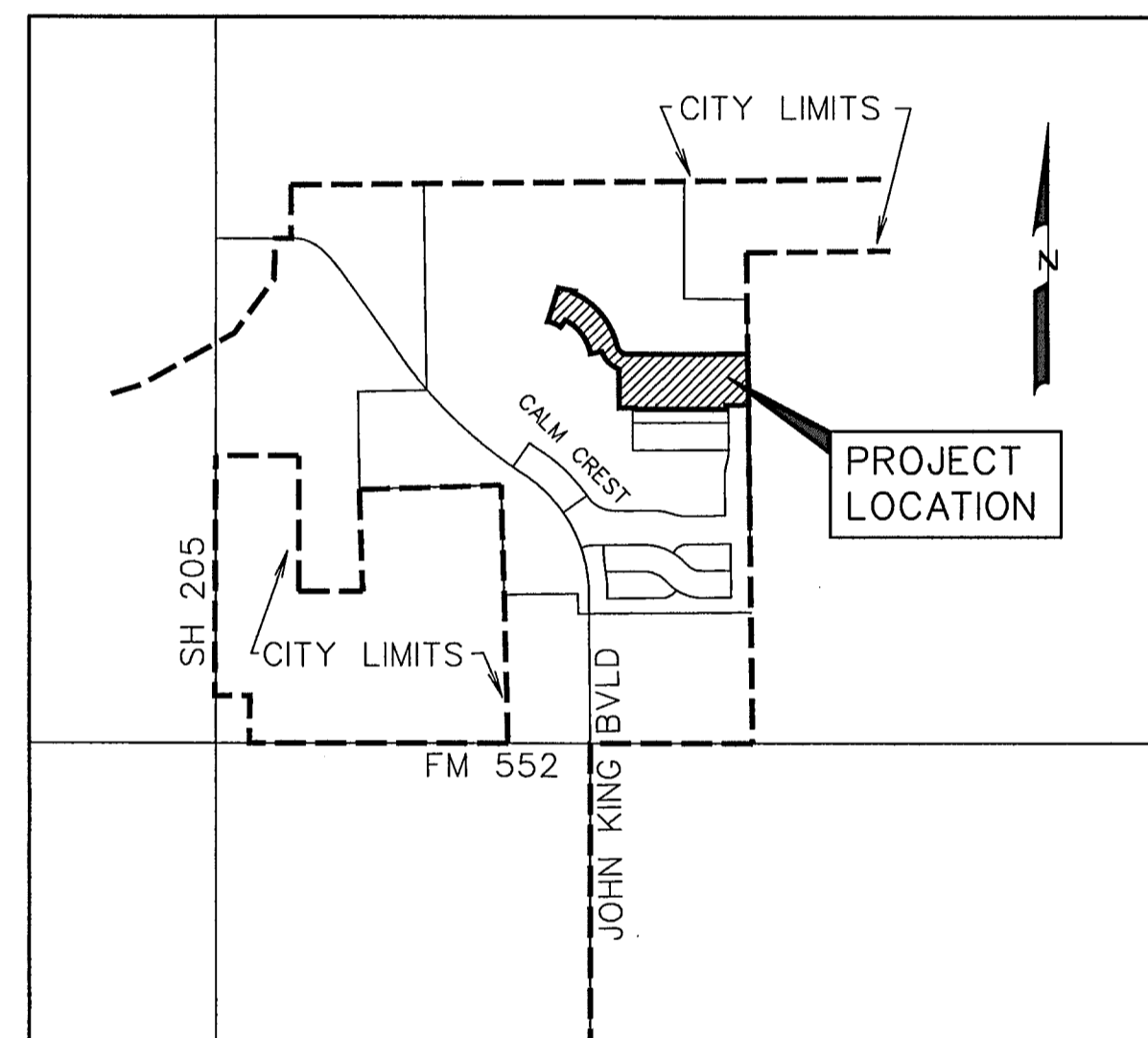


# DEVELOPMENT PLANS FOR BREEZY HILL PHASE V CITY OF ROCKWALL, TEXAS



VICINITY MAP  
NOT TO SCALE

PREPARED FOR  
BH PHASE III SF, LTD.

8214 WESTCHESTER DRIVE, SUITE 710 DALLAS, TEXAS 75225

**CORWIN ENGINEERING, INC. — CONSULTING ENGINEERS**

200 W. BELMONT, SUITE E

TBPE FIRM #5951

ALLEN, TEXAS 75013

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26	STREET SIGN PLAN

NOTE:

CITY OF ROCKWALL STANDARDS  
AND NCTCOG 3rd ADDITION STANDARDS  
SHALL BE USED FOR REFERENCE.



AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED  
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Warren L. Corwin,  
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September 27, 2016

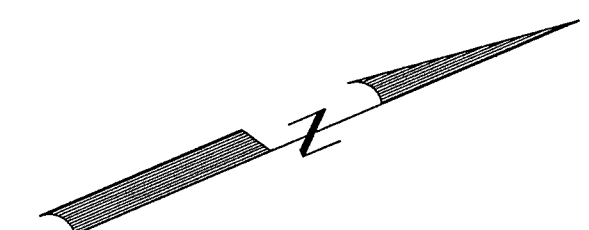
1	CITY COMMENTS	07/27/15
NO.	REVISIONS	DATE

JUNE 2015

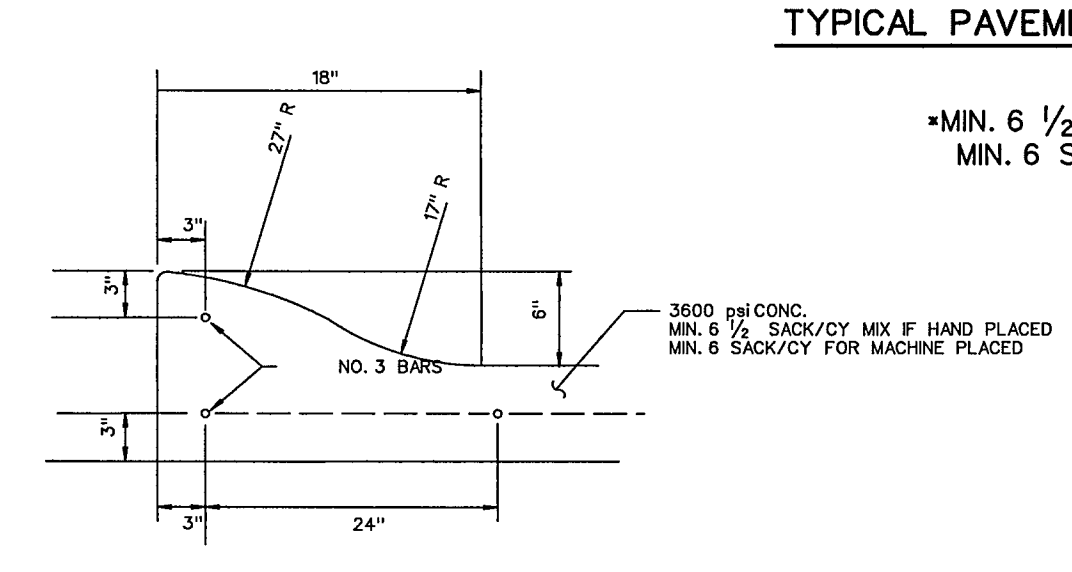
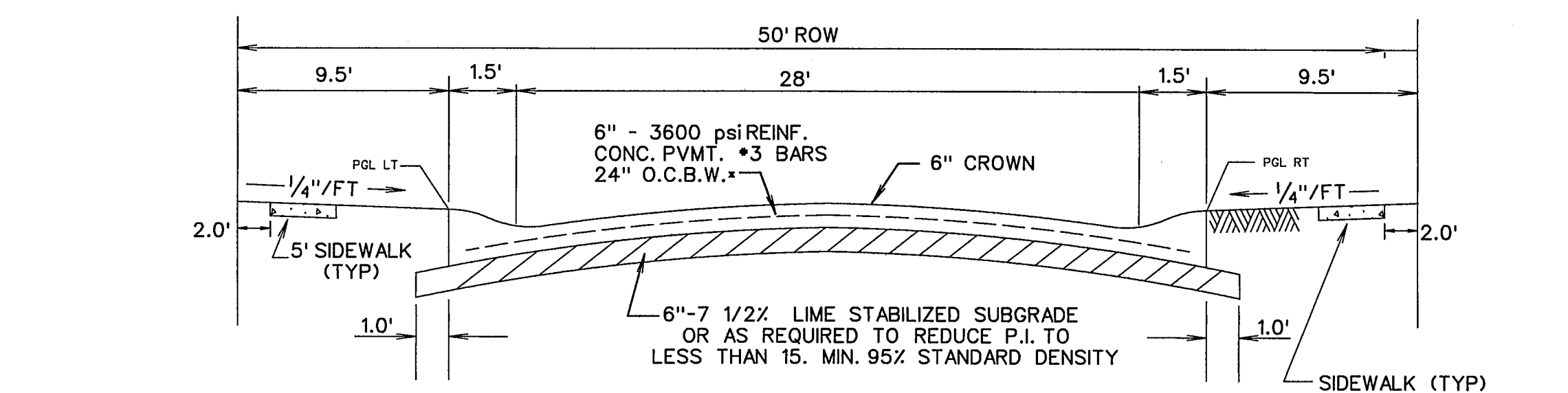
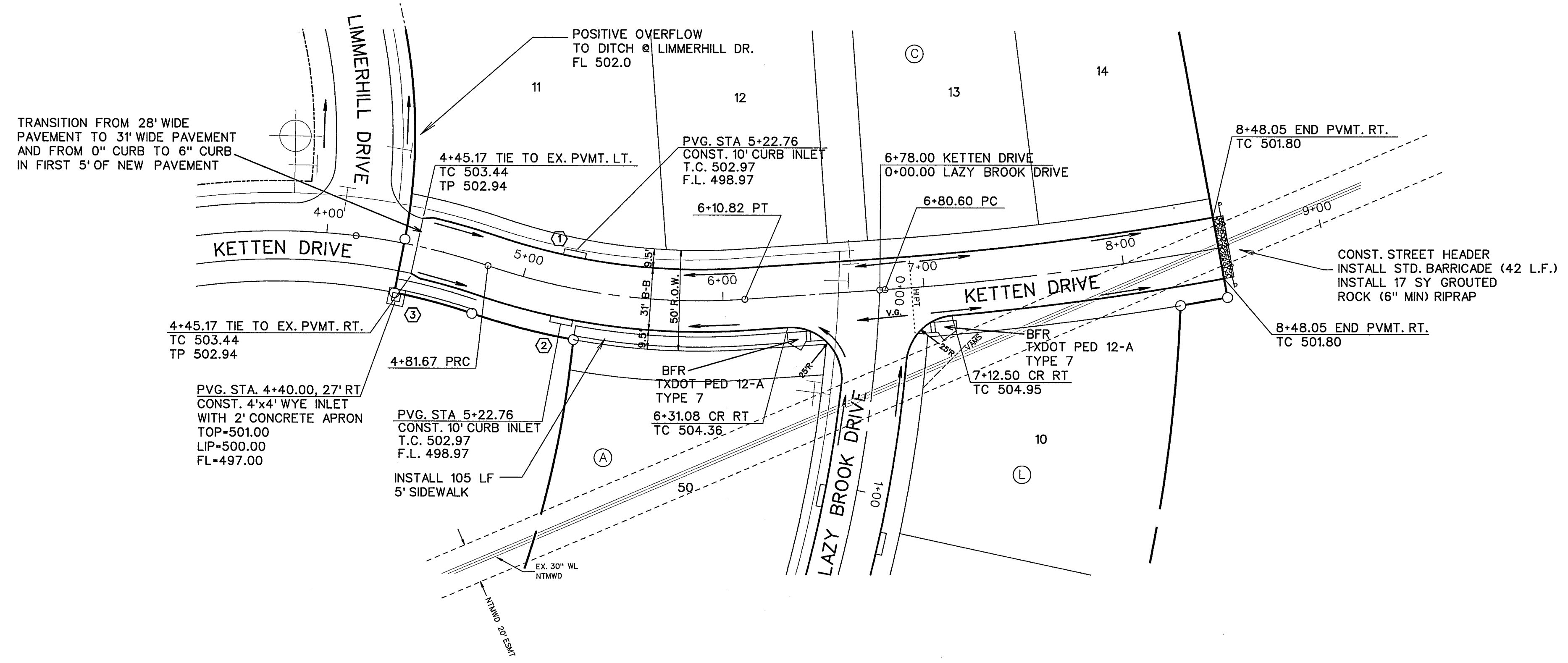


NOTE:

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.



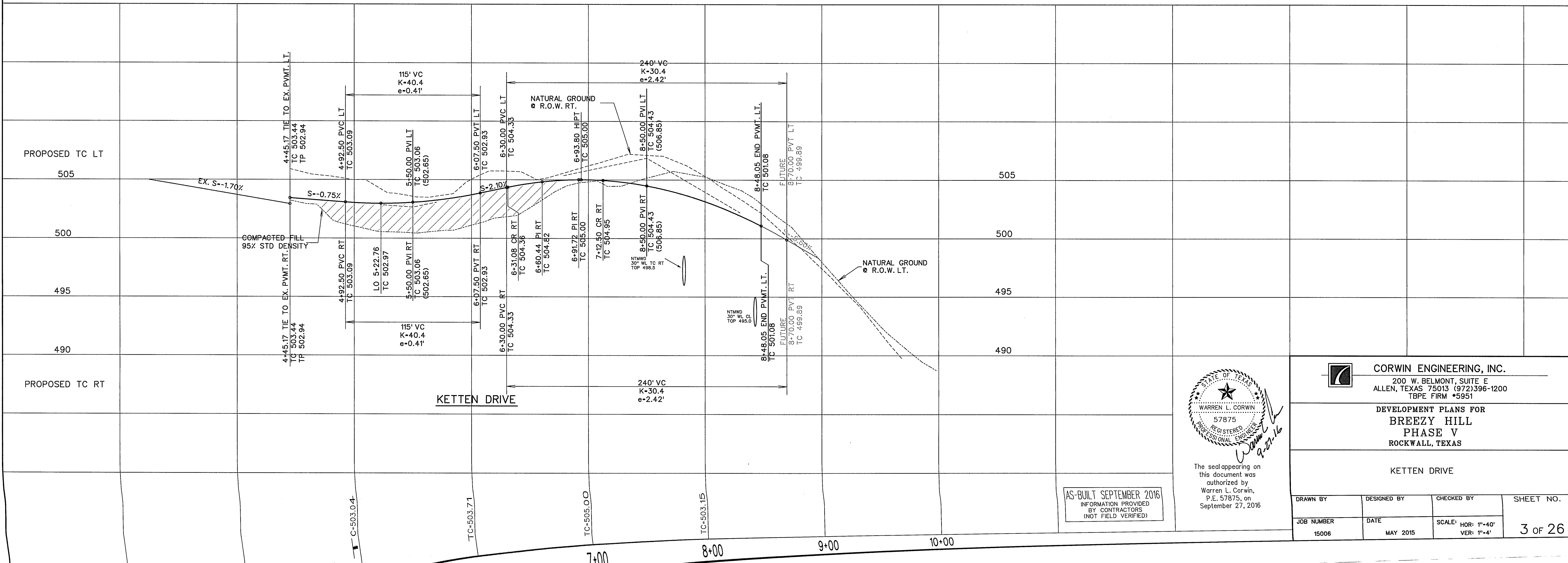
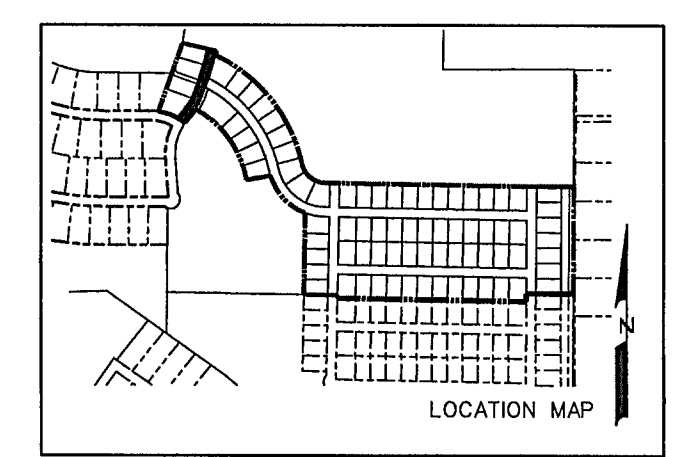
SCALE: 1" = 40'



**TYPICAL PAVEMENT SECTION - LAYDOWN CURB**  
N.T.S.  
\*MIN. 6 1/2 SACK/CY MIX IF HAND PLACED  
MIN. 6 SACK/CY FOR MACHINE PLACED

**MONOLITHIC CURB**  
N.T.S.

**BENCHMARK:**  
" X " Cut on top of curb on east side of John King Blvd.  
approx. 48' north of the centerline of Pleasant View Dr.  
ELEVATION = 505.61

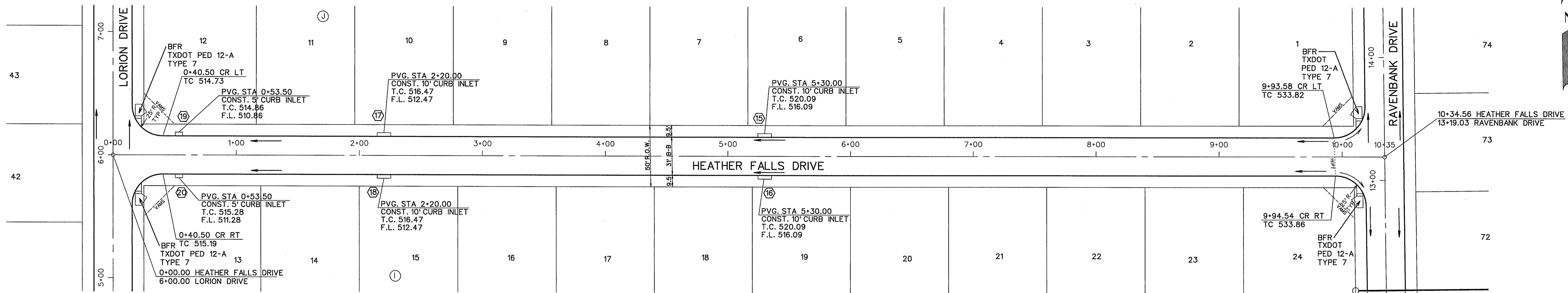
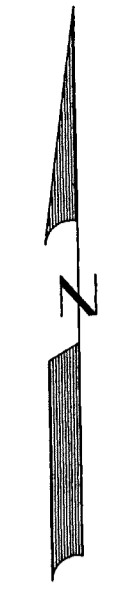


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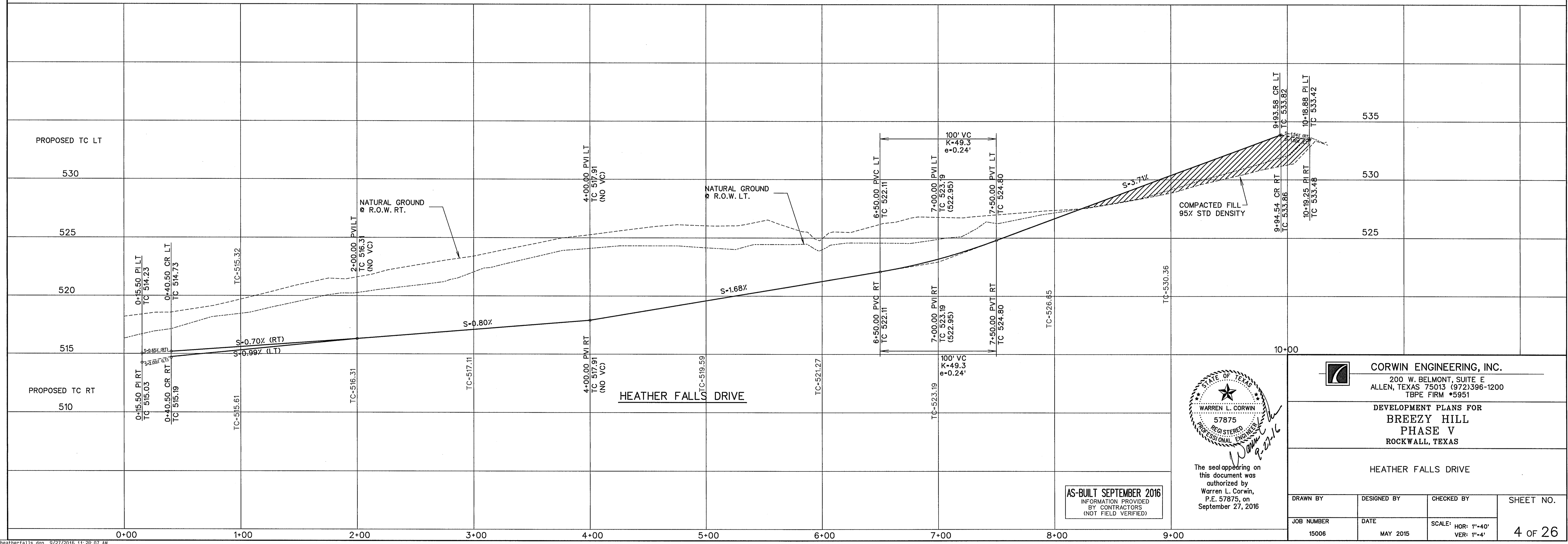
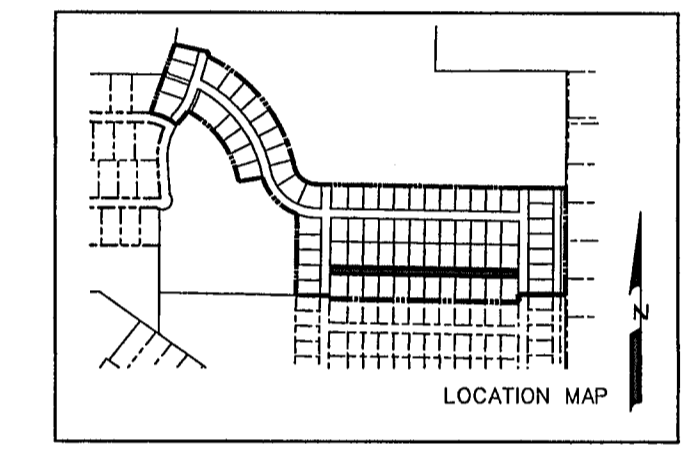
AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

<b>CORWIN ENGINEERING, INC.</b> 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 TBPE FIRM #5951			
DEVELOPMENT PLANS FOR <b>BREEZY HILL</b> PHASE V ROCKWALL, TEXAS			
<b>KETTEN DRIVE</b>			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	3 of 26
15008	MAY 2015		

SCALE: 1" = 40'



BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



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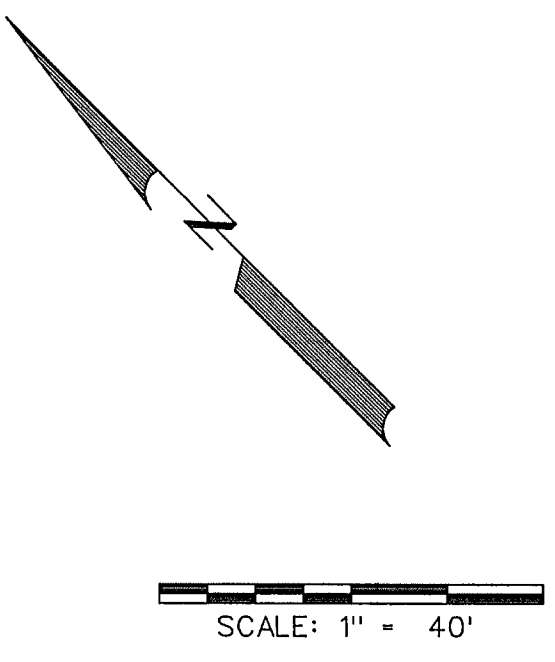
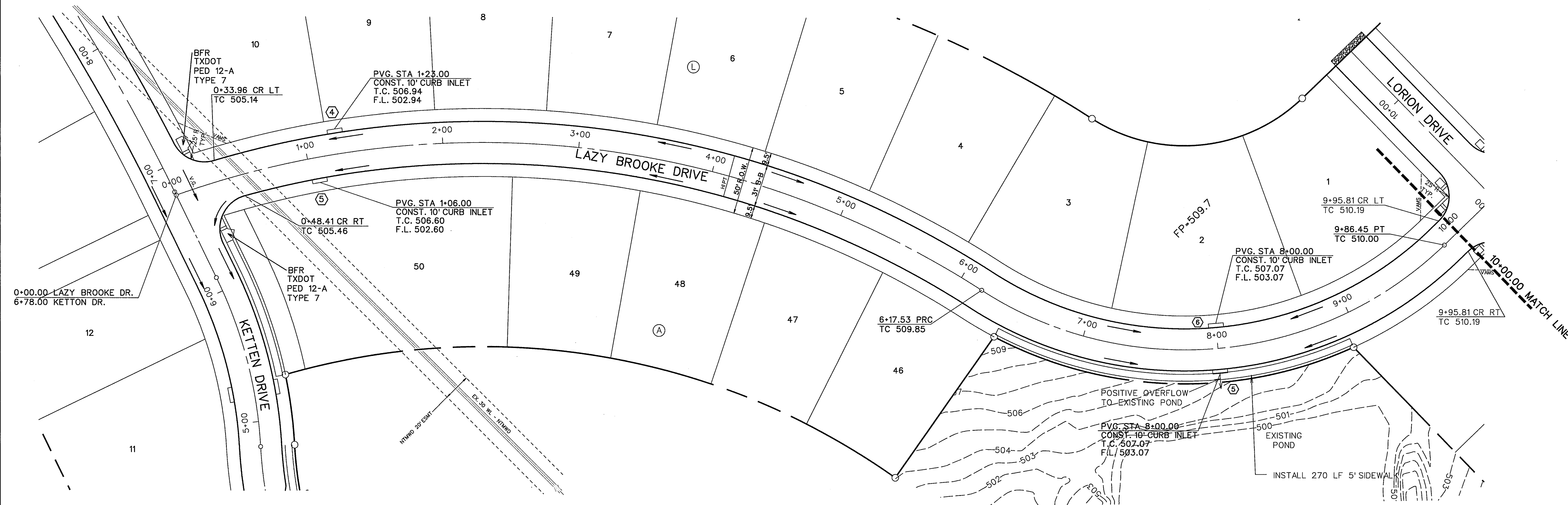
AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL  
 PHASE V**  
 ROCKWALL, TEXAS

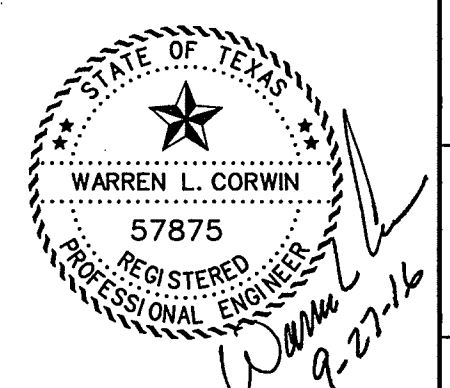
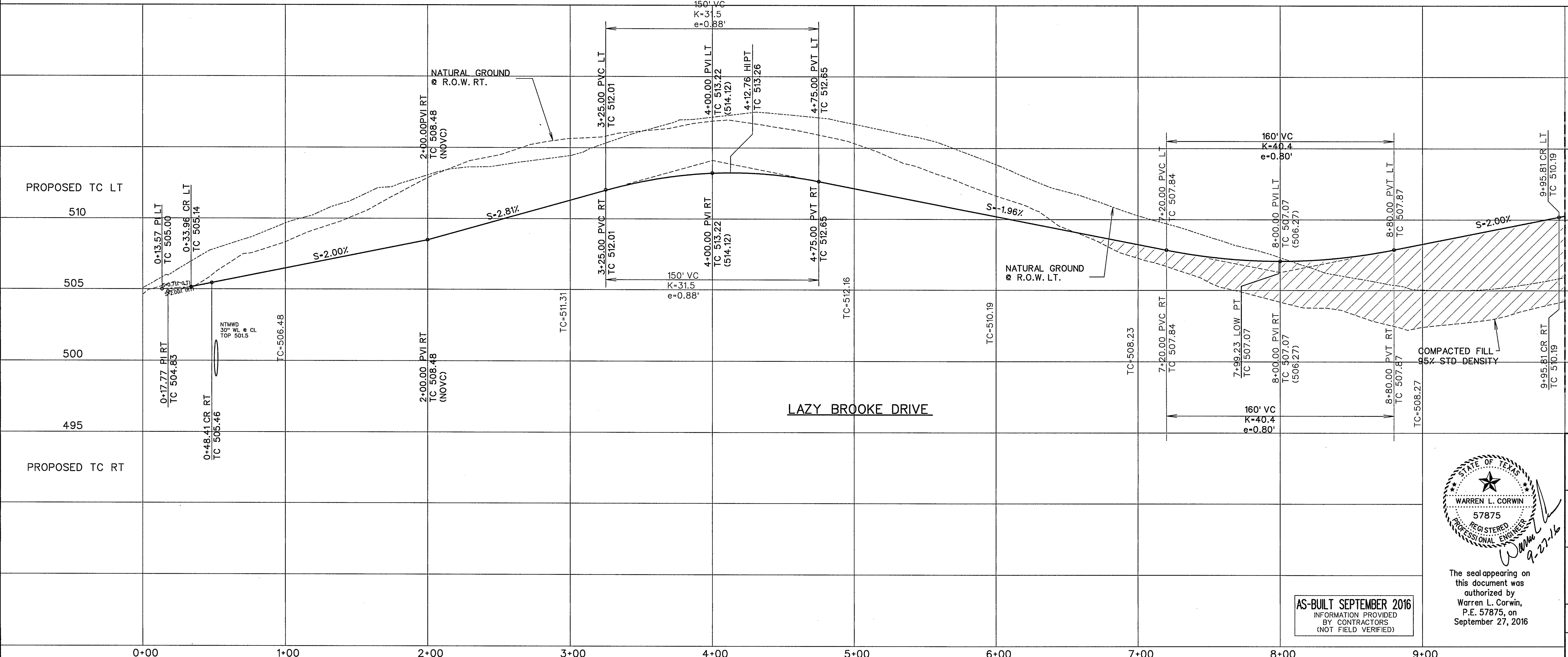
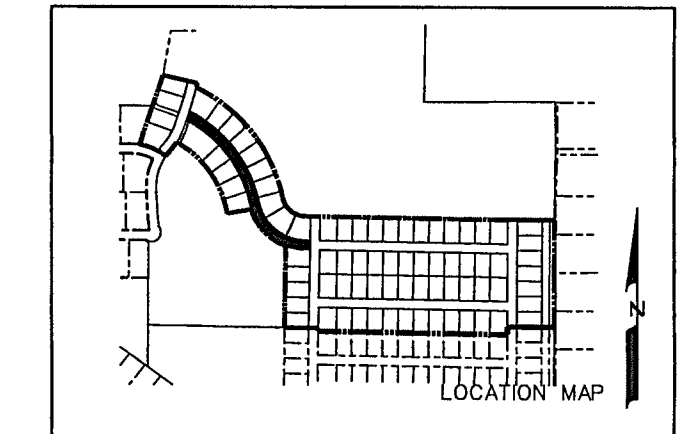
HEATHER FALLS DRIVE

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	4 OF 26
15006	MAY 2015		



NOTE:  
 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.

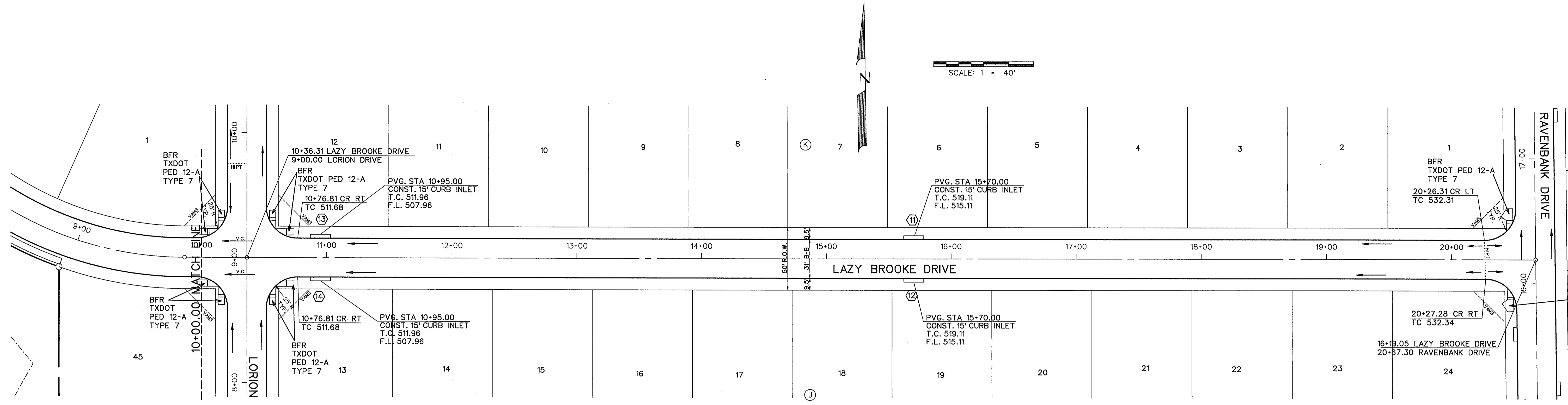
BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd. approx. 48' north of the centerline of Pleasant View Dr. ELEVATION = 505.61



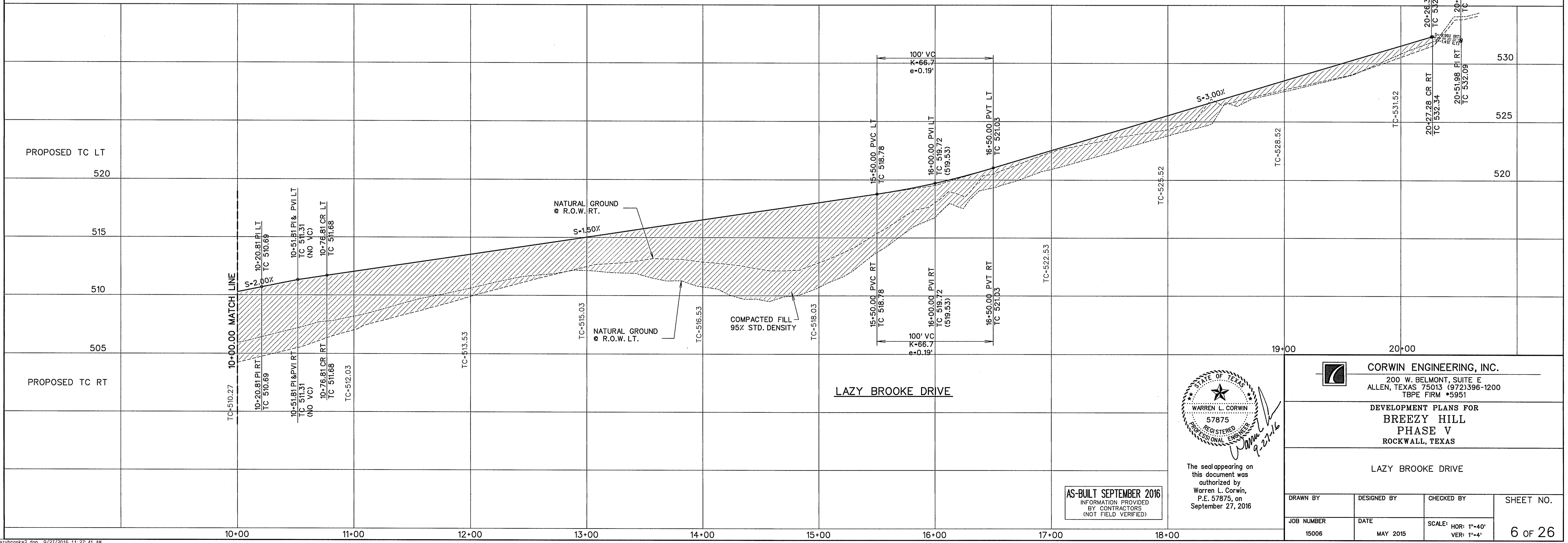
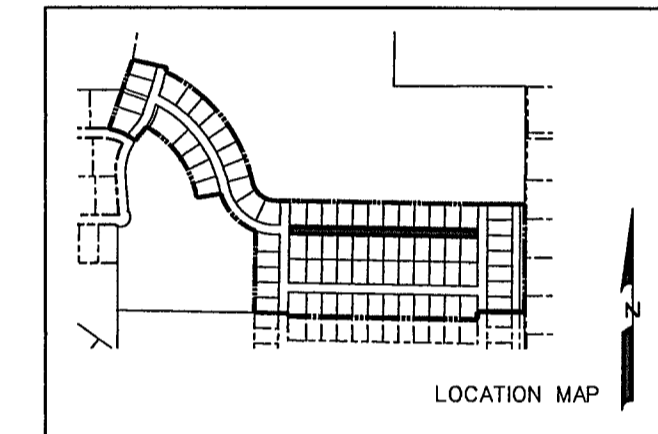
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AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

<b>CORWIN ENGINEERING, INC.</b> 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 TBPE FIRM #5951			
DEVELOPMENT PLANS FOR <b>BREEZY HILL PHASE V</b> ROCKWALL, TEXAS			
LAZY BROOKE DRIVE			
DRAWN BY 15006	DESIGNED BY MAY 2015	CHECKED BY SCALE: HOR: 1"=40' VER: 1"=4'	SHEET NO. 5 of 26



BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



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 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

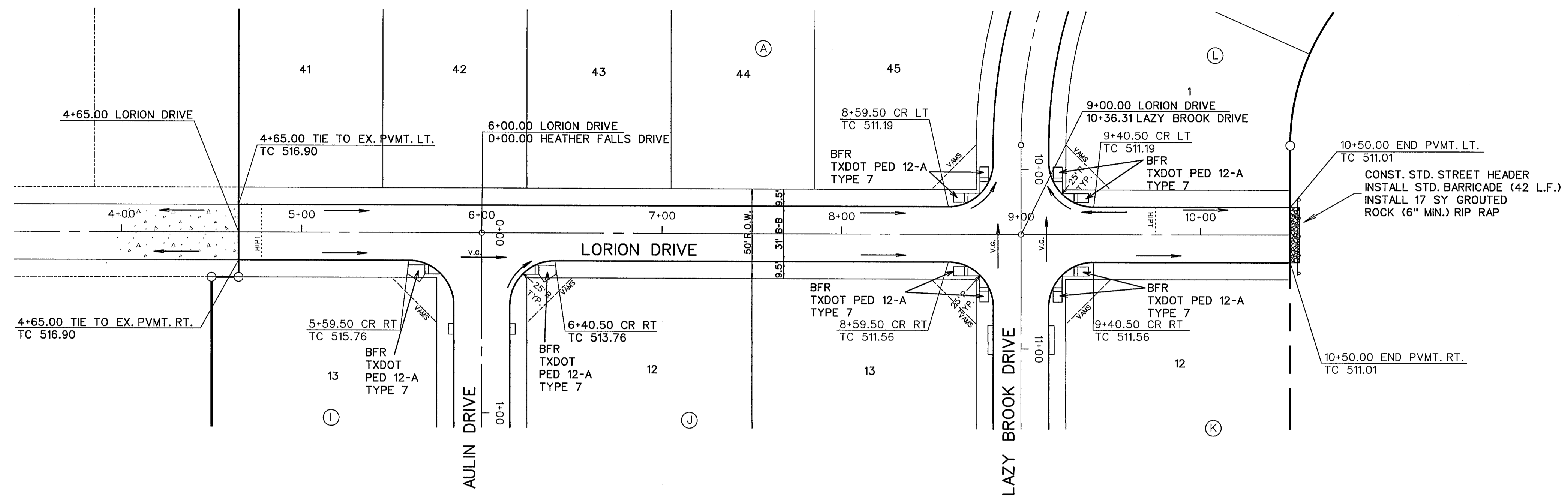
DEVELOPMENT PLANS FOR  
**BREEZY HILL**  
 PHASE V  
 ROCKWALL, TEXAS

LAZY BROOKE DRIVE

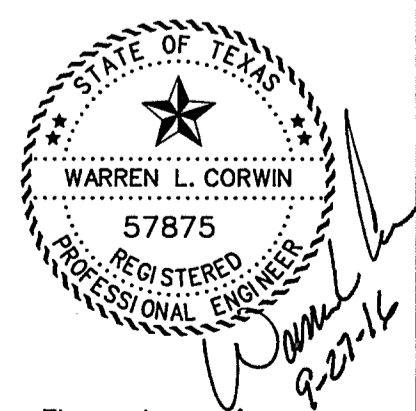
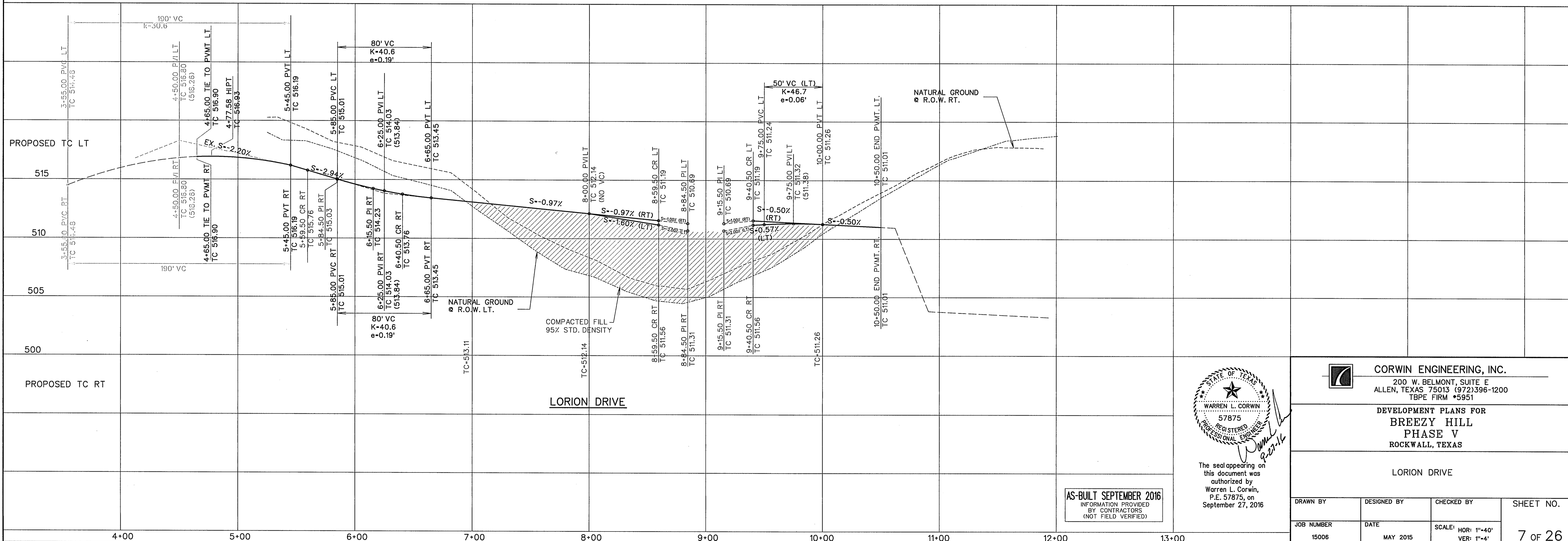
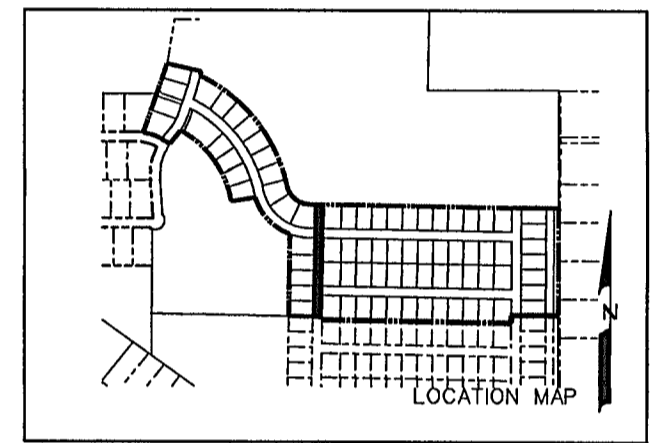
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
15006	MAY 2015		6 OF 26



SCALE: 1" = 40'



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 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



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AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

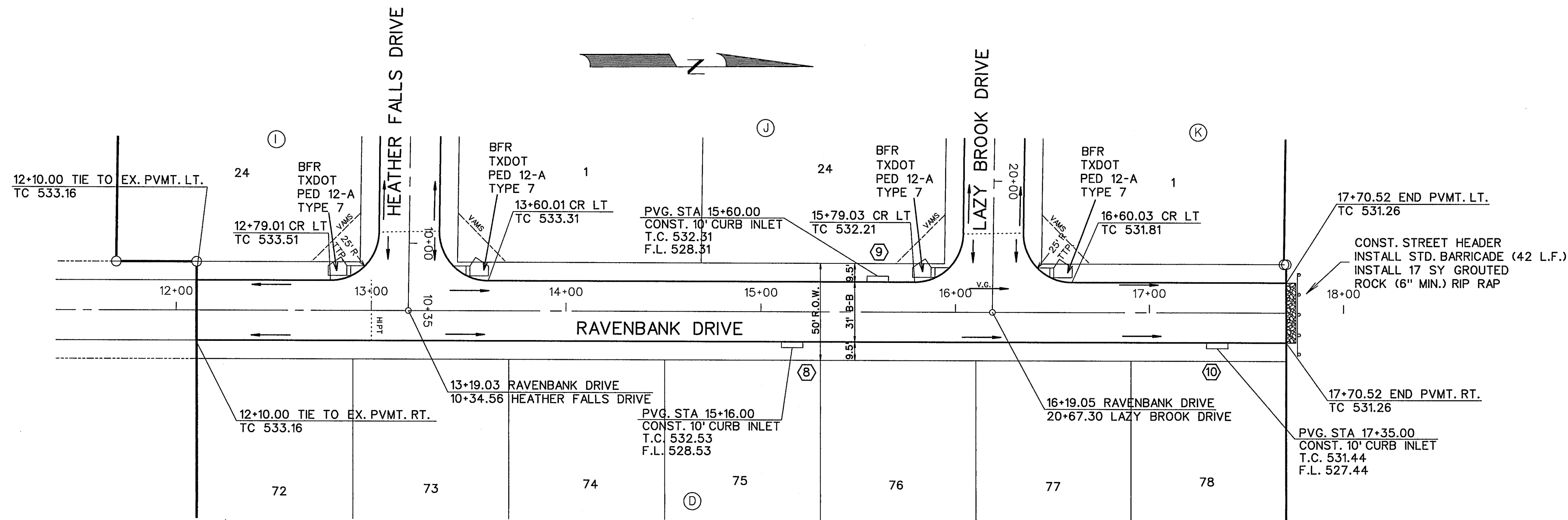
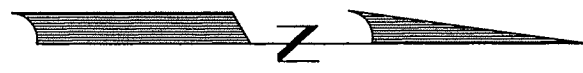
**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL**  
 PHASE V  
 ROCKWALL, TEXAS

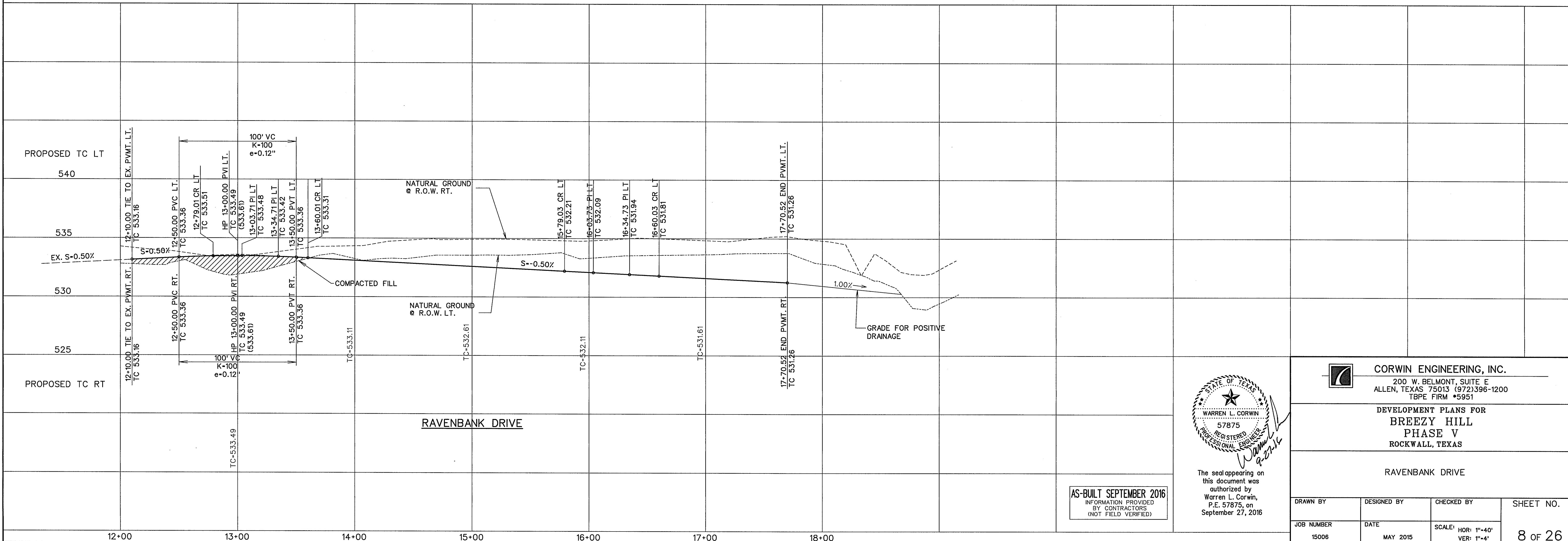
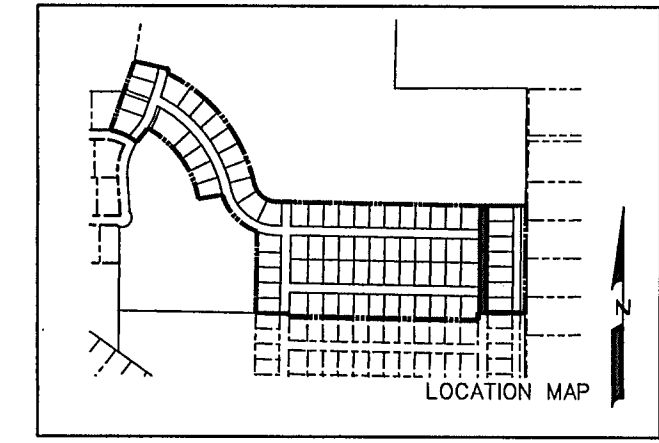
LORION DRIVE

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
15006	MAY 2015		7 OF 26

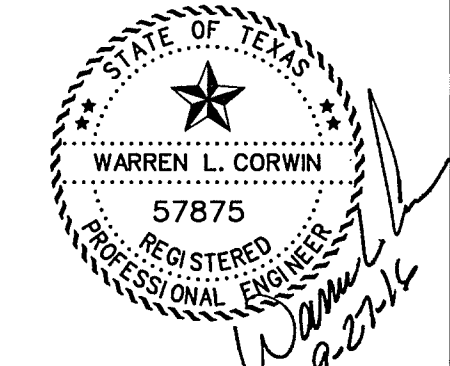
SCALE: 1" = 40'



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 approx. 48' north of the centerline of Pleasant View Dr.  
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AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED  
 BY CONTRACTORS  
 (NOT FIELD VERIFIED)



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**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL  
 PHASE V**  
 ROCKWALL, TEXAS

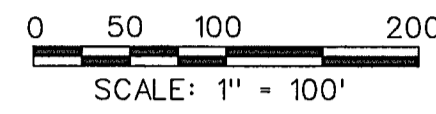
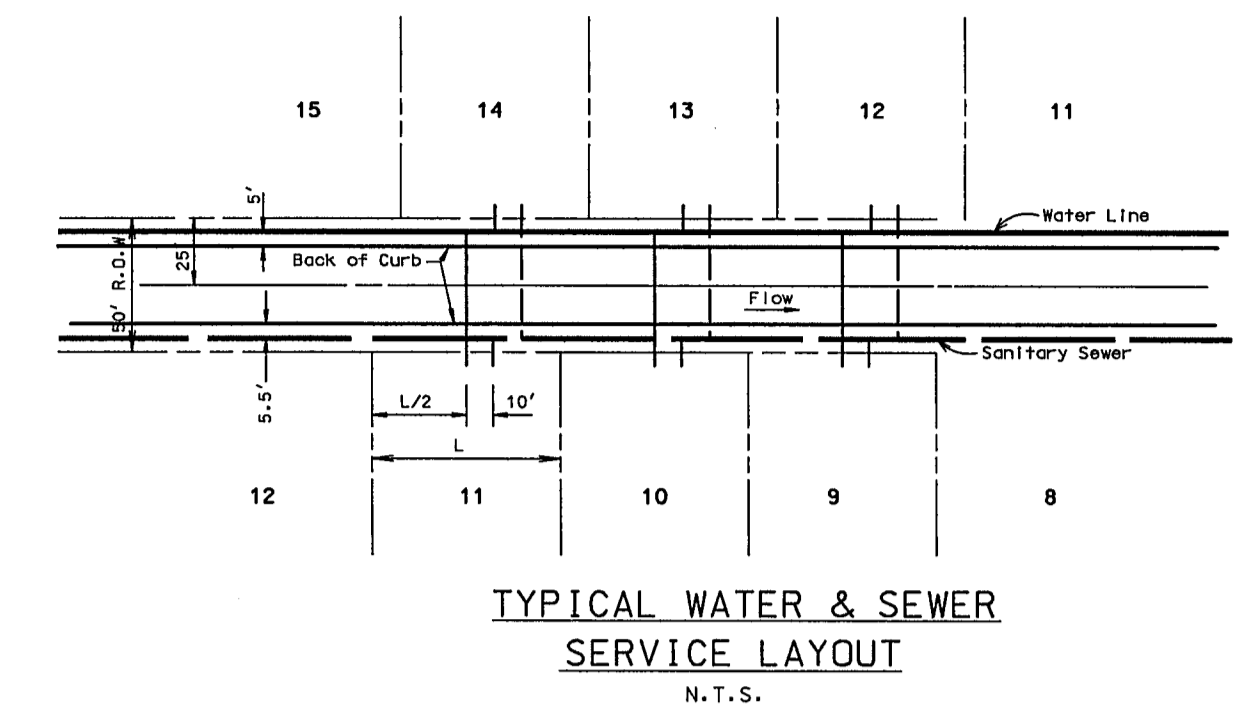
RAVENBANK DRIVE

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	8 OF 26
15006	MAY 2015		



BENCHMARK:  
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 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61

NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES FOR LOCATION AND ELEVATION PRIOR TO CONSTRUCTION. ALL UNDERGROUND UTILITIES SHOWN ARE FROM AS-BUILT PLANS AND NOT FIELD VERIFIED.



NOTE:  
 ALL WATER LINES TO BE CLASS 200 PIPE SDR 14.  
 ALL SANITARY SEWER PIPE TO BE SDR 35 FOR 5-10' DEEP AND SDR 26 FOR 10' AND GREATER.  
 INSTALL BLUE "EMS" DISK ON WATER LINE AT EVERY 250' AND CHANGE IN DIRECTION, VALVE, AND SERVICE.  
 INSTALL GREEN "EMS" DISK ON SANITARY SEWER LINE EVERY 250' AND AT EVERY CHANGE IN DIRECTION, MANHOLE, CLEANOUT, AND SERVICE.  
 ALL MANHOLES TO BE RAVEN EPOXY LINED AND SEALED.

NOTES FOR CONSTRUCTION WITH THE NORTH TEXAS MUNICIPAL WATER DISTRICT EASEMENT  
 A. North Texas Municipal Water District (NTMWD)'s 30-inch water transmission pipeline is 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. 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.  
 J. Limits of bore shall be a minimum of the NTMWD easement width centered on NTMWD's pipeline.  
 K. The casing pipe shall terminate outside of NTMWD's easement.  
 L. All proposed sanitary sewer crossings where installed above NTMWD's pipeline shall be comprised of a minimum 150-PSI pressure rated carrier pipe and casing pipe. Installation of this carrier pipe and casing pipe shall be installed across the entire NTMWD easement.  
 M. Water and sewer lines crossing the NTMWD easement shall be installed in compliance with the Rules and Regulations for Public Water Systems Paragraph 290.44 (e), Location of Water lines.

NOTE:  
 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.

LEGEND

- PROP. WATER LINE
- PROP. FIRE HYDRANT AND VALVE
- PROP. GATE VALVE
- PROP. FLUSH VALVE
- EXIST. WATER LINE
- EXIST. FIRE HYDRANT AND VALVE
- PROP. SANITARY SEWER
- PROP. MANHOLE
- PROP. CLEANOUT
- EXIST. SANITARY SEWER
- EXIST. MANHOLE
- PROP. STORM SEWER
- PROP. CURB INLETS
- PROP. CONC. HEADWALL

SERVICE SCHEDULE		
TYPE	SIZE	NO.
SANITARY	4"	79
WATER	1"	79

AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)



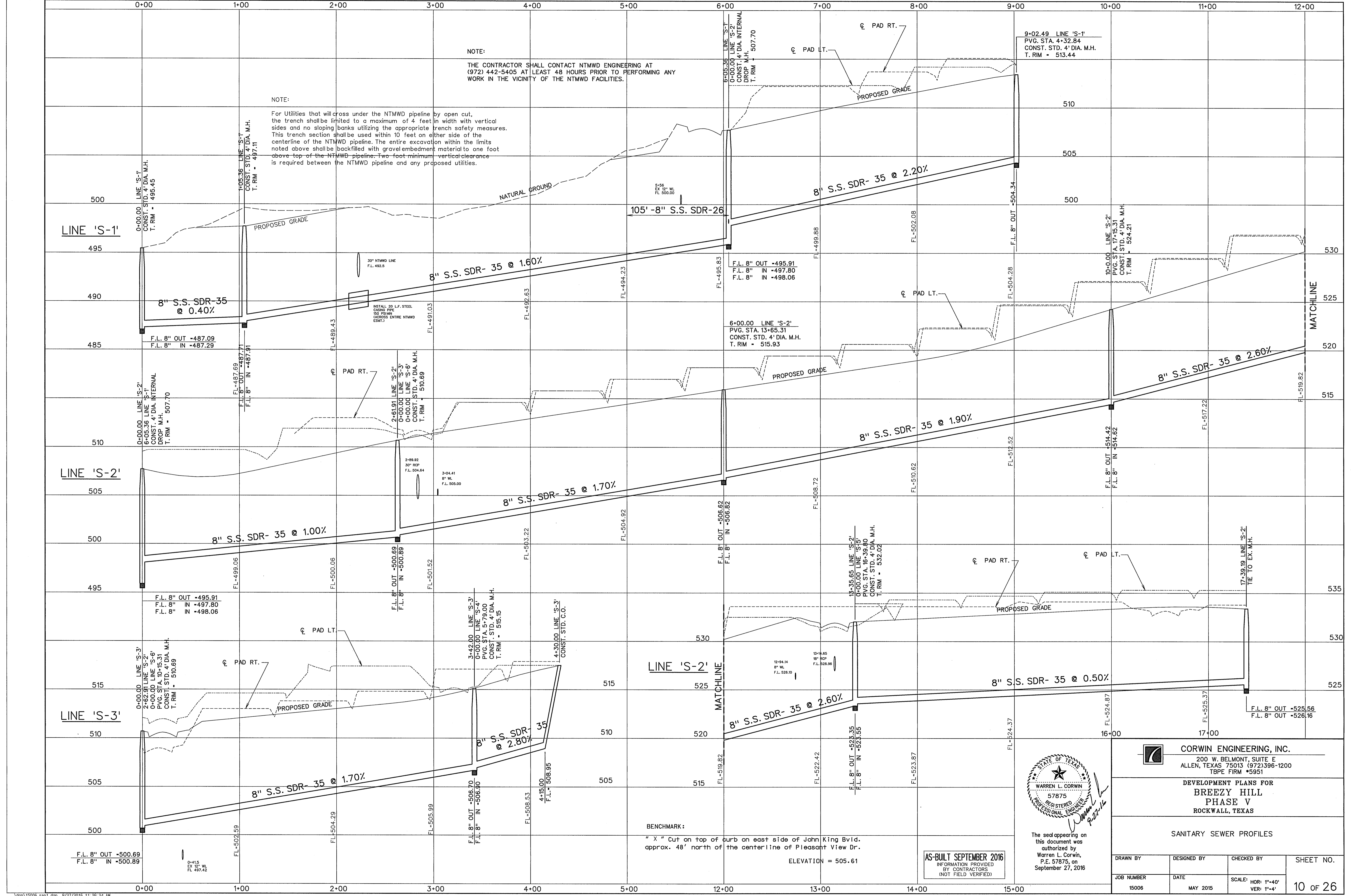
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**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972) 396-1200  
 TBP# FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL  
 PHASE V  
 ROCKWALL, TEXAS**

WATER AND SANITARY SEWER PLAN

NO.	REVISIONS	BY	DATE	JOB NUMBER	DATE	SCALE	SHEET NO.
1	LOWER EXISTING 12" WATER LINE AT 'S-4' CROSSING	BD	2/19/16	15006	MAY 2015	1"=100'	9 OF 20

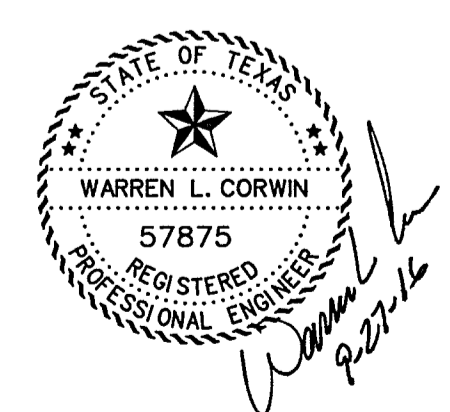


NOTE:  
 THE CONTRACTOR SHALL CONTACT NTMWD ENGINEERING AT (972) 442-5405 AT LEAST 48 HOURS PRIOR TO PERFORMING ANY WORK IN THE VICINITY OF THE NTMWD FACILITIES.

NOTE:  
 For utilities that will cross under the NTMWD pipeline by open cut, the trench shall be limited to a maximum of 4 feet in width with vertical sides and no sloping banks utilizing the appropriate trench safety measures. This trench section shall be used within 10 feet on either side of the centerline of the NTMWD pipeline. The entire excavation within the limits noted above shall be backfilled with gravel/bedding material to one foot above top of the NTMWD pipeline. Two foot minimum vertical clearance is required between the NTMWD pipeline and any proposed utilities.

BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61

AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)



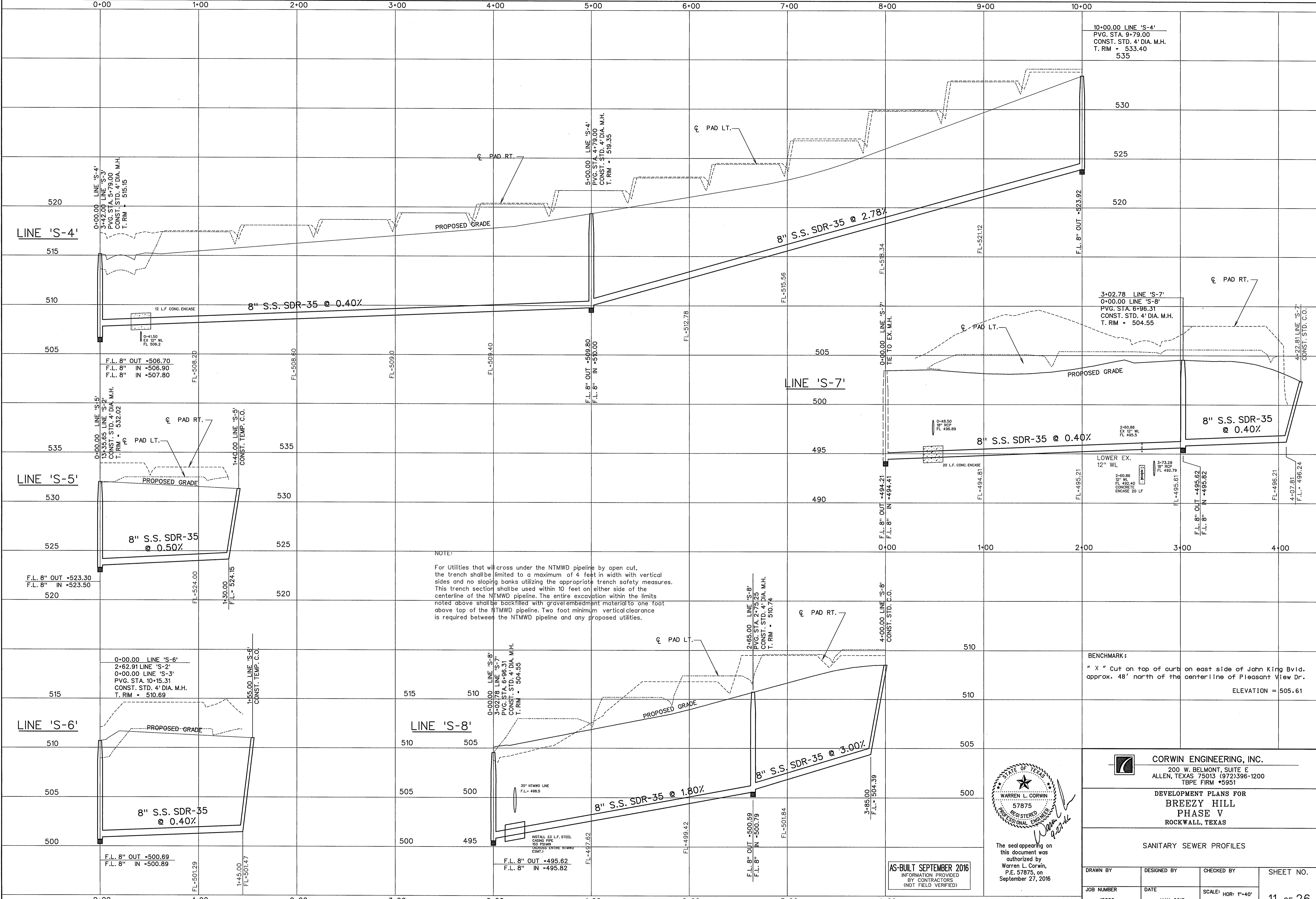
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**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL**  
 PHASE V  
 ROCKWALL, TEXAS

SANITARY SEWER PROFILES

DRAWN BY 15006	DESIGNED BY MAY 2015	CHECKED BY	SHEET NO. 10 OF 26
JOB NUMBER 15006		SCALE: HOR: 1"=40' VER: 1"=4'	



**NOTE:**  
 For Utilities that will cross under the NTMWD pipeline by open cut, the trench shall be limited to a maximum of 4 feet in width with vertical sides and no sloping banks utilizing the appropriate trench safety measures. This trench section shall be used within 10 feet on either side of the centerline of the NTMWD pipeline. The entire excavation within the limits noted above shall be backfilled with gravel embedment material to one foot above top of the NTMWD pipeline. Two foot minimum vertical clearance is required between the NTMWD pipeline and any proposed utilities.

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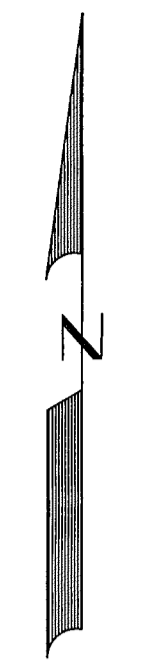
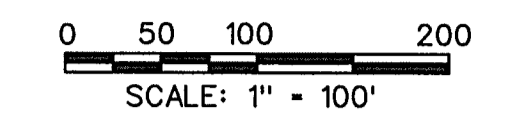
**AS-BUILT SEPTEMBER 2016**  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

**DEVELOPMENT PLANS FOR BREEZY HILL PHASE V**  
 ROCKWALL, TEXAS

**SANITARY SEWER PROFILES**

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
15006	MAY 2015		11 OF 26



FLOOD PLAIN LIMITS  
PER FEMA FIRM PANEL 48397C0030L  
REVISED PER LOMR 13-06-2096P,  
EFFECTIVE JANUARY 17, 2014.

FLOOD PLAIN LIMITS  
PER FEMA FIRM PANEL 48397C0030L,  
REVISED PER LOMR 13-06-2096P,  
EFFECTIVE JANUARY 17, 2014.

**LEGEND**

- PROP. STORM SEWER
- PROP. CURB INLETS
- PROP. CONC. HEADWALL
- EXIST. STORM SEWER
- DRAINAGE AREA DIVIDE
- FLOW ARROW
- DRAINAGE AREA NO.

**RUNOFF COMPUTATIONS**

#	Area (sf)	Area (acres)	Runoff Coefficient	CA	Tc (min)	I(100) (in/hr)	Q(100) (cfs)
EX1	289898	6.66	0.35	2.33	20	8.30	19.3
EX2	673049	15.5	0.35	5.41	20	8.30	44.9
EX3	1243893	28.58	0.35	9.99	20	8.30	83.0
EX4	224945	5.16	0.35	1.81	20	8.30	15.0
EX5	75236	1.73	0.35	0.60	20	8.30	5.0

AS-BUILT SEPTEMBER 2016  
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BY CONTRACTORS  
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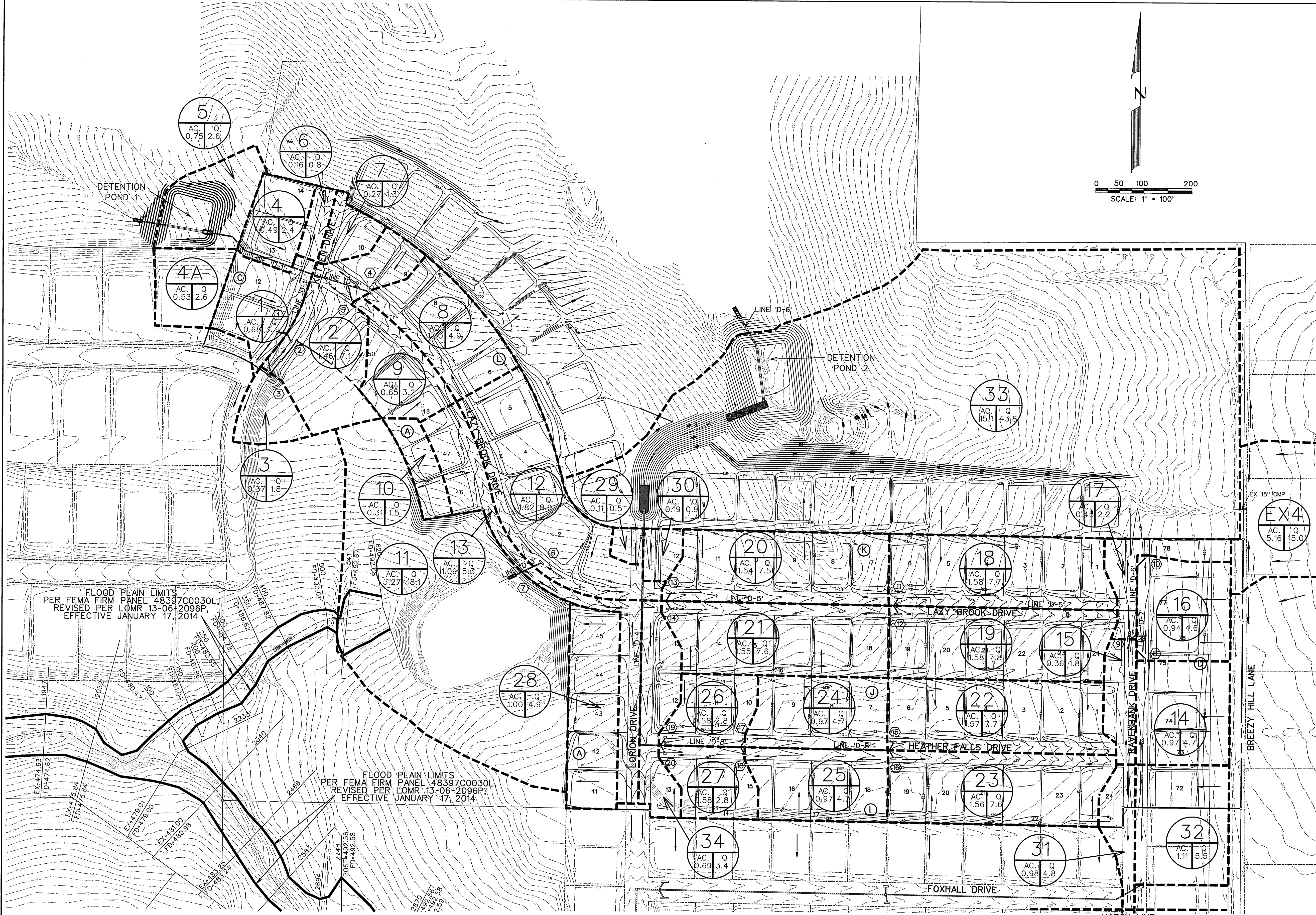
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September 27, 2016

**CORWIN ENGINEERING, INC.**  
200 W. BELMONT, SUITE E  
ALLEN, TEXAS 75013 (972)396-1200  
TBPE FIRM #5951

**DEVELOPMENT PLANS FOR  
BREEZY HILL  
PHASE V  
ROCKWALL, TEXAS**

EXISTING CONDITIONS DRAINAGE AREA MAP

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER 15006	DATE MAY 2015	SCALE: 1"=100'	12 OF 26



0 50 100 200  
SCALE: 1" = 100'

FLOOD PLAIN LIMITS  
PER FEMA FIRM PANEL 48397C0030L,  
REVISED PER LOMR 13-06-2096P,  
EFFECTIVE JANUARY 17, 2014

FLOOD PLAIN LIMITS  
PER FEMA FIRM PANEL 48397C0030L,  
REVISED PER LOMR 13-06-2096P,  
EFFECTIVE JANUARY 17, 2014

Area #	Area (sf)	Area (acres)	Runoff Coefficient	CA	Tc (min)	I(100) (in/hr)	Q(100) (cfs)	Drains To:
1	2982	0.68	0.50	0.34	10	9.80	3.3	Inlet #1
2	63416	1.46	0.50	0.73	10	9.80	7.1	Inlet #2
3	16306	0.37	0.50	0.19	10	9.80	1.8	Inlet #3
4	21437	0.49	0.50	0.25	10	9.80	2.4	Detention Pond #1
4A	23070	0.53	0.50	0.26	10	9.80	2.6	Detention Pond #1
5	32872	0.75	0.50	0.38	10	9.80	3.5	Open Space
6	8839	0.16	0.50	0.08	10	9.80	0.8	Future Phase
7	11800	0.27	0.50	0.14	10	9.80	1.3	Future Phase
8	43563	1.00	0.50	0.50	10	9.80	4.9	Inlet #4
9	28174	0.65	0.50	0.32	10	9.80	3.2	Inlet #5
10	13388	0.31	0.50	0.16	10	9.80	1.5	Open Space
11	229421	5.27	0.35	1.84	10	9.80	18.1	Open Space
12	79370	1.82	0.50	0.91	10	9.80	8.9	Inlet #6
13	47534	1.09	0.50	0.55	10	9.80	5.3	Inlet #7
14	42045	0.97	0.50	0.48	10	9.80	4.7	Inlet #8
15	15871	0.36	0.50	0.18	10	9.80	1.8	Inlet #9
16	41067	0.94	0.50	0.47	10	9.80	4.6	Inlet #10
17	19762	0.45	0.50	0.23	10	9.80	2.2	Future Phase

Area #	Area (sf)	Area (acres)	Runoff Coefficient	CA	Tc (min)	I(100) (in/hr)	Q(100) (cfs)	Drains To:
18	68853	1.58	0.50	0.79	10	9.80	7.7	Inlet #11
19	68903	1.58	0.50	0.79	10	9.80	7.8	Inlet #12
20	67059	1.54	0.50	0.77	10	9.80	7.6	Inlet #13
21	67423	1.55	0.50	0.77	10	9.80	7.8	Inlet #14
22	68333	1.57	0.50	0.78	10	9.80	7.7	Inlet #15
23	67936	1.56	0.50	0.78	10	9.80	7.6	Inlet #16
24	42060	0.97	0.50	0.48	10	9.80	4.7	Inlet #17
25	42100	0.97	0.50	0.48	10	9.80	4.7	Inlet #18
26	25238	0.58	0.50	0.29	10	9.80	2.8	Inlet #19
27	25248	0.58	0.50	0.29	10	9.80	2.8	Inlet #20
28	43615	1.00	0.50	0.50	10	9.80	4.9	Open Space
29	4659	0.11	0.50	0.05	10	9.80	0.5	Future Phase
30	8207	0.19	0.50	0.09	10	9.80	0.9	Future Phase
31	42481	0.98	0.50	0.49	10	9.80	4.8	Ph. 3, Inlet #7
32	48540	1.11	0.50	0.56	10	9.80	5.5	Ph. 3, Inlet #9
33	69628	15.1	0.35	5.27	20	8.30	43.8	Detention Pond #2
34	30075	0.69	0.50	0.35	10	9.80	3.4	Inlet #7
EX4	224945	5.16	0.35	1.81	20	8.30	15.0	Detention Pond #2

LEGEND

- PROP. STORM SEWER
- PROP. CURB INLETS
- PROP. CONC. HEADWALL
- EXIST. STORM SEWER
- INLET NUMBER
- DRAINAGE AREA DIVIDE
- FLOW ARROW
- DRAINAGE AREA NO.

AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED  
BY CONTRACTORS  
(NOT FIELD VERIFIED)



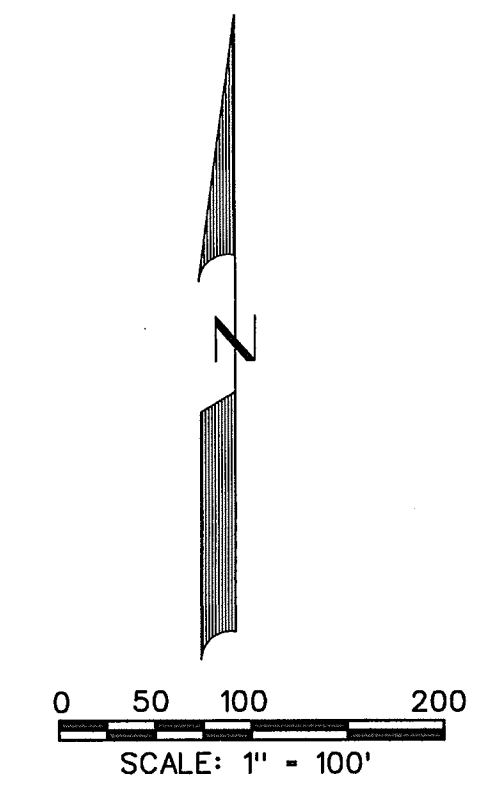
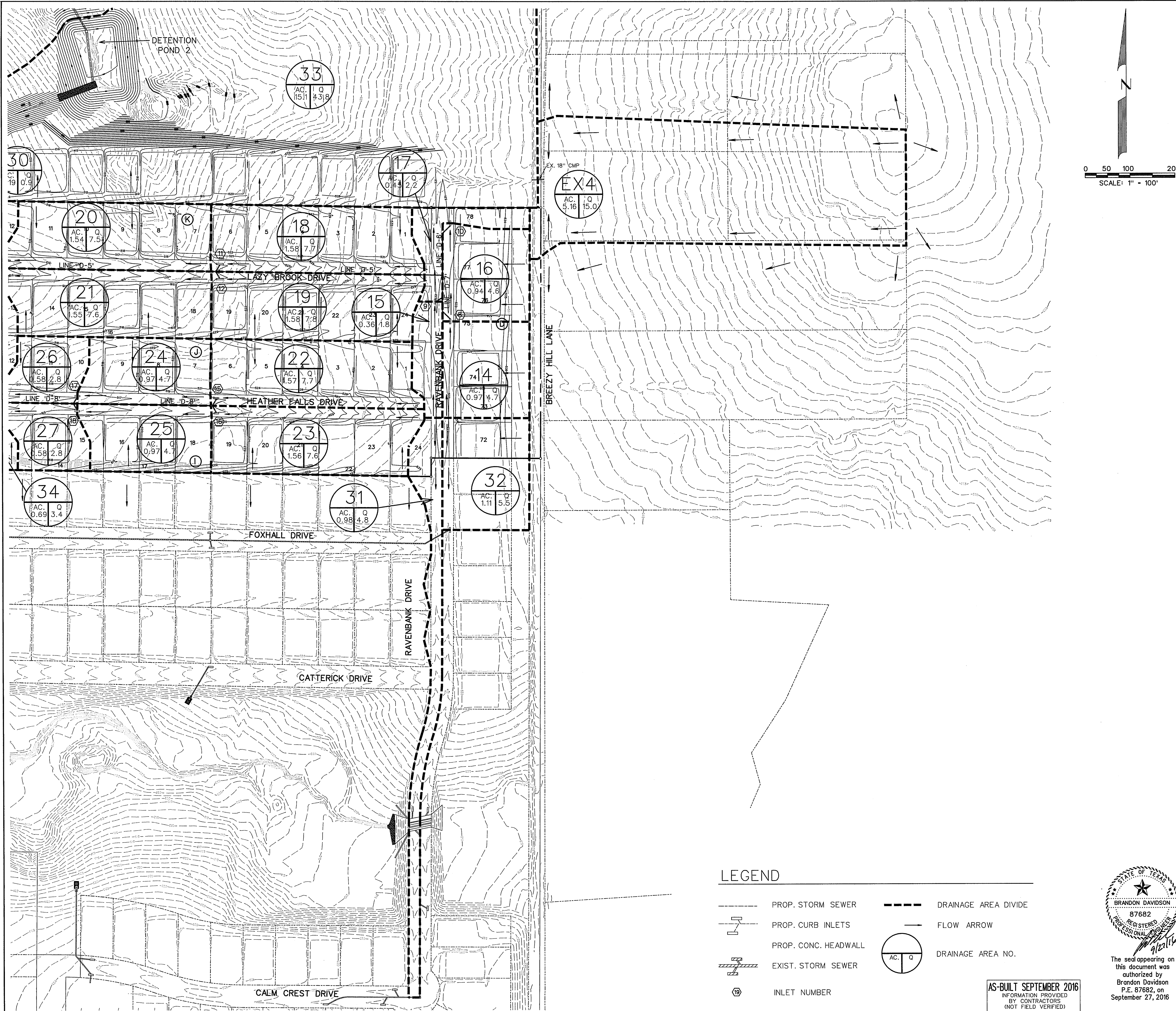
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**CORWIN ENGINEERING, INC.**  
200 W. BELMONT, SUITE E  
ALLEN, TEXAS 75013 (972) 396-1200  
TPE FIRM #5951

**DEVELOPMENT PLANS FOR  
BREEZY HILL  
PHASE V  
ROCKWALL, TEXAS**

**PROPOSED DRAINAGE AREA MAP**

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE:	13 of 26
15006	MAY 2015	1"=100'	

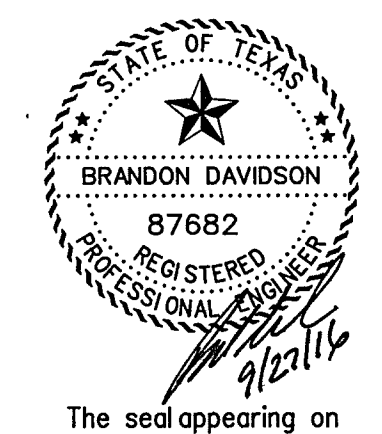


RUNOFF COMPUTATIONS									
Area #	Area (sf)	Area (acres)	Runoff Coefficient	CA	Tc (min)	I(100) (in/hr)	Q(100) (cfs)	Drains To:	
1	29682	0.68	0.50	0.34	10	9.80	3.3	Inlet #1	
2	63416	1.46	0.50	0.73	10	9.80	7.1	Inlet #2	
3	16306	0.37	0.50	0.19	10	9.80	1.8	Inlet #3	
4	21437	0.49	0.50	0.25	10	9.80	2.4	Detention Pond #1	
4A	23070	0.53	0.50	0.26	10	9.80	2.6	Detention Pond #1	
5	32672	0.75	0.35	0.26	10	9.80	2.6	Detention Pond #1	
6	6839	0.16	0.50	0.08	10	9.80	0.8	Future Phase	
7	11600	0.27	0.50	0.14	10	9.80	1.3	Future Phase	
8	43563	1.00	0.50	0.50	10	9.80	4.9	Inlet #4	
9	28174	0.65	0.50	0.32	10	9.80	3.2	Inlet #5	
10	13368	0.31	0.50	0.16	10	9.80	1.5	Open Space	
11	229421	5.27	0.35	1.84	10	9.80	18.1	Open Space	
12	79370	1.82	0.50	0.91	10	9.80	8.9	Inlet #6	
13	47534	1.09	0.50	0.55	10	9.80	5.3	Inlet #7	
14	42045	0.97	0.50	0.48	10	9.80	4.7	Inlet #8	
15	15371	0.36	0.50	0.19	10	9.80	1.8	Inlet #9	
16	41057	0.94	0.50	0.47	10	9.80	4.6	Inlet #10	
17	19762	0.45	0.50	0.23	10	9.80	2.2	Future Phase	
18	68853	1.58	0.50	0.79	10	9.80	7.7	Inlet #11	
19	68603	1.58	0.50	0.79	10	9.80	7.6	Inlet #12	
20	67005	1.54	0.50	0.77	10	9.80	7.5	Inlet #13	
21	67423	1.55	0.50	0.77	10	9.80	7.6	Inlet #14	
22	68333	1.57	0.50	0.78	10	9.80	7.7	Inlet #15	
23	67936	1.56	0.50	0.78	10	9.80	7.6	Inlet #16	
24	42666	0.97	0.50	0.49	10	9.80	4.7	Inlet #17	
25	42100	0.97	0.50	0.48	10	9.80	4.7	Inlet #18	
26	25238	0.58	0.50	0.29	10	9.80	2.8	Inlet #19	
27	25248	0.58	0.50	0.29	10	9.80	2.8	Inlet #20	
28	43615	1.00	0.50	0.50	10	9.80	4.9	Open Space	
29	4659	0.11	0.50	0.05	10	9.80	0.5	Future Phase	
30	8207	0.19	0.50	0.09	10	9.80	0.9	Future Phase	
31	42481	0.98	0.50	0.49	10	9.80	4.8	Ph. 3, Inlet #7	
32	48540	1.11	0.50	0.56	10	9.80	5.5	Ph. 3, Inlet #8	
33	85268	1.91	0.35	0.67	20	8.30	43.8	Detention Pond #2	
34	30075	0.69	0.50	0.35	10	9.80	3.4	Inlet #7	
EX4	224845	5.16	0.35	1.81	20	8.30	15.0	Detention Pond #2	

**LEGEND**

- PROP. STORM SEWER
- PROP. CURB INLETS
- PROP. CONC. HEADWALL
- EXIST. STORM SEWER
- INLET NUMBER
- DRAINAGE AREA DIVIDE
- FLOW ARROW
- DRAINAGE AREA NO.

AS-BUILT SEPTEMBER 2016  
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**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

**DEVELOPMENT PLANS FOR BREEZY HILL PHASE V ROCKWALL, TEXAS**

PROPOSED DRAINAGE AREA MAP

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE:	13A of 26
15006	MAY 2015	1"=100'	

STORM SEWER CALCULATIONS

Table with columns: Station, Downstream Station, Distance (ft), AREA NO., Total Area (Acres), Picked Up (Acres), C, CA, Accumulated CA, Tc (Years), Design Storm (in/hr), I (in/hr), Q (cfs), S (ft/ft), Pipe Size (in), Partial Flow?, Velocity (ft/s), Flow Time (Min), Velocity Head (ft), Junction Type, K, Time at Dis (Min), Minor Losses (ft), Hydraulic Grade (ft) Upstream, Hydraulic Grade (ft) Downstream.

INLET CALCULATIONS

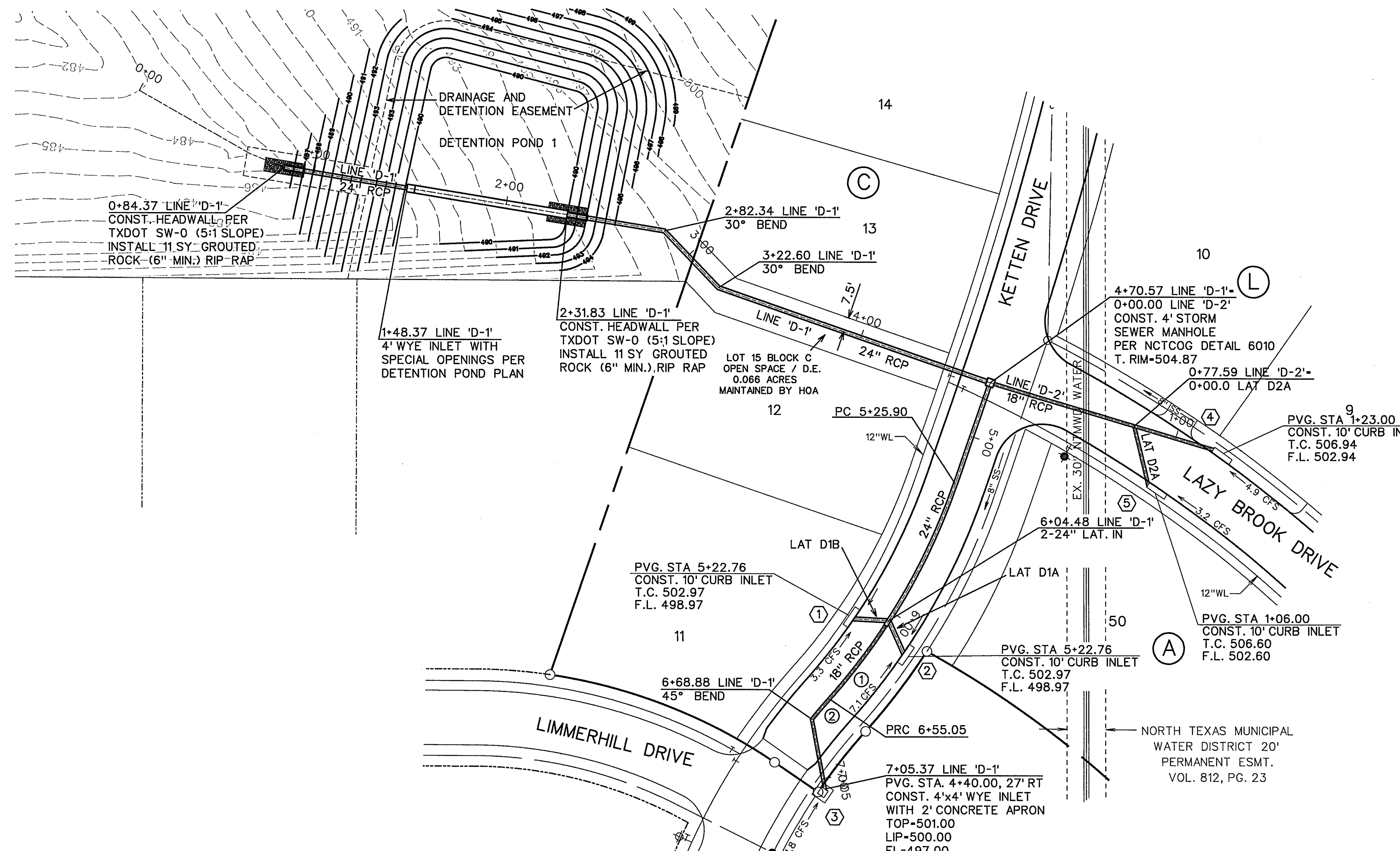
Table with columns: Inlet No., Station, Offset, Street, Design Storm Freq. (years), Tc (min), Intensity (in/hr), Area Runoff (Acres), Area "A" (sq ft), Q (cfs), Carry-Over from Upstream (cfs), Total Gutter Flow (cfs), Gutter Capacity (cfs), Gutter Slope (ft/100 ft), Crown, Maximum Allowable Ponding Depth (ft), Actual Ponding Depth (ft), Maximum Allowable Spread (ft), Actual Spread (ft), Selected Inlet Length (ft), Inlet Capacity (cfs), Carry-Over to Downstream Inlet (cfs), Carry-Over to Downstream Inlet No., Carry-Over CA.



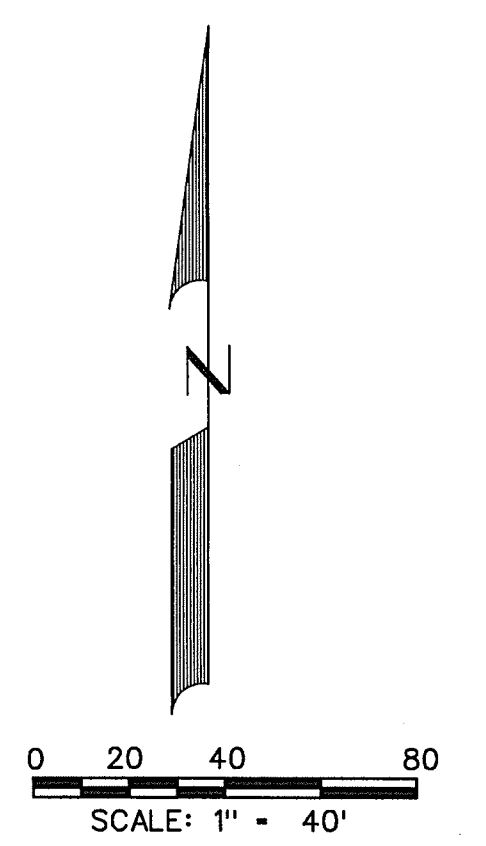
AS-BUILT SEPTEMBER 2016
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CORWIN ENGINEERING, INC.
200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200
DEVELOPMENT PLANS FOR BREEZY HILL PHASE V ROCKWALL, TEXAS
DRAINAGE CALCULATIONS
DRAWN BY: 15006 DESIGNED BY: MAY 2015 CHECKED BY: SCALE: HOR: 1"=40' VER: 1"=4' SHEET NO.: 14 OF 26



BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



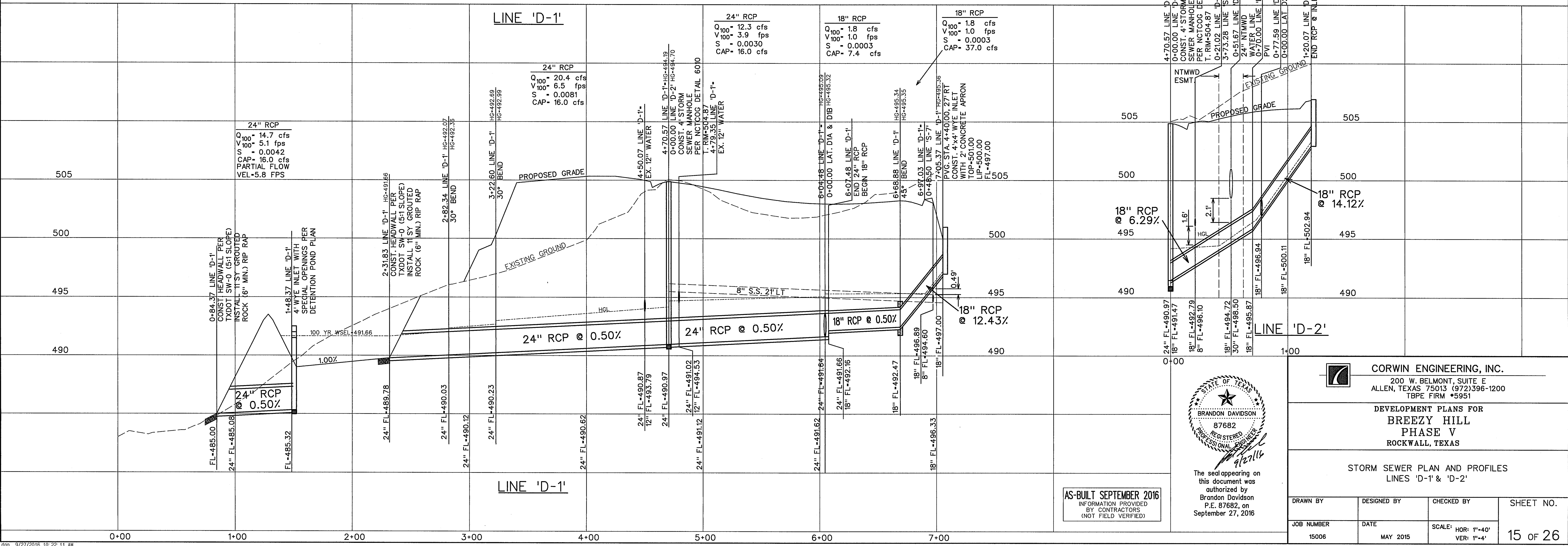
NOTE:  
 For Utilities that will cross under the NTMWD pipeline by open cut, the trench shall be limited to a maximum of 4 feet in width with vertical sides and no sloping banks utilizing the appropriate trench safety measures. This trench section shall be used within 10 feet on either side of the centerline of the NTMWD pipeline. The entire excavation within the limits noted above shall be backfilled with gravel embedment material to one foot above top of the NTMWD pipeline. Two foot minimum vertical clearance is required between the NTMWD pipeline and any proposed utilities.

CURVE NO.	(1)	(2)
Δ	22° 46' 07"	02° 26' 17"
R	325.00'	325.00'
T	65.44'	6.92'
L	129.15'	13.83'

- LEGEND**
- (B) - BLOCK LABEL
  - (M) - INLET NUMBER
  - (1) - CURVE NUMBER
  - - SANITARY SEWER
  - ⊕ - WATER
  - ==== - PROPOSED STORM SEWER
  - - EXISTING STORM SEWER

**18" RCP**  
 Q<sub>100</sub> = 8.1 cfs  
 V<sub>100</sub> = 4.6 fps  
 S = 0.0059  
 CAP = 26.3 cfs  
 PARTIAL FLOW  
 VEL = 13.1 FPS

**18" RCP**  
 Q<sub>100</sub> = 4.9 cfs  
 V<sub>100</sub> = 2.8 fps  
 S = 0.0022  
 CAP = 38.1 cfs  
 PARTIAL FLOW  
 VEL = 14.9 FPS



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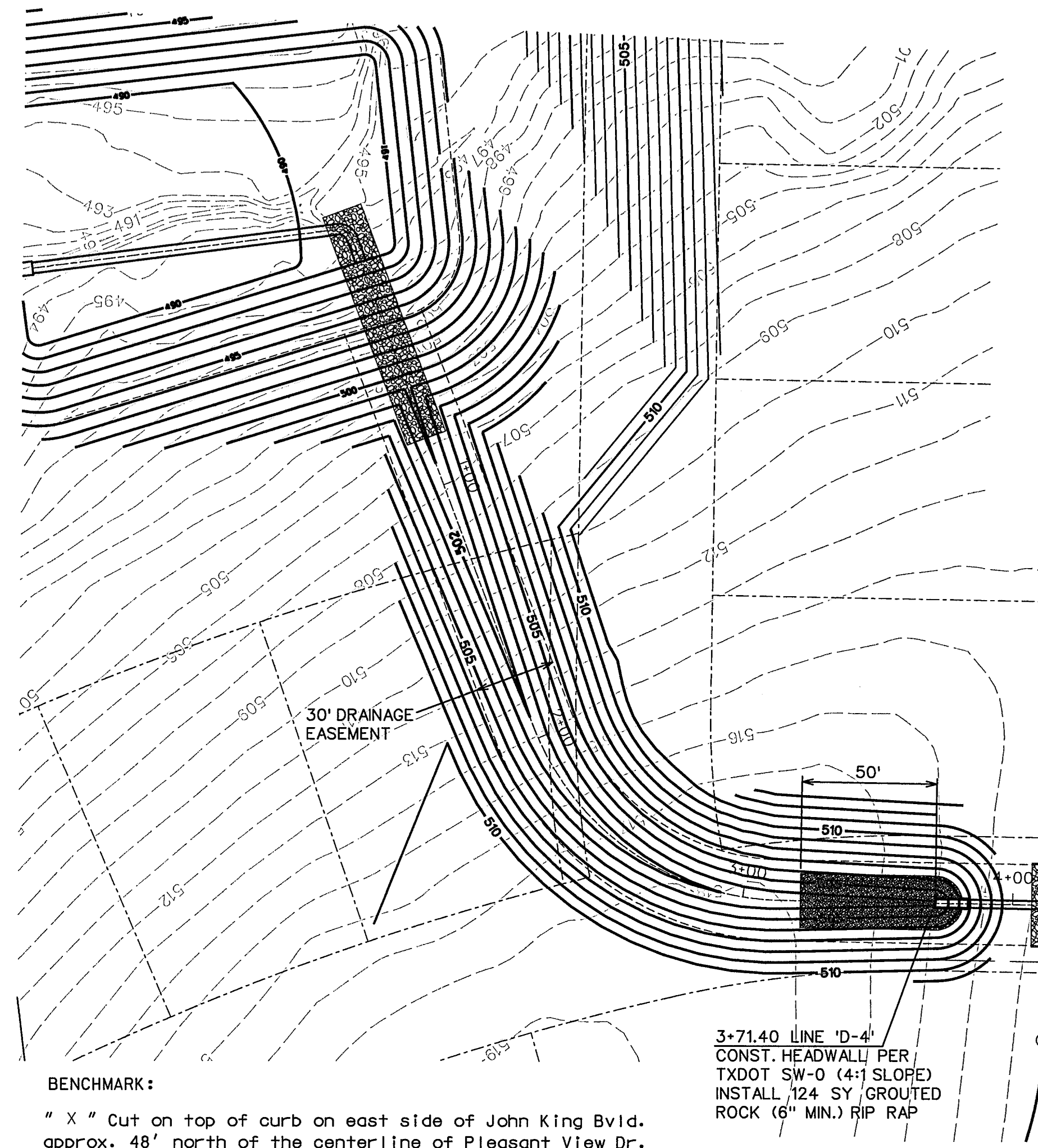
DEVELOPMENT PLANS FOR  
**BREEZY HILL**  
 PHASE V  
 ROCKWALL, TEXAS

STORM SEWER PLAN AND PROFILES  
 LINES 'D-1' & 'D-2'

AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

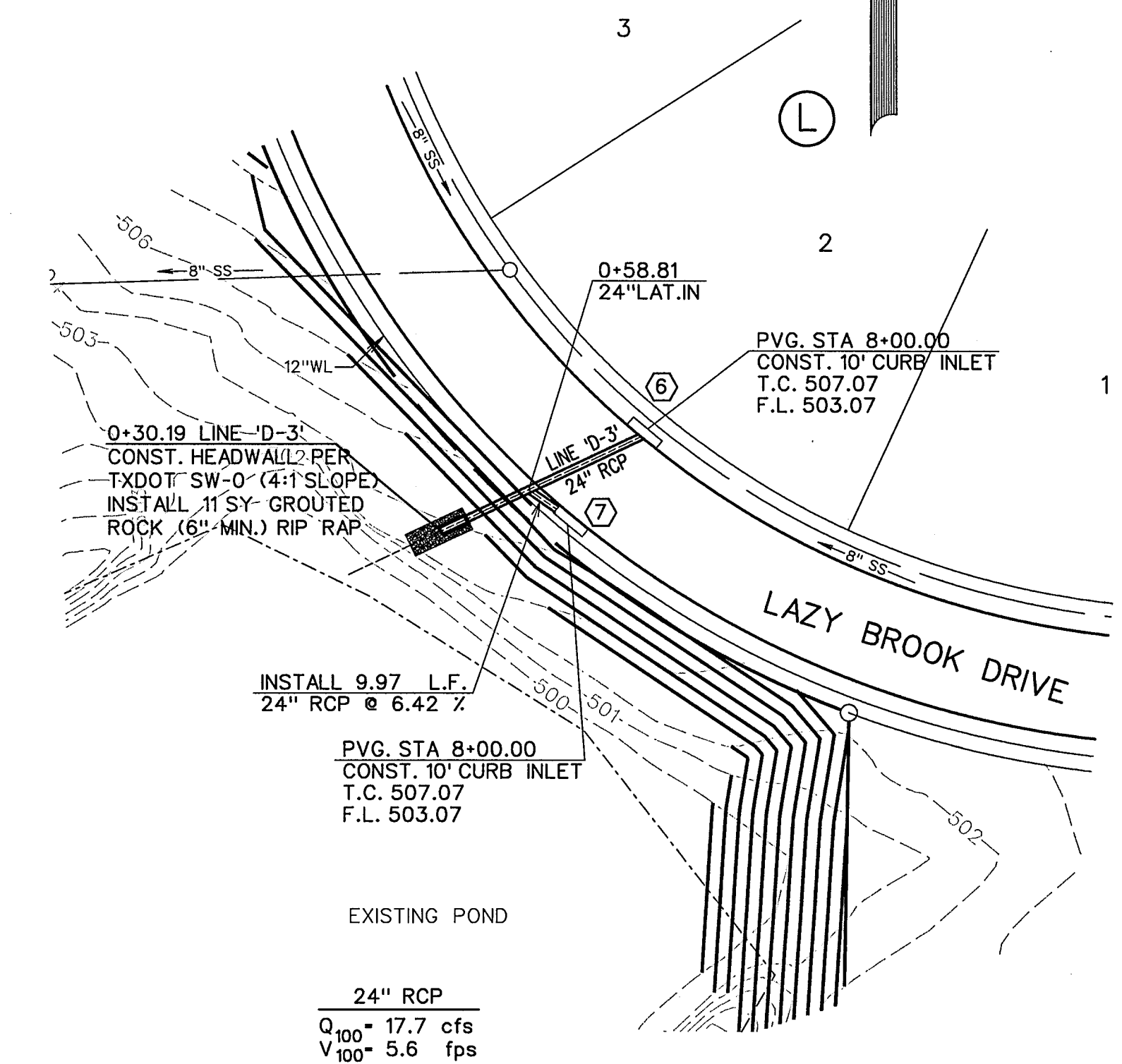
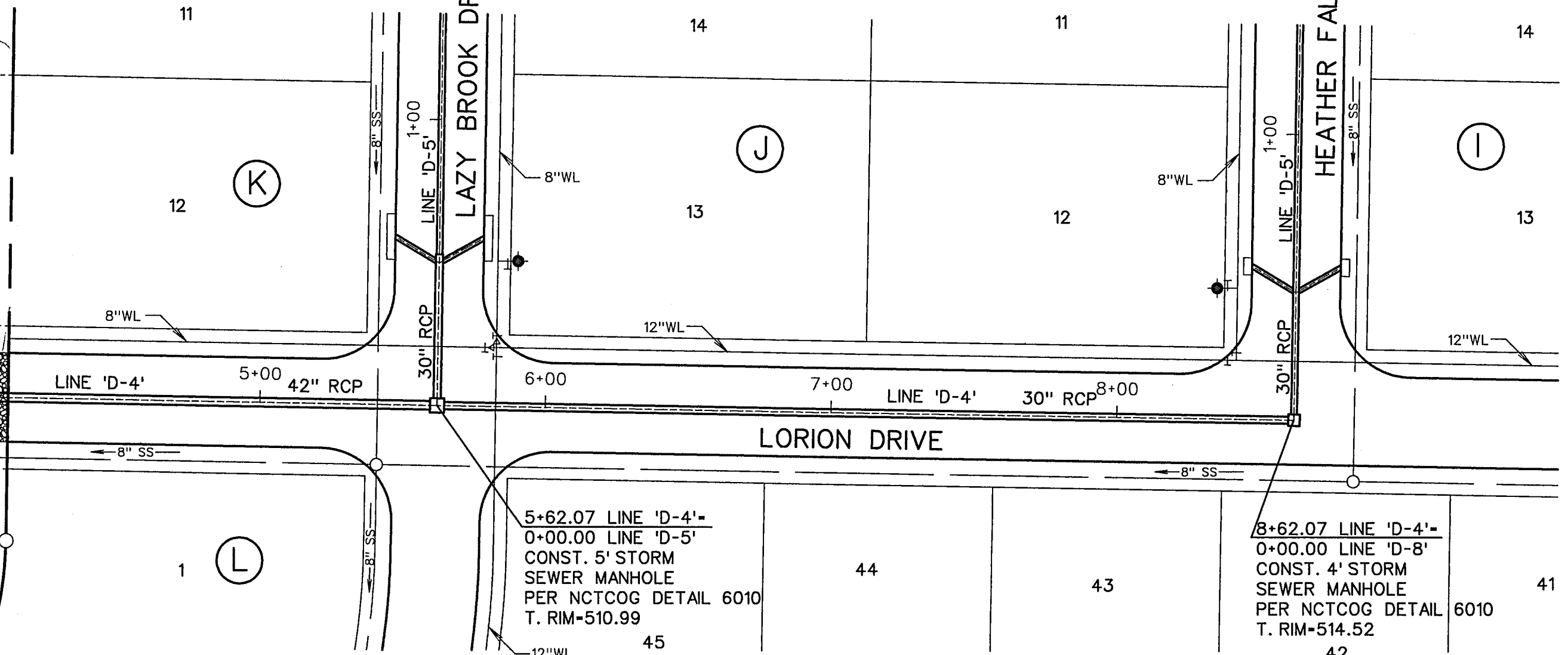
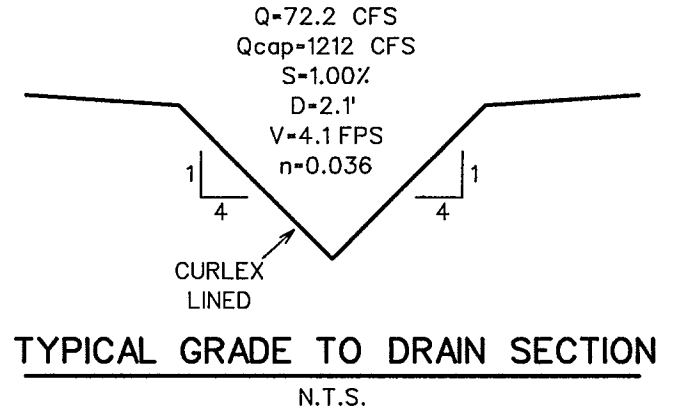
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	15 of 26
15006	MAY 2015		



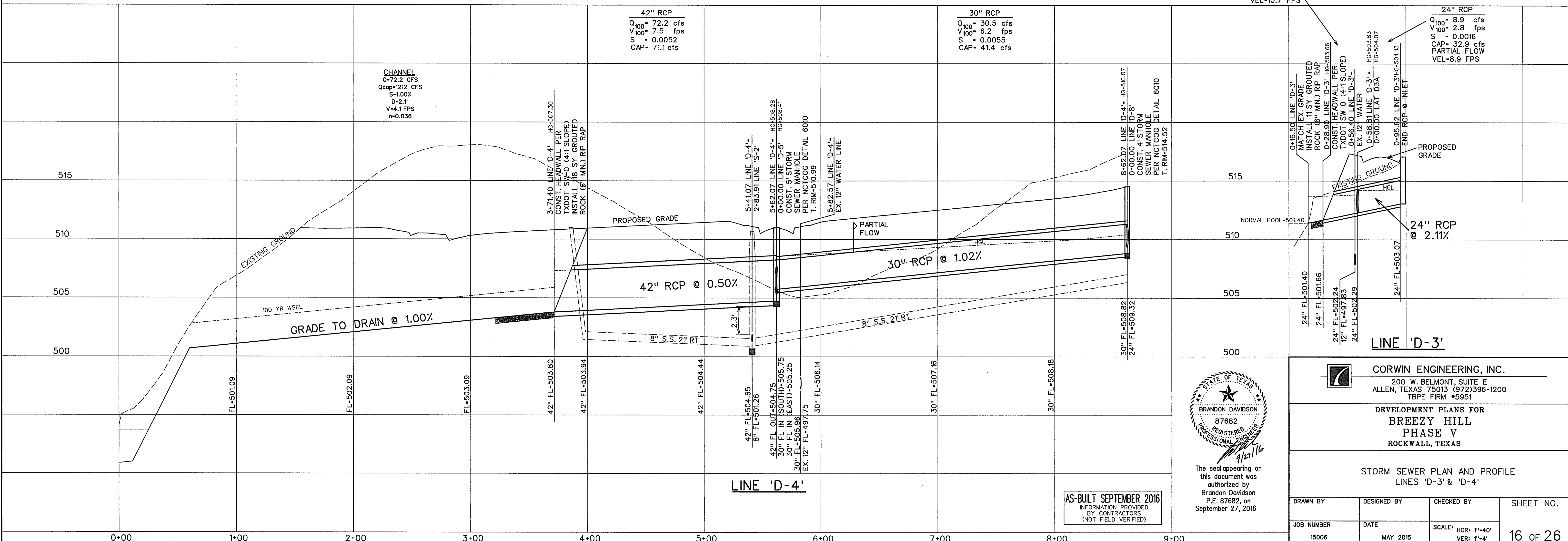


**LEGEND**

- (B) - BLOCK LABEL
- (IN) - INLET NUMBER
- (C) - CURVE NUMBER
- (S) - SANITARY SEWER
- (W) - WATER
- (SS) - PROPOSED STORM SEWER
- (SS) - EXISTING STORM SEWER



**BENCHMARK:**  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



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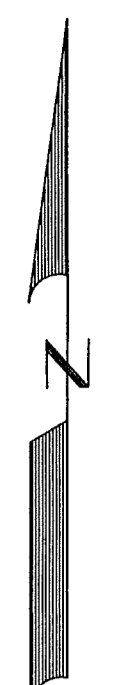
**AS-BUILT SEPTEMBER 2016**  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

**CORWIN ENGINEERING, INC.**  
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 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

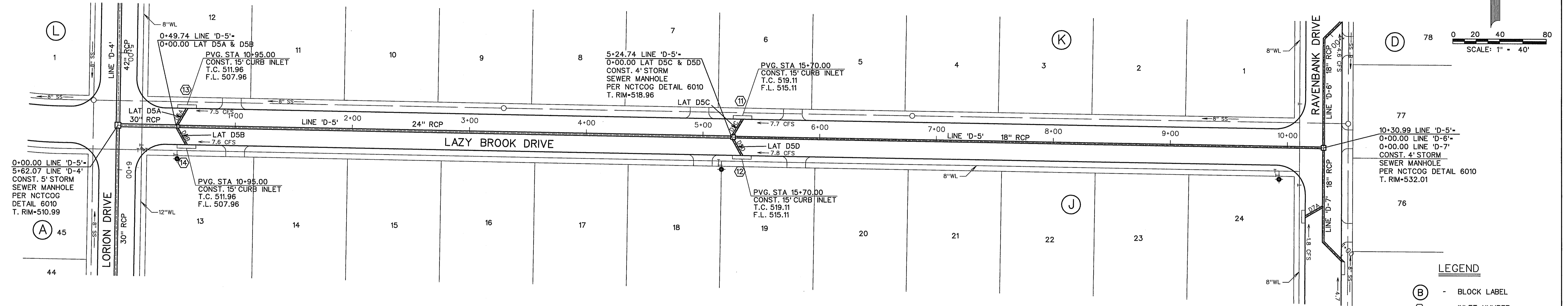
**DEVELOPMENT PLANS FOR BREEZY HILL PHASE V**  
 ROCKWALL, TEXAS

**STORM SEWER PLAN AND PROFILE**  
 LINES 'D-3' & 'D-4'

DRAWN BY 15006	DESIGNED BY MAY 2015	CHECKED BY	SHEET NO. 16 OF 26
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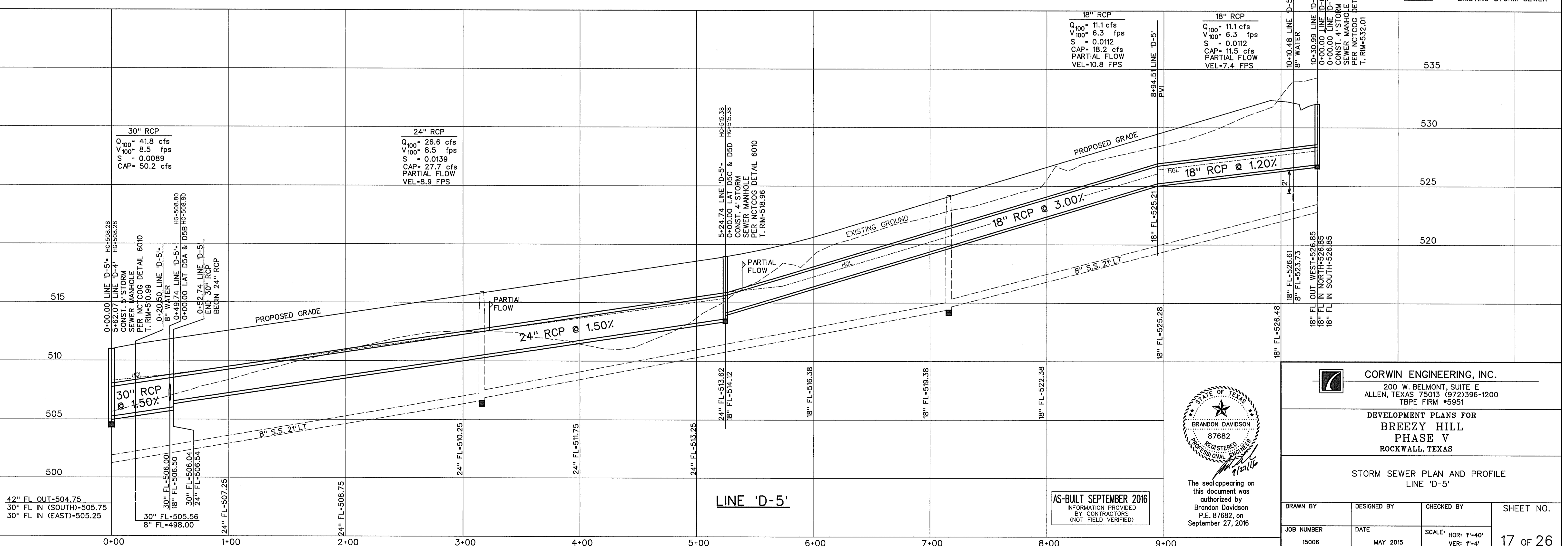


0 20 40 80  
SCALE: 1" = 40'



LINE 'D-5'

BENCHMARK:  
" X " Cut on top of curb on east side of John King Blvd.  
approx. 48' north of the centerline of Pleasant View Dr.  
ELEVATION = 505.61



LINE 'D-5'

AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED  
BY CONTRACTORS  
(NOT FIELD VERIFIED)



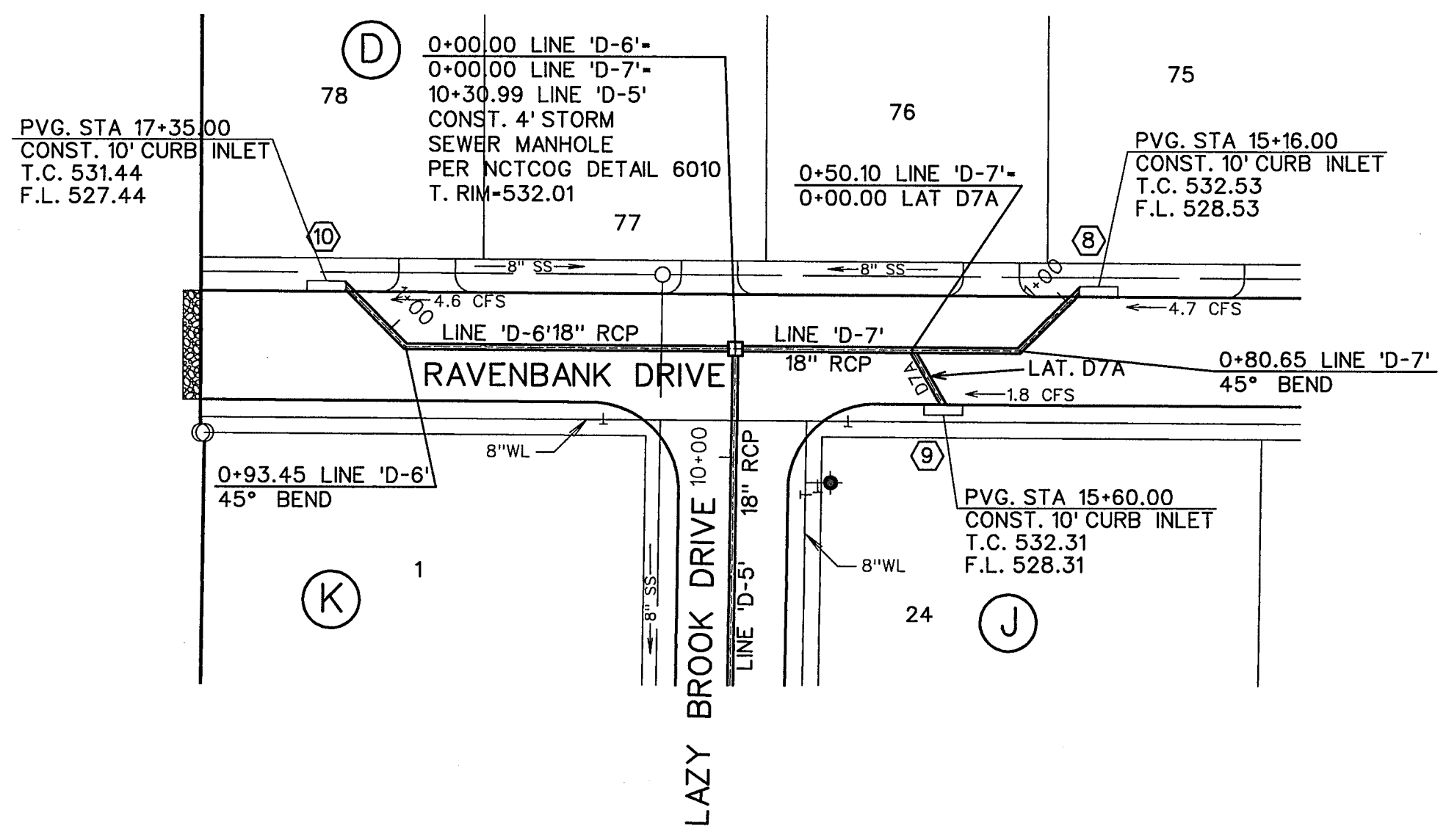
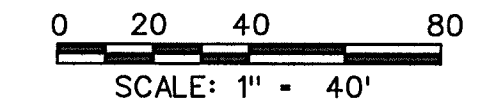
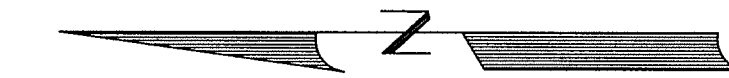
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TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL**  
PHASE V  
ROCKWALL, TEXAS

STORM SEWER PLAN AND PROFILE  
LINE 'D-5'

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
15006	MAY 2015		17 OF 26



**LINE 'D-6' & 'D-7'**

BENCHMARK:

" X " Cut on top of curb on east side of John King Blvd.  
approx. 48' north of the centerline of Pleasant View Dr.

ELEVATION = 505.61

**LEGEND**

- (B) - BLOCK LABEL
- (10) - INLET NUMBER
- (1) - CURVE NUMBER
- - SANITARY SEWER
- +— - WATER
- ==== - PROPOSED STORM SEWER
- ==== - EXISTING STORM SEWER

Station	Profile Description	Flow Data	Grade	Notes
2+00				
1+00	18" RCP @ 0.50%	Q <sub>100</sub> = 4.6 cfs V <sub>100</sub> = 2.6 fps S = 0.0019 CAP = 7.4 cfs PARTIAL FLOW VEL = 4.4 FPS	Proposed Grade	18" RCP @ 0.50%
0+00	18" RCP @ 1.61%	Q <sub>100</sub> = 6.5 cfs V <sub>100</sub> = 3.7 fps S = 0.0038 CAP = 13.3 cfs PARTIAL FLOW VEL = 7.5 FPS	Proposed Grade	18" RCP @ 1.61%
0+00	LAT. D7A	Q <sub>100</sub> = 4.7 cfs V <sub>100</sub> = 2.7 fps S = 0.0020 CAP = 13.3 cfs PARTIAL FLOW VEL = 6.9 FPS	Proposed Grade	LAT. D7A
1+00	18" RCP @ 3.69%	Q <sub>100</sub> = 1.8 cfs V <sub>100</sub> = 1.0 fps S = 0.0003 CAP = 20.2 cfs PARTIAL FLOW VEL = 7.1 FPS	Proposed Grade	18" RCP @ 3.69%
2+00				



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AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

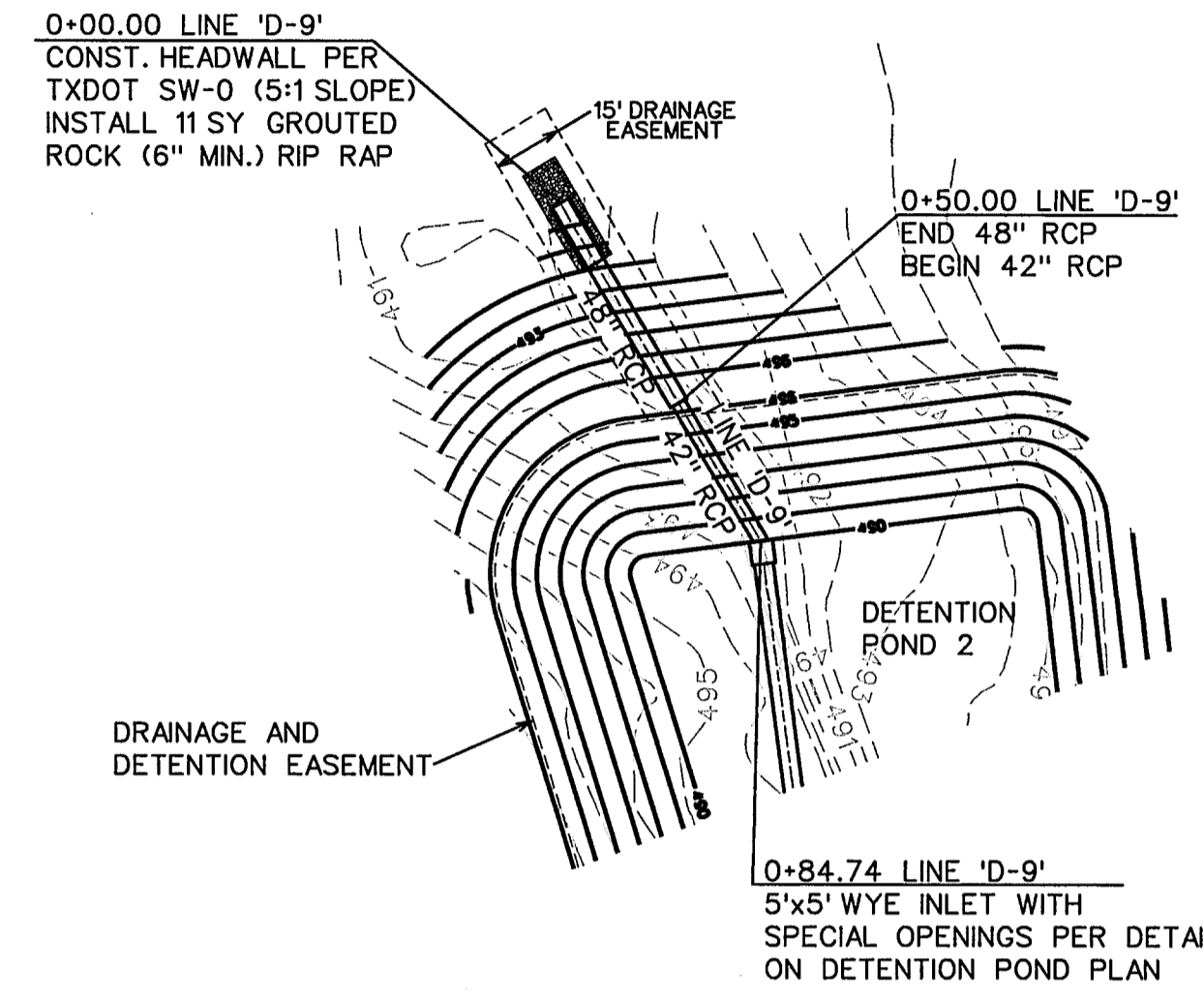
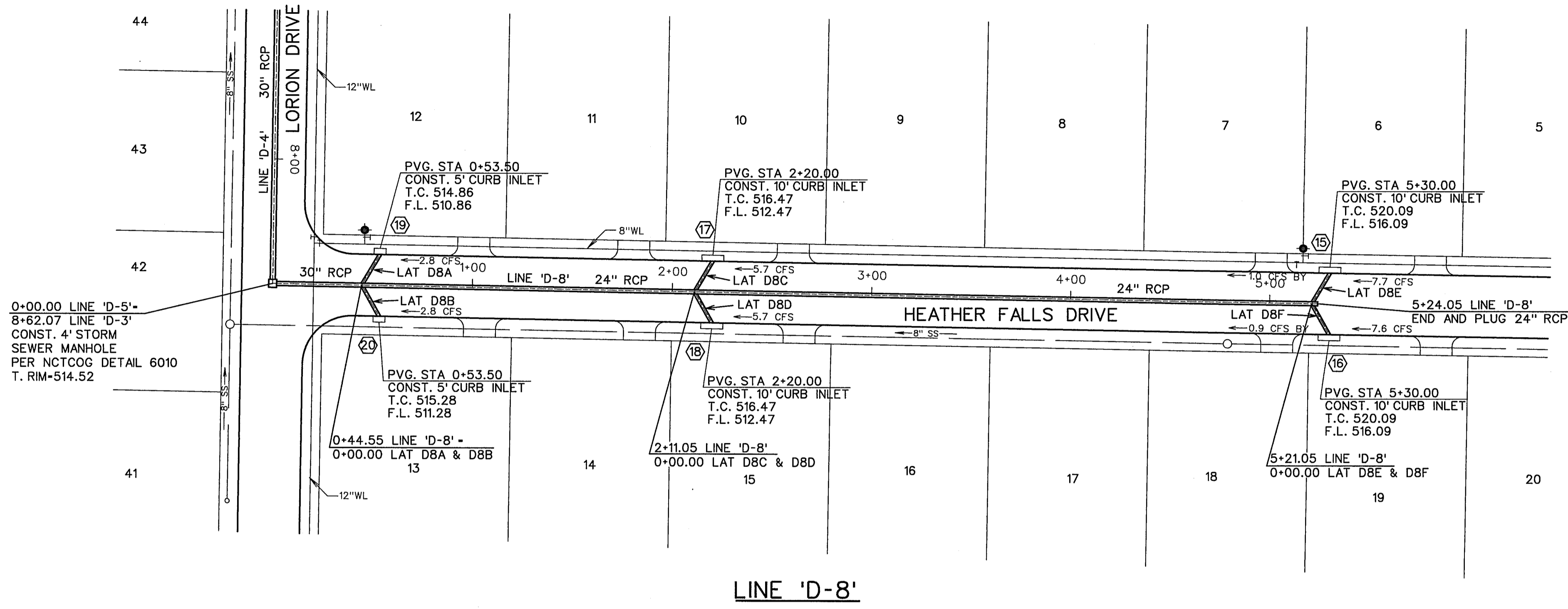
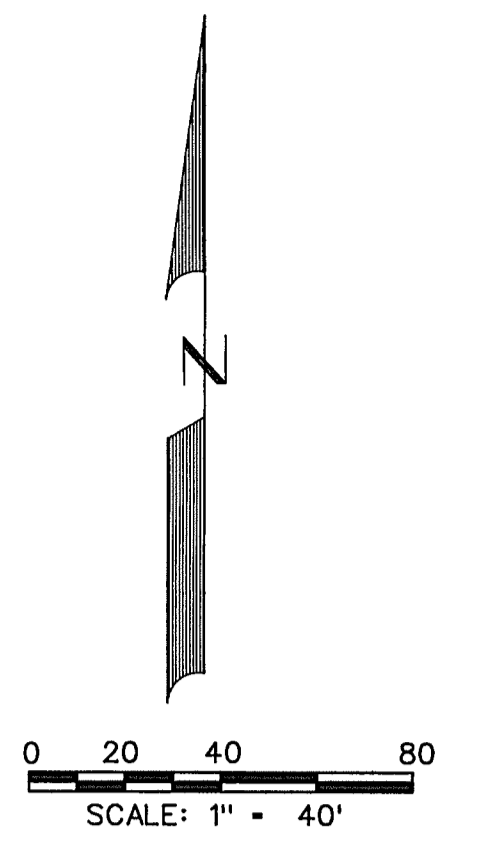
**CORWIN ENGINEERING, INC.**  
200 W. BELMONT, SUITE E  
ALLEN, TEXAS 75013 (972)396-1200  
TBE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL  
PHASE V**  
ROCKWALL, TEXAS

STORM SEWER PLAN AND PROFILES  
LINES 'D-6' & 'D-7'

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	18 OF 26
15006	MAY 2015		

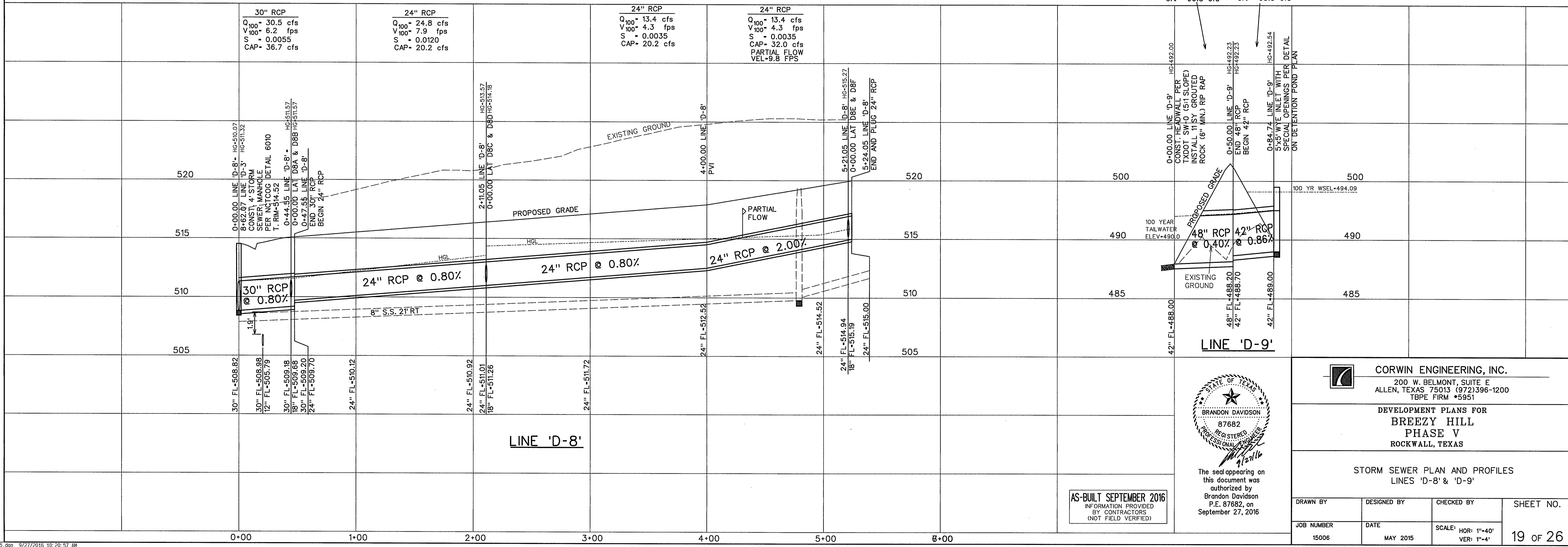
BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



- LEGEND**
- (B) - BLOCK LABEL
  - (19) - INLET NUMBER
  - (1) - CURVE NUMBER
  - - SANITARY SEWER
  - +— - WATER
  - +— - PROPOSED STORM SEWER
  - +— - EXISTING STORM SEWER

**LINE 'D-9'**

48" RCP	42" RCP
Q <sub>100</sub> = 96.4 cfs	Q <sub>100</sub> = 96.4 cfs
V <sub>100</sub> = 7.7 fps	V <sub>100</sub> = 10.0 fps
S = 0.0045	S = 0.0092
CAP = 90.8 cfs	CAP = 93.3 cfs



The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on September 27, 2016

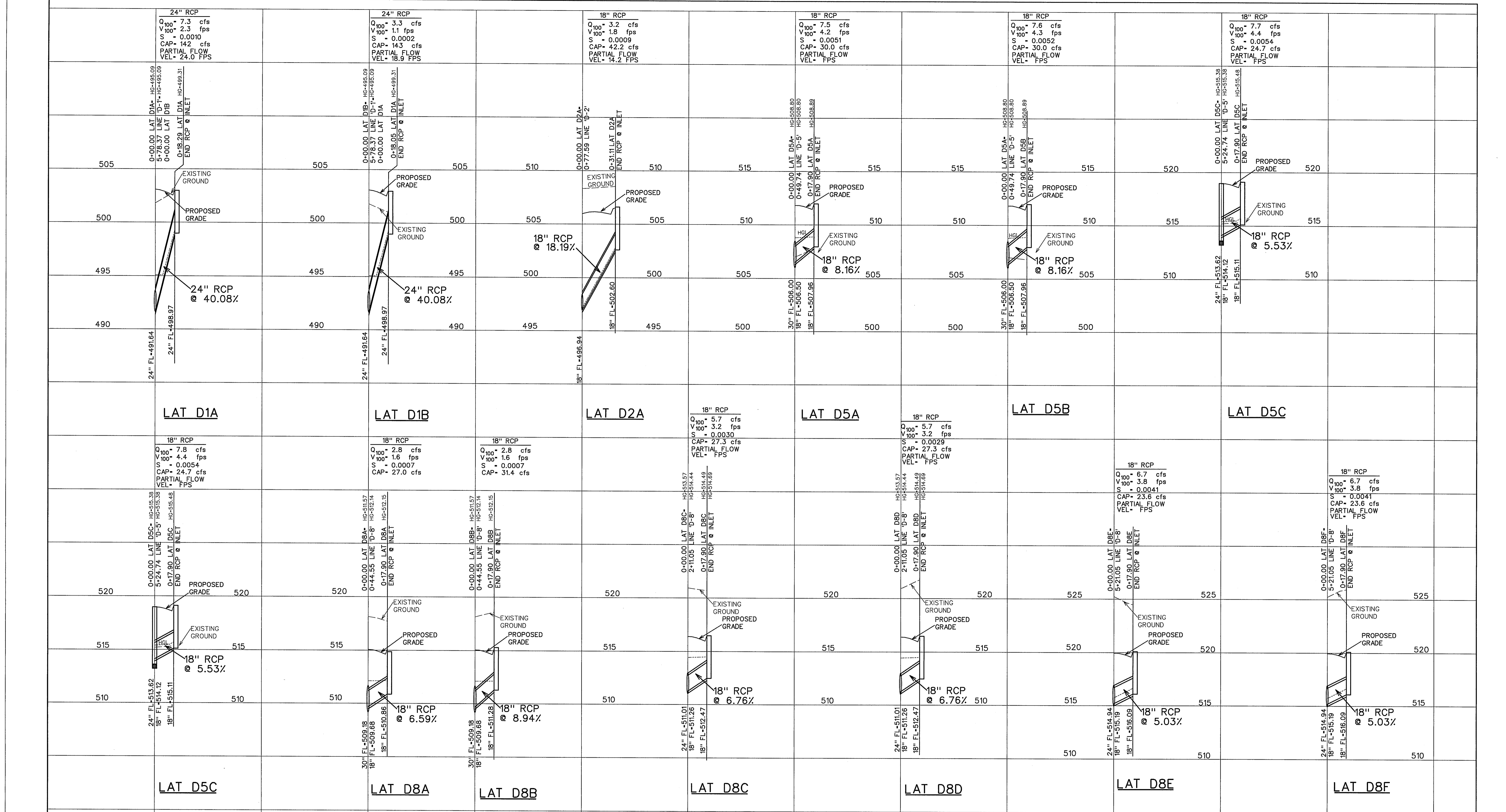
AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

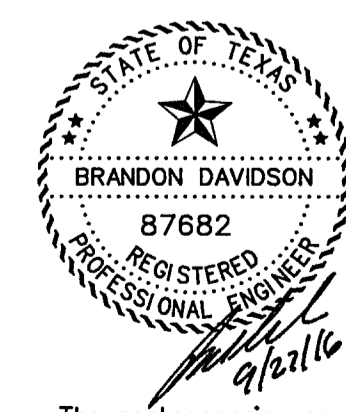
**CORWIN ENGINEERING, INC.**  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

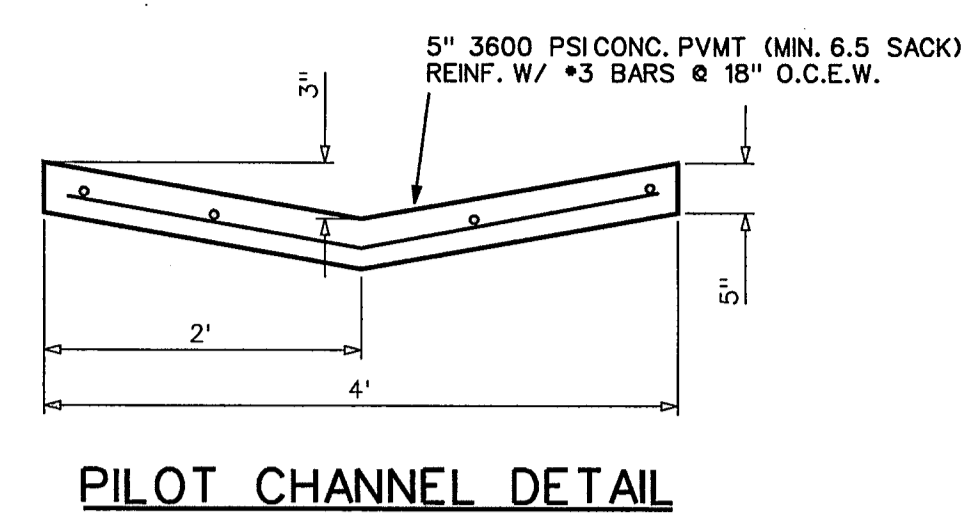
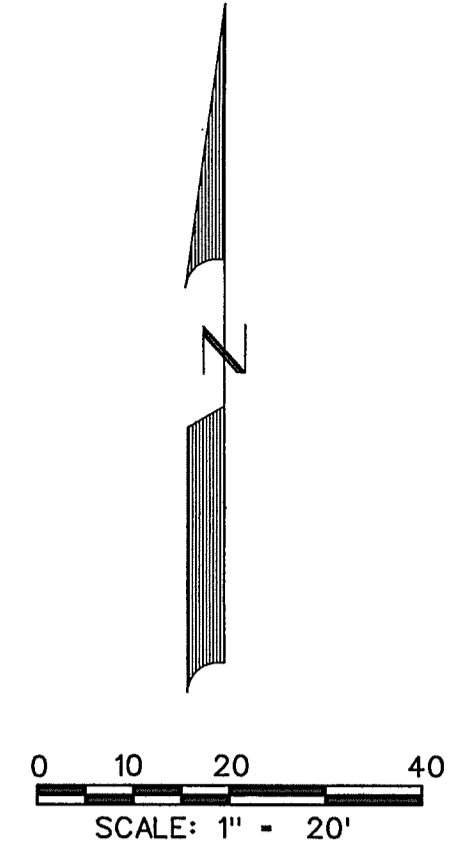
DEVELOPMENT PLANS FOR  
**BREEZY HILL  
 PHASE V**  
 ROCKWALL, TEXAS

STORM SEWER PLAN AND PROFILES  
 LINES 'D-8' & 'D-9'

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	19 OF 26
15006	MAY 2015		



			
<b>CORWIN ENGINEERING, INC.</b> 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 TBPE FIRM #5951			
<b>DEVELOPMENT PLANS FOR          BREEZY HILL          PHASE V          ROCKWALL, TEXAS</b>			
<b>STORM SEWER LATERAL PROFILES</b>			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	<b>20 OF 26</b>
15006	MAY 2015		



**Elevation-Storage Table**

Elevation (ft)	Volume
489	0
490	3686
491	11900
492	21677
493	33775

**Stage-Discharge Table** Office 1 - 2' x 1' opening Weir - 3' wide @ 491.5

Stage	H	Office 1 Area	Discharge	Weir Length	Depth of Flow	Weir Discharge	Total Discharge	Allowable Discharge	Above	Below	
489.00	0	0	0			0.0	0.0				
490.00	0.50	2.00	6.8			6.8	6.8	11.4	(1.20)	5-year	
490.62	1.12	2.00	19.2			19.2	19.2				
491.00	1.50	2.00	11.8			0.0	11.8				
491.03	1.53	2.00	11.9			0.0	11.9	13.7	(1.62)	10-year	
491.25	1.75	2.00	12.7			0.0	12.7	15.4	(2.63)	25-year	
491.46	1.95	2.00	13.5	3.0	0.0	13.5	15.4	(1.91)	50-year		
491.66	2.16	2.00	14.2	3.0	0.2	0.5	14.7	17.5	(2.81)	100-year	
492.00	2.50	2.00	15.2	3.0	0.5	2.8	18.0				
493.00	3.50	2.00	18.0	3.0	1.5	14.5	32.5				
494.00	4.50	2.00	20.4	3.0	2.5	31.2	51.6				

**Elevation Calculations**

Event	Maximum Release Rate	Storage Requirement	Occurs at Elevation
5-year	10.2	8801	490.62
10-year	11.9	10334	491.03
25-year	12.7	12954	491.25
50-year	13.5	15403	491.46
100-year	14.7	17840	491.66

**Breezy Hill Phase 5 Northwest Detention Pond**  
**5-Year Storm**  
**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)
EX1	289898	6.66	0.35	20	4.9	11.4
Allowed Release=						11.4

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Proposed Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	Difference between Pre and Post Development Conditions
1-5,8-9	258320	5.93	0.48	10	6.1	17.4	6.0
Allowed Release=						17.4	

**10-Year Storm**  
**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)
EX1	289898	6.66	0.35	20	5.9	13.7
Allowed Release=						13.7

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	Difference between Pre and Post Development Conditions
1-5,8-9	258320	5.93	0.48	10	7.1	20.3	6.5
Allowed Release=						20.3	

**25-Year Storm**  
**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)
EX1	289898	6.66	0.35	20	6.6	15.4
Allowed Release=						15.4

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	Difference between Pre and Post Development Conditions
1-5,8-9	258320	5.93	0.48	10	8.3	23.7	8.3
Allowed Release=						23.7	

**50-Year Storm**  
**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)
EX1	289898	6.66	0.35	20	7.5	17.5
Allowed Release=						17.5

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	Difference between Pre and Post Development Conditions
1-5,8-9	258320	5.93	0.48	10	9	25.7	8.2
Allowed Release=						25.7	

**100-Year Storm**  
**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)
EX1	289898	6.66	0.35	20	8.3	19.3
Allowed Release=						19.3

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	Difference between Pre and Post Development Conditions
1-5,8-9	258320	5.93	0.48	10	9.8	28.0	8.6
Allowed Release=						28.0	

**DETENTION STORAGE CALCULATIONS - 5 Year**

Storm Duration	Outflow Duration	Area (AC.)	Future "C"	Future "Kf"	Future "CA"	Rainfall Intensity	Inflow (cfs)	Inflow Volume (cubic ft.)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)
10	20	5.93	0.48	1.00	2.85	6.10	17.4	10441	6126	4315	0.10	10.2
20	30	5.93	0.48	1.00	2.85	4.90	14.0	16773	9189	7585	0.17	10.2
30	40	5.93	0.48	1.00	2.85	4.10	11.7	21052	12251	8801	0.20	10.2
40	50	5.93	0.48	1.00	2.85	3.40	9.7	23277	15314	7963	0.18	10.2
50	60	5.93	0.48	1.00	2.85	2.80	8.0	23962	16377	5585	0.13	10.2
60	70	5.93	0.48	1.00	2.85	2.60	7.4	26700	21440	5269	0.12	10.2
70	80	5.93	0.48	1.00	2.85	2.40	6.8	28754	24503	4251	0.10	10.2
80	90	5.93	0.48	1.00	2.85	2.30	6.6	31493	27566	3927	0.09	10.2
90	100	5.93	0.48	1.00	2.85	2.10	6.0	32348	30629	1720	0.04	10.2
100	110	5.93	0.48	1.00	2.85	1.90	5.4	32520	33692	-1172	-0.03	10.2
110	120	5.93	0.48	1.00	2.85	1.80	5.1	33889	36754	-2866	-0.07	10.2
										8801		

**DETENTION STORAGE CALCULATIONS - 10 Year**

Storm Duration	Outflow Duration	Area (AC.)	Future "C"	Future "Kf"	Future "CA"	Rainfall Intensity	Inflow (cfs)	Inflow Volume (cubic ft.)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)
10	20	5.93	0.48	1.00	2.85	7.10	20.3	12152	7156	4996	0.11	11.9
20	30	5.93	0.48	1.00	2.85	5.90	16.8	20196	10734	9462	0.22	11.9
30	40	5.93	0.48	1.00	2.85	4.80	13.7	24646	14313	10334	0.24	11.9
40	50	5.93	0.48	1.00	2.85	4.00	11.4	27385	17891	9494	0.22	11.9
50	60	5.93	0.48	1.00	2.85	3.50	10.0	29922	21469	8453	0.19	11.9
60	70	5.93	0.48	1.00	2.85	3.00	8.6	30808	25047	5761	0.13	11.9
70	80	5.93	0.48	1.00	2.85	2.80	8.0	33547	28625	4921	0.11	11.9
80	90	5.93	0.48	1.00	2.85	2.60	7.4	35600	32203	3397	0.08	11.9
90	100	5.93	0.48	1.00	2.85	2.50	7.1	36510	35781	2729	0.06	11.9
100	110	5.93	0.48	1.00	2.85	2.40	6.8	37600	39360	1718	0.04	11.9
110	120	5.93	0.48	1.00	2.85	2.30	6.6	43302	42938	365	0.01	11.9
										10334		

**DETENTION STORAGE CALCULATIONS - 25 Year**

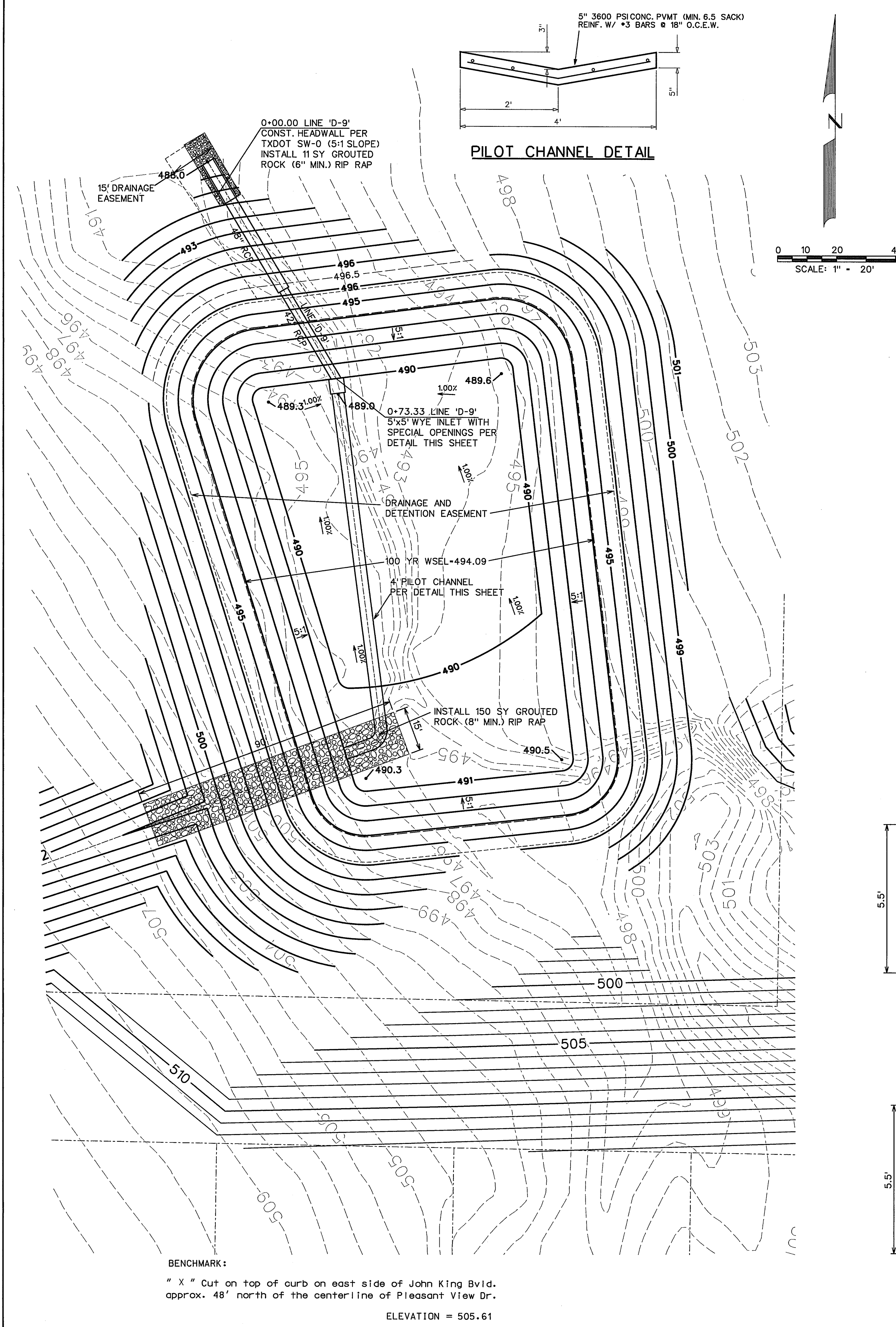
Storm Duration	Outflow Duration	Area (AC.)	Future "C"	Future "Kf"	Future "CA"	Rainfall Intensity	Inflow (cfs)	Inflow Volume (cubic ft.)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)
10	20	5.93	0.48	1.00	2.85	8.30	23.7	14206	7644	6562	0.15	12.7
20	30	5.93	0.48	1.00	2.85	6.80	19.8	22593	11465	11127	0.26	12.7
30	40	5.93	0.48	1.00	2.85	5.50	15.7	28241	15287	12954	0.30	12.7
40	50	5.93	0.48	1.00	2.85	4.60	13.1	31493	19109	12384	0.28	12.7
50	60	5.93	0.48	1.00	2.85	4.00	11.4	34231	22931	11301	0.26	12.7
60	70	5.93	0.48	1.00	2.85	3.50	10.0	35943	26752	9190	0.21	12.7
70	80	5.93	0.48	1.00	2.85	3.30	9.4	36537	30574	8963	0.21	12.7
80	90	5.93	0.48	1.00	2.85	3.10	8.8	42447	34396	8051	0.18	12.7
90	100	5.93	0.48	1.00	2.85	2.90	8.3	44672	38218	6454	0.15	12.7
100	110	5.93	0.48	1.00	2.85	2.70	7.7	46212	42039	4173	0.10	12.7
110	120	5.93	0.48	1.00	2.85	2.50	7.1	47668	45861	1207	0.03	12.7
										12954		

**DETENTION STORAGE CALCULATIONS - 50 Year**

Storm Duration	Outflow Duration	Area (AC.)	Future "C"	Future "Kf"	Future "CA"	Rainfall Intensity	Inflow (cfs)	Inflow Volume (cubic ft.)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)
10	20	5.93	0.48	1.00	2.85	9.00	25.7	15404	8079	7325	0.17	13.5
20	30	5.93	0.48	1.00	2.85	7.50	21.4	25673	12118	13555	0.31	13.5
30	40	5.93	0.48	1.00	2.85	6.10	17.4	31322	16158	15164	0.35	13.5
40	50	5.93	0.48	1.00	2.85	5.20	14.8	35600	20197	15403	0.35	13.5
50	60	5.93	0.48	1.00	2.85	4.50	12.8	38510	24237	14274	0.33	13.5
60	70	5.93	0.48	1.00	2.85	3.90	11.1	40950	28276	11775	0.27	13.5
70	80	5.93	0.48	1.00	2.85	3.70	10.6	44329	32315	12014	0.28	13.5
80	90	5.93	0.48	1.00	2.85	3.50	10.0	47624	36355	11569	0.27	13.5
90	100	5.93	0.48	1.00	2.85	3.30	9.4	50833	40394	10439	0.24	13.5
100	110	5.93	0.48	1.00	2.85	3.00	8.6	51347	44434	6913	0.16	13.5
110	120	5.93	0.48	1.00	2.85	2.90	8.3	54599	48473	6128	0.14	13.5
										15403		

**DETENTION STORAGE CALCULATIONS - 100 Year**

Storm Duration	Outflow Duration	Area (AC.)	Future "C"	Future "Kf"	Future "CA"	Rainfall Intensity	Inflow (cfs)	Inflow Volume (cubic ft.)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)
10	20	5.93	0.48	1.00	2.85	9.80	28.0	16773	8795	7978	0.18	14.7
20	30	5.93	0.48	1.00	2.85	8.30	23.7	28412	13192	15220	0.35	14.7
30	40	5.93	0.48	1.00	2.85	6.90	19.7	35429	17580	17840	0.41	14.7
40	50	5.93	0.48	1.00	2.85	5.80	16.5	39708	21987	17721	0.41	14.7
50	60	5.93	0.48	1.00	2.85	5.00	14.3	42789	26384	16405	0.38	14.7
60	70	5.93	0.48	1.00	2.85	4.50	12.8	46212	30782	15430	0.35	14.7
70	80	5.93	0.48	1.00	2.85	4.00	11.4	47924	35179	12744	0.29	14.7
80	90	5.93	0.48	1.00	2.85	3.70	10.6	50662	39577	11085	0.25	14.7
90	100	5.93	0.48	1.00	2.85	3.50	10.0	53914	43974	9940	0.23	14.7
100	110	5.93	0.48	1.00	2.85	3.40	9.7	56193	48372	9821	0.23	14.7
110	120	5.93	0.48	1.00	2.85	3.20	9.1	60247	52769	7478	0.17	14.7
										17840		



**Breezy Hill Phase 5 North Detention Pond**  
5-Year Storm

**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)	
EX3,EX4	1468838	33.72	0.35	20	4.9	57.8	
						Allowed Release=	57.8

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	
14-27,29-30,33	1298366	29.8	0.43	10	7.1	79.4	
EX4	224945	5.2	0.35	20	4.9	8.9	
						Allowed Release=	88.3

**10-Year Storm**

**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)	
EX3,EX4	1468838	33.72	0.35	20	5.9	69.6	
						Allowed Release=	69.6

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	
14-27,29-30,33	1298366	29.8	0.43	10	8.3	90.2	
EX4	224945	5.2	0.35	20	5.9	10.7	
						Allowed Release=	100.8

**25-Year Storm**

**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)	
EX3,EX4	1468838	33.72	0.35	20	7.1	77.9	
						Allowed Release=	77.9

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	
14-27,29-30,33	1298366	29.8	0.43	10	8.3	105.4	
EX4	224945	5.2	0.35	20	6.6	11.9	
						Allowed Release=	117.3

**50-Year Storm**

**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)	
EX3,EX4	1468838	33.72	0.35	20	8.6	99.6	
						Allowed Release=	99.6

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	
14-27,29-30,33	1298366	29.8	0.43	10	9.8	114.3	
EX4	224945	5.2	0.35	20	7.5	13.6	
						Allowed Release=	127.8

**100-Year Storm**

**Pre-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Undeveloped (cfs)	
EX3,EX4	1468838	33.72	0.35	20	10.3	119.9	
						Allowed Release=	119.9

**Post-Project Runoff Calculations**

Area #	Area (sf)	Area (acres)	Existing Runoff Coefficient	Tc - Existing (min)	Rainfall Intensity (in/hr)	Q - Post Development (cfs)	
14-27,29-30,33	1298366	29.8	0.43	10	11.9	131.6	
EX4	224945	5.2	0.35	20	8.3	15.0	
						Allowed Release=	146.6

**Elevation-Storage Table**

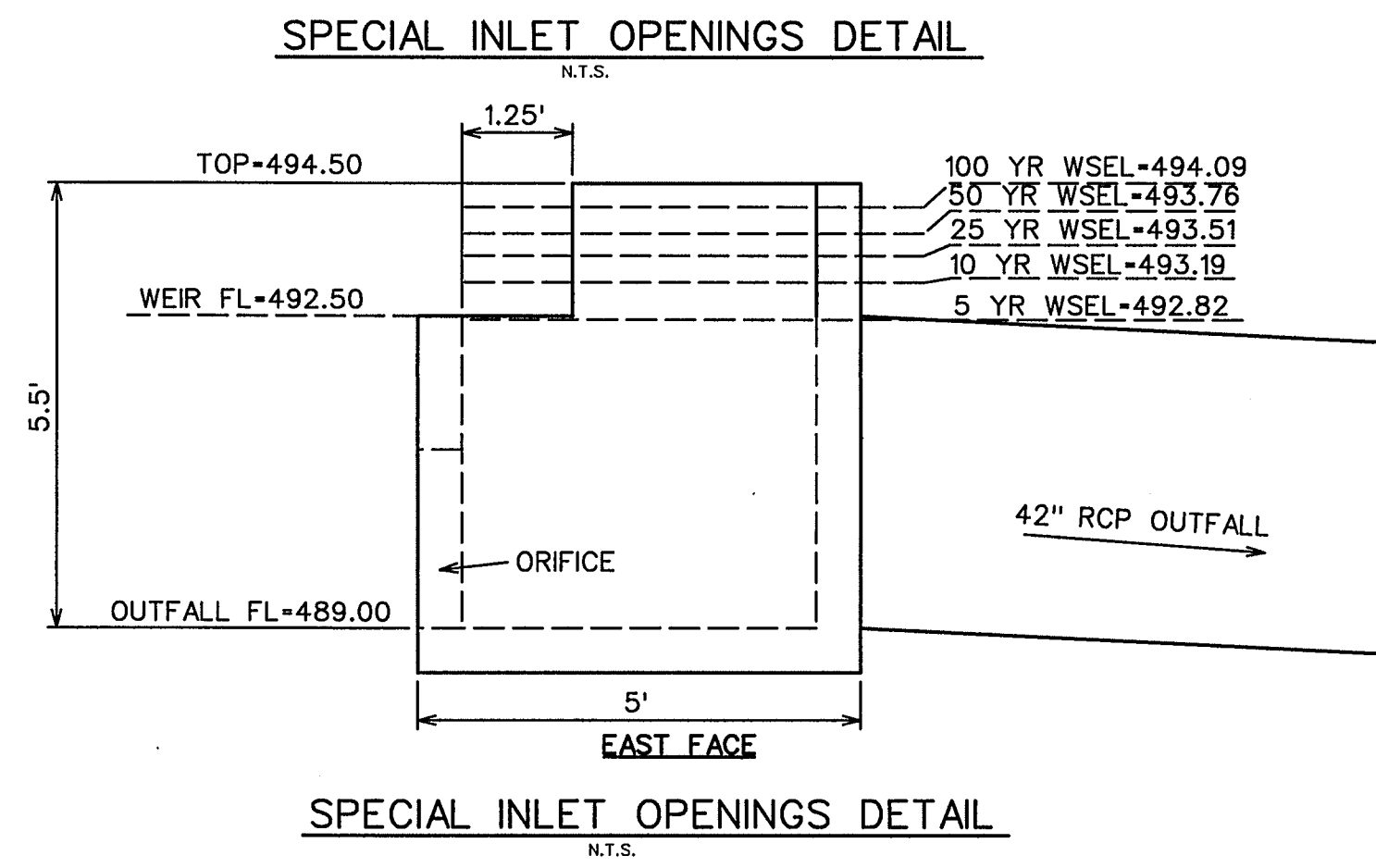
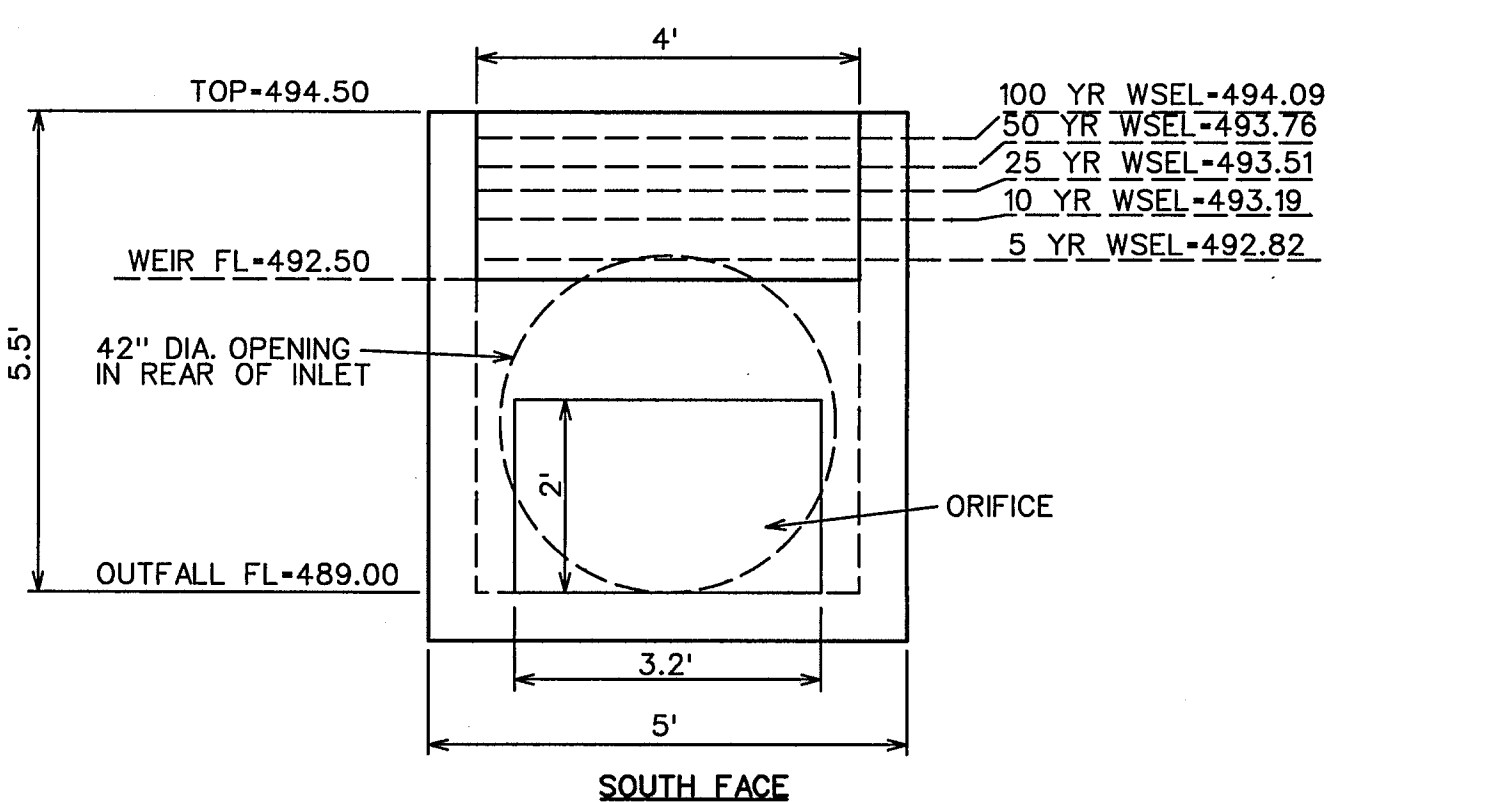
Elevation (ft)	Volume (cf)
489	0
490	4003
491	14276
492	27988
493	44124
494	62841
495	84296

**Elevation Calculations**

Event	Maximum Release Rate	Storage Requirement	Occurs at Elevation
5-year	54.8	42343	492.82
10-year	64.7	47707	493.19
25-year	74.9	53711	493.51
50-year	84.1	58381	493.76
100-year	96.4	64491	494.09

**Stage-Discharge Table**

Stage	H	Orifice 1			Orifice 2			Weir - 6.5' Long @ 492.5		
		Area	Discharge	Depth of Flow	Weir	Discharge	Depth of Flow	Discharge	Allowable	Above
489.00	0		0		0.0	0.0				
490.00	0.50	3.20	10.9		0.0	10.9				
491.00	1.00	6.40	30.8		0.0	30.8				
492.00	2.00	6.40	43.6		0.0	43.6				
492.82	2.82	6.40	51.7	6.5	0.3	3.1	54.8	57.8	(2.99)	5-year
493.00	3.00	6.40	53.4	6.5	0.5	6.0	59.4			
493.19	3.19	6.40	55.0	6.5	0.7	9.7	64.7	69.6	(4.94)	10-year
493.51	3.51	6.40	57.7	6.5	1.0	17.2	74.9	77.9	(2.98)	25-year
493.76	3.76	6.40	59.8	6.5	1.3	24.3	84.1	88.5	(4.44)	50-year
494.00	4.00	6.40	61.6	6.5	1.5	31.4	93.0			
494.09	4.08	6.40	62.3	6.5	1.6	34.1	96.4	96.0	(1.56)	100-year



**DETENTION CALCULATIONS - 5 Year**

Storm Duration	Outflow Duration	Area (A.C.)	Future "C"	Future "KF"	Future "CA"	Rainfall intensity	Inflow (cfs)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)	
10	20	34.97	0.41	1.00	14.51	6.1	88.5	53092	32906	20186	0.46	54.8
20	30	34.97	0.41	1.00	14.51	4.9	71.1	85266	49359	38937	0.82	54.8
30	40	34.97	0.41	1.00	14.51	4.1	59.5	107055	65812	41243	1.02	54.8
40	50	34.97	0.41	1.00	14.51	3.4	48.3	118369	82265	36165	0.83	54.8
50	60	34.97	0.41	1.00	14.51	2.8	40.6	121851	98719	23133	0.53	54.8
60	70	34.97	0.41	1.00	14.51	2.6	37.7	135777	115171	20606	0.47	54.8
70	80	34.97	0.41	1.00	14.51	2.4	34.8	146221	131624	14598	0.34	54.8
										41243		

**DETENTION CALCULATIONS - 10 Year**

Storm Duration	Outflow Duration	Area (A.C.)	Future "C"	Future "KF"	Future "CA"	Rainfall intensity	Inflow (cfs)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)	
10	20	34.97	0.41	1.00	14.51	7.1	103.0	61786	38813	22983	0.53	64.7
20	30	34.97	0.41	1.00	14.51	5.9	85.6	102703	58219	44484	1.02	64.7
30	40	34.97	0.41	1.00	14.51	4.8	69.6	125352	77825	47707	1.10	64.7
40	50	34.97	0.41	1.00	14.51	4.0	58.0	139258	97031	42227	0.97	64.7
50	60	34.97	0.41	1.00	14.51	3.5	50.8	152314	116438	35876	0.82	64.7
60	70	34.97	0.41	1.00	14.51	3.0	43.5	156685	135844	20822	0.48	64.7
70	80	34.97	0.41	1.00	14.51	2.8	40.6	170591	155250	15341	0.35	64.7
										47707		

**DETENTION CALCULATIONS - 25 Year**

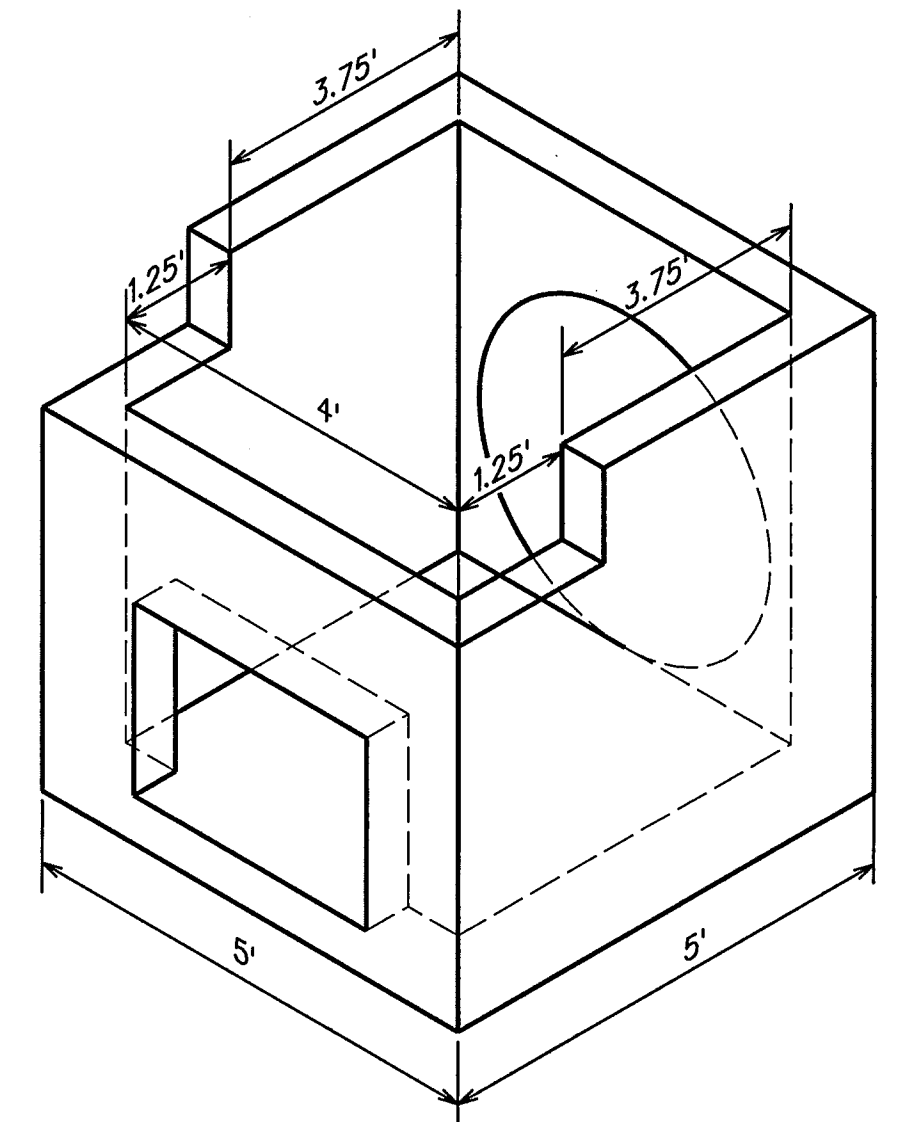
Storm Duration	Outflow Duration	Area (A.C.)	Future "C"	Future "KF"	Future "CA"	Rainfall intensity	Inflow (cfs)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)	
10	20	34.97	0.41	1.00	14.51	8.3	120.4	72240	44549	27291	0.63	74.9
20	30	34.97	0.41	1.00	14.51	6.8	95.7	114888	67424	47464	1.09	74.9
30	40	34.97	0.41	1.00	14.51	5.5	79.8	143610	89899	53711	1.23	74.9
40	50	34.97	0.41	1.00	14.51	4.6	66.7	160147	112374	47773	1.10	74.9
50	60	34.97	0.41	1.00	14.51	4.0	58.0	174073	134848	39224	0.90	74.9
60	70	34.97	0.41	1.00	14.51	3.5	50.8	182776	157323	25463	0.58	74.9
70	80	34.97	0.41	1.00	14.51	3.3	47.9	201054	179798	21256	0.49	74.9
										53711		

**DETENTION CALCULATIONS - 50 Year**

Storm Duration	Outflow Duration	Area (A.C.)	Future "C"	Future "KF"	Future "CA"	Rainfall intensity	Inflow (cfs)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)	
10	20	34.97	0.41	1.00	14.51	9.0	130.6	78333	50448	27865	0.64	84.1
20	30	34.97	0.41	1.00	14.51	7.5	108.8	130555	75871	64883	1.26	84.1
30	40	34.97	0.41	1.00	14.51	6.1	88.5	159276	100895	68381	1.34	84.1
40	50	34.97	0.41	1.00	14.51	5.2	75.4	181036	126119	64918	1.26	84.1
50	60	34.97	0.41	1.00	14.51	4.5	65.3	185832	151943	44469	1.02	84.1
60	70	34.97	0.41	1.00	14.51	3.9	56.6	203855	176567	27088	0.62	84.1
70	80	34.97	0.41	1.00	14.51	3.7	53.7	225424	201791	23634	0.54	84.1
										58381		

**DETENTION CALCULATIONS - 100 Year**

Storm Duration	Outflow Duration	Area (A.C.)	Future "C"	Future "KF"	Future "CA"	Rainfall intensity	Inflow (cfs)	Outflow Volume (cubic ft.)	Volume (cubic ft.)	Volume (acre-ft.)	Outflow (cfs)	
10	20	34.97	0.41	1.00	14.51	9.8	142.2	85296	57837	27458	0.63	96.4
20	30	34.97	0.41	1.00	14.51	8.3	120.4	144480	86756	67724	1.33	96.4
30	40	34.97	0.41	1.00	14.51	6.9	100.1	180165	115675	64491	1.48	96.4
40	50	34.97	0.41	1.00	14.51	5.8	84.1	201924	144593	57331	1.32	96.4
50	60	34.97	0.41	1.00	14.51	5.0	72.5	217691	173512	44079	1.01	96.4
60	70	34.97	0.41	1.00	14.51	4.5	65.3	234988	202431	32567	0.76	96.4
70	80	34.97	0.41	1.00	14.51	4.0	58.0	243702	231349	12352	0.28	96.4
										64491		



BENCHMARK:  
" X " Cut on top of curb on east side of John King Blvd.  
approx. 48' north of the centerline of Pleasant View Dr.

ELEVATION = 505.61

AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED  
BY CONTRACTORS  
(NOT FIELD VERIFIED)



The seal appearing on this document was authorized by Brandon Davidson P.E. 87682, on September 27, 2016

**CORWIN ENGINEERING, INC.**  
200 W. BELMONT, SUITE E  
ALLEN, TEXAS 75013 (972)396-1200  
TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL  
PHASE V  
ROCKWALL, TEXAS**

DETENTION POND PLAN  
POND 2

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
15006	MAY 2015	SCALE:	22 OF 26



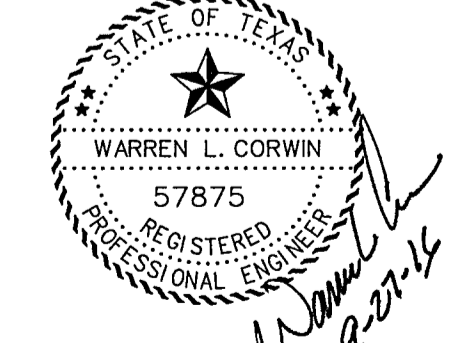
BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61

NOTE:  
 RETAINING WALLS 3' IN HEIGHT AND OVER  
 NEED A ENGINEERED SEALED PLAN.  
 (PLANS TO BE SUBMITTED PRIOR  
 TO ENGINEERING APPROVAL)

LEGEND  
 SPOT ELEVATION 706.2  
 EXIST. CONTOUR 700  
 PROP. CONTOUR 704  
 RETAINING WALL

DRIVEWAY LOCATION SO MAXIMUM 14%  
 SLOPE OR UNDER IS MAINTAINED, OR AS TO  
 AVOID INLET OR MIN. DISTANCE FROM INTER-  
 SECTION  
 (DRIVEWAY MAY BE PLACED AT ALTERNATE  
 LOCATION WITH USE OF A DROP GARAGE AS  
 LONG AS MAXIMUM SLOPE IS 14% OR UNDER)

- 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.
  4. All fill compacted to min 95% std. density using sheeps foot roller.
  5. All portions of the wall to be on one lot. Do not install on property line



AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED  
 BY CONTRACTORS  
 (NOT FIELD VERIFIED)

The seal appearing on  
 this document was  
 authorized by  
 Warren L. Corwin,  
 P.E. 57875, on  
 September 27, 2016

CORWIN ENGINEERING, INC.  
 200 W. BELMONT, SUITE E  
 ALLEN, TEXAS 75013 (972)396-1200  
 TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
**BREEZY HILL**  
**PHASE V**  
 ROCKWALL, TEXAS

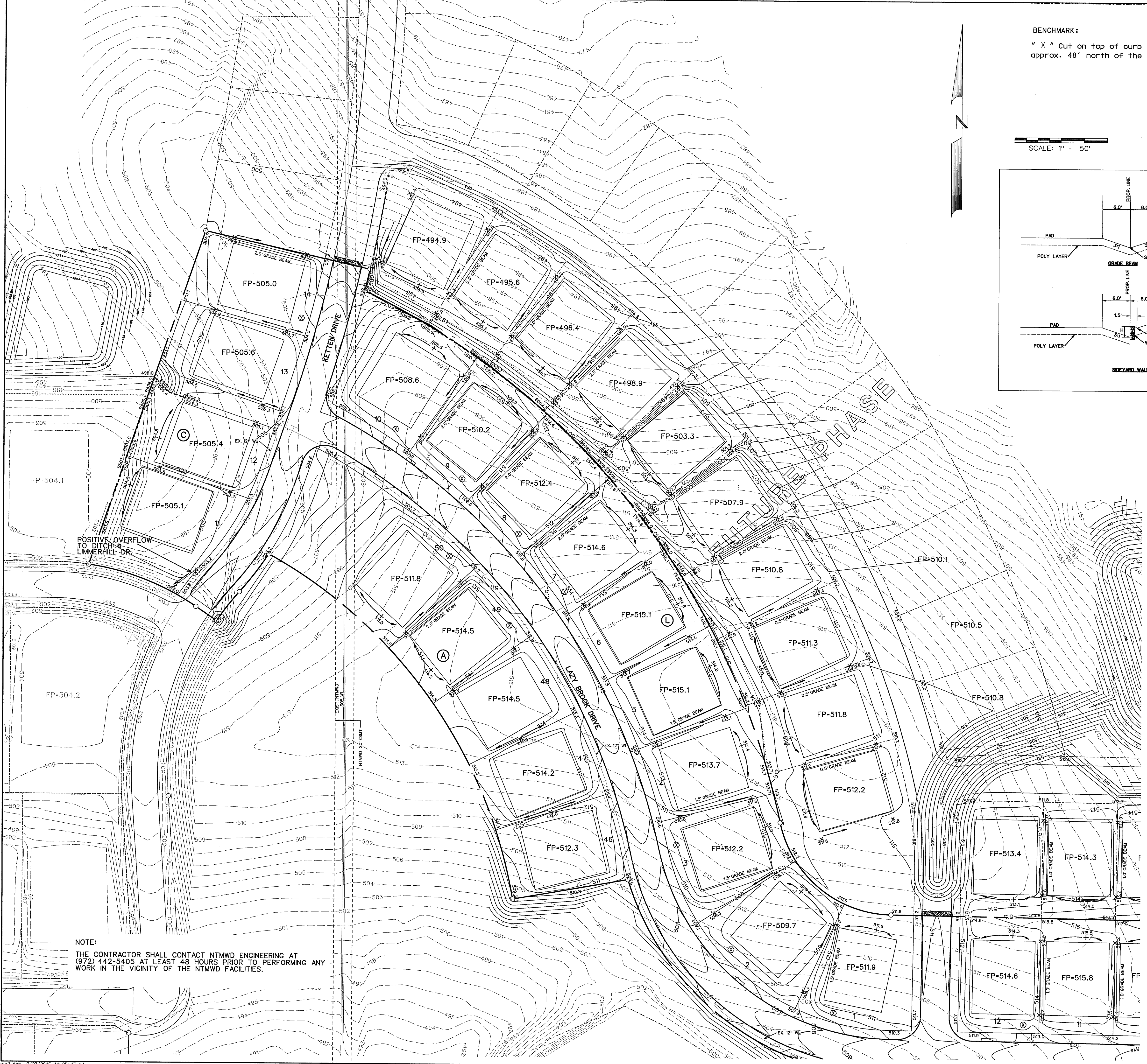
GRADING PLAN

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4"	23 OF 26
15006	MAY 2015		

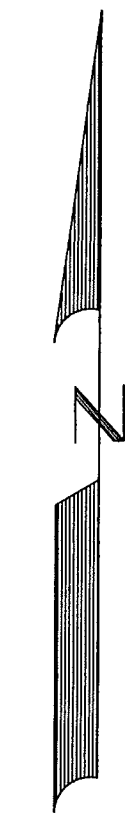
SCALE: 1" = 50'

Note:  
 Each lot will need a detailed grading plan  
 with building permit submittal. This is a  
 general grading plan for site work only.

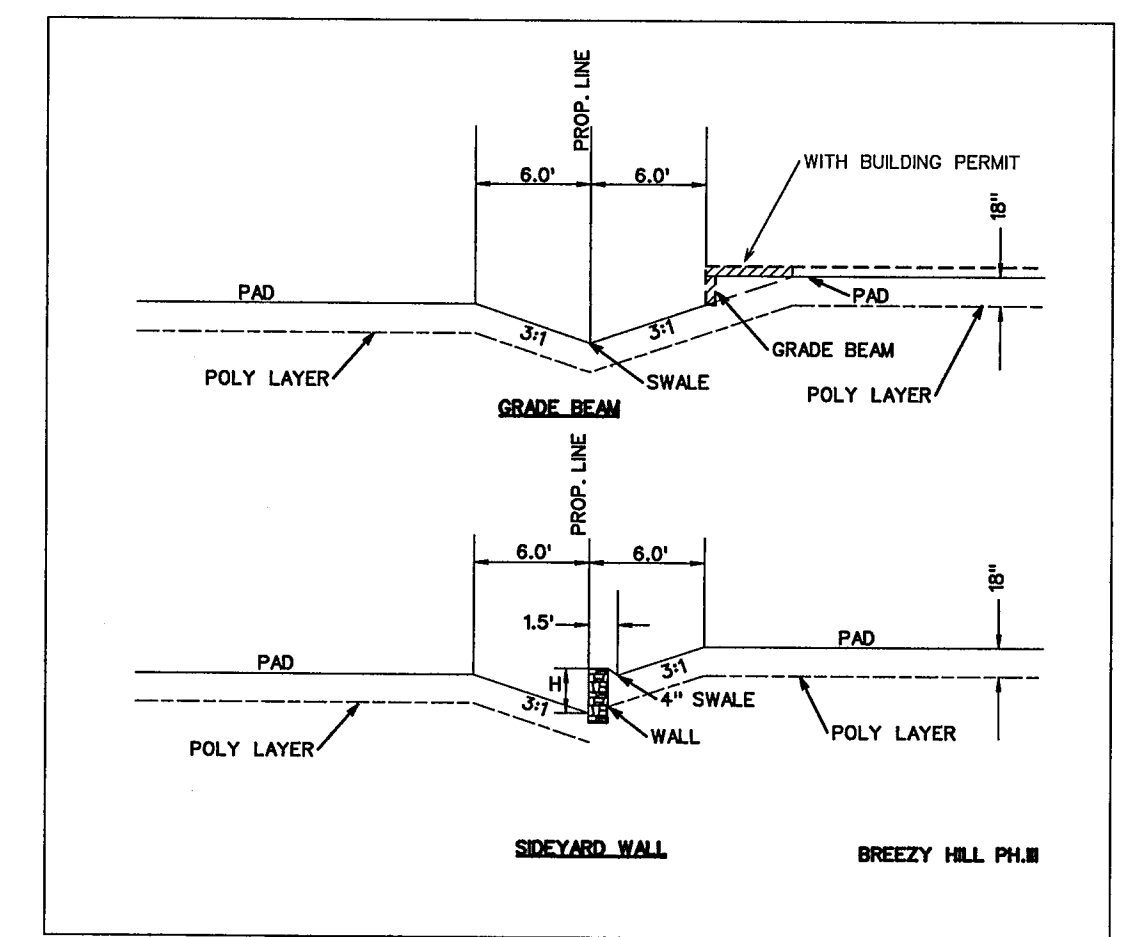




BENCHMARK:  
 " X " Cut on top of curb on east side of John King Blvd.  
 approx. 48' north of the centerline of Pleasant View Dr.  
 ELEVATION = 505.61



SCALE: 1" = 50'



NOTE:  
 RETAINING WALLS 3' IN HEIGHT AND OVER  
 NEED AN ENGINEERED SEALED PLAN.  
 (PLANS TO BE SUBMITTED PRIOR  
 TO ENGINEERING APPROVAL)

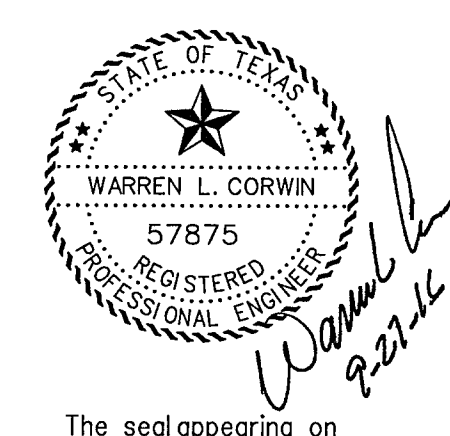
Note:  
 Each lot will need a detailed grading plan  
 with building permit submittal. This is a  
 general grading plan for site work only.

- 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.
  4. All fill compacted to min 95% std. density using sheeps foot roller.
  5. All portions of the wall to be on one lot. Do not install on property line

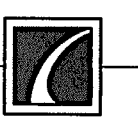
LEGEND

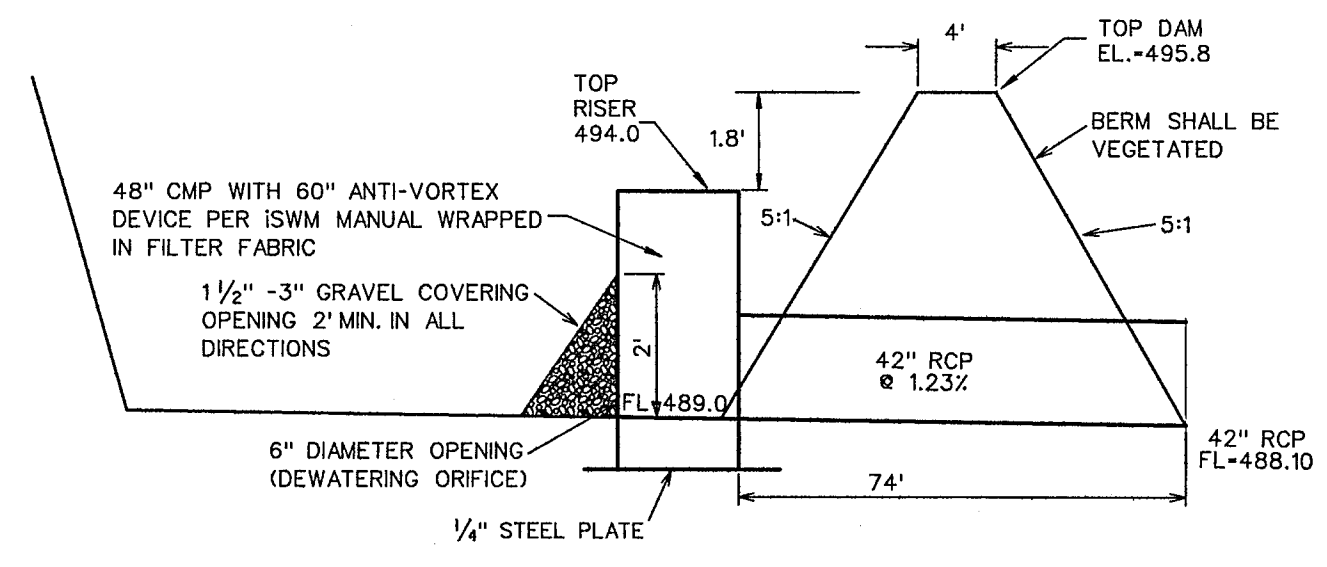
- SPOT ELEVATION 706.2
  - EXIST. CONTOUR — 700 —
  - PROP. CONTOUR — 704 —
  - RETAINING WALL - - - - -
- ⊗ DRIVEWAY LOCATION SO MAXIMUM 14% SLOPE OR UNDER IS MAINTAINED, OR AS TO AVOID INLET OR MIN. DISTANCE FROM INTERSECTION (DRIVEWAY MAY BE PLACED AT ALTERNATE LOCATION WITH USE OF A DROP GARAGE AS LONG AS MAXIMUM SLOPE IS 14% OR UNDER)

AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED  
 BY CONTRACTORS  
 (NOT FIELD VERIFIED)



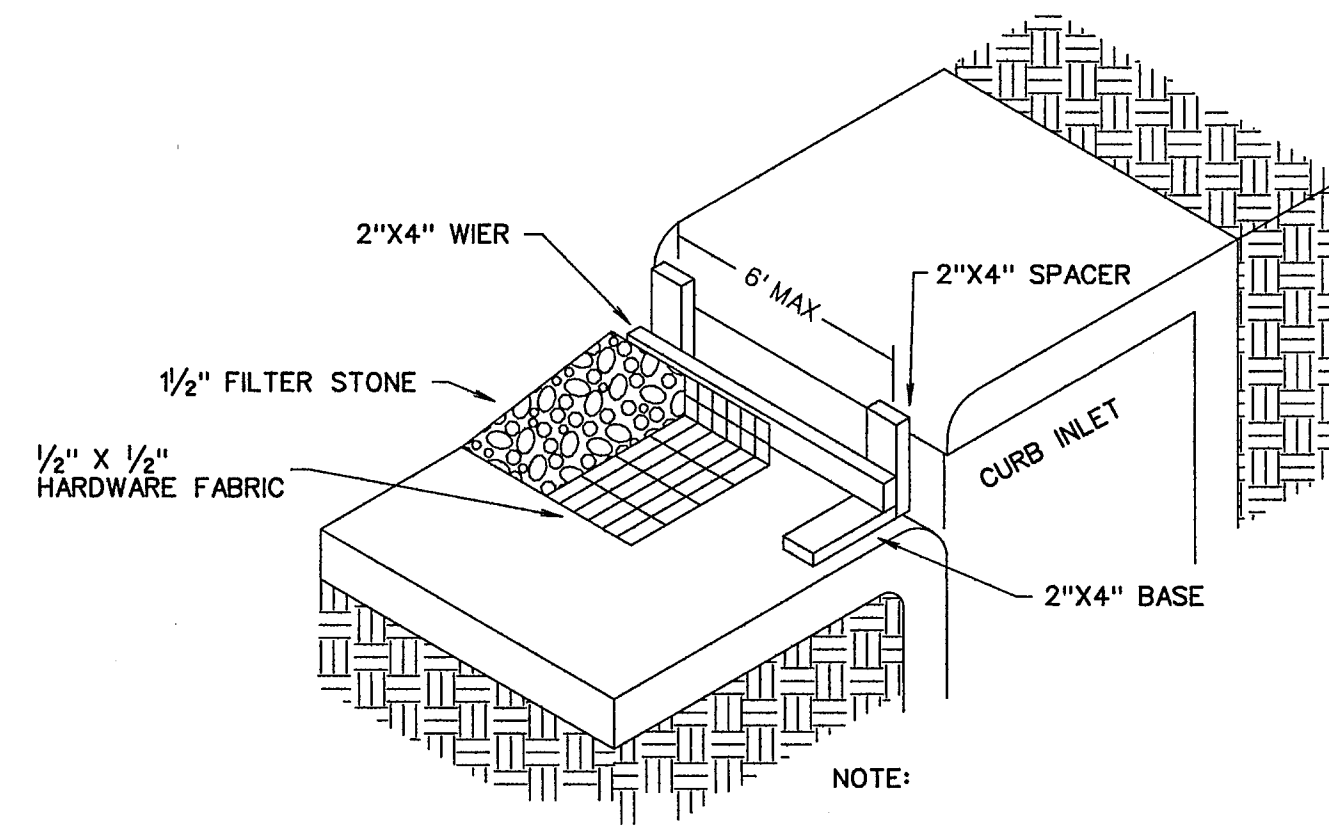
The seal appearing on this document was authorized by Warren L. Corwin, P.E. 57875, on September 27, 2016

 <b>CORWIN ENGINEERING, INC.</b> 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972) 396-1200 TBPE FIRM #5951			
DEVELOPMENT PLANS FOR <b>BREEZY HILL          PHASE V          ROCKWALL, TEXAS</b>			
GRADING PLAN			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE: HOR: 1"=40' VER: 1"=4'	24 of 26
15006	MAY 2015		



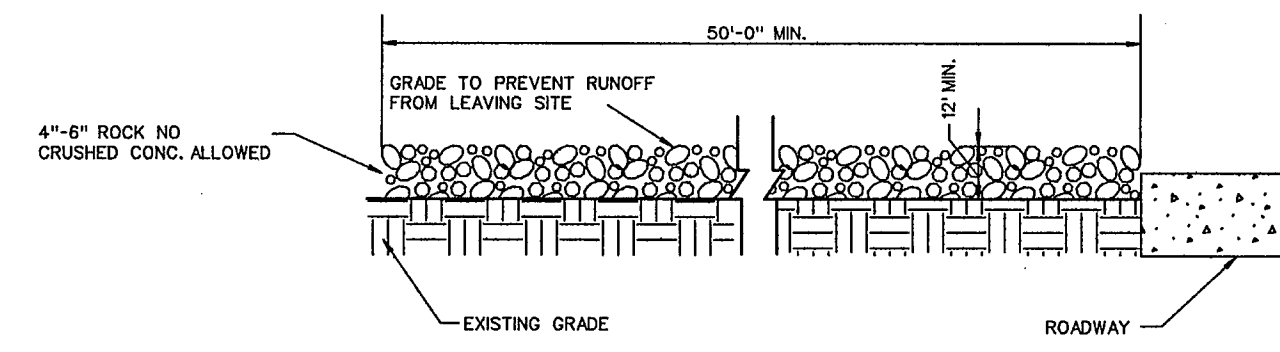
**SEDIMENT BASIN OUTFALL DETAIL**

N.T.S.  
 VOLUME REQUIRED = 3600 CF/ACRE  
 = 20.74 ACRES \* 3600 CF/DISTURBED ACRE = 74,682 CF REQUIRED  
 VOLUME PROVIDED = 84,296 CF (USING DETENTION POND 2 AS SEDIMENT BASIN)

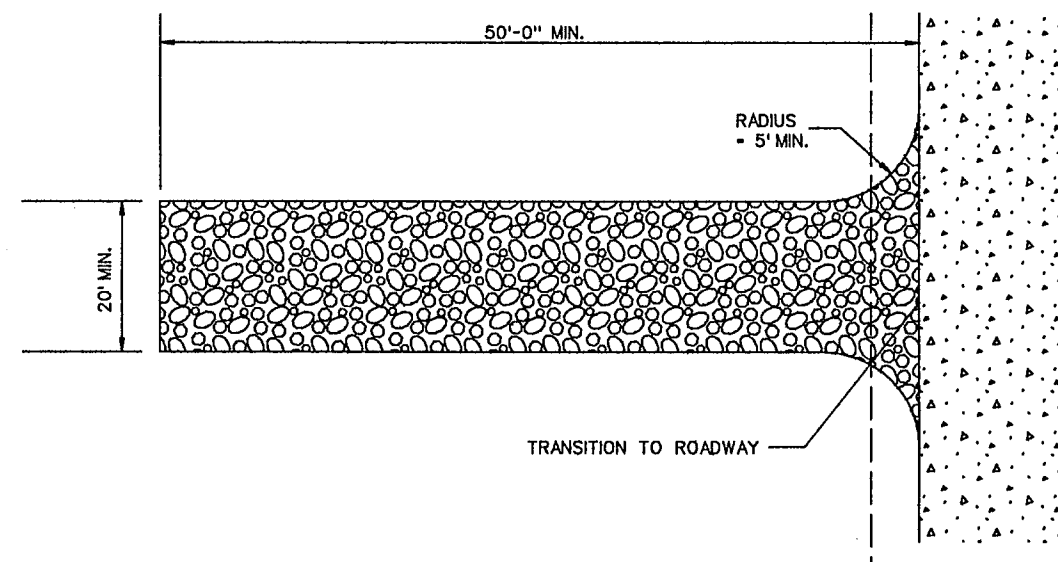


NOTE:  
 EXTEND FABRIC, FRAME AND FILTER STONE 12' BEYOND END OF INLET ON BOTH ENDS.

**TYPE B CURB INLET PROTECTION**

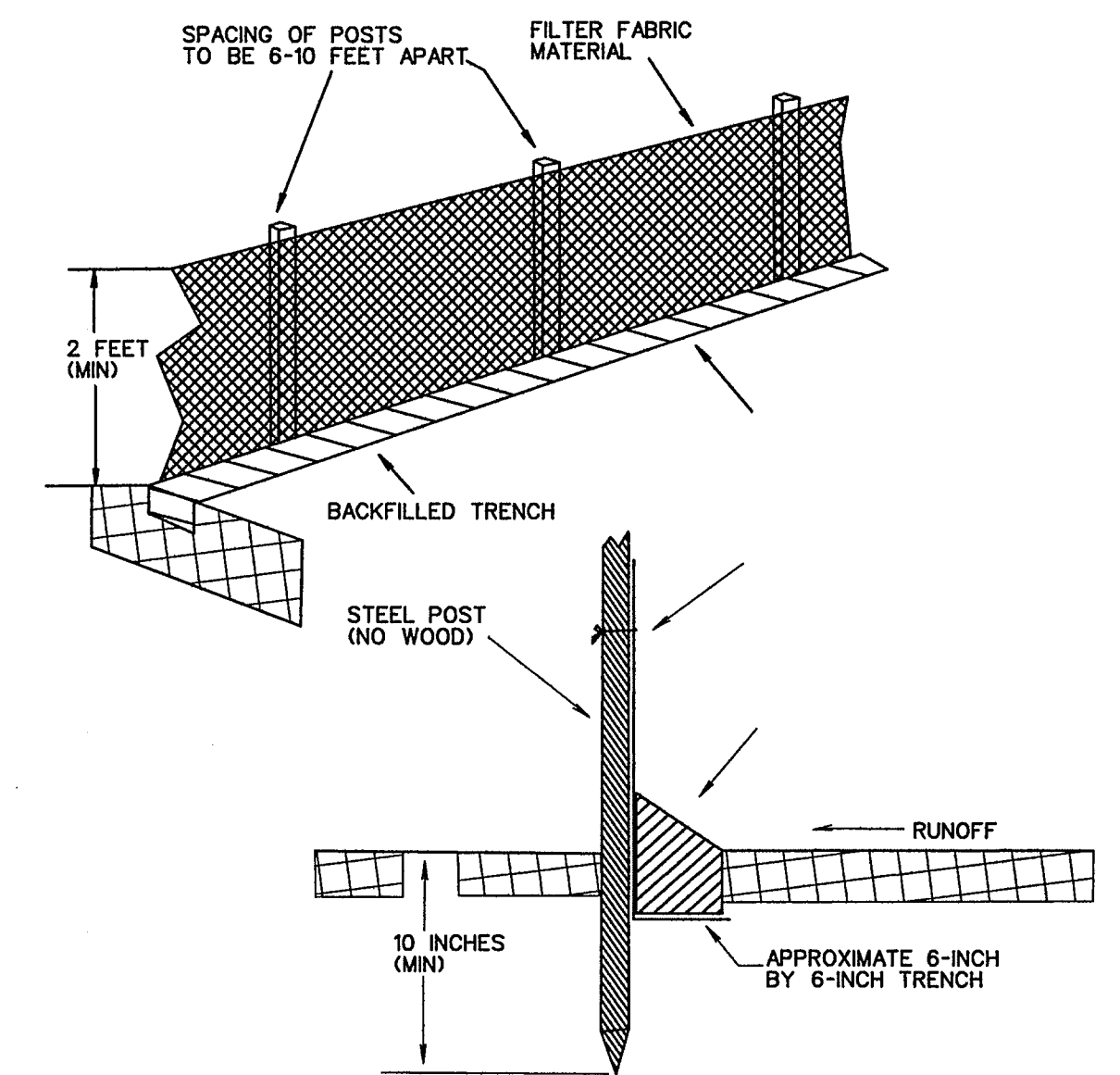


**PROFILE**



**PLAN VIEW**

**STABILIZED ENTRANCE DETAIL**

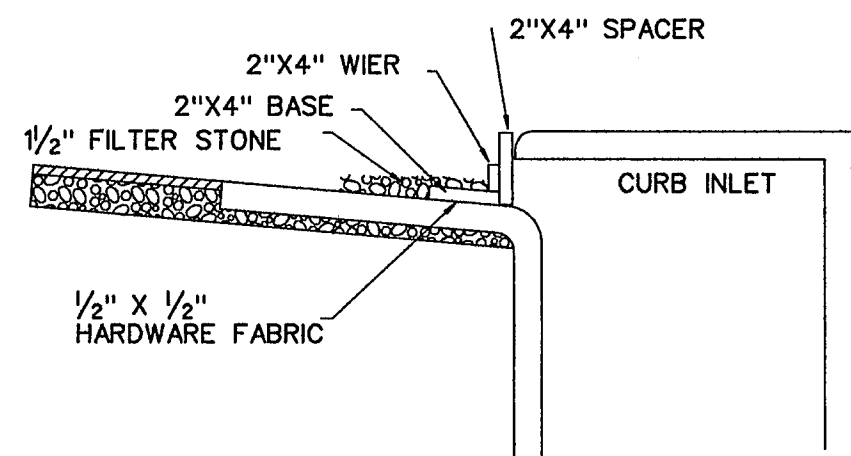
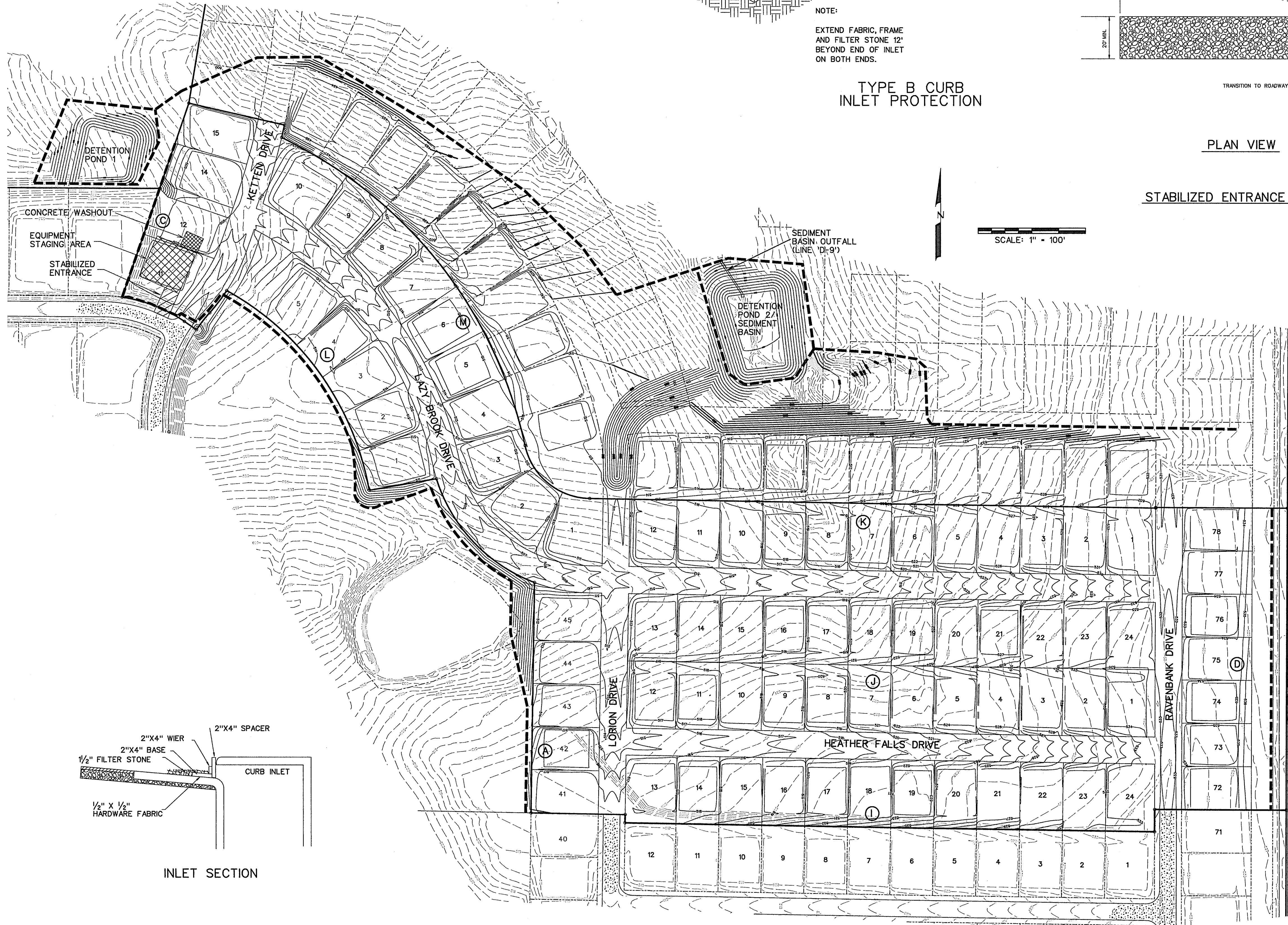


**FILTER FABRIC FENCE DETAIL**

AREA DISTURBED 36.7 AC  
 DISTURBED AREA BY BASIN:  
 BASIN EX1 - 6.6 ACRES - NO SEDIMENT BASIN REQUIRED  
 BASIN EX2 - 6.2 ACRES - NO SEDIMENT BASIN REQUIRED  
 BASIN EX3 - 20.7 ACRES - SEDIMENT BASIN REQUIRED  
 BASIN EX4 - 4.2 ACRES - NO SEDIMENT BASIN REQUIRED

**LEGEND**

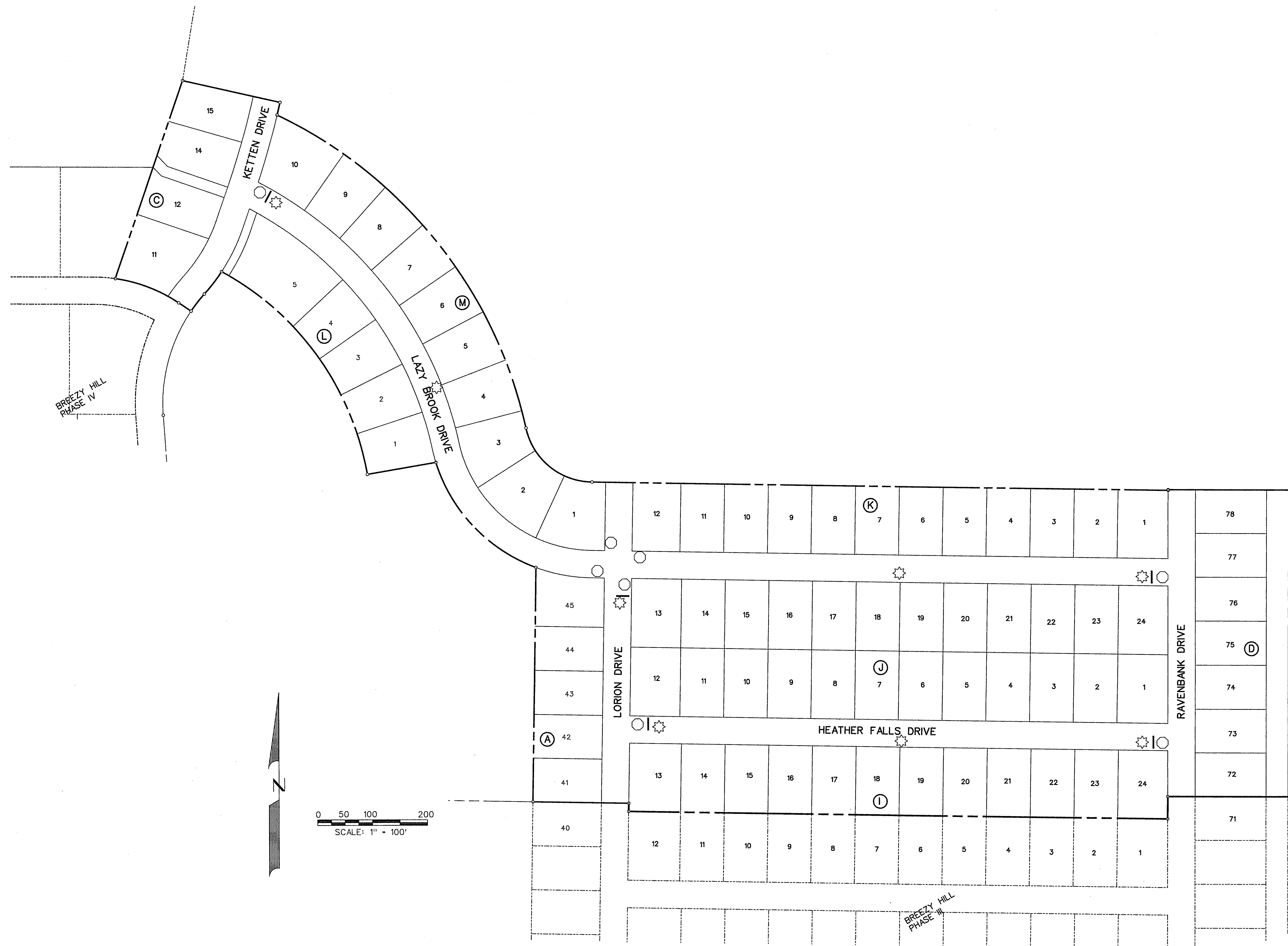
SILT FENCE (BEFORE CONSTRUCTION) - - - - -  
 INLET PROTECTION [Symbol]



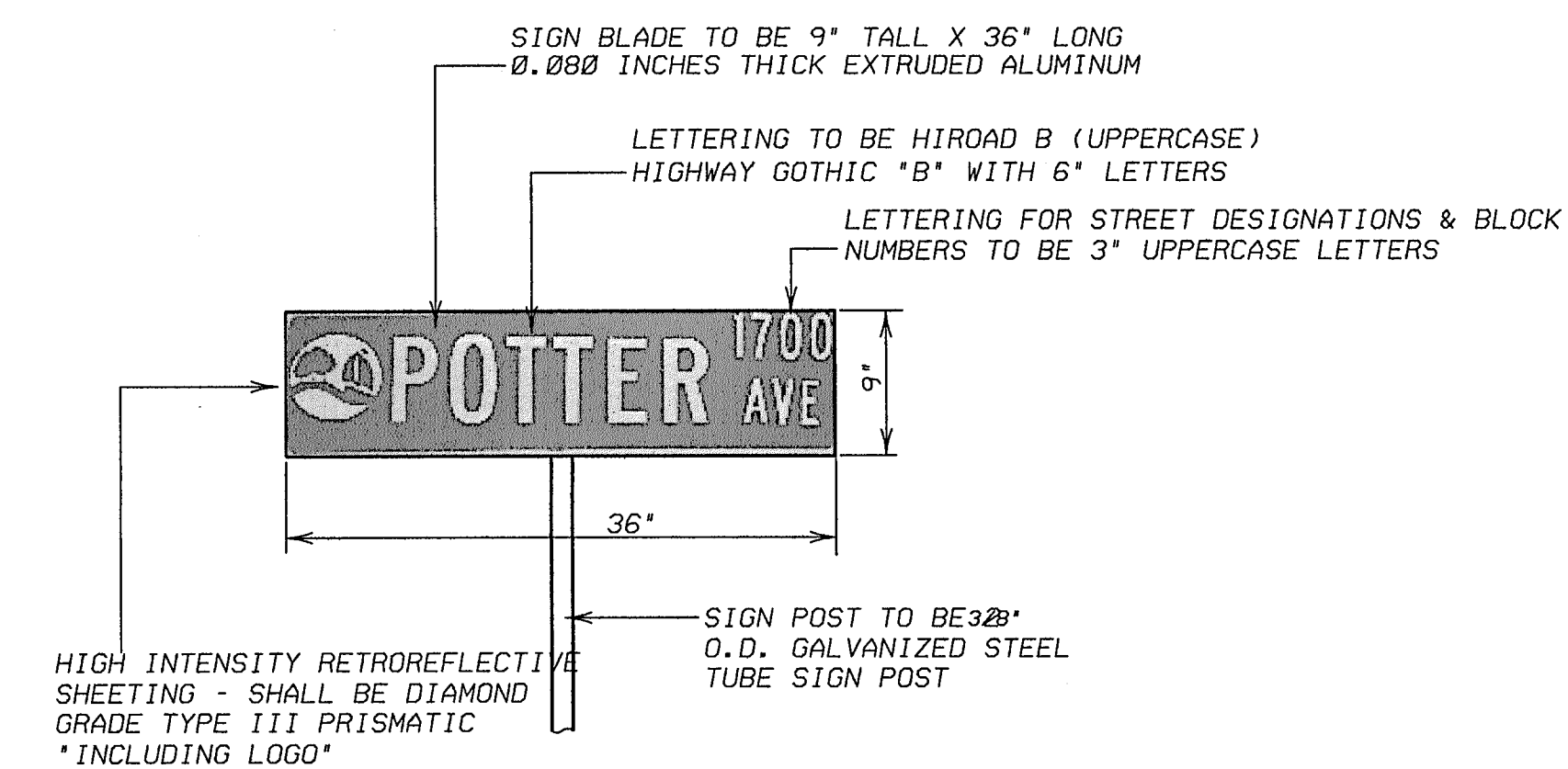
**INLET SECTION**

AS-BUILT SEPTEMBER 2016  
 INFORMATION PROVIDED BY CONTRACTORS (NOT FIELD VERIFIED)

<b>CORWIN ENGINEERING, INC.</b> 200 W. BELMONT, SUITE E ALLEN, TEXAS 75013 (972)396-1200 TBPE FIRM #5951			
DEVELOPMENT PLANS FOR <b>BREEZY HILL          PHASE V</b> ROCKWALL, TEXAS			
<b>EROSION CONTROL PLAN</b>			
DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER	DATE	SCALE:	25 of 26
15006	MAY 2015	1"=100'	



NOTE: STREET NAME SIGNS SHALL CONSIST OF A WHITE LEGEND \*INCLUDING LOGO\* ON A GREEN BACKGROUND.



STREET SIGN DETAIL  
NOT TO SCALE

STREET SIGN NOTES

All signage installed shall comply with the current "Texas Manual on Uniform Traffic Control Devices" and the "Standard Highway Sign Designs for Texas".

The developer shall be responsible for furnishing and installing all regulatory, warning and street name signs and sign mounts in accordance with the approved engineering plans.

Block Numbers are required on all street name blades.

Street Name Blades shall be nine inch (9") tall extruded aluminum. The blades shall be 0.080 inches thick.

High Intensity Retro reflective Sheeting for Street, Regulatory, and Warning Signs - shall be high intensity diamond grade type III prismatic.

The Lettering for the street blades shall be HIROAD B with all uppercase fonts. "Highway Gothic B" with six-inch letters. Letters for abbreviated street designations shall be three inches (3") tall with all uppercase fonts (i.e., LN, PKWY, CT, etc.). Block numbers shall be three-inch (3") tall.

The street sign background shall be green and the legend shall be white.

The street sign blade must incorporate the current City of Rockwall logo.


For a street with a cul-de-sac end, a standard W 14-2a shall be mounted over the street name blade.

Sign posts shall be 2 3/8" O.D. galvanized steel tube sign post with a galvanized finish.

Sign clamps and brackets shall be high strength aluminum.

- LEGEND
- ☼ - STREET LIGHT
  - - STOP SIGN
  - - STREET NAME BLADE

AS-BUILT SEPTEMBER 2016  
INFORMATION PROVIDED  
BY CONTRACTORS  
(NOT FIELD VERIFIED)

 CORWIN ENGINEERING, INC.  
200 W. BELMONT, SUITE E  
ALLEN, TEXAS 75013 (972)396-1200  
TBPE FIRM #5951

DEVELOPMENT PLANS FOR  
BREEZY HILL  
PHASE V  
ROCKWALL, TEXAS

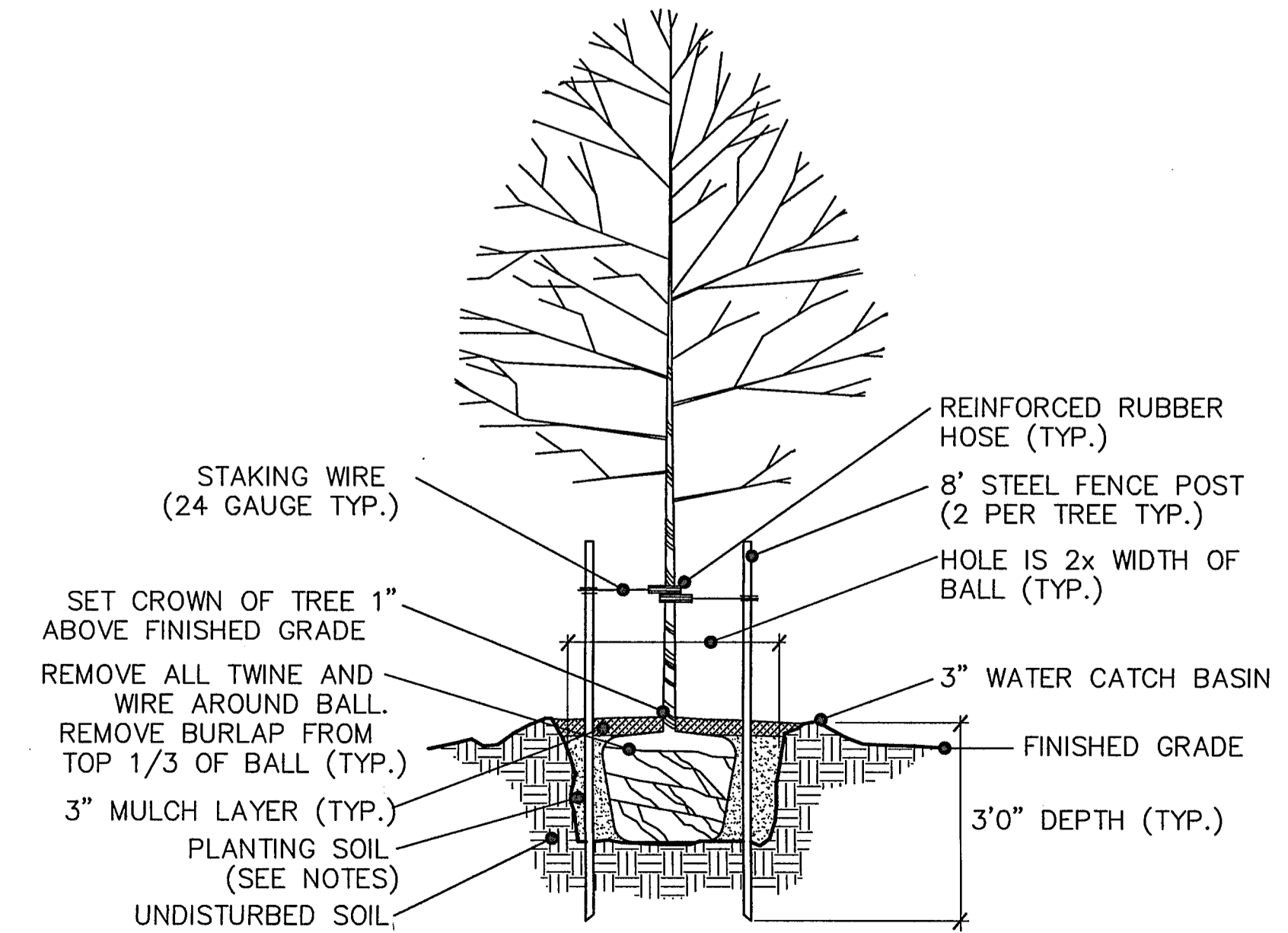
SIGN AND LIGHT PLAN

DRAWN BY	DESIGNED BY	CHECKED BY	SHEET NO.
JOB NUMBER 15006	DATE MAY 2015	SCALE: 1"=100'	26 OF 26

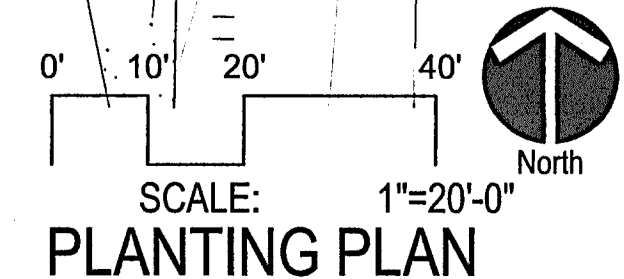
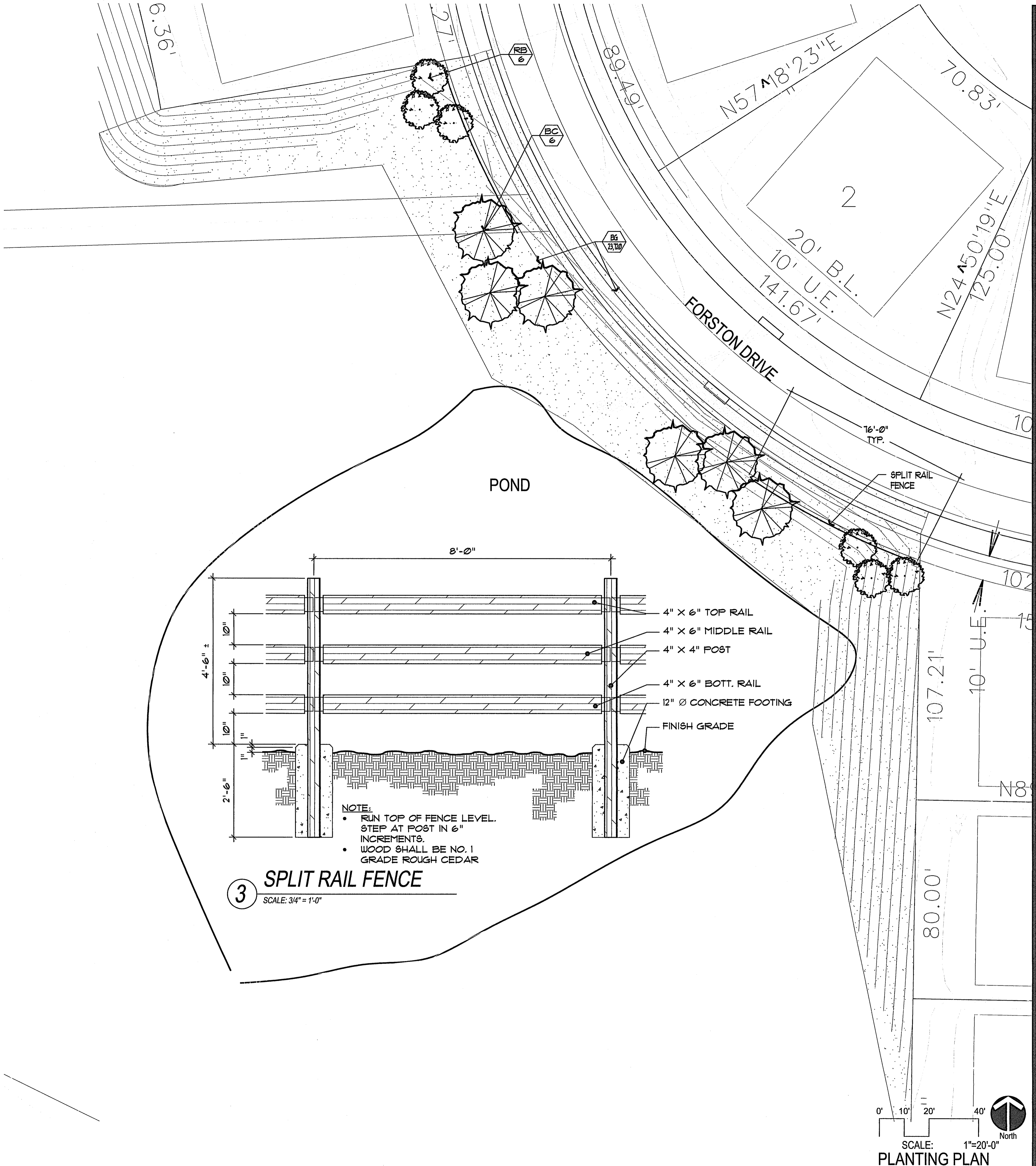
PLANT SCHEDULE					
SYM	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	NOTES
<b>Trees</b>					
BC	Taxodium distichum	Bald Cypress	6 EA.	3" cal., 12' Ht. min., 8' Spread min.	B. & B., Single trunk, Well branched with Central Leader, 4' branching height
RB	Cercis canadensis 'Texana'	Texas Redbud	6 EA.	6' Ht. Min., 3' Spread Min.	B. & B., Single trunk, Well branched with Central Leader, Speciman
<b>Misc</b>					
BG	Cynodon dactylon	Bermuda Grass	23,720 Sq. Ft.	Solid Sod	Staggered tight joints, sand filled and rolled

**PLANTING NOTES:**

- Submit a construction schedule of work to be approved by Landscape Architect and Owner. Failure to submit schedule may result in Landscape Architect stopping construction until submitted. No extensions of time will be considered for failure to promptly submit schedule.
- Notify Landscape Architect 48 hours in advance of commencement of work to coordinate project inspection schedules.
- Locate existing underground utilities and obstructions prior to commencing work. Repair damage to utilities resulting from the installation of the work at no additional cost to Owner.
- Notify Landscape Architect immediately upon encountering any unknown obstructions, grade differences or conditions not indicated on drawings. Make necessary revisions as required to conform to plans and specifications due to failure to give such notification.
- Coordinate with other trades and subcontractors as required to accomplish the planting operation.
- Plant material shall be tagged or approved at site by Landscape Architect prior to installation. Install plant material free of pest and diseases. Guarantee plant material for a period of 365 calendar days from date of issuance of final acceptance by Landscape Architect.
- Layout proposed planting beds and receive Landscape Architect's approval prior to installation. Notify Landscape Architect of layout conflicts. Failure to notify Landscape Architect will result in Contractor's liability to relocate materials at no additional expense to Owner.
- Excavate bed areas to a depth of 4 inches, backfill with 4 inches of Acid Gro Complete mix as manufacture by Soil Building Systems and rototill to a depth of 12 inches producing a homogeneous mixture.
- Final locations of plant material shall be subject to approval by Landscape Architect. Install groundcover 12 inches from the edge of shrubs and tree root balls and 4 inches from edge of paving, walls and other structures.
- Backfill tree and shrub pits with one part compost as manufactured by Soil Building Systems and two parts existing soil.
- Stake tree locations and acquire written approval from Landscape Architect prior to installation of irrigation system. Do not locate tree(s) within 10 feet of any irrigation rotary spray head. Install tree(s) in areas covered by irrigation system. Provide supplemental watering as required until final acceptance by Landscape Architect. Locate tree(s) 4 feet minimum from walls, headers, property lines and other trees within project. Notify Landscape Architect of location conflicts for resolution. Failure to notify Landscape Architect will result in Contractor's liability to relocate trees at no additional expense to Owner.
- Stake tree(s) immediately upon installation and within same day as planted.
- Mulch planting beds and tree pits with shredded hardwood mulch.
- Provide full service maintenance of landscape within project scope for a period of four (4) months, 120 calendar days, from date of issuance of final acceptance by Landscape Architect. Failure to properly maintain landscape and irrigation system will result in extending the guarantee and maintenance period at no additional expense to Owner.
- All landscape areas to be watered by an automatic landscape irrigation system.



**2 TREE PLANTING**  
SCALE: NONE



PROJECT NAME	Breezy Hill PH V
PROJECT NUMBER	16-070
REVISIONS	

**Breezy Hill**  
Phase V  
Rockwall, Texas



09/16/2016  
PROJECT NAME  
**Breezy Hill**  
Phase V  
Rockwall  
Texas

**RICKY D. PETTY**  
LANDSCAPE ARCHITECT  
7720 ALTO CARO DRIVE  
DALLAS, TEXAS 75248  
PHONE: (214) 843-5265  
e-mail: rdpetty@bx.rr.com

TITLE **Planting Plan**  
DATE **September 16, 2016**  
SCALE **1" = 20'-0"**  
SHEET **L1-1**

IRRIGATION LEGEND and SCHEDULE

SYM	DESCRIPTION	MANUFACTURER	MODEL	SIZE / NOZZLE	NOTES
	Automatic Controller	Hunter	XC HYBRID	Refer to Plan for Size	Fedestal mount with Wireless Solar Sync Sensor
	Master Valve (w/ Pressure Regulator)	Hunter	PGV w/ AS-10 & 45000 DC Latching Solenoid	Refer to Plan for Size	Install per detail in 10" diameter valve box w/ snap on lid. Rout and paint valve number on lid.
	Remote Control Valve	Hunter	PGV w/ 45000 DC Latching Solenoid	Refer to Plan for Size	Install per detail in 10" diameter valve box w/ snap on lid. Rout and paint valve number on lid.
	Drip Zone Valve Kit	Hunter	ICZ-101 w/ 45000 DC Latching Solenoid	Refer to Plan for Size	Install per detail in 10" diameter valve box w/ snap on lid. Rout and paint valve number on lid.
	Rotary Spray Head Small Part - Circle	Hunter	PGP	*4 Nozzle	Install per detail with 40 PSI at base of head
	Rotary Spray Head Small Full - Circle	Hunter	PGP	*1 Nozzle	Install per detail with 40 PSI at base of head
	Water Meter	---	per City	Refer to Plan for Size	Installed by General Contractor
	Wye Strainer	Febco	4305	Line Size	Install 10" RD valve box. Ref Backflow Connection Detail.
	Ball Valve	Nibco	46605	Line Size	Install 10" RD valve box.
	Double Check Valve	Febco	850	Refer to Plan for Size	Furnish and install per local code by Licensed Irrigation Contractor
	Irrigation Sleeve	---	Sch 40 w/ 12 ga. Full wire in sleeve	Refer to Plan for Size	Driveway sleeve(s) installed by General Contractor Sidewalk sleeves installed by Irrigation Contractor
	Irrigation Main Line	---	Class 200	Refer to Plan for Size	18" installation depth
	Irrigation Lateral Line	---	Class 200	Refer to Plan for Size	12" installation depth
	Drip Tubing	Hunter	FLD-06	536"ID x 12" emitter spacing at 0.6 GPH	Install per details at 12 inches on center

- Program and Station number for Automatic Controller
- Valve size in inches
- Gallons per minute, per valve

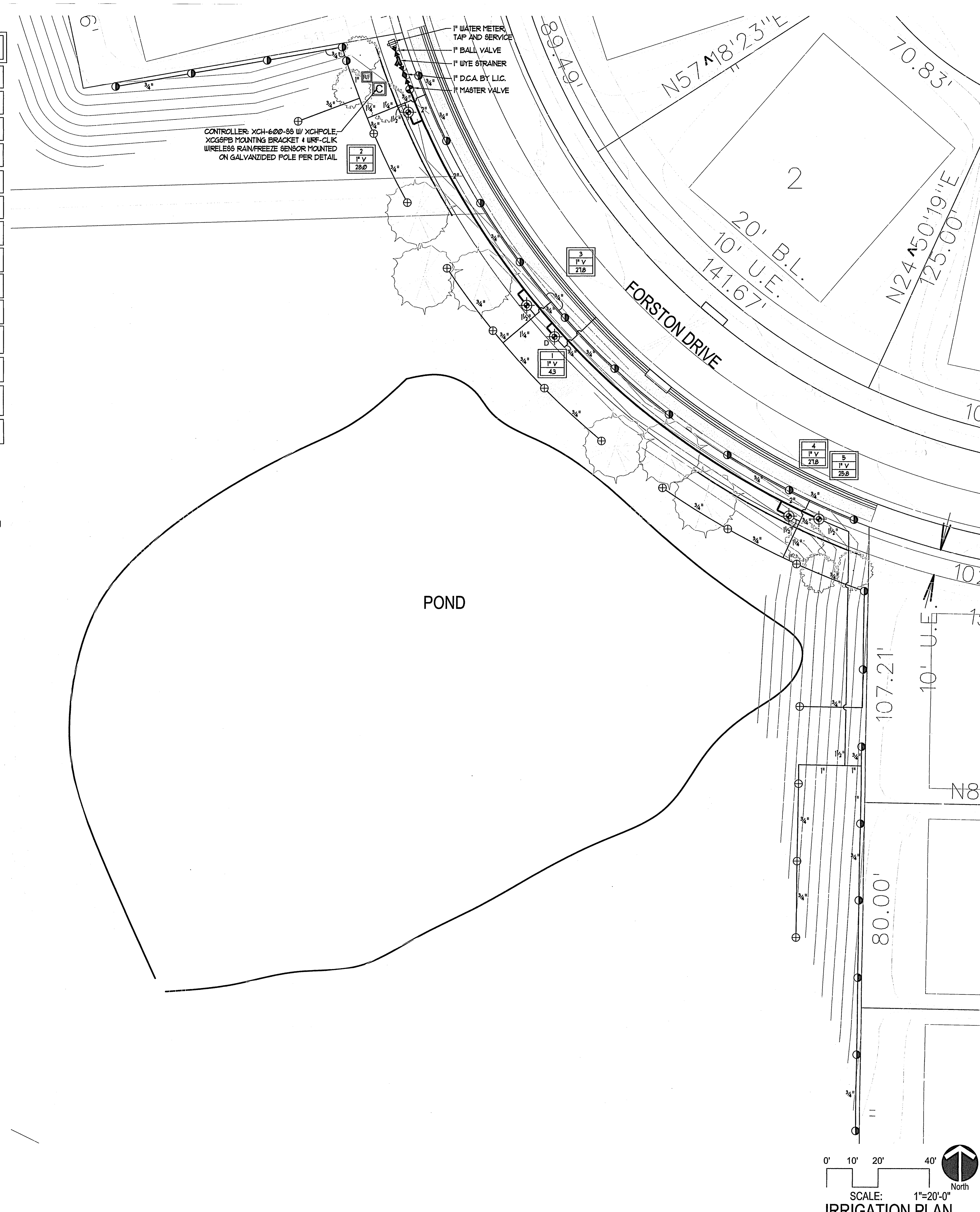
IRRIGATION NOTES:

- Provide a complete, functioning automatic irrigation system including labor, materials, fees, taxes, equipment and other costs incidental to accomplishing work.
- Acquire written approval from Landscape Architect for material substitutes prior to commencing the installation.
- Locate existing underground utilities or obstacles prior to commencing installation. Repair damage to utilities or finishes resulting from work at no additional expense to Owner.
- Piping is diagrammatic. Adjust as required for existing utilities, obstructions, tree root balls, etc.
- Install work in accordance with applicable local codes and ordinances.
- Coordinate installation with landscape contractor and other trades.
- Locate each end of irrigation sleeves dimensionally on the Record "As-Built" Drawings.
- Contractor shall be responsible for damage to plant material due to system failure from inferior workmanship, during the installation of plants and maintenance period.
- Extend one extra control wire to farthest valve, routed parallel to common ground wire with installation of lead and common wires.
- Control wire shall be direct burial, 600 volt, single conductor, solid copper, plastic insulated cable, rated for direct burial applications, UF, UL approved, 14 gauge minimum lead and common ground return wire unless noted otherwise. Color of insulation as follows:
  - Lead Wire: any color (same color), except white or orange
  - Common Ground Wire: white (color)
  - Extra Control Wire: Orange (color)
- All P.V.C. pressure main line and lateral lines shall receive as follows:
  - 18" minimum cover for main lines
  - 12" minimum cover for lateral lines
- Make final electrical connection of controller per local electrical code. Provide all necessary fuse boxes, conduit, fittings, connectors or other electrical devices to make connection. Owner shall provide electrical service within 20 linear feet of controller location unless noted otherwise on drawings.
- Coordinate sleeve and conduit requirements with General Contractor.
- Connect remote sensors to controller with ground wire in series prior to connecting to remote control valves.
- Owner or Landscape Architect shall determine final controller location.

EQUIPMENT SHALL BE INSTALLED AS SPECIFIED. EQUIPMENT SUBSTITUTIONS WILL NOT BE ALLOWED.

HYDRAULIC CALCULATIONS

ITEM	SIZE	PSI	NOTES
Maximum GPM			Fitting Loss Accounted By Adding 10% To Flow Shown In Manuf. Nozzle Chart.
Estimated - 28 GPM			
Service	1"	5.30	TYPE K* COPPER 25 LN. FT.
Water Meter	1"	4.60	
Ball Valve	1"	0.20	
Wye Strainer	1"	0.20	
Backflow Preventer	1"	6.00	
Master Valve	1 1/2"	3.00	
Main Line	2"	1.20	235 Ln. Ft.
Station Valve	1 1/2"	3.00	
Zone		5.00	
Head		40.00	
Total Loss		69.10	
Assumed Static Pressure		70.00	
Pressure Differential		0.90	



PROJECT NAME: Breezy Hill PH V  
 PROJECT NUMBER: 16-070  
 REVISIONS:

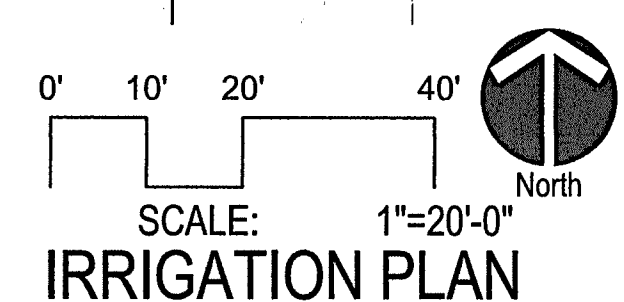
**Breezy Hill**  
 Phase V  
 Rockwall, Texas

Ricky D. Petty  
 09/16/2016

PROJECT NAME: Breezy Hill Phase V Rockwall Texas

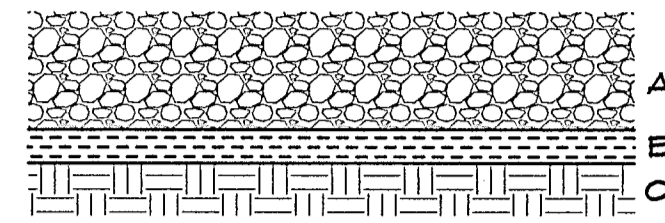
**RICKY D. PETTY**  
 LANDSCAPE ARCHITECT  
 7720 ALTO CARO DRIVE  
 DALLAS, TEXAS 75248  
 PHONE: (214) 543-5265  
 e-mail: rdpetty@tx.rr.com

TITLE: Irrigation Plan  
 DATE: September 16, 2016  
 SCALE: 1" = 20'-0"  
 SHEET: L2-1

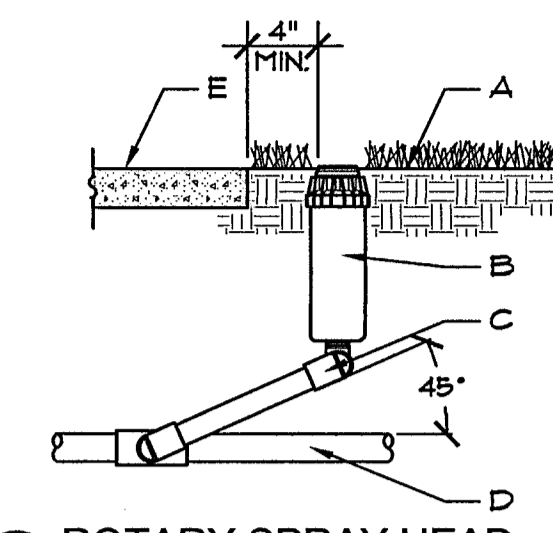


**GENERAL NOTES:**  
 CONTRACTOR SHALL PLACE DRIFLINE TO ASSURE ADEQUATE WATERING FOR PLANT GROWTH AND VIABILITY. DO NOT EXCEED DRIP LINE RUNS GREATER THAN 110 LN. FT.

**CONSTRUCTION NOTES:**  
 A. MULCH (REF. LANDSCAPE DRAWINGS)  
 B. DRIP LINE  
 C. BED PREP (REF. LANDSCAPE PLAN)



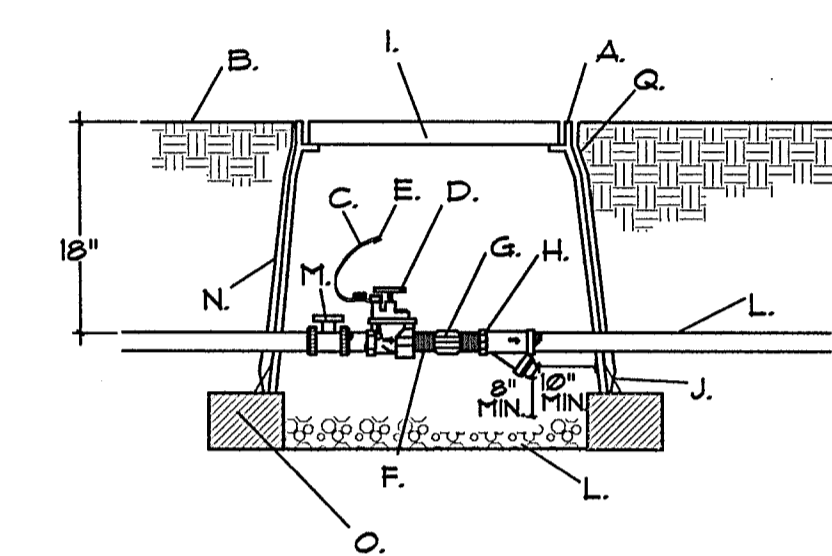
DRIP LINE / CRUSHER FINES  
 NOT TO SCALE



ROTARY SPRAY HEAD  
 NOT TO SCALE

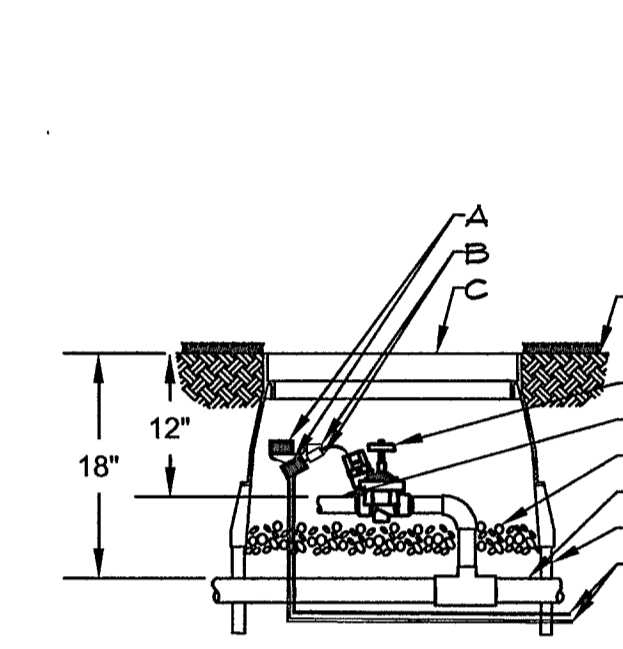
**GENERAL NOTES:**  
 1. SET TOP OF HEAD FLUSH WITH FINISH GRADE  
 2. FLUSH PIPING PRIOR TO INSTALLING NOZZLE  
 3. SET HEAD OFFSET OF LATERAL AND MAINLINE PIPING

**CONSTRUCTION NOTES:**  
 A. FINISH GRADE  
 B. ROTARY SPRAY HEAD  
 C. 3/4" LASCO UNITIZED O-RING SWING JOINT ASSEMBLY  
 D. LATERAL PIPING  
 E. PAVING



DRIP VALVE/FILTER ASSEMBLY  
 NOT TO SCALE

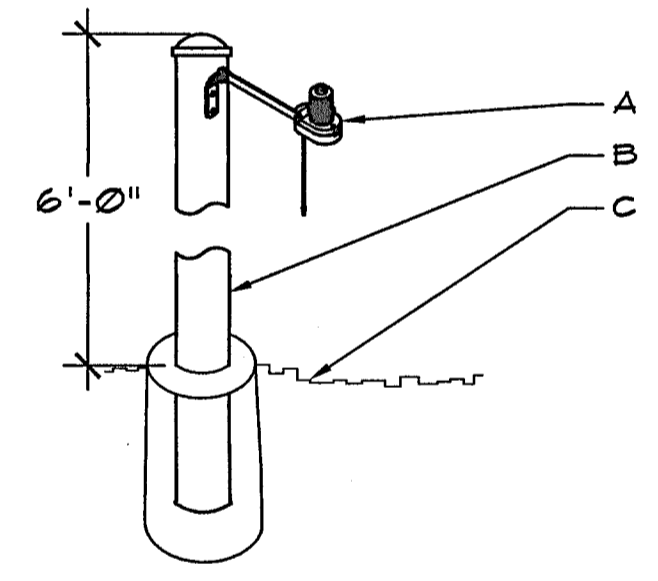
**CONSTRUCTION NOTES:**  
 A. 12" X 11" PLASTIC VALVE BOX WITH LOCKING LID.  
 B. FINISHED GRADE.  
 C. 24" WIRE LOOP.  
 D. AUTOMATIC VALVE, SEE IRRIGATION PART LIST.  
 E. WATER PROOF WIRE CONNECTOR.  
 F. SCH 80 NIPPLE.  
 G. PRESSURE REGULATOR.  
 H. WYE STRAINER, INSTALL TO PROVIDE ACCESS FOR MAINTENANCE AND REPLACEMENT OF FILTER.  
 I. LOCKING VALVE BOX COVER.  
 J. VALVE BOX EXTENSIONS IF NEEDED.  
 K. LATERAL LINE.  
 L. 4" LAYER OF 3/4" GRAVEL.  
 M. TRUE UNION BALL VALVE.  
 N. 6MM BLACK POLYETHYLENE PLASTIC TAPE TO ALL INLET AND OUTLET PIPE AND INSTALL FULL LENGTH OF VALVE BOX BOTTOM.  
 O. CMU BLOCK



REMOTE CONTROL VALVE  
 NOT TO SCALE

**GENERAL NOTES:**  
 1. INSTALL FEA GRAVEL FLUSH WITH BOTTOM OF PIPE 4 VALVE.  
 2. MAIN LINE SHALL HAVE A MINIMUM OF 18" COVER.  
 3. LATERAL LINE SHALL HAVE A MINIMUM 12" COVER.  
 4. PROVIDE A 12" WIRE EXPANSION COIL AT EACH DRY SPLICE WIRE CONNECTION.  
 5. CENTER VALVE ASSEMBLY IN VALVE BOX.

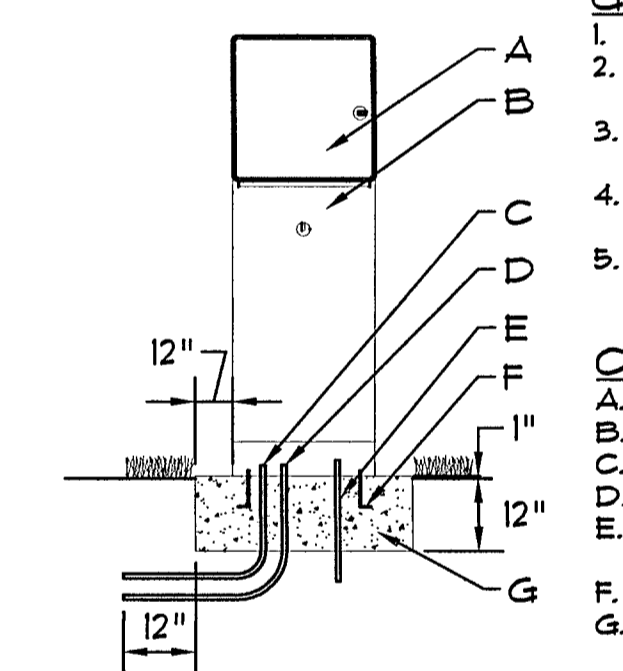
**CONSTRUCTION NOTES:**  
 A. 12" DIA. WIRE COIL  
 B. WATERPROOF WIRE CONNECTORS  
 C. 10" DIAMETER VALVE BOX W/ LOCKING LID.  
 D. SET 1/4" ABOVE FINISH GRADE  
 E. FINISH GRADE  
 F. AUTOMATIC VALVE  
 G. LATERAL LINE PVC, REF. PLAN  
 H. WASHED PEA GRAVEL - 12" DEPTH MIN.  
 I. MAINLINE PVC, SEE SPECIFICATION AND PARTS LIST  
 J. 6" VALVE BOX EXTENSIONS  
 K. VALVE WIRING



RAIN SENSOR  
 NOT TO SCALE

**CONCRETE FOOTING NOTES:**  
 1. LOCATE POLE NEXT TO CONTROLLER AS APPROVED BY L.A.  
 2. CONNECT SENSOR TO CONTROLLER PER MANUFACTURER'S SPECS.  
 3. TOP OF CONCRETE FOOTING 1" ABOVE FINISH GRADE

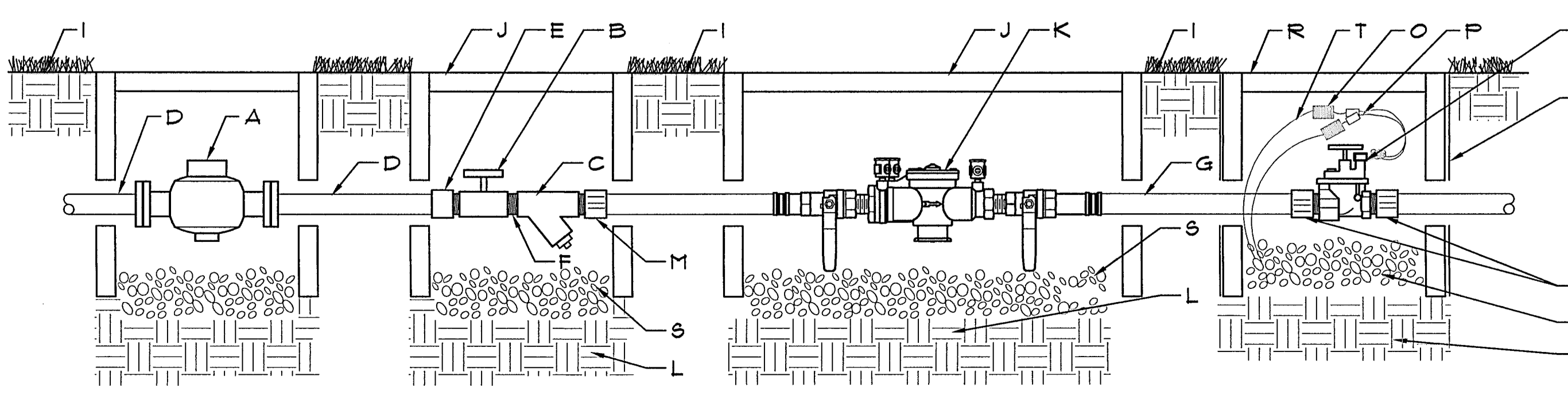
**CONSTRUCTION NOTES:**  
 A. WEATHER STATION - ROTATE SO THERMOSTAT PORTION POINTS SOUTH  
 B. 2" GALV. SCH. 40 STEEL PIPE  
 C. FINISH GRADE



PEDESTAL MOUNTED CONTROLLER  
 NOT TO SCALE

**GENERAL NOTES:**  
 1. INSTALL ELECTRICAL WIRING PER LOCAL CODES.  
 2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELECTRICAL WORK.  
 3. PROVIDE DRAINAGE AWAY FROM BASE OF PEDESTAL.  
 4. GROUND IRRIGATION BOXES WITH GROUNDING ROD PER N.E.C.  
 5. INSTALL TEMPERATURE SENSOR TO NORTH SIDE OF CONTROLLER PEDESTAL W/ STAINLESS STEEL SCREWS

**CONSTRUCTION NOTES:**  
 A. CONTROLLER  
 B. PEDESTAL  
 C. ELECTRICAL SERVICE CONDUIT  
 D. REMOTE CONTROL VALVE WIRING CONDUIT  
 E. GROUNDING ROD(S) PER MANUFACTURER'S REQUIREMENTS  
 F. ANCHOR BOLTS  
 G. CONCRETE BASE, 3,000 PSI

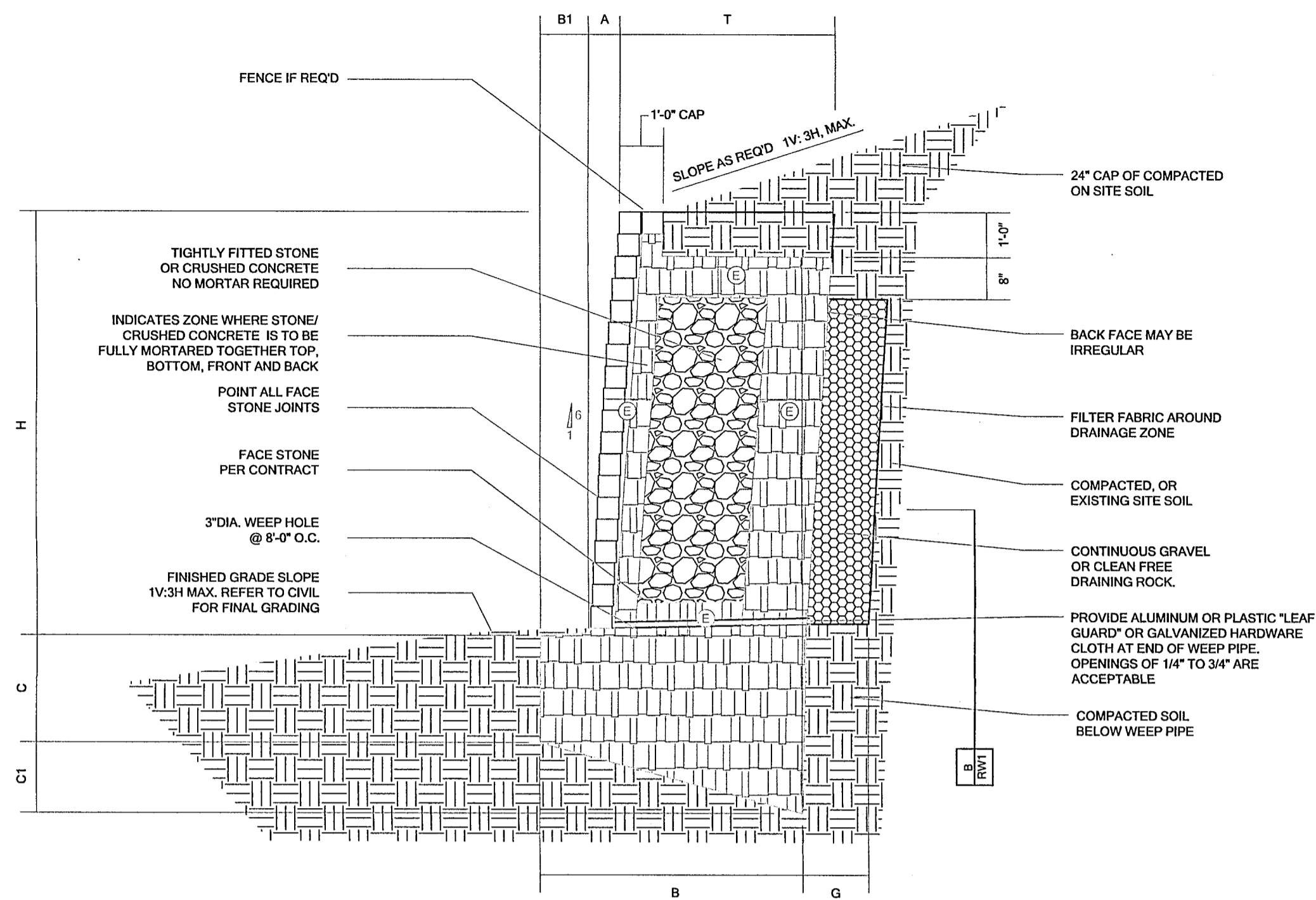


BACKFLOW PREVENTER CONNECTION  
 NOT TO SCALE

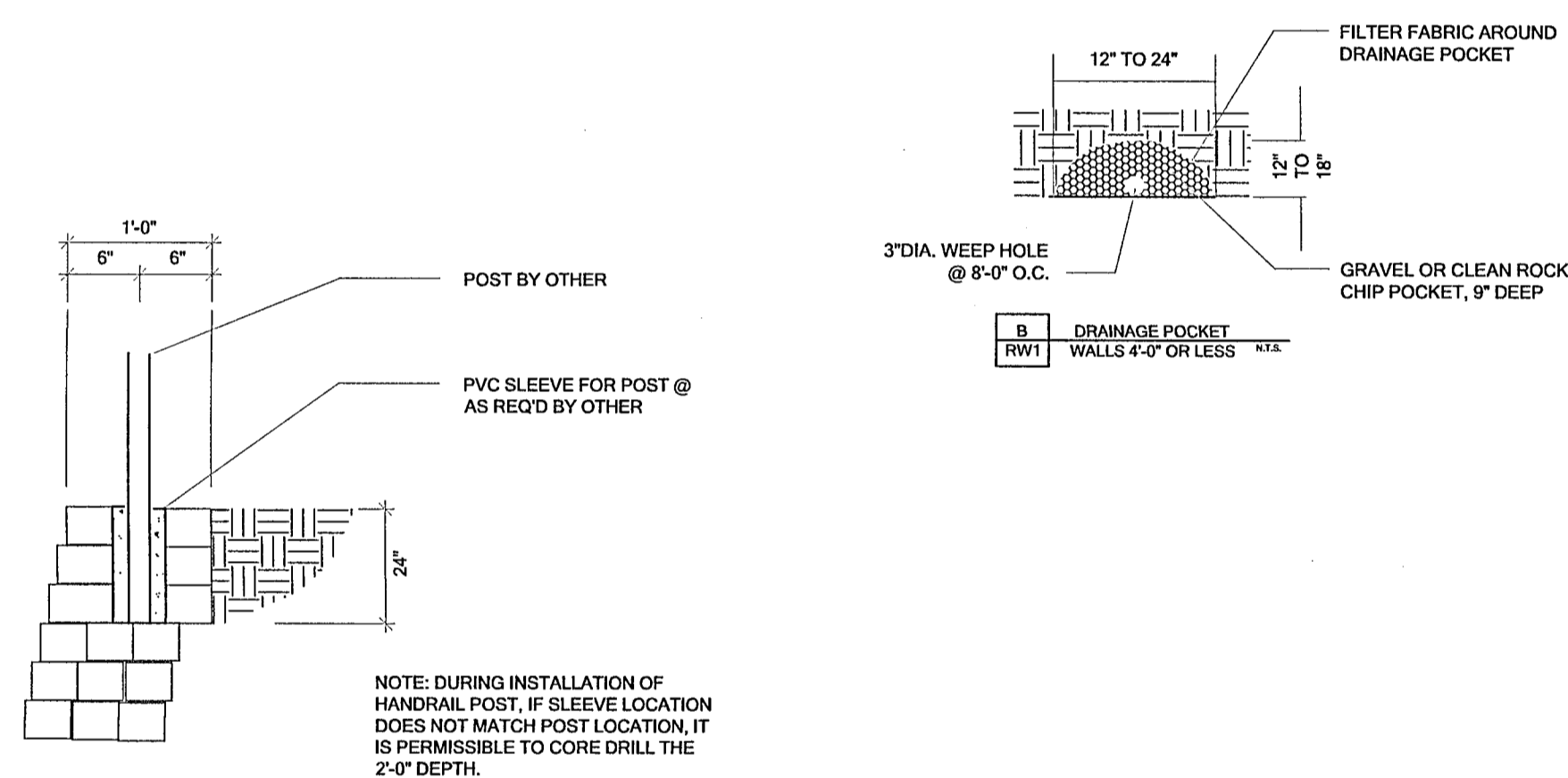
**GENERAL NOTES:**  
 1. INSTALL WASHED FEA GRAVEL BELOW DCA TO ALLOW ACCESS TO TEST COCKS AND OPERATION OF BALL VALVES  
 2. INSTALL FEA GRAVEL FLUSH WITH ELECTRIC VALVE.  
 3. PROVIDE A 24" WIRE EXPANSION COIL AT EACH DRY SPLICE WIRE CONNECTION.  
 4. CENTER VALVE ASSEMBLY IN VALVE BOX.

**CONSTRUCTION NOTES:**  
 A. WATER METER (SIZE PER PLAN)  
 B. BALL VALVE (SIZE PER LINE)  
 C. WYE STRAINER (SIZE PER LINE)  
 D. TYPE 'K' COPPER PIPE  
 E. COPPER 8xT COUPLING  
 F. TEE NIPPLE  
 G. PIPE PER CITY CODE  
 H. COUPLING  
 I. FINISH GRADE  
 J. 12"x11" VALVE BOX. SET FLUSH WITH FINISH GRADE  
 K. DOUBLE CHECK VALVE ASSEMBLY COMPACTED SUBGRADE  
 L. MALE ADAPTER  
 M. MASTER ELECTRIC VALVE  
 N. WIRE COIL  
 O. WATERPROOF WIRE CONNECTORS  
 P. 10 ML BLACK PLASTIC  
 Q. 10" RD VALVE BOX. SET 1/4" ABOVE FINISH GRADE.  
 R. WASHED PEA GRAVEL - 6" DEPTH MIN  
 S. VALVE WIRING

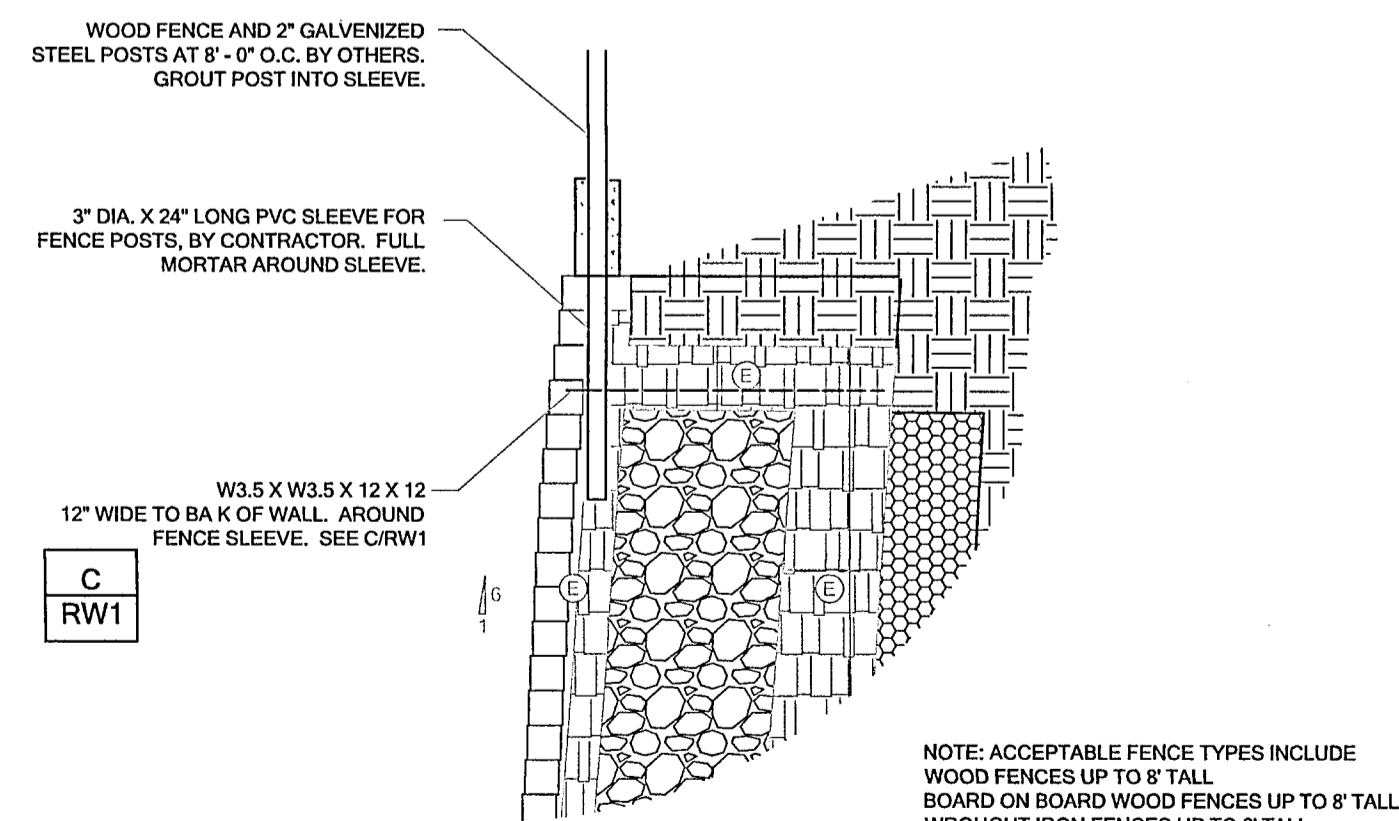




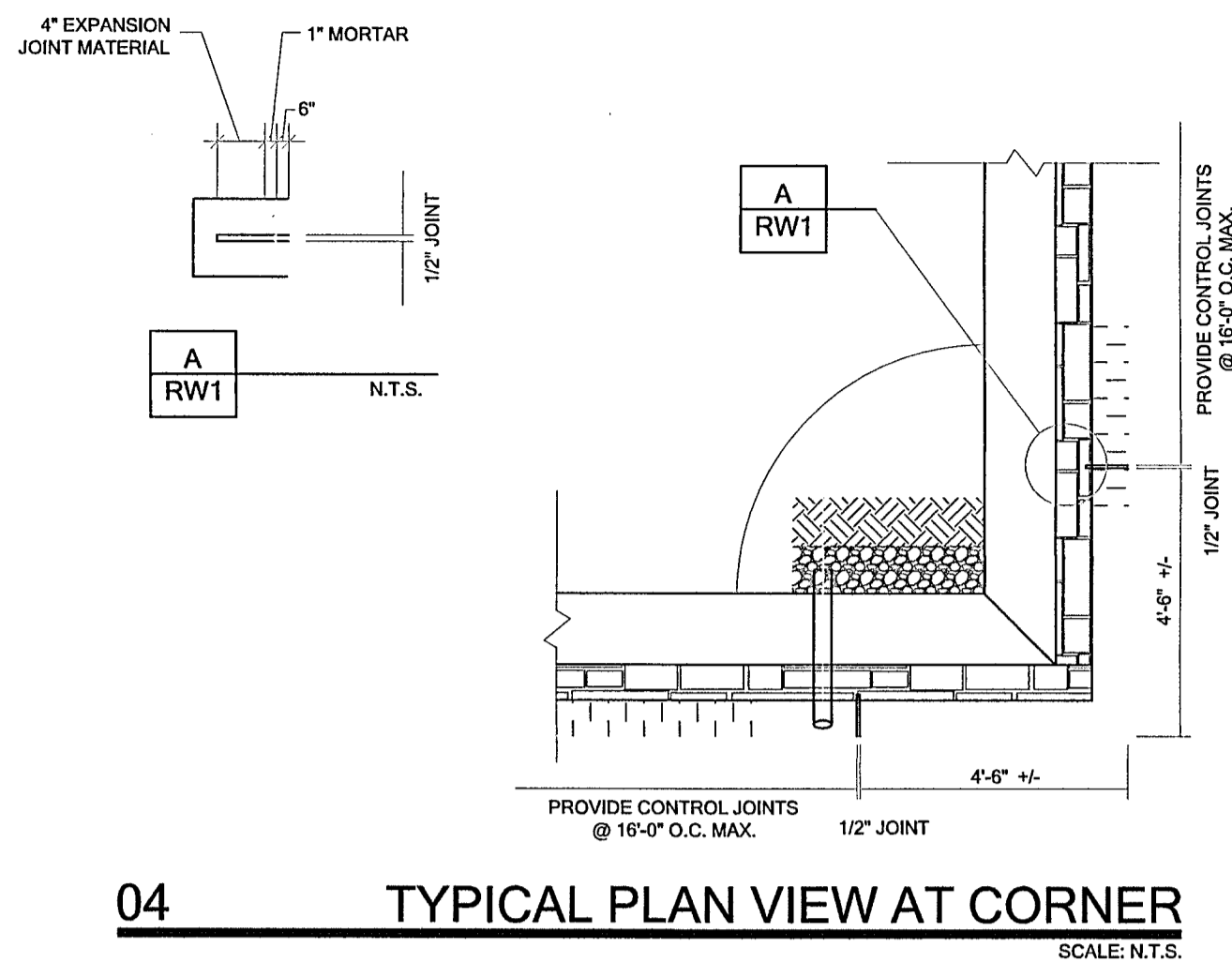
**RW1/1 DETAIL OF TYPICAL MASONRY WALL**  
SCALE: N.T.S.



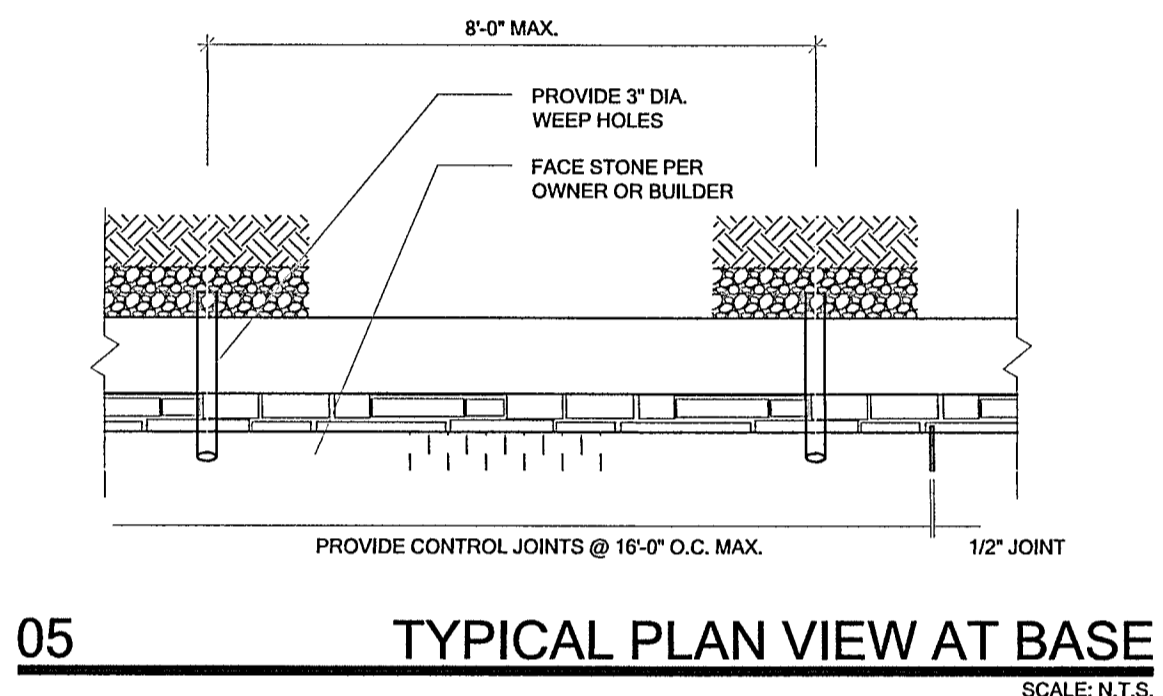
**02 WALL SECTION W/ FENCE POST**  
SCALE: N.T.S.



**03 DETAIL OF WALL WITH WELDED WIRE FABRIC FOR FENCE SLEEVE**  
SCALE: N.T.S.



**04 TYPICAL PLAN VIEW AT CORNER**  
SCALE: N.T.S.



**05 TYPICAL PLAN VIEW AT BASE**  
SCALE: N.T.S.

RW1/1 - MASONRY WALL SCHEDULE - 1800 psf									
1800 psf - BEARING CAPACITY (COMPACTED AND TESTED OR NATURAL SOILS)									
WALL HEIGHT	BASE WIDTH	TOE DEPTH	BASE DEPTH	BASE DEPTH	BATTER	FULLY MORTARED ZONE	THICKNESS OF WALL	DRAINAGE ZONE THICKNESS	BEARING CAPACITY
H	B	B1	C	C1	A	E	T	G	
1' - 0"	1' - 1"	0' - 1"	0' - 9"	0' - 2"	0' - 2"	FULLY	1' - 0"	SEE B/RW1	1800 psf
2' - 0"	1' - 6"	0' - 3"	0' - 9"	0' - 3"	0' - 4"	FULLY	1' - 3"	SEE B/RW1	
3' - 0"	1' - 11"	0' - 3"	0' - 10"	0' - 4"	0' - 6"	FULLY	1' - 8"	SEE B/RW1	
4' - 0"	2' - 3"	0' - 4"	1' - 0"	0' - 5"	0' - 8"	FULLY	1' - 11"	SEE B/RW1	
5' - 0"	2' - 6"	0' - 5"	1' - 4"	0' - 6"	0' - 10"	0' - 9"	2' - 1"	0' - 9"	
6' - 0"	3' - 0"	0' - 6"	1' - 6"	0' - 7"	1' - 0"	0' - 9"	2' - 7"	1' - 0"	
7' - 0"	3' - 6"	0' - 7"	1' - 8"	0' - 8"	1' - 2"	0' - 10"	2' - 11"	1' - 0"	
8' - 0"	4' - 0"	0' - 9"	1' - 11"	0' - 9"	1' - 4"	1' - 0"	3' - 3"	1' - 3"	
WALL DESIGN CRITERIA									
BEARING	SLOPE TOP	SLOPE BOT	ACTIVE PRESSURE	PASSIVE PRESSURE	FRICTION ANGLE BASE	SLOPE OF BACK OF WALL	SURCHARGE		
1800 psf	$\beta$	$\beta_1$	$\phi_a$	$\phi_p$	$\delta$	$\alpha$	q		

**RW1/1 MASONRY WALL SCHEDULE**  
SCALE: N.T.S.

- Design Building Code**  
International Building Code, 2009 Edition
- Geotechnical Report**  
Firm: EWI  
Report No: BH153460R  
Dated: May 22, 2015  
Allowable Bearing Capacity: 1800psf on undisturbed or properly compacted fill soils.

Note:  
An 1800 psf bearing capacity is anticipated throughout the site. Each wall section has a design for multiple bearing capacity options. It will be field verified which bearing condition to use based on the conditions of the soil at the base of the wall during excavation. If the bearing capacity changes along the length of the retaining wall it is permitted to change bearing capacity designs as necessary.

- Geotechnical Criteria**  
Bearing on Stiff Natural Undisturbed Clayey Soils or Compacted and Tested Soils  
Allowable Bearing: 1800 psf, minimum  
Friction Angle between Base of Wall and Soil - 17 degrees

Backfill Soil Parameters:  
Backfill Soil - Natural Clays or Fill Soils  
Backfill Angle of Internal Friction  $\phi_i = 30$  degrees

Base Soil Parameters:  
Soil at Toe - natural, Undisturbed or Fill Soils  
Angle of Internal Friction  $\phi_i = 30$  degrees

The backfill soil angle of internal friction referred to above is a composite angle of internal friction and includes both cohesion and angle of internal friction of the soils.

The use of very wet or very dry backfill soil should be avoided. The use of heavy equipment within 3'-0" of the wall could damage the wall and should be avoided.

Locate base of walls on undisturbed or properly compacted soil.

- Materials**  
Average density of masonry stone wall varies from 135 pcf to 145 pcf. Size of stone within wall varies from 4" to 18". Crushed concrete with or without rebar is acceptable to be used in the wall construction.  
Drainage zone materials may be composed of clean gravel or stone ranging from 1" to 5". Crushed concrete is acceptable provided it is clean and generally free of dust or other deleterious materials.

Portland Cement Mortar for Retaining Wall Construction.

The Portland cement mortar used for construction of the above grade portion of the masonry stone retaining walls shall be provided with the following proportions per cubic yard of concrete. The Portland cement mortar supplier shall provide "batch tickets" clearly indicating that the appropriate amount of materials are provided in each concrete mixer truck load. The batch tickets shall clearly indicate the amount batched, the date, the project name and shall be provided to DirtSavers, LLC. for review, documentation, and file.

Contents	Amount per cubic yard
Type F Fly Ash:	94 lbs.
Fine Aggregate (sand):	3,250 lbs.
Potable Water:	235 lbs.
Type 1 Portland Cement:	376 lbs.
Admixture Eucon 100:	48 oz. average

Concrete retarders such as "Eucon 100 Retarder" may be used at the discretion of the masonry wall contractor. A greater amount of retarder (about 64 ounces) is typically used during hot periods and a less amount of retarder (about 32 ounces) is typically used during cool weather.

Please note that the above proportions will provide a Portland cement mortar with a compressive strength of about  $f_c = 2000$  psi. DirtSavers, LLC. does not require any concrete testing provided the above proportions are verified by way of the "batch tickets".

- Construction Reviews**  
DirtSavers, LLC. shall be called for construction review of masonry wall.

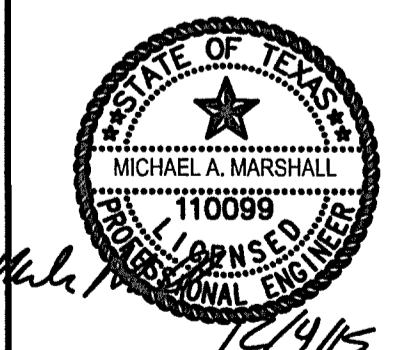
- Retaining Wall Design Constraints**  
Retaining walls should not have solid fence placed on top of wall other than that shown on these plans. Retaining walls shall not have additional surcharge placed above the wall other than that shown on these plans. Retaining walls shall not have slope at base or top of wall that exceeds that which is shown on these plans. The retaining walls noted above require special design.

Minor variations in the construction of the retaining walls from these documents may be accepted at the discretion of the design engineer.

**DIRTSAVERS**  
2708 Chesapeake Court  
Grapevine, TX 76051  
PH: 469.834.7446

**BREEZY HILL PHASE V**  
MASONRY RETAINING WALLS  
ROCKWALL, TEXAS  
**RPM xCONSTRUCTION, LLC.**  
PLANO, TEXAS

No.	Date	Item



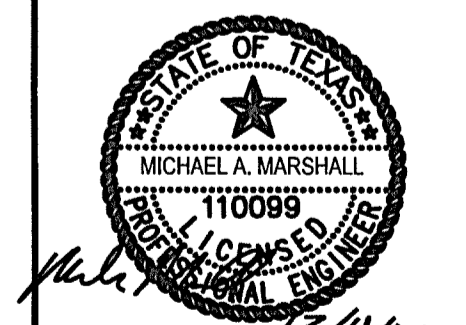
RETAINING WALL  
DETAILS AND NOTES

Project No.	RW120415-1
Date	12.04.2015
Last Revision	12.04.2015

**RW1**

No.	Date	Item	REVISIONS

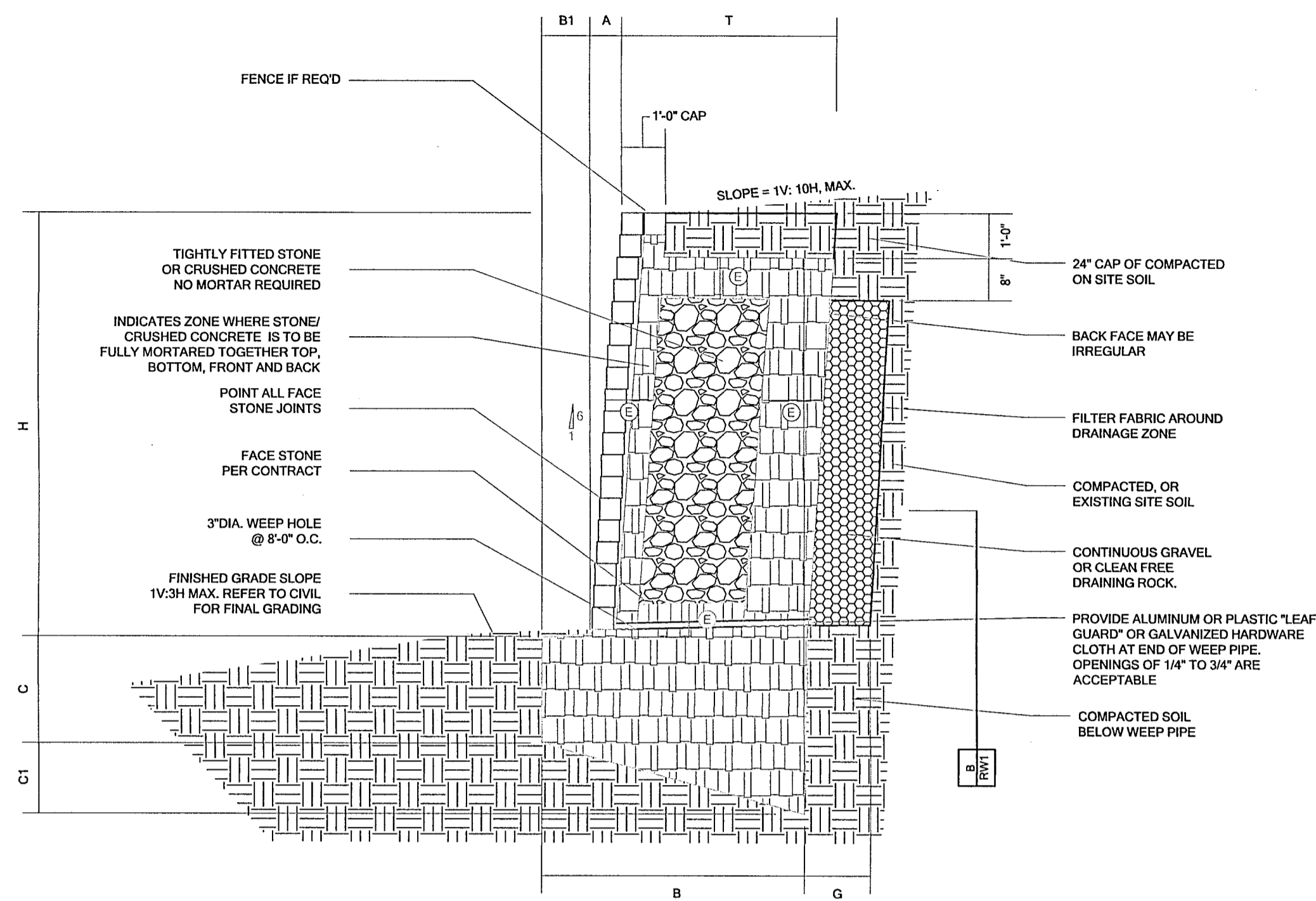
DR: MAM CHKD: MAM APPD: MAM



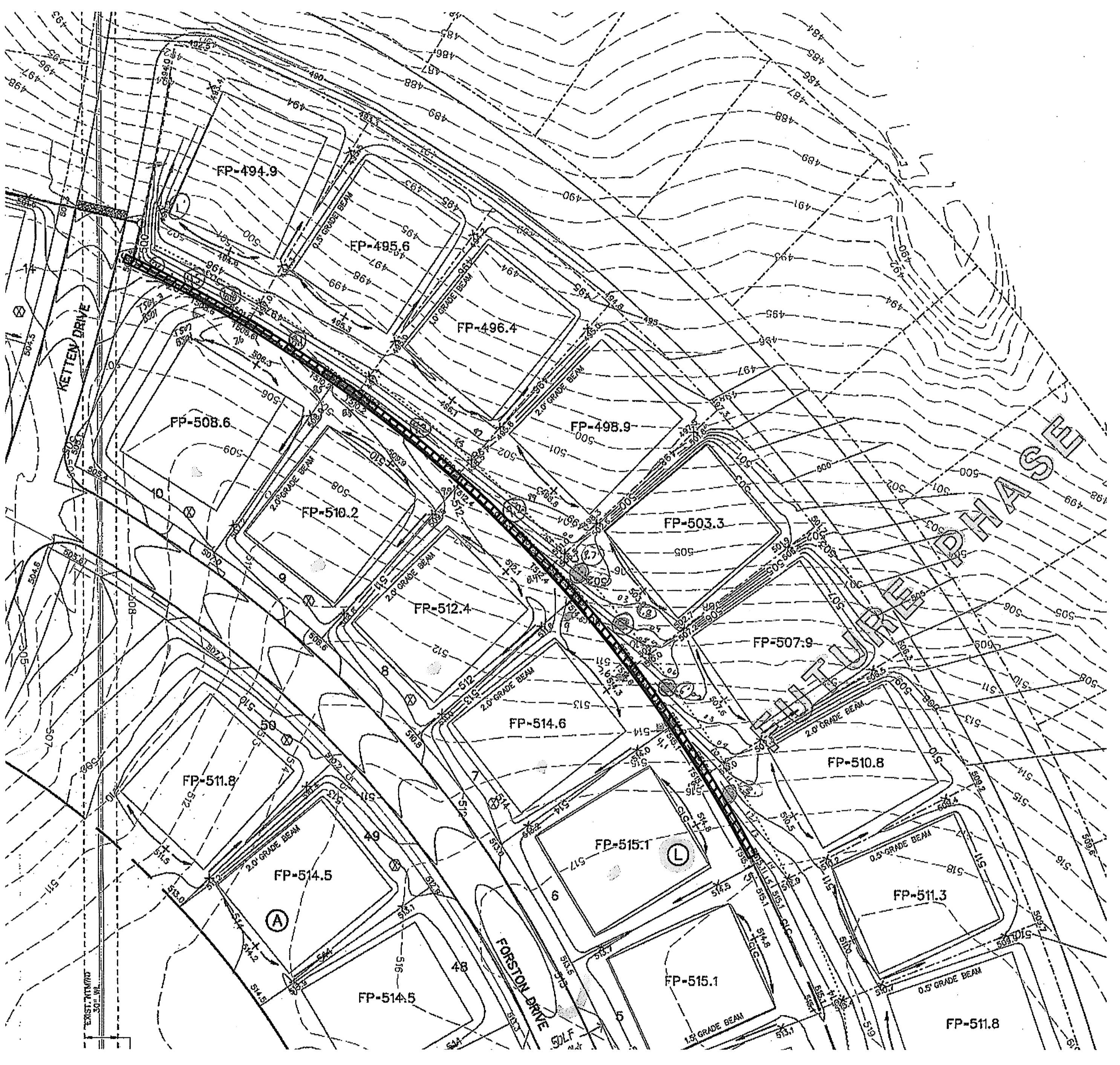
RETAINING WALL  
 DETAILS AND NOTES

Project No.	RW120415-1
Date	12.04.2015
Last Revision	12.04.2015

**RW2**



**RW2/1 ALTERNATE SLOPE MASONRY WALL**  
 SCALE: N.T.S.



**ALT MASONRY WALL LOCATION**  
 SCALE: N.T.S.

RW2/1 - ALTERNATE MASONRY WALL SCHEDULE - 1800 psf									
1800 psf - BEARING CAPACITY (COMPACTED AND TESTED OR NATURAL SOILS)									
WALL HEIGHT	BASE WIDTH	TOE DEPTH (TOE)	BASE DEPTH (HEEL)	BATTER	FULLY MORTARED ZONE	THICKNESS OF WALL	DRAINAGE ZONE THICKNESS	BEARING CAPACITY	
H	B	B1	C	C1	A	E	T	G	
7' - 0"	3' - 10"	0' - 10"	1' - 8"	0' - 8"	1' - 2"	0' - 10"	3' - 0"	1' - 0"	1800 psf
8' - 0"	4' - 6"	1' - 0"	2' - 0"	0' - 10"	1' - 4"	1' - 0"	3' - 6"	1' - 3"	
9' - 0"	5' - 2"	1' - 2"	2' - 6"	0' - 11"	1' - 6"	1' - 2"	4' - 0"	1' - 6"	
10' - 0"	6' - 0"	1' - 4"	2' - 9"	1' - 1"	1' - 8"	1' - 4"	4' - 8"	1' - 9"	
11' - 0"	6' - 9"	1' - 6"	3' - 0"	1' - 3"	1' - 10"	1' - 6"	5' - 3"	2' - 0"	
WALL DESIGN CRITERIA									
BEARING	SLOPE TOP	SLOPE BOT	ACTIVE PRESSURE	PASSIVE PRESSURE	FRICTION ANGLE BASE	SLOPE OF BACK OF WALL	SURCHARGE		
1800 psf	$\beta$	$\beta_1$	$\phi_a$	$\phi_p$	$\delta$	$\alpha$	q		
1800 psf	5.7 deg	18.4 deg	30 deg	30 deg	17 deg	99.5 deg	0 psf		

**RW2/1 ALT MASONRY WALL SCHEDULE**  
 SCALE: N.T.S.

ALTERNATE WALL DESIGN FOR BLOCK L LOTS 6-10