



TOWN OF ASHLAND CITY

Planning Commission Meeting

October 02, 2023 5:30 PM

Agenda

Chairwoman: Nicole Binkley

Committee Members: Vivian Foston, Gerald Greer, JT Smith, Steven Stratton, Mike Stuart, Jerome Terrell

CALL TO ORDER

ROLL CALL

APPROVAL OF AGENDA

APPROVAL OF MINUTES

- [1.](#) September 07, 2023 PC Meeting Minutes

PUBLIC FORUM

NEW BUSINESS

- [2.](#) Rezone Request: 1037 Thompson Road
- [3.](#) Final Plat Approval - Brookhollow Senior Living

OTHER

- [4.](#) Article III: General Provisions Discussion

ADJOURNMENT

Those with disabilities who require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding the accessibility of the meeting, should contact the ADA Coordinator at 615-792-6455, M-F 8:00 AM – 4:00 PM. The town will make reasonable accommodations for those persons.



TOWN OF ASHLAND CITY
Planning Commission Meeting
September 07, 2023 5:30 PM
Minutes

CALL TO ORDER

Chairwoman Binkley called the meeting to order at 5:30 p.m.

ROLL CALL

PRESENT

Chairwoman Nicole Binkley
Committee Member Gerald Greer
Committee Member Vivian Foston
Committee Member Jerome Terrell

ABSENT

Committee Member Steven Stratton
Committee Member JT Smith
Committee Member Mike Stuart

APPROVAL OF AGENDA

Chairwoman Binkley stated there were a few changes to the agenda. She stated that an attorney-client meeting will be held directly after the approval of the agenda, Jennifer Noe will be added immediately after the public forum, and agenda item #2 will be pulled from the agenda. A motion was made by Committee Member Greer, Seconded by Committee Member Foston, to approve the agenda with the stated changes. All approved by voice vote.

ATTORNEY-CLIENT MEETING

At 5:33 p.m., the committee recessed for an Attorney-Client meeting.

At 5:40 p.m., the Planning Commission meeting resumed.

APPROVAL OF MINUTES

1. August 07, 2023 PC Meeting Minutes

A motion was made by Committee Member Foston, Seconded by Committee Member Terrell, to approve the August 07, 2023 meeting minutes. All approved by voice vote.

PUBLIC FORUM

The following citizens spoke during the public forum:

David Schlundt
Deborah Doyle
Sherri Raymer
Lynn Williams

ATTORNEY REPORT

Ms. Noe informed the committee of the 10-year tax abatement that Beacon Properties is applying for.

OLD BUSINESS

None.

NEW BUSINESS

2. ACE Mini Storage

Mr. Josh Lyon spoke on behalf of ACE Mini Storage. Mr. Gregory recommended this for approval as long as all comments were addressed. A motion was made by Committee Member Greer, Seconded by Committee Member Foston, to approve with recommendations. Voting Yea: Chairwoman Binkley, Committee Member Greer, Committee Member Foston, Committee Member Terrell.

3. Zoning Ordinance Definition Review

Mr. Gregory and the committee discussed the Zoning Ordinance and Flood Ordinance definitions.

OTHER

4. Title VI

This item will be discussed at the next meeting.

5. Committee Member Greer discussed how we could save the topography of the Town in the future.

ADJOURNMENT

A motion was made by Committee Member Greer, Seconded by Committee Member Foston, to adjourn the meeting. All approved by voice vote and the meeting adjourned at 7:09 p.m.

CHAIRWOMAN NICOLE BINKLEY

SECRETARY



Town of Ashland City Building & Codes Department

233 Tennessee Waltz Parkway Suite 103
Ashland City TN 37015
(615) 792-6455

Application for Reclassification of Property Under the Zoning Ordinance

Application Fee: \$100.00

Application is hereby made to the Mayor and City Council, which first must be reviewed by the City Planning Commission, to reclassify the property described below now in a HEAVY INDUSTRIAL I-3 district.

Description of Property (Attach Map): Map065 Parcel08601
38.23 ACRES OF LAND IN THE FIRST CIVIL DISTRICT OF CHEATHAM COUNTY, TENNESSE LOCATED AT 1037 THOMPSON ROAD, ASHLAND CITY, TENNESSE INCLUSIVE OF ALL EASEMENTS AND RIGHT OF WAYS.

Reason for Reclassification Request: Ingram Barge Company is seeking to construct a marine cargo handling facility that will require outdoor storage of break bulk commodities such as steel, aluminum, and other ferrous commodities.

Address: 1037 Thompson Road, Ashland City, Tennessee 37015

NOTE:

1. All applications for rezoning must be turned into City Hall no later than thirty (30) days prior to the upcoming planning commission meeting if they are to be entertained at said meeting.
2. An accurate graphic plat prepared and stamped by a registered design professional and a legal description of property to be rezoned must be submitted to the Building Official prior to consideration by the Town Planning Commissioners. In certain circumstances (i.e. large annexation requests having irregular boundaries) these legal descriptions must be submitted prior to planning commission consideration.
3. The applicant will submit the names and addresses of all owners of adjacent property within 1,000 feet. The applicant must also submit a map showing the property within 200 feet of said property.

Send application and other documents to amartin@ashlandcitytn.gov

Applicant

September 15, 2023

Date



Ashland City Terminal

Re-zoning Application for Ashland City
September 13, 2023

Contents of Application



Completed Application for
Reclassification of
Property Under Zone
Ordinance



Graphic Plat of Property
to be Rezoned



Names and Addresses of
All Landowners withing
1000 feet of property



Map showing all property
within 200 feet of proposed
property



Economic Impact
Analysis for Ashland City
Terminal

Executive Summary

With the continued commercial and industrial growth in Middle Tennessee, demand has been created for an additional marine cargo handling facility in Ashland City which will be located at 1037 Thompson Road. This marine cargo transfer facility will primarily unload barges containing non-hazardous break bulk and bulk commodities that will then be stored on site pending final delivery to manufacturing plants and industrial consumers throughout middle Tennessee. In this terminal development, Ingram will expend approximately \$41M for the development of multiple docks, warehouses, and material handling equipment supporting 24 full time jobs with an average annual wage of \$104,000.

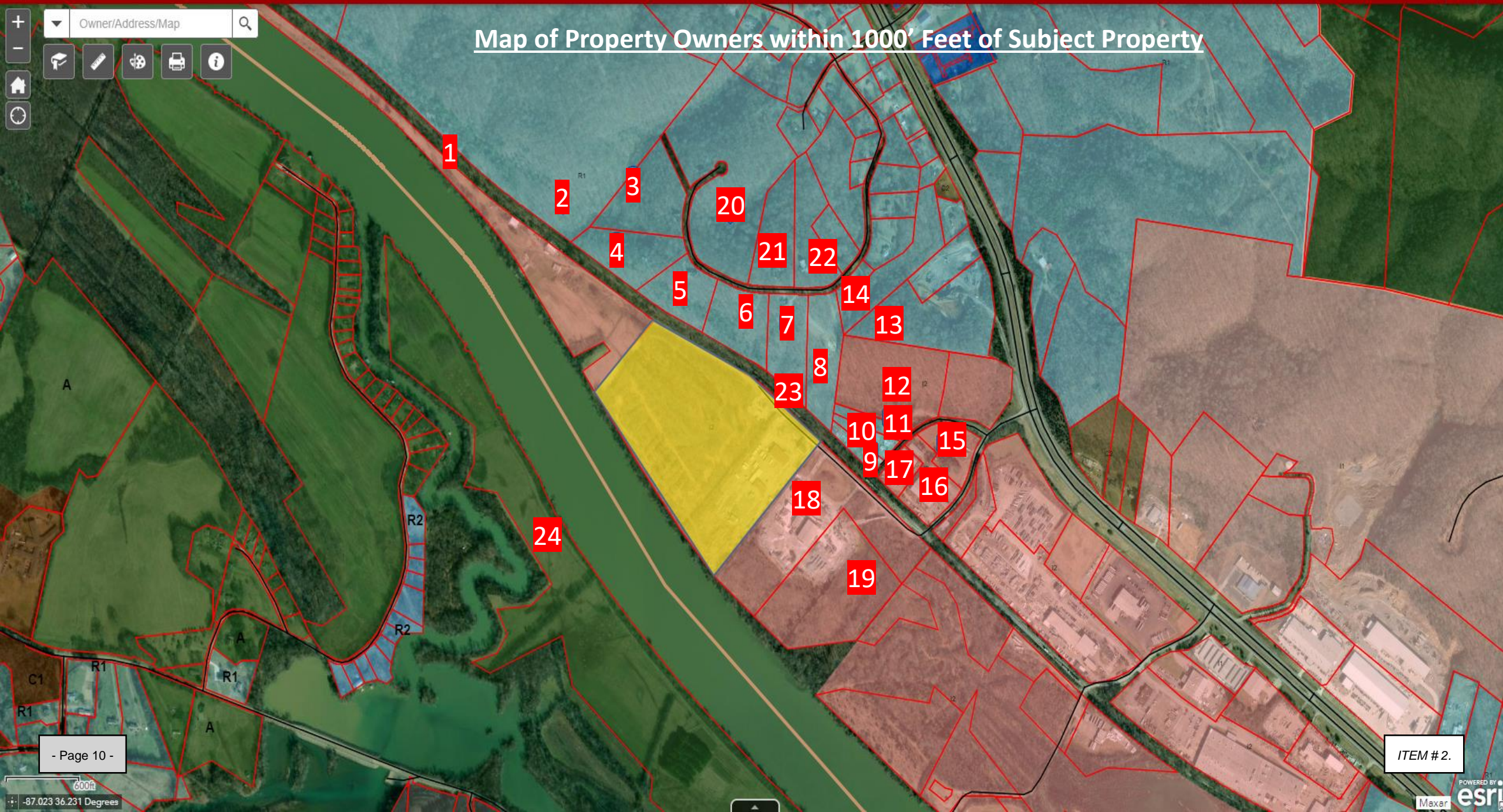
In accordance with Ashland City Zoning Codes, Ingram is requesting that 1037 Thompson Road be rezoned from Light Industrial (I-2) to Heavy Industrial (I-3) therefore facilitating the storage of break bulk materials outside of enclosed storage areas on paved laydown yards.

List of Property Owners within 1000 Feet

#	PARCEL OWNER REGISTERED	PARCEL ID #	Parcel Address	City, State	Mailing Address	Zoning
1	ADCOCK, FRANKLIN DWIGHT	062 07701 000	1043 THOMPSON ROAD	ASHLAND CITY, TN	SAME	I2
2	TRABUE, NELSON JR AND SUSAN TRABUE	062 07700 000	RIVERVIEW LANE (OFF)	ASHLAND CITY, TN	920 TRABUE DR, ASHLAND CITY, TN	R1
3	COOKE, MICHAEL BRIAN ETUX AMY BLACKMAN	062 07706 000	1045 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
4	SCHLUNDT, DAVID	062 07705 000	1039 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
5	FISHER, JACK	062 07714 000	1031 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
6	JERDON, BONNIE ETVIR HAROLD JERDON	062 07704 000	1015 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
7	LONG, CHERYL A	062 07703 000	1011 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
8	HOOTEN, ANTHONY D	062 07702 000	RIVERVIEW LANE	ASHLAND CITY, TN	2305 SEIFRIED ST, NASHVILLE, TN	R1
9	WALKUP, JUDY	065 04100 000	1040 GALLAHER RD	ASHLAND CITY, TN	SAME	R1
10	NEWMAN, STEVE	065 04101 000	1032 GALLAHER RD	ASHLAND CITY, TN	SAME	R1
11	WALKUP, DONALD ETUX JUDY	065 04102 000	1030 GALLAHER RD	ASHLAND CITY, TN	SAME	R1
12	WILKINS, ROD E	065 04200 000	HWY 12S (OFF)	ASHLAND CITY, TN	6441 BRESSLYN ROAD, NASHVILLE, TN	I2
13	WALKER, JASON	062 04101 000	HWY 12S	ASHLAND CITY, TN	PO BOX 849, ASHLAND CITY, TN	R1
14	HOOTEN, ANTHONY D	062 07715 000	RIVERVIEW LANE	ASHLAND CITY, TN	2305 SEIFRIED ST, NASHVILLE, TN	R1
15	REED, JERRY	065 04001 000	1020 THOMPSON ROAD	ASHLAND CITY, TN	1030 FOX HILL ROAD, ASHLAND CITY, TN	I2
16	THOMPSON, MARGARET S	065 04000 000	1030 THOMPSON ROAD	ASHLAND CITY, TN	21 WASHINGTON PARK, NASHVILLE, TN	I2
17	THOMPSON, DONALD F	065 04002 000	1032 THOMPSON ROAD	ASHLAND CITY, TN	1160 CHICKADEE CIR, HERMITAGE, TN	I2
18	THE BASSICHIS CO	065 02400 000	1035 THOMPSON ROAD	ASHLAND CITY, TN	PO BOX 968, KATY TX 77492	I2
19	THE BASSICIHIS CO	065 02500 000	THOMPSON ROAD	ASHLAND CITY, TN	PO BOX 968, KATY TX 77492	I2
20	MIKLICH, HENRY A	062 07707 000	1055 RIVERVIEW LANE	ASHLAND CITY, TN	1921 HWY 12S, ASHLAND CITY, TN	R1
21	AMONETT, EDWARD M	062 07711 000	1012 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
22	ALI, YASMINE SUBHI	062 07712 000	1010 RIVERVIEW LANE	ASHLAND CITY, TN	SAME	R1
23	NASHVILLE AND WESTERN RR ROW	ROW	N/A	N/A	P.O. BOX 788, NICHOLASVILLE, KY 40340	N/A
	STATE OF TENNESSEE	065 02300 000	3101 RIVER ROAD	N/A	312 8TH AVE NORTH, 22ND FL, NASHVILLE, TN	ITEM #2.

Owner/Address/Map

Map of Property Owners within 1000' Feet of Subject Property



Owner/Address/Map

Map of Property Owners within 200' Feet of Subject Property

Orange Highlighted Parcels



Economic Impact Analysis*

10 Years Operating plus One-Time Construction

- Total Capital Investment - \$41.8M
 - Total Jobs Supported throughout Construction Period – 234
 - Total Full Time Direct Employment – 24 jobs
 - Total Indirect Employment – 21 jobs
- Total Economic Impact to Ashland City -\$91.7M
- Total Wage Impact - \$31.6M
- Total Net New Property Taxes - \$2.7M
 - Annual Local Tax Benefit - \$379,873
- Annual Average Wage - \$104,557

*Ashland City Economic Impact Analysis, Younger and Associates, 2023

September 2023

Economic Impact Analysis: Marine Cargo Facility

Ashland City, Cheatham County, TN

Prepared for:
Ingram Marine Group

PREPARED BY:

 **UNGER**

JACKSON » 97 DIRECTORS ROW | JACKSON, TN 38305 | 731.668.7367
MEMPHIS » 2157 MADISON AVENUE | MEMPHIS, TN 38104 | 901.272.5005

- Page 13 -

ITEM #2.

Ingram Marine Group Cargo Terminal Economic Impact Analysis

Introduction & Scope

Ingram Marine Group retained Younger Associates to conduct an analysis of the economic impact of a new marine cargo operation to be located in Ashland City, Cheatham County, Tennessee.

This analysis evaluates the full economic impact of the construction and ongoing operations of the new terminal and is based on a complete capital expenditure of \$41 million. It is intended to provide key stakeholders, policymakers, and elected officials with a better understanding of the economic significance of new developments like the one proposed by Ingram Marine Group.

The analysis is based upon data from the U.S. Bureau of Economic Analysis (BEA) and a model of the local economy utilizing historical employment patterns, wage rates, tax rates, and tax collection ratios. Primary data regarding site development costs and construction costs were provided by Ingram Marine Group.

The analysis provides impact projections from capital investments and ongoing operations of the terminal and is based on the full development of the terminal, which is subject to final customer demand for services. Impact is measured in terms of jobs, wages, and tax revenue, both direct and indirect.

Methodology

The economic impact calculations in this study were generated using a model of the Cheatham County economy based on regional input-output multipliers (RIMS II) from the U.S. Bureau of Economic Analysis (BEA). The BEA developed the RIMS II system based on historical economic activity at the county level for 372 industry sectors. The RIMS II multipliers account for inter-industry relationships within regions comprised of one or more counties, in both the public and private sectors. The multipliers were originally developed to estimate the regional impacts of public projects such as military base closings and airport construction. The multipliers eliminate the need for surveys, which can introduce bias into the data. It should be noted that the RIMS II Type II Multipliers are utilized in this analysis, which project the total indirect as well as the induced jobs. When the term “indirect job” is used, it includes the induced jobs as well.

To effectively use RIMS II multipliers for economic impact analyses, detailed geographical and operational information on the initial changes in output, earnings, or employment is utilized. This data, which includes capital investment costs and operational data such as operational spending, jobs, and wages, was provided by Ingram Marine Group. The model also utilizes local wage rates, local tax rates, historical local tax collection ratios, local property values, and historical regional consumer spending patterns.

Younger Associates has used this impact calculation methodology in hundreds of projects across the United States for more than 30 years. The methodology is recognized by the International Economic Development Council and utilized in courses by the Economic Development Institute. The Younger Associates model for impact analyses is highly accurate, yet slightly conservative by design, in projecting tax revenue generation.

Secondary data collected by Younger Associates from the U.S. Department of Labor - Bureau of Labor Statistics, the U.S Bureau of Economic Analysis, the State of Tennessee Department of Revenue, and the State of Tennessee Department of Labor and Workforce Development is also used in this analysis.

Impact Definitions

Economic Impact – the total dollar value of change in output from all industries within the local economy that results from \$1 of change in output from operations. This impact represents the total dollars flowing through the local economy due to the activity associated with the new marine cargo terminal.

Direct Jobs – the number of jobs directly employed by Ingram Marine Group.

Indirect Jobs – the number of jobs across all industries in the local economy supported by the ongoing operations of the marine cargo terminal. This includes jobs (or hours of work, which comprise portions of a job) of vendors and other businesses that provide direct services to the terminal, as well as induced jobs that are supported in ancillary sectors such as retail stores, restaurants, personal services, transportation, and all other industry sectors.

Local Taxes – the dollar amount of taxes collected for Ashland City and Cheatham County both directly and indirectly from local option sales tax and other, smaller local tax revenue sources such as business permits and alcohol and tobacco taxes. The state portion of sales tax and other state and federal taxes that are reapportioned to the city and county are not included.

One-Time Impact

Ingram Marine Group plans to invest \$41.8 million for construction and set-up of the new cargo terminal. This includes \$23.3 million for the building and \$18.5 million for equipment. This investment is projected to generate a one-time impact of \$56.2 million for the local economy during the construction and set-up period.

Additionally, 234 jobs will be supported during the development period. For example, should the construction period be two years, an average of 117 jobs would be supported annually. Total wages paid to jobs supported during the construction and set-up period are projected to be \$12.6 million.

Direct sales tax from taxable goods and services for the construction of the terminal and indirect sales tax generated by the spending of wages paid to jobs supported are estimated to total \$707,000 during the development period.

Impact from Ongoing Operations

Ingram Marine Group estimates an annual operating budget of \$2.7 million, and the annual economic impact generated by these operations is estimated to be \$3.5 million. This is a measure of the total dollars flowing through the Cheatham County economy because of the terminal's operations.

Jobs, Wages and Local Taxes

The ongoing operations of the cargo terminal will support 24 jobs directly paying \$2 million in wages. Operations of the terminal will support an additional 21 indirect jobs paying \$1.1 million in wages. Spending of wages paid to the direct and indirect jobs is projected to generate over \$104,000 in local indirect tax revenue annually.

Table 1: Summary of Economic Impact

Impact from Operations			
Metric	One-Time Impact from Construction	Annual Impact (at full operation)	10-Year Impact (includes one-time impact)
Economic Impact	\$ 56,211,160	\$ 3,550,774	\$ 91,718,904
Direct/Indirect Jobs	234	45	45
Wages (Direct & Indirect)	\$ 12,631,796	\$ 3,165,379	\$ 31,653,791
Local Sales Tax (Direct & Indirect)	\$ 707,534	\$ 104,230	\$ 3,568,200

The tables on the following pages contain detailed calculations supporting the numbers cited in this report.

Economic Impact Analysis

Project Summary

Company/Applicant:	Ingram Marine Group
Capital Investment: (new)	\$ 44,300,000
Jobs:	24
Annual Average Wage: (weighted average)	\$ 104,557
Annual Economic Impact:	\$ 3,550,774
Annual Net New Property Tax:	\$ 275,644
Annual Local Tax Benefit: (Direct & Indirect - All Sources)	\$ 379,873

10-Year Operations Impact, Plus One-Time Construction Impact

Economic Impact	\$ 91,718,904
Wages:	\$ 31,653,791
Net New Property Tax	\$ 2,756,436
Total Local Taxes: (Direct & Indirect - All Sources)	\$ 3,568,200

**Ashland City, Cheatham County, TN
Ingram Marine Group Cargo Facility
Economic Impact Analysis**

One-Time Expansion Impact		
Total Capital Investment	\$	41,800,000
Building - Real Property	\$	23,300,000
Final Demand Output Multiplier ¹		1.4077
Economic Impact	\$	32,799,410
Equipment Purchase/Set-up - Personal Property	\$	18,500,000
Final Demand Output Multiplier ²		1.2655
Economic Impact	\$	23,411,750
Local Sales Tax (Direct) 2.75%*	\$	459,800
Total Economic Impact	\$	56,211,160
Final Demand Employment Multiplier ³		5.6094
Jobs Supported During the Construction Period**		234
Cheatham County Projected 2023 Annual Average Wage ⁴	\$	53,873
Wages Paid to Jobs Supported During Construction Period	\$	12,631,796
Local Sales Tax Revenue (Indirect) ⁵	\$	203,561
Other Local Tax Revenue (Indirect) ⁶	\$	44,173
Total Tax Revenue	\$	707,534

**Assumes 40% of construction and equipment are subject to local sales tax.*

***Total employment for the construction period. If the construction period is two years, the annual average employment would be 117.*

**Ashland City, Cheatham County, TN
Ingram Marine Group Cargo Facility
Economic Impact Analysis**

Annual Impact of Operations		
Employment, Direct (New full-time equivalent jobs) *		24
Wages & Benefits, Direct*	\$	2,057,316
Direct Effect Employment Multiplier ⁷		1.8570
Total Employment		45
Employment, Indirect		21
Cheatham County Projected 2023 Annual Average Wage ⁴	\$	53,873
Wages, Indirect	\$	1,108,063
Total Wages	\$	3,165,379
Local Sales Tax Revenue (Indirect) ⁵	\$	51,010
Other Local Tax Revenue (Indirect) ⁶	\$	11,069
Indirect Local Property Tax Revenue ⁸	\$	42,151
Total Tax Revenue	\$	104,230
Annual Operating Budget*	\$	2,713,000
Final Demand Output Multiplier ⁹		1.3088
Economic Impact from Operations	\$	3,550,774

**Provided by the developer.*

**Ashland City, Cheatham County, TN
Ingram Marine Group Cargo Facility
Real Property Tax Schedule**

Appriased Value after Completion:	\$	22,000,000
Current Appraised Value:	\$	752,500
Net New Value:	\$	21,247,500
 Assessed Value after Completion: (40% Ratio)	 \$	 8,499,000

Cheatham County

Real Property - Land & Building	
Cheatham County Rate: \$2.4767	Full Taxes
Year 1	\$ 210,486
Year 2	\$ 210,486
Year 3	\$ 210,486
Year 4	\$ 210,486
Year 5	\$ 210,486
Year 6	\$ 210,486
Year 7	\$ 210,486
Year 8	\$ 210,486
Year 9	\$ 210,486
Year 10	\$ 210,486
Total	\$ 2,104,862

Ashland City

Real Property - Land & Building	
Ashland City Tax Rate: \$0.59	Full Taxes
Year 1	\$ 50,144
Year 2	\$ 50,144
Year 3	\$ 50,144
Year 4	\$ 50,144
Year 5	\$ 50,144
Year 6	\$ 50,144
Year 7	\$ 50,144
Year 8	\$ 50,144
Year 9	\$ 50,144
Year 10	\$ 50,144
Total	\$ 501,441

Total Taxes:	\$	2,606,303
---------------------	-----------	------------------

**Ashland City, Cheatham County, TN
Ingram Marine Group Cargo Facility
Personal Property Tax Schedule**

Cheatham County Personal Property			Ashland City Personal Property		
Cheatham County Rate: \$2.4767	Full Taxes 30% Assessment Ratio	MACRS Depreciation Schedule	Ashland City Tax Rate: \$0.59	Full Taxes 30% Assessment Ratio	MACRS Depreciation Schedule
Value	\$ 18,500,000		Value	\$ 18,500,000	
Year 1	\$ 13,745	0.100	Year 1	\$ 3,219	0.100
Year 2	\$ 24,741	0.180	Year 2	\$ 5,794	0.180
Year 3	\$ 19,793	0.144	Year 3	\$ 4,635	0.144
Year 4	\$ 12,646	0.092	Year 4	\$ 2,961	0.092
Year 5	\$ 10,171	0.074	Year 5	\$ 2,382	0.074
Year 6	\$ 9,072	0.066	Year 6	\$ 2,125	0.066
Year 7	\$ 9,072	0.066	Year 7	\$ 2,125	0.066
Year 8	\$ 8,934	0.065	Year 8	\$ 2,092	0.065
Year 9	\$ 8,934	0.065	Year 9	\$ 2,092	0.065
Year 10	\$ 4,536	0.033	Year 10	\$ 1,062	0.033
Total	\$ 121,644		Total	\$ 28,488	

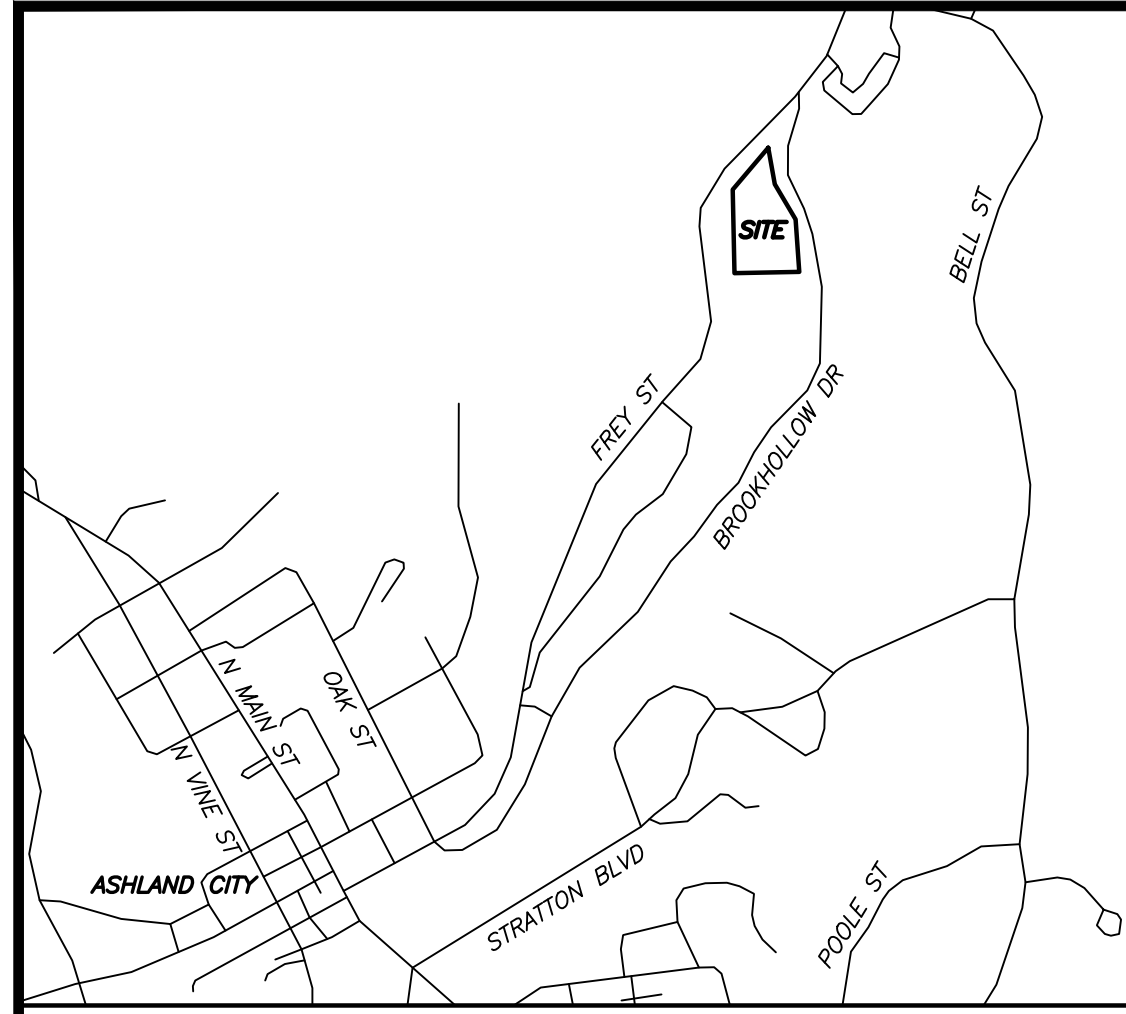
Total Projected New Property Tax: \$ 150,133

Annual Average: \$ 15,013

Notes for Ingram Maine Ashland City Terminal Impact Analysis:

1. U.S. Bureau of Economic Analysis RIMS II final demand aggregate output multiplier for Cheatham County, Tennessee for Construction. This multiplier represents the total dollar change in output that occurs in all industries for each additional dollar of output delivered by the specified industry.
2. U.S. Bureau of Economic Analysis RIMS II final demand aggregate output multiplier for Cheatham County, Tennessee for wholesale trade support activities.
3. U.S. Bureau of Economic Analysis RIMS II final demand employment multiplier for Cheatham County, Tennessee for Construction. This multiplier represents the number of jobs supported per million dollars of output from the specified industry.
4. Projection based upon data from Tennessee Department of Labor; Annual Average Wage/Salary for all industry sectors in Cheatham County, 2022. Assumes an average wage increase of 1.5% for 2023.
5. U.S. Department of Labor, "Consumer Expenditure Survey, Southern US" 2021; factor applied to direct and indirect wages to determine the rate of indirect or "downstream" expenditures on sales taxable goods and services at the Ashland City and Cheatham County local option rate of 2.75%.
6. Based upon July 2022 - June 2023 collections of business, motor vehicle and other local taxes compared to sales tax for Cheatham County.
7. U.S. Bureau of Economic Analysis RIMS II direct effect employment multiplier for Cheatham County, for truck transportation. This multiplier represents the total change in the number of jobs supported in all industries for each additional job created by the specified industry.
8. Indirect property tax for Cheatham County and Ashland City is based on the new direct jobs created by the company. For this calculation, it is assumed that 75% of the direct jobs reside in Cheatham County and represent one household per job. The 2023 median home value is utilized as a proxy for residential property value, to determine property tax generated per job. The residential assessment rate of 25% is utilized for all residences, including those in multifamily buildings assessed at 40%, and a combined Cheatham County (\$2.4766) and Ashland City (\$0.58) tax rate of \$3.06 per \$100 of assessed value is used to project the annual tax per job. The property tax from new or expanded commercial property that is generated indirectly from economic activity associated with the jobs supported by the company is not projected.
9. U.S. Bureau of Economic Analysis RIMS II final demand aggregate output multiplier for Cheatham County, Tennessee for truck transportation.

Note: All calculations are in constant 2023 dollars. No tax rate increases are assumed.
The 2012/2021 RIMS II multipliers are utilized for this analysis.



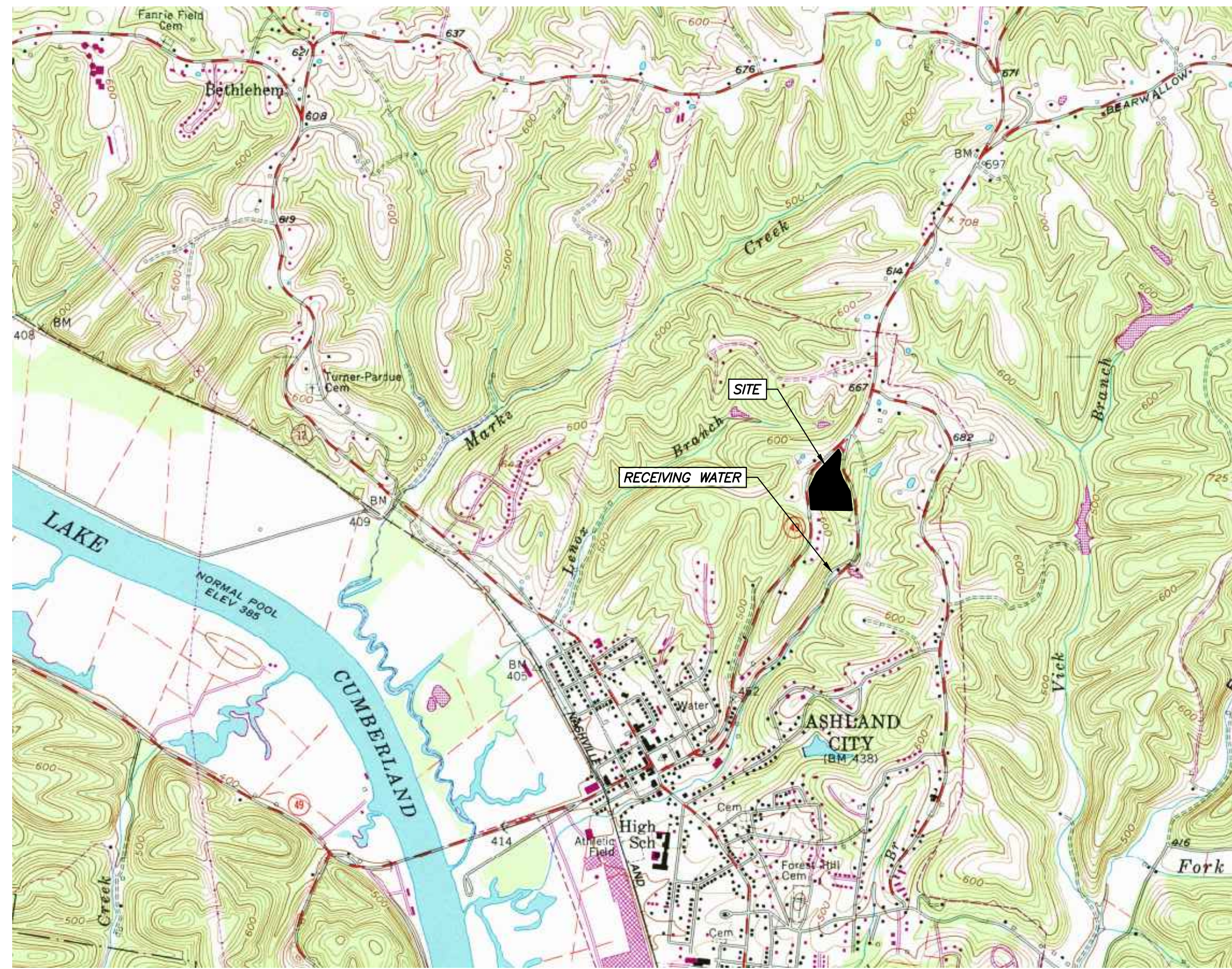
VICINITY MAP (NTS)

CONTACTS:

DEVELOPER – SOCAJR, INC.
 1244 SOUTH 4TH STREET
 LOUISVILLE, KY 40203
 CONTACT: JOSH HOOPER
 (502) 634-9830 EXT. 135

TENNESSEE ONE CALL
 PHONE: 1-800-351-1111

TENNESSEE DEPARTMENT OF TRANSPORTATION
 1918 WILMA RUDOLPH BLVD
 CLARKSVILLE, TN 37040
 PHONE: 931-648-5570



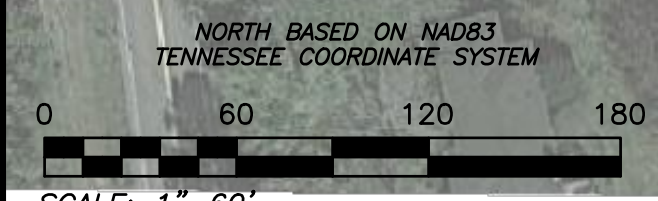
"ASHLAND CITY" NTS

LEGEND

- ARV = AIR RELEASE VALVE
- TP = TELEPHONE POLE
- PP = POWER POLE
- RCP = REINFORCED CONCRETE PIPE
- CMP = CORRUGATED METAL PIPE
- CB = CATCH BASIN
- JB = JUNCTION BOX
- WM = WATER METER
- WM = WATER METER
- WV = WATER VALVE
- CO = CLEANOUT
- AD = AREA DRAIN
- FH = FIRE HYDRANT
- IP(O) = IRON PIN OLD
- IP(N) = 1/2" IRON PIN NEW SET CAP NO. 1837
- R.O.W. = RIGHT OF WAY
- M.B.S.L. = MINIMUM BUILDING SETBACK LINE
- P.U.D.E. = PUBLIC UTILITY & DRAINAGE EASEMENT
- POINT OF CURVATURE: O
- EASEMENT LINE: ---
- MINIMUM BUILDING SETBACK LINE: ---
- CENTERLINE: ---
- BOUNDARY LINE: ---
- RIGHT-OF-WAY LINE: ---
- CONTOUR: --- 500 ---
- OVERHEAD ELECTRIC: --- OHE --- OHE --- OHE
- OVERHEAD TELEPHONE: --- OHT --- OHT --- OHT
- GAS MAIN: --- G --- G --- G --- G --- G
- WATER MAIN: --- 6"W --- 6"W --- 6"W --- 6"W --- 6"W
- FORCEMAIN SEWER: --- FM --- FM --- FM --- FM --- FM
- STORM PIPE: --- --- --- --- ---
- FENCE: ---

INDEX OF DRAWINGS:

- C0.0 – TITLE SHEET
- C0.1 – NOTES
- C1.0 – SITE LAYOUT
- C1.1 – LANDSCAPING PLAN
- C1.2 – LIGHTING PLAN
- C2.0 – UTILITIES
- C3.0 – SWPPP
- C3.1 – EPSC PHASE I
- C3.2 – EPSC PHASE II
- C3.3 – EPSC PHASE III
- C4.0 – GRADING & DRAINAGE
- C5.0 – TDOT CONNECTION
- C6.0 – RETAINING WALL #1
- C6.1 – RETAINING WALL #2
- C6.2 – RETAINING WALL #3
- C6.3 – RETAINING WALL #4
- C7.0 – GENERAL DETAILS
- C7.1 – GENERAL DETAILS
- C7.2 – PUMP STATION DETAILS
- C7.3 – PUMP STATION DETAILS
- C7.4 – PUMP STATION DETAILS

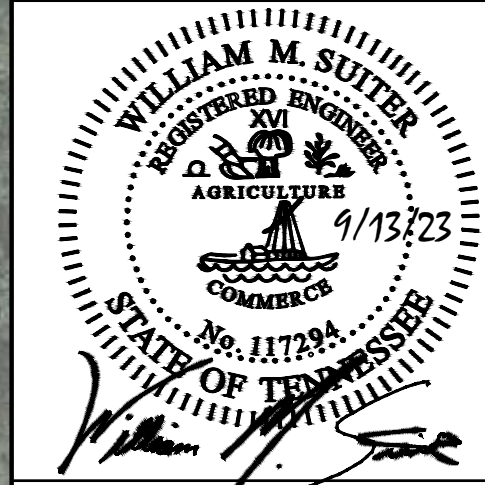


Quiner
Surveying
 & Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 Ph. # (931) 920-1750
 Fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
 CONSTRUCTION PLANS
 SCALE: 1"=60'



C0.0

EARTHWORK NOTES:

THE CONTRACTOR SHALL PROTECT ALL TREES DESIGNATED TO REMAIN, A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE BEFORE ANY CLEARING BEGINS TO DETERMINE WHICH TREES SHALL REMAIN, DO NOT OPERATE NOR STORE HEAVY EQUIPMENT, NOR HANDLE/STORE MATERIALS WITHIN THE DRIP LINES OF TREES THAT WILL REMAIN.

THE CONTRACTOR SHALL INSTALL AN ORANGE BARRIER FENCE AROUND THE DRIP LINE OF ALL TREES TO REMAIN. IF FOR ANY REASON THE FENCING IS DAMAGED THE CONTRACTOR SHALL IMMEDIATELY MAKE REPAIRS.

EVERY EFFORT SHALL BE TAKEN BY THE CONTRACTOR TO LIMIT THE DISTURBANCE OF SOILS TO THE AREAS INDICATED ON THE PLANS.

TOPSOIL SHALL BE STRIPPED FROM ALL CUT AND FILL AREAS AND STOCKPILED IN FREE DRAINING AREAS. INSTALL EROSION AND SEDIMENTATION CONTROLS AROUND STOCKPILES.

PROVIDE TEMPORARY SEEDING ON STOCKPILES AND ALL OTHER AREAS OF THE SITE THAT WILL REMAIN UNDISTURBED FOR 30 DAYS OR MORE.

AFTER STRIPPING TOPSOIL, PROOFROLL SUBGRADE WITH A LOADED DUMP TRUCK WITH A MINIMUM WEIGHT OF 20 TONS. CONTRACTOR SHALL EMPLOY A GEOTECHNICAL ENGINEER TO PERFORM PROCTOR TESTS IN ACCORDANCE WITH ASTM D1557.

ENGINEERED FILL SHALL BE PLACED IN MAXIMUM 8" COMPACTED LIFTS WITH DENSITY OF 95% OF MAXIMUM DRY DENSITY PER ASTM D1557.

ALL GRADED AREAS SHALL RECEIVE 4" OF TOPSOIL AND BE SEEDDED AND MULCHED WITHIN 15 DAYS AFTER GRADING IS COMPLETED. SATISFACTORY TOPSOIL IS DEFINED AS SOIL BEING FREE OF SUBSOIL, CLAY LUMPS, STONES, OTHER OBJECTS OVER 1" IN DIAMETER, OR CONTAMINANTS.

ALL CURBS AND SIDEWALKS SHALL BE BACKFILLED WITH TOPSOIL, SEEDDED, AND MULCHED, UNLESS OTHERWISE NOTED.

ALL CUT AND FILL SLOPES TO BE 3:1 MAXIMUM UNLESS SPECIFICALLY NOTED ON PLANS.

FINISH GRADE TOLERANCES ARE 0.10 FEET ABOVE OR BELOW DESIGN ELEVATIONS.

ALL ROADWAYS SHALL BE BLUETOPPED ON THE CENTERLINE AND 2 FEET BEHIND ALL CURBLINES A MINIMUM OF EVERY FIFTY FOOT STATION BEFORE ACCEPTANCE OF THE SUBGRADE. ROADS HAVING SLOPES LESS THAN 1% SHALL BE BLUETOPPED AT TWENTY FIVE FOOT INTERVALS.

ALL BUILDING PADS SHALL BE COMPACTED WITH ENGINEERED FILL. 10' BEYOND THE LIMITS OF THE PAD, ROADWAYS SHALL BE COMPACTED WITH ENGINEERED FILL A MINIMUM OF 5' BEYOND THE PROPOSED BACK OF CURB LINE. SEWER LINES LOCATIONS SHALL BE COMPACTED WITH ENGINEERED FILL 10' ON EACH SIDE OF THE SEWER CENTERLINE.

NUCLEAR DENSITY TESTING SHALL BE PERFORMED ON ALL LIFTS ON ENGINEERED FILL. A GEOTECHNICAL ENGINEER SHALL CERTIFY THAT EACH LIFT IS COMPACTED TO A DENSITY OF 95% OF MAXIMUM DRY DENSITY PER ASTM D1557.

SOLID ROCK SHALL BE DEFINED AS (1) ROCK WHICH CANNOT BE ECONOMICALLY EXCAVATED WITHOUT THE USE OF EXPLOSIVES OR (2) ANY ROCK, BOULDER OR FRAGMENT OF ROCK OR CONCRETE EXCAVATED FROM A FOUNDATION HAVING A VOLUME GREATER THAN ONE HALF (1/2) CUBIC YARD.

SHOULD SOLID ROCK BE ENCOUNTERED AND EXCAVATION OF SOLID ROCK IS COVERED WITHIN THE CONTRACT BETWEEN THE OWNER AND THE CONTRACTOR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. REPRESENTATIVES OF THE ENGINEER SHALL MEASURE THE SOLID ROCK EXCAVATION TO DETERMINE THE QUANTITY OF SOLID ROCK EXCAVATED.

EROSION CONTROL & SEDIMENT PREVENTION NOTES:

A COMPLETED NOTICE OF INTENT (NOI) AND APPLICATION FEE (MAKE CHECKS PAYABLE TO "TREASURER STATE OF TENNESSEE") SHALL BE SUBMITTED TO THE LOCAL ENVIRONMENTAL ASSISTANCE CENTER (EAC) BY THE OWNER, WHO WILL BE THE PRIMARY PERMITTEE, AT LEAST THIRTY DAYS BEFORE CONSTRUCTION BEGINS.

CONSTRUCTION SHALL NOT BEGIN UNTIL A NOTICE OF COVERAGE (NOC) IS RECEIVED FROM THE STATE. THE NOC SHALL BE POSTED NEAR THE SITE ENTRANCE.

EACH CONTRACTOR AND SUB-CONTRACTOR THAT IS RESPONSIBLE FOR THE INSTALLATION, INSPECTIONS, OR MAINTENANCE OF EROSION OR SEDIMENT CONTROL MEASURES IS CONSIDERED A SECONDARY PERMITTEE AND MUST ALSO UNDERSTAND AND FOLLOW THIS DOCUMENT. ALL SECONDARY PERMITTEES WITH THE ORIGINAL TRACKING NUMBER TO THE LOCAL EAC AT LEAST SEVEN DAYS BEFORE BEGINNING WORK. NO ADDITIONAL FEES ARE REQUIRED OF SECONDARY PERMITTEES. THE CONTRACTOR SHALL MAINTAIN RECORDS OF GRADING ACTIVITIES AND STABILIZATION PRACTICES THROUGHOUT THE ENTIRE PROJECT.

PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 10 DAYS PRIOR TO GRADING OR EARTH MOVING UNLESS THE AREA IS SEEDDED AND/OR MULCHED OR OTHER TEMPORARY COVER IS INSTALLED.

CONSTRUCTION MUST BE PHASED FOR PROJECTS IN WHICH OVER 50 ACRES OF SOIL WILL BE DISTURBED. AREAS OF THE COMPLETED PHASE MUST BE STABILIZED WITHIN 15 DAYS (SEE SUBSECTION 3.5.5 BELOW). NO MORE THAN 50 ACRES OF ACTIVE SOIL DISTURBANCE IS ALLOWED AT ANY TIME DURING THE CONSTRUCTION PROJECT.

EROSION PREVENTION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN, AND MUST BE CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. TEMPORARY MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORKDAY, BUT MUST BE REPLACED AT THE END OF THE WORKDAY.

THE FOLLOWING RECORDS SHALL BE MAINTAINED ON OR NEAR SITE: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; THE DATES WHEN STABILIZATION MEASURES ARE INITIATED; INSPECTION RECORDS AND RAINFALL RECORDS.

PERMITTEES SHALL MAINTAIN A RAIN GAUGE AND DAILY RAINFALL RECORDS AT THE SITE, OR USE A REFERENCE SITE FOR A RECORD OF DAILY AMOUNT OF PRECIPITATION.

THE CONTRACTORS SHALL USE WATER SPRINKLING AND OWNER SUITABLE METHODS AS NECESSARY TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION WORK.

CONSTRUCT TEMPORARY EROSION CONTROL AS SHOWN ON THE DRAWINGS PRIOR TO BEGINNING GRADING OPERATIONS.

ALL DRAINAGE STRUCTURES, PIPES WITHIN THE LIMITS OF CONSTRUCTION, DETENTION PONDS SHALL HAVE SEDIMENT REMOVED PRIOR TO FINAL ACCEPTANCE.

SILT BARRIERS SHALL BE CLEANED OF ACCUMULATED SEDIMENT WHEN APPROXIMATELY 50% FILLED.

TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED WHEN THE SITE IS STABILIZED AND DEVICES ARE NO LONGER REQUIRED FOR THE INTENDED PURPOSE.

TOP OF GRATE ELEVATIONS FOR CURB INLETS ARE GIVEN TO THE CENTER OF THE INLETS AT THE FACE OF CURB. THE GRATES SHALL SLOPE LONGITUDINALLY WITH THE PAVEMENT GRADE. ADJUST THE CASTING TO FALL ALONG THE CURB LINE.

EROSION CONTROL & SEDIMENT PREVENTION NOTES (CONT'D.):

ALL PIPES UNDER PAVED AREAS SHALL BE BACKFILLED WITH CRUSHED STONE. ALL PIPES UNDER LAWN AREAS SHALL BE BACKFILLED WITH SATISFACTORY MATERIAL COMPACTED TO 95% OF MAXIMUM PER ASTM D1557.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, & RESTORING ALL DRAINAGE SYSTEMS. THE CONTRACTOR SHALL MAINTAIN AND/OR IMPROVE EXISTING AND PROPOSED DRAINAGE SYSTEMS TO ASSURE NO ADVERSE EFFECTS ON ADJOINING PROPERTIES DURING CONSTRUCTION.

ALL DITCHES AND BASINS, UNLESS NOTED ON PLANS, SHALL BE SEEDDED, STRAWED, & MATTED UNLESS OTHERWISE NOTED. MATTING SHALL BE TYPE S 150 (NORTH AMERICAN GREEN) OR EQUIVALENT AND SHOULD BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.

CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL REQUIREMENTS OF THE TDEC GENERAL NPDES PERMIT TNR-10-0000.

CONTRACTOR SHALL INSPECT EROSION CONTROL ON SITE BEFORE EACH FORECASTED RAIN, AFTER EACH RAIN OF 0.5" OR MORE, AND AT LEAST TWICE EVERY WEEK. ALL INSPECTIONS SHALL BE DOCUMENTED AND TURNED IN WITH PAYMENT REQUESTS.

CONTRACTOR TO INSTALL ADDITIONAL SILT FENCE ALONG CURB LINE AFTER CURBS ARE BACKFILLED. LOCATION TO BE SPECIFIED BY ENGINEER.

CONSTRUCTION EXITS SHALL BE CONSTRUCTED AT ALL LOCATIONS WHERE INDICATED ON PLANS. CONTRACTOR SHALL CONTACT ENGINEER FOR APPROVAL OF ADDITIONAL CONSTRUCTION EXIT LOCATIONS WHERE VEHICLES OR EQUIPMENT ACCESS PUBLIC ROADWAYS.

CONTRACTOR TO CONSTRUCT 18" DEEP OVERFLOW SWALES FROM ROADWAY INLET TO HEADWALL AT APPLICABLE LOT LINES.

UPON COMPLETION OF THE SITE STABILIZATION, THE OWNER AND CONTRACTOR SHALL PROVIDE A NOTICE OF TERMINATION (NOT) FOR THE PROJECT TO THE LOCAL ENVIRONMENT ASSISTANCE CENTER.

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING ALL PHASES OF CONSTRUCTION TO MAINTAIN THE INTEGRITY OF ALL SINKHOLES. THE CONTRACTOR SHALL INSTALL EROSION CONTROL AND SEDIMENT CONTROL AS SHOWN ON PLANS TO PROTECT THE SINKHOLE FROM SILTATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ADDITIONAL SEDIMENT CONTROL MEASURES BECOME NECESSARY.

GENERAL PROJECT NOTES:

NOTIFY ENGINEER IMMEDIATELY UPON DISCOVERY OF HAZARDOUS MATERIALS.

THE CONTRACTOR SHALL NOTIFY THE TENNESSEE ONE-CALL SYSTEM, INC. (TOCS) AT 1-800-351-1111 AND ANY NON TOCS MEMBER UTILITY INDIVIDUALLY AT LEAST 3 WORKING DAYS PRIOR TO ANY EXCAVATION AND/OR DEMOLITION.

UNDERGROUND STRUCTURES & UTILITIES SHOWN ARE STRICTLY APPROXIMATE IN LOCATION AND DEPTH, AND MAY NOT BE THE ONLY UTILITIES PRESENT. THE CONTRACTOR SHALL VERIFY FIELD SIZES, LOCATION AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING WORK. NOTIFY ENGINEER OF ANY DISCREPANCIES.

CONTRACTOR SHALL PROVIDE PROTECTION TO ALL STREETS, FENCES, TREES, UTILITIES AND STRUCTURES THAT ARE TO REMAIN. CONTRACTOR-CAUSED DAMAGE SHALL BE REPAIRED TO EXISTING CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.

THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL PERMITS, AND PAY ALL PERMIT AND TAP FEES PRIOR TO BEGINNING WORK.

PROVIDE A SMOOTH TRANSITION BETWEEN PAVEMENT AND NEW PAVEMENT. FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. INSTALL ALL UTILITIES PRIOR TO INSTALLATION OF PAVEMENT.

DIMENSIONS ARE TO THE FACE OF CURB, EDGE OF CONCRETE, OR TO THE FACE OF BUILDING, UNLESS OTHERWISE NOTED.

MAINTAIN ONE SET OF AS-BUILT DRAWINGS ON THE JOB SITE FOR DISTRIBUTION TO THE ENGINEER UPON COMPLETION. AS-BUILTS SHALL INCLUDE LOCATIONS AND ELEVATIONS OF WATER MAIN, APPURTENANCES & SERVICES, SEWER MAINS, MANHOLES AND SERVICES, STORM STRUCTURES, STORM WATER BASINS, AND STORM WATER QUALITY DEVICES.

OBSERVANCE OF THE CONTRACTOR'S WORK BY REPRESENTATIVES OF THE ENGINEER'S OFFICE SHALL NOT RELIEVE THE CONTRACTOR OF THE FINAL AND ULTIMATE RESPONSIBILITY FOR THE CONSTRUCTION OF THE IMPROVEMENTS IN ACCORDANCE WITH THESE PLANS AND ANY REFERENCED SPECIFICATIONS, STANDARD DRAWINGS OR DETAILS.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AT LEAST 10 WORKING DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION IN ORDER TO SCHEDULE A PRE-CONSTRUCTION MEETING.

IN THE EVENT OF ANY DISCREPANCIES FOUND IN THE DRAWINGS OR IF PROBLEMS ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL CONSTRUCTION SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS OF THE RESPONSIBLE GOVERNMENTAL AGENCIES.

ANY DEVIATIONS FROM THE PLANS MUST BE APPROVED BY THE ENGINEER.

WHEN THE WORK AREA IS AN AREA OF DIRECT PUBLIC ACCESS, THE WORK AREA SHALL BE BARRICADED AND ILLUMINATED DURING DARKNESS AND PERIODS OF INACTIVITY.

CONTRACTOR SHALL PROVIDE SHEETING, SHORING AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET ALL APPROPRIATE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS.

ANY SHOP DRAWINGS REQUIRED MUST BE APPROVED BY THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. DESIGNS PROVIDED BY OTHERS MUST BE SIGNED AND SEALED AS REQUIRED BY TENNESSEE STATUTES.

THE CONTRACTOR SHALL MAKE A PHYSICAL INSPECTION OF THE SITE BEFORE SUBMITTING A PROPOSAL FOR THE PROJECT. IT IS ASSUMED THAT THE CONTRACTOR HAS EXAMINED THE PLANS, SPECIFICATIONS AND THE SITE BEFORE SUBMITTING A PROPOSAL. ANY ITEMS THAT WOULD BE REASONABLY REQUIRED FOR CONSTRUCTION, WHETHER OR NOT SPECIFICALLY DENOTED IN THE PLANS SHALL BE PROVIDED BY THE CONTRACTOR.

SHOULD A CONFLICT EXIST BETWEEN THE PLANS, SPECIFICATION OR THE REQUIREMENTS OF OFFICIALS OF INVOLVED GOVERNING BODIES, THE MORE STRINGENT SHALL APPLY.

BEARINGS AND/OR DISTANCES SHOWN ON THE PLANS SHALL TAKE PRECEDENCE OVER SCALE. NOTIFY THE ENGINEER OF ANY DISCREPANCY.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ANY DAMAGE DONE TO ADJOINING PROPERTIES DURING CONSTRUCTION.

ALL SIDEWALKS SHALL BE BUILT IN ACCORDANCE WITH ADA REGULATIONS & GUIDELINES, INCLUDING THE INSTALLATION OF CURB RAMPS AND ALL ASSOCIATED APPURTENANCES.

UTILITY NOTES:

THE CONTRACTOR SHALL PROTECT ALL UTILITY MANHOLES, VALVES, BOXES AND COVER, AND ADJUST TO PROPOSED FINISHED GRADES AS NECESSARY.

1. DUCTILE IRON PIPE
 - A. DUCTILE IRON PIPE SHALL BE SUPPLIED AND MANUFACTURED IN ACCORDANCE WITH AWWA SPECIFICATION C-151, AS LAST REVISED.
 - B. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350, OR AS SHOWN ON DRAWINGS. PIPE SHALL BE FURNISHED IN 18 TO 20 FOOT NOMINAL LAYING LENGTHS AND SHALL BE BELL AND SPIGOT TYPE, EMPLOYING A SINGLE RUBBER GASKET TO EFFECT THE JOINING SEAL, "TYTON JOINT" OR APPROVED EQUAL IN ACCORDANCE WITH AWWA SPECIFICATION C-104.
 - C. ALL PIPE SHALL BE LINED WITH 40 MILS NOMINAL DRY FILM THICKNESS OF "PROTECTO 401 CERAMIC EPOXY."
2. FITTINGS
 - A. ALL FITTINGS SHALL BE MANUFACTURED IN CONFORMANCE WITH AWWA SPECIFICATION C-110 AND C-111 WITH A MINIMUM PRESSURE RATING OF 350 P.S.I.
 - B. JOINTS SHALL BE MECHANICAL JOINT FURNISHED SYNTHETIC RUBBER COMPOUND OR RUBBER GASKETS.
 - C. ALL FITTINGS SHALL BE LINED WITH 40 MILS NOMINAL DRY FILM THICKNESS OF "PROTECTO 401 CERAMIC EPOXY."

WATER SERVICE PIPE MATERIAL MAY BE MUNICIPEX CROSSLINKED POLYETHYLENE (PEXa) BY Rehau, OR ALTERNATIVELY MAY BE TYPE K SOFT COPPER.

WHERE COMPRESSION FITTINGS ARE USED ON MUNICIPEX PIPE, INSERT STIFFENERS ARE REQUIRED TO ENSURE A PROPER CONNECTION IS MADE. PLASTIC INSERT STIFFENERS ARE TO BE USED WHERE PIPE IS LESS THAN 2 INCHES IN DIAMETER AND STAINLESS STEEL INSERT STIFFENERS ARE TO BE USED WHERE PIPE IS 2-INCH DIAMETER AND LARGER.

TRACER WIRE SHALL BE INSTALLED ALONG ALL WATER MAIN AND WATER SERVICES AND ANY SEWER FORCE MAIN AND FORCE MAIN SERVICES. TRACER WIRE SHALL BE Copperhead 1230-HS, 12 AWG COPPER-CLAD STEEL TRACER WIRE WITH 30 MIL HDPE COATING, NO SUBSTITUTION ALLOWED. CONNECTORS AT SERVICE CONNECTIONS AND TEES SHALL BE DryConn Direct Bury Lug Aqua BY King Innovation AND AT MAIN LINE SPLICES SHALL BE DryConn King 6 Blue BY King Innovation, NO SUBSTITUTIONS ALLOWED. TRACER WIRE SHALL EXTEND AT LEAST FIVE FEET BEYOND WATER SERVICE STUB TERMINATIONS. A PIECE OF PVC PIPE SHALL BE BURIED VERTICALLY AGAINST THE 4"x4" MARKER POST EXTENDING AND ABOUT TWO INCHES ABOVE GROUND LEVEL. THE TRACER WIRE SHALL BE FED THROUGH THE PVC PIPE WITH THE END OF THE WIRE ABOUT TWO INCHES ABOVE THE END OF THE PIPE AND THE REMAINDER COILED AND BURIED BENEATH IT. A PERFORMANCE TEST WILL BE PERFORMED ON THE COMPLETED TRACER WIRE SYSTEM TO ENSURE THE ENTIRE SYSTEM IS TRACKABLE. ANY PART OF THE SYSTEM THAT IS NOT TRACKABLE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR UNTIL IT IS TRACKABLE PRIOR TO FINAL ACCEPTANCE OF UTILITIES.

CURBING CONTRACTOR SHALL MARK WATER AND SEWER SERVICE LOCATION IN CURB DURING POURING. A "W" SHALL BE STAMPED ON THE CURB FACE AT ALL WATER LATERAL LOCATION. A "S" SHALL BE STAMPED ON THE CURB FACE AT ALL SEWER LATERAL LOCATIONS.

NO WATER SERVICE APPARATUS OF ANY KIND SHALL BE PLACED IN A.C. OR CONCRETE AREAS.

WATER SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL STATE & LOCAL CODES, SPECIFICATIONS, AND REGULATIONS. CLEANED, DISINFECTED AND BACTERIOLOGICALLY CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS.

SANITARY SEWER SYSTEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL STATE & LOCAL CODES, SPECIFICATIONS, AND REGULATIONS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SEQUENCING OF CONSTRUCTION FOR ALL UTILITY LINES SO THAT WATER LINES AND UNDERGROUND ELECTRIC DO NOT CONFLICT WITH SANITARY SEWERS OR STORM SEWERS.

BACKFILL UTILITY TRENCHES UNDER PAVEMENT AREAS WITH CRUSHED STONE OR GRAVEL. BACKFILL UTILITY TRENCHES IN LAWN AREAS WITH SATISFACTORY FILL MATERIAL COMPACTED TO AT LEAST 95% OF MAXIMUM PER ASTM D1557.

PROVIDE AS-BUILT DRAWINGS WHICH INCLUDE AT LEAST TWO DIMENSIONS TO EACH VALVE AND MANHOLE FROM KNOWN SITE FEATURES. DRAWINGS SHALL INCLUDE VERTICAL AND HORIZONTAL INFORMATION ON ALL NEW UTILITIES AS WELL AS EXISTING UTILITIES ENCOUNTERED.

CONTRACTOR SHALL MAINTAIN A MINIMUM 10' HORIZONTAL AND 18" VERTICAL CLEARANCE BETWEEN WATER, FORCEMAINS, & GRAVITY SEWER LINES WHERE SUCH LINES CROSS.

ALL WATER MAINS, UNLESS NOTED ON PLANS, SHALL BE MADE OF SDR 21 PVC MEETING ASTM D-2241 SPECIFICATIONS & SHALL HAVE A MINIMUM COVER OF 3 FEET IN NON-TRAFFIC AREAS AND 4 FEET OF COVER IN TRAFFIC AREAS. WATERLINE DEPTH SHALL BE GREATER AS NECESSARY TO AVOID SEWER, STORM DRAINS AND OTHER UTILITIES.

ALL SEWER MAINS TO BE INSTALLED AT A DEPTH LESS THAN 12 FEET, UNLESS NOTED ON PLANS, SHALL BE MADE OF SDR 35 PVC MEETING ASTM-3034 SPECIFICATION. ALL SEWER MAINS TO BE INSTALLED AT A DEPTH EQUAL TO OR GREATER THAN 12 FEET, UNLESS NOTED ON PLANS, SHALL BE MADE OF SDR 26 PVC MEETING ASTM-3034 SPECIFICATIONS. ALL SEWER MAINS TO BE INSTALLED AT A DEPTH GREATER THAN 20 FEET SHALL BE MADE OF DUCTILE IRON.

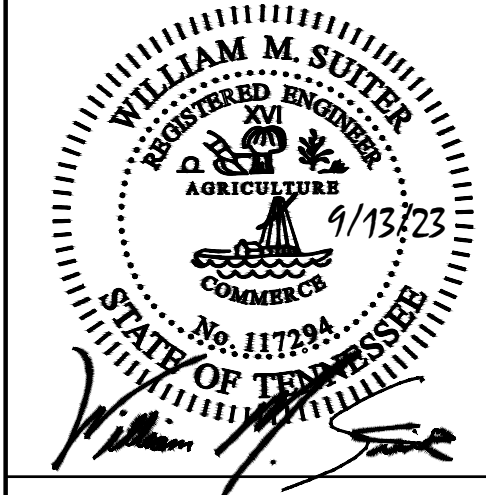
CHECK DAMS SHALL BE INSTALLED AT THE UPSTREAM SIDE OF EACH MANHOLE. CHECK DAMS SHALL CONSIST OF COMPACTED CLAY BEDDING AND BACKFILL AT LEAST THREE FEET THICK TO THE TOP OF THE TRENCH AND CUT INTO WALLS OF THE TRENCH TWO FEET.

SOLID ROCK ENCOUNTERED IN A SEWER TRENCH SHALL BE REMOVED TO A DEPTH OF AT LEAST 6 INCHES BELOW THE FINISHED PIPELINE.

P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 Ph. # (931) 920-1750
 Fax # (931) 920-8490
Suiner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

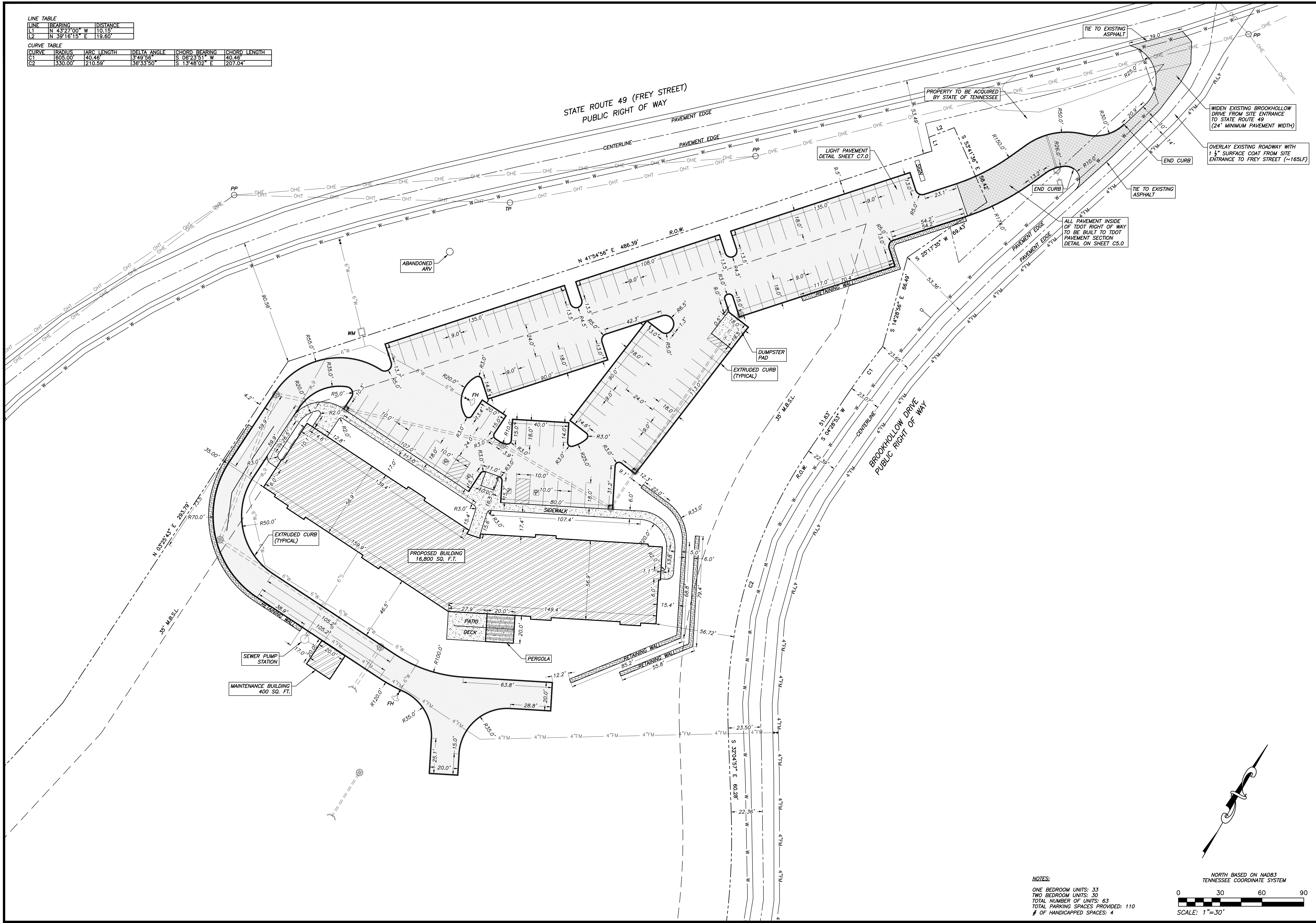
BROOKHOLLOW SENIOR APARTMENTS
ASHLAND CITY, TN
GENERAL NOTES
SCALE: NONE



CO.1

LINE	BEARING	DISTANCE
L1	N 43°27'00" W	10.15'
L2	N 39°16'15" E	19.60'

CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	605.00'	40.48'	3°49'58"	S 08°23'51" W	40.48'
C2	330.00'	210.59'	36°33'50"	S 13°48'02" E	207.04'

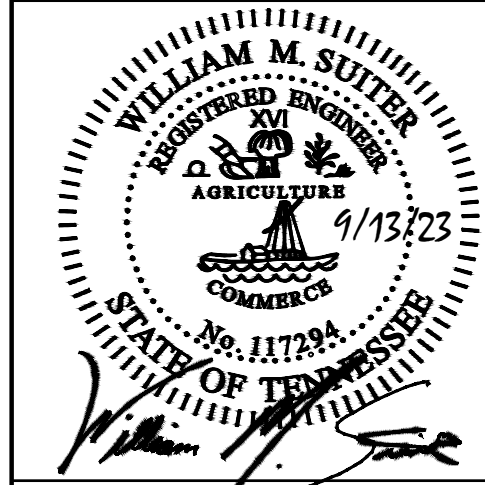


Sutiner
Surveying
 & Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

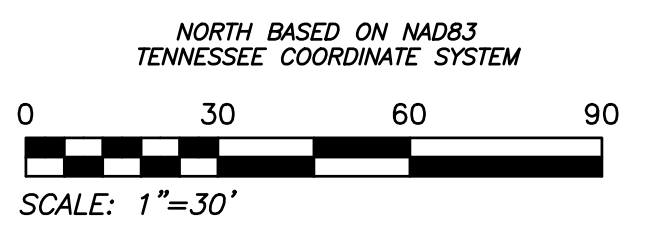
REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS


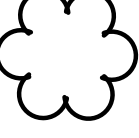
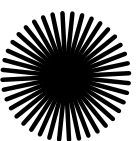

BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
 SITE LAYOUT
 SCALE: 1"=30'



C1.0

NOTES:
 ONE BEDROOM UNITS: 33
 TWO BEDROOM UNITS: 30
 TOTAL NUMBER OF UNITS: 63
 TOTAL PARKING SPACES PROVIDED: 110
 # OF HANDICAPPED SPACES: 4



LANDSCAPE SCHEDULE						
QUANTITY	SYMBOL	COMMON NAME	BOTANICAL NAME	HEIGHT	TRUNK	TYPE
16		SUGAR MAPLE	ACER SACCHARUM	2"	D	
8		FLOWERING DOGWOOD	CORNUS FLORIDA	2"	D	
9		YOSHINO CHERRY	PRUNUS YEDOENSIS	2"	D	
10		LITTLE LEAF BOXWOOD	BUXUS MICROPHYLLA	18"	E	



LANDSCAPE NOTES:

NO CERTIFICATE OF OCCUPANCY SHALL BE ISSUED UNTIL ALL LANDSCAPE MATERIALS ARE IN PLACE & IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED LANDSCAPE PLAN.

ALL TREES & SHRUBS SHALL BE TAGGED ACCORDING TO SPECIES. TAGS SHALL NOT BE REMOVED UNTIL AFTER THE SITE INSPECTION FOR THE ISSUANCE OF OCCUPANCY.

ANY PLANT THAT DIES, TURNS BROWN OR DEFLOLIATES SHALL BE REPLACED WITHIN ONE YEAR OR BY THE NEXT GROWING SEASON, WHICHEVER IS SOONER. OTHER DEFECTIVE LANDSCAPE MATERIAL SHALL BE REPLACED WITHIN THREE MONTHS.

ALL TREES SHALL BE STRAIGHT TRUNKED, FULL HEADED & MEET ALL REQUIREMENTS SPECIFIED. ALL TREES & SHRUBS MUST BE CONTAINER GROWN OR BALLED & BURLAPPED WITH SIZES INDICATED ON THE PLANT SCHEDULE ON THE APPROVED PLANS.

ALL PLANTS SHALL BE HEALTHY, VIGOROUS MATERIAL, FREE OF PESTS & DISEASE. ALL ROOTBALLS, CONTAINERS & HEIGHT TO WIDTH RATIOS SHALL CONFORM TO THE SIZE STANDARDS SET FORTH IN THE AMERICAN STANDARDS FOR NURSERY STOCK, CURRENT EDITION.

ALL REQUIRED DECIDUOUS TREES SHALL BE A MINIMUM OF TWO INCHES IN CALIPER AT PLANTING.

ALL REQUIRED EVERGREEN TREES SHALL BE A MINIMUM OF SIX FEET IN HEIGHT AT PLANTING.

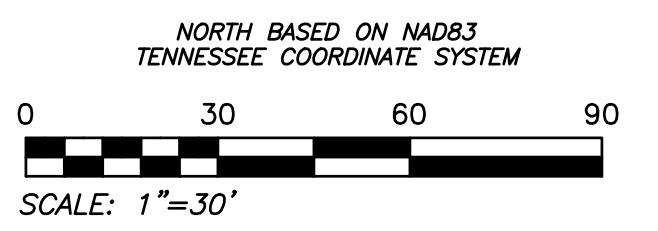
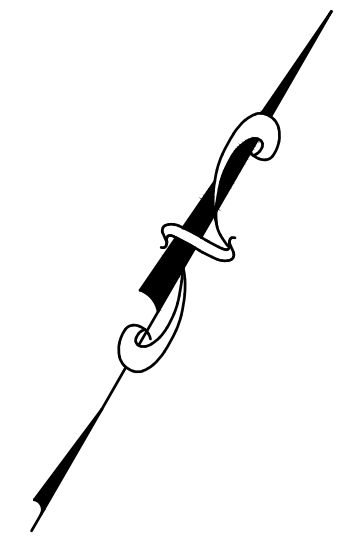
ANY SITE OR LANDSCAPE CHANGES (INCLUDING BUT NOT LIMITED TO A CHANGE IN DESIGN, A REDUCTION IN SIZE OR NUMBER OF PLANT MATERIAL, OR THE RELOCATION OF OVERHEAD OR UNDERGROUND UTILITIES) WILL REQUIRE A REVISED LANDSCAPE PLAN TO BE SUBMITTED AND APPROVED PRIOR TO LANDSCAPE INSTALLATION.

IF PROPOSING ANY LANDSCAPE WITHIN A DEDICATED EASEMENT, THE FOLLOWING NOTE SHOULD BE INCLUDED ON THE LANDSCAPE PLANS:
 "THE OWNER ACKNOWLEDGES THAT LANDSCAPING IN A DEDICATED EASEMENT DOES NOT WAIVE OR MODIFY THE CITY OF CLARKSVILLE'S RIGHTS AS THE EASEMENT HOLDER. THE OWNER UNDERSTANDS THAT THE CITY OF CLARKSVILLE, ITS AUTHORIZED CONTRACTOR OR APPLICABLE PRIVATE UTILITY SHALL HAVE NO LIABILITY TO THE OWNER FOR ANY DAMAGE TO THE LANDSCAPING IN THE EASEMENT WHEN SAID DAMAGE IS DUE TO WORK WITHIN THE EASEMENT. THE OWNER MAY BE HELD RESPONSIBLE FOR THE REMOVAL OF LANDSCAPING TO ENABLE WORK TO BE DONE. THE OWNER SHALL BE SOLELY RESPONSIBLE FOR ANY COSTS INCURRED IN REPAIRING AND/OR REPLACING THE REQUIRED LANDSCAPING."

PLANT MATERIAL SHALL CONFORM TO "THE AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1) FOR SIZE FORM AND QUALITY

MYCORRHIZAL INOCULATES AND SUPER-ABSORBENT MATERIAL ADDED TO TOPSOIL BACKFILL AT THE MANUFACTURER'S RECOMMENDED RATE AS PER SPECIFICATIONS

REMOVE ALL CRUSHED STONE BASE TO NATIVE SOIL OR A MINIMUM OF 24" IF ENGINEERED FILL

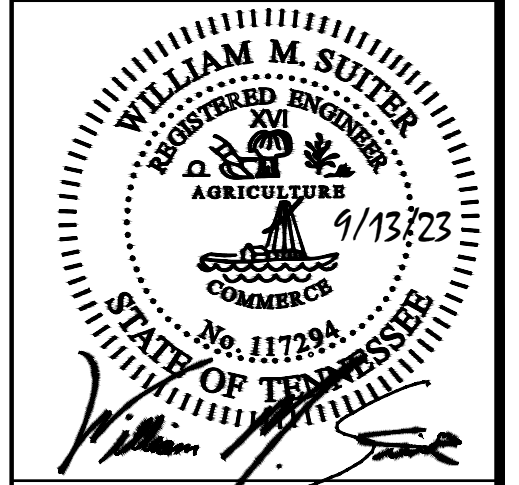


Quiner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

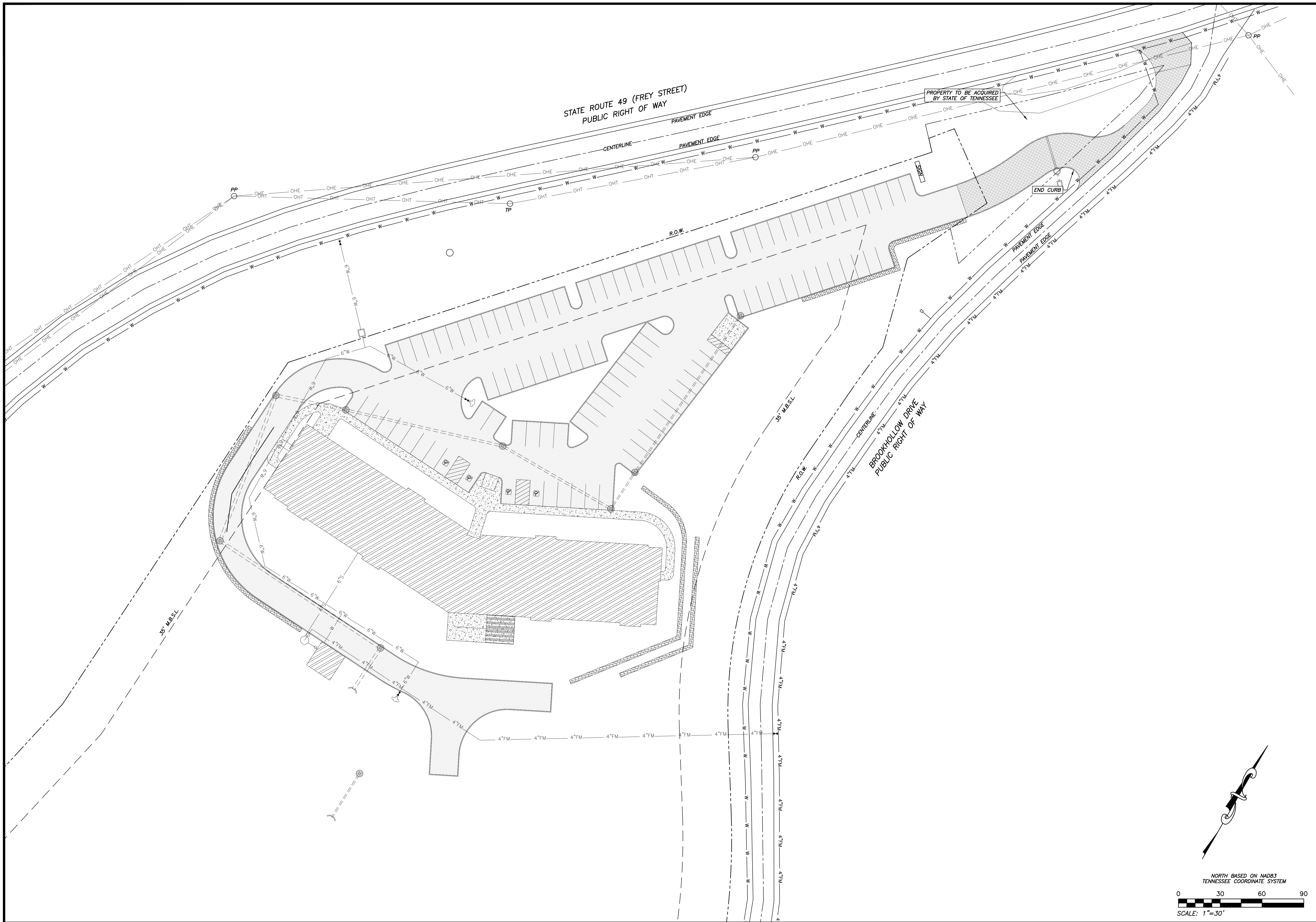
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR
APARTMENTS
ASHLAND CITY, TN
LANDSCAPING PLAN
SCALE: 1"=30'



C1.1

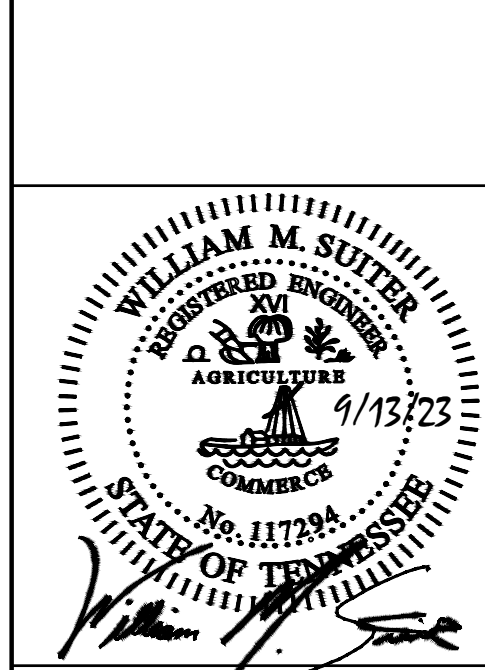


Suter
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

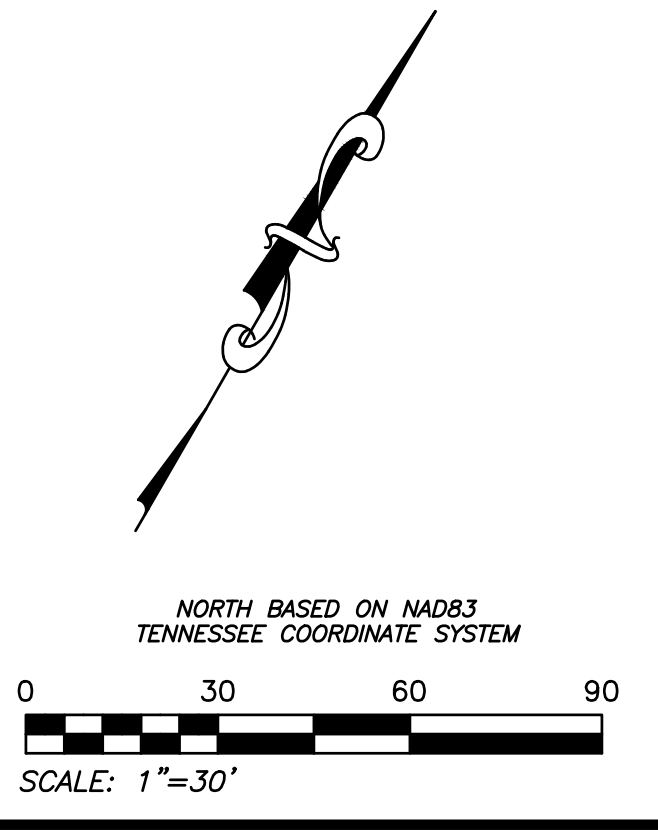
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
LIGHTING PLAN
 SCALE: 1" = 30'

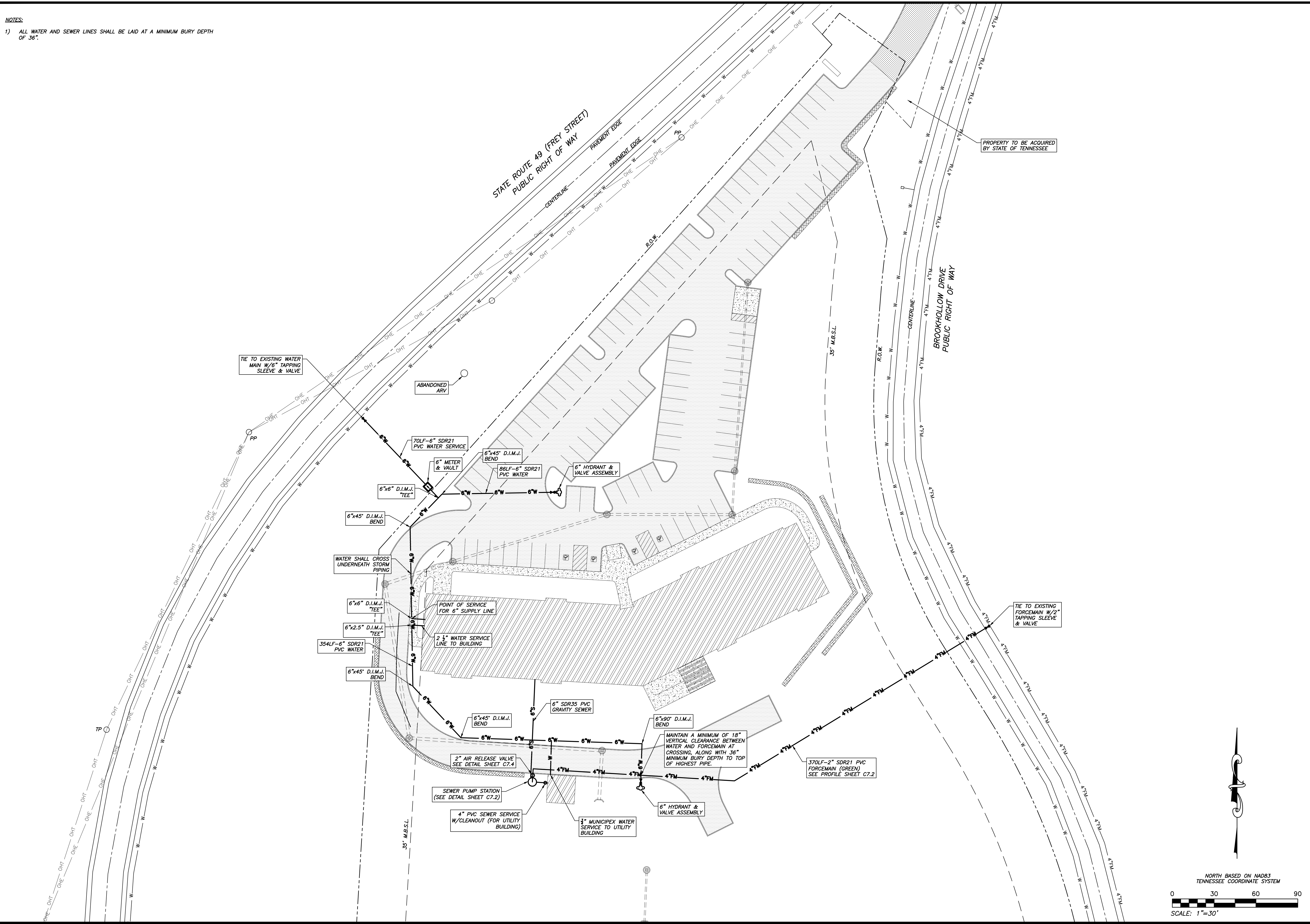


C1.2



NOTES:

1) ALL WATER AND SEWER LINES SHALL BE LAID AT A MINIMUM BURY DEPTH OF 36".

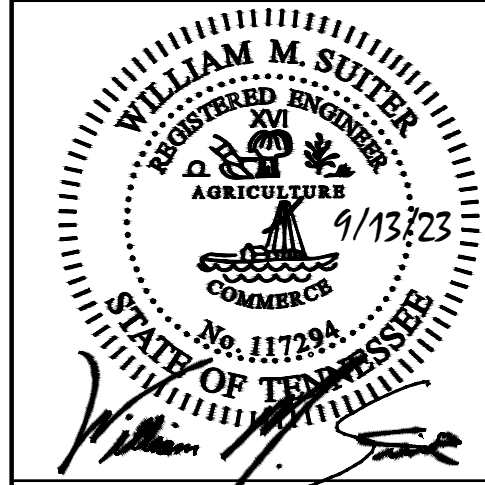


Quiner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

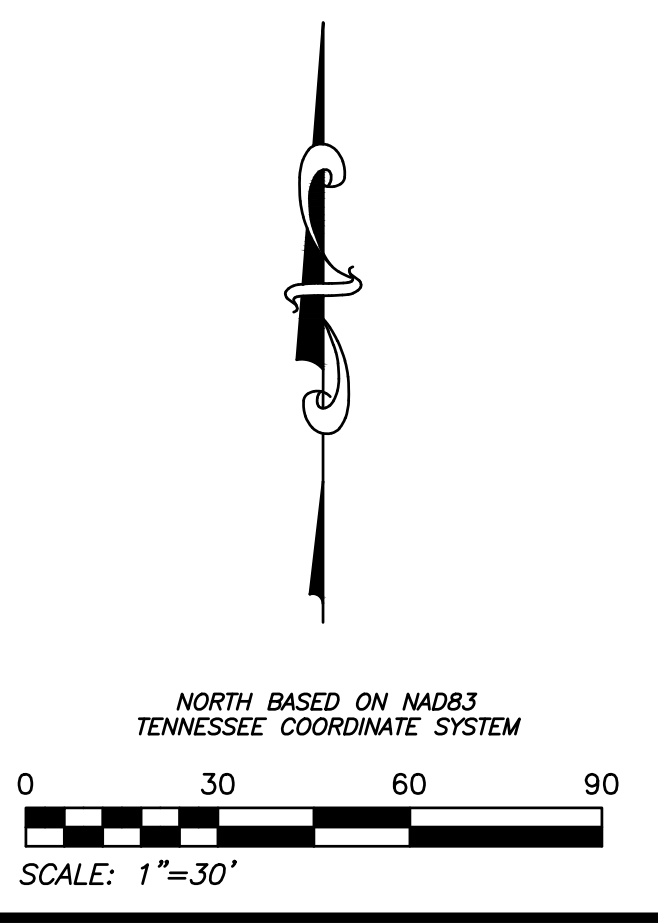
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 Fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
UTILITY PLAN
 SCALE: 1" = 30'



C2.0



STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NOTES:

This Storm Water Pollution Prevention Plan (SWPPP) is developed in accordance with the Tennessee General NPDES Permit (TNR 100000) for Storm Water Discharges Associated with Construction Activity (TNCGP), and is prepared using sound engineering and construction practices. Non-storm water discharges are prevented as a condition of this permit.

The goal of this SWPPP is to prevent any detrimental discharge from the property described to receiving waters of the State of Tennessee. The construction activity mentioned in this report shall be carried out in such a manner that will prevent any discharge that would cause a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of the waters on the property or downstream of the property for fish and aquatic life, livestock watering, recreation, irrigation, navigation, or industrial or domestic water supply.

This SWPPP is intended to be a supplement to TNR 100000 and not a substitute for it. The owner and contractor shall be familiar with the requirements of TNR 100000. A copy of TNR 100000 can be found at www.state.tn.us/environment/permits/conststrmnl.pdf

A Notice of Intent (NOI) and application fee shall be submitted to the local Environmental Assistance Center (EAC) by the owner at least thirty days before construction begins. A fee schedule is included in Appendix A. The NOI and all correspondence during the duration of the project shall be sent to:

Tennessee Department of Environment & Conservation
 Environmental Assistance Center (EAC)
 Division of Water Pollution
 711 RS Gass Boulevard
 Nashville, TN 37206

The current property owner, contracting developer, and per responsible for the EPSC measures described in this SWPPP is:

Socayr, Inc.
 1244 S. 4th St.
 Louisville, KY 40203

Each contractor and sub-contractor that is responsible for the installation, inspections, or maintenance of erosion or sediment control measures must understand and follow this document. The contractor shall sign the contractor's certification on the Notice of Intent and submit it to the local EAC. The contractor shall maintain records of grading activities and stabilization practices throughout the entire project. The contractor shall also maintain precipitation records for the site and keep a rain gauge on site. For this site, there is only one main operator/contractor that will be solely responsible for the implementation of this entire SWPPP.

Construction shall not begin until a Notice of Coverage (NOC) is received from the State. Current versions of the SWPPP, NOI, and NOC shall be kept at the project site for the duration of the project and shall be made available to all operators and site personnel. These documents shall be kept in a job trailer and/or project permit board if available. In cases where these locations are not available, a copy of each document shall be placed in hands of the on-site foreman in charge of construction. In either case the documents shall be kept on site at all times when work is being performed and shall be made available to all operators and site personnel involved with the project. The Project Engineer & Owner/Developer shall also keep a copy of each document at their respective offices.

This SWPPP shall be amended as necessary when defects or problems need to be corrected. All amendments to the plan shall be implemented within 48 hours after initiation. Anyone who finds defects or problems associated with the SWPPP shall notify the engineer immediately by phone or in writing. The Project Engineer will then make the necessary revisions to the SWPPP and distribute the revisions to the owner and all contractors.

Each contractor and sub-contractor that is responsible for the installation, inspections, or maintenance of erosion or sediment control measures shall file a Notice of Termination (NOT) when their respective duties are completed. The owner shall submit a final NOT after final stabilization is complete and established.

All construction procedures for installation of erosion prevention and sediment controls shall be performed in accordance with the "Tennessee Erosion and Sediment Control Handbook" published by the State of Tennessee. A copy of this handbook can be obtained at www.state.tn.us/environment/wpc/seg_ero_controlhandbook/.

If a release containing hazardous substance in an amount equal to or in excess of a reporting quantity established under either 40 CFR 117 or 40 CFR 302 occurs during a 24-hour period, the contractor shall immediately notify the permittee who shall then notify the National Response Center (NRC) (800-424-8802) and the Tennessee Emergency Management Agency (TEMA) (800-262-3300 for emergencies; 800-262-3400 for non-emergencies) and the Environmental Assistance Center. A report describing such spills, mitigation plans, and steps taken to prevent future spills shall be reported to the EAC within fourteen days of the spill.

Any hazardous waste such as paint cans, oil cans, used oil, filters, etc. shall be contained and disposed of by the contractor at an appropriate hazardous waste disposal center. All other trash shall be properly contained and disposed of at reasonable intervals.

Litter, construction debris, and construction chemicals exposed to storm water shall be picked up prior to anticipated storm events (e.g. forecasted by local weather reports), or otherwise prevented from becoming a pollutant source for storm water discharges (e.g. screening outfalls, daily pick-ups).

A site assessment will be performed at each outfall involving drainage totaling 10 or more acres, or 5 or more acres if draining to an impaired or exceptional quality waters, within a month of construction commencing at each portion of the site that drains the qualifying acreage of such portion of the site. The site assessment shall be performed by individuals holding the qualification of either licensed professional engineer or landscape architect, certified professional in erosion and sediment control (CPESC), or a person that successfully completed the "Level II Design Principles for Erosion Prevention and Sediment Control for Construction Sites" course.

The assessment will be performed to verify the installation, functionality and performance of the EPSC measures described in the SWPPP. The assessment will be performed with the site inspector and will include a review and update of the SWPPP if applicable. The site assessment findings shall be documented and the documentation kept with the SWPPP on-site. The documentation shall include information included in the inspection form provided in Appendix C of TDEC's Construction General Permit. The documentation must contain the printed name and signature of the individual performing the assessment and the following certification:

"I certify under penalty of law that this report and all attachments are, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

SWPPP – EXISTING SITE CONDITIONS:

The site in question is a vacant lot which drains generally north to south. The entire lot itself is approximately 8.35 acres in size, with only the northern 3.9 acres (+/-) being proposed for disturbance. The nearest body of surface water is an unnamed stream which feeds directly into the Cumberland River on the southwest side of Ashland City.

The site will initially be cleared and grubbed of existing trees and prepared for the development of a multi-story assisted living complex. The erosion control measures on site have been designed to withstand the 5 year/24 hour storm event. The site outfall accepts a contributing drainage area of 3.5 acres (+/-) and there is a permanent detention basin being proposed for the site which will act as a temporary sediment trap during the construction phase of the development.

SWPPP – CONSTRUCTION SEQUENCE:

Initial erosion and sediment controls such as construction exits, straw bale filters and silt fencing shall be installed according to construction documents. Only the clearing and grubbing necessary to install these controls shall be accomplished. Any buffer zones shown on the construction plans shall be marked by the contractor so as to prevent the disturbance of the buffer area. All erosion prevention and sediment control best management practices identified in this SWPPP or shown on the construction plans shall be installed as recommended in the Tennessee Erosion & Sediment Control Handbook.

Clearing and grubbing of the site will begin. Removal and disposal of organics such as tree lops, stumps, and brush shall be removed by the contractor. Burning will be allowed only when a permit is obtained by the contractor from the governing agencies. Burial of organics shall only be performed with consent of the project engineer. Removal and disposal of other items such as debris, building materials and other non-biodegradable materials shall be properly disposed of by the contractor at an off-site location. Ground cover shall not be removed more than twenty days before mass grading begins. Care shall be taken to prevent the cutting of trees within the buffer zone.

The contractor shall only clear and grub the areas shown or indicated on the construction plans. Areas that are not being developed shall be left in its natural state in order to prevent erosion.

Sediment basins shall be constructed as indicated on the construction plans. Detention basins as shown on the construction plans shall be constructed as sediment basins during construction of the site infrastructure. When final grading begins the basins shall be modified to bio-retention basins as shown on the construction plans. Diversion ditches or berms shall be constructed so that all water leaving the site must first enter into a sediment basin or other sediment control feature. Discharges from sediment basins and traps must be through a pipe or lines or well grassed channel.

Sediment deposits shall be cleaned out of sediment basins, silt fence and other controls by the contractor when the capacity is reduced to fifty percent. Sediment removed from basins shall be deposited at a designated area and immediately stabilized with grass seed and matting. Care should be taken during removal of sediment to prevent disturbance of lands downstream from sediment basin. Any repairs required to re-establish functionality of sediment basin shall be immediately performed after sediment loads are removed.

Mass grading of roadways and building pads shall be conducted according to current construction methods. The contractor shall notify the engineer of potential problem areas that could produce unfiltered runoff. When practical, the contractor shall attempt to prevent a mass grading of the entire site at once. The maximum disturbed area at any one time shall not exceed 50 acres.

Muddy water to be pumped from excavation and work areas must be held in settling basins or filtered prior to its discharge into surface waters. Water must be discharged through a pipe or lines or well grassed channel.

Any storage of off-site soils shall be temporary in nature and shall be protected with silt fence around the perimeter of stockpiles. Any stockpile that is dormant for fifteen days shall be stabilized with seed and mulch as noted below.

Construction of sewer, storm, water, gas, and other utility infrastructure shall be completed in a manner that will limit the amount of sediment that can be transported from the site. Once installed and functional, inlet protection shall be installed at inlets prone to sediment intrusion.

Final grading and paving of roadways shall be completed according to current construction procedures. Stabilization will be accomplished as soon as practicable after attainment of final grade and no later than seven days after attaining final grade. Where earth disturbing activities have temporarily ceased, temporary stabilization will be applied within seven days if the activity will not resume for fifteen days.

SWPPP – CONSTRUCTION SEQUENCE (CONT.):

Stabilization may include seed and mulch, as shown below, or may include seed and erosion control blankets, as noted on the plans. Construction shall be as per the City of Clarksville Gas & Water Standard Specification titled "Section 02485-Lawn & Grass Landscaping."

Seeding mixtures are shown below:

Seeding Dates	Grass Seed	Percentage
February 1 – July 1	Kentucky 31 Fescue	80
	Korean Lespedeza	15
	English Rye	5
June 1 – August 15	Kentucky 31 Fescue	55
	Korean Lespedeza	20
	English Rye	15
April 15 – August 15	German Millet	10
	Bermusgrass (huled)	70
	Annual Lespedeza	30
August 1 – December 1	Kentucky 31 Fescue	70
	English Rye	20
	White Clover	10
February 1 – December 1	Kentucky 31 Fescue	70
	Crown Vetch	25
	English Rye	5

Temporary Seeding Mixtures

Seeding Dates	Grass Seed	Percentage
January 1 – May 1	Italian Rye	33
	Korean Lespedeza	33
	Summer Oats	34
May 1 – July 15	Sudan-Sorghum	100
May 1 – July 15	Starr Millet	100
July 15 – January 1	Balboa Rye	67
	Italian Rye	33

After the site is fully established, silt fence and trapped sediment shall be removed to prevent remains from becoming a pollutant source for storm water discharges.

The contractor's qualified personnel shall inspect each outfall and erosion control on site within 24 hours after each rainfall of 0.5" or more, before an anticipated storm event, and at least twice a week being at least 72 hours apart. Each inspection must be documented and submitted to the State of Tennessee's Environmental Assistance Center (EACH) by the 15th of each month after each quarter of the year. Copies of inspection documentation and forms shall be obtained from the EAC. The inspector shall look for and note the following:

- a. All disturbed areas on-site shall be inspected for pollutants that could contaminate downstream waters
- b. Erosion control shall be inspected for structural defects and general effectiveness of the control
- c. Outfall points shall be inspected for any signs of erosion

Again, all inspections must be documented and include the inspector's name, qualifications, date, and any notes taken. The inspector shall notify the engineer of any problems so that this SWPPP can be revised within 14 days of notification. All records shall be retained for a period of three years.

All erosion control structures shall be properly maintained. Any defect found during inspections shall be corrected within seven days after inspection. Notify the engineer of any such defects found at the time of inspection.

All records taken during construction shall be kept for a minimum of three years after the NOT is filed. TDEC may request that files be kept for periods longer than three years.

Any disturbed area on-site shall be stabilized within 15 days, or 7 days in areas with \geq 35% slopes, where construction activities have temporarily or permanently ceased.

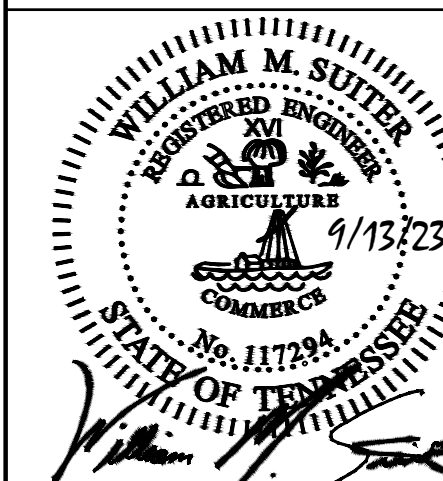
Any vegetation or EPSC and other protective measure on-site that is deemed as inadequate, not functional, or in general need of a repair, replacement or update by the site inspector shall be repaired replaced or modified within 7 days.

P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 Fax # (931) 920-8490

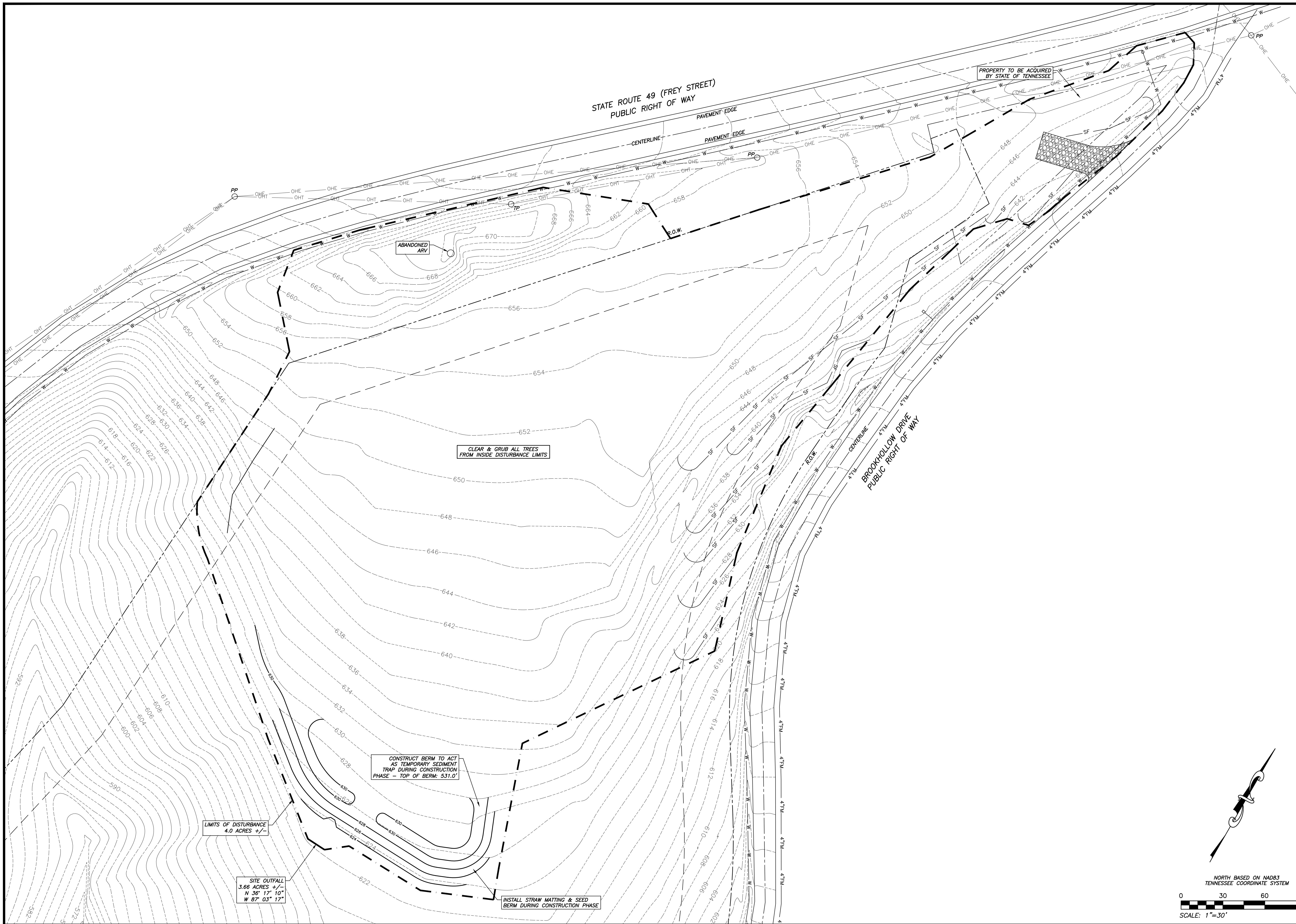
Quiner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR APARTMENTS ASHLAND CITY, TN SWPPP SCALE: NONE



C3.0



LIMITS OF DISTURBANCE
4.0 ACRES +/-

SITE OUTFALL
3.66 ACRES +/-
N 36° 17' 10"
W 87° 03' 17"

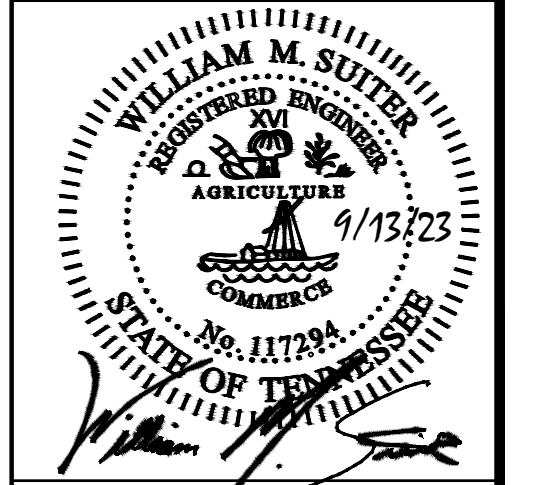
CONSTRUCT BERM TO ACT
AS TEMPORARY SEDIMENT
TRAP DURING CONSTRUCTION
PHASE - TOP OF BERM: 531.0'

CLEAR & GRUB ALL TREES
FROM INSIDE DISTURBANCE LIMITS

INSTALL STRAW MATTING & SEED
BERM DURING CONSTRUCTION PHASE

PROPERTY TO BE ACQUIRED
BY STATE OF TENNESSEE

**BROOKHOLLOW SENIOR
APARTMENTS
ASHLAND CITY, TN
EPSC PHASE II
SCALE: 1" = 30'**

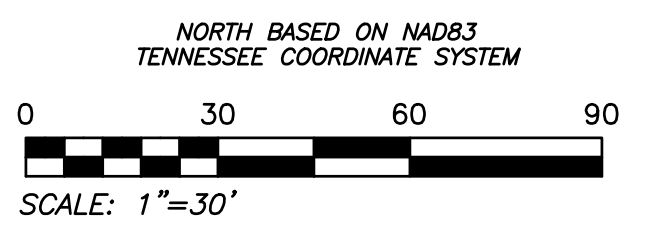


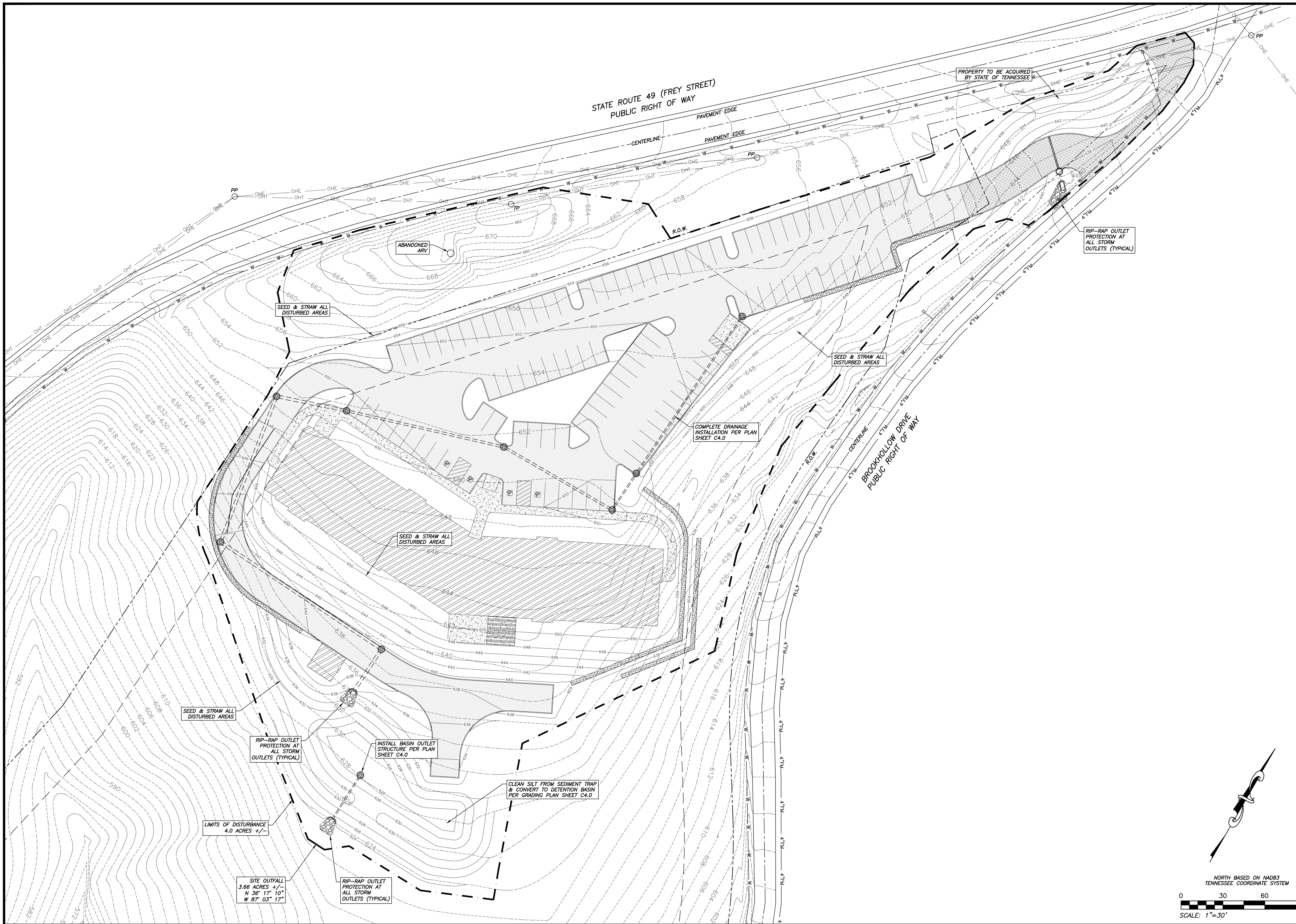
C3.2

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

Suter
Surveying
& Land Planning
CIVIL ENGINEERING & LAND SURVEYING

P.O. Box 30271
1805A Alpine Drive
Clarksville, TN, 37040
ph. # (931) 920-1750
fax # (931) 920-8490



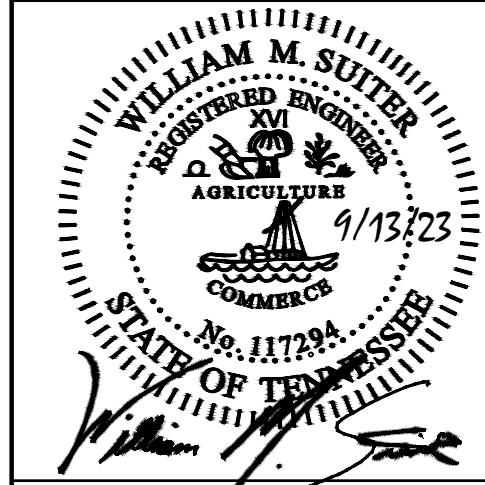


Quiner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

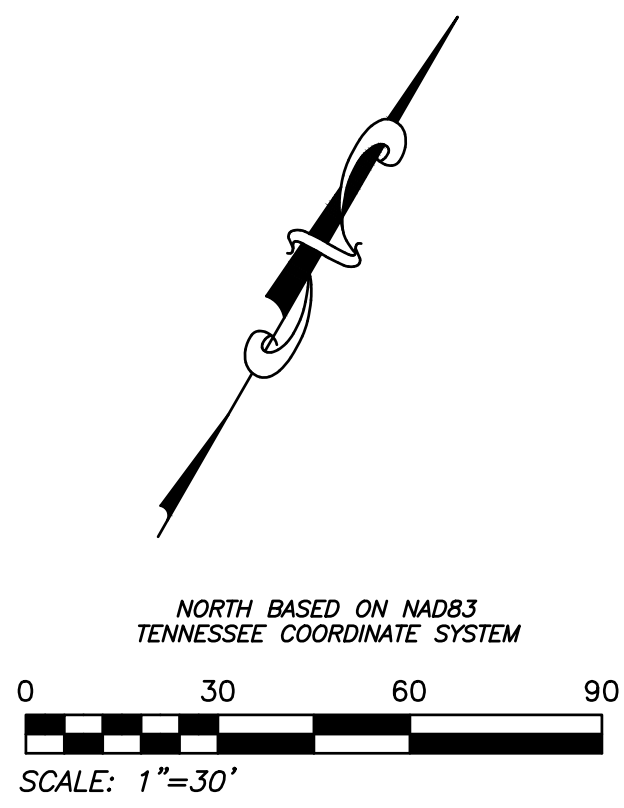
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

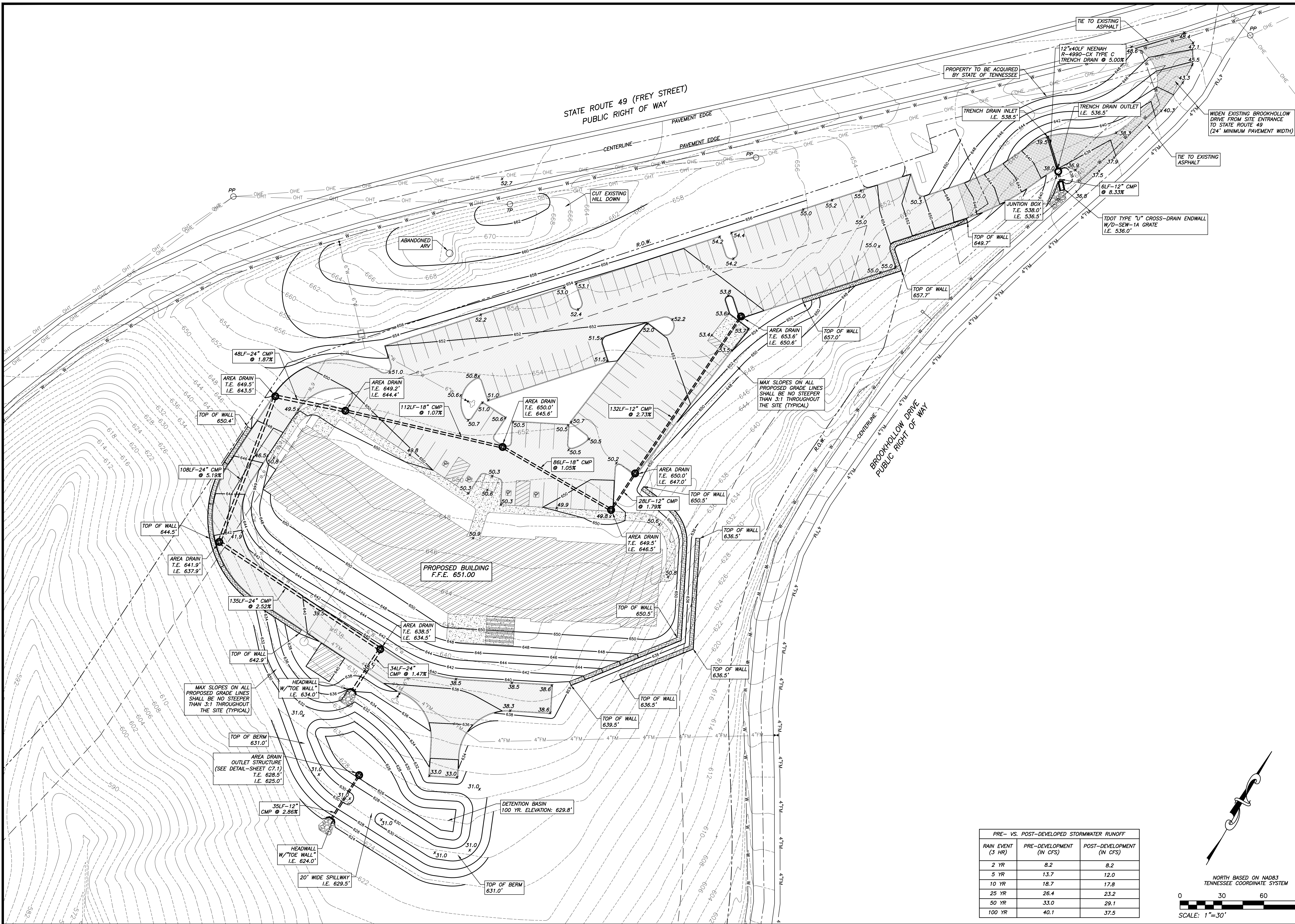
REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
 EPSC PHASE III
 SCALE: 1" = 30'



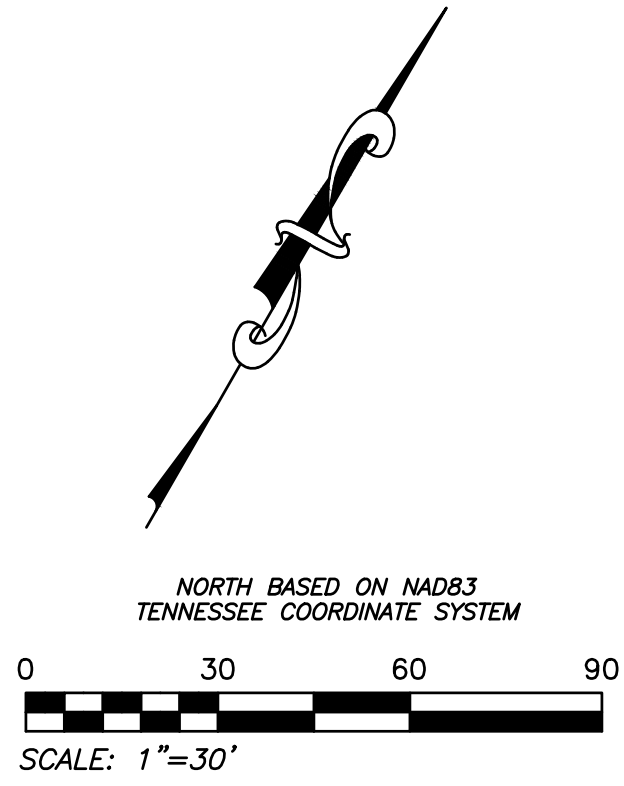
C3.3





PRE- VS. POST-DEVELOPED STORMWATER RUNOFF

RAIN EVENT (3 HR)	PRE-DEVELOPMENT (IN CFS)	POST-DEVELOPMENT (IN CFS)
2 YR	8.2	8.2
5 YR	13.7	12.0
10 YR	18.7	17.8
25 YR	26.4	23.2
50 YR	33.0	29.1
100 YR	40.1	37.5

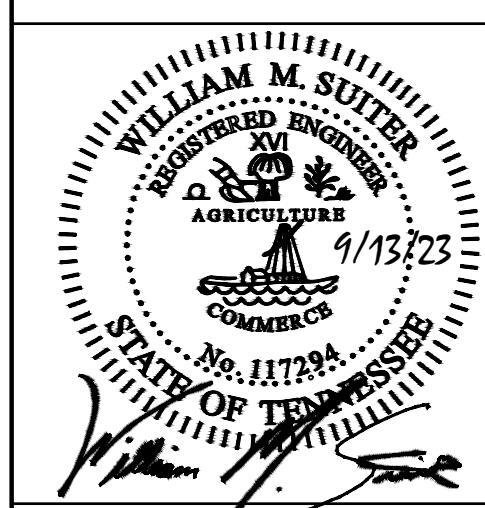


Sutiner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

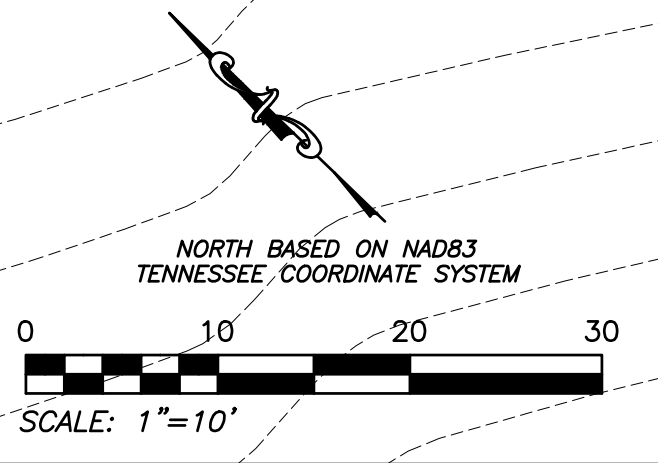
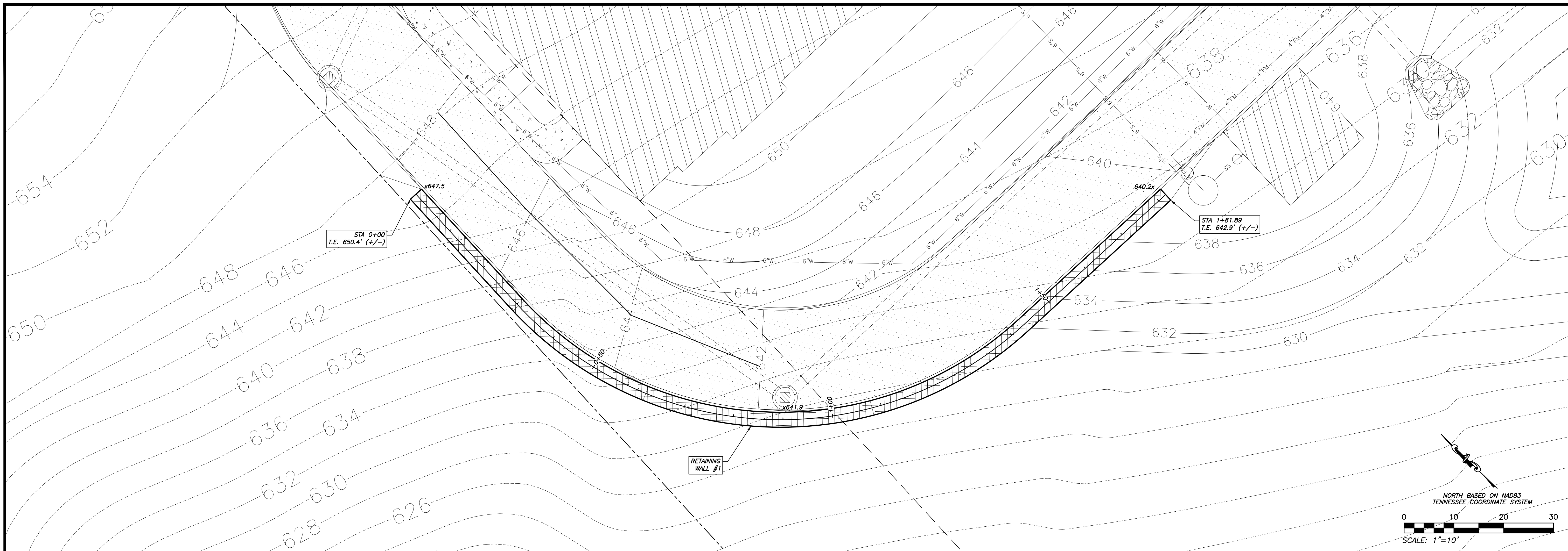
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

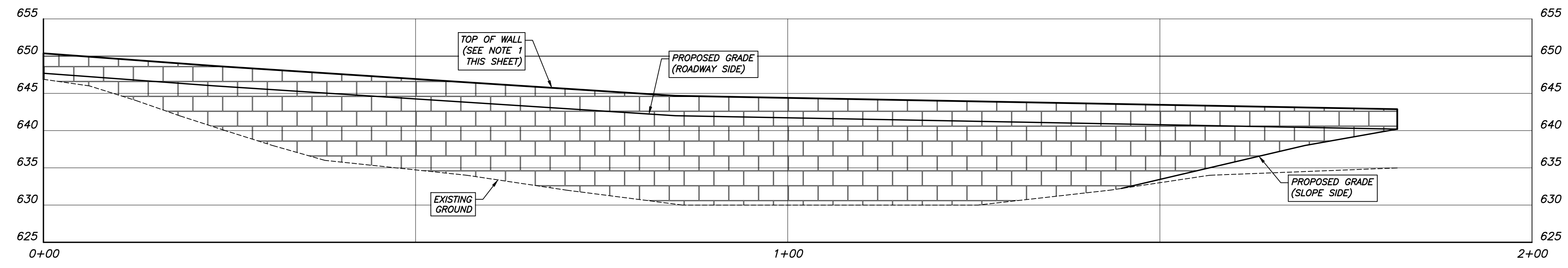
BROOKHOLLOW SENIOR APARTMENTS
ASHLAND CITY, TN
GRADING & DRAINAGE PLAN
SCALE: 1"=30'



C4.0



NOTES:
 1) TOP OF WALL TO BE 32" ABOVE PROPOSED ROADWAY GRADE. SEE STRUCTURAL DRAWINGS FOR DETAIL DESIGN OF RETAINING WALL.



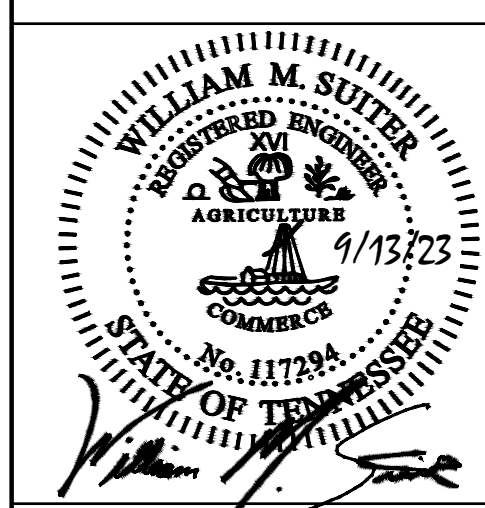
RETAINING WALL #1
 STA 0+00 TO 1+81.89
 PROFILE
 SCALE: 1"=10'

Sutner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

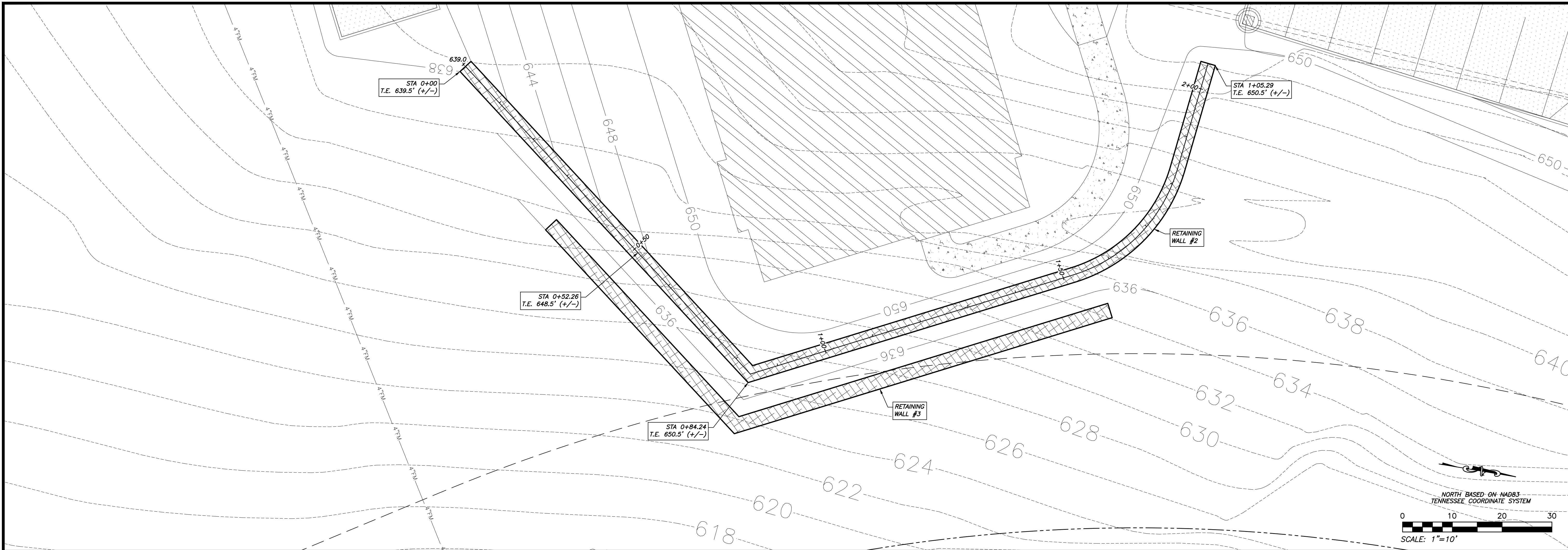
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

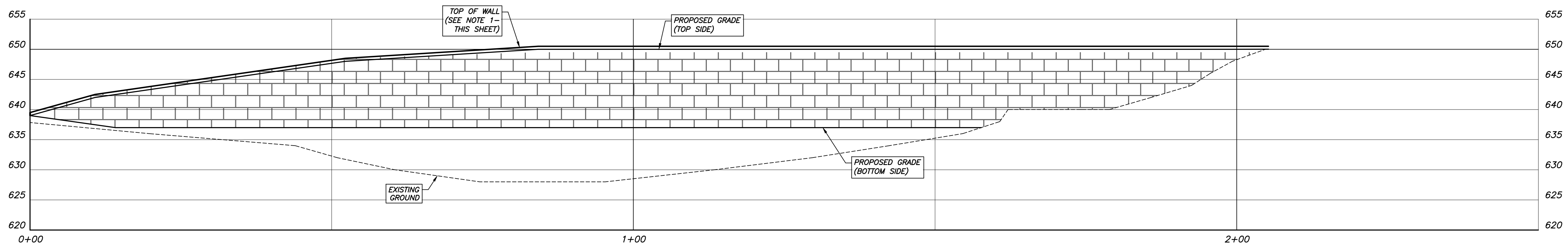
BROOKHOLLOW SENIOR
APARTMENTS
ASHLAND CITY, TN
RETAINING WALL #1
SCALE: 1"=10'



C6.0



NOTES:
 1) TOP OF WALL TO BE 6" ABOVE PROPOSED GRADE. SEE STRUCTURAL DRAWINGS FOR DETAIL DESIGN OF RETAINING WALL.



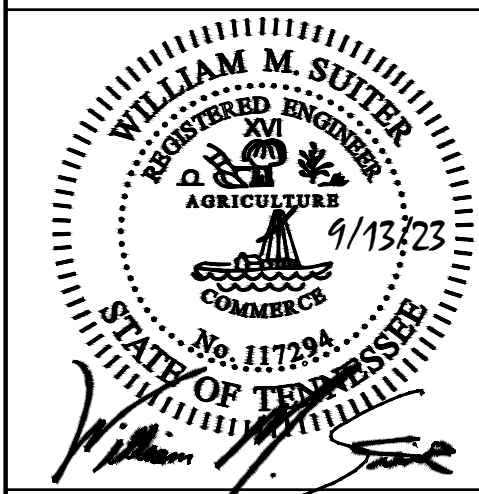
RETAINING WALL #2
 STA 0+00 TO 2+05.29
 PROFILE
 SCALE: 1"=10'

Sutner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

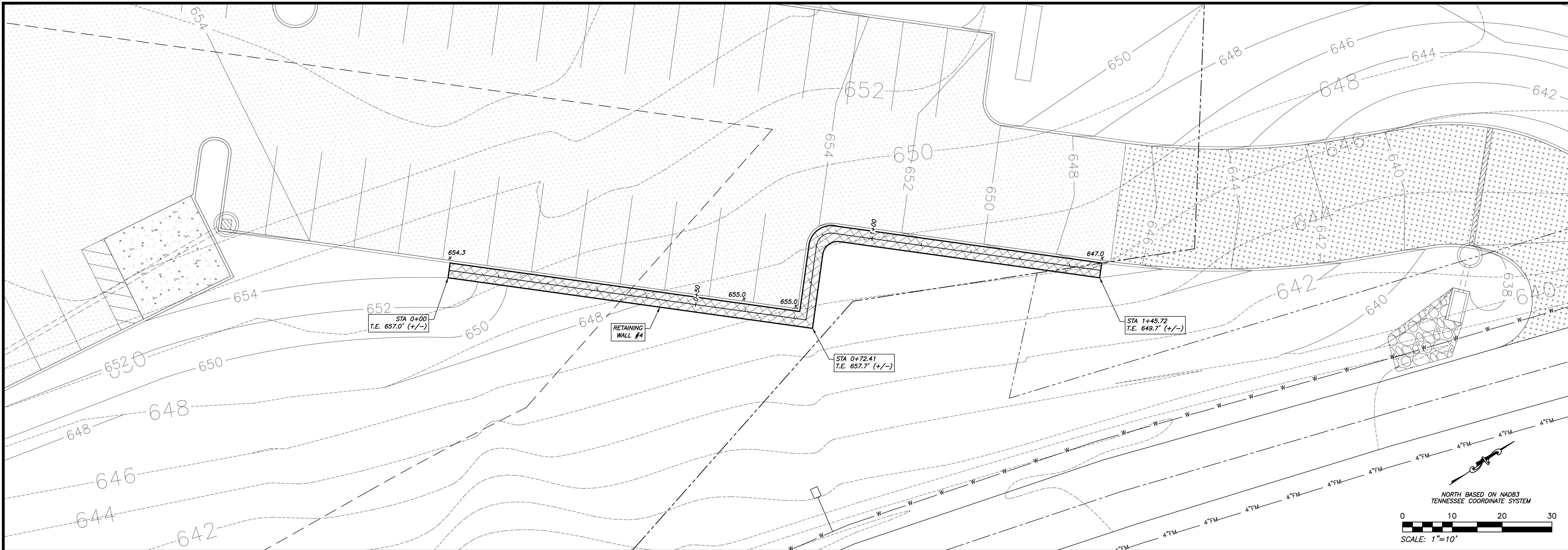
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

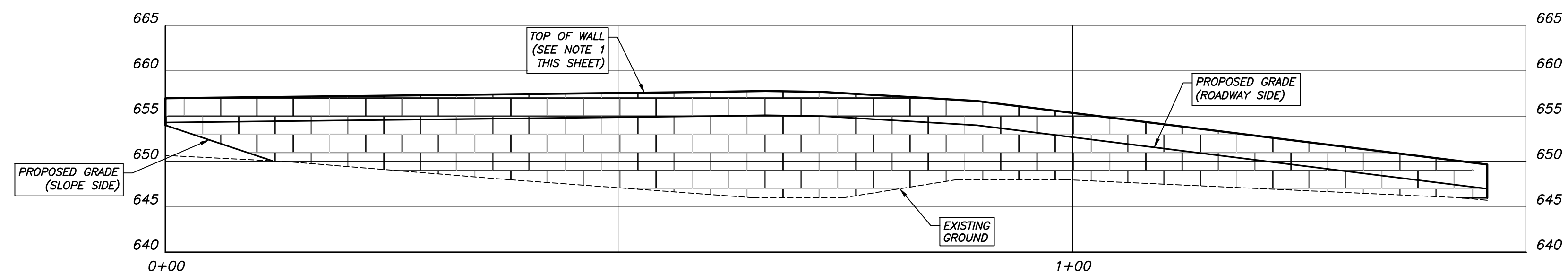
BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
RETAINING WALL #2
 SCALE: 1"=10'



C6.1



NOTES:
 1) TOP OF WALL TO BE 32" ABOVE PROPOSED ROADWAY GRADE. SEE STRUCTURAL DRAWINGS FOR DETAIL DESIGN OF RETAINING WALL.



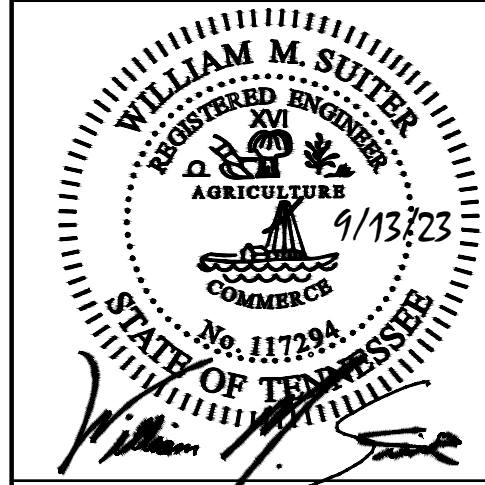
RETAINING WALL #4
 STA 0+00 TO 1+45.72
 PROFILE
 SCALE: 1"=10'

Sutner
Surveying
& Land Planning
 CIVIL ENGINEERING & LAND SURVEYING

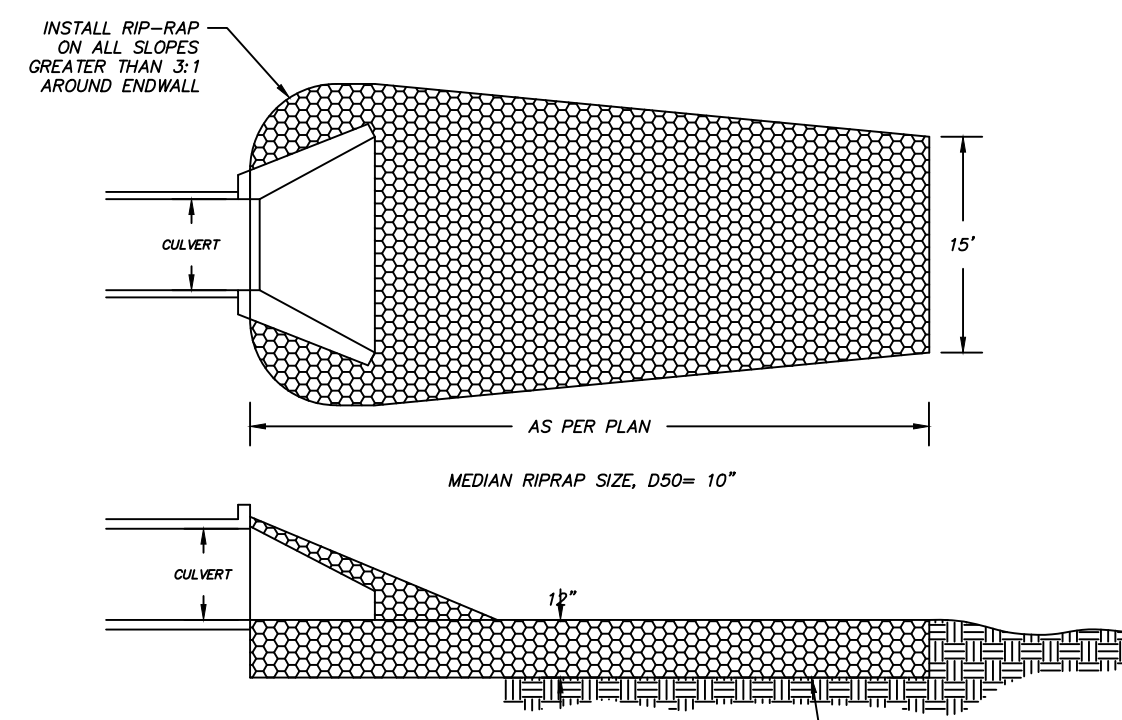
P.O. Box 30271
 1805A Alpine Drive
 Clarksville, TN, 37040
 ph. # (931) 920-1750
 fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

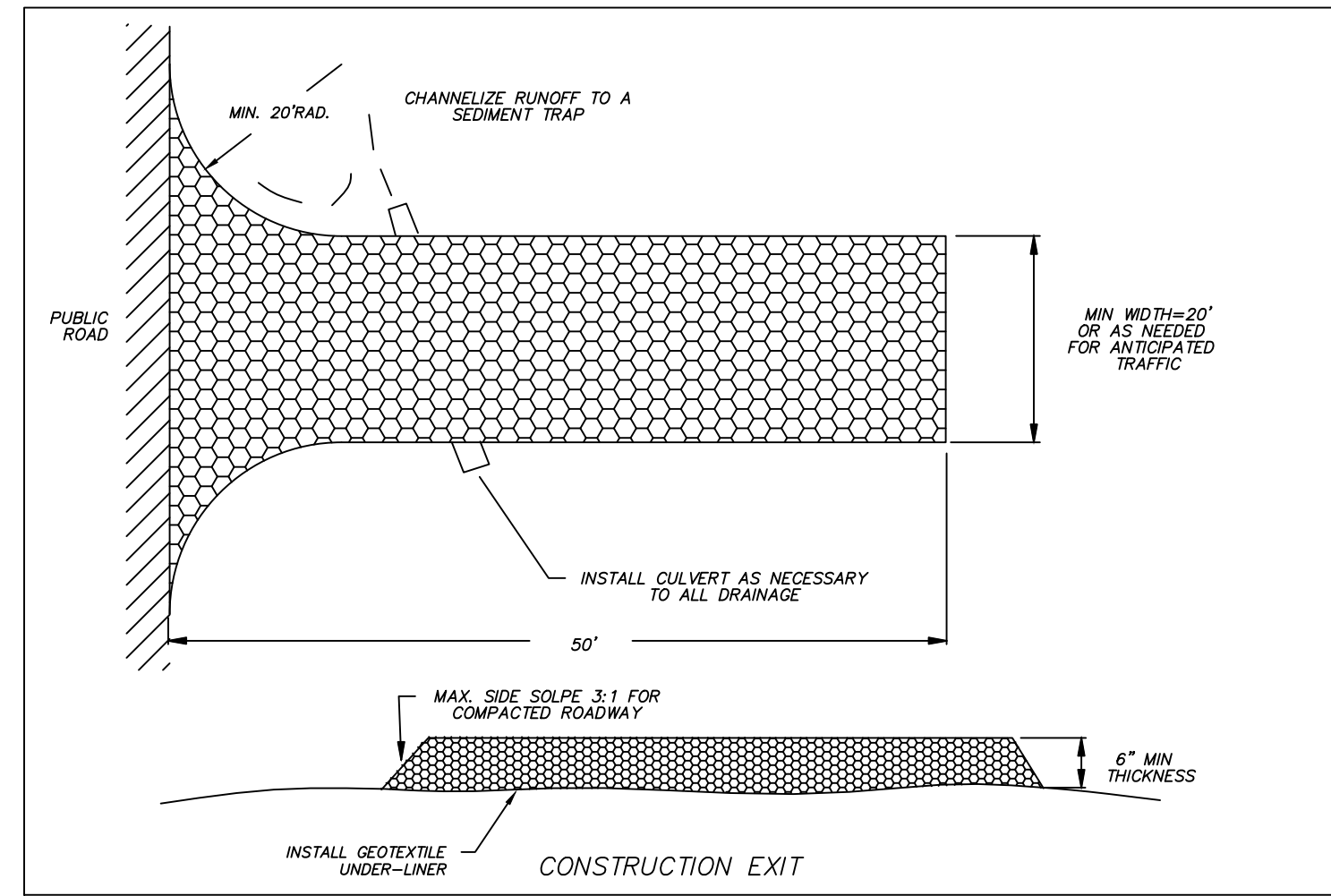
BROOKHOLLOW SENIOR
APARTMENTS
 ASHLAND CITY, TN
RETAINING WALL #4
 SCALE: 1"=10'



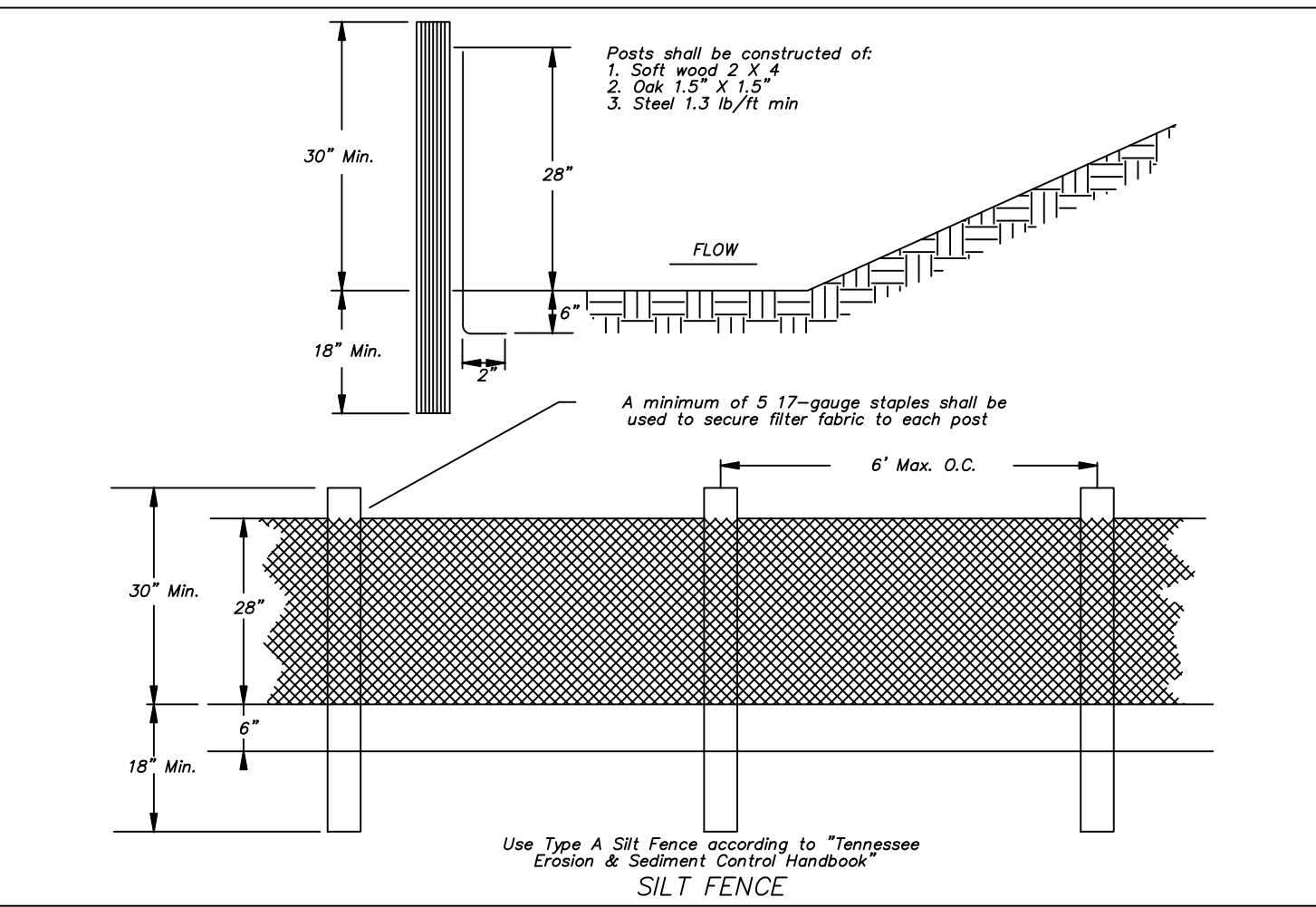
C6.3



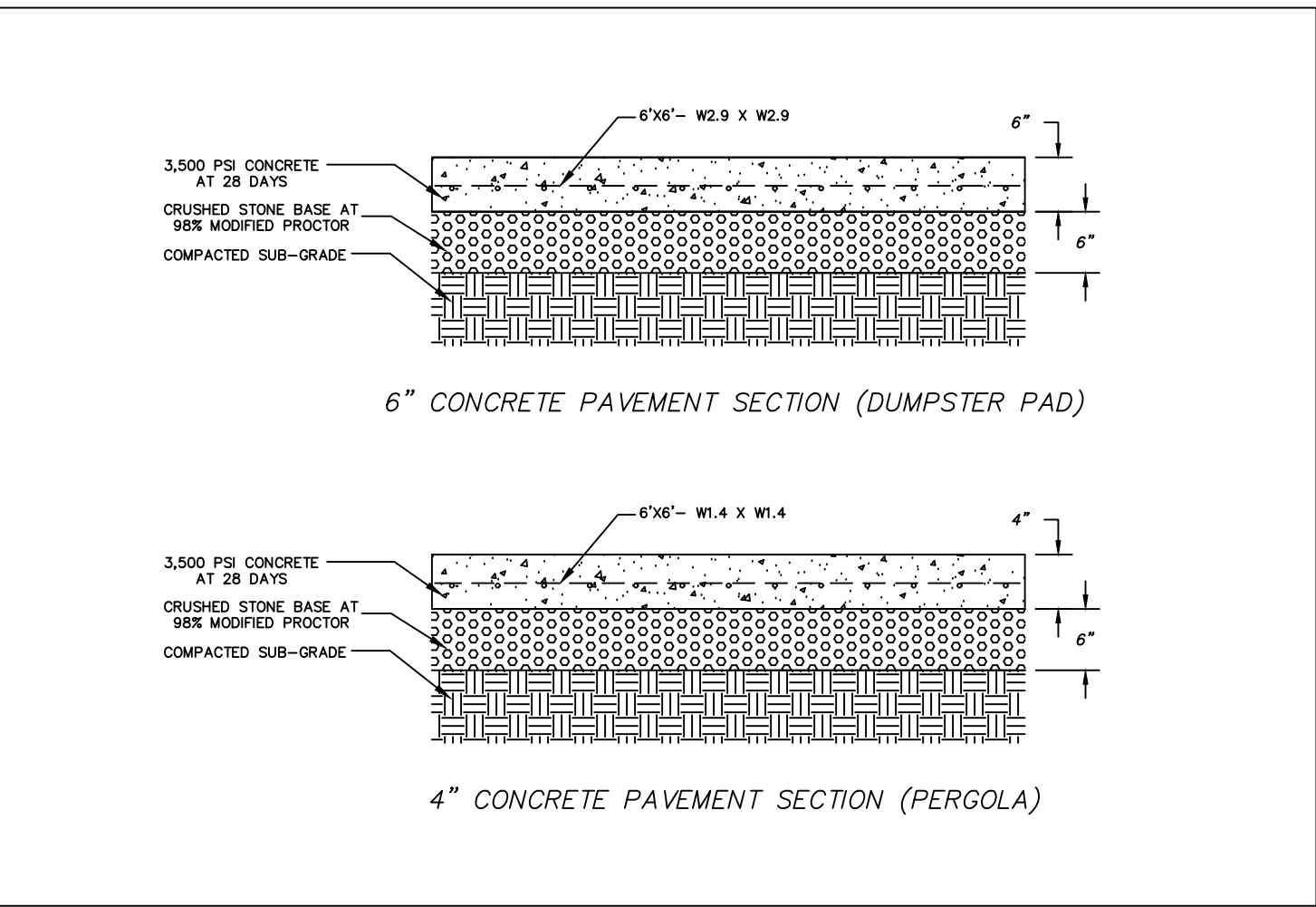
RIPRAP OUTLET PROTECTION



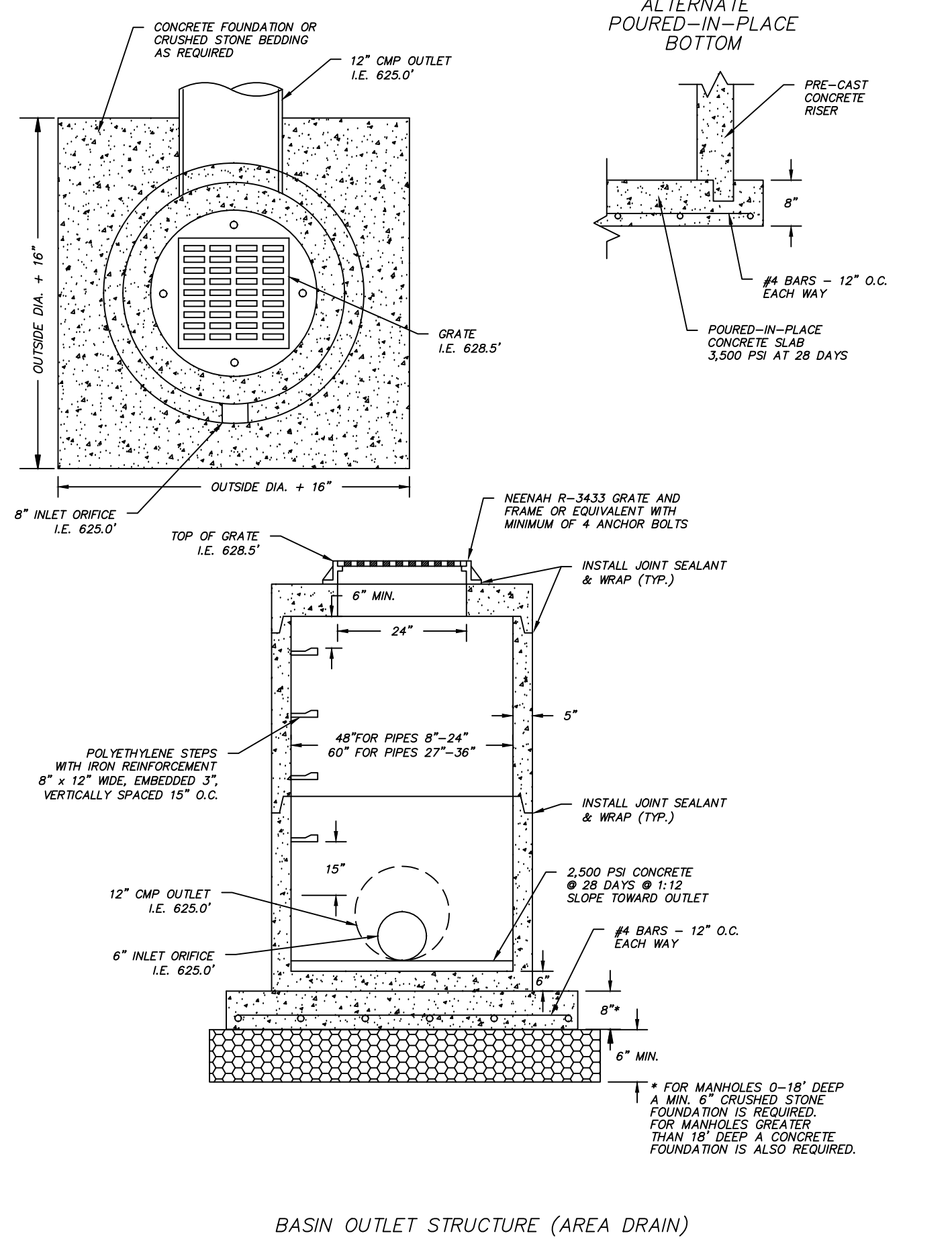
CONSTRUCTION EXIT



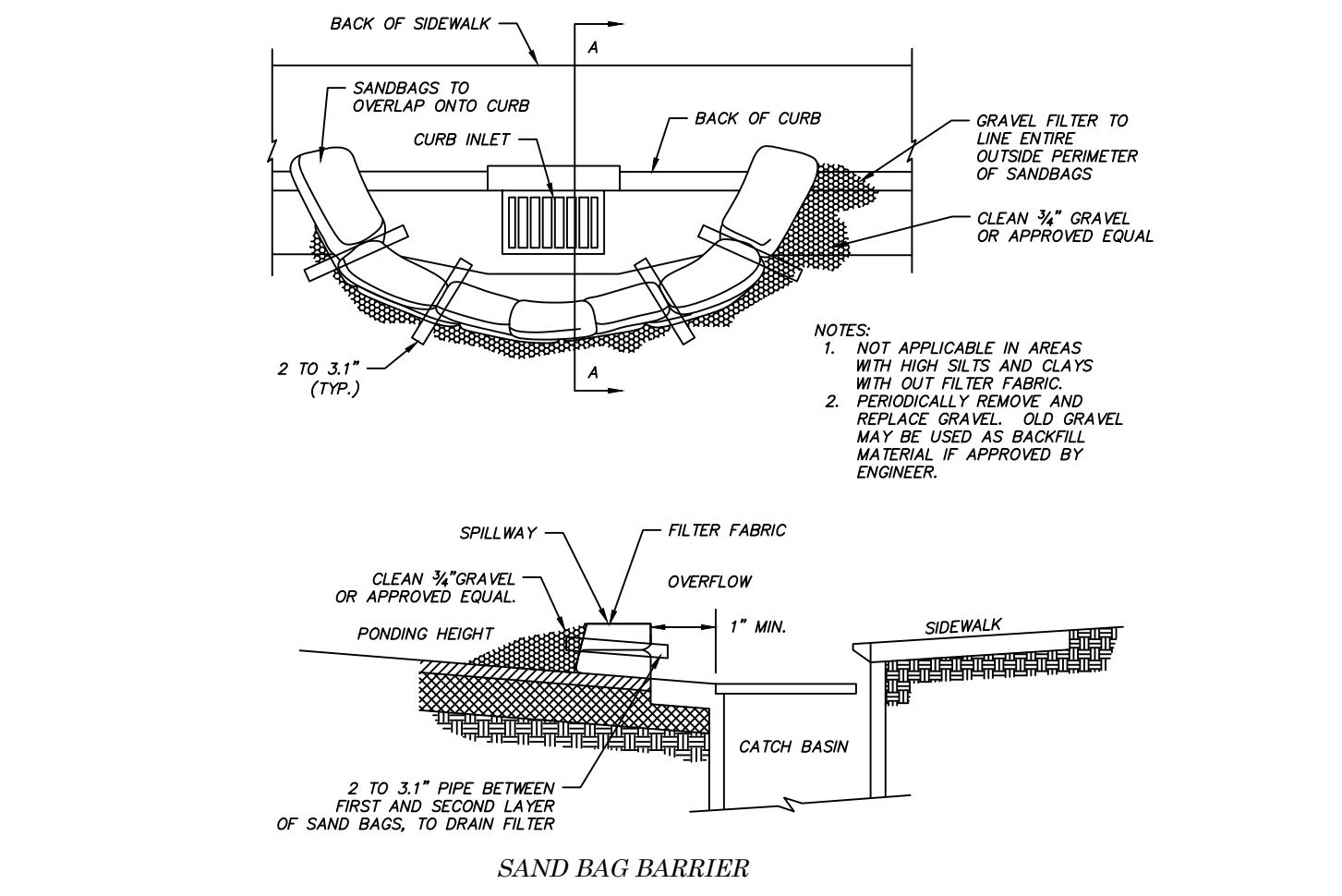
SILT FENCE



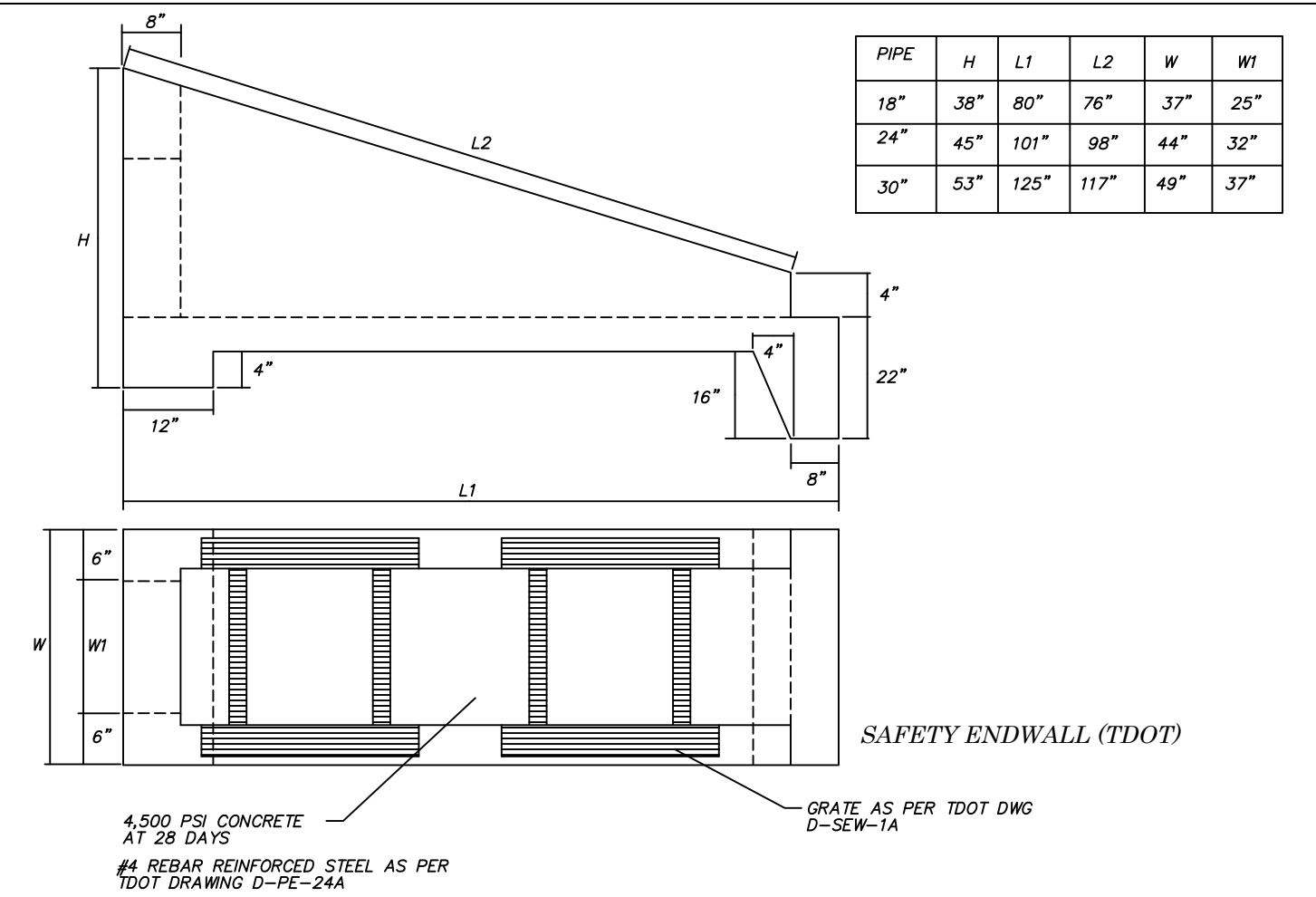
6" CONCRETE PAVEMENT SECTION (DUMPSTER PAD)
4" CONCRETE PAVEMENT SECTION (PERGOLA)



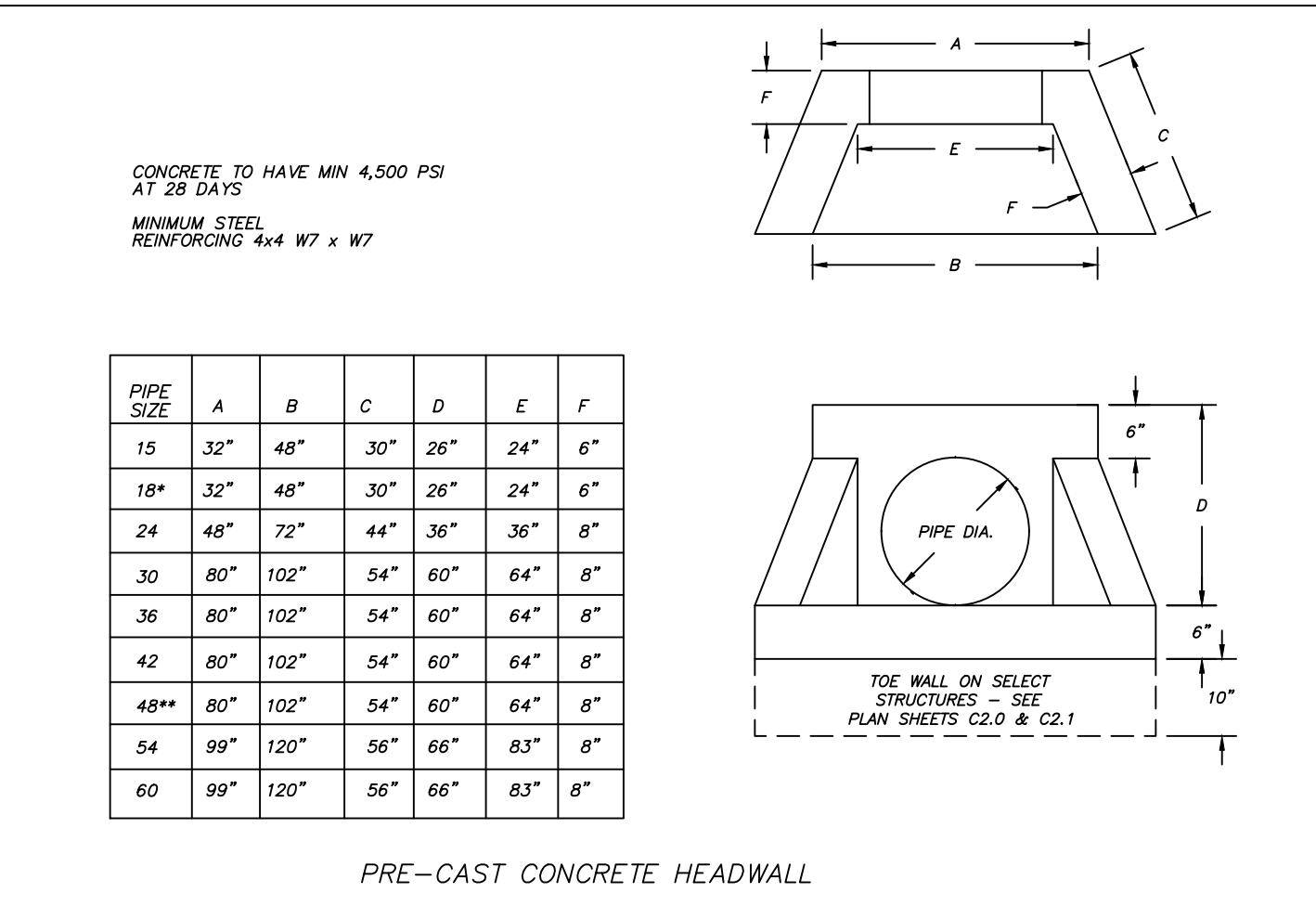
BASIN OUTLET STRUCTURE (AREA DRAIN)



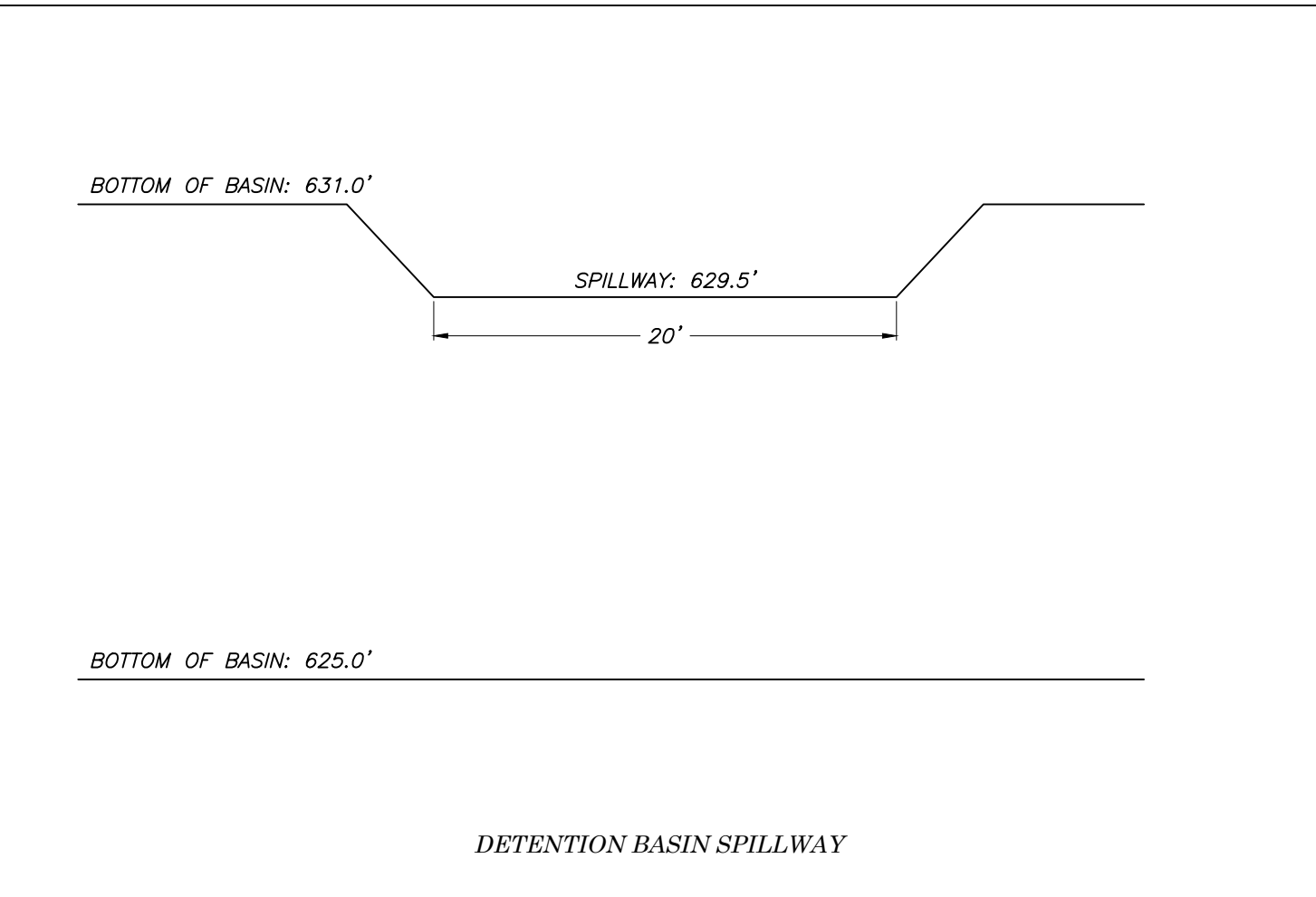
SAND BAG BARRIER



SAFETY ENDWALL (TDOT)



PRE-CAST CONCRETE HEADWALL

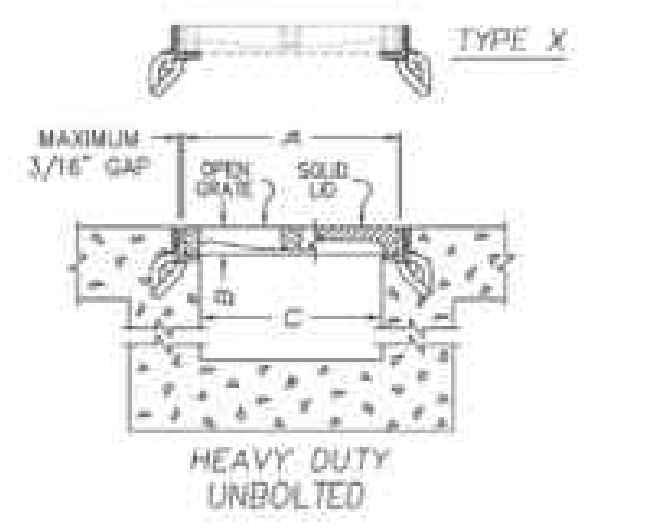


DETENTION BASIN SPILLWAY

Dimensions in inches

Un-Bolted Catalog No.	A	B	C	Type A	Type C	Type D	Type E	Type P	Type Q
R-4990-AX	8	1 1/2	6	x	x	x	x	x	x
R-4990-BX	10	1 1/2	8	x	x	x	x	x	x
R-4990-CX	12	1 1/2	10	x	x	x	x	x	x
R-4990-DX	14	1 1/2	12	x	x	x	x	x	x
R-4990-EX	17	1 1/2	15	x	x	x	x	x	x
R-4990-FX	20	1 1/2	18	x	x	x	x	x	x
R-4990-GX	23	1 1/2	21	x	x*	x	x	x	x
R-4990-HX	26	1 1/2	24	x	x*	x	x	x	x
R-4990-JX	30	2	27	x	x	x	x	x	x
R-4990-KX	33	2	30	x	x	x*	x	x	x
R-4990-LX	36	2	33	x	x	x*	x	x	x
R-4990-MX	39	2	36	x	x*	x	x	x	x
R-4990-NX	45	2	42	x	x*	x	x	x	x
R-4990-OX	51	2	48	x	x*	x	x	x	x

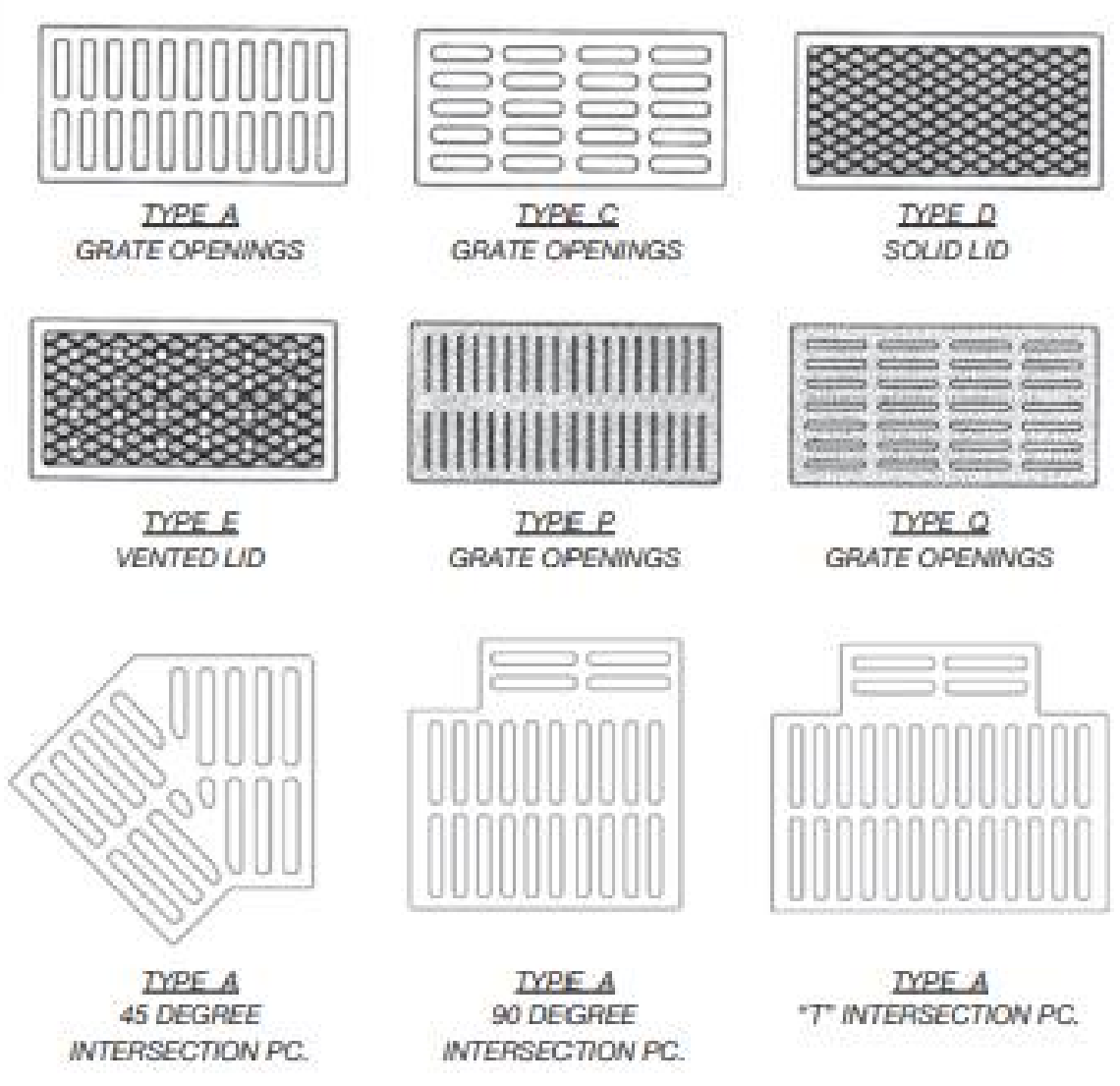
x - Indicates availability.
* Deep Ribs (consult shop drawing for dimensions).
Deep Ribs = "B" dimension times 2 or greater.



HEAVY DUTY UNBOLTED



Illustrating Type C trench. Trench sections are furnished in 24" standard lengths.
Note: In Type A and P grates the slots are perpendicular to the trench run. In Type C and Q grates the slots are parallel with the trench run.



Note: 45°, 90° and "T" available in limited sizes and types.

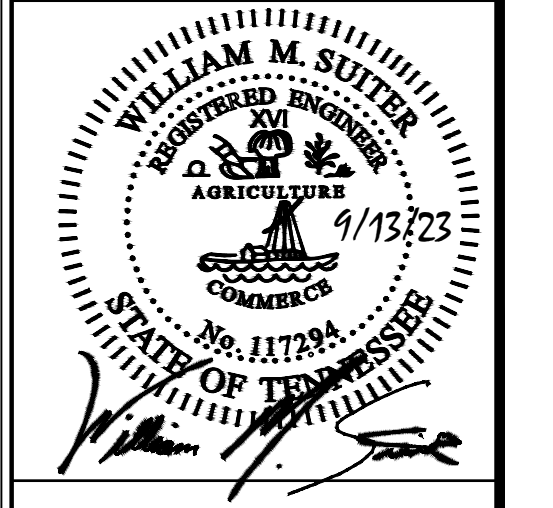
TRENCH DRAIN

Sutiner
Surveying & Land Planning
CIVIL ENGINEERING & LAND SURVEYING

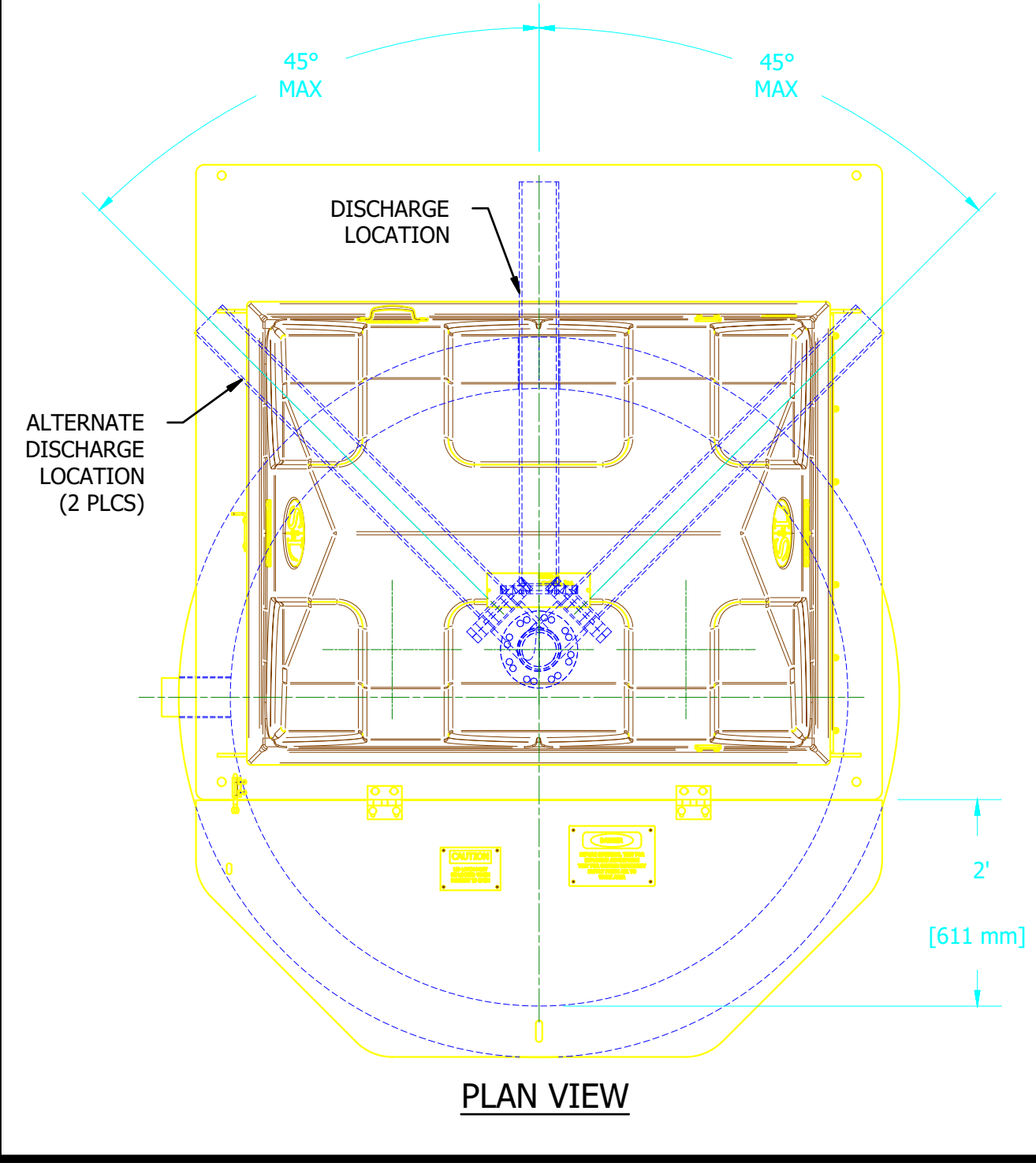
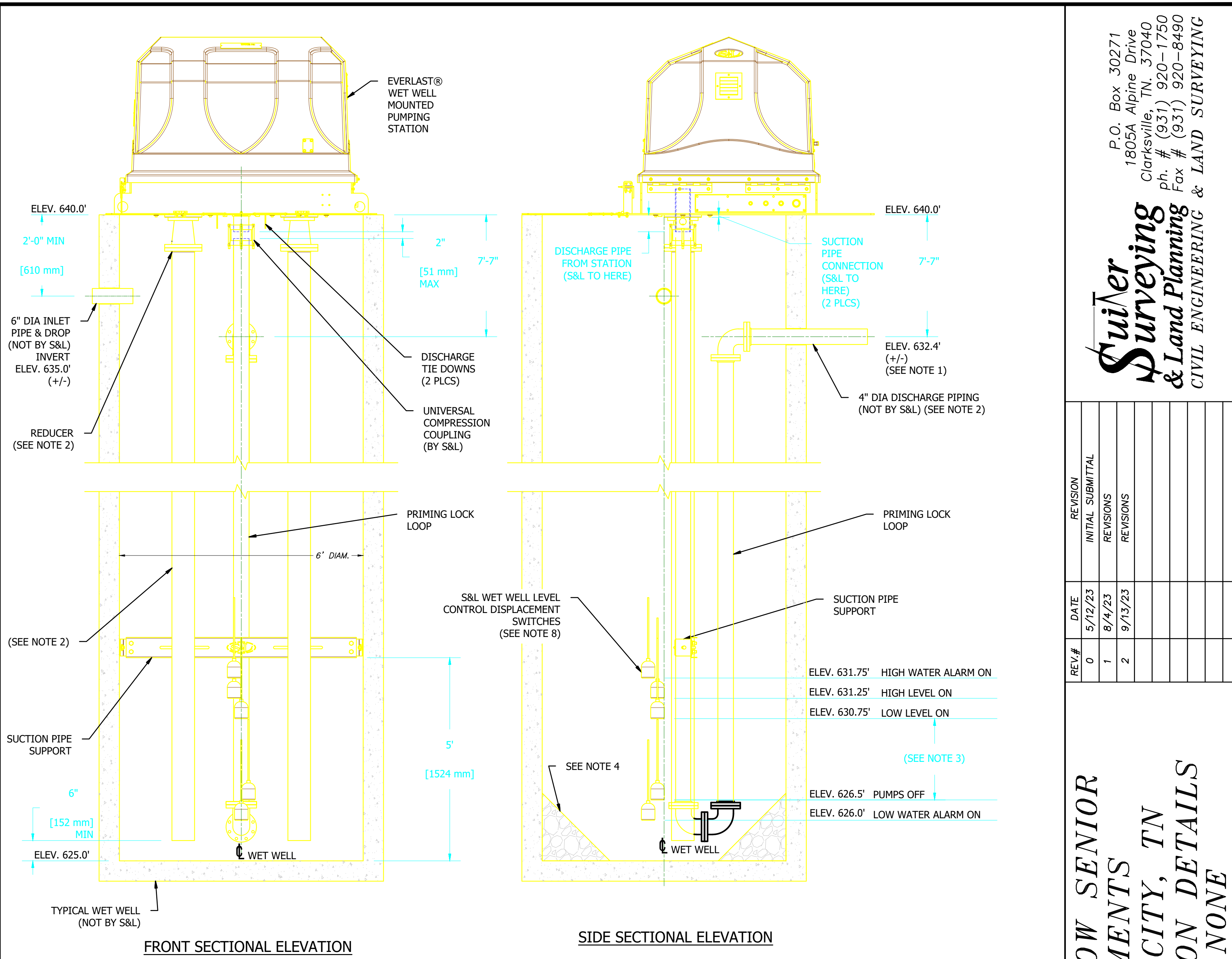
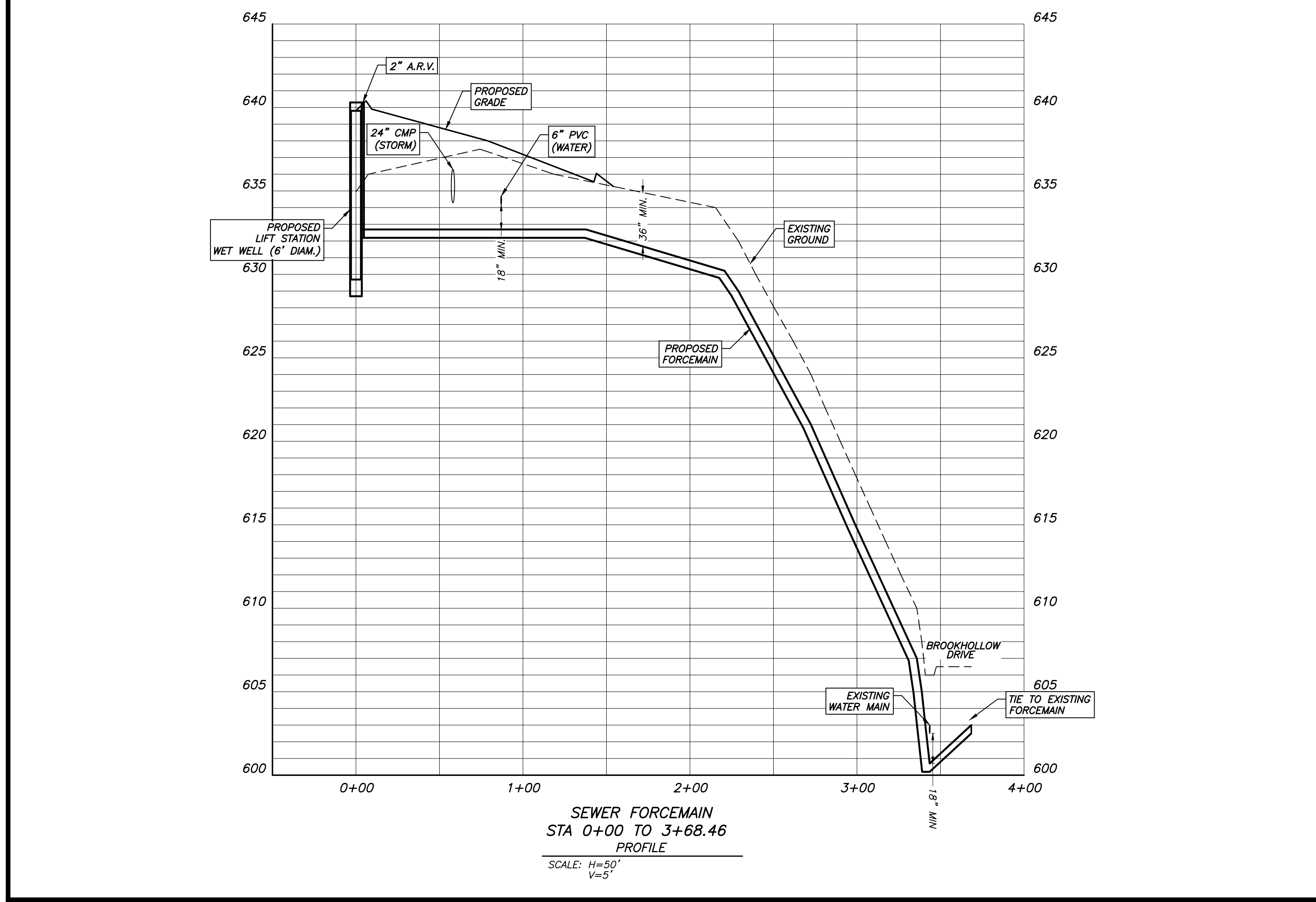
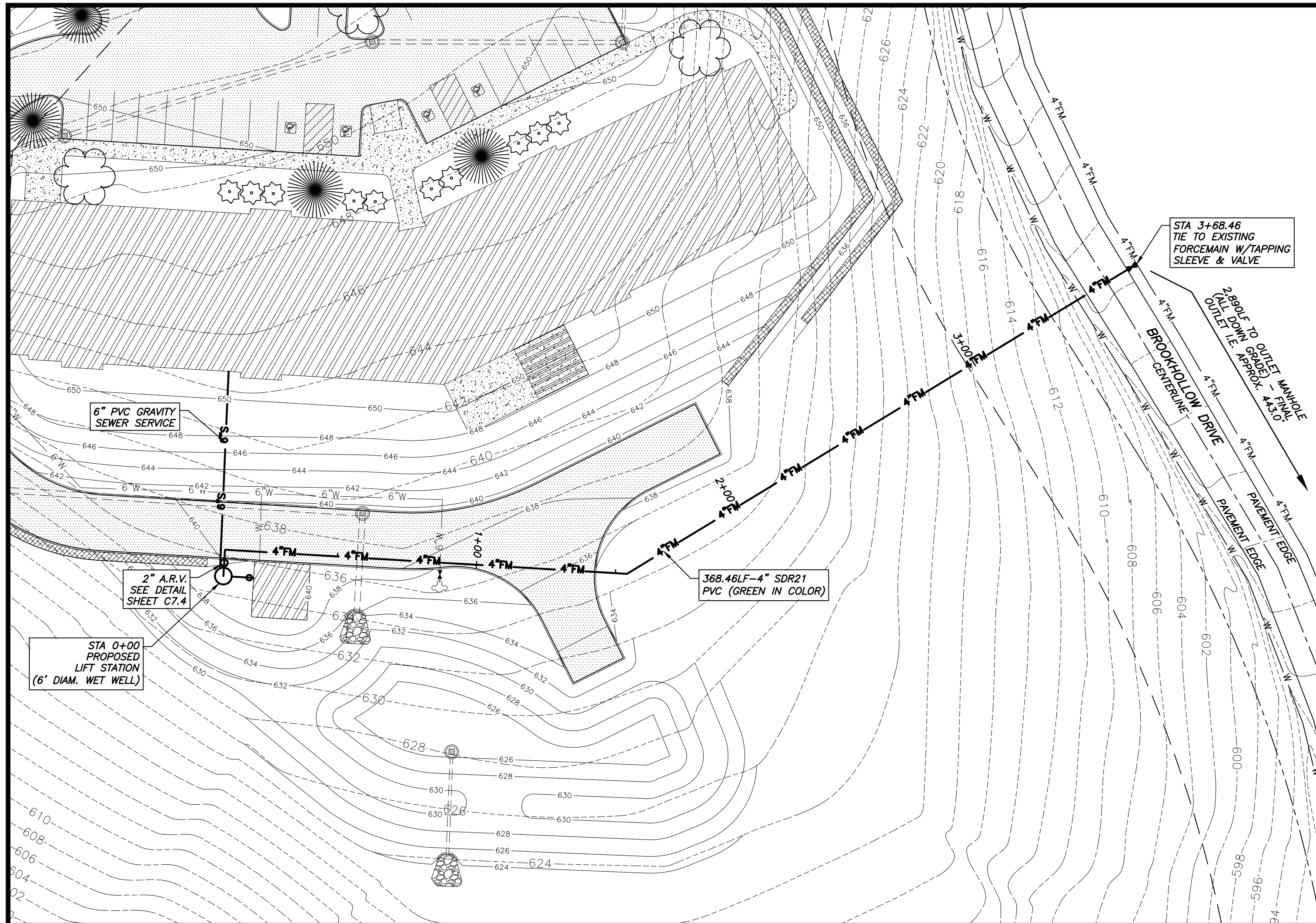
P.O. Box 30271
1805A Alpine Drive
Clarksville, TN, 37040
ph. # (931) 920-1750
fax # (931) 920-8490

REVISION	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR APARTMENTS
ASHLAND CITY, TN
GENERAL DETAILS
SCALE: NONE



C7.1



- NOTES:
- IF THE INVERT ELEVATION AT THE DISCHARGE END OF THE FORCE MAIN IS BELOW THE INVERT ELEVATION OF THE FORCE MAIN AT THE POINT OF LEAVING THE WET WELL, OR IF THE DISCHARGE FORCE MAIN IS LESS THAN 200 FEET (61 m) IN LENGTH, A PRIMING LOCK LOOP MAY BE REQUIRED TO BE INSTALLED TO PROVIDE A "TRAP" IN THE FORCE MAIN. SEE DRAWING 878761 FOR PRIMING LOCK LOOP AND ADDITIONAL STATION INSTALLATION DETAILS.
 - DISCHARGE AND SUCTION PIPES TYPICALLY ARE 4-INCH (100mm), 6-INCH (150mm) OR 8-INCH (200mm) DEPENDING ON THE PROJECT REQUIREMENTS. FLANGED INCREASER FITTINGS CAN BE PROVIDED TO ACCOMMODATE LARGER DIAMETER DISCHARGE AND SUCTION PIPES TO THE STATION FOR INCREASED FLOW REQUIREMENTS.
 - THE WET WELL VOLUME AS DEFINED BETWEEN THE LOW LEVEL "ON" AND THE PUMPS "OFF" SETTINGS SHOULD BE EQUAL TO, OR GREATER THAN, THE PUMPING RATE PER MINUTE OF THE STATION SO THE STATION WILL OPERATE FOR AT LEAST ONE MINUTE PER CYCLE. SEE TABLE 2 FOR TYPICAL LEVEL SETTINGS.
 - PROVIDE 45° SLOPE IN WET WELL AS REQUIRED. ENSURE THE GROUT DOES NOT CONFLICT WITH, RESTRICT OR BLOCK THE OPENINGS OF, THE SUCTION PIPES.
 - SUCTION PIPE MATERIAL RECOMMENDED TO BE SCHEDULE 80 PVC OR CPVC. A SUCTION PIPE SUPPORT KIT IS PROVIDED BY S&L, TO BE INSTALLED BY OTHERS AS SHOWN. THE SIZE AND MOUNTING WILL VARY BASED ON PROJECT REQUIREMENTS.
 - 20 FT MAXIMUM SUCTION LIFT IS AVAILABLE UP TO A MAXIMUM OF 85°F (29°C) AND 1000 FT OF ALTITUDE. THE ALLOWABLE SUCTION LIFT WILL BE DERATED FOR TEMPERATURES ABOVE 85°F (29°C) AND 1000 FT OF ALTITUDE.
 - MINIMUM OF 1/2-IN OF GROUT OR MASTIC SPACER ON THE TOP OF THE WET WELL LIP FOR IS REQUIRED FOR STATIONS WITH A 4' WET WELL OPENING TO AVOID CLASHES BETWEEN THE PUMP STATION HARDWARE AND THE WET WELL STRUCTURE.
 - THE TOTAL NUMBER OF CONTROL DISPLACEMENT SWITCHES (FLOATS) WILL VARY BASED ON REQUIREMENTS.
 - THE WET WELL (INCLUDING INLET, INVERT, CAP AND/OR GROUT), SUCTION PIPES, DISCHARGE FORCE MAIN AND DISCHARGE FORCE MAIN RESTRAINT ARE NOT PROVIDED BY S&L.
 - COPYRIGHT © 2021, SMITH & LOVELESS, INC.

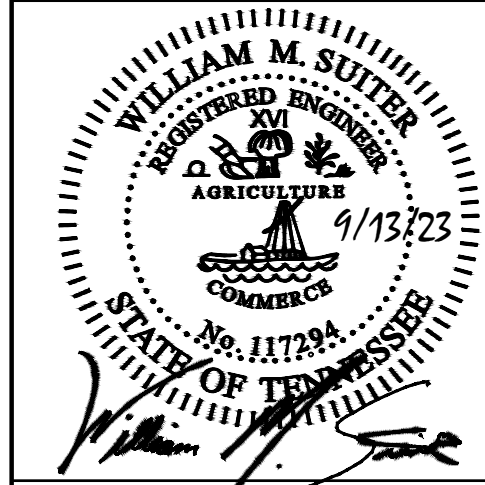
TABLE 1	
WET WELL DIAMETER	DIM A
6' [1.8 m]	2'-0" [610 mm]

Quiner
Surveying
& Land Planning
CIVIL ENGINEERING & LAND SURVEYING

P.O. Box 30271
1805A Alpine Drive
Clarksville, TN, 37040
ph. # (931) 920-1750
fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

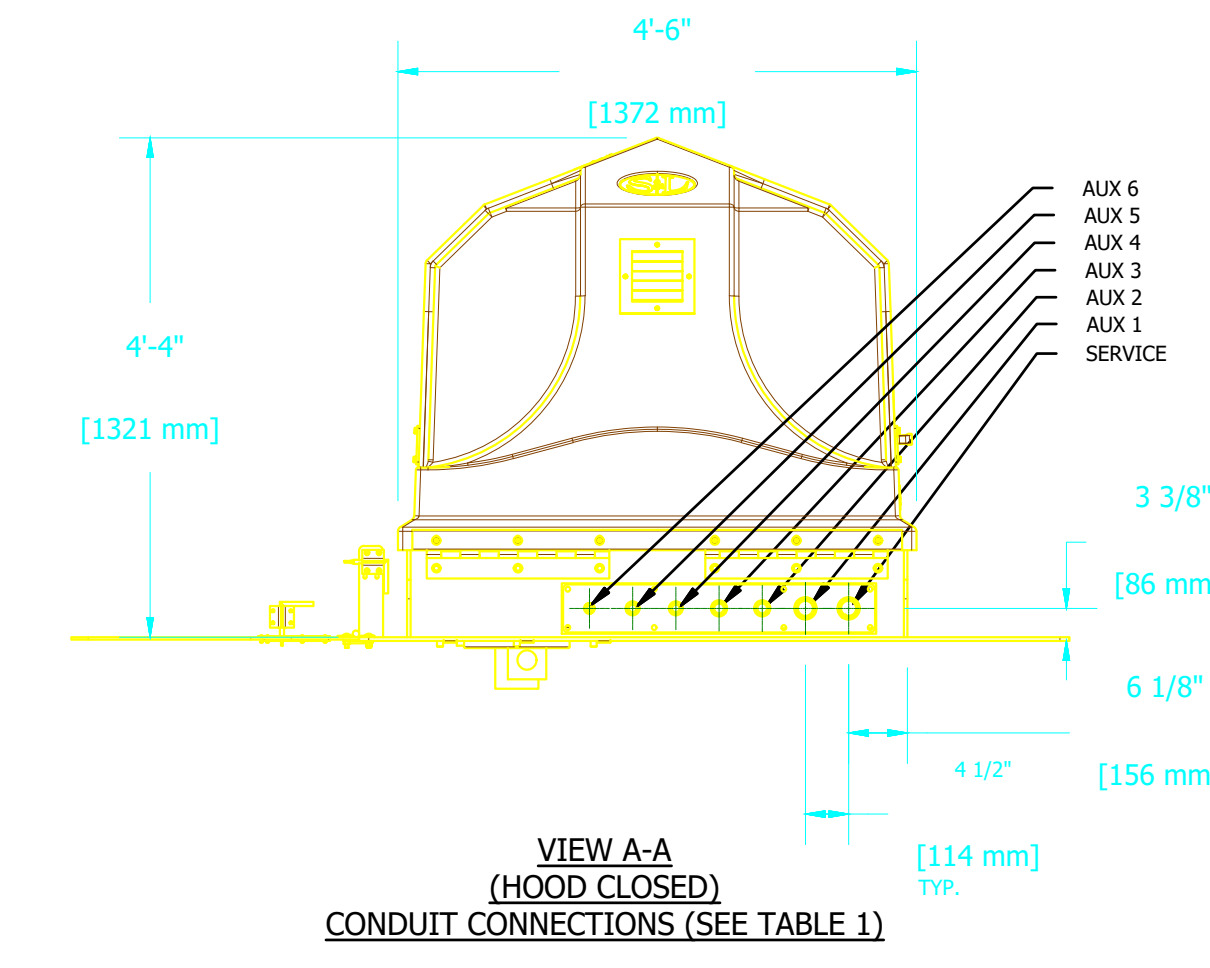
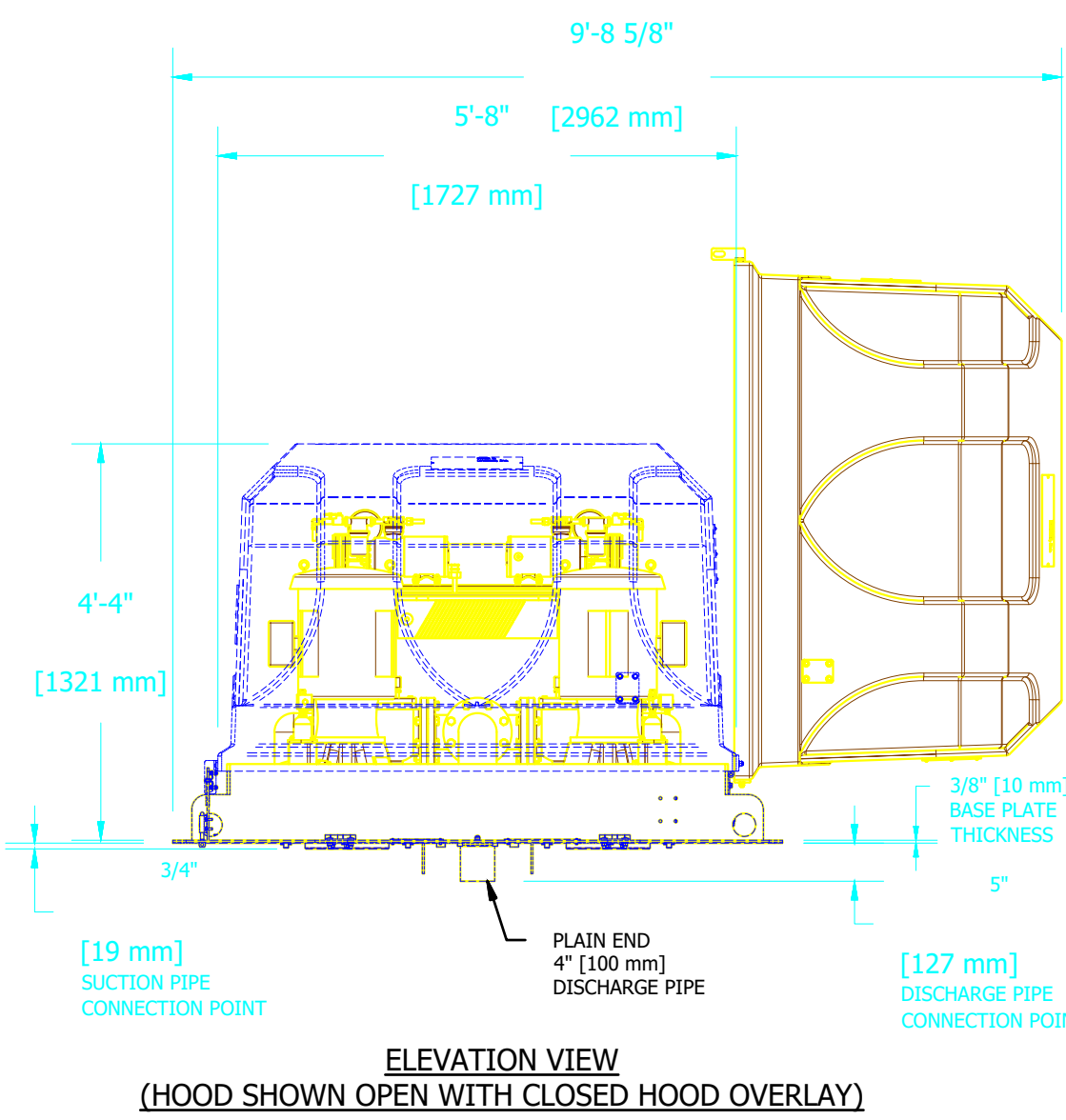
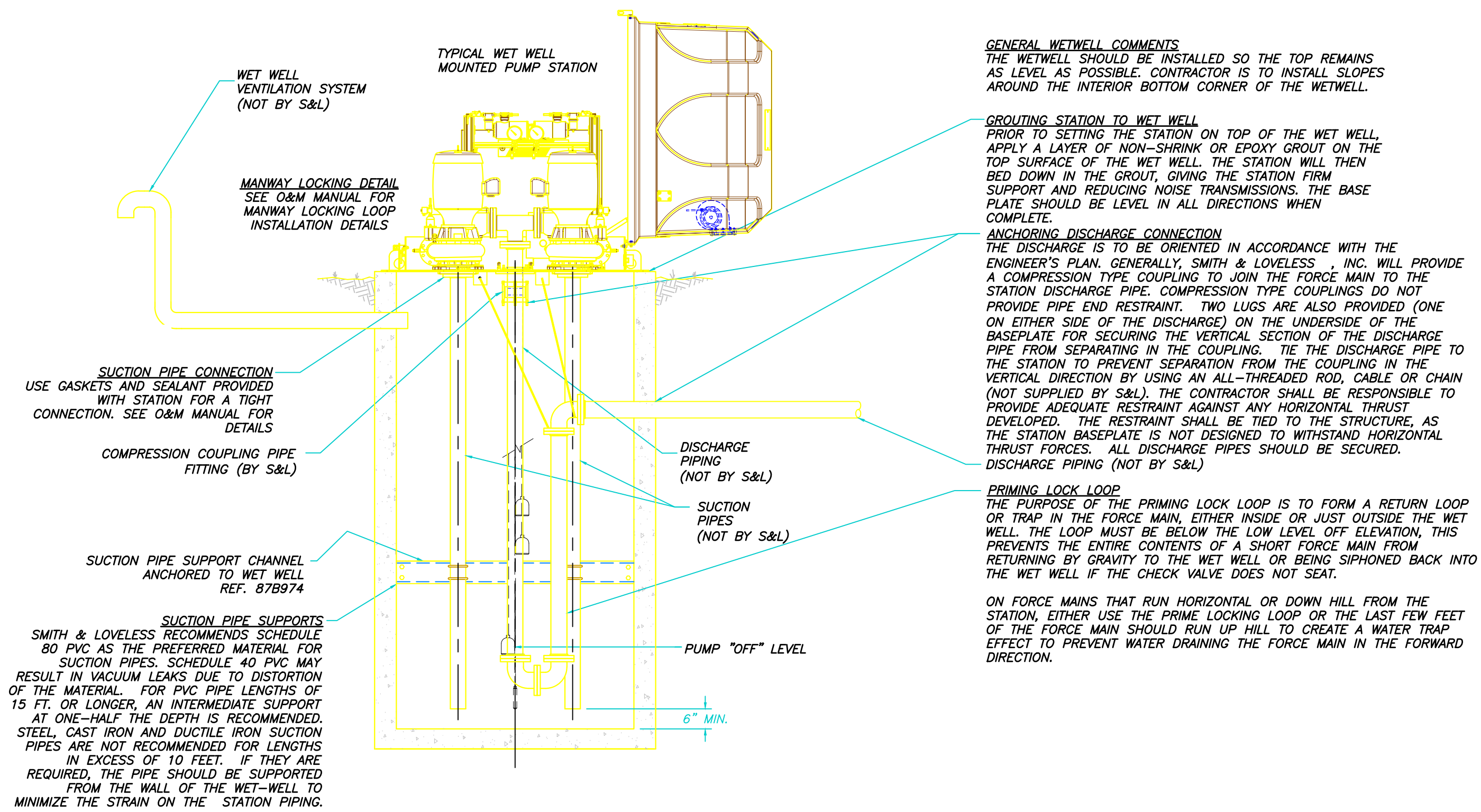
BROOKHOLLOW SENIOR APARTMENTS
ASHLAND CITY, TN
PUMP STATION DETAILS
SCALE: NONE



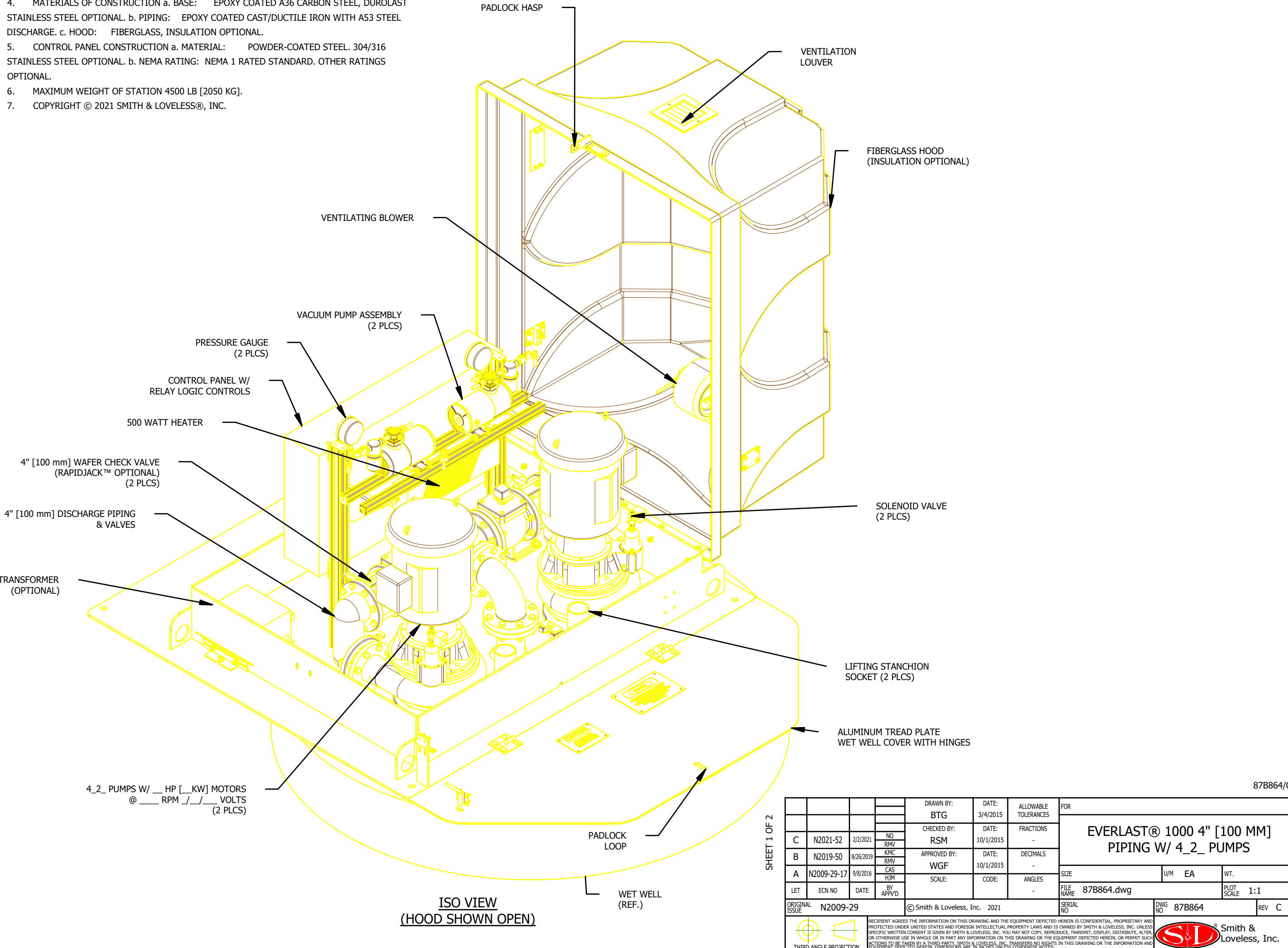
C7.2

INSTALLATION DETAILS

EVERLAST™ 1000/3000 SERIES



- NOTES:**
- SEE DRAWING 87B761 FOR STATION INSTALLATION DETAILS.
 - SEE DRAWING 87B721 FOR TYPICAL WET WELL LAYOUT AND LEVEL CONTROL SETTINGS.
 - U.S. CUSTOMARY CONDUIT COUPLING SIZES SHOWN. METRIC SIZES OPTIONAL.
 - MATERIALS OF CONSTRUCTION a. BASE: EPOXY COATED A36 CARBON STEEL, DURALOAST STAINLESS STEEL OPTIONAL. b. PIPING: EPOXY COATED CAST/DUCTILE IRON WITH A53 STEEL DISCHARGE. c. HOOD: FIBERGLASS, INSULATION OPTIONAL.
 - CONTROL PANEL CONSTRUCTION a. MATERIAL: POWDER-COATED STEEL, 304/316 STAINLESS STEEL OPTIONAL. b. NEMA RATING: NEMA 1 RATED STANDARD. OTHER RATINGS OPTIONAL.
 - MAXIMUM WEIGHT OF STATION 4500 LB [2050 KG].
 - COPYRIGHT © 2021 SMITH & LOVELESS®, INC.

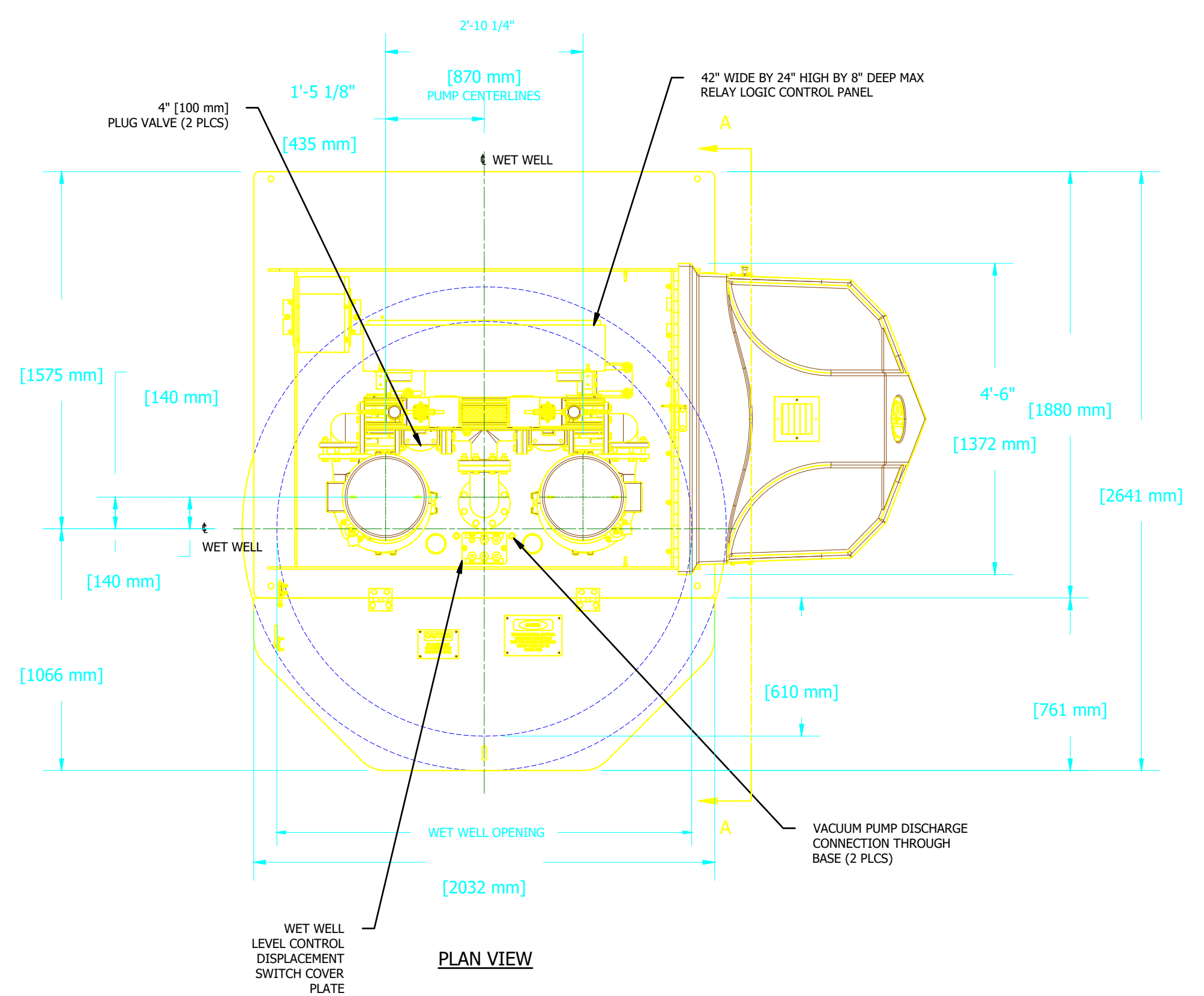


REV	DATE	BY	CHKD	DESCRIPTION
C	N2021-52	02/20/21	RSM	10/1/2015
B	N2019-50	03/02/19	WGF	08/1/2015
A	N2009-29-17	08/20/11	WGF	08/1/2015
LET	EDN NO	DATE	APPROV	

87B864.dwg

EVERLAST® 1000 4" [100 MM] PIPING W/ 4_2_PUMPS

SMITH & LOVELESS, INC.



REV	DATE	BY	CHKD	DESCRIPTION
C	N2021-52	02/20/21	RSM	10/1/2015
B	N2019-50	03/02/19	WGF	08/1/2015
A	N2009-29-17	08/20/11	WGF	08/1/2015
LET	EDN NO	DATE	APPROV	

87B864.dwg

EVERLAST® 1000 4" [100 MM] PIPING W/ 4_2_PUMPS

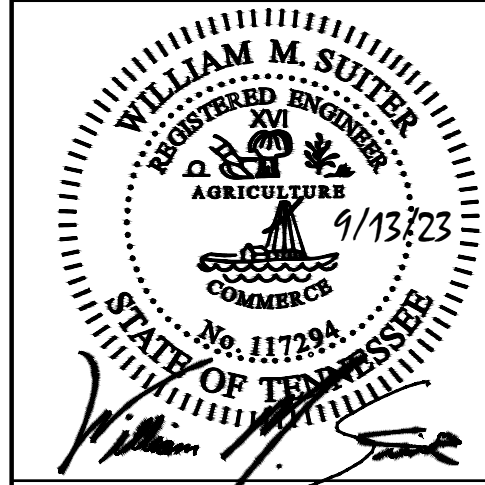
SMITH & LOVELESS, INC.

Quiner Surveying & Land Planning
CIVIL ENGINEERING & LAND SURVEYING

P.O. Box 30271
1805A Alpine Drive
Clarksville, TN, 37040
ph. # (931) 920-1750
fax # (931) 920-8490

REV.#	DATE	REVISION
0	5/12/23	INITIAL SUBMITTAL
1	8/4/23	REVISIONS
2	9/13/23	REVISIONS

BROOKHOLLOW SENIOR APARTMENTS
ASHLAND CITY, TN
PUMP STATION DETAILS
SCALE: NONE



C7.3

Suiter Surveying & Land Planning, Inc.

Mr. Allen Nicholson
Building & Codes Director
Town of Ashland City
233 TN Waltz Pkwy, Suite 103
Ashland City, TN 37015

SUBJECT: Brookhollow Senior Apartments
Plan Revision Re-Submittal #1

September 13, 2023

Mr. Nicholson,

Thank you very much for helping us with the review process on the Brookhollow Senior Apartments. We have tried to meet every request presented, where possible, with the following commentary relative to each note presented by the reviewing engineer.

Plans

- We have assumed that a 20' aisle will be sufficient for most emergency vehicles noting that it is only 4' narrower than a full width roadway. Additionally, review comments provided to the developer on the architectural drawing submittal specify a 20' wide access drive for fire apparatus.
- The developer has retained a structural engineer to design features such as retaining walls, which are outside of our expertise. We would defer to the retaining wall structural drawings for the appropriate interfacing with driveway pavement. We do, however, have an extruded curb detail and pavement section detail on sheet C7.0 of the plans which details the pavement itself. Any variations to interfaces with the pavement through retaining wall sections should be reflected in the structural plans, which have not been provided to us (the civil engineer) at the time of this submittal.
- Sheet C3.3 notes that all disturbed areas shall be seeded and strawed. The relative, permanent seeding mixtures for these areas are noted on sheet C3.0.
 - A landscaping plan has been added to the plan set, as requested.

- No proposed grade slopes have been designed to be any steeper than 3:1.
- As mentioned, any further details for wall construction should be part of the structural drawing package.
- Pavement detail is called out on sheet C1.0 to reference the detail on sheet C5.0. Concerning off-site striping, application has been made to TDOT for review and approval since off-site roadway improvements will be within state right of way. It is our understanding that TDOT currently has roadway improvements planned for this area. We expect some revisions based on their comment, but all we are proposing for off-site roadway improvements at the moment is an extension of width of one of the existing asphalt lanes. We do not anticipate that our project would prompt any additional signage for traffic on the existing roadway other than what already exists. There is an existing stop sign at the end of Brookhollow and we aren't proposing to move the "centerline" of the existing road. But if the city wishes to detail what they would like to see (if anything specific) as far as additional striping or signage, we will certainly incorporate that into the plan set.
- The storm manhole detail/grate has been revised as requested, calling for Neenah R-4810 grates on all storm manholes. The area drain in the curve of the roadway was also relocated, as pointed out to get out of the retaining wall footprint. Thank you for catching that mistake.
- Reference has been made to the TDEC manual for review of the silt fence. It should be noted that TDEC themselves has already approved these plans as submitted. However, the silt fence layout was revised as requested with the following design considerations:
 - It is noted that it will not be acceptable to simply surround the disturbance area with silt fencing. Therefore, the majority of silt fencing (specifically along the southern portion of the disturbance) has been removed. In its place, we have noted for the contractor to leave the specified portion of existing forest to remain as a natural, protective silt barrier. The southern portion of the site will outfall to dense forest (on our own site) with an effective filtering depth of roughly 300'. The reviewing engineer is correct in pointing out the limited efficacy of silt fencing. We believe natural filtration existing on site to be much more appropriate. On the eastern portion of the site where it slopes towards the existing roadway, we have left silt fencing but stacked it in a multi-layered fashion along contours to provide redundancy of protection, per the TDEC manual. Additionally, we have specified for an existing treeline to remain downstream of this silt fence as well to provide even further means of siltation barrier in a more effective manner, as requested.
 - Outlet protection has been revised and noted, as requested.
 - The referenced detail has been removed from the plan set to avoid confusion.
- A site electrical plan which includes power service and lighting locations was completed by a third party for incorporation into the architectural drawing set. The plan sheet has been forwarded to us so that we can submit a copy of it to you along with our transmittal. However, it is our understanding that it has already been submitted to the City and undergone review as part of the architectural drawing submittal.

- A site electrical plan which includes power service and lighting locations was completed by a third party for incorporation into the architectural drawing set. The plan sheet has been forwarded to us so that we can submit a copy of it to you along with our transmittal. However, it is our understanding that it has already been submitted to the City and undergone review as part of the architectural drawing submittal.
- The reviewing engineer has requested that we confirm the depth of the existing water main *with Public Works*. Since this review letter was transmitted to me from the City, I will direct this comment as a question back to the City and its public works department. Does Public works believe this water line to be too shallow to withstand the roadway tie-in? If the water line is actually in the middle of the existing ditch as we have it shown then it should technically only be in fill. However, if you believe it to be too shallow to withstand the proposed construction or would prefer it be relocated along a certain stretch, please specify. To follow that, I had heard mentioned that plans for any public utility line extensions outside of private developments in Ashland City would be the task of Ashland City's hired engineer (although we certainly don't mind showing a relocation if I misheard). If the report is that the line needs to be relocated, should we just note the potential location on our plans and reference a third party set of drawings or should we say "Contractor shall coordinate with Ashland City Public Works to relocate existing water main along X number of feet?" We are open to whatever is most appropriate.
- The grading plan has been revised as requested to specify maximum slopes of 3:1, with "toe-walls" at the ends of standard headwall outlets. A headwall detail has been added to reflect this as well.
- We have one pipe bedding/backfill box in the detail list that actually shows 3 different pipe installation details within it. Each instance is clearly labeled and yes, covers all pipe installations on site unless otherwise directed.
- The spillway is clearly labeled on the grading plan, and an additional box cross-section detail of the spillway has been provided in the detail list, as requested.
- Pump station details have been finalized and provided, as requested.
- Elevations of buildings are not necessary for these civil drawings, nor were they incorporated into these plans. I feel confident that structural/architectural drawings have been submitted separately by a 3rd party and are being reviewed against their own standards.

Calculations/Reports

- A summary has been added, as requested which references a drainage map and the included hydrologic model containing all of the details mentioned in the revision request.
 - Drainage maps for both the pre- and post-development conditions have been added in order to simply review of the attached model and provide reference locations for required data.
- Headwater calculations for all subbasins are available in the model provided and are referenced in the hydrologic summary.

- Also mentioned in the hydrologic summary (and related to the headwater elevations for each subbasin) are the pipe capacities. The way we chose to model this storm system was in a dynamic nature, with each drainage structure taking into account tailwater conditions downstream of the structure. When a series of catch basins are tied together in this manner, instead of modeling them as reaches and analyzing carrying capacity vs routed inflow individually, we model each catch basin as a small basin itself (with zero holding capacity) and then check the peak elevation at each structure in relation to the design elevation of the top of grate. This is a much simpler way for us to gauge our system model. We believe this allows for a more effective design for the client, especially in cases such as this where all of the piping is private anyways. The drainage system was designed to handle the 100 year/24 hour storm without overflowing any of the specified area drains/catch basins.
- As mentioned, we do not provide any of the “design” of the retaining walls and would have to defer to structural drawings for retaining wall calculations.
- A paragraph on design of the silt fencing was added to the hydrologic summary, specifically referencing the TDEC manual, as requested. Additionally, please reference the previous comments concerning EPSC measures and silt fencing provided earlier in this document. Please note that with the limited contributing drainage area to our outfall, there are no hard and fast calculation points to hit for the design of erosion control for this property. As mentioned, we’ve actually gotten approval already from TDEC themselves. We are not arguing that silt fencing is the only way to control the erosion on-site but the design of EPSC measures is sometimes more subjective than sizing a storm pipe. The site goes through various levels of disturbance and feature construction on varying portions of the site throughout the entire construction phase. It’s impractical to put silt fencing or coir logs on exactly every ¼ acre subbasin across exactly 100 LF and expect them to last through construction because they will be in the way of equipment. Our site is surrounded by woods and we have decided to use that as a means of last resort for filtering of sediment. However, we have taken advantage of opportunistic silt fencing and a sediment trap in order to help limit erosion from the site. If further means of erosion control are required by the city, we would be more than happy to incorporate them in our plans but would ask for them to be specific in nature as none of the measures that we are proposing are anything but a subjective design idea.
- The developer is proposing a 92-bed establishment. We have estimated approximately 100 gallons per day per bed plus fire protection. Please refer to architectural drawings for sprinkler system projections. The sewer pump station has been designed by a 3rd party manufacturer for a 120 gpm pumping capacity. Its relative characteristics and details have been added to the details sheets, as requested.

William M. Suiter, PE

Suiter Surveying & Land Planning, Inc.

PO Box 30271 - 1805A Alpine Drive

Clarksville, TN 37040

Office: (931) 920-1750

msuiter@suitersurveying.com

Suiter Surveying & Land Planning, Inc.

BROOKHOLLOW SENIOR APARTMENTS

Hydrology Report

For: Socayr, Inc.
September 13, 2023



By: Suiter Surveying & Land Planning, Inc.
William M. Suiter, PE
1805A Alpine Drive
Clarksville, TN 37040
(931) 920-1750
TN Lic. 117294

The site proposed for development is a currently vacant lot consisting of 8.38 acres (+/-). For purposes of analysis, approximately 0.57 acres (+/-) of off-site right of way have been included in the following hydrologic model since proposed grading activities will extend into this area as well.

The intention of the design as it relates to stormwater runoff is to withhold post-development runoff rates to values less-than or equal-to pre-developed conditions. The following table compares the pre-developed, uncontrolled condition of runoff with the post-developed, detention-routed condition for the 2, 5, 10, 25, 50 & 100-year rain events with 24-hour durations:

Return Event (24 hr)	Pre-Developed Runoff (cfs)	Post-Developed Runoff (cfs)
2 year	8.2	8.1
5 year	13.7	11.9
10 year	18.7	17.7
25 year	26.4	23.0
50 year	33.0	29.0
100 year	40.1	37.7

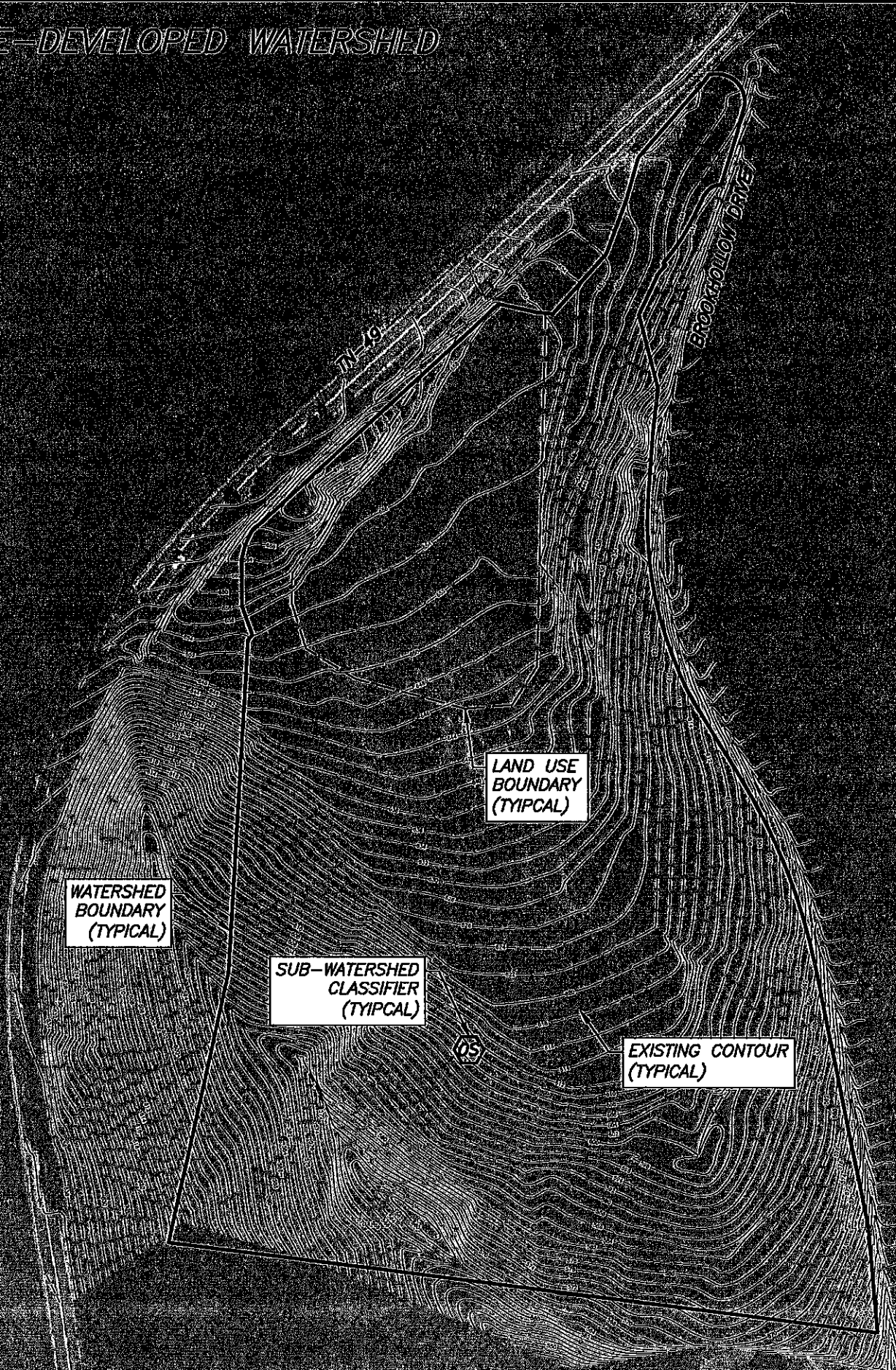
Referencing the hydrologic model in which the SCS method was used, the pre-developed analysis is fairly straightforward. Approximately 7.69 acres are classified as woods, with the remaining 1.26 acres classified as rangeland. Steep slopes on the site limit the time of concentration to just under 16 minutes.

The post-developed drainage model breaks the development down into multiple sub-watersheds, each with its own specific characteristics. Essentially, the storm piping system across the site is the final outfall for each subbasin. The drainage structures were designed to transport the 100 year/24 hour storm event effectively. For means of conservatism, we assigned a minimum value of 6.0 minutes for the times of concentration on subbasins 1S-7S, with 8S having a longer than minimum time of concentration since it encompasses the bypassing runoff which contains a lot of the wooded areas and some of the shallower slopes once re-grading is completed.

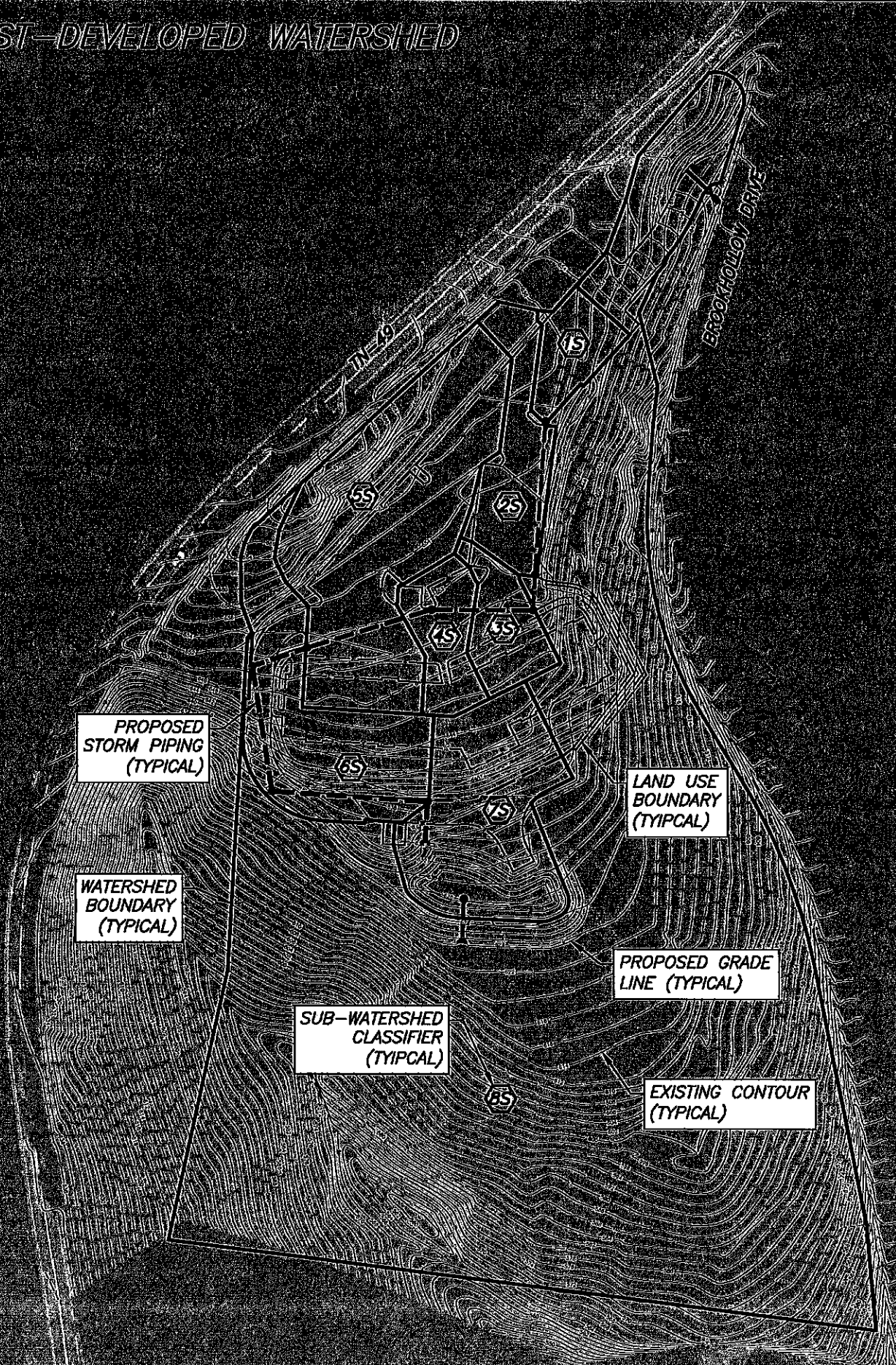
The relative drainage maps for pre-developed and post-developed conditions have been included with this report to allow for referencing of model data with each relative subbasin. Data for each subbasin such as times of concentration, contributing drainage areas, SCS curve numbers, etc. can be found in the attached model. As mentioned, the proposed storm piping system across the site was designed to transport the 100 year/24 hour rain event, which is the storm that the attached model reflects. Noting this, in order to determine head elevations at each proposed catch basin/area drain on site, reference can be made to the "Peak Elevation" noted for each area drain that the subbasins route to. When producing a dynamic model such as this (which iterates tailwater conditions to determine peak headwaters) we can simply compare the peak elevation of each outlet structure with its corresponding top of grate elevation to verify that no surcharging should be expected and the piping system does in fact have the capacity to transport the 100 year/24 hour storm effectively (which is the case throughout). For the trench drain analysis, instead of giving you a peak elevation like the catch basin nodes do, the trench drain reach provides an average estimated flow depth of 0.19' during the 100 year storm which is significantly less than its 12-18" design depth. See the drainage maps below:

Concerning the design of the erosion control measures on site, the project flow generally from west to east and north to south on fairly steep slopes, inside of a naturally wooded landscape. Design criteria for silt fences in the TDEC Erosion and Sediment Control Handbook allows for ¼ acre of upstream drainage area per 100 linear feet of (unbacked) silt fencing. On the portion of the site that we have chosen to control with silt fencing, there is approximately 1.3 acres of upstream contributing drainage area. In order to stay on contour with each silt fence and still provide an adequate barrier for disturbance, the silt fencing has been broken up into multiple effective “layers” as the runoff travels downstream. In all, we are proposing 770 LF of silt fencing to cover the area, with a back-up barrier of protected cover from the existing wooded area.

PRE-DEVELOPED WATERSHED



POST-DEVELOPED WATERSHED



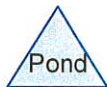
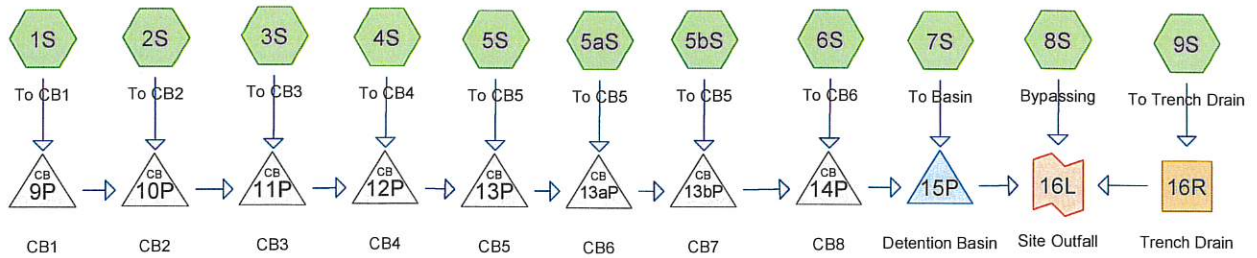
Brookhollow Senior Apartments

Pre-Development



To Outfall

Post-Development



Routing Diagram for Runoff

Prepared by {enter your company name here}, Printed 9/13/2023
HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

Runoff

Prepared by {enter your company name here}

Printed 9/13/2023

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.211	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
1.257	61	Pasture/grassland/range, Good, HSG B (OS)
1.747	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
13.681	66	Woods, Poor, HSG B (8S, OS)

Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

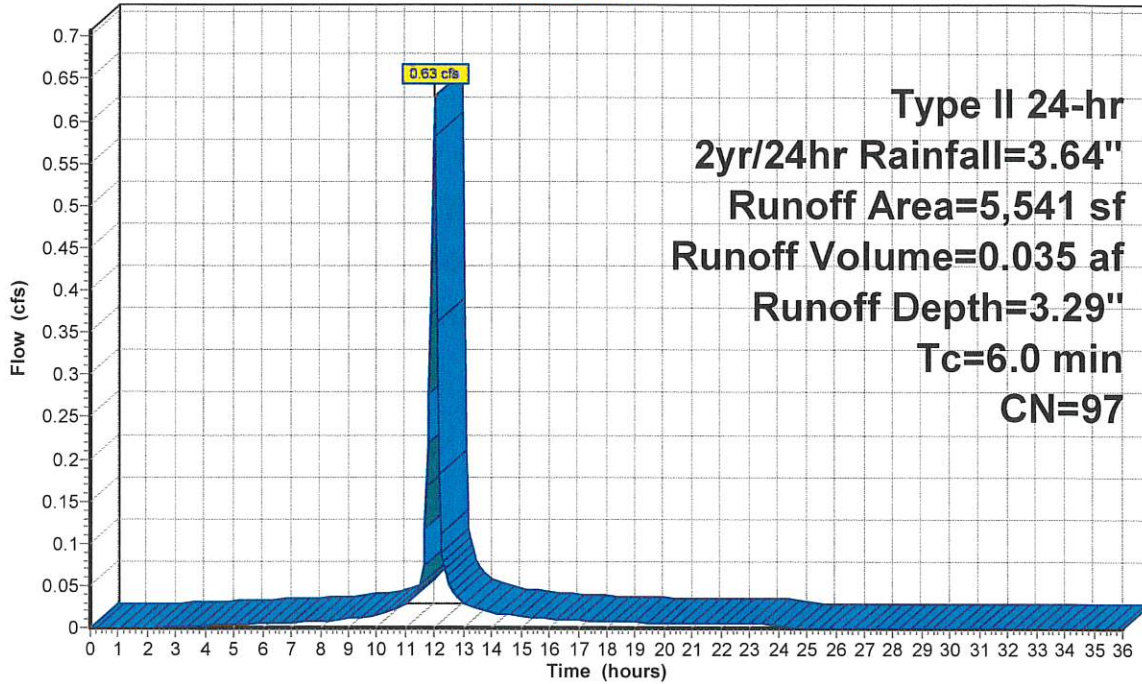
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 3

Subcatchment 1S: To CB1

Hydrograph

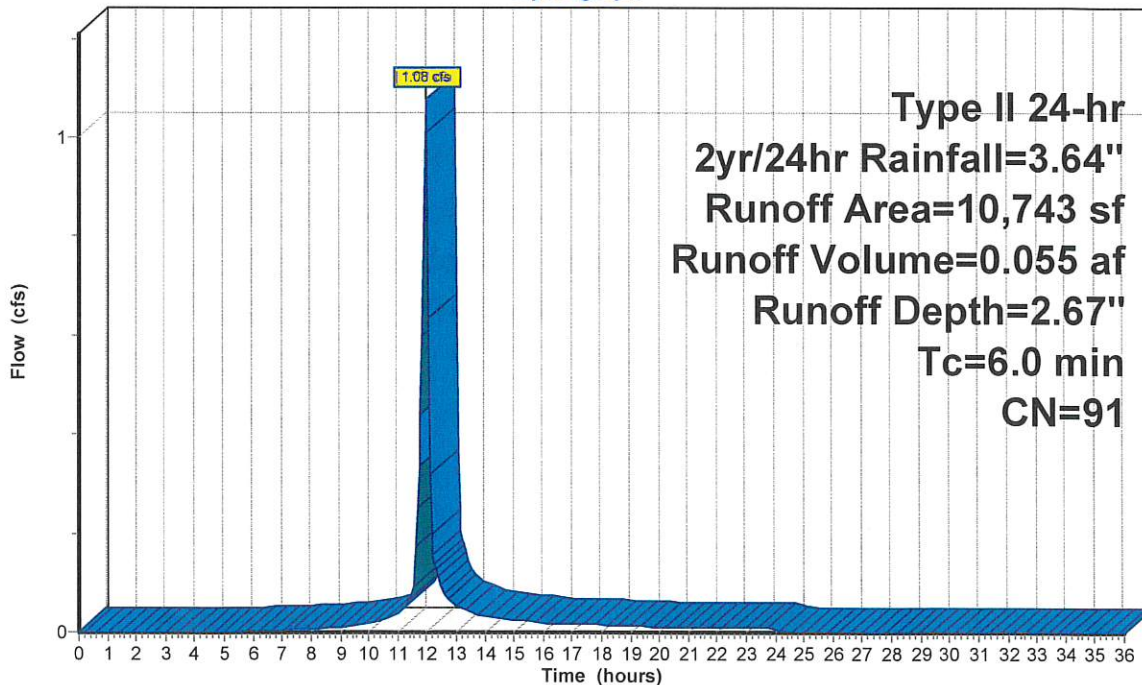


Runoff

Type II 24-hr
2yr/24hr Rainfall=3.64"
Runoff Area=5,541 sf
Runoff Volume=0.035 af
Runoff Depth=3.29"
Tc=6.0 min
CN=97

Subcatchment 2S: To CB2

Hydrograph



Runoff

Type II 24-hr
2yr/24hr Rainfall=3.64"
Runoff Area=10,743 sf
Runoff Volume=0.055 af
Runoff Depth=2.67"
Tc=6.0 min
CN=91

Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

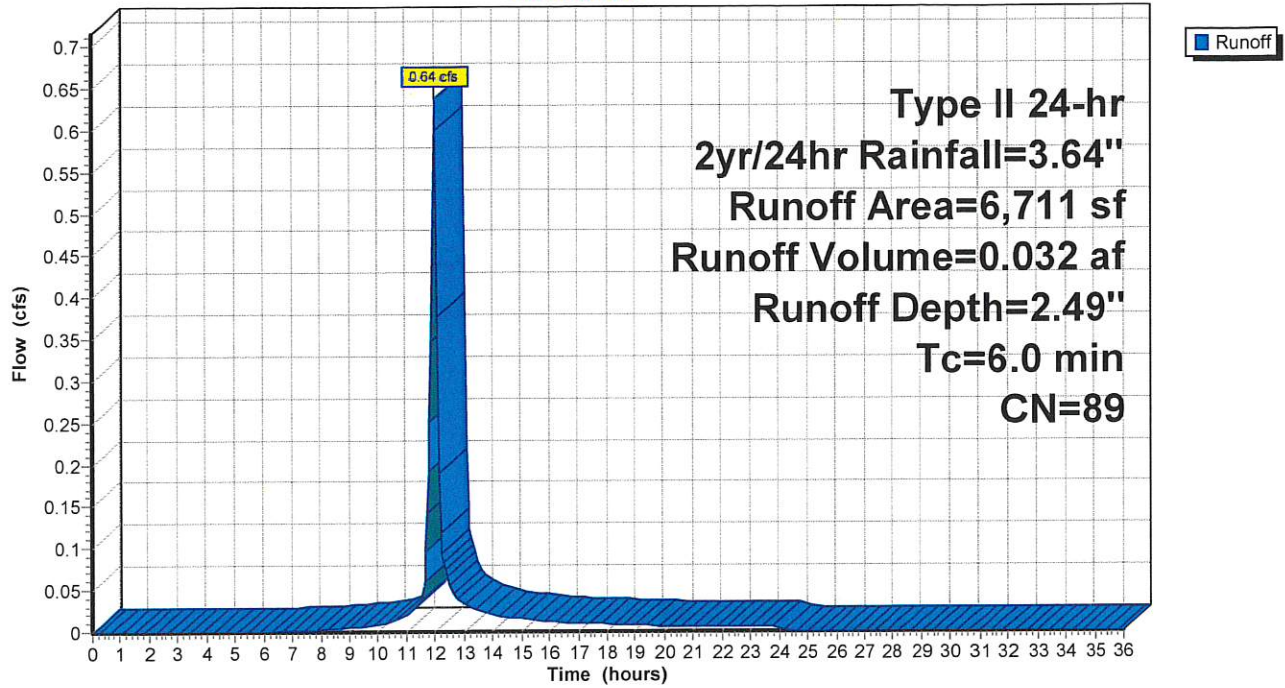
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 4

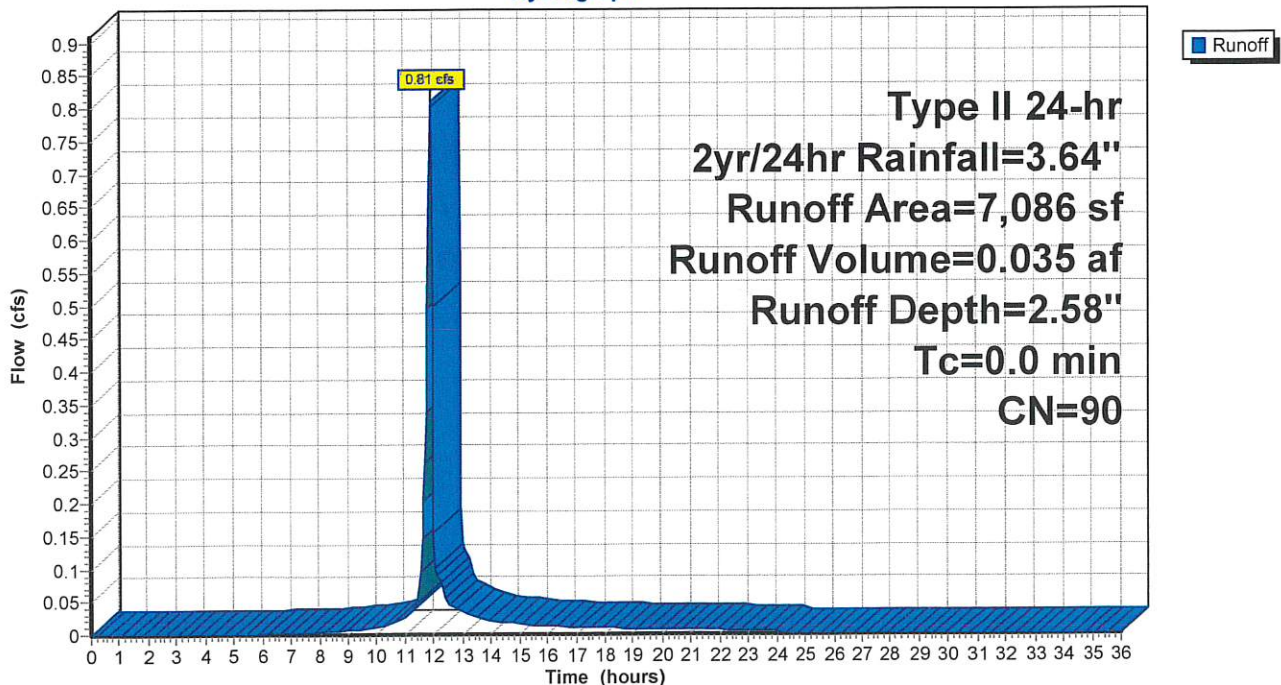
Subcatchment 3S: To CB3

Hydrograph



Subcatchment 4S: To CB4

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

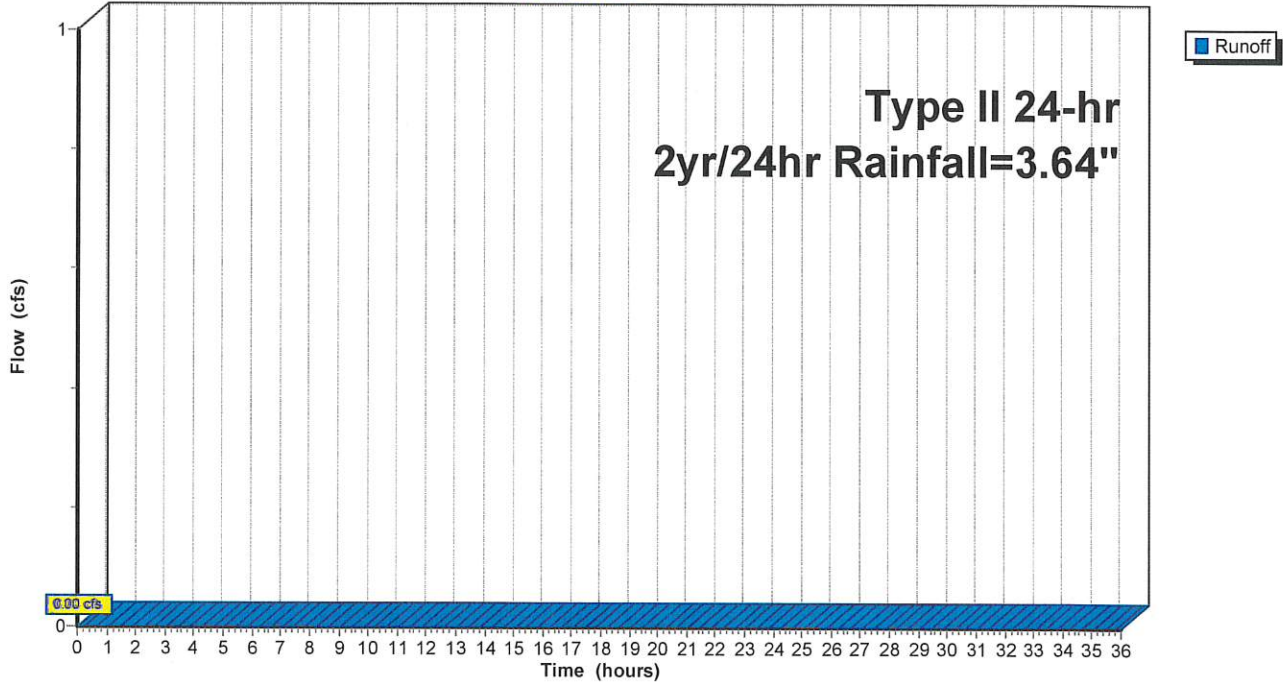
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 5

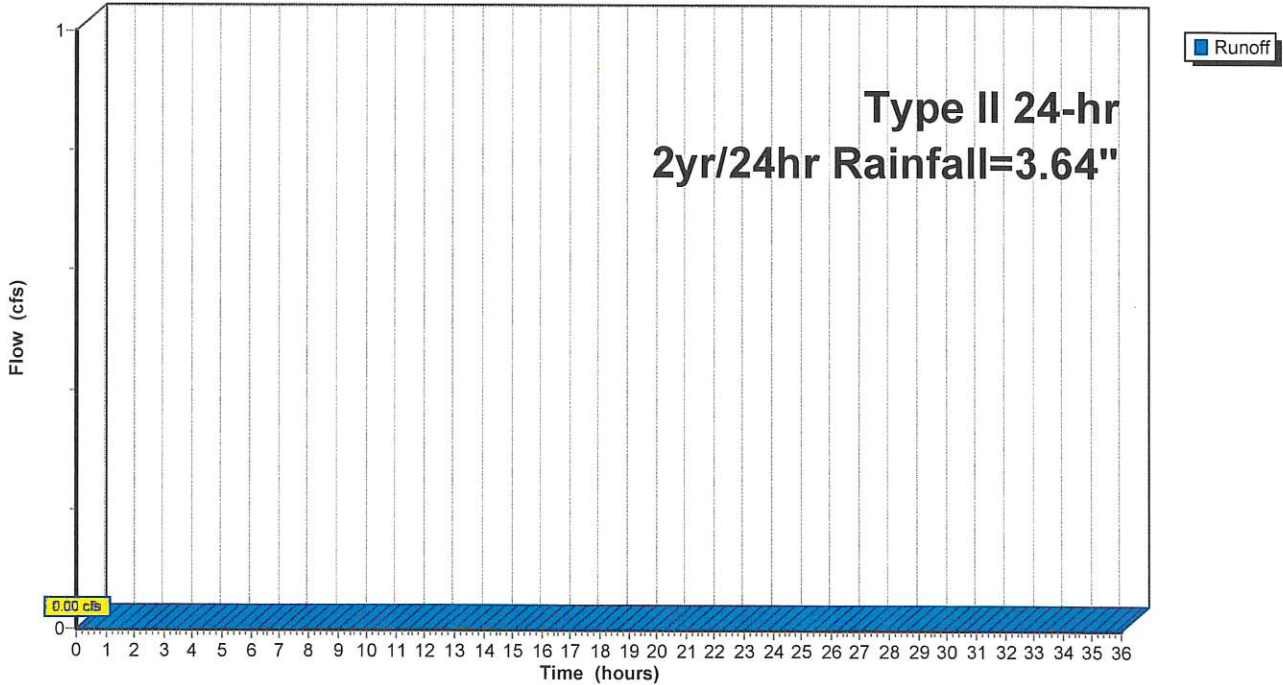
Subcatchment 5aS: To CB5

Hydrograph



Subcatchment 5bS: To CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

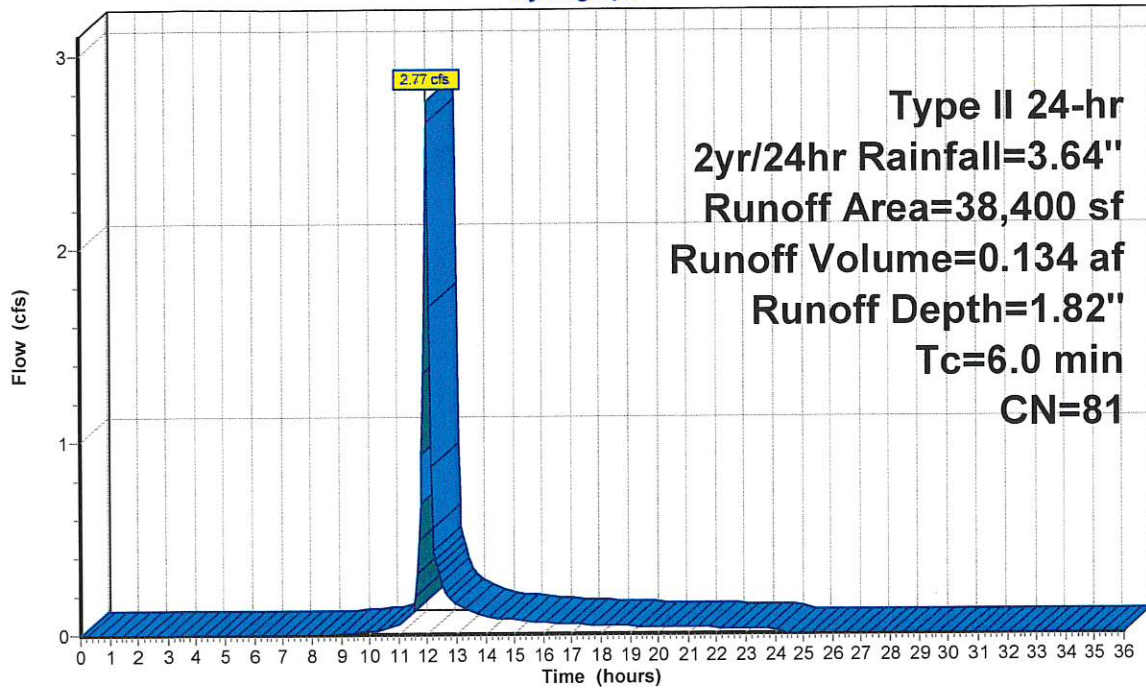
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 6

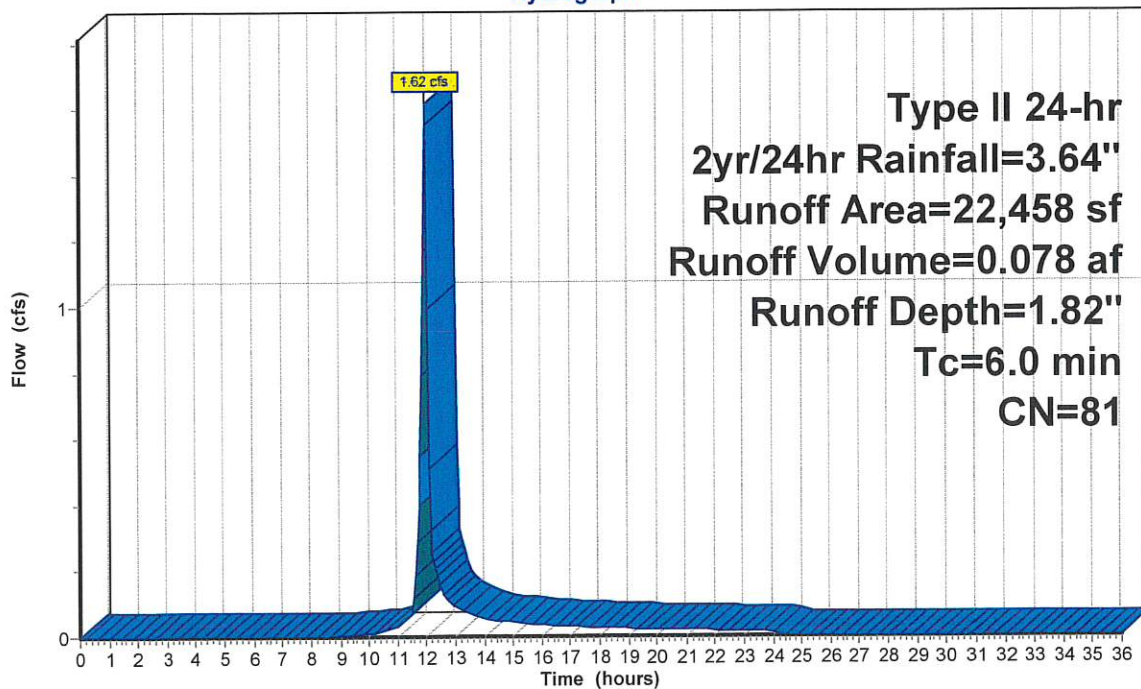
Subcatchment 5S: To CB5

Hydrograph



Subcatchment 6S: To CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

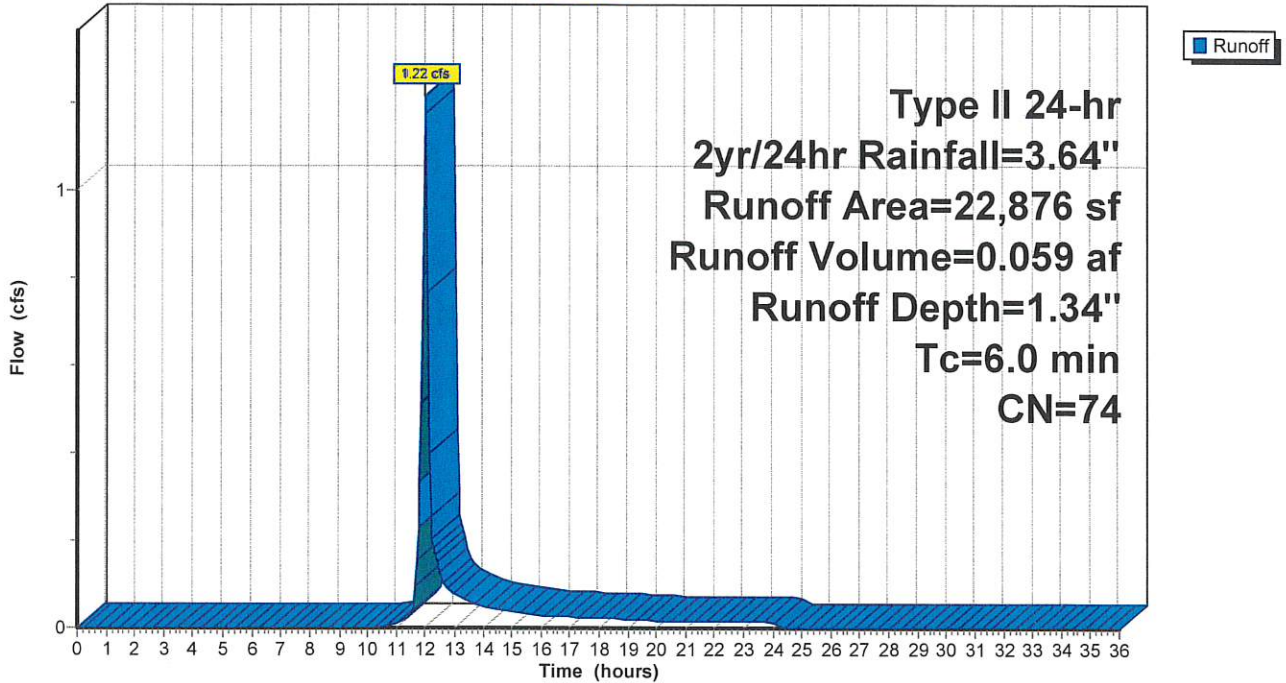
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 7

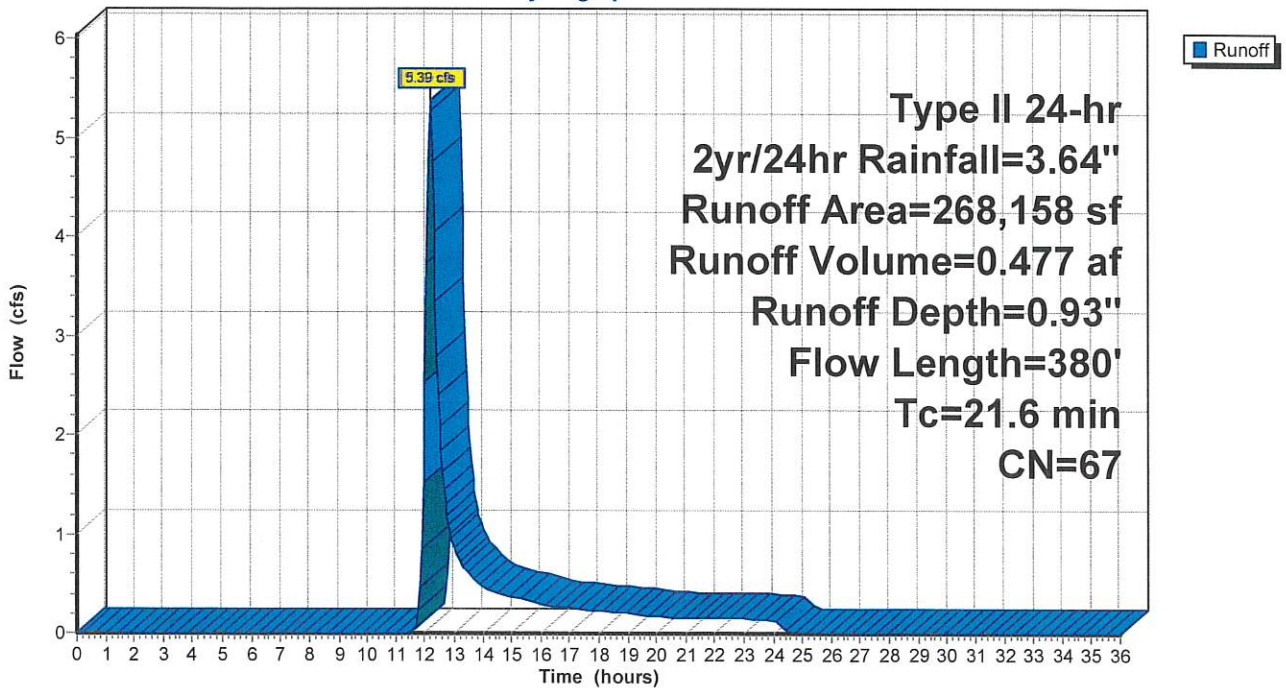
Subcatchment 7S: To Basin

Hydrograph



Subcatchment 8S: Bypassing

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

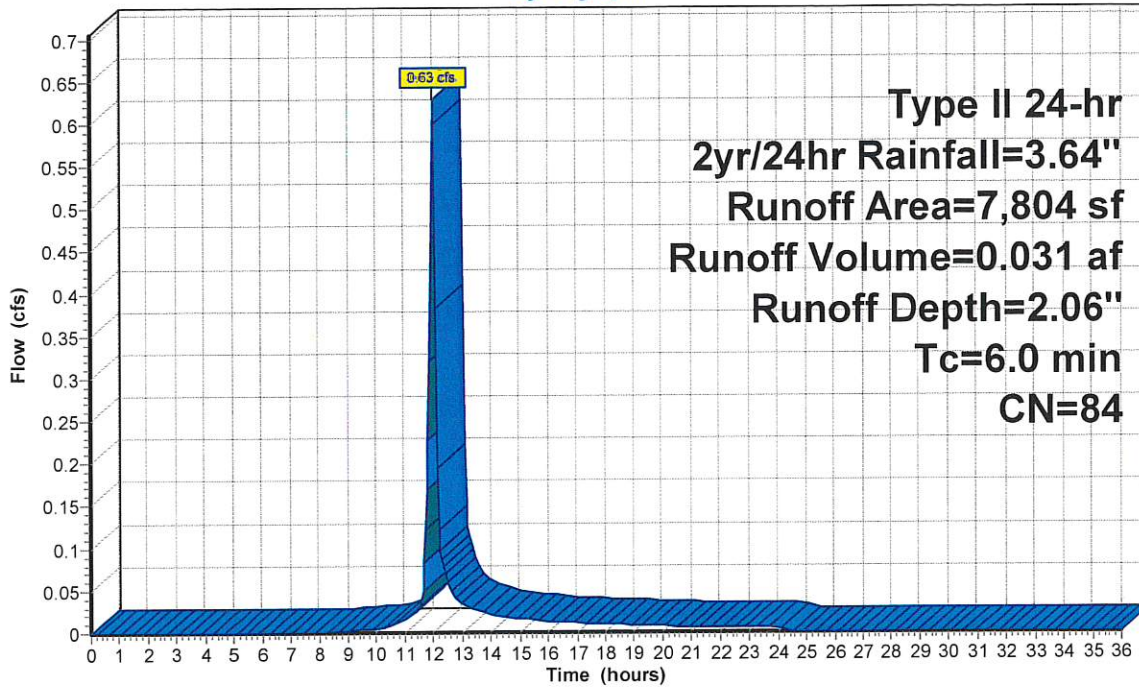
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 8

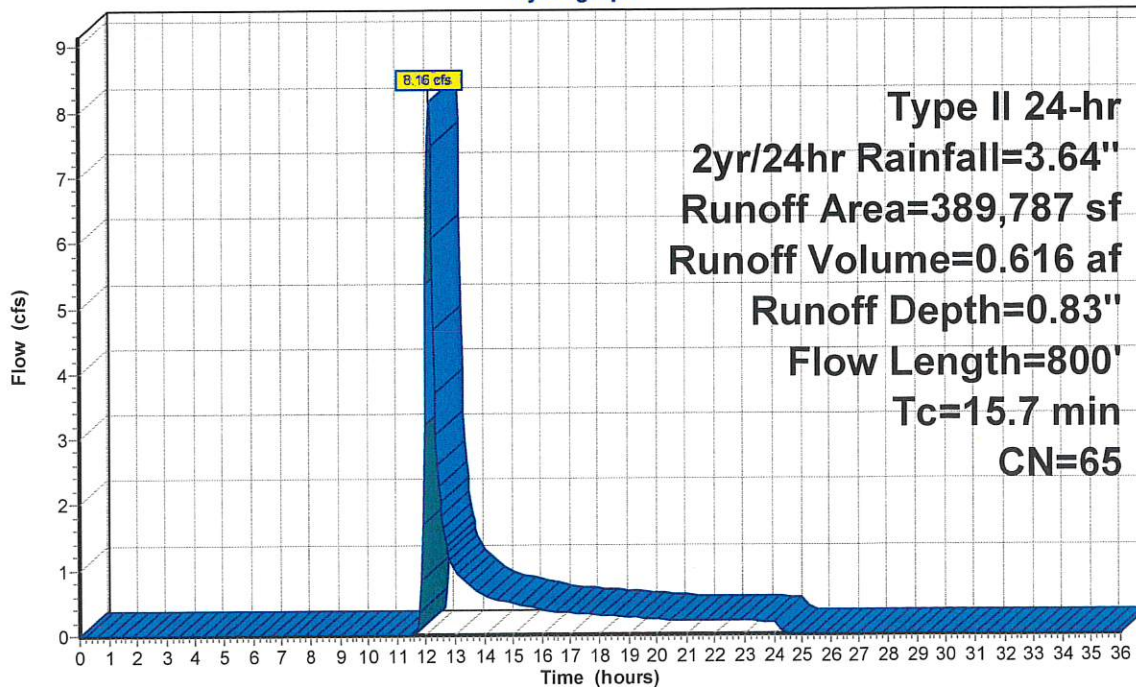
Subcatchment 9S: To Trench Drain

Hydrograph



Subcatchment OS: To Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

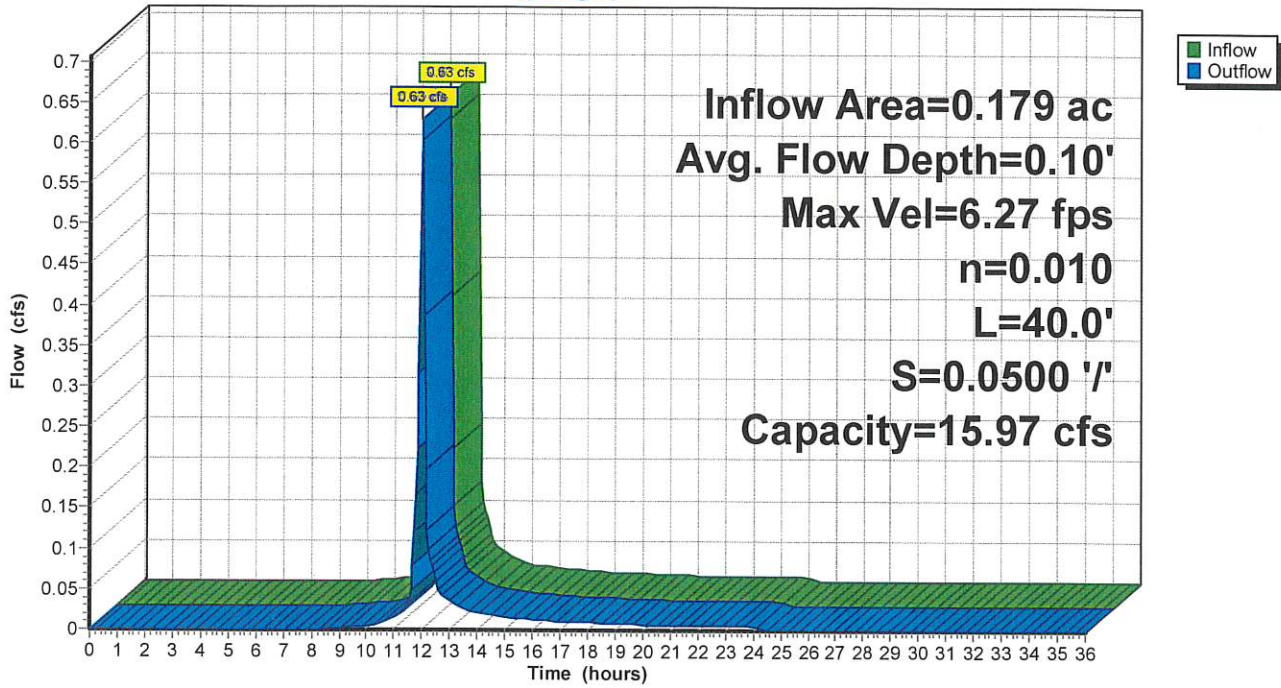
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 9

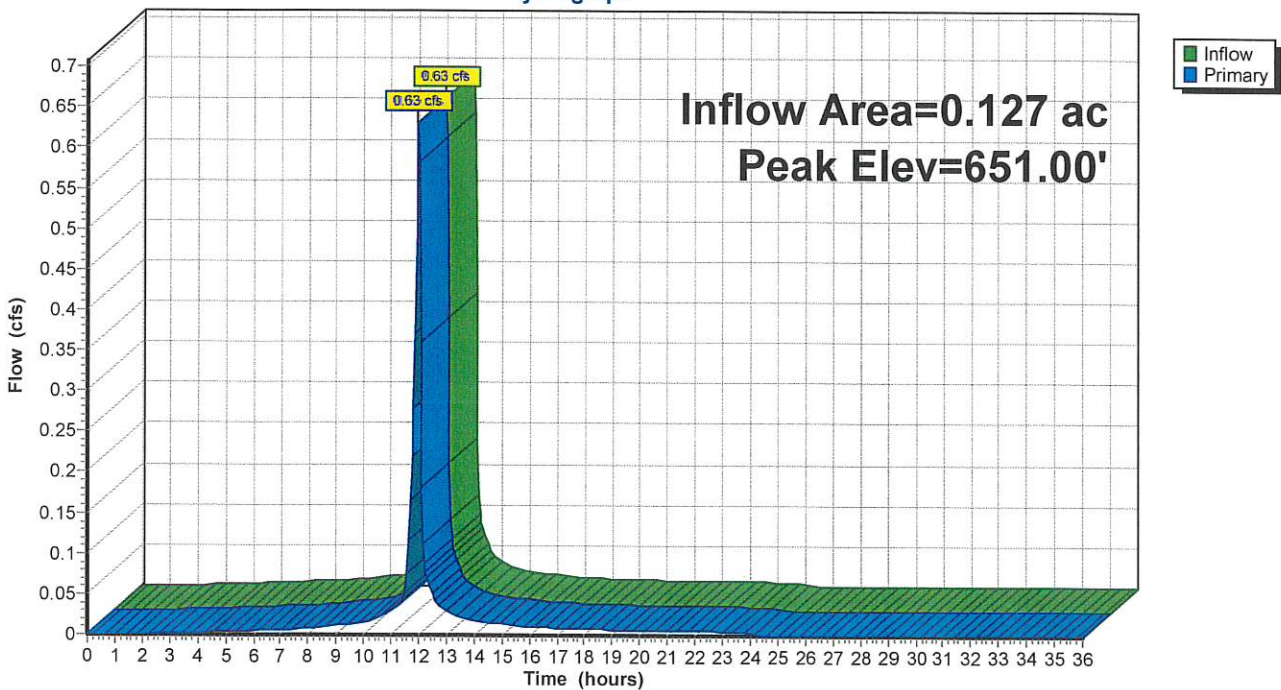
Reach 16R: Trench Drain

Hydrograph



Pond 9P: CB1

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

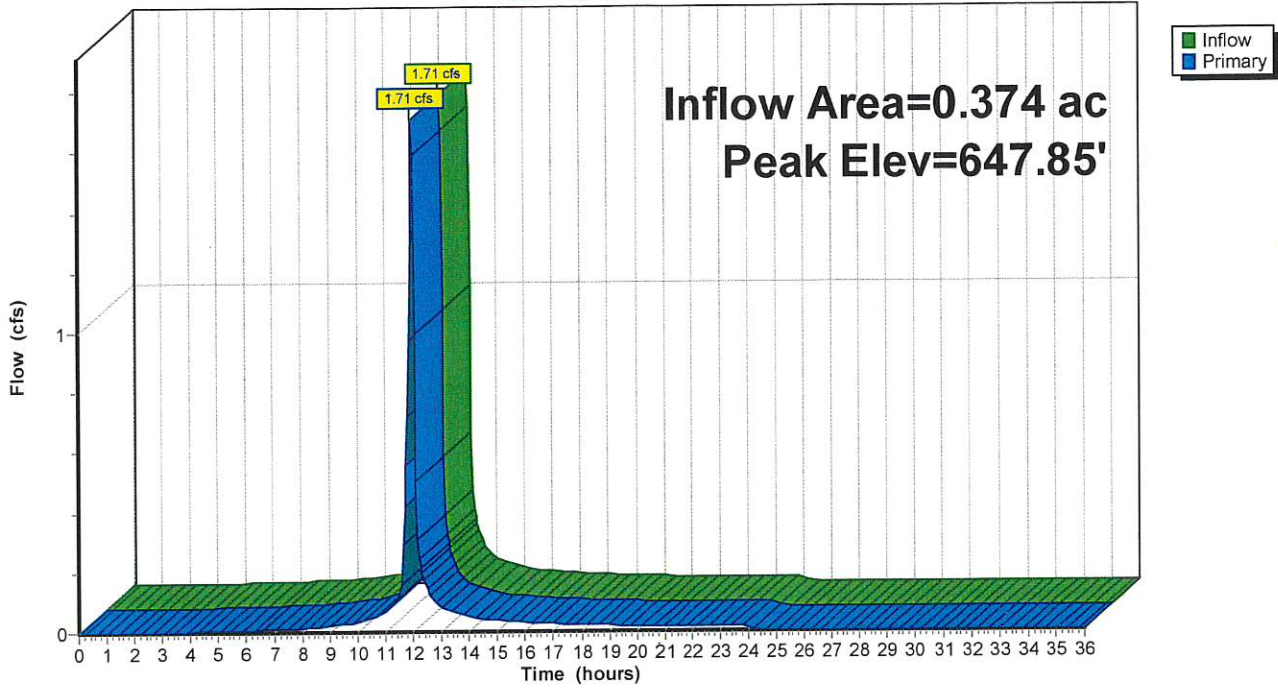
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 10

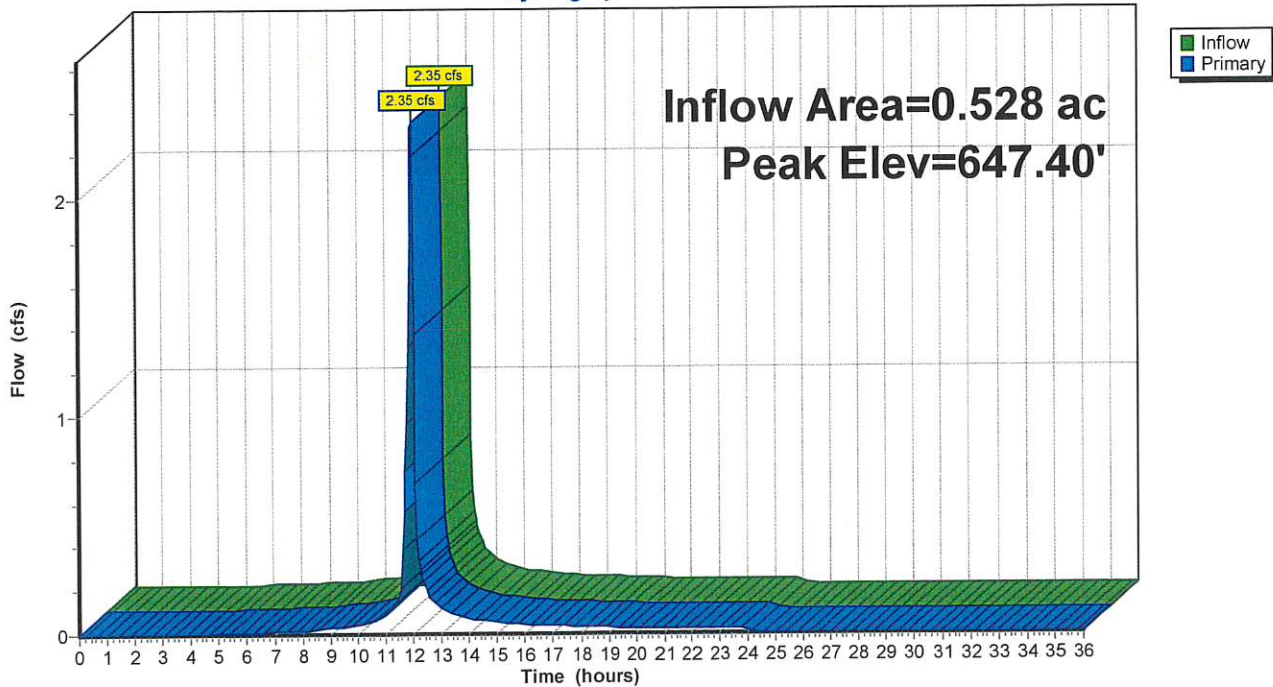
Pond 10P: CB2

Hydrograph



Pond 11P: CB3

Hydrograph



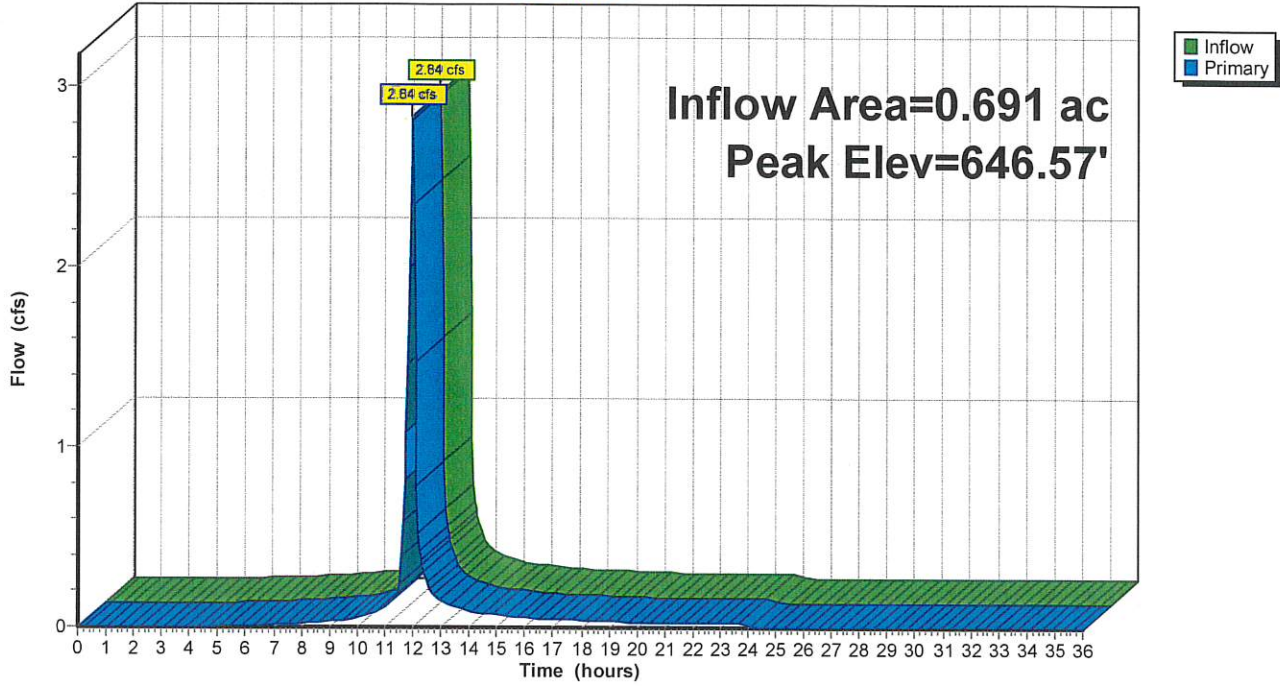
Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

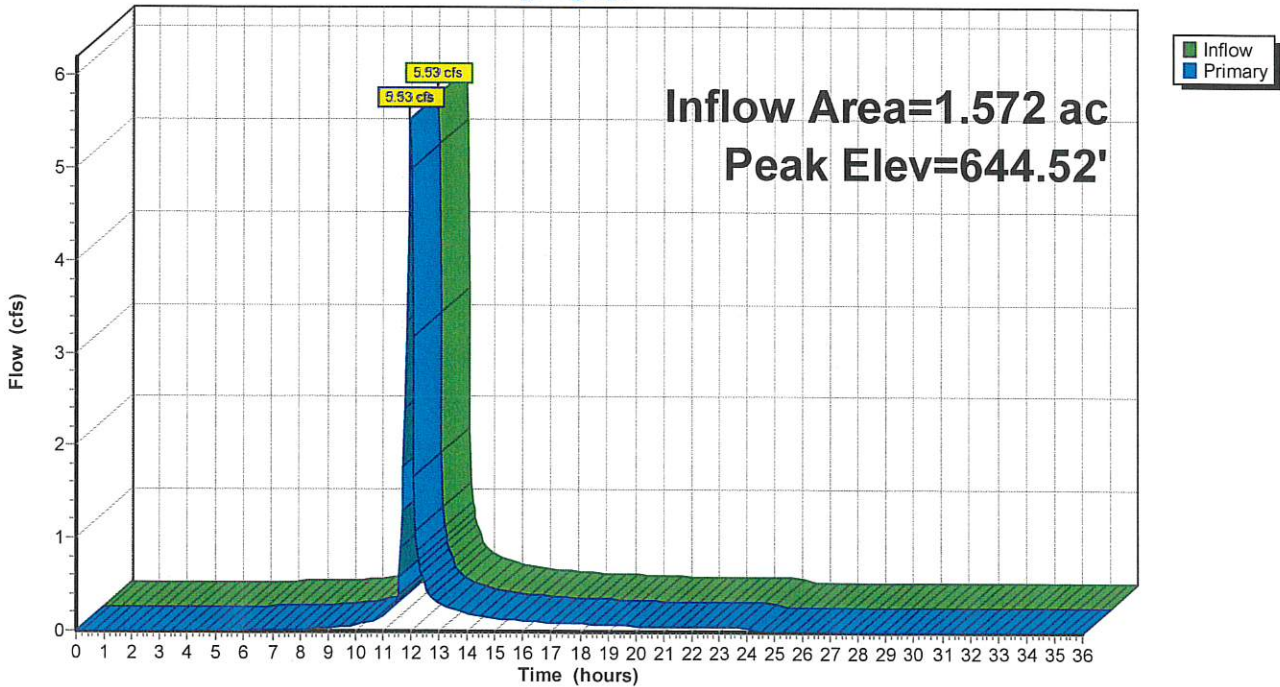
Pond 12P: CB4

Hydrograph



Pond 13aP: CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

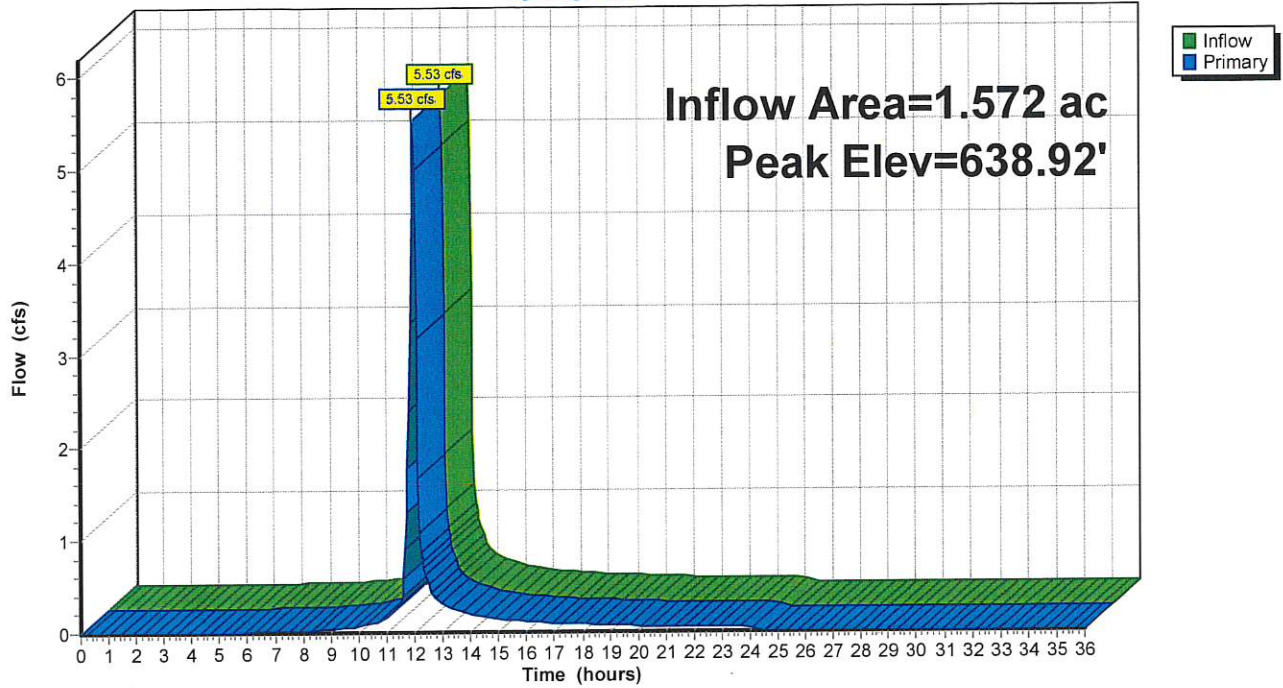
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 12

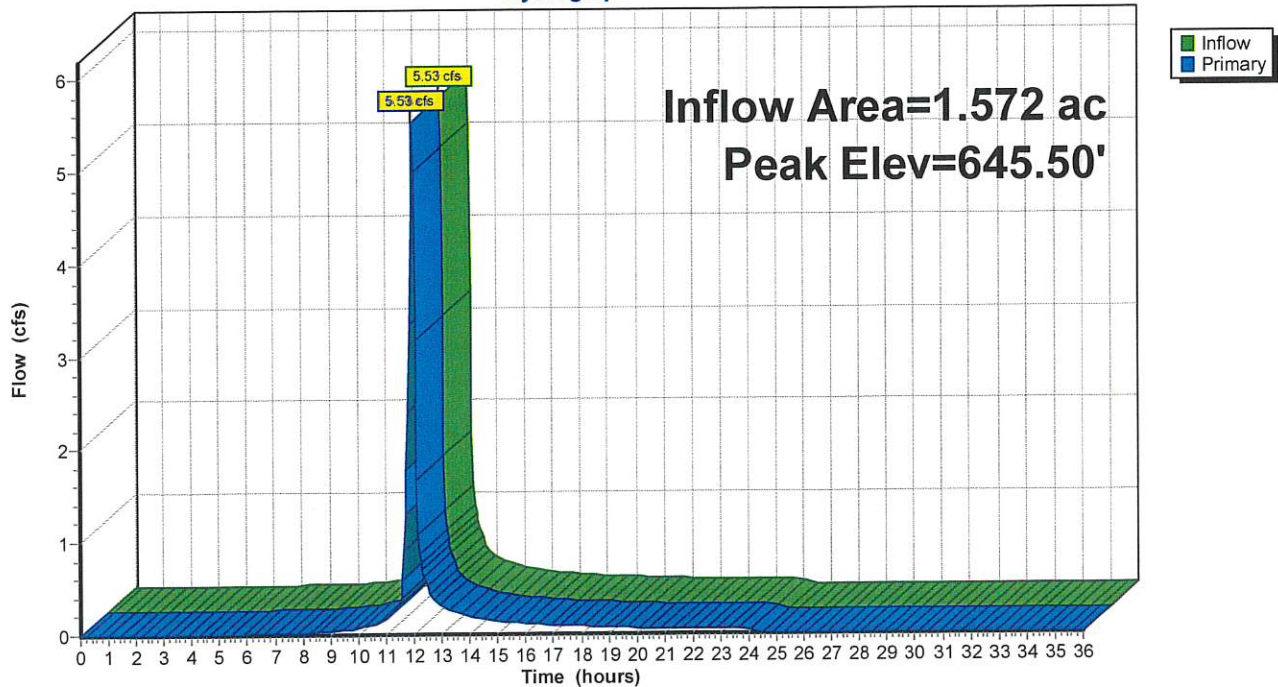
Pond 13bP: CB7

Hydrograph



Pond 13P: CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

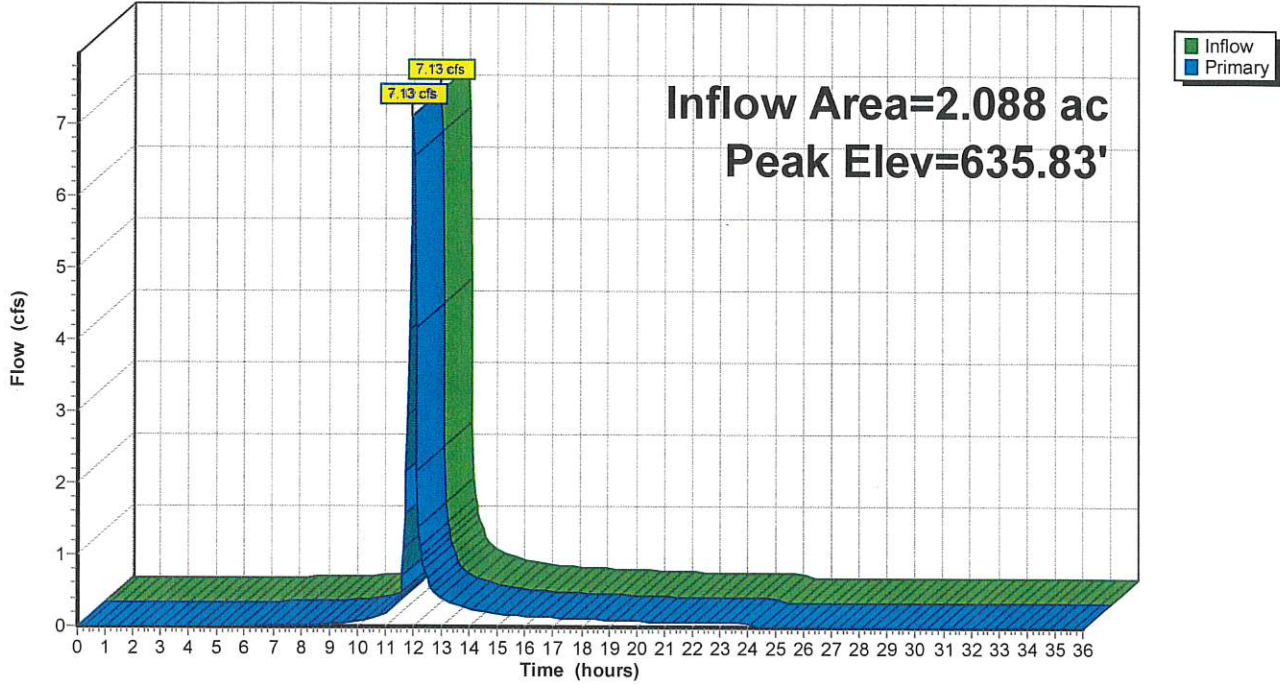
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 13

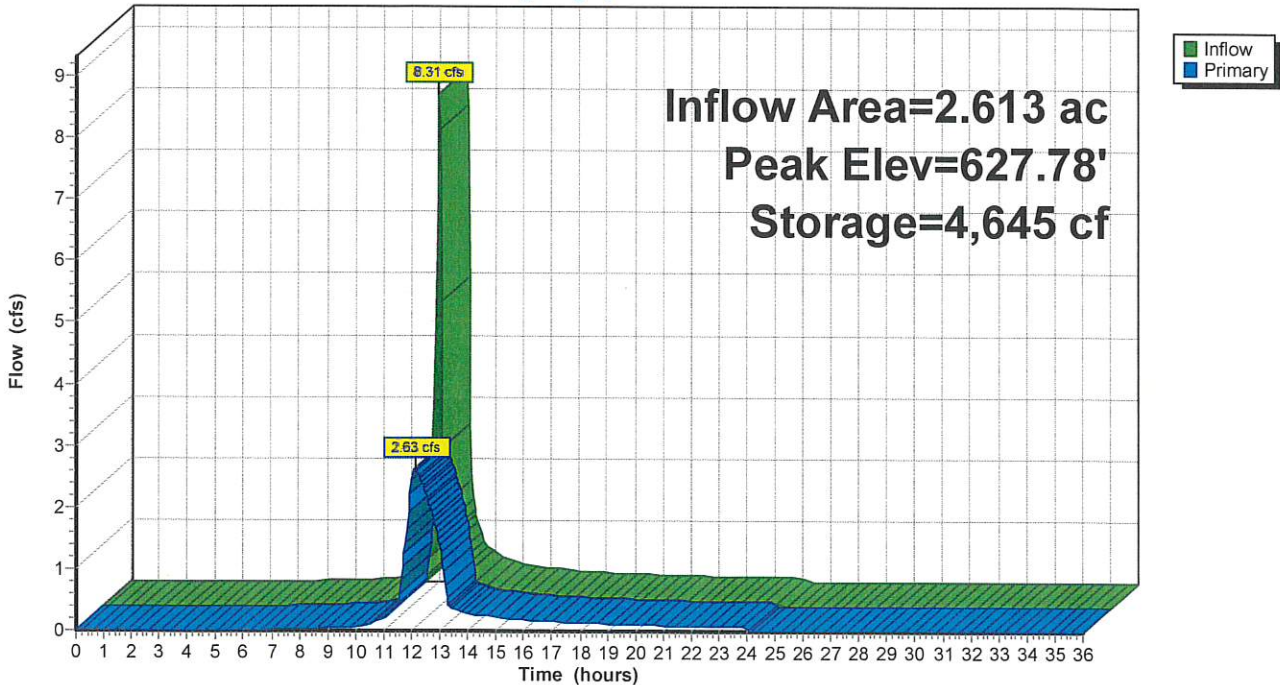
Pond 14P: CB8

Hydrograph



Pond 15P: Detention Basin

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

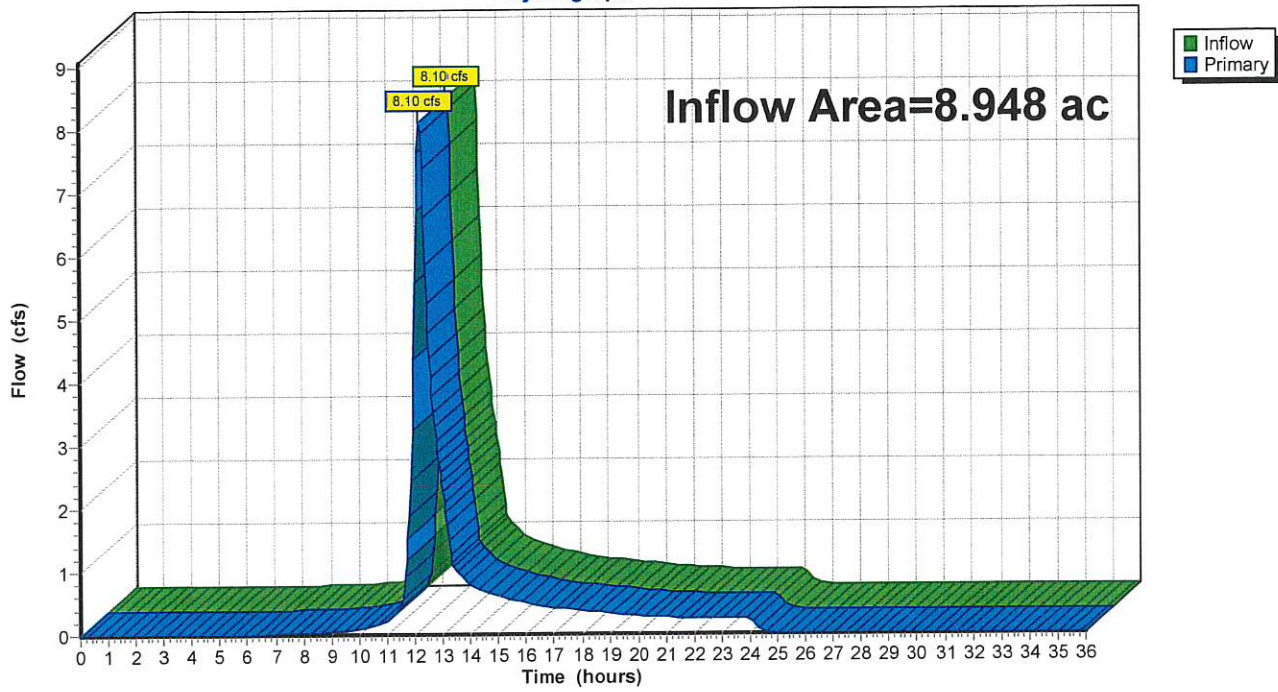
Brookhollow Senior Apartments
Type II 24-hr 2yr/24hr Rainfall=3.64"

Printed 9/13/2023

Page 14

Link 16L: Site Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

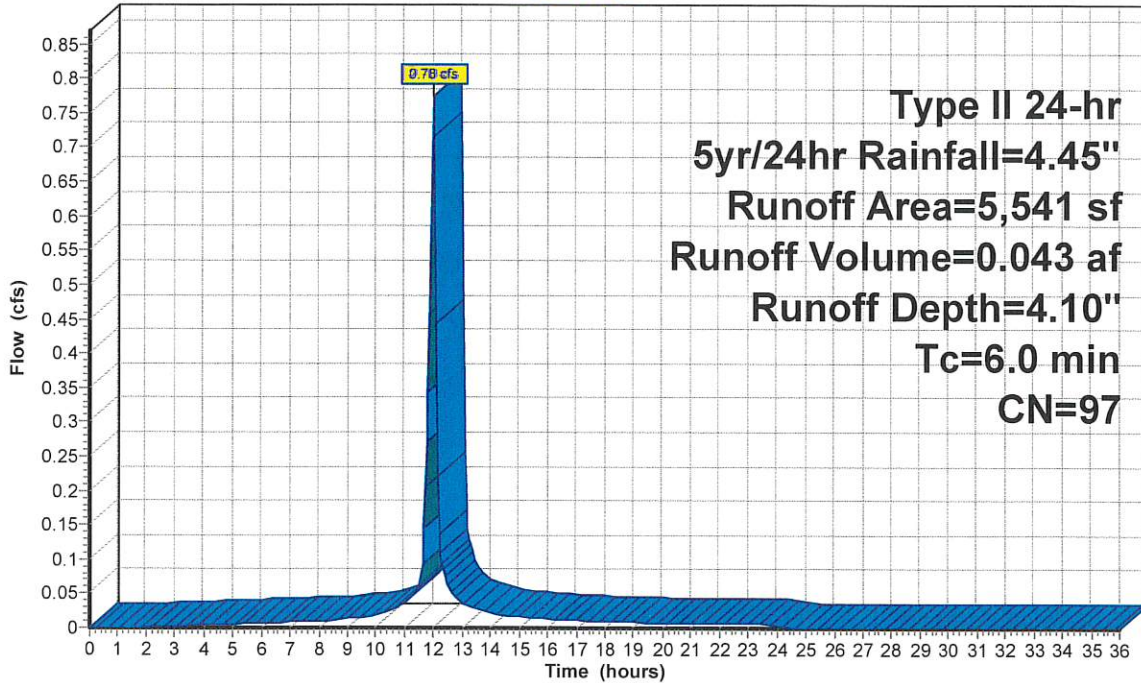
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 15

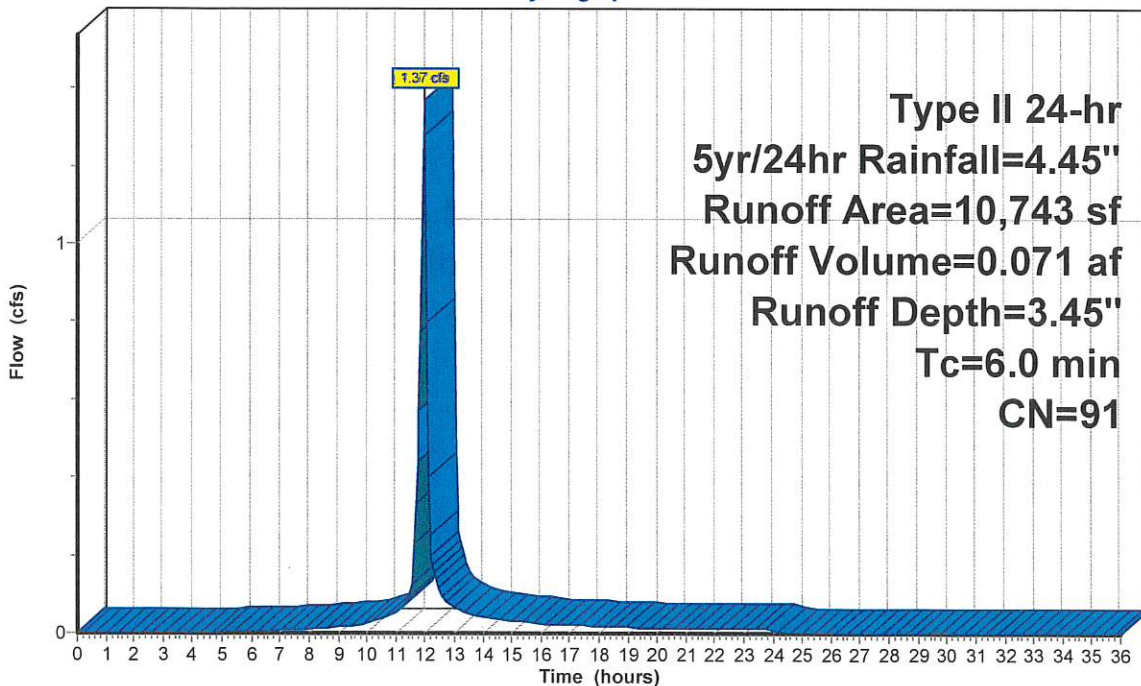
Subcatchment 1S: To CB1

Hydrograph



Subcatchment 2S: To CB2

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

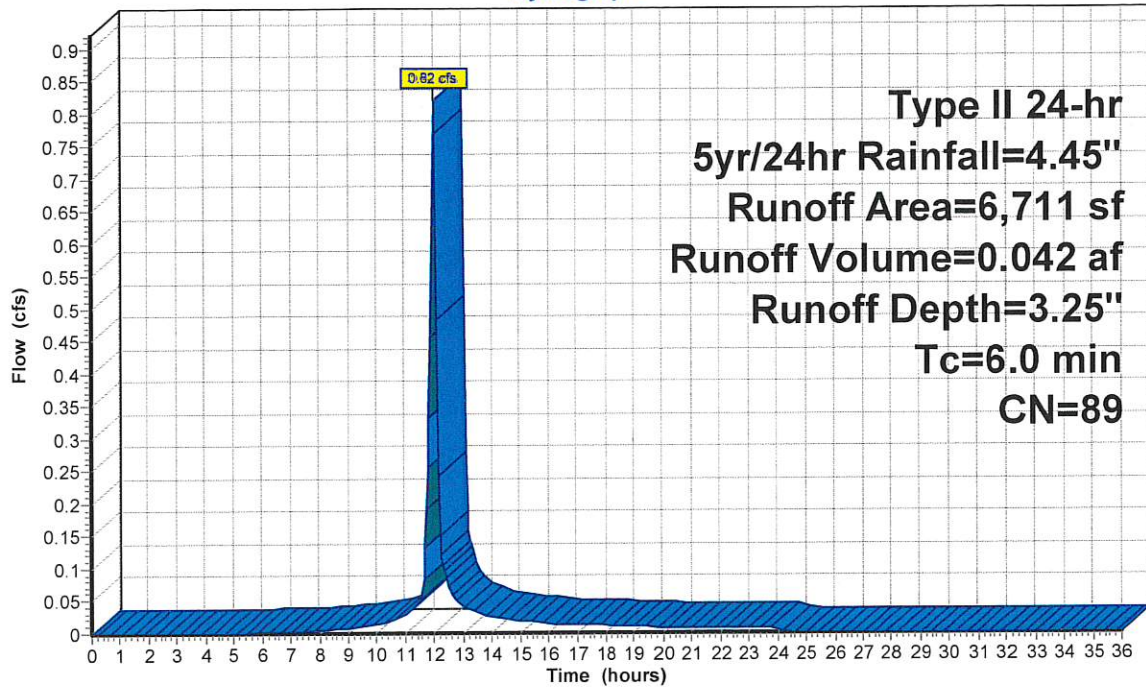
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 16

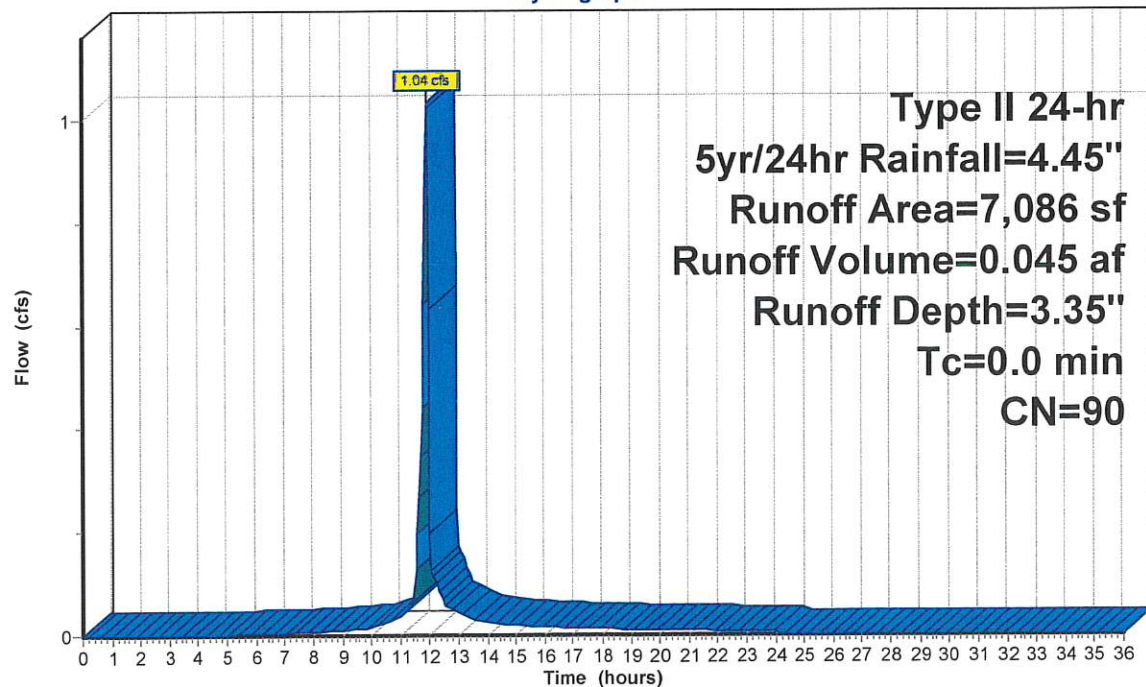
Subcatchment 3S: To CB3

Hydrograph



Subcatchment 4S: To CB4

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

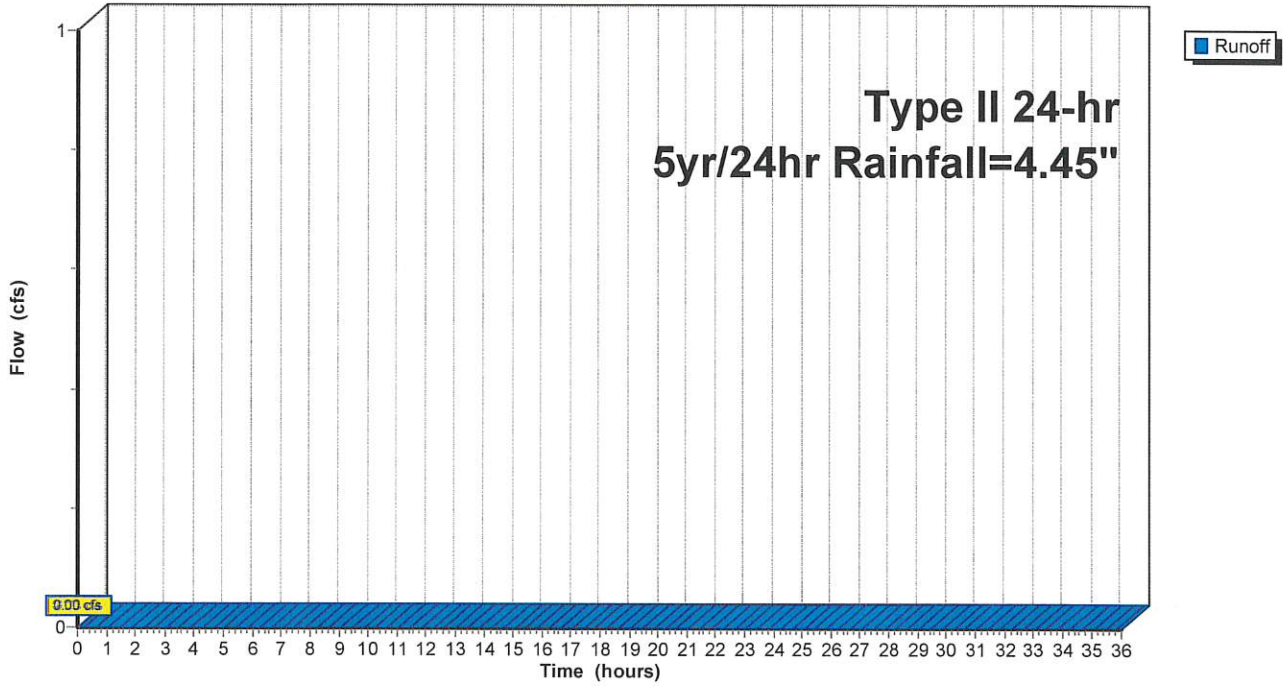
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 17

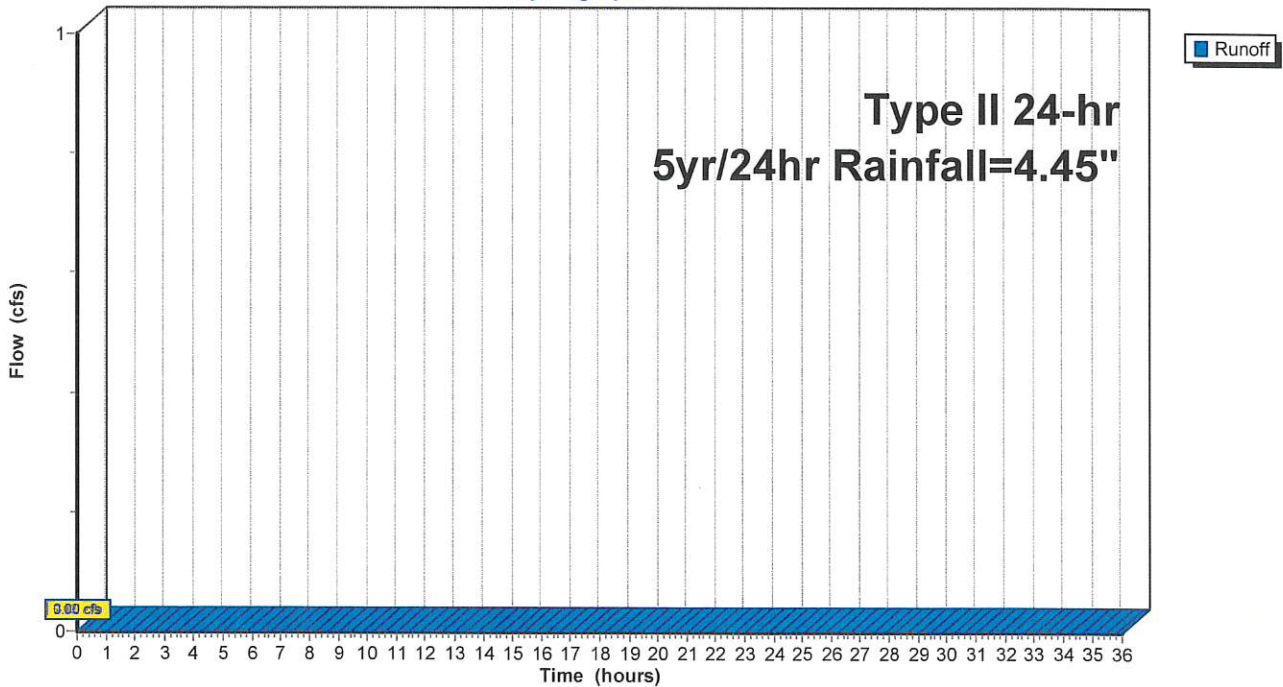
Subcatchment 5aS: To CB5

Hydrograph



Subcatchment 5bS: To CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

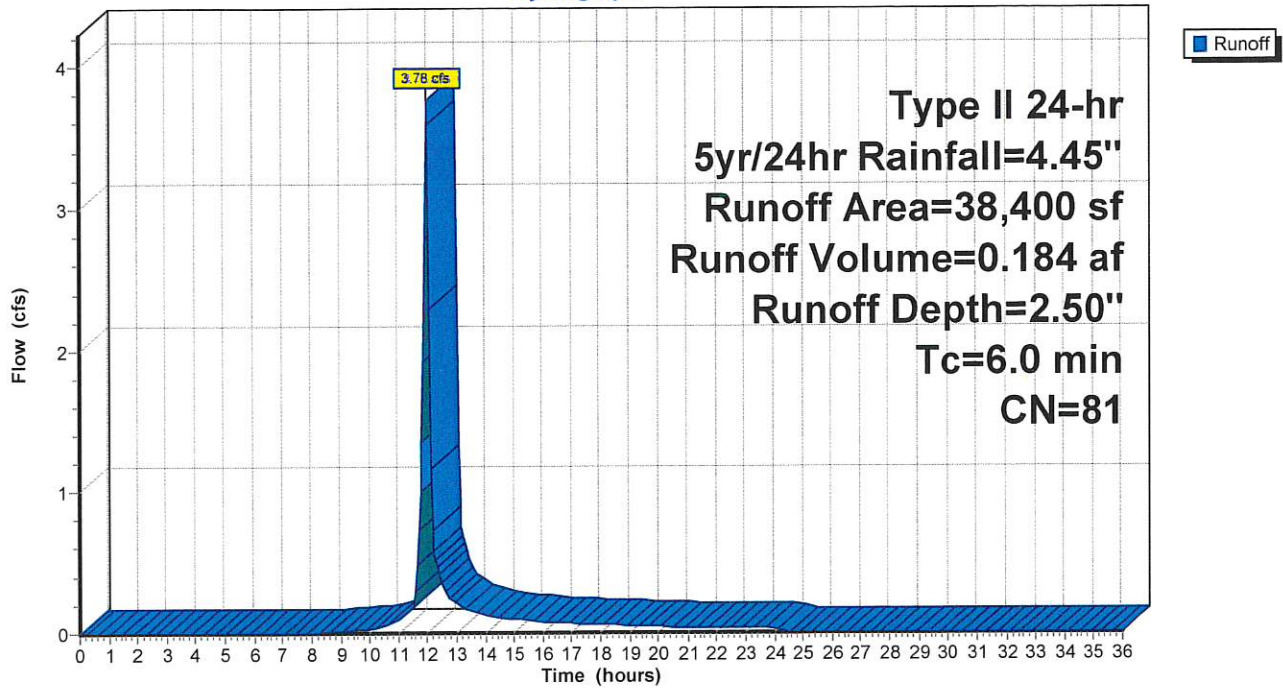
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 18

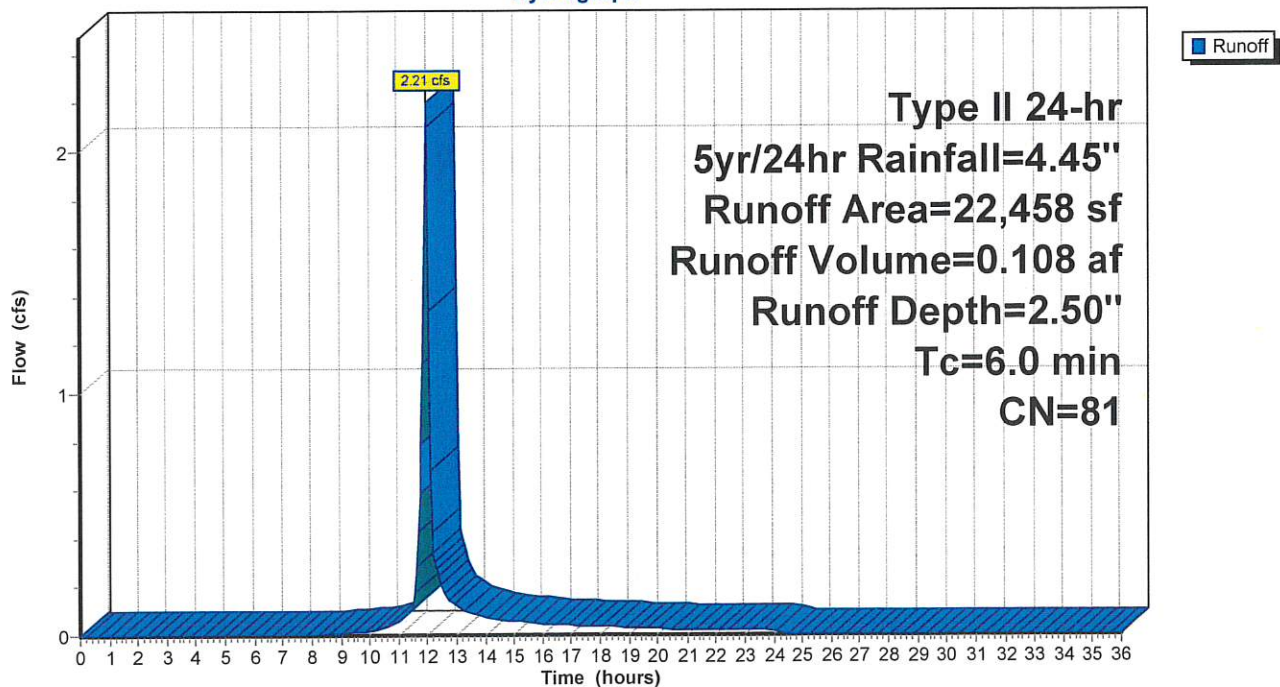
Subcatchment 5S: To CB5

Hydrograph



Subcatchment 6S: To CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

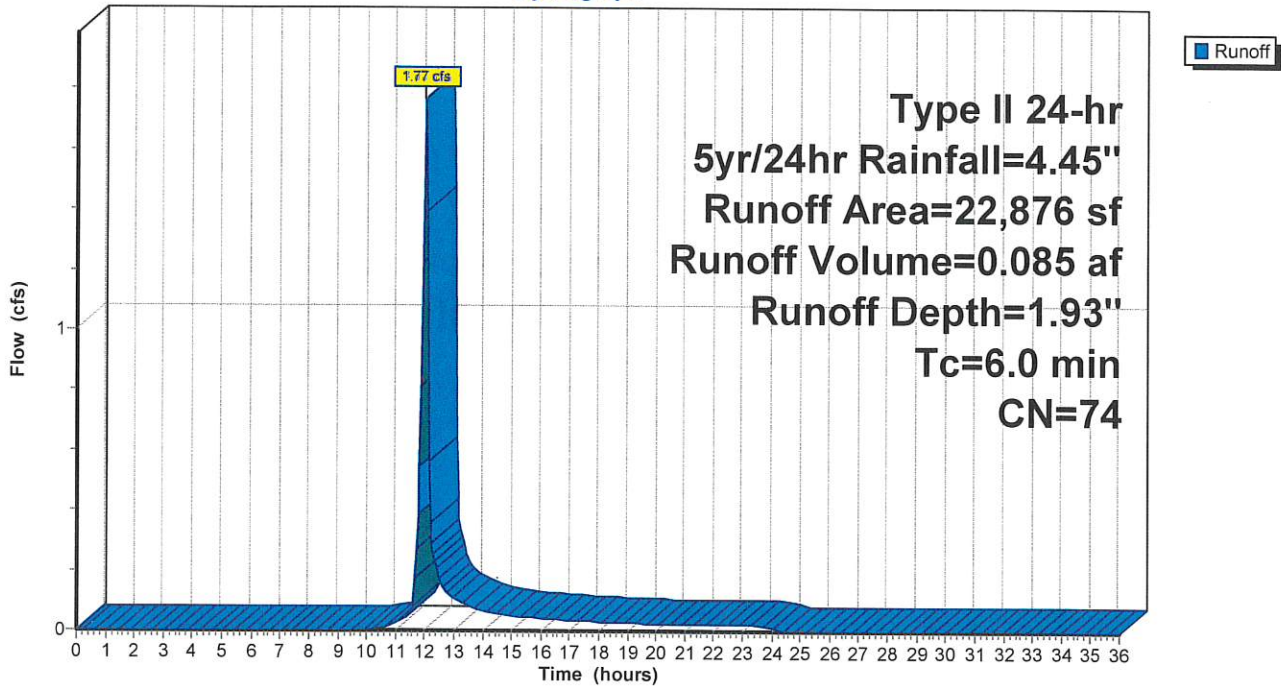
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 19

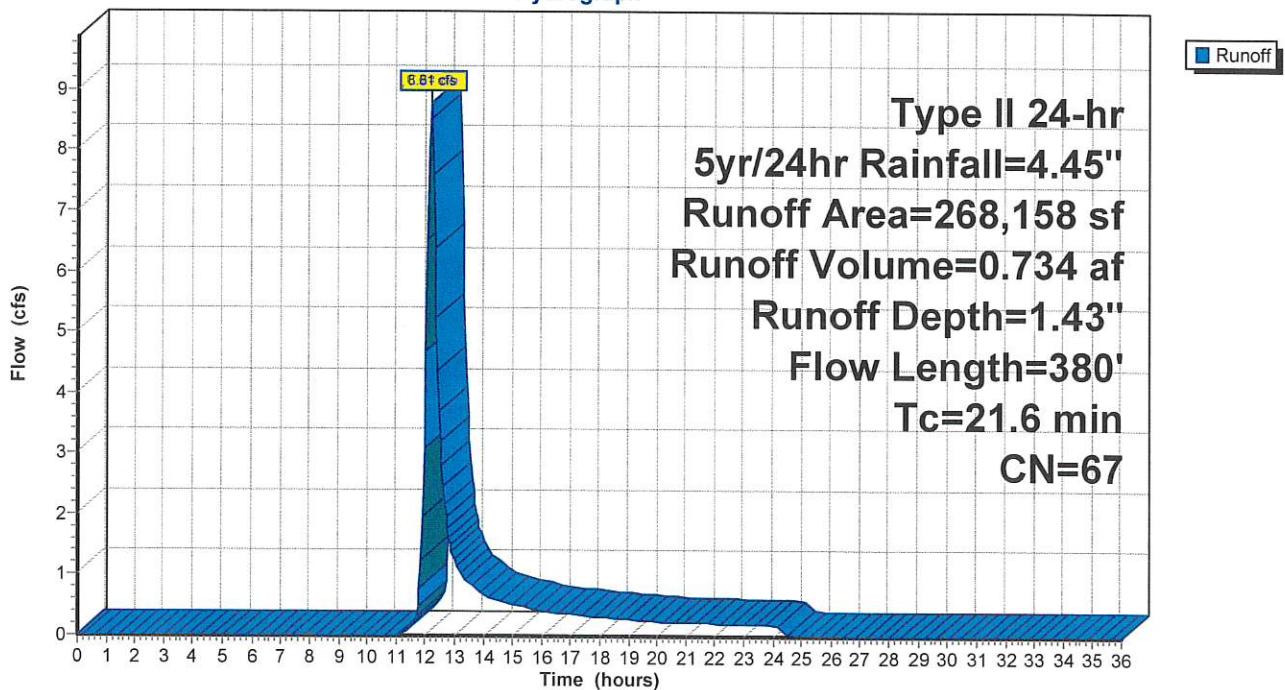
Subcatchment 7S: To Basin

Hydrograph



Subcatchment 8S: Bypassing

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

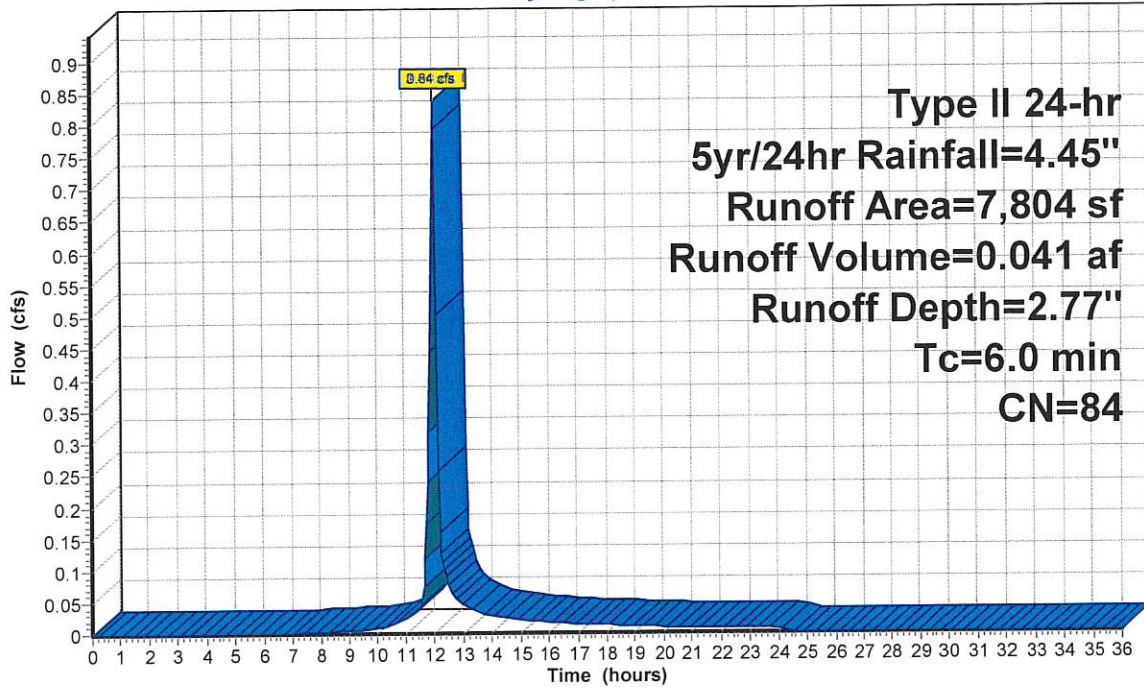
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 20

Subcatchment 9S: To Trench Drain

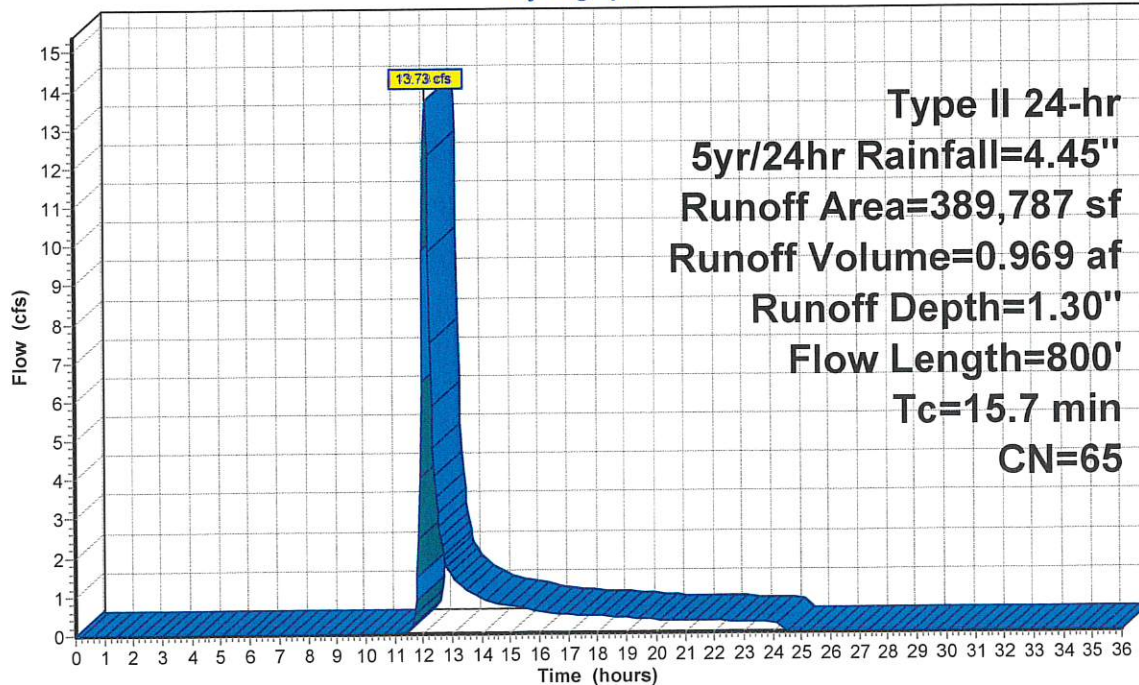
Hydrograph



Runoff

Subcatchment OS: To Outfall

Hydrograph



Runoff

Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

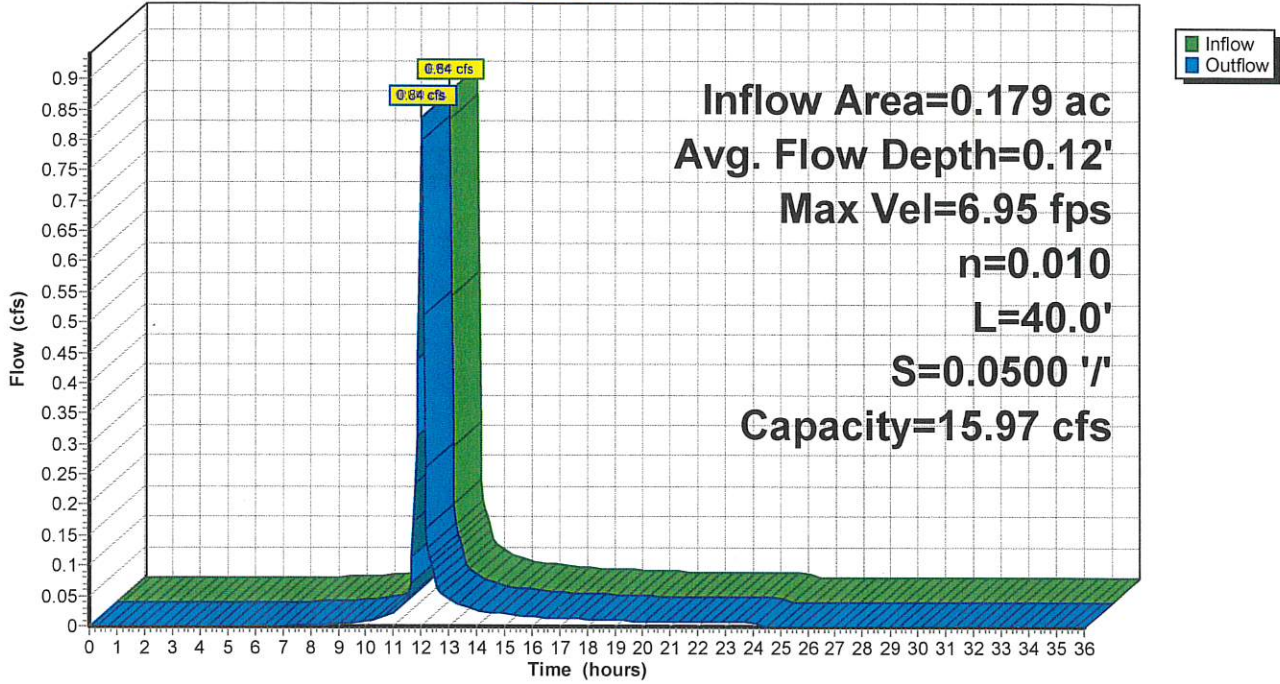
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 21

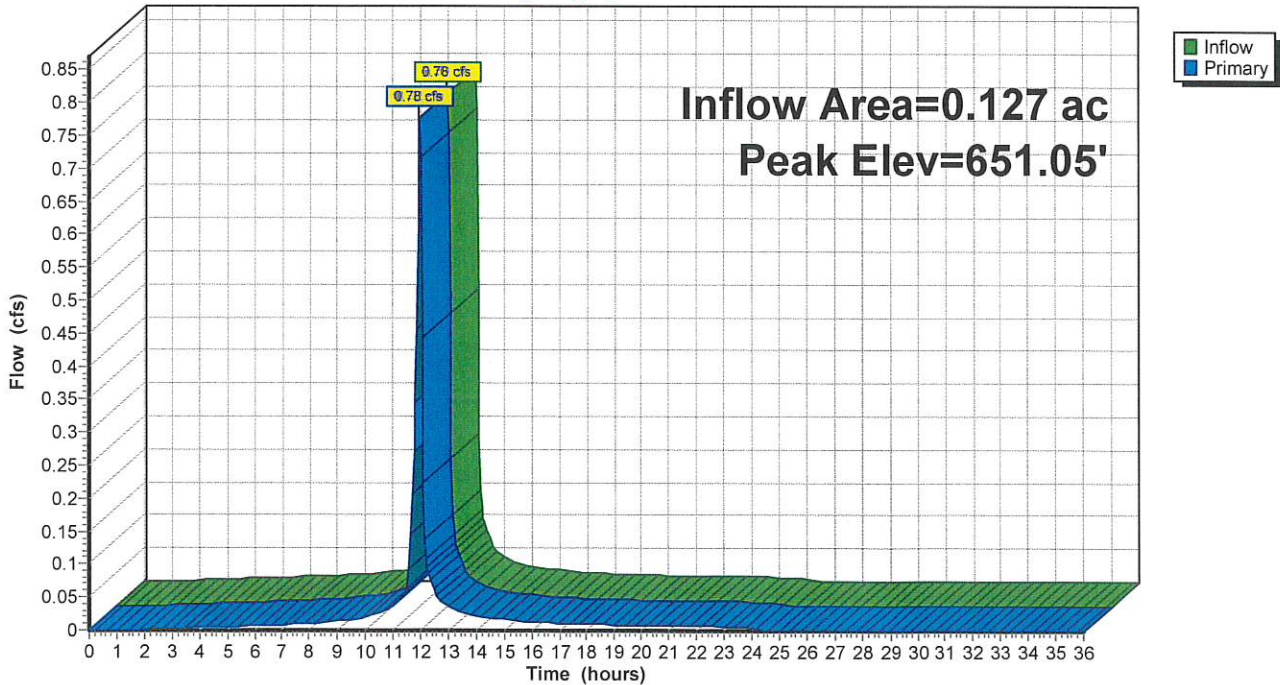
Reach 16R: Trench Drain

Hydrograph



Pond 9P: CB1

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

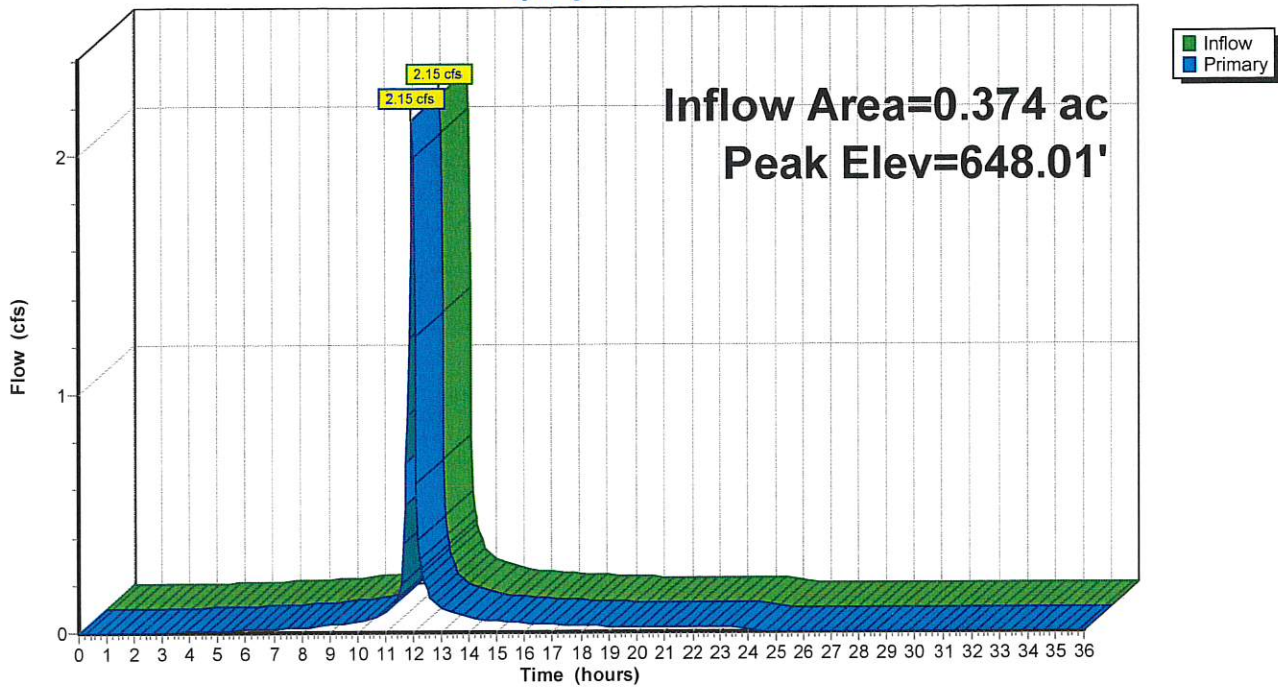
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 22

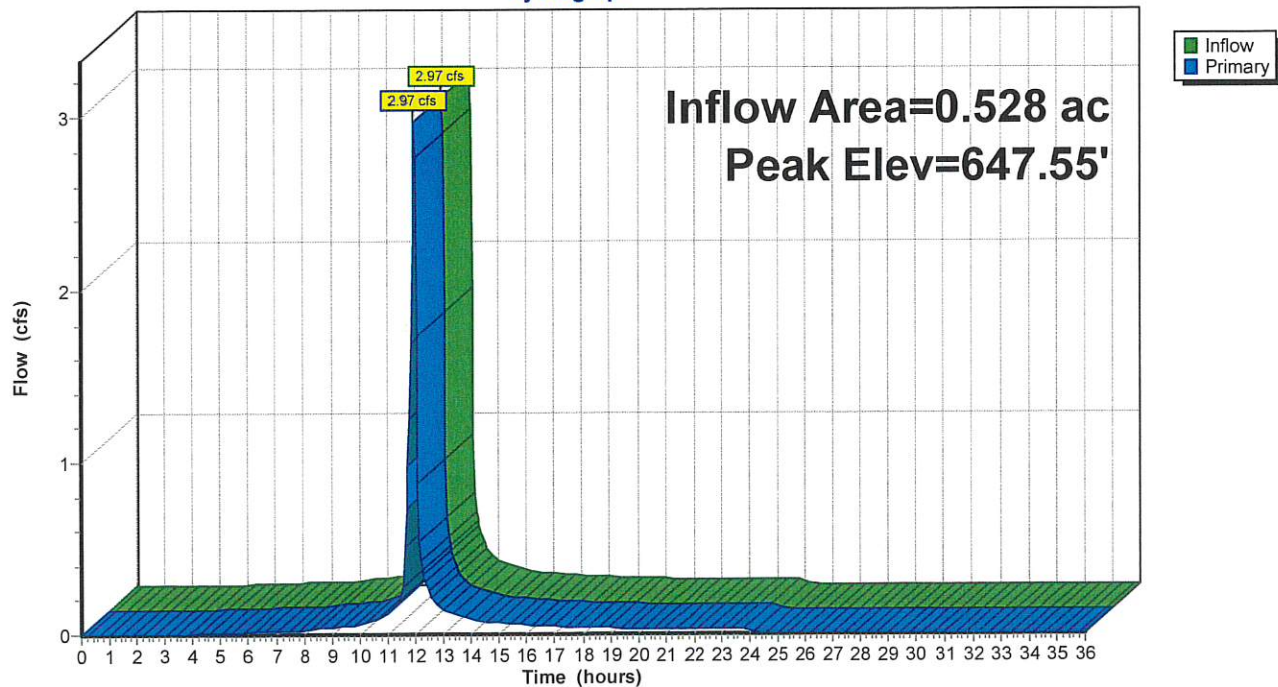
Pond 10P: CB2

Hydrograph



Pond 11P: CB3

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

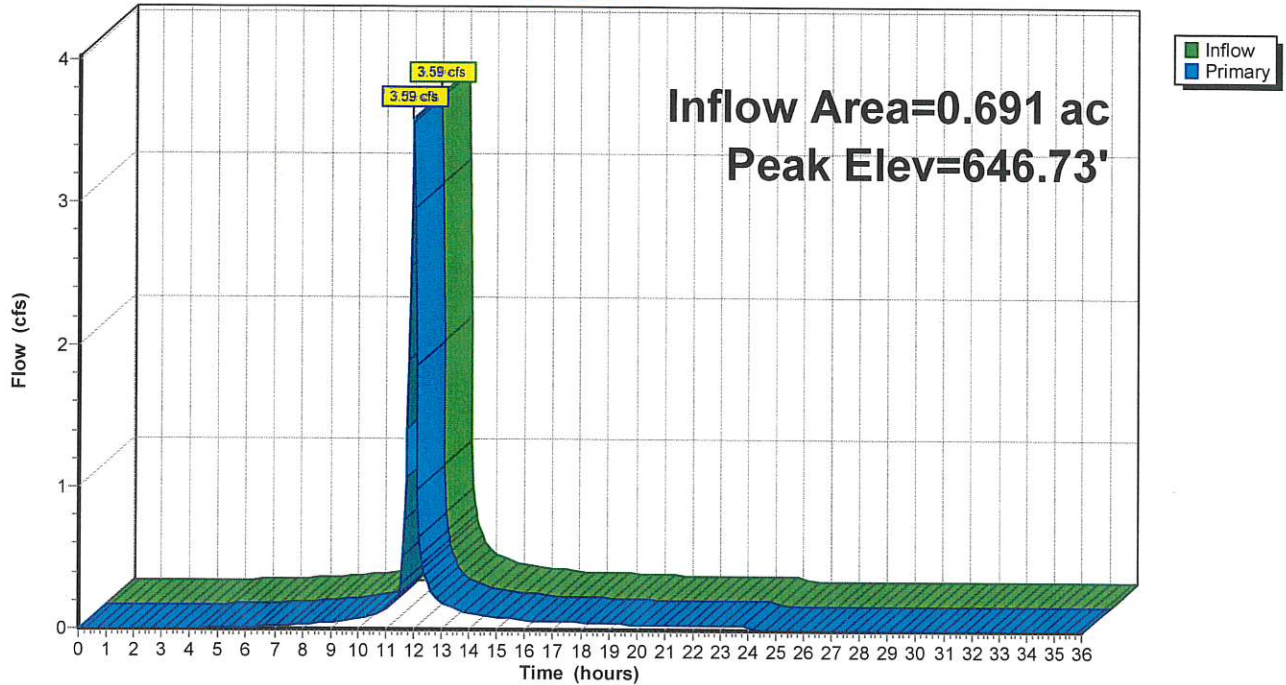
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 23

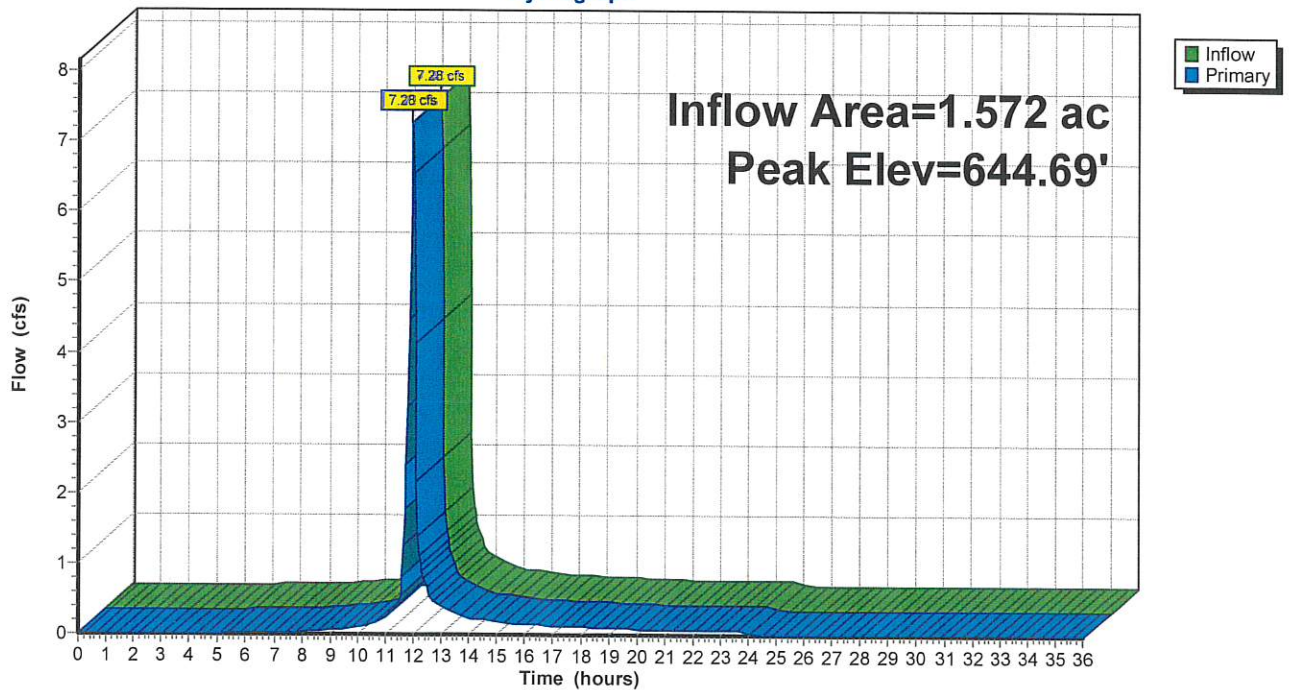
Pond 12P: CB4

Hydrograph



Pond 13aP: CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

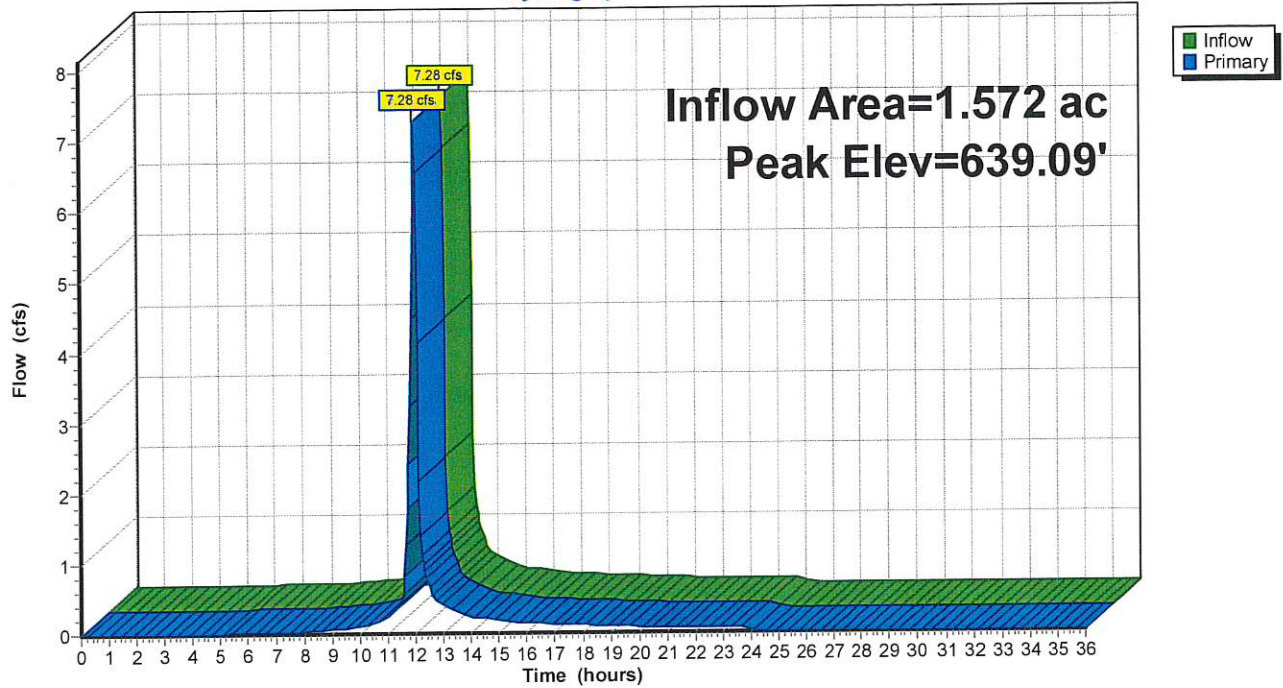
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 24

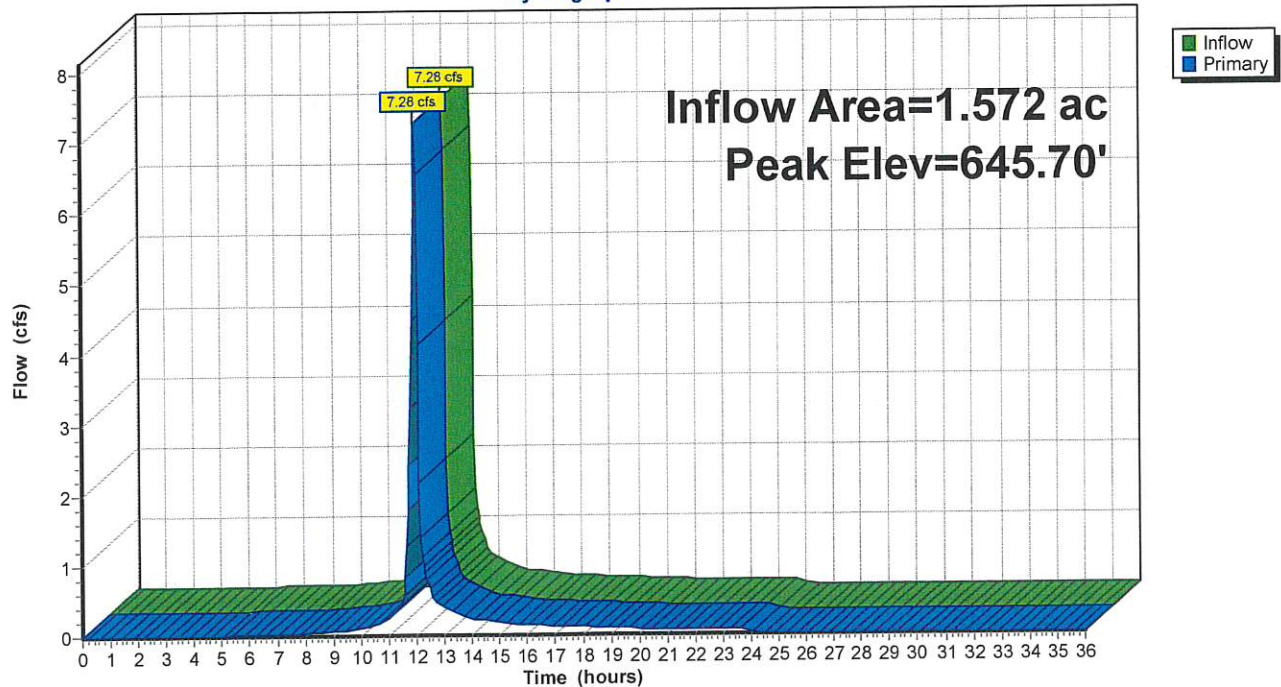
Pond 13bP: CB7

Hydrograph



Pond 13P: CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

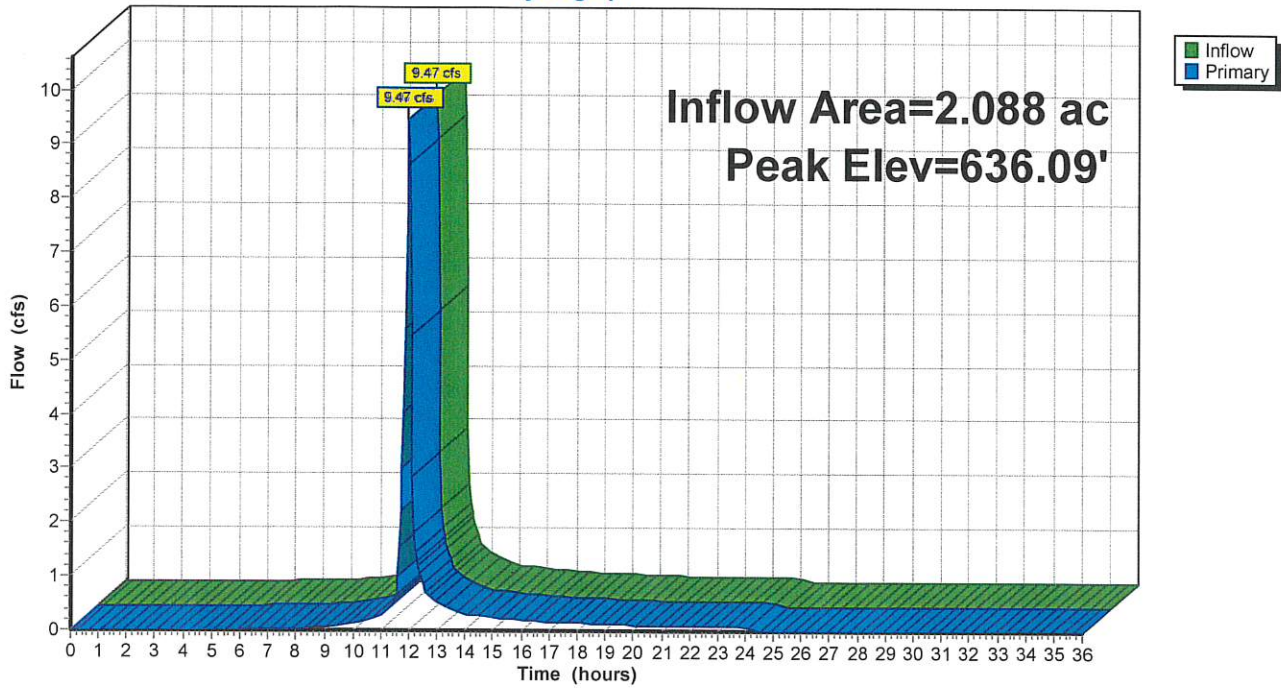
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 25

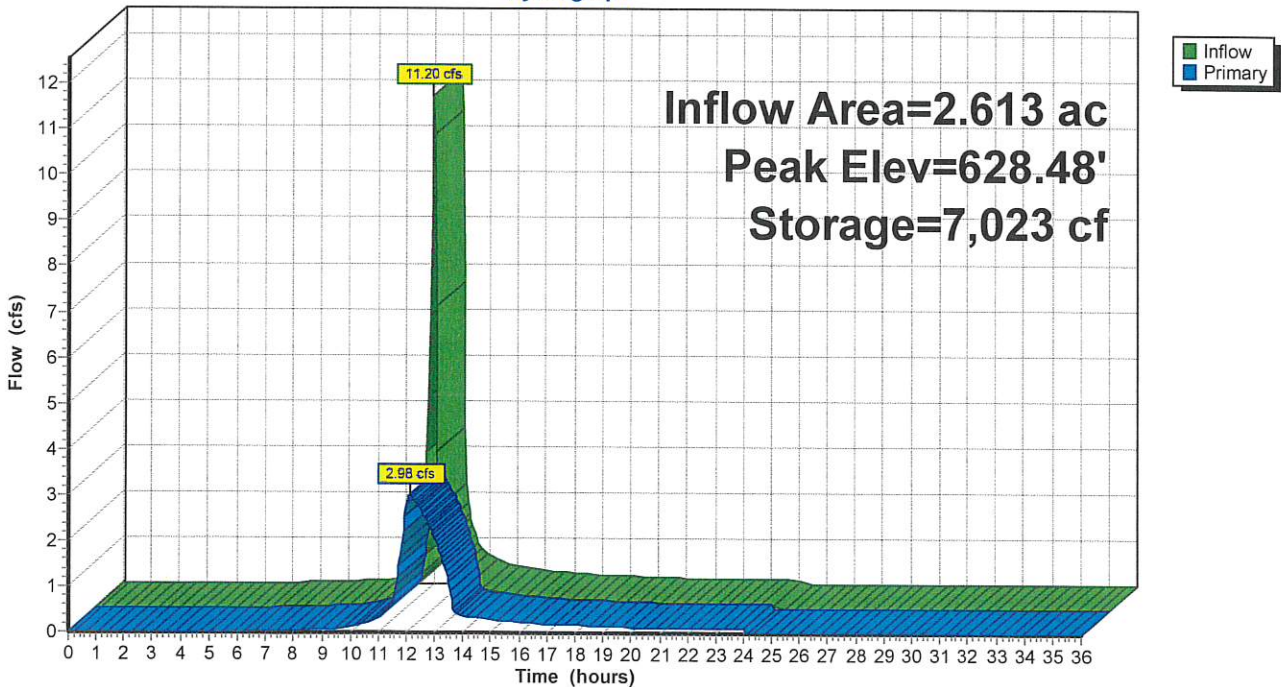
Pond 14P: CB8

Hydrograph



Pond 15P: Detention Basin

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

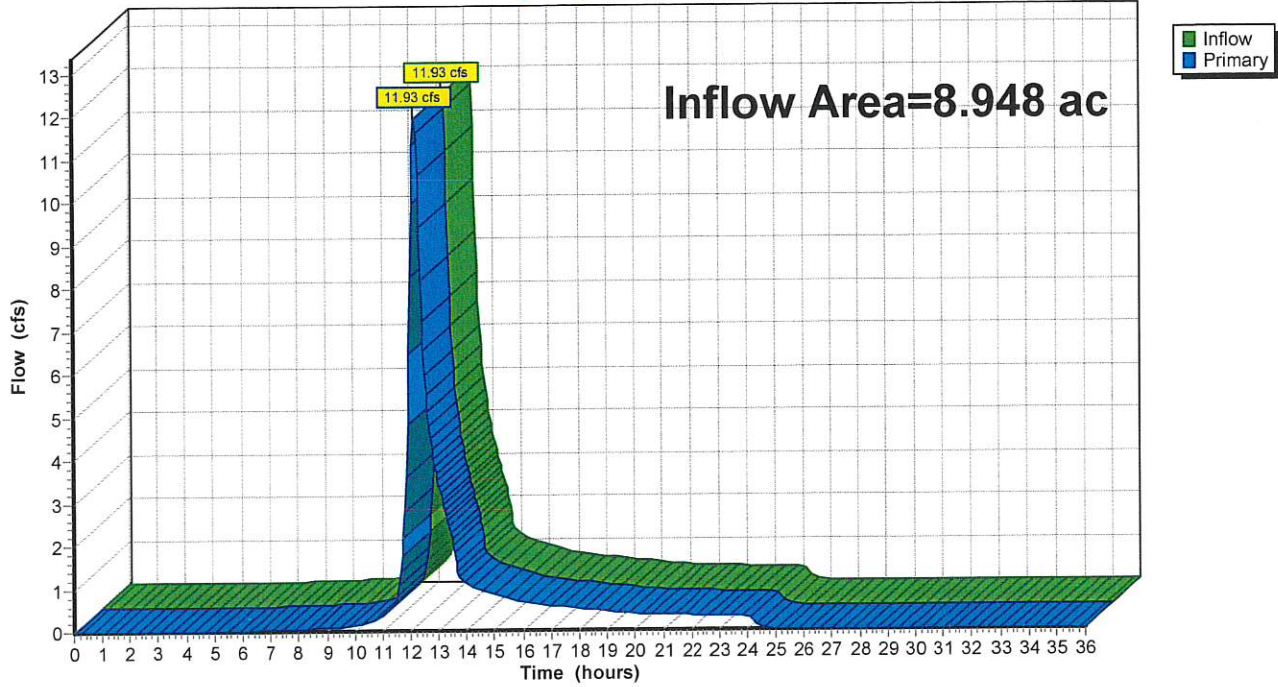
Brookhollow Senior Apartments
Type II 24-hr 5yr/24hr Rainfall=4.45"

Printed 9/13/2023

Page 26

Link 16L: Site Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

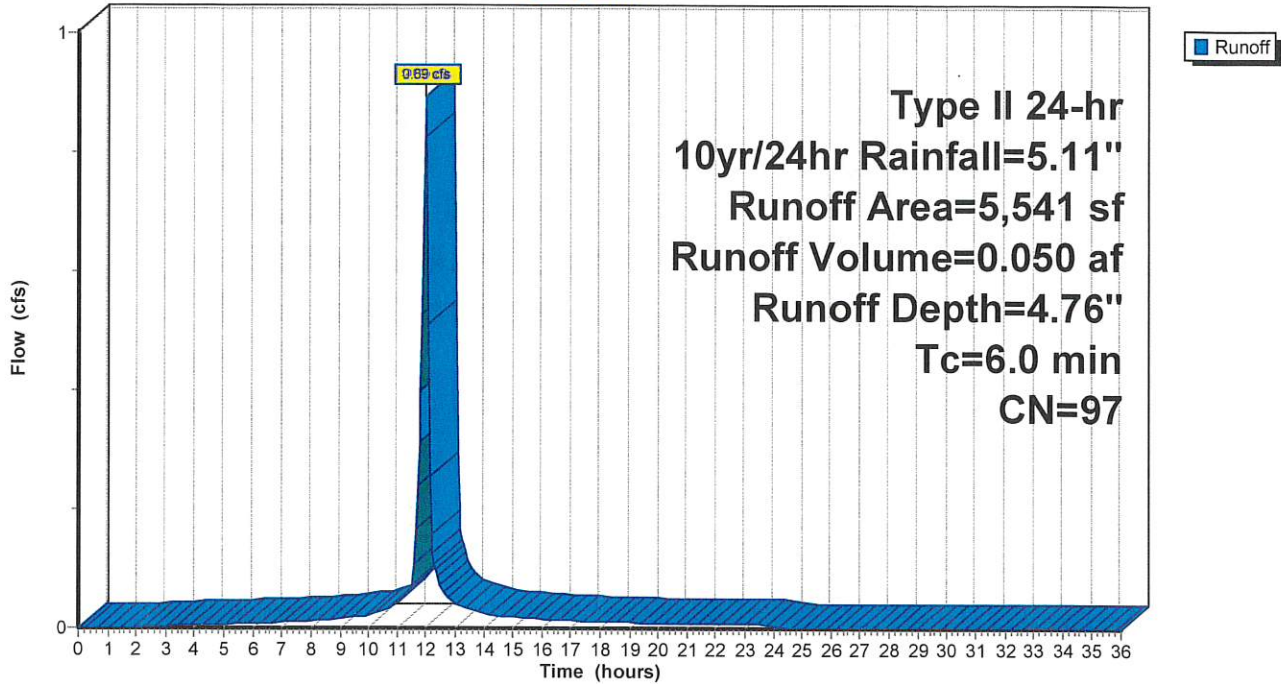
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 27

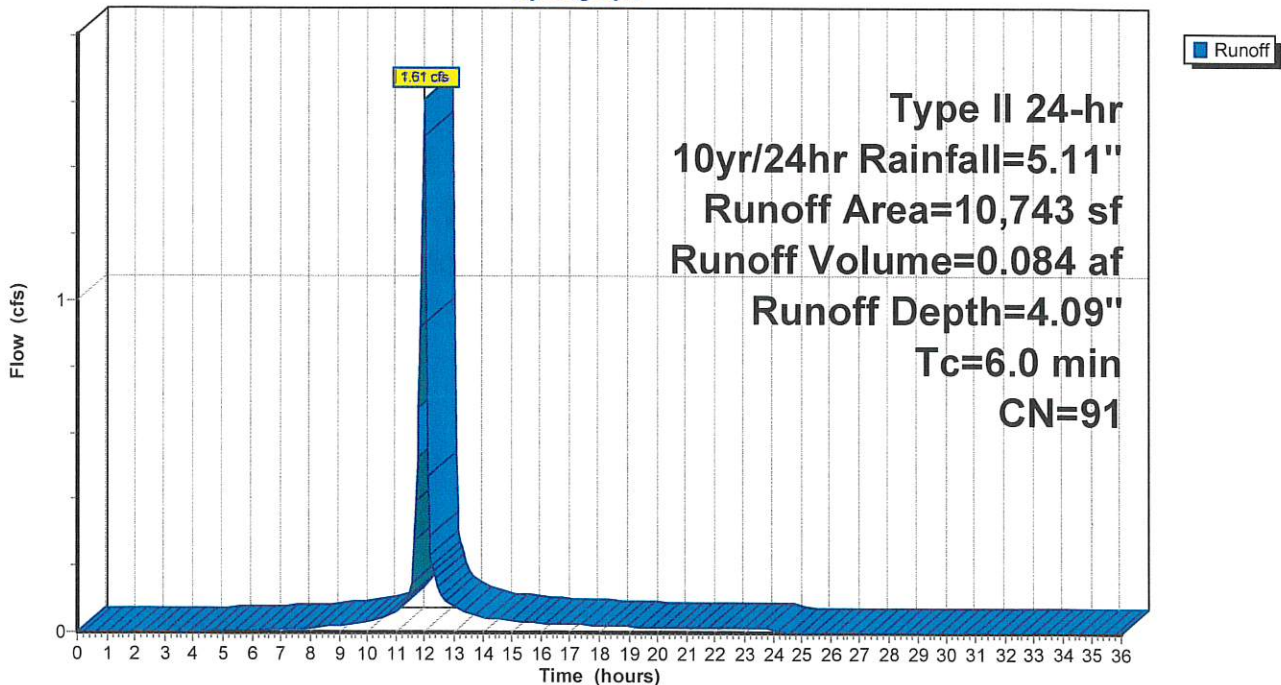
Subcatchment 1S: To CB1

Hydrograph



Subcatchment 2S: To CB2

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

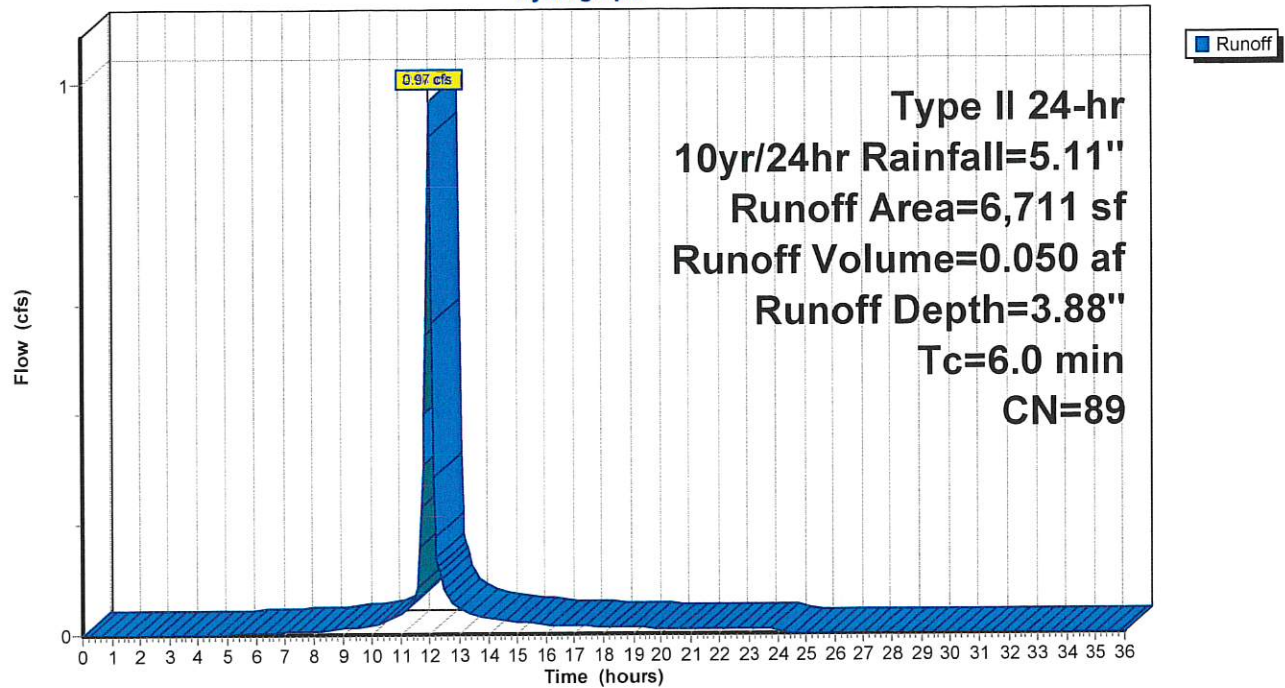
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 28

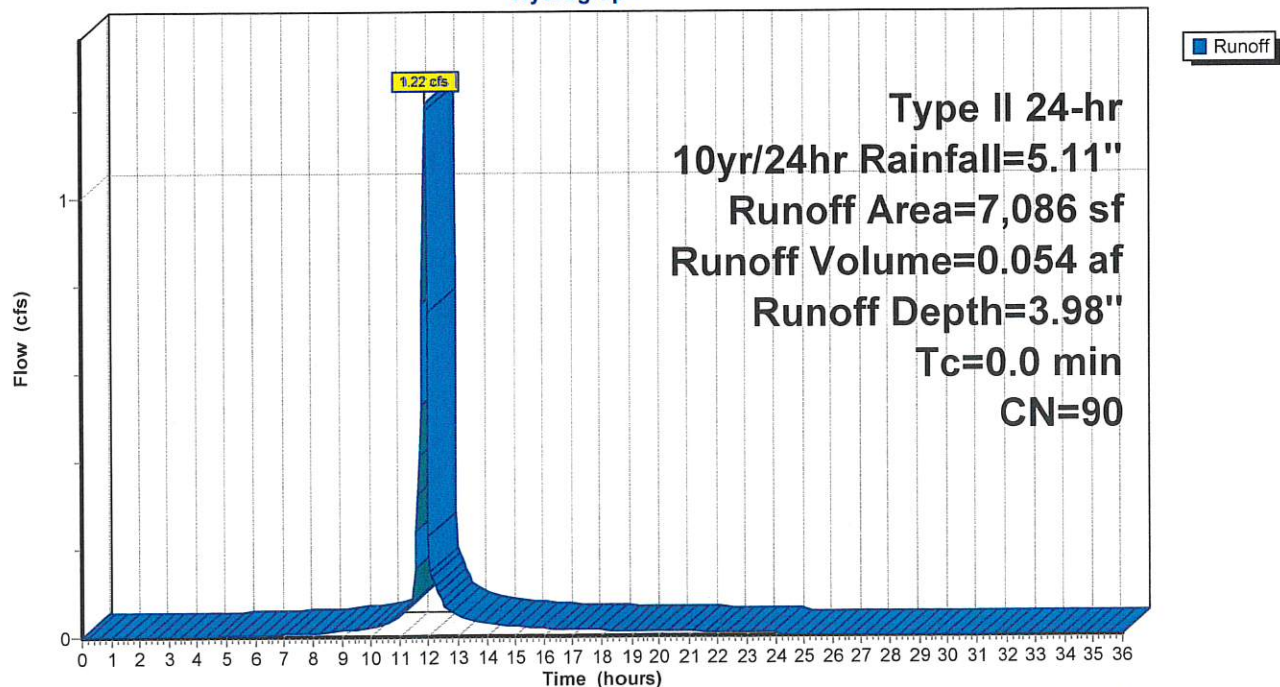
Subcatchment 3S: To CB3

Hydrograph



Subcatchment 4S: To CB4

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

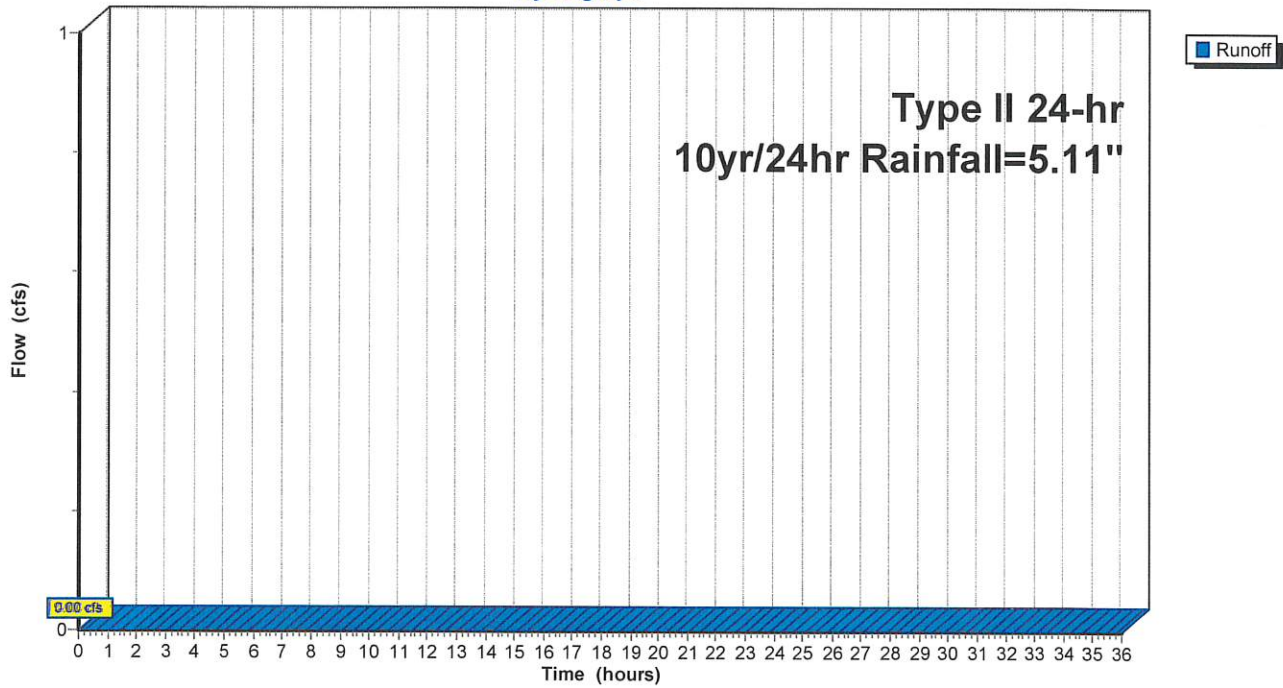
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 29

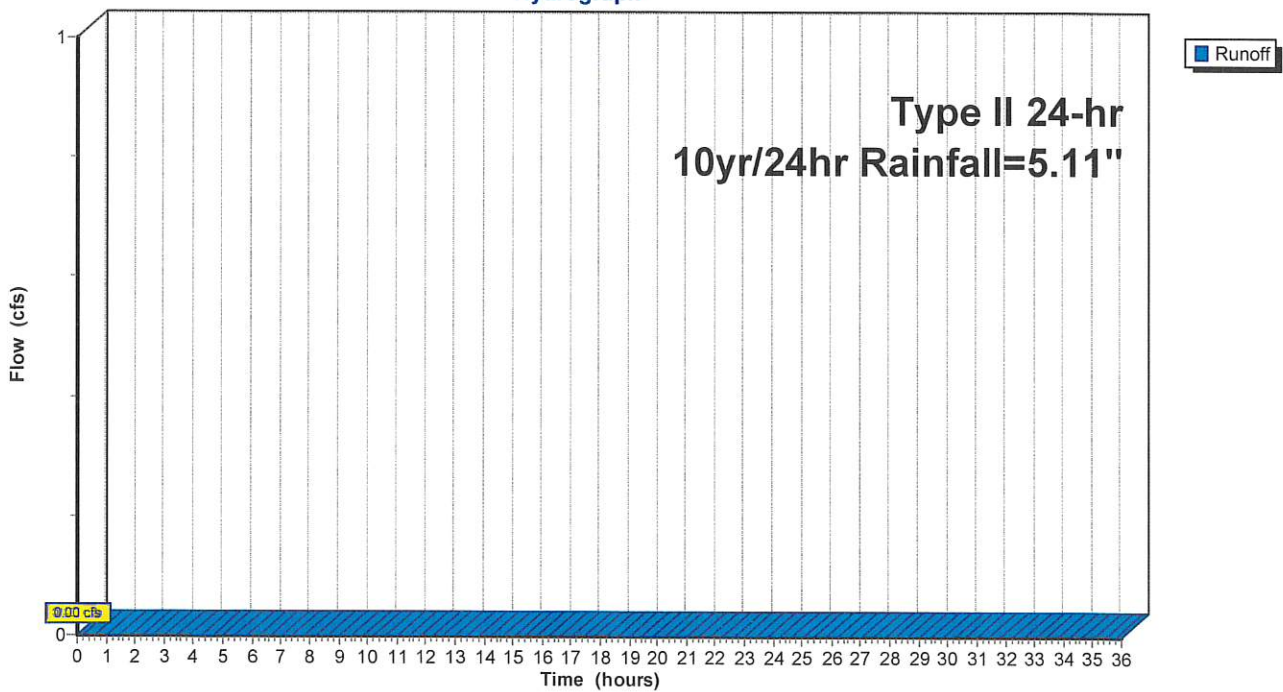
Subcatchment 5aS: To CB5

Hydrograph



Subcatchment 5bS: To CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

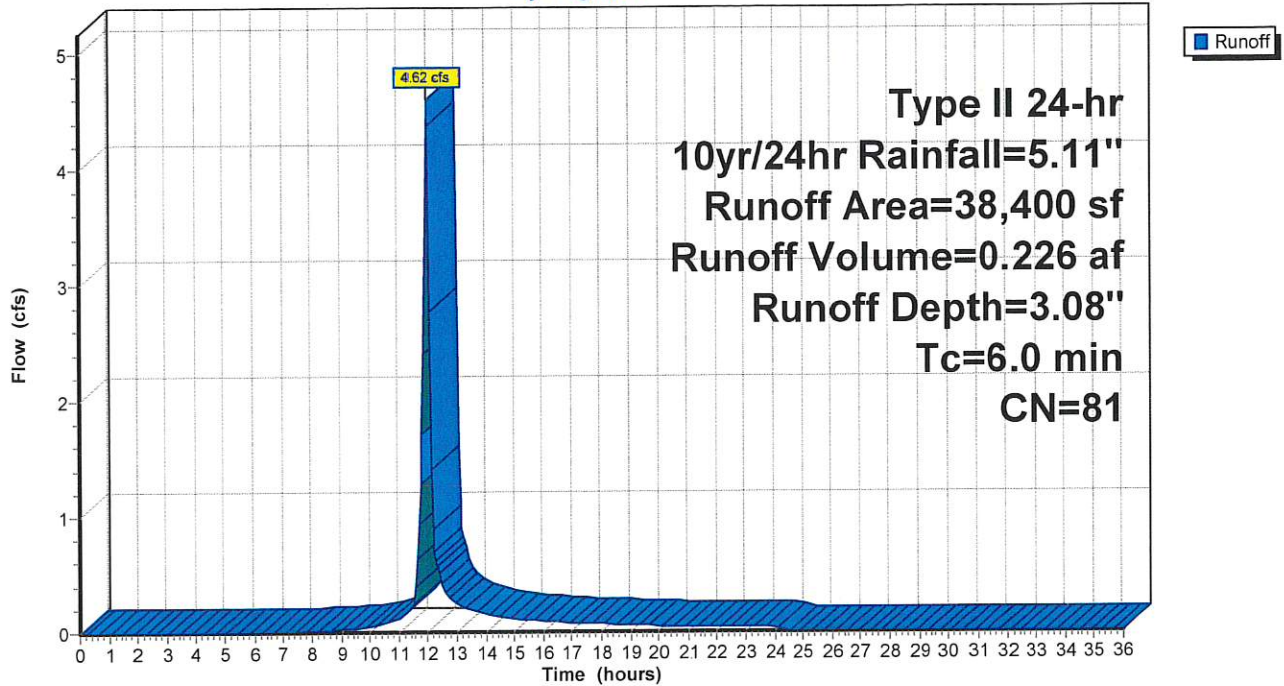
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 30

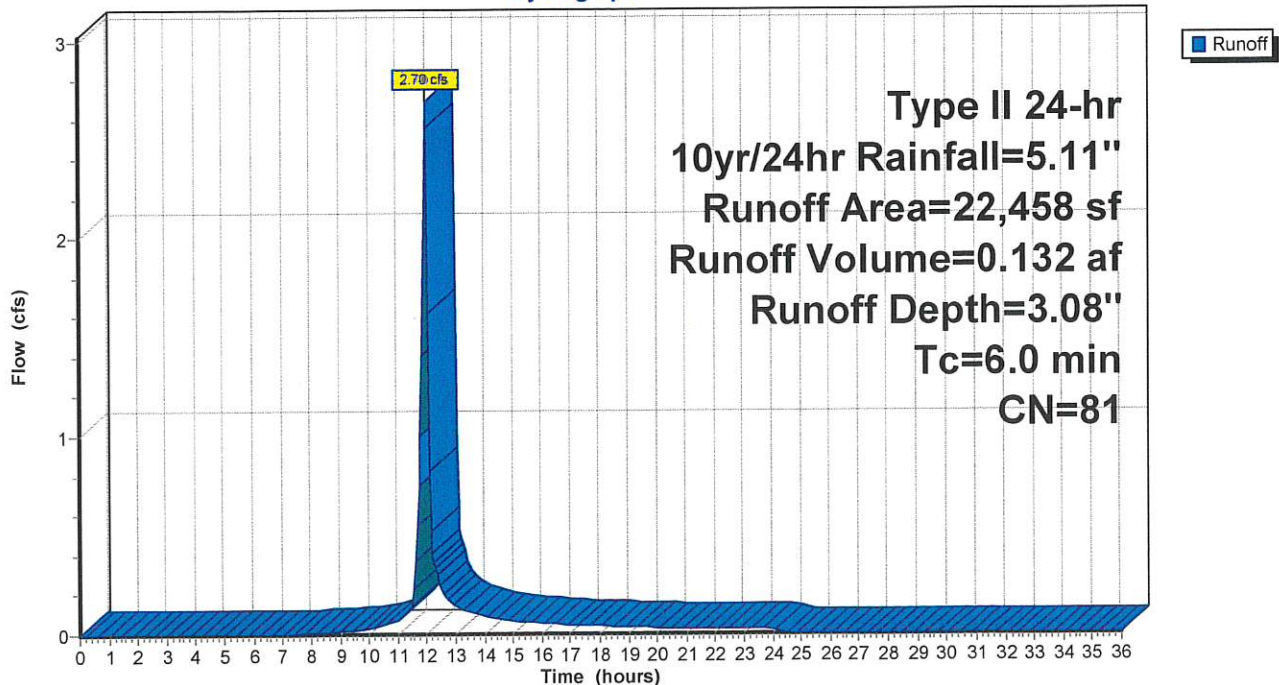
Subcatchment 5S: To CB5

Hydrograph



Subcatchment 6S: To CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

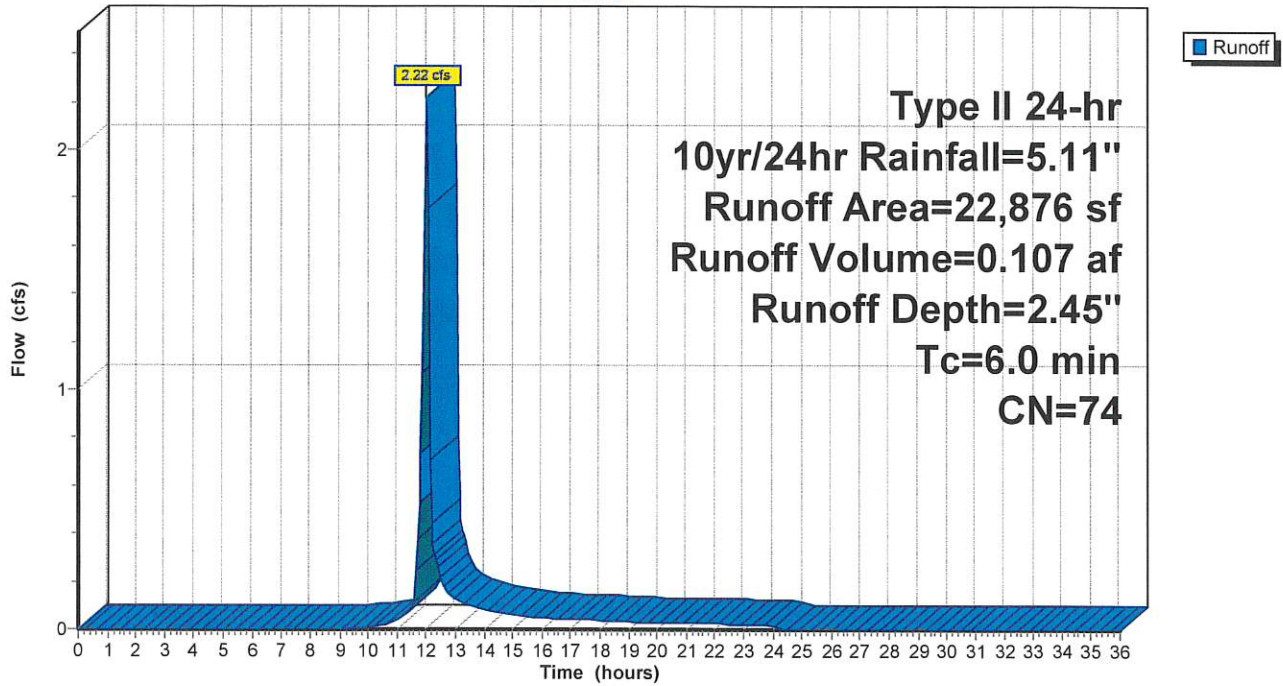
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 31

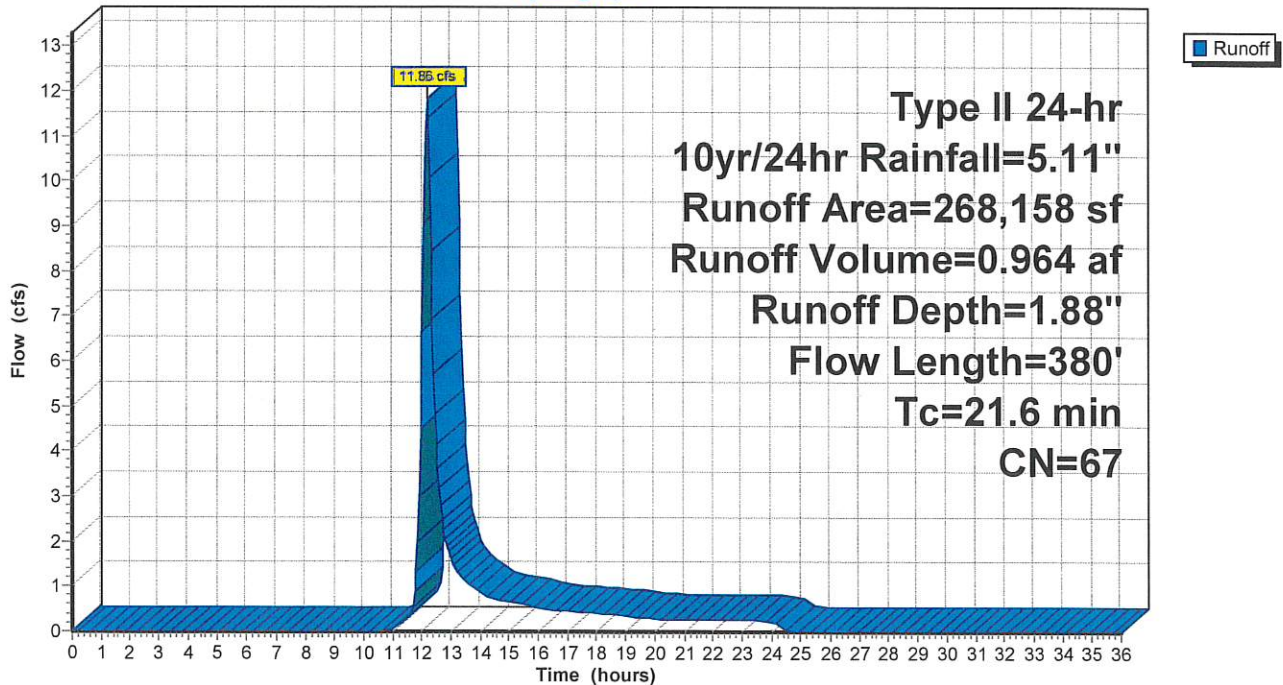
Subcatchment 7S: To Basin

Hydrograph



Subcatchment 8S: Bypassing

Hydrograph



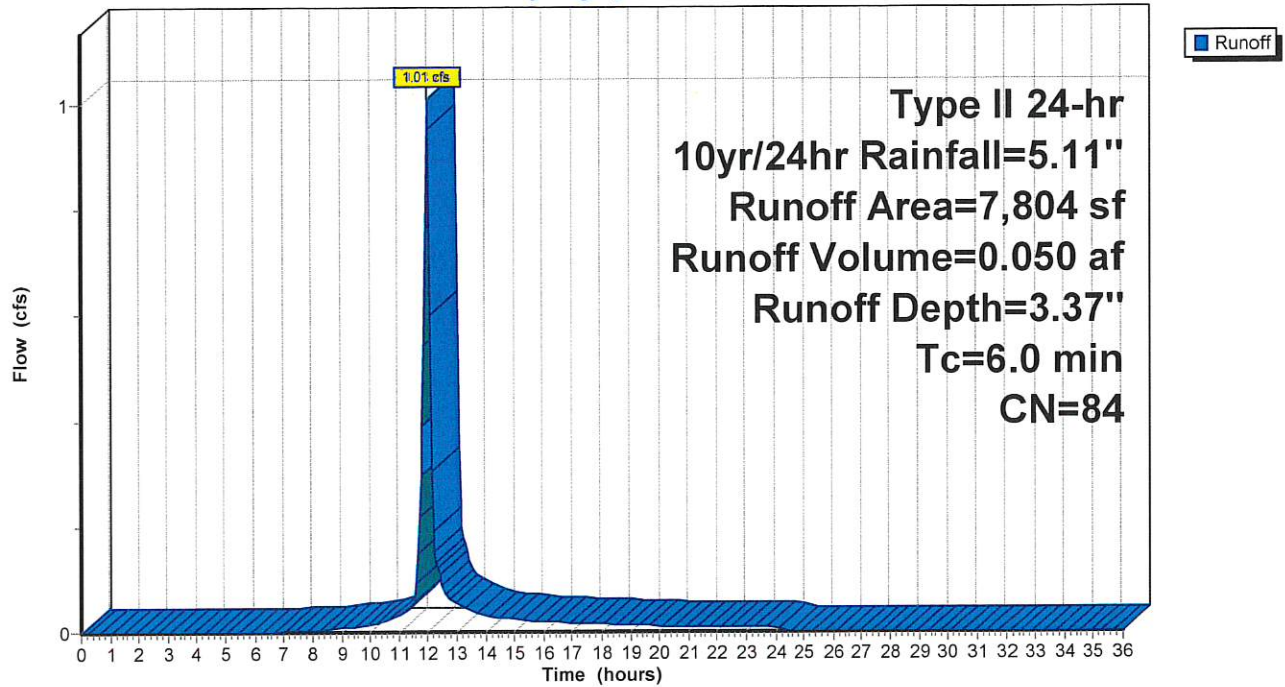
Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

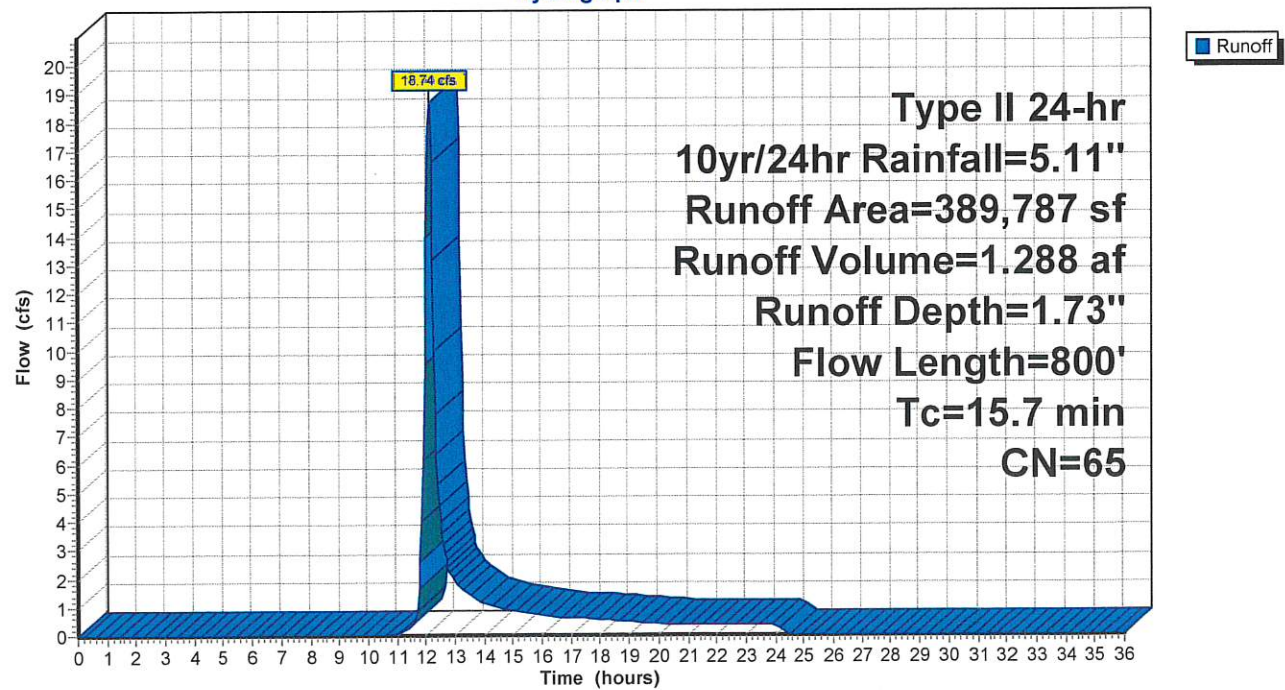
Subcatchment 9S: To Trench Drain

Hydrograph



Subcatchment OS: To Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

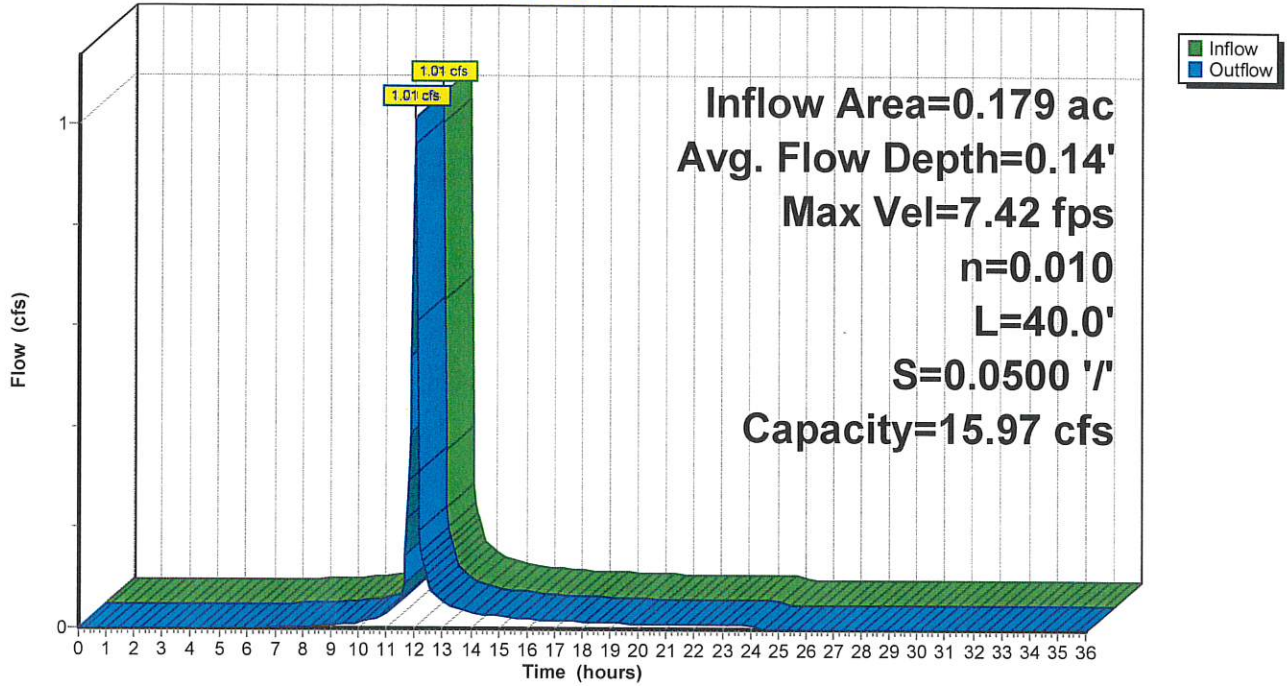
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 33

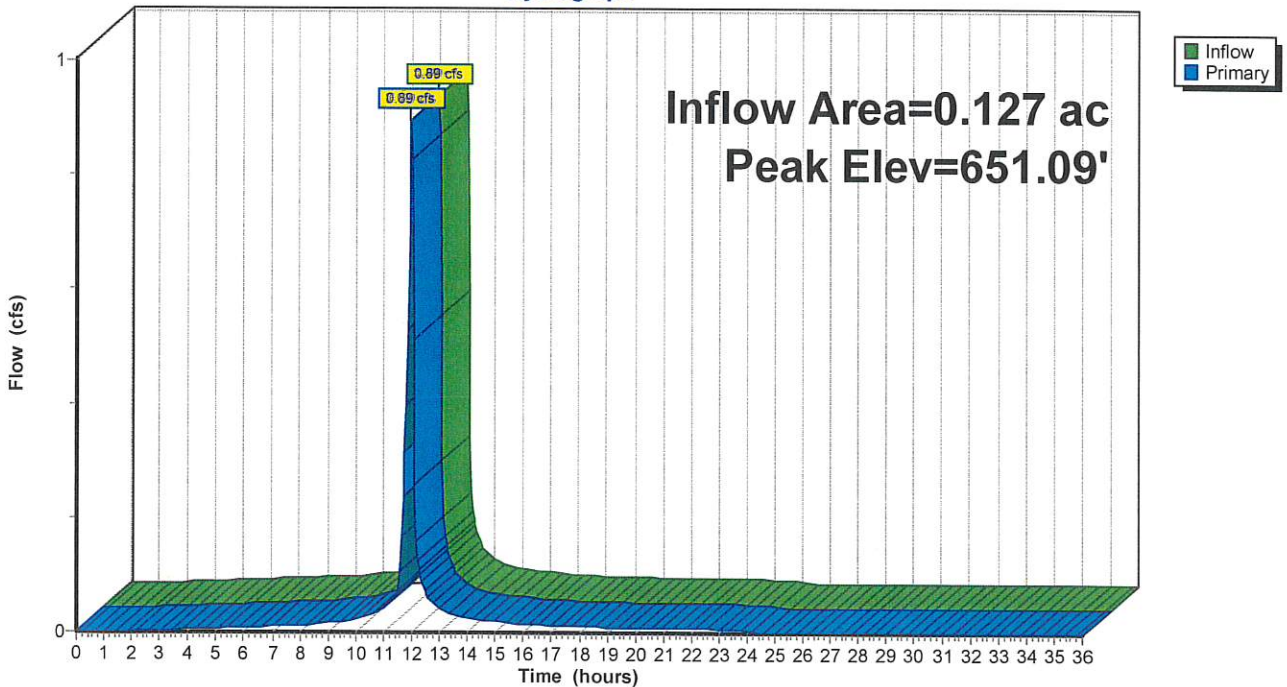
Reach 16R: Trench Drain

Hydrograph



Pond 9P: CB1

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

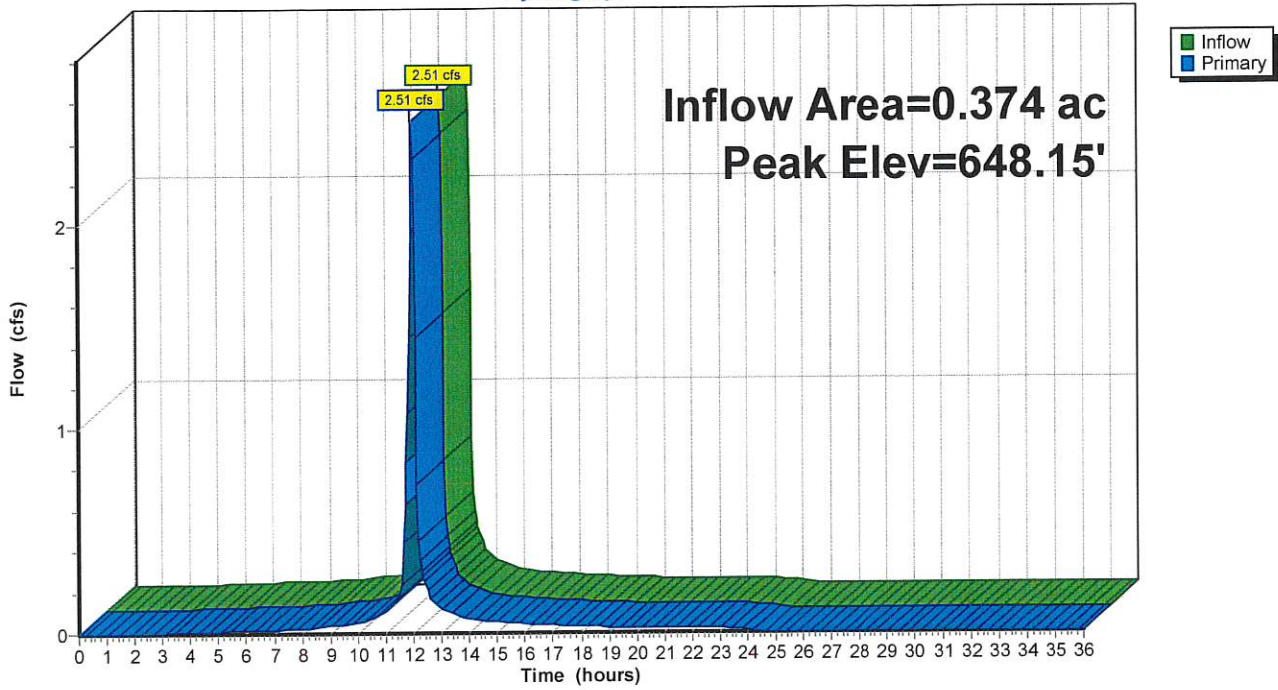
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 34

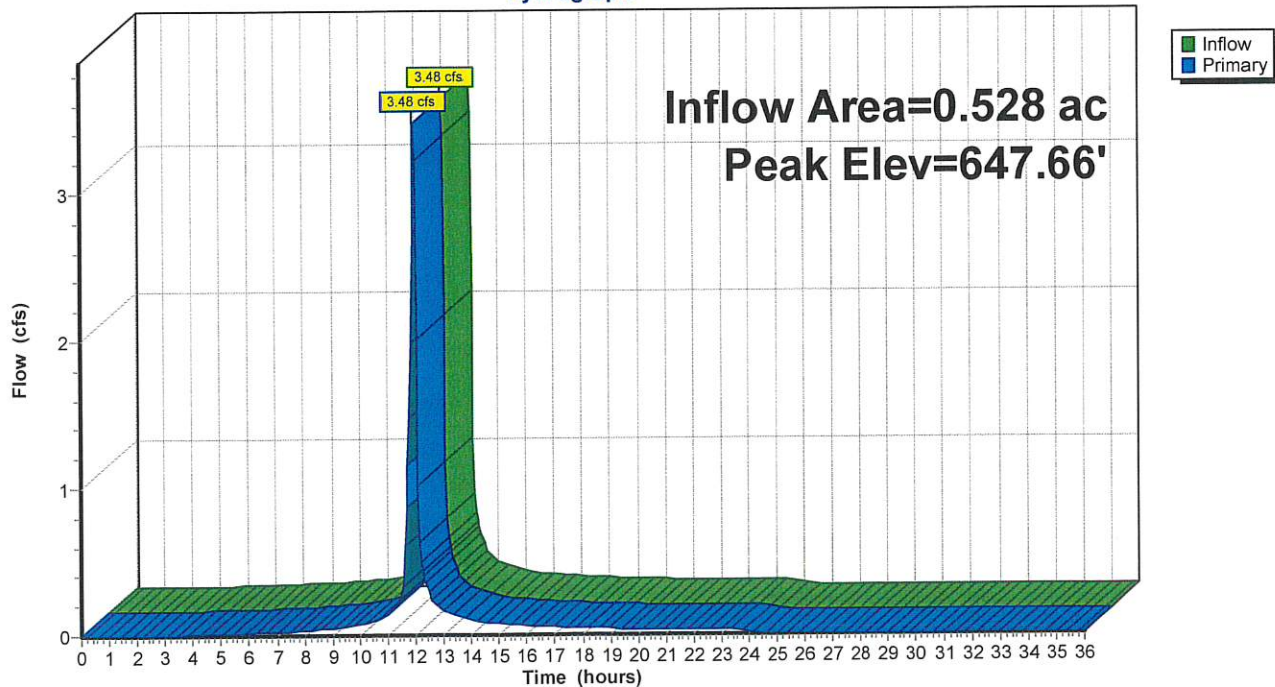
Pond 10P: CB2

Hydrograph



Pond 11P: CB3

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

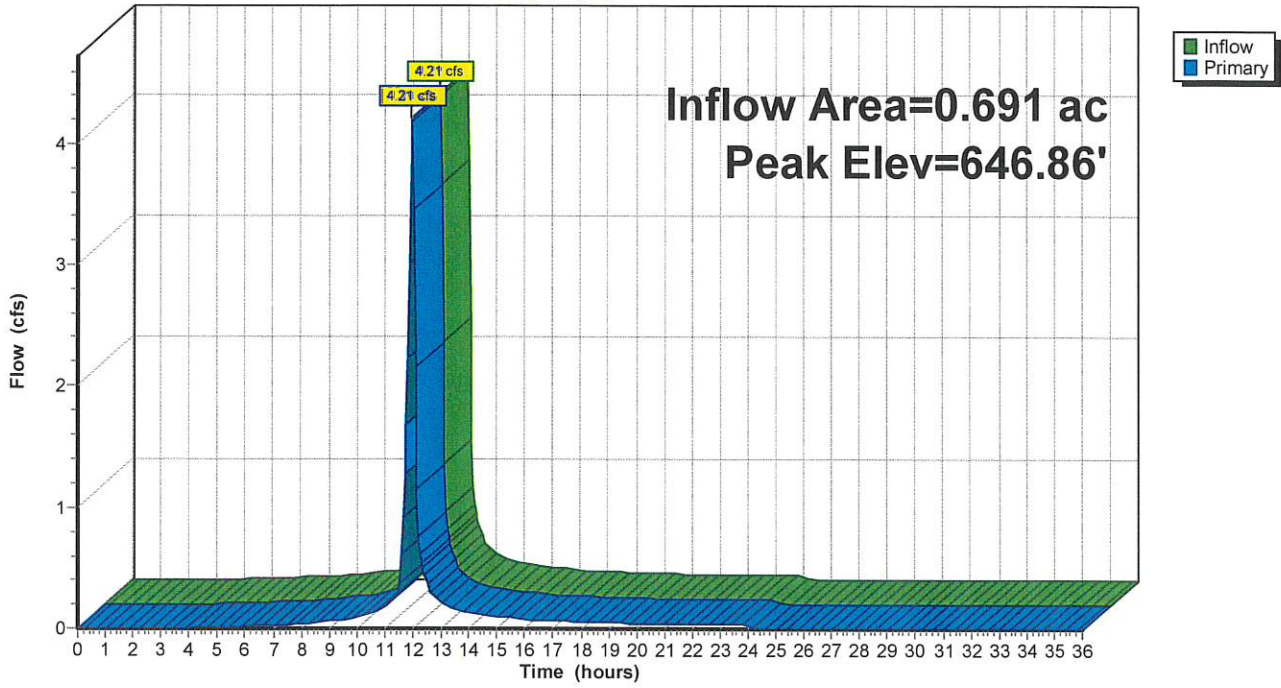
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 35

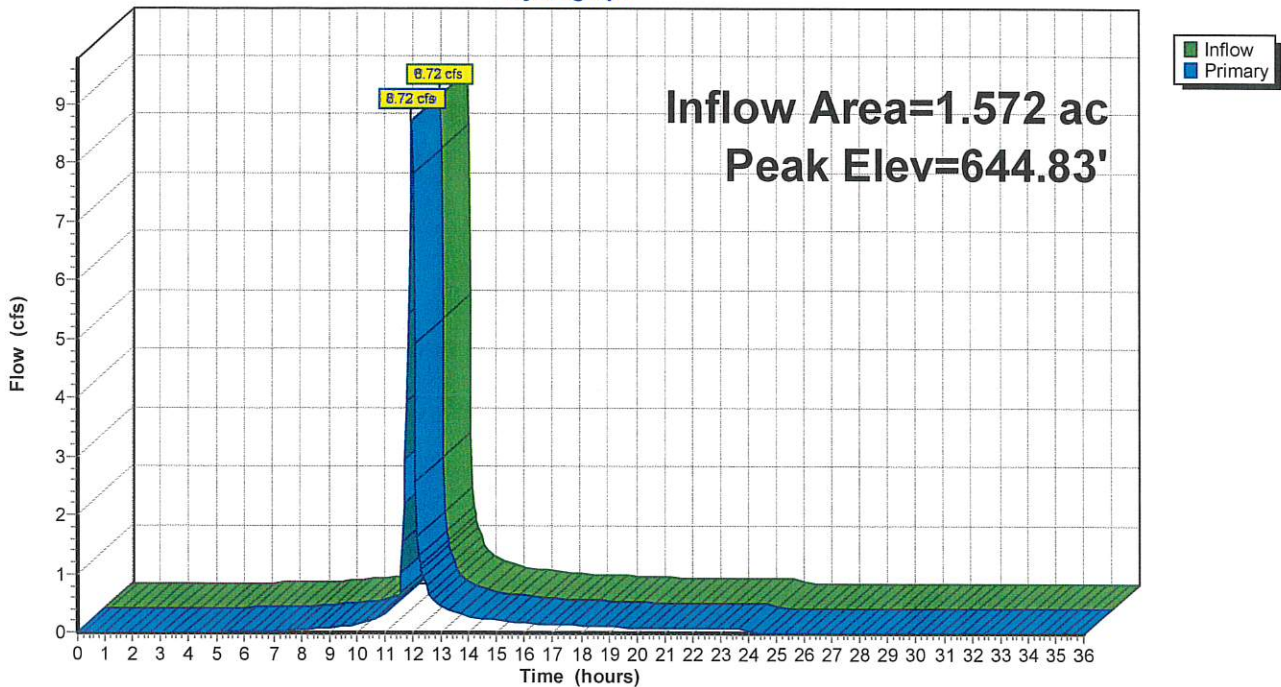
Pond 12P: CB4

Hydrograph



Pond 13aP: CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

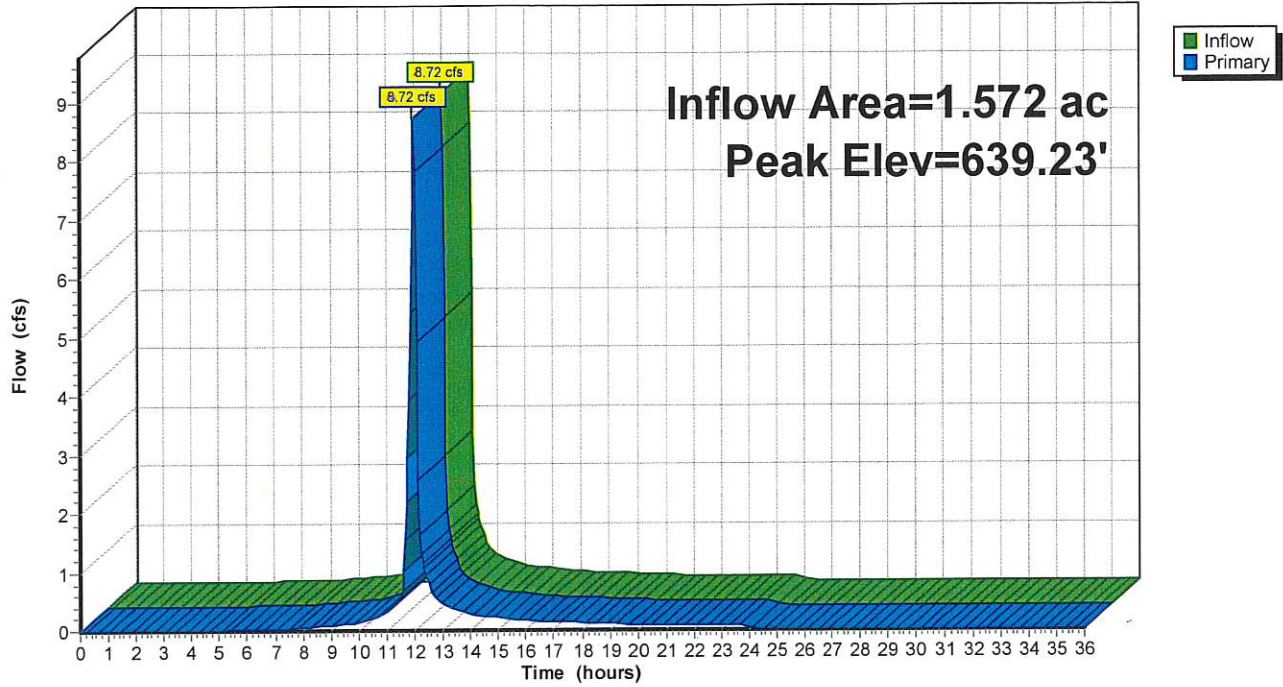
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 36

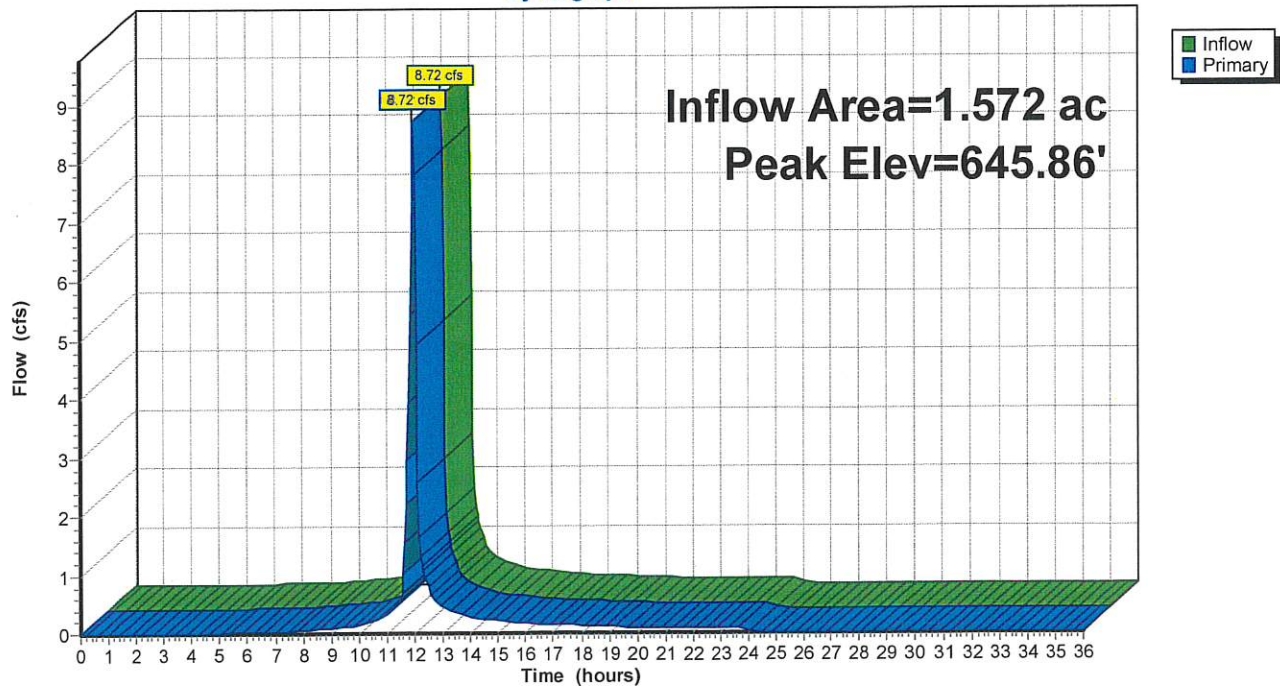
Pond 13bP: CB7

Hydrograph



Pond 13P: CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

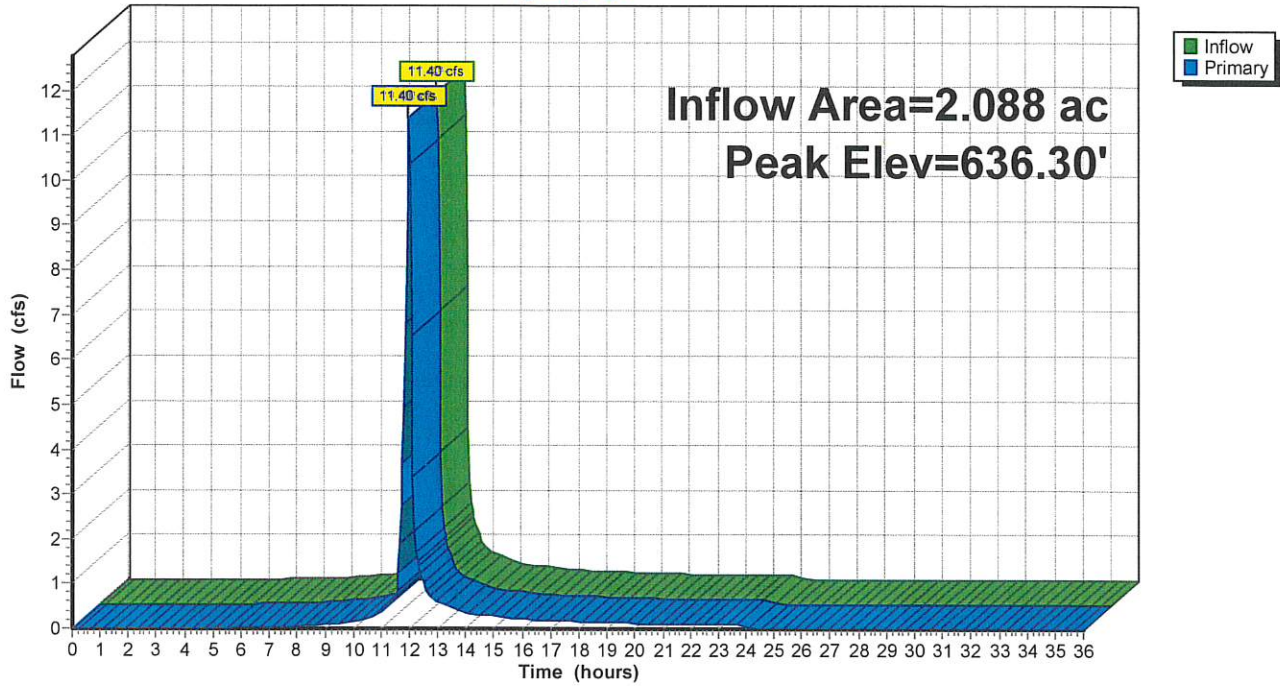
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 37

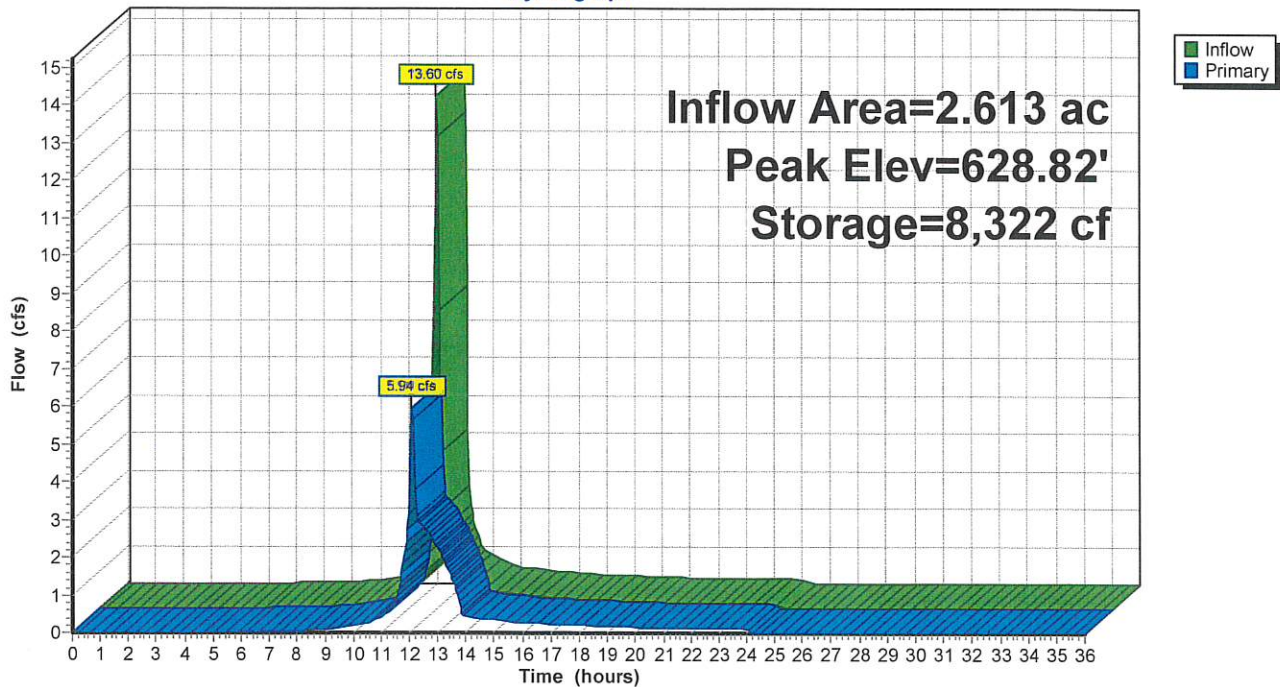
Pond 14P: CB8

Hydrograph



Pond 15P: Detention Basin

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

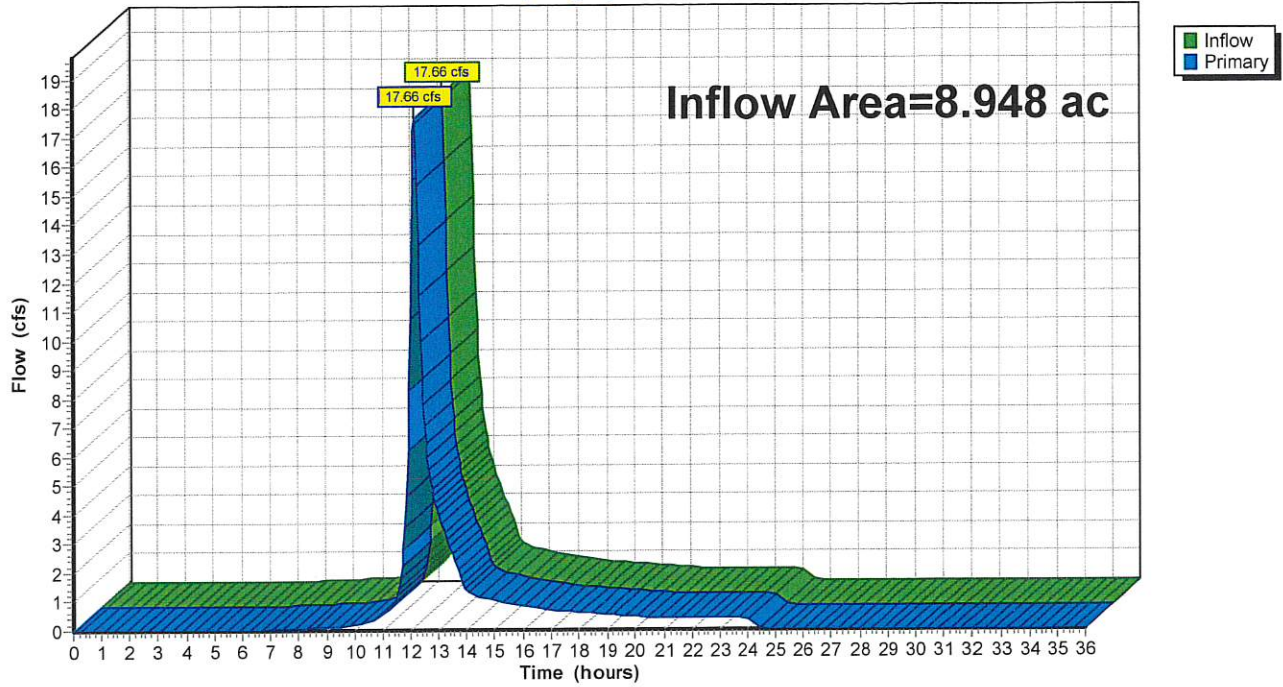
Brookhollow Senior Apartments
Type II 24-hr 10yr/24hr Rainfall=5.11"

Printed 9/13/2023

Page 38

Link 16L: Site Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

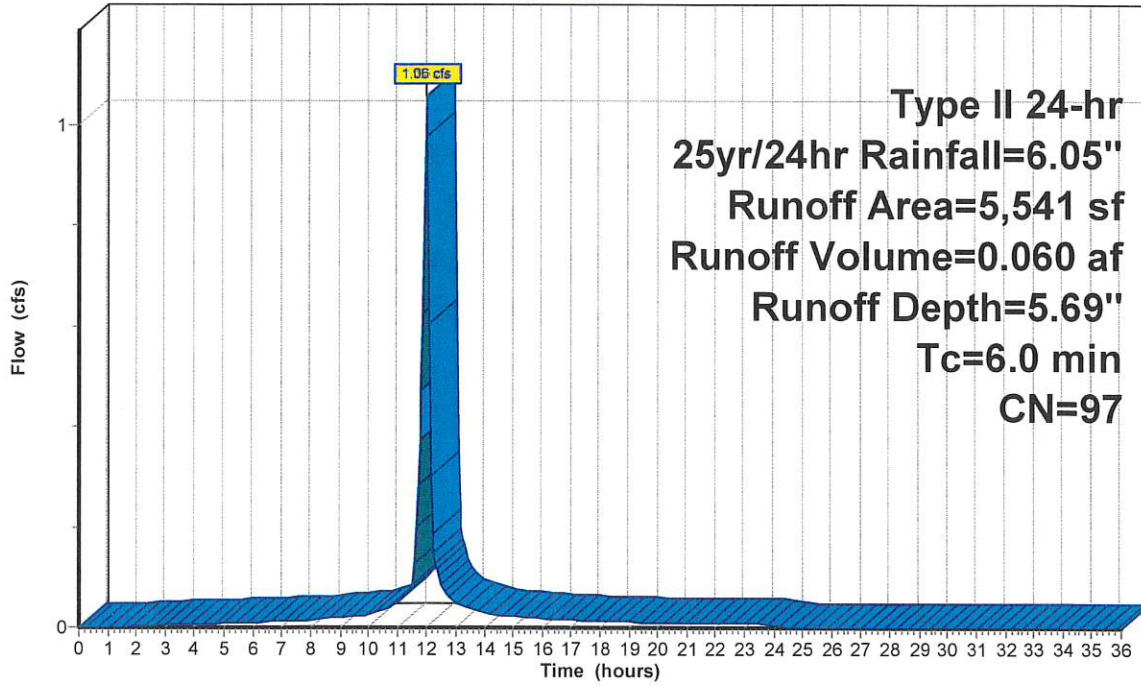
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 39

Subcatchment 1S: To CB1

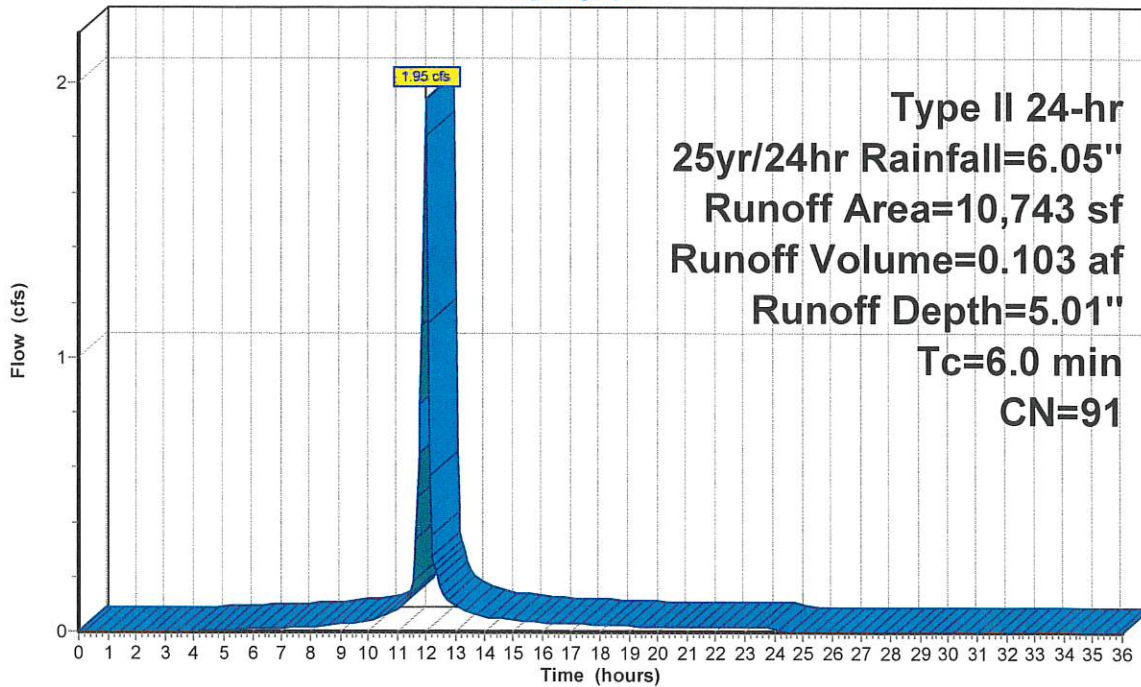
Hydrograph



Runoff

Subcatchment 2S: To CB2

Hydrograph



Runoff

Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

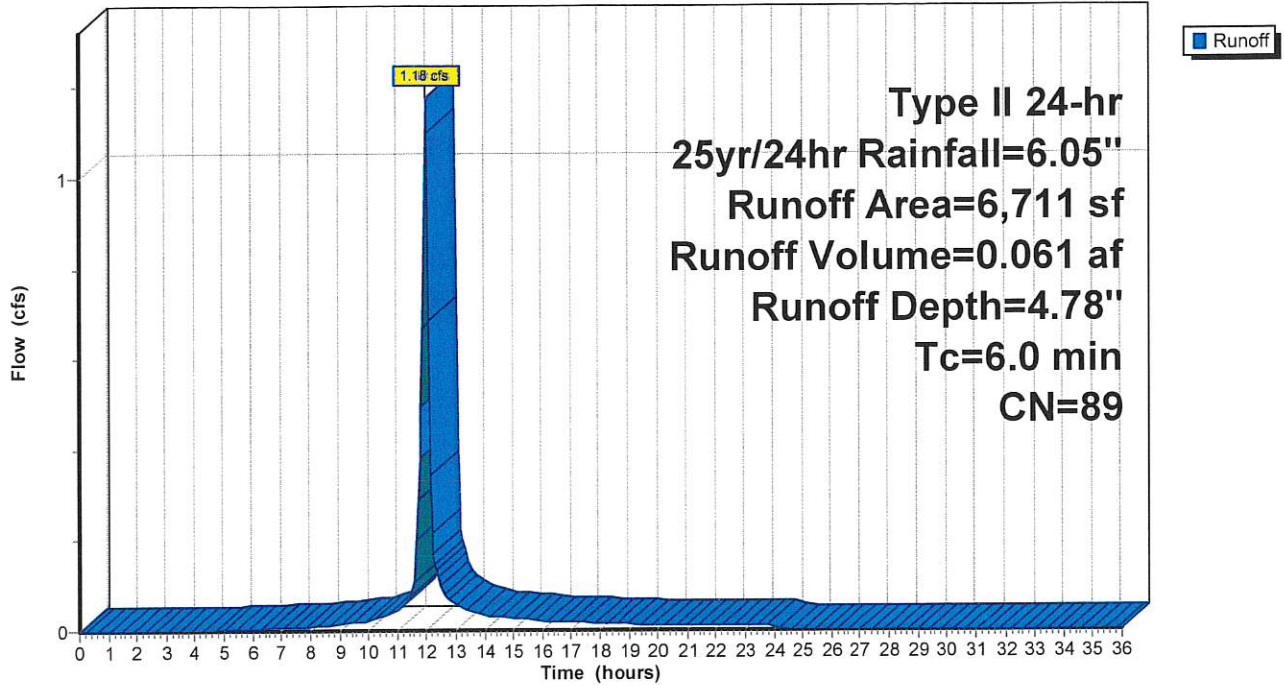
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 40

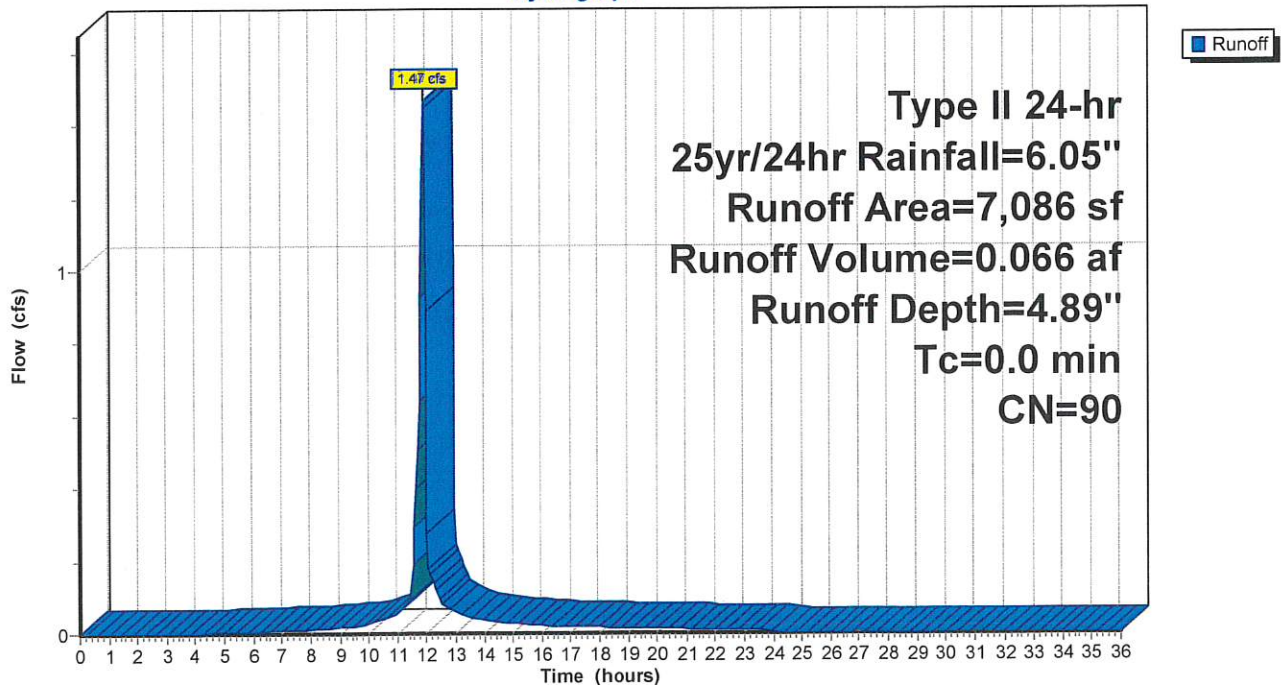
Subcatchment 3S: To CB3

Hydrograph



Subcatchment 4S: To CB4

Hydrograph



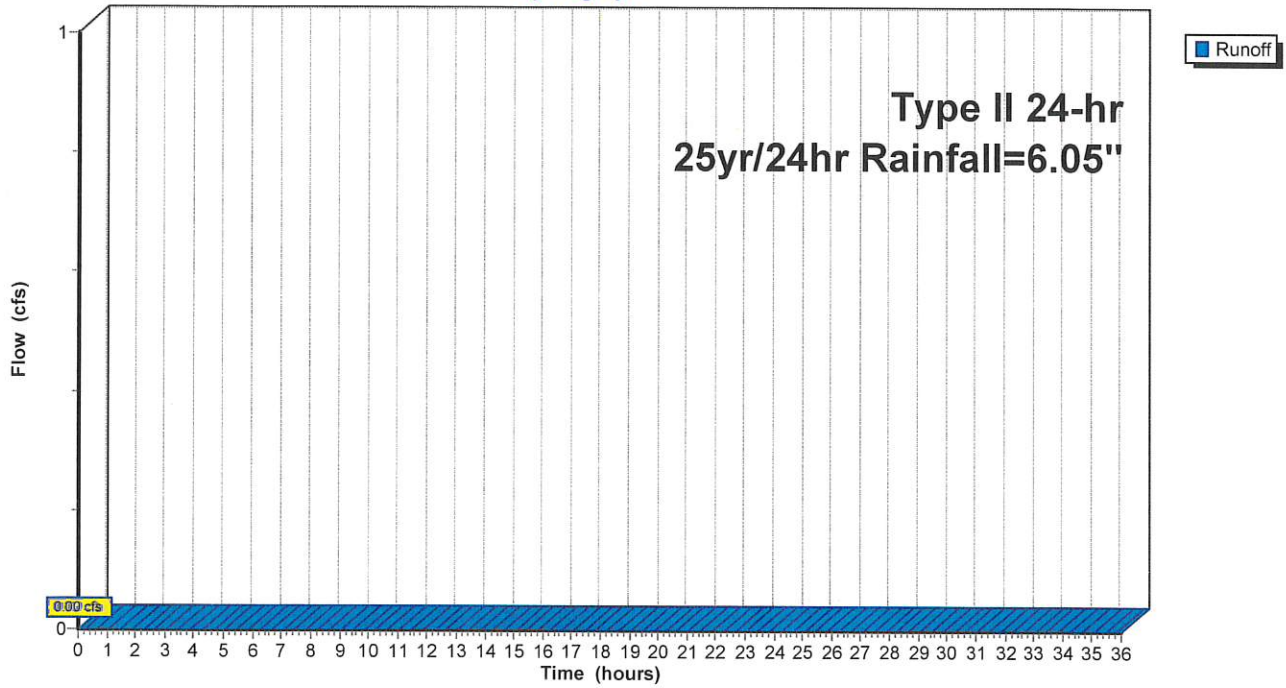
Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

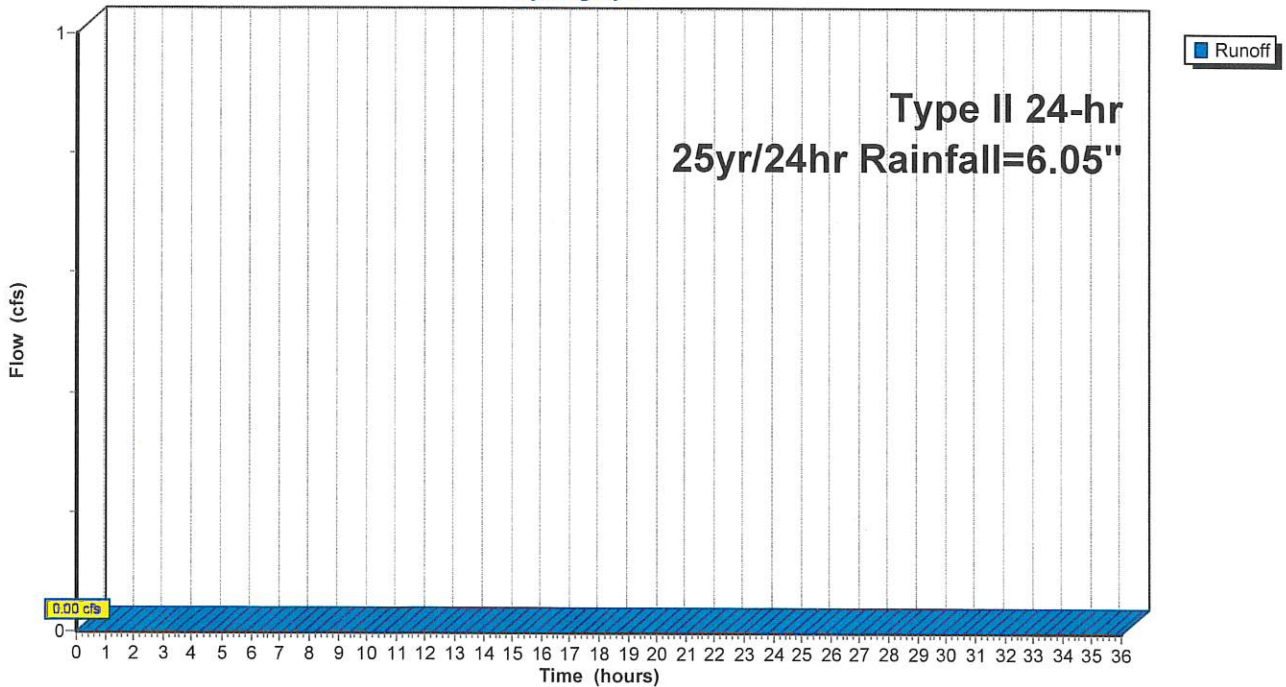
Subcatchment 5aS: To CB5

Hydrograph



Subcatchment 5bS: To CB5

Hydrograph



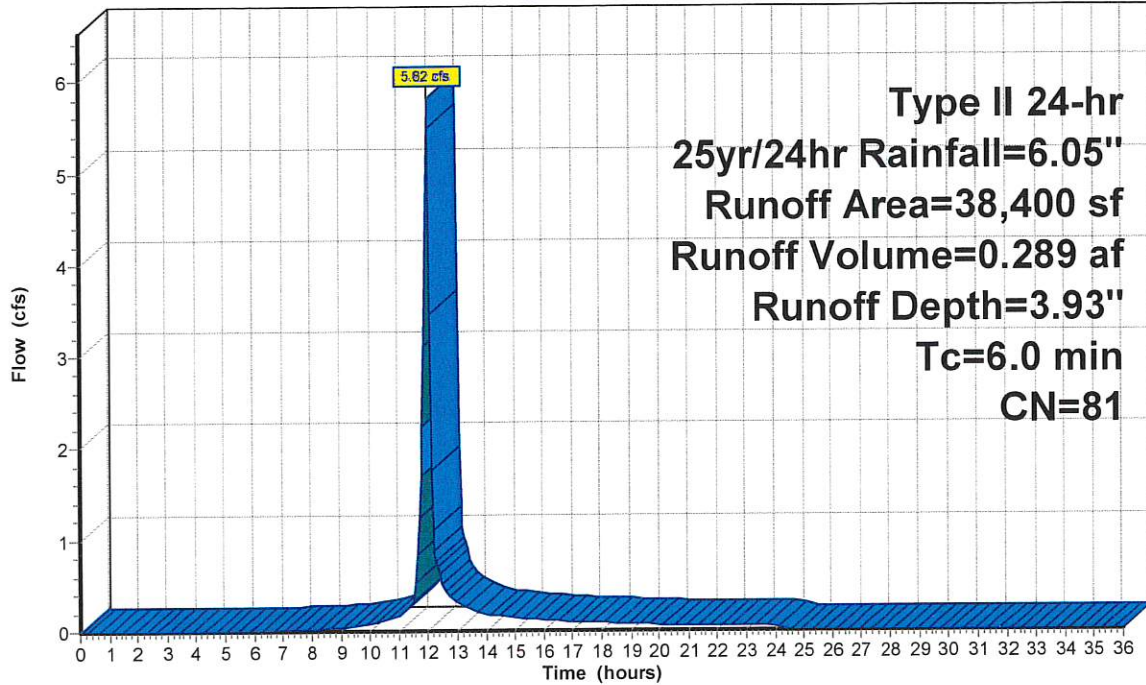
Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

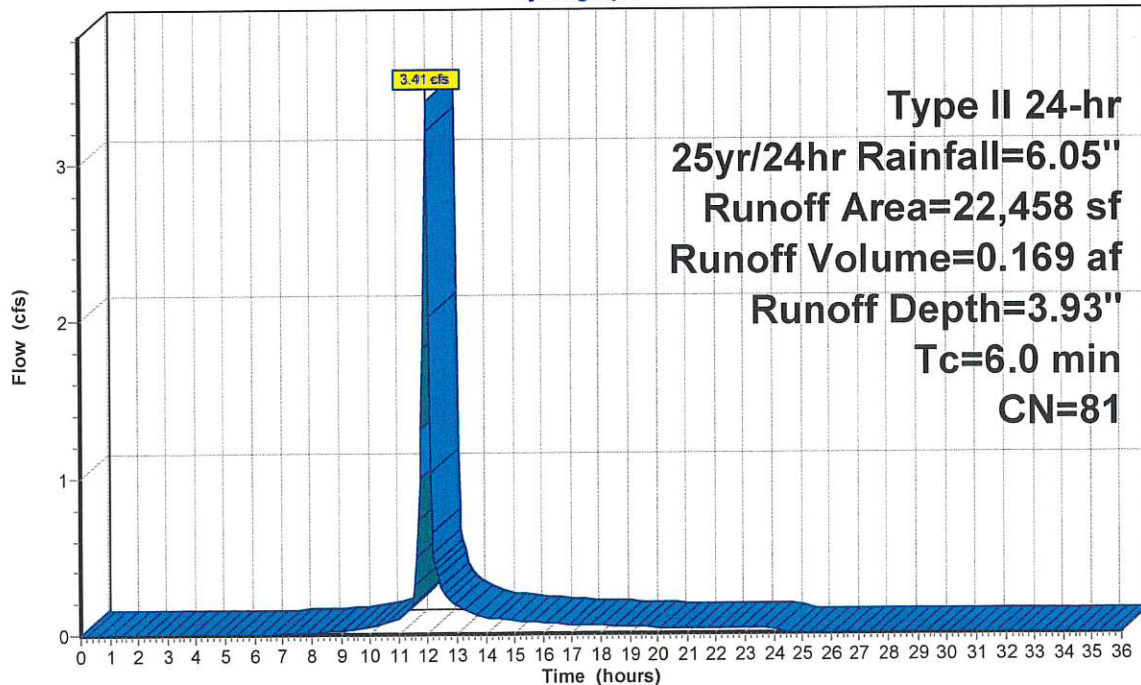
Subcatchment 5S: To CB5

Hydrograph



Subcatchment 6S: To CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

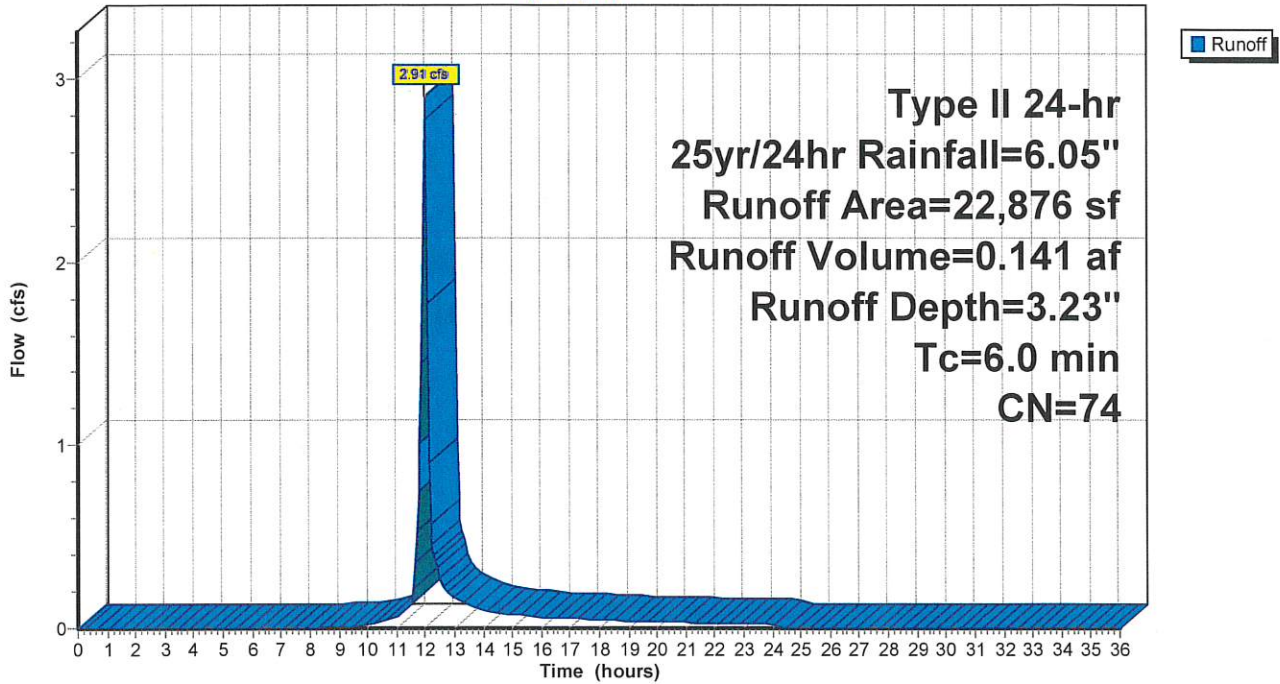
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 43

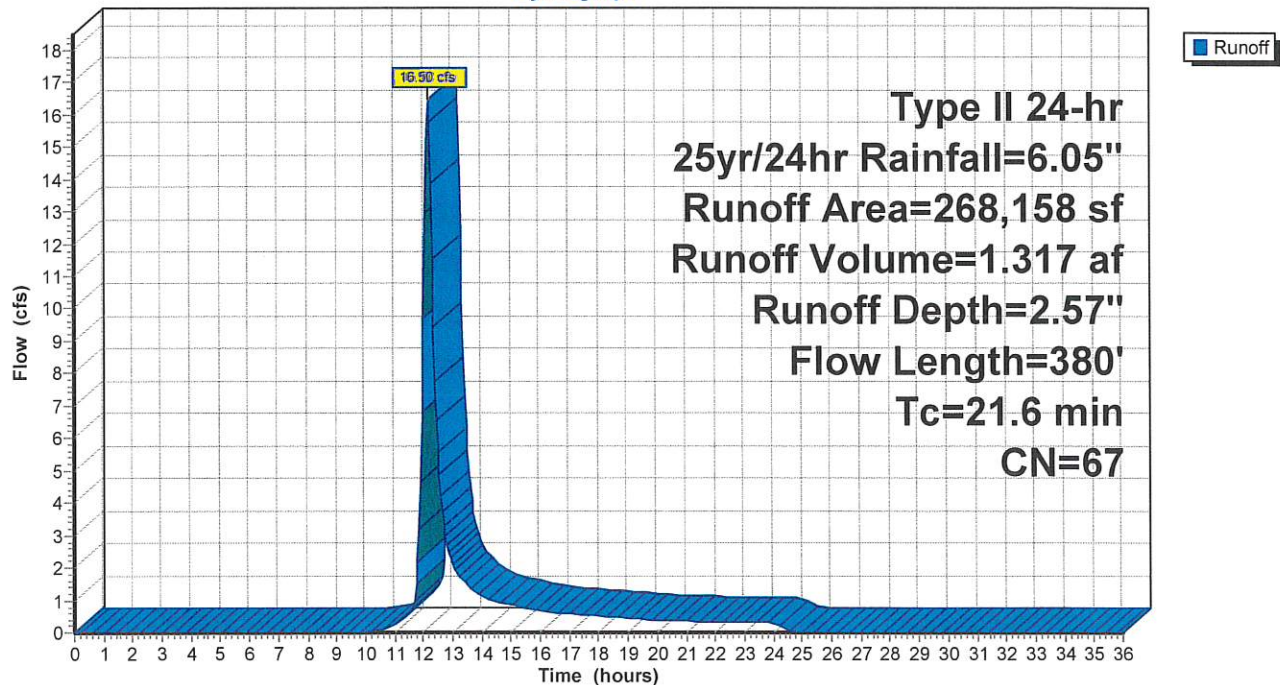
Subcatchment 7S: To Basin

Hydrograph



Subcatchment 8S: Bypassing

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

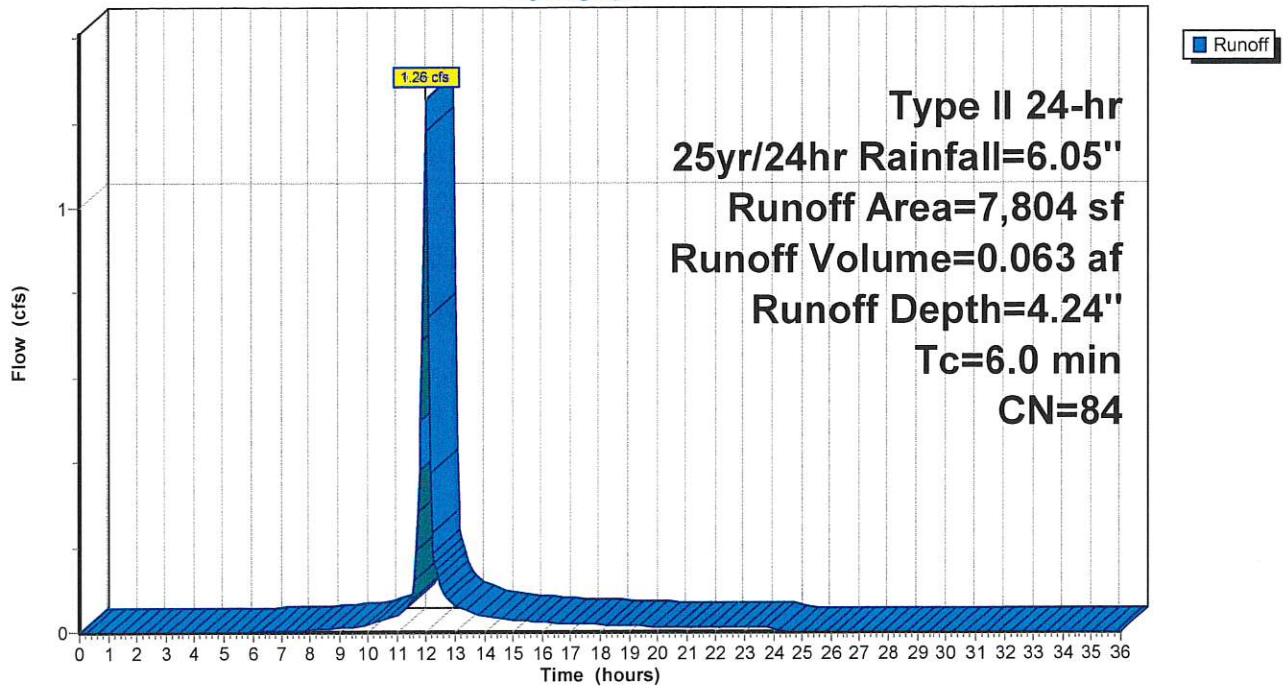
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 44

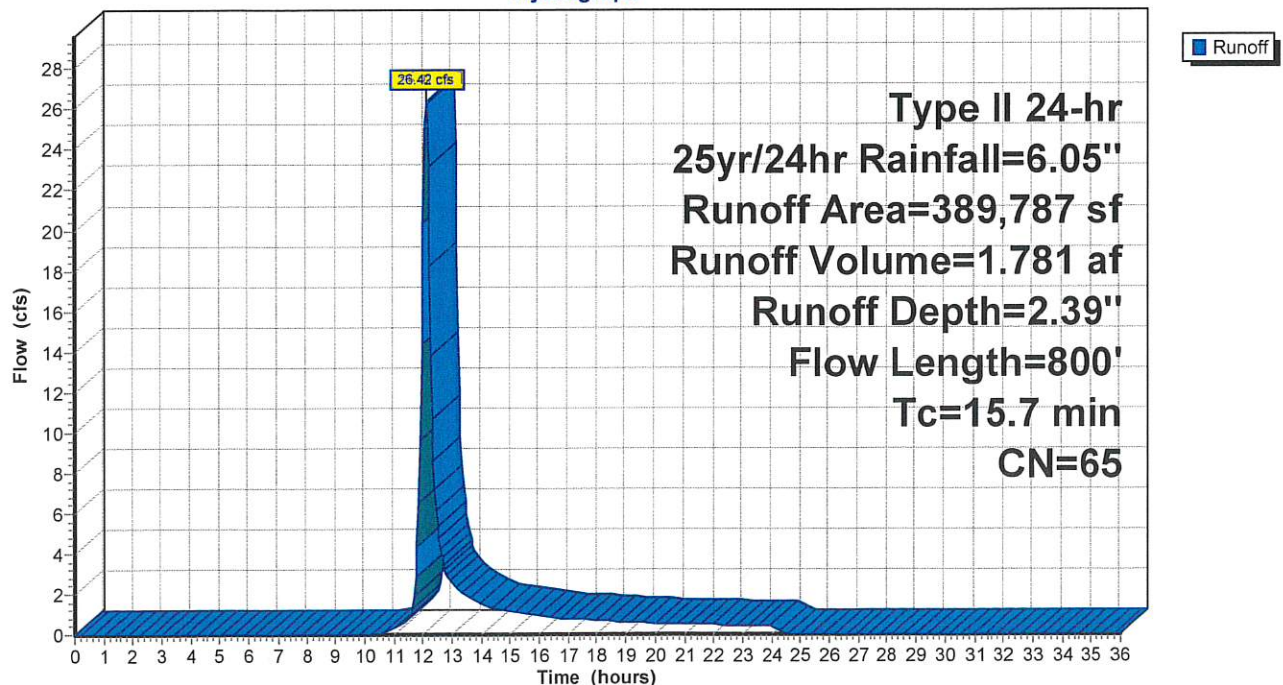
Subcatchment 9S: To Trench Drain

Hydrograph



Subcatchment OS: To Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

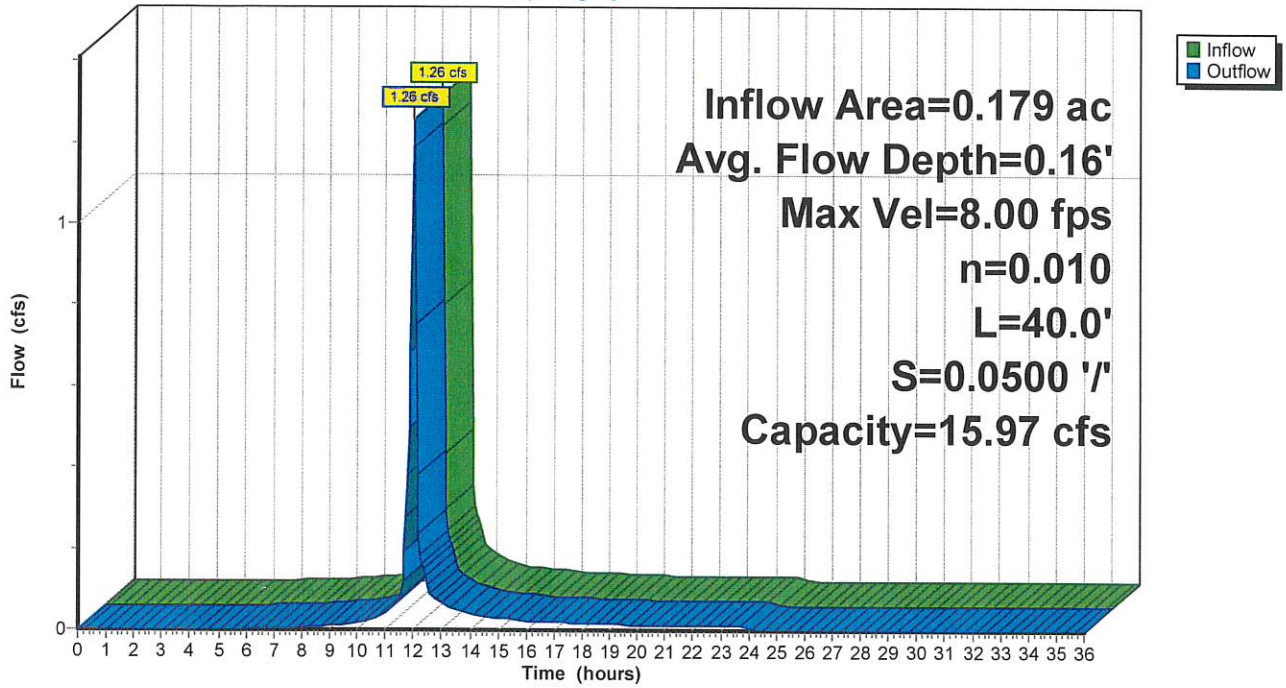
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 45

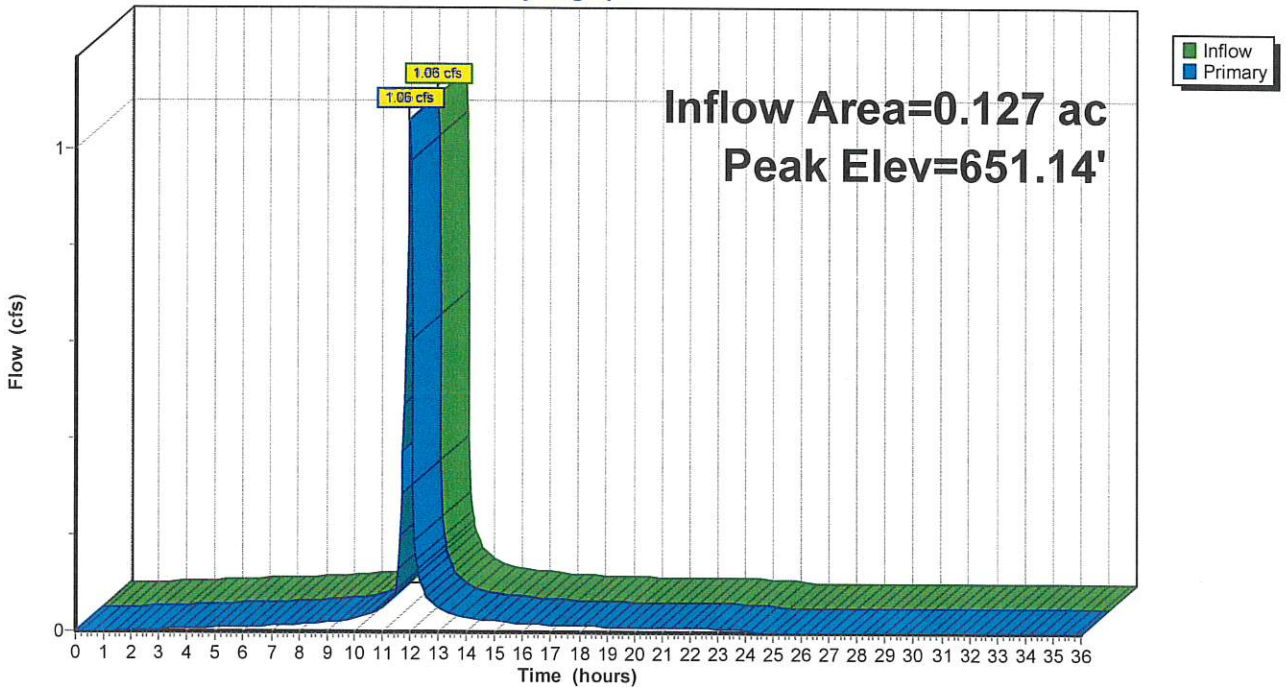
Reach 16R: Trench Drain

Hydrograph



Pond 9P: CB1

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

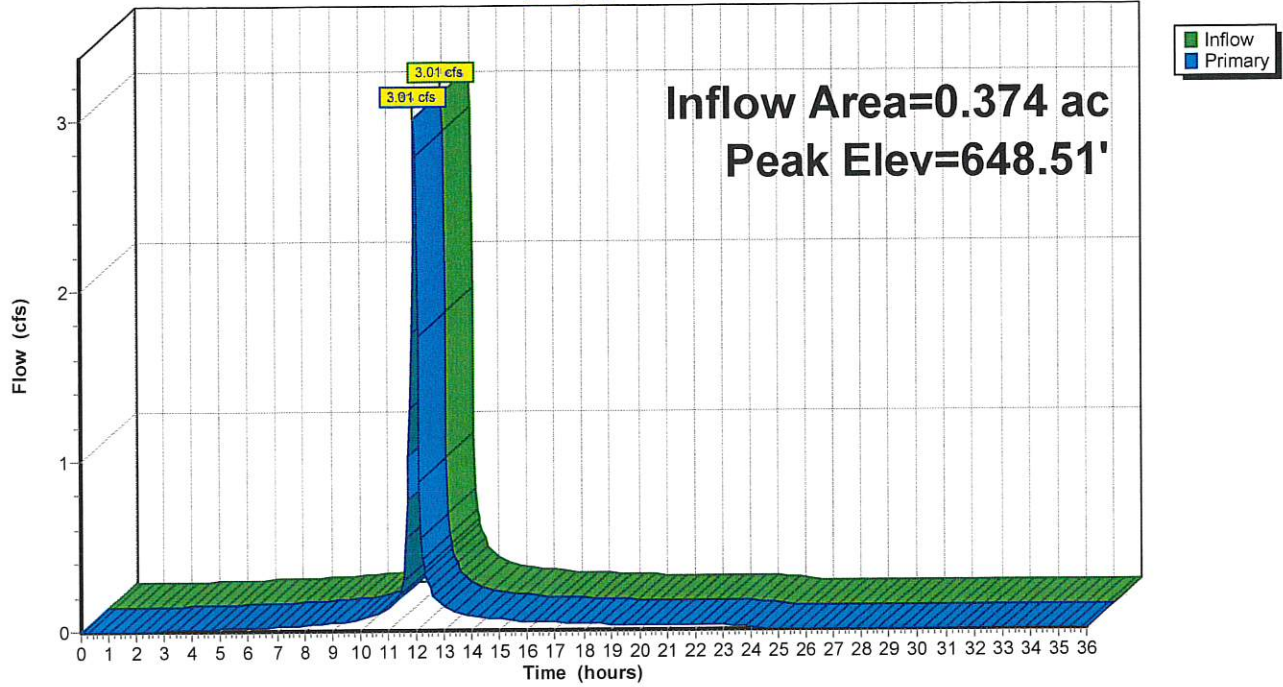
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 46

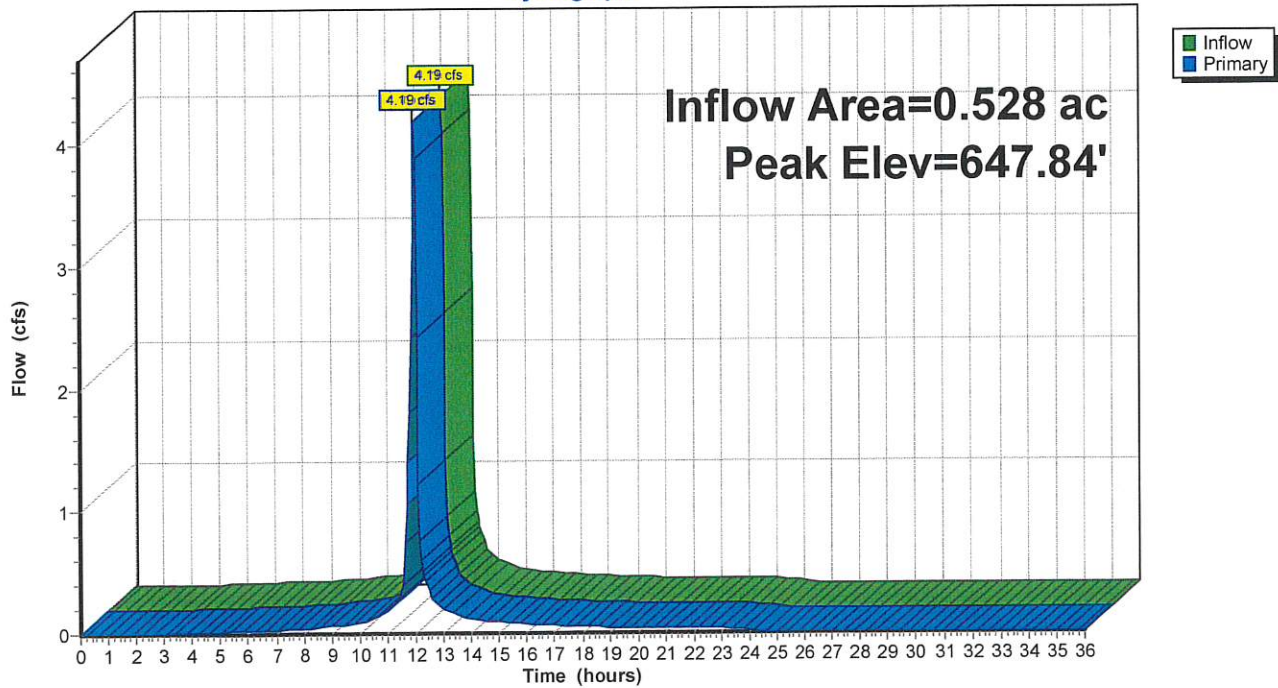
Pond 10P: CB2

Hydrograph



Pond 11P: CB3

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

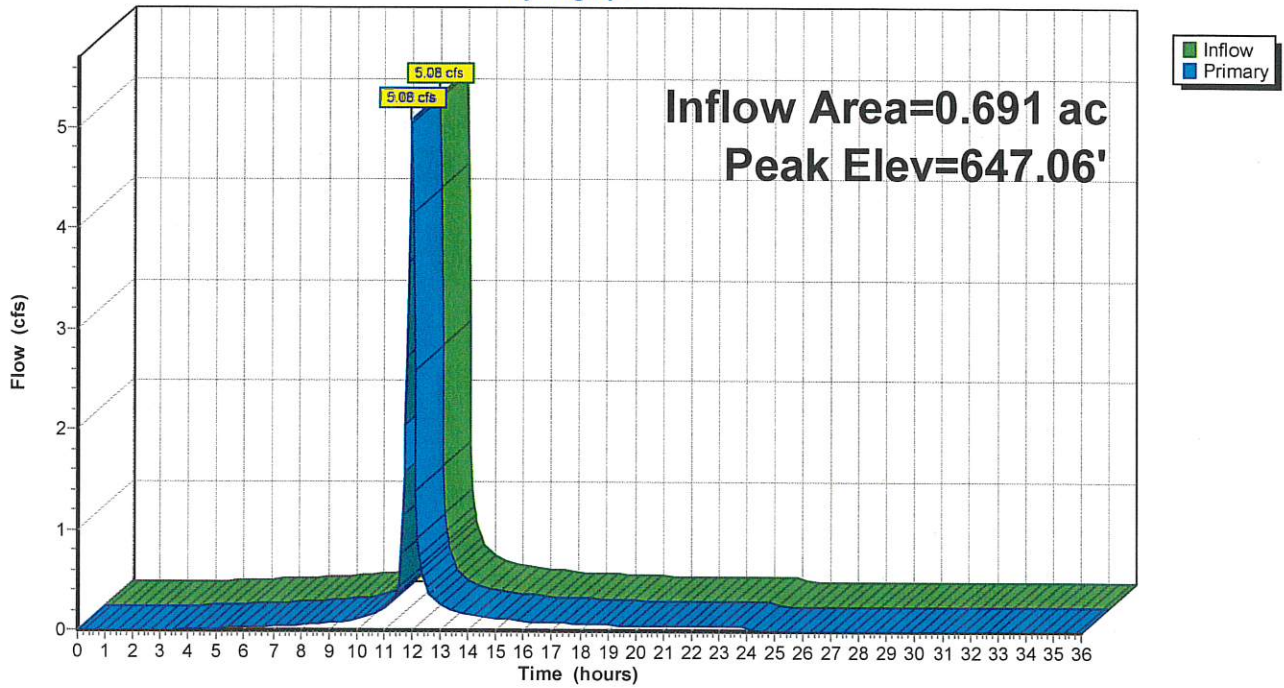
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 47

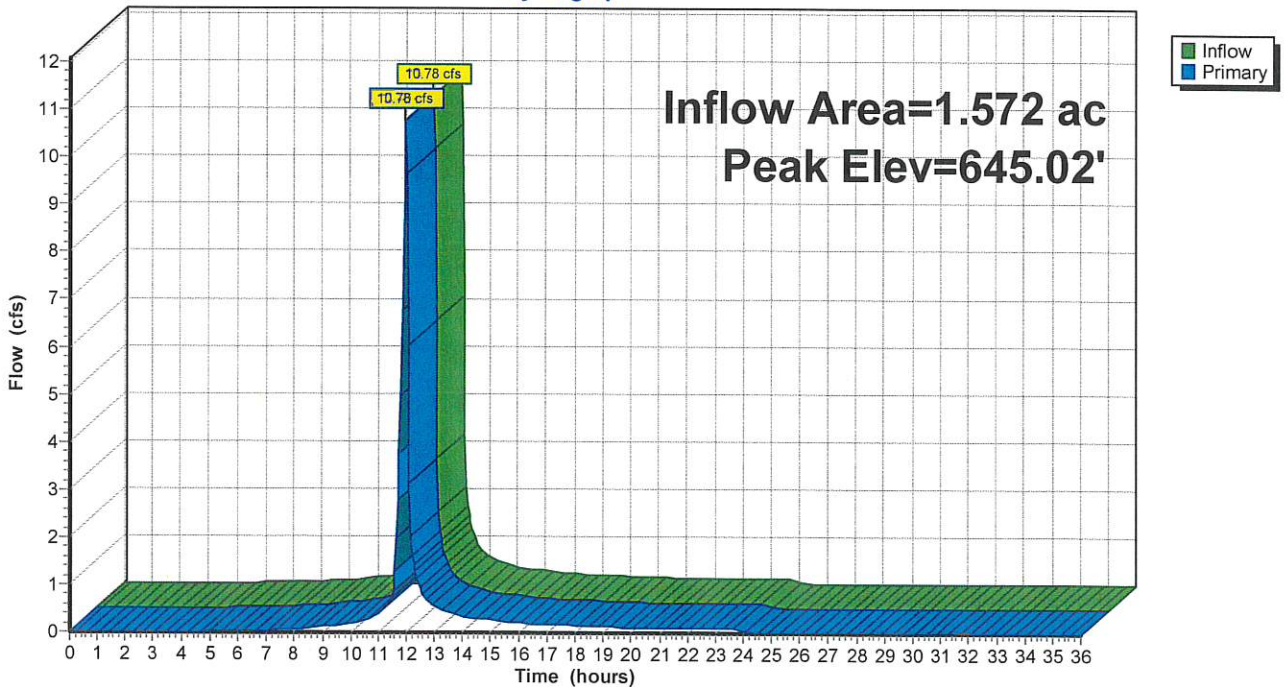
Pond 12P: CB4

Hydrograph



Pond 13aP: CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

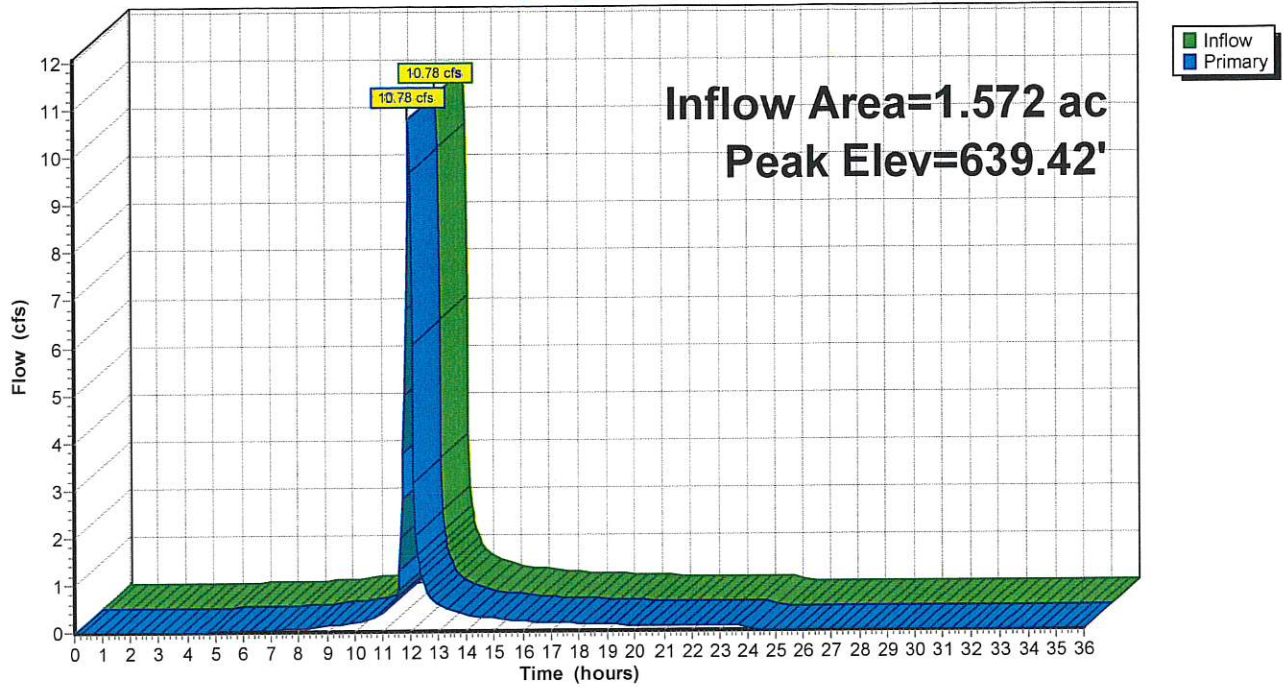
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 48

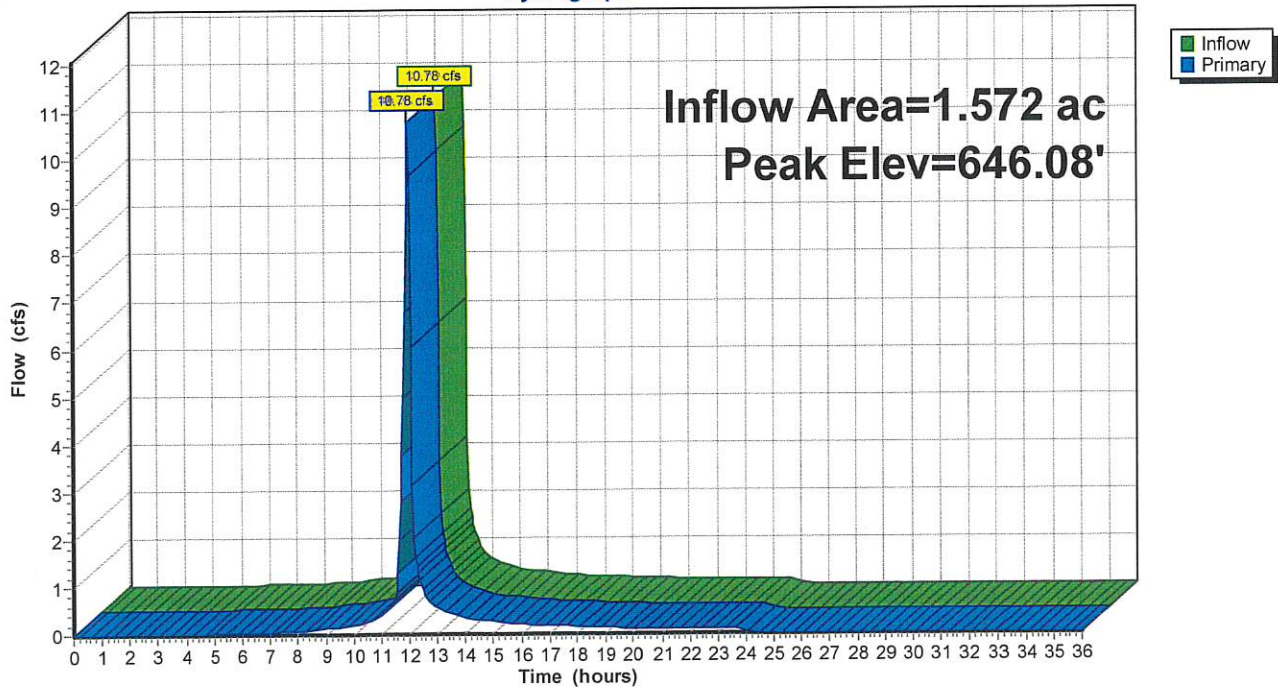
Pond 13bP: CB7

Hydrograph



Pond 13P: CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

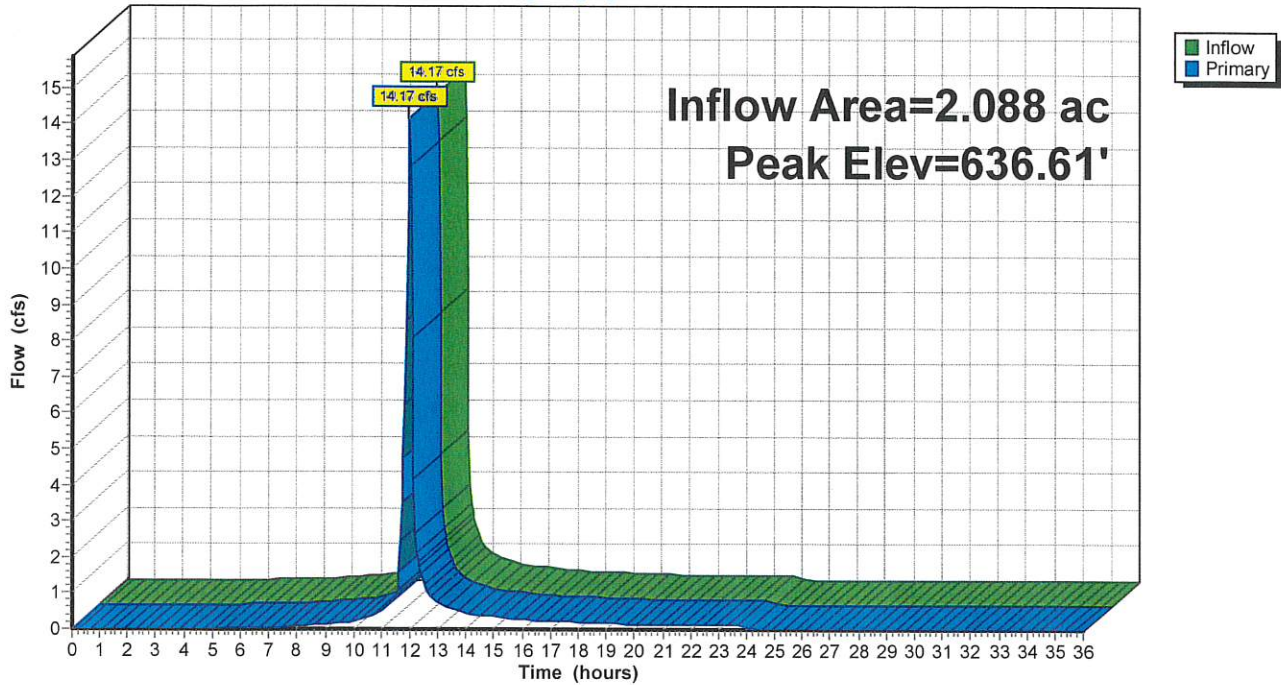
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 49

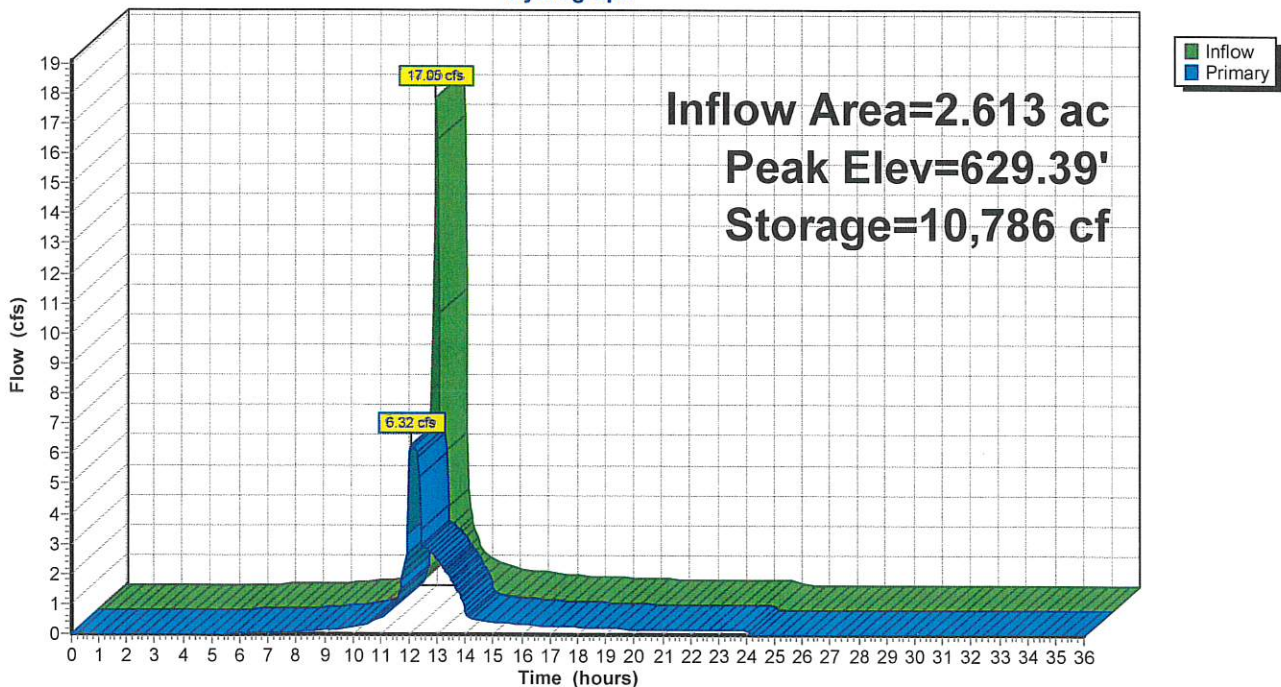
Pond 14P: CB8

Hydrograph



Pond 15P: Detention Basin

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

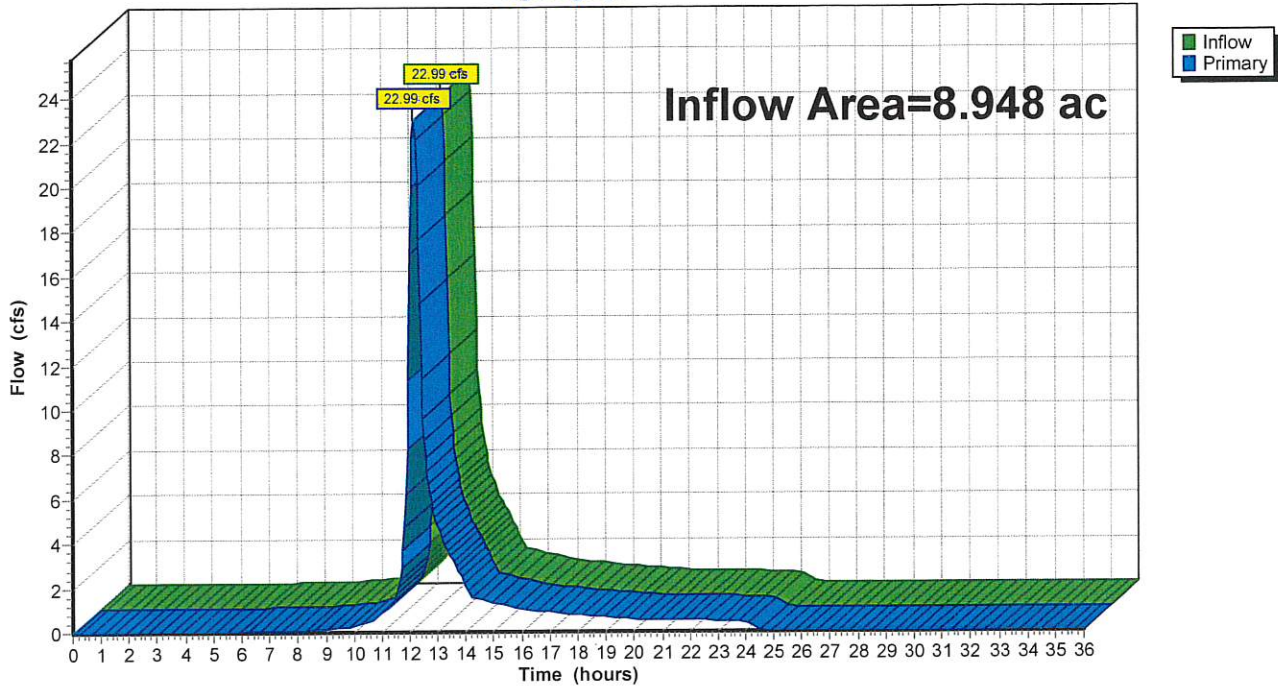
Brookhollow Senior Apartments
Type II 24-hr 25yr/24hr Rainfall=6.05"

Printed 9/13/2023

Page 50

Link 16L: Site Outfall

Hydrograph



Runoff

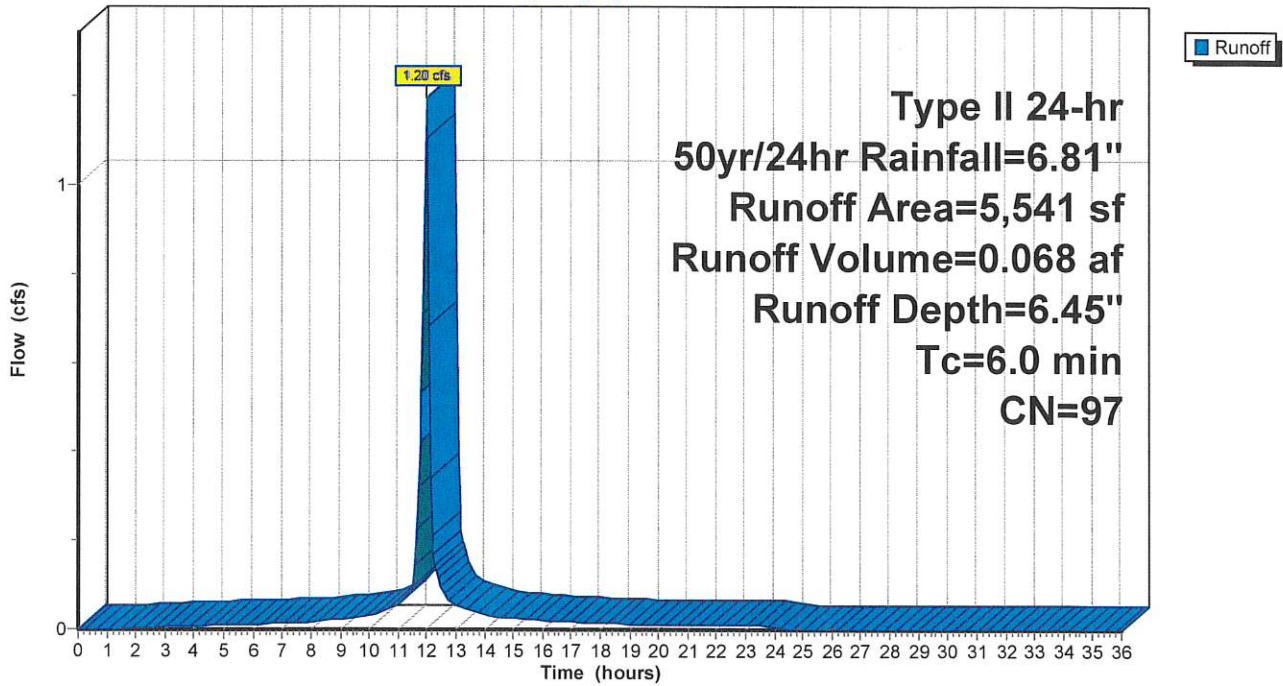
Prepared by {enter your company name here}
HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023
Page 51

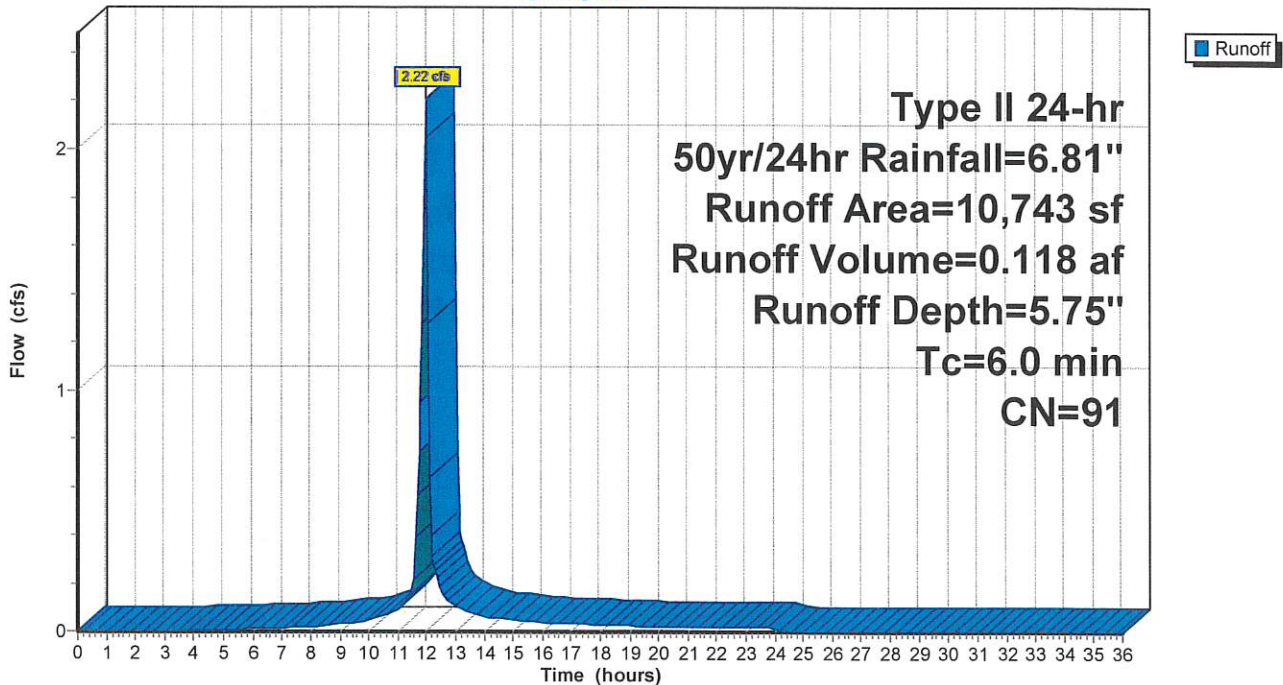
Subcatchment 1S: To CB1

Hydrograph



Subcatchment 2S: To CB2

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

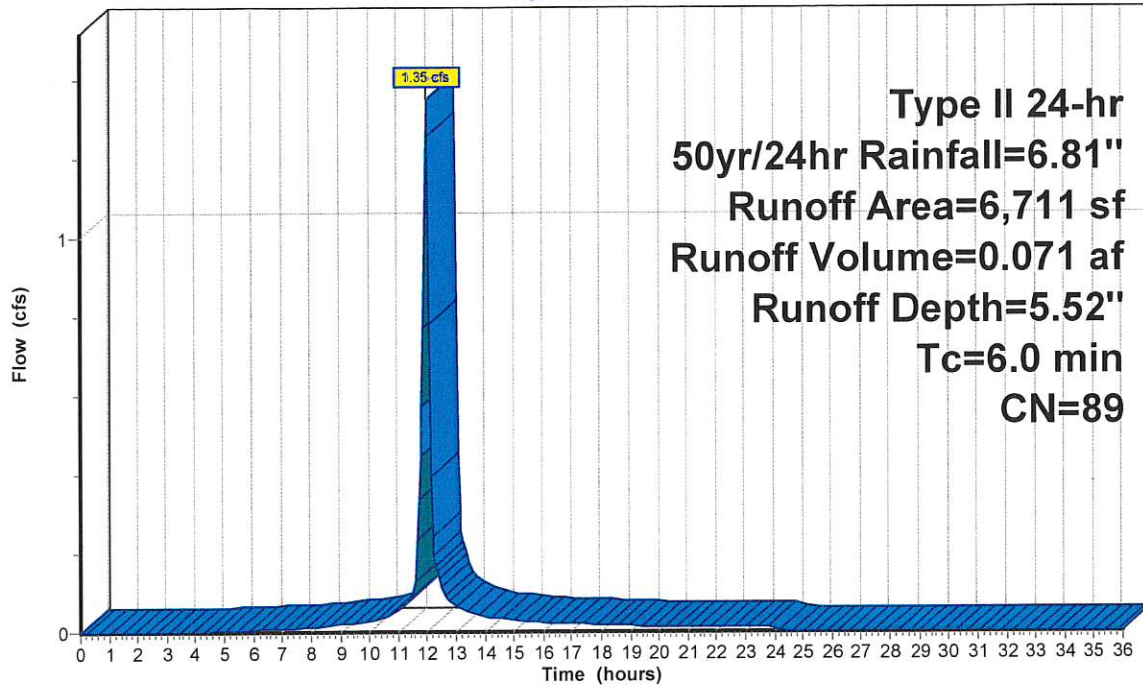
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 52

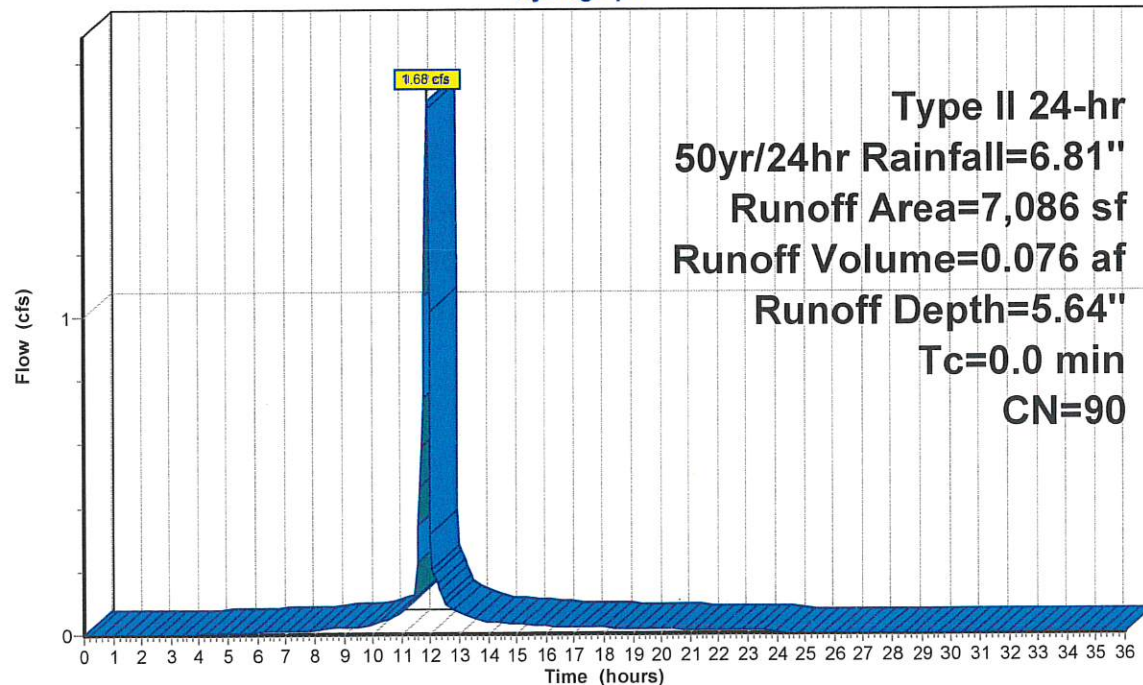
Subcatchment 3S: To CB3

Hydrograph



Subcatchment 4S: To CB4

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

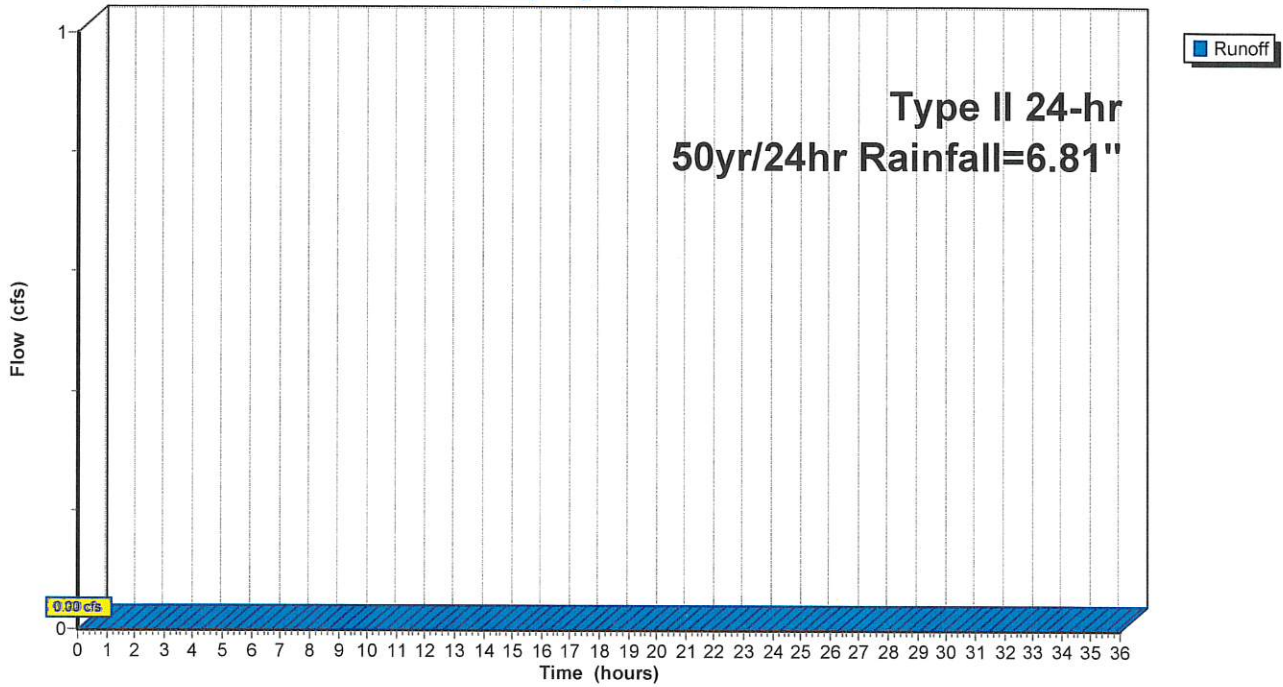
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 53

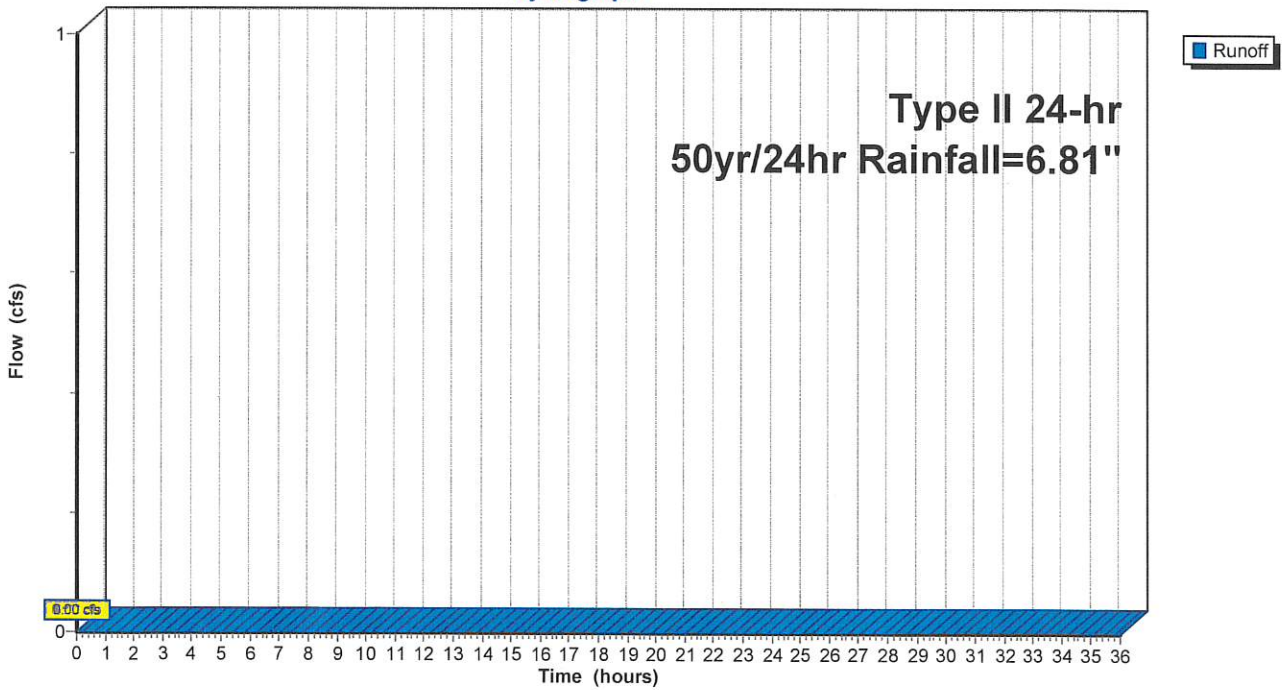
Subcatchment 5aS: To CB5

Hydrograph



Subcatchment 5bS: To CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

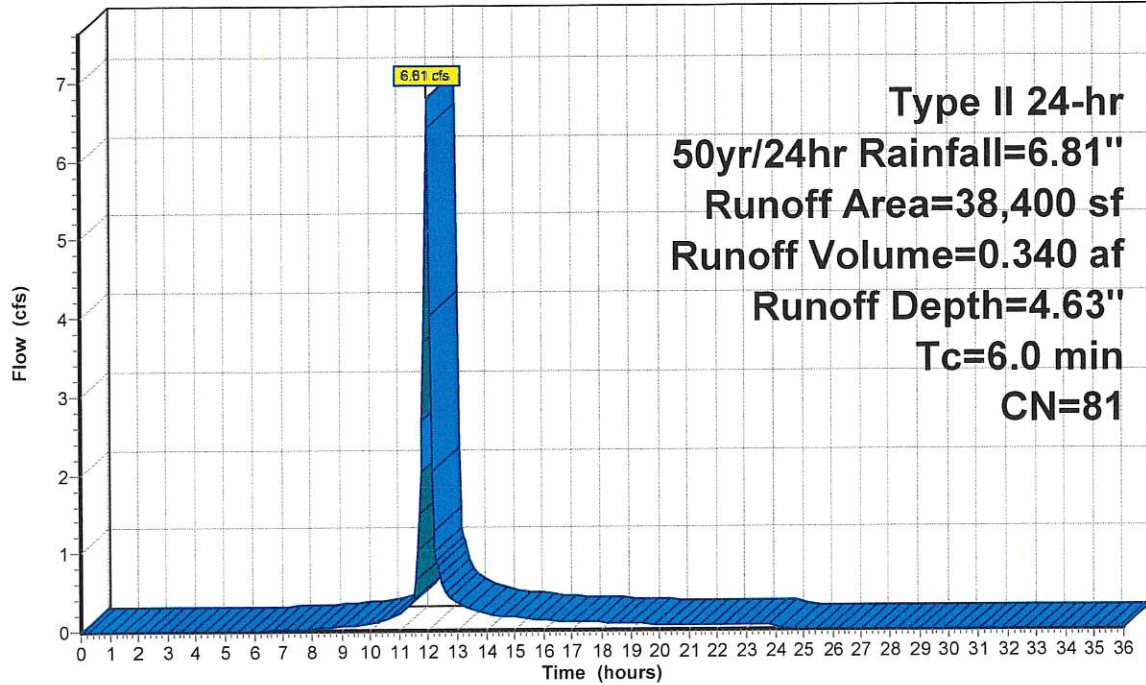
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 54

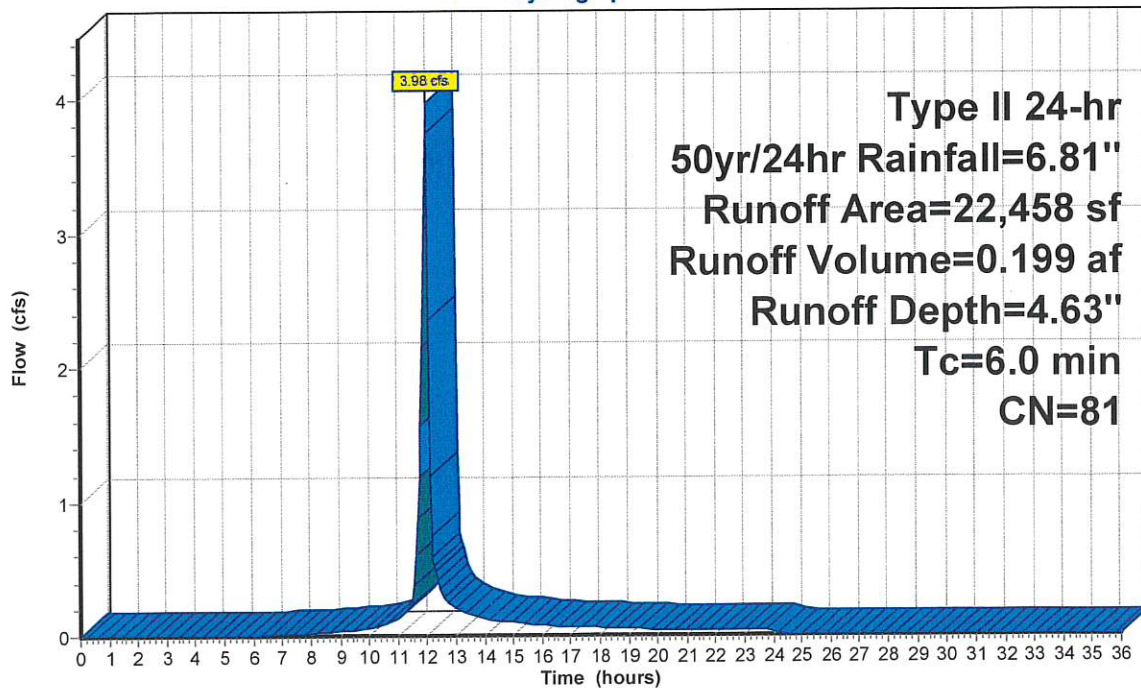
Subcatchment 5S: To CB5

Hydrograph



Subcatchment 6S: To CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

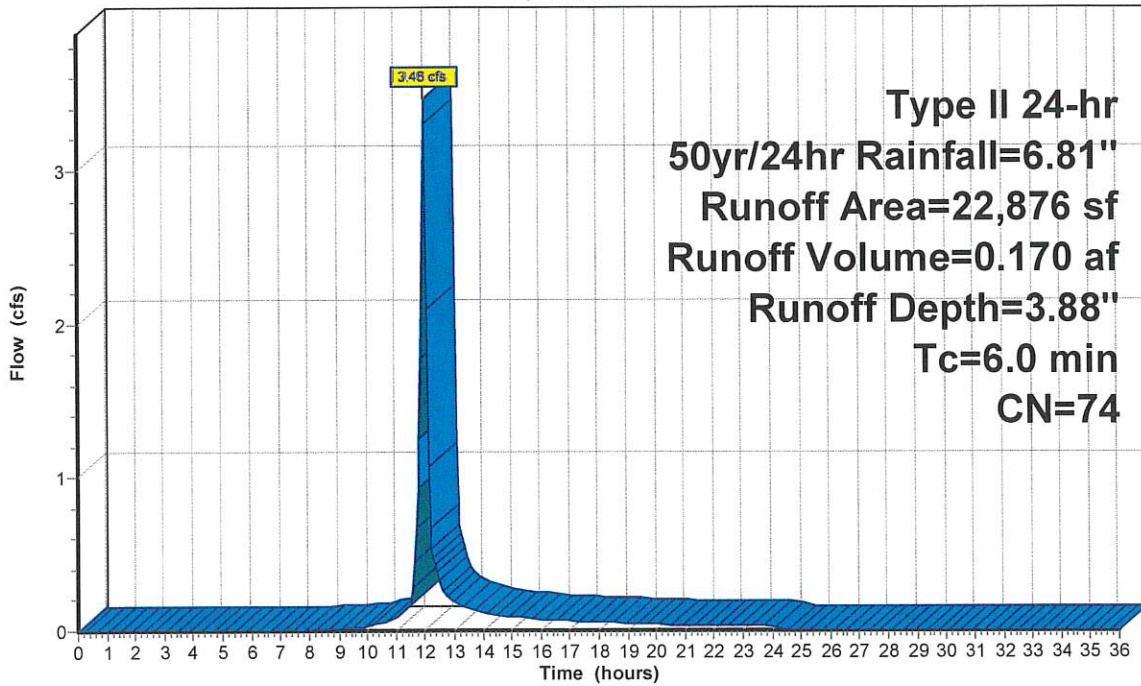
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 55

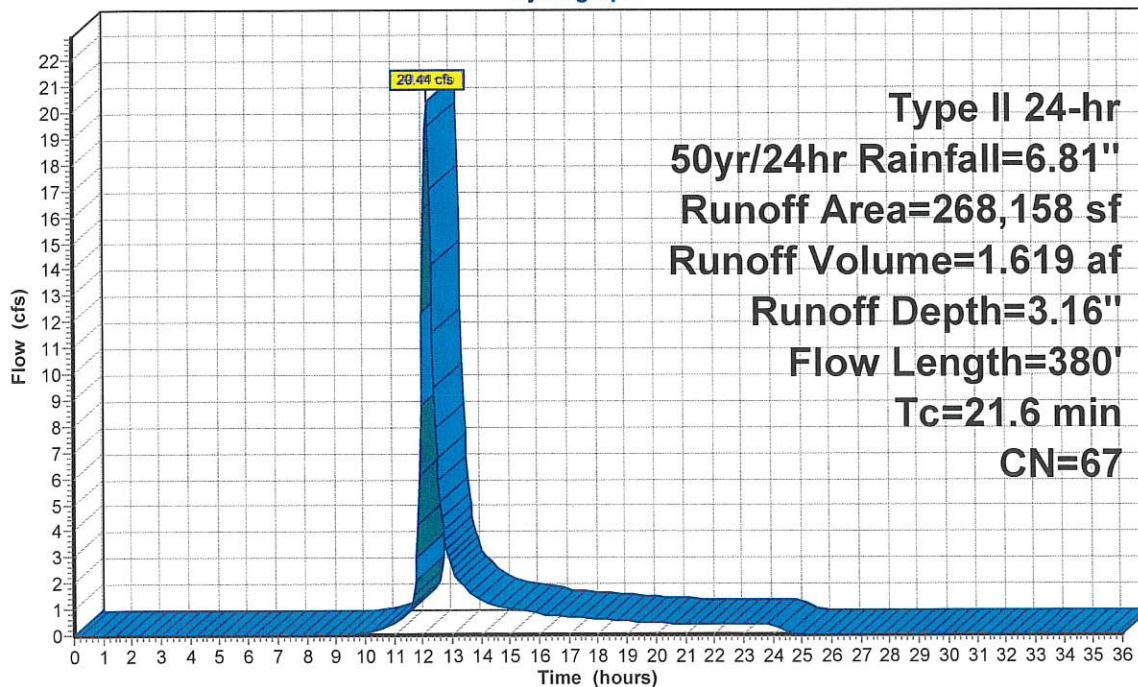
Subcatchment 7S: To Basin

Hydrograph



Subcatchment 8S: Bypassing

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

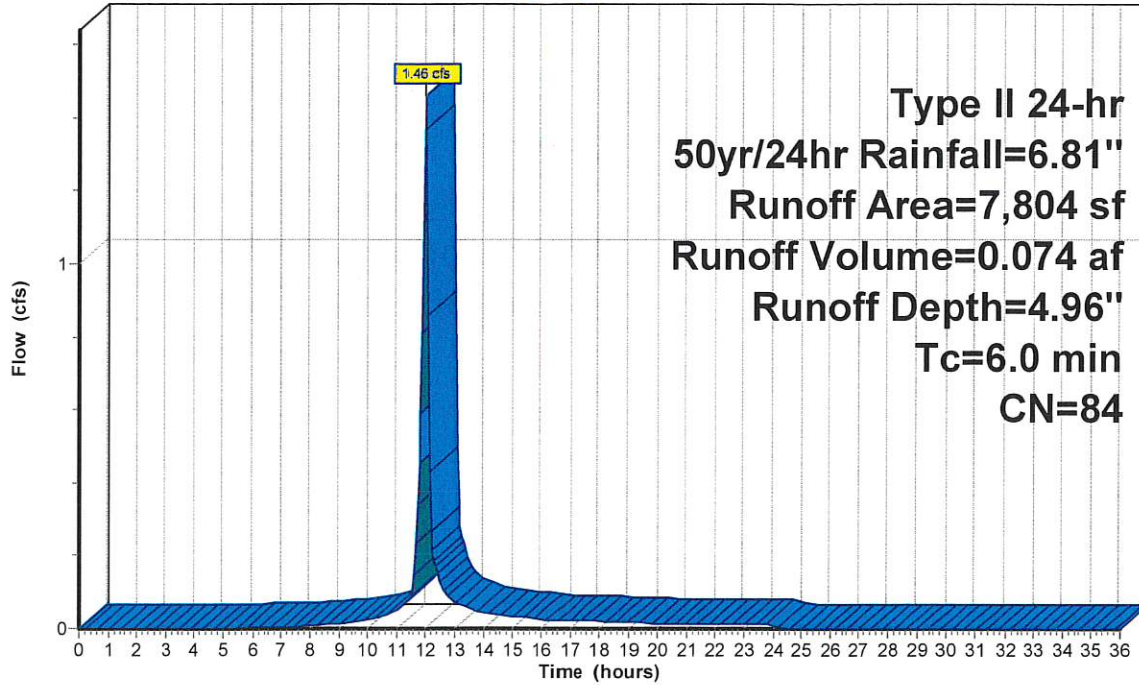
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 56

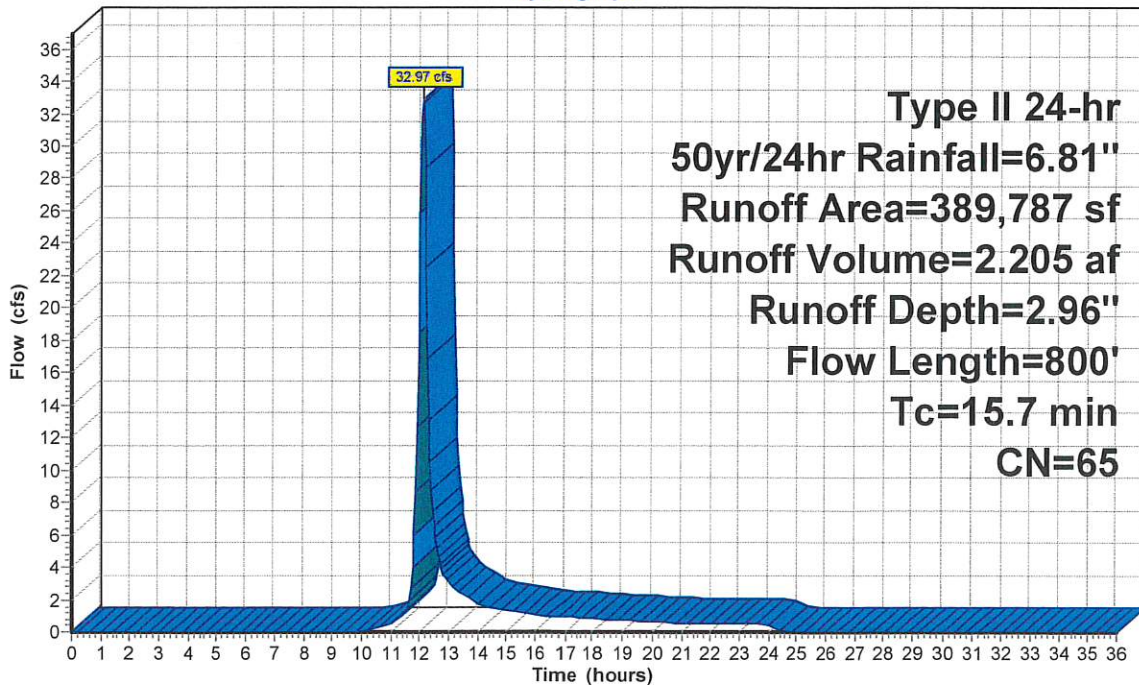
Subcatchment 9S: To Trench Drain

Hydrograph



Subcatchment 0S: To Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

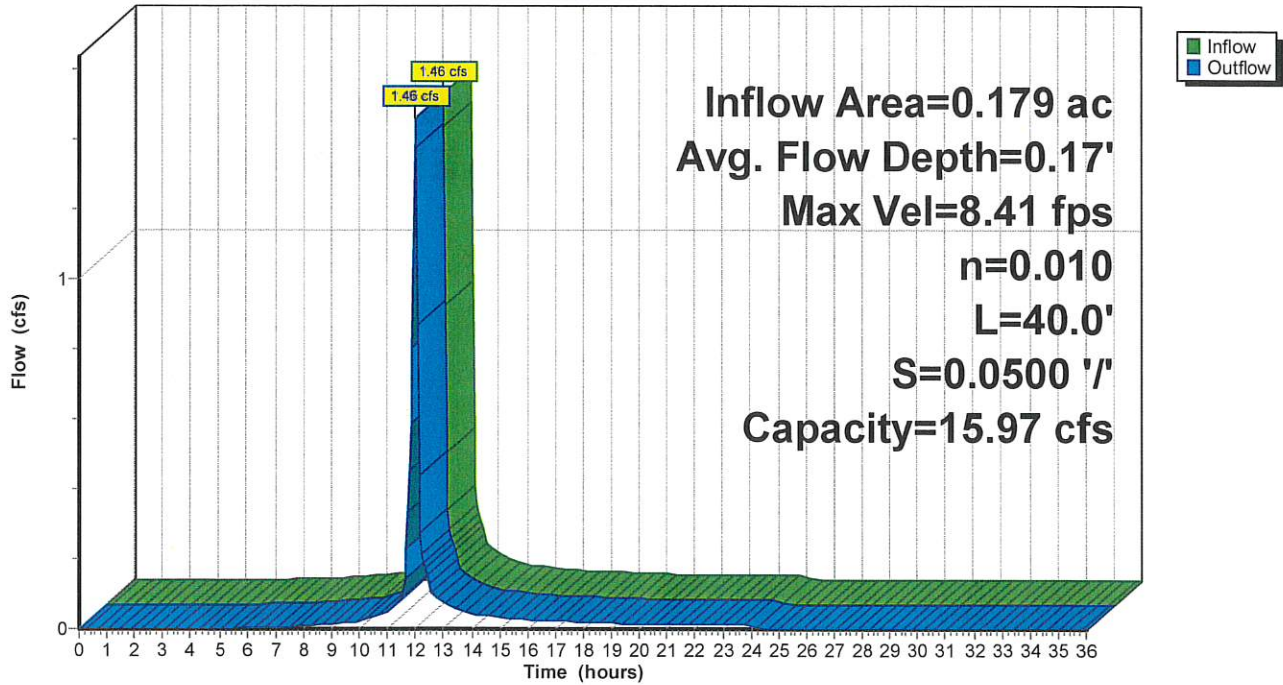
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 57

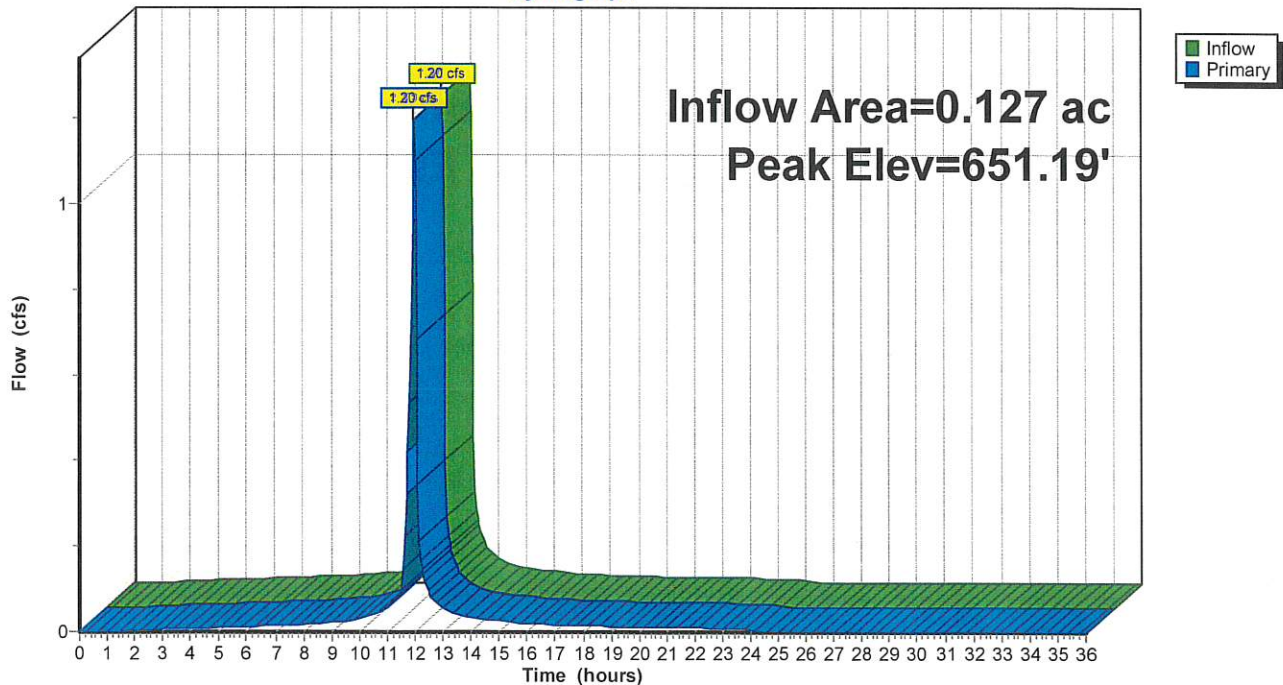
Reach 16R: Trench Drain

Hydrograph



Pond 9P: CB1

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

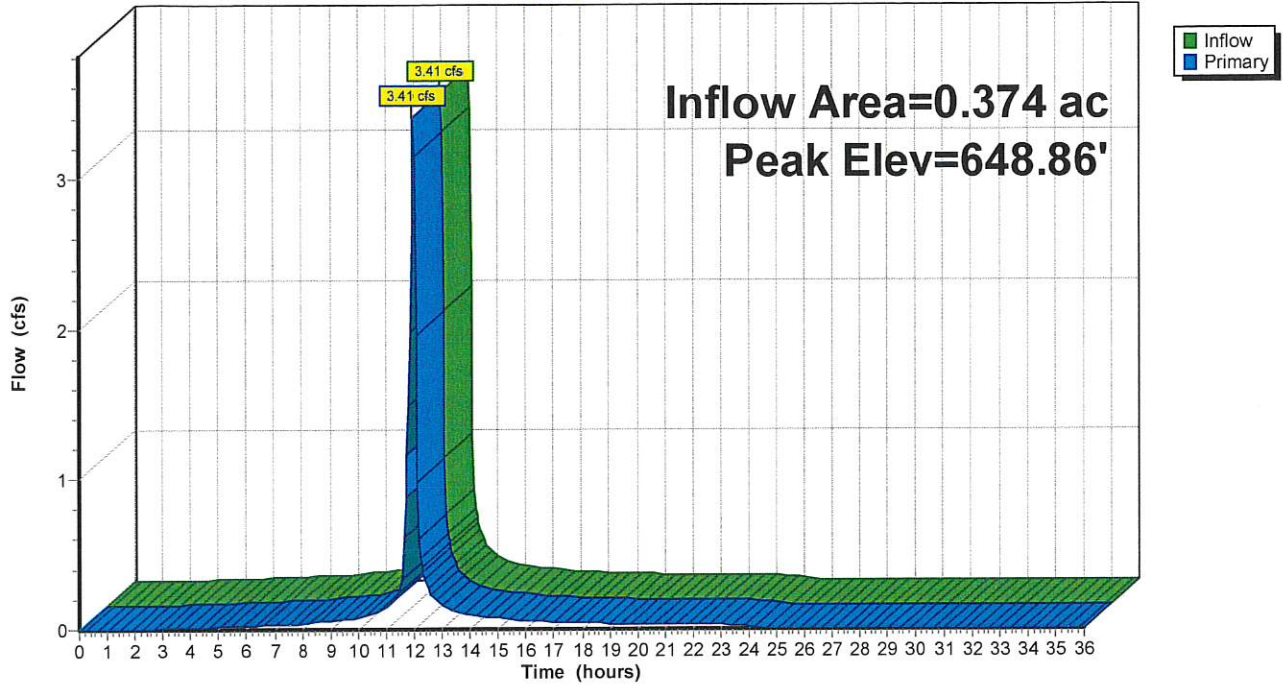
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 58

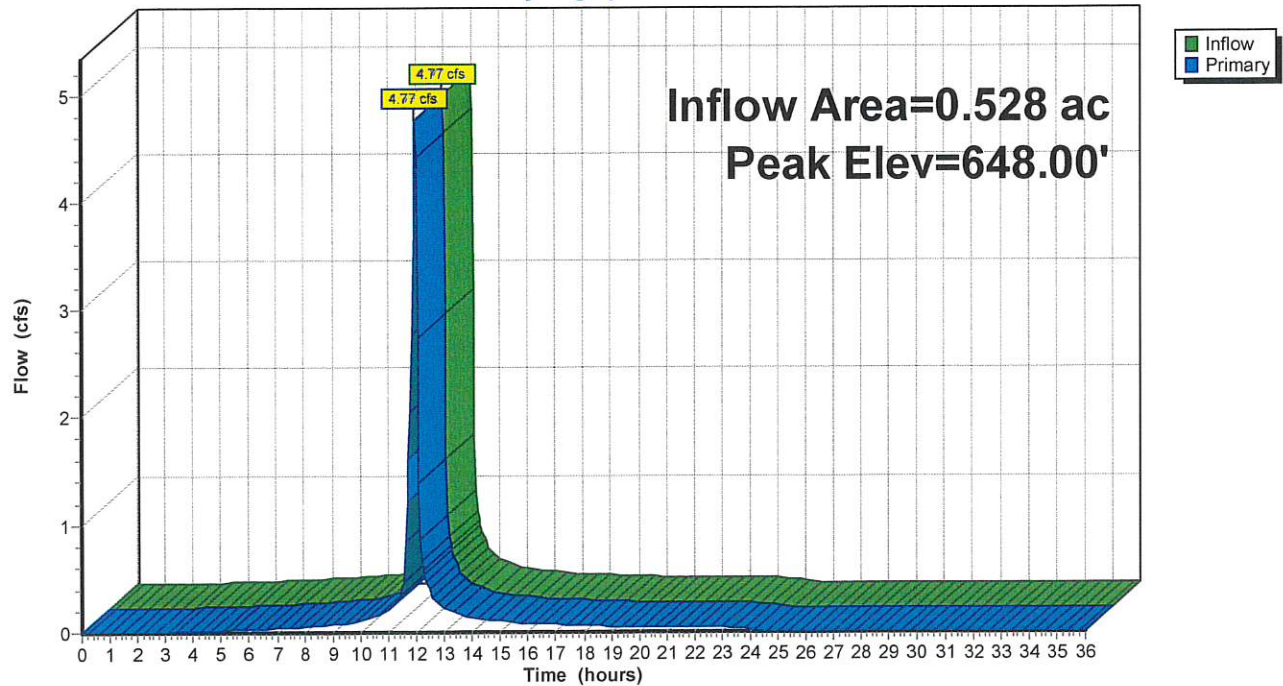
Pond 10P: CB2

Hydrograph



Pond 11P: CB3

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

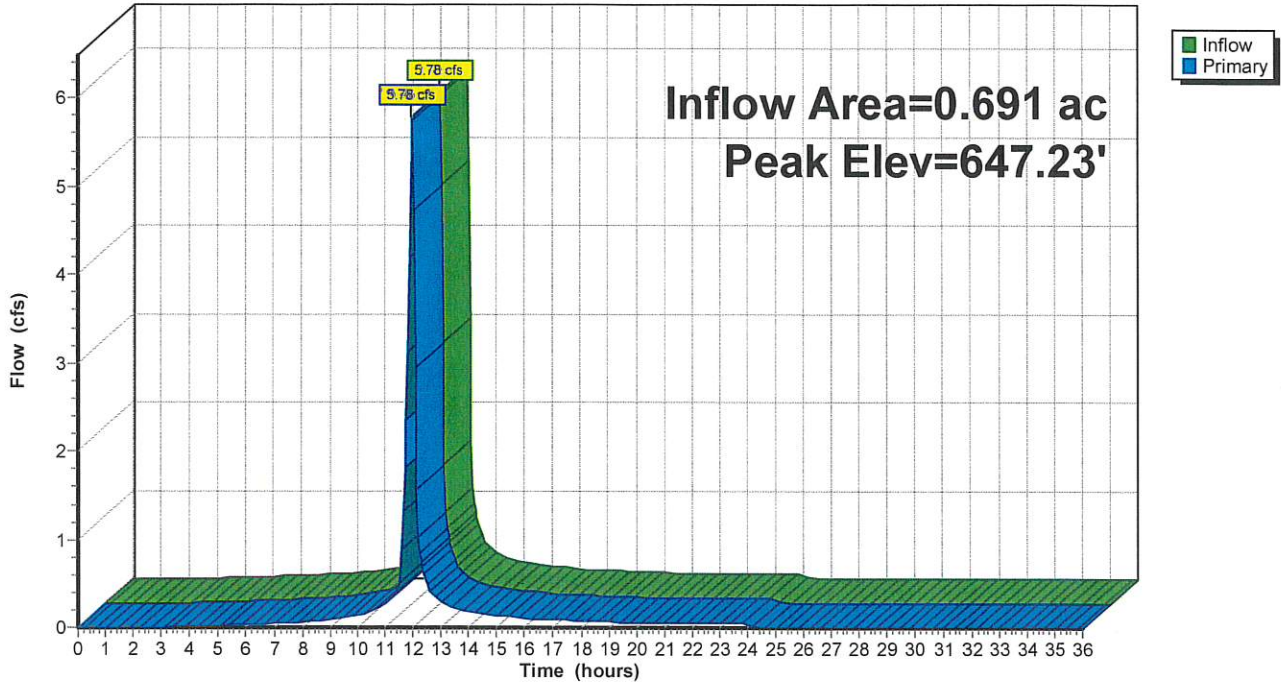
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 59

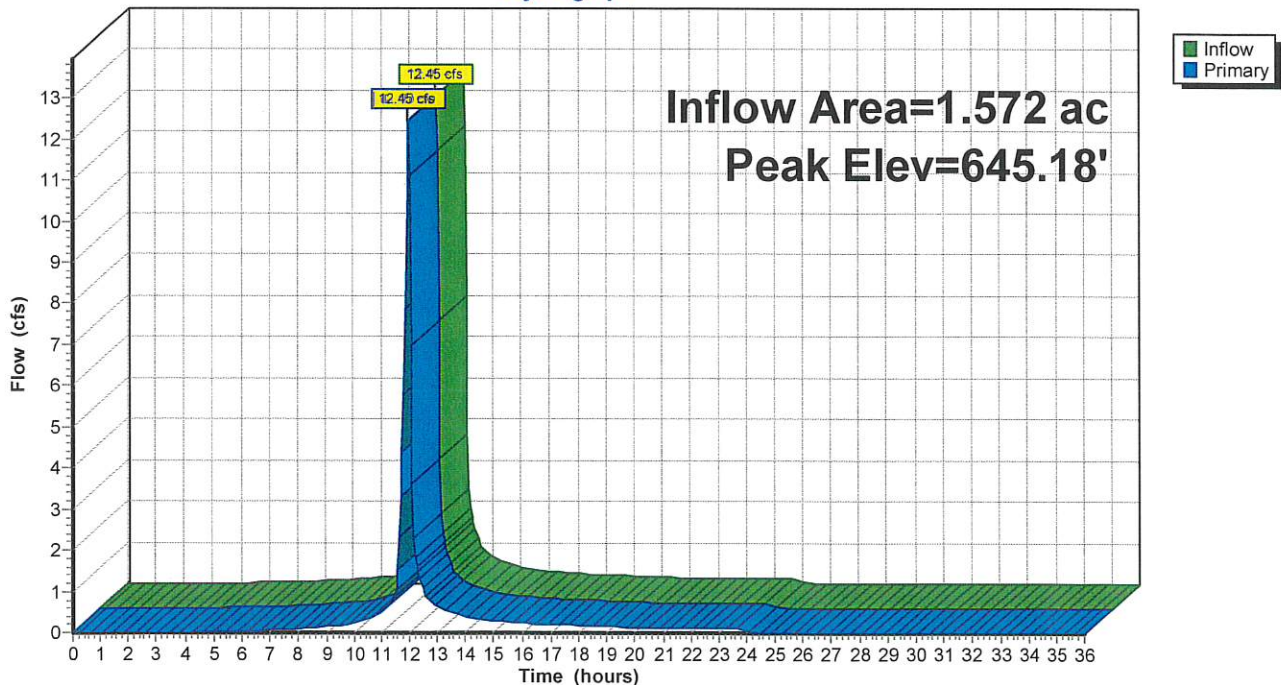
Pond 12P: CB4

Hydrograph



Pond 13aP: CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

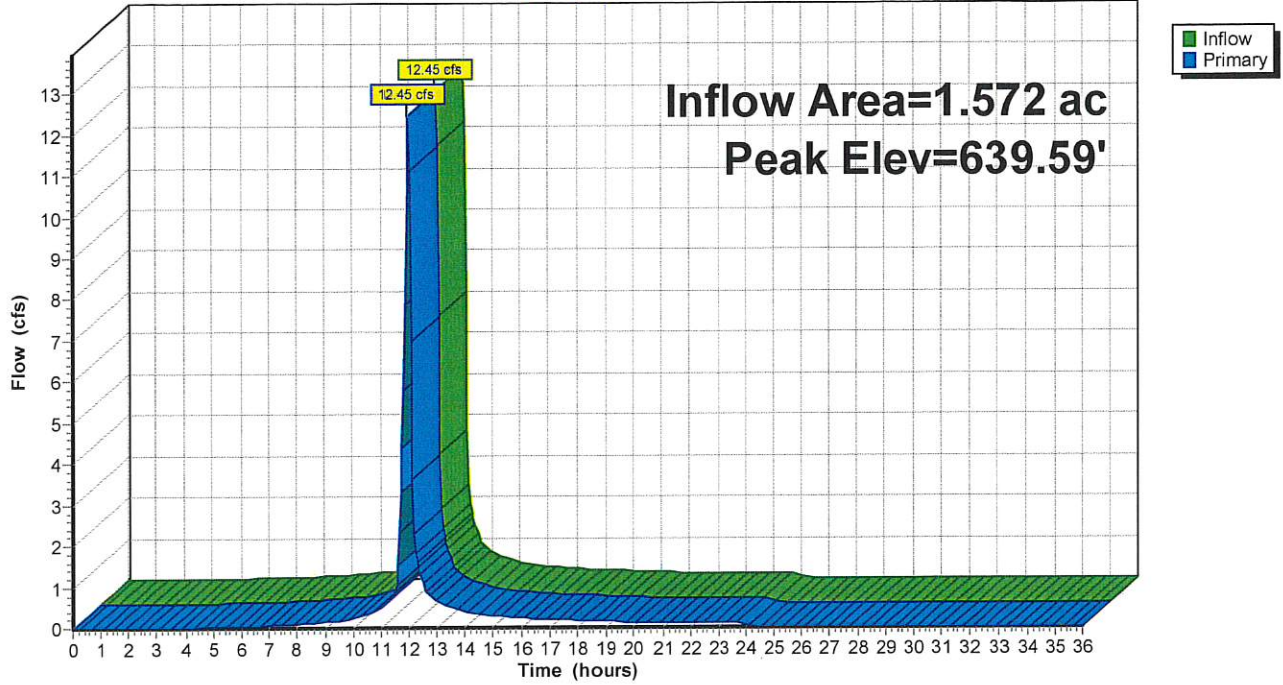
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 60

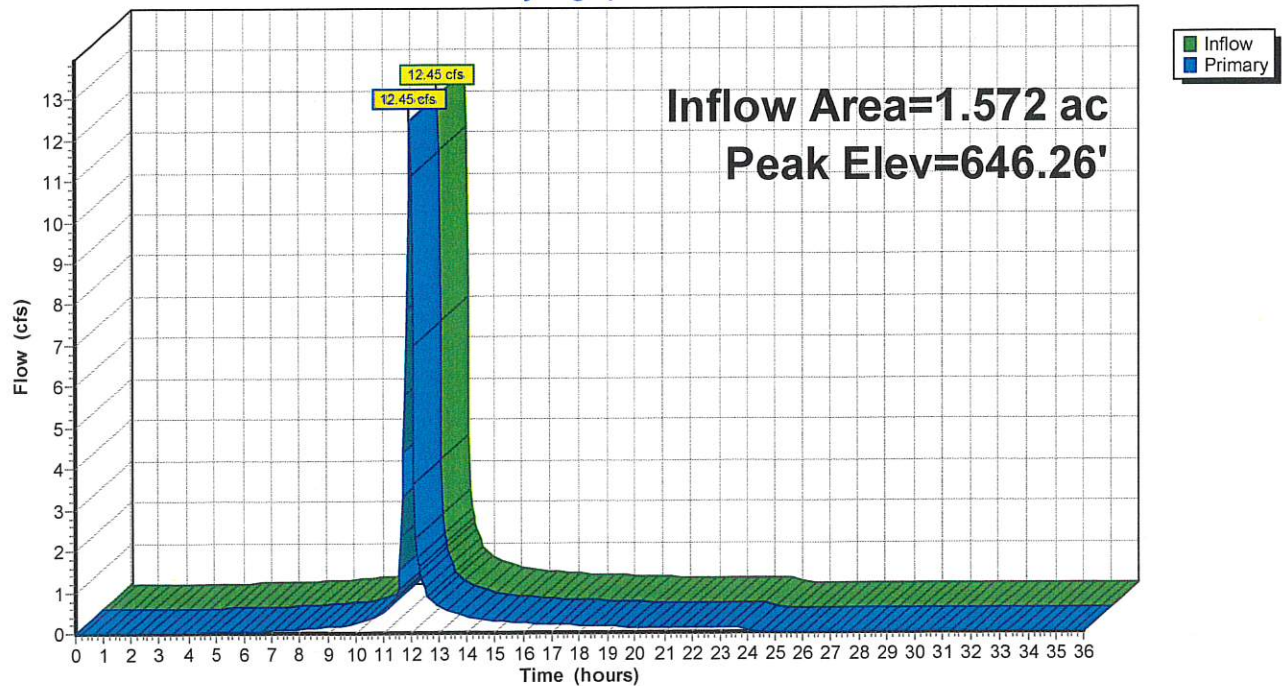
Pond 13bP: CB7

Hydrograph



Pond 13P: CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

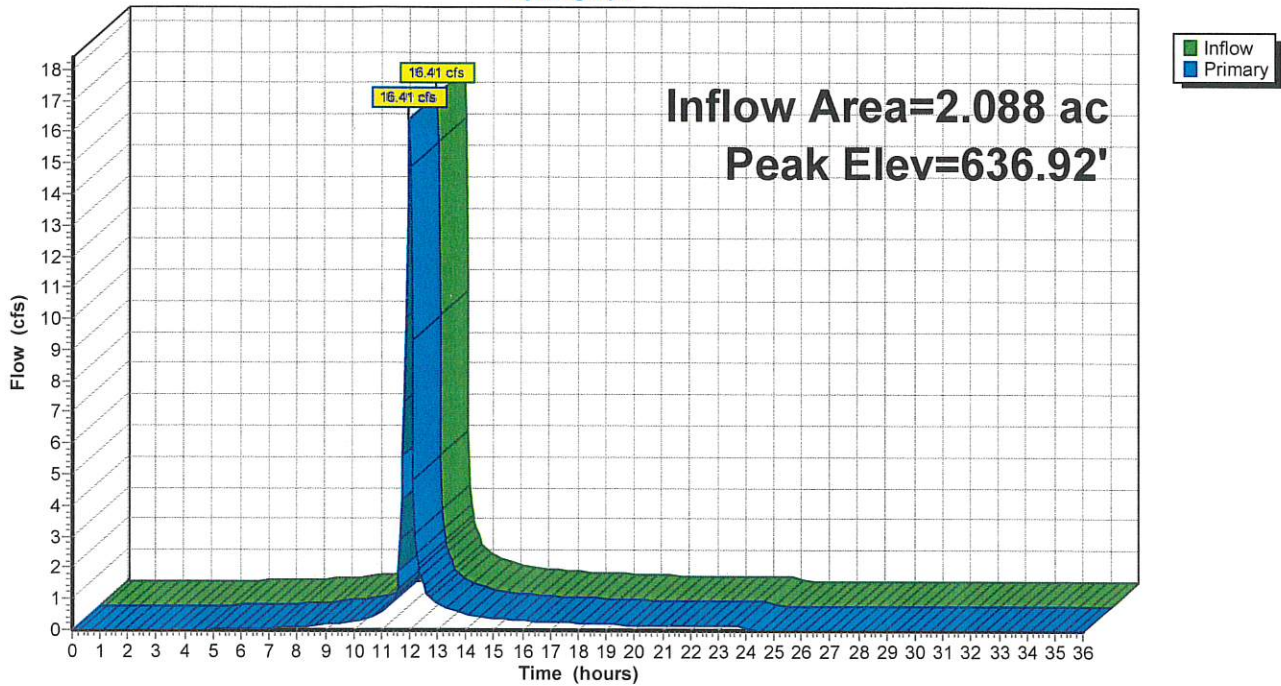
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 61

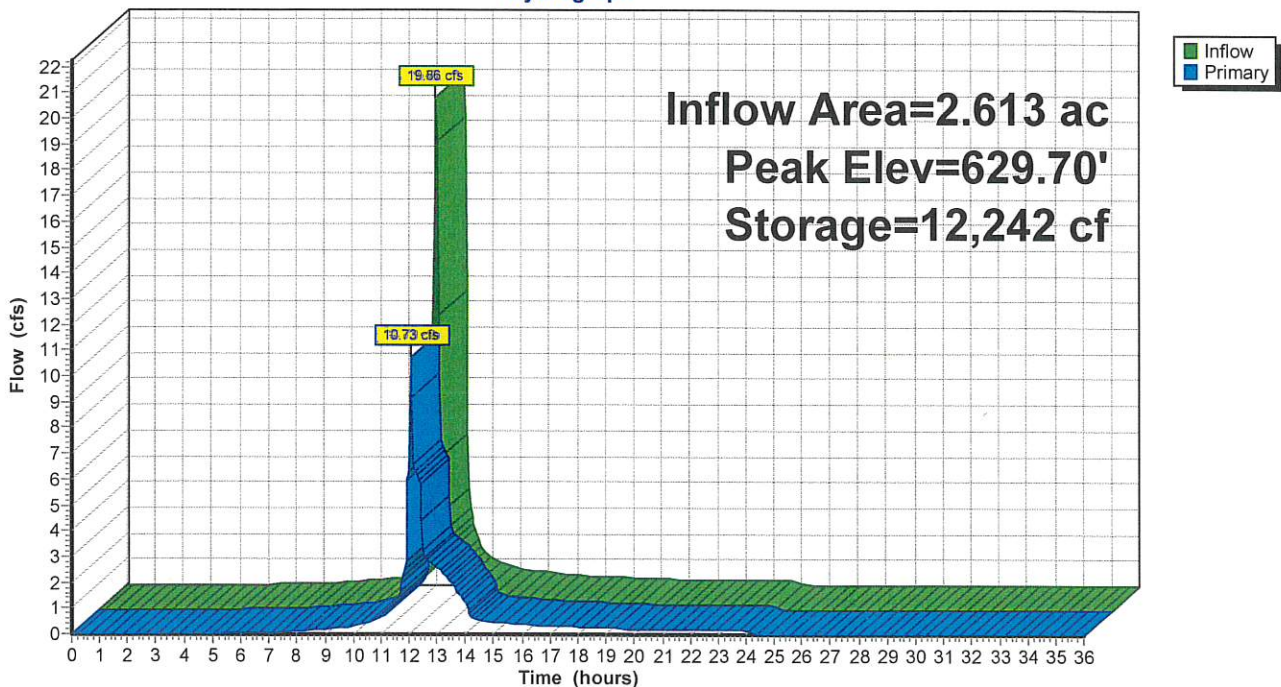
Pond 14P: CB8

Hydrograph



Pond 15P: Detention Basin

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

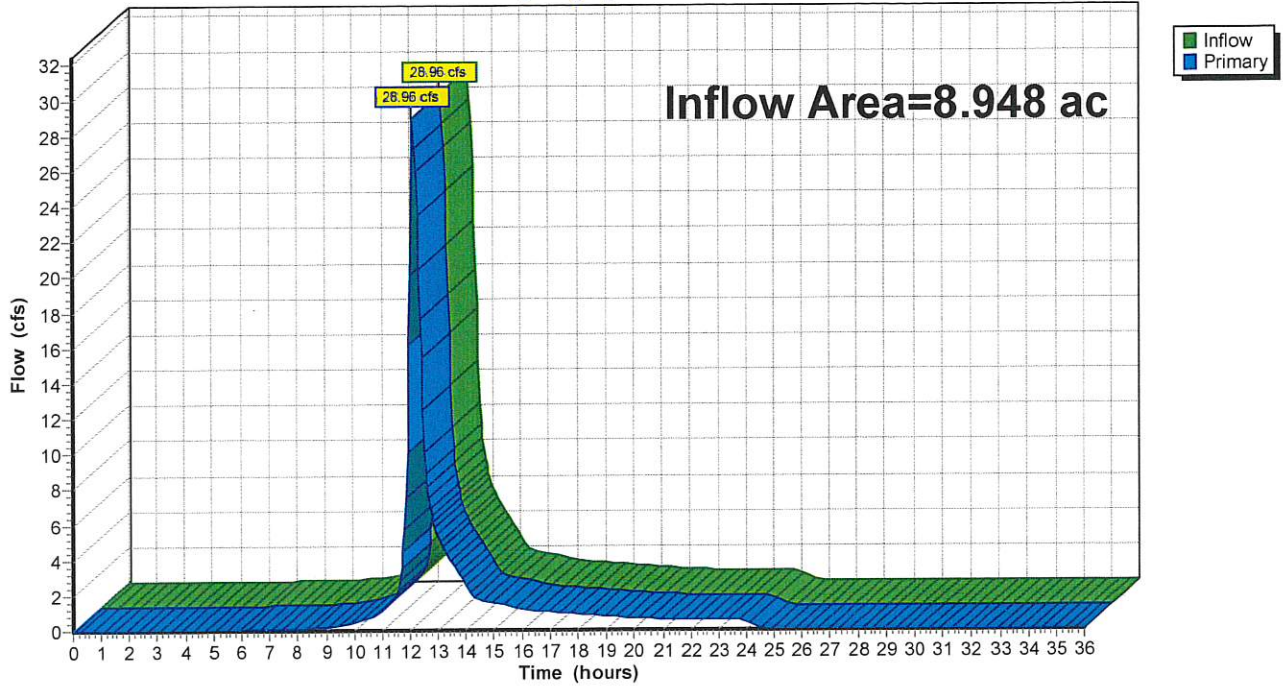
Brookhollow Senior Apartments
Type II 24-hr 50yr/24hr Rainfall=6.81"

Printed 9/13/2023

Page 62

Link 16L: Site Outfall

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

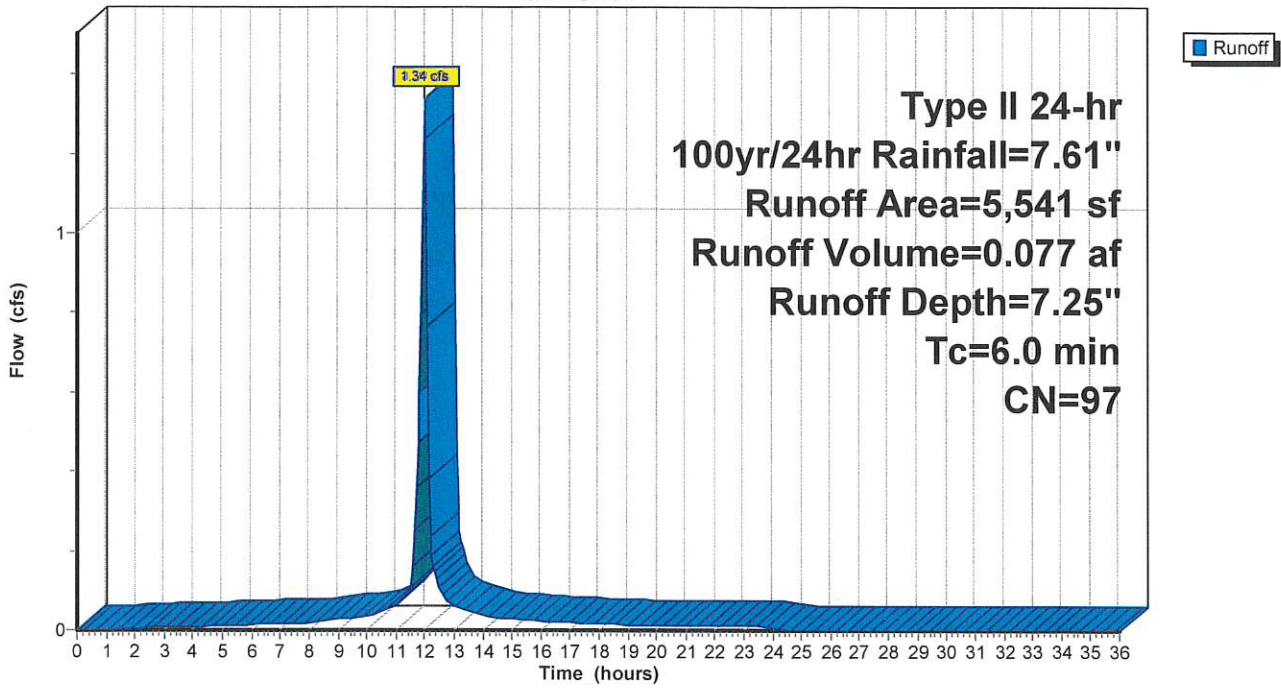
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 63

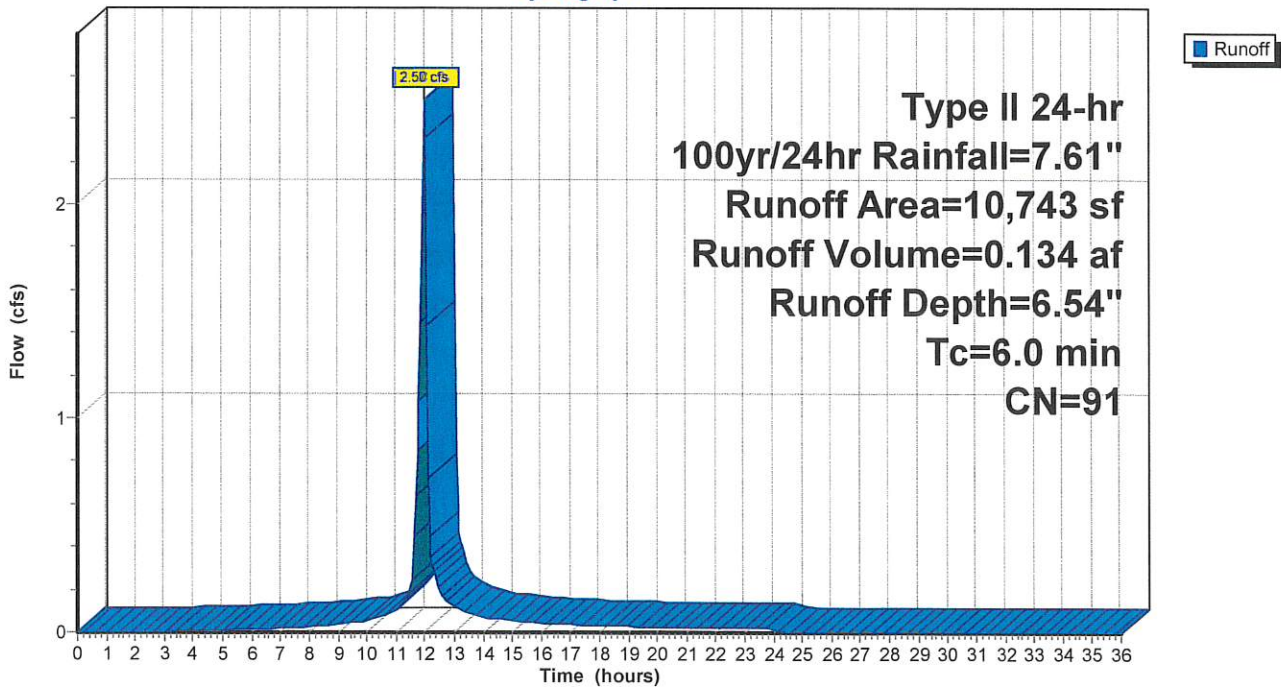
Subcatchment 1S: To CB1

Hydrograph



Subcatchment 2S: To CB2

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

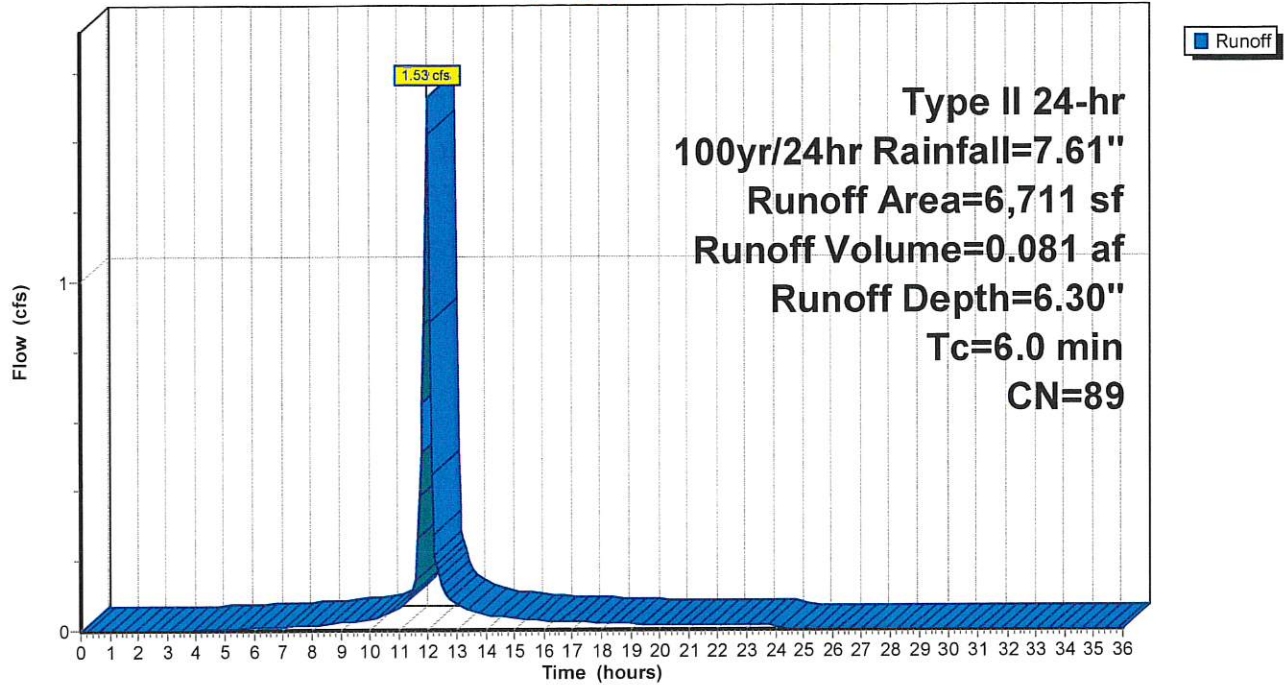
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 64

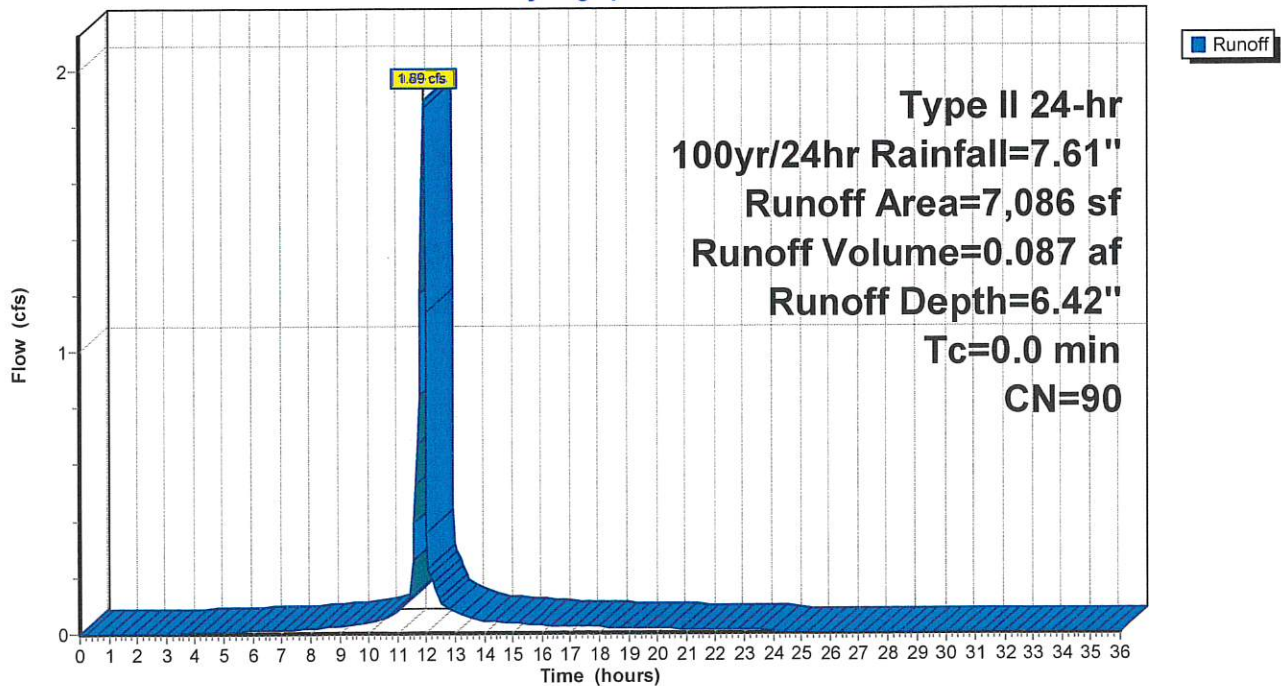
Subcatchment 3S: To CB3

Hydrograph



Subcatchment 4S: To CB4

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

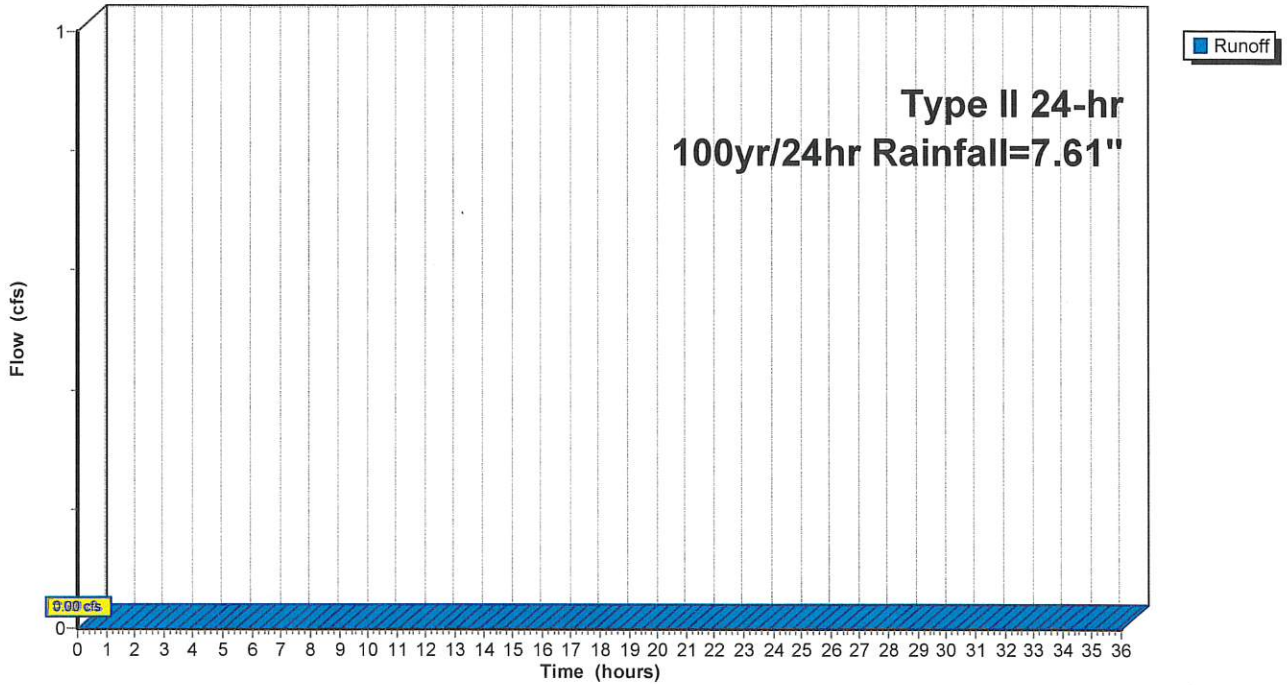
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 65

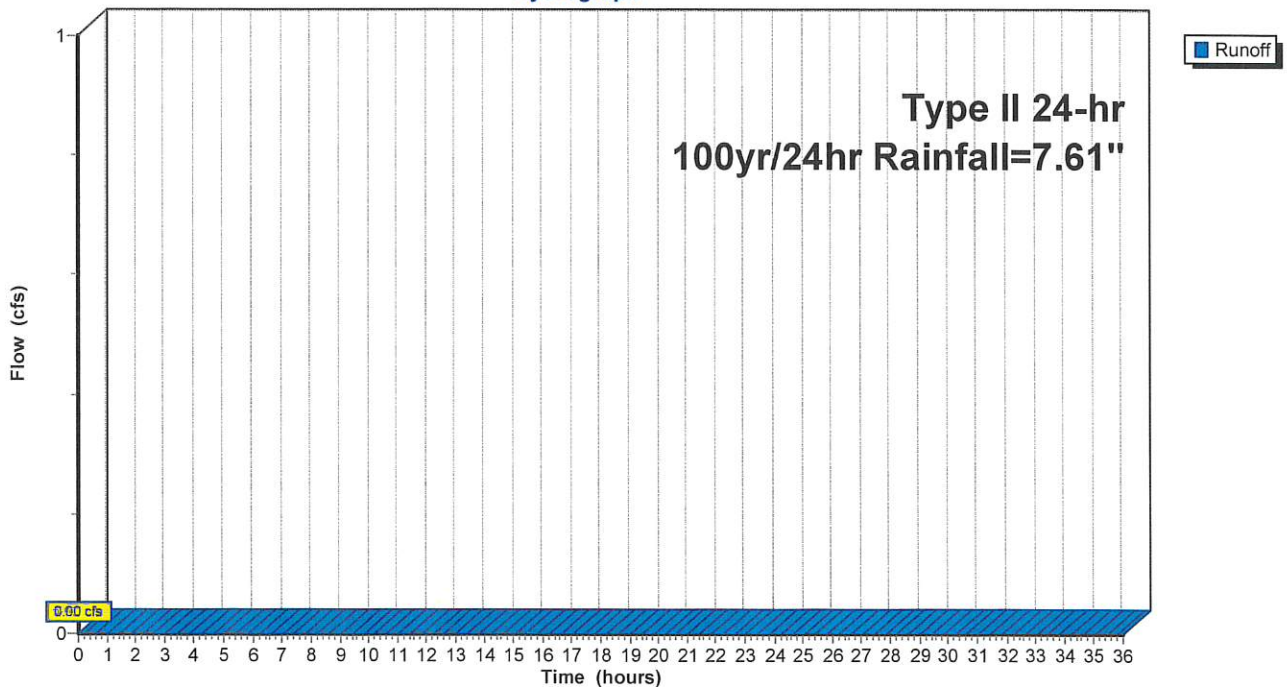
Subcatchment 5aS: To CB5

Hydrograph



Subcatchment 5bS: To CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

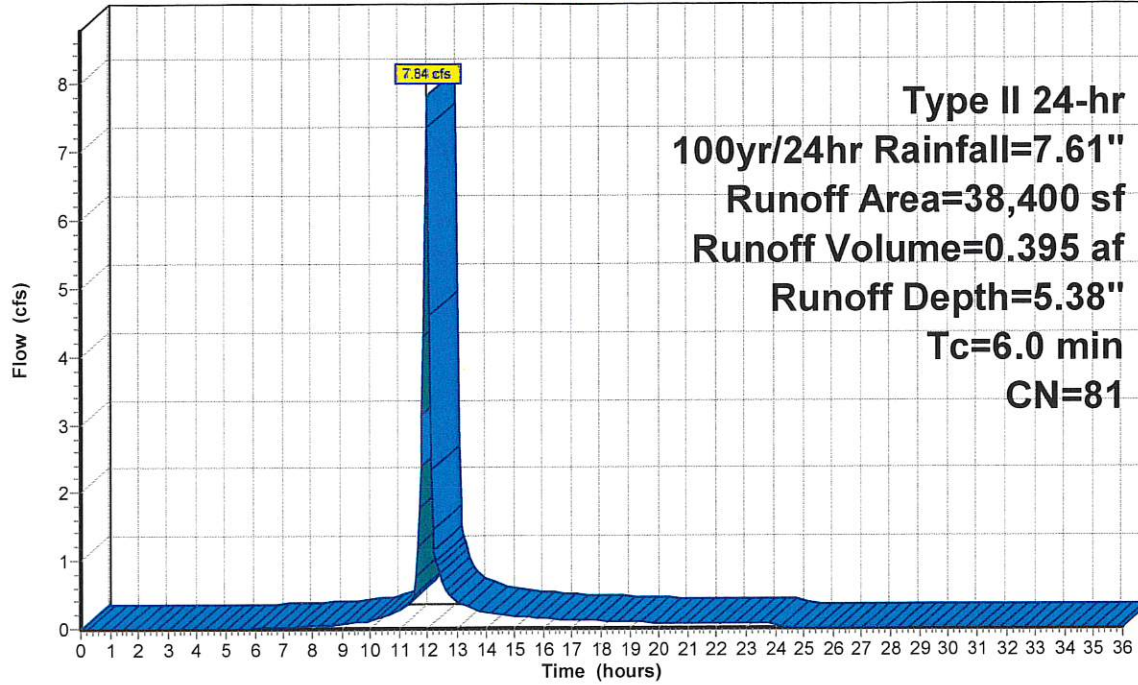
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 66

Subcatchment 5S: To CB5

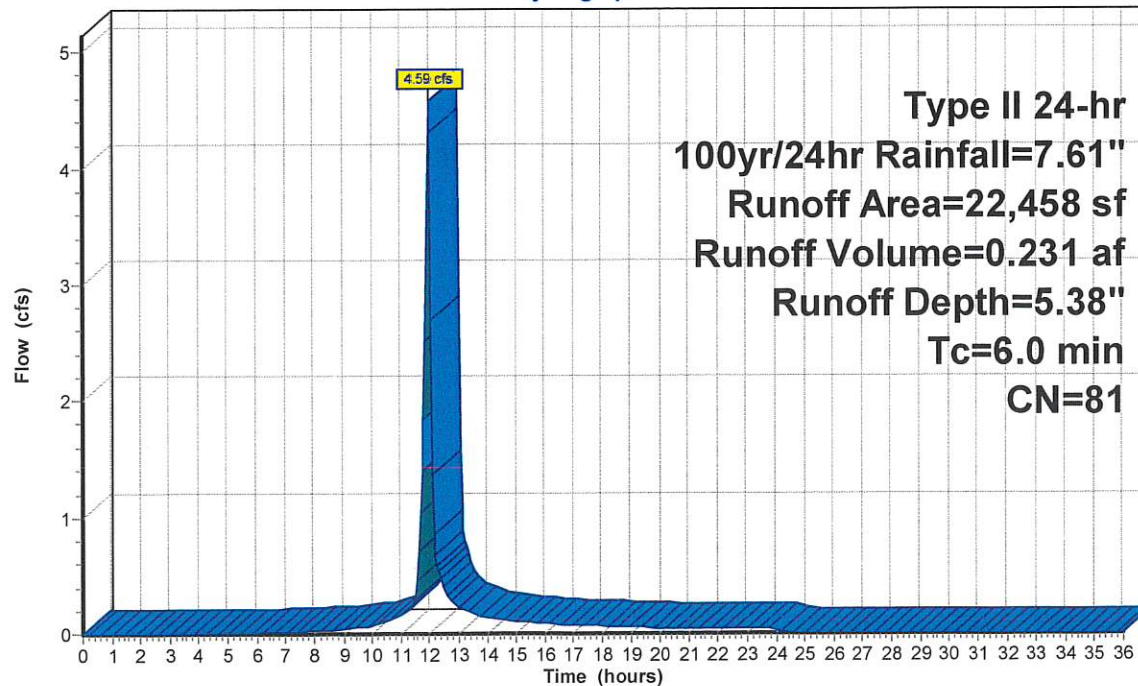
Hydrograph



Runoff

Subcatchment 6S: To CB6

Hydrograph



Runoff

Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

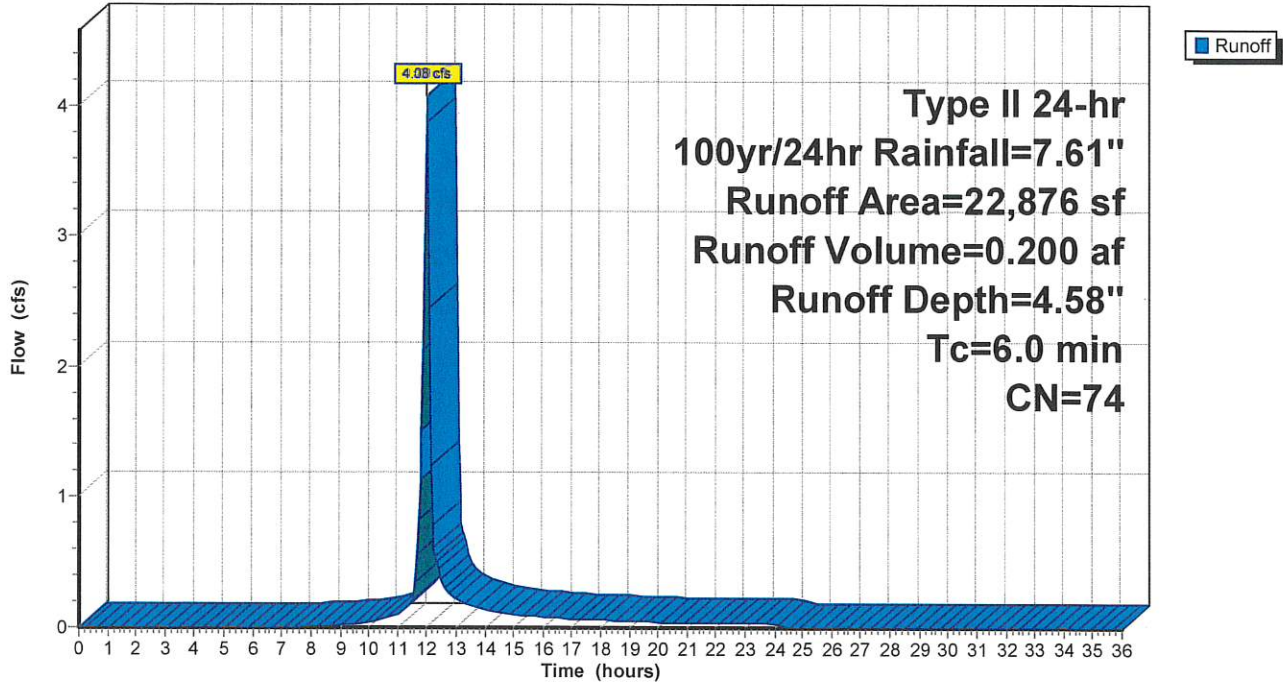
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 67

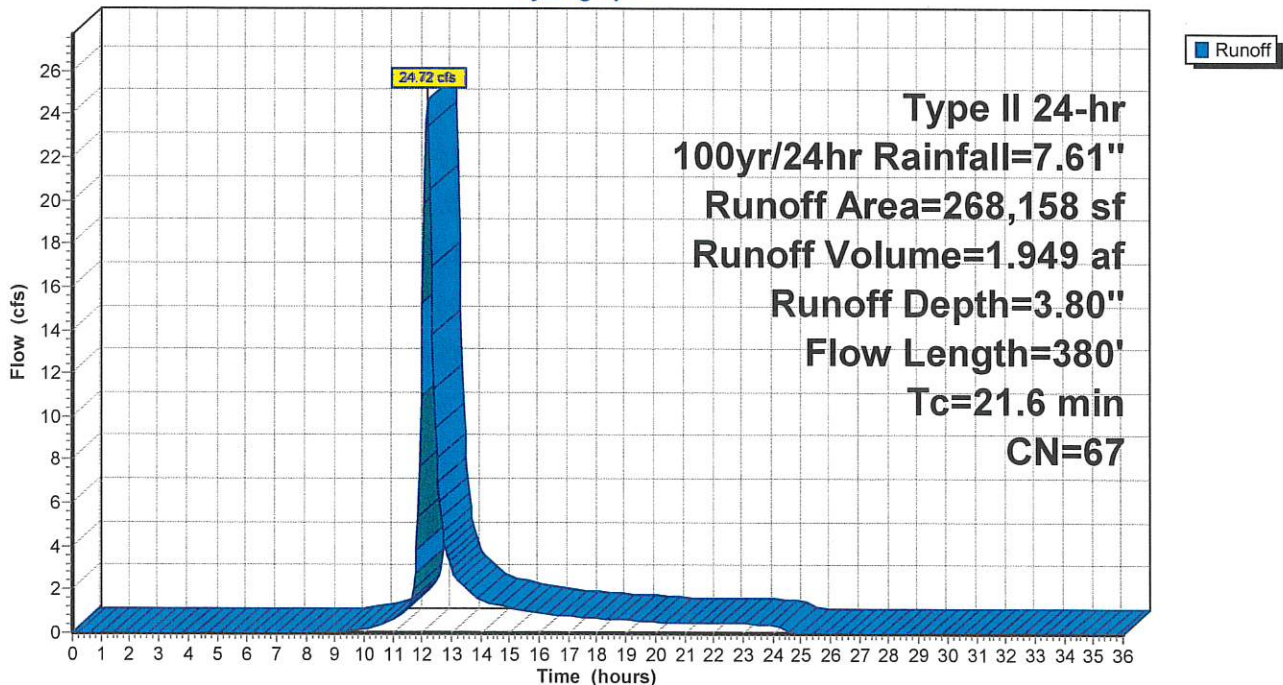
Subcatchment 7S: To Basin

Hydrograph



Subcatchment 8S: Bypassing

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

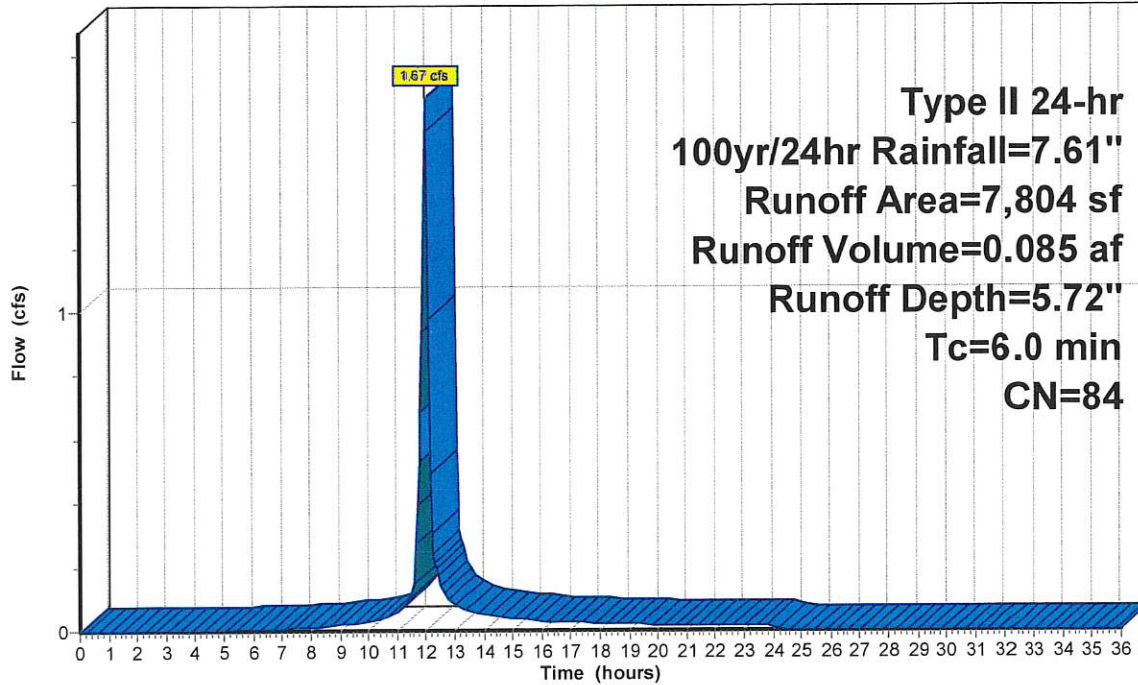
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 68

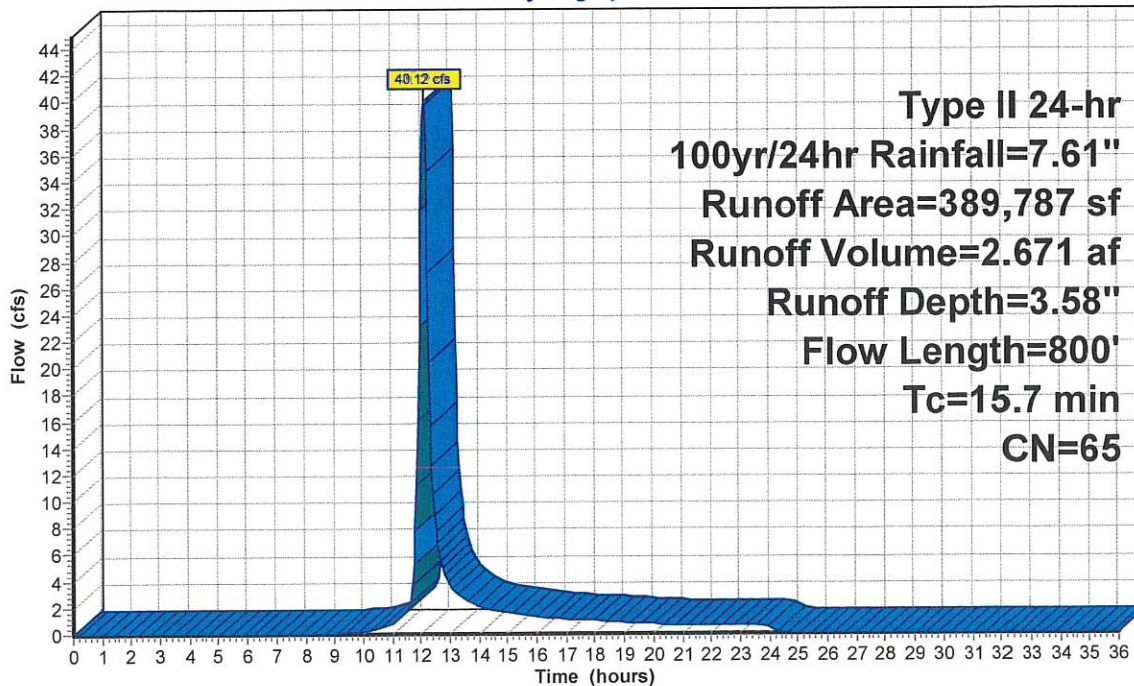
Subcatchment 9S: To Trench Drain

Hydrograph



Subcatchment OS: To Outfall

Hydrograph



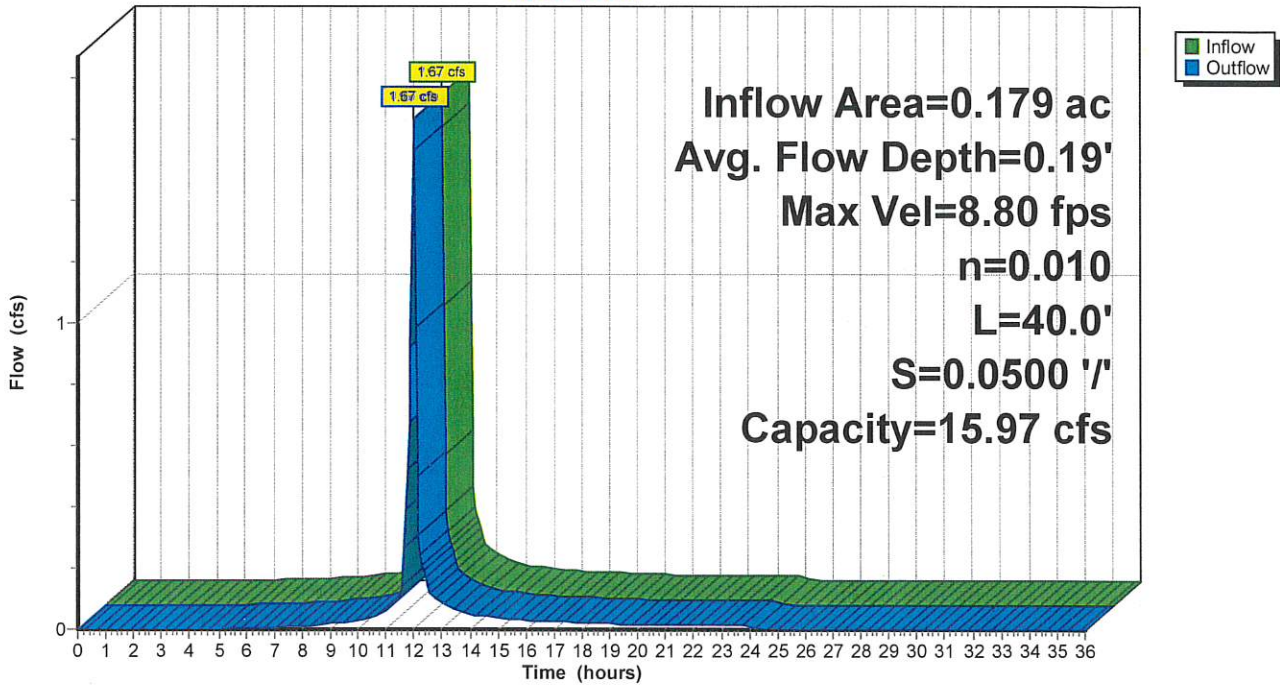
Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

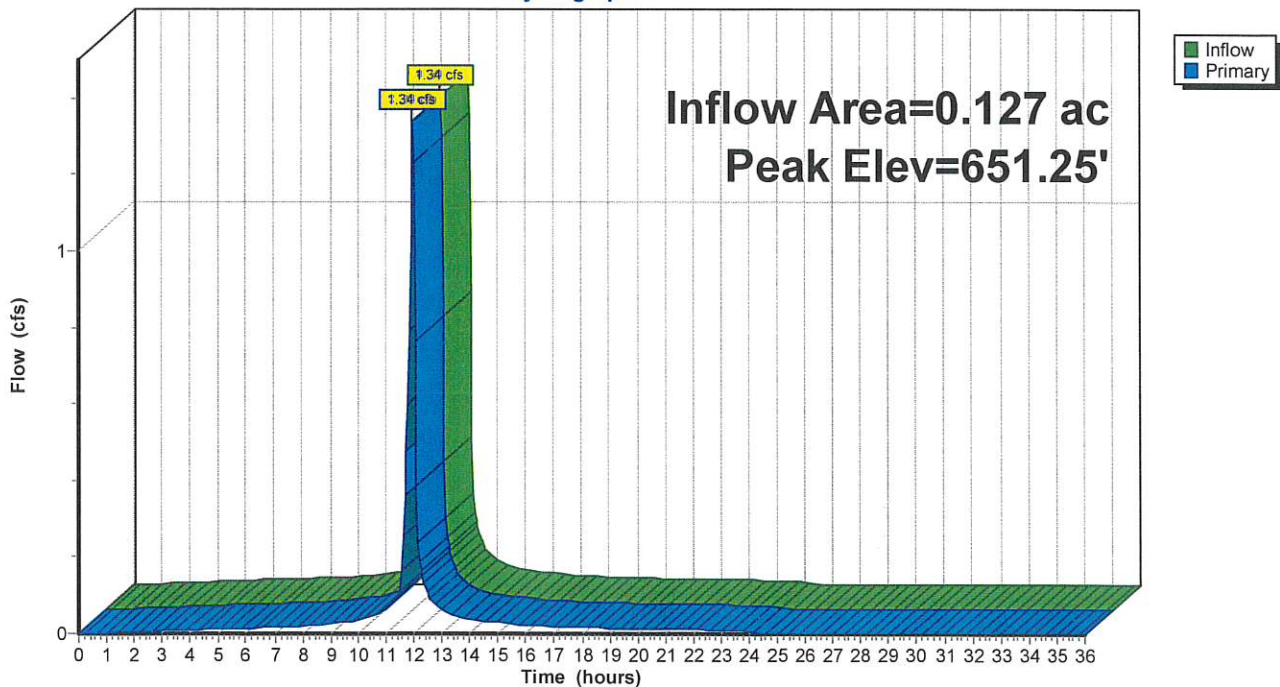
Reach 16R: Trench Drain

Hydrograph



Pond 9P: CB1

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

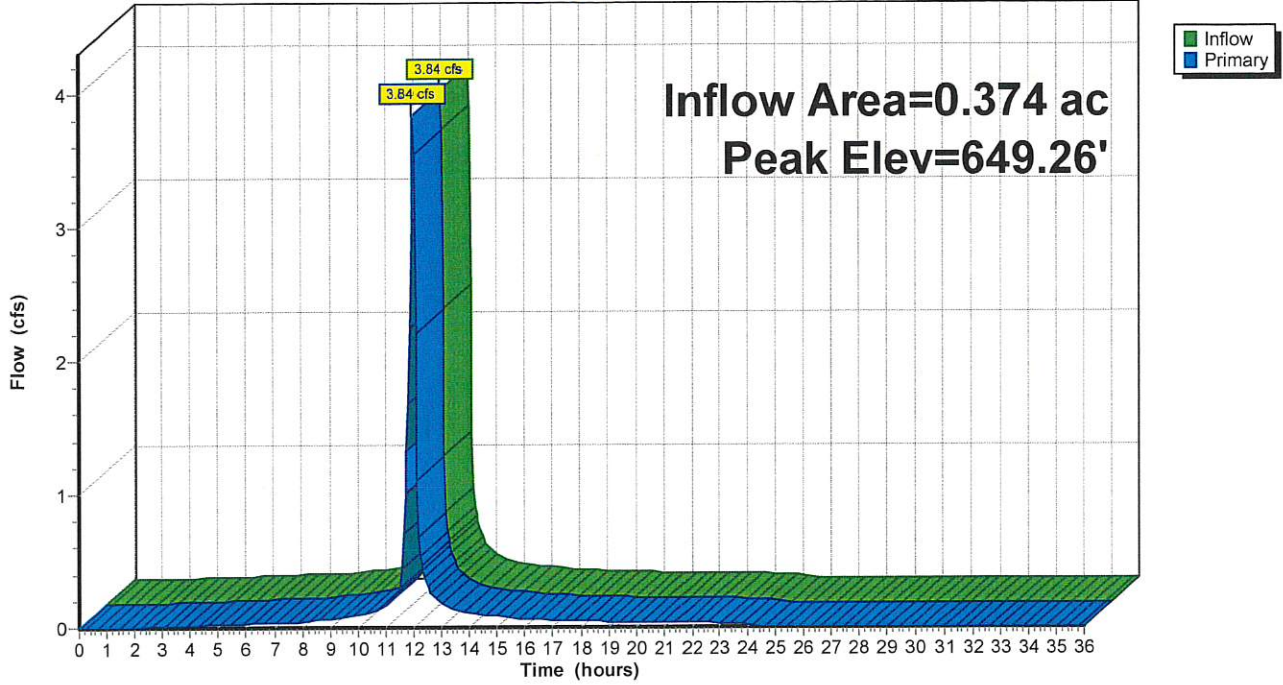
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 70

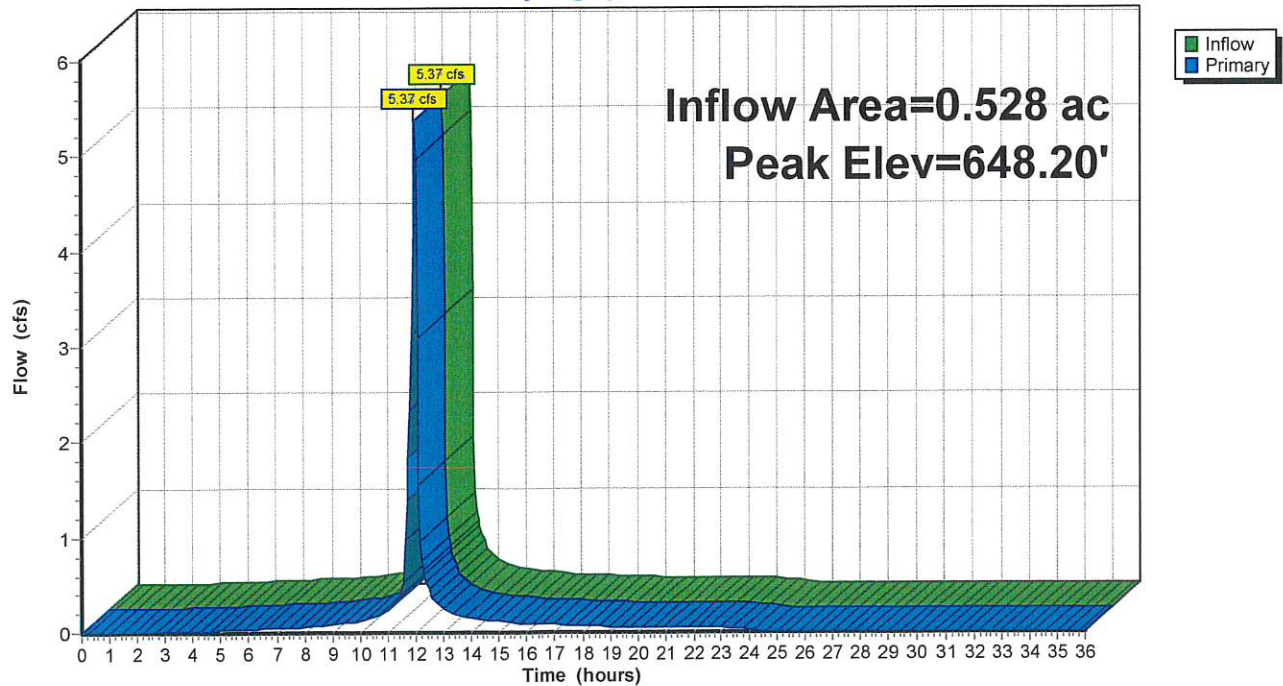
Pond 10P: CB2

Hydrograph



Pond 11P: CB3

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

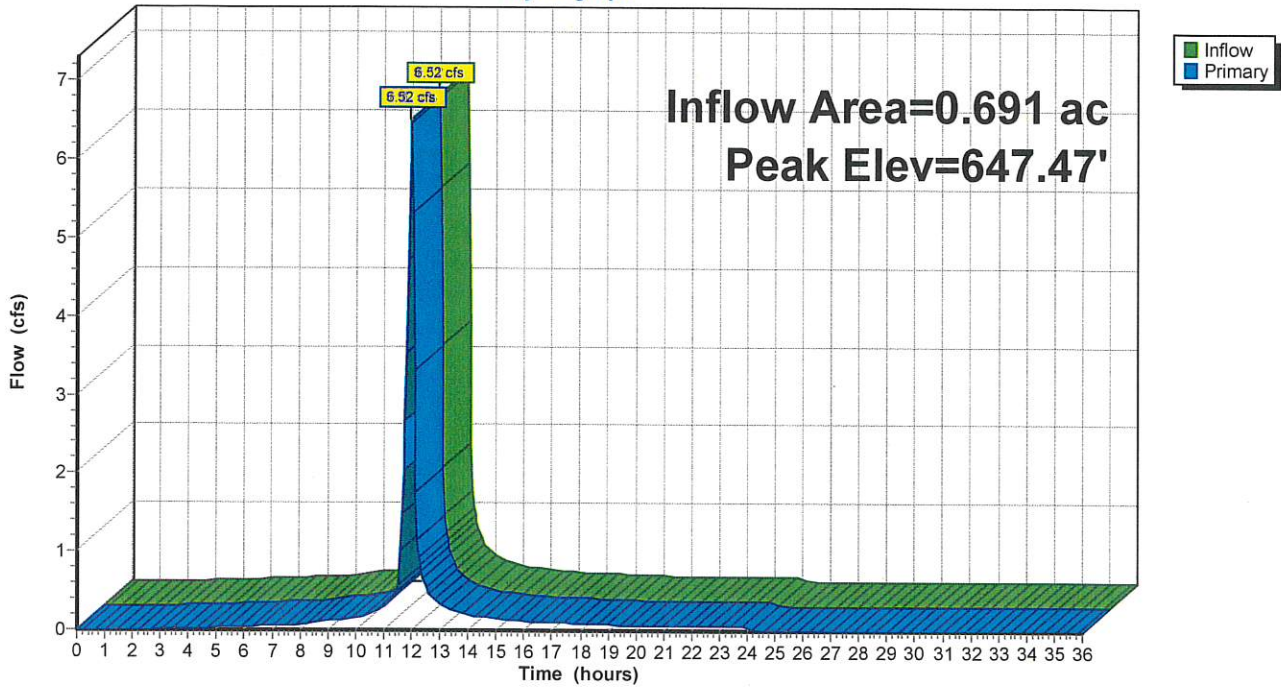
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 71

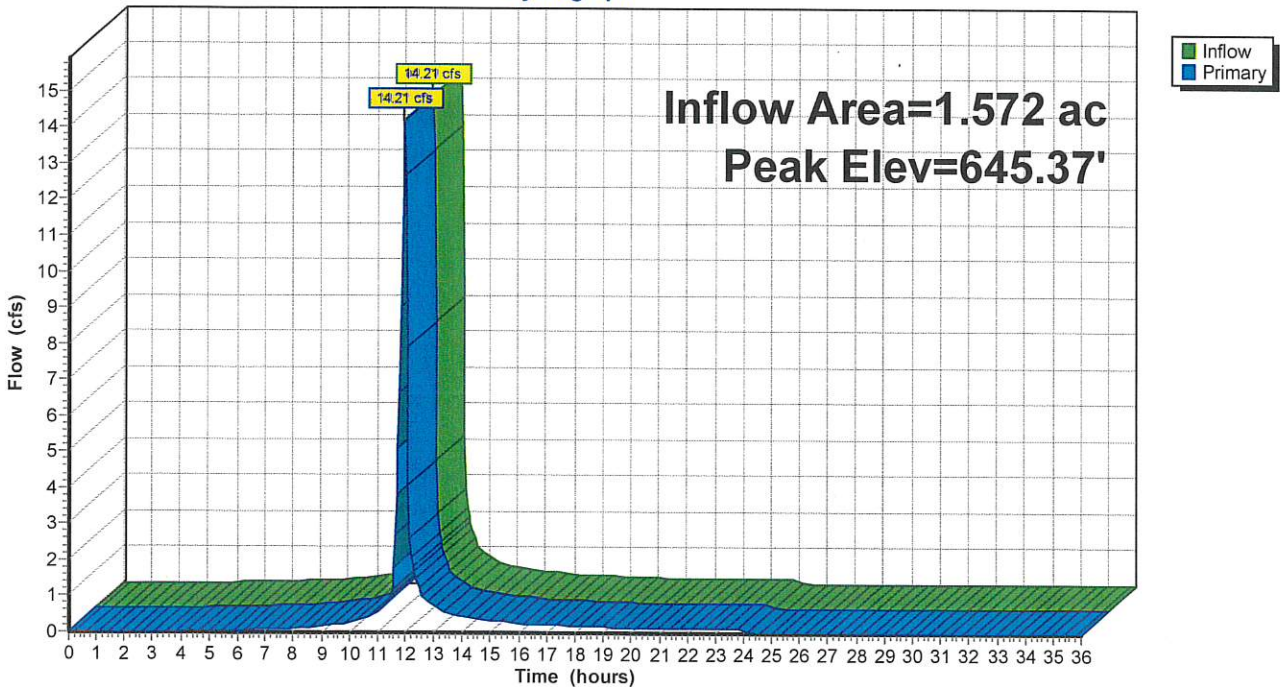
Pond 12P: CB4

Hydrograph



Pond 13aP: CB6

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

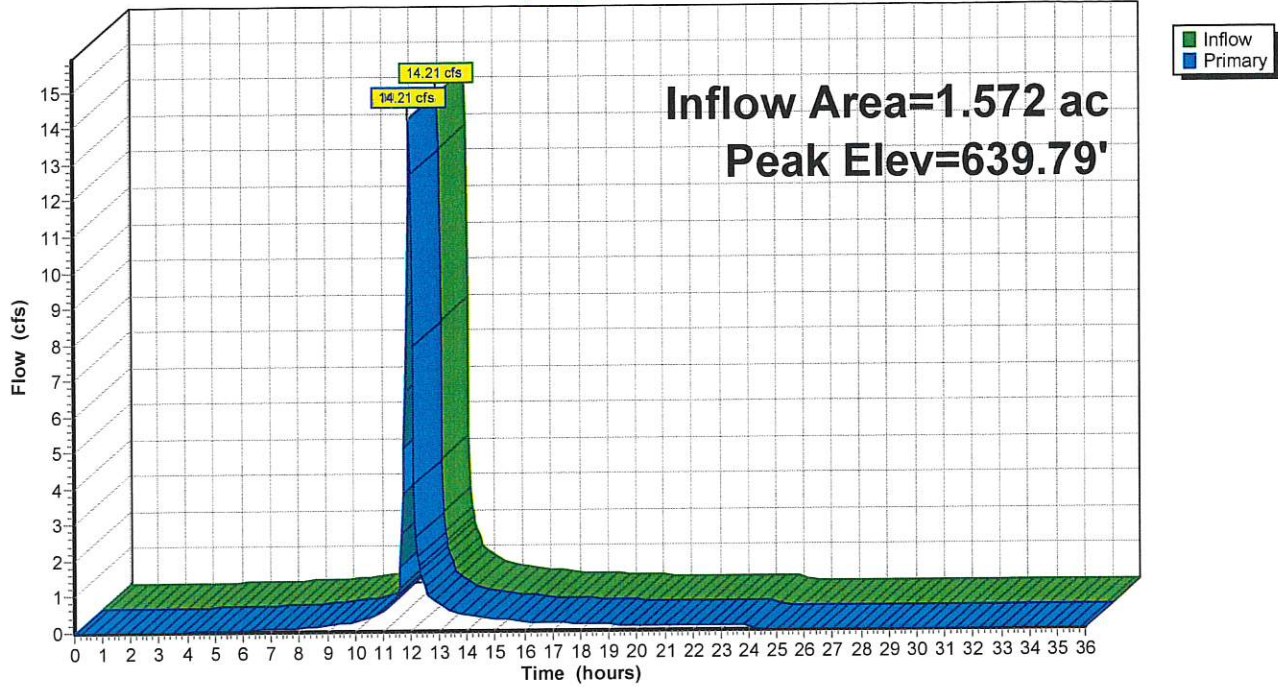
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 72

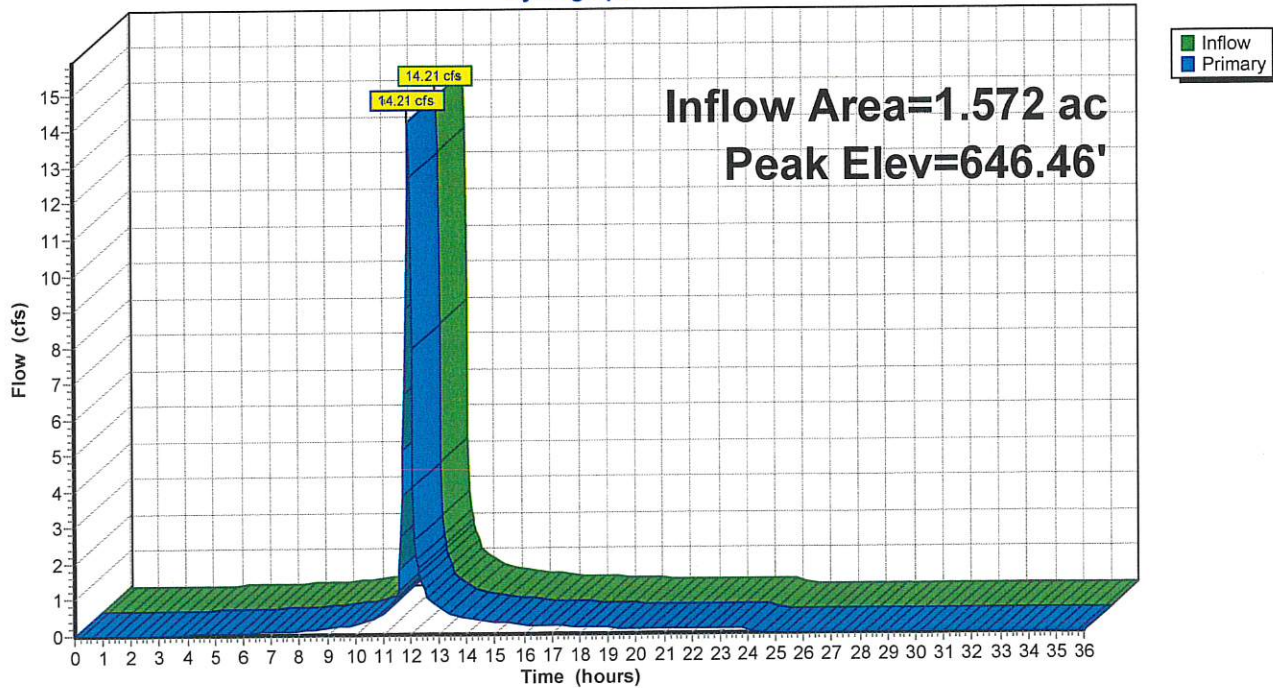
Pond 13bP: CB7

Hydrograph



Pond 13P: CB5

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

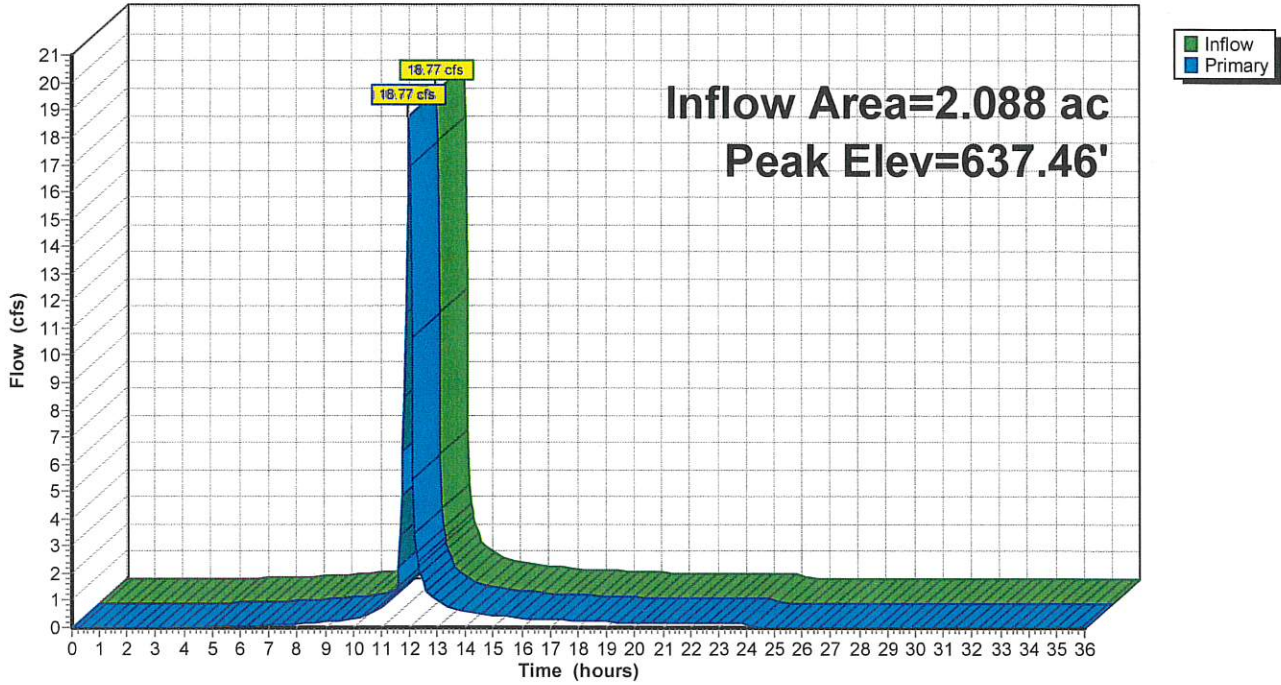
Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 73

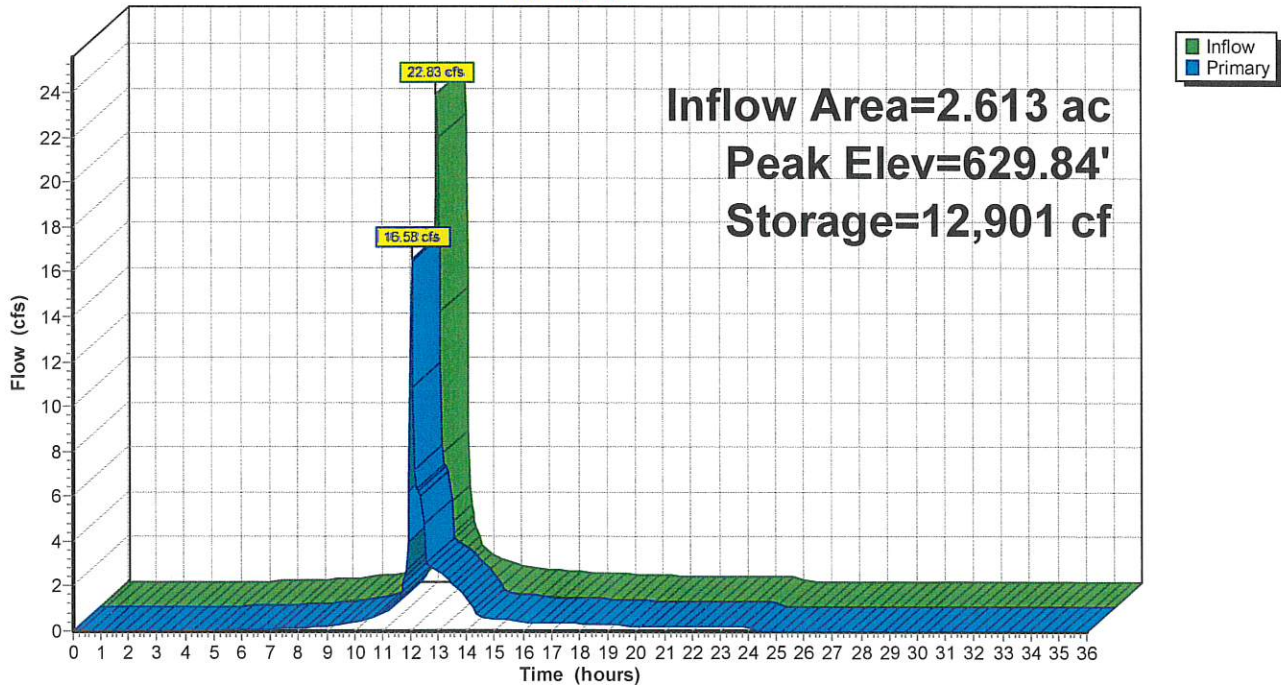
Pond 14P: CB8

Hydrograph



Pond 15P: Detention Basin

Hydrograph



Runoff

Prepared by {enter your company name here}

HydroCAD® 10.00-26 s/n 08801 © 2020 HydroCAD Software Solutions LLC

Brookhollow Senior Apartments
Type II 24-hr 100yr/24hr Rainfall=7.61"

Printed 9/13/2023

Page 74

Link 16L: Site Outfall

Hydrograph

