



City of Bartlett

David Parsons, Mayor

Municipal Planning Commission

AGENDA

Tuesday, September 2, 2025 — 6:30 p.m.

Bartlett City Hall Assembly Chamber

Opening Prayer

****Official Business of the Day****

Minutes of the Monday, August 4, 2025 Meeting

NEW BUSINESS

Master Plan

1. The Sanctuary Subdivision, 3465 Kirby Whitten Parkway, (Keith Grant, BlueSky Communities, Inc.)

Construction Plan

2. The Sanctuary Subdivision Phase I, 3465 Kirby Whitten Parkway, (Keith Grant, BlueSky Communities, Inc.)

Open Discussion

The public shall be provided an opportunity to address the Board or Commission during an Open Discussion period at the end of each regular and special meeting of the governing body. Prior to the start of the meeting, individuals will be required to complete and present to the Clerk the Open Discussion Citizen form provided at each meeting. The Open Discussion period for regular and special meetings of the Board or Commission shall be limited to twenty (20) minutes. Individuals shall be allowed to speak for up to three (3) minutes each. Open Discussion periods will not be held for any meeting where there are no actionable items on the agenda or meetings where the governing body is conducting a disciplinary hearing for a member of the governing body or a person whose profession or activities fall within the jurisdiction of the governing body.

Adjourn

PLANNING COMMISSION

Tuesday, September 2, 2025 - 6:30 P.M.

Bartlett City Hall Assembly Chamber

Staff Comments

NEW BUSINESS

Master Plan

1. **The Sanctuary Subdivision, 3465 Kirby Whitten Parkway, (Keith Grant, BlueSky Communities, Inc.)**

INTRODUCTION: Mr. Keith Grant with BlueSky Communities, Inc. is requesting Planning Commission approval of a Master Plan for the Sanctuary Subdivision. The subject property is located at 3465 Kirby Whitten along the north side of Yale Road at Kirby Whitten Parkway. The subject property is zoned "RS-10" Single Family Residential Zoning District.

BACKGROUND: On September 5, 1989, the Planning Commission approved a Site Plan for Bartlett Baptist Church on the 60-acre site.

DISCUSSION: The specific request by the applicant is for Master Plan approval to subdivide 40.3 acres of land into a 110-lot single-family residential subdivision. The subdivision will be constructed in three phases with Common Open Space A, B, & C going in Phase 1. The proposed phasing of the development will be as follows:

Phase	Number of Lots
Phase 1	40
Phase 2	28
Phase 3	42

Lot sizes will range from 10,000 square feet to 18,483 square feet. Access to the site will be from entrances off of Yale Road and Stonetrace Dr. Additionally, the proposed development will have two storm-water detention ponds, three common open spaces and modified fence and landscape plates along the frontage of Yale Road and along the church property.

Recommendation: Approval with conditions.

Engineering Conditions:

General:

- 1) A Residential Site Plan contract may be required and will be prepared by Engineering and submitted to the developer/engineer for review to cover the fees to be paid to the City of Bartlett.
- 2) All new utilities shall be underground.
- 3) Easements should be shown on all plan sheets.
- 4) Orange vinyl fence shall be installed to clearly mark the "limit of disturbance" as shown on the plans.
- 5) Correct all markups.
- 6) A Demolition Plan has been submitted in the Civil Plans.
 - Additionally, a Demolition Permit should be submitted to Code Enforcement.
 - All work in this Demolition Permit should be completed **prior to** any work commencing.

Plat

- 7) Water Easements for removed water will need to be shown as abandoned easements.
- 8) Sewer Easements for removed sewer will need to be shown as abandoned easements

Sanitary Sewer

- 9) The following will be required regarding the Existing Sewer shown to be removed: Once sewer pipe is removed, all trenches shall be backfilled and compacted to 98% Standard Proctor.

Water

- 10) Applicant/ Engineer shall provide a **digital set of drawing** files showing the sanitary sewer lines, drainage lines, lot lines and all improvements in AutoCAD format to dhubbard@cityofbartlett.org and ecampbell@cityofbartlett.org for use in the preparation of the Water Design Plan. This plan will be coordinated with the site design engineer to resolve any conflicts.
- 11) Existing Water Shown onsite is incomplete. The City will provide field locations of all existing water, which must be located by the Surveyor, and shown on the plans and submitted to City Staff mentioned above.
- 12) A Water main connection to Stone Trace Drive will be required to provide continual water service and fire protection for the existing Bartlett Baptist Church. This connection must be installed, tested and approved **prior to** any site excavation and/or removal of any existing water mains.
- 13) A looped water main connection will be required for the All Phases of The Sanctuary SD. This loop must utilize the existing water connection from Angelin Cove (west of Proposed Lot 83) and the existing water connection from Yale Road.

- 14) Regarding the Existing Water shown to be removed; Once water pipe is removed, all trenches shall be backfilled and compacted to 98% Standard Proctor.

Traffic

- 15) Final Street Names are needed.
16) A traffic control plan for Yale Road will be required.
17) A sight triangle study must be conducted to verify that the location of the Yale Rd. intersection has good visibility for turns in and out.

Erosion Control Plan

- 18) A SWPPP and a TDEC permit may be required. A Notice of Intent (NOI) shall be submitted to TDEC with a copy provided to the City of Bartlett Engineering office.
19) The engineer shall provide a copy of the SWPPP (Storm Water Pollution Prevention Plan) that has been or will be submitted to TDEC (Tennessee Department of Conservation).
20) Prior to any work being started, an NOC (Notice of Coverage) from TDEC must be received and a copy submitted to the City of Bartlett.
21) Metal posts with wire-backed fence are required on the proposed silt fences.
22) Details for inlet protection are required.
23) The TDEC permit number shall be shown on EPSC Phase 1-3.
24) Clearing should not take place until Erosion Control measures are completed according to EPSC Phase 1.

Grading and Drainage

- 25) The Civil Plans submitted are only for Phase 1.
26) These plans include a Grading Plan for Phase 1, and EPSC for Sanctuary SD Phase 1.

However, since the submittal date, the Engineer has mentioned the intent for the following:

- 27) Construct Phase 1 as originally submitted, but additionally:
28) Grade the entire site (all phases) during Phase 1 Construction.
29) Delete the submitted EPSC Plans in favor of a revised EPSC for the entire site (all Phases).

This intent is acceptable to Engineering. The City Engineer has required the following additional information:

- 30) An overall Master Grading plan which has been received and is under review.
- 31) Revised EPSC Sheets which will be submitted and will show EPSC for the entire site.

Planning Comments:

1. Public Notices were sent out inviting the neighbors bordering the subject property to come view the Master Plan of the Sanctuary Subdivision. Several neighbors had the following requests.
 - A. The owners of 6660 Stephan Ridge Cove have requested the two trees behind their property line be removed. One is a hazard tree that they fear will fall.
 - B. Owners of 3498 Angelin adjacent to Lots 80 and 81 in Phase 3 request that the applicant makes sure the grading pushes toward the street in side yard and not funneling additional water back on to property.
 - C. The owners of 6640 Wood Park Lane adjacent to Lots 91, 102, and 103 in Phase 3 request that the applicant makes sure the grading pushes away from their lot as water tends to pond at their property line and not funneling additional water back on their property. They are also concerned about the water pressure for this site since their subdivision Bartlett Woodlands East has water pressure issues.
 - D. Multiple people were concerned about water ponding around the existing drainage ditch.
 - E. Multiple owners asked about ownership and maintenance of the strip of property between Lot 78 and the Altruria Road frontage.

Planning Conditions:

1. The applicant shall extend the landscaping along the east property line so that it runs the full length of the parking lot.
2. The applicant shall include a fence detail for the subdivision fence along Yale Road.
3. The applicant will need to add a note to the plat to deny driveway access to Yale Road for lots 1, 40, 33, 34, 35.
4. The applicant shall identify the location for the Post Office required cluster box to the final plat.
5. The applicant shall revise the vicinity map to show correct street locations.
6. The applicant shall designate and show a 5-foot utility easement along all property lines.
7. The applicant shall indicate who owns and will maintain the grassy strip of property between Lot 78 and the Altruria Frontage on the final plan/plat.
8. The applicant shall apply to the Design Review Commission for the approval of subdivision fence materials, landscaping, cluster box, and any other common features.

9. The Sanctuary Subdivision is a regular subdivision and not a Planned Development, therefore a Homeowner's Association (HOA) is not required. However, the applicant has indicated to staff that an HOA will be responsible for all common features. A note shall be added to the Final Plat stating that the HOA is responsible to maintain all common amenities, landscaping, subdivision fence, subdivision sign, and other features.
10. The applicant shall attach the homeowner's association bylaws instrument number and the covenants and restrictions instrument number to the final plat.
11. The applicant must obtain subdivision Construction Plan and Final Plan approval for each phase of the development.
12. The applicant shall be present at the meetings in order to make decisions relative to any changes that may be suggested by the Planning Commission.

Construction Plan

2. The Sanctuary Subdivision, Phase 1, 3465 Kirby Whitten Parkway, (Keith Grant, BlueSky Communities, Inc.)

INTRODUCTION: Mr. Keith Grant with BlueSky Communities, Inc. is requesting Planning Commission approval of a Construction Plan for the Sanctuary Subdivision Phase 1. The subject property is located at 3465 Kirby Whitten along the north side of Yale Road at Kirby Whitten Parkway. The subject property is zoned "RS-10" Single Family Residential Zoning District.

BACKGROUND: On September 5, 1989, the Planning Commission approved a Site Plan for Bartlett Baptist Church on the 60-acre site.

DISCUSSION: The specific request by the applicant is for Planning Commission approval of the Construction Plan to subdivide 15.01 acres of land into 40 lots for Phase 1 of the Sanctuary Subdivision. The construction plans include: clearing plan, stormwater detention plan, landscape plan, grading and drainage plans, erosion control plan, sanitary sewer plan, signage plan, and street plans for Entrance Drive, East Street, Middle Street, South Cove, and East Cove. Access to the subdivision will be from Yale Road.

Recommendation: Approval with conditions.

Engineering Conditions:

General:

- 1) A Residential Site Plan contract may be required and will be prepared by Engineering and submitted to the developer/engineer for review to cover the fees to be paid to the City of Bartlett.

- 2) All new utilities shall be underground.
- 3) Easements should be shown on all plan sheets.
- 4) Orange vinyl fence shall be installed to clearly mark the "limit of disturbance" as shown on the plans.
- 5) Correct all markups.
- 6) A Demolition Plan has been submitted in the Civil Plans.
 - Additionally, a Demolition Permit should be submitted to Code Enforcement.
 - All work in this Demolition Permit should be completed **prior to** any work commencing.

Plat

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- 11) Existing Water Shown onsite is incomplete. The City will provide field locations of all existing water, which must be located by the Surveyor, and shown on the plans and submitted to City Staff mentioned above.
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- 14) Regarding the Existing Water shown to be removed; Once water pipe is removed, all trenches shall be backfilled and compacted to 98% Standard Proctor.

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- 20) Prior to any work being started, an NOC (Notice of Coverage) from TDEC must be received and a copy submitted to the City of Bartlett.
- 21) Metal posts with wire-backed fence are required on the proposed silt fences.
- 22) Details for inlet protection are required.
- 23) The TDEC permit number shall be shown on EPSC Phase 1-3.
- 24) Clearing should not take place until Erosion Control measures are completed according to EPSC Phase 1.

Grading and Drainage

- 25) The Civil Plans submitted are only for Phase 1.
- 26) These plans include a Grading Plan for Phase 1, and EPSC for Sanctuary SD Phase 1.

However, since the submittal date, the Engineer has mentioned the intent for the following:

- 27) Construct Phase 1 as originally submitted, but additionally:
- 28) Grade the entire site (all phases) during Phase 1 Construction.
- 29) Delete the submitted EPSC Plans in favor of a revised EPSC for the entire site (all Phases).

This intent is acceptable to Engineering. The City Engineer has required the following additional information:

- 30) An overall Master Grading plan which has been received and is under review.

31) Revised EPSC Sheets which will be submitted and will show EPSC for the entire site.

Planning Comments:

1. The applicant will be submitting the final street names to MLGW for approval and will provide the names on the Final Plat to be recorded by the Shelby County Register of Deeds.

Planning Conditions:

1. The applicant shall extend the landscaping along the east property line south to include the entire alignment with the parking lot.
2. The applicant shall include a fence detail for the subdivision fence along Yale Road.
3. The applicant will need to add a note to the plat to deny driveway access to Yale Road for lots 1, 40, 33, 34, 35.
4. The applicant shall identify the location for the Post Office required cluster box to the final plat
5. The applicant shall designate and show a 5-foot utility easement along all property lines.
6. The applicant shall revise the vicinity map to show correct street locations.
7. The applicant shall apply to the Design Review Commission for the approval of subdivision fence materials, landscaping, and any other common features.
8. The applicant shall indicate who owns and will maintain the grassy strip of property between Lot 78 and the Altruria Frontage on the final plan/plat.
9. The Sanctuary Subdivision is a regular subdivision and not a Planned Development, therefore a Homeowner's Association (HOA) is not required. However, the applicant has indicated to staff that an HOA will be responsible for all common features. A note shall be added to the Final Plat stating that the HOA is responsible to maintain all common amenities, landscaping, subdivision fence, subdivision sign, and other features.
10. The applicant shall attach the homeowner's association bylaws instrument number and the covenants and restrictions instrument number to the final plat.
11. The applicant must obtain subdivision Construction Plan and Final Plan approval for each phase of the development.
12. The applicant shall be present at the meetings in order to make decisions relative to any changes that may be suggested by the Planning Commission.

**Bartlett Planning and
Economic Development Department
6382 Stage Road, P.O. Box 341148
Bartlett, TN 38184-1148
901-385-6417 FAX 901-385-6419
www.cityofbartlett.org**

Bartlett Planning Commission
Master Subdivision Plan Checklist

The applicant shall either indicate that the following items have been completed by a check (✓) or that they are not applicable (n/a):

- ☒ Date, north point and scale
- ☒ Location sketch map
- ☒ Boundary survey, showing location of point of beginning, true or grid bearing and length of each line, and area in acres
- ☒ Name and addresses of adjoining owners on gum labels. (one set)

Existing and Proposed:

- ☐ Tree Survey with Tree Table
- ☐ Tree Protection Plan with Tree Table
- ☒ Existing Survey/Conditions Plan
- ☒ Site Plan/Layout of development with areas reserved for detention/retention
- ☒ Grading/Drainage Plan showing all drain manholes, inlets, and drainage areas picked up
- ☒ Contour intervals
- ☒ Streets
- ☒ Structures
- ☒ Water courses
- ☒ Rights-of-way
- ☒ Sewers
- ☐ Bridges
- ☐ Culverts
- ☐ Springs (water)
- ☒ Water mains
- ☒ Easements for drainage, water, sewer, landscape, and signage
- ☒ Utility lines including utility easements along property lines
- ☒ Location and extent of all land subject to flooding

Proposed:

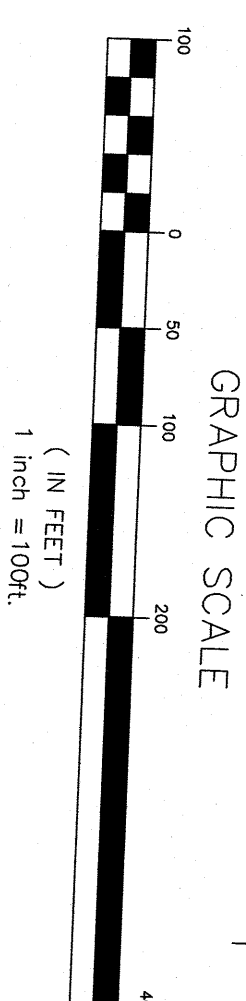
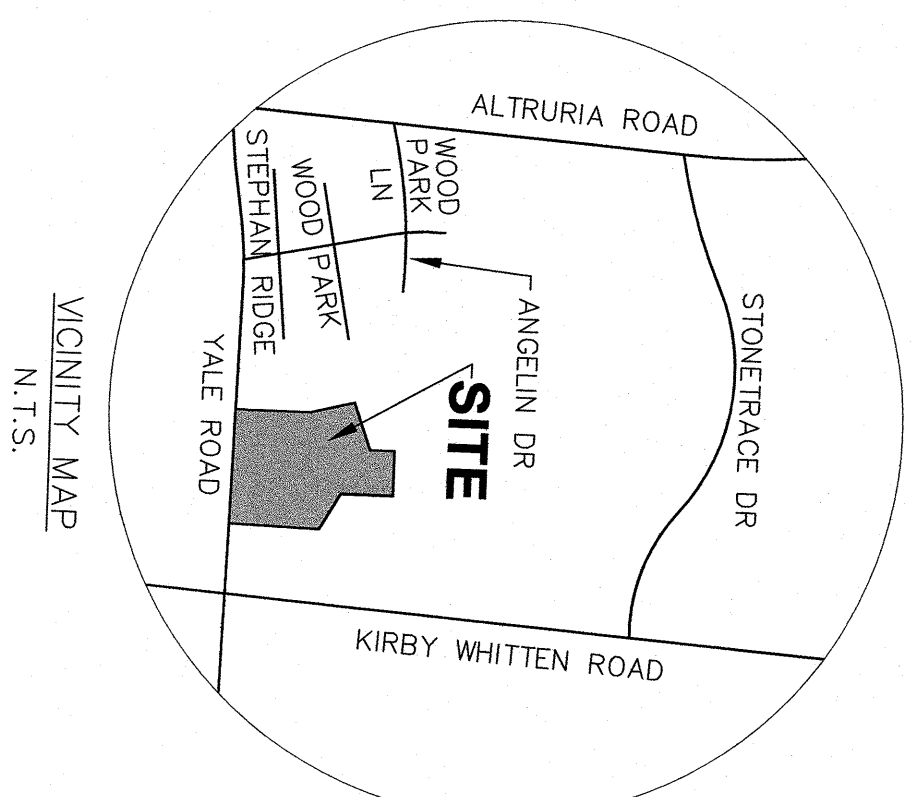
- ☐ Plat with signature blocks and notes
 - ☒ Lot or parcel layout plan with dimensions and area
 - ☒ Street rights-of-way
 - ☒ Erosion Control Plan with phasing
 - ☐ Traffic Control Plan with phasing and notes
 - ☒ Landscape Plan
 - ☒ Drainage improvements study
 - ☒ Drainage Pipe Table with all inlets and capacities and Q25 design
 - ☒ Detention Basin Calculations for 2, 5, 10, 25, 50, and 100 year design
 - ☒ Sediment Basin Design and Calculations
 - ☐ Flood hazard area details
 - ☐ Floodways
 - ☐ Utility Plan with size of meters required and location of fire sprinkler room
 - ☒ Plan and Profile of all streets
 - ☒ Sewer Plan and Profile
 - ☒ Setback lines
- Zoning Classification:
- ☒ Site (with area indicated)
 - ☒ Adjoining land

In addition to the Master Plan drawing, the following shall be provided:

- ☒ One PDF file of the pictorial portion of the Master Plan, for display at the Planning Commission meeting.

Include a fee of \$500.00 plus \$20.00 per lot with this application (check payable to the City of Bartlett).
The fee is not refundable.

INCOMPLETE APPLICATIONS WILL NOT BE PROCESSED



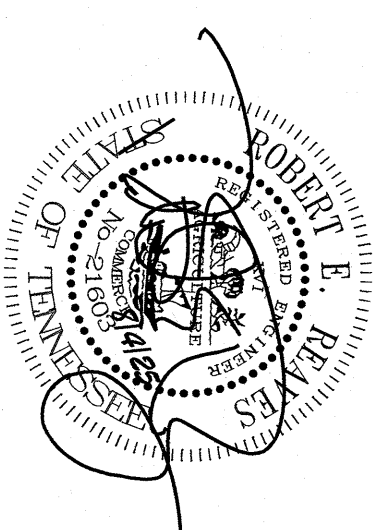
MASTER PLAN
LOT LAYOUT
THE SANCTUARY
BARTLETT, TENNESSEE

AUGUST, 2025

SUBJECT PROPERTY AREA: 15.01 AC
TOTAL LOTS: 40
SCALE: 1" = 100'

DEVELOPER:
BLUE SKY DEVELOPMENTS, INC.
177 CRESWELL BLVD.
COLLIERVILLE, TN 38017

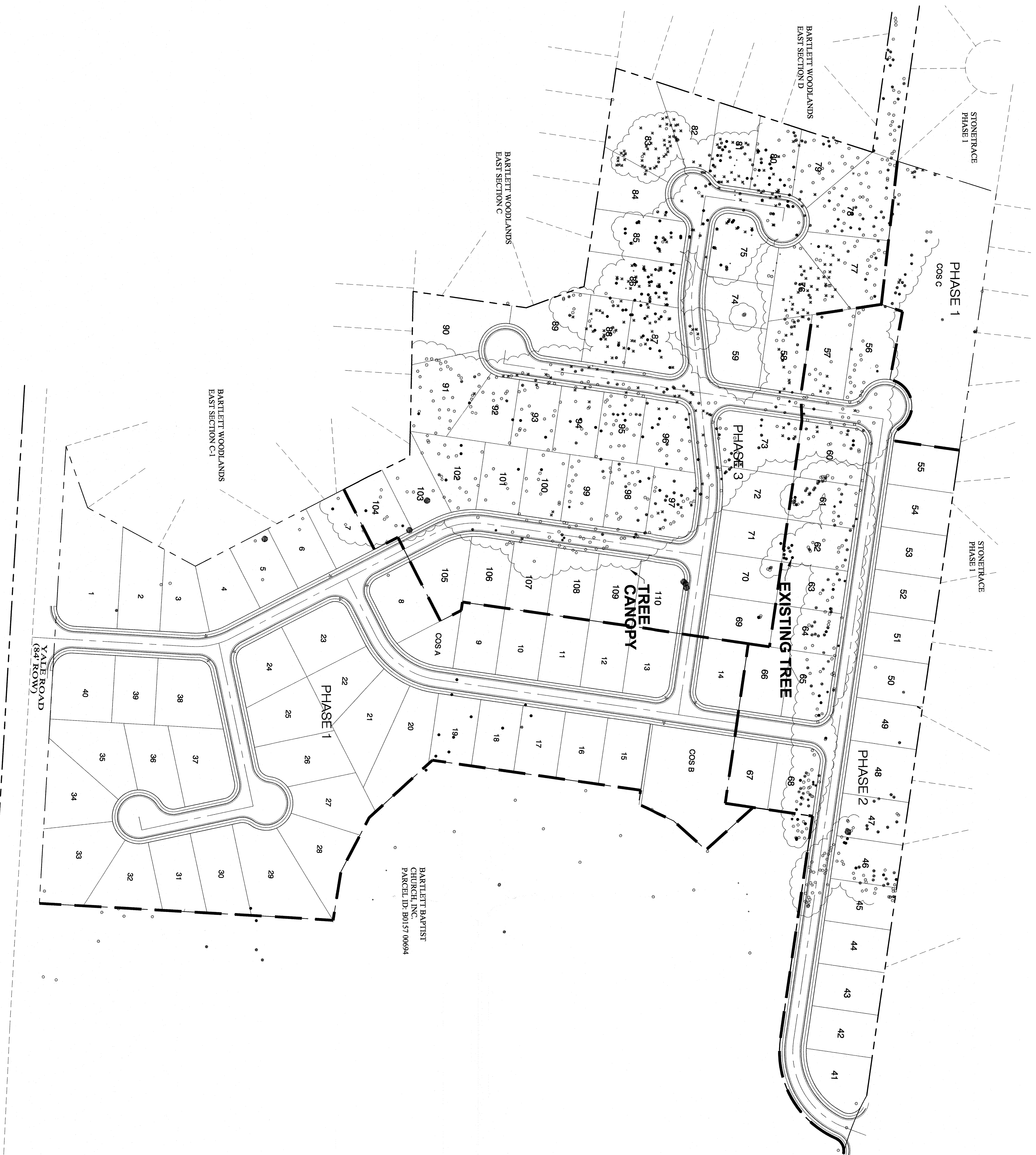
ENGINEER:
LAND DEVELOPMENT SOLUTIONS, LLC
6535 BURREN WAY



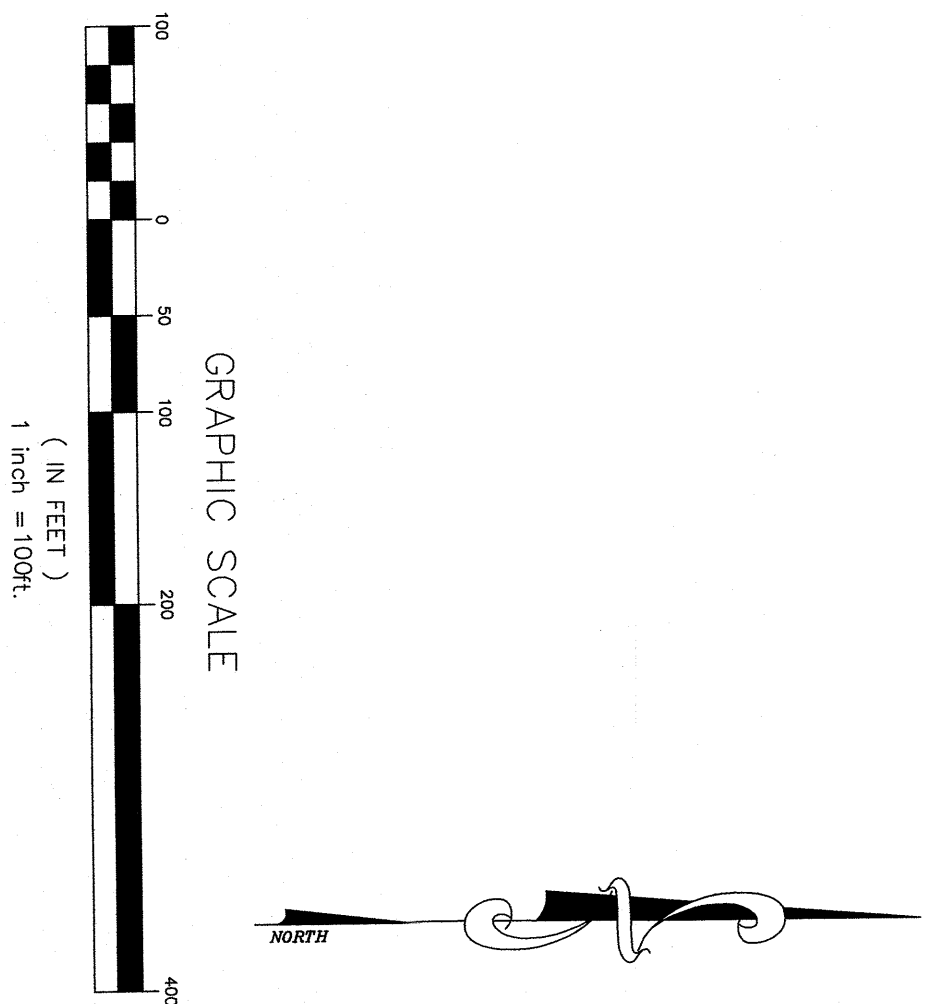
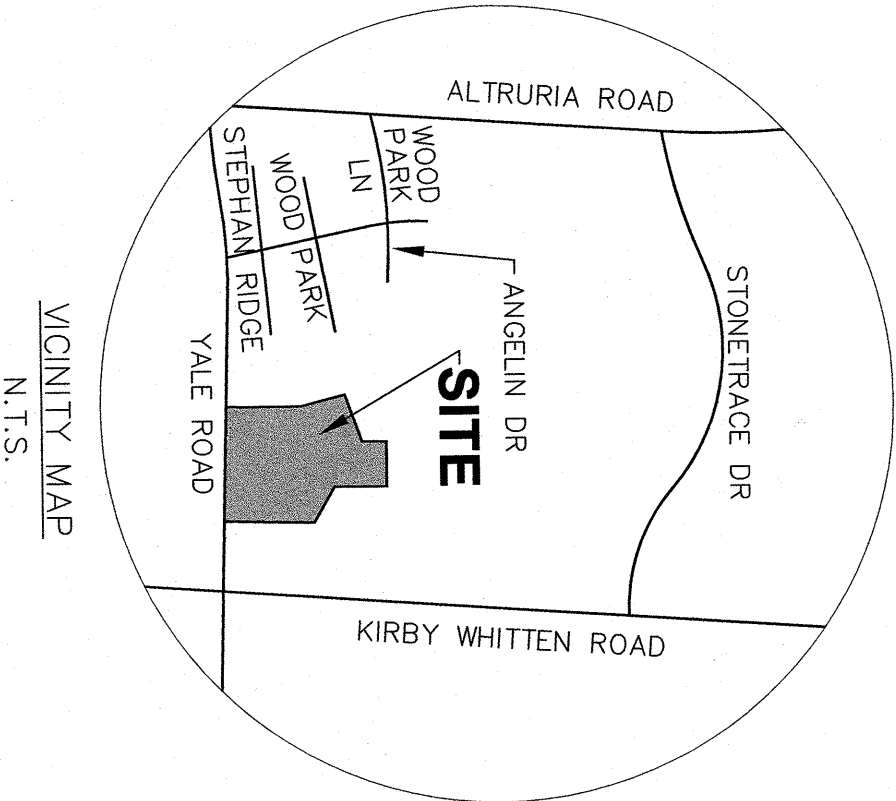
RECEIVED

AUG 04 2025

CITY OF BARTLETT



NOTE:
ALL TREES SHOWN WITHIN THE BOUNDARY
OF THIS DEVELOPMENT SHALL BE REMOVED
DUE TO SITE DESIGN CONSTRAINTS.
EFFORTS SHALL BE MADE TO SAVE TREES
IF POSSIBLE.



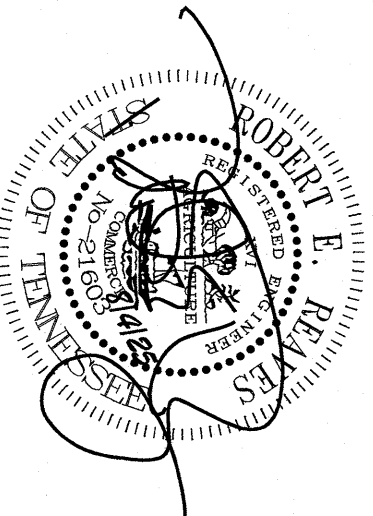
MASTER PLAN
TREE PLAN
THE SANCTUARY
BARTLETT, TENNESSEE

AUGUST, 2025

SUBJECT PROPERTY AREA: 15.01 AC
TOTAL LOTS: 40
SCALE: 1" = 100'

DEVELOPER:
BLUE SKY COMMUNITIES, INC.
COLLIERVILLE, TN 38017

ENGINEER:
LAND DEVELOPMENT SOLUTIONS, LLC
6333 BURREN WAY
ARLINGTON, TN 38002



GRACE PRESBYTERIAN
CHURCH, PCUSA
PARCEL ID: B0157R B00074

BARTLETT DAVIST
CHURCH, PCUSA
PARCEL ID: B0157 00694

BARTLETT WOODLANDS
EAST SECTION C1

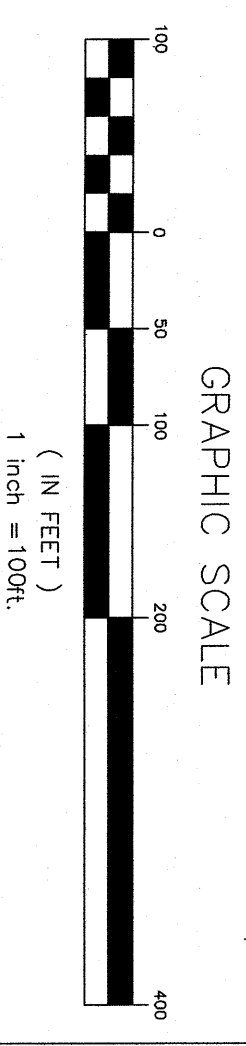
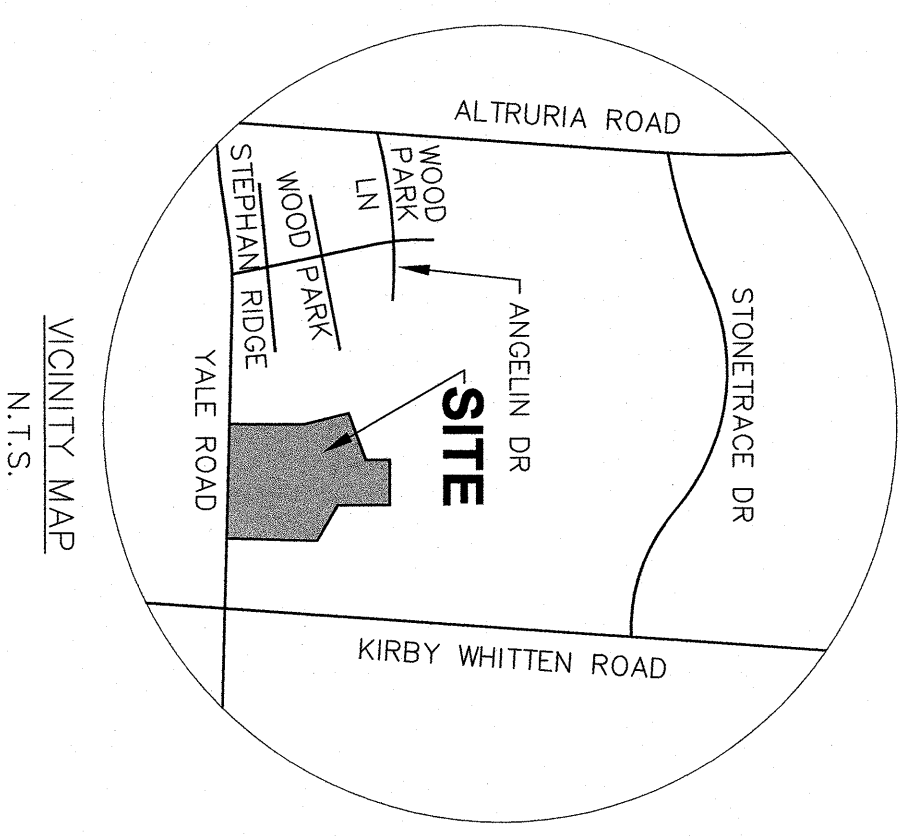
BARTLETT WOODLANDS
EAST SECTION C

BARTLETT WOODLANDS
EAST SECTION D



GRACE PRESBYTERIAN
CHURCH, PCUSA
PARCEL ID: B0157R B00074

BARTLETT BAPTIST
CHURCH, INC.
PARCEL ID: B0157 00694

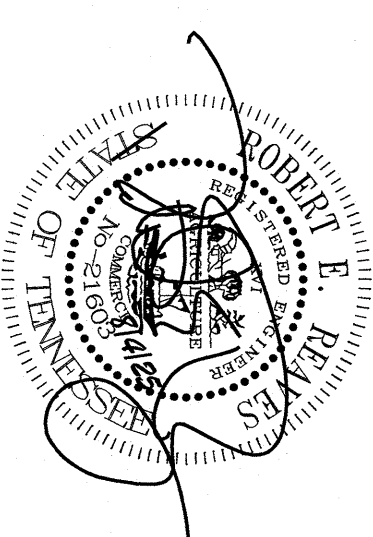


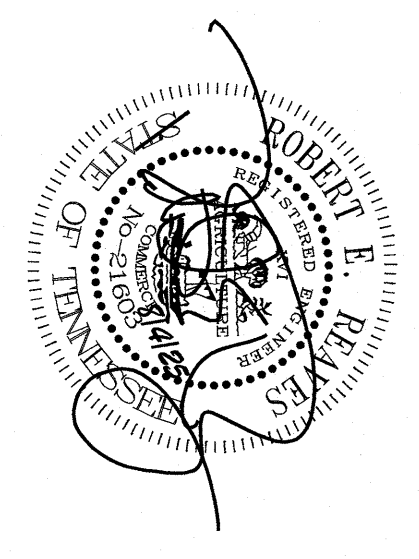
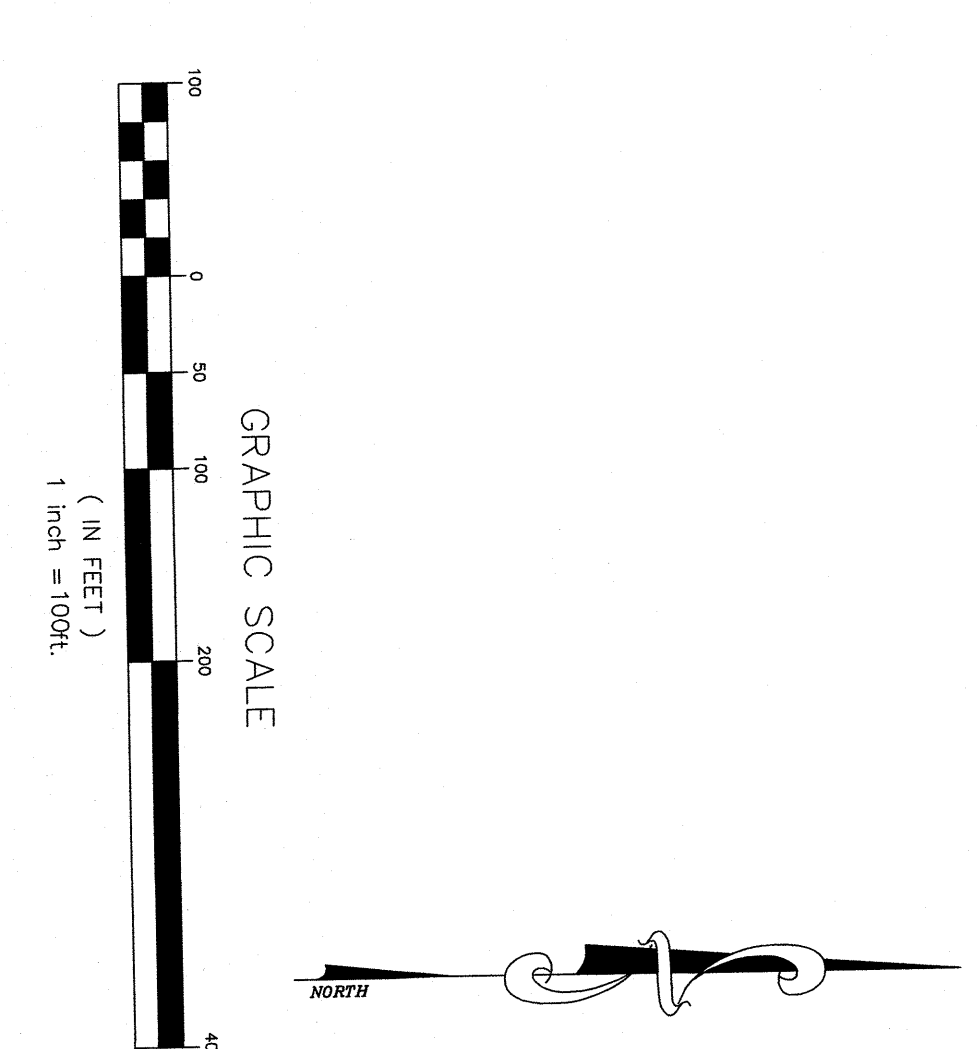
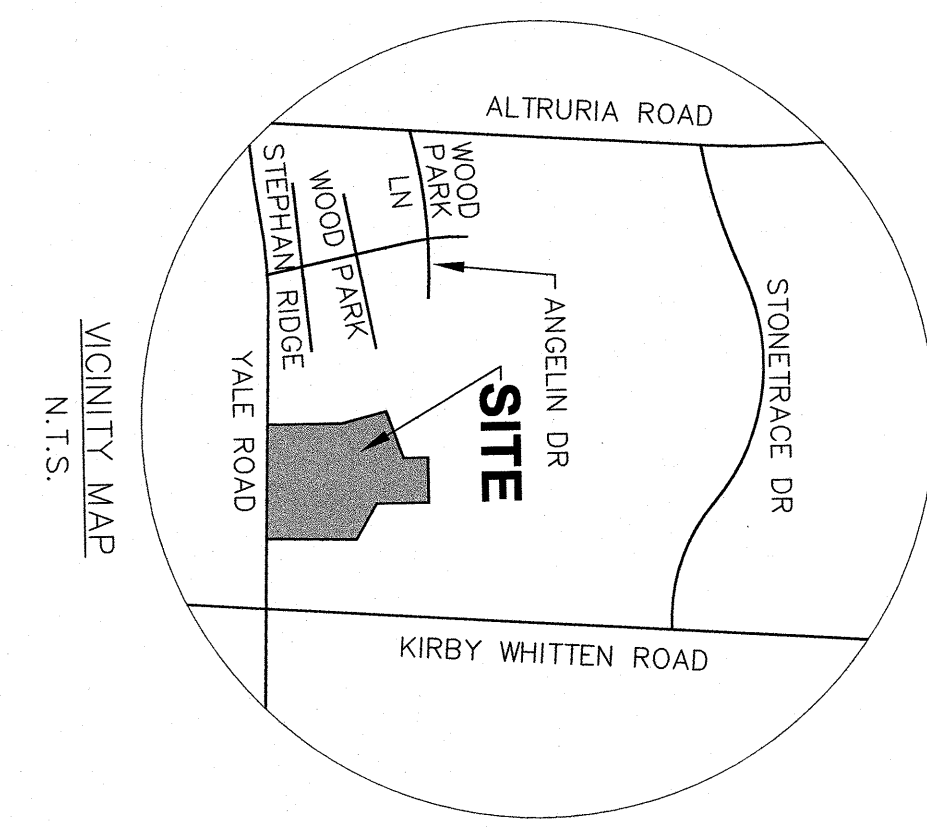
MASTER PLAN
GRADING AND DRAINAGE PLAN
THE SANCTUARY
BARTLETT, TENNESSEE

AUGUST, 2025

SUBJECT PROPERTY AREA: 15.01 AC
TOTAL LOTS: 40
SCALE: 1" = 100'

DEVELOPER:
BLUE SKY COMMUNITIES, INC.
17705 COLONY BLVD.
COLLIERVILLE, TN 38017
ENGINEER:
LAND DEVELOPMENT SOLUTIONS, LLC
6333 BUREN WAY
ARLINGTON, TN 38002





MASTER PLAN
SANITARY SEWER PLAN
THE SANCTUARY
BARTLETT, TENNESSEE

AUGUST, 2025

SUBJECT PROPERTY AREA: 15.01 AC
TOTAL LOTS: 40
SCALE: 1" = 100'

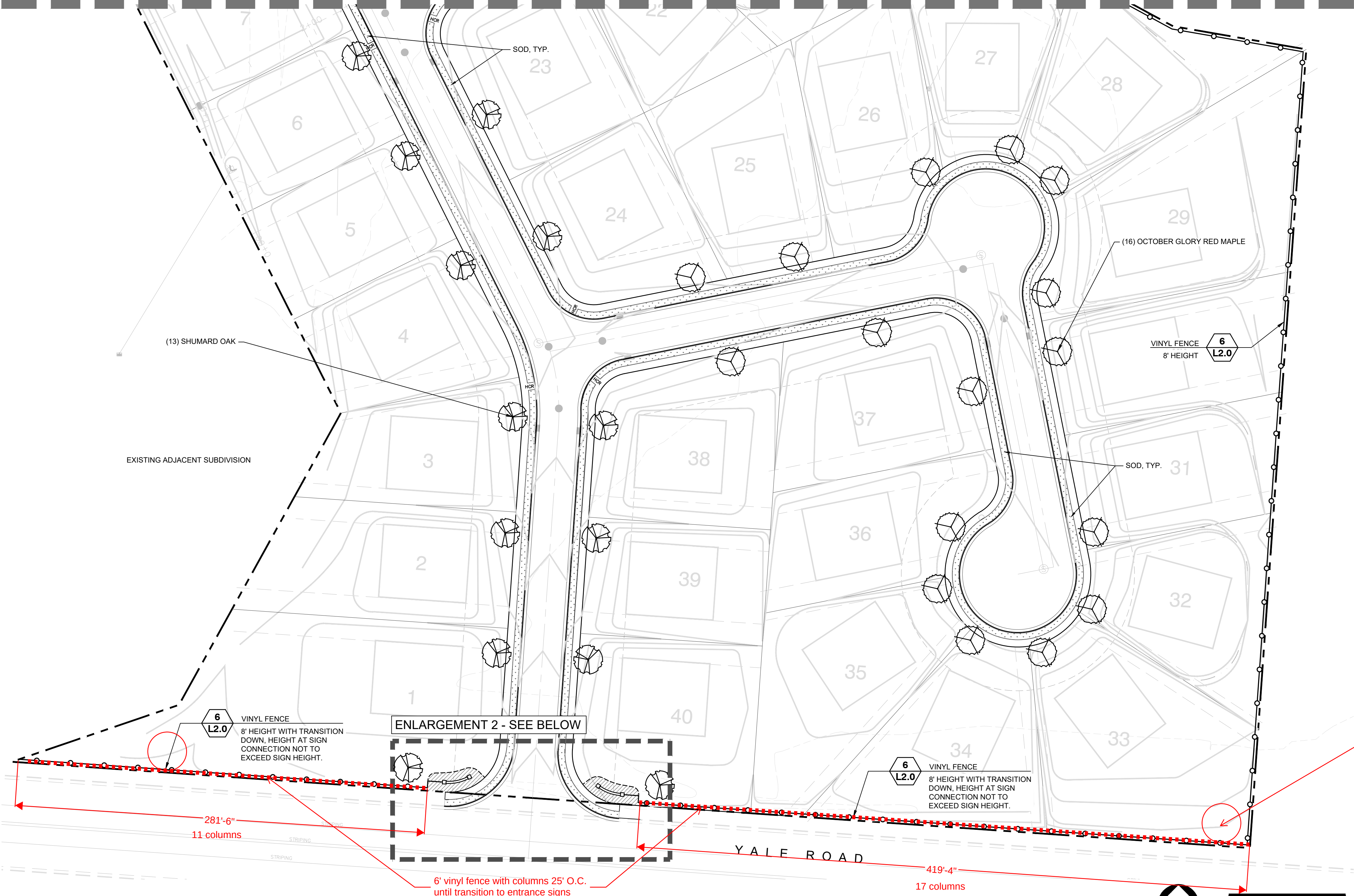
DEVELOPER:
BLUE SKY COMMUNITIES, INC.
1177 CRESCENT DRIVE
COLLIERVILLE, TN 38017

ENGINEER:
LAND DEVELOPMENT SOLUTIONS, LLC
6333 BURREN WAY
ARLINGTON, TN 38002

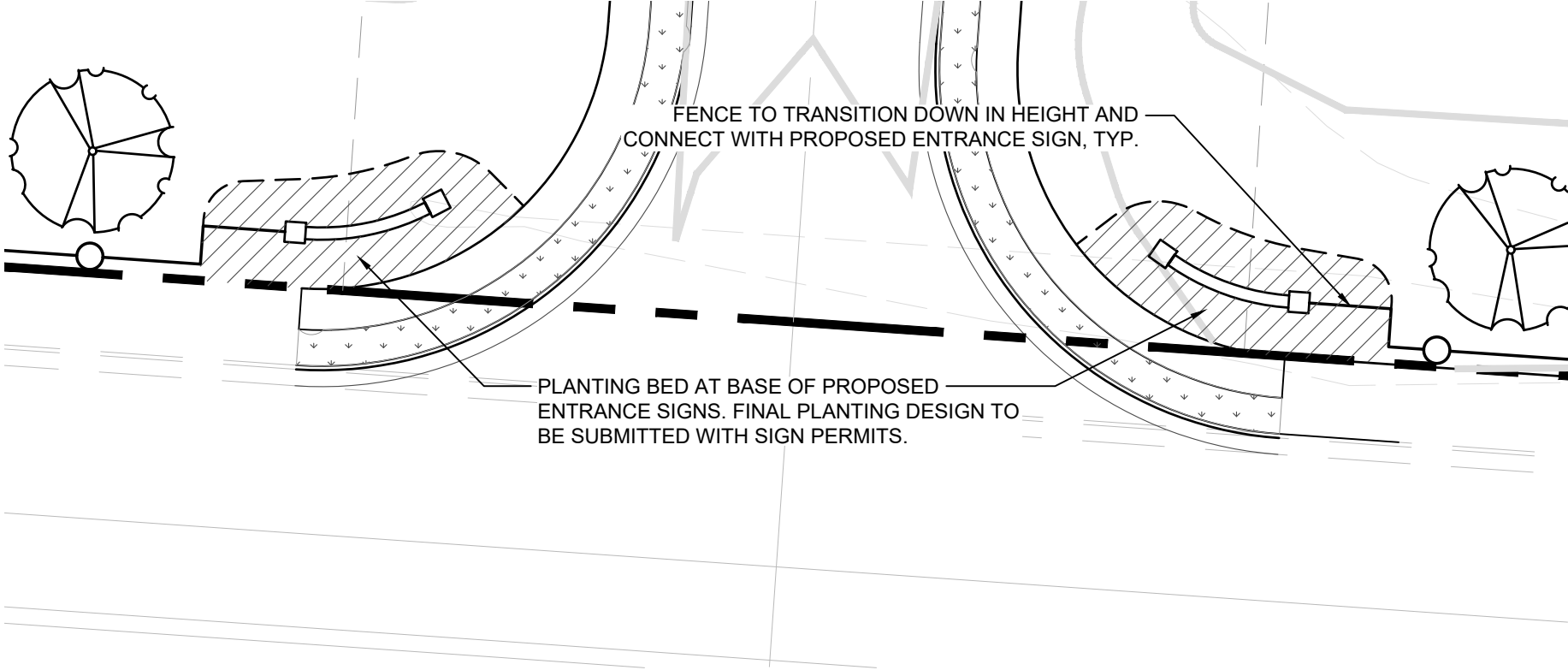
MATCHLINE, SEE SHEET L1.1

MATCHLINE, SEE SHEET L1.1

- NOTES:
- THE DEVELOPER MAY USE ANY OF THE FOLLOWING SUBSTITUTES FOR ANY CANOPY TREE SHOWN ON THIS PLAN:
WILLOW OAK / QUERCUS PHELLOS
NUTTALL OAK / QUERCUS TEXANA OR NUTTALL
ARMSTRONG MAPLE / ACER RUBRUM 'ARMSTRONG'
OCTOBER GLORY MAPLE / ACER RUBRUM 'OCTOBER GLORY'
BOWHALL RED MAPLE / ACER RUBRUM 'BOWHALL'
AUTUMN BLAZE MAPLE / ACER X FRESMANII 'JEFFERSED'
FRONTIER ELM / ULMUS X 'FRONTIER'
ADDITIONAL SUBSTITUTES MAY BE APPROVED BY THE CITY DUE TO UNCERTAINTY IN FUTURE AVAILABILITY OF PLANT SPECIES.
 - ALL TREE LOCATIONS MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS, LIGHTING, UTILITIES, AND OTHER CONDITIONS.
 - FIELD ADJUST MONUMENTS, COLUMNS, AND/OR FENCING LOCATIONS TO AVOID ANY PROPOSED DRAINAGE OR OTHER UNDERGROUND STRUCTURES.
 - ALL PROPOSED PLANTING BEDS WILL BE IRRIGATED.



1 LANDSCAPE PLAN - SOUTH
SCALE: 1" = 40'



2 SOUTH ENTRANCE
SCALE: 1" = 20'

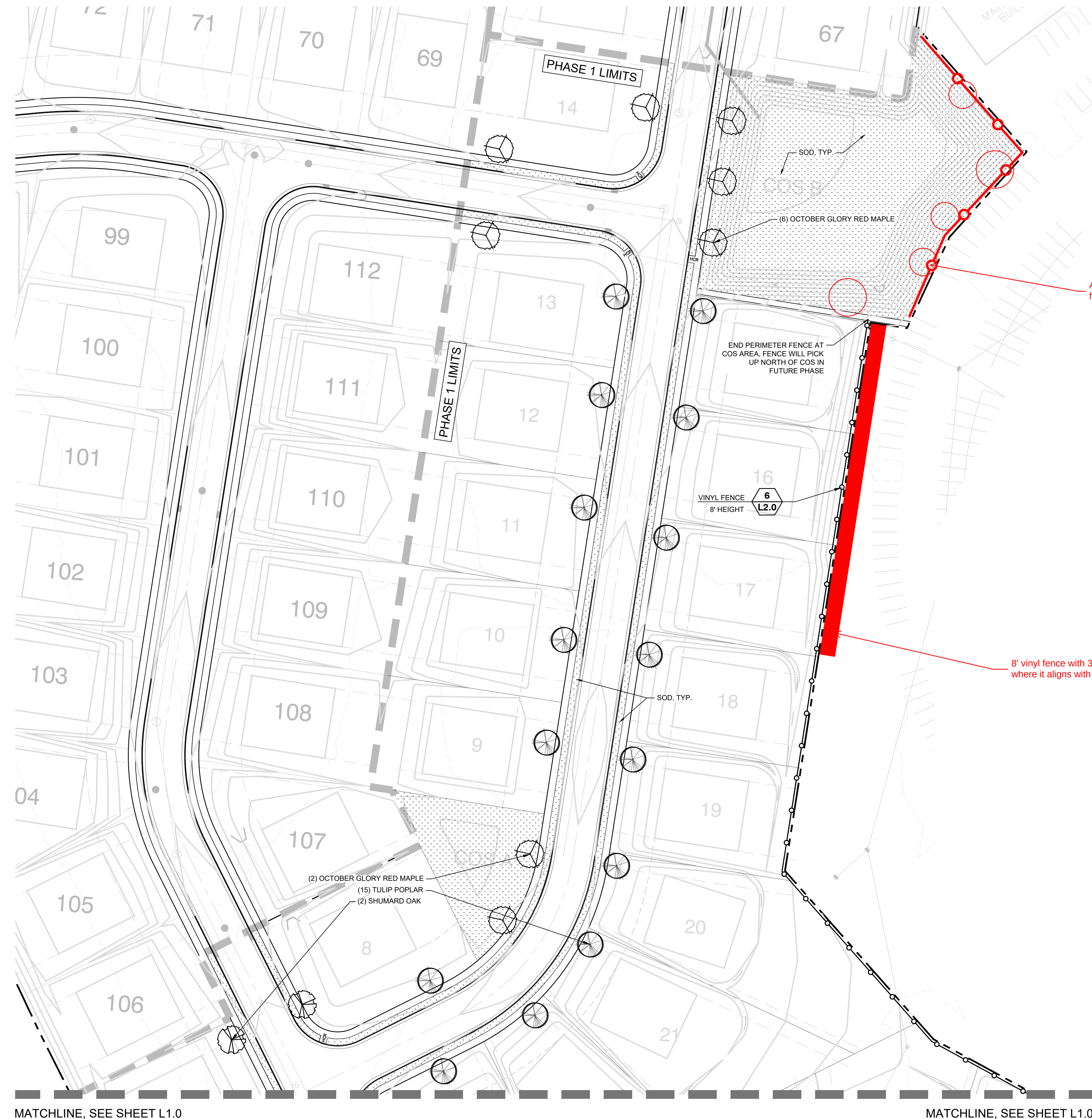
PLANT SCHEDULE						
QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONT.	UNIT	COMMENTS
TREES						
24	Acer rubrum 'October Glory'	October Glory Red Maple	1.5" Cal.	B&B	EA	Well branched, full head
15	Liriodendron tulipifera	Tulip Poplar	1.5" Cal.	B&B	EA	Uniform branching, dominant leader
15	Quercus shumardii	Shumard Oak	1.5" Cal.	B&B	EA	Uniform branching, dominant leader
QTY	BOTANICAL NAME	COMMON NAME	SIZE	UNIT	COMMENTS	
GROUND COVERS						
54,860 sf	Cynodon dactylon	Bermudagrass	sod	Fill Area	Typical sod installation, see details	

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE



THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
LANDSCAPE ARCHITECT: DT DESIGN STUDIO

SHEET 1 OF 3
DIVISION OF ENGINEERING
LANDSCAPE PLAN - SOUTH
BARTLETT, TENNESSEE
SURVEY: DATE: PROJECT NO:
DESIGNED BY: DT BOOK:
DRAWN BY: DT DATE: 8/25 SCALE: AS NOTED
REVIEWED BY:



MATCHLINE, SEE SHEET L1.0

MATCHLINE, SEE SHEET L1.0

1 LANDSCAPE PLAN - NORTH
SCALE: 1" = 40'



0 10 20 40 80
SCALE: 1" = 40'

- NOTES:
1. THE DEVELOPER MAY USE ANY OF THE FOLLOWING SUBSTITUTES FOR ANY CANOPY TREE SHOWN ON THIS PLAN:
WILLOW OAK / QUERCUS PHELLOS
NUTTALL OAK / QUERCUS TEXANA OR NUTTALL
ARMSTRONG MAPLE / ACER RUBRUM 'ARMSTRONG'
OCTOBER GLORY MAPLE / ACER RUBRUM 'OCTOBER GLORY'
BOWHALL RED MAPLE / ACER RUBRUM 'BOWHALL'
AUTUMN BLAZE MAPLE / ACER X FREEMANII 'JEFFERSRED'
FRONTIER ELM / ULMUS X 'FRONTIER'
 2. ALL TREE LOCATIONS MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS, LIGHTING, UTILITIES, AND OTHER CONDITIONS.
 3. FIELD ADJUST MONUMENTS, COLUMNS, AND/OR FENCING LOCATIONS TO AVOID ANY PROPOSED DRAINAGE OR OTHER UNDERGROUND STRUCTURES.
 4. ALL PROPOSED PLANTING BEDS WILL BE IRRIGATED.

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE



THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
LANDSCAPE ARCHITECT: DT DESIGN STUDIO

SHEET 2 OF 3
DIVISION OF ENGINEERING
LANDSCAPE PLAN - SOUTH
BARTLETT, TENNESSEE
SURVEY: DESIGNED BY: DT
DATE: 8/25
DRAWN BY: DT
PROJECT NO: BOOK: AS NOTED
SCALE: AS NOTED
REVIEWED BY:



PC Construction Plan Application

Date: 08/04/2025

Project Information

Property Address: 3465 Kirby Whitten Pky
Project Name:

Present Zoning: RS 10
of Lots: 40

Description: single family residential

Applicant / Owner

Applicant Name: Keith Grant
Company Name: BlueSky Communities, Inc.
Address: 177 Crescent Drive
City, State, Zip: Collierville, TN 38017
Phone: 901-854-0525
Email: cpeeper@grantnewhomes.com

Owner Name: Blue Sky Communities, Inc.
Company Name: Blue Sky Communities, Inc.
Address: 177 Crescent Drive
City, State, Zip: Collierville, TN 38017
Phone: 901-854-0525
Email: cpeeper@grantnewhomes.com

Architect / Engineer

Architect Contact:
Company Name:
Address:
City, State, Zip:
Phone:
Email:

Architect Contact: Robert Reaves
Company Name: Land Development Solutions, LLC
Address: 6333 Burren Way
City, State, Zip: Arlington, TN 38002
Phone: 901-574-9804
Email: lds.reaves@gmail.com

I do hereby certify that the information contained herein is true and correct.

Robert Reaves

Name

08/04/2025

Date

**Bartlett Planning and
Economic Development Department
6382 Stage Road, P.O. Box 341148
Bartlett, TN 38184-1148
901-385-6417 FAX 901-385-6419
www.cityofbartlett.org**

Construction Plan Checklist

The applicant shall either indicate that the following items have been completed by a check (✓) or that they are not applicable (n/a).

In addition to all the requirements of the Master Plan, the Construction Plan shall show

- ☒ Signature and Seal of Designer, a Professional Civil Engineer Registered in Tennessee
- ☒ * Grading Plan, existing & finished contours for the site and fifty (50) feet beyond property
- ☒ * Extent and elevation of land below the 100-year flood
- ☒ Detailed plan of sewer layouts
- ☒ Plan and profile sheets and engineering data for streets, storm drainage, controls for surface and ground water, water and sewer layouts
- ☒ Landscape plan and planting schedule as required
- ☒ Comprehensive drainage plan
- ☒ Construction traffic access plan

Certificates: (As applicable)

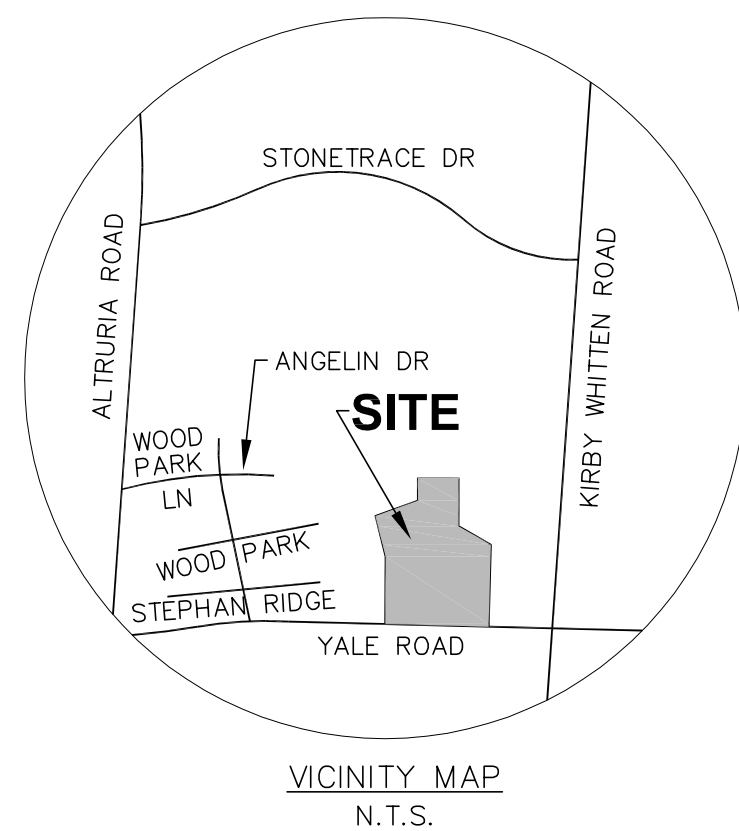
- ☒ Suitability of Soils for Septic Tanks
- ☒ Approval of Water and Sewerage Systems
- ☒ Accuracy of Engineering and Design
- ☒ Approval of Water and Sewer Lines
- ☒ Approval of Street and Drainage Improvements
- ☒ Quality of Construction
- ☒ Compliance with requirements of EPA
- ☒ Approval of Flood Administrator

In addition to the Construction Plan drawings, the following shall be provided:

- ☒ One PDF file of the pictorial portion of the Construction Plan sheets indicated above by an asterisk (*), for display at the Planning Commission meeting.

Include a fee of \$500.00 plus \$20.00 per lot with this application (check payable to the City of Bartlett).
The fee is not refundable.

INCOMPLETE APPLICATIONS WILL NOT BE PROCESSED



THE SANCTUARY

PHASE 1

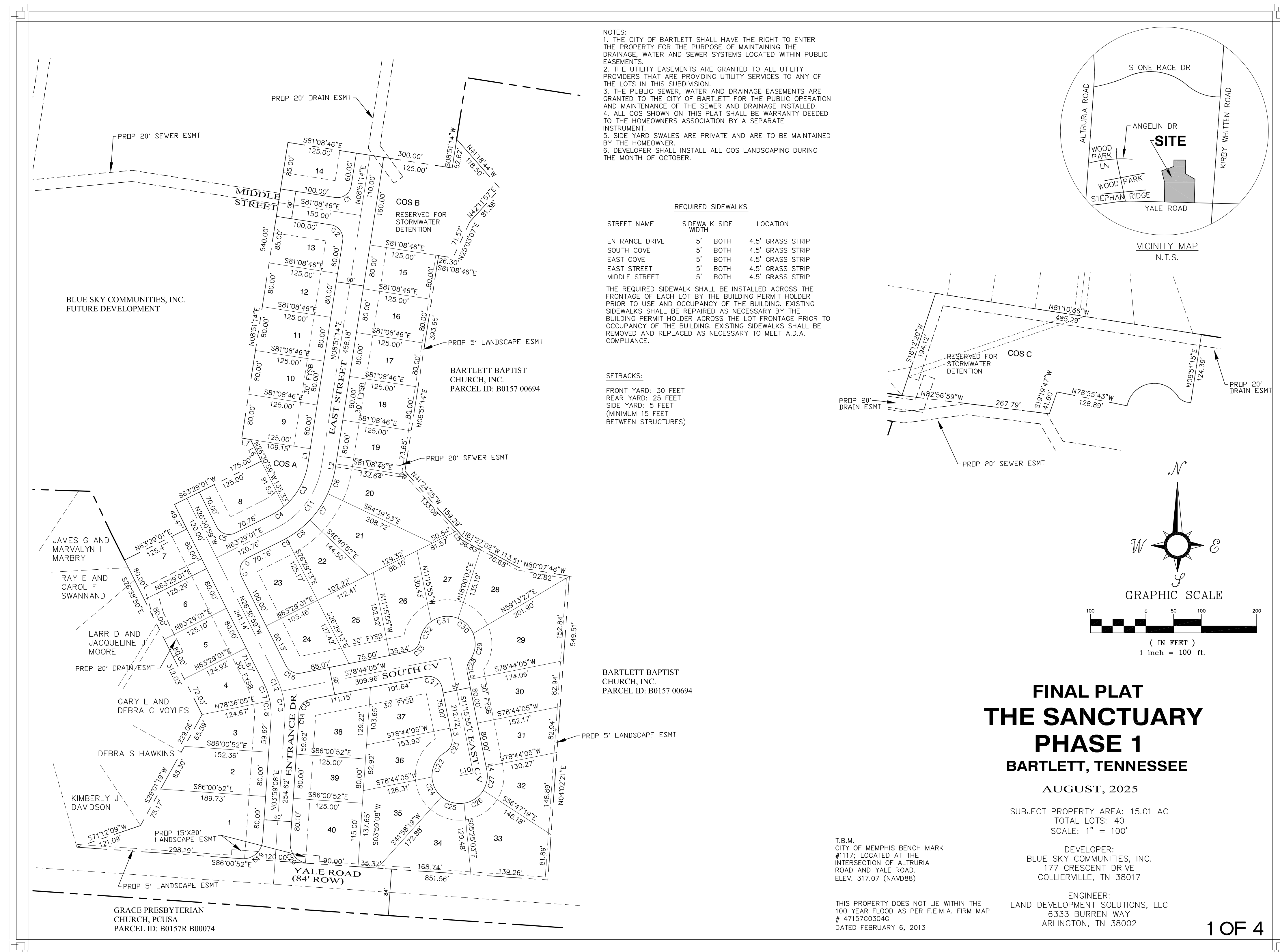
BARTLETT, TENNESSEE

DEVELOPER
BLUE SKY COMMUNITIES, INC
177 CRESCENT DRIVE
COLLIERVILLE, TN 38017

ENGINEER
LAND DEVELOPMENT SOLUTIONS, LLC
6333 BURREN WAY
ARLINGTON, TN 38002

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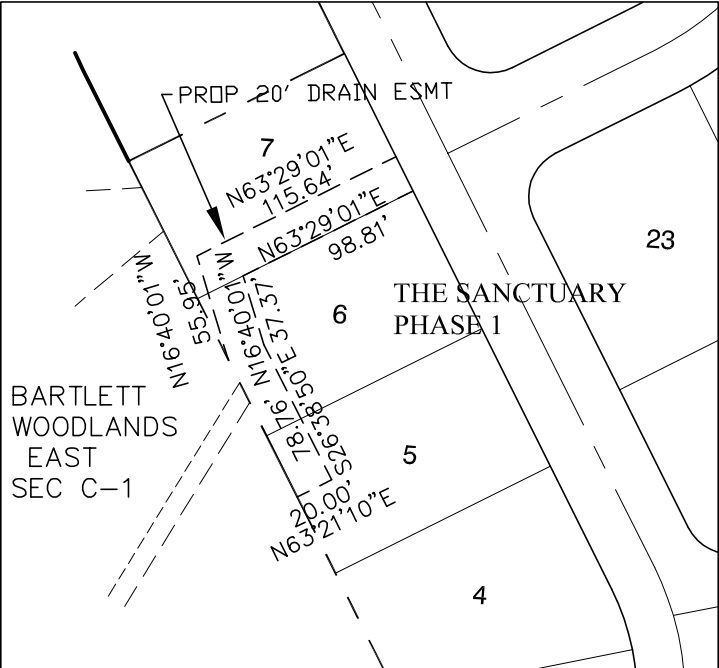
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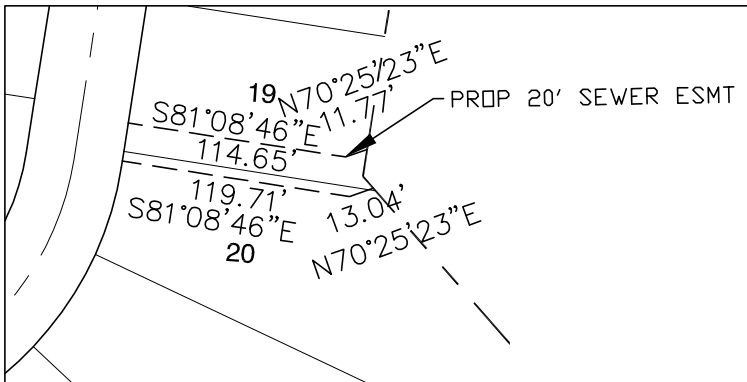
LINE TABLE		
LINE	LENGTH	BEARING
L1	28.18	S08°51'14"W
L2	8.18	N08°51'14"E
L3	17.01	S11°15'55"E
L4	7.20	N11°15'55"W
L5	14.62	N11°15'55"W
L6	43.80	N26°30'59"W
L7	15.85	S81°08'46"E
L8	16.30	S41°24'25"E
L9	9.93	S41°24'25"E
L10	25.00	N78°44'05"E

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	CHORD	CHORD DIRECTION	DELTA ANGLE
C1	39.27'	25.00'	25.00'	35.36'	N53°51'14"E	90°00'00"
C2	39.27'	25.00'	25.00'	35.36'	N36°08'46"W	90°00'00"
C3	89.67'	125.00'	46.86'	87.76'	N29°24'19"E	41°06'10"
C4	29.51'	125.00'	14.82'	29.44'	N56°43'13"E	13°31'37"
C5	39.27'	25.00'	25.00'	35.36'	S71°30'59"E	90°00'00"
C6	47.51'	175.00'	23.90'	47.36'	N16°37'53"E	15°33'17"
C7	58.00'	175.00'	29.27'	57.73'	N33°54'11"E	18°59'18"
C8	53.59'	175.00'	27.01'	53.38'	N52°10'11"E	17°32'43"
C9	7.76'	175.00'	3.88'	7.76'	N62°12'47"E	2°32'29"
C10	39.27'	25.00'	25.00'	35.36'	S18°29'01"W	90°00'00"
C11	143.02'	150.00'	77.47'	137.66'	N36°10'08"E	54°37'47"
C12	26.68'	150.00'	13.38'	26.64'	N21°25'15"W	10°11'27"
C13	53.17'	150.00'	26.87'	52.90'	N06°10'12"W	20°18'40"
C14	14.22'	175.00'	7.12'	14.22'	N01°39'26"E	4°39'25"
C15	34.65'	25.00'	20.76'	31.94'	S39°01'54"W	79°24'21"
C16	32.62'	25.00'	19.10'	30.35'	S63°53'27"E	74°44'57"
C17	33.27'	125.00'	16.74'	33.17'	N18°53'27"W	15°15'03"
C18	33.27'	125.00'	16.74'	33.17'	N03°38'24"W	15°15'03"
C19	54.98'	35.00'	35.00'	49.50'	N48°59'21"E	90°00'25"
C20	54.97'	35.00'	35.00'	49.49'	S41°00'41"E	89°59'38"
C21	39.27'	25.00'	25.00'	35.36'	N56°15'55"W	90°00'00"
C22	53.80'	50.00'	29.83'	51.24'	S28°26'26"W	61°38'44"
C23	30.77'	25.00'	17.68'	28.87'	N23°59'57"E	70°31'44"
C24	41.08'	50.00'	21.78'	39.94'	S25°55'12"E	47°04'32"
C25	43.40'	50.00'	23.18'	42.05'	S74°19'33"E	49°44'11"
C26	42.97'	50.00'	22.91'	41.66'	N56°11'09"E	49°14'26"
C27	37.38'	50.00'	19.61'	36.51'	N10°09'00"E	42°49'51"
C28	21.03'	25.00'	11.18'	20.41'	S12°49'46"W	48°11'23"
C29	51.98'	50.00'	28.35'	49.32'	N07°22'17"E	59°06'21"
C30	39.49'	50.00'	20.84'	38.47'	N44°48'18"W	45°14'50"
C31	51.47'	50.00'	28.28'	49.23'	S83°04'46"W	58°59'02"
C32	39.60'	50.00'	20.91'	38.58'	S30°53'48"W	45°22'54"
C33	30.77'	25.00'	17.68'	28.87'	N43°28'13"E	70°31'44"

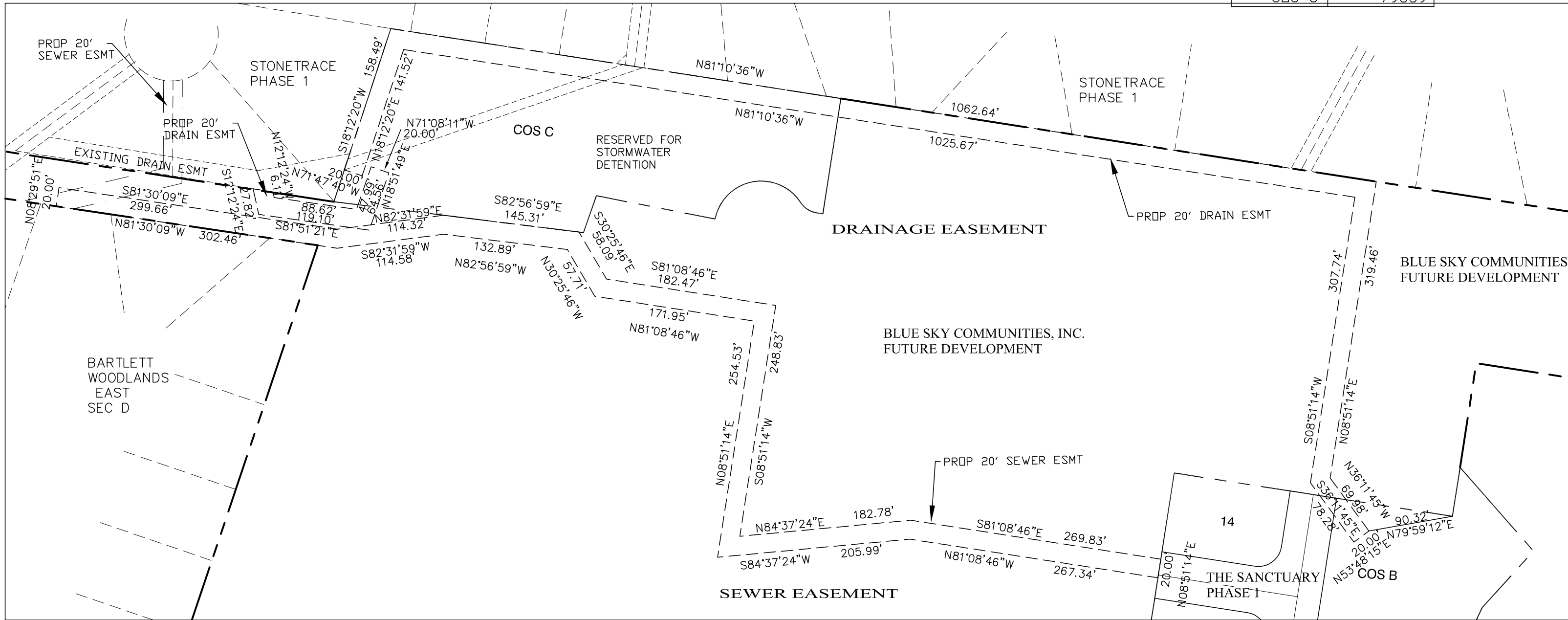
LOT AREA	
LOT NO	AREA (SF)
1	26752
2	13684
3	10316
4	11044
5	10001
6	10016
7	10030
8	11707
9	10000
10	10000
11	10000
12	10000
13	10491
14	10491
15	10000
16	10000
17	10000
18	10000
19	10024
20	16458
21	14636
22	10135
23	12802
24	11651
25	12881
26	12940
27	12085
28	13835
29	19571
30	13049
31	11298
32	12053
33	18144
34	13904
35	14496
36	11531
37	13893
38	13969
39	10000
40	14116
CDS A	6925
CDS B	30613
CDS C	79559



DRAINAGE EASEMENT



SEWER EASEMENT



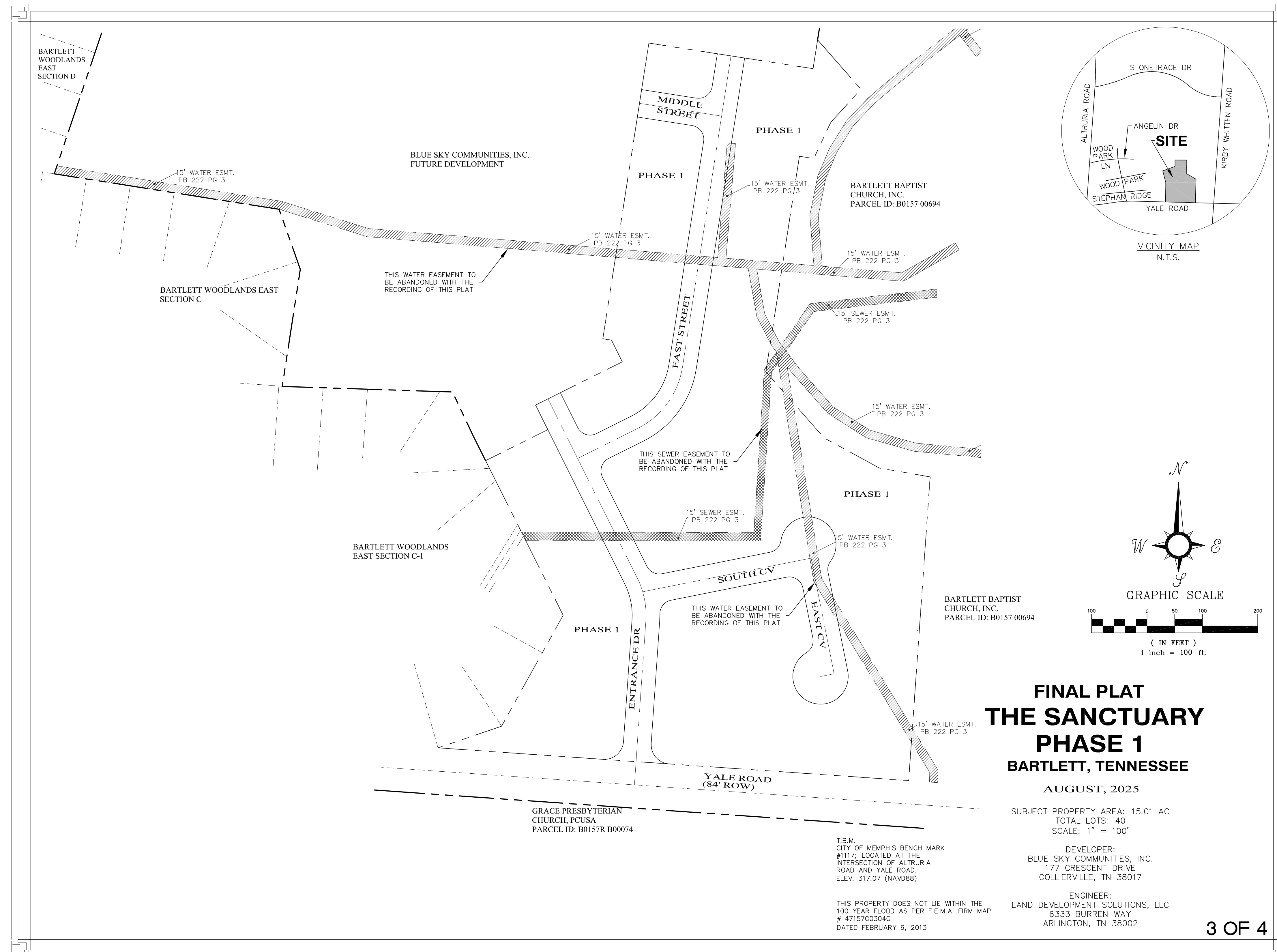
FINAL PLAT
THE SANCTUARY
PHASE 1
BARTLETT, TENNESSEE

AUGUST, 2025

SUBJECT PROPERTY AREA: 15.01 AC
TOTAL LOTS: 40
SCALE: 1" = 100'

DEVELOPER:
BLUE SKY COMMUNITIES, INC.
177 CRESCENT DRIVE
COLLIERVILLE, TN 38017

ENGINEER:
LAND DEVELOPMENT SOLUTIONS, LLC
6333 BURREN WAY
ARLINGTON, TN 38002



OWNER'S CERTIFICATE
WE, THE UNDERSIGNED BLUE SKY COMMUNITIES, INC,OWNERS OF THE PROPERTY SHOWN
HEREON, HEREBY ADOPT THIS AS OUR PLAN OF DEVELOPMENT AND DEDICATE THE
STREETS, RIGHTS-OF-WAY, AND GRANT THE EASEMENTS AS SHOWN AND/OR DESCRIBED
TO THE PUBLIC USE FOREVER. WE CERTIFY THAT WE ARE THE OWNERS OF SAID PROPERTY
IN FEE SIMPLE, DULY AUTHORIZED SO TO ACT; AND THAT SAID PROPERTY IS NOT
ENCUMBERED BY ANY TAXES WHICH HAVE BECOME DUE AND PAYABLE.

SIGNATURE DATE

NOTARY'S CERTIFICATE
STATE OF TENNESSEE
COUNTY OF SHELBY
BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID STATE AND COUNTY
AT MEMPHIS, DULY COMMISSIONED AND QUALIFIED, PERSONALLY APPEARED

WITH WHOM I AM PERSONALLY ACQUAINTED AND WHO UPON HIS OATH
ACKNOWLEDGED HIMSELF TO BE _____ OF BLUE SKY
COMMUNITIES, INC., OWNER OF THE PROPERTY, THE WITHIN NAMED BARGAINER, AND
THAT HE EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN
CONTAINED.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND AFFIXED MY NOTORIAL SEAL
AT MY OFFICE IN _____, WITNESS MY HAND AND NOTARIAL
SEAL THIS _____ DAY OF _____, 20_____.

NOTARY PUBLIC

MY COMMISSION EXPIRES

MORTGAGEE'S CERTIFICATE
WE, _____, THE UNDERSIGNED MORTGAGEE OF THE PROPERTY
SHOWN HEREON, HEREBY CONSENT AND AGREE TO THE PLAN OF DEVELOPMENT AS
SUBMITTED BY _____, OWNER(S) OF THE PROPERTY.

NOTARY'S CERTIFICATE
STATE OF TENNESSEE
COUNTY OF SHELBY
BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID STATE AND COUNTY
AT MEMPHIS, DULY COMMISSIONED AND QUALIFIED, PERSONALLY APPEARED

WITH WHOM I AM PERSONALLY ACQUAINTED AND WHO UPON HIS OATH
ACKNOWLEDGED HIMSELF TO BE _____ OF BLUE SKY
COMMUNITIES, INC., OWNER OF THE PROPERTY, THE WITHIN NAMED BARGAINER, AND
THAT HE EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN
CONTAINED.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND AFFIXED MY NOTORIAL SEAL
AT MY OFFICE IN _____, WITNESS MY HAND AND NOTARIAL
SEAL THIS _____ DAY OF _____, 20_____.

NOTARY PUBLIC

MY COMMISSION EXPIRES

CERTIFICATE OF ADEQUACY OF STORM DRAINAGE
I, _____, DO HEREBY CERTIFY THAT I AM A
REGISTEREDPROFESSIONAL CIVIL ENGINEER, AND THAT I HAVE DESIGNED ALL
STORMWATER DRAINAGE FOR WALKER FARMS PHASE 3 TO ASSURE THAT NEITHER THE
SAID SUBDIVISION NOR ADJOINING PROPERTY WILL BE DAMAGED OR THE CHARACTER OF
LAND USE AFFECTED BY THE VELOCITY AND VOLUME OF WATER ENTERING OR LEAVING
SAME.

IN WITNESS WHERE, I, THE SAID _____, PROFESSIONAL CIVIL
ENGINEER, HEREUNTO SET OUT HAND AND AFFIX MY SEAL THIS _____ DAY OF
_____.

PROFESSIONAL CIVIL ENGINEER DATE
TENNESSEE CERTIFICATE NUMBER

CERTIFICATE OF SURVEY
I, _____, DO HEREBY CERTIFY THAT I AM A REGISTERED LAND
SURVEYOR, AND THAT I HAVE SURVEYED THE LANDS EMBRACED WITHIN THE PLAT OR
MAP DESIGNATED AS FINAL PLAT, WALKER FARMS PHASE, A SUBDIVISION ALL LYING
WITHIN THE CORPORATE LIMITS OF THE CITY OF BARTLETT, TENNESSEE; SAID PLAT OR
MAP IS A TRUE AND CORRECT PLAT OR MAP OF THE LANDS EMBRACED THEREIN,
SHOWING THE SUBDIVISION THEREOF IN ACCORDANCE WITH THE SUBDIVISION
REGULATIONS OF THE CITY OF BARTLETT, TENNESSEE; I FURTHER CERTIFY THAT THE
SURVEY OF THE LANDS EMBRACED WITHIN SAID PLAT OR MAP HAS BEEN CORRECTLY
MONUMENTED IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS OF THE CITY OF
BARTLETT, TENNESSEE.

IN WITNESS WHERE, I, THE SAID _____, LAND SURVEYOR,
HEREUNTO SET OUT HAND AND AFFIX MY SEAL THIS _____ DAY OF
_____.

SIGNATURE OF LAND SURVEYOR DATE
TENNESSEE CERTIFICATE NUMBER

PLANNING COMMISSION CERTIFICATE
I, _____, DO HEREBY CERTIFY THAT THE CITY OF BARTLETT
PLANNING COMMISSION HAS APPROVED THIS PLAT OF SUBDIVISION FOR RECORDING.

SECRETARY, BARTLETT PLANNING COMMISSION DATE

BOARD OF MAYOR AND ALDERMEN CERTIFICATE
I, _____, DO HEREBY CERTIFY THAT ALL REQUIRED
IMPROVEMENTS HAVE BEEN INSTALLED, OR THAT A PERFORMANCE BOND OR OTHER
COLLATERAL IN SUFFICIENT AMOUNT TO ASSURE COMPLETION OF ALL REQUIRED
IMPROVEMENTS HAS BEEN POSTED FOR THE SUBDIVISION SHOWN ON THIS PLAT, AND
ARE HEREBY APPROVED BY THE CITY OF BARTLETT, TENNESSEE.

MAYOR, CITY OF BARTLETT DATE

**FINAL PLAT
THE SANCTUARY
PHASE 1
BARTLETT, TENNESSEE**

AUGUST, 2025

SUBJECT PROPERTY AREA: 15.01 AC
TOTAL LOTS: 40
SCALE: 1" = 100'

DEVELOPER:
BLUE SKY COMMUNITIES, INC.
177 CRESCENT DRIVE
COLLIERVILLE, TN 38017

ENGINEER:
LAND DEVELOPMENT SOLUTIONS, LLC
6333 BURREN WAY
ARLINGTON, TN 38002

TRENCH NOTES

1. TRENCH BOXES MAY BE REQUIRED FOR SAFETY. WORKERS MUST STAY INSIDE OF TRENCH BOXES DURING INSTALLATION OF PIPE.
2. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL O.S.H.A. REGULATIONS.
3. THE ENGINEER DISCLAIMS ANY RESPONSIBILITY FOR TRENCH FAILURES OR COLLAPSES CAUSING INJURY. THE CONTRACTOR IS FULLY RESPONSIBLE FOR MAINTAINING A SAFE WORK ENVIRONMENT.

CONSTRUCTION STAKES, LINES AND GRADES

1. THE SURVEYOR WILL SET CONSTRUCTION STAKES ESTABLISHING LINES, SLOPES AND PROFILE GRADE IN ROAD WORK, AND LINE AND GRADE FOR CULVERT WORK. PROTECTIVE AND ACCESSORY STRUCTURES AND APPURTENANCES MAY BE DEEMED NECESSARY, AND WILL FURNISH THE CONTRACTOR WITH ALL NECESSARY INFORMATION RELATING TO LINES, SLOPES AND GRADES.
2. THE SURVEYOR WILL BE RESPONSIBLE FOR THE ACCURACY OF ALL STAKES OR MARKS SET BY THE SURVEYOR TO ESTABLISH THE PLANNED LINES, SLOPES AND GRADES. THESE STAKES AND MARKS SHALL CONSTITUTE THE FIELD CONTROL WITH WHICH THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACCURATELY ESTABLISHING OTHER NECESSARY CONTROLS AND PERFORMING THE WORK.
3. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PRESERVATION OF ALL STAKES AND MARKS. IF ANY OF THE CONSTRUCTION STAKES OR MARKS ARE CARELESSLY OR WILLFULLY DESTROYED OR DISTURBED BY THE CONTRACTOR, THE COST OF REPLACING THEM WILL BE DEDUCTED FROM THE PAYMENT FOR THE WORK.
4. BEFORE COMMENCING WORK, THE CONTRACTOR MUST BE SATISFIED AS TO THE CORRECTNESS AND MEANING OF ALL STAKES, MEASUREMENTS AND MARKS. NO CLAIM WILL BE ENTERTAINED AS A RESULT OF ALLEGED INACCURACIES UNLESS THE CONTRACTOR NOTIFIES THE ENGINEER THEREOF IN WRITING IN TIME FOR THE ENGINEER TO VERIFY OR CHECK SUCH STAKES OR MARKS BEFORE THE WORK IS COMMENCED.

GENERAL NOTES

1. A MINIMUM OF 24-HOURS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE CITY OF BARTLETT CONSTRUCTION INSPECTION DIVISION AT 901-385-6499.
2. ALL NEWLY CUT OR FILLED AREAS LACKING ADEQUATE VEGETATION SHALL BE SEEDED, MULCHED, FERTILIZED, AND/OR SODDED AS REQUIRED TO EFFECTIVELY CONTROL SOIL EROSION.
3. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND NOT NECESSARILY ALL OF SAME. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY COMPANIES WHICH MAINTAIN A UTILITY LINE WITHIN THE BOUNDARIES OF THE PROJECT PRIOR TO THE INITIATION OF ANY CONSTRUCTION ON THE PROJECT OR IN THE STREETS BORDERING THE PROJECT. THE CONTRACTOR SHALL ALSO ASSUME FULL RESPONSIBILITY FOR DAMAGE TO ANY UTILITIES ENCOUNTERED WITHIN CONSTRUCTION PERIMETERS, WHETHER SHOWN ON THE CONSTRUCTION PLANS OR NOT. DURING THE WORK ON THE PROJECT, FOR SITE LOCATION OF EXISTING UTILITIES CALL: 1-800-351-1111 OR 811 A MINIMUM OF 3 BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION.
4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES.
5. ALL FILL SOILS SHALL BE COMPACTED TO A MINIMUM OF 95 % OF STANDARD PROCTOR DENSITY (ASTM D-698) WITHIN 3 % OF OPTIMUM MOISTURE CONTENT IN LIFTS NOT TO EXCEED SIX (6) INCHES OF COMPACTED THICKNESS. BACKFILL OF ALL DRAIN, SEWER AND WATER LINES SHALL MEET THE DENSITY AND BACKFILL REQUIREMENTS OF THE CITY'S TECHNICAL SPECIFICATIONS.
6. ALL CONSTRUCTION MATERIAL AND PROCEDURES SHALL MEET OR EXCEED THE REQUIREMENTS OF THE CITY OF BARTLETT STANDARD CONSTRUCTION SPECIFICATIONS.
7. PROPERTY LINES SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION, GRADING, CLEARING AND ERECTION OR REMOVAL OF FENCES ALONG PROPERTY LINES SHALL BE FULLY COORDINATED WITH ADJACENT PROPERTY OWNERS.
8. VERIFY SITE CONDITIONS PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER OF ANY VARIATIONS PRIOR TO COMMENCEMENT OF WORK.
9. ALL GRADING WORK SHALL BE PERFORMED IN SUCH A MANNER THAT ADJACENT PROPERTIES ARE NOT DAMAGED OR ADVERSELY AFFECTED.
10. LOT DRAINAGE: FINISH GRADE SHALL BE SLOPED AWAY FROM THE FOUNDATION FOR DRAINAGE. THE FINISH GRADE MUST BEGIN AT LEAST 12-INCHES BELOW THE TOP OF THE FOUNDATION WALL OR THE GRADE OF THE CONCRETE SLAB AT THE INTERIOR IN THE CASE OF AN INTEGRAL SLAB AND FOUNDATION. THE MINIMUM GRADE AWAY FROM THE FOUNDATION SHALL BE TWO PERCENT (2%) IN ALL DIRECTIONS. THE DRIVEWAY SHALL BE SLOPED DOWN AT TWO PERCENT (2 %) FOR AT LEAST EIGHT FEET FROM THE STRUCTURE.
11. CONTRACTOR SHALL INSTALL SURVEY MONUMENTS AS SHOWN ON THE FINAL PLAT.
12. THE DEVELOPER SHALL PROVIDE A SOILS TECHNICIAN TO PERFORM DENSITY TESTING IN PUBLIC R.O.W.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN EROSION CONTROL DURING CONSTRUCTION BY THE PLACEMENT OF SILT FENCES, HAY BALES, AND OTHER APPROPRIATE STRUCTURAL OR NONSTRUCTURAL MEASURES AS SHOWN ON THE STORM WATER POLLUTION PREVENTION PLAN (CONTAINED HEREIN, AS MODIFIED) WHERE NECESSARY TO PREVENT DOWNSTREAM SILTATION OF ANY DITCHES, PIPES, DRAINAGE STRUCTURES OR ADJACENT PROPERTIES. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL EROSION CONTROL AS NEEDED OR AS DIRECTED BY THE ENGINEER.
2. ALL CONTROL MEASURES MUST BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
3. EROSION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN.
4. CLEARING AND GRUBBING SHALL BE THE MINIMUM NECESSARY FOR GRADING AND EQUIPMENT OPERATION. SEQUENCE CONSTRUCTION TO MINIMIZE EXPOSURE TIME OF CLEARED AREAS. PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE REMOVED OR DISTURBED MORE THAN 14 DAYS PRIOR TO BEGINNING EARTH-MOVING OPERATIONS UNLESS TEMPORARY GROUND COVER IS INSTALLED.
5. AVOID GRADING ACTIVITIES DURING MONTHS OF HIGHLY EROSIVE RAINFALL.
6. STABILIZE ONE CLEARED AREA BY TEMPORARILY OR PERMANENTLY PROTECTING THE DISTURBED SOIL SURFACE FROM RAINFALL IMPACTS AND RUNOFF BEFORE PROCEEDING TO CLEAR ANOTHER.
7. INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES TWICE WEEKLY. A MINIMUM OF 72-HOURS APART AND AFTER EACH RAINFALL MEASURING MORE THAN 1-INCH IN 24-HOURS. INSPECTION AND APPROPRIATE REMEDIAL MEASURES SHALL BE DOCUMENTED ON THE "CGP Inspection Worksheet for Twice-Weekly Inspections of Erosion Prevention and Sediment Controls" FORM.
8. DESIGNATE A SPECIFIC INDIVIDUAL TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AND KEEP THE PERMANENT JOB LOG. INSPECTORS PERFORMING THE REQUIRED TWICE WEEKLY INSPECTIONS MUST HAVE AN ACTIVE CERTIFICATION BY COMPLETING THE "FUNDAMENTALS OF EROSION PREVENTION AND SEDIMENT CONTROL LEVEL 1" COURSE AS REQUIRED BY THE TENNESSEE DIVISION OF WATER POLLUTION CONTROL. A COPY OF THE CERTIFICATION OR TRAINING RECORD FOR INSPECTOR CERTIFICATION SHOULD BE KEPT ONSITE.
9. EROSION CONTROLS ARE NOT LIMITED TO THE SPECIFIED PRACTICES; HOWEVER, ALTERNATIVE MEASURES MUST BE AT LEAST AS EFFECTIVE IN CONTROLLING EROSION AND SEDIMENTATION.
10. PLACE MATERIAL EXCAVATED FROM PIPE TRENCHES ON THE UPSLOPE SIDE OF THE EXCAVATION SUCH THAT ANY EROSION FROM THE SPOIL PILE IS CAUGHT BY THE TRENCH.
11. PROMPTLY BACKFILL AND STABILIZED TRENCHES AND/OR PITS.
12. APPLY APPROPRIATE ANNUAL VEGETATION, OR OTHER MEASURES FOR TEMPORARY SOIL STABILIZATION TO AREAS THAT ARE INACTIVE FOR MORE THAT 14 CALENDAR DAYS.
13. AS SOON AS POSSIBLE AFTER FINAL GRADING, BUT NO LATER THAN 14 DAYS. APPLY PERMANENT SOIL STABILIZATION WITH PERENNIAL VEGETATION AND/OR OTHER APPROPRIATE PERMANENT STABILIZATION PRACTICES.
14. INSTALL SILT FENCE ALONG THE BASE OF ALL BACKFILLS AND CUTS, ON THE DOWNHILL SIDE OF STOCKPILED SOIL, AND ALONG DITCH BANKS IN CLEARED AREAS TO PREVENT EROSION INTO DITCHES. DO NOT PLACE SILT FENCE IN FLOWING DITCH.
15. WHERE EVER POSSIBLE, DIVERT OFF-SITE SURFACE WATER FLOWING TOWARD THE SITE AROUND THE CONSTRUCTION AREA BY THE USE OF DIKES, BERMS, CHANNELS OR SEDIMENT TRAPS, AS NECESSARY.
16. STABILIZE DISTURBED DITCH BANKS AT ALL CROSSINGS WITHIN FIVE (5) CALENDAR DAYS OF COMPLETION OF THE CROSSING, SLOPES GREATER THAN 20% (5 H: 1 V) SHALL BE STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED.
17. DO NOT DESTROY, REMOVE OR DISTURB VEGETATIVE GROUND COVER MORE THAN 14 CALENDAR DAYS PRIOR TO GRADING. DO NOT UNNECESSARILY REMOVE CANOPY; HOWEVER, WHEN NECESSARY, TREES AND SHRUBS SHOULD BE CUT SO THEY FALL AWAY FROM DITCHES.
18. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM ALL STRUCTURAL MEASURES WHEN THE DEPTH OF THE CONTAINED SEDIMENT REACHES 50% OF THE FULL CAPACITY OF THE MEASURE.
19. SLOPES EQUAL TO OR STEEPER THAN 4(H):1(V) SHALL BE SODDED, OR SHALL HAVE AN APPROPRIATE EROSION CONTROL BLANKET APPLIED AFTER SEEDING TO PROTECT THE SLOPE UNTIL A 70 % COVERAGE OF GRASS HAS BEEN ACHIEVED. ANY SLOPE REPAIRS SHALL BE PERFORMED PRIOR TO TERMINATION OF COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT.

UNDERGROUND UTILITIES DISCLAIMER

INFORMATION REGARDING THE REPUTED PRESENCE, SIZE, CHARACTER AND LOCATION OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES RELATED TO UNDERGROUND UTILITIES AS SHOWN HEREON ARE FROM PHYSICAL EVIDENCE LOCATED IN THE FIELD AND FROM UTILITY COMPANY RECORDS. THERE IS NO CERTAINTY OF THE ACCURACY OF THIS INFORMATION AND IT SHALL BE CONSIDERD IN THAT LIGHT BY THOSE USING THIS DRAWING. THE LOCATION AND ARRANGEMENT OF UNDERGROUND UTILITIES SHOWN HEREON MAY BE INACCURATE AND UTILITIES NOT SHOWN MAY BE ENCOUNTERED. THE OWNER, HIS EMPLOYEES, HIS CONSULTANTS, AND HIS CONTRACTORS SHALL HEREBY DISTINCTLY UNDERSTAND THAT THE SURVEYOR OR ENGINEER IS NOT RESPONSIBLE FOR THE CORRECTNESS OR SUFFICIENCY OF HIS INFORMATION REGARDING THE UNDERGROUND UTILITIES AND STRUCTURES RELATED TO UNDERGROUND UTILITIES SHOWN HEREON..

ABOVE GROUND AND UNDERGOUND UTILITIES THROUGH THIS PROPERTY SHOWN HEREON AND THE STREETS SURROUNDING THE PROPERTY SHOWN HEREON ARE OWNED AND MAINTAINED BY THE FOLLOWING:

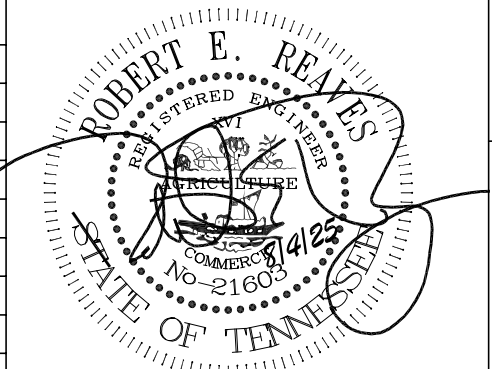
GAS AND ELECTRIC
MEMPHIS LIGHT GAS AND WATER DIVISION
LAND AND MAPPING
1665 WHITTEN ROAD
MEMPHIS, TN 38134
(901) 729-8620

TELEPHONE AND FIBER OPTIC COMMUNICATIONS
AT&T
315 E. COLLEGE STREET
JACKSON, TN 38301
(731) 217-7575

STREETS, SANITARY SEWER, WATER AND DRAINAGE
CITY OF BARTLETT
PUBLIC WORKS DEPARTMENT
3585 ALTRURIA ROAD
BARTLETT, TN 38135
(901) 385-5570

CABLE TELEVISION
XFINITY.COM
(800) 934-6489

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE



THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

SHEET 1 OF 1
DIVISION OF ENGINEERING

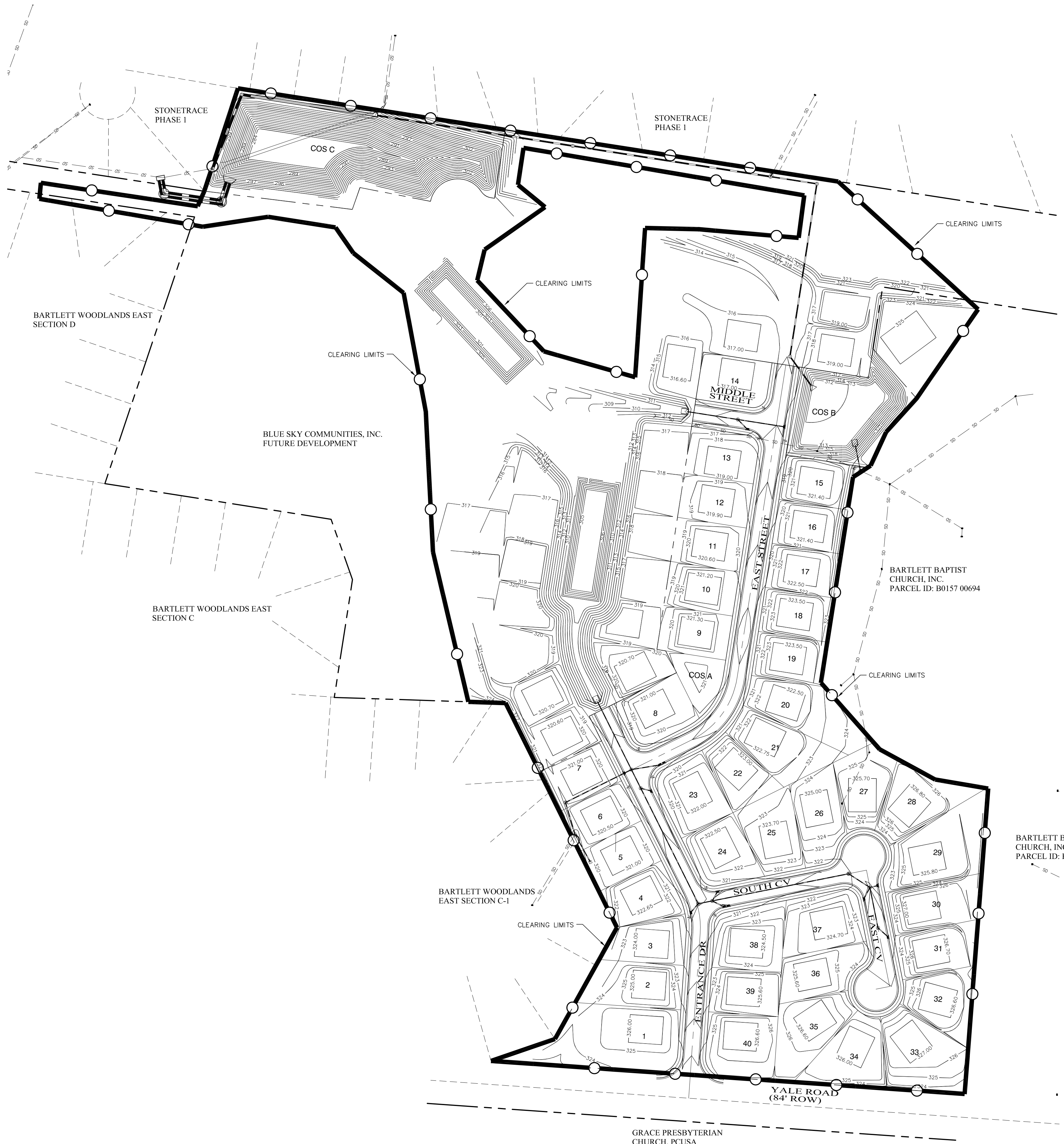
GENERAL NOTES

BARTLETT, TENNESSEE

SURVEY:
DESIGNED BY: LDS
DRAWN BY: LDS

DATE:
DATE: 8/25
REVIEWED BY:

PROJECT NO:
BOOK:
SCALE:



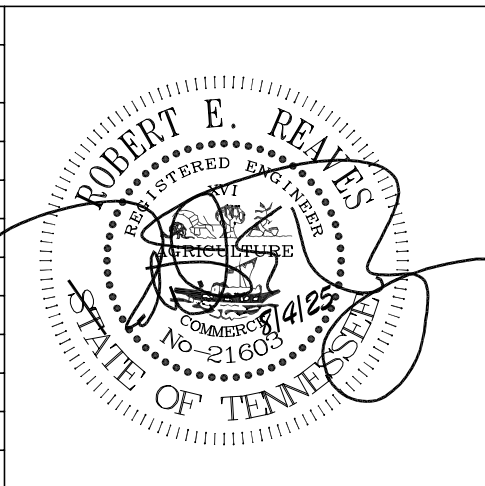
BARTLETT BAPTIST CHURCH, INC.
PARCEL ID: B0157 00694

GRACE PRESBYTERIAN CHURCH, PCUSA
PARCEL ID: B0157R B00074

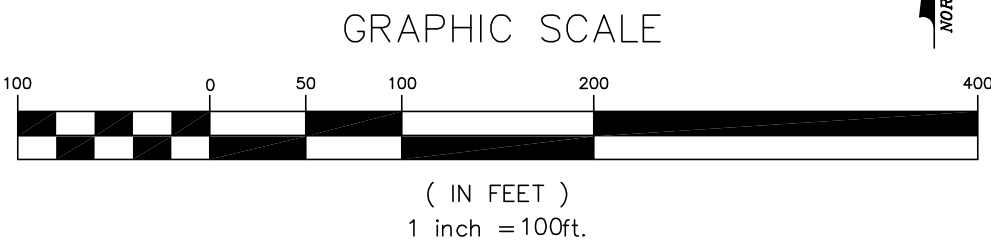
T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157033040
DATED FEBRUARY 6, 2013

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE



THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC



SHEET 1 OF 2
DIVISION OF ENGINEERING
CLEARING PLAN
BARTLETT, TENNESSEE

SURVEY: PROJECT NO:
DESIGNED BY: LDS BOOK:
DRAWN BY: LDS DATE: 8/25 SCALE: 1"=100'
REVIEWED BY:

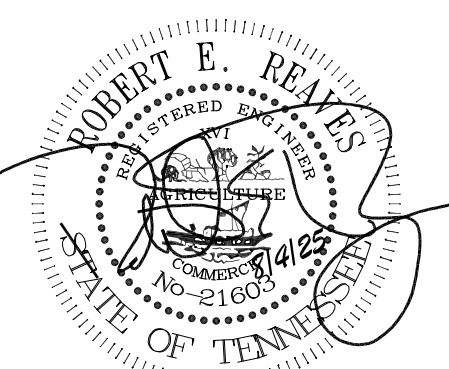


NOTE: CONTRACTOR SHALL VERIFY THE ELEVATION AND SLOPE OF EXISTING CURB AND DRAIN PIPES PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER OF ANY SIGNIFICANT VARIATION. ADJUSTMENTS TO THE EXISTING CURB AND DRAINAGE MAY BE REQUIRED.

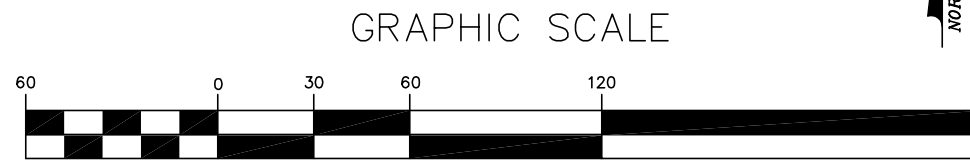
T.B.M.
CITY OF MEMPHIS BENCH MARK
#117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C0304G
DATED FEBRUARY 6, 2013

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE

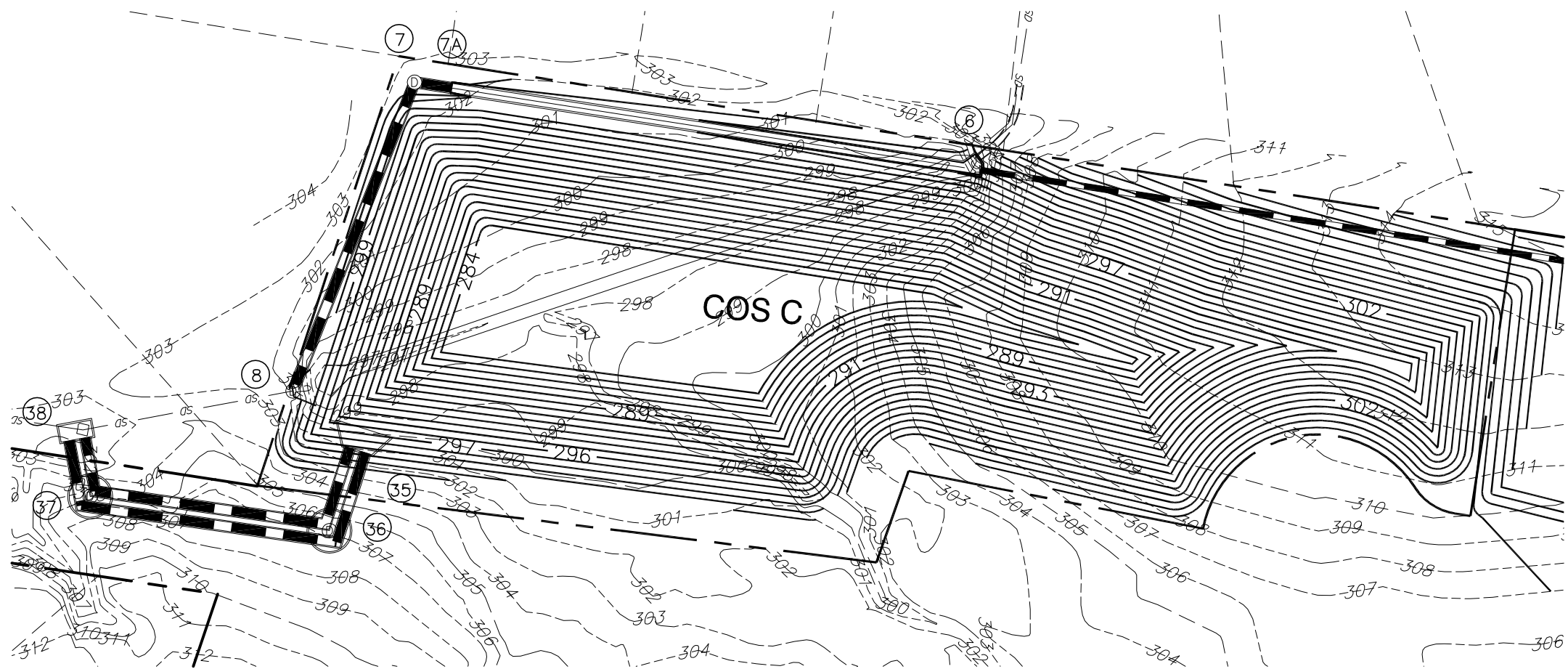


THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

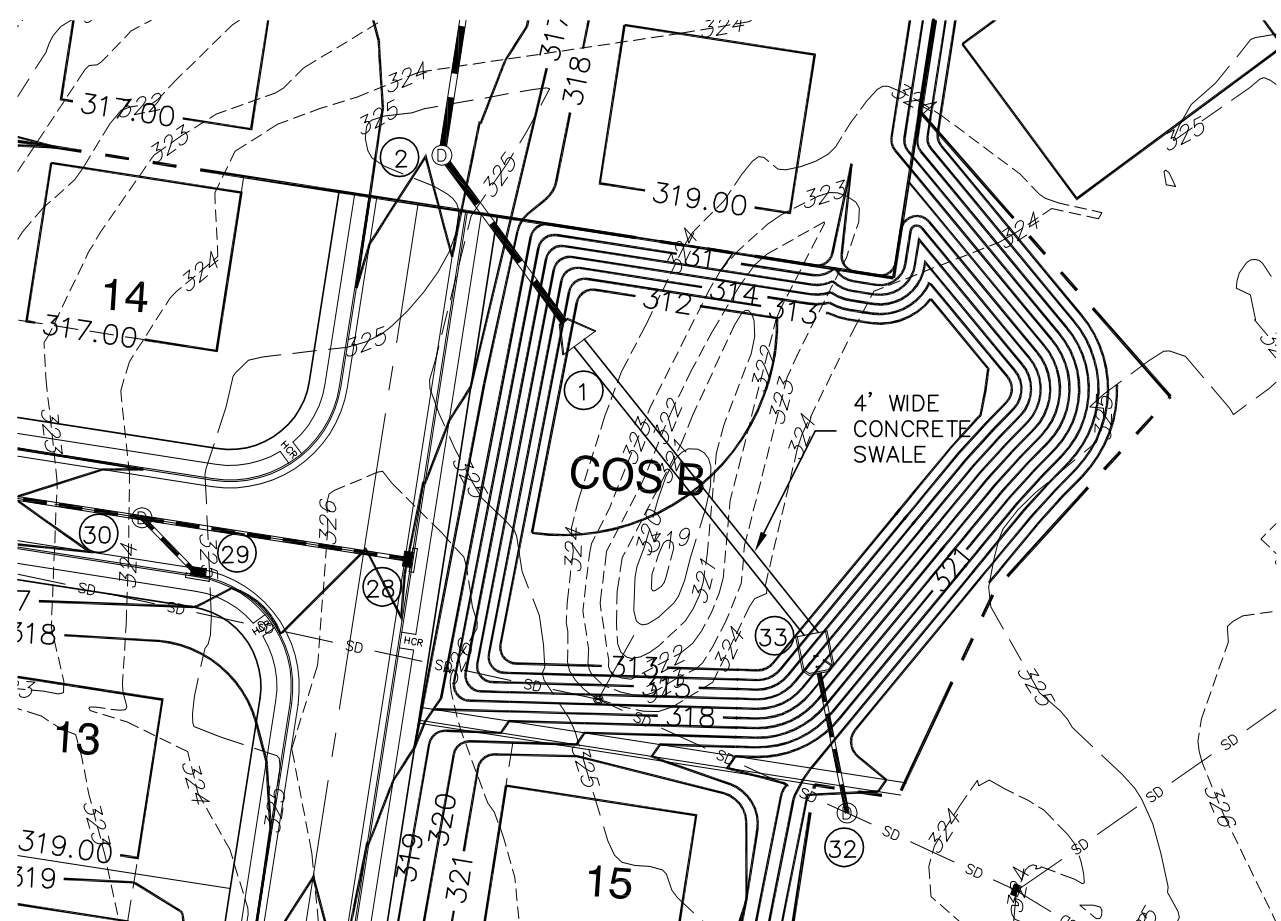


SHEET 1 OF 1
DIVISION OF ENGINEERING
GRADING AND DRAINAGE PLAN

BARTLETT, TENNESSEE
SURVEY: PROJECT NO:
DESIGNED BY: LDS DATE: BOOK:
DRAWN BY: LDS DATE: 8/25 SCALE: 1"=60'
REVIEWED BY:



WEST DETENTION BASIN



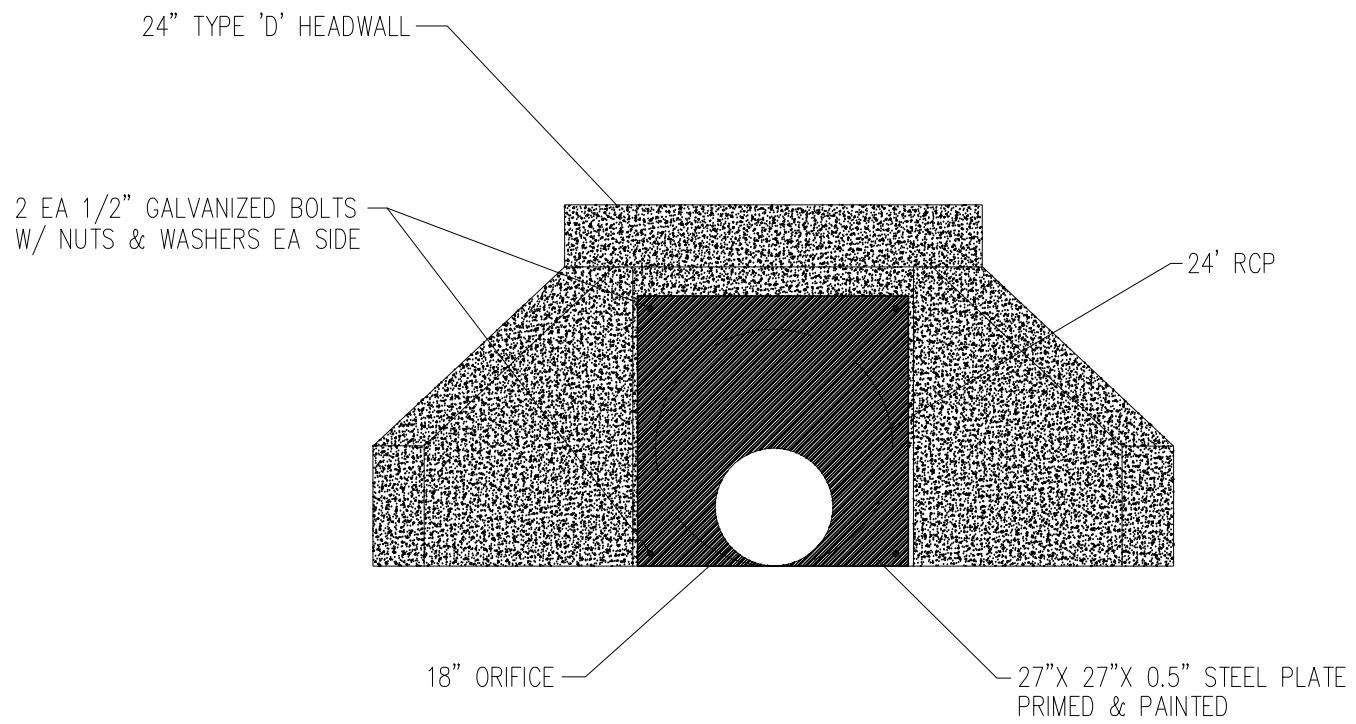
EAST DETENTION BASIN

WEST DETENTION BASIN SUMMARY							
STORM EVENT (yr)	PREDEV Q (cfs)	POST-DEV Q (cfs)	ROUTED Q (cfs)	BYPASS (cfs)	Q ROUTED PLUS BYPASS (cfs)	WSEL	STORAGE (cf)
2	103.82	108.12	58.36	39.36	90.04	298.60	43,610
5	148.13	147.54	86.17	52.09	128.45	299.17	145,112
10	184.66	179.68	108.64	62.30	159.45	299.59	167,707
25	235.56	223.82	138.69	76.19	201.31	300.15	197,960
100	321.32	297.15	183.22	86.05	266.31	301.05	248,923

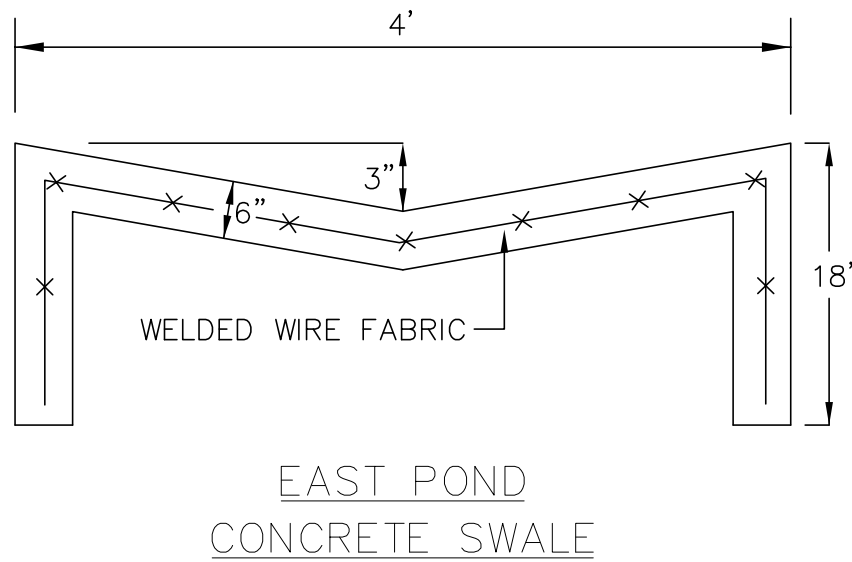
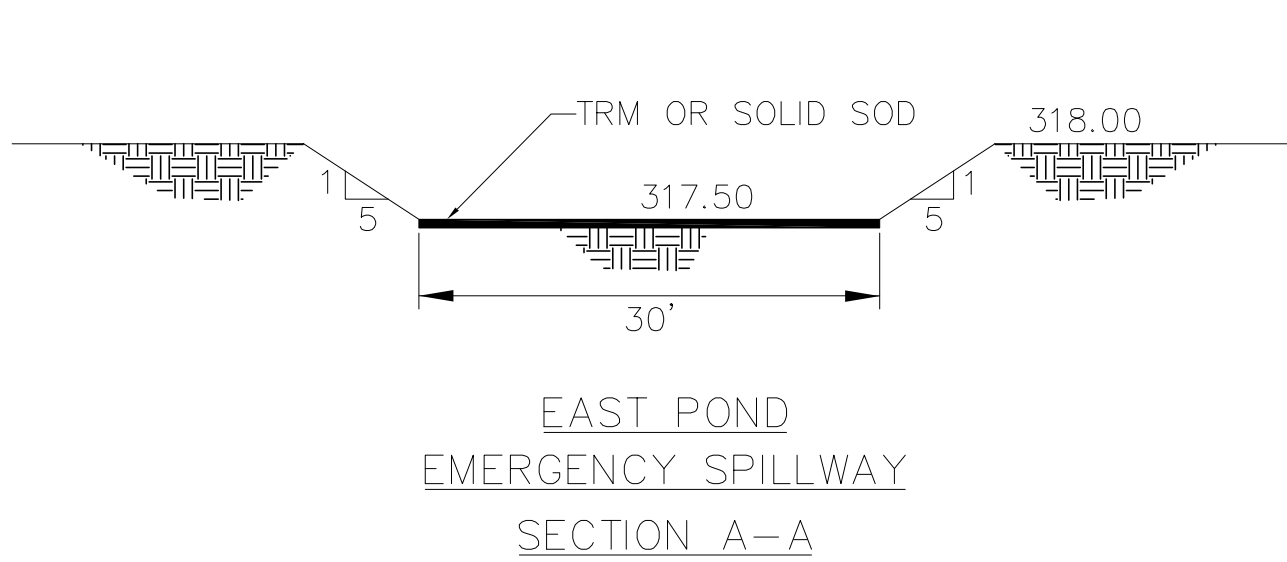
WEST DETENTION BASIN AS-BUILT					
ITEM	2 YEAR	5 YEAR	10 YEAR	25 YEAR	100 YEAR
NORTH POND Q-IN, CFS					
NORTH POND Q-OUT, CFS					
ALLOWED POND Q-OUT, CFS					
MAX WATER SURFACE ELEV., FT					
MAXIMUM POND STORAGE, AC-FT					

EAST DETENTION BASIN SUMMARY				
STORM EVENT (yr)	POST-DEV Q (cfs)	ROUTED Q (cfs)	WSEL	STORAGE (cf)
2	29.46	11.44	313.56	18,266
5	38.71	13.15	314.14	26,647
10	46.13	14.39	314.61	33,803
25	56.23	15.90	315.24	43,978
100	72.84	18.05	316.25	67,544

EAST DETENTION BASIN AS-BUILT					
ITEM	2 YEAR	5 YEAR	10 YEAR	25 YEAR	100 YEAR
SOUTH POND Q-IN, CFS					
SOUTH POND Q-OUT, CFS					
ALLOWED POND Q-OUT, CFS					
MAX WATER SURFACE ELEV., FT					
MAXIMUM POND STORAGE, AC-FT					



DETENTION POND OUTLET STRUCTURE
NTS



T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117; LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD;
ELEV. 317.07 (NAV088)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C03046
DATED FEBRUARY 6, 2013

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE

**THE SANCTUARY
PHASE 1**
DEVELOPER: BLUE SKY COMMUNITIES, INC.
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

SHEET 1 OF 1
DIVISION OF ENGINEERING
DETENTION BASIN PLAN
BARTLETT, TENNESSEE

SURVEY: DESIGNED BY: DATE: PROJECT NO:
DRAWN BY: DATE: 8/25 BOOK:
REVIEWED BY: SCALE: 1"=60'

CITY ENGINEER DATE



SEQUENCE OF WORK

PHASE 1

1. THE CONSTRUCTION ENTRANCE WILL BE INSTALLED.
2. PERIMETER SILT FENCING WILL BE INSTALLED TO CONTROL RUNOFF LEAVING THE SITE.
3. THE EASTERN POND WILL BE CONSTRUCTED AND STABILIZED AND THE BY-PASS DRAINAGE SYSTEM WILL BE INSTALLED.

PHASE 2

1. CLEARING AND MASS GRADING WILL OCCUR AND TEMPORARY STABILIZATION APPLIED.
2. SEDIMENT TRAPS WILL BE CONSTRUCTED.
3. THE SANITARY SEWER SYSTEM WILL BE INSTALLED.
4. THE DRAINAGE SYSTEM WILL BE INSTALLED.
5. THE WATER DISTRIBUTION SYSTEM WILL BE INSTALLED.
6. THE CURB AND GUTTERS WILL BE INSTALLED.
7. THE SOIL CEMENT BASE FOR THE ROADS WILL BE INSTALLED.
8. THE GAS AND ELECTRICAL SYSTEM WILL BE INSTALLED.
9. THE CURBS WILL BE BACKFILLED AND THE LOTS FINAL GRADED.

PHASE 3

1. THE LOTS WILL BE SEEDED WITH GROUND COVER.
2. SOD WILL BE PLACED AS SHOWN ON EPSCP PLAN.
3. ONCE STABILIZATION HAS BEEN ATTAINED, EROSION PROTECTION MEASURES SHALL BE REMOVED.

NOTE:
CONTRACTOR SHALL STABILIZE THE SITE AS THEY MOVE ACROSS IT TO MINIMIZE DISTURBED AREA AT ANY ONE TIME.

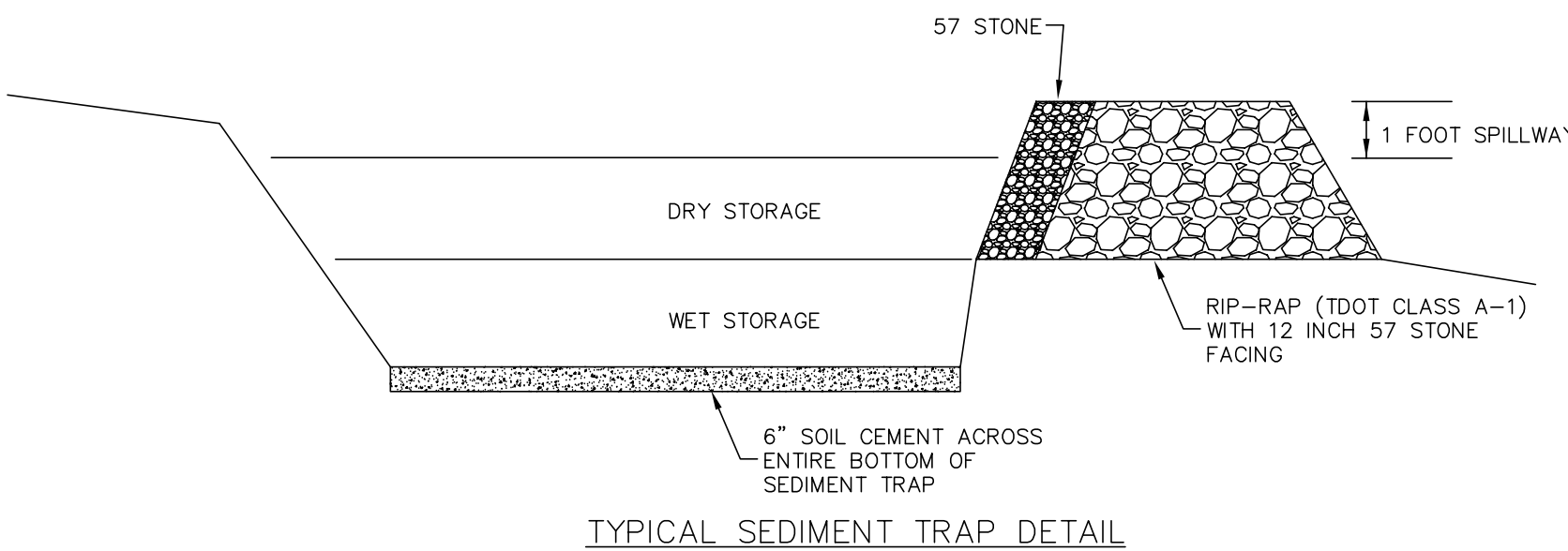
NOTE:
ADDITIONAL STONE MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTIONING OF THE CONSTRUCTION ENTRANCE PAD.

IF THE CRUSHED STONE DOES NOT ADEQUATELY REMOVE THE MUD FROM THE VEHICLE WHEELS, THE WHEELS SHOULD BE HOSED OFF BEFORE THE VEHICLE ENTERS A PUBLIC STREET.

THE WASHING SHOULD BE DONE ON AN AREA COVERED WITH CRUSHED STONE, AND THE WASTE WATER SHOULD DRAIN TO SEDIMENT TRAP OR SEDIMENT BARRIER.

REPLACE SILT FENCE AT THE END OF EACH WORK DAY.

CONTRACTOR TO INSTALL 2' WIDE SOD STRIP BEHIND CURB ON ALL STREETS.

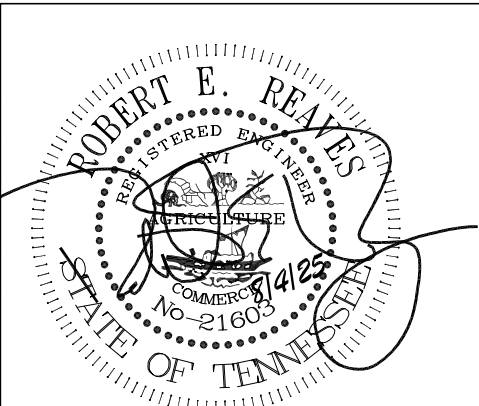


- CONSTRUCTION EXIT/ENTRANCE
- INLET PROTECTION
- SILT FENCE
- SEEDING
- SOD

T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 517.07 (NAVD88)

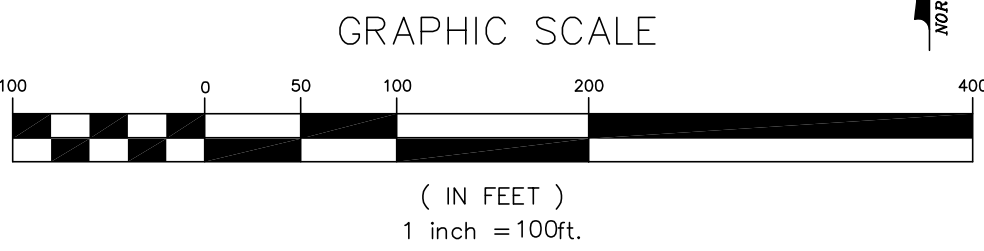
THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C03046
DATED FEBRUARY 6, 2013

REVISION	APPROVAL
ITEM NO.	DESCRIPTION OF CHANGE



THE SANCTUARY
PHASE 1

DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC



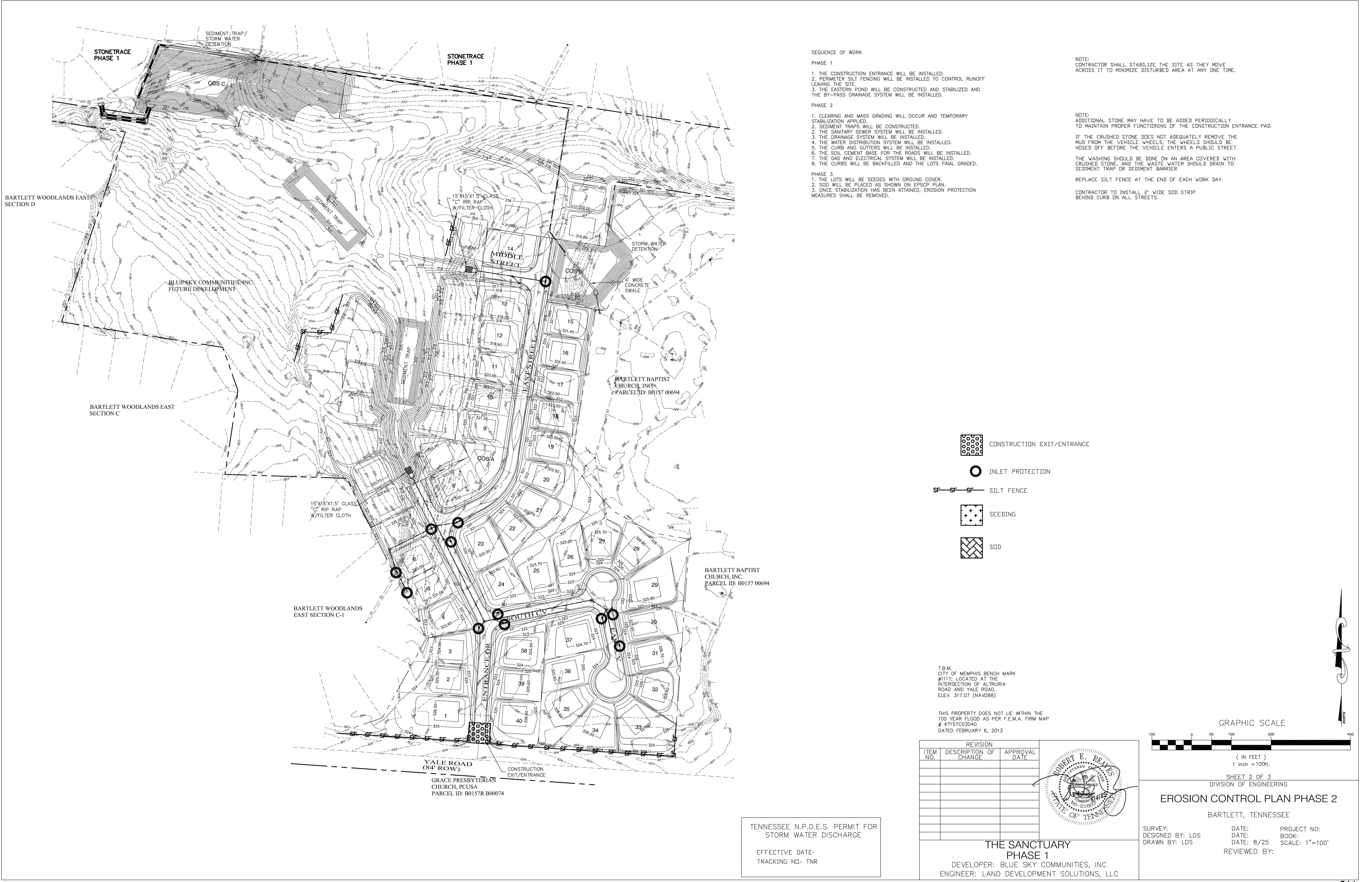
SHEET 1 OF 3
DIVISION OF ENGINEERING
EROSION CONTROL PLAN PHASE 1

BARTLETT, TENNESSEE

SURVEY: DATE: PROJECT NO:
DESIGNED BY: LDS DATE: 8/25 BOOK:
DRAWN BY: LDS SCALE: 1"=100'
REVIEWED BY:

TENNESSEE N.P.D.E.S. PERMIT FOR
STORM WATER DISCHARGE

EFFECTIVE DATE:
TRACKING NO.: TNR



- SEQUENCE OF WORK
- PHASE 1
- 1. THE CONSTRUCTION ENTRANCE WILL BE INSTALLED.
 - 2. PERIMETER SILT FENCING WILL BE INSTALLED TO CONTROL RUNOFF LEAVING THE SITE.
 - 3. THE EASTERN POND WILL BE CONSTRUCTED AND STABILIZED AND THE BY-PASS DRAINAGE SYSTEM WILL BE INSTALLED.
- PHASE 2
- 1. CLEARING AND MASS GRADING WILL OCCUR AND TEMPORARY STABILIZATION APPLIED.
 - 2. SEDIMENT TRAPS WILL BE CONSTRUCTED.
 - 3. THE SANITARY SEWER SYSTEM WILL BE INSTALLED.
 - 4. THE DRAINAGE SYSTEM WILL BE INSTALLED.
 - 5. THE WATER DISTRIBUTION SYSTEM WILL BE INSTALLED.
 - 6. THE CURB AND GUTTERS WILL BE INSTALLED.
 - 7. THE SOIL CEMENT BASE FOR THE ROADS WILL BE INSTALLED.
 - 8. THE GAS AND ELECTRICAL SYSTEM WILL BE INSTALLED.
 - 9. THE CURBS WILL BE BACKFILLED AND THE LOTS FINAL GRADED.
- PHASE 3
- 1. THE LOTS WILL BE SEEDED WITH GROUND COVER.
 - 2. SOD WILL BE PLACED AS SHOWN ON EPSCP PLAN.
 - 3. ONCE STABILIZATION HAS BEEN ATTAINED, EROSION PROTECTION MEASURES SHALL BE REMOVED.

NOTE:
CONTRACTOR SHALL STABILIZE THE SITE AS THEY MOVE ACROSS IT TO MINIMIZE DISTURBED AREA AT ANY ONE TIME.

NOTE:
ADDITIONAL STONE MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTIONING OF THE CONSTRUCTION ENTRANCE PAD.

IF THE CRUSHED STONE DOES NOT ADEQUATELY REMOVE THE MUD FROM THE VEHICLE WHEELS, THE WHEELS SHOULD BE HOSED OFF BEFORE THE VEHICLE ENTERS A PUBLIC STREET.

THE WASHING SHOULD BE DONE ON AN AREA COVERED WITH CRUSHED STONE, AND THE WASTE WATER SHOULD DRAIN TO SEDIMENT TRAP OR SEDIMENT BARRIER.

REPLACE SILT FENCE AT THE END OF EACH WORK DAY.

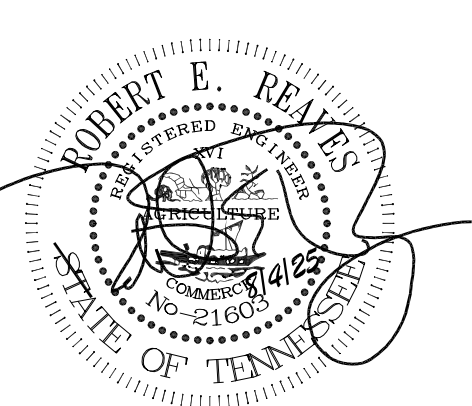
CONTRACTOR TO INSTALL 2' WIDE SOD STRIP BEHIND CURB ON ALL STREETS.

- CONSTRUCTION EXIT/ENTRANCE
- INLET PROTECTION
- SILT FENCE
- SEEDING
- SOD

T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117; LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C0304G
DATED FEBRUARY 6, 2013

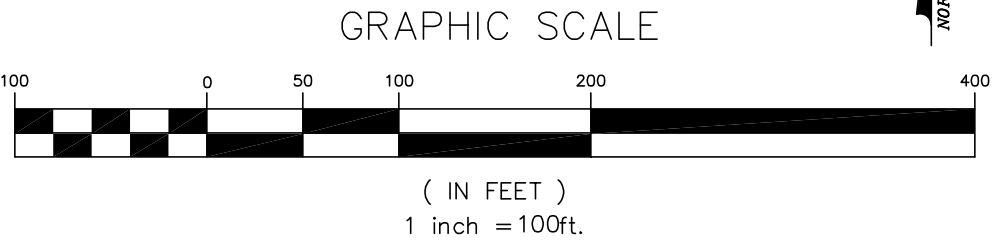
ITEM NO.	REVISION		APPROVAL DATE
	DESCRIPTION OF CHANGE		



TENNESSEE N.P.D.E.S. PERMIT FOR
STORM WATER DISCHARGE

EFFECTIVE DATE:
TRACKING NO.: TNR

THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

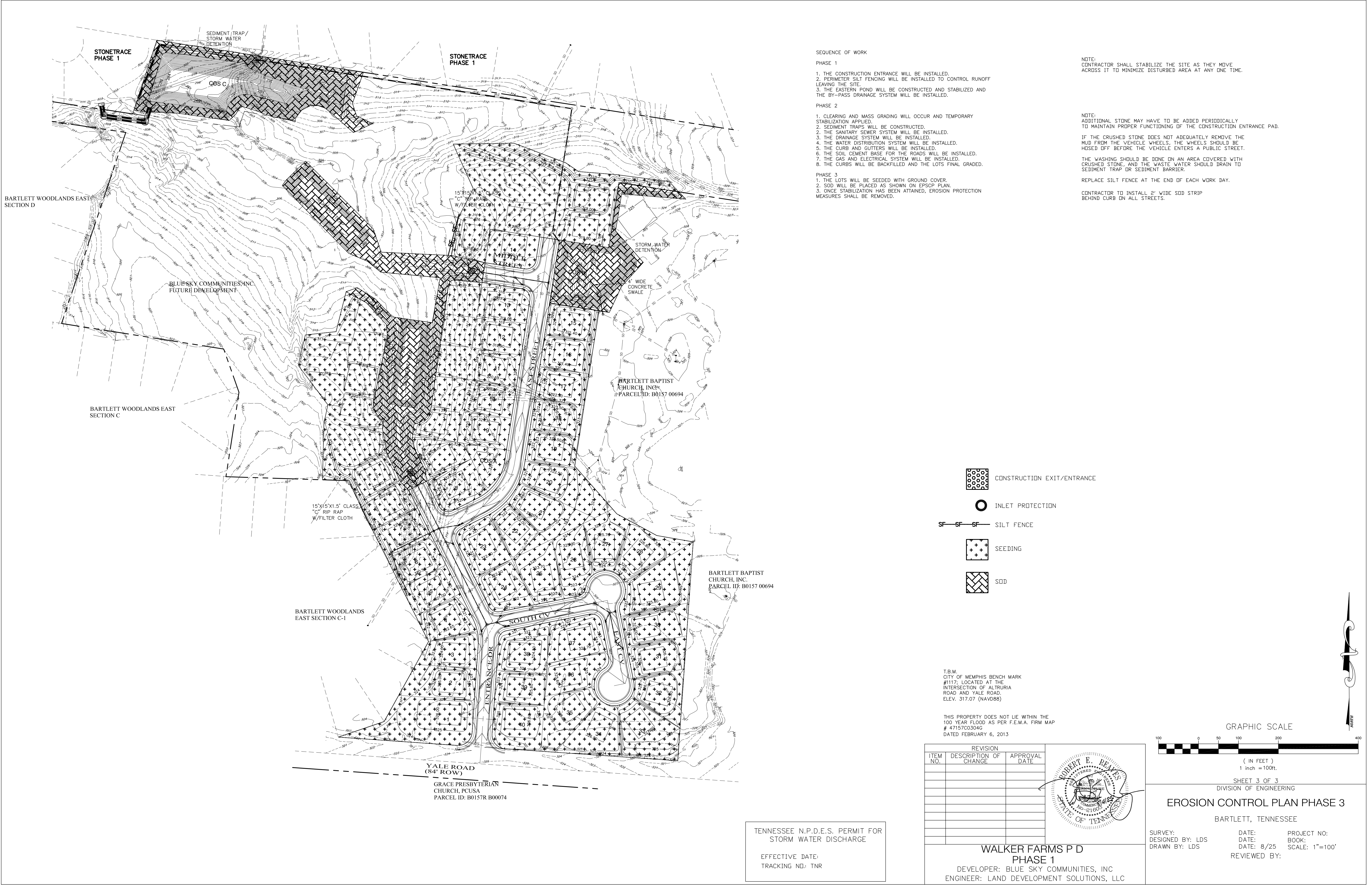


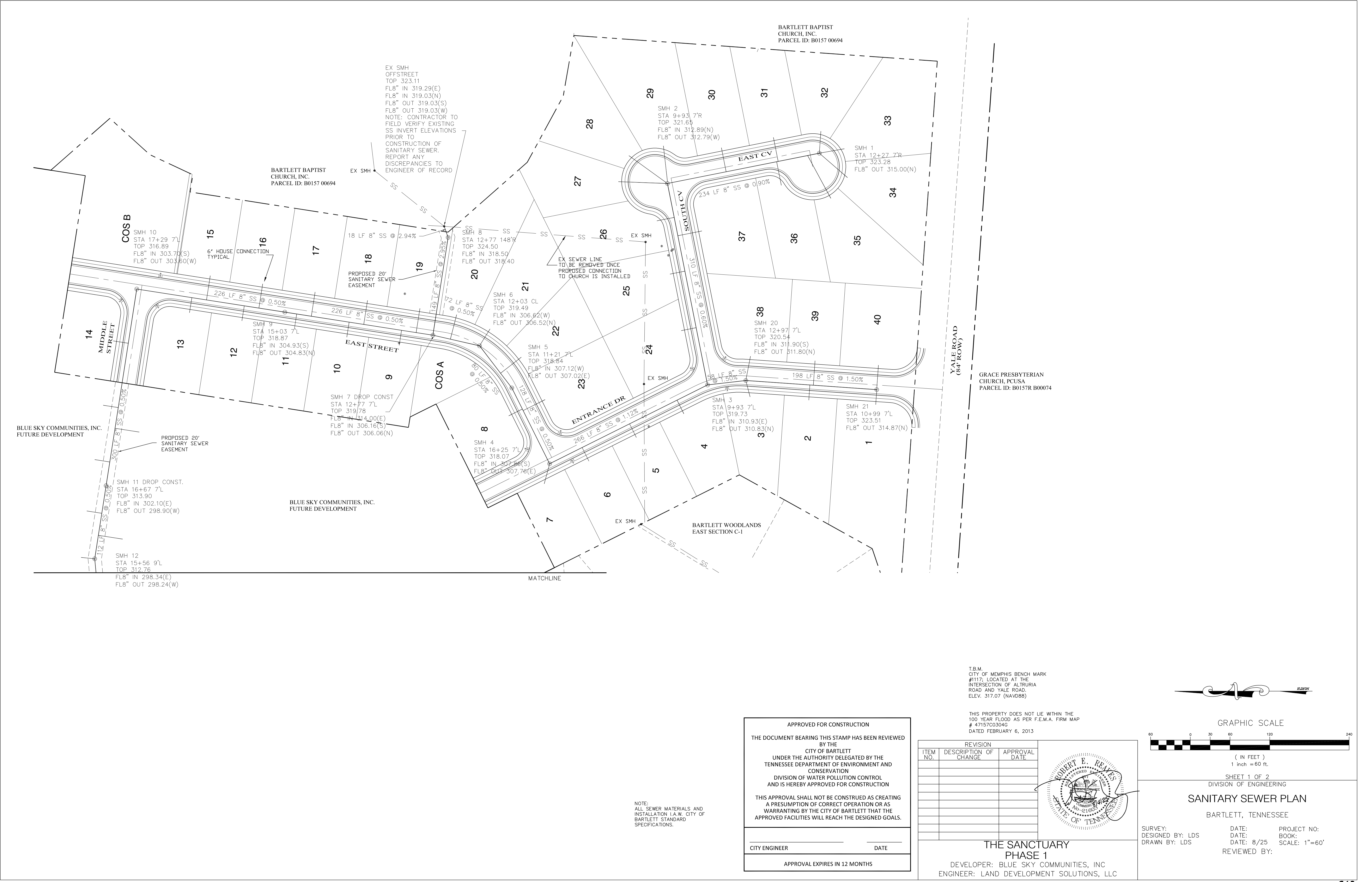
SHEET 2 OF 3
DIVISION OF ENGINEERING
EROSION CONTROL PLAN PHASE 2
BARTLETT, TENNESSEE

SURVEY: DESIGNED BY: LDS
DRAWN BY: LDS

DATE: DATE: 8/25
REVIEWED BY:

PROJECT NO: BOOK: SCALE: 1"=100'





NOTE:
ALL SEWER MATERIALS AND
INSTALLATION I.A.W. CITY OF
BARTLETT STANDARD
SPECIFICATIONS.

APPROVED FOR CONSTRUCTION

THE DOCUMENT BEARING THIS STAMP HAS BEEN REVIEWED BY THE
CITY OF BARTLETT
UNDER THE AUTHORITY DELEGATED BY THE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
AND IS HEREBY APPROVED FOR CONSTRUCTION

THIS APPROVAL SHALL NOT BE CONSTRUED AS CREATING A PRESUMPTION OF CORRECT OPERATION OR AS WARRANTING BY THE CITY OF BARTLETT THAT THE APPROVED FACILITIES WILL REACH THE DESIGNED GOALS.

CITY ENGINEER

DATE

APPROVAL EXPIRES IN 12 MONTHS

REVISION

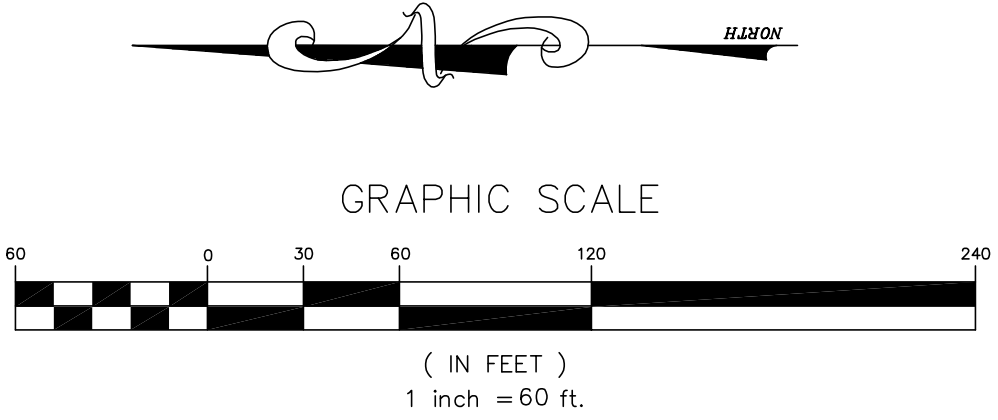
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE

THE SANCTUARY
PHASE 1

DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117; LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C0304G
DATED FEBRUARY 6, 2013

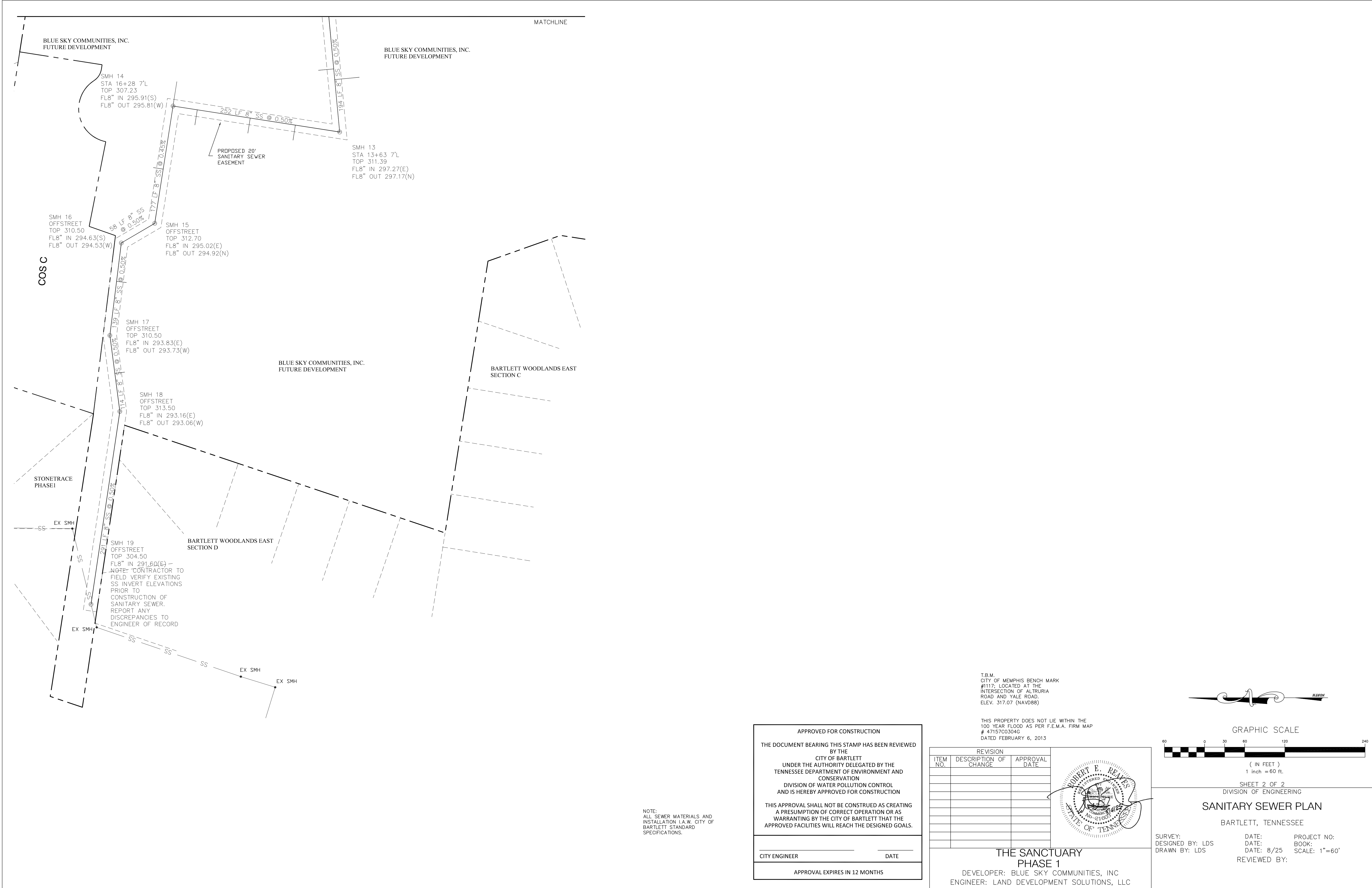


SHEET 1 OF 2
DIVISION OF ENGINEERING
SANITARY SEWER PLAN
BARTLETT, TENNESSEE

SURVEY:
DESIGNED BY: LDS
DRAWN BY: LDS

DATE:
DATE: 8/25
REVIEWED BY:

PROJECT NO:
BOOK:
SCALE: 1"=60'



NOTE:
ALL SEWER MATERIALS AND
INSTALLATION I.A.W. CITY OF
BARTLETT STANDARD
SPECIFICATIONS.

APPROVED FOR CONSTRUCTION

THE DOCUMENT BEARING THIS STAMP HAS BEEN REVIEWED BY THE
CITY OF BARTLETT
UNDER THE AUTHORITY DELEGATED BY THE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
AND IS HEREBY APPROVED FOR CONSTRUCTION

THIS APPROVAL SHALL NOT BE CONSTRUED AS CREATING
A PRESUMPTION OF CORRECT OPERATION OR AS
WARRANTING BY THE CITY OF BARTLETT THAT THE
APPROVED FACILITIES WILL REACH THE DESIGNED GOALS.

CITY ENGINEER

DATE

APPROVAL EXPIRES IN 12 MONTHS

T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
4715700304G
DATED FEBRUARY 6, 2013

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE

ROBERT E. REYES

REGISTERED ENGINEER

10-21603

STATE OF TENNESSEE

THE SANCTUARY

PHASE 1

DEVELOPER: BLUE SKY COMMUNITIES, INC

ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

SHEET 2 OF 2
DIVISION OF ENGINEERING

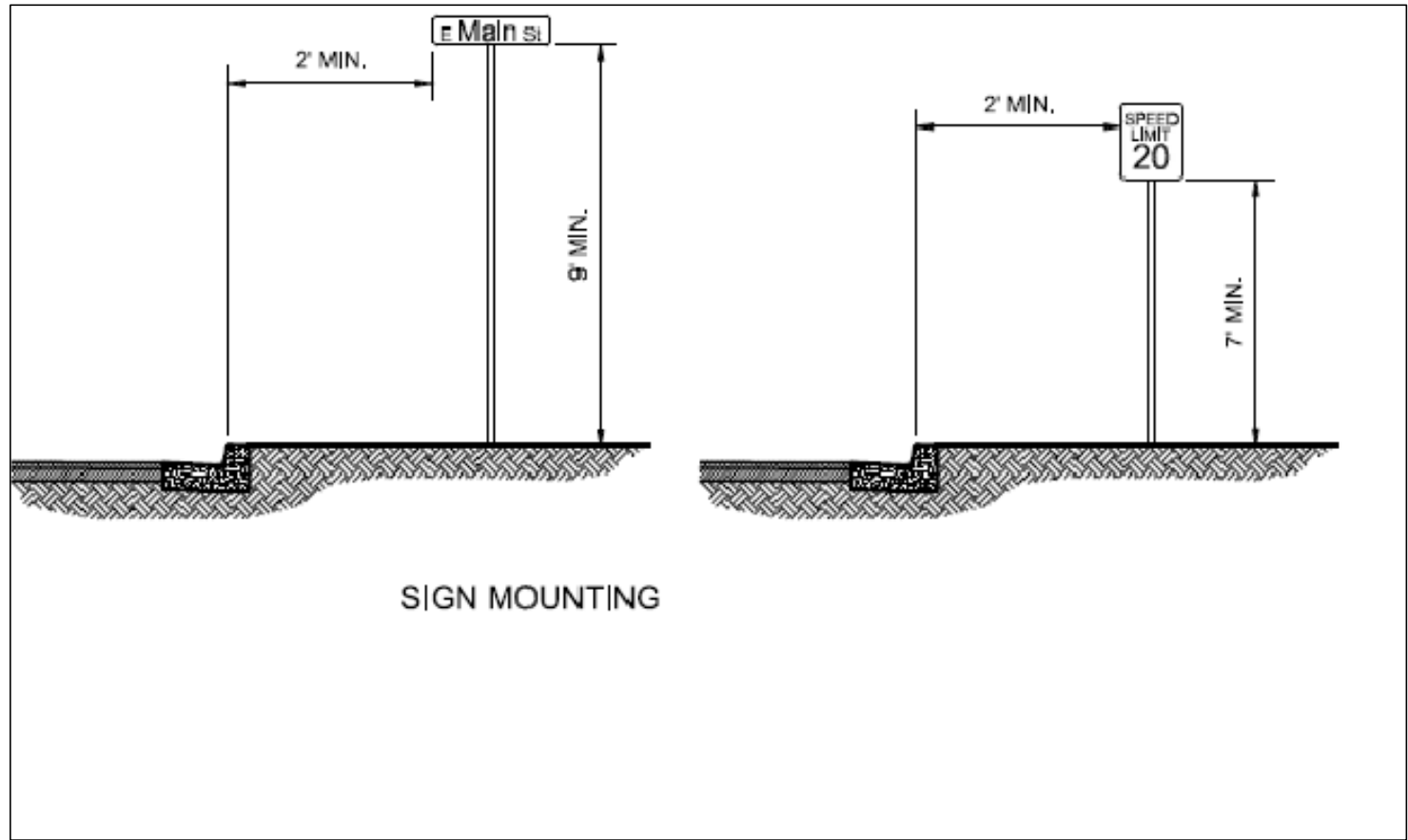
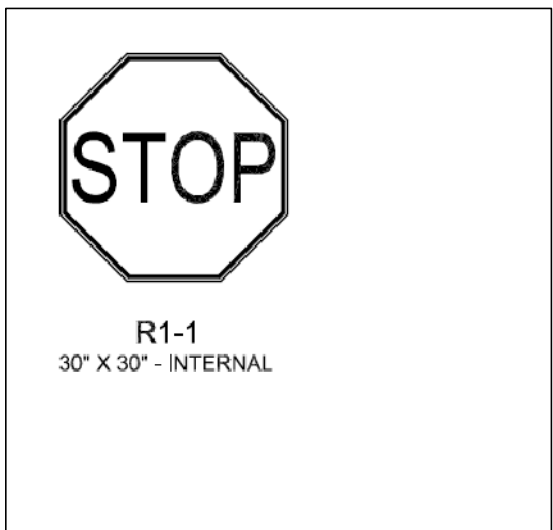
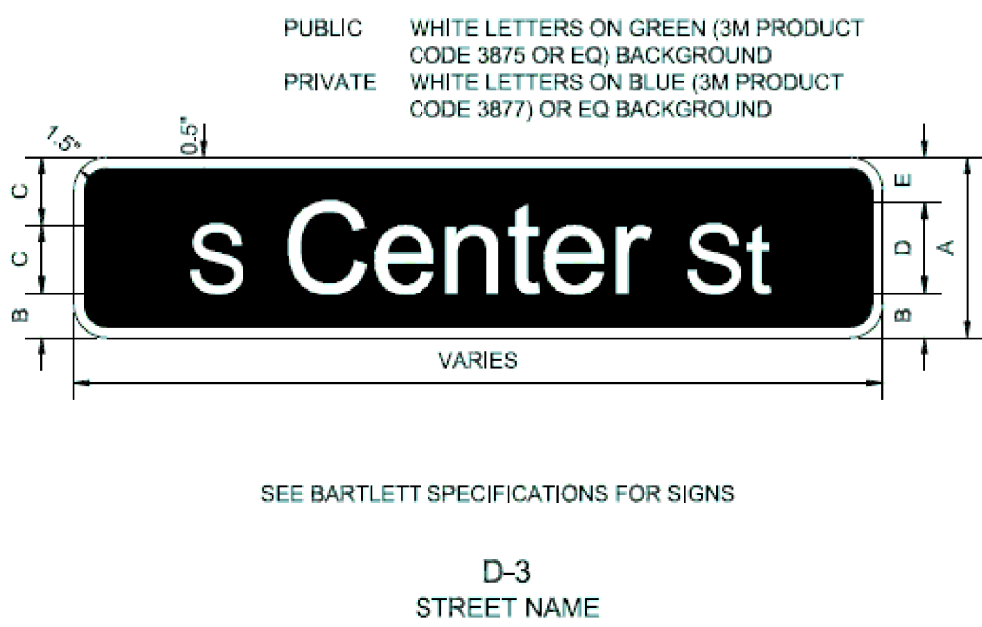
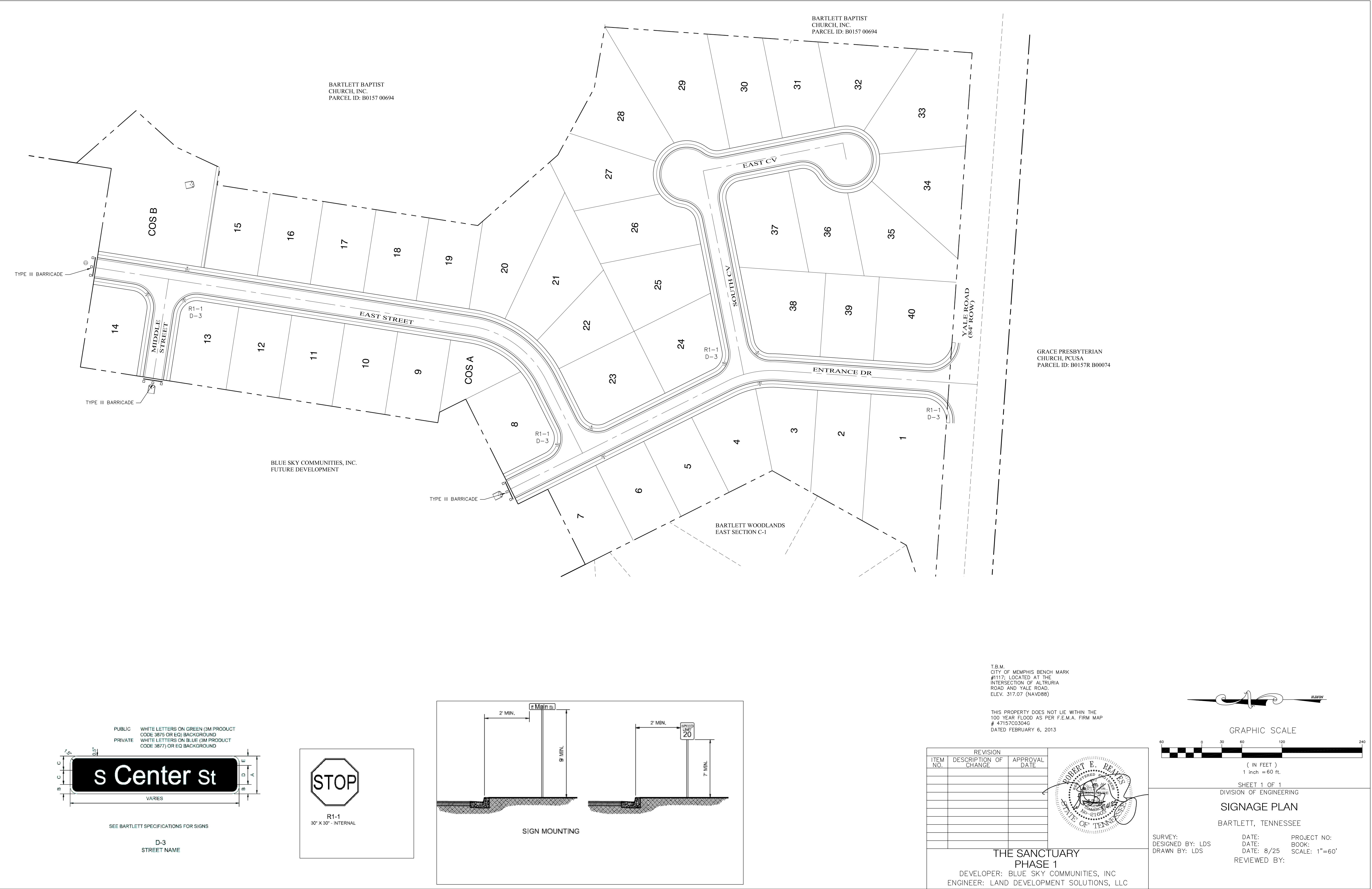
SANITARY SEWER PLAN

BARTLETT, TENNESSEE

SURVEY:
DESIGNED BY: LDS
DRAWN BY: LDS

DATE:
DATE: 8/25
REVIEWED BY:

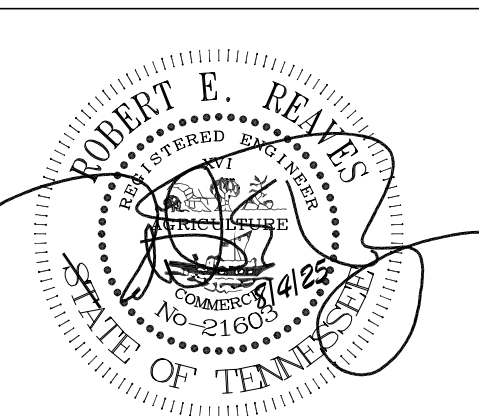
PROJECT NO:
BOOK:
SCALE: 1"=60'



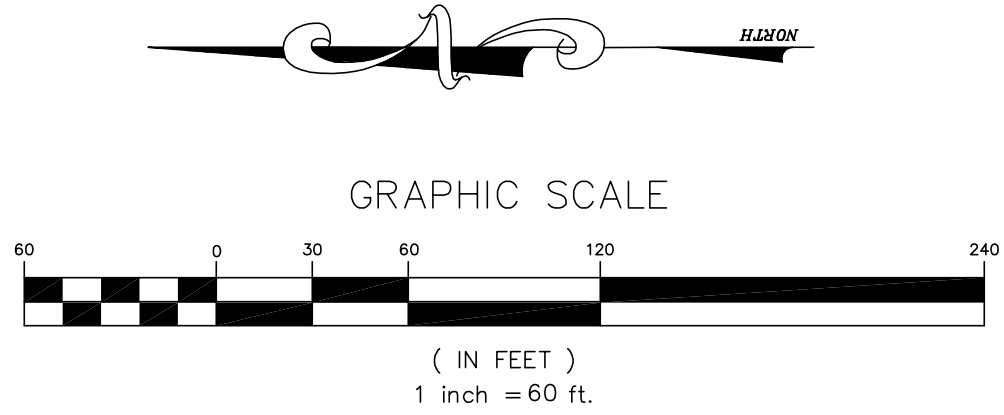
T.B.M.
CITY OF MEMPHIS BENCH MARK
#117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
471570030403
DATED FEBRUARY 6, 2013

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE

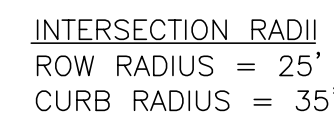


THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC



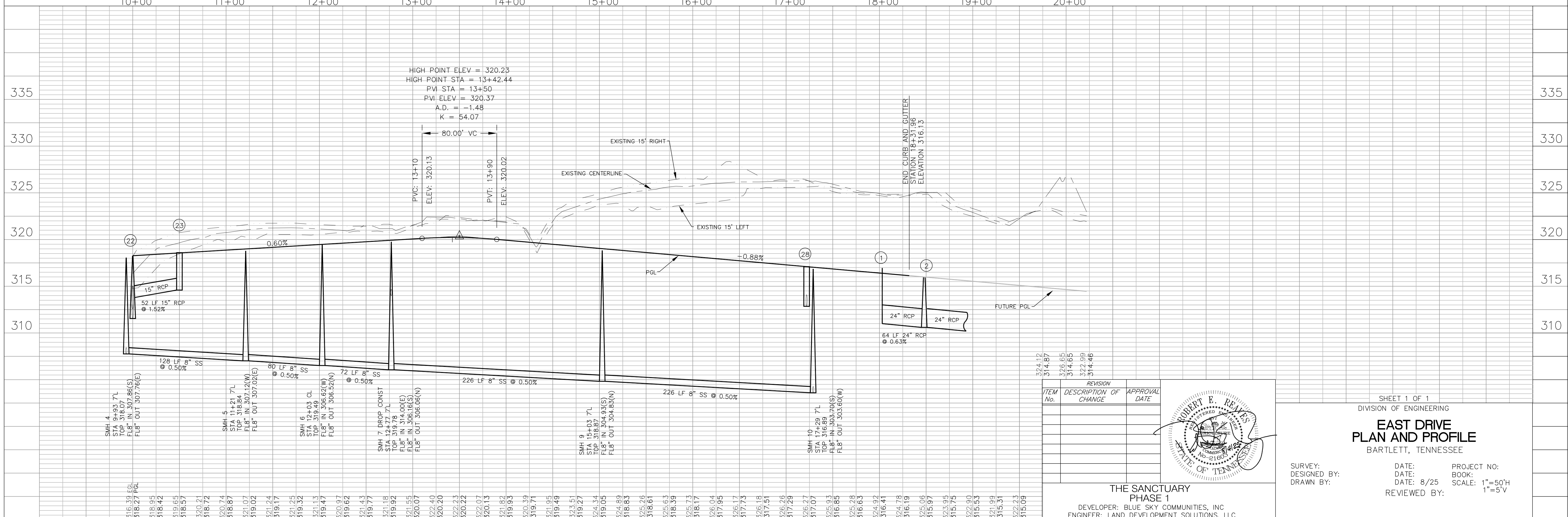
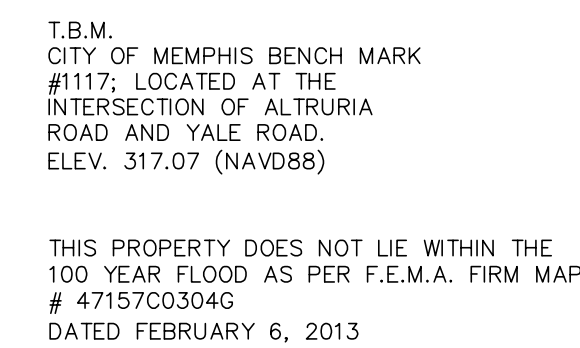
SHEET 1 OF 1
DIVISION OF ENGINEERING
SIGNAGE PLAN
BARTLETT, TENNESSEE

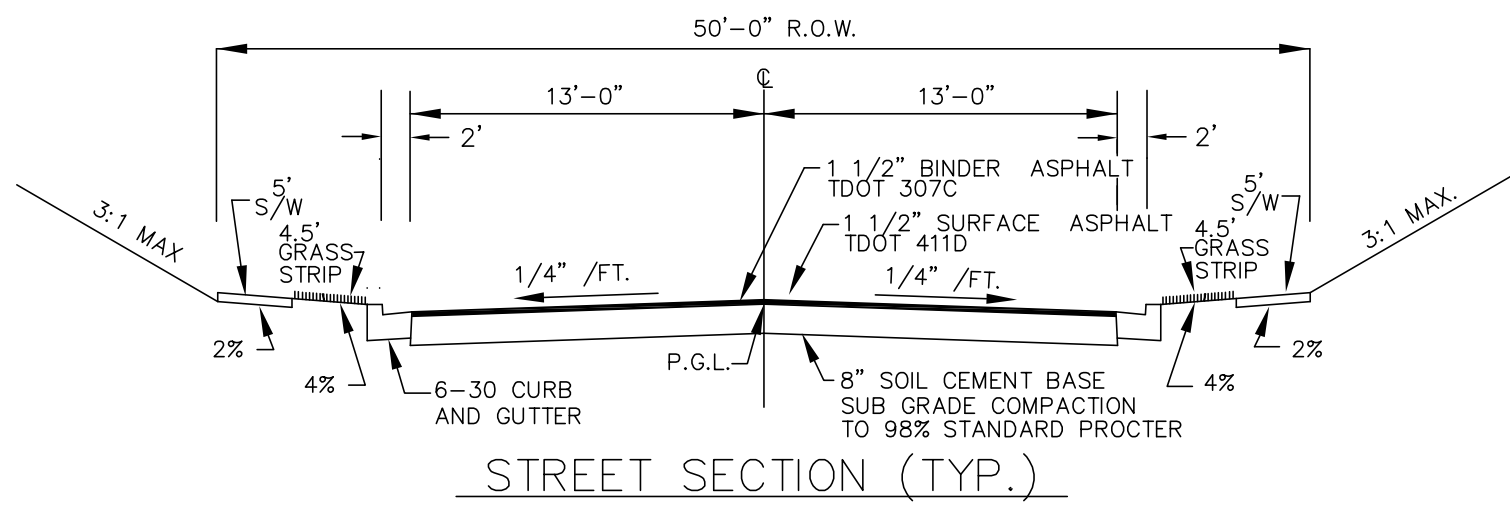
SURVEY: DATE: PROJECT NO:
DESIGNED BY: LDS DATE: 8/25 BOOK:
DRAWN BY: LDS SCALE: 1"=60'
REVIEWED BY:



NOTE: CONTRACTOR TO FIELD VERIFY
EXISTING EOP ELEVATIONS PRIOR TO
CONSTRUCTION.
CONTRACTOR TO SAW CUT EXISTING EOP
PRIOR TO TYING IN NEW STREETS.

STORM PIPE TABLE										
FROM	FL.	TO	FL.	LENGTH	SLOPE(%)	SIZE(IN.)	ACRES	Qd	Qc	VEL.
1	311.00	2	310.60	64	0.63	24	8.4	15.75	18.0	5.7
20	312.97	22	312.55	37	0.60	30	6.69	27.43	31.8	6.5
23	314.59	22	313.80	52	1.52	15	1.75	7.18	8.0	6.5
28	312.85	30	311.86	85	1.17	15	1.46	5.99	7.0	5.7



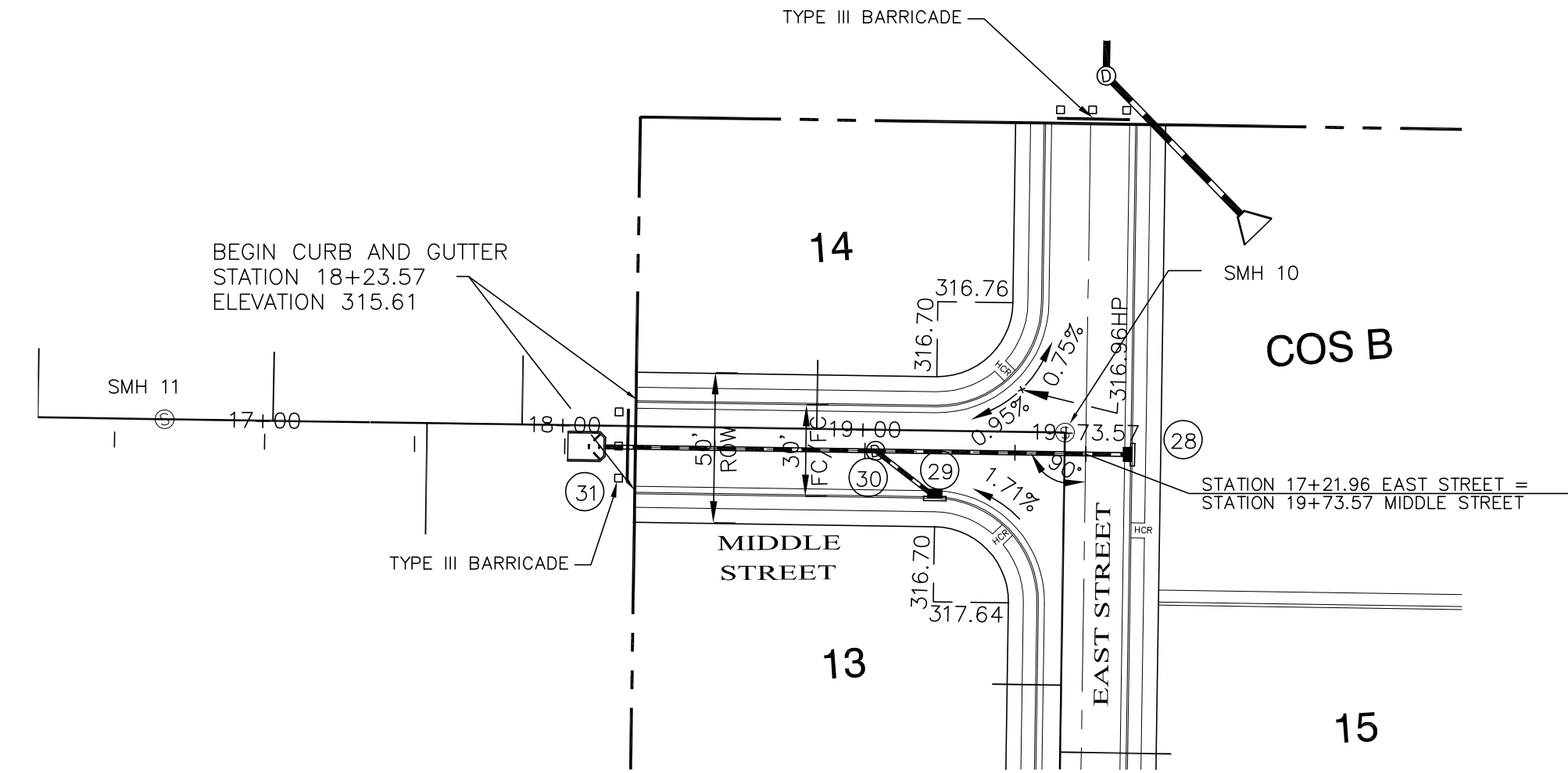


WEARING SURFACE TO BE INSTALLED PRIOR TO PLAT RECORDING.

N.T.S. ALL SUB BASE MATERIAL TO BE TESTED BY A QUALIFIED GEO TECHNICAL FIRM

INTERSECTION RADII
ROW RADIUS = 25'
CURB RADIUS = 35'

NOTE: CONTRACTOR TO FIELD VERIFY EXISTING EOP ELEVATIONS PRIOR TO CONSTRUCTION.
CONTRACTOR TO SAW CUT EXISTING EOP PRIOR TO TYING IN NEW STREETS.

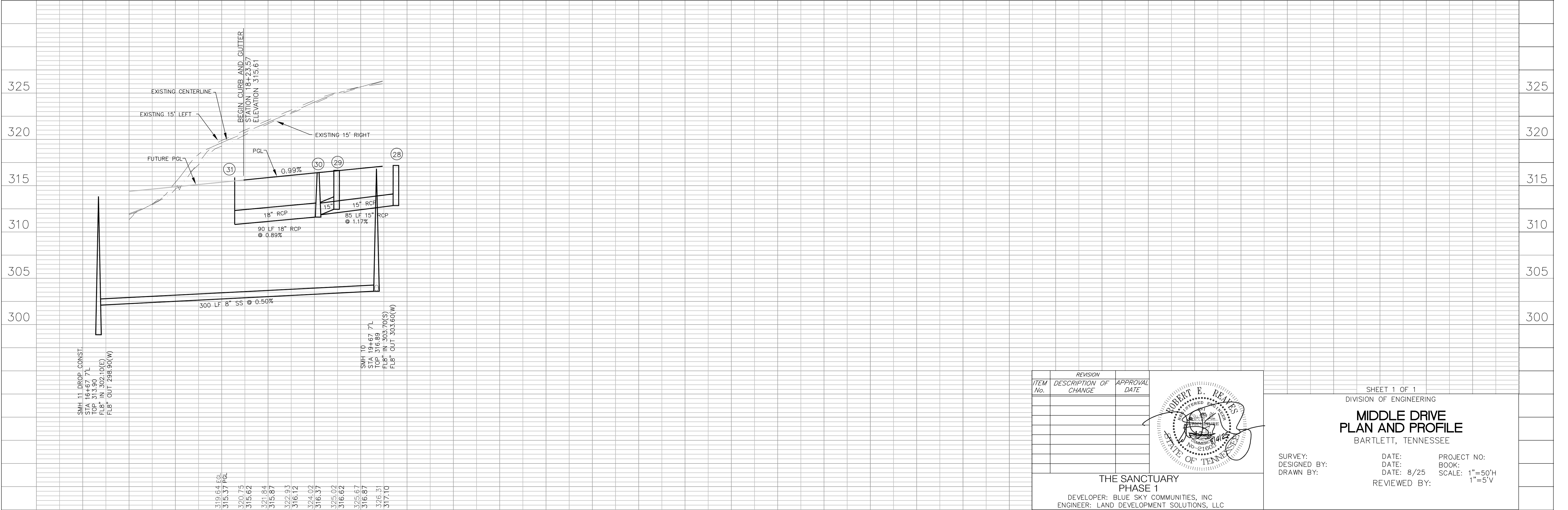
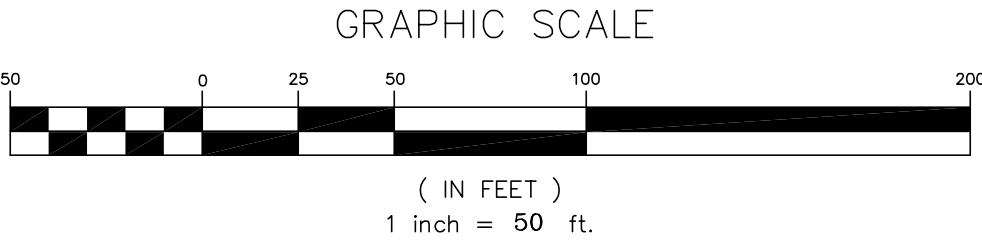


STORM STRUCTURE TABLE						
NO.	TYPE	LOCATION	D.A.	Q25	TOP/THR	AS BUILT TOP/THROAT
28	6-72 INLET	17+22 15' R EAST STREET	1.46	5.99	317.20	
29	6-72 INLET	19+24 15' R MIDDLE STREET	0.60	2.46	316.70	
30	DMH	19+04 CL MIDDLE STREET			316.41	
31	TYPE 'D' HDWL	18+14 CL MIDDLE STREET			313.00	

STORM PIPE TABLE										
FROM	FL.	TO	FL.	LENGTH	SLOPE(%)	SIZE(IN.)	ACRES	Qd	Qc	VEL.
28	312.85	30	311.86	85	1.17	15	1.46	5.99	7.0	5.7
29	312.45	30	311.86	25	2.36	15	0.60	2.46	9.9	8.1
30	311.61	31	310.61	90	0.89	18	2.06	6.45	9.9	5.6

T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAV88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
4715700304G
DATED FEBRUARY 6, 2013



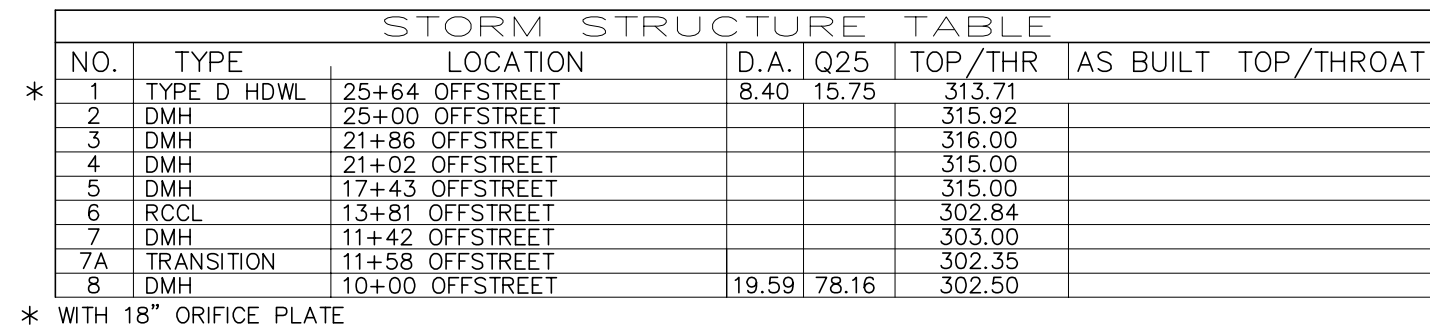
ITEM No.	REVISION DESCRIPTION OF CHANGE	APPROVAL DATE

**THE SANCTUARY
PHASE 1**
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

SHEET 1 OF 1
DIVISION OF ENGINEERING

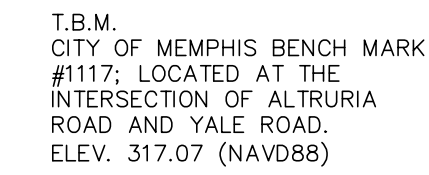
**MIDDLE DRIVE
PLAN AND PROFILE**
BARTLETT, TENNESSEE

SURVEY:	DATE:	PROJECT NO:
DESIGNED BY:	DATE:	BOOK:
DRAWN BY:	DATE: 8/25	SCALE: 1"=50'H 1"=5'V
	REVIEWED BY:	



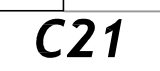
STORM PIPE TABLE										
FROM	FL.	TO	FL.	LENGTH	SLOPE(%)	SIZE(IN.)	ACRES	Qd	VEL.	
1	311.00	2	310.60	64	0.83	24	8.4	15.75	18.0	5.7
2	310.60	3	308.59	314	0.64	24	8.4	15.75	18.1	5.8
3	308.59	4	308.07	84	0.62	24	8.4	15.75	17.8	5.7
4	307.57	5	309.76	359	0.50	30	10.9	19.59	23.0	6.9
5	300.36	6	298.34	352	0.57	30	10.4	15.75	31.0	6.3
6	298.34	7A	297.27	230	0.47	***	19.59	78.16	106.6	6.8
7	297.27	8	296.54	16	0.46	***	19.59	78.16	97.4	6.8
7	297.20	8	296.54	142	0.46	***	19.59	78.16	105.0	6.8

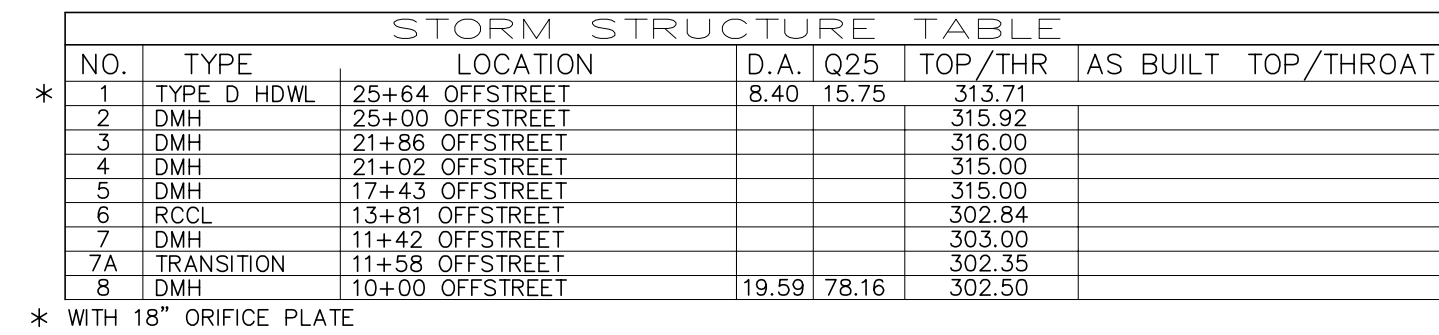
*** 3.0'/0.25' x 4' RCCL



GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

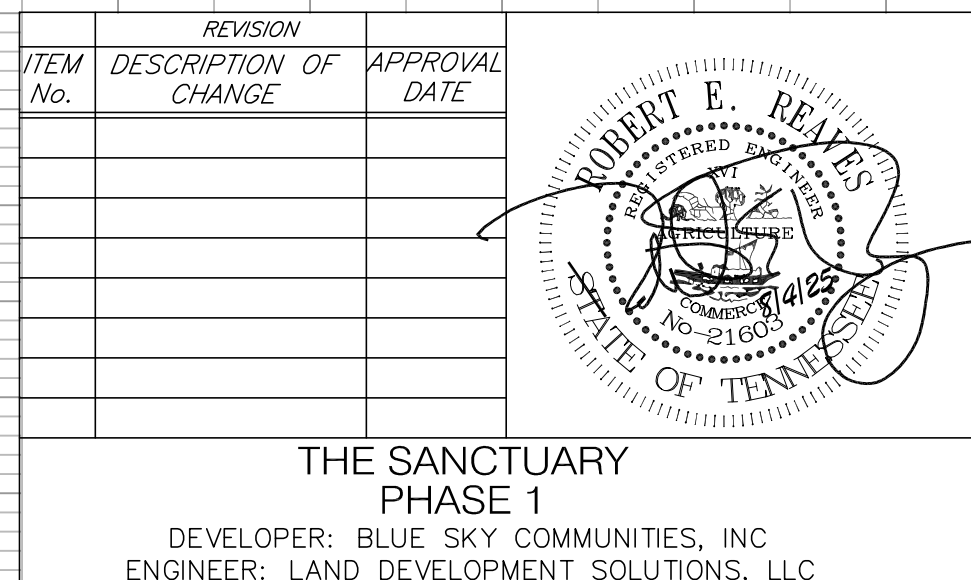


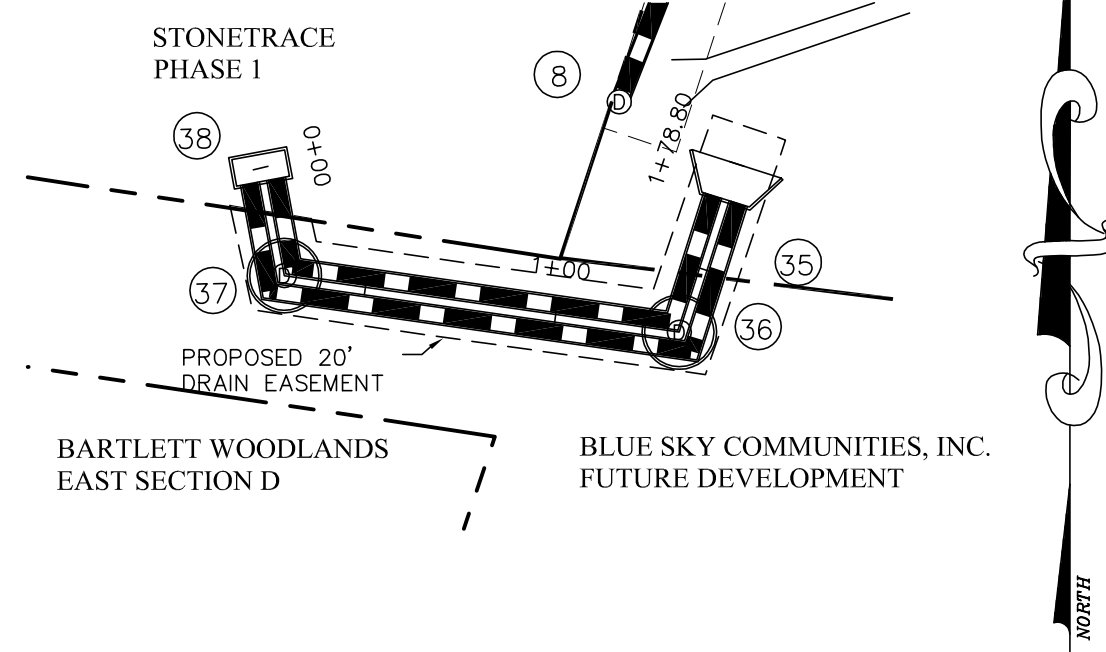


*** 3.0'/0.25' x 4' RCCL

(IN FEET)

1 inch = 50 ft.





STORM STRUCTURE TABLE						
NO.	TYPE	LOCATION	D.A.	Q25	TOP/THR	AS BUILT TOP/THR
24	3070 INLET	15+23 140' L ENTRANCE DRIVE	0.93	3.81	318.50	
25	3070 INLET	15+59 142' L ENTRANCE DRIVE	1.27	5.21	318.75	
26	DHW	16+18 132' L ENTRANCE DRIVE			319.60	
34	6"-72 INLET	16+18 151' ENTRANCE DRIVE	0.54	2.21	318.36	
35	TYPE 'D' HDWL				301.34	
36	JUNCTION BOX	OFF STREET			312.00	
37	JUNCTION BOX	OFF STREET			307.00	
38	4X4 INLET	OFF STREET			302.00	

STORM PIPE TABLE											
	FROM	FL.	TO	FL.	LENGTH	SLOPE(%)	SIZE(IN.)	ACRES	Qd	Qc	VEL.
	24	315.70	25	315.46	57	0.42	15	0.93	3.81	4.2	3.4
	25	315.70	26	314.66	60	0.91	18	2.20	8.02	10.0	5.7
	26	314.66	27	314.34	91	1.17	24	9.02	10.0	10.0	9.0
	34	313.10	22	313.05	15	0.30	24	2.24	11.23	12.4	3.9
*****	35	296.34	36	296.24	34	0.28	48	43.60	70.00	-	5.6
*****	36	296.24	37	295.96	27	0.26	48	43.60	70.00	-	5.6
*****	37	295.96	38	295.89	27	0.26	48	43.60	70.00	-	5.6
*****	35	296.34	36	296.24	45	0.24	48	43.60	70.00	-	5.6
*****	36	296.24	37	295.98	39	0.28	48	43.60	70.00	-	5.6
*****	37	295.98	38	295.89	33	0.24	48	43.60	70.00	-	5.6

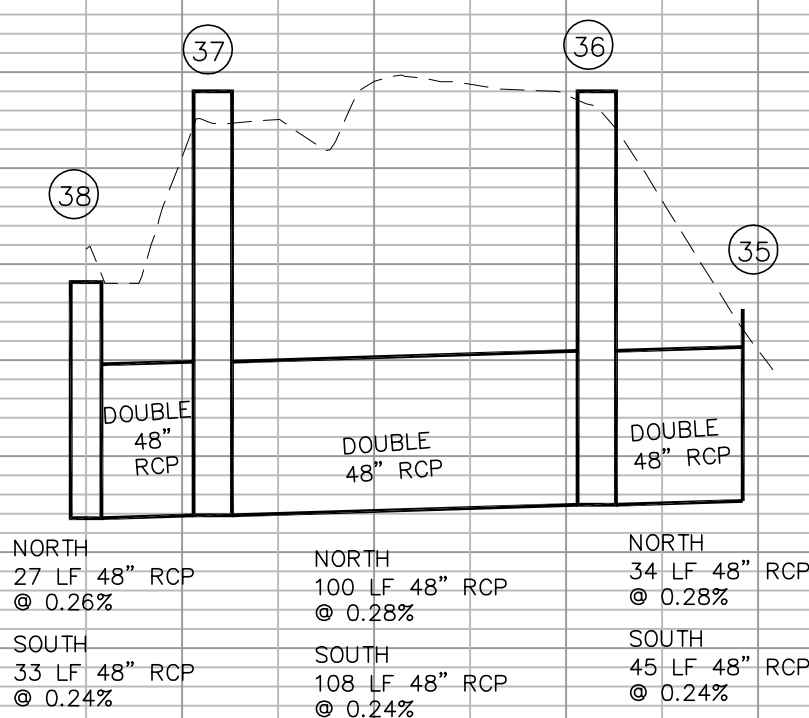
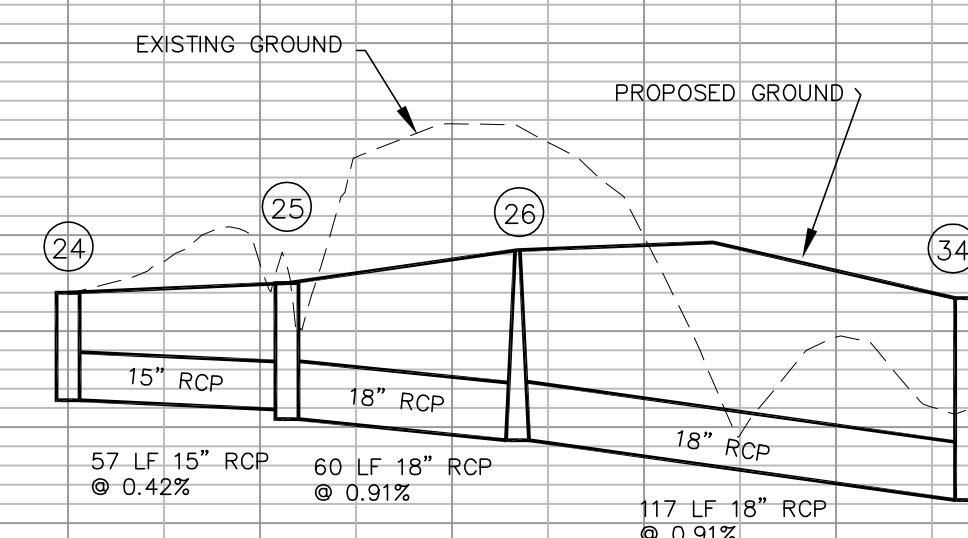
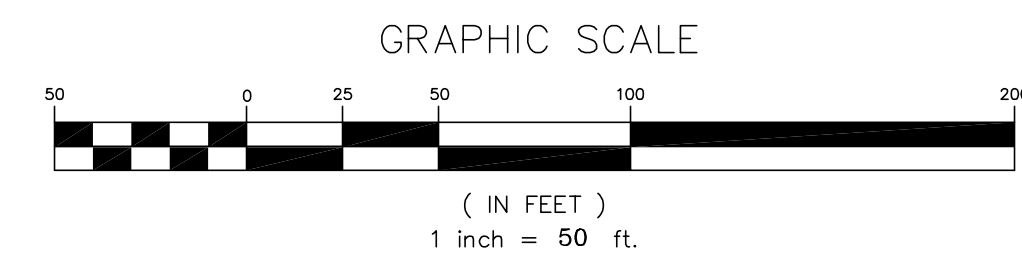
```

      **** NORTH OUTLET PIPE
      ***** SOUTH OUTLET PIPE

```

T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117; LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C0304G
DATED FEBRUARY 6, 2013

[illegible]

THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

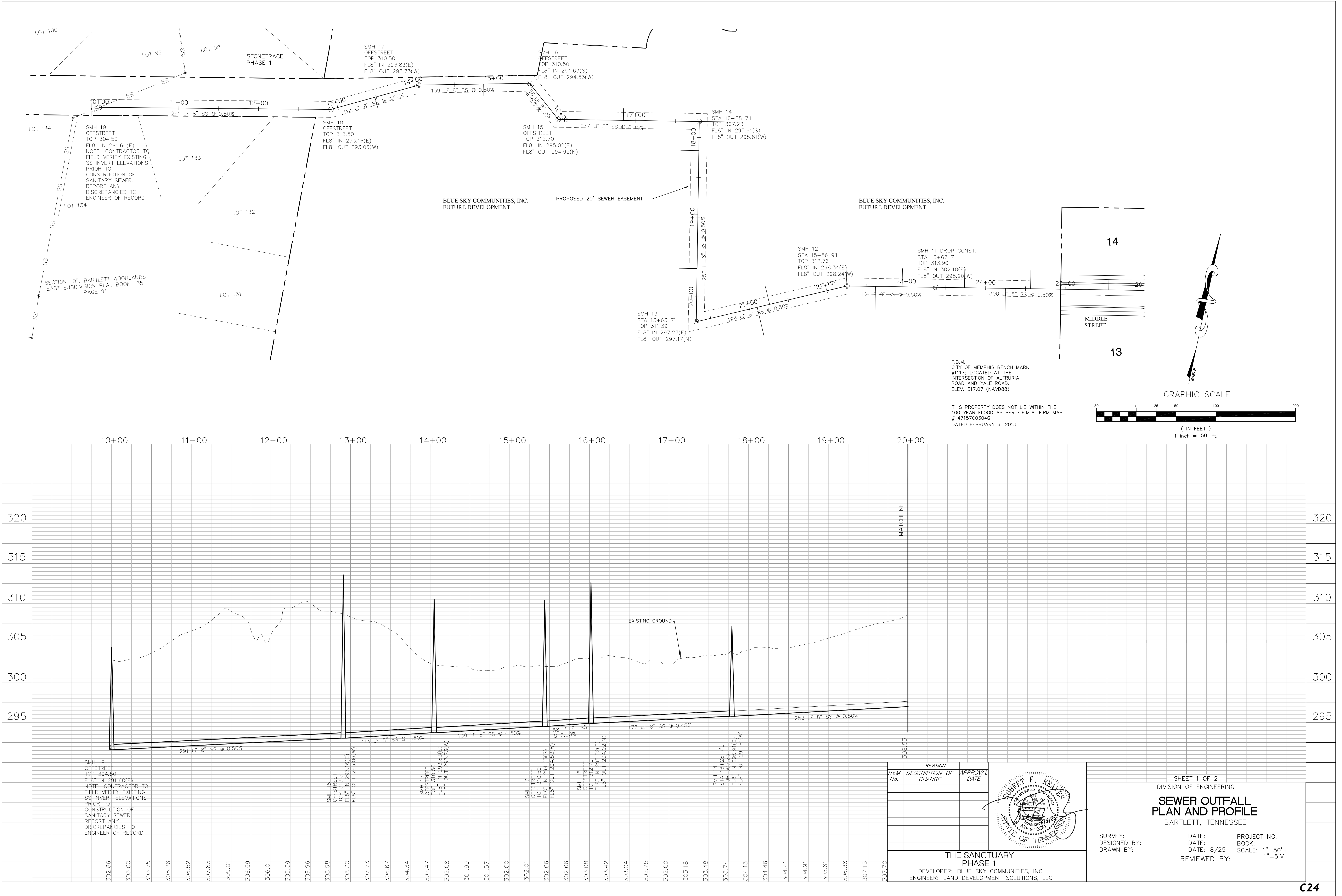
SHEET 1 OF 1
DIVISION OF ENGINEERING

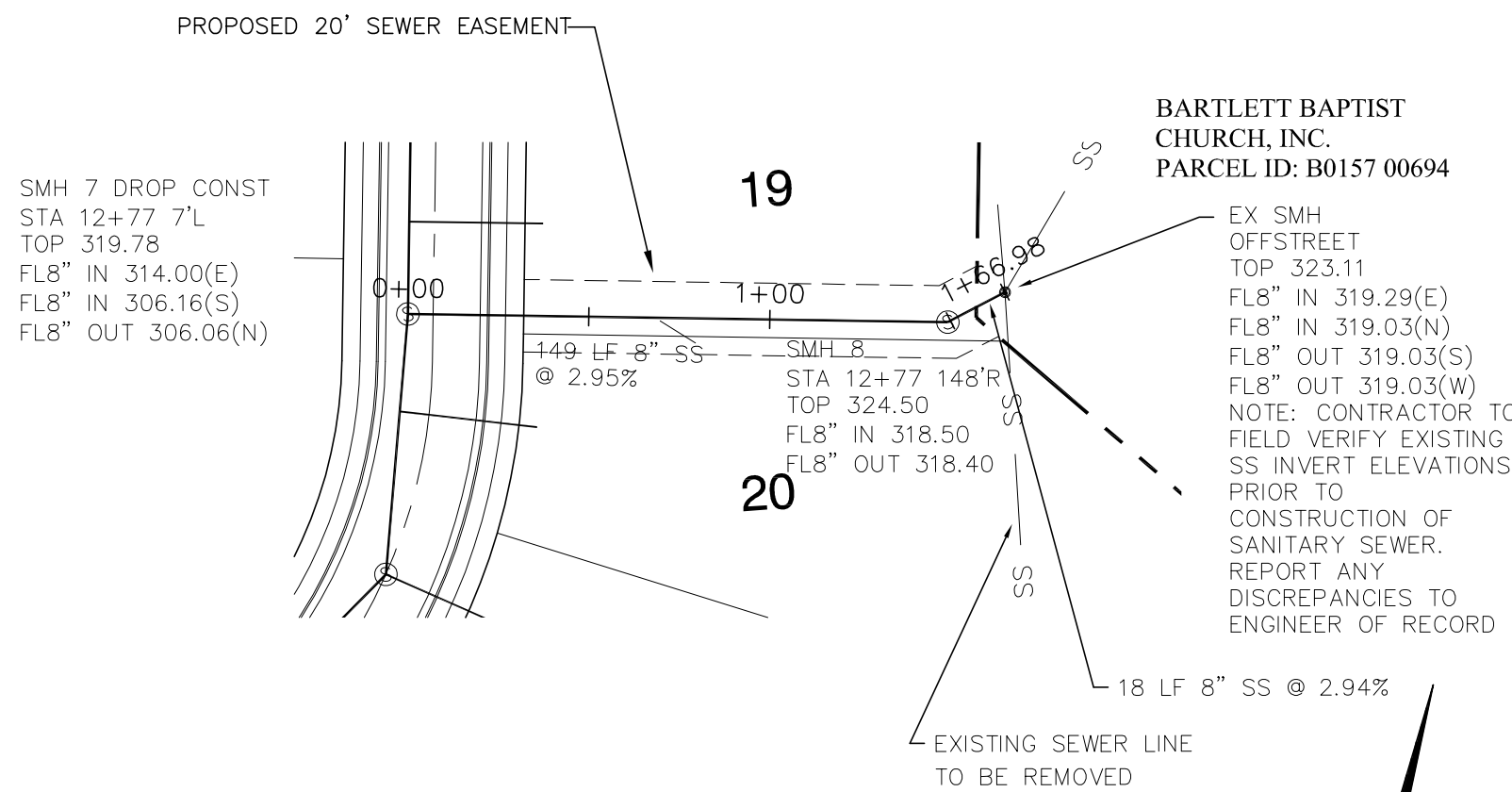
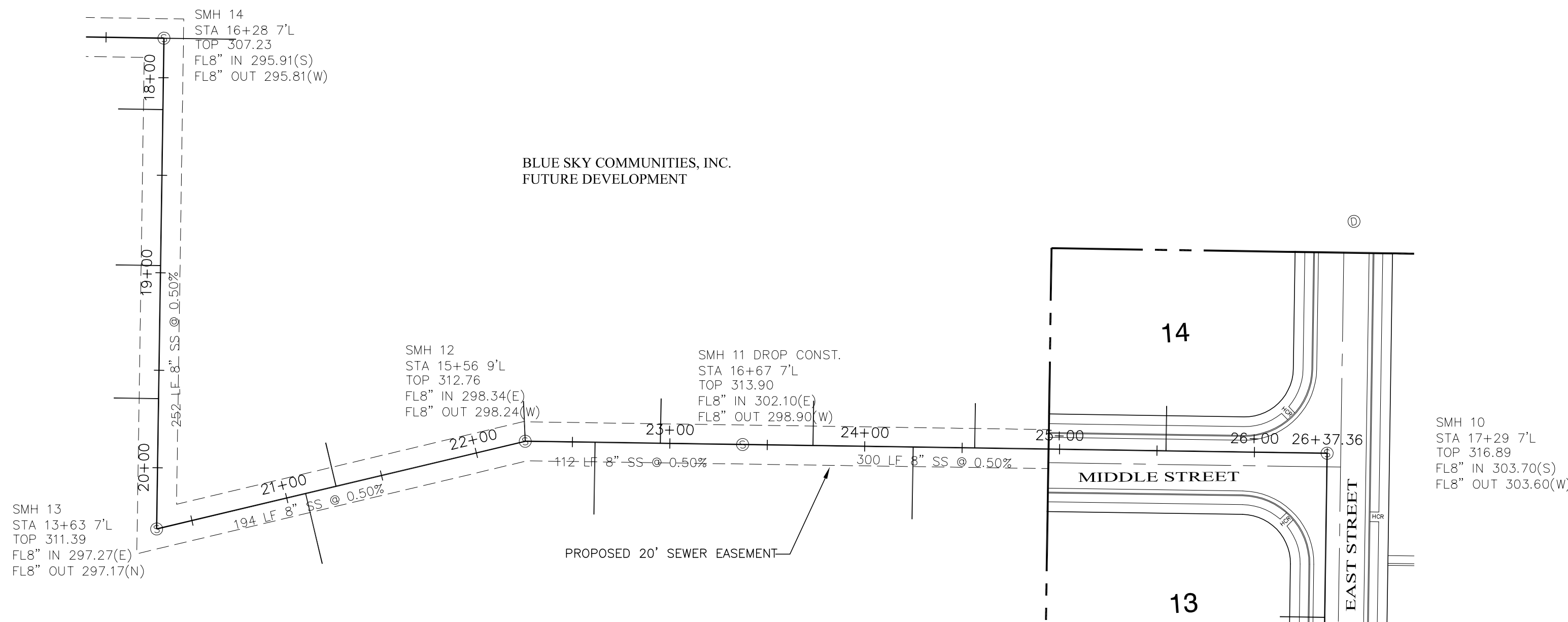
OFFSTREET DRAINAGE PLAN AND PROFILE

BARTLETT, TENNESSEE

SURVEY:
DESIGNED BY:
DRAWN BY:

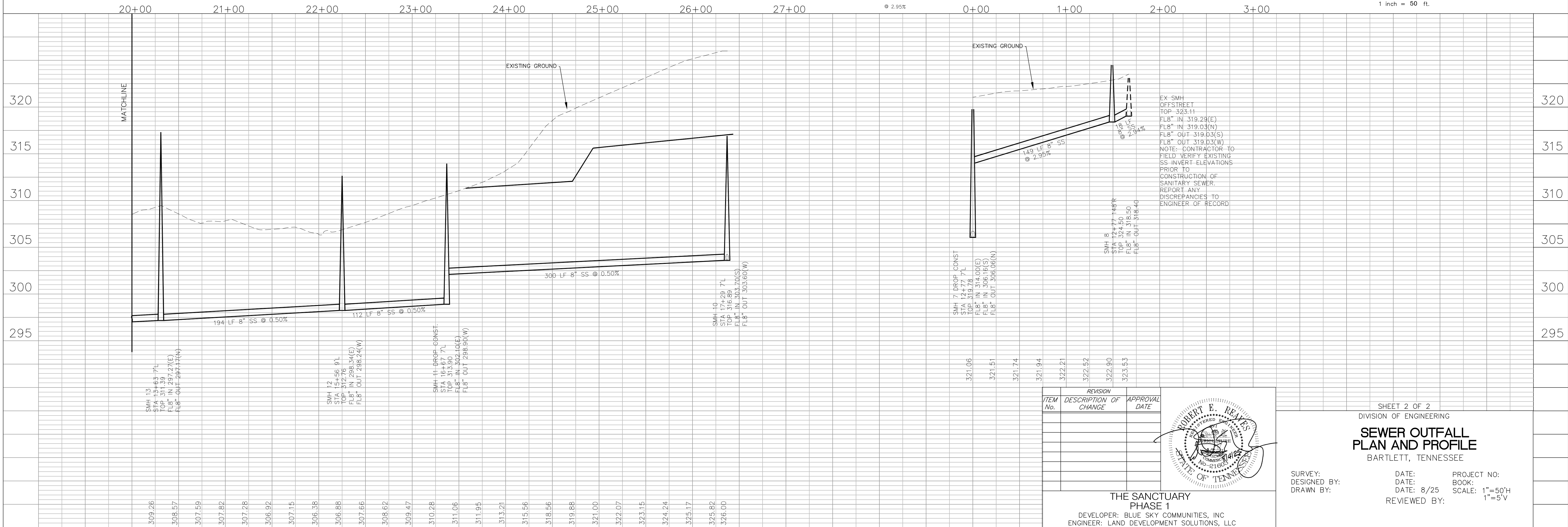
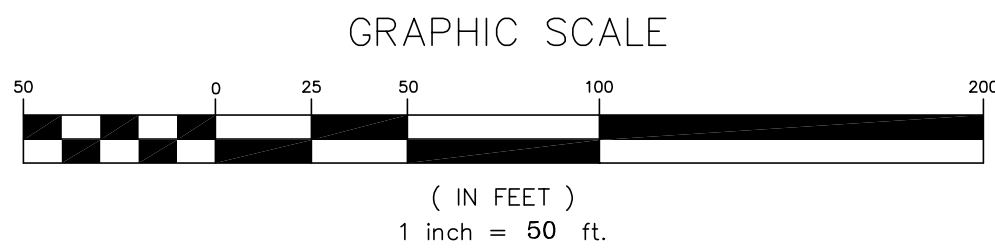
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DATE: BOOK:
DATE: 8/25 SCALE: 1"=50'H
REVIEWED BY: 1"=5'V



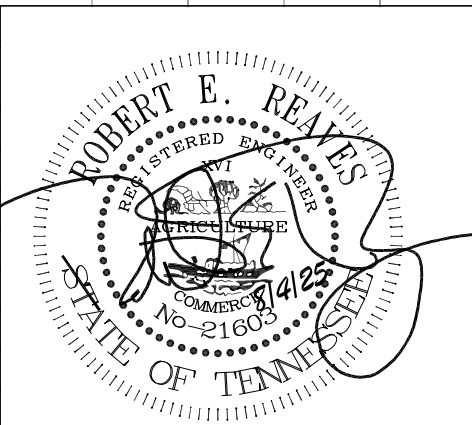


T.B.M.
CITY OF MEMPHIS BENCH MARK
#1117, LOCATED AT THE
INTERSECTION OF ALTRURIA
ROAD AND YALE ROAD.
ELEV. 317.07 (NAVD88)

THIS PROPERTY DOES NOT LIE WITHIN THE
100 YEAR FLOOD AS PER F.E.M.A. FIRM MAP
47157C0304G
DATED FEBRUARY 6, 2013



ITEM No.	REVISION		APPROVAL DATE
	DESCRIPTION OF CHANGE		



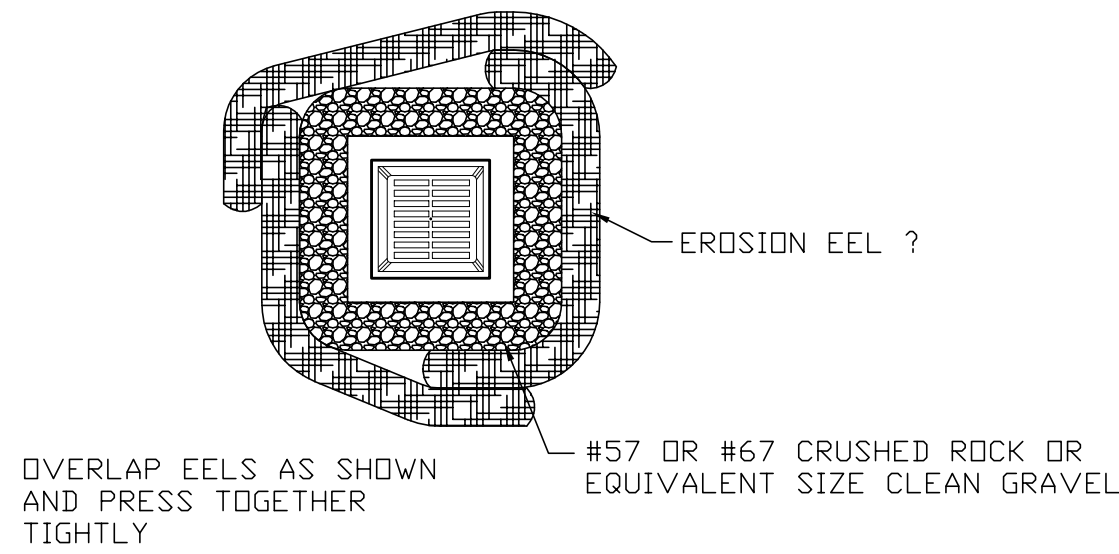
THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

SHEET 2 OF 2
DIVISION OF ENGINEERING

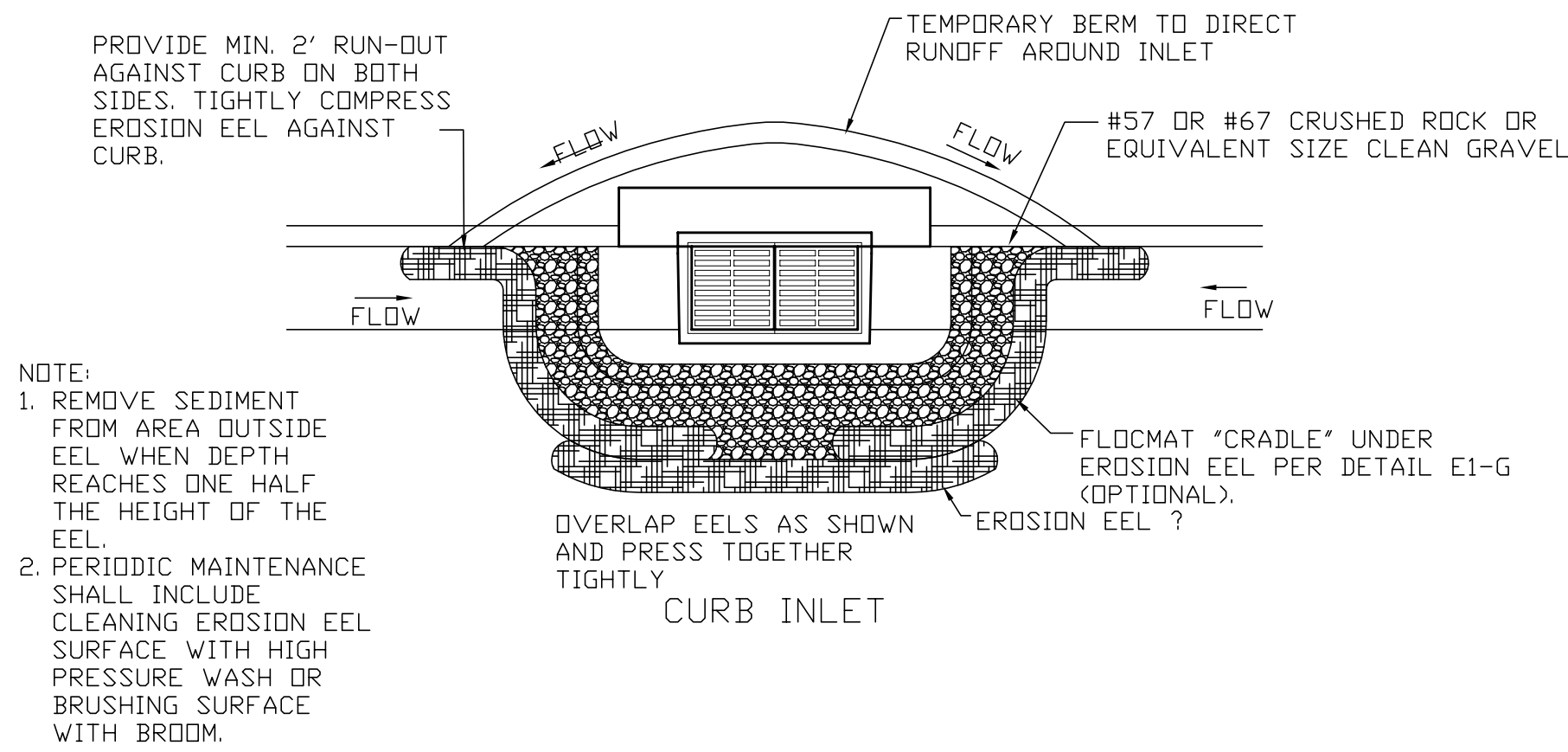
SEWER OUTFALL
PLAN AND PROFILE
BARTLETT, TENNESSEE

SURVEY:
DESIGNED BY:
DRAWN BY:

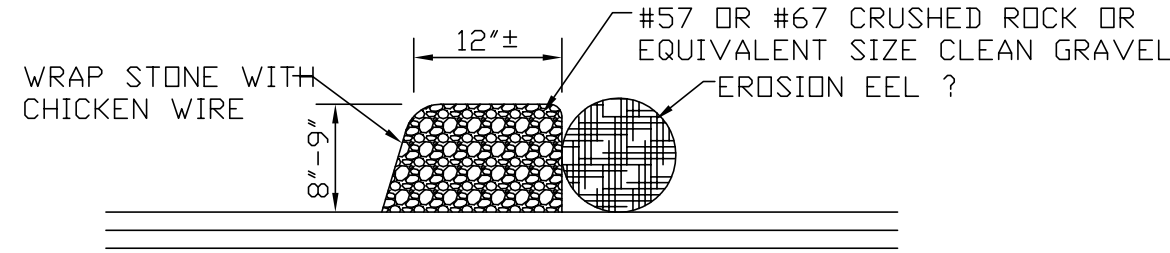
DATE:
DATE: 8/25
REVIEWED BY:
PROJECT NO:
BOOK:
SCALE: 1"=50'H
1"=5'V



GRATE/WEIR INLET

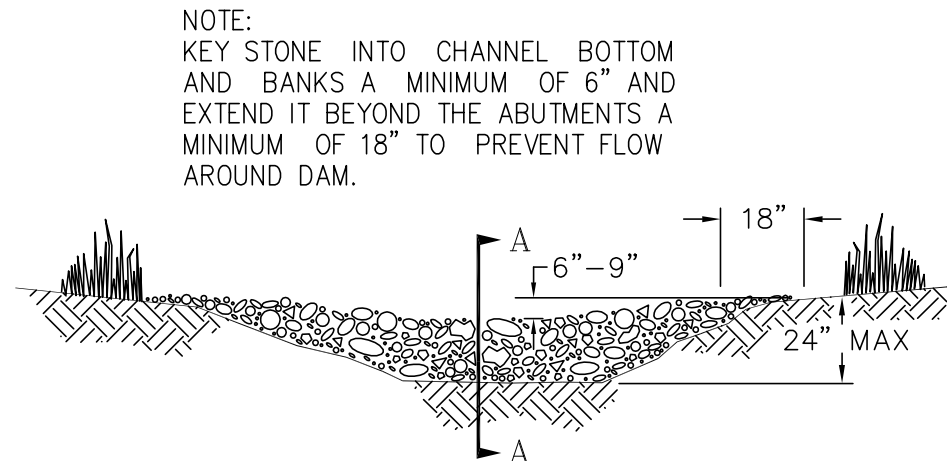


CURB INLET

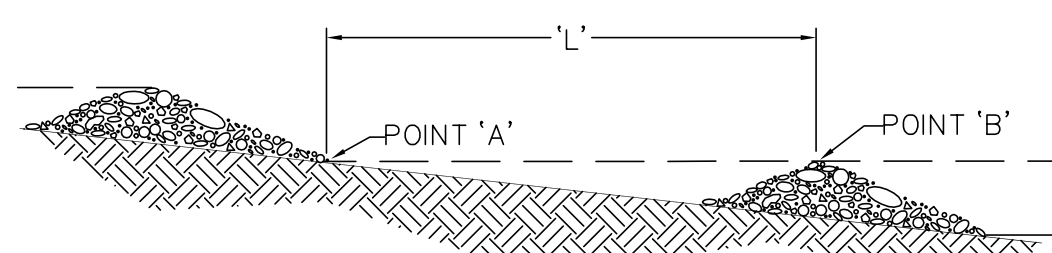
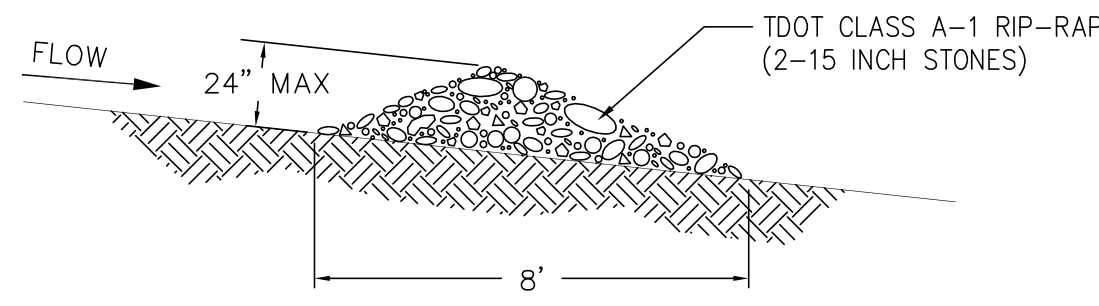


SECTION THROUGH EEL AND GRAVEL/STONE BACKER

EROSION EEL INLET PROTECTION

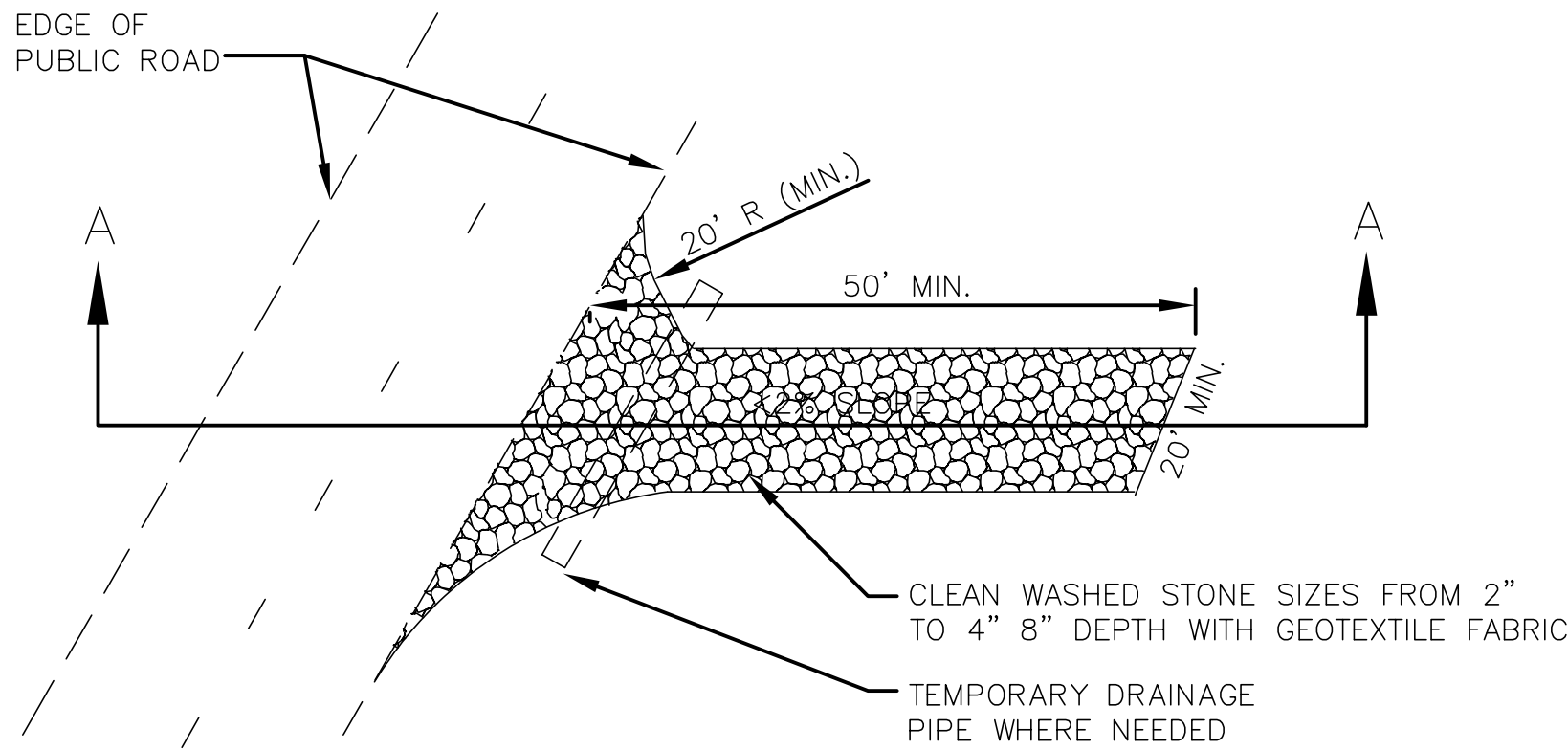


VIEW LOOKING UPSTREAM

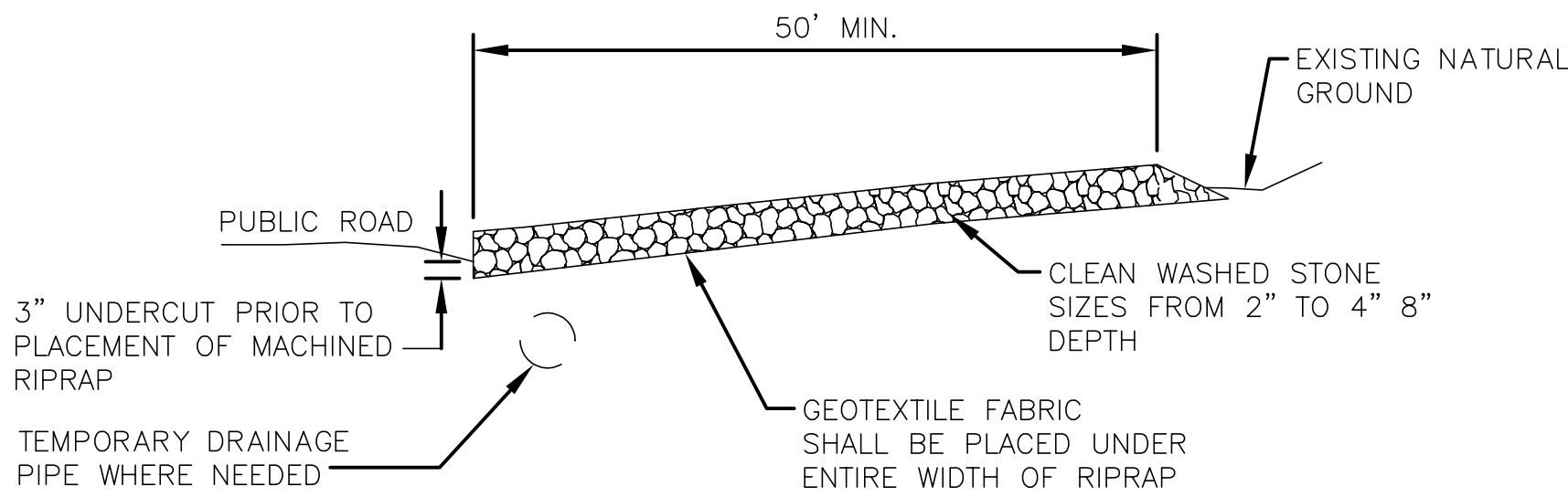


SPACING BETWEEN CHECK DAMS

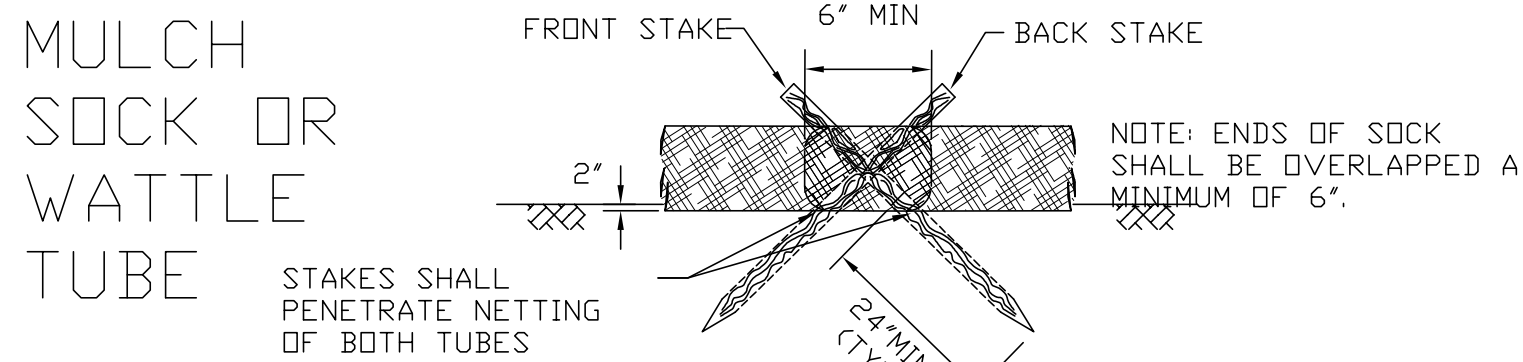
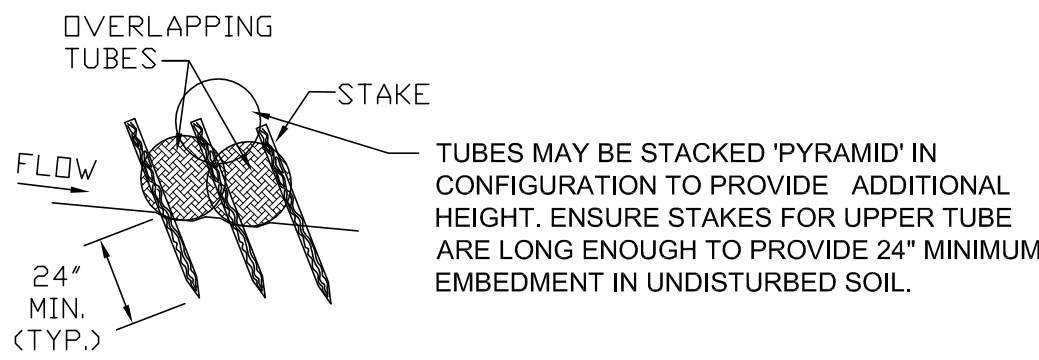
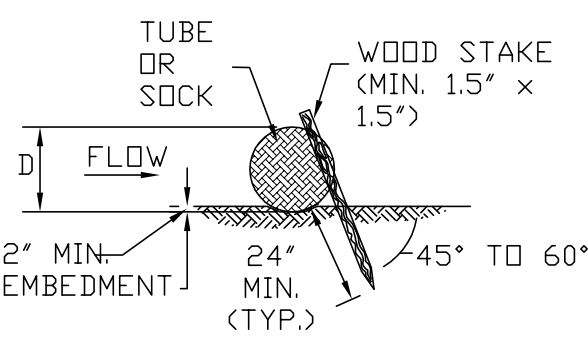
ROCK CHECK DAM
NOT TO SCALE



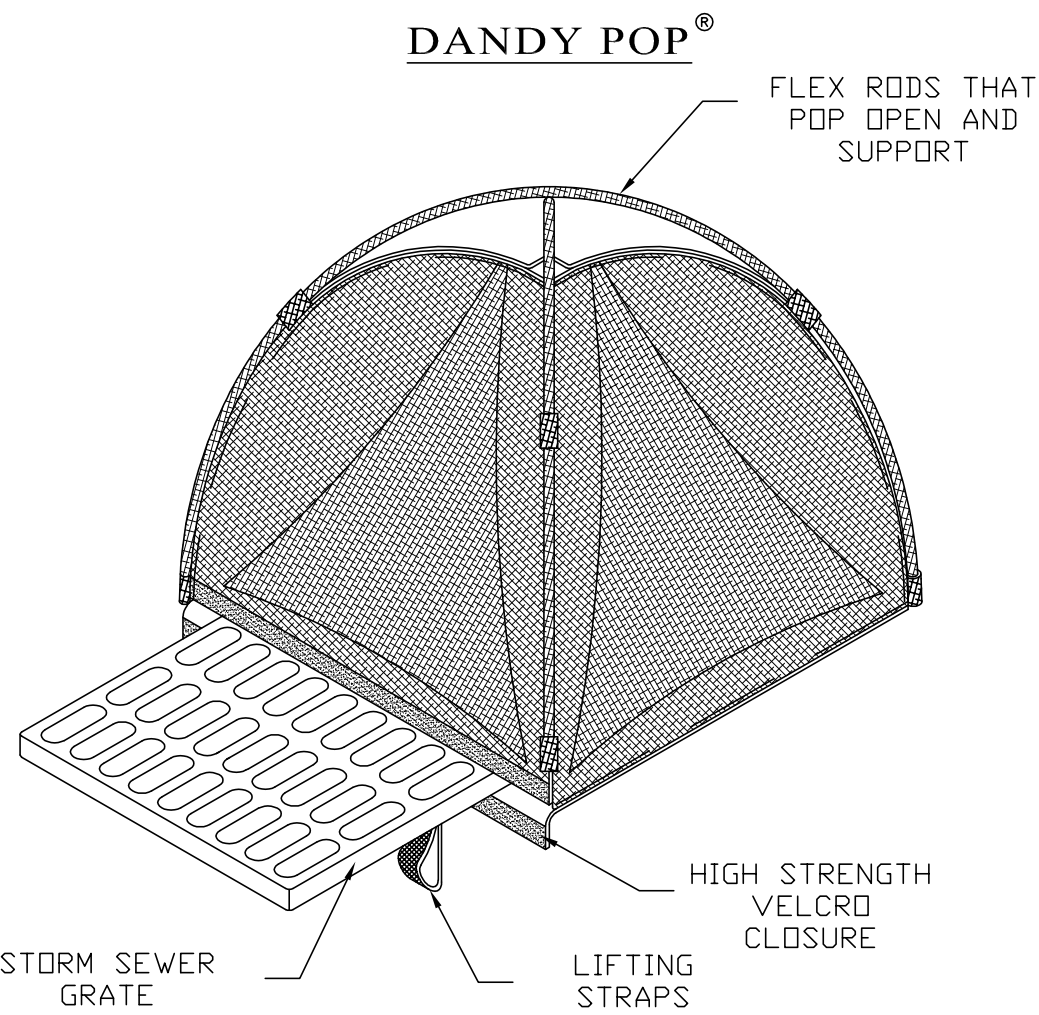
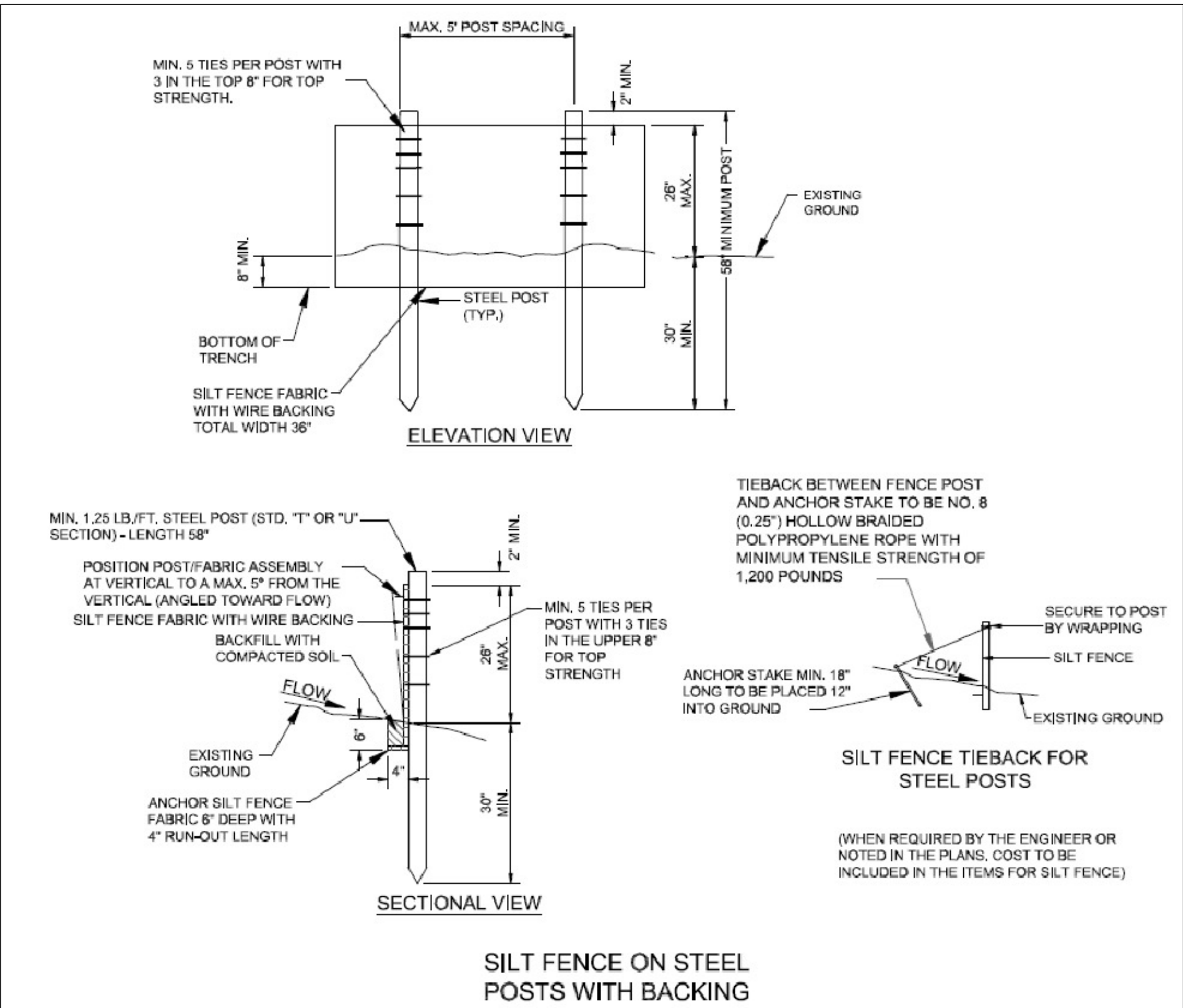
PLAN VIEW OF TEMPORARY CONSTRUCTION EXIT



SECTION A-A



STAKING AT LAP

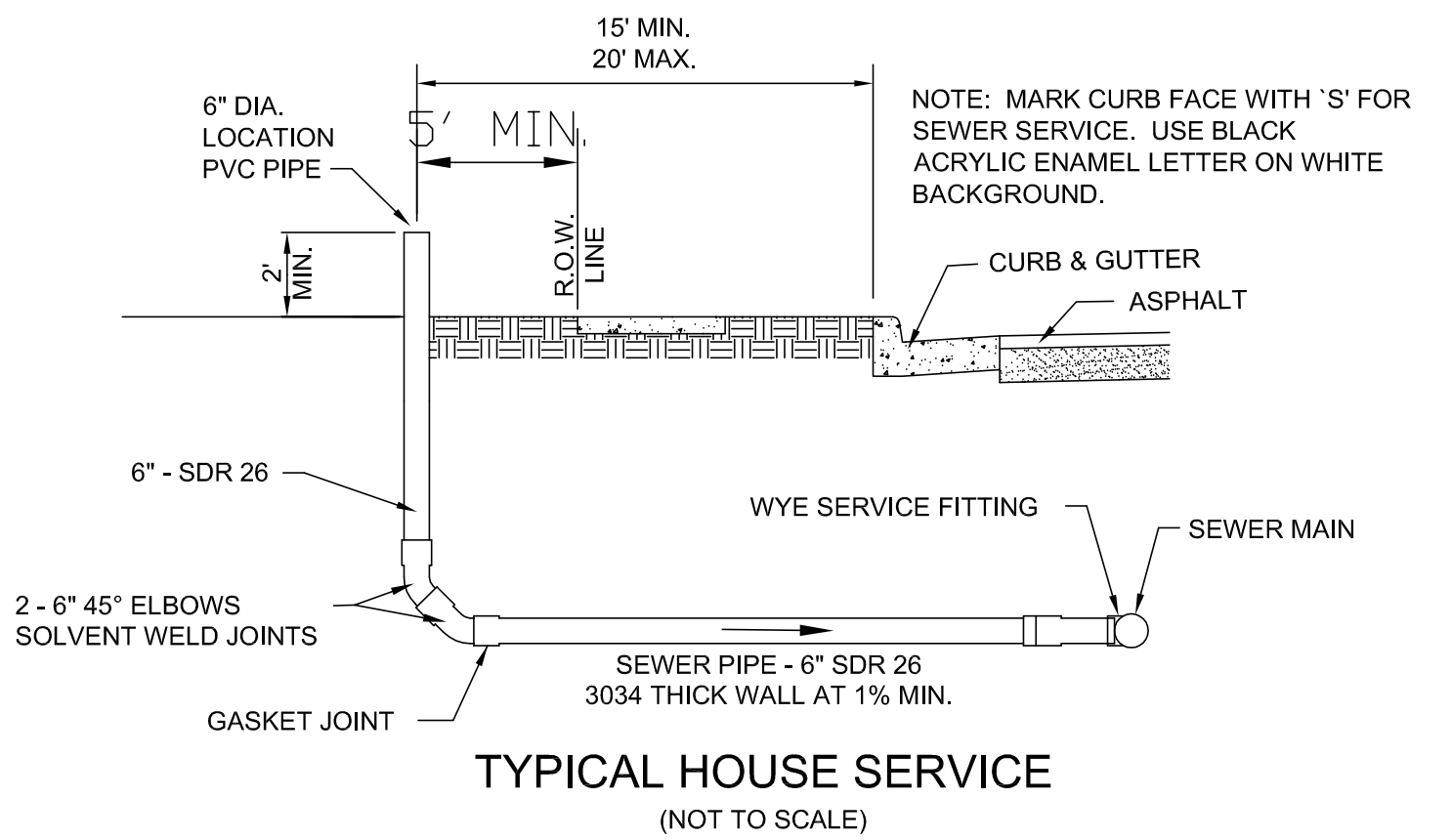


REVISION			
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE	
THE SANCTUARY PHASE 1			
DEVELOPER: BLUE SKY COMMUNITIES, INC			
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC			

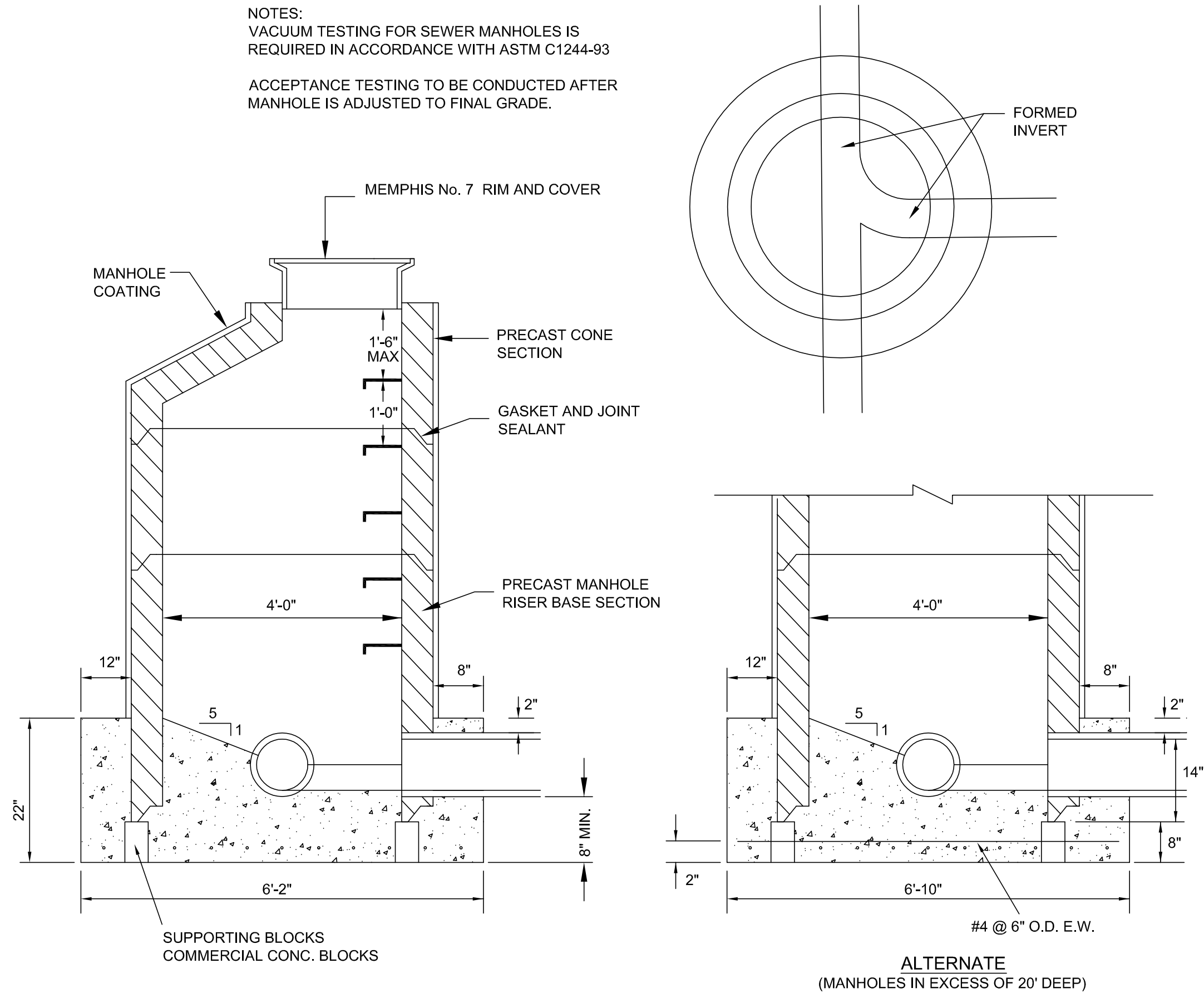
SHEET 1 OF 1
DIVISION OF ENGINEERING
EROSION CONTROL DETAILS

BARTLETT, TENNESSEE

SURVEY: DESIGNED BY: LDS
DRAWN BY: LDS
DATE: 8/25
REVIEWED BY:
PROJECT NO:
BOOK:
SCALE:



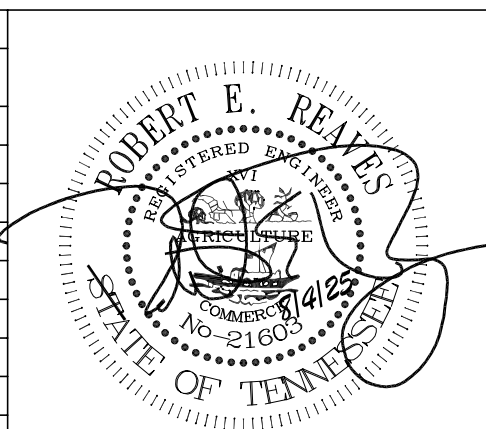
- NOTE
1. PIPE TO BE BEDDED ON A MINIMUM OF 6" SAND AND BACKFILLED A MINIMUM OF 6" OVER THE TOP OF THE PIPE WITH SAND.
 2. FOR SEWER PIPE INSTALLED AT DEPTHS OF 4' OR LESS, TRACER WIRE WILL BE ATTACHED TO THE SEWER LINES WITH ELECTRICAL TAPE OR NYLON WIRE TIES WRAPPED COMPLETELY AROUND THE CIRCUMFERENCE OF THE SEWER MAIN.
 3. FOR SEWER PIPE INSTALLED AT DEPTHS GREATER THAN 4', TRACER WIRE SHALL BE INSTALLED AT A DEPTH NOT TO EXCEED 4'.
 4. AT A VERTICAL DISTANCE OF 24" DIRECTLY ABOVE THE TRACER WIRE, RED CAUTION TAPE SHALL BE INSTALLED THE ENTIRE LENGTH OF THE TRACER WIRE.
 5. THE TRACER WIRE AND TAPE SHALL BE PROTECTED FROM DAMAGE DURING EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE SHALL BE PERMITTED. REFER TO CITY OF BARTLETT SEWER TRACER WIRE DETAIL FOR MORE INFORMATION.



SANITARY SEWER MANHOLE
NTS

- NOTES:
- MH COATING:
OUTSIDE COATING OF MANHOLE SHALL BE ASPHALTIC BLACK AS AVAILABLE AT UNITED PAINT COMPANY. METHOD OF APPLICATION SHALL BE PERFORMED BY BRUSH OR LOW PRESSURE SPRAYER.
- JOINT SEALANT:
CONCRETE MORTAR SHALL BE USED TO SEAL JOINTS AFTER THE INSTALLATION OF AN APPROVED GASKET MATERIAL BETWEEN ALL PRECAST MANHOLE SECTIONS.
- SUBSTITUTES:
POURED-IN-PLACE MANHOLES MAY BE SUBSTITUTED FOR PRECAST MANHOLES, PROVIDED A FORMAL, WRITTEN REQUEST HAS BEEN SUBMITTED AND APPROVED BY THE ENGINEER OF DESIGN. ALL POURED IN PLACE MANHOLES SHALL CONFORM TO CITY OF MEMPHIS STANDARD DRAWINGS NO. SST-6 AND SST-7.

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE



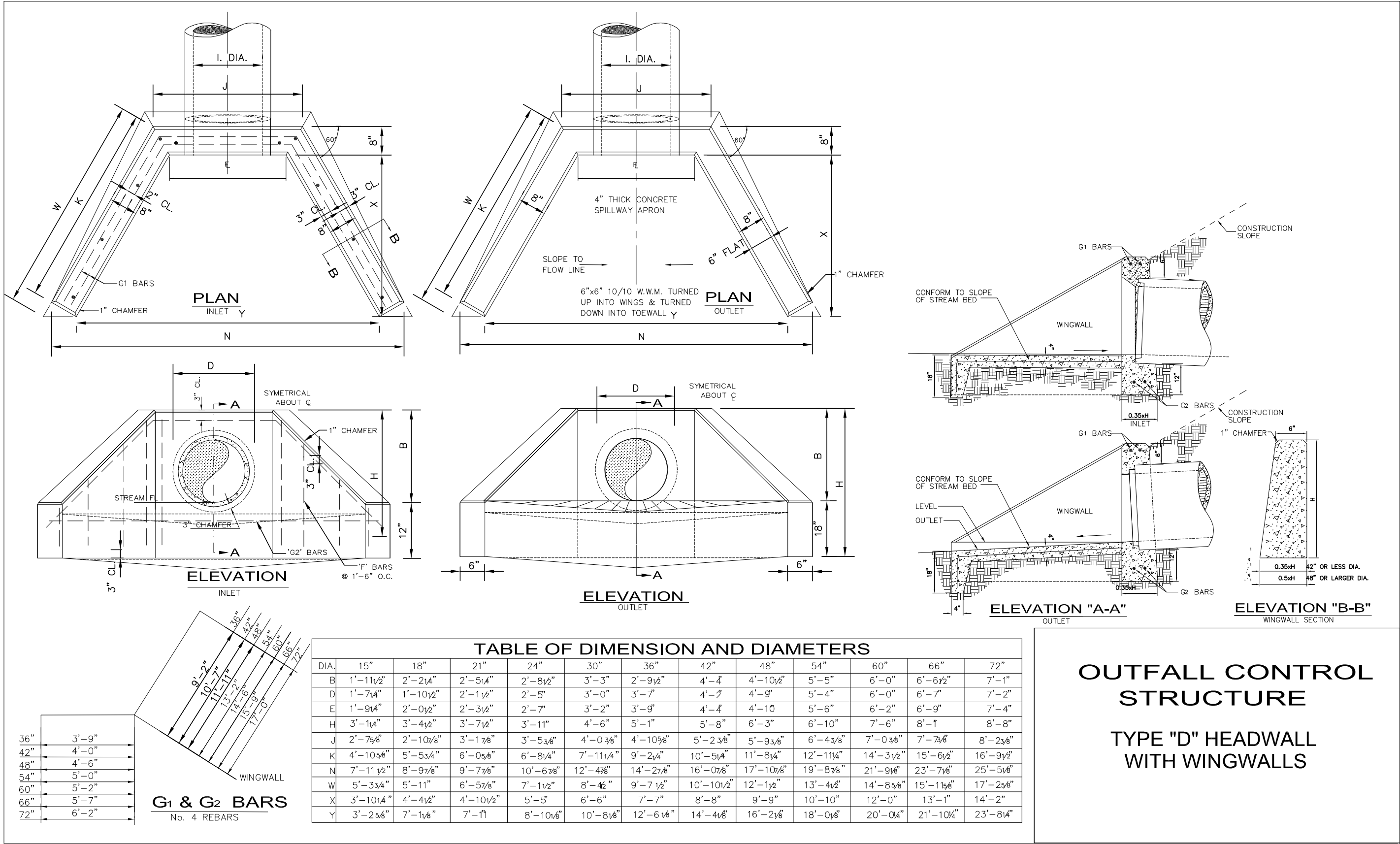
**THE SANCTUARY
PHASE 1**
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

SHEET 1 OF 1
DIVISION OF ENGINEERING
SANITARY SEWER DETAILS
BARTLETT, TENNESSEE

SURVEY:
DESIGNED BY: LDS
DRAWN BY: LDS

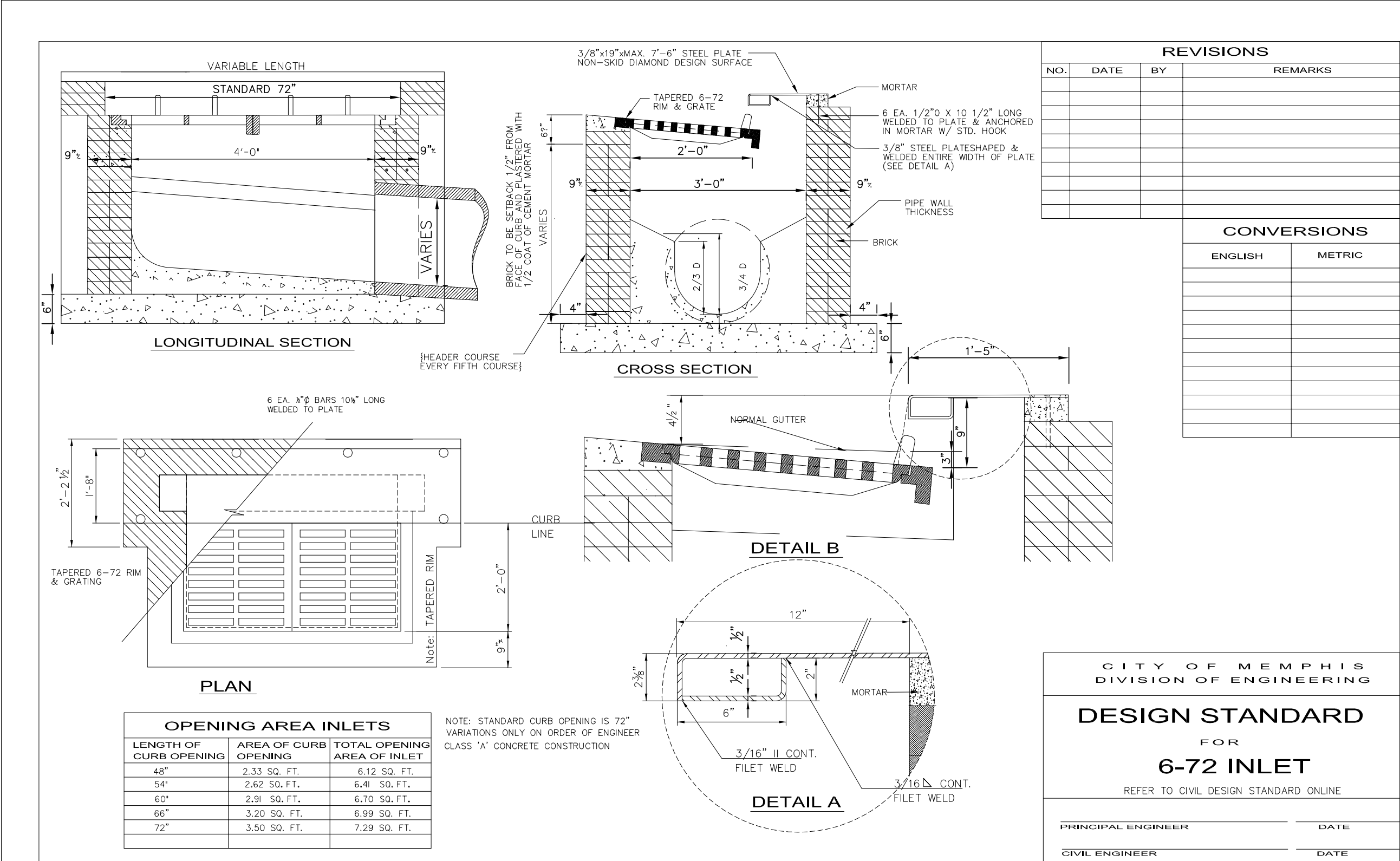
DATE:
DATE: 8/25
REVIEWED BY:

PROJECT NO:
BOOK:
SCALE:



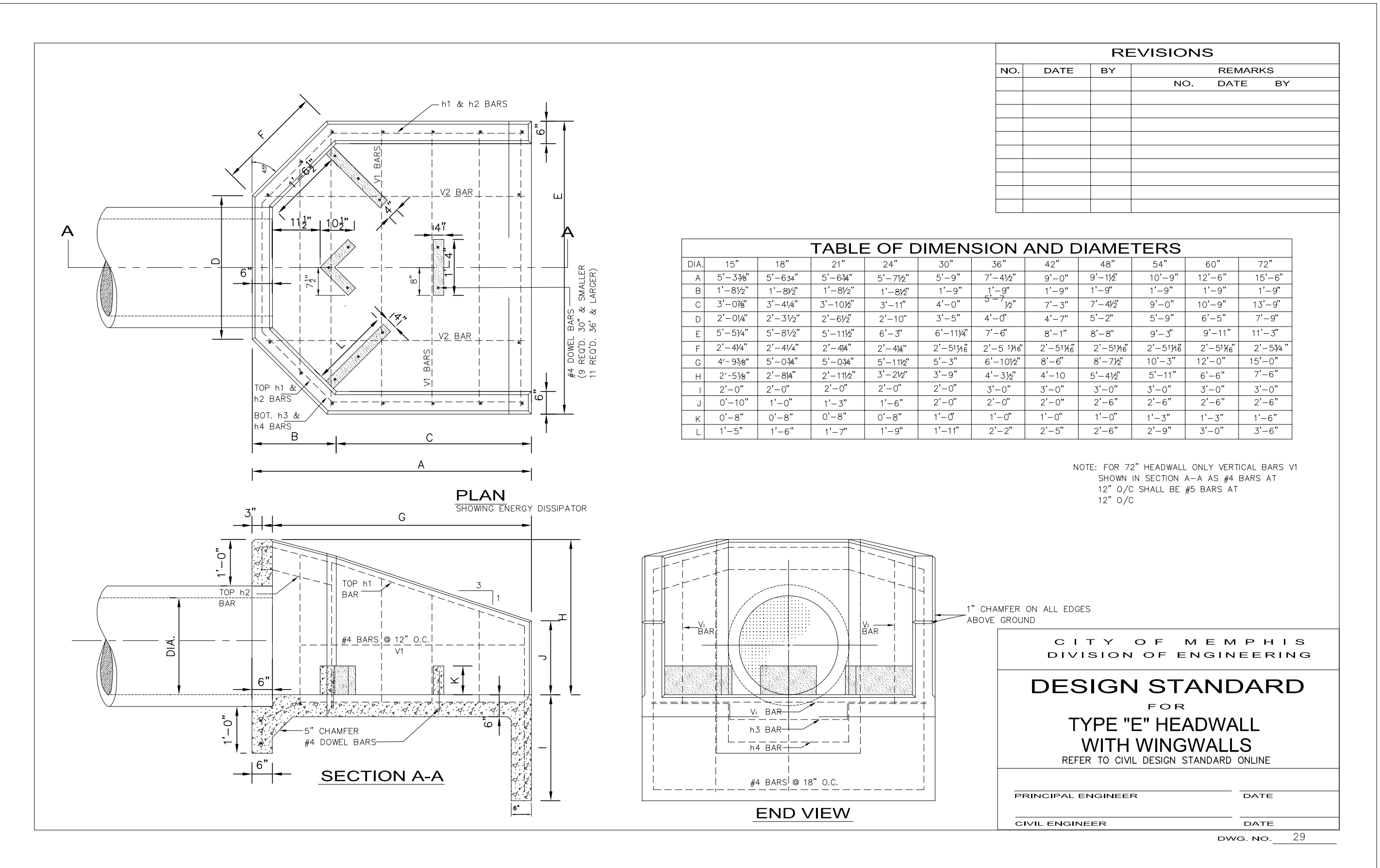
OUTFALL CONTROL
STRUCTURE
TYPE "D" HEADWALL
WITH WINGWALLS

NOTE: CHAIN LINK FENCE SHALL BE INSTALLED ON ALL HEADWALLS, TO INCLUDE WINGWALLS, WHEN THE DISTANCE FROM TOP OF MANHOLE TO PIPE INVERT IS 30" OR MORE.



CITY OF MEMPHIS
DIVISION OF ENGINEERING
DESIGN STANDARD
FOR
6-72 INLET
REFER TO CIVIL DESIGN STANDARD ONLINE.

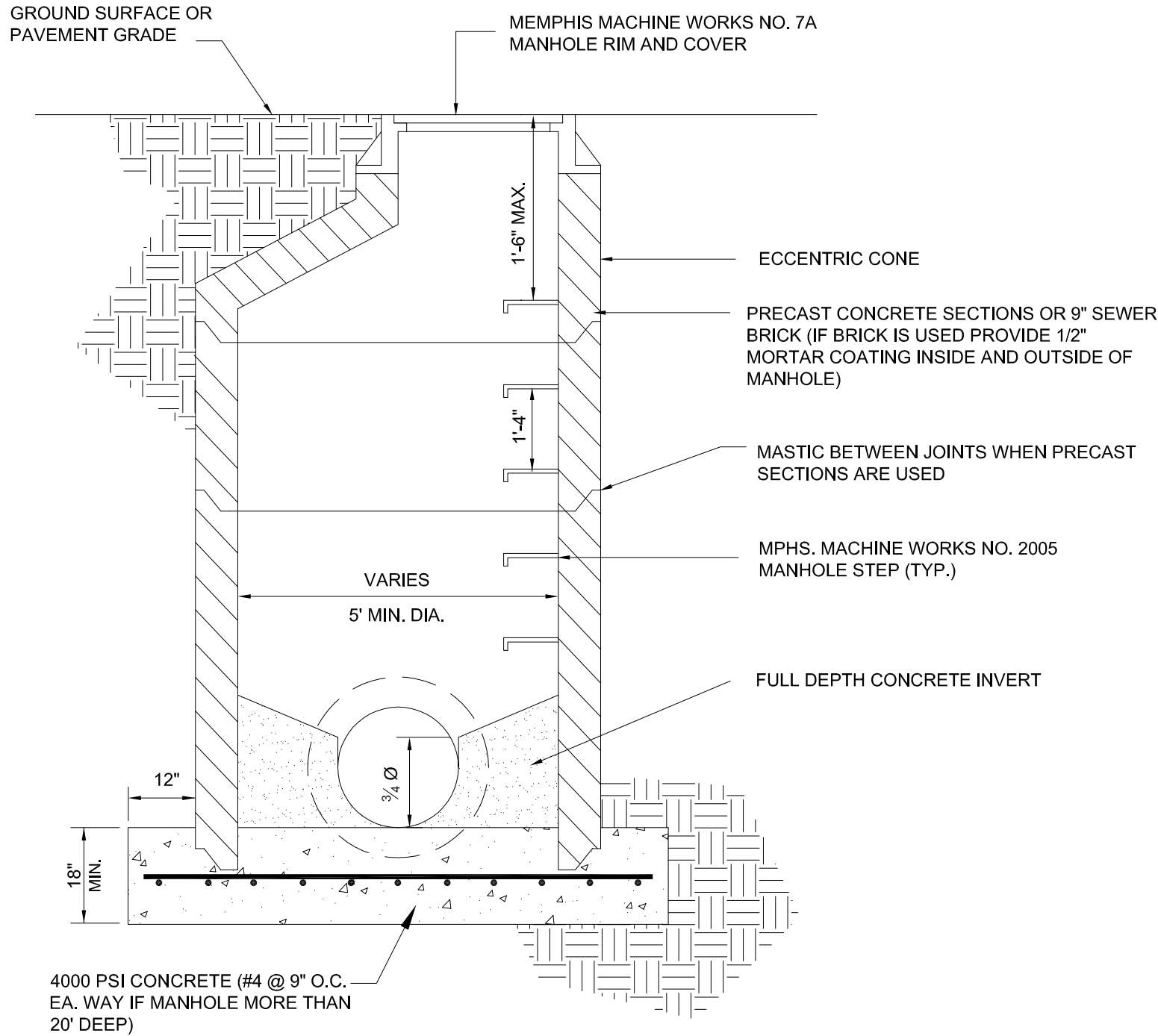
PRINCIPAL ENGINEER: _____ DATE: _____
CIVIL ENGINEER: _____ DATE: _____
DWG. NO.: 21



CITY OF MEMPHIS
DIVISION OF ENGINEERING
DESIGN STANDARD
FOR
TYPE "E" HEADWALL
WITH WINGWALLS
REFER TO CIVIL DESIGN STANDARD ONLINE.

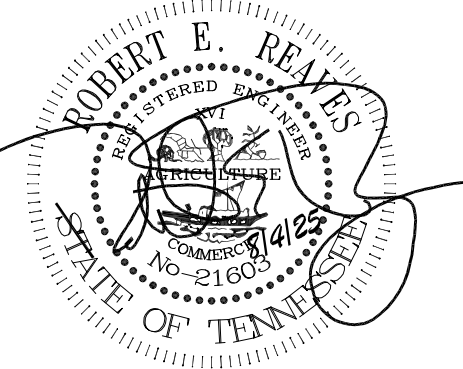
PRINCIPAL ENGINEER: _____ DATE: _____
CIVIL ENGINEER: _____ DATE: _____
DWG. NO.: 29

NOTE: CHAIN LINK FENCE SHALL BE INSTALLED ON ALL HEADWALLS, TO INCLUDE WINGWALLS, WHEN THE DISTANCE FROM TOP OF MANHOLE TO PIPE INVERT IS 30" OR MORE.



STORM DRAIN MANHOLE
(NOT TO SCALE)

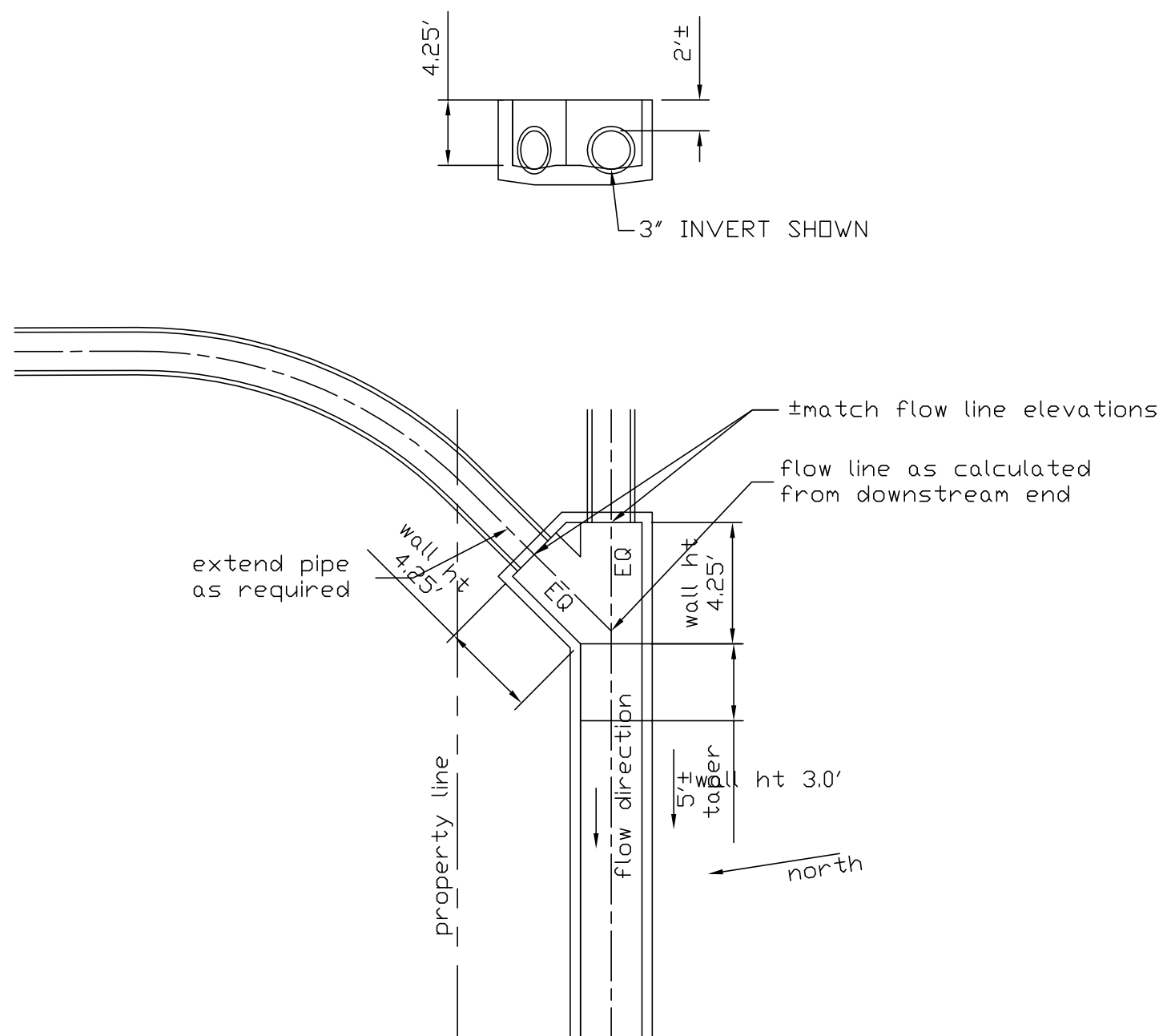
REVISION			APPROVAL DATE
ITEM NO.	DESCRIPTION OF CHANGE		



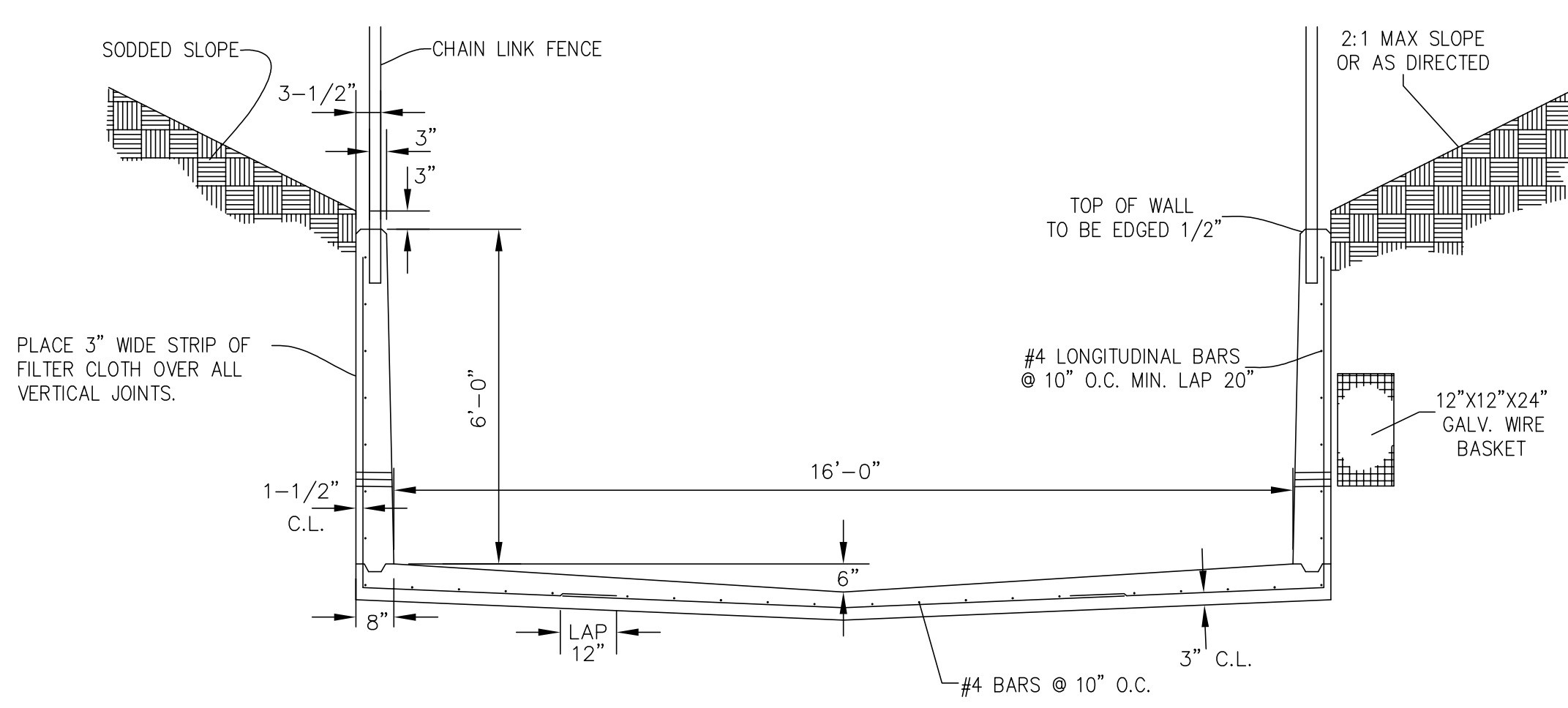
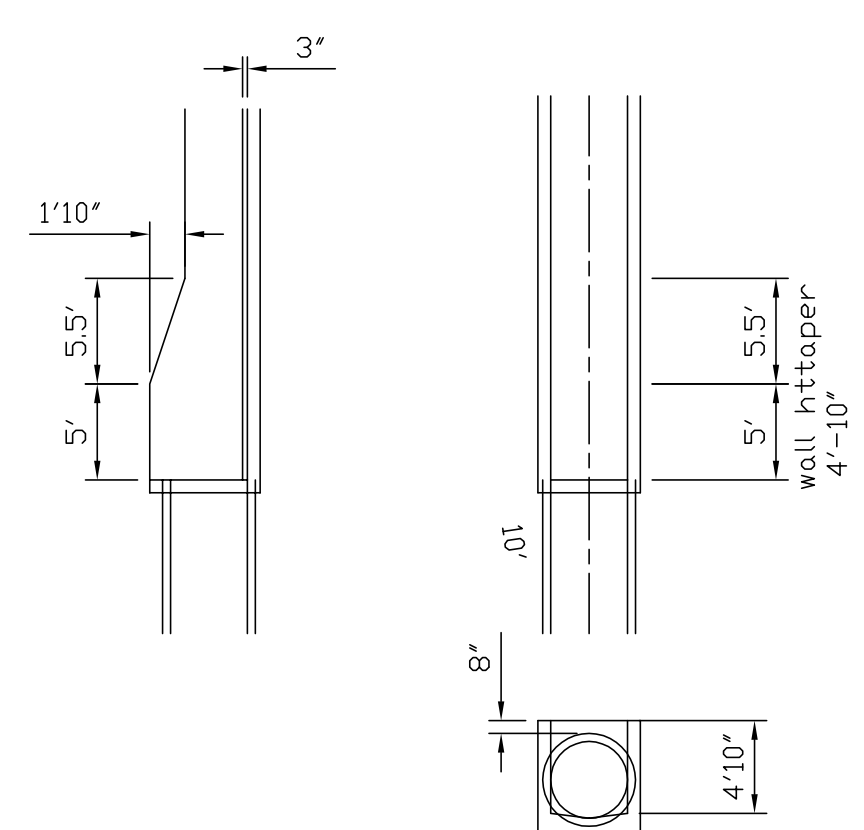
SHEET 1 OF 1
DIVISION OF ENGINEERING
DRAINAGE DETAILS
BARTLETT, TENNESSEE

SURVEY: _____ DATE: _____ PROJECT NO: _____
DESIGNED BY: LDS DATE: _____ BOOK: _____
DRAWN BY: LDS DATE: 8/25 SCALE: _____
REVIEWED BY: _____

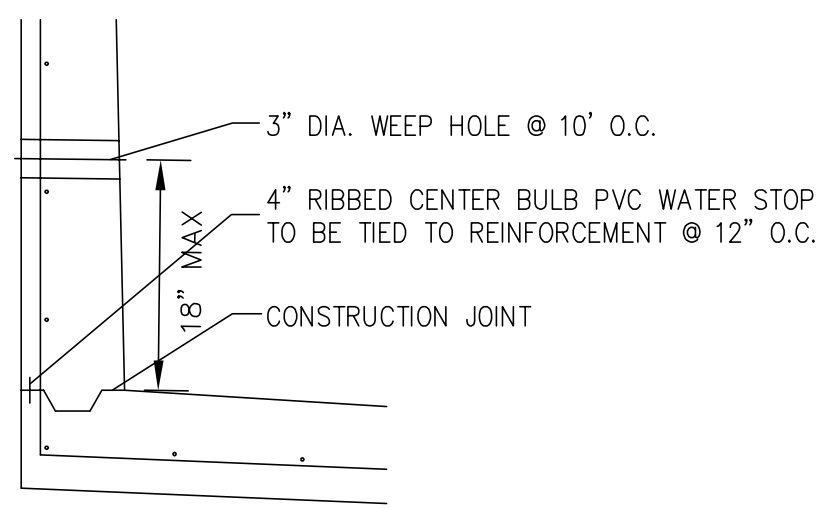
THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC



CHANNEL JUNCTION DETAIL
(NOT TO SCALE)

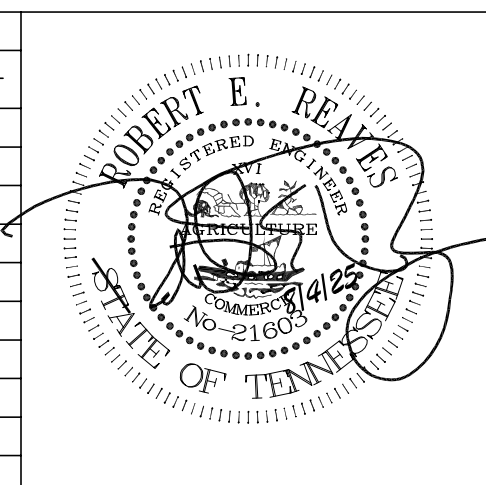


TYPICAL SECTION



WATER STOP DETAIL
(TYPICAL SECTION)

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE

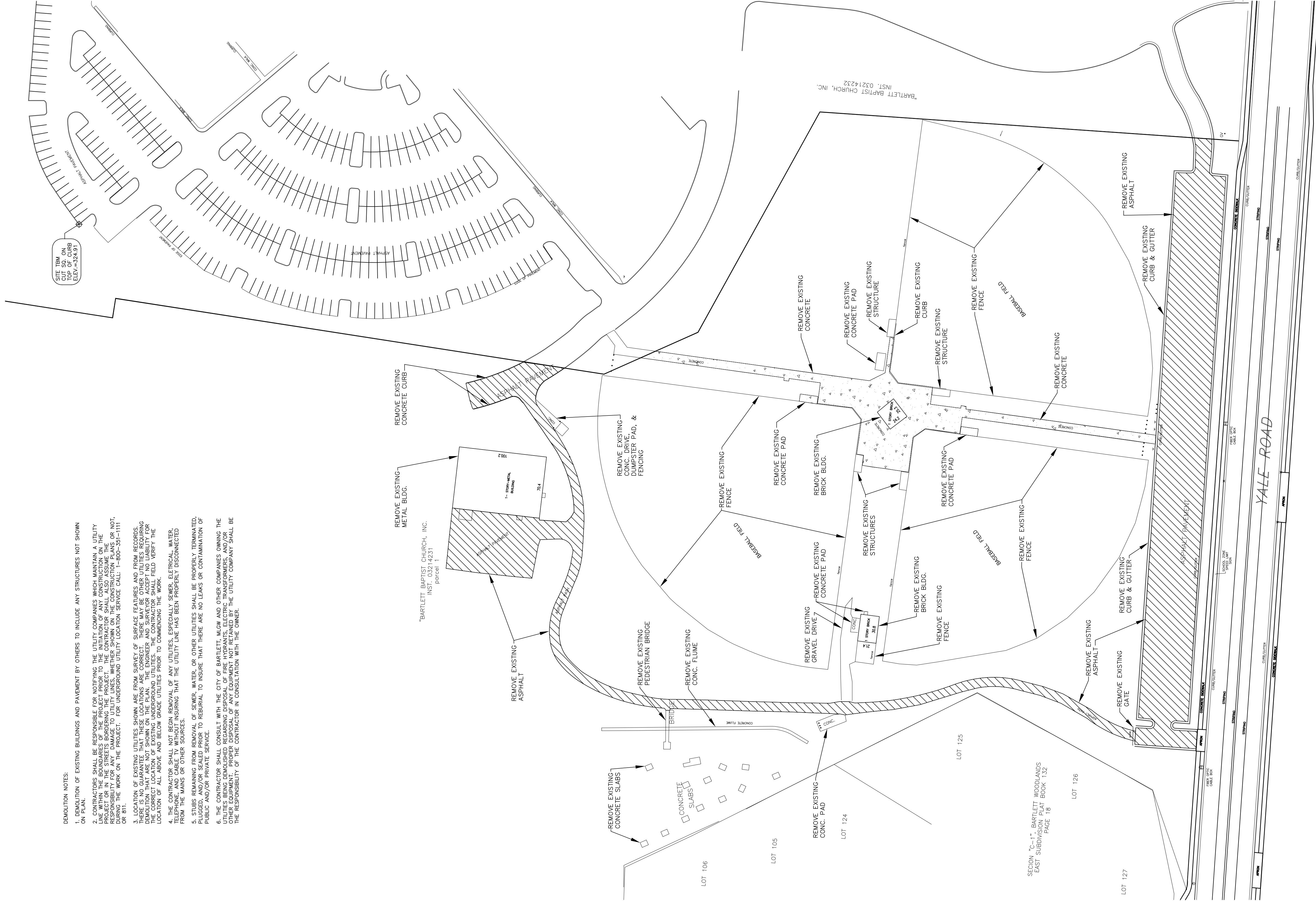


**THE SANCTUARY
PHASE 1**
DEVELOPER: BLUE SKY COMMUNITIES, INC
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

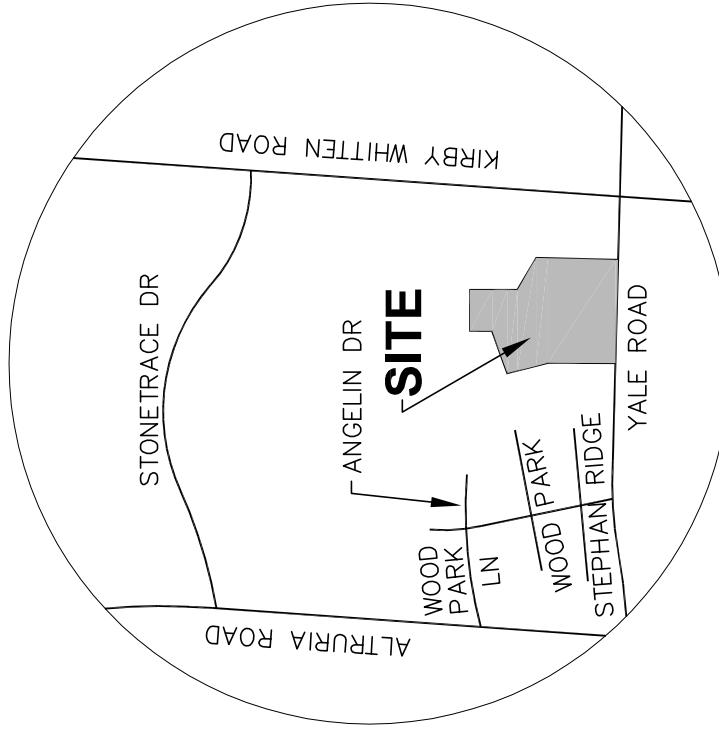
SHEET 1 OF 1
DIVISION OF ENGINEERING
DRAINAGE DETAILS
BARTLETT, TENNESSEE
SURVEY: DATE: PROJECT NO:
DESIGNED BY: LDS DATE: 8/25 BOOK:
DRAWN BY: LDS SCALE:
REVIEWED BY:

DEMOLITION NOTES:

1. DEMOLITION OF EXISTING BUILDINGS AND PAVEMENT BY OTHERS TO INCLUDE ANY STRUCTURES NOT SHOWN ON PLAN.
2. CONTRACTORS SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY COMPANIES WHO MAINTAIN A UTILITY LOCATED WITHIN THE PROJECT. THE CONTRACTOR SHALL ALSO ASSUME THE RESPONSIBILITY FOR VERIFYING THE LOCATION OF ALL ABOVE AND BELOW GRADE UTILITIES PRIOR TO COMMENCING THE WORK ON THE PROJECT. FOR UNDERGROUND UTILITY LOCATION SERVICE CALL: 1-800-254-1111 OR 811.
3. LOCATION OF EXISTING UTILITIES SHOWN ARE FROM SURVEY OF SURFACE FEATURES AND FROM RECORDS. CONTRACTORS SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL ABOVE AND BELOW GRADE UTILITIES PRIOR TO COMMENCING THE WORK ON THE PROJECT. THE CONTRACTOR SHALL ALSO ASSUME THE RESPONSIBILITY FOR VERIFYING THE LOCATION OF ALL ABOVE AND BELOW GRADE UTILITIES PRIOR TO COMMENCING THE WORK.
4. THE CONTRACTOR SHALL NOT BEGIN REMOVAL OF ANY UTILITIES, ESPECIALLY SEWER, ELECTRICAL, WATER, TELEPHONE, AND CABLE TV WITHOUT INSURING THAT THE UTILITY LINE HAS BEEN PROPERLY DISCONNECTED FROM THE MAINS OR OTHER SOURCES.
5. STUDS REMAINING FROM REMOVAL OF SEWER, WATER, OR OTHER UTILITIES SHALL BE PROPERLY TERMINATED, AND THE CONTRACTOR SHALL INSURE THAT THERE ARE NO LEAKS OR CONTAMINATION OF PUBLIC AND/OR PRIVATE SERVICE.
6. THE CONTRACTOR SHALL CONSULT WITH THE CITY OF BARTLETT, MLOW AND OTHER COMPANIES OWNING THE UTILITIES BEING DEMOLISHED REGARDING DISPOSAL OF FIRE HYDRANTS, ELECTRIC TRANSFORMERS, AND/OR OTHER UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF THE UTILITIES COMPANY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IN CONSULTATION WITH THE OWNER.

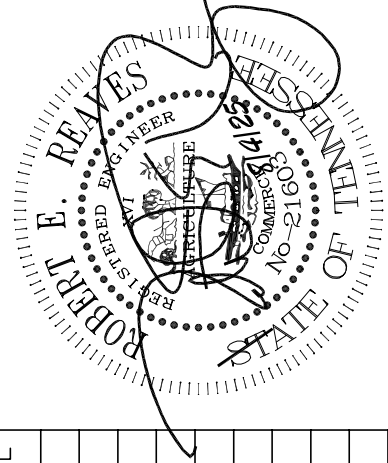


SECTION "C-1" BARTLETT WOODLANDS
EAST SUBDIVISION PLAT BOOK 132
PAGE 18

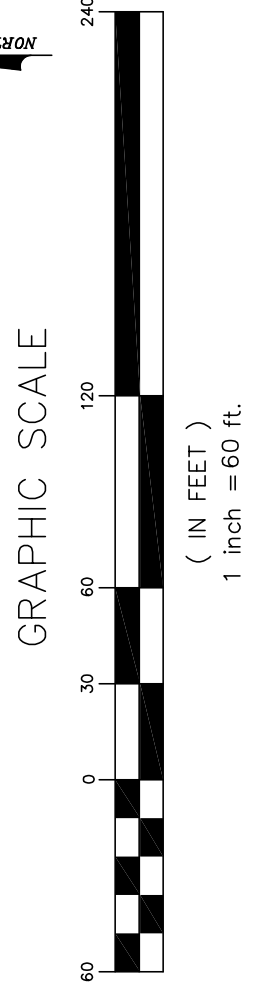


VICINITY MAP
N.T.S.

ITEM NO.	REVISION DESCRIPTION OF CHANGE	APPROVAL DATE



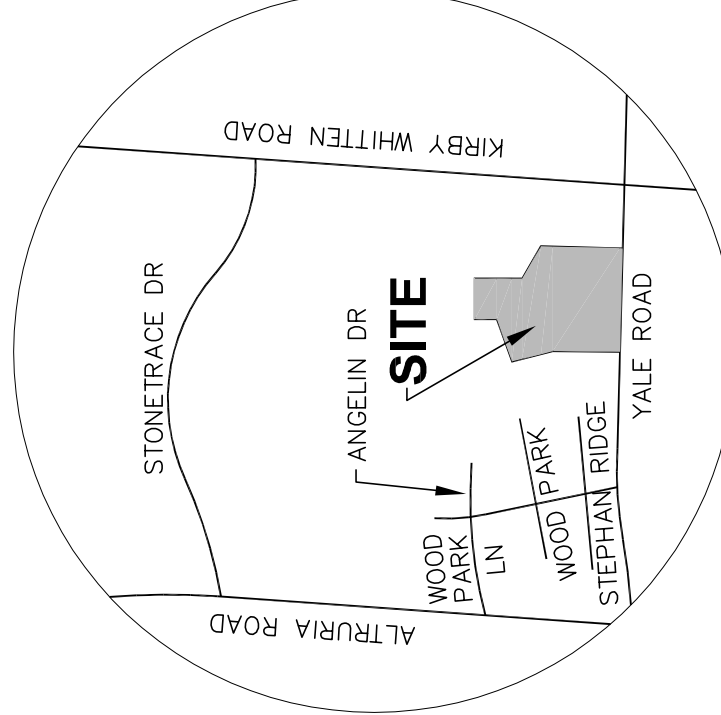
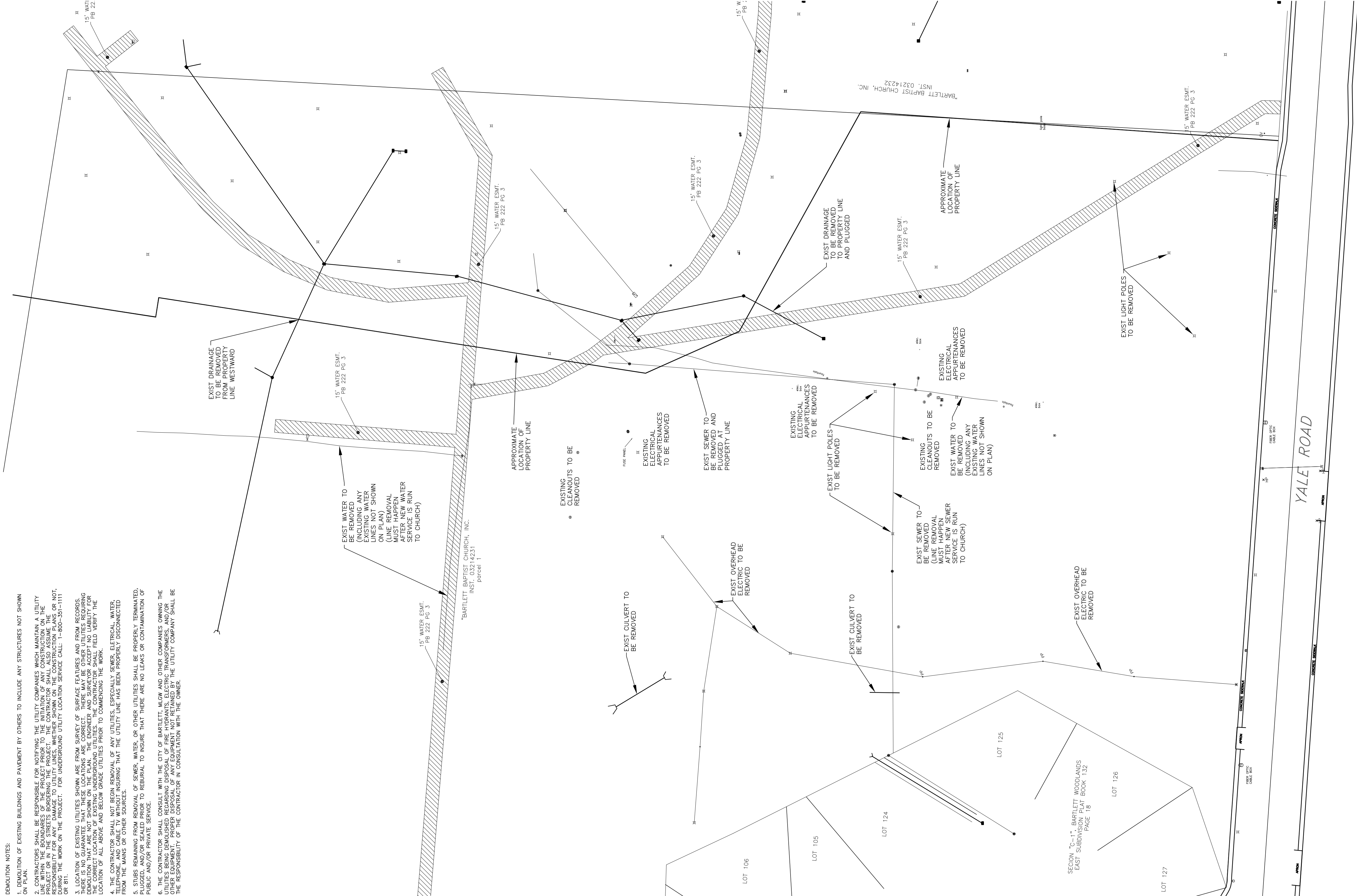
THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC.
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC



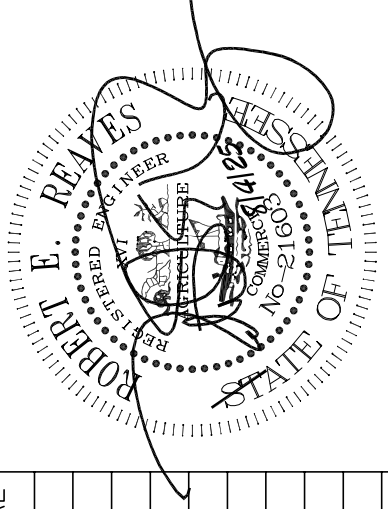
DIVISION OF ENGINEERING
DEMO PLAN
BARTLETT, TENNESSEE
SURVEY: PROJECT NO:
DESIGNED BY: LDS DATE: 05/25
DRAWN BY: LDS SCALE: 1"=60'
REVIEWED BY:

DEMOLITION NOTES:

1. REMOVAL OF EXISTING BUILDINGS AND PAYMENT BY OTHERS TO INCLUDE ANY STRUCTURES NOT SHOWN ON PLAN.
2. CONTRACTORS SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY COMPANIES WHICH MAINTAIN A UTILITY LINE WITHIN THE BOUNDARIES OF THE PROJECT PRIOR TO THE INITIATION OF ANY CONSTRUCTION ON THE PROJECT. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITY LINES, WHETHER SHOWN ON THE CONSTRUCTION PLAN OR NOT, THAT MAY OCCUR DURING THE WORK ON THE PROJECT. FOR UNDERGROUND UTILITY LOCATION SERVICE CALL 1-800-353-1111 OR 811.
3. LOCATION OF EXISTING UTILITIES SHOWN ARE FROM SURVEY OF SURFACE FEATURES AND FROM RECORDS. THERE IS NO GUARANTEE THAT THESE LOCATIONS ARE CORRECT. THERE MAY BE OTHER UTILITIES REQUIRING PROTECTION THAT ARE NOT SHOWN ON THE CONSTRUCTION PLAN. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL ABOVE AND BELOW GRADE UTILITIES PRIOR TO COMMENCING THE WORK.
4. THE CONTRACTOR SHALL NOT BEGIM REMOVAL OF ANY UTILITIES, ESPECIALLY SEWER, ELECTRICAL, WATER, TELEPHONE AND GAS, WITHOUT FIRST INSURING THAT THE UTILITY LINE HAS BEEN PROPERLY DISCONNECTED AND IS SAFE TO BE REMOVED.
5. OTHER DRAWINGS FROM REMOVAL OF SEWER, WATER, OR OTHER UTILITIES SHALL BE PROPERLY TERMINATED AND NOT REUSED FOR ANY OTHER PROJECT. CONTRACTORS SHALL BE RESPONSIBLE FOR PROPERLY DISPOSING, PLUGGED, AND/OR SEALED PRIOR TO REMOVAL, INSURE THAT THERE ARE NO LEAKS OR CONTAMINATION OF PUBLIC AND/OR PRIVATE SERVICE.
6. THE CONTRACTOR SHALL CONSULT WITH THE CITY OF BARTLETT, M&W AND OTHER COMPANIES OWNING THE UTILITIES BEING DEMOLISHED REGARDING DISPOSAL OF FIRE HYDRANTS, ELECTRIC TRANSMISSION, AND/OR GAS LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITY LINES, WHETHER SHOWN ON THE CONSTRUCTION PLAN OR NOT, THAT MAY OCCUR DURING THE WORK ON THE PROJECT. FOR UNDERGROUND UTILITY LOCATION SERVICE CALL 1-800-353-1111 OR 811.



VICINITY MAP
N.T.S.

[illegible]

THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC.
ENGINEER: LAND DEVELOPMENT SOLUTIONS, LLC

DEMO PLAN

BARTLETT, TENNESSEE

SURVEY: _____ DATE: _____ PROJECT NO: _____
DESIGNED BY: _____ DATE: _____

SURVEY:

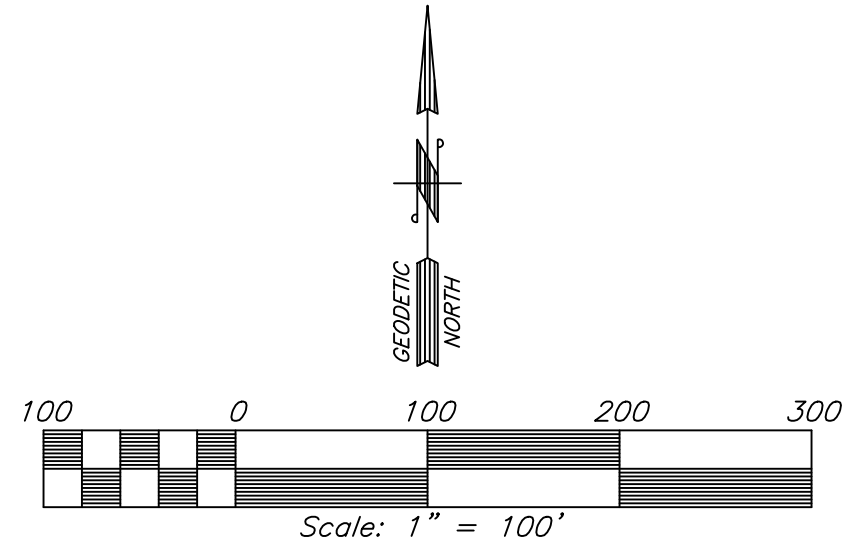
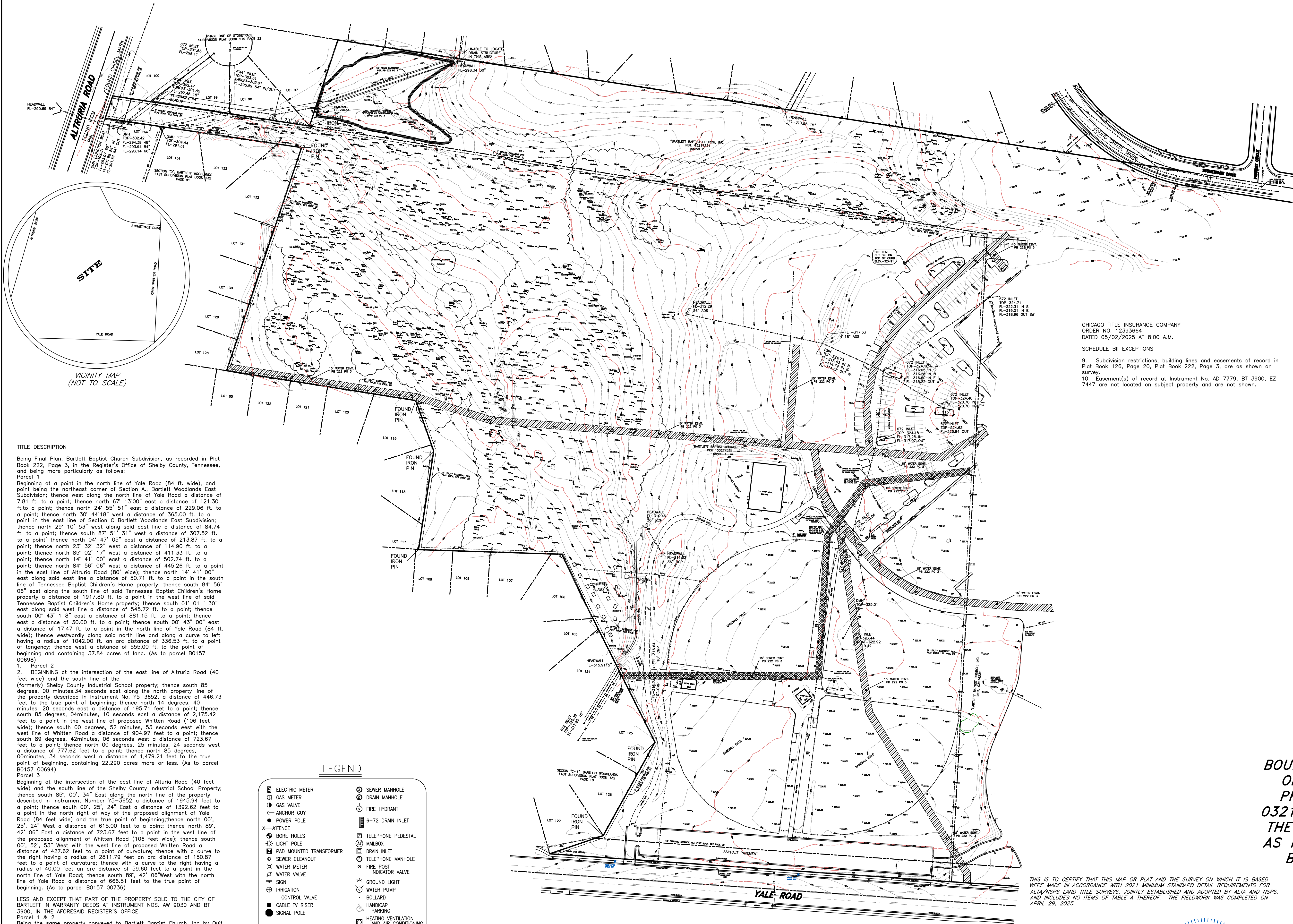
DATE: 05/25 SCALE: 1"=60'

DATE: 05/25

REVIEWED BY:

CITY ENGINEER	DATE
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2025.???	D2
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NOTES

1. BEARINGS SHOWN ARE RELATIVE TO EACH OTHER ONLY.
2. ONLY VISIBLE AND APPARENT UTILITIES SHOWN.
3. UNDERGROUND UTILITIES NOT SHOWN, BEFORE COMMENCEMENT OF ANY CONSTRUCTION CALL TENNESSEE 1 CALL @ 1-800-351-1111 AND THE UTILITY COMPANIES MAINTAINING UTILITY SERVICES ACROSS SUBJECT PROPERTY.
4. EVERY DOCUMENT OF RECORD REVIEWED AND CONSIDERED AS A PART OF THIS SURVEY IS NOTED HEREON. ONLY THE DOCUMENTS NOTED HEREON WERE SUPPLIED TO THE SURVEYOR. THERE MAY EXIST OTHER DOCUMENTS OF RECORD THAT WOULD AFFECT THIS PARCEL.
5. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART TO THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT.
6. ACCORDING TO THE FEDERAL EMERGENCY MANagements AGENCY'S FLOOD INSURANCE RATE MAP (FIRM), THIS PROPERTY DOES NOT LIE IN A FLOOD HAZARD AREA AS IDENTIFIED IN COMMUNITY PANEL NUMBERS 470175 0301 G, 470175 0302 G AND 470175 0304 G. MAPS REVISED FEBRUARY 6, 2013.
7. IF YOU HAVE RECEIVED THIS DRAWING IN DIGITAL FORMAT PLEASE BE AWARE THAT A HARD COPY OF THE PLAT BEARING AN ORIGINAL SEAL AND SIGNATURE RENDERED IN RED WILL RULE IN THE EVENT OF A CONFLICT BETWEEN THE PRESENTED DATA.
8. THE UNAUTHORIZED DISTRIBUTION OF THIS PLAT OF SURVEY MAY CONSTITUTE A COPYRIGHT INFRINGEMENT.
9. FLOW LINE ELEVATIONS, PIPE SIZES AND COMPOSITION (EXCEPT AS NOTED AS BEING DETERMINED FROM RECORDS) ARE REPORTED AS CAN BE ASCERTAINED FROM INVESTIGATION AT THE GROUND SURFACE WITHOUT ENTRY INTO THE STRUCTURE(S). AS SUCH INDICATED MEASUREMENTS MAY NOT MEET THE PROJECT SURVEY MEASUREMENT REQUIREMENTS.
10. UTILITY LOCATIONS AS SHOWN HAVE BEEN PLOTTED FROM "ONE CALL" OR OTHER UTILITY LOCATION SERVICES AS MARKED AT GRADE, AND/OR VISIBLE EVIDENCE OF UTILITY SERVICES OR FROM RECORDS OF THE UTILITY PROVIDER(S) AS NOTED ON PLAT OF SURVEY. THE CLIENT SHOULD SATISFY THEMSELVES AS TO ALL MATTERS OF UTILITY LOCATION.
11. CITY OF MEMPHIS BENCH MARK #1117: LOCATED AT THE INTERSECTION OF ALTRURIA ROAD & YALE ROAD. ELEVATION = 317.07 (NAVD88).
12. SITE BENCH MARK: CUT SQUARE ON TOP OF CURB IN THE NORTH PARKING LOT OF BARTLETT BAPTIST CHURCH, ±425 FEET WEST OF THE WEST LINE OF STONEBRIDGE DRIVE & ±288 FEET SOUTH OF THE NORTH PROPERTY LINE. ELEVATION = 324.91 (NAVD88).
13. THERE WERE NO OBSERVED EVIDENCE OF ANY CEMETERIES, GRAVESITES OR BURIAL GROUNDS ON SUBJECT PROPERTY.
14. NUMBER OF PARKING SPACES: THERE ARE *** REGULAR PARKING SPACES OF WHICH *** IS DESIGNATED FOR THE HANDICAPPED.
15. THERE IS NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADJUSTMENT.
16. WE ARE UNAWARE OF ANY PROPOSED CHANGES IN STREET RIGHT OF WAY LINES. THERE WAS NO OBSERVED EVIDENCE OF RECENT SIDEWALK CONSTRUCTION OR REPAIRS.
17. THERE WAS NO OBSERVED EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
18. THERE WERE NO WETLAND AREAS DELINEATED AT TIME OF SURVEY.
19. THIS PROPERTY HAS DIRECT ACCESS TO YALE ROAD, ALTRURIA ROAD AND KIRBY WHITTEN ROAD WHICH ARE A PUBLIC RIGHTS OF WAY.

BOUNDARY & TOPOGRAPHIC SURVEY OF PART OF THE BARTLETT BAPTIST CHURCH, INC. PROPERTY AS DESCRIBED IN INSTRUMENT 03214232 AND INSTRUMENT 03214231, BEING THE BARTLETT BAPTIST CHURCH SUBDIVISION AS RECORDED IN PLAT BOOK 222 PAGE 3 IN BARTLETT, SHELBY COUNTY, TENNESSEE

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES NO ITEMS OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON APRIL 29, 2025.

Harris & Associates Land Surveyors, LLC

By

JOE S. WISEMAN
SURVEYOR
TENNESSEE LICENSE #1932

jwiseman@harrisassociateslandsurveyors.com



HARRIS & ASSOCIATES LAND SURVEYORS, LLC

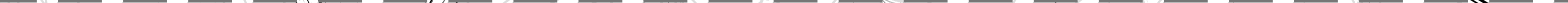
554 Greentree Cove, Suite 102B • Collierville, Tennessee 38017 • (901)362-2345

DATE : APRIL 28, 2025

SCALE : 1" = 100'

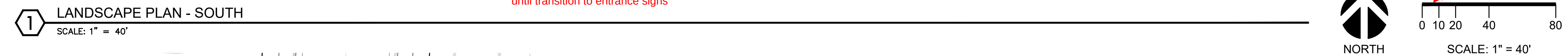
DRAWN BY : JLH/JSW

ORDERED BY : KYLE HAM
GRANT HOMES



— 10 —

— Trees as required for lots 1 and 33



FENCE TO TRANSITION DOWN IN HEIGHT AND CONNECT WITH PROPOSED ENTRANCE SIGN, TYP.

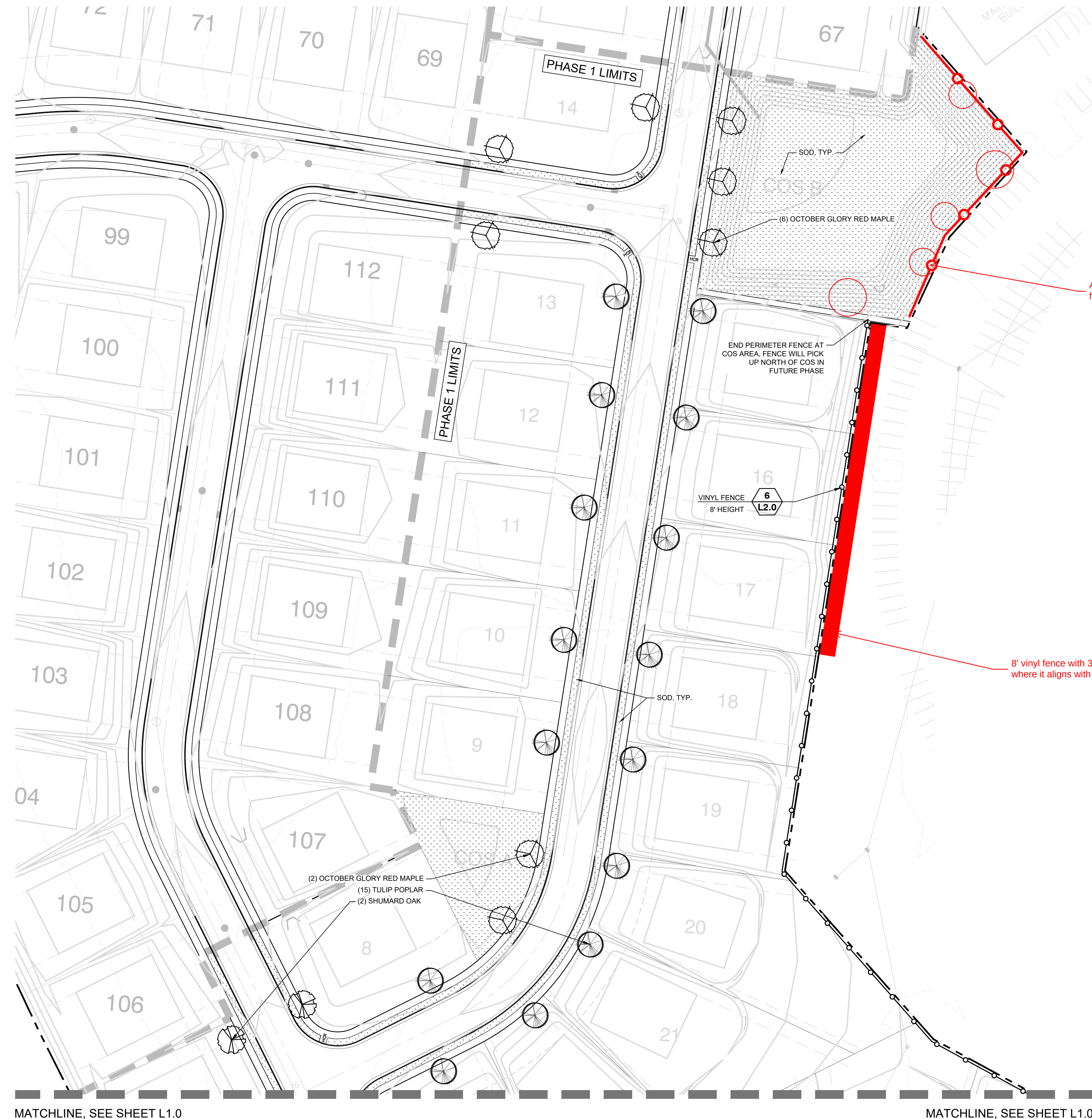
PLANTING BED AT BASE OF PROPOSED ENTRANCE SIGNS. FINAL PLANTING DESIGN TO BE SUBMITTED WITH SIGN PERMITS.

2 SOUTH ENTRANCE
SCALE: 1" = 20'

NORTH
SCALE: 1" = 20'

QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONT.	UNIT	COMMENTS
TREES						
24	Acer rubrum 'October Glory'	October Glory Red Maple	1.5" Cal.	B&B	EA	Well branched, full head
15	Liriodendron tulipifera	Tulip Poplar	1.5" Cal.	B&B	EA	Uniform branching, dominant leader
15	Quercus shumardii	Shumard Oak	1.5" Cal.	B&B	EA	Uniform branching, dominant leader
QTY	BOTANICAL NAME	COMMON NAME	SIZE	UNIT	COMMENTS	
GROUND COVERS						
54,860 sf	Cynodon dactylon	Bermudagrass	sod	Fill Area	Typical sod installation, see details	

SHEET 1 OF 3		
DIVISION OF ENGINEERING		
LANDSCAPE PLAN - SOUTH		
BARTLETT, TENNESSEE		
SURVEY:	DATE:	PROJECT NO:
DESIGNED BY: DT	DATE:	BOOK:
DRAWN BY: DT	DATE: 8/25	SCALE: AS NOTED
REVIEWED BY:		



MATCHLINE, SEE SHEET L1.0

MATCHLINE, SEE SHEET L1.0

1 LANDSCAPE PLAN - NORTH
SCALE: 1" = 40'



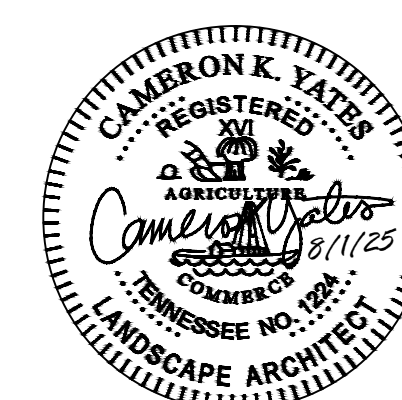
0 10 20 40 80
SCALE: 1" = 40'

- NOTES:
1. THE DEVELOPER MAY USE ANY OF THE FOLLOWING SUBSTITUTES FOR ANY CANOPY TREE SHOWN ON THIS PLAN:
WILLOW OAK / QUERCUS PHELLOS
NUTTALL OAK / QUERCUS TEXANA OR NUTTALLI
ARMSTRONG MAPLE / ACER RUBRUM 'ARMSTRONG'
OCTOBER GLORY MAPLE / ACER RUBRUM 'OCTOBER GLORY'
BOWHALL RED MAPLE / ACER RUBRUM 'BOWHALL'
AUTUMN BLAZE MAPLE / ACER X FREEMANII 'JEFFERSRED'
FRONTIER ELM / ULMUS X 'FRONTIER'
 2. ALL TREE LOCATIONS MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS, LIGHTING, UTILITIES, AND OTHER CONDITIONS.
 3. FIELD ADJUST MONUMENTS, COLUMNS, AND/OR FENCING LOCATIONS TO AVOID ANY PROPOSED DRAINAGE OR OTHER UNDERGROUND STRUCTURES.
 4. ALL PROPOSED PLANTING BEDS WILL BE IRRIGATED.

Adding trees around detention pond and vinyl split-rail fence

8' vinyl fence with 3-4' tall shrubs only where it aligns with the church's parking lot.

REVISION		
ITEM NO.	DESCRIPTION OF CHANGE	APPROVAL DATE



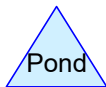
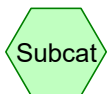
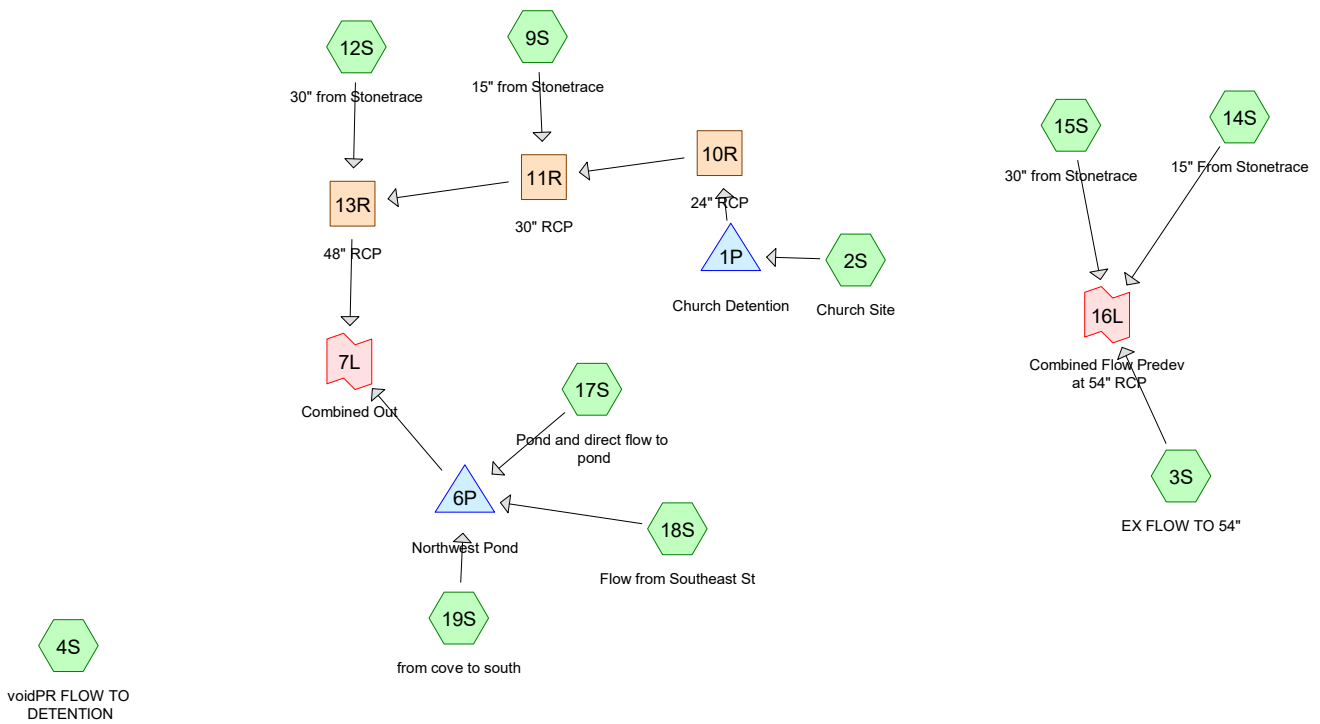
THE SANCTUARY
PHASE 1
DEVELOPER: BLUE SKY COMMUNITIES, INC
LANDSCAPE ARCHITECT: DT DESIGN STUDIO

SHEET 2 OF 3
DIVISION OF ENGINEERING
LANDSCAPE PLAN - SOUTH
BARTLETT, TENNESSEE

SURVEY: DESIGNED BY: DT
DATE: 8/25
DRAWN BY: DT

PROJECT NO: BOOK: AS NOTED
SCALE: AS NOTED

REVIEWED BY:



On Site Flows

Prepared by Land Development Solutions, LLC
HydroCAD® 10.00 s/n 02789 © 2012 HydroCAD Software Solutions LLC

The Sanctuary
Type II 24-hr 2-yr Rainfall=3.97"
Printed 7/31/2025
Page 2

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: Church Detention Peak Elev=313.56' Storage=18,266 cf Inflow=29.46 cfs 1.766 af
Primary=11.44 cfs 1.766 af Tertiary=0.00 cfs 0.000 af Outflow=11.44 cfs 1.766 af

Subcatchment 2S: Church Site Runoff Area=8.410 ac 0.00% Impervious Runoff Depth=2.52"
Flow Length=933' Slope=0.0400 '/' Tc=12.3 min CN=86 Runoff=29.46 cfs 1.766 af

Subcatchment 3S: EX FLOW TO 54" Runoff Area=49.410 ac 0.00% Impervious Runoff Depth=1.72"
Flow Length=2,432' Tc=23.6 min CN=76 Runoff=83.74 cfs 7.064 af

Subcatchment 4S: voidPR FLOW TO Runoff Area=41.000 ac 0.00% Impervious Runoff Depth=2.10"
Flow Length=2,697' Slope=0.0300 '/' Tc=12.7 min CN=81 Runoff=119.29 cfs 7.162 af

Pond 6P: Northwest Pond Peak Elev=298.64' Storage=117,725 cf Inflow=108.12 cfs 7.714 af
Primary=57.04 cfs 7.673 af Secondary=0.00 cfs 0.000 af Outflow=57.04 cfs 7.673 af

Link 7L: Combined Out Inflow=88.68 cfs 11.392 af
Primary=88.68 cfs 11.392 af

Subcatchment 9S: 15" from Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=2.10"
Tc=10.5 min CN=81 Runoff=6.51 cfs 0.365 af

Reach 10R: 24" RCP Avg. Flow Depth=1.12' Max Vel=6.31 fps Inflow=11.44 cfs 1.766 af
24.0" Round Pipe n=0.013 L=585.0' S=0.0070 '/' Capacity=18.94 cfs Outflow=11.41 cfs 1.766 af

Reach 11R: 30" RCP Avg. Flow Depth=1.28' Max Vel=5.97 fps Inflow=15.41 cfs 2.131 af
30.0" Round Pipe n=0.013 L=718.0' S=0.0050 '/' Capacity=29.00 cfs Outflow=15.09 cfs 2.131 af

Subcatchment 12S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=2.10"
Tc=12.4 min CN=81 Runoff=26.70 cfs 1.588 af

Reach 13R: 48" RCP Avg. Flow Depth=1.94' Max Vel=6.64 fps Inflow=40.42 cfs 3.719 af
48.0" Round Pipe n=0.013 L=392.0' S=0.0035 '/' Capacity=84.92 cfs Outflow=39.36 cfs 3.719 af

Subcatchment 14S: 15" From Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=2.10"
Tc=10.5 min CN=81 Runoff=6.51 cfs 0.365 af

Subcatchment 15S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=2.10"
Tc=12.4 min CN=81 Runoff=26.70 cfs 1.588 af

Link 16L: Combined Flow Predev at 54" RCP Inflow=103.82 cfs 9.017 af
Primary=103.82 cfs 9.017 af

Subcatchment 17S: Pond and direct flow Runoff Area=4.630 ac 19.87% Impervious Runoff Depth=2.34"
Flow Length=10' Tc=0.0 min CN=84 Runoff=21.81 cfs 0.905 af

Subcatchment 18S: Flow from Southeast St Runoff Area=37.530 ac 0.00% Impervious Runoff Depth=2.10"
Flow Length=2,065' Tc=14.9 min CN=81 Runoff=101.41 cfs 6.556 af

On Site Flows

Prepared by Land Development Solutions, LLC

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The Sanctuary
Type II 24-hr 2-yr Rainfall=3.97"

Printed 7/31/2025

Page 3

Subcatchment 19S: from cove to south

Runoff Area=1.450 ac 0.00% Impervious Runoff Depth=2.10"

Tc=11.0 min CN=81 Runoff=4.45 cfs 0.253 af

Total Runoff Area = 164.790 ac Runoff Volume = 27.612 af Average Runoff Depth = 2.01"
99.44% Pervious = 163.870 ac 0.56% Impervious = 0.920 ac

On Site Flows

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The Sanctuary
Type II 24-hr 2-yr Rainfall=3.97"
Printed 7/31/2025
Page 4

Summary for Pond 1P: Church Detention

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 2.52" for 2-yr event
Inflow = 29.46 cfs @ 12.04 hrs, Volume= 1.766 af
Outflow = 11.44 cfs @ 12.22 hrs, Volume= 1.766 af, Atten= 61%, Lag= 10.7 min
Primary = 11.44 cfs @ 12.22 hrs, Volume= 1.766 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 313.56' @ 12.22 hrs Surf.Area= 14,014 sf Storage= 18,266 cf

Plug-Flow detention time= 13.4 min calculated for 1.766 af (100% of inflow)
Center-of-Mass det. time= 13.3 min (829.6 - 816.3)

Volume	Invert	Avail.Storage	Storage Description
#1	311.00'	96,427 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	0	0	0
312.00	4,077	2,039	2,039
313.00	13,176	8,627	10,665
314.00	14,674	13,925	24,590
315.00	16,206	15,440	40,030
316.00	17,822	17,014	57,044
317.00	19,522	18,672	75,716
318.00	21,900	20,711	96,427

Device	Routing	Invert	Outlet Devices
#1	Primary	311.00'	24.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 311.00' / 310.61' S= 0.0070 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Tertiary	317.50'	30.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	311.00'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=11.42 cfs @ 12.22 hrs HW=313.55' (Free Discharge)

↑ **1=Culvert** (Passes 11.42 cfs of 18.83 cfs potential flow)
↑ **3=Orifice/Grate** (Orifice Controls 11.42 cfs @ 6.46 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=311.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

On Site Flows

Prepared by Land Development Solutions, LLC
HydroCAD® 10.00 s/n 02789 © 2012 HydroCAD Software Solutions LLC

The Sanctuary
Type II 24-hr 2-yr Rainfall=3.97"
Printed 7/31/2025
Page 5

Summary for Subcatchment 2S: Church Site

Runoff = 29.46 cfs @ 12.04 hrs, Volume= 1.766 af, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
2.230	74	>75% Grass cover, Good, HSG C
* 5.400	92	Building and Parking
0.780	74	>75% Grass cover, Good, HSG C
8.410	86	Weighted Average
8.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	933	0.0400	1.26		Lag/CN Method,

Summary for Subcatchment 3S: EX FLOW TO 54"

Runoff = 83.74 cfs @ 12.18 hrs, Volume= 7.064 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 5.400	92	Building and Parking
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
13.070	73	Woods, Fair, HSG C
25.570	74	>75% Grass cover, Good, HSG C
49.410	76	Weighted Average
49.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	993	0.0400	0.93		Lag/CN Method,
0.7	321		7.50		Direct Entry,
0.7	170	0.0650	4.10		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
4.4	948	0.0110	3.57	71.45	Channel Flow,
					Area= 20.0 sf Perim= 16.3' r= 1.23' n= 0.050
23.6	2,432	Total			

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Type II 24-hr 2-yr Rainfall=3.97"
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Summary for Subcatchment 4S: voidPR FLOW TO DETENTION

Runoff = 119.29 cfs @ 12.05 hrs, Volume= 7.162 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
* 35.630	81	On Site Lots
41.000	81	Weighted Average
41.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	311	0.0300	0.74		Lag/CN Method,
5.7	2,386		7.00		Direct Entry,
12.7	2,697	Total			

Summary for Pond 6P: Northwest Pond

Inflow Area = 43.610 ac, 2.11% Impervious, Inflow Depth = 2.12" for 2-yr event
Inflow = 108.12 cfs @ 12.07 hrs, Volume= 7.714 af
Outflow = 57.04 cfs @ 12.23 hrs, Volume= 7.673 af, Atten= 47%, Lag= 9.7 min
Primary = 57.04 cfs @ 12.23 hrs, Volume= 7.673 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 296.34' Surf.Area= 41,213 sf Storage= 13,821 cf
Peak Elev= 298.64' @ 12.23 hrs Surf.Area= 50,273 sf Storage= 117,725 cf (103,903 cf above start)

Plug-Flow detention time= 112.0 min calculated for 7.356 af (95% of inflow)
Center-of-Mass det. time= 76.4 min (907.9 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	580,587 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
296.00	40,090	0	0
297.00	43,392	41,741	41,741
298.00	46,770	45,081	86,822
299.00	52,270	49,520	136,342
301.00	57,370	109,640	245,982
304.00	68,700	189,105	435,087
306.00	76,800	145,500	580,587

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Device	Routing	Invert	Outlet Devices
#1	Primary	296.34'	48.0" Round 48" Culvert L= 161.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Primary	296.34'	48.0" Round 48" Culvert L= 184.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0024 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#3	Secondary	304.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=56.77 cfs @ 12.23 hrs HW=298.63' (Free Discharge)

↑ **1=48" Culvert** (Barrel Controls 28.81 cfs @ 5.58 fps)

↑ **2=48" Culvert** (Barrel Controls 27.96 cfs @ 5.42 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.34' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 7L: Combined Out

Inflow Area = 63.200 ac, 1.46% Impervious, Inflow Depth > 2.16" for 2-yr event
Inflow = 88.68 cfs @ 12.15 hrs, Volume= 11.392 af
Primary = 88.68 cfs @ 12.15 hrs, Volume= 11.392 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 9S: 15" from Stonetrace

Runoff = 6.51 cfs @ 12.02 hrs, Volume= 0.365 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Reach 10R: 24" RCP

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 2.52" for 2-yr event
Inflow = 11.44 cfs @ 12.22 hrs, Volume= 1.766 af
Outflow = 11.41 cfs @ 12.27 hrs, Volume= 1.766 af, Atten= 0%, Lag= 3.0 min

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Type II 24-hr 2-yr Rainfall=3.97"

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Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.31 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 2.56 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1,059 cf @ 12.24 hrs

Average Depth at Peak Storage= 1.12'

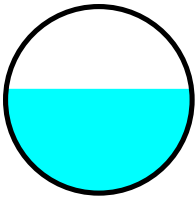
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.94 cfs

24.0" Round Pipe

n= 0.013

Length= 585.0' Slope= 0.0070 '/'

Inlet Invert= 314.00', Outlet Invert= 309.90'



Summary for Reach 11R: 30" RCP

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 2.43" for 2-yr event

Inflow = 15.41 cfs @ 12.06 hrs, Volume= 2.131 af

Outflow = 15.09 cfs @ 12.12 hrs, Volume= 2.131 af, Atten= 2%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.97 fps, Min. Travel Time= 2.0 min

Avg. Velocity = 2.27 fps, Avg. Travel Time= 5.3 min

Peak Storage= 1,821 cf @ 12.09 hrs

Average Depth at Peak Storage= 1.28'

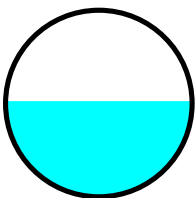
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 29.00 cfs

30.0" Round Pipe

n= 0.013

Length= 718.0' Slope= 0.0050 '/'

Inlet Invert= 305.52', Outlet Invert= 301.93'



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Summary for Subcatchment 12S: 30" from Stonetrace

Runoff = 26.70 cfs @ 12.04 hrs, Volume= 1.588 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

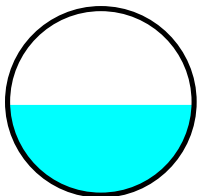
Summary for Reach 13R: 48" RCP

Inflow Area = 19.590 ac, 0.00% Impervious, Inflow Depth = 2.28" for 2-yr event
Inflow = 40.42 cfs @ 12.06 hrs, Volume= 3.719 af
Outflow = 39.36 cfs @ 12.09 hrs, Volume= 3.719 af, Atten= 3%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.64 fps, Min. Travel Time= 1.0 min
Avg. Velocity= 2.20 fps, Avg. Travel Time= 3.0 min

Peak Storage= 2,362 cf @ 12.07 hrs
Average Depth at Peak Storage= 1.94'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 84.92 cfs

48.0" Round Pipe
n= 0.013
Length= 392.0' Slope= 0.0035 '/'
Inlet Invert= 297.91', Outlet Invert= 296.54'



Summary for Subcatchment 14S: 15" From Stonetrace

Runoff = 6.51 cfs @ 12.02 hrs, Volume= 0.365 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

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Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Subcatchment 15S: 30" from Stonetrace

Runoff = 26.70 cfs @ 12.04 hrs, Volume= 1.588 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

Summary for Link 16L: Combined Flow Predev at 54" RCP

Inflow Area = 60.590 ac, 0.00% Impervious, Inflow Depth = 1.79" for 2-yr event
Inflow = 103.82 cfs @ 12.13 hrs, Volume= 9.017 af
Primary = 103.82 cfs @ 12.13 hrs, Volume= 9.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 17S: Pond and direct flow to pond

Runoff = 21.81 cfs @ 11.89 hrs, Volume= 0.905 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 3.710	81	
* 0.920	98	
4.630	84	Weighted Average
3.710		80.13% Pervious Area
0.920		19.87% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10				Direct Entry,

Summary for Subcatchment 18S: Flow from Southeast St

Runoff = 101.41 cfs @ 12.07 hrs, Volume= 6.556 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 37.530	81	
37.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,
4.9	2,065		7.00		Direct Entry,
14.9	2,065				Total

Summary for Subcatchment 19S: from cove to south

Runoff = 4.45 cfs @ 12.03 hrs, Volume= 0.253 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.97"

Area (ac)	CN	Description
* 1.450	81	
1.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					Direct Entry,

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: Church Detention Peak Elev=314.14' Storage=26,641 cf Inflow=38.71 cfs 2.345 af
Primary=13.15 cfs 2.345 af Tertiary=0.00 cfs 0.000 af Outflow=13.15 cfs 2.345 af

Subcatchment 2S: Church Site Runoff Area=8.410 ac 0.00% Impervious Runoff Depth=3.35"
Flow Length=933' Slope=0.0400 '/' Tc=12.3 min CN=86 Runoff=38.71 cfs 2.345 af

Subcatchment 3S: EX FLOW TO 54" Runoff Area=49.410 ac 0.00% Impervious Runoff Depth=2.43"
Flow Length=2,432' Tc=23.6 min CN=76 Runoff=120.23 cfs 10.001 af

Subcatchment 4S: voidPR FLOW TO Runoff Area=41.000 ac 0.00% Impervious Runoff Depth=2.87"
Flow Length=2,697' Slope=0.0300 '/' Tc=12.7 min CN=81 Runoff=162.66 cfs 9.808 af

Pond 6P: Northwest Pond Peak Elev=299.22' Storage=147,724 cf Inflow=147.54 cfs 10.541 af
Primary=84.80 cfs 10.500 af Secondary=0.00 cfs 0.000 af Outflow=84.80 cfs 10.500 af

Link 7L: Combined Out Inflow=126.86 cfs 15.519 af
Primary=126.86 cfs 15.519 af

Subcatchment 9S: 15" from Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=2.87"
Tc=10.5 min CN=81 Runoff=8.86 cfs 0.500 af

Reach 10R: 24" RCP Avg. Flow Depth=1.23' Max Vel=6.51 fps Inflow=13.15 cfs 2.345 af
24.0" Round Pipe n=0.013 L=585.0' S=0.0070 '/' Capacity=18.94 cfs Outflow=13.12 cfs 2.345 af

Reach 11R: 30" RCP Avg. Flow Depth=1.45' Max Vel=6.26 fps Inflow=18.89 cfs 2.845 af
30.0" Round Pipe n=0.013 L=718.0' S=0.0050 '/' Capacity=29.00 cfs Outflow=18.45 cfs 2.845 af

Subcatchment 12S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=2.87"
Tc=12.4 min CN=81 Runoff=36.40 cfs 2.175 af

Reach 13R: 48" RCP Avg. Flow Depth=2.29' Max Vel=7.12 fps Inflow=53.49 cfs 5.019 af
48.0" Round Pipe n=0.013 L=392.0' S=0.0035 '/' Capacity=84.92 cfs Outflow=52.09 cfs 5.019 af

Subcatchment 14S: 15" From Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=2.87"
Tc=10.5 min CN=81 Runoff=8.86 cfs 0.500 af

Subcatchment 15S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=2.87"
Tc=12.4 min CN=81 Runoff=36.40 cfs 2.175 af

Link 16L: Combined Flow Predev at 54" RCP Inflow=148.13 cfs 12.675 af
Primary=148.13 cfs 12.675 af

Subcatchment 17S: Pond and direct flow Runoff Area=4.630 ac 19.87% Impervious Runoff Depth=3.15"
Flow Length=10' Tc=0.0 min CN=84 Runoff=28.85 cfs 1.216 af

Subcatchment 18S: Flow from Southeast St Runoff Area=37.530 ac 0.00% Impervious Runoff Depth=2.87"
Flow Length=2,065' Tc=14.9 min CN=81 Runoff=138.53 cfs 8.978 af

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Subcatchment 19S: from cove to south

Runoff Area=1.450 ac 0.00% Impervious Runoff Depth=2.87"

Tc=11.0 min CN=81 Runoff=6.06 cfs 0.347 af

Total Runoff Area = 164.790 ac Runoff Volume = 38.044 af Average Runoff Depth = 2.77"
99.44% Pervious = 163.870 ac 0.56% Impervious = 0.920 ac

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Summary for Pond 1P: Church Detention

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 3.35" for 5-yr event
Inflow = 38.71 cfs @ 12.04 hrs, Volume= 2.345 af
Outflow = 13.15 cfs @ 12.24 hrs, Volume= 2.345 af, Atten= 66%, Lag= 11.9 min
Primary = 13.15 cfs @ 12.24 hrs, Volume= 2.345 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 314.14' @ 12.24 hrs Surf.Area= 14,887 sf Storage= 26,641 cf

Plug-Flow detention time= 16.3 min calculated for 2.342 af (100% of inflow)
Center-of-Mass det. time= 16.3 min (824.5 - 808.2)

Volume	Invert	Avail.Storage	Storage Description
#1	311.00'	96,427 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	0	0	0
312.00	4,077	2,039	2,039
313.00	13,176	8,627	10,665
314.00	14,674	13,925	24,590
315.00	16,206	15,440	40,030
316.00	17,822	17,014	57,044
317.00	19,522	18,672	75,716
318.00	21,900	20,711	96,427

Device	Routing	Invert	Outlet Devices
#1	Primary	311.00'	24.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 311.00' / 310.61' S= 0.0070 ' S= 0.0070 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Tertiary	317.50'	30.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	311.00'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=13.14 cfs @ 12.24 hrs HW=314.13' (Free Discharge)

↑ **1=Culvert** (Passes 13.14 cfs of 22.60 cfs potential flow)
↑ **3=Orifice/Grate** (Orifice Controls 13.14 cfs @ 7.44 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=311.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Subcatchment 2S: Church Site

Runoff = 38.71 cfs @ 12.04 hrs, Volume= 2.345 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
2.230	74	>75% Grass cover, Good, HSG C
* 5.400	92	Building and Parking
0.780	74	>75% Grass cover, Good, HSG C
8.410	86	Weighted Average
8.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	933	0.0400	1.26		Lag/CN Method,

Summary for Subcatchment 3S: EX FLOW TO 54"

Runoff = 120.23 cfs @ 12.17 hrs, Volume= 10.001 af, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 5.400	92	Building and Parking
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
13.070	73	Woods, Fair, HSG C
25.570	74	>75% Grass cover, Good, HSG C
49.410	76	Weighted Average
49.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	993	0.0400	0.93		Lag/CN Method,
0.7	321		7.50		Direct Entry,
0.7	170	0.0650	4.10		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
4.4	948	0.0110	3.57	71.45	Channel Flow,
					Area= 20.0 sf Perim= 16.3' r= 1.23' n= 0.050
23.6	2,432	Total			

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Summary for Subcatchment 4S: voidPR FLOW TO DETENTION

Runoff = 162.66 cfs @ 12.05 hrs, Volume= 9.808 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
* 35.630	81	On Site Lots
41.000	81	Weighted Average
41.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	311	0.0300	0.74		Lag/CN Method,
5.7	2,386		7.00		Direct Entry,
12.7	2,697	Total			

Summary for Pond 6P: Northwest Pond

Inflow Area = 43.610 ac, 2.11% Impervious, Inflow Depth = 2.90" for 5-yr event
Inflow = 147.54 cfs @ 12.06 hrs, Volume= 10.541 af
Outflow = 84.80 cfs @ 12.21 hrs, Volume= 10.500 af, Atten= 43%, Lag= 8.9 min
Primary = 84.80 cfs @ 12.21 hrs, Volume= 10.500 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 296.34' Surf.Area= 41,213 sf Storage= 13,821 cf
Peak Elev= 299.22' @ 12.21 hrs Surf.Area= 52,822 sf Storage= 147,724 cf (133,902 cf above start)

Plug-Flow detention time= 91.9 min calculated for 10.172 af (96% of inflow)
Center-of-Mass det. time= 66.1 min (888.8 - 822.6)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	580,587 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
296.00	40,090	0	0
297.00	43,392	41,741	41,741
298.00	46,770	45,081	86,822
299.00	52,270	49,520	136,342
301.00	57,370	109,640	245,982
304.00	68,700	189,105	435,087
306.00	76,800	145,500	580,587

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Device	Routing	Invert	Outlet Devices
#1	Primary	296.34'	48.0" Round 48" Culvert L= 161.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0028 ' S= 0.0028 ' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Primary	296.34'	48.0" Round 48" Culvert L= 184.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0024 ' S= 0.0024 ' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#3	Secondary	304.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=84.35 cfs @ 12.21 hrs HW=299.21' (Free Discharge)

↑ **1=48" Culvert** (Barrel Controls 42.74 cfs @ 6.21 fps)

↑ **2=48" Culvert** (Barrel Controls 41.61 cfs @ 6.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.34' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 7L: Combined Out

Inflow Area = 63.200 ac, 1.46% Impervious, Inflow Depth > 2.95" for 5-yr event
Inflow = 126.86 cfs @ 12.14 hrs, Volume= 15.519 af
Primary = 126.86 cfs @ 12.14 hrs, Volume= 15.519 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 9S: 15" from Stonetrace

Runoff = 8.86 cfs @ 12.02 hrs, Volume= 0.500 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Reach 10R: 24" RCP

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 3.35" for 5-yr event
Inflow = 13.15 cfs @ 12.24 hrs, Volume= 2.345 af
Outflow = 13.12 cfs @ 12.29 hrs, Volume= 2.345 af, Atten= 0%, Lag= 3.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.51 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 2.75 fps, Avg. Travel Time= 3.5 min

Peak Storage= 1,181 cf @ 12.26 hrs

Average Depth at Peak Storage= 1.23'

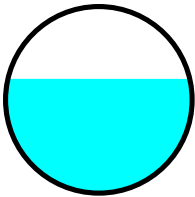
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.94 cfs

24.0" Round Pipe

n= 0.013

Length= 585.0' Slope= 0.0070 '/'

Inlet Invert= 314.00', Outlet Invert= 309.90'



Summary for Reach 11R: 30" RCP

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 3.25" for 5-yr event

Inflow = 18.89 cfs @ 12.05 hrs, Volume= 2.845 af

Outflow = 18.45 cfs @ 12.11 hrs, Volume= 2.845 af, Atten= 2%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.26 fps, Min. Travel Time= 1.9 min

Avg. Velocity = 2.43 fps, Avg. Travel Time= 4.9 min

Peak Storage= 2,125 cf @ 12.08 hrs

Average Depth at Peak Storage= 1.45'

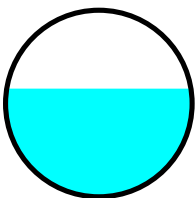
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 29.00 cfs

30.0" Round Pipe

n= 0.013

Length= 718.0' Slope= 0.0050 '/'

Inlet Invert= 305.52', Outlet Invert= 301.93'



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Summary for Subcatchment 12S: 30" from Stonetrace

Runoff = 36.40 cfs @ 12.04 hrs, Volume= 2.175 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

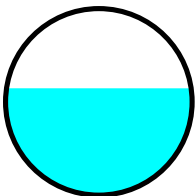
Summary for Reach 13R: 48" RCP

Inflow Area = 19.590 ac, 0.00% Impervious, Inflow Depth = 3.07" for 5-yr event
Inflow = 53.49 cfs @ 12.05 hrs, Volume= 5.019 af
Outflow = 52.09 cfs @ 12.08 hrs, Volume= 5.019 af, Atten= 3%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.12 fps, Min. Travel Time= 0.9 min
Avg. Velocity= 2.37 fps, Avg. Travel Time= 2.8 min

Peak Storage= 2,921 cf @ 12.07 hrs
Average Depth at Peak Storage= 2.29'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 84.92 cfs

48.0" Round Pipe
n= 0.013
Length= 392.0' Slope= 0.0035 '/'
Inlet Invert= 297.91', Outlet Invert= 296.54'



Summary for Subcatchment 14S: 15" From Stonetrace

Runoff = 8.86 cfs @ 12.02 hrs, Volume= 0.500 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

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Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Subcatchment 15S: 30" from Stonetrace

Runoff = 36.40 cfs @ 12.04 hrs, Volume= 2.175 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

Summary for Link 16L: Combined Flow Predev at 54" RCP

Inflow Area = 60.590 ac, 0.00% Impervious, Inflow Depth = 2.51" for 5-yr event
Inflow = 148.13 cfs @ 12.12 hrs, Volume= 12.675 af
Primary = 148.13 cfs @ 12.12 hrs, Volume= 12.675 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 17S: Pond and direct flow to pond

Runoff = 28.85 cfs @ 11.89 hrs, Volume= 1.216 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 3.710	81	
* 0.920	98	
4.630	84	Weighted Average
3.710		80.13% Pervious Area
0.920		19.87% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10				Direct Entry,

Summary for Subcatchment 18S: Flow from Southeast St

Runoff = 138.53 cfs @ 12.07 hrs, Volume= 8.978 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 37.530	81	
37.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,
4.9	2,065		7.00		Direct Entry,
14.9	2,065				Total

Summary for Subcatchment 19S: from cove to south

Runoff = 6.06 cfs @ 12.03 hrs, Volume= 0.347 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=4.87"

Area (ac)	CN	Description
* 1.450	81	
1.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					Direct Entry,

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: Church Detention Peak Elev=314.61' Storage=33,803 cf Inflow=46.13 cfs 2.818 af
Primary=14.39 cfs 2.818 af Tertiary=0.00 cfs 0.000 af Outflow=14.39 cfs 2.818 af

Subcatchment 2S: Church Site Runoff Area=8.410 ac 0.00% Impervious Runoff Depth=4.02"
Flow Length=933' Slope=0.0400 '/' Tc=12.3 min CN=86 Runoff=46.13 cfs 2.818 af

Subcatchment 3S: EX FLOW TO 54" Runoff Area=49.410 ac 0.00% Impervious Runoff Depth=3.03"
Flow Length=2,432' Tc=23.6 min CN=76 Runoff=150.47 cfs 12.473 af

Subcatchment 4S: voidPR FLOW TO Runoff Area=41.000 ac 0.00% Impervious Runoff Depth=3.51"
Flow Length=2,697' Slope=0.0300 '/' Tc=12.7 min CN=81 Runoff=197.97 cfs 12.000 af

Pond 6P: Northwest Pond Peak Elev=299.65' Storage=170,789 cf Inflow=179.68 cfs 12.880 af
Primary=107.08 cfs 12.839 af Secondary=0.00 cfs 0.000 af Outflow=107.08 cfs 12.839 af

Link 7L: Combined Out Inflow=157.66 cfs 18.929 af
Primary=157.66 cfs 18.929 af

Subcatchment 9S: 15" from Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=3.51"
Tc=10.5 min CN=81 Runoff=10.78 cfs 0.612 af

Reach 10R: 24" RCP Avg. Flow Depth=1.30' Max Vel=6.63 fps Inflow=14.39 cfs 2.818 af
24.0" Round Pipe n=0.013 L=585.0' S=0.0070 '/' Capacity=18.94 cfs Outflow=14.36 cfs 2.818 af

Reach 11R: 30" RCP Avg. Flow Depth=1.59' Max Vel=6.45 fps Inflow=21.62 cfs 3.430 af
30.0" Round Pipe n=0.013 L=718.0' S=0.0050 '/' Capacity=29.00 cfs Outflow=21.08 cfs 3.430 af

Subcatchment 12S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=3.51"
Tc=12.4 min CN=81 Runoff=44.30 cfs 2.660 af

Reach 13R: 48" RCP Avg. Flow Depth=2.58' Max Vel=7.40 fps Inflow=63.98 cfs 6.090 af
48.0" Round Pipe n=0.013 L=392.0' S=0.0035 '/' Capacity=84.92 cfs Outflow=62.30 cfs 6.090 af

Subcatchment 14S: 15" From Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=3.51"
Tc=10.5 min CN=81 Runoff=10.78 cfs 0.612 af

Subcatchment 15S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=3.51"
Tc=12.4 min CN=81 Runoff=44.30 cfs 2.660 af

Link 16L: Combined Flow Predev at 54" RCP Inflow=184.66 cfs 15.745 af
Primary=184.66 cfs 15.745 af

Subcatchment 17S: Pond and direct flow Runoff Area=4.630 ac 19.87% Impervious Runoff Depth=3.81"
Flow Length=10' Tc=0.0 min CN=84 Runoff=34.51 cfs 1.472 af

Subcatchment 18S: Flow from Southeast St Runoff Area=37.530 ac 0.00% Impervious Runoff Depth=3.51"
Flow Length=2,065' Tc=14.9 min CN=81 Runoff=168.80 cfs 10.984 af

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Subcatchment 19S: from cove to south

Runoff Area=1.450 ac 0.00% Impervious Runoff Depth=3.51"

Tc=11.0 min CN=81 Runoff=7.37 cfs 0.424 af

Total Runoff Area = 164.790 ac Runoff Volume = 46.715 af Average Runoff Depth = 3.40"
99.44% Pervious = 163.870 ac 0.56% Impervious = 0.920 ac

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Summary for Pond 1P: Church Detention

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 4.02" for 10-yr event
Inflow = 46.13 cfs @ 12.04 hrs, Volume= 2.818 af
Outflow = 14.39 cfs @ 12.25 hrs, Volume= 2.818 af, Atten= 69%, Lag= 12.8 min
Primary = 14.39 cfs @ 12.25 hrs, Volume= 2.818 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 314.61' @ 12.25 hrs Surf.Area= 15,606 sf Storage= 33,803 cf

Plug-Flow detention time= 18.7 min calculated for 2.815 af (100% of inflow)
Center-of-Mass det. time= 18.7 min (821.7 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1	311.00'	96,427 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	0	0	0
312.00	4,077	2,039	2,039
313.00	13,176	8,627	10,665
314.00	14,674	13,925	24,590
315.00	16,206	15,440	40,030
316.00	17,822	17,014	57,044
317.00	19,522	18,672	75,716
318.00	21,900	20,711	96,427

Device	Routing	Invert	Outlet Devices
#1	Primary	311.00'	24.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 311.00' / 310.61' S= 0.0070 ' S= 0.0070 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Tertiary	317.50'	30.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	311.00'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=14.38 cfs @ 12.25 hrs HW=314.61' (Free Discharge)

↑ **1=Culvert** (Passes 14.38 cfs of 25.87 cfs potential flow)
↑ **3=Orifice/Grate** (Orifice Controls 14.38 cfs @ 8.14 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=311.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Subcatchment 2S: Church Site

Runoff = 46.13 cfs @ 12.04 hrs, Volume= 2.818 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
2.230	74	>75% Grass cover, Good, HSG C
* 5.400	92	Building and Parking
0.780	74	>75% Grass cover, Good, HSG C
8.410	86	Weighted Average
8.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	933	0.0400	1.26		Lag/CN Method,

Summary for Subcatchment 3S: EX FLOW TO 54"

Runoff = 150.47 cfs @ 12.17 hrs, Volume= 12.473 af, Depth= 3.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 5.400	92	Building and Parking
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
13.070	73	Woods, Fair, HSG C
25.570	74	>75% Grass cover, Good, HSG C
49.410	76	Weighted Average
49.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	993	0.0400	0.93		Lag/CN Method,
0.7	321		7.50		Direct Entry,
0.7	170	0.0650	4.10		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
4.4	948	0.0110	3.57	71.45	Channel Flow,
					Area= 20.0 sf Perim= 16.3' r= 1.23' n= 0.050
23.6	2,432	Total			

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Summary for Subcatchment 4S: voidPR FLOW TO DETENTION

Runoff = 197.97 cfs @ 12.04 hrs, Volume= 12.000 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
* 35.630	81	On Site Lots
41.000	81	Weighted Average
41.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	311	0.0300	0.74		Lag/CN Method,
5.7	2,386		7.00		Direct Entry,
12.7	2,697	Total			

Summary for Pond 6P: Northwest Pond

Inflow Area = 43.610 ac, 2.11% Impervious, Inflow Depth = 3.54" for 10-yr event
Inflow = 179.68 cfs @ 12.06 hrs, Volume= 12.880 af
Outflow = 107.08 cfs @ 12.21 hrs, Volume= 12.839 af, Atten= 40%, Lag= 8.5 min
Primary = 107.08 cfs @ 12.21 hrs, Volume= 12.839 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 296.34' Surf.Area= 41,213 sf Storage= 13,821 cf
Peak Elev= 299.65' @ 12.21 hrs Surf.Area= 53,924 sf Storage= 170,789 cf (156,968 cf above start)

Plug-Flow detention time= 83.7 min calculated for 12.521 af (97% of inflow)
Center-of-Mass det. time= 60.6 min (877.6 - 817.0)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	580,587 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
296.00	40,090	0	0
297.00	43,392	41,741	41,741
298.00	46,770	45,081	86,822
299.00	52,270	49,520	136,342
301.00	57,370	109,640	245,982
304.00	68,700	189,105	435,087
306.00	76,800	145,500	580,587

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Device	Routing	Invert	Outlet Devices
#1	Primary	296.34'	48.0" Round 48" Culvert L= 161.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Primary	296.34'	48.0" Round 48" Culvert L= 184.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0024 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#3	Secondary	304.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=106.78 cfs @ 12.21 hrs HW=299.64' (Free Discharge)

↑ **1=48" Culvert** (Barrel Controls 54.06 cfs @ 6.61 fps)

↑ **2=48" Culvert** (Barrel Controls 52.72 cfs @ 6.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.34' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 7L: Combined Out

Inflow Area = 63.200 ac, 1.46% Impervious, Inflow Depth > 3.59" for 10-yr event
Inflow = 157.66 cfs @ 12.14 hrs, Volume= 18.929 af
Primary = 157.66 cfs @ 12.14 hrs, Volume= 18.929 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 9S: 15" from Stonetrace

Runoff = 10.78 cfs @ 12.02 hrs, Volume= 0.612 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Reach 10R: 24" RCP

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 4.02" for 10-yr event
Inflow = 14.39 cfs @ 12.25 hrs, Volume= 2.818 af
Outflow = 14.36 cfs @ 12.30 hrs, Volume= 2.818 af, Atten= 0%, Lag= 3.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.63 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 2.88 fps, Avg. Travel Time= 3.4 min

Peak Storage= 1,269 cf @ 12.27 hrs

Average Depth at Peak Storage= 1.30'

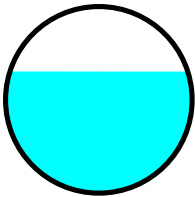
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.94 cfs

24.0" Round Pipe

n= 0.013

Length= 585.0' Slope= 0.0070 '/'

Inlet Invert= 314.00', Outlet Invert= 309.90'



Summary for Reach 11R: 30" RCP

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 3.92" for 10-yr event

Inflow = 21.62 cfs @ 12.05 hrs, Volume= 3.430 af

Outflow = 21.08 cfs @ 12.11 hrs, Volume= 3.430 af, Atten= 2%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.45 fps, Min. Travel Time= 1.9 min

Avg. Velocity = 2.56 fps, Avg. Travel Time= 4.7 min

Peak Storage= 2,371 cf @ 12.07 hrs

Average Depth at Peak Storage= 1.59'

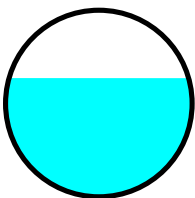
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 29.00 cfs

30.0" Round Pipe

n= 0.013

Length= 718.0' Slope= 0.0050 '/'

Inlet Invert= 305.52', Outlet Invert= 301.93'



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Summary for Subcatchment 12S: 30" from Stonetrace

Runoff = 44.30 cfs @ 12.04 hrs, Volume= 2.660 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

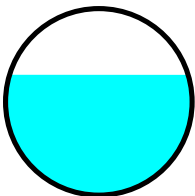
Summary for Reach 13R: 48" RCP

Inflow Area = 19.590 ac, 0.00% Impervious, Inflow Depth = 3.73" for 10-yr event
Inflow = 63.98 cfs @ 12.05 hrs, Volume= 6.090 af
Outflow = 62.30 cfs @ 12.08 hrs, Volume= 6.090 af, Atten= 3%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.40 fps, Min. Travel Time= 0.9 min
Avg. Velocity= 2.48 fps, Avg. Travel Time= 2.6 min

Peak Storage= 3,360 cf @ 12.06 hrs
Average Depth at Peak Storage= 2.58'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 84.92 cfs

48.0" Round Pipe
n= 0.013
Length= 392.0' Slope= 0.0035 '/'
Inlet Invert= 297.91', Outlet Invert= 296.54'



Summary for Subcatchment 14S: 15" From Stonetrace

Runoff = 10.78 cfs @ 12.02 hrs, Volume= 0.612 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

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Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Subcatchment 15S: 30" from Stonetrace

Runoff = 44.30 cfs @ 12.04 hrs, Volume= 2.660 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

Summary for Link 16L: Combined Flow Predev at 54" RCP

Inflow Area = 60.590 ac, 0.00% Impervious, Inflow Depth = 3.12" for 10-yr event
Inflow = 184.66 cfs @ 12.12 hrs, Volume= 15.745 af
Primary = 184.66 cfs @ 12.12 hrs, Volume= 15.745 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 17S: Pond and direct flow to pond

Runoff = 34.51 cfs @ 11.89 hrs, Volume= 1.472 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 3.710	81	
* 0.920	98	
4.630	84	Weighted Average
3.710		80.13% Pervious Area
0.920		19.87% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10				Direct Entry,

Summary for Subcatchment 18S: Flow from Southeast St

Runoff = 168.80 cfs @ 12.07 hrs, Volume= 10.984 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 37.530	81	
37.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,
4.9	2,065		7.00		Direct Entry,
14.9	2,065				Total

Summary for Subcatchment 19S: from cove to south

Runoff = 7.37 cfs @ 12.03 hrs, Volume= 0.424 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (ac)	CN	Description
* 1.450	81	
1.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					Direct Entry,

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: Church Detention Peak Elev=315.24' Storage=43,978 cf Inflow=56.23 cfs 3.471 af
Primary=15.90 cfs 3.471 af Tertiary=0.00 cfs 0.000 af Outflow=15.90 cfs 3.471 af

Subcatchment 2S: Church Site Runoff Area=8.410 ac 0.00% Impervious Runoff Depth=4.95"
Flow Length=933' Slope=0.0400 '/' Tc=12.3 min CN=86 Runoff=56.23 cfs 3.471 af

Subcatchment 3S: EX FLOW TO 54" Runoff Area=49.410 ac 0.00% Impervious Runoff Depth=3.88"
Flow Length=2,432' Tc=23.6 min CN=76 Runoff=192.69 cfs 15.963 af

Subcatchment 4S: voidPR FLOW TO Runoff Area=41.000 ac 0.00% Impervious Runoff Depth=4.41"
Flow Length=2,697' Slope=0.0300 '/' Tc=12.7 min CN=81 Runoff=246.47 cfs 15.056 af

Pond 6P: Northwest Pond Peak Elev=300.21' Storage=201,703 cf Inflow=223.82 cfs 16.140 af
Primary=136.69 cfs 16.098 af Secondary=0.00 cfs 0.000 af Outflow=136.69 cfs 16.098 af

Link 7L: Combined Out Inflow=199.06 cfs 23.675 af
Primary=199.06 cfs 23.675 af

Subcatchment 9S: 15" from Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=4.41"
Tc=10.5 min CN=81 Runoff=13.42 cfs 0.767 af

Reach 10R: 24" RCP Avg. Flow Depth=1.40' Max Vel=6.75 fps Inflow=15.90 cfs 3.471 af
24.0" Round Pipe n=0.013 L=585.0' S=0.0070 '/' Capacity=18.94 cfs Outflow=15.88 cfs 3.471 af

Reach 11R: 30" RCP Avg. Flow Depth=1.78' Max Vel=6.64 fps Inflow=25.27 cfs 4.239 af
30.0" Round Pipe n=0.013 L=718.0' S=0.0050 '/' Capacity=29.00 cfs Outflow=24.58 cfs 4.239 af

Subcatchment 12S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=4.41"
Tc=12.4 min CN=81 Runoff=55.14 cfs 3.338 af

Reach 13R: 48" RCP Avg. Flow Depth=3.01' Max Vel=7.66 fps Inflow=78.24 cfs 7.577 af
48.0" Round Pipe n=0.013 L=392.0' S=0.0035 '/' Capacity=84.92 cfs Outflow=76.19 cfs 7.577 af

Subcatchment 14S: 15" From Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=4.41"
Tc=10.5 min CN=81 Runoff=13.42 cfs 0.767 af

Subcatchment 15S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=4.41"
Tc=12.4 min CN=81 Runoff=55.14 cfs 3.338 af

Link 16L: Combined Flow Predev at 54" RCP Inflow=235.56 cfs 20.068 af
Primary=235.56 cfs 20.068 af

Subcatchment 17S: Pond and direct flow Runoff Area=4.630 ac 19.87% Impervious Runoff Depth=4.73"
Flow Length=10' Tc=0.0 min CN=84 Runoff=42.21 cfs 1.826 af

Subcatchment 18S: Flow from Southeast St Runoff Area=37.530 ac 0.00% Impervious Runoff Depth=4.41"
Flow Length=2,065' Tc=14.9 min CN=81 Runoff=210.38 cfs 13.782 af

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Subcatchment 19S: from cove to south

Runoff Area=1.450 ac 0.00% Impervious Runoff Depth=4.41"

Tc=11.0 min CN=81 Runoff=9.15 cfs 0.532 af

Total Runoff Area = 164.790 ac Runoff Volume = 58.841 af Average Runoff Depth = 4.28"
99.44% Pervious = 163.870 ac 0.56% Impervious = 0.920 ac

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Summary for Pond 1P: Church Detention

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 4.95" for 25-yr event
Inflow = 56.23 cfs @ 12.04 hrs, Volume= 3.471 af
Outflow = 15.90 cfs @ 12.27 hrs, Volume= 3.471 af, Atten= 72%, Lag= 13.7 min
Primary = 15.90 cfs @ 12.27 hrs, Volume= 3.471 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 315.24' @ 12.27 hrs Surf.Area= 16,595 sf Storage= 43,978 cf

Plug-Flow detention time= 21.8 min calculated for 3.468 af (100% of inflow)
Center-of-Mass det. time= 21.8 min (818.9 - 797.1)

Volume	Invert	Avail.Storage	Storage Description
#1	311.00'	96,427 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	0	0	0
312.00	4,077	2,039	2,039
313.00	13,176	8,627	10,665
314.00	14,674	13,925	24,590
315.00	16,206	15,440	40,030
316.00	17,822	17,014	57,044
317.00	19,522	18,672	75,716
318.00	21,900	20,711	96,427

Device	Routing	Invert	Outlet Devices
#1	Primary	311.00'	24.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 311.00' / 310.61' S= 0.0070 ' S= 0.0070 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Tertiary	317.50'	30.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	311.00'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=15.88 cfs @ 12.27 hrs HW=315.23' (Free Discharge)

↑ **1=Culvert** (Passes 15.88 cfs of 29.65 cfs potential flow)
↑ **3=Orifice/Grate** (Orifice Controls 15.88 cfs @ 8.99 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=311.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Subcatchment 2S: Church Site

Runoff = 56.23 cfs @ 12.04 hrs, Volume= 3.471 af, Depth= 4.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
2.230	74	>75% Grass cover, Good, HSG C
* 5.400	92	Building and Parking
0.780	74	>75% Grass cover, Good, HSG C
8.410	86	Weighted Average
8.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	933	0.0400	1.26		Lag/CN Method,

Summary for Subcatchment 3S: EX FLOW TO 54"

Runoff = 192.69 cfs @ 12.17 hrs, Volume= 15.963 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 5.400	92	Building and Parking
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
13.070	73	Woods, Fair, HSG C
25.570	74	>75% Grass cover, Good, HSG C
49.410	76	Weighted Average
49.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	993	0.0400	0.93		Lag/CN Method,
0.7	321		7.50		Direct Entry,
0.7	170	0.0650	4.10		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
4.4	948	0.0110	3.57	71.45	Channel Flow,
					Area= 20.0 sf Perim= 16.3' r= 1.23' n= 0.050
23.6	2,432	Total			

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Summary for Subcatchment 4S: voidPR FLOW TO DETENTION

Runoff = 246.47 cfs @ 12.04 hrs, Volume= 15.056 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
* 35.630	81	On Site Lots
41.000	81	Weighted Average
41.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	311	0.0300	0.74		Lag/CN Method,
5.7	2,386		7.00		Direct Entry,
12.7	2,697	Total			

Summary for Pond 6P: Northwest Pond

Inflow Area = 43.610 ac, 2.11% Impervious, Inflow Depth = 4.44" for 25-yr event
Inflow = 223.82 cfs @ 12.06 hrs, Volume= 16.140 af
Outflow = 136.69 cfs @ 12.20 hrs, Volume= 16.098 af, Atten= 39%, Lag= 8.3 min
Primary = 136.69 cfs @ 12.20 hrs, Volume= 16.098 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 296.34' Surf.Area= 41,213 sf Storage= 13,821 cf
Peak Elev= 300.21' @ 12.20 hrs Surf.Area= 55,367 sf Storage= 201,703 cf (187,881 cf above start)

Plug-Flow detention time= 74.5 min calculated for 15.781 af (98% of inflow)
Center-of-Mass det. time= 55.2 min (865.8 - 810.6)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	580,587 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
296.00	40,090	0	0
297.00	43,392	41,741	41,741
298.00	46,770	45,081	86,822
299.00	52,270	49,520	136,342
301.00	57,370	109,640	245,982
304.00	68,700	189,105	435,087
306.00	76,800	145,500	580,587

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Device	Routing	Invert	Outlet Devices
#1	Primary	296.34'	48.0" Round 48" Culvert L= 161.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Primary	296.34'	48.0" Round 48" Culvert L= 184.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0024 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#3	Secondary	304.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=136.67 cfs @ 12.20 hrs HW=300.21' (Free Discharge)

↑ **1=48" Culvert** (Barrel Controls 69.15 cfs @ 7.07 fps)

↑ **2=48" Culvert** (Barrel Controls 67.52 cfs @ 6.91 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.34' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 7L: Combined Out

Inflow Area = 63.200 ac, 1.46% Impervious, Inflow Depth > 4.50" for 25-yr event
Inflow = 199.06 cfs @ 12.13 hrs, Volume= 23.675 af
Primary = 199.06 cfs @ 12.13 hrs, Volume= 23.675 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 9S: 15" from Stonetrace

Runoff = 13.42 cfs @ 12.02 hrs, Volume= 0.767 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Reach 10R: 24" RCP

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 4.95" for 25-yr event
Inflow = 15.90 cfs @ 12.27 hrs, Volume= 3.471 af
Outflow = 15.88 cfs @ 12.32 hrs, Volume= 3.471 af, Atten= 0%, Lag= 3.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.75 fps, Min. Travel Time= 1.4 min

Avg. Velocity = 3.05 fps, Avg. Travel Time= 3.2 min

Peak Storage= 1,376 cf @ 12.29 hrs

Average Depth at Peak Storage= 1.40'

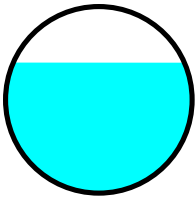
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.94 cfs

24.0" Round Pipe

n= 0.013

Length= 585.0' Slope= 0.0070 '/'

Inlet Invert= 314.00', Outlet Invert= 309.90'



Summary for Reach 11R: 30" RCP

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 4.84" for 25-yr event

Inflow = 25.27 cfs @ 12.04 hrs, Volume= 4.239 af

Outflow = 24.58 cfs @ 12.10 hrs, Volume= 4.239 af, Atten= 3%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.64 fps, Min. Travel Time= 1.8 min

Avg. Velocity = 2.70 fps, Avg. Travel Time= 4.4 min

Peak Storage= 2,692 cf @ 12.07 hrs

Average Depth at Peak Storage= 1.78'

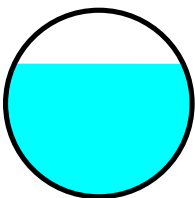
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 29.00 cfs

30.0" Round Pipe

n= 0.013

Length= 718.0' Slope= 0.0050 '/'

Inlet Invert= 305.52', Outlet Invert= 301.93'



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Summary for Subcatchment 12S: 30" from Stonetrace

Runoff = 55.14 cfs @ 12.04 hrs, Volume= 3.338 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

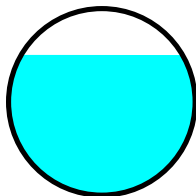
Summary for Reach 13R: 48" RCP

Inflow Area = 19.590 ac, 0.00% Impervious, Inflow Depth = 4.64" for 25-yr event
Inflow = 78.24 cfs @ 12.05 hrs, Volume= 7.577 af
Outflow = 76.19 cfs @ 12.08 hrs, Volume= 7.577 af, Atten= 3%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.66 fps, Min. Travel Time= 0.9 min
Avg. Velocity= 2.63 fps, Avg. Travel Time= 2.5 min

Peak Storage= 3,971 cf @ 12.06 hrs
Average Depth at Peak Storage= 3.01'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 84.92 cfs

48.0" Round Pipe
n= 0.013
Length= 392.0' Slope= 0.0035 '/'
Inlet Invert= 297.91', Outlet Invert= 296.54'



Summary for Subcatchment 14S: 15" From Stonetrace

Runoff = 13.42 cfs @ 12.02 hrs, Volume= 0.767 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

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Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Subcatchment 15S: 30" from Stonetrace

Runoff = 55.14 cfs @ 12.04 hrs, Volume= 3.338 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

Summary for Link 16L: Combined Flow Predev at 54" RCP

Inflow Area = 60.590 ac, 0.00% Impervious, Inflow Depth = 3.97" for 25-yr event
Inflow = 235.56 cfs @ 12.12 hrs, Volume= 20.068 af
Primary = 235.56 cfs @ 12.12 hrs, Volume= 20.068 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 17S: Pond and direct flow to pond

Runoff = 42.21 cfs @ 11.89 hrs, Volume= 1.826 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 3.710	81	
* 0.920	98	
4.630	84	Weighted Average
3.710		80.13% Pervious Area
0.920		19.87% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10				Direct Entry,

Summary for Subcatchment 18S: Flow from Southeast St

Runoff = 210.38 cfs @ 12.07 hrs, Volume= 13.782 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 37.530	81	
37.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,
4.9	2,065		7.00		Direct Entry,
14.9	2,065				Total

Summary for Subcatchment 19S: from cove to south

Runoff = 9.15 cfs @ 12.02 hrs, Volume= 0.532 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=6.57"

Area (ac)	CN	Description
* 1.450	81	
1.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					Direct Entry,

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: Church Detention Peak Elev=316.25' Storage=61,544 cf Inflow=72.84 cfs 4.566 af
Primary=18.05 cfs 4.566 af Tertiary=0.00 cfs 0.000 af Outflow=18.05 cfs 4.566 af

Subcatchment 2S: Church Site Runoff Area=8.410 ac 0.00% Impervious Runoff Depth=6.52"
Flow Length=933' Slope=0.0400 '/' Tc=12.3 min CN=86 Runoff=72.84 cfs 4.566 af

Subcatchment 3S: EX FLOW TO 54" Runoff Area=49.410 ac 0.00% Impervious Runoff Depth=5.33"
Flow Length=2,432' Tc=23.6 min CN=76 Runoff=263.98 cfs 21.951 af

Subcatchment 4S: voidPR FLOW TO Runoff Area=41.000 ac 0.00% Impervious Runoff Depth=5.92"
Flow Length=2,697' Slope=0.0300 '/' Tc=12.7 min CN=81 Runoff=326.98 cfs 20.233 af

Pond 6P: Northwest Pond Peak Elev=301.14' Storage=254,136 cf Inflow=297.15 cfs 21.658 af
Primary=179.40 cfs 21.616 af Secondary=0.00 cfs 0.000 af Outflow=179.40 cfs 21.616 af

Link 7L: Combined Out Inflow=262.35 cfs 31.699 af
Primary=262.35 cfs 31.699 af

Subcatchment 9S: 15" from Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=5.92"
Tc=10.5 min CN=81 Runoff=17.79 cfs 1.031 af

Reach 10R: 24" RCP Avg. Flow Depth=1.56' Max Vel=6.86 fps Inflow=18.05 cfs 4.566 af
24.0" Round Pipe n=0.013 L=585.0' S=0.0070 '/' Capacity=18.94 cfs Outflow=18.03 cfs 4.566 af

Reach 11R: 30" RCP Avg. Flow Depth=2.18' Max Vel=6.73 fps Inflow=31.15 cfs 5.598 af
30.0" Round Pipe n=0.013 L=718.0' S=0.0050 '/' Capacity=29.00 cfs Outflow=30.06 cfs 5.598 af

Subcatchment 12S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=5.92"
Tc=12.4 min CN=81 Runoff=73.14 cfs 4.486 af

Reach 13R: 48" RCP Avg. Flow Depth=4.00' Max Vel=7.68 fps Inflow=101.52 cfs 10.084 af
48.0" Round Pipe n=0.013 L=392.0' S=0.0035 '/' Capacity=84.92 cfs Outflow=86.05 cfs 10.084 af

Subcatchment 14S: 15" From Stonetrace Runoff Area=2.090 ac 0.00% Impervious Runoff Depth=5.92"
Tc=10.5 min CN=81 Runoff=17.79 cfs 1.031 af

Subcatchment 15S: 30" from Stonetrace Runoff Area=9.090 ac 0.00% Impervious Runoff Depth=5.92"
Tc=12.4 min CN=81 Runoff=73.14 cfs 4.486 af

Link 16L: Combined Flow Predev at 54" RCP Inflow=321.32 cfs 27.468 af
Primary=321.32 cfs 27.468 af

Subcatchment 17S: Pond and direct flow Runoff Area=4.630 ac 19.87% Impervious Runoff Depth=6.28"
Flow Length=10' Tc=0.0 min CN=84 Runoff=54.90 cfs 2.422 af

Subcatchment 18S: Flow from Southeast St Runoff Area=37.530 ac 0.00% Impervious Runoff Depth=5.92"
Flow Length=2,065' Tc=14.9 min CN=81 Runoff=279.47 cfs 18.520 af

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Subcatchment 19S: from cove to south

Runoff Area=1.450 ac 0.00% Impervious Runoff Depth=5.92"

Tc=11.0 min CN=81 Runoff=12.13 cfs 0.716 af

Total Runoff Area = 164.790 ac Runoff Volume = 79.442 af Average Runoff Depth = 5.78"

99.44% Pervious = 163.870 ac 0.56% Impervious = 0.920 ac

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Summary for Pond 1P: Church Detention

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 6.52" for 100-yr event
Inflow = 72.84 cfs @ 12.04 hrs, Volume= 4.566 af
Outflow = 18.05 cfs @ 12.29 hrs, Volume= 4.566 af, Atten= 75%, Lag= 15.2 min
Primary = 18.05 cfs @ 12.29 hrs, Volume= 4.566 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 316.25' @ 12.29 hrs Surf.Area= 18,246 sf Storage= 61,544 cf

Plug-Flow detention time= 26.7 min calculated for 4.562 af (100% of inflow)
Center-of-Mass det. time= 26.7 min (816.2 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	311.00'	96,427 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	0	0	0
312.00	4,077	2,039	2,039
313.00	13,176	8,627	10,665
314.00	14,674	13,925	24,590
315.00	16,206	15,440	40,030
316.00	17,822	17,014	57,044
317.00	19,522	18,672	75,716
318.00	21,900	20,711	96,427

Device	Routing	Invert	Outlet Devices
#1	Primary	311.00'	24.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 311.00' / 310.61' S= 0.0070 ' S= 0.0070 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Tertiary	317.50'	30.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	311.00'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=18.04 cfs @ 12.29 hrs HW=316.25' (Free Discharge)

↑ **1=Culvert** (Passes 18.04 cfs of 34.90 cfs potential flow)
↑ **3=Orifice/Grate** (Orifice Controls 18.04 cfs @ 10.21 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=311.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Subcatchment 2S: Church Site

Runoff = 72.84 cfs @ 12.04 hrs, Volume= 4.566 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
2.230	74	>75% Grass cover, Good, HSG C
* 5.400	92	Building and Parking
0.780	74	>75% Grass cover, Good, HSG C
8.410	86	Weighted Average
8.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	933	0.0400	1.26		Lag/CN Method,

Summary for Subcatchment 3S: EX FLOW TO 54"

Runoff = 263.98 cfs @ 12.16 hrs, Volume= 21.951 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 5.400	92	Building and Parking
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
13.070	73	Woods, Fair, HSG C
25.570	74	>75% Grass cover, Good, HSG C
49.410	76	Weighted Average
49.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	993	0.0400	0.93		Lag/CN Method,
0.7	321		7.50		Direct Entry,
0.7	170	0.0650	4.10		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
4.4	948	0.0110	3.57	71.45	Channel Flow,
					Area= 20.0 sf Perim= 16.3' r= 1.23' n= 0.050
23.6	2,432	Total			

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Summary for Subcatchment 4S: voidPR FLOW TO DETENTION

Runoff = 326.98 cfs @ 12.04 hrs, Volume= 20.233 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 3.080	81	Stonetrace
* 2.290	81	Bartlett Woodlands
* 35.630	81	On Site Lots
41.000	81	Weighted Average
41.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	311	0.0300	0.74		Lag/CN Method,
5.7	2,386		7.00		Direct Entry,
12.7	2,697	Total			

Summary for Pond 6P: Northwest Pond

Inflow Area = 43.610 ac, 2.11% Impervious, Inflow Depth = 5.96" for 100-yr event
 Inflow = 297.15 cfs @ 12.06 hrs, Volume= 21.658 af
 Outflow = 179.40 cfs @ 12.20 hrs, Volume= 21.616 af, Atten= 40%, Lag= 8.4 min
 Primary = 179.40 cfs @ 12.20 hrs, Volume= 21.616 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Starting Elev= 296.34' Surf.Area= 41,213 sf Storage= 13,821 cf
 Peak Elev= 301.14' @ 12.20 hrs Surf.Area= 57,904 sf Storage= 254,136 cf (240,315 cf above start)

Plug-Flow detention time= 64.7 min calculated for 21.299 af (98% of inflow)
 Center-of-Mass det. time= 49.2 min (851.5 - 802.3)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	580,587 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
296.00	40,090	0	0
297.00	43,392	41,741	41,741
298.00	46,770	45,081	86,822
299.00	52,270	49,520	136,342
301.00	57,370	109,640	245,982
304.00	68,700	189,105	435,087
306.00	76,800	145,500	580,587

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Device	Routing	Invert	Outlet Devices
#1	Primary	296.34'	48.0" Round 48" Culvert L= 161.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Primary	296.34'	48.0" Round 48" Culvert L= 184.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 296.34' / 295.89' S= 0.0024 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#3	Secondary	304.00'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=179.43 cfs @ 12.20 hrs HW=301.14' (Free Discharge)

↑ **1=48" Culvert** (Barrel Controls 90.79 cfs @ 7.62 fps)

↑ **2=48" Culvert** (Barrel Controls 88.64 cfs @ 7.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.34' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 7L: Combined Out

Inflow Area = 63.200 ac, 1.46% Impervious, Inflow Depth = 6.02" for 100-yr event
Inflow = 262.35 cfs @ 12.17 hrs, Volume= 31.699 af
Primary = 262.35 cfs @ 12.17 hrs, Volume= 31.699 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 9S: 15" from Stonetrace

Runoff = 17.79 cfs @ 12.02 hrs, Volume= 1.031 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Reach 10R: 24" RCP

Inflow Area = 8.410 ac, 0.00% Impervious, Inflow Depth = 6.52" for 100-yr event
Inflow = 18.05 cfs @ 12.29 hrs, Volume= 4.566 af
Outflow = 18.03 cfs @ 12.34 hrs, Volume= 4.566 af, Atten= 0%, Lag= 3.1 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.86 fps, Min. Travel Time= 1.4 min

Avg. Velocity = 3.28 fps, Avg. Travel Time= 3.0 min

Peak Storage= 1,538 cf @ 12.31 hrs

Average Depth at Peak Storage= 1.56'

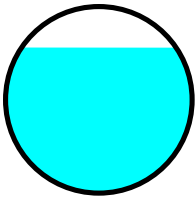
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 18.94 cfs

24.0" Round Pipe

n= 0.013

Length= 585.0' Slope= 0.0070 '/'

Inlet Invert= 314.00', Outlet Invert= 309.90'



Summary for Reach 11R: 30" RCP

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 6.40" for 100-yr event

Inflow = 31.15 cfs @ 12.04 hrs, Volume= 5.598 af

Outflow = 30.06 cfs @ 12.10 hrs, Volume= 5.598 af, Atten= 3%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.73 fps, Min. Travel Time= 1.8 min

Avg. Velocity = 2.92 fps, Avg. Travel Time= 4.1 min

Peak Storage= 3,259 cf @ 12.07 hrs

Average Depth at Peak Storage= 2.18'

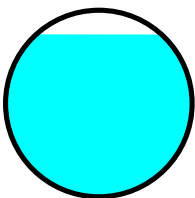
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 29.00 cfs

30.0" Round Pipe

n= 0.013

Length= 718.0' Slope= 0.0050 '/'

Inlet Invert= 305.52', Outlet Invert= 301.93'



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Summary for Subcatchment 12S: 30" from Stonetrace

Runoff = 73.14 cfs @ 12.04 hrs, Volume= 4.486 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

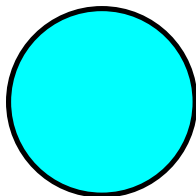
Summary for Reach 13R: 48" RCP

Inflow Area = 19.590 ac, 0.00% Impervious, Inflow Depth = 6.18" for 100-yr event
Inflow = 101.52 cfs @ 12.05 hrs, Volume= 10.084 af
Outflow = 86.05 cfs @ 12.06 hrs, Volume= 10.084 af, Atten= 15%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.68 fps, Min. Travel Time= 0.9 min
Avg. Velocity= 2.84 fps, Avg. Travel Time= 2.3 min

Peak Storage= 4,926 cf @ 12.05 hrs
Average Depth at Peak Storage= 4.00'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 84.92 cfs

48.0" Round Pipe
n= 0.013
Length= 392.0' Slope= 0.0035 '/'
Inlet Invert= 297.91', Outlet Invert= 296.54'



Summary for Subcatchment 14S: 15" From Stonetrace

Runoff = 17.79 cfs @ 12.02 hrs, Volume= 1.031 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

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Type II 24-hr 100-yr Rainfall=8.19"
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Area (ac)	CN	Description
* 2.090	81	
2.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					Direct Entry,

Summary for Subcatchment 15S: 30" from Stonetrace

Runoff = 73.14 cfs @ 12.04 hrs, Volume= 4.486 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 9.090	81	
9.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					Direct Entry,

Summary for Link 16L: Combined Flow Predev at 54" RCP

Inflow Area = 60.590 ac, 0.00% Impervious, Inflow Depth = 5.44" for 100-yr event
Inflow = 321.32 cfs @ 12.12 hrs, Volume= 27.468 af
Primary = 321.32 cfs @ 12.12 hrs, Volume= 27.468 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 17S: Pond and direct flow to pond

Runoff = 54.90 cfs @ 11.89 hrs, Volume= 2.422 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 3.710	81	
* 0.920	98	
4.630	84	Weighted Average
3.710		80.13% Pervious Area
0.920		19.87% Impervious Area

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Type II 24-hr 100-yr Rainfall=8.19"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10				Direct Entry,

Summary for Subcatchment 18S: Flow from Southeast St

Runoff = 279.47 cfs @ 12.06 hrs, Volume= 18.520 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 37.530	81	
37.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,
4.9	2,065		7.00		Direct Entry,
14.9	2,065				Total

Summary for Subcatchment 19S: from cove to south

Runoff = 12.13 cfs @ 12.02 hrs, Volume= 0.716 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.19"

Area (ac)	CN	Description
* 1.450	81	
1.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0					Direct Entry,