

# CONSTRUCTION PLANS FOR BRISTOL PARK

(PHASE 1-NORTH)  
AN ADDITION TO THE CITY OF LUCAS  
COLLIN COUNTY, TEXAS  
22 SINGLE FAMILY LOTS, 48.02 ACRES

**CONTACT INFORMATION:**

City of Lucas - (972) 771-6228  
Engineer - Stanton Foerster, P.E.  
Development Services Director - Joe Hilbourn

Lovejoy ISD - (469) 742-8017  
Dennis Womack

Grayson-Collin Electric - (903) 482-7183  
Michael Lauer

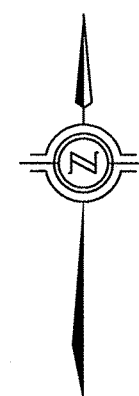
TXU Energy - (214) 812-4600  
Brian Neitzel

North Texas Municipal Water District - (972) 442-5402  
Bob Quinn

Co-Serve - (940) 321-7862  
Lance Ehler



VICINITY MAP  
NOT TO SCALE



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**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-15  
TODD WINTERS DATE

**CAUTION! EXISTING UTILITIES**

CONTRACTOR SHOULD CALL 1-800-DIG-TESS PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES FOR EXISTING UTILITY LOCATIONS. EXISTING UTILITIES AND UNDERGROUND FACILITIES INDICATED ON THESE PLANS HAVE BEEN LOCATED FROM REFERENCE INFORMATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY BOTH HORIZONTALLY AND VERTICALLY THE LOCATION OF ALL EXISTING UTILITIES AND UNDERGROUND FACILITIES PRIOR TO CONSTRUCTION AND TO TAKE NECESSARY PRECAUTIONS IN ORDER TO PROTECT ALL FACILITIES ENCOUNTERED. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION.

SITE BENCHMARK:  
An 'X' cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek elevation: 569.65

OWNER/DEVELOPER  
**LUCAS REAL ESTATE, LLC**  
1221 N INTERSTATE 35E STE 200  
CARROLLTON, TX 75006-3806



ENGINEERING / PROJECT MANAGEMENT /  
CONSTRUCTION SERVICES FIRM REG # F-001145  
201 WINDCO CIR, SUITE 200 WYLIE, TEXAS 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

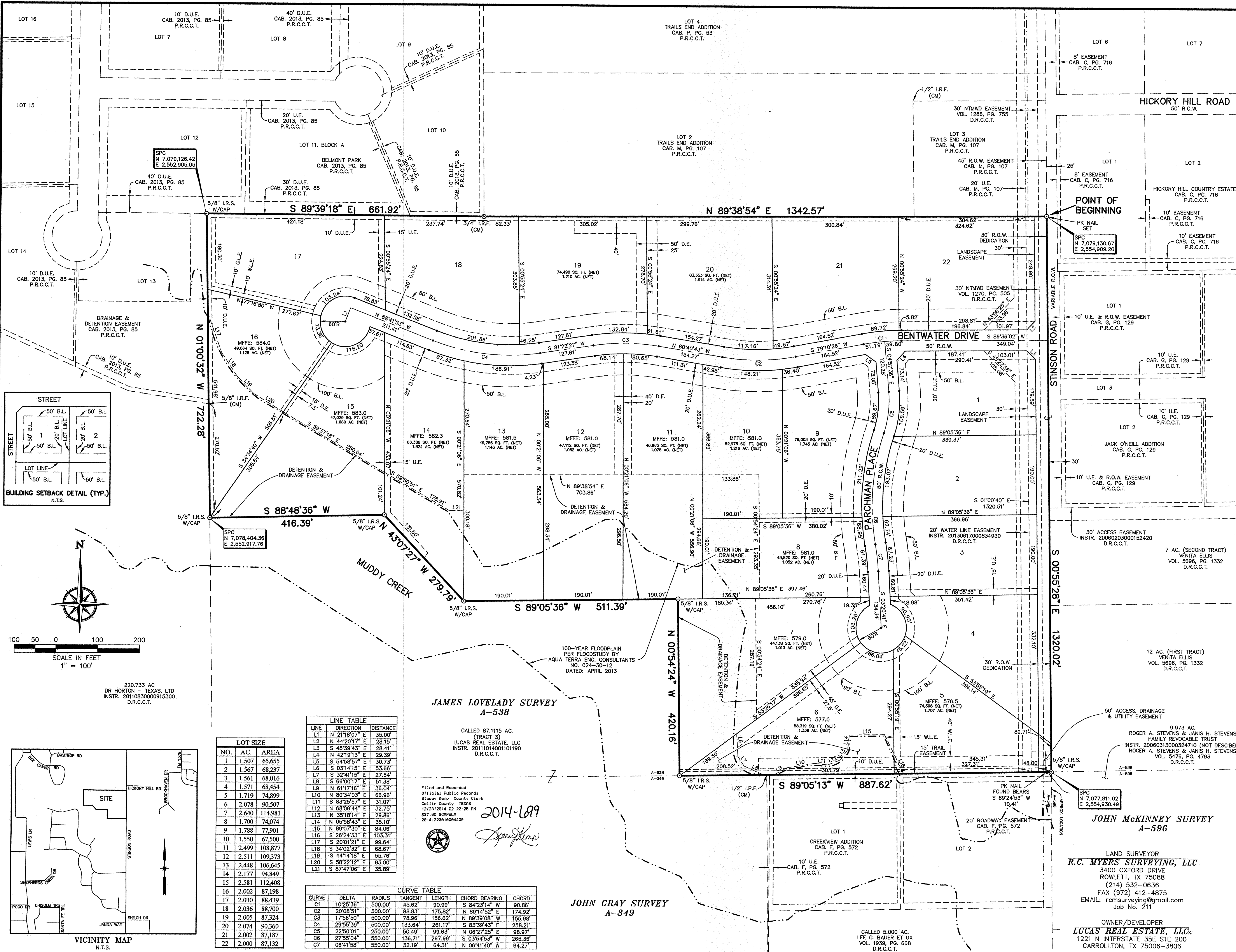
REVISIONS:

DATE:	SEPTEMBER, 2015
PROJECT NO.:	8313
DWG FILE NAME:	1 Coversheet.dwg

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND NOT TO BE USED FOR BIDDING OR CONSTRUCTION.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY TODD D. WINTERS, P.E. 87085





- NOTES:
- By graphical plotting, part of the parcel described hereon lies within Zone "A", as delineated on the Collin County, Texas and Incorporated Areas, Flood Insurance Rate Map, Map Number 48085C0405 J, dated June 02, 2009, as published by the Federal Emergency Management Agency. Zone "A" is defined as "Special flood hazard areas inundated by 100-year flood; No Base flood elevations determined." The Surveyor utilized the above referenced floodplain information for this determination and the Surveyor does not certify that revised floodplain information has or has not been published by the Federal Emergency Management Agency or some other source. This statement shall not create liability on the part of the surveyor.
  - Lots or portions of lots within the floodplain or areas of special flood hazard require a development permit prior to issuance of a building permit or commencement of construction including site grading, on all or part of those lots.
  - Bearings are based on Texas State Plane Coordinates. Projection: State Plane NAD83 Texas North Central Zone 4202, Lambert Conformal Conic, Feet (TX83-NCF).
  - Property owners to maintain property including drainage and utility easements to the edge of pavement.
  - Only wrought iron fences permitted within drainage easements.
  - A 5/8-inch iron rod with yellow cap stamped "RPLS 3963" will be set at all lot corners, points of curvature, points of tangency and angle points in public rights-of-way whenever possible unless otherwise shown or noted in this drawing.
  - Selling a portion of any lot within this addition by metes and bounds is a violation of state law and city ordinance and is subject to fines and withholding of utilities and building permits.
  - Benchmark: An "x" cut in south end of a concrete headwall on the west side of Stinson Road at Muddy Creek. Elev. 569.65'
  - The landscape easements are dedicated to and will be maintained by the Homeowner's Association.

**LEGEND**

D.U.E.	DRAINAGE & UTILITY EASEMENT
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
W.L.E.	WATER LINE EASEMENT
G.L.E.	GAS LINE EASEMENT
B.L.	BUILDING SETBACK LINE
L.S.E.	LANDSCAPE EASEMENT
B.L.	BUILDING SETBACK LINE
I.P.F.	IRON PIPE FOUND
I.R.F.	IRON ROD FOUND
SPC	STATE PLANE COORDINATES
5/8" I.R.S. W/CAP	5/8" IRON ROD SET WITH YELLOW CAP STAMPED "RPLS 3963"
(CM)	CONTROL MONUMENT
D.R.C.C.T.	DEEDS RECORDS COLLIN COUNTY TEXAS
P.R.C.C.T.	PLAT RECORDS COLLIN COUNTY TEXAS

**North Texas Municipal Water District (NTMWD) Note:**  
 The NTMWD easement restricts construction of permanent structures such as foundations, walls, pools and permanent storage buildings. Items such as driveways, fences, sprinkler systems and normal landscaping plans that encroach on the NTMWD easements are allowed. However, the NTMWD assumes no responsibility for damages resulting from the need to repair or maintain the NTMWD pipelines. Further, any cost for repair or damage to the pipelines resulting from construction by the developer, contractor or owner will be the responsibility of the developer, contractor or owner.

**EXISTING ZONING: AG**  
**PROPOSED ZONING: R2 & R1.5**  
**22 RESIDENTIAL LOTS**  
**DENSITY: 1 LOT PER 2.18 ACRES GROSS**  
**AVG. LOT SIZE: 2.002 ACRE**  
**MIN. LOT SIZE: 1.500 ACRE**

**FINAL PLAT**  
**BRISTOL PARK**  
**PHASE ONE**

LOTS 1-22, BLOCK A  
 22 RESIDENTIAL LOTS  
 BEING 48.04 ACRES  
 SITUATED IN THE  
 JAMES LOVELADY SURVEY, ABSTRACT NO. 538  
 CITY OF LUCAS, COLLIN COUNTY, TEXAS

**ENGINEERING CONCEPTS & DESIGN, L.P.**  
 ENGINEERING/PROJECT MANAGEMENT/CONSTRUCTION SERVICES  
 TEXAS FIRM REG. NO. 001145  
 201 WINDO CIRCLE, SUITE 200, WYLLIS TEXAS 75098  
 (972) 941-8400 FAX (972) 941-8401

**LAND SURVEYOR**  
**R.C. MYERS SURVEYING, LLC**  
 3400 OXFORD DRIVE  
 ROWLETT, TX 75088  
 (214) 532-0636  
 FAX (972) 412-4875  
 EMAIL: romysurveying@gmail.com  
 Job No. 211

**OWNER/DEVELOPER**  
**LUCAS REAL ESTATE, LLC**  
 1221 N INTERSTATE 35E STE 200  
 CARROLLTON, TX 75006-3806

**LINE TABLE**

LINE	DIRECTION	DISTANCE
L1	N 21°18'07" E	35.00'
L2	N 44°20'17" E	28.15'
L3	N 45°39'43" E	28.41'
L4	N 42°19'13" E	29.39'
L5	S 54°58'57" E	30.73'
L6	S 03°14'15" E	53.66'
L7	S 32°41'15" E	27.54'
L8	S 68°00'17" E	51.38'
L9	N 61°17'16" E	38.04'
L10	N 80°34'03" E	66.96'
L11	S 83°25'57" E	31.07'
L12	N 68°09'44" E	32.75'
L13	N 35°18'14" E	29.86'
L14	N 05°58'43" E	35.10'
L15	N 89°07'30" E	84.06'
L16	S 29°24'33" E	103.31'
L17	S 20°01'21" E	99.64'
L18	S 34°02'32" E	68.67'
L19	S 44°14'18" E	55.76'
L20	S 82°22'12" E	83.00'
L21	S 87°47'06" E	35.89'

**CURVE TABLE**

CURVE	DELTA	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD
C1	102°53'36"	500.00'	45.62'	90.99'	S 84°27'14" W	90.88'
C2	20°08'51"	500.00'	88.83'	175.82'	N 89°14'52" E	174.92'
C3	17°56'50"	500.00'	78.96'	156.62'	N 89°39'08" E	155.98'
C4	29°55'39"	500.00'	133.64'	261.17'	S 83°39'43" E	258.21'
C5	22°50'01"	250.00'	50.49'	99.63'	N 06°27'25" E	98.97'
C6	27°55'04"	550.00'	136.71'	267.99'	S 03°54'53" W	265.35'
C7	06°41'58"	550.00'	32.19'	64.31'	N 06°41'40" W	64.27'

**LOT SIZE**

NO.	AC.	AREA
1	1.507	65,655
2	1.567	68,237
3	1.561	68,016
4	1.571	74,854
5	1.719	74,899
6	2.078	90,507
7	2.640	114,981
8	1.700	74,074
9	1.788	77,901
10	1.550	67,500
11	2.499	108,877
12	2.511	109,373
13	2.448	106,645
14	2.177	94,849
15	2.581	112,408
16	2.002	87,198
17	2.030	88,439
18	2.036	88,700
19	2.005	87,324
20	2.074	90,360
21	2.002	87,187
22	2.000	87,132

**JAMES LOVELADY SURVEY**  
**A-538**

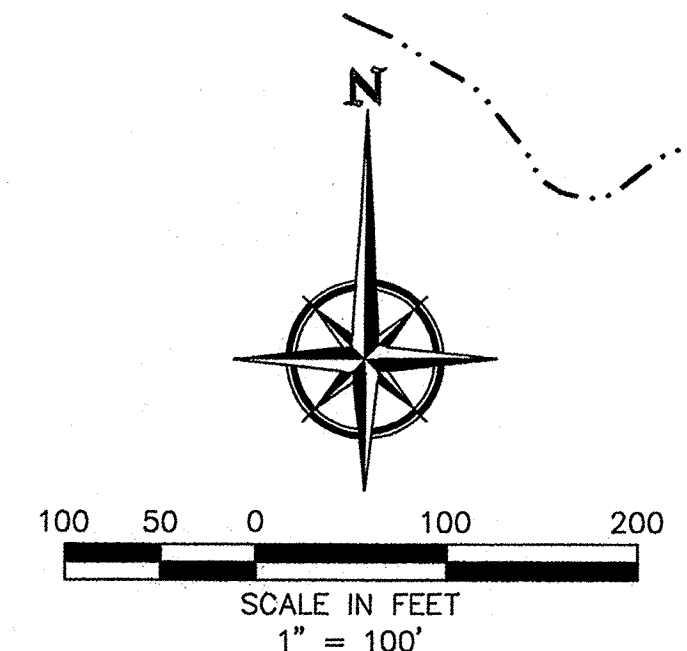
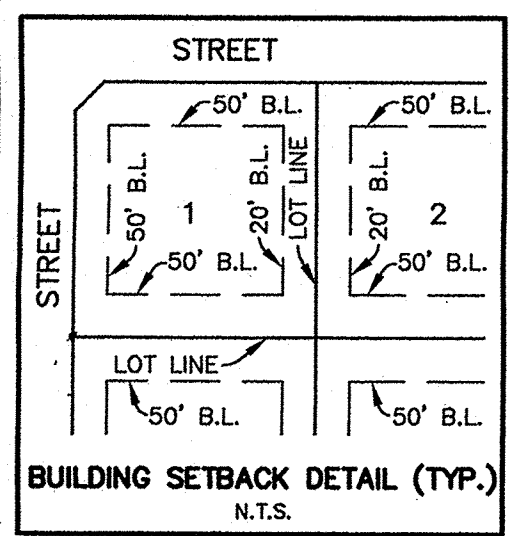
CALLED 87.1115 AC.  
 (TRACT 3)  
 LUCAS REAL ESTATE, LLC  
 INSTR. 2011014001010190  
 D.R.C.C.T.

Filed and Recorded  
 Official Public Records  
 Stearns Kemp, County Clerk  
 Collin County, TEXAS  
 12/23/2014 02:22:25 PM  
 \$37.00 SORPELA  
 20141223010004400

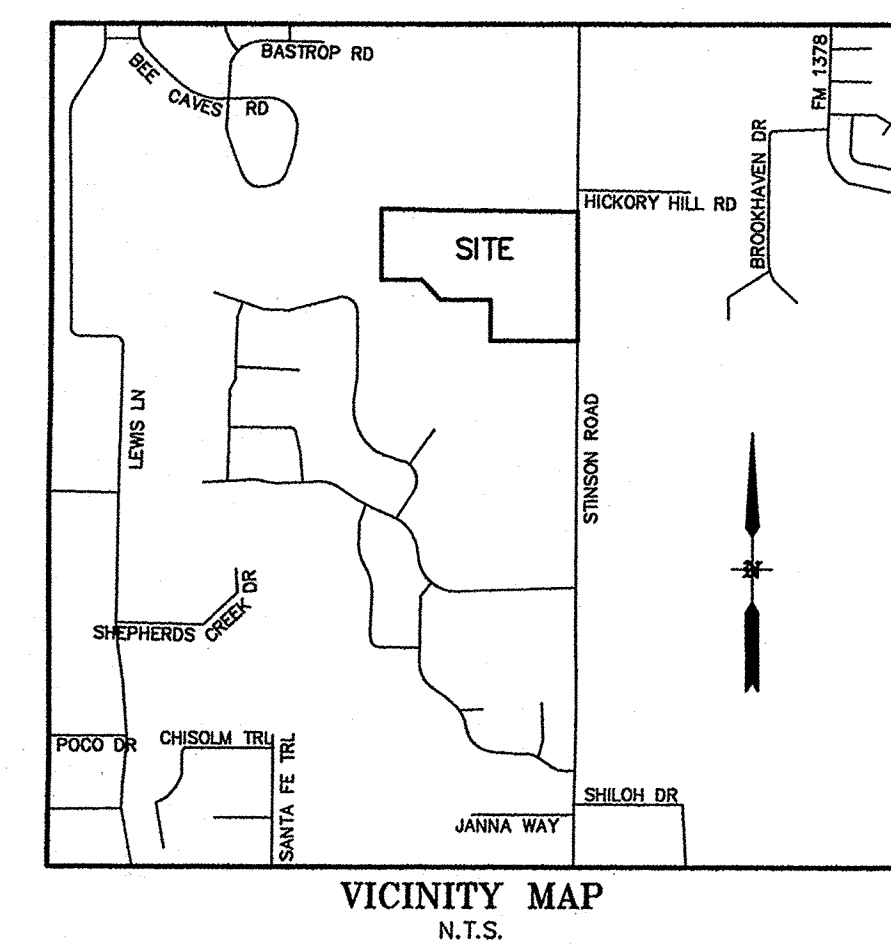


**JOHN GRAY SURVEY**  
**A-349**

CALLED 5.000 AC.  
 LEE G. BAUER ET UX  
 VOL. 1939, PG. 668  
 D.R.C.C.T.



220.733 AC  
 DR HORTON - TEXAS, LTD  
 INSTR. 2011083000915300  
 D.R.C.C.T.



OWNER'S CERTIFICATE & DEDICATION

STATE OF TEXAS  
COUNTY OF COLLIN

WHEREAS, LUCAS REAL ESTATE, LLC., BEING the owner of a 48.045 acre tract of land situated in the James Lovelady Survey, Abstract No. 538, City of Lucas, Collin County, State of Texas, and being part of that certain 87.1115 acre tract of land (Tract 3) described in deed to Lucas Real Estate, LLC, as recorded in Instrument 201101400101190, Deed Records, Collin County, Texas, said 48.045 acre tract being more particularly described by metes and bounds as follows:

BEGINNING at a PK Nail set for the northeast corner of said 87.1115 acre tract and the southeast corner of Lot 3, Trails End Addition, an addition to the City of Lucas, as recorded in Cabinet M, Page 107, Plat Records, Collin County, Texas, said corner being in the centerline of Stinson Road, a variable width right-of-way;

THENCE South 00 degrees 55 minutes 28 seconds East, with the east boundary line of said 47.1115 acre tract and the centerline of said Stinson Road, a distance of 1320.02 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for an exterior ell corner of said 87.1115 acre tract from which a PK Nail found bears South 89 degrees 24 minutes 53 seconds West, a distance of 10.41 feet;

THENCE South 89 degrees 05 minutes 13 seconds West, with a south boundary line of said 47.1115 acre tract, passing a 1/2-inch iron pipe found for an interior ell corner of said 87.1115 acre tract at a distance of 679.10 feet and continuing a total distance of 887.62 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for corner;

THENCE North 00 degrees 54 minutes 24 seconds West, a distance of 420.16 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for corner;

THENCE South 89 degrees 05 minutes 36 seconds West, a distance of 511.39 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for corner;

THENCE North 43 degrees 07 minutes 27 seconds West, a distance of 279.79 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for corner;

THENCE South 88 degrees 48 minutes 36 seconds West, a distance of 416.39 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for corner in the common boundary line of a 59.030 acre tract and a 86.548 acre tract described in a boundary line agreement, as recorded in Instrument 20061020001510100 of said Deed Records;

THENCE North 01 degrees 00 minutes 32 seconds West, with the common agreed boundary line of last mentioned tracts, passing a 5/8-inch iron rod found at the southeast corner of Lot 13, Block A of The Belmont Addition to the City of Lucas as recorded in Cabinet 2013, Page 85 of said Plat Records, Collin County, Texas, and the southeast corner of same addition, at a distance of 270.52 feet, and continuing with the common boundary line of said Lot 13, said addition, and said 87.1115 acre tract, a total distance of 722.28 feet to a 5/8-inch iron rod with yellow cap stamped "RPLS 3963" set for the northwest corner of said 87.1115 acre tract, and the northeast corner of said Lot 13, at an interior ell corner of said Belmont Addition and being in the south line of Lot 12 Block A of same;

THENCE South 89 degrees 39 minutes 18 seconds East, with the common boundary line of said 87.1115 acre tract and said Lot 12 and Lot 11 and 10, Block A of said addition, respectively, a distance of 661.92 feet to a 3/4-inch iron rod found for an exterior ell corner of said addition and the southeast corner of said Lot 10, said point also being the southwest corner of Lot 2 of the aforementioned Trails End Addition;

THENCE North 89 degrees 38 minutes 54 seconds East, with the common boundary line of said Lots 2 and 3 of Trails End Addition and said 87.1115 acre tract, a distance of 1342.57 feet to the POINT OF BEGINNING AND CONTAINING 2,092,827 square feet or 48.045 acres of land.

NOW THEREFORE KNOW ALL MEN BY THESE PRESENTS:

THAT, LUCAS REAL ESTATE, LLC., does hereby adopt this plat designating the herein described property as ~~TRAILS END ADDITION~~ <sup>Bristol Park Phase One</sup> ~~TRAILS END ADDITION~~, an addition to the City of Lucas, Texas, and does hereby dedicate to the public use forever, the streets and alleys shown thereon. The streets and alleys are dedicated for street purposes. The Easements and public use areas, as shown, are dedicated, for the public use forever, for the purposes indicated on this plat. No buildings, fences, trees, shrubs or other improvements or growths shall be constructed or placed upon, over or across the Easements as shown. In addition, Utility Easements may also be used for the mutual use and accommodation of all public utilities desiring to use or using the same unless the easement limits the use to particular utilities, said use by public utilities being subordinate to the Public's and City of Lucas's use thereof. The City of Lucas and public utility entities 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 systems in said Easements. The City of Lucas and public utility entities shall at all times have the full right of Ingress and Egress to or from their respective easements for the purpose of constructing, reconstructing, inspecting, patrolling, maintaining, and adding to or removing all or parts of their respective systems without the necessity at any time procuring the permission from anyone.

This plat approved subject to all platting ordinances, rules, regulations and resolution of the City of Lucas, Texas.

FOR: LUCAS REAL ESTATE, LLC.

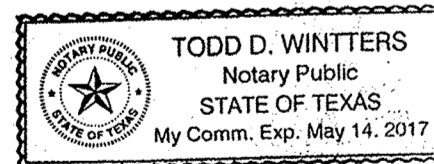
BY: Bradford Phillips  
BRAUFORD PHILLIPS

STATE OF TEXAS  
COUNTY OF COLLIN

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Bradford Phillips, 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.

Given under my hand and seal of office, this 23<sup>rd</sup> day of December, 2014.

Todd D. Winters  
Notary Public in and for the State of Texas  
My Commission Expires: 5-14-17



CITY APPROVAL CERTIFICATE

This plat is hereby approved by the Planning and Zoning Commission of the City of Lucas, Texas.

Jim Rutcholtz  
Chairman, Planning and Zoning Commission

12/11/14  
Date

ATTEST:

Donna Bradshaw  
Signature

12-17-14  
Date

Donna Bradshaw  
Name

12-17-14  
Date

The The Director of Public Works of the City of Lucas, Texas hereby certifies that to the best of his/her knowledge or belief, this subdivision plat conforms to all requirements of the Code of Ordinances and with engineering construction standards and processes adopted by the City of Lucas, Texas as to which his/her approval is required.

SA Ph  
Director of Public Works

12-18-14  
Date

The Director of Planning and Community Development of the City of Lucas, Texas hereby certifies that to the best of his/her knowledge or belief, this subdivision plat conforms to all requirements of the Code of Ordinances, or as may have been amended or modified, as allowed, by the Planning and Zoning Commission as to which his/her approval is required.

[Signature]  
Director of Planning and Community Development

12/17/14  
Date

SURVEYOR'S CERTIFICATION

KNOW ALL MEN BY THESE PRESENTS:

That I, Robert C. Myers, hereby certify, that I prepared this plat was made from an actual on the ground survey of the land as described and that the corner monuments shown thereon were properly placed under my personal supervision in accordance with the Platting Rules and Regulations of the City of Lucas Planning and Zoning Commission

[Signature]  
ROBERT C. MYERS  
REGISTERED PROFESSIONAL LAND SURVEYOR  
STATE OF TEXAS NO. 3963

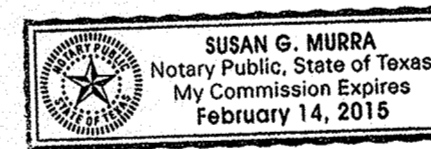


STATE OF TEXAS  
COUNTY OF COLLIN

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Robert C. Myers, 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 purpose and considerations therein expressed.

Given under my hand and seal of office, this 24th day of November, 2014.

Susan G. Murr  
Notary Public in and for the State of Texas  
My Commission Expires: 02/14/2015



On-Site Sewage Facilities (OSSF) Notes:

- All lots must utilize alternative type On-Site Sewage Facilities.
- All lots must maintain state-mandated setback of all On-Site Sewage Facility components from any/all easements and drainage areas, water distribution lines, sharp breaks and/or creeks/ponds, etc. (Per State regulations).
- A portion of lots 5, 6, 7, 8, 10, 11, 12, 13, 14, 15 and 16 are located within the 100-year flood plain:
  - Any OSSF that is located within the 100-year flood plain is subject to special planning requirements.
  - All electrical/mechanical appurtenances located within the 100-year flood plain must be elevated at least 1' above base flood elevation.
  - A certificate of elevation establishing base flood elevation and proving that the finished floor will be at least 2' above base flood elevation must accompany any permit application for a structure that is proposed to be located within the curvilinear line of the 100-year flood plain.
- Tree removal and/or grading for OSSF may be required on individual lots.
- Individual site evaluations and OSSF design plans (meeting all State and County requirements) must be submitted to and approved by Collin County for each lot prior to construction of any OSSF system.

HEALTH DEPARTMENT CERTIFICATION:

I hereby certify that the on-site sewage facilities described on this plat conform to the applicable OSSF laws of the State of Texas, that site evaluations have been submitted representing the site conditions in the area in which on-site sewage facilities are planned to be used.

WJL RS#5727  
Registered Sanitarian or Designated Representative  
Collin County Development Services

Filed and Recorded  
Official Public Records  
Stacey Kemp, County Clerk  
Collin County, TEXAS  
12/23/2014 02:22:25 PM  
\$37.00 SCAPELAR  
20141223010004400

2014-700



[Signature]

FINAL PLAT  
BRISTOL PARK  
PHASE ONE

LOTS 1-22, BLOCK A  
22 RESIDENTIAL LOTS

BEING 48.045 ACRES  
SITUATED IN THE  
JAMES LOVELADY SURVEY, ABSTRACT NO. 538  
CITY OF LUCAS, COLLIN COUNTY, TEXAS

LAND SURVEYOR  
**R.C. MYERS SURVEYING, LLC**  
3400 OXFORD DRIVE  
ROWLETT, TX 75088  
(214) 532-0636  
FAX (972) 412-4875  
EMAIL: rcmsurveying@gmail.com  
Job No. 211

OWNER/DEVELOPER  
**LUCAS REAL ESTATE, LLC**  
1221 N INTERSTATE 35E STE 200  
CARROLLTON, TX 75006-3806

**ENGINEERING CONCEPTS & DESIGN, L.P.**  
ENGINEERING/PROJECT MANAGEMENT/CONSTRUCTION SERVICES  
TEXAS FIRM REG. NO. 00145  
201 WINDCO CIRCLE, SUITE 200, WYLE TEXAS 75098  
(972) 941-8400 FAX (972) 941-8401

DATE: DECEMBER 8, 2014

SHEET 2 OF 2

GENERAL NOTES:

1. All work and materials shall conform to the City of LUCAS Engineering Design Manual and the "Standard Specifications for Public Works Construction" published by the North Central Texas Council of Governments (NCTCOG), latest edition. In the event of conflict, duplication, or variance, the City Engineer shall have the final decision on all construction materials, methods, and procedures.
2. Prior to construction, the contractor shall familiarize himself with the contract documents and specifications, the plans including all notes 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 or 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.
3. Contractor shall have in his possession, prior to construction, all--necessary permits, licenses, etc. Contractor shall have at least one set of approved engineering plans and specifications on site at all time.
4. Any item of work called for by the plans and/or specification and not included, as a bid item shall be subsidiary to the construction of the various bid items.
5. Construction inspection will 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. Contractor is responsible for scheduling required inspections as required by contract documents.
6. Any item requiring inspection by the City, must be performed between the hours of 8am-5pm Monday thru Friday.
7. The contractor and all subcontractors must confine their activities to the work area. Any damage resulting from construction activities, shall be the contractor's responsibility.
8. It will be the responsibility of each contractor to protect all existing public and private utilities throughout the construction of this project. 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. Location of utilities are taken from the City of LUCAS and Utility Company records. Contractor shall field verify to determine exact location of utilities.
9. Trench safety design will be the responsibility of the contractor. The contractor shall abide by all applicable federal, state, and local laws governing excavation. Trench side slopes shall meet OSHA standards. Benching, shoring, and bracing shall be required when side slope standards are not met. A pull box, meeting OSHA standards will be acceptable. The contractor shall submit detailed plans to the City Engineer for review showing how OSHA Standards for excavation shall be met prior to the start of any utility construction. The plans shall be sealed by an Engineer registered by the State of Texas.
10. Contractor shall stockpile salvage materials for inspection. All items not salvaged by the owner shall be removed from the site at the contractor's expense. The owner will transport salvaged materials away from the site at the owner's expense. Salvage, stockpile, and removal of materials shall be considered subsidiary to the various bid items and shall not be paid for directly unless such items are specifically included in the bid items.
11. The contractor shall be responsible for providing and maintaining all necessary warning and safety work, material, and operations needed to provide for the health and safety of the public until all work has been completed, including maintenance bond periods, and to be accepted by the City of LUCAS in writing.
12. All construction and materials testing unless otherwise indicated, shall be performed by an Engineering Testing Laboratory employed by the Contractor. The testing laboratory shall be approved by the City of LUCAS. The testing laboratory shall make tests necessary to insure that construction is in accordance with the approved plans and specifications. Re-testing required due to construction not being performed in accordance with the plans and specifications shall be at the expense of the contractor. The testing laboratory shall submit testing reports to the City Engineer and Design Engineer.
13. Any additional excavated material shall be placed as directed by the Owner.
14. All fill areas to be density and moisture controlled. Fill should be compacted to 95% of standard proctor density at a minimum of 2% above optimum moisture content.
15. Water and sewer lines crossing the NTMWD easement shall be installed in compliance with the Rules and Regulations for Public Water Systems Paragraph 290.44 (e), Location of Water Lines.
16. The contractor shall contact NTMWD Engineering at (972) 442-5405 at least 48 hours prior to performing any work in the vicinity of the NTMWD facilities."

CLEARING AND GRADING NOTES:

1. All grading shall conform to the City of LUCAS standards.
2. Site Preparation: All surface vegetation and the foreign materials such as roots, grass, etc., shall be stripped to a minimum depth of 4 inches and removed. All cleared and grubbed materials shall be removed off-site in accordance with local, state, and federal regulations.
3. Scarifying Area to be Filled: In areas where fills are desired, the stripped surface shall be scarified to a depth of at least 6 inches for uniform compaction. The scarified surface shall be such that it is free from lumps and uneven surfaces.
4. Compacting Area to be Filled: After clearing and scarifying the area to be filled, the soils shall be brought to a moisture content of -2% to +4% of the optimum moisture value and compacted, in 6 inch maximum lifts, mechanically to at least 95% of Standard Proctor maximum dry density (ASTM D 698). R.O.W. areas to be filled shall be brought to moisture content of 0% to +4% of the optimum moisture value and compacted, in 6 inch maximum lifts, mechanically to at least 95% of Standard Proctor maximum dry density (ASTM D 698).
5. Fill Material: On-site soil and/or rock could be used as random fill provided such material is free from vegetation and other deleterious substances. No fill material shall contain rocks or lumps having a diameter of 6 inches or greater.
6. Depth and Mixing of Fill Layers: The fill materials shall be placed in level, uniform layers. Each layer shall be thoroughly blade mixed during spreading to insure uniform compaction. These materials shall be placed in loose lifts with density and moisture content shall conform to that specified herein.
7. Compaction of Fill Layer: Compaction equipment shall be capable of compacting all fill soils to the specified density. Compaction of all fill shall be accomplished with the material at the specified moisture content. Each fill layer shall be compacted uniformly with sufficient effort to achieve the specified degree of compaction.
8. Amount of Compaction: After each fill layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted to a minimum 95% of the Standard Proctor density (ASTM D 698).
9. Moisture Content: All fill material shall be compacted at the appropriate moisture content as defined for the particular soil type. Each layer shall be brought to a moisture content of -2% to +4% of the optimum moisture value as determined by ASTM D 698. The compaction moisture content of limestone or other rock-like materials is not considered crucial, provided the proper degree of compaction is obtained. R.O.W. areas to be filled shall be brought to moisture content of 0% to +4% of the optimum moisture value and compacted, in 6 inch maximum lifts, mechanically to at least 95% of Standard Proctor maximum dry density (ASTM D 698).
10. Slope Control: In areas where cut of fill slopes exceed 3 feet in depth/height, a slope ratio of one (vertical) to 4 (horizontal) shall not be exceeded. Compaction operations of fill slopes shall be continued until the slopes are stable.
11. Field Density: Field density tests of fill and/or backfill shall be controlled by an Engineering Testing Laboratory. Density tests shall be taken in the compacted material below the disturbed surface. When these tests indicate that the density or any layer of fill is below the required density, the particular soil or rock layer shall be reworked until the proper density and/or moisture content is achieved. Re-testing of reworked areas shall be at contractors expense.
12. Tolerance for Rough Grading: Streets shall be rough graded within 0.2' of plan grades prior to utility construction. Utility contractor shall return street to within 0.2' of plan grade prior to street paving.
13. Supervision: Supervision by the Soils Engineer shall be of such continuity during the grading operations that he can adequately describe the work done and evaluate that work in comparison with the specifications. Actual supervision shall be the Contractor's Supervisor.
14. Reports: The Testing Laboratory shall send 1 copy of each test, inspection, or evaluation report to the Public Works Department, Owner, and Design Engineer.
15. All excess earth shall be used on-site or taken to an area designated by the Engineer at the Contractor's expense.

PAVING NOTES

1. Concrete street pavement shall be NCTCOG Class "C", 3,600 PSI compressive strength. Air content shall be 3%-5%. Pavement thickness and reinforcing steel shall be as indicated on construction plans and conforming with current City of LUCAS Standards.
2. The subgrade shall be treated 6 inches deep, minimum, with lime slurry. Lime slurry shall be Type B Grade 1 and applied in accordance with the City Standard Specifications. Lime shall be applied at a rate of 6.0% of the dry weight soil and have a P.I. of less than 15. Compaction of the lime stabilized subgrade shall be to 95% Standard Proctor density. Stabilization shall extend 1' ft. beyond edge of pavement (refer to typical paving section).
3. All dimensions are to edge of pavement unless otherwise noted. Elevations are edge of pavement unless otherwise noted.
4. Water meters and/or services shown to be in conflict with proposed paving or drainage facilities are to be relocated by the Contractor, subject to review by the Public Works Department, prior to commencement of construction of paving and drainage.
5. Power and telephone poles shown to be in conflict with proposed paving to be relocated by appropriate utility prior to paving.
6. It will be the responsibility of the paving contractor to protect all public utilities of this project. All valve boxes, fire hydrants, etc., must be adjusted to proper line and grade by the paving contractor prior to and after the placing of permanent paving.
7. Expansion or construction joints shall be placed at 600 feet maximum spacing or the final pour of the construction day. Transverse contraction joints shall be placed on 20 feet maximum spacing. Refer to City of LUCAS Standard Details.
8. Contraction joints shall be formed by sawing. Joint depth shall be equal to one-fourth (1/4) of slab thickness. Sawing of joints shall begin as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling. All joints should be completed before uncontrolled shrinkage cracking occurs. Joints should be continuous across the slab and extend completely through the curb. All joint openings to be cleaned and sealed with hot poured rubber joint sealing compound prior to opening to traffic.
9. Any excess earth shall be taken to an area, to be designated by the Engineer at the contractors expense.
10. Back fill shall be placed behind all pavement. Back fill material shall be free of earthwork debris such as muck, rock, refuse, stumps, concrete, asphalt, or other unsuitable materials and shall consist of soil suitable for sodding.
11. Topsoil to be stripped and placed on parkways and yards on lots.
12. City will water test streets upon completion. Any standing water must be remedied before acceptance.

WATER SYSTEM IMPROVEMENTS NOTES

1. All work and materials shall be in accordance with City of LUCAS standard specifications.
2. Fire Hydrants shall be Mueller or approved equal, 3-way breakaway type, no less than 5 1/2 inches in size and shall conform to the provisions of the latest AWWA Standard C502, and shall have a bury depth of five feet. Valves shall be placed on all fire hydrant leads and shall be F X M.J. Fire hydrants shall be located so that breakaway point is no less than 2-inches and no greater than 6-inches above the grade surface and a minimum of 2-feet and a maximum of 6-feet behind the edge of pavement. The fire hydrant shall be installed so the steamer connection will face the street, or as directed by the fire department. A Blue Slimsbite, Fire-Lite reflector (or approved equal) shall be placed in the center of the drive lane on the side of the fire hydrant.
3. Fire hydrant Bonnets shall be painted according to the capacity of the main to which it is attached. See chart below. The remainder of the hydrant above ground shall be painted aluminum.  
8" Waterline - Blue
4. Valves 12" and under to be Gate Valves meeting requirements of AWWA C500 or AWWA C509 (NCTOG Item 2.13.1) with non-rising stems. Contractor shall also mark curb with "V" at location of valve.
5. Water Mains - All water mains, fittings, and valves shall meet AWWA specifications. All water lines to be C900 DR-18 (NCTOG item 2.12.2). Minimum cover over water mains shall be 8" dia. and under, 3.5-feet, 8" dia., 4-feet, 12" dia. 4.5 feet-5 feet. DR-18 water mains to be tested at 150 psi for a continuous period of four (4) hours. Leakage rate shall not exceed 25 gallons per inch of normal diameter per mile of pipe over test period. Contractor shall flush and sterilize lines and prove lines to be free of conforms organisms by obtaining samples for laboratory tests for contamination. The Contractor shall flush and re-sterilize until samples for test are free from contamination. Jetting of backfill will not be permitted.
6. All water services shall be 1" copper. Meter boxes shall comply with current City of LUCAS Standards and Specifications.
7. Contractor shall tie a 1" piece of blue plastic flagging to the water service and shall leave a minimum of 36" of flagging exposed after backfill. Contractor shall also mark pavement with "W" at location of water service.
8. Contractor shall furnish a maintenance band to the City of LUCAS to run for two years from the date of acceptance.
9. The source of water supply for this addition will be from the City of LUCAS.
10. Valve boxes shall be furnished and set on each gate valve. After the final clean-up and alignment has been completed, the Contractor (utility) shall pour a concrete block 6" x 18" x 18" around all valves box tops so the finished grade is level with the finished parkway.
11. Water lines shall be pressure tested and disinfected in accordance with AWWA C601.
12. Water valves deeper than 4' shall have extention in accordance with City of LUCAS Details.
13. All embedment to be class B+ or better as detailed in the NCTOG Construction Standards.

Texas Commission on Environmental Quality  
Chapter 290 - Public Drinking Water  
Subchapter D: Rules And Regulations For Public Water Systems  
§290.44. Water Distribution.

- (a) Location of waterlines
  - (i) Where the nine-foot separation distance cannot be achieved, the following criteria shall apply.
    - (A) New waterline installation - parallel lines.
      - (i) Where a new potable waterline parallels an existing, non-pressure or pressure rated wastewater main or lateral and the licensed professional engineer licensed in the State of Texas is able to determine that the existing wastewater main or lateral is not leaking, the new potable waterline shall be located at least two feet above the existing wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the existing wastewater main or lateral. Every effort shall be exerted not to disturb the bedding and backfill of the existing wastewater main or lateral.
      - (ii) Where a new potable waterline parallels an existing pressure rated wastewater main or lateral and it cannot be determined by the licensed professional engineer if the existing line is leaking, the existing wastewater main or lateral shall be replaced with at least 150 psi pressure rated pipe. The new potable waterline shall be located at least two feet above the new wastewater line, measured vertically, and at least four feet away, measured horizontally, from the replaced wastewater main or lateral.
      - (iii) Where a new potable waterline parallels a new wastewater main, the wastewater main or lateral shall be constructed of at least 150 psi pressure rated pipe. The new potable waterline shall be located at least two feet above the wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the wastewater main or lateral.
    - (B) New waterline installation - crossing lines.
      - (i) Where a new potable waterline crosses an existing, non-pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. If the existing wastewater main or lateral is disturbed or shows signs of leaking, it shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure rated pipe.
      - (ii) Where a new potable waterline crosses an existing, pressure rated, wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. If the existing wastewater main or lateral shows signs of leaking, it shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure rated pipe.
      - (iii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral and the standard pipe segment length of the wastewater main or lateral is at least 18 feet, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.
      - (iv) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral and a standard length of the wastewater pipe is less than 18 feet in length, the potable water pipe segment shall be centered over the wastewater line. The materials and method of installation shall conform with one of the following options.
        - (i) Within nine feet horizontally of either side of the waterline, the wastewater pipe and joints shall be constructed with pipe material having a minimum pressure rating of at least 150 psi. An absolute minimum vertical separation distance of two feet shall be provided. The wastewater main or lateral shall be located below the waterline.
        - (ii) All sections of wastewater main or lateral within nine feet horizontally of the waterline shall be encased in an 18-foot (or longer) section of pipe. Flexible encasing pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The encasing pipe shall be centered on the waterline and shall be at least two nominal pipe diameters larger than the wastewater main or lateral. The space around the carrier pipe shall be supported at five-foot (or less) intervals with spacers or be filled to the springline with washed sand. Each end of the casing shall be sealed with watertight non-shrink cement grout or a manufactured watertight seal. An absolute minimum separation distance of six inches between the encasement pipe and the waterline shall be provided. The waterline shall be located below the waterline.
        - (iii) When a new waterline crosses under a wastewater main or lateral, the waterline shall be encased as described for wastewater mains or laterals in subclause (i) of this clause or constructed of ductile iron or steel pipe with mechanical or welded joints as appropriate. An absolute minimum separation distance of one foot between the waterline and the wastewater main or lateral shall be provided. Both the waterline and wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.
      - (v) Where a new potable waterline crosses a new, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater line such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the center line of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pressure rating of at least 150 psi. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.
      - (vi) Where cement stabilized sand bedding is required, the cement stabilized sand shall have a minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume (at least 2.5 bags of cement per cubic yard of mixture). The cement stabilized sand bedding shall be a minimum of six inches above and four inches below the wastewater main or lateral. The use of brown coloring in cement stabilized sand for wastewater main or lateral bedding is recommended for the identification of pressure rated wastewater mains during future construction.

NOTE:  
All backfill for utilities and pavement including lime stabilized subgrade to be +2% or higher of optimum moisture.

STORM WATER DISCHARGE AUTHORIZATION:

1. Contractor shall submit a Notice of Intent (NOI) to TCEQ no less than 2 days prior to commencement of construction activities. All grading activities shall conform to the Erosion Control Plan included in the approved construction plans.
2. All contractors and subcontractors providing services related to the SWPPP shall sign a Contractor Certification statement acknowledging their responsibilities as specified in the SWPPP.
3. A copy of the SWPPP, including Contractor Certifications and any Revisions, shall be submitted to the CITY OF LUCAS Engineer and Design Engineer and filed with the construction plans, and shall be retained on-site during construction.
4. A Notice of Termination (NOT) shall be submitted to TCEQ when the site has 100% of the disturbed areas stabilized and the site no longer has storm water discharges associated with industrial activities (construction), or the NOI permittee or co-permittee no longer holds operational control of the construction.

STORM WATER POLLUTION PROTECTION PLAN:

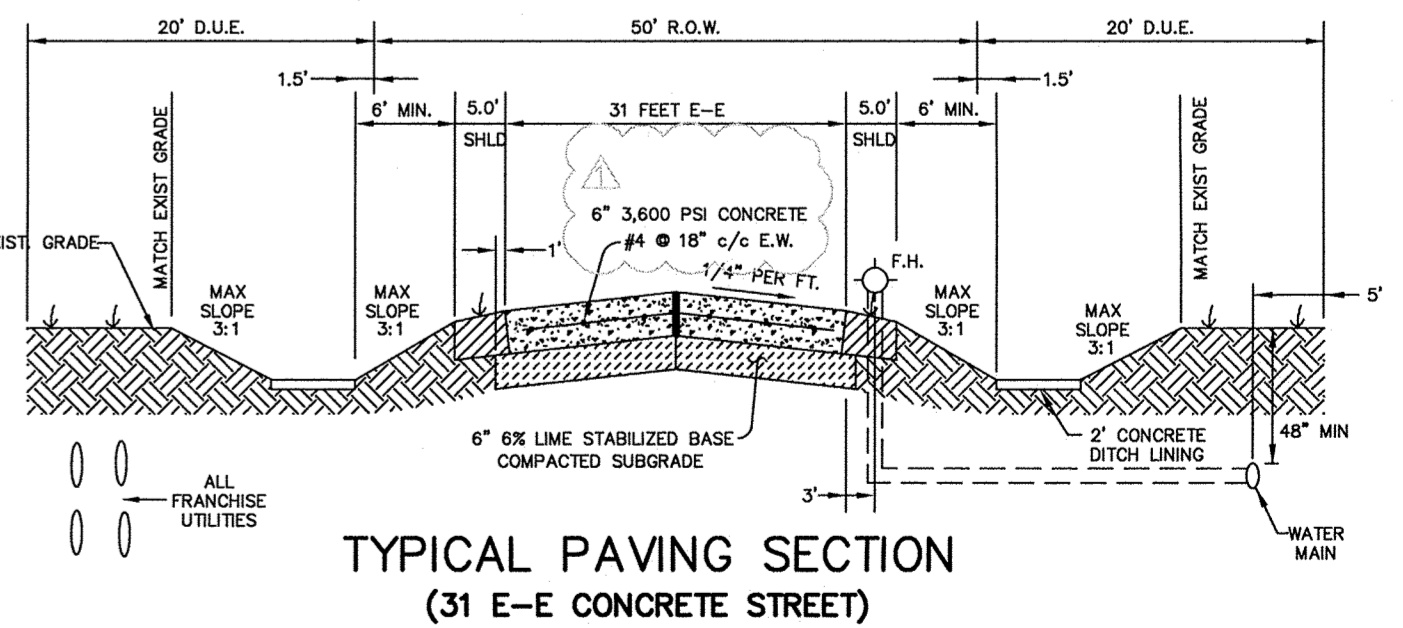
1. This site shall be reviewed by owner or his representative weekly and after any major storm. Adjustments/repairs to the erosion control will then be made as needed.

EROSION CONTROL SPECIFICATIONS:

1. The Grading Contractor shall provide and maintain all erosion control devices in the areas indicated on the Erosion Control Plan and any other areas as directed by the Engineer.
2. The Utility Contractor shall provide and maintain all erosion control device around all openings into the storm sewer system to protect completion and as directed by the Engineer.
3. The paving Contractor shall provide and maintain all erosion control devices as indicated on the Erosion Control Plan and as directed by the Engineer.
4. Upon completion of fine grading, all street parkways shall be seeded, fertilized, and maintained by the Paving Contractor in accordance with the CITY OF LUCAS specifications.
5. The Electrical Utility, Natural Gas, Telephone, and Cable TV Contractor shall re-establish any previously established erosion control measure or device that is disturbed by their construction, including vegetative cover.
6. Site entry and exit locations shall be maintained in a condition which will prevent tracking or flowing of sediment onto public roadways. All sediment spilled, dropped, washed, or tracked into a public roadway must be removed immediately. When washing is required to remove sediment prior to entrance to a public roadway, it shall be done on an area stabilized with crushed stone which drains into an approved sediment basin. All fines imposed for tracking onto public roads shall be paid by the contractor.
7. Temporary seeding or other methods of stabilization shall be initiated within 14 days of the last disturbance on any area of the site, unless additional construction on the area is expected within 21 days of the last disturbance.
8. Seeding for permanent vegetative cover shall be initiated upon completion of fine grading by Paving and Grading Contractor, see Final Stabilization.
9. Erosion control devices may be added or reduced in the field as directed by the Engineer.
10. INSPECTION - The Contractor shall conduct inspections of all erosion controls provided in the SWPPP at a minimum of once every 7 calendar days. When field inspection reveals an inadequacy in erosion control measures, the SWPPP shall be revised and erosion control measures shall be upgraded within 7 days.
11. MAINTENANCE - Erosion controls shall be repaired or replaced as inspection deems necessary or as directed by the Engineer. Accumulated silt at any erosion control device shall be removed when it reaches a depth of 6", and shall be distributed on site in a manner not contributing to additional siltation.
12. The Contractor is responsible for re-establishing any erosion control device which he disturbs. Each Contractor shall notify the Engineer of any deficiencies in the established erosion control measures which may lead to unauthorized discharge of storm water pollution, sedimentation, or other surface or ground water pollutants, and excessive dust or other airborne pollutants. Unauthorized pollutants include, but are not limited to, excess concrete dumping or concrete residue, paints and other overspray, solvents, greases, fuel and lube oil, pesticides, and solid waste materials.
13. FINAL STABILIZATION - Upon completion of all soil disturbing construction, all areas not paved or covered by permanent structures or equivalent permanent stabilization measures shall be stabilized with a uniform perennial vegetative cover. For termination of initial status of the construction site, the vegetative cover must meet a minimum density of 70% as determined by the Engineer. All temporary erosion control measures must be removed.

STORM SEWER NOTES:

1. The developer will be held responsible for notifying builders and lot owner of proper driveway culvert sizes (shown on the plot) and ensuring the properly sized culvert is installed with appropriate concrete headwalls.
2. Concrete, wherever mentioned in these regulations, shall be Class A concrete as defined in TxDOT, Item 421, Concrete materials, placement methods, placement temperatures, curing, etc., shall be in accordance with TxDOT, Items 420 and 421.
3. Pipe culverts must be reinforced concrete pipe.
4. Driveway culverts must have concrete headwalls.
5. All concrete shall have a minimum compressive strength of 3,600 psi at 28 days unless otherwise on the approved plans.
6. All reinforcing steel for concrete shall be ASTM Grade 60
7. Embedment for drainage pipe shall be incidental to pipe installation and will not be a separate pay item.



**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Wintters* 9-18-16  
TODD WINTTERS DATE

BENCHMARK:  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek Elevation 569.65'

**ENGINEERING CONCEPTS & DESIGN, L.P.**

ENGINEERING / PROJECT MANAGEMENT /  
CONSTRUCTION SERVICES - FIRM REG. #F-00145  
201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

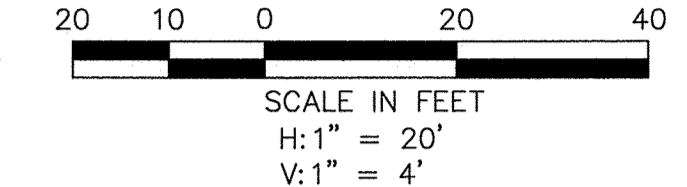
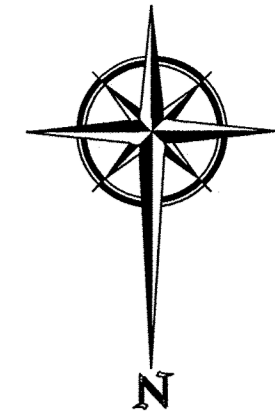
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DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
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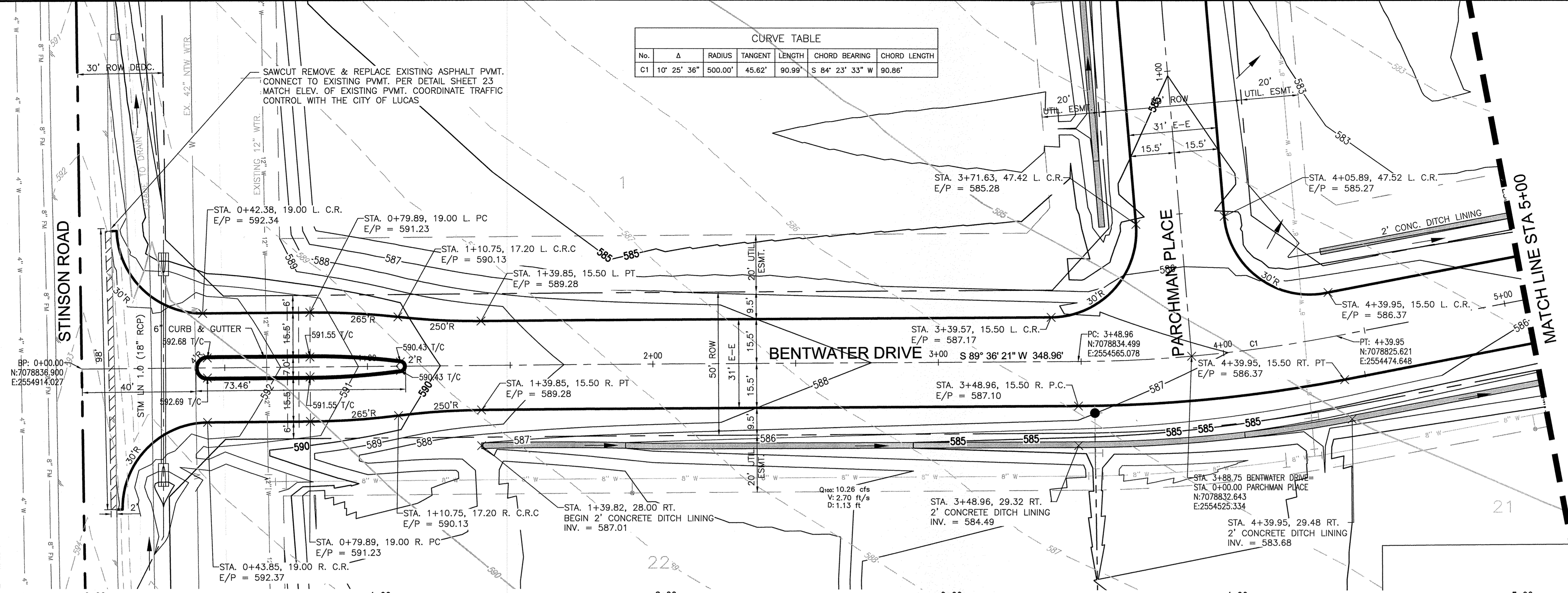


**GENERAL NOTES & PAVING SECTIONS**  
**BRISTOL PARK**  
PHASE I

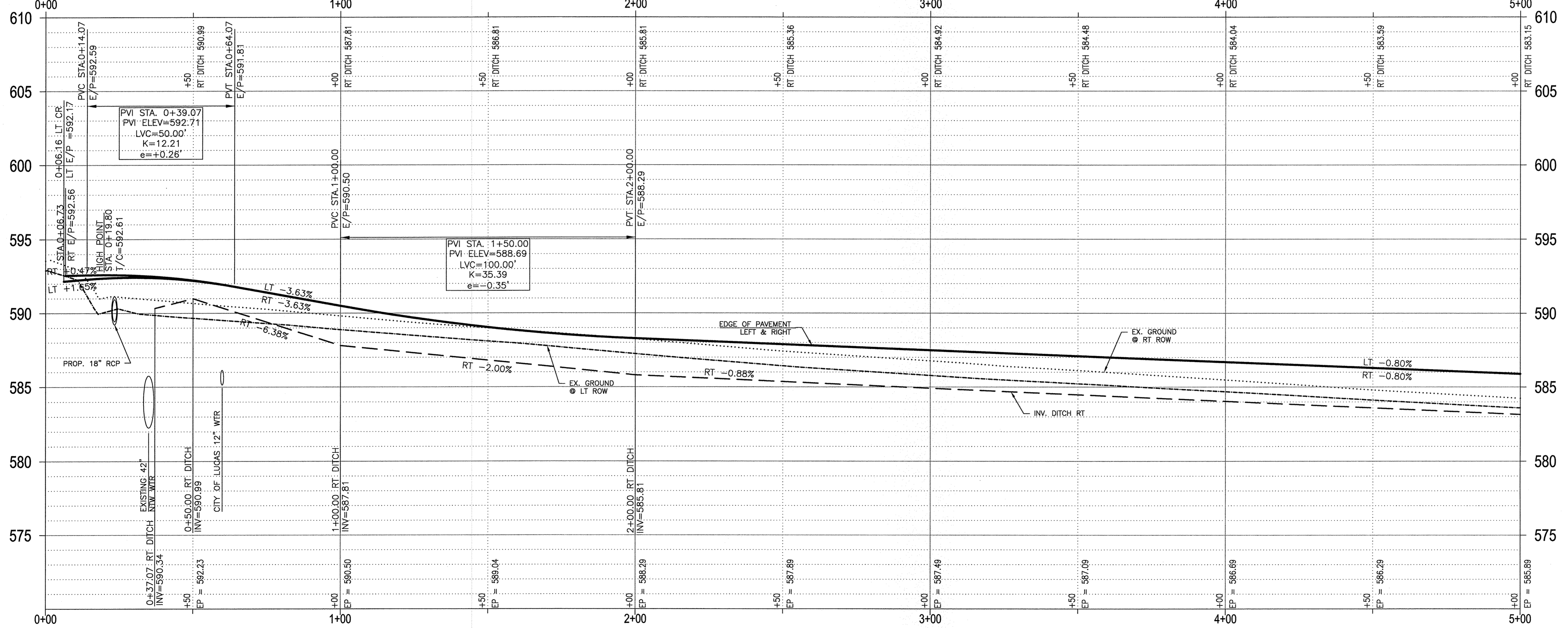
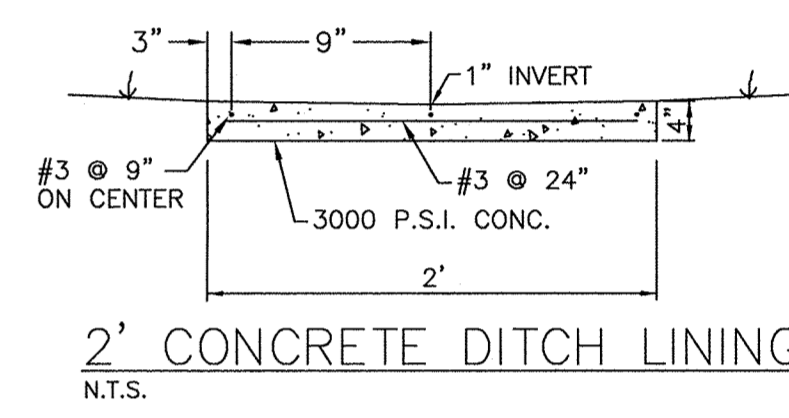
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OF  
25



CURVE TABLE						
No.	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD LENGTH
C1	10° 25' 36"	500.00'	45.62'	90.99'	S 84° 23' 33" W	90.86'



- LEGEND**
- PP POWER POLE
  - EM ELECTRIC METER
  - EL ELECTRIC DISCONNECT
  - LP LIGHT POLE
  - SSMH SAN. SEWER MANHOLE
  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - NIC NOT IN CONTRACT



**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-15  
TODD WINTERS DATE

**BENCHMARK:**  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

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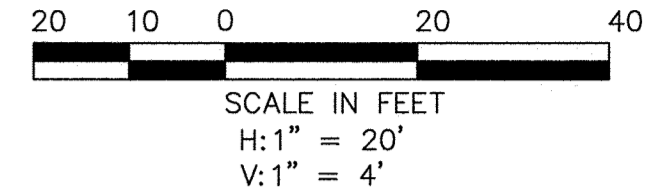
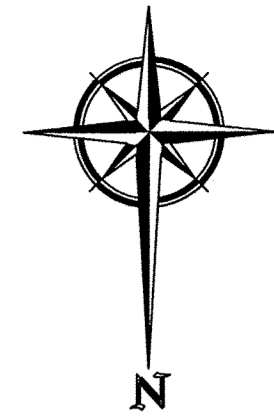
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CHECKED: TW	DATE:
PROJECT NO.: 8313	
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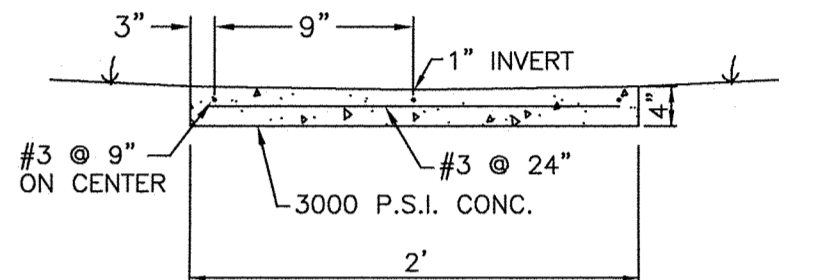


**PAVING PLAN**  
**BENTWATER DRIVE STA. 0+00 TO 5+00**  
**BRISTOL PARK**  
PHASE 1

SHEET  
**5**  
OF  
**25**

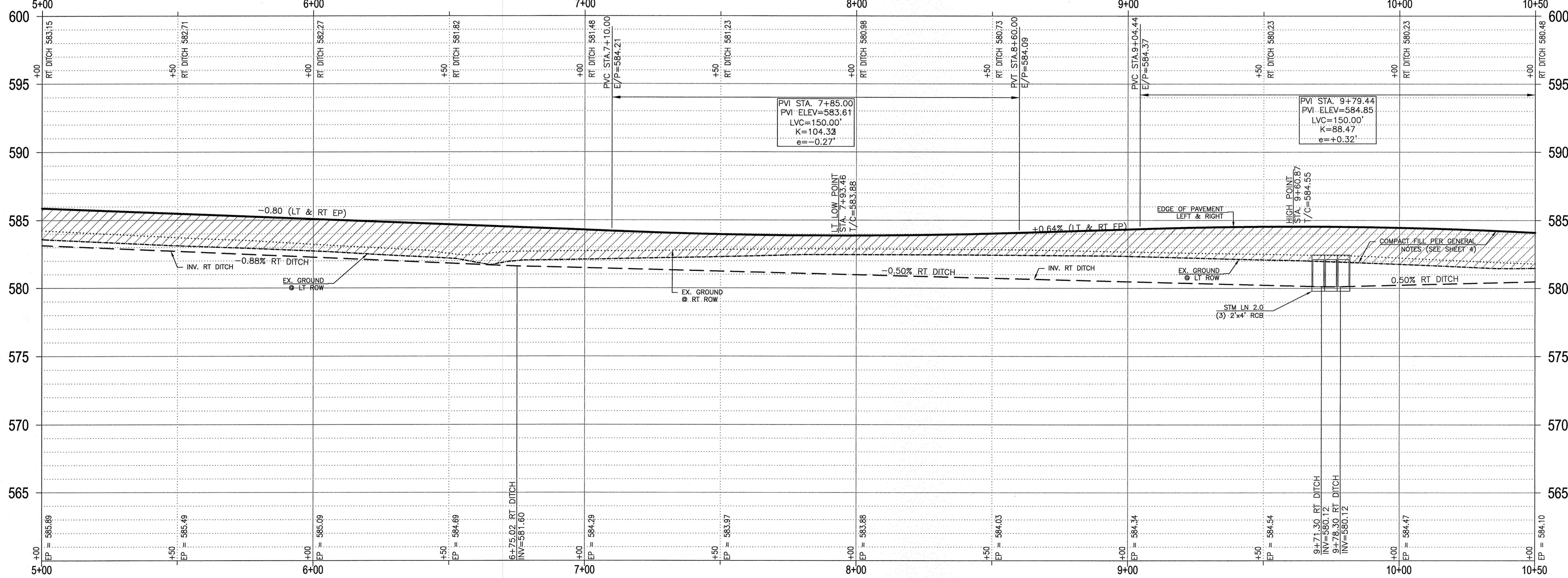
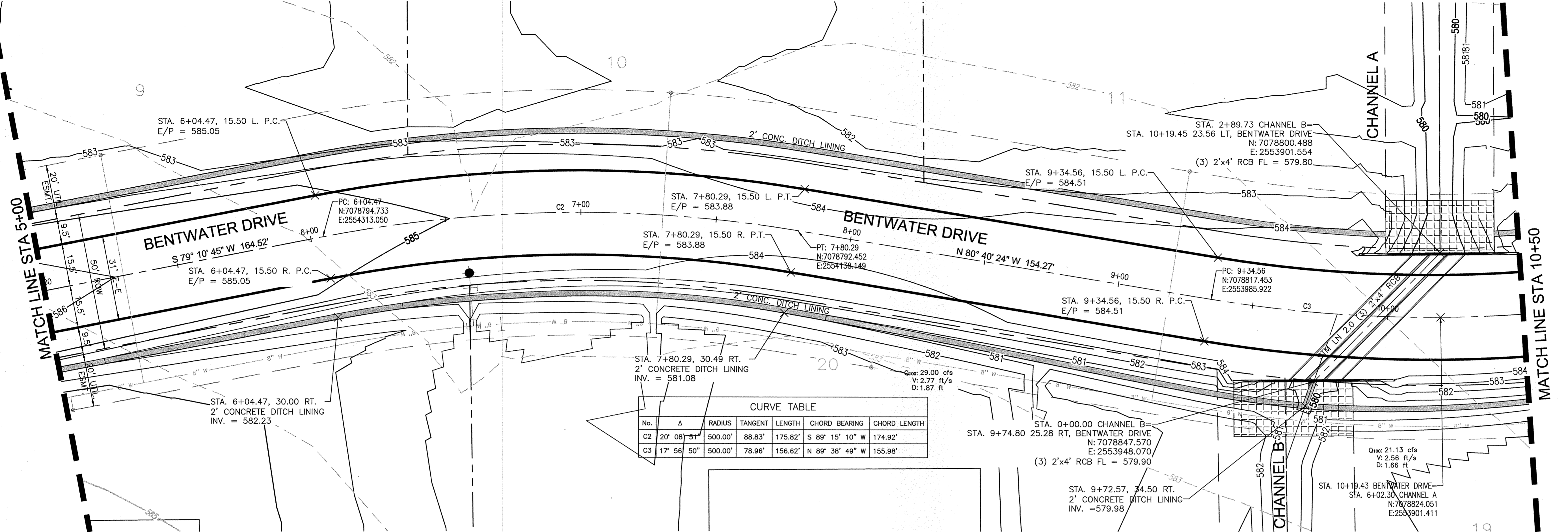


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  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - FL FENCE LINE
  - NIC NOT IN CONTRACT



**CURVE TABLE**

No.	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD LENGTH
C2	20° 08' 51"	500.00'	88.83'	175.82'	S 89° 15' 10" W	174.92'
C3	17° 56' 50"	500.00'	78.96'	156.62'	N 89° 38' 49" W	155.98'



**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-15  
TODD WINTERS DATE

**BENCHMARK:**  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

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201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

**REVISIONS:**

8/27/2014	LOWERED ROAD OVER CHANNEL
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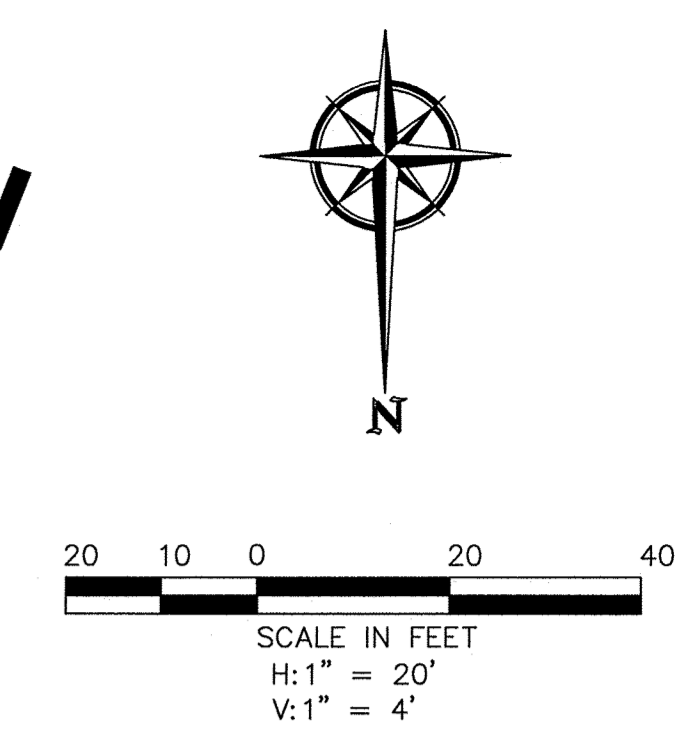
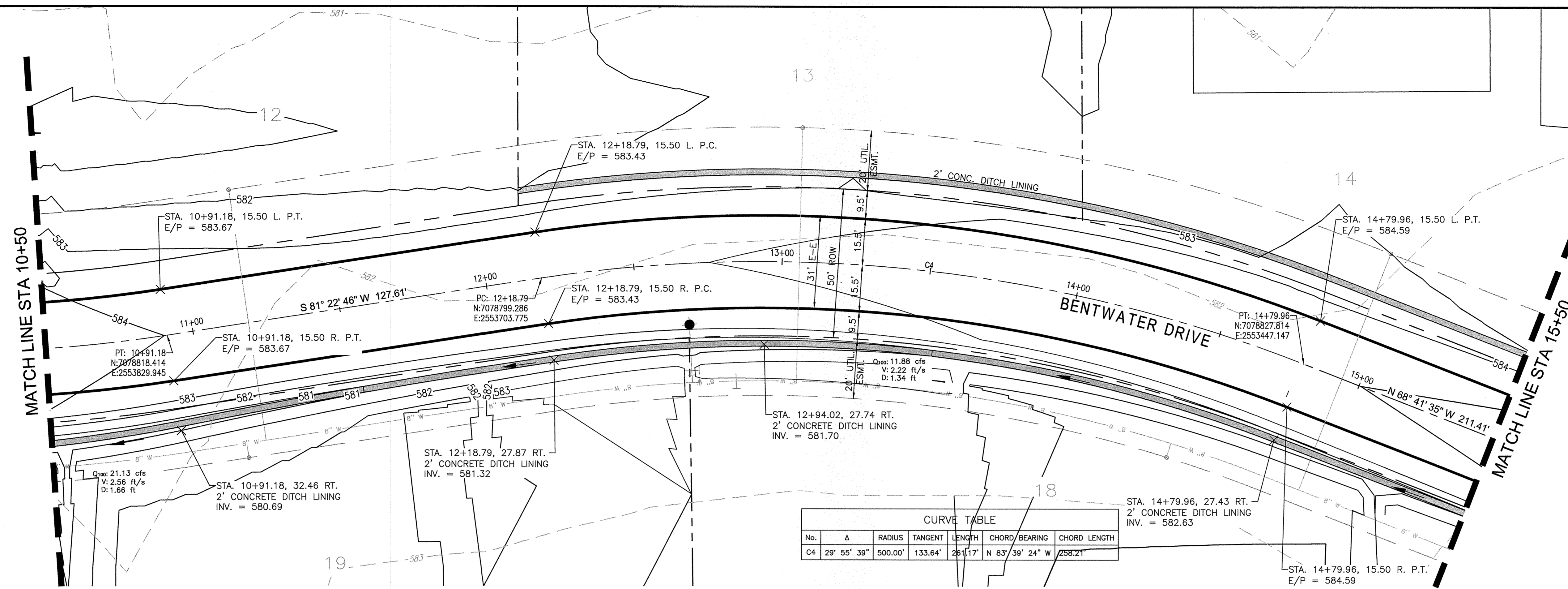
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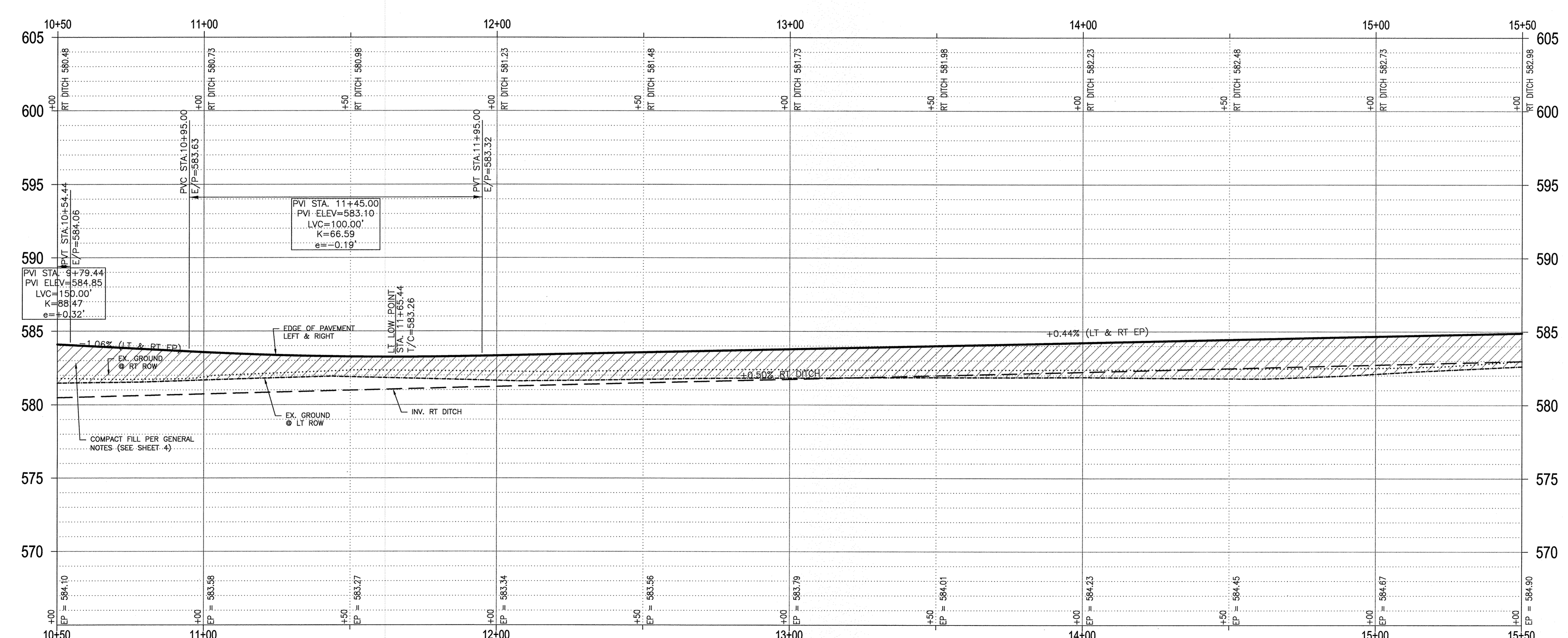
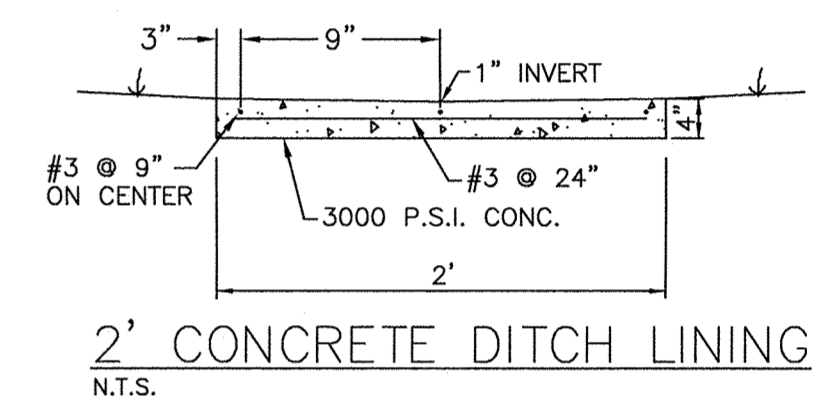


**PAVING PLAN**  
**BENTWATER DRIVE STA. 5+00 TO 10+00**  
**BRISTOL PARK**  
PHASE 1

SHEET  
**6**  
OF  
**25**



- LEGEND**
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  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - FL FENCE LINE
  - NIC NOT IN CONTRACT



**RECORD DRAWINGS**

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*Todd Winters* 9-18-15  
TODD WINTERS DATE

BENCHMARK:  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

ENGINEERING / PROJECT MANAGEMENT / CONSTRUCTION SERVICES - FIRM REG. #F-001145  
201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:

8/27/2014	LOWERED ROAD OVER CHANNEL
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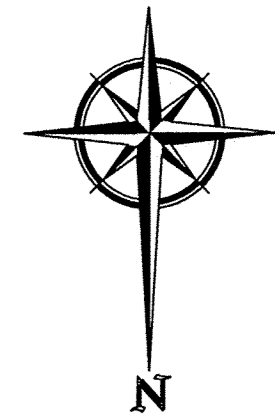
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CHECKED: JW DATE:  
PROJECT NO.: 8313  
DWG FILE NAME: 5 INDIAN CREEK CIRCLE STA. 0+00 TO 5+00.DWG

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TODD D. WINTERS, P.E. 87085



**PAVING PLAN**  
**BENTWATER DRIVE STA. 10+00 TO 15+50**  
**BRISTOL PARK**  
PHASE 1

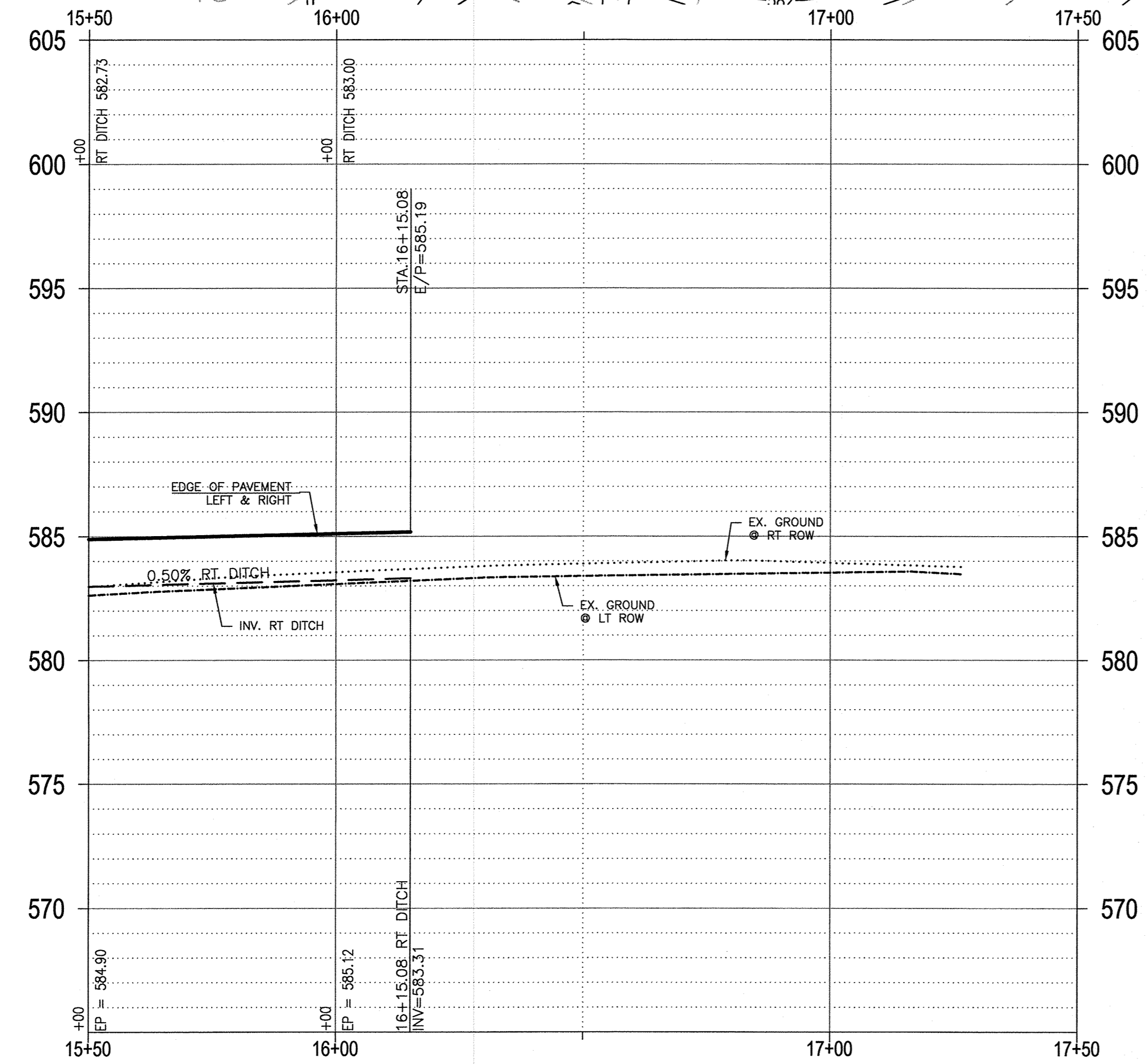
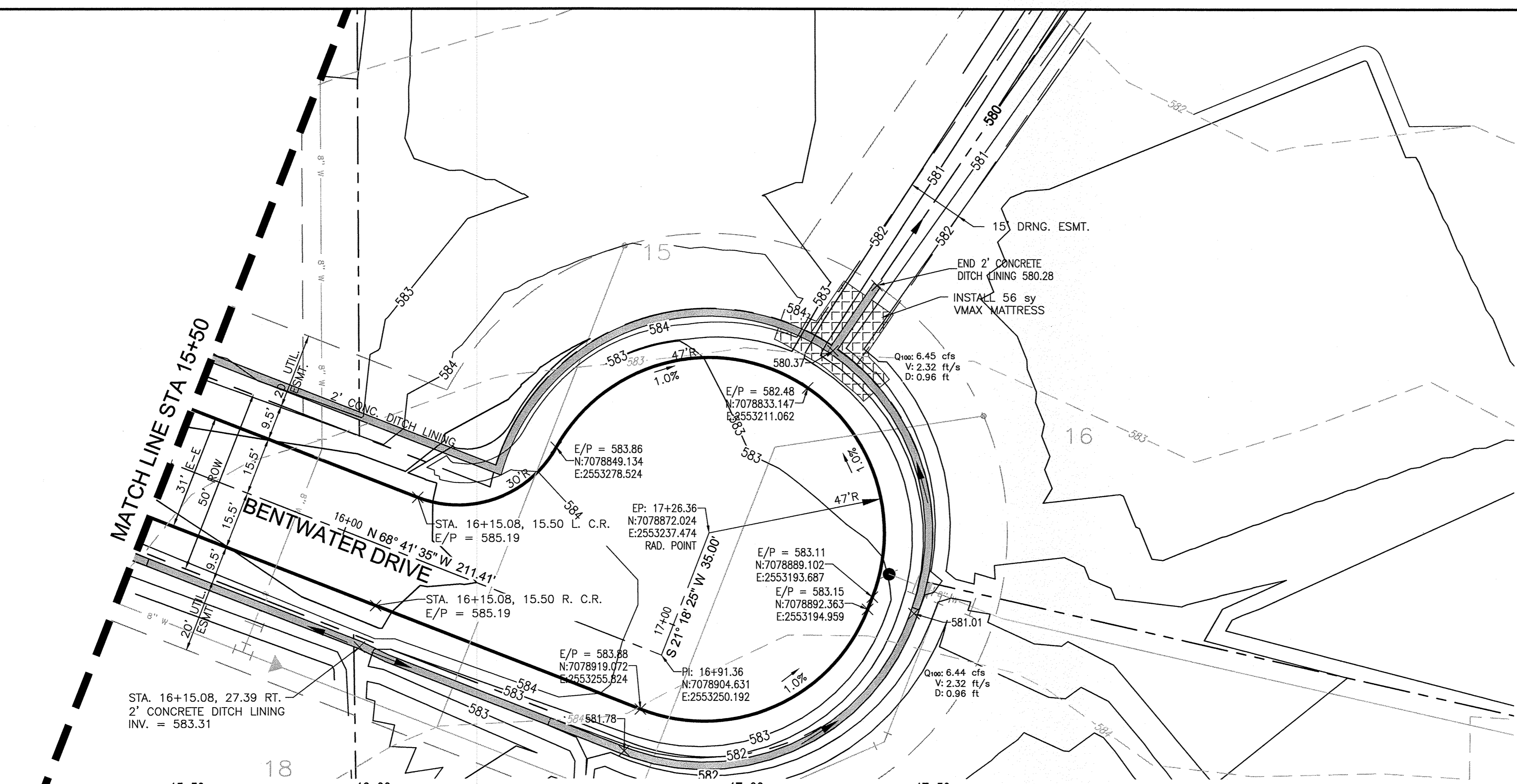
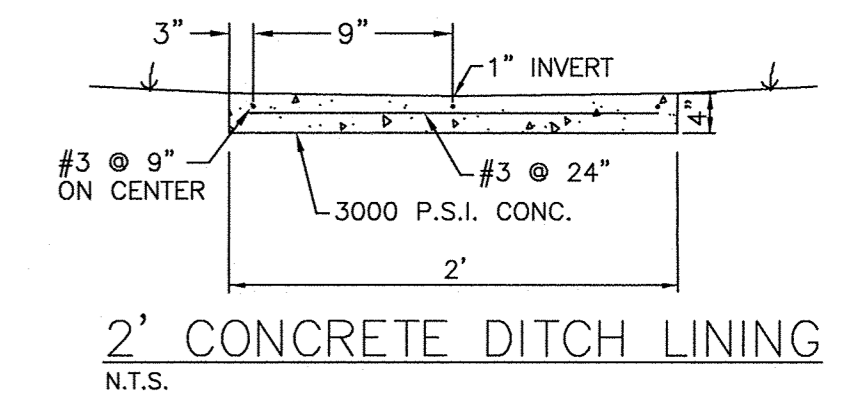
SHEET  
7  
OF  
25



SCALE IN FEET  
H: 1" = 20'  
V: 1" = 4'

**LEGEND**

PP	POWER POLE
EM	ELECTRIC METER
EL	ELECTRIC DISCONNECT
LP	LIGHT POLE
SSMH	SAN. SEWER MANHOLE
WM	WATER METER
FH	FIRE HYDRANT
WV	WATER VALVE
ROW	RIGHT OF WAY
FENCE LINE	FENCE LINE
NIC	NOT IN CONTRACT



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REVISIONS:


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CHECKED: TW DATE:                             
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DWG FILE NAME: 5 INDIAN CREEK CIRCLE STA. 0+00 TO 5+00.DWG

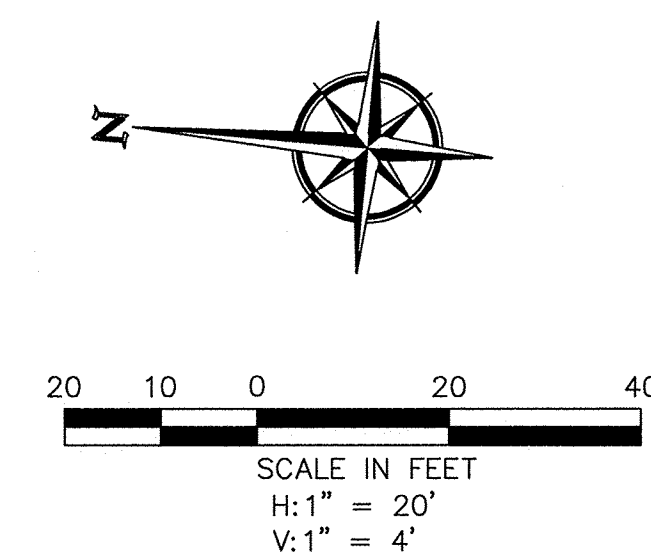
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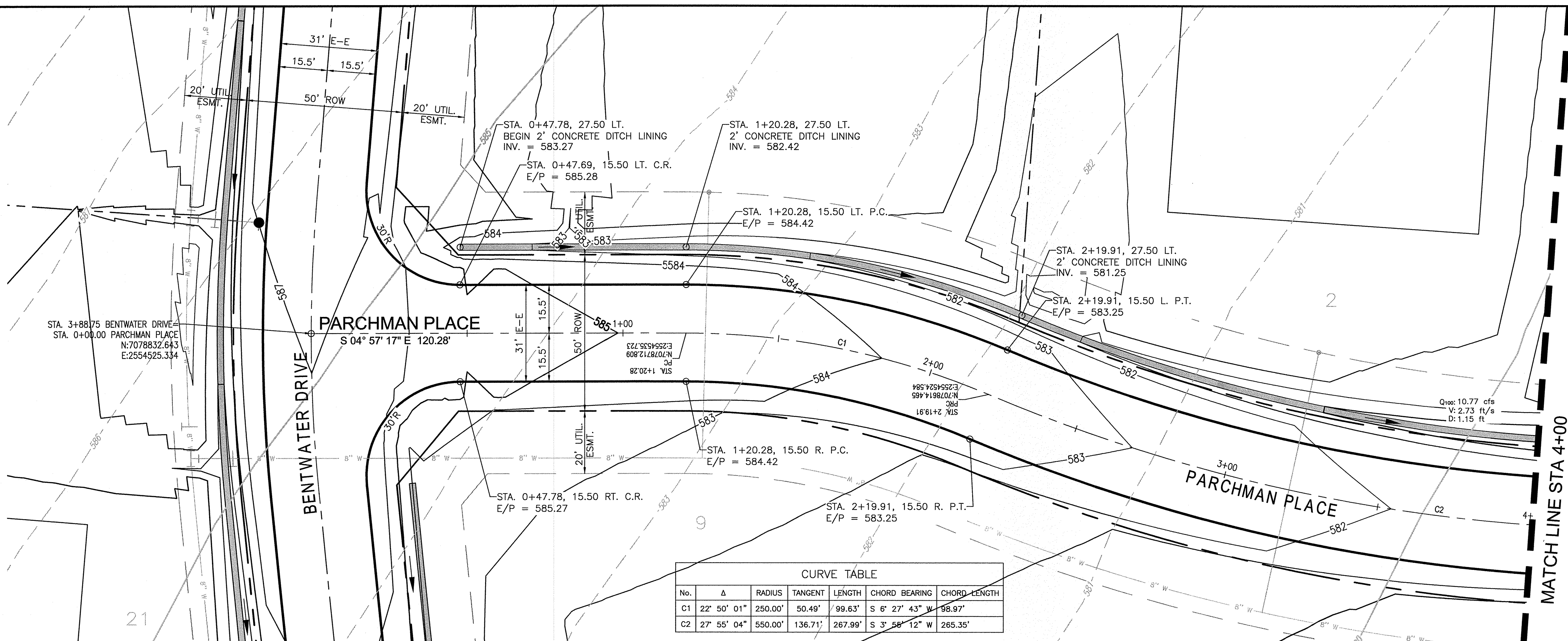
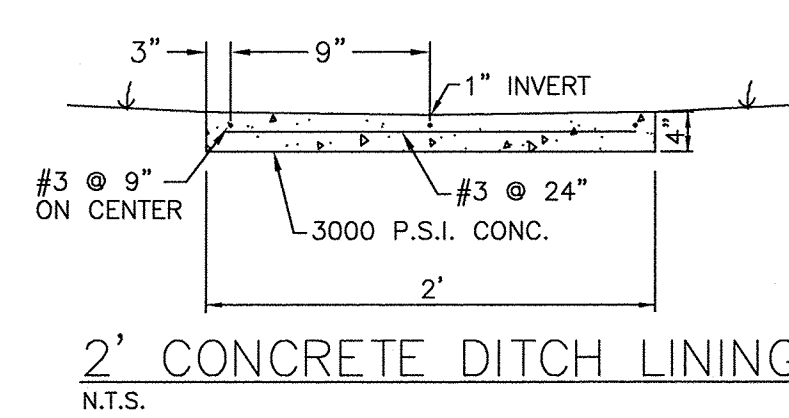
**PAVING PLAN**  
**BENTWATER DRIVE STA. 15+50 TO END**  
**BRISTOL PARK**  
PHASE 1

SHEET  
**8**  
OF  
**25**

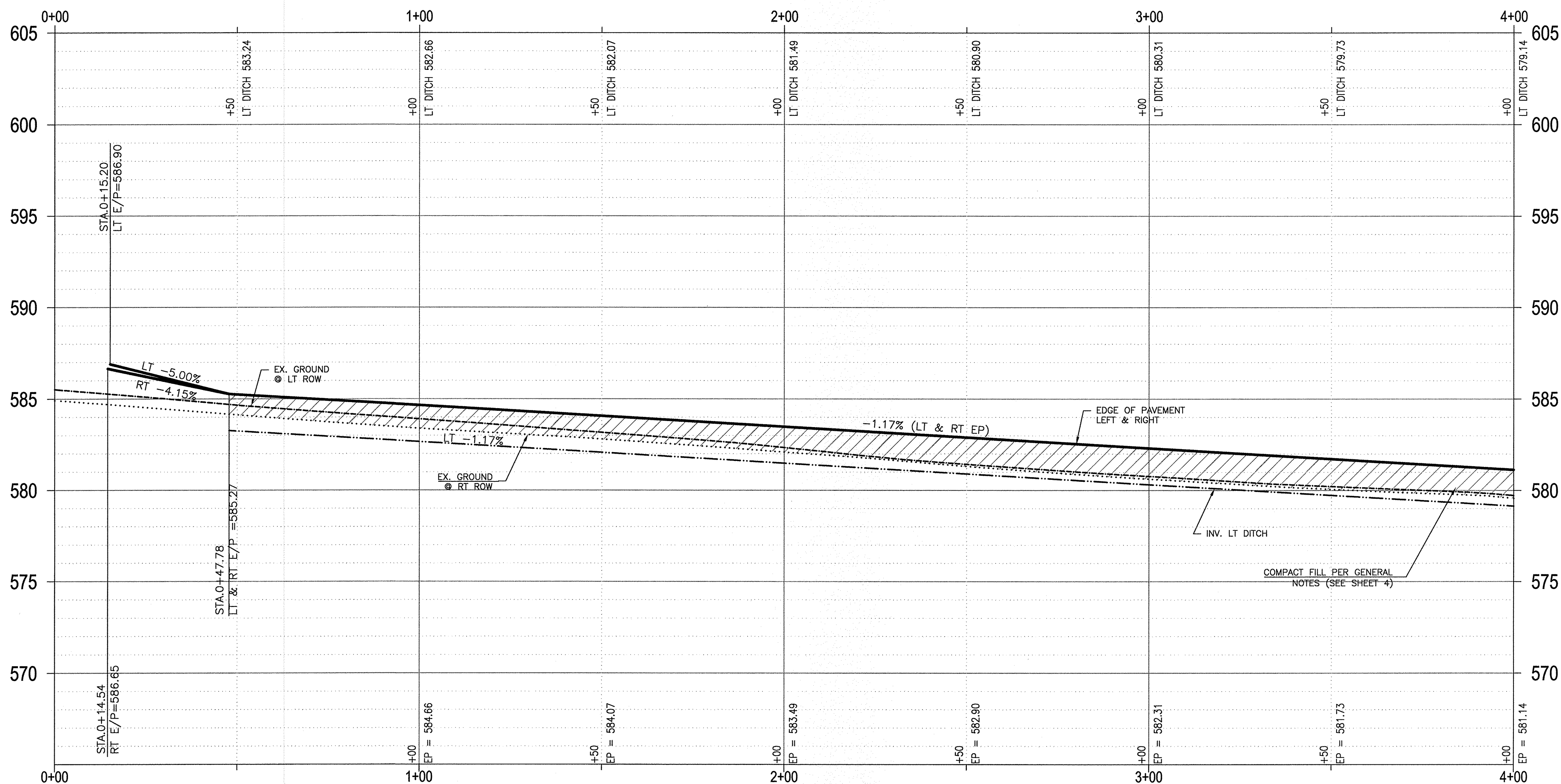




- LEGEND**
- PP POWER POLE
  - EM ELECTRIC METER
  - EL ELECTRIC DISCONNECT
  - LP LIGHT POLE
  - SSMH SAN. SEWER MANHOLE
  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - FENCE LINE
  - NIC NOT IN CONTRACT



CURVE TABLE						
No.	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD LENGTH
C1	22° 50' 01"	250.00'	50.49'	99.63'	S 6° 27' 43" W	98.97'
C2	27° 55' 04"	550.00'	136.71'	267.99'	S 3° 58' 12" W	265.35'



**RECORD DRAWINGS**

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REVISIONS:

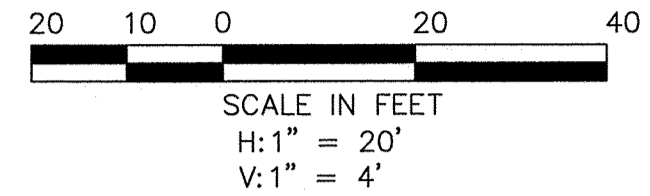
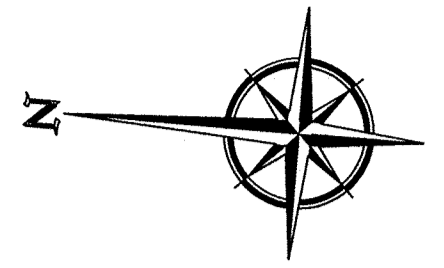
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: JW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 9 WISPERING BROOK.DWG	

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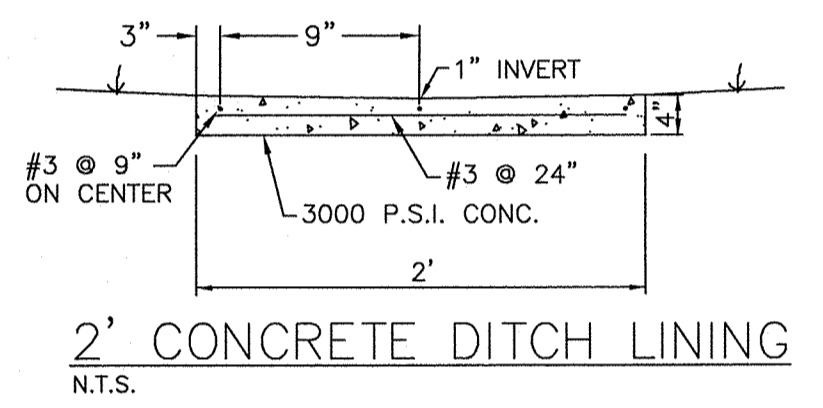


**PAVING PLAN & PROFILE**  
**PARCHMAN PLACE 9 0+00 TO 4+00**  
**BRISTOL PARK**  
PHASE 1

SHEET  
**9**  
OF  
**25**

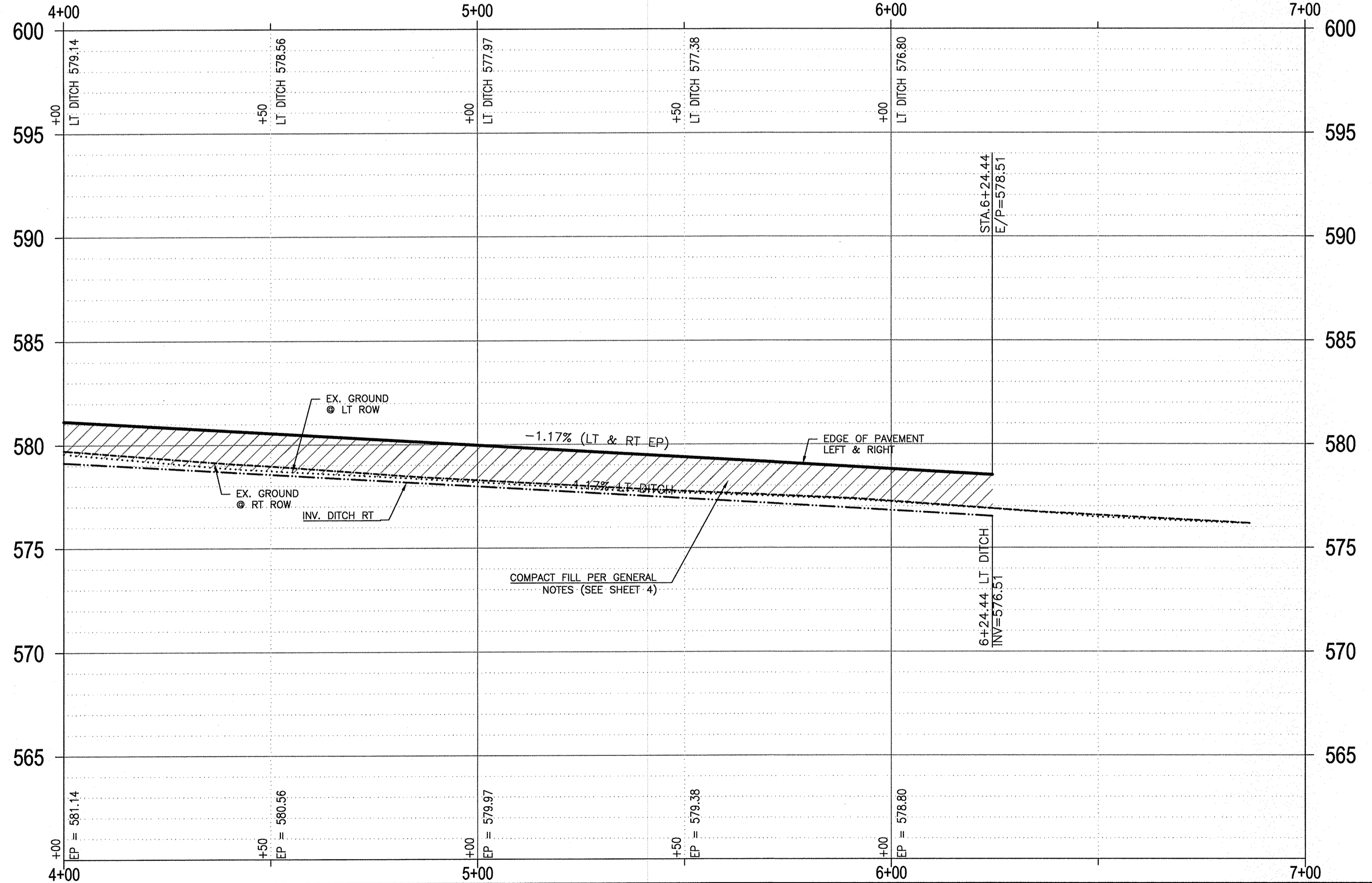
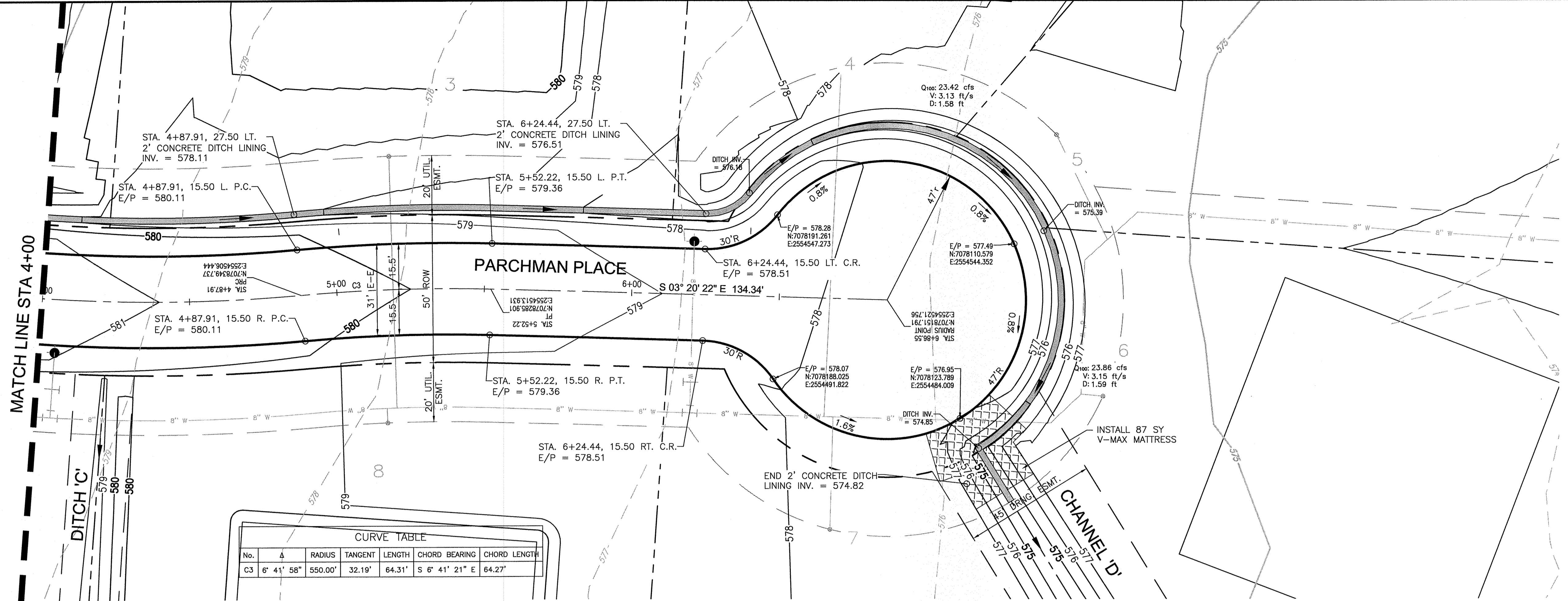


- LEGEND**
- PP POWER POLE
  - EM ELECTRIC METER
  - EL ELECTRIC DISCONNECT
  - LP LIGHT POLE
  - SSMH SAN. SEWER MANHOLE
  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - FENCE LINE FENCE LINE
  - NIC NOT IN CONTRACT



**CURVE TABLE**

No.	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD LENGTH
C3	6° 41' 58"	550.00'	32.19'	64.31'	S 6° 41' 21" E	64.27'



**RECORD DRAWINGS**

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*Todd Winters* 9-18-15  
TODD WINTERS DATE

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**ENGINEERINGCONCEPTS**  
& DESIGN, L.P.

ENGINEERING / PROJECT MANAGEMENT /  
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201 WINDCO CIR, STE 200, WYLIE, TX 75098  
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REVISIONS:

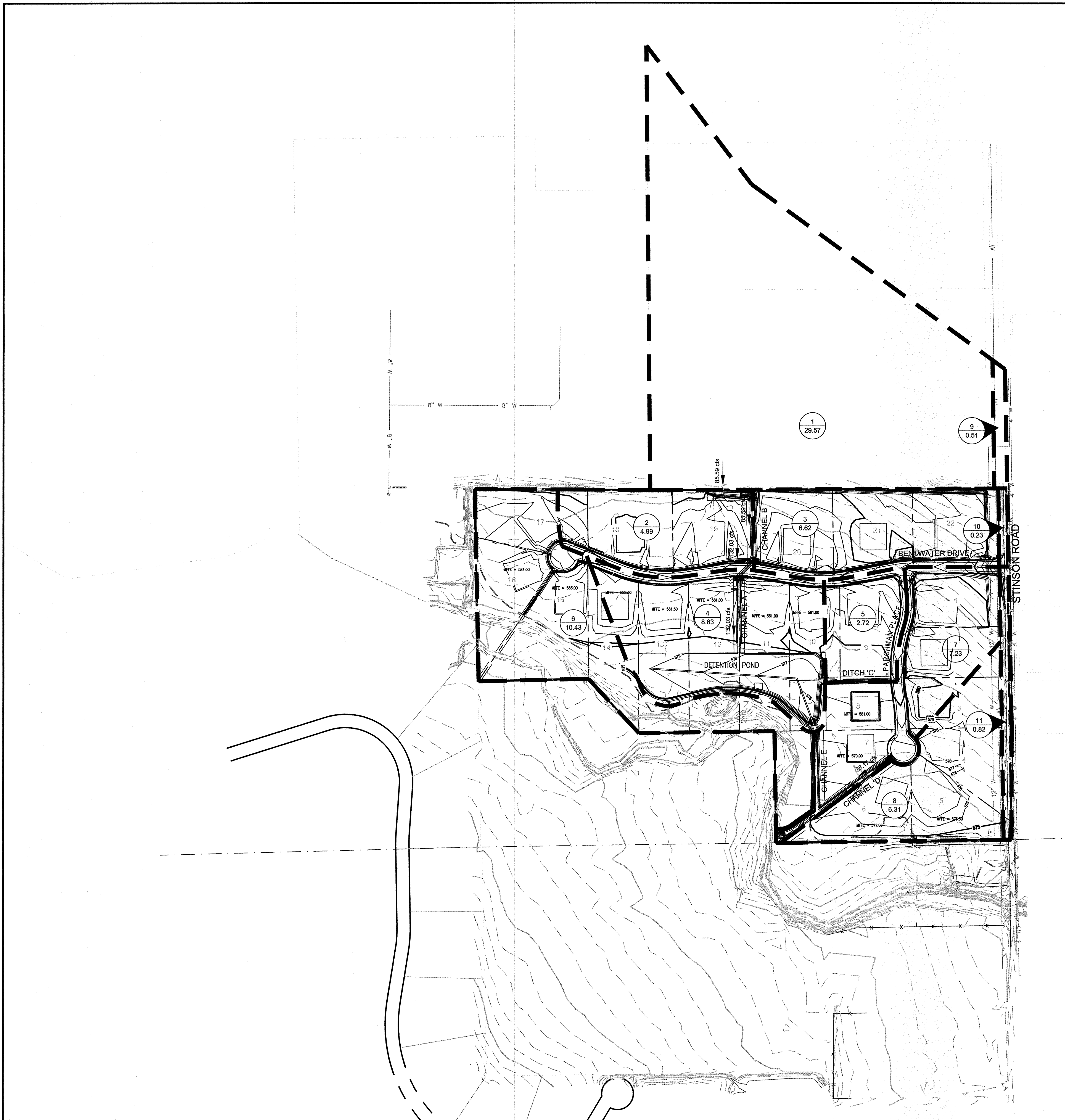
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CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 9 WISPERING BROOK.DWG	

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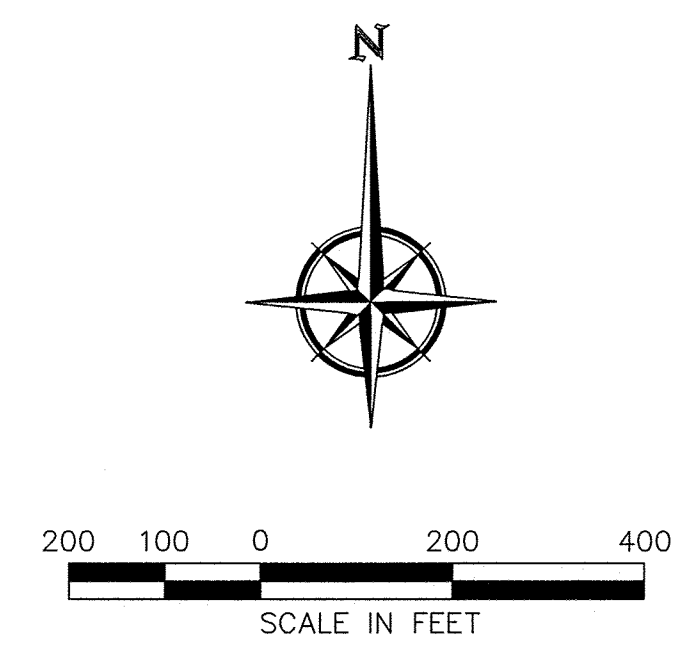
**PAVING PLAN & PROFILE**  
**PARCHMAN PLACE 10 4+00 TO END**  
**BRISTOL PARK**  
PHASE 1

SHEET  
10  
OF  
25



**DRAINAGE CALCULATIONS**

AREA NO.	AREA (ACRES)	C	T <sub>c</sub> (MIN)	I <sub>100</sub> (IN/HR)	Q <sub>100</sub> (CFS)	COMMENTS
1	29.57	0.35	20	8.27	85.59	
2	4.99	0.55	15	9.60	26.35	
3	6.62	0.55	15	9.60	34.95	
4	8.83	0.55	15	9.60	46.62	
5	2.72	0.55	15	9.60	14.36	
6	10.43	0.55	15	9.60	55.07	
7	7.23	0.55	15	9.60	38.17	
8	6.31	0.55	15	9.60	33.32	
9	0.51	0.55	15	9.60	2.69	
10	0.23	0.55	15	9.60	1.21	
11	0.82	0.55	15	9.60	4.33	



**DRIVEWAY CULVERT TABLE**

LOT	Q <sub>100</sub>	SIZE
1	2.80 cfs	18"
2	8.64 cfs	2-18"
3	15.6 cfs	2-21"
4	18.78 cfs	3-18"
5	18.91 cfs	3-18"
6	19.14 cfs	3-18"
7	0.87 cfs	18"
8	0.47 cfs	18"
9	0.49 cfs	18"
10	0.95 cfs	18"
11	1.28 cfs	18"
12	1.42 cfs	18"
13	1.48 cfs	18"
14	0.49 cfs	18"
15	0.10 cfs	18"
16	6.45 cfs	18"
17	6.44 cfs	18"
18	11.88 cfs	2-18"
19	21.13 cfs	2-21"
20	29.00 cfs	3-21"
21	19.47 cfs	2-21"
22	10.26 cfs	2-18"

**LEGEND:**  

 DRAINAGE AREA  
 30.06 ACRES

**NOTE:**  
 DRIVEWAY CULVERTS MUST MEET CITY OF LUCAS STANDARDS AND MAY REQUIRE CONCRETE HEADWALLS.

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**REVISIONS:**

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CHECKED: JW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 12 DETENTION CALCULATIONS.DWG	

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**DRAINAGE AREA MAP  
 BRISTOL PARK  
 PHASE 1**

8313

SHEET  
 11  
 OF  
 25

DETENTION POND VOLUME CALCULATOR MODIFIED RATIONAL METHOD					
2 YEAR FREQUENCY					
DETENTION REQUIRED					
48.02 phase 1 0 phase 2					
Area, acre = 48.02					
Present Conditions			Proposed Conditions		
C	0.35	C	0.55		
Tc	20.00	Tc	15.00		
i (100)	3.86	i (100)	4.50		
Q (100)	64.88	Q (100)	118.85		
Proposed Intensities					
Time	Inflow	Outflow	Storage (cf)	Tc	Intensity
5	55701	38925	16776	5	7.03
10	86364	48656	37708	10	5.45
15	106965	58396	49577	15	4.5
20	122336	68119	54217	20	3.86
30	144521	87581	56840	30	3.04
40	160368	107044	53224	40	2.53
50	172728	126506	46222	50	2.18
60	182553	145969	36584	60	1.92
70	190793	165431	25362	70	1.72
80	198033	184894	14139	80	1.57
90	205372	204356	1016	90	1.44

DETENTION POND VOLUME CALCULATOR MODIFIED RATIONAL METHOD					
100 YEAR FREQUENCY					
DETENTION REQUIRED					
48.02 phase 1 0 phase 2					
Area, acre = 48.02					
Present Conditions			Proposed Conditions		
C	0.35	C	0.55		
Tc	20.00	Tc	15.00		
i (100)	8.30	i (100)	9.60		
Q (100)	139.50	Q (100)	253.55		
Proposed Intensities					
Time	Inflow	Outflow	Storage (cf)	Tc	Intensity
5	118057	83699	34358	5	14.9
10	183821	104624	79197	10	11.6
15	228191	125548	102843	15	9.6
20	263054	146473	116581	20	8.3
30	313763	188322	125440	30	6.6
40	348625	230172	118453	40	5.5
50	380318	272021	108297	50	4.8
60	408842	313871	94972	60	4.3
70	421520	355720	65799	70	3.8
80	443705	397570	46135	80	3.5
90	456382	439419	16963	90	3.2

### DETENTION POND

TOTAL DRAINAGE AREA = 48.02 ACRES  
 EXISTING C FACTOR, C=0.35  
 DEVELOPED C FACTOR, C=0.55  
 AREA TO POND = 23.39 ACRES  
 BY-PASS AREA = 24.63 ACRES

ALLOWABLE RELEASE, 2 YEAR (Q= CIA)  
 2 YEAR 20 MINUTE INTENSITY I=3.86  
 C=0.35  
 Q(2)= 31.60 CFS (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 5 YEAR (Q= CIA)  
 5 YEAR 20 MINUTE INTENSITY I=4.86  
 C=0.35  
 Q(5)= 39.8 CFS (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 10 YEAR (Q= CIA)  
 10 YEAR 20 MINUTE INTENSITY I=5.7  
 C=0.35  
 Q(10)= 46.7 CFS (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 25 YEAR (Q= CIA)  
 25 YEAR 20 MINUTE INTENSITY I=6.7  
 C=0.35  
 Q(25)= 54.8 CFS (ALLOWABLE RELEASE)

ALLOWABLE RELEASE, 100 YEAR (Q= CIA)  
 100 YEAR 20 MINUTE INTENSITY I=8.3  
 C=0.35  
 Q(100)= 67.9 CFS (ALLOWABLE RELEASE)

### Detention Pond Volume Calculations

Contour Elevation	Surface Area (sf)	Average Area	Cumulative Volume (cf)
575.50	200	2,293	1,147
576.00	4,387	17,440	18,587
577.00	30,493	45,726	64,313
578.00	60,958	77,876	142,189
579.00	94,793		

### Outlet Structure Calculations 2 Year Discharge @ Max Water Surface

Q total = 31.6 cfs  
 Storage Elevation = 577.60  
 Invert Elevation = 575.30  
 Width = 2.5

WEIR  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 2.30 {H = Storage elev. minus FL of weir}  
 L = 2.5  
 Q = 29.06 cfs

Weir opening 2.5 feet x 2.30' @ FL 577.60

### Outlet Structure Calculations 5 Year Discharge @ Max Water Surface

Q total = 39.8 cfs  
 Storage Elevation = 578.11  
 Invert Elevation = 575.30  
 Width = 2.5

WEIR  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 2.81 {H = Storage elev. minus FL of weir}  
 L = 2.5  
 Q = 39.25 cfs

Weir opening 2.5 feet x 2.81' @ FL 578.11

### Outlet Structure Calculations 10 Year Discharge @ Max Water Surface

Q total = 46.7 cfs Allowable  
 Storage Elevation = 578.26  
 Invert Elevation = 575.30  
 Width = 2.5

WEIR  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 2.96 {H = Storage elev. minus FL of weir}  
 L = 2.5  
 Q = 42.43 cfs

Weir opening 2.5 feet x 2.96' @ FL 578.26

### Outlet Structure Calculations 25 Year Discharge @ Max Water Surface

Q total = 54.8 cfs  
 Storage Elevation = 578.46  
 Invert Elevation = 575.30  
 Width Weir (1) = 2.5  
 Width Weir (2) = 10.0

WEIR (1)  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 3.16 {H = Storage elev. minus FL of weir}  
 L = 2.5  
 Q = 46.81 cfs

WEIR (2)  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 0.20 {H = Storage elev. minus FL of weir}  
 L = 10.0  
 Q = 2.98 cfs

Weir opening 2.5 feet x 3.16' @ FL 578.46      Weir opening 10.0 feet x 0.20' @ FL 578.46

### Outlet Structure Calculations 100 Year Discharge @ Max Water Surface

Q total = 67.9 cfs  
 Storage Elevation = 578.78  
 Invert Elevation = 575.30  
 Width Weir (1) = 2.5  
 Width Weir (2) = 10.0

WEIR (1)  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 3.48 {H = Storage elev. minus FL of weir}  
 L = 2.5  
 Q = 54.09 cfs

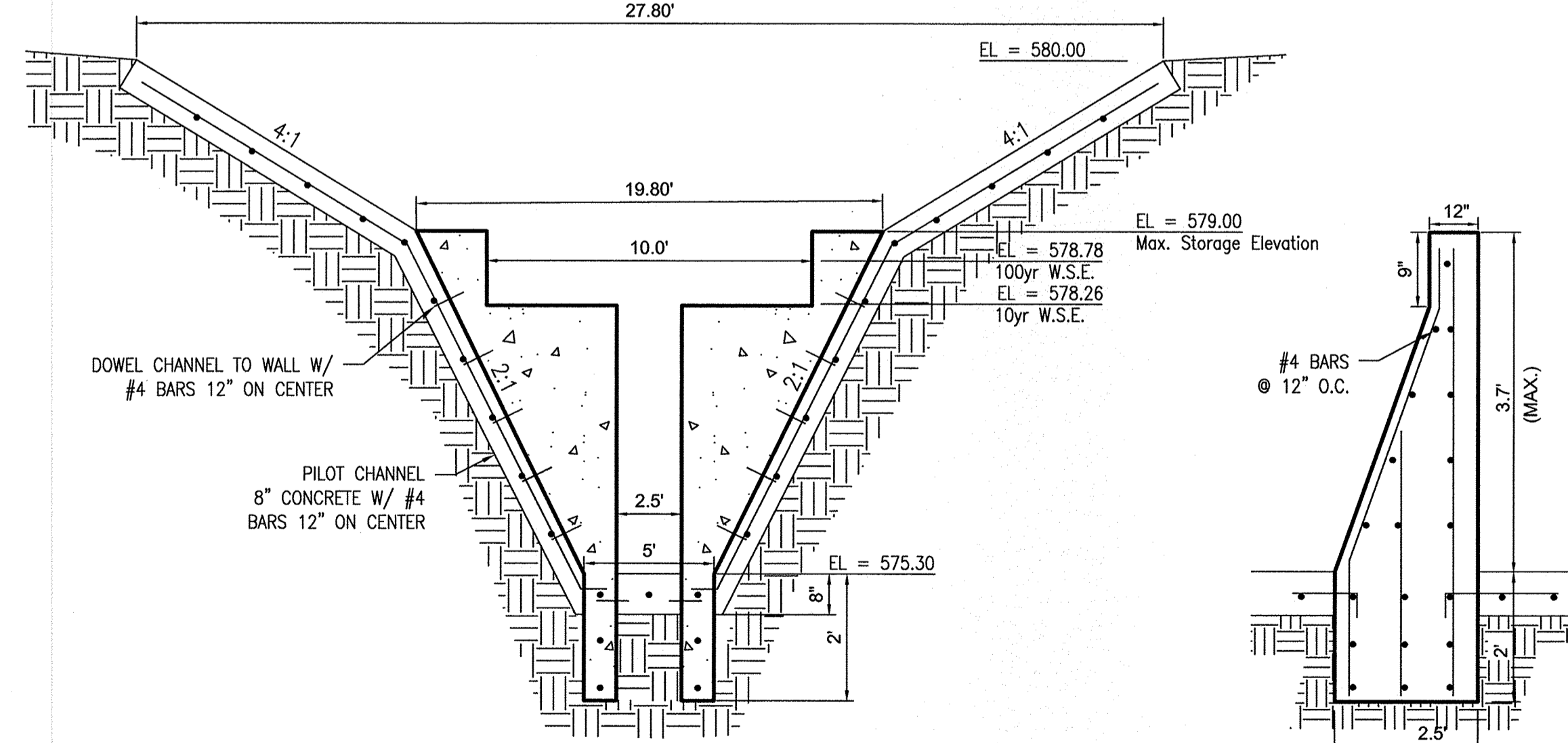
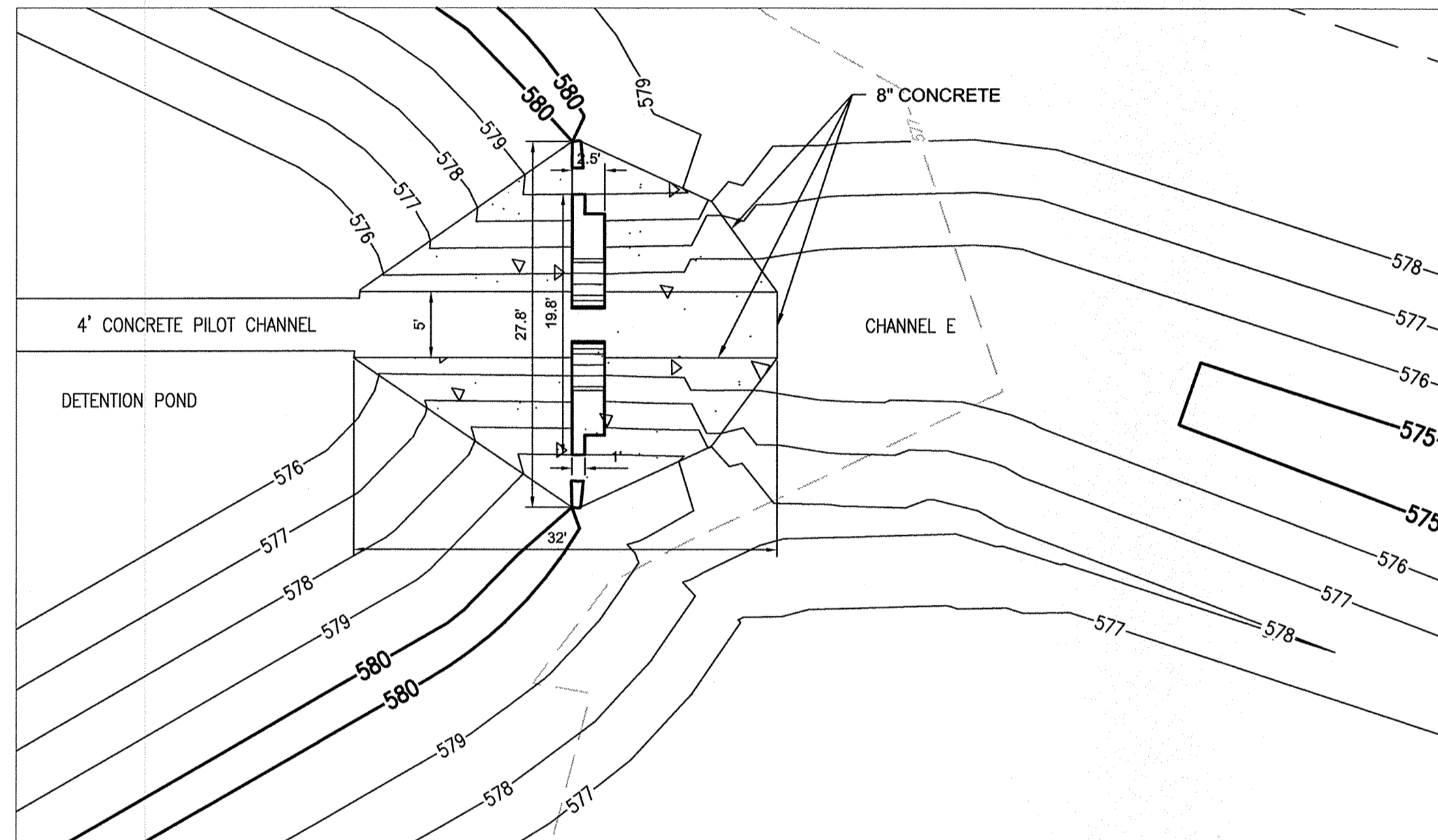
WEIR (2)  
 $Q = C L (H)^{3/2}$   
 C = 3.333  
 H = 0.52 {H = Storage elev. minus FL of weir}  
 L = 10.0  
 Q = 12.50 cfs

Weir opening 2.5 feet x 3.48' @ FL 578.78      Weir opening 10.0 feet x 0.52' @ FL 578.78

DETENTION POND VOLUME CALCULATOR MODIFIED RATIONAL METHOD					
5 YEAR FREQUENCY					
DETENTION REQUIRED					
48.02 phase 1 0 phase 2					
Area, acre = 48.02					
Present Conditions			Proposed Conditions		
C	0.35	C	0.55		
Tc	20.00	Tc	15.00		
i (100)	4.86	i (100)	5.63		
Q (100)	81.68	Q (100)	148.69		
Proposed Intensities					
Time	Inflow	Outflow	Storage (cf)	Tc	Intensity
5	68299	49009	19290	5	8.62
10	107281	61262	46020	10	6.77
15	133825	73514	60311	15	5.63
20	154029	85766	68263	20	4.86
30	183028	110271	72758	30	3.85
40	204104	134775	69329	40	3.22
50	220268	159280	60988	50	2.78
60	233896	183785	50111	60	2.48
70	245147	208289	36858	70	2.21
80	256081	232794	23287	80	2.02
90	263846	257298	6548	90	1.85

DETENTION POND VOLUME CALCULATOR MODIFIED RATIONAL METHOD					
10 YEAR FREQUENCY					
DETENTION REQUIRED					
48.02 phase 1 0 phase 2					
Area, acre = 48.02					
Present Conditions			Proposed Conditions		
C	0.35	C	0.55		
Tc	20.00	Tc	15.00		
i (100)	5.70	i (100)	6.69		
Q (100)	95.80	Q (100)	174.31		
Proposed Intensities					
Time	Inflow	Outflow	Storage (cf)	Tc	Intensity
5	80025	57480	22545	5	10.1
10	123603	71850	51754	10	7.8
15	156881	86220	70681	15	6.6
20	180651	100590	80061	20	5.7
30	213929	129330	84599	30	4.5
40	240868	158070	82798	40	3.8
50	261469	186810	74659	50	3.3
60	268223	215550	60879	60	2.9
70	284408	244290	44118	70	2.6
80	304255	273030	31225	80	2.4
90	313763	301770	11993	90	2.2

DETENTION POND VOLUME CALCULATOR MODIFIED RATIONAL METHOD					
25 YEAR FREQUENCY					
DETENTION REQUIRED					
48.02 phase 1 0 phase 2					
Area, acre = 48.02					
Present Conditions			Proposed Conditions		
C	0.35	C	0.55		
Tc	20.00	Tc	15.00		
i (100)	6.70	i (100)	7.70		
Q (100)	112.61	Q (100)	203.36		
Proposed Intensities					
Time	Inflow	Outflow	Storage (cf)	Tc	Intensity
5	95080	67564	27515	5	12.0
10	147373	84455	62918	10	9.3
15	183028	101346	81682	15	7.7
20	212344	118237	94107	20	6.7
30	251961	152019	99942	30	5.3
40	278900	185801	93099	40	4.4
50	301085	219583	81502	50	3.8
60	323271	253365	69905	60	3.4
70	343871	287148	59124	70	3.1
80	354964	320930	34034	80	2.8
90	370810	354712	16099	90	2.6



DETENTION POND OUTLET DETAIL  
N.T.S.

**RECORD DRAWINGS**

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*Todd Winters* 9-18-15  
 TODD WINTERS DATE

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 An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
 Elevation 569.65'

**ENGINEERING CONCEPTS & DESIGN, L.P.**

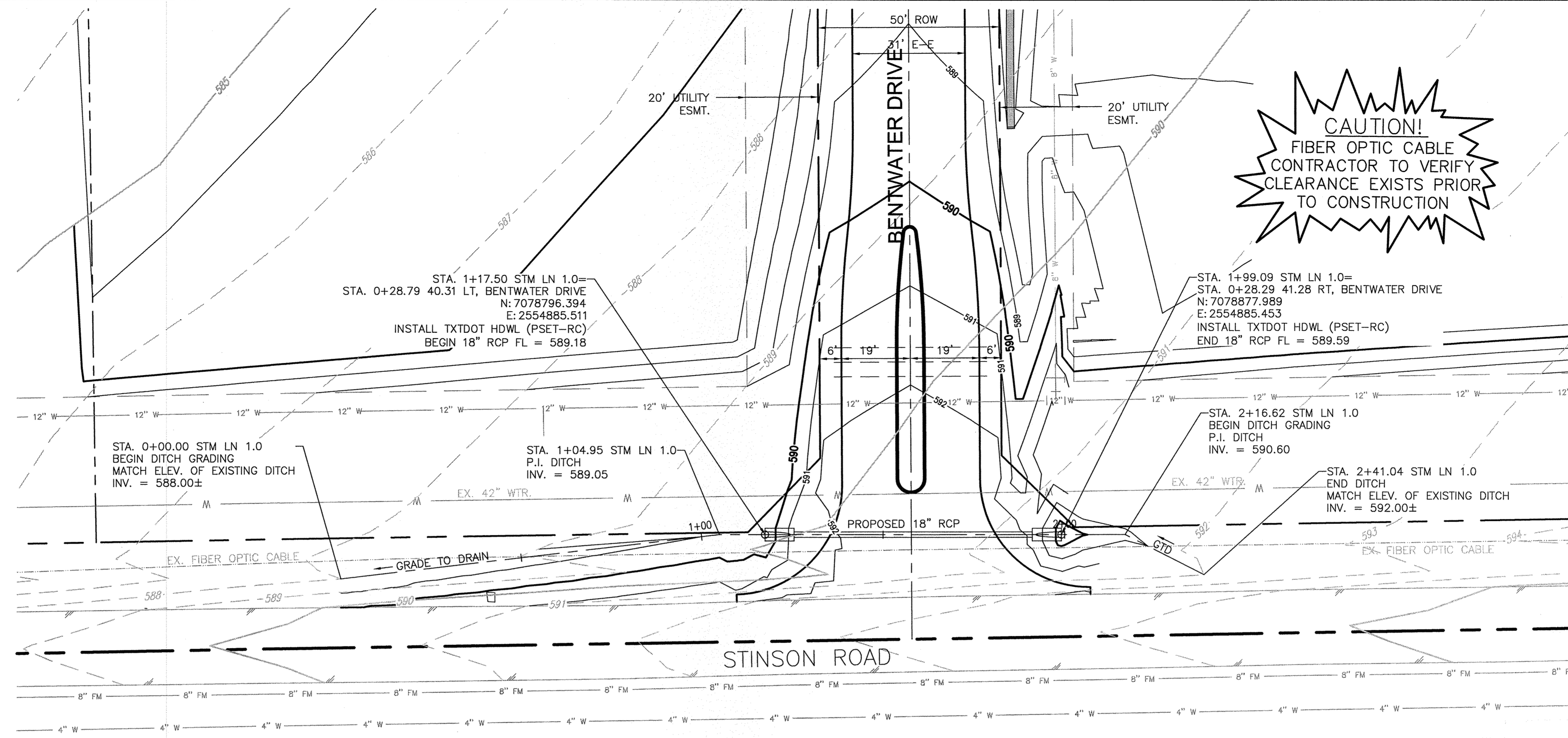
ENGINEERING / PROJECT MANAGEMENT /  
 CONSTRUCTION SERVICES - FIRM REG. #F-001145  
 201 WINDCO CIR, STE 200, WYLIE, TX 75098  
 972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 12 DETENTION CALCULATIONS.DWG	

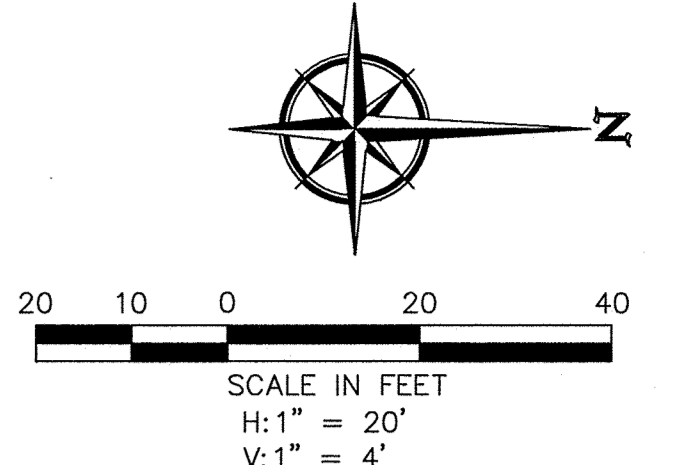
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 TODD D. WINTERS, P.E. 87085

**DETENTION CALCULATIONS**  
**BRISTOL PARK**  
**PHASE 1**  
 8313

SHEET  
 12  
 OF  
 25

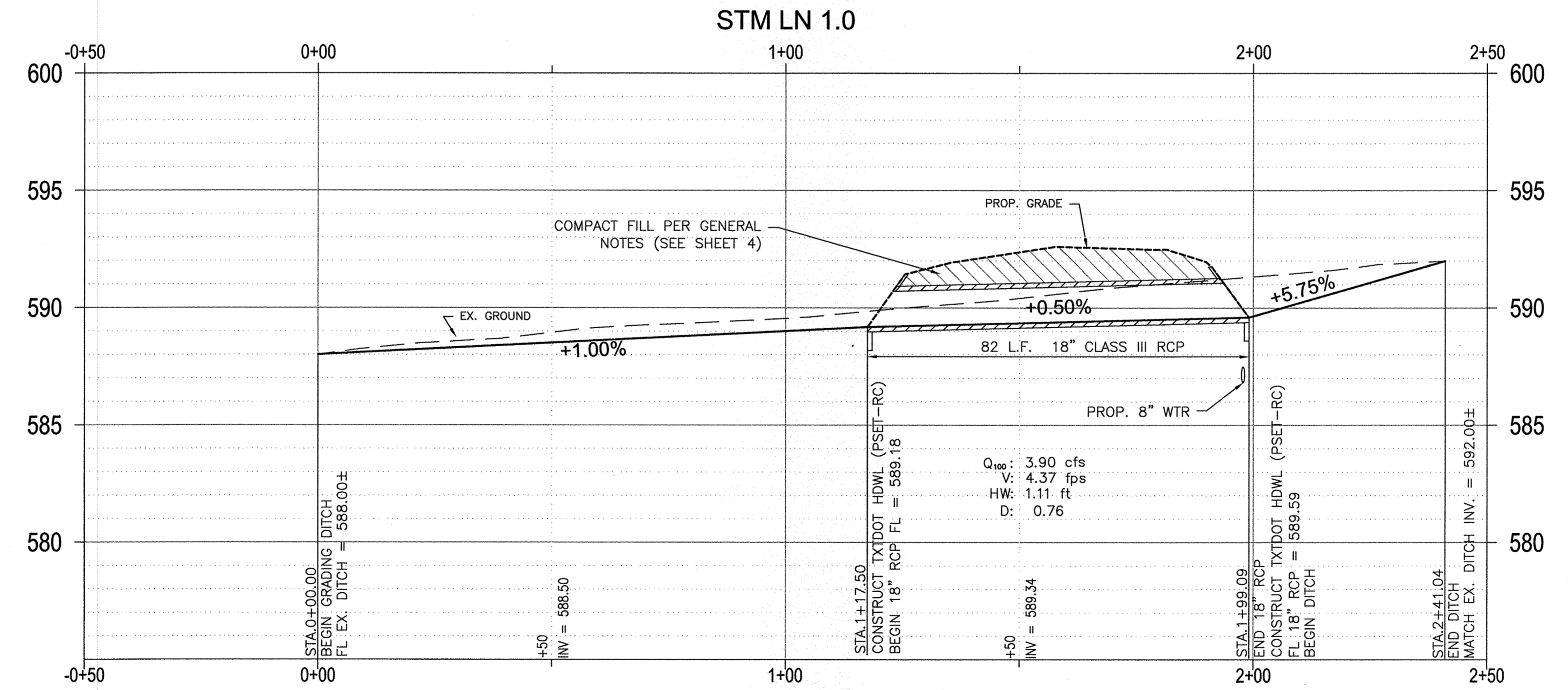


**CAUTION!**  
FIBER OPTIC CABLE  
CONTRACTOR TO VERIFY  
CLEARANCE EXISTS PRIOR  
TO CONSTRUCTION



**LEGEND**

PP	POWER POLE
EM	ELECTRIC METER
EL	ELECTRIC DISCONNECT
LP	LIGHT POLE
SSMH	SAN. SEWER MANHOLE
WM	WATER METER
FH	FIRE HYDRANT
WV	WATER VALVE
ROW	RIGHT OF WAY
FL	FENCE LINE
NIC	NOT IN CONTRACT



**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-15  
TODD WINTERS DATE

**BENCHMARK:**  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

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CONSTRUCTION SERVICES - FIRM REG. #F-001145  
201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

**REVISIONS:**

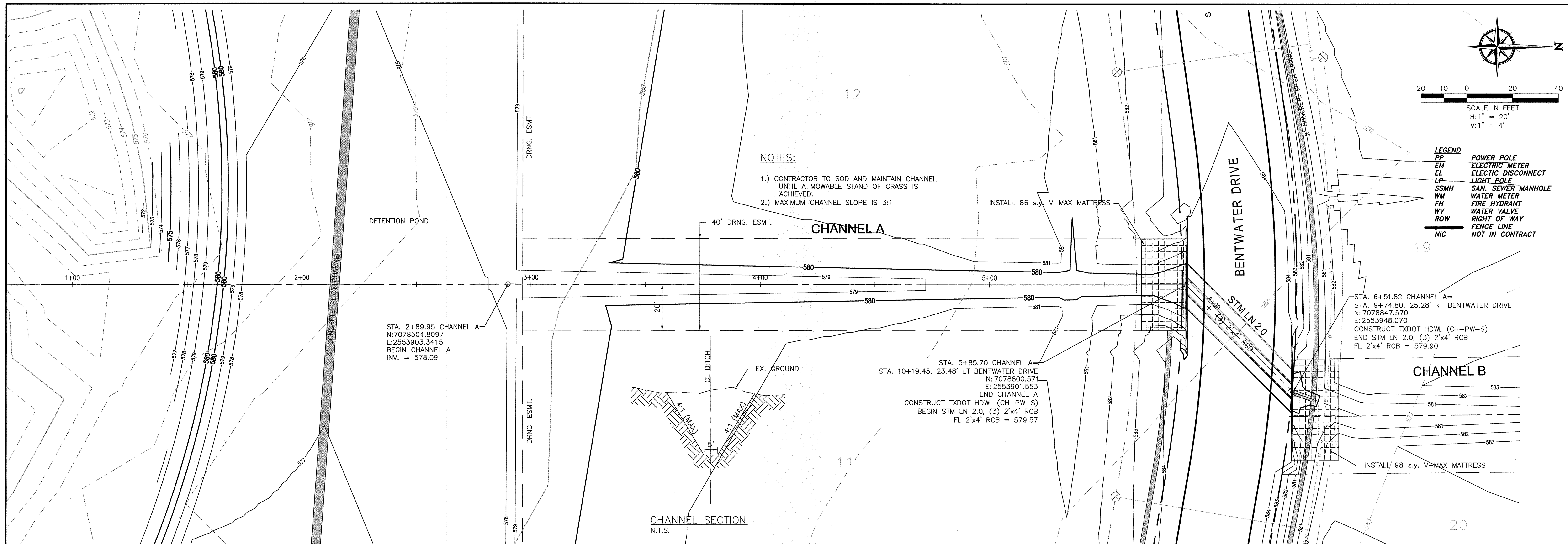
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CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 13 STM LN 1.0.DWG	

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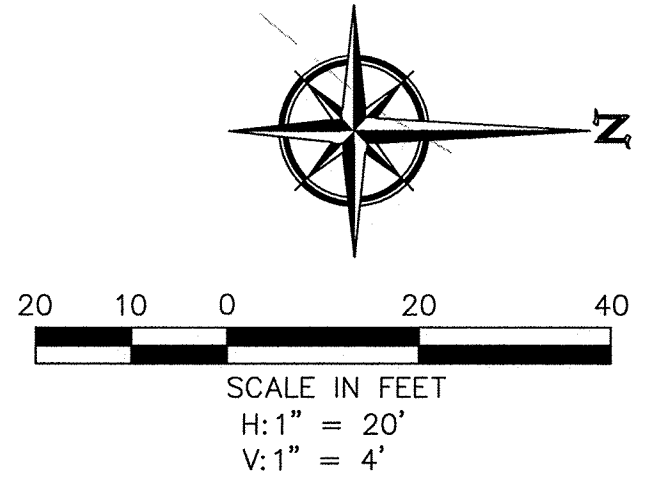
**STORM SEWER PLAN & PROFILE**  
STM LN 1.0  
BRISTOL PARK  
PHASE 1

SHEET 13 OF 25



**NOTES:**

- 1.) CONTRACTOR TO SOD AND MAINTAIN CHANNEL UNTIL A MOWABLE STAND OF GRASS IS ACHIEVED.
- 2.) MAXIMUM CHANNEL SLOPE IS 3:1



**LEGEND**

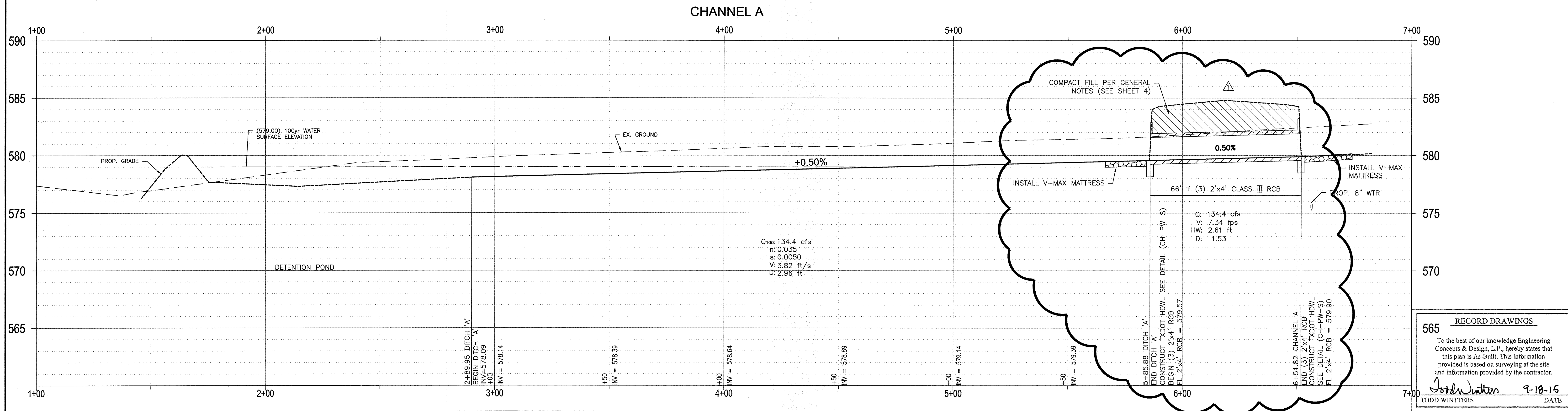
PP	POWER POLE
EM	ELECTRIC METER
ED	ELECTRIC DISCONNECT
LP	LIGHT POLE
SSMH	SAN. SEWER MANHOLE
WM	WATER METER
FH	FIRE HYDRANT
WV	WATER VALVE
ROW	RIGHT OF WAY
—	FENCE LINE
NIC	NOT IN CONTRACT

STA. 2+89.95 CHANNEL A  
 N: 7078504.8097  
 E: 2553903.3415  
 BEGIN CHANNEL A  
 INV. = 578.09

STA. 5+85.70 CHANNEL A  
 STA. 10+19.45, 23.48' LT BENTWATER DRIVE  
 N: 7078800.571  
 E: 2553901.555  
 END CHANNEL A  
 CONSTRUCT TXDOT HDWL (CH-PW-S)  
 BEGIN STM LN 2.0, (3) 2'x4' RCB  
 FL 2'x4' RCB = 579.57

STA. 6+51.82 CHANNEL A =  
 STA. 9+74.80, 25.28' RT BENTWATER DRIVE  
 N: 7078847.570  
 E: 2553948.070  
 CONSTRUCT TXDOT HDWL (CH-PW-S)  
 END STM LN 2.0, (3) 2'x4' RCB  
 FL 2'x4' RCB = 579.90

**CHANNEL SECTION**  
N.T.S.



**RECORD DRAWINGS**

565

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-16  
 TODD WINTERS DATE

**BENCHMARK:**  
 An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
 Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

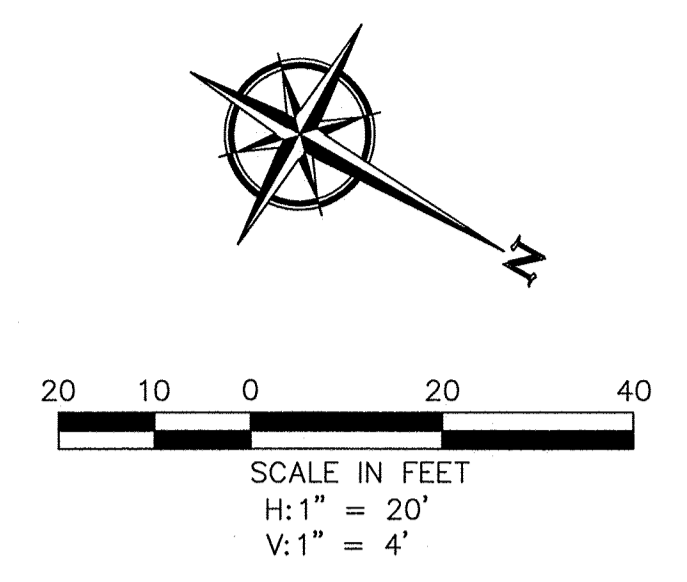
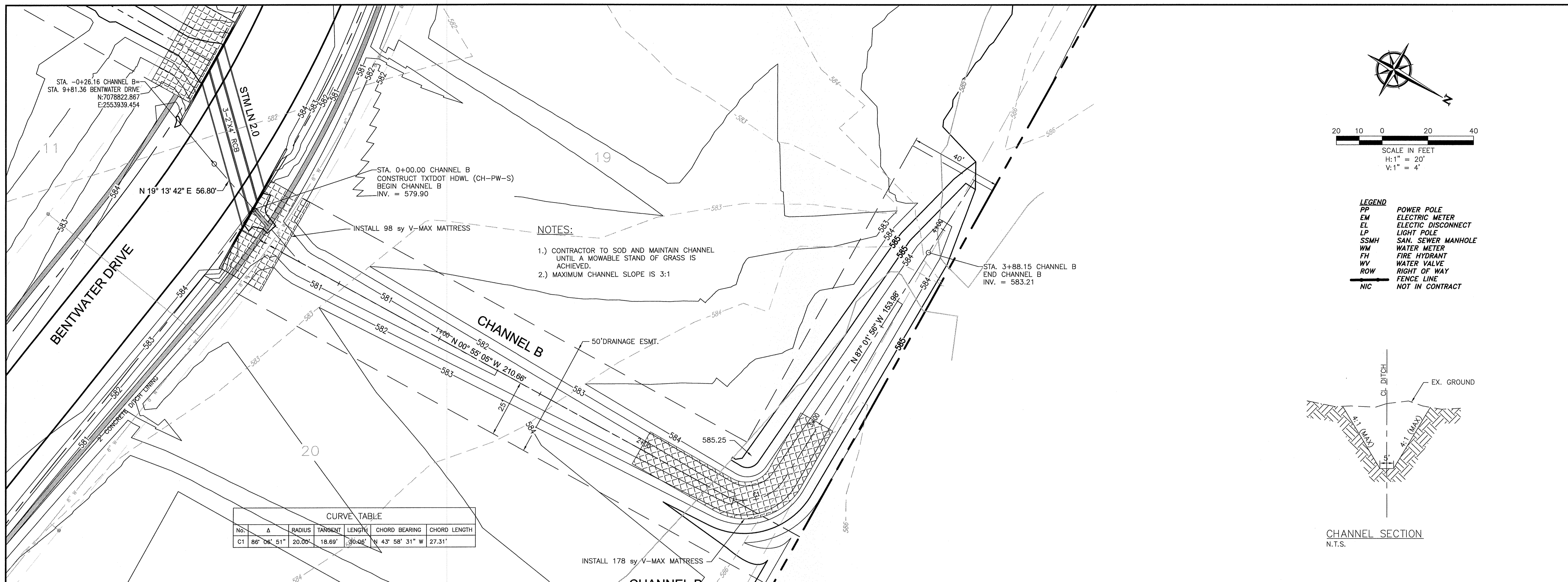
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 201 WINDCO CIR, STE 200, WYLIE, TX 75098  
 972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
8/27/2014	REVISED STM LN 2.0
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 14 CHANNEL A.DWG	

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**STORM SEWER PLAN & PROFILE**  
**CHANNEL A**  
**BRISTOL PARK**  
 PHASE I

SHEET 14 OF 25



**LEGEND**

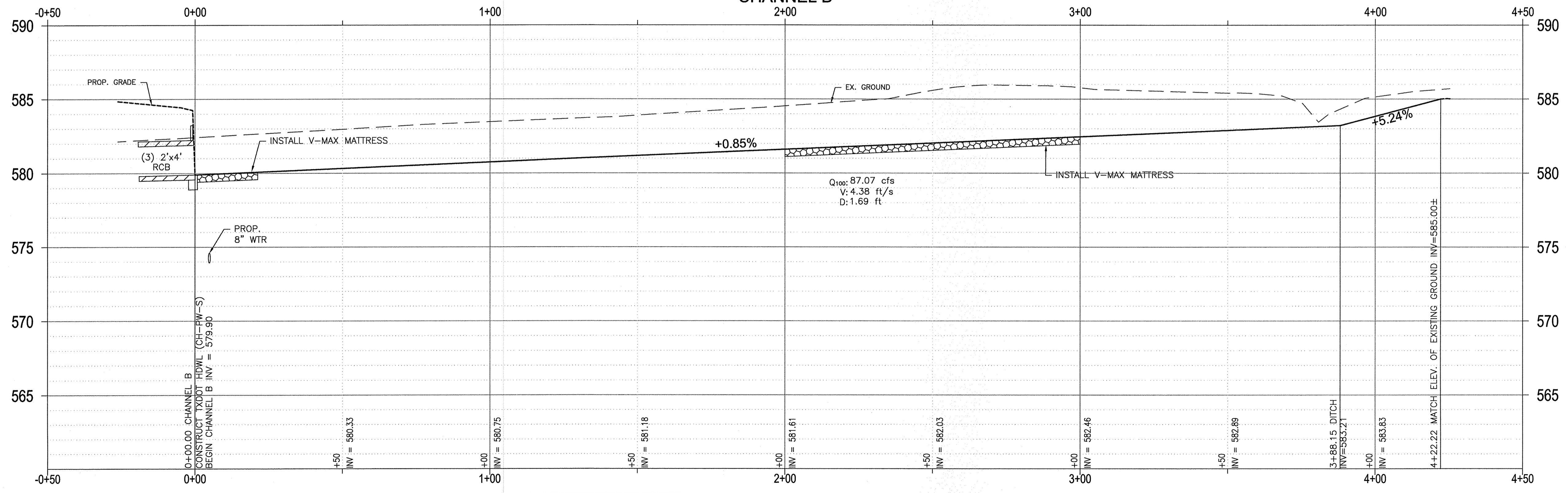
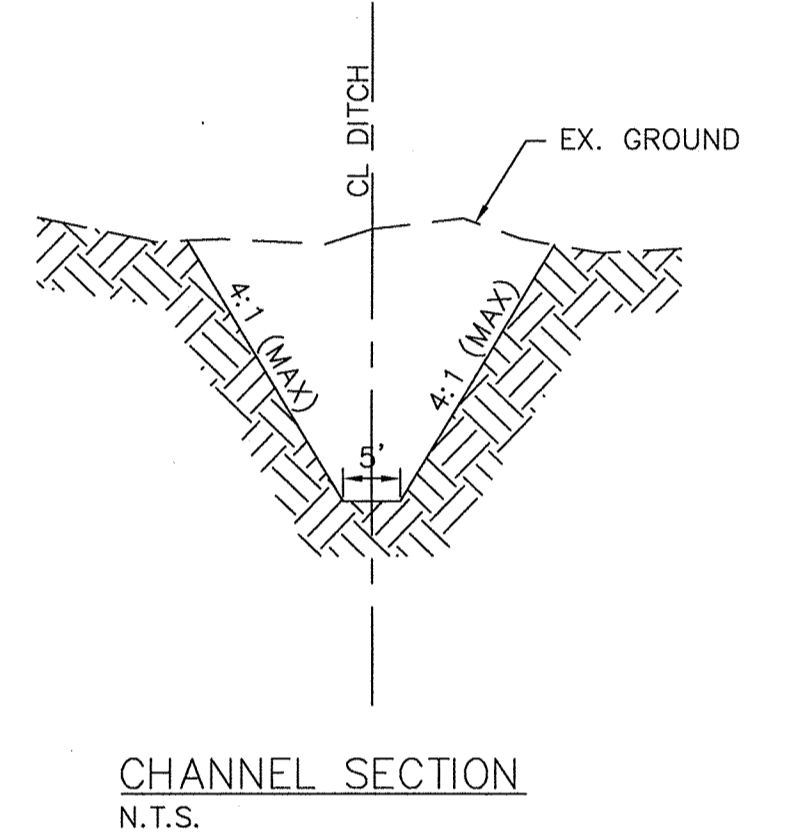
PP	POWER POLE
EM	ELECTRIC METER
EL	ELECTRIC DISCONNECT
LP	LIGHT POLE
SSMH	SAN. SEWER MANHOLE
WM	WATER METER
FH	FIRE HYDRANT
WV	WATER VALVE
ROW	RIGHT OF WAY
---	FENCE LINE
NIC	NOT IN CONTRACT

**NOTES:**

- 1.) CONTRACTOR TO SOD AND MAINTAIN CHANNEL UNTIL A MOWABLE STAND OF GRASS IS ACHIEVED.
- 2.) MAXIMUM CHANNEL SLOPE IS 3:1

**CURVE TABLE**

No.	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD LENGTH
C1	86° 06' 51"	20.00'	18.69'	30.06'	N 43° 58' 31" W	27.31'



**RECORD DRAWINGS**

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*Todd Winters* 9-18-15  
 TODD WINTERS DATE

**BENCHMARK:**  
 An "x" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
 Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

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**REVISIONS:**

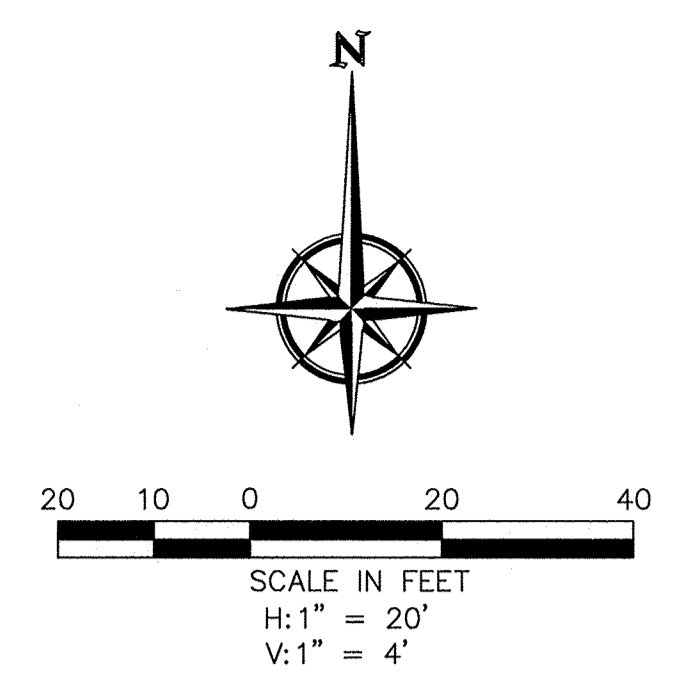
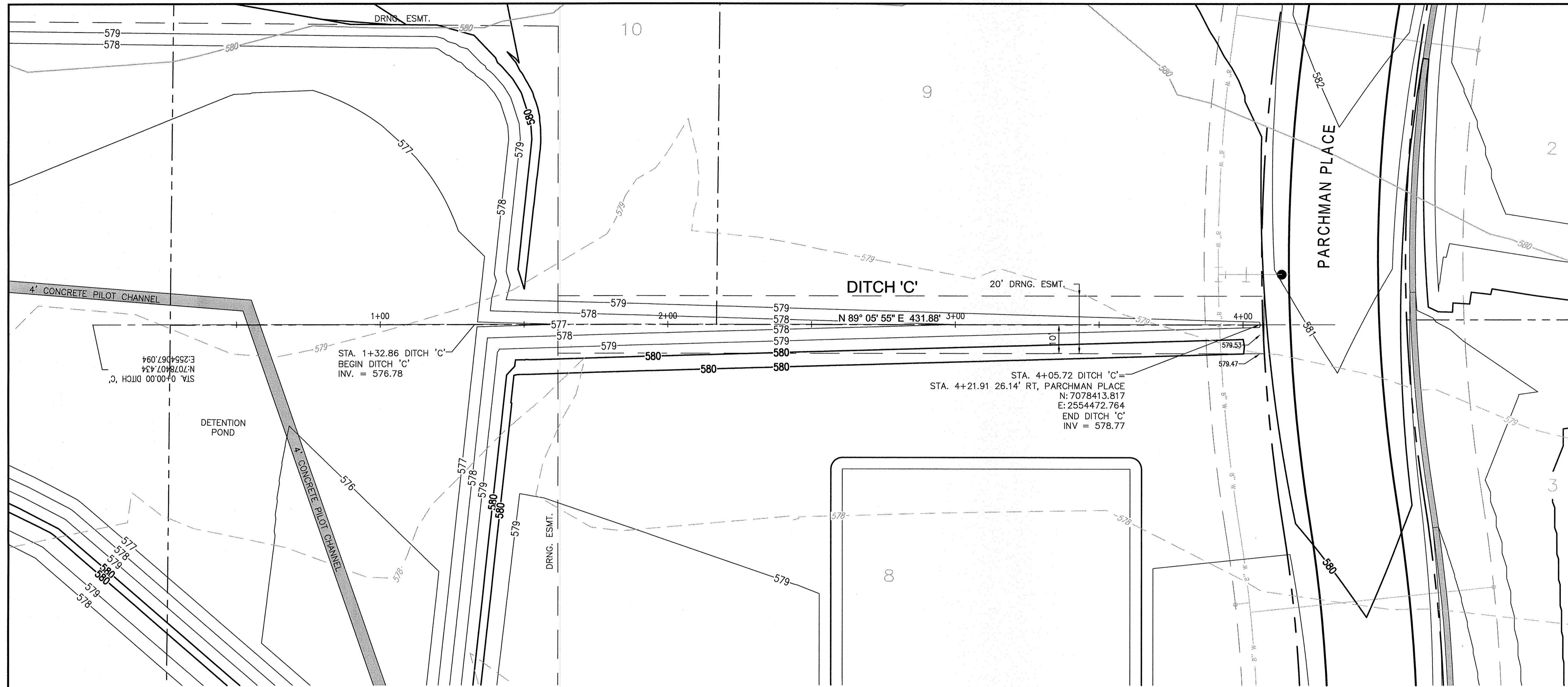
8/27/2014	LOWERED ROAD OVER CHANNEL
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 15 CHANNEL B.DWG	

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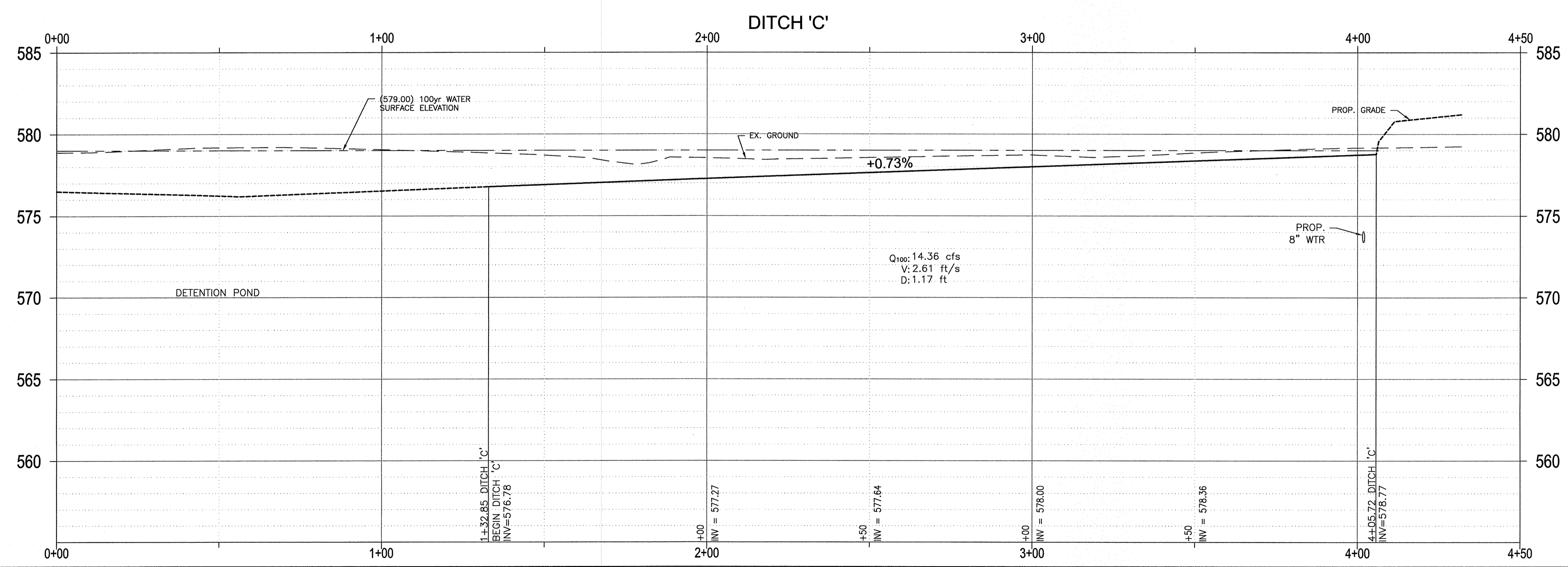
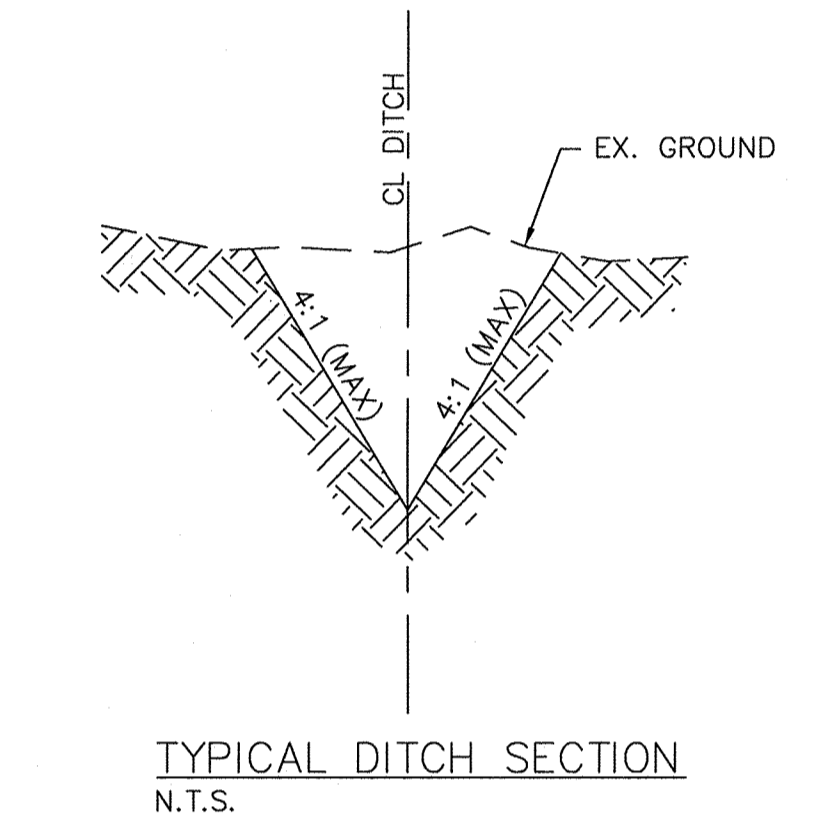


**STORM SEWER PLAN & PROFILE**  
**CHANNEL B**  
**BRISTOL PARK**  
 PHASE I

SHEET 15 OF 25



- LEGEND**
- PP POWER POLE
  - EM ELECTRIC METER
  - EL ELECTRIC DISCONNECT
  - LP LIGHT POLE
  - SSMH SAN. SEWER MANHOLE
  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - NIC FENCE LINE
  - NIC NOT IN CONTRACT



**RECORD DRAWINGS**

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TODD WINTERS DATE

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Elevation 569.65'

**ENGINEERINGCONCEPTS**  
& DESIGN, L.P.

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972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:

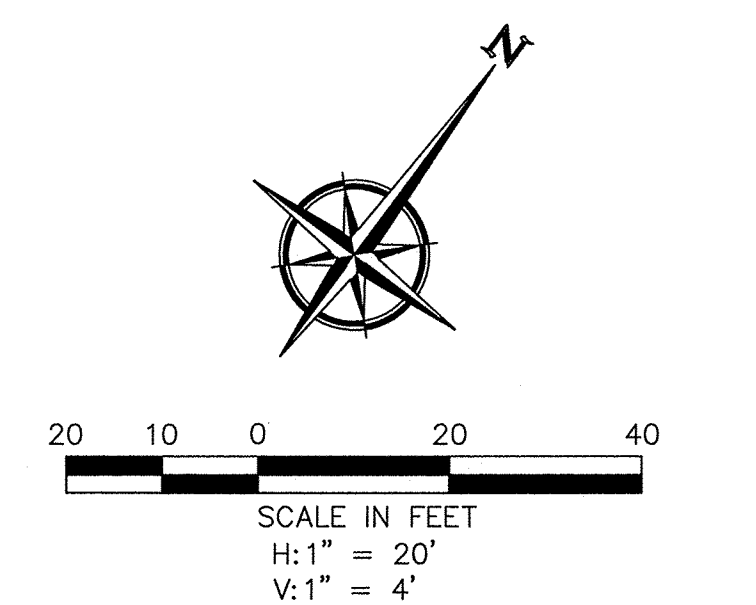
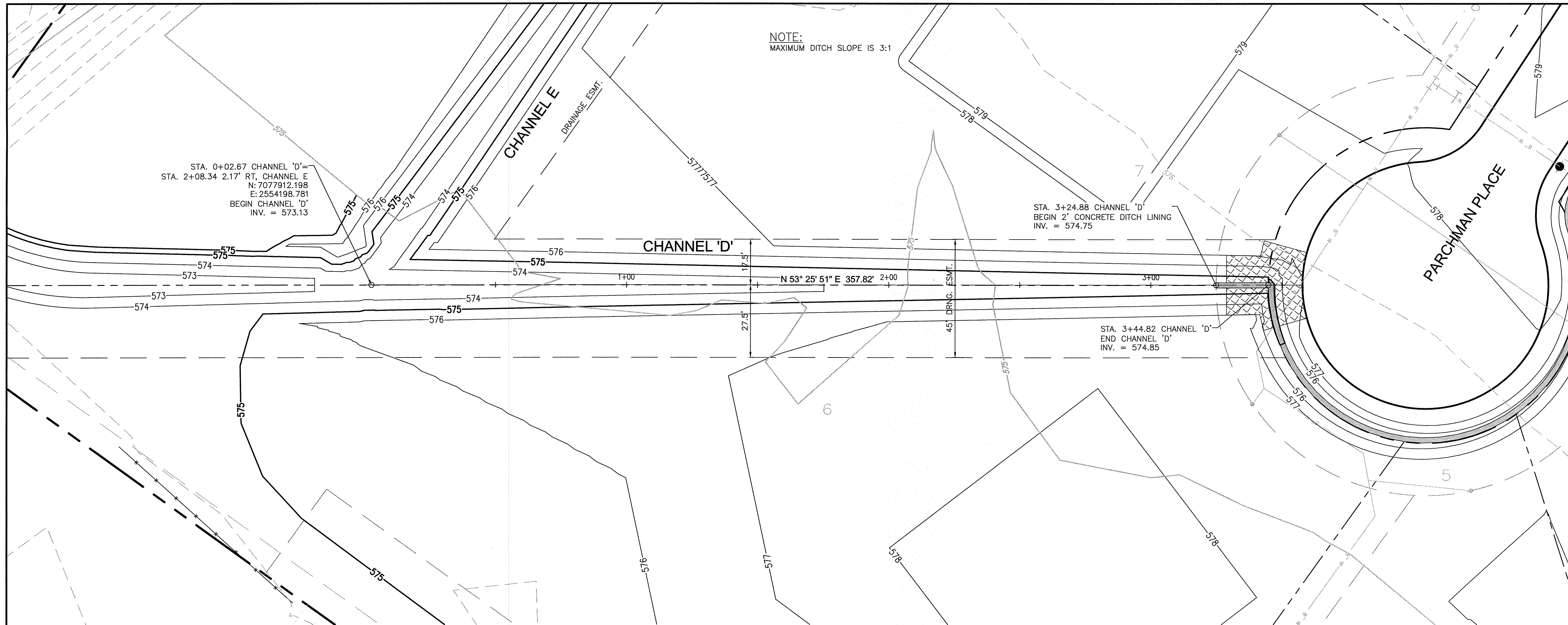
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 16 DITCH 'C'.DWG	

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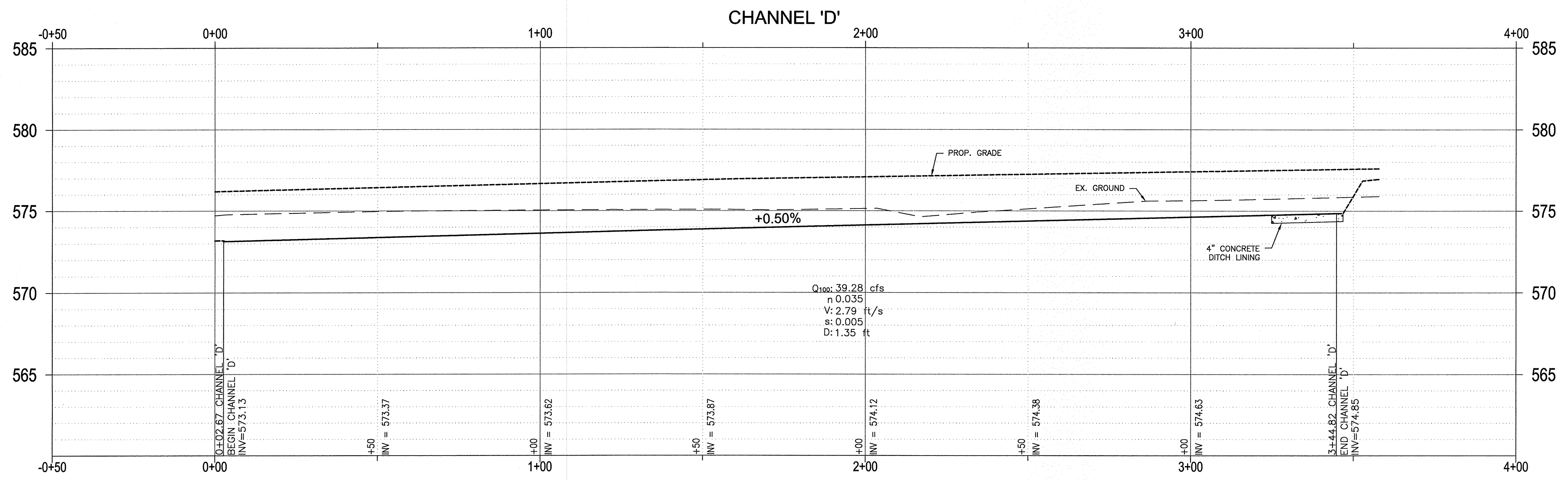
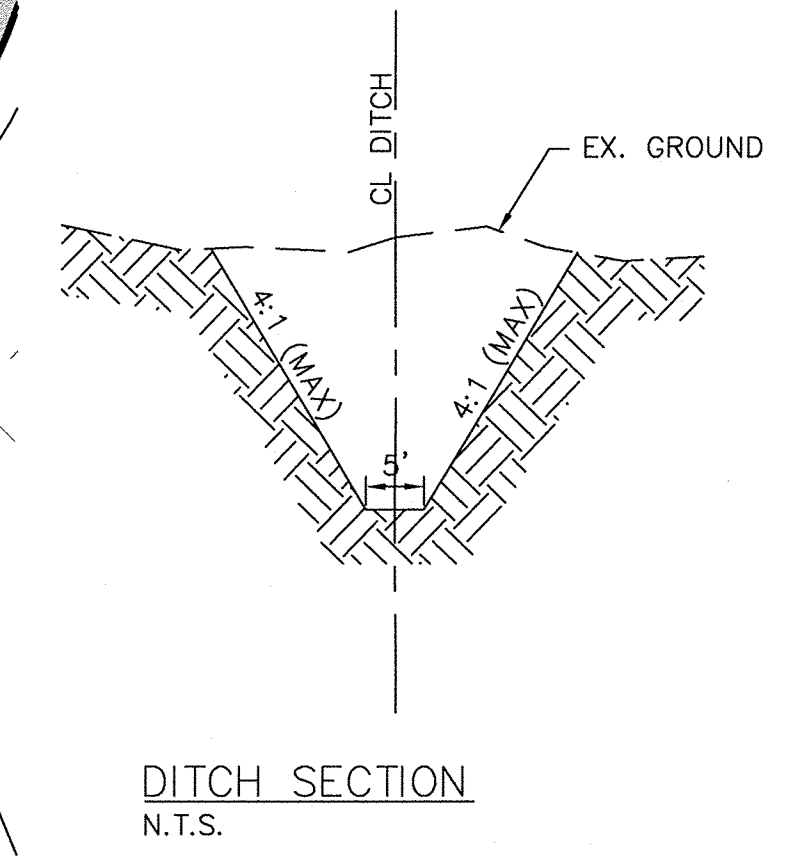


**DITCH PLAN & PROFILE**  
DITCH 'C'  
BRISTOL PARK  
PHASE I





- LEGEND**
- PP POWER POLE
  - EM ELECTRIC METER
  - EL ELECTRIC DISCONNECT
  - LP LIGHT POLE
  - SSMH SAN. SEWER MANHOLE
  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - FENCE LINE
  - NIC NOT IN CONTRACT



**RECORD DRAWINGS**

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*Todd Winters* 9-18-15  
TODD WINTERS DATE

BENCHMARK:  
An "X" out in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'

**ENGINEERINGCONCEPTS**  
& DESIGN, L.P.

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201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

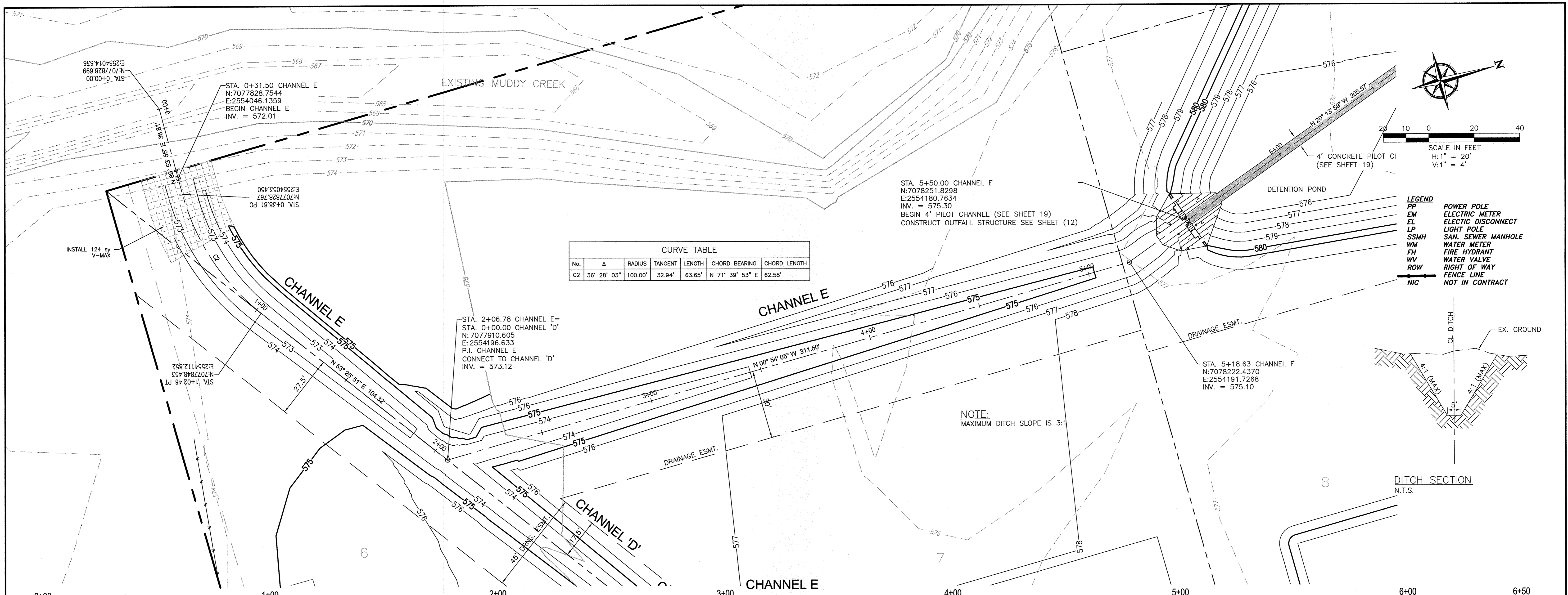
REVISIONS:

DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 17 CHANNEL 'D'.DWG	

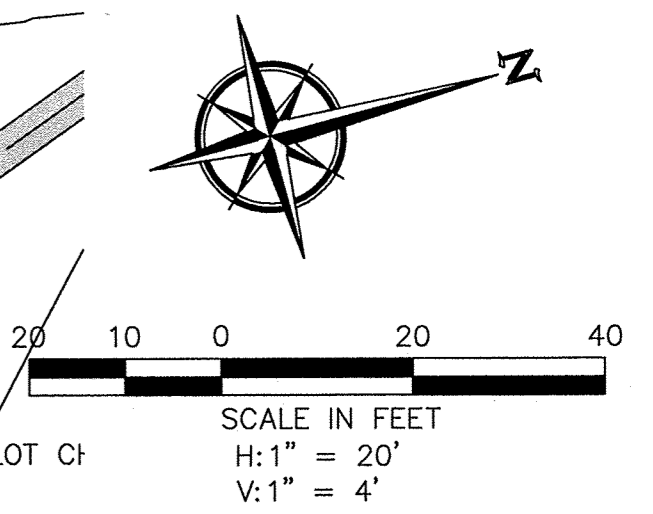
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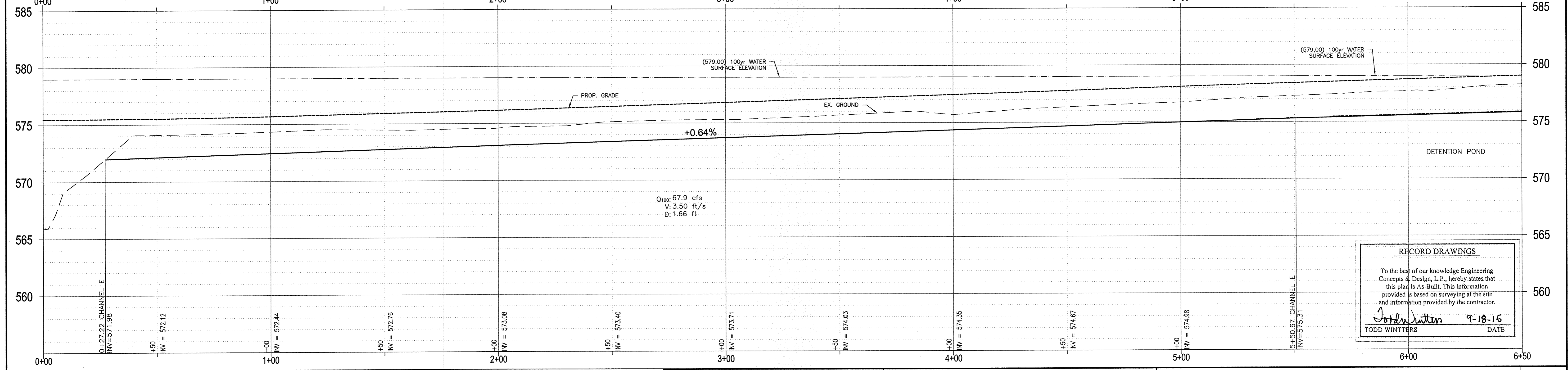
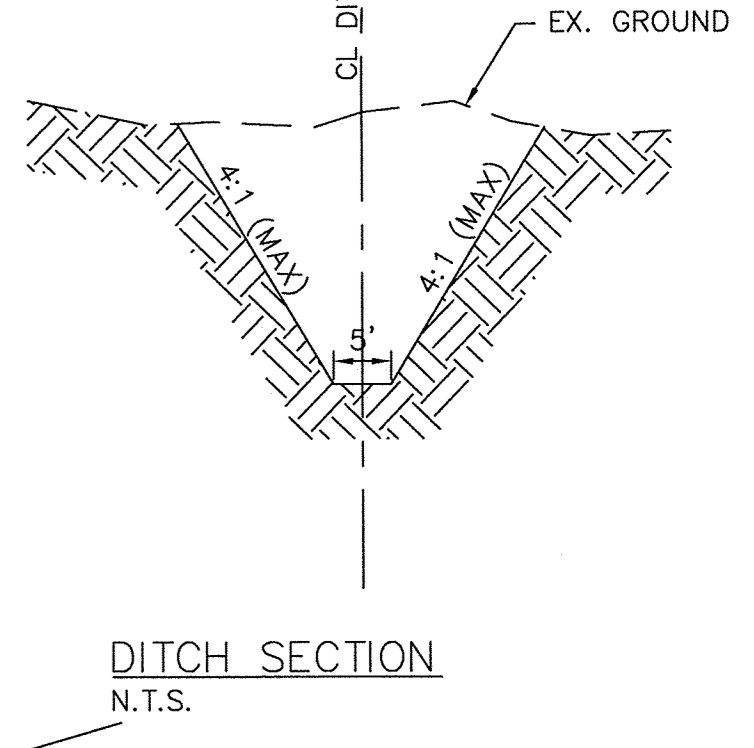
**STORM SEWER PLAN & PROFILE**  
**CHANNEL 'D'**  
**BRISTOL PARK**  
PHASE 1



CURVE TABLE						
No.	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING	CHORD LENGTH
C2	36° 28' 03"	100.00'	32.94'	63.65'	N 71° 39' 53" E	62.58'



- LEGEND**
- PP POWER POLE
  - EM ELECTRIC METER
  - EL ELECTRIC DISCONNECT
  - LP LIGHT POLE
  - SSMH SAN. SEWER MANHOLE
  - WM WATER METER
  - FH FIRE HYDRANT
  - WV WATER VALVE
  - ROW RIGHT OF WAY
  - FENCE LINE
  - NIC NOT IN CONTRACT



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*Todd Winters* 9-18-16  
TODD WINTERS DATE

BENCHMARK:  
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Elevation 569.65'

**ENGINEERINGCONCEPTS**  
& DESIGN, L.P.

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972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:

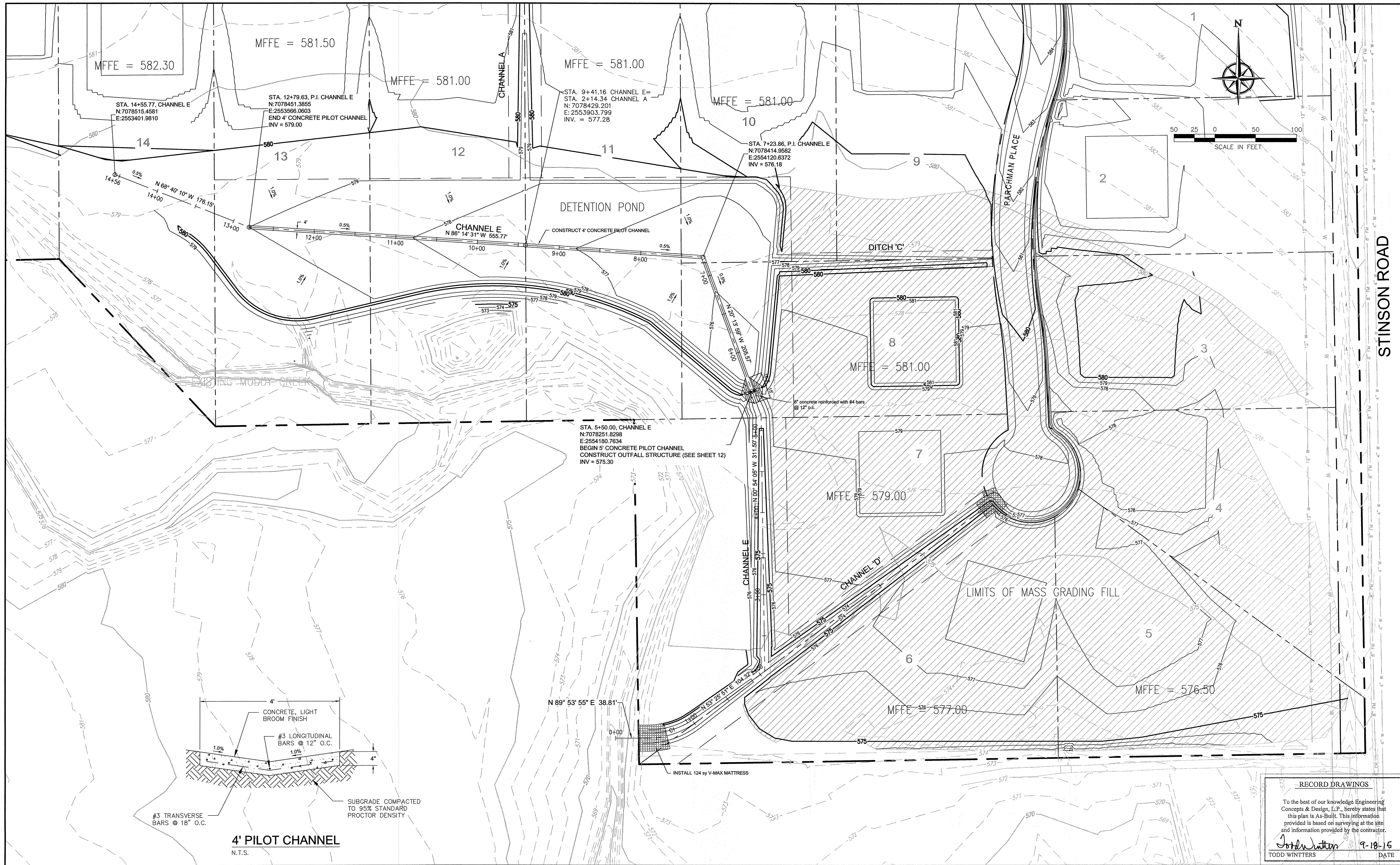
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CHECKED: TW	DATE:
PROJECT NO.: 8313	
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**STORM SEWER PLAN & PROFILE**  
**CHANNEL 'E'**  
**BRISTOL PARK**  
PHASE I

SHEET  
18  
OF  
25



STINSON ROAD

**RECORD DRAWINGS**  
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*Todd Winters* 9-18-15  
 TODD WINTERS DATE

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 Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**  
 ENGINEERING / PROJECT MANAGEMENT / CONSTRUCTION SERVICES - FIRM REG. #F-001145  
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 972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 19 MASS GRADING.DWG	

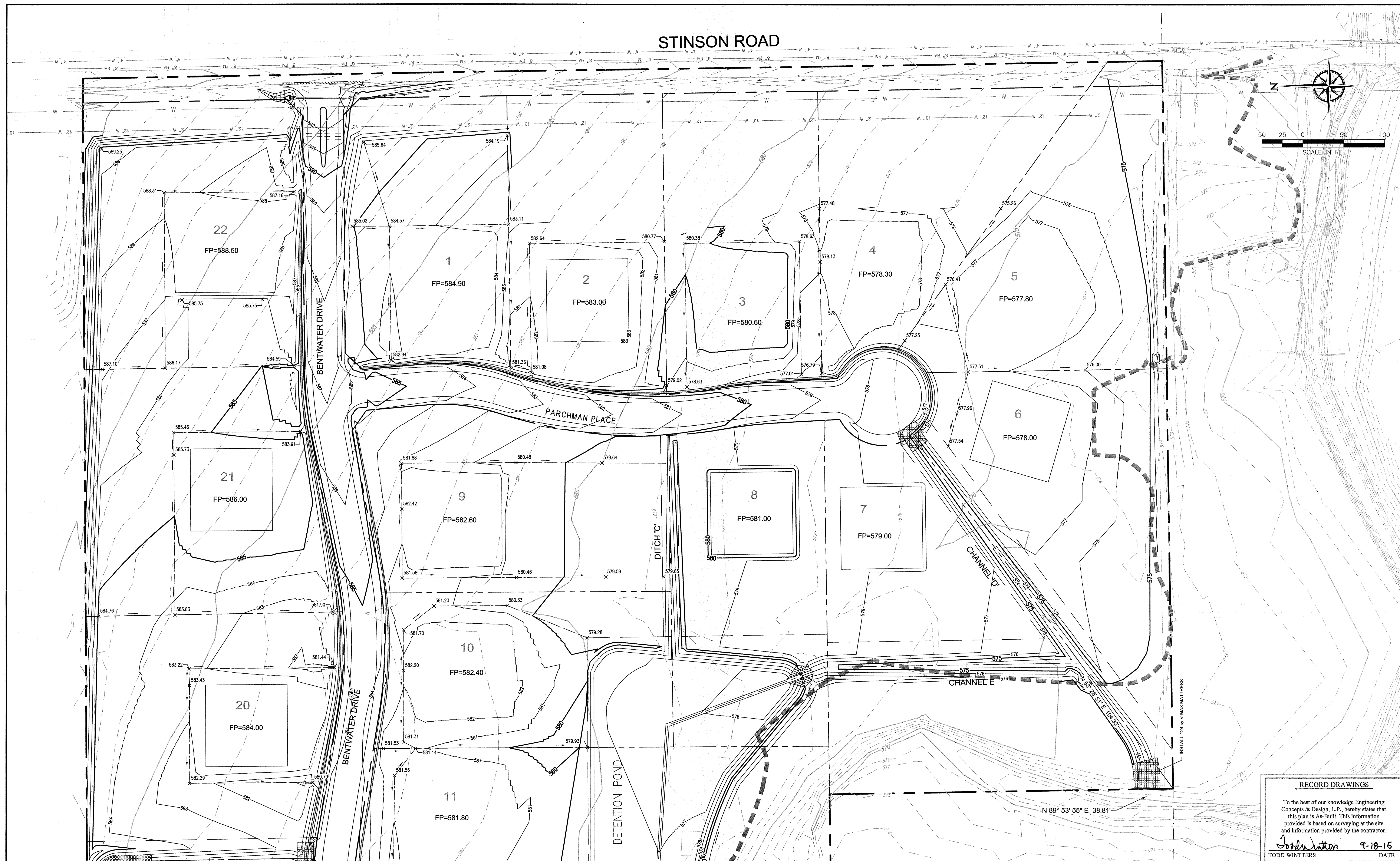
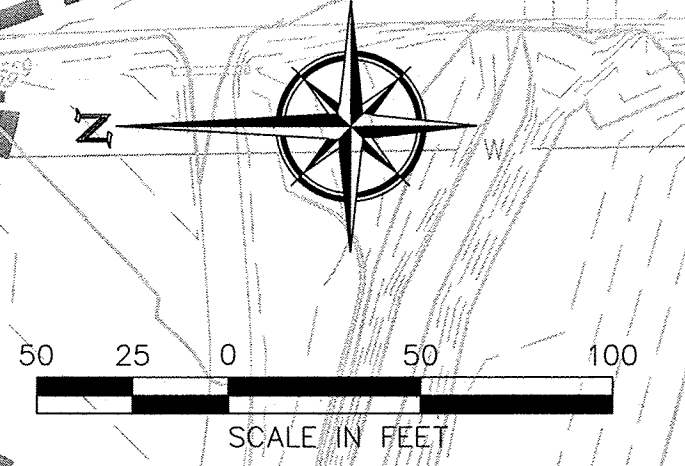
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 TODD D. WINTERS, P.E. 87085



**19 MASS GRADING PLAN**  
**BRISTOL PARK**  
**PHASE 1**  
 8313

SHEET  
**19**  
 OF  
**25**

STINSON ROAD



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*Todd Winters* 9-18-15  
 TODD WINTERS DATE

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**ENGINEERINGCONCEPTS**  
 & DESIGN, L.P.  
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 CONSTRUCTION SERVICES - FIRM REG. #F-001145  
 201 WINDCO CIR, STE 200, WYLIE, TX 75098  
 972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 19A LOT GRADING PLANS.DWG	

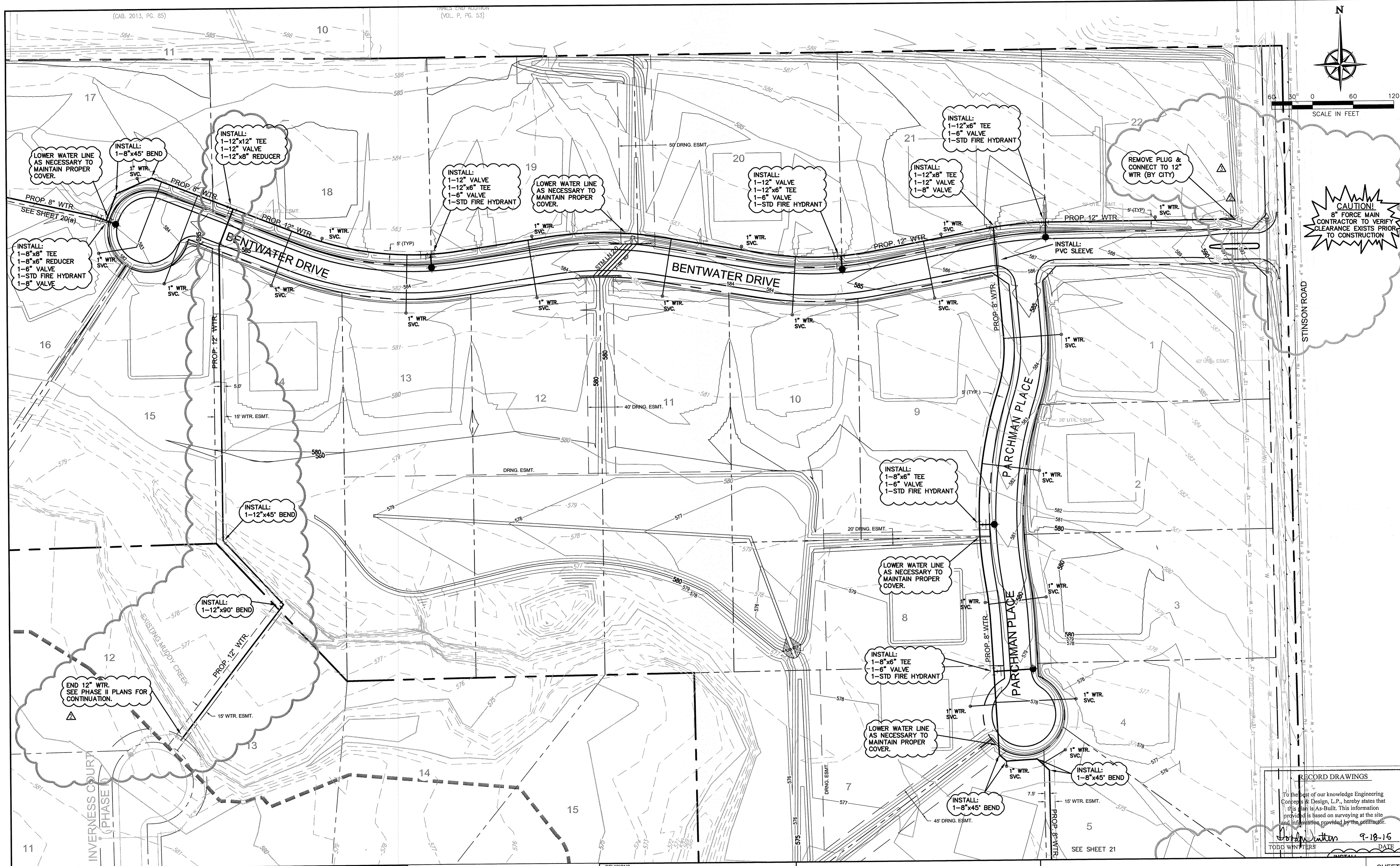
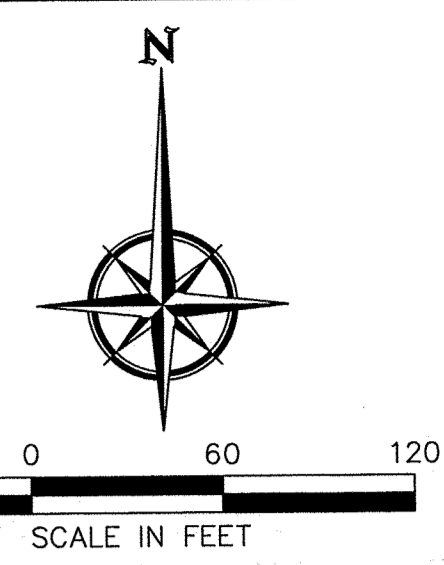
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**LOT GRADING PLAN**  
**BRISTOL PARK**  
**PHASE 1**  
 8313

SHEET  
**19A**  
 OF  
**25**





CAUTION!  
8" FORCE MAIN  
CLEARANCE EXISTS PRIOR  
TO CONSTRUCTION

BENCHMARK:  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 589.65'

**ENGINEERINGCONCEPTS**  
& DESIGN, L.P.

ENGINEERING / PROJECT MANAGEMENT /  
CONSTRUCTION SERVICES - FIRM REG. #F-001145  
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972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
8/06/13 LOOPED 8" WTR TO STINSON RD & PHASE II	
12/10/13 REVISED CONNECTION TO STINSON RD & PHASE II	
2/28/14 REVISED CONNECTION TO STINSON RD & PHASE II	
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 20 WATER PLAN.DWG	

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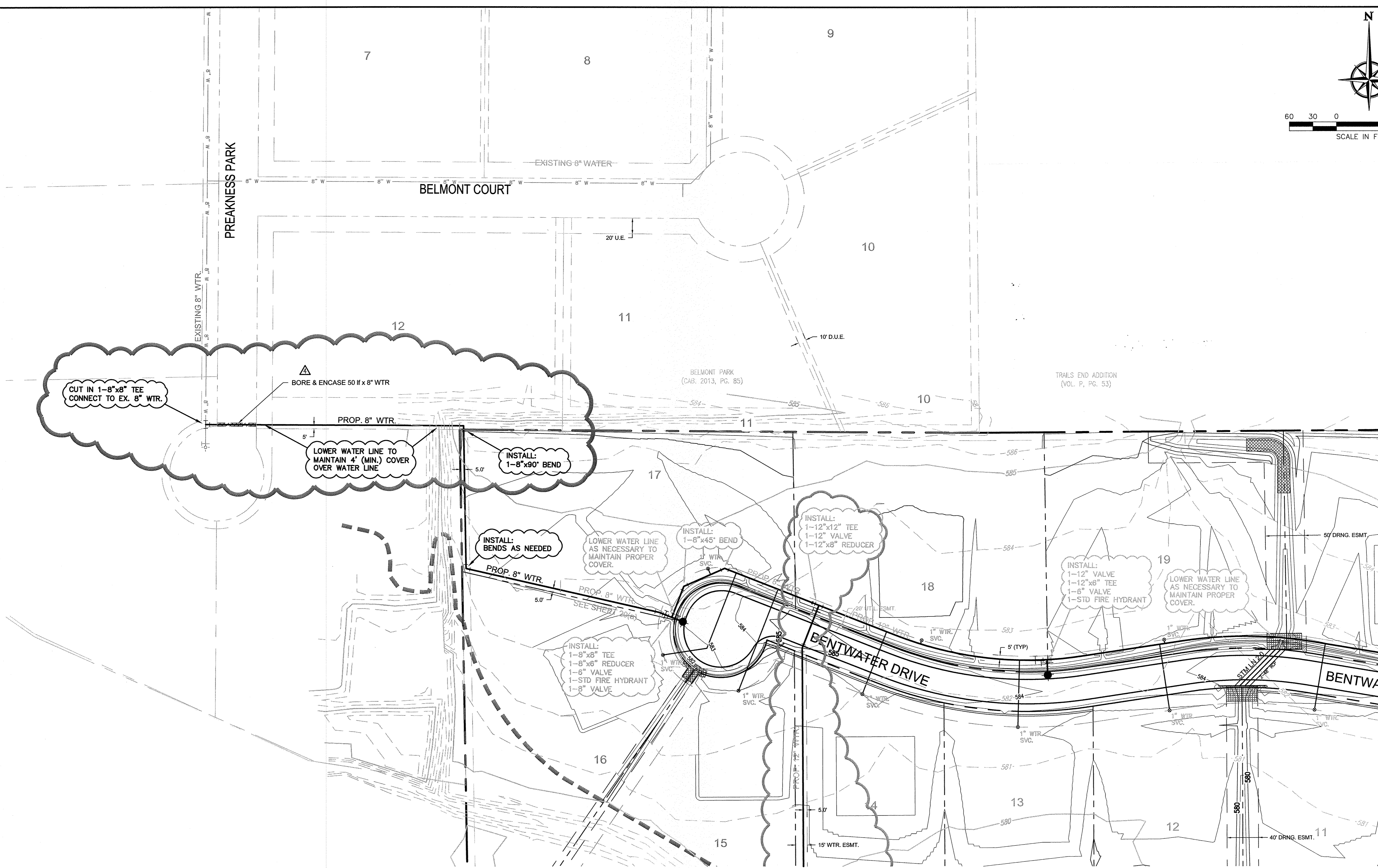
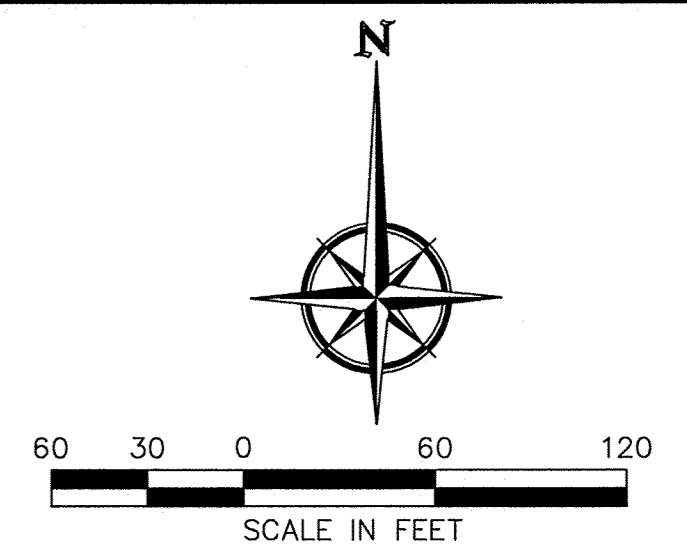


# WATER PLAN BRISTOL PARK PHASE I

8313

SHEET  
20  
OF  
25

RECORD DRAWINGS  
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Concepts & Design, L.P., hereby states that  
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and information provided by the contractor.  
TODD WINTTERS 9-18-15  
DATE



**RECORD DRAWINGS**

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*Todd Winters* 9-18-15  
TODD WINTERS DATE

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Elevation 569.65'

**ENGINEERINGCONCEPTS & DESIGN, L.P.**

ENGINEERING / PROJECT MANAGEMENT / CONSTRUCTION SERVICES - FIRM REG. #F-001145  
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972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

5/06/14 ADDED CONNECTION TO EXISTING 8" WATER

REVISIONS:	
8/06/13	LOOPEO 8" WTR TO STINSON RD & PHASE II
12/10/13	REVISED CONNECTION TO STINSON RD & PHASE II
2/28/14	REVISED CONNECTION TO STINSON RD & PHASE II

DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 20 WATER PLAN.DWG	

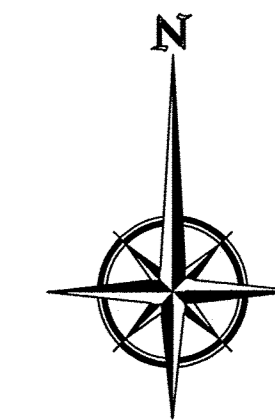
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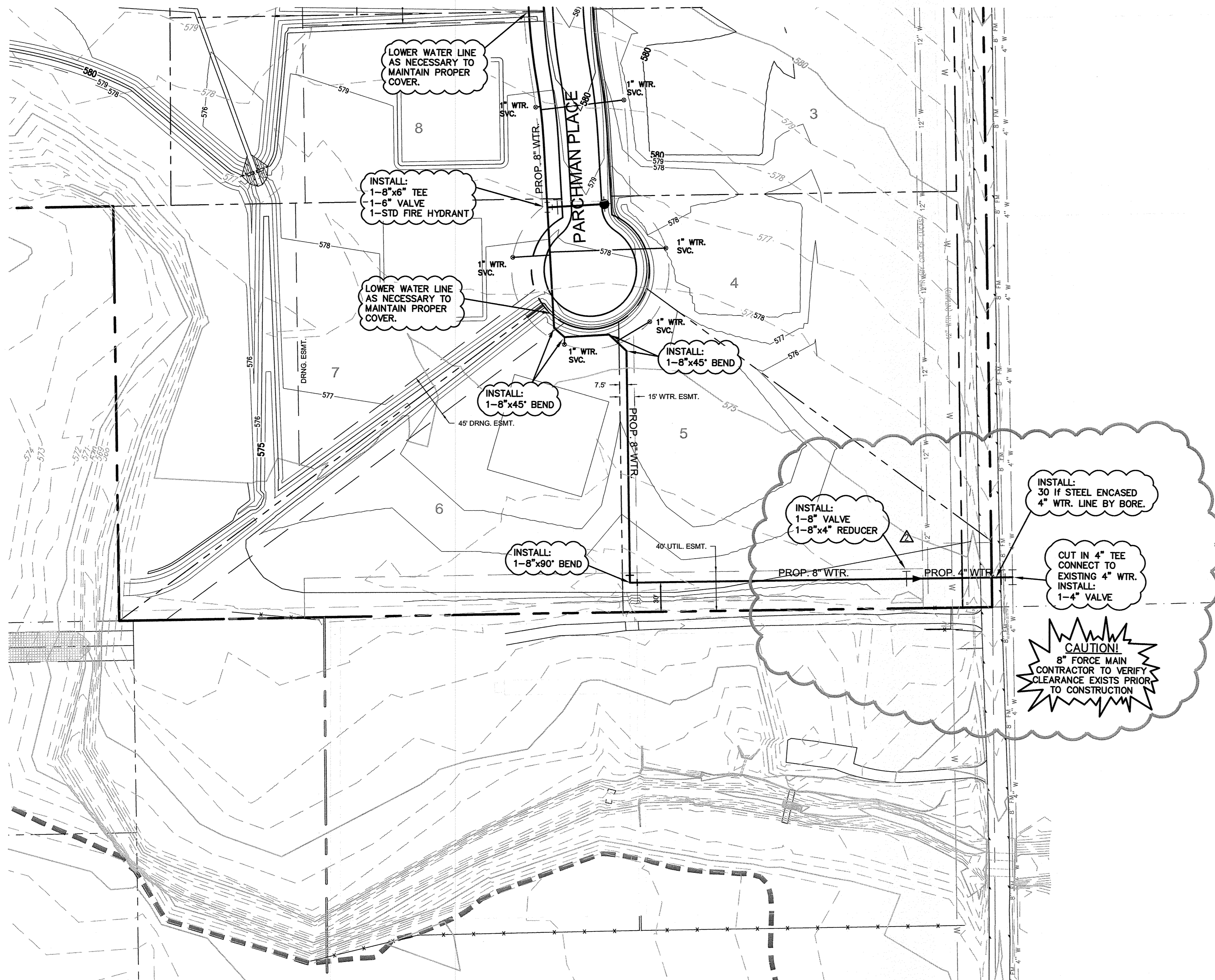
**WATER PLAN  
BRISTOL PARK  
PHASE 1**  
8313

SHEET  
**20(A)**  
OF  
**25**

SEE SHEET 20



60 30 0 60 120  
SCALE IN FEET



INSTALL:  
30 IF STEEL ENCASED  
4\"/>

CUT IN 4\"/>

**CAUTION!**  
8\"/>

**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-15  
TODD WINTERS DATE

BENCHMARK:  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'



ENGINEERING / PROJECT MANAGEMENT /  
CONSTRUCTION SERVICES - FIRM REG. #F-001145  
201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
▲	8/06/13 LOOPED 8" WTR TO STINSON RD & PHASE II
▲	12/10/13 REVISED CONNECTION TO STINSON RD & PHASE II
▲	2/28/14 REVISED CONNECTION TO STINSON RD & PHASE II
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 20 WATER PLAN.DWG	

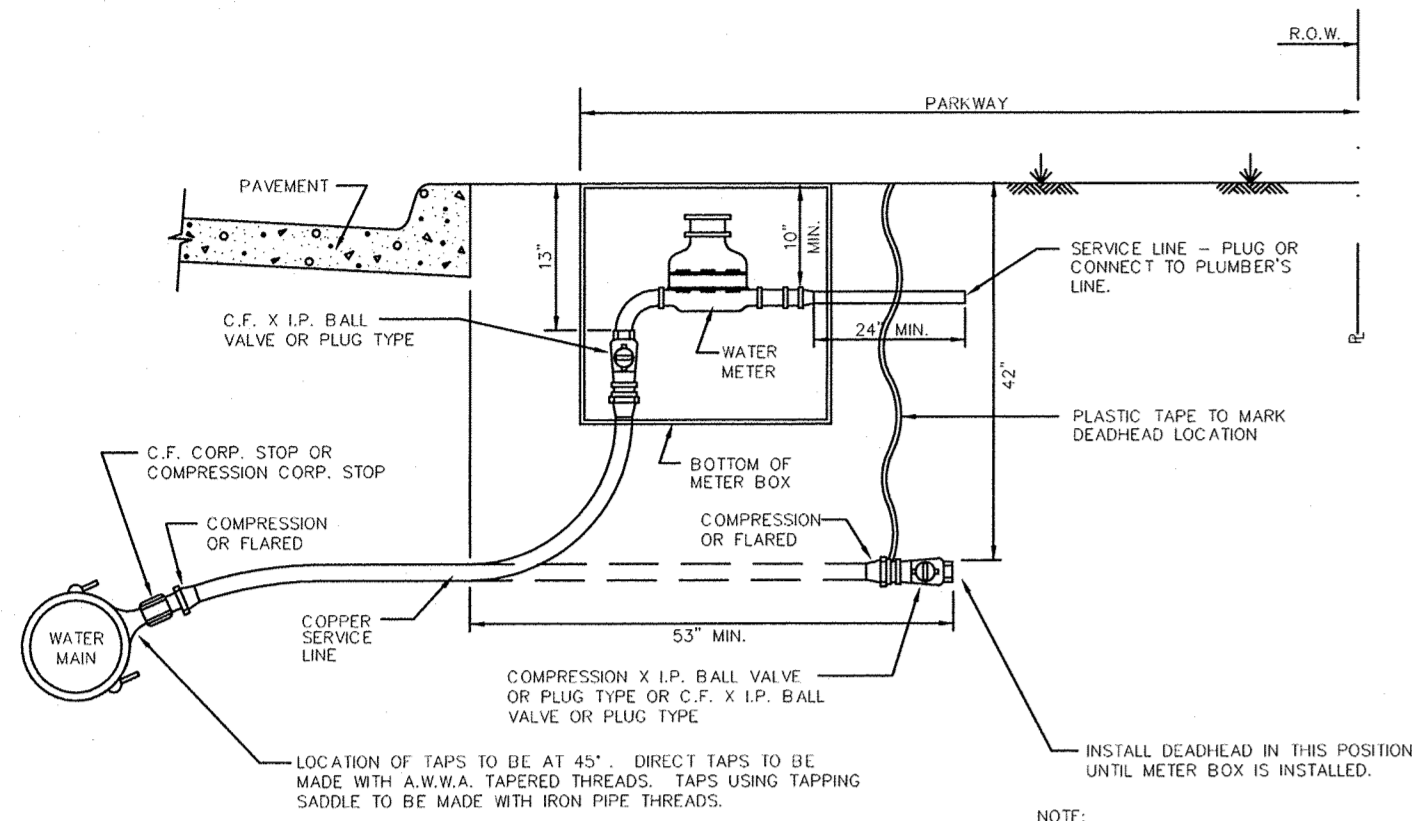
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF CONSTRUCTION. THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY  
TODD D. WINTERS, P.E. 87085



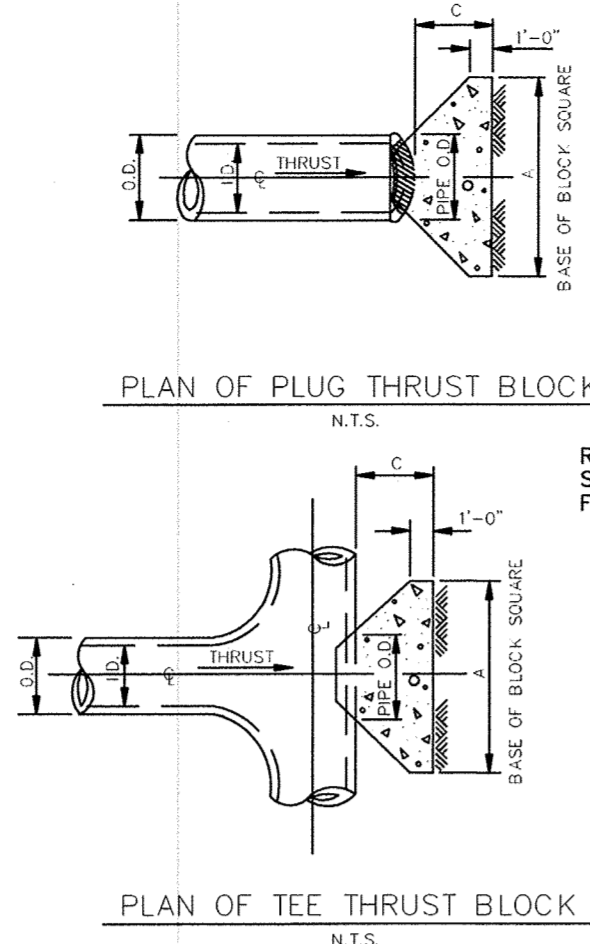
**OFF-STE WATER PLAN (SOUTH)**  
**BRISTOL PARK**  
**PHASE 1**  
8313

SHEET  
21  
OF  
25





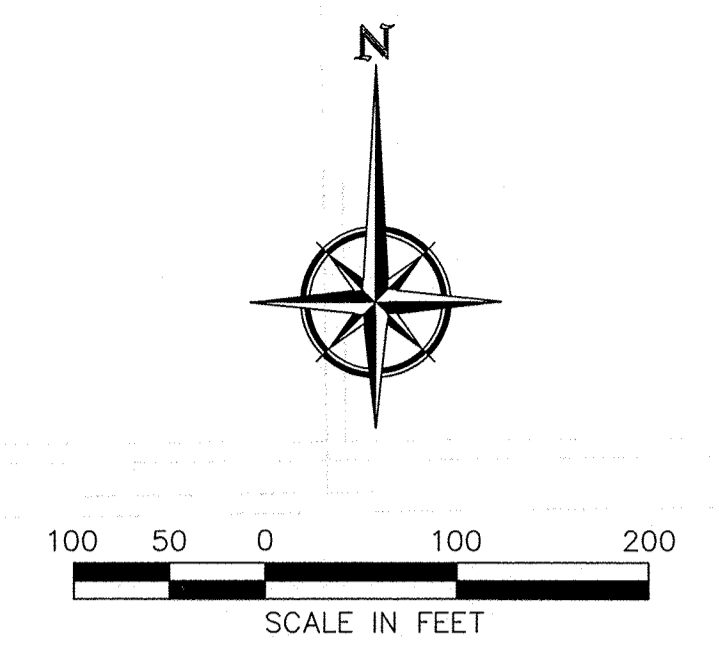
WATER SERVICE INSTALLATION  
3/4" OR 1" LINE



PLAN OF PLUG THRUST BLOCK  
N.T.S.

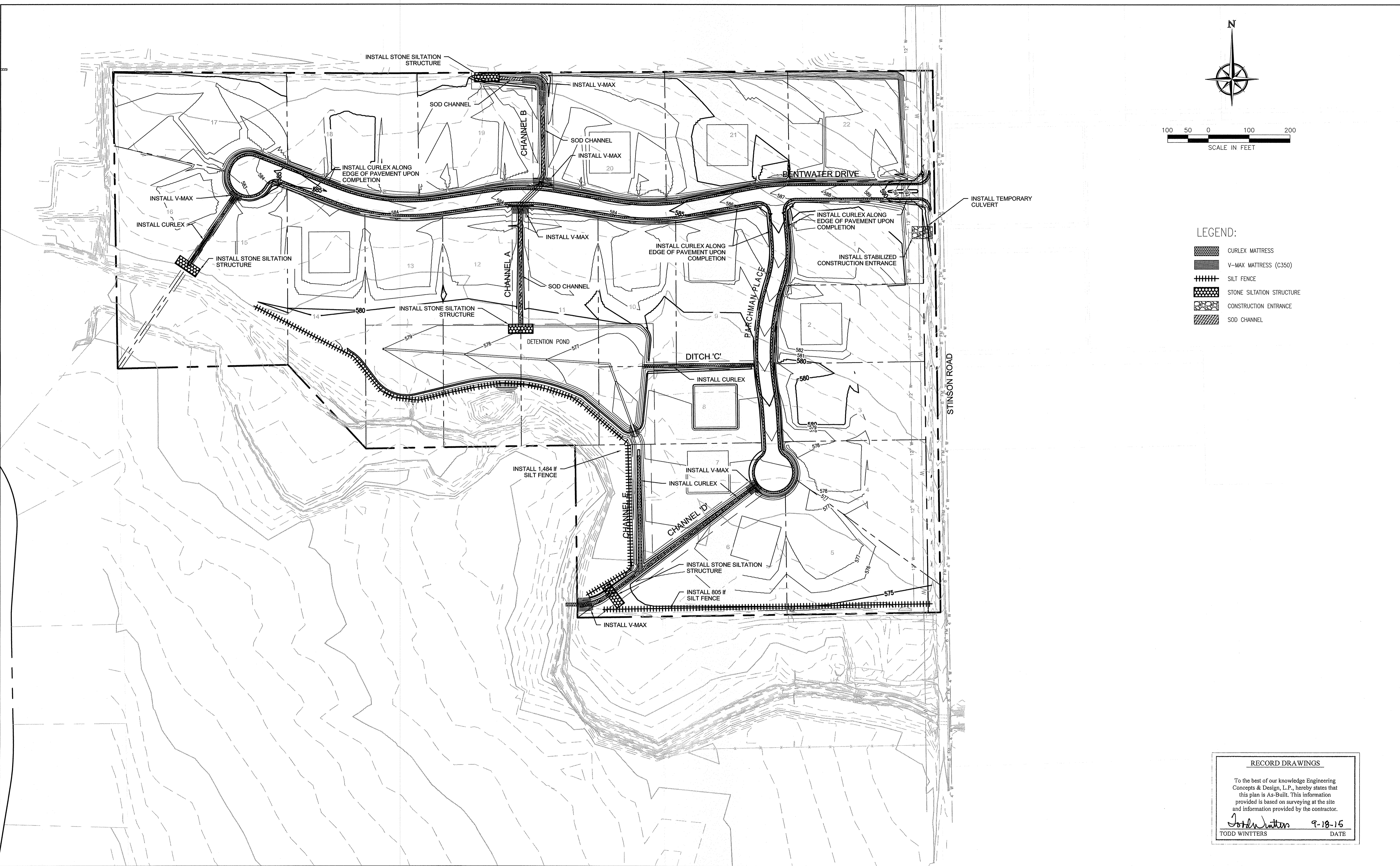
REFER TO  
STD. DWG. No. 4040  
FOR GENERAL NOTES.

I.D. (IN.)	G (FT.)	Δ = 11.25°				Δ = 22.50°				I.D. (IN.)
		THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	
4.68	0.4	1.5	1.5	0.9	10.12	0.5	1.5	1.5	1.2	
10.12	0.6	1.5	1.5	1.8	20	0.7	1.5	1.5	1.8	
24	0.9	1.5	1.5	2.1	30	0.9	1.5	1.9	2.6	
36	1.2	1.5	1.5	2.4	42	1.2	1.5	2.3	3.3	
48	1.5	1.5	1.5	2.7	54	1.5	1.5	2.6	3.8	
66	1.8	1.5	1.5	3.0	78	2.1	1.5	3.0	4.3	
90	2.1	1.5	1.5	3.3	102	2.4	1.5	3.3	4.8	
114	2.4	1.5	1.5	3.6	138	3.0	1.5	3.6	5.3	
150	3.0	1.5	1.5	3.9	174	3.6	1.5	3.9	5.7	
198	3.6	1.5	1.5	4.2	234	4.2	1.5	4.2	6.2	
246	4.2	1.5	1.5	4.5	306	4.8	1.5	4.5	6.6	
306	4.8	1.5	1.5	4.8	378	5.4	1.5	4.8	7.0	
378	5.4	1.5	1.5	5.1	450	6.0	1.5	5.1	7.4	
450	6.0	1.5	1.5	5.4	522	6.6	1.5	5.4	7.8	
606	7.2	1.5	1.5	6.0	678	7.8	1.5	6.0	8.4	
810	8.4	1.5	1.5	6.6	906	9.0	1.5	6.6	9.0	
1080	9.6	1.5	1.5	7.2	1134	10.2	1.5	7.2	9.6	
1350	10.8	1.5	1.5	7.8	1362	11.4	1.5	7.8	10.2	
1620	12.0	1.5	1.5	8.4	1590	12.6	1.5	8.4	10.8	
1890	13.2	1.5	1.5	9.0	1818	13.8	1.5	9.0	11.4	
2160	14.4	1.5	1.5	9.6	2046	15.0	1.5	9.6	12.0	
2430	15.6	1.5	1.5	10.2	2274	16.2	1.5	10.2	12.6	
2700	16.8	1.5	1.5	10.8	2502	17.4	1.5	10.8	13.2	
2970	18.0	1.5	1.5	11.4	2730	18.6	1.5	11.4	13.8	
3240	19.2	1.5	1.5	12.0	2958	19.8	1.5	12.0	14.4	
3510	20.4	1.5	1.5	12.6	3186	21.0	1.5	12.6	15.0	
3780	21.6	1.5	1.5	13.2	3414	22.2	1.5	13.2	15.6	
4050	22.8	1.5	1.5	13.8	3642	23.4	1.5	13.8	16.2	
4320	24.0	1.5	1.5	14.4	3870	24.6	1.5	14.4	16.8	
4590	25.2	1.5	1.5	15.0	4100	25.8	1.5	15.0	17.4	
4860	26.4	1.5	1.5	15.6	4330	27.0	1.5	15.6	18.0	
5130	27.6	1.5	1.5	16.2	4560	28.2	1.5	16.2	18.6	
5400	28.8	1.5	1.5	16.8	4790	29.4	1.5	16.8	19.2	
5670	30.0	1.5	1.5	17.4	5020	30.6	1.5	17.4	19.8	
5940	31.2	1.5	1.5	18.0	5250	31.8	1.5	18.0	20.4	
6210	32.4	1.5	1.5	18.6	5480	33.0	1.5	18.6	21.0	
6480	33.6	1.5	1.5	19.2	5710	34.2	1.5	19.2	21.6	
6750	34.8	1.5	1.5	19.8	5940	35.4	1.5	19.8	22.2	
7020	36.0	1.5	1.5	20.4	6170	36.6	1.5	20.4	22.8	
7290	37.2	1.5	1.5	21.0	6400	37.8	1.5	21.0	23.4	
7560	38.4	1.5	1.5	21.6	6630	39.0	1.5	21.6	24.0	
7830	39.6	1.5	1.5	22.2	6860	40.2	1.5	22.2	24.6	
8100	40.8	1.5	1.5	22.8	7090	41.4	1.5	22.8	25.2	
8370	42.0	1.5	1.5	23.4	7320	42.6	1.5	23.4	25.8	
8640	43.2	1.5	1.5	24.0	7550	43.8	1.5	24.0	26.4	
8910	44.4	1.5	1.5	24.6	7780	45.0	1.5	24.6	27.0	
9180	45.6	1.5	1.5	25.2	8010	46.2	1.5	25.2	27.6	
9450	46.8	1.5	1.5	25.8	8240	47.4	1.5	25.8	28.2	
9720	48.0	1.5	1.5	26.4	8470	48.6	1.5	26.4	28.8	
9990	49.2	1.5	1.5	27.0	8700	49.8	1.5	27.0	29.4	
10260	50.4	1.5	1.5	27.6	8930	51.0	1.5	27.6	30.0	
10530	51.6	1.5	1.5	28.2	9160	52.2	1.5	28.2	30.6	
10800	52.8	1.5	1.5	28.8	9390	53.4	1.5	28.8	31.2	
11070	54.0	1.5	1.5	29.4	9620	54.6	1.5	29.4	31.8	
11340	55.2	1.5	1.5	30.0	9850	55.8	1.5	30.0	32.4	
11610	56.4	1.5	1.5	30.6	10080	57.0	1.5	30.6	33.0	
11880	57.6	1.5	1.5	31.2	10310	58.2	1.5	31.2	33.6	
12150	58.8	1.5	1.5	31.8	10540	59.4	1.5	31.8	34.2	
12420	60.0	1.5	1.5	32.4	10770	60.6	1.5	32.4	34.8	
12690	61.2	1.5	1.5	33.0	11000	61.8	1.5	33.0	35.4	
12960	62.4	1.5	1.5	33.6	11230	63.0	1.5	33.6	36.0	
13230	63.6	1.5	1.5	34.2	11460	64.2	1.5	34.2	36.6	
13500	64.8	1.5	1.5	34.8	11690	65.4	1.5	34.8	37.2	
13770	66.0	1.5	1.5	35.4	11920	66.6	1.5	35.4	37.8	
14040	67.2	1.5	1.5	36.0	12150	67.8	1.5	36.0	38.4	
14310	68.4	1.5	1.5	36.6	12380	69.0	1.5	36.6	39.0	
14580	69.6	1.5	1.5	37.2	12610	70.2	1.5	37.2	39.6	
14850	70.8	1.5	1.5	37.8	12840	71.4	1.5	37.8	40.2	
15120	72.0	1.5	1.5	38.4	13070	72.6	1.5	38.4	40.8	
15390	73.2	1.5	1.5	39.0	13300	73.8	1.5	39.0	41.4	
15660	74.4	1.5	1.5	39.6	13530	75.0	1.5	39.6	42.0	
15930	75.6	1.5	1.5	40.2	13760	76.2	1.5	40.2	42.6	
16200	76.8	1.5	1.5	40.8	13990	77.4	1.5	40.8	43.2	
16470	78.0	1.5	1.5	41.4	14220	78.6	1.5	41.4	43.8	
16740	79.2	1.5	1.5	42.0	14450	79.8	1.5	42.0	44.4	
17010	80.4	1.5	1.5	42.6	14680	81.0	1.5	42.6	45.0	
17280	81.6	1.5	1.5	43.2	14910	82.2	1.5	43.2	45.6	
17550	82.8	1.5	1.5	43.8	15140	83.4	1.5	43.8	46.2	
17820	84.0	1.5	1.5	44.4	15370	84.6	1.5	44.4	46.8	
18090	85.2	1.5	1.5	45.0	15600	85.8	1.5	45.0	47.4	
18360	86.4	1.5	1.5	45.6	15830	87.0	1.5	45.6	48.0	
18630	87.6	1.5	1.5	46.2	16060	88.2	1.5	46.2	48.6	
18900	88.8	1.5	1.5	46.8	16290	89.4	1.5	46.8	49.2	
19170	90.0	1.5	1.5	47.4	16520	90.6	1.5	47.4	49.8	
19440	91.2	1.5	1.5	48.0	16750	91.8	1.5	48.0	50.4	
19710	92.4	1.5	1.5	48.6	16980	93.0	1.5	48.6	51.0	
19980	93.6	1.5	1.5	49.2	17210	94.2	1.5	49.2	51.6	
20250	94.8	1.5	1.5	49.8	17440	95.4	1.5	49.8	52.2	
20520	96.0	1.5	1.5	50.4	17670	96.6	1.5	50.4	52.8	
20790	97.2	1.5	1.5	51.0	17900	97.8	1.5	51.0	53.4	
21060	98.4	1.5	1.5	51.6	18130	99.0	1.5	51.6	54.0	
21330	99.6	1.5	1.5	52.2	18360	100.2	1.5	52.2	54.6	
21600	100.8	1.5	1.5	52.8	18590	101.4	1.5	52.8	55.2	
21870	102.0	1.5	1.5	53.4	18820	102.6	1.5	53.4	55.8	
22140	103.2	1.5	1.5	54.0	19050	103.8	1.5	54.0	56.4	
22410	104.4	1.5	1.5	54.6	19280	105.0	1.5	54.6	57.0	
22680	105.6	1.5	1.5	55.2	19510	106.2	1.5	55.2	57.6	
22950	106.8	1.5	1.5	55.8	19740	107.4	1.5	55.8	58.2	
23220	108.0	1.5	1.5	56.4	19970	108.6	1.5	56.4	58.8	
23490	109.2	1.5	1.5	57.0	20200	109.8	1.5	57.0	59.4	
23760	110.4	1.5	1.5	57.6	20430	111.0	1.5	57.6	60.0	
24030	111.6	1.5	1.5	58.2	20660	112.2	1.5	58.2	60.6	
24300	112.8	1.5	1.5	58.8	20890	113.4	1.5	58.8	61.2	
24570	114.0	1.5	1.5	59.4	21120	114.6	1.5	59.4	61.8	
24840	115.2	1.5	1.5	60.0	21350	115.8	1.5	60.0	62.4	
25110	116.4	1.5	1.5	60.6	21580	117.0	1.5	60.6	63.0	
25380	117.6	1.5	1.5	61.2	21810	118.2	1.5	61.2	63.6	
25650	118.8	1.5	1.5	61.8	22040	119.4	1.5	61.8	64.2	
25920	120.0	1.5	1.5	62.4	22270	120.6	1.5	62.4	64.8	
26190	121.2	1.5	1.5	63.0	22500	121.8	1.5	63.0	65.4	
26460	122.4	1.5	1.5	63.6	22730	123.0	1.5	63.6	66.0	
26730	123.6	1.5	1.5	64.2	22960	124.2	1.5	64.2	66.6	
27000	124.8	1.5	1.5	64.8	23190	125.4	1.5	64.8	67.2	
27270	126.0	1.5	1.5	65.4	23420	126.6	1.5	65.4	67.8	
27540	127.2	1.5	1.5	66.0	23650	127.8	1.5	66.0	68.4	
27810	128.4	1.5	1.5	66.6	23880	129.0	1.5	66.6	69.0	
28080	129.6	1.5	1.5	67.2	24110	130.2	1.5	67.2	69.6	
28350	130.8	1.5	1.5	67.8	24340	131.4	1.5	67.8	70.2	
28620	132.0	1.5	1.5	68.4	24570	132.6	1.5	68.4	70.8	
28890	133.2	1.5	1.5	69.0	24800	133.8	1.5	69.0	71.4	
29160	134.4	1.5	1.5	69.6	25030	135.0	1.5	69.6	72.0	
29430	135.6	1.5	1.5	70.2	25260	136.2	1.5	70.2	72.6	
29700	136.8	1.5	1.5	70.8	25490	137.4	1.5	70.8	73.2	
29970	138.0	1.5	1.5	71.4	25720	138.6	1.5	71.4	73.8	
30240	139.2	1.5	1.5	72.0	25950	139.8	1.5	72.0	74.4	
30510	140.4	1.5	1.5	72.6	26180	141.0	1.5	72.6	75.0	
30780	141.6	1.5	1.5	73.2	26410	142.2	1.5	73.2	75.6	
31050	142.8	1.5	1.5	73.8	26640	143.4	1.5	73.8	76.2	
313										



**LEGEND:**

- CURLEX MATTRESS
- V-MAX MATTRESS (C350)
- SILT FENCE
- STONE SILTATION STRUCTURE
- CONSTRUCTION ENTRANCE
- SOD CHANNEL



RECORD DRAWINGS

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-16  
TODD WINTTERS DATE

BENCHMARK:  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'

**ENGINEERINGCONCEPTS**  
& DESIGN, L.P.

ENGINEERING / PROJECT MANAGEMENT /  
CONSTRUCTION SERVICES - FIRM REG. #F-001145  
201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO: 8313	
DWG FILE NAME: 22 EROSION CONTROL.DWG	

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF CONSTRUCTION. THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY TODD D. WINTTERS, P.E. 87085

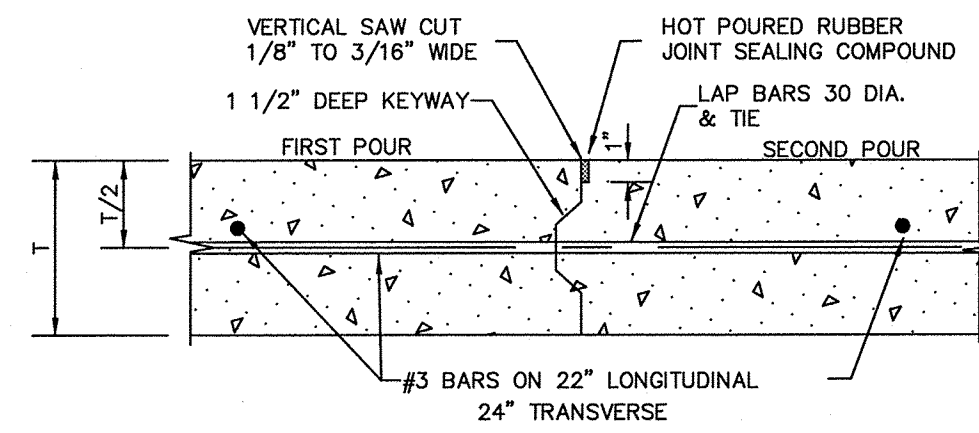


**EROSION CONTROL**  
**BRISTOL PARK**  
**PHASE 1**  
8313

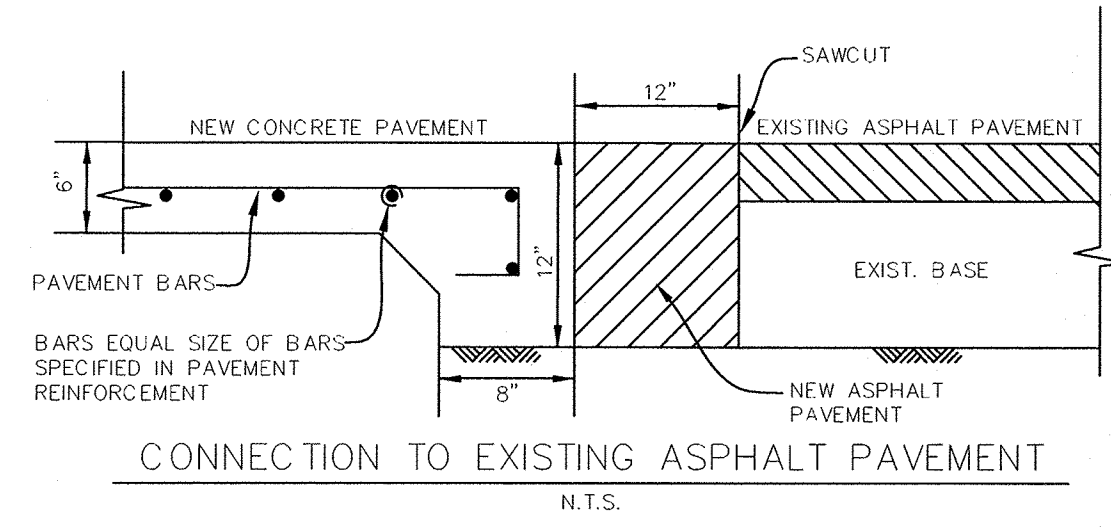
SHEET  
**23**  
OF  
**25**

NOTES:

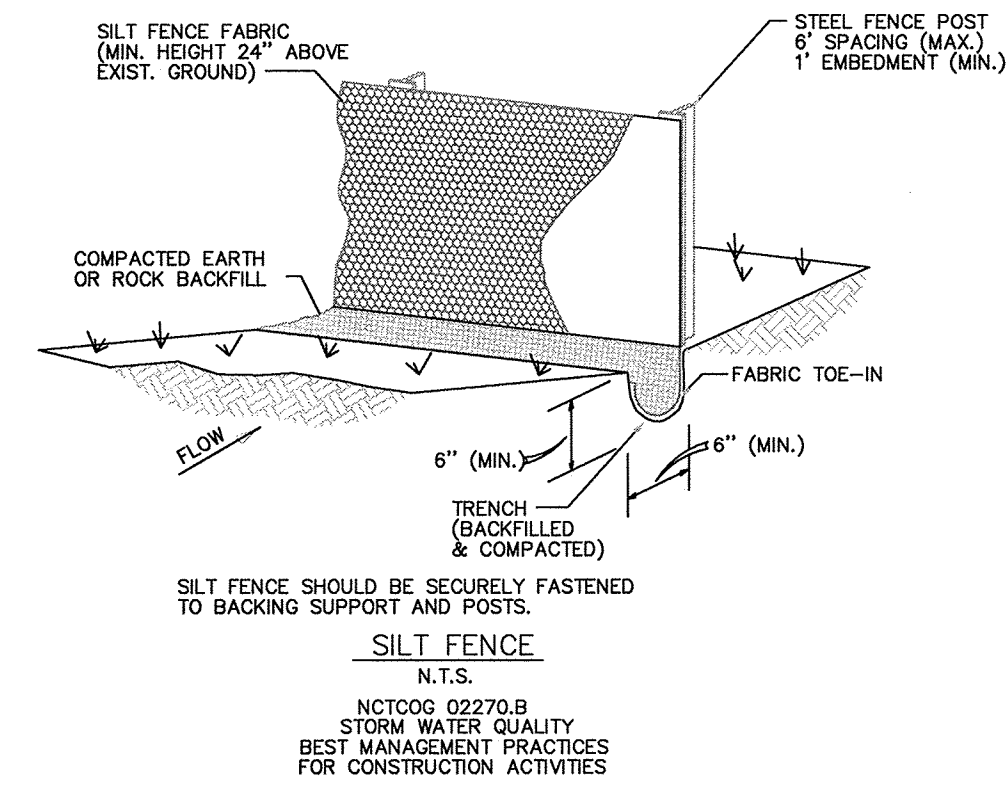
1. A STORM WATER POLLUTION PREVENTION PLAN (S.W.P.P.) INCLUDING NOTICE OF INTENT (N.O.I.) WILL BE PREPARED BY THE GENERAL CONTRACTOR FOR THIS PROJECT IN ACCORDANCE WITH THE REQUIREMENTS OF THE N.P.D.E.S. GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION.
2. ALL CONTRACTORS WILL COMPLY WITH THE REQUIREMENTS AND INTENT OF THE N.P.D.E.S. GENERAL PERMIT FOR STORM WATER DISCHARGES.
3. EACH CONTRACTOR SHALL SUBMIT A NOTICE OF INTENT (N.O.I.) FOR STORM WATER DISCHARGE PERMIT COVERAGE. THIS SUBMITTAL SHALL BE COORDINATED WITH THE OWNER AND SHALL OCCUR NO LESS THAN 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY.
4. EACH CONTRACTOR SHALL OBTAIN AND SUBMIT TO THE OWNER A POLLUTION PREVENTION CERTIFICATION FROM EACH SUBCONTRACTOR WHOSE WORK IMPACTS THE STORM WATER POLLUTION PREVENTION PLAN (S.W.P.P.) PRIOR TO THE PERFORMANCE OF ANY WORK BY SAID SUBCONTRACTOR. THESE CERTIFICATIONS SHALL BECOME A PART OF THE STORM WATER POLLUTION PREVENTION PLAN.
5. CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES, AS INDICATED ON THE PLANS AND AS FIELD CONDITIONS WARRANT, PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITY. REPAIRS OR MODIFICATIONS TO THE MEASURES WILL BE MADE BY THE CONTRACTOR IF THE CONTROL MEASURES PROVE INEFFECTIVE OR IF ADDITIONAL CONTROL MEASURES ARE NECESSARY.
6. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PREVENT TRACKING OF MUD AND/OR SOILS ONTO EXISTING AND/OR NEW PAVEMENT. ANY TRACKING THAT OCCURS SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
7. AT A MINIMUM, PERIMETER CONTROLS SUCH AS SILT FENCE OR STRAW BALES SHALL BE INSTALLED AT ALL DOWN SLOPE BOUNDARIES AND AS WARRANTED WHERE PAVEMENT REMOVAL, UTILITY CONSTRUCTION, GRADING, OR OTHER CONSTRUCTION ACTIVITIES ARE TO BE PERFORMED. THE CONTRACTOR SHALL AT ALL TIMES TAKE SUCH MEASURES AS NECESSARY TO MINIMIZE OFFSITE TRACKING OR TRANSPORT OF SEDIMENT AND DEBRIS.
8. DAMAGE TO ADJACENT PROPERTY AND/OR TO RECEIVING WATERS CAUSED BY IMPROPERLY INSTALLED OR POORLY MAINTAINED EROSION CONTROL MEASURES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ANY SILTATION CAUSED BY HIS OPERATIONS AND/OR FAILURE OF THE EROSION CONTROL MEASURES.
10. CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ACCUMULATED SILT AND SEDIMENT FROM EROSION CONTROL MEASURES WHEN IT REACHES A DEPTH OF SIX (6) INCHES OR IMPAIRS THE EFFECTIVENESS OF THE MEASURES.
11. THE CONTRACTORS REPRESENTATIVE WILL INSPECT THE PROJECT EVERY SEVEN DAYS, AT A MINIMUM, AND AFTER EVERY RAINFALL OF ONE-HALF INCHES OR GREATER TO DETERMINE THE INTEGRITY AND EFFECTIVENESS OF THE EROSION CONTROL MEASURES. A WRITTEN INSPECTION REPORT WILL BE FILED WITH THE POLLUTION PREVENTION PLAN. THIS INSPECTION DOES NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR INSPECTION AND MAINTENANCE OF THE EROSION CONTROL MEASURES OR HIS DUTY TO COMPLY WITH THE INTENT AND CONDITIONS OF THE N.P.D.E.S. GENERAL PERMIT.
12. ALL STOCKPILED SOILS WILL BE SURROUNDED BY A STRAW BALE DIKE, SILT FENCE, SEDIMENT CONTROL SWALE, OR EQUIVALENT MEASURE TO PROPERLY CONTROL SEDIMENT RUNOFF, AS APPROVED BY THE OWNER.
13. CONTRACTOR SHALL STABILIZE ANY AREA WHERE CONSTRUCTION ACTIVITY IS TO BE TEMPORARILY OR PERMANENTLY CEASED FOR MORE THAN 14 DAYS.
13. ALL DISTURBED AREAS TO BE SEEDED AND STABILIZED UNTIL GRASS IS ESTABLISHED.



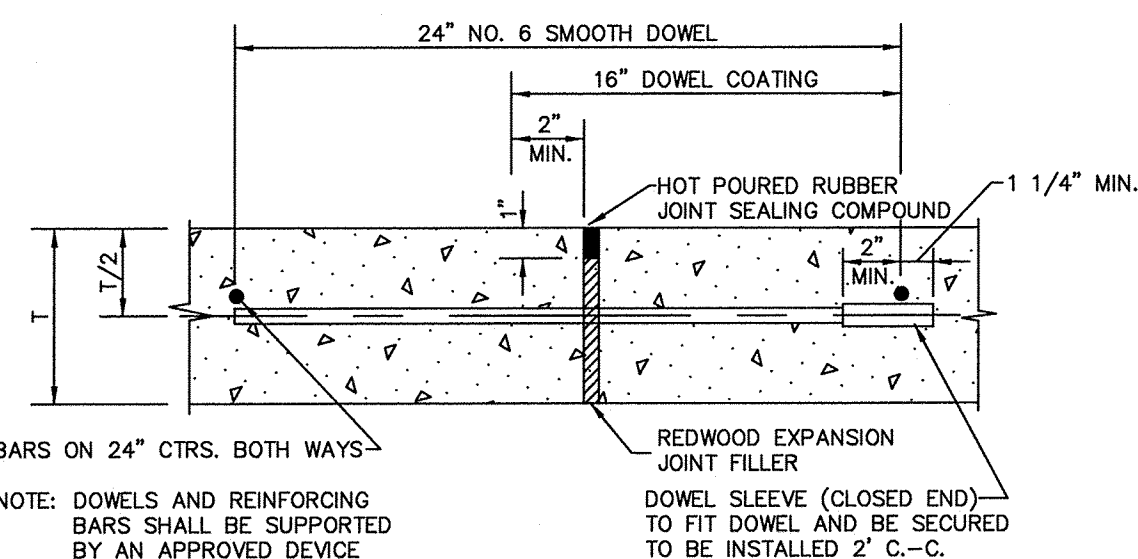
**CONSTRUCTION JOINT DETAIL**  
N.T.S.



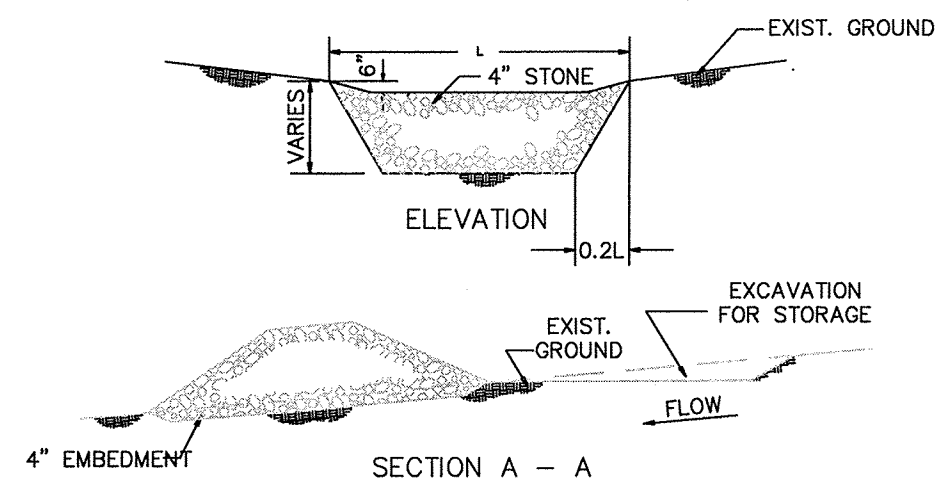
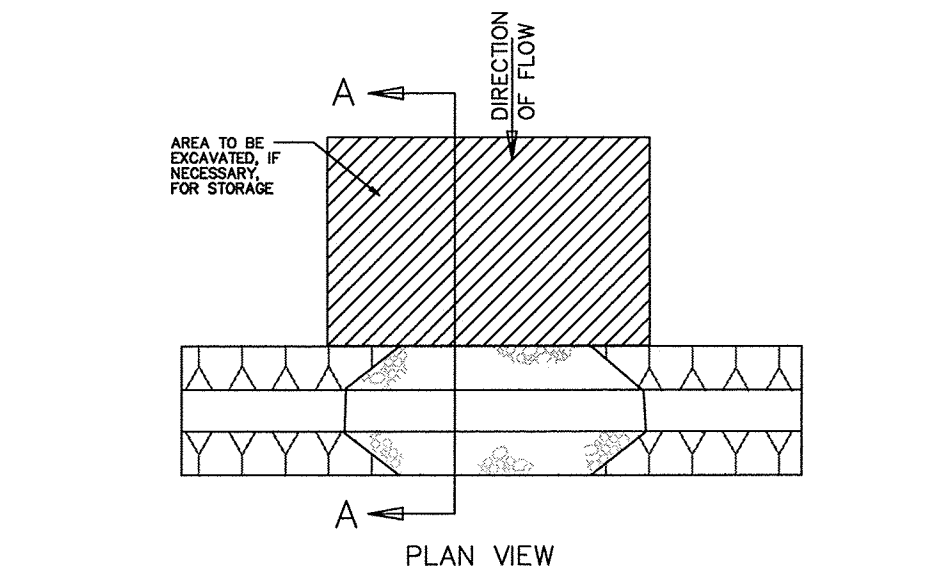
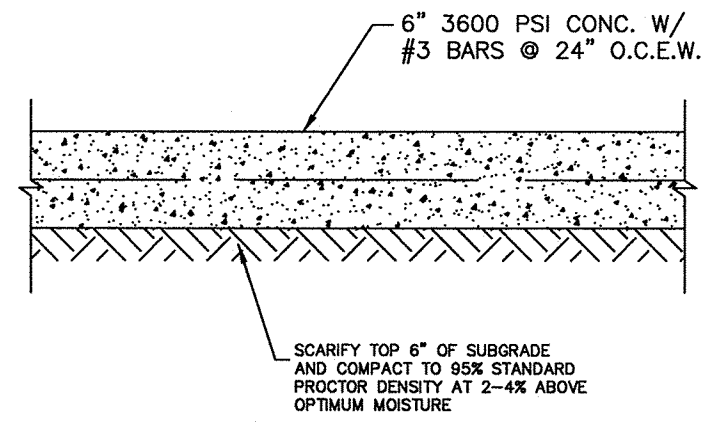
**CONCRETE PAVEMENT**  
NO SCALE



**SILT FENCE**  
N.T.S.  
NCTCOG 02270.B  
STORM WATER QUALITY  
BEST MANAGEMENT PRACTICES  
FOR CONSTRUCTION ACTIVITIES

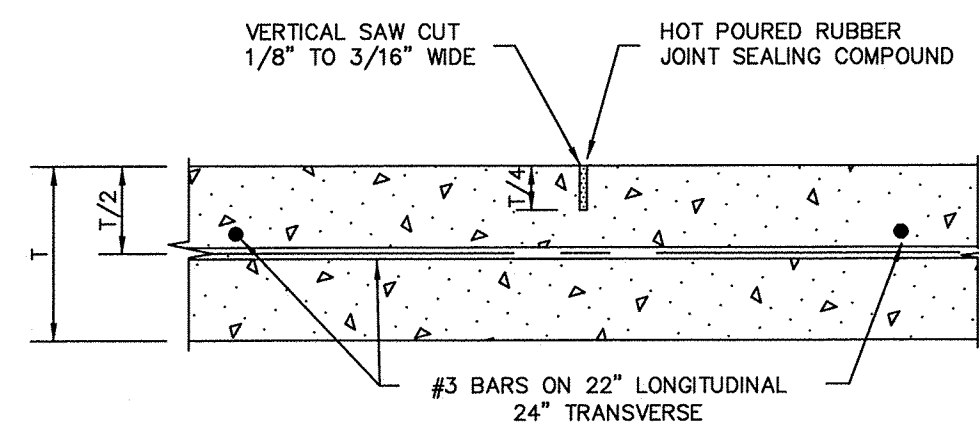


**TRANSVERSE EXPANSION JOINT DETAIL**  
NOTE: SPACE 600' O.C., LOCATE AT INTERSECTIONS

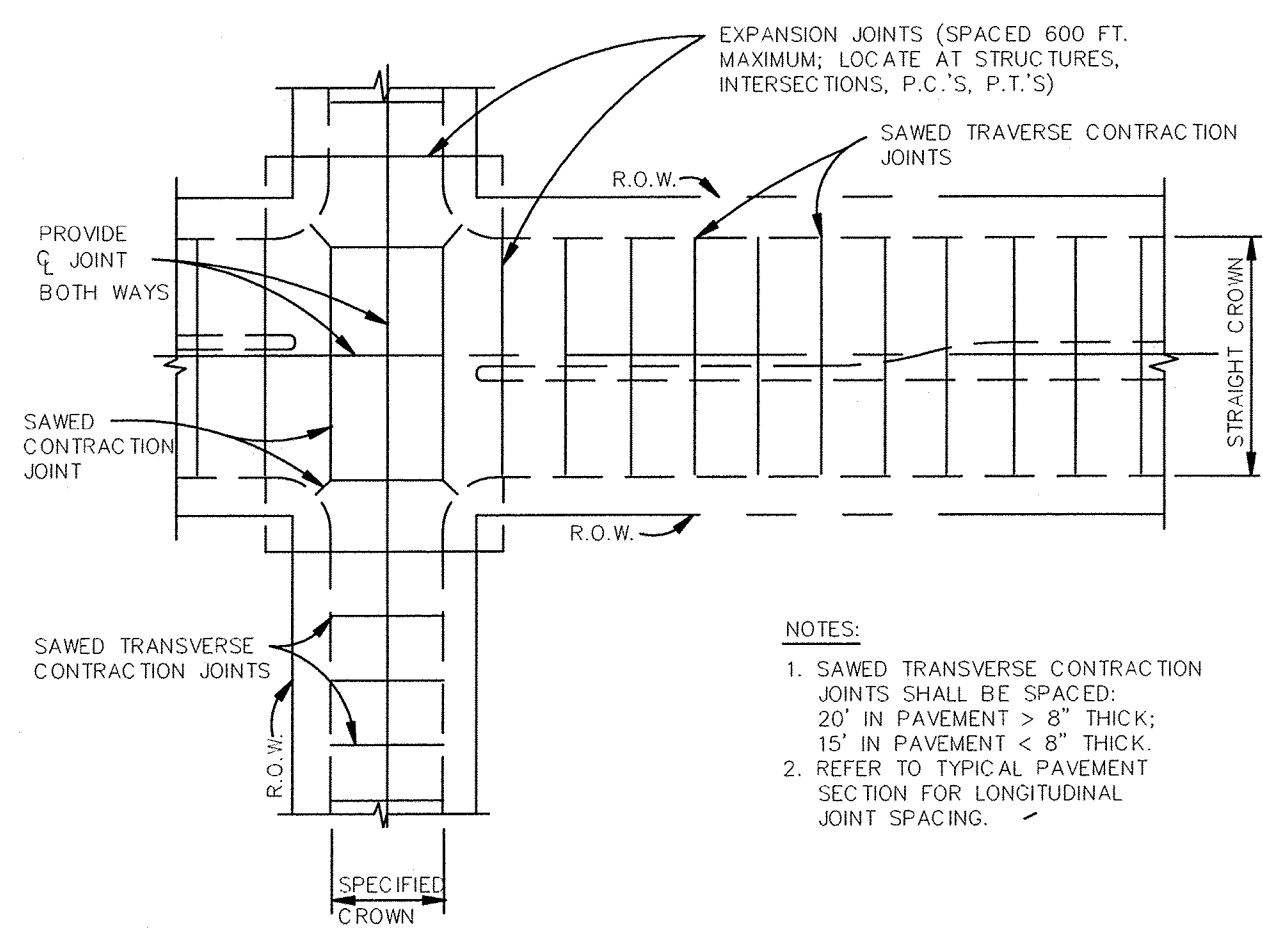


**STONE SILTATION STRUCTURE**  
N.T.S.

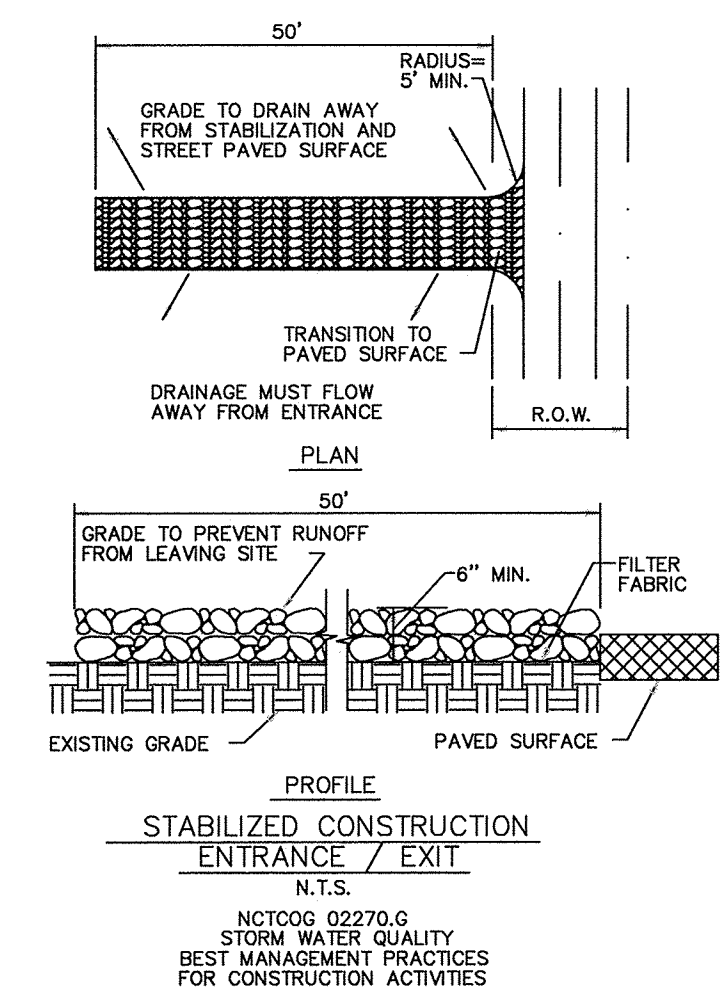
Stone Siltation Structure To Be Installed Prior To Beginning Work On Site.



**SAWED DUMMY JOINT DETAIL**



**SPACING DIAGRAM FOR TRANSVERSE JOINTS**  
N.T.S.



**STABILIZED CONSTRUCTION  
ENTRANCE / EXIT**  
N.T.S.  
NCTCOG 02270.G  
STORM WATER QUALITY  
BEST MANAGEMENT PRACTICES  
FOR CONSTRUCTION ACTIVITIES

**RECORD DRAWINGS**

To the best of our knowledge Engineering Concepts & Design, L.P., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

*Todd Winters* 9-18-15  
TODD WINTERS DATE

BENCHMARK:  
An "X" cut in south end of a concrete headwall on the east side of Stinson Road at Muddy Creek  
Elevation 569.65'



ENGINEERING / PROJECT MANAGEMENT /  
CONSTRUCTION SERVICES - FIRM REG. #F-001145  
201 WINDCO CIR, STE 200, WYLIE, TX 75098  
972-941-8400 FAX: 972-941-8401 WWW.ECDLP.COM

REVISIONS:	
DRAWN: JIM	DATE: SEPTEMBER, 2015
CHECKED: TW	DATE:
PROJECT NO.: 8313	
DWG FILE NAME: 1 COVERSHEET.DWG	

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF CONSTRUCTION. THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY  
TODD D. WINTTERS, P.E. 87085



**PAVING & EROSION CONTROL  
DETAILS  
BRISTOL PARK  
PHASE I**

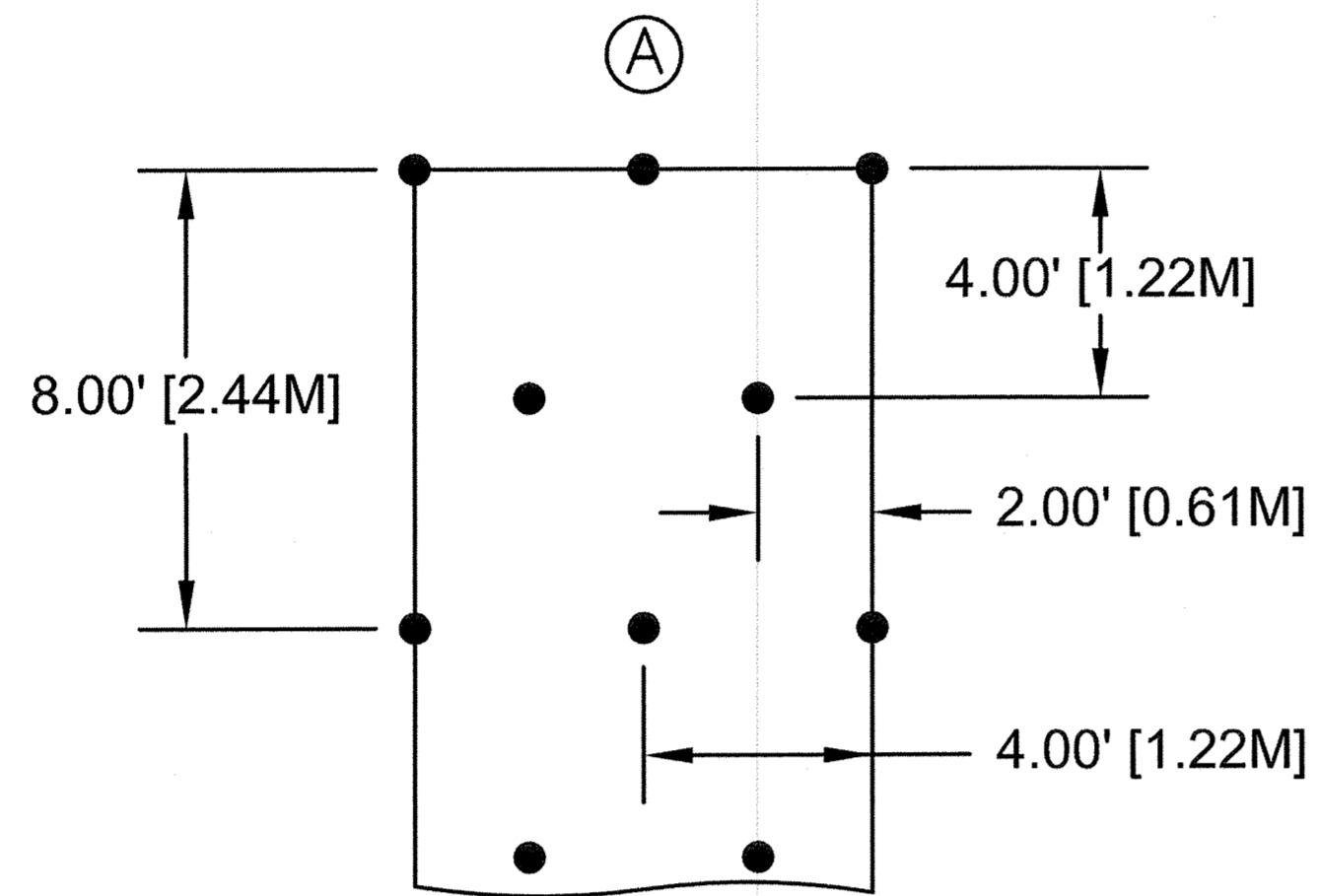


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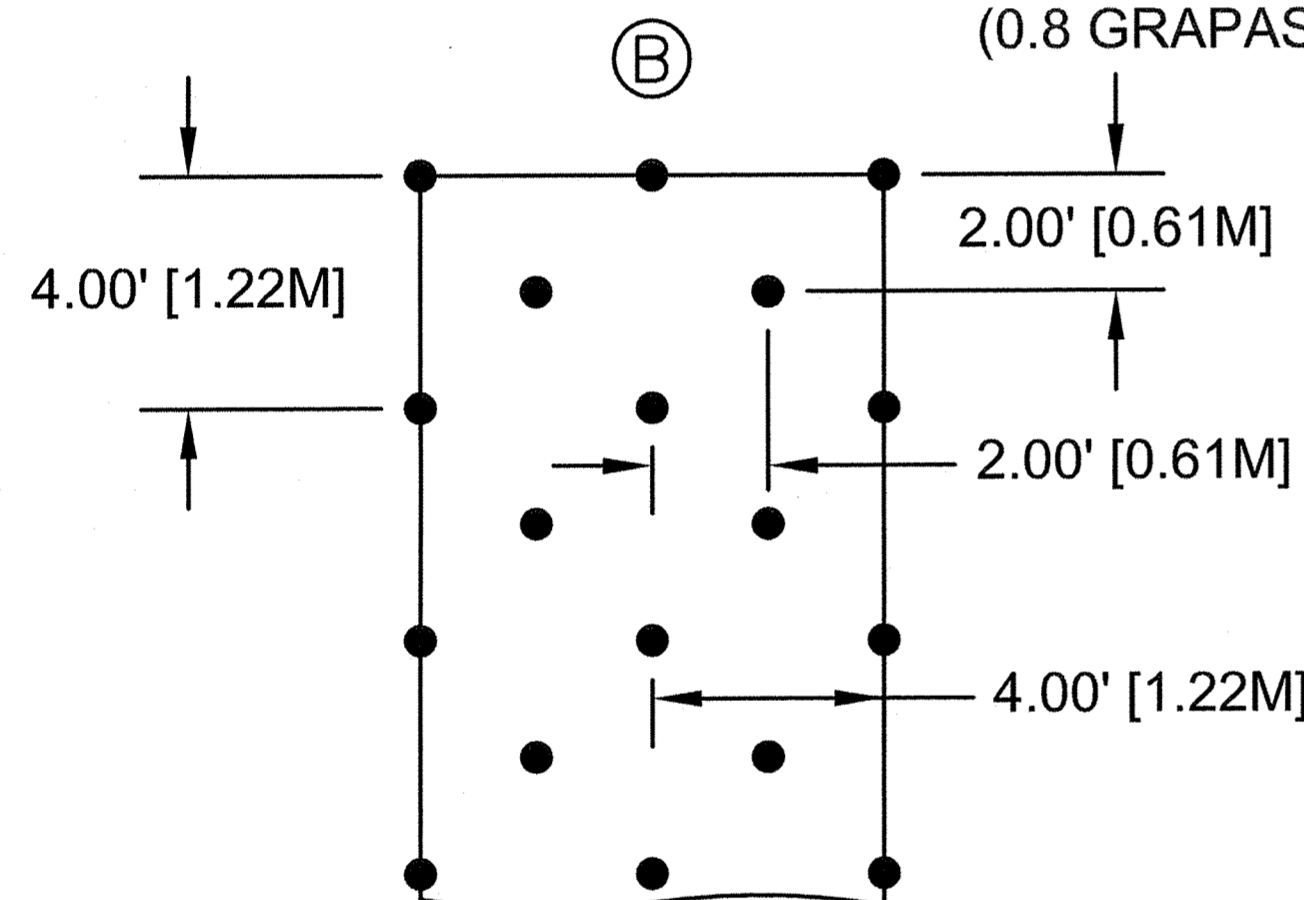
# STAPLE PATTERN GUIDE 8' (2.4 M) WIDE ROLLS PARA EL ENGRAPADO 8' (2.4 M) ROLLE ANCHO



0.7 STAPLES PER SQ. YD.  
(0.8 STAPLES PER SQ. M)

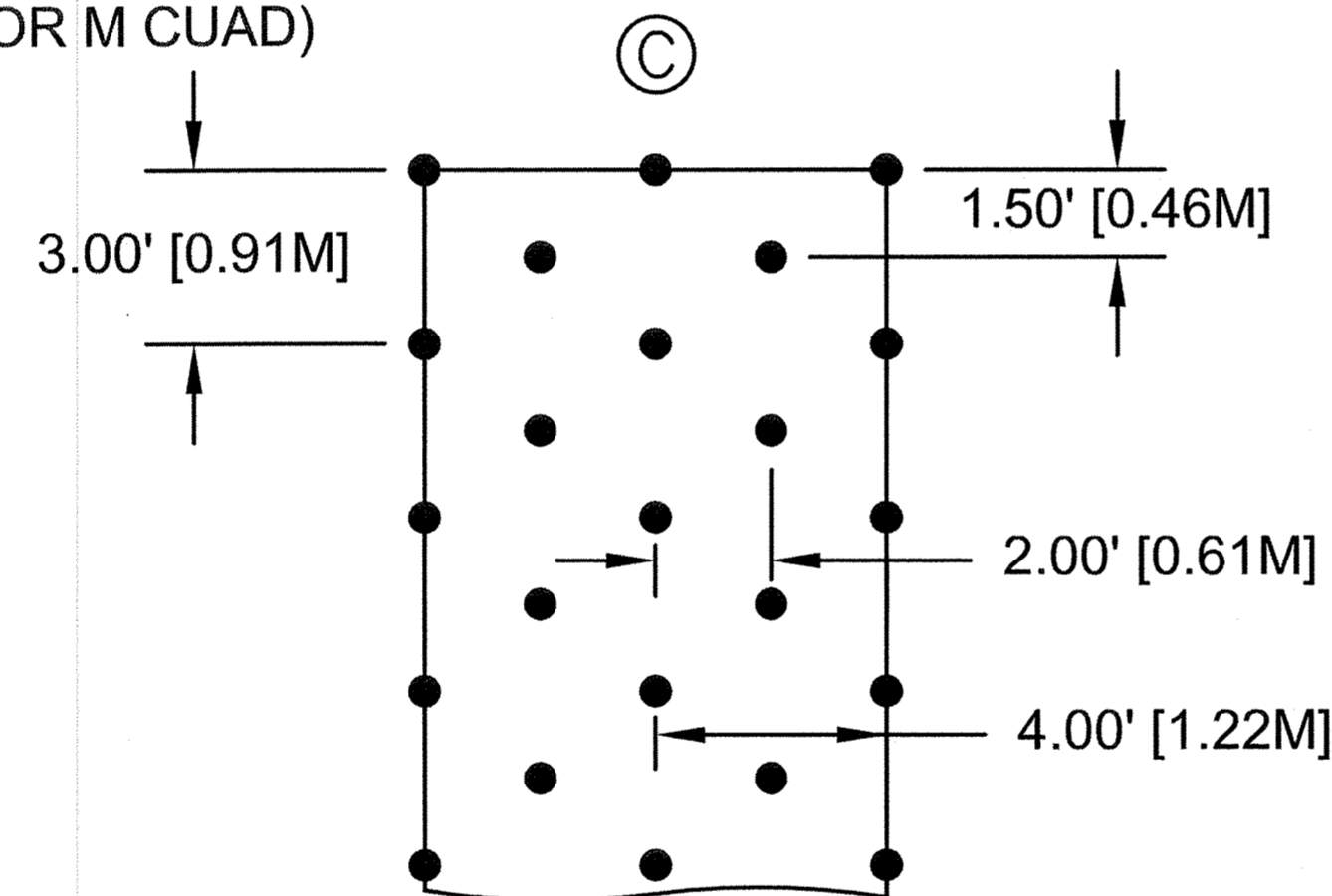
0.7 GRAPAS POR YD CUAD  
(0.8 GRAPAS POR M CUAD)

Recommended Staples per Roll on 8 ft. (2.4 m) Wide x 112 ft. (34.14 m) Long Rolls (100 sq. yd. / 83.61 sq. m)	
PATTERN	QUANTITY
A	70
B	130
C	170
D	340
E	360



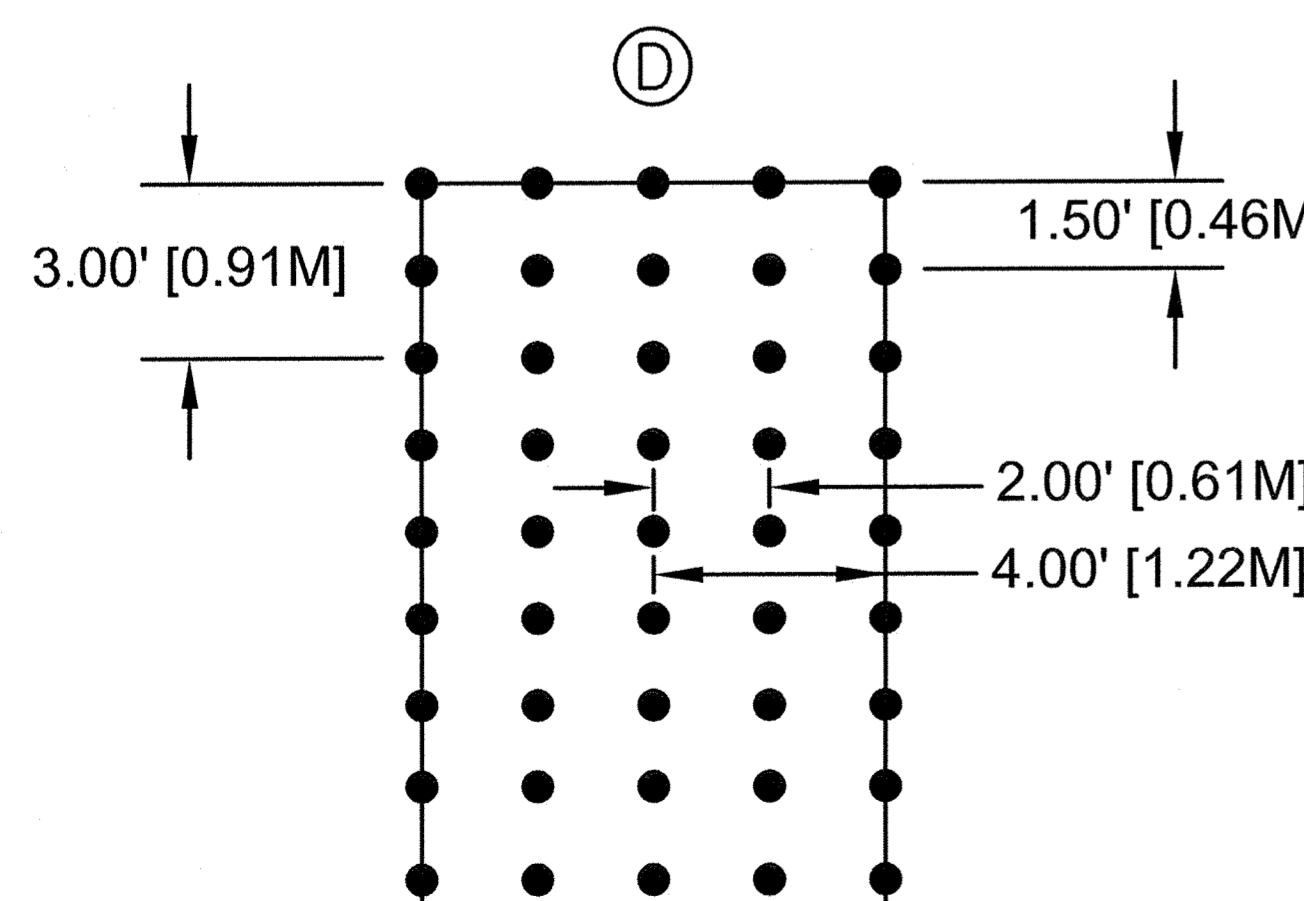
1.3 STAPLES PER SQ. YD.  
(1.5 STAPLES PER SQ. M)

1.3 GRAPAS POR YD CUAD  
(1.5 GRAPAS POR M CUAD)



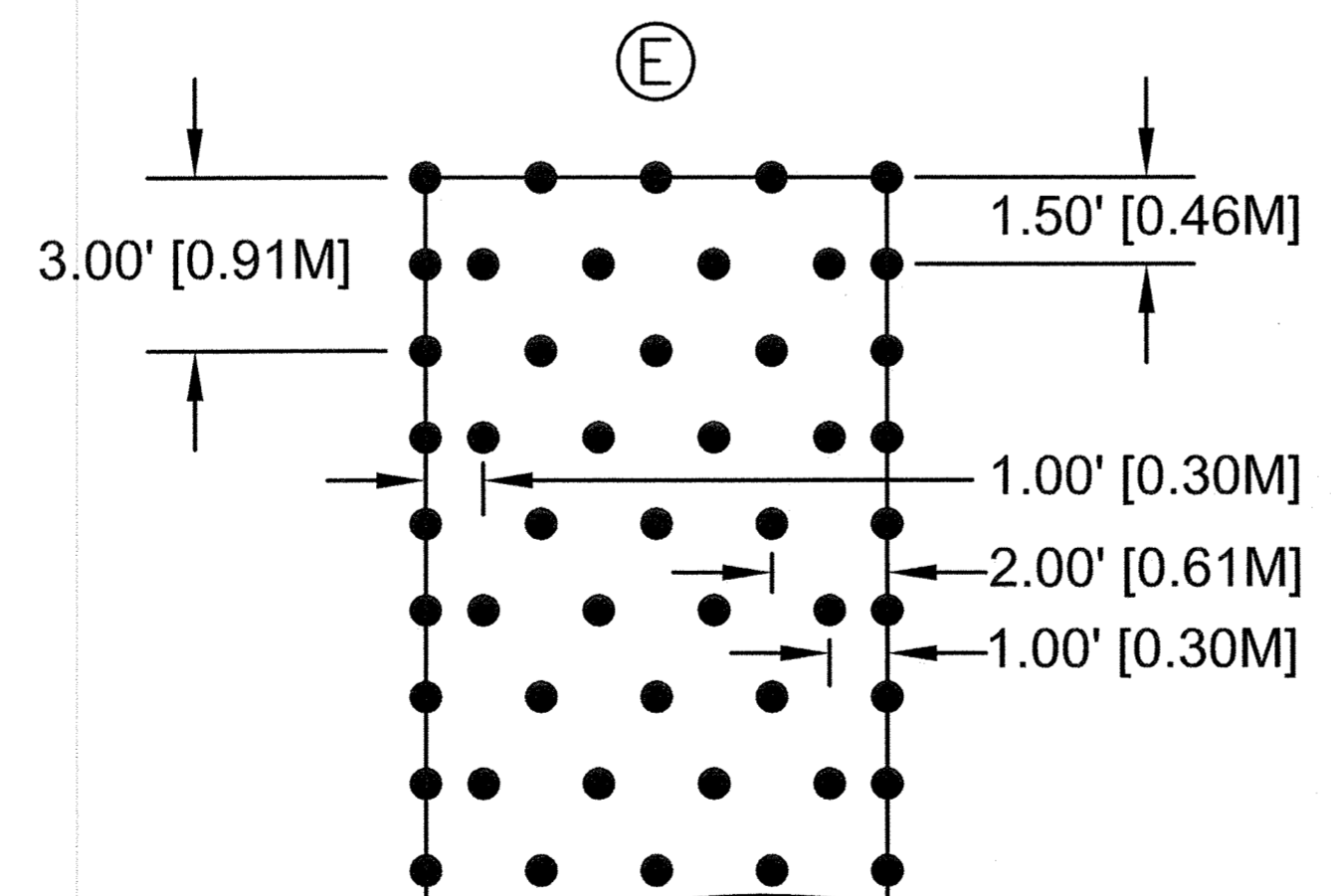
1.7 STAPLES PER SQ. YD.  
(2.0 STAPLES PER SQ. M)

1.7 GRAPAS POR YD CUAD  
(2.0 GRAPAS POR M CUAD)



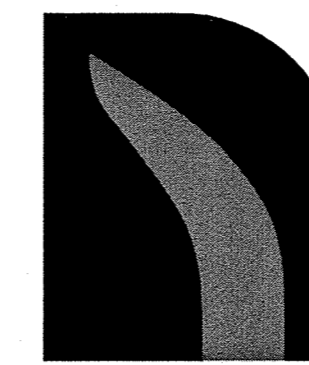
3.4 STAPLES PER SQ. YD.  
(4.1 STAPLES PER SQ. M)

3.4 GRAPAS POR YD CUAD  
(4.1 GRAPAS POR M CUAD)



3.6 STAPLES PER SQ. YD.  
(4.3 STAPLES PER SQ. M)

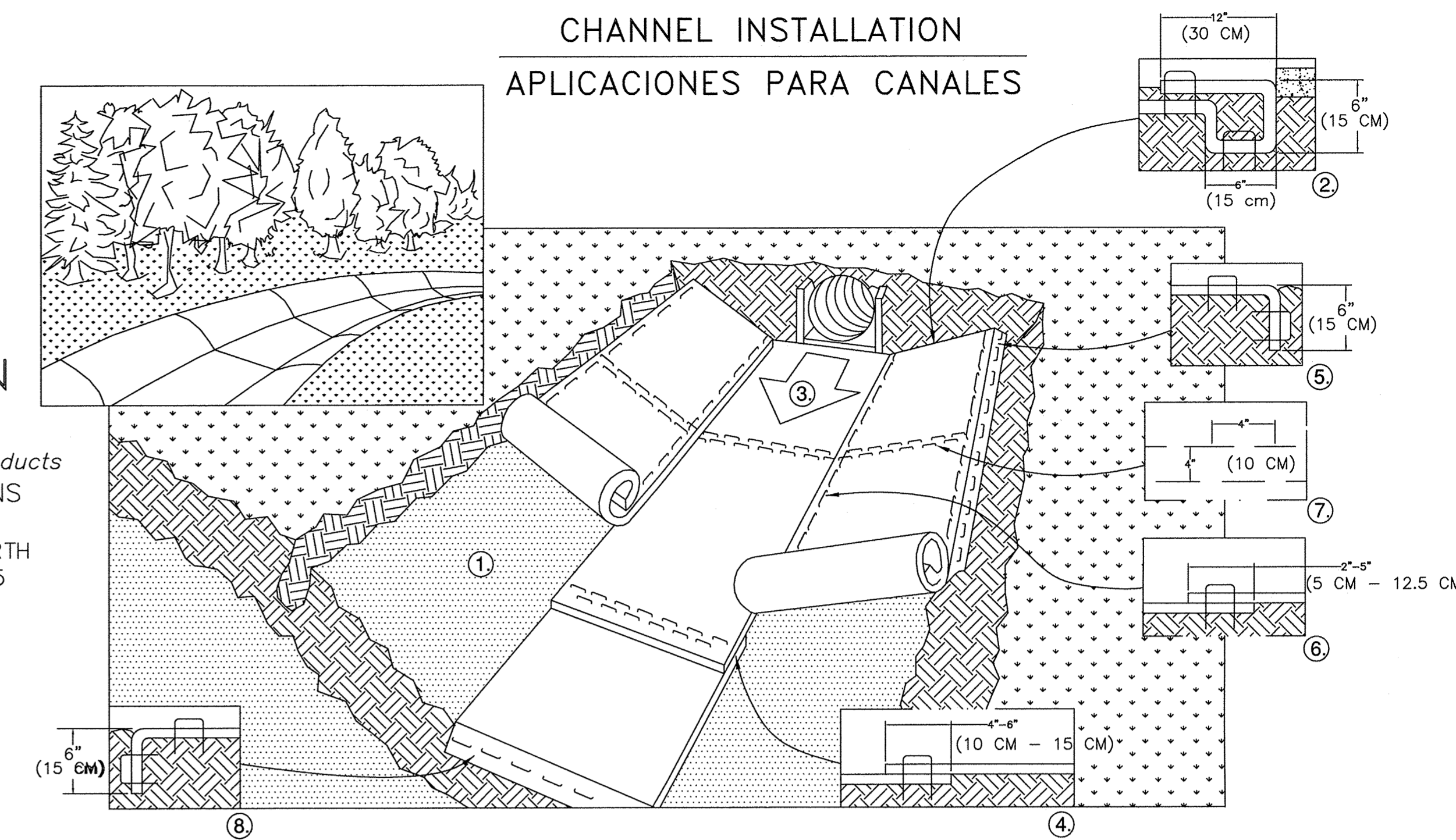
3.6 GRAPAS POR YD CUAD  
(4.3 GRAPAS POR M CUAD)



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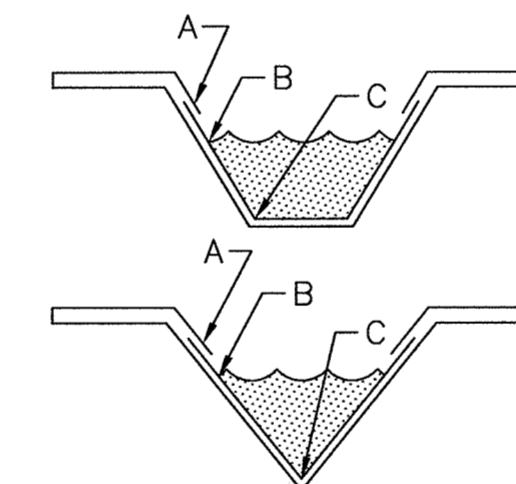
## CHANNEL INSTALLATION APLICACIONES PARA CANALES



- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP'S IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP'S.
- ROLL CENTER RECP'S IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- PLACE CONSECUTIVE RECP'S END OVER END (SHINGLE STYLE) WITH A 4" - 6" (10 CM - 15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP'S.
- FULL LENGTH EDGE OF RECP'S AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- ADJACENT RECP'S MUST BE OVERLAPPED APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) (DEPENDING ON RECP'S TYPE) AND STAPLED.
- IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M - 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
- THE TERMINAL END OF THE RECP'S MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

NOTE:

\* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP'S.



CRITICAL POINTS  
A. OVERLAPS AND SEAMS  
B. PROJECTED WATER LINE  
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:

\* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

\*\* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP'S.

PUNTOS CRITICOS  
A. TRASLAPES Y JUNTAS  
B. LINEAS DE AGUA PROYECTADA  
C. FONDO DEL CANAL/VERTICES DE LAS PENDIENTES LATERALES

NOTA:

\* LA SEPARACION HORIZONTAL DE LAS GRAPAS SE DEBE ALTERAR SI SE NECESITA, PARA PERMITIR QUE LAS GRAPAS ASEGUEN LOS PUNTOS CRITICOS A LO LARGO DE LA SUPERFICIE DEL CANAL.

\*\* EN CONDICIONES DE SUELO SUELTO, PUEDE QUE SE NECESITEN GRAPAS O ESTACAS DE MAS DE 6" (15 CM) DE LARGO PARA ASEGUAR LAS MANTAS CORRECTAMENTE.

- PREPARE EL SUELO DE COLOCAR LAS MANTAS, INCLUYENDO LA APLICACION DE CAL, FERTILIZANTE SEMILLA. NOTA: CUANDO ESTE USANDO CELL-O-SEED NO SIEMPRE EL AREA PREPARADA. CELL-O-SEED TIENE QUE INSTALARSE CON EL LADO DE PAPEL HACIA ABAJO.
- COMIENCE EN LA CABECERA DEL CANAL SUJETANDO LA MANTA EN UNA ZANJA DE 6" (15 CM) DE PROFUNDIDAD POR 6" (15 CM) DE ANCHO CON APROXIMADAMENTE 12" (30 CM) DE LA MANTA EXTENDIDA MAS ALLA DE LA PENDIENTE ALTA DE LA ZANJA. SUJETE RELLENE Y COMPACTE LA ZANJA DESPUES DEL ENGRAPE. RIEGUE LA SEMILLA EN EL SUELO COMPACTADO Y DOBLE LAS 12" (30 CM) REMANENTES DE MANTA SOBRE LA SEMILLA Y EL SUELO COMPACTADO. ASEGURE LA MANTA SOBRE EL SUELO CON UNA LINEA DE GRAPAS O ESTACAS APROXIMADAMENTE 12" (30 CM) UNA DE LA OTRA A TRAVES DEL ANCHO DE LA MANTA.
- DESENROLLE LA MANTA DEL MEDIO EN EL FONDO DEL CANAL Y EN LA DIRECCION DEL FLUJO DE AGUA CON EL LADO APROPIADO HACIA LA SUPERFICIE DEL SUELO. TODAS LAS MANTAS DEBERAN ASEGUARSE A LA SUPERFICIE DEL SUELO POR MEDIO DE GRAPAS O ESTACAS EN LUGARES APROPIADOS TAL Y COMO SE INDICA EN EL PATRON GUIA DE ENGRAPADO, CUANDO ESTE USANDO EL DOT SYSTEM™. LAS GRAPAS O ESTACAS DEBEN COLOCARSE A TRAVES DE CADA UNO DE LOS PUNTOS CON COLOR CORRESPONDIENTES AL PATRON DE ENGRAPADO APROPIADO.
- COLOQUE LAS MANTAS CONSECUTIVAS BORDE SOBRE BORDE (TIPO ESCALONADO) CON UN TRASLAPES DE 4" - 6" (10 CM - 15 CM). USE UNA LINEA DOBLE DE GRAPAS ESCALONADAS, SEPARADAS POR 4" (10 CM) Y CADA 4" (10 CM) SOBRE EL CENTRO PARA ASEGUAR LAS MANTAS.
- EN EL TOPE DE LAS DOS PENDIENTES LATERALES DEL CANAL, SE DEBE SUJETAR TODO EL LARGO DE LA ORILLA DE LAS MANTAS CON UNA LINEA DE GRAPAS O ESTACAS APROXIMADAMENTE CADA 12" (30 CM) UNA DE LA OTRA EN UNA ZANJA DE 6" (15 CM) DE PROFUNDIDAD POR 6" (15 CM) DE ANCHO. RELLENE Y COMPACTE LA ZANJA DESPUES DEL ENGRAPE.
- LAS MANTAS ADYACENTES DEBEN TRASLAPARSE APROXIMADAMENTE DE 2" - 5" (5 CM - 12.5 CM) (DEPENDIENDO DEL TIPO DE MANTA) Y ENGRAPPARSE.
- EN APLICACIONES PARA CANALES DE FLUJO ALTO, SE RECOMIENDA DEJAR UNA RANURA PARA EL CHEQUEO DE LAS GRAPAS A INTERVALOS DE 30 A 40 PIES (9 M - 12 M). USE UNA LINEA DOBLE DE GRAPAS ESCALONADAS, SEPARADAS POR 4" (10 CM) Y CADA 4" (10 CM) SOBRE EL CENTRO A TRAVES DE TODO EL ANCHO DEL CANAL.
- LOS BORDES FINALES DE LAS MANTAS DEBEN SUJETARSE CON UNA LINEA DE GRAPAS O ESTACAS APROXIMADAMENTE CADA 12" (30 CM) UNA DE LA OTRA EN UNA ZANJA DE 6" (15 CM) DE PROFUNDIDAD POR 6" (15 CM) DE ANCHO. RELLENE Y COMPACTE DESPUES DEL ENGRAPADO.

NOTE:

\* EN CONDICIONES DE SUELTO, PUEDE QUE SE NECESITEN GRAPAS O ESTACAS DE MAS DE 6" (15 CM) DE LARGO PARA ASEGUAR LAS MANTAS CORRECTAMENTE.

NOTE:

CONTRACTOR TO INSTALL (C-350) V-MAX MATTRESS USING STAPLE PATTERN "B" UNLESS OTHERWISE NOTED.

V-MAX MATTRESS  
DETAILS