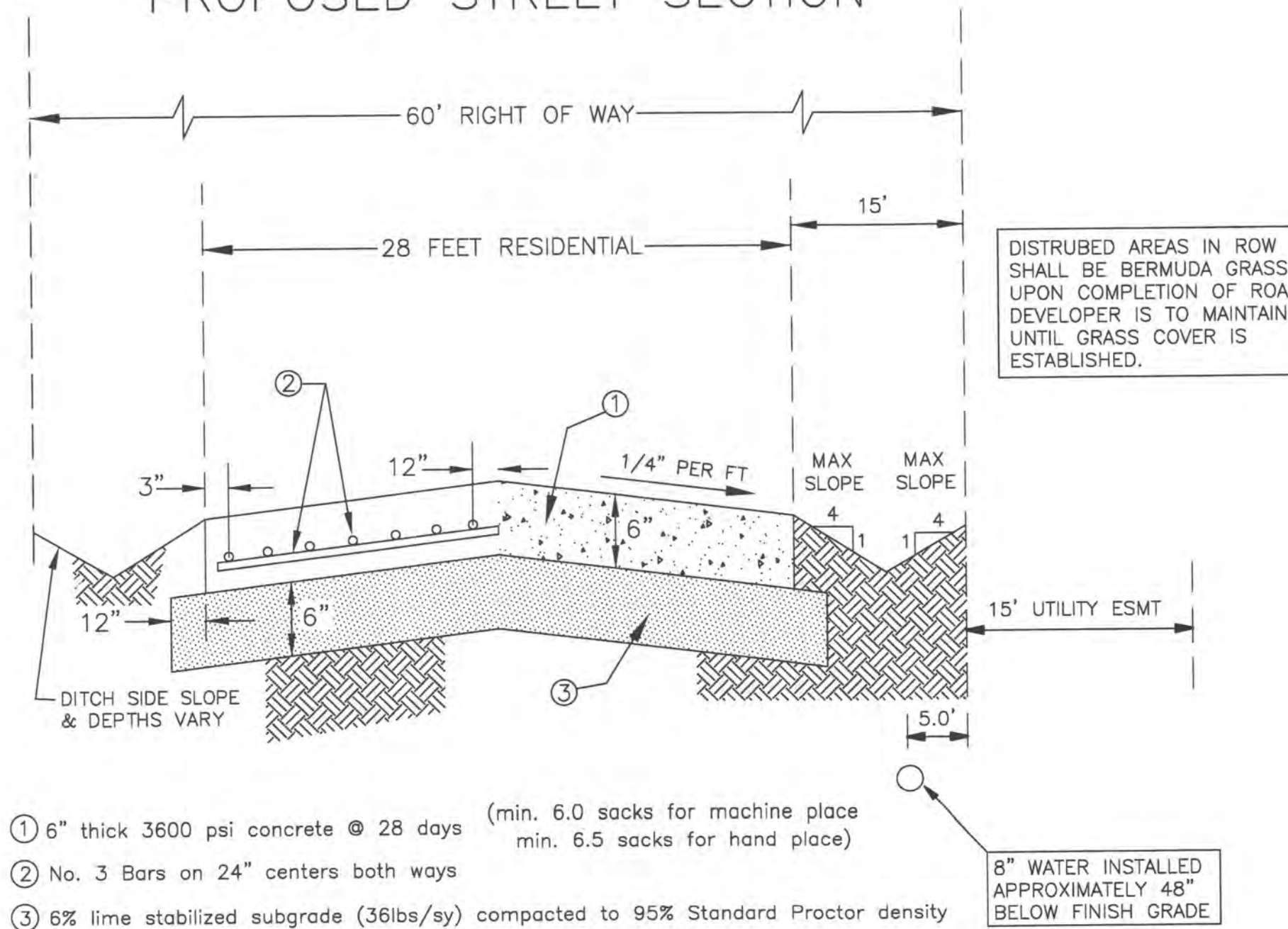


GENERAL NOTES

- Utility information is based upon field measurements and the best available records. Field data is limited to that which is visible and can be measured. This does preclude the existence of other underground items. Record information is based upon data collected from both private and public sources. The completeness and/or accuracy of these records cannot be guaranteed except insofar as they can be verified by the field measurements. It shall be the Contractor's responsibility to make arrangements with the franchise utilities prior to work to confirm the exact location and elevation of utilities.
- All materials and workmanship shall strictly conform to the City of Rockwall Standards of Design; the North Central Texas Council of Governments Public Works Construction Standards, 3rd Edition; Construction Standards, Specifications and Regulations of Blackland Water Supply and Standard Construction Details and all TCEQ Regulations.
- All barricades, warning signs, lights, devices, etc., for the guidance and protection of traffic and pedestrians must conform to the installation shown in the 1980 Texas Manual of Uniform Traffic Control Devices as currently amended, Texas Department of Transportation. Contractor shall take special precautions to barricade all hazardous areas at the end of each day.
- The Contractor is responsible for keeping streets and sidewalks adjacent to project free of mud and debris from the construction.
- All natural ground or cut areas which are to receive fill shall be scarified, the water content adjusted to at least 2% wet of optimum, and the top 6 inches of surface shall be compacted to at least 95% Standard Proctor density (ASTM-D-698) -1 to +2% above the optimum moisture content. All to be compacted using a sheeps foot roller.
- All pavement concrete shall have minimum compressive strength of 3600 P.S.I. at 28 days. (Minimum 6.0 sacks for machine place and min. 6.5 sacks for hand place) All aggregate shall be minimum 3/4" maximum aggregate 1-1/2". All reinforcing steel shall be No. 3 Bars on 24" center, each way, placed at mid-depth & supported by bars chairs.
- Transverse contraction joints will not be built with pavement on this project. Sawed dummy joint will be 1" deep, spaced 15' on centers, and filled with approved joint sealer.
- All concrete finish shall be in accordance with the Texas Department of Transportation Standard Specifications, Item 360.10. Spreading and Finishing. Finish shall be uniform brush finish (carpet drag).
- The Contractor shall be responsible for TEMPORARY EROSION, SEDIMENT, and WATER POLLUTION CONTROL, Per N.C.T.C.O.G. Specifications Division 200 item no. 201. thru 203.B.
- Access to the abutting properties during the construction of this project must be maintained for emergency and local traffic with approved all-weather surface.
- The Contractor shall be responsible to protect existing water and sanitary sewer services to adjacent properties. If replacement of existing services is necessary due to grade and/or utility conflicts, new material shall be installed from the main to the service replacement near the property line.
- All installed and existing valves shall be operated by Blackland Water Supply representative only.
- Notification to the public when the water will be cut off during construction shall be the responsibility of the Contractor and shall be done 24 hours prior to the cut off. A written notice shall be left on every door 24 hours prior to the cut off.
- Water service to residents shall not be cut off for more than eight (8) hours on any given day without prior written approval of the Blackland Water Supply.
- Existing paving, utilities, fences, etc. damaged by the construction of the proposed improvements, shall be replaced to a condition equal to or better than its original condition, Contractor shall make these repairs at his own expense.
- Contractor shall be required to furnish to the City of Rockwall appropriate insurance, payment and performance bonds prior to commencing work. The test reports for subgrade stabilization and density testing shall be provided to the City Engineer for approval prior to construction of the concrete streets. At the completion of work, a lien release, test reports, As-builts and a (two year @ 10% maintenance bond per developer's agreement) covering the date of final acceptance of work shall be provided to the City. Any defects in workmanship shall be corrected at no cost to the City.

PROPOSED STREET SECTION



All embankment, subgrade, and treated soils shall be compacted at a moisture content of +2% or higher of optimum moisture at a minimum density of 95% Standard Proctor (ASTM D-698) should be used for clay soils and Tex 113 E should be used for base materials and treated soils in accordance with TxDOT methods.

PAVING AND GRADING GENERAL NOTES

- All construction shall conform to the North Central Texas Council of Governments Public Works Construction Standards, 3rd Edition and City of Rockwall Standards of Design. In the event that an item is not covered, the contractor shall bring the problem to the attention of the engineer for approval or modification.
- Excavation of fill operations shall not interfere with or obstruct pre-construction drainage patterns until such time as on-site drainage improvements are constructed.
- All spot elevations shown to top of pavement or finished grade unless otherwise noted. The intention of this grading plan is preclude ponding water on paving or grassed areas. If the contractor finds any location that will result in ponding water, the Engineer shall be notified for clarification prior to pavement placement.
- All subgrade beneath proposed pavement shall be scarified 6" deep and compacted to at least 95% Standard Proctor density (ASTM-D-698) -1 to +2% above the optimum moisture content.
- Sawed transverse dummy joints shall be installed in concrete pavement on 15' centers. Sawed longitudinal dummy joints shall be installed along centerline of road and outsides where applicable. All joints shall be filled with an approved sealer.
- Transverse expansion joints shall be installed at all drive returns and a maximum of 400' on centers along the roadway. Expansion joints shall be placed along all fixed objects such as light poles and foundations.
- Contractor shall adjust all manholes and water valves to match finished grades as shown on drawings.
- Street lights (if installed) shall be installed 3 1/2 to 4' behind back of curbs as required but shall not encroach on any sidewalks.
- Contractor shall construct barrier free ramps at all intersections per City of Rockwall Details. All handicap ramps, stairs, walks and access to the building(s) shall meet ADA, TASS and all applicable standards.
- Contractor shall be responsible for traffic control warning and safety devices until all work has been accepted by the City of Rockwall and the owner.
- The location of existing utilities shown on these plans are approximate. All utilities may not be shown. It is the responsibility of the contractor to contact the City of Rockwall and all area utilities that may conflict with construction prior to beginning work.
- Erosion control shall conform to the North Central Texas Council of Governments Public Works Construction Standards, 3rd Edition and City of Rockwall Standards of Design. Lot erosion control to be installed per City specifications after subdivision is substantially completed.
- Construction joints shall be built at the end of each concrete pour if another pour is to be placed adjacent more than 1 hour later.
- Paving contractor will provide to the City of Rockwall Engineer for approval the proposed concrete mix design prior to paving. Mix design will show at minimum percentage of air entrainment, aggregate size, additives, maximum slump and water content, etc.
- Weight tickets for the lime need to be provided to the City Engineer so that they can verify the percentage of lime used.
- All detention systems to be installed and functioning per plan prior to any paving installation. The sides and bottoms of all detention to either be sodded or have anchored seeded curlex installed prior to paving.

E 2016-016 Date 10-13-16

PLAN REVIEW	Approved	Dis-Approved	Date
Submittal Date: 9-29-16			
City Engineer	—		
Assistant City Engineer	—		
Civil Engineer			10/14/16
Water	—		
Wastewater	—		
Streets	—		
Engineering	BWH		9/30/16
Fire Department	—		
Planning & Zoning	—		
Other	—		

Minor Comments
As-Noted

WANDA RIDGE ESTATES PHASE 2

ROCKWALL COUNTY, TEXAS

OWNER:
CROWELL DEVELOPMENT CORPORATION
CONTACT: ROBERT JOHN CROWELL
403 SOUTH ELM STREET
ROYSE CITY, TEXAS 75189
PHONE: 972-636-2108

ENGINEER:
HENRY G. NIBLO, P.E.
5231 KIWANIS ROAD
DALLAS, TEXAS 75236
(214) 770-6947
FIRM NO. F-11286

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 LAVON, TEXAS 75166
CELL: (972) 742-4411
OFFICE: (214) 726-2041
TEXAS FIRM REGISTRATION NO.: 10007200

PRELIMINARY REVIEW
THIS DOCUMENT IS RELEASED
FOR THE PURPOSE OF REVIEW UNDER THE
AUTHORITY OF:
HENRY G. NIBLO, P.E. NO. 68739
ON SEPTEMBER 26, 2016
IT IS NOT TO BE USED FOR CONSTRUCTION,
BIDDING, PERMIT PURPOSES.

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- 10 OFFSITE DRAINAGE AREA MAP
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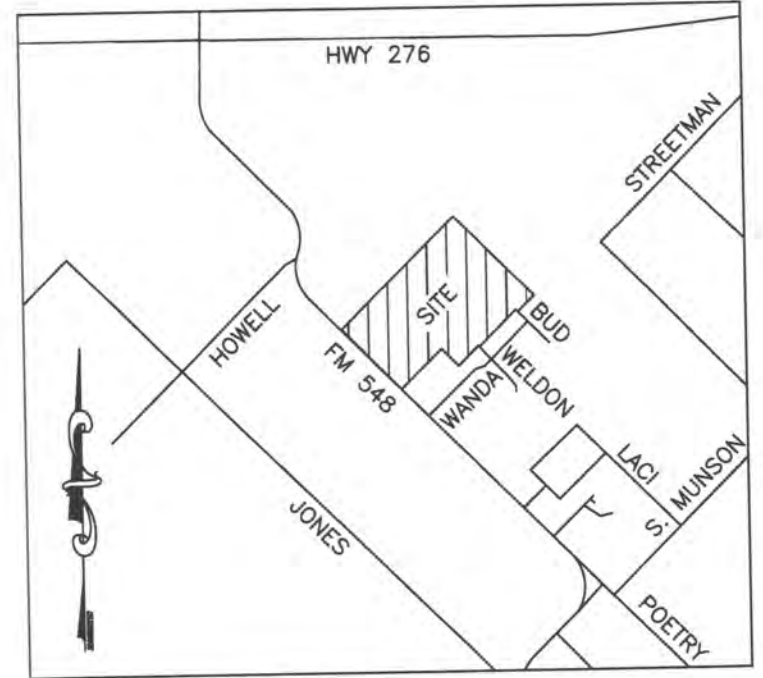
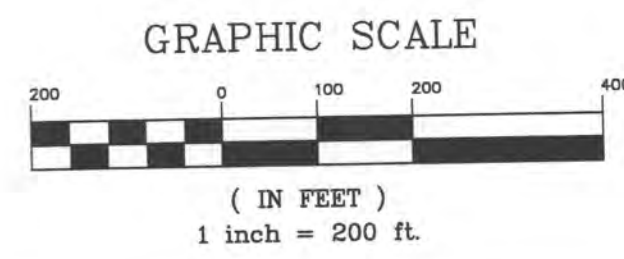
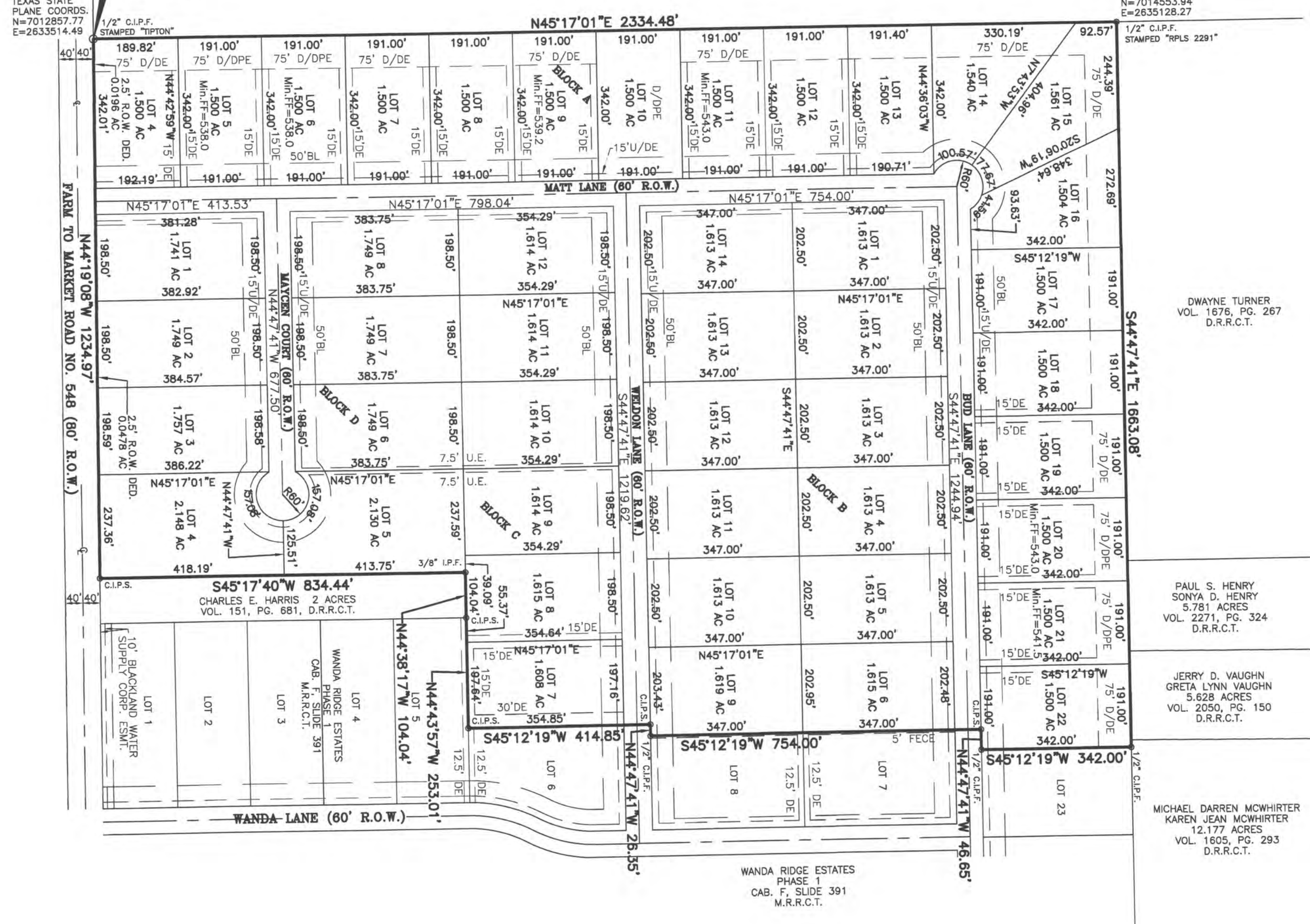
SUBMITTAL #3
SEP 29 2016
City of Rockwall Engineering Dept.

TEXAS STATE
PLANE COORDS
N=7012857.77
E=2633514.48

POINT OF BEGINNING
1/2" C.I.P.S.
STAMPED "TIFTON"

DONALD JUNT AND EQUITY TRUST COMPANY
CUSTODIAN FBO DONALD JUNT IRA
97.282 ACRES
VOL. 2015, PG. 18282
D.R.R.C.T.

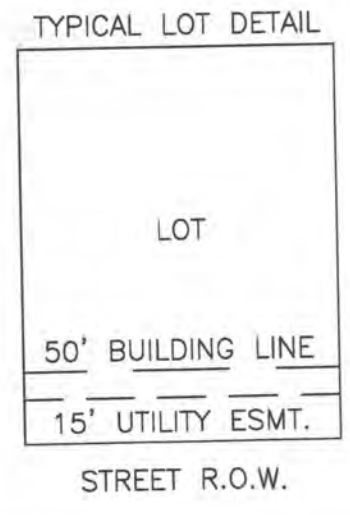
TEXAS STATE
PLANE COORDS
N=7014553.94
E=2635128.27



- U/DE - UTILITY & DRAINAGE EASEMENT
- UE - UTILITY EASEMENT
- BL - BUILDING LINE
- DE - DRAINAGE EASEMENT
- D/DE - DETENTION/DRAINAGE EASEMENT
- D/DPE - DRAINAGE/DETENTION POND EASEMENT
- FECE - FARMERS ELECTRIC COOPERATIVE EASEMENT
- C.I.P.S. - 1/2" YELLOW CAPPED IRON PIN SET STAMPED "CCG INC RPLS 5129"

FINAL PLAT
WANDA RIDGE ESTATES
PHASE 2
44 RESIDENTIAL LOTS
79.7111 ACRES OF LAND
S. MCFADGIN SURVEY, ABSTRACT NO. 142
ROCKWALL COUNTY, TEXAS
CASE NO.: P2016-016

NOTES:
All drainage/detention systems to be maintained, repaired, and replaced by property owner(s).
Bearings based on northwest line of deed recorded in Volume 4417, Page 152, Deed Records, Rockwall County, Texas.
State Plane coordinates based on the Texas State Plane Coordinate System, North Central Zone, North American Datum of 1983 on Grid Coordinate values, No Scale and no Projection.



OWNER:
CROWELL DEVELOPMENT CORPORATION
CONTACT: ROBERT JOHN CROWELL
403 SOUTH ELM STREET
ROYSE CITY, TEXAS 75189
PHONE: 972-636-2108

REVISED: SEPTEMBER 26, 2016

PAGE 1 OF 2

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 LAVON, TEXAS 75166 PHONE:
TEXAS FIRM REGISTRATION NO.: 10007200 (972) 742-4411

JOB No.	SCALE:	DATE	DRAWN BY:
2232-16	1"=200'	APRIL 27, 2016	CP

OWNER'S CERTIFICATE

STATE OF TEXAS
COUNTY OF ROCKWALL

Whereas, Crowell Development Co., Inc. is the owner of a tract of land situated in the S. McFadin Survey, Abstract No. 142, Rockwall County, Texas and being the same 79.7111 acre tract of land as conveyed to Crowell Development Co., Inc. by deed recorded in Volume 4417, Page 152, Deed Records, Rockwall County, Texas, and being more particularly described as follows:

Beginning at a 1/2" capped iron pin found on the northeasterly right-of-way line of Farm to Market Road No. 548 (80' R.O.W.) for the west corner of said 79.7111 acre tract and the south corner of a 97.282 acre tract of land conveyed to Donald Junt and Equity Trust Company Custodian FBO Donald Junt IRA by deed recorded in Volume 2015, Page 18262, Deed Records, Rockwall County, Texas;

Thence, North 45°17'01" East, along the northwest line of said 79.7111 acre tract and the southeast line of said 97.282 acre tract, a distance of 2334.48 feet to a 1/2" capped iron pin found for the north corner of said 79.7111 acre tract and the west corner of a tract of land conveyed to Dwayne Turner by deed recorded in Volume 1676, Page 267, Deed Records, Rockwall County, Texas;

Thence, South 44°47'41" East, along the northeast line of said 79.7111 acre tract, the southwest line of said Turner tract, the southwest line of a 5.781 acre tract of land conveyed to Paul S. Henry and Sonya D. Henry by deed recorded in Volume 2271, Page 324, Deed Records, Rockwall County, Texas, the southwest line of a 5.628 acre tract of land conveyed to Jerry D. Vaughn and Greta Lynn Vaughn by deed recorded in Volume 2050, Page 150, Deed Records, Rockwall County, Texas and the southwest line of a 12.177 acre tract of land conveyed to Michael Darren McWhirter and Karen Jean McWhirter by deed recorded in Volume 1605, Page 293, Deed Records, Rockwall County, Texas, a distance of 1663.08 feet to a 1/2" capped iron pin found for the most northerly east corner of said 79.7111 acre tract and the most northerly corner of Wanda Ridge Estates Phase 1, on addition to Rockwall County, Texas, according to the plat thereof recorded in Cabinet F, Slide 391, Map Records, Rockwall County, Texas;

Thence, southwesterly, along the southeasterly lines of said 79.7111 acre tract and the northwesterly lines of said Wanda Ridge Estates Phase 1 the following:

South 45°12'19" West, a distance of 342.00 feet to a 1/2" capped iron pin found for corner on the northeast right-of-way line of Bud Lane (60' R.O.W.);

North 44°47'41" West, along the northeast line of said Bud Lane, a distance of 46.65 feet to a 1/2" yellow capped iron pin set stamped "CCG INC RPLS 5129" for corner;

South 45°12'19" West, a distance of 754.00 feet to a 1/2" capped iron pin found on the northeast right-of-way line of Weldon Lane (60' R.O.W.);

North 44°47'41" West, along the northeast line of said Weldon Lane, a distance of 26.35 feet to a 1/2" yellow capped iron pin set stamped "CCG INC RPLS 5129" for corner;

South 45°12'19" West, a distance of 414.85 feet to a 1/2" yellow capped iron pin set stamped "CCG INC RPLS 5129" on the north line of Lot 5, of said Wanda Ridge Estates Phase 1;

Thence, North 44°43'57" West, along a southwesterly line of said 79.7111 acre tract and the northeast line of said Lot 5, a distance of 253.01 feet to a 1/2" yellow capped iron pin set stamped "CCG INC RPLS 5129" for the north corner of said Lot 5 and the east corner of a 2 acre tract of land conveyed to Charles E. Harris by deed recorded in Volume 151, Page 681, Deed Records, Rockwall County, Texas;

Thence, North 44°38'17" West, along a southwesterly line of said 79.7111 acre tract and the northeast line of said 2 acre tract, a distance of 104.04 feet to a 3/8" iron pin found for the north corner of said 2 acre tract;

Thence, South 45°17'40" West, along a southeasterly line of said 79.7111 acre tract and the northwest line of said 2 acre tract, a distance of 834.44 feet to a 1/2" yellow capped iron pin set stamped "CCG INC RPLS 5129" on the northeasterly right-of-way line of Farm to Market Road No. 548 (80' R.O.W.) for the south corner of said 79.7111 acre tract and the west corner of said 2 acre tract;

Thence, North 44°19'08" West, along the northeasterly right-of-way line of Farm to Market Road No. 548 (80' R.O.W.) and the southwest line of said 79.7111 acre tract, a distance of 1234.97 feet to the Point of Beginning and containing 3,472,216 square feet or 79.7111 acres of land.

NOW THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

I the undersigned owner of the land shown on this plat, and designated herein as the WANDA RIDGE ESTATES PHASE 2 subdivision to the City of Rockwall, Texas, and whose name is subscribed hereto, hereby dedicate to the use of the public forever all streets, alleys, parks, water courses, drains, easements and public places thereon shown on the purpose and consideration therein expressed. I further certify that all other parties who have a mortgage or lien interest in the WANDA RIDGE ESTATES PHASE 2 subdivision have been notified and signed this plat. I understand and do hereby reserve the easement strips shown on this plat for the purposes stated and for the mutual use and accommodation of all utilities desiring to use or using same. I also understand the following:

- 1.No buildings shall be constructed or placed upon, over, or across the utility easements as described herein.
- 2.Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs, or other growths or improvements which in any way endanger or interfere with construction, maintenance or efficiency of their respective system on any of these easement strips; and any public utility shall at all times have the right of ingress or egress to, from and upon the said easement strips for purpose of construction, reconstruction, inspecting, patrolling, maintaining, and either adding to or removing all or part of their respective system without the necessity of, at any time, procuring the permission of anyone.
- 3.The City of Rockwall will not be responsible for any claims of any nature resulting from or occasioned by the establishment of grade of streets in the subdivision.
- 4.The developer and subdivision engineer shall bear total responsibility for storm drain improvements.
- 5.The developer shall be responsible for the necessary facilities to provide drainage patterns and drainage controls such that properties within the drainage area are not adversely affected by storm drainage from the development.
- 6.No house dwelling unit, or other structure shall be constructed on any lot in this addition by the owner or any other person until the developer and/or owner has complied with all requirements of the Subdivision Regulations of the City of Rockwall regarding improvements with respect to the entire block on the street or streets on which property abuts, including the actual installation of streets with the required base and paving, curb and gutter, water and sewer, drainage structures, storm structures, storm sewers, and alleys, all according to the specifications of the City of Rockwall; or

Until an escrow deposit, sufficient to pay for the cost of such improvements, as determined by the city's engineer and/or city administrator, computed on a private commercial rate basis, has been made with the city secretary, accompanied by an agreement signed by the developer and/or owner, authorizing the city to make such improvements at prevailing private commercial rates, or have the same made by a contractor and pay for the same out of the escrow deposit, should the developer and/or owner fail or refuse to install the required improvements within the time stated in such written agreement, but in no case shall the City be obligated to make such improvements itself. Such deposit may be used by the owner and/or developer as progress payments as the work progresses in making such improvements by making certified requisitions to the city secretary, supported by evidence of work done; or

Until the developer and/or owner files a corporate surety bond with the city secretary in a sum equal to the cost of such improvements for the designated area, guaranteeing the installation thereof within the time stated in the bond, which time shall be fixed by the city council of the City of Rockwall.

I (we) further acknowledge that the dedications and/or exaction's made herein are proportional to the impact of the Subdivision upon the public services required in order that the development will comport with the present and future growth needs of the City. I (we), my (our) successors and assigns hereby waive any claim, damage, or cause of action that I (we) may have as a result of the dedication of exactions made herein.

WITNESS, my hand, this the _____ day of _____, 2016.

BY: _____
Crowell Development Co., Inc., Owner
By: Bobby J. Crowell

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, on this day personally appeared Bobby J. Crowell, 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 consideration therein stated.

GIVEN under my hand and seal of office this _____ day of _____, 2016.

Notary Public for and in the State of Texas
My commission expires: _____

WITNESS, my hand, this the _____ day of _____, 2016.

BY: _____
Crowell Development Co., Inc., Owner
By: Robert John Crowell

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, on this day personally appeared Robert John Crowell, 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 consideration therein stated.

GIVEN under my hand and seal of office this _____ day of _____, 2016.

Notary Public for and in the State of Texas
My commission expires: _____

SURVEYOR'S CERTIFICATE

STATE OF TEXAS

THAT I, James Bart Carroll, do hereby certify that I have prepared this plat from an actual and accurate survey of the land, and that the corner monuments shown thereon were properly placed under my personal supervision.

"PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE"

James Bart Carroll
Texas Registered Professional Land Surveyor No. 5129

FLOOD NOTE:

ACCORDING TO MY INTERPRETATIONS OF COMMUNITY PANEL NO. 48397C0065L, DATED SEPTEMBER 26, 2008, OF THE NATIONAL FLOOD INSURANCE RATE MAPS FOR ROCKWALL COUNTY, TEXAS, THE SUBJECT PROPERTY LIES WITHIN ZONE "X" AND IS NOT SHOWN TO BE WITHIN A SPECIAL FLOOD HAZARD AREA. THIS STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS, GREATER FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.

Bearings based on northwest line of deed recorded in Volume 4417, Page 152, Deed Records, Rockwall County, Texas.

Planning & Zoning Commission, Chairman Date

APPROVED:

I hereby certify that the above and foregoing plat of an addition to the City of Rockwall, Texas, was approved by the City Council of the City of Rockwall on the _____ day of _____, 2016.

This approval shall be invalid unless the approved plat for such addition is recorded in the office of the County Clerk of Rockwall, County, Texas, within one hundred eighty (180) days from said date of final approval.

WITNESS OUR HANDS, this _____ day of _____, 2016.

Mayor, City of Rockwall City Secretary City Engineer

Rockwall County Judge Date

General Notes:

- 1) It shall be the policy of the City of Rockwall to withhold issuing building permits until all streets, water, sewer and storm drainage systems have been accepted by the City. The approval of a plat by the City does not constitute any representation, assurance or guarantee that any building within such plat shall be approved, authorized or permit therefore issued, nor shall such approval constitute any representation, assurance or guarantee by the City of the adequacy and availability for water for personal use and fire protection within such plat, as required under Ordinance 83-34.

FINAL PLAT

WANDA RIDGE ESTATES
PHASE 2

44 RESIDENTIAL LOTS
79.7111 ACRES OF LAND
S. MCFADGIN SURVEY, ABSTRACT NO. 142
ROCKWALL COUNTY, TEXAS
CASE NO.: P2016-016

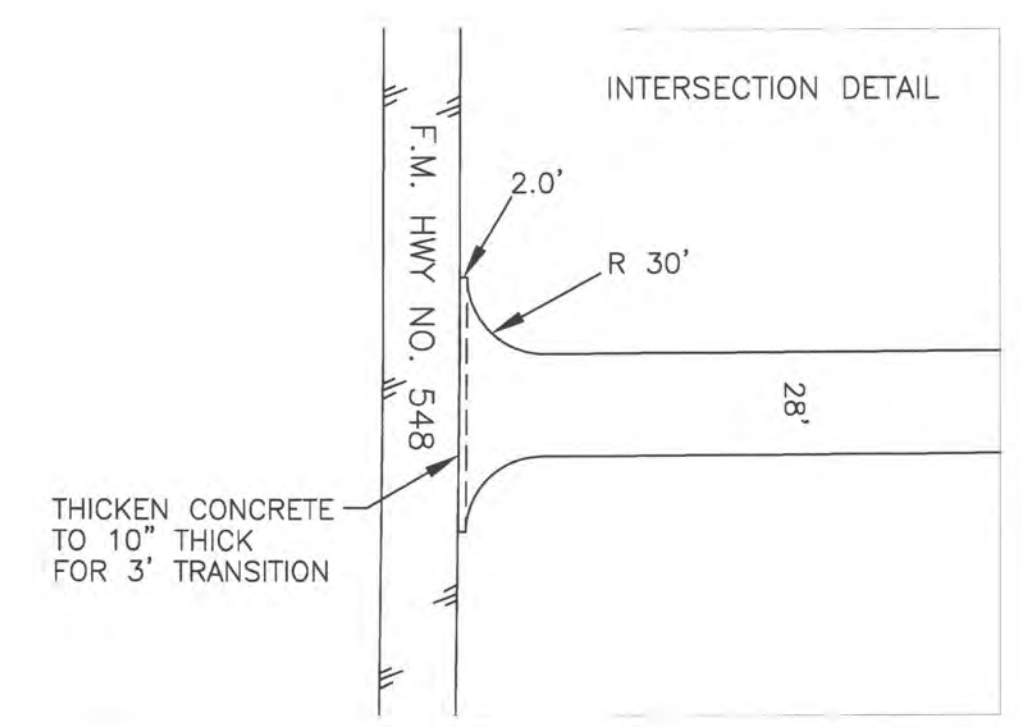
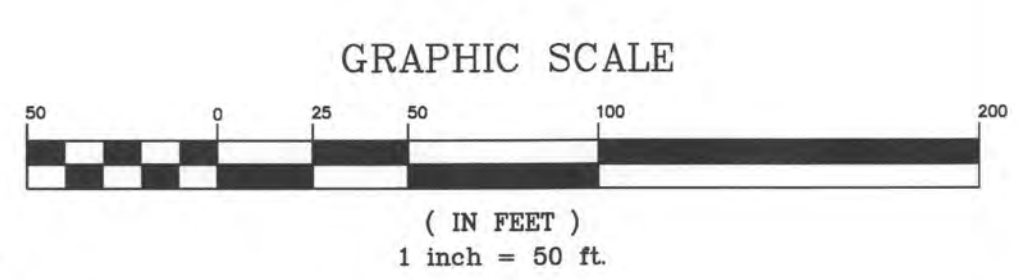
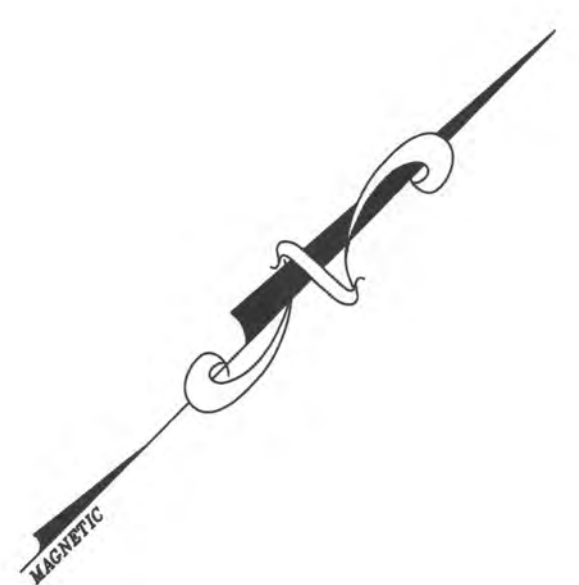
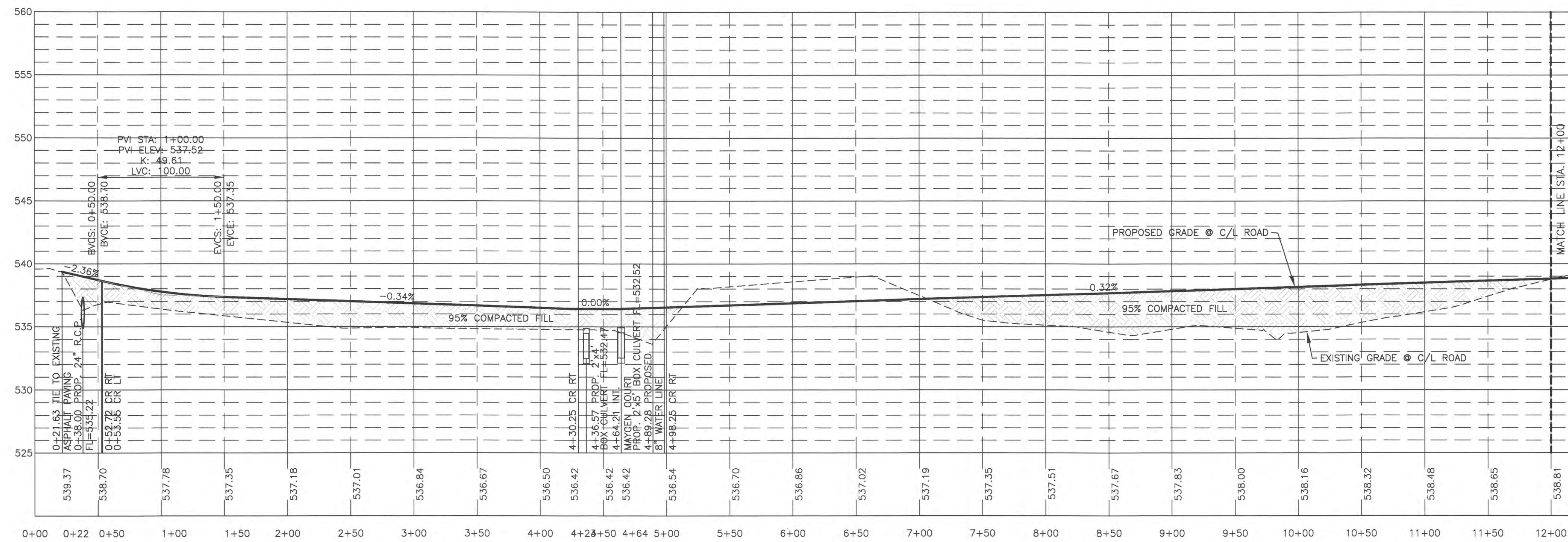
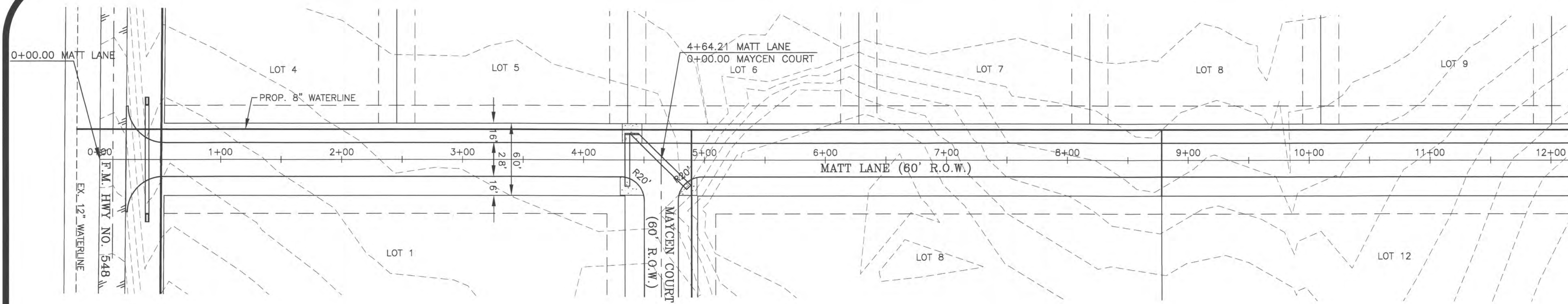
REVISED: SEPTEMBER 26, 2016

PAGE 2 OF 2

CARROLL CONSULTING GROUP, INC.

P.O. BOX 11 LAVON, TEXAS 75166 PHONE:
TEXAS FIRM REGISTRATION NO.: 10007200 (972) 742-4411

JOB No.	SCALE:	DATE	DRAWN BY:
2232-16	1"=100'	APRIL 27, 2016	CP

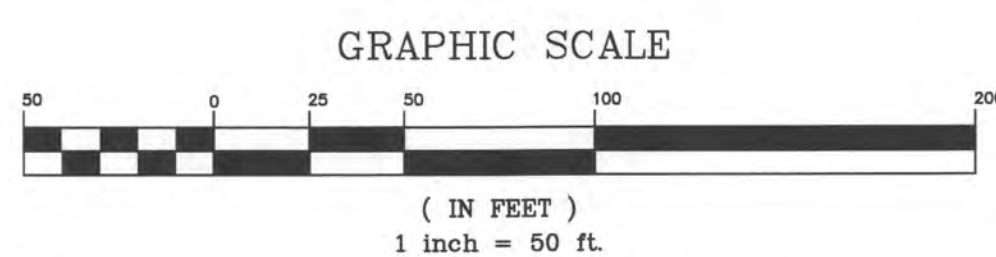
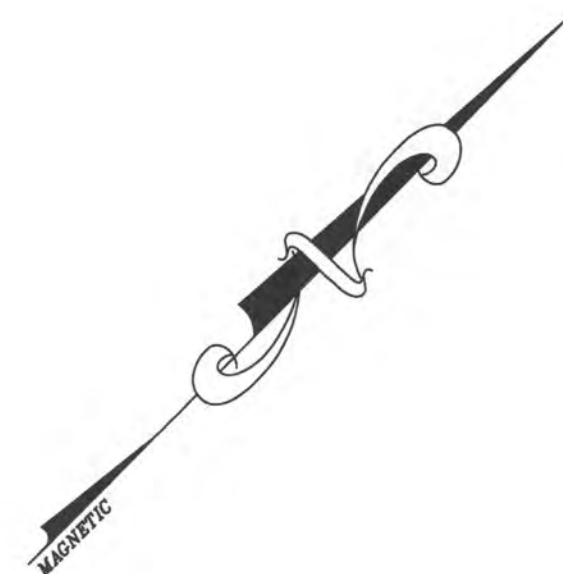
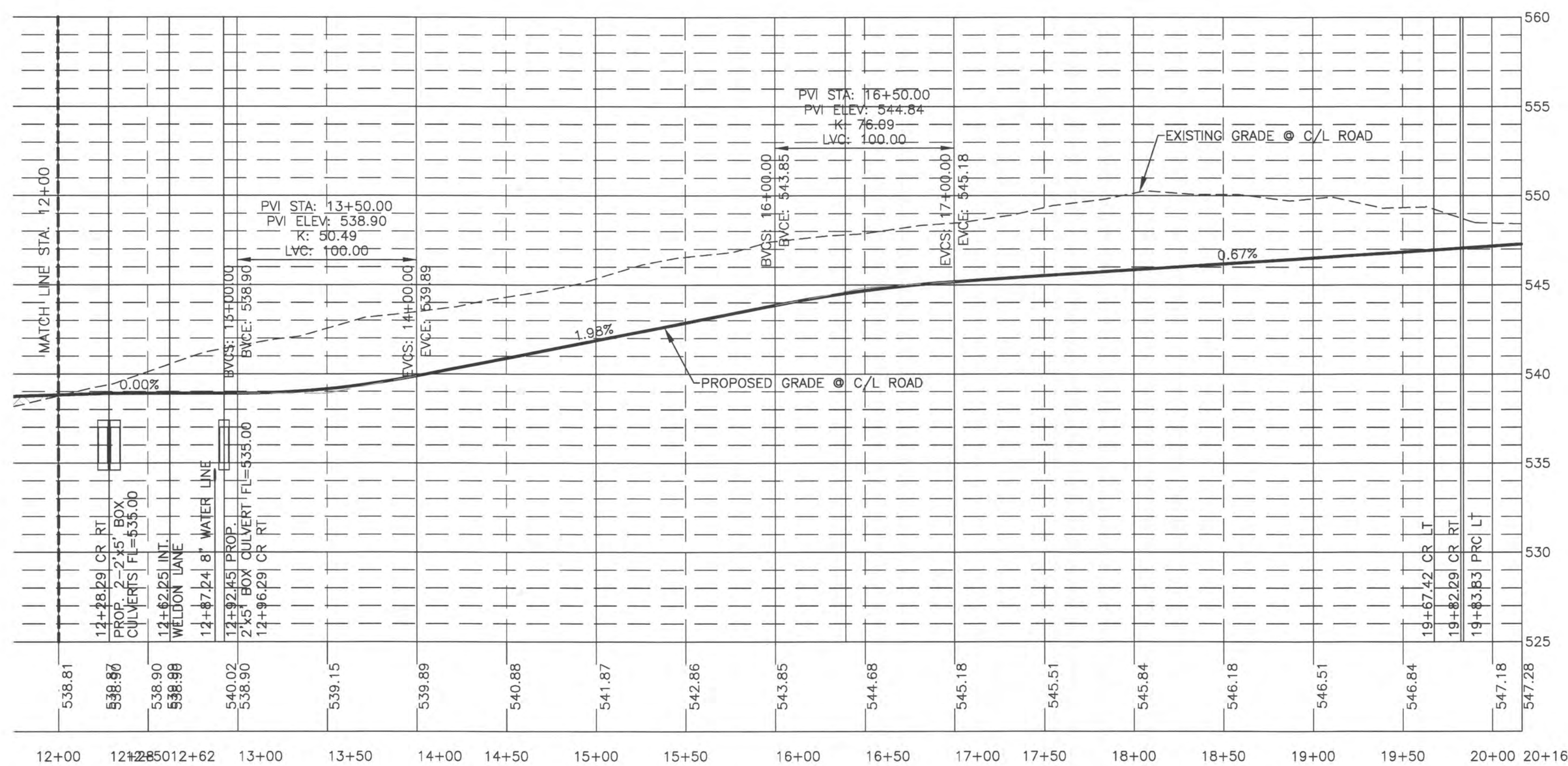
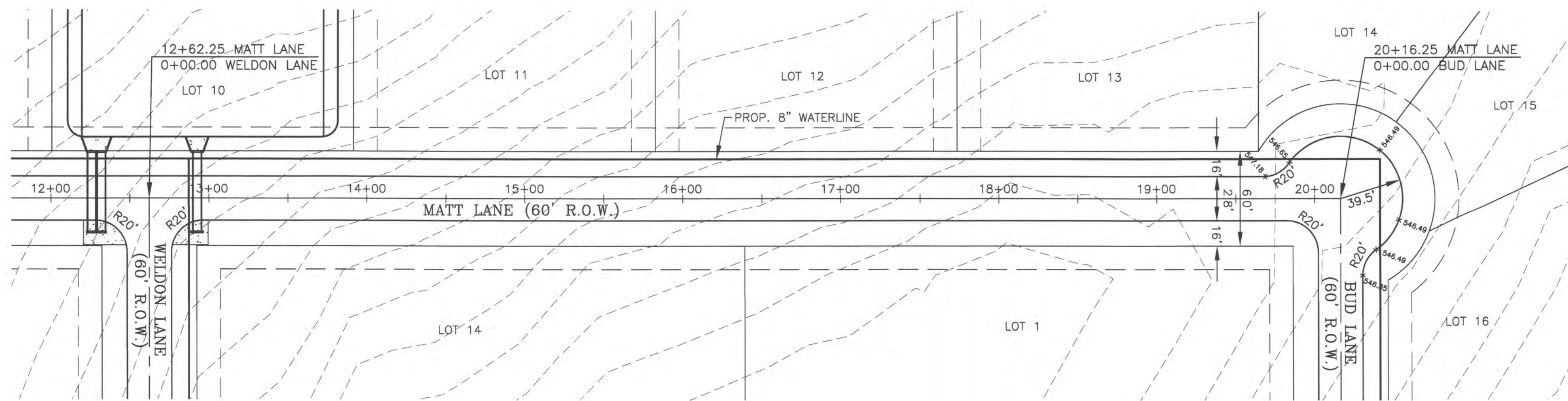


BENCHMARK:
 National Geodetic Survey Benchmark C 929 or CS0050
 Bench mark disk in top of concrete monument at the intersection of the northeast side of Poetry Road and the northwest side of S. Munson Road on the northeast side of wire fence. A standard disk stamped C 929 1946.
 Elevation: 547.09

PRELIMINARY REVIEW
 THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF REVIEW UNDER THE AUTHORITY OF:
 HENRY G. NIBLO, P.E. NO. 68739
 ON SEPTEMBER 26, 2016
 IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, PERMIT PURPOSES.

1

PAVING PLAN & PROFILE			
MATT LANE STA. 0+00 - 12+00			
WANDA RIDGE ESTATES PHASE 2			
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11 LAVON, TEXAS 75166		PHONE: (972) 742-4411 TEXAS FIRM REGISTRATION NO.: 10007200	
DWG:	DATE:	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=50' 1"=5'	CP



BENCHMARK:

National Geodetic Survey Benchmark C 929 or CS0050

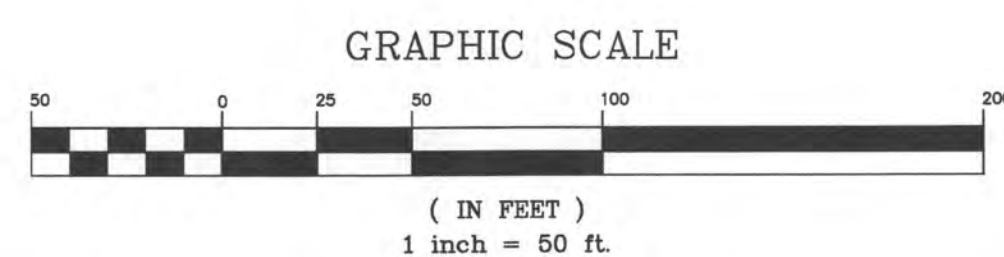
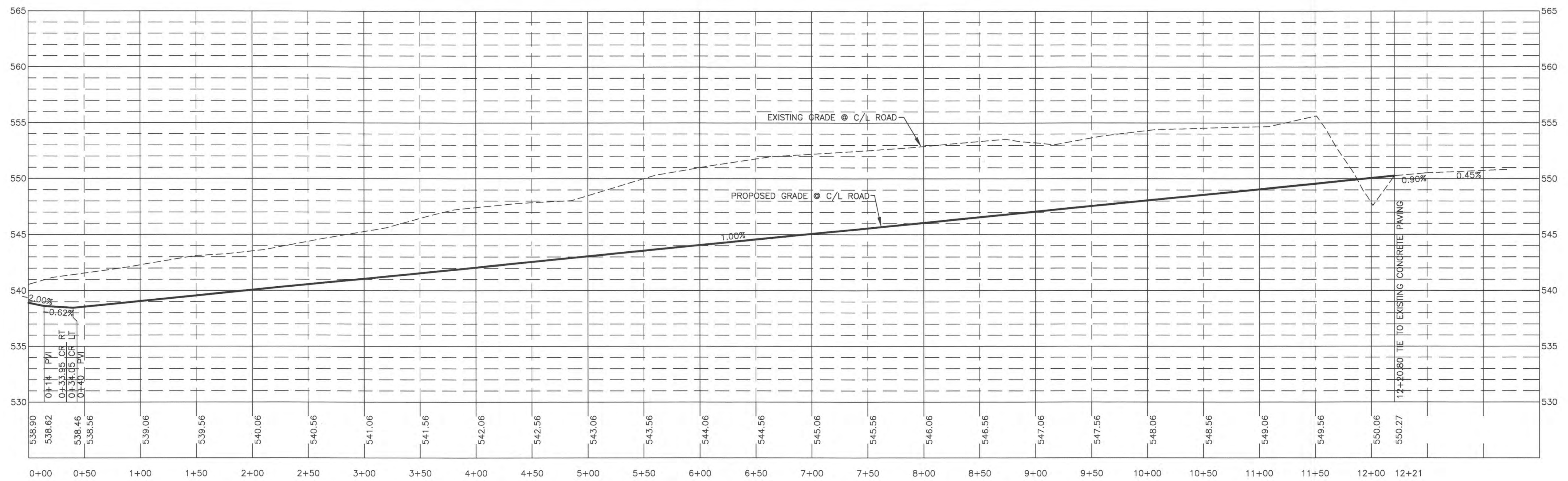
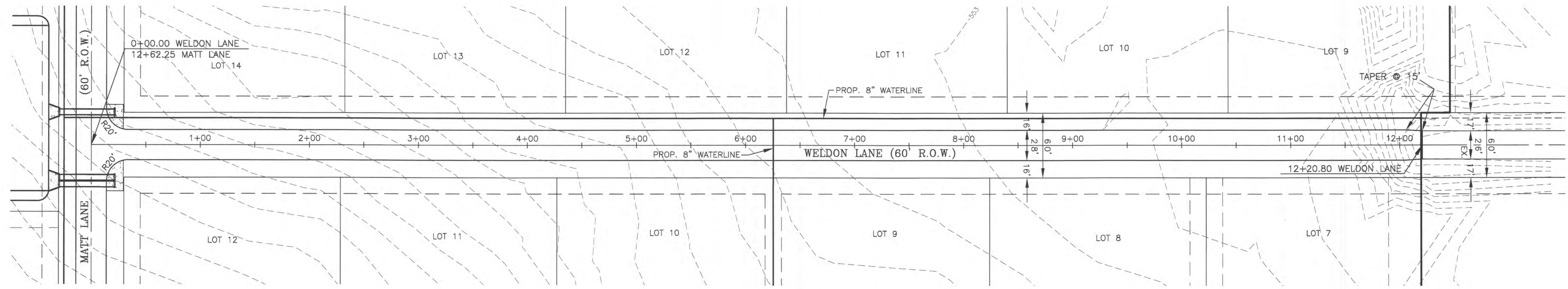
Bench mark disk in top of concrete monument at the intersection of the northeast side of Poetry Road and the northwest side of S. Munson Road on the northeast side of wire fence. A standard disk stamped C 929 1946.

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2

PAVING PLAN & PROFILE			
MATT LANE STA. 12+00 - 20+16.25			
WANDA RIDGE ESTATES PHASE 2			
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11		PHONE: (972) 742-4411	
LAVON, TEXAS 75166		TEXAS FIRM REGISTRATION NO.: 10007200	
DWG:	DATE:	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=50' 1"=5'	CP



BENCHMARK:

National Geodetic Survey Benchmark C 929 or CS0050

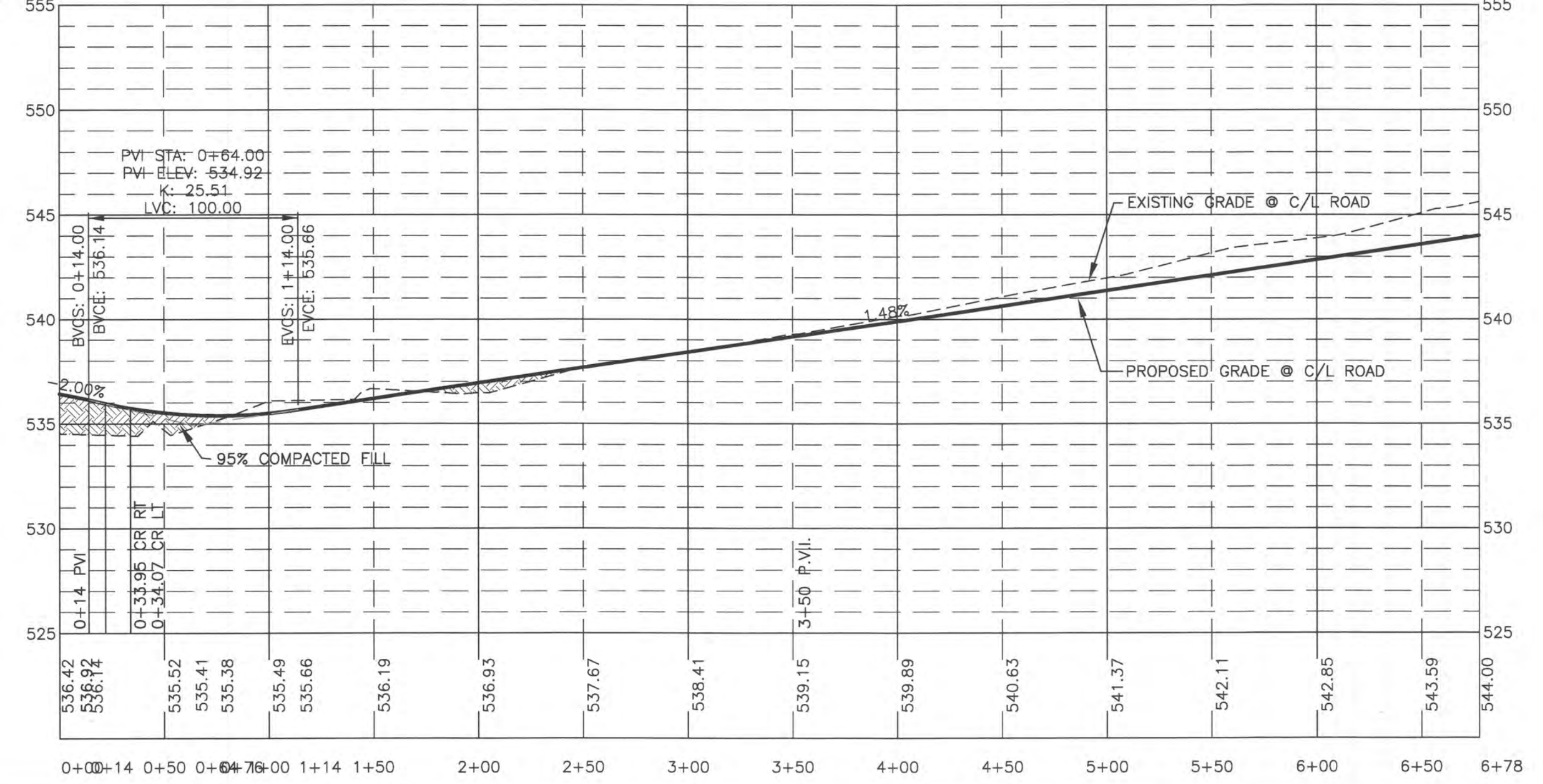
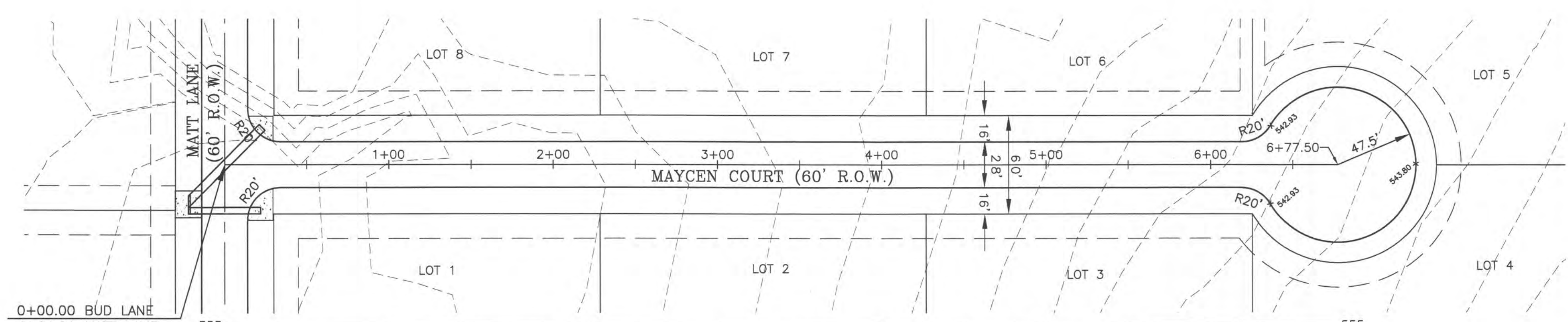
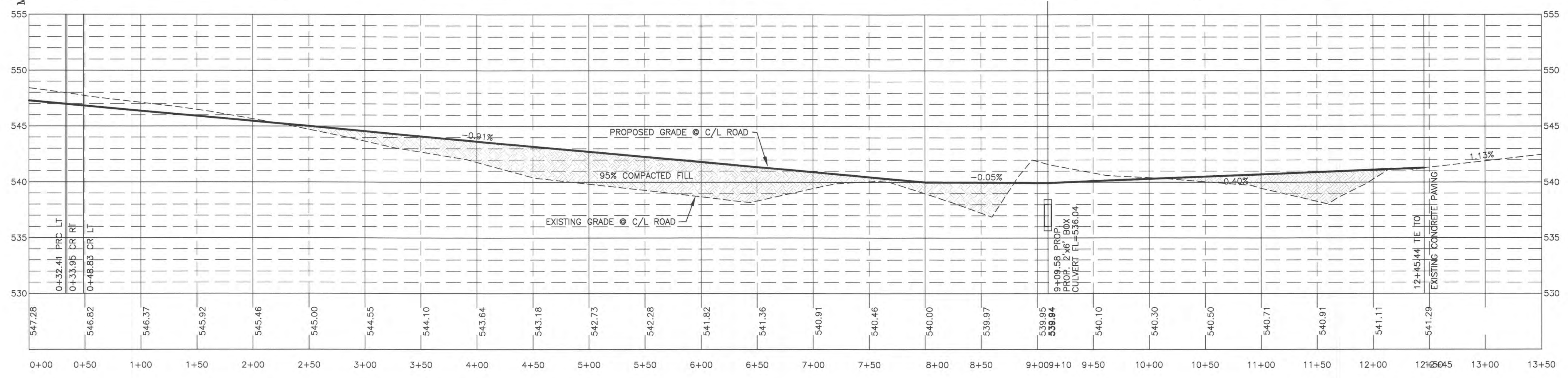
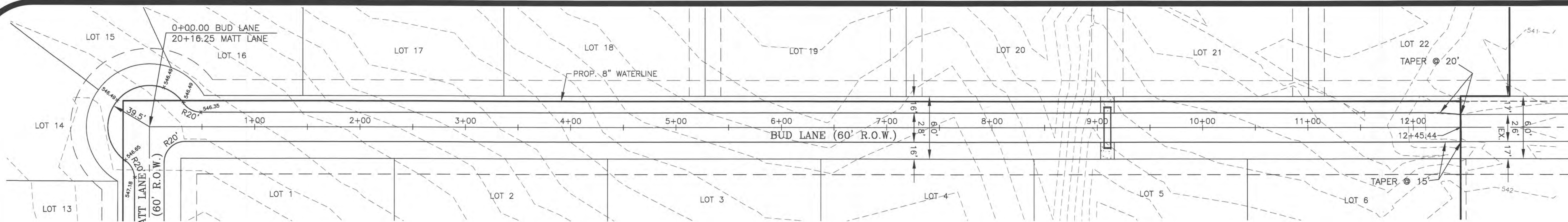
Bench mark disk in top of concrete monument at the intersection of the northeast side of Poetry Road and the northwest side of S. Munson Road on the northeast side of wire fence. A standard disk stamped C 929 1946.

Elevation: 547.09

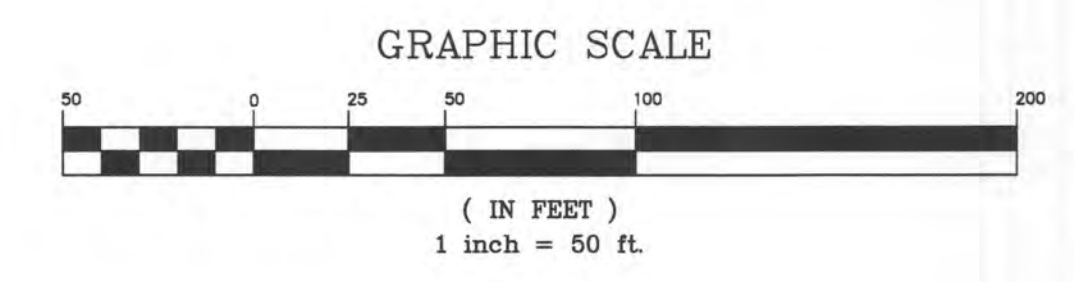
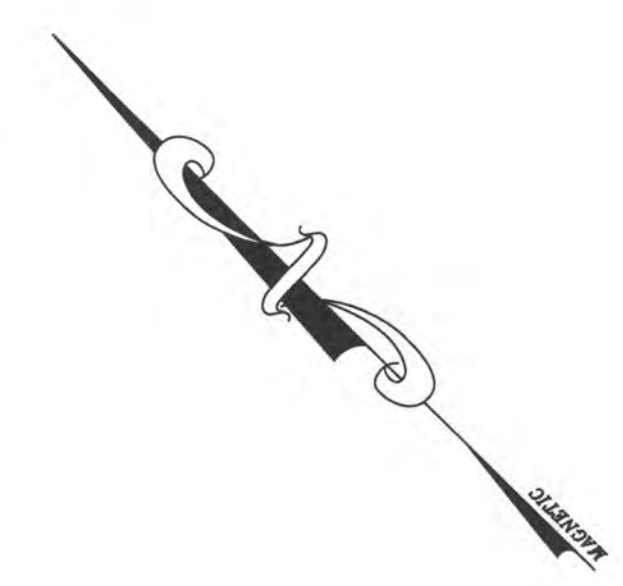
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PAVING PLAN & PROFILE			
WELDON LANE			
WANDA RIDGE ESTATES PHASE 2			
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11		PHONE: (972) 742-4411	
LAVON, TEXAS 75166		TEXAS FIRM REGISTRATION NO.: 10007200	
DWG:	DATE:	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=50' 1"=5'	CP



BENCHMARK:
 National Geodetic Survey Benchmark C 929 or CS0050
 Bench mark disk in top of concrete monument at the intersection of the northeast side of Poetry Road and the northwest side of S. Munson Road on the northeast side of wire fence. A standard disk stamped C 929 1946.
 Elevation: 547.09



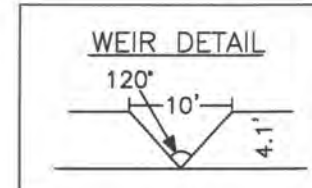
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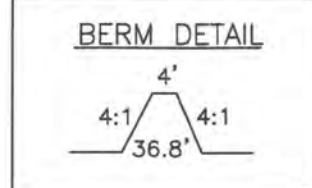
PAVING PLAN & PROFILE
BUD LANE & MAYCEN COURT
WANDA RIDGE ESTATES PHASE 2

CARROLL CONSULTING GROUP, INC.
 P.O. BOX 11 LAVON, TEXAS 75166
 PHONE: (972) 742-4411
 TEXAS FIRM REGISTRATION NO.: 10007200

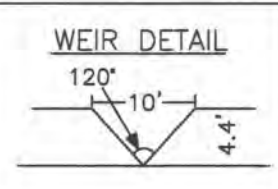
DWG: WANDARIDGE2	DATE: APRIL 27, 2016	SCALE: 1"=50' 1"=5'	DRAWN BY: CP
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2-PROPOSED WEIRS
 TOP DEPTH = 4.10 ft
 WEIR COEFF. CW = 4.40
 Q = 27.03 cfs each
 Angle = 120 deg.
 DEPTH = 2.07 ft
 VELOCITY = 3.65 ft/s
 TOP WIDTH = 10.0 ft
 INSTALL 3"-6" STONE RIP-RAP FOR EROSION CONTROL.

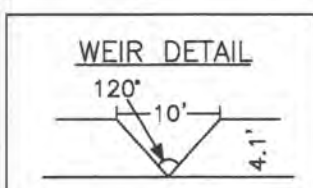
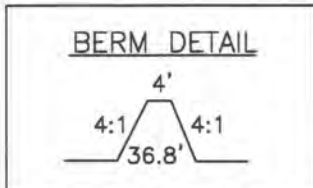
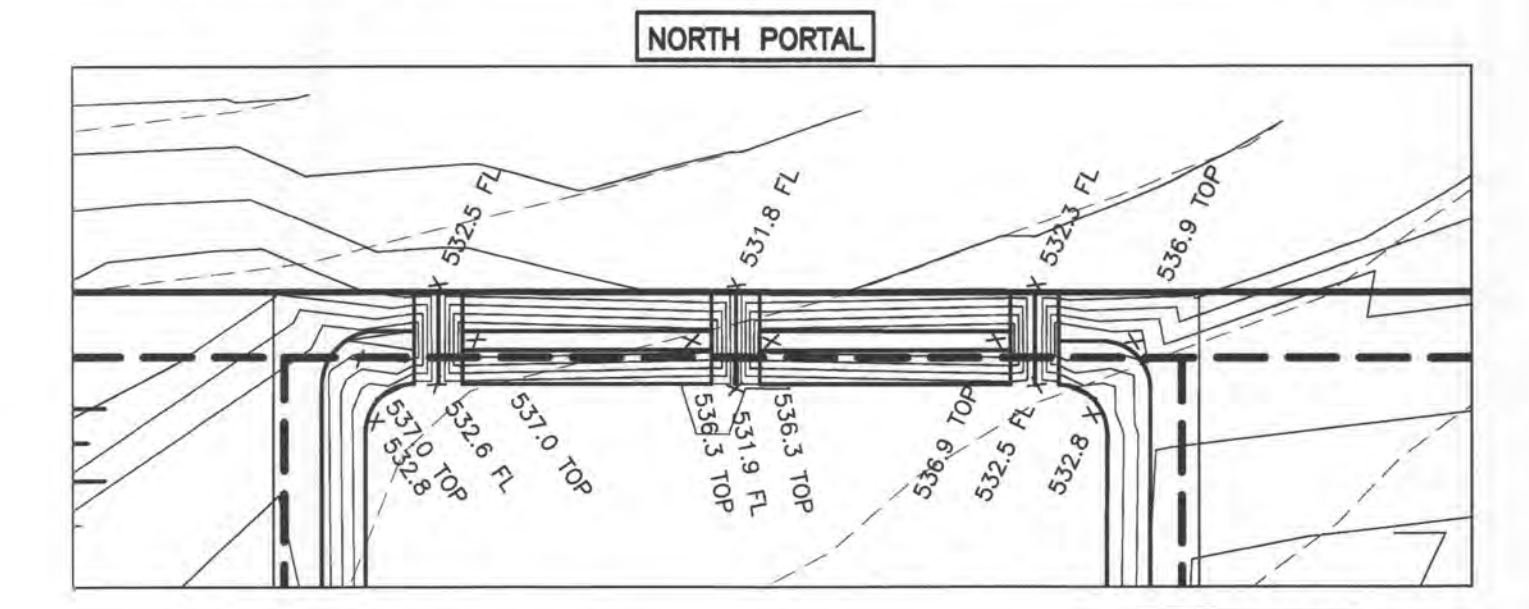
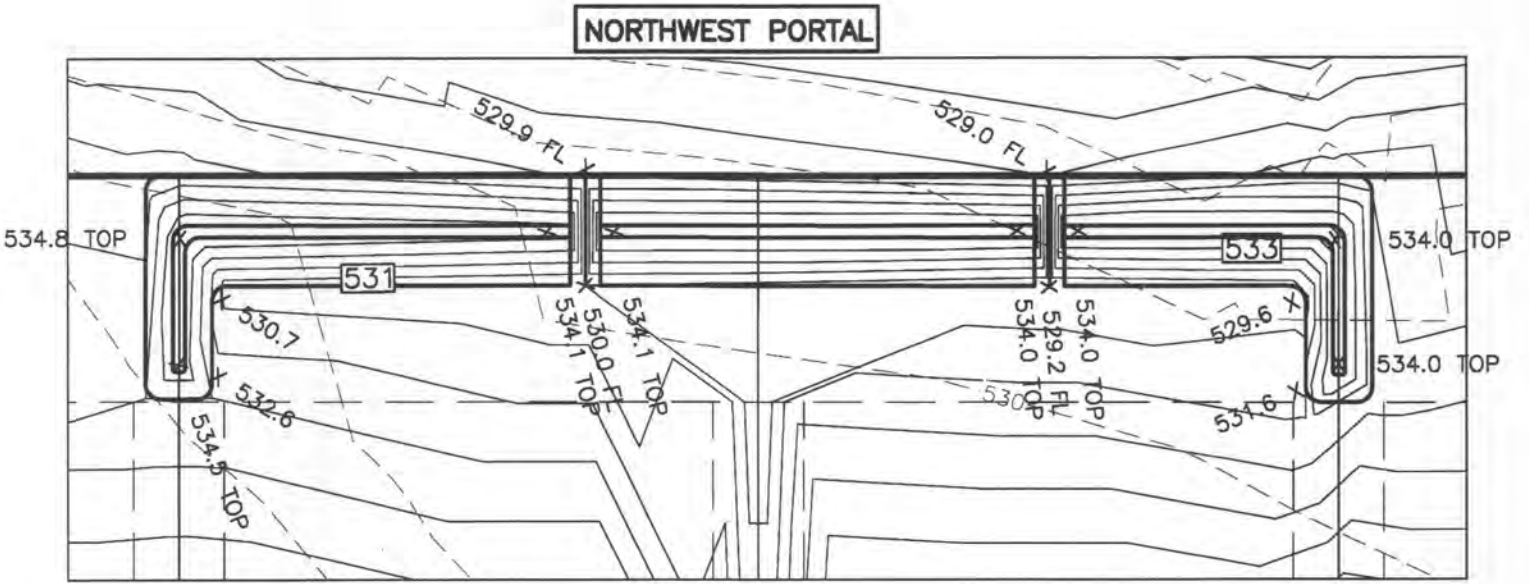
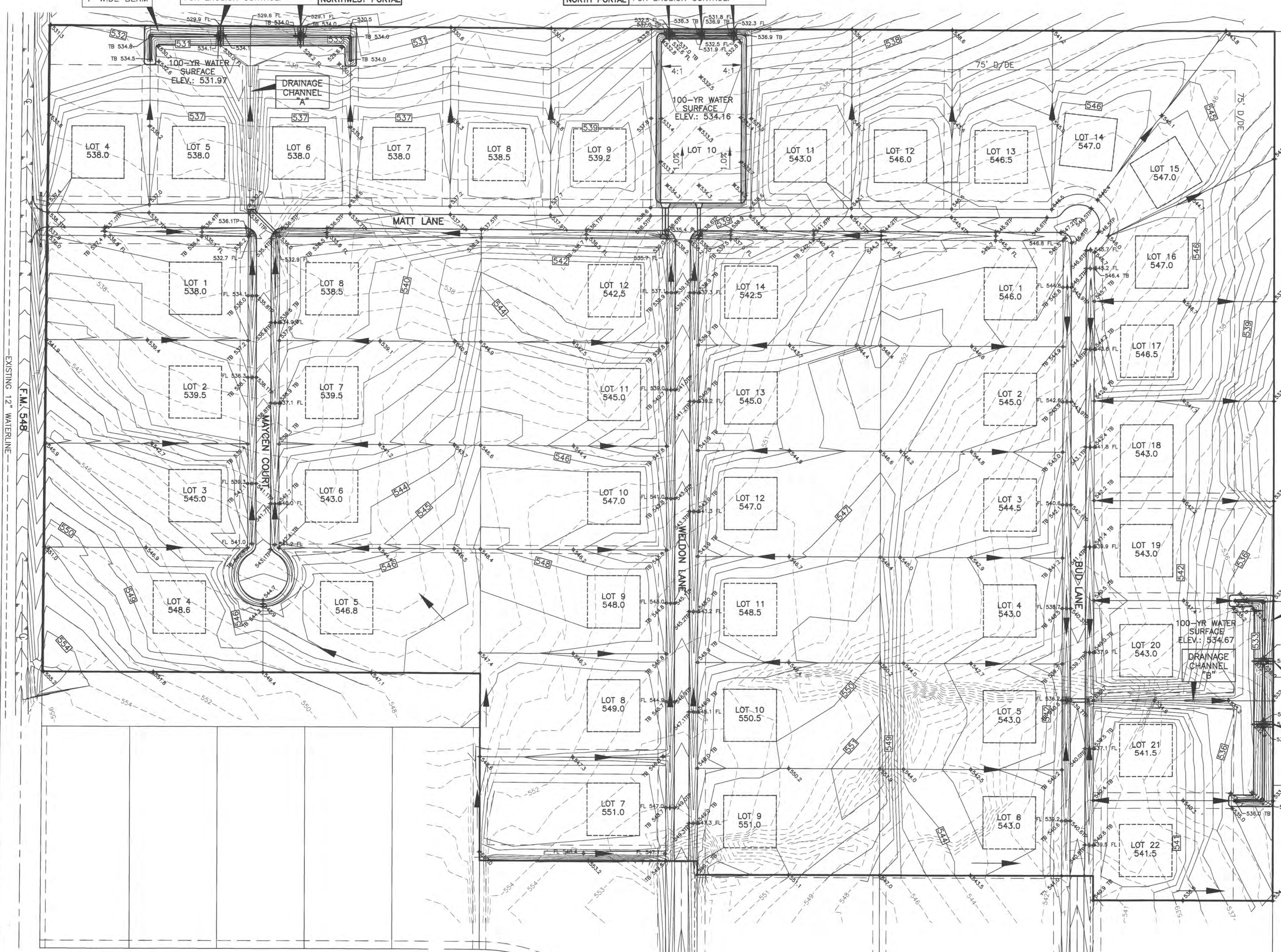
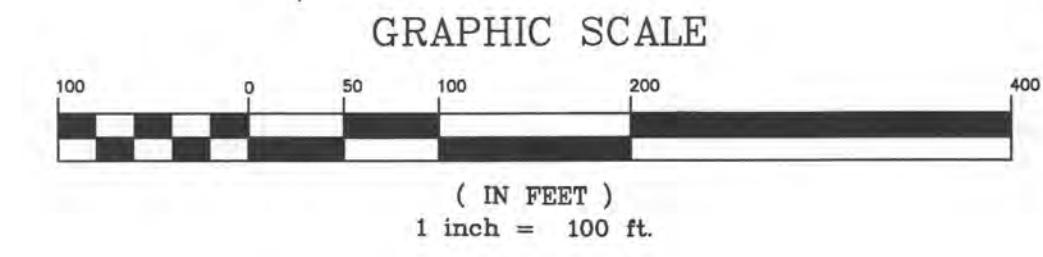


3-PROPOSED WEIRS
 TOP DEPTH = 4.40 ft
 WEIR COEFF. CW = 4.40
 Q = 37.59 cfs each
 Angle = 120 deg.
 100YR POND DEPTH = 3.47 ft
 WATER SURFACE EL. = 535.47ft
 VELOCITY = 3.90 ft/s
 TOP WIDTH = 10.0 ft
 INSTALL 3"-6" STONE RIP-RAP FOR EROSION CONTROL.



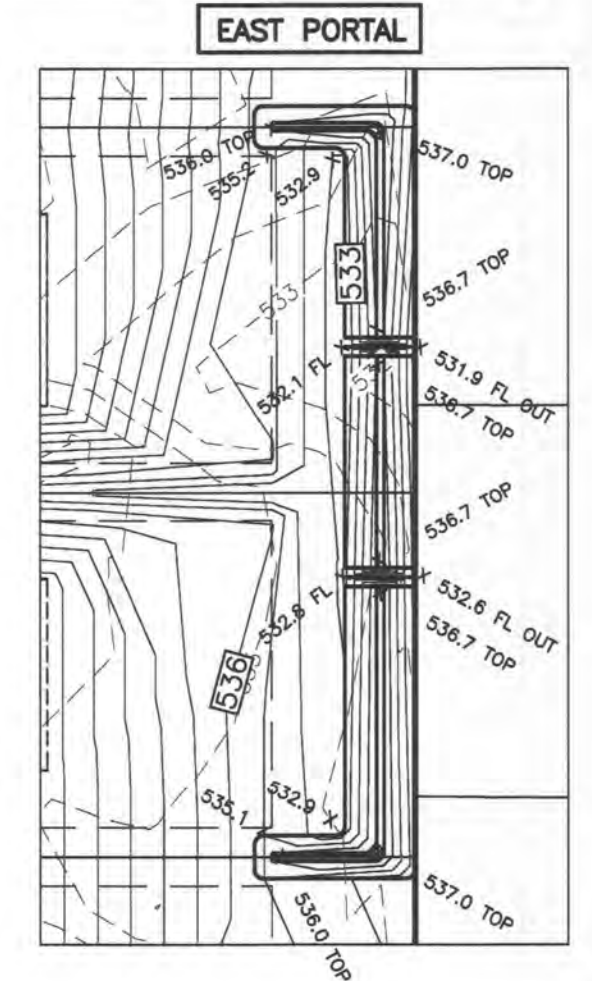
548 - PROPOSED CONTOUR
 - PROPOSED GRADE

TP - TOP OF PAVING
 FL - FLOW LINE
 TB - TOP OF BANK



PROPOSED 4.1' HIGH & 4' WIDE BERM

2-PROPOSED WEIRS
 TOP DEPTH = 4.10 ft
 WEIR COEFF. CW = 4.40
 Q = 34.27 cfs each
 Angle = 120 deg.
 DEPTH = 2.27 ft
 VELOCITY = 3.83 ft/s
 TOP WIDTH = 10.0 ft
 INSTALL 3"-6" STONE RIP-RAP FOR EROSION CONTROL.



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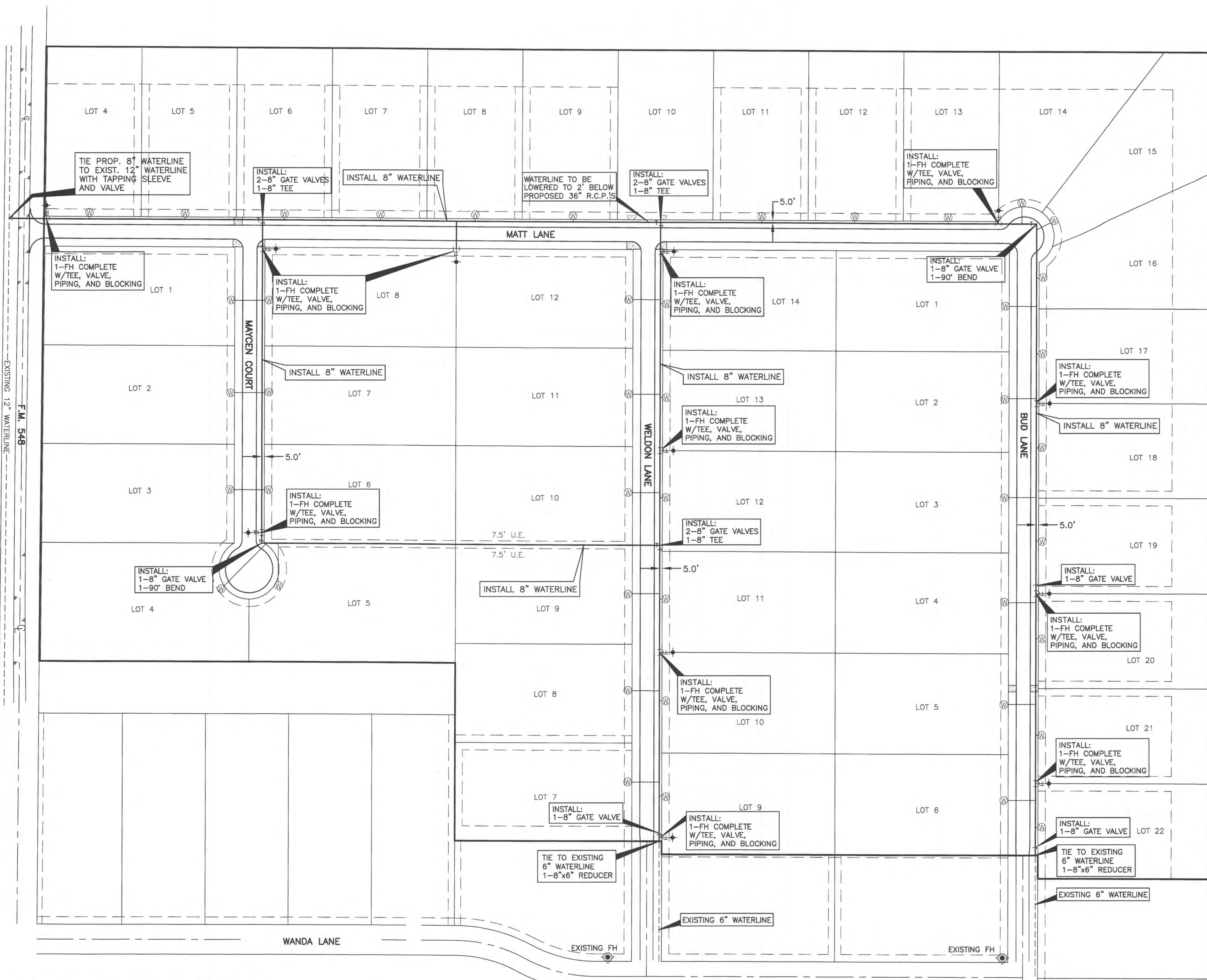
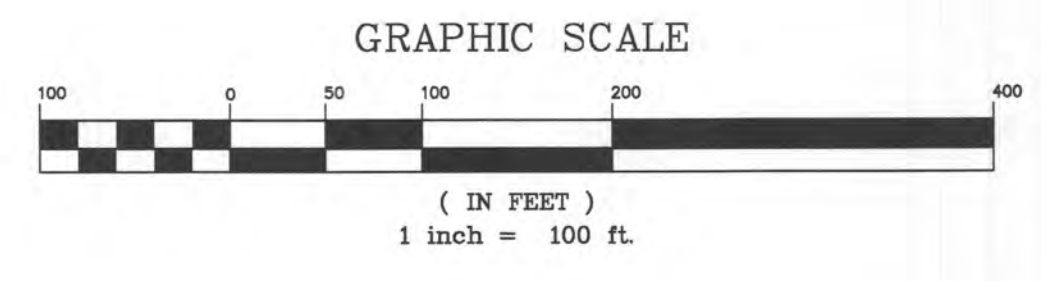
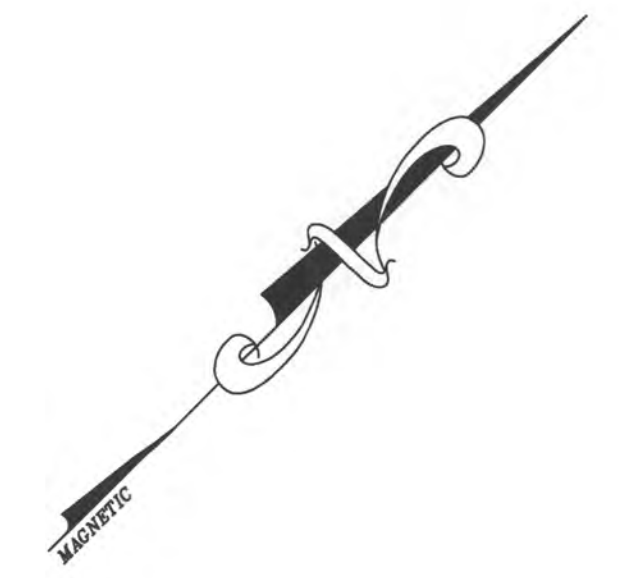
LOT GRADING PLAN

WANDA RIDGE ESTATES PHASE 2

CARROLL CONSULTING GROUP, INC.

P.O. BOX 11 LAVON, TEXAS 75166 PHONE: (972) 742-4411 TEXAS FIRM REGISTRATION NO.: 10007200

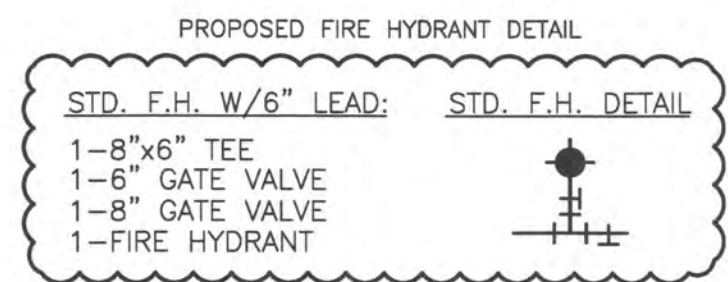
DWG: WANDARIDGE2	DATE: APRIL 27, 2016	SCALE: 1"=100'	DRAWN BY: CP
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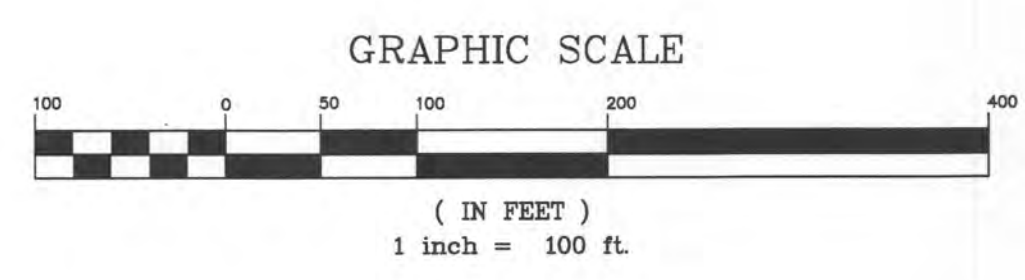
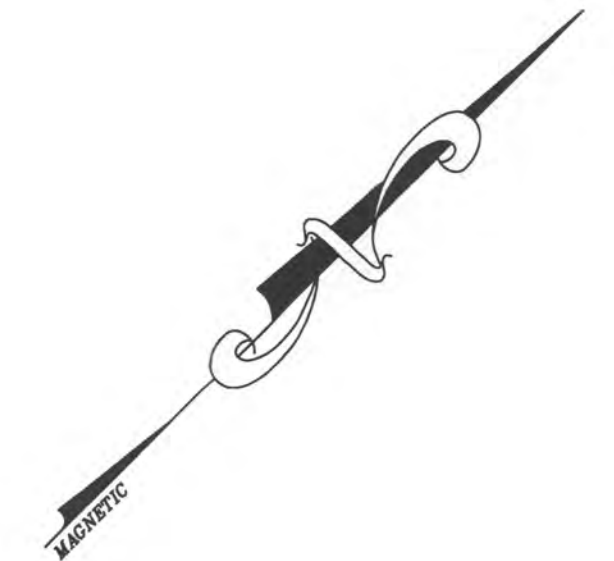
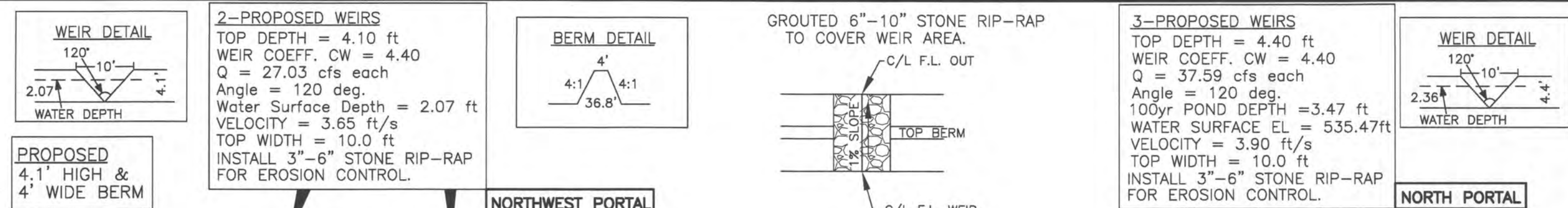
ALL INITIAL DEADEND WATER LINES NEED TO HAVE A FIRE HYDRANT WITH AUTOMATIC FLUSHING MECHANISM INSTALLED AT END.
 ANY WATER VALVES DEEPER THAN 6 FEET NEED TO HAVE VALVE EXTENSIONS.
 UTILITY CONTRACTORS TO PROVIDE AND INSTALL DUAL CHECK VALVES AT METER SERVICES.
 ALL FIRE HYDRANTS SHALL BE MUELLER SUPER CENTURION 250/HS (HIGH SECURITY)
 ALL WATER FITTINGS SHALL BE AWWA C-153 COMPACT DUCTILE IRON.



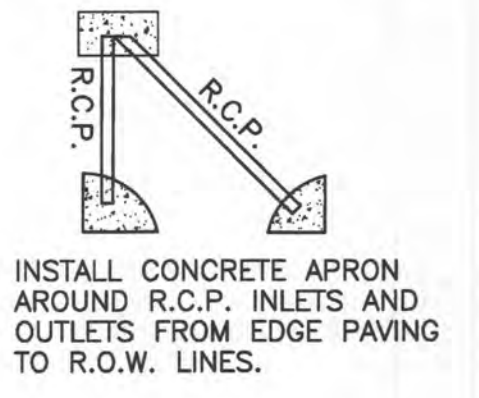
BLUE EMS PAD TO BE INSTALLED AT EVERY CHANGE IN DIRECTION, VALVE, FIRE HYDRANT, SERVICE AND EVERY 250'.
 WATERLINE TO BE DR 14 CLASS 200 PVC.

⊙ - PROPOSED WATER METER

UTILITY PLAN			
WATER LINE			
WANDA RIDGE ESTATES PHASE 2			
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11	PHONE: (972) 742-4411		
LAVON, TEXAS 75166	TEXAS FIRM REGISTRATION NO.: 10007200		
DWG: WANDARIDGE2	DATE: APRIL 27, 2016	SCALE: 1"=100'	DRAWN BY: CP

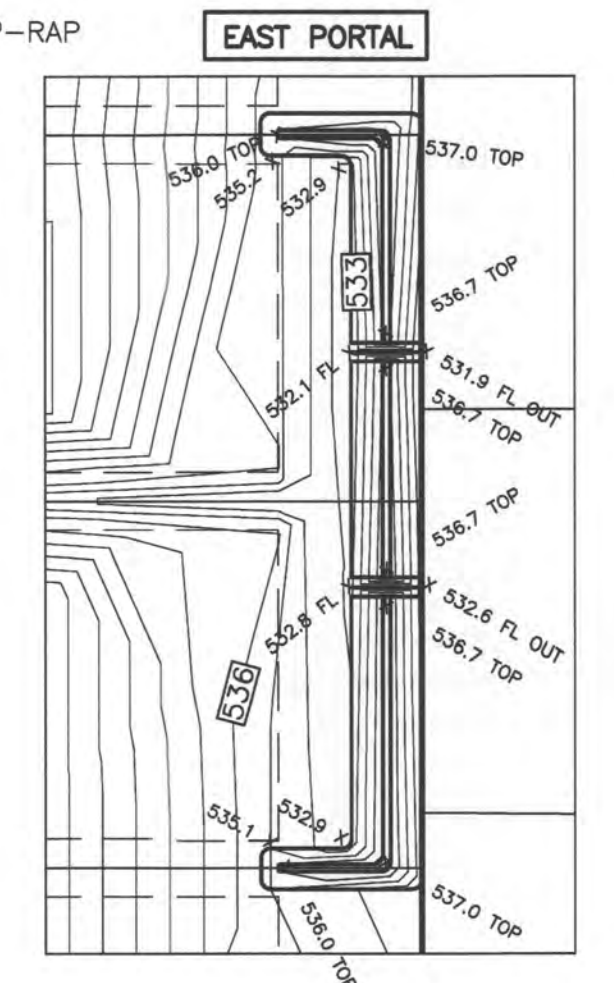
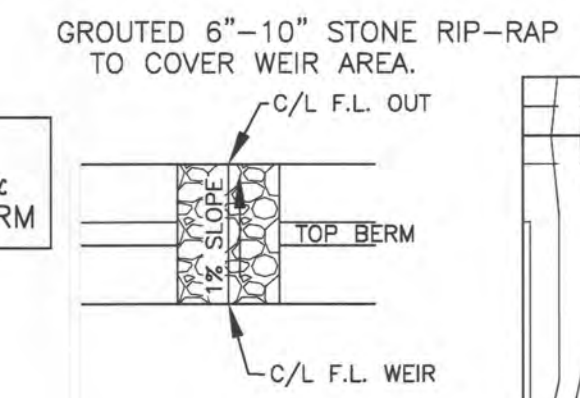
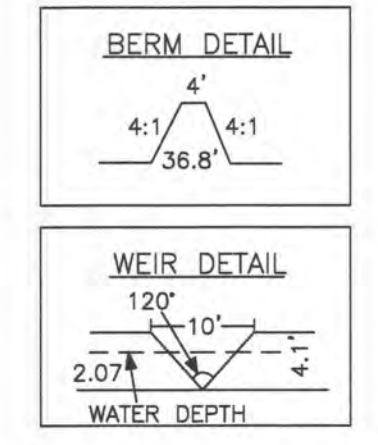


DETENTION MUST BE INSTALLED AND FUNCTIONING PER PLAN PRIOR TO ANY CONCRETE INSTALLATION. SIDES AND BOTTOMS OF DETENTION SYSTEMS TO BE ESTABLISHED WITH EITHER SOD OR ANCHORED SEEDED CURLEX PRIOR TO INSTALLATION OF CONCRETE.



SEE DETAIL SHEET CH-PW-0 FOR HEADWALLS.

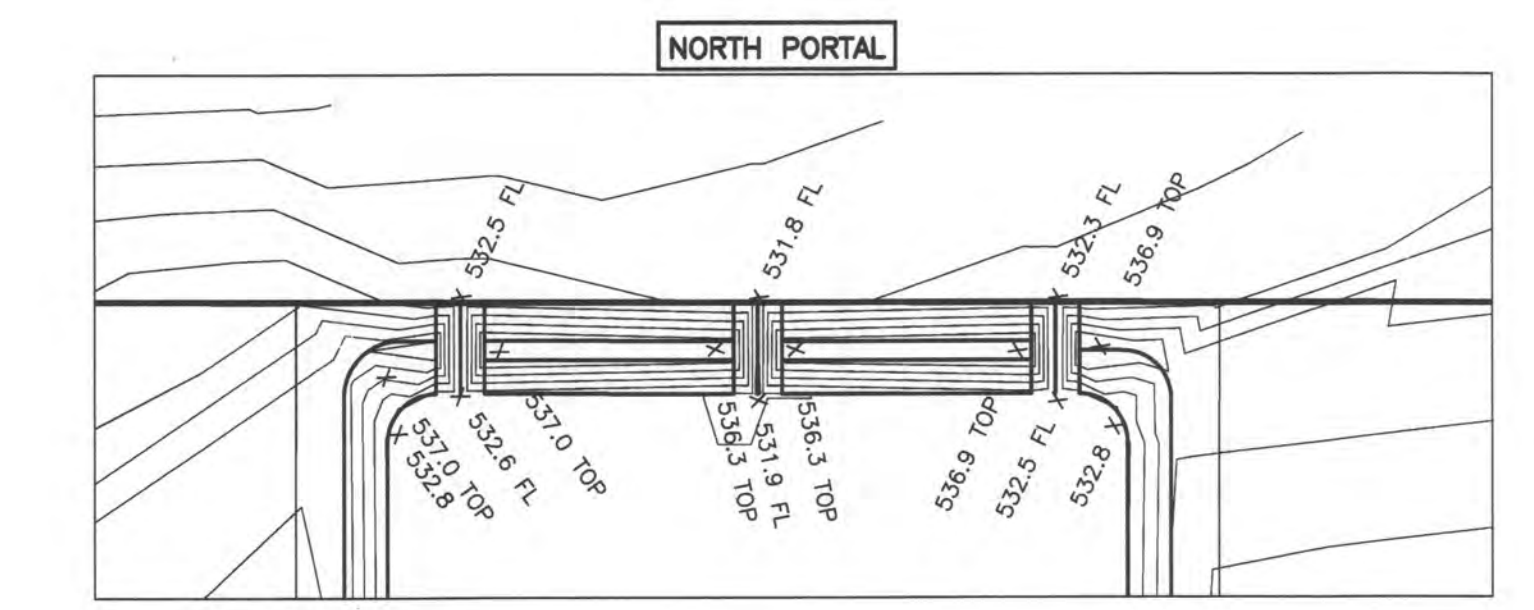
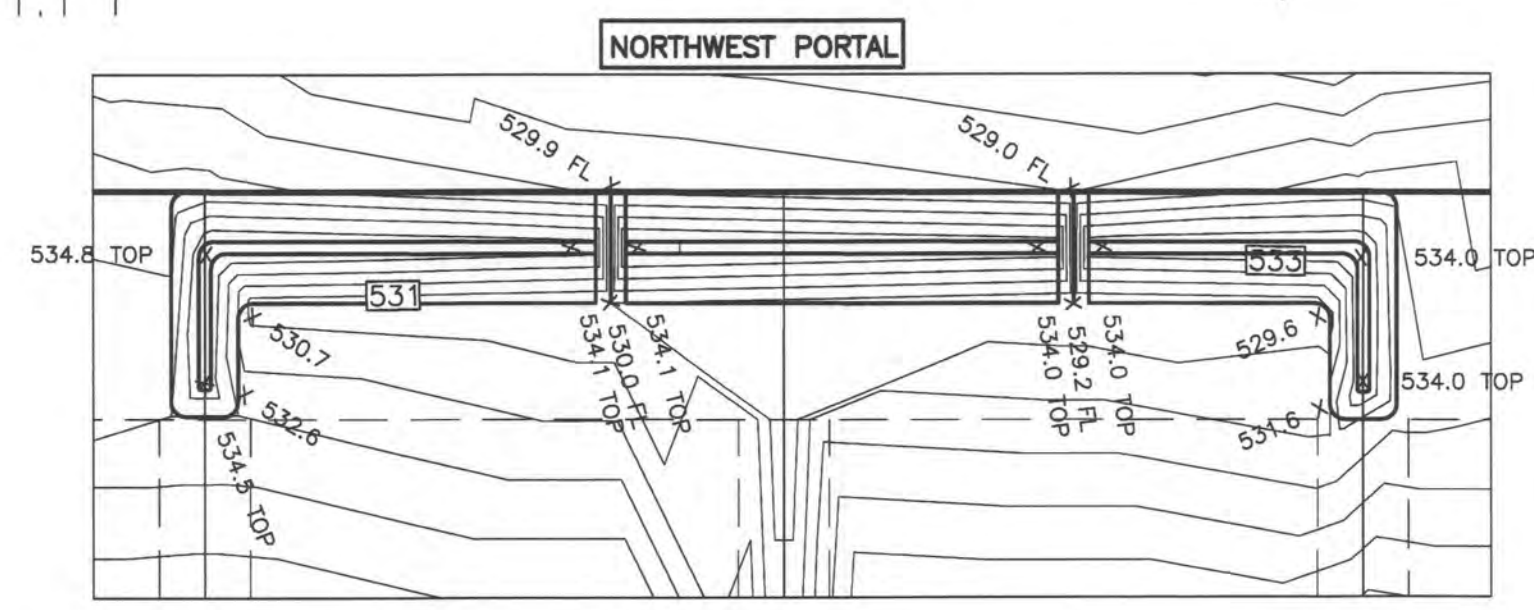
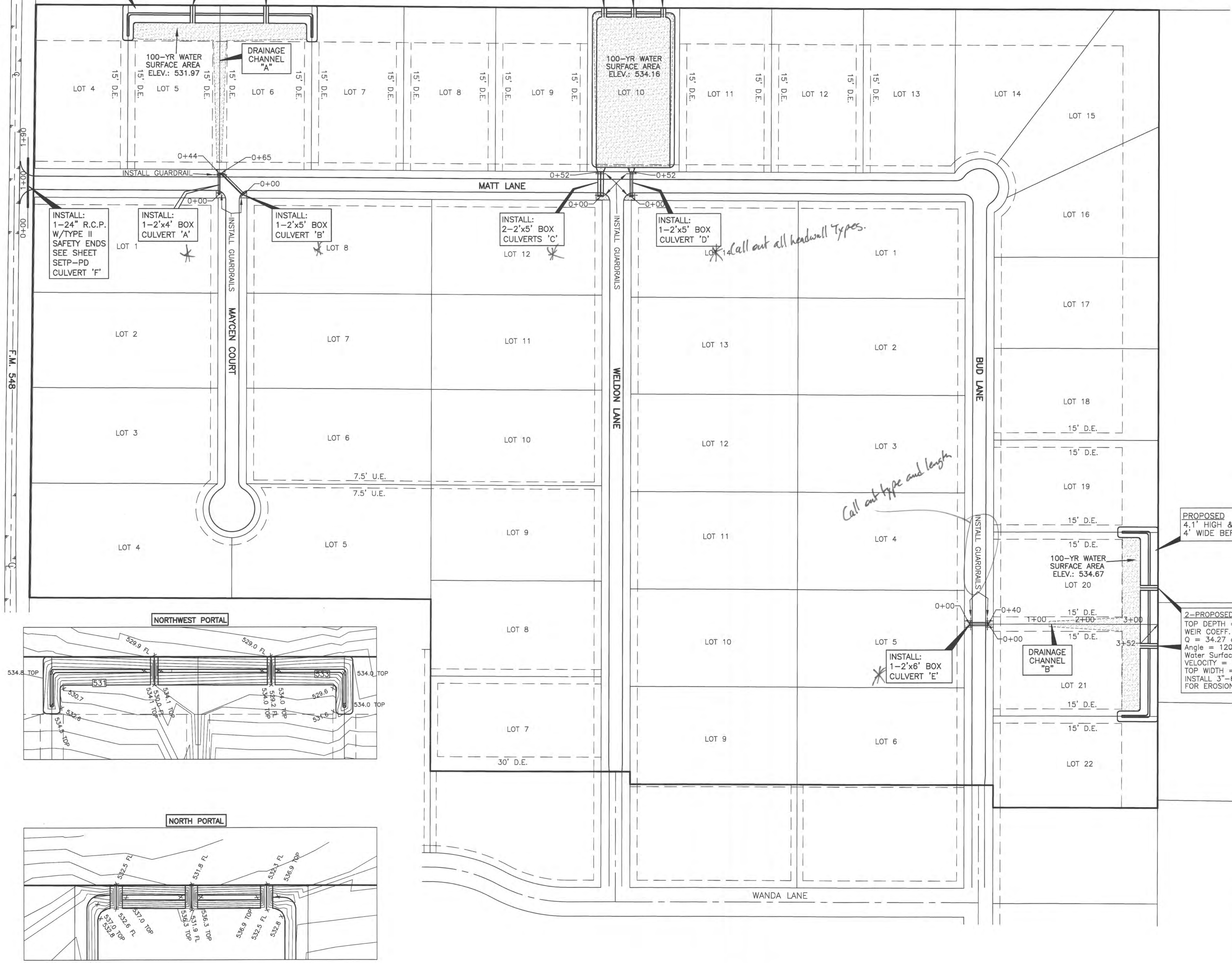
INSTALL GUARD RAILS ON TOP OF BOX CULVERT HEADWALLS. SEE TXDOT DETAIL RAC.



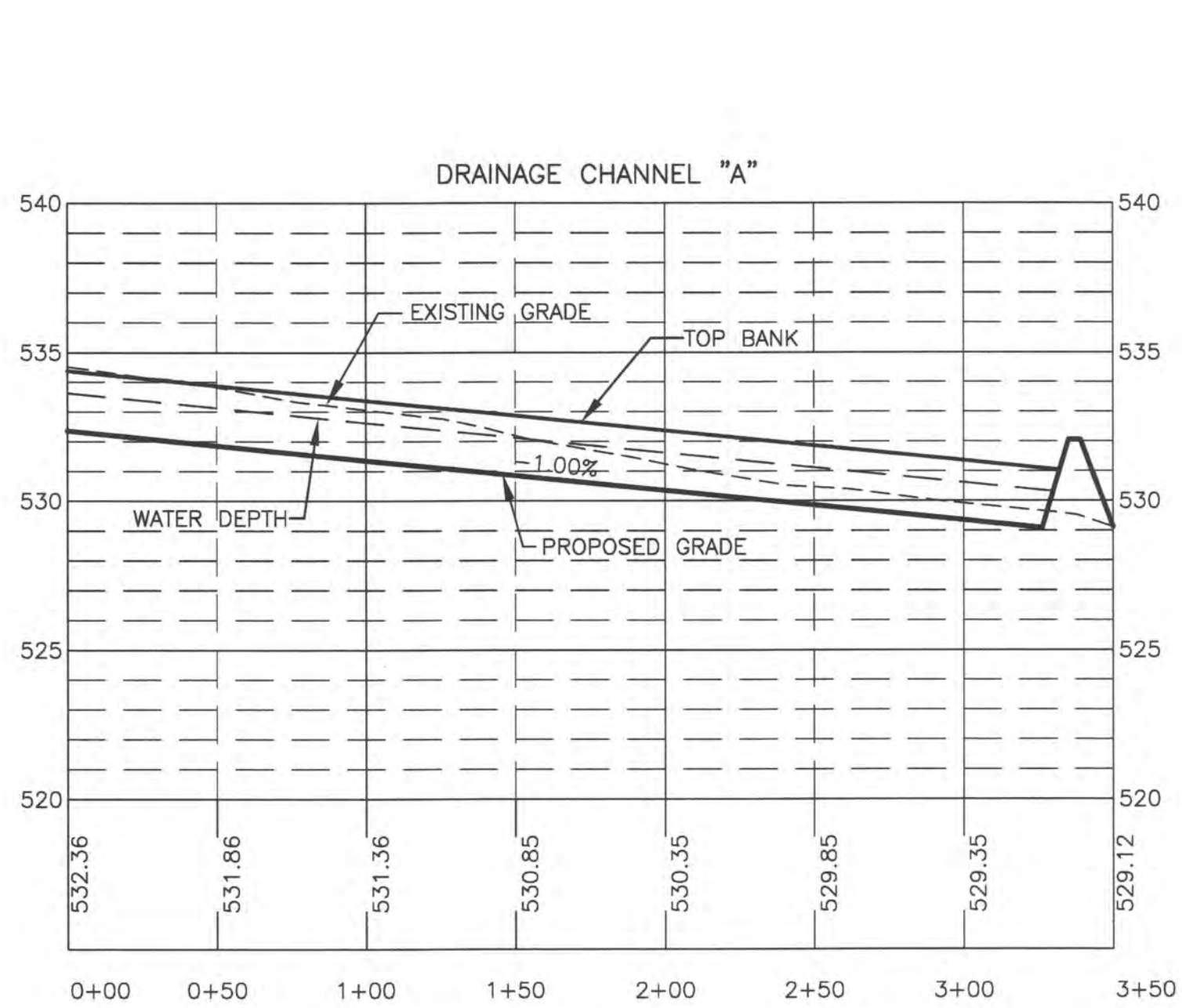
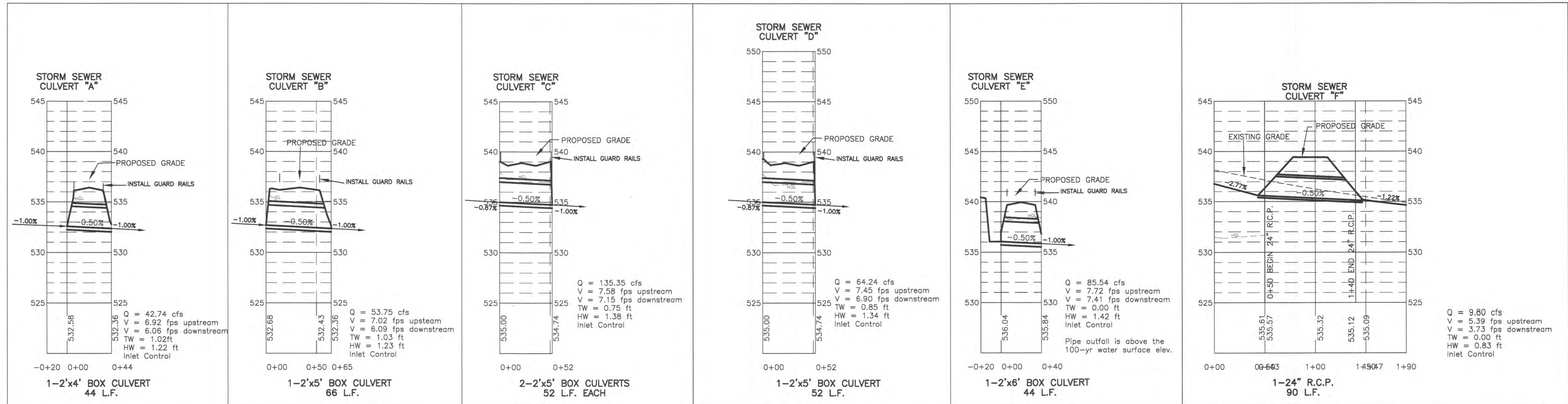
2-PROPOSED WEIRS
TOP DEPTH = 4.10 ft
WEIR COEFF. CW = 4.40
Q = 34.27 cfs each
Angle = 120 deg.
Water Surface Depth = 2.27 ft
VELOCITY = 3.83 ft/s
TOP WIDTH = 10.0 ft
INSTALL 3"-6" STONE RIP-RAP FOR EROSION CONTROL.

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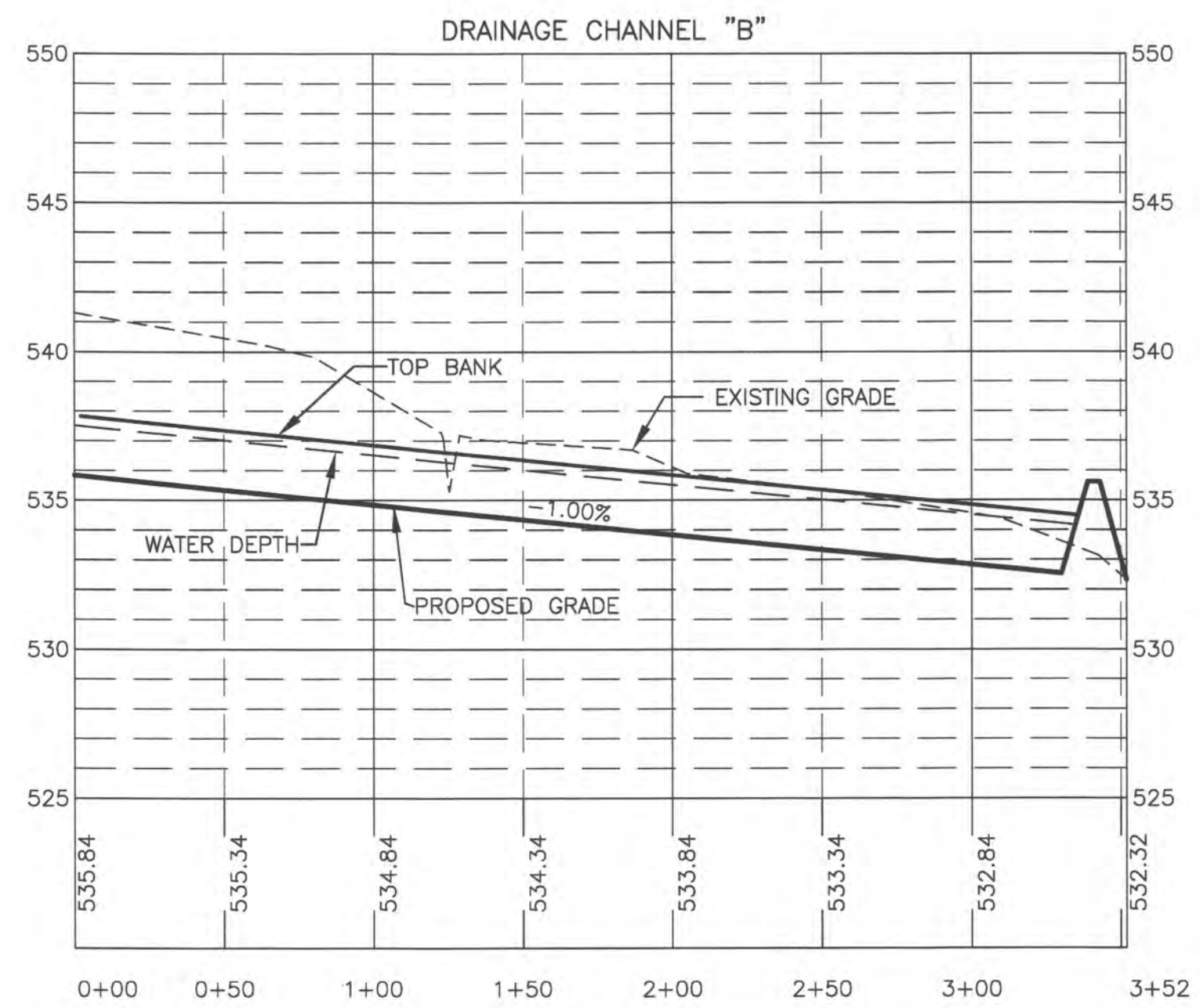


UTILITY PLAN			
STORM SEWER			
WANDA RIDGE ESTATES PHASE 2			
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11	LAVON, TEXAS 75166	PHONE: (972) 742-4411	TEXAS FIRM REGISTRATION NO.: 10007200
DWG:	DATE:	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=100'	CP



4:1
6'
4:1

Q = 96.49 cfs
V = 5.41 fps
Water Depth = 1.26 ft
100-yr Water Depth = 1.46 ft



4:1
6' Min.
4:1

Q = 121.71 cfs
V = 7.53 fps
Water Depth = 1.67 ft
100-yr Water Depth = 1.92 ft
Recal for 6' min bottom width

DRIVEWAY CULVERT CALCULATIONS

Lot-Block	Street	Size (in)	No.	Flow (cfs)	Velocity (ft/s)	HW in (ft)	Invert S (ft/ft)	HGL (ft/ft)	Control
16-A	BUD	18.000	1.000	2.75	2.05	0.59	0.0100	1.03	Inlet
17-A	BUD	18.000	1.000	3.82	2.69	0.72	0.0100	1.23	Inlet
18-A	BUD	18.000	1.000	5.94	3.86	0.96	0.0100	1.09	Inlet
19-A	BUD	18.000	1.000	8.03	4.94	1.21	0.0100	1.25	Inlet
20-A	BUD	18.000	1.000	10.11	6.00	1.53	0.0100	1.38	Inlet
21-A	BUD	18.000	1.000	5.27	3.50	0.89	0.0100	1.04	Inlet
22-A	BUD	18.000	1.000	3.30	2.39	0.66	0.0100	0.84	Inlet
1-B	BUD	18.000	1.000	4.69	3.18	0.82	0.0100	0.98	Inlet
2-B	BUD	21.000	1.000	13.87	6.11	1.42	0.0100	1.54	Inlet
3-B	BUD	27.000	1.000	22.85	6.21	1.25	0.0100	1.83	Inlet
4-B	BUD	24.000	1.000	31.83	5.54	1.18	0.0100	1.72	Inlet
5-B	BUD	27.000	2.000	45.69	6.21	1.25	0.0100	1.83	Inlet
6-B	BUD	24.000	2.000	35.32	6.38	1.30	0.0100	1.45	Inlet
9-B	WELDON	18.000	1.000	11.23	6.57	1.74	0.0100	1.39	Inlet
10-B	WELDON	27.000	1.000	20.16	5.60	1.12	0.0100	1.73	Inlet
11-B	WELDON	21.000	2.000	29.14	6.37	1.50	0.0100	1.58	Inlet
12-B	WELDON	24.000	2.000	38.12	6.44	1.40	0.0100	1.78	Inlet
13-B	WELDON	30.000	2.000	47.10	5.41	1.04	0.0100	1.80	Inlet
14-B	WELDON	30.000	2.000	57.24	6.35	1.21	0.0100	1.98	Inlet
7-C	WELDON	24x36	2.000	54.58	5.40	1.15	0.0050	1.68	Inlet
8-C	WELDON	24x60	2.000	91.70	5.43	1.16	0.0050	1.69	Inlet
9-C	WELDON	24x60	2.000	104.65	5.97	1.21	0.0050	1.75	Inlet
10-C	WELDON	24x60	2.000	113.61	6.33	1.26	0.0050	1.79	Inlet
11-C	WELDON	24x60	2.000	122.57	6.68	1.30	0.0050	1.84	Inlet
12-C	WELDON	24x60	2.000	132.85	7.06	1.36	0.0050	1.88	Inlet
1-D	MAYCEN	24.000	2.000	6.44	6.44	1.40	0.0100	1.78	Inlet
2-D	MAYCEN	21.000	2.000	30.66	6.65	1.59	0.0100	1.60	Inlet
3-D	MAYCEN	27.000	1.000	20.96	5.79	1.16	0.0100	1.76	Inlet
4-D	MAYCEN	18.000	1.000	10.71	6.30	1.64	0.0100	1.41	Inlet
5-D	MAYCEN	18.000	1.000	11.26	6.59	1.74	0.0100	1.43	Inlet
6-D	MAYCEN	27.000	1.000	21.38	5.88	1.18	0.0100	1.77	Inlet
7-D	MAYCEN	24.000	1.000	31.00	5.80	1.16	0.0100	1.69	Inlet
8-D	MAYCEN	27.000	2.000	42.07	5.80	1.16	0.0100	1.76	Inlet

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STORM SEWER PROFILES &
DRIVEWAY CULVERT CALCULATIONS
WANDA RIDGE ESTATES PHASE 2

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 LAVON, TEXAS 75166 PHONE: (972) 742-4411
TEXAS FIRM REGISTRATION NO.: 10007200

DWG: WANDARIDGE2	DATE: APRIL 27, 2016	SCALE: H-1"=50' V-1"=5'	DRAWN BY: CP
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MODIFIED RATIONAL METHOD - NORTH PORTAL WEST (100 YEAR)										
Area =	21.69 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	9.80	106.28	63769	20	37806	25963		
		15	9.00	97.61	87845	25	47257	40587		
Land Use =		20	8.30	90.01	108016	30	56709	51308		
C =	0.35	30	6.90	74.83	134695	40	75611	59084		
Tc =	20.00 Min	40	5.80	62.90	150962	50	94514	56448		
I(100) =	8.30 In/Hr	50	5.00	54.23	162675	60	113417	49258		
Q(100) =	63.01 cfs	60	4.80	48.80	175689	70	132320	43369		
		70	4.00	43.38	182196	80	151223	30973		
Proposed Conditions		80	3.70	40.13	192607	90	170126	22482		
		90	3.80	37.96	204971	100	189028	15942		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	59084 cf
I(100) =	9.80 In/Hr								Water Surface Elev. =	531.97
Q(100) =	106.28 cfs									

MODIFIED RATIONAL METHOD - NORTH PORTAL WEST (25 YEAR)										
Area =	21.69 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	8.30	90.01	54008	20	37806	16202		
		15	7.50	81.34	73204	25	47257	25947		
Land Use =		20	6.60	71.58	85892	30	56709	29184		
C =	0.35	30	5.50	59.65	107366	40	75611	31754		
Tc =	20.00 Min	40	4.60	49.89	119729	50	94514	25215		
I(25) =	8.30 In/Hr	50	4.00	43.38	130140	60	113417	16723		
Q(25) =	63.01 cfs	60	3.50	37.96	136647	70	132320	4327		
		70	3.30	35.79	150312	80	151223	-911		
Proposed Conditions		80	3.10	33.62	161374	90	170126	-8752		
		90	2.90	31.45	169833	100	189028	-19196		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	31754 cf
I(25) =	8.30 In/Hr								Water Surface Elev. =	531.01
Q(25) =	90.01 cfs									

MODIFIED RATIONAL METHOD - NORTH PORTAL WEST (10 YEAR)										
Area =	21.69 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	7.10	77.00	46200	20	37806	8394		
		15	6.50	70.49	63443	25	47257	16186		
Land Use =		20	5.90	63.99	76783	30	56709	20074		
C =	0.35	30	4.80	52.06	93701	40	75611	18089		
Tc =	20.00 Min	40	4.00	43.38	104112	50	94514	9598		
I(10) =	8.30 In/Hr	50	3.50	37.96	113873	60	113417	455		
Q(10) =	63.01 cfs	60	3.00	32.54	117126	70	132320	-15194		
		70	2.80	30.37	127537	80	151223	-23685		
Proposed Conditions		80	2.60	28.20	135346	90	170126	-34780		
		90	2.50	27.11	146408	100	189028	-42621		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	20074 cf
I(10) =	7.10 In/Hr								Water Surface Elev. =	530.60
Q(10) =	77.00 cfs									

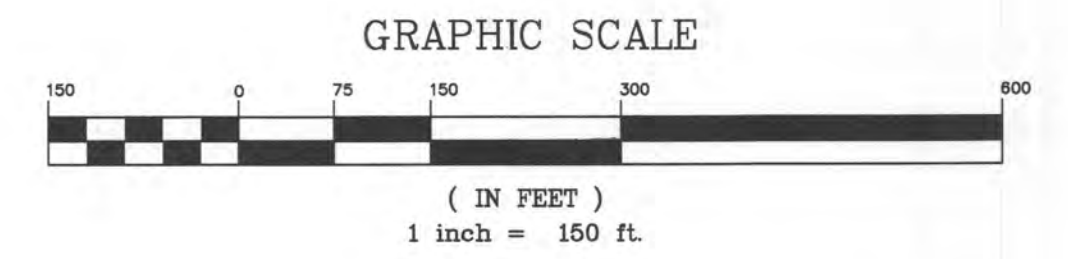
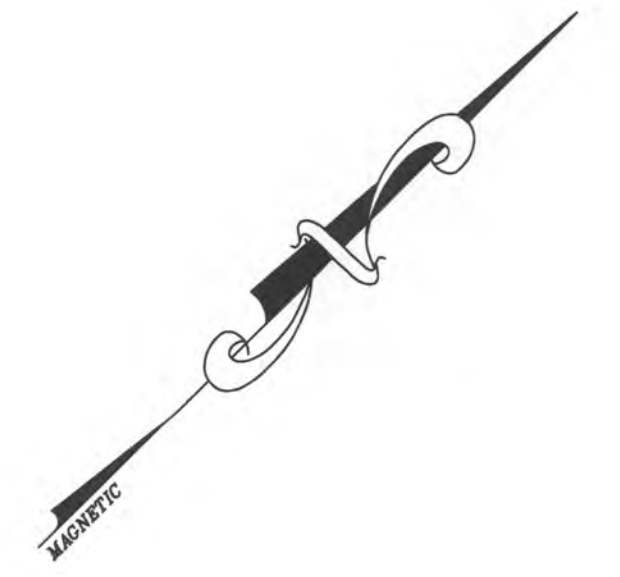
MODIFIED RATIONAL METHOD - NORTH PORTAL WEST (5 YEAR)										
Area =	21.69 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	6.10	66.15	39693	20	37806	1887		
		15	5.50	59.65	53683	25	47257	6426		
Land Use =		20	4.90	53.14	63769	30	56709	7060		
C =	0.35	30	4.10	44.46	80036	40	75611	4425		
Tc =	20.00 Min	40	3.40	36.87	88495	50	94514	-8019		
I(5) =	8.30 In/Hr	50	2.80	30.37	91098	60	113417	-22319		
Q(5) =	63.01 cfs	60	2.60	28.20	101509	70	132320	-30811		
		70	2.40	26.03	109318	80	151223	-41905		
Proposed Conditions		80	2.30	24.94	119729	90	170126	-50397		
		90	2.10	22.77	122982	100	189028	-66046		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	7060 cf
I(5) =	6.10 In/Hr								Water Surface Elev. =	530.15
Q(5) =	66.15 cfs									

MODIFIED RATIONAL METHOD - NORTH PORTAL MIDDLE (100 YEAR)										
Area =	40.44 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	9.80	198.16	118894	20	70487	48407		
		15	9.00	181.98	163782	25	88109	75673		
Land Use =		20	8.30	167.83	201391	30	105730	95661		
C =	0.35	30	6.90	139.52	251132	40	140974	110159		
Tc =	20.00 Min	40	5.80	117.28	281462	50	176217	105245		
I(100) =	8.30 In/Hr	50	5.00	101.10	303300	60	211461	91839		
Q(100) =	117.48 cfs	60	4.80	90.99	327564	70	246704	80860		
		70	4.00	80.88	339696	80	281948	57748		
Proposed Conditions		80	3.70	74.81	359107	90	317191	41916		
		90	3.50	70.77	362158	100	352435	29723		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	110159 cf
I(100) =	9.80 In/Hr								Water Surface Elev. =	534.16
Q(100) =	198.16 cfs									

MODIFIED RATIONAL METHOD - NORTH PORTAL MIDDLE (25 YEAR)										
Area =	40.44 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	8.30	167.83	100696	20	70487	30209		
		15	7.50	151.65	136485	25	88109	48376		
Land Use =		20	6.60	133.45	160142	30	105730	54412		
C =	0.35	30	5.50	111.21	200178	40	140974	59204		
Tc =	20.00 Min	40	4.60	93.01	223229	50	176217	47012		
I(25) =	8.30 In/Hr	50	4.00	80.88	242640	60	211461	31179		
Q(25) =	117.48 cfs	60	3.50	70.77	254772	70	246704	8068		
		70	3.30	66.73	280249	80	281948	-1698		
Proposed Conditions		80	3.10	62.68	300874	90	317191	-16318		
		90	2.90	58.64	316645	100	352435	-35789		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	59204 cf
I(25) =	8.30 In/Hr								Water Surface Elev. =	532.55
Q(25) =	167.83 cfs									

MODIFIED RATIONAL METHOD - NORTH PORTAL MIDDLE (10 YEAR)										
Area =	40.44 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	7.10	143.56	86137	20	70487	15650		
		15	6.50	131.43	118287	25	88109	30178		
Land Use =		20	5.90	119.30	143158	30	105730	37427		
C =	0.35	30	4.80	97.06	174701	40	140974	33727		
Tc =	20.00 Min	40	4.00	80.88	194112	50	176217	17895		
I(10) =	8.30 In/Hr	50	3.50	70.77	212310	60	211461	849		
Q(10) =	117.48 cfs	60	3.00	60.66	218376	70	246704	-28328		
		70	2.80	56.62	237787	80	281948	-44160		
Proposed Conditions		80	2.60	52.57	252346	90	317191	-64846		
		90	2.50	50.55	272970	100	352435	-79465		
Land Use =										
C =	0.50									
Tc =	10.00 Min								Required Storage =	37427 cf
I(10) =	7.10 In/Hr								Water Surface Elev. =	531.03
Q(10) =	143.56 cfs									

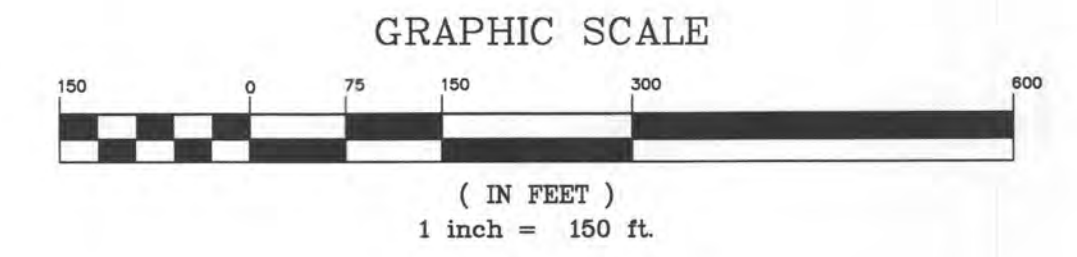
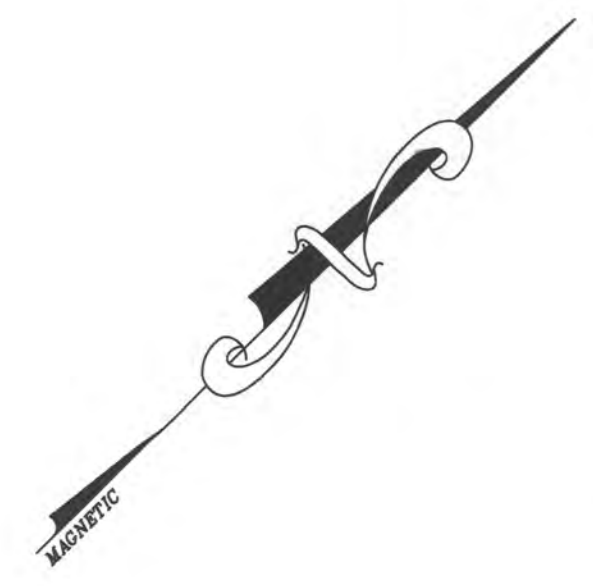
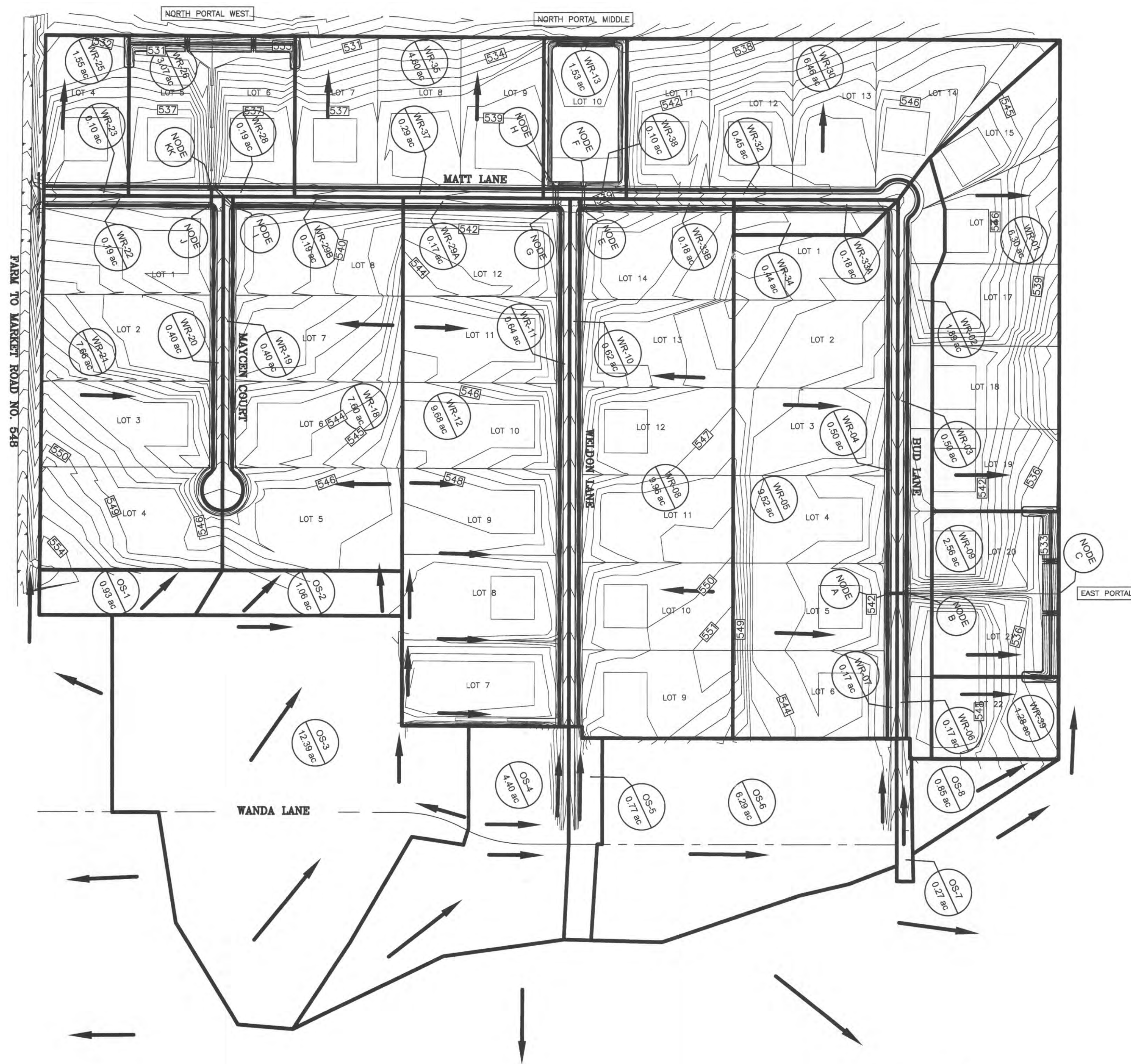
MODIFIED RATIONAL METHOD - NORTH PORTAL MIDDLE (5 YEAR)										
Area =	40.44 Acres	Storm Duration (Min)	Rainfall Intensity (In/Hr)	Runoff Flowrate (cfs)	Runoff Volume (cf)	Discharge Period (Min)	Discharge Volume (cf)	Required Storage (cf)		
Existing Conditions		10	6.10	123.34	74005	20	70487	3518		
		15	5.50	111.21	100089	25	88109	11980		
Land Use =		20	4.90	99.08	118894	30	105730	13163		
C =	0.35	30	4.10	82.90	149224	40	140974	8250		
Tc =	20.00 Min	40	3.40	68.75	164995	50	176217	-11222		
I(5) =	8.30 In/Hr	50	2.80	56.62	169848	60	211461	-41613		
Q(5) =	117.48 cfs	60	2.60	52.57	189259	70	246704	-57445		
		70	2.40	48.						



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10

OFF-SITE DRAINAGE AREAS			
EXISTING DRAINAGE AREAS			
WANDA RIDGE ESTATES PHASE 2			
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11		PHONE: (972) 742-4411	
LAVON, TEXAS 75166		TEXAS FIRM REGISTRATION NO.: 10007200	
DWG:	DATE	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=150'	CP



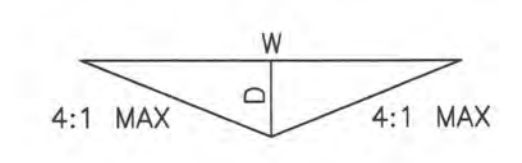
DRAINAGE ACRES TO EACH DETENTION POND

NORTH PORTAL WEST		NORTH PORTAL MIDDLE		EAST PORTAL	
DA	ACRES	DA	ACRES	DA	ACRES
WR-26	3.07				
WR-28	0.19	WR-11	0.64		
WR-20	0.40	WR-12	9.68	WR-04	0.50
WR-21	7.66	WR-33A & B	0.36	WR-05	9.52
WR-22	0.19	WR-08	9.96	WR-07	0.17
WR-18	7.60	WR-10	0.62	WR-02	1.89
WR-19	0.40	WR-38	0.10	WR-03	0.50
WR-29 A & B	0.36	OS-3	12.39	WR-09	2.56
OS-1	0.93	OS-4	4.40	WR-06	0.17
OS-2	1.06	OS-5	0.77	OS-6	6.29
		WR-13	1.53	OS-7	0.27
		WR-34	0.44		
TOTAL	21.86	TOTAL	40.89	TOTAL	21.87
	ACRES		ACRES		ACRES

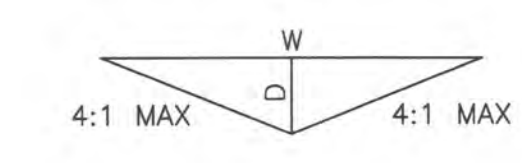
BY-PASS AREAS BY SHEET FLOW

SHEET FLOW NORTH		SHEET FLOW EAST	
DA	ACRES	DA	ACRES
WR-25	1.55	WR-01	6.30
WR-23	0.10	WR-39	1.28
WR-35	4.60	OS-8	0.85
WR-37	0.29		
WR-30	6.46		
WR-32	0.45		
TOTAL	13.45	TOTAL	8.43
	ACRES		ACRES

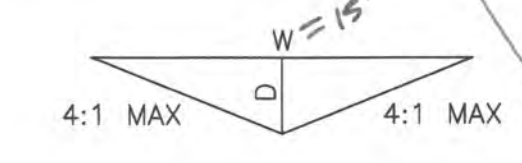
MAYCEN COURT DITCH SOUTHWEST SIDE
CFS = 42.74
MAX DEPTH = 2.0 FT



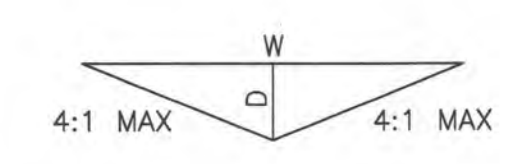
WELDON LANE DITCH SOUTHWEST SIDE
CFS = 135.35
MAX DEPTH = 2.0 FT



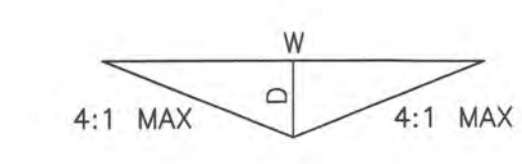
BUD LANE DITCH SOUTHWEST SIDE
CFS = 85.54
MAX DEPTH = 2.0 FT



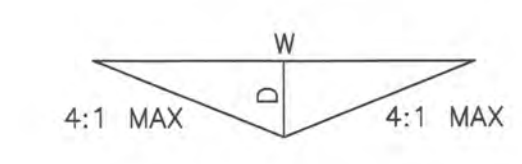
MAYCEN COURT DITCH NORTHEAST SIDE
CFS = 53.75
MAX DEPTH = 2.0 FT



WELDON LANE DITCH NORTHEAST SIDE
CFS = 64.24
MAX DEPTH = 2.0 FT



BUD LANE DITCH NORTHEAST SIDE
CFS = 24.96
MAX DEPTH = 2.0 FT



What is actual depth for these ditches?
Per typical section the max depth can't exceed 1.875 ft so it does not encroach roadway point and over top driveway.
Can always widen channel bottom.
Min bottom width 6.0'

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PROPOSED SUB-DRAINAGE AREA MAP

WANDA RIDGE ESTATES PHASE 2

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 LAVON, TEXAS 75166
PHONE: (972) 742-4411
TEXAS FIRM REGISTRATION NO.: 10007200

DWG: WANDARIDGE2	DATE: APRIL 27, 2016	SCALE: 1"=150'	DRAWN BY: CP
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Street and Regulatory Signage

The developer shall arrange for the installation of all pavement striping, regulatory, warning and guide signs, including posts, as shown on the plans or as directed by the City. Street name signs shall be installed at each intersection. Examples of regulatory, warning, information and guide signs are as follows:

- Regulatory signs shall include, but are not limited to, STOP, ALL-WAY, YIELD, KEEP RIGHT and speed limit signs.
- Warning signs shall include, but are not limited to, DEAD END, NO OUTLET, DIVIDED ROAD, DIP, and PAVEMENT ENDS.
- Guide signals shall include, but are not limited to, street name signs, DETOUR, direction arrow and advance arrow.

Regulatory signs should be used only where justified by engineering judgment or study. All signage plans shall be reviewed and approved by the City of Rockwall Engineering Department and be designed in accordance with the principles described in the current TMUTCD.

- A detailed street and regulatory signage plan is to be submitted to the City of Rockwall Engineering Department. All signs shall be shown in the engineering plans for review and approval. The signage plan shall be shown on a separate signage & pavement marking layout sheet or as a part of the plan & profile sheet. The plan shall identify the specific sign designation, size and location for each sign. Sign standards shall also be included in the engineering plans.
- All signage installed shall comply with the current "Texas Manual on Uniform Traffic Control Devices" and the "Standard Highway Sign Designs for Texas." The sign layout drawings shall show the color and dimensions of all sign face legend components including background color, legend color, borders, symbols, letter size and style.
- For a street with a cul-de-sac end, a standard W 14-2a shall be mounted over the street name blade, if the cul-de-sac is not clearly visible from the adjoining roadway, or is located in excess of 400 linear feet from the adjoining roadway.
- Sign posts shall be 2 3/8" O.D. galvanized steel tube sign post with a galvanized finish.
- Sign clamps and brackets shall be high strength aluminum.
- Street name sign blades shall be double-sided with rounded corners.
- Street Name Blades shall be nine-inch (9") tall flat aluminum. The blades shall be 0.050 inches thick and be a minimum of 36" long.
- The lettering for the street signs shall be 3M Scotchlite Series 3930 high intensity prismatic material. All signs shall be used for street, regulatory, warning signs and shall be high intensity diamond grade type III prismatic. The street sign background shall be green and the legend shall be white.
- The street sign blade must incorporate the current City of Rockwall logo. The logo shall consist of white 3M Scotchlite Series 3930 high intensity prismatic material (product code 3930).
- Block Numbers are required on all street name blades and shall be located on the top right corner of the street blade.
- The lettering for the street blades shall be composed of a combination of lower-case letters with initial upper-case letters. The Clearview TCAD-1W font shall be used. The lettering shall be composed of initial upper-case letters of at least 6 inches in height and lower case letters of at least 4.5 inches in height. For supplementary lettering to indicate the type of street (such as Street, Avenue or Road) shall be composed of initial upper-case letters at least 3-inches in height and lower-case letters at least 2.25 inches in height. Abbreviations may be used (for example St., Ave., or Rd) except the street name itself. The supplementary lettering shall be located at the lower right corner of the street blade, under the block number.
- The street blade sign shall consist of green 3M Scotchlite Series 3930 high intensity prismatic material background - (product code 3937). The lettering shall consist of white 3M Scotchlite Series 3930 high intensity prismatic material (product code - 3930). The background sheathing shall be white 3M 9990 high intensity prismatic material. The background material shall be applied to the full width and height of the sign blank leaving no metal exposed. The background material shall be one continuous piece of material. Patching of background material is not allowed and any sign with patching material of any type will be rejected by the City.
- Alternative Option:
As an alternative, the foreground color may be green transparent Scotchlite ElectroCut177 film (E.C. film). Lettering shall be cut out and removed producing a single continuous piece of green transparent film material.

The developer shall be responsible for furnishing and installing all regulatory signage, warning signage and street name signage along with all the necessary sign mounts in accordance with the approved engineering plans. A sample production sign shall be submitted to the Traffic Signs & Pavement Markings Supervisor for review and approval. The sample shall be directed to the City of Rockwall Service Center located at 1600 Airport Road, Rockwall, Texas 75087. The sample sign must be submitted at least 10 days prior to the scheduled installation date.

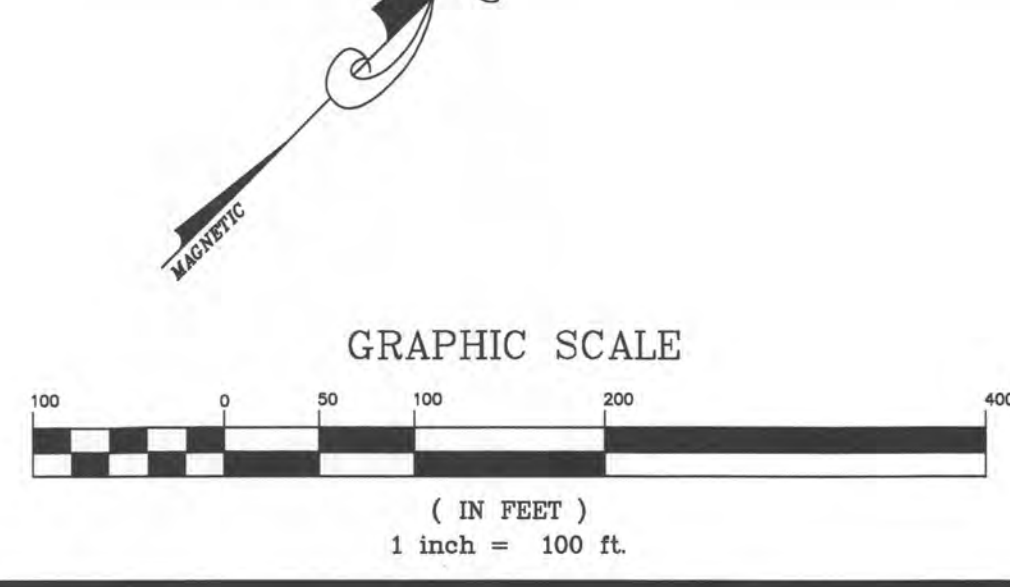
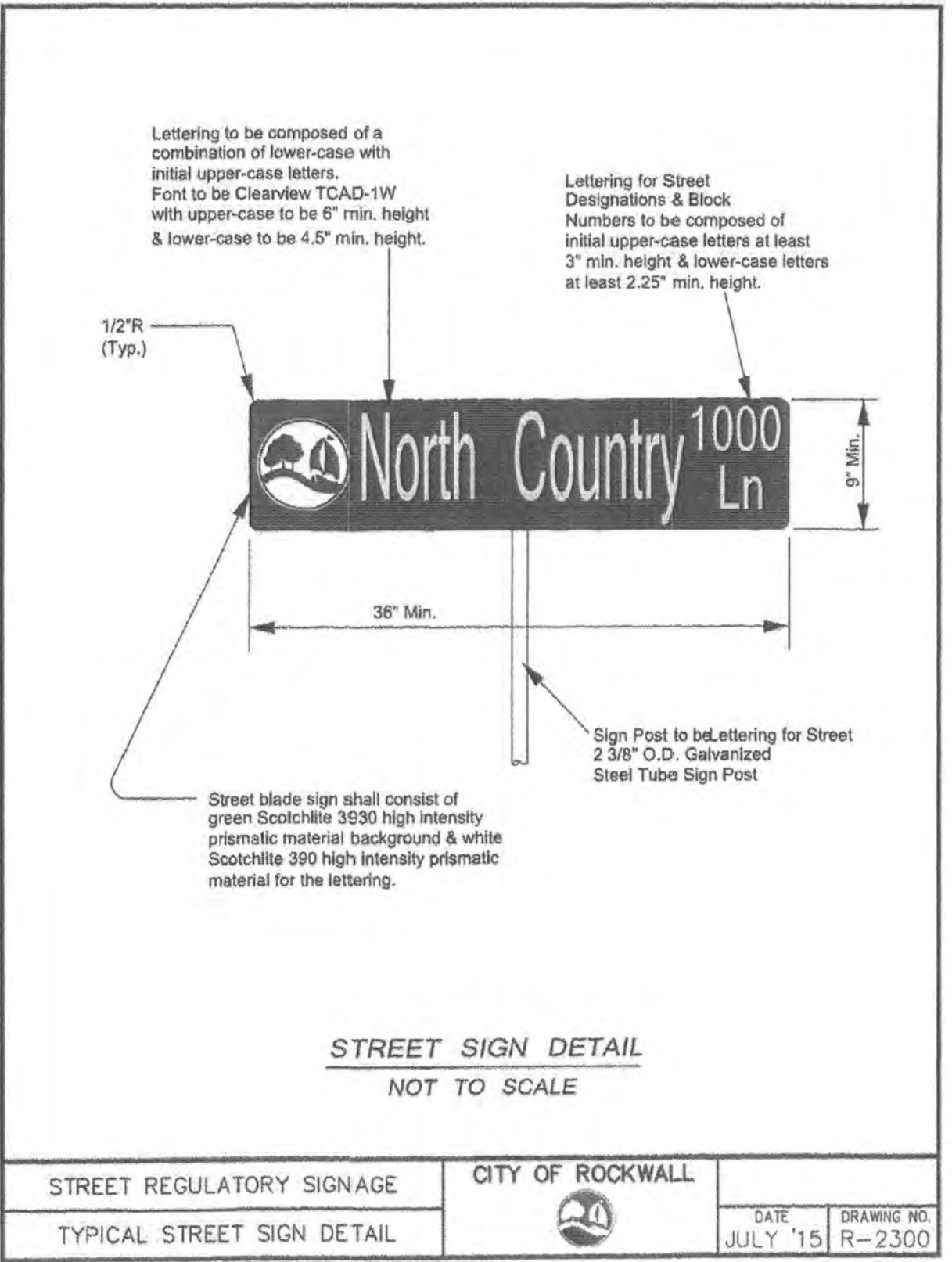
All street and regulatory signage shall be installed, inspected and approved, prior to final acceptance of the project. This inspection typically takes place as part of the engineering department's final walkover. Any sign related issues/issues will be noted on the project final punch list.

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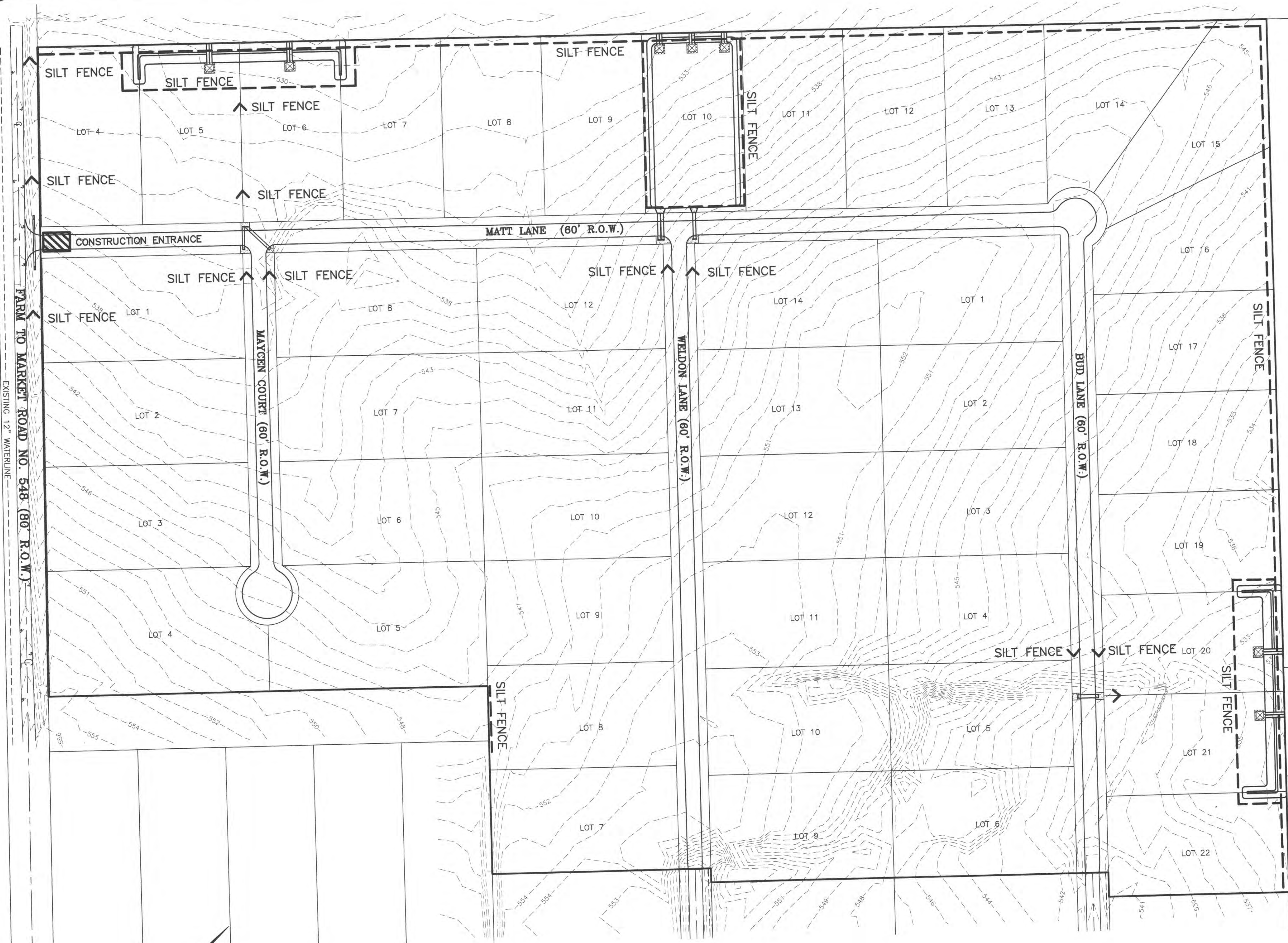
LIGHTING / SIGN PLAN

WANDA RIDGE ESTATES PHASE 2

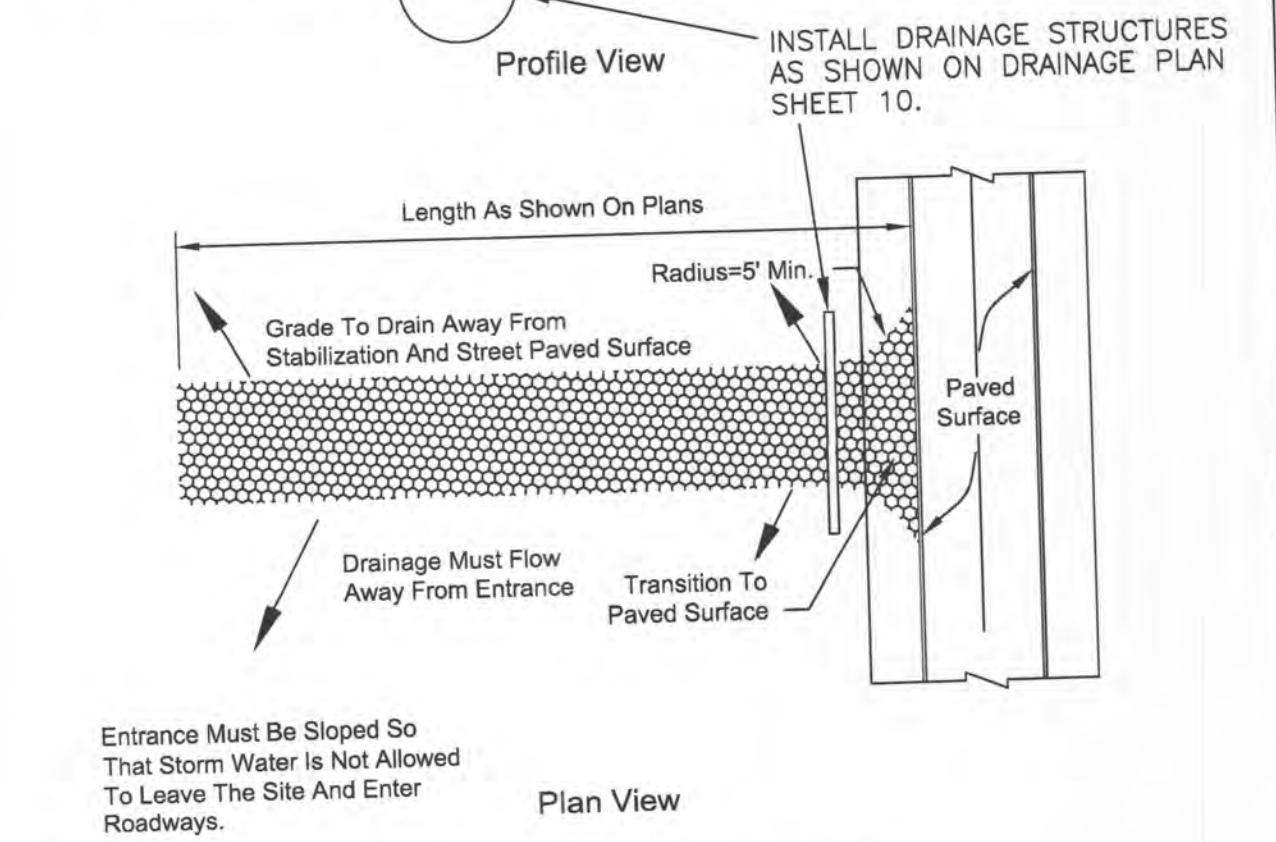
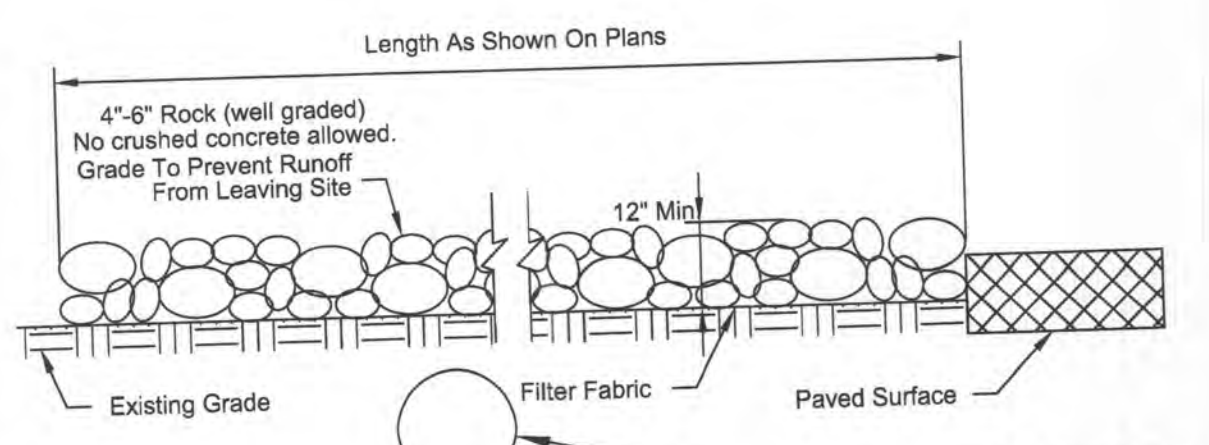
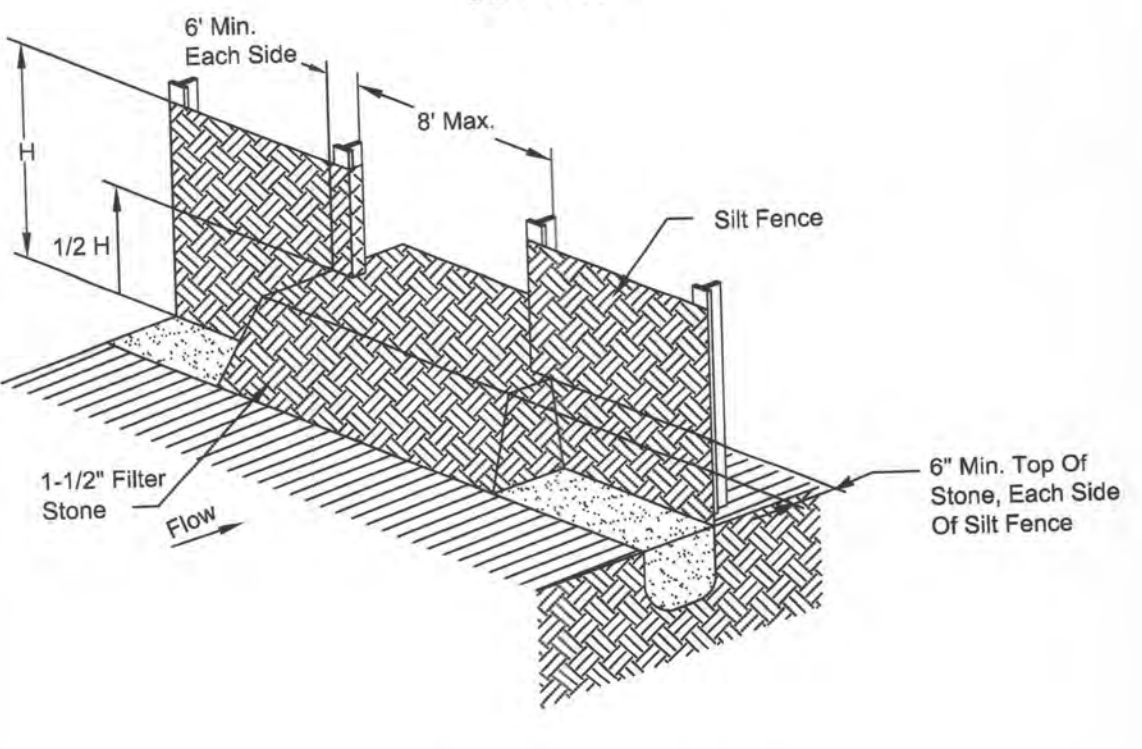
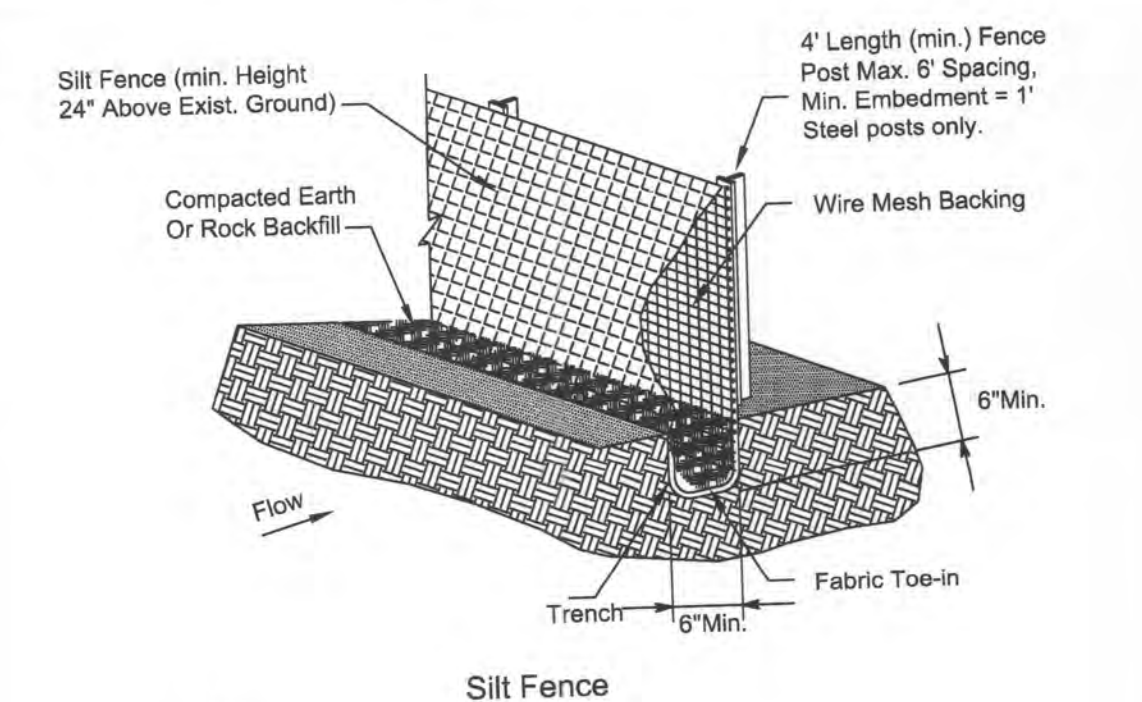
CARROLL CONSULTING GROUP, INC.			
P.O. BOX 11	PHONE: (972) 742-4411		
LAVON, TEXAS 75166	TEXAS FIRM REGISTRATION NO.: 10007200		
DWG:	DATE:	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=100'	CP



STREET LIGHTING SHALL BE OF THE TYPE COVERED UNDER LOCAL ELECTRIC FRANCHISE PROVIDER REQUIREMENTS.



USE ATTACHED STANDARD EC (1)-93 FOR SILT FENCE TO BE PLACED INSIDE TxDOT ROW.



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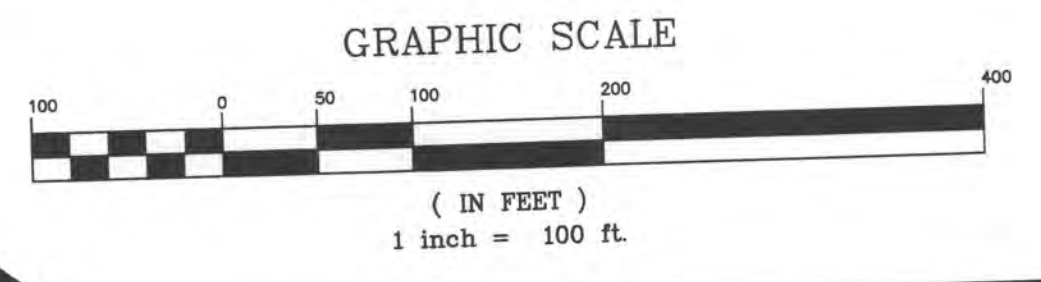
13

EROSION CONTROL PLAN

WANDA RIDGE ESTATES PHASE 2

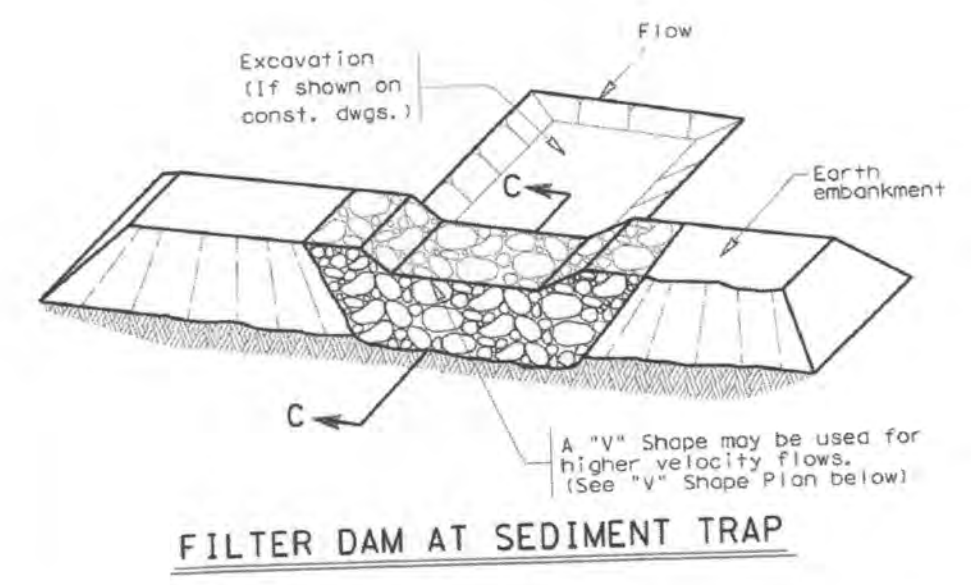
CARROLL CONSULTING GROUP, INC.
 P.O. BOX 11 LAVON, TEXAS 75166
 PHONE: (972) 742-4411
 TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE:	SCALE:	DRAWN BY:
WANDARIDGE2	APRIL 27, 2016	1"=100'	CP



- SILT FENCE
- ▨ CONSTRUCTION ENTRANCE 20' X 50' MIN.

NOTE:
 IF TEMPORARY CONSTRUCTION ENTRANCES ARE PRESENT FOR MORE THAN 6 (SIX) MONTHS THEN, A SEPARATE DRIVEWAY PERMIT APPLICATION WILL BE REQUIRED FROM TxDOT.

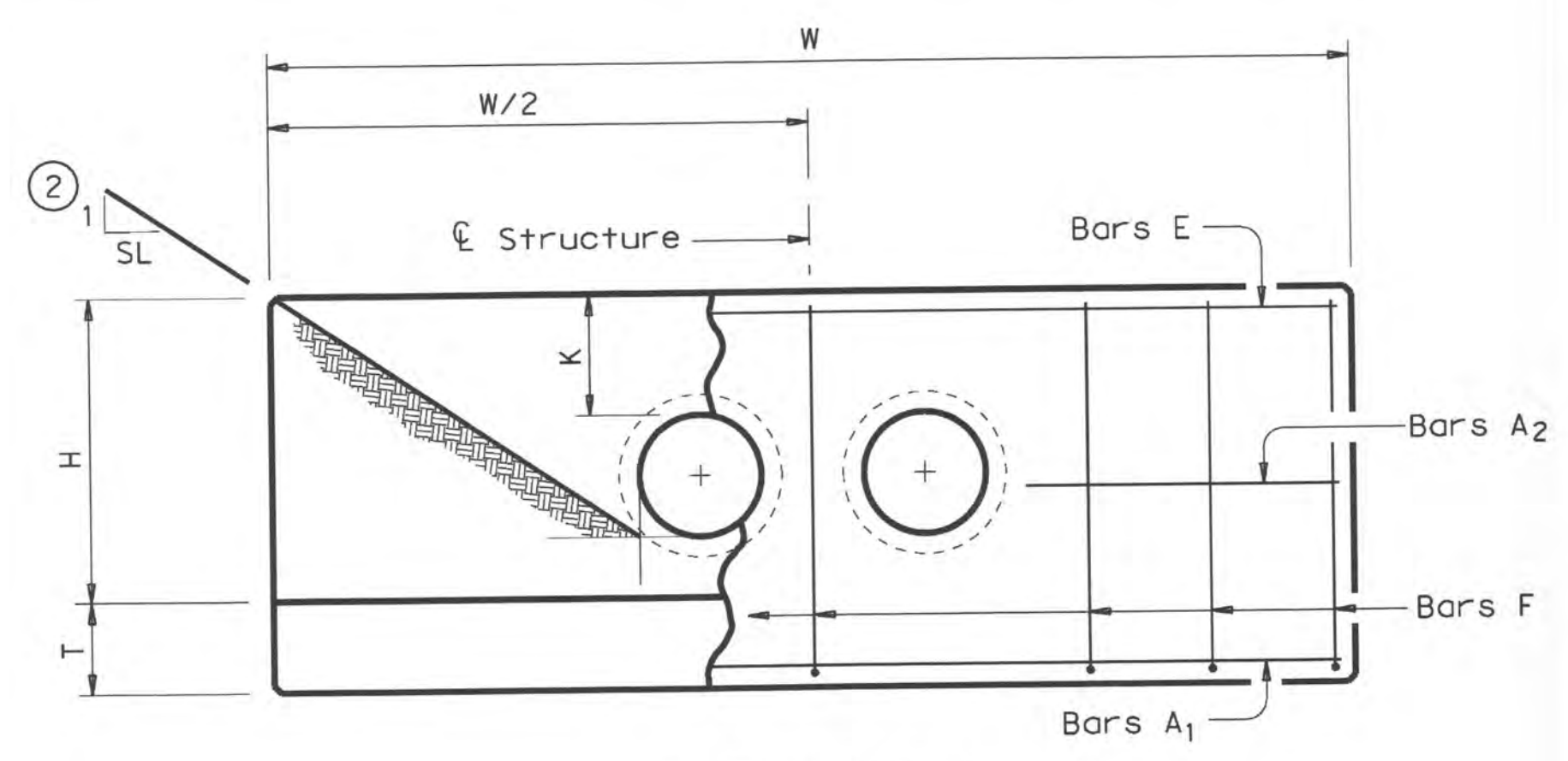


INSTALL SEDIMENT TRAP FOR PONDING OF SEDIMENT RUNOFF UPSTREAM BEFORE EACH WEIR. 20'X20'

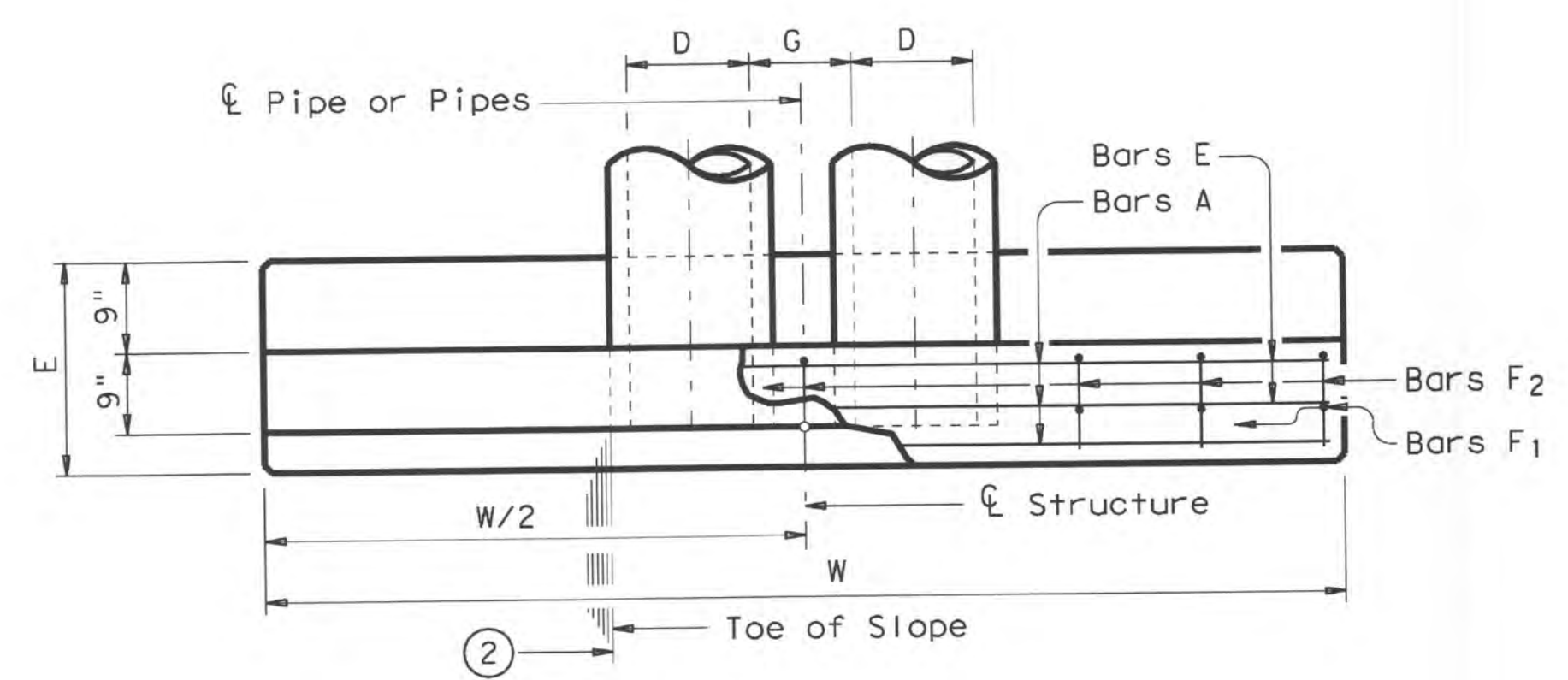
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

LEVELS DISPLAYED
ACC:

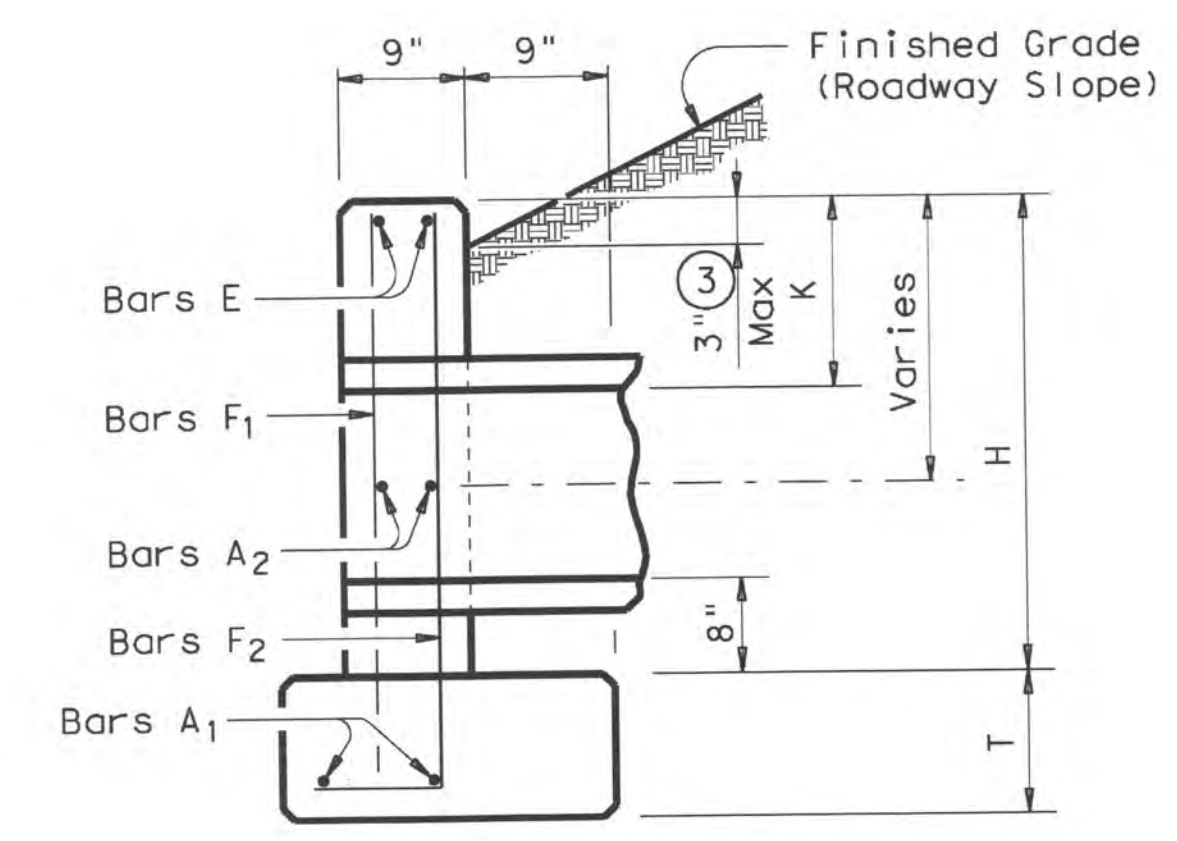
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)							
SLOPE	DIA OF PIPE, D	Values for one Pipe			Values to be added for each add'l Pipe		
		W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)
2:1	12"	9'-0"	122	1.1	1'-9"	15	0.2
	15"	10'-3"	136	1.3	2'-2"	16	0.2
	18"	11'-6"	163	1.5	2'-8"	19	0.3
	21"	12'-9"	200	1.8	3'-1"	31	0.4
	24"	14'-0"	217	2.1	3'-7"	34	0.4
	27"	15'-3"	254	2.4	3'-11"	37	0.5
	30"	16'-6"	272	2.7	4'-4"	40	0.6
	33"	17'-9"	314	3.1	4'-8"	43	0.6
	36"	19'-0"	371	3.9	5'-1"	46	0.8
	42"	21'-6"	442	4.9	5'-10"	52	1.0
	48"	25'-0"	569	6.4	6'-7"	59	1.3
	54"	27'-6"	701	7.5	7'-6"	82	1.6
	60"	30'-0"	794	8.8	8'-3"	90	1.8
	66"	32'-6"	894	10.2	8'-9"	96	2.0
72"	35'-0"	1055	11.7	9'-4"	103	2.3	
3:1	12"	13'-0"	175	1.6	1'-9"	14	0.2
	15"	14'-9"	193	1.9	2'-2"	17	0.2
	18"	16'-6"	228	2.2	2'-8"	19	0.3
	21"	18'-3"	299	2.6	3'-1"	31	0.4
	24"	20'-0"	323	3.0	3'-7"	33	0.4
	27"	21'-9"	371	3.5	3'-11"	37	0.5
	30"	23'-6"	415	4.0	4'-4"	40	0.5
	33"	25'-3"	469	4.6	4'-8"	43	0.6
	36"	27'-0"	556	5.7	5'-1"	46	0.8
	42"	30'-6"	675	7.1	5'-10"	52	1.0
	48"	35'-6"	837	9.2	6'-7"	59	1.3
	54"	39'-0"	1015	11.0	7'-6"	84	1.6
	60"	42'-6"	1171	12.9	8'-3"	91	1.8
	66"	46'-0"	1298	14.9	8'-9"	98	2.0
72"	49'-6"	1561	17.1	9'-4"	103	2.3	
4:1	12"	17'-0"	229	2.0	1'-9"	15	0.2
	15"	19'-3"	266	2.4	2'-2"	17	0.2
	18"	21'-6"	308	2.9	2'-8"	19	0.3
	21"	23'-9"	382	3.5	3'-1"	31	0.3
	24"	26'-0"	430	3.9	3'-7"	34	0.4
	27"	28'-3"	486	4.7	3'-11"	37	0.5
	30"	30'-6"	539	5.2	4'-4"	40	0.6
	33"	32'-9"	603	6.0	4'-8"	42	0.6
	36"	35'-0"	738	7.5	5'-1"	47	0.8
	42"	39'-6"	881	9.3	5'-10"	52	1.0
	48"	46'-0"	1102	12.1	6'-7"	61	1.3
	54"	50'-6"	1364	14.4	7'-6"	84	1.6
	60"	55'-0"	1547	16.9	8'-3"	91	1.8
	66"	59'-6"	1741	19.5	8'-9"	98	2.0
72"	64'-0"	2069	22.4	9'-4"	102	2.3	
6:1	12"	25'-0"	336	3.0	1'-9"	14	0.2
	15"	28'-3"	384	3.6	2'-2"	17	0.2
	18"	31'-6"	452	4.2	2'-8"	19	0.3
	21"	34'-9"	581	5.1	3'-1"	31	0.4
	24"	38'-0"	644	5.8	3'-7"	34	0.4
	27"	41'-3"	737	6.9	3'-11"	37	0.5
	30"	44'-6"	807	7.7	4'-4"	39	0.6
	33"	47'-9"	912	8.9	4'-8"	44	0.6
	36"	51'-0"	1108	11.0	5'-1"	48	0.8
	42"	57'-6"	1318	13.7	5'-10"	54	1.0
	48"	67'-0"	1674	17.9	6'-7"	59	1.3
	54"	73'-6"	2064	21.3	7'-6"	83	1.6
	60"	80'-0"	2343	24.9	8'-3"	89	1.8
	66"	86'-6"	2635	28.9	8'-9"	96	2.0
72"	93'-0"	3123	33.1	9'-4"	101	2.3	



ELEVATION



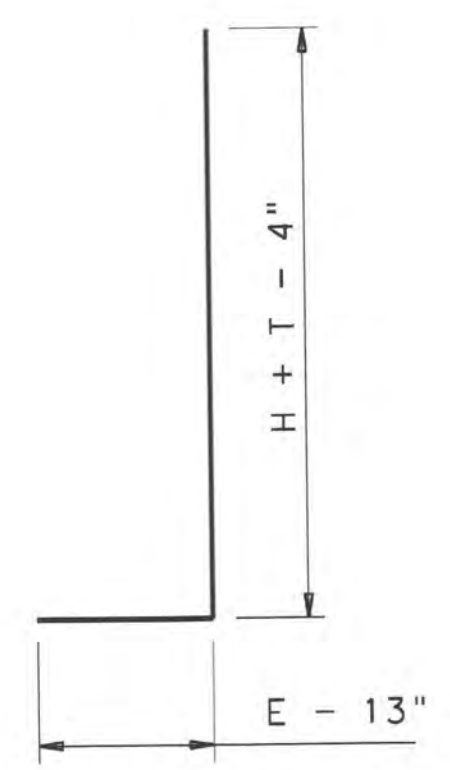
PLAN OF NON-SKEWED PIPES



SECTION

TABLE OF CONSTANT DIMENSIONS					
DIA OF PIPE, D	G	K	H	T	E
12"	9"	1'-0"	2'-8"	9"	1'-9"
15"	11"	1'-0"	2'-11"	9"	1'-9"
18"	1'-2"	1'-0"	3'-2"	9"	1'-9"
21"	1'-4"	1'-0"	3'-5"	9"	2'-0"
24"	1'-7"	1'-0"	3'-8"	9"	2'-0"
27"	1'-8"	1'-0"	3'-11"	9"	2'-3"
30"	1'-10"	1'-0"	4'-2"	9"	2'-3"
33"	1'-11"	1'-0"	4'-5"	9"	2'-6"
36"	2'-1"	1'-0"	4'-8"	1'-0"	2'-6"
42"	2'-4"	1'-0"	5'-2"	1'-0"	2'-9"
48"	2'-7"	1'-3"	5'-11"	1'-0"	3'-0"
54"	3'-0"	1'-3"	6'-5"	1'-0"	3'-3"
60"	3'-3"	1'-3"	6'-11"	1'-0"	3'-6"
66"	3'-3"	1'-3"	7'-5"	1'-0"	3'-9"
72"	3'-4"	1'-3"	7'-11"	1'-0"	4'-0"

TABLE OF REINFORCING STEEL (4)			
Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1'-6"	~
E	#5	~	2
F	#5	1'-0"	~



BARS F2

GENERAL NOTES:
 Designed according to current AASHTO Standard and Interim Specifications.
 Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.
 All reinforcing steel shall be Grade 60.
 All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
 No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation
 Bridge Division

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

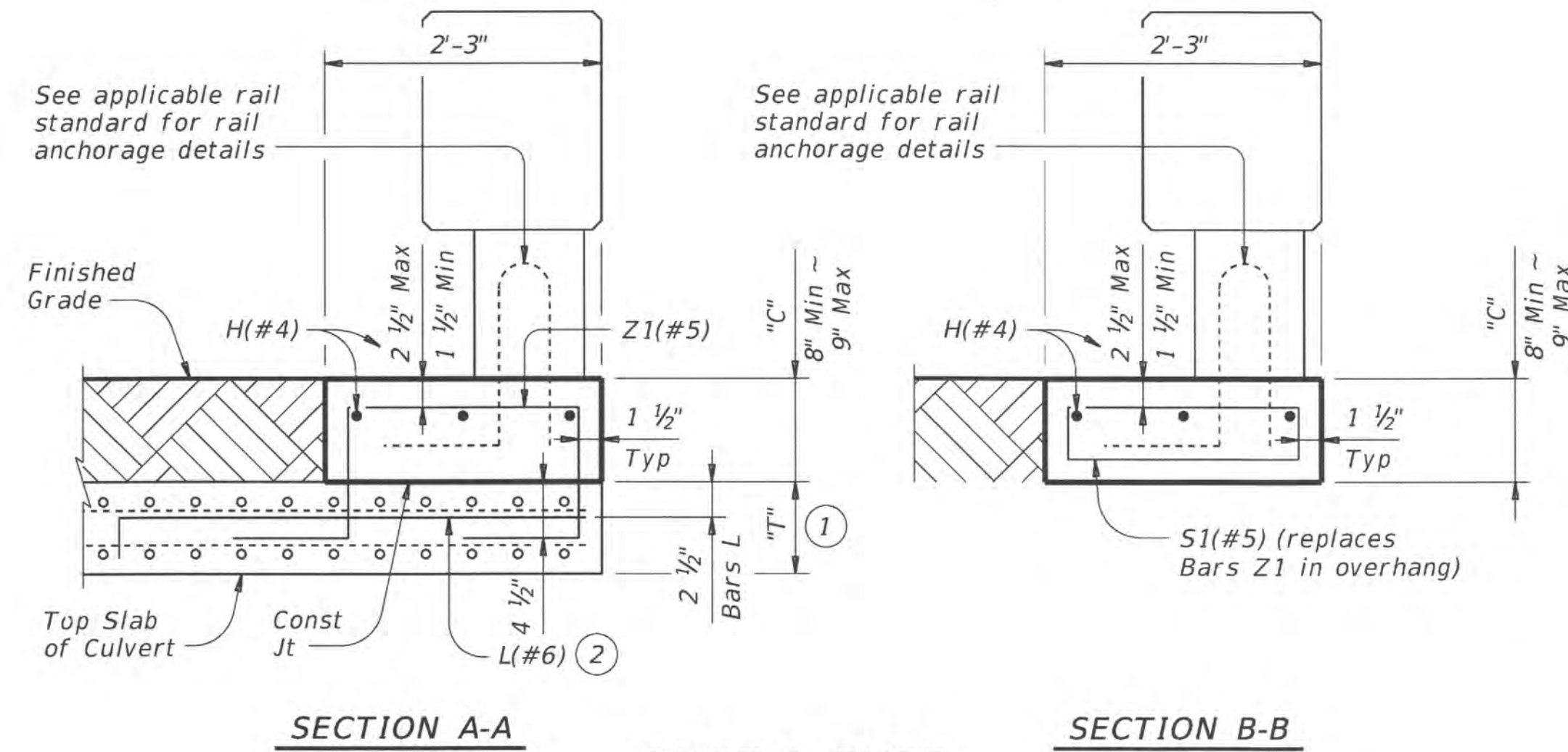
CH-PW-0

FILE: chpw0ste.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
© TxDOT May 2005	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				
COUNTY	CONTROL	SECT	JOB	HIGHWAY

- Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- Indicated slope is perpendicular to centerline Pipe or Pipes.
- For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- Quantities shown are for one structure end only (one headwall).

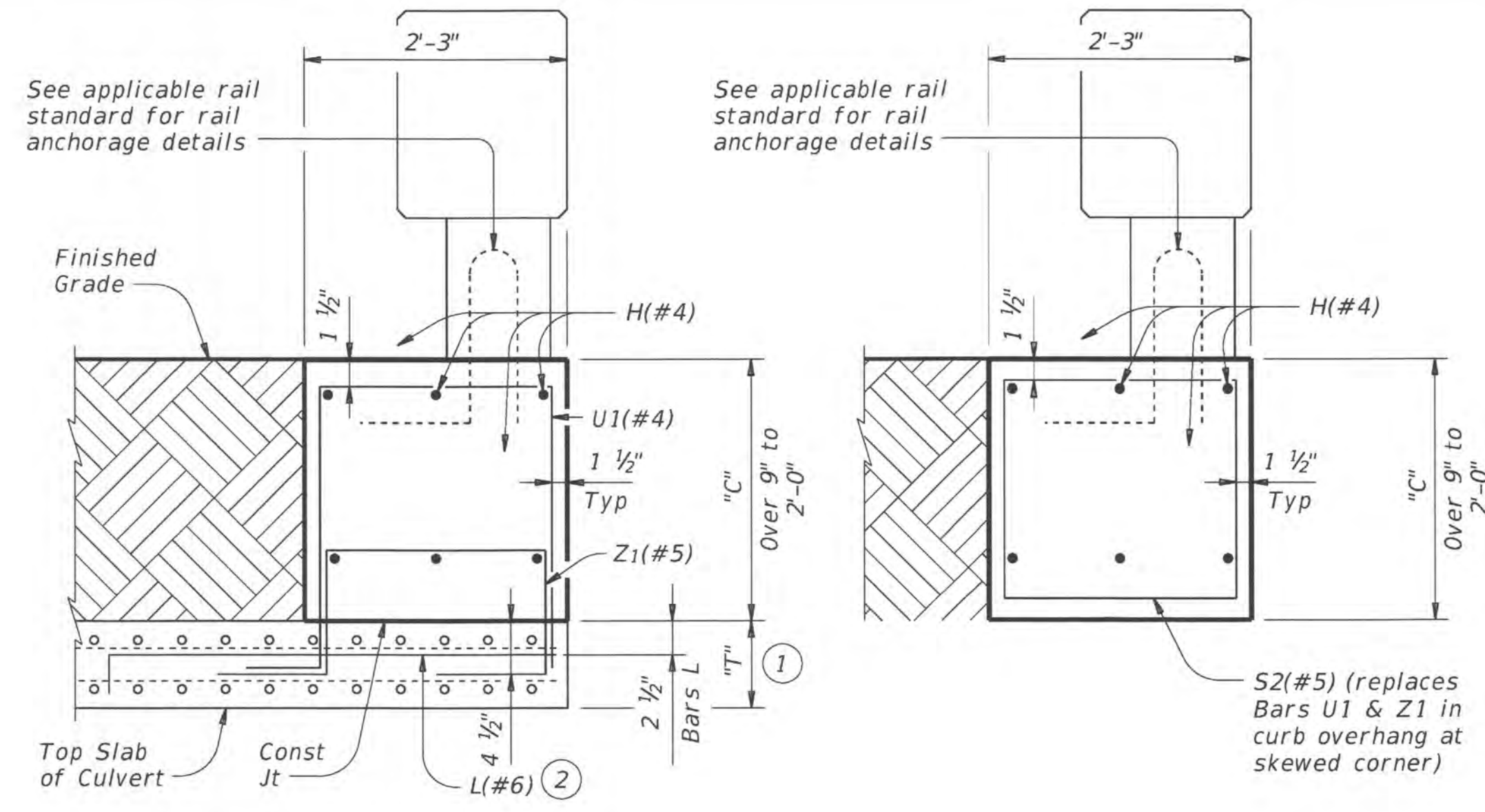
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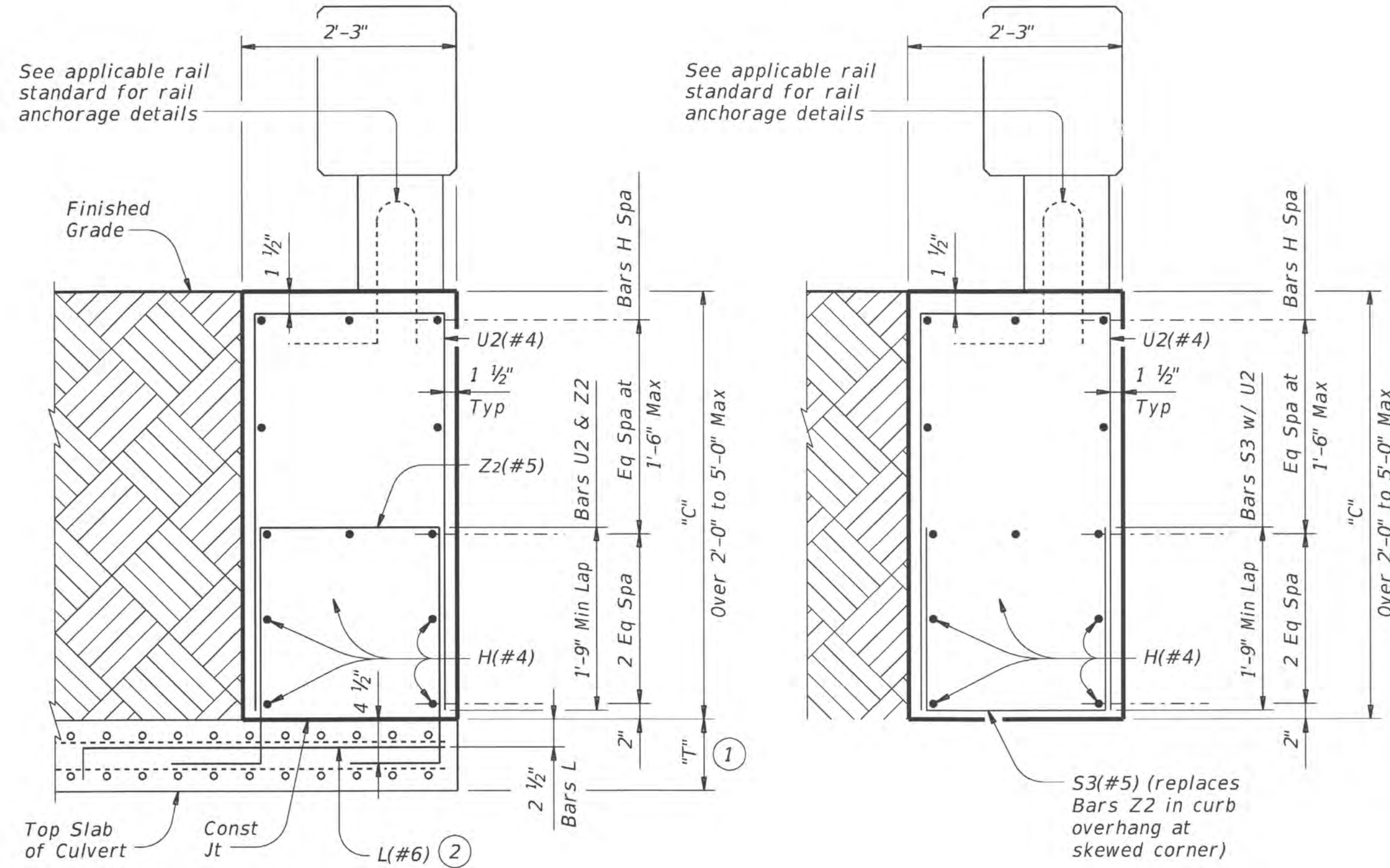
SECTION A-A **TYPE 1 CURB** **SECTION B-B**

Used for curbs from 8" to 9" (Showing "C" = 9"). Showing T223 Rail, other rails similar. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



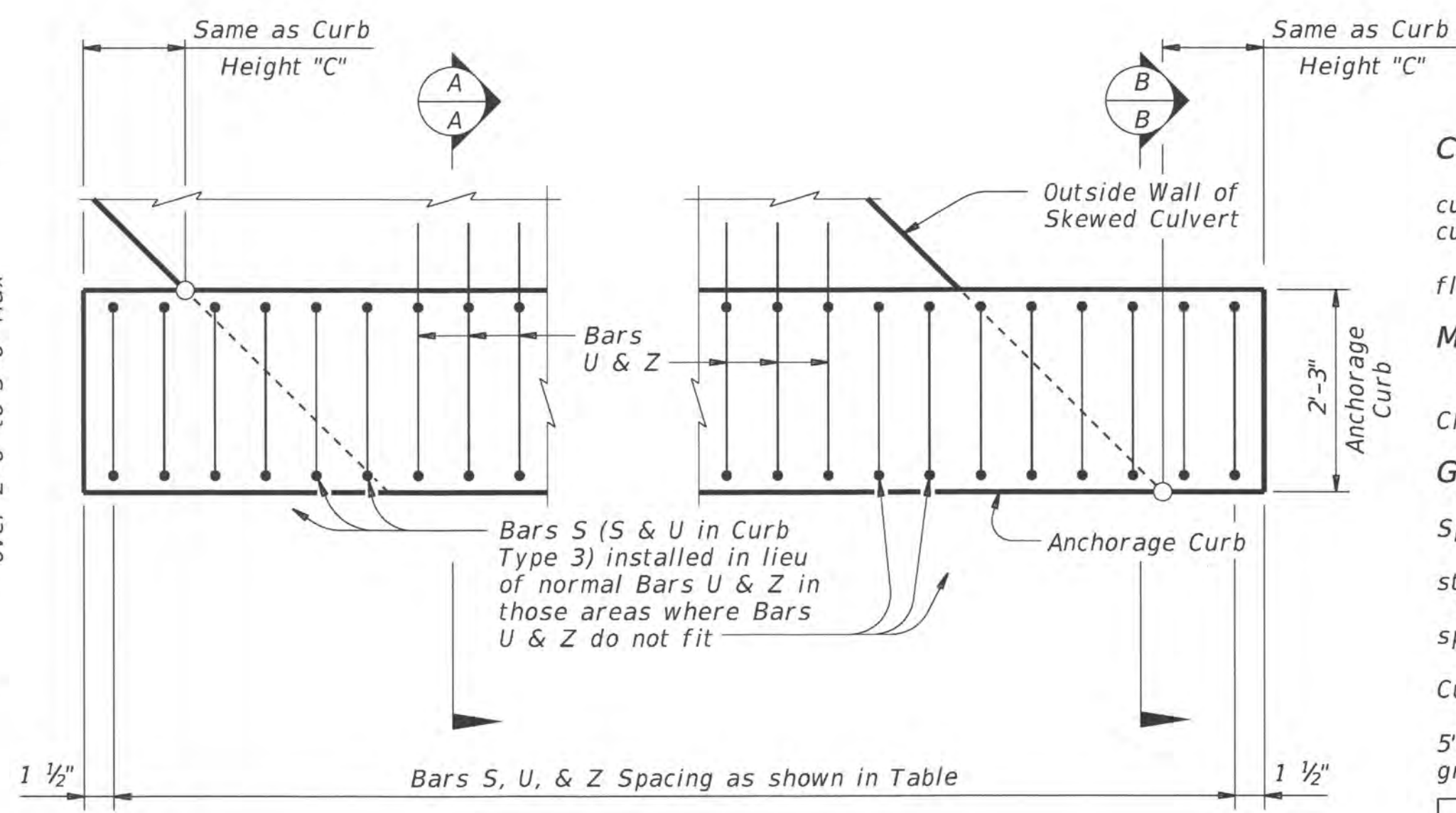
SECTION A-A **TYPE 2 CURB** **SECTION B-B**

Used for curbs over 9" to 2'-0" (Showing "C" = 2'-0"). Showing T223 Rail, other rails similar. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



SECTION A-A **TYPE 3 CURB** **SECTION B-B**

Used for curbs over 2'-0" to 5'-0" (Showing "C" = 4'-0"). Showing T223 Rail, other rails similar. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.



TYPICAL CURB PLAN

Showing typical installation on skewed culvert. (Bars L(#5) on T223 and C223 Rails are not used for this structure). Bars RH(#5) required on standards T80HT, T80SS and T224 are not required when used with the RAC standard.

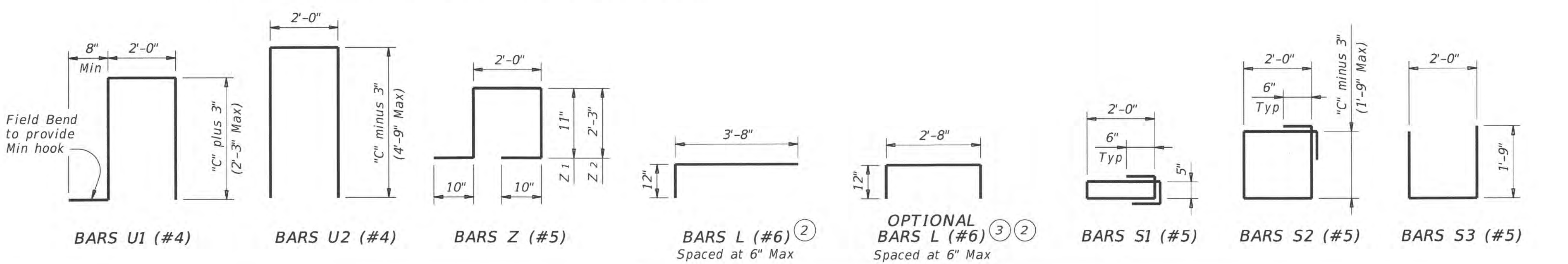


TABLE OF REINFORCING SPACING

Curb Height "C"	Section Type	Bars S, U, & Z Spa
8" to 9"	1	12"
Over 9" to 2'-0"	2	9"
Over 2'-0" to 3'-0"	3	7"
Over 3'-0" to 5'-0"	3	5"

TABLE OF ESTIMATED QUANTITIES

Curb Height "C"	Section Type	Reinf Steel (Lb/LF)	Class "C" Concrete (CY/LF)
8"	1	21.5	0.056
9"	1	21.5	0.063
1'-0"	2	29.7	0.083
1'-6"	2	30.6	0.125
2'-0"	2	31.5	0.167
3'-0"	3	44.6	0.250
4'-0"	3	56.8	0.333
5'-0"	3	60.0	0.417

- "T" is equal to the culvert top slab thickness. For Precast Boxes with slabs less than 7" thick, see SCP-MD Standard for additional details.
- Tilt Bars L hook as necessary to maintain cover.
- Optional Bars L are to be used only for Precast Box Culverts with 3'-0" closure pours.
- Quantities shown are for Contractor's information only. Quantities are per Linear Foot of curb length. The values for each section type in table can be interpolated for intermediate values of Curb Height, "C".

CONSTRUCTION NOTES:
When using this anchorage curb, omit normal culvert curb reinforcing bars K and H shown on the culvert standard sheets.
For vehicle safety, the top of the curb must be flush with the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class "C" concrete (f'c=3,600 psi). Provide Class "C" (HPC) concrete if shown elsewhere in the plans.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
The rail anchorage curb details have sufficient strength for use with all standard rail types.
See appropriate rail standard for approved design speed restrictions, notes and details not shown.
This anchorage curb is considered part of the Box Culvert for payment.
These details are for use with curbs that are 8" to 5'-0" tall only. Curb heights that are less than or greater than those shown will require special design.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

SHEET 1 OF 2

Bridge Division Standard

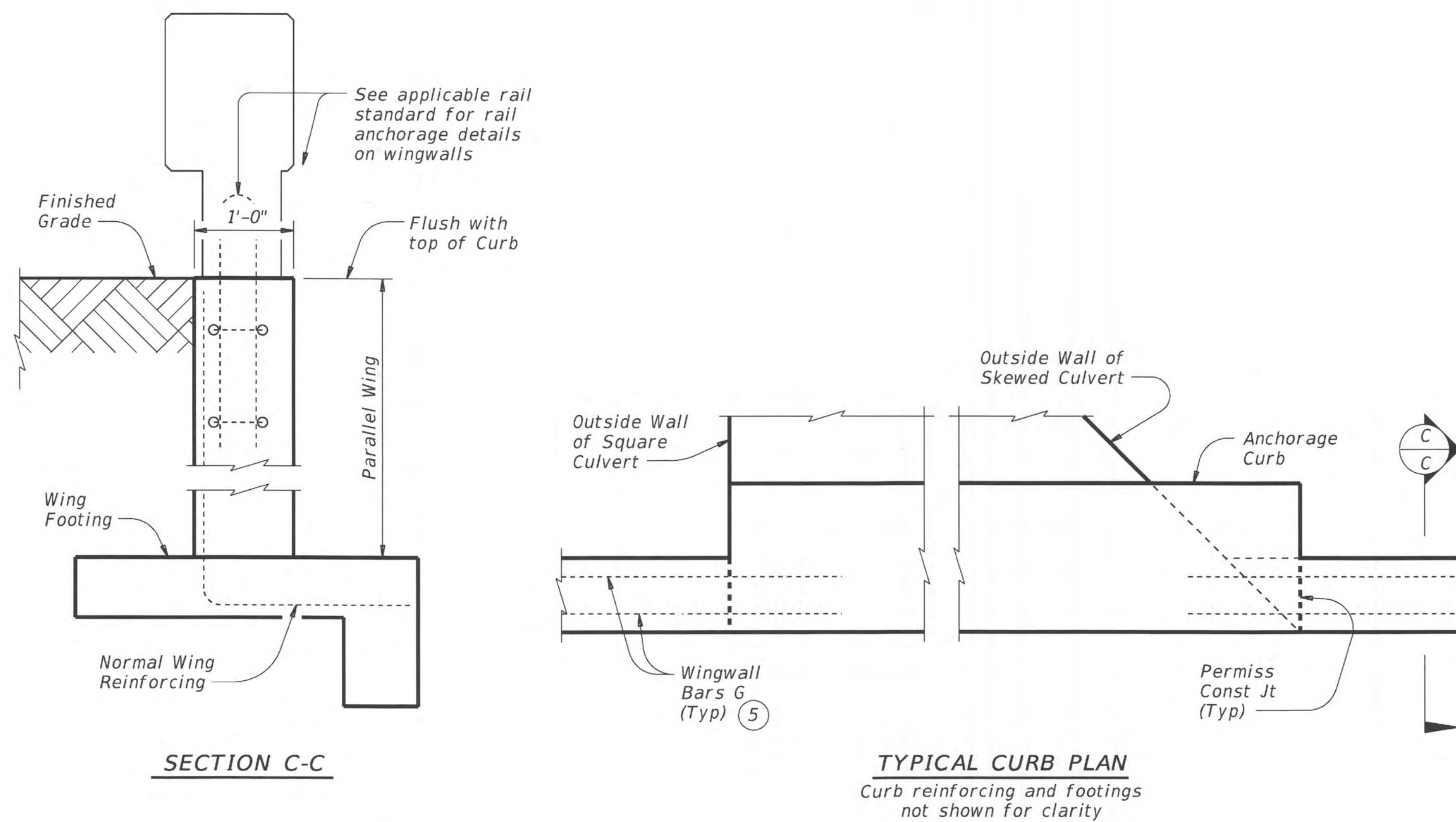
RAIL ANCHORAGE CURB BOX CULVERT RAIL MOUNTING DETAILS (CURBS 8" TO 5'-0" TALL ONLY)

RAC

FILE: racste01.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
05-11: Type 3 Curb, Sect. B-B, Gen. Notes, T101 Anchor PL.				
07-12: Width				
03-16: Notes				
DIST	COUNTY	SHEET NO.		

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FILE:



INSTALLATION AT PARALLEL CULVERT WINGWALLS

See culvert wingwall standard for bars and details not shown.

5 Bars G (#5), as identified on the PARALLEL WINGS PW standard sheet, must extend 1'-6" into the Anchorage Curb similar to that shown for a normal culvert curb.

SHEET 2 OF 2

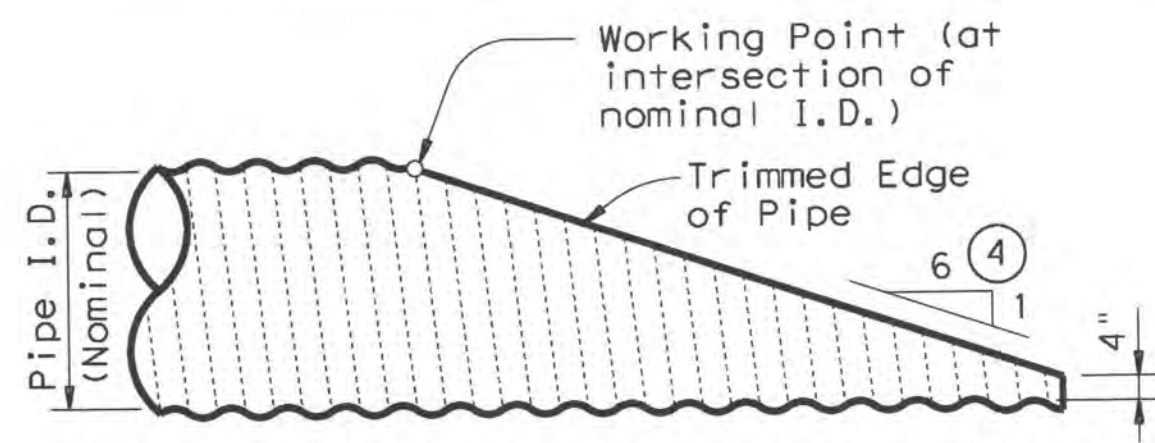


**RAIL ANCHORAGE CURB
BOX CULVERT
RAIL MOUNTING DETAILS
(CURBS 8" TO 5'-0" TALL ONLY)**

RAC

FILE: racste01.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
05-11: Type 3 Curb, Sect. B-8, Gen Notes, T101 Anchor PL.	DIST	COUNTY	SHEET NO.	
07-12: Width.				
03-16: Notes.				

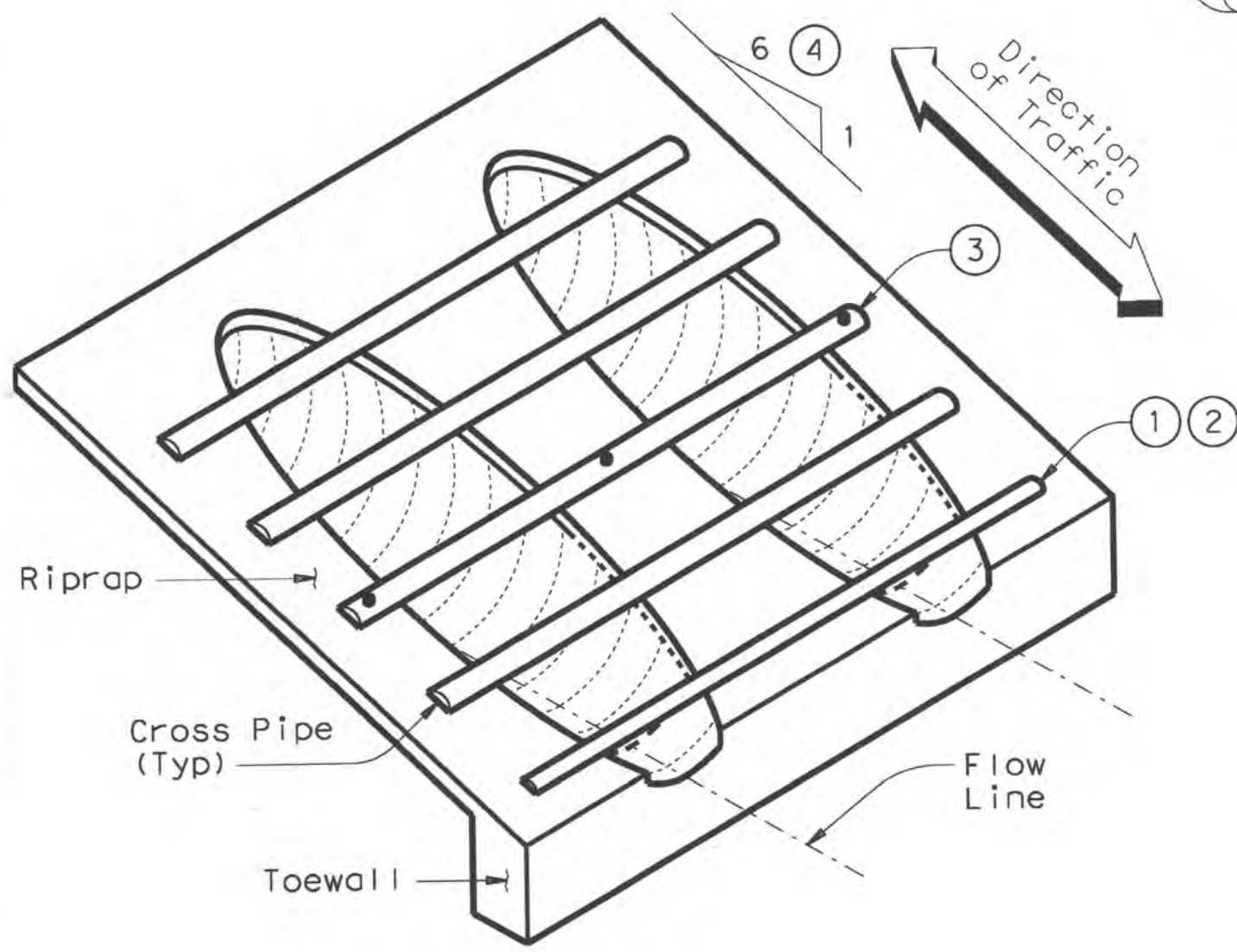
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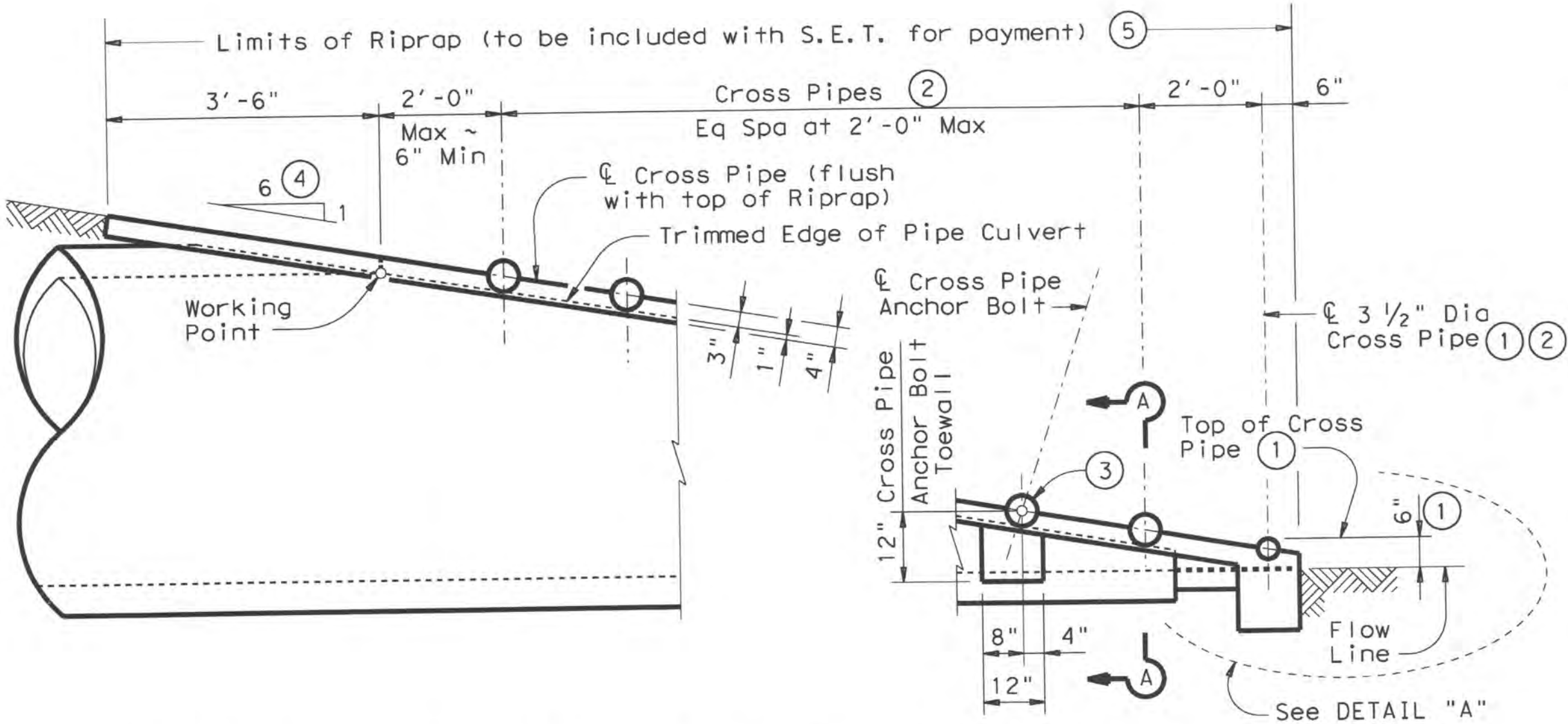
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.)
(Details at Concrete Pipe Culvert are similar.)

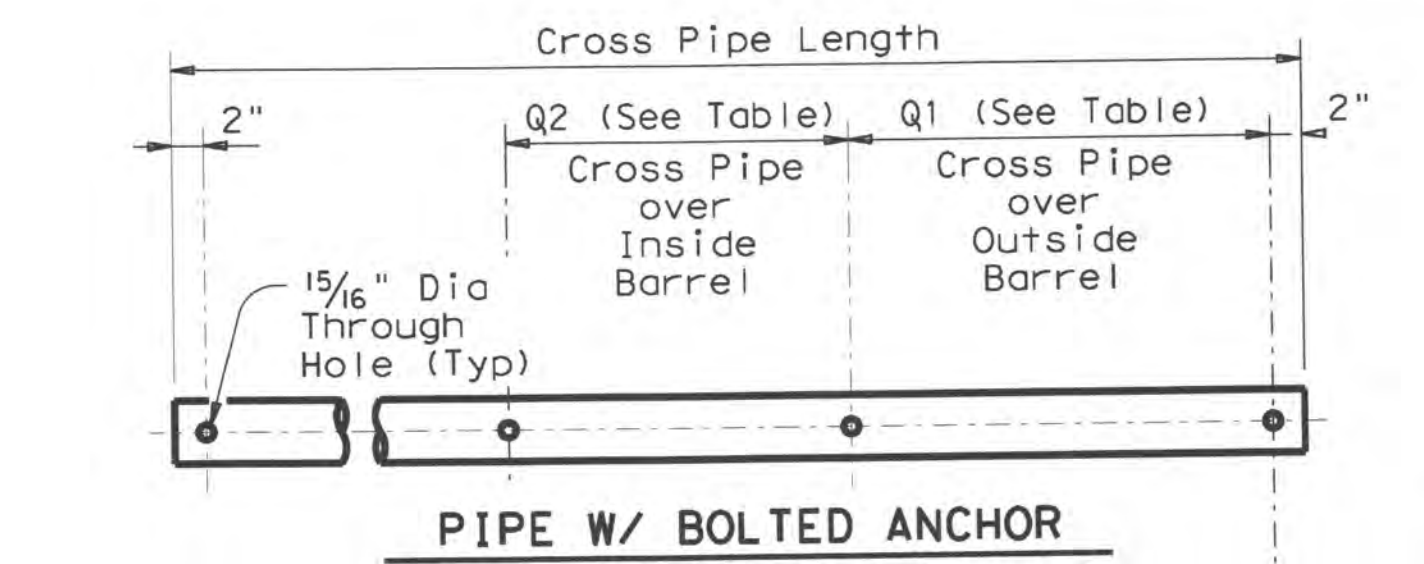


ISOMETRIC VIEW OF TYPICAL INSTALLATION

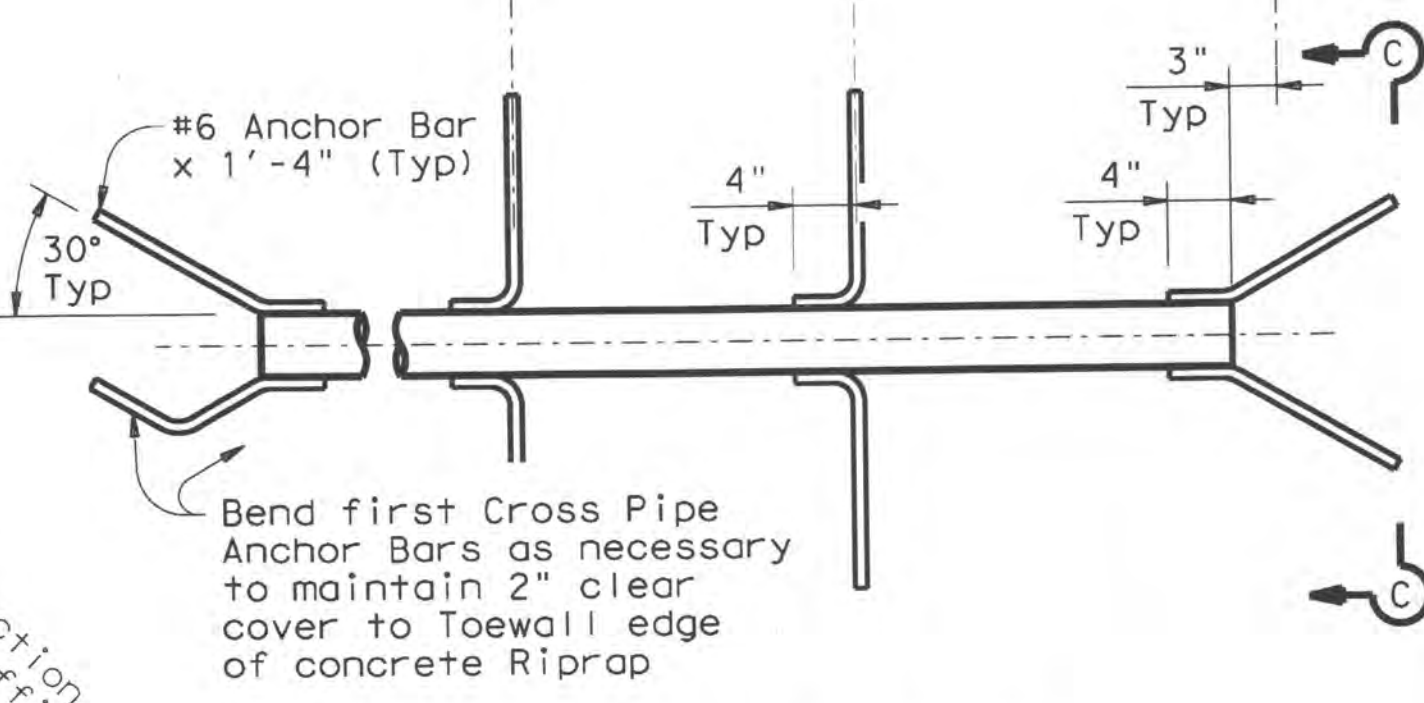


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

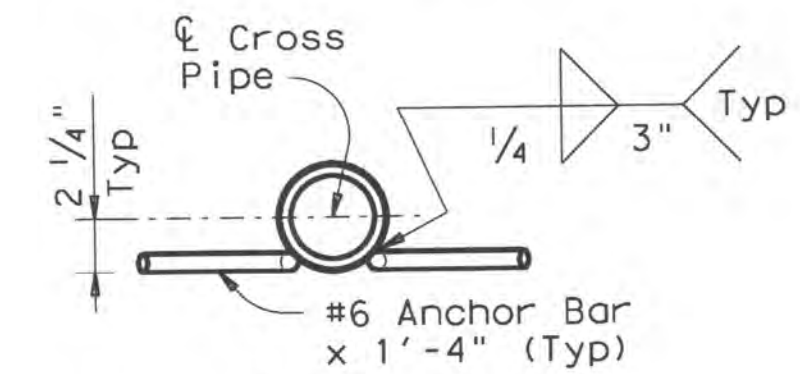
(Showing Concrete Pipe Culvert.)
(Details at Corrugated Metal Pipe Culvert are similar.)



PIPE W/ BOLTED ANCHOR

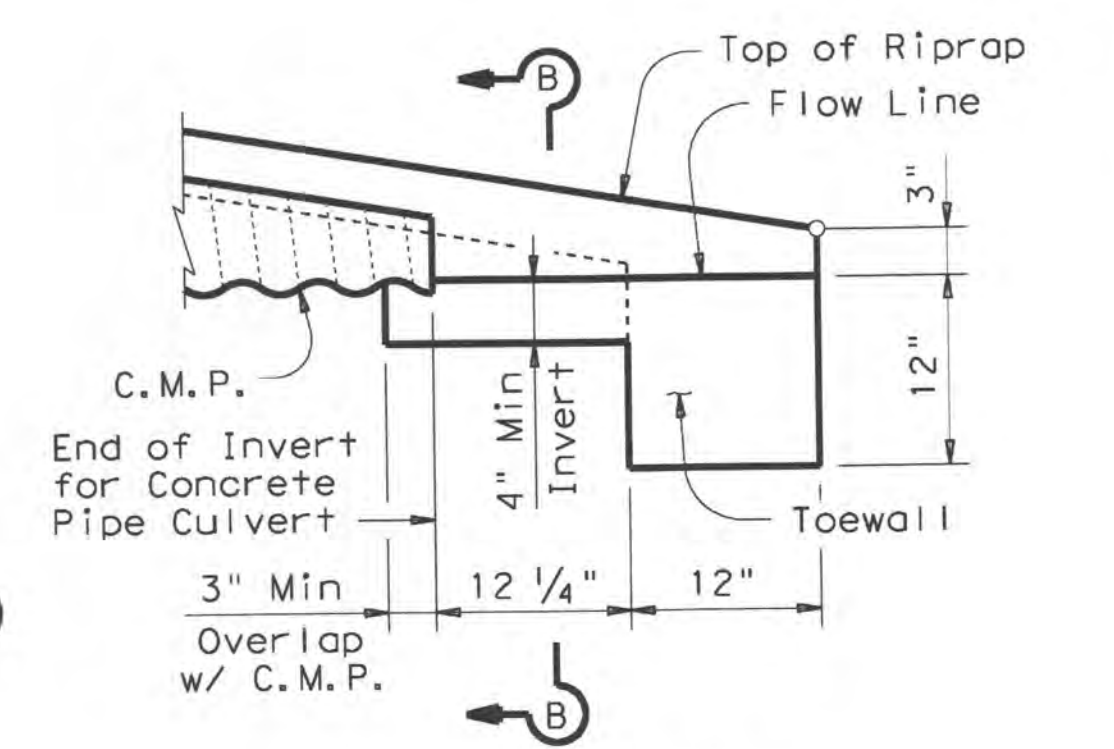


PIPE W/ ANCHOR BARS



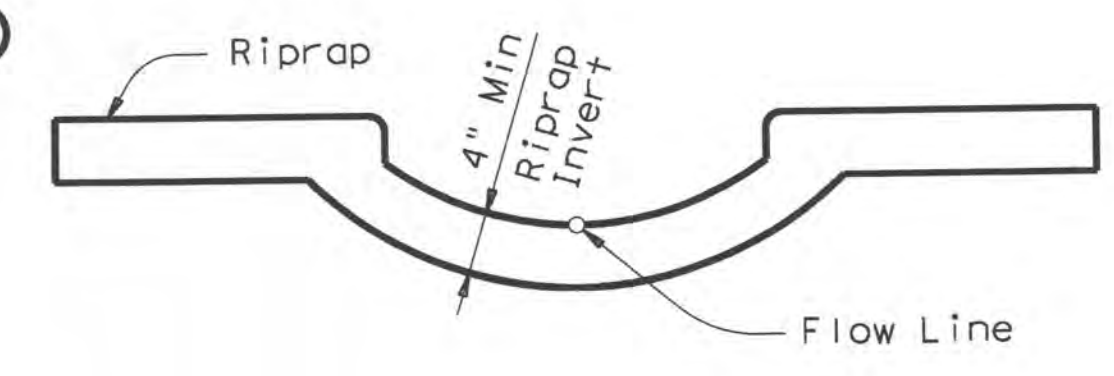
SECTION C-C

CROSS PIPE DETAILS



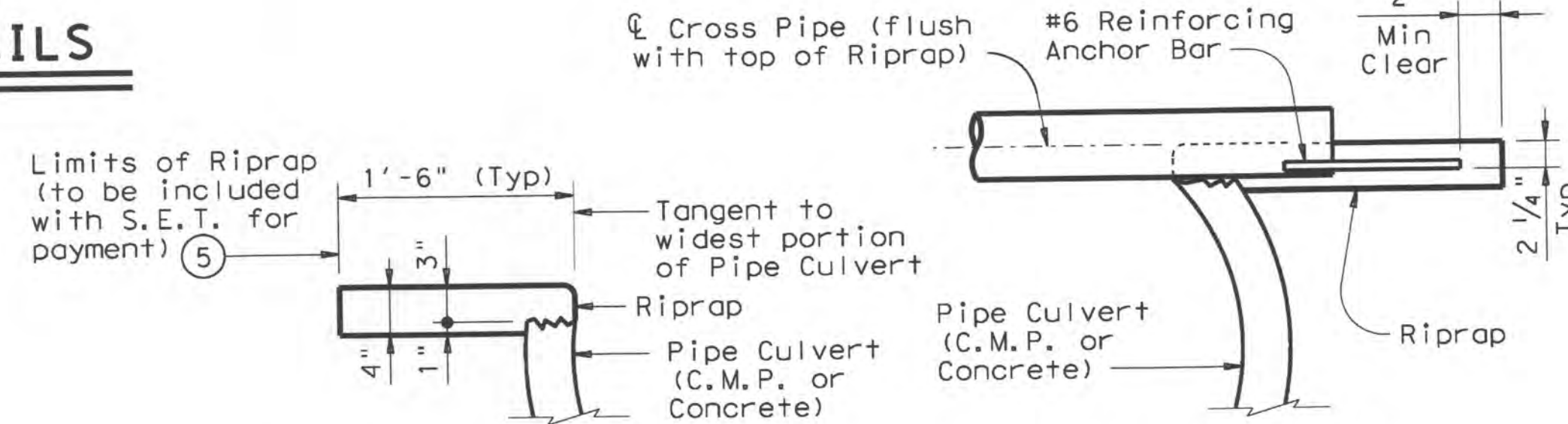
DETAIL "A"

(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)

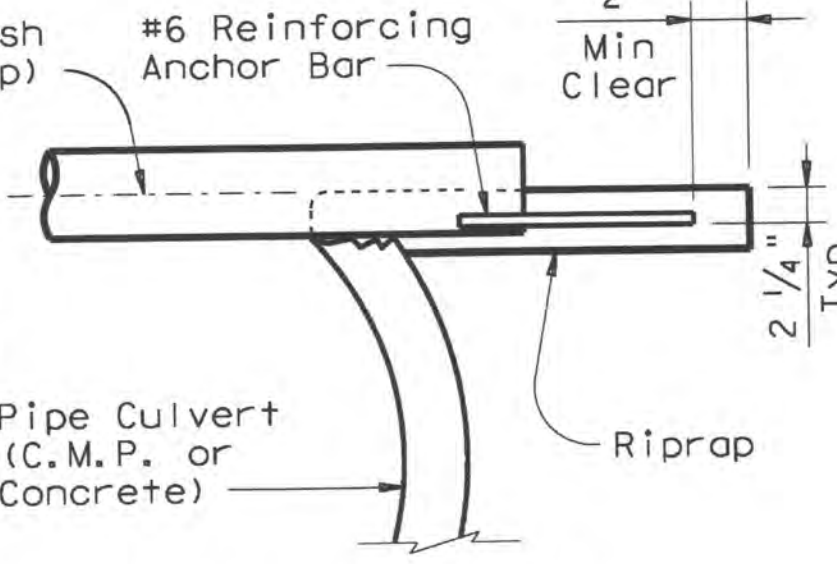


SECTION B-B

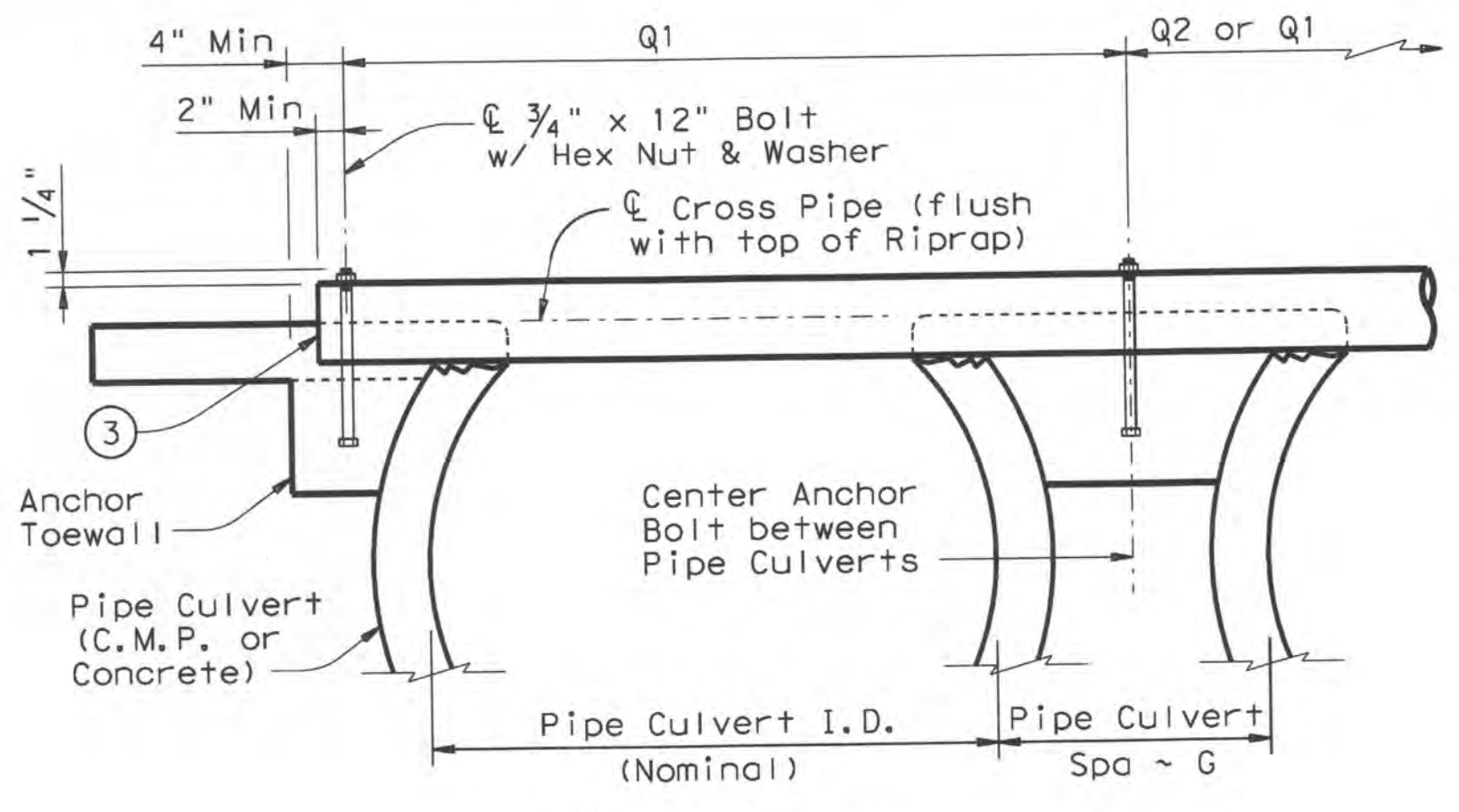
(Cross Pipes not shown for clarity.)



SHOWING TYPICAL PIPE CULVERT & RIPRAP



SHOWING CROSS PIPE WITH ANCHOR BAR



SECTION A-A

SHOWING CROSS PIPE WITH BOLTED ANCHOR

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes	Cross Pipe Size
12"	0.6	9"	N/A	2'-1"	1'-9"	3 or more Pipe Culverts	3" Std (3,500" O.D.)
15"	0.7	11"	N/A	2'-5"	2'-2"		
18"	0.8	1'-2"	N/A	2'-10"	2'-8"		
21"	0.9	1'-4"	N/A	3'-2"	3'-1"	3 or more Pipe Culverts	3 1/2" Std (4,000" O.D.)
24"	0.9	1'-7"	N/A	3'-6"	3'-7"		
27"	1.0	1'-8"	N/A	3'-10"	3'-11"	2 or more Pipe Culverts	4" Std (4,500" O.D.)
30"	1.1	1'-10"	N/A	4'-2"	4'-4"		
33"	1.2	1'-11"	4'-2"	4'-5"	4'-8"	All Pipe Culverts	4" Std (4,500" O.D.)
36"	1.3	2'-1"	4'-5"	4'-9"	5'-1"		
42"	1.5	2'-4"	4'-11"	5'-5"	5'-10"	All Pipe Culverts	5" Std (5,563" O.D.)
48"	1.7	2'-7"	5'-5"	6'-0"	6'-7"		
54"	2.0	3'-0"	5'-11"	6'-9"	7'-6"	All Pipe Culverts	5" Std (5,563" O.D.)
60"	2.2	3'-3"	6'-5"	7'-4"	8'-3"		
66"	2.4	3'-3"	6'-11"	7'-10"	8'-9"		
72"	2.7	3'-4"	7'-5"	8'-5"	9'-4"		

- The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.
- Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 1/2" Standard Pipe (4" O.D.).
- The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.
- Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.
- Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
- Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple pipe culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

GENERAL NOTES:

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap". Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Cross Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52. Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA

PIPE CULVERTS

TYPE II ~ PARALLEL DRAINAGE

SETP-PD

FILE: setppdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
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11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	

DATE: FILE: