



SUBDIVISION REPORT - CONCEPT/DEVELOPMENT PLAN

► **FILE #:** 11-SA-22-C

AGENDA ITEM #: 27

11-A-22-DP

AGENDA DATE: 11/10/2022

► **SUBDIVISION:** FAIRVIEW ROAD SUBDIVISION

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

OWNER(S): Danny Kirby Springbrook Properties, LLC

TAX IDENTIFICATION: 21 04603, 020MJ054 & 026

[View map on KGIS](#)

JURISDICTION: County Commission District 8

STREET ADDRESS: 0 FAIRVIEW RD (7802 & 7946 Beeler Farms Lane)

► **LOCATION:** West side of Fairview Road, eastern terminus of Beeler Farms Ln

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:** 126

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

ACCESSIBILITY: Access is via Beeler Farms Lane, a local street with a pavement width of 26-ft within 50-ft of right-of-way, and via Fairview Road, a minor arterial with 19-ft of pavement width within 50-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

ALTERNATIVE DESIGN STANDARDS REQUIRING KNOXVILLE-KNOX COUNTY PLANNING COMMISSION APPROVAL

1. Reduce the minimum horizontal curve from 250' to 200' on Road 'A' between STA 10+24.38 and 10+58.76
2. Reduce the minimum horizontal curve from 250' to 175' on Road 'B'

**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:

- **Deny the concept plan because the proposal is not harmonious with the existing development, as outlined below.**

- 1) The Beeler Farms Subdivision ("Beeler Farms") was approved with a single cul-de-sac street that was not designed or intended to provide access to a significant amount of additional dwellings and the associated vehicular traffic.
- 2) A road stub-out was not proposed by the developer of the Beeler Farms Subdivision developer or required by the Planning Commission.
- 3) The houses at the end of the existing cul-de-sac (7942 & 7943 Beeler Farms Lane) were not sited in anticipation of the road being extended along their side lot lines.

*** Additional details are provided in the staff comments below ***

- **Deny the development plan based on the denial recommendation of the concept plan.**

COMMENTS:

1) The Beeler Farms Subdivision ("Beeler Farms") was approved with a single cul-de-sac street that was not designed or intended to provide access to a significant amount of additional dwellings and the associated vehicular traffic.

a) The Transportation Impact Study for the Fairview Road Subdivision (AJAX Engineering, August 2022) noted the long-standing unwritten design policy requiring a second entrance or a boulevard entrance road design when a subdivision has more than 150 lots (see Exhibit C). The purpose of this policy is primarily to address access for emergency services, but could also have the secondary benefit of increasing connectivity. If the proposed subdivision is approved as requested, there will be 179 lots utilizing Beeler Farms Lane as a single access point, which has a standard 26-ft wide pavement width with the potential of vehicles parked on both sides of the street.

b) A sidewalk was not required along Beeler Farms Lane because the development did not meet the criteria according to the Knox County sidewalk ordinance (Chapter 54, Article IV of the Knox County Code). One of the criteria for requiring a sidewalk on new internal streets is when there is an estimated average vehicle trips per day (ADT) of 1,000 or more on a particular road segment. The assumption is that on streets with low traffic volumes, pedestrians and vehicles can safely co-mingle. The street acts as a multimodal facility. Streets with higher traffic volumes need a sidewalk because it is no longer a safe condition for pedestrians and vehicles to co-mingle. The ADT for the 53 homes in Beeler Farms is 580, with the highest travel volume only being between the entrance to the subdivision and the first house. The vehicle trips decrease towards the end of Beeler Farms Lane. The ADT for the proposed 126-lot Fairview Road subdivision is 1,248, which must all travel on the existing Beeler Farms Lane. Now that the Beeler Farms houses are constructed, it will be difficult to add a sidewalk on one side of Beeler Farms Lane. If the Fairview Road Subdivision is approved, a sidewalk will be required along the full length of Road 'A' (Beeler Farms Lane extension), from the edge of the existing cul-de-sac to the eastern terminus of Road 'A'. The residents of Beeler Farms will not have a sidewalk unless installed by the County as a capital improvement project or the applicant agrees to install as part of the infrastructure improvements for the Fairview Road Subdivision.

2) When a stub-out road is proposed by the developer or required by the Planning Commission, Section 3.04.C.2.b of the Subdivision Regulations states the impact of future street connections should be evaluated to identify any impact from the connections, the end of the new street shall be posted with a sign designating the street end as a future street connection, and the Concept Plan and Final Plat for the subdivision shall also clearly identify that the street end is designed for future connection.

a) The intent of this is to ensure adequate infrastructure is installed while the subdivision is being constructed and that future property owners have notice that the road is intended to be extended in the future.

b) During the review phase for Beeler Farms, the staff comments memorandum (dated 4/17/2022) stated: "Staff is recommending a stub out street connection to at least one of the larger tracts to the south (or east)." The development team responded that "with alignment changes and fewer lots, this isn't a desirable condition."

c) During the public hearing for Beeler Farms, the applicant stated that the original subdivision design had a

cul-de-sac that extended to the east property line (adjoining the subject property), but the road was shortened because of the presence of a blue line stream. The applicant did not propose a road stub-out for a future connection. A public comment made during the meeting requested that a road stub-out be provided for future connectivity.

d) Planning staff did not recommend a road stub-out to the east property line as a condition of the concept plan approval because requiring a stub-out that crosses a blueline stream was not a logical extension of the road.

e) The Planning Commission did not require a road stub-out as an outcome of the deliberations.

3) The siting of the houses at the end of the cul-de-sac (7942 & 7943 Beeler Farms Lane) indicates that the extension of the road was not anticipated.

a) The two houses referenced above were sited without respect to, and presumably knowledge of, a road being extended between them. The front façade of the houses are parallel to the radius of the cul-de-sac, as would be expected (see Exhibit A & B). If the road is extended, the remnant of the cul-de-sac on both sides will result in something similar to an "eyebrow", unless the cul-de-sac is removed. In either case, a house on a lot like this is typically sited with the front facade parallel to the transition, or point of intersect, of the eyebrow and main roadway or parallel to the main road. Because of how the existing houses are sited, the side elevations are closer to the extended roadway than would normally be required if a stub-out right-of-way was established when the subdivision was platted.

b) In Beeler Farms, the property to the east of the stream was approved and platted as a common area and one house lot, each with a 25 ft strip of land to the cul-de-sac and an access easement straddling the common lot line for shared access across the blueline stream. During the public hearing, the applicant stated he intended to leave the common area untouched and serene and that the homeowners should have input on any amenities placed on the site. The Fairview Road Subdivision concept plan proposes to allocate 20 ft from both the common area lot and the house lot to create the 40-ft right-of-way of the Beeler Farms Lane extension (Road 'A'). If the proposal is approved, the road extension will improve access to the common area, but it is unknown whether an amenity use has been discussed with the Beeler Farms residents and whether the road extension will be complimentary.

c) The applicant is requesting a reduction of the required 50-ft right-of-way to 40-ft for the portion of Road 'A' in Beeler Farms. This will result in a 5-ft strip of land between the two lots at the end of the existing cul-de-sac and the new public right-of-way. The strips of land will remain part of the common area lot and the house lot located on the east side of the stream. Even though the existing lots are near Road 'A', they will not have the benefit of using that frontage to access their rear yards. The purpose of the requested right-of-way reduction and the 5-ft strips of land is so the side lot lines of the two adjacent lots do not touch the new public right-of-way and become front lot lines, which would make the existing houses non-conforming to the front setback standards and restrict the placement of accessory structures. Knox County Engineering and Public Works (EPW) does not oppose the right-of-way reduction. EPW is recommending a reduction of the pavement width to 20-ft between the existing cul-de-sac and the intersection of Road 'A' and Road 'B'. This is to constrict the travel lanes as a traffic calming measure. This segment of roadway will be required to have a sidewalk.

SUMMARY OF PROPOSAL

The proposed subdivision has 126 lots with a single access via Beeler Farms Ln, a recently constructed cul-de-sac road in the Beeler Farms subdivision. The developer is only purchasing 33 acres of a 93-acre property on the northwest side of Beaver Creek and the unnamed tributary that comes from the Thompson School Road area to the north. The remaining 60 acres has access to Fairview Road and will be retained by the current property owner.

PREVIOUS ZONING AND CONCEPT PLAN APPROVALS

The property was rezoned from A (Agricultural) to PR (Planned Residential) up to 2 du/ac in 2007 (6-N-07-RZ). This rezoning and subsequent concept plan included the large property to the east owned by a family member of the owner of the subject parcel (190 acres total). Later in 2007, a concept plan was approved for the 190-acre property with 271 detached houses and 47 attached houses at a density of 1.68 du/ac (10-SD-07-C). This proposal had a boulevard entrance road with access to Fairview Drive, a stub-out road for secondary access to a property with frontage on Beeler Road, and walking trails along Beaver Creek.

ACCESS

The proposed access is via Beeler Farms Lane, a local street with 26-ft of pavement width. The new road will connect to the terminus of the existing cul-de-sac. The only proposed or required improvement to the existing Beeler Farms Lane is to remove the cul-de-sac and install new a curb inline with the existing curbing. If this is required during permitting, the existing driveways that access the cul-de-sac must be extended.

INFRASTRUCTURE IMPROVEMENTS

When the B&B Builders – Beeler Road Subdivision (7-SA-22-C / 7-A-22-UR) was approved, there was a condition that a right turn lane be installed on Beeler Road at the E. Emory Road intersection. If the Fairview Road Subdivision is approved, the installation of the turn lane will also be required. Knox County has agreed to share the cost of this improvement. The developers of these two subdivisions can work out a cost-sharing agreement to fund their portion of the turn lane improvement. If they cannot come to an agreement, the turn lane installation may be a requirement of the first project to move forward with construction.

AMENITIES / COMMON AREA

There is a usable common area lot between lots 75 & 76, which appears to be the proposed location for the centralized mail facility. The other common areas contain stormwater facilities.

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, Knox County will require a sidewalk along the full length of Road 'A' (extension of Beeler Farms Lane) and a connection to the proposed greenway from the Road 'A' cul-de-sac.

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 Ridgeway Protection Plan. This proposal will disturb all 17.87 acres in the HP area, so in the 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.

DENSITY

The Fairview Road Subdivision is located on a parcel that is approximately 93 acres, zoned PR up to 2 du/ac. This allows approximately 186 dwelling units total. The proposed subdivision is on only 33 acres and is proposed with 126 lots, which is a density of 3.82 du/ac. This will effectively transfer the development rights of 60 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 60 dwelling units (this depends on the actual acreage from a survey).

ESTIMATED TRAFFIC IMPACT: 1248 (average daily vehicle trips)

Average Daily Vehicle Trips are computed using national average trip rates reported in the latest edition of "Trip Generation," published by the Institute of Transportation Engineers. Average Daily Vehicle Trips represent the total number of trips that a particular land use can be expected to generate during a 24-hour day (Monday through Friday), with a "trip" counted each time a vehicle enters or exits a proposed development.

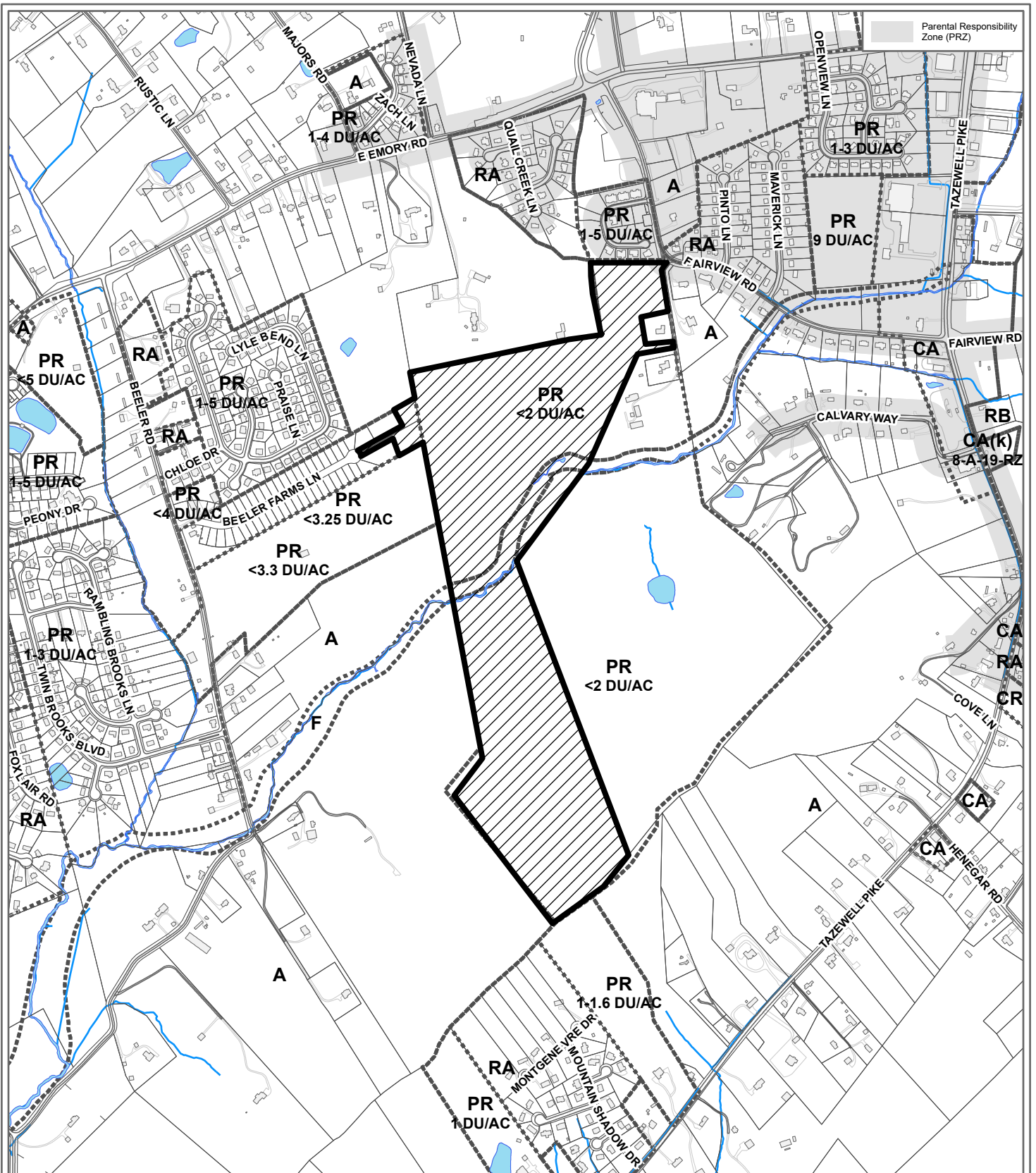
ESTIMATED STUDENT YIELD: 53 (public school children, grades K-12)

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



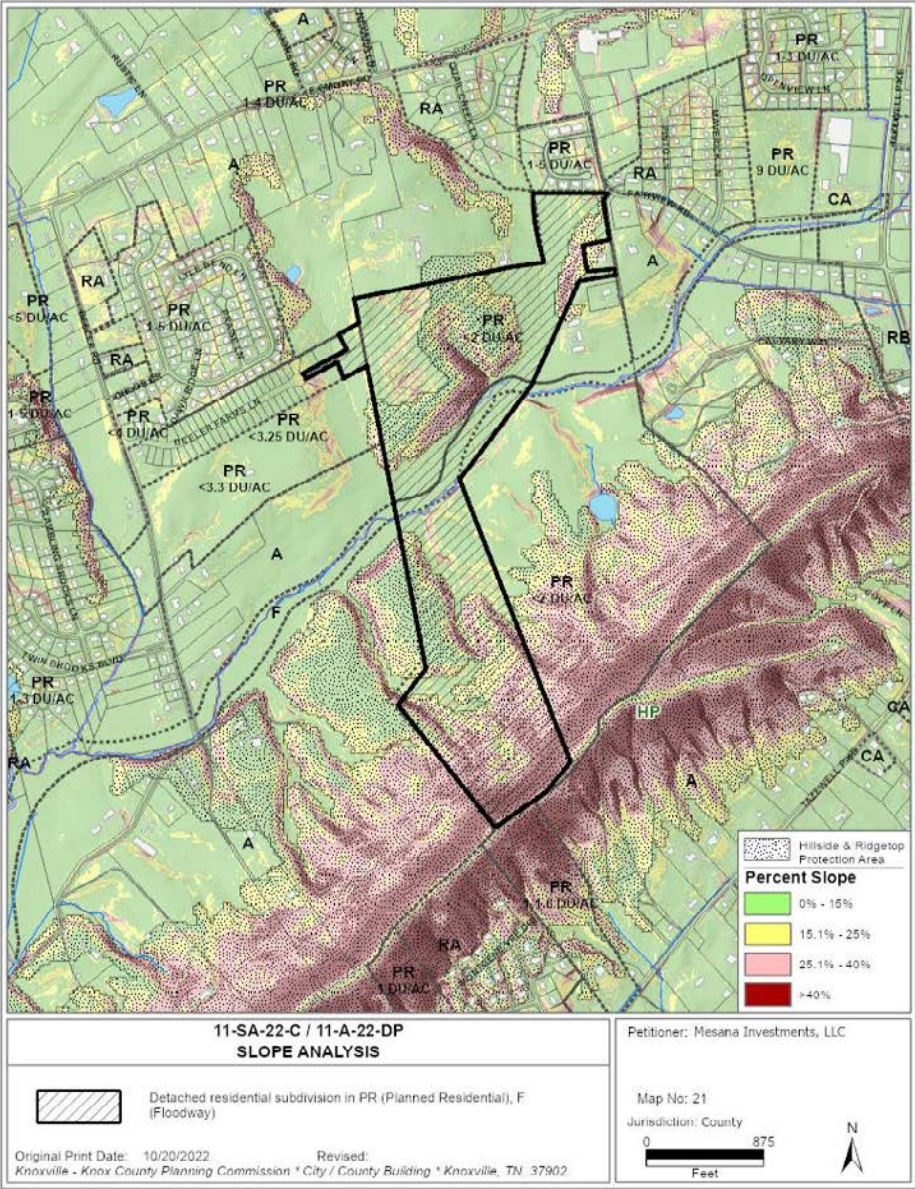
Detached residential subdivision in PR (Planned Residential), F (Floodway)

Original Print Date: 10/17/2022 Revised:
Knoxville - Knox County Planning Commission * City / County Building * Knoxville, TN 37902

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



CATEGORY	ACRES	RECOMMENDED DISTURBANCE BUDGET (Percent)	DISTURBANCE AREA (Acres)
Total Area of Site	94.87		
Non-Hillside	43.20	N/A	
0-15% Slope	12.92	100%	12.92
15-25% Slope	13.81	50%	6.91
25-40% Slope	14.99	20%	3.00
Greater than 40% Slope	9.94	10%	0.99
Ridgetops			
Hillside Protection (HP) Area	51.67	Recommended disturbance budget within HP Area (acres)	23.8
		Percent of HP Area	0.5



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

ALTERNATIVE DESIGN STANDARDS REQUIRING KNOXVILLE-KNOX COUNTY PLANNING COMMISSION APPROVAL

1. Reduce the minimum horizontal curve from 250' to 200' on Road 'A' between STA 10+24.38 and 10+58.76
2. 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 1.99% along Road 'C' at its intersection with Road 'A'
2. Increase the intersection grade from 1% to 2% along Road 'B' at its intersection with Road 'A'
3. Increase the intersection grade from 1% to 2% along Road 'D' 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. Reduce the required right-of-way width from 50' to 40' between the existing Beeler Farms Ln cul-de-sac and the eastern boundary of the Beeler Farms subdivision.
6. Reduce the required pavement width from 26' to 20' between the existing Beeler Farms Ln cul-de-sac and the eastern boundary of the Beeler Farms subdivision (recommended by Knox County Engineering and Public Works)

KNOX COUNTY ENGINEERING AND PUBLIC WORKS RECOMMENDATION:

Approve



11/4/2022

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

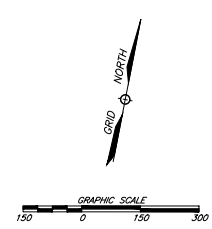
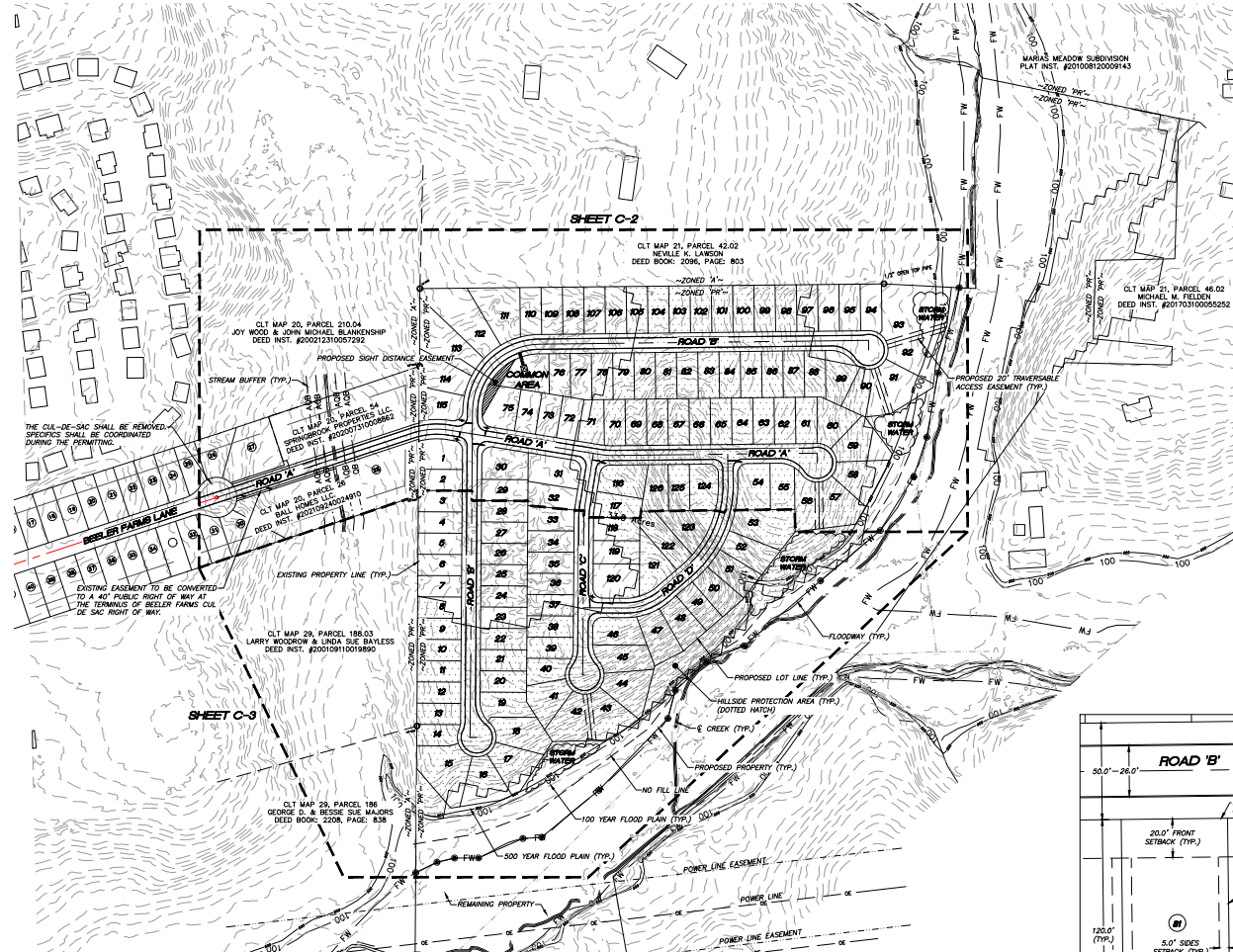
SHEET

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

Revised: 10/21/2022

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

2	10/21/22	PER PLANNING/KCEPW COMMENTS	
ISSUE NO.	DATE	DESCRIPTION	

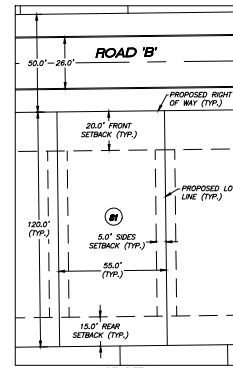


- SITE PLAN NOTES:**
1. THIS PROPERTY IS ZONED "P". REQUIRED BUILDING SETBACKS ARE AS FOLLOWS:
FRONT: HOUSES, TWENTY (20) FEET
PERIPHERY: THIRTY FIVE (35) FEET (MINIMUM)
SIDE: FIVE (5) FEET
REAR: FIFTEEN (15) FEET
 2. THE LOCATIONS OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON THE LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER VALVES, ETC., AND COMPLYING INFORMATION FROM PLANS SUPPLIED BY VARIOUS UTILITY COMPANIES AND GOVERNMENT AGENCIES. THE CONTRACTORS SHALL NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES AND ALSO CALL TENN. 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 126-UNITS (3.82 UNITS PER ACRE).
 7. PROPOSED OPEN SPACE (INCLUDING EASEMENTS; 4 AREAS WITHIN STORM WATER DETENTION AREAS) = 4.494 ACRES (14.2%)
 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. 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 FOR LOCAL STREET TYPICAL SECTION.
 13. LOTS 51, 91, 92, AND 93 TO BE FILLED TO RAISE ELEVATION ABOVE THE 500-YEAR FLOOD ELEVATION.
 14. IF REQUIRED, A DRAINAGE EASEMENT SHALL BE DEEDED TO KNOX COUNTY ALONG THE EAST SIDE OF BEULER CREEK BRANCH WITH IT CROSSING TO THE NORTH SIDE OF THE CREEK WHERE THE BRANCH CONNECTS TO BEULER CREEK. SPECIFICATIONS TO BE COORDINATED DURING PERMITTING.

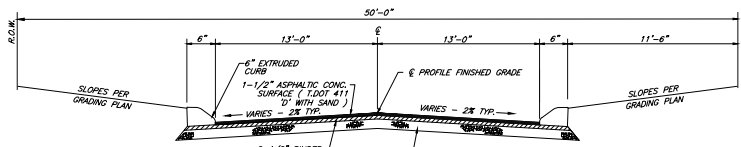
ALTERNATIVE DESIGN STANDARD REQUESTS:

1. REDUCE THE REQUIRED CENTERLINE RADIUS FROM 250' TO 200' ON ROAD "A" BETWEEN STATIONS 10+24.38 AND 10+56.76.
2. REDUCE THE REQUIRED CENTERLINE RADIUS FROM 250' TO 175' ON ROAD "B" BETWEEN STATIONS 8+40.44 AND 11+31.97.
3. INCREASE THE INTERSECTION GRADE FROM 1% TO 1.9% ALONG ROAD "C" AT ITS INTERSECTION WITH ROAD "A".
4. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD "A" AT ITS INTERSECTION WITH ROAD "A".
5. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD "D" AT ITS INTERSECTION WITH ROAD "A".
6. INCREASE THE INTERSECTION GRADE FROM 1% TO 2% ALONG ROAD "D" AT ITS INTERSECTION WITH ROAD "C".

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



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. 108864
Date: 10/21/2022

Revised: 10/21/2022

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

REFERENCE:
DEED INST. 20200219005035



REVISION	DATE	PER PLANNING / KEEP COMMENTS	CAS
1	10/21/22	PER PLANNING / KEEP 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

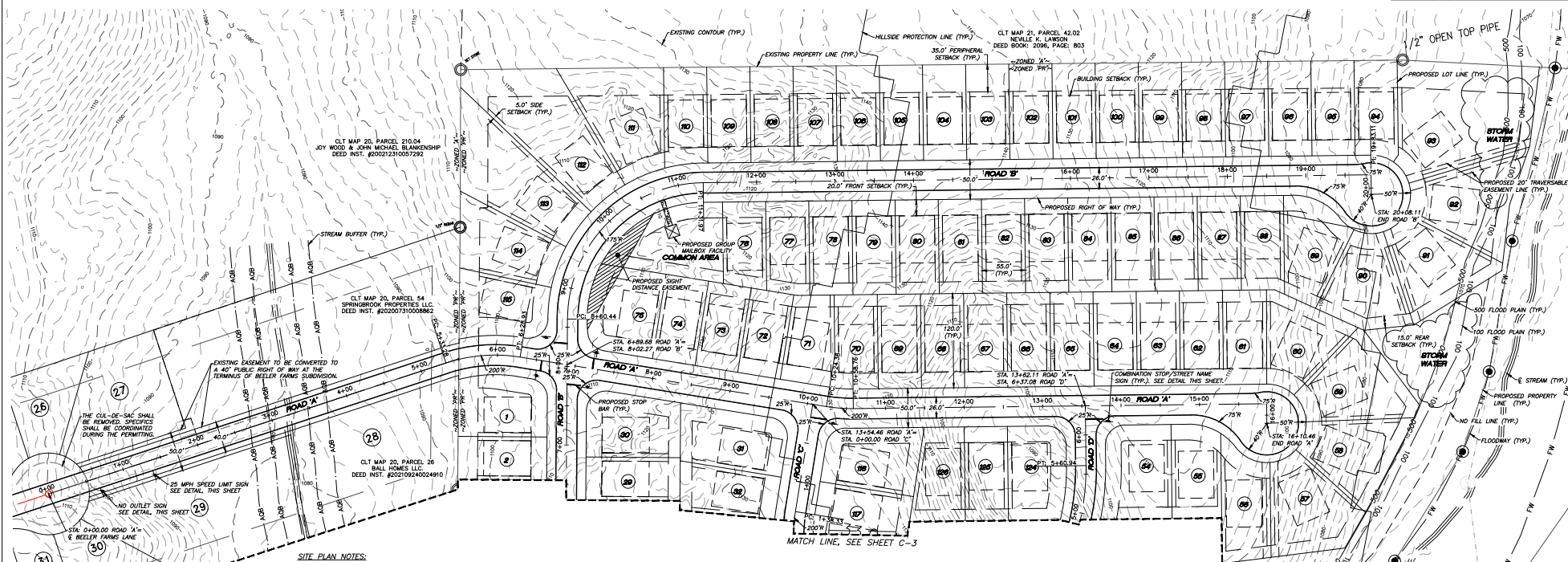
DEVELOPER: MESANA INVESTMENTS, LLC
P.O. BOX 11315
KNOXVILLE, TN 37939

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

DWG: CLM	CHK: CAS	DWG. NO. 2207020
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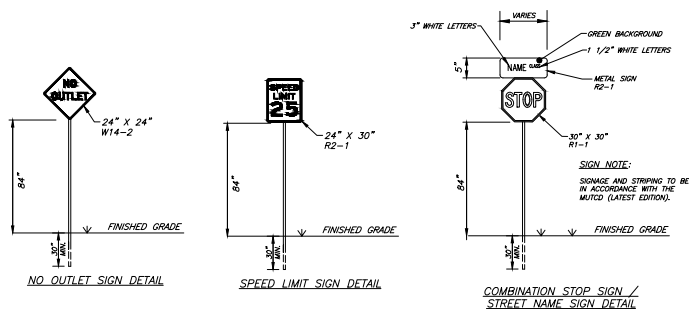
MPC FILE# 11-SA-22-C / 11-A-22-DP

Revised: 10/21/2022



SITE PLAN NOTES:

- THIS PROPERTY IS ZONED T2, REQUIRED BUILDING SETBACKS ARE AS FOLLOWS:
- FRONT: TWENTY, TWENTY (20) FEET
- REAR: 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 COMPARISON WITH MAPS SUPPLIED BY VARIOUS UTILITY COMPANIES AND GOVERNMENT AGENCIES. THE CONTRACTORS SHALL NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES OF ANY TRENCH ONE-CALL PRIOR TO ANY EXCAVATION WORK, TO VERIFY INFORMATION SHOWN AND DETERMINE THE LOCATION OF THE UTILITY LOCATION SYSTEM AND IF ADDITIONAL INFORMATION MAY EXIST.
3. HORIZONTAL COORDINATES ARE TENNESSEE STATE PLANE, VERTICAL DATUM IS NAD83.
4. ALL WORK SHALL BE IN ACCORDANCE WITH KNOX COUNTY'S SPECIFICATIONS FOR SITE DEVELOPMENT.
5. THE CURRENT TOTAL AREA OF DEVELOPMENT IS 3.30 ACRES.
6. THE DEVELOPMENT PROPOSES 126-120' (38.5 UNITS PER ACRE).
7. PROPOSED OPEN SPACE (INCLUDING EASEMENTS, & AREAS WITH INTERNAL WATER DETENTION AREAS) = 4.89 ACRES
8. THE PROPOSED LOTS SHALL HAVE VEHICULAR ACCESS TO STORM DRAIN ROADS ONLY.
9. A HOMEOWNERS ASSOCIATION SHALL BE ESTABLISHED AND ASSURE MAINTENANCE OF THE COMMON AREAS.
10. 10" UTILITY AND DRAINAGE EASEMENTS SHALL BE RESERVED ALONG ALL EXTERIOR BOUNDARY LINES AND PUBLIC PORT OF WAY. UTILITY AND DRAINAGE EASEMENTS SHALL BE RESERVED ALONG ALL INTERIOR LOT LINES EXCEPT WHEN BOUNDING BUILDINGS.
11. THE TOTAL AREA OF THE PROPERTY COVERED BY HILLSIDE PROTECTION IS 17.87 ACRES. THE AREA OF DISTURBANCE OF THE HILLSIDE PROTECTION IS 1.787 ACRES.
12. SEE SHEET FOR LOCAL STREET TYPICAL SECTION.
13. LOTS 51, 51, 52, AND 53 TO BE FILLED TO MEET ELEVATION ABOVE THE 500'-YEAR FLOOD ELEVATION.
14. IF REQUIRED, A GREENWAY EASEMENT SHALL BE DEEDS TO KNOX COUNTY ALONG THE EAST SIDE OF BEAVER CREEK BRANCH WHEN IT CROSSING TO THE NORTH SIDE OF THE CREEK WHERE THE BRANCH CONNECTS TO BEAVER CREEK. SPECIFICATIONS TO BE COORDINATED DURING



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-Yvón County Subdividing Regulations except as has been itemized and described in a report filed with the Planning Commission.
Registered Engineer: Christopher A. Sharp
Christopher A. Sharp, P.E.
Tennessee License No. 108984
Date: 10/21/2022


SHEET C-2

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

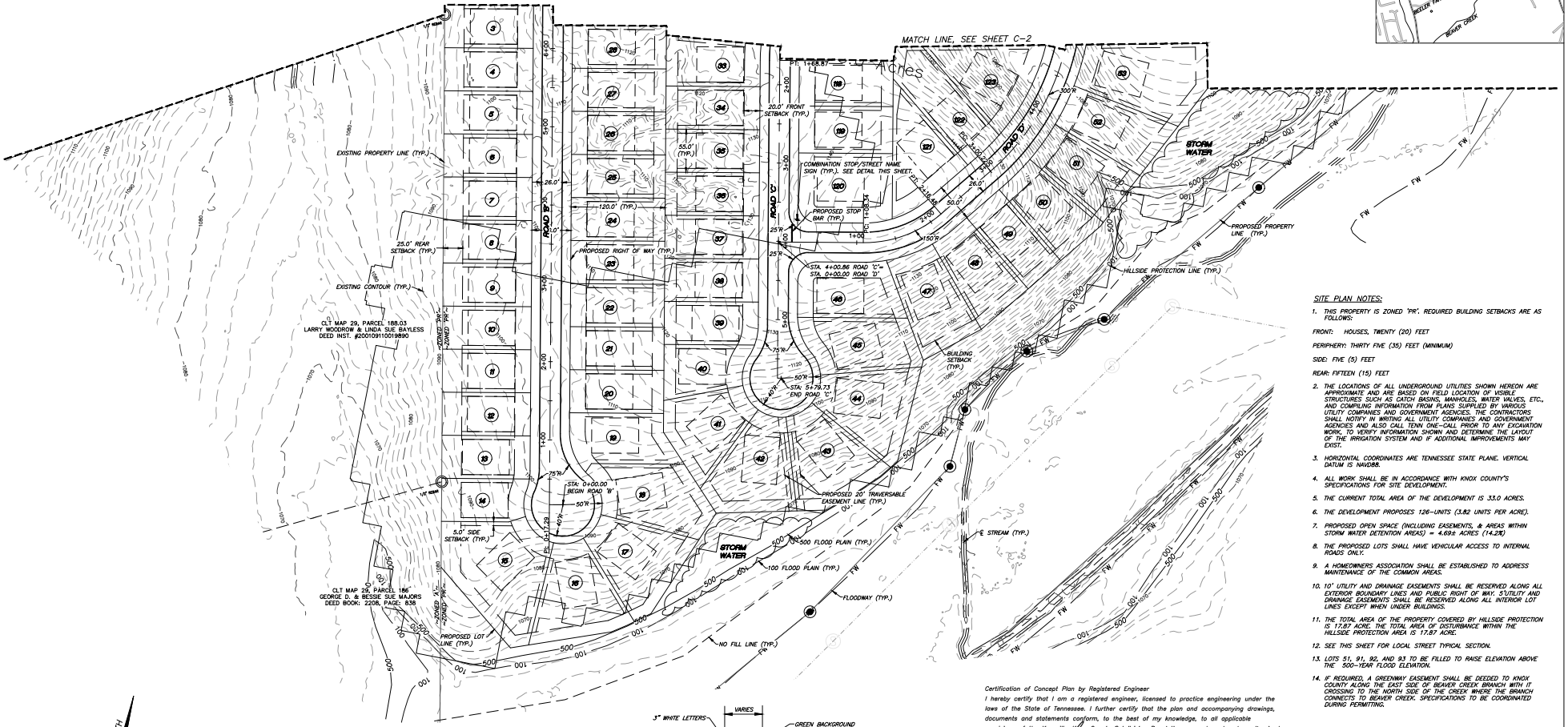


URBAN ENGINEERING, INC.
10330 HARDIN VALLEY RD., #201
KNOXVILLE, TENNESSEE 37932

[illegible]

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

Revised: 10/21/2022



SITE PLAN NOTES:

1. THIS PROPERTY IS ZONED 'RM'. 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 126-UNITS (3.82 UNITS PER ACRE).
7. PROPOSED OPEN SPACE (INCLUDING EASEMENTS, & AREAS WITHIN STORM WATER DETENTION AREAS) = 4.696 ACRES (14.2%).
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. 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 FOR LOCAL STREET TYPICAL SECTION.
13. LOTS 51, 91, 92, AND 93 TO BE FILLED TO RAISE ELEVATION ABOVE THE 500-YEAR FLOOD ELEVATION.
14. IF REQUIRED, A GREENWAY EASEMENT SHALL BE DEDED TO KNOX COUNTY ALONG THE EAST SIDE OF BEAVER CREEK BRANCH WITH IT CROSSING TO THE NORTH SIDE OF THE CREEK WHERE THE BRANCH CONNECTS TO BEAVER CREEK. SPECIFICATIONS TO BE COORDINATED DURING PERMITTING.

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 Tennessee State Board of Professional Engineering. Registered Engineer: Christopher A. Sharp, P.E. Tennessee License No. 108984 Date: 10/21/2022

REFERENCE:
DEED INSTR. 202002180055035

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

REVISION	DATE	PER PLANNING / KEEP COMMENTS	DESCRIPTION	BY
1	10/21/22	PER PLANNING / KEEP COMMENTS		CAS

SHEET C-3

SITE PLAN FAIRVIEW ROAD SUBDIVISION

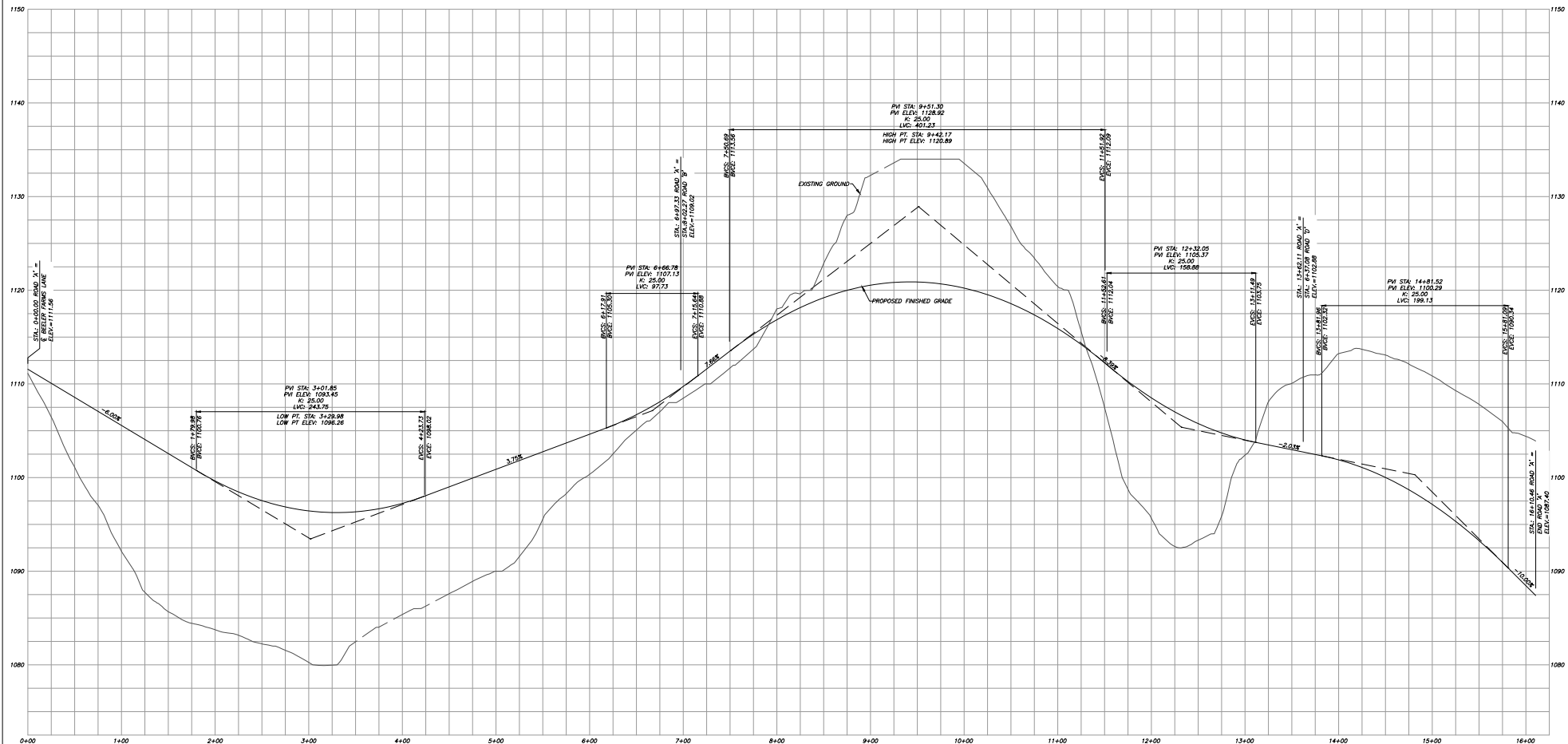
SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

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 DATE: 10/21/2022



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

11-SA-22-C / 11-A-22-DP
 Revised: 10/21/2022


1	10/21/22	PER PLANNING / KCEPM COMMENTS	CAS
REVISION	DATE	DESCRIPTION	BY

SHEET C-4

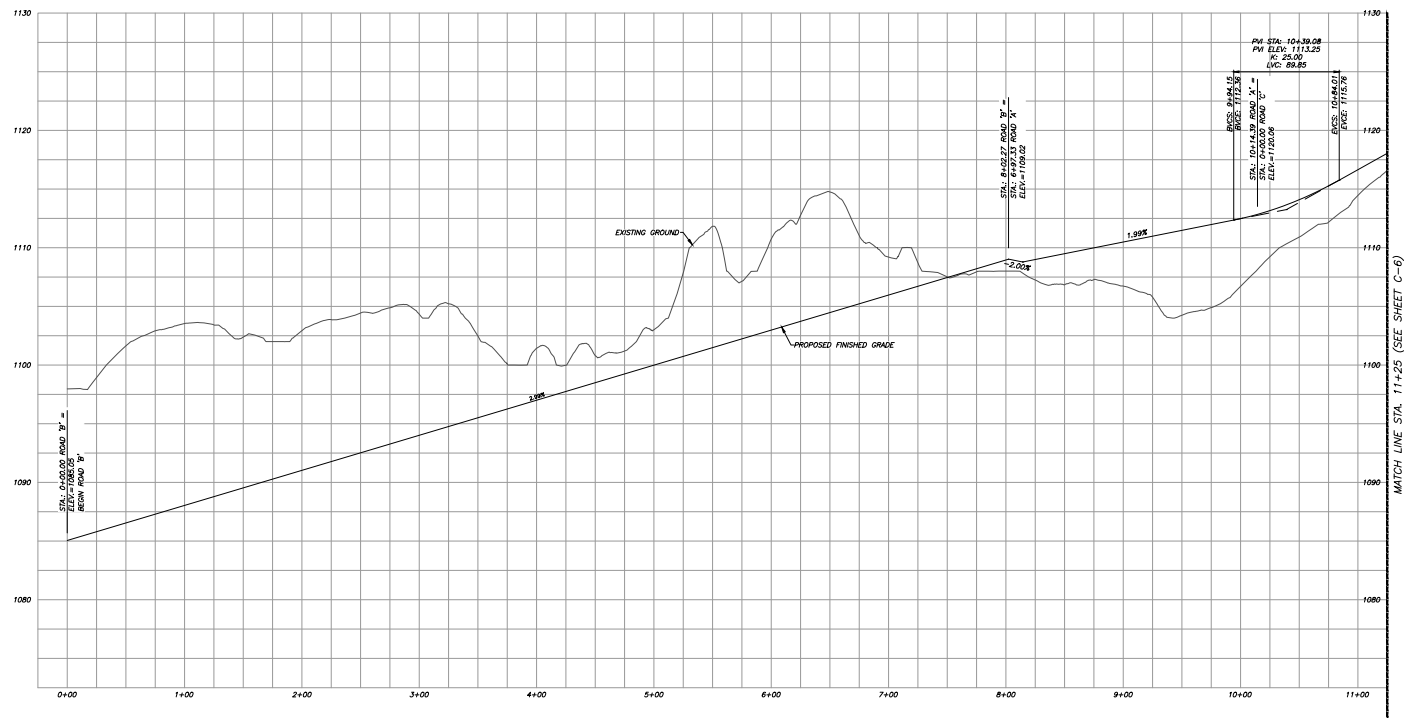
ROAD 'A' PROFILE
FAIRVIEW ROAD SUBDIVISION
 SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

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

DWN: CLM CHG: CAS DWG. NO. 2207020



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

11-SA-22-C / 11-A-22-DP
Revised: 10/21/2022

REVISION	DATE	DESCRIPTION	BY
1	10/21/22	PER PLANNING / KCEPM COMMENTS	CAS

SHEET C-5

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

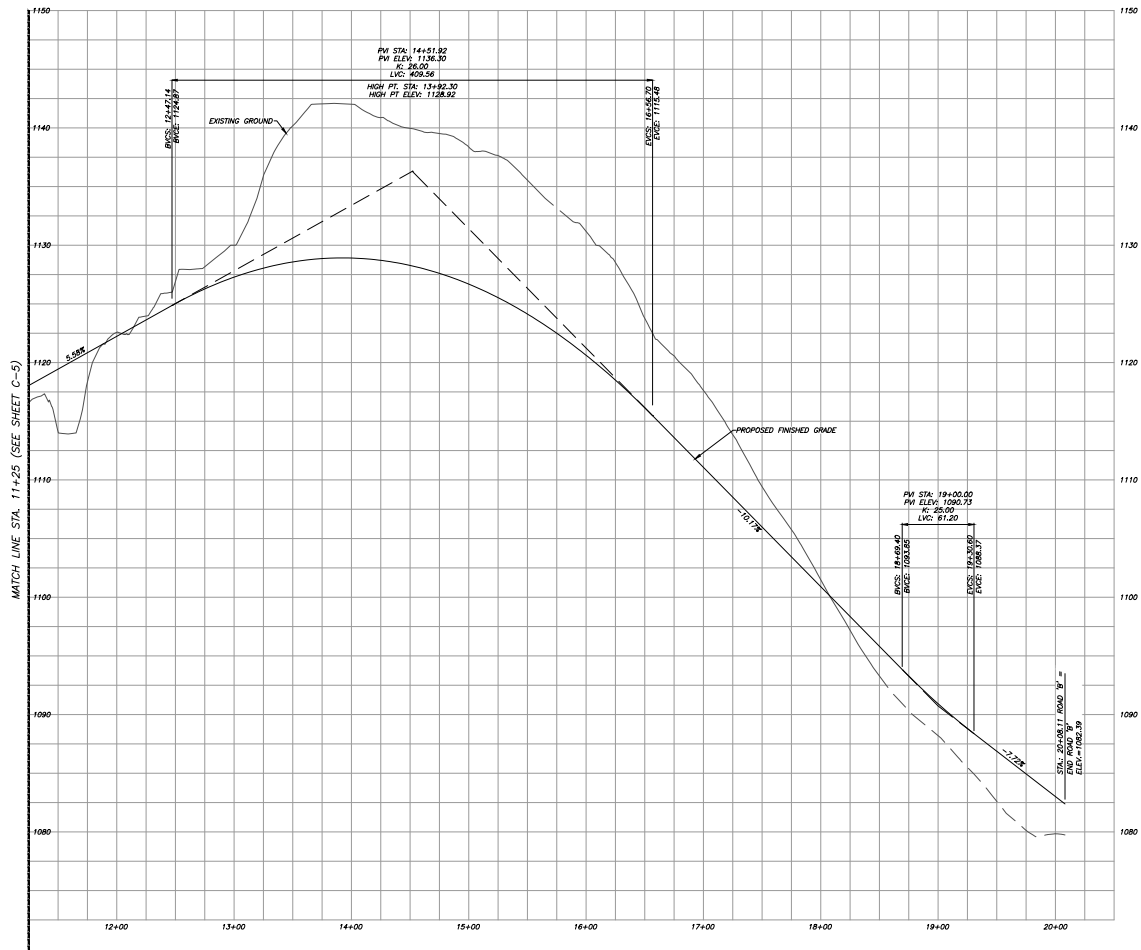
DIST. NO. 8 KNOX CO., TN.
CLT MAP 21 PARCEL 46.03
SCALE: AS NOTED JUNE 25, 2022

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: 10/21/2022

1	10/21/22	PER PLANNING / KCEPM COMMENTS	CAS
REVISION	DATE	DESCRIPTION	BY

SHEET C-6

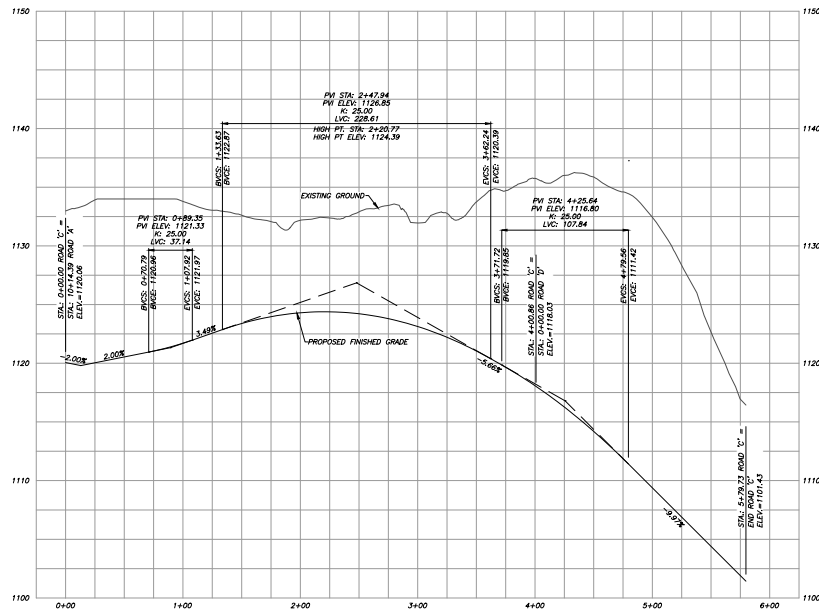
ROAD 'B' PROFILE
FAIRVIEW ROAD SUBDIVISION
 SITE ADDRESS: 0 FAIRVIEW ROAD (37721)

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

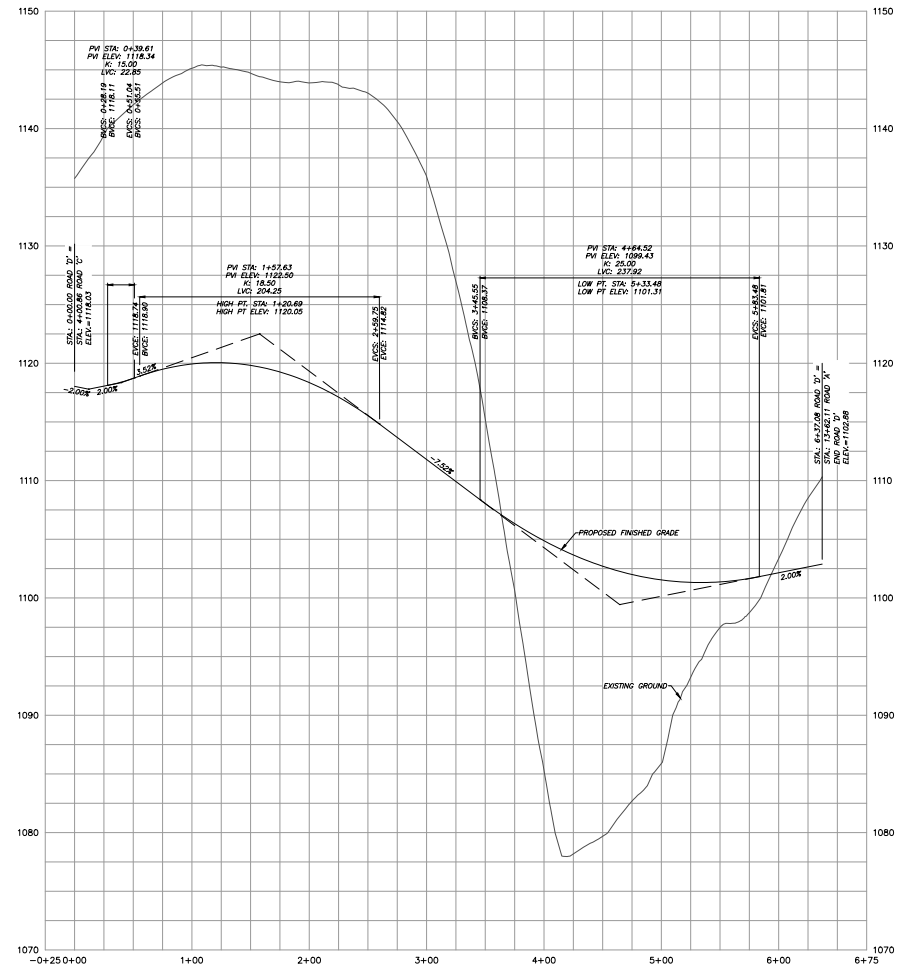
DEVELOPER: MESANA INVESTMENTS, LLC
 P.O. BOX 11315
 KNOXVILLE, TN 37939

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

DWG. NO. 2207020



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



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

11-SA-22-C / 11-A-22-DP
 Revised: 10/21/2022

1	10/21/22	PER PLANNING / KCEPM COMMENTS	CAS
REVISION	DATE	DESCRIPTION	BY

SHEET C-7

ROADS 'C' & 'D' PROFILES
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

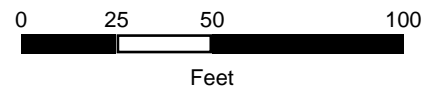
DEVELOPER: MESANA INVESTMENTS, LLC
 P.O. BOX 11315
 KNOXVILLE, TN 37939

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

DWG. NO. 2207020



7942 & 7943 Beeler Farms Lane



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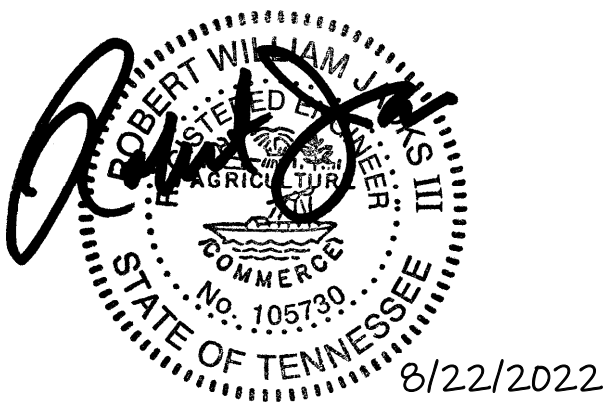


Transportation Impact Study Fairview Road Subdivision Knox County, Tennessee



August 2022

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



11-SA-22-C / 11-A-22-DP
TIS Version 1
8/22/2022

CONCLUSIONS & RECOMMENDATIONS

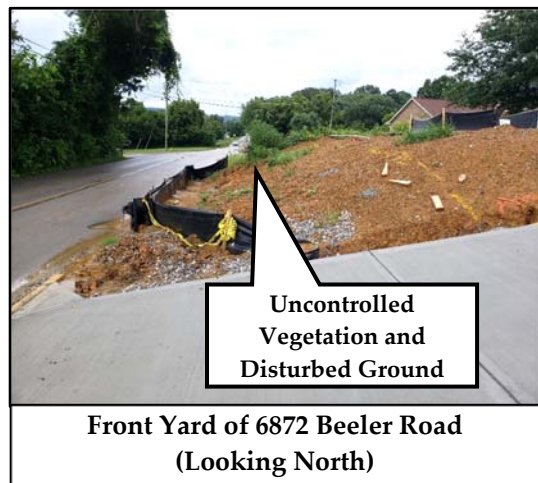
The following is an overview of recommendations to minimize the transportation impacts of the proposed Fairview Road Subdivision with the other adjacent subdivisions on the adjacent transportation system while attempting to achieve an acceptable traffic flow and safety level.



Beeler Road at Beeler Farms Lane: Level of service calculations were not completed for the entrance of Beeler Road at Beeler Farms Lane in the projected conditions since there will be minimal conflicting traffic volumes. The construction of left and right-turn lanes on Beeler Road at Beeler Farms Lane for entering traffic is not necessary to accommodate the Fairview Road Subdivision. The single exit lane on Beeler Farms Lane at Beeler Road will be sufficient for the residents in Beeler Farms Subdivision and the Fairview Road Subdivision.

- 1a) A Stop Sign (R1-1) has been installed on Beeler Farms Lane at Beeler Road, but a 24" white stop bar has not been applied to the pavement. A 24" white 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.

- 1b) Fairview Road Subdivision will have outside road access to Beeler Road via Beeler Farms Lane in Beeler Farms Subdivision. Based on visual observation, the intersection and stopping sight distances from Beeler Farms Lane at Beeler Road are adequate but could be improved with vegetation removal and finished grading. Vegetation and disturbed ground currently hamper full sight distance to the



north of the intersection. These items are in the front yard of a newly constructed house with direct driveway access to Beeler Road. This house is located at 6872 Beeler Road and is a part of the construction of the Beeler Farms Subdivision. During the construction of this house lot, some uncontrolled vegetation has been allowed to grow along the Beeler Road frontage during grading operations. This uncontrolled vegetation will need to be removed, and any future planned vegetation or landscaping on this lot must be maintained.



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 in the AM and PM peak hours.

- 2a) The previous Transportation Impact Study (TIS) for the adjacent proposed Beeler Road Subdivision recommended an eastbound right-turn lane 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 will be absorbed into one of the new thru lanes. 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.
- 2b) 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 at this time 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 addressed 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 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.

- 2c) 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 the majority of the 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 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 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 vehicle 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	99.7	0.724	F	537.2	1.765
		Northbound Right	C	15.9	0.380	C	19.6	0.361
		Westbound Left/Thru	A	8.8	0.072	B	11.0	0.204

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 122 feet. Thus, even though the northbound left-turn lane will experience high vehicle delays, as shown in Table 10, the calculated maximum queue is projected to only be approximately five passenger cars in length.

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	18
	Westbound Left/Thru	n/a	n/a	106	211
	Northbound Left	n/a	n/a	70	122
	Northbound Right	100	Yes	76	84

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

- 2d) 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. This project is currently in the design phase, and TDOT proposes widening East Emory Road from 2 to 5 lanes. This project will include 2 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 an 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 worksheet from this examination is shown in Appendix I and shows that a separate eastbound right-turn lane would not be required with a 5-lane roadway section on East Emory Road with the projected 2030 traffic volumes.

The capacity calculations and vehicle queues were analyzed with 5-lanes on East Emory Road with the northbound right-turn lane on Beeler Road remaining 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)		Northbound Left	C	22.2	0.267	E	45.4	0.519
		Northbound Right	B	12.5	0.296	B	14.7	0.272
		Westbound Left	A	8.9	0.073	B	11.2	0.209

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

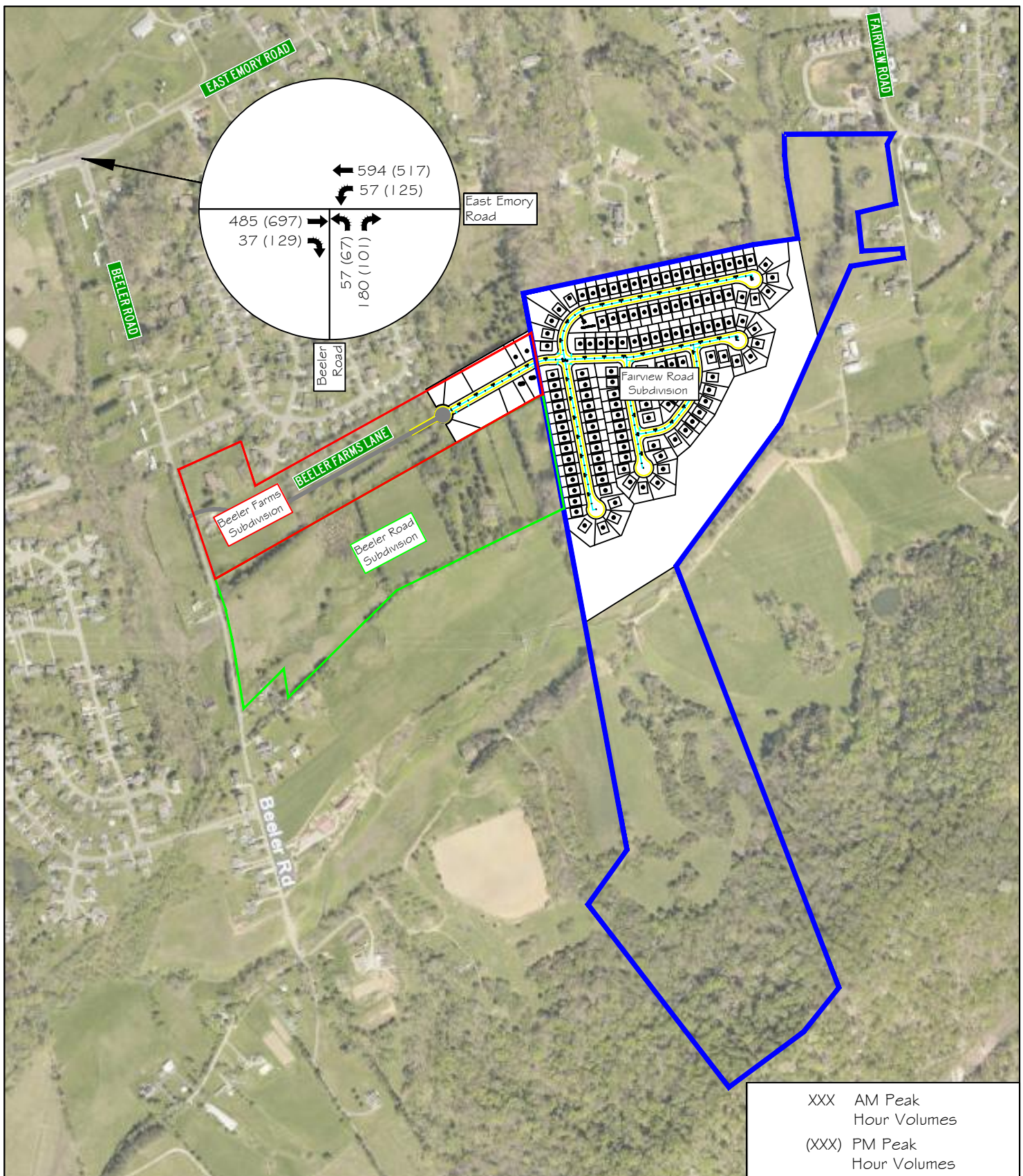
As shown in Table 12, the TDOT road widening project in 2030, coupled with the northbound right-turn lane on Beeler Road, will provide the necessary road capacity to mitigate the excessive vehicle delays on the northbound approach at the intersection of East Emory Road at Beeler Road.

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	4	15
	Westbound Left	n/a	n/a	45	69
	Northbound Left	n/a	n/a	65	93
	Northbound Right	100	Yes	65	64

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

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 vehicle queue is calculated to be 65 feet in the projected AM peak hour.



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

NOT TO SCALE



FIGURE 9

Fairview Road Subdivision

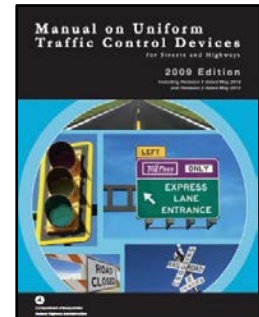
2030 Peak Hour Traffic Volumes -
PROJECTED CONDITIONS
(WITH THE PROJECT)

- 2e) 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 efficiencies.

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 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...” It is not believed that any specific alternatives have been implemented and observed at this intersection; therefore, this warrant was not included in this study.

A spreadsheet was 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, the generated traffic from the remaining houses in Beeler Farms Subdivision to be fully occupied, the proposed Beeler Road Subdivision, and the proposed Fairview Road Subdivision. This spreadsheet is shown in Appendix J.

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 J 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 development. 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 four scenarios. The scenarios in the table include the 2027 projected conditions with the project, 2027 projected conditions with the project and an eastbound right-turn lane, 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. As seen in the table, the vehicle delays and queues are reduced in each scenario when additional road capacity is provided.

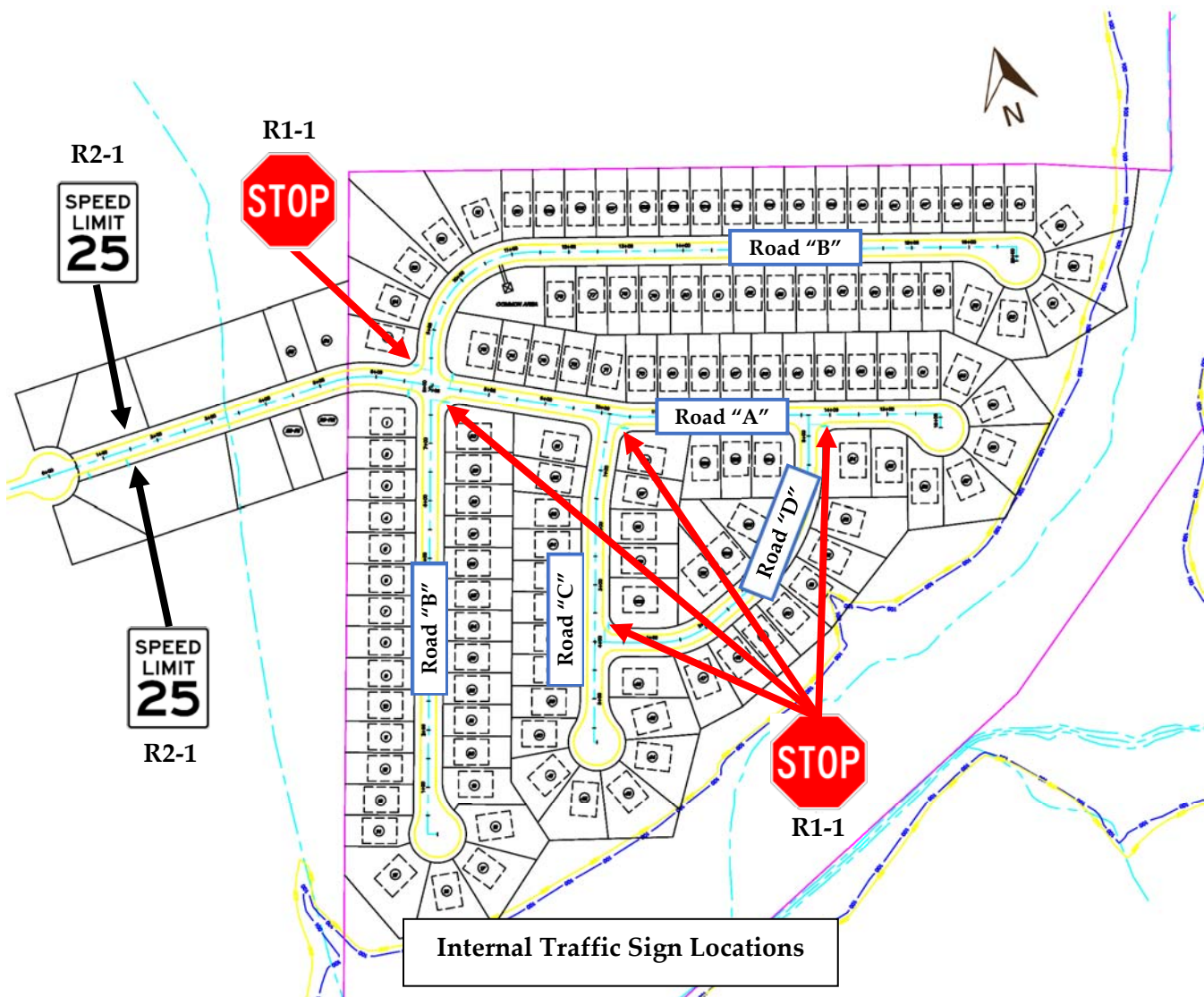
TABLE 14
INTERSECTION CAPACITY AND VEHICLE QUEUE ANALYSIS RESULTS -
EAST EMORY ROAD AT BEELER ROAD

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	149.4	160	F	779.7	288
		Westbound Left/Thru	A	8.8	103	B	11.0	239
2027 Projected Conditions (With the Project) with EB Right Turn Lane	 Unsignalized	Northbound Left/Right	F	130.2	149	F	603.8	226
		Westbound Left/Thru	A	8.8	95	B	11.0	199
2027 Projected Conditions (With the Project) with EB and NB Right Turn Lanes	 Unsignalized	Northbound Left	F	99.7	70	F	537.2	122
		Northbound Right	C	15.9	76	C	19.6	84
		Westbound Left/Thru	A	8.8	106	B	11.0	211
2030 Projected Conditions (With the Project) with 5-Lane TDOT Widening and NB Right Turn Lane	 Unsignalized	Northbound Left	C	22.2	65	E	45.4	93
		Northbound Right	B	12.5	65	B	14.7	64
		Westbound Left	A	8.9	45	B	11.2	69



Fairview Road Subdivision Internal Roads: The layout plan shows one entrance via Beeler Farms Lane constructed for the development, as shown in Figure 3 and below.

- 3a) Even though a 25-mph Speed Limit (R2-1) sign and a "No Outlet" (W14-2a) sign are already posted at the beginning of the Beeler Farms Lane off Beeler Road, it is recommended that two 25-mph Speed Limit (R2-1) signs be posted on Road "A" to the east of the cul-de-sac at the end of Beeler Farms Lane. One sign should be installed for eastbound travel into Fairview Road Subdivision and one for westbound travel into the Beeler Farms Subdivision. This recommendation will provide a reinforcement notification of the speed limit within the subdivisions.
- 3b) 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:



- 3c) 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.
- 3d) 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 to be used 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.

- 3e) All drainage grates and covers for the residential development must be pedestrian and bicycle safe.
- 3f) If directed by the local post office, the site designer should provide a centralized mail delivery center with a parking area within the Fairview Road Subdivision. The current site plan shows a common area on Road “B” on the northwest side of the development, but it does not show or label this area as a dedicated mail center. A specific parking or pull-off area plan should be designed and provided if a mail center is required.
- 3g) Knox County has completed a greenway study in 2020 and 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, the developer should discuss with Knox County if this potential greenway path is feasible to implement while the property is being developed.

- 3h) 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. A total of 183 houses will be constructed in the Beeler Farms and Fairview Road Subdivisions, utilizing Beeler Farms Lane as the single access point. The only available road access for the Fairview Road Subdivision will be via Beeler Farms Lane to Beeler Road. The Fairview Road Subdivision development will not have physical access for a second entrance. The entrance at Beeler Farms Lane and Beeler Road has already been constructed and will preclude constructing or retrofitting a boulevard entrance. The lack of a second entrance is not expected to be an issue regarding roadway capacity at the entrance via Beeler Farms Lane.

The development property that will be purchased from the current landowner for the proposed subdivision house lots will not have access to Fairview Road. Furthermore, any potential road access to Fairview Road would be cost prohibitive to cross Beaver Creek and could negatively impact the floodplain.

- 3i) All road grade and intersection elements should be designed to AASHTO, TDOT, and Knox County specifications and guidelines to ensure proper operation.



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

11/10/2022

Meeting Date (if applicable)

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

File Number(s)

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

Danny Kirby Springbrook Properties, LLC 7335 PO BOX 10226 Knoxville TN 37939

Owner Name (if different)

Owner Address

/ dkirby@5881000.com

Owner Phone / Email

0 FAIRVIEW RD / 7802 & 7946 Beeler Farms Lane

Property Address

021 04603, 020MJ054 (part of) and 020MJ026

Parcel ID

Part of Parcel (Y/N)?

95.83 acres

Tract Size

Hallsdale Powell Utility District

Sewer Provider

Northeast Knox Utility District

Water Provider

Septic (Y/N)

STAFF USE ONLY

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

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	126
Total Number of Lots Created	
Additional Information _____	
<input 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**☐ Staff Review ☐ Planning Commission**ATTACHMENTS**☐ Property Owners / Option Holders ☐ Variance Request**ADDITIONAL REQUIREMENTS**

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

Fee 1	Total
\$1,600.00	
Fee 2	
Fee 3	

AUTHORIZATION

Mesana Investments, LLC		9/20/2022
Applicant Signature	Please Print	Date
Phone / Email		
Danny Kirby Springbrook Properties, LLC		9/20/2022
Property Owner Signature	Please Print	Date

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

Reset Form

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

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)

Springbrook Properties, LLC, PO BOX 10226, Knoxville, TN, 37939

Property Owner Name (if different)

Property Owner Address

Property Owner Phone

0 Fairview Road (37721), 7802 & 7946 BEELER FARMS LN

021 04603, 020MJ054 (part of) & 056 026

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

95.83 acres

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

☐ 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		\$1,600

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
Please Print7-21-2022
Date

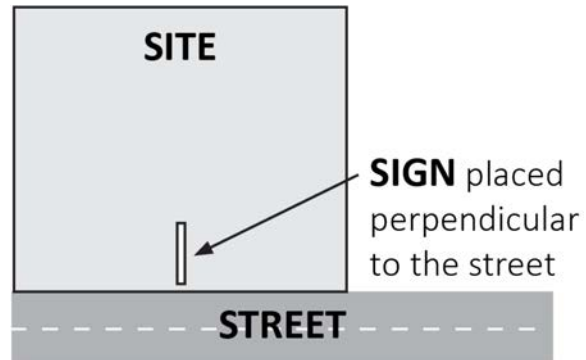


NAME	ADDRESS	CITY	STATE	ZIP	OWNER / OPTION
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Q. 23 ✓

If more space is needed, attach additional sheets.

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