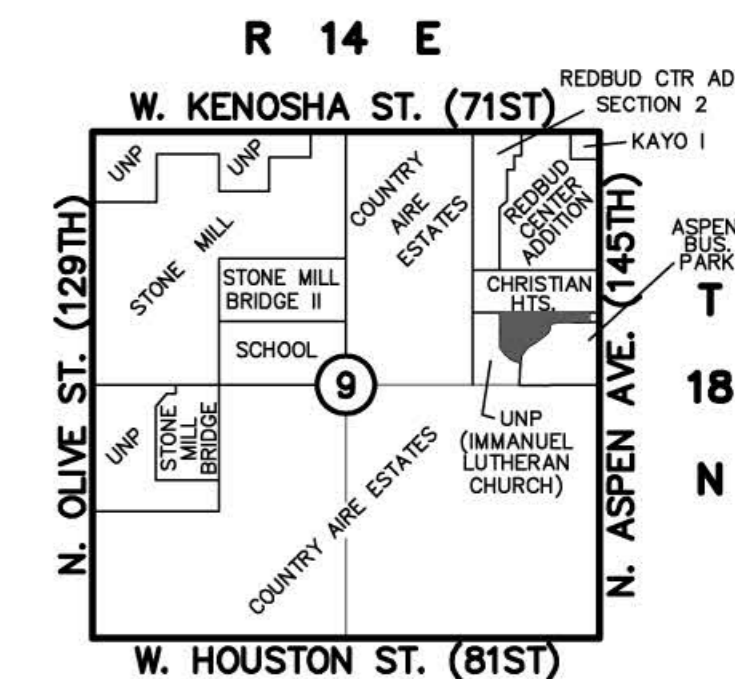


CITY OF BROKEN ARROW, OKLAHOMA  
 PLAN OF PROPOSED  
 CHANNEL AND DETENTION POND  
 MAINTENANCE REPAIR AND IMPROVEMENTS  
 FOR  
 IMMANUEL LUTHERAN CHURCH  
 NE/4 SECTION 9 T-18-N R-14-E  
 TULSA COUNTY, OKLAHOMA

**LEGEND**

- |                            |                          |
|----------------------------|--------------------------|
| ⊙ SEWER MANHOLE            | ☐ IRRIGATION CONTROL BOX |
| ▣ REINFORCED CONCRETE BOX  | ⊖ ELECTRIC SERVICE       |
| ⊖ REINFORCED CONCRETE PIPE | ⊖ GAS SERVICE            |
| ⊖ AIR CONDITIONER          | ⊖ TELEPHONE SERVICE      |
| ⊖ WATER METER              | M/P METER POINT          |
| ⊖ WATER VALVE              | —OH— OVERHEAD UTILITIES  |
| △ GAS METER                | —F— FENCE LINE           |
| ■ TELEPHONE PEDESTAL       | —SS— SANITARY SEWER LINE |
| • POWER POLE               | —ST— STORM SEWER LINE    |
| ★ LIGHT POLE               | • GUARD POST             |
| TC TOP OF CURB             | ▣ CONCRETE               |
| G GUTTER                   | ▣ ASPHALT                |
| TR TOP OF RIM              | ⊕ BENCHMARK              |
| TG TOP OF GRATE            |                          |
| FL FLOWLINE                |                          |

BEFORE YOU DIG,  
 CALL OKIE FOR  
 LOCATION OF  
 UNDERGROUND UTILITIES.  
 DIAL 811



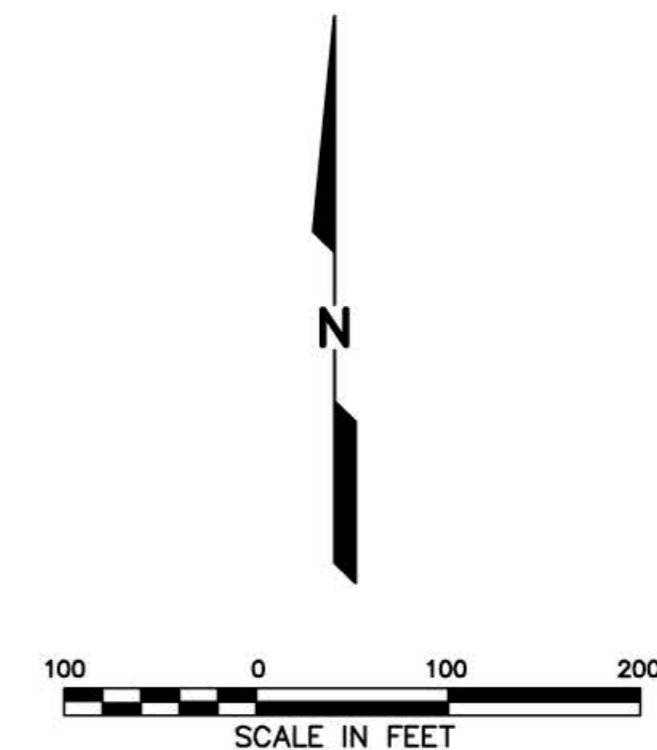
**Location Map**  
 SCALE: 1"=2000'

**OWNER/DEVELOPER:**  
 Immanuel Lutheran Church

400 North Aspen Avenue  
 Broken Arrow, OK 74012  
 Phone: (918) 258-5506  
 Contact: Aaron Stenslie  
 email: astenscp@cox.net

**SURVEYOR:**  
 White Surveying  
 C.A. No. 1098, EXPIRATION DATE 6/30/2017  
 9939 East 55th Place  
 Tulsa, Oklahoma 74146  
 Phone: (918) 663-6924  
 Contact: Tom Haynes  
 email: thaynes@whitesurvey.com

**ENGINEER:**  
 Sanders Engineering, Inc.  
 C.A. No. 2370, EXPIRATION DATE 6/30/2017  
 11502 S. 66th E. Ave.  
 Bixby, Oklahoma 74008  
 Phone: (918) 296-5067  
 Fax: (918) 296-5068  
 Contact: Robert David Sanders, PE.  
 email: rdsand1@sbcglobal.net



**BASIS OF BEARINGS:**

THE NORTH LINE OF ASPEN BUSINESS PARK/  
 SOUTH LINE OF CHRISTIAN HEIGHTS ADDITION  
 ASSUMED AS N 89°58'43" W.

HORIZONTAL DATUM: NAD83,  
 OKLAHOMA STATE PLANE COORDINATE  
 SYSTEM (3501)

VERTICAL DATUM: NAVD88

UNITS: U.S. SURVEY FEET

**BENCHMARKS:**

**BENCHMARK #1**  
 CHISELED BOX ON SW CORNER CURB OF PARKING  
 LOT, LOCATED APPROXIMATELY 550' WEST AND  
 28' NORTH OF THE S.E. CORNER OF CHRISTIAN  
 HEIGHTS PROPERTY.

ELEVATION 704.90'

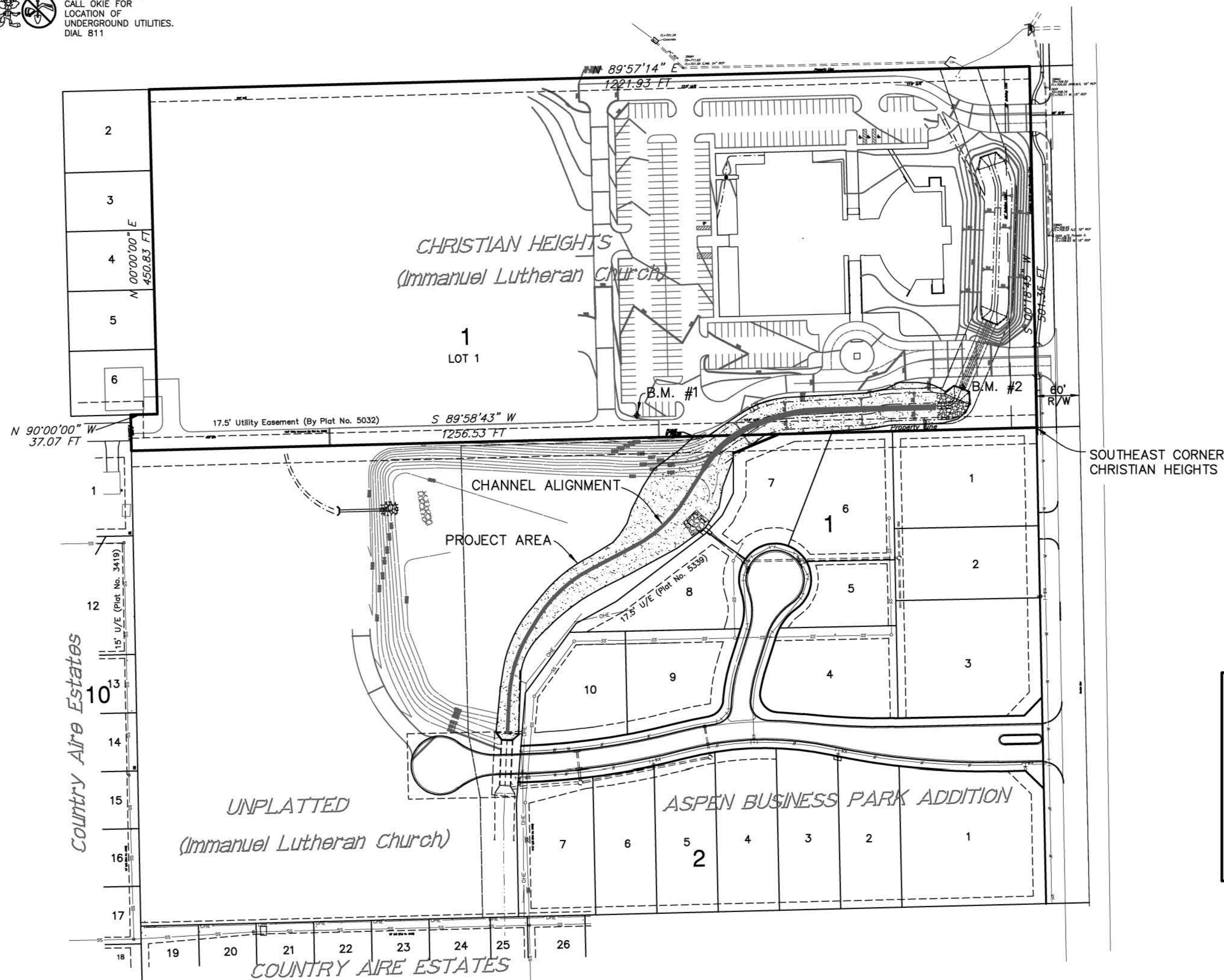
**BENCHMARK #2**  
 CHISELED BOX ON HEADWALL APPROXIMATELY  
 103' WEST AND 56' NORTH OF THE S.E. CORNER  
 OF CHRISTIAN HEIGHTS PROPERTY.

ELEVATION 713.40'

**CALL OKIE!**

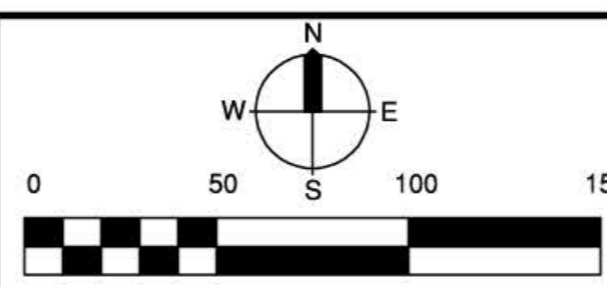
EXISTING UNDERGROUND LINES HAVE BEEN SHOWN  
 TO THE EXTENT KNOWN AND PLANS HAVE BEEN SENT  
 TO THE EFFECTED UTILITY OWNERS FOR VERIFICATION  
 OF EXISTING LINES. BEFORE YOU DIG, CONTACT  
 OKLAHOMA ONE-CALL: 1-800-622-6543.

ELECTRIC CABLE TELEVISION  
 NATURAL GAS TELEPHONE



SHEET INDEX	
SHEET NAME	SHEET #
TITLE SHEET	1
SURVEY DATA SHEET	2
GRADING PLAN	3
CHANNEL PLAN & PROFILE	4-5
DETAILS	6
ILLUSTRATIVE PLAN	7
CROSS SECTIONS	8

DATE	REVISIONS



**Immanuel Lutheran Church**  
 400 N. Aspen Ave.  
 Broken Arrow, OK 74012  
 (918)258-5506

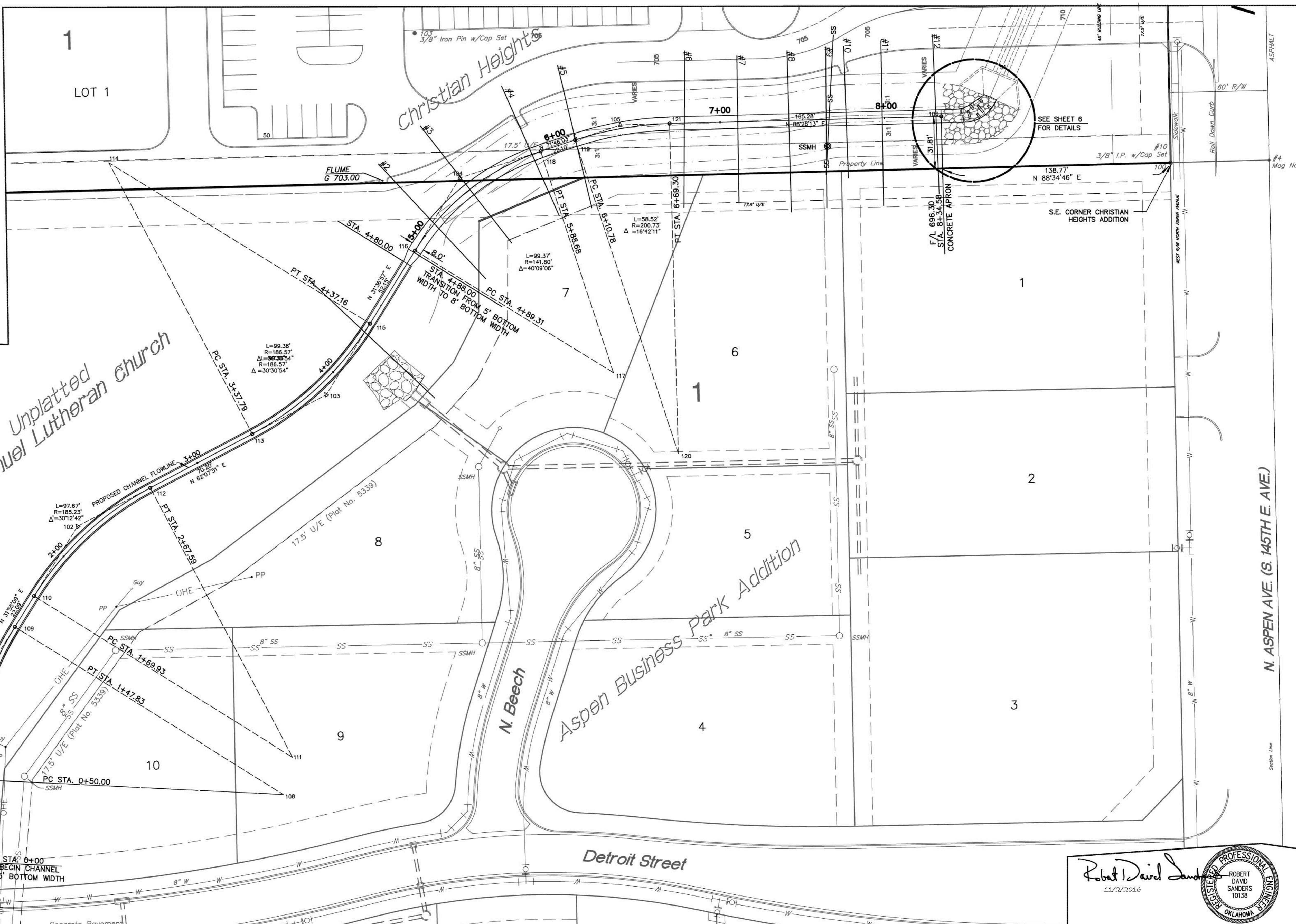
**SANDERS ENGINEERING, INC.**  
 11502 S. 66th E. Ave.  
 Bixby, Oklahoma 74008  
 Phone: (918)296-5067  
 Fax: (918)296-5068  
 Certificate of Authorization No. CA 2370 Exp. 6/30/2017

**TITLE SHEET**

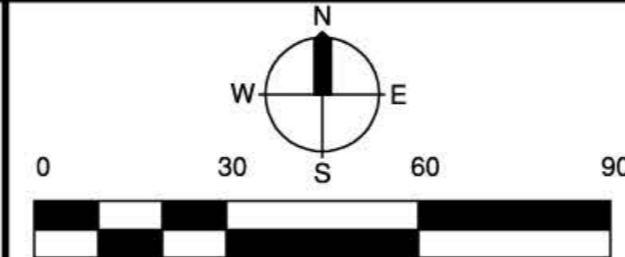
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Node ID	Northing	Easting	Description
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51	391522.91	2614050.38	BM
100	391044.11	2613420.22	BEGIN CL
101	391143.99	2613425.07	PI
102	391247.62	2613489.62	PI
103	391327.59	2613640.87	PI
104	391459.47	2613722.05	PI
105	391491.82	2613820.25	PI
106	391497.02	2614014.93	END CL
107	391094.05	2613422.65	PC
108	391084.71	2613614.81	RP
109	391186.43	2613451.51	PT
110	391205.18	2613463.19	PC
111	391107.24	2613620.41	RP
112	391270.99	2613533.83	PT
113	391303.81	2613595.88	PC
114	391468.74	2613508.67	RP
115	391370.93	2613667.55	PT
116	391415.34	2613694.89	PC
117	391341.01	2613815.64	RP
118	391475.69	2613771.28	PT
119	391482.60	2613792.27	PC
120	391291.95	2613855.06	RP
121	391492.61	2613849.70	PT



DATE	REVISIONS



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 Bixby, Oklahoma 74008  
 Phone: (918)298-5067  
 Fax: (918)298-5068  
 Certificate of Authorization No. CA 2370 Exp. 6/30/17

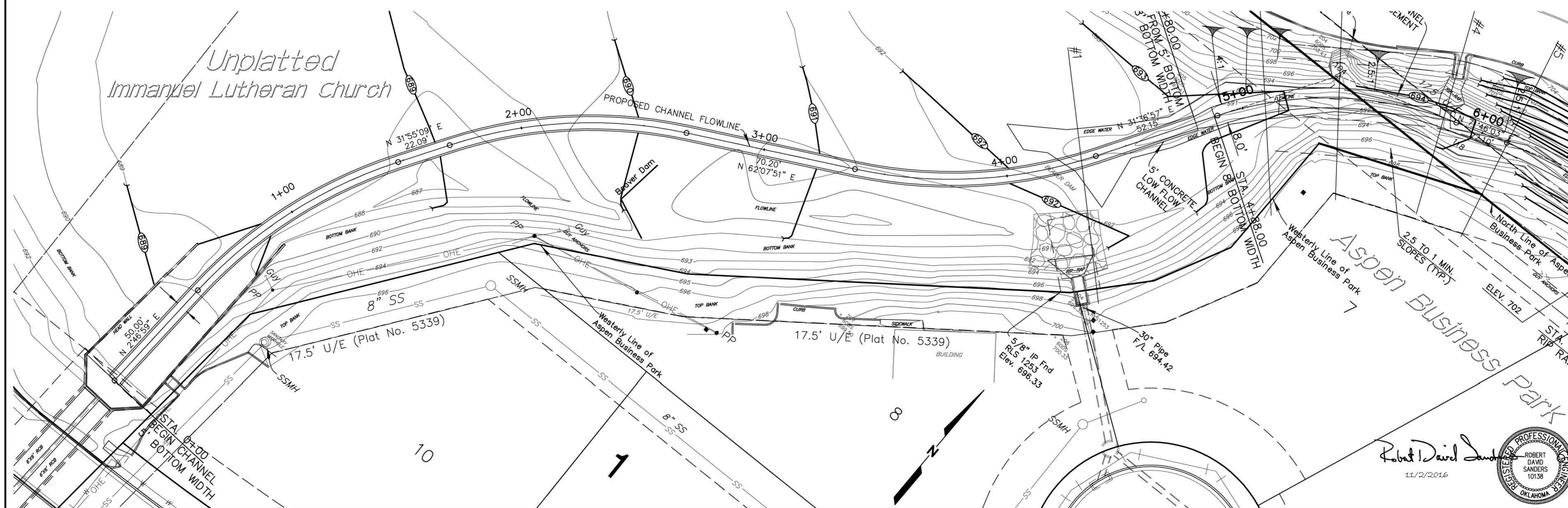
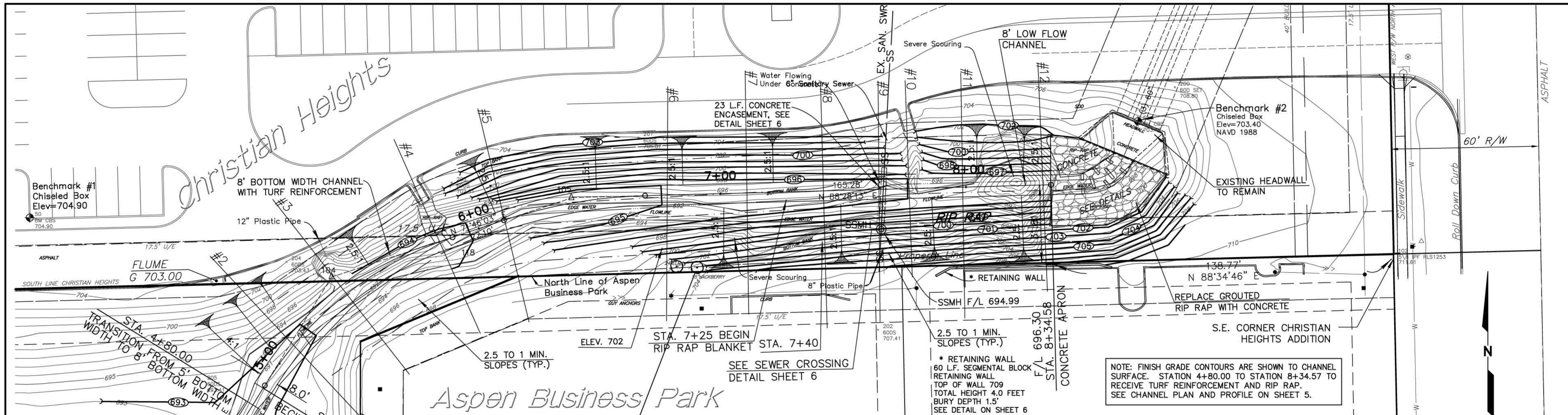
**SURVEY DATA SHEET**

Robert David Sanders  
 11/2/2016

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SHEET OF	2			
	8			
PROJECT NO.	151-189			

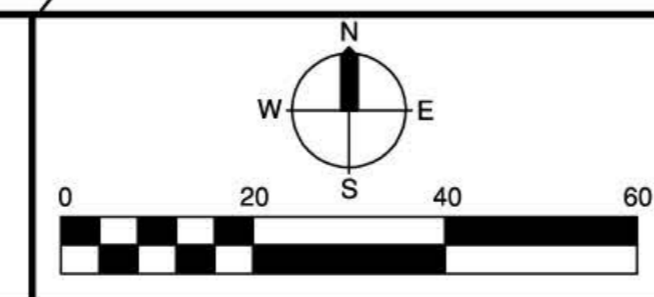
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DATE	REVISIONS


**CITY OF  
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 400 N. Aspen Ave.  
 Broken Arrow, OK 74012  
 (918)258-5506

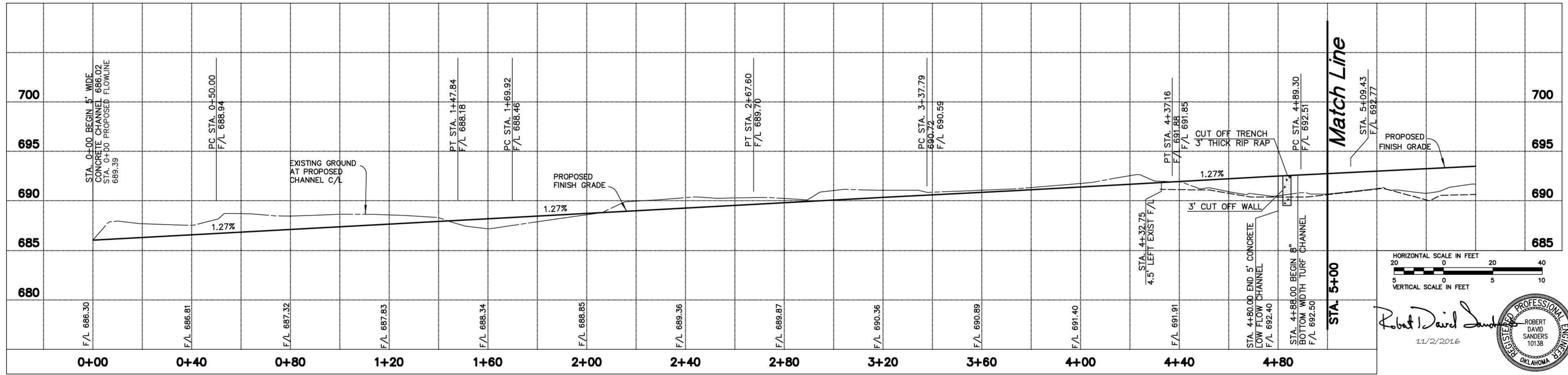
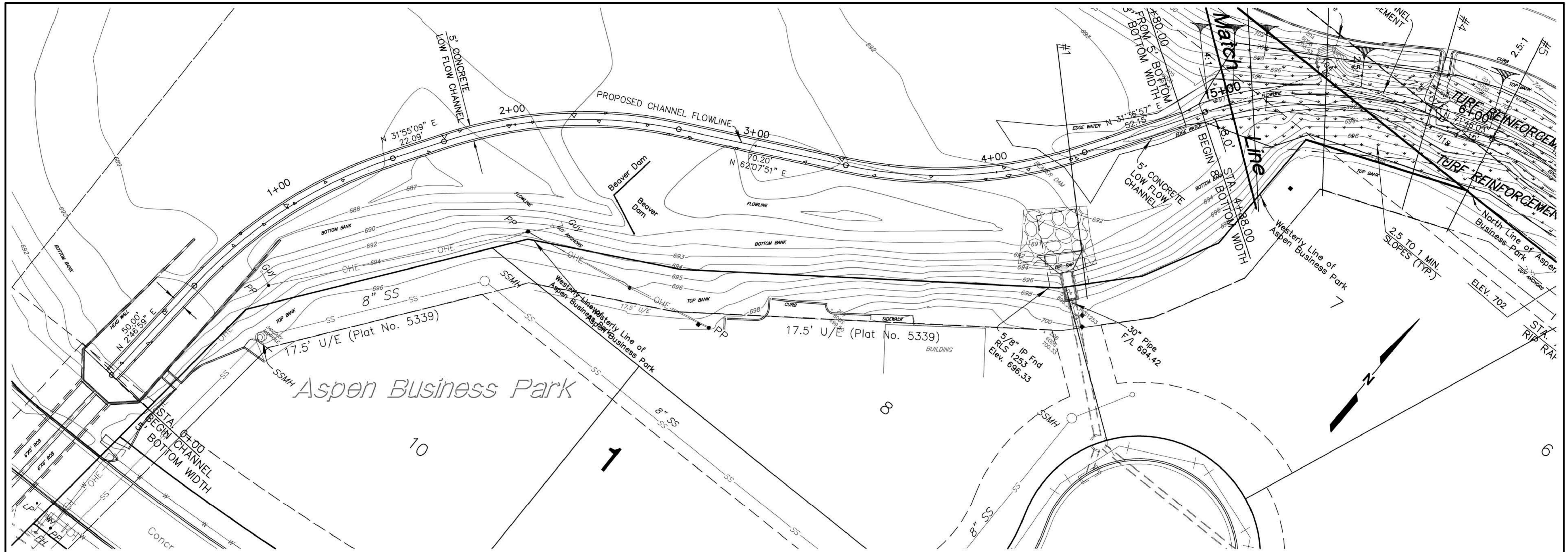

**SANDERS ENGINEERING, INC.**  
 11502 S. 66th E. Ave. Phone: (918)296-5067  
 Blaby, Oklahoma 74008 FAX: (918)296-5068  
 Certificate of Authorization No. CA 2370 Exp. 6/30/17

# GRADING PLAN

SCALE:	DESIGN	DATE	DRAFTED	DATE
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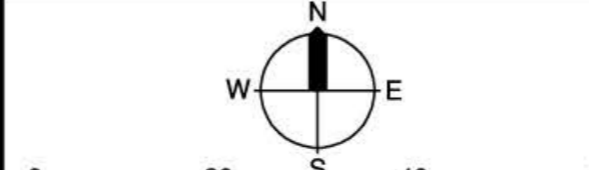
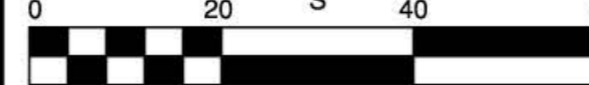
Robert David Sanders  
 11/2/2016  


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DATE	REVISIONS


**CITY OF  
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 400 N. Aspen Ave.  
 Broken Arrow, OK 74012  
 (918)258-5506

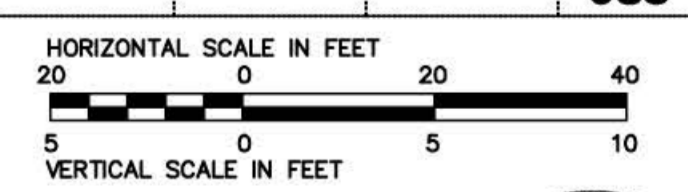
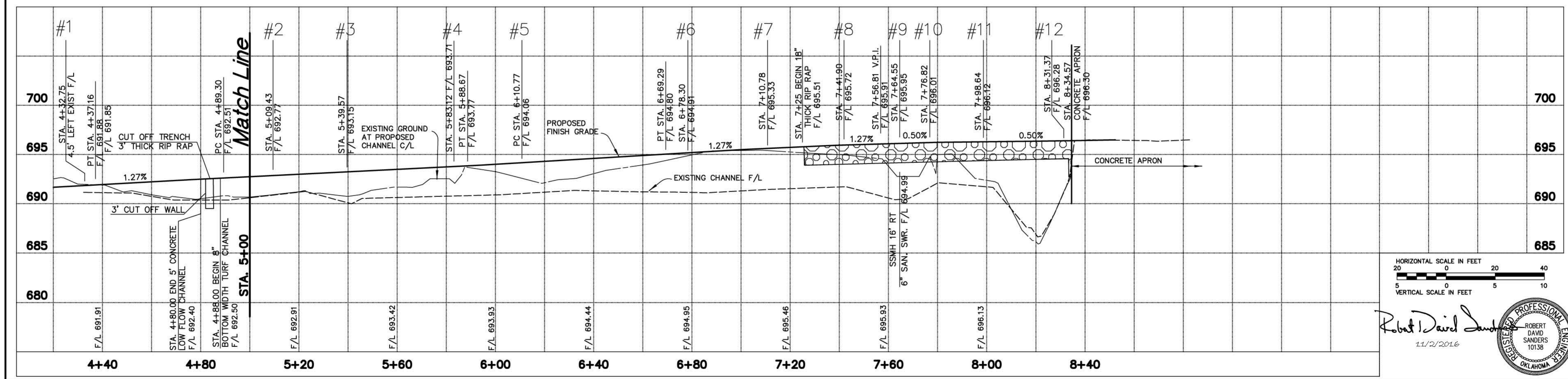
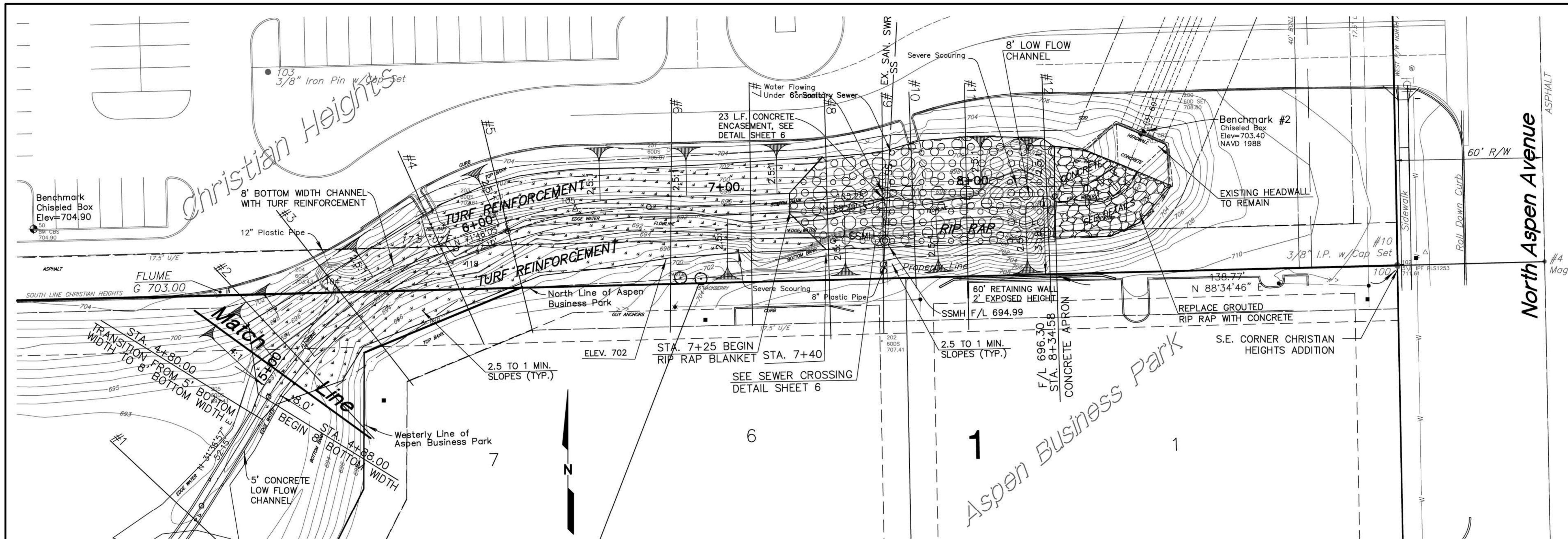

**SANDERS ENGINEERING, INC.**  
 11502 S. 66th E. Ave. Phone: (918)296-5087  
 Bixby, Oklahoma 74008 Fax: (918)296-5088  
 Certificate of Authorization No. CA 2370 Exp. 6/30/17

**PLAN & PROFILE (WEST)**

SCALE:	DESIGN	DATE	DRAFTED	DATE
HORZ. 1"=20'	RDS	10/2016	GSA	10/2016
VERT. 1"=5'	REVIEWED	DATE	APPROVED	DATE
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	OF	8		

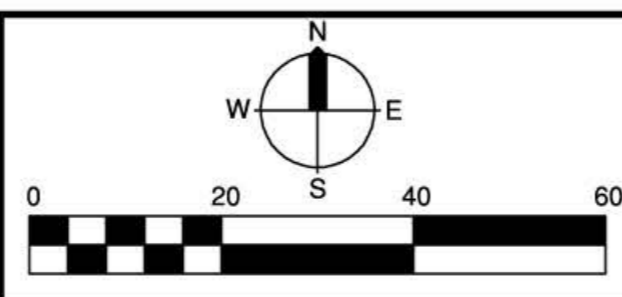


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Robert David Sanders  
 11/2/2016  
 REGISTERED PROFESSIONAL ENGINEER  
 ROBERT DAVID SANDERS  
 10136  
 OKLAHOMA

DATE	REVISIONS



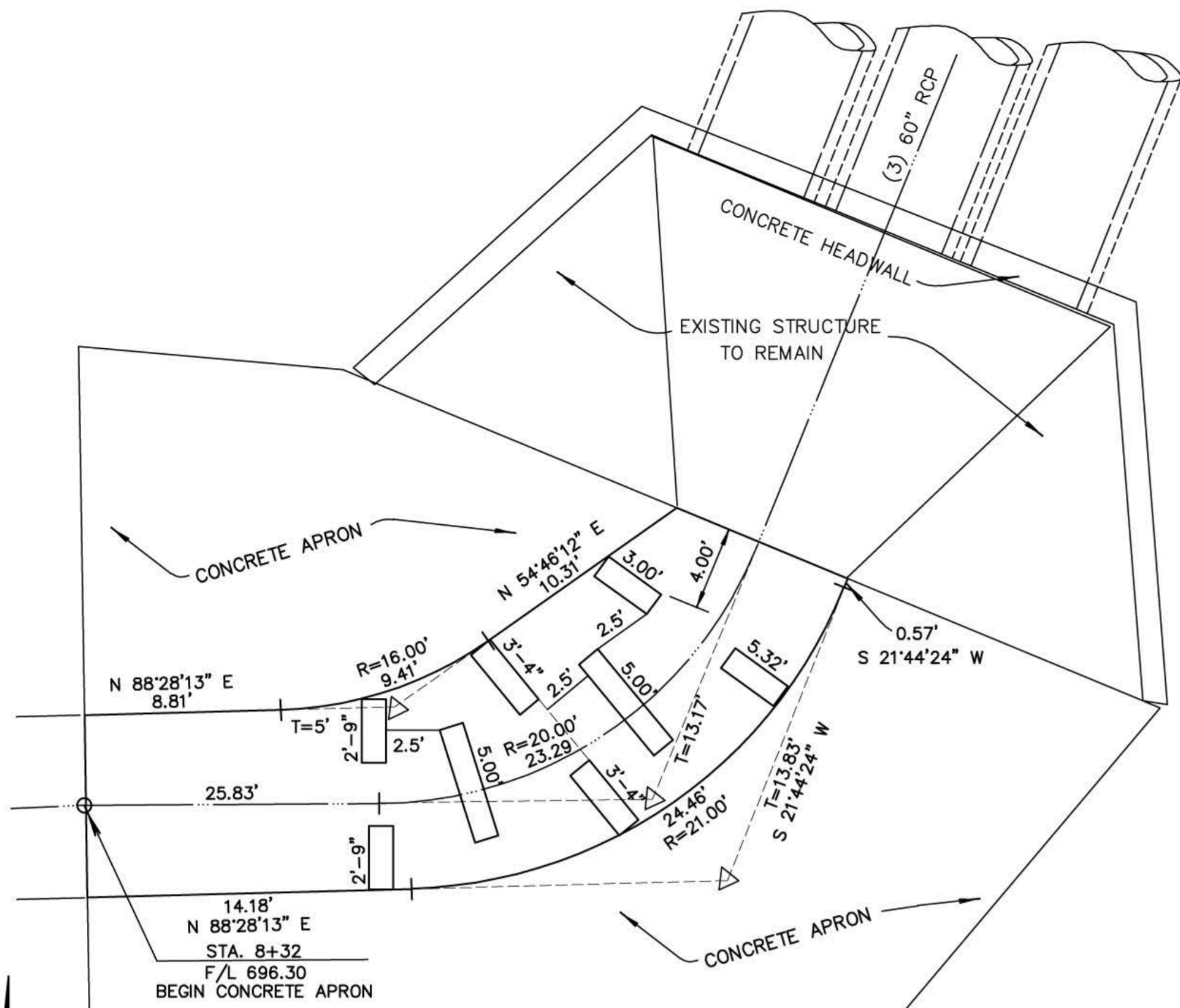
**Immanuel Lutheran Church**  
 400 N. Aspen Ave.  
 Broken Arrow, OK 74012  
 (918)258-5506

**SANDERS ENGINEERING, INC.**  
 11502 S. 66th E. Ave. Phone: (918)296-5067  
 Bixby, Oklahoma 74008 Fax: (918)296-5068  
 Certificate of Authorization No. CA 2370 Exp. 6/30/17

# PLAN & PROFILE (EAST)

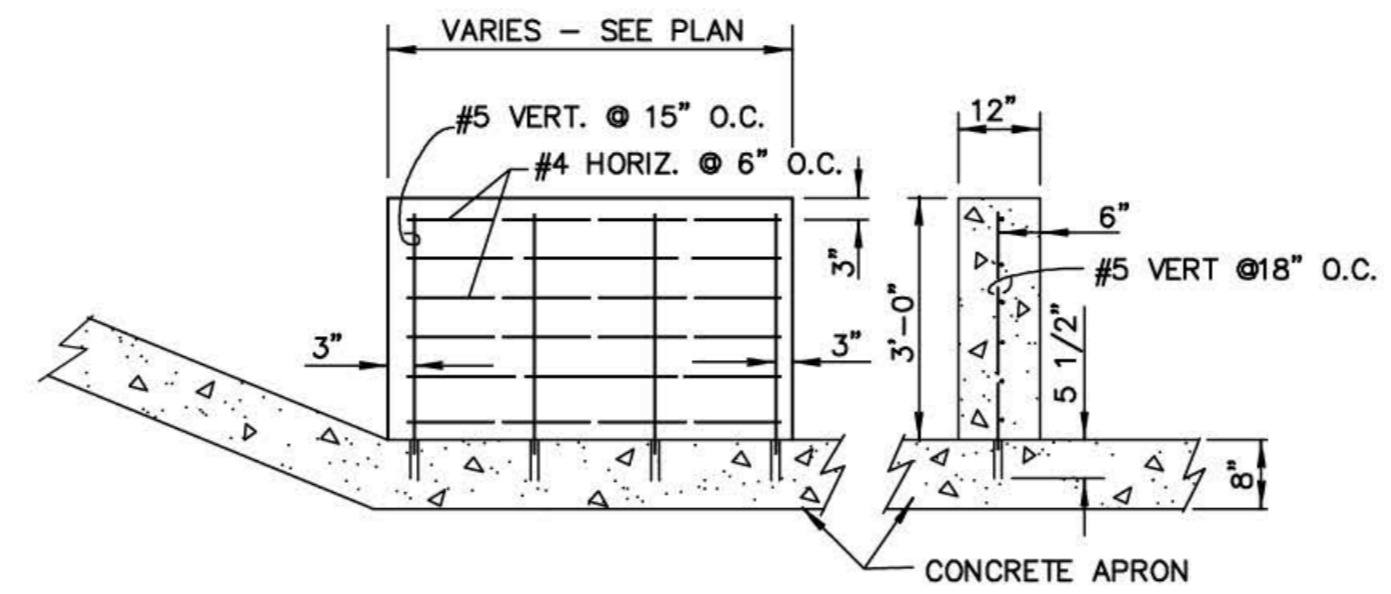
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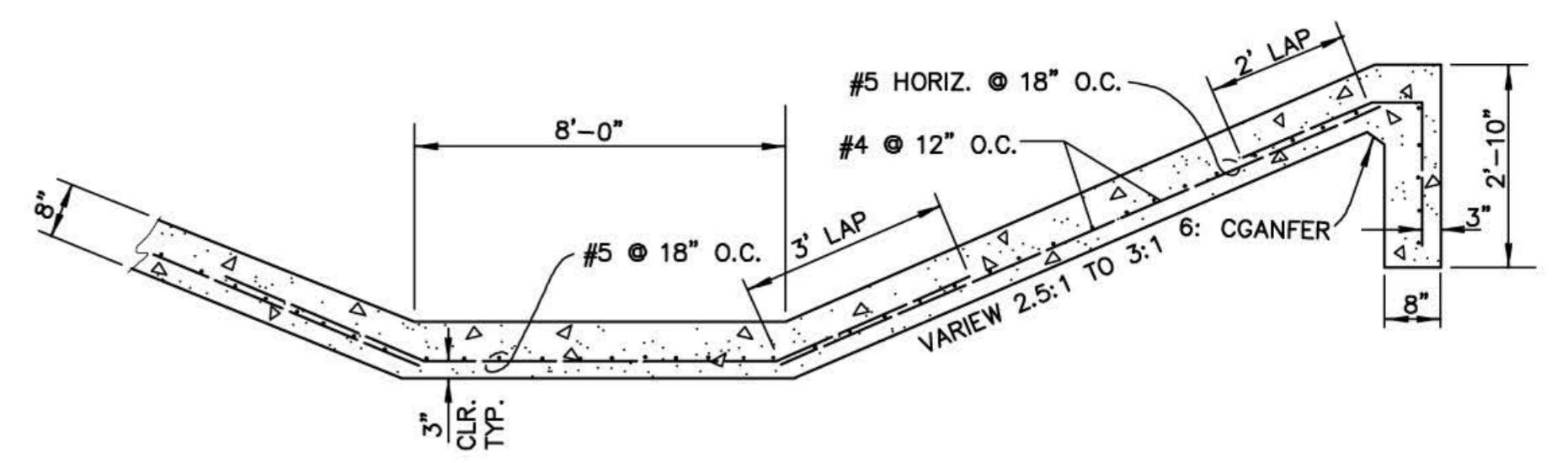
ENERGY DISSIPATOR DETAIL

1"=5'



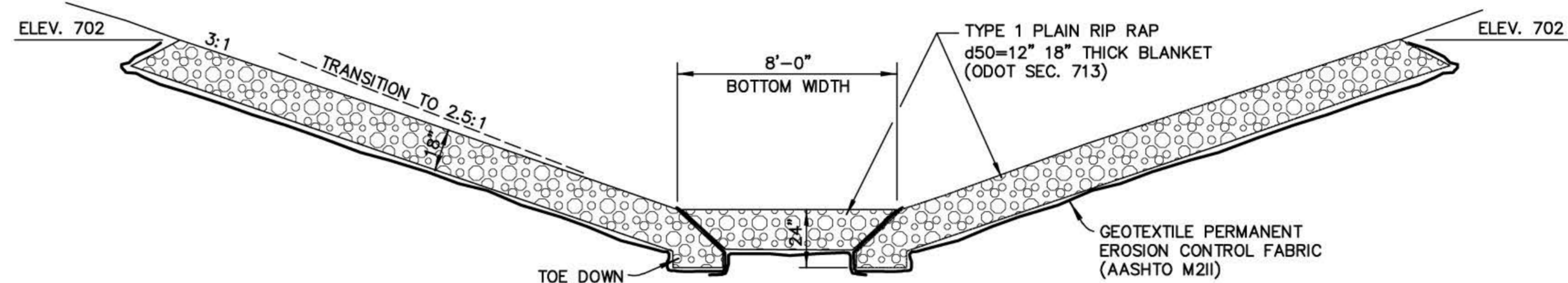
ENERGY DISSIPATOR DETAIL

N.T.S.



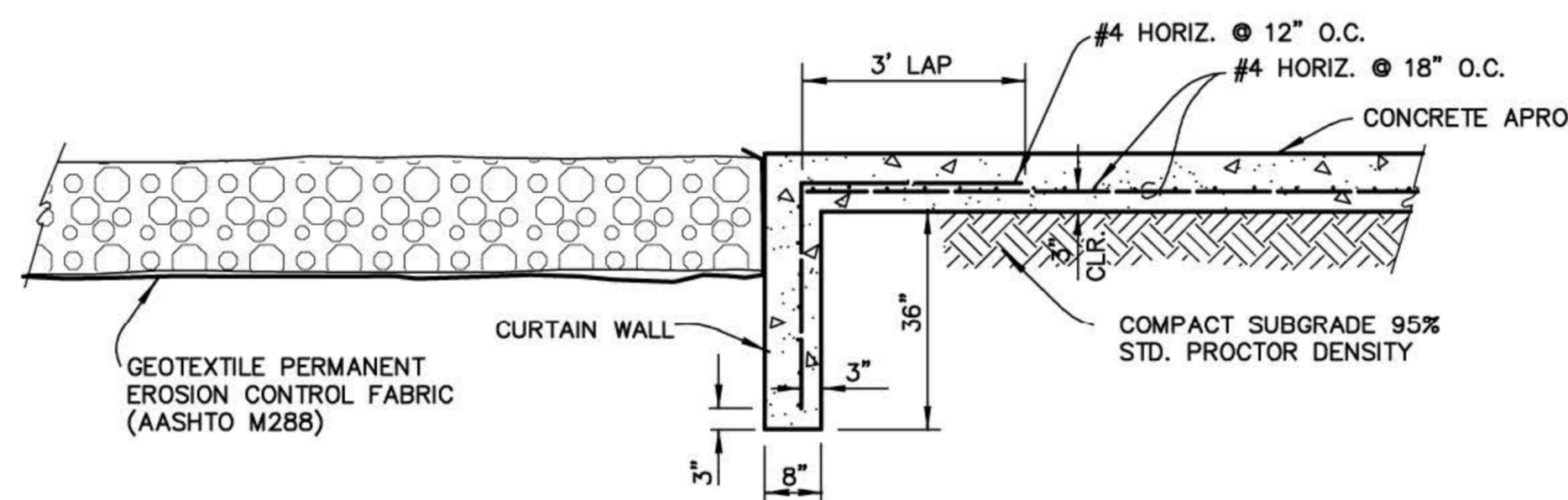
CONCRETE APRON

N.T.S.



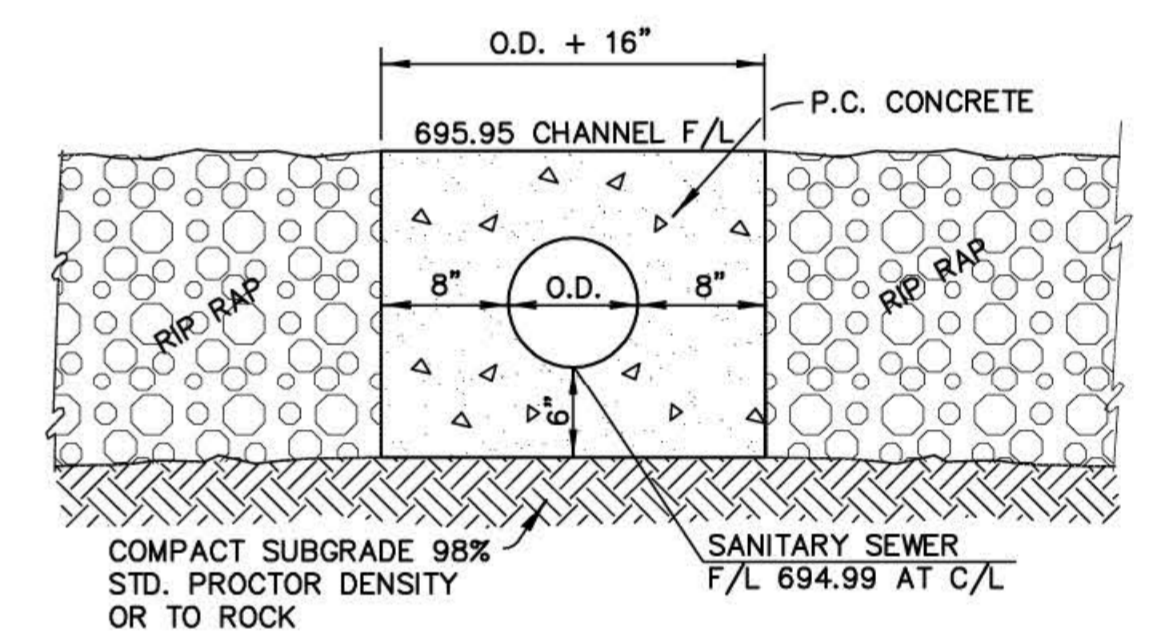
RIP RAP INSTALLATION DETAIL

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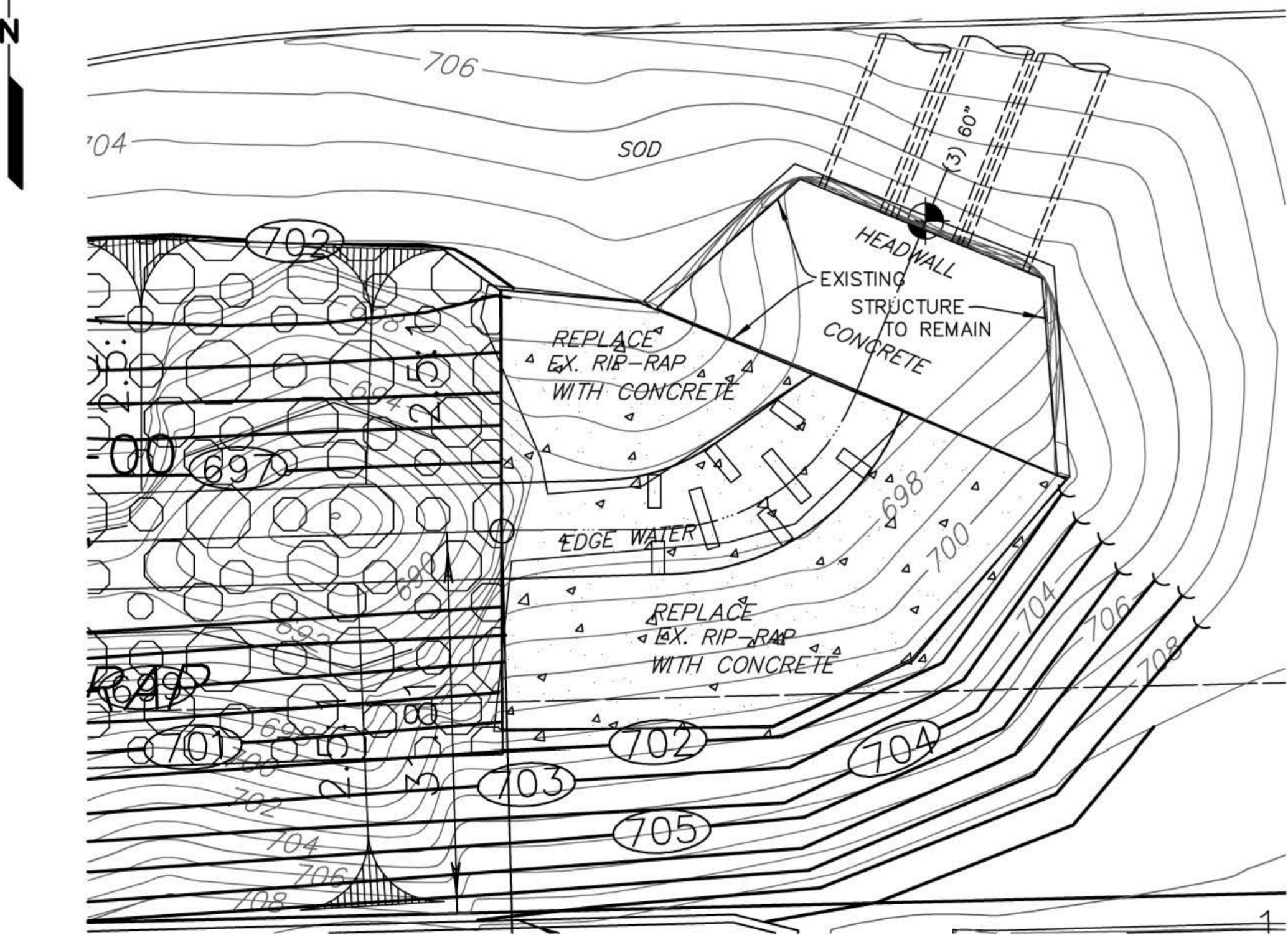
CURTAIN WALL DETAIL

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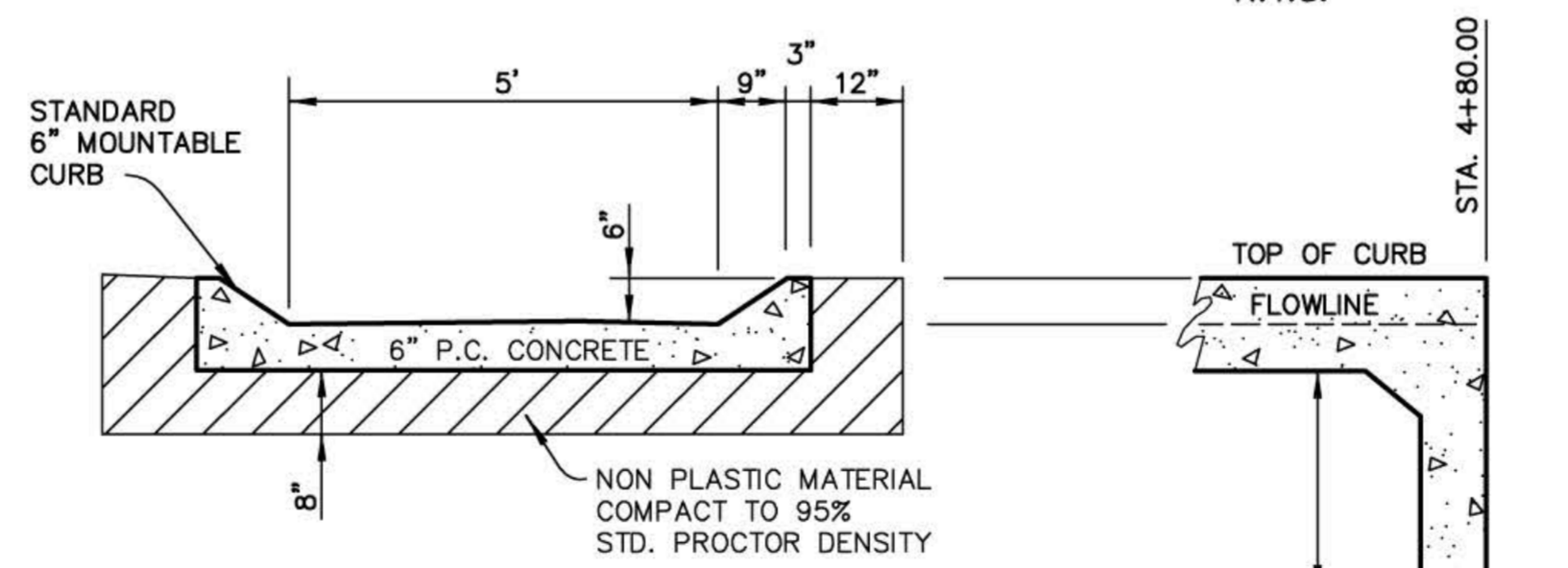
SANITARY SEWER CROSSING DETAIL

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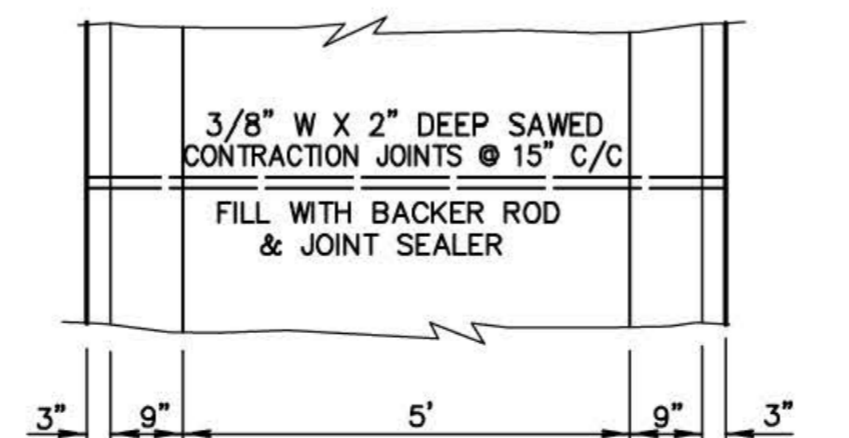


OUTLET CHANNEL AND APRON PLAN

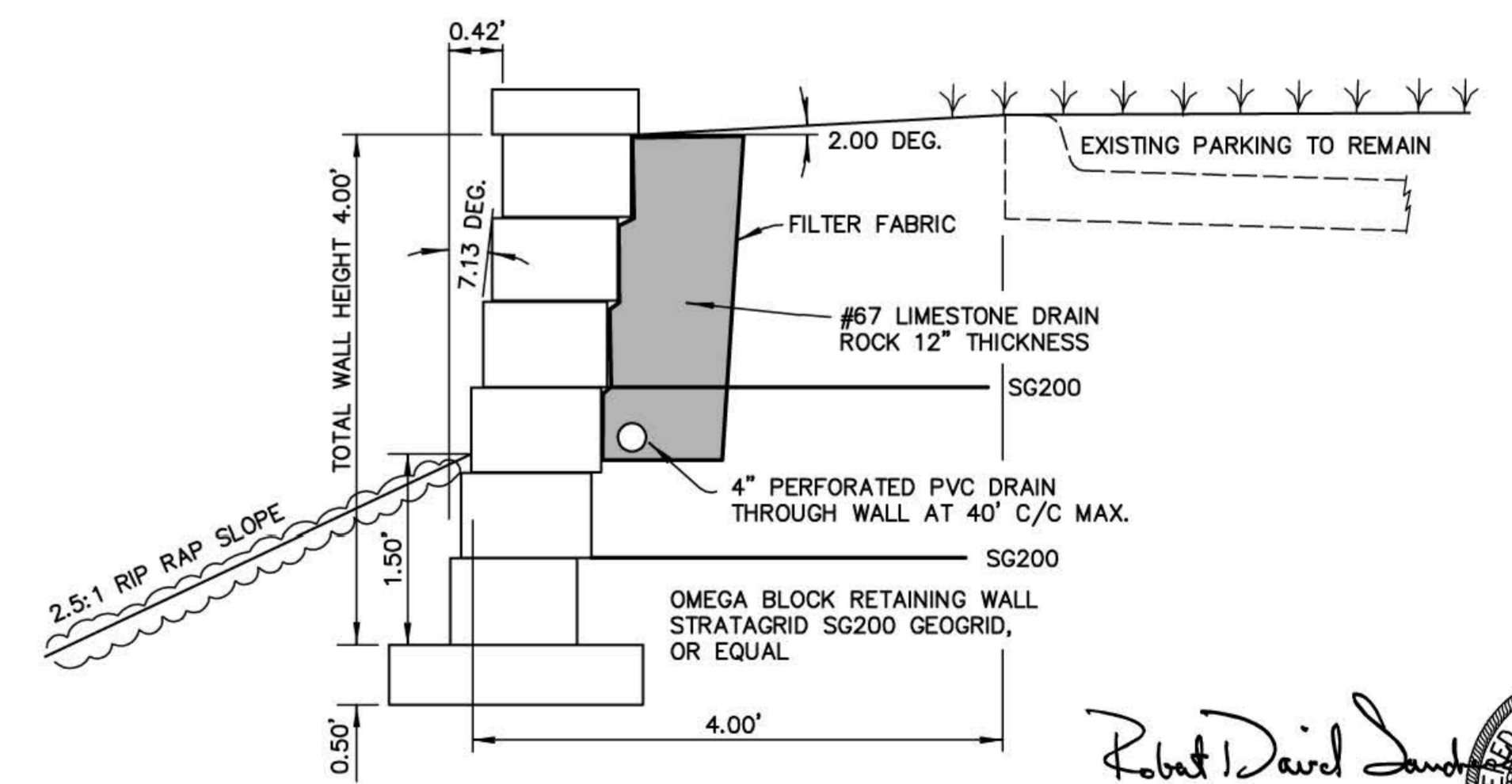
1"=10'



CUT OFF CURTAIN DETAIL

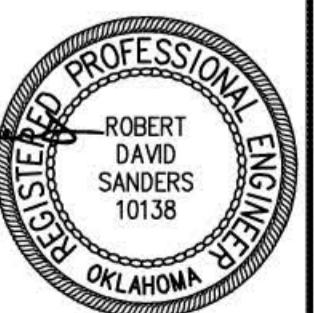


LOW FLOW CHANNEL DETAIL

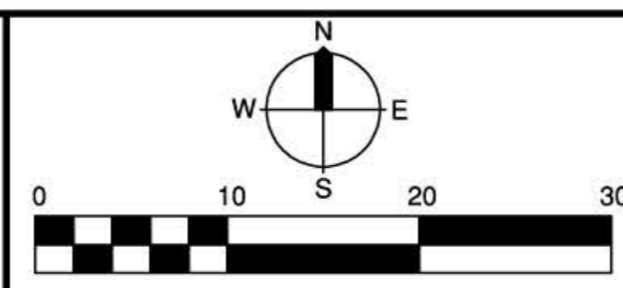


RETAINING WALL DETAIL

Robert David Sanders  
11/2/2016



DATE	REVISIONS



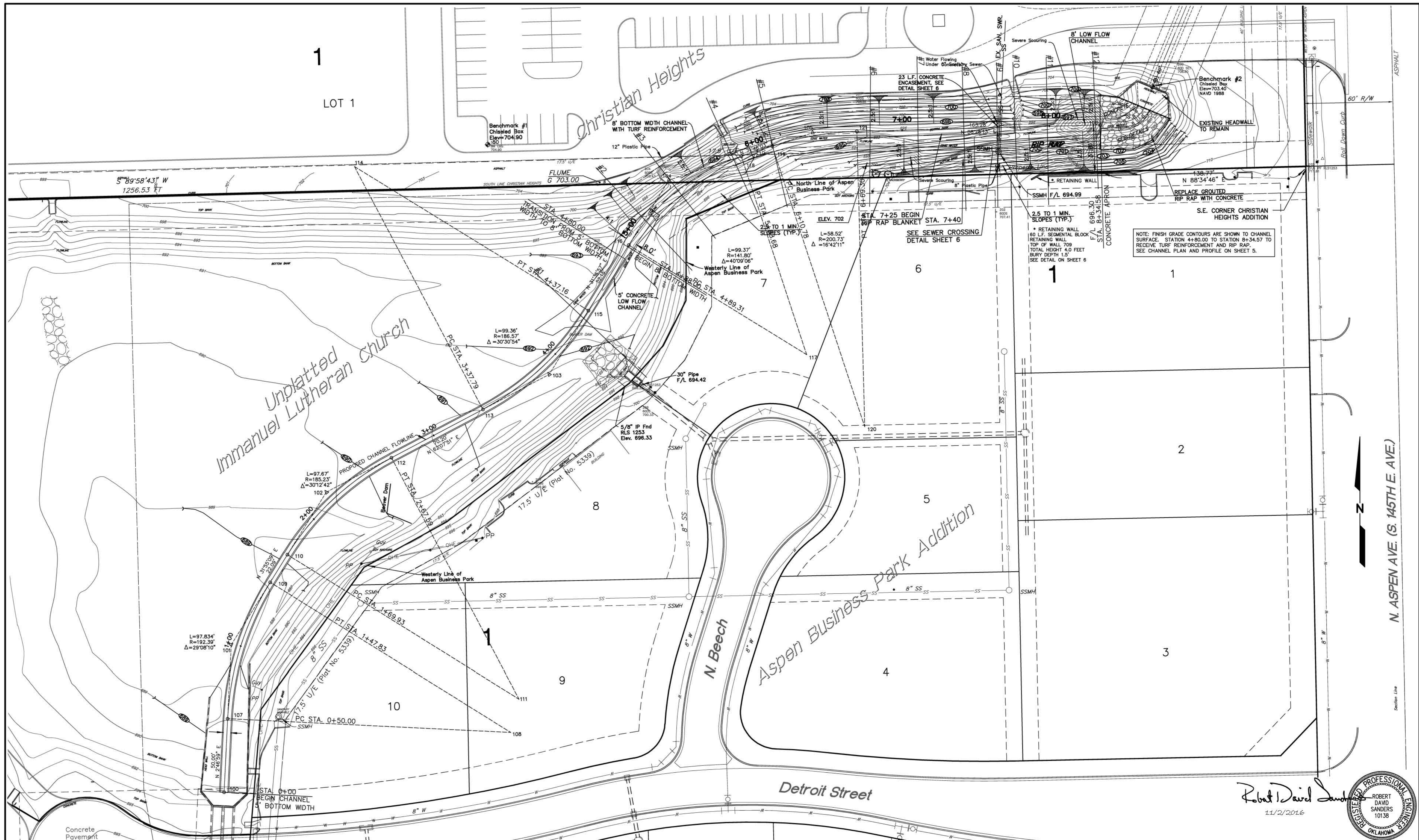
**Immanuel Lutheran Church**  
400 N. Aspen Ave.  
Broken Arrow, OK 74012  
(918)258-5506

**SANDERS ENGINEERING, INC.**  
11502 S. 66th E. Ave.  
Blauy, Oklahoma 74008  
Certificate of Authorization No. CA 2370 Exp. 6/30/17

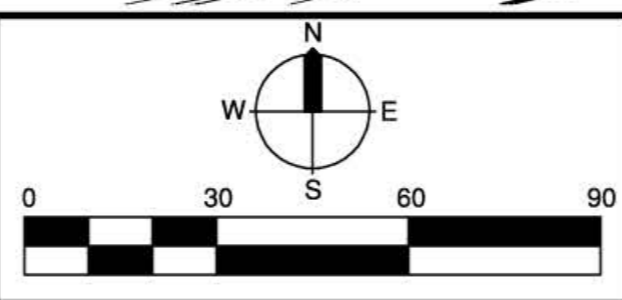
**DETAILS**

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VERT. N/A	REVIEWED	DATE	APPROVED	DATE
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SHEET OF	6	8	PROJECT NO.	151/181

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DATE	REVISIONS



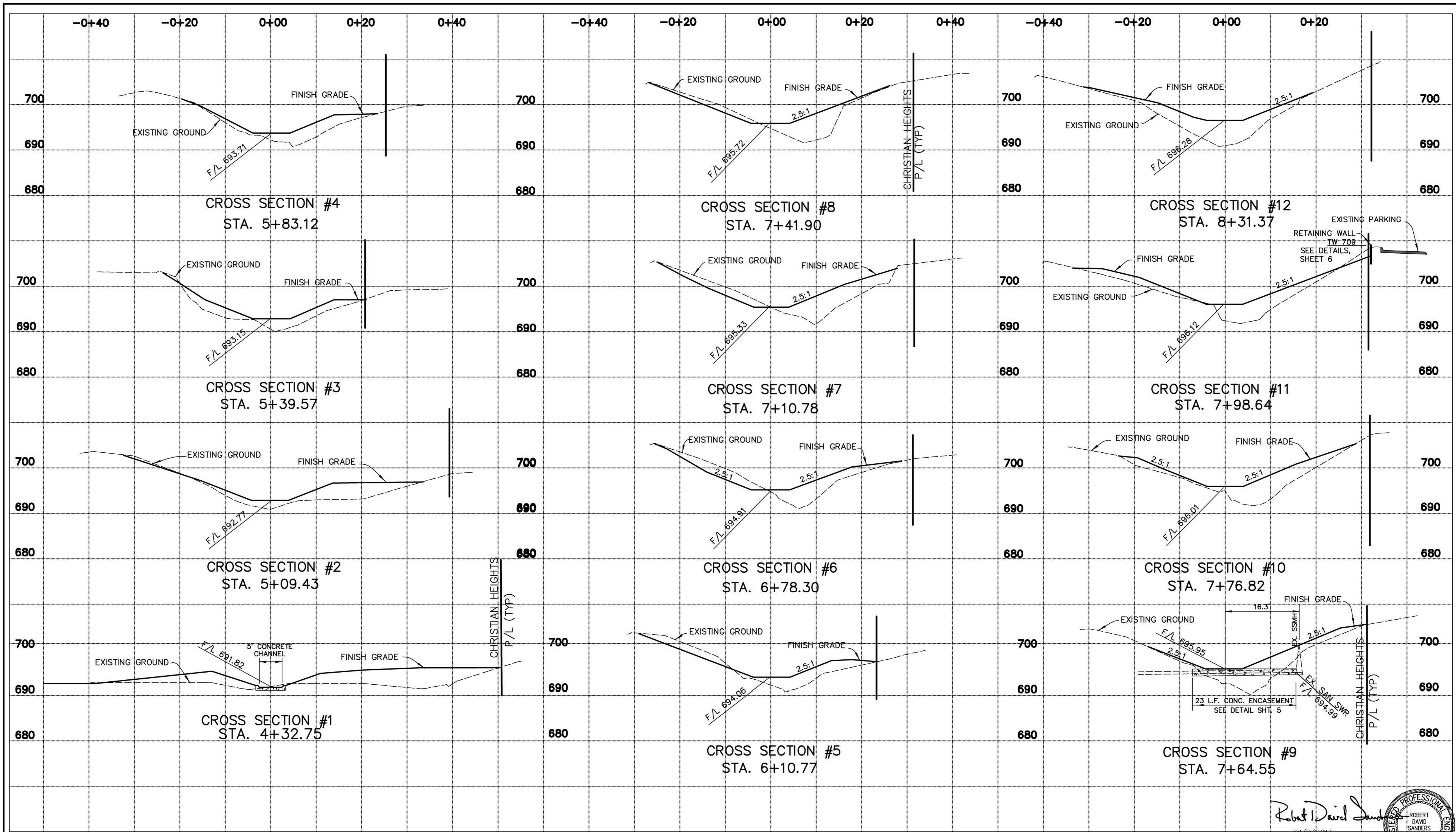
**Immanuel Lutheran Church**  
 400 N. Aspen Ave.  
 Broken Arrow, OK 74012  
 (918)258-5506

**SANDERS ENGINEERING, INC.**  
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 Bixby, Oklahoma 74008  
 Phone: (918)298-5087  
 Fax: (918)298-5088  
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**ILLUSTRATIVE PLAN**

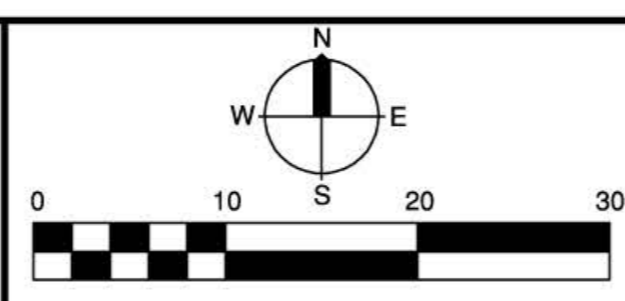
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VERT. N/A	REVIEWED X	DATE 2016	APPROVED X	DATE 2016
DRAWING NAME: ILC-GRADING.dwg	SHEET OF	7 8	PROJECT NO. 151/181	DATE

Robert David Sanders  
 11/2/2016



Robert D. Sanders  
 11/2/2016  
 PROFESSIONAL ENGINEER  
 ROBERT DAVID SANDERS  
 10138  
 OKLAHOMA

DATE	REVISIONS



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**CROSS SECTIONS**

SCALE:	DESIGN	DATE	DRAFTED	DATE
HORZ. 1"=10'	RDS	10/2016	GSA	10/2016
VERT. 1"=10'	REVIEWED	DATE	APPROVED	DATE
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DRAWING NAME:	SHEET	OF	PROJECT NO.	
ILC-CrossSecs.dwg	8	8	151-181	

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