



SUBDIVISION REPORT - CONCEPT/DEVELOPMENT PLAN

► **FILE #:** 11-SA-22-C (REVISED) **AGENDA ITEM #:** 30

11-A-22-DP (REVISED) **AGENDA DATE:** 12/8/2022

POSTPONEMENT(S): 11/10/2022

► **SUBDIVISION:** FAIRVIEW ROAD SUBDIVISION

► **APPLICANT/DEVELOPER:** MESANA INVESTMENTS, LLC

OWNER(S): Michael Fielden

TAX IDENTIFICATION: 21 04603 (PART OF) & 18803

[View map on KGIS](#)

JURISDICTION: County Commission District 8

STREET ADDRESS: 0 FAIRVIEW RD (0 Beeler Rd)

► **LOCATION:** West side of Fairview Road, east side of Beeler Road

SECTOR PLAN: Northeast County

GROWTH POLICY PLAN: Planned Growth Area

WATERSHED: Beaver Creek

► **APPROXIMATE ACREAGE:** 95.83 acres

► **ZONING:** PR (Planned Residential), F (Floodway)

► **EXISTING LAND USE:** Agriculture/Forestry/Vacant Land

► **PROPOSED USE:** Detached residential subdivision

SURROUNDING LAND USE AND ZONING: North: Agricultural/Forestry/Vacant Land -- A (Agricultural), PR (Planned Residential)
South: Agricultural/Forestry/Vacant Land -- A (Agricultural), PR (Planned Residential), F (Floodway)
East: Agricultural/Forestry/Vacant Land, Single Family Residential -- PR (Planned Residential), F (Floodway)
West: Single Family Residential, Agricultural/Forestry/Vacant Land -- A (Agricultural), PR (Planned Residential)

► **NUMBER OF LOTS:** 128

SURVEYOR/ENGINEER: Chris Sharp, P.E. Urban Engineering, Inc.

ACCESSIBILITY: Access is via Beeler Road, a minor collector street with 19 ft of pavement width within 40 ft of right-of-way.

► **SUBDIVISION VARIANCES**

REQUIRED:

- VARIANCES**
1. Reduce the minimum vertical curve tangent K value from K=25 to K=18.5 at STA 1+57.63, Road D
 2. Reduce the minimum vertical curve tangent K value from K=25 to K=22.5 at STA 3+14.59, Road A

ALTERNATIVE DESIGN STANDARDS REQUIRING KNOXVILLE-KNOX COUNTY PLANNING COMMISSION APPROVAL

1. Reduce the minimum horizontal curve from 250' to 175' on Road 'B' between STA 8+60.44 and 11+31.97

ALTERNATIVE DESIGN STANDARDS REQUIRING KNOX COUNTY ENGINEERING AND PUBLIC WORKS APPROVAL

**** See the Requested Variances and Alternative Design Standards memo attached to the staff report**

STAFF RECOMMENDATION:

- **Approve the requested variances and alternative design standard based on the justification provided by the applicant and recommendations of the Knox County Department of Engineering and Public Works.**

Approve the Concept Plan subject to 11 conditions.

- 1) Connection to sanitary sewer and meeting other relevant utility provider requirements.
- 2) Provision of street names consistent with the Uniform Street Naming and Addressing System within Knox County (County Ord. 91-1-102).
- 3) Providing a sight distance easement across the lots on the inside of the horizontal curves with a radius less than 200 ft per the requirements of Knox County Engineering and Public Works during the design plan phase. Any driveways on these lots must be located outside the sight distance easement and shown on the plat, or the driveways must have a depth of 20 ft beyond the sight distance easement if they cannot be located outside the sight distance easement.
- 4) Partnering with Knox County to implement the recommended turn lane improvements to Beeler Road at the E. Emory Road intersection as outlined in the Fairview Road Transportation Impact Study (AJAX Engineering, revised December 2022). The developer is responsible for designing the turn lane, grading the area, and installing the base stone and binder course. Knox County is responsible for installing the surface course, striping the lane, and installing any necessary signage. The improvements that are the responsibility of the developer must be completed before the first phase of the subdivision is platted. The turn lanes on E. Emory Road recommended by the TIS, are not required to be installed by this condition.
- 5) Obtaining all necessary permits from TDOT for the improvements at the Beeler Road and E. Emory Road intersection.
- 6) Providing a 50-ft wide right-of-way stub-out from Road 'B' to the property to the north (parcel 021 04202). The stub-out shall be provided on the Final Plat and identified for future connection. The location of the stub-out shall be reviewed and approved by Knox County Engineering and Public Works during the design plan phase.
- 7) Installing the curbing and asphalt road surface through the intersection radii referenced in condition #6 above and installing notification of future street connection as required by Section 3.04.C.2.d. of the Knoxville-Knox County Subdivision Regulations.
- 8) Providing a greenway easement on the Final Plat along Beaver Creek and the unnamed tributary to Beaver Creek, as proposed in the Knox County Greenway Corridor Study (see Exhibit B). The greenway easement shall only be required if the easement for the preferred route crosses the portion of parcel 021 04603 being purchased by the applicant. The greenway easement width and location are to be determined by Knox County Parks and Recreation department during the design plan phase.
- 9) Meeting all applicable requirements of the Knox County Department of Engineering and Public Works and TDOT.
- 10) Before certification of the final plat for the subdivision, establish a property owners association or other legal entity responsible for maintaining common facilities, such as common areas, amenities, private roads, and/or stormwater drainage systems.
- 11) Revising the B&B Builders concept plan (7-SA-22-C) to provide a road connection for the Fairview Road Subdivision.

- **Approve the development plan for a residential subdivision with up to 128 detached dwellings and a reduction of the 35-ft peripheral setback to 25-ft for lots 207-212, as shown on the plan, subject to 1 condition.**

- 1) Meeting all applicable requirements of the Knox County Zoning Ordinance.

COMMENTS:

***** REVISIONS SINCE THE NOVEMBER PLANNING COMMISSION MEETING *****

The road connection to Beeler Farms Lane is removed and a new access to Beeler Road is proposed through the unbuilt B&B Builders Subdivision that was approved in July 2022 (7-SA-22-C / 7-A-22-DP). The applicant has a contract to purchase the B&B Builders Subdivision and has submitted a revised concept plan that will be on the January Planning Commission agenda. The revised B&B Builders Subdivision extends an internal road to the subject property line to make a connection between the two subdivisions. The intent is that these two subdivisions will be phases 1 & 2 of the same subdivision when it is developed and platted. The total number of lots in the Fairview Road Subdivision increased from 126 to 128.

SUMMARY OF PROPOSAL

This proposal is for a 128-lot residential development with a single access to Beeler Road through the recently approved and unbuilt B&B Builders Subdivision. The applicant is only purchasing 33 acres of a 93-acre property. The remaining 60 acres have access to Fairview Road and will be retained by the current property owner.

ZONING AND DENSITY

The 93-acre property was rezoned from A (Agricultural) to PR (Planned Residential) up to 2 du/ac in 2007 (6-N-07-RZ). This allows approximately 186 dwelling units on the entire 93-acre parcel. The proposed subdivision is on only 33 acres and is proposed with 128 lots, which is a net density of 3.88 du/ac. This will effectively transfer the development rights of 62 dwelling units from the remaining 60 acres to the Fairview Road Subdivision. If this is approved as requested, the remaining portion of the property (parcel 021-04603) will only be allowed approximately 58 dwelling units.

ACCESS

The proposed access is through the unbuilt B&B Builders Subdivision, which was approved with 26-ft wide roads and a single entrance from Beeler Road. The two subdivisions combined will have up to 212 lots using the single entrance, which exceeds long-standing unwritten design policy requiring a second entrance or a boulevard entrance road design when a subdivision has more than 150 lots. The purpose of this policy is primarily to address access for emergency services, but also has the secondary benefit of increasing connectivity when multiple entrances are established. Staff is recommending a condition to provide a stub-out on the north side of the Fairview Road Subdivision and will recommend a stub-out on the south side of the B&B Builders Subdivision. The intent is to provide multiple options for a future second access point so a boulevard entrance is not necessary. The boulevard entrance option should only be used when there is no other viable connection that can provide the secondary access.

INFRASTRUCTURE IMPROVEMENTS

When the B&B Builders Subdivision (7-SA-22-C / 7-A-22-UR) was approved, there was a condition to install a right turn lane on Beeler Road at the E. Emory Road intersection. This is still a recommended condition of approval. Knox County agreed to share the cost of this improvement.

AMENITIES / COMMON AREA

The Knox County Greenway Corridor Study proposes a greenway along the unnamed tributary on the east side of the development and Beaver Creek on the south side. During the permitting stage, a determination will be made if a greenway easement will be required. This will depend on the external boundary of the subdivision and which side of the creek the greenway will likely be located.

If the subdivision is approved as requested, the Knox County sidewalk ordinance will require a sidewalk along all road segments with 1,000 ADT or more because the site is within 1/4 mile of a proposed greenway corridor. In the Fairview Road Subdivision, this includes Road 'E' and Road 'B' between Road 'E' and Road 'A'. In the B&B Builders Subdivision, this includes Road 'E' and Road 'A' from Beeler Road to Road 'E'.

VARIANCES AND ALTERNATIVE DESIGN STANDARDS

The applicant is requesting several road design variances and alternative design standards ("variances"). The 33 acres where the subject development is located has 17.87 acres within the Hillside Protection (HP) area. Section 4.01 of the Subdivision Regulations allows alternative road design standards in the HP area if the Planning Commission finds that the proposed development preserves and protects undisturbed land consistent with the intent of the land disturbance recommendations of the Hillside and Ridgetop Protection Plan. This proposal will disturb all 17.87 acres in the HP area, so in staff's opinion, the provisions of this section are not applicable.

If the Planning Commission approves the subdivision as requested, Knox County Engineering and Public

Works recommends approval of the vertical curve and horizontal curve variances as requested. The reductions comply with AASHTO road standards for the design speed of 25 MPH. By default, residential streets in Knox County are posted with a speed limit of 25 MPH.

DEVELOPMENT PLAN ANALYSIS PER ARTICLE 6, SECTION 6.50.06 (APPROVAL OR DENIAL)

In the exercise of its administrative judgment, the Planning Commission shall determine if the proposed plan is in harmony with the general purpose and intent of the zoning ordinance and adopted plans.

1) ZONING ORDINANCE

PR (Planned Residential) up to 2 du/ac:

- a) The PR zone allows houses as a permitted use. The administrative procedures for the PR zone require the Planning Commission to approve the development plan before permits can be issued (Article 5, Section 5.13.15).
- b) This PR zone district is approved for a maximum of 2 du/ac. The proposed density is 1.38 du/ac based on the 93-acre parcel.
- c) The peripheral setback is 35 feet, however, the planning commission may reduce it to 15 feet when the adjacent property is zoned agricultural or residential. The applicant is requesting a peripheral setback of 25 ft for the portion of lots 207-212 that abut the Beeler Farms Subdivision. The requested reduction will have minimal impact on adjacent properties.

2) GENERAL PLAN – DEVELOPMENT POLICIES

- a) Ensure that the context of new development, including scale and compatibility, does not impact existing neighborhoods and communities (Policy 9.3) – The development will consist of detached houses, which is the same as other nearby residential developments. The proposed peripheral setback reduction should have minimal impact on adjacent properties.
- b) Encourage a mixture of housing sizes and prices within planned residential developments (Policy 9.8) – This development is exclusively detached, single-family houses, which does not diversify the housing mix in the area. It is unknown if the price ranges will vary from nearby residential developments.

3) NORTHEAST COUNTY SECTOR PLAN

- a) The property is classified LDR (Low Density Residential), which allows consideration of up to 5 du/ac. The gross density for the entire 93-acre parcel is 1.38 du/ac. The development will have a net density of 3.88 du/ac on the 33-acre site where the subdivision will be located.

4) KNOXVILLE – FARRAGUT – KNOX COUNTY GROWTH POLICY PLAN

- a) The property is within the Planned Growth Boundary. The purposes of the Planned Growth Boundary designation are to encourage a reasonably compact pattern of development, promote the expansion of the Knox County economy, offer a wide range of housing choices, and coordinate the actions of the public and private sectors, particularly with regard to the provision of adequate roads, utilities, schools, drainage and other public facilities and services.

ESTIMATED TRAFFIC IMPACT: A traffic impact study was prepared by the applicant. The findings of that study were used in formulating the recommendations of this staff report.

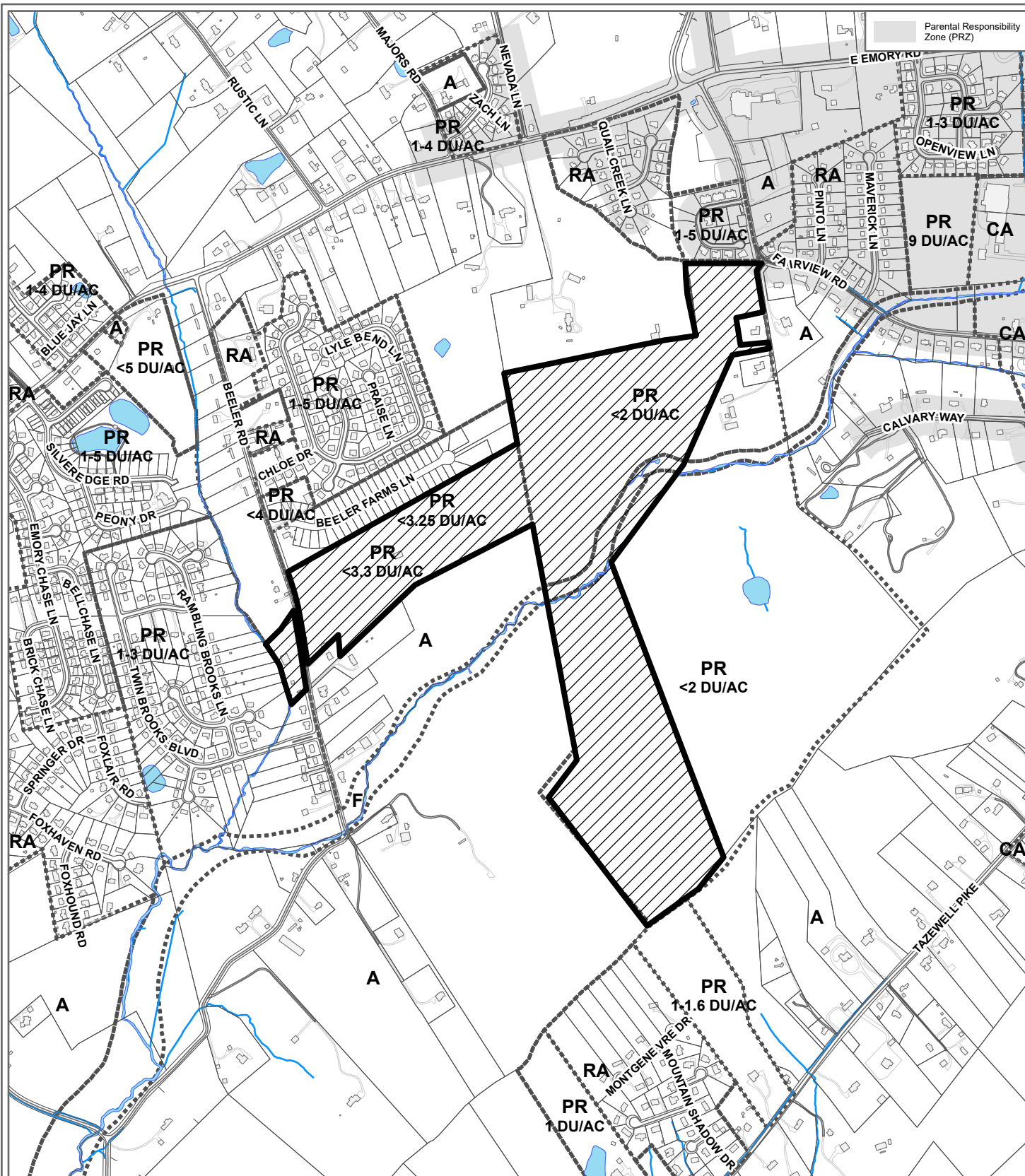
ESTIMATED STUDENT YIELD: 54 (public school children, grades K-12)

Schools affected by this proposal: Gibbs Elementary, Gibbs Middle, and Gibbs High.

- Potential new school population is estimated using locally-derived data on public school student yield generated by new housing.
- Students are assigned to schools based on current attendance zones as determined by Knox County Schools. Students may request transfers to different zones, and zone boundaries are subject to change.
- Estimates presume full build-out of the proposed development. Build-out is subject to market forces, and timing varies widely from proposal to proposal.
- Student yields from new development do not reflect a net addition of children in schools. Additions occur incrementally over the build-out period. New students may replace current population that ages through the system or moves from the attendance zone.

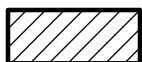
Knoxville-Knox County Planning Commission's approval or denial of this concept plan request is final, unless the action is appealed to Knox County Chancery Court. The date of the Knox County Chancery Court hearing will depend on when the appeal application is filed.

Knoxville-Knox County Planning Commission's approval or denial of this development plan request is final, unless the action is appealed to the Court of Competent Jurisdiction. The date of the Court of Competent Jurisdiction hearing will depend on when the appeal application is filed.



**11-SA-22-C / 11-A-22-DP
CONCEPT PLAN/DEVELOPMENT PLAN**

Petitioner: Mesana Investments, LLC



Detached residential subdivision in PR (Planned Residential), F (Floodway)

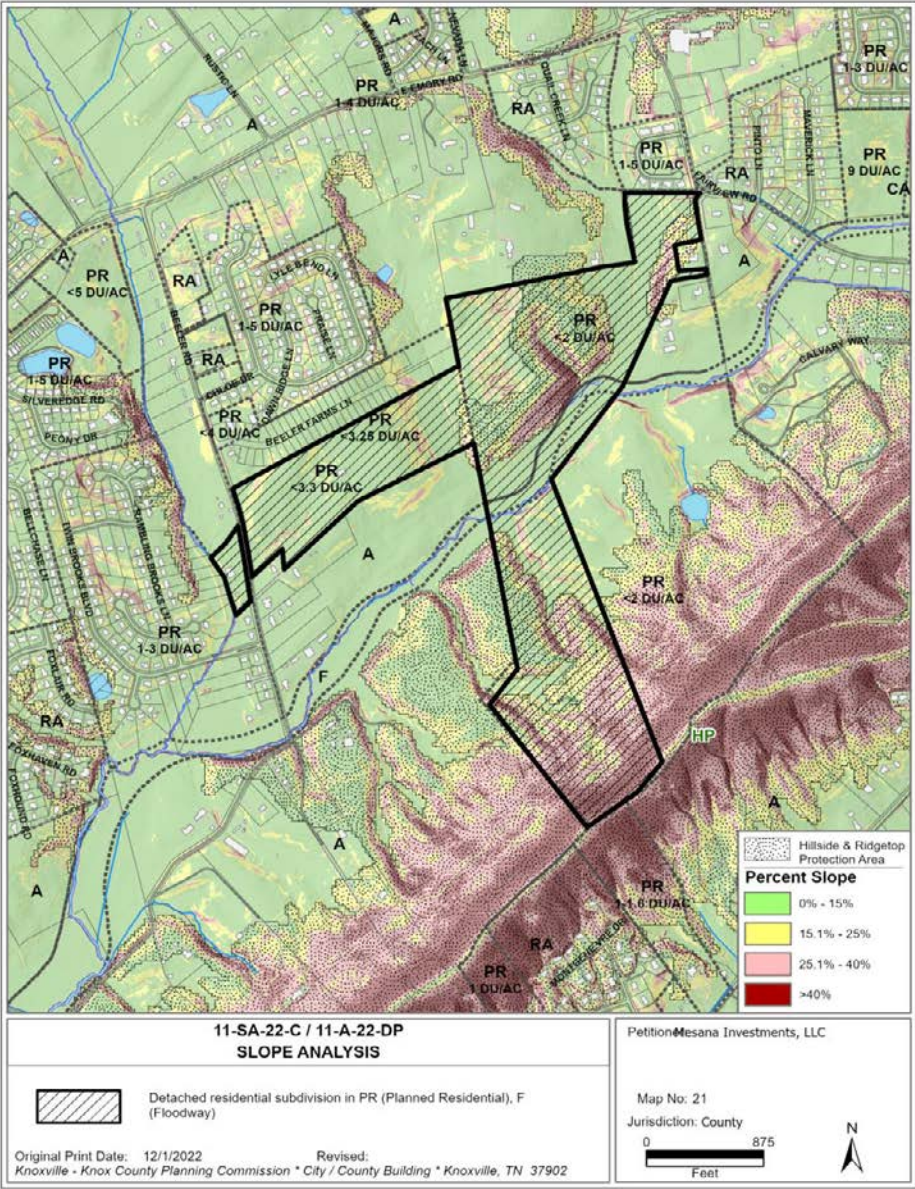
Original Print Date: 12/1/2022
Knoxville - Knoxville Planning Commission * City / County Building * Knoxville, TN 37902

Revised:

Map No: 21
Jurisdiction: County
0 1,000
Feet



CATEGORY	ACRES	RECOMMENDED DISTURBANCE BUDGET (Percent)	DISTURBANCE AREA (Acres)
Total Area of Site	124.54		
Non-Hillside	69.20	N/A	
0-15% Slope	12.92	100%	12.92
15-25% Slope	13.09	50%	6.54
25-40% Slope	14.20	20%	2.84
Greater than 40% Slope	15.13	10%	1.51
Ridgetops	9.94		
Hillside Protection (HP) Area	55.34	Recommended disturbance budget within HP Area (acres)	23.8
		Percent of HP Area	0.4



Requested Variances & Alternative Design Standards

11-SA-22-C / 11-A-22-DP— FAIRVIEW ROAD SUBDIVISION

VARIANCES

1. Reduce the minimum vertical curve tangent K value from K=25 to K=18.5 at STA 1+57.63, Road D
2. Reduce the minimum vertical curve tangent K value from K=25 to K=22.5 at STA 3+14.59, Road A



ALTERNATIVE DESIGN STANDARDS REQUIRING KNOXVILLE-KNOX COUNTY PLANNING COMMISSION APPROVAL

1. Reduce the minimum horizontal curve from 250' to 175' on Road 'B' between STA 8+60.44 and 11+31.97

ALTERNATIVE DESIGN STANDARDS REQUIRING KNOX COUNTY ENGINEERING AND PUBLIC WORKS APPROVAL

1. Increase the intersection grade from 1% to 2% along Road 'E' at its intersection with Road 'B'
2. Increase the intersection grade from 1% to 1.6% along Road 'A' at its intersection with Road 'B'
3. Increase the intersection grade from 1% to 2% along Road 'C' at its intersection with Road 'A'
4. Increase the intersection grade from 1% to 2% along Road 'D' at its intersection with Road 'C'
5. Increase the intersection grade from 1% to 2% along Road 'D' at its intersection with Road 'A'

KNOX COUNTY ENGINEERING AND PUBLIC WORKS RECOMMENDATION:

<p>Approve</p> <p>  12/1/22</p>

CONCEPT PLAN

U.E.I. PROJECT NO. 2207020

FAIRVIEW ROAD SUBDIVISION

SITE ADDRESS: 0 FAIRVIEW RD (37721)
CLT MAP 21, PARCEL 46.03



LOCATION MAP

DEVELOPER:
MESANA INVESTMENTS, LLC
P.O. BOX 11315
KNOXVILLE, TN 37939



SITE ENGINEER:
URBAN ENGINEERING, INC.
CHRIS SHARP
10330 HARDIN VALLEY RD, #201
KNOXVILLE, TENNESSEE 37932
(865) 966-1924

SPECIFICATIONS

EXCEPT WHERE DIRECTED OTHERWISE BY THE PLANS, WORKMANSHIP AND MATERIAL (BUT NOT MEASUREMENT AND PAYMENT) FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS AND STANDARDS.

ELECTRICAL - AS DIRECTED BY KNOXVILLE UTILITIES BOARD
GAS - AS DIRECTED BY KNOXVILLE UTILITIES BOARD
WATER & SEWER - AS DIRECTED BY WEST KNOX UTILITY DISTRICT
TELEPHONE - AS DIRECTED BY AT&T
CABLE - AS DIRECTED BY COMCAST
SITE DEVELOPMENT - KNOX COUNTY STANDARDS AND SPECIFICATIONS

SHEET INDEX

TITLE

TITLE SHEET
SITE PLAN - OVERALL
SITE PLAN
ROAD PROFILES

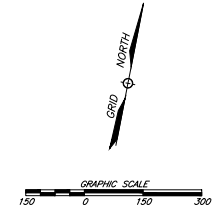
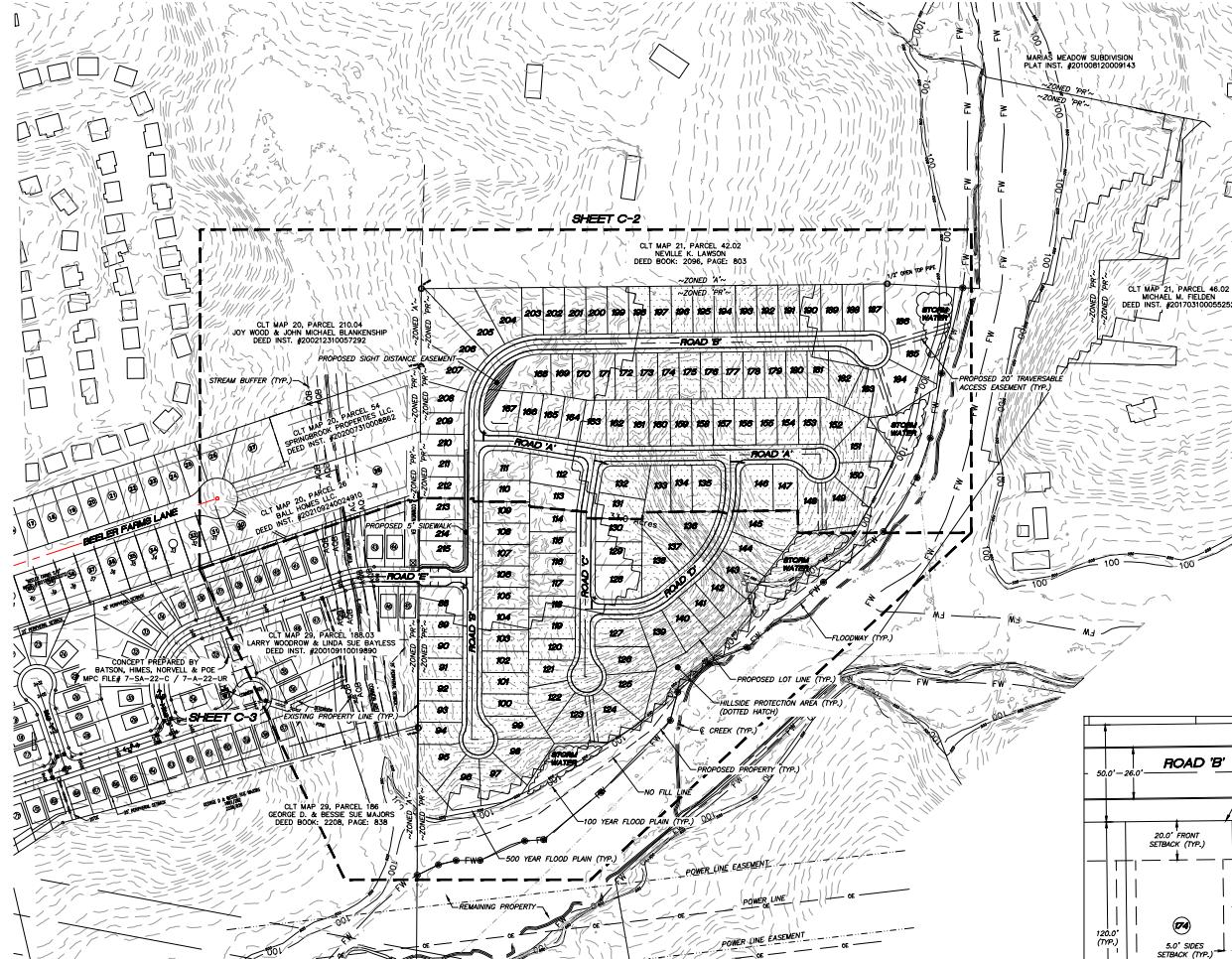
SHEET

C-0
C-1
C-2 & C-3
C-4 THRU C-7

Revised: 11/28/2022

MPC FILE# 11-SA-22-C / 11-A-22-DP

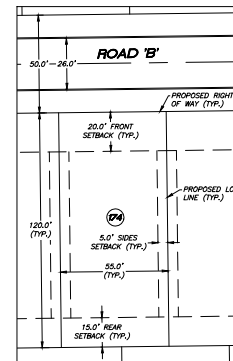
ISSUE NO.	DATE	DESCRIPTION
4	11/28/22	GENERAL REVISIONS
3	11/17/22	GENERAL REVISIONS
2	10/21/22	PER PLANNING/KCEPW COMMENTS



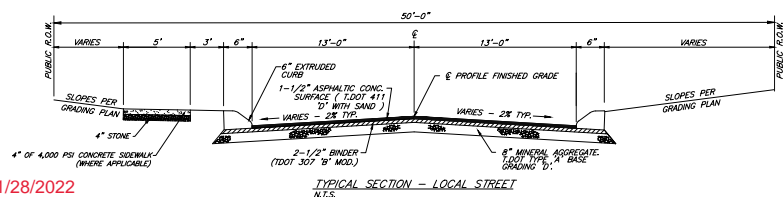
- SITE PLAN NOTES:**
1. THIS PROPERTY IS ZONED 'PH'. REQUIRED BUILDING SETBACKS ARE AS FOLLOWS:
FRONT: HOUSES, TWENTY (20) FEET
PERIPHERY: THIRTY FIVE (35) FEET (MINIMUM)
SIDE: FIVE (5) FEET
REAR: FIFTEEN (15) FEET
 2. THE LOCATIONS OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON THE LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER VALVES, ETC., AND COMPLYING INFORMATION FROM PLANS SUPPLIED BY MAJOR UTILITY COMPANIES AND GOVERNMENT AGENCIES. THE CONTRACTORS SHALL NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES AND ALSO CALL TOWN ONE-CALL PRIOR TO ANY EXCAVATION WORK TO VERIFY INFORMATION SHOWN AND DETERMINE THE LAYOUT OF THE IRRIGATION SYSTEM AND IF ADDITIONAL IMPROVEMENTS MAY EXIST.
 3. HORIZONTAL COORDINATES ARE TENNESSEE STATE PLANE, VERTICAL DATUM IS NAVD83.
 4. ALL WORK SHALL BE IN ACCORDANCE WITH KNOX COUNTY'S SPECIFICATIONS FOR SITE DEVELOPMENT.
 5. THE CURRENT TOTAL AREA OF THE DEVELOPMENT IS 33.0 ACRES.
 6. THE DEVELOPMENT PROPOSES 128-UNITS (3.88 UNITS PER ACRE).
 7. PROPOSED OPEN SPACE (INCLUDING EASEMENTS, & AREAS WITHIN STORM WATER DETENTION AREAS) = 4.444 ACRES (13.58%).
 8. THE PROPOSED LOTS SHALL HAVE VEHICULAR ACCESS TO INTERNAL ROADS ONLY.
 9. A HOMEOWNERS ASSOCIATION SHALL BE ESTABLISHED TO ADDRESS MAINTENANCE OF THE COMMON AREAS.
 10. 10' UTILITY AND DRAINAGE EASEMENTS SHALL BE RESERVED ALONG ALL EXTERIOR BOUNDARY LINES AND PUBLIC RIGHT OF WAY. S'UTILITY AND DRAINAGE EASEMENTS SHALL BE RESERVED ALONG ALL INTERIOR LOT LINES EXCEPT WHEN UNDER BUILDINGS.
 11. THE TOTAL AREA OF THE PROPERTY COVERED BY HILLSIDE PROTECTION IS 17.87 ACRES. THE TOTAL AREA OF DISTURBANCE WITHIN THE HILLSIDE PROTECTION AREA IS 17.87 ACRES.
 12. SEE THIS SHEET FOR LOCAL STREET TYPICAL SECTION.
 13. LOTS 143, 144, 185, AND 186 TO BE FILLED TO RAISE ELEVATION ABOVE THE 500-YEAR FLOOD ELEVATION.
 14. LOTS 88 THROUGH 215 TO BE BUILT AS PHASE 2 OF THE B&B BUILDERS SUBDIVISION.
 15. THE COMMON AREA BETWEEN LOT 44 OF PHASE 1 AND THE COMMON PROPERTY BETWEEN PHASES 1 AND 2 CAN BE REMOVED IF THE GROUP MAIL FACILITY IS RELOCATED.

ALTERNATIVE DESIGN STANDARD REQUESTS:

1. REDUCE THE REQUIRED CENTERLINE RADIUS FROM 250' TO 175' ON ROAD 'B' BETWEEN STATIONS 8+60.44 AND 11+31.97.
2. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD 'E' AT ITS INTERSECTION WITH ROAD 'B'.
3. INCREASE THE INTERSECTION GRADE FROM 1% TO 1.6% ALONG ROAD 'A' AT ITS INTERSECTION WITH ROAD 'B'.
4. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD 'A' AT ITS INTERSECTION WITH ROAD 'C'.
5. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD 'D' AT ITS INTERSECTION WITH ROAD 'C'.
6. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD 'D' AT ITS INTERSECTION WITH ROAD 'A'.



LOT DETAIL
SCALE: 1"=30'



TYPICAL SECTION - LOCAL STREET
N.T.S.

Certification of Concept Plan by Registered Engineer
I hereby certify that I am a registered engineer, licensed to practice engineering under the laws of the State of Tennessee. I further certify that the plan and accompanying drawings, documents and statements conform to the best of my knowledge, to all applicable provisions of the Knoxville-Knox County Subdivision Regulations except as has been itemized and described in a report filed with the Planning Commission.
Registered Engineer: Christopher A. Sharp, P.E.
Tennessee License No. 108984
Date: 11/28/2022

ALL WORKMANSHIP AND MATERIALS SHALL BE PER KNOX COUNTY STANDARD SPECIFICATIONS FOR SITE DEVELOPMENT PERMITS.

Revised: 11/28/2022

MPC FILE# 11-SA-22-C / 11-A-22-DP

REFERENCE:
DEED INST. 20200219005035



REVISION	DATE	DESCRIPTION	BY
3	11/28/22	GENERAL REVISIONS	CLM
2	11/17/22	GENERAL REVISIONS	CLM
1	10/21/22	PER PLANNING / RESPW COMMENTS	CAS

SHEET C-1

SITE PLAN - OVERALL

FAIRVIEW ROAD SUBDIVISION

SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

DIST. NO. 8	KNOX CO., TN.
CLT MAP 21	PARCEL 46.03
SCALE: 1"=150'	JUNE 25, 2022

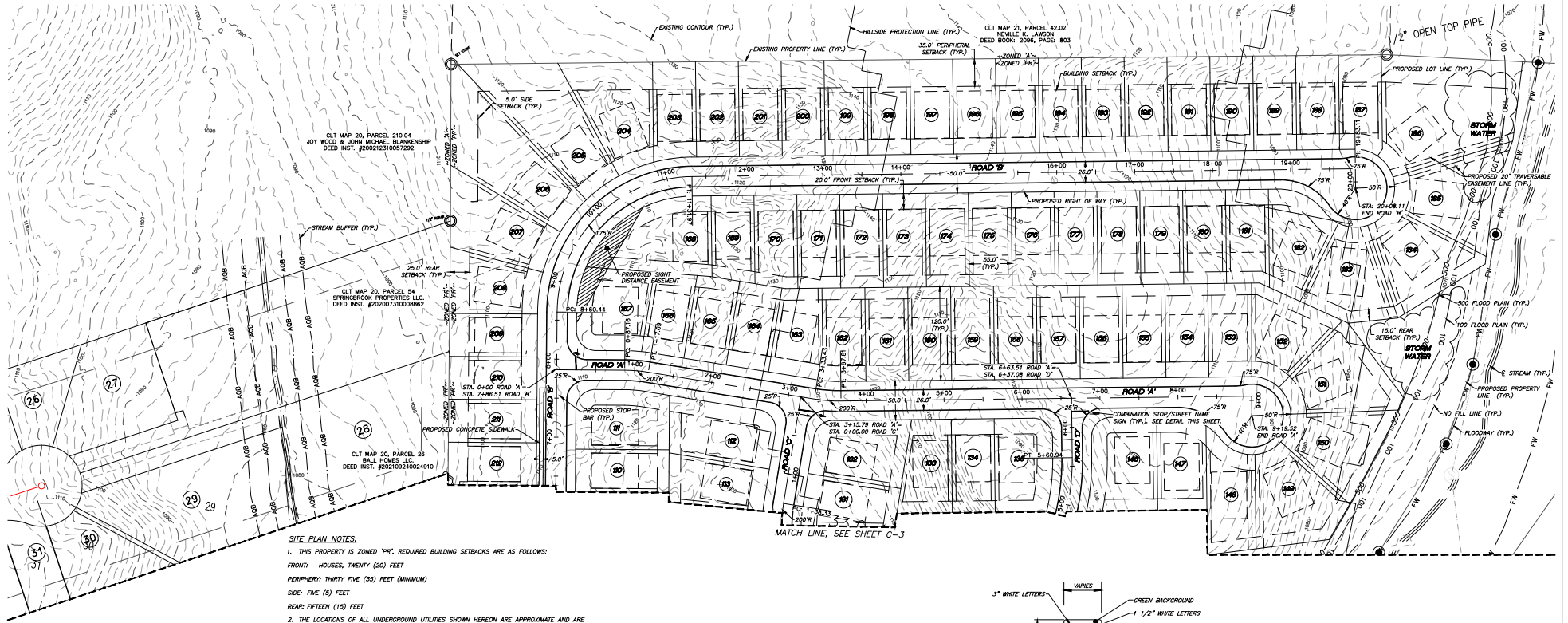
DEVELOPER: MESANA INVESTMENTS, LLC
P.O. BOX 11315
KNOXVILLE, TN 37939

URBAN ENGINEERING, INC.
10330 HARDIN VALLEY RD, #201
KNOXVILLE, TENNESSEE 37932
(865) 966-1924

DWG. NO. 22070200

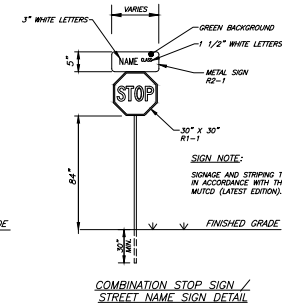
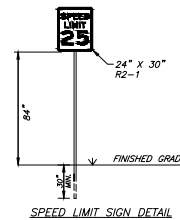
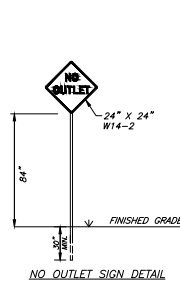
MPC FILE# 11-SA-22-C / 11-A-22-DP

Revised: 11/28/2022



SITE PLAN NOTES:

1. THIS PROPERTY IS ZONED "R". REQUIRED BUILDING SETBACKS ARE AS FOLLOWS:
FRONT: HOUSES, TWENTY (20) FEET
PERIPHERY: THIRTY FIVE (35) FEET (MINIMUM)
SIDE: FIVE (5) FEET
REAR: FIFTEEN (15) FEET
2. THE LOCATIONS OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER VALVES, ETC., AND CONSULTING INFORMATION FROM PLANS SUPPLIED BY VARIOUS UTILITY COMPANIES AND GOVERNMENT AGENCIES. THE CONTRACTORS SHALL NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES AND ALSO CALL TOWN ONE-CALL PRIOR TO ANY EXCAVATION WORK, TO VERIFY INFORMATION SHOWN AND DETERMINE THE LAYOUT OF THE IRRIGATION SYSTEM AND IF ADDITIONAL IMPROVEMENTS MAY EXIST.
3. HORIZONTAL COORDINATES ARE TENNESSEE STATE PLANE, VERTICAL DATUM IS NAVD83.
4. ALL WORK SHALL BE IN ACCORDANCE WITH KNOX COUNTY'S SPECIFICATIONS FOR SITE DEVELOPMENT.
5. THE CURRENT TOTAL AREA OF THE DEVELOPMENT IS 3.50 ACRES.
6. THE DEVELOPMENT PROPOSES 128 UNITS (2.88 UNITS PER ACRE).
7. PROPOSED OPEN SPACE (INCLUDING EASEMENTS, & AREAS WITHIN STORM WATER DETENTION AREAS) = 4.444 ACRES (13.53%).
8. THE PROPOSED LOTS SHALL HAVE VEHICULAR ACCESS TO INTERNAL ROADS ONLY.
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REFERENCE:
DEED INST. 202002190055036

ALL WORKMANSHIP AND MATERIALS SHALL BE PER
KNOX COUNTY STANDARD SPECIFICATIONS
FOR SITE DEVELOPMENT PERMITS.

REVISION	DATE	DESCRIPTION	BY
3	11/28/22	GENERAL REVISIONS	CLM
2	11/17/22	GENERAL REVISIONS	CLM
1	10/21/22	PER PLANNING / RESPW COMMENTS	CAS

SHEET C-2

FAIRVIEW ROAD SUBDIVISION

SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

DIST. NO. 8 KNOX CO., TN.
CLT MAP 21 PARCEL 46.03
SCALE: 1"=60' JUNE 25, 2022

DEVELOPER: MESANA INVESTMENTS, LLC
P.O. BOX 11315
KNOXVILLE, TN 37939

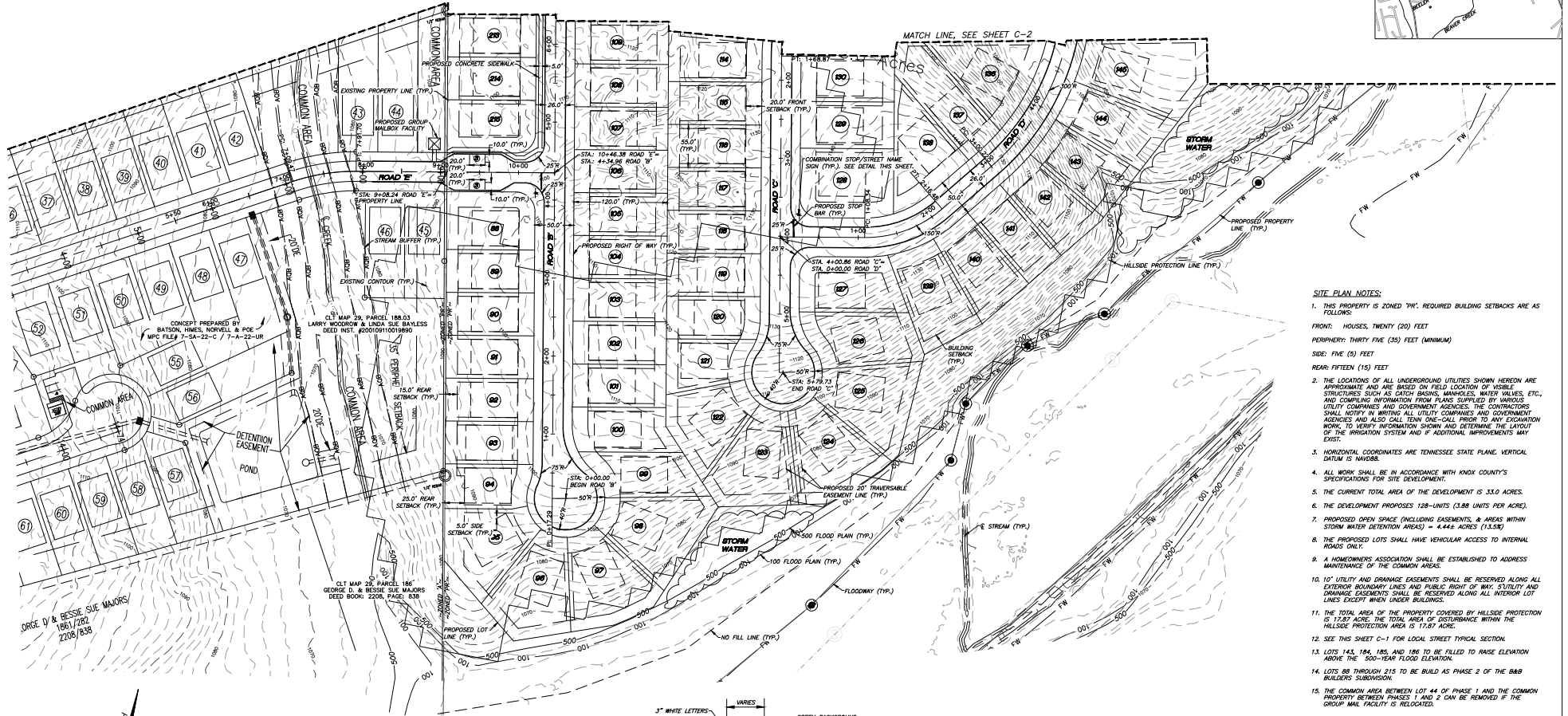
URBAN ENGINEERING, INC.
10330 HARDIN VALLEY RD, #201
KNOXVILLE, TENNESSEE 37932
(865) 966-1924

DWG: CLM CHK: CAS DWG. NO. 22070200

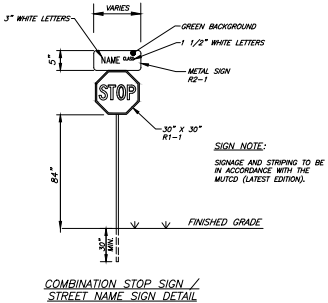
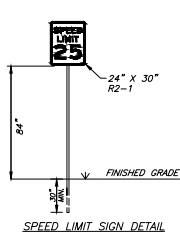
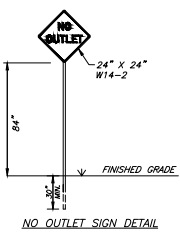
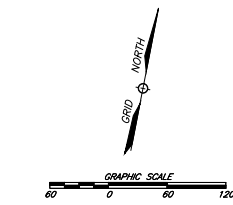


MPC FILE# 11-SA-22-C / 11-A-22-DP

Revised: 11/28/2022



- SITE PLAN NOTES:**
1. THIS PROPERTY IS ZONED 'TR'. REQUIRED BUILDING SETBACKS ARE AS FOLLOWS:
FRONT: HOUSES, TWENTY (20) FEET
PERIPHERY: THIRTY FIVE (35) FEET (MINIMUM)
SIDE: FIVE (5) FEET
REAR: FIFTEEN (15) FEET
 2. THE LOCATIONS OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER VALVES, ETC., AND COMPILED INFORMATION FROM PLANS SUPPLIED BY VARIOUS UTILITY COMPANIES AND GOVERNMENT AGENCIES. THE CONTRACTORS SHALL NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES AND ALSO CALL TOWN ONE-CALL PRIOR TO ANY EXCAVATION WORK, TO VERIFY INFORMATION SHOWN AND DETERMINE THE LAYOUT OF THE IRRIGATION SYSTEM AND IF ADDITIONAL IMPROVEMENTS MAY EXIST.
 3. HORIZONTAL COORDINATES ARE TENNESSEE STATE PLANE, VERTICAL DATUM IS NAVD83.
 4. ALL WORK SHALL BE IN ACCORDANCE WITH KNOX COUNTY'S SPECIFICATIONS FOR SITE DEVELOPMENT.
 5. THE CURRENT TOTAL AREA OF THE DEVELOPMENT IS 33.0 ACRES.
 6. THE DEVELOPMENT PROPOSES 128 UNITS (3.88 UNITS PER ACRE).
 7. PROPOSED OPEN SPACE (INCLUDING EASEMENTS, & AREAS WITHIN STORM WATER DETENTION AREAS) = 4.448 ACRES (13.5%).
 8. THE PROPOSED LOTS SHALL HAVE VEHICULAR ACCESS TO INTERNAL ROADS ONLY.
 9. A HOMEOWNERS ASSOCIATION SHALL BE ESTABLISHED TO ADDRESS MAINTENANCE OF THE COMMON AREAS.
 10. 10' UTILITY AND DRAINAGE EASEMENTS SHALL BE RESERVED ALONG ALL EXISTING BOUNDARY LINES AND PUBLIC RIGHT OF WAY. EXISTING UTILITY AND DRAINAGE EASEMENTS SHALL BE RESERVED ALONG ALL INTERIOR LOT LINES EXCEPT WHEN UNDER BUILDINGS.
 11. THE TOTAL AREA OF THE PROPERTY COVERED BY HILLSIDE PROTECTION IS 12.87 ACRES. THE TOTAL AREA OF DISTURBANCE WITHIN THE HILLSIDE PROTECTION AREA IS 17.87 ACRES.
 12. SEE THIS SHEET C-1 FOR LOCAL STREET TYPICAL SECTION.
 13. LOTS 143, 144, 145, AND 146 TO BE FILLED TO RAISE ELEVATION ABOVE THE 500-YEAR FLOOD ELEVATION.
 14. LOTS 88 THROUGH 215 TO BE BUILT AS PHASE 2 OF THE B&B BUILDERS SUBDIVISION.
 15. THE COMMON AREA BETWEEN LOT 44 OF PHASE 1 AND THE COMMON PROPERTY BETWEEN PHASES 1 AND 2 CAN BE REMOVED IF THE GROUP MAIL FACILITY IS RELOCATED.



REFERENCE:
DEED INSTR. 202002190050335

ALL WORKMANSHIP AND MATERIALS SHALL BE PER KNOX COUNTY STANDARD SPECIFICATIONS FOR SITE DEVELOPMENT PERMITS.

REVISION	DATE	DESCRIPTION	BY
3	11/28/22	GENERAL REVISIONS	CLM
2	11/17/22	GENERAL REVISIONS	CLM
1	10/21/22	PER PLANNING / KSEPM COMMENTS	CAS

SHEET C-3

SITE PLAN

FAIRVIEW ROAD SUBDIVISION

SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

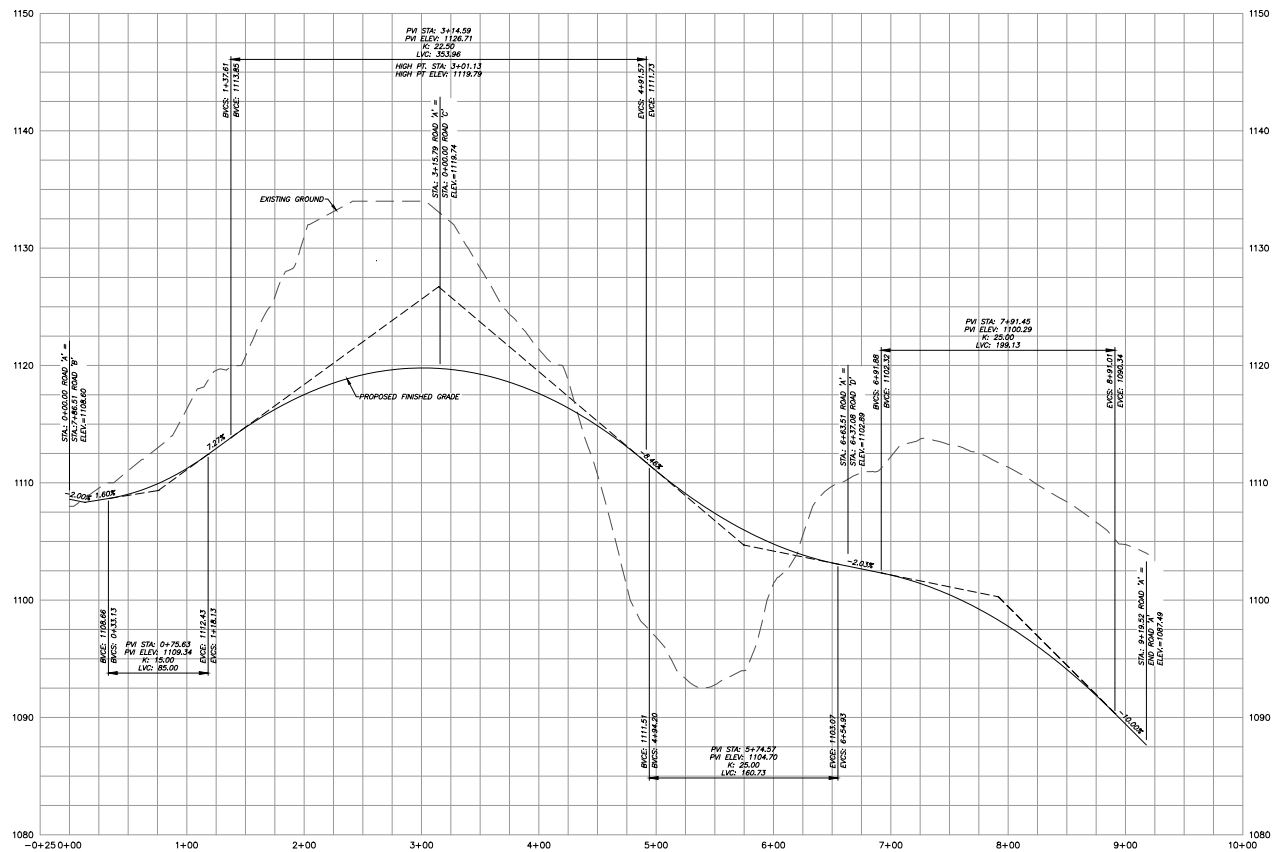
DIST. NO. 8 KNOX CO., TN.
CLT MAP 21 PARCEL 46.03
SCALE: 1"=60' JUNE 25, 2022

DEVELOPER: MESANA INVESTMENTS, LLC
P.O. BOX 11315
KNOXVILLE, TN 37939

URBAN ENGINEERING, INC.
10330 HARDIN VALLEY RD, #201
KNOXVILLE, TENNESSEE 37932
(865) 966-1924

DWG: CLM CHK: CAS DWG. NO. 22070200





PROFILE VIEW: ROAD 'A'
1"=50' (HORIZONTAL)
1"=5' (VERTICAL)

11-SA-22-C / 11-A-22-DP
 Revised: 11/28/2022

REVISION	DATE	DESCRIPTION	BY
3	11/28/22	GENERAL REVISIONS	CLM
2	11/17/22	GENERAL REVISIONS	CLM
1	10/21/22	PER PLANNING / KCSM COMMENTS	CAS

SHEET C-4

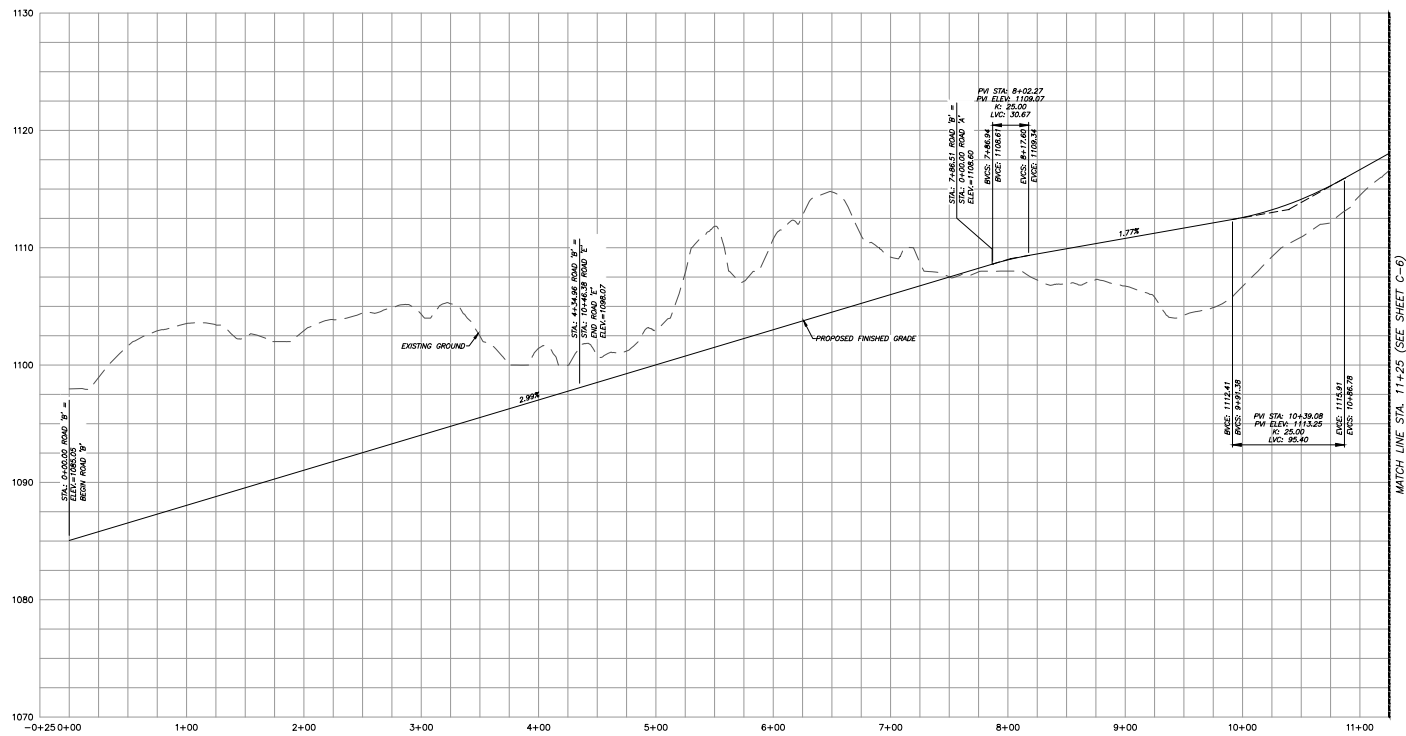
ROAD 'A' PROFILE
FAIRVIEW ROAD SUBDIVISION
 SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

DIST. NO. 8 KNOX CO., TN.
 CLT MAP 21 PARCEL 46.03
 SCALE: AS NOTED JUNE 25, 2022

DEVELOPER: MESANA INVESTMENTS, LLC
 P.O. BOX 11315
 KNOXVILLE, TN 37939

URBAN ENGINEERING, INC.
 10330 HARDIN VALLEY RD., #201
 KNOXVILLE, TENNESSEE 37932
 (865) 966-1924

DWG. NO. 2207020



PROFILE VIEW: ROAD 'B'
 1"=50' (HORIZONTAL)
 1"=5' (VERTICAL)

11-SA-22-C / 11-A-22-DP
 Revised: 11/28/2022

REVISION	DATE	DESCRIPTION	BY
3	11/28/22	GENERAL REVISIONS	CLM
2	11/17/22	GENERAL REVISIONS	CLM
1	10/21/22	PER PLANNING / KCEPM COMMENTS	CAS

SHEET C-5
 ROAD 'B' PROFILE
FAIRVIEW ROAD SUBDIVISION
 SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

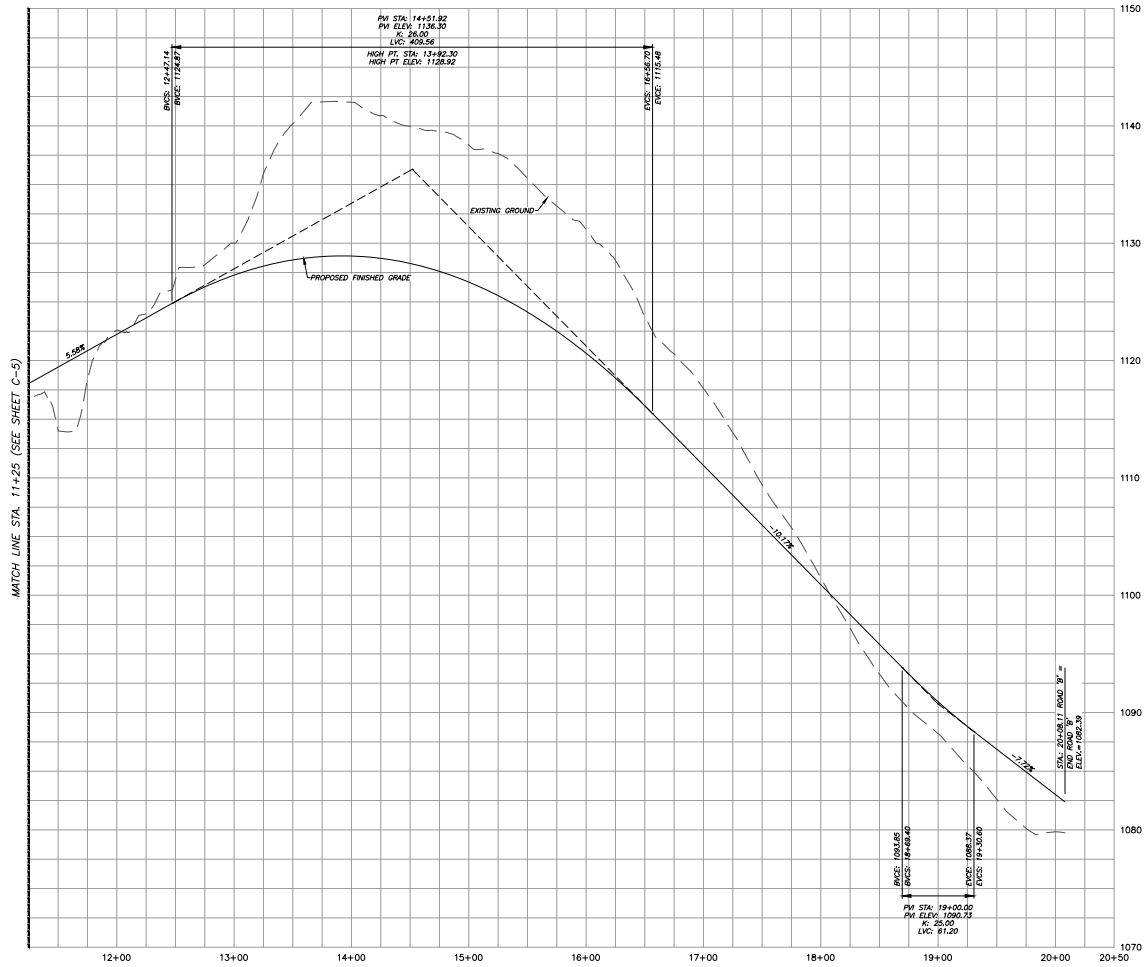
DIST. NO. 8
 CLT MAP 21
 SCALE: AS NOTED

KNOX CO., TN.
 PARCEL 46.03
 JUNE 25, 2022

DEVELOPER:
 MESANA INVESTMENTS, LLC
 P.O. BOX 11315
 KNOXVILLE, TN 37939

URBAN ENGINEERING, INC.
 10330 HARDIN VALLEY RD., #201
 KNOXVILLE, TENNESSEE 37932
 (865) 966-1924

DWN: CLM
 CHK: CAS
 DWG. NO. 2207020



PROFILE VIEW: ROAD 'B'
1"=50' (HORIZONTAL)
1"=5' (VERTICAL)

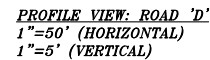
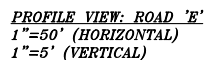
11-SA-22-C / 11-A-22-DP
Revised: 11/28/2022

REVISION	DATE	DESCRIPTION	BY
3	11/28/22	GENERAL REVISIONS	CLM
2	11/17/22	GENERAL REVISIONS	CLM
1	10/21/22	PER PLANNING / KCEP COMMENTS	CAS

SHEET C-6

ROAD 'B' PROFILE	
FAIRVIEW ROAD SUBDIVISION	
SITE ADDRESS: 0 FAIRVIEW ROAD (37721)	
DIST. NO. 8	KNOX CO., TN.
CLT MAP 21	PARCEL 46.03
SCALE: AS NOTED	JUNE 25, 2022
DEVELOPER: MESANA INVESTMENTS, LLC	
P.O. BOX 11315	
KNOXVILLE, TN 37939	

	URBAN ENGINEERING, INC.	
	10330 HARDIN VALLEY RD., #201 KNOXVILLE, TENNESSEE 37932 (865) 966-1924	
DWN: CLM	CHK: CAS	DWG. NO. 2207020



SHEET C-7

ROADS 'C', 'D' & 'E' PROFILES
FAIRVIEW ROAD SUBDIVISION
SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

DIST. NO. 8
CLT MAP 21
SCALE: AS N


KNOX CO., TN.
PARCEL 46.03
JUNE 25, 2022

DEVELOPER:

MESANA INVESTMENTS, LLC
P.O. BOX 11315
KNOXVILLE, TN 37939



URBAN ENGINEERING, INC.
10330 HARDIN VALLEY RD, #201
KNOXVILLE, TENNESSEE 37932
(865) 966-1924

3	11/28/22	GENERAL REVISIONS	CLM	 URBAN ENGINEERING, INC. 10330 HARDIN VALLEY RD, #201 KNOXVILLE, TENNESSEE 37932 (865) 966-1924
2	11/17/22	GENERAL REVISIONS	CLM	
1	10/21/22	PER PLANNING / KOSCEP COMMENTS	CAS	
REVISION	DATE	DESCRIPTION	BY	
DWG: CLM				CHG: CAS DWG: NO. 2207020

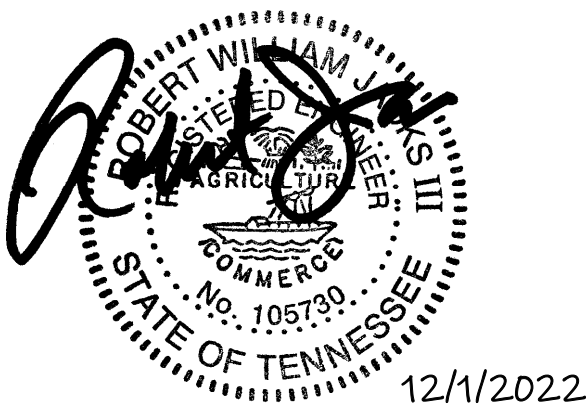


Transportation Impact Study Fairview Road Subdivision Knox County, Tennessee



Revised December 2022

Prepared for:
Eagle Bend Development
Attn: Scott Davis
P.O. Box 11315
Knoxville, TN 37939



11-SA-22-C / 11-A-22-DP
Revised: 12/1/2022

CONCLUSIONS & RECOMMENDATIONS

The following is an overview of recommendations to minimize the transportation impacts of the proposed Fairview Road Subdivision with the other adjacent subdivisions on the adjacent transportation system while attempting to achieve an acceptable traffic flow and safety level.



Beeler Road at Beeler Farms Lane: The projected 2027 level of service calculations for this intersection resulted in excellent LOS and low vehicle delays. The construction of left and right-turn lanes on Beeler Road for entering traffic into Beeler Farms Subdivision at Beeler Farms Lane is not warranted. The single exit lane on Beeler Farms Lane at Beeler Road will be sufficient for the residents of Beeler Farms Subdivision.



Beeler Road at Beeler Road Subdivision Entrance: The projected 2027 level of service calculations for this intersection resulted in excellent LOS and low vehicle delays. The construction of left and right-turn lanes on Beeler Road for entering traffic into the Beeler Road Subdivision is not warranted. The single exit lane on the Beeler Road Subdivision entrance at Beeler Road will be sufficient for the residents of the Beeler Road Subdivision and the Fairview Road Subdivision.

- 2a) It is recommended that a Stop Sign (R1-1) be installed, and a 24" white stop bar be applied to the Beeler Road Subdivision entrance approach at Beeler Road. This Stop Sign (R1-1) and stop bar will control the exiting motorists from both Beeler Road and Fairview Road Subdivisions at Beeler Road. The stop bar should be applied a minimum of 4 feet away from the edge of Beeler Road and placed at the desired stopping point that maximizes the sight distance.
- 2b) Sight distances at the Beeler Road Subdivision entrance approach must not be impacted by future landscaping, signage, or vegetation. A visual inspection determined that the intersection and stopping sight distances are available. Based on a posted speed limit of 25-mph on Beeler Road, the desirable intersection sight distance is 250 feet looking in each direction at each entrance. The required stopping sight distance is 155 feet to the north and the south at the Beeler Road Subdivision entrance location. The site designer must ensure that these sight distances are accounted for and provided in the design plans.

- 2c) Knox County requires specific minimum spacing between intersecting streets. Beeler Road is designated as a Major Collector at the entrance locations on Beeler Road, and the minimum intersection spacing is 300 feet.

The proposed spacing between the proposed entrance road for Beeler Road Subdivision and Beeler Farms Lane in Beeler Farms Subdivision will be approximately 500 feet from centerline to centerline, greater than the Knox County minimum.



East Emory Road at Beeler Road: The existing 2022 and projected 2027 level of service calculations for the intersection of East Emory Road at Beeler Road resulted in extremely high vehicle delays for the northbound approach of Beeler Road in the AM and PM peak hours.

- 3a) The previous Transportation Impact Study (TIS) for the adjacent proposed Beeler Road Subdivision recommended an eastbound right-turn lane with a storage length of 75 feet and a taper length of 75 feet on East Emory Road at Beeler Road. This eastbound right-turn lane is expected to be constructed as an interim remediation before the TDOT project widens East Emory Road from 2 to 5 lanes. When East Emory Road is reconstructed, this eastbound right-turn lane can be absorbed into one of the new thru lanes, and a separate right-turn lane will not be required when the TDOT project is completed in 2030. Providing an eastbound right-turn lane prior to the reconstruction will slightly reduce the vehicle queue and delay for northbound motorists on Beeler Road attempting to turn left and right onto East Emory Road.
- 3b) As determined in this study and the TIS for the Beeler Road Subdivision, a westbound left-turn lane on East Emory Road at Beeler Road was warranted based on the existing and projected traffic volumes. However, it was determined in the previous TIS that the construction of a westbound left-turn lane would not be critically needed at this time. Any construction to install a “temporary” westbound left-turn lane on East Emory Road will be shortly replaced by the TDOT widening project. In the interim, a “No Passing on Shoulder” (R4-18) sign was recommended in the previous study to be installed on East Emory Road. This recommendation was offered to address the illegal movements committed by some motorists occasionally using the shoulder to pass stopped westbound left-turning vehicles on East Emory Road at Beeler Road.

All the calculated high vehicle delays at this intersection are projected to only occur for the northbound motorists on Beeler Road attempting to turn left and right on East Emory Road. Providing a temporary westbound left-turn lane at this time would only primarily benefit westbound thru vehicles on East Emory Road since they would not be impeded by stopped vehicles attempting to turn left onto Beeler Road. Westbound left turns from East Emory Road onto Beeler Road were calculated to operate with low vehicle delays in the existing and projected 2027 conditions. Some safety benefits would be provided if a left-turn lane on East Emory Road were provided at this time, but it would not provide significant vehicle delay reductions for this movement since it is


directly correlated to the number of opposing vehicles and is calculated with good LOS and low vehicle delays.

- 3c) The northbound approach of Beeler Road in 2027 was projected to operate with extremely high delays for the left and right-turning motorists. In addition to the recommended eastbound right-turn lane on East Emory Road from the previous TIS, it is recommended that a northbound right-turn lane with 100 feet of storage on Beeler Road be constructed. The existing and projected right turns at the northbound approach of Beeler Road at East Emory Road are much higher than left turns. Adding an exclusive right-turn lane on this approach would reduce delays for most northbound motorists. Several right-turning motorists on Beeler Road were observed during the traffic count using the shoulder to bypass vehicles waiting to turn left onto East Emory Road and avoid the delay. If not constructed, it is anticipated that more right-turning motorists will be tempted to use the shoulder to avoid excessive delays and queues. The recommended eastbound and northbound right-turn lanes at this intersection should be coordinated in design and construction to reduce costs and construction time. These lanes should be constructed once the Beeler Road and Fairview Road Subdivisions commence construction to provide additional road capacity and moderate vehicle delays and queues until the TDOT widening project is completed. The northbound right-turn lane on Beeler Road should be marked with a white turn arrow and lane markings, as shown in TDOT Standard Drawing T-M-4.

Separate left and right lanes at unsignalized intersections operating under stop conditions can be an issue due to motorists' potential to compete for sight distance. However, with the existing horizontal alignment on East Emory Road, it is anticipated that a northbound right-turn lane on Beeler Road could be constructed to allow left and right-turning motorists to see oncoming vehicles on East Emory Road in both directions freely without being obstructed by other vehicles.

Adding a northbound right-turn lane on Beeler Road would reduce the overall intersection delay and the excessive queue lengths on the northbound approach by spreading the vehicles into two lanes. The LOS calculation results of adding a northbound right-turn lane on Beeler Road with the previously recommended eastbound right-turn lane on East Emory Road in the projected 2027 conditions are shown in Table 10. The worksheets for these results are provided in Appendix F.

TABLE 10
2027 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS (WITH THE PROJECT)
INCLUDING RECOMMENDED EASTBOUND AND NORTHBOUND RIGHT-TURN LANES

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS	DELAY (seconds)	V/C	LOS	DELAY (seconds)	V/C
East Emory Road (EB & WB) at Beeler Road (NB)	 Unsignalized	Northbound Left	F	108.8	0.769	F	611.8	1.912
		Northbound Right	C	16.0	0.389	C	19.5	0.354
		Westbound Left/Thru	A	8.9	0.074	B	11.2	0.217

Note: All analyses were calculated in Synchro 11 software and reported using HCM 2010 intersection methodology

^a Level of Service

^b Average Delay (sec/vehicle)

^c Volume-to-Capacity Ratio

Since the projected northbound left-turn lane is computed to remain at LOS F even with the addition of an eastbound and northbound right-turn lane, the projected vehicle queues were calculated. An additional software program was used to calculate the projected 2027 AM and PM peak hour vehicle queues at the studied intersection with the addition of the recommended eastbound and northbound right-turn lanes. The previously mentioned Synchro Traffic Software includes SimTraffic. The Synchro portion of the software performs the macroscopic calculations for intersections, and SimTraffic performs micro-simulation and animation of vehicular traffic. SimTraffic (Version 11) software was utilized to estimate the projected vehicle queues.

The 95th percentile vehicle queue is the recognized measurement in the traffic engineering profession as the design standard used when considering vehicle queue lengths. A 95th percentile vehicle queue length means 95% certainty that the vehicle queue will not extend beyond that point. The calculated vehicle queue results were based on averaging the outcome obtained during ten traffic simulations. The calculated 95th percentile vehicle queue lengths at the intersection for the 2027 projected conditions with an eastbound and northbound right-turn lane are shown in Table 11. The vehicle queue worksheet results from the SimTraffic software are in Appendix J. As shown in Table 11, the longest vehicle queues will occur in the PM peak hour. In particular, the longest northbound left-turn queue is calculated to be 145 feet. Thus, even though the northbound left-turn lane will experience high vehicle delays, as shown in Table 10, the calculated 95th percentile queue is projected only to be just under six passenger cars, assuming a car length and spacing of 25 feet.

TABLE 11
TURN LANE STORAGE & VEHICLE QUEUE SUMMARY -
2027 PROJECTED TRAFFIC CONDITIONS (WITH THE PROJECT)
INCLUDING RECOMMENDED EASTBOUND AND NORTHBOUND RIGHT-TURN LANES

INTERSECTION	APPROACH/ MOVEMENT	PROPOSED STORAGE (ft)	ADEQUATE LENGTH?	95 th PERCENTILE QUEUE LENGTH (ft)	
				AM PEAK HOUR	PM PEAK HOUR
East Emory Road (EB & WB) at Beeler Road (NB)	Eastbound Right	75	Yes	5	20
	Westbound Left/Thru	n/a	n/a	105	216
	Northbound Left	n/a	n/a	72	145
	Northbound Right	100	Yes	79	99

Note: 95th percentile queues were calculated in SimTraffic 11 software

- 3d) This report has determined that the documented need for separate left and right-turn lanes on East Emory Road at Beeler Road will be satisfied by the capacity provided by the future TDOT widening project in 2030. TDOT proposes widening East Emory Road from 2 to 5 lanes. This project will include two thru lanes in each direction and a center turn lane. East Emory Road will be widened to provide a center turn lane for westbound left-turns at Beeler Road, and the two thru lanes (in each direction) will eliminate the need for a separate eastbound right-turn lane at Beeler Road.


The thru volumes on East Emory Road shown in **Figure 8** were increased by an annual growth factor of 1% from 2027 to 2030 to provide an analysis of the intersection in 2030 with the TDOT road widening project. These volumes are shown in **Figure 9**.

The eastbound right-turn volume thresholds were examined in the projected 2030 conditions to provide evidence that the need for a separate eastbound right-turn lane will be eliminated with a 5-lane roadway section. This examination included the AM and PM peak hour projected 2030 volumes on East Emory Road with five lanes, as shown in **Figure 9**. The worksheets from this examination are shown in **Appendix I** and show that a separate eastbound right-turn lane at the intersection would not be required with a 5-lane roadway section on East Emory Road with the projected 2030 traffic volumes.

The capacity and vehicle queues calculations were re-analyzed with five lanes on East Emory Road and the recommended northbound right-turn lane on Beeler Road, combined with the projected 2030 traffic volumes. The results of these calculations are

shown in Tables 12 and 13. The worksheets for these results are provided in Appendix F and J.

TABLE 12
2030 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS (WITH THE PROJECT)
WITH TDOT WIDENING PROJECT AND NORTHBOUND RIGHT-TURN LANE ON BEELER ROAD

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS	DELAY (seconds)	V/C	LOS	DELAY (seconds)	V/C
East Emory Road (EB & WB) at Beeler Road (NB)	 Unsignalized	Northbound Left	C	22.7	0.283	E	48.1	0.537
		Northbound Right	B	12.6	0.304	B	14.7	0.268
		Westbound Left	A	8.9	0.075	B	11.4	0.222

Note: All analyses were calculated in Synchro 11 software and reported using HCM 2010 intersection methodology

^a Level of Service

^b Average Delay (sec/vehicle)

^c Volume-to-Capacity Ratio

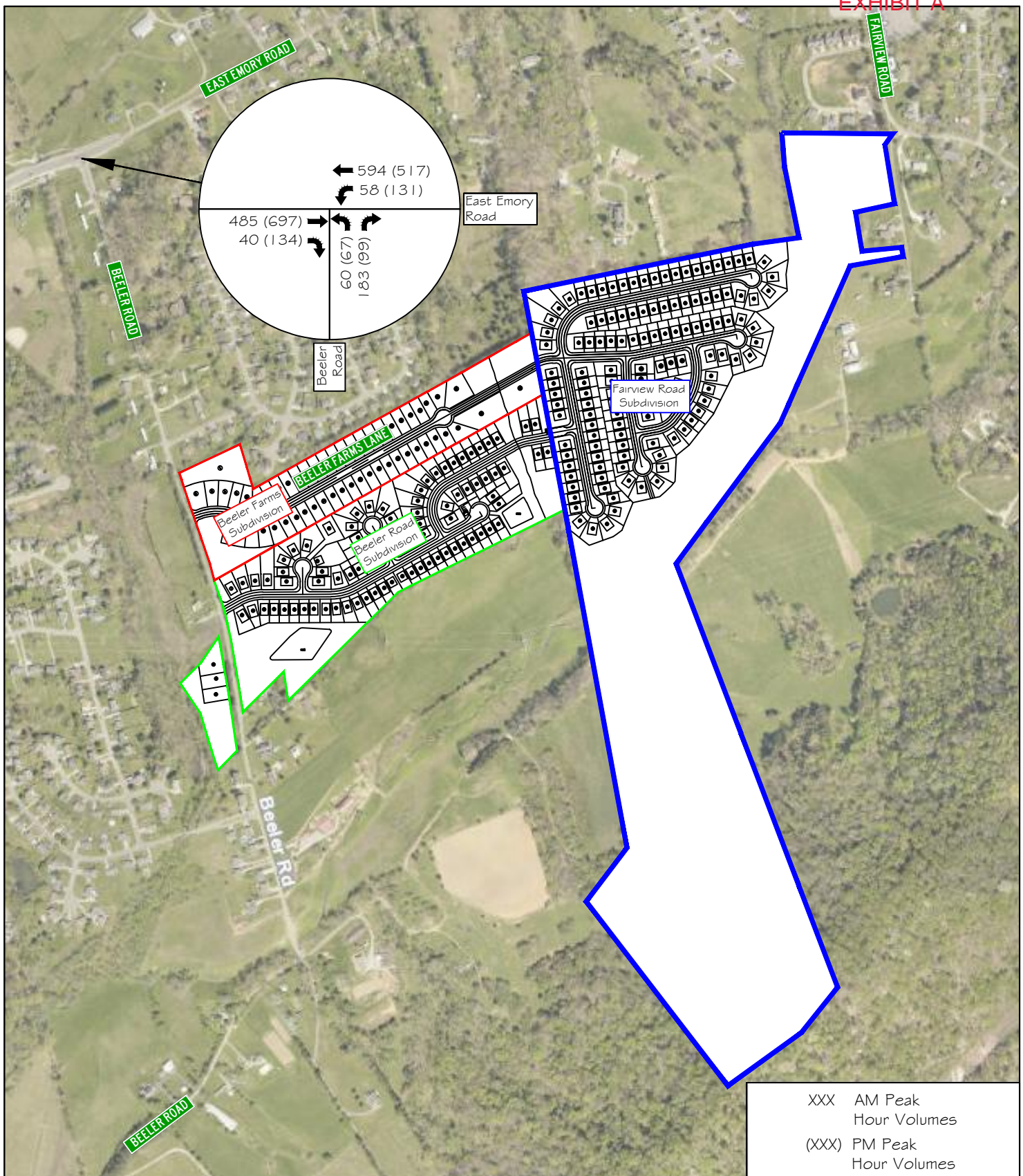
As shown in Table 12, the TDOT road widening project in 2030, coupled with the recommended northbound right-turn lane on Beeler Road, will provide the necessary road capacity to mitigate the excessive vehicle delays on the northbound approach at the intersection of East Emory Road at Beeler Road.

As shown in Table 13, the recommended northbound right-turn lane with 100 feet of storage will be adequate in the projected 2030 conditions since the longest 95th percentile vehicle queue is calculated to be 76 feet in the projected AM peak hour.

TABLE 13
TURN LANE STORAGE & VEHICLE QUEUE SUMMARY -
2030 PROJECTED TRAFFIC CONDITIONS (WITH THE PROJECT)
WITH TDOT WIDENING PROJECT AND NORTHBOUND RIGHT-TURN LANE ON BEELER ROAD

INTERSECTION	APPROACH/ MOVEMENT	PROPOSED STORAGE (ft)	ADEQUATE LENGTH?	95 th PERCENTILE QUEUE LENGTH (ft)	
				AM PEAK HOUR	PM PEAK HOUR
East Emory Road (EB & WB) at Beeler Road (NB)	Eastbound Thru/Right	n/a	n/a	5	17
	Westbound Left	n/a	n/a	45	71
	Northbound Left	n/a	n/a	66	100
	Northbound Right	100	Yes	66	76

Note: 95th percentile queues were calculated in SimTraffic 11 software



11812 Black Road
Knoxville, TN 37932
Phone: (865) 556-0042
Email: ajaxengineering@gmail.com

NOT TO SCALE



FIGURE 9

Fairview Road Subdivision

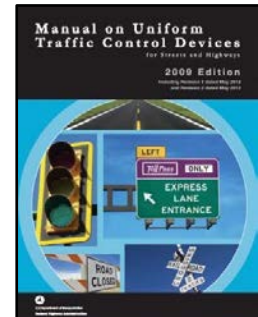
2030 Peak Hour Traffic Volumes -
PROJECTED CONDITIONS
(WITH THE PROJECT)

- 3e) As a further investigation into potential remediation for this intersection in future conditions, an evaluation was conducted with respect to traffic signal warrants.

Methodology:

The Manual on Uniform Traffic Control Devices – 2009 Edition

(MUTCD) presents nine different warrants that the traffic engineering profession has developed to determine whether a traffic signal is warranted. These warrants cover a broad range of minimum elements required to indicate whether a traffic signal is justified for any particular location. These elements include traffic volumes, pedestrian volumes, crash history, and other factors. The



MUTCD explicitly states that a traffic control signal should not be installed unless one or more of the Manual's signal warrants are met. However, the satisfaction of a warrant does not entirely in itself justify the need for a traffic signal. Sometimes further engineering studies and judgments must be applied before justifying the need for a traffic signal installation. These additional studies are significant in ensuring that a traffic signal's installation will not degrade safety and efficiency.

The MUTCD defines nine different warrants, two of which are potentially applicable for this intersection at this time and are explained below:



Warrant #1, Eight-Hour Vehicular Volume:

Warrant #1 is comprised of 2 conditions – A and B. The Minimum Vehicular Volume, Condition A, is intended for applications where the volume of intersecting traffic is the principal reason for consideration of signal installation. The Interruption of Continuous Traffic, Condition B, is intended for use at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.



Warrant #2, Four-Hour Vehicular Volume:

The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Even though nine warrants are offered to justify a traffic signal, according to the TDOT Traffic Signal Manual, the agency gives precedence to Warrant #1 (Eight Hour Vehicular Volume) and Warrant #7 (Crash Experience). Even though Warrant #2 is not a primary warrant used by TDOT, it is included in this study. Furthermore, TDOT does not allow installing a traffic signal on a state route based on speculative developments or unrealized traffic volumes.

The intersection of East Emory Road at Beeler Road was evaluated in the projected 2030 conditions with the volumes shown in **Figure 9** to determine whether a traffic signal could be justified based on the MUTCD Warrants listed above. Beeler Road was used as the minor side street for the warrant analysis, and East Emory Road was the major street. Warrant #7 was not analyzed at this intersection for this study. Warrant #7 was not included because one of the primary criteria for an intersection to meet the warrant is that an “Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency...”; therefore, this warrant was not included in this study.

A spreadsheet was developed and used to calculate the 2030 traffic volumes generated by the developments being added to the intersection during the highest 8 hours of traffic based on the assumed trip distribution and assignment. The volumes in the spreadsheet include the existing tabulated thru volumes on East Emory Road increased by 1% for eight years to the year 2030, and the generated traffic from the houses in Beeler Farms Subdivision, Beeler Road Subdivision, and the Fairview Road Subdivision. This spreadsheet is shown in **Appendix K**.

Traffic signal warrants for this intersection were analyzed with the additional lanes that will be provided on East Emory Road by the TDOT widening project. Based on the projected 2030 traffic volumes with the 5-lane section on East Emory Road, the results of this evaluation determined that Warrant #1 would not be fully met but would meet Warrant #2. **Appendix K** includes the traffic signal warrant spreadsheet for the projected traffic volumes in 2030, with East Emory Road having 5-lanes provided by the TDOT widening project.




In conclusion, since TDOT does not allow for a traffic signal to be constructed on speculative or projected volumes, it is recommended that traffic counts be re-conducted in the future once the subdivisions on Beeler Road are constructed and fully occupied,

and the road widening of East Emory Road is under design. Updated traffic counts will allow a re-examination of the Traffic Signal Warrants and establish a timeframe if this intersection could or should be signalized during the TDOT road widening project of East Emory Road. Traffic crash data should also be included in the examination.

Higher growth than anticipated in this study could occur and increase traffic volumes large enough to meet Warrant #1 fully.

In summary, and to provide a comparison of all the discussed options, Table 14 presents the calculated LOS and 95th percentile vehicle queues at the intersection of East Emory Road at Beeler Road for three scenarios. The scenarios in the table include the 2027 projected conditions with the project, the 2027 projected conditions with the project and an eastbound and northbound right-turn lane, and the 2030 projected conditions with the project with a northbound right-turn lane and the TDOT road widening with five lanes. As seen in the table, the vehicle delays and queues are reduced in each scenario when additional road capacity is provided.

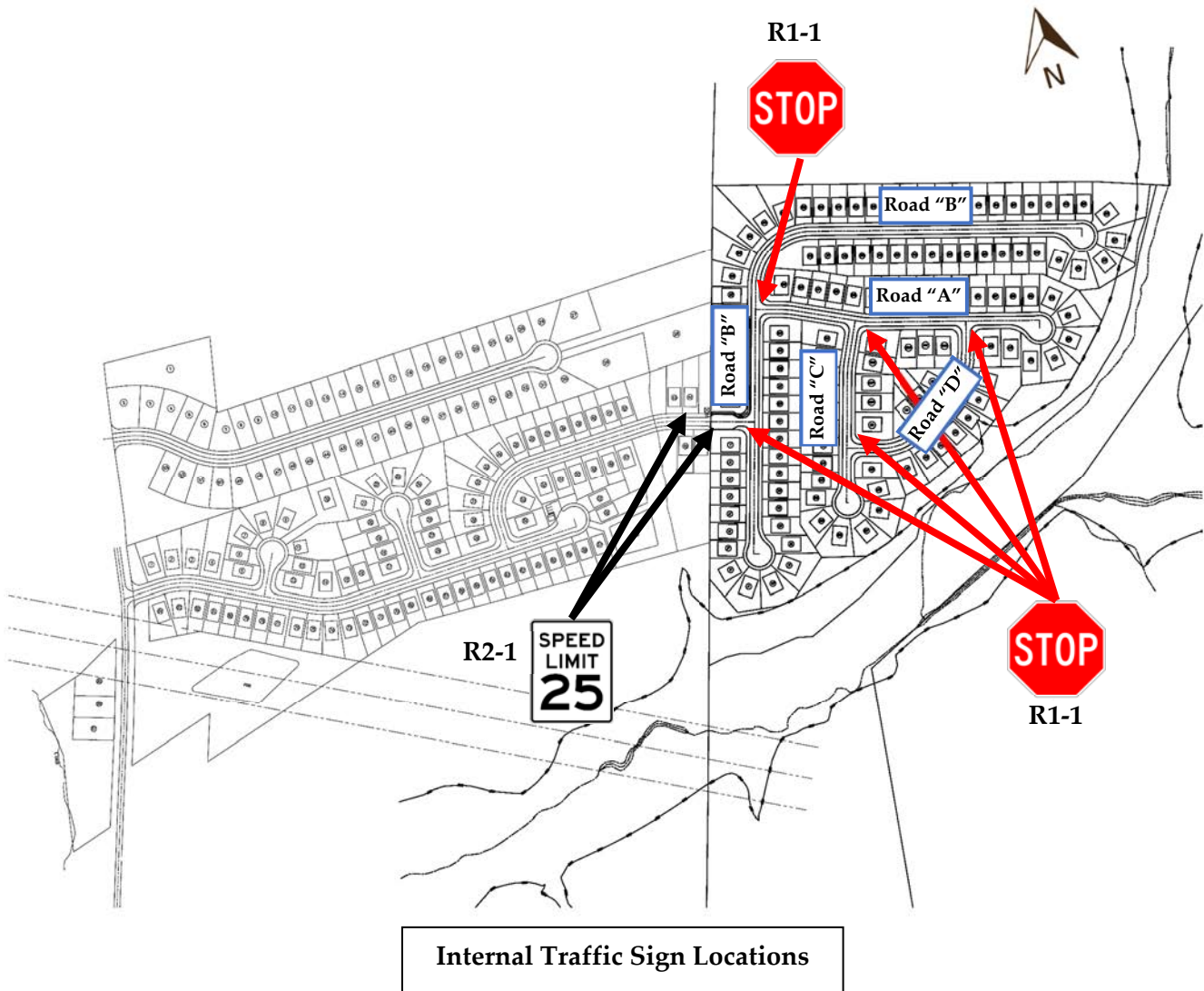
TABLE 14
INTERSECTION CAPACITY AND VEHICLE QUEUE ANALYSIS RESULTS -
EAST EMORY ROAD AT BEELER ROAD

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS	DELAY (seconds)	QUEUE LENGTH (ft)	LOS	DELAY (seconds)	QUEUE LENGTH (ft)
2027 Projected Conditions (With the Project)	 Unsignalized	Northbound Left/Right	F	172.0	156	F	820.2	298
		Westbound Left/Thru	A	8.9	114	B	11.2	242
2027 Projected Conditions (With the Project) with EB and NB Right- Turn Lanes	 Unsignalized	Northbound Left	F	108.8	72	F	611.8	145
		Northbound Right	C	16.0	79	C	19.5	99
		Westbound Left/Thru	A	8.9	105	B	11.2	216
2030 Projected Conditions (With the Project) with 5-Lane TDOT Widening and NB Right-Turn Lane	 Unsignalized	Northbound Left	C	22.7	66	E	48.1	100
		Northbound Right	B	12.6	66	B	14.7	76
		Westbound Left	A	8.9	45	B	11.4	71



Fairview Road Subdivision Internal Roads: The layout plan shows one entrance via Beeler Road Subdivision, as shown in **Figure 3** and below.

- 4a) Two 25-mph Speed Limit (R2-1) signs are recommended to be installed on the connecting road between Beeler Road and Fairview Road Subdivisions. One sign should be installed for eastbound travel into Fairview Road Subdivision and one for westbound travel into the Beeler Road Subdivision. This recommendation will provide a reinforcement notification of the speed limit within the subdivisions.
- 4b) Stop Signs (R1-1) with 24" white stop bars and other traffic signage are recommended to be installed at the internal locations in Fairview Road Subdivision, as shown below:



- 4c) Sight distance at the new internal subdivision road intersections must not be impacted by signage, parked cars, or future landscaping. With a proposed speed limit of 25-mph in the development, the internal intersection sight distance is 250 feet. The required stopping sight distance is 155 feet for a level road grade. The site designer should ensure that internal sight distance lengths are met and account for different proposed road grades.
- 4d) The internal roads of “A” and “B” in the Fairview Road Subdivision have relatively long and straight road segments. Straight road segments encourage motorists to travel at higher speeds, especially with steep grades. It is recommended that the site designer consider traffic calming measures on these internal roads. Roads “C” and “D” are relatively short and would not necessarily require traffic calming measures.

Speed humps are a prevalent traffic calming measure to install in residential areas to reduce vehicle speeds due to their relatively low cost. However, speed humps are not recommended on roads with grades greater than 8%.

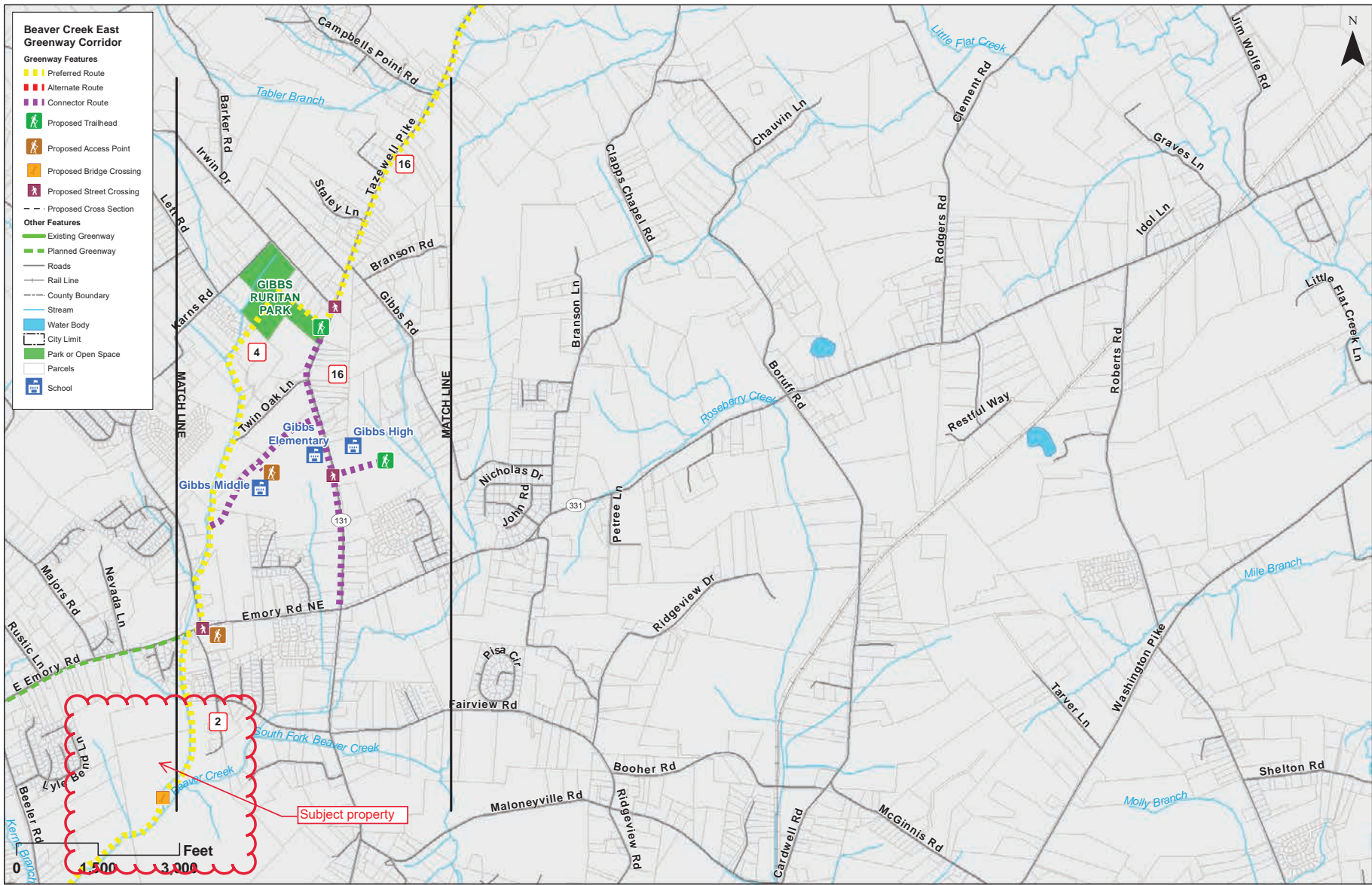
If implemented, it is recommended that the site designer consider speed humps and chokers. Chokers are recommended when the internal road grades are greater than 8%. A choker is used to discourage motorists from speeding and is appropriate in residential settings. A choker is created by narrowing the road using curb extensions or can be created by installing a planting strip on an island at the road edge. Any road design with chokers must consider driveway placement, stormwater, and sight distance. Details of any traffic calming should be coordinated with Knox County Engineering in the detailed design phase.

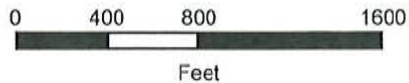
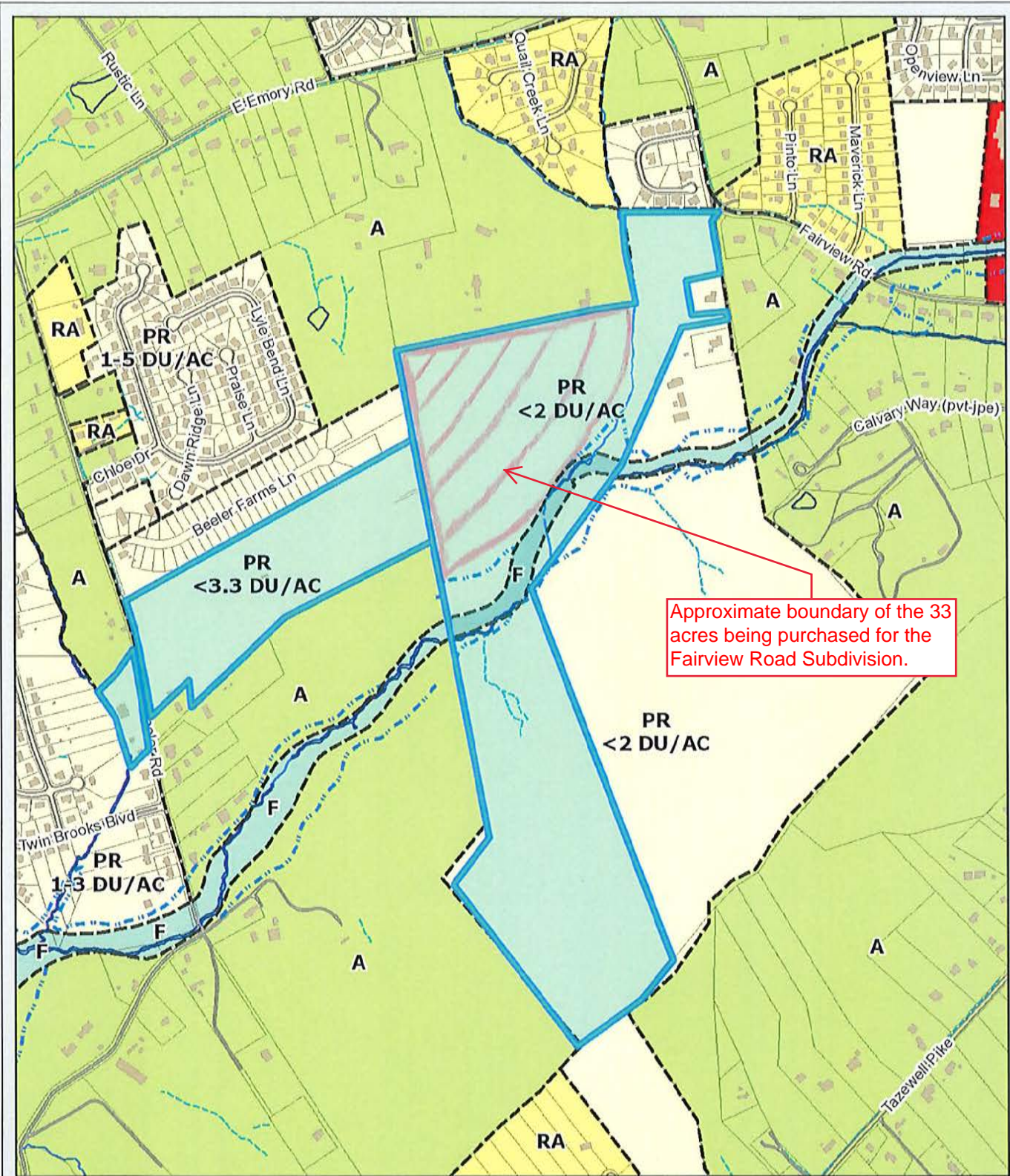
- 4e) All drainage grates and covers for the residential development must be pedestrian and bicycle safe.
- 4f) An internal sidewalk is proposed for a short distance along the connector road between Beeler Road Subdivision and Fairview Road Subdivision and up to Road “A” in Fairview Road Subdivision with a total length of 420 feet. Sidewalks should have appropriate ADA-compliant ramps at intersection corners, and the internal sidewalks are recommended to be 5 feet minimum in width to meet Knox County regulations.
- 4g) Knox County completed a greenway study in 2020. They recommended Beaver Creek

as a preferred route for a new greenway connecting the area around Interstate 75 in Powell to the Knox County/Union County line. With Beaver Creek adjacent to the development site and on the development property to the south, the developer should discuss with Knox County if this potential greenway path is feasible to implement while the property is being developed.

- 4h) For residential subdivisions with a single access point and more than 150 houses, Knox County has a long-standing unwritten design policy requiring a second entrance or a boulevard road typical section at the entrance. This policy is to ensure access to the subdivision during potential emergencies. The combination of houses in Beeler Road and Fairview Road Subdivisions with 212 houses (128 in Fairview Subdivision and 87 in Beeler Road Subdivision minus three houses on Beeler Road constructed for Beeler Road Subdivision) would exceed this threshold. Thus, it is recommended that a boulevard typical section be constructed in Beeler Road Subdivision up to the first intersecting street in the subdivision. The first intersecting street will be Road "B" (as labeled in the Beeler Road Subdivision concept plan), a cul-de-sac 450 feet from Beeler Road. It is further recommended that an opening be provided in the median of the boulevard typical section midway to allow a vehicle to turn around. Providing a boulevard typical section at the entrance at Beeler Road will satisfy this Knox County policy emergency access requirement.
- 4i) All road grade and intersection elements should be designed to AASHTO, TDOT, and Knox County specifications and guidelines to ensure proper operation.

Figure 4-3. Beaver Creek East: East of Beeler Road to Campbells Point Road





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Development Request

DEVELOPMENT

- ☒ Development Plan
☐ Planned Development
☐ Use on Review / Special Use
☐ Hillside Protection COA

SUBDIVISION

- ☒ Concept Plan
☐ Final Plat

ZONING

- ☐ Plan Amendment
☐ Sector Plan
☐ One Year Plan
☐ Rezoning

Mesana Investments, LLC

Applicant Name

Affiliation

9/20/2022

Date Filed

12/8/2022

Meeting Date (if applicable)

11-SA-22-C / 11-A-22-DP

File Number(s)

(Revised 11/28/2022)

CORRESPONDENCE

All correspondence related to this application should be directed to the approved contact listed below.

Chris Sharp, P.E. Urban Engineering, Inc.

Name / Company

10330 Hardin Valley Rd. Pk. Knoxville TN 37932

Address

865-966-1924 / chris@urban-eng.com

Phone / Email

CURRENT PROPERTY INFO

Michael Fielden

Owner Name (if different)

7335 Farview Road Corryton TN 37721

Owner Address

B&B Builders Inc, PO Box 71233, Knoxville, TN 37923

Owner Phone / Email

0 FAIRVIEW RD / 0 Beeler Rd

Property Address

21 04603 (part of) & 18803

Parcel ID

Part of Parcel (Y/N)?

95.83 acres (parcel 021 04603 only)

Tract Size

Hallsdale Powell Utility District

Sewer Provider

Northeast Knox Utility District

Water Provider

No

Septic (Y/N)

STAFF USE ONLY

West side of Fairview Road, east side of Beeler Road

General Location

☐ City **Commission District 8** **PR (Planned Residential), F (Floodway)**

☒ County District

Zoning District

Agriculture/Forestry/Vacant Land

Existing Land Use

Northeast County

Planning Sector

LDR (Low Density Residential), HP (Hillside Protection), S

Sector Plan Land Use Classification

Planned Growth Area

Growth Policy Plan Designation

DEVELOPMENT REQUEST

<input checked="" type="checkbox"/> Development Plan	<input type="checkbox"/> Planned Development	<input type="checkbox"/> Use on Review / Special Use	Related City Permit Number(s)
<input type="checkbox"/> Hillside Protection COA	<input type="checkbox"/> Residential	<input type="checkbox"/> Non-residential	
Home Occupation (specify) _____			
Other (specify) Detached residential subdivision			

SUBDIVISION REQUEST

Fairview Road Subdivision	Related Rezoning File Number
Proposed Subdivision Name	
Unit / Phase Number	128
Additional Information	
<input checked="" type="checkbox"/> Attachments / Additional Requirements	

ZONING REQUEST

<input type="checkbox"/> Zoning Change	Pending Plat File Number
Proposed Zoning	
<input type="checkbox"/> Plan Amendment	Proposed Plan Designation(s)
Proposed Density (units/acre) Previous Zoning Requests	
Additional Information	

STAFF USE ONLY

PLAT TYPE	Fee 1	Total
<input type="checkbox"/> Staff Review	\$1,600.00	
<input type="checkbox"/> Planning Commission	Fee 2	
ATTACHMENTS	Fee 3	
<input type="checkbox"/> Property Owners / Option Holders		
<input checked="" type="checkbox"/> Variance Request		
ADDITIONAL REQUIREMENTS		
<input type="checkbox"/> COA Checklist (Hillside Protection)		
<input type="checkbox"/> Design Plan Certification (Final Plat)		
<input checked="" type="checkbox"/> Site Plan (Development Request)		
<input checked="" type="checkbox"/> Traffic Impact Study		
<input checked="" type="checkbox"/> Use on Review / Special Use (Concept Plan)		

AUTHORIZATION

Mesana Investments, LLC	9/20/2022
Applicant Signature	Date
Please Print	
Phone / Email	
Michael Fielden	9/20/2022
Property Owner Signature	Date
Please Print	

I declare under penalty of perjury the foregoing (i.e., he/she/they is/are the owner of the property and that the application and all associated materials are being submitted with his/her/their consent) is true and correct.



Development Request

DEVELOPMENT

- ☒ Development Plan
☐ Planned Development
☐ Use on Review / Special Use
☐ Hillside Protection COA

SUBDIVISION

- ☒ Concept Plan
☐ Final Plat

ZONING

- ☐ Plan Amendment
☐ SP ☐ OYP
☐ Rezoning

Mesana Investments, LLC

Option Holder

Applicant Name

Affiliation

~~July 25, 2022~~ 9/13/2022

~~September 8, 2022~~ 11/10/2022

Date Filed

Meeting Date (if applicable)

File Number(s)

11-SA-22-C
11-A-22-DP
(Revised 11/28/2022)

CORRESPONDENCE

All correspondence related to this application should be directed to the approved contact listed below.

- ☐ Applicant ☐ Property Owner ☐ Option Holder ☐ Project Surveyor ☒ Engineer ☐ Architect/Landscape Architect

Chris Sharp, P.E.

Urban Engineering, Inc.

Name

Company

10330 Hardin Valley Road, Suite 201

Knoxville

TN

37932

Address

City

State

ZIP

(865) 966-1924

chris@urban-eng.com

Phone

Email

CURRENT PROPERTY INFO

Michael Fielden

7335 Fairview Road (37721)

B&B Builders Inc, PO Box 71233, Knoxville, TN 37923

~~Springbrook Properties, LLC, PO BOX 10226, Knoxville, TN 37909~~

Property Owner Name (if different)

Property Owner Address

Property Owner Phone

0 Beeler Road

021 18803

0 Fairview Road (37721), 7802 & 7046 BEELER FARMS LN

021 04603, 020MJ054 (part of) & 056

Property Address

Parcel ID

Hallsdale Powell

Hallsdale Powell

No

Sewer Provider

Water Provider

Septic (Y/N)

STAFF USE ONLY

West side of Fairview Road, ~~eastern terminus of Beeler Farms Ln~~ east side of Beeler Road

95.83 acres (parcel 021 04603 only)

General Location

Tract Size

☐ City ☒ County

8th

PR (Planned Residential)

Agriculture/forestry/vacant

District

Zoning District

Existing Land Use

Northeast County

LDR, HP & SP

Planned Growth

Planning Sector

Sector Plan Land Use Classification

Growth Policy Plan Designation

DEVELOPMENT REQUEST

☒ Development Plan ☐ Use on Review / Special Use ☐ Hillside Protection COA
☒ Residential ☐ Non-Residential

Related City Permit Number(s)

Home Occupation (specify) _____

Other (specify) ~~Concept Plan~~ Detached residential subdivision

SUBDIVISION REQUEST

Fairview Road S/D

Related Rezoning File Number

Proposed Subdivision Name

~~126~~ 128

Unit / Phase Number ☐ Combine Parcels ☒ Divide Parcel

Total Number of Lots Created

☐ Other (specify) Detached residential subdivision

☐ Attachments / Additional Requirements

ZONING REQUEST

☐ Zoning Change Proposed Zoning _____

Pending Plat File Number

☐ Plan Amendment Change Proposed Plan Designation(s) _____

Proposed Density (units/acre) Previous Rezoning Requests _____

☐ Other (specify) _____

STAFF USE ONLY**PLAT TYPE**

☐ Staff Review ☐ Planning Commission

ATTACHMENTS

☐ Property Owners / Option Holders ☐ Variance Request

ADDITIONAL REQUIREMENTS

☐ Design Plan Certification (Final Plat)
☐ Use on Review / Special Use (Concept Plan)
☐ Traffic Impact Study
☐ COA Checklist (Hillside Protection)

Fee 1		Total
102	Concept Plan	
Fee 2		
Fee 3		

MR

AUTHORIZATION

Applicant Signature

Mesana Investments, LLC

7-21-2022

Please Print

Date

(865) 693-3356

swd444@gmail.com

Phone Number

Email Michael M Fielden

7-21-2022

Property Owner Signature

THOMAS D FIELDEN

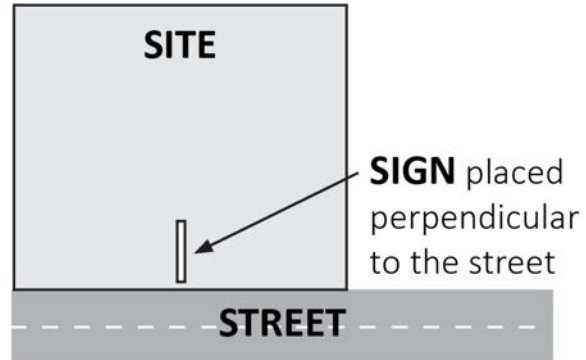
7-21-2022

Please Print

Date

*Owner signature for parcel 021 18803 on file

The Administrative Rules and Procedures of the Knoxville-Knox County Planning Commission require a sign to be posted on the property for each application subject to consideration by the Planning Commission, including the following applications: rezoning, plan amendment, concept plan, use on review/special use, planned development, right-of-way closure, and name change.



The required public notice sign(s) will be provided by Planning to the applicant when an application is submitted. If an application is submitted electronically, Planning staff will post the required sign. If a replacement sign(s) is needed, the applicant is responsible for picking up the new sign(s) from Planning and will be charged \$10 for each replacement.

LOCATION AND VISIBILITY

The sign must be posted on the nearest adjacent/frontage street and in a location clearly visible to vehicles traveling in either direction. If the property has more than one street frontage, the sign should be placed along the street that carries more traffic. Planning staff may recommend a preferred location for the sign to be posted at the time of application.

TIMING

The sign(s) must be posted **not less than 12 days prior to the scheduled Planning Commission public hearing** and must remain in place until the day after the meeting. In the case of a postponement, the sign can either remain in place or be removed and reposted not less than 12 days prior to the next Planning Commission meeting. The applicant is responsible for removing the sign after the application has been acted upon by the Planning Commission.

The individual below is responsible for posting and removing the sign(s) provided consistent with the above guidelines and between the dates of:

_____ 10/28/2022 _____ and _____ 11/11/2022 _____
 (applicant or staff to post sign) (applicant to remove sign)

Applicant Name: Mesana Investments, LLC

Date: 9/20/22

File Number: 11-SA-22-C, 11-A-22-DP



Sign posted by Staff



Sign posted by Applicant