

CONSTRUCTION PLANS FOR HIGHPOINT OAKS ESTATES

21.245 ACRES ZONED ETH

CITY OF LEWISVILLE DENTON COUNTY, TEXAS

DEVELOPER:

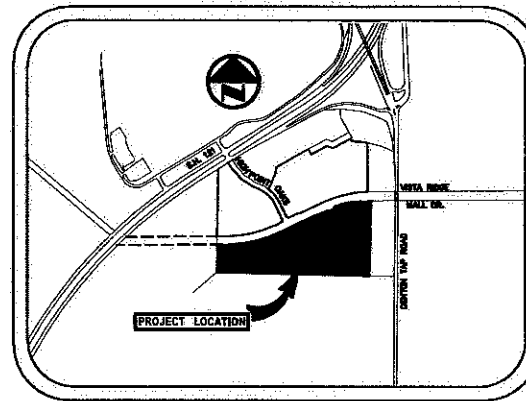
GEHAN HOMES LTC.
15725 NORTH DALL PKWY, STE 320
ADDISON, TEXAS 75001
(972) 383-4304
CONTACT: CHRIS LYNCH

ENGINEER:

JBI PARTNERS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-438
16301 QUORUM DRIVE, SUITE 200 B
ADDISON, TEXAS 75001
(972) 248-7676
CONTACT: JASON KAISER

CITY OF LEWISVILLE GENERAL NOTES

- The City of Lewisville's Inspector overtime policy allows the Contractor to work from 7:00 a.m. to 7:00 p.m., Monday through Saturday. Any request to work on a Saturday must be made prior to 12:00 p.m. on Thursday afternoon and will require a minimum four (4) hours charge. The Contractor shall pay overtime charges of \$45.00 per hour to the City of Lewisville for work outside the normal work week (8:00 a.m. to 5:00 p.m. Monday through Friday). No work is allowed on Sundays or City holidays without written approval from the City Engineer or Designer.
- The Contractor shall be responsible for submitting a copy of the bid proposal for all public improvements to the City of Lewisville at the pre-construction meeting. This proposal shall include unit costs, quantities and amounts.
- The Owner/Contractor shall be responsible for paying a 3.5% inspection fee to the City of Lewisville at the pre-construction meeting for all public improvements.
- The Contractor shall be responsible for providing a two (2) year, 100% Maintenance Bond to the City of Lewisville for all public improvements (water, sanitary sewer, storm drainage, pavement, sidewalk, screening walls, traffic signals, pavement markings, and excavation/fill) within right-of-ways or easements.
- No water jetting is allowed for water, sanitary sewer and storm sewer drainage construction.
- All trenches that are excavated to a depth in excess of five (5) feet shall be excavated and maintained in a manner that meets all Occupational Safety and Health Administration (OSHA) Standards. Prior to the excavation and construction of the trench(es), the Contractor shall be responsible for submitting two (2) copies of the trench safety plans prepared by a Licensed Professional Engineer in accordance with OSHA standards.
- All embankment and backfill shall be wetted to approximate optimum moisture and compacted in twelve (12) inch lifts to 95% Standard Proctor Density. Density tests shall be obtained for each lift and for each 150 lined feet of trench or increment thereof. The Contractor shall be responsible for submitting a copy of all geotechnical laboratory reports/test results to the City of Lewisville.
- There shall be no filling in the floodplain or dumping within the City of Lewisville without an approved grading plan and/or fill permit.
- The Contractor shall be responsible for recording all field changes to the plans. The project engineer shall incorporate these changes in "Record Drawings".
- The Contractor shall be responsible for providing erosion control in accordance with the Erosion Control Plan prepared by the engineer and/or as identified on the Storm Water Pollution Prevention Plan (S.W.P.P.P.). The Contractor shall install additional erosion control devices when field conditions warrant or as directed by the City of Lewisville or the Engineer.
- The permitted operator shall submit copies of the Notice of Intent (N.O.I.) and the Notice of Termination (N.O.T.) to the City of Lewisville Engineering Division as part of the submittal to the Texas Commission on Environmental Quality (TCEQ).
- The Contractor shall remove and replace any concrete pavement (drive approaches/street panels) within five (5) days of saw cutting the pavement. Concrete pavement subject to vehicular traffic shall have a compressive strength of 4,200 PSI at 3 days.
- The use of fly ash is not allowed in the concrete mix design.
- All subgrades for public street improvements shall be tested for sulfates prior to subgrade treatment. Fill materials containing sulfates will not be allowed for use within public easements or rights-of-way.
- The Developer is responsible for providing a preliminary geotechnical report at the time of the submittal of the construction drawings. The Developer/Contractor is responsible for providing a geotechnical report upon completion of the subgrade treatment for comparison.
- The maximum P.I. allowed for a treated subgrade is 25.
- The Developer is responsible for all third party costs associated with the construction of this project (i.e., inspections, flaggers, traffic control performed police officer and etc.)



LOCATION MAP

SCALE: N.T.S.

GENERAL NOTES

- Prior to any construction the Contractor shall familiarize himself with the Contract Documents and Specifications, Plans including all notes, the City of Lewisville Details & Specifications and any other applicable standards or specifications relevant to the proper completion of the work specified. Failure on the part of the Contractor to familiarize himself with all Standards or Specifications pertaining to this work shall in no way relieve the Contractor of responsibility for performing the work in accordance with all such applicable Standards and Specifications.
- Contractor shall have in his possession, prior to construction, all necessary permits, licenses, etc. Contractor shall have at least one set of approved Engineering Plans and Specifications on-site at all times.
- All materials and construction shall conform to the City of Lewisville Standard Construction Details For Paving, Drainage, Water & Sanitary Sewer Facilities and be installed in accordance with the City Specifications and Standard Specifications for Public Works Construction for North Central Texas Published by NCTCOG. These specifications shall be made part of these plans. All work shall be inspected by The Lewisville Public Works Inspectors.
- Construction inspection will be performed by representatives of the Owner, Engineer, City, Geotechnical Engineer, and Reviewing Authorities and agencies. Unrestricted access shall be provided to them at all times. Contractor is responsible for understanding and scheduling required inspections.
- All contractors must confine their activities to the work area. No encroachments onto developed or undeveloped areas will be allowed, unless specifically noted on plans. Any damage resulting therefrom shall be Contractor's responsibility to repair.
- It will be the responsibility of each contractor to protect all existing public and private utilities throughout the construction of this project. Contractor shall contact the appropriate utility companies for line locations prior to commencement of construction and shall assume full liability to those companies for any damages caused to their facilities.
- Construction staking will be performed by the Owner's Engineer.
- If unforeseen problems or conflicts are encountered in the construction, for which an immediate solution is not apparent, the Engineer and Owner shall be notified immediately.
- Contractors shall be responsible for field locating existing utilities and improvements prior to construction.
- Copies of lab reports for soil, concrete, and the water bacteria test for the Public Works portion of the project shall be submitted to the City Engineer.

Add not to cover sheet that developer shall pay a screening wall maintenance fee of 20% of the cost of the public screening wall.

Add all applicable City of Lewisville details to the plan set.

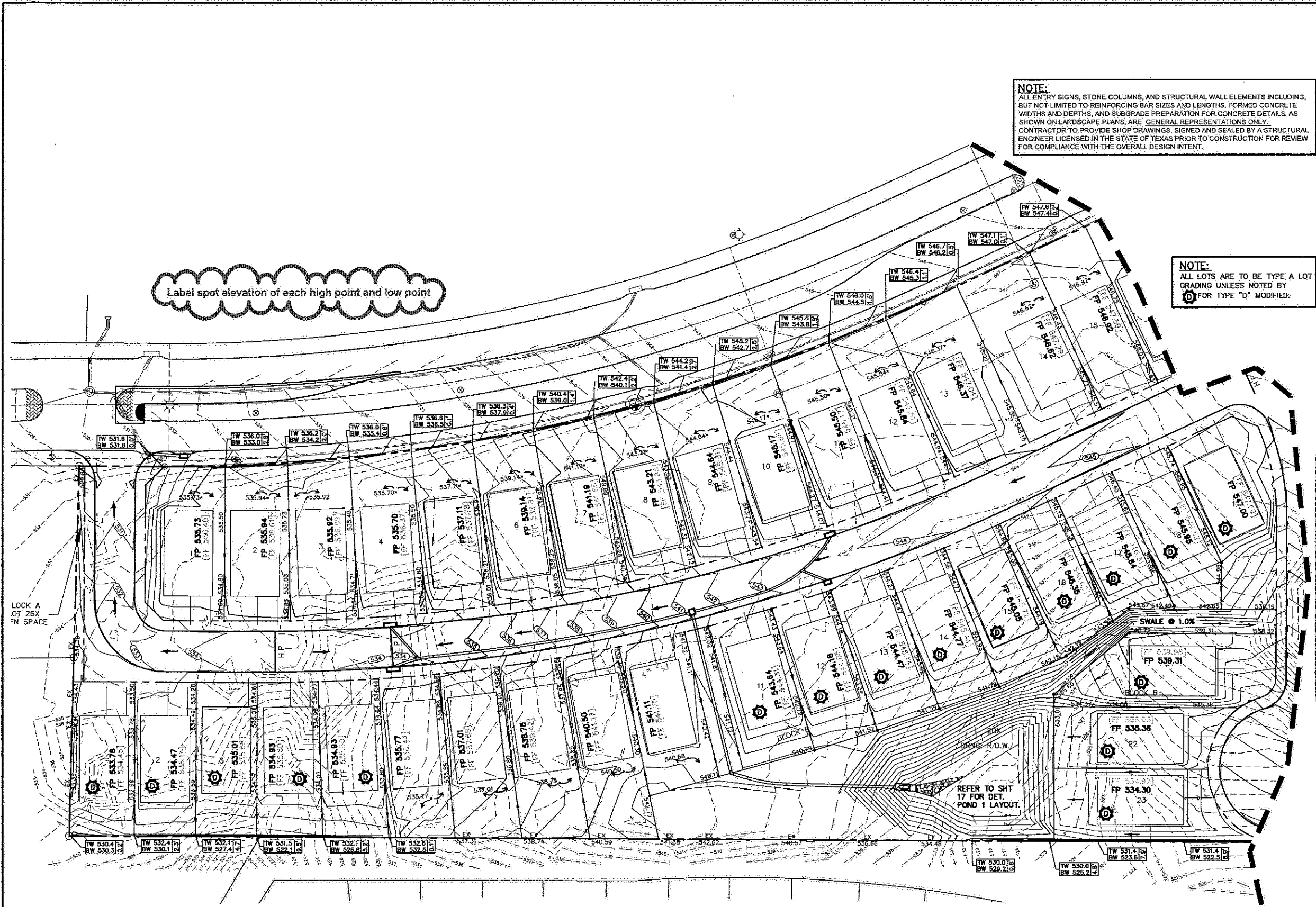
Add retaining wall plans.

INDEX

SHEET NO.	DESCRIPTION
1	Cover Sheet
2-3	Final Plat
4	Paving Plan & Profile: Pointview Court & Point Vista Drive
5	Paving Plan & Profile: High Ridge Lane & Vista Vend Drive
6	Paving Plan & Profile: Ridgewood Drive [Sta. 1+00 to 9+50]
7	Paving Plan & Profile: Ridgewood Drive [Sta. 9+50 to 17+00]
8	Paving Plan & Profile: Highview Lane & Woodpoint Road
9	Paving Plan Vista Ridge Mall Drive [Left Turn Lane]
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11	Grading Plan [Sheet 2]
12	Grading Details
13	Erosion Control Plan
14	Erosion Control Details
15	Drainage Area Map [Existing Conditions]
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21	Storm Sewer Plan & Profile: Line A, A3, & EX-1
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23	Storm Sewer Plan & Profile: Line C & E (Private)
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26	Water Plan [Sheet 2]
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29	Water Profiles: Line W1 [Sta. 25+50 to 29+00], W2 & W3
30	Sanitary Sewer Plan: Line S1, S2, S3, S4 & S5
31	Sanitary Sewer Plan: Line S6
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37	Traffic Control Details Landscape Drawings



The seal appearing on this document was authorized by Jason M. Kaiser, P.E. 110015. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

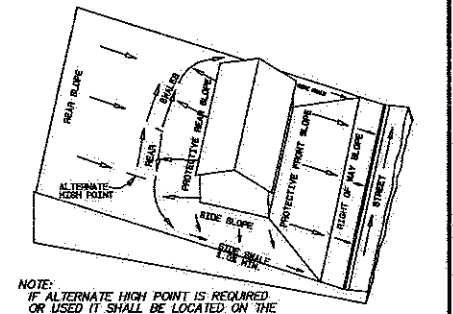


NOTE:
 ALL ENTRY SIGNS, STONE COLUMNS, AND STRUCTURAL WALL ELEMENTS INCLUDING, BUT NOT LIMITED TO REINFORCING BAR SIZES AND LENGTHS, FORMED CONCRETE WIDTHS AND DEPTHS, AND SUBGRADE PREPARATION FOR CONCRETE DETAILS, AS SHOWN ON LANDSCAPE PLANS, ARE GENERAL REPRESENTATIONS ONLY. CONTRACTOR TO PROVIDE SHOP DRAWINGS, SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS PRIOR TO CONSTRUCTION FOR REVIEW FOR COMPLIANCE WITH THE OVERALL DESIGN INTENT.

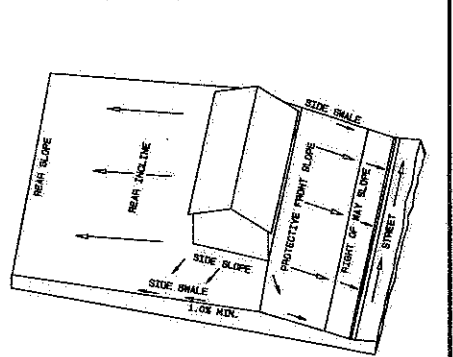
NOTE:
 ALL LOTS ARE TO BE TYPE A LOT GRADING UNLESS NOTED BY **(D)** FOR TYPE "D" MODIFIED.

LEGEND

- - 715 - - EX. CONTOUR INTERVAL
- x 790.30 PROP. FINISHED GRADE.
- FP 790.7 PROP. FINISHED PAD
- ← PROP. STORM DRAINAGE FLOW
- ← PROP. DRAINAGE FLOW DIRECTION
- EX. FENCELINE
- POSSIBLE GRADE BEAM BY BUILDER
- PROPOSED STORM LINE & INLET
- 780 — PROP. MAJOR CONTOUR
- 791 — PROP. MINOR CONTOUR
- PP EX. POWER POLE

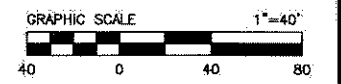


NOTE:
 IF ALTERNATE HIGH POINT IS RETAINED OR USED IT SHALL BE LOCATED ON THE HIGH SIDE OF THE LOT.



LOT GRADING TYPE D

SEE SHEET 1 FOR CONTINUATION OF GRADING PLAN



BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road.
 Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
 Elevation = 541.23

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE	NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

DESIGNED BY: JMK
 DRAWN BY: JLF
 CHECKED BY: JMK

PRELIMINARY FOR REVIEW ONLY
 NOT FOR CONSTRUCTION OR PERMIT PURPOSES

ENGINEER: Jason Kaiser
 P.E. No. 110015 Date: 18 JUL 2013



16301 Quorum Drive
 Suite 200 B
 Addison, Texas 75001
 Main 972.248.7676
 Fax 972.248.1414
 www.jbipartners.com

GRADING PLAN		PROJECT NO.
SHEET 1		GEH004
HIGHPOINT OAKS ESTATES		SHEET NO.
City of Lewisville, Denton County, Texas		10

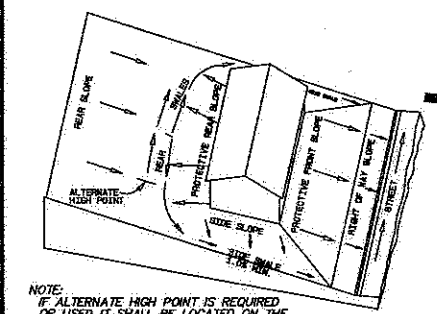
LEGEND

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- PP EX. POWER POLE

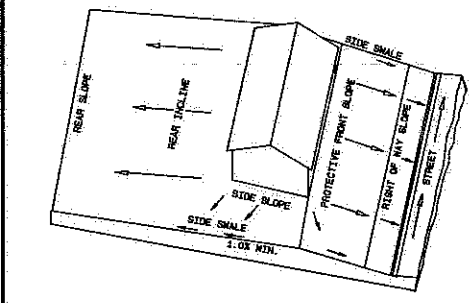
Provide a spot elevation at each high point and low point.

EXISTING POND
NWSE=539.0 DRAINAGE R.O.W.

Provide spot elevation at each property corner.



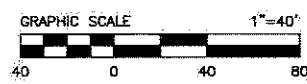
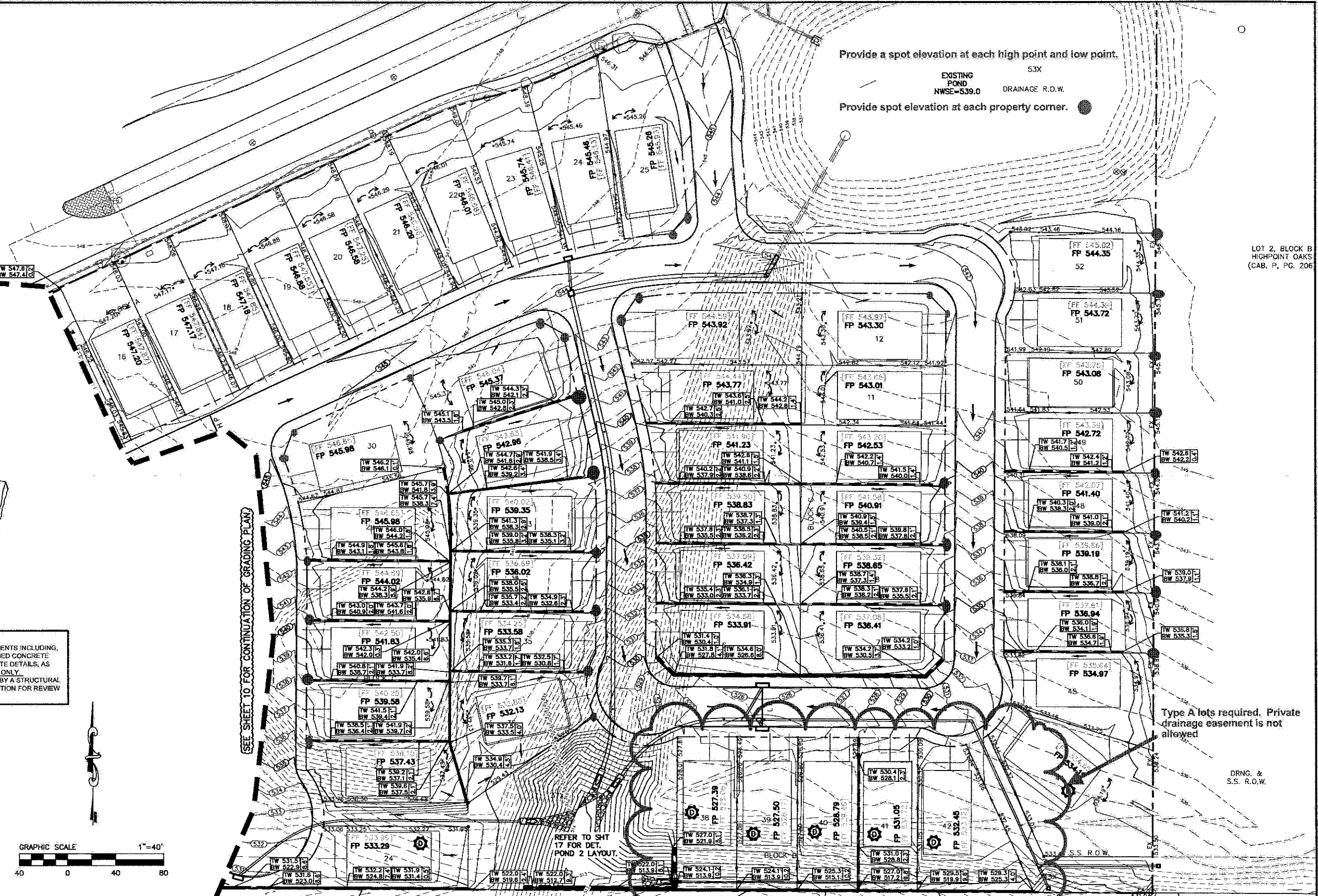
LOT GRADING TYPE A



LOT GRADING TYPE D

NOTE:
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NOTE:
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BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road. Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive. Elevation = 541.23

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DRAWN BY: JLF
CHECKED BY: JMK

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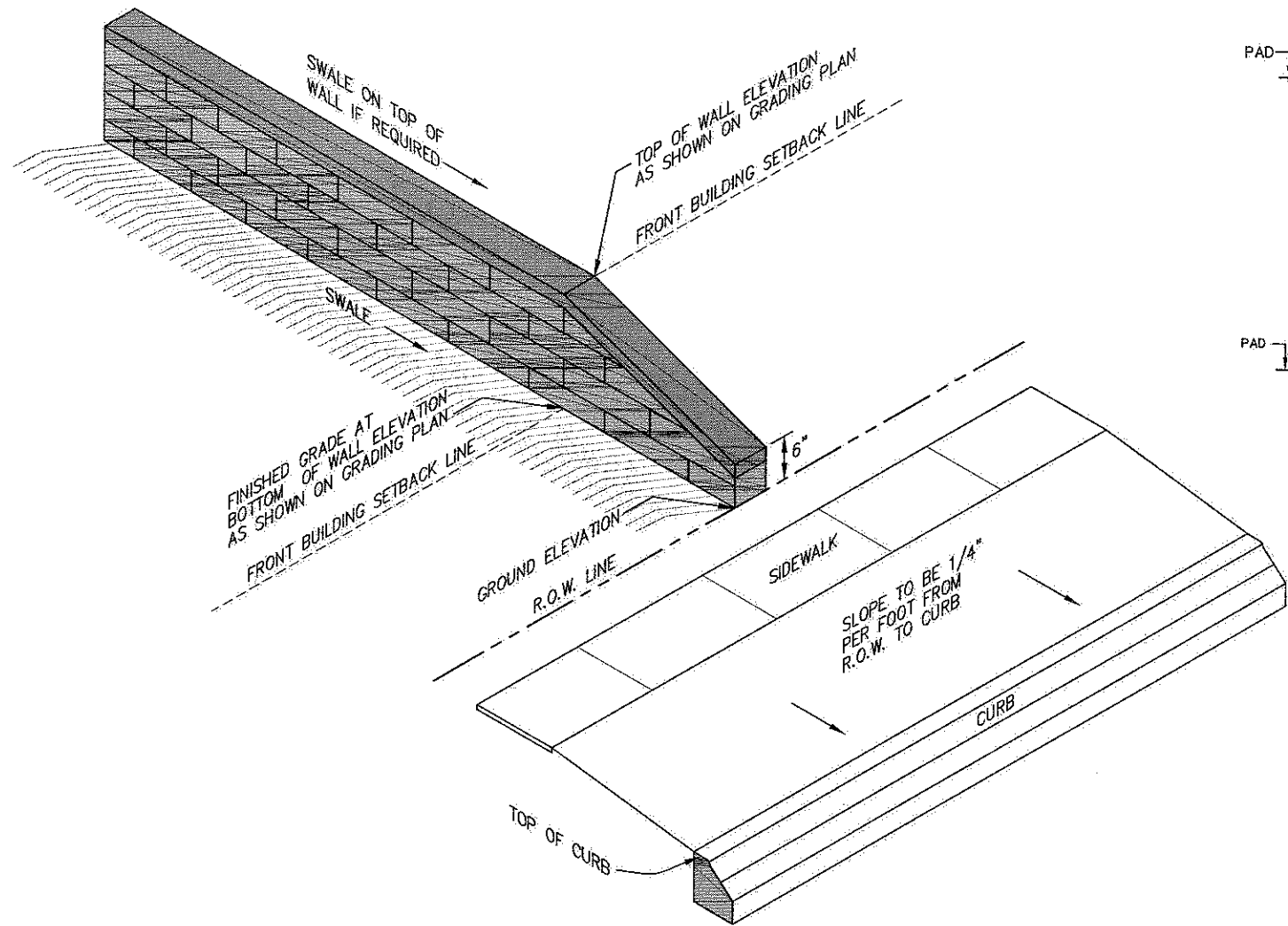
ENGINEER: Jason Kaiser
P.E. No. 119015 Date: 18 JUL 2013



GRADING PLAN SHEET 2
HIGHPOINT OAKS ESTATES
City of Lewisville, Denton County, Texas

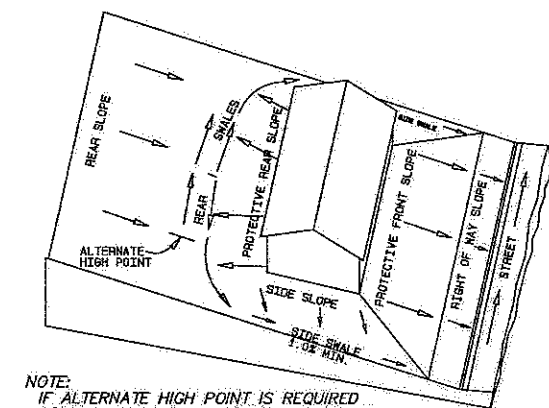
PROJECT NO. GEH004
SHEET NO. 11

Plotted by: jfitzgerald Plot Date: 7/18/2013 10:11 AM
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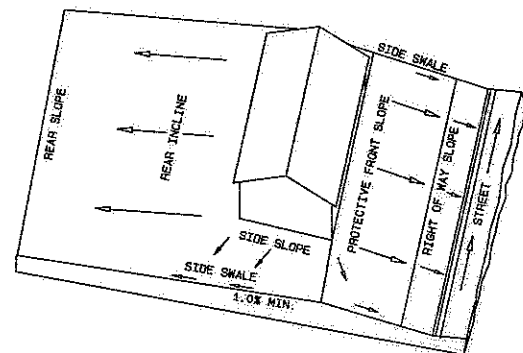


TYPICAL WALL END DETAIL

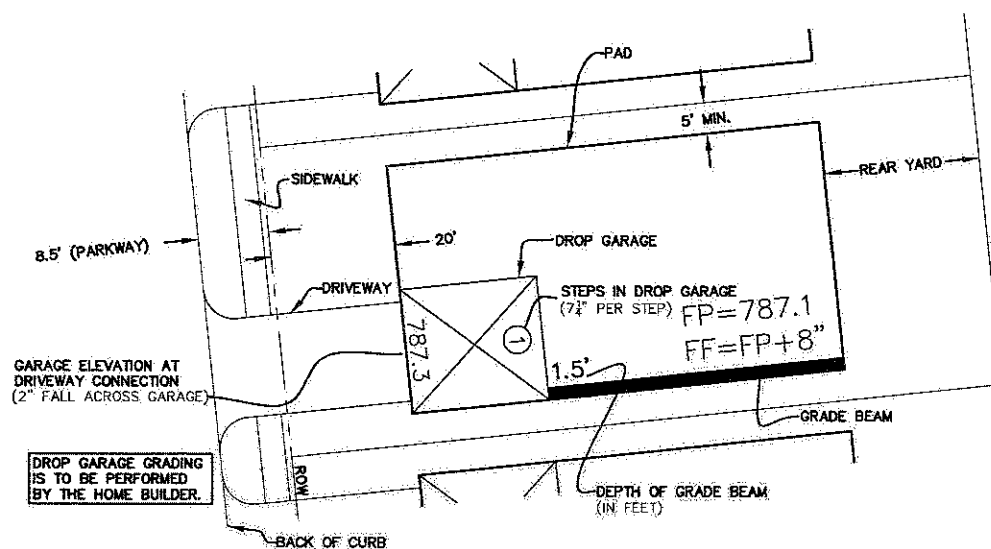
NTS



LOT GRADING TYPE A

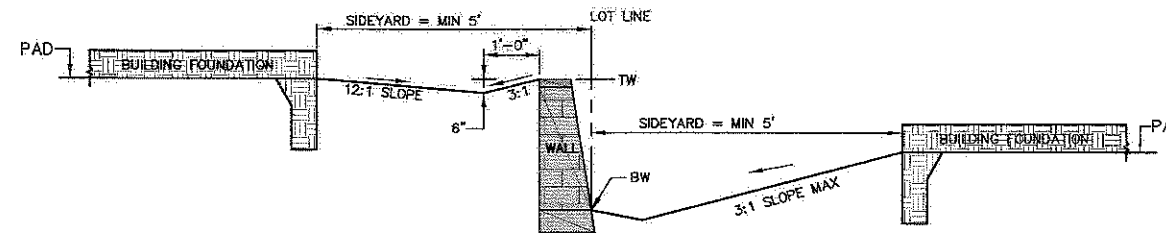


LOT GRADING TYPE D



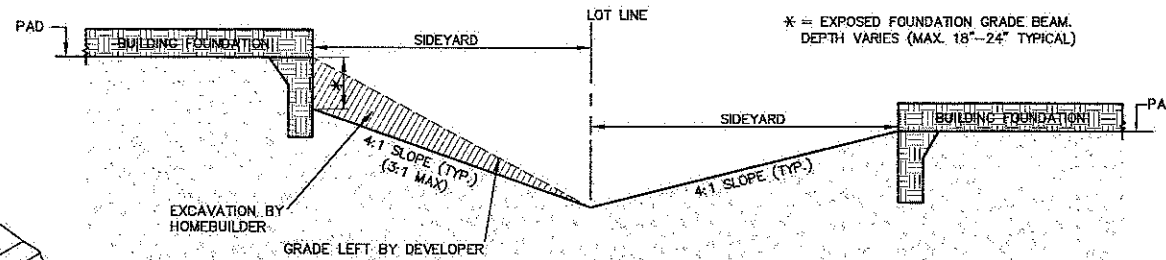
SAMPLE PAD (PLAN VIEW)

N.T.S.



TYPICAL SECTION OF SIDEYARD SWALE W/ WALL

N.T.S.

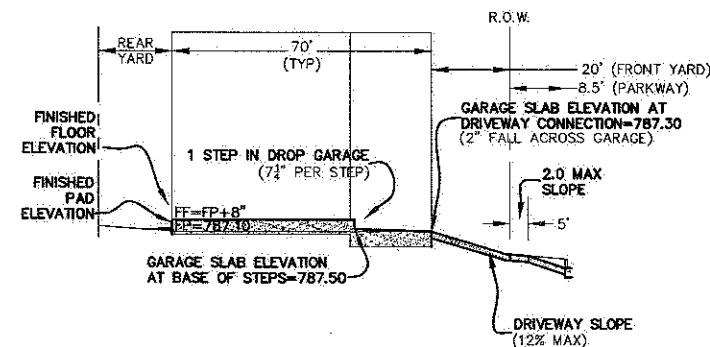


TYPICAL SECTION OF SIDEYARD SWALE W/ DROPPED GRADE BEAM

N.T.S.

GRADING NOTES

1. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) TO BE COMPLETELY IMPLEMENTED PRIOR TO ANY GRADING WORK.
2. GRADING SHALL NOT CREATE A LOT-TO-LOT DRAINAGE CONDITION UNLESS APPROVED BY CITY ENGINEER DURING DESIGN AND EASEMENTS ARE PROVIDED.
3. RETAINING WALLS TO BE PLACED ENTIRELY ON THE HIGH SIDE LOT.
4. SPECIFICATIONS FOR CONSTRUCTION AND TESTING FOR EXCAVATION AND FILLING ON PRIVATE LOTS SHALL BE PROVIDED BY THE PROJECT'S GEOTECHNICAL ENGINEER. SPECIFICATIONS FOR CONSTRUCTION AND TESTING FOR EXCAVATION AND FILLING WITHIN PUBLIC RIGHT-OF-WAYS SHALL BE PROVIDED BY THE GOVERNING AGENCY. IN THE EVENT OF AN ABSENCE OF A SPECIFICATION BY A GOVERNING AGENCY, THE GEOTECHNICAL ENGINEER'S SPECIFICATIONS SHALL CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE SPECIFICATIONS FROM THE GEOTECHNICAL ENGINEER AND GOVERNING AGENCY PRIOR TO COMMENCING WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING TESTING OF THE EXCAVATION AND FILLING WITH THE OWNER'S TESTING LABORATORY. IF THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE TESTING LABORATORY, THE SELECTED TESTING LABORATORY SHALL BE APPROVED BY THE OWNER.
6. RETAINING WALLS 2'-4' IN HEIGHT REQUIRE A SEPARATE PERMIT FROM THE BUILDING INSPECTION DEPARTMENT. RETAINING WALLS OVER 4' MUST BE DESIGNED BY AN ENGINEER REGISTERED IN THE STATE OF TEXAS. RETAINING WALLS SHOWN ON THIS PLAN ARE FOR LOCATION AND ELEVATION PURPOSES ONLY. STRUCTURAL AND STABILITY ENGINEERING OF THE RETAINING WALLS ARE NOT PART OF THE DESIGN RESPONSIBILITY OF JONES AND BOYD, INC.
7. ANY SLOPES GREATER THAN 3 FEET IN HEIGHT SHALL BE REVIEWED BY THE OWNER'S GEOTECHNICAL ENGINEER FOR STABILITY PURPOSES. ALL SLOPES ARE DESIGNED AT A MAXIMUM OF 4 HORIZONTAL TO 1 VERTICAL UNLESS OTHERWISE NOTED.



SAMPLE PAD (ELEVATION VIEW)

N.T.S.

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Elevation = 541.45

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DESIGNED BY: JMK	PRELIMINARY FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES ENGINEER: Jason Kaiser P.E. No. 110015 Date: 18 JUL 2013
DRAWN BY: JLF	
CHECKED BY: JMK	



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Texas Registered Engineering Firm F-438

GRADING DETAILS

HIGHPOINT OAKS ESTATES

City of Lewisville, Denton County, Texas

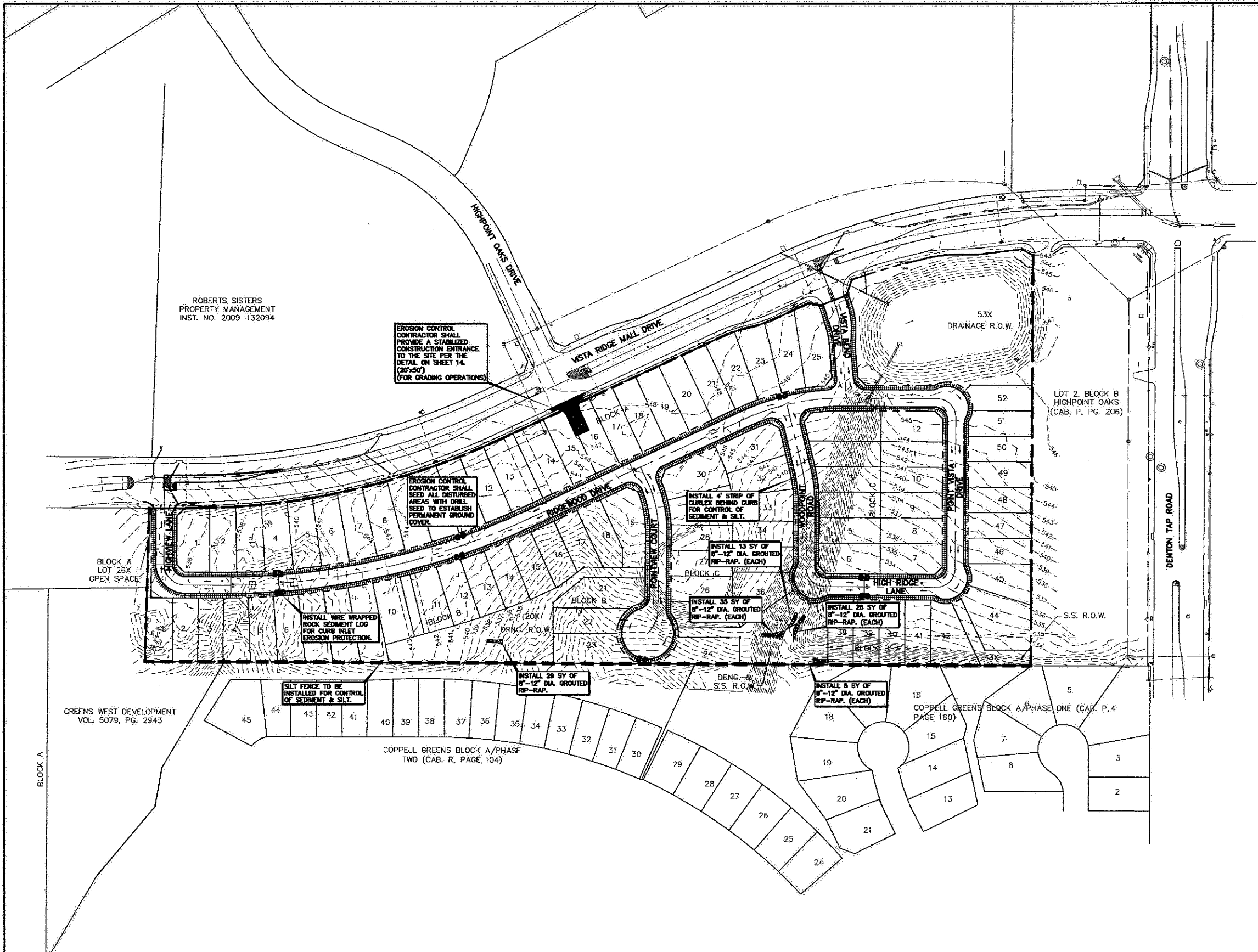
PROJECT NO.
GEH004
SHEET NO.
12

LEGEND

- PROPOSED SILT FENCE WITH WIRE MESH BACKING TO BE INSTALLED PRIOR TO EXCAVATION
- PROPOSED 4' CURLEX MATTING AT COMPLETION OF PAVING & FINISHED GRADING
- 610 EXISTING CONTOURS
- INLET PROTECTION
- FLOW ARROW FOR PROPOSED GRADING

GENERAL NOTES FOR THE EROSION CONTROL PLAN

1. All operators and/or contractors shall conform to the terms and conditions of the National Pollution Discharge Elimination Systems (NPDES) General Permit as published in the Federal Register, Vol. 63, No. 128, July 6, 1998, by the Environmental Protection Agency (EPA). The Notice of Intent (NOI), as required by the General Permit, must be properly displayed on site at all times by each operator.
2. All releases of reportable quantities of hazardous substances shall be reported immediately to the facility operator and EPA.
3. The Contractor shall inspect the site at least once every fourteen days and within 24 hours of a 1/2-inch or greater rainfall event. The Contractor shall document the results. Copies of the inspection reports shall accompany the Contractor's monthly pay request.
4. The Contractor shall not be paid until said reports are presented to the Owner/Owner's Representative. The Earthwork Contractor shall be responsible for inspection until the Utility Contractor begins his work. The Utility Contractor shall be responsible for inspections until the Paving Contractor begins his work. The Paving Contractor shall be responsible for inspections until the Earthwork Contractor begins lot benching operations. The Earthwork Contractor shall make remaining inspections until project is accepted by the City. Modifications to the Storm Water Pollution Prevention Plan shall be implemented and be in-place within a seven calendar day period. If any contractor sees a violation by an operator or another contractor, he shall notify the operator and contractor in violation. Erosion control shall be installed prior to any grading.
5. Accumulated silt deposits shall be removed from silt fences and hay bale dikes when silt depth reaches six inches. Removal of silt deposits by the contractor shall be incidental to the performance of the contract and a separate bid item shall not be included.
6. The contractor shall add or delete erosion protection of the request and direction of the Operator or the City.
7. After installation of pavement, final lot benching and general cleanup, the grass groundcover shall be established in all street parkways, lots and all other disturbed areas. Materials shall be as specified in Item 2.15 and seeding shall be in accordance with Item 3.10 of the NCTCOG Standard Specifications. Depending upon schedule for house construction, grass establishment may be waived on a single lot basis if house construction begins immediately on that lot.
8. It shall be the contractor's responsibility to control and limit silt and sediment leaving the site. Specifically, the contractor shall protect all public streets, alleys, streams and storm drainage.
9. If any erosion control is removed for construction and/or access purposes, the contractor shall replace it at the end of the work day.
10. It shall be the contractor's responsibility to provide a dumpster (or equal) to collect solid waste materials during construction.



ROBERTS SISTERS
PROPERTY MANAGEMENT
INST. NO. 2009-132094

EROSION CONTROL CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ENTRANCE TO THE SITE PER THE DETAIL ON SHEET 14. (20'x50') (FOR GRADING OPERATIONS)

EROSION CONTROL CONTRACTOR SHALL SEED ALL DISTURBED AREAS WITH DRILL SEED TO ESTABLISH PERMANENT GROUND COVER.

INSTALL WIRE WRAPPED ROCK SEDIMENT LOG FOR CURB INLET EROSION PROTECTION.

SILT FENCE TO BE INSTALLED FOR CONTROL OF SEDIMENT & SILT.

INSTALL 20 SY OF 8"-12" DIA. GROUDED RP-RAP.

INSTALL 4' STRIP OF CURLEX BEHIND CURB FOR CONTROL OF SEDIMENT & SILT.

INSTALL 13 SY OF 8"-12" DIA. GROUDED RP-RAP. (EACH)

INSTALL 35 SY OF 8"-12" DIA. GROUDED RP-RAP. (EACH)

INSTALL 28 SY OF 8"-12" DIA. GROUDED RP-RAP. (EACH)

INSTALL 5 SY OF 8"-12" DIA. GROUDED RP-RAP. (EACH)

BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road.
Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 355 feet west of the center of Highpoint Oaks Drive.
Elevation = 541.23

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DESIGNED BY: JLF
DRAWN BY: JLF
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ENGINEER: Jason Kaiser
P.E. No. 116015 Date: 18 JUL 2013



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EROSION CONTROL PLAN

PROJECT NO. GEH004

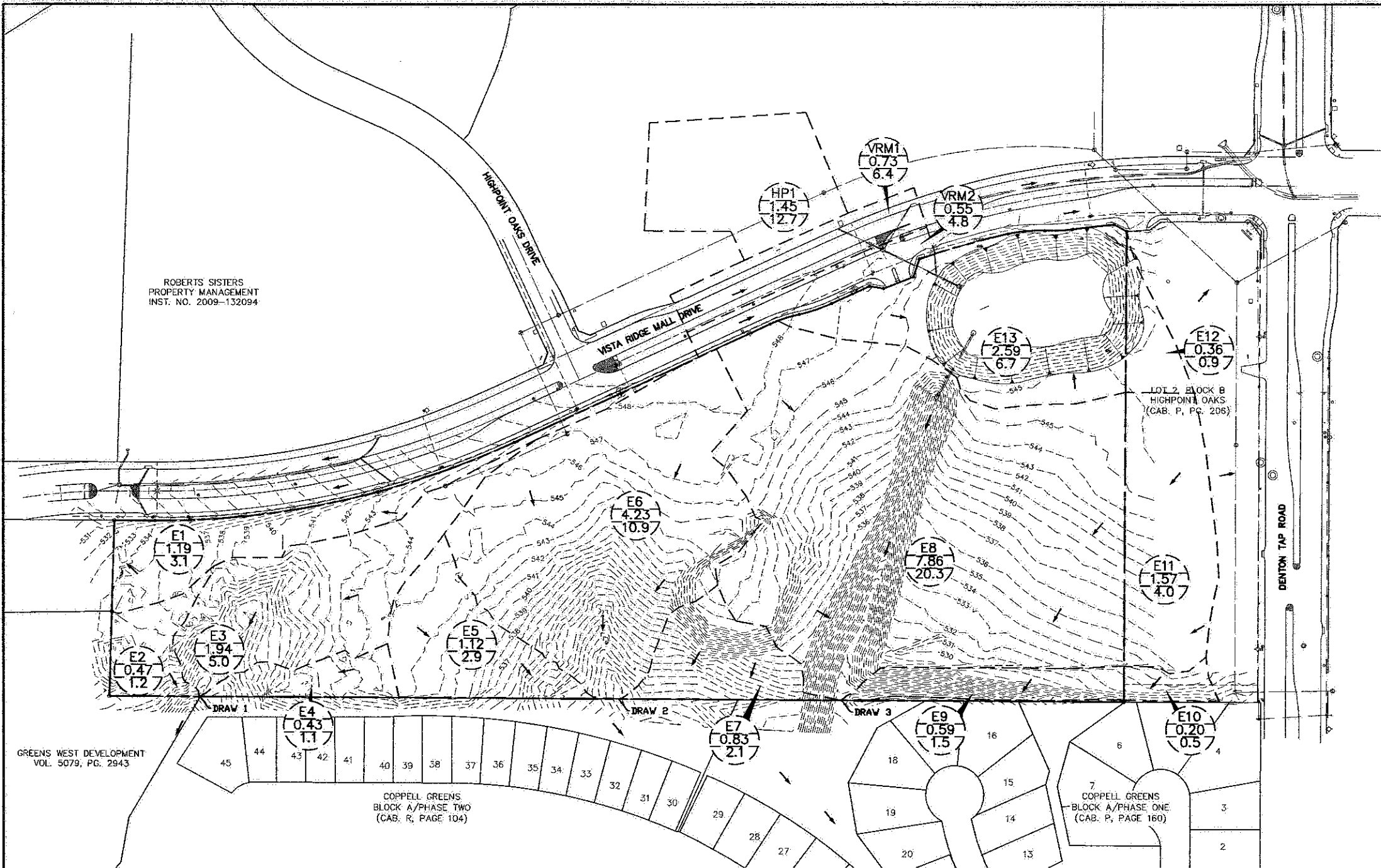
HIGHPOINT OAKS ESTATES

City of Lewisville, Denton County, Texas

SHEET NO. 13



Plotted by: jitzgerald Plot Date: 7/17/2013 4:43 PM
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ROBERTS SISTERS
PROPERTY MANAGEMENT
INST. NO. 2009-132094

GREENS WEST DEVELOPMENT
VOL. 5079, PG. 2943

COPPELL GREENS
BLOCK A/PHASE TWO
(CAB. R, PAGE 104)

7 COPPELL GREENS
BLOCK A/PHASE ONE
(CAB. P, PAGE 160)



- *LEGEND***
- DRAINAGE AREA NUMBER
 - PROPOSED DRAINAGE AREA (ACRES)
 - PROPOSED RUNOFF, Q (CFS)
 - PROPOSED DRAINAGE DIVIDE
 - EXISTING CONTOURS
 - PROPOSED FLOW DIRECTION
 - PROPOSED INLET LABEL
 - PROPOSED INLET

EXISTING RUNOFF CALCULATIONS								
Drainage Area #	Area (Sqft)	Area (Acres)	Runoff Coeff	Intensity (in./hr)	Time (conc.) (minutes)	Antecedent Prec. Coef	Discharge (c.f.s.)	Notes
EX-1	51956	1.19	0.3	6.89	20.0	1.25	3.1	Discharge to Vista Ridge Mall Road
SUB-BASIN TOTAL								3.1
EX-2	20496	0.47	0.3	6.89	20.0	1.25	1.2	Discharge to Existing Draw 1
EX-3	84513	1.94	0.3	6.89	20.0	1.25	5.0	Discharge to Existing Draw 1
EX-4	18627	0.43	0.3	6.89	20.0	1.25	1.1	Discharge to Existing Draw 1
SUB-BASIN TOTAL								7.3
EX-5	48623	1.12	0.3	6.89	20.0	1.25	2.9	Discharge to Existing Draw 2
EX-6	184234	4.23	0.3	6.89	20.0	1.25	10.9	Discharge to Existing Draw 2
EX-7	35675	0.83	0.3	6.89	20.0	1.25	2.1	Discharge to Existing Draw 2
SUB-BASIN TOTAL								15.9
EX-8	342445	7.86	0.3	6.89	20.0	1.25	20.3	Discharge to Existing Draw 3
EX-9	26663	0.59	0.3	6.89	20.0	1.25	1.5	Discharge to Existing Draw 3
EX-10	1642	0.20	0.3	6.89	20.0	1.25	0.5	Discharge to Existing Draw 3
EX-11	68256	1.57	0.3	6.89	20.0	1.25	4.0	Discharge to Existing Draw 3
EX-12	15798	0.36	0.3	6.89	20.0	1.25	0.9	Discharge to Existing Draw 3
EX-13	112893	2.59	0.3	6.89	20.0	1.25	6.7	Discharge to Existing Draw 3, Existing pond to bypass through proposed detention pond
HP-1	63354	1.45	0.9	8.74	10.0	1.11	12.7	Stubout for Highpoint Oaks Industrial Area. Existing to bypass through proposed detention pond. *
VRM-1	32011	0.73	0.9	8.74	10.0	1.11	6.4	Vista Ridge Mall Dr. Inlet, Existing to bypass through proposed detention pond. **
VRM-2	24079	0.55	0.9	8.74	10.0	1.11	4.8	Vista Ridge Mall Dr. Inlet, Existing to bypass through proposed detention pond. ***
SUB-BASIN TOTAL								58.0
TOTAL SITE DISCHARGE							84.3	

Note: Draw 2 & Draw 3 merge south of proposed subdivision within platted common space.
 * - Q from record drawings Highpoint Oaks Estates, dated 5/19/99 = 12.3cfs
 ** - Q from record drawings Highpoint Oaks Estates, dated 5/19/99 = 6.2cfs
 *** - Q from record drawings Highpoint Oaks Estates, dated 5/19/99 = 6.2cfs

DRAINAGE DESIGN
 Rational Method
 $Q_{100} = C \times C_r \times I_{100} \times A$ (C=0.30 for Undeveloped)
 C, *C_r* and *I* values taken from City of Lewisville Drainage Criteria Manual.
 Storm sewer design is based on the 100-year storm.



BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road.
Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
Elevation = 541.23

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE	NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

DESIGNED BY: JMK
 DRAWN BY: JLF
 CHECKED BY: JMK

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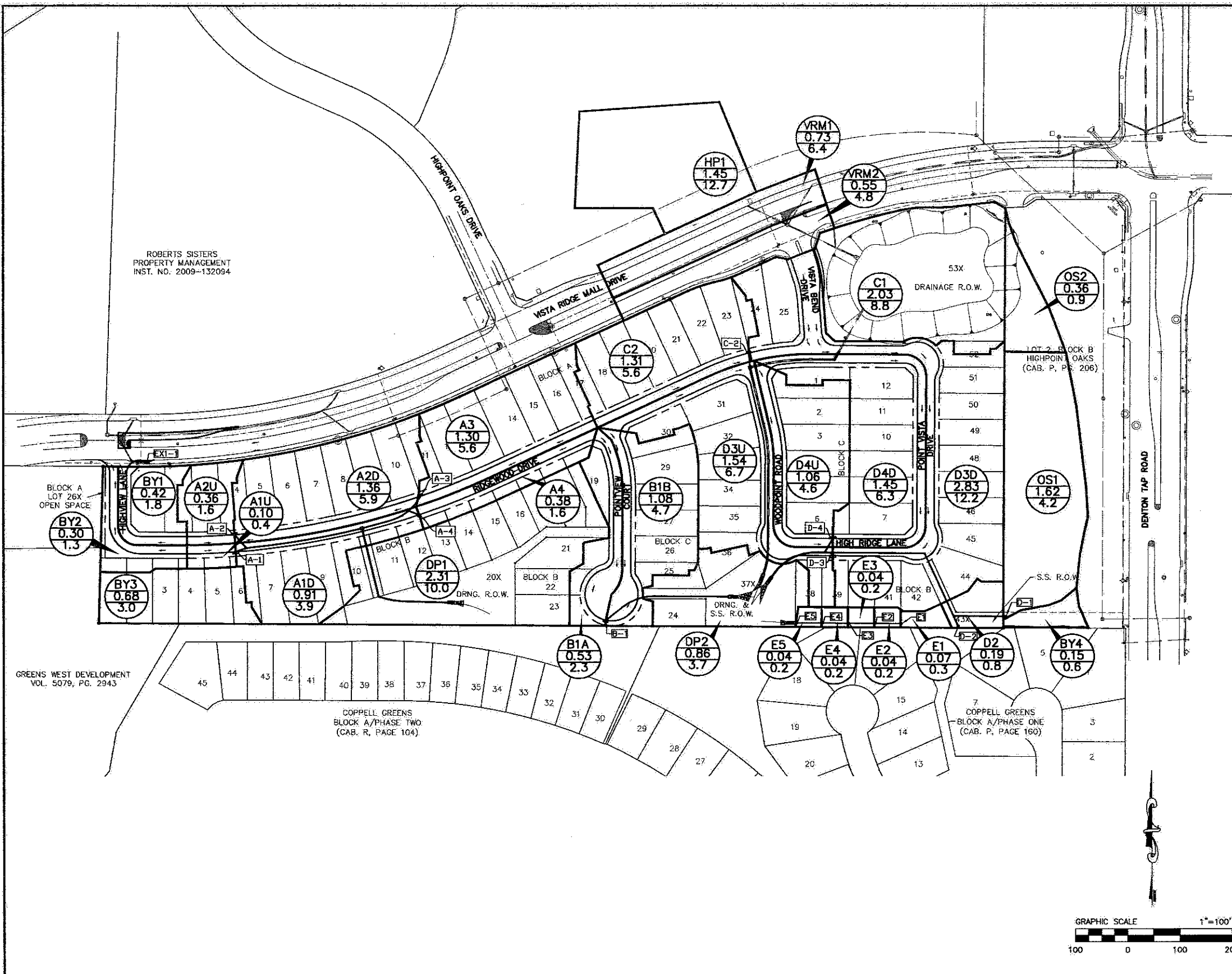
ENGINEER: Jason Kaiser
 P.E. No. 110015 Date: 18 JUL 2013

JBI PARTNERS

DRAINAGE AREA MAP
 EXISTING CONDITIONS
 HIGHPOINT OAKS ESTATES
 City of Lewisville, Denton County, Texas

PROJECT NO. GEH004
 SHEET NO. 15

Plotted by: jfitzgerald Plot Date: 7/19/2013 10:16 AM
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LEGEND

- X
XX.X
XXX DRAINAGE AREA NUMBER
- PROPOSED DRAINAGE AREA (ACRES)
- PROPOSED RUNOFF, Q (CFS)
- PROPOSED DRAINAGE DIVIDE
- EXISTING CONTOURS
- PROPOSED FLOW DIRECTION
- A1 PROPOSED INLET LABEL
- PROPOSED INLET

DRAINAGE THEORY

Rational Method: $Q=CIA$

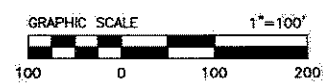
Q ~ runoff [c.f.s.]
 C ~ runoff coefficient
 $C(\text{developed}) = 0.45$ single family
 I ~ Intensity [in/hr]
 $I(100\text{yr}) = 7.69$ in/hr
 A ~ Area [acres]
 K ~ Antecedent Prec. Coef. = 1.25

STREET CAPACITY

Capacity for 33' B-B Street with 5-inch Crown is 5.73 cfs for one side while leaving 12' open travel lane.

Note: Street Capacity calculations based on minimum grade (0.6%).

RUNOFF CALCULATIONS							
Drainage Area #	Area (Acres)	Runoff Coeff.	Intensity (in./hr.)	Time (conc.) (minutes)	Antecedent Prec. Coef.	Discharge (c.f.s.)	Destination & Notes
"A"	"C"	"I ₁₀₀ "	T _c	"K ₁₀₀ "	"Q ₁₀₀ "		
BY1	0.42	0.45	7.69	15.0	1.25	1.8	Vista Ridge Mall Dr. storm system
BY2	0.30	0.45	7.69	15.0	1.25	1.3	Vista Ridge Mall Dr. storm system
BY3	0.68	0.45	7.69	15.0	1.25	3.0	Sheet flow to platted common space
BY4	0.15	0.45	7.69	15.0	1.25	0.6	Sheet flow to platted common space
Bypass Total	1.6					6.7	
A1U	0.10	0.45	7.69	15.0	1.25	0.4	Inlet A1
A1D	0.91	0.45	7.69	15.0	1.25	3.9	Inlet A1
A2U	0.36	0.45	7.69	15.0	1.25	1.6	Inlet A2
A2D	1.36	0.45	7.69	15.0	1.25	5.9	Inlet A2
A3	1.30	0.45	7.69	15.0	1.25	5.6	Inlet A3
A4	0.38	0.45	7.69	15.0	1.25	1.6	Inlet A4
DP1	2.31	0.45	7.69	15.0	1.25	10.0	Detention Pond 1
Basin Total	6.7					29.1	
B1A	0.53	0.45	7.69	15.0	1.25	2.3	Inlet B1
B1B	1.08	0.45	7.69	15.0	1.25	4.7	Inlet B1
HP1	1.45	0.9	6.74	10.0	1.11	12.7	Proposed Conditions to remain at existing flow & bypass proposed detention pond
VRM1	0.73	0.9	6.74	10.0	1.11	6.4	Proposed Conditions to remain at existing flow & bypass proposed detention pond
VRM2	0.55	0.9	6.74	10.0	1.11	4.8	Proposed Conditions to remain at existing flow & bypass proposed detention pond
OS2	0.36	0.3	6.89	20.0	1.25	0.9	Existing flow out of pond to bypass proposed detention pond
C1	2.03	0.45	7.69	15.0	1.25	8.8	Existing flow out of pond to bypass proposed detention pond
C2	1.31	0.45	7.69	15.0	1.25	5.6	Inlet C2
OS1	1.62	0.3	6.89	20.0	1.25	4.2	Drop Inlet D1, Proposed Conditions to remain at existing flow & bypass proposed detention pond
D2	0.19	0.45	7.69	15.0	1.25	0.8	Inlet D1
D3U	1.54	0.45	7.69	15.0	1.25	6.7	Inlet D3
D3D	2.83	0.45	7.69	15.0	1.25	12.2	Inlet D3
D4U	1.06	0.45	7.69	15.0	1.25	4.6	Inlet D4
D4D	1.45	0.45	7.69	15.0	1.25	6.3	Inlet D4
E1	0.07	0.45	7.69	15.0	1.25	0.3	Inlet E1
E2	0.04	0.45	7.69	15.0	1.25	0.2	Inlet E2
E3	0.04	0.45	7.69	15.0	1.25	0.2	Inlet E3
E4	0.04	0.45	7.69	15.0	1.25	0.2	Inlet E4
E5	0.04	0.45	7.69	15.0	1.25	0.2	Inlet E5
DP2	0.86	0.45	7.69	15.0	1.25	3.7	Detention Pond 2
Basin Total	17.8					85.8	
TOTAL SITE & BASINS	26.1					121.58	



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Elevation = 541.45

BM #2: Square cut in Inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
Elevation = 541.23

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE	NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

DESIGNED BY: JMK
 DRAWN BY: JLF
 CHECKED BY: JMK

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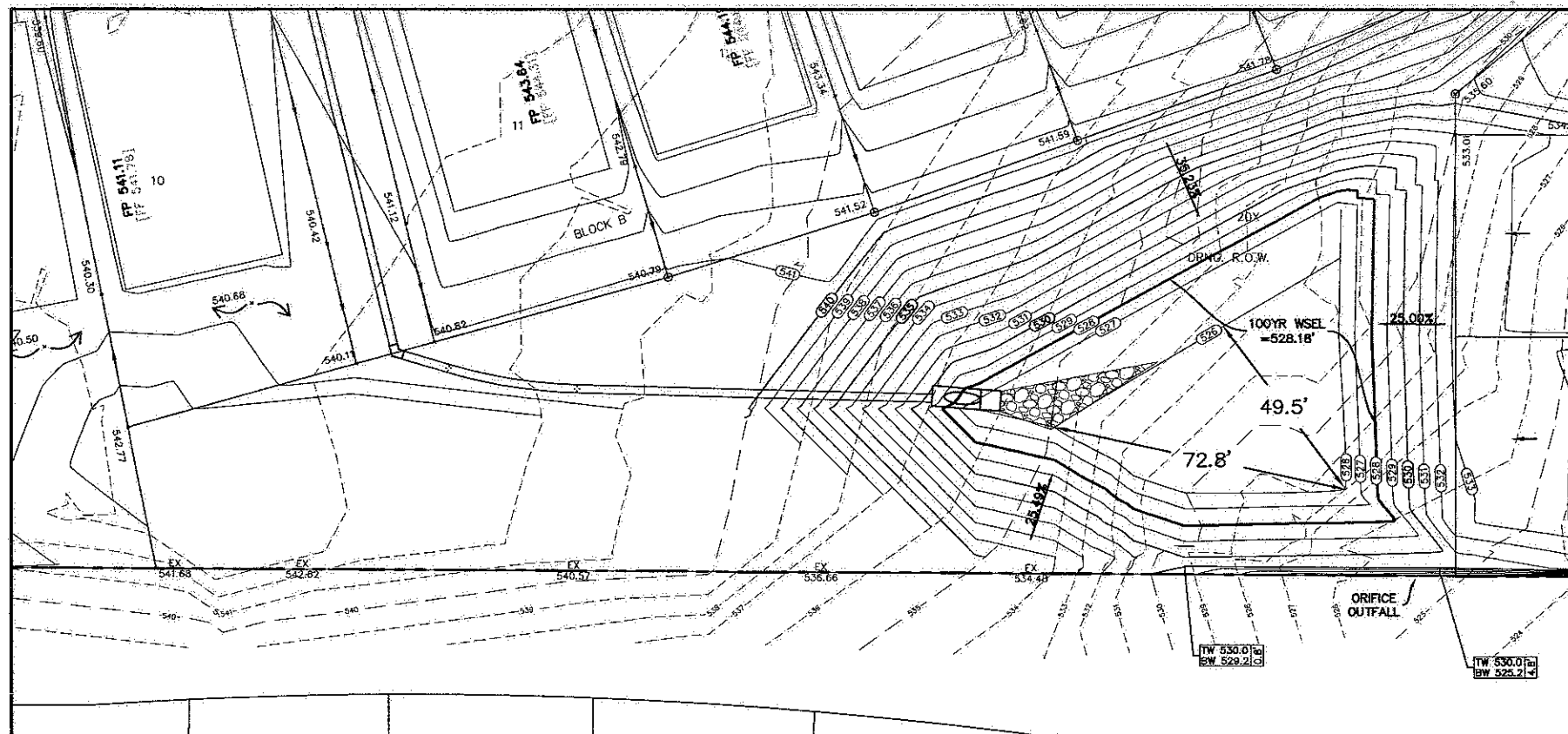
ENGINEER: Jason Kaiser
 P.E. No. 110015 Date: 18 JUL 2013



DRAINAGE AREA MAP
PROPOSED CONDITIONS
HIGHPOINT OAKS ESTATES
 City of Lewisville, Denton County, Texas

PROJECT NO. GEH004
 SHEET NO. 16

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NOTE:
 ALL ENTRY SIGNS, STONE COLUMNS, AND STRUCTURAL WALL ELEMENTS INCLUDING, BUT NOT LIMITED TO REINFORCING BAR SIZES AND LENGTHS, FORMED CONCRETE WIDTHS AND DEPTHS, AND SUBGRADE PREPARATION FOR CONCRETE DETAILS, AS SHOWN ON LANDSCAPE PLANS, ARE GENERAL REPRESENTATIONS ONLY. CONTRACTOR TO PROVIDE SHOP DRAWINGS, SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS PRIOR TO CONSTRUCTION FOR REVIEW FOR COMPLIANCE WITH THE OVERALL DESIGN INTENT.

LEGEND	
--715--	EX. CONTOUR INTERVAL
x 790.30	PROP. FINISHED GRADE
FP 790.7	PROP. FINISHED PAD
←	PROP. STORM DRAINAGE FLOW
←	PROP. DRAINAGE FLOW DIRECTION
---	EX. FENCELINE
---	POSSIBLE GRADE BEAM BY BUILDER
---	PROPOSED STORM LINE & INLET
---	PROP. MAJOR CONTOUR
---	PROP. MINOR CONTOUR
○ _{pp}	EX. POWER POLE

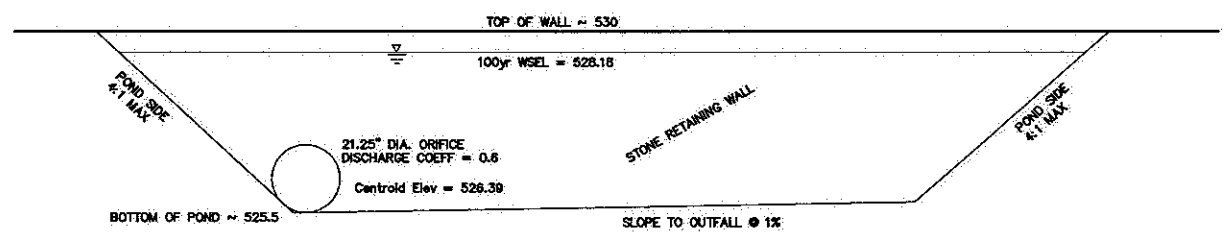
Show outlet pipe and headwalls

100-Year - Detention Pond Calculations
 Modified Rational Method

e	b	d	Drainage Areas:					
0.771	112.763	17.572	A1U, A1D, A2U, A2D, A3, A4, DP1	Note: Q allowable reduced from a calculated 17.3 cfs to 15.9 cfs as defined by the existing drainage area.				
Peak Discharge - Pre-Project			A	K	Q			
Duration (Min.)	Intensity (in./hr.)	C	(Acres)		(cfs)			
20.0	6.89	0.30	6.70	1.25	17.3			
Release Rate			Required Storage Volume					
15.9 cfs			9688 cu. Ft					
			369 cu. Yd.					
			0.22 ac-ft					
			Time to Peak(Tpeak)					
			30 minutes					
Peak Discharge - Post-Project			A	K	Q			
Duration (Min.)	Intensity (in./hr.)	C	(Acres)		(cfs)			
15.0	7.69	0.45	6.70	1.25	29.0			
Total Inflow - Proposed Conditions			A	Q	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cy)
Duration (Min.)	Intensity (in./hr.)	C	(Acres)	(cfs)				
10	8.74	0.450	6.70	26.4	15815	11927	3688	144
15	7.99	0.450	6.70	23.2	20863	14313	6550	243
20	6.89	0.450	6.70	20.8	24917	16698	8218	304
30	5.74	0.450	6.70	17.3	31158	21469	9688	359
40	4.96	0.450	6.70	14.9	35861	26240	9620	366
50	4.38	0.450	6.70	13.2	39610	31011	8607	319
60	3.94	0.450	6.70	11.9	42744	35782	6961	268
70	3.59	0.450	6.70	10.8	45417	40553	4963	180

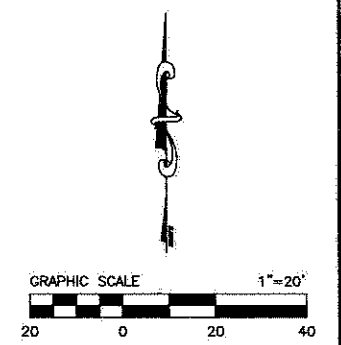
Pond Elevation	Area (acre)		Storage (acre-ft)	
	Lower	Upper	Storage	Cumulative
525.5	0	0	0.00	0.00
526	0	2416	0.055	0.01
527	0.055	4380	0.101	0.08
528	0.101	5489	0.126	0.11
529	0.126	6705	0.154	0.14
530	0.154	8023	0.184	0.17

Water Surface Elevation	Required Storage	Return Year
528.18	0.22	100 yr



DETENTION POND 1 ORIFICE
 N.T.S.

$Q = CA\sqrt{2gh}$
 $Q = 15.9\text{ cfs}$
 $C = 0.6$
 $A = 2.47\text{ ft}^2$
 $g = 32.2\text{ ft/s}^2$
 $H = 1.79\text{ ft}$



BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road.
 Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
 Elevation = 541.23

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE	NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

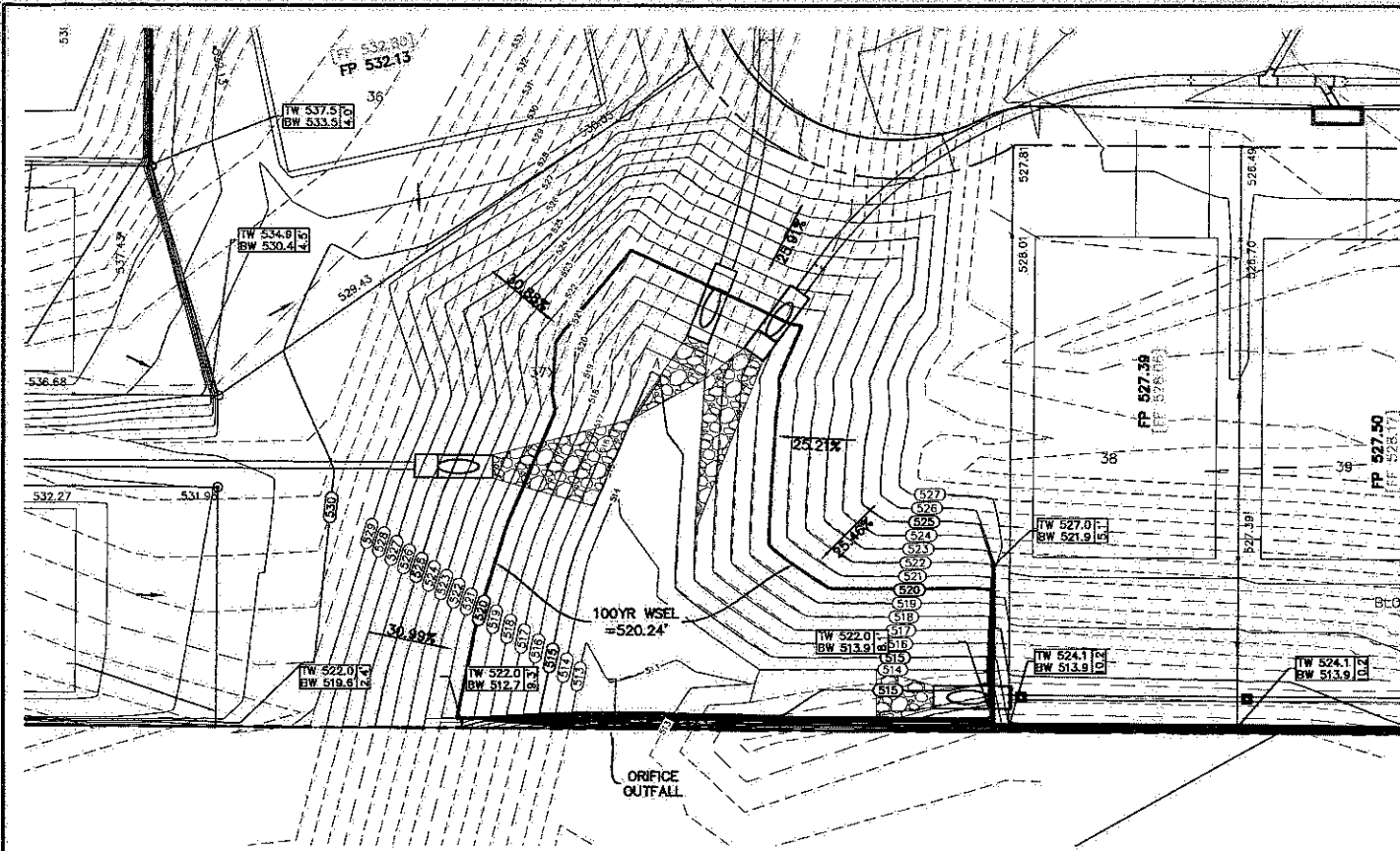
DESIGNED BY: JMK
 DRAWN BY: JLF
 CHECKED BY: JMK
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 ENGINEER: Jason Kaiser
 P.E. No. 319015 Date: 16 JUL 2013



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DETENTION POND 1		PROJECT NO.
DETAILS & CALCULATIONS		GEH004
HIGHPOINT OAKS ESTATES		SHEET NO.
City of Lewisville, Denton County, Texas		17

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 Plotted by: Fitzgerald, Plot Date: 7/17/2013 5:05 PM



LEGEND	
-715-	EX. CONTOUR INTERVAL
x 790.30	PROP. FINISHED GRADE
FP 790.7	PROP. FINISHED PAD
←	PROP. STORM DRAINAGE FLOW
←	PROP. DRAINAGE FLOW DIRECTION
-x-	EX. FENCELINE
---	POSSIBLE GRADE BEAM BY BUILDER
---	PROPOSED STORM LINE & INLET
---	PROP. MAJOR CONTOUR
---	PROP. MINOR CONTOUR
○ _{PP}	EX. POWER POLE

NOTE:
 ALL ENTRY SIGNS, STONE COLUMNS, AND STRUCTURAL WALL ELEMENTS INCLUDING, BUT NOT LIMITED TO REINFORCING BAR SIZES AND LENGTHS, FORMED CONCRETE WIDTHS AND DEPTHS, AND SUBGRADE PREPARATION FOR CONCRETE DETAILS, AS SHOWN ON LANDSCAPE PLANS, ARE GENERAL REPRESENTATIONS ONLY. CONTRACTOR TO PROVIDE SHOP DRAWINGS, SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS PRIOR TO CONSTRUCTION FOR REVIEW FOR COMPLIANCE WITH THE OVERALL DESIGN INTENT.

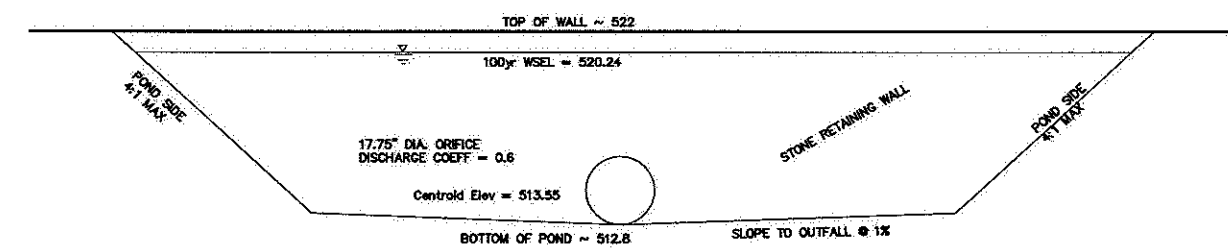
Show outlet pipe and headwalls on plan.

100-Year - Detention Pond Calculations
 Modified Rational Method

e	b	d	Drainage Areas:					
0.771	112.783	17.572	B1A, B1B, C1, D2U, D2D, D3U, D3D, E1-E6, DP2.					
Peak Discharge - Pre-Project								
Duration (Min.)	Intensity (in./hr.)	C	A (Acres)	K	Q (cfs)			
20.0	6.89	0.30	11.09	1.25	28.6			
Release Rate: 20.2 cfs								
Peak Discharge - Post-Project								
Duration (Min.)	Intensity (in./hr.)	C	A (Acres)	K	Q (cfs)			
15.0	7.69	0.45	11.09	1.25	48.0			
Total Inflow - Proposed Conditions								
Duration (Min.)	Intensity (in./hr.)	C	A (Acres)	Q (cfs)	Inflow (cfs)	Outflow (cfs)	Storage (cfs)	Storage (cy)
10	8.74	0.450	11.09	43.6	26178	15181	10997	407
15	7.69	0.450	11.09	38.4	34532	18217	16316	604
20	6.89	0.450	11.09	34.4	41243	21253	19990	740
30	5.74	0.450	11.09	28.7	51573	27325	24248	898
40	4.96	0.450	11.09	24.7	69398	33967	25960	961
50	4.38	0.450	11.09	21.9	65578	39470	26108	967
60	3.94	0.450	11.09	19.7	70750	45542	25208	934
70	3.59	0.450	11.09	17.9	75175	51614	23561	873
80	3.30	0.450	11.09	16.5	79042	57886	21356	791
90	3.06	0.450	11.09	15.3	82479	63759	18720	693
100	2.86	0.450	11.09	14.3	85573	69631	15742	583
110	2.68	0.450	11.09	13.4	88388	75903	12485	462
120	2.53	0.450	11.09	12.6	90973	81975	8998	333
130	2.40	0.450	11.09	12.0	93364	88048	5316	197
140	2.28	0.450	11.09	11.4	95590	94120	1470	54
150	2.17	0.450	11.09	10.9	97672	100192	-2520	-93

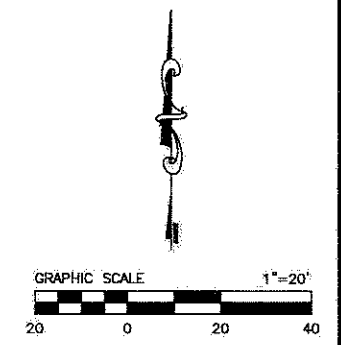
Pond Elevation	Area (acre)			Δh	Storage (acre-ft)	
	Lower	(sqft)	Upper		Storage	Cumulative
512.8	0	0	0	0.00	0.00	0.00
513	0	254	0.006	0.20	0.00	0.00
514	0.006	1065	0.024	1.00	0.01	0.01
515	0.024	2198	0.05	1.00	0.04	0.05
516	0.05	3194	0.073	1.00	0.06	0.11
517	0.07	4052	0.093	1.00	0.08	0.20
518	0.09	4898	0.112	1.00	0.10	0.30
519	0.11	5791	0.133	1.00	0.12	0.42
520	0.13	6730	0.154	1.00	0.14	0.56
521	0.15	7683	0.176	1.00	0.17	0.73
522	0.18	8787	0.202	1.00	0.19	0.92

Water Surface Elevation	Required Storage	Return Year
520.24	0.60	100 yr



$Q = CA\sqrt{2gH}$
 $Q = 20.2 \text{ cfs}$
 $C = 0.6$
 $A = 1.69 \text{ ft}^2$
 $g = 32.2 \text{ ft/s}^2$
 $H = 6.89 \text{ ft}$

DETENTION POND 2 ORIFICE
 N.T.S.



BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road.
 Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
 Elevation = 541.23

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE	NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

DESIGNED BY: JMK
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ENGINEER: Jason Kaiser
 P.E. No. 110015 Date: 18 JUL 2013



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DETENTION POND 2		PROJECT NO.
DETAILS & CALCULATIONS		GEH004
HIGHPOINT OAKS ESTATES		SHEET NO.
City of Lewisville, Denton County, Texas		18

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Rainfall Frequency	2-year	5-year	25-year	100-year
e	0	0	0	0.771
b	0	0	0	112.793
c	0	0	0	17.572

Inlet Capacity Calculation Table

Inlet No.	Inlet Type	Paving Station	Drainage Areas										*SL* Street Long Slope	Street Section (type)	Roadway Cross Slope "Sx" (ft/ft)	Manning's coefficient for pavement "n"	Street Width (F-F) (ft)	Street Crown Height (ft)	Half Street Gutter Capacity to Crown (cfs)	Depth of Flow (ft)	Spread of Flow "T" (ft)	Gutter Cross Slope "SW" (ft/ft)	Width of Depressed Gutter "W" (ft)	Ratio of Flow "EO"	Gutter Depression Depth "a" (ft)	Equivalent Cross Slope "Se" (%)	Required Length "LT" (ft)	Length Provided "L" (ft)	Inlet Efficiency "E"	Captured Flow "QT" (cfs)	Inlet Capacity (cfs)	Carryover Flow "q" (cfs)	Target Inlet	Effective Area Name	Effective Area (acres)	Comments
			Area No.	Areas (acres)	Runoff "c"	Design Storm Frequency	Conc. Time (min.)	Intensity (in/hr)	Runoff Antecedent "K"	Runoff (cfs)	Total Flow to Inlet "Q" (cfs)																									
A3	ONGC	6+89.14 Ridgewood Dr.	A3	1.30	0.45	100	15.00	7.69	1.25	5.61	5.61	0.006	Straight Crown	0.0030	0.0150	30	5	5.73	0.36	12.86	0.3333	1.5	0.933	0.5	0.314	6.6	8	100.00%	5.6	8.0	0.0		EA3	1.30		
A4	ONGC	6+74.70 Ridgewood Dr.	A4	0.38	0.45	100	15.00	7.69	1.25	1.82	1.82	0.006	Straight Crown	0.0030	0.0150	30	5	5.73	0.22	8.07	0.3333	1.5	0.982	0.5	0.330	3.8	5	100.00%	1.6	5.0	0.0		EA4	0.38		
C2	ONGC	13+75.43 Ridgewood Dr.	C2	1.31	0.45	100	15.00	7.69	1.25	5.65	5.65	0.006	Straight Crown	0.0030	0.0150	30	5	5.73	0.36	12.89	0.3333	1.5	0.933	0.5	0.314	6.7	8	100.00%	5.6	8.0	0.0		EC2	1.31		

Inlet No.	Area Designation	Areas (acres)	Runoff "c"	Runoff Coeff "K"	Conc. Time (min)	100-year Intensity (in/hr)	100-year Total Q (cfs)	Depth of Depress "a" (ft)	Length of Inlet Opening L or P (ft)	Width of Depress (ft)	Coeff (Weir or Orifice) Cw/Co	Flow at Opening "d" (ft)	Max Depth before bypass "dmax" (ft)	Capacity of Inlet per Foot of Length Q/L (cfs/ft)	Capacity of Inlet (cfs)	Carry-Over into Overflow (cfs)	Percent Qaa captured by inlet (%)	Noises	Effective Area Name	Effective Area (ac)
A1	A1U, A1D	1.01	0.45	1.25	15	7.69	4.36	0.42	10.0	1.5	2.30	0.28*	0.44	0.85*	8.53*	0.00	100%	Inlet depth as weir; Inlet capacity as weir	EA1U, A1D	1.01
A2	A2U, A2D	1.73	0.45	1.25	15	7.69	7.47	0.42	10.0	1.5	2.30	0.40*	0.44	0.85*	8.53*	0.00	100%	Inlet depth as weir; Inlet capacity as weir	EA2U, A2D	1.73
B1	B1A, B1B	1.61	0.45	1.25	15	7.69	6.96	1.42	8.0	1.5	2.30	0.43*	0.80	1.99**	15.95**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	EB1A, B1B	1.61
D1	D1	1.62	0.30	1.25	20	6.89	4.18	2.42	8.0	0.0	2.30	0.37*	1.00	2.33**	18.63**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	ED1	1.62
D2	D2	0.19	0.45	1.25	15	7.69	0.84	3.42	8.0	0.0	2.30	0.13*	1.00	2.33**	18.63**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	ED2	0.19
D3	D3U, D3D	4.37	0.45	1.25	15	7.69	18.90	4.42	10.0	1.5	2.30	0.75*	1.10	2.48**	24.79**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	ED3U, D3D	4.37
D4	D4U, D4D	2.51	0.45	1.25	15	7.69	10.87	5.42	10.0	1.5	2.30	0.52*	1.10	2.48**	24.79**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	ED4U, D4D	2.51
E1	E1	0.07	0.45	1.25	15	7.69	0.31	6.42	4.0	0.0	2.30	0.10*	1.00	2.33**	9.31**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	EE1	0.07
E2	E2	0.04	0.45	1.25	15	7.69	0.19	2.42	4.0	0.0	2.30	0.07*	1.00	2.33**	9.31**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	EE2	0.04
E3	E3	0.04	0.45	1.25	15	7.69	0.19	8.42	4.0	0.0	2.30	0.07*	1.00	2.33**	9.31**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	EE3	0.04
E4	E4	0.04	0.45	1.25	15	7.69	0.19	9.42	4.0	0.0	2.30	0.07*	1.00	2.33**	9.31**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	EE4	0.04
E5	E5	0.04	0.45	1.25	15	7.69	0.18	10.42	4.0	0.0	2.30	0.07*	1.00	2.33**	9.31**	0.00	100%	Inlet depth as weir; Inlet capacity as orifice	EE5	0.04

*Inlet depth is controlled by weir equation $Q=3.0 L Y^{1.5}$ where:

L=Inlet length (ft)
Y=depth

Q/L calculation controlled by $Y_{max}=1.4 H-0.7$ inserted into weir equation, where:
H=inlet opening height (0.5 ft)

**Inlet depth is controlled by orifice equation $Q=C_o H L (2 g d_o)^{0.5}$ where:

C_o=orifice coefficient (0.67)
H= height of inlet opening (ft)
L= length of inlet opening (ft)
d_o=effective head at the center of the orifice opening (ft)

All inlets shall be 5' or 10'
All depth of depression shall be 0.42'

BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road.
Elevation = 541.45

BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
Elevation = 541.23

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE	NO.	REVISIONS DURING PLAN REVIEW	BY	DATE

DESIGNED BY: JMK	PRELIMINARY FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES ENGINEER: Jason Kaiser P.E. No. 110015 Date: 18 JUL 2013
DRAWN BY: JLF	
CHECKED BY: JMK	



STORM SEWER CALCULATIONS		PROJECT NO.
INLET CALCULATIONS		GEH004
HIGHPOINT OAKS ESTATES		SHEET NO.
City of Lewisville, Denton County, Texas		19

Drawing: H:\Projects\GEH004\dwg\SEH004-STRM.dwg Saved By: jfitzgerold Save Time: 7/18/2013 11:07 AM Plotted By: jfitzgerold Plot Date: 7/18/2013 11:07 AM

STORMSEWER CALCULATIONS LINE A (100-YR)																																	
US Station	DS Station	Pipe Length	US Structure	DS Structure	CONTRIBUTING DRAINAGE AREA				Time of Concentration				Design Storm				Head Loss Calculations				HGL				T/C or Ground Elevation	COMMENTS							
					Name	Area	Total Area	Roadoff %	Antecedent %	Incremental cfs	Total cfs	Inlet	Travel	Total	Intensity	Roadoff	Q Pipe	Pipe Size Diameter	Width	Height	n	SF	V1 (ft/s)	V2 (ft/s)			(V1*2)/g	(V2*2)/g	Junction Loss	Inlet Loss Coefficient	Headloss at Inlet/Exit	US	DS
7+00.12	7+00.12	21.89	Inlet A-1	Inlet A-1	EA1A, A1B	1.81	1.81	0.45	1.25	0.57	0.57	15	0.08	15.00	100	7.69	4.4	4.4	21	0.013	0.0008	1.81	4.07	0.05	0.34	0.06	0.56	532.49	532.47	530.12	528.99	534.23	Pressure Flow
6+78.23	4+52.89	225.37	Lat A1	Manhole	EA2B, A2D	1.72	2.73	0.45	1.25	0.97	1.54	15	0.08	15.88	100	7.69	7.5	11.6	21	0.013	0.0056	4.07	4.07	0.34	0.34	0.00	0.00	532.41	531.14	530.12	528.99	534.23	Pressure Flow
4+52.86	3+18.15	134.71	Manhole	60 deg bend	EA3, EA4	1.67	4.41	0.45	1.25	0.94	2.46	15	0.08	16.32	100	7.69	7.2	19.1	24	0.013	0.0072	4.07	5.11	0.34	0.40	0.03	0.00	531.14	530.17	529.74	528.07	534.23	Pressure Flow
3+18.15	1+72.37	143.76	60 deg bend	Outlet		1.67	4.41	0.45	1.25	0.98	2.48	15	0.08	16.90	100	7.69	6.8	19.1	24	0.013	0.0072	5.11	5.11	0.40	0.40	0.03	0.00	530.14	529.99	528.07	527.34	534.23	Pressure Flow

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DESIGNED BY: JMK
DRAWN BY: JLF
CHECKED BY: JMK

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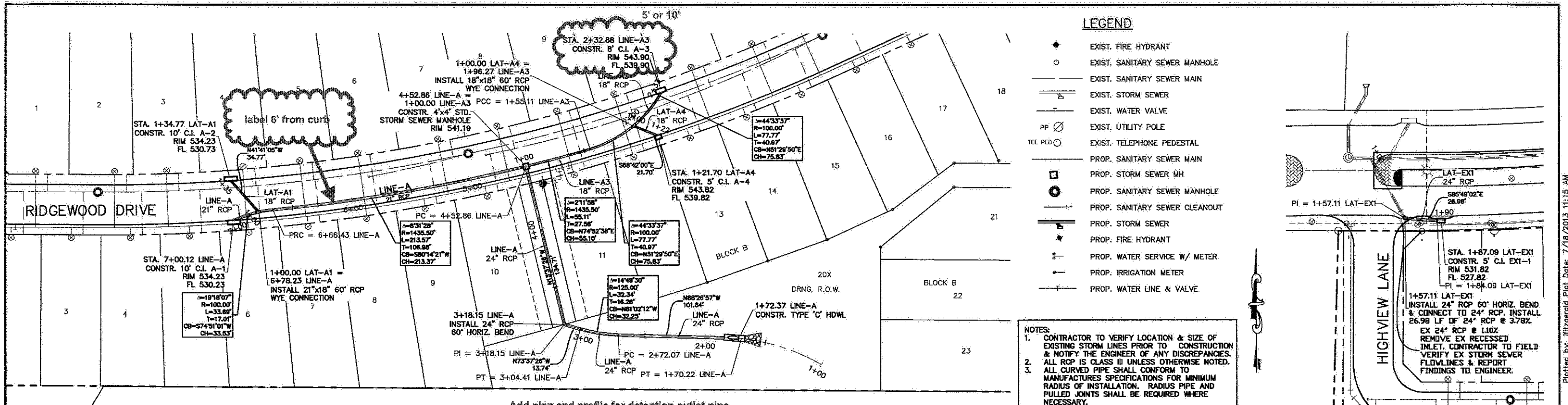
ENGINEER: Jason Kaiser
P.E. No. 110015 Date: 18 JUL 2013



PROJECT NO. GEH004
SHEET NO. 20

STORM SEWER CALCULATIONS
PIPE CALCULATIONS
HIGHPOINT OAKS ESTATES
City of Lewisville, Denton County, Texas

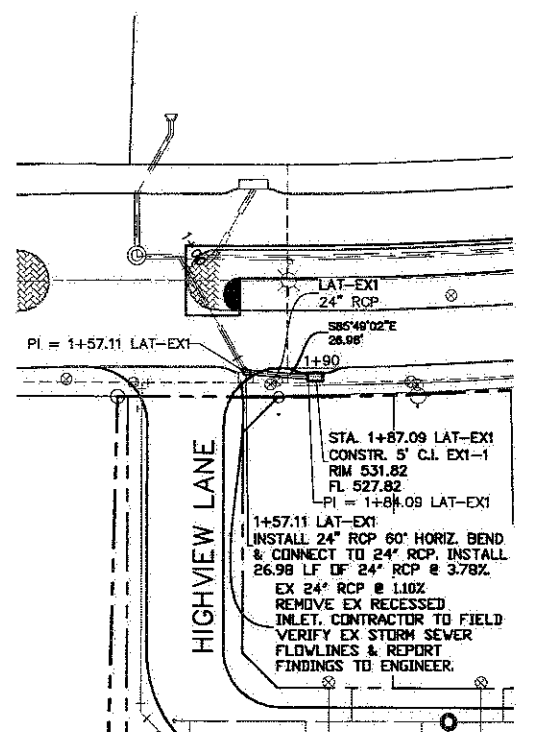
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LEGEND

- ◆ EXIST. FIRE HYDRANT
- EXIST. SANITARY SEWER MANHOLE
- EXIST. SANITARY SEWER MAIN
- EXIST. STORM SEWER
- EXIST. WATER VALVE
- ⊗ EXIST. UTILITY POLE
- TEL. PED. ○ EXIST. TELEPHONE PEDESTAL
- PROP. SANITARY SEWER MAIN
- PROP. STORM SEWER MH
- PROP. SANITARY SEWER MANHOLE
- PROP. SANITARY SEWER CLEANOUT
- PROP. STORM SEWER
- ◆ PROP. FIRE HYDRANT
- PROP. WATER SERVICE W/ METER
- PROP. IRRIGATION METER
- PROP. WATER LINE & VALVE

NOTES:
 1. CONTRACTOR TO VERIFY LOCATION & SIZE OF EXISTING STORM LINES PRIOR TO CONSTRUCTION & NOTIFY THE ENGINEER OF ANY DISCREPANCIES. ALL RCP IS CLASS III UNLESS OTHERWISE NOTED.
 2. ALL CURVED PIPE SHALL CONFORM TO MANUFACTURERS SPECIFICATIONS FOR MINIMUM RADIUS OF INSTALLATION. RADIUS PIPE AND FILLED JOINTS SHALL BE REQUIRED WHERE NECESSARY.

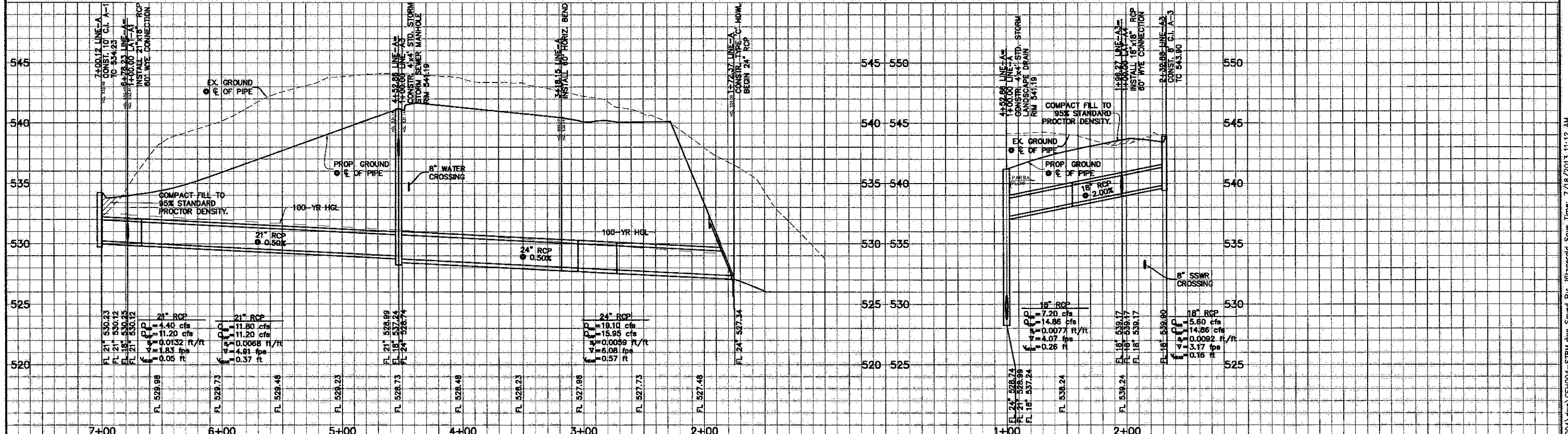


Add plan and profile for detention outlet pipe



LINE-A

LINE-A3



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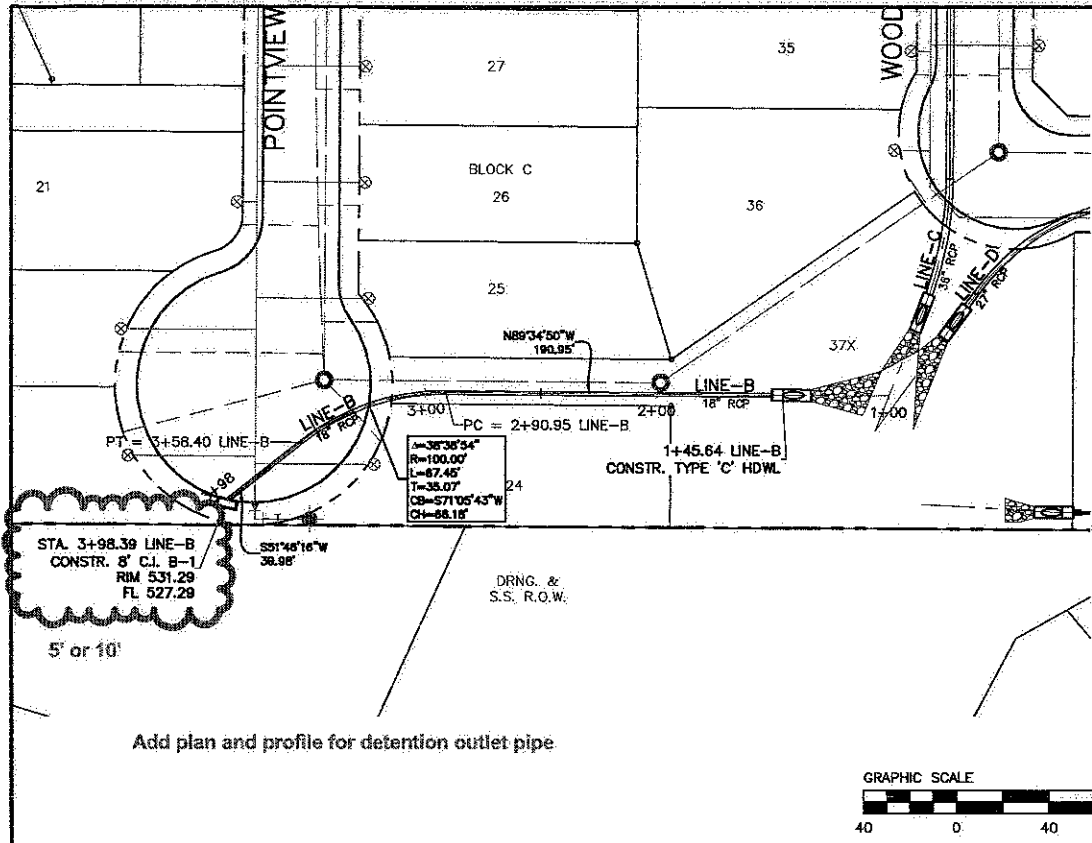
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ENGINEER: Jason Kaiser
 P.E. No. 110015 Date: 18 JUL 2013



STORM SEWER PLAN & PROFILES
 LINE-A, A3 & EX-1
 HIGHPOINT OAKS ESTATES
 City of Lewisville, Denton County, Texas

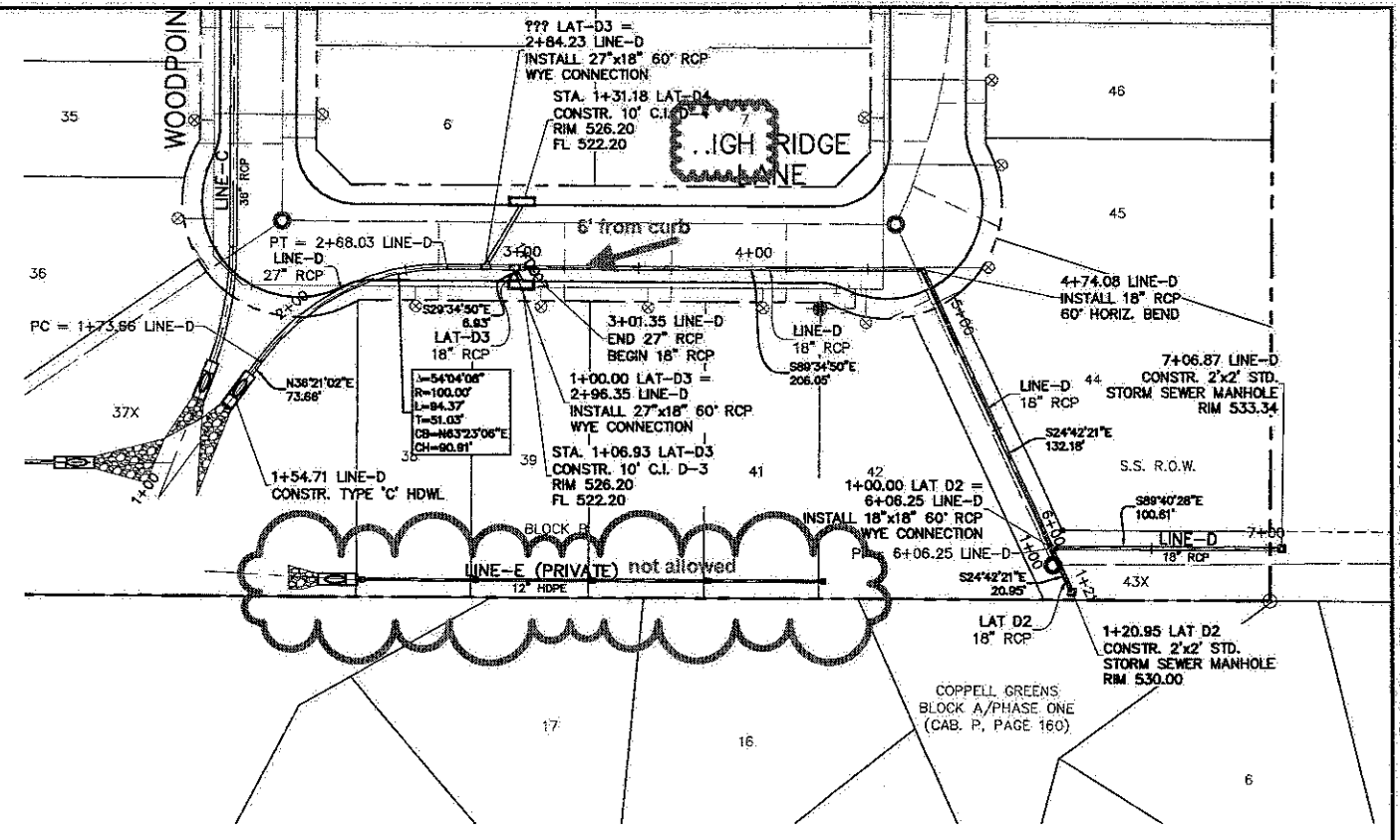
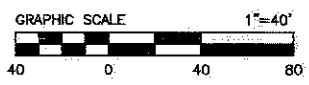
PROJECT NO. GEH004
 SHEET NO. 21



- LEGEND**
- ◆ EXIST. FIRE HYDRANT
 - EXIST. SANITARY SEWER MANHOLE
 - EXIST. SANITARY SEWER MAIN
 - EXIST. STORM SEWER
 - EXIST. WATER VALVE
 - PP ○ EXIST. UTILITY POLE
 - TEL PED ○ EXIST. TELEPHONE PEDESTAL
 - PROP. SANITARY SEWER MAIN
 - PROP. STORM SEWER MH
 - PROP. SANITARY SEWER MANHOLE
 - PROP. SANITARY SEWER CLEANOUT
 - PROP. STORM SEWER
 - ◆ PROP. FIRE HYDRANT
 - PROP. WATER SERVICE W/ METER
 - PROP. IRRIGATION METER
 - PROP. WATER LINE & VALVE

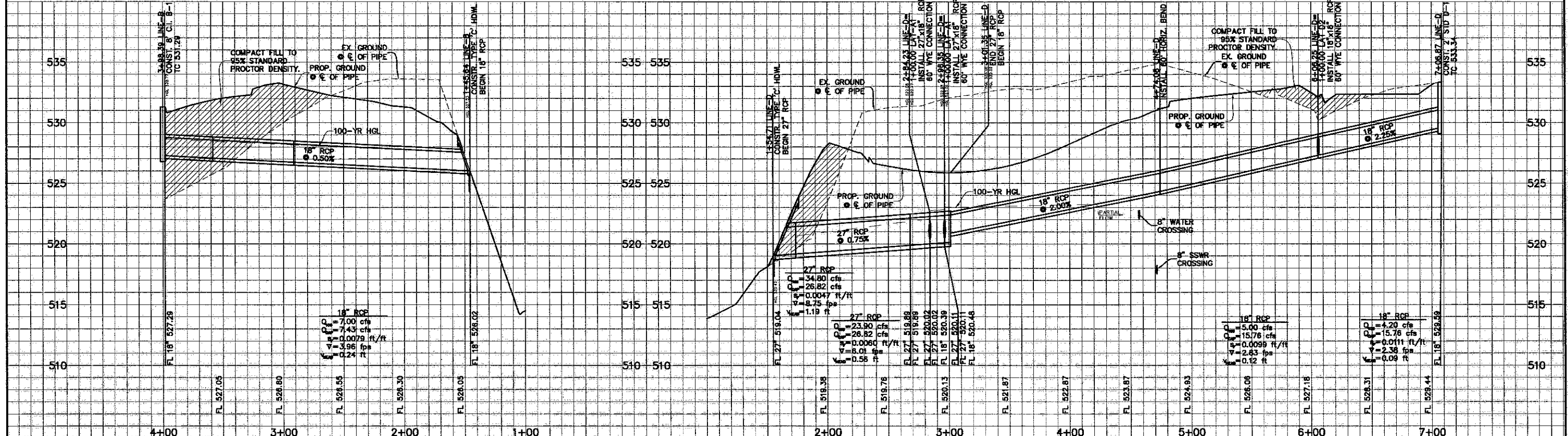
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LINE-B

LINE-D



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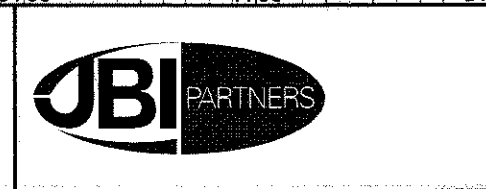
BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive.
Elevation = 541.23

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DESIGNED BY: JMK
 DRAWN BY: JLF
 CHECKED BY: JMK

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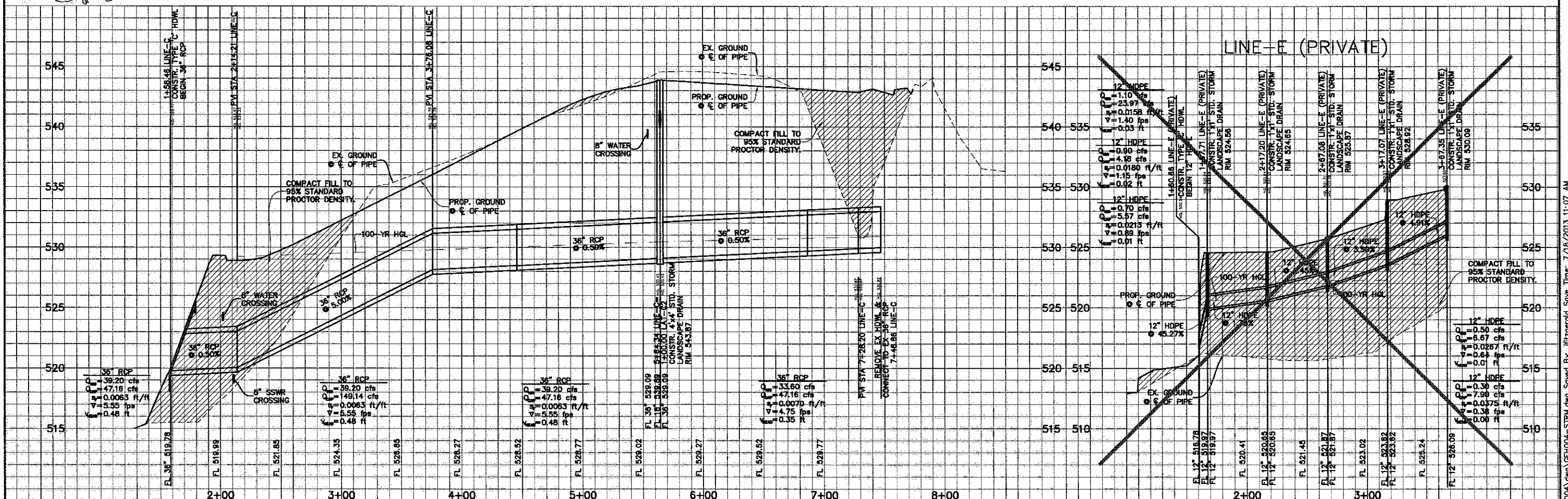
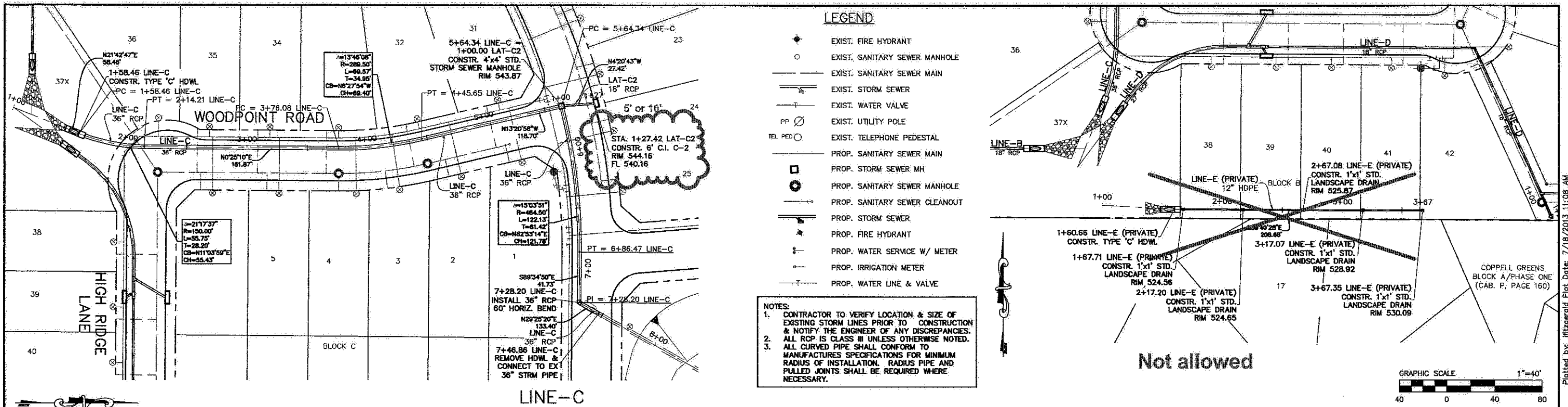
ENGINEER: Jason Kaliser
 P.E. No. 110015 Date: 18 JUL 2013



STORM SEWER PLAN & PROFILES
 LINE-B & D
 HIGHPOINT OAKS ESTATES
 City of Lewisville, Denton County, Texas

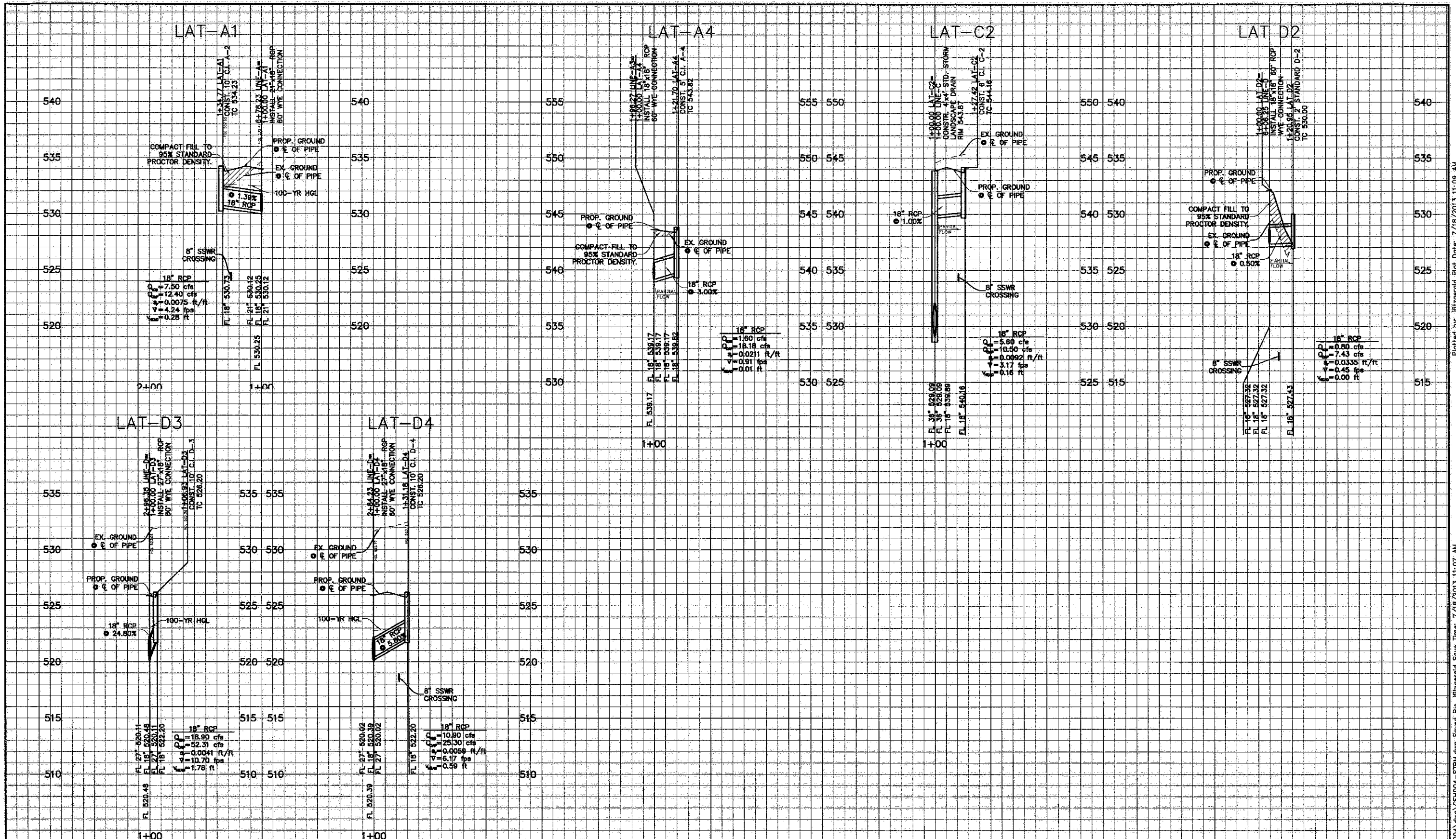
PROJECT NO. GEH004
 SHEET NO. 22

Plotted by: jfitzgerald Plot Date: 7/18/2013 11:08 AM



BM #1: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 160 feet west of the center of Denton Tap Road. Elevation = 541.45		BM #2: Square cut in inlet located in the south curb line of Vista Ridge Mall Drive approximately 365 feet west of the center of Highpoint Oaks Drive. Elevation = 543.23		DESIGNED BY: JMK	PRELIMINARY FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.		STORM SEWER PLAN & PROFILES LINE-C & E (PRIVATE) HIGHPOINT OAKS ESTATES City of Lewisville, Denton County, Texas	PROJECT NO. GEH004
NO. REVISIONS DURING CONSTRUCTION BY DATE NO. REVISIONS DURING PLAN REVIEW BY DATE				DRAWN BY: JLF				SHEET NO. 23
				CHECKED BY: JMK				ENGINEER: Jason Kaiser P.E. No. 110015 Date: 18 JUL 2013

Plotted by: jfitzgerald Plot Date: 7/18/2013 11:08 AM
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DESIGNED BY:
JMK

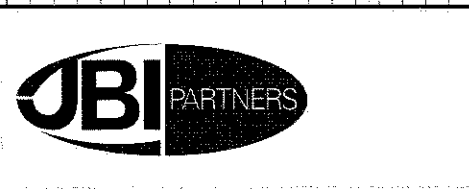
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ENGINEER: Jason Kaiser

P.E. No. 110015 Date: 18 JUL 2013



PROJECT NO.
GEH004

SHEET NO.
24

STORM SEWER PROFILES
LINE-E & LATERALS
HIGHPOINT OAKS ESTATES
City of Lewisville, Denton County, Texas

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