Name \_\_\_\_\_

My Commission expires: \_\_\_\_\_

I, John R. Blount, County Engineer of Harris County, hereby certify that the plat of this subdivision complies with all the existing rules and regulations of this office as adopted by the Harris County Commissioners' Court and that it complies or will comply with all applicable provisions of the Harris County Road Law as amended and all other Court adopted drainage requirements.

John R. Blount, P.E., LEED AP  
 County Engineer

GENERAL CONSTRUCTION NOTES:

CONTRACTOR IS TO REMOVE ALL GRASS AND ROOT MASS TO A MINIMUM DEPTH OF SIX INCHES AND DISPOSE OF IT IN A SITE APPROVED BY THE ENGINEER.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THEIR REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

CONTRACTOR SHALL CALL TEXAS ONE CALL AT 811 OR LONE STAR NOTIFICATION SYSTEM AT 713 223-4567 48 HOURS (TWO BUSINESS DAYS) PRIOR TO THE START OF CONSTRUCTION.

THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE TO THEM.

CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.

CONTRACTOR SHALL COORDINATE AND BE RESPONSIBLE FOR THE COST OF REMOVAL AND/OR ADJUSTMENT OF UTILITY FACILITIES WITHIN THE WORK ZONE.

THE CONTRACTOR SHALL MAINTAIN EXISTING DITCHES AND CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES.

THE CONTRACTOR SHALL PROVIDED AND MAINTAIN EROSION CONTROL DEVICES INCLUDING SILT FENCES ROCK DAMS AND OTHER DEVICES TO CONTROL GROUND AND SURFACE WATER QUALITY.

THE CONTRACTOR SHALL PROVIDE A MINIMUM OF SIX INCHES VERTICAL CLEARANCE AT ALL CROSSINGS OF SANITARY SEWERS, STORM SEWERS, AND WATER LINES. THE CONTRACTOR SHALL COMMENCE WORK ONLY AFTER PERMITS ARE OBTAINED AND COPIES ARE KEPT ON SITE.

IF IT BECOMES NECESSARY TO OPERATE MACHINERY ON A PORTION OF THE PAVEMENT, PRECAUTIONS MUST BE TAKEN TO PREVENT ANY DAMAGE.

THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, SEQUENCE, TECHNIQUES AND SCHEDULING ALL ELEMENTS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY IN OR ABOUT THE JOB SITE IN ACCORDANCE WITH ANY HEALTH OR SAFETY PRECAUTIONS, REGULATIONS, STANDARD OR CODES REQUIRED BY OSHA OR ANY OTHER REGULATORY AGENCY.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND USE OF TRENCH SHORING SYSTEMS TO BE IN COMPLIANCE WITH STATE AND OSHA REQUIREMENTS.

CONTRACTOR SHALL REMOVE ALL TREE STUMPS AND ROOTS 0.5" DIAMETER AND LARGER UNDER PROPOSED CONCRETE FOUNDATIONS OR PAVEMENT.

THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIAL AND EQUIPMENT STORED ON THE JOBSITE.

ALL TESTING PROCEDURES USED ON THIS PROJECT SHALL CONFORM TO THE APPROPRIATE SPECIFICATIONS. THE INITIAL TESTING EXPENSE SHALL BE BORNE BY THE OWNER. IF ANY OF THE TEST RESULTS DO NOT MEET THE TESTING STANDARDS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE OR REPLACE SUCH MATERIAL SO THAT THE TESTING STANDARDS CAN BE MET. ADDITIONAL TESTING TO COMPLY WITH THESE STANDARDS SHALL BE AT THE CONTRACTOR'S EXPENSE.

ALL FINISHED GRADES SHALL VARY UNIFORMLY BETWEEN FINISHED ELEVATIONS.

ALL PROPOSED TOPS OF FOUNDATIONS (SLABS) ARE MINIMUM ELEVATIONS REQUIRED.

CONTRACTOR SHALL NOTIFY HARRIS COUNTY AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK AT 713 247-3939.

SITE CONTRACTOR TO PROVIDE HEIGHT ADJUSTMENTS FOR ALL EXISTING VALVE BOXES, MANHOLE CASTINGS, CLEANOUTS, ETC., TO MATCH NEW GRADES.

CONTRACTOR SHALL OBTAIN AND PAY ANY COST INCURRED FOR ALL CONSTRUCTION PERMITS AND TAP FEES.

ALL TRENCHES SHALL BE SHORED IN ACCORDANCE WITH OSHA REGULATIONS.

ANY SPOIL AND/OR UNSUITABLE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT HIS EXPENSE IN AN APPROVED MANNER AT AN OFFSITE LOCATION.

CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (1980 EDITION) DURING CONSTRUCTION TO PROVIDE COMPLETE SAFETY TO THE GENERAL PUBLIC.

CONTRACTOR SHALL CONTACT AND COORDINATE WITH ADJOINING PROPERTY OWNERS PRIOR TO REMOVING ANY FENCES.

CONTRACTOR SHALL HYDRO MULCH THE ENTIRE DETENTION POND AREA TO HARRIS COUNTY FLOOD CONTROL SPECIFICATIONS.

PAVING SPECS

THE CONTRACTOR SHALL PROOF ROLL SUBGRADE WITH A LOADED DUMP TRUCK OF BETWEEN 25 AND 50 TONS TO DETECT SOFT SPOTS IN ACCORDANCE WITH TXDOT STANDARD SPECIFICATION ITEM 216. DETECTED SOFT SPOTS ARE TO BE REMOVED TO FIRM SUBBASE AND RECOMPACTED WITH SELECT FILL TO 95% STANDARD PROCTOR (ASTM D698) WITHIN +/- 2% OF OPTIMUM MOISTURE CONTENT.

USE SELECT FILL CONSISTING OF LEAN CLAY WITH A LIQUID LIMIT OF LESS THAN 40 AND A PI BETWEEN 12 AND 20 PLACED AND COMPACTED IN 8 INCH LIFTS TO 95% OF STANDARD PROCTOR AND +/- 2% OF OPTIMUM MOISTURE CONTENT TO REACH FINAL GRADE UNLESS NOTED OTHERWISE.

SELECT FILL SHALL BE PLACED UNDER PROPOSED PAVING AND EXTEND TWO FEET OUTSIDE OF THE EDGE OF PROPOSED PAVING.

THE TOP 6 INCHES OF SUBGRADE UNDER 6 INCH PROPOSED PAVING SHALL BE STABILIZED WITH 6% LIME (32 POUNDS DRY WEIGHT) SQUARE YARD OF STABILIZED SUBGRADE UNLESS PLACED ON SELECT FILL.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF RETESTING ALL FAILED TEST.

OWNER RESERVES THE RIGHT TO RETEST SOIL COMPACTION IN THE EVENT OF A 1/2" INCH (ONE-HALF INCH) RAIN.

FOR PAVING DESIGNATED AS 6" THICK USE 6 SACK, 4000 PSI REINFORCED CONCRETE WITH #4 BARS SPACED AS SHOWN ON THE PLANS.

CONCRETE SIDEWALKS ARE TO BE CONSTRUCTED THROUGHOUT THIS PROJECT AS PER THE PLANS.

THE CROSS SLOPE ON ANY ACCESSIBLE ROUTE SHALL NOT EXCEED 1:50.

ALL FIRE LANES MUST BE CONTINUOUSLY MARKED WITH RED PAINT ON THE FACE AND TOP OF THE CURB ON BOTH SIDES OR, IF NO CURB EXIST, WITH A RED STRIPE AT LEAST FOUR INCHES WIDE. IN THREE INCH WHITE LETTERS. THE LETTERING "FIRE LANE - NO PARKING" SHALL OCCUR AT 25-FOOT INTERVALS ALONG THE FIRE LANE. IN ADDITION, APPROVED SIGNS SHALL BE INSTALLED WHERE THE FIRE LANE ADJOINS A PUBLIC WAY AND EVERY 100 FEET ALONG BOTH SIDES OF THE FIRE LANE. SEE PLAT FOR LOCATION OF FIRE LANES.

FAILURE TO MEET THE REQUIREMENTS THROUGH THE TESTING PROCEDURE WILL RESULT IN THE REJECTION OF THAT PORTION DEEMED TO BE DEFICIENT.

FAILURE OF A PAVEMENT TO MEET THESE MINIMUM REQUIREMENTS WILL RESULT IN THE REJECTION OF PAVEMENT. IMMEDIATE REMOVAL AND REPLACEMENT OF SUBSTANDARD PAVEMENT SECTIONS WILL BE NECESSARY TO SATISFY THESE REQUIREMENTS.

PAVEMENTS EXCEEDING DEPTH OR STRENGTH REQUIREMENTS WILL BE ACCEPTED IF BOTH CRITERIA MEET THE MINIMUM ESTABLISHED REQUIREMENTS.

JOINTS AND VERTICAL CURB JOINTS TO BE SEALED WITH LIQUID RUBBER CONFORMING TO T.M.D. ITEM 380.2 (7) CLASS 1-b (TWO COMPONENT, SYNTHETIC POLYMER, COLD-POURABLE, SELF-LEVELING TYPE.)

SEE PLANS FOR EXPANSION JOINT LAYOUT.

CONTRACTOR SHALL PROVIDE AND MAINTAIN A LINED CONCRETE WASHOUT AREA ON THE SITE AND SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL CONCRETE WASTE IN AN APPROVED METHOD BY THE OWNER OR ITS REPRESENTATIVE.

STORM SEWER SPEC

STORM SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATIONS LATEST REVISIONS.

ALL STORM SEWERS 12" AND LARGER SHALL BE REINFORCED CONCRETE PIPE A.S.T.M. C-76 CLASS III, INCLUDING INLET LEADS CROSSING UNDER EXISTING OR PROPOSED PAVEMENT OR AS AN ALTERNATIVE ADS N-12-WT IB PIPE CONFORMING TO ASTM 2848 SPECIFICATIONS MAY BE USED, UNLESS OTHERWISE NOTED.

ALL STORM SEWER DRAINS BELOW 12" INCHES IN DIAMETER SHALL BE SDR 26 PVC CONFORMING TO ASTM D3034 SPECIFICATIONS UNLESS NOTED OTHERWISE.

STORM SEWER SHALL BE INSTALLED, BEDDED AND BACKFILLED IN CONFORMITY TO THE STANDARD DETAIL SHEETS. BACKFILL UNDER OR WITHIN 1' (ONE FOOT) OF EXISTING OR PROPOSED PAVEMENT WITH CEMENT STABILIZED SAND (1-1/2 SACKS PER CUBIC YARD MIX).

CONTRACTOR SHALL PROVIDE A MINIMUM OF 6" (SIX INCHES) CLEARANCE AT STORM SEWER AND WATER LINE CROSSINGS, AND A MINIMUM OF 12" (TWELVE INCHES) AT STORM SEWER AND SANITARY SEWER CROSSINGS.

MATERIAL SPECIFICATIONS

ALL LATEST REVISION OF THE SPECIFIED STANDARD SHALL BE USED.

ALL BELOW GROUND WATER LINES 3 INCHES AND SMALLER DIAMETER SHALL BE SCHEDULE 40 PVC CONFORMING TO ASTM D 1785 SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL BELOW GROUND WATER LINES 4-12 INCHES IN DIAMETER SHALL MEET AWWA C900 SPECIFICATIONS UNLESS NOTED OTHERWISE

ALL ABOVE GROUND WATER LINES 3 INCHES AND SMALLER SHALL BE SCHEDULE 40 GALVANIZED SEAMLESS IRON PIPE CONFORMING TO ASTM A 53 GRADE B SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL STRUCTURAL STEEL SHALL BE GALVANIZED TO ASTM A-123 SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL STRUCTURAL STEEL SHELL MEET ASTM A-36 SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60 SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL CHAIN LINK FENCING SHALL CONFORM TO TXDOT ITEM 550 SPECIFICATIONS WITH WIRE FABRIC MEETING ASTM A392 CLASS 1 OR ASTM A491 SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL EXCAVATIONS REQUIRING DEWATERING SHALL BE DEWATER IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION NUMBER 1578 UNLESS NOTED OTHERWISE.

ALL FLOWABLE FILL SHALL MEET CITY OF HOUSTON SPECIFICATION 02322 AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI WITHIN 48 HOURS.

ALL GATE VALVES SHALL BE IRON BODY, CLASS 125 BOLTED BONNET NON RISING STEM, BRONZE TRIM THREADED ENDS OR APPROVED EQUAL MEETING THE REQUIREMENTS OF AWWA C500 SPECIFICATIONS UNLESS NOTED OTHERWISE.

FOR PAVEMENT FINISH USE BURLAP DRAG OR BELTED FINISH, UNLESS OTHERWISE NOTED.

ALL CONCRETE CURING COMPOUND SHALL BE TYPE 2 MEMBRANE CURING COMPOUND MEETING TXDOT DMS 4650 STANDARDS UNLESS OTHERWISE NOTED.

ALL ASPHALT SHALL BE FURNISHED AND INSTALLED IN COMPLIANCE WITH ASTM SPECIFICATION D6114 UNLESS NOTED OTHERWISE.

ANY PRECAST INLETS SHALL BE DESIGNED TO AASHO H-20 LOADING UNLESS NOTED OTHERWISE.

ALL JOINT SEALANT SHALL CONFORM TO ASTM D3436 SPECIFICATIONS UNLESS NOTED OTHERWISE.

ALL REINFORCED CONCRETE PIPE SHALL MEET ASTM C-76 SPECIFICATIONS.

ALL CEMENT STABILIZED SAND SHALL CONTAIN 1-1/2 SACKS OF TYPE I PORTLAND CEMENT PER CUBIC YARD OF SAND UNLESS NOTED OTHERWISE.

ALL CONCRETE SHALL BE 6-SACK(TYPE I PORTLAND CEMENT), WITH A MAXIMUM SLUMP OF 4", AND A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS UNLESS NOTED OTHERWISE.



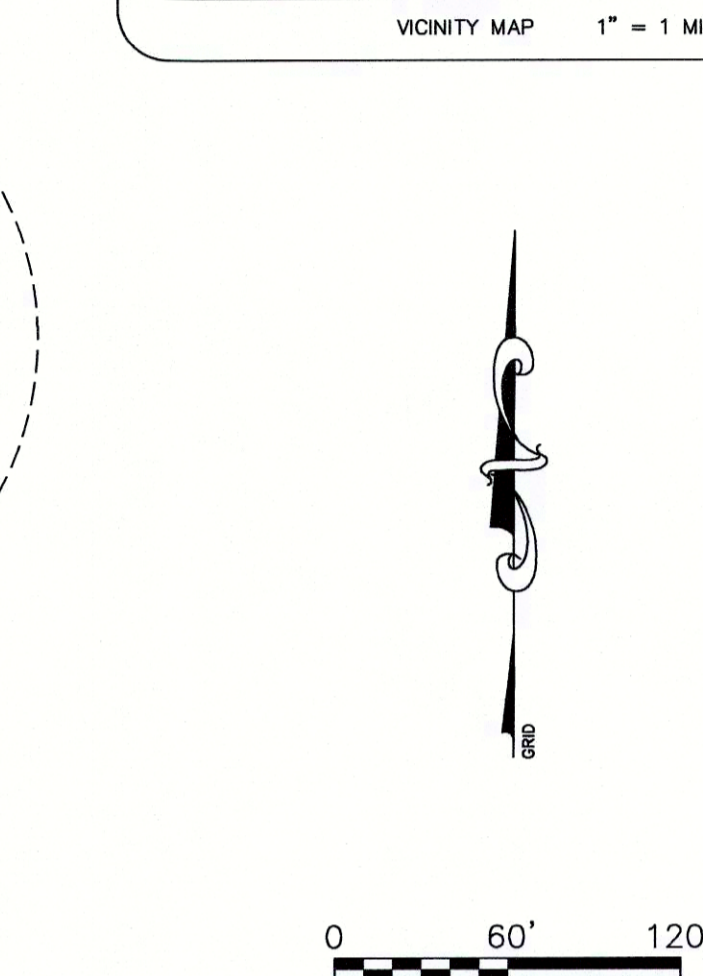
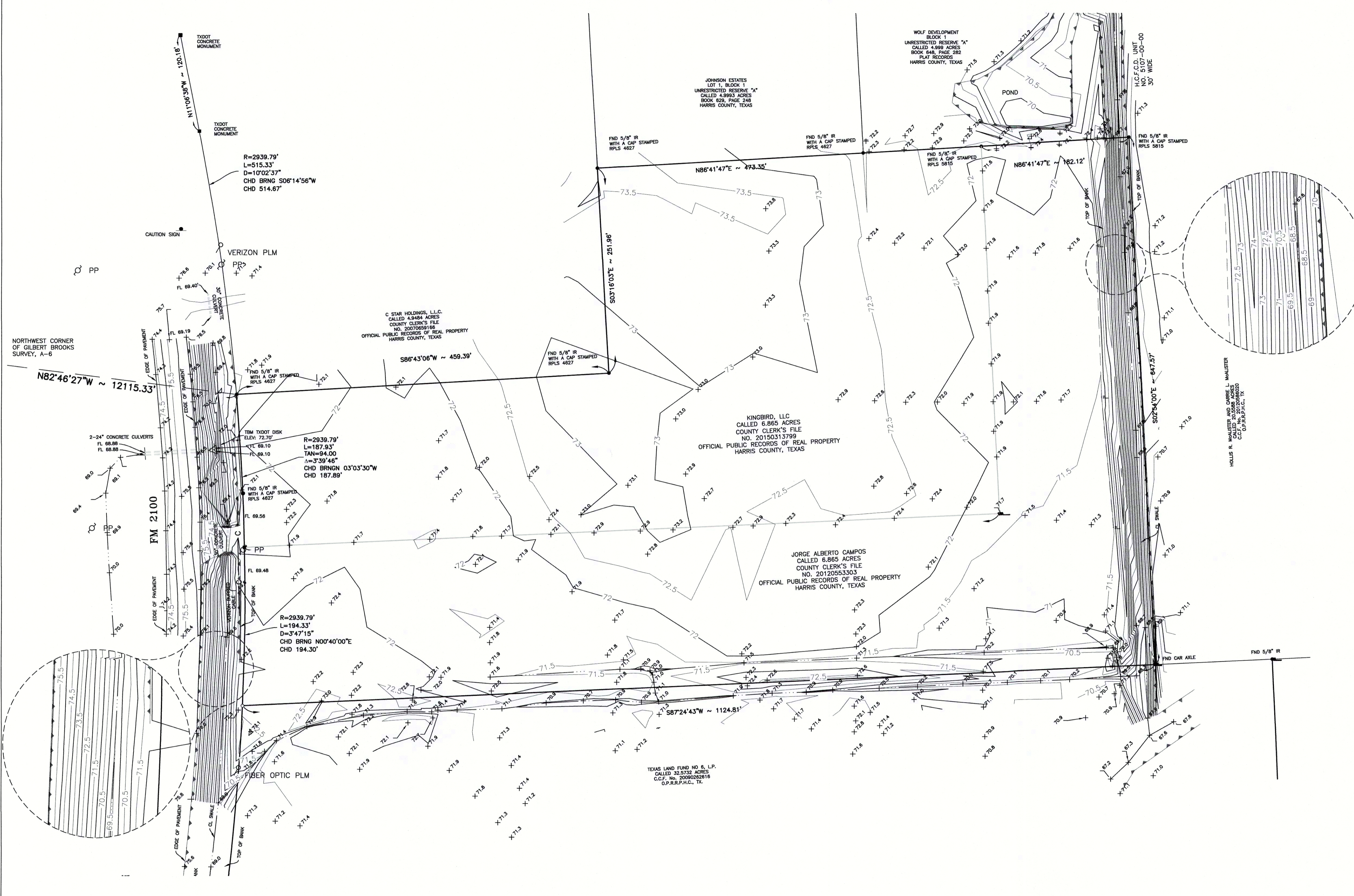
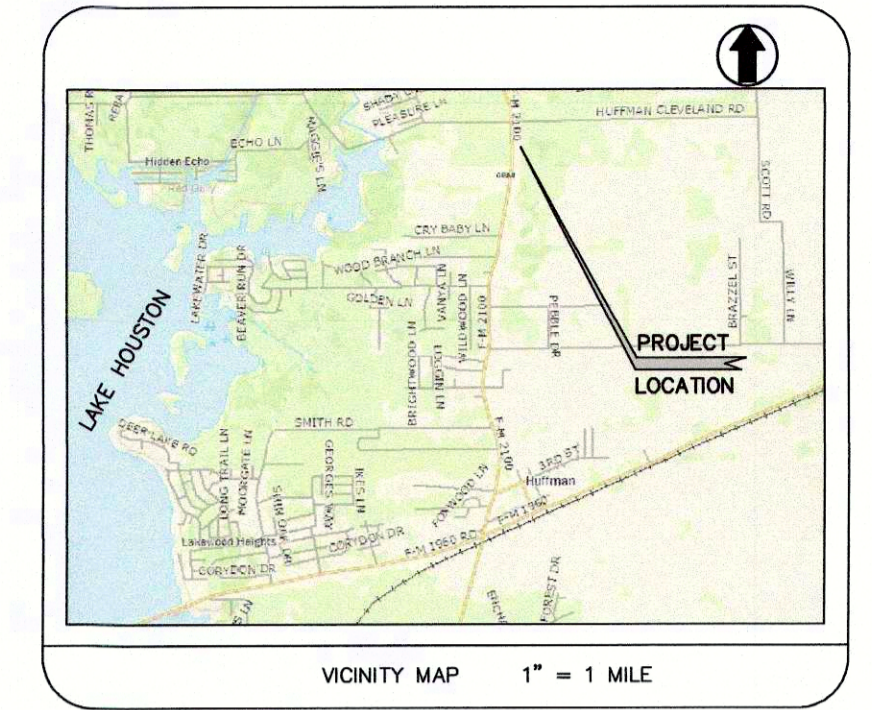
**SHT. 3 NOTES AND SPECIFICATIONS  
HUFFMAN BUSINESS PARK  
HARRIS COUNTY, TEXAS**

**HANS CONSULTING COMPANY**  
Professional Engineers TBPE Firm # F4537  
Registered Professional Land Surveyors TBPLS #101295  
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net

DRAWN BY	DATE	SHEET	OF	REVISED
GMH	3/22/18	3	15	
DESIGNED BY	SCALE	PROJECT NO.		
CHKD BY	1" = 40'	1563		

# HARRIS COUNTY, TEXAS

## GILBERT BROOKS SURVEY, A-6



- NOTES:**
- ALL BEARINGS ARE BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204), AND BASED ON THE WESTERN DATA TRIMBLE VRS NETWORK'S DATUM OF NAD 83 (2011) EPOCH 2010.00.
  - ALL DISTANCES SHOWN HEREON ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING THE SURFACE DISTANCE BY THE COMBINED SCALE FACTOR OF 0.999942551.
  - THIS TRACT WAS DETERMINED TO BE IN ZONE X. AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP, PANEL NUMBER 4820103040L, REVISED JUNE 16, 2007.
  - THE BOUNDARY SURVEY HAS BEEN PREPARED AS A RESULT OF AN ON THE GROUND SURVEY AND IS SUBMITTED WITH A LEGAL DESCRIPTION PREPARED OF EVEN DATE.
  - ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO NAVD88 AND ARE BASED ON THE HARRIS COUNTY FLOOD PLAN REFERENCE MARK NO. 180015, ELEVATION = 53.56'.

- LEGEND**
- ⊙ - SET 60D NAIL
  - ⊙ - SET 5/8" IR WITH A CAP STAMPED "S. OLIVER & ASSOC."
  - ✕ - SET "X" CUT
  - - FOUND IRON ROD AS NOTED
  - - FOUND
  - FND - MAP RECORDS, HARRIS COUNTY, TEXAS
  - D.R.H.C. TX - DEED RECORDS, HARRIS COUNTY, TEXAS COUNTY
  - C.C.F. No. - COUNTY CLERK'S FILE NUMBER
  - O.P.R.R.P.H.C. TX - OFFICIAL PUBLIC RECORDS FOR REAL PROPERTY, HARRIS COUNTY, TEXAS
  - AC - ACRES
  - U/E - UTILITY EASEMENT
  - R.O.W. - RIGHT-OF-WAY
  - (C.M.) - CONTROL MONUMENT
  - P.P. - POWER POLE
  - TS - TRAFFIC SIGN
  - P.O.B. - POINT OF BEGINNING
  - P.O.C. - POINT OF COMMENCEMENT

I, Marvin L. Mardock, a Registered Professional Land Surveyor in the State of Texas do hereby certify that this survey was prepared from an actual on the ground survey of the real property shown hereon conducted by me or under my supervision on January 21, 2016, and that this survey correctly represents the facts found at the time of the survey.

*Marvin L. Mardock* 01/21/16



**S Oliver & Associates, L.P.**  
Surveying & Mapping

7507 TAMM DRIVE  
ELECTRON, TEXAS 77523  
WWW.SOLIVERANDASSOCIATES.COM  
FAX (281) 624-9407

REV.	DATE	DESCRIPTION	DWN	CHKD	APPD
0	01-06-16	ORIGINAL	JMB	SO&A	
1	01-07-16	PAVEMENT SHOTS ADDED	JMB	SO&A	
2	01-13-16	FLOWLINE OF DITCH SHOTS ADDED	JMB	SO&A	
3	01-21-16	TIE IN HCFCD RM #180015	MLM	SO&A	

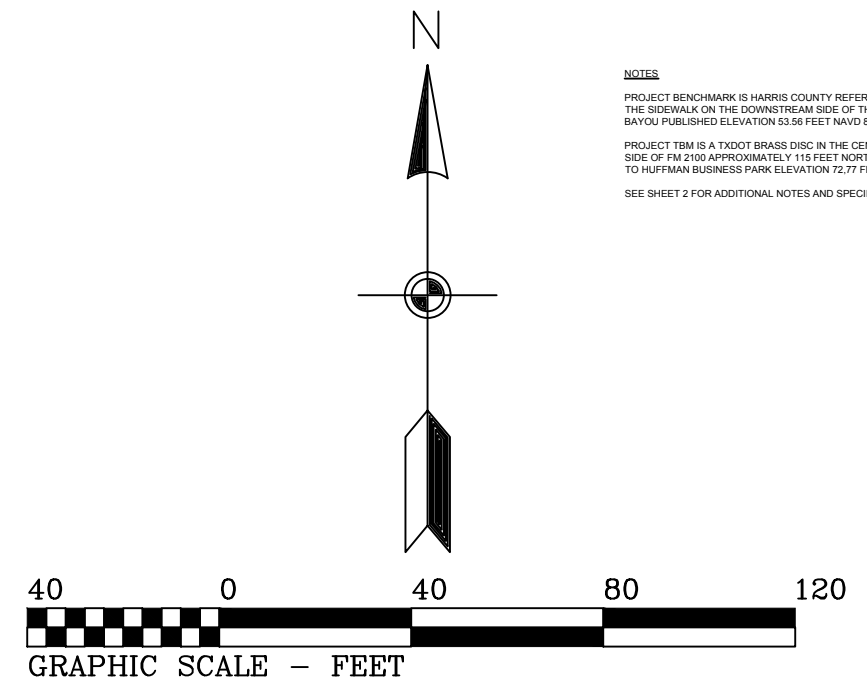
**HANS CONSULTING COMPANY**  
Professional Engineers TBPE Firm # F4537  
Registered Professional Land Surveyors TBPLS #101295

P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email gmane@teleshare.net

DRAWN BY: DATE 01/21/16 SHEET 1 OF 1 REVISED

MLM SCALE 1"=60' PROJECT NO. 15-088-000

DESIGNED BY: CHK'D BY GH



PROJECT BENCHMARK IS HARRIS COUNTY RESERVE MARK WELLS LOCATED IN THE CENTER OF THE RESERVE ON THE GOVERNMENT SIDE OF THE 1/4 SECTION 5, T12N, R10E, S12E. THE BENCHMARK ELEVATION IS 85.12 FEET NAVD83. THE BENCHMARK IS APPROXIMATELY 1/4 MILE NORTH OF THE CENTER OF THE RESERVE. THE BENCHMARK IS APPROXIMATELY 1/4 MILE WEST OF THE CENTER OF THE RESERVE. THE BENCHMARK IS APPROXIMATELY 1/4 MILE WEST OF THE CENTER OF THE RESERVE. THE BENCHMARK IS APPROXIMATELY 1/4 MILE WEST OF THE CENTER OF THE RESERVE.

**HUFFMAN BUSINESS PARK**  
STORM WATER QUALITY CALCULATIONS

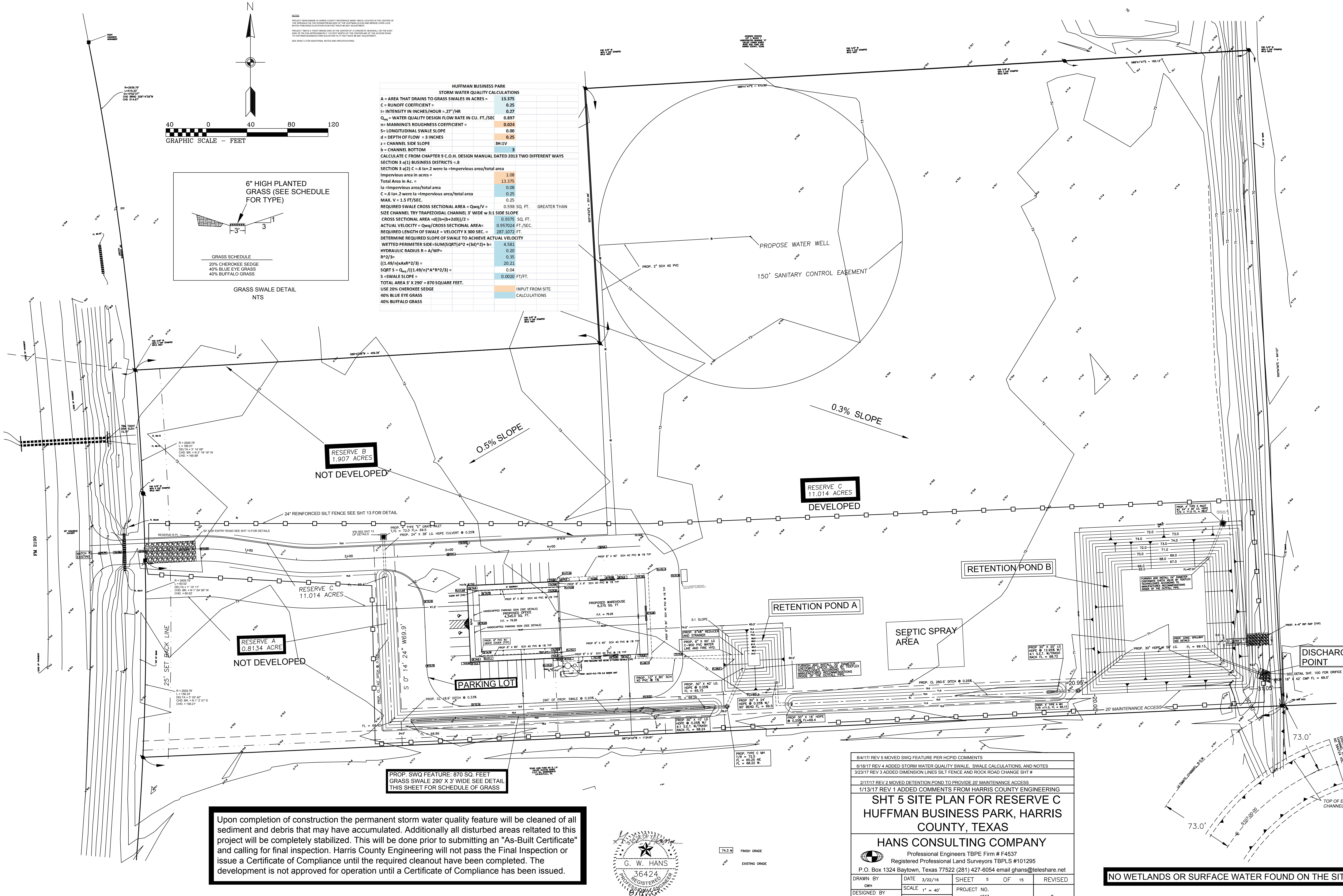
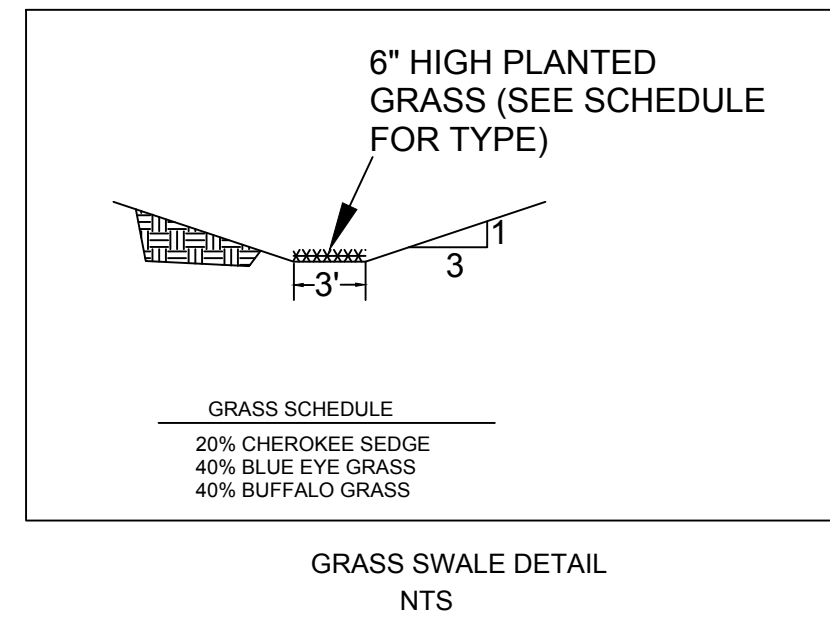
A = AREA THAT DRAINS TO GRASS SWALES IN ACRES =	13.375
C = RUNOFF COEFFICIENT =	0.25
I = INTENSITY IN INCHES/HOUR =	2.7
Q <sub>sw</sub> = WATER QUALITY DESIGN FLOW RATE IN CU. FT./SEC =	0.897
n = MANNING'S ROUGHNESS COEFFICIENT =	0.024
S = LONGITUDINAL SWALE SLOPE =	0.00
d = DEPTH OF FLOW =	3 INCHES
z = CHANNEL SIDE SLOPE =	3H:1V
b = CHANNEL BOTTOM	3

CALCULATE C FROM CHAPTER 9 C.O.H. DESIGN MANUAL DATED 2013 TWO DIFFERENT WAYS  
SECTION 3 a(1) BUSINESS DISTRICTS = 8

SECTION 3 a(2) C = 6 la+2 were la = impervious area/total area	1.08
Impervious area in acres =	13.375
Total Area in acres =	0.08
la = impervious area/total area	0.25
C = 6 la+2 were la = impervious area/total area	0.25
MAX. V = 1.5 FT./SEC.	0.25

REQUIRED SWALE CROSS SECTIONAL AREA =  $Q_{sw}/V = 0.598$  SQ. FT. GREATER THAN  
SIZE CHANNEL TRY TRAPEZOIDAL CHANNEL 3' WIDE w 3:1 SIDE SLOPE  
CROSS SECTIONAL AREA =  $(b+(b+zS)D)/2 = 0.9375$  SQ. FT.  
ACTUAL VELOCITY =  $Q_{sw}/\text{CROSS SECTIONAL AREA} = 0.957024$  FT./SEC.  
REQUIRED LENGTH OF SWALE =  $VELOCITY \times 300 \text{ SEC.} = 287.1072$  FT.  
DETERMINE REQUIRED SLOPE OF SWALE TO ACHIEVE ACTUAL VELOCITY  
WETTED PERIMETER SIDE =  $SUM(\sqrt{D^2+(zD)^2}) + b = 4.581$   
HYDRAULIC RADIUS R =  $A/WP = 0.30$   
 $R^2/3 = 0.35$   
 $((1.49/n) \times A \times R^2/3) = 20.21$   
 $SQRT S = Q_{sw} / ((1.49/n) \times A \times R^2/3) = 0.04$   
S = SWALE SLOPE = 0.0020 FT./FT.

TOTAL AREA 3' X 290' = 870 SQUARE FEET.  
USE 20% CHEROKEE SEDGE  
40% BLUE EYE GRASS  
40% BUFFALO GRASS



Upon completion of construction the permanent storm water quality feature will be cleaned of all sediment and debris that may have accumulated. Additionally all disturbed areas related to this project will be completely stabilized. This will be done prior to submitting an "As-Built Certificate" and calling for final inspection. Harris County Engineering will not pass the Final Inspection or issue a Certificate of Compliance until the required cleanup have been completed. The development is not approved for operation until a Certificate of Compliance has been issued.



8/17/17 REV 5 MOVED SWQ FEATURE PER HCPID COMMENTS
6/19/17 REV 4 ADDED STORM WATER QUALITY SWALE, SWALE CALCULATIONS, AND NOTES
3/23/17 REV 3 ADDED DIMENSION LINES SILT FENCE AND ROCK ROAD CHANGE SHIT #
2/17/17 REV 2 MOVED DETENTION POND TO PROVIDE 20' MAINTENANCE ACCESS
1/13/17 REV 1 ADDED COMMENTS FROM HARRIS COUNTY ENGINEERING
<b>SHT 5 SITE PLAN FOR RESERVE C</b>
<b>HUFFMAN BUSINESS PARK, HARRIS COUNTY, TEXAS</b>
<b>HANS CONSULTING COMPANY</b>
Professional Engineers TBPE Firm # F4537
Registered Professional Land Surveyors TBPLS #101295
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net
DRAWN BY: DATE: 3/22/16 SHEET: 5 OF 15 REVISED:
DESIGNED BY: SCALE: 1" = 40' PROJECT NO.: 1563
CHK'D BY: 5

**NO WETLANDS OR SURFACE WATER FOUND ON THE SITE**

PROJECT BENCHMARK IS HARRIS COUNTY RESERVE MARKS LOCATED IN THE CENTER OF THE RESERVE AS PER THE REQUIREMENTS OF THE HARRIS COUNTY FLOOD CONTROL DISTRICT. BENCHMARK ELEVATION IS 88 FEET NAVD83 (2011 ADJUSTMENT).  
 PROJECT THERE IS 100% AREA FOR THE PURPOSE OF FLOOD PROTECTION. THE ELEVATION OF THIS AREA IS APPROXIMATELY 110 FEET TO BE THE CENTERLINE OF THE ACCESS ROAD TO THE MAIN BUILDING FROM LOCATIONS TO THE WEST AND SOUTH.  
 SEE SHEET 1 FOR ADDITIONAL NOTES AND SPECIFICATIONS.

HANS CONSULTING COMPANY  
 STORM WATER DETENTION REQUIREMENTS  
 REF: HARRIS COUNTY FLOOD CONTROL DISTRICT MANUAL  
 JOB NUMBER 1563  
 19 May 16

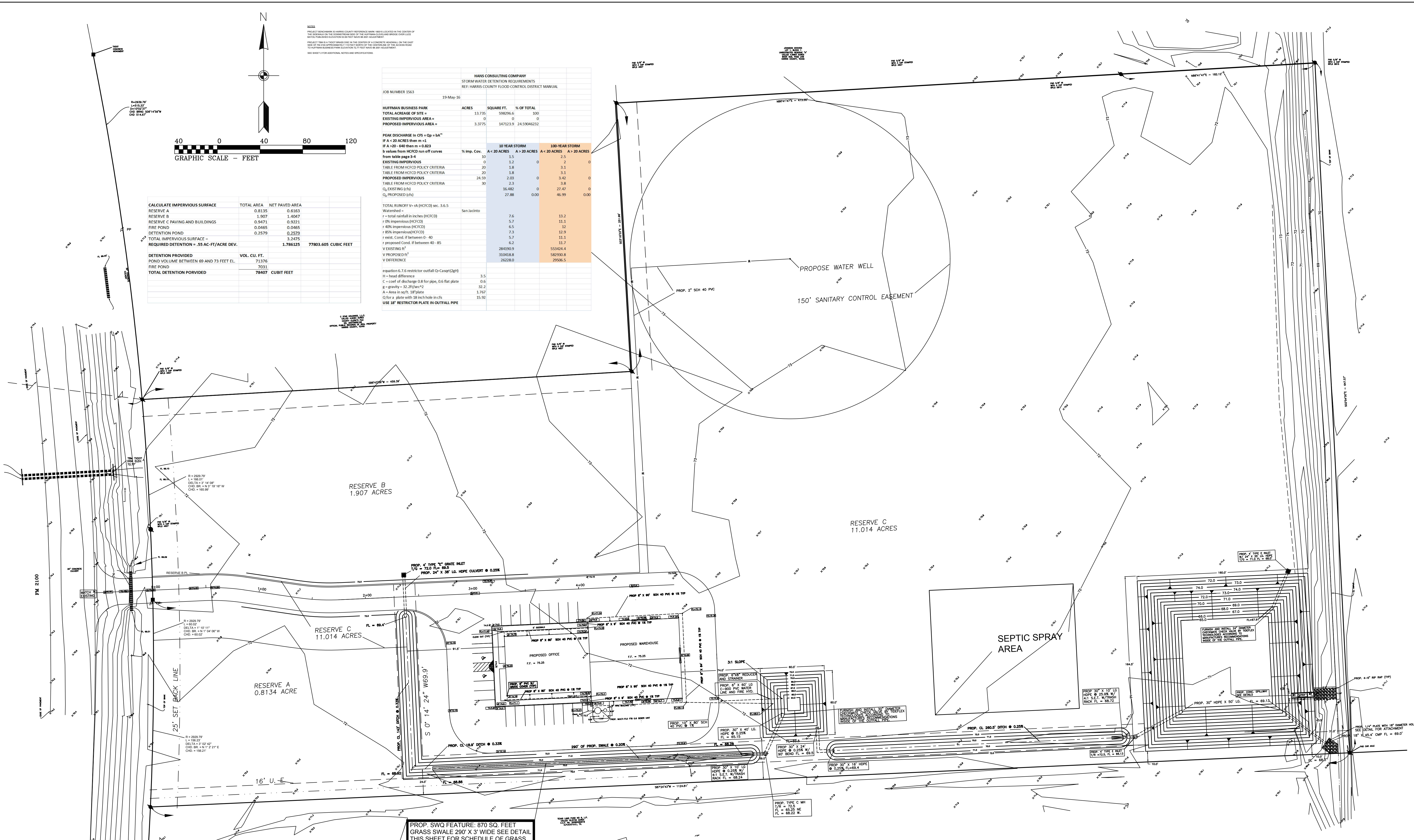
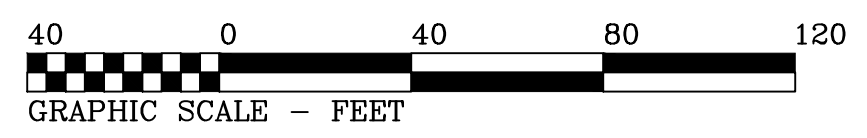
HUFFMAN BUSINESS PARK	ACRES	SQUARE FT.	% OF TOTAL
TOTAL ACRES OF SITE =	13.750	598296.0	100
EXISTING IMPERVIOUS AREA =	0	0	0
PROPOSED IMPERVIOUS AREA =	3.375	147123.0	24.5904232

PEAK DISCHARGE IN CFS = Qp = Ia <sup>n</sup> IF A < 20 ACRES then n = 1 IF A > 20 ACRES then n = 0.823 Ia values from HCFCD run off curves	% Imp. Cov.	A < 20 ACRES	A > 20 ACRES	A < 20 ACRES	A > 20 ACRES
EXISTING IMPERVIOUS	0	1.2	0	2	0
TABLE FROM HCFCD POLICY CRITERIA	20	1.8	0	3.1	0
TABLE FROM HCFCD POLICY CRITERIA	20	1.8	0	3.1	0
PROPOSED IMPERVIOUS	24.59	2.05	0	3.42	0
TABLE FROM HCFCD POLICY CRITERIA	30	2.3	0	3.8	0
Q <sub>p</sub> EXISTING (cfs)		16.482	0	27.47	0
Q <sub>p</sub> PROPOSED (cfs)		27.88	0.00	46.99	0.00

TOTAL RUNOFF V <sub>t</sub> = IA (HCFCD) sec. 3.6.5	San Jacinto	San Jacinto
Watershed =	San Jacinto	San Jacinto
r = total rainfall in inches (HCFCD)	7.6	13.2
r 0% impervious (HCFCD)	5.7	11.1
r 40% impervious (HCFCD)	6.5	12
r 80% impervious (HCFCD)	7.3	12.9
r exist. Cond. if between 0 - 40	5.7	11.1
r proposed Cond. if between 40 - 85	6.2	11.7
V EXISTING ft <sup>3</sup>	284300.9	553424.4
V PROPOSED ft <sup>3</sup>	310418.8	582930.8
V DIFFERENCE	26228.0	29506.5

equation 6.7.6 restrictor outfall Q-Casport(Dt)  
 H = head difference  
 C = coeff of discharge 0.8 for pipes, 0.6 flat plate  
 g = gravity = 32.2ft/sec<sup>2</sup>  
 A = Area in sq ft, 18" plate  
 D (for a plate with 3/8" holes in c/s  
 USE 18" RESTRICTOR PLATE IN OUTFALL PIPE

CALCULATE IMPERVIOUS SURFACE	TOTAL AREA	NET PAVED AREA
RESERVE A	0.8135	0.6163
RESERVE B	1.907	1.4047
RESERVE C PAVING AND BUILDINGS	0.9471	0.9221
FIRE POND	0.0465	0.0465
DETENTION POND	0.2579	0.2579
TOTAL IMPERVIOUS SURFACE =		
REQUIRED DETENTION = .55 AC-FT/ACRE DEV.	1.786125	77803.605 CUBIC FEET
DETENTION PROVIDED		
POND VOLUME BETWEEN 69 AND 73 FEET EL.	71376	
FIRE POND	7031	
TOTAL DETENTION PROVIDED	78407	CUBIC FEET



PROP. SWQ FEATURE: 870 SQ. FEET GRASS SWALE 290' X 3' WIDE SEE DETAIL THIS SHEET FOR SCHEDULE OF GRASS

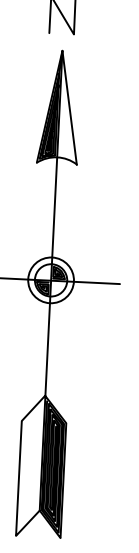
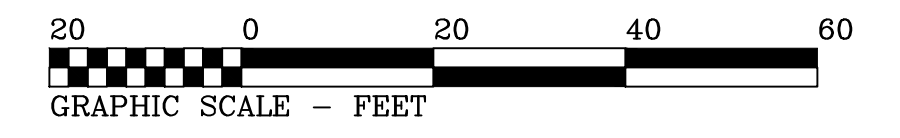
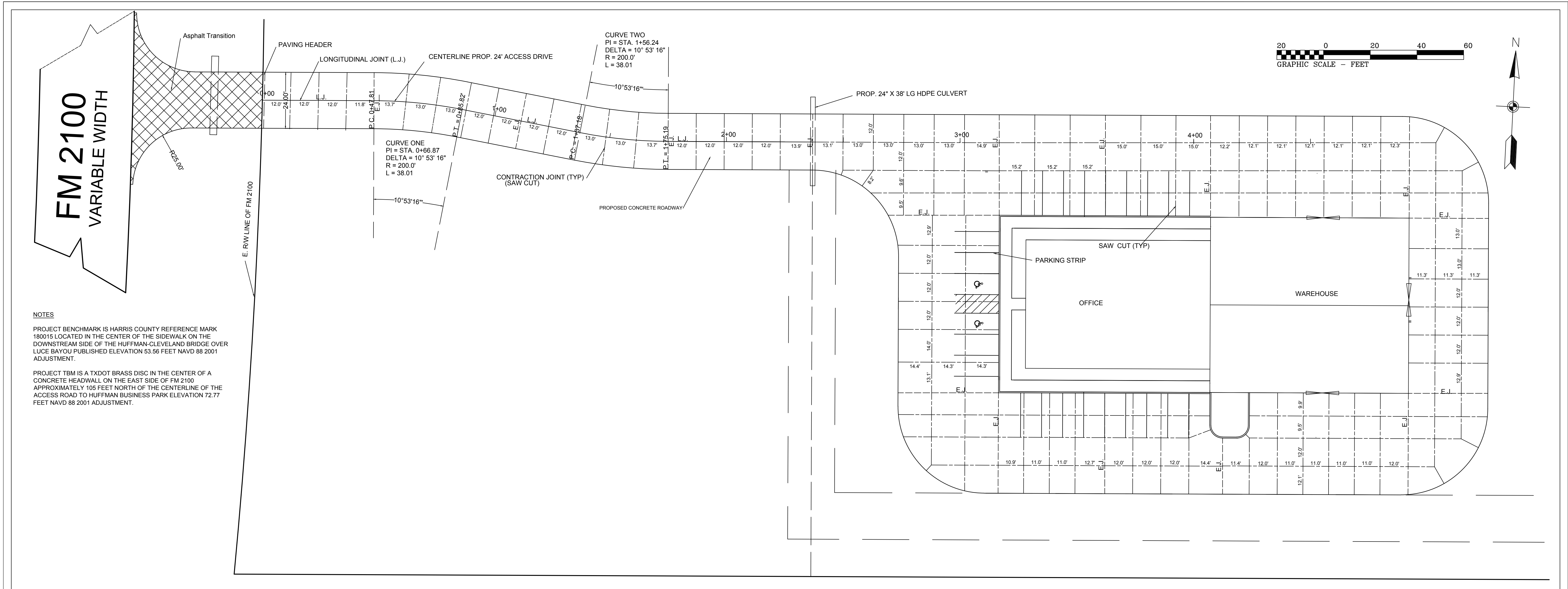


74.3 FINISH GRADE  
 80.0 EXISTING GRADE

**SITE GRADING PLAN FOR RESERVE C  
 HUFFMAN BUSINESS PARK, HARRIS  
 COUNTY, TEXAS**

**HANS CONSULTING COMPANY**  
 Professional Engineers TBPE Firm # F4537  
 Registered Professional Land Surveyors TBPLS #101295  
 P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net

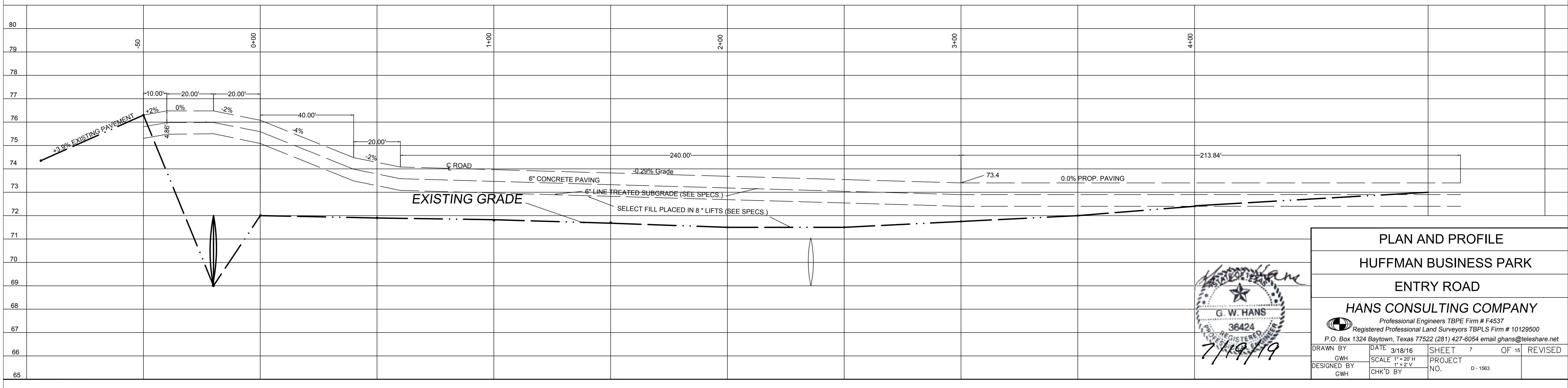
DRAWN BY OWH	DATE 3/22/16	SHEET 6	OF 15	REVISED
DESIGNED BY CHK'D BY	SCALE 1" = 40'	PROJECT NO. 1563		



**NOTES**

PROJECT BENCHMARK IS HARRIS COUNTY REFERENCE MARK 180015 LOCATED IN THE CENTER OF THE SIDEWALK ON THE DOWNSTREAM SIDE OF THE HUFFMAN CLEVELAND BRIDGE OVER LUCE BAYOU PUBLISHED ELEVATION 53.56 FEET NAVD 88 2001 ADJUSTMENT.

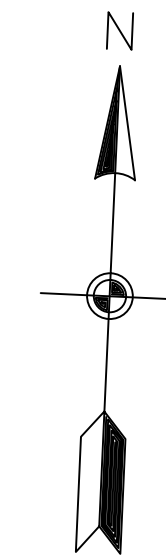
PROJECT TBM IS A TXDOT BRASS DISC IN THE CENTER OF A CONCRETE HEADWALL ON THE EAST SIDE OF FM 2100 APPROXIMATELY 105 FEET NORTH OF THE CENTERLINE OF THE ACCESS ROAD TO HUFFMAN BUSINESS PARK ELEVATION 72.77 FEET NAVD 88 2001 ADJUSTMENT.



**PLAN AND PROFILE**  
**HUFFMAN BUSINESS PARK**  
**ENTRY ROAD**  
**HANS CONSULTING COMPANY**  
Professional Engineers TBPE Firm # F4537  
Registered Professional Land Surveyors TBPLS Firm # 10129500  
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email gghans@teleshare.net

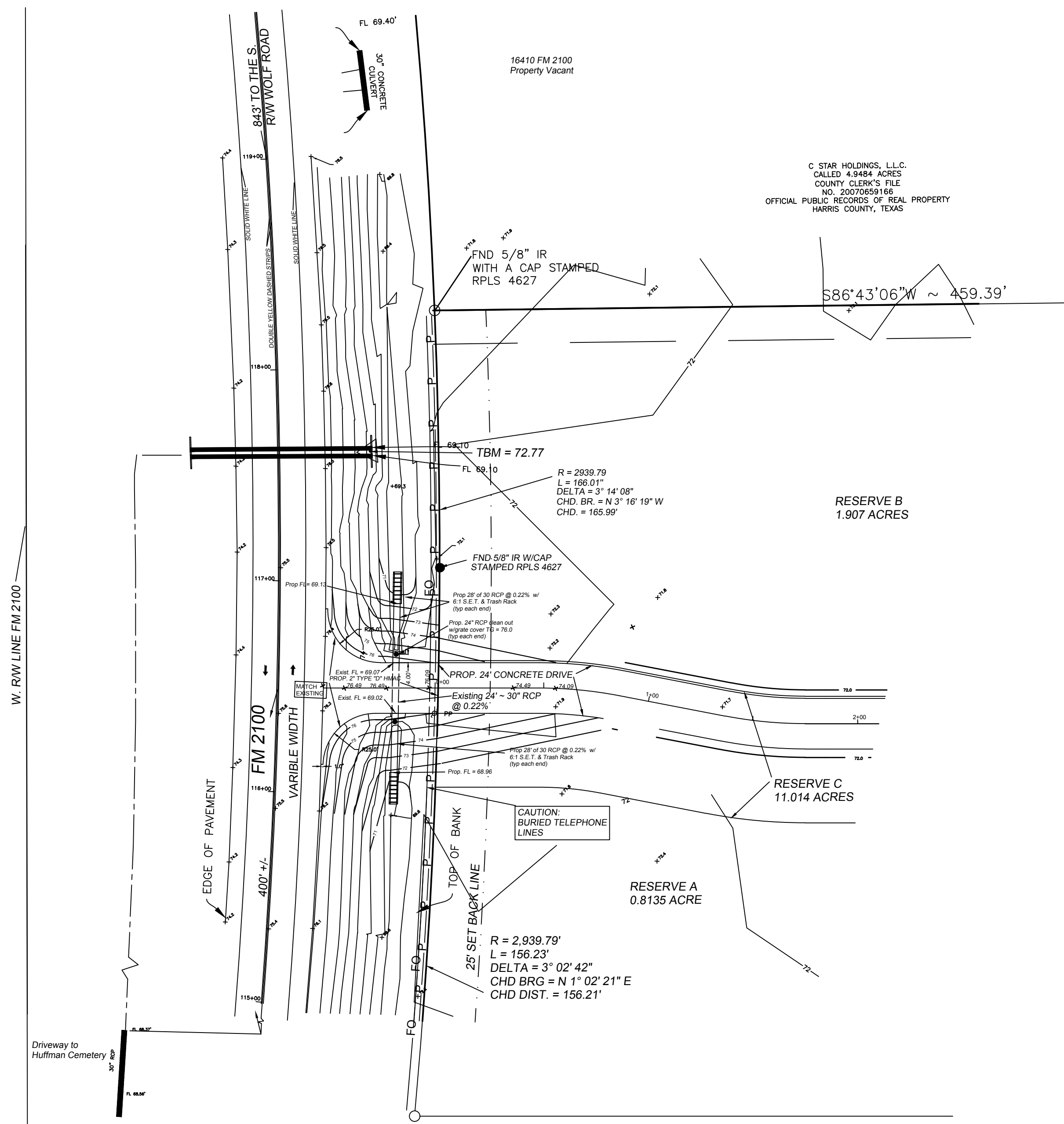
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GWH	3/18/16	7	15	
DESIGNED BY	SCALE	PROJECT		
GWH	1" = 20' H 1" = 2' V	NO.		
CHK'D BY				

**G. W. HANS**  
REGISTERED PROFESSIONAL LAND SURVEYOR  
36424  
7/19/19

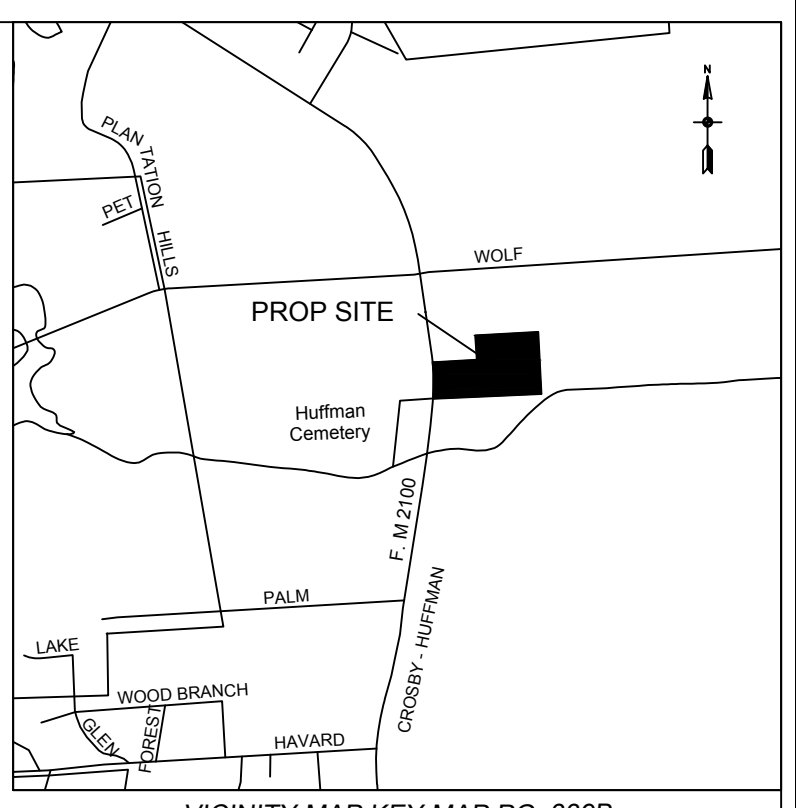


SCALE 1" = 40'

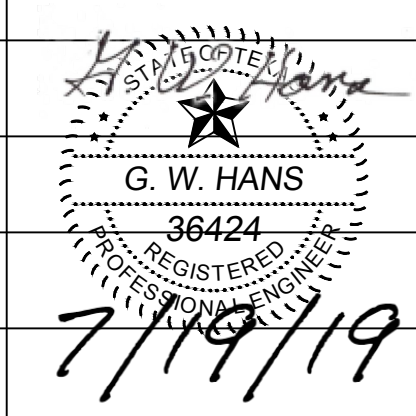
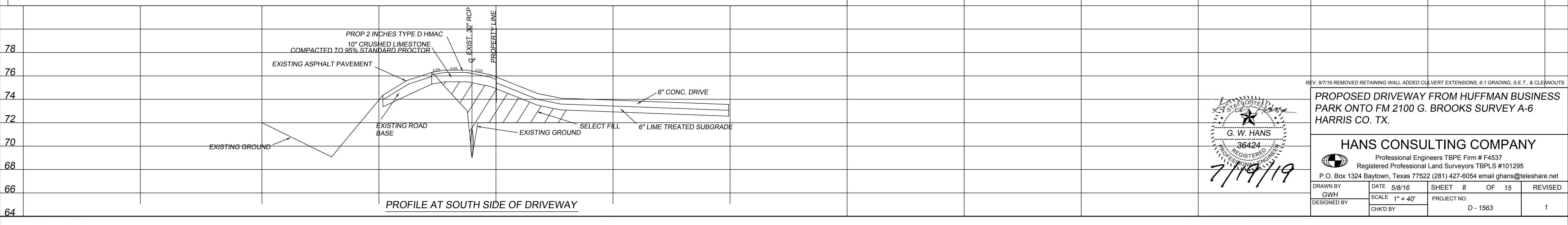
LEGEND  
OVERHEAD POWER — P — P —  
POWER POLE ⚡ PP —  
BURIED TELEPHONE — FO —



**NOTES**  
PROJECT BENCHMARK IS HARRIS COUNTY REFERENCE MARK 180015 LOCATED IN THE CENTER OF THE SIDEWALK ON THE DOWNSTREAM SIDE OF THE HUFFMAN-CLEVELAND BRIDGE OVER LUCE BAYOU PUBLISHED ELEVATION 53.56 FEET NAVD 88 2001 ADJUSTMENT.  
PROJECT TBM IS A TXDOT BRASS DISC IN THE CENTER OF A CONCRETE HEADWALL ON THE EAST SIDE OF FM 2100 APPROXIMATELY 115 FEET NORTH OF THE CENTERLINE OF THE ACCESS ROAD TO HUFFMAN BUSINESS PARK ELEVATION 72.77 FEET NAVD 88 2001 ADJUSTMENT.  
POSTED SPEED LIMIT IS 50 MPH SIGN IS WHITE.



VICINITY MAP KEY MAP PG. 339B  
SCALE 1" = 2,000'



REV. 9/7/16 REMOVED RETAINING WALL. ADDED CULVERT EXTENSIONS, 8:1 GRADING, S.E.T., & CLEANOUTS

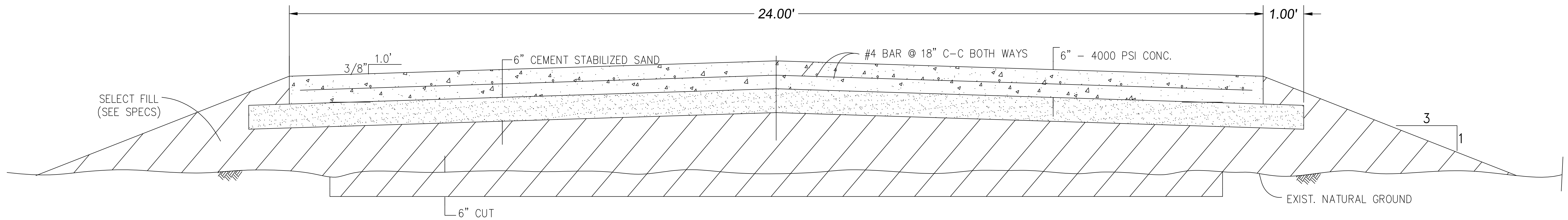
**PROPOSED DRIVEWAY FROM HUFFMAN BUSINESS PARK ONTO FM 2100 G. BROOKS SURVEY A-6 HARRIS CO. TX.**

**HANS CONSULTING COMPANY**  
Professional Engineers TBPE Firm # F4537  
Registered Professional Land Surveyors TBPLS #101295  
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net

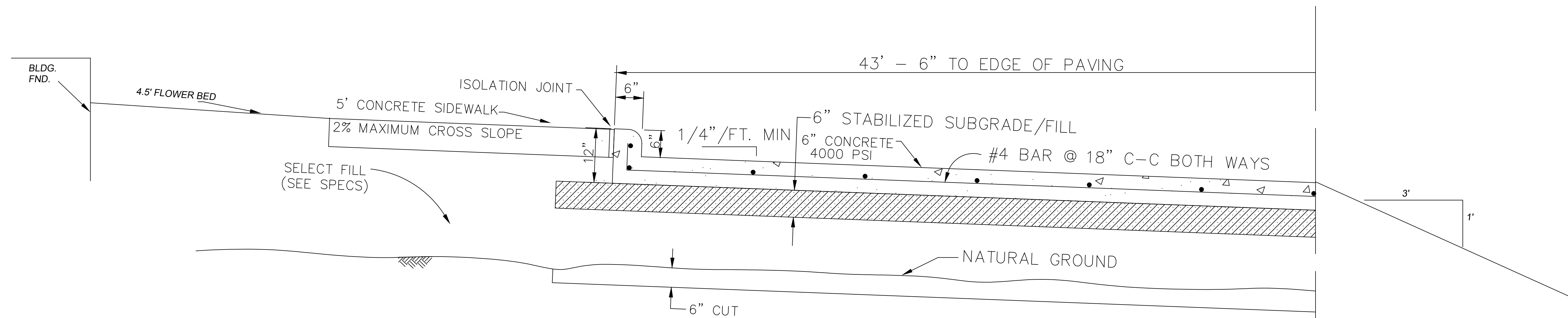
DRAWN BY	DATE	SHEET	OF	REVISED
GWH	5/8/16	8	15	
DESIGNED BY	SCALE	PROJECT NO.		
CHK'D BY	1" = 40'	D - 1563		

1





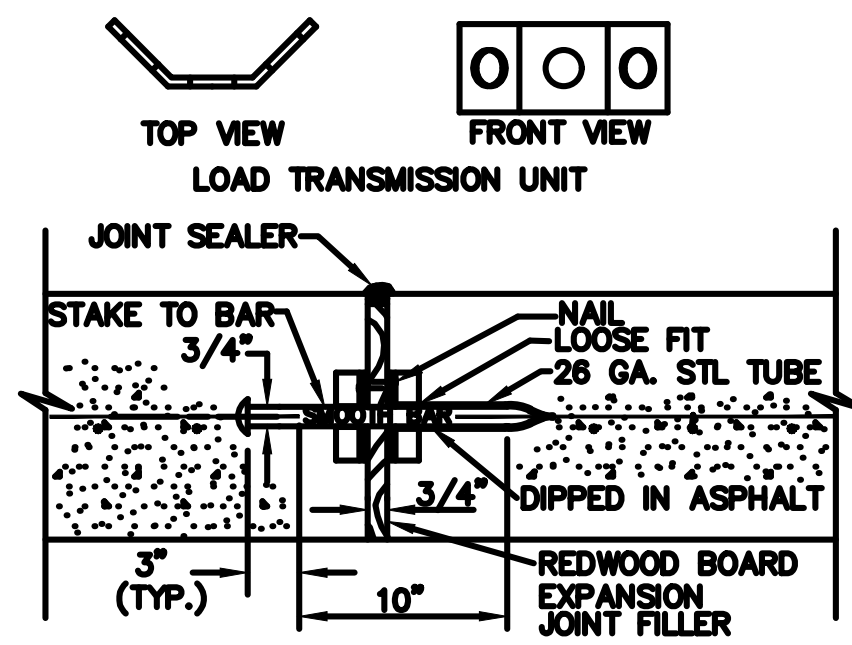
TYPICAL DRIVEWAY  
SECTION B-B  
NOT TO SCALE



SECTION A-A  
SECTION THROUGH PARKING AREA  
NOT TO SCALE

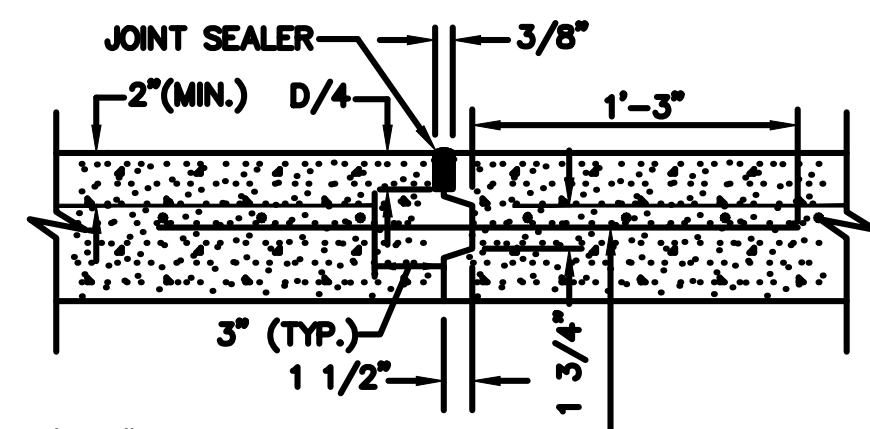
*G. W. Hans*  
G. W. HANS  
36424  
REGISTERED PROFESSIONAL ENGINEER  
7/19/19

PAVING SECTIONS FOR RESERVE C HUFFMAN BUSINESS PARK HARRIS COUNTY, TEXAS			
HANS CONSULTING COMPANY Professional Engineers TBPE Firm # F4537 Registered Professional Land Surveyors TBPLS #101295 P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net			
DRAWN BY	DATE 3/22/16	SHEET 9 OF 15	REVISED
OWH	SCALE NOTED	PROJECT NO.	
DESIGNED BY	CHK'D BY	1563	



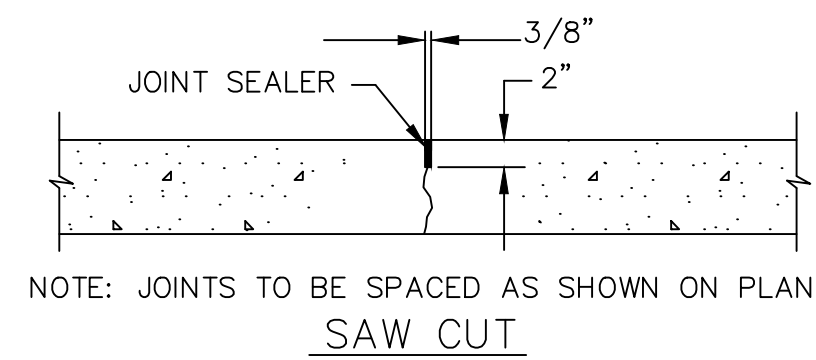
NOTE: JOINT SPACING SHALL NOT BE GREATER THAN 80' AND SHALL BE LOCATED AT THE ENDS OF ALL RADII OF THE ROADWAY AND/OR CURB.  
STEEL TO MEET ASTM STD. SPECS FOR CONCRETE REINFOR. BAR UNITS TO SPACED 22" c-c.

**PAVEMENT DOWEL EXPANSION JOINT (E.J.)**  
N.T.S.

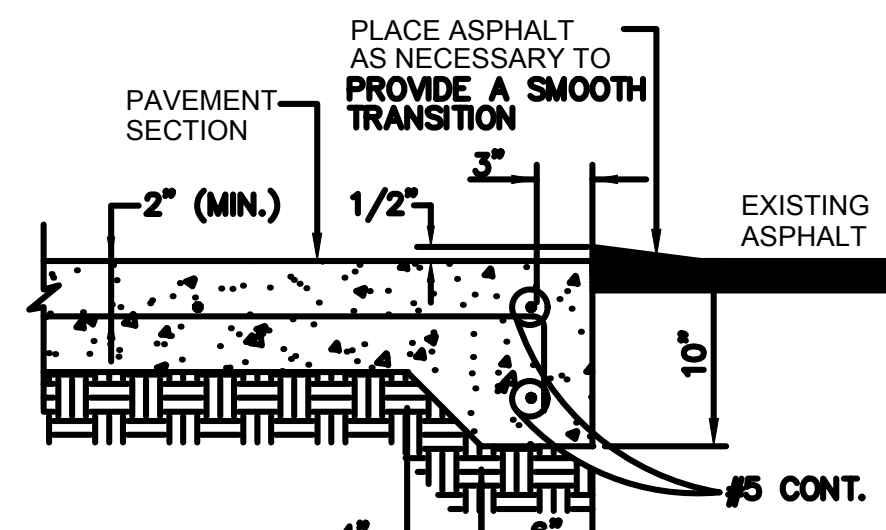


NOTE: TO BE LOCATED AT CENTERLINE OF ROADWAY

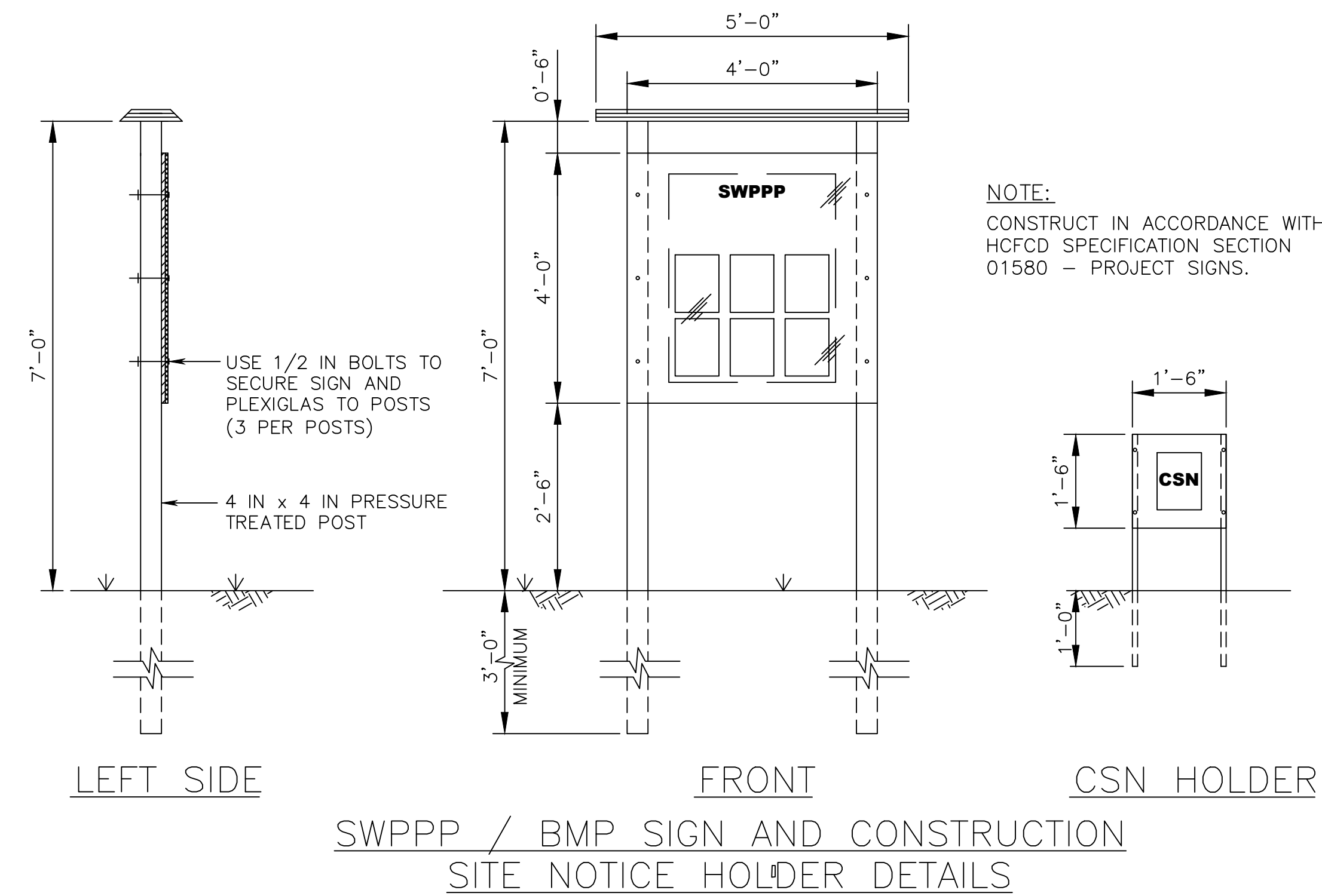
**PAVEMENT LONGITUDINAL (L.J.)**  
N.T.S.



NOTE: JOINTS TO BE SPACED AS SHOWN ON PLANS  
SAW CUT

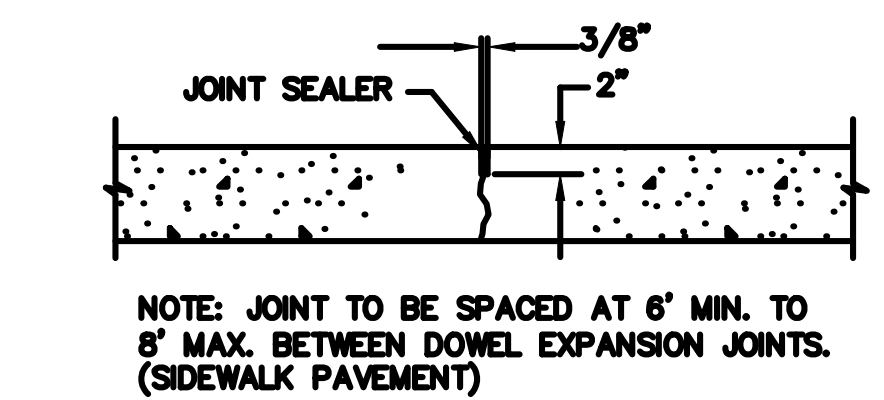


**HEADER DETAIL**  
N.T.S.



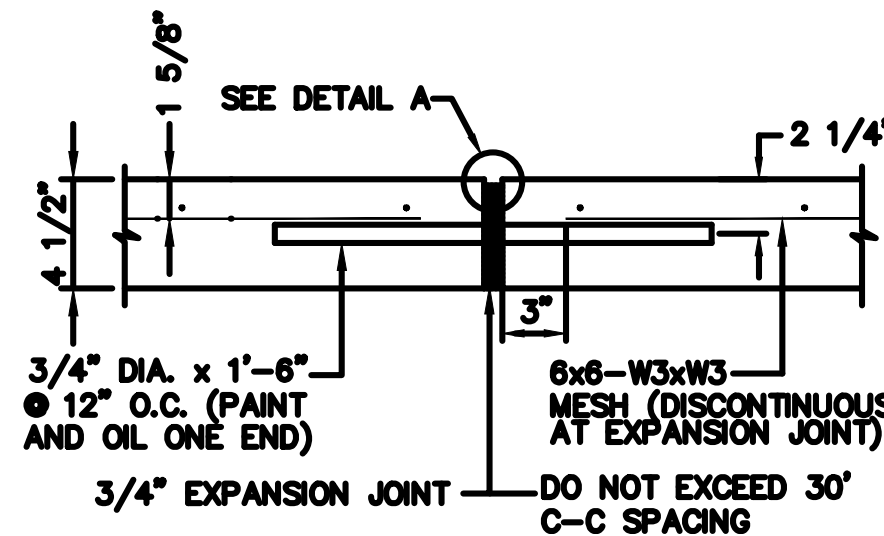
NOTE:  
CONSTRUCT IN ACCORDANCE WITH  
HCFCD SPECIFICATION SECTION  
01580 - PROJECT SIGNS.

**SWPPP / BMP SIGN AND CONSTRUCTION  
SITE NOTICE HOLDER DETAILS**

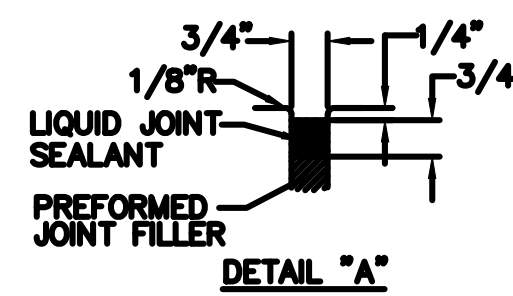


NOTE: JOINT TO BE SPACED AT 6' MIN. TO 8' MAX. BETWEEN DOWEL EXPANSION JOINTS. (SIDEWALK PAVEMENT)

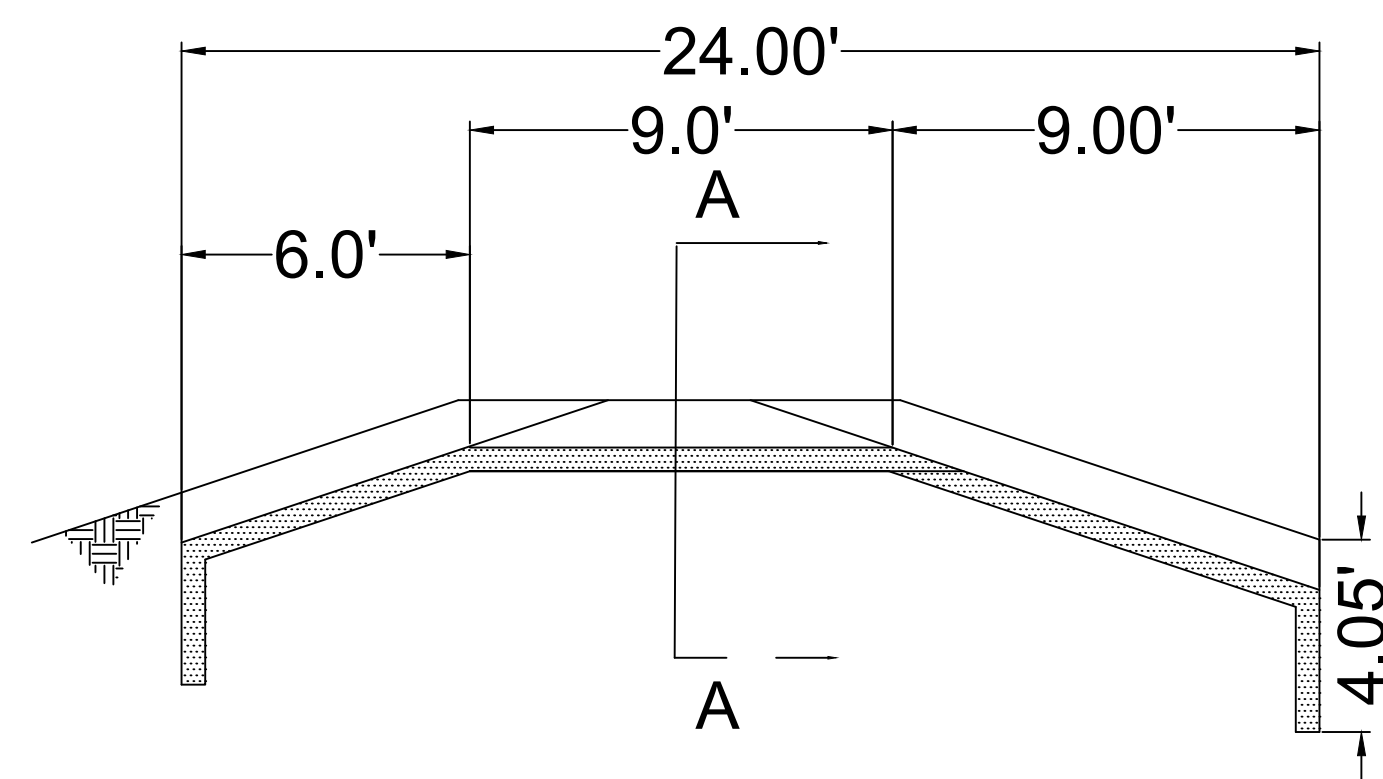
**CONTRACTION JOINT (Cj)**



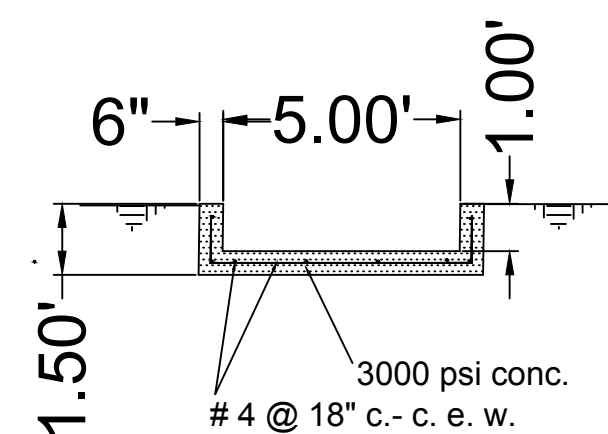
**EXPANSION JOINT (EJ)**



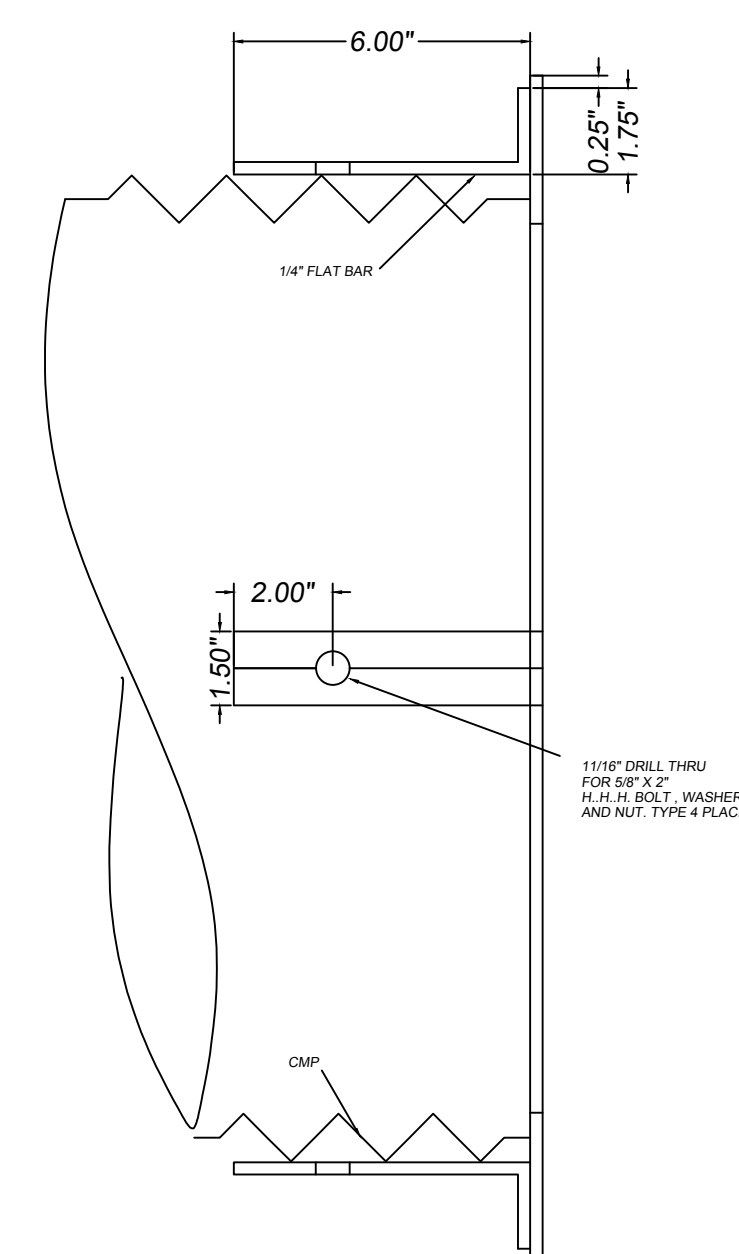
**SIDEWALK JOINTS**  
N.T.S.



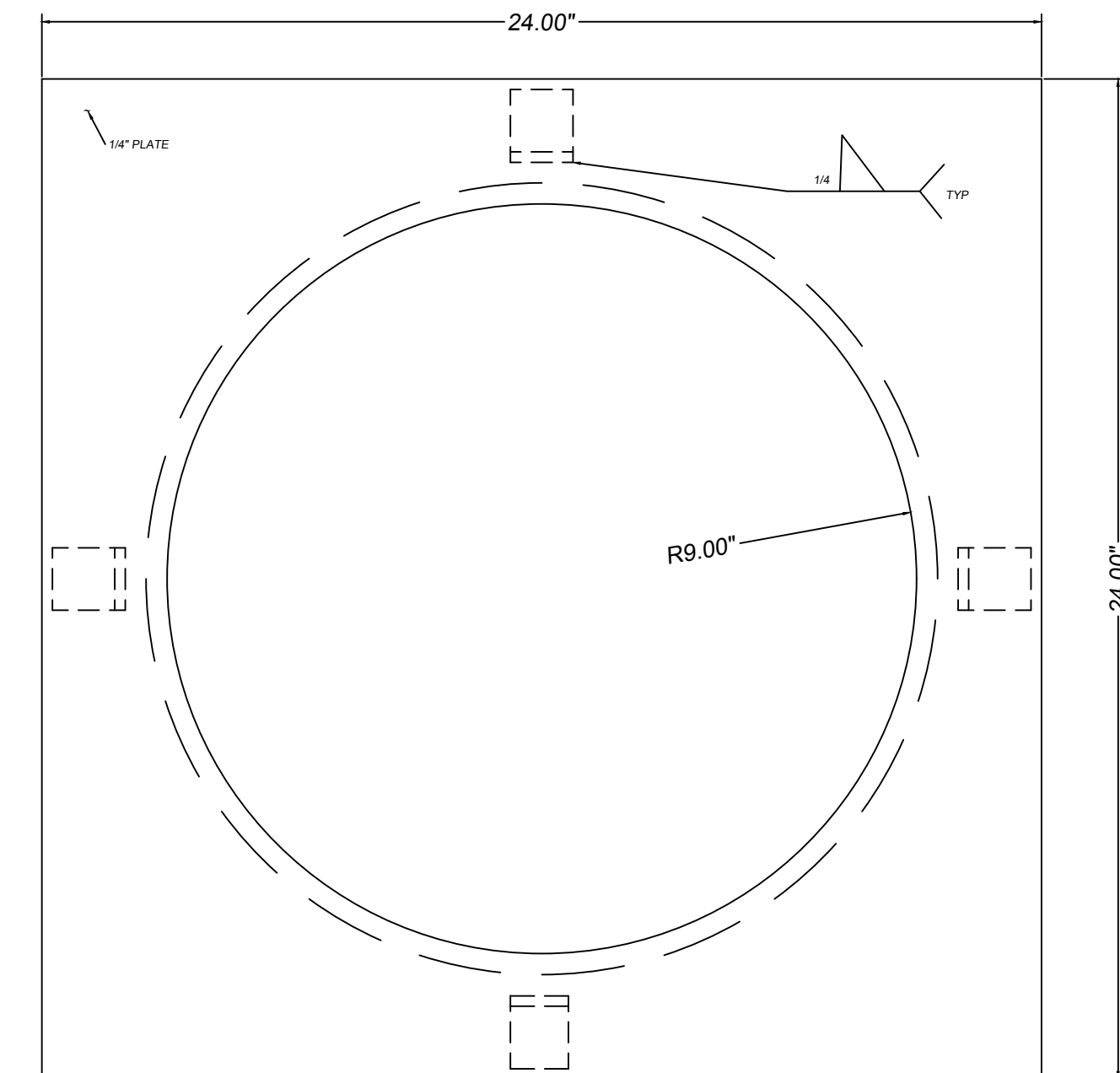
**CONCRETE SPILLWAY**  
NOT TO SCALE



**SECTION A - A**



**ORFICE PLATE DETAIL**  
NOT TO SCALE

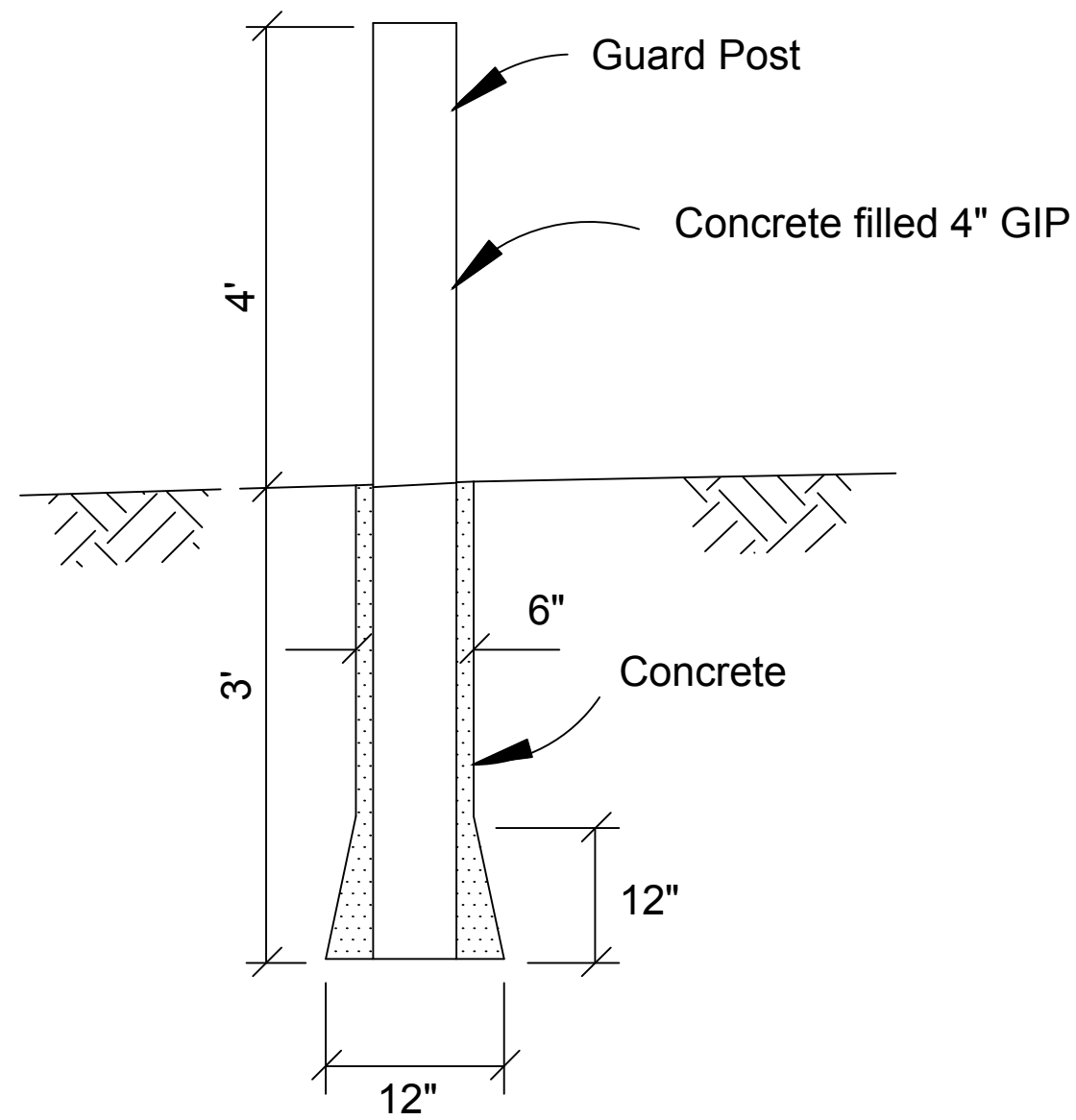


**PAVING AND DRAINAGE DETAILS**  
HUFFMAN BUSINESS PARK  
HARRIS COUNTY, TEXAS

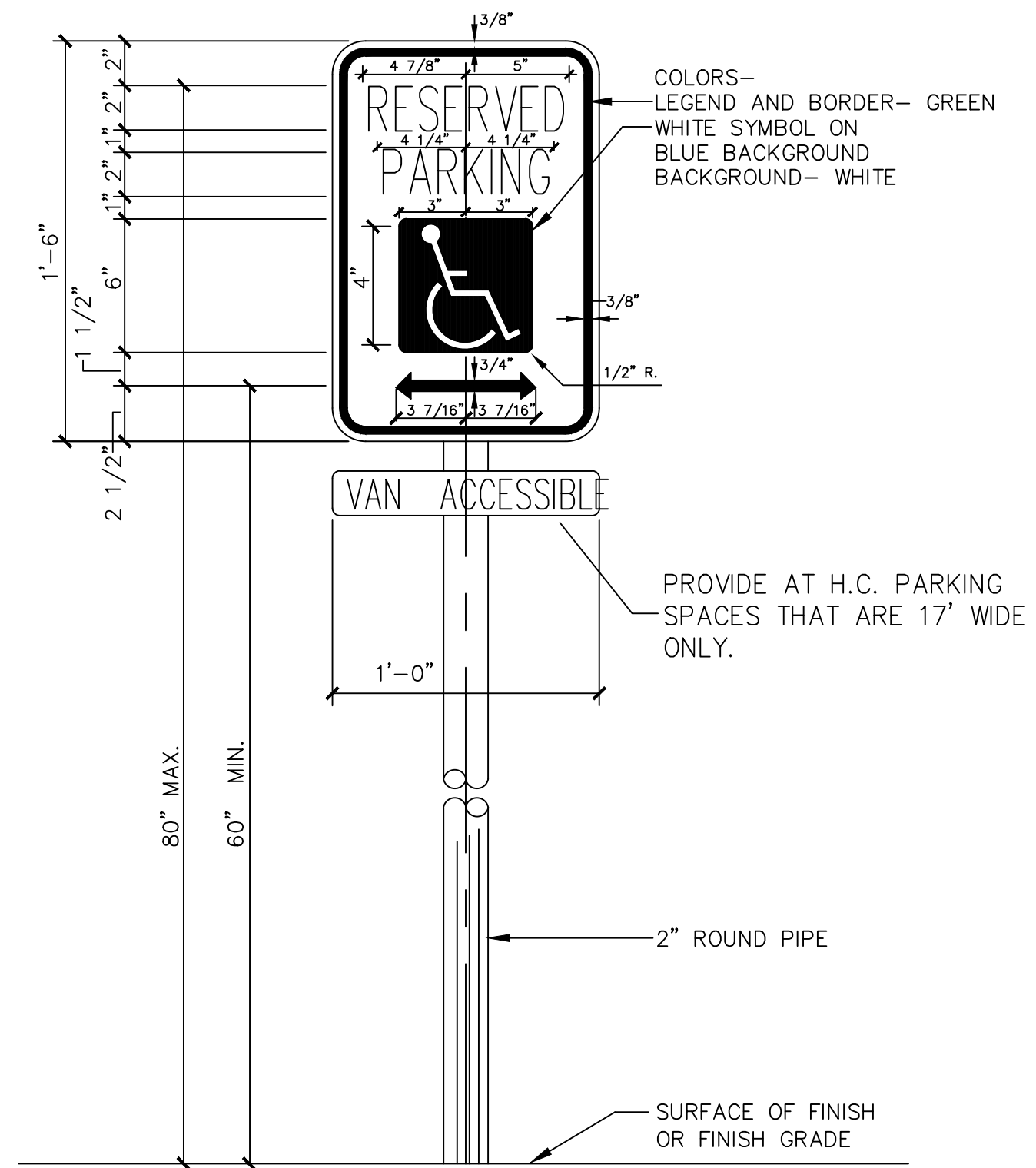
**HANS CONSULTING COMPANY**

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Registered Professional Land Surveyors TBPLS #101295  
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email ghans@teleshare.net

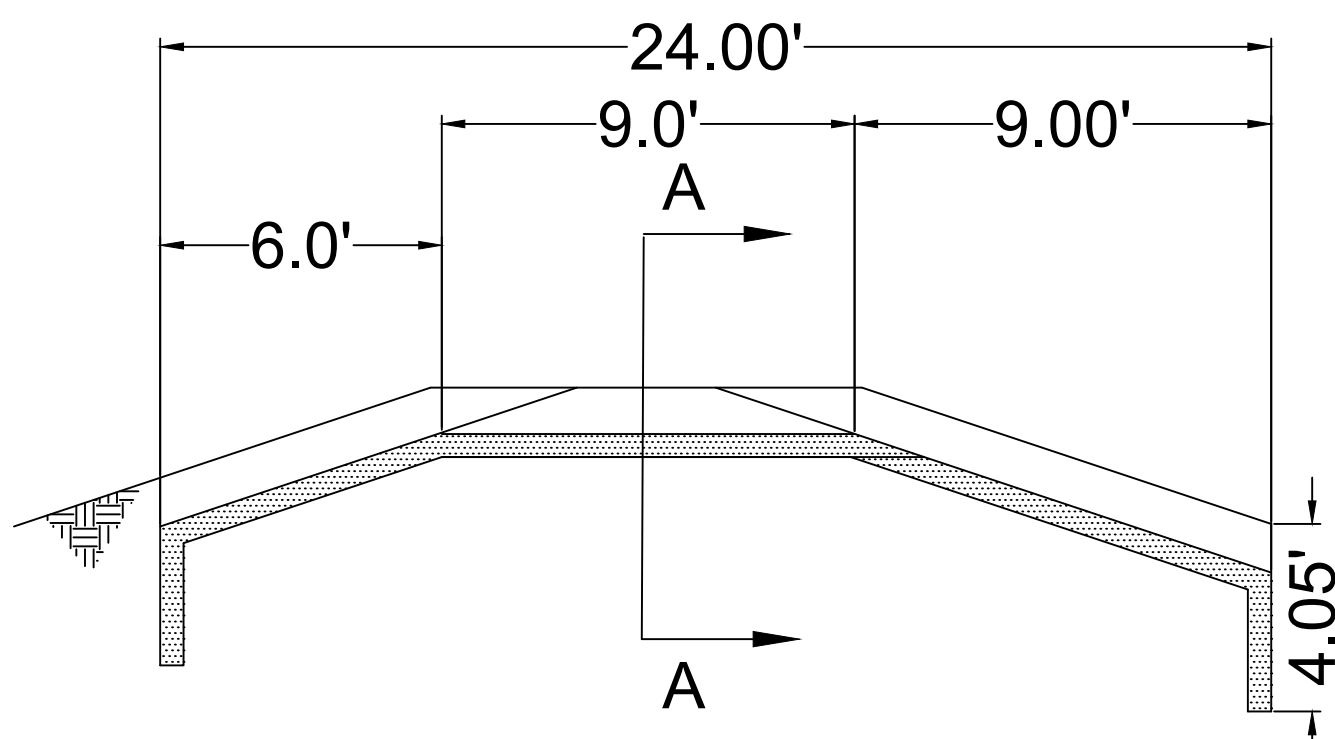
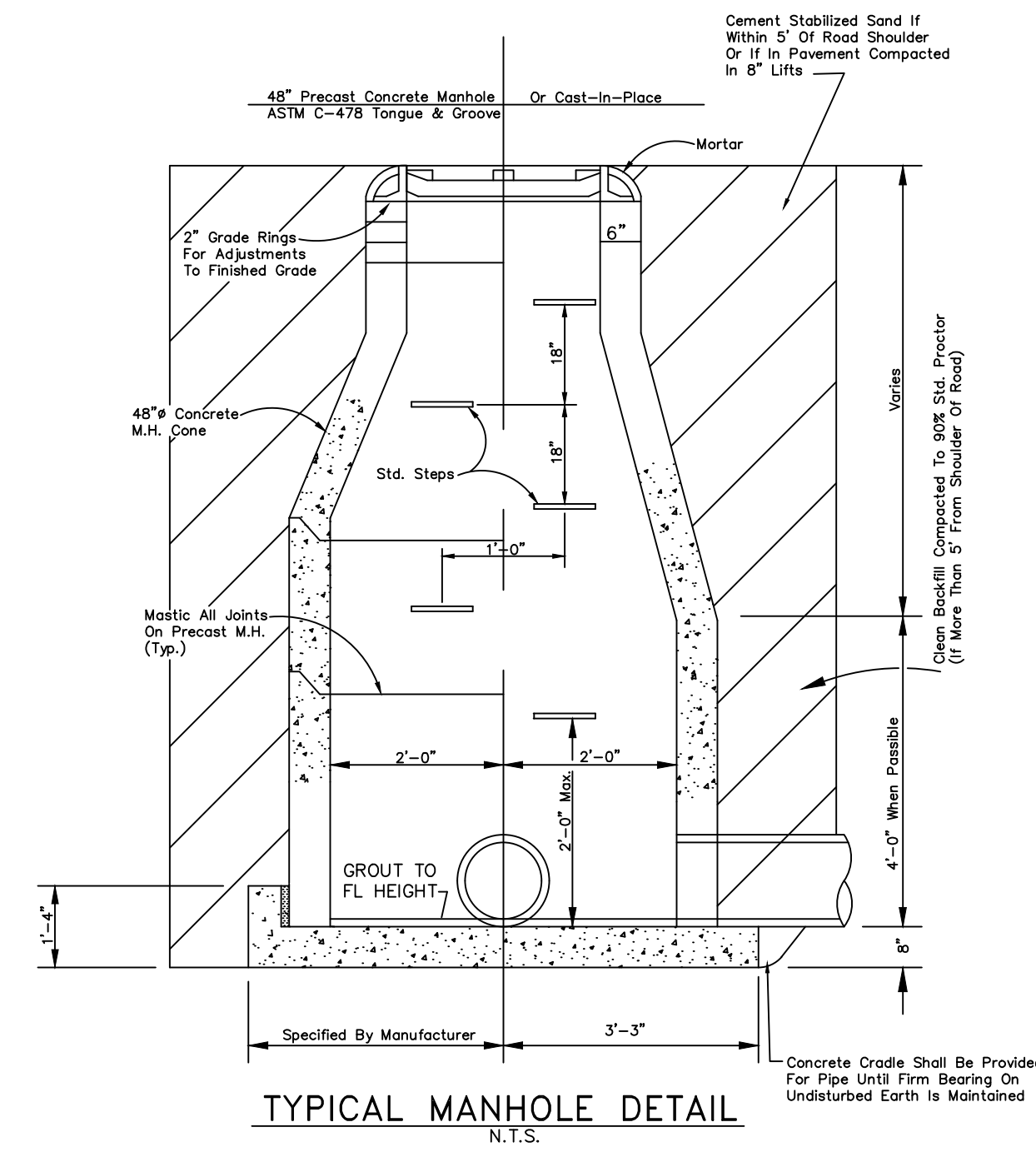
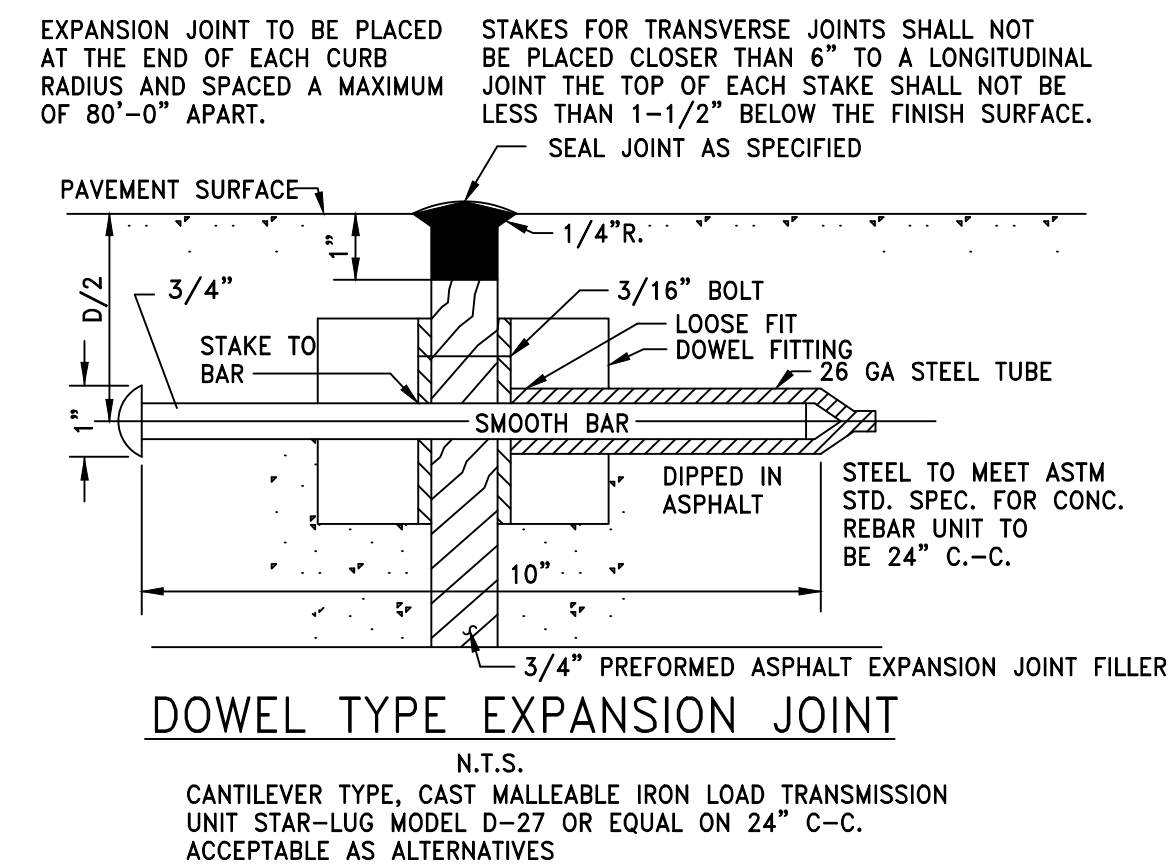
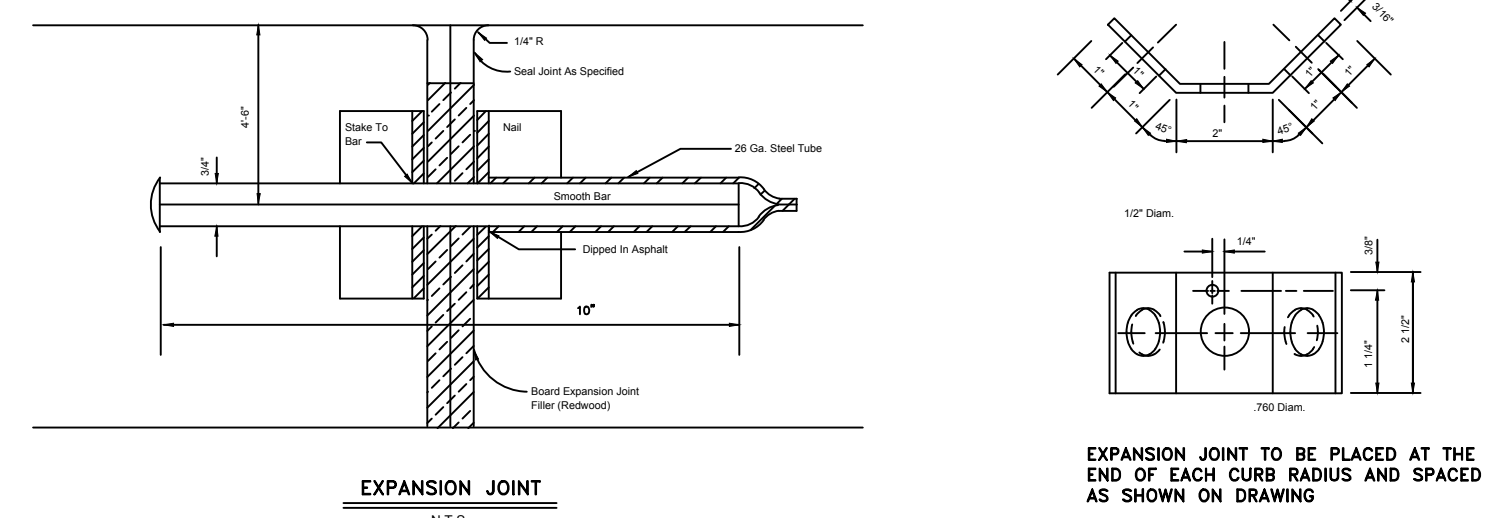
DRAWN BY GWH	DATE 3/22/16	SHEET 10	OF 15	REVISED
DESIGNED BY	SCALE 1" = 40'	PROJECT NO. 1563		
CHK'D BY				



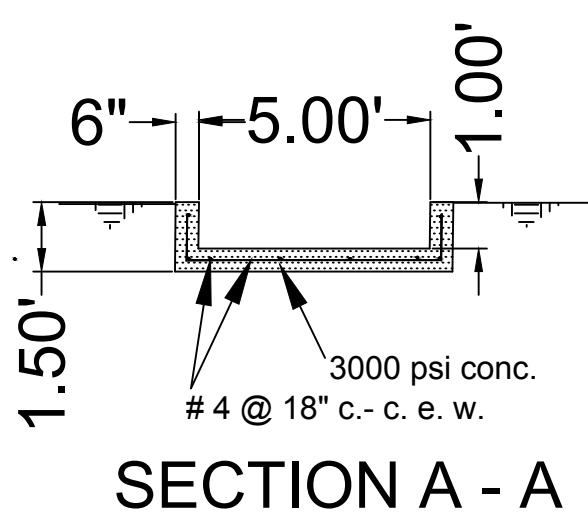
**DETAIL 'B'**  
**BOLLARD**



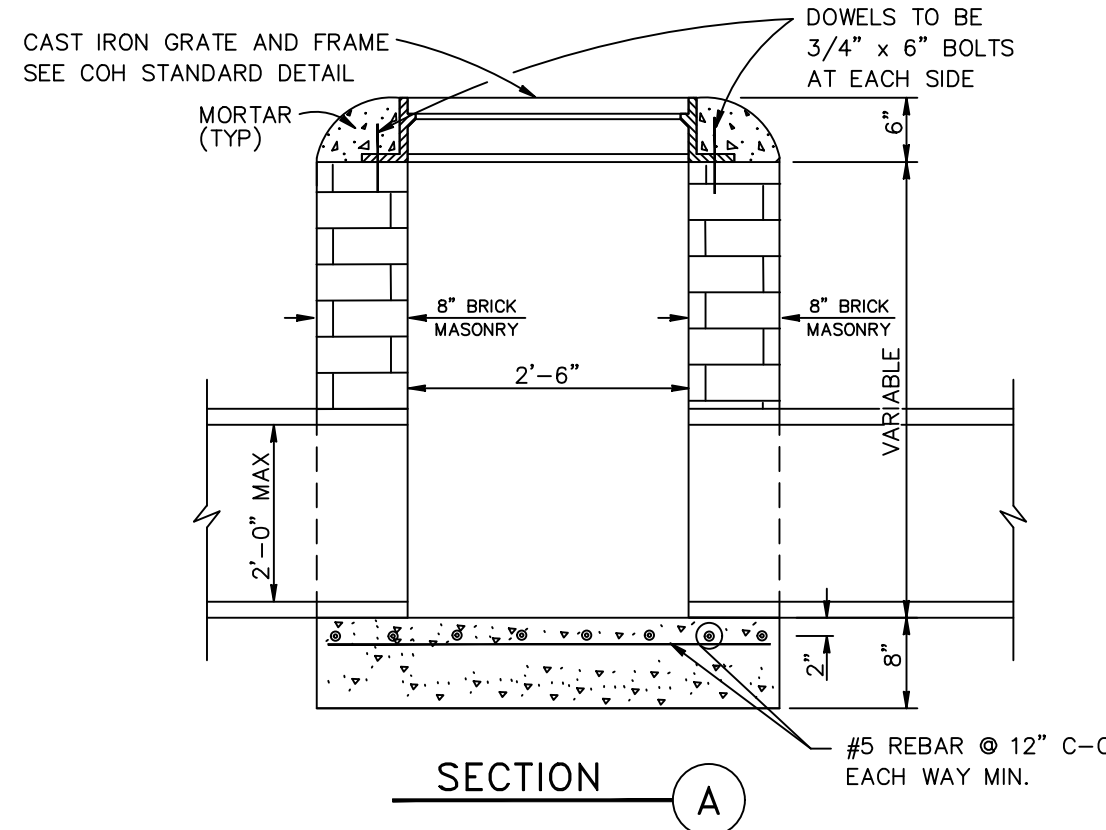
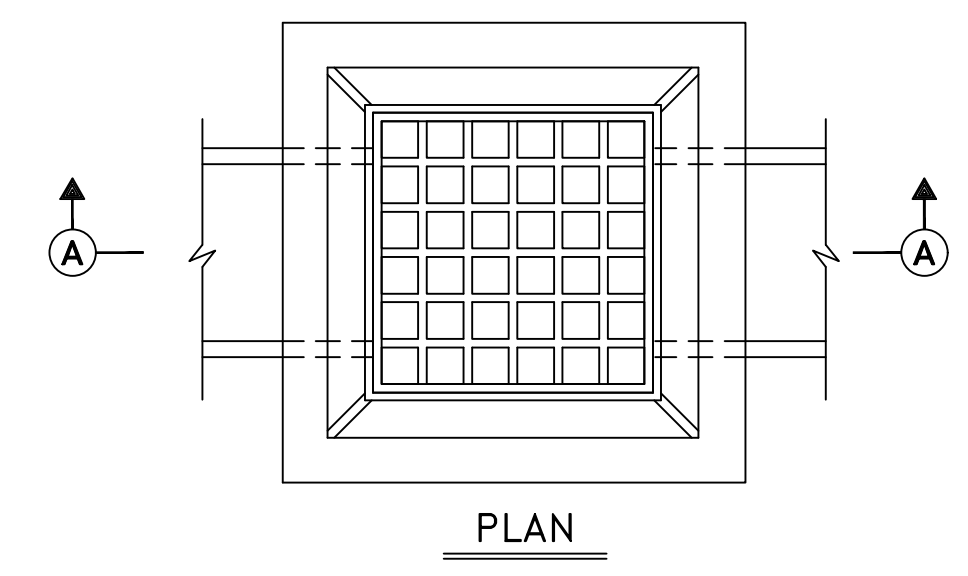
**HANDICAP PARKING SIGN**  
NOT TO SCALE



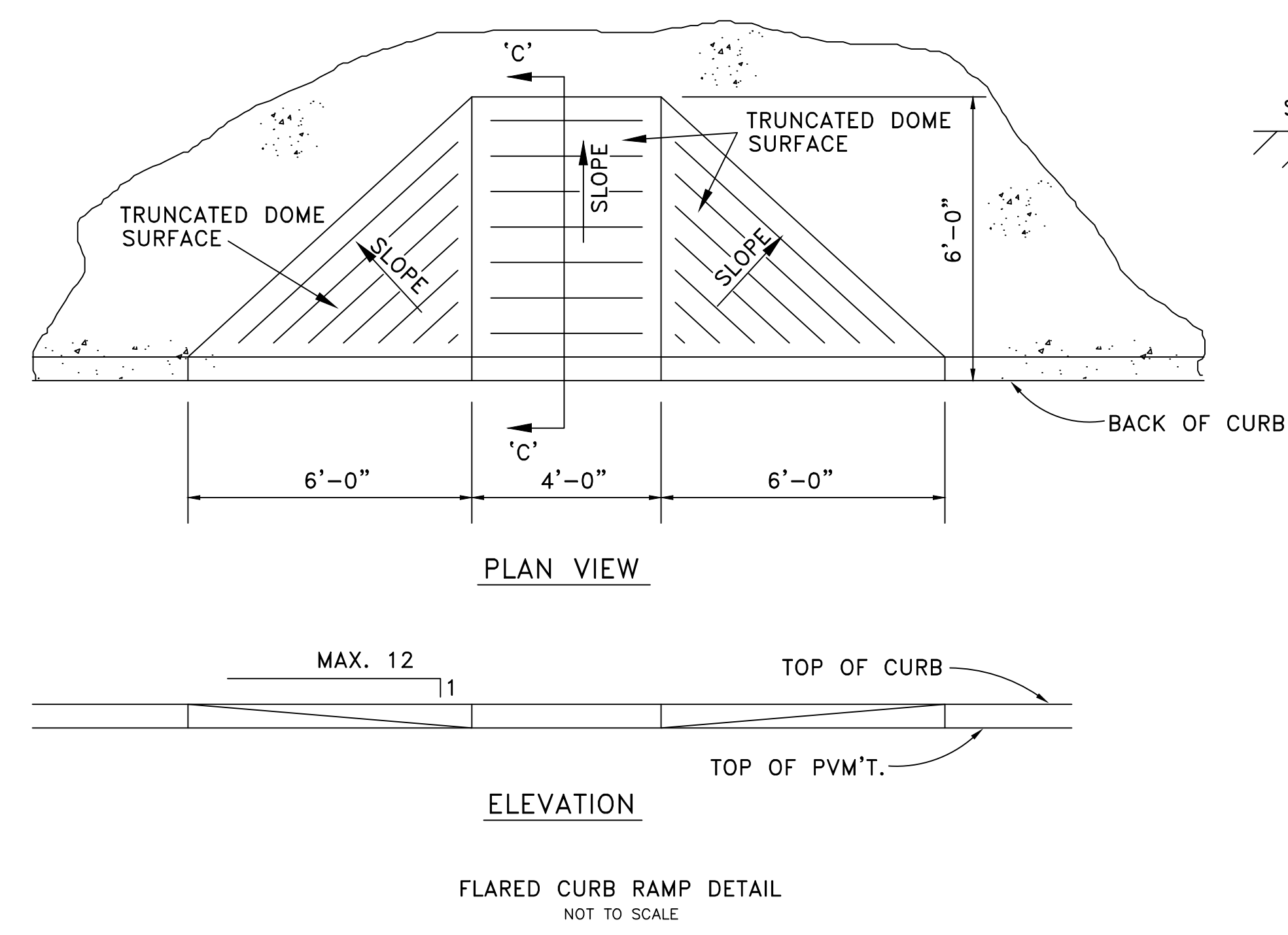
**CONCRETE SPILLWAY**  
NOT TO SCALE



**SECTION A - A**



**TYPE "A" GRATE INLET**  
(NOT TO SCALE)



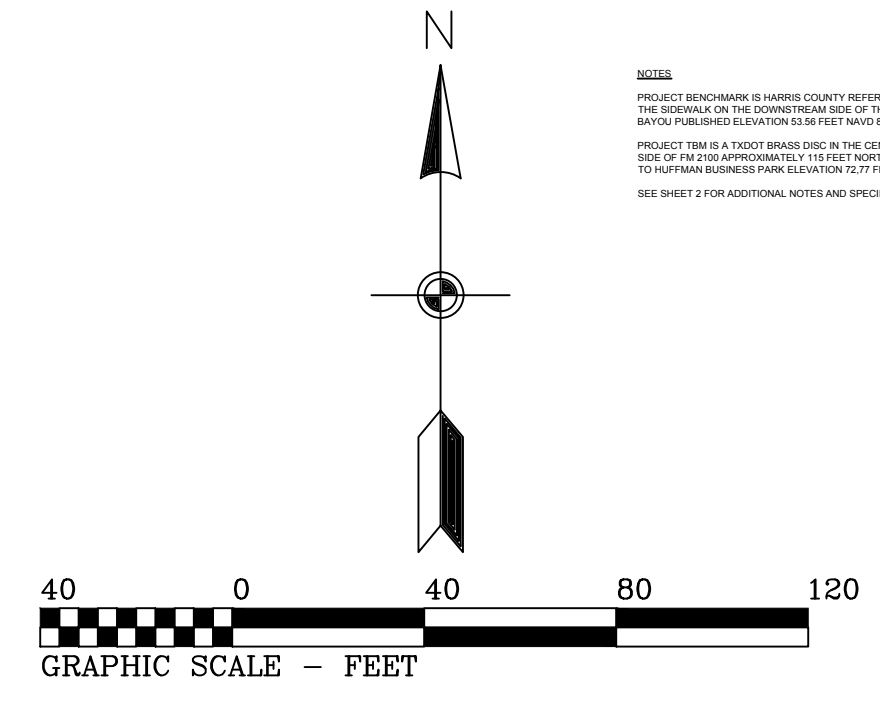
ALL TRUNCATED DOME SURFACES SHALL MEET THE REQUIREMENTS OF A.D.A. AND T.A.S. REGULATIONS

*G.W. HANS*  
G. W. HANS  
REGISTERED PROFESSIONAL ENGINEER  
36424  
7/19/19

**MISCELLANEOUS DETAILS**  
**HUFFMAN BUSINESS PARK**  
**HARRIS COUNTY, TEXAS**

**HANS CONSULTING COMPANY**  
Professional Engineers TBPE Firm # F4537  
Registered Professional Land Surveyors TBPLS #101295  
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email gghans@teleshare.net

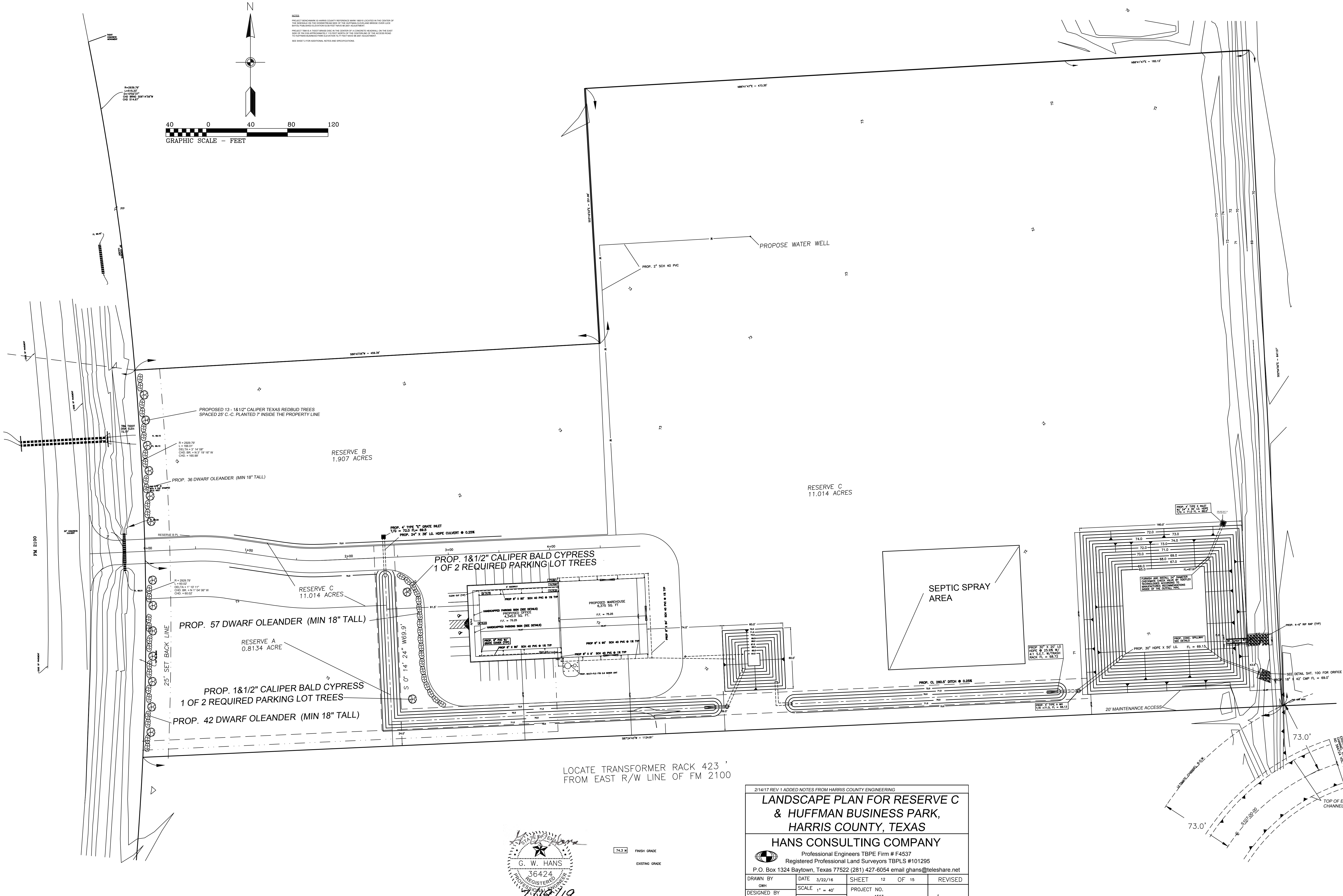
DRAWN BY	DATE	SHEET	OF	REVIS
GMH	3/22/18	11	15	
DESIGNED BY	SCALE	PROJECT NO.		
CHKD BY	NOTED	1563		



PROJECT BENCHMARK IS HARRIS COUNTY RESERVE MARK 1885 LOCATED IN THE CENTER OF THE RESERVE ON THE SOUTHWEST CORNER OF THE MAP. HARRIS COUNTY ENGINEERING HAS BEEN ADVISED BY THE HARRIS COUNTY ENGINEERING DEPARTMENT THAT THE BENCHMARK ELEVATION IS 38.52 FEET MSL @ 2011 ADJUSTMENT.

PROJECT THERE IS 100% GRADE AND IN THE CENTER OF A CHANNEL. MEASUREMENTS IN THE WEST SIDE OF THE CHANNEL APPROXIMATELY 1/2 FEET NORTH OF THE CENTERLINE OF THE ACCESS ROAD TO THE BENCHMARK FROM ELEVATION TO 100% GRADE @ 2011 ADJUSTMENT.

SEE SHEET 2 FOR ADDITIONAL NOTES AND SPECIFICATIONS.



LOCATE TRANSFORMER RACK 423' FROM EAST R/W LINE OF FM 2100



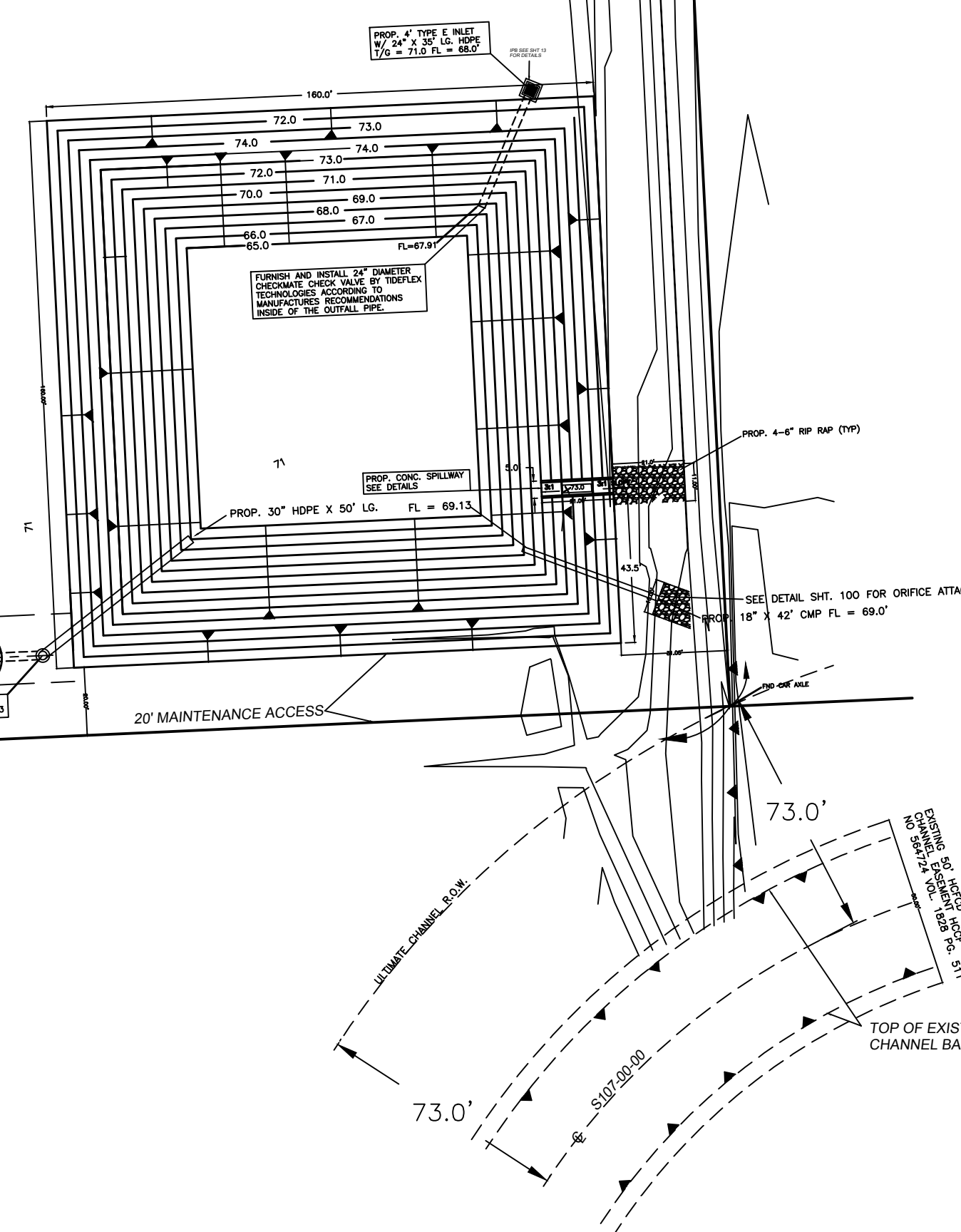
74.3' FINISH GRADE  
EXISTING GRADE

2/14/17 REV 1 ADDED NOTES FROM HARRIS COUNTY ENGINEERING

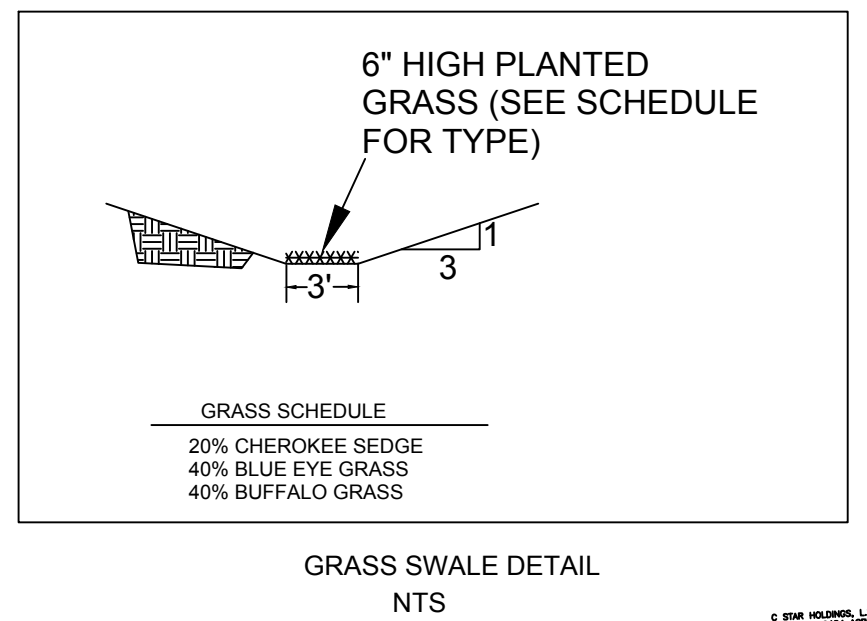
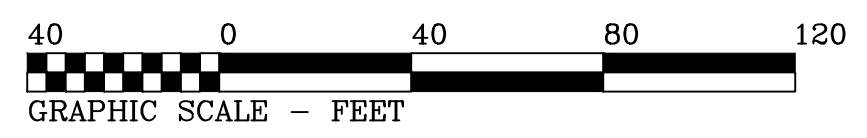
### LANDSCAPE PLAN FOR RESERVE C & HUFFMAN BUSINESS PARK, HARRIS COUNTY, TEXAS

HANS CONSULTING COMPANY  
Professional Engineers TBPE Firm # F4537  
Registered Professional Land Surveyors TBPLS #101295  
P.O. Box 1324 Baytown, Texas 77522 (281) 427-6054 email gghans@teleshare.net

DRAWN BY	DATE	SHEET	OF	REVISED
GWH	3/22/16	12	15	
DESIGNED BY	SCALE	PROJECT NO.		
CHK'D BY	1" = 40'	1563		1



PROJECT BENCHMARK IS HARRIS COUNTY RESERVE MARK WELLS LOCATED IN THE CENTER OF THE RESERVE BY THE GOVERNMENT SURVEY BY THE HARRIS COUNTY ENGINEERING SURVEYOR. DATA PUBLISHED ELEVATION IS 82.50 FT. (82.50' ± 0.05' ADJUSTMENT). PROJECT MARK IS 100' AREA (SEE THE SURVEY OF A 100' AREA) IN THE CENTER OF THE RESERVE BY THE GOVERNMENT SURVEY BY THE HARRIS COUNTY ENGINEERING SURVEYOR. DATA PUBLISHED ELEVATION IS 82.50 FT. (82.50' ± 0.05' ADJUSTMENT). SEE SHEET 1 FOR ADDITIONAL NOTES AND SPECIFICATIONS.



HUFFMAN BUSINESS PARK STORM WATER QUALITY CALCULATIONS	
A = AREA THAT DRAINS TO GRASS SWALES IN ACRES =	13.375
C = RUNOFF COEFFICIENT =	0.25
I = INTENSITY IN INCHES/HOUR =	0.27
Q <sub>10</sub> = WATER QUALITY DESIGN FLOW RATE IN CU. FT./SEC =	0.897
n = MANNING'S ROUGHNESS COEFFICIENT =	0.024
S = LONGITUDINAL SWALE SLOPE =	0.00
d = DEPTH OF FLOW =	3 INCHES
z = CHANNEL SIDE SLOPE =	3H:1V
b = CHANNEL BOTTOM	3
CALCULATE C FROM CHAPTER 9 C.O.H. DESIGN MANUAL DATED 2013 TWO DIFFERENT WAYS	
SECTION 3 a(1) BUSINESS DISTRICTS = .8	
SECTION 3 a(2) C = .6 I.A. = 2 were I.A. = Impervious area/total area	
Impervious area in acres =	1.08
Total Area in Ac. =	13.375
I.A. = Impervious area/total area	0.08
C = .6 I.A. = 2 were I.A. = Impervious area/total area	0.25
MAX. V = 1.5 FT/SEC.	0.25
REQUIRED SWALE CROSS SECTIONAL AREA = Q <sub>10</sub> /V =	0.598 SQ. FT. GREATER THAN
SIZE CHANNEL TRY TRAPEZOIDAL CHANNEL 3' WIDE W 3:1 SIDE SLOPE	
CROSS SECTIONAL AREA = d((b+(b+zS))/2) =	0.9375 SQ. FT.
ACTUAL VELOCITY = Q <sub>10</sub> /CROSS SECTIONAL AREA =	0.957024 FT./SEC.
REQUIRED LENGTH OF SWALE = VELOCITY X 300 SEC. =	287.1072 FT.
DETERMINE REQUIRED SLOPE OF SWALE TO ACHIEVE ACTUAL VELOCITY	
WETTED PERIMETER SIDE = SUM(SQRT(d^2 + (3d)^2)) + b =	4.581
HYDRAULIC RADIUS R = A/WP =	0.20
R^2/3 =	0.35
((1.49/n) x A x R^2/3) =	20.21
SQRT S = Q <sub>10</sub> / ((1.49/n) x A x R^2/3) =	0.04
S = SWALE SLOPE	0.0020 FT/FT.
TOTAL AREA 2' X 200' =	870 SQUARE FEET.
USE 20% CHEROKEE SEDGE	INPUT FROM SITE
40% BLUE EYE GRASS	CALCULATIONS
40% BUFFALO GRASS	

**RESERVE B**  
1.907 ACRES  
NOT DEVELOPED

**RESERVE C**  
11.014 ACRES  
DEVELOPED

**RESERVE A**  
0.8134 ACRE  
NOT DEVELOPED

RESERVE C  
11.014 ACRES

PARKING LOT

RETENTION POND A

RETENTION POND B

SEPTIC SPRAY AREA

DISCHARGE POINT

Upon completion of construction the permanent storm water quality feature will be cleaned of all sediment and debris that may have accumulated. Additionally all disturbed areas related to this project will be completely stabilized. This will be done prior to submitting an "As-Built Certificate" and calling for final inspection. Harris County Engineering will not pass the Final Inspection or issue a Certificate of Compliance until the required cleanup have been completed. The development is not approved for operation until a Certificate of Compliance has been issued.



8/4/17 REVISION 1 CHANGED LOCATION OF STORM WATER QUALITY FEATURE PER HCPID REVIEW

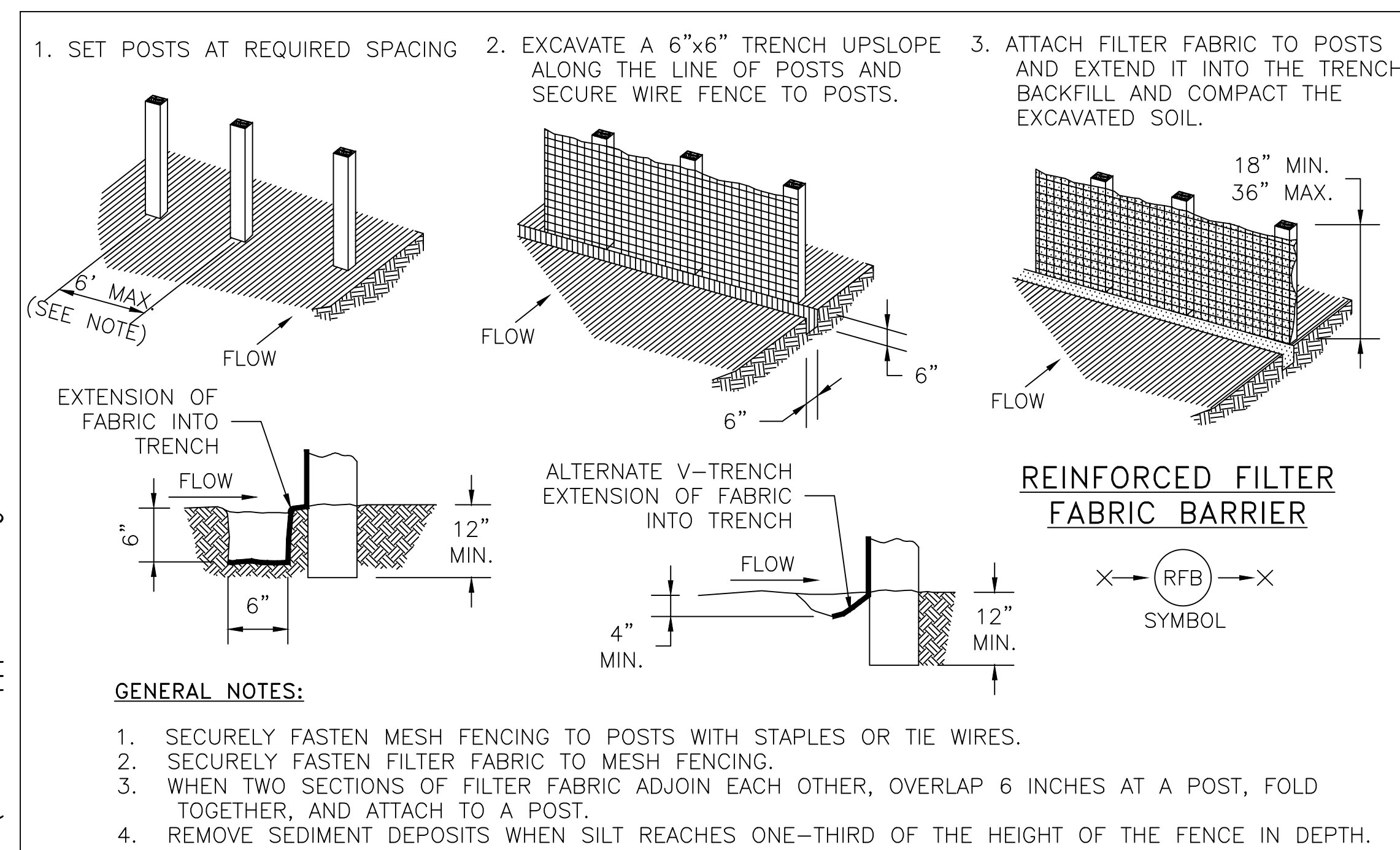
**SHT 13 SWPPP FOR RESERVE C**  
HUFFMAN BUSINESS PARK, HARRIS COUNTY, TEXAS

**HANS CONSULTING COMPANY**  
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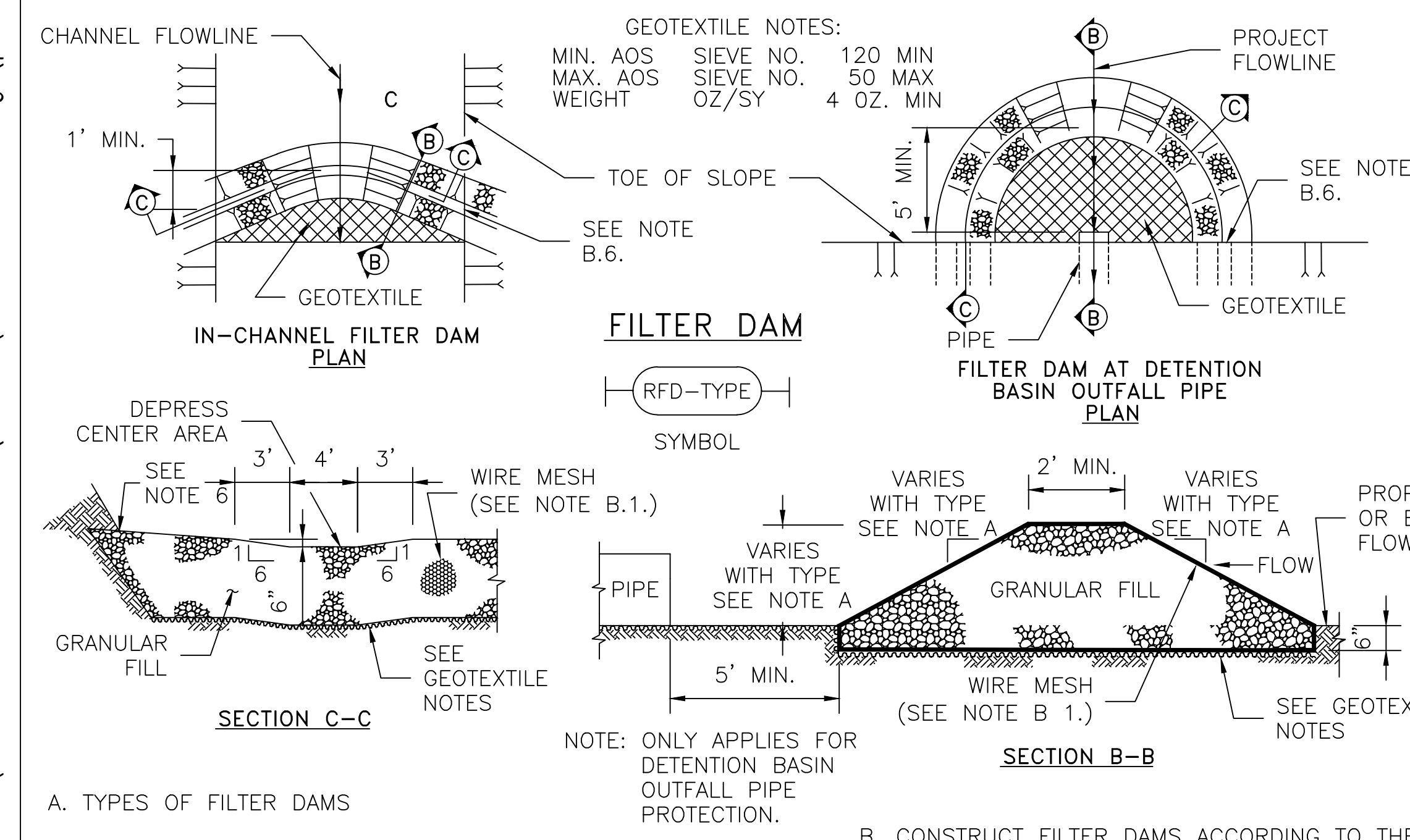
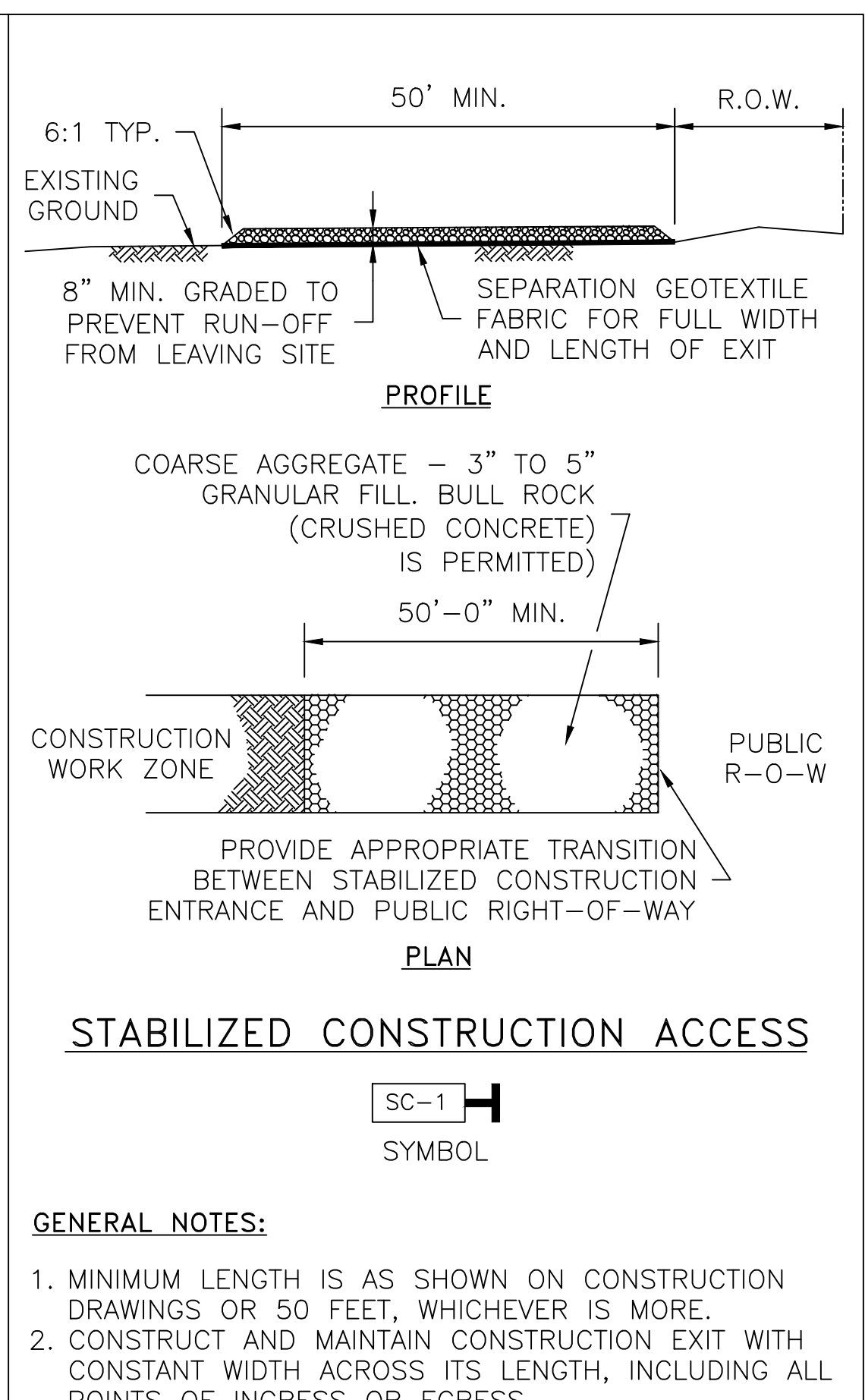
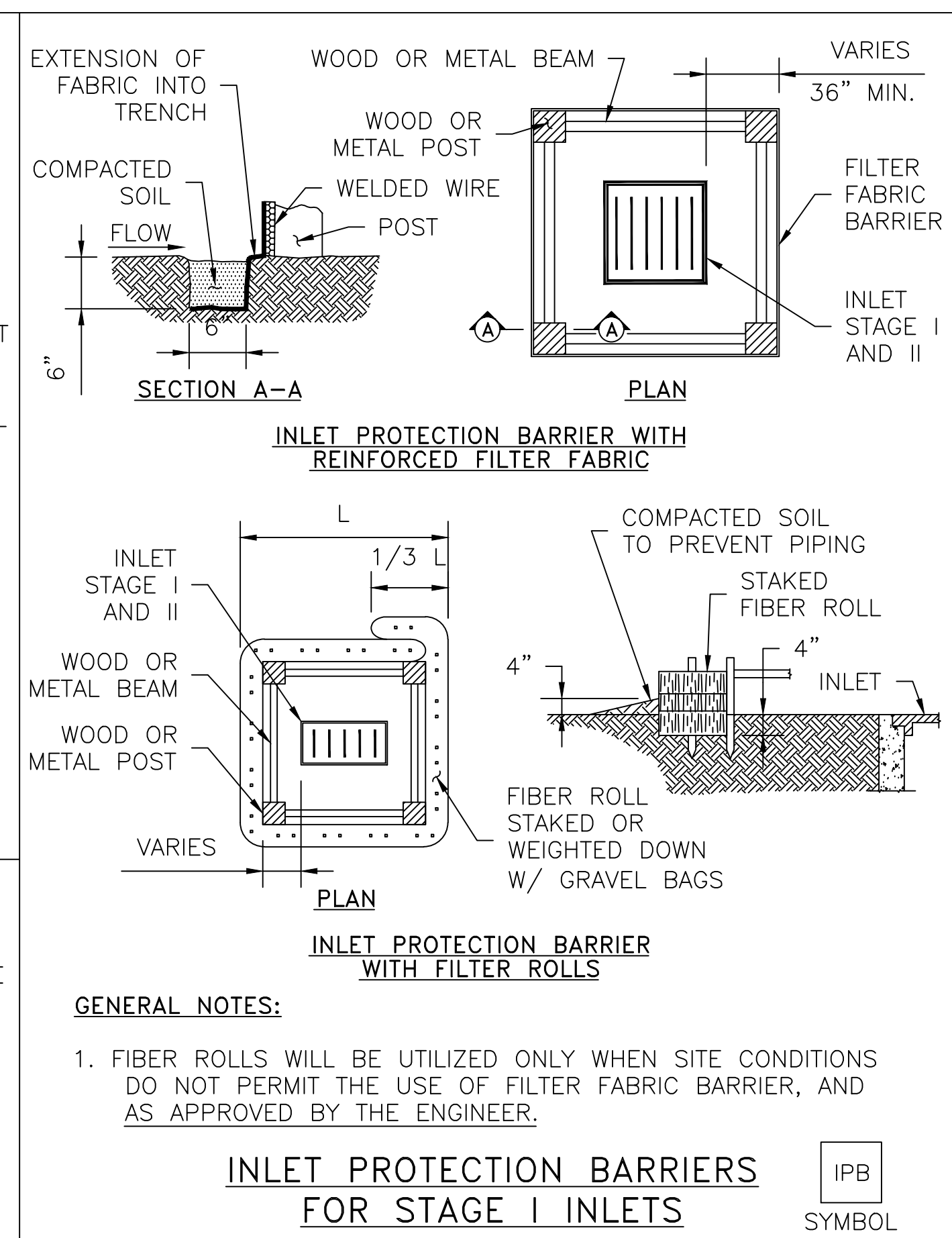
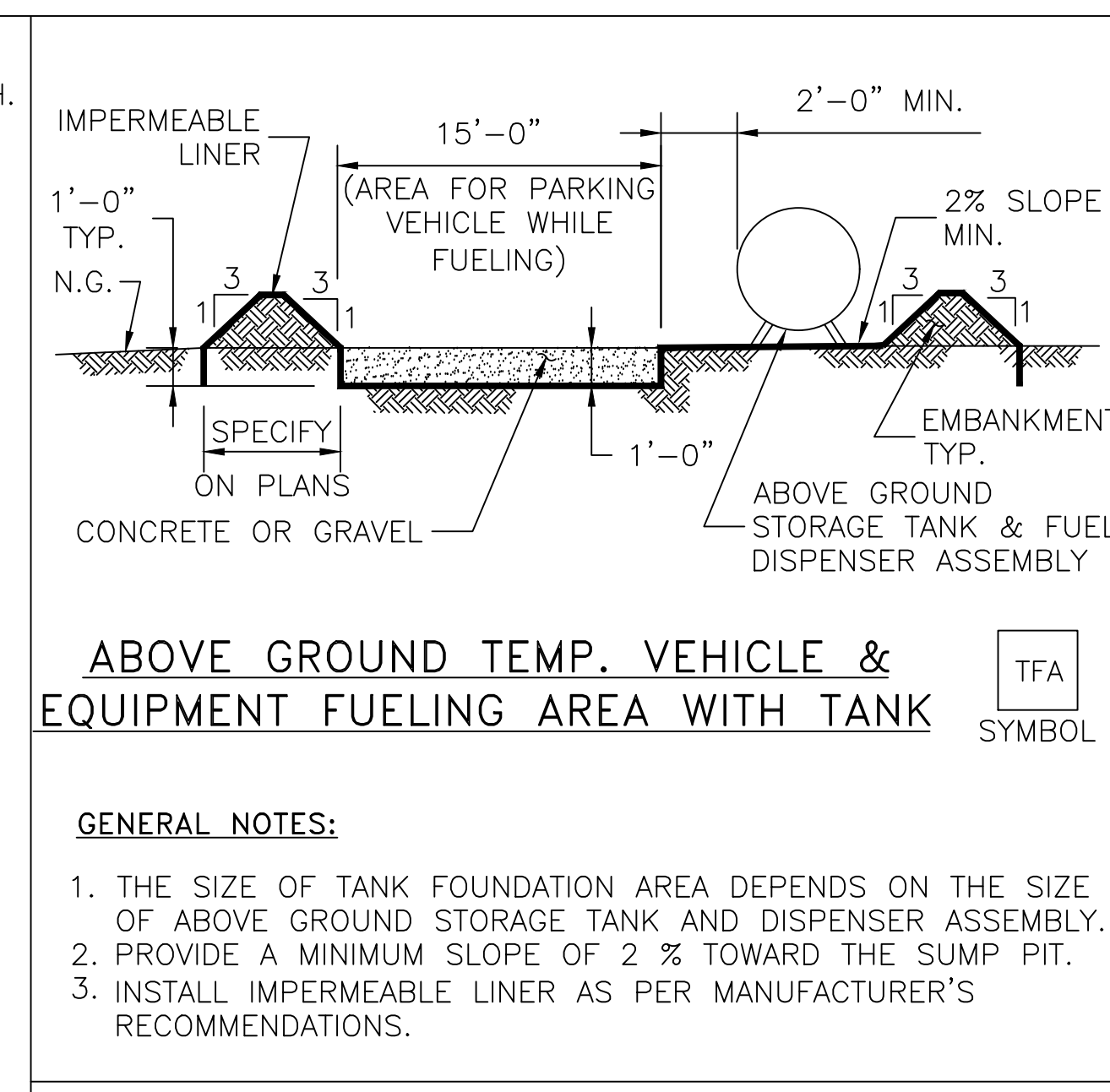
DRAWN BY	DATE	SHEET	OF	REVISED
OWH	3/22/16	13	15	
DESIGNED BY	SCALE	PROJECT NO.		
CHK'D BY	1" = 40'	1563		

**NO WETLANDS OR SURFACE WATER FOUND ON THE SITE**

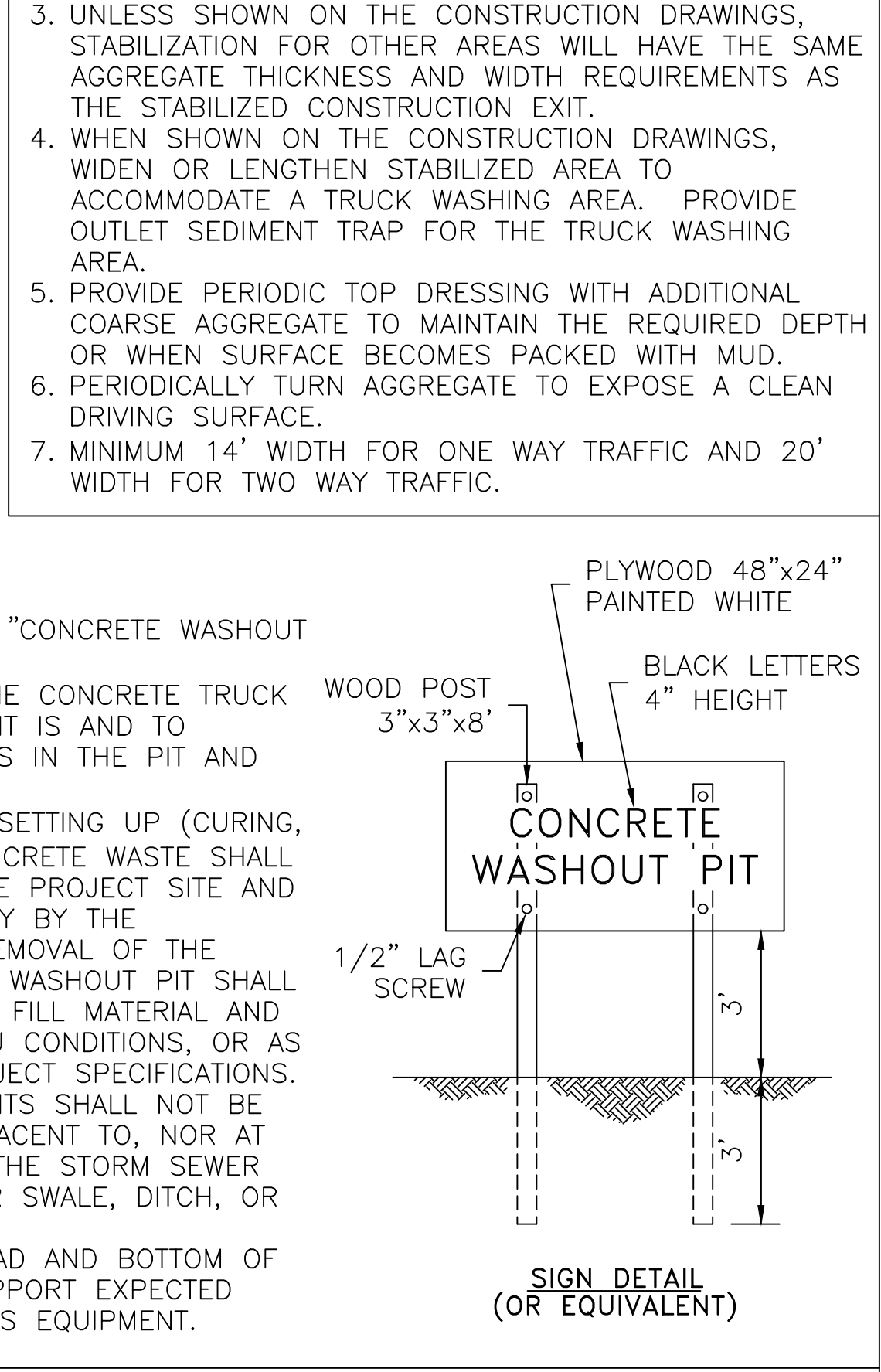
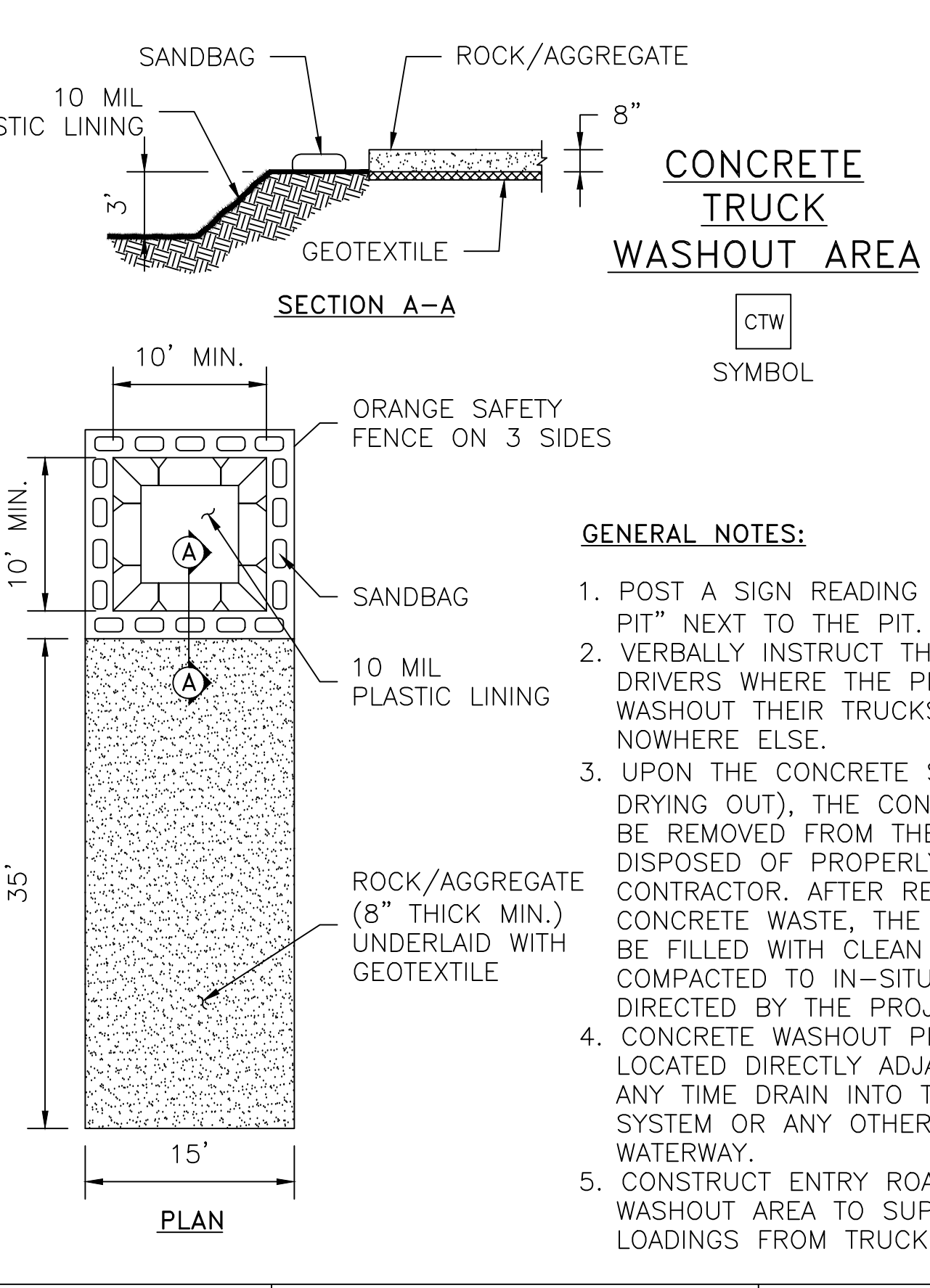
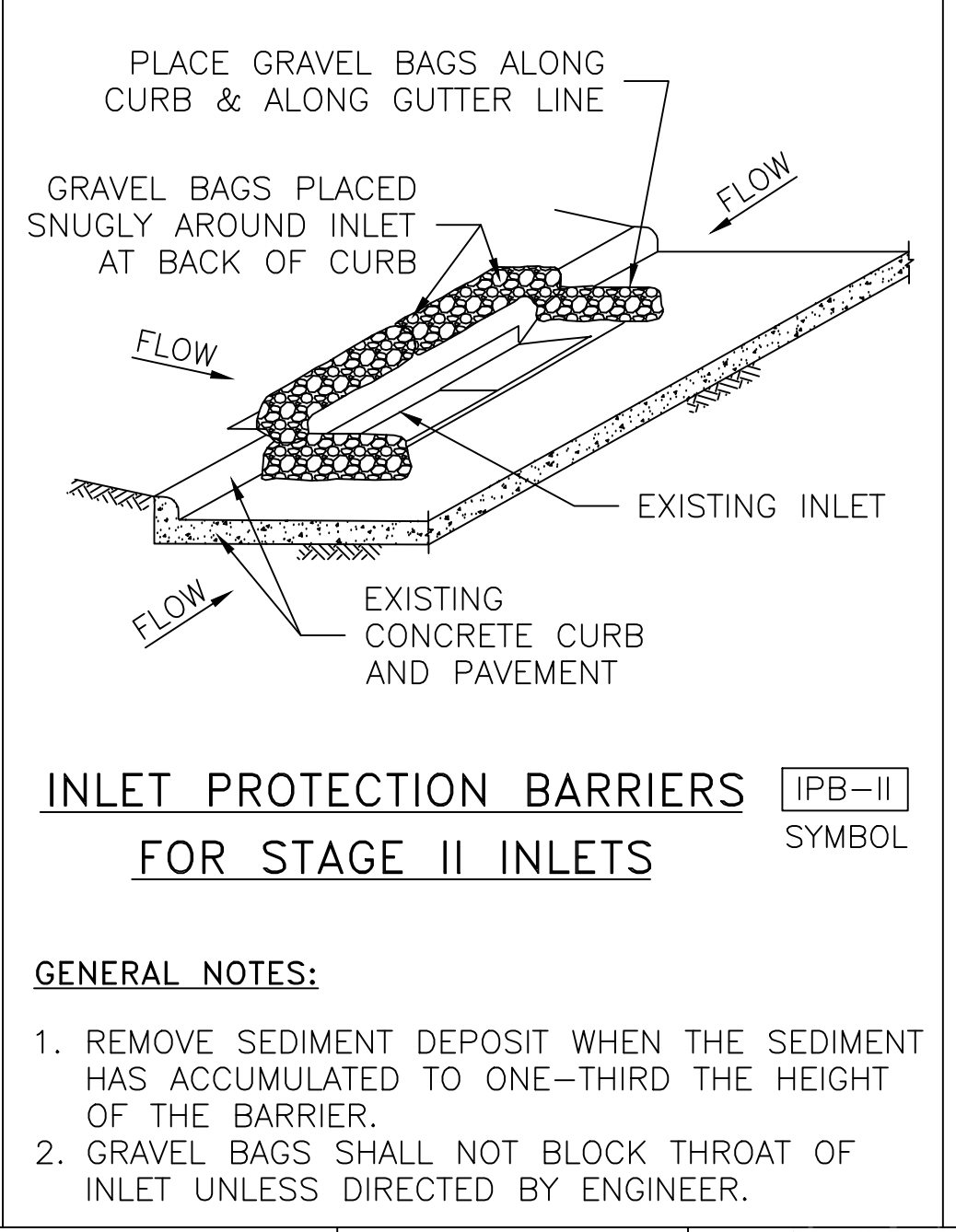
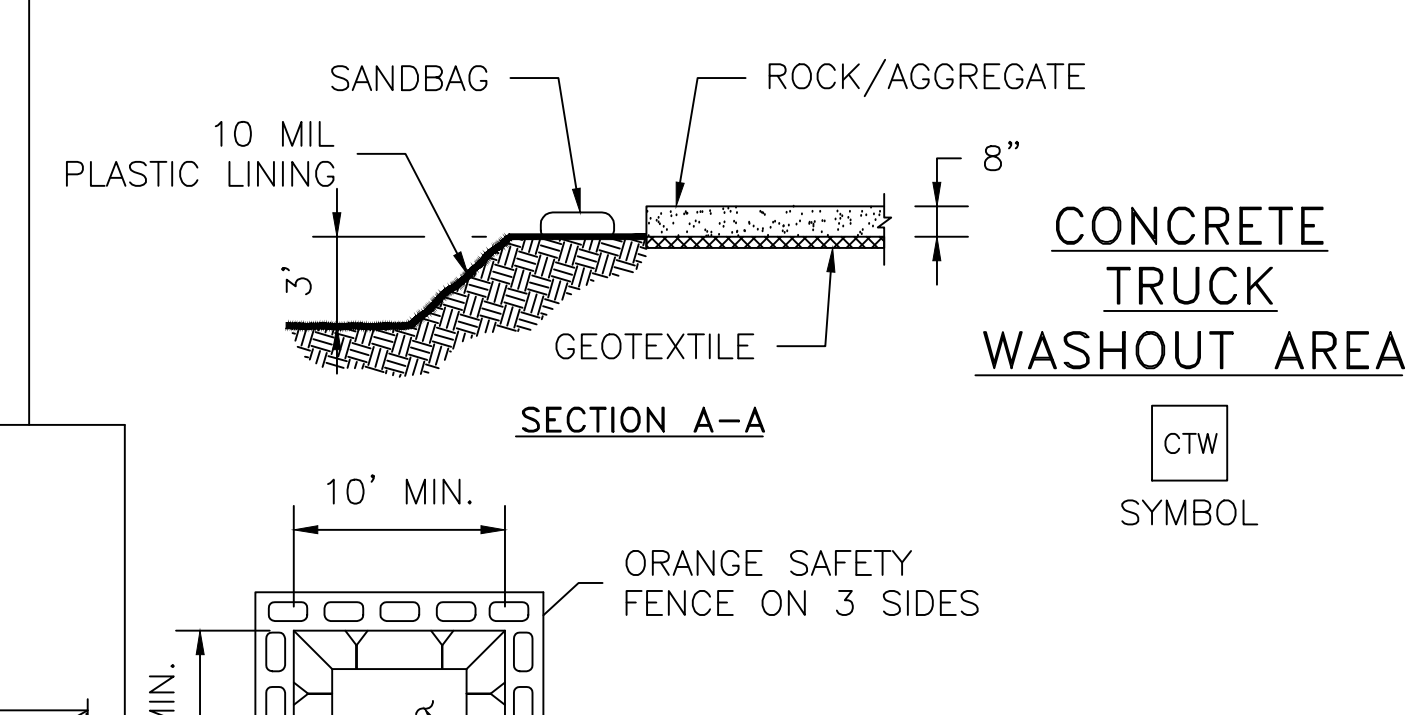
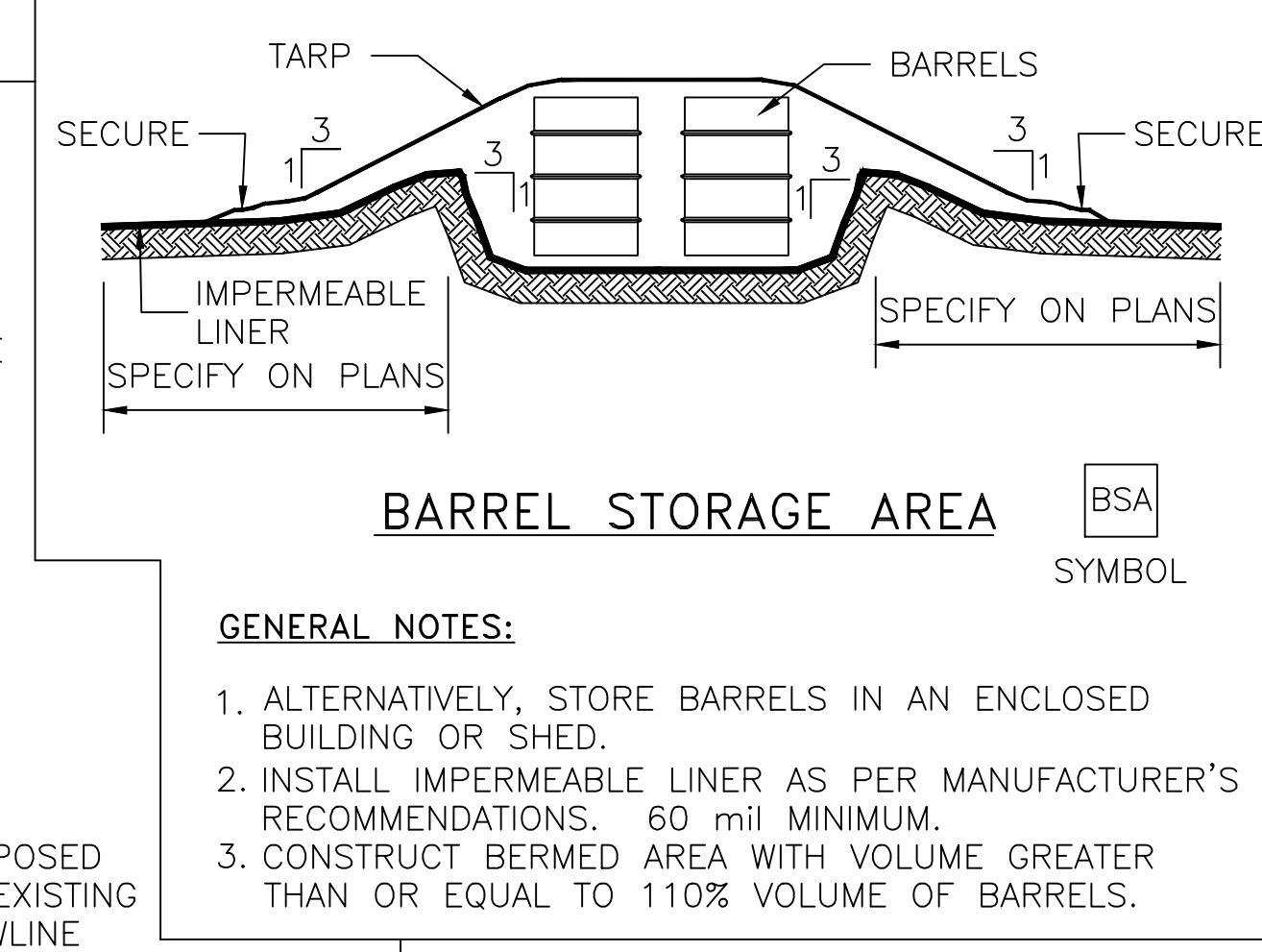
c:\users\gordon\my documents\hcc\aa-projects-hcc\1563 13.2 acres fm 2100\masters\construction drawings\plan set\sh 14 swppp details.dwg



- GENERAL NOTES:**
1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
  2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
  3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
  4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

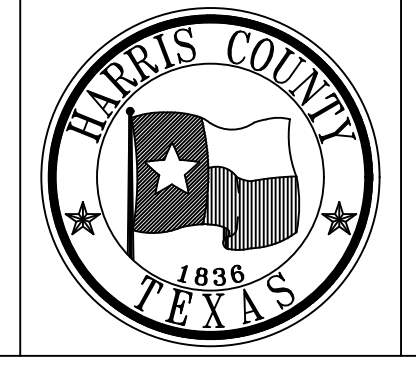


- A. TYPES OF FILTER DAMS**
1. TYPE 1 (NON-REINFORCED)
    - a. HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
    - b. TOP WIDTH - 2 FEET (MINIMUM)
    - c. SLOPES - 2:1 (MAXIMUM).
  2. TYPE 2 (REINFORCED)
    - a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
    - b. TOP WIDTH - 2 FEET (MINIMUM).
    - c. SLOPES - 2:1 (MAXIMUM).
  3. TYPE 3 (REINFORCED)
    - a. HEIGHT - 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
    - b. TOP WIDTH - 2 FEET (MINIMUM).
    - c. SLOPES - 3:1 (MAXIMUM).
  4. TYPE 4 (GABION)
    - a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
    - b. TOP WIDTH - 2 FEET (MINIMUM).
  5. TYPE 5. AS SHOWN ON THE PLANS.
- B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.**
1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
  2. PLACE GRANULAR FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
    - a. 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
    - b. 4-8 INCHES FOR ROCK FILTER DAM TYPE REFER TO GRANULAR FILL IN SPECIFICATION SECTION No. 02378 RIPRAP AND GRANULAR FILL.
  3. FOLD WIRE MESH AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
  4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
  5. SEE HCFCD SPECIFICATION SECTION NO. 02364-FILTER DAMS.
  6. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.



NO.	REVISIONS	DATE	NAME
REV	REVISION_TEXT	DATE	NAME
REV	REVISION_TEXT	DATE	NAME
REV	REVISION_TEXT	DATE	NAME
REV	REVISION_TEXT	DATE	NAME
REV	REVISION_TEXT	DATE	NAME

HARRIS COUNTY  
ENGINEERING DEPARTMENT



**HANS CONSULTING COMPANY**  
(281) 427-6054  
P.O. Box 1524  
Baytown, TX 77522  
ghans@teleshare.net  
TBPE FIRM No. F-4537  
TBPLS FIRM No. 10129500  
ENGINEER: GORDON W. HANS, PE  
P.E. SERIAL No. 36426  
DATE: DATE 1/26/17

PROJECT TITLE: <b>HUFFMAN BUSINESS PARK</b>		HCED STANDARD
DRAWN BY:	SHEET DESCRIPTION:	SHEET NO: 14 / 15
CK'D BY:	APPROVED BY:	
SCALE:	DATE: 1/26/17	

