



November 19, 2024  
AVO 37449.004

Ms. Ramie Hammonds  
Development Services Director/Building Official  
City of Sanger  
201 Bolivar Street  
P.O. Box 1729  
Sanger, Texas 76266

Re: **Windhaven Estates Re-Plat Review**

Dear Ms. Hammonds,

Halff Associates, Inc. was requested by the City of Sanger to review the re-plat for Windhaven Estates. The submittal was prepared by Homeyer Engineering, Inc. and was received on November 4<sup>th</sup>, 2024.

**General Comments**

1. Please address comments on attached markups and provide annotated responses on markups. Please note, not all comments are written on letter since some comments are easier to show and explain on the markups. Please annotate markup with responses.
2. Please note additional comments may be provided in subsequent reviews once additional data/responses is received.

**Hydrology and Hydraulics**

1. Please provide drainage report hydrographs and summary tables referenced in drainage report.
2. Please provide detention pond, storm sewer, culvert, street/alley capacity, open channel, and inlet calculations demonstrating Sanger drainage criteria are met. §10.106(d)(4-10)
3. Please provide documentation that the existing pond is not considered Waters of the US.
  - a. Please note that environmental assessment will be required prior to draining existing pond.
4. Please account for northern offsite flows in the detention pond size calculations. See pg. 11 of plans.
  - a. The Q100 entering the proposed detention pond (554 cfs) also does not appear to be equivalent to the total flow calculated in the existing drainage area calculations (271 cfs). Please provide additional calculations for the unaccounted for offsite 280 cfs.
5. Please provide drainage calculations in proposed drainage area map similar to existing drainage area map. §10.106(d)(2)(D). See pg. 11 of plans.
6. Runoff computations shall be based on fully developed watershed conditions. Please provide evidence that fully developed conditions were utilized in upstream offsite area when calculating proposed discharges §10.106(d)(2)(C)

7. Please revise single family run off coefficients to 0.55 per the Sanger Drainage criteria. §10.106(d)(2)(D)(i)
8. Please provide the cross section station for the referenced cross section on sheet C8. See pg. 11 of plans.
9. Please provide finished-floor elevations of all structures §10.106(d)(4)(C)
10. Please provide an explanation of how the 2 feet of sediment storage is accounted for in the detention pond calculations. §10.106(d)(10)(A)
11. Please label location of emergency overflow on detention pond
12. Please provide bottom slope of detention pond §10.106(d)(10)(C)
13. If detention pond fills up to 687', which is the current design, a portion of Lot 23 and Lot 22 will be used for that detention. Please revise or clarify that this is intentional. See pg. 9 of plans.
14. Please clarify which regulation is intended to be met with the placement of easement in center of detention pond. This may not be necessary. See pg. 9 of plans.

If you have any questions or need additional information, please do not hesitate to call me at (214) 937-3953.

Sincerely,  
HALFF  
TBPELS Firm No. 312

A handwritten signature in black ink, appearing to read 'Randy Peterman', is written over a light gray rectangular background.

Randy Peterman, PE, CFM, ENV SP



November 18, 2024  
AVO 37449.004

Ms. Ramie Hammonds  
Development Services Director/Building Official  
City of Sanger  
201 Bolivar Street  
P.O. Box 1729  
Sanger, Texas 76266

Re: **Windhaven Estates Preliminary Civil Construction Plans - Review #1**  
Dear Ms. Hammonds,

Halff Associates, Inc. was requested by the City of Sanger to review the Preliminary Civil Construction Plans for the Windhaven Estates. This submittal was prepared by Homeyer Engineering, Inc and was received on November 4<sup>th</sup>, 2024.

### **General Comments**

1. Please address comments on attached markups and provide annotated responses on markups. Please note, not all comments are written on letter since some comments are easier to show and explain on the markups. Please annotate markup with responses.
2. Please note additional comments may be provided in subsequent reviews once additional data/responses is received.

### **Drainage Calculation Comments**

1. Provide drainage area runoff calculations for proposed drainage

### **Storm Drain Profile Comments**

1. Provide Inlet calculations for proposed storm drain systems
2. Provide hydraulic calculations for proposed storm drain systems
3. Provide plan and profile sheets for proposed storm drain systems showing hydraulic grade lines and flows in pipe segments to ensure minimum and maximum velocities are met.

### **Grading**

1. Ensure surface runoff from residential lots does not cross more than one additional lot before being directed toward a street or dedicated drainage system per ordinance 10.106(d)(12)(A)
2. Verify that all first-floor elevations are set at a minimum of 1ft above the top of the street curb elevation per ordinance 10.106(d)(4)(C)

### **Water Line**

1. Ensure the spacing between fire hydrants does not exceed the maximum 500ft per City of Sanger ordinance 5.701(b)

Ms. Ramie Hammonds  
November 18, 2023  
Page 2 of 2

2. Ensure that 18' minimum segment of water line at crossing with proposed sanitary sewer is perpendicular to and centered on sewer pipe. Verify that segment is either constructed of ductile iron/steel or encased in cement stabilized sand embedment to comply with TCEQ requirements.

### **Sanitary Sewer**

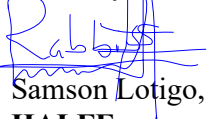
1. Ensure that maximum sanitary sewer manhole spacing of 500ft per ordinance 10.106(f)(1)(A)(iii) is met in all proposed sanitary sewer lines.

### **Illumination**

1. Street lighting shall be provided for very light traffic in residential areas and lighting fixtures shall in no case exceed 400ft per ordinance 10.106(h)

If you have any questions or need additional information, please do not hesitate to call me at (214) 764-7498.

Sincerely,



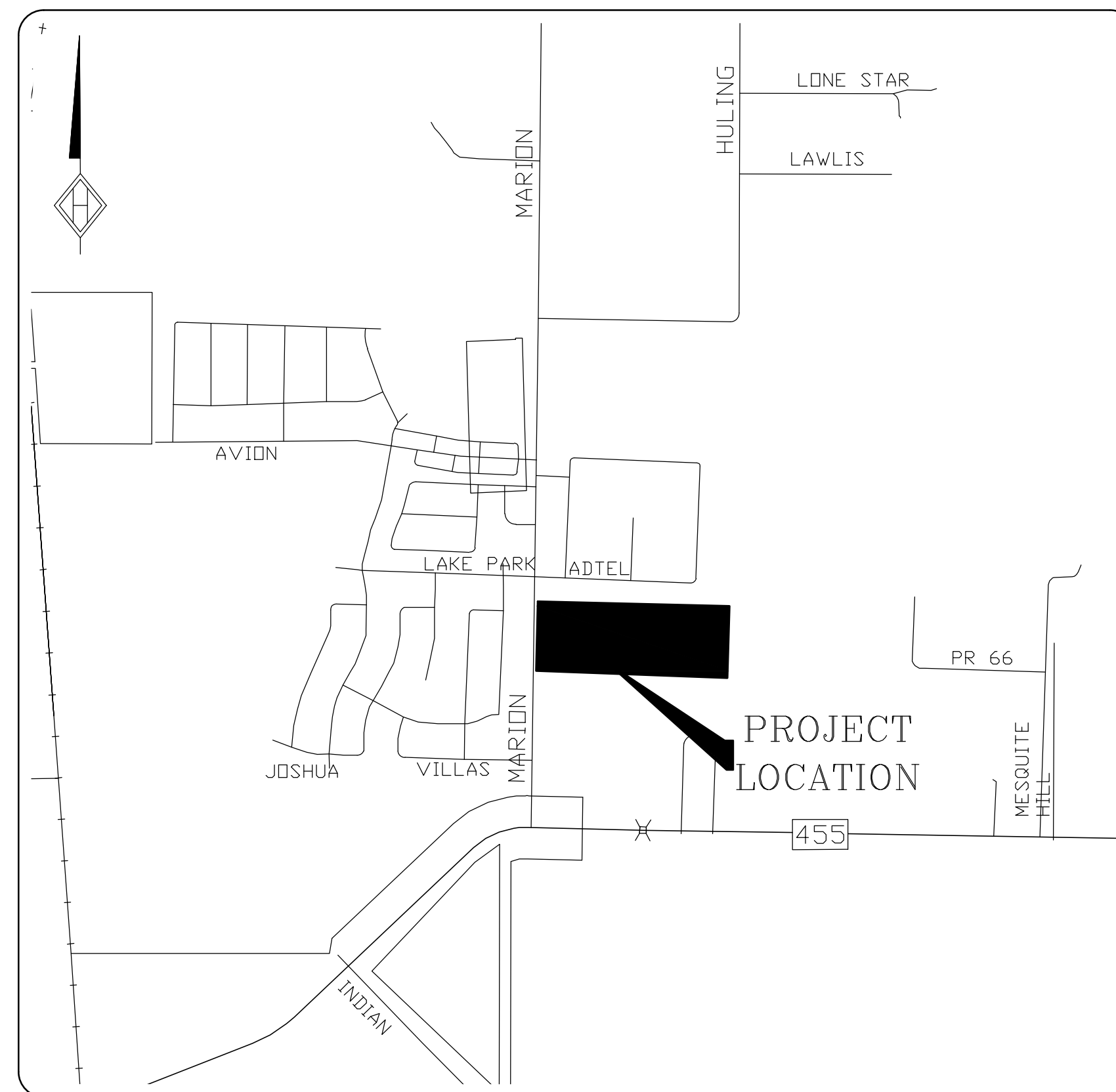
Samson Lotigo, PE

**HALFF**

Firm No. 0312

Attachments: Preliminary Civil Construction Plans markups

PRELIMINARY CIVIL CONSTRUCTION PLANS  
for  
Windhaven Estates  
19.50 Acres  
City of Sanger  
Denton County, Texas  
October 2024



Vicinity Map 1"=1000'

**ENGINEER**  
HOMEYER ENGINEERING, INC  
P.O. BOX 294527  
LEWISVILLE, TEXAS 75029  
CONTACT: STEVEN R. HOMEYER, PE  
PHONE: 972-906-9985

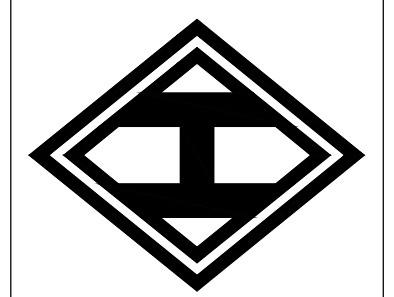
**OWNER/DEVELOPER**  
WINDHAVEN ESTATES, LLC  
6404 SHADY OAKS LANE  
PLANO, TEXAS 75093  
CONTACT: JACK LEONARD

SHEET INDEX

- Cover
- Plat
- C1 HEI General Notes
- C2 Development Plan
- C3 Lilly Lane Plan and Profile
- C4 Lilly Lane and Claire Court Plan and Profile
- C5 Taylor Trail Plan and Profile
- C6 Grading Plan West
- C7 Grading Plan East
- C8 Existing Drainage Area Map
- C9 Proposed Drainage Area Map
- C10 Detention Pond Plan
- C11 Proposed Storm Plan
- C12 Erosion Control Plan
- C13 Overall Water
- C14 Water Plan West
- C15 Water Plan East
- C16 Overall Sanitary Sewer Plan
- C17 Sanitary Sewer Line A Plan and Profile
- C18 Sanitary Sewer Line B Plan and Profile
- C19 Sanitary Sewer Line B1 Plan and Profile
- C20 Sanitary Sewer Line C Plan and Profile
- C21 Paving Details
- C22 Water Details
- C23 Water Details
- C24 Sanitary Sewer Details
- C25 Sanitary Sewer Details
- C26 Storm Drain Details
- C27 Storm Drain Details
- C28 Erosion Control Details
- C29 Misc. Details

PRELIMINARY PLANS  
THIS DOCUMENT IS FOR INTERIM  
REVIEW AND IS NOT INTENDED FOR  
CONSTRUCTION, BIDDING OR PERMIT  
PURPOSES.  
STEVEN R. HOMEYER, PE # 86942  
DATE: 10/07/2024

**HOMEYER**  
ENGINEERING, INC.  
TBPELS FIRM REGISTRATION NO. F-8440  
P.O. BOX 294527 • LEWISVILLE • TEXAS • 75029  
972-906-9985 PHONE • 972-906-9987 FAX  
WWW.HEI.US.COM

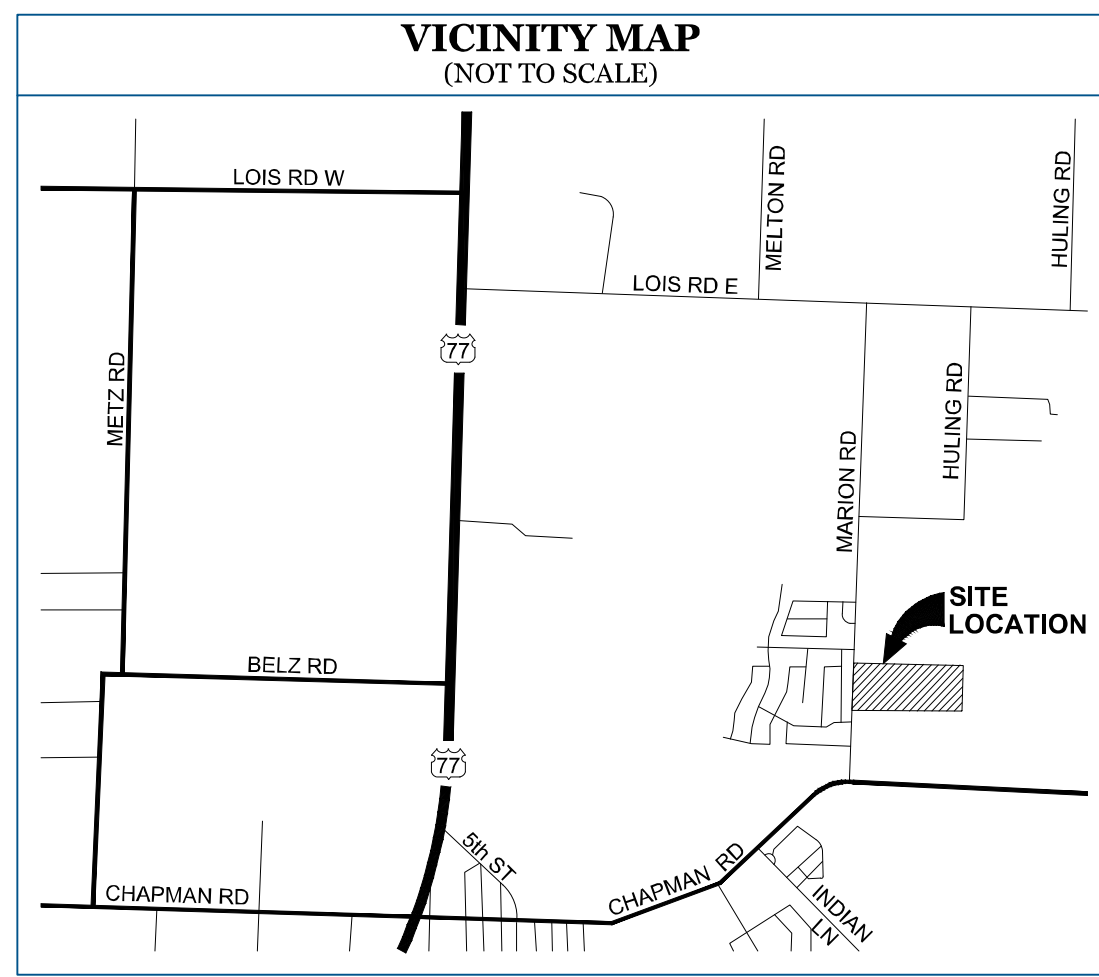


WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

COVER SHEET

DRAWN: ATG  
DATE: 10/07/2024

HEI #: 24-0702



**GENERAL NOTES**

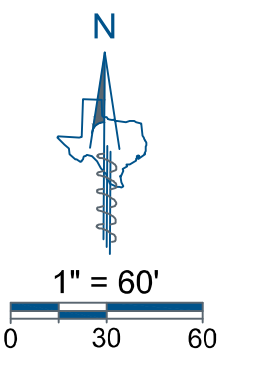
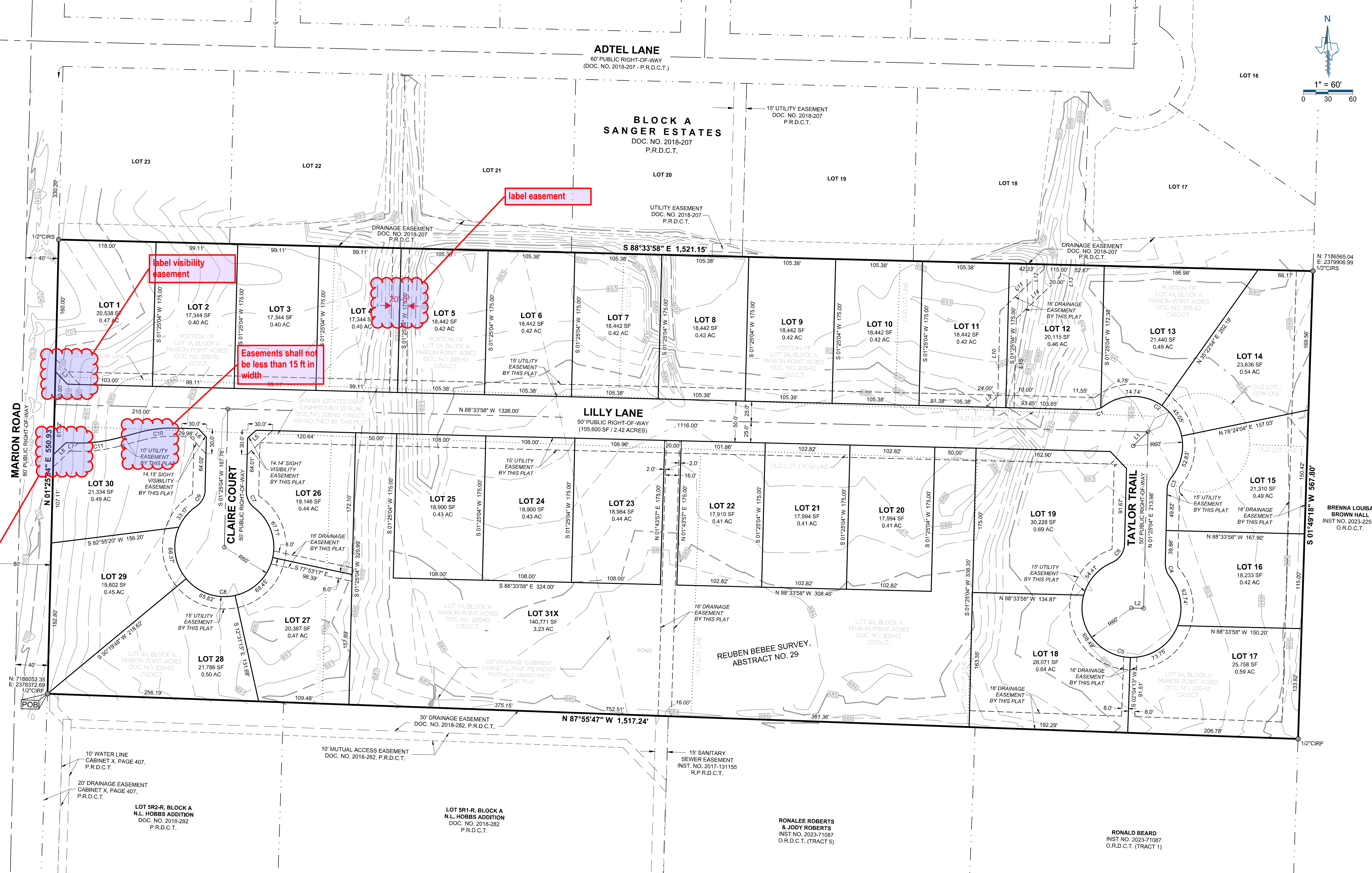
- The purpose of this plat is to recreate the lot configuration of a recorded platted residential subdivision to create 30 residential lots and one open space lot.
- This property is located in "Non-shaded Zone X" as scaled from the F.E.M.A. Flood Insurance Rate Map dated April 18, 2011 as shown on Map Number 48121C0070G.
- The bearings and coordinates shown on this survey are based on GPS observations utilizing the AllTerra RTKNET Network, North American Datum of 1983 (Adjustment Realization 2011).
- The grid coordinates shown on this survey are based on GPS observations utilizing the AllTerra RTKNET Cooperative network, NAD 83(2011) State Plane Coordinate System (Texas North Central Zone - 4202).
- Selling a portion of this addition by metes and bounds is a violation of City Ordinance and State Law, and is subject to fines and/or withholding of utilities and building permits.
- The elevations shown on this plat are based on GPS observations utilizing the AllTerra RTKNET Cooperative network, NAVD(88) Datum, (Geoid 12A).
- All interior property corners are marked with a 1/2-inch iron rod with green plastic cap stamped "EAGLE SURVEYING" unless noted otherwise.
- All easements shown on previously filed plats for this property are to be abandoned at the time this plat is filed for record.
- The Drainage Easements and Open Spaces as shown hereon, are to be maintained by the Homeowner's Association.
- The minimum dwelling unit size for lots in R-1 District is 2000 SF.
- All private roads, easements, drainage and detention facilities and common areas are to be maintained by the Home Owner's Association.
- The Drainage and Detention Easement will remain open at all times and will be maintained in a safe and sanitary condition by the owners of the lot or lots that are traversed by or adjacent to the Drainage and Detention Easement. The City will not be responsible for the maintenance and operation of said Easement or for any damage to private property or person that results from conditions in the Easement, or for the control of erosion. No obstructions to the natural flow or storm water run off shall be permitted by construction of any type of building, fence or any other structure within the Drainage and Detention Easement, as herein above defined, unless approved by the City Engineer. Provided, however, it is understood that in the event it becomes necessary for the City to erect or consider erecting any type of drainage structure in order to improve the storm drainage that may be occasioned by drainage in or adjacent to the subdivision, then in such event, the City shall have the right to enter upon the Drainage and Detention Easement at any point, or points, to investigate, survey or to erect, construct and maintain any drainage facility deemed necessary for drainage purposes. Each property owner shall keep the Drainage and Detention Easement clean and free of debris, silt, and any substance which would result in unsanitary conditions or obstruct the flow of water, and the City shall have the right of ingress and egress for the purpose of inspection and supervision of maintenance work by the property owner to alleviate any undesirable conditions which may occur. The natural drainage through the Drainage and Detention Easement is subject to storm water overflow and natural bank erosion to an extent which cannot be definitely defined. The City shall not be held liable for any such damages of any nature resulting from the occurrence of these natural phenomena, or resulting from the failure of any structure or structures, within the Easement.
- No wall, fence, structure, sign, tree, or other planting or slope terrace or embankment may be maintained higher than three (3) feet above the street grade so as to cause danger or hazard to traffic by obstructing the view of the intersection within visibility easements.

label visibility easement

label visibility easement

label easement

Easements shall not be less than 15 ft in width



**LEGEND**

- AC = ACRES
- SF = SQUARE FEET
- POB = POINT OF BEGINNING
- CIRF = CAPPED IRON ROD FOUND
- CIRS = CAPPED IRON ROD SET
- DOC. NO. = DOCUMENT NUMBER
- P.R.D.C.T. = PLAT RECORDS
- DENTON COUNTY, TEXAS
- O.R.D.C.T. = OFFICIAL RECORDS
- DENTON COUNTY, TEXAS
- ROW = RIGHT-OF-WAY

**CURVE TABLE**

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	16.33'	25.00'	37°25'41"	N 72°43'12" E	16.04'
C2	172.62'	60.00'	164°50'24"	S 43°34'27" E	118.95'
C3	16.33'	25.00'	37°25'41"	S 20°07'54" W	16.04'
C4	17.65'	25.00'	40°26'46"	S 18°48'19" E	17.28'
C5	299.39'	60.00'	285°53'54"	N 76°04'46" W	72.30'
C6	28.56'	25.00'	65°27'07"	N 34°08'38" E	27.03'
C7	23.55'	25.00'	53°58'05"	S 25°33'59" E	22.69'
C8	301.53'	60.00'	287°56'10"	N 88°34'56" W	70.59'
C9	23.55'	25.00'	53°58'05"	N 28°24'07" E	22.69'
C10	39.10'	140.00'	16°00'05"	S 83°25'59" W	38.97'
C11	48.87'	175.00'	16°00'05"	S 83°25'59" W	48.71'

**LINE TABLE**

LINE	BEARING	DISTANCE
L1	N 46°25'33" E	24.75'
L2	S 88°34'56" E	14.69'
L3	S 43°34'27" E	21.22'
L4	N 43°34'27" W	28.29'
L5	S 46°25'33" W	14.14'
L6	N 43°34'27" W	14.14'
L7	N 88°33'58" W	12.49'
L8	S 46°25'33" W	21.23'
L9	N 46°26'32" E	19.80'
L10	S 01°25'04" W	102.77'
L11	S 46°24'07" W	74.02'
L12	S 01°25'14" W	5.86'
L13	S 01°25'14" W	14.14'
L14	S 46°24'07" W	74.02'
L15	S 01°25'04" W	108.49'

**LOT SUMMARY**

GROSS: 19.51 ACRES  
 DEDICATED: 2.42 ACRES  
 NET: 17.09 ACRES

**PRELIMINARY**  
 this document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document

**REPLAT**  
**WINDHAVEN ESTATES**  
 LOTS 1 - 30 & 31X, BLOCK A  
 19.51 ACRES

**30 RESIDENTIAL LOTS / 1 OPEN SPACE LOT & 2.42 ACRES RIGHT-OF-WAY DEDICATION**

A REPLAT OF PART OF LOTS 1A - 4A AND ALL OF LOTS 5A - 8A, BLOCK A OF MARION POINT ACRES, RECORDED IN DOC. NO. 2015-62, P.R.D.C.T., REUBEN BEBEE SURVEY, ABSTRACT NO. 29, CITY OF SANGER, DENTON COUNTY, TEXAS

DATE OF PREPARATION: 09/30/2024

**OWNER**  
 Windhaven Estates, LLC  
 Contact: Jack Leonard  
 6404 Shady Oaks Lane  
 Plano, TX 75093

**ENGINEER**  
 Homeyer Engineering, Inc.  
 Contact: Matt Haskin  
 P.O. Box 294527  
 Lewisville, TX 75029  
 (972) 906-9985

**SURVEYOR**  
 Eagle Surveying, LLC  
 Contact: Brad Eubanks  
 222 S. Elm Street, Suite: 200  
 Denton, TX 76201  
 (940) 222-3009

**Eagle Surveying, LLC**  
 222 South Elm Street  
 Suite: 200  
 Denton, TX 76201  
 940.222.3009  
 www.eaglesurveying.com  
 TX Firm # 10194177

**OWNER'S CERTIFICATE & DEDICATION**

STATE OF TEXAS §  
COUNTY OF DENTON §

WHEREAS, **WINDHAVEN ESTATES LLC**, is the owner of a 19.51 acre tract of land situated in the Reuben Bebee Survey, Abstract Number 29, City of Sanger, Denton County, Texas, being a part of Lots 1A through 4A, Block A and all of Lots 5A through 8A, Block A of Marion Point Acres, an addition to the Extra-Territorial Jurisdiction of the City of Sanger, Denton County, Texas, according to the plat thereof filed for record under Document Number 2015-62, Plat Records, Denton County, Texas, (P.R.D.C.T.), as conveyed to Windhaven Estates LLC by deed of record in Document Number 2024-78673 of the Official Records of Denton County, Texas (O.R.D.C.T.), said 19.51 acre tract of land being more particularly described by metes and bounds as follows:

**BEGINNING** at a 1/2-inch capped iron rod found for the Southwest corner of the herein described tract, being in the East Right-of-Way line of Marion Road, and being the Northwest corner of Lot 5R of N.L. Hobbs Addition, an addition to the City of Sanger, according to the plat thereof recorded in Cabinet X, Page 613 of the P.R.D.C.T.;

Thence North 01°25'04" East with the East Right-of-Way line of said Marion Road for a distance of 550.93 feet to a 1/2-inch capped iron rod stamped "Eagle Surveying" set for the Northwest corner of the herein described tract;

Thence South 88°33'58" East with the North boundary line of the herein described tract for a distance of 1521.15 feet to a 1/2-inch capped iron rod stamped "Eagle Surveying" set for the Northeast corner of the herein described tract, and being in the West boundary line of a tract of land described in a deed to Delores S. Brown, according to the deed thereof recorded in Document No. 2002-157064 of the O.R.D.C.T.;

Thence South 01°49'18" West with the West boundary line of said Brown tract for a distance of 567.80 feet to a 1/2-inch capped iron rod found for the Southeast corner of the herein described tract, and being in the Northeast corner of a tract of land described in a deed to Ronald Beard, according to the deed thereof recorded in Document No. 2023-71087 of the O.R.D.C.T.;

Thence North 87°55'47" West with the North boundary line of said Roberts tract and Block A of aforementioned N.L. Hobbs Addition, for a distance of 1,517.24 feet to the **POINT OF BEGINNING** enclosing 19.51 acres of land, more or less.

**NOW THEREFORE KNOW ALL MEN BY THESE PRESENTS:**

THAT, **WINDHAVEN ESTATES LLC**, does hereby adopt this plat, designating the herein described property as **WINDHAVEN ESTATES**, an addition to the City of Sanger, Denton County, Texas, and does hereby dedicate to public use forever all streets, alleys, parks, watercourses, drains, easements and public places shown thereon for the purpose and consideration therein expressed. No buildings, fences, trees, shrubs or other improvements or growths shall be constructed or placed upon, over or across the drainage and utility easements as shown. Said drainage and utility easements being hereby reserved for the mutual use and accommodation of all public utilities desiring to use same. All and any public utility shall have the right to remove and keep removed all or parts of any buildings, fences, trees, shrubs or other improvements or growths which may in any way endanger or interfere with the construction, maintenance, or efficiency of its respective system on the drainage and utility easement and all public utilities shall at all times have the full right of ingress and egress to or from and upon the said drainage and utility easements for the purpose of constructing, reconstructing, inspecting, patrolling, maintaining and adding to or removing all or parts of its respective systems without the necessity at any time of procuring the permission of anyone.

OWNER: **WINDHAVEN ESTATES LLC**

BY: \_\_\_\_\_ Date \_\_\_\_\_  
Jack Leonard Manager

STATE OF TEXAS §  
COUNTY OF DENTON §

BEFORE ME, the undersigned authority, on this day personally appeared **JACK LEONARD**, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF THE OFFICE this \_\_\_\_\_ day of \_\_\_\_\_, 2024.

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

**CERTIFICATE OF SURVEYOR**

STATE OF TEXAS §  
COUNTY OF DENTON §

I, **MATTHEW J. RAABE**, Registered Professional Land Surveyor, do hereby certify that this plat was prepared from an actual survey made on the ground and that the monuments shown hereon were found or placed with 1/2-inch iron rods with green plastic caps stamped "EAGLE SURVEYING" under my direction and supervision in accordance with the current provisions of the Texas Administrative Code and the Ordinances of the City of Sanger, Denton County, Texas.

**PRELIMINARY**  
this document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document

Matthew J. Raabe, R.P.L.S. # 6402 \_\_\_\_\_ Date \_\_\_\_\_

STATE OF TEXAS §  
COUNTY OF TARRANT §

BEFORE ME, the undersigned authority, on this day personally appeared **TED A. GOSSETT**, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF THE OFFICE this \_\_\_\_\_ day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
John Cox, Notary Public in and for the State of Texas

UTILITY PROVIDERS	
<b>TELEPHONE:</b>	<b>SPRINT</b> 1435 S. Loop 288, Suite: 107 Denton, TX 76205 1- (866) 723-8010
<b>WATER:</b>	<b>CITY OF SANGER</b> 201 Boliver Street Sanger, TX 76266 (940) 458-9096
<b>ELECTRIC:</b>	<b>COSERV ELECTRIC</b> 7701 South Stemmons Corinth, TX 76210 1- (800) 274-4014

Approved and Accepted	
_____	_____
Chairman, Planning & Zoning Commission City of Sanger, TX	Date
_____	_____
Mayor City of Sanger, TX	Date
Attested by	
_____	_____
City Secretary City of Sanger, TX	Date

**SURVEYOR**  
Eagle Surveying, LLC  
Contact: Brad Eubanks  
222 S. Elm Street, Suite: 200  
Denton, TX 76201  
(940) 222-3009

**ENGINEER**  
Homeyer Engineering, Inc.  
Contact: Matt Haskin  
P.O. Box 294527  
Lewisville, TX 75029  
(972) 906-9985

**OWNER**  
Windhaven Estates, LLC  
Contact: Jack Leonard  
6404 Shady Oaks Lane  
Plano, TX 75093

JOB NUMBER 1607.043-11		Eagle Surveying, LLC 222 South Elm Street Suite: 200 Denton, TX 76201 940.222.3009 www.eaglesurveying.com TX Firm # 10194177
DATE 09/30/2024		
REVISION -		
DRAWN BY BE		

**REPLAT  
WINDHAVEN ESTATES  
LOTS 1 - 30 & 31X, BLOCK A  
19.51 ACRES**

**30 RESIDENTIAL LOTS / 1 OPEN SPACE LOT  
& 2.42 ACRES RIGHT-OF-WAY DEDICATION**

A REPLAT OF PART OF LOTS 1A - 4A AND  
ALL OF LOTS 5A - 8A, BLOCK A OF MARION POINT ACRES,  
RECORDED IN DOC. NO. 2015-62, P.R.D.C.T.,  
REUBEN BEBEE SURVEY, ABSTRACT No. 29,  
CITY OF SANGER, DENTON COUNTY, TEXAS

DATE OF PREPARATION: 09/30/2024

GENERAL NOTES:

- The proposed project is located in the City of Sanger, Texas, hereinafter called "City"
- Prior to any construction, the Contractor shall familiarize himself with the Contract Documents and Specifications, the Plans, including all notes, the City Standard Details and Specifications and any other applicable standards or specifications relevant to the proper completion of the work specified. Failure on the part of the Contractor to familiarize himself with all Standards and Specifications pertaining to this work shall in no way relieve the Contractor of responsibility for performing the work in accordance with all such applicable Standards and Specifications.
- The Contractor shall have in his possession, prior to construction, all necessary permits, licenses, etc. The Contractor shall have at least one set of approved Engineering Plans and Specifications on-site at all times. The Contractor shall notify the City 48 hours prior to the commencement of any work.
- All materials and construction shall conform to the City Standard Construction Details for Paving, Drainage, Water and Sanitary Sewer Facilities and be installed in accordance with the City Specifications and the North Central Texas Council of Governments Standard Specifications for Public Works Construction. These specifications shall be made part of these plans.
- In the event an item of work is not covered in the City Construction Standards, Specifications and Details; or the North Central Texas Council of Governments Standard Specifications for Public Works Construction; the City Engineer shall have the final decision on all materials, methods and procedures.
- Construction inspection may be performed by representatives of the Owner, Engineer, City, Geotechnical Engineer and Reviewing Authorities and Agencies. Unrestricted access shall be provided to them at all times. The Contractor is responsible for understanding and scheduling required inspections.
- All contractors must confine their activities to the work area. No encroachments outside of the defined work area will be allowed, unless specifically noted on the plans. Any damage resulting therefrom shall be the Contractor's responsibility to repair.
- It will be the responsibility of each contractor to protect all existing public and private utilities throughout the construction of this project. The Contractor shall contact the appropriate utility companies for line locations prior to commencement of construction and shall assume full liability to those companies for any damages caused to their facilities.
- The Contractor shall be responsible for providing the required construction staking necessary to complete the construction in accordance with the plans and specifications.
- The Contractor shall be responsible for providing and maintaining all necessary barricading and all other warning and safety devices to protect the public safety and health until all work has been completed and accepted.
- If unforeseen problems or conflicts are encountered in the course of construction, for which an immediate solution is not apparent, the Engineer and Owner shall be notified immediately.
- The Contractor shall be responsible for field locating existing utilities and improvements prior to construction. The locations of existing utilities shown on these plans are approximate. The Contractor shall call 1-800-344-8377 (DIG-TESS), other utility locating services or the underground utility companies a minimum of 48 hours prior to beginning work.
- The Contractor shall employ an Owner approved engineering testing laboratory for all required density, construction and materials testing and water bacteria testing. The testing laboratory shall make tests necessary to insure that construction is in accordance with the approved plans and specifications. Any retesting necessary to insure that a prior failing test meets the plan requirements, shall be at the Contractor's expense. The testing laboratory shall submit testing reports to the Engineer, the Owner and the City.
- The existing utilities shown on these plans have been located from reference information obtained from the respective owner of the utility. The Engineer and Owner do not accept responsibility for the utility locations as shown. It shall be the responsibility of the Contractor to verify the location of all existing utilities prior to construction, to take necessary precautions to protect all facilities encountered and to notify the Engineer promptly of any conflicts with existing facilities.
- The Contractor shall be responsible for removing any existing structures, fences, debris or trees that are located within the boundaries of this project, unless otherwise noted on the plans.
- The Contractor shall remove and dispose of all unsuitable excavated materials and construction debris at no additional cost to the Owner.
- The Contractor shall be solely responsible for maintaining trench safety requirements in accordance with the trench safety plan prepared by others and in accordance with City Standards, Texas State Law and the Occupational Safety and Health Administration Standards.
- All concrete shall meet the minimum compressive strengths as noted and specified on the plans or other specifications. As a minimum, no concrete shall have a compressive strength less than 4,000 psi at 28 days.
- Refer to the architectural plans for building and foundation dimensions.
- The Contractor shall be responsible for providing a two (2) year, 100% maintenance bond to the Owner for all improvements associated with the approved plans.

GRADING NOTES:

- All grading shall be performed in accordance with these plans and the geotechnical report prepared by others.
- New finished contours shown are top of paving in areas to receive pavement and top of soil in areas to be seeded.
- Areas outside of parking lot perimeter shown to be seeded shall receive a minimum of four (4) inches of top soil (or to depth identified on the Landscaping Plans). This topsoil to be placed and leveled by the grading contractor. This material may be stockpiled during stripping operations.
- Rough grading elevations shall be as follows:
  - Four (4) inches below finished contours in seeded areas.
  - Six (6) inches below finished contours in paved areas, unless noted otherwise.
- Dimensions on buildings are for grading purposes only and are not intended for use in laying out the building foundation.
- Contractor shall pay all costs associated with raising or lowering existing utility appurtenances as required to match finished grades in conformance with City Standards and these plans.
- The Contractor shall use whatever measures are required to prevent silt and construction debris from leaving the site. Contractor shall comply with all Federal, State and Local erosion, conservation and siltation regulations. Contractor shall remove all temporary erosion control devices upon completion of permanent drainage facilities and the establishment of vegetation sufficient to prevent erosion. Any damage to adjacent properties; downstream channels, ponds or lakes; or wildlife shall be corrected by the Contractor at his expense.
- The Contractor shall take all available precautions to control dust at no additional cost to owner.
- All excavation is unclassified and shall include all materials encountered.
- All areas not covered by the building, paving or proposed landscaping shall be grassed on this lot including adjacent street parkways.
- Prior to the commencement of construction activities, the Contractor shall stake out and mark the items established by the site plan.
- Temporary erosion control devices shall be installed prior to the commencement of grading activities. Contractor shall inspect and maintain all temporary erosion control devices as required.
- All disturbed areas shall be seeded with hydromulch unless otherwise noted. The Contractor shall maintain as much existing vegetation as possible. Grass buffer strips shall remain around the perimeter of the property to aid in the filtering of sedimentation. Sufficient temporary or permanent groundcover shall be established on all slopes, berms and swales to prevent erosion.
- All site grading and earthwork shall comply to the geotechnical report recommendations.
- These specifications do not include grading and preparation of the building foundation area. The Contractor shall confirm the foundation compaction, moisture control, select fill and/or treatment with the Owner, the project geotechnical engineer and structural engineer.
- Areas within five (5) feet horizontally of the parking pavement and/or embankment slopes adjacent to the parking area shall be constructed as per the project geotechnical engineer's recommendations. The specifications identified below are minimum requirements and shall be superseded by the project geotechnical engineer's recommendations if in conflict. The specifications are as follows:
  - The area shall be stripped of vegetation a minimum of six (6) inches or as directed by the project geotechnical engineer and proof rolled. Proof rolling consists of rolling the entire area of prepared subgrade with a heavy (25 ton or greater total weight) pneumatic tired roller. The roller shall make several passes over the area. Any soft, wet or weak areas which do not compact by proof rolling shall be removed and recompacted as outlined herein. The proof rolling operation must be performed under the observation of a qualified geotechnical engineer or his representative and density control tested.
  - On-site soils with plasticity index (PI) anticipated to be greater than 15 and less than 20, which includes any dark colored surface clay soils, can be used as grade raise fill outside the proposed building area. These clay soils shall be compacted to a dry density of at least 95 percent of standard proctor density. The compacted moisture content of the clays during placement shall be between optimum and four (4) percentage points above optimum.
  - Compaction shall be accomplished by placing the fill in six (6) to eight (8) inch thick lifts and compacting each lift to at least the minimum specified dry density. It is imperative that the fill particle sizes be less than six (6) inches in diameter. If larger clods are encountered during grading, these clods must be broken down or removed prior to final placement of the fill.
  - In order for the fill materials to perform as intended, the fill material must be placed in a manner which produces a good uniform fill that is compacted within the density and moisture ranges outlined above. Field density tests shall be performed to confirm this performance as construction progresses. For the proposed parking and driveway areas, testing at a frequency of no less than one (1) test per each lift per each 5,000 square feet shall be provided.
- All underground work shall be completed prior to subgrade preparation and placement of paving.

EROSION CONTROL NOTES:

- Erosion control design and specifications are included in these drawings in accordance with the minimum requirements of the City. Responsibility for compliance with State and Federal Best Management Practices (BMPs), the implementation of erosion control BMP measures and/or the filing of permits or notices shall solely rest with the Contractor(s) and Owner(s). The Texas Commission on Environmental Quality (TCEQ) requires permits for both small and large construction sites under the authority of the Texas Pollution Discharge Elimination System (TPDES) General Permit. General Permit requirements will require the developer/owner and responsible Contractor(s) to complete the following:
 

Small Construction Sites – will disturb (alone or as part of a larger development) between 1 acre and 5 acres of land.

    - Must develop and implement a Storm Water Pollution Prevention Plan (SWPPP)
    - Must post copy of the TCEQ Construction Site Notice at the project site.
    - Must submit a copy of the Construction Site Notice to the City.

Large Construction Sites – will disturb (alone or as part of a larger development) 5 acres or more of land.

    - Must develop and implement a SWPPP
    - Must submit Notice of Intent (NOI) with application fee to TCEQ at least 2 days prior to commencing construction activities.
    - Must post copy of the NOI at the project site.
    - Must submit a copy of the NOI to the City.

Homeyer Engineering, Inc. assumes no responsibility or liability for failure to do so by the Owner, Developer or Contractor.
  - The Contractor shall obtain a TPDES General Permit in compliance with TCEQ and implement a SWPPP according to permit requirements and applicable laws.
  - The Contractor shall preserve existing vegetation when possible and must stabilize any disturbed area where construction activity has temporarily or permanently ceased. The stabilization must take place within 14 days of the end of activities unless construction will resume within 21 days.
  - All of the erosion control devices shown on the erosion control plan for the project shall be installed prior to the start of land disturbing activities.
  - If the erosion control plan as approved cannot control erosion and off-site sedimentation from the project, then the erosion control plan will be required to be revised and/or additional erosion control devices will be required on-site.
  - The Contractor shall use whatever measures are required to prevent silt and construction debris from leaving the site. Contractor shall comply with all Federal, State and Local erosion, conservation and siltation regulations. Contractor shall remove all temporary erosion control devices upon completion of permanent drainage facilities and the establishment of vegetation sufficient to prevent erosion. Any damage to adjacent properties; downstream channels, ponds or lakes; or wildlife shall be corrected by the Contractor at his expense.
  - The Contractor shall take all available precautions to control dust at no additional cost to owner.
- PAVING NOTES:
- All dimensions are to the face of curb unless shown otherwise.
  - All proposed curb radii are 2.0 feet unless shown otherwise.
  - The Contractor shall remove and replace any concrete pavement within five (5) days of saw cutting the existing pavement.
  - 20% MAX of fly ash is allowed in the concrete mix design.
  - All subgrade shall be tested for sulfates prior to the placement of concrete pavement. If sulfates are found, any treatments shall be in accordance with the recommendations of the geotechnical engineer.
  - All concrete shall meet the minimum compressive strengths as noted and specified on the plans or other specifications. Unless noted otherwise, the concrete pavement shall have a minimum compressive strength of 4,000 psi at 28 days.
  - It is the Contractor's responsibility to ensure compliance with all handicapped accessibility requirements, including signage, textures, colorings, markings and slopes of ADA accessible routes and parking spaces.
  - All signs, pavement markings and other traffic control devices shall conform to the Texas Manual on Uniform Traffic Control Devices.
  - All existing signs within the limits of the proposed pavement shall be relocated a minimum of five (5) feet from the proposed back of curb.
  - The contractor shall submit a pavement jointing plan to the Engineer for approval prior to the placement of concrete paving.
  - Saw joints shall be made as soon as the new concrete can support the weight of the machine and operator without tracking.

WATER AND SEWER NOTES:

- All materials, devices and components used for dispensing potable water shall conform to NSF/ANSI Standard 61 and NSF/ANSI Standard 372 in accordance with the Reduction of Lead in Drinking Water Act and city details.
- All water pipe less than 12 inches in diameter shall be C900, CL 150 (DR 18) PVC unless shown otherwise.
- All sewer pipe less than 12 inches in diameter and less than 10 feet in depth shall be SDR-35 PVC. When the depth exceeds 10 feet, the pipe material shall be SDR-26 PVC.
- All water line appurtenances (valves, fire hydrants, tees, etc.) shall utilize mechanically restrained joints and concrete thrust blocking.
- The contractor shall adjust any valve covers, manholes, etc. to proposed grades. Refer to grading plans, paving plans and landscaping plans for final grades for determining manhole rim elevations.
- Water mains shall have a minimum cover of 48 inches below the proposed finished grade.
- All public pipe, structures and fittings shall be inspected by the City inspector prior to the trench being backfilled.
- Water jetting is not allowed.
- All embedment and backfill shall be wetted to approximate optimum moisture and compacted in 8 inch lifts to 95% Standard Proctor Density or as directed by the Geotechnical Engineer. Density tests shall be obtained for each lift and for each 150 lineal feet of trench or increment thereof or as directed by the Geotechnical Engineer.
- The location of all existing utilities indicated on the plans are taken from existing records. The exact location and elevation of all public utilities shall be determined by the Contractor. It shall be the responsibility of the Contractor to determine whether additional facilities, other than those shown, may be present.
- When installing water lines at sanitary sewer crossings, no joint of water pipe shall be within 9 feet of the centerline of the sanitary sewer pipe.
- A minimum clearance of 2 feet shall be provided between water lines and storm drainage inlets.
- All road bores shall be made using dry bore equipment. No wet bores will be allowed.
- Fire hydrants shall be located a minimum of 3 feet and a maximum of 5 feet behind the back of curb. If the fire hydrant is located within or adjacent to a public right-of-way, the Contractor shall place a blue reflector in the center of the lane adjacent to the fire hydrant.
- Fire hydrants shall be painted in accordance with City Standards.
- Proposed water lines shall be tested and disinfected in accordance with AWWA C601 prior to acceptance.
- Proposed sewer lines shall be subjected to an air test and/or leakage test prior to acceptance.
- The Contractor shall provide a TV inspection for all public sewer mains at Contractor's expense.
- All excavation is unclassified and shall include all materials encountered.

STORM DRAINAGE NOTES:

- All storm drainage pipe shall be Class III RCP, C-76, unless shown otherwise.
- The Contractor shall use Forterra "B-2" (Radius Pipe) or equal for all horizontal or vertical curves with a radius greater than 100 feet. Pre-fabricated bends shall be used if the radius is less than 100 feet.
- Use pre-fabricated Wyes at all pipe intersections and concrete collars at pipe size changes if a junction device (manhole, junction box, inlet, etc.) is not used.
- Open ends of storm drainage pipes shall be adequately protected at the end of each day by the contractor.
- Water jetting is not allowed.
- All embedment and backfill shall be wetted to approximate optimum moisture and compacted in 8 inch lifts to 95% Standard Proctor Density or as directed by the Geotechnical Engineer. Density tests shall be obtained for each lift and for each 150 lineal feet of trench or increment thereof or as directed by the Geotechnical Engineer.
- All excavation is unclassified and shall include all materials encountered.
- The proposed storm drainage system including the detention facility shall be maintained by the property owner.

FIRE LANE NOTES:

- The fire lane shall be striped on a paved surface and be clearly marked on the pavement with a "red" painted line at least four (4) inches wide. "NO PARKING" and "FIRE LANE" in not less than four (4) inch letters in "white" point shall be placed every other twenty five (25) feet on the stripe. Where the fire lane is adjacent to a curb, the entire curb shall be painted. All paint referred to shall be a traffic marking paint.

MAINTENANCE AGREEMENT NOTE:

The City of Sanger is not responsible for the design, construction, operation, maintenance or use of the stormwater detention area, and their associated private drainage easements, herein referred to as "features" to be developed and constructed by the owners of their successors. Owners or successors agree to indemnify and hold harmless the City of Sanger, its officers, employees, and agents from any direct or indirect loss, damage, liability, or expense and attorney's fees for any negligence or omissions whatsoever, arising out of the design, construction, operation, maintenance, condition or use of the "features" including any non-performance of the foregoing. Owners and successors accept full responsibility and liability for the "features". All of the above shall be covenants running with the land.

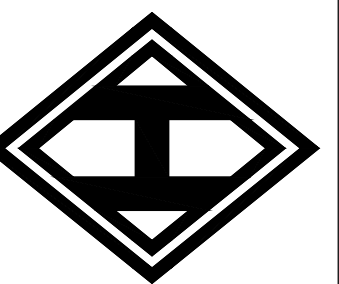
TxDOT GENERAL NOTES:

- All construction within the state right of way will require compliance to 2014 TxDOT standard specifications, standard plan, TxDOT on-line manual and the Texas manual on uniform traffic control devices.
- By sealing and signing there permit plans as a professional civil engineer licensed to practice in the state of Texas, I certify that the proposed driveway of public street connections to the state roadway meets or exceeds the minimum stopping sight distance required for a design speed of 50 miles per hour, based on the most recent on-line TxDOT roadway design manual requirements.
- Posted speed limit is 50 miles per hour.
- Specifications adopted by the Texas dept. of transportation November 1, 2014 and specification items listed and dated as follows shall govern on this project for all work within the state right of way.
- Traffic control must be maintained throughout the duration of work within TxDOT row.
- All disturbed row must be re-vegetated with sod and maintained until vegetation is re-established.
- All lane closures must be coordinated with both TxDOT and municipality inspectors.
- No construction shall be permitted within TxDOT right of way prior to TxDOT approval and issuance of permit.
- Any utility relocation under TxDOT row requires separate "UIR" permit.
- All lane closures shall take place between 9.00 AM – 3.30 PM Monday thru Friday. No lane closures are allowed during peak hours.

PRELIMINARY PLANS

THIS DOCUMENT IS FOR INTERIM REVIEW AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.  
 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024

**HOMEYER**  
 ENGINEERING, INC.  
 TBPELS FIRM REGISTRATION NO. F-84440  
 P.O. BOX 2944527 • LEWISVILLE, TEXAS • 75029  
 972-906-9985 PHONE • 972-906-9987 FAX  
 WWW.HEI.US.COM



WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

HEI GENERAL NOTES

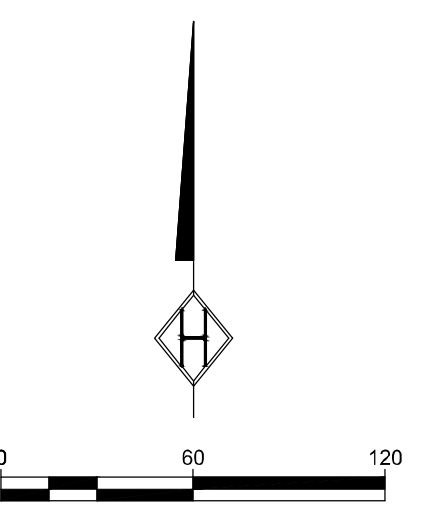
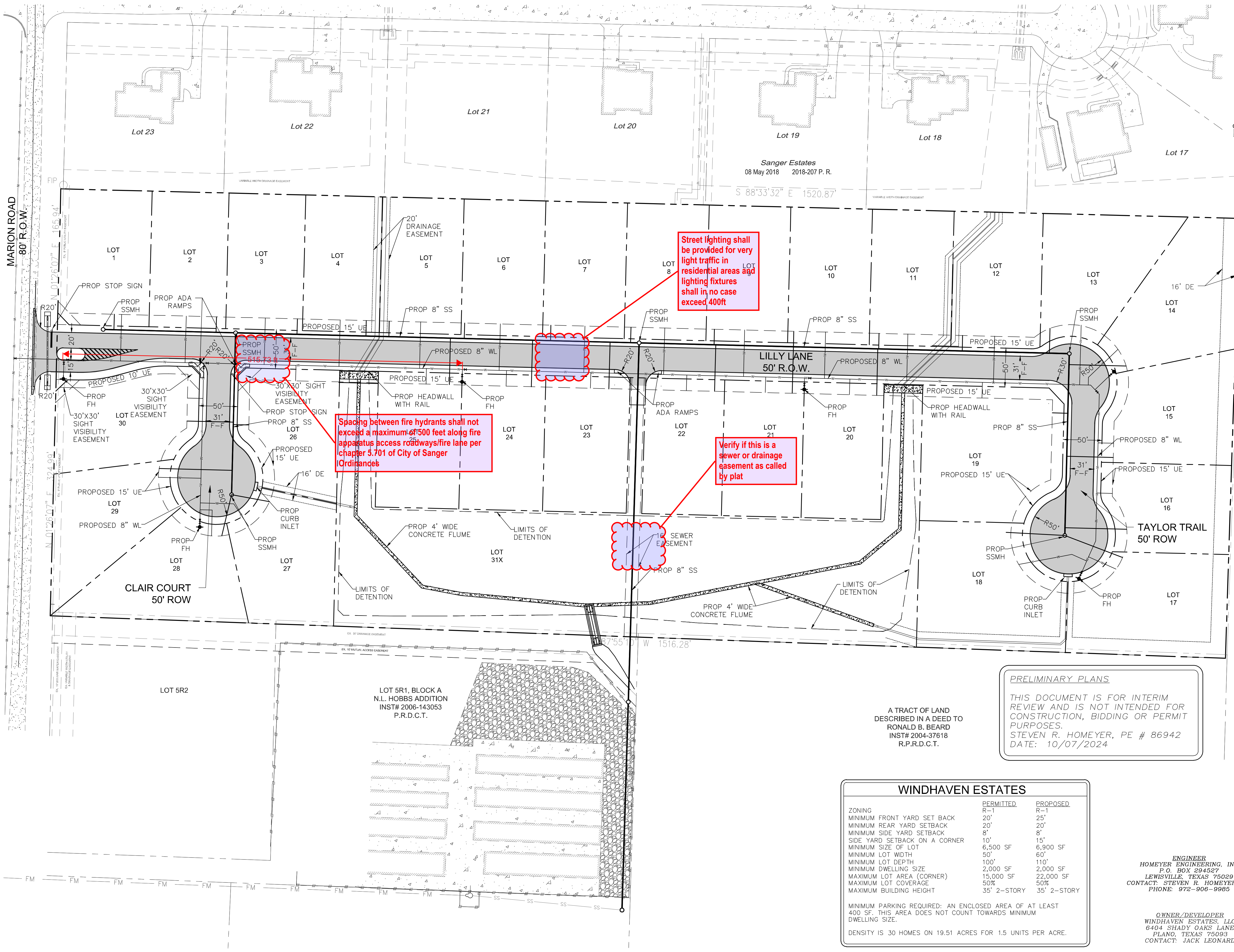
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DATE: 10/07/2024

HEI #: 24-0702

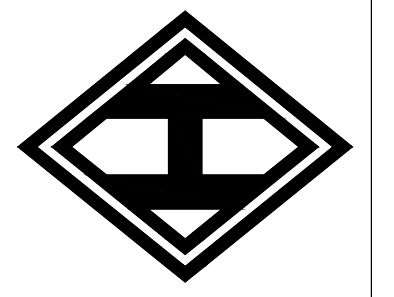
SHEET NO:  
 C1





A TRACT OF LAND DESCRIBED IN A DEED TO DELORES S. BROWN, TRUSTEE INST# 2002-157064 R.P.R.D.C.T.

**HOMEYER ENGINEERING, INC.**  
 ENGINEERING, INC. F-8440  
 TBPELS FIRM REGISTRATION NO. F-8440  
 P.O. BOX 294527 • LEWISVILLE, TEXAS • 75029  
 972-906-9985 PHONE • 972-906-9987 FAX  
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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

**DEVELOPMENT PLAN**

**PRELIMINARY PLANS**  
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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024

**SITE INFORMATION**

ZONED:	"R-1"
TOTAL ACREAGE:	19.51 ACRES
NUMBER OF LOTS:	30
NUMBER OF PHASES:	NO
PHASES:	
TELEPHONE SERVICE:	SPRINT
ELECTRIC SERVICE:	COSERV
GAS:	N/A
WATER:	CITY OF SANGER
SEWER:	CITY OF SANGER
EXISTING HOA:	SANGER CIRCLE HOME OWNERS ASSOCIATION.

**WINDHAVEN ESTATES**

	PERMITTED	PROPOSED
ZONING	R-1	R-1
MINIMUM FRONT YARD SET BACK	20'	25'
MINIMUM REAR YARD SETBACK	20'	20'
MINIMUM SIDE YARD SETBACK	8'	8'
SIDE YARD SETBACK ON A CORNER	10'	15'
MINIMUM SIZE OF LOT	6,500 SF	6,900 SF
MINIMUM LOT WIDTH	50'	60'
MINIMUM LOT DEPTH	100'	110'
MINIMUM DWELLING SIZE	2,000 SF	2,000 SF
MAXIMUM LOT AREA (CORNER)	15,000 SF	22,000 SF
MAXIMUM LOT COVERAGE	50%	50%
MAXIMUM BUILDING HEIGHT	35' 2-STORY	35' 2-STORY

MINIMUM PARKING REQUIRED: AN ENCLOSED AREA OF AT LEAST 400 SF. THIS AREA DOES NOT COUNT TOWARDS MINIMUM DWELLING SIZE.  
 DENSITY IS 30 HOMES ON 19.51 ACRES FOR 1.5 UNITS PER ACRE.

ENGINEER  
 HOMEYER ENGINEERING, INC  
 P.O. BOX 294527  
 LEWISVILLE, TEXAS 75029  
 CONTACT: STEVEN R. HOMEYER, PE  
 PHONE: 972-906-9985

OWNER/DEVELOPER  
 WINDHAVEN ESTATES, LLC  
 6404 SHADY OAKS LANE  
 PLANO, TEXAS 75093  
 CONTACT: JACK LEONARD

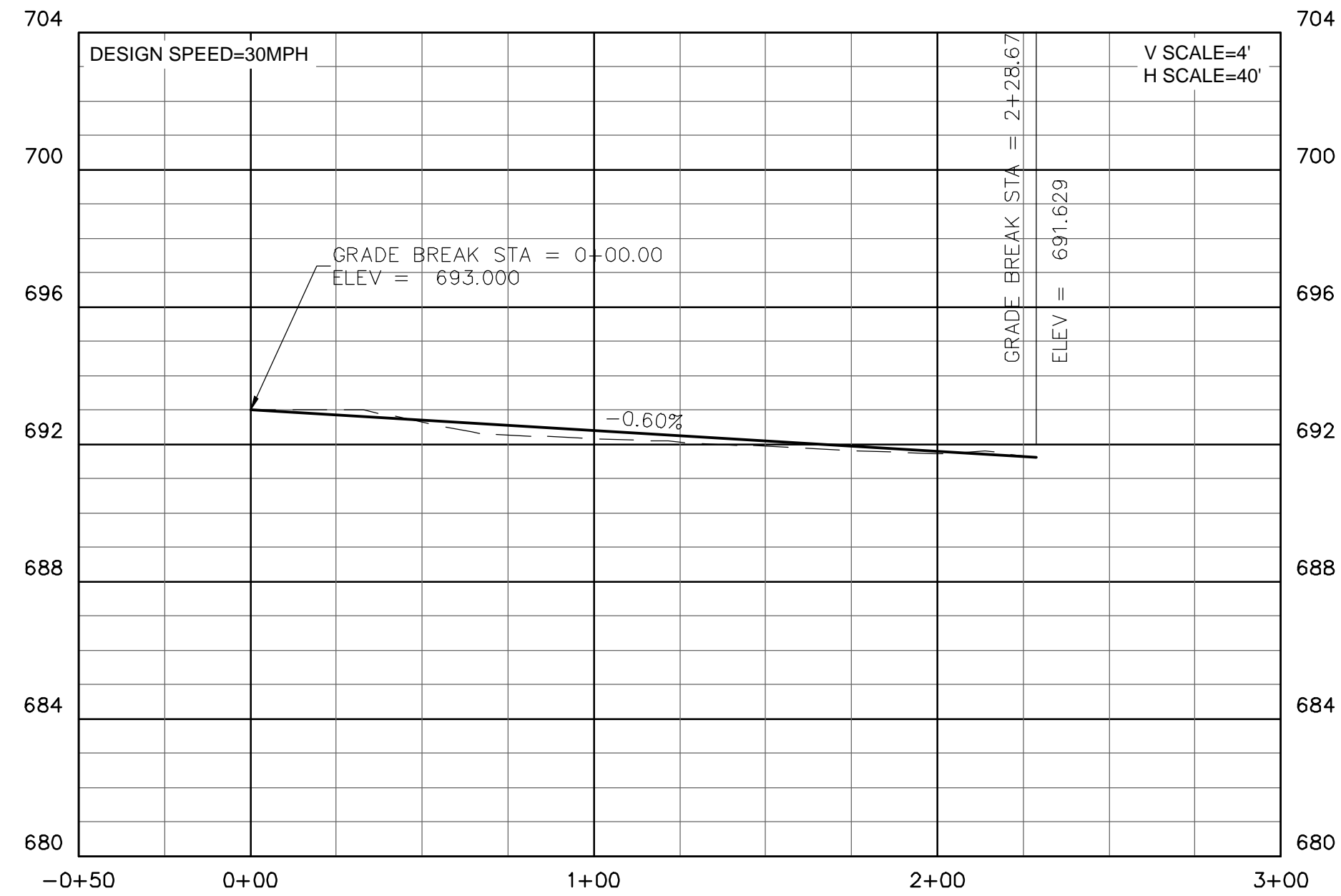
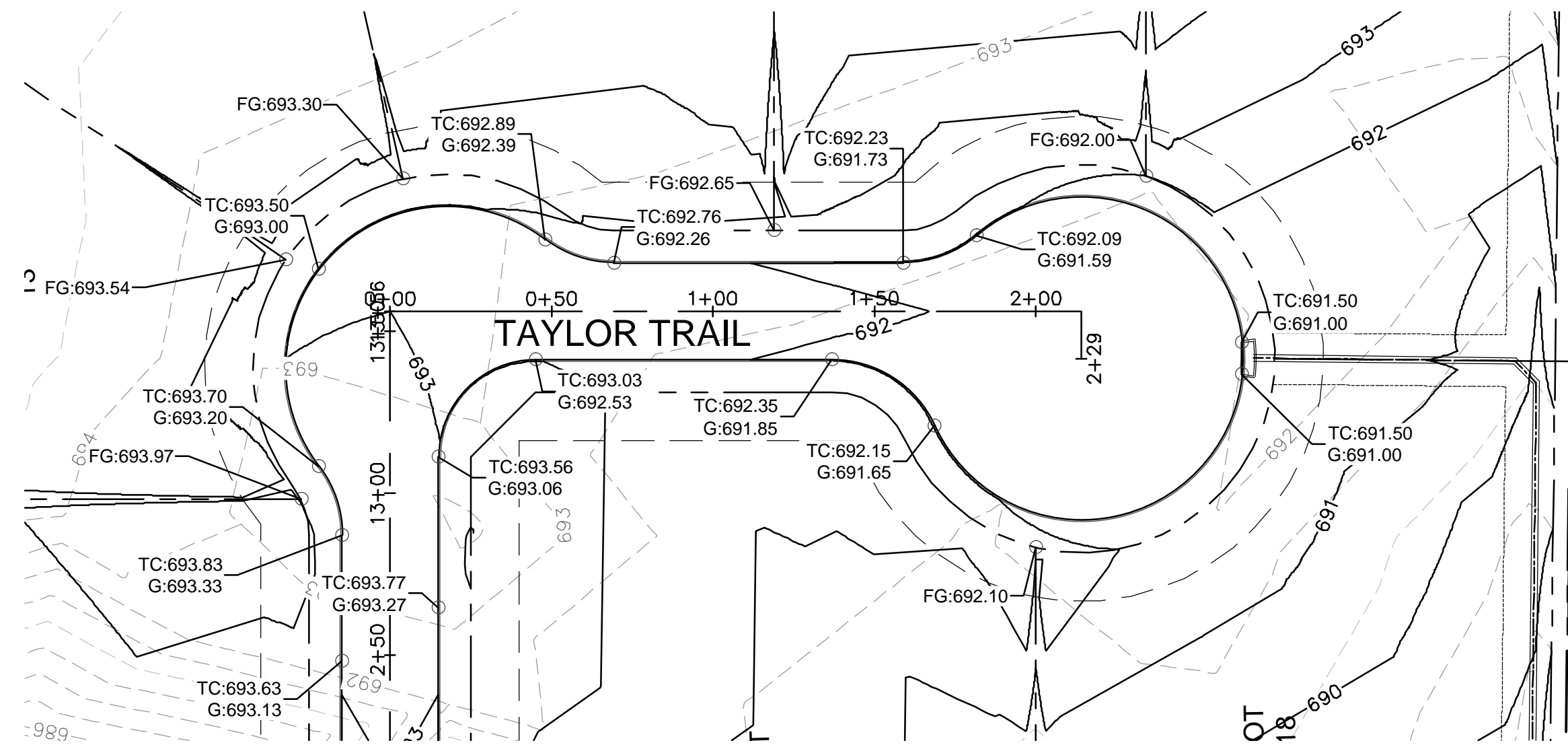


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 DATE: 10/07/2024  
 HEI #: 24-0702  
 SHEET NO:  
 C2





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### BENCHMARK INFORMATION

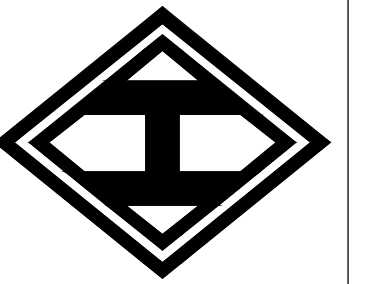
TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD  
 APPROXIMATELY 90' NORTH OF THE INTERSECTION OF  
 SANGER CIRCLE DRIVE.

TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD  
 APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF  
 SANGER CIRCLE DRIVE.

DATUM: NAVD(88)

### PRELIMINARY PLANS

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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024



**HOMEYER**  
 ENGINEERING INC.  
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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

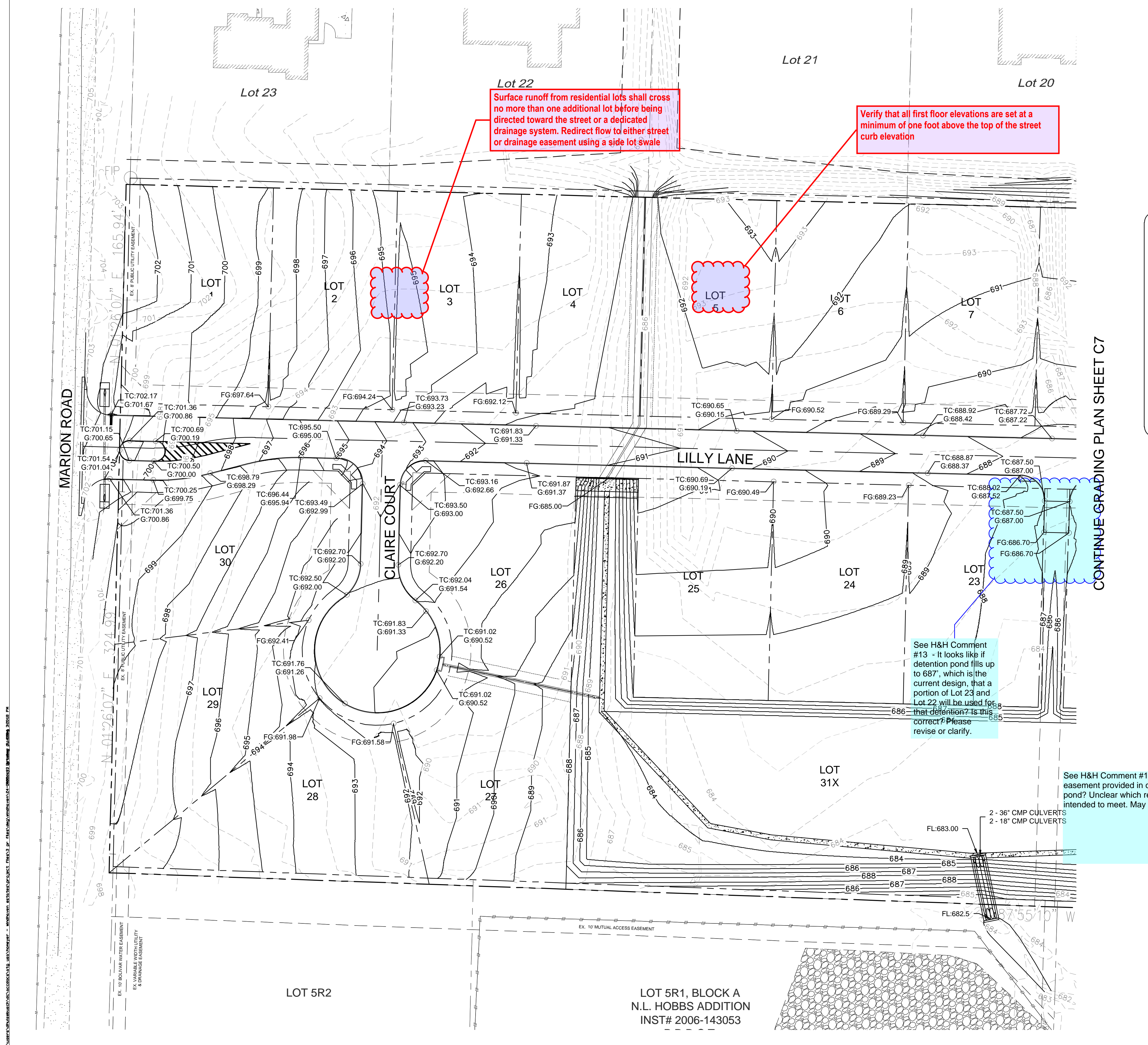
TAYLOR TRAIL PLAN  
 AND PROFILE

DRAWN: ATG

DATE: 10-05-2024

HEI #: 24-0702

SHEET NO:  
 C5



Surface runoff from residential lots shall cross no more than one additional lot before being directed toward the street or a dedicated drainage system. Redirect flow to either street or drainage easement using a side lot swale

Verify that all first floor elevations are set at a minimum of one foot above the top of the street curb elevation

See H&H Comment #13 - It looks like if detention pond fills up to 687', which is the current design, that a portion of Lot 23 and Lot 22 will be used for that detention? Is this correct? Please revise or clarify.

See H&H Comment #14 - Why was easement provided in center of detention pond? Unclear which regulation this is intended to meet. May not be necessary.

GRADING LEGEND

I.R.F.	IRON ROD FOUND	WM	WATER METER
S.I.R.	SET IRON ROD	TC	TOP OF CURB
"X"	CUT X IN CONCRETE	G	GUTTER
F.C.P.	FENCE CORNER POST	TP	TOP OF PAVEMENT
///	ASPHALT	NG	NATURAL GROUND
⊙	TELEPHONE MANHOLE	TW	TOP OF WALL
⊗	POWER POLE	BW	BOTTOM OF WALL
⊙	LIGHT POLE	FF	FINISHED FLOOR
⊗	WATER VALVE	---	EXISTING CONTOURS
⊙ <sup>SSMH</sup>	SANITARY SEWER MANHOLE	---	PROPOSED CONTOURS
⊙	FIRE HYDRANT	---	HIGH POINT

CONTINUE GRADING PLAN SHEET C7



**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD APPROXIMATELY 90' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.

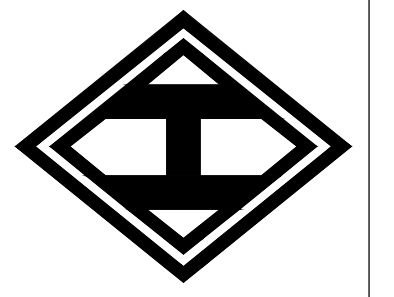
TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.

DATUM: NAVD(88)

**PRELIMINARY PLANS**

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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024

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 P.O. BOX 294527, LEWISVILLE, TEXAS 75029  
 972-906-9985, PHONE 972-906-9987, FAX  
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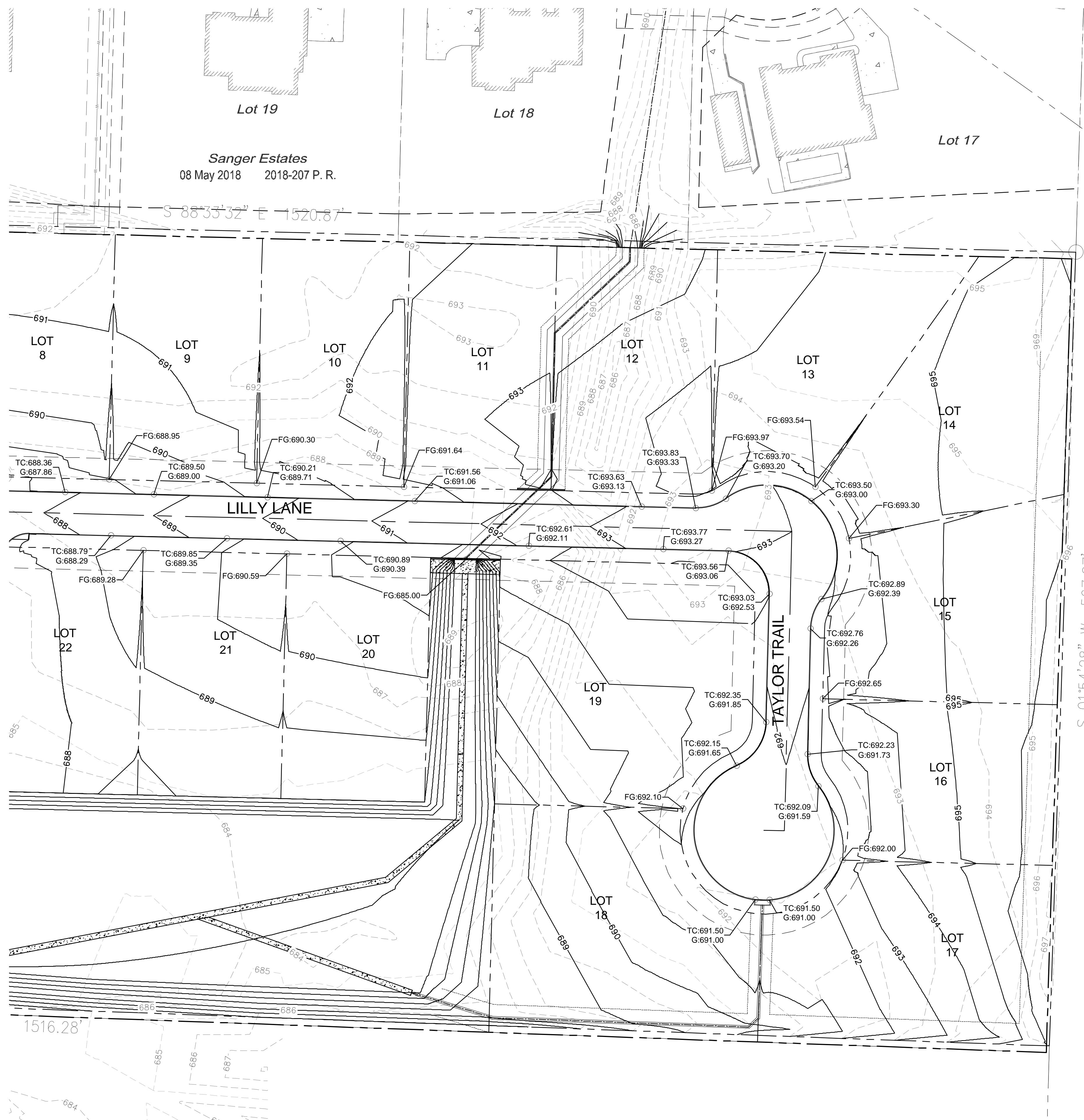
WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

GRADING PLAN  
 WEST

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
**SHEET NO:**  
 C6

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CONTINUE GRADING PLAN SHEET C6



**GRADING LEGEND**

I.R.F.	IRON ROD FOUND	WM	WATER METER
S.I.R.	SET IRON ROD	TC	TOP OF CURB
"X"	CUT X IN CONCRETE	G	GUTTER
F.C.P.	FENCE CORNER POST	TP	TOP OF PAVEMENT
///	ASPHALT	NG	NATURAL GROUND
⊙	TELEPHONE MANHOLE	TW	TOP OF WALL
⊗	POWER POLE	BW	BOTTOM OF WALL
⊙	LIGHT POLE	FF	FINISHED FLOOR
⊗	WATER VALVE	---	EXISTING CONTOURS
⊙ <sup>SSMH</sup>	SANITARY SEWER MANHOLE	---	PROPOSED CONTOURS
⊙	FIRE HYDRANT	---	HIGH POINT



**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
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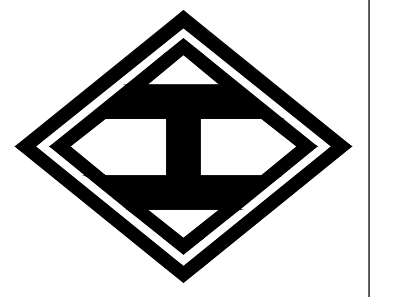
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DATUM: NAVD(88)

*PRELIMINARY PLANS*

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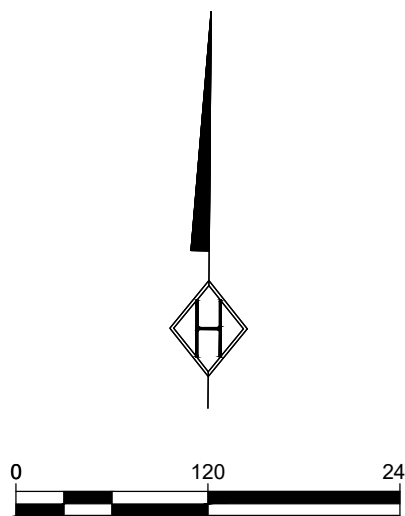
GRADING PLAN  
 EAST

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702

**SHEET NO:**  
 C7

DATE PLOTTED: 10/07/2024 10:00 AM

See H&H Comment #4 - Existing Drainage Area map does not appear to account for offsite flows coming from north of site. If additional drainage area north of site drains to site, this will affect detention pond sizing. Please revise.

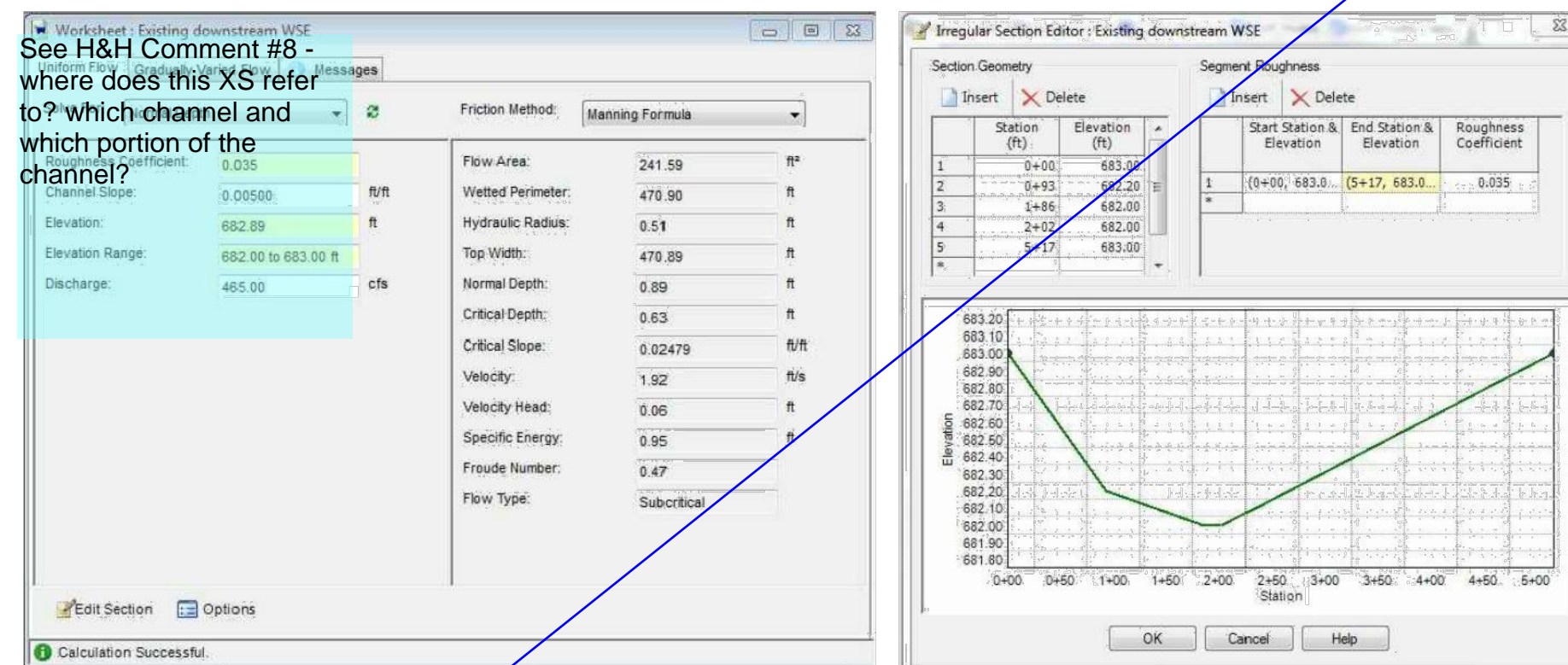


See H&H Comment #5 - Please provide drainage calculations in proposed drainage area map similar to existing drainage area map.

EXISTING DRAINAGE CALCULATIONS																COMMENTS	
DRAINAGE AREA	ACRES	"C"	Tc (min)	I2 (in/hr)	Q2 (cfs)	I5 (in/hr)	Q5 (cfs)	I10 (in/hr)	Q10 (cfs)	I25 (in/hr)	Q25 (cfs)	I50 (in/hr)	Q50 (cfs)	I100 (in/hr)	Q100 (cfs)		
P1	2.57	0.45	15	4.30	4.97	5.60	6.48	6.60	7.63	7.70	8.91	8.70	10.06	9.60	11.10	ONSITE to D2-A	
P2	3.36	0.45	15	4.30	6.50	5.60	8.47	6.60	9.98	7.70	11.64	8.70	13.15	9.60	14.52	ONSITE to D1-B	
P3	3.77	0.45	15	4.30	7.29	5.60	9.50	6.60	11.20	7.70	13.06	8.70	14.76	9.60	16.29	ONSITE to CP-5	
P4	3.62	0.45	15	4.30	7.00	5.60	9.12	6.60	10.75	7.70	12.54	8.70	14.17	9.60	15.64	ONSITE to D2-B	
P5	4.54	0.45	15	4.30	8.78	5.60	11.44	6.60	13.48	7.70	15.73	8.70	17.77	9.60	19.61	ONSITE to D2-C	
P6	3.70	0.45	15	4.30	7.16	5.60	9.32	6.60	10.99	7.70	12.82	8.70	14.49	9.60	15.98	ONSITE to D3-A2	
P7	2.29	0.45	15	4.30	4.43	5.60	5.77	6.60	6.80	7.70	7.93	8.70	8.97	9.60	9.89	ONSITE to D2-E	
P8	2.69	0.45	15	4.30	5.21	5.60	6.78	6.60	7.99	7.70	9.32	8.70	10.53	9.60	11.62	ONSITE to D5-A	
P9	3.79	0.45	15	4.30	7.33	5.60	9.55	6.60	11.26	7.70	13.13	8.70	14.84	9.60	16.37	ONSITE to D4-B	
P10	2.86	0.45	15	4.30	5.53	5.60	7.21	6.60	8.49	7.70	9.91	8.70	11.20	9.60	12.36	ONSITE to D5-B	
P11	2.83	0.45	15	4.30	5.48	5.60	7.13	6.60	8.41	7.70	9.81	8.70	11.08	9.60	12.23	ONSITE to CP-8	
P12	4.53	0.45	15	4.30	8.77	5.60	11.42	6.60	13.45	7.70	15.70	8.70	17.73	9.60	19.57	ONSITE to D3-A	
P13	2.87	0.45	15	4.30	5.55	5.60	7.23	6.60	8.52	7.70	9.94	8.70	11.24	9.60	12.40	ONSITE to D4-C	
P14	1.73	0.45	15	4.30	3.35	5.60	4.36	6.60	5.14	7.70	5.99	8.70	6.77	9.60	7.47	ONSITE to D5-F	
P15	2.29	0.45	15	4.30	4.43	5.60	5.77	6.60	6.80	7.70	7.93	8.70	8.97	9.60	9.89	ONSITE to D2-E	
P16	2.28	0.45	15	4.30	4.41	5.60	5.75	6.60	6.77	7.70	7.90	8.70	8.93	9.60	9.85	ONSITE to D5-F	
H6	19.51	0.30	15	4.30	25.17	5.60	32.78	6.60	38.63	7.70	45.07	8.70	50.92	9.60	56.19	WINDHAVEN	
TOTAL	69.23						121.38		158.07		186.30		217.35		245.57	270.98	

**DRAINAGE NOTES:**  
 - ORIGINAL CALCULATIONS TAKEN FROM THE RECORD DRAWINGS FOR "SANGER ESTATES", PREPARED BY HOMEYER ENGINEERING, DATED APRIL 2018.  
 - \*REFERENCED OFFSITE FLOWS NOT INCLUDED WITH DETENTION CALCULATIONS.  
 - CONCENTRATION POINTS AND FLOWS SHOWN ARE THE PROPOSED CONDITIONS, SHEET C9 FROM THE CONSTRUCTION OF SANGER ESTATES AND REFLECTS CURRENT EXISTING GRADING.  
 - DETENTION ONLY ACCOUNTS FOR THE ESTATES AND WINDHAVEN.

CROSS SECTION-X, EXISTING WATER SURFACE ELEVATION  
 EXISTING WSE=682.89



**LEGEND**

- (A/Q) DRAINAGE AREA NUMBER Q100
- DRAINAGE AREA LIMITS
- xxx--- EXISTING CONTOURS
- xxx--- PROPOSED CONTOURS
- DIRECTION OF STORMWATER FLOW
- CONCENTRATION POINT Q100

**FEMA FLOODZONE**  
 PER FIRM PANEL 48121C 0210G DATED APRIL 18, 2011, THE SITE LIES WITHIN ZONE-X, DESCRIBED AS OUTSIDE THE 1% CHANCE OR 100-YEAR STORM EVENT.

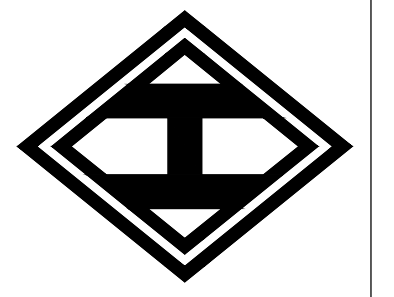
**BENCHMARK INFORMATION**  
 TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD APPROXIMATELY 90' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.  
 TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.  
 DATUM: NAVD(88)

See H&H comment #4, The Q100 entering your detention pond (554 cfs) also does not appear to be equivalent to the total flow you've calculated in your existing drainage area calculations (271 cfs). Is there 280 cfs offsite for which calculations need to be provided?

RETENTION-DETENTION POND  
 EXISTING FLOW Q100=554 CFS

PRE DEVELOPED  
 465 CFS

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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

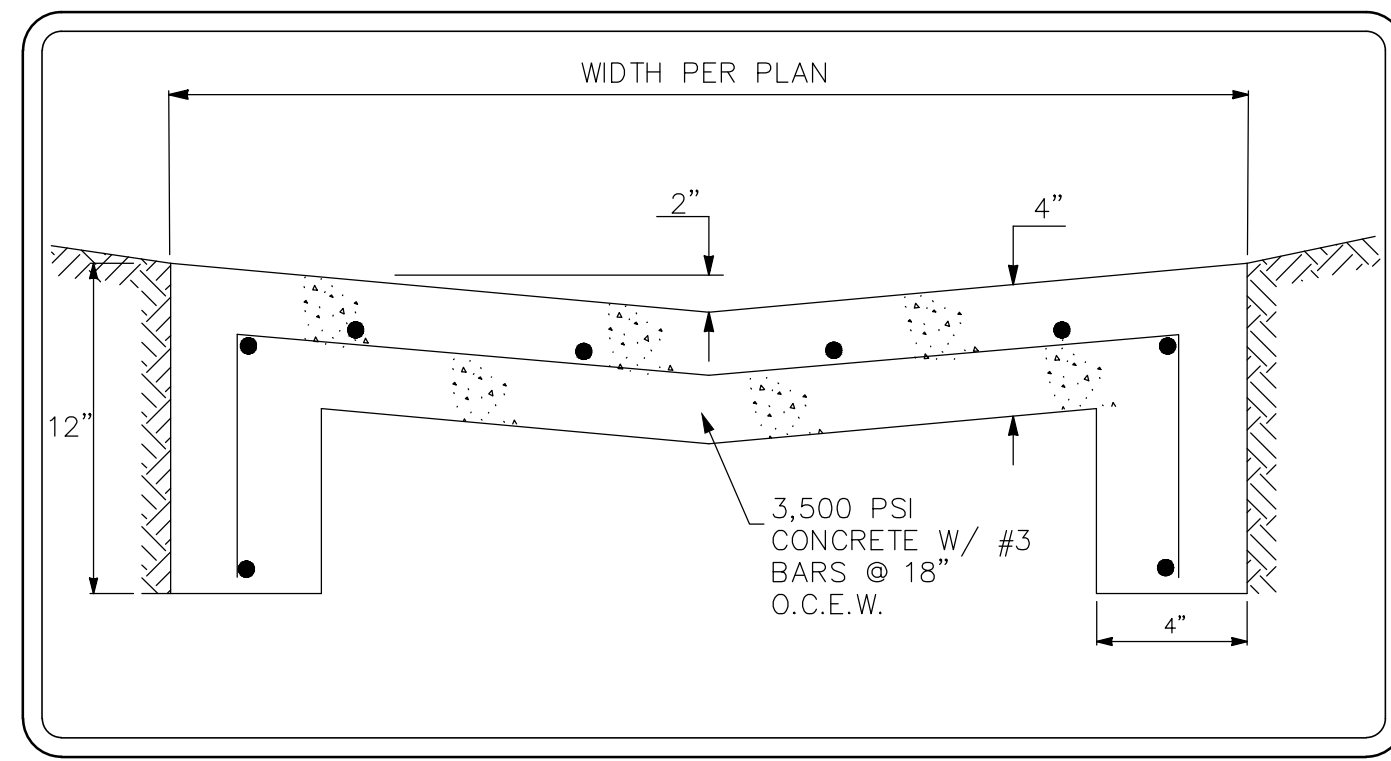
EXISTING DRAINAGE AREA MAP

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
 SHEET NO: C8

**PRELIMINARY PLANS**  
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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024



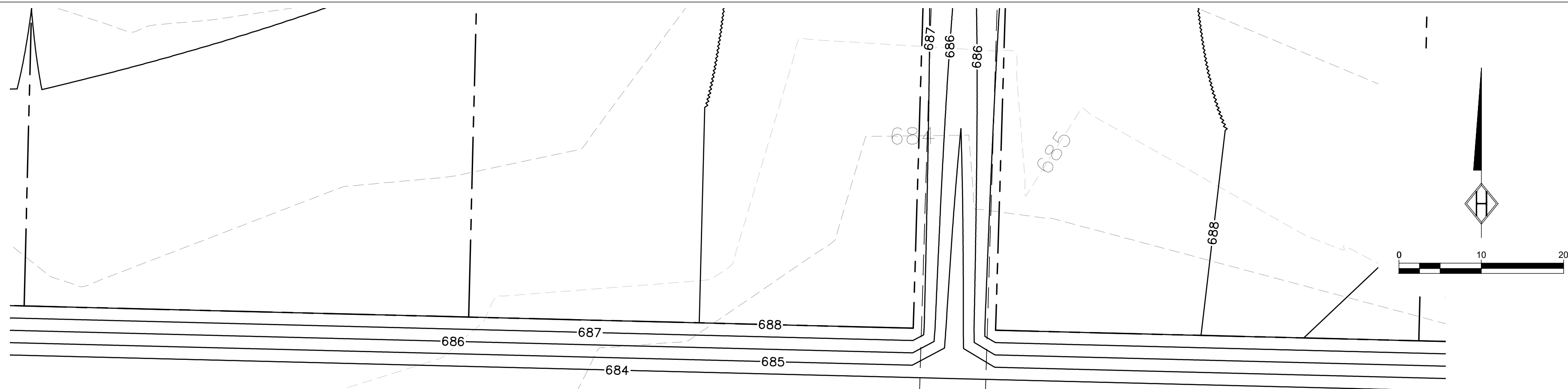




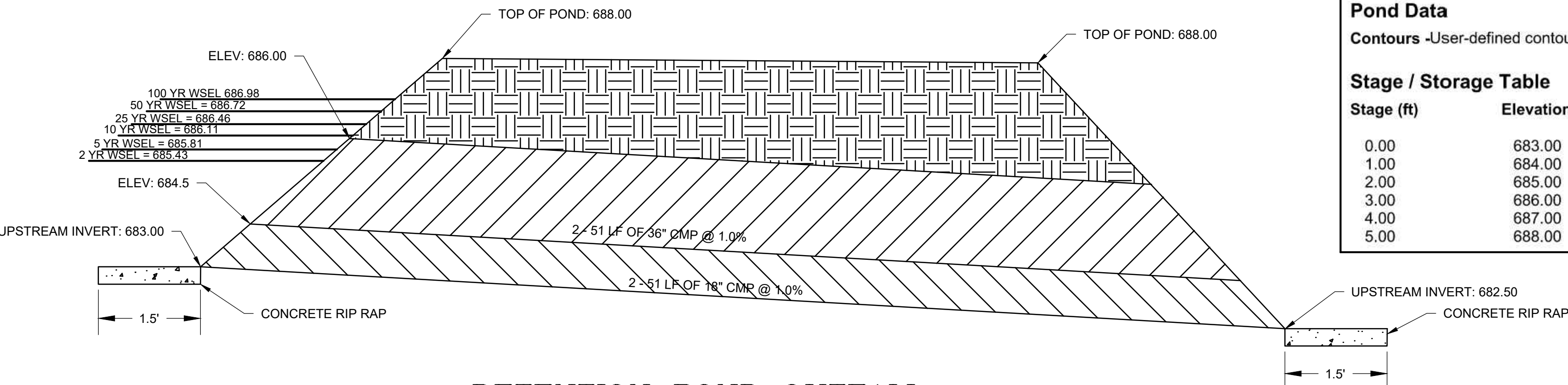
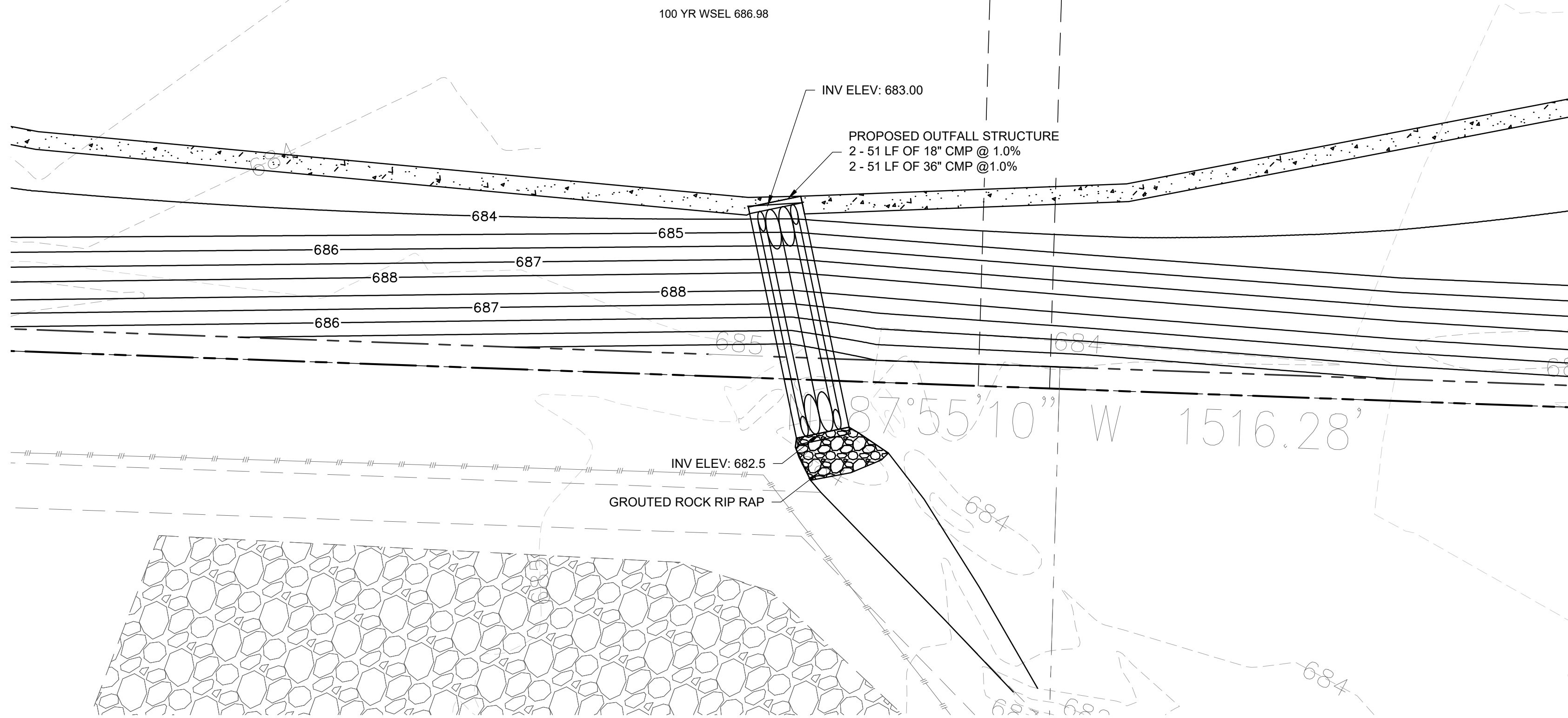
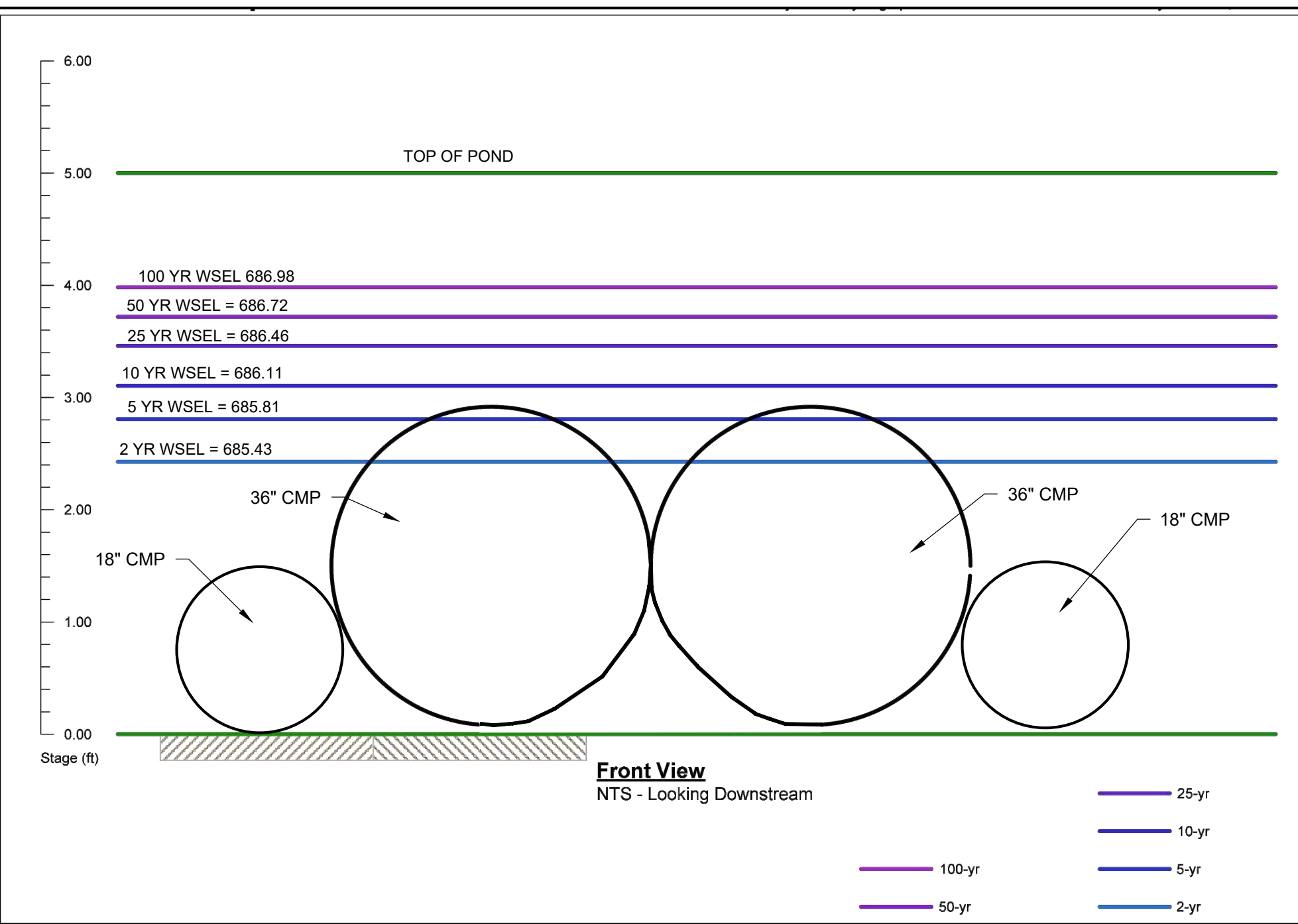
**CONCRETE FLUME DETAIL**  
NOT TO SCALE

**DETENTION POND MAINTENANCE AGREEMENT NOTE:**

THE CITY OF SANGER IS NOT RESPONSIBLE FOR THE DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, OR USE OF THE STORMWATER DETENTION AREA, AND THEIR ASSOCIATED PRIVATE DRAINAGE EASEMENTS, HEREIN REFERRED TO AS "FEATURES" TO BE DEVELOPED AND CONSTRUCTED BY THE OWNERS OR THEIR SUCCESSORS. OWNERS OR THEIR SUCCESSORS, OWNERS OR SUCCESSORS AGREE TO INDEMNIFY AND HOLD HARMLESS THE CITY OF SANGER, ITS OFFICERS, EMPLOYEES, AND AGENTS FROM ANY DIRECT OR INDIRECT LOSS, DAMAGE, LIABILITY, OR EXPENSE AND ATTORNEY'S FEES FOR ANY NEGLIGENCE OR OMISSIONS WHATSOEVER, ARISING OUT OF THE DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, CONDITION OR USE OF THE "FEATURES" INCLUDING ANY NON-PERFORMANCE OF THE FOREGOING. OWNERS AND SUCCESSORS ACCEPT FULL RESPONSIBILITY AND LIABILITY FOR THE "FEATURES". ALL OF THE ABOVE SHALL BE COVENANTS RUNNING WITH THE LAND.



**LOT 31X**



**DETENTION POND OUTFALL DETAIL**  
NOT TO SCALE

**Pond Data**  
Contours -User-defined contour areas. Conic method used for volume calculation. Begning Elevation = 683.00 ft

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	683.00	00	0	0
1.00	684.00	64,320	21,438	21,438
2.00	685.00	88,513	76,088	97,526
3.00	686.00	98,295	93,352	190,878
4.00	687.00	108,145	103,171	294,048
5.00	688.00	118,062	113,056	407,104

NOTE:  
REFER TO DRAINAGE REPORT FOR SPECIFIC YEAR CALCS.

**BENCHMARK INFORMATION**

TBM #1: ELEV. = 684.11' N: 7179639.79, E: 2370642.94  
"X-CUT" IN CONCRETE LOCATED ON THE DRIVEWAY APPROXIMATELY 160 FEET NORTH OF THE SOUTHWEST CORNER OF THE PROPERTY.

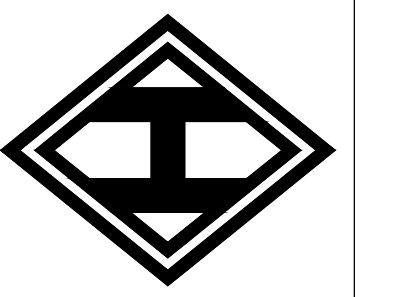
TBM #2: ELEV = 684.49' N: 7179664.64, E: 2370421.14  
"X-CUT" IN CONCRETE LOCATED APPROXIMATELY 177 FEET NORTH AND 183 EAST FROM SOUTHWEST CORNER OF THE PROPERTY.

**PRELIMINARY PLANS**

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STEVEN R. HOMEYER, PE # 86942  
DATE: 05/20/2024



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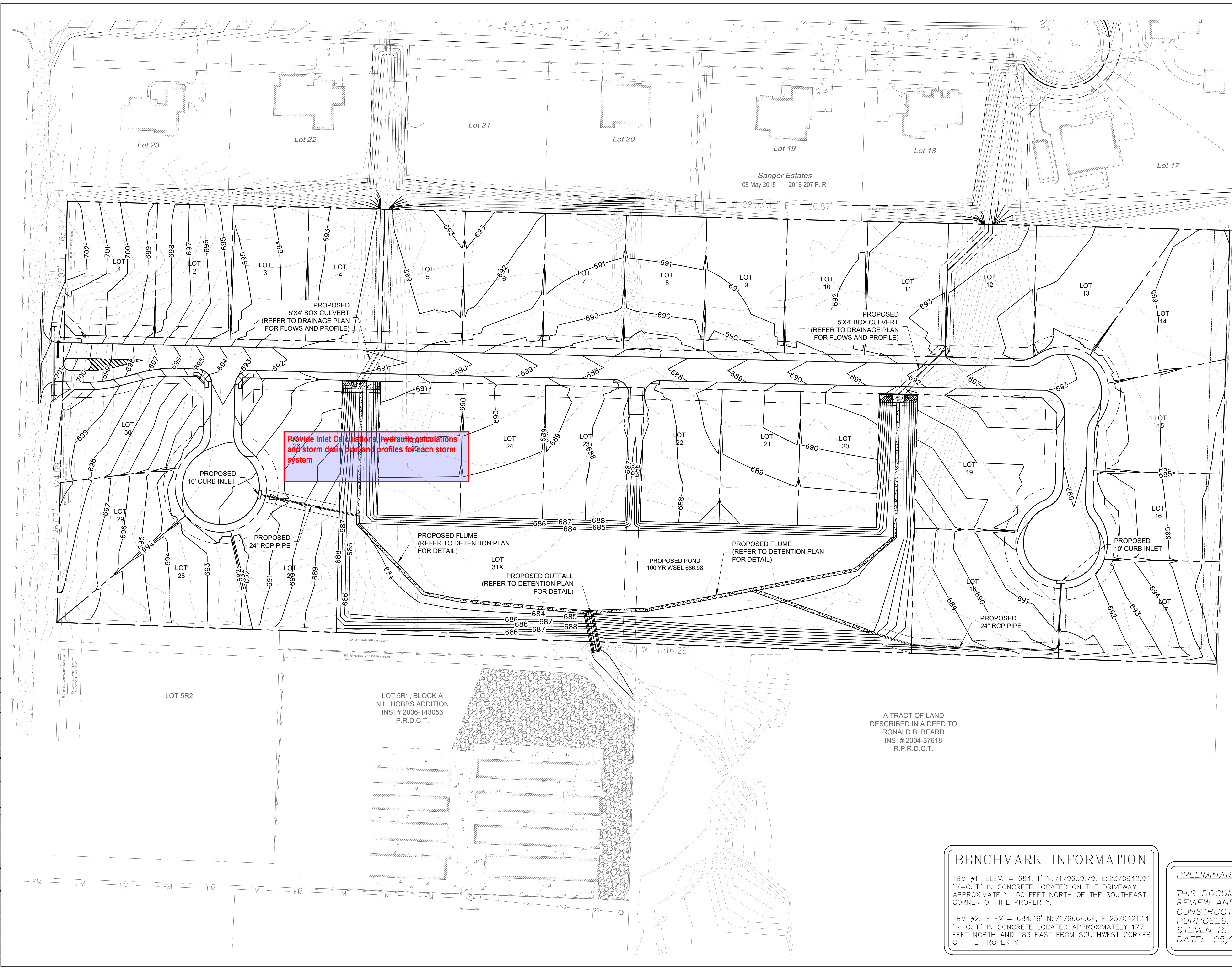


WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

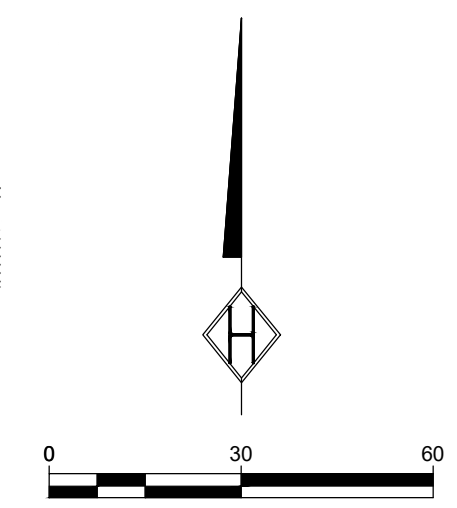
DETENTION PLAN

DRAWN: ATG  
DATE: 10-05-2024  
HEI #: 24-0702

SHEET NO:  
C10



Provide Inlet Calculations, hydraulic calculations and storm drain plan and profiles for each storm system

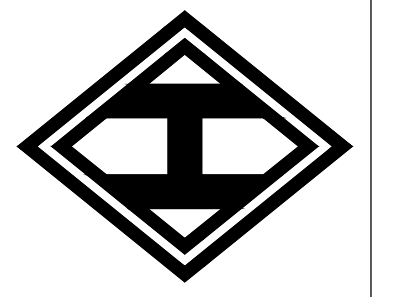


A TRACT OF LAND DESCRIBED IN A DEED TO DELORES S. BROWN, TRUSTEE INST# 2002-157064 R.P.R.D.C.T.

S 01°54'28" W 567.87'

A TRACT OF LAND DESCRIBED IN A DEED TO RONALD B. BEARD INST# 2004-37618 R.P.R.D.C.T.

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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

PROPOSED  
 STORM PLAN

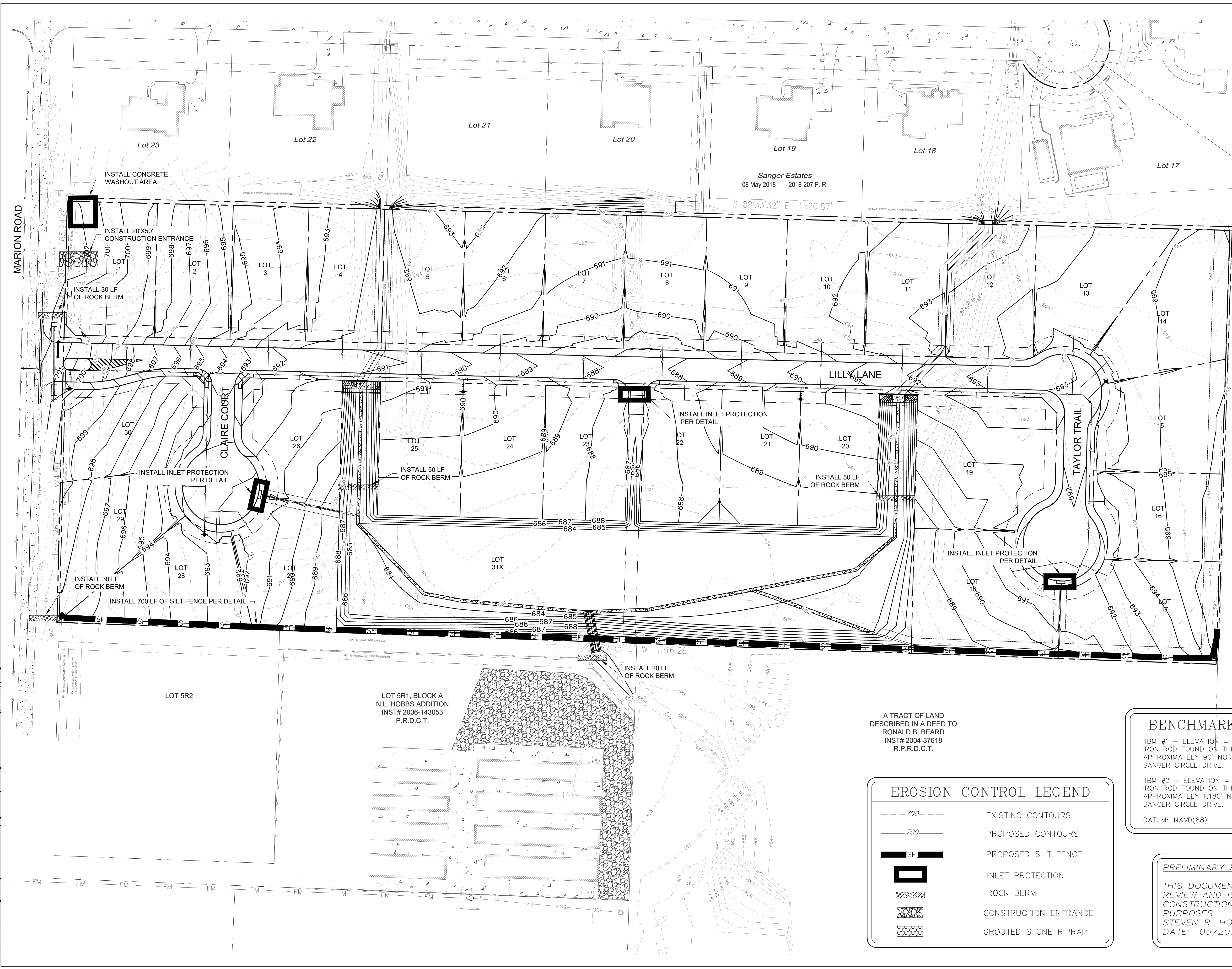


**BENCHMARK INFORMATION**  
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 "X-CUT" IN CONCRETE LOCATED ON THE DRIVEWAY APPROXIMATELY 160 FEET NORTH OF THE SOUTHEAST CORNER OF THE PROPERTY.  
 TBM #2: ELEV = 684.49' N: 7179664.64, E: 2370421.14  
 "X-CUT" IN CONCRETE LOCATED APPROXIMATELY 177 FEET NORTH AND 183 EAST FROM SOUTHWEST CORNER OF THE PROPERTY.

**PRELIMINARY PLANS**  
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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 05/20/2024

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
 SHEET NO:  
 C11

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A TRACT OF LAND DESCRIBED IN A DEED TO DELORES S. BROWN, TRUSTEE INST# 2002-157064 R.P.R.D.C.T.

S 01°54'28" W 567.87'



A TRACT OF LAND DESCRIBED IN A DEED TO RONALD B. BEARD INST# 2004-37618 R.P.R.D.C.T.

LOT 5R1, BLOCK A N.L. HOBBS ADDITION INST# 2006-143053 P.R.D.C.T.

**EROSION CONTROL LEGEND**

- 700 --- EXISTING CONTOURS
- 700 — PROPOSED CONTOURS
- SF PROPOSED SILT FENCE
- INLET PROTECTION
- ROCK BERM
- CONSTRUCTION ENTRANCE
- GROUTED STONE RIPRAP

**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD APPROXIMATELY 90' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.

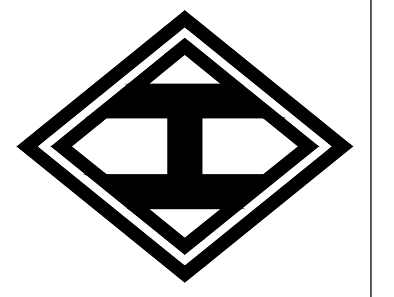
TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.

DATUM: NAVD(88)

PRELIMINARY PLANS

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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 05/20/2024

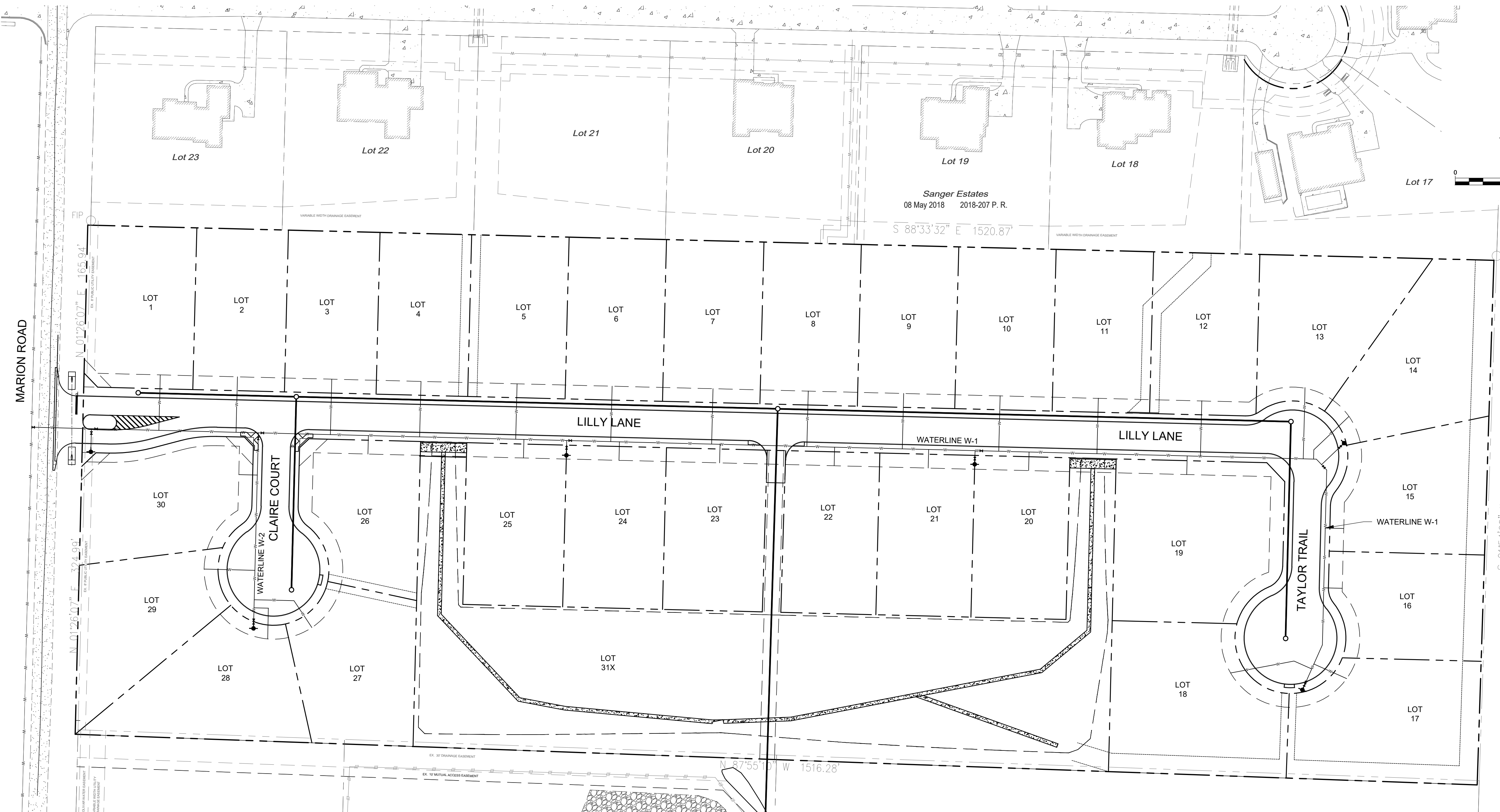
**HOMEYER**  
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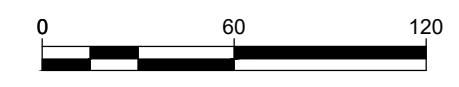
WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

EROSION CONTROL PLAN

DRAWN: ATG  
 DATE: 10/07/2024  
 HEI #: 24-0702  
 SHEET NO:  
 C12



A TRACT OF LAND DESCRIBED IN A DEED TO DELORES S. BROWN, TRUSTEE INST# 2002-157064 R.P.R.D.C.T.



**LEGEND**

I.R.F.	IRON ROD FOUND	⊗	POWER POLE
I.R.S.	IRON ROD SET	⊙	LIGHT POLE
"X"	CUT X IN CONCRETE	⊗	WATER VALVE
F.C.P.	FENCE CORNER POST	⊙	SANITARY SEWER MANHOLE
—	ASPHALT	⊙	FIRE HYDRANT
⓪	TELEPHONE MANHOLE	▷	WATER REDUCER

**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD APPROXIMATELY 90' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.

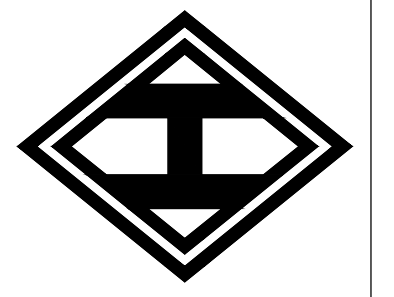
TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF SANGER CIRCLE DRIVE.

DATUM: NAVD(88)

**PRELIMINARY PLANS**

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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024

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**WINDHAVEN ESTATES**  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

**WATER PLAN OVERALL**

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
**SHEET NO: C13**



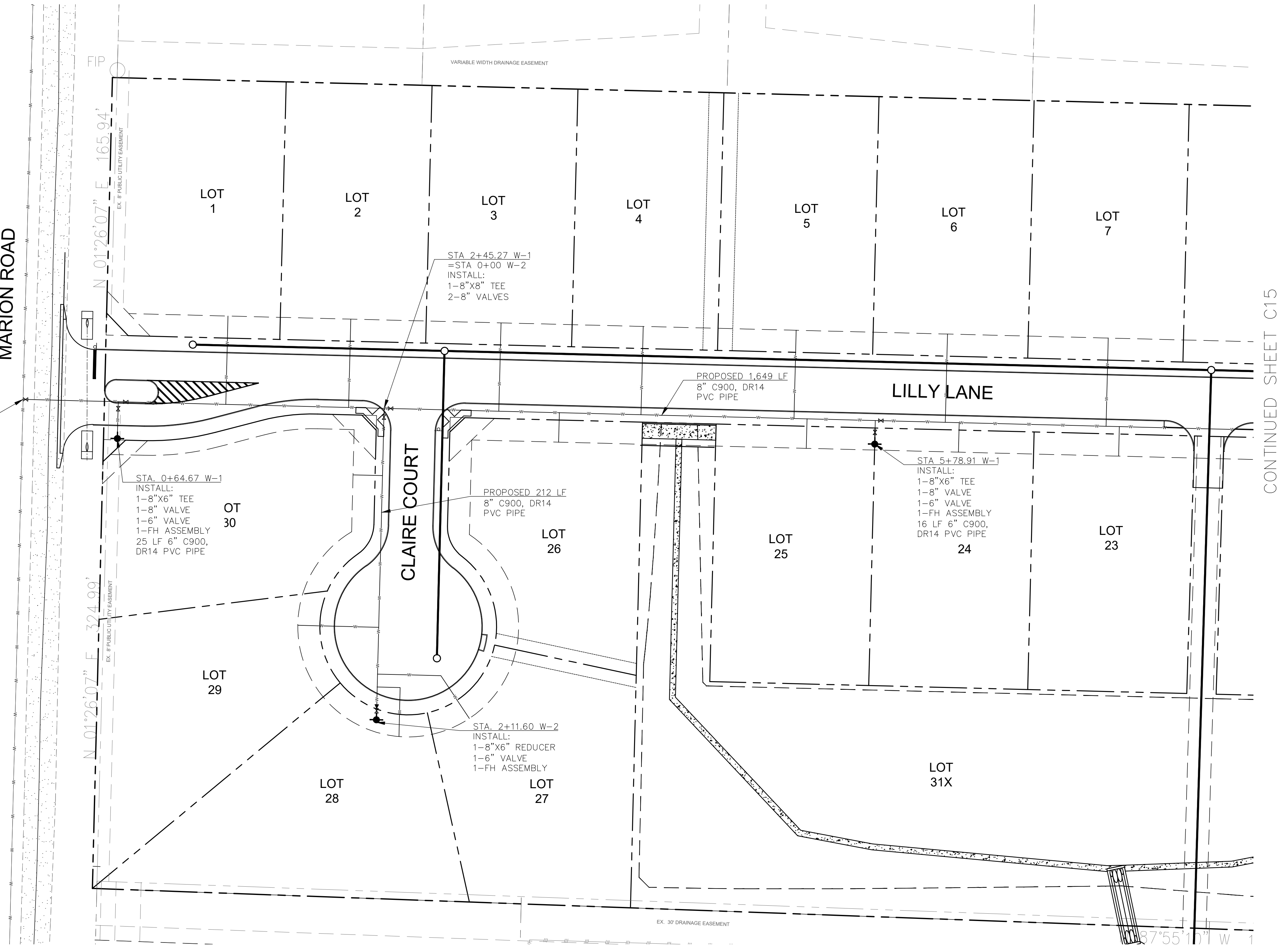
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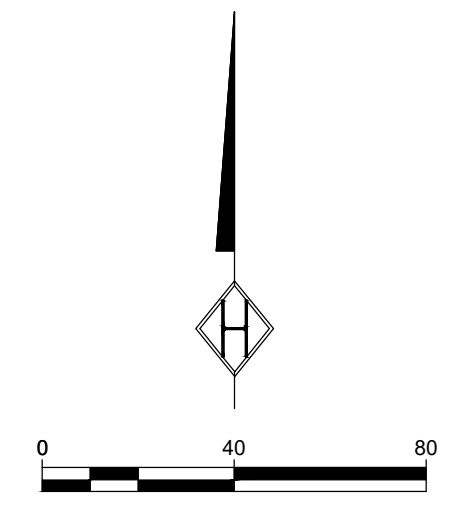


STA. 0+00 W-1  
 CONNECT TO  
 EXISTING 12" WL  
 INSTALL:  
 1-12"X8" TS&V  
 BORE EXISTING  
 ROADWAY  
 (APPROX. 24LF)

MARION ROAD



CONTINUED SHEET C15



**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD  
 APPROXIMATELY 90' NORTH OF THE INTERSECTION OF  
 SANGER CIRCLE DRIVE.

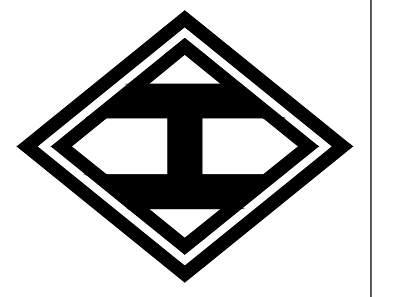
TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD  
 APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF  
 SANGER CIRCLE DRIVE.

DATUM: NAVD(88)

**PRELIMINARY PLANS**

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 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024

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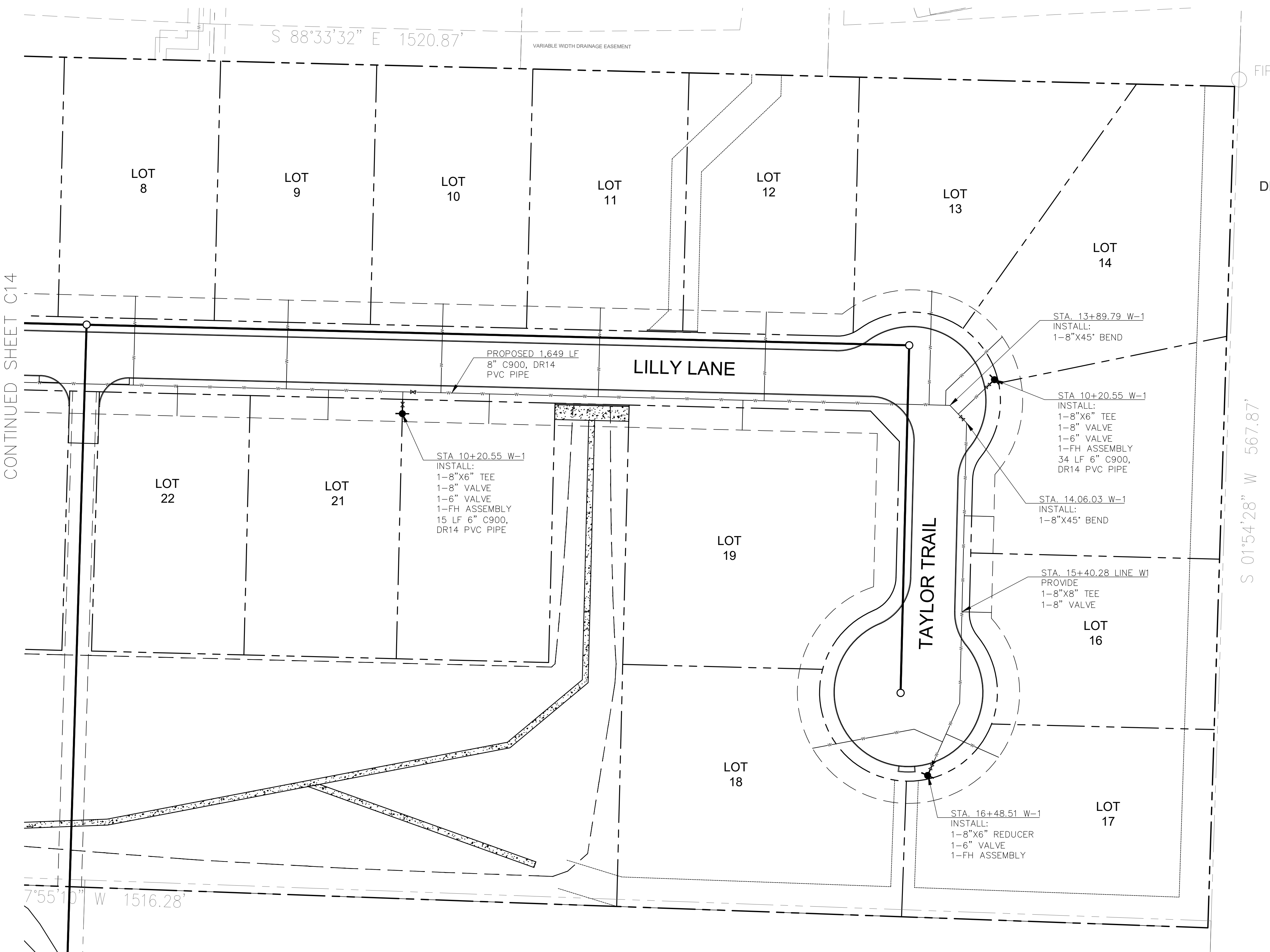


WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

WATER PLAN  
 WEST

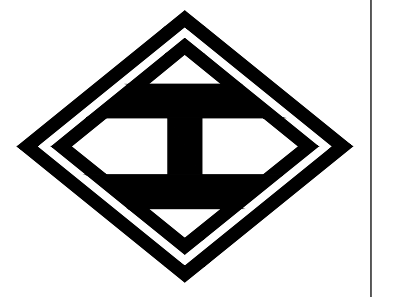
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 HEI #: 24-0702  
**SHEET NO:**  
**C14**

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A TRACT OF LAND  
DESCRIBED IN A DEED TO  
DELORES S. BROWN,  
TRUSTEE  
INST# 2002-157064  
R.P.R.D.C.T.

**HOMEYER**  
ENGINEERING, INC.  
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WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

WATER PLAN  
EAST

DRAWN: ATG  
DATE: 10-05-2024  
HEI #: 24-0702

SHEET NO:  
C15



**BENCHMARK INFORMATION**

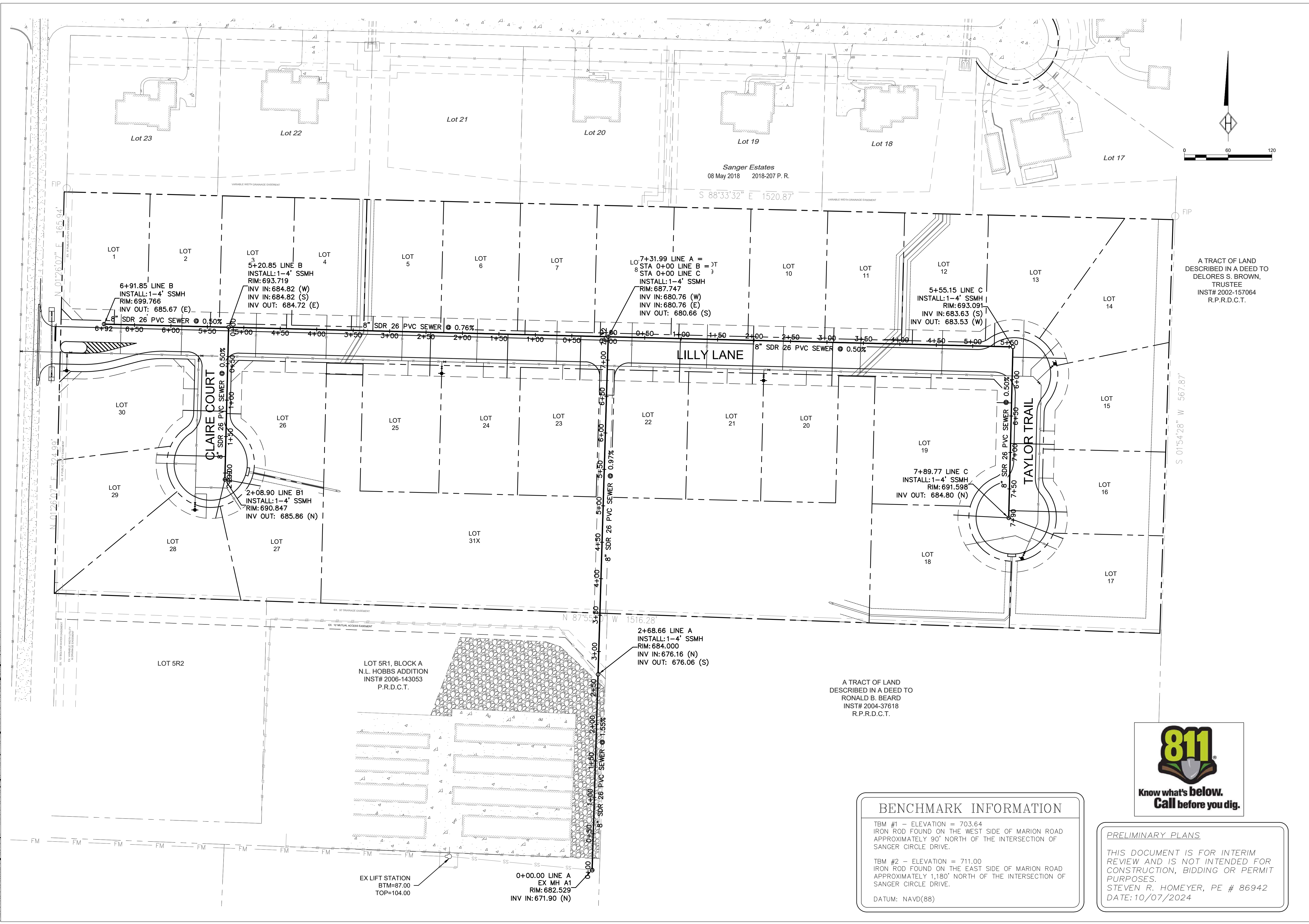
TBM #1 - ELEVATION = 703.64  
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SANGER CIRCLE DRIVE.

TBM #2 - ELEVATION = 711.00  
IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD  
APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF  
SANGER CIRCLE DRIVE.

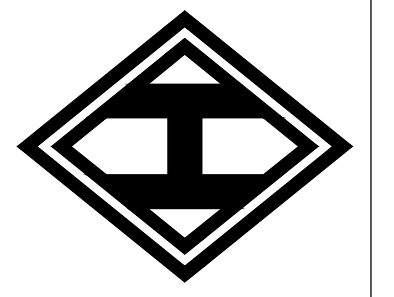
DATUM: NAVD(88)

*PRELIMINARY PLANS*

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STEVEN R. HOMEYER, PE # 86942  
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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

OVERALL  
 SANITARY  
 SEWER PLAN

A TRACT OF LAND  
 DESCRIBED IN A DEED TO  
 DELORES S. BROWN,  
 TRUSTEE  
 INST# 2002-157064  
 R.P.R.D.C.T.

A TRACT OF LAND  
 DESCRIBED IN A DEED TO  
 RONALD B. BEARD  
 INST# 2004-37618  
 R.P.R.D.C.T.



**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD  
 APPROXIMATELY 90' NORTH OF THE INTERSECTION OF  
 SANGER CIRCLE DRIVE.

TBM #2 - ELEVATION = 711.00  
 IRON ROD FOUND ON THE EAST SIDE OF MARION ROAD  
 APPROXIMATELY 1,180' NORTH OF THE INTERSECTION OF  
 SANGER CIRCLE DRIVE.

DATUM: NAVD(88)

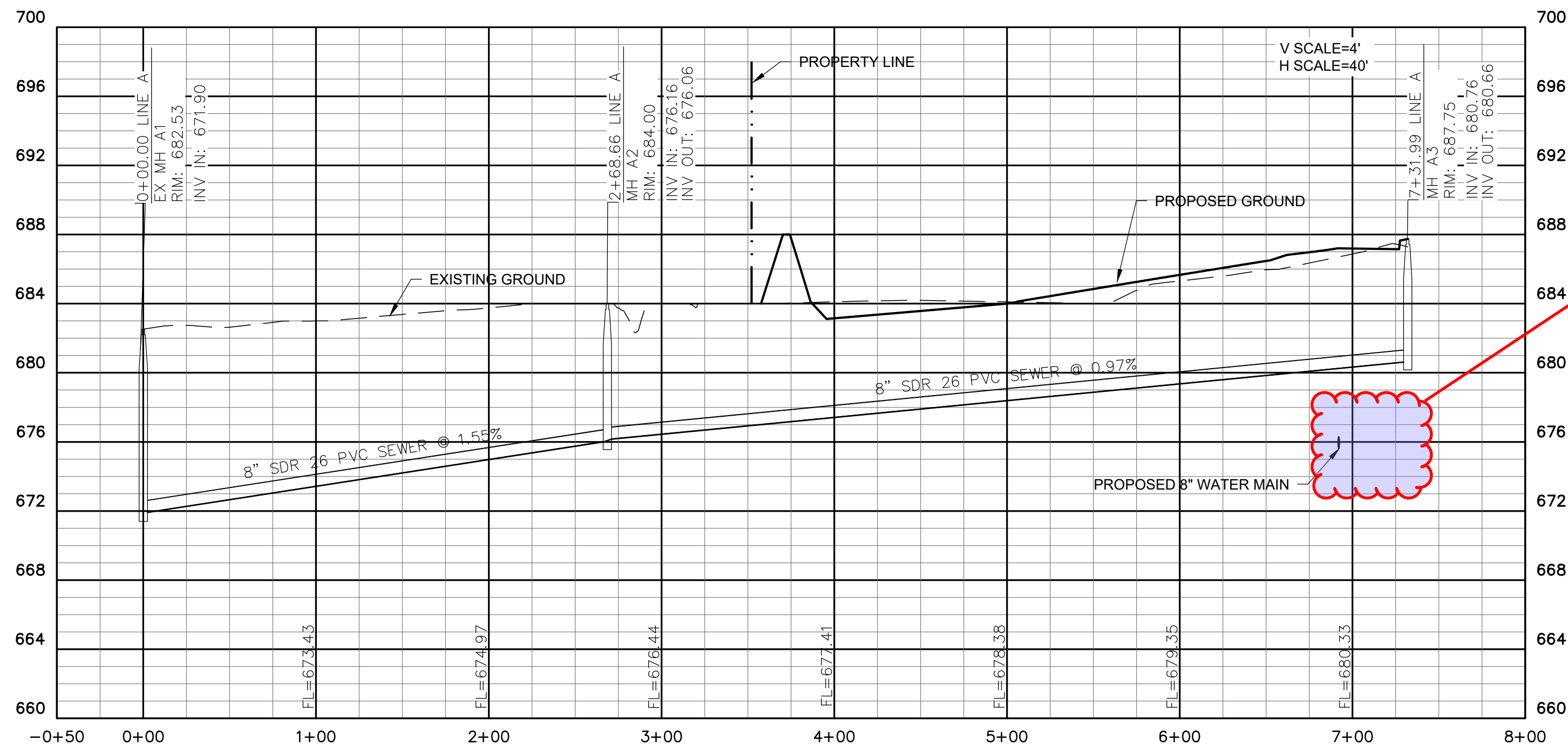
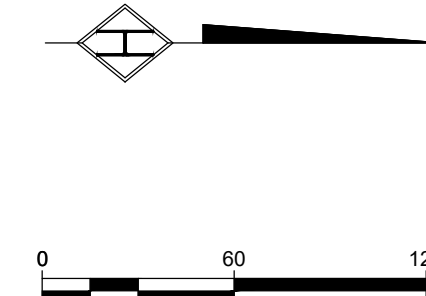
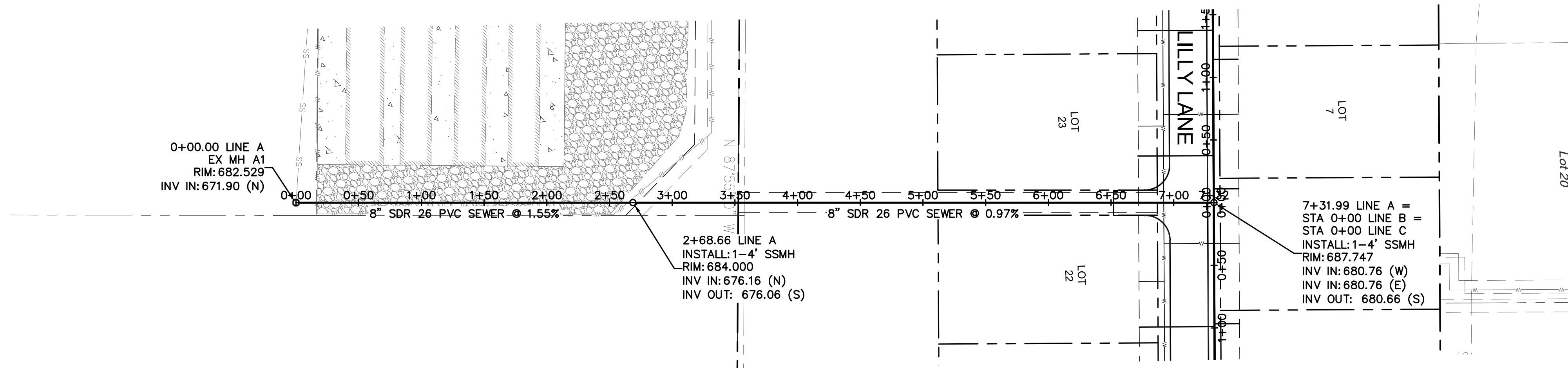
**PRELIMINARY PLANS**

THIS DOCUMENT IS FOR INTERIM  
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 CONSTRUCTION, BIDDING OR PERMIT  
 PURPOSES.  
 STEVEN R. HOMEYER, PE # 86942  
 DATE: 10/07/2024

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
 SHEET NO:  
 C16

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C:\Users\akoburn\OneDrive\Documents\811\Windhaven\Windhaven.dwg, 7/26/24, 4:28:24 PM



Ensure that 18' min segment of water line is perpendicular to and centered on sewer pipe. Verify that segment is either constructed of ductile iron/steel or encased in cement stabilized sand embedment



**BENCHMARK INFORMATION**

TBM #1 - ELEVATION = 703.64  
 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD  
 APPROXIMATELY 90' NORTH OF THE INTERSECTION OF  
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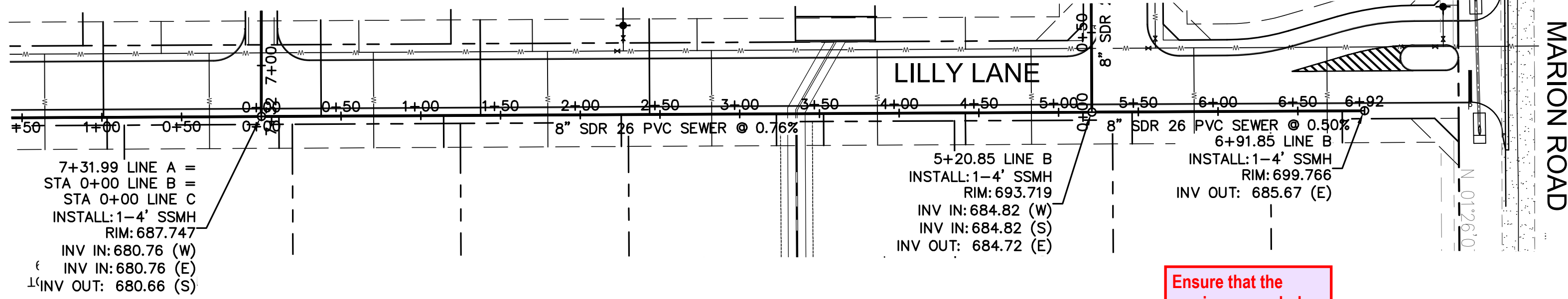
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DATUM: NAVD(88)

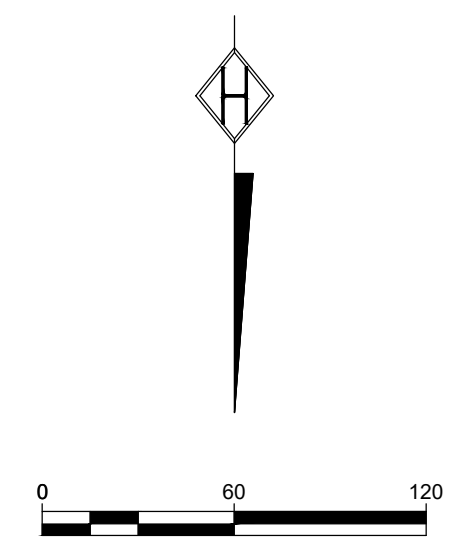
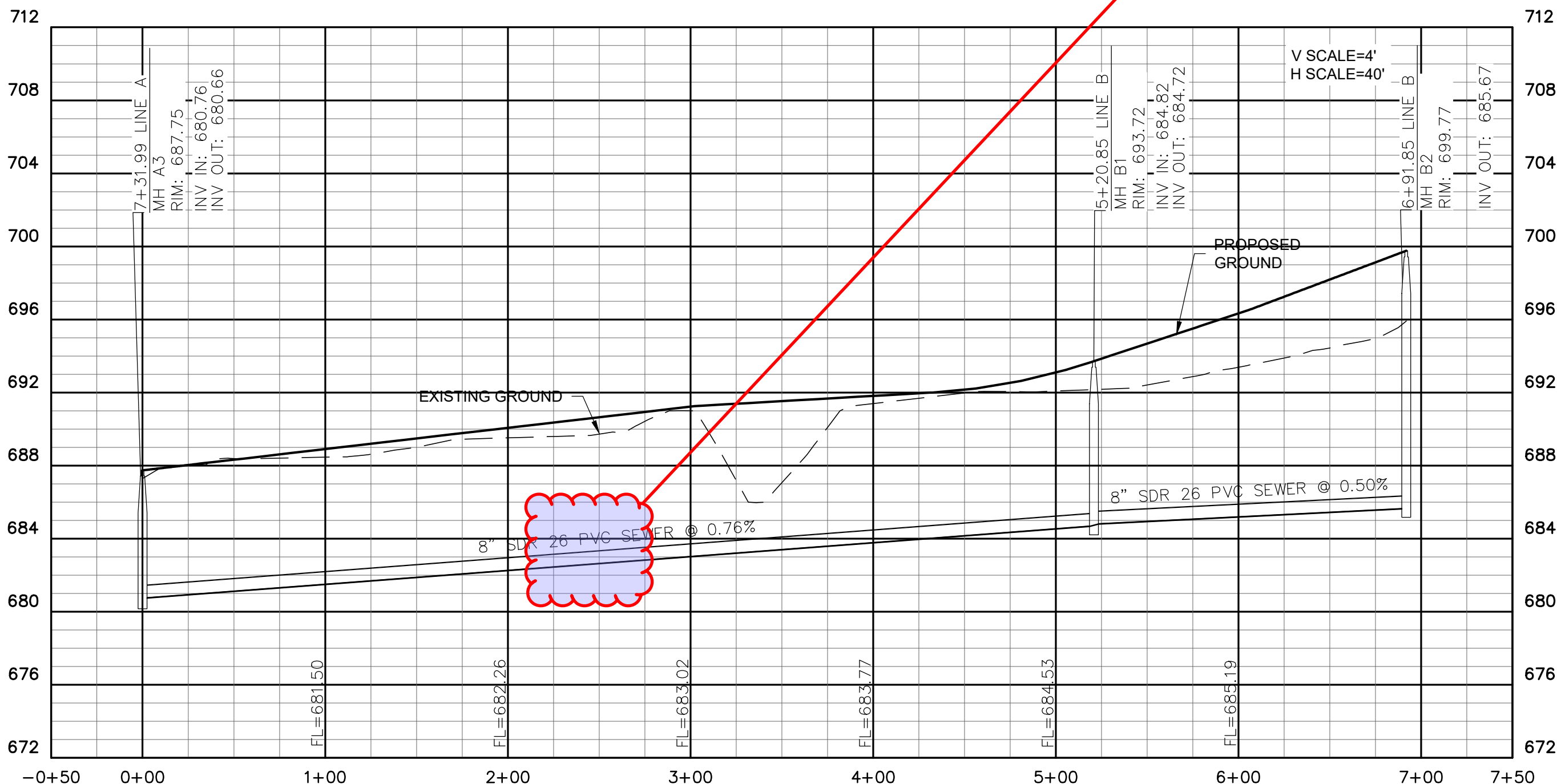
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 STEVEN R. HOMEYER, PE # 86942  
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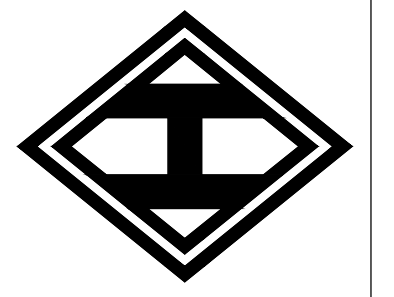




Ensure that the maximum manhole spacing is 500 ft in all cases



**HOMEYER ENGINEERING, INC.**  
 TBPELS FIRM REGISTRATION NO. F-8440  
 P.O. BOX 294527 • LEWISVILLE, TEXAS • 75029  
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 WWW.HEI.US.COM



WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

SEWER LINE B  
 PLAN AND  
 PROFILE



**BENCHMARK INFORMATION**

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 IRON ROD FOUND ON THE WEST SIDE OF MARION ROAD  
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DRAWN: ATG

DATE: 10-05-2024

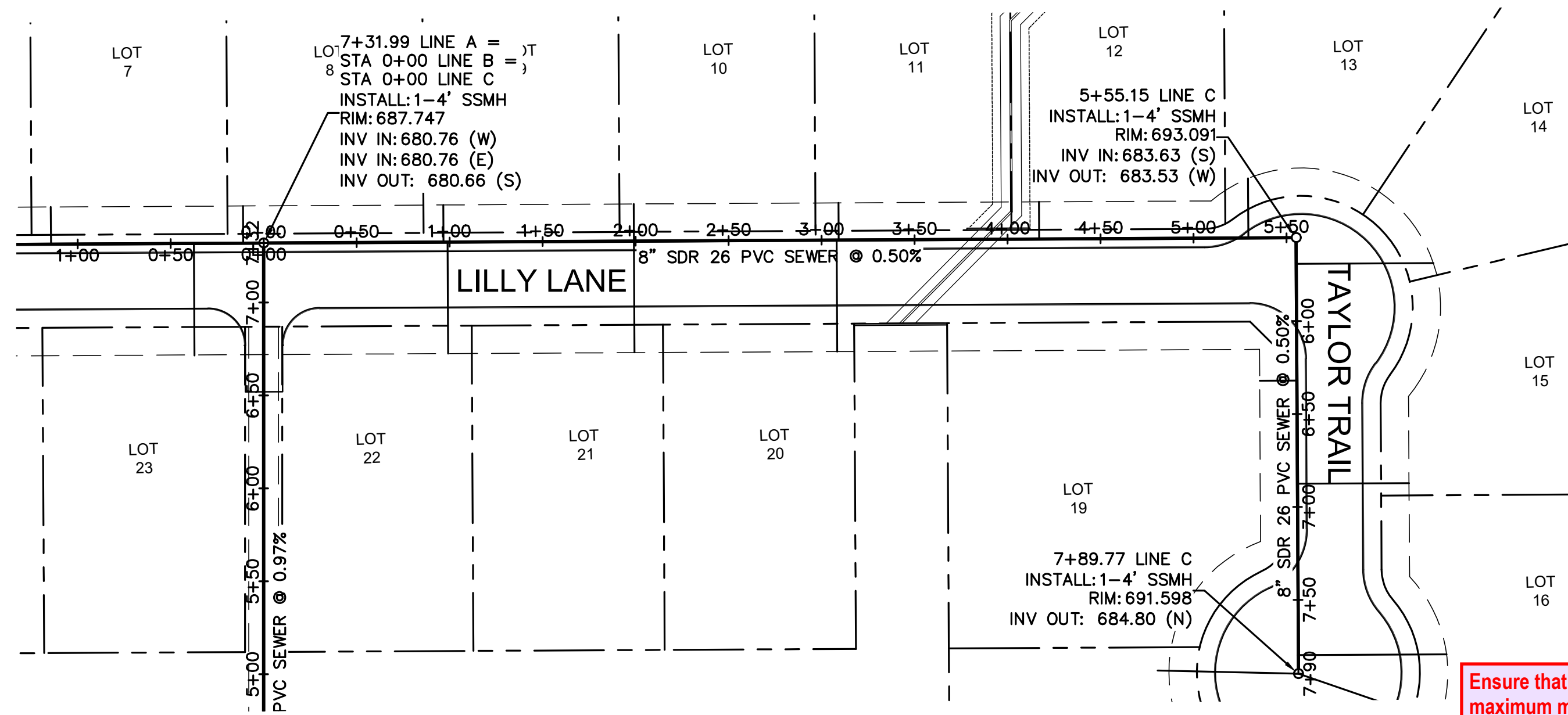
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SHEET NO:

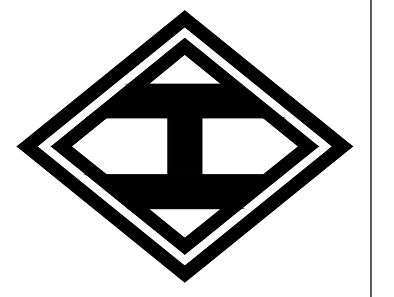
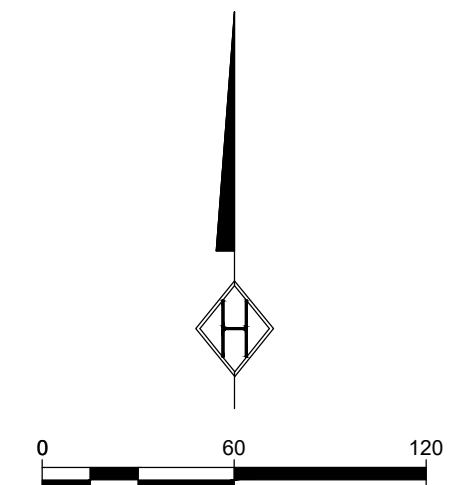
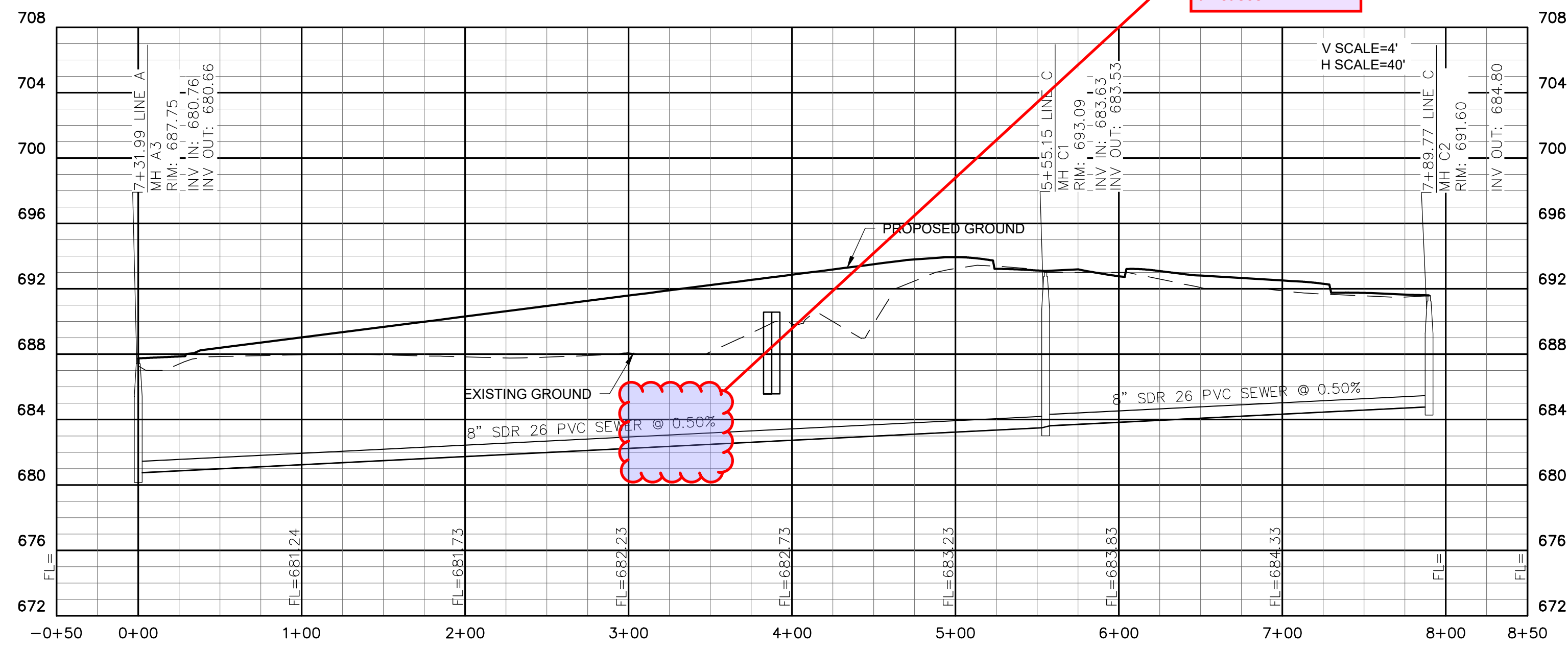
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Ensure that the maximum manhole spacing is 500 ft in all cases



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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

SEWER LINE C  
 PLAN AND  
 PROFILE



**BENCHMARK INFORMATION**

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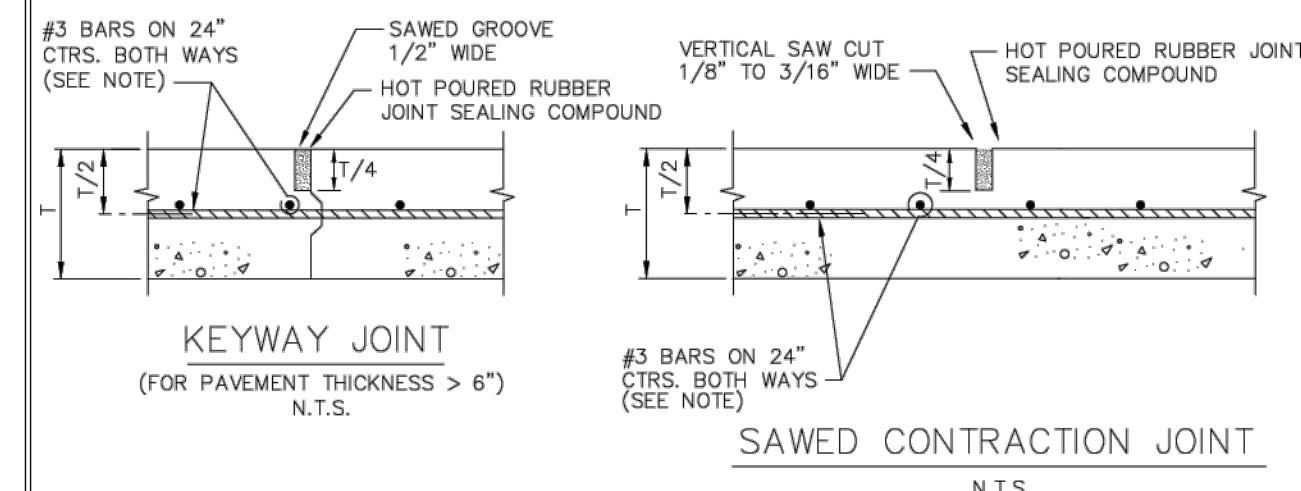
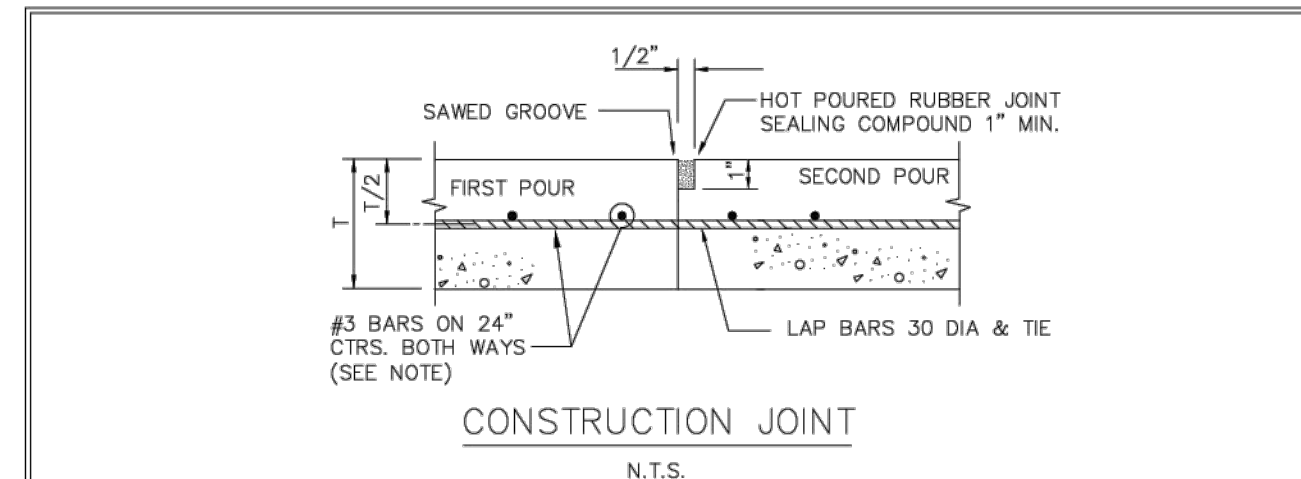
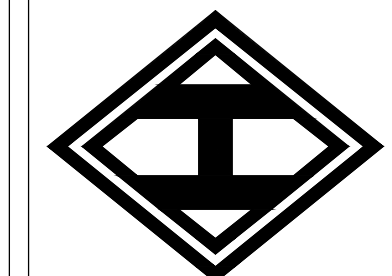
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DATUM: NAVD(88)

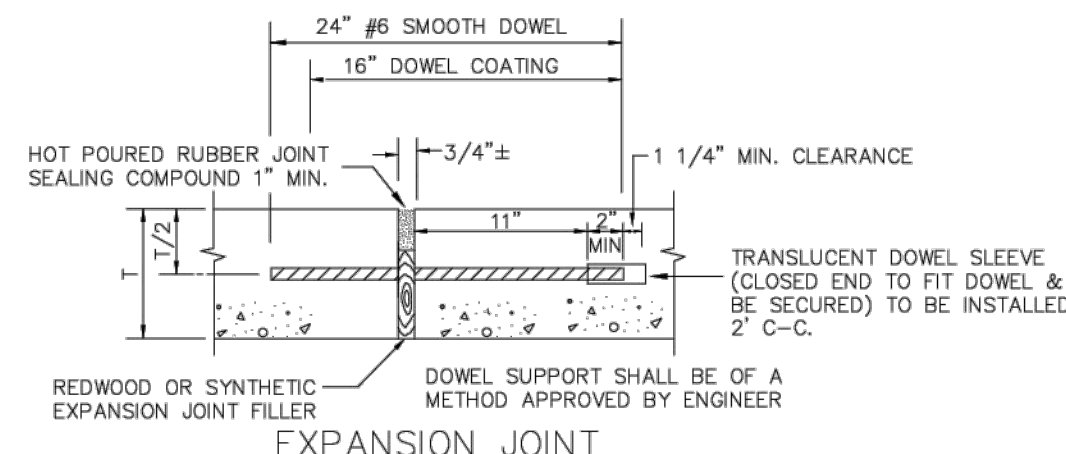
**PRELIMINARY PLANS**

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 HEI #: 24-0702  
 SHEET NO:  
 C20

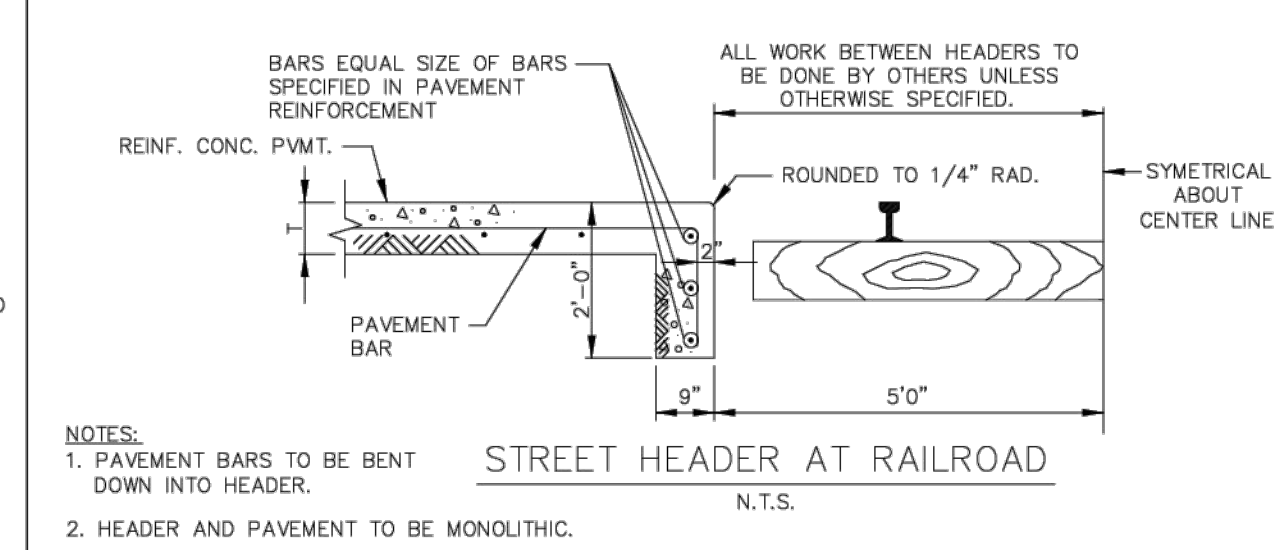
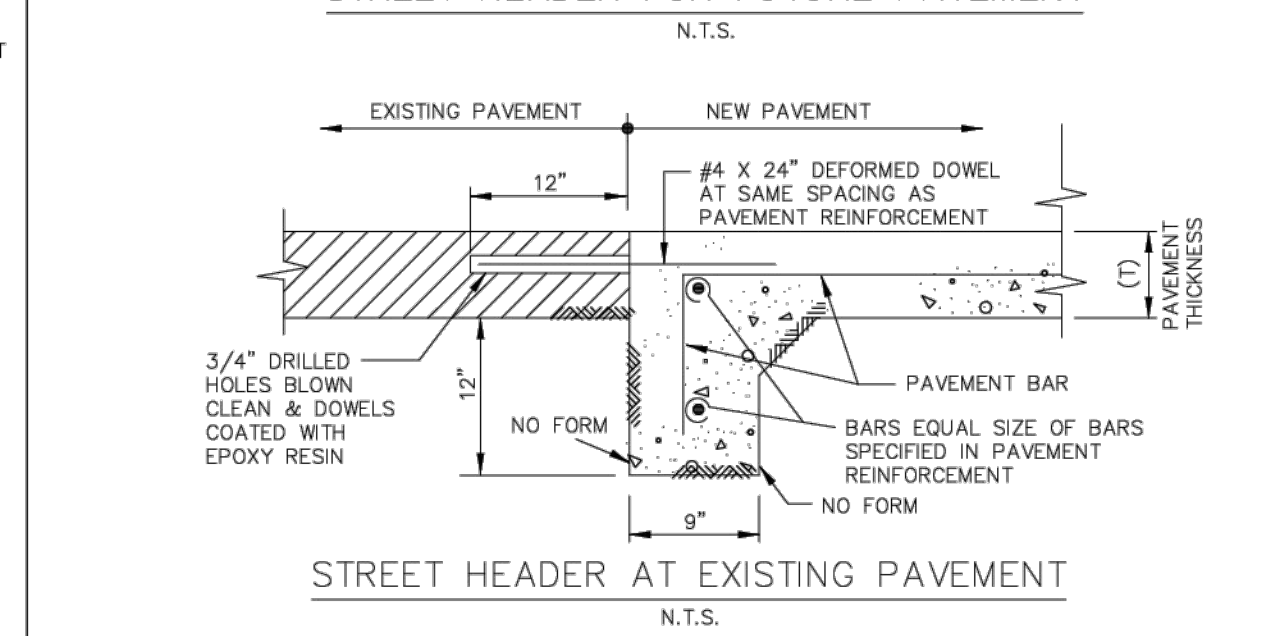
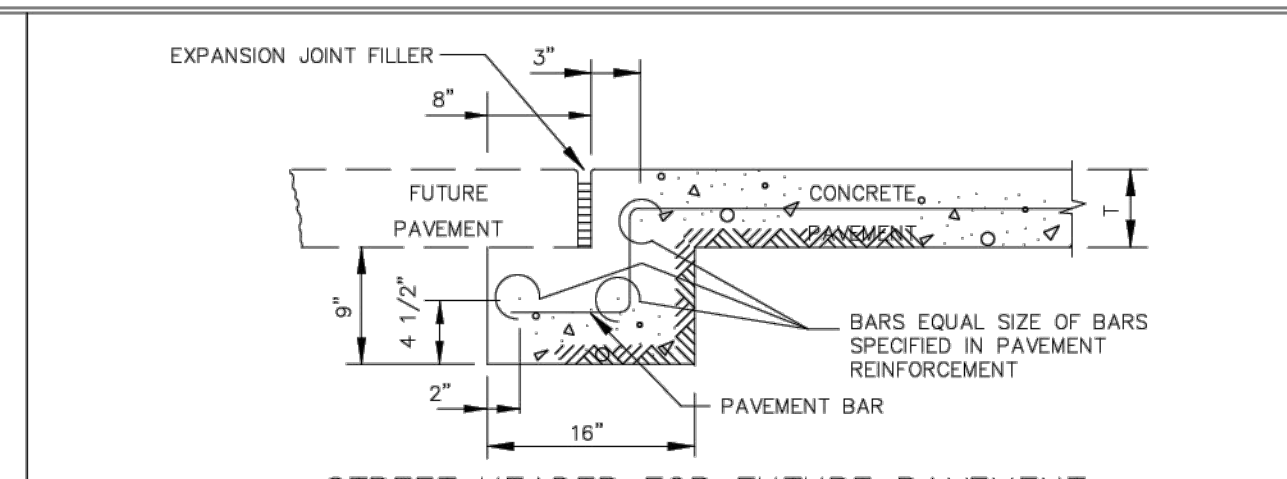


NOTE:  
ALTERNATE REINFORCEMENT  
#4 BARS ON 30" CTRS.  
BOTH WAYS.

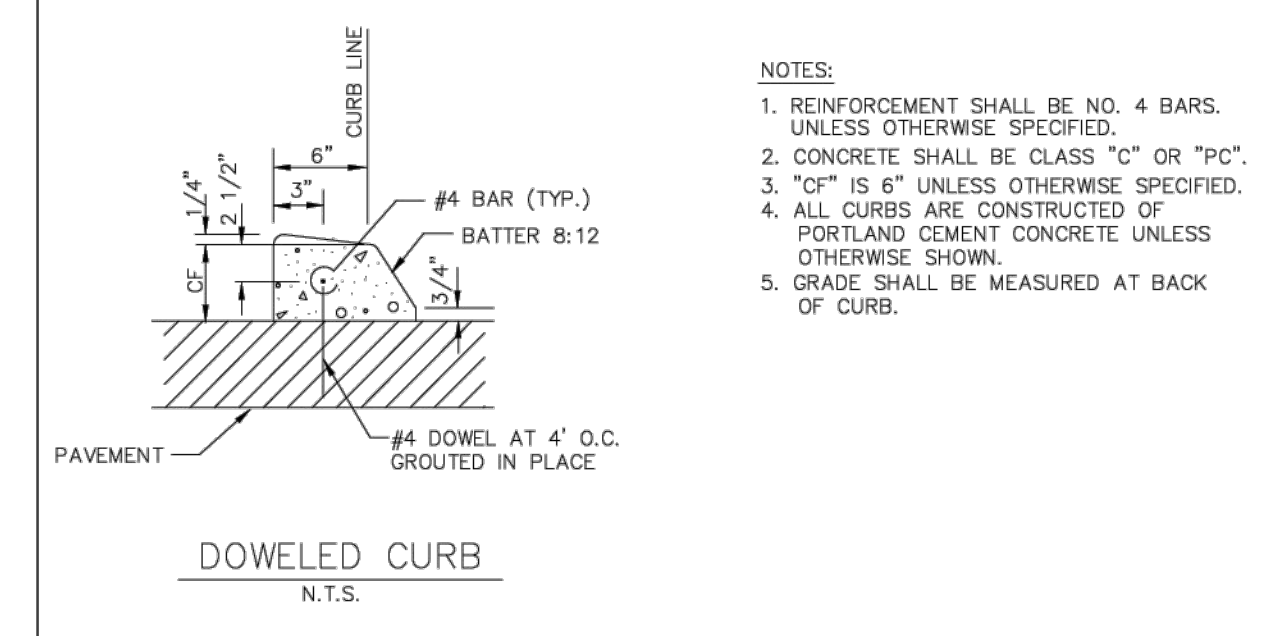
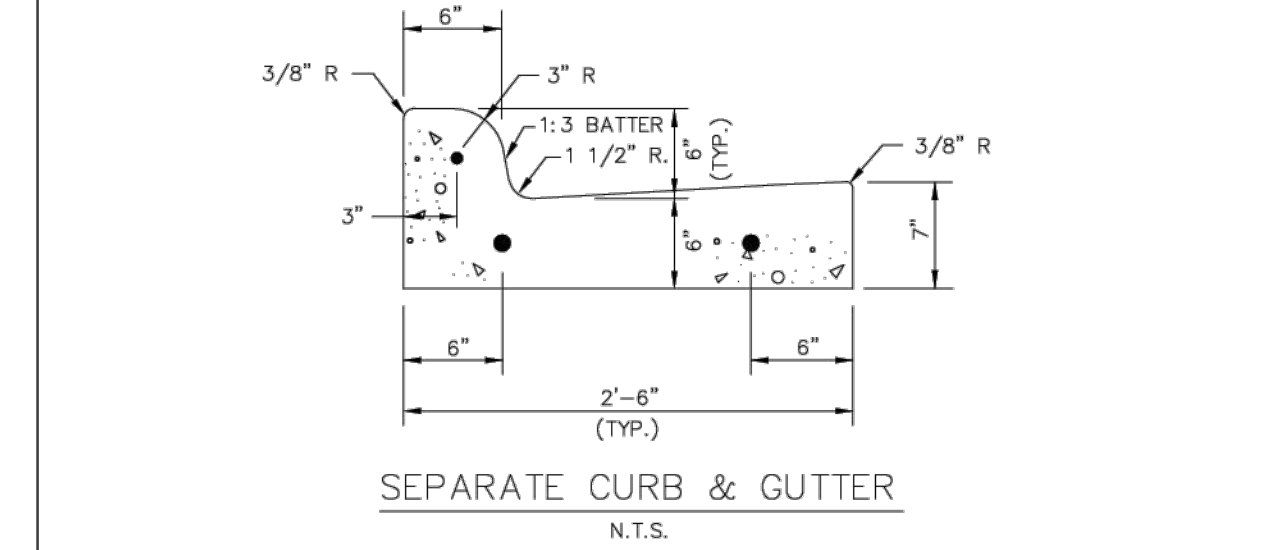
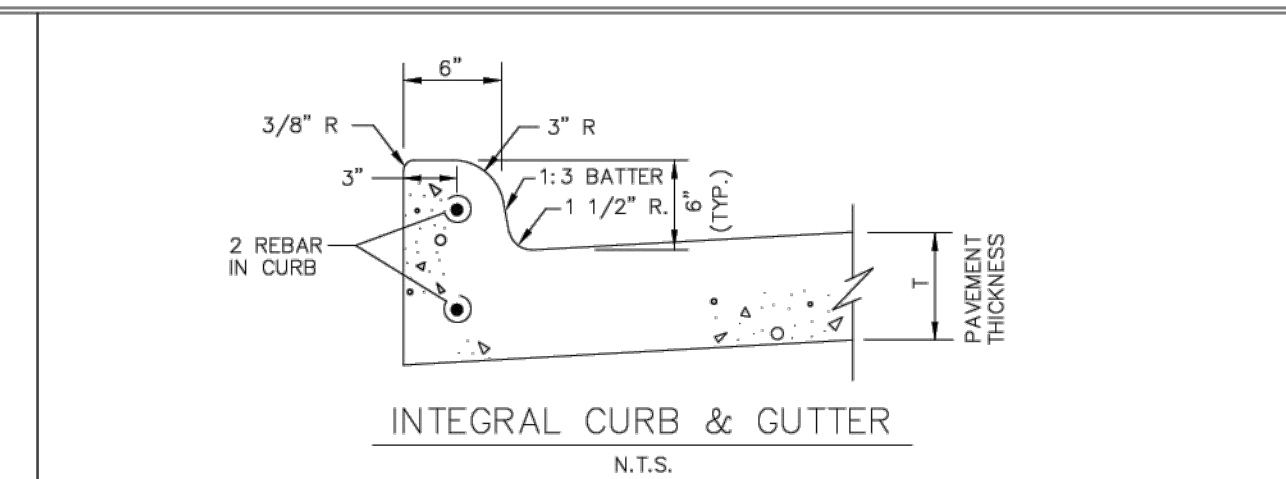


(SPACED 600 FT. MAXIMUM; LOCATE AT  
STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)  
N.T.S.

REINFORCED CONCRETE PAVEMENT JOINTS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303.5.4.
		DATE: OCT. '04 STANDARD DRAWING NO.: 2050

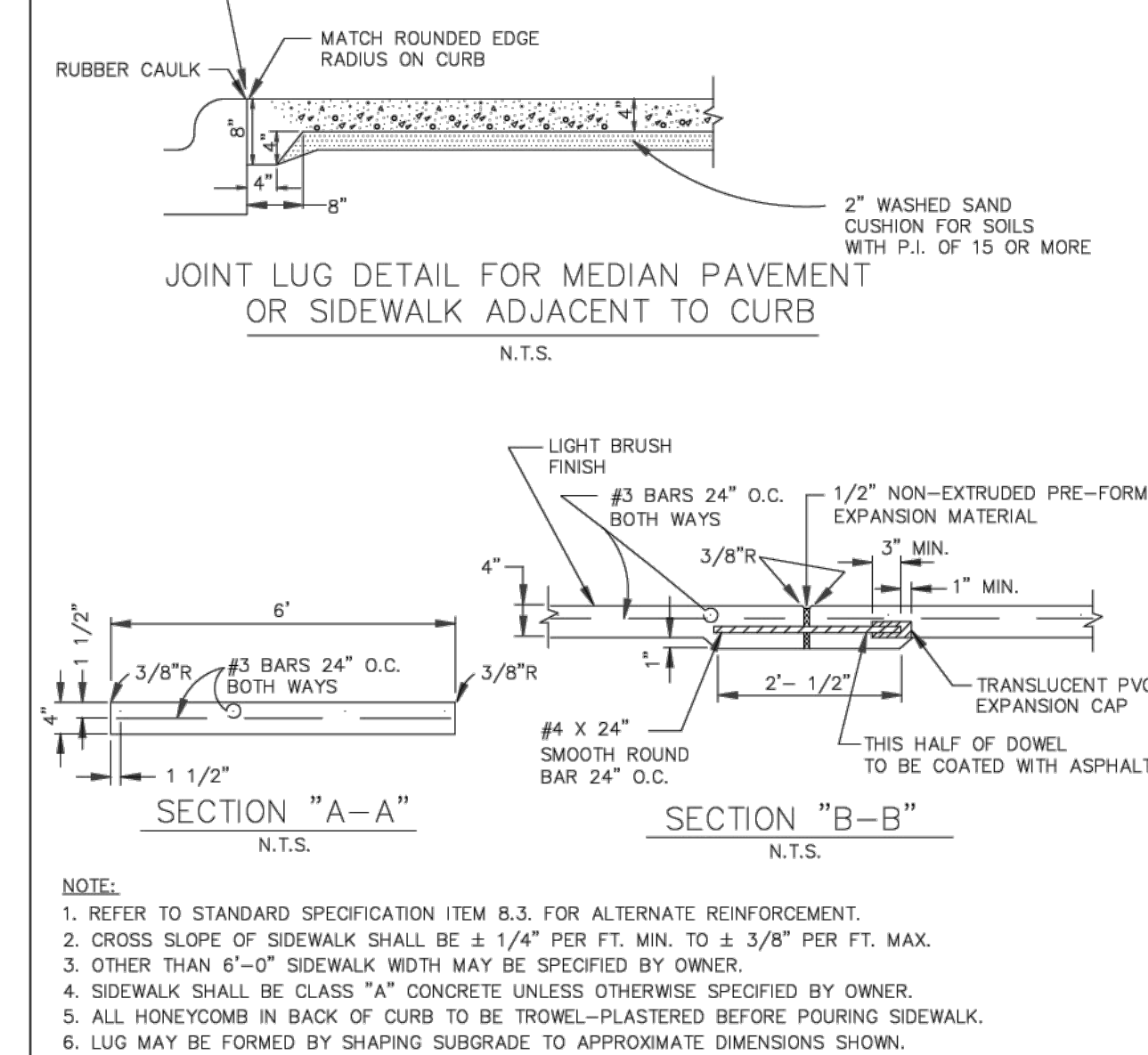
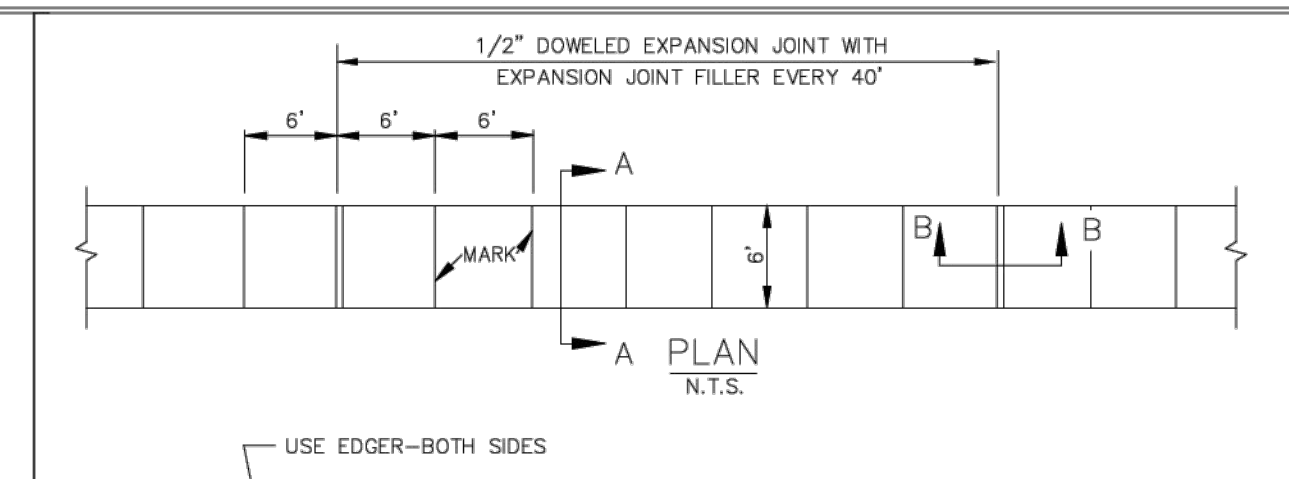


REINFORCED CONCRETE PAVEMENT STREET HEADERS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 305.4
		DATE: OCT. '04 STANDARD DRAWING NO.: 2070

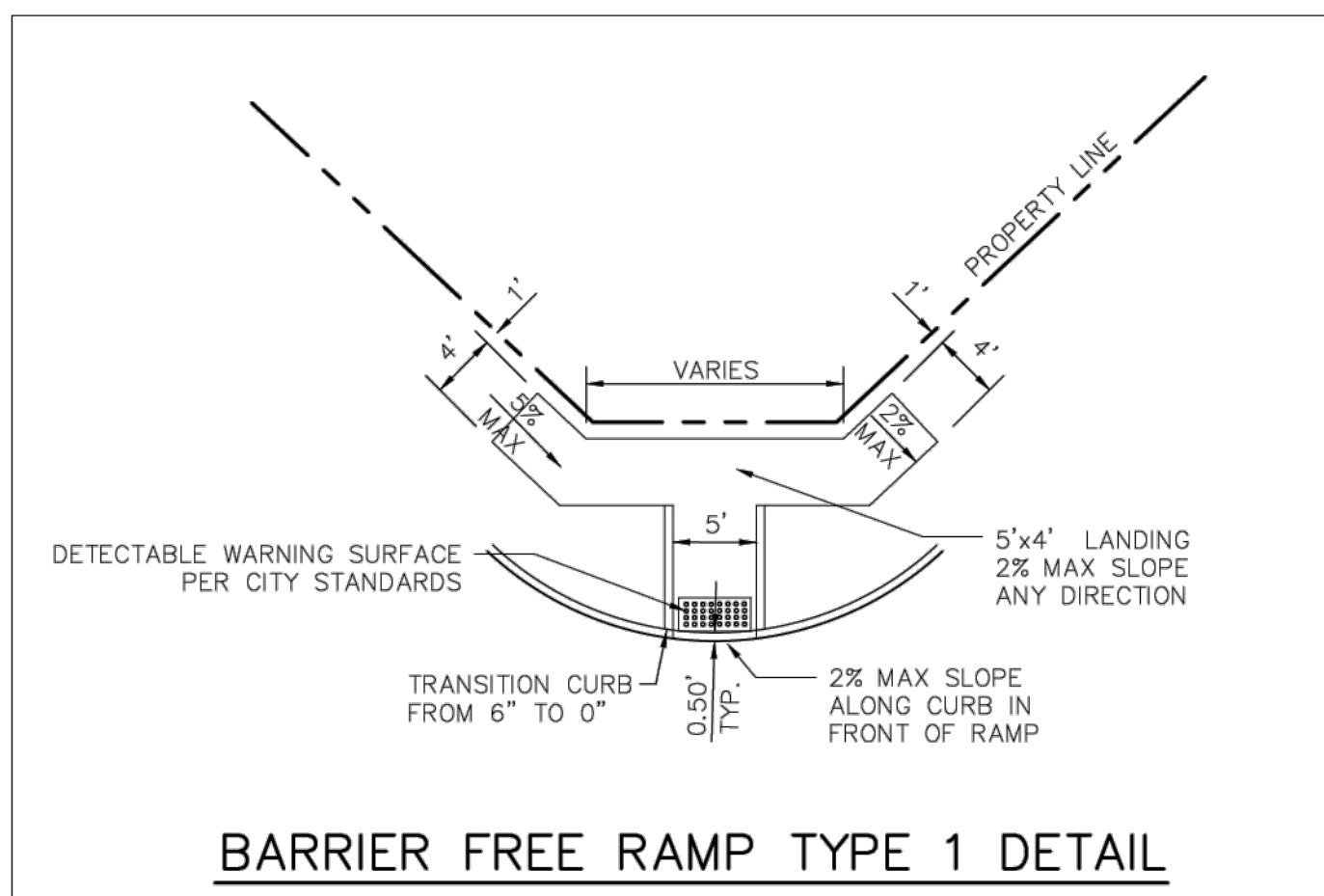
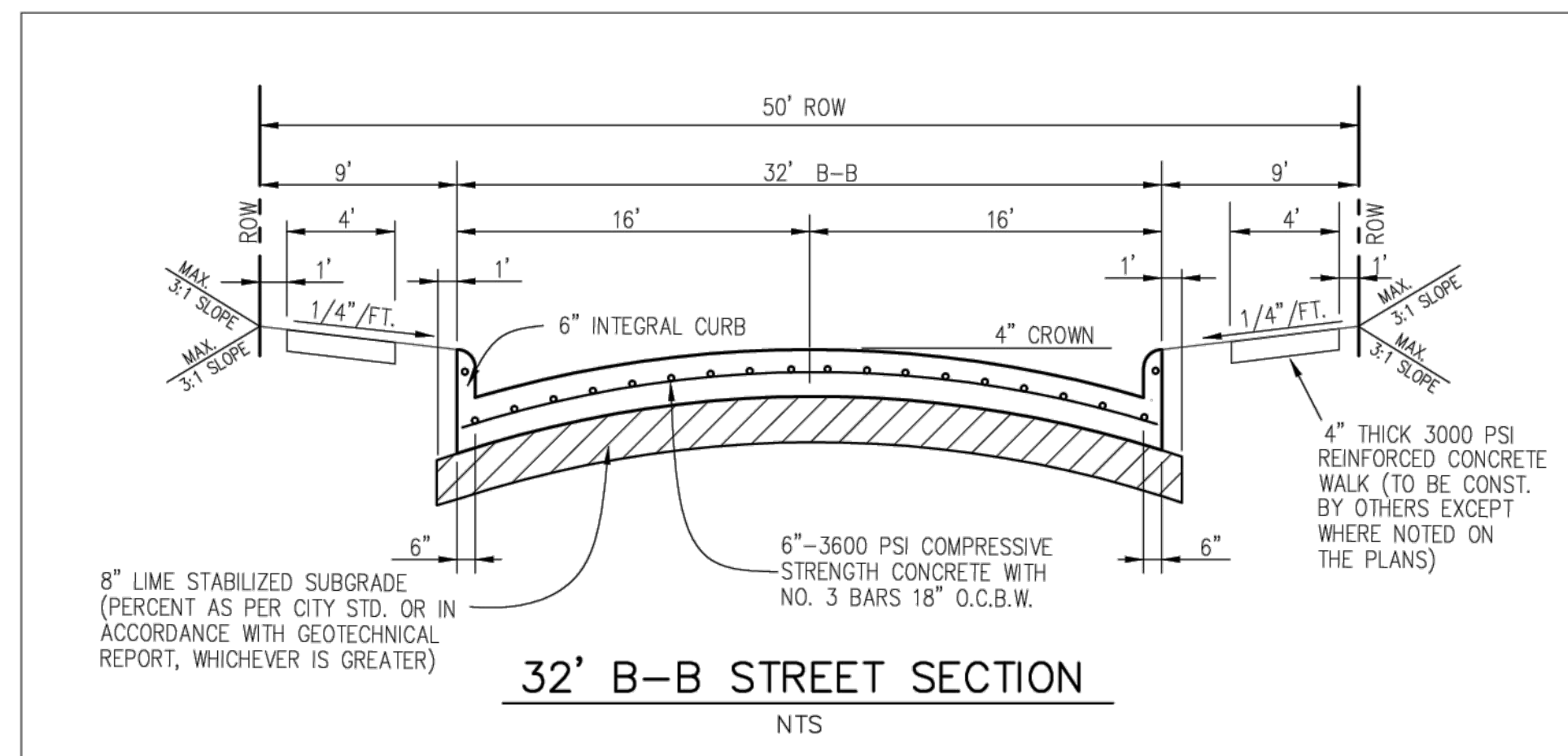


- NOTES:  
 1. REINFORCEMENT SHALL BE NO. 4 BARS UNLESS OTHERWISE SPECIFIED.  
 2. CONCRETE SHALL BE CLASS "C" OR "PC".  
 3. "CF" IS 6" UNLESS OTHERWISE SPECIFIED.  
 4. ALL CURBS ARE CONSTRUCTED OF PORTLAND CEMENT CONCRETE UNLESS OTHERWISE SHOWN.  
 5. GRADE SHALL BE MEASURED AT BACK OF CURB.

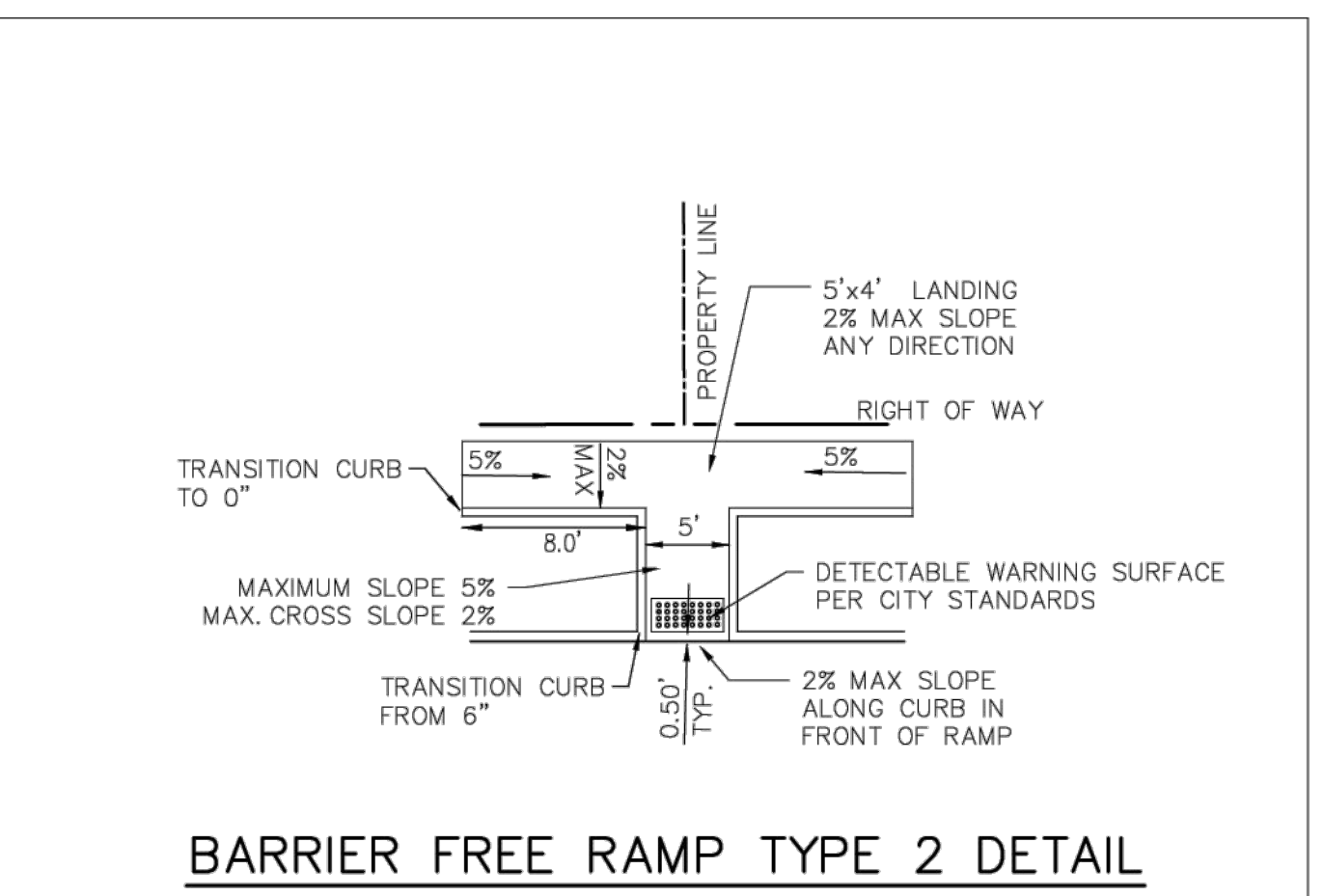
CONCRETE CURB & GUTTER INTEGRAL, SEPARATE, & DOWELED	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 305.1
		DATE: OCT. '04 STANDARD DRAWING NO.: 2120



REINFORCED CONCRETE SIDEWALKS JOINTS AND SPACING	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 8.3.
		DATE: NOV. '96 STANDARD DRAWING NO.: 2170



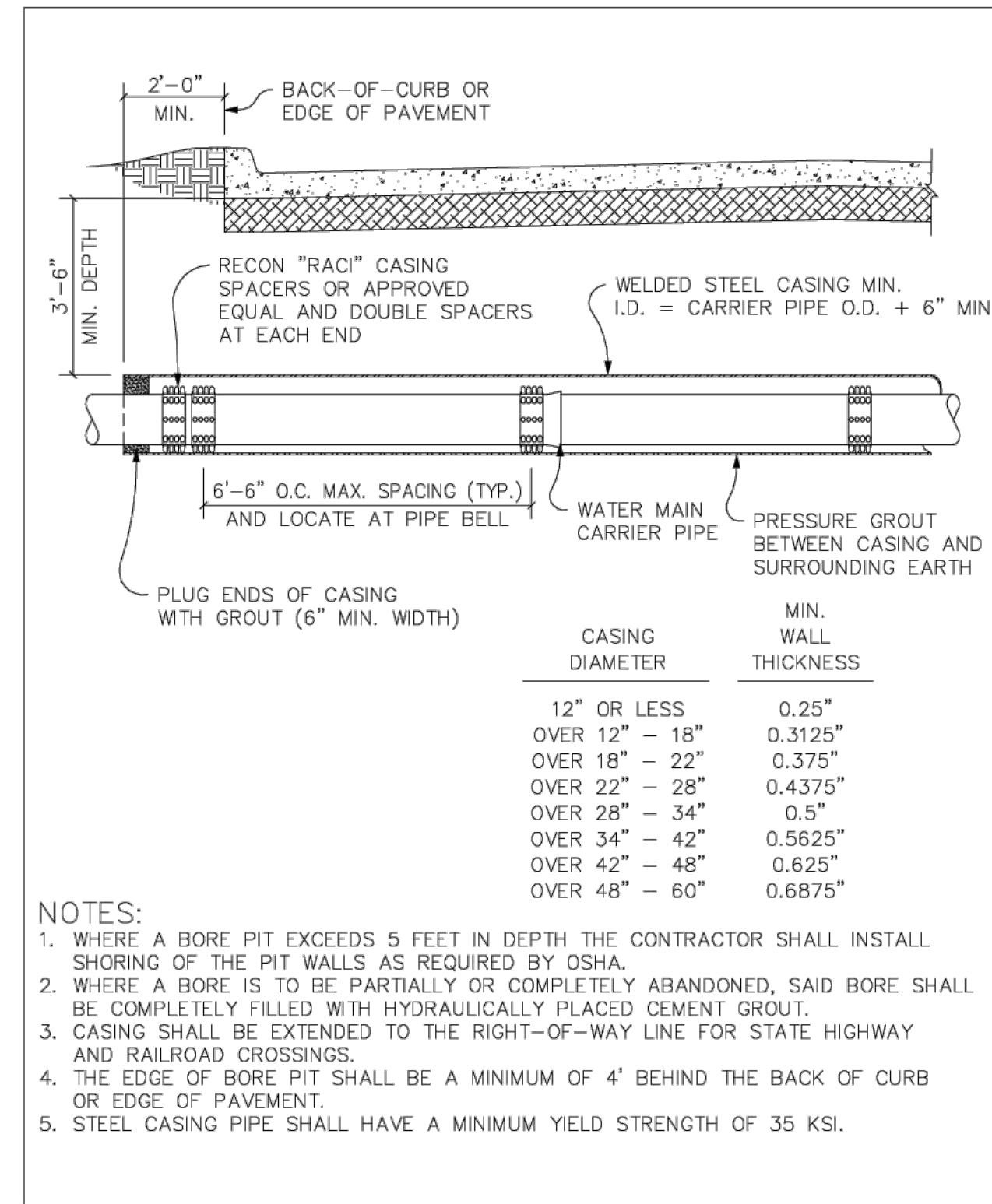
- NOTES:  
 -MAXIMUM LINEAR SLOPE TO BE 5% (1:20)  
 -MAXIMUM CROSS SLOPE TO BE 2% (1:50)



- NOTES:  
 -MAXIMUM LINEAR SLOPE TO BE 5% (1:20)  
 -MAXIMUM CROSS SLOPE TO BE 2% (1:50)

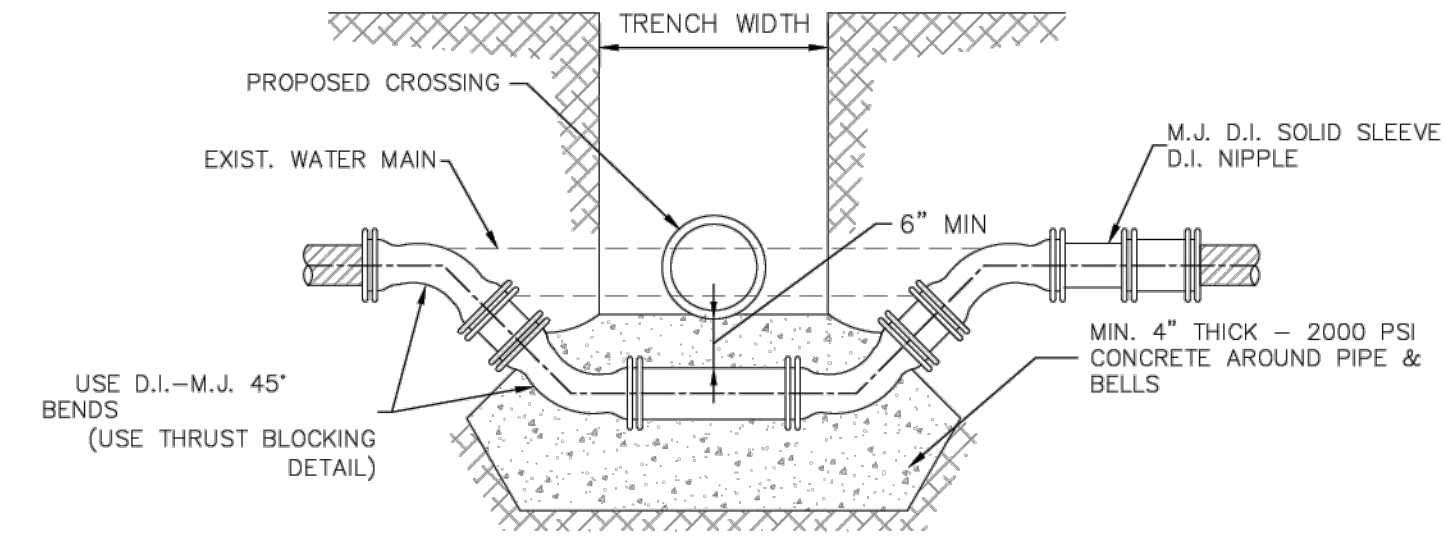
PRELIMINARY PLANS  
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 STEVEN R. HOMEYER, PE # 86942  
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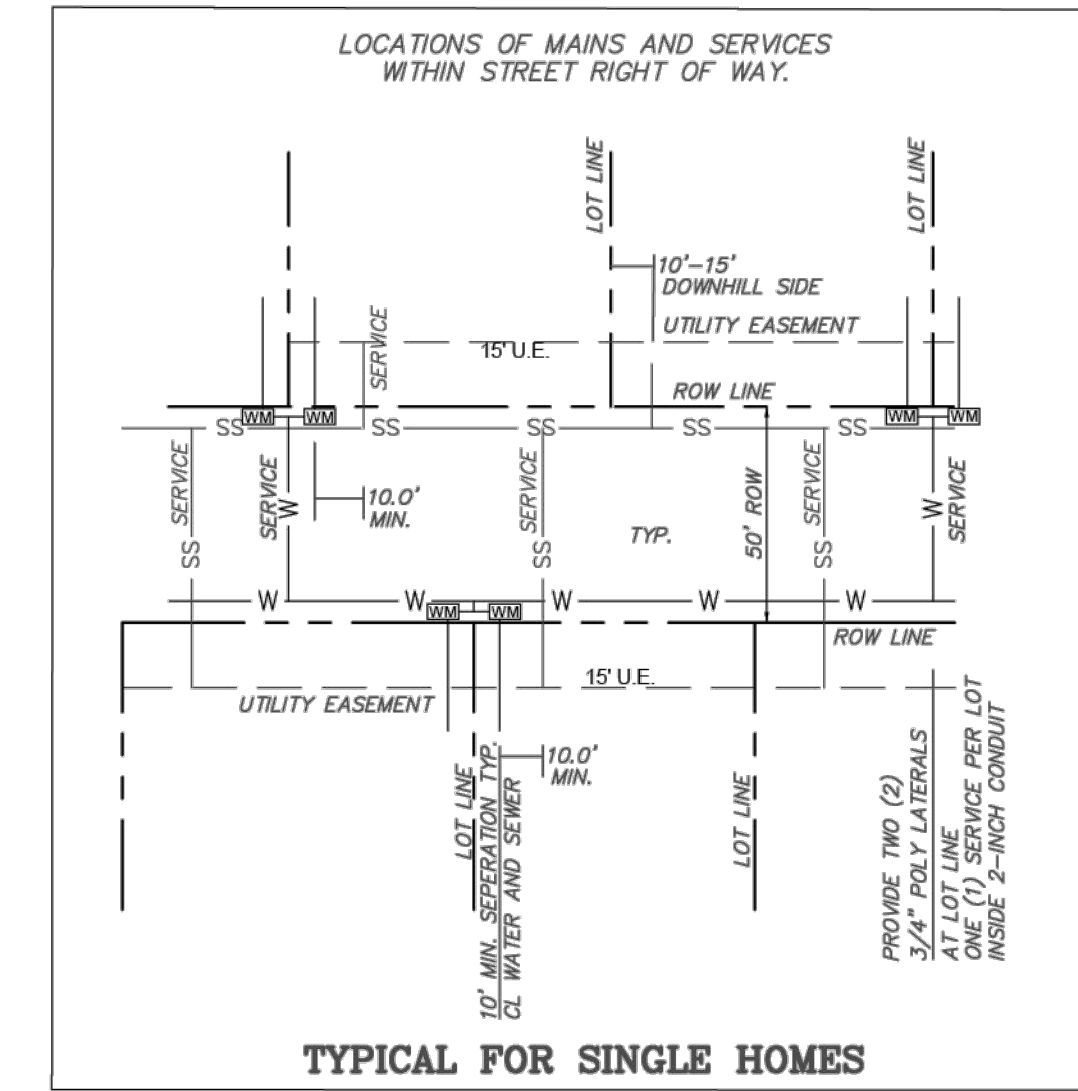


- NOTES:
- WHERE A BORE PIT EXCEEDS 5 FEET IN DEPTH THE CONTRACTOR SHALL INSTALL SHORING OF THE PIT WALLS AS REQUIRED BY OSHA.
  - WHERE A BORE IS TO BE PARTIALLY OR COMPLETELY ABANDONED, SAID BORE SHALL BE COMPLETELY FILLED WITH HYDRAULICALLY PLACED CEMENT GROUT.
  - CASING SHALL BE EXTENDED TO THE RIGHT-OF-WAY LINE FOR STATE HIGHWAY AND RAILROAD CROSSINGS.
  - THE EDGE OF BORE PIT SHALL BE A MINIMUM OF 4' BEHIND THE BACK OF CURB OR EDGE OF PAVEMENT.
  - STEEL CASING PIPE SHALL HAVE A MINIMUM YIELD STRENGTH OF 35 KSI.

WATER SYSTEM CONSTRUCTION DETAILS  
WATER LINE BORE AND CASING

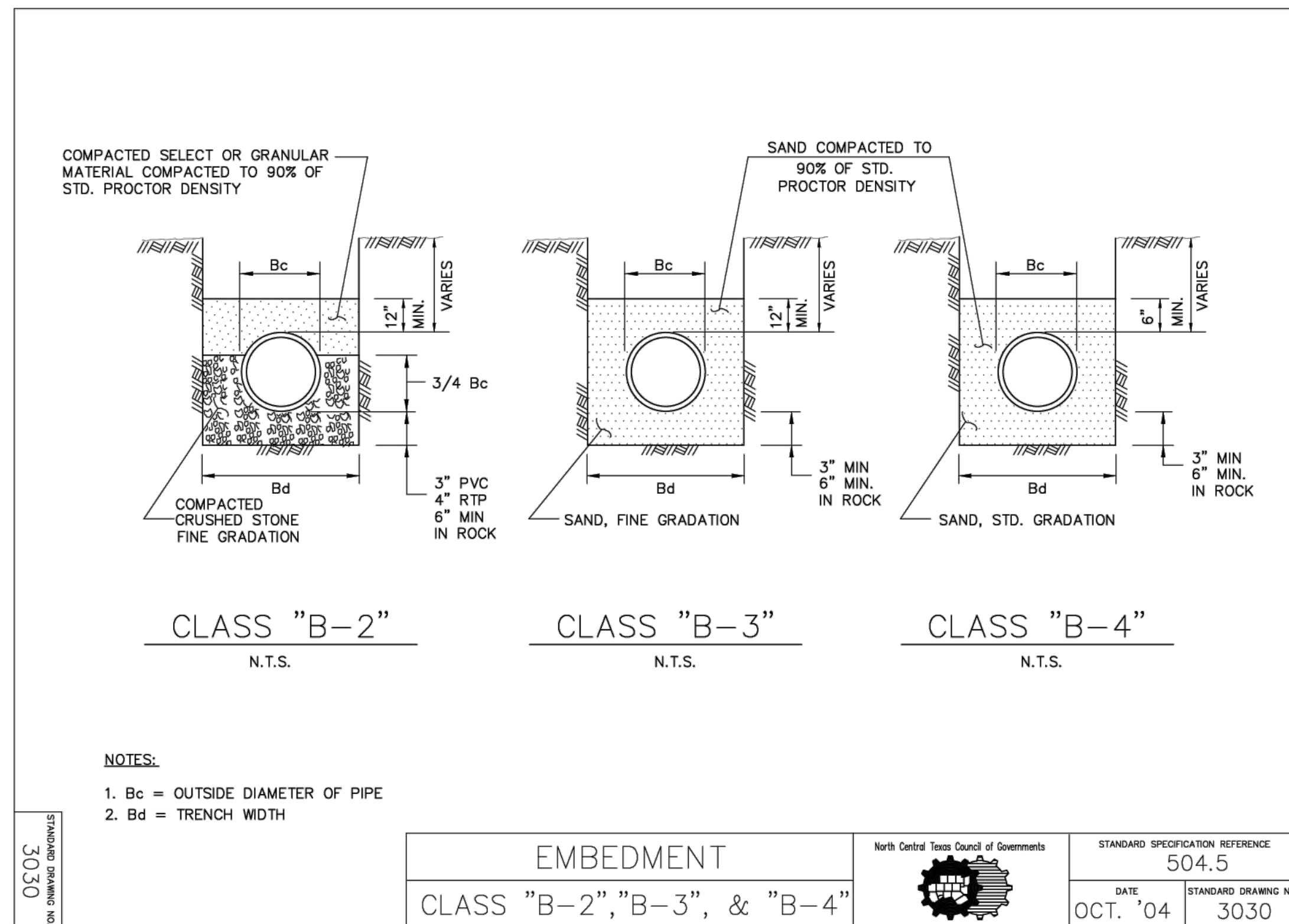


DETAIL FOR WATER MAIN LOWERING  
NOT TO SCALE



TYPICAL FOR SINGLE HOMES  
LOCATIONS OF MAINS AND SERVICES  
N.T.S.

- NOTES:
- SOME WATER LATERALS MAY ONLY SERVICE ONE LOT DUE TO ODD LOTS OR OBSTACLES. IF THIS IS THE CASE THE LATERAL IS NOT SHOWN ON THE LOT LINE IN THE PLAN VIEW. A 2-INCH SLEEVE IS STILL REQUIRED FOR A SINGLE SERVICE.
  - SANITARY SEWER TO BE ON THE DOWNHILL OR LOWER SIDE OF THE LOT. LATERAL TYPICALLY TO BE 10' TO 15' FROM LOT LINE AND 10-FEET FROM WATER SERVICES.



EMBEDMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE	504.5
CLASS "B-2", "B-3", & "B-4"		DATE	OCT. '04
		STANDARD DRAWING NO.	3030

NOTE

WATER LINE EMBEDMENT SHALL BE CLASS "B-3" OR CLASS "B-4" PER CITY REQUIREMENTS

PRELIMINARY PLANS

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STEVEN R. HOMEYER, PE # 86942  
DATE:

WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

WATER DETAILS

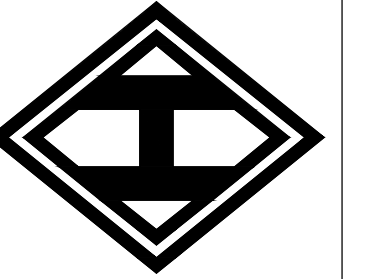
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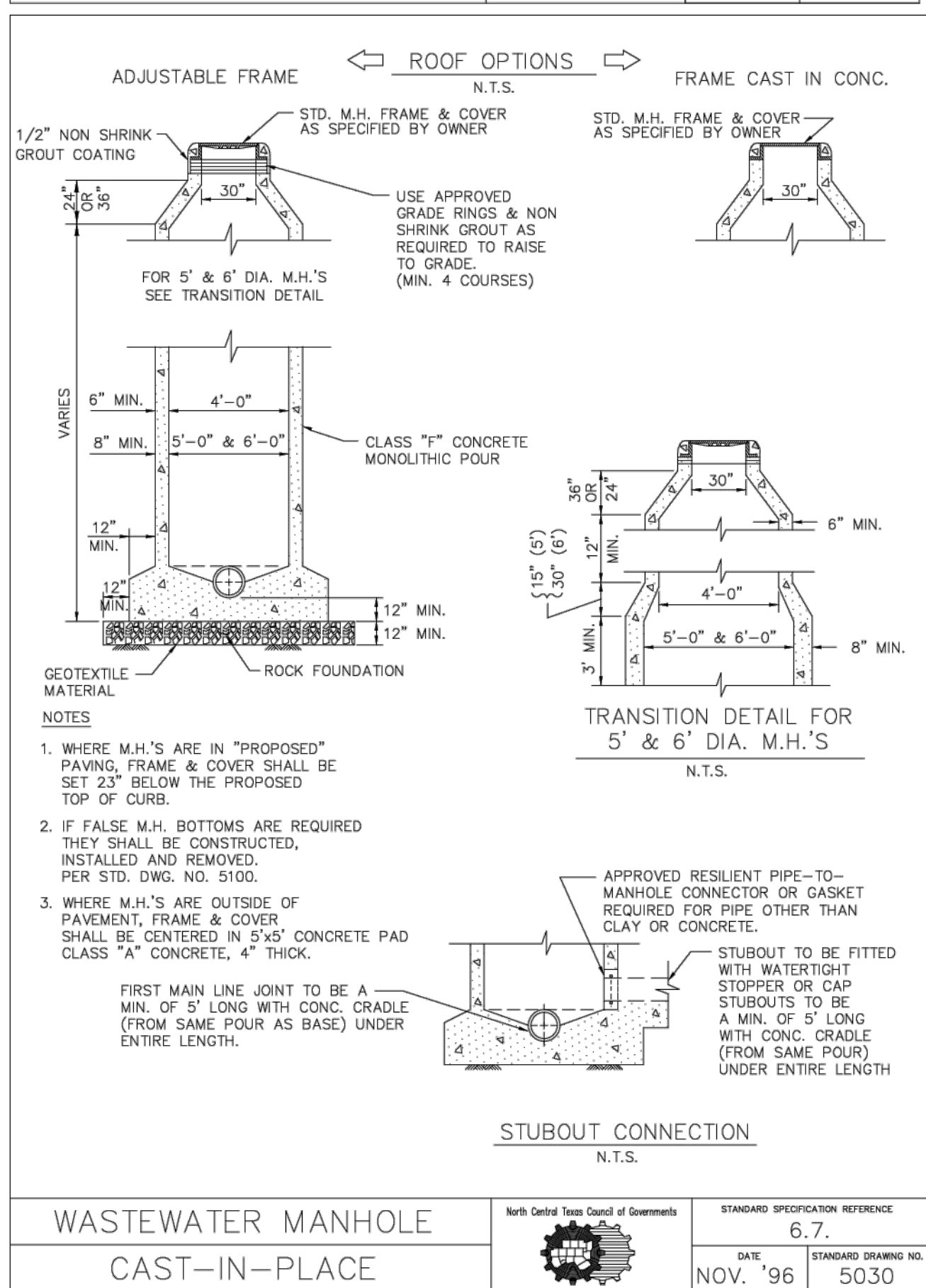
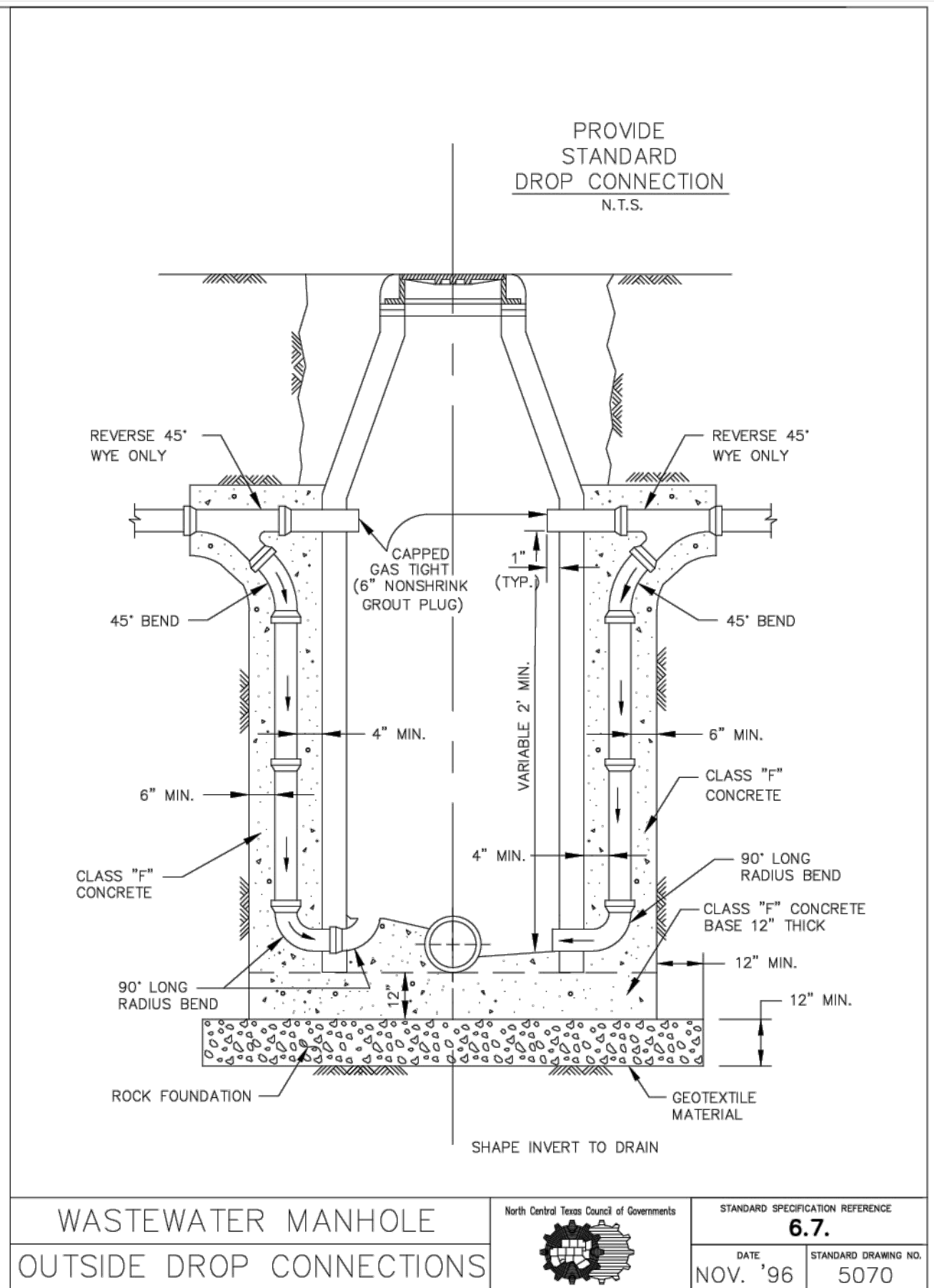
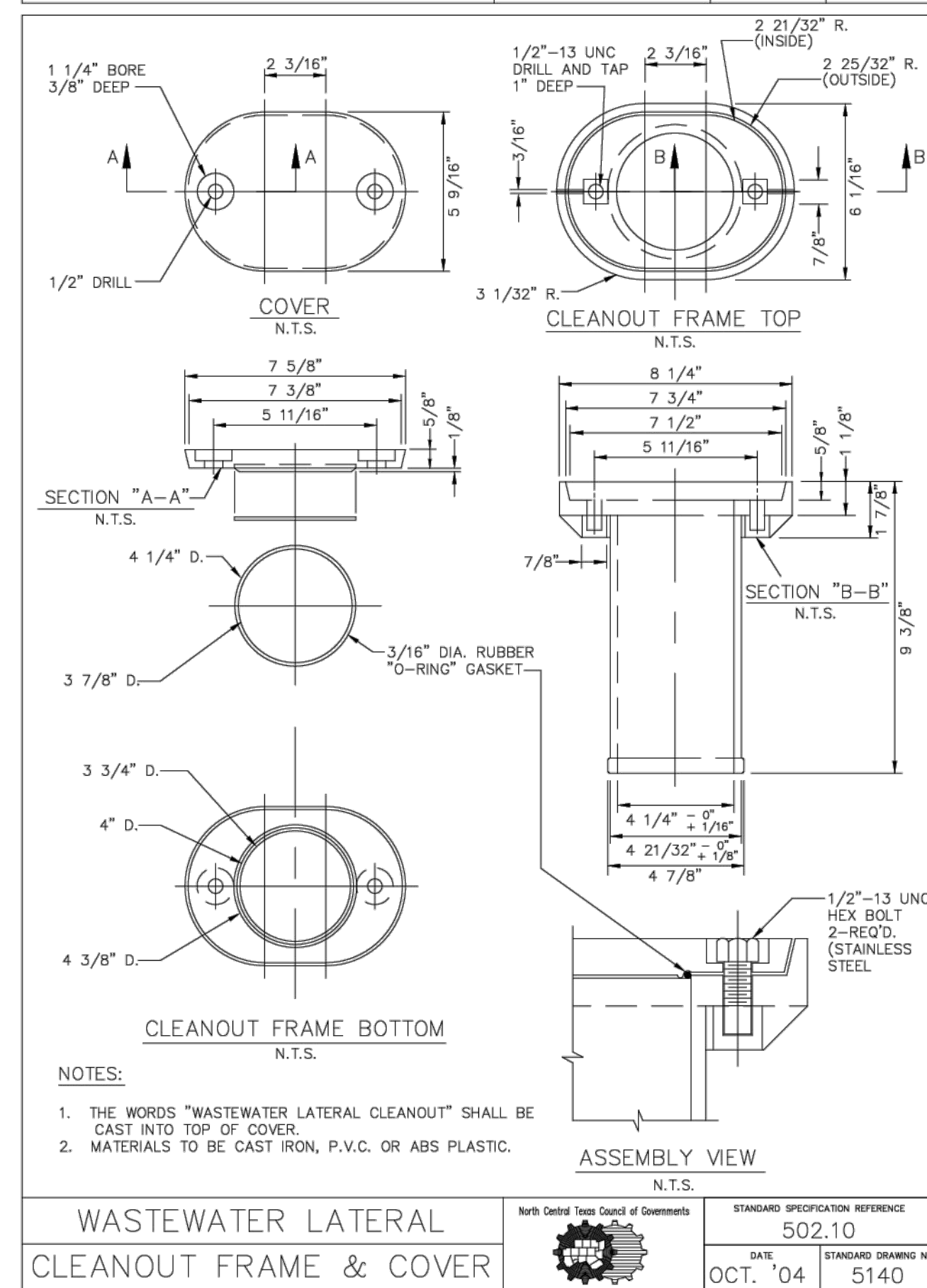
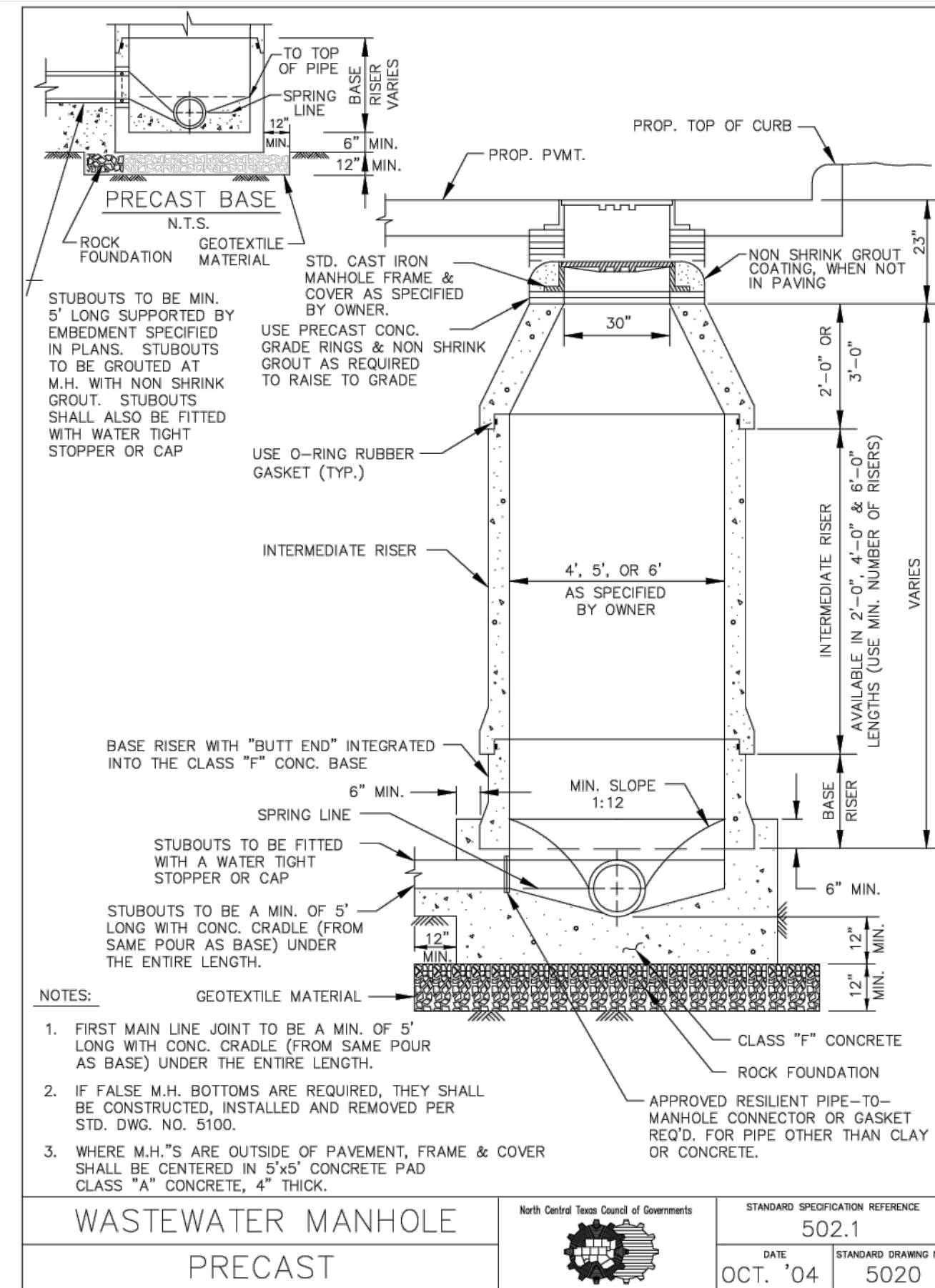
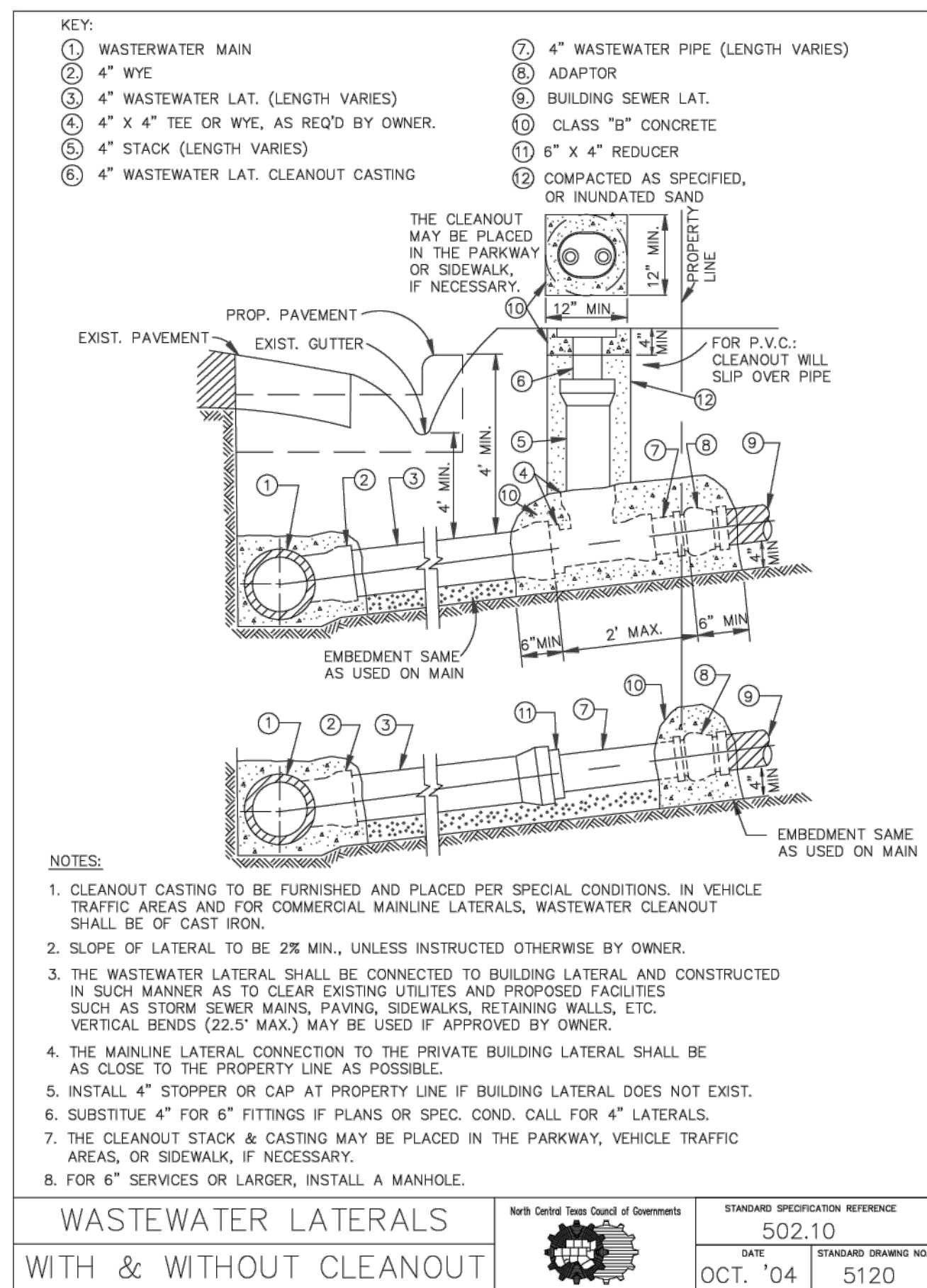
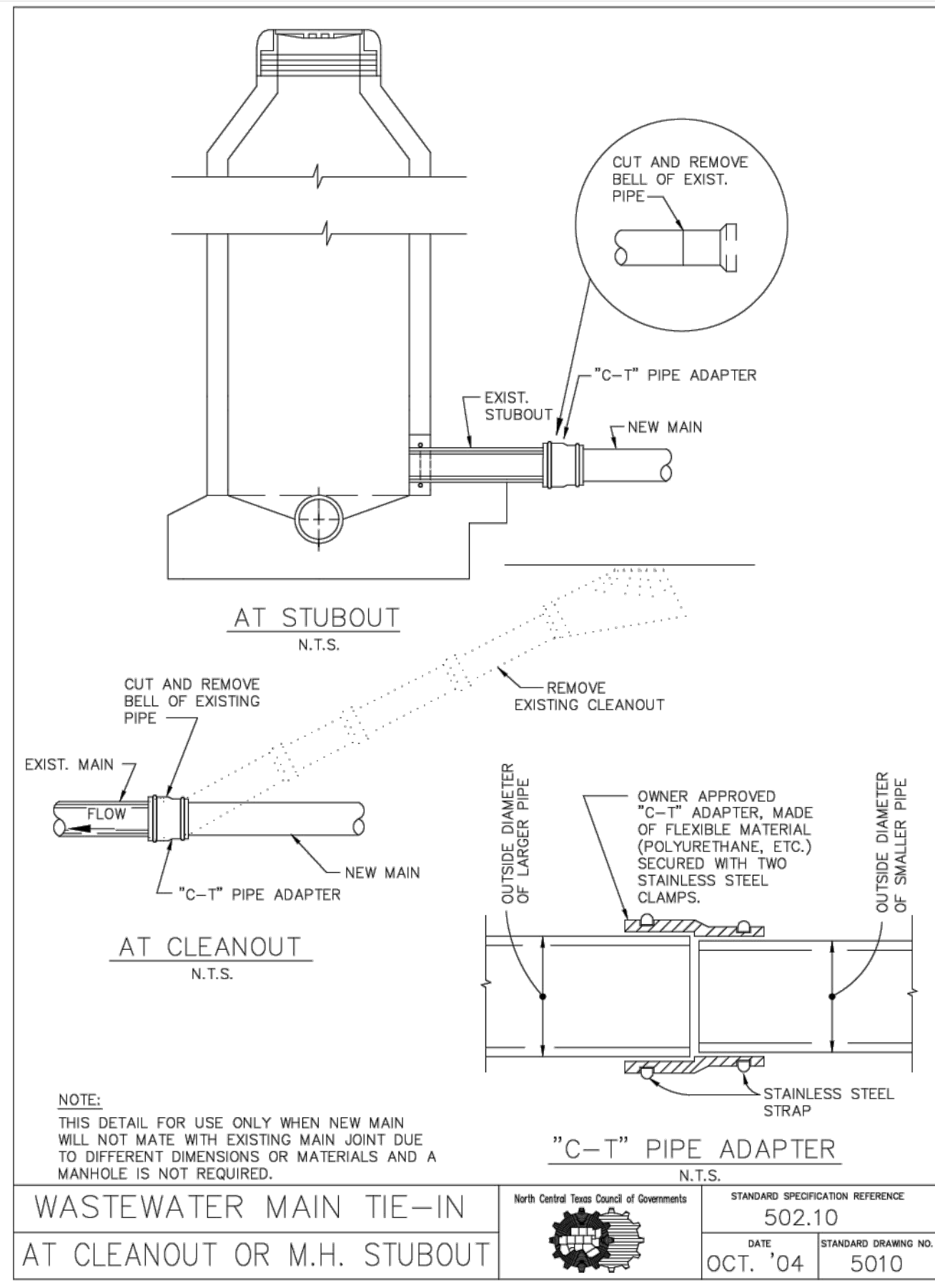
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HEI #: 24-0702

SHEET NO:  
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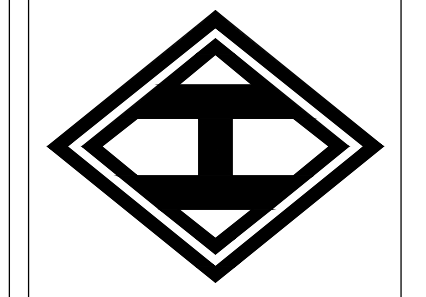
**HOMEYER**  
ENGINEERING INC.  
TBPELS FIRM REGISTRATION NO. F-8440  
P.O. BOX 294527 LEWISVILLE, TEXAS 75029  
972-906-9985 PHONE 972-906-9987 FAX  
WWW.HEI.US.COM





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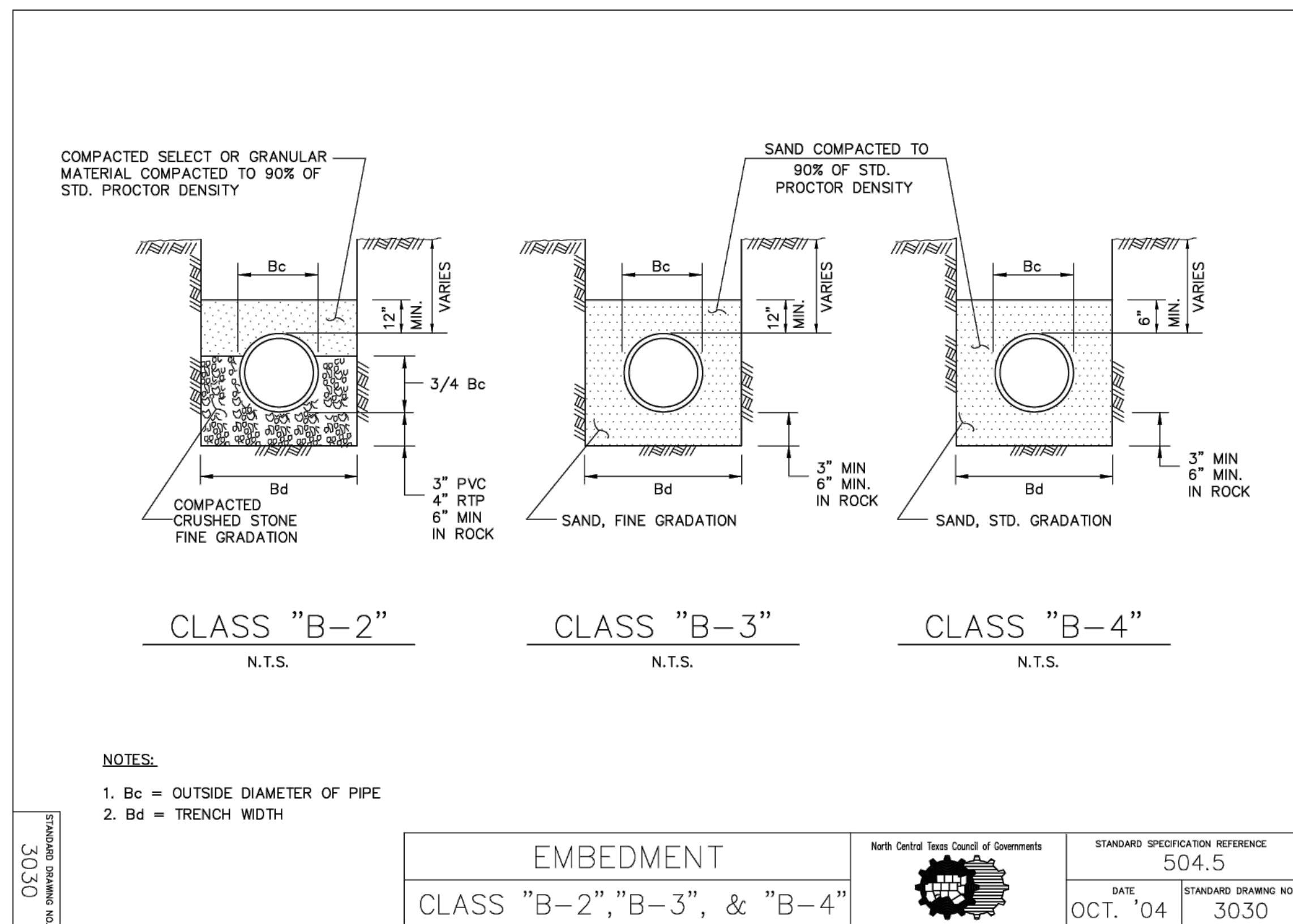
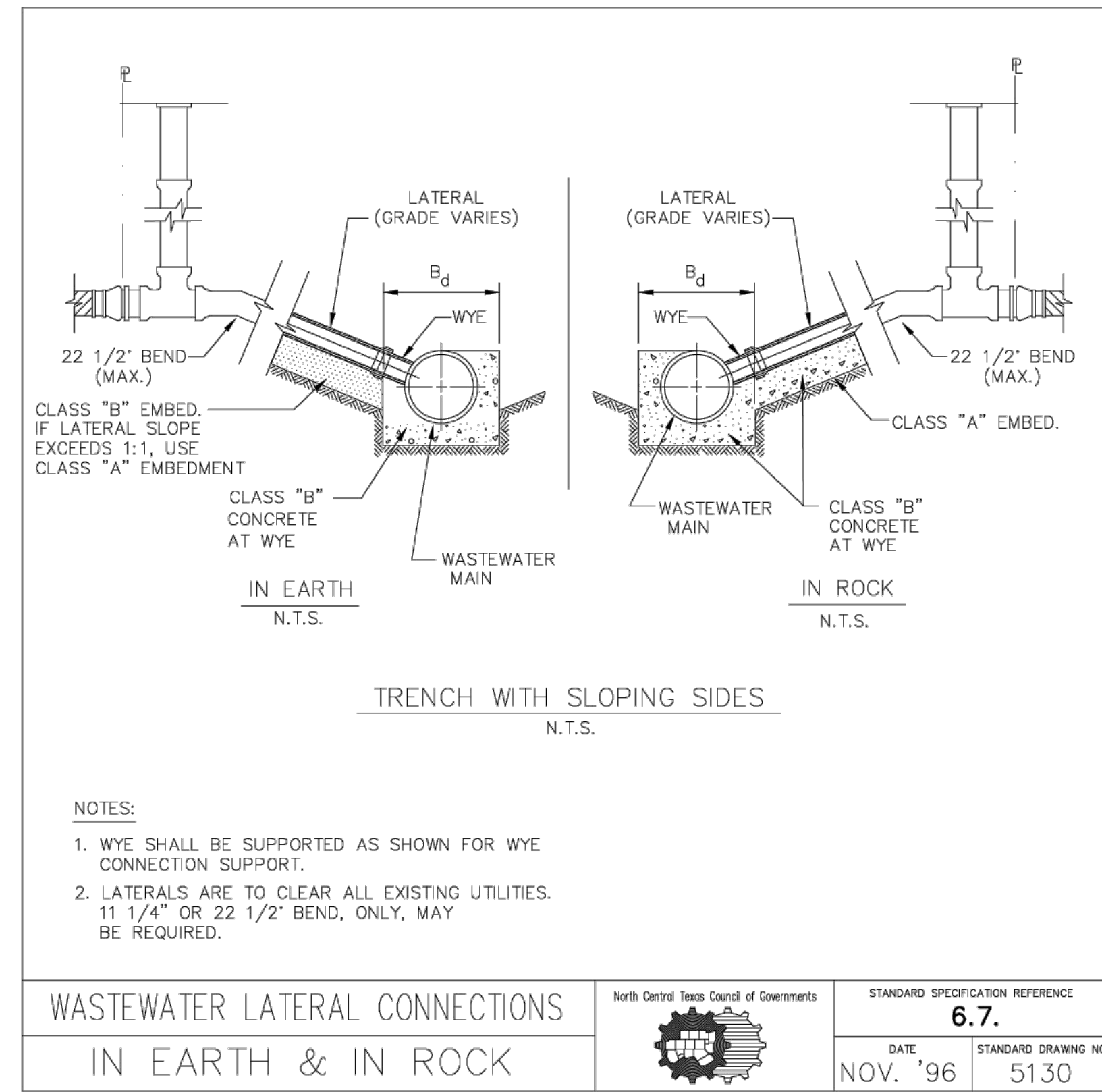
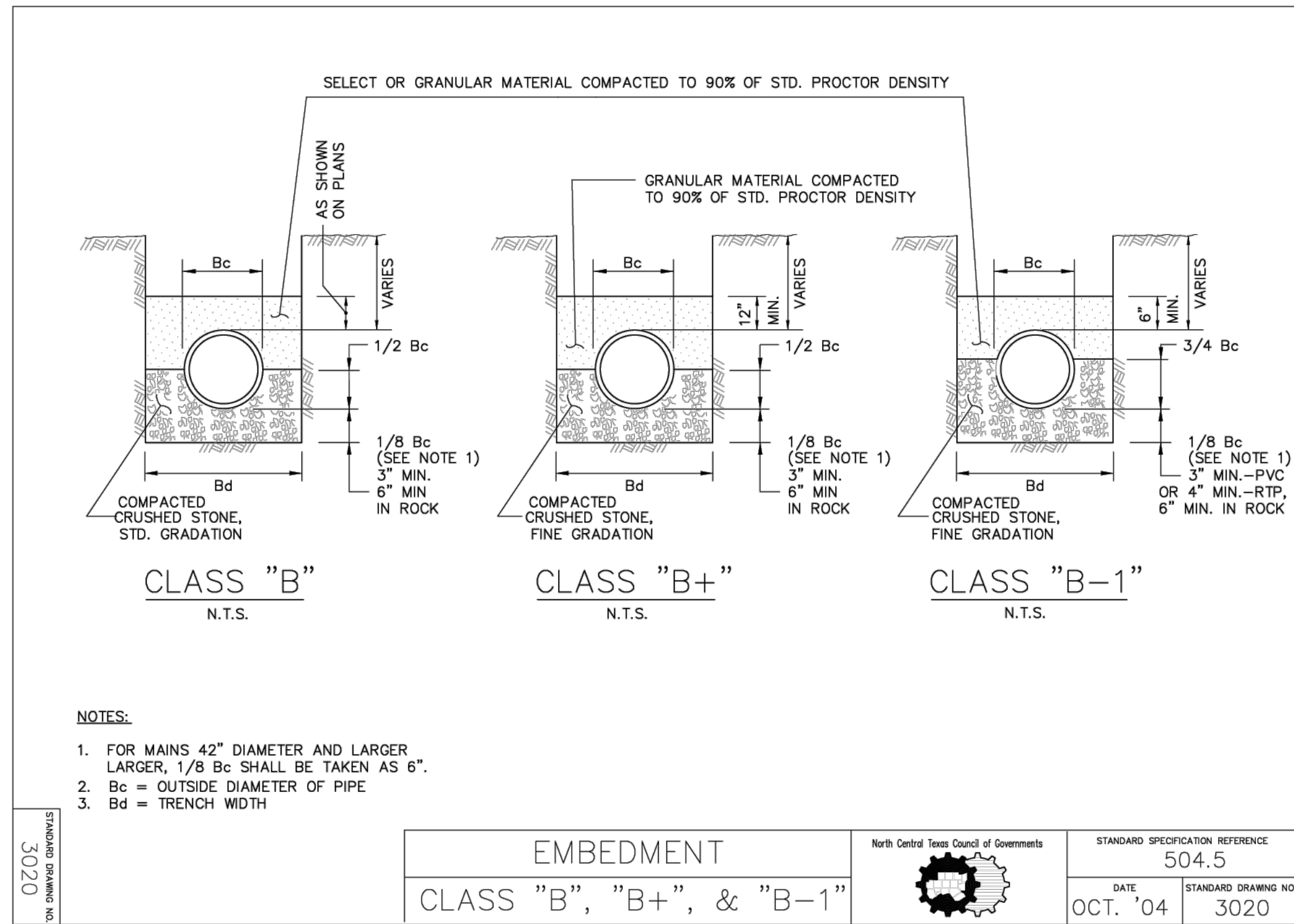
**HOMEYER ENGINEERING INC.**  
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WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

SANITARY  
SEWER DETAILS

DRAWN: ATG  
DATE: 10-05-2024  
HEI #: 24-0702  
SHEET NO:  
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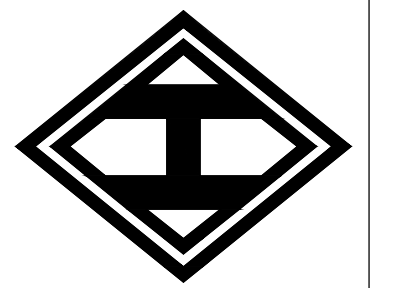


NOTE

SANITARY SEWER LINE EMBEDMENT SHALL BE CLASS "B", "B+", "B-1" OR CLASS "B-2" PER CITY REQUIREMENTS

LATERAL CONNECTIONS SHALL BE INSTALLED PER NCTCOG DETAIL 5130 PER CITY REQUIREMENTS

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WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

SANITARY  
 SEWER DETAILS

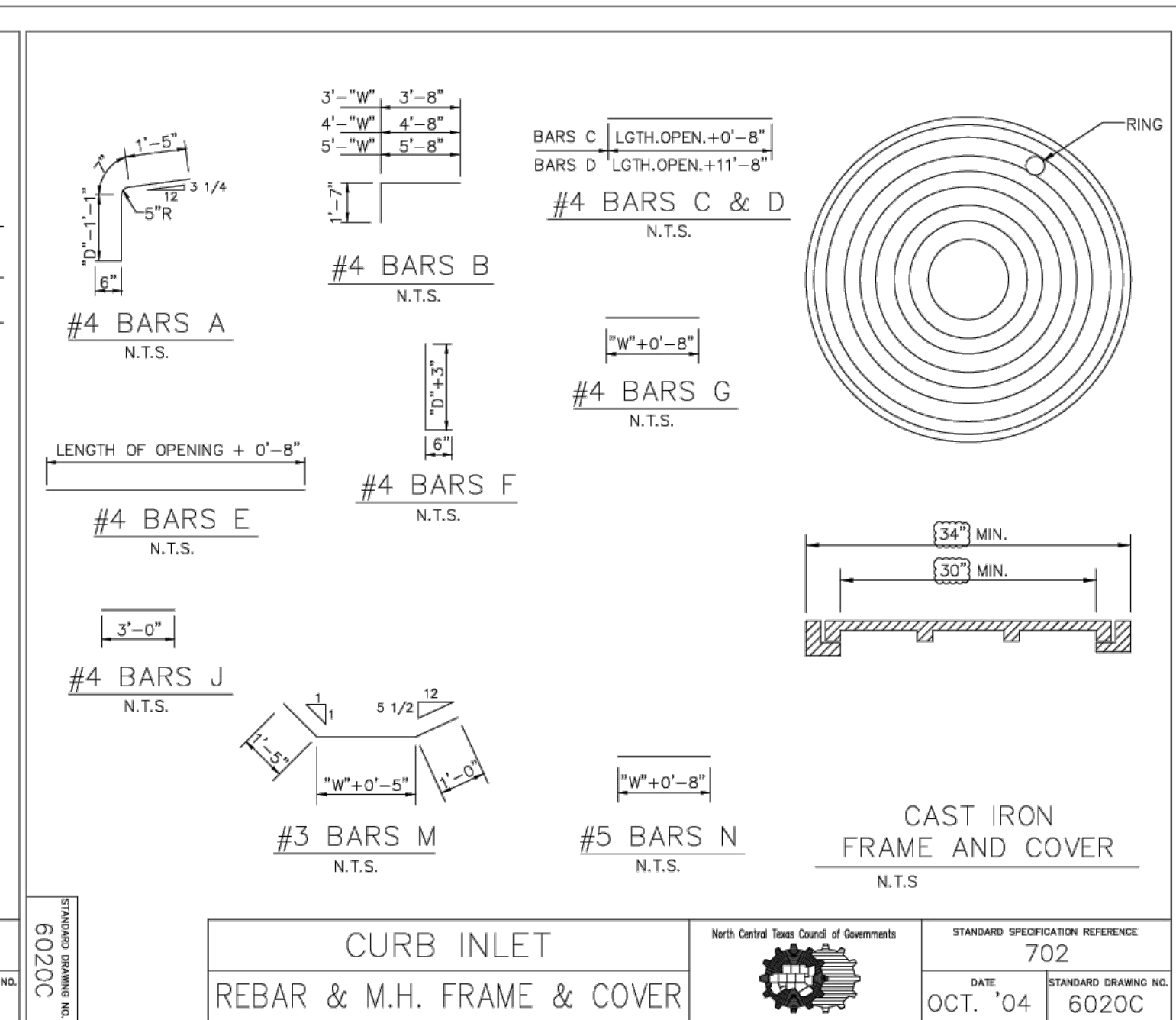
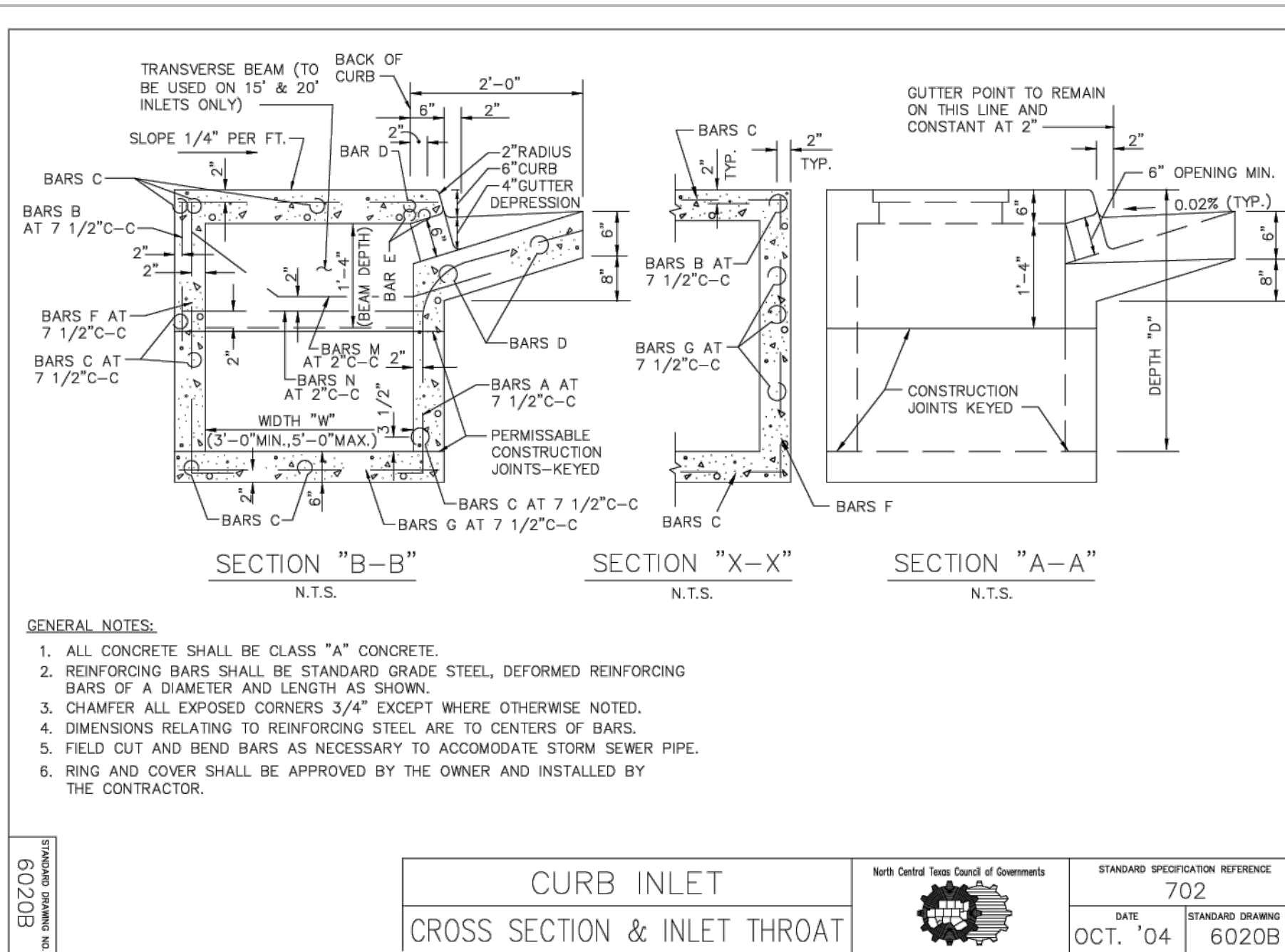
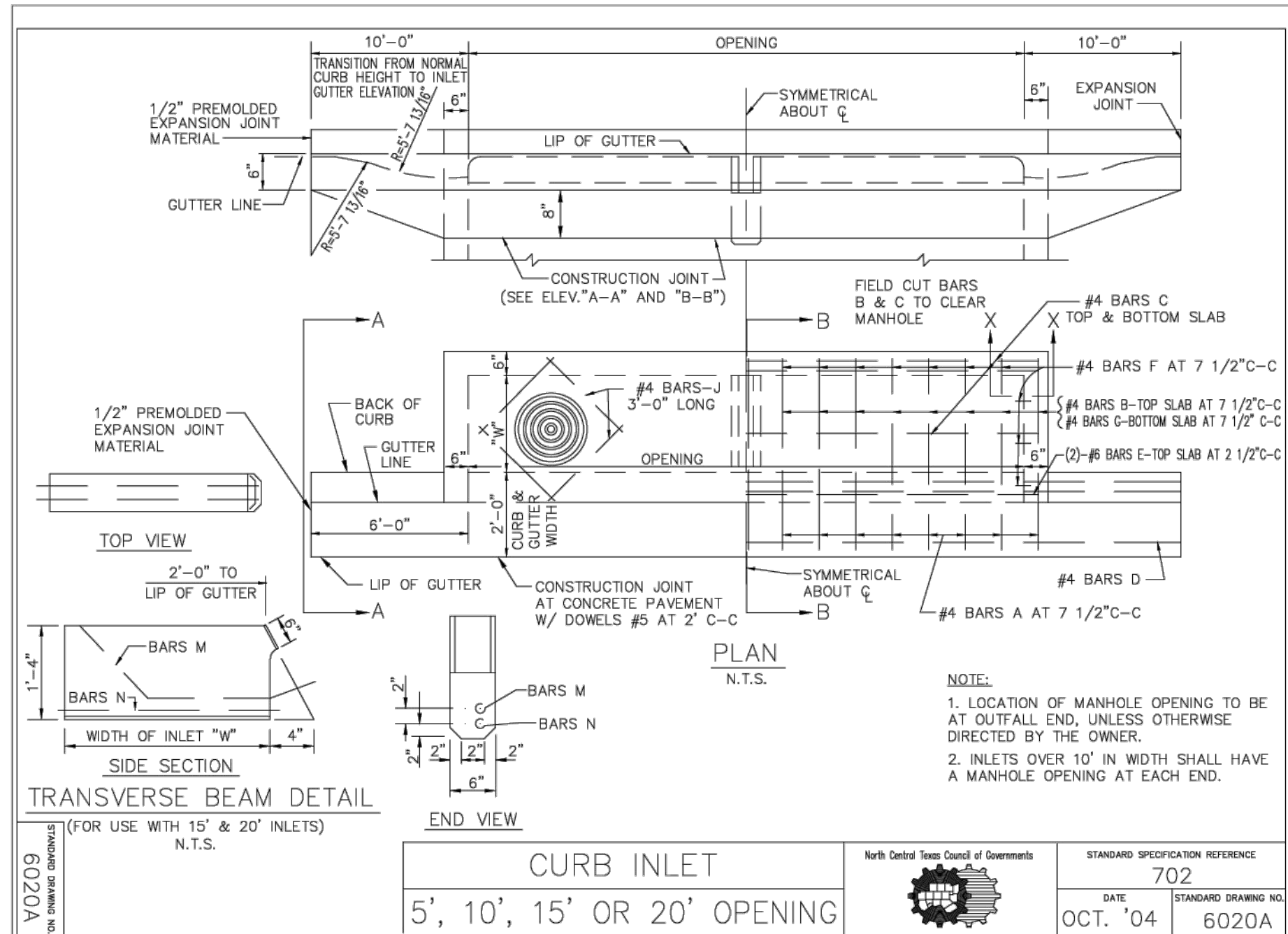
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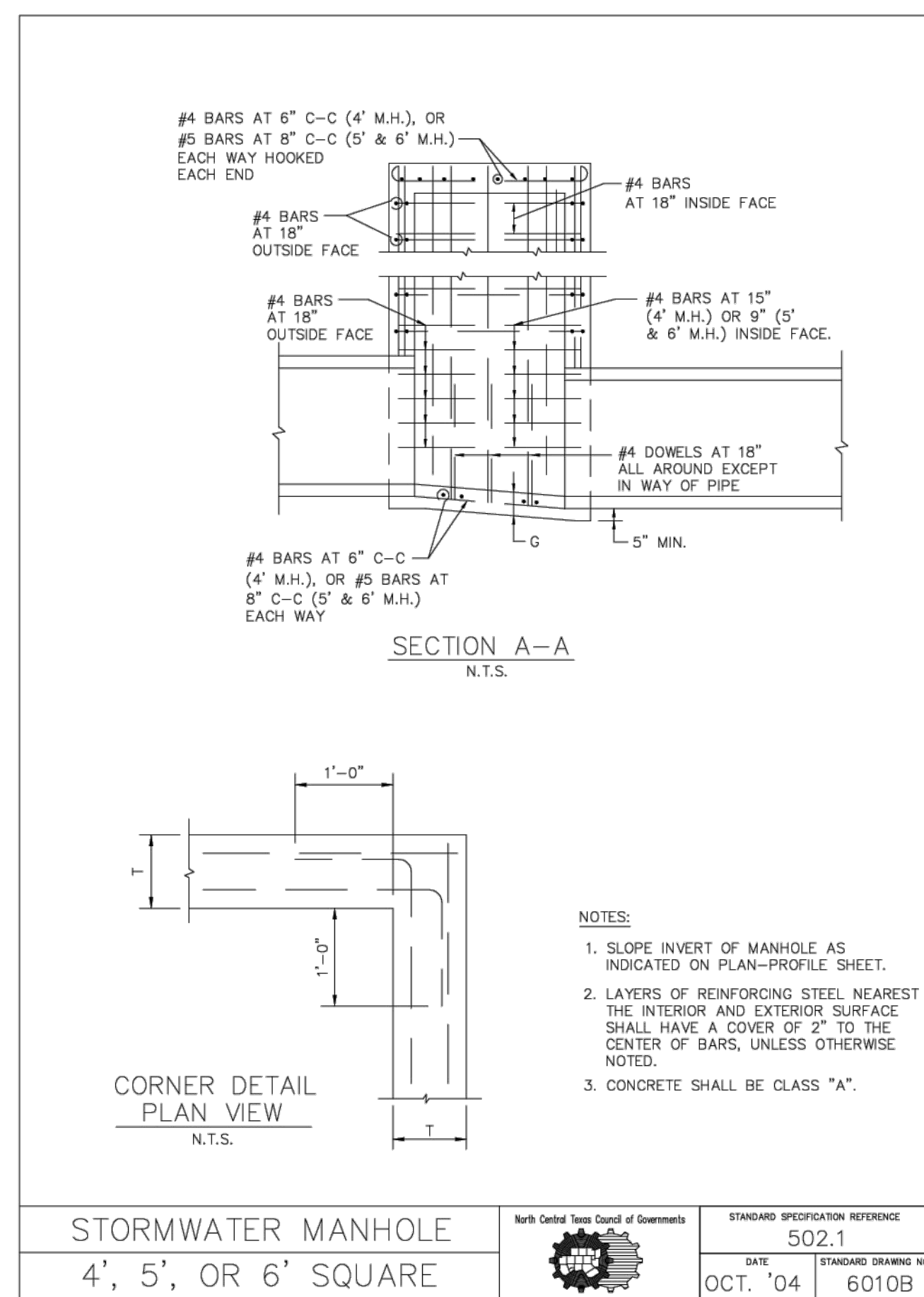
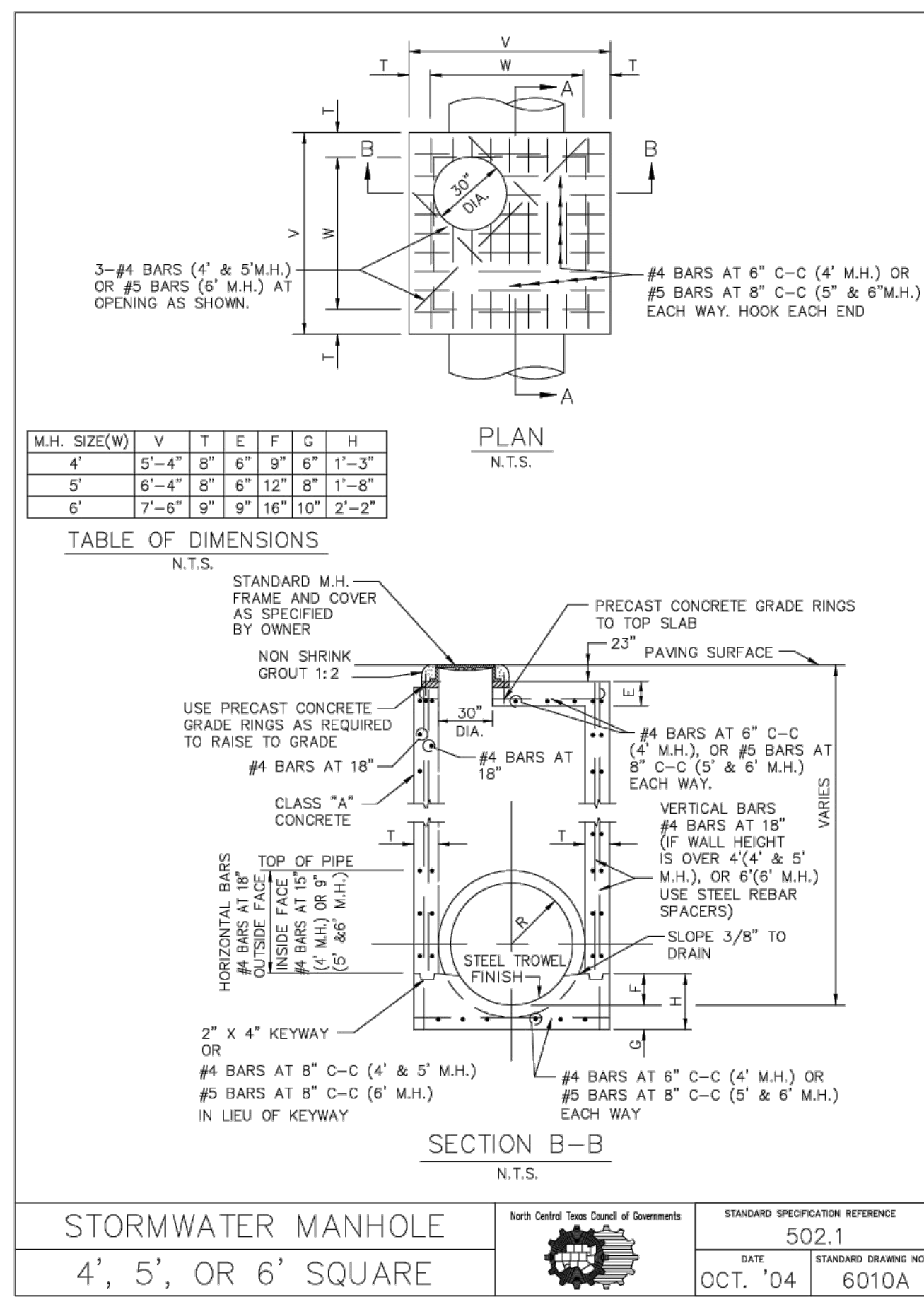
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DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
 SHEET NO:  
 C25





REVISED: 07-23-2019  
STORM MH FRAME & COVER TO BE INSTALLED PER CITY STANDARDS

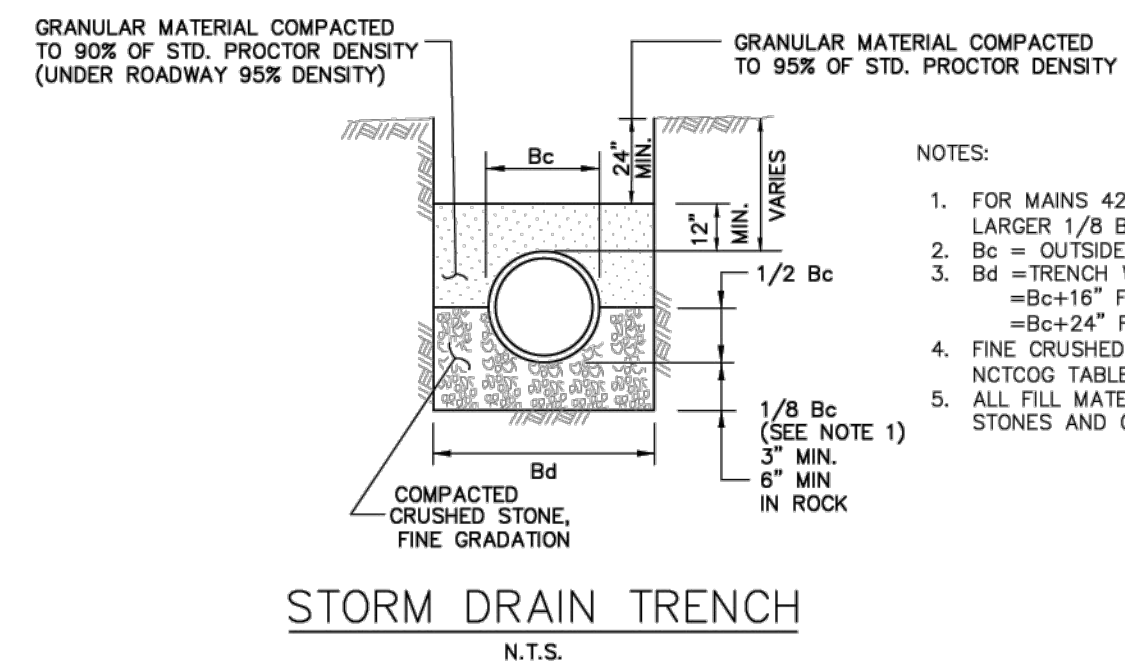
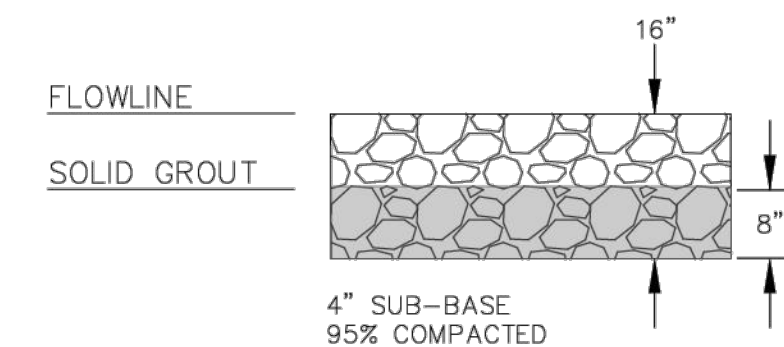
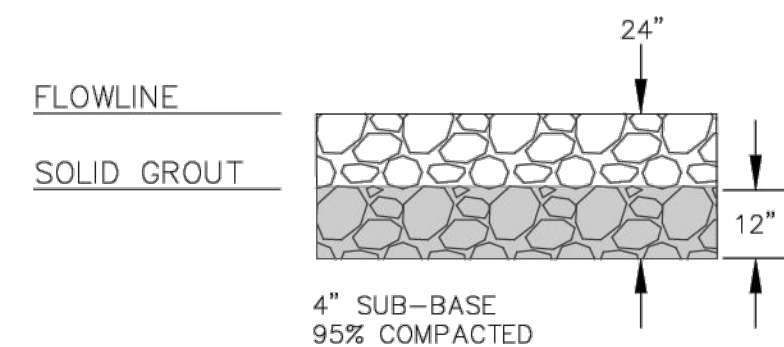


**RIP-RAP GRADATION**  
12" THICKNESS

SIEVE SIZE	PERCENT PASSING
15-INCH	100
12-INCH	70-100
8-INCH	45-70
6-INCH	30-45
3-INCH	10-30
1-1/2-INCH	0-10

**RIP-RAP GRADATION**  
8" THICKNESS

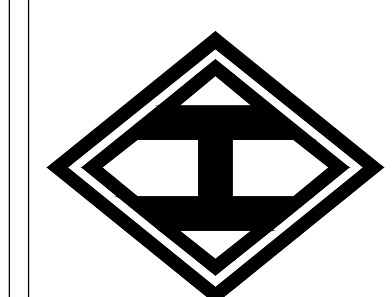
SIEVE SIZE	PERCENT PASSING
10-INCH	100
8-INCH	70-100
6-INCH	40-75
3-INCH	20-40
1-1/2-INCH	0-15



- NOTES:
- FOR MAINS 42" DIAMETER AND LARGER, LARGER 1/8 Bc SHALL BE TAKEN AS 6".
  - Bc = OUTSIDE DIAMETER OF PIPE.
  - Bd = TRENCH WIDTH.
  - =Bc+16" FOR PIPES 20" AND LESS.
  - =Bc+24" FOR PIPE 24" AND GREATER.
  - FINE CRUSHED STONE (GRADE 3) PER NCTCOG TABLE 504.2.2.1.(a).
  - ALL FILL MATERIAL SHALL BE FREE OF STONES AND ORGANICS.

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STEVEN R. HOMEYER, PE # 86942  
DATE:

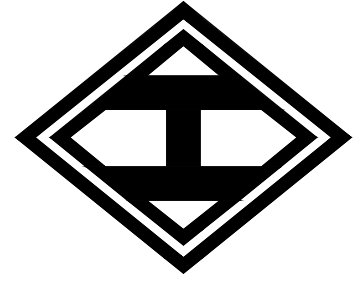
**HOMEYER ENGINEERING INC.**  
ENGINEERING FIRM REGISTRATION NO. F-8440  
P.O. BOX 294527, LEWISVILLE, TEXAS 75029  
972-906-9985, PHONE 972-906-9987, FAX  
WWW.HEI.US.COM



WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

**SANITARY SEWER DETAILS**

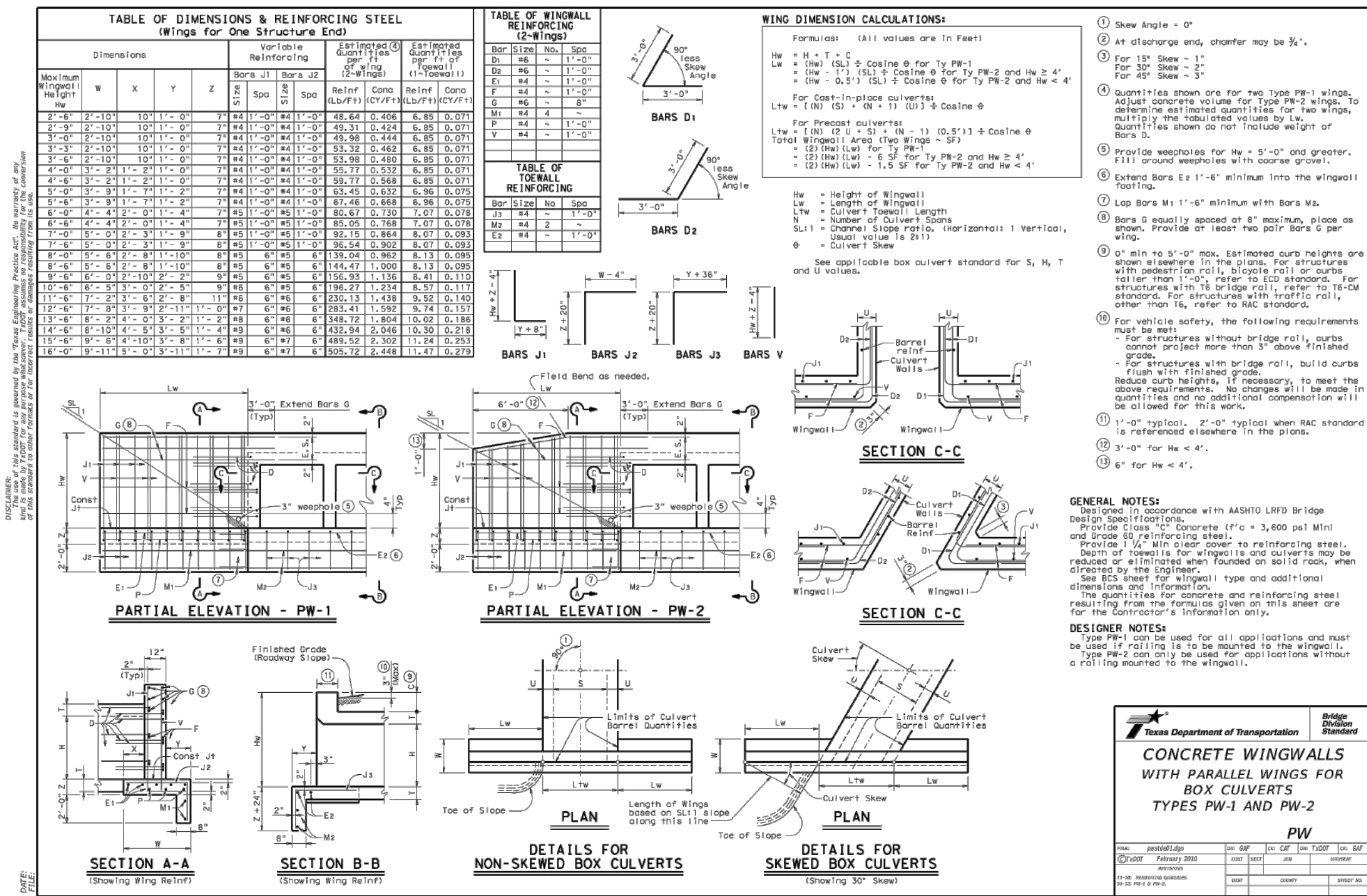
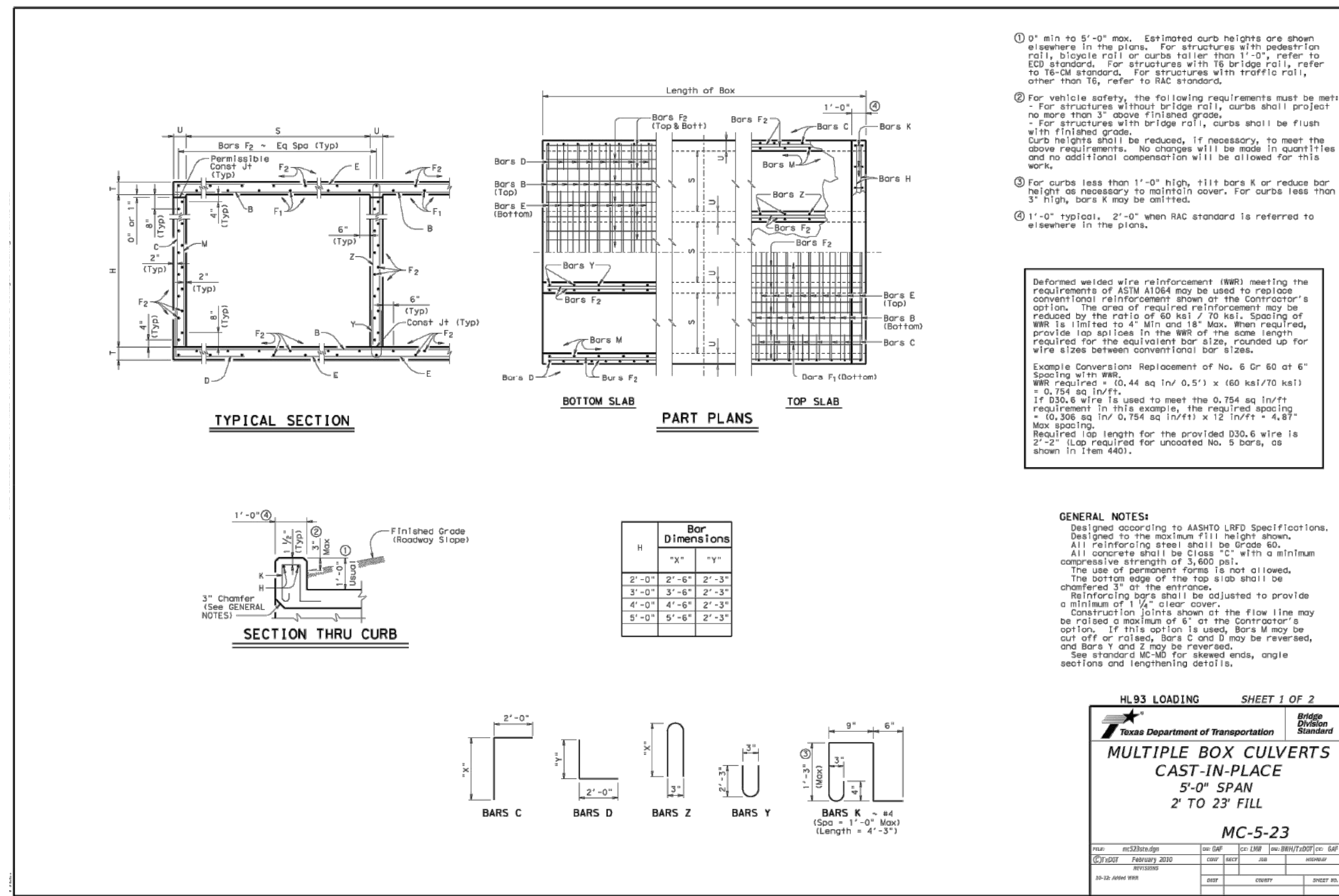
DRAWN: ATG  
DATE: 10-05-2024  
HEI #: 24-0702  
**SHEET NO.:**  
C26



WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

STORM DRAIN  
 DETAILS

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
 SHEET NO:  
 C27

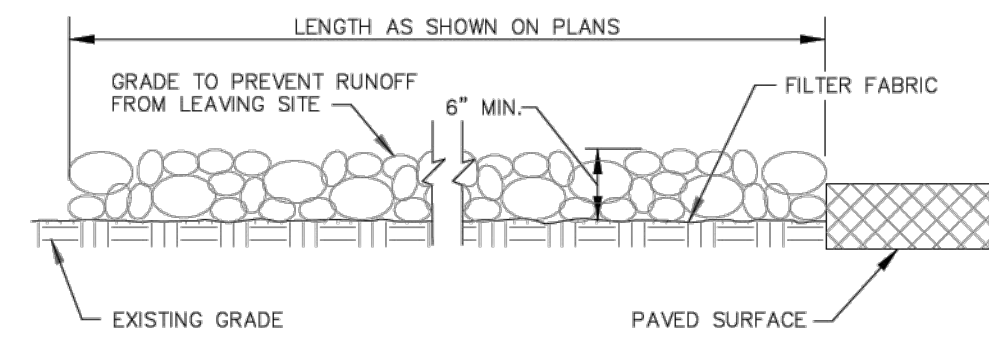


**BILLS OF REINFORCING STEEL (For Box Length = 40 feet)**

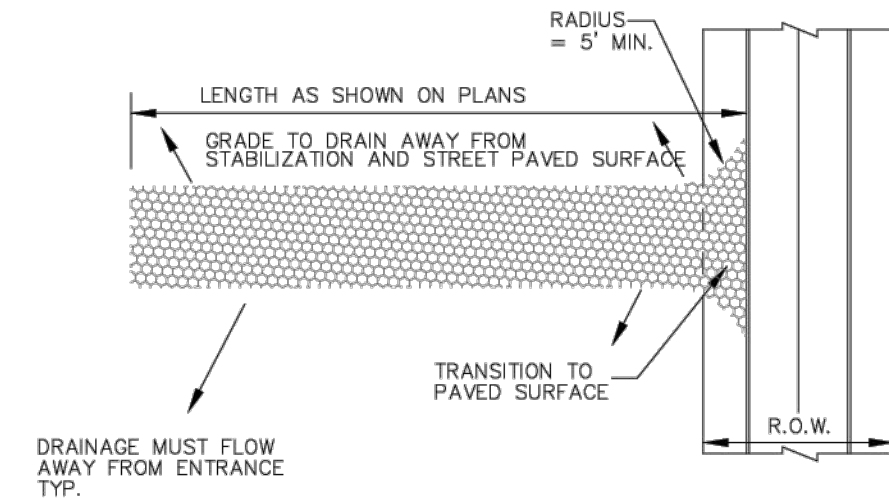
SECTION DIMENSIONS	QUANTITIES																																																		
	Bars B	Bars C & D	Bar E	Bars F1-M4	Bars F2-M4	Bars M-M4	Bars Y & Z-M4	Bars H 4-M4	Bars K	Per Foot of Barrel	Total																																								
5'-0" x 2'-0" x 8'	122	45	8	11	6	1,463	138	44	7	4	6	415	4	392	162	45	6	5	4	927	818	39	9	212	38	33	9	1,009	56	2	75	29	4	8	175	5	2	97	11	6	31	28	0	710	117	0	9	105	29	3	4,812

**HL93 LOADING SHEET 2 OF 2**  
**MULTIPLE BOX CULVERTS CAST-IN-PLACE**  
 5'-0" SPAN  
 2 TO 23' FILL  
**MC-5-23**

PRELIMINARY PLANS  
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 STEVEN R. HOMEYER, PE # 86942  
 DATE:



PROFILE VIEW  
NOT TO SCALE

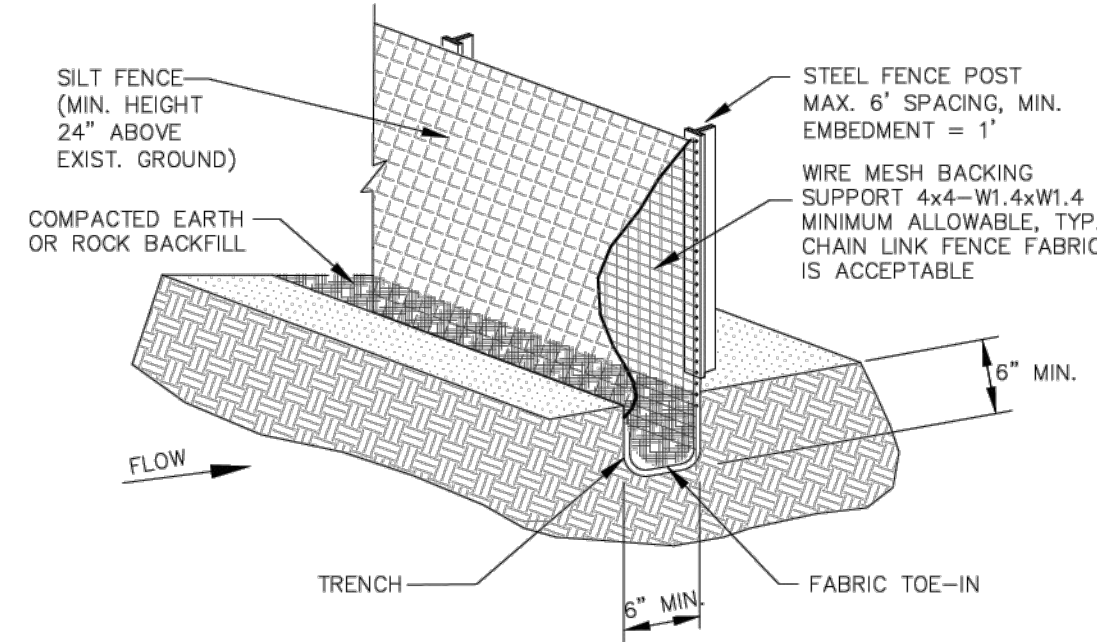


DRAINAGE MUST FLOW AWAY FROM ENTRANCE TYP.

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 3 TO 5 INCH DIAMETER CRUSHED ROCK OR ACCEPTABLE CRUSHED PORTLAND CEMENT CONCRETE.
2. LENGTH SHALL BE SHOWN ON PLANS, WITH A MINIMUM LENGTH OF 30 FEET FOR LOTS WHICH ARE LESS THAN 150 FEET FROM EDGE OF PAVEMENT. THE MINIMUM DEPTH IN ALL OTHER CASES SHALL BE 50 FEET.
3. THE THICKNESS SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZER.

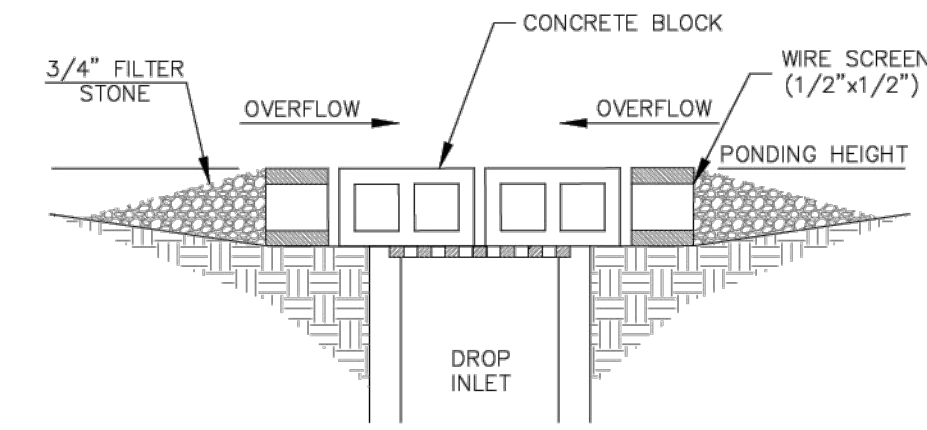
CONSTRUCTION ENTRANCE  
NOT TO SCALE



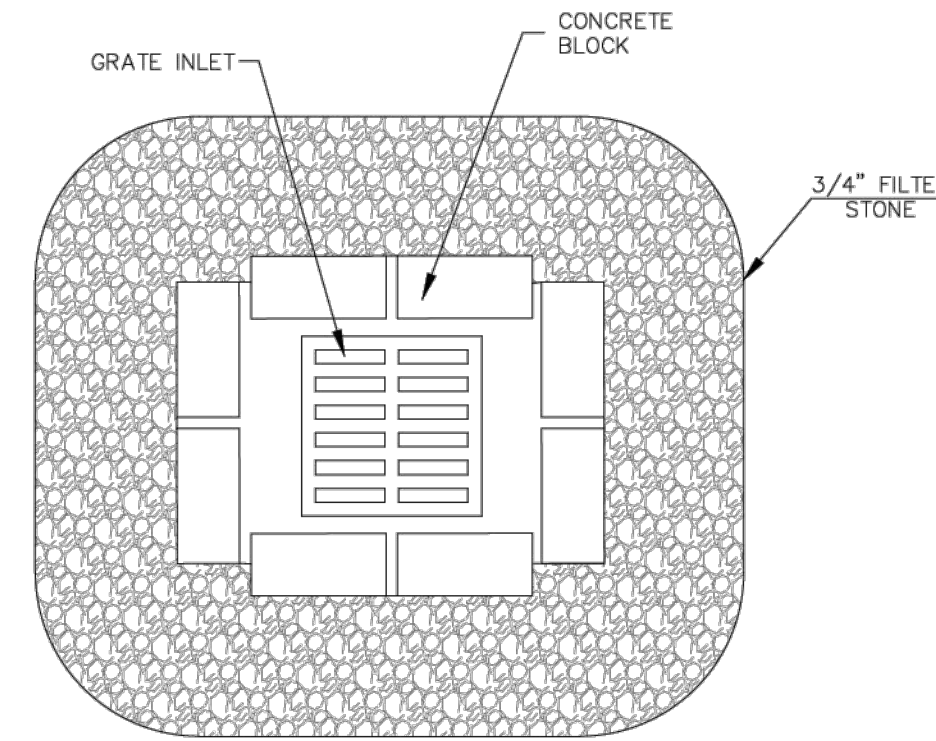
SILT FENCE GENERAL NOTES:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

SILT FENCE  
NOT TO SCALE

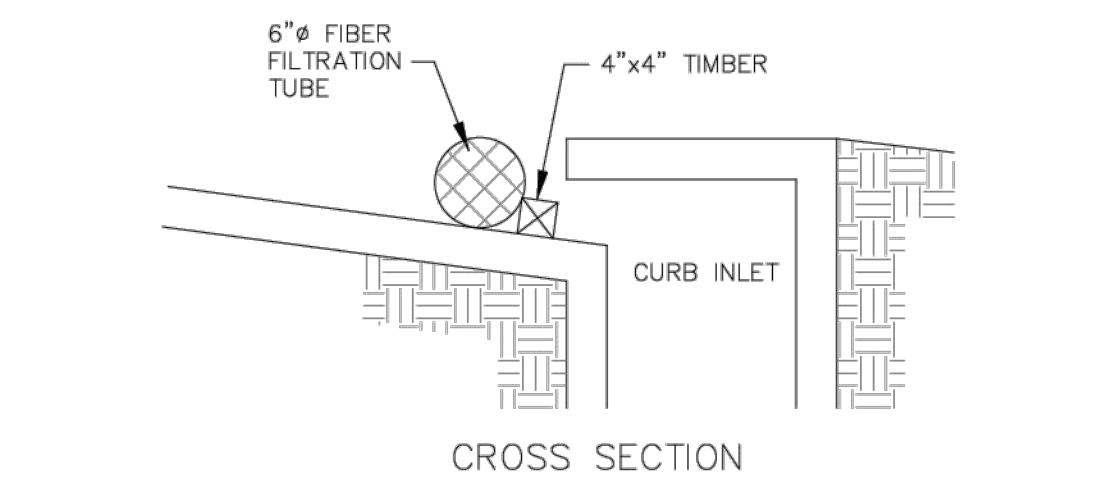


CROSS SECTION

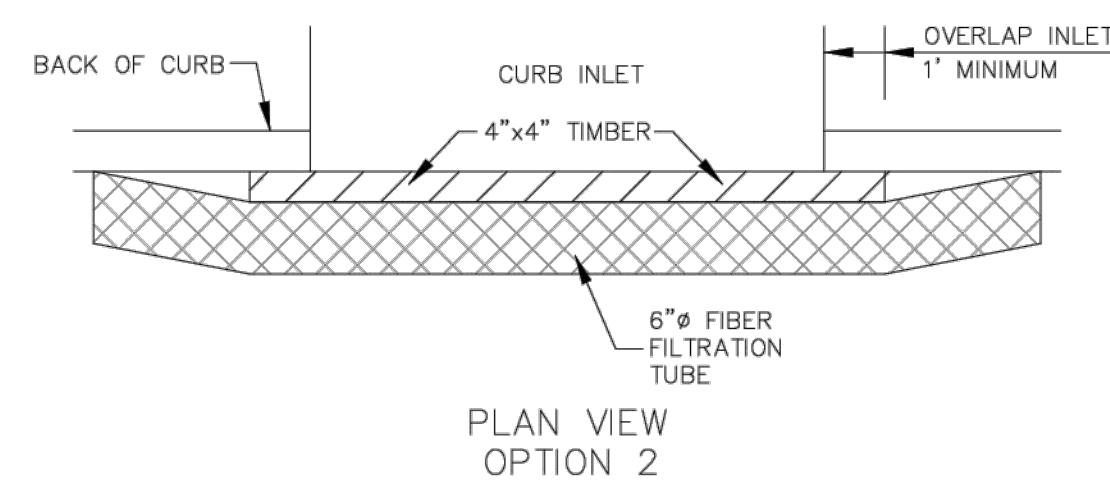


PLAN VIEW

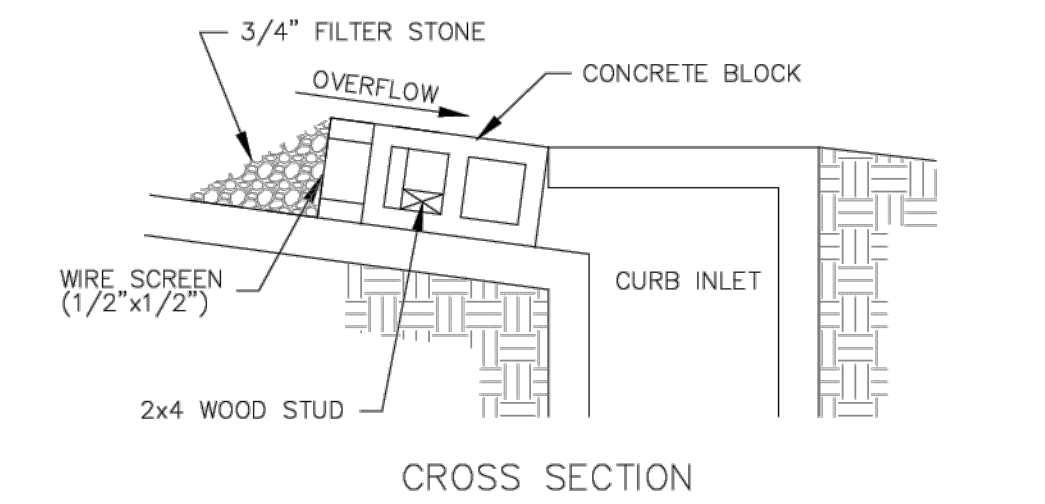
DROP INLET PROTECTION  
NOT TO SCALE



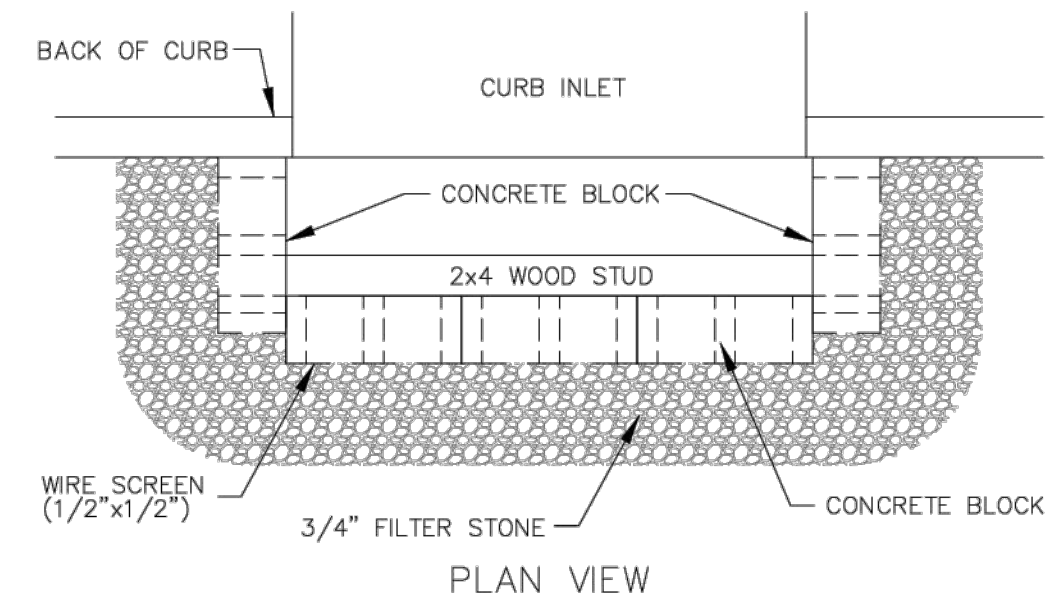
CROSS SECTION



PLAN VIEW  
OPTION 2

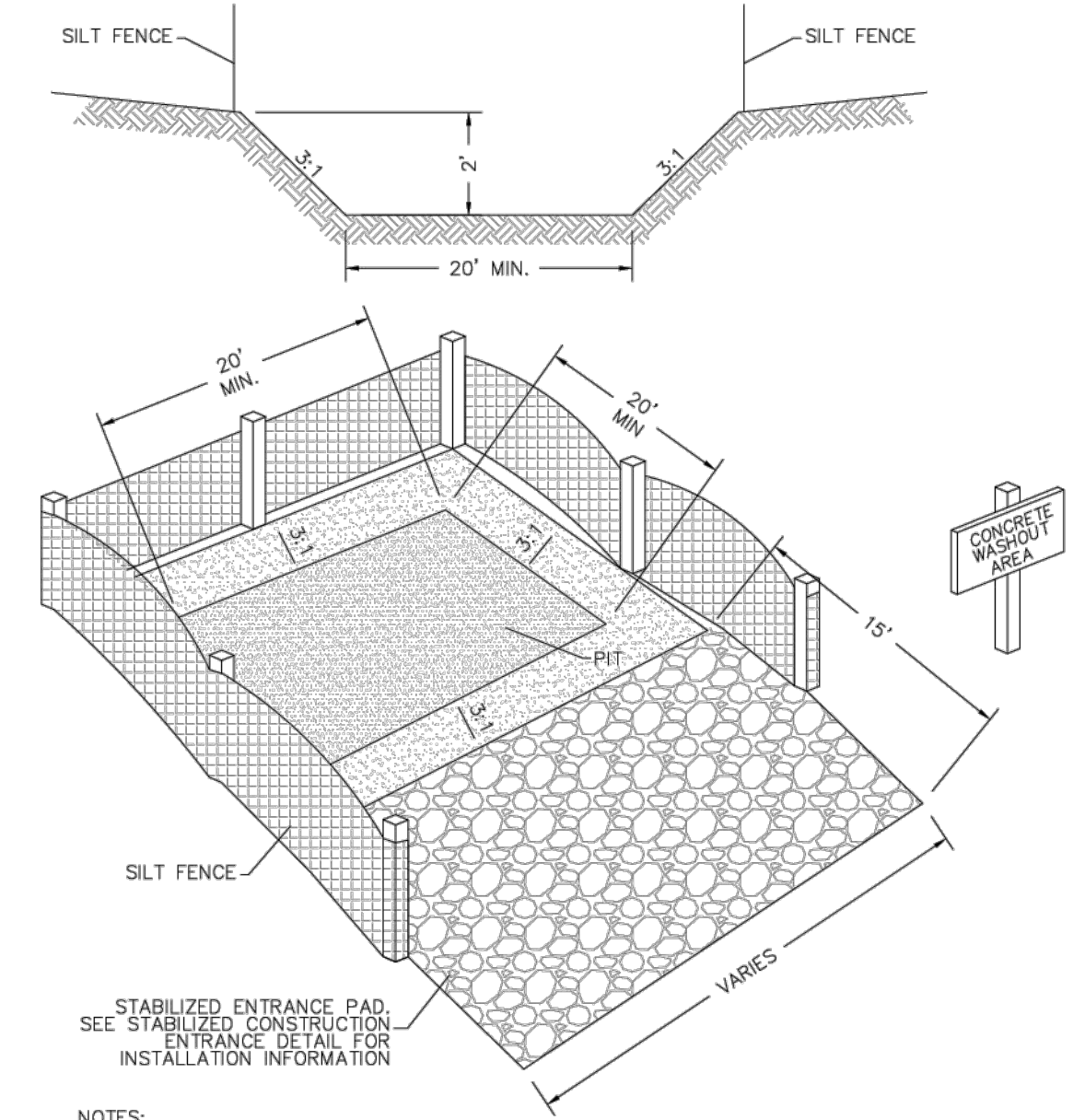


CROSS SECTION



PLAN VIEW

CURB INLET PROTECTION  
NOT TO SCALE



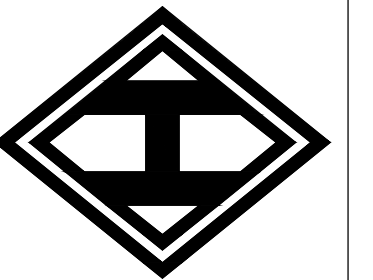
STABILIZED ENTRANCE PAD. SEE STABILIZED CONSTRUCTION ENTRANCE DETAIL FOR INSTALLATION INFORMATION.

NOTES:

1. THIS PRACTICE WILL BE USED ON ANY CONSTRUCTION PROJECT THAT INVOLVES THE DEMOLITION OF EXISTING CONCRETE OR THE USE OF FRESH CONCRETE AND WHERE THE WASTE CONCRETE MUST BE DISPOSED OF ON SITE. IT IS ILLEGAL TO DUMP WASTE CONCRETE INTO VACANT AREAS ON THE JOB-SITE, OR INTO DITCHES OR DRAINAGE FACILITIES.
2. USE A 30 MIL PVC LINER (GEO-MEMBRANE) MANUFACTURED BY ENVIRONMENTAL PROTECTION, INC. (EPI) OR EQUIVALENT. THICKNESS (ASTM D-5199) = 0.030"
3. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND/OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE. WASTE MATERIAL FROM CONCRETE WASHOUT OPERATIONS MUST BE REMOVED AND LEGALLY DISPOSED OF WHEN IT HAS ACCUMULATED TWO-THIRDS OF NET STORAGE CAPACITY OF THE STRUCTURE. WHEN CONSTRUCTION WORK IS TERMINATED, THE CONCRETE WASHOUT AREA MUST BE REMOVED. THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE LOCAL JURISDICTION.

CONCRETE WASHOUT AREA

**HOMEYER ENGINEERING INC.**  
ENGINEERING FIRM REGISTRATION NO. F-8440  
P.O. BOX 294527, LEWISVILLE, TEXAS 75029  
972-906-9985 PHONE 972-906-9987 FAX  
WWW.HEI.US.COM



WINDHAVEN ESTATES  
19.50 ACRES  
CITY OF SANGER  
DENTON COUNTY, TEXAS

EROSION CONTROL  
DETAILS

PRELIMINARY PLANS

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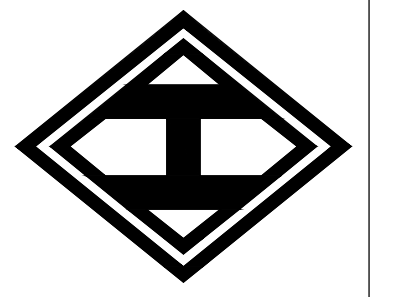
DRAWN: ATG

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SHEET NO:

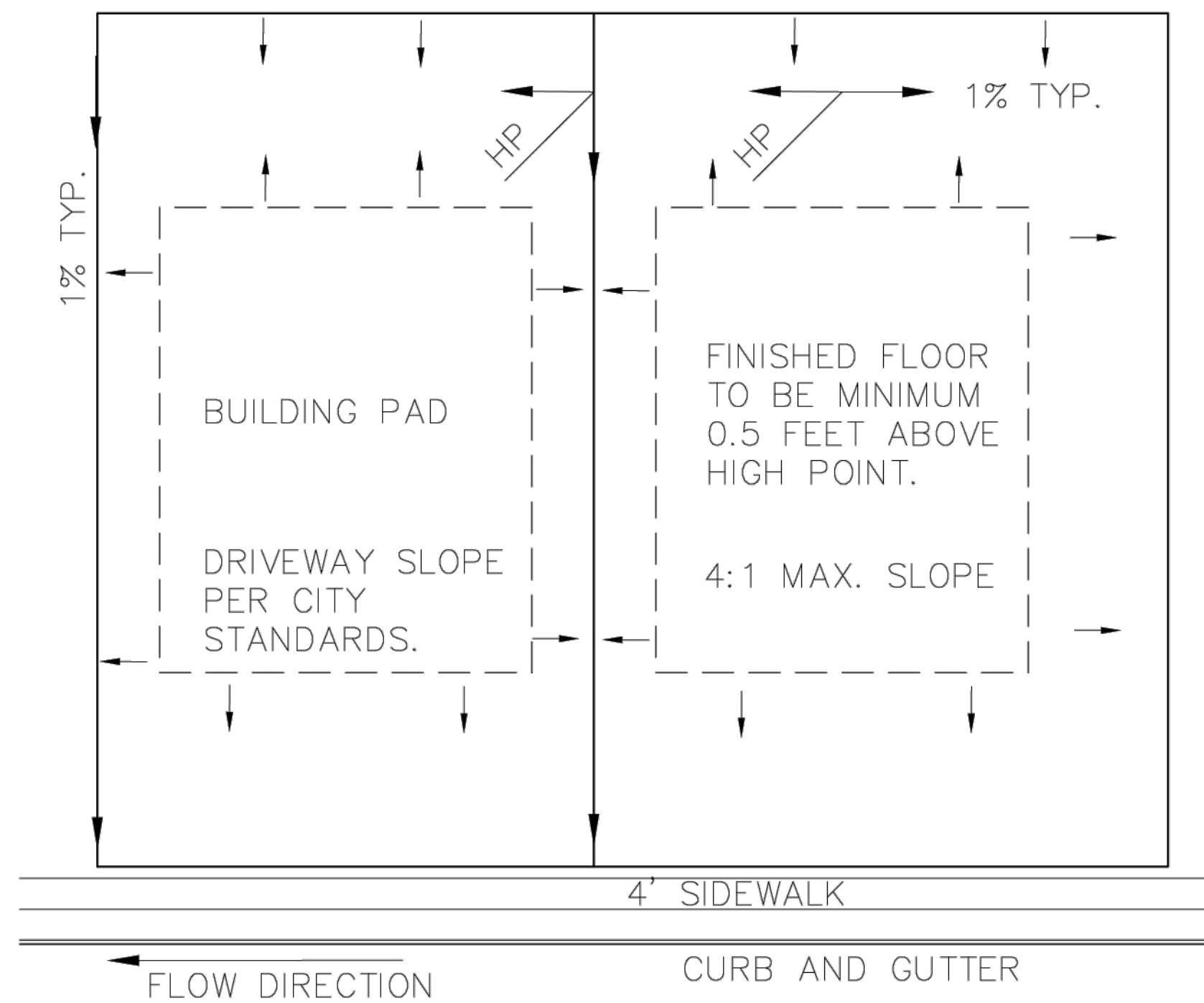
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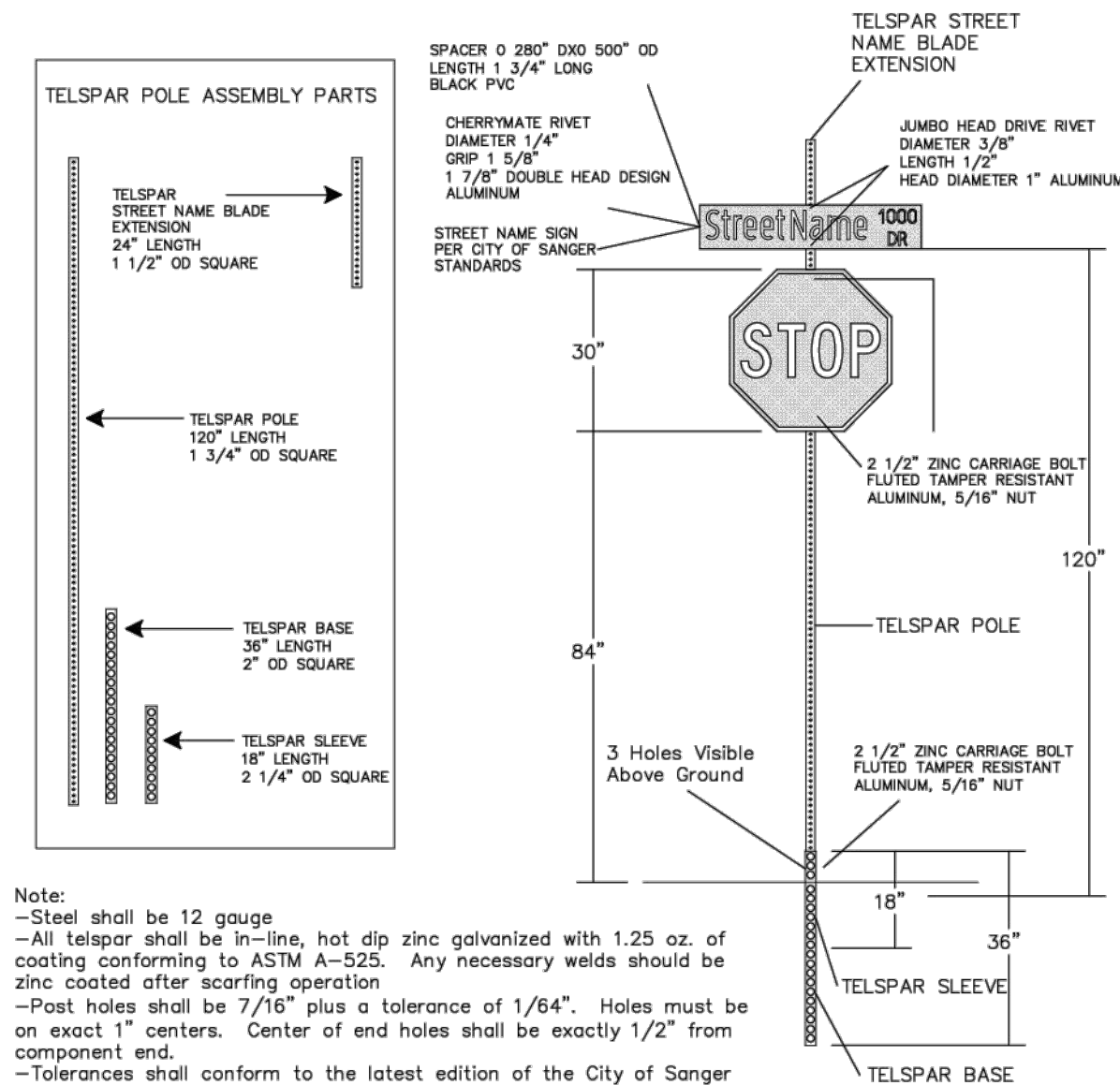
WINDHAVEN ESTATES  
 19.50 ACRES  
 CITY OF SANGER  
 DENTON COUNTY, TEXAS

MISCELLANEOUS  
 DETAILS

DRAWN: ATG  
 DATE: 10-05-2024  
 HEI #: 24-0702  
 SHEET NO:  
 C29

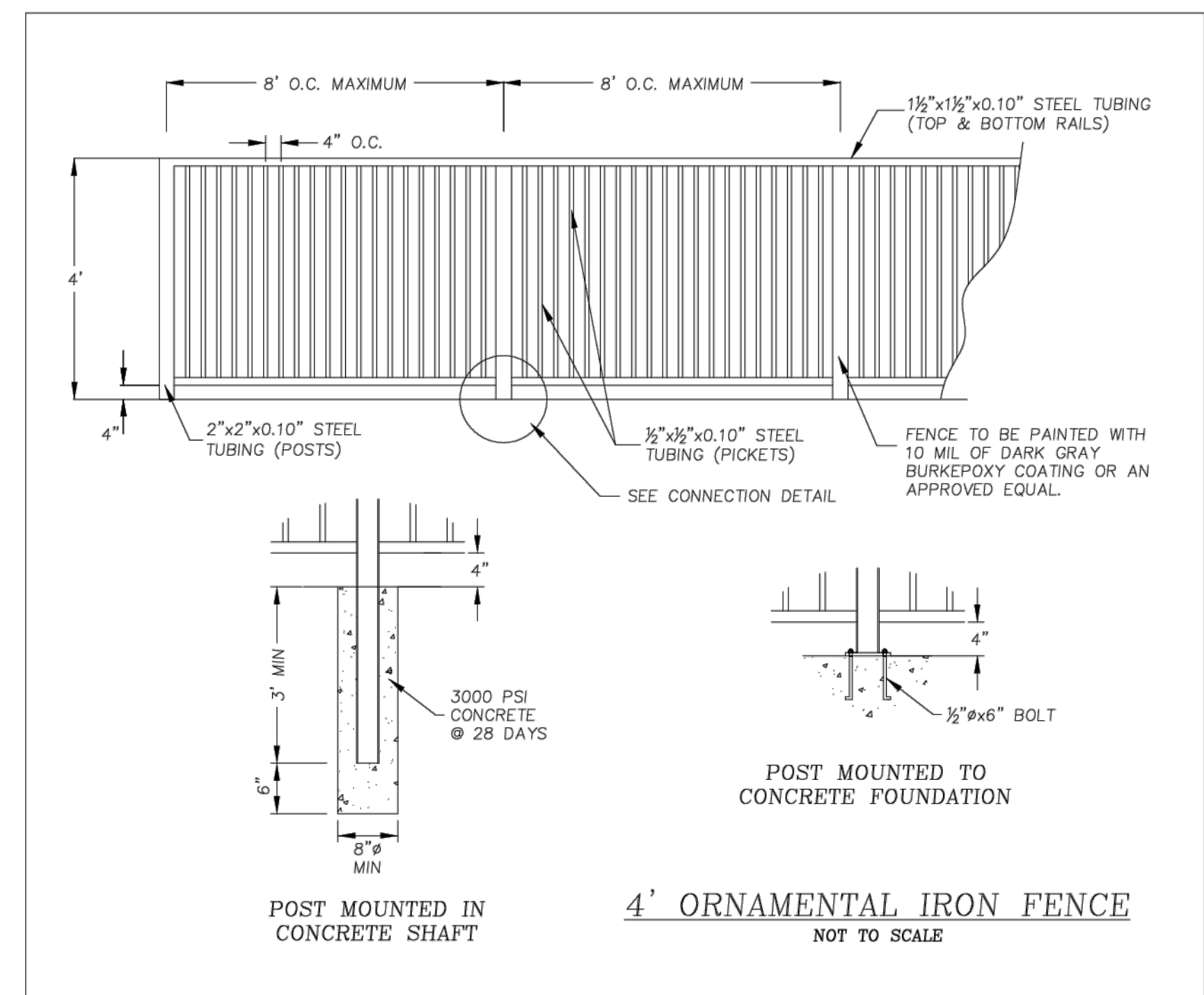


TYPICAL LOT DRAINAGE  
 N.T.S.



Note:  
 -Steel shall be 12 gauge  
 -All tel spar shall be 11-line, hot dip zinc galvanized with 1.25 oz. of coating conforming to ASTM A-525. Any necessary welds should be zinc coated after scarfing operation  
 -Post holes shall be 7/16" plus a tolerance of 1/64". Holes must be on exact 1" centers. Center of end holes shall be exactly 1/2" from component end.  
 -Tolerances shall conform to the latest edition of the City of Sanger Sign Specifications.  
 -All posts shall conform to the latest edition of the Texas Manual on Uniform Traffic Control Devices.  
 -Sign post and anchor sleeve shall be driven into the ground as an assembly using approved driving cap. No modifications such as creating a point shall be allowed.  
 -Anchor post and sleeve shall be driven into the ground until no more than 4" of the assembly remain above ground.  
 -At least 3 holes shall remain visible above ground level.  
 -All hardware shall be electrogalvanized steel

SIGN DETAIL



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