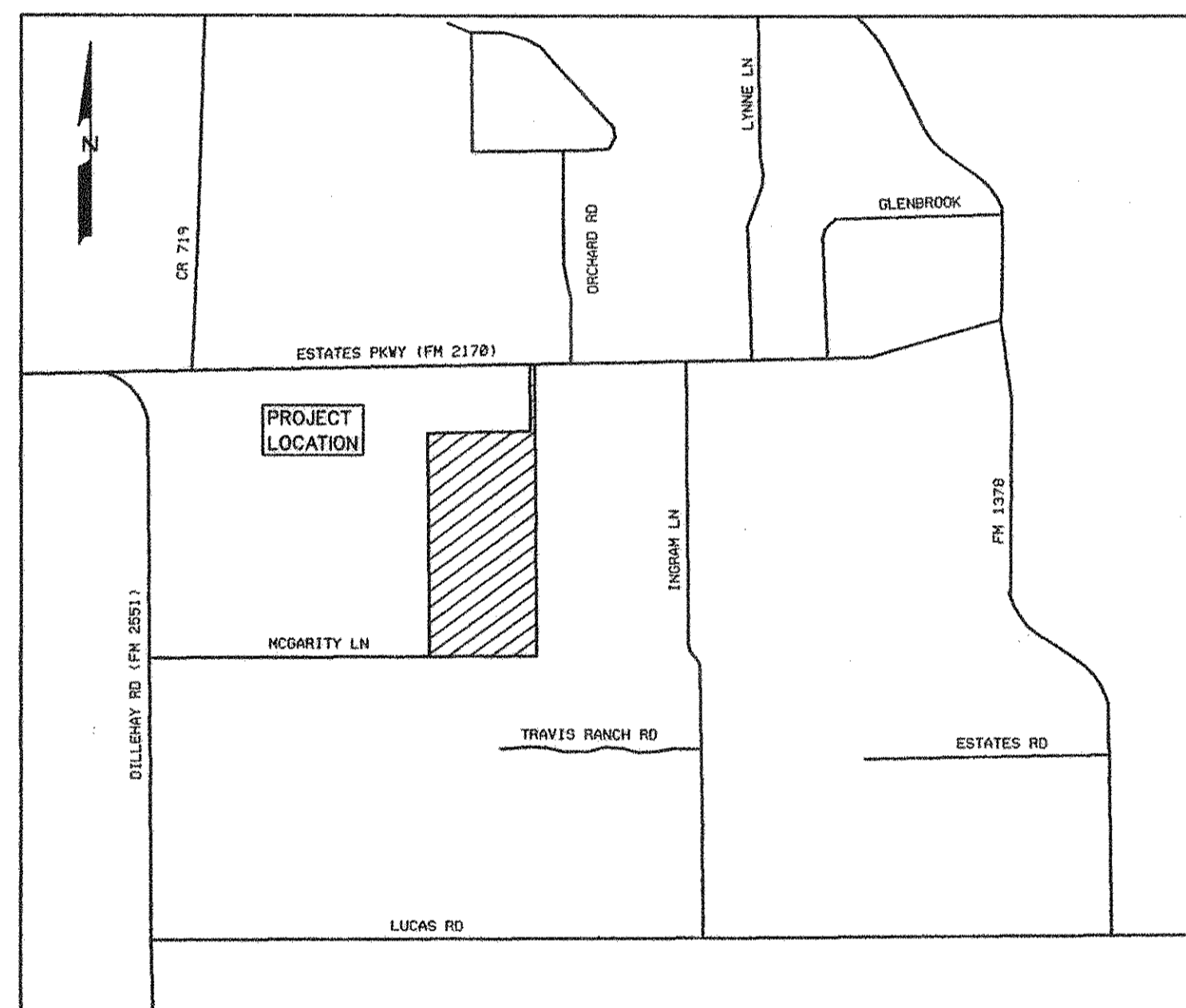


CONSTRUCTION PLANS FOR CLAREMONT SPRINGS PHASE II

CITY OF LUCAS ETJ
COLLIN COUNTY, TEXAS

NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT

- A. North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.
- B. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossing shall be designated and verified to provide a minimum of five-feet of cover.
- C. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
- D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.
- E. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
- F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
- G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
- H. 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.
- I. Franchised utilities are not permitted in NTMWD easements except for crossings. Water and storm sewer facilities are not permitted in NTMWD easements except for crossings. Sanitary sewer facilities are not permitted in NTMWD easements.



LOCATION MAP
N.T.S.

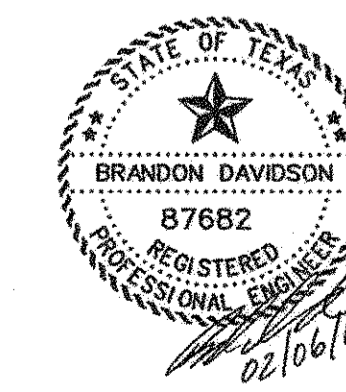
PREPARED FOR
CLAREMONT SPRINGS II, LTD.
3838 OAK LAWN, SUITE 1212
DALLAS, TEXAS 75219
214-522-4945

INDEX

| | |
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| 9 | MAPLEWOOD LANE |
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| 11 | STORM SEWER PLAN AND PROFILE LINES 'D-1', 'D-2', 'D-3' & 'D-2' |
| 12 | DETENTION POND PLAN & CALCULATIONS |
| 13 | GRADING PLAN |
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| 14 | GRADING PLAN |
| 15 | EROSION CONTROL PLAN |
| 16 | STREET SIGN & LIGHTING PLAN |
| 17 | GENERAL NOTES |
| SETP-CD(2) | TxDOT SAFETY END TREATMENT |

CORWIN ENGINEERING, INC. — CONSULTING ENGINEERS
200 W. BELMONT, SUITE E ALLEN, TEXAS 75013

AS-BUILT FEBRUARY 2008
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)



The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on February 6, 2008

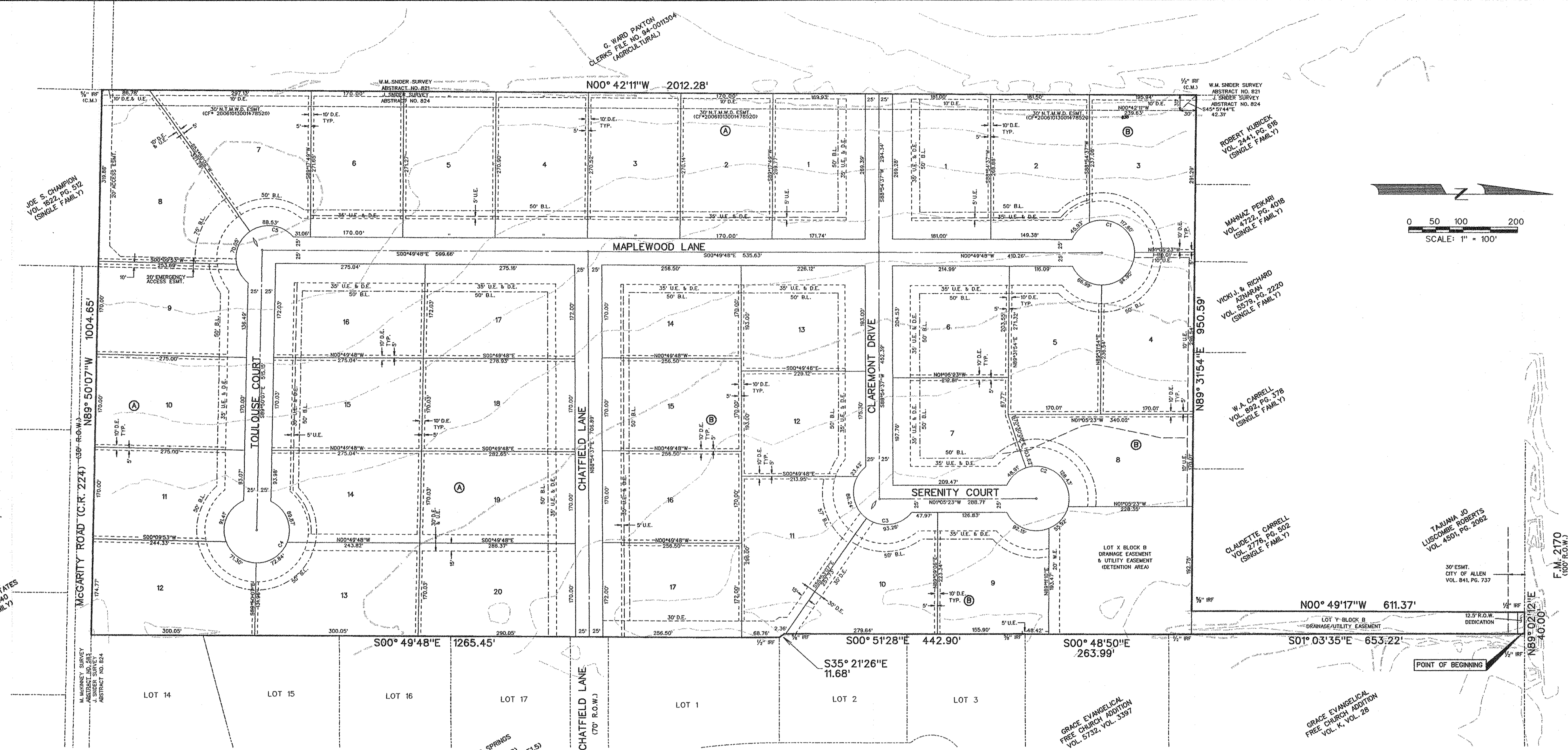
| LOT AREA SUMMARY TABLE | | | |
|------------------------|-------------|---------|-------------|
| BLOCK A | | BLOCK B | |
| LOT # | AREA (S.F.) | LOT # | AREA (S.F.) |
| 1 | 45379 | 1 | 45747 |
| 2 | 45992 | 2 | 51790 |
| 3 | 45956 | 3 | 52379 |
| 4 | 46020 | 4 | 47665 |
| 5 | 46084 | 5 | 44749 |
| 6 | 46148 | 6 | 44149 |
| 7 | 53317 | 7 | 43885 |
| 8 | 63038 | 8 | 48591 |
| 9 | 48302 | X | 60756* |
| 10 | 46750 | Y | 24740* |
| 11 | 44826 | 9 | 43631 |
| 12 | 50135 | 10 | 43561 |
| 13 | 49438 | 11 | 49591 |
| 14 | 44689 | 12 | 43586 |
| 15 | 46757 | 13 | 43738 |
| 16 | 47307 | 14 | 43605 |
| 17 | 47651 | 15 | 43605 |
| 18 | 47733 | 16 | 43605 |
| 19 | 48366 | 17 | 44118 |
| 20 | 48999 | | |

LOT AREAS ROUNDED TO THE NEAREST SQUARE FOOT
* DENOTES OPEN SPACE

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

Registered Sanitarian/Designed Representative
Collin County Development Services

TRAVIS RANCK ESTATES
VOL. K, PG. 840
(SINGLE FAMILY)



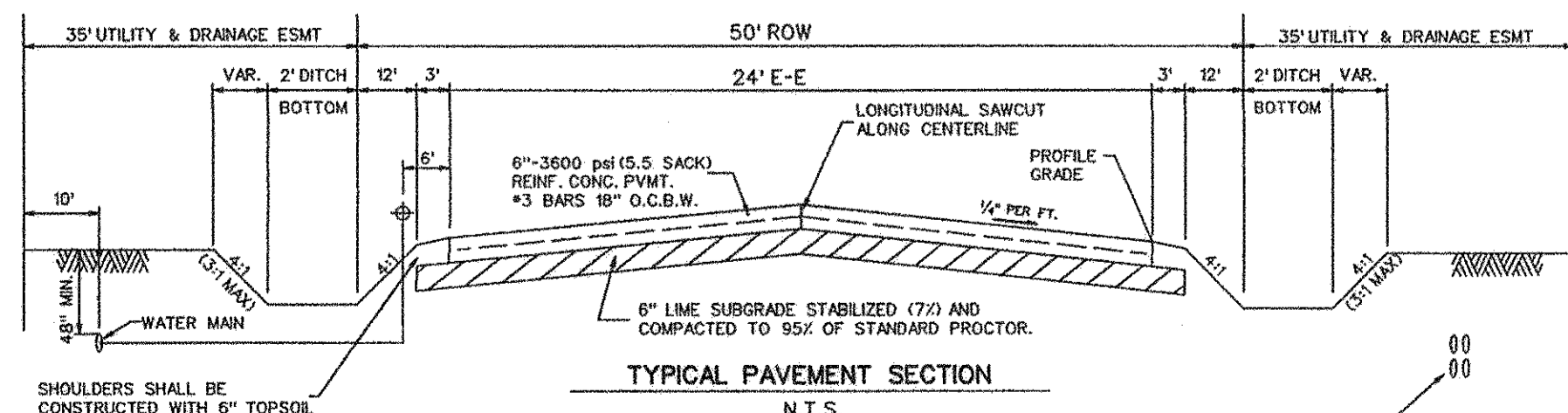
The NTMWD easement (CF*20061013001478520) restricts construction of permanent structures such as foundations, walls, pools and permanent storage buildings. Items such as driveways, fences, sprinkler systems and normal landscaping plans that encroach on the NTMWD easements are allowed. Fence post foundations are restricted to an installation depth no deeper than 18-inches below final ground elevation. However, the NTMWD assumes no responsibility for damages resulting from the need to repair or maintain the NTMWD pipelines. Further, any cost for repair for damage to the pipelines resulting from construction by the developer, contractor or owner will be the responsibility of the developer, contractor or owner.

NOTES

- Bearing are referenced to a 46.892 acre tract, as recorded in Clerks File No. 05-0169490, in the Deed Records of Collin County, Texas.
- All lot lines are radial or perpendicular to the street unless otherwise noted by bearing.
- 1/2" iron rods with "CORWIN ENGR. INC." caps set at all boundary corners, block corners, points of curvature, points of tangency, and angle points in public right-of-way unless otherwise noted.
- No floodplain exist on site.
- "Notice: Selling a portion of this addition by metes and bounds is a violation of city ordinance and state law and is subject to fines and withholding of utilities and building permits."
- B.L. - Building Line
U.E. - Utility Easement
D.E. - Drainage Easement
W.E. - Water Easement
N.T.M.W.D. - North Texas Municipal Water District
OSSF - On-Site Sewage Facilities
- Street Name Change
- All lots must utilize alternative type On-Site Sewage Facilities.
- Must maintain state-mandated setback of all On-Site Sewage Facility components from any/all easements and drainage areas.
- Final grading, per the grading plan, will be required prior to installation/operation of On-Site Sewage Facilities.
- Individual site evaluations and OSSF design plans must be submitted to and approved by Collin County for each lot prior to construction of any OSSF system.
- No trees will be removed in the development of the project.

CURVE TABLE

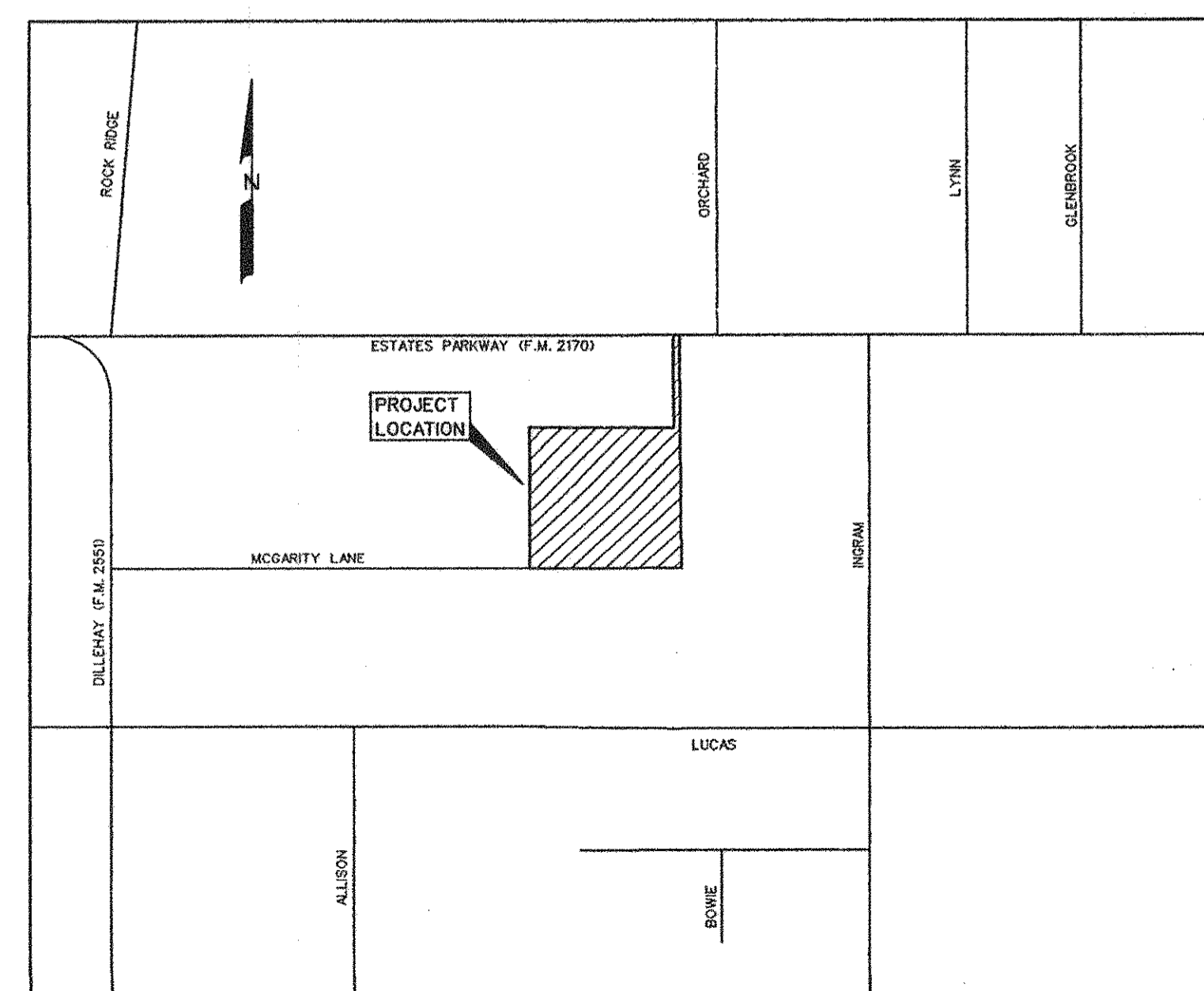
| CURVE NO. | DELTA | RADIUS | LENGTH | TANGENT | CHORD | BEARING |
|-----------|--------------|--------|---------|---------|---------|----------------|
| 1. | 49° 15' 26" | 60.00' | 325.41' | --- | 50.00' | S88° 07' 45" W |
| 2. | 49° 14' 57" | 60.00' | 325.41' | --- | 50.00' | S89° 10' 13" W |
| 3. | 166° 13' 29" | 60.00' | 202.92' | --- | 119.13' | N43° 53' 47" E |
| 4. | 49° 14' 55" | 60.00' | 325.41' | --- | 50.00' | N00° 09' 53" E |
| 5. | 16° 55' 04" | 60.00' | 199.05' | --- | 119.54' | N46° 34' 11" W |



NOTE: CONTRACTOR TO PROVIDE LIQUID ASPHALT SEALER FOR CONCRETE JOINTS

SITE DATA SUMMARY TABLE

| | |
|--------------------|--------|
| GROSS ACRES: | 46.891 |
| R.O.W. DEDICATION: | 0.015 |
| NET ACRES: | 46.876 |
| TOTAL LOTS: | 37 |
| NET DENSITY: | 0.79 |
| CURRENT ZONING: | COUNTY |



LOCATION MAP
SCALE: 1" = 1000'

PRELIMINARY PLAT
OF
**CLAREMONT SPRINGS ADDITION
PHASE II**

OUT OF THE
J. SNIDER SURVEY, ABSTRACT NO. 824

IN
COLLIN COUNTY, TEXAS

OWNER/APPLICANT
CLAREMONT SPRINGS II, L.T.D.
3838 OAK LAWN, SUITE 1212
DALLAS, TEXAS 75219
214-522-4945

PREPARED BY
CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013
972-396-1200

APRIL 2007

SCALE: 1" = 100'

LEGAL DESCRIPTION (Claremont Springs Addition Phase II)

WHEREAS CLAREMONT SPRINGS II, LTD., is the owner of a tract of land situated in the J. Snider Survey, Abstract No. 824, in the City of Lucas, Collin County, Texas and being part of a called 46.892 acre tract as described in Clerks File No. 05-0169490 of the Dead Records of Collin County, Texas, and being more particularly described as follows:

BEGINNING, at a 1/2 inch iron rod found at the northeast corner of said 46.892 acre tract, being the south line of F.M. 2170, also being the northwest corner of Grace Evangelical Free Church Addition, an addition to the City of Lucas, as described in Volume K, Page 28, in the Plat Records of Collin County, Texas:

THENCE, South 01° 03' 35" East, along the east line of said 46.892 acre tract and along the west line of said Grace Evangelical Free Church Addition, for a distance of 653.22 feet, to a 1/2 inch iron rod found at the southwest corner of the Grace Evangelical Church;

THENCE, South 00° 48' 50" East, continuing along said east line, for a distance of 263.99 feet, to a 5/8 inch iron rod found at the most westerly northwest corner of Claremont Springs Addition, an addition to the City of Lucas, as described Volume 2006, Page 418, in said Plat Records:

THENCE, South 00° 51' 28" East, continuing along said east line along the west line of said Claremont Springs Addition, for a distance of 442.90 feet, to a 5/8 inch iron rod found:

THENCE, South 35° 21' 26" East, continuing along said east and west lines, for a distance of 11.68 feet, to a 1/2 inch iron rod found:

THENCE, South 00° 49' 48" East, continuing along said east and west lines, for a distance of 1265.45 feet, to a 8" three prong Bois D' Arc tree, being the southeast corner of said 46.892 acre tract, and being the southwest corner of said Claremont Springs Addition;

THENCE, North 89° 50' 07" West, along the south line of the 46.892 acre tract, for a distance of 1004.65 feet, to a 5/8 inch iron rod found at the southwest corner of the 46.892 acre tract:

THENCE, North 00° 42' 11" West, along the west line of 46.892 acre tract, for a distance of 2012.28 feet, to a 1/2 inch iron rod found at the most westerly northwest corner of the 46.892 acre tract:

THENCE, North 89° 31' 54" East, along the north line of the 46.892 acre tract, for a distance of 950.59 feet, to a 5/8 inch iron rod found at an interior ell corner of the 46.892 acre tract:

THENCE, North 00° 49' 17" West, along a west line of the 46.892 acre tract, for a distance of 611.37 feet, to a 1/2 inch iron rod found at the most northerly northwest corner of the 46.892 acre tract also being in the south line of said F.M. 2170:

THENCE, North 89° 02' 12" East, along the north line of the 46.892 acre tract and along the south line of said F.M. 2170, for a distance of 40.00 feet, to the POINT OF BEGINNING and containing 46.891 acres of land.

SURVEYOR'S CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS that I, WARREN L. CORWIN, do hereby certify that I prepared this Plat and the field notes from an actual and accurate survey of the land, that the corner monuments shown thereon were properly placed under my personal supervision in accordance with the subdivision Regulations of the City of Lucas, Texas.

WARREN L. CORWIN
R.P.L.S. No. 4621

THE STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned, a Notary Public in and for the State of Texas, on this day personally appeared WARREN L. CORWIN, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed same for the purpose and consideration therein expressed.

Given under my hand and seal of office, this day of , 2007.

NOTARY PUBLIC, STATE OF TEXAS

DEDICATION

NOW THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

THAT, CLAREMONT SPRINGS II, LTD., is the owner of the above-described project and does hereby adopt this plat designating the herein described property as CLAREMONT SPRINGS ADDITION PHASE II, an addition to the City of Lucas, Texas, and does hereby dedicate to the public use forever the right-of-way, streets, easements, and alleys platted hereon.

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

EXECUTED this the day of , 2007.

Richard Skorburg
President

THE STATE OF TEXAS
COUNTY OF COLLIN

BEFORE ME, the undersigned, a Notary Public for the State of Texas, on this day personally appeared RICHARD SKORBURG, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that the same is his act and deed in the capacity therein stated and for the purposes and considerations therein expressed.

WITNESS MY HAND AND SEAL OF OFFICE, this the day of , 2007.

NOTARY PUBLIC, STATE OF TEXAS

"Recommended For Approval

Chairman
Planning and Zoning Commission
City of Lucas, Texas

"Approved For Construction:

Mayor
City of Lucas, Texas

"The undersigned, the City Secretary of the City of Lucas, Texas hereby certifies that the foregoing Final Plat of CLAREMONT SPRINGS ADDITION PHASE II an addition to the City of Lucas was submitted to the City Council, by formal action, on the day of , 2007; and that Council, by formal action, then and there accepted the dedication of right-of-ways, streets, easements, alleys, public places, and water and sewer lines, as shown and set forth in and upon said plat, and said Council further authorized the Mayor to note the acceptance thereof for construction by signing his/her name as hereinabove subscribed.

Witness my hand this day of A.D., 2007.

City Secretary
City of Lucas, Texas

PRELIMINARY PLAT
OF
CLAREMONT SPRINGS ADDITION
PHASE II

OUT OF THE
J. SNIDER SURVEY, ABSTRACT NO. 824
IN

COLLIN COUNTY, TEXAS

OWNER/APPLICANT
CLAREMONT SPRINGS II, LTD.

3838 OAK LAWN, SUITE 1212
DALLAS, TEXAS 75219
214-522-4945

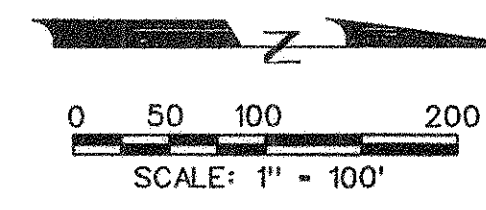
PREPARED BY
CORWIN ENGINEERING, INC.

200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013
972-396-1200

APRIL 2007

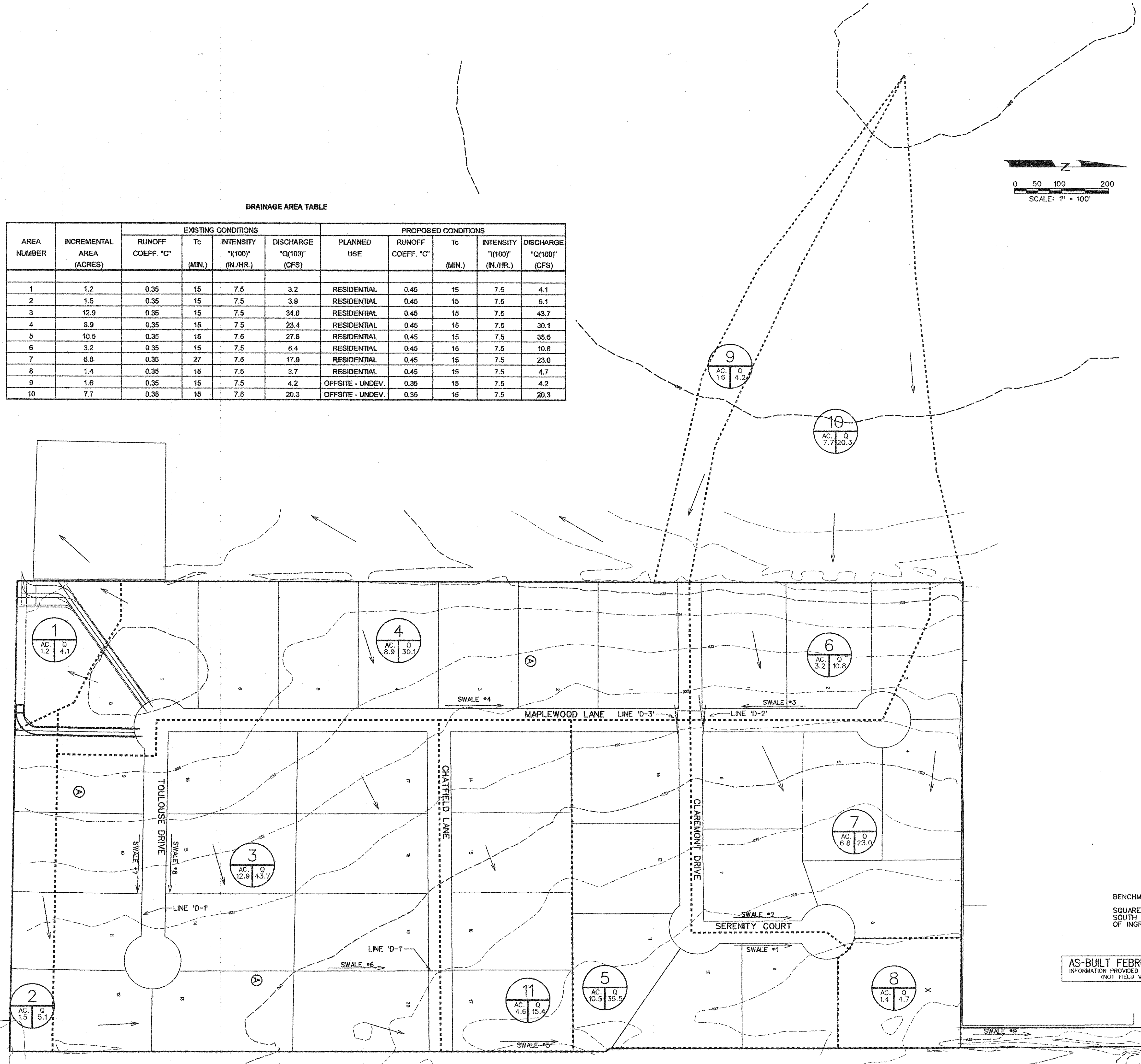
DRAINAGE AREA TABLE

| AREA NUMBER | INCREMENTAL AREA (ACRES) | EXISTING CONDITIONS | | | | PROPOSED CONDITIONS | | | | |
|-------------|--------------------------|---------------------|-----------|------------------------------|--------------------------|---------------------|-------------------|-----------|------------------------------|--------------------------|
| | | RUNOFF COEFF. "C" | Tc (MIN.) | INTENSITY "I(100)" (IN./HR.) | DISCHARGE "Q(100)" (CFS) | PLANNED USE | RUNOFF COEFF. "C" | Tc (MIN.) | INTENSITY "I(100)" (IN./HR.) | DISCHARGE "Q(100)" (CFS) |
| 1 | 1.2 | 0.35 | 15 | 7.5 | 3.2 | RESIDENTIAL | 0.45 | 15 | 7.5 | 4.1 |
| 2 | 1.5 | 0.35 | 15 | 7.5 | 3.9 | RESIDENTIAL | 0.45 | 15 | 7.5 | 5.1 |
| 3 | 12.9 | 0.35 | 15 | 7.5 | 34.0 | RESIDENTIAL | 0.45 | 15 | 7.5 | 43.7 |
| 4 | 8.9 | 0.35 | 15 | 7.5 | 23.4 | RESIDENTIAL | 0.45 | 15 | 7.5 | 30.1 |
| 5 | 10.5 | 0.35 | 15 | 7.5 | 27.6 | RESIDENTIAL | 0.45 | 15 | 7.5 | 35.5 |
| 6 | 3.2 | 0.35 | 15 | 7.5 | 8.4 | RESIDENTIAL | 0.45 | 15 | 7.5 | 10.8 |
| 7 | 6.8 | 0.35 | 27 | 7.5 | 17.9 | RESIDENTIAL | 0.45 | 15 | 7.5 | 23.0 |
| 8 | 1.4 | 0.35 | 15 | 7.5 | 3.7 | RESIDENTIAL | 0.45 | 15 | 7.5 | 4.7 |
| 9 | 1.6 | 0.35 | 15 | 7.5 | 4.2 | OFFSITE - UNDEV. | 0.35 | 15 | 7.5 | 4.2 |
| 10 | 7.7 | 0.35 | 15 | 7.5 | 20.3 | OFFSITE - UNDEV. | 0.35 | 15 | 7.5 | 20.3 |

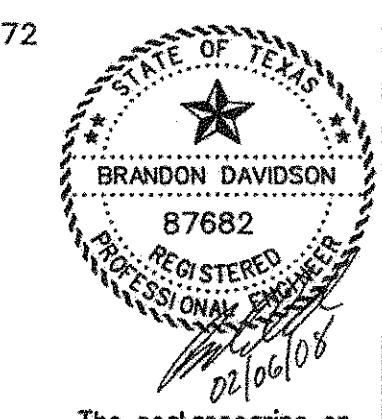


| DRIVEWAY CULVERT CHART | | | | | |
|------------------------|------------|-----------------------------------|--------------|---------|-----------------|
| BLOCK | LOT | LOTS DRAINING TO CULVERT | AREA (acres) | Q (cfs) | PIPE DIA. (in.) |
| A | 1 (FRONT) | A1-A8 | 8.90 | 30.0 | 2-24 |
| | 1 (SIDE) | 9 | 1.60 | 4.2 | 18 |
| | 2 | A2-A8 | 7.90 | 26.7 | 2-24 |
| | 3 | A3-A8 | 6.90 | 23.3 | 30 |
| | 4 | A4-A8 | 5.90 | 19.9 | 27 |
| | 5 | A5-A8 | 4.90 | 16.5 | 27 |
| | 6 | A6-A8 | 3.90 | 13.2 | 24 |
| | 7 | A7-A8 | 2.90 | 9.8 | 21 |
| | 8 | A8 | 1.30 | 4.4 | 18 |
| EMERGENCY DRIVE | | HIGH POINT OF SWALE | | | |
| | 9 | A9 | 0.20 | 0.7 | 18 |
| | 10 | A9-A10 | 0.40 | 1.4 | 18 |
| | 11 | A9-A11 | 0.60 | 2.0 | 18 |
| | 12 | A9-A12 | 0.80 | 2.7 | 18 |
| | 13 | A9-A13 | 0.80 | 2.7 | 18 |
| | 14 | A14-A16 | 0.60 | 2.0 | 18 |
| | 15 | A15-A16 | 0.40 | 1.4 | 18 |
| | 16 (FRONT) | A16 | 0.20 | 0.7 | 18 |
| | 16 (SIDE) | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 17 (FRONT) | A17 | 0.55 | 1.9 | 18 |
| | 17 (SIDE) | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 18 | A17-A18 | 1.10 | 3.7 | 18 |
| | 19 | A17-A19 | 1.65 | 5.6 | 18 |
| | 20 | A20 | 0.55 | 1.9 | 18 |
| B | 1 (FRONT) | 10, B1-B3 | 10.00 | 28.5 | 2-24 |
| | 1 (SIDE) | 10 | 7.70 | 20.2 | 2-21 |
| | 2 | 10, B2-B3 | 4.50 | 12.9 | 21 |
| | 3 | HIGH POINT OF SWALE | | | |
| | 4 | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 5 | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 6 (FRONT) | 10, B1-B3 | 10.90 | 31.0 | 2-24 |
| | 6 (SIDE) | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 7 (FRONT) | 10, B1-B3, B6 | 11.10 | 31.7 | 2-24 |
| | 7 (SIDE) | 10, B1-B3, B6-7 | 12.90 | 37.8 | 2-27 |
| | 8 | 10, B1-B8 | 14.50 | 43.2 | 2-27 |
| | 9 | 9, A1-A9, B9-B13 | 21.10 | 71.2 | 3-30 |
| | 10 | 9, A1-A9, B10-B13 | 21.20 | 71.6 | 3-30 |
| | 11 | 9, A1-A9, B11-B13 | 12.10 | 39.6 | 2-27 |
| | 12 | 9, A1-A9, B12-B13 | 11.10 | 36.3 | 2-27 |
| | 13 (FRONT) | 9, A1-A9, B13 | 10.10 | 32.9 | 2-24 |
| | 13 (SIDE) | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 14 (FRONT) | | 0.20 | 0.7 | 18 |
| | 14 (SIDE) | SLOPES FROM STREET TO BACK OF LOT | | | |
| | 15 | | 0.40 | 1.4 | 18 |
| | 16 | | 0.60 | 2.0 | 18 |
| | 17 | | 13.70 | 46.2 | 3-21 |

| SWALE CALCULATIONS | | | | | |
|--------------------|---------|-----------------|--------------------|-------------|---------------------|
| SWALE # | Q (cfs) | SLOPE (ft./ft.) | BOTTOM WIDTH (ft.) | DEPTH (ft.) | VELOCITY (ft./sec.) |
| 1 | 75.1 | 0.0035 | 4 | 2.1 | 2.8 |
| 2 | 43.1 | 0.0047 | 4 | 1.4 | 3.1 |
| 3 | 31.1 | 0.0050 | 4 | 1.2 | 2.9 |
| 4 | 30.1 | 0.0045 | 4 | 1.2 | 2.8 |
| 5 | 69.2 | 0.0035 | 8 | 1.6 | 3.1 |
| 6 | 43.7 | 0.0050 | 8 | 1.1 | 3.1 |
| 7 | 14.0 | 0.0050 | 4 | 0.8 | 2.4 |
| 8 | 7.3 | 0.0050 | 4 | 0.6 | 2.0 |
| 9 | 120.0 | 0.0048 | 10 | 1.8 | 4.0 |



AS-BUILT FEBRUARY 2008
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)



The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on February 6, 2008

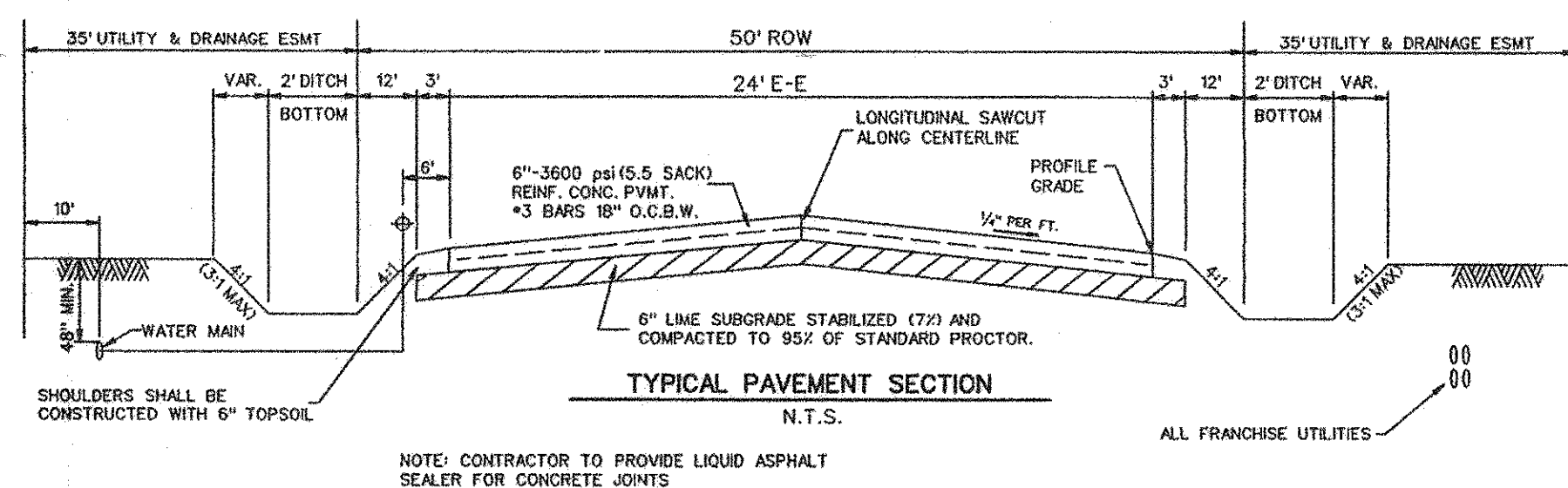
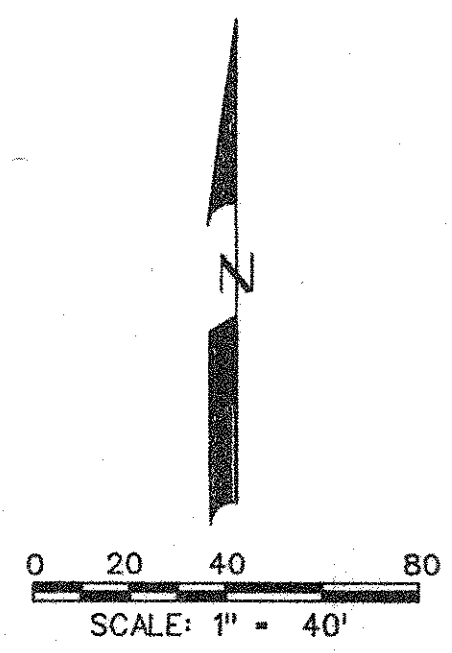
| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| | | | |

CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E
ALLEN, TEXAS 75013 (972)396-1200

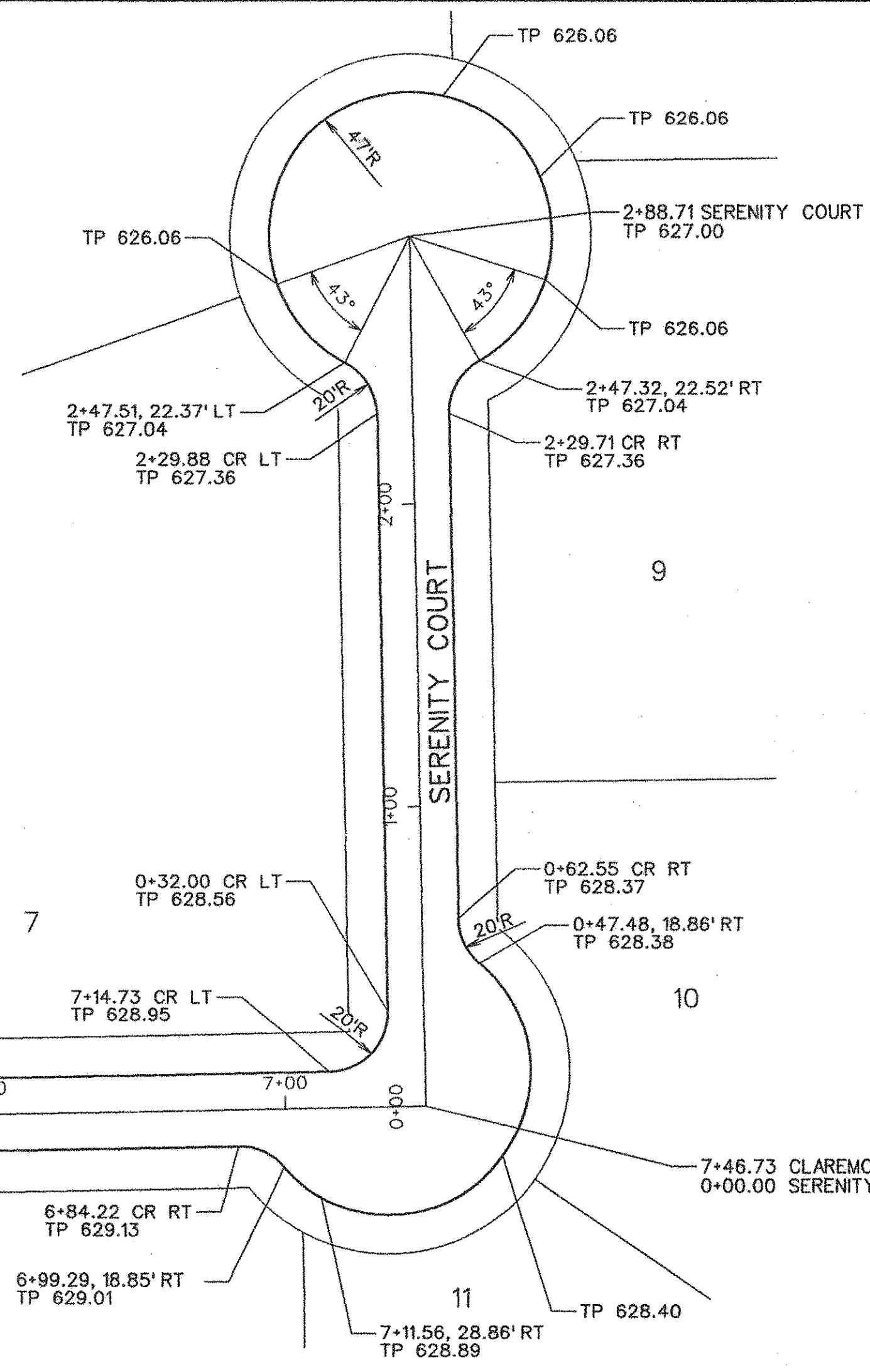
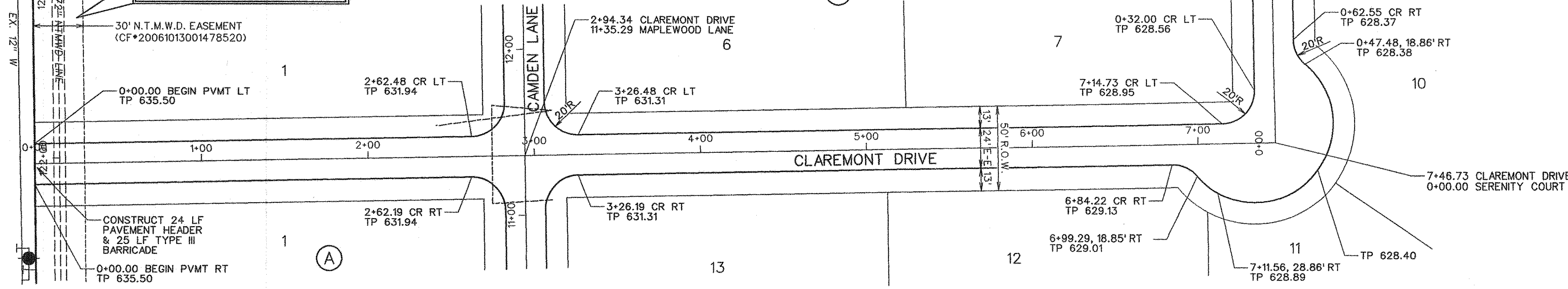
DEVELOPMENT PLANS FOR
CLAREMONT SPRINGS PHASE II
LUCAS, TEXAS

DRAINAGE AREA MAP

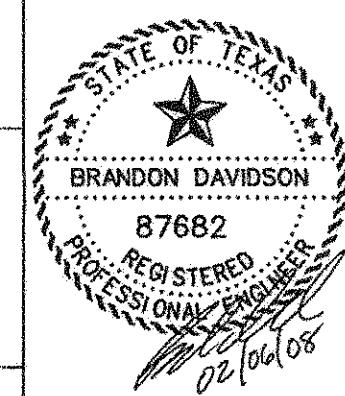
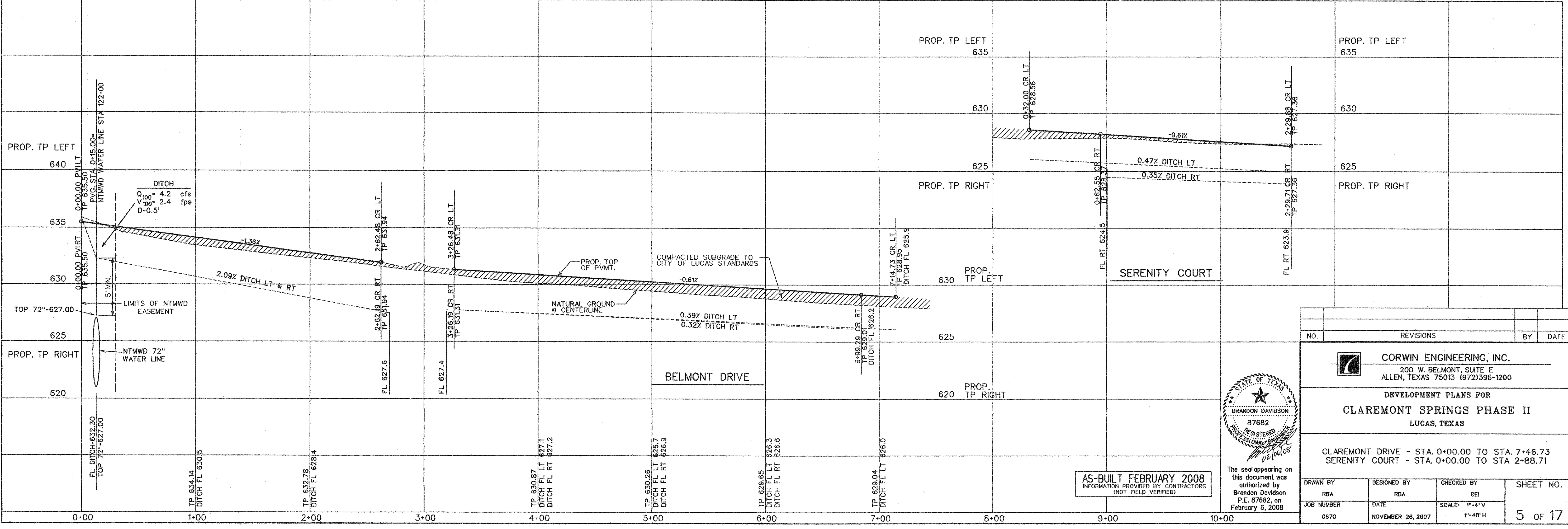
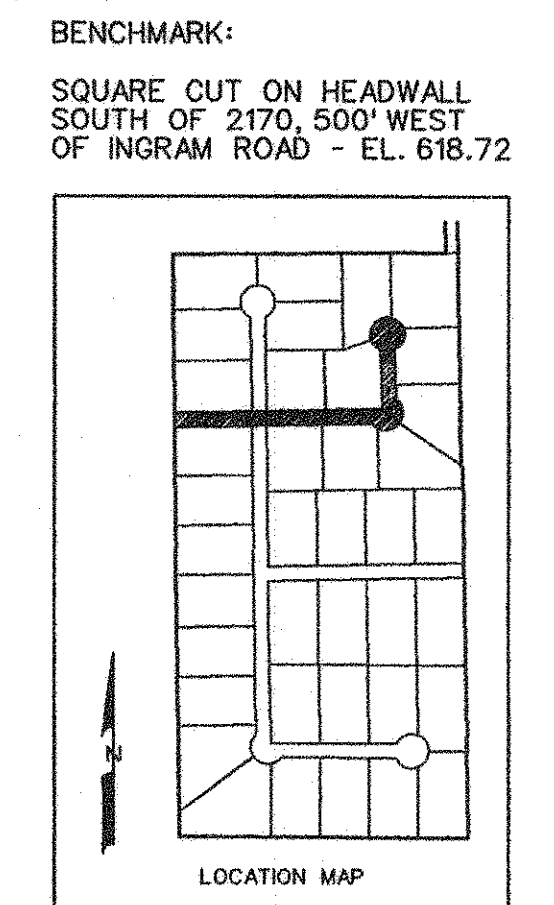
| | | | |
|--------------------|---------------------------|-------------------|----------------------|
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEI | SHEET NO. 4 OF 17 |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=100' | |



!!!WARNING!!!
 72" NORTH TEXAS MUNICIPAL WATER DISTRICT PIPELINE IN THIS AREA. CONTRACTOR TO CONTACT NORTH TEXAS MUNICIPAL WATER DISTRICT AT 972-442-5405 48 HOURS PRIOR TO CONSTRUCTION



- NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT
- A. North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.
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 - D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.
 - E. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
 - F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
 - G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
 - H. 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.
 - I. Franchised utilities are not permitted in NTMWD easements except for crossings. Water and storm sewer facilities are not permitted in NTMWD easements except for crossings. Sanitary sewer facilities are not permitted in NTMWD easements.



AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

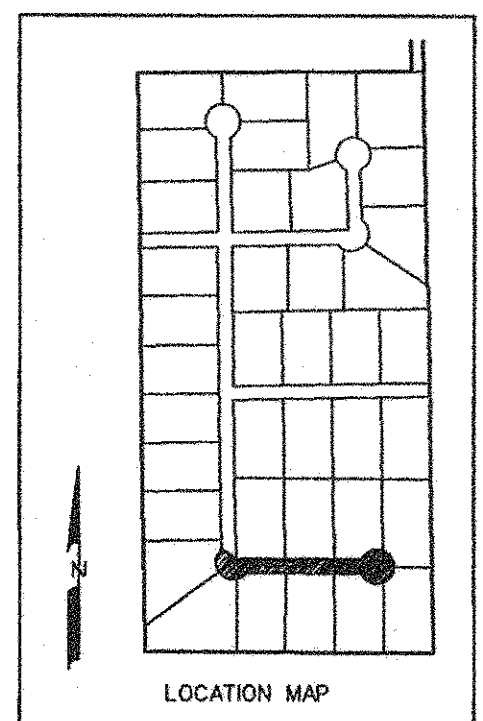
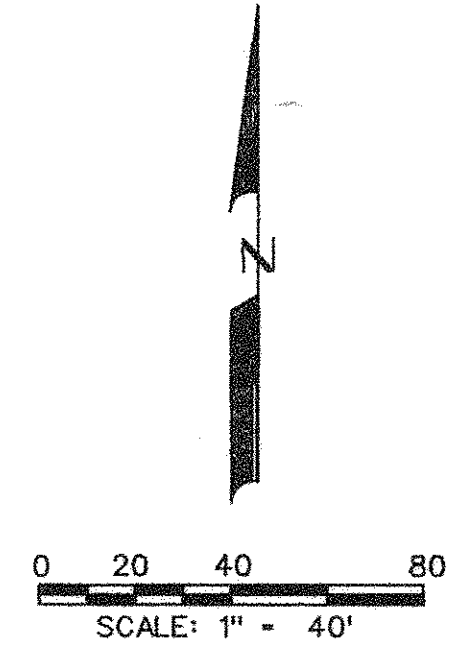
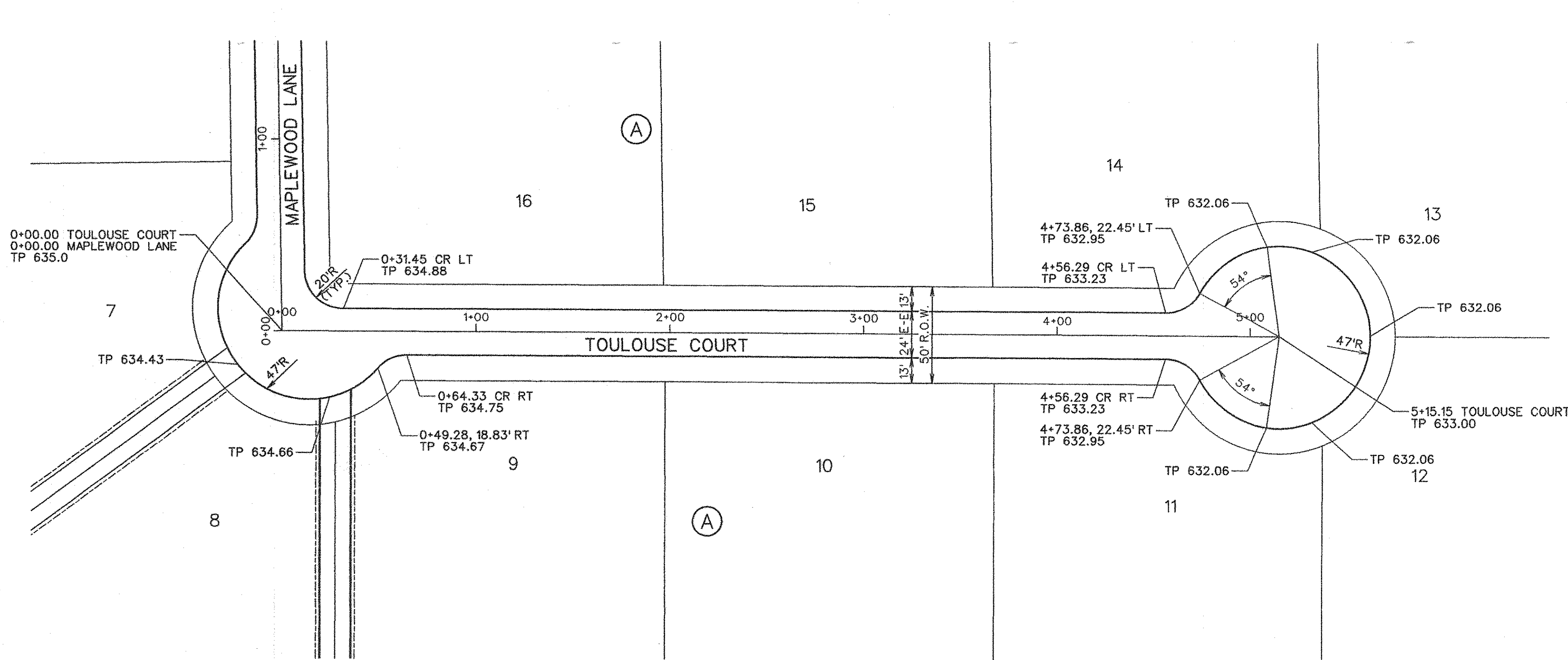
| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| | | | |

CORWIN ENGINEERING, INC.
 200 W. BELMONT, SUITE E
 ALLEN, TEXAS 75013 (972)396-1200

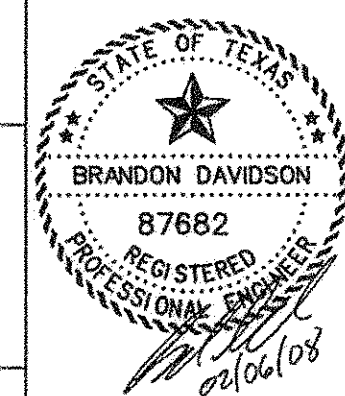
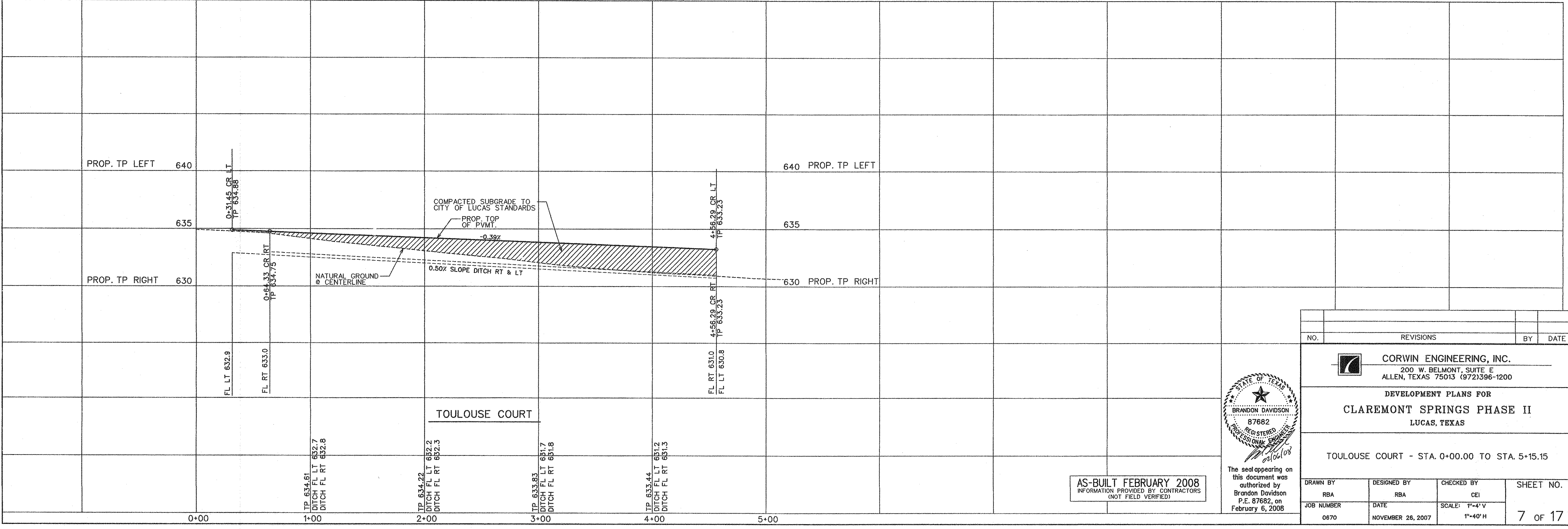
DEVELOPMENT PLANS FOR
CLAREMONT SPRINGS PHASE II
 LUCAS, TEXAS

CLAREMONT DRIVE - STA. 0+00.00 TO STA. 7+46.73
 SERENITY COURT - STA. 0+00.00 TO STA. 2+88.71

| | | | |
|--------------------|---------------------------|----------------------------|----------------------|
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEI | SHEET NO. 5 of 17 |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=4' V 1"=40' H | |



BENCHMARK:
 SQUARE CUT ON HEADWALL
 SOUTH OF 2170, 500' WEST
 OF INGRAM ROAD - EL. 618.72



AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS
 (NOT FIELD VERIFIED)

The seal appearing on
 this document was
 authorized by
 Brandon Davidson
 P.E. 87682, on
 February 6, 2008

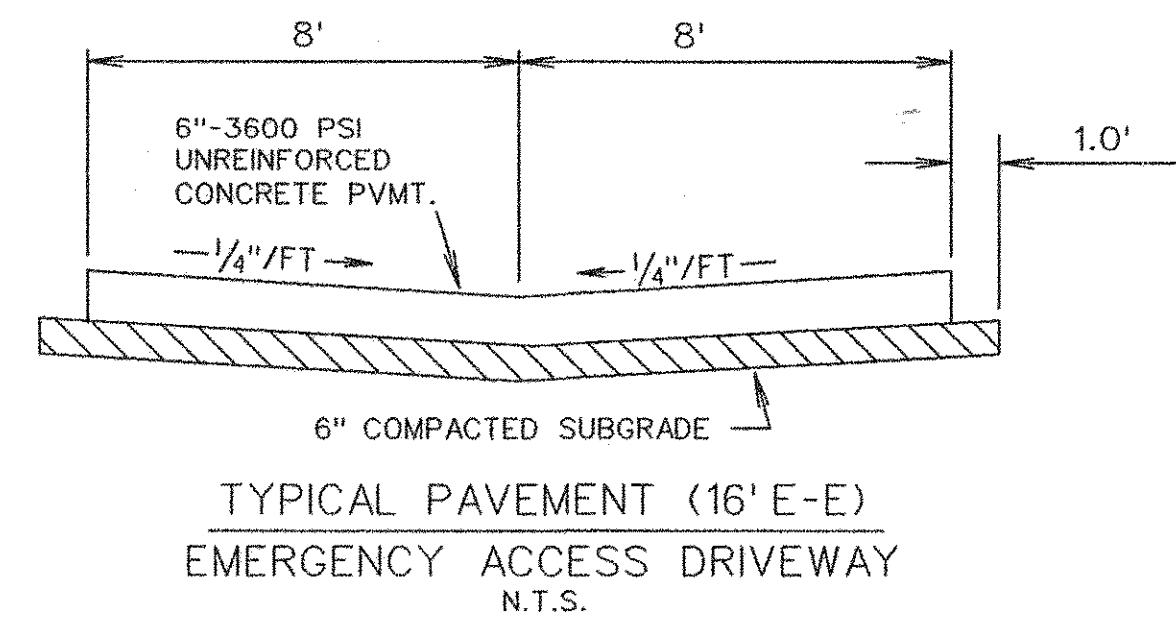
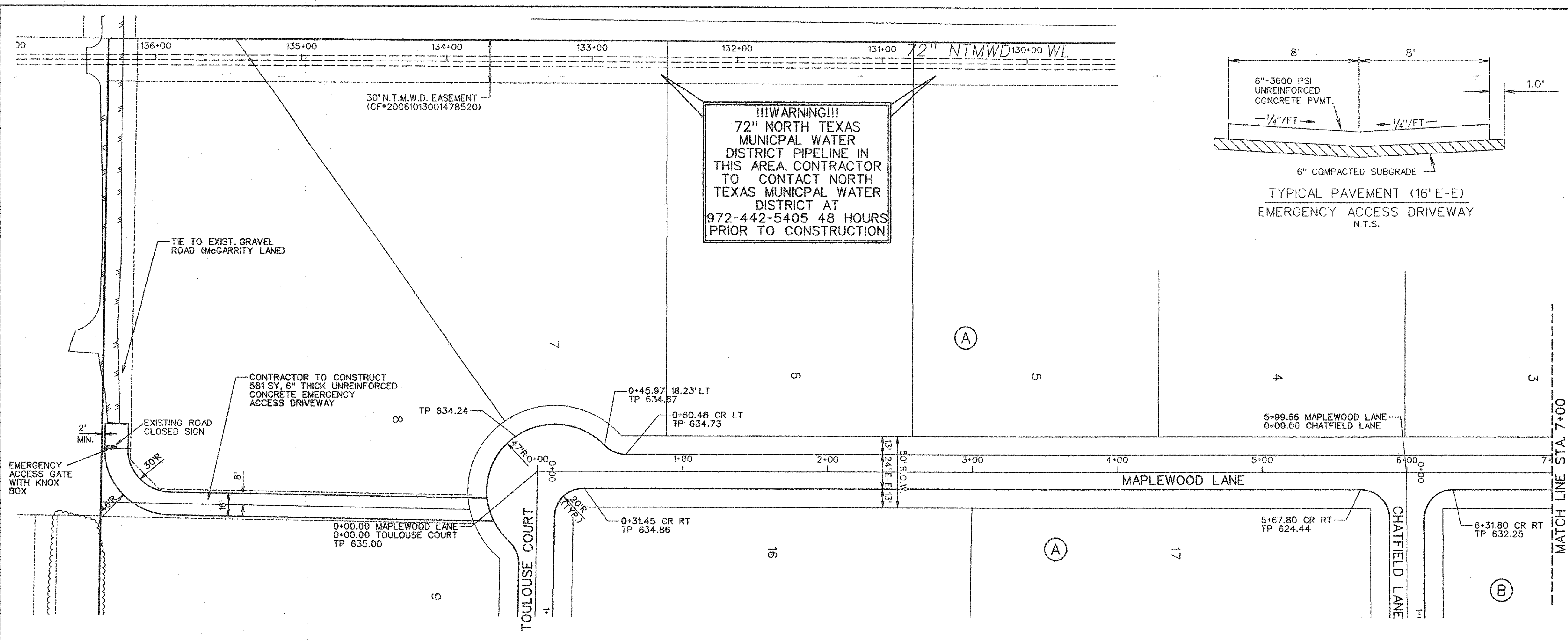
| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| | | | |

CORWIN ENGINEERING, INC.
 200 W. BELMONT, SUITE E
 ALLEN, TEXAS 75013 (972)396-1200

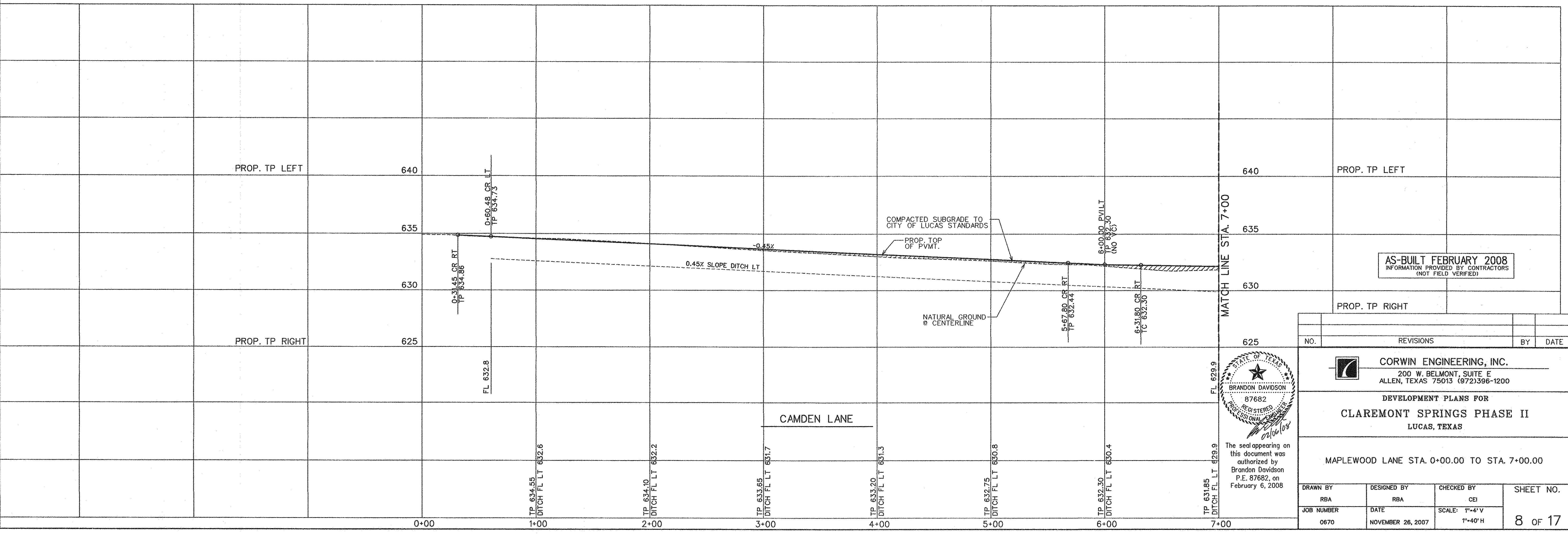
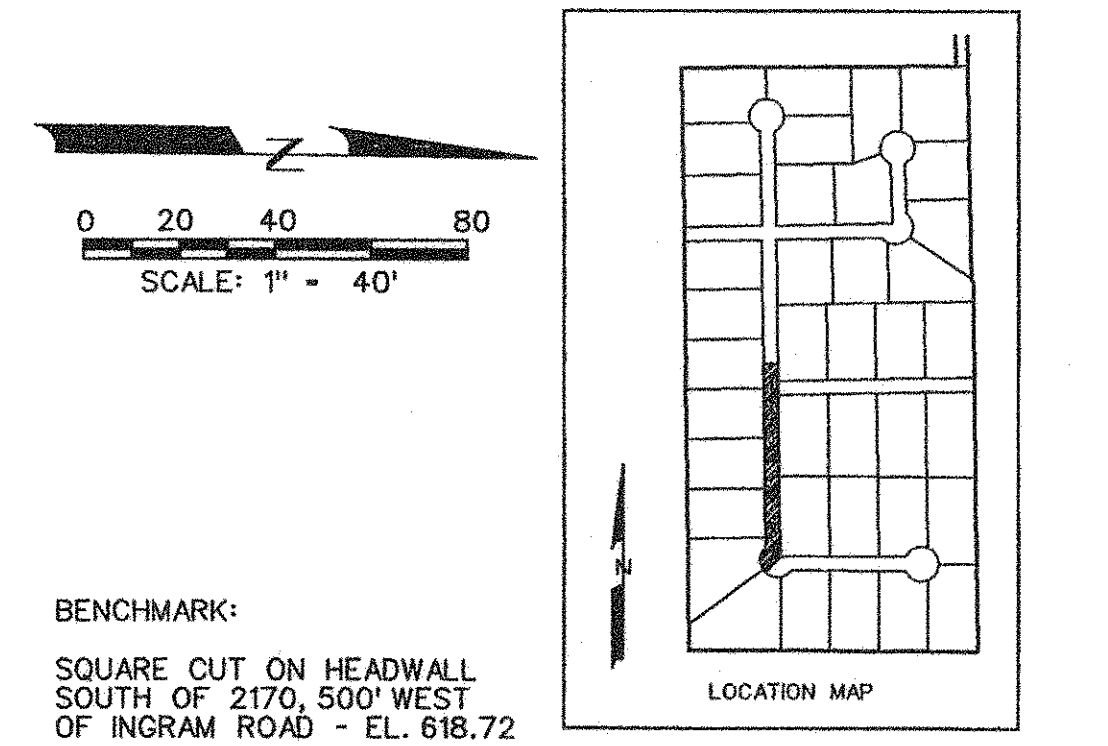
DEVELOPMENT PLANS FOR
CLAREMONT SPRINGS PHASE II
 LUCAS, TEXAS

TOULOUSE COURT - STA. 0+00.00 TO STA. 5+15.15

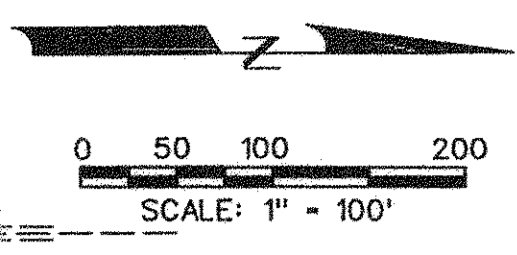
| | | | |
|--------------------|---------------------------|----------------------------|----------------------|
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEI | SHEET NO. 7 OF 17 |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=4' V 1"=40' H | |



- NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT
- A. North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.
 - B. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossing shall be designated and verified to provide a minimum of five-feet of cover.
 - C. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
 - D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.
 - E. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
 - F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
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 - I. Franchised utilities are not permitted in NTMWD easements except for crossings. Water and storm sewer facilities are not permitted in NTMWD easements except for crossings. Sanitary sewer facilities are not permitted in NTMWD easements.



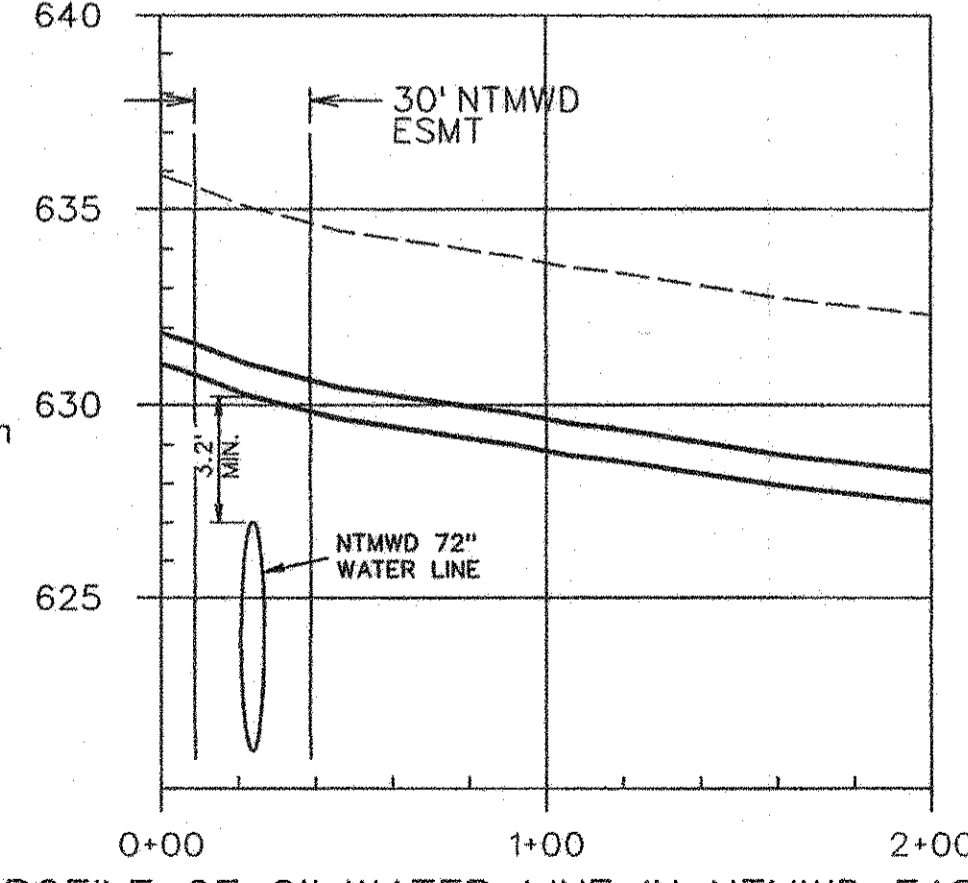
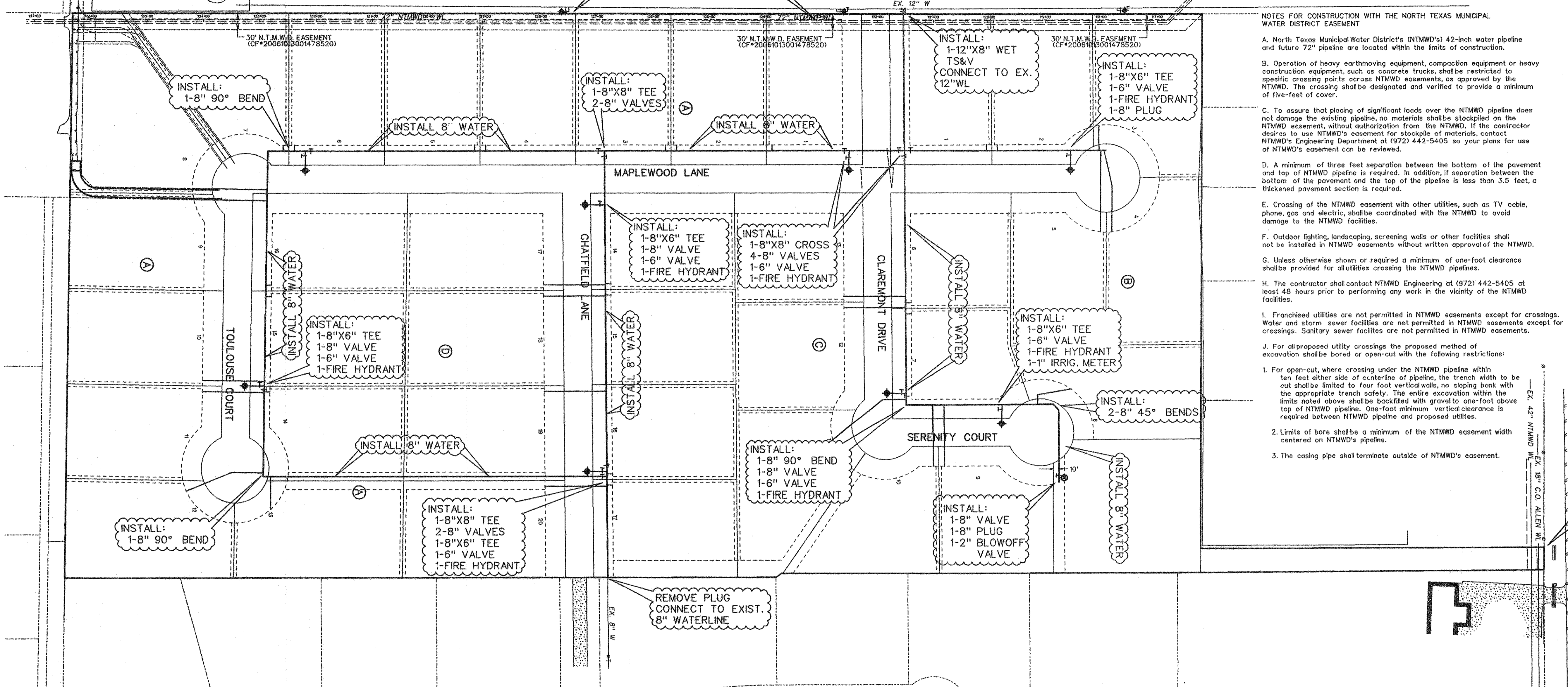
!!!WARNING!!!
 72" NORTH TEXAS
 MUNICIPAL WATER
 DISTRICT PIPELINE IN
 THIS AREA. CONTRACTOR
 TO CONTACT NORTH
 TEXAS MUNICIPAL WATER
 DISTRICT AT
 972-442-5405 48 HOURS
 PRIOR TO CONSTRUCTION



- NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT
- North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.
 - Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossing shall be designated and verified to provide a minimum of five-feet of cover.
 - To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for storage of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
 - A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.
 - Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
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 - Franchised utilities are not permitted in NTMWD easements except for crossings. Water and storm sewer facilities are not permitted in NTMWD easements except for crossings. Sanitary sewer facilities are not permitted in NTMWD easements.
 - For all proposed utility crossings the proposed method of excavation shall be bored or open-cut with the following restrictions:
 - For open-cut, where crossing under the NTMWD pipeline within ten feet either side of centerline of pipeline, the trench width to be cut shall be limited to four foot vertical walls, no sloping bank with the appropriate trench safety. The entire excavation within the limits noted above shall be backfilled with gravel to one-foot above top of NTMWD pipeline. One-foot minimum vertical clearance is required between NTMWD pipeline and proposed utilities.
 - Limits of bore shall be a minimum of the NTMWD easement width centered on NTMWD's pipeline.
 - The casing pipe shall terminate outside of NTMWD's easement.

- NOTES:
- METER LOCATIONS SHALL BE SIDE TO SIDE AT LOT LINES WHERE POSSIBLE, AS SHOWN.
 - PAVEMENT SHALL BE SCORED AT VALVES AND ANGLE STOP/SERVICE LINE LOCATIONS
 - BLUE REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE PLACED IN THE CENTER OF THE PAVEMENT AT FIRE HYDRANT LOCATIONS.

!!!WARNING!!!
 EXIST. 42" NORTH TEXAS
 MUNICIPAL WATER DISTRICT
 PIPELINE IN THIS AREA.
 CONTRACTOR TO
 CONTACT NORTH TEXAS
 MUNICIPAL WATER DISTRICT
 AT 972-442-5405
 48 HOURS PRIOR
 TO CONSTRUCTION

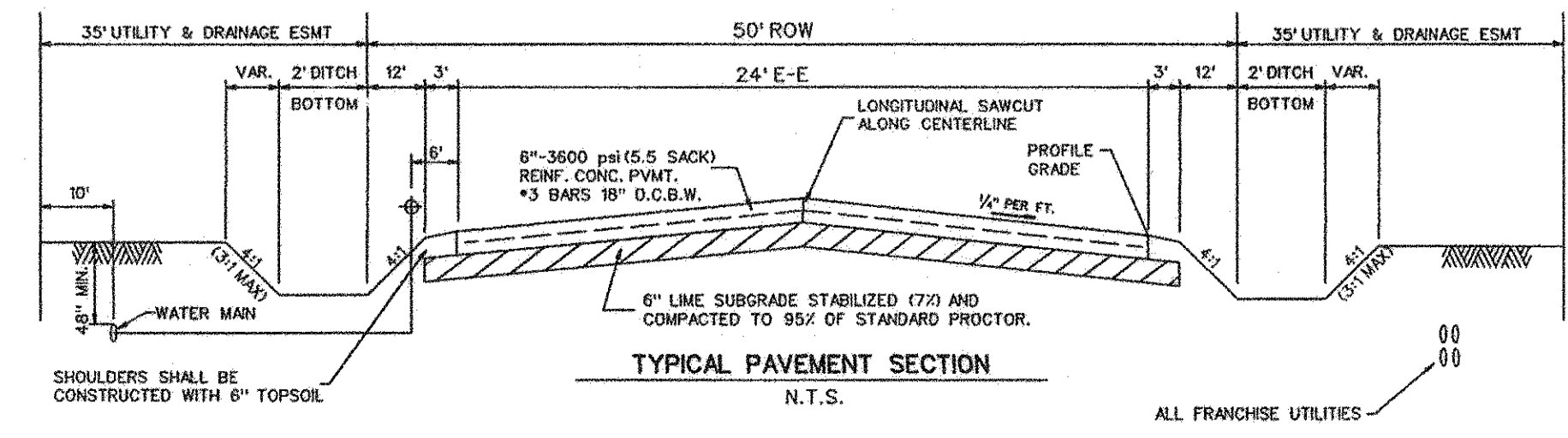


PROFILE OF 8" WATER LINE IN NTMWD EASEMENT (CLAREMONT DRIVE)

| SERVICE SCHEDULE | | |
|------------------|------|-----|
| TYPE | SIZE | NO. |
| WATER | 1" | 37 |
| IRRIGATION | 1" | 1 |

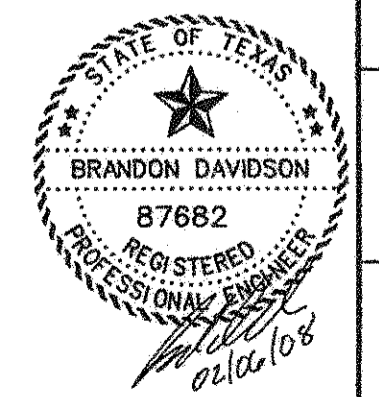
- LEGEND**
- PROP. WATER LINE
 - PROP. FIRE HYDRANT AND VALVE
 - PROP. GATE VALVE
 - EXIST. WATER LINE
 - EXIST. FIRE HYDRANT AND VALVE
 - PROP. STORM SEWER
 - PROP. CURB INLETS
 - PROP. CONC. HEADWALL

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN ARE TAKEN FROM PUBLIC RECORDS. THE ENGINEER MAKES NO GUARANTEE THAT THE EXISTING UTILITIES SHOWN HEREON ARE COMPLETE OR IN THE CORRECT LOCATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.



CLASS "B" EMBEDMENT DETAIL
 N.T.S.

AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS
 (NOT FIELD VERIFIED)



The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on February 6, 2008

BENCHMARK:
 SQUARE CUT ON HEADWALL
 SOUTH OF 2170, 500' WEST
 OF INGRAM ROAD - EL. 618.72

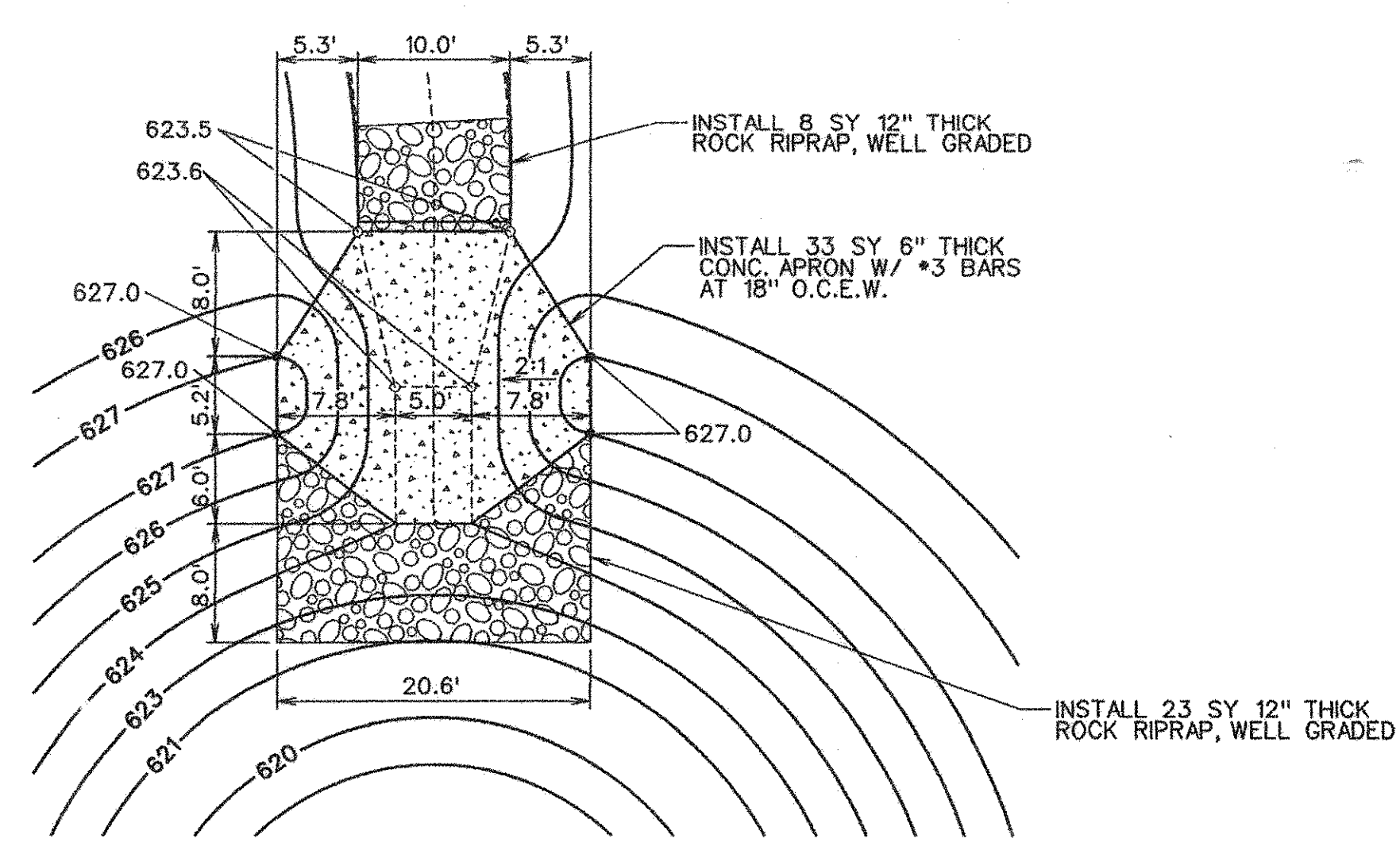
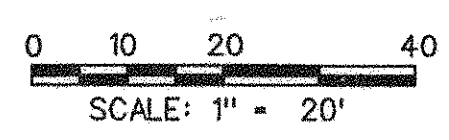
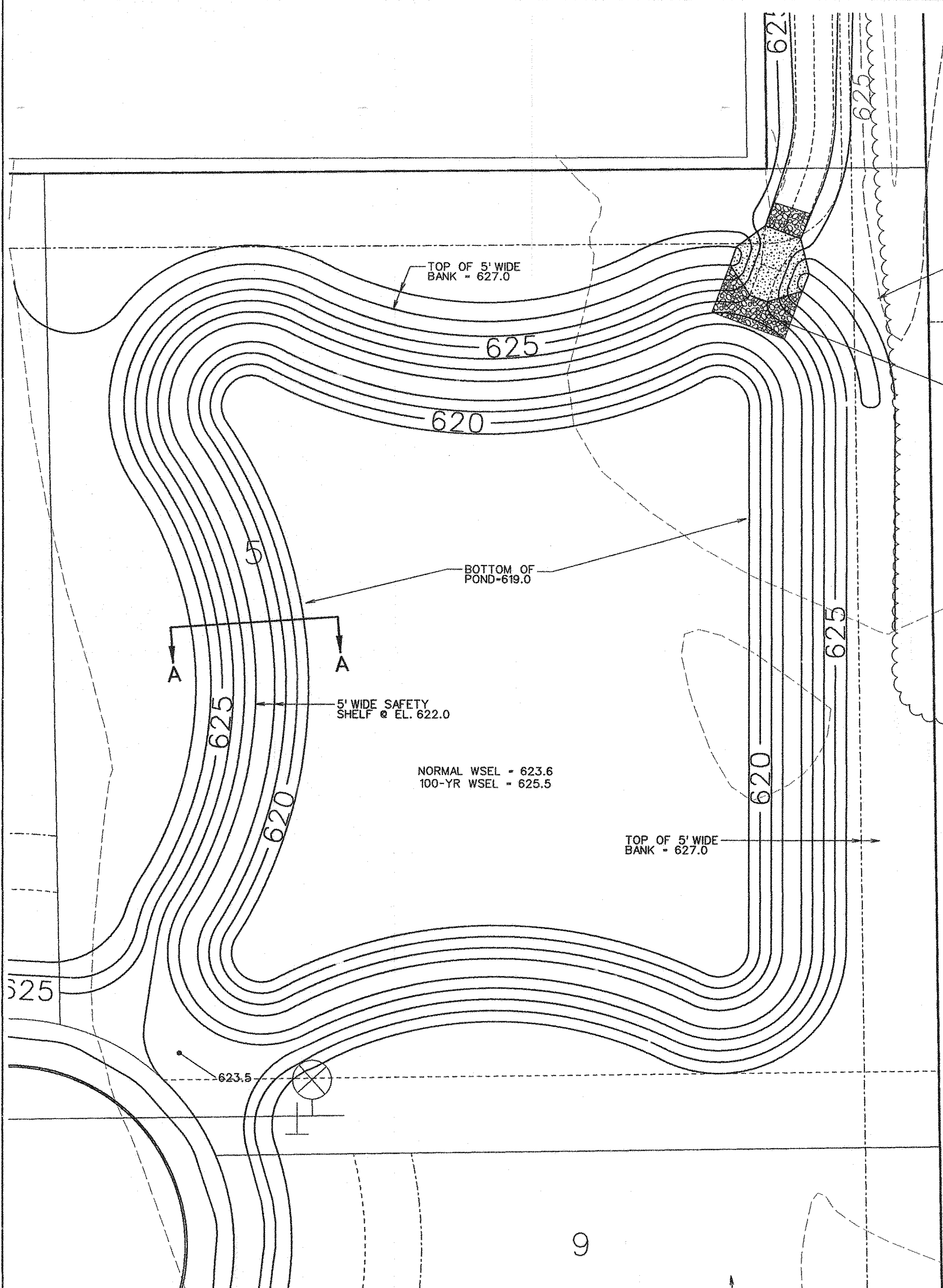
| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| | | | |

CORWIN ENGINEERING, INC.
 200 W. BELMONT, SUITE E
 ALLEN, TEXAS 75013 (972)396-1200

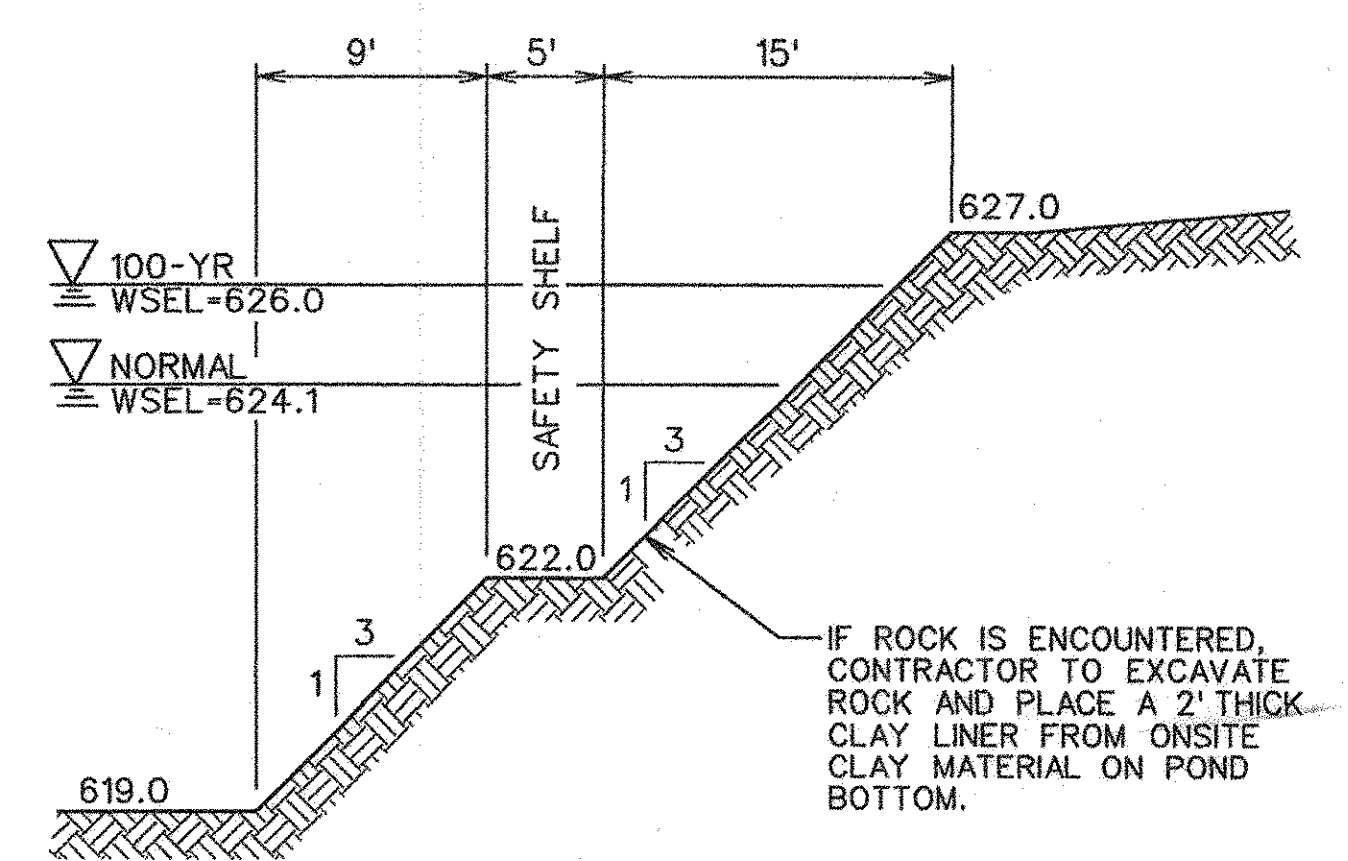
**DEVELOPMENT PLANS FOR
 CLAREMONT SPRINGS PHASE II
 LUCAS, TEXAS**

WATER PLAN

| | | | |
|--------------------|---------------------------|-------------------|-----------------------|
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEI | SHEET NO. 10 OF 17 |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=100' | |



OUTFALL WEIR DETAIL
SCALE: 1"=10'



SECTION A-A
N.T.S.

EXISTING CONDITIONS:

AREA DRAINING TO NORTHEAST CORNER = 53.0 acres
 UNDEVELOPED RUNOFF COEFFICIENT = 0.35
 100-YR INTENSITY = 7.52 in/hr
 $Q = C \times I \times A = 0.35 \times 53.0 \times 7.52 = 139.5 \text{ cfs}$

9.3 ACRES THAT IS BEING DETAINED FOR IN CLAREMONT SPRINGS PHASE I DETENTION POND SHALL BE REDIRECTED TOWARDS THE PHASE II POND. THEREFORE THE MAXIMUM OUTFALL RATE INCREASES BY:
 $Q = C \times I \times A = 0.425 \times 9.3 \times 5.75 = 22.7 \text{ cfs}$

ADDITIONALLY, GRACE EVANGELICAL FREE CHURCH & CLAREMONT SPRINGS II, LTD., HAVE AGREED TO INCREASE THE SIZE OF THE DETENTION POND IN PHASE II TO ACCOUNT FOR FUTURE DEVELOPMENT ON THE REMAINING 4.9 ACRE UNDEVELOPED PORTION OF GRACE EFC SITE (ADJACENT EASTERN TRACT). THEREFORE, THE MAXIMUM OUTFLOW RATE DECREASES BY:

$Q = (C \times I \times A \text{ EXISTING}) - (C \times I \times A \text{ DEVELOPED}) = (0.35 \times 7.52 \times 4.9) - (0.8 \times 8.74 \times 4.9) = 21.4 \text{ cfs}$

THEREFORE, THE MAXIMUM OUTFLOW RATE IS:
 $Q_{out} = 139.5 + 22.7 - 21.4 = 140.8 \text{ cfs}$

HOWEVER, USING THE TOTAL AVAILABLE STORAGE AREA OF THE PROPOSED POND, THE OUTFALL DISCHARGE CAN BE REDUCED TO 120.0 cfs.

PROPOSED CONDITIONS:

WEIGHTED RUNOFF COEFFICIENT:
 UNDEVELOPED AREA (D.A. 9 & 10) = 9.3 acres
 UNDEVELOPED C VALUE = 0.35
 DEVELOPED AREA TO N.E. CORNER = 43.7 acres
 DEVELOPED C VALUE = 0.45
 WEIGHTED C VALUE = 0.43

THE REQUIRED STORAGE VOLUME WAS DETERMINED USING THE MODIFIED RATIONAL METHOD:

WEIGHTED RUNOFF COEFFICIENT= 0.43
 DRAINAGE AREA= 53 acres
 TIME OF CONCENTRATION (Tc)= 15 minutes
 MAXIMUM OUTFLOW RATE (Q)= 120.0 cfs

| Duration (minutes) | Intensity (in./hr.) | Depth (inches) | Inflow Discharge (cfs) | Inflow Volume (cubic ft.) | Outflow Duration (minutes) | Outflow Volume (cubic ft.) | Storage Volume (cubic ft.) |
|--------------------|---------------------|----------------|------------------------|---------------------------|----------------------------|----------------------------|----------------------------|
| 10 | 8.74 | 1.46 | 199.2 | 119,511 | 25.0 | 90,000 | 29,511 |
| 15 | 7.52 | 1.88 | 171.4 | 154,243 | 30.0 | 108,000 | 46,243 |
| 20 | 6.93 | 2.31 | 157.9 | 189,522 | 35.0 | 126,000 | 63,522 |
| 30 | 5.75 | 2.88 | 131.0 | 235,877 | 45.0 | 162,000 | 73,877 |
| 40 | 5.14 | 3.42 | 117.1 | 280,955 | 55.0 | 198,000 | 82,955 |
| 50 | 4.52 | 3.77 | 103.1 | 309,260 | 65.0 | 234,000 | 75,260 |
| 60 | 3.91 | 3.91 | 89.1 | 320,792 | 75.0 | 270,000 | 50,792 |
| 70 | 3.68 | 4.29 | 83.8 | 352,083 | 85.0 | 306,000 | 46,083 |
| 80 | 3.45 | 4.60 | 78.5 | 377,038 | 95.0 | 342,000 | 35,038 |
| 90 | 3.22 | 4.82 | 73.3 | 395,657 | 105.0 | 378,000 | 17,657 |
| 120 | 2.52 | 5.04 | 57.4 | 413,502 | 135.0 | 486,000 | -72,498 |
| 180 | 1.91 | 5.73 | 43.5 | 470,112 | 195.0 | 702,000 | -231,888 |

BELOW IS THE VOLUME PER STAGE TABLE FOR THE PROPOSED DETENTION POND:

| STAGE | ELEV. | AREA | INCREM. | TOTAL VOL. |
|-------|-------|-------|---------|------------|
| 0 | 624.1 | 31582 | | |
| | | | 33080 | 33080 |
| 0.9 | 625 | 41930 | | |
| | | | 50265 | 83345 |
| 1.9 | 626 | 58600 | | |

THE FREEBOARD ELEVATION IS 627.0.

OUTFALL STRUCTURE:

USING MANNING'S OPEN CHANNEL EQUATION FOR A CONCRETE-LINED CHANNEL, A WEIR STRUCTURE WITH A 5' WIDE BOTTOM, 2:1 SIDE SLOPES, ROUGHNESSAND 0.50% VALUE OF 0.016 (AVERAGE FOR NEW CONC. CHANNEL PER CITY OF ALLEN DRAINAGE DESIGN), A LONGITUDINAL SLOPE OF 0.50%, WILL RESULT IN A 126 CFS RELEASE RATE AT A DEPTH OF 1.9 FEET.

TRAPEZOIDAL DITCH

slope= 0.0045 ft/ft 'n' value 0.016

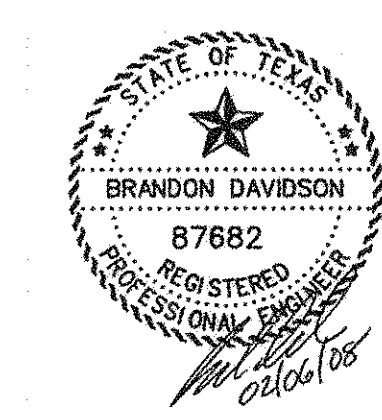
bottom width= 5

side slope= (x:1) 2

| depth of flow | area | perimeter | hyd. radius | q (cfs) | velocity (ft/sec) |
|---------------|-------|-----------|-------------|---------|-------------------|
| 1.9 | 16.72 | 13.50 | 1.24 | 120 | 7.2 |

BENCHMARK:
 SQUARE CUT ON HEADWALL
 SOUTH OF 2170, 500' WEST
 OF INGRAM ROAD - EL. 618.72

| NO. | REVISIONS | BY | DATE |
|--|-------------------|---------------|-----------|
| CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 DEVELOPMENT PLANS FOR CLAREMONT SPRINGS PHASE II LUCAS, TEXAS DETENTION POND PLAN AND CALCULATIONS | | | |
| DRAWN BY | DESIGNED BY | CHECKED BY | SHEET NO. |
| RBA | RBA | CEI | 12 OF 17 |
| JOB NUMBER | DATE | SCALE: 1"=20' | |
| 0670 | NOVEMBER 26, 2007 | | |



AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS
 (NOT FIELD VERIFIED)

The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on February 6, 2008

ROBERT KUBICEK
VOLUME 2441,
PAGE 616
D.R.C.C.T.

MAHNAZ PEKARI
VOLUME 4722,
PAGE 4018
D.R.C.C.T.

VICKI J. AND RICHARD
AZHARAN
VOLUME 5579,
PAGE 2220
D.R.C.C.T.

W. A. CARRELL
VOLUME 892,
PAGE 378
D.R.C.C.T.

!!!WARNING!!!
EXIST. 42" NORTH TEXAS
MUNICIPAL WATER DISTRICT
PIPELINE IN THIS AREA.
CONTRACTOR TO CONTACT
NORTH TEXAS MUNICIPAL
WATER DISTRICT AT
972-442-5405 48 HOURS
PRIOR TO CONSTRUCTION

TREES ON PROPERTY LINE TO BE
PROTECTED DURING CONSTRUCTION
AND FENCED WITH ORANGE
CONSTRUCTION FENCING.

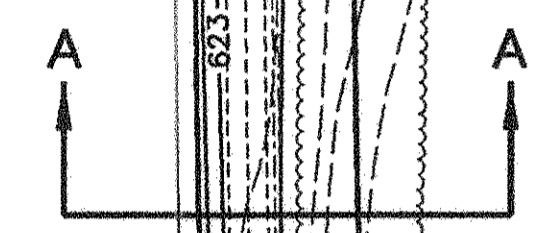
MATCH LINE - THIS SHEET

FM 2170

MATCH EX.
FL - 620.9

0 25 50 100
SCALE: 1" = 50'

- NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT
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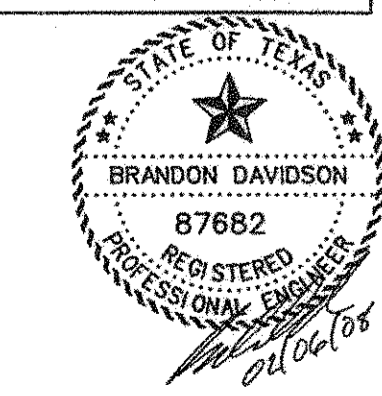
I APPROVE THIS GRADING PLAN WITH THE PAD ELEVATIONS, CONTOURS AND SPOT ELEVATIONS AS SHOWN.

SIGNATURE _____
 PRINTED NAME AND TITLE _____
 COMPANY _____

- NOTES:
1. Finish Floor Elevation to be 0.70 Feet above Finished Pad.(FP)
 2. Additional Erosion Control to be installed in Parkways as determined by the City Inspector.
 3. Finished Pad Elevations are within ± 0.3 Feet.

BENCHMARK:
 SQUARE CUT ON HEADWALL
 SOUTH OF 2170, 500' WEST
 OF INGRAM ROAD - EL. 618.72

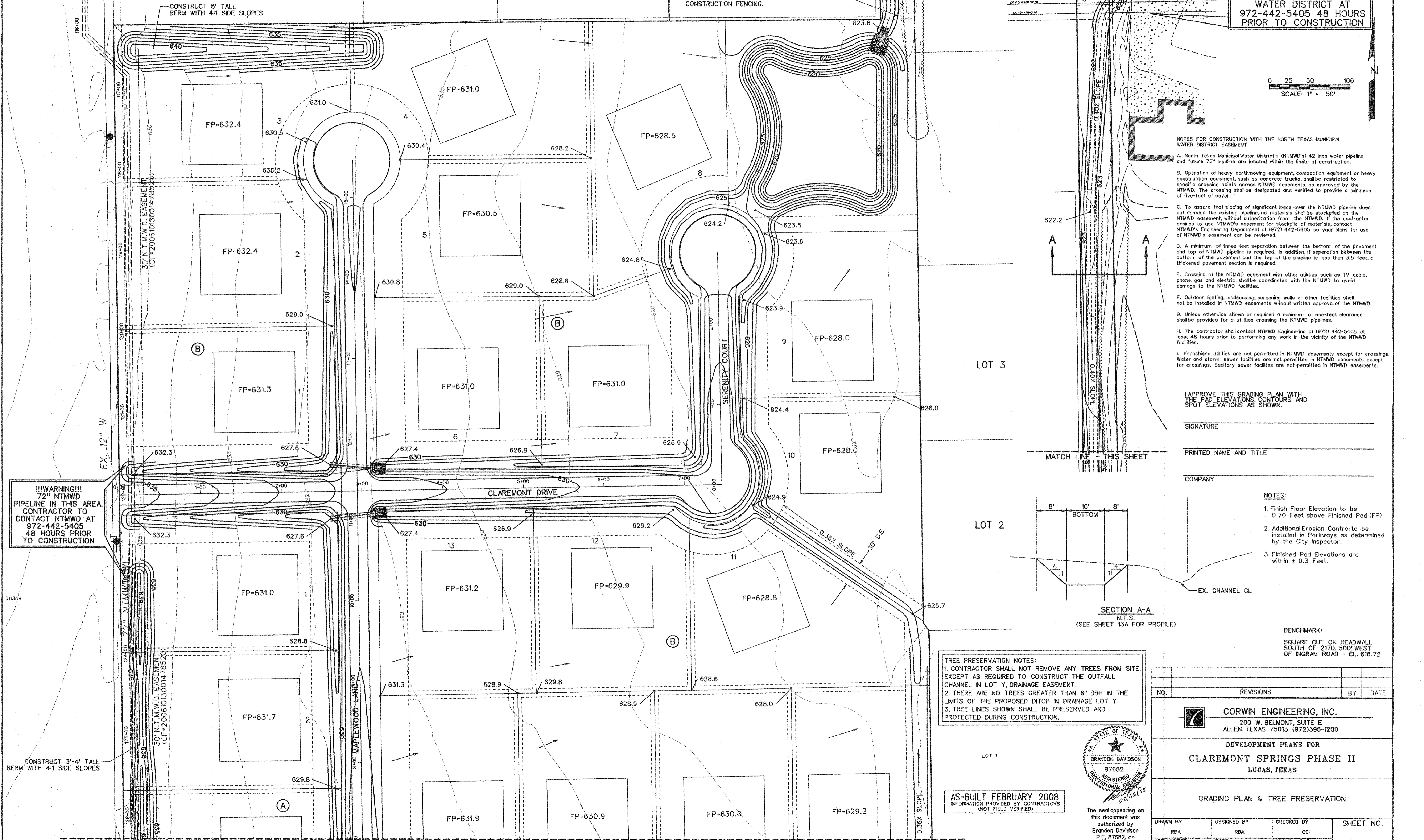
TREE PRESERVATION NOTES:
 1. CONTRACTOR SHALL NOT REMOVE ANY TREES FROM SITE, EXCEPT AS REQUIRED TO CONSTRUCT THE OUTFALL CHANNEL IN LOT Y, DRAINAGE EASEMENT.
 2. THERE ARE NO TREES GREATER THAN 6" DBH IN THE LIMITS OF THE PROPOSED DITCH IN DRAINAGE LOT Y.
 3. TREE LINES SHOWN SHALL BE PRESERVED AND PROTECTED DURING CONSTRUCTION.



AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS
 (NOT FIELD VERIFIED)

The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on February 6, 2008

| NO. | REVISIONS | BY | DATE |
|--|---------------------------|-------------------|-----------------------|
| | | | |
| CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 | | | |
| DEVELOPMENT PLANS FOR CLAREMONT SPRINGS PHASE II LUCAS, TEXAS | | | |
| GRADING PLAN & TREE PRESERVATION | | | |
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEJ | SHEET NO. 13 OF 17 |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=50' | |



!!!WARNING!!!
72" NTMWD
PIPELINE IN THIS AREA.
CONTRACTOR TO
CONTACT NTMWD AT
972-442-5405
48 HOURS PRIOR
TO CONSTRUCTION

CONSTRUCT 3'-4" TALL
BERM WITH 4:1 SIDE SLOPES

30' N.T.M.W.D. EASEMENT
(CF#20061013001478520)

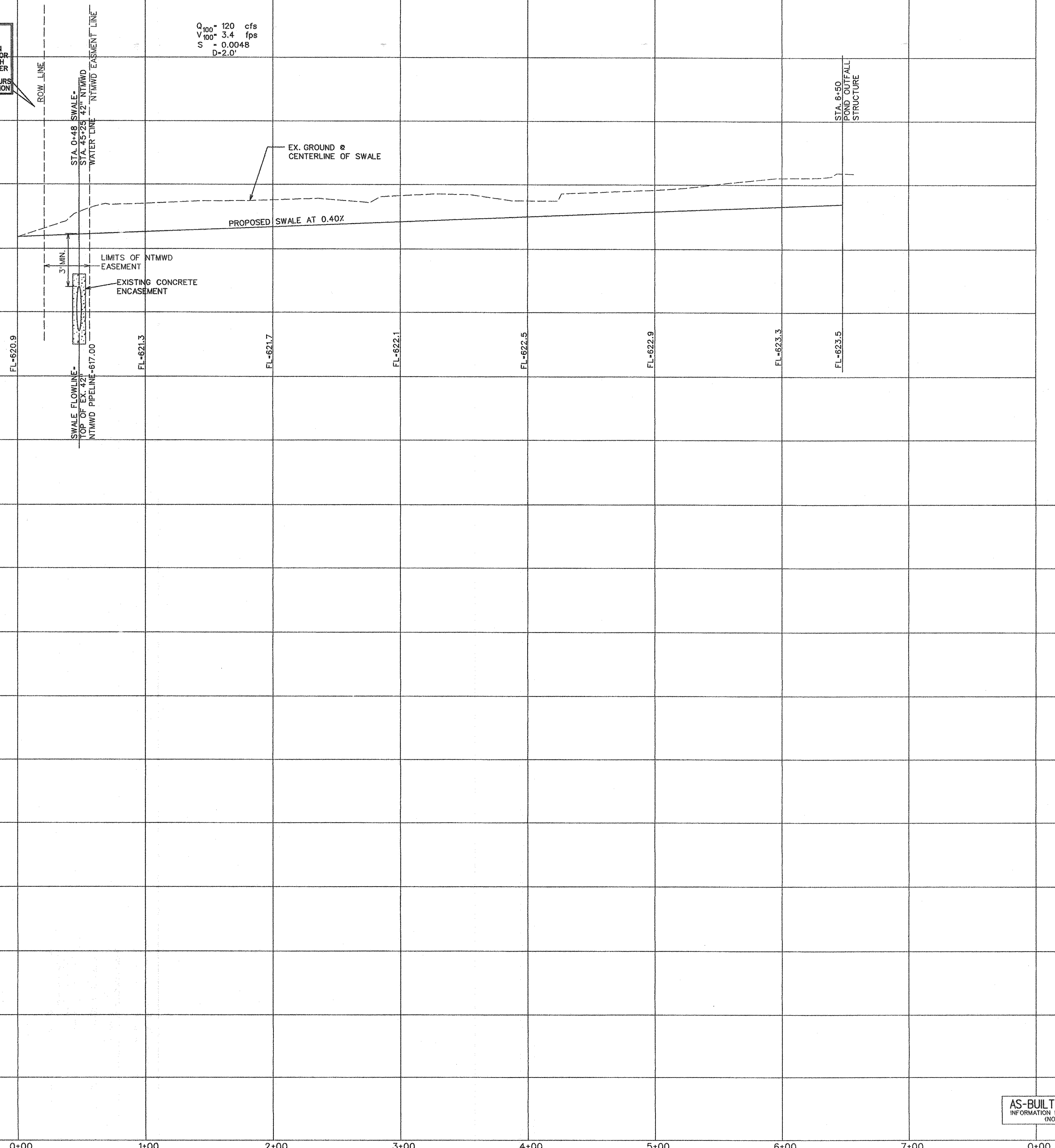
30' N.T.M.W.D. EASEMENT
(CF#20061013001478520)

MATCH LINE - SHEET 14

!!WARNING!!
 42" NORTH TEXAS MUNICIPAL WATER DISTRICT PIPELINE IN THIS AREA. CONTRACTOR TO CONTACT NORTH TEXAS MUNICIPAL WATER DISTRICT AT 972-442-5405 48 HOURS PRIOR TO CONSTRUCTION.

Q₁₀₀ = 120 cfs
 V₁₀₀ = 3.4 fps
 S = 0.0048
 D = 2.0'

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 0+00



- NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT
- A. North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.
 - B. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossing shall be designated and verified to provide a minimum of five-foot of cover.
 - C. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
 - D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.
 - E. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
 - F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
 - G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
 - H. 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.
 - I. Franchised utilities are not permitted in NTMWD easements except for crossings. Water and storm sewer facilities are not permitted in NTMWD easements except for crossings. Sanitary sewer facilities are not permitted in NTMWD easements.
 - J. For all proposed utility crossings the proposed method of excavation shall be bored or open-cut with the following restrictions:
 1. For open-cut, where crossing under the NTMWD pipeline within ten feet either side of centerline of pipeline, the trench width to be cut shall be limited to four foot vertical walls, no sloping bank with the appropriate trench safety. The entire excavation within the limits noted above shall be backfilled with gravel to one-foot above top of NTMWD pipeline. One-foot minimum vertical clearance is required between NTMWD pipeline and proposed utilities.
 2. Limits of bore shall be a minimum of the NTMWD easement width centered on NTMWD's pipeline.
 3. The casing pipe shall terminate outside of NTMWD's easement.

2+00 3+00 4+00



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AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

CORWIN ENGINEERING, INC.
 200 W. BELMONT, SUITE E
 ALLEN, TEXAS 75013 (972)396-1200

DEVELOPMENT PLANS FOR
CLAREMONT SPRINGS PHASE II
 LUCAS, TEXAS

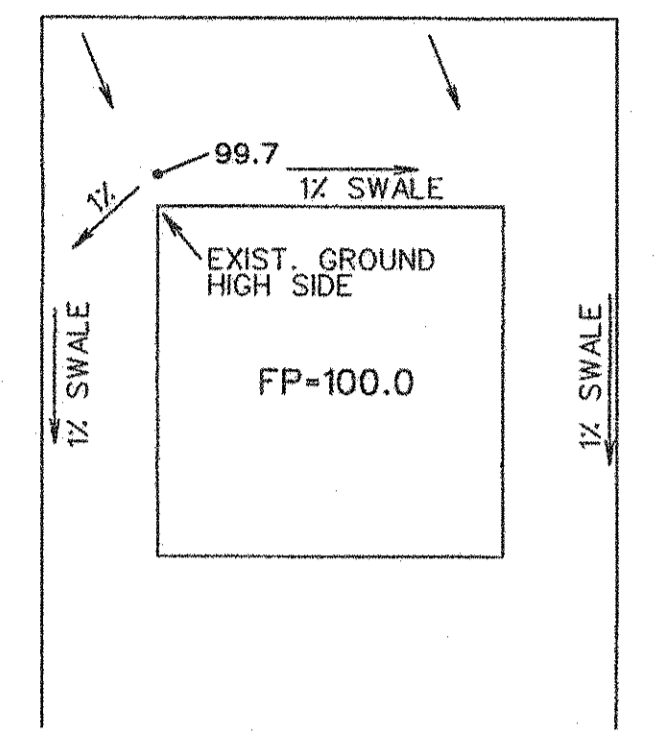
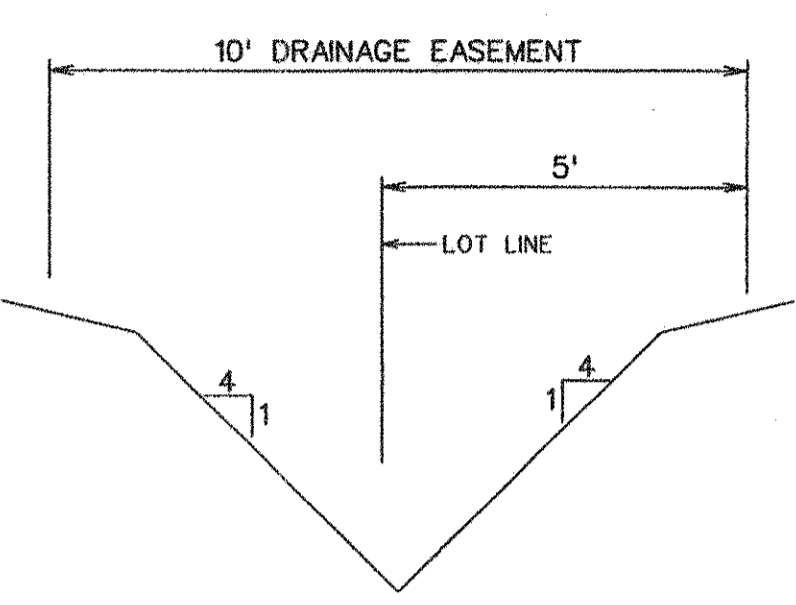
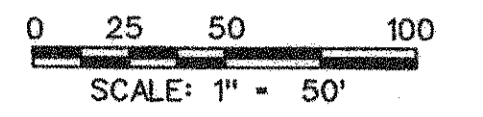
DETENTION POND GRADE TO DRAIN

| | | | |
|--------------------|-----------------------|---------------------------|-----------|
| DRAWN BY BDD | DESIGNED BY BDD | CHECKED BY BDD | SHEET NO. |
| JOB NUMBER 0670 | DATE JULY 27, 2007 | HOR: 1"=40' VER: 1"=4' | 13A OF 17 |



TREE PRESERVATION NOTES:
 1. CONTRACTOR SHALL NOT REMOVE ANY TREES FROM SITE, EXCEPT AS REQUIRED TO CONSTRUCT THE OUTFALL CHANNEL IN LOT Y, DRAINAGE EASEMENT.
 2. THERE ARE NO TREES GREATER THAN 6" DBH IN THE LIMITS OF THE PROPOSED DITCH IN DRAINAGE LOT Y.
 3. TREE LINES SHOWN SHALL BE PRESERVED AND PROTECTED DURING CONSTRUCTION.

- NOTES:**
1. Finish Floor Elevation to be 0.70 Feet above Finished Pad.(FP)
 2. Additional Erosion Control to be installed in Parkways as determined by the City Inspector.
 3. Finished Pad Elevations are within ± 0.3 Feet.



SECTION B-B
 N.T.S.
 TYPICAL AT EACH LOT LINE

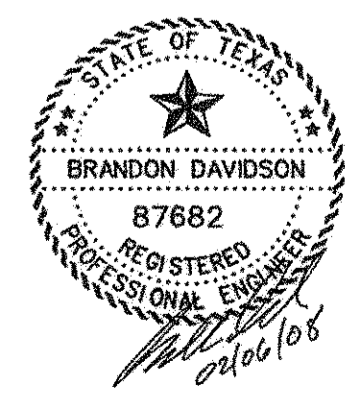
- NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT**
- A. North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.
 - B. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossing shall be designated and verified to provide a minimum of five-feet of cover.
 - C. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
 - D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.
 - E. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.
 - F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.
 - G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
 - H. 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.
 - I. Franchised utilities are not permitted in NTMWD easements except for crossings. Water and storm sewer facilities are not permitted in NTMWD easements except for crossings. Sanitary sewer facilities are not permitted in NTMWD easements.

I APPROVE THIS GRADING PLAN WITH THE PAD ELEVATIONS, CONTOURS AND SPOT ELEVATIONS AS SHOWN.

SIGNATURE _____
 PRINTED NAME AND TITLE _____
 COMPANY _____

BENCHMARK:
 SQUARE CUT ON HEADWALL
 SOUTH OF 2170, 500' WEST
 OF INGRAM ROAD - EL. 618.72

AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS
 (NOT FIELD VERIFIED)



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| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| | | | |
| | | | |

CORWIN ENGINEERING, INC.
 200 W. BELMONT, SUITE E
 ALLEN, TEXAS 75013 (972)396-1200

**DEVELOPMENT PLANS FOR
 CLAREMONT SPRINGS PHASE II
 LUCAS, TEXAS**

GRADING PLAN & TREE PRESERVATION

| | | | |
|--------------------|---------------------------|-------------------|-----------------------|
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEI | SHEET NO. 14 OF 17 |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=50' | |

!!!WARNING!!!
 72" NORTH TEXAS MUNICIPAL WATER DISTRICT PIPELINE IN THIS AREA. CONTRACTOR TO CONTACT NORTH TEXAS MUNICIPAL WATER DISTRICT AT 972-442-5405 48 HOURS PRIOR TO CONSTRUCTION

CONSTRUCT 3'-4' TALL BERM WITH 4:1 SIDE SLOPES

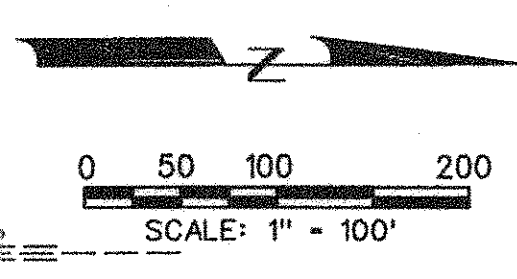
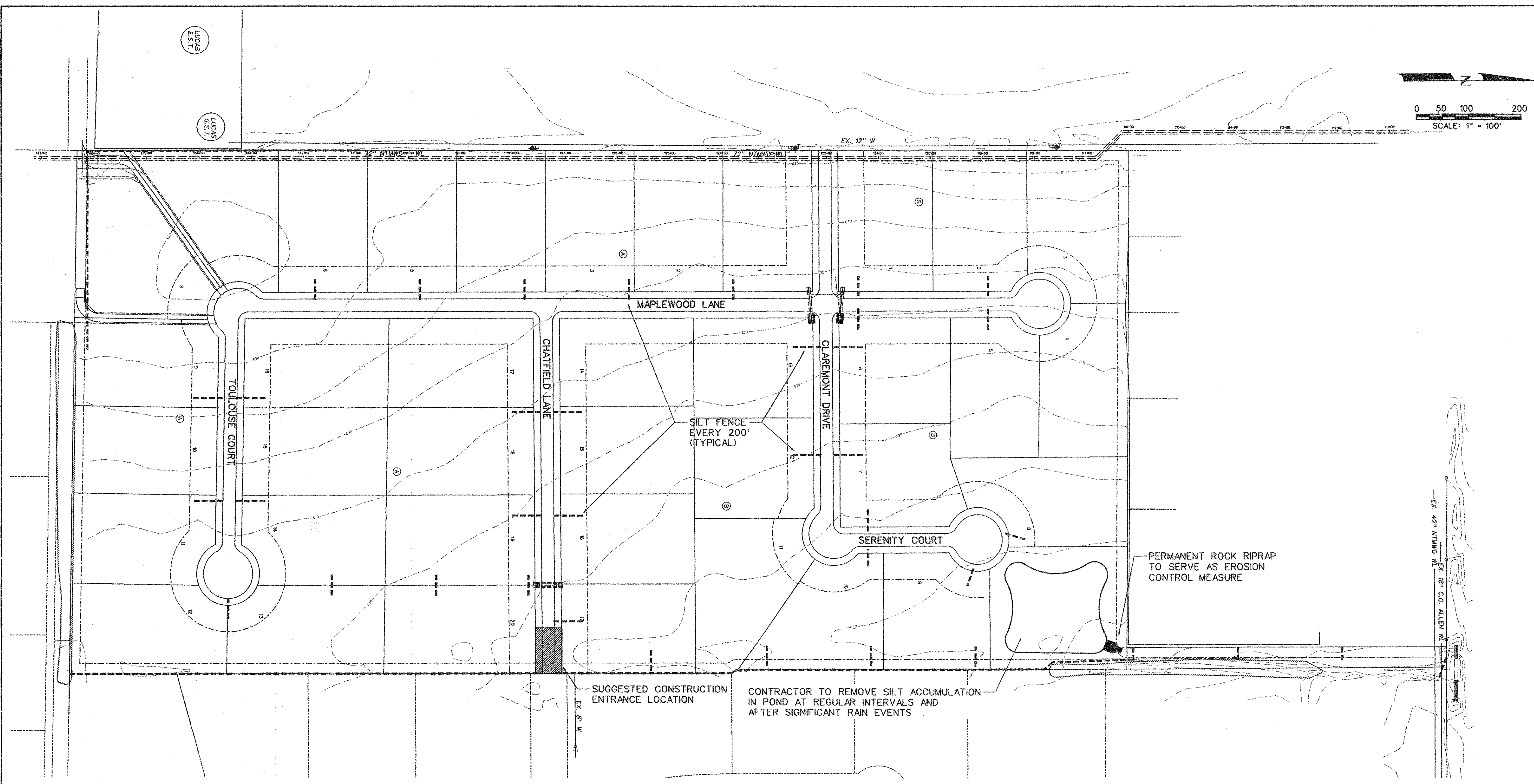
LUCAS G.S.T.

OF LUCAS PAGE 162 D.R.C.C.T.

McGARTY RD.

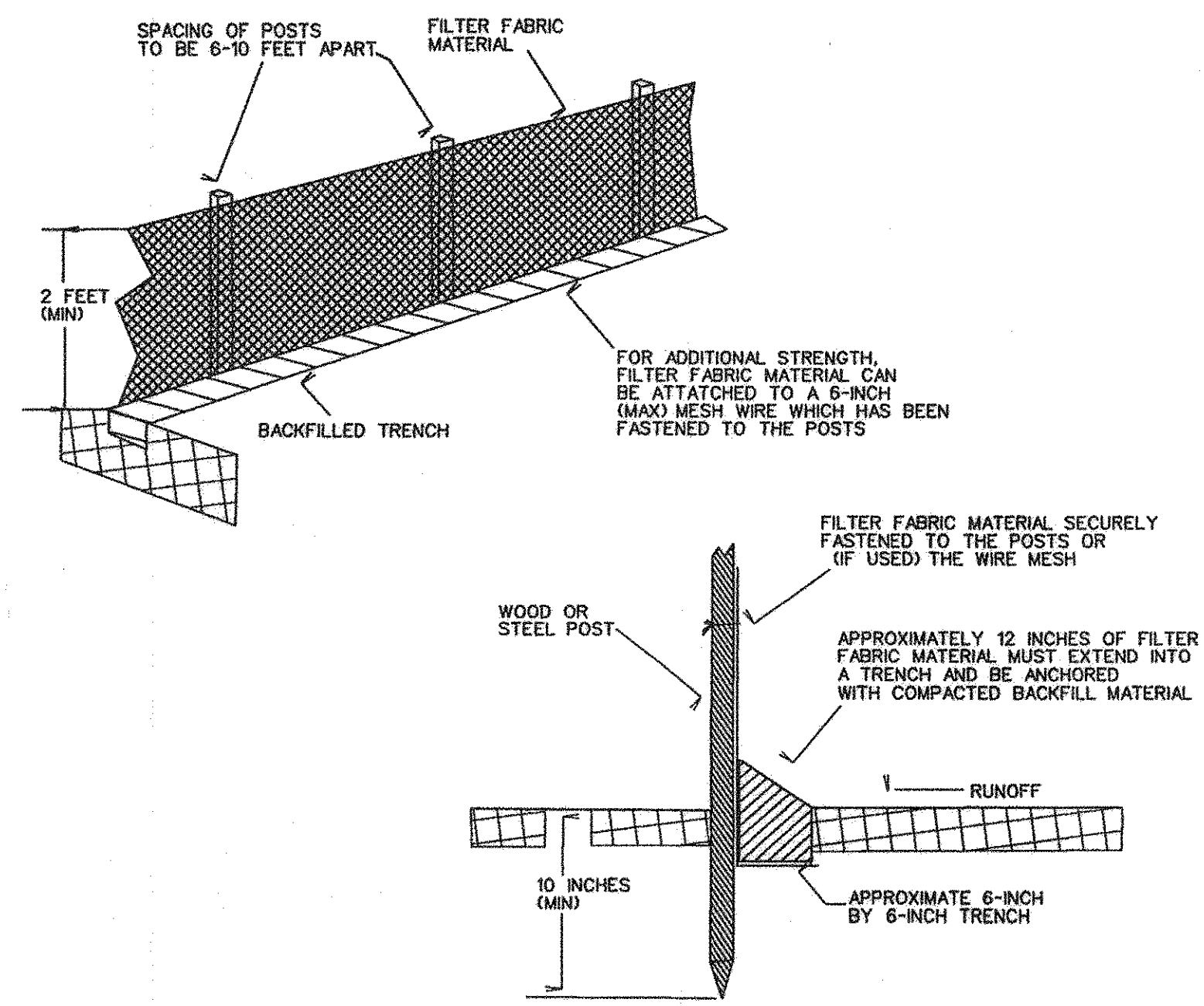
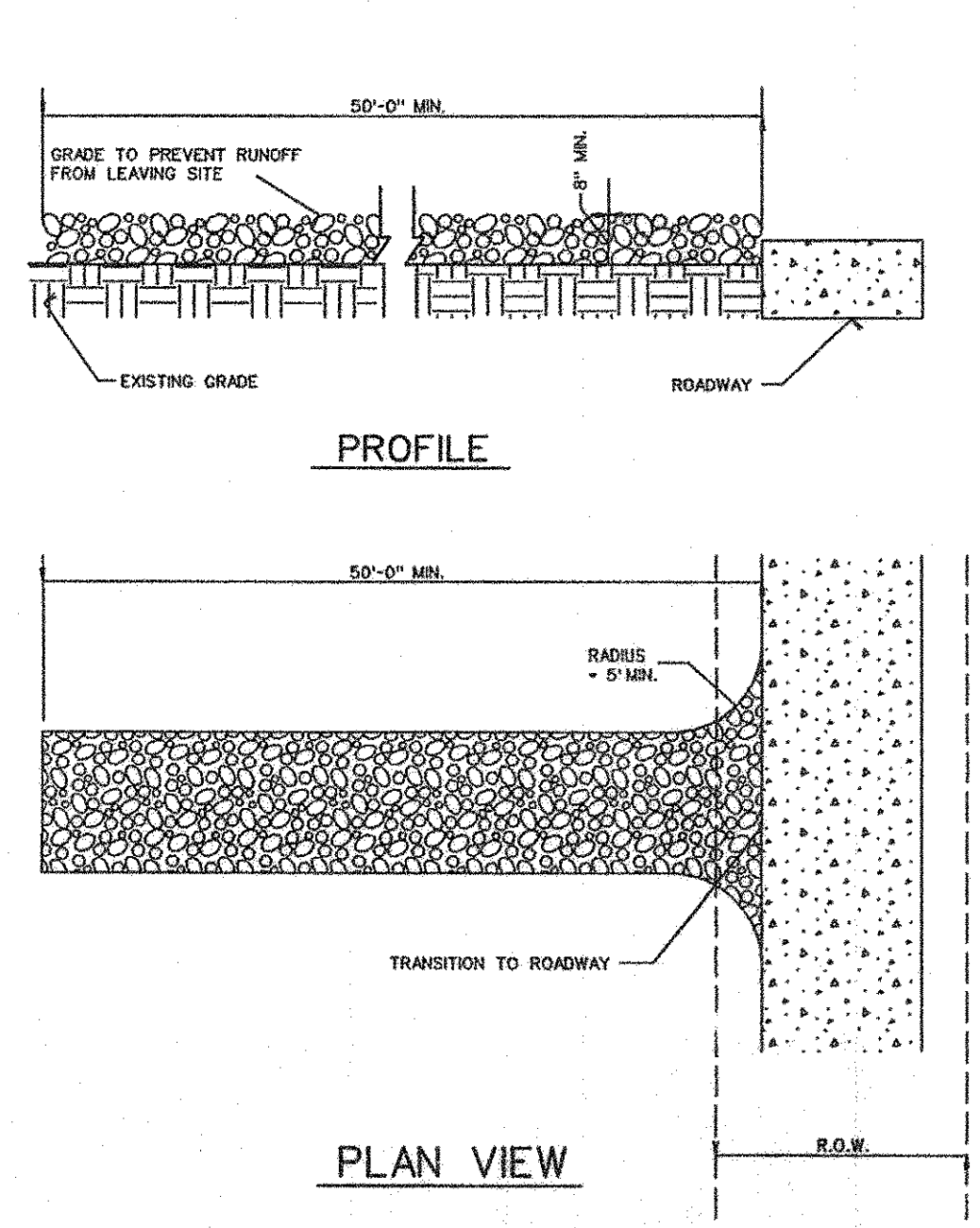
DOUBLE 36" LOCUST TREE

TREES ON PROPERTY LINE TO BE PROTECTED DURING CONSTRUCTION AND FENCED WITH ORANGE CONSTRUCTION FENCING.



CONSTRUCTION SEQUENCE

1. GRADING CONTRACTOR TO INSTALL TEMPORARY STABILIZED ENTRANCE.
2. INSTALL SILT FENCE AS SHOWN, (TS-600 POLY FELT) PER C.O.G. SPECIFICATIONS.
3. PERFORM GRADING AND UTILITY CONSTRUCTION.
4. SILT FENCE SHALL REMAIN IN PLACE UNTIL RE-VEGETATION HAS BEEN COMPLETED.
5. PAVING CONTRACTOR SHALL REMOVE TEMPORARY STABILIZED ENTRANCE.
6. PRIOR TO CITY ACCEPTANCE THE PAVING CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY MUD OR SILT WHICH COLLECTS ON THE EXISTING AND NEW PAVEMENT AND INSTALLING EROSION MAT.



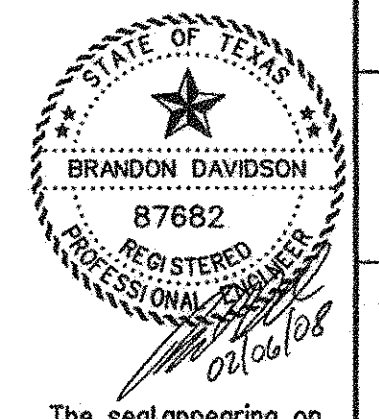
LEGEND

SILT FENCE (BEFORE CONSTRUCTION) - - - - -

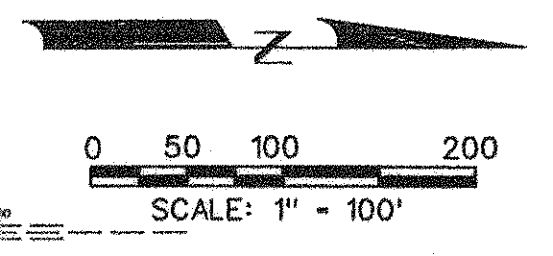
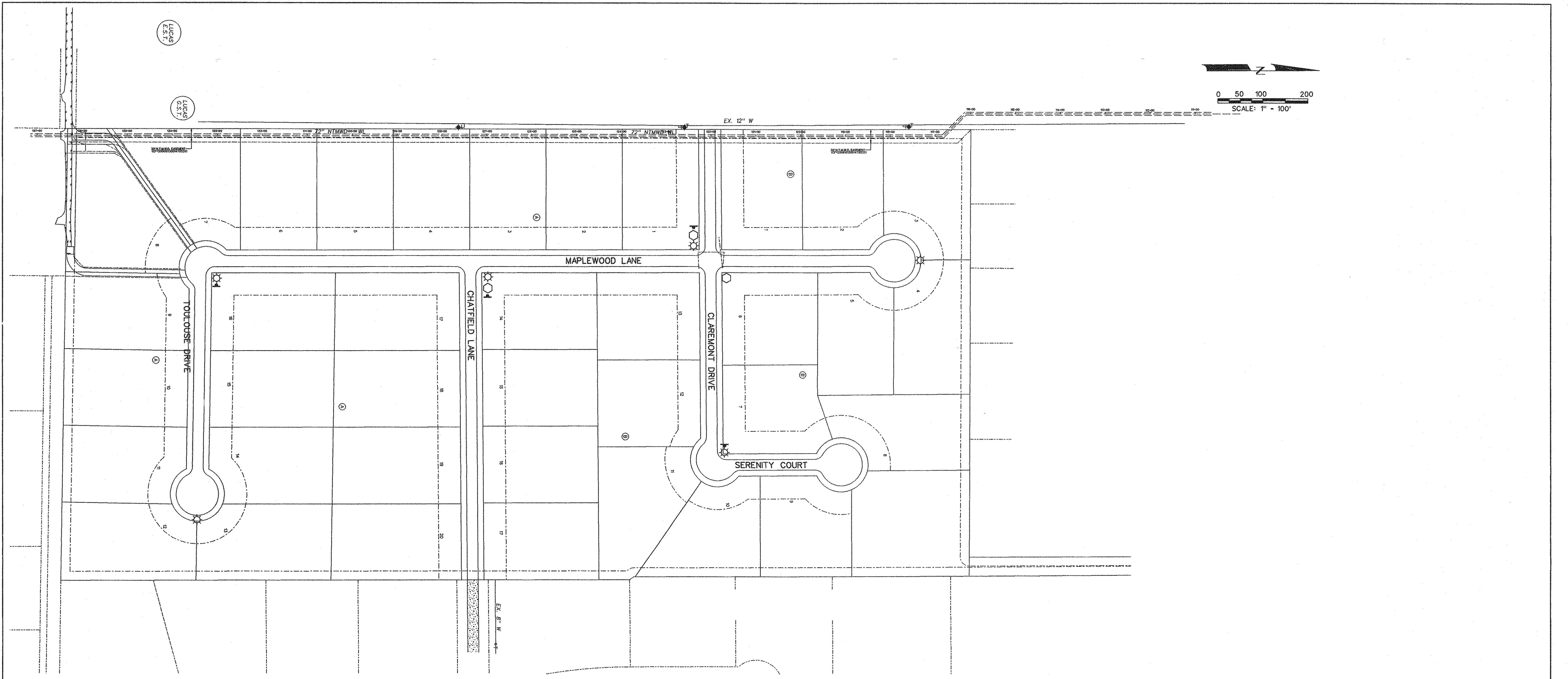
BENCHMARK:
SQUARE CUT ON HEADWALL
SOUTH OF 2170, 500' WEST
OF INGRAM ROAD - EL. 618.72

| NO. | REVISIONS | BY | DATE |
|--|---------------------------|-------------------|-----------|
| CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 | | | |
| DEVELOPMENT PLANS FOR CLAREMONT SPRINGS PHASE II LUCAS, TEXAS | | | |
| EROSION CONTROL PLAN | | | |
| DRAWN BY RBA | DESIGNED BY RBA | CHECKED BY CEI | SHEET NO. |
| JOB NUMBER 0670 | DATE NOVEMBER 26, 2007 | SCALE: 1"=100' | 15 OF 17 |

AS-BUILT FEBRUARY 2008
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)



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TRAFFIC CONTROL NOTES:

1. ALL SIGNAGE, BARRICADES, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE STANDARD HIGHWAY SIGN DESIGN FOR TEXAS (1980).
2. LOCATIONS SHOWN FOR SIGNAGE AND PAVEMENT MARKINGS ARE APPROXIMATE; FINAL LOCATIONS MAY CHANGE DUE TO POST CONSTRUCTION CONDITIONS AND PRESENCE OF OTHER PHYSICAL FEATURES. FINAL LOCATION OF ALL TRAFFIC CONTROL DEVICES SHALL BE FIELD VERIFIED WITH CITY PRIOR TO INSTALLATION.
3. ALL PAVEMENT MARKINGS OTHER THAN BUTTONS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
4. ALL SIGNS SHALL BE HIGH INTENSITY AND THE SIZES SHALL BE STANDARD UNLESS OTHERWISE NOTED.
5. ALL TRAFFIC SIGNS, POSTS, AND MATERIALS SHALL BE INSTALLED PER DETAIL THIS SHEET.
6. FOR STOP SIGNS THAT WILL ACCEPT FUTURE STREET SIGNS, EXTEND POST ABOVE STOP SIGN SO THAT 2 HOLES ARE AVAILABLE FOR MOUNTING. (FOR ALL OTHERS, POST SHALL NOT EXTEND ABOVE SIGN.)
7. CHANGES TO TYPICAL SIGN POST LOCATION MADE AT ENGINEER'S DISCRETION.

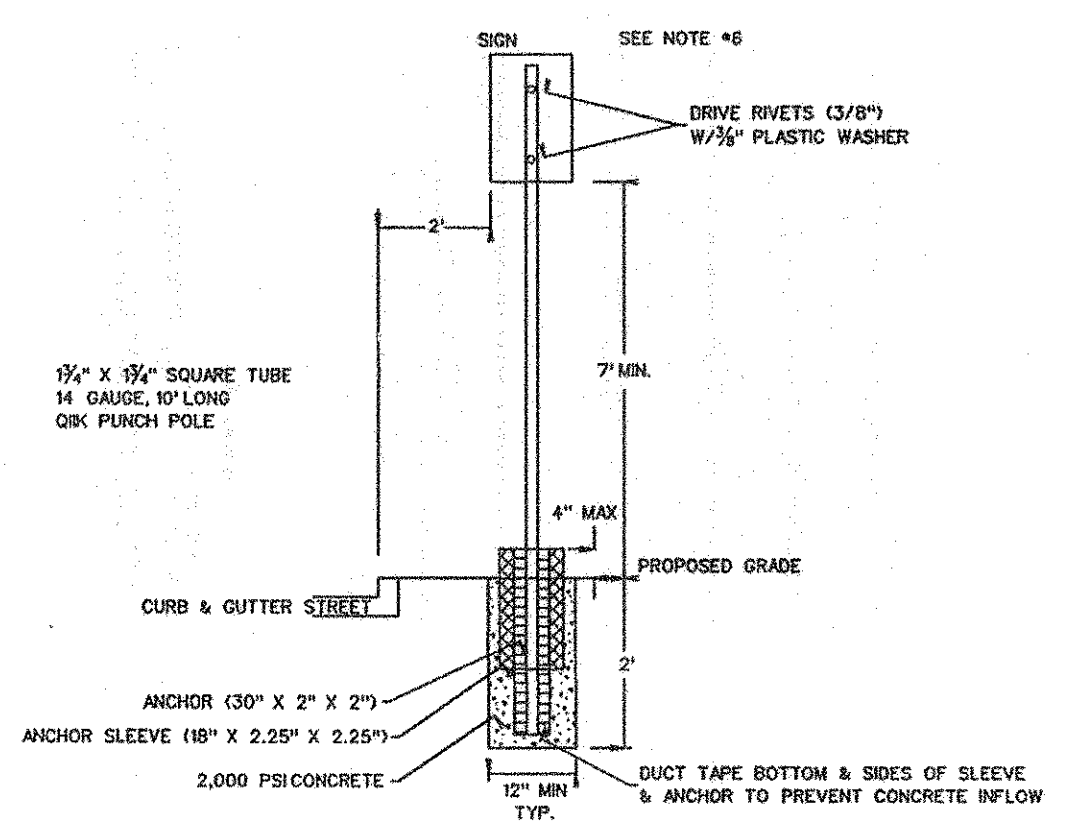
LEGEND

- STREET LIGHT
- 30" STOP SIGN
- STREET NAME BLADE

NOTES:

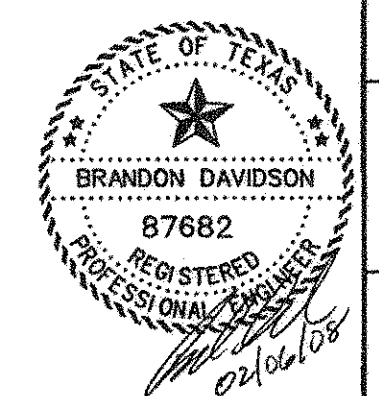
1. WHEN POSSIBLE, STREET NAME BLADE AND STOP SIGN SHALL BE MOUNTED ON LIGHT POST, AS INSTALLED IN CLAREMONT SPRINGS PHASE I.
2. STREET LIGHTS SHALL BE "DARK SKY" LIGHTS, AS SHOWN ON DETAIL, THIS SHEET.
3. NO CITY LOGO ON STREET NAME SIGNS.

BENCHMARK:
 SQUARE CUT ON HEADWALL
 SOUTH OF 2170, 500' WEST
 OF INGRAM ROAD - EL. 618.72



SIGN POST DETAIL
 N.T.S.

AS-BUILT FEBRUARY 2008
 INFORMATION PROVIDED BY CONTRACTORS
 (NOT FIELD VERIFIED)



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| NO. | REVISIONS | BY | DATE |
|--|-------------------|----------------|-----------|
| | | | |
| CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 | | | |
| DEVELOPMENT PLANS FOR CLAREMONT SPRINGS PHASE II LUCAS, TEXAS | | | |
| STREET SIGN & LIGHTING PLAN | | | |
| DRAWN BY | DESIGNED BY | CHECKED BY | SHEET NO. |
| RBA | RBA | CEI | 16 OF 17 |
| JOB NUMBER | DATE | SCALE: 1"=100' | |
| 0670 | NOVEMBER 26, 2007 | | |

WATER SYSTEM
General Notes

All work and materials shall be in accordance with City's standard specifications and general design standards.

- All tapping sleeves and valves shall be full body ductile iron.
- Valves and fittings to be Mueller -150 psi test.
- Fittings shall of the mechanical joint type, flanged where applicable, and be manufactured by US Pipe, American, or other as approved by the City - Class 250. All fittings shall be restrained by the use of Mega-Lugs or approved equal and concrete thrust blocking.
- Fire hydrants to be Mueller or approved equal, and Waterloo three-way standard thread with valve in lead or approved equal. All mains steamer nozzles shall have a nominal inside diameter of 4-inches.
- Water lines in the area of storm drain inlets shall be constructed behind the inlet by pulling the pipe using longitudinal bending in accordance with the manufacturer's requirements. Fittings may be used if bending is impractical consult the project City Construction Inspector.
- Water lines crossing under storm drains and sanitary sewer lines shall have a minimum of 18" clearance below storm drains and two (2) feet clearance below sanitary sewer lines or otherwise as governed by TNRC Chapter 290 requirements. Parallel water lines shall be at least nine (9) feet clear horizontally to sanitary sewer lines and manholes. Where minimum clearance cannot be achieved, water lines shall be encased six (6) inches around in concrete to ten (10) feet either side of utility crossing. Where water lines cross creeks or ditches the water line shall be protected by concrete encasement at least ten (10) feet past the embankment slope on each side.
- Water mains: All water lines shall have a minimum of 48" cover over the top of the pipe. All new water mains shall be PVC pipe in accordance with the following: C900 DR 14 for 4"-8", C900 DR 18 for 12", and C905 DR 18 for over 12", all blue in color as per City specifications; the pipe shall be laid on a minimum of class "B" embedment (see Detail Drawing No. 14-A). Water mains up to 12" shall be installed 2' back of curb; mains larger than 12" shall be installed at least 3' from the back of curb depending upon conditions. Detectable metallic tags ("Blue-Caution Buried Water Below" or approved equal) shall be installed to a maximum depth of 12" below finished grade (after compaction) above all PVC mains.

8. The Contractor shall install fire hydrants as the locations shown. A M.J. and flanged tee with a flanged end to M.J. gate valve is required so that the gate valve is anchored to the main.

9. Fire Hydrants shall be painted as follows:

- A. Tnemec Series 43-38H Diffused Aluminum, Silver for 6 inch mains
- B. Tnemec Series 2H Hi-Build Tnemec-Gloss, True Blue Safety for 8 inch mains.
- C. Tnemec Series 2H Hi-Build Tnemec-Gloss, Yellow Safety for 12 inch or larger water mains.

All hydrants shall be painted with two coats of Tnemec Series 43-38H Diffused Aluminum, Silver paint. When a color code other than Tnemec Series 43-38H Diffused Aluminum, Silver is required the top bonnet, including the lip and all nozzle caps shall be painted the appropriate color.

10. All bolts and nuts used with mechanical joint fitting shall be "Cor-Ten" steel or approved equal.

11. The installation of a blue stemsonite (or equal) model 88-SSA fire hydrant marker will be installed opposite fire hydrants just off center to the side of the street adjacent to the hydrant.

12. Polyethylene encasement - The Contractor shall furnish and install polyethylene wrap around the ductile iron pipe, related fittings and valves. This wrap shall be an 8 mil. thickness polytube. Seams and overlaps shall be wrapped and held in place by two (2) inch wide plastic backed adhesive tape, Polyken 900 or Scotchrap no. 50, or an approved equal, with approximate two (2) foot laps on the polytube. The wrap on the barrel of the pipe shall be loose enough to allow the film to shift with the soil. The wrap shall be installed without breaks, tears, or holes in the film. The cost of the polyethylene tube wrap and complete installation shall be included in the unit price bid for the furnishing and the installation of ductile iron pipe and related fittings and valves.

13. Valve boxes shall be furnished at the required length in order to be set to final grade on each gate valve. After the final clean up and alignment has been completed, the Contractor shall pour a reinforced concrete block 24"x 24" x 6' around all valve boxes so the finished grade is level with the finished parkway. All valve stack components shall be cast iron. Valve boxes over four (4) feet deep will require extensions. All valves shall be marked with a saw on the curb or pavement with "V". The "V" shall point to the location of the valve as follows: If the valve is in the paving, the "V" shall be marked upright; if the valve is outside the paving, the "V" shall be marked upside down.

14. The Contractor shall coordinate operation of all existing valves with the City. Contact the City Construction Inspector at the Construction Inspection Department at (972)-727-8999.

15. All water lines shall be pressure tested to 200 psi for a three-hour continuous period. Leakage rate shall not exceed 25 gallons per inch of nominal diameter per mile of pipe over a 24-hour period. Contractor shall flush and sterilize lines and prove lines to be free of fecal coliform organisms by obtaining samples for laboratory tests for contamination. The Contractor shall flush and sterilize until all samples prove free from contamination.

16. All residential water services shall be as follows:

- A. Water services shall be normally located side by side at lot lines, where possible. A water meter box as approved by the City, with lock lid shall be installed two (2) feet back of curb line.
- B. The water service shall be a minimum of 1" diameter continuous type "K" soft copper pipe. Sand embedment shall be used around the pipe and corporation stop. Service saddles shall be brass body with double bronze flattened straps (no banded) - Ford, Mueller, or City approved equal.
- C. Contractor shall tie a 1" wide piece of blue plastic flagging to the water service meter setter and shall leave a minimum of 36" of flagging exposed after backfill after curb and paving is completed.
- D. The utility contractor shall install the water services to a point two (2) feet back of the curb line at a depth of 12 inches. The meter box shall be furnished and installed by the Contractor after the paving Contractor has completed the final grading in back of the curb. Each service location will be marked on the curb with a single vertical saw mark by the utility Contractor and tied to property corners on the "As-Recorded" plans.
- E. Score pavement at valves and angle stop / service line locations.
- F. Provide blue raised pavement markings at fire hydrant locations.

17. For non-residential water services, the meter box shall be furnished and installed by the Contractor after the paving Contractor has completed the final grading in the back of the curb. Meter boxes/vaults shall be located outside of paving. Each service location will be marked on the curb or pavement with a single vertical saw mark by the utility Contractor and tied to property corners on the "As Recorded" plans.

18. Density testing requirements: Frequency of tests shall not be less than one every 300 linear feet of main pipe per 2.0' of lift until final grade, starting at 2.0' above top of pipe. Water services are to be tested at a rate of 1 for every 6 services that cross the proposed right-of-way or every 300 ft of water service installed. Every other main, stubout, and fire hydrant lead that cross the existing or proposed street, alley, or fire lane subgrade shall also receive at least one set of density tests. All ditches shall be mechanically tamped and compacted to 95% standard proctor density at 0-4% above optimum moisture. Water jetting is not permitted.

19. The Contractor shall be responsible for providing "As-Recorded" plans to the engineer of record showing the location of water services and valves by distance to lot lines. This information shall be placed and marked "As-Recorded" by the engineer of record. Copies of these "As-Recorded" plans shall be furnished to the City as required.

20. The Contractor shall furnish maintenance bond of 10% (ten percent) of the total contract price to the City to run two years from the date of acceptance of the system by the City

PAVING SYSTEM
General Notes

1. Absolutely not earthwork, lime application, or other preparation of the subgrade for paving of streets, alleys, or fire lanes shall be initiated without authorization from the City Construction Engineer. Once all testing of subgrade has been completed and verified to meet the City's specifications, the City Construction Engineer will issue a letter to the project owner or superintendent that will authorize the initiation of all subgrade work in preparation for paving.

2. All street, alley, and fire lane right-of-way or easement width shall be excavated full width in accordance with the street and sidewalk section to be constructed.

3. The subgrade for all streets, alleys, and fire lanes shall be stabilized with hydrated lime material to a distance 12 inches beyond the back of curb or edge of paving as applicable. The amount of lime material shall be that amount which will reduce the plasticity index (PI) below fifteen (15) as verified by testing by an approved laboratory; the City will add one (1) percent to the laboratory results for field variation. Laboratory testing (lime series) shall generally be conducted when all utilities are complete and the roadway subgrade is complete. Lime shall be applied by percentage dry unit weight of soil treated to a minimum in place compacted thickness of six (6) inches. At the discretion of the City, additional testing for the presence of sulfates in the pavement subgrade may be required at the Contractor's expense. If the sulfates are present at an unacceptable concentration, the City may require a recommendation for further treatment of the soil from the approved laboratory.

4. Subgrade testing requirements: All fill and shall be compacted to no less than 95% of standard proctor density at 0 - 4% above optimum moisture content. Frequency of tests shall not exceed every 300 linear feet of fill. Frequency of testing shall not exceed every 300 linear feet per 2.0' of lift until final grade starting at 2.0' above natural/sound grade to top of subgrade. All street alley, and fire lane subgrade shall be compacted to no less than 95% of standard proctor density at 0 - 4% above optimum moisture content. Frequency of tests shall not exceed every 300 linear feet of subgrade, alternating from left quarter point to center line to right quarter point. Verification of lime depth, testing for subgrade gradations/pulverizations, and plasticity indices of the soil shall also be conducted; the frequency of this testing shall be as previously mentioned. All testing of materials required for the construction of any street, alley or fire lane shall be performed by an approved agency for testing materials. The nomination of the testing laboratory and the payment of such testing services shall be made by the Contractor. The engineer shall approve the laboratory nominated to do the testing of materials. It shall be the Contractor's responsibility to show by standard testing procedures that the work constructed does meet the requirements of the City's specifications.

5. Minimum design requirements: All street, alley and fire lane paving shall be designed to have a minimum compressive strength of 3500 psi at twenty-eight (28) days with a minimum of five (5) sacks of cement as verified by testing in an approved laboratory. Two batch designs shall be submitted to the City Construction Engineer for approval: one for machine work and one for hand work. All batch designs must be signed by the testing laboratory and include all documentation, such as results of field trial testing. A fly ash batch design may be submitted for approval on a specific job basis; fly ash up to twenty (20%) by weight of cement replacement may be used in machine pours. If applicable, all batch designs shall specify an appropriate sulfate resistant cement or equivalent. Slump shall be 1 - 3 inches for all machine work and 1 - 4 inches for all hand work. Streets (depending on classification) and fire lanes shall have a minimum thickness of six (6) inches; alleys shall have a minimum thickness of 8" -5'-8". Upon completion of construction, all streets and fire lanes shall be cored for depth (2" cores) at a spacing of 300 ft maximum alternating from left quarter point to center line to right quarter point. Alleys shall be cored for depth (2" cores) at a spacing of 300 ft maximum, along the center line. Pavement of a thickness less than the thickness shown on the plans by more than one-quarter (1/4) inch but less than three-quarter (3/4) inch will be considered deficient. The Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to be deficient in thickness as defined above. Pavement deficient in strength by more than three-quarter (3/4) inch shall be removed and replaced completely. The deficient area shall be cored immediately on ten (10) foot centers or one (1) per panel to be proved out. All streets, alleys, and fire lanes and will require cylinders to be made for strength tests by the approved laboratory. Samples for strength tests of each class of concrete placed each day shall be taken by an approved laboratory not less than once a day, nor less than once for each 100-150 cu yd of concrete. Four (4) cylinders shall be made; one shall be broken at 7 day, two (2) shall be broken at twenty-eight (28) days, and one shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days is required for each strength test beyond twenty-eight (28) days is unacceptable. If the twenty-eight (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately on ten foot centers or one per panel to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to be deficient in strength. For any areas deficient in strength by more than 500 psi but more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to be deficient in strength. Pavement deficient in strength by more than 1000 psi shall be removed and replaced completely. No more than three (3) - four (4) inch cores shall be extracted per panel without prior City approval. A rebar detector shall be used to ensure that the cored areas are clear of any rebar. All coring and additional laboratory testing shall be at the expense of the Contractor. The width to be considered for any deficiencies shall be the full width of the pavement.

6. Any section of all existing public or private streets, alleys or firelanes shall be replaced within 72 hours of removal.

7. The Contractor shall furnish a maintenance bond of 10% (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

8. Contractor to provide liquid asphalt sealer for concrete joints.

UTILITY CROSSINGS
General Notes

1. Tunneling and boring under city streets shall be accomplished by means of jacking, boring, or tunneling equipment which is subject to the City approval prior to start of construction.

2. The voids outside of the carrier pipe or casing pipe shall be backfilled by hydraulically placed material so that there are no open voids over the roof of the tunnel or bore. This shall be done without damage to the roadway structure.

3. All bore pits, trenches, and inspection holes shall be backfilled within 48 hours of the installation of utility lines. The method of compaction shall be such that a soil density equal to that existing prior to the start of construction will be required as verified by any approved testing laboratory. Any excess or surplus material resulting due to displacement of utility lines and conduits shall be disposed of in an acceptable manner to the City.

4. The street sections that are shown as typical sections shall apply to any alleys, driveways, roadways, etc. that will be within a City right-of-way of easement.

5. The Contractor shall be required to install an necessary warning and safety devices that would protect the safety and health of the public until the work has been finished and accepted by the City.

6. The use of a casing pipe will be based upon specific project location and soil conditions. In general, the minimum casing thickness is 0.25 inch and the material shall be steel. Where more than one section is required, the casing ends shall be welded together. Raci-spacers, or City approved equal shall be used to support the carrier pipe. The use of wood skids is no long permitted.

STORM SEWER SYSTEM
General Notes

1. All storm sewer pipe or box culvert in right-of-way or fire lanes shall be reinforced concrete pipe as per City Specifications and shall be laid on a minimum of a compacted crushed stone or pea gravel cushion, four inches thick below the bottom of the pipe shall unless otherwise approved by the City. The initial backfill of select material or fine granular shall be required to a minimum of the spring line of the pipe unless otherwise approved by the City.

2. Density testing requirements: Frequency of tests shall not be less than one every 300 linear feet of pipe per 2.0' of lift until final grade, starting at 2.0' above top of pipe. Every other lateral stubout that crosses the existing or proposed street, alley, or fire lane subgrade inlet and junction box will receive a density test every lift. All ditches shall be mechanically tamped and compacted to 95% of standard proctor density at 0 - 4% above optimum moisture. Water jetting is not permitted.

3. The joints shall be constructed and jointed together in such a manner that no spill through of backfill will occur. This includes the lift holes used in certain pipe or box sizes. Approved joint materials are concrete mortar; cold applied, plastic asphalt joint compound; rubber gaskets; and cold applied, preformed plastic gaskets.

4. Storm drainage inlets shall be as indicated on the approved construction plans. For secondary and major street intersections, a recessed type inlet will be required. For industrial and residential streets, a curb line inlet will be required unless otherwise approved. A round manhole cover with locking device shall be placed on all inlet tops. The top shall be placed near the outlet pipe. All inlets shall have a shall have a compressive strength of 4000 psi at 28 days.

5. All precast box culverts or other special structures in any right-of-way or fire lane easement will require a certification from the manufacturer that the product meets the design dimensions and twenty-eight (28) day compressive strength. All cast-in-place box culverts or other special structures in and right-of-way and fire lane or utility easements will require cylinders to be made for strength tests by the approved laboratory. Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 100-150 cu yd of concrete, nor less than once for each 5000 sq ft of surface area for slabs or walls. Four (4) cylinders shall be made; one shall be broken at 7 day, two (2) shall be broken at twenty-eight (28) days, and one shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days, is required for each strength test; any strength test beyond twenty-eight (28) days is unacceptable. If the twenty-eight (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to be deficient in strength. For any areas deficient by more than 500 psi but not more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to be deficient in strength. For any areas deficient in strength by more than 1000 psi, the structure shall be removed and reconstructed at the full expense of the Contractor. Prior to City acceptance of any penalty payments for any traffic bearing structure that does not meet 28 day design strength, the Design Engineer shall provide a sealed structural evaluation that assesses the performance adequacy of the deficient structure as constructed under the design service loads. All coring and additional laboratory testing shall be at the expense of the Contractor.

6. The Contractor shall furnish a maintenance bond of 10% (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT

A. North Texas Municipal Water District's (NTMWD's) 42-inch water pipeline and future 72" pipeline are located within the limits of construction.

B. Operation of heavy earthmoving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossing shall be designated and verified to provide a minimum of five-feet of cover.

C. To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement, without authorization from the NTMWD. If the contractor desires to use NTMWD's easement for stockpile of materials, contact NTMWD's Engineering Department at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.

D. A minimum of three feet separation between the bottom of the pavement and top of NTMWD pipeline is required. In addition, if separation between the bottom of the pavement and the top of the pipeline is less than 3.5 feet, a thickened pavement section is required.

E. Crossing of the NTMWD easement with other utilities, such as TV cable, phone, gas and electric, shall be coordinated with the NTMWD to avoid damage to the NTMWD facilities.


F. Outdoor lighting, landscaping, screening walls or other facilities shall not be installed in NTMWD easements without written approval of the NTMWD.

G. Unless otherwise shown or required a minimum of one-foot clearance shall be provided for utilities crossing the NTMWD pipelines.

H. 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.

BENCHMARK:

SQUARE CUT ON HEADWALL,
SOUTH OF 2170, 500 WEST
OF INGRAM ROAD - EL. 618.72

| NO. | REVISIONS | BY | DATE |
|--|-------------------|------------|-----------|
|  CORWIN ENGINEERING, INC. 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 | | | |
| DEVELOPMENT PLANS FOR CLAREMONT SPRINGS PHASE II LUCAS, TEXAS | | | |
| GENERAL NOTES | | | |
| DRAWN BY | DESIGNED BY | CHECKED BY | SHEET NO. |
| RBA | RBA | CEI | 17 OF 17 |
| JOB NUMBER | DATE | SCALE: NTS | |
| 0670 | NOVEMBER 26, 2007 | | |

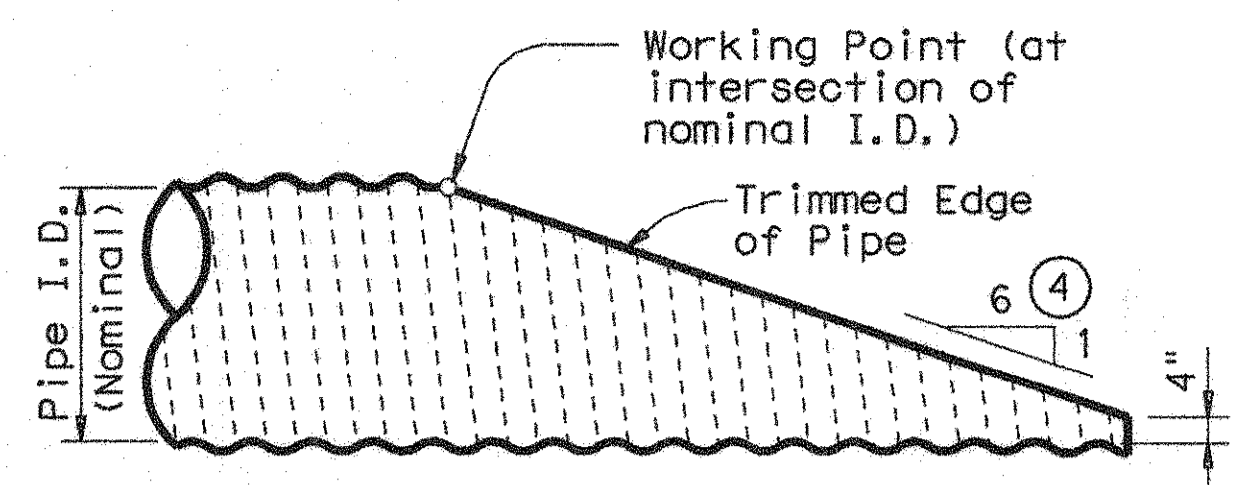
AS-BUILT FEBRUARY 2008
INFORMATION PROVIDED BY CONTRACTORS
(NOT FIELD VERIFIED)



The seal appearing on this document was authorized by
Brandon Davidson
P.E. 87682, on
February 6, 2008

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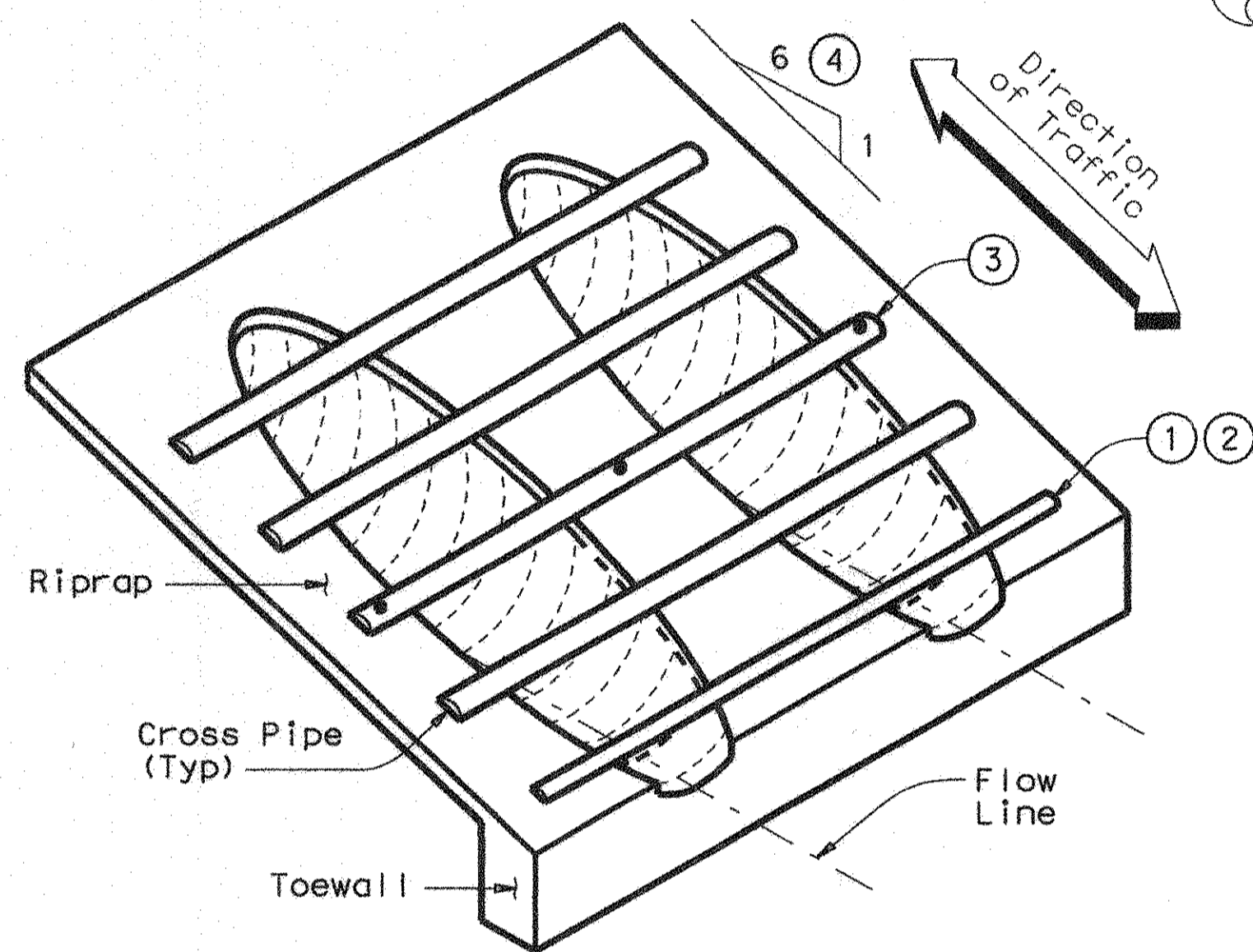
LEVELS DISPLAYED
ACC:



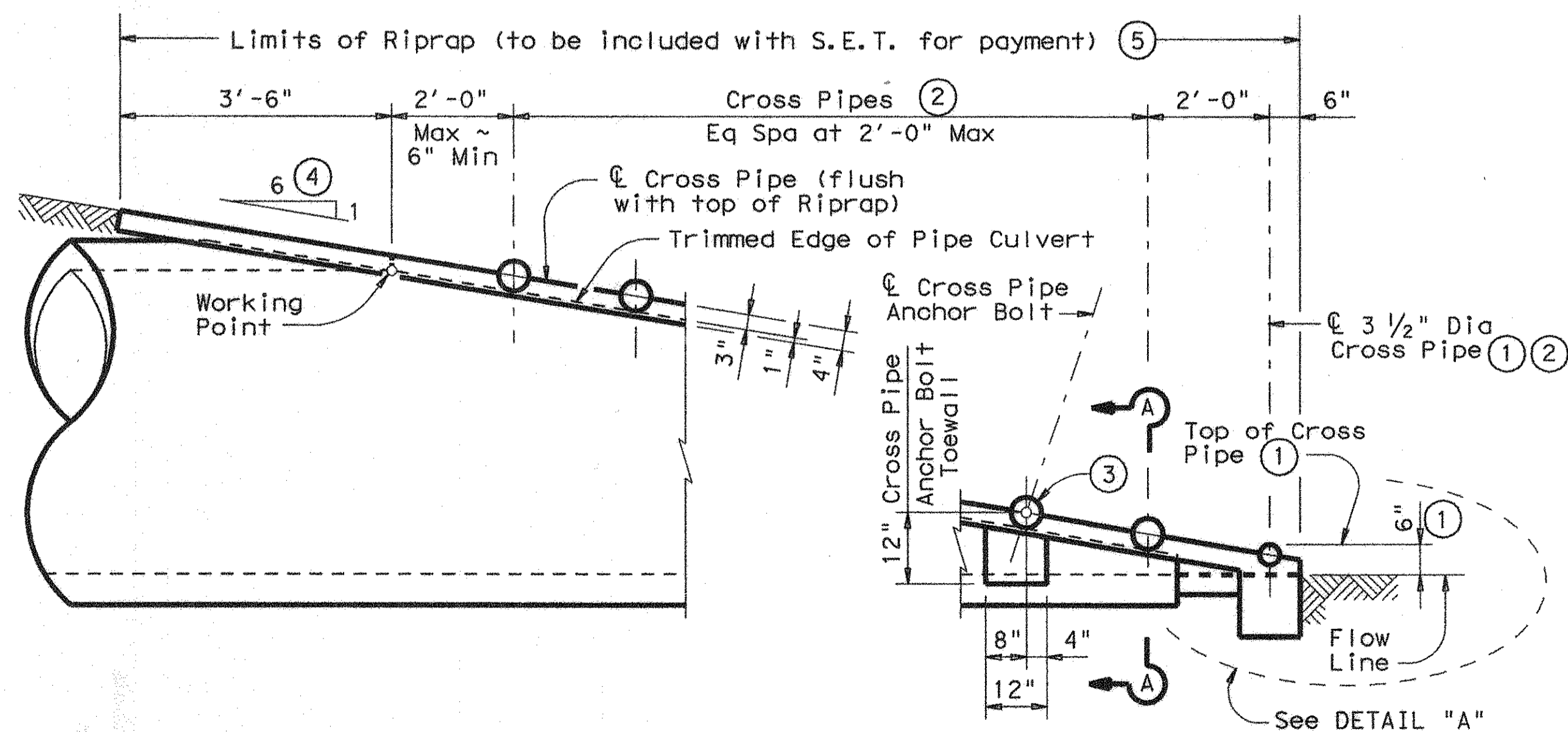
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

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

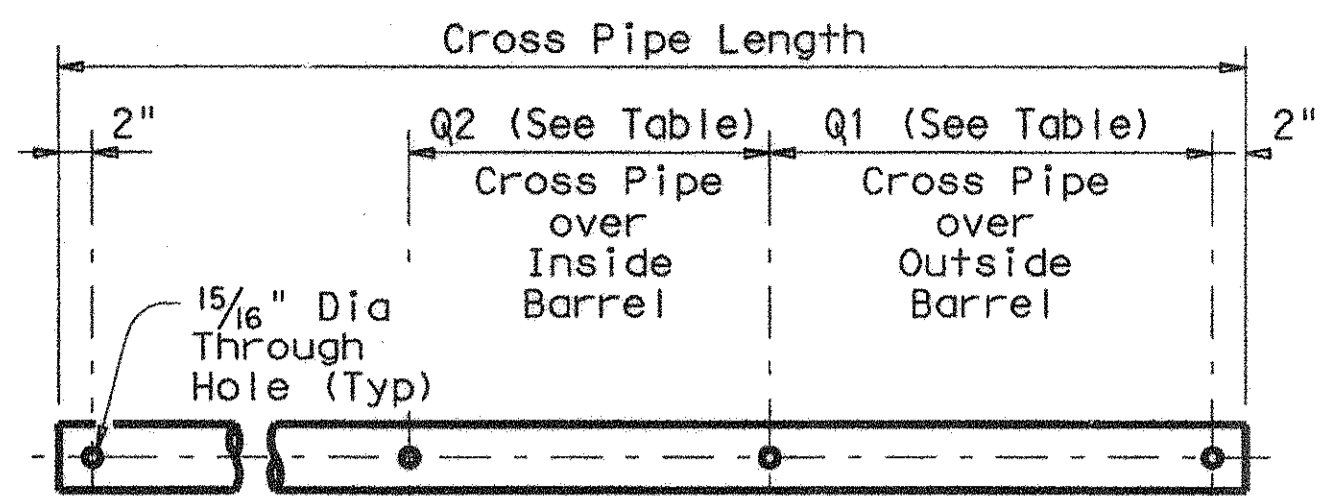


ISOMETRIC VIEW OF TYPICAL INSTALLATION

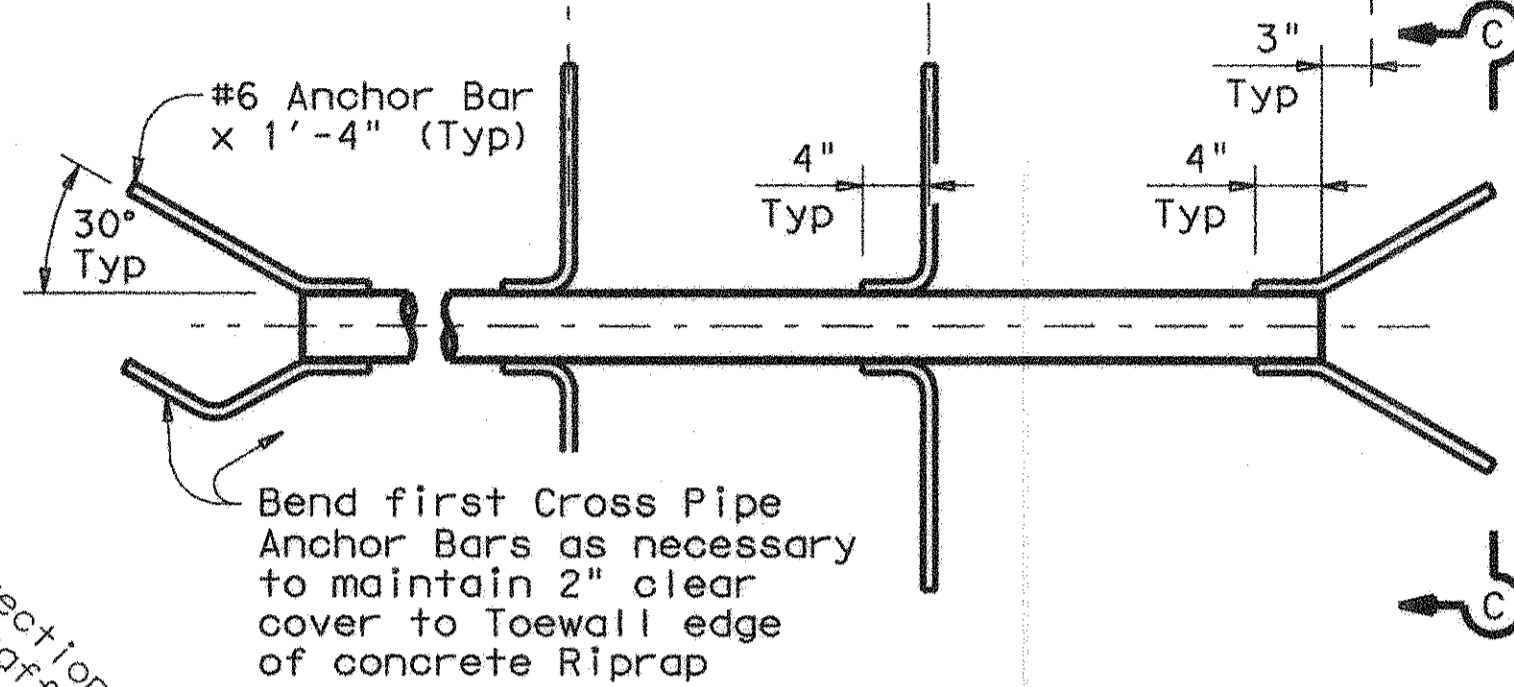


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

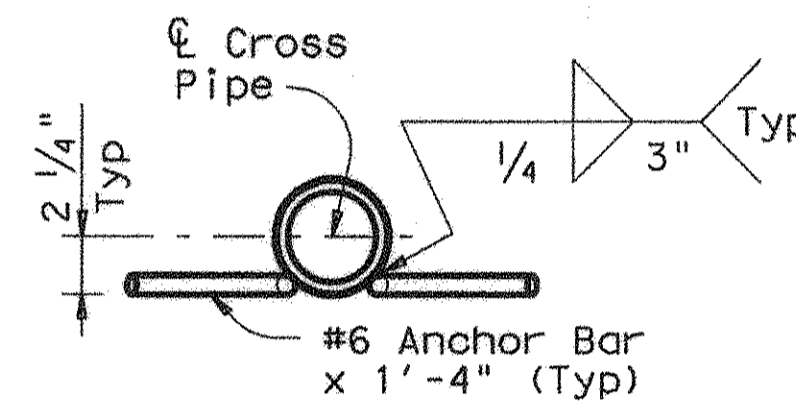
(Showing Concrete Pipe Culvert.)
(Details at Corrugated Metal Pipe Culvert are similar.)



PIPE W/ BOLTED ANCHOR



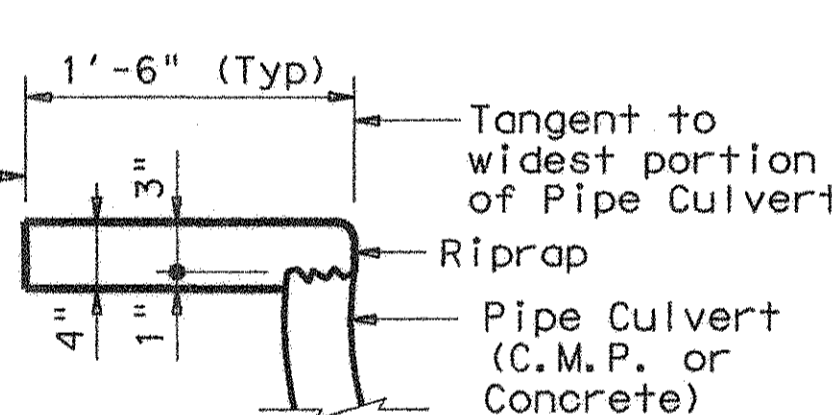
PIPE W/ ANCHOR BARS



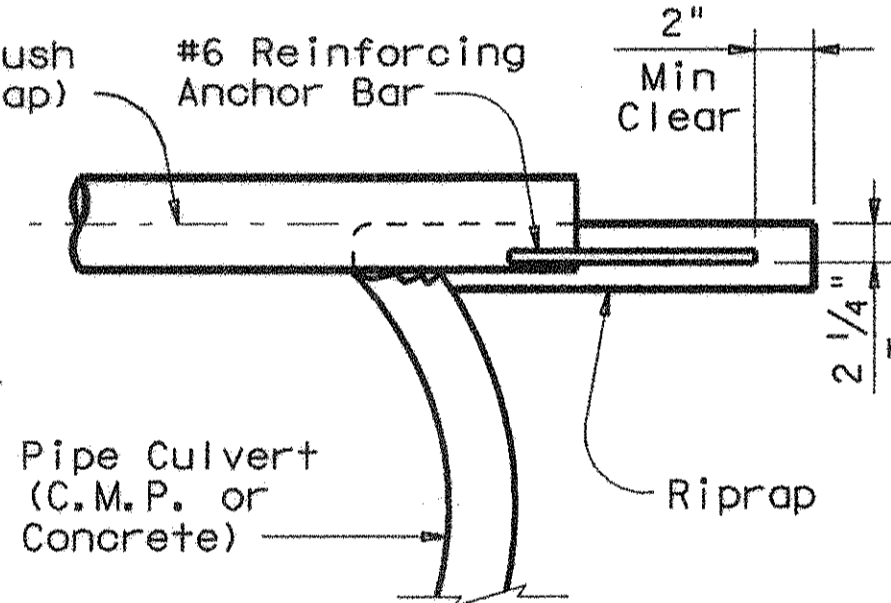
SECTION C-C

CROSS PIPE DETAILS

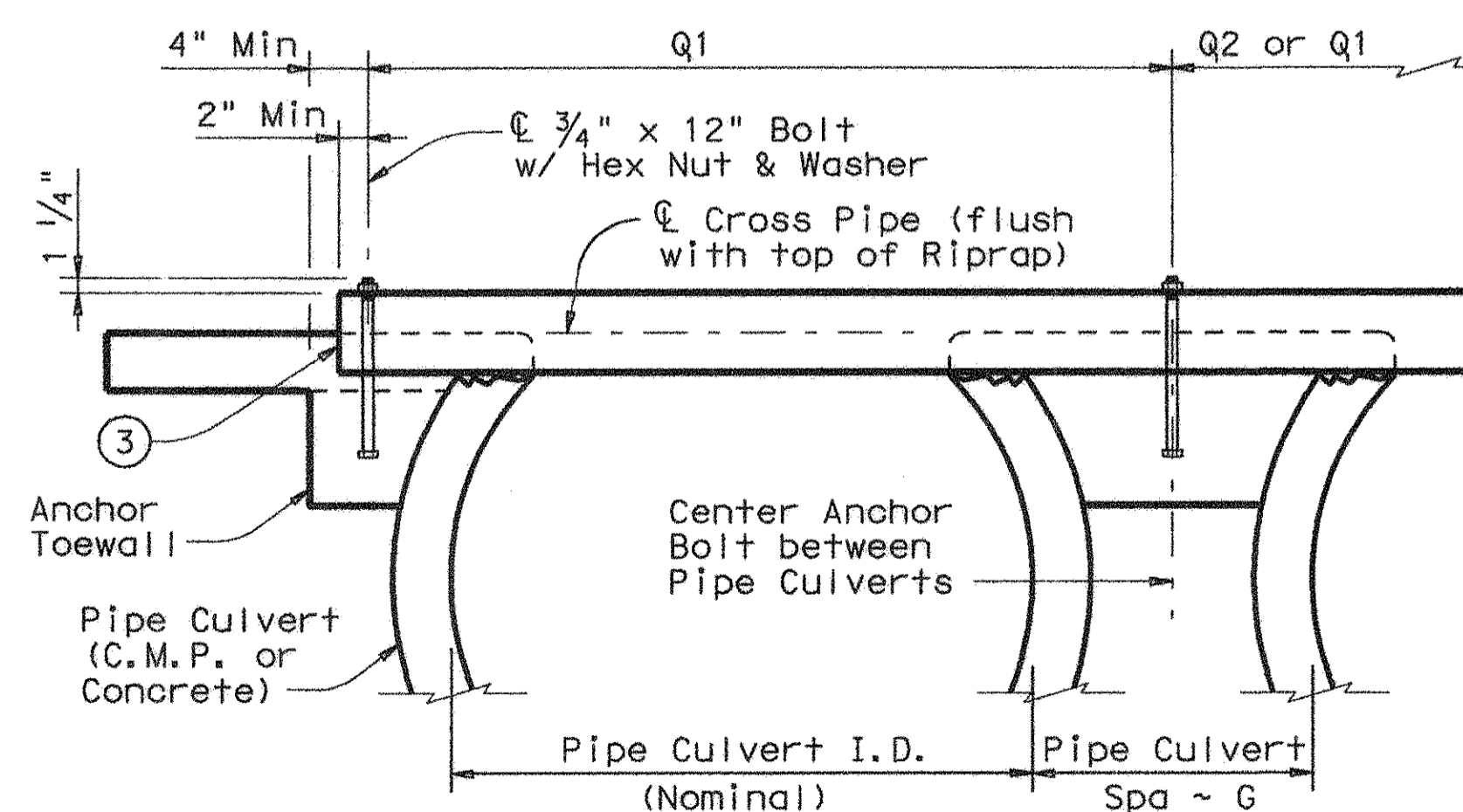
Limits of Riprap (to be included with S.E.T. for payment) ⑤



SHOWING TYPICAL PIPE CULVERT & RIPRAP

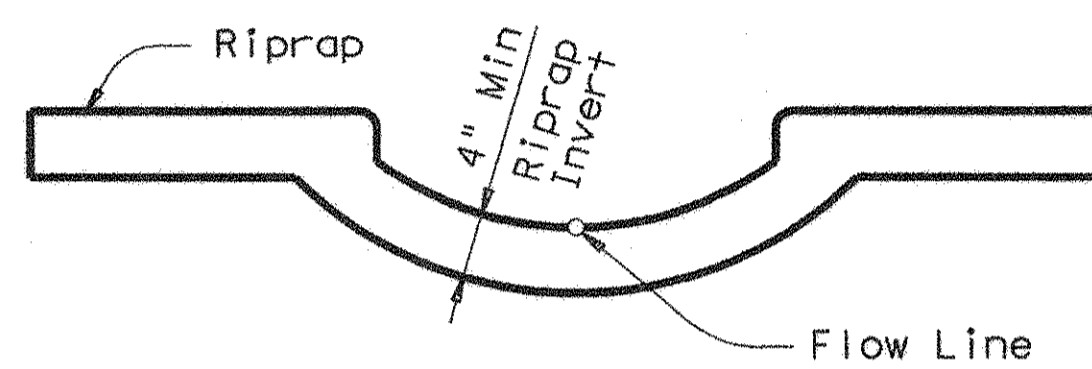


SHOWING CROSS PIPE WITH ANCHOR BAR



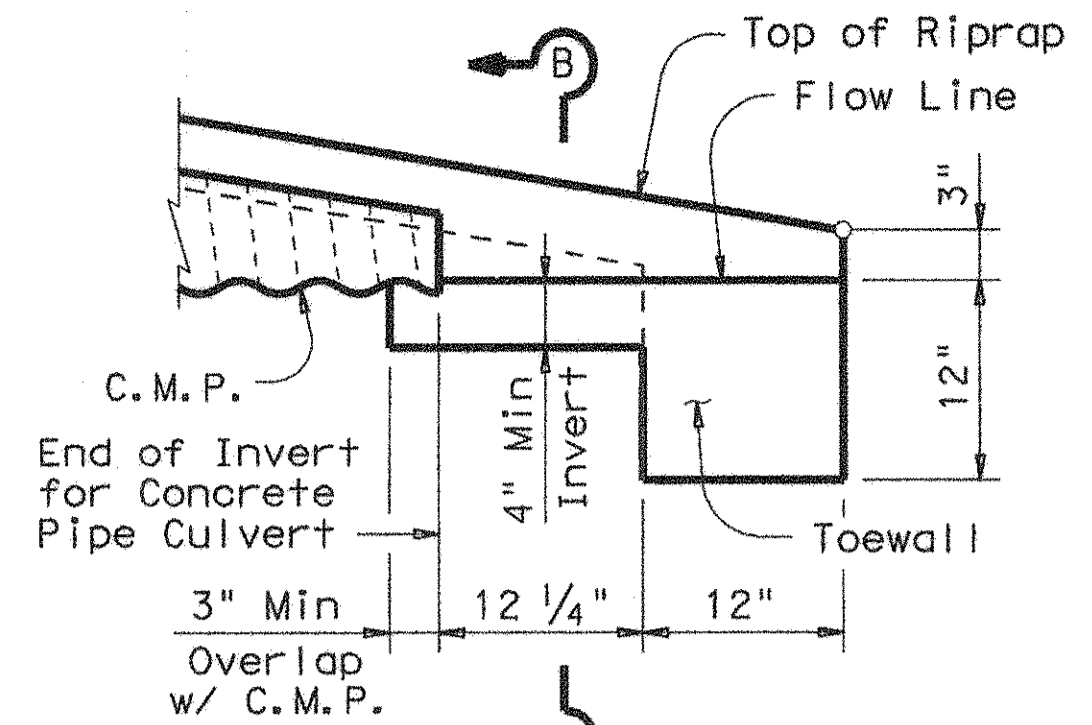
SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A



SECTION B-B

(Cross Pipes not shown for clarity.)



DETAIL "A"

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

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES ②

| 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" | | |
| 24" | 0.9 | 1'-7" | N/A | 3'-6" | 3'-7" | 3 or more Pipe Culverts | 3 1/2" Std (4.000" O.D.) |
| 27" | 1.0 | 1'-8" | N/A | 3'-10" | 3'-11" | | |
| 30" | 1.1 | 1'-10" | N/A | 4'-2" | 4'-4" | 2 or more Pipe Culverts | 3 1/2" Std (4.000" O.D.) |
| 33" | 1.2 | 1'-11" | 4'-2" | 4'-5" | 4'-8" | | |
| 36" | 1.3 | 2'-1" | 4'-5" | 4'-9" | 5'-1" | All Pipe Culverts | 4" Std (4.500" O.D.) |
| 42" | 1.5 | 2'-4" | 4'-11" | 5'-5" | 5'-10" | | |
| 48" | 1.7 | 2'-7" | 5'-5" | 6'-0" | 6'-7" | All Pipe Culverts | 5" Std (5.563" O.D.) |
| 54" | 2.0 | 3'-0" | 5'-11" | 6'-9" | 7'-6" | | |
| 60" | 2.2 | 3'-3" | 6'-5" | 7'-4" | 8'-3" | All Pipe Culverts | 5" Std (5.563" O.D.) |
| 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".

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

SAFETY END TREATMENT FOR 12" DIA TO 72" DIA PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE

SETP-PD

| | | | | |
|--------------------|----------|---------------------|---------|---------|
| FILE: setppdse.dgn | DW: GAF | CK: CAT | DW: JRP | CK: GAF |
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| REVISIONS | COUNTY | CONTROL | SECT | JOB |
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