



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, April 9, 2024, 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 March 12, 2024, Meeting and the Minutes from the Special March 26, 2024, Meeting.
- b. Public hearing to Discuss and consider the Preliminary and Final plat for the West Side of 12th Street Addition Phase 2.
- c. Discussion, Consideration and Possible action to approve the Preliminary and Final Plat for the West Side of 12th Street Addition for applicant Elliott Cousins LLC.

3 Motion to Adjourn.

Rachel Bernish, Community Development Director

CHICKASHA

Meeting Type: Planning Commission 4.9.24

Meeting Date: 4/9/2024

Department: Community Development

Agenda Item No. 2.a.

AGENDA ITEM: Discussion, consideration and possible action to approve the minutes from the March 12, 2024, Meeting and the Minutes from the Special March 26, 2024, Meeting.

I. BACKGROUND/DESCRIPTION:

II. RECOMMENDED ACTION:

Approval

III. FISCAL INFORMATION -

IV. FUND INFORMATION:

Dept. Director:

NAME, TITLE

Meeting Date:

April 9, 2024

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

V. ATTACHMENTS:

1. March 11 2024 Min
2. March 26 2024

**NOTICE OF MEETING FOR
CITY OF CHICKASHA
PLANNING COMMISSION**

PLANNING COMMISSION MEETING

March 11, 2024

1. Call meeting to order: 4:00pm

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa.

Present: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, & James Schoppa

Absent: None

Staff Present: Rachel Bernish, Assistant City Manager, Kelly Deatherage, Permit Technician, Darren Martin, Chief Building Official, and Shae Mortimer

Citizens:

2. Meeting Items:

- a. Discussion, Consideration and Possible action to approve the minutes from the December 12, 2023 meeting.**

***Motion by: Mosley and second by Schoppa to approve minutes from the December 12, 2023, meeting.**

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa.

Ayes: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, & James Schoppa

Nays: None

Abstain:

b. Public hearing to discuss and consider the Oversize Building at 722 N.12th Street.

- **Public Hearing Opened: 4:03pm**
- **Public Hearing Closed: 4:08pm**

c. Discussion, Consideration and Possible action to approve the Oversize Building at 722 N. 12th Street.

***Motion by: Mosley and second by Ladd to approve**

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa..

Ayes: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, & James Schoppa

Nays: None

Abstain:

3. Motion to adjourn meeting:

***Motion: Schoppa and seconded by Mosely to adjourn meeting.**

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa.

Ayes: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, & James Schoppa

Nays: None

Abstain:

**NOTICE OF MEETING FOR
CITY OF CHICKASHA
PLANNING COMMISSION**

PLANNING COMMISSION MEETING

March 26, 2024

1. Call meeting to order: 4:00pm

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa.

Present: Mike Mosley, Brooklyn White, John Grote, Nita Ladd

Absent: James Schoppa

Staff Present: Rachel Bernish, Assistant City Manager, Kelly Deatherage, Permit Technician, Darren Martin, Chief Building Official, and Shae Mortimer

Citizens: Spencer Winzenried, Jim Cowan, Isaac Delon

2. Meeting Items:

a. Public hearing to discuss and consider the Change in the Zoning Ordinance Chapter 54 adding a new tobacco ordinance.

- **Public Hearing Opened: 4:00pm**
- **Public Hearing Closed: 4:02pm**

b. **Discussion, Consideration and Possible action to approve the change to the zoning ordinance Chapter 54 adding a new tobacco ordinance.**

***Motion by: White and second by Mosely to approve**

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa.

Ayes: Mike Mosley, Brooklyn White, John Grote, Nita Ladd

Nays:

Abstain:

3. Motion to adjourn meeting:

***Motion: Grote and seconded by Mosley to adjourn meeting.**

Roll Call: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, And James Schoppa.

Ayes: Mike Mosley, Brooklyn White, John Grote, Nita Ladd, & James Schoppa

Nays:

Abstain:

CHICKASHA

Meeting Type: Planning Commission 4.9.24

Meeting Date: 4/9/2024

Department: Community Development

Agenda Item No. 2.b.

AGENDA ITEM: Public hearing to Discuss and consider the Preliminary and Final plat for the West Side of 12th Street Addition Phase 2.

I. BACKGROUND/DESCRIPTION:

II. RECOMMENDED ACTION:

III. FISCAL INFORMATION -

IV. FUND INFORMATION:

Dept. Director:	Fund	Account	Amount
NAME, TITLE	(To)		
	FUND	ACCOUNT	AMOUNT
Meeting Date: April 9, 2024	(From)		

V. ATTACHMENTS:

CHICKASHA

Meeting Type: Planning Commission 4.9.24

Meeting Date: 4/9/2024

Department: Community Development

Agenda Item No. 2.c.

AGENDA ITEM: Discussion, Consideration and Possible action to approve the Preliminary and Final Plat for the West Side of 12th Street Addition for applicant Elliott Cousins LLC.

I. BACKGROUND/DESCRIPTION:

The applicant wishes to be granted the Preliminary and Final plat for The West Side of 12th Street Addition Phase 2. This is 1.48 acres divided into 5 lots.

II. RECOMMENDED ACTION:

Approval

III. FISCAL INFORMATION -

IV. FUND INFORMATION:

Dept. Director: NAME, TITLE	Fund	Account	Amount
		(To)	
	FUND	ACCOUNT	AMOUNT
Meeting Date: April 9, 2024	(From)		

V. ATTACHMENTS:

1. City of Chickasha West Side of 12th Street Addition, Phase 2 submittal Trns Letter 3-5-24
2. 117436 Elliott Cousins Phase 2 Plat-Preliminary Plat 3.4.2024
3. 117436 Elliott Cousins Phase 2 Plat-1 Plat Cover Sheet 3.1..2024
4. 117436 Elliott Cousins Phase 2 Plat 3.1.2024
5. Phase 2 West Side of 12th Street Addition Hydraulic Analysis and Drainage Calcs - 03-04-2024



2500 McGee Drive, Suite 100
Norman, OK 73072-7436
Telephone (405) 418-2288 Fax (405) 418-2289

March 5, 2024

Ms. Rachel Bernish
Community Development Director
City of Chickasha

**Re: West Side of 12th Street Addition Phase 2
Chickasha, Oklahoma**

Dear Rachel,

Transmitted electronically through email are the updated Preliminary Plat, the updated Final Plat for West Side of 12th Street Addition, Phase 2, these Plats have been updated based on comments from Jerod Wilkins with Hudson Prince Engineering letter dated February 16, 2024, and marked up comments on the plats. Enclosed with this transmittal is an updated copy of the Hydraulic Report incorporating comments by Jerod Wilkins with Hudson Prince. The Preliminary Plat and Final Plat are submitted for approval by the City of Chickasha, Planning Commission and City Council.

If you should have any questions, please contact me at 405-574-6856.

Sincerely,

A handwritten signature in blue ink that reads "Gary W. Noland".

Gary W. Noland, PE
Smith Roberts Baldischwiler, LLC

PRELIMINARY PLAT

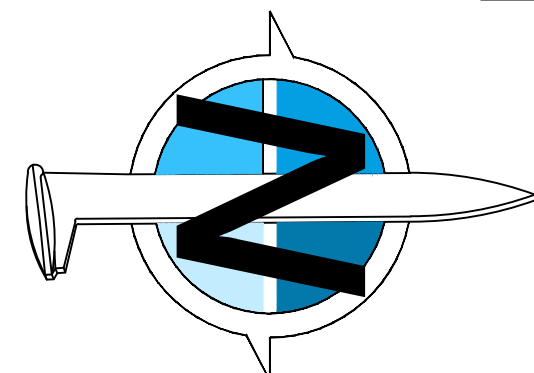
WEST SIDE OF 12th STREET ADDITION PHASE 2

BEING PART OF THE NW/4, SEC. 4, T6N, R7W, I.M.,
AN ADDITION TO CHICKASHA, GRADY COUNTY, OKLAHOMA
PROSPECT VIEW
"R-1"

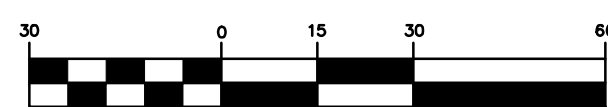
DA AREA 1 = 41.87 AC.
(RESIDENTIAL C=0.50)
Q₁₀₀ = 170.50 CFS

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: 61748.496
E: 198205.111
Z: 1163.110
MONUMENT: CP 101
DESCRIPTION: 1/2" IRON PIN W/PINK SRB CONTROL CAP
N: 617252.438
E: 198226.305
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



GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.

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=1,4848
STREET R-O-W=0.0000
NET AREA=1,4848
TOTAL LOTS=5
GROSS DWELLING UNITS PER AC.=0.3
NET DWELLING UNITS PER AC.=0.30
PUBLIC LOCAL STREET=0 L.F.

OWNER:
ELLIOTT COUSINS,
OKLAHOMA LIMITED PARTNERSHIP
528 WEST IOWA,
CHICKASHA, OK 73018

ENGINEER:
GARY NOLAND, PE
SRB, LLC
2500 MCGEE DRIVE, SUITE 100
NORMAN, OK 73072

SURVEYOR:
JUSTIN SMITH, PLS
SRB, LLC
100 N.E. 5TH STREET
OKLAHOMA CITY, OKLAHOMA 73104

BENCHMARKS

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

THE PRELIMINARY PLAT HAS BEEN PREPARED UNDER MY SUPERVISION & DESIGNED IN ACCORDANCE WITH THE COMPREHENSIVE PLAN AND IN ACCORDANCE TO CITY OF CHICKASHA ORDINANCES AND REGULATIONS.

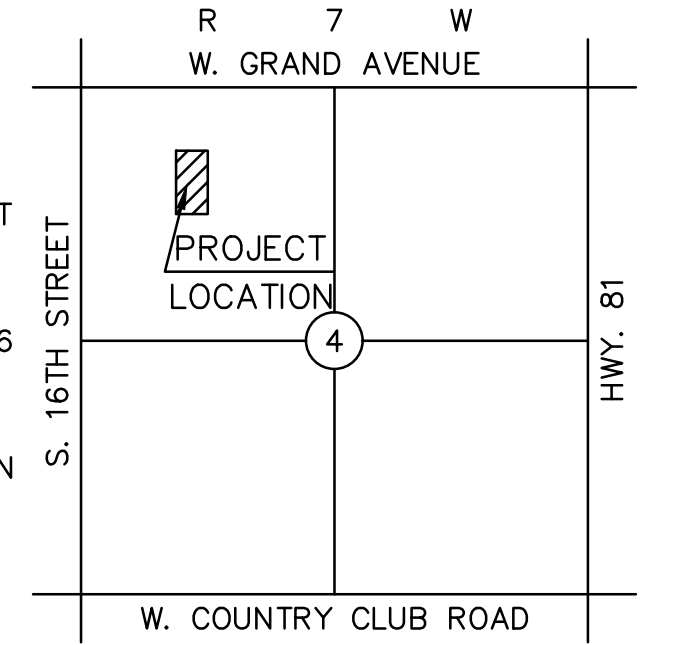
FEBRUARY 26, 2024



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, 2025



LOCATION MAP
NOT TO SCALE

LEGAL DESCRIPTION

A tract of land lying in the Northwest Quarter (NW/4) of Section Four (4), Township Six (6) North, Range Seven (7) West of the Indian Meridian, Grady County, Oklahoma, being more particularly described as follows:

COMMENCING at the Southeast corner of Government Lot 4, Section 4, as shown on the Plat of PROSPECT VIEW ADDITION, according to the recorded plat therein, said Southeast corner being 1314.68 feet, South 00°07'49" East and 1319.00 feet, South 89°59'19" East from the Northwest corner of said Section 4;

THENCE North 89°59'19" West, along the south line of said Lot 4, a distance of 180.00 feet to the Southwest corner of Lot 4, Block 1, WEST SIDE OF 12TH STREET ADDITION, said point also being the POINT OF BEGINNING;

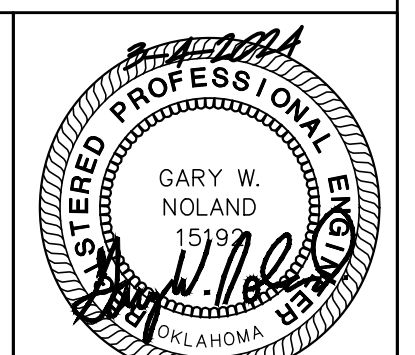
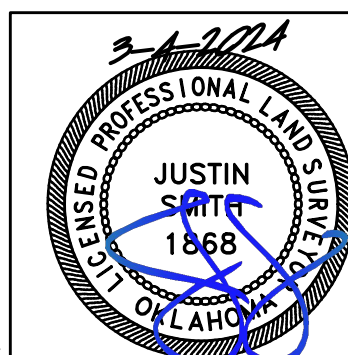
THENCE continuing North 89°59'19" West, along said south line, a distance of 128.00 feet, to a point on the East right-of-way line of S. 13TH STREET;

THENCE North 00°05'20" West, along said East right-of-way line, a distance of 505.29 feet, to a point on the South right-of-way line of California Avenue;

THENCE North 89°59'49" East, along said South right-of-way line, a distance of 505.29 feet, to a point on the west line of said Block 1, WEST SIDE OF 12TH STREET ADDITION;

THENCE South 00°05'20" East, along said west line, a distance of 505.32 feet to said POINT OF BEGINNING.

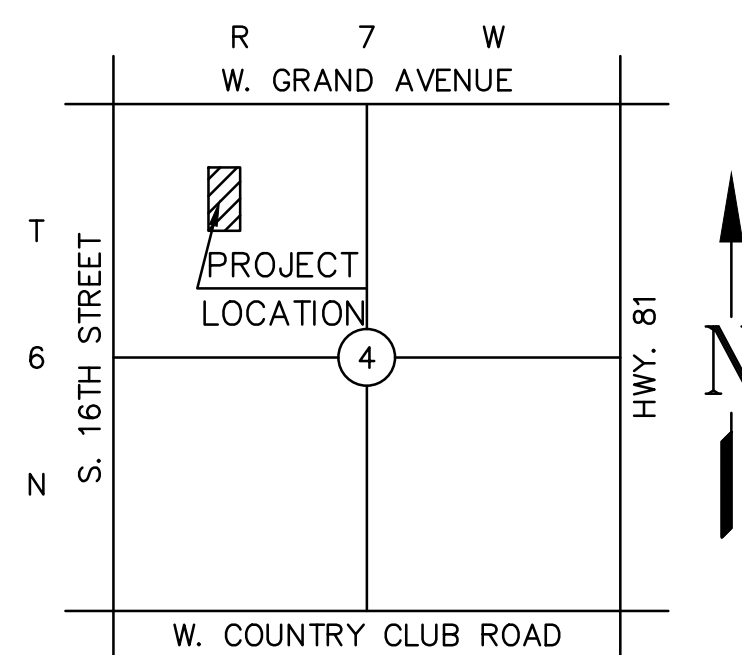
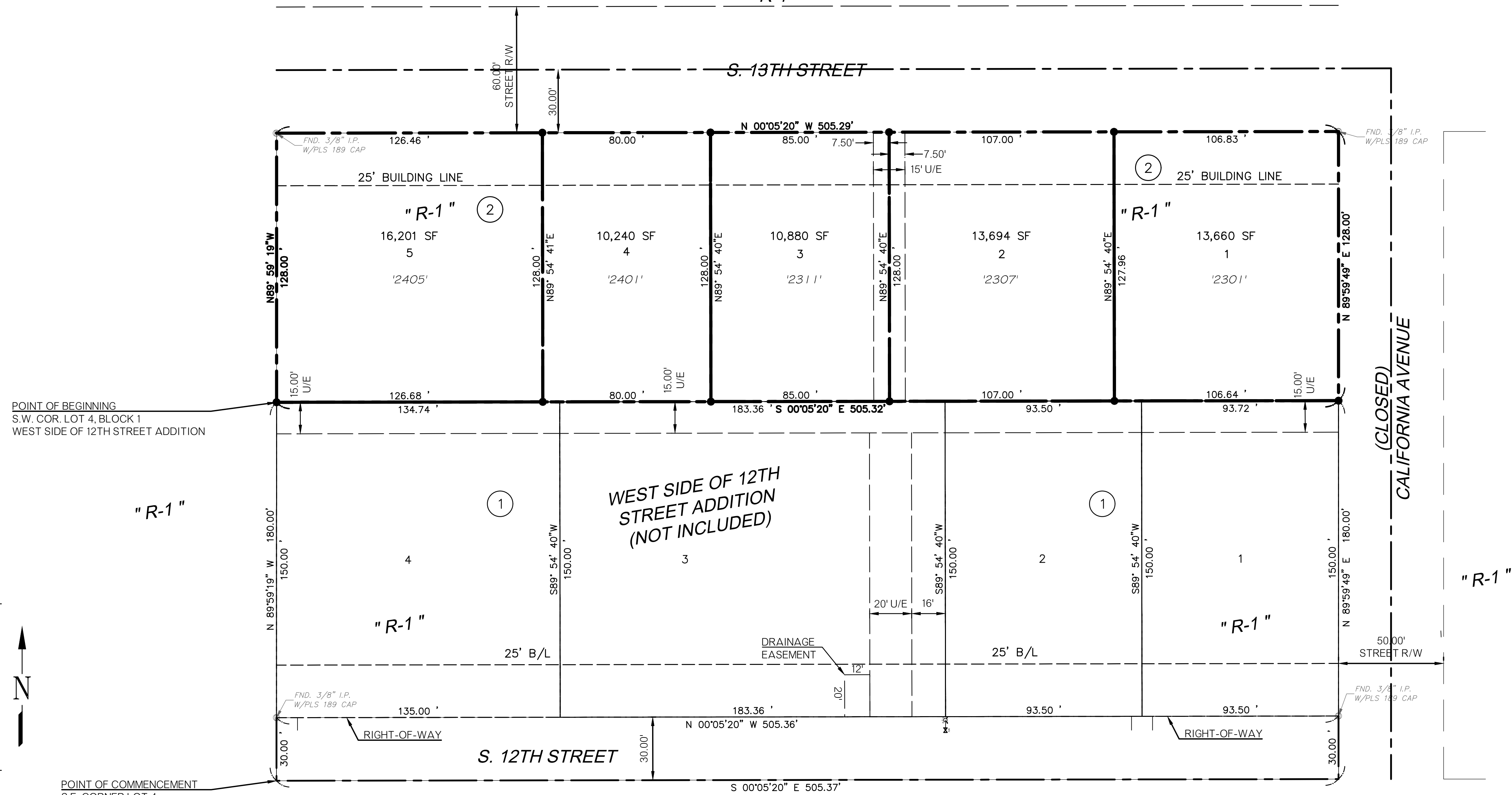
Said tract of land contains an area of 64,679 square feet or 1.4848 acres, more or less.



FINAL PLAT WEST SIDE OF 12th STREET ADDITION PHASE 2

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

PROSPECT VIEW
"R-1"



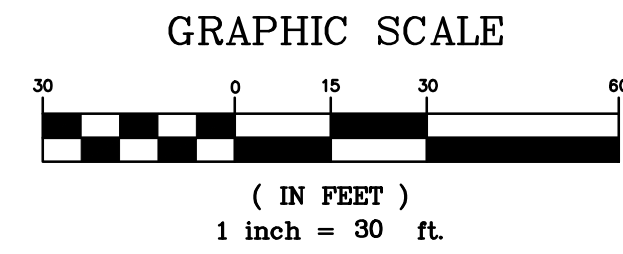
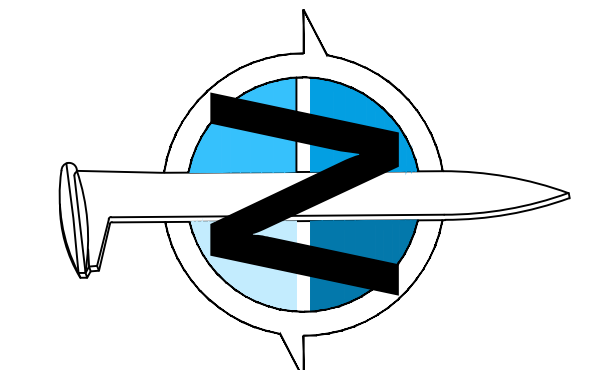
LOCATION MAP
NOT TO SCALE

POINT OF COMMENCEMENT
S.E. CORNER LOT 4,
SECTION 4, T-6-N, R-7-W, I.M.

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=1.4848
STREET R-O-W=0.0000
NET AREA=1.4848
TOTAL LOTS=5
GROSS DWELLING UNITS PER AC.=0.3
NET DWELLING UNITS PER AC.=0.30
PUBLIC LOCAL STREET= 0 L.F.

SHANNON SPRINGS PARK
"R-1"



THIS DOCUMENT IS
PRELIMINARY IN
NATURE AND IS
NOT A FINAL
SIGNED AND
SEALED DOCUMENT

WEST SIDE OF 12th STREET ADDITION PHASE 2
SHEET 2 OF 2
(SRB #117436) FEBRUARY 26, 2024

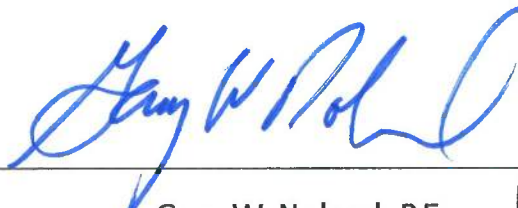
 SMITH ROBERTS SRB BIDISHWILER, LLC	ENGINEERING SURVEYING PLANNING	OKLAHOMA CITY 100 N.E. 5th Street Oklahoma City, Oklahoma 73104 T: 405.840.7094 F: 405.840.9116 www.srbok.com	NORMAN 2500 McGee Drive, Suite 100 Norman, OK 73072 T: 405.418.2288 F: 405.418.2289 srb@srbok.com
CERTIFICATE OF AUTHORIZATION NO. 3949 EXPIRES JUNE 30, 2025			

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

DRAINAGE ANALYSIS REPORT FOR

WEST SIDE OF 12TH STREET ADDITION
CHICKASHA, OKLAHOMA

UPDATE MARCH 4, 2024



Gary W. Noland, P.E.



SUBMITTED BY:



ENGINEERING | SURVEYING | PLANNING

SMITH ROBERTS BALDISCHWILER, LLC

2500 MCGEE DRIVE, SUITE 100 | NORMAN, OK 73072 | 405.418.2288

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.

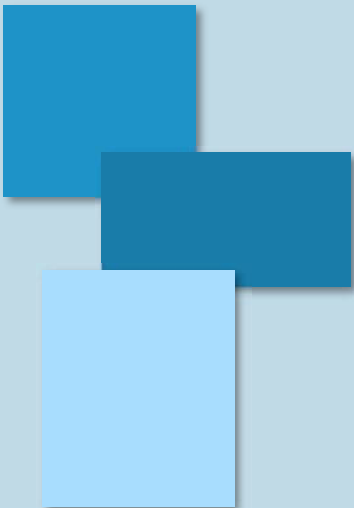




4.0 CONCLUSIONS

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 1133.55' which is less than the top of curb elevation of 1135.13' on 12th Street at this location therefore the existing 66" culvert meets the General Drainage Policy of the City of Chickasha.





SURVEY LEGEND

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> — AIR CONDITIONER — AREA DRAIN OR CATCH BASIN — ALPHA BOX — AUTO SPRINKLER — PROP. MON. — BUSH — CLEAN OUT — DOWN SPOUT — ELECTRIC METER | <ul style="list-style-type: none"> — ELECTRIC MANHOLE — ELECTRIC MARKER — ELECTRIC UTILITY RISER — FRENCH DRAIN — FIRE HYDRANT — FLAG POLE — FIRE VALVE — GUY ANCHOR — GAS METER — GREASE TRAP — GAS VALVE — HC SIGN — HC PARKING — INLET — LIGHT POLE — MAIL BOX — MONITORING WELL — MISC. MARKER — PIER — PULLBOX — PARKING METER — POWER POLE — QUARTER CORNER — QUARTER CORNER — QUARTER CORNER — SECTION CORNER — STS — STS — STS — STS | <ul style="list-style-type: none"> — SPRINKLER CONTROL VALVE — SANITARY SEWER LIFT STATION — SIGN — SANITARY SEWER MANHOLE — SEPTIC TANK — STORM SEWER MANHOLE — TRAFFIC CONTROL BOX — TELEPHONE NORTH-SOUTH — TELEPHONE MANHOLE — TELEPHONE MARKER — TELEPHONE PEDESTAL — TREE — TREE — TRAFFIC SIGNAL LIGHT — TV MANHOLE — TV MARKER — TV PEDESTAL — VENT — ROUND WATER METER — WATER — WATER MARKER — WATER METER PIT — WATER MANHOLE — SQUARE WATER METER — WATER SHUTOFF (SPICOT) — WATER VALVE — WATER WELL — YARD LIGHT — BM #1 — EL=XX.XX' |
|--|--|--|



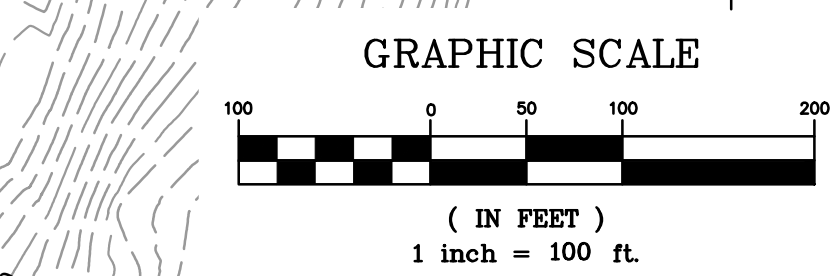
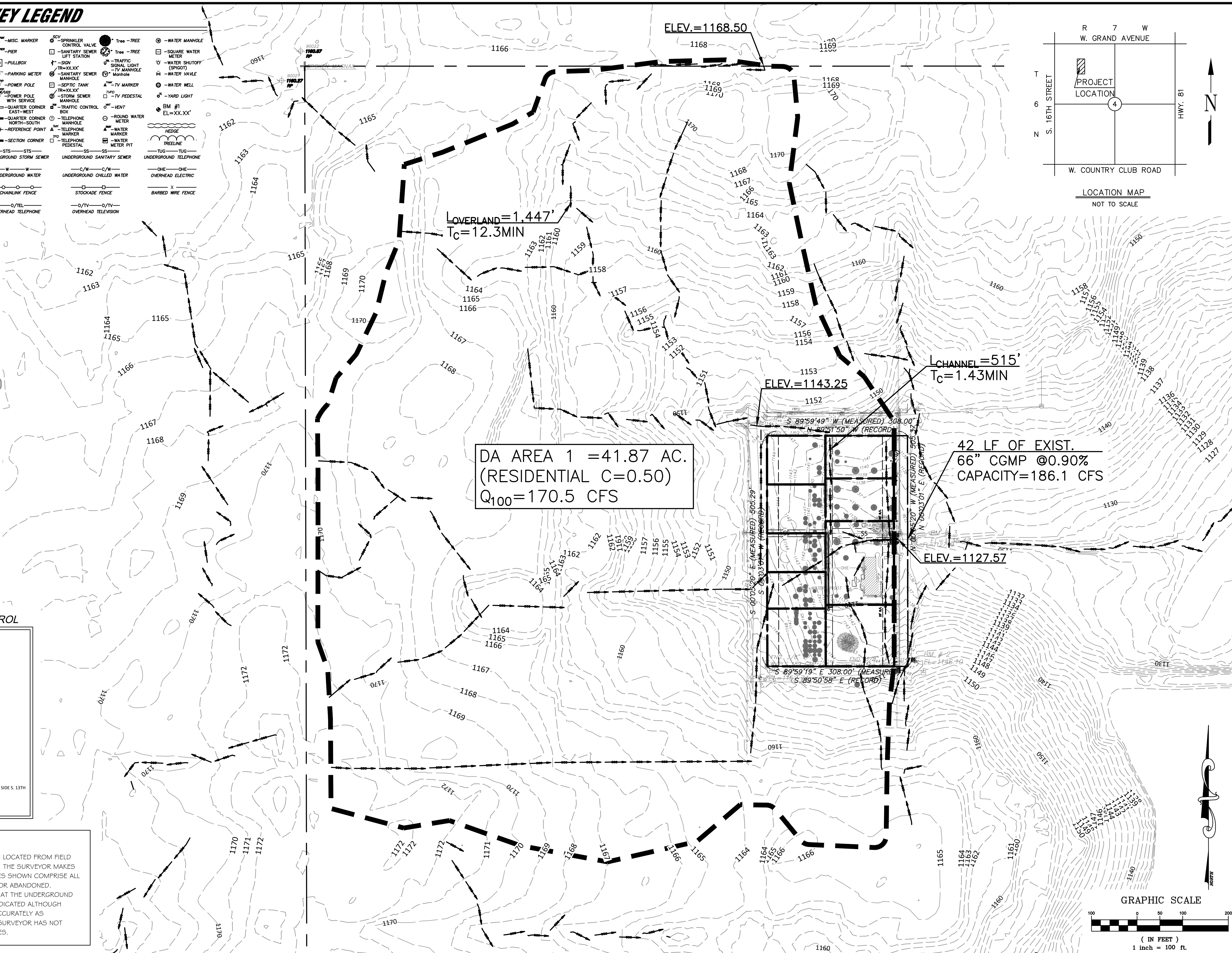
- BM #1**
 CUT "X" ON CONCRETE RAMP TO CROSSWALK
 ELEV=1152.74
- BM #2**
 CUT "X" ON CONCRETE RAMP TO CROSSWALK
 ELEV=1146.10
- BM #3**
 CUT "X" ON TOP OF HEADWALL ON EAST SIDE OF S. 12TH ST.
 ELEV=1135.47

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: 1160.801

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: 616284.939
 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.



ENGINEERING SURVEYING PLANNING
 SRB
 CERTIFICATE OF AUTHORIZATION
 NO. 1946 EXPIRES JUNE 30, 2025

NO.	DATE	DESCRIPTION	REVISIONS

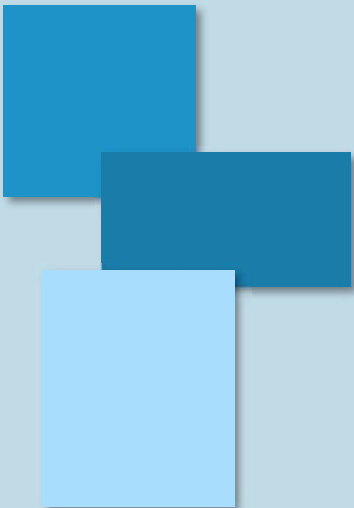
PROJ. 117436
 DATE: 3-4-24
 DRAWN BY: BAW
 DESIGNED BY: GWN
 CHECKED BY: GWN

WEST SIDE OF 12th STREET ADDITION 2400 S. 12TH STREET CHICKASHA, OK 73018 DRAINAGE EXHIBIT

SCALE:
 HOR. 1"=100'

SHEET
 1

Z:\117436\Hydraulics\117436 Drainage Exhibit.dwg jlgarcadesai 3/4/2024



DRAINAGE BASIN PEAK RUNOFF CALCULATION SPREADSHEET

PROJECT NAME: **Rhoads Property for Elliott Cousins** DATE: **03/04/24**
 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: **1447** (As determined by survey, USGS mapping, aerial survey, ect.)
 Overland average slope, S_o , in feet: **0.017** (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:	1447	0.37	535.39
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:	1447		Sum of "K" Factor Products: 535.39

WEIGHTED OVERLAND "K" : 0.3700

$$T_o = K (L_o)^{0.37} / S_o^{0.2} \qquad T_o = 12.28 \text{ minutes}$$

B. Channel Flow:

Length of channel flow, L_r , in feet: **515.0** (As determined by survey, USGS mapping, aerial survey, ect.)
 Channel average slope, S_r , in feet: **0.0304** (As determined by survey, USGS mapping, aerial survey, ect.)
 Channel Velocity in fps: **6.0**

$$T_r = L_r / V_o \qquad T_r = 1.43 \text{ minutes}$$

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

TOTAL TIME OF CONCENTRATION, $T_c = 13.71$ minutes

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

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

	<u>2 year</u>	<u>5 year</u>	<u>10 year</u>	<u>25 year</u>	<u>50 year</u>	<u>100 year</u>
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)

Q = CIA

C - Runoff coefficient of the drainage basin
 I - Average historical rainfall intensity in units of inches/hour
 A - Area in units of acres

	<u>2 year</u>	<u>5 year</u>	<u>10 year</u>	<u>25 year</u>	<u>50 year</u>	<u>100 year</u>
Intensity (I)	3.95	4.92	5.69	6.56	7.33	8.14
Runoff (Q)	82.735	103.052	119.154	137.245	153.478	170.451

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: 170.45 cfs

Design Flow: 170.45 cfs

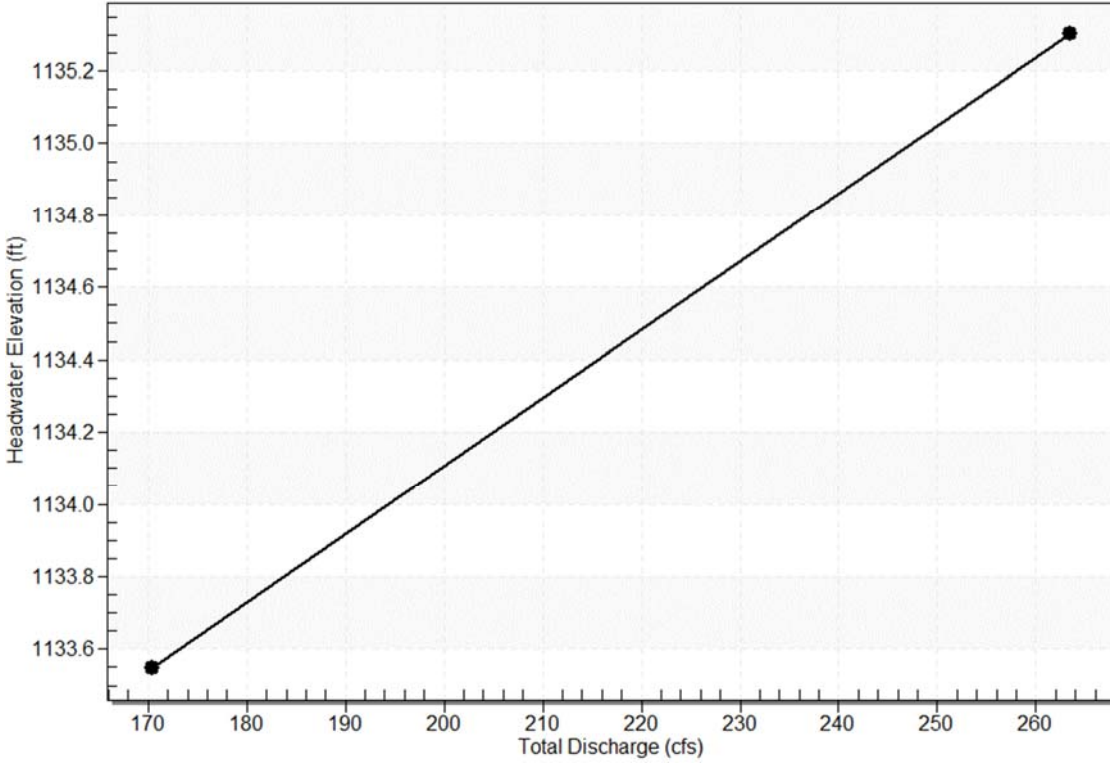
Maximum Flow: 170.45 cfs

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

Headwater Elevation (ft)	Total Discharge (cfs)	66 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1133.55	170.45	170.45	0.00	1
1135.13	235.99	235.99	0.00	Overtopping

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

Total Rating Curve
Crossing: Culvert Under S. 12th Street



Culvert Data: 66

Table 1 - Culvert Summary Table: 66

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)
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62
170.45	170.45	1133.55	5.68	5.979	7-M2c	4.43	3.65	3.65	1.77	10.18	4.62

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

Inlet Elevation (invert): 1127.57 ft,

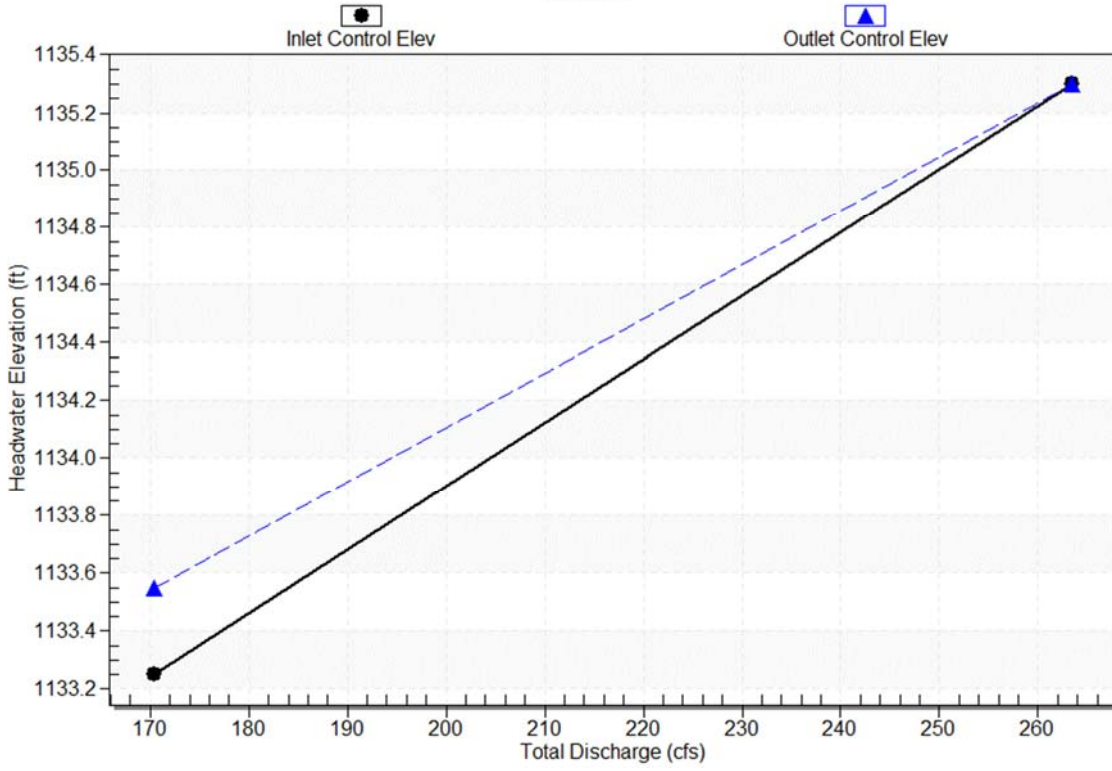
Outlet Elevation (invert): 1127.19 ft

Culvert Length: 42.00 ft,

Culvert Slope: 0.0090

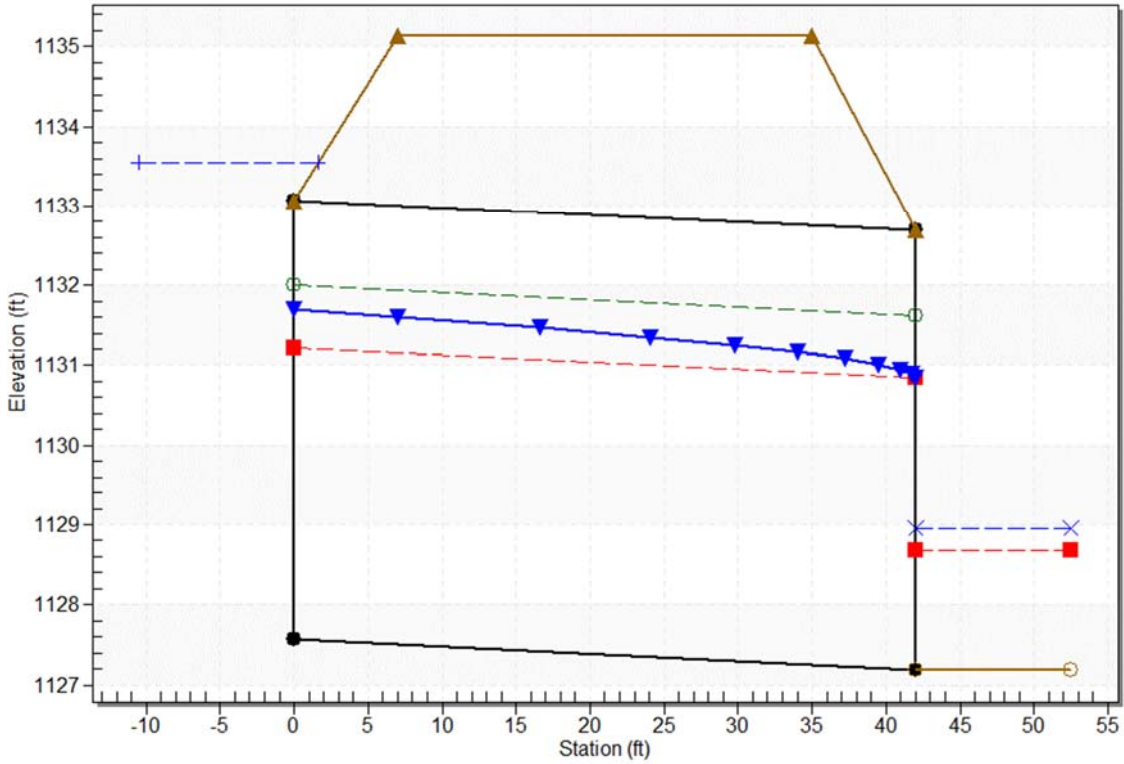
Culvert Performance Curve Plot: 66

Performance Curve
Culvert: 66



Water Surface Profile Plot for Culvert: 66

Crossing - Culvert Under S. 12th Street, Design Discharge - 170.5 cfs
Culvert - 66, Culvert Discharge - 170.5 cfs



Site Data - 66

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

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 (Ke=0.5)

Inlet Depression: None

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

Table 2 - Downstream Channel Rating Curve (Crossing: Culvert Under S. 12th Street)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73
170.45	1128.96	1.77	4.62	0.99	0.73

Tailwater Channel Data - Culvert Under S. 12th Street

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 12.00 ft

Side Slope (H:V): 5.00 (.: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: 1135.13 ft

Roadway Surface: Paved

Roadway Top Width: 28.00 ft