

CIVIL CONSTRUCTION PLANS FOR PAVING, DRAINAGE & UTILITY IMPROVEMENTS FOR KONRAD RANCH ESTATES GOOSE REAL ESTATE

PLANS SUBMITTAL/REVIEW LOG

| | |
|------------------------|------------|
| DESIGN DEVELOPMENT SET | 06/27/2014 |
| 1st CITY SUBMITTAL | 07/18/2014 |
| 2nd CITY SUBMITTAL | 10/14/2014 |
| ISSUE RECORD DRAWINGS | 12/08/2014 |

GENERAL CONSTRUCTION NOTES:

- CONTRACTOR SHALL CONTACT MR. STANTON FOERSTER, DIRECTOR OF PUBLIC WORKS, CITY OF LUCAS TO SET UP A PRE-CONSTRUCTION MEETING PRIOR TO START OF CONSTRUCTION.
- THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS AND ARE APPROXIMATE AT BEST. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN. THE CONTRACTOR SHALL DETERMINE THE DEPTH AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO TRENCHING AND SHALL BE REQUIRED TO TAKE ANY MEASURES NECESSARY TO PROTECT ALL UTILITIES SHOWN AND/OR ANY OTHER UTILITIES NOT OF RECORD OR NOT SHOWN ON THE PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION.
- ANY CONTRACTOR/SUBCONTRACTOR PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE HIMSELF WITH THE SITE AND SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM HIS OPERATIONS. EXISTING IMPROVEMENTS SHALL INCLUDE, BUT NOT BE LIMITED TO, ANY UTILITY OR FUEL LINE, BERMS, DITCHES, FENCES, PLANTS, TREES, EX. PAVEMENT, OVERHEAD POWER AND FRANCHISE UTILITY LINES, UNDERGROUND POWER AND FRANCHISE UTILITY LINES, ETC., ANY DAMAGE OR REMOVAL TO EXISTING IMPROVEMENTS SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR OR HIS DESIGNEE AT HIS EXPENSE AND SHALL BE APPROVED BY THE CITY OF LUCAS AND ALL GOVERNING AUTHORITIES.
- ALL CONSTRUCTION, TESTING, AND CONSTRUCTION MATERIALS SHALL MEET OR EXCEED ALL STANDARDS & SPECIFICATIONS OF THE CITY OF LUCAS.

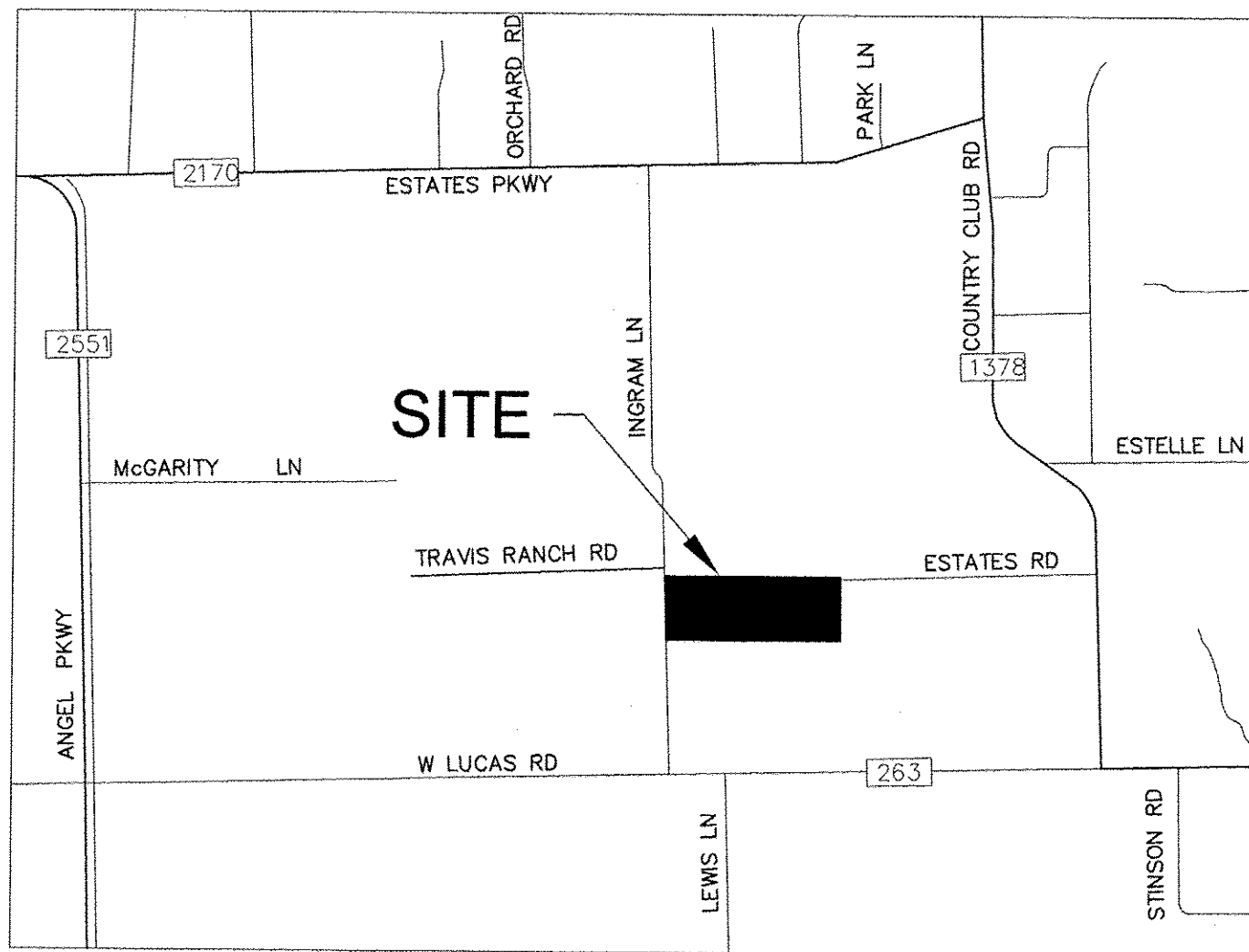
OWNER/DEVELOPER

GOOSE REAL ESTATE
1200 KEMPTON PARK
FAIRVIEW, TEXAS 75069
PH 614.306.4246
CONTACT: JAMES ROBERTS

ENGINEER

Kimley»Horn

TEXAS REGISTERED ENGINEERING FIRM F-928
12750 MERIT DRIVE
SUITE 1000
DALLAS, TEXAS 75251
PH 972.770.1300
CONTACT: JOSEPH E. HELMBERGER, P.E.



VICINITY MAP
N.T.S.

| INDEX OF SHEETS | | |
|-----------------|------------------------------|-----------|
| SHEET NO. | DESCRIPTION | REVISIONS |
| C-001 | COVER SHEET | |
| --- | FINAL PLAT | |
| C-002 | DESIGN SURVEY | |
| C-003 | GENERAL NOTES | |
| C-101 | UTILITY PLAN | |
| C-102 | PAVING PLAN | |
| C-103 | DRAINAGE PLAN | |
| C-104 | EROSION CONTROL PLAN | |
| C-105 | EROSION CONTROL DETAILS | |
| C-106 | TRAFFIC CONTROL PLAN (TXDOT) | |
| C-107 | WATER DETAIL SHEET - 1 | |
| C-108 | WATER DETAIL SHEET - 2 | |

DESIGN SURVEY AND BOUNDARY VERIFICATION PROVIDED BY THE OWNER UNDER SEPARATE CONTRACT WITH GLAS LAND SURVEYING, 2114 FM 1563, WOLFE CITY, TEXAS 75496, TBPLS FIRM NO. 1019397, PHONE 903-496-2084. (www.glaslandsurveying.com)

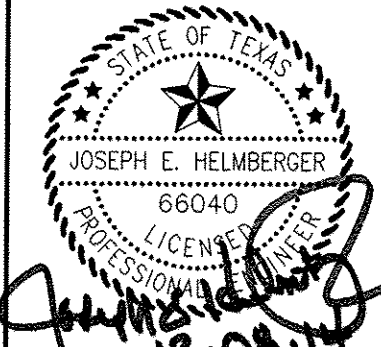
AS-BUILT UTILITIES, PAVING, AND DRAINAGE INFORMATION OBTAINED FROM RECORD DRAWINGS ON FILE WITH THE CITY OF LUCAS.

"RECORD DRAWING"
THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

DATE: 12.08.14 BY: Joseph E. Helmsberger

Kimley»Horn

12750 MERIT DRIVE, SUITE 1000, DALLAS, TX 75251
PHONE: 972-770-1300 FAX: 972-239-3820
WWW.KIMLEY-HORN.COM TX F-928



| | | | | | | | | | | | |
|-------------|-----------|------|---------------|-------|----------|-------------|-----|----------|-----|------------|-----|
| KHA PROJECT | 064475200 | DATE | DECEMBER 2014 | SCALE | AS SHOWN | DESIGNED BY | JEH | DRAWN BY | BAG | CHECKED BY | JEH |
|-------------|-----------|------|---------------|-------|----------|-------------|-----|----------|-----|------------|-----|

KONRAD RANCH
ESTATES
FOR
GOOSE REAL ESTATE
LUCAS
TEXAS

SHEET NUMBER
C-001

REVISIONS

No.

DATE

BY



Curve Table

| CURVE | RADIUS | ARC LENGTH | CHORD LENGTH | CHORD BEARING | DELTA ANGLE |
|-------|--------|------------|--------------|---------------|-------------|
| C1 | 63.00' | 54.63' | 52.93' | S65°07'59"E | 49°40'47" |
| C2 | 73.00' | 355.93' | 94.47' | N00°01'37"E | 279°21'34" |
| C3 | 63.00' | 54.63' | 52.93' | S65°11'14"W | 49°40'47" |

| LINE | BEARING | DISTANCE |
|------|-------------|----------|
| L1 | S89°49'38"W | 24.00' |
| L2 | S00°13'22"E | 80.00' |
| L3 | N89°49'38"E | 24.00' |

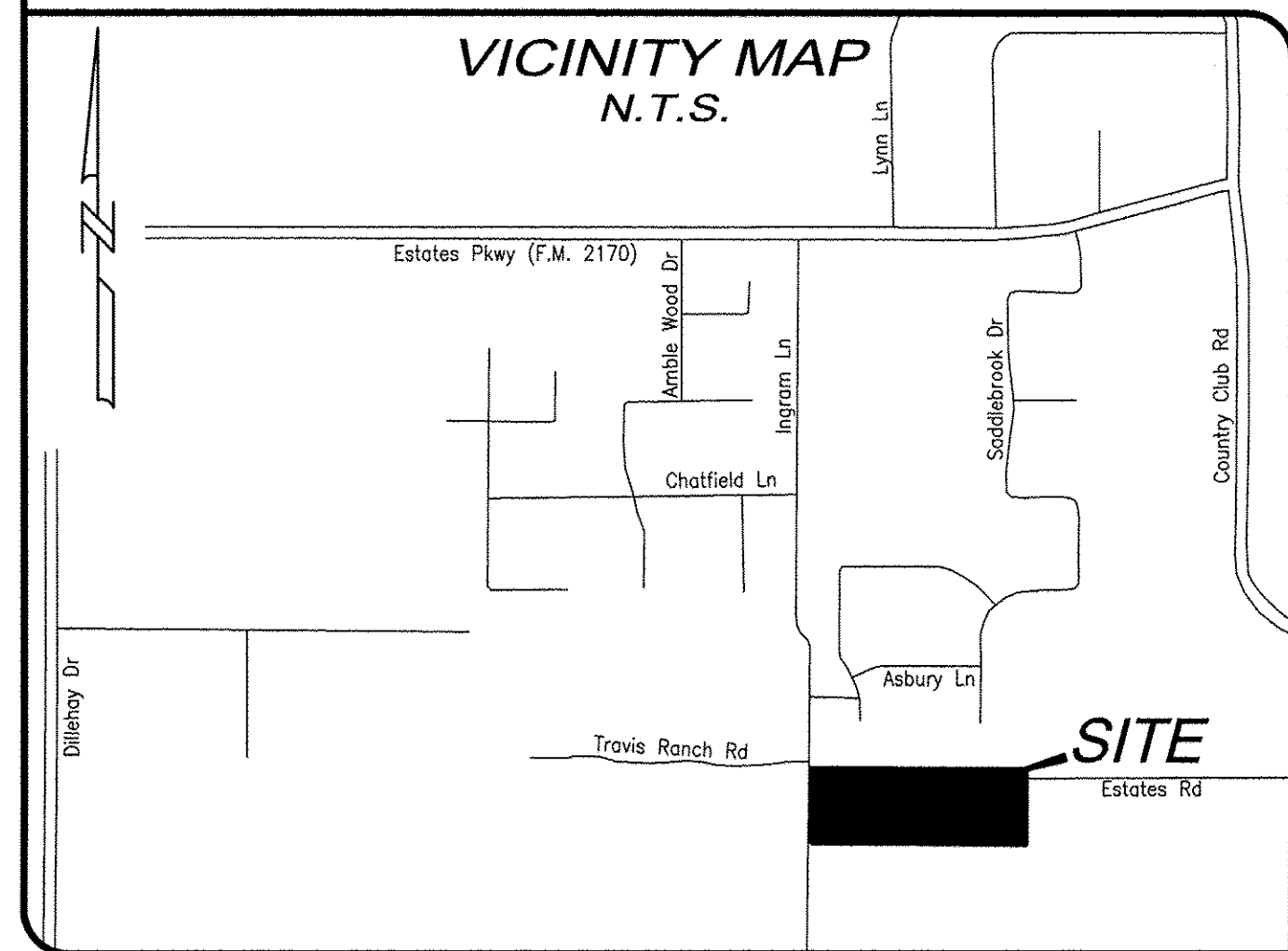
NOTES

1) This plat has been completed without the benefit of a Title Commitment. Subject property is affected by any and/or all easements of record. Surveyor did not abstract or research records for easements.

2) Source bearing per Saddlebrook Estates, Phase II, an addition to the City of Lucas as recorded in Volume Q, Page 233 of the Collin County Map Records.

3) No part of subject property lies within a Special Flood Hazard Area inundated by 100-year flood per Flood Insurance Rate Map Number 48085C0405 J of F.E.M.A. Flood Insurance Rate Maps for Collin County, Texas and Incorporated Areas dated June 2, 2009 (Zone X). This flood statement does not imply that the property and/or structures will be free from flooding or flood damage. On occasion, greater floods can and will occur and flood heights may be increased by man-made or natural causes. The above flood statement shall not create liability on the part of the surveyor.

4) Wrought Iron fences permitted within drainage easements.



STATE OF TEXAS §
COUNTY OF COLLIN §

OWNER'S CERTIFICATE

STATE OF TEXAS §
COUNTY OF COLLIN §

NOW THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That We, **Coose Real Estate, Inc.**, the Owner, do hereby bind themselves and their heirs, assignees and successors of title this plat designating the hereinabove described property as **Final Plat of Lots 1-8, Block A of Konrad Ranch Estates**, an addition to the City of Lucas, and do hereby dedicate to the public use of the City of Lucas, the easement and right of ingress and egress to and from and upon the easement and right of ingress and egress strips shown on this plat for the mutual use and accommodation of garbage collection agencies and all public utilities desiring to use or using same. Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs, or other improvements or growths that in any way endanger or obstruct the use of the easement and right of ingress and egress strips, and any public utility shall at all times have the right of ingress and egress to and from and upon the said easement strips for the purpose of constructing, reconstructing, inspecting, patrolling, without the necessity of a license or other permission and without liability, to certify that we own the sole and entire interest in the dedicated property and that no other interest is attached to this property unless otherwise indicated on the plat. The time of recording hereof and certification is included on this plat.

Furthermore, as the owner of the property described herein, and in consideration of establishing the subdivision described herein, we agree to the following:

- Every owner of fee simple title to every individual lot within the subdivision shall be a member of the homeowners' association.
- The homeowners' association shall have the authority to collect membership fees.
- As applicable as it pertains to condition shown herein, the homeowners' association shall be responsible for the maintenance of all common areas, screening walls, landscaped areas, private streets and alleys.
- The homeowners' association shall grant the City the right of access to any areas to abate any nuisances on such areas, and attach a lien upon each individual lot for the pro-rated costs of abatement.
- The homeowners' association shall indemnify and hold the City harmless from any and all costs, expenses, suits, demands, liabilities, damages, or otherwise, including attorney fees and costs of suit, in connection with the City's maintenance of common areas.
- The homeowners' association shall, where additional right-of-way has been dedicated for the purpose of providing landscaped areas, screening walls or other amenities, enter into a license agreement with the City and shall be responsible for the installation and maintenance of all landscape areas in the public rights-of-way.

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

James Roberts, _____
of Goose Real Estate, Inc.

OWNER'S DEDICATION AND ACKNOWLEDGEMENT

STATE OF TEXAS §
COUNTY OF COLLIN §

WHEREAS **Goose Real Estate, Inc.** is the owner of a tract of land situated in the State of Texas, County of Collin, and City of Lucas, being part of the W.G. McKinney Survey, Abstract No. 583 and being the resurvey of a called 17.480 acre tract of land as recorded under Document No. 20140714000722860 of the Collin County Land Records with said premises being more particularly described as follows:

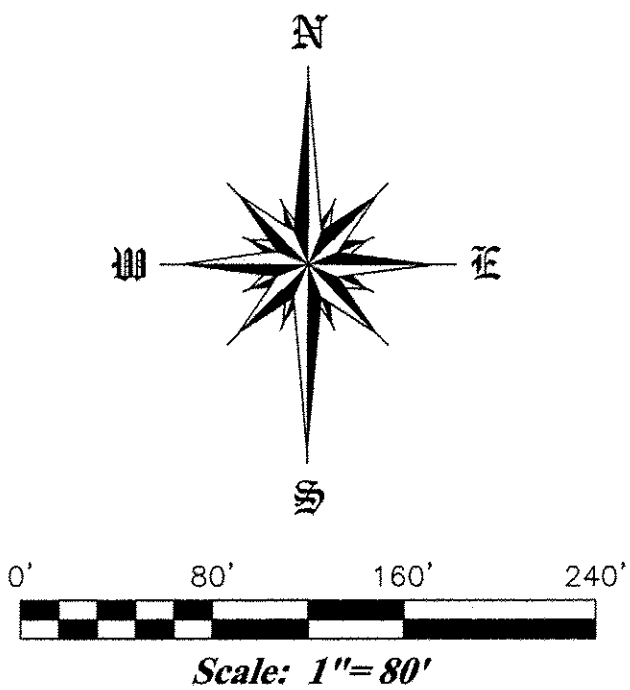
BEGINNING at a 1/2-inch iron rod found marking the northeast corner of said 17.480 acre tract, the northeast corner of said premises, the southeast corner of Saddlebrook Estates, Phase II, an addition to the City of Lucas as recorded in Volume Q, Page 233 of the Collin County Map Records, and being in the west line of Ranch Estates Subdivision, an addition to Collin County as recorded in Volume 653, Page 464 of the Collin County Map Records;

THENCE with the east line of said 17.480 acre tract, the east line of said premises, and the west line of said Ranch Estates Subdivision, South 00°13'22" East, 514.16 feet to a Glas capped iron rod set marking the southeast corner of said 17.480 acre tract, the southeast corner of said premises, and the northeast corner of Lot 2, Oak Park Addition, an addition to the City of Lucas as recorded in Volume L, Page 239 of the Collin County Map Records;

THENCE with the south line of said 17.480 acre tract, the south line of said premises, and the north line of said Lot 2, North 89°57'22" West, passing a ½-inch iron rod found at 738.97 feet and continuing for a total distance of 1,480.40 feet to a Glas capped iron rod set in the east edge of Ingram Road marking the southwest corner of said 17.480 acre tract, the southwest corner of said premises, and the northwest corner of said Lot 2;

THENCE with the east edge of Ingram Road, the west line of said 17.480 acre tract, and the west line of said premises, North 00°41'26" West, 512.85 feet to a Glas capped iron rod set marking the northwest corner of said 17.480 acre, the northwest corner of said premises, and being in the south line of the aforementioned Saddlebrook Estates, Phase II;

THENCE with the north line of said 17.480 acre tract, the north line of said premises, and the south line of said Saddlebrook Estates, Phase II, North 89°59'31" East, passing a ½-inch iron rod found at 344.60 feet and 1,131.13 feet and continuing for a total distance of 1,484.58 feet to the point of beginning and containing 17.475 acres of land.



Legend

| | |
|--------------|----------------------------|
| Glas Cpd.IRS | Glas Capped Iron Rod Set |
| C.G.M.R. | Collin County Map Records |
| C.C.L.R. | Collin County Land Records |
| IRF | Iron Rod Found |
| CM | Controlling Monument |
| <u>As</u> | Edge of Asphalt |

Owner:
Goose Real Estate, Inc.
1200 Kempton Park Ln
Fairview, Tx 75069
(614) 306-4246
Attn: James Roberts
roberts.james321@gmail.com

Surveyor:
Glas Land Surveying
2114 FM 1563
Wolfe City, Tx 75496
(903) 496-2084
Attn: John Glas
john@glaslandsurveying.com

Revised: __/__/2014
Drawings\2014\AC00195.dwg



Glas Land Surveying

2114 FM 1563, Wolfe City, Texas 75496
Office: (903) 496-2084
www.glaslandsurveying.com
TBPLS Firm No. 10193970

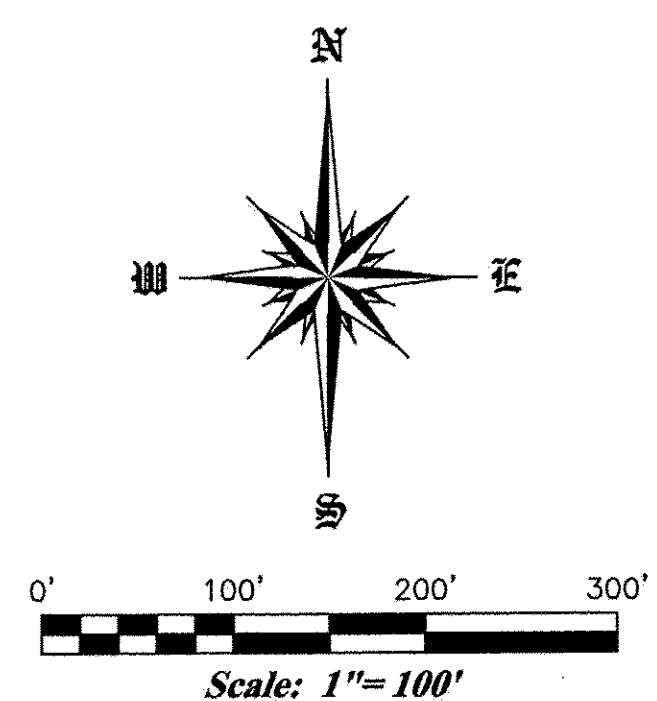
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CHECKED BY
KASDHANA
DATE
MAY 15 2014
TIME
10:00 AM
PROJECT
KONRAD RANCH ESTATES
SHEET
C-002
THIS DOCUMENT, INCLUDING THE CONCEPTS AND DESIGNS PRESENTED HEREIN, IS AN INSTRUMENT OF SERVICE, AND ITS PREPARATION AND DELIVERY IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF ANY PART OF THIS DOCUMENT FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF GLAS LAND SURVEYING, INC. IS STRICTLY PROHIBITED.



VICINITY MAP
N.T.S.

NOTES

- 1) Unable to get accurate ground shots in the dirt pile area. Topo in this area was generated using the surrounding elevation data.
- 2) No part of subject property lies within a Special Flood Hazard Area inundated by 100-year flood per Flood Insurance Rate Map Number 48085C0405 J of F.E.M.A. Flood Insurance Rate Maps for Collin County, Texas and Incorporated Areas dated June 2, 2009 (Zone X).
- 3) Source bearing per Saddlebrook Estates, Phase II, on addition to the City of Lucas as recorded in Volume Q, Page 233 of the Collin County Map Records.
- 4) This plot has been completed without the benefit of a title commitment. Subject property is affected by any or all easements of record. Surveyor did not abstract or research records for easements.



Benchmark

RM 135 per FEMA Panel No.
48085C0405 J (January 19, 1996)
Elev=571.20'
Square cut on current headwall at
southeast corner of the intersection of
FM 1378 & FM 3286 at Lucas

Legend

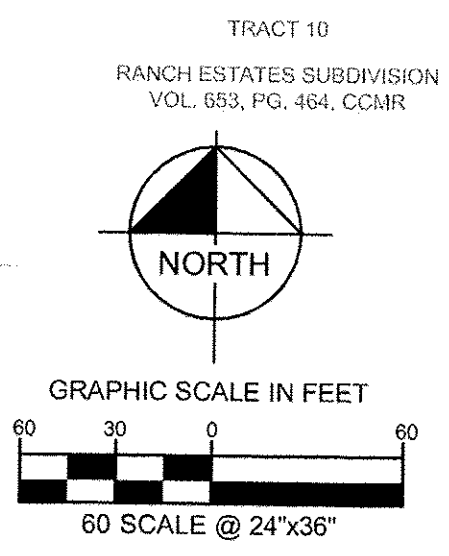
- | | |
|--------------|----------------------------|
| Class Ccd/RS | Class Capped Iron Rod Set |
| CCMR | Collin County Map Records |
| CCLLR | Collin County Land Records |
| IRF | Iron Rod Found |
| CM | Controlling Monument |
| WM | Water Meter |
| WV | Water Valve |
| FW | Fire Hydrant |
| PP | Power Pole |
| SSM | Sanitary Sewer Manhole |
| ATTR | AT&T Telephone Riser |
| cm mkr | Cable Marker |
| conc | Concrete |
| — | Overhead Lines |
| — | Edge of Asphalt |
| — | Pipe Fence |
| — | Barbed-Wire Fence |
| — | Iron Fence |
| — | Guy |

Design Survey
Konrad Ranch Estates
W.G. McKinney Survey, Abstract No. 583
City of Lucas, Collin County, Texas
June 17, 2014

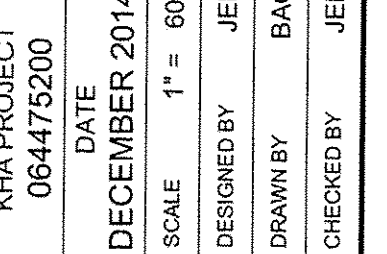
Drawings\2014\AC00128.dwg

Glas Land Surveying
2114 FM 1563, Wolfe City, Texas 75496
Office: (903) 496-2084
www.glaslandsurveying.com
TBPLS Firm No. 10193970

C-002



Kimley»»Horn
12750 MERIT DRIVE, SUITE 1000, DALLAS, TX 75251
PHONE: 972-770-1500 FAX: 972-238-3820
WWW.KIMLEY-HORN.COM TX F-9281



KONRAD RANCH
ESTATES
FOR
GOOSE REAL ESTATE
LUCAS

LEAS

GENERAL NOTES:

1. SEWAGE DISPOSAL SHALL BE PRIVATELY OWNED/ORGANIZED ON-SITE SEWAGE FACILITIES AND SHALL BE OF THE AEROBIC TYPE. NO TRADITIONAL SEPTIC SYSTEMS WILL BE ALLOWED.
2. EACH INDIVIDUAL LOT OWNER SHALL OBTAIN AN ON-SITE SEWAGE FACILITY LICENSE FROM COLLIN COUNTY DEVELOPMENT SERVICES.
3. ALL PROPOSED ON-SITE SEWAGE FACILITIES SHALL BE IN ACCORDANCE WITH THE RULES OF COLLIN COUNTY FOR ON-SITE SEWAGE FACILITIES.
4. WATER SUPPLY BY THE CITY OF LUCAS.
5. ALL PAVING , DRAINAGE, AND WATER SYSTEM IMPROVEMENTS TO BE BUILT TO CITY OF LUCAS STANDARDS.
6. PAVING SECTION AS SHOWN ON THIS PLAN PROPOSED.
7. EASEMENT STATEMENT:
 - A) DRAINAGE EASEMENTS SHALL BE USED FOR OVERLAND FLOW OF STORM WATER.
 - B) UTILITY EASEMENTS SHALL BE USED FOR UTILITIES AND OVERLAND FLOW OF STORM WATER WHERE CHANNEL DEPTH IS NOT SUFFICIENT IN TYPICAL SECTION.

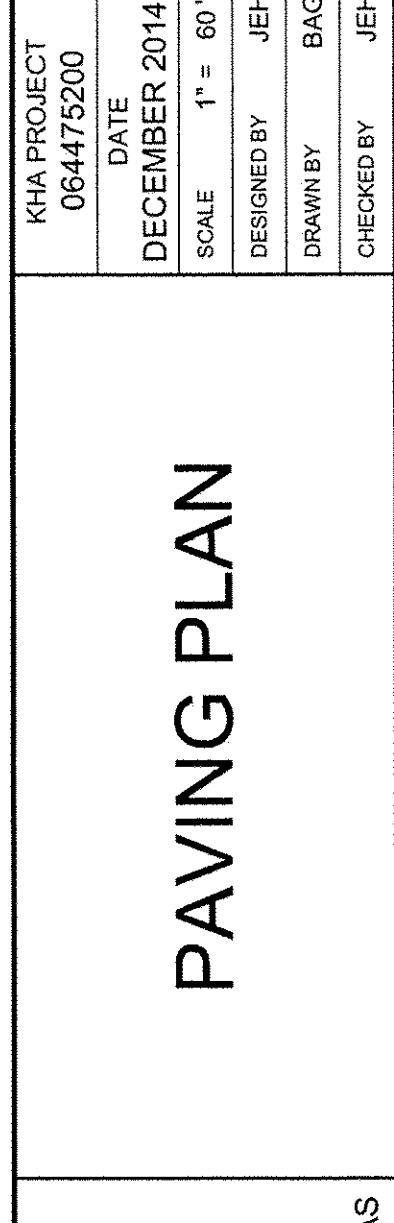
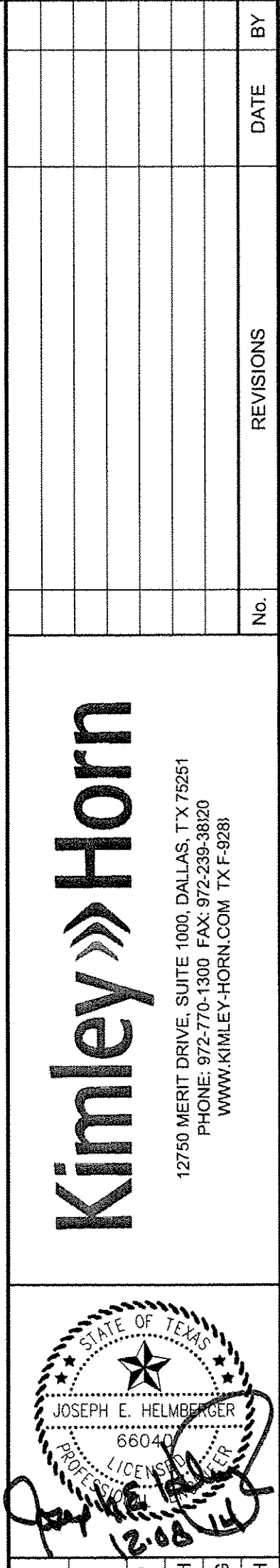
BENCHMARK

RM 135 PER FEMA PANEL NO. 48085C0455 G
(JANUARY 19, 1996)
ELEV.=571.20'

SQUARE CUT ON CULVERT HEADWALL AT
SOUTHEAST CORNER OF THE INTERSECTION
OF FM 1378 & FM 3286 AT LUCAS

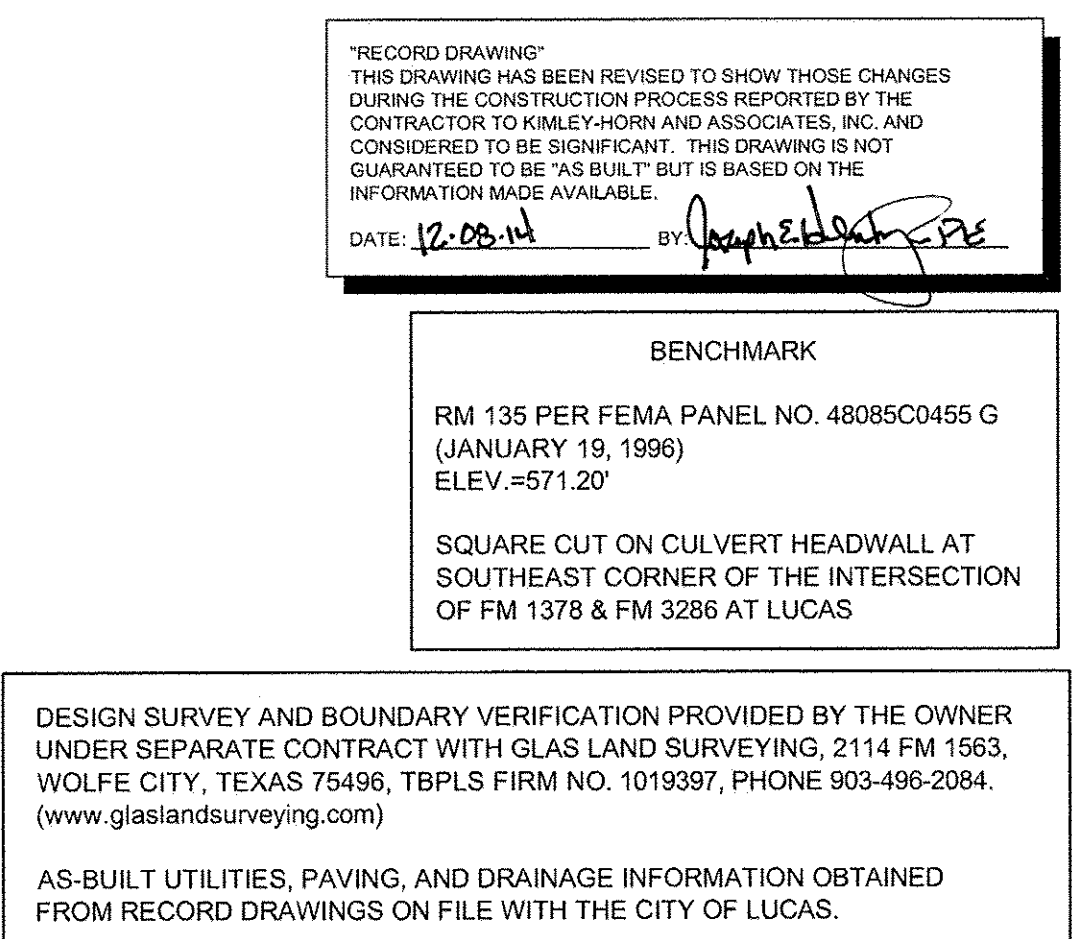
DESIGN SURVEY AND BOUNDARY VERIFICATION PROVIDED BY THE OWNER UNDER SEPARATE CONTRACT WITH GLAS LAND SURVEYING, 2114 FM 1563, WOLFE CITY, TEXAS 75496, TBPLS FIRM NO. 1019397, PHONE 903-496-2084.
(www.glaslandsurveying.com)

AS-BUILT UTILITIES, PAVING, AND DRAINAGE INFORMATION OBTAINED FROM RECORD DRAWINGS ON FILE WITH THE CITY OF LUGAS.

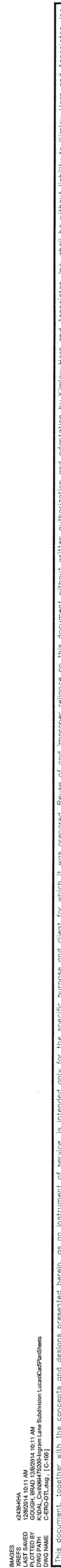
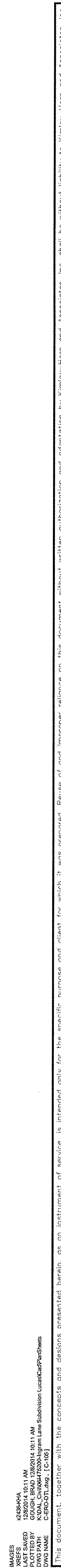
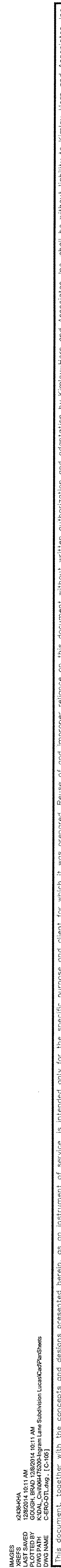


KONRAD RANCH
ESTATES
FOR
GOOSE REAL ESTATE
LUCAS TEXAS

SHEET NUMBER
C-102



x2328-PCA : xSite : xUtl : xDetailAa-Section : xTopo : xBenchmark : xNote-Design-Survey : xB only : xAdat : xGrid
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 PLOTTED BY
 KUDAL, CIVIL/6427/5006-Ingram Lane Subdivision Lucas/Clerks/Sheets



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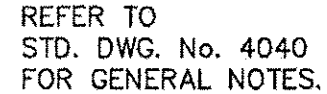
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| KOA | 1206XMAH-1206XMAH-1011 AM |
| DVO BTRY | 1206XMAH-1206XMAH-1011 AM |
| SUBDIVISION | Lawrenceville, GA |
| DWG NAME | CEROT-Dwg_ [C-16] |

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| IMAGES | XREFS | LAST SAVED | PLOTTED BY | DWG PATH | DWG NAME |
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| | 502.4 | |
| DATE | STANDARD DRAWING NO. | |
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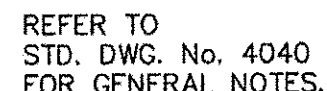
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| I.D. (I.D.) | EARTH | | | | | | ROCK | | | | I.D. (I.D.) | EARTH | | | | | | ROCK | | | |
| | G (F.T.) | TH (TUNST) | A (F.T.) | B (F.T.) | VC (V.C.) | Y (F.T.) | A (F.T.) | B (F.T.) | VC (V.C.) | G (F.T.) | | TH (TUNST) | A (F.T.) | B (F.T.) | VC (V.C.) | Y (F.T.) | A (F.T.) | B (F.T.) | VC (V.C.) | | |
| 0.62 | 0.4 | 1.0 | 1.0 | 1.5 | 0.1 | 1.0 | 1.0 | 0.1 | 46.8 | 0.8 | 2.0 | 1.5 | 1.5 | 0.1 | 1.0 | 1.0 | 1.0 | 1.0 | 0.1 | | |
| 1,18 | 0.4 | 0.6 | 2.2 | 1.5 | 0.1 | 1.0 | 1.0 | 1.5 | 0.12 | 1.1 | 4.4 | 2.0 | 2.5 | 0.3 | 1.5 | 1.5 | 1.5 | 1.5 | 0.1 | | |
| 6,18 | 0.8 | 5.0 | 2.0 | 2.5 | 0.3 | 1.5 | 2.0 | 0.2 | 16.18 | 1.6 | 9.9 | 3.0 | 3.5 | 0.6 | 2.0 | 2.5 | 0.3 | 2.0 | 0.1 | | |
| 20 | 0.9 | 6.2 | 2.0 | 3.5 | 0.4 | 1.5 | 3.0 | 0.3 | 20 | 1.8 | 12.3 | 3.5 | 3.5 | 0.7 | 2.0 | 3.0 | 3.0 | 3.0 | 0.4 | | |
| 24 | 1.1 | 6.9 | 3.0 | 3.5 | 0.5 | 1.0 | 3.0 | 0.3 | 24 | 2.2 | 17.7 | 4.0 | 4.5 | 1.0 | 3.0 | 3.5 | 3.5 | 3.5 | 0.5 | | |
| 30 | 1.4 | 10.6 | 3.0 | 4.0 | 0.6 | 3.0 | 4.0 | 0.3 | 30 | 2.7 | 20.0 | 5.0 | 5.0 | 1.0 | 3.0 | 3.5 | 3.5 | 3.5 | 0.6 | | |
| 36 | 1.7 | 15.4 | 4.5 | 4.5 | 0.7 | 2.0 | 5.0 | 0.6 | 36 | 3.3 | 29.8 | 5.5 | 5.5 | 2.3 | 4.0 | 4.0 | 4.0 | 4.0 | 1.3 | | |
| 42 | 1.9 | 20.4 | 4.5 | 5.0 | 1.0 | 2.5 | 5.0 | 0.8 | 42 | 3.8 | 40.5 | 7.0 | 6.0 | 3.9 | 4.5 | 5.0 | 2.1 | 2.1 | 0.1 | | |
| 48 | 2.2 | 26.5 | 4.5 | 6.0 | 2.0 | 2.5 | 6.0 | 1.1 | 48 | 4.4 | 52.9 | 8.0 | 7.0 | 5.7 | 4.5 | 6.0 | 5.5 | 5.5 | 2.8 | | |
| 54 | 2.6 | 33.7 | 6.0 | 6.0 | 3.0 | 3.0 | 6.0 | 1.4 | 54 | 4.9 | 67.0 | 9.0 | 8.0 | 8.0 | 6.0 | 6.0 | 6.0 | 6.0 | 4.1 | | |
| 60 | 2.7 | 41.6 | 6.0 | 7.0 | 3.8 | 3.0 | 7.0 | 1.8 | 60 | 5.5 | 82.7 | 9.5 | 9.0 | 10.6 | 6.0 | 7.0 | 7.0 | 7.0 | 5.3 | | |
| 66 | 3.0 | 50.3 | 6.5 | 8.0 | 5.1 | 3.5 | 8.0 | 2.3 | 66 | 6.0 | 100.1 | 10.5 | 10.0 | 14.1 | 6.5 | 8.0 | 8.0 | 8.0 | 7.2 | | |
| 72 | 3.3 | 59.9 | 7.5 | 8.0 | 6.3 | 4.0 | 8.0 | 3.7 | 72 | 6.8 | 119.7 | 11.0 | 11.0 | 17.6 | 7.5 | 8.0 | 8.0 | 8.0 | 9.1 | | |
| 78 | 3.6 | 70.2 | 8.0 | 9.0 | 8.1 | 4.0 | 9.0 | 3.9 | 78 | 7.1 | 139.8 | 12.0 | 12.0 | 22.5 | 8.0 | 9.0 | 9.0 | 9.0 | 17.7 | | |
| 84 | 3.8 | 81.5 | 8.5 | 10.0 | 10.3 | 4.5 | 10.0 | 5.3 | 84 | 7.6 | 162.7 | 13.0 | 12.5 | 27.2 | 8.5 | 10.0 | 10.0 | 10.0 | 14.8 | | |
| 90 | 4.1 | 93.5 | 9.5 | 10.0 | 12.2 | 5.0 | 10.0 | 6.3 | 90 | 8.2 | 186.1 | 14.0 | 13.5 | 33.7 | 9.5 | 10.0 | 10.0 | 10.0 | 17.6 | | |
| 96 | 4.4 | 106.4 | 10.0 | 11.0 | 15.0 | 5.0 | 11.0 | 7.4 | 96 | 8.7 | 217.7 | 15.0 | 14.5 | 41.2 | 10.0 | 11.0 | 11.0 | 11.0 | 21.8 | | |

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
| $\Delta = 67.50^\circ$ | | | | | | | | | $\Delta = 90^\circ$ | | | | | | | | |
|------------------------|-------|---------------|----------|----------|-------------|----------|----------|-------------|---------------------|-------|---------------|----------|----------|-------------|----------|----------|-------------|
| I.D. (N.) | C (F) | THRUST (TONS) | EARTH | | | ROCK | | | I.D. (N.) | C (F) | THRUST (TONS) | EARTH | | | ROCK | | |
| | | | A (F.T.) | B (F.T.) | VOL. (C.Y.) | A (F.T.) | B (F.T.) | VOL. (C.Y.) | | | | A (F.T.) | B (F.T.) | VOL. (C.Y.) | A (F.T.) | B (F.T.) | VOL. (C.Y.) |
| 4,6,8 | 21 | 5.6 | 3.0 | 2.0 | 0.3 | 2.0 | 1.5 | 0.2 | 4,6,8 | 27 | 7.1 | 5.0 | 1.5 | 0.4 | 2.0 | 2.0 | 0.2 |
| 10,12 | 31 | 12.6 | 5.5 | 2.5 | 0.8 | 3.5 | 2.0 | 0.4 | 10,12 | 40 | 16.0 | 6.5 | 2.5 | 1.0 | 3.5 | 2.5 | 0.5 |
| 16,18 | 47 | 28.3 | 7.5 | 4.0 | 1.9 | 5.5 | 3.0 | 0.9 | 16,18 | 60 | 36.0 | 9.0 | 4.0 | 2.4 | 4.5 | 4.0 | 1.0 |
| 20 | 5.2 | 34.9 | 8.0 | 4.0 | 2.3 | 5.5 | 3.5 | 1.2 | 20 | 6.6 | 44.4 | 10.0 | 4.5 | 3.1 | 6.0 | 4.0 | 1.5 |
| 24 | 6.2 | 50.3 | 11.5 | 4.5 | 3.5 | 6.5 | 4.0 | 1.6 | 24 | 7.9 | 64.0 | 14.5 | 4.5 | 5.0 | 8.0 | 4.0 | 2.1 |
| 28 | 7.8 | 58.9 | 12.0 | 5.0 | 4.8 | 7.5 | 4.0 | 2.2 | 30 | 9.9 | 75.0 | 15.0 | 5.0 | 6.7 | 10.0 | 4.0 | 3.3 |
| 36 | 9.4 | 84.9 | 14.5 | 6.0 | 8.2 | 9.5 | 4.5 | 3.8 | 36 | 11.9 | 108.0 | 18.0 | 6.0 | 11.4 | 12.0 | 4.5 | 4.5 |
| 42 | 10.9 | 115.5 | 17.0 | 7.0 | 12.8 | 11.0 | 5.5 | 5.3 | 42 | 13.9 | 147.0 | 21.0 | 7.0 | 15.0 | 16.0 | 5.0 | 5.7 |
| 48 | 12.5 | 150.9 | 19.0 | 8.0 | 18.4 | 13.0 | 6.0 | 9.2 | 48 | 15.9 | 192.0 | 24.0 | 8.0 | 18.0 | 19.0 | 5.5 | 8.7 |
| 54 | 14.0 | 191.0 | 21.5 | 9.0 | 26.0 | 15.0 | 6.5 | 12.9 | 54 | 17.9 | 243.0 | 27.0 | 9.0 | 26.0 | 26.0 | 6.0 | 12.4 |
| 60 | 15.6 | 235.6 | 24.0 | 10.0 | 36.0 | 16.0 | 7.0 | 17.6 | 60 | 19.9 | 299.0 | 30.0 | 10.0 | 36.0 | 36.0 | 7.0 | 18.1 |
| 66 | 17.1 | 285.3 | 26.5 | 11.0 | 46.0 | 18.0 | 7.5 | 22.3 | 66 | 21.9 | 362.0 | 33.0 | 11.0 | 46.0 | 46.0 | 8.5 | 32.5 |
| 72 | 18.7 | 339.5 | 29.0 | 12.0 | 57.8 | 19.0 | 9.0 | 28.0 | 72 | 23.8 | 431.0 | 36.0 | 12.0 | 56.0 | 56.0 | 9.0 | 41.0 |
| 78 | 20.2 | 398.5 | 31.0 | 13.0 | 75.7 | 21.0 | 9.5 | 37.4 | 78 | 25.7 | 506.7 | 39.0 | 13.0 | 108.0 | 102.0 | 10.0 | 53.2 |
| 84 | 21.6 | 462.1 | 33.5 | 14.0 | 94.7 | 22.0 | 10.5 | 46.5 | 84 | 27.7 | 587.7 | 42.0 | 14.0 | 134.4 | 128.0 | 10.5 | 64.8 |
| 90 | 23.3 | 530.5 | 35.5 | 15.0 | 114.4 | 24.5 | 11.0 | 58.2 | 90 | 29.0 | 674.6 | 45.0 | 15.0 | 164.9 | 130.0 | 11.5 | 81.2 |
| 96 | 24.9 | 603.6 | 38.0 | 16.0 | 138.0 | 25.5 | 12.0 | 70.0 | 96 | 31.6 | 767.5 | 48.0 | 16.0 | 199.9 | 132.0 | 12.0 | 95.1 |

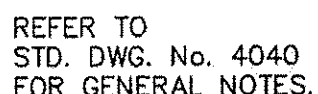
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
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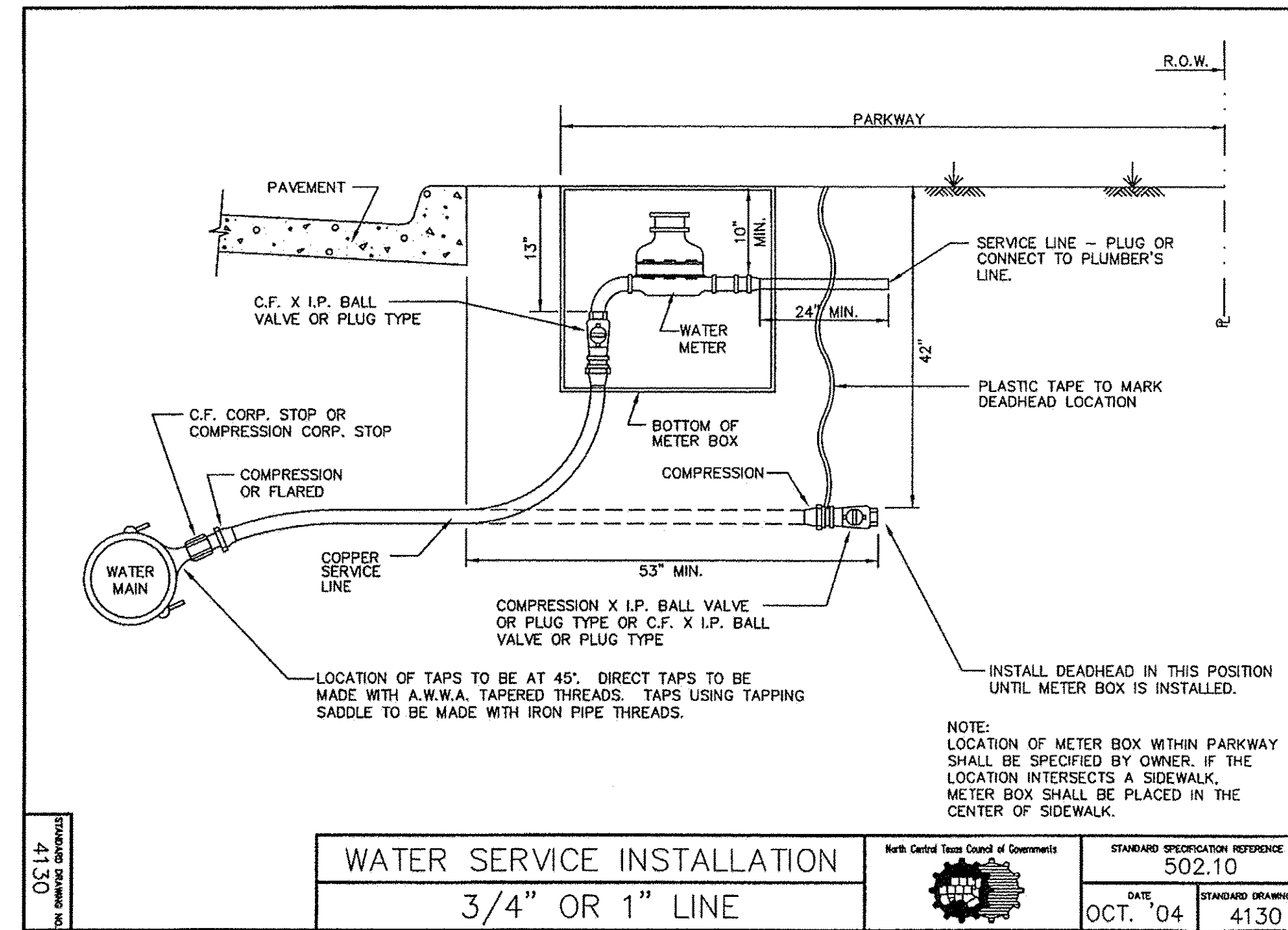
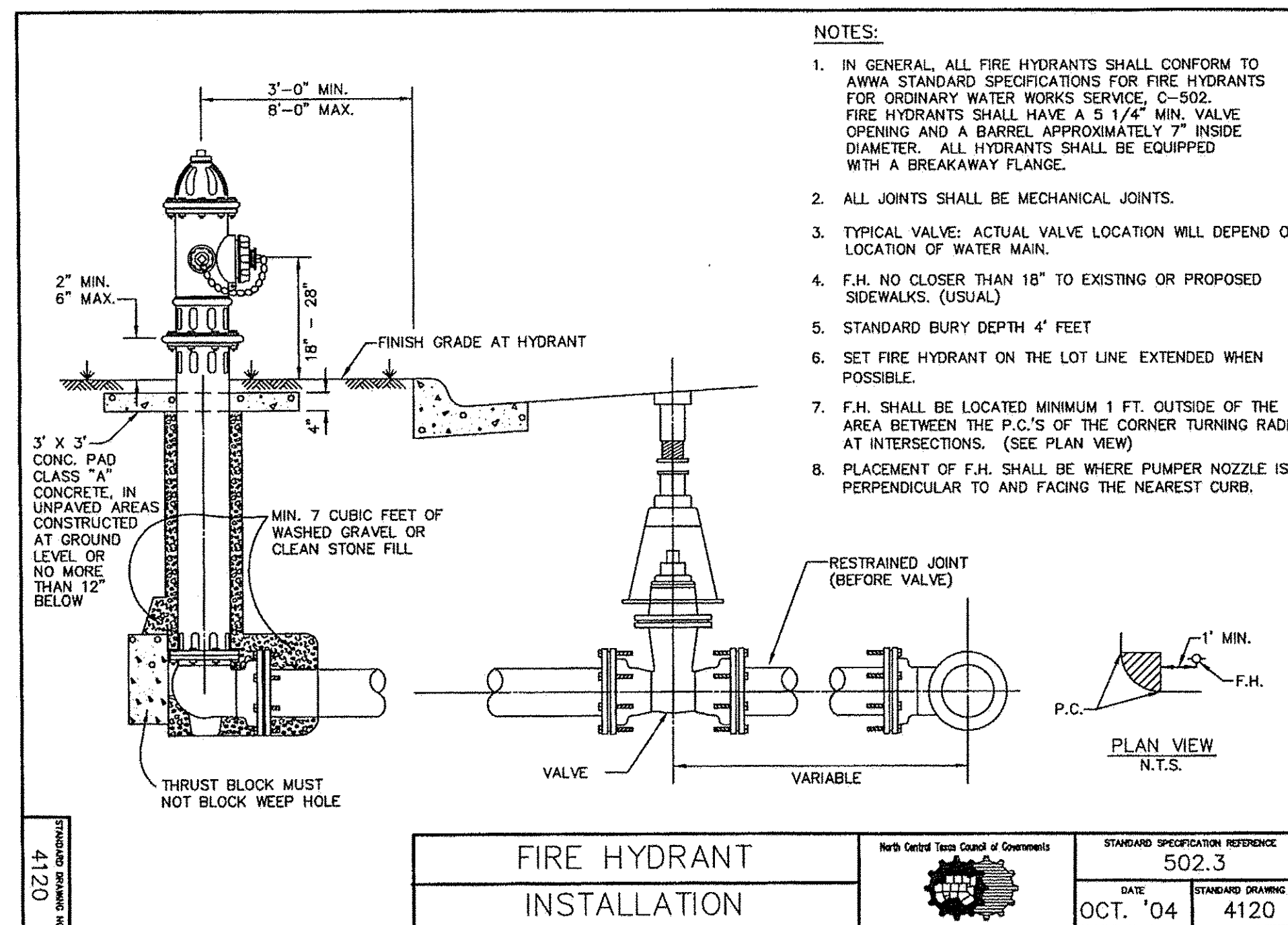
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DATE: 12.08.14 BY: Joseph E. Black, Jr.



DATE: 12.08.14 BY: [Signature] RE: