



Office of Community of Development
**NOTICE OF A MEETING FOR
CITY OF CHICKASHA
PLANNING COMMISSION**

In compliance with Title 25, Oklahoma Statutes, Section 301-314, the Oklahoma Open Meeting Act, including the posting of notices and agenda, be advised that the **City of Chickasha Planning Commission** of the City of Chickasha, Oklahoma, meeting on **Tuesday, January 10, 2023, at 4:00 PM.**

Said meeting will be held at City Hall, 2nd Floor City Council Chambers, 117 N. 4th Street, Chickasha, Oklahoma.

The City of Chickasha encourages participation from all its citizens. If special accommodations are needed, please notify the City Clerk at least 48 hours prior to the scheduled meeting. The City may waive the 48-hour rule if the necessary accommodations can be easily made.

AGENDA

1 Call to Order/Roll Call

2 Meeting Items

- a. Discussion, consideration and possible action to approve the minutes from the December 13, 2022 Meeting
- b. Public hearing to Discuss and consider the request for the Final and Preliminary plat of the 12th Street Addition for applicant Elliott Cousins, Oklahoma Limited Partnership
- c. Discussion, consideration and possible action to approve the Final and Preliminary plat for the 12th Street Addition for applicant Elliott Cousins, Oklahoma Limited Partnership.

3 Motion to Adjourn.

Rachel Bernish, Community Development Director



City of
CHICKASHA

Meeting Type: Planning Commission 1/10/23

Meeting Date: 1/10/2023

Department: Community Development

Agenda Item No. 2.a.

AGENDA ITEM: Discussion, consideration and possible action to approve the minutes from the December 13, 2022 Meeting

I. BACKGROUND/DESCRIPTION:

II. RECOMMENDED ACTION:

III. FISCAL INFORMATION -

IV. FUND INFORMATION:

Dept. Director:
NAME, TITLE

	Fund	Account	Amount
	(To)		
	FUND	ACCOUNT	AMOUNT
Meeting Date: January 10, 2023	(From)		

V. ATTACHMENTS:

1. Minutes for City Planning 12-13-22

PLANNING COMMISSION MEETING

12/13/2022 at: 4:00 pm

1. Call meeting to order: 4:00 pm

Roll Call: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa, Jeff McClure (alternate), Joe Hutmacher (alternate)

Present: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa

Absent:

Staff Present: Rachel Bernish Community Development Director, Cristina Fierro Permit Technician, Darren Martin Chief Building Official

Citizens Present: Brittanie Howe, Buffie Howe, Elsie Wilkerson

2. Meeting Items

a. Discussion, consideration, and possible action to approve the minutes of the November 8, 2022, meeting.

***Motion by: Tim Smith** and second by **James Schoppa** to approve minutes of Planning Commission meeting.

Roll Call: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa, Jeff McClure (alternate), Joe Hutmacher (alternate)

Present: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa

Absent:

Ayes: Mike Mosley, Tim Smith, John Grote, James Schoppa

Nays:

Abstain: Glen Snedeker

b. Public hearing to discuss and consider the rezoning request for 1627 Iowa, Chickasha, OK for applicant Elsie L Wilkerson

Hearing opened: 4:01

Hearing closed: 4:04

- c. Discussion, consideration, and possible action to approve the rezoning request for applicant Elsie L Wilkerson for 1627 Iowa, Chickasha, OK

***Motion by:** Tim Smith **and second by** James Schoppa **to approve**

Roll Call: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa, Jeff McClure (alternate), Joe Hutmacher (alternate)

Present: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa

Absent:

Ayes: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa

Nays:

Abstain:

Motion Carries

- d. Public hearing to discuss and consider the rezoning request for 1420 N 16th, Chickasha, OK for applicant Buffie Howe

Hearing opened: 4:05 pm

Hearing closed: 4:08 pm

- e. Discussion, consideration, and possible action to approve the rezoning request for 1420 N. 16th, Chickasha, OK

***Motion by:** James Schoppa **and second by** Tim Smith **to approve**

Roll Call: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa, Jeff McClure (alternate), Joe Hutmacher (alternate)

Present: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa

Absent:

Ayes: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa

Nays:

Abstain:

Motion Carries

- f. Public hearing to discuss and consider Chapter 46, The land Development Code**

Hearing opened: 4:09 pm

Hearing closed: 4:11 pm

- g. Discussion, consideration, and possible action to approve Chapter 46 to the City of Chickasha Code of Ordinances**

Roll Call: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa, Jeff McClure (alternate), Joe Hutmacher (alternate)

***Motion by:** Tim Smith **and second by** James Schoppa **to approve**

Present: John Grote, Mike Mosley, Tim Smith, James Schoppa, Glenn Snedeker

Absent:

Ayes: John Grote, Mike Mosley, Tim Smith, James Schoppa, Glenn Snedeker

Nays:

Abstain:

Motion Carries

3. Motion to Adjourn.

Roll Call: Mike Mosley, Tim Smith, John Grote, Glenn Snedeker, James Schoppa, Jeff McClure (alternate), Joe Hutmacher (alternate)

***Motion by:** Tim Smith **and second by** James Schoppa **to approve**

Roll Call: John Grote, Mike Mosley, Tim Smith, James Schoppa, Glenn Snedeker

Ayes: John Grote, Mike Mosley, Tim Smith, James Schoppa, Glenn Snedeker

Nays:

Abstain:

Motion Carries



City of
CHICKASHA

Meeting Type: Planning Commission 1/10/23

Meeting Date: 1/10/2023

Department: Community Development

Agenda Item No. 2.b.

AGENDA ITEM: Public hearing to Discuss and consider the request for the Final and Preliminary plat of the 12th Street Addition for applicant Elliott Cousins, Oklahoma Limited Partnership

I. BACKGROUND/DESCRIPTION:

II. RECOMMENDED ACTION:

III. FISCAL INFORMATION -

IV. FUND INFORMATION:

Dept. Director:
NAME, TITLE

Fund	Account	Amount
(To)		
FUND	ACCOUNT	AMOUNT
(From)		

Meeting Date:
January 10, 2023

V. ATTACHMENTS:



City of
CHICKASHA

Meeting Type: Planning Commission 1/10/23

Meeting Date: 1/10/2023

Department: Community Development

Agenda Item No. 2.c.

AGENDA ITEM: Discussion, consideration and possible action to approve the Final and Preliminary plat for the 12th Street Addition for applicant Elliott Cousins, Oklahoma Limited Partnership.

I. BACKGROUND/DESCRIPTION:

There will be 4 new lots in this addition on 12th and California.
This has been recommended for approval by the engineering team.

II. RECOMMENDED ACTION:

Staff Recommends to approve.

III. FISCAL INFORMATION -

IV. FUND INFORMATION:

Dept. Director:
NAME, TITLE

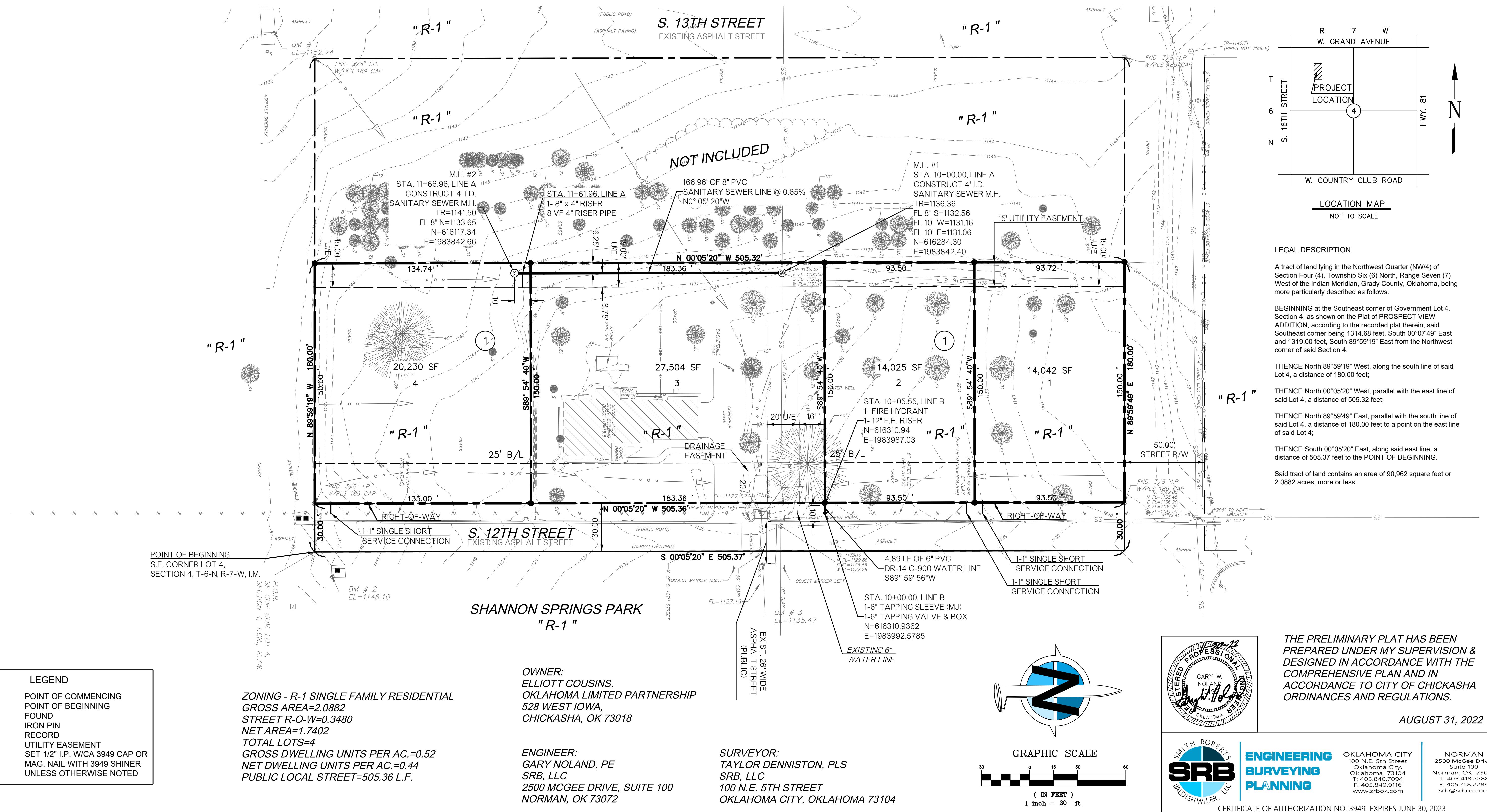
	Fund	Account	Amount
	(To)		
	FUND	ACCOUNT	AMOUNT
Meeting Date: January 10, 2023	(From)		

V. ATTACHMENTS:

1. West Side of 12th Street Addition Preliminary Plat
2. West Side of 12th Street Addition Final Plat with 2 sheets
3. West Side of 12th St. Addition Sanitary Sewer Plans
4. West Side of 12th St. Addition Water Line Layout Plan
5. 20221229104329659

PRELIMINARY PLAT WEST SIDE OF 12th STREET ADDITION

BEING PART OF THE NW/4, SEC. 4, T6N, R7W, I.M.,
AN ADDITION TO CHICKASHA, GRADY COUNTY, OKLAHOMA



BEING PART OF THE NW/4, SEC. 4, T6N, R7W, I.M.,
AN ADDITION TO CHICKASHA, GRADY COUNTY, OKLAHOMA

That Elliott Cousins, an Oklahoma Limited Partnership, does hereby certify that they are the owners and of the only persons, firms or corporation or entity having any rights, title, or interest in and to the land shown on the annexed plat of WEST SIDE OF 12th STREET ADDITION, an Addition to the CITY of CHICKASHA, GRADY COUNTY, STATE OF OKLAHOMA, and that they have caused the same to be surveyed and platted, and that they hereby dedicate all the streets and easements shown hereon to the public, for the purposes of streets, utilities, and drainage, for their heirs, executors, administrators, successors, and assign forever, and have caused the same to be released from all encumbrances so that the title is clear, except as shown in the abstractor's certificate.

[illegible]

NOTARY PUBLIC

CHAIRMAN

MAYOR

CITY CLERK

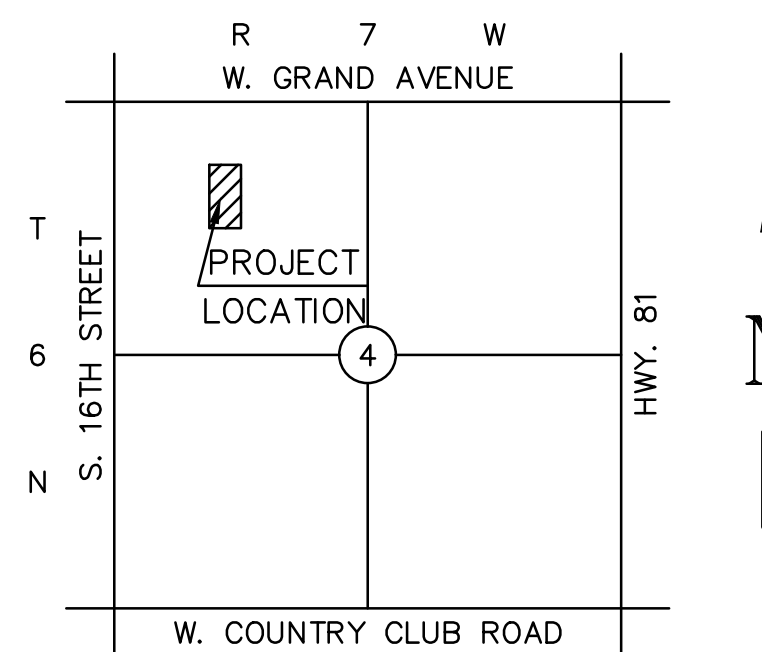
COUNTY TREASURER

Said tract of land contains an area of 90,962 square feet or 2.0882 acres, more or less.

ABSTRACT & TITLE COMPANY

[illegible]

NOTARY PUBLIC



LOCATION MAP
NOT TO SCALE

THIS PLAT OF SURVEY MEETS THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED BY THE OKLAHOMA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS, AND SAID PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 11 SECTION 41-108 OF THE OKLAHOMA STATE STATUTES.

WEST SIDE OF 12th STREET ADDITION
SHEET 1 OF 2
(SRB #116741)



**ENGINEERING
SURVEYING
PLANNING**

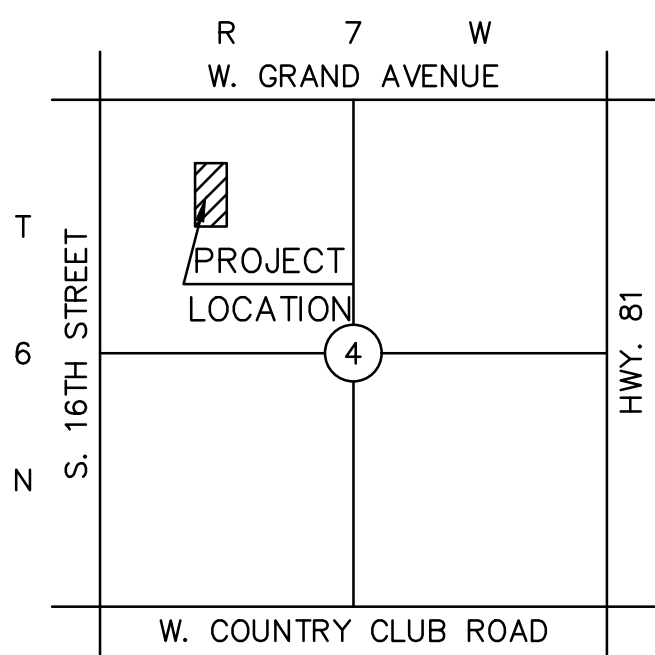
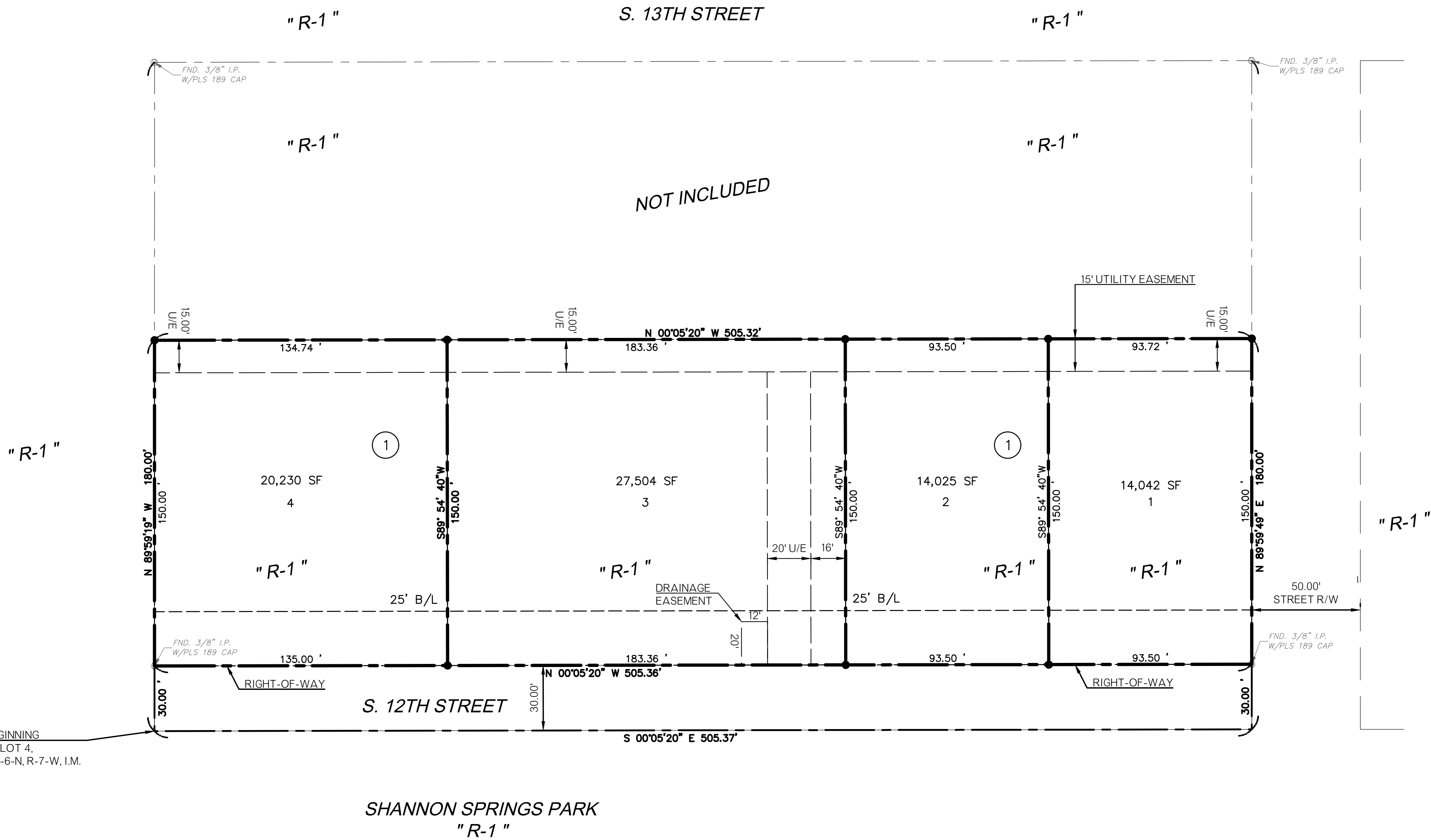
OKLAHOMA CITY
100 N.E. 5th Street
Oklahoma City,
Oklahoma 73104
T: 405.840.7094
F: 405.840.9116
www.srbok.com

NORMAN
2500 McGee Drive,
Suite 100
Norman, OK 73072
T: 405.418.2288
F: 405.418.2289
srb@srbok.com

CERTIFICATE OF AUTHORIZATION NO. 3949 EXPIRES JUNE 30, 2023

FINAL PLAT
WEST SIDE OF 12th STREET ADDITION

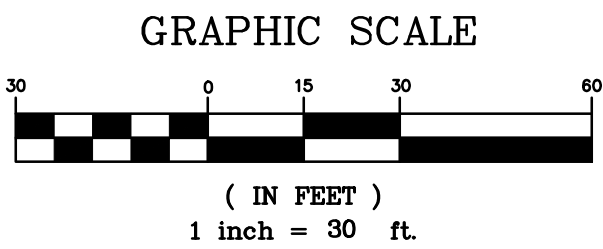
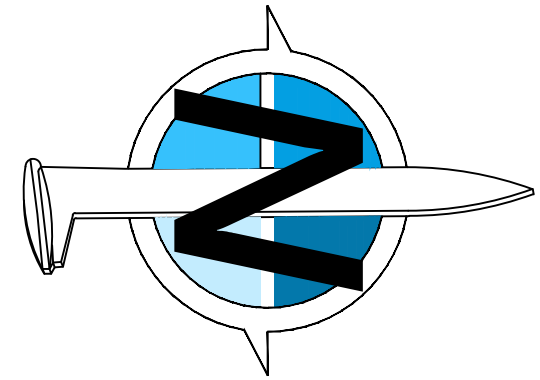
BEING PART OF THE NW/4, SEC. 4, T6N, R7W, I.M.,
AN ADDITION TO CHICKASHA, GRADY COUNTY, OKLAHOMA



LOCATION MAP
NOT TO SCALE

LEGEND	
P.O.C.	POINT OF COMMENCING
P.O.B.	POINT OF BEGINNING
FND.	FOUND
I.P.	IRON PIN
REC.	RECORD
U/E	UTILITY EASEMENT
•	SET 1/2" I.P. W/CA 3949 CAP OR MAG. NAIL WITH 3949 SHINER UNLESS OTHERWISE NOTED

ZONING - R-1 SINGLE FAMILY RESIDENTIAL
GROSS AREA=2.0882
STREET R-O-W=0.3480
NET AREA=1.7402
TOTAL LOTS=4
GROSS DWELLING UNITS PER AC.=0.52
NET DWELLING UNITS PER AC.=0.44
PUBLIC LOCAL STREET=505.36 L.F.



WEST SIDE OF 12th STREET ADDITION
SHEET 2 OF 2
(SRB #116741)



ENGINEERING
SURVEYING
PLANNING

OKLAHOMA CITY
100 N.E. 5th Street
Oklahoma City,
Oklahoma 73104
T: 405.840.7094
F: 405.840.9116
www.srbok.com

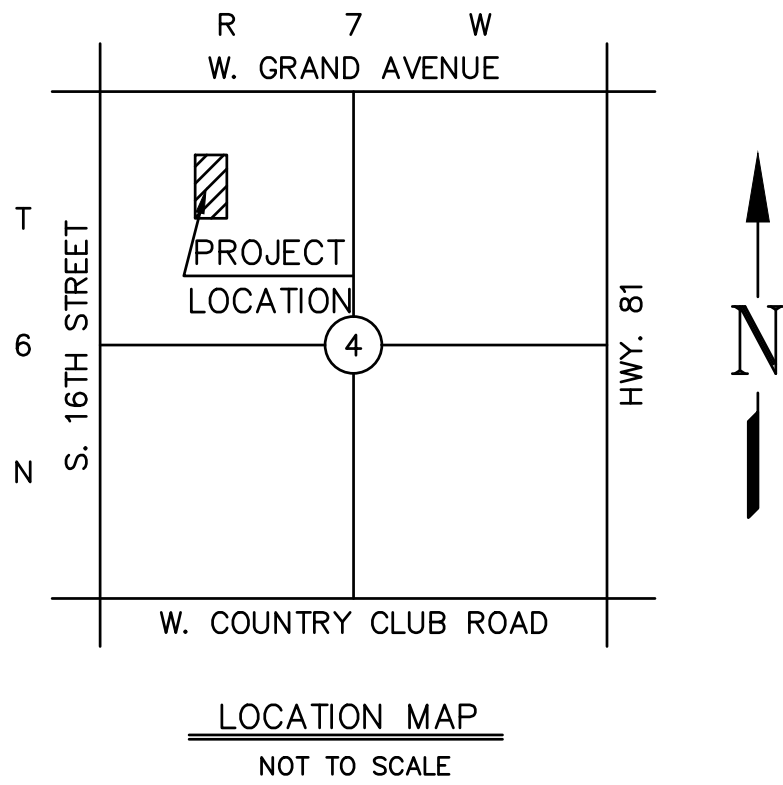
NORMAN
2500 McGee Drive,
Suite 100
Norman, OK 73072
T: 405.418.2288
F: 405.418.2289
srb@srbok.com

CERTIFICATE OF AUTHORIZATION NO. 3949 EXPIRES JUNE 30, 2023

I:\cadd\cadd\p\p\Section\City\ACAD-COVER\EPD-Cover VSC 04/08/13

SUMMARY OF PUBLIC QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
1	8" PVC SANITARY SEWER	LF	167.00	
2	TRENCHING (5'-8')	LF	167.00	
3	CONNECT TO EXIST. SS MANHOLE	EA	1.00	
4	4' I.D. SS MANHOLE (0'-6')	EA	1.00	
5	EXTRA DEPTH 4' I.D. SS MANHOLE	VF	1.85	
6	4" RISER PIPE	VF	8.00	
7	8" x 4" WYE W/ 1/8° BEND	EA	1.00	
8	LEAKAGE TEST	LSUM	1.00	
9	DEFLECTION TEST	LSUM	1.00	

PUBLIC WASTEWATER MAIN PLANS
TO SERVE
WEST SIDE OF 12th STREET ADDITION
2400 S. 12TH STREET
(I.E. A PART OF THE NW/4, SEC. 4, T6N, R7W, I.M., AN ADDITION TO
CHICKASHA, GRADY COUNTY, OKLAHOMA)



SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SANITARY SEWER LAYOUT SHEET
3	SANITARY SEWER PLAN & PROFILE SHEET
4-8	SANITARY SEWER STANDARD DETAILS

ONE CALL UTILITY LOCATION NUMBER

840-5032
1-800-522-6543

This number is to be used for information on the location of all underground utilities. Contact this number and other numbers specified in the plans prior to any excavation.



ENGINEERING
SURVEYING
PLANNING

OKLAHOMA CITY
100 N.E. 5th Street
Oklahoma City,
Oklahoma 73104
T: 405.840.7094
F: 405.840.9116
www.srbok.com

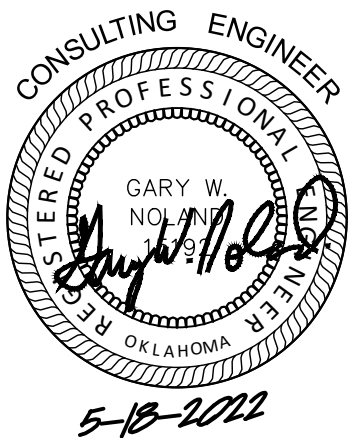
NORMAN
2500 McGee Drive,
Suite 100
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F: 405.418.2289
srb@srbook.com

CERTIFICATE OF AUTHORIZATION NO. 3949 EXPIRES JUNE 30, 2023

PREPARED BY:

GARY W. NOLAND
(OK P.E. 15192) Date: 5-18-22

REGISTERED PROFESSIONAL ENGINEER
DATE: 10/31/2022



WEST SIDE OF 12th STREET ADDITION

DEPARTMENT OF UTILITIES
ENGINEERING PRIVATE
DEVELOPMENT DIVISION

Checked by: _____ Date: _____
Checked by: _____ Date: _____
Checked by: _____ Date: _____

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

APPROVED:

City Engineer: _____ Date: _____

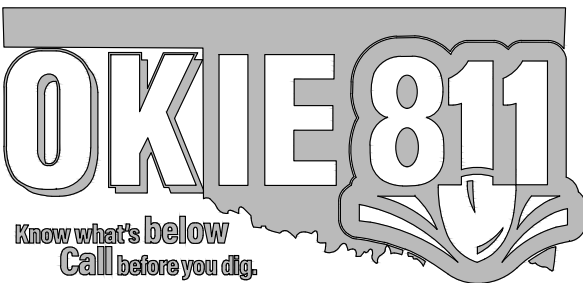
PRIMARY
HORIZONTAL / VERTICAL CONTROL

HORIZONTAL DATUM: OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011) MONUMENT: CP 100 DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP N: 617748.496 E: 1982095.111 Z: 1163.110 MONUMENT: CP 101 DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP N: 617252.438 E: 1982206.305 Z: 1160.101 VERTICAL DATUM: OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011) NAVD 88; GEOID 128 MONUMENT: CP 10000 DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP 10' WEST OF DIP SIGN E SIDE S. 13TH N: 616384.939 E: 1983704.859 Z: 1144.395

BM #1
CUT "X" ON CONCRETE RAMP
TO CROSSWALK
ELEV=1152.74

BM #2
CUT "X" ON CONCRETE RAMP
TO CROSSWALK
ELEV=1146.10

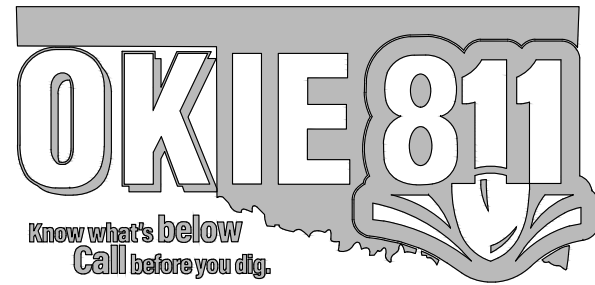
BM #3
CUT "X" ON TOP OF HEADWALL
ON EAST SIDE OF S. 12TH ST.
ELEV=1135.47



Z:\E 116741 Rhoads Property for Elliott Cousins\Private Site Development\116741-PL AN.dwg Wood0096 5/19/2022

SURVEY LEGEND

AC - AIR CONDITIONER	EM - ELECTRIC MANHOLE	GM - GAS MARKER	MM - MISC. MARKER	SCV - SPRINKLER CONTROL VALVE	Tree - TREE	WM - WATER MANHOLE
AD - AREA DRAIN OR CATCH BASIN	EMK - ELECTRIC MARKER	GP - GUARD POST	PI - PIER	SS - SANITARY SEWER LIFT STATION	TV - TV MARKER	SWM - SQUARE WATER METER
AB - ALPHA BOX	ET - ELECTRIC UTILITY RISER	GT - GREASE TRAP	PB - PULLBOX	ST - SIGN	TM - TR=XX.XX"	WS - WATER SHUTOFF (SPICOT)
AS - AUTO SPRINKLER	EU - ELECTRIC UTILITY TRANSFORMER	GV - GAS VALVE	PM - PARKING METER	STW - SANITARY SEWER MANHOLE	TVM - TV MANHOLE	WV - WATER VALVE
AV - AIR VENT	FD - FRENCH DRAIN	HC - HC SIGN	PP - POWER POLE	STN - SEPTIC TANK	TV - TV	WV - WATER WELL
PM - PROP. MON.	HY - FIRE HYDRANT	HC - HC PARKING	PP - POWER POLE WITH SERVICE	STN - STORM SEWER MANHOLE	TV - TV	YL - YARD LIGHT
B - BUSH	FP - FLAG POLE	IN - INLET	QC - QUARTER CORNER	STB - TRAFFIC CONTROL BOX	TV - TV	WM - WATER METER
CO - CLEAN OUT	FP - FIRE VALVE	IN - INLET	QC - QUARTER CORNER NORTH-SOUTH	STB - TELEPHONE MANHOLE	TV - TV	WM - WATER METER
DS - DOWN SPOUT	GA - GAS ANCHOR	MA - MAIL BOX	RC - REFERENCE POINT	STB - TELEPHONE PEDESTAL	TV - TV	WM - WATER METER
EM - ELECTRIC METER	GM - GAS METER	MW - MONITORING WELL	SC - SECTION CORNER	STB - TELEPHONE PEDESTAL	TV - TV	WM - WATER METER
F/O - UNDERGROUND FIBER OPTIC	G - UNDERGROUND GAS	STS - UNDERGROUND STORM SEWER	SS - UNDERGROUND SANITARY SEWER	SS - UNDERGROUND SANITARY SEWER	SS - UNDERGROUND SANITARY SEWER	SS - UNDERGROUND SANITARY SEWER
U/T - UNDERGROUND TELEVISION	U/E - UNDERGROUND ELECTRIC	W - UNDERGROUND WATER	C/W - UNDERGROUND CHILLED WATER	C/W - UNDERGROUND CHILLED WATER	C/W - UNDERGROUND CHILLED WATER	C/W - UNDERGROUND CHILLED WATER
TOE OF BANK	TOP OF BANK	CHAINLINK FENCE	STOCKADE FENCE	STOCKADE FENCE	STOCKADE FENCE	STOCKADE FENCE
	O/PL - OVERHEAD PIPE LINE	O/TEL - OVERHEAD TELEPHONE	O/TV - OVERHEAD TELEVISION	O/TV - OVERHEAD TELEVISION	O/TV - OVERHEAD TELEVISION	O/TV - OVERHEAD TELEVISION



BM #1
CUT "X" ON CONCRETE RAMP
TO CROSSWALK
ELEV=1152.74

BM #2
CUT "X" ON CONCRETE RAMP
TO CROSSWALK
ELEV=1146.10

BM #3
CUT "X" ON TOP OF HEADWALL
ON EAST SIDE OF S. 12TH ST.
ELEV=1135.47

PRIMARY HORIZONTAL / VERTICAL CONTROL

HORIZONTAL DATUM:

OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011)

MONUMENT: CP 100

DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP

N: 617748.496

E: 1982095.111

Z: 1163.110

MONUMENT: CP 101

DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP

N: 617252.438

E: 1982206.305

Z: 1160.101

VERTICAL DATUM:

OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011)

NAVD 88; GEOID 128

MONUMENT: CP 10000

DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP 10' WEST OF DIP SIGN E SIDE S. 13TH

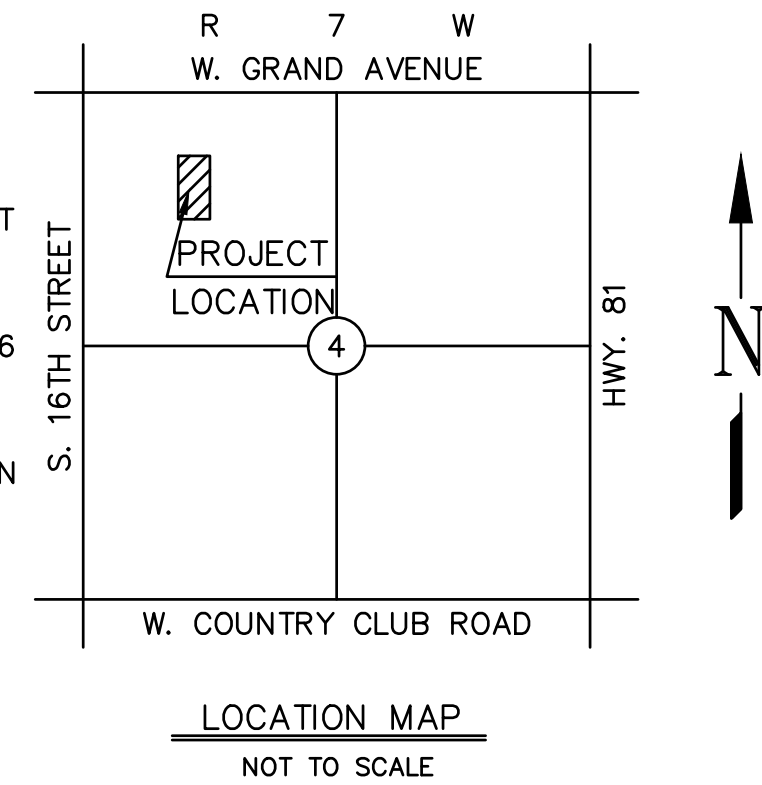
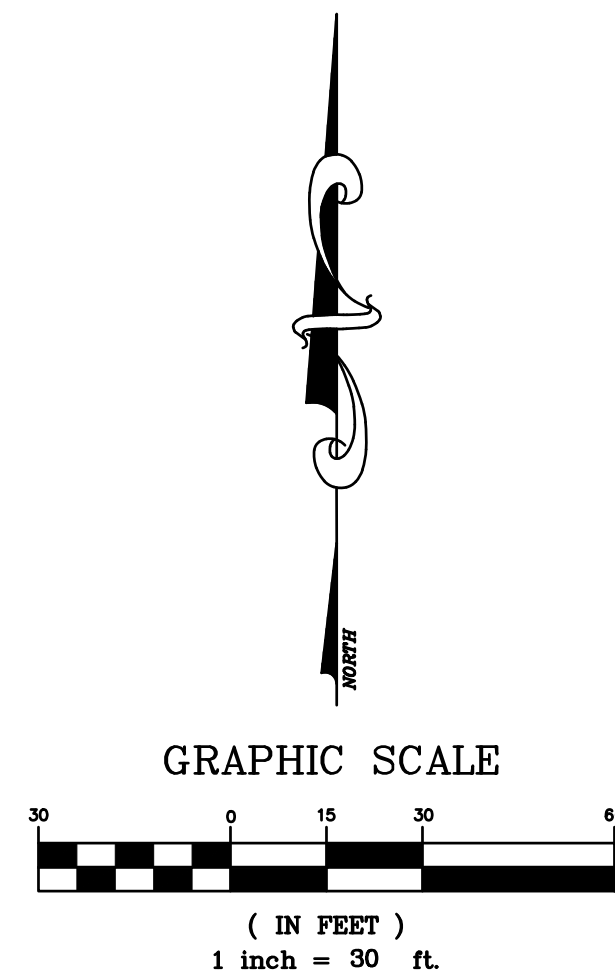
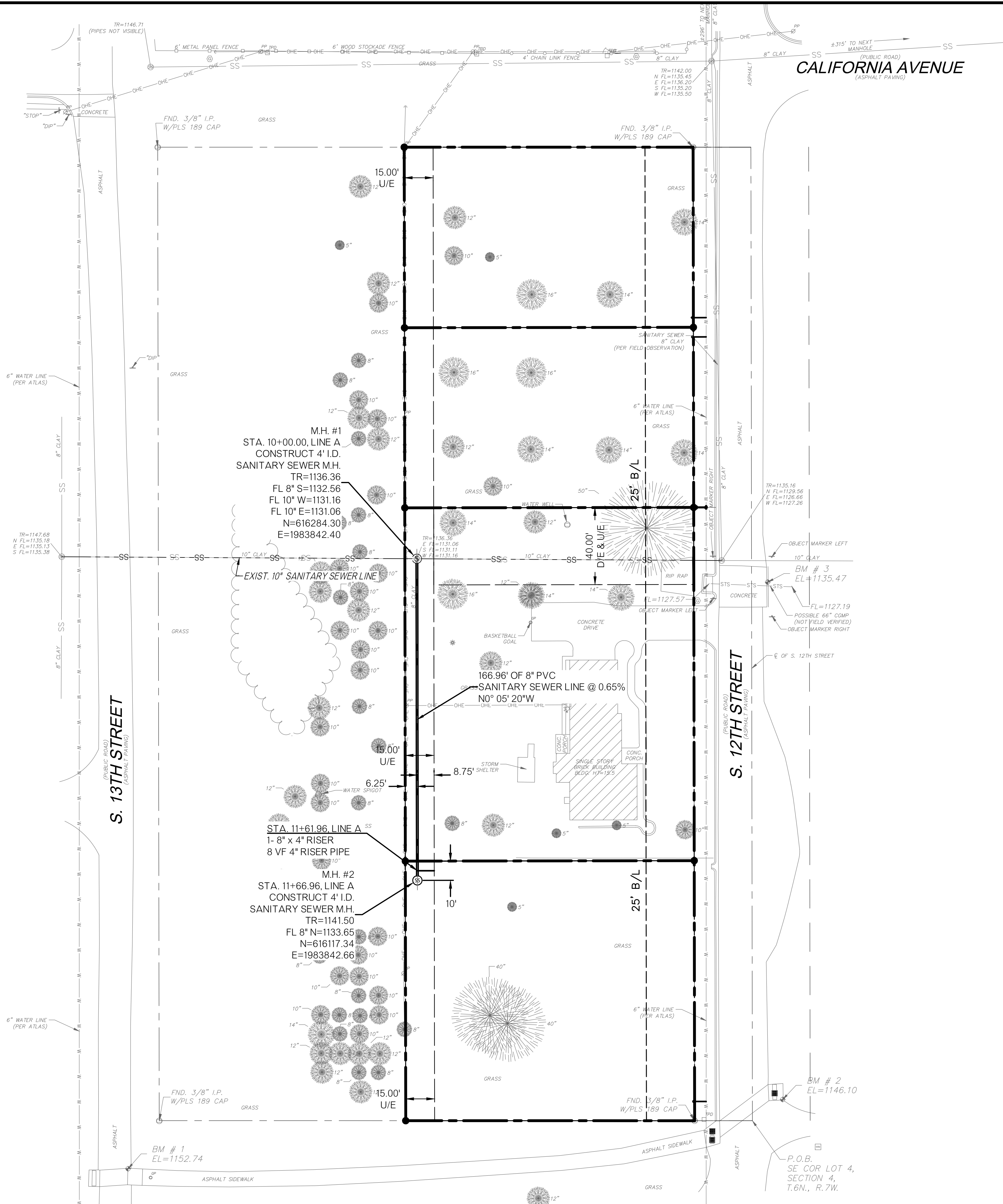
N: 616384.939

E: 1983704.859

Z: 1144.395

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.



WEST SIDE OF 12TH STREET ADDITION
2400 S. 12TH STREET CHICKASHA, OK 73018
SANITARY SEWER LAYOUT SHEET

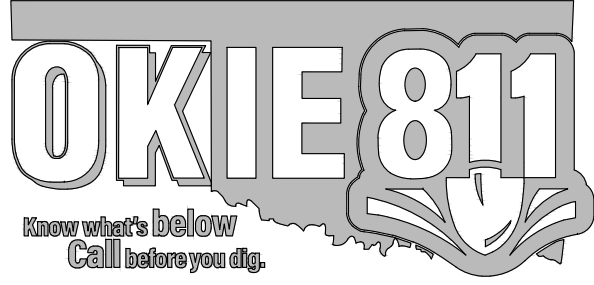
SCALE:
HOR. 1"=30'

SHEET
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NO.	DATE	DESCRIPTION	BY
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PROJ. 116741
DATE: 5-18-22
DRAWN BY: BAW
DESIGNED BY: GWN
CHECKED BY:

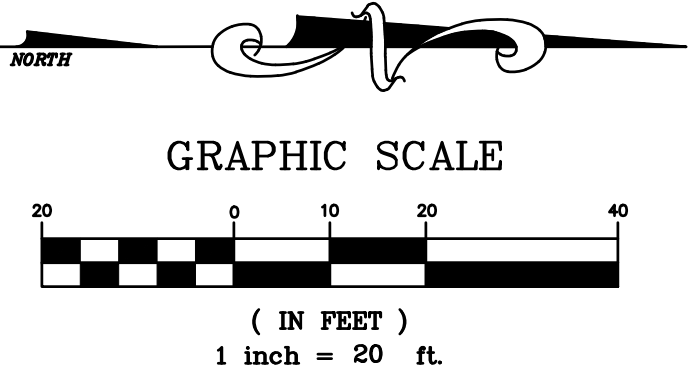
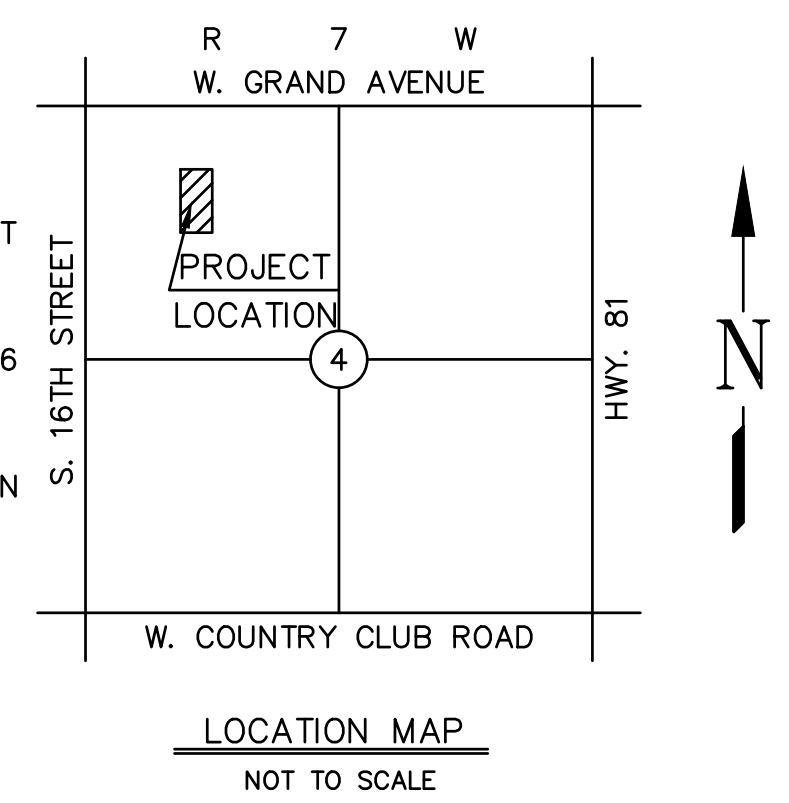
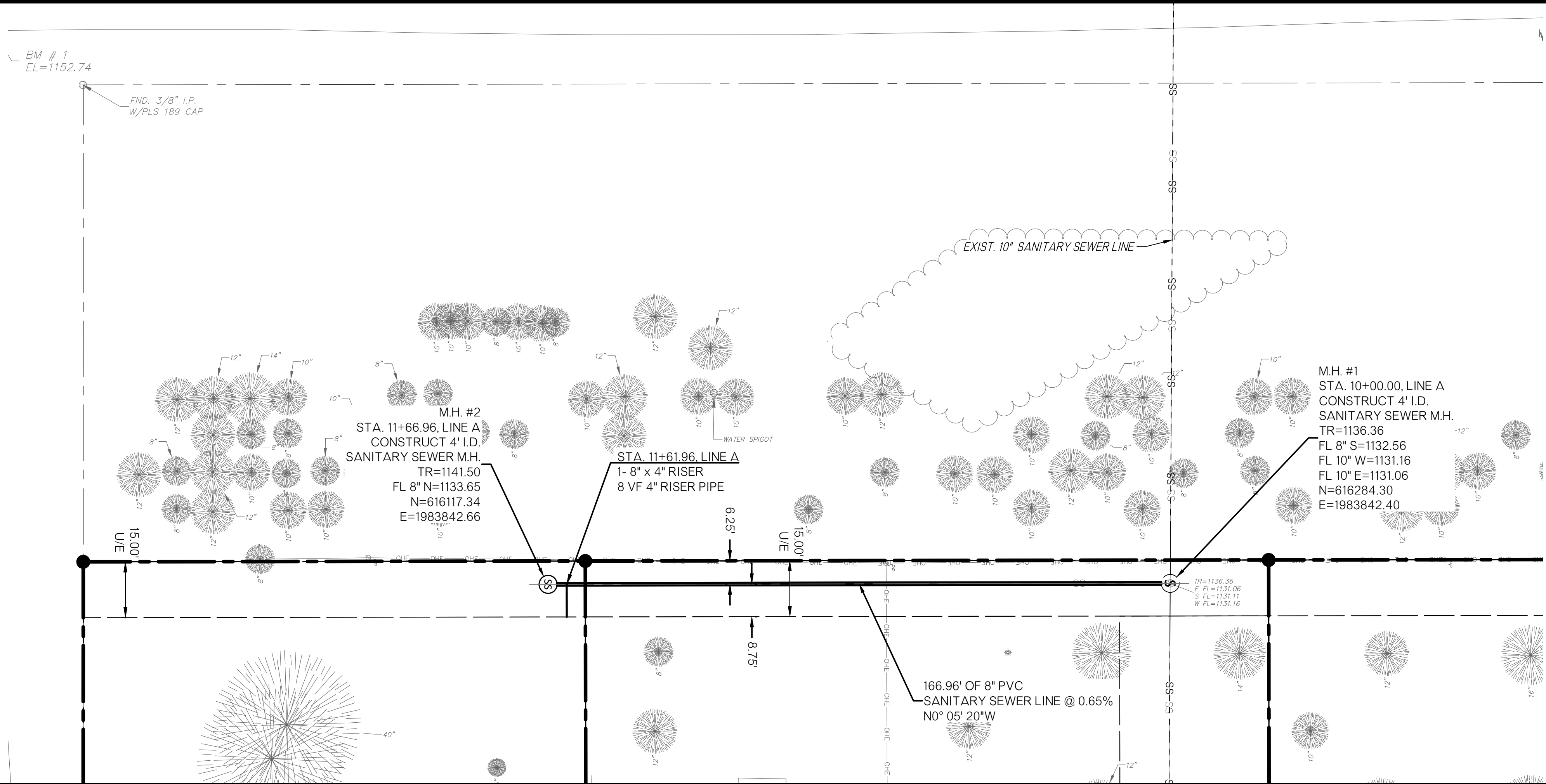
ENGINEERING
SURVEYING
PLANNING
SRB
ROBERT S. RICHARDS
B.S. SURVEYING
C.E. 1984
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C.E. 2019
C.E. 2020
C.E. 2021
C.E. 2022



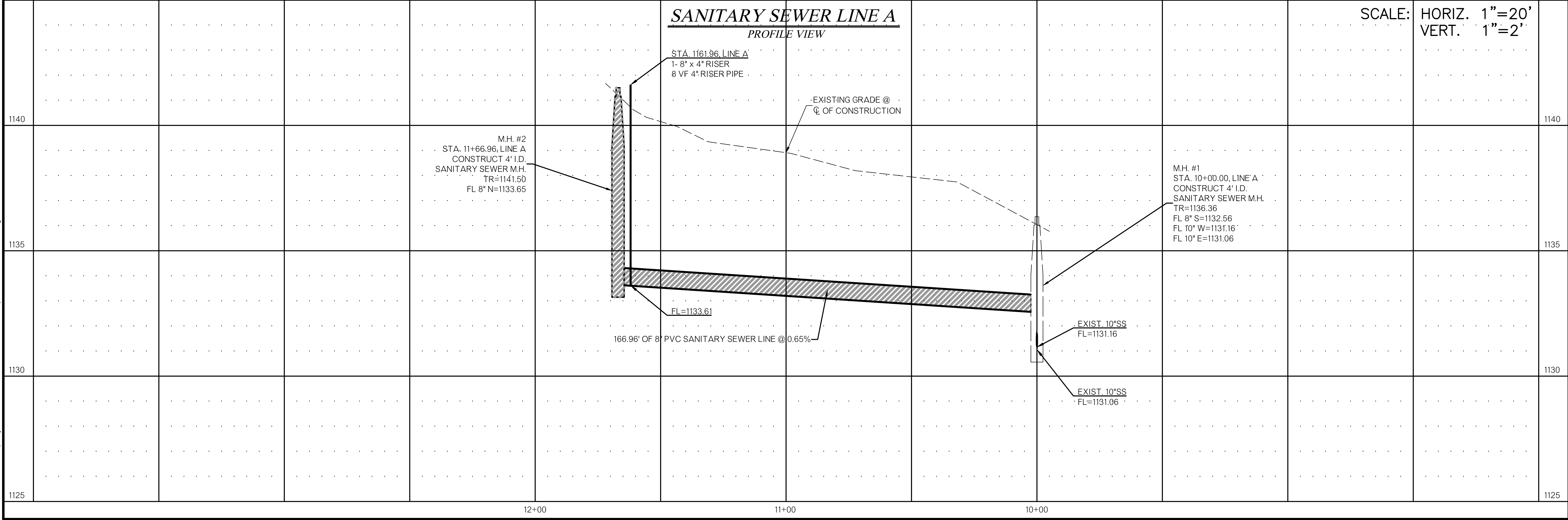
- BM #1**
CUT "X" ON CONCRETE RAMP
TO CROSSWALK
ELEV=1152.74
- BM #2**
CUT "X" ON CONCRETE RAMP
TO CROSSWALK
ELEV=1146.10
- BM #3**
CUT "X" ON TOP OF HEADWALL
ON EAST SIDE OF S. 12TH ST.
ELEV=1135.47

PRIMARY
HORIZONTAL / VERTICAL CONTROL

HORIZONTAL DATUM:
OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011)
MONUMENT: CP 100
DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP
N: 617748.496
E: 1982095.111
Z: 1163.110
MONUMENT: CP 101
DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP
N: 617252.438
E: 1982206.305
Z: 1160.101
VERTICAL DATUM:
OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011)
NAVD 88: GEOID 128
MONUMENT: CP 10000
DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP 10' WEST OF DIP SIGN E SIDE S. 13TH
N: 616384.939
E: 1983704.859
Z: 1144.395



SANITARY SEWER LINE A
PROFILE VIEW



SCALE: HORIZ. 1"=20'
VERT. 1"=2'

WEST SIDE OF 12TH STREET ADDITION
2400 S. 12TH STREET CHICKASHA, OK 73018
SANITARY SEWER PLAN & PROFILE SHEET

SCALE:
HOR. 1"=20'
VERT. 1"=2'

SHEET
3

NO.	DATE	DESCRIPTION	BY
116741	5-18-22	PROJ.	BAW
		DRAWN BY:	GWN
		DESIGNED BY:	GWN
		CHECKED BY:	

ENGINEERING SURVEYING PLANNING
SRB
CERTIFICATE OF AUTHORIZATION
NO. 1848, EXPIRES APRIL 30, 2023

LEGEND AND SANITARY SEWER - GENERAL REQUIREMENTS

LEGEND

●	Property Corner	⛽	Fuel Fill Point
△	Benchmark	⛽	Fuel Hydrant
▲	Monument	◇	Fuel Pressure Suppressor
✱	Aerial Control	▣	Fuel Line Marker
✱	Turning Point	▶	Fuel Shut-off Emergency Valve
⋮	Points on Section	○	Fuel Manhole
▣	Section Corner	○	Natural Gas Manhole
□	1/4 Section Corner	⊙	Gas Yard Light
⋮	GIS Control Point	⊕	Tree
△	CL Intersection	⊙	Cluster of Trees
⊙	Reference Point	⊙	Shrub
⊙	GPS Target Point	⊙	Hedge
⊙	Existing Sanitary Sewer	▣	Cable TV Pedestal
⊙	Sanitary Sewer Clean-out	▣	Business Sign
⊕	Septic Tank	●	Business Sign
▣	1-Grated Inlet	▣	Mailbox
▣	2-Grated Inlet	▣	Parking Meter
⊙	Existing Storm Sewer Manhole	○	Unknown Manhole
⊙	Floor Drain	○	Cap
⊙	Roof Drain	○	Monitoring Well
⊙	Drain Clean-out	⊙	Test Hole (Soil Boring)
⊕	Yard Drain	⊙	Flag Pole
○	Elevated Tank	⛽	Traffic Signal Pole
⛽	Fire Stand Pipe	▣	Traffic Control Box
⊙	Water Manhole	⊙	Traffic Detector Loop
⊙	Water Valve	⊙	Proposed Sanitary Sewer Manhole
⊙	Water Meter / Water Meter Box	⊙	Proposed Storm Sewer Manhole
⛽	Fire Hydrant	⊙	Fiber Optic Manhole
★	Sprinkler Head		
⊙	Water Well	→	CL of River
⊙	Water Faucet	→	CL of Creek
⊙	Air Release Valve	→	CL of Stream
⊙	Yard Hydrant	⋮	Ground
⊙	Sprinkler Valve Box	⋮	CL R.R.
⊙	Blow-off Valve	⋮	Top of Bank
⊕	Ground Storage Tank	⋮	Edge of Timber
⋮	Cathodic Protection System	⋮	Awning
⋮	Steam Manhole	⋮	Sod
⋮	Steam Valve	⋮	Gate
⋮	Power Pole with Riser	⋮	Fence
⋮	Electric Yard Light	⋮	Security Fence
⋮	Power Pole	⋮	Top of Curb
⋮	H-Pole	⋮	Header
⋮	Tower	⋮	Slot Drain
⋮	Transformer Pole	⋮	Retaining Wall
⋮	Light Pole	⋮	Guard Rail
⋮	Electric Pedestal (Riser)	⋮	Planter
⋮	Electric Transformer	⋮	Wall
⋮	Guy Pole	⋮	Row of Trees
⋮	Down Guy	⋮	Flow Direction
⋮	Electric Meter	⋮	Existing Sanitary Sewer
⋮	Electric Manhole	⋮	Existing Storm Sewer
⋮	Traffic Pullbox	⋮	Existing UG Petroleum Pipe
⋮	Runway Light	⋮	Existing UG Telephone Line
⋮	Landscape Light	⋮	Existing UG Gas Line
⋮	Ground Rod	⋮	Existing Electric Line
⋮	Telephone Pole	⋮	Existing Water Main
⋮	Telephone Pedestal	⋮	Cox Cable
⋮	Communications Manhole	⋮	Abandoned Sewer Lines
⋮	Telephone Underground Warning	⋮	CL of Survey of Construction
⋮	Gas Valve	⋮	CL of Street, Driveway, & Alley Pavement
⋮	Gas Vent & / or Marker	⋮	Property Lines
⋮	Gas Warning Sign	⋮	Easement Lines
⋮	Gas Pressure Regulator	⋮	Proposed Construction
⋮	Propane Tank		

GENERAL CONSTRUCTION NOTES

- All construction shall be in accordance with The City of Seminole Standard Specifications for Construction of Public Improvements.
- All work not classified as a contract pay item shall be considered as an incidental and not paid for directly.
- All excavation under existing and future pavement shall be backfilled with sand.
- All waterlines exposed during construction shall be backfilled with sand.
- Pipe leakage tests shall be performed by the contractor in accordance with The City of Seminole Sewer requirements. Leakage shall not exceed 50 gallons per inch of normal pipe per mile per day for any section of the system.
- Deflection tests shall be performed on all flexible pipe. The test shall be conducted after the final backfill has been in place for at least thirty (30) days. No pipe shall exceed a deflection of more than five (5%) percent. If the deflection test is to be run using a rigid ball and mandrel, it shall have a diameter equal to ninety-five (95%) percent of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.
- Polyvinyl chloride (PVC) pipes shall conform to ASTM D-3034, ASTM F-679, and ASTM F-789: and ASTM F-89-49 for profile wall pipe. Regardless of size, open profile wall pipe will be allowed only on sections of pipe where there are no apparent service connections.
- Special sanitary sewer pipe shall be required to satisfy minimum horizontal and vertical clearance requirements from waterlines, wells and petroleum storage tanks, as established by the Oklahoma State Department of Environmental Quality (ODEQ).
- Special sanitary sewer pipe shall be either PVC or Ductile Iron Pipe (DIP). Special PVC pipe shall conform to ASTM D-2241 and SDR 32.5 for sizes four (4") inches to thirty-six (36") inches, or AWWA C-900 and AWWA C-905; with a minimum DR rating of eighteen (18) for pipe sizes four (4") inches to (12") inches and a minimum DR rating of 32.5 for pipe sizes greater than twelve (12") inches. DIP pipes shall meet the requirements specified below.
 - EXTERIOR COATING -- The exterior surfaces of ductile iron pipe, specifications and fittings shall be coated with an asphaltic coating in accordance with ASTM A746, section 6.1; of AWWA E-151. The coating shall have a minimum thickness of one (1) mil.
 - INTERIOR COATING -- Interior surfaces of pipe and fittings shall be lined with forty (40) mills of virgin Polyethylene complying with ASTM D-1248 or Madison Polyethylene Lining, Corporate II tx-5 Minute Number 17115, manufactured by Madison Chemicals, Inc., Canada, or approved equal. The lining materials shall be compounded with a minimum of two (2%) percent carbon black to resist ultra violet rays.
 - THICKNESS -- Unless otherwise specified, Ductile Iron Pipe shall have the following table.

Pipe Nominal Thickness (inches)	DEPTH of COVER (feet)									
	≤10'		>10' or ≤15'		>15' or ≤20'		>20' or ≤25'		>50' or ≤30'	
	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151
3	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
4	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
6	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
8	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
10	0.26	350	0.26	350	0.26	350	0.26	350	0.26	350
12	0.28	350	0.28	350	0.28	350	0.28	350	0.28	350
18	0.31	250	0.31	250	0.31	250	0.31	250	0.34	300
24	0.33	200	0.33	200	0.33	300	0.38	200	0.38	300
30	0.34	150	0.34	150	0.34	250	0.42	150	0.45	300
36	0.38	150	0.38	150	0.38	250	0.47	150	0.50	300
42	0.41	150	0.41	150	0.41	250	0.52	150	0.63	350
48	0.46	150	0.46	150	0.46	300	0.64	150	0.70	350
54	0.51	150	0.51	150	0.51	300	0.72	150	0.79	350
60	0.54	150	0.54	150	0.54	300	0.76	150	0.83	350
64	0.56	150	0.56	150	0.56	300	0.80	150	0.87	350

MANHOLE TESTING

- GENERAL -- When called for on the plans or specified, manholes shall be tested, before acceptance, by either performing exfiltration or vacuum test. The Engineer shall determine which test shall be performed.
- EXFILTRATION TEST -- All incoming and outgoing lines (including services) shall be plugged and the manhole filled with water up to the bottom of the manhole ring. If the water loss exceeds the maximum allowable as shown, the manhole shall be considered to have failed the test. the contractor shall drain, perform the necessary repairs as directed by the Engineer, and then reset the manhole until it passes, all at no additional cost to the City.
- VACUUM TESTING -- All incoming and outgoing sewer and service lines shall be plugged, the plugs restrained and the vacuum tester head placed on the manhole ring and sealed. A vacuum of ten (10") inches Hg (Mercury) shall then be drawn on the manhole and the time measured for the vacuum to drop to nine (9") inches Hg. The time measured shall be not less than that shown on the following table.

Manhole Depth (feet)	Maximum Allowable Water Loss
≤ 8	One (1") inch over Five (5) minutes
≥ 8	One - Eighth (1/8") inch per vertical foot of depth over five (5) minutes

Manhole Internal Diameter (feet)	Time Measured (seconds)
4	60
5	60
6	60
7	70

MANHOLE NOTES

- MANHOLE -- PIPE CONNECTION AT INVERTS -- Flexible gaskets seals shall be required where pipe enters the wall of all manholes. Where possible, the opening for each connecting sewer pipe shall be circular and match the diameter of the pipe. For manholes built over existing lines or for special conditions, horseshoe shaped openings shall be accepted. Flexible gaskets shall be A-Lok, or approved equal. The method and material used for grouting any remaining angular space shall be approved by the Engineer prior to construction.
- FINISHING MANHOLE TO GRADE --The manhole ring and cover shall be adjusted to grade with concrete rings or courses of brick masonry.
- OUTSIDE WATERPROOFING -- When called for on the plans or specified, waterproofing shell be required on the outside of the manholes. The waterproofing material shall be TNE MEC Series 66 III of approved equal. The coating shall have a minimum thickness of four (4) mills. Coating shall be environmentally non-hazardous. Spray applications shall be shop applied and field applications are limited to brush or roller. Acceptance of material used for waterproofing shall be on the basis of Type "D" Certifications, provided that all applicable requirements are met.
- VERTICAL DROP -- The vertical drop of concrete pours shall not exceed ten (10') feet. The Contractor may select to use either a construction joint as shown on the standard detail or use a tremmie.
- CONCRETE PLACEMENT -- Monolithic pours of the manhole bottom and walls shall be permitted provided that all concrete (bottom and walls) is vibrated according to the specifications for the construction of sanitary sewers and appurtenances.
- COMPRESSION STRENGTH -- All concrete for manhole bases, invert s and wall shall have a minimum compression strength of 3500 psi.
- FORMING -- Forms shall be provided for the shaping and finishing of the manhole bottoms. a minimum of twenty-four (24) hours shall elapse prior to pouring the manhole walls.
- CONCRETE FINISH -- Mortar for finishing and sealing shall be class "C". Any honeycombing of concrete less than two (2") inches deep in manhole walls may be repaired using Class "D" mortar.

A. CAST-IN-PLACE MANHOLES

- DIMENSIONS -- The manholes shall be constructed pursuant to appropriate Standard Details for Precast-In-Place Non-Reinforced Concrete Manholes.
- PROTECTIVE COATING -- Protective coating shall not be required unless otherwise called for on the plans or as directed by the Engineer.

B. PRECAST MANHOLES

- APPLICABLE STANDARD -- Pre-cast manholes shall be constructed in accordance with ASTM C-478.
- DIMENSIONS -- The manholes shall be constructed pursuant to the appropriate Standard Details for precast reinforced concrete manholes, and/or as specified in ASTM C-478. the minimum wall thickness shall be as specified in the following table and not less than one-twelfth (1/12) of the internal diameter of the largest cone or riser section of five (5") inches, whichever is greater.

Manhole Internal Diameter (feet)	Minimum Wall Thickness (inches)
4	5
5	5
6	6
7	7
- MANHOLE STEPS AND LADDERS -- Steps and ladders shall not be constructed unless otherwise directed by the Engineer. If called for, they shall conform with Section 13 of ASTM C-478.
- HANDLING -- All lifting holes shall be repaired with a mixture of cement and sand grout firmly packed.
- PROTECTIVE COATING -- All inside surfaces (walls, bottoms and etc.) of precast concrete manholes shall be shop coated with a total dry film thickness of not less than eight (8) mils of TNE MEC Series 69 Hi-Build Epoxoline II, or approved equal.
- FIELD TESTING -- When directed by the Engineer, a set of three (3) cylinders, three (3") inches in diameter shall be cut from randomly selected manholes.
- ACCEPTANCE -- Acceptance of manhole structure shall be based on the conformance and performance of materials required in ASTM C-478, and the Engineer's inspection of the installed product.

WEST SIDE OF 12th STREET ADDITION
2400 S. 12TH STREET CHICKASHA, OK 73018
SANITARY SEWER DETAIL SHEET

SCALE:
N.T.S.

SHEET
4

ENGINEERING
SURVEYING
PLANNING

CERTIFICATE OF AUTHORIZATION
NO. 18458 EXPIRES JUNE 30, 2027

SMITH ROBERTS BUILDERS

NO.

DATE

DESCRIPTION

BY

PROJ. 116741

DATE: 5-18-22

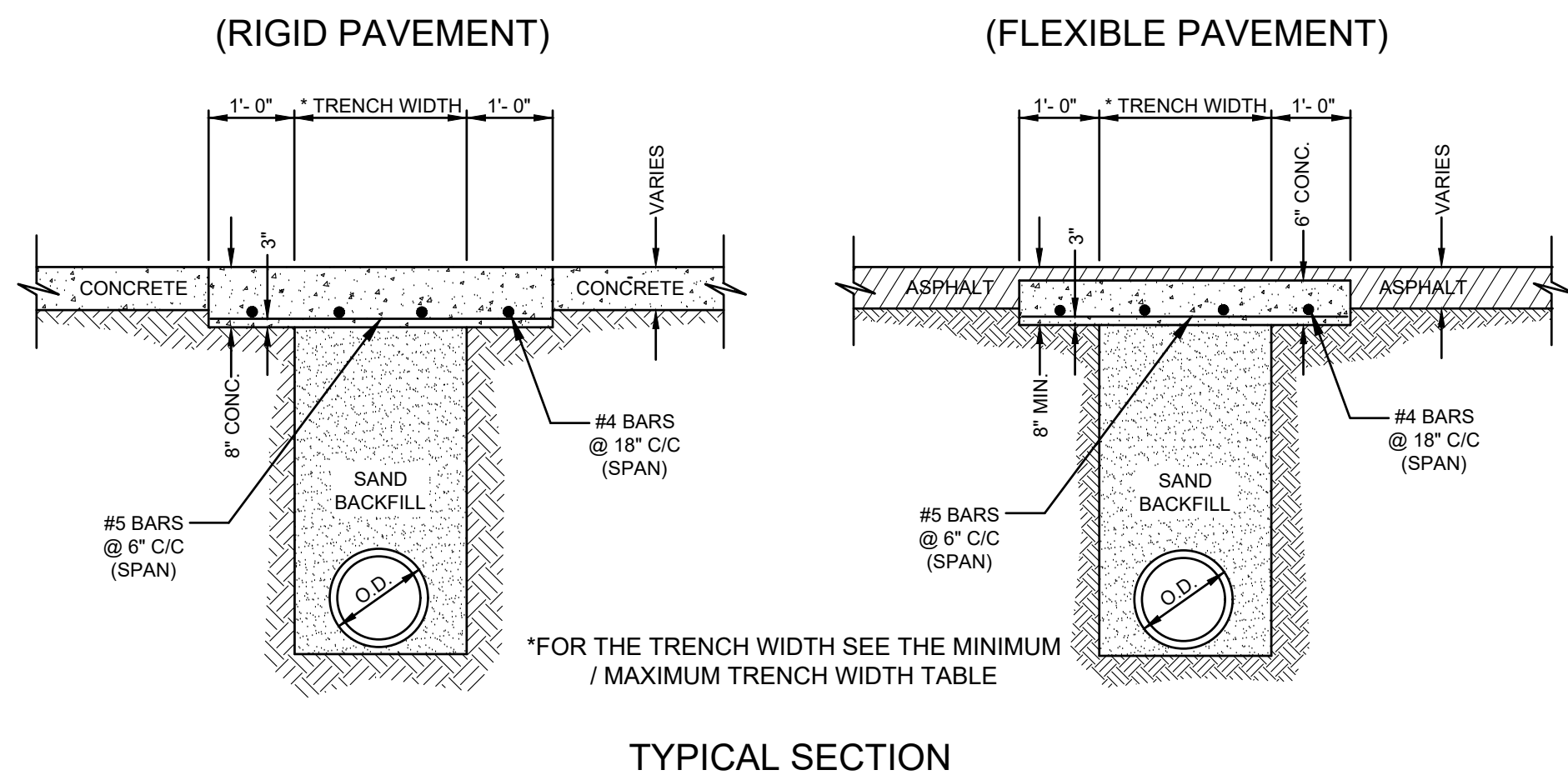
DRAWN BY: BAW

DESIGNED BY: GWN

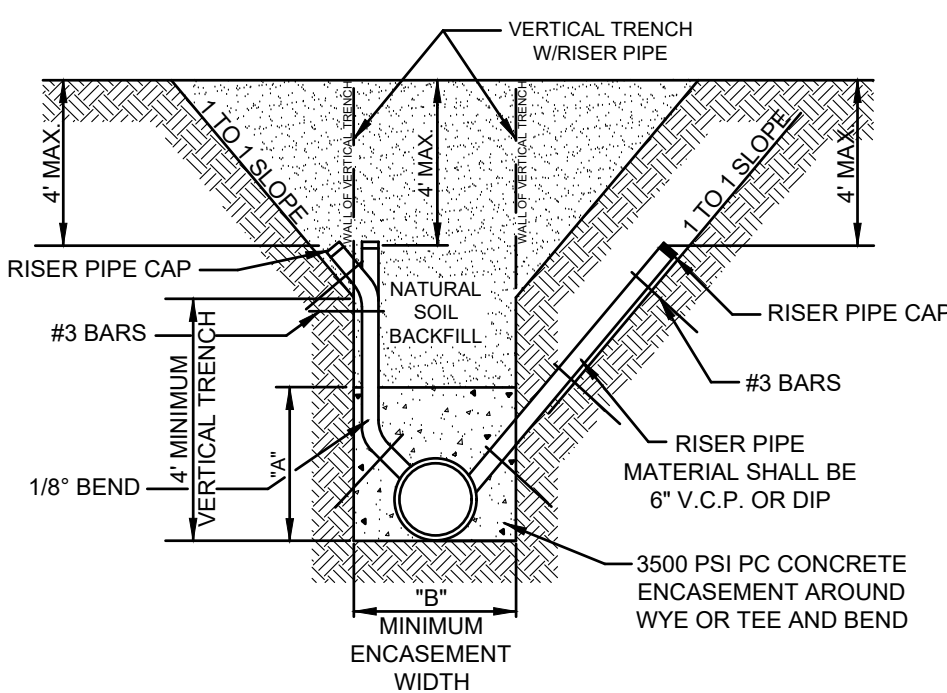
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SANITARY SEWER - MISCELLANEOUS DETAILS

PAVING CUT AND PERMANENT REPAIR



SERVICE CONNECTION INSTALLATION



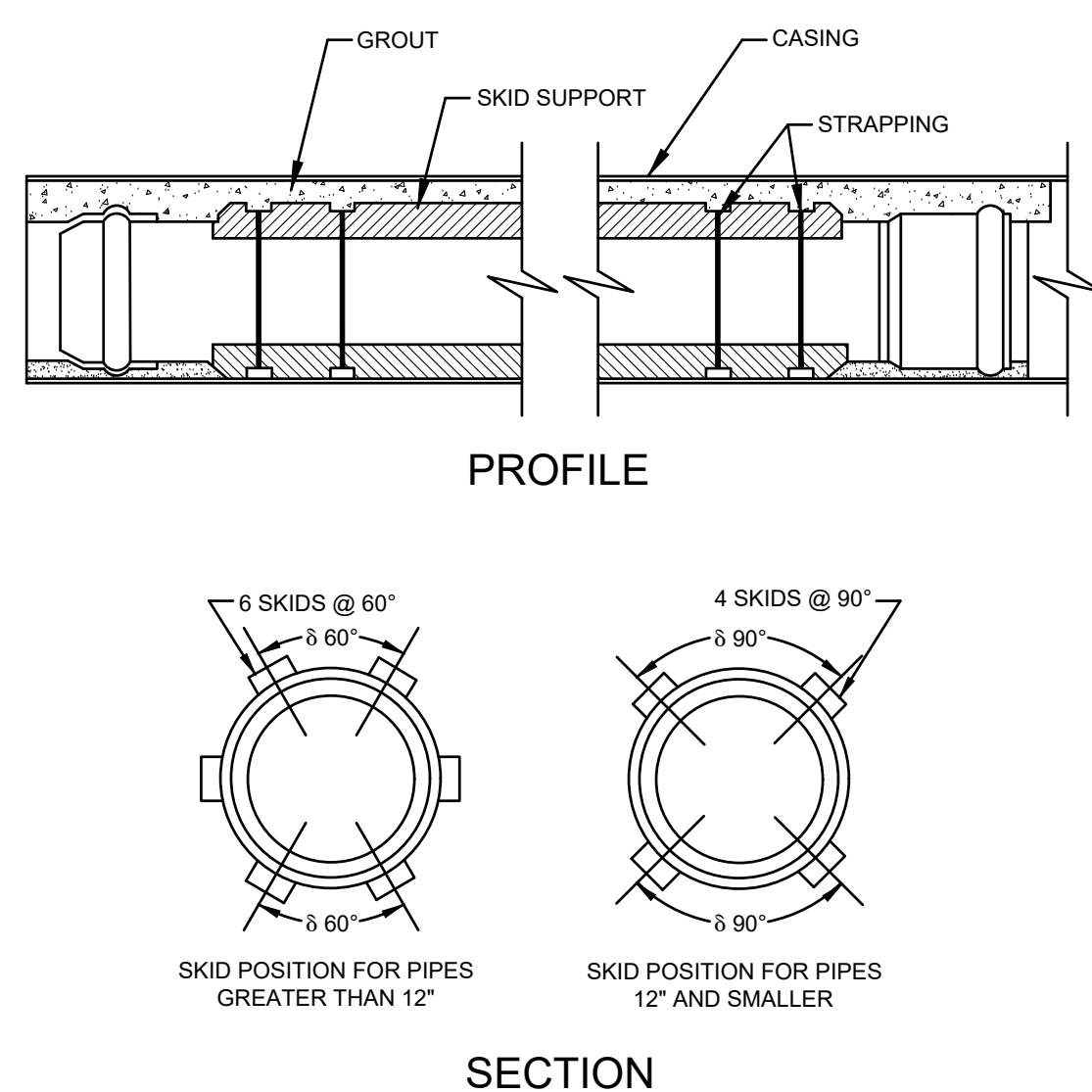
PIPE SIZE (inches)	"A" (feet)	"B" (feet)	LENGTH OF ENCASEMENT (feet)
8	1.5	2.2	2.0
10	2.0	2.2	2.0
12	2.0	2.2	2.0
15	2.5	2.6	2.0
18	3.0	3.0	2.5

ADD 1.0' "B" WHEN USING BRACING OR SHORING

CONNECTION TYPES

1. **EXTERNAL CONNECTIONS FOR NEW CONSTRUCTION WYE BRANCHES --**
For new construction there shall be installed wye branches of size and type shown on the plans with six (6") inch openings at locations shown on the plans or as described by the Engineer.
2. **EXTERNAL CONNECTION TO EXISTING MAIN --** Connections to existing main may be accomplished as follows:
 - a. **SADDLES --** Connections may be made by excavating the existing main and cutting a hole using approved equipment and installing a saddle. Sewer service connections constructed with saddles shall include straps, a one-eighth (1/8") degree bend, and a closure pipe. When existing main has been rehabilitated by trenchless method of construction, the saddle connection shall be made to the pipe/or liner.
 - b. **TEES --** Connections may be made by removing a section of existing pipe and installing a wye branch. Fittings and closure assembly shall be used to make the connection and shall be supplied in a normal diameter or six (6") inches. The external connection shall be considered complete when backfilling and surface restoration is complete. Service connections constructed with wye branches shall include a one-eighth (1/8") degree bend, elbow, and when required, a closure piece.
3. **RISER**
 - a. **INSTALLATION --** The pipe may be installed in one of three ways shown above.
 - b. **SIZE AND MATERIAL --** The riser pipe shall be six (6") inch PVC or DIP.
 - c. **CONCRETE ENCASEMENT --** Concrete encasement around riser shall meet the requirement established above.
4. **LOCATOR TAPE --** A locator tape, green in color stating "CAUTION -- SANITARY SEWER RISER BURIED BELOW" shall be attached to the sanitary sewer riser and extended to a minimum of two (2') feet above the ground, the tape shall be three (3") inch wide DuraTac as manufactured by THOR Enterprises, Inc., of Sun Prairie, Wisconsin or approved equal.

BORING STANDARD DETAIL



NOTES:

1. **WOOD SKID SUPPORTS** – Wood skid supports, from bell to spigot, shall be used and fastened securely to pipe with steel strapping, cables or clamps. Use of petroleum products shall not be allowed as a lubricant to ease installation. When wood skids are used they shall be pressure treated with creosote pentachlorophenol, or salt type preservative in accordance with APWA C-2. Cut surfaces shall be given two (2) heavy brush coats of the same preservative.
2. **PLUGGED PIPE ENDS** – both ends of the casing pipe shall be plugged with a grout or concrete having a minimum compressive strength of twenty-five hundred (2500 psi) pounds per square inch or grouted masonry. Each plug shall be a minimum length of eighteen (18) inches, the grouting presser shall be in accordance with the pipe manufactures recommendations.
3. **FILLING ANNULAR SPACE** – The annular space between the Portland sewer pipe and the steel casing shall be filled with a flowable fill consisting of a sanitary cement grout having a minimum twenty-eight (28) day compressive strength of one-thousand (1,000 psi) pounds per square inch, the contractor shall install a vent pipe higher than the upper end of the pipe to ensure the annulus is completely filled with grout.
4. **CASING PIPE SIZE** – Steel casing pipe shall have the following suggested minimum diameters:

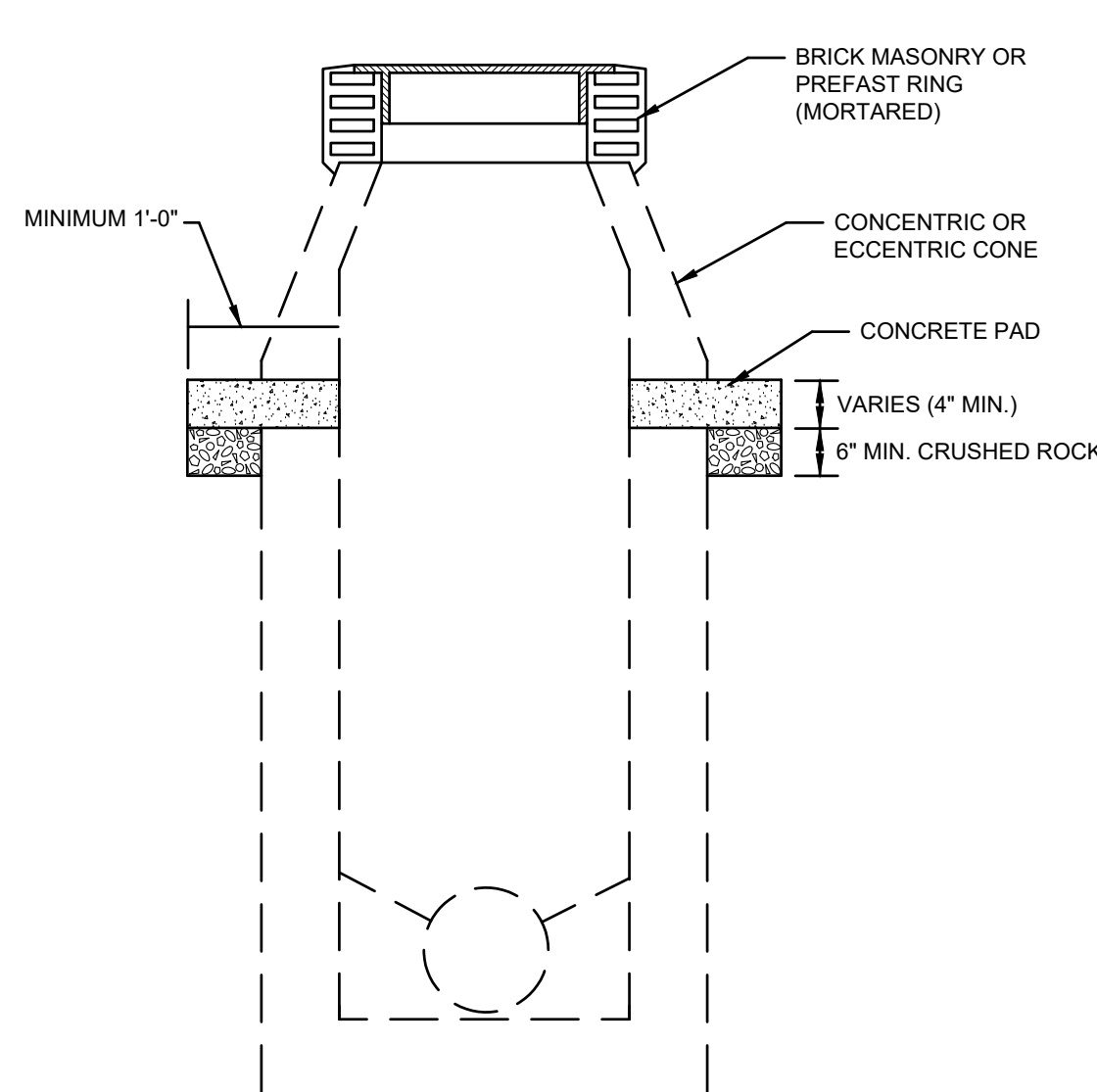
PIPE NOMINAL SIZE (inches)	SUGGESTED CASING PIPE INSIDE DIAMETER (inches)
4	8 to 10
6	10 to 12
8	14 to 16
10	16 to 18
12	18 to 20
15	20 to 22
18	24 to 26
24	31 to 33
27	33 to 36
30	36 to 42
36	42 to 48
42	54 to 60
48	60 to 66

5. CASING PIPE THICKNESS -- Steel casing pipe shall have the following minimum thickness(es), in inches, for the indicated maximum depth of cover(s), in feet:

OUTSIDE DIAMETER (inches)	UNDER HIGHWAY		UNDER RAILROAD	
	WALL THICKNESS (inches)	WALL THICKNESS (inches)	WALL THICKNESS (inches)	WALL THICKNESS (inches)
< 12 3/4	0.188	30	0.250	30
16	0.250	30	0.281	30
18	0.250	30	0.322	30
20	0.250	30	0.344	30
24	0.250	30	0.406	30
30	0.322	30	0.469	30
36	0.375	30	0.531	30
42	0.375	25	0.531	30
48	0.438	25	0.531	25
54	0.438	25	0.531	20
60	0.438	25	0.531	20
66	0.438	20	0.531	20

6. CASING MATERIAL -- Steel casing pipe shall conform with ASTM A-139, Standard Specification for Electric-Fusion (ARC)-Welded Steel Pipe (NPS4 and over). The steel material shall be new, smooth wall, carbon steel, Grade B, with a minimum tensile strength, and minimum thirty-five-thousand (35,000 psi) pounds per square inch yield strength.

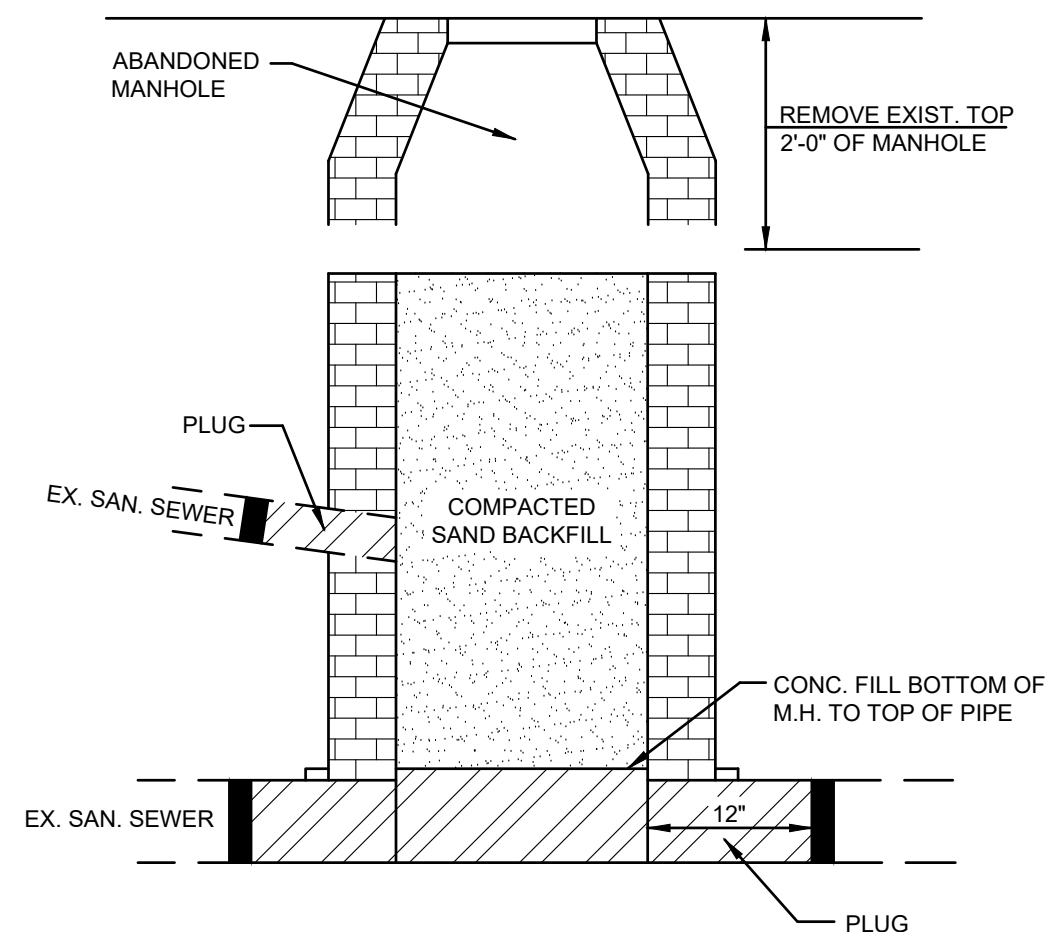
STANDARD DETAILS FOR REBUILDING MANHOLES



NOTES:

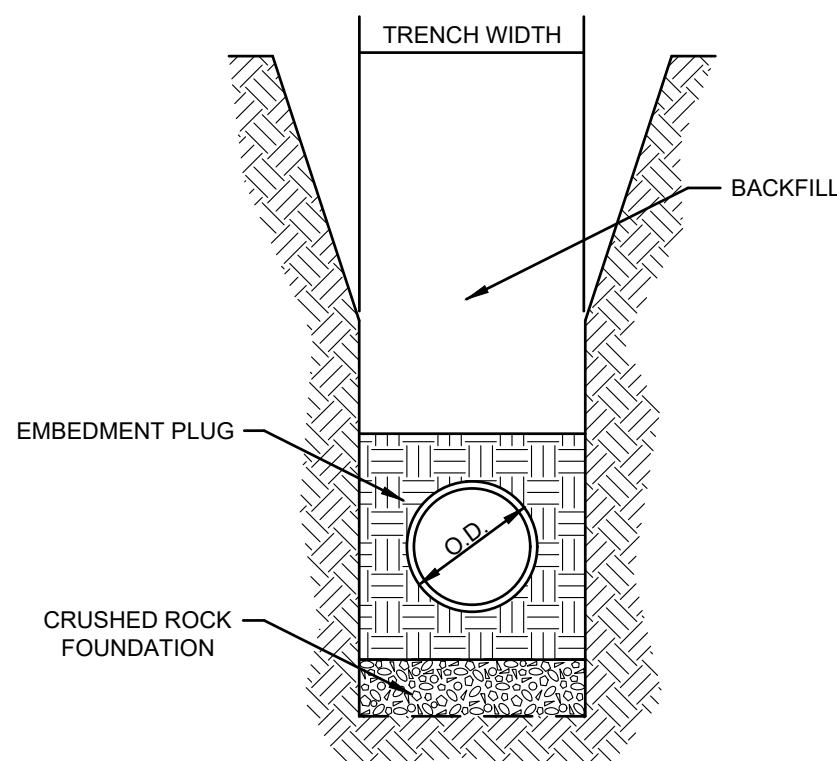
1. **CAST-IN-PLACE NON-REINFORCED CONCRETE AND BRICK MANHOLES** -- The existing cone and wall, if necessary, shall be removed to a level which will allow installation of new cone to the proper grade. The exposed cut-off surfaces of the existing manhole wall shall be cleaned by removing loose material and wetted, prior to construction of concrete pad. All loose backfill around the manhole wall shall be removed and replaced with compacted crushed rock. The new concrete pad shall be constructed, and a new cone shall be formed or placed to the proper grade using fifteen (1500 psi) pounds per square inch mortar.
2. **PRECAST REINFORCED CONCRETE MANHOLES** -- Precast sections shall be removed to a level where the new cone can be installed to the desired grade. Installation shall be in accordance with the appropriate Standard Detail for Precast Manhole cones. A new rubber gasket shall be used to seal each section.

STANDARD DETAILS FOR ABANDONING MANHOLES



NOTE: Salvaged materials, including ring and cover shall be delivered to the Line Maintenance Division of the Water and Wastewater Utilities Department at 621 N. Pennsylvania Avenue.

EMBEDMENT PLUG STANDARD DETAIL



NOTES:

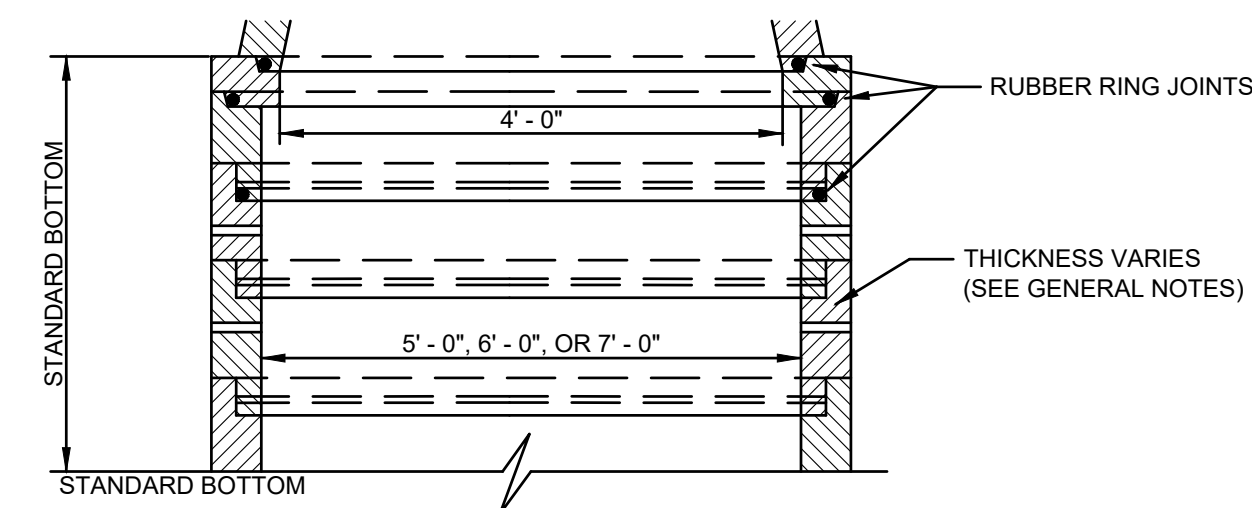
Two types of embedment plugs may be used, at the Contractors option, as follows:

1. **PLAY PLUGS** – the embedment and backfill material shall be select clay separated from excavated material and shall be approved by the Engineer prior to placement. This material shall be free of clods, clumps, debris, organic material and stones. All clay plug material shall be compacted to a minimum of ninety (90%) percent of Standard Proctor Density (ASTM D-698) at plus or minus three (3%) percent of Optimum Moisture Content.
2. **FLOWABLE FILL PLUGS** – Flowable fill plugs shall consist of a Portland Cement grout having a minimum twenty-eight (28) day compressive strength of five hundred (500 psi) pounds per square inch.

**ENGINEERING
SURVEYING
PLANNING**

SRB

CERTIFICATE OF AUTHORIZATION
NO. 3949 EXPIRES JUNE 30, 2023



A diagram of a tapered shaft. The total length is labeled D . The diameter at the left end is labeled C . The diameter at the right end is labeled B . The total height of the shaft is labeled A . The shaft is shaded with a stippled pattern.

WATER TIGHT SEAL

ENCASE DROP CONNECTION TO SPRINGLINE WITH 4000 PSI CONCRETE

LOCATION & SIZE OF ALL OPENINGS FOR DROP CONNECTIONS SHALL BE FURNISHED IN THE SHOP. OPENING WILL BE SCORED & MARKED.

SUPPORT STRAPS

WHERE APPLICABLE, PROVIDE INLET THROUGH MANHOLE WALL IN ACCORDANCE WITH THE STANDARD DETAIL FOR PIPE CONNECTIONS.

VARIES

6"

6"

D

6"

4000 PSI CONCRETE

A

A

6"

6"

SECTION A-A

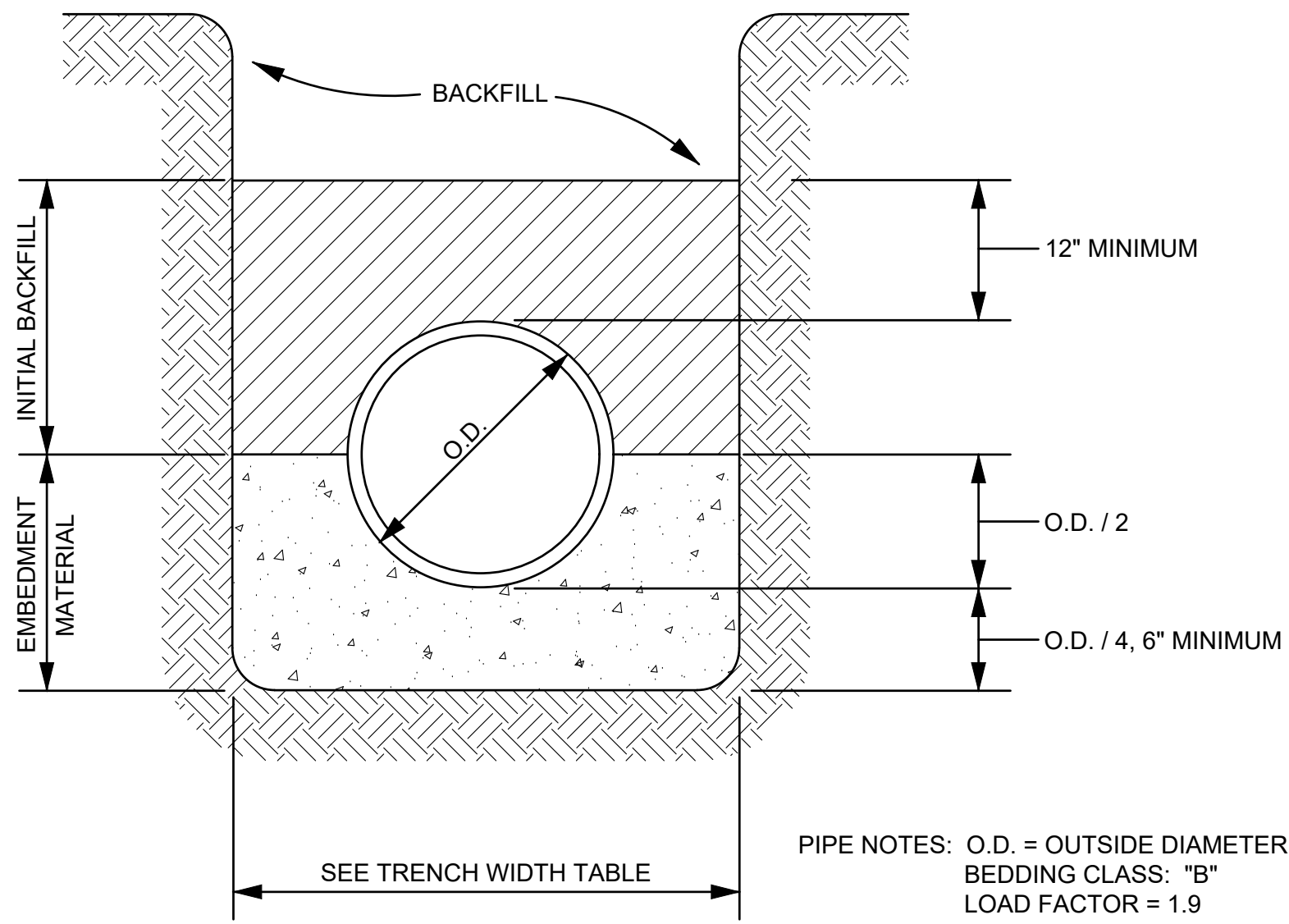
WEST SIDE OF 12th STREET ADDITION
2400 S. 12TH STREET CHICKASHA, OK 73018
SANITARY SEWER DETAIL SHEET

SCALE:
N.T.S.

SHEET
6

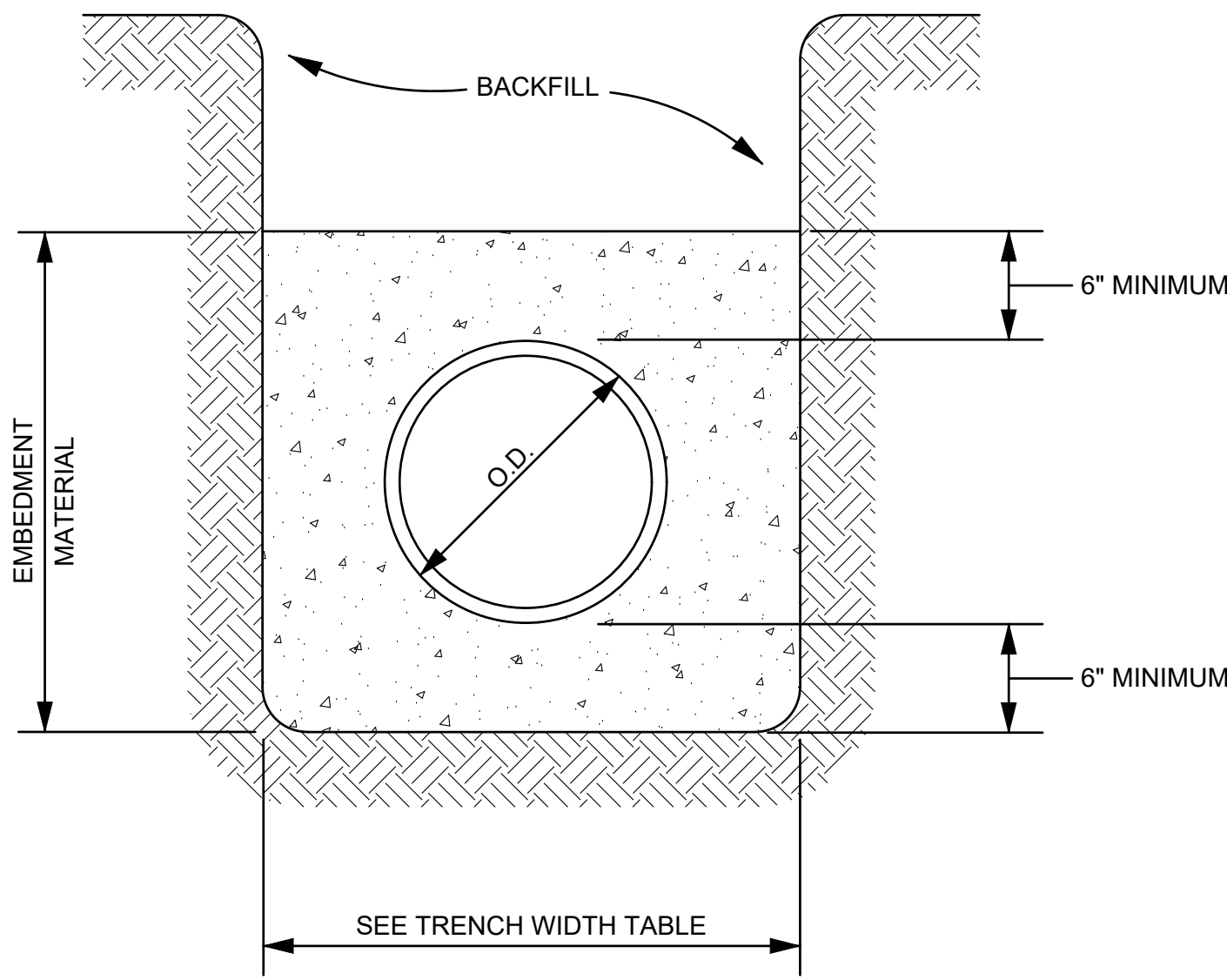
SANITARY SEWER PIPE - INSTALLATION DETAILS

RIDGED PIPE INSTALLATION (RCP, VCP)



PIPE NOTES: O.D. = OUTSIDE DIAMETER (IN.)
BEDDING CLASS: "B"
LOAD FACTOR = 1.9

FLEXIBLE PIPE INSTALLATION (DIP, HDPE, PVC, RFP)



EMBEDMENT MATERIAL

Embedment is that material to be placed from a minimum of six (6") inches below bottom of the pipe to the springline (half pipe diameter) or to a minimum of six (6") inches above top of pipe for rigid and flexible pipes, respectively. The remaining material to be placed over the embedment is considered backfill.

MATERIAL MATERIAL REQUIREMENTS

- GENERAL** -- Embedment material for all rigid and flexible pipes shall be crushed rock meeting the requirement of either ASTM D-2321, Class 1A, or ASTM C-33, Number 57 or 67 and gradations shown below:

Nominal Sieve Size	Percent Passing		
	ASTM D-2321 Class 1A	ASTM C-33	
		Number 57	Number 67
1 1/2 inch	100%	100%	.....
1 inch	ASTM D-2321	95 to 100%	100%
3/4 inch	.....	.....	90 to 100%
1/2 inch	.....	25 to 60%	.....
3/8 inch	.....	.....	20 to 55%
Number 4	≤10%	0 to 10%	0 to 10%
Number 8	.....	0 to 5%	0 to 5%
Number 200	≤5%	.....	.....

- COMPACTION REQUIREMENTS** -- All embedment material shall be placed in six (6") inch lifts to the following minimum percent of Standard Proctor Density as determined by ASTM D-698. "Tests for Moisture -- Density Relations of Soil -- Aggregate Mixtures", and ASTM D-2049, "Test for Related Density of Cohesionless Soils", respectively.

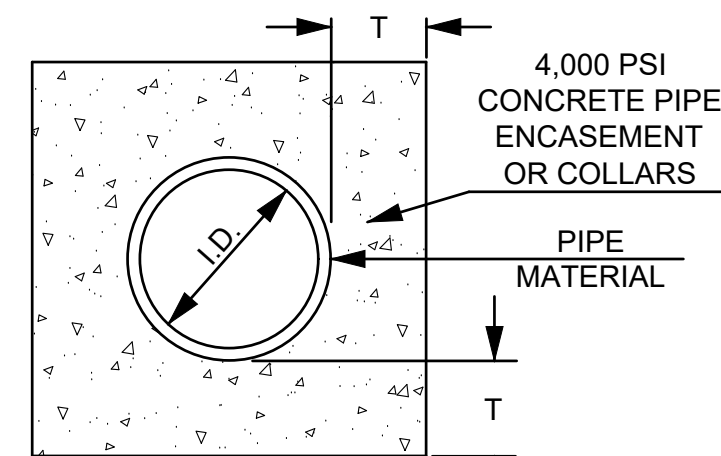
Compaction Test	Compaction Requirement
Standard Proctor Density	95%
Relative Density	75%

- COMPACTION METHODS** -- All embedment material shall be compacted in accordance with the methods described in Part "3" of "Backfilling."

VERTIFIED CLAY PIPE MINIMUM PIPE DESIGN ASTM C-700

Pipe Nominal Size (inches)	Minimum Three-Edge Bearing Strength (lb./ft)	Maximum Depth of Cover (feet)
4	2000	25
6	2000	25
8	2200	20
10	2400	18
12	2600	16
15	2900	15
18	3300	14
21	3850	14
24	4450	14
27	4700	13
30	5000	13
33	5500	13
36	6000	13
39	6550	13
42	7000	12

PIPE ENCASEMENT AND COLLARS



NOMINAL DIAMETER (INCHES)	T (INCHES)
≤18"	6"
>18" & ≤30"	8"
>30" & ≤42"	10"
≤42"	12"

NOTE: FOR COLLARS, THE CONCRETE ENCASEMENT SHALL BE PLACED TO A MINIMUM OF TWELVE (12") INCHES ON EITHER SIDE OF THE JOINT.

REINFORCED CONCRETE PIPE (RCP) MINIMUM PIPE DESIGN

- HIGHWAYS** -- Minimum pipe class for diameter twenty-four (24") inches to one-hundred-two (102") inches meeting the requirements of ASTM C-76 shall be as follows:

MAXIMUM DEPTH OF COVER (feet)	MINIMUM CLASS
10	III
10	III
10	III

For maximum depth of cover of thirty (30') feet, pipes ranging from twenty-four (24") inches to fifty-four (54") inches in diameter shall be designed and manufactured in accordance with ASTM C-655 and shall have the following minimum three-edge bearing strength for 0.01 crack (D 0.01) in pounds per lineal foot of inside diameter.

PIPE NOMINAL SIZE (in.)	D _{0.01} (lb./lineal ft. per ft. of inside diameter)
24	3200
27	3050
30	3050
33	3475
36	3475
42	3450
48	3300
54	3125

Pipes ranging in diameter from sixty (60") to one-hundred-two (102") inches in diameter shall be class V for a minimum depth of cover of thirty (30') feet when manufactured in accordance with ASTM C-76.

- RAILROADS** -- Minimum pipe class for E-80 Railroad live load pipe size twenty-four (24") inches to one-hundred-two (102") inches in diameter meeting the requirements of ASTM C-76. or ASTM C-655 shall be as follows:
 - MAXIMUM DEPTH OF COVER TEN (10') FEET -- Diameters twenty-four (24") inches to one-hundred-two (102") inches shall be Class VI.
 - MAXIMUM DEPTH OF COVER FIFTEEN (15') FEET -- diameters twenty-four (24") inches to forty-two (42") inches shall be Class V and forty-eight (48") inches to one-hundred-two (102") inches shall be Class VI.
 - MAXIMUM DEPTH OF COVER TWENTY (20') FEET -- Diameters twenty-four (24") inches to one-hundred-two inches shall be class V.
 - MAXIMUM DEPTH OF COVER TWENTY-FIVE (25') FEET -- Diameter twenty-four (24") inches shall have D 0.01 of thirty-one-hundred (3100 lb./l.f.) pound/lineal foot per foot of inside diameter. Diameters twenty-seven (27") inches to one-hundred-two (102") inches shall be Class V.

PIPE NOMINAL SIZE (in.)	D _{0.01} (lb./lineal ft. per ft. of inside diameter)
24	3300
27	3125
30	3150
33	3575
36	3575
42	3550
48	3400
54	3225
60	3100

Diameters sixty-six (66") inches to one-hundred-two (102") inches shall be Class V.

BACKFILLING

- DESCRIPTION** -- Backfill is that portion of the total backfill down to but not including the pipe embedment material. The back fill shall be only material approved by the Engineer consisting of loose earth, free of clods, stones, organic matter, debris or other objectionable material. All backfilling shall be done in such a manner as not to disturb or injure the pipe or structures over or against which it is being placed. Any pipe or structure injured or moved from its proper line or grade during backfilling operations shall be opened up and repaired then rebackfilled as herein specified.

The placing of backfill mater shall not begin until approved for so doing has been given by the Engineer, but backfilling about structures or portion of structures shall be done immediately when so ordered by the Engineer. The top surface of all slopes of all backfill shall be neatly graded off where selected topsoil, or sod or other material is removed and piled separately, such material shall be carefully replaced in a manner satisfactory to the Engineer. The top twelve inches of backfill shall be of as good quality as the original topsoil, which is removed.

- COMPACTING REQUIREMENTS** -- All backfill shall be placed and compacted in six (6") inch lifts for hand-tamped equipment and thirty (30") lifts of self-propelled or power driven equipment to the following minimum percent of Standard Proctor Density of Related Density as determined by ASTM D-698, "Test for Moisture-Density Relations of Soil and Soil Aggregate Mixtures", and ASTM D-2049 "Text for Relative Density of Cohesionless Soils", respectively. ASTM Test D-2049 shall be performed on cohesionless (Granular) soils.

Cohesive backfill material shall reach the indicated compaction levels at plus (+) or minus (-) three (3%) percent of optimum moisture content. The lift thickness shall be reduced, if necessary, to meet the compaction requirements specified herein.

General Location	Percent Compaction (%)	
	Standard Proctor Density (ASTM D-698)	Standard Proctor Density (ASTM D-698)
Under Traffic Area or Improved Existing Surfaces	95	75
Urban & Residential Areas	90	70
Underdeveloped & Other Areas	85	70

- COMPACTING METHODS** -- Compacting methods may vary depending on the materials or as approved by the Engineer.
 - COHESIVE MATERIALS** -- Compaction of cohesive materials may be obtained by the use of impact type equipment in confined areas; pneumatic tampers and engine driven rammers may also be used. In relatively narrow trenches, self propelled rammers may also be used. In wide trenches, sheepfoot rollers may be used.

ENGINEERING
SURVEYING
PLANNING

CERTIFICATE OF AUTHORIZATION
NO. 18457 EXPIRES JUNE 30, 2027

SRB

REGISTERED PROFESSIONAL SURVEYOR

PROJ. 116741
DATE: 5-18-22

DESIGNED BY: BAW
DRAWN BY: GWN
CHECKED BY: GWN

NO. DATE DESCRIPTION

REVISIONS

BY

WEST SIDE OF 12th STREET ADDITION
2400 S. 12TH STREET CHICKASHA, OK 73018
SANITARY SEWER DETAIL SHEET

SCALE:
N.T.S.

SHEET
7

SANITARY SEWER PIPE STANDARD DETAILS - FRAME (RING) & COVER (LID)

GENERAL NOTES

FRAME (RING) & COVER

1. **GENERAL** – Cast iron rings, tops, covers, grating and all cast iron fitting shall be sound, true to form and thickness, and neatly finished and shall fit together in a satisfactory manner. Castings shall be clean, uniform and whole without blow or sand holes, dorset, hard spots, shrinkage distortion or any other surface defects which would impair serviceability. Casting surfaces shall be smooth and well-cleaned by shot blasting or other approved cleaning method. Plugging or filling holes or other defects shall not be permitted. Parting fins and pouring gates shall be removed. Sharp edges resulting from fabrication shall be dulled by acceptable method to ensure safety in handling. Casting shall conform to the requirements of the Standard Specification for Grey Iron Fittings ASTM A-48, Class "30 B" for rings and "35 B" for covers and the approved Standard Details for Manhole Rings and Covers.

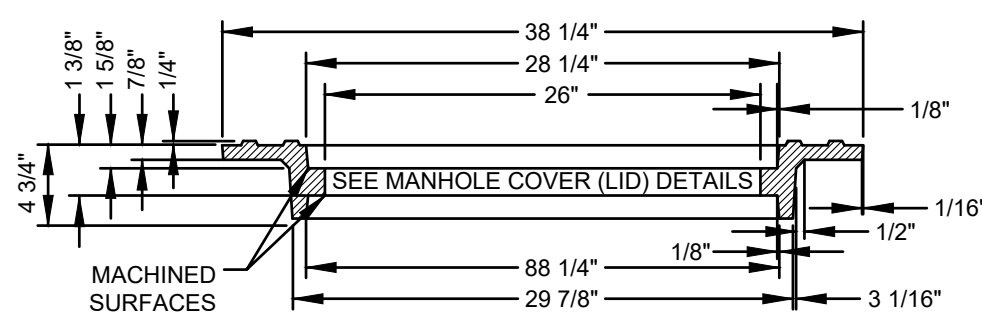
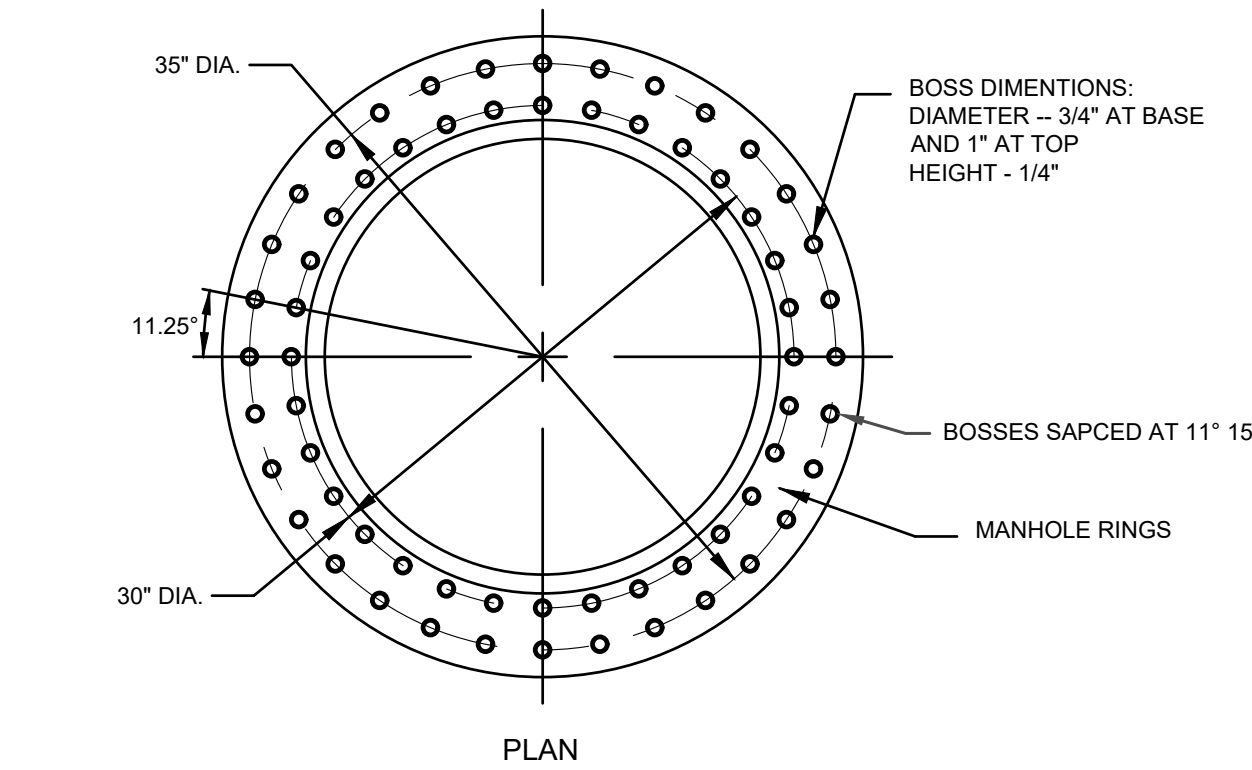
All rings and covers shall be accurately and carefully placed. All rings shall be beaded in a substantial layer of mortar, shall have a full bearing and shall be set to the exact grade. Unless other wise shown, top of covers shall be flush with or slightly above the surrounding surface. When each cover is placed in any position on the ring, the side play shall not exceed one-eighth (1/8") inch in any direction.

2. RINGS -- Rings may be manufactured in accordance with the Standard Detail for Reversible Manhole Rings.

3. COVERS --
 - A GENERAL -- Manhole covers may be manufactured in accordance with the appropriate Standard Details for Vented or Non-Vented Covers.
 - B COATING -- When called for on the plans or specified, the underside of all manhole covers shall be given one (1) coat of asphalt varnish after visual inspection and approval on the job site.
 - C APPLICATION -- All lids (covers) in street right-of-way shall be non-vented.
4. CASTING WEIGHTS -- The average weight of casting will be not less than 95% of weights shown below:

Ring Only	235 LBS
Cover Only	195 LBS
Totals	430 LBS

REVERSIBLE MANHOLE FRAME

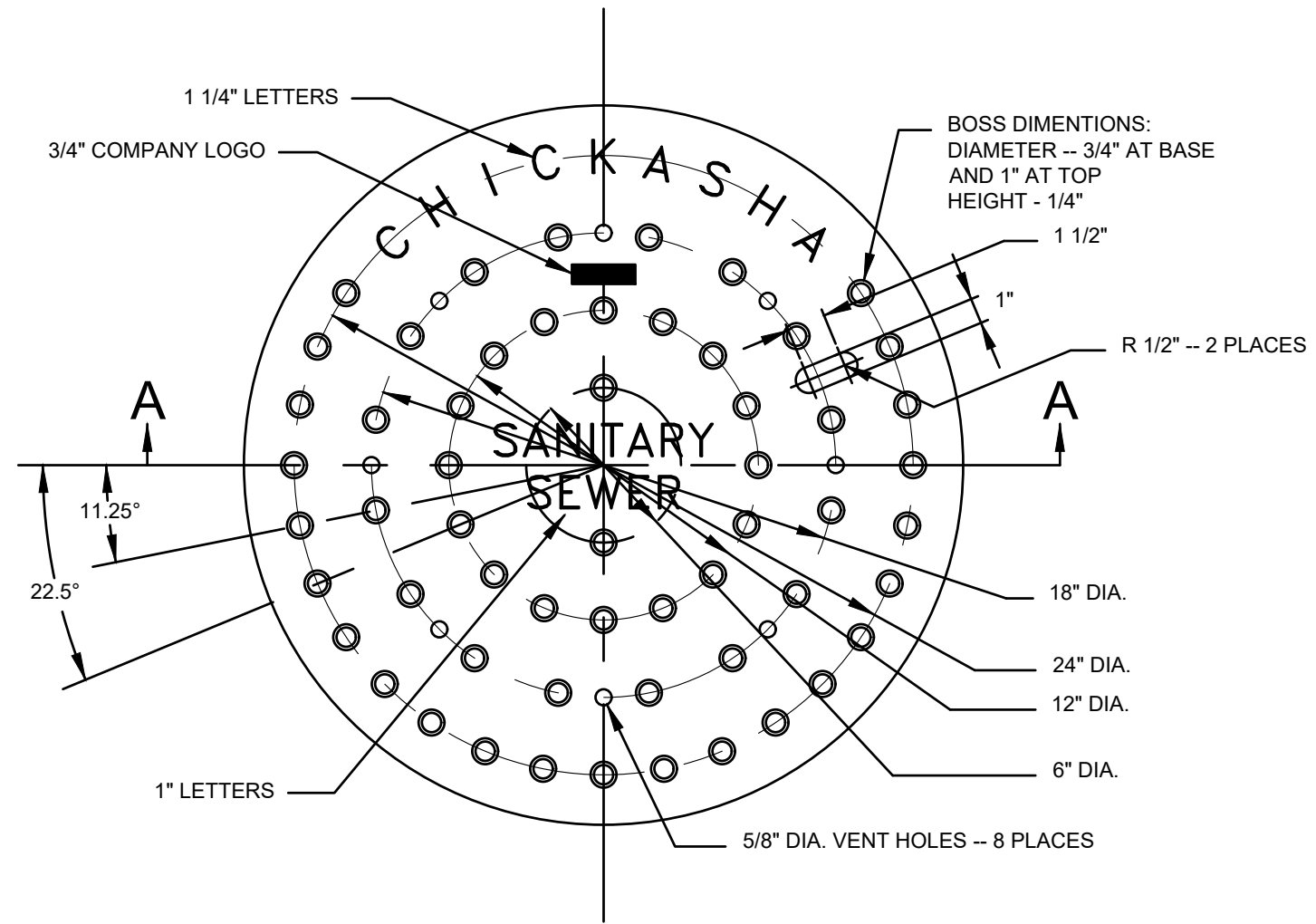


SECTION
AS SHOWN FOR OUT OF PAVING INSTALLATION
REVISED FOR IN PAVING INSTALLATION

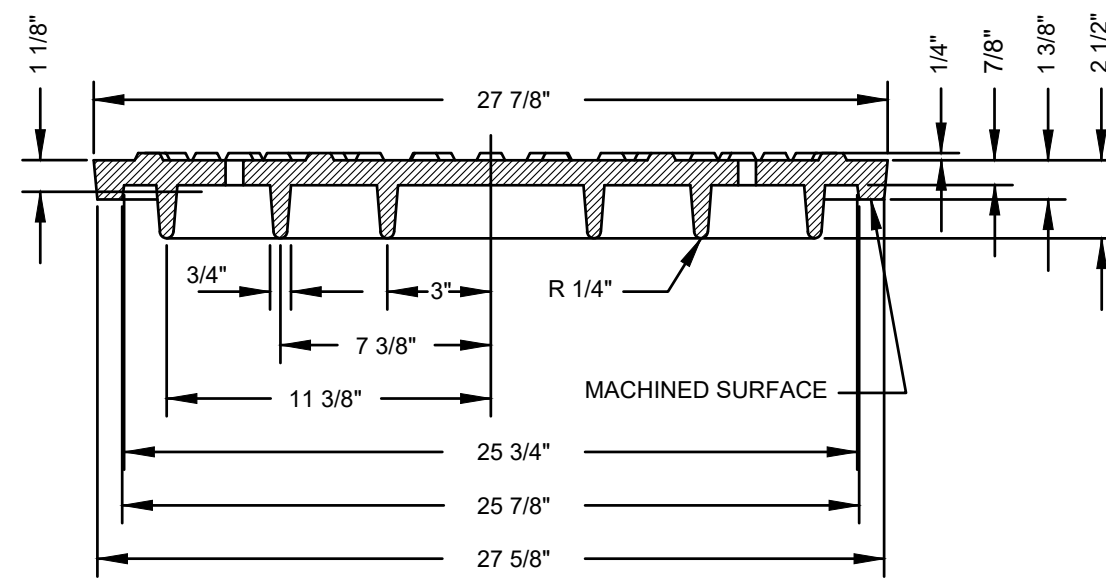
GENERAL NOTES

1. FINISH EXCESS IRON AND FINIS;
MACHINE SEATING SURFACES FLAT
TO NOTED DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS
OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN,
ALL DIMENTIONS ARE IN INCHES.

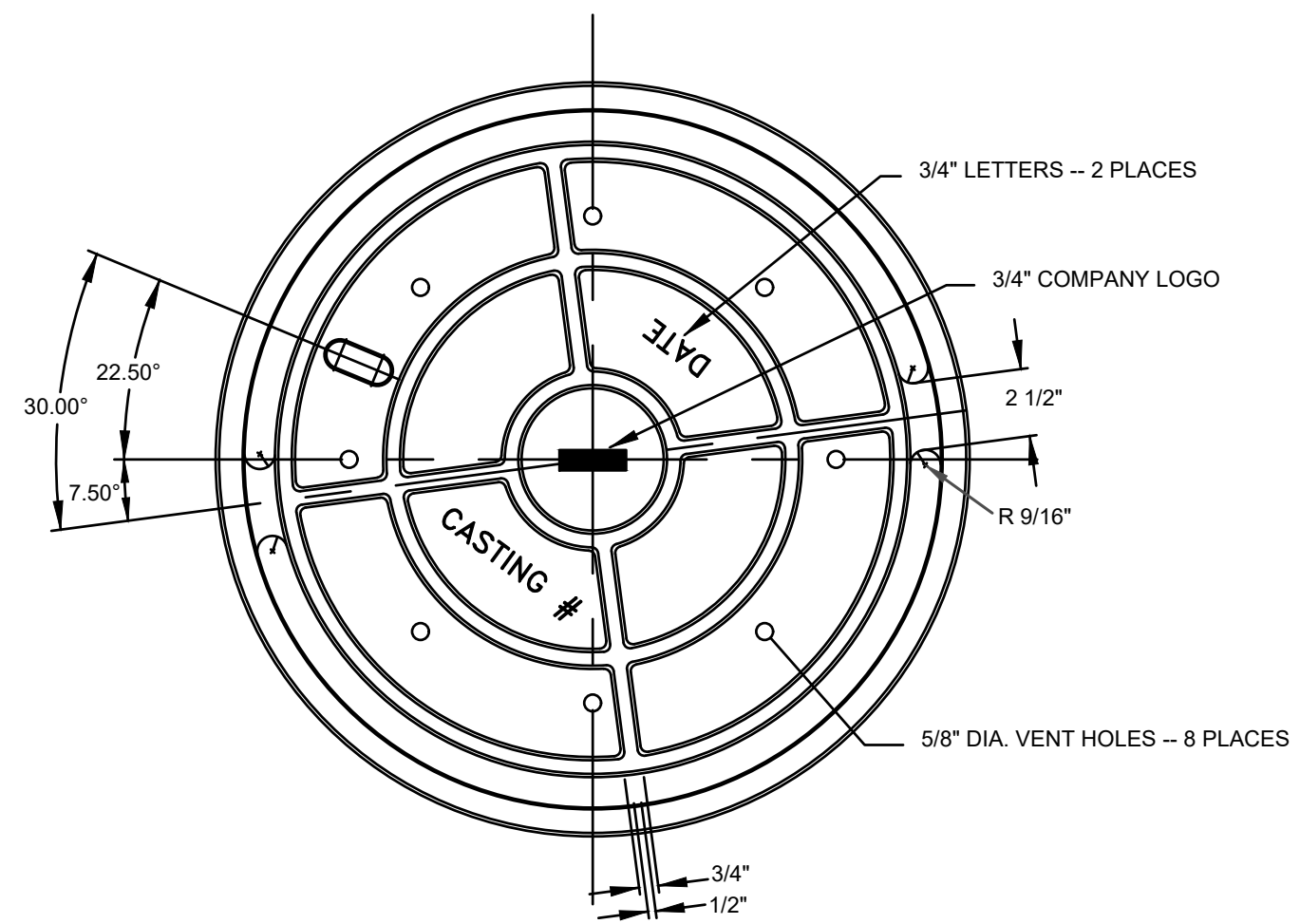
VENTED MANHOLE COVER (LID



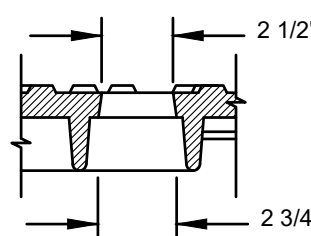
PLAN OF TOUR



SECTION A-7

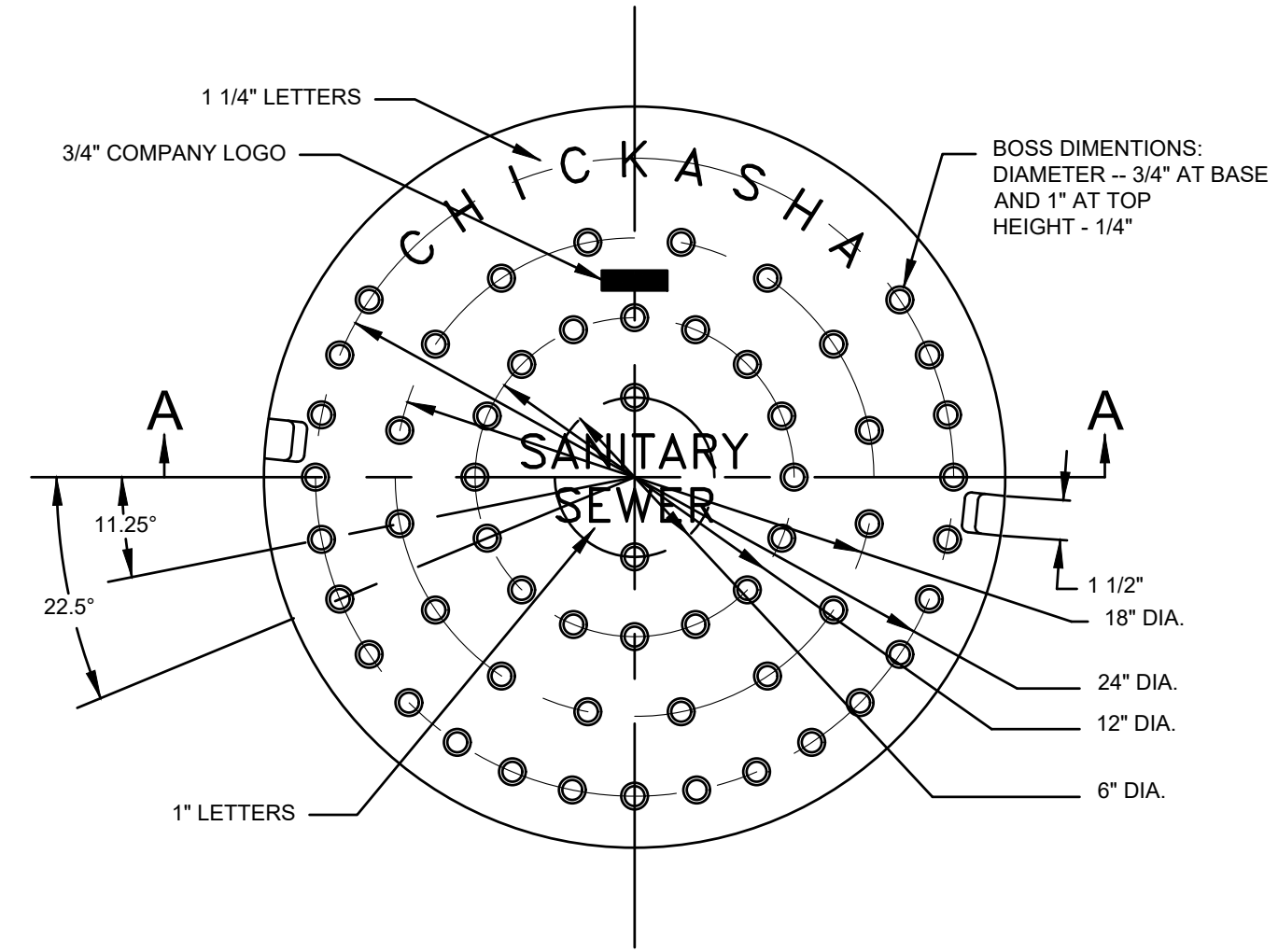


PLAN OF UNDERSIDE

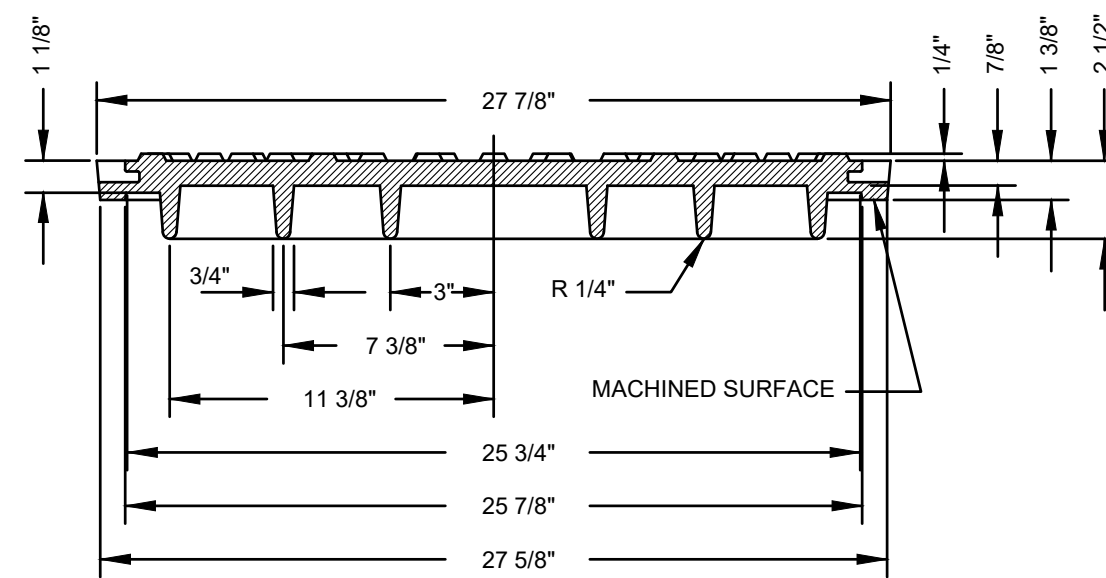


SECTION THRU
PICK SLOT

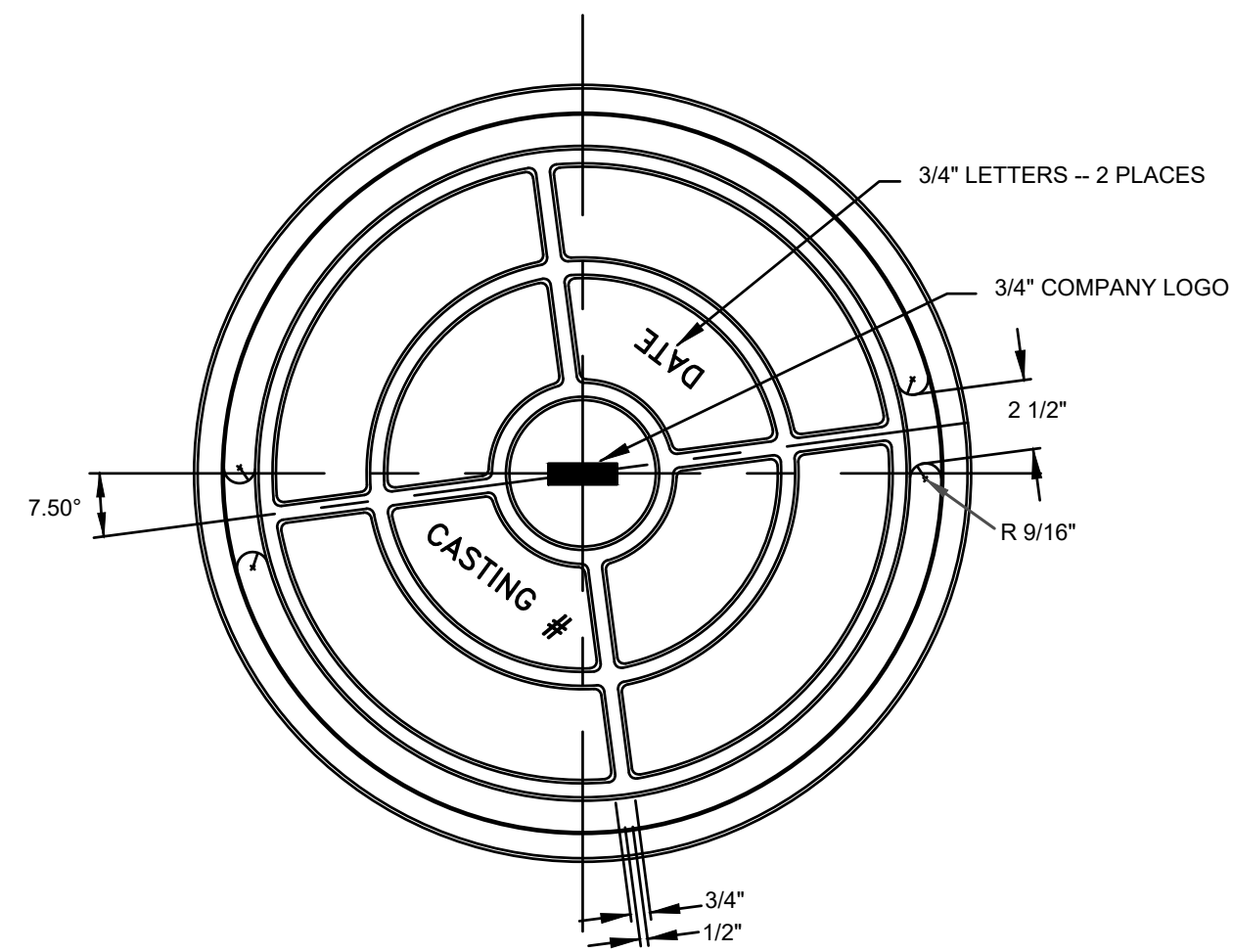
NON-VENTED MANHOLE COVER



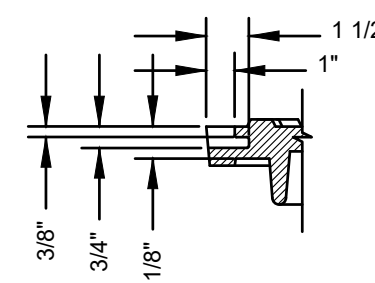
PLAN OF TO



SECTION A-



PLAN OF UNDERSIDE



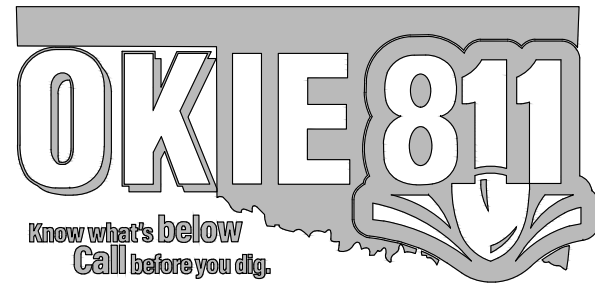
SECTION THRU
PICK SLOT

GENERAL NOTES:

1. FINISH EXCESS IRON AND FINIS;
MACHINE SEATING SURFACES FLAT
TO NOTED DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS
OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN,
ALL DIMENTIONS ARE IN INCHES.

SURVEY LEGEND

AC - AIR CONDITIONER	EM - ELECTRIC MANHOLE	GM - GAS MARKER	MS - MISC. MARKER	SCV - SPRINKLER CONTROL VALVE	Tree - TREE	WM - WATER MANHOLE
AD - AREA DRAIN OR CATCH BASIN	EMK - ELECTRIC MARKER	GP - GUARD POST	PI - PIER	SS - SANITARY SEWER LIFT STATION	Tree - TREE	SW - SQUARE WATER METER
AB - ALPHA BOX	ET - ELECTRIC UTILITY RISER	GT - GREASE TRAP	PB - PULLBOX	ST - STORM SEWER MANHOLE	TL - TRAFFIC LIGHT	WS - WATER SHUTOFF (SPIGOT)
AS - AUTO SPRINKLER	FD - FRENCH DRAIN	GV - GAS VALVE	PM - PARKING METER	STW - STORM WATER MANHOLE	TM - TV MARKER	WV - WATER VALVE
AV - AIR VENT	FP - FIRE HYDRANT	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
PM - PROP. MON.	FP - FIRE HYDRANT	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
BS - BUSH	FP - FIRE VALVE	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
CO - CLEAN OUT	FP - FIRE VALVE	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
DS - DOWN SPOUT	FP - GUY ANCHOR	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
EM - ELECTRIC METER	FP - GAS METER	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
FO - UNDERGROUND FIBER OPTIC	GP - UNDERGROUND GAS	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
UTV - UNDERGROUND TELEVISION	GP - UNDERGROUND GAS	HC - HC SIGN	PP - POWER POLE	STW - STORM WATER MANHOLE	TV - TV MARKER	WV - WATER WELL
TOE OF BANK	TOP OF BANK	CHAIN FENCE	STOCKADE FENCE	BARBED WIRE FENCE		



BM #1 CUT "X" ON CONCRETE RAMP TO CROSSWALK ELEV=1152.74
BM #2 CUT "X" ON CONCRETE RAMP TO CROSSWALK ELEV=1146.10
BM #3 CUT "X" ON TOP OF HEADWALL ON EAST SIDE OF S. 12TH ST. ELEV=1135.47

PRIMARY HORIZONTAL / VERTICAL CONTROL

HORIZONTAL DATUM:

OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011)

MONUMENT: CP 100

DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP

N: 617748.496

E: 1982095.111

Z: 1163.110

MONUMENT: CP 101

DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP

N: 617252.438

E: 1982206.305

Z: 1146.101

VERTICAL DATUM:

OKLAHOMA STATE PLANE SOUTH ZONE (CORS 2011)

NAVD 88; GEOID 128

MONUMENT: CP 10000

DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP 10' WEST OF DIP SIGN E SIDE S. 13TH

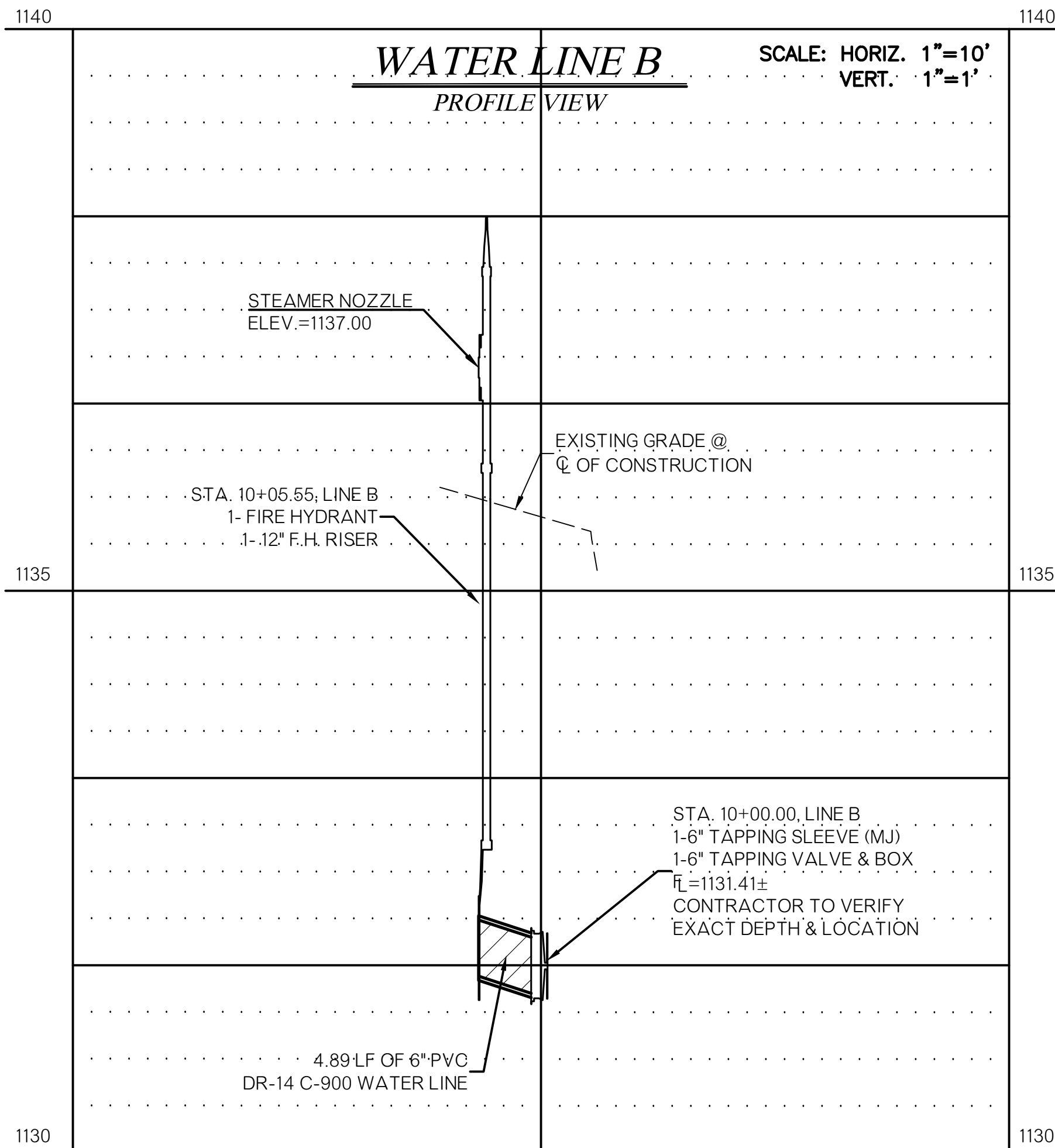
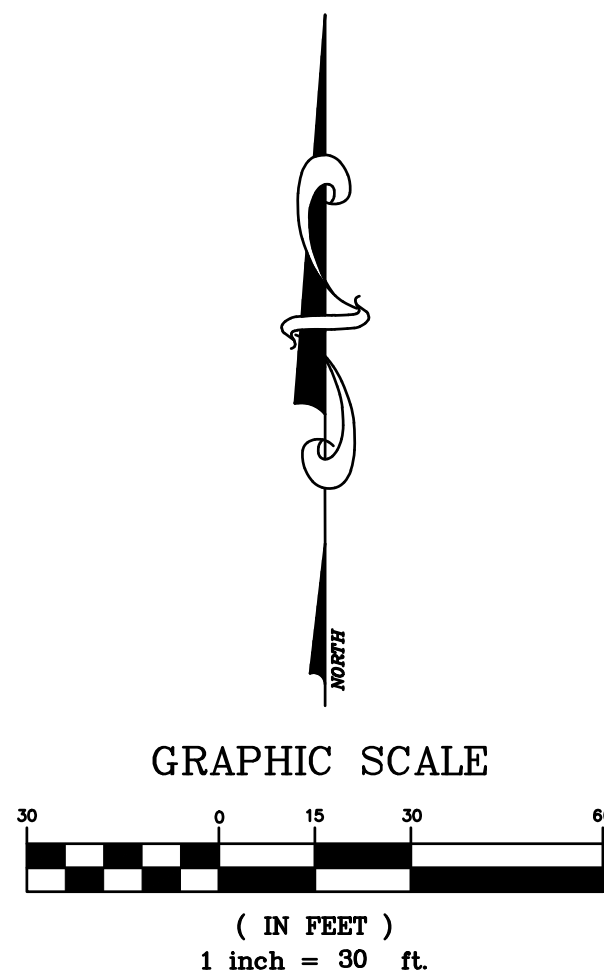
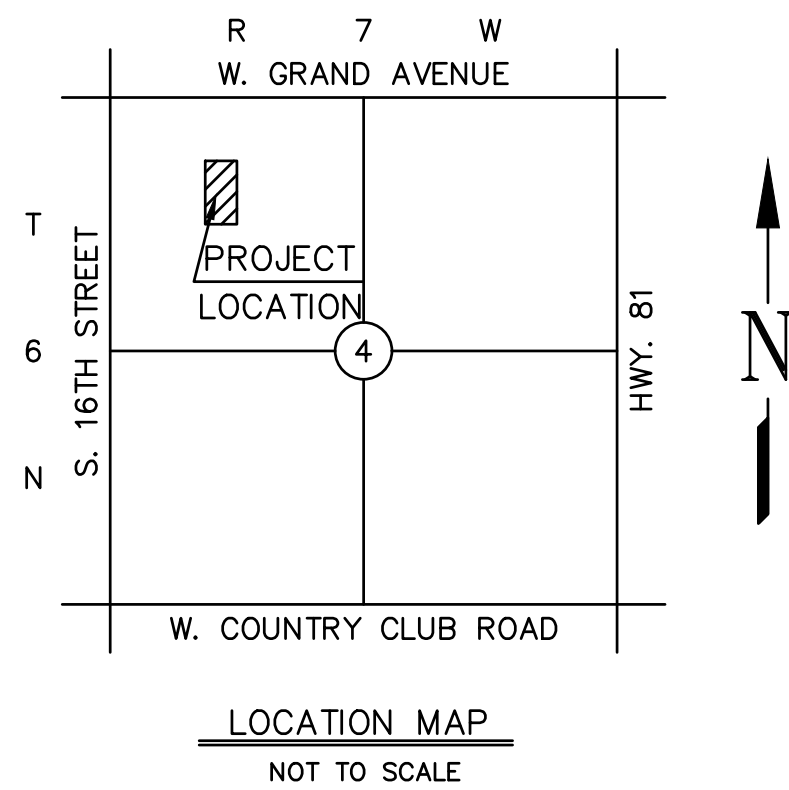
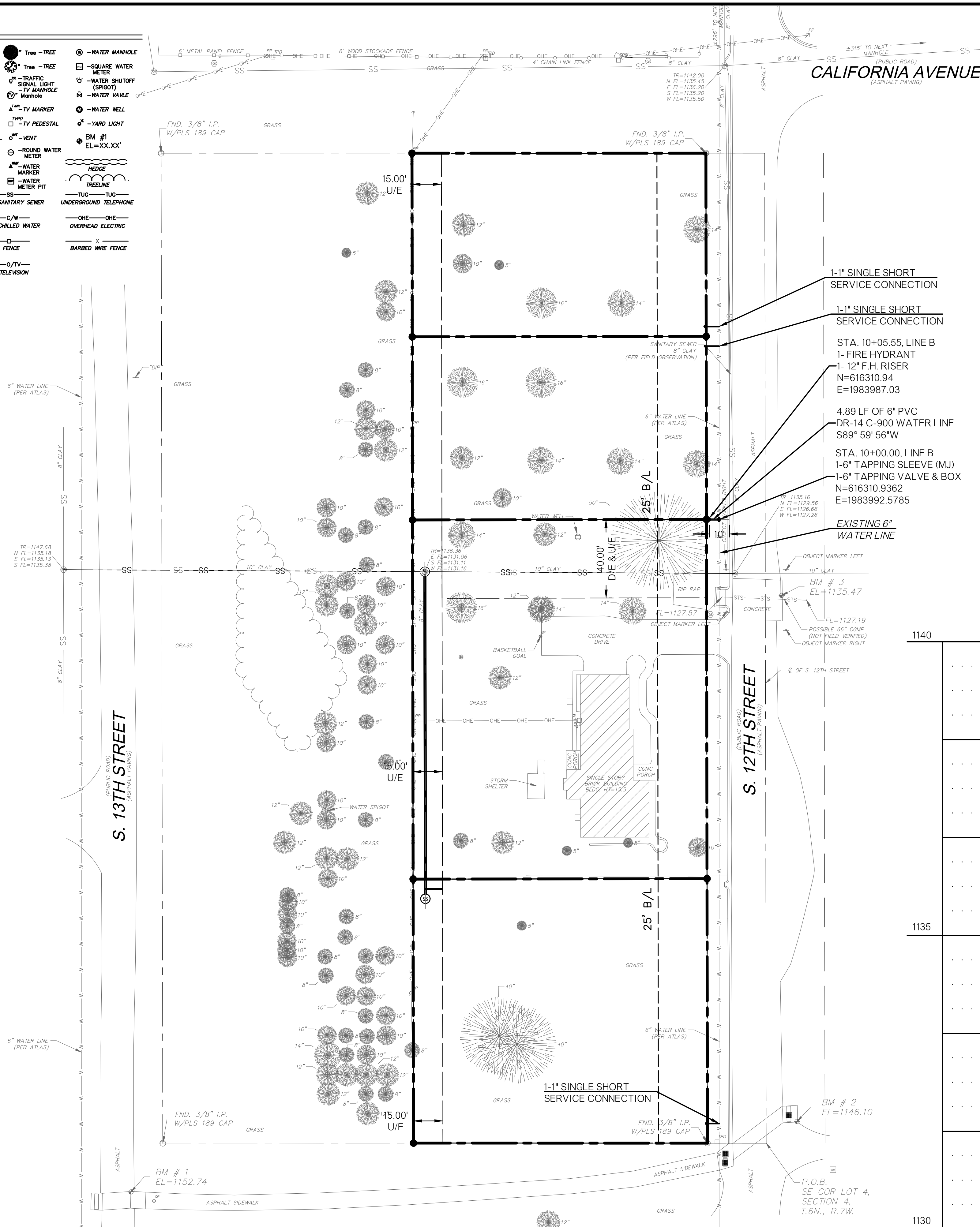
N: 616384.939

E: 1983704.859

Z: 1144.395

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.



WEST SIDE OF 12th STREET ADDITION
2400 S. 12TH STREET CHICKASHA, OK 73018
WATER LINE LAYOUT SHEET

SCALE:
HOR. 1"=30'

SHEET
2

Engineering Surveying Planning

PROJ: 116741
DATE: 5-18-22
DRAWN BY: BAW
DESIGNED BY: GWN
CHECKED BY:

REVISIONS

NO.	DATE	DESCRIPTION	BY

14-10-4894
Washita Valley Abstract Company
WVAC 141847



I-2014-027810 Book 4856 Pg: 386
12/31/2014 12:38 pm Pg 0386-0386
Fee: \$ 13.00 Doc: \$ 183.00
Sharon Shoemaker - Grady County Clerk
State of Oklahoma

INDIVIDUAL
WARRANTY DEED
(Oklahoma Statutory Form)

That Edd D. Rhoades, Jr. and John L. Rhoades, Successor Co-Trustees of The Edd D. Rhoades and Erma Rhoades Revocable Trust dated February 3, 1992, Parties of the first part, in consideration of the sum of TEN & NO/100 and other valuable considerations, in hand paid, the receipt of which is hereby acknowledged, do/does hereby grant, bargain, sell and convey unto Elliott Cousins Limited Partnership, of PO Box 460 - Chickasha, OK 73023, Party of the second part, the following described real property and premises situate in Grady County, State of Oklahoma, to-wit:

SURFACE RIGHTS ONLY

A tract of land in the S/2 of Lot 4, being the fractional NW/4 NW/4 of Section 4, Township 6 North, Range 7 West of the I.M., Grady County, State of Oklahoma, described as follows: Beginning at the Southeast corner of said Lot 4; thence North 00°03'01" East a distance of 505.37 feet; thence North 89°51'50" West a distance of 308.00; thence South 00°03'01" West a distance of 505.29 feet; thence South 89°50'38" East a distance of 308.00 feet to the point of beginning.

PROPERTY ADDRESS: 2400 S. 12th St., Chickasha, OK 73018

together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the said party of the second part, their heirs and assigns, forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and encumbrances of whatsoever nature.

EXCEPT covenants, conditions, easements, restrictions and mineral conveyances of record.

Signed and delivered this 31 day of **December**, 2014.

Edd D. Rhoades, Jr. and John L. Rhoades, Successor
Co-Trustees of The Edd D. Rhoades and Erma
Rhoades Revocable Trust dated February 3, 1992

Edd D. Rhoades, Jr.
By: Edd D. Rhoades, Jr., Successor Co-Trustee

John L. Rhoades
By: John L. Rhoades, Successor Co-Trustee

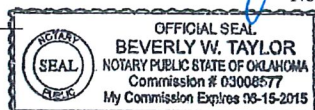
State of OKLAHOMA)
)
) SS.
County of GRADY)

Before me, the undersigned, a Notary Public in and for said County and State, on this 31 day of December, 2014 personally appeared Edd D. Rhoades, Jr. and John L. Rhoades, Successor Co-Trustees of The Edd D. Rhoades and Erma Rhoades Revocable Trust dated February 3, 1992, to me known to be the identical persons who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

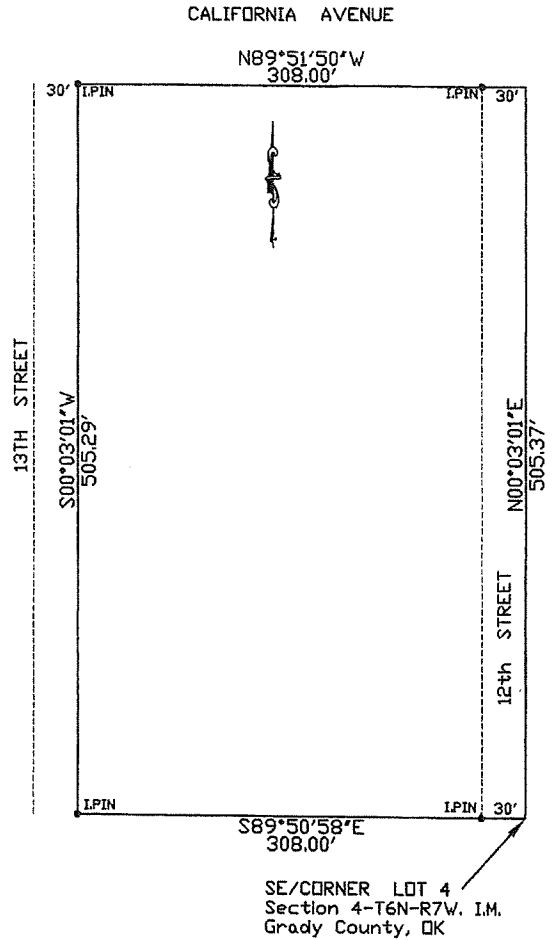
Given under my hand and seal the day and year last above written.

My Commission Expires:

6-15-15



Beverly W. Taylor
Notary Public



A tract of land located in the South Half of Lot 4, (NW/4 NW/4) of Section 4-Township 6 North-Range 7 West of the Indian Meridian, Grady County, Oklahoma, described as follows:
Beginning at the Southeast corner of said Lot 4, thence N.00°03'01"E. a distance of 505.37 feet; thence N.89°51'50"W. a distance of 308.00 feet; thence S.00°03'01"W. a distance of 505.29 feet; thence S.89°50'58"E. a distance of 308.00 feet to the point of beginning.

Date: - November 28, 2014

This Plat of Survey meets the Oklahoma Minimum Standards for the practice of Land Surveying as adopted by the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors.

PATHFINDER RESOURCES
PO Box 1467
Chickasha, OK 73023
CA # 3680



CITY OF CHICKASHA
APPLICATION FOR FINAL SUBDIVISION PLAT APPROVAL

I (We), hereby make application for approval of the subdivision of land described below and on the accompanying plat under authority of the City of Chickasha's Subdivision Regulations. Supplementary materials are attached hereto and specifically made a part of this application for all purposes. I (We) accept responsibility for any errors or omissions on this form and accompanying supplementary materials even if such errors or omissions should result in the postponement of this plat review by the Planning Commission and/or City Council.

Applicant Name: Agent Gary Noland, PE
for Property Owner: Elliott Cousins, Okla. Limited Partnership
Address: 2500 McGee Drive, Suite 100, Norman, OK 73072
Phone Number: 405-574-6856
Owner's Name: Elliott Cousins, Okla. Limited Partnership Attn: Greg Elliott + Blake Elliott
Property Owners Address: 528 West Iowa, Chickasha, OK 73018
Phone Number: 405-224-0819
Engineer/Surveyor: Gary Noland, PE SRB LLC
Address: 2500 McGee Drive, Suite 100, Norman, OK 73072
Phone Number: 405-574-6856

Subdivision Location: 2400 S. 12th Street on West Side 12th Street South Side of California Ave
Total Acreage: 1.74 Ac. Total Lots: 4 Total To Be Developed: 3 lots
1 lot existing

Describe existing/proposed easements or other restrictions on or effecting the property:

Proposed drainage and utility easements are
shown on Plat.

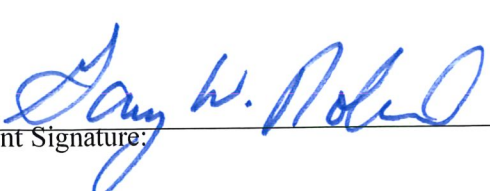
Describe vacations of plats, easements, etc. needed:

Proposed drainage and utility easements are shown
on Plat

Proposed Land Uses:

Present Zoning: R1 Single Family
Proposed Land Use: Residential

Proposed Zoning: R1 Single Family
Residential

Applicant Signature: 

Date: 6-28-22

Legal Publication
(Published in The Express-Star December 15th, 2022)
From: Community Development
Applicant: Elliot Cousins Oklahoma Limited Partnership
Re: Preliminary and Final Plat of the West Side of 12th Street Addition.
Location: 2400 S 12th Street; West side of 12th Street and south side of California Ave.
Legal: a tract of land in the S/2 of Lot 4, being the fractional NW/4 NW/4 of Section 4, Township 6 North, Range 7 West of the Indian Meridian, Grady County, State of Oklahoma.
When: Planning Commission January 10, 2023 at 4 pm in the City of Chickasha City Council Chambers, City Council Hearing will be January 17, 2023 at 6:30 PM in the City Council Chambers.
Please contact community development with questions or concerns. 405-222-6010; rachel.bernish@chickasha.org

Proof of Publication

2400 S 12th Street

Affidavit of Publication

State of Oklahoma, County of Grady, ss:

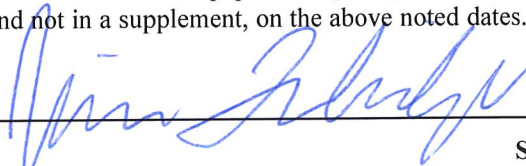
I, the undersigned publisher, editor or Authorized Agent of the Chickasha Daily Express, do solemnly swear that the attached advertisement was published in said paper as follows:

1st Publication

December 15, 2022

That said newspaper is Weekly, in the city of Chickasha, Grady County, Oklahoma, a Weekly newspaper qualified to publish legal notices, advertisements and publications as provided in Section 106 of Title 25, Oklahoma Statutes 1971, as amended, and complies with all other requirements of the laws of Oklahoma with reference to legal publications.

That said Notice, a true copy of which is attached hereto, was published in the regular edition of said newspaper during the period and time of publications and not in a supplement, on the above noted dates.



Signature

Subscribed and sworn before me on this 15th day of December 2022.



My commission expires July 10, 2024.

Notary Public
Commission #
20008340

Cost of Publication \$ 19.20

Ad # 00510621

Acct # 23151928

Copies: 1

PAY TO

The Express Star
PO Drawer E
Chickasha, OK 73023

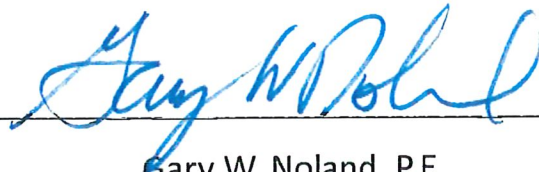


WEST SIDE OF 12TH STREET
ADDITION
2400 S. 12TH STREET
CHICKASHA, OKLAHOMA

DRAINAGE ANALYSIS REPORT FOR

WEST SIDE OF 12TH STREET ADDITION
CHICKASHA, OKLAHOMA

SEPTEMBER 1, 2022



Gary W. Noland, P.E.



SUBMITTED BY:



ENGINEERING | SURVEYING | PLANNING

SMITH ROBERTS BALDISCHWILER, LLC

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SRB PROJECT #116706



1.0 INTRODUCTION

West Side of 12th Street Addition is a Plat for a single family residential development site with four lots, one lot already developed with a house. The site is located in the Northwest Quarter of Section 4, Township 6 North, Range 7 West of the Indian Meridian, bounded by 12th Street along the east, 13th Street to the west and south of California Ave. in Chickasha, OK.

2.0 SITE CONDITIONS

The site surface drain through the development from the west towards the east with the area of the drainage basin being 41.87 acres. Storm water sheet flows through the site to an existing 66 inch CGMP culvert under 12th Street towards the north end of Lot 3. Drainage Exhibit with drainage area is included in Appendix A.

3.0 STORM WATER DRAINAGE ANALYSIS

3.1 METHODOLOGY

The procedure used for drainage calculations on the existing 66 inch CGMP culvert under 12th Street was to calculate peak discharges using the Rational Method for the development. The site is zoned R-1 Single Family Residential along with the property to the west being zoned R-1 therefore for the Rational Method and using the City of Chickasha drainage criteria the 'C' factor is 0.50 which is used to determine the flow through the 66" CGMP culvert for the 100-year storm event. HY-8 Culvert Analysis software was used to analyze the existing 66 inch CGMP culvert under 12th Street. Drainage calculations along with the culvert analysis is included in Appendix B.



4.0 CONCLUSIONS

The existing 66 inch culvert under 12th Street, will carry the 100-year storm event of 172.76 cfs without overtopping the 12th Street. The headwater elevation at the inlet end of the 66" culvert is 1133.60' which is less than the top of curb elevation of 1134.95' on 12th Street at this location therefore the existing 66" culvert meets the General Drainage Policy of the City of Chickasha.

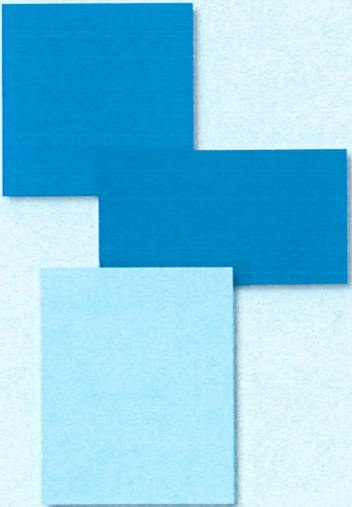
APPENDIX A

DRAINAGE EXHIBIT

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APPENDIX B

STORM WATER CALCULATIONS & CULVERT ANALYSIS



DRAINAGE BASIN PEAK RUNOFF CALCULATION SPREADSHEET

PROJECT NAME: **Rhoads Property for Elliott Cousins** DATE: **09/02/22**
 OKC PROJECT NUMBER: OFFICE PROJECT NUMBER: **116741**
 SUB-BASIN : **Area 1** PROJECT ENGINEER: **G.W.N.**
 OKLAHOMA CLIMATE ZONE: **2** (Refer to the OKC Drainage Manual for climatic zones)
 TOTAL DRAINAGE BASIN (ac) : **41.87** (As determined by survey, USGS mapping, aerial survey, ect.)

In order to determine an accurate runoff coefficient, a weighted average of the drainage basin will be made.

Land use:	Sub-Area (Acres)	*Runoff Coefficient	Partial CA Product
Pasture:	0.00	0.25	0.00
Lawns:	0.00	0.25	0.00
Cultivated Rows:	0.00	0.35	0.00
Agricultural Land:	0.00	0.40	0.00
Industrial:	0.00	0.50	0.00
Residential:	41.87	0.50	20.94
Business:	0.00	0.90	0.00
Street:	0.00	0.95	0.00
Total Area:	41.87		Sum CA: 20.94

* Estimated Runoff Coefficients may be found in the OKC DRAINAGE MANUAL. The following runoff coefficients are commonly used.

To calculate the Weighted "C" Coefficient, divide the Sum of Coefficient Products by the total Drainage Basin.

WEIGHTED "C" : 0.50

Land Use	Coefficient	Land Use	Coefficient
Single Family Residential	0.50	Apartments	0.70
Duplex	0.60	Commercial	0.90
Quad-Plex	0.75	Shopping Center	0.95
		Industrial	0.95

To determine the time of concentration, both overland and channel flows must be computed.

A. Overland Flow:

Length of overland flow, L_o , in feet: **1974** (As determined by survey, USGS mapping, aerial survey, ect.)
 Overland average slope, S_o , in feet: **0.021** (As determined by survey, USGS mapping, aerial survey, ect.)

If the overland flow path crosses different types of ground cover a weighted "k" factor must be calculated.

Ground Cover	Incremental Length (ft)	K Factor	Partial Length & K Factor Product
Pavement:	1974	0.37	730.38
Bare Soil:	0	0.60	0
Poor Grass:	0	0.90	0
Average Grass:	0	1.00	0
Dense Grass:	0	1.13	0
Total Overland Length:	1974		Sum of "K" Factor Products: 730.38

WEIGHTED OVERLAND "K" : 0.3700

$$T_o = K (L_o)^{0.37} / S_o^{0.2}$$

$T_o = 13.21$ minutes

B. Channel Flow:

Length of channel flow, L_c , in feet: **0.0** (As determined by survey, USGS mapping, aerial survey, ect.)
 Channel average slope, S_c , in feet: **0.0000** (As determined by survey, USGS mapping, aerial survey, ect.)
 Channel Velocity in fps: **5.0**

$$T_c = L_c / V_c$$

$T_c = 0.00$ minutes

The total time of concentration is the sum of the overland time (T_o) and channel time (T_c); $T_c = T_o + T_c$

TOTAL TIME OF CONCENTRATION, $T_c = 13.21$ minutes

The formula for the average historical rainfall intensity as defined in the OKC DRAINAGE MANUAL is as follows:

$$I = A / (B + T_c)^E$$

	2 year	5 year	10 year	25 year	50 year	100 year
A =	53.000	64.000	74.000	93.000	104.000	108.000
B =	10.000	12.000	12.000	15.000	15.000	15.000
E =	0.820	0.790	0.790	0.790	0.790	0.770

Rainfall Intensity Formula Nomenclature as per OKC DRAINAGE MANUAL for the Climatic Zone chosen :

The rational method will be used to calculate the peak runoff. (Not extremely accurate for large drainage basins)

C - Runoff coefficient of the drainage basin

I - Average historical rainfall intensity in units of inches/hour

A - Area in units of acres

$$Q = CIA$$

	2 year	5 year	10 year	25 year	50 year	100 year
Intensity (I)	4.02	5.00	5.78	6.65	7.43	8.25
Runoff (Q)	84.187	104.656	121.008	139.154	155.613	172.761

Worksheet for Exist. 66" CGMP

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.024	
Channel Slope	0.00905	ft/ft
Normal Depth	5.17	ft
Diameter	5.50	ft

Results

Discharge	186.13	ft ³ /s
Flow Area	23.18	ft ²
Wetted Perimeter	14.56	ft
Hydraulic Radius	1.59	ft
Top Width	2.61	ft
Critical Depth	3.82	ft
Percent Full	94.0	%
Critical Slope	0.01526	ft/ft
Velocity	8.03	ft/s
Velocity Head	1.00	ft
Specific Energy	6.17	ft
Froude Number	0.48	
Maximum Discharge	186.13	ft ³ /s
Discharge Full	173.03	ft ³ /s
Slope Full	0.01047	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	94.00	%
Downstream Velocity	Infinity	ft/s

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 172.761 cfs

Design Flow: 172.761 cfs

Maximum Flow: 172.761 cfs

Table 1 - Summary of Culvert Flows at Crossing: Culvert Under S. 12th Street

Headwater Elevation (ft)	Total Discharge (cfs)	66" CGMP Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1133.60	172.76	172.76	0.00	1
1135.00	231.01	231.01	0.00	Overtopping

Rating Curve Plot for Crossing: Culvert Under S. 12th Street

Total Rating Curve

Crossing: Culvert Under S. 12th Street

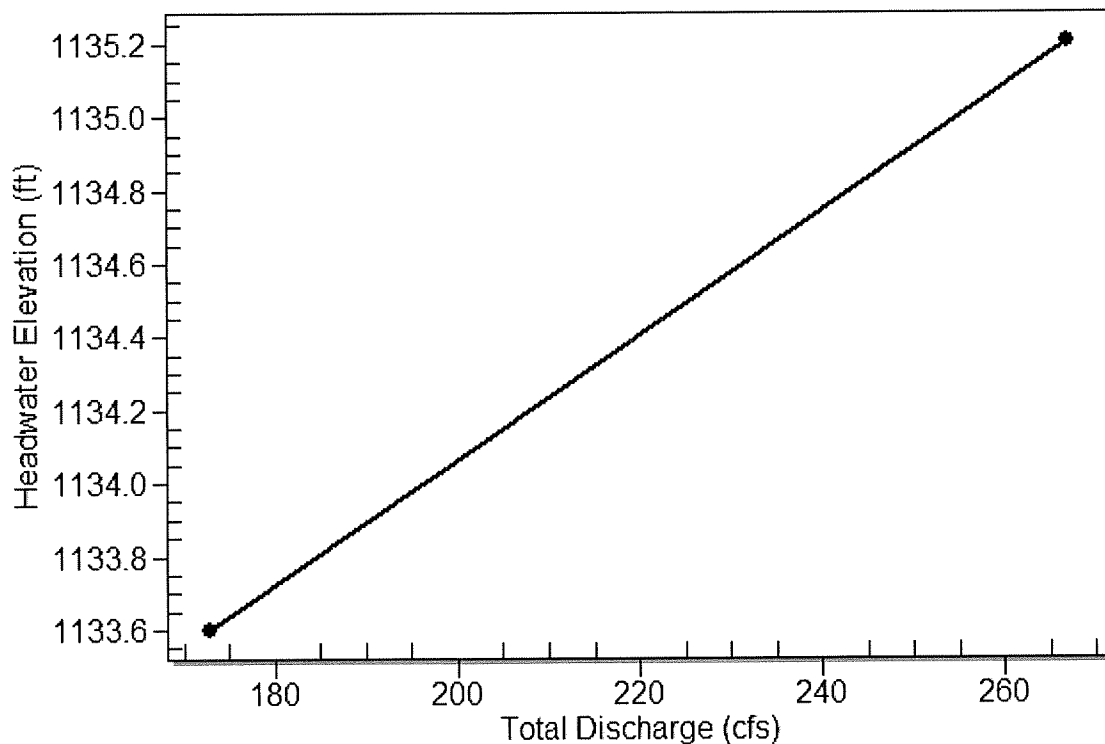
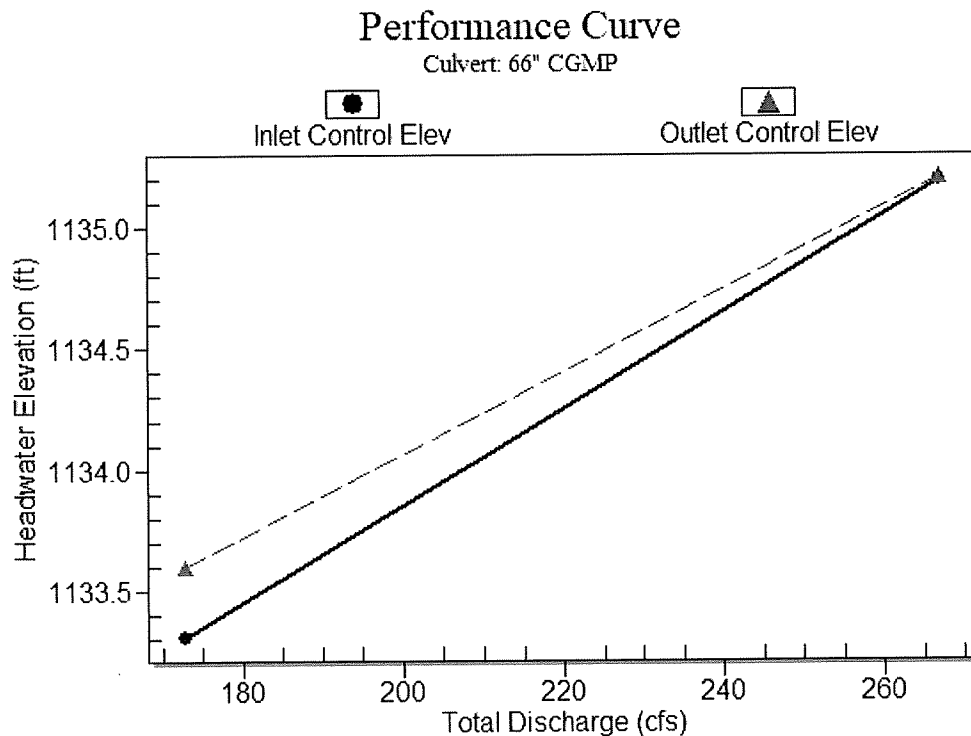


Table 2 - Culvert Summary Table: 66" CGMP

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
172.76	172.76	1133.60	5.737	6.032	7-M2c	4.492	3.675	3.675	1.782	10.241	4.636
172.76	172.76	1133.60	5.737	6.032	7-M2c	4.492	3.675	3.675	1.782	10.241	4.636
172.76	172.76	1133.60	5.737	6.032	7-M2c	4.492	3.675	3.675	1.782	10.241	4.636
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172.76	172.76	1133.60	5.737	6.032	7-M2c	4.492	3.675	3.675	1.782	10.241	4.636
172.76	172.76	1133.60	5.737	6.032	7-M2c	4.492	3.675	3.675	1.782	10.241	4.636
172.76	172.76	1133.60	5.737	6.032	7-M2c	4.492	3.675	3.675	1.782	10.241	4.636

 Straight Culvert
 Inlet Elevation (invert): 1127.57 ft, Outlet Elevation (invert): 1127.19 ft
 Culvert Length: 42.00 ft, Culvert Slope: 0.0090

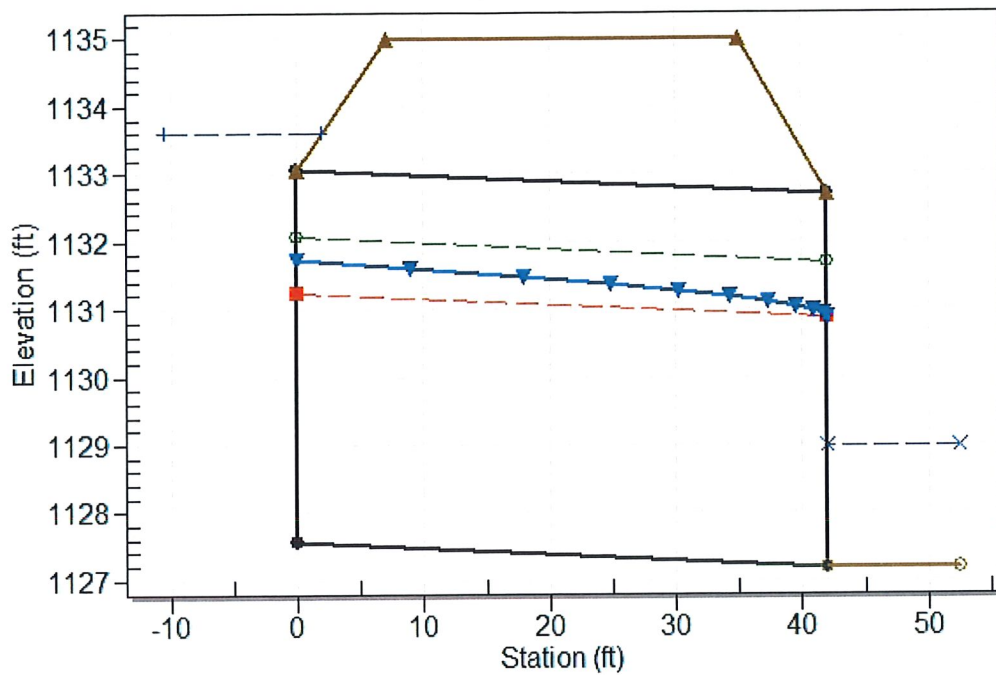
Culvert Performance Curve Plot: 66" CGMP



Water Surface Profile Plot for Culvert: 66" CGMP

Crossing - Culvert Under S. 12th Street, Design Discharge - 172.8 cfs

Culvert - 66" CGMP, Culvert Discharge - 172.8 cfs



Site Data - 66" CGMP

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1127.57 ft

Outlet Station: 42.00 ft

Outlet Elevation: 1127.19 ft

Number of Barrels: 1

Culvert Data Summary - 66" CGMP

Barrel Shape: Circular

Barrel Diameter: 5.50 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: Culvert Under S. 12th Street)
Tailwater Channel Data - Culvert Under S. 12th Street

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73
172.76	1128.97	1.78	4.64	1.00	0.73

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 12.00 ft

Side Slope (H:V): 5.00 (1:1)

Channel Slope: 0.0090

Channel Manning's n: 0.0350

Channel Invert Elevation: 1127.19 ft

Roadway Data for Crossing: Culvert Under S. 12th Street

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 1135.00 ft

Roadway Surface: Paved

Roadway Top Width: 28.00 ft