WORKSHOP AGENDA

Planning Commission
June 10, 2025 @ 5:30 PM
For the June 24, 2025 Regular Meeting @ 6:00 PM

- Call meeting to order.
- Determine quorum.

ORDER OF BUSINESS

1. Approve Minutes: May 27, 2025 Regular Meeting and June 10, 2025 Workshop.

2. Public Comment Period.

OLD BUSINESS

3. Site Plan – Smoke Club 13 – New Building of 2,759 Square Feet on 0.42 Acres. Requested by Dean Design Group. Property located at 5234 Murfreesboro Road (Tax Map 15M, Group C, Parcel 6). C-2 (Highway Service) Zoning District. Property owned by Smoke Club 13, LLC.

4. Site Plan – 314 Retail Building – New Building of 9,750 Square Feet on 1.01 Acres. Requested by Danny Wamble. Property located at 314 Old Nashville Highway (Tax Map 17D, Group B, Parcel 15). C-2 (Highway Service) Zoning District. Property owned by Good Brothers, LLC.

NEW BUSINESS

5. Final Plat - The Resubdivision of Lot 15 Morningside Acres, Section 1 - Two Lots on 1.02 Acres. Requested by Huddleston - Steele. Property located on Old Jones Mill Road (Tax Map 13H, Group A, Parcel 39). R-1 (Low Density Residential) Zoning District. Property owned by Martha H. Queener.

6. Final Plat - Replat Lot 8 of Richland South, LLC Property - Two Lots on 1.33 Acres. Requested by TTL. Property located on Murfreesboro Road (Tax Map 14, Parcel 72.16). C-2 (Highway Service) Zoning District. Property owned by Woodhaven Development Group.

7. Final Plat - Bola Gabriel Subdivision - Two Lots on 5.04 Acres. Requested by Huddleston - Steele. Property located on Hollandale Road (Tax Map 14, Parcel 23.2). R-1 (Low Density Residential) Zoning District. Property owned by Bola Gabriel & Mariam Girges.

8. Site Plan – Mid-South Carpenter's Training Trust – New Pavillion of 6,767 Square Feet on 4 Acres. Requested by Wamble & Associates. Property located at 130 Veterans Memorial Parkway (Tax Map 14, Parcel 72.09). C-2 (Highway Service) Zoning District. Property owned by Mid-South Carpenter's Training Trust.

9. Recommendation to the Board of Mayor and Aldermen: Rezoning of Property - Requested by Cory McClellan - 4.36 Acres. Property located at 782 Waldron Road (Tax Map 29, Parcel 38). Current Zoning District: R-1 (Low Density Residential) Zoning District; Proposed Zoning District: C-2 (Highway Service) Zoning District. Property owned by Cory McClellan.

10. Recommendation to the Board of Mayor and Aldermen for Subdivision Acceptance - Brookside, Phase 2 - 88 Lots. Requested by Mitchell Bowman. Property located off Macaw Lane (Tax Map 29, Parcel 28). R-2 (Medium Density Residential) Zoning District.

11. Final Plat – 314 Retail Building – Two Lots on 1.01 Acres. Requested by Danny Wamble. Property located at 314 Old Nashville Highway (Tax Map 17D, Group B, Parcel 15). C-2 (Highway Service) Zoning District. Property owned by Good Brothers, LLC.

12. Combination Plat - 192 and 198 Old Nashville Highway - One New Lot on 1.35 Acres. Requested by Huddleston - Steele. Property located at 192 and 198 Old Nashville Highway (Tax Map 15M, Group E, Parcels 4 & 5). C-2 (Highway Service) Zoning District. Property owned by Better Home, LLC.

13. Bonds/Letters of Credit Update.

14. Discussion - New Zoning Ordinance.

15. Discussion - Community and Development Services General Information for Website Publication

16. Discussion - Updated Public Works Road and Civil Specifications

ADJOURN

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 3. **Site Plan – Smoke Club 13 – New Building of 2,759 Square Feet on 0.42 Acres. Requested by Dean Design Group. Property located at 5234 Murfreesboro Road (Tax Map 15M, Group C, Parcel 6). C-2 (Highway Service) Zoning District. Property owned by Smoke Club 13, LLC.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer
Scott Tatalovich, Utility Engineer

Summary:

This lot is comprised of 0.40 ± acres.

The property is located on Murfreesboro Road. The proposed layout on the plan shows one (1) new building is indicated for the parcel.

The proposed plan also shows two businesses.

Improvements to parking areas and drive aisles are shown in an effort to bring the site up to modern standards. The City's architectural overlay requirements will be met including meeting all brick and stone requirements on all facades.

The City's parking requirements have not been met as the front parking spaces will have to be removed. Staff is working with the applicant to bring the plans into greater conformance.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)

1. There are two (2) businesses shown on the plans after the public conversation last month that these 2 bus. will not be allowed;
2. Two businesses are not allowed;
3. Front parking spaces must be removed;
4. All utilities must be underground;
5. Exact location of new 6' sidewalk along Murf. Rd. needs to be determined.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. Show stakes on both sides of wattle tubes (eels) on the detail.
2. Submit a filled-out Longterm Maintenance Agreement (LTMA) which includes a Longterm Maintenance Plan (LTMP). Get with Alexandra Thompson (615-287-8658) for assistance. (https://www.lavergnetn.gov/DocumentCenter/View/3971/Long-Term-Maintenance-Agreements---La-Vergne)
3. Show the building footprint on the Dennis Ray Waldron property to the north as previously requested by the Planning Commission

4. Show a structural section of the proposed retaining wall. The note that the design will be done by others is not acceptable for walls which are required to comply with Site Plan requirements. Please include a detail for how the wall will pass the outfall pipe from the bioretention pond which is hitting it at an extreme angle or add a traffic-rated handhold to create a perpendicular connection of the pipe with the wall.
5. Provide calculations for the WQTV per the requirements of the La Vergne Stormwater Management Ordinance (https://www.lavergnetn.gov/DocumentCenter/View/4047/Title-14---Zoning-and-Land-Use-Control_APPROVED-2023-10-10)
6. On the pavement detail, show that subgrade must be compacted to 95% Standard Proctor (ASTM D698). Also state that asphalt and aggregate materials must meet City of La Vergne Standard Roadway Specifications.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)

1. If water fixtures are proposed in this building modification, contact City Utility Engineer: Scott Tatalovich, statalovich@lavergnetn.gov. You will be emailed a form to fill out.
2. Label existing water meter.
3. Per City Code, every lot shall have its own water meter serving only that property. City investigating water meter location for 5236 Murfreesboro Rd.
4. Show sewer cleanouts every 50 feet or at every angle point in the sewer system.
5. Show distance to nearest public FH to a property corner.
6. Show existing public Town of Smyrna Natural Gas distribution line located on your side of Murfreesboro Rd.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

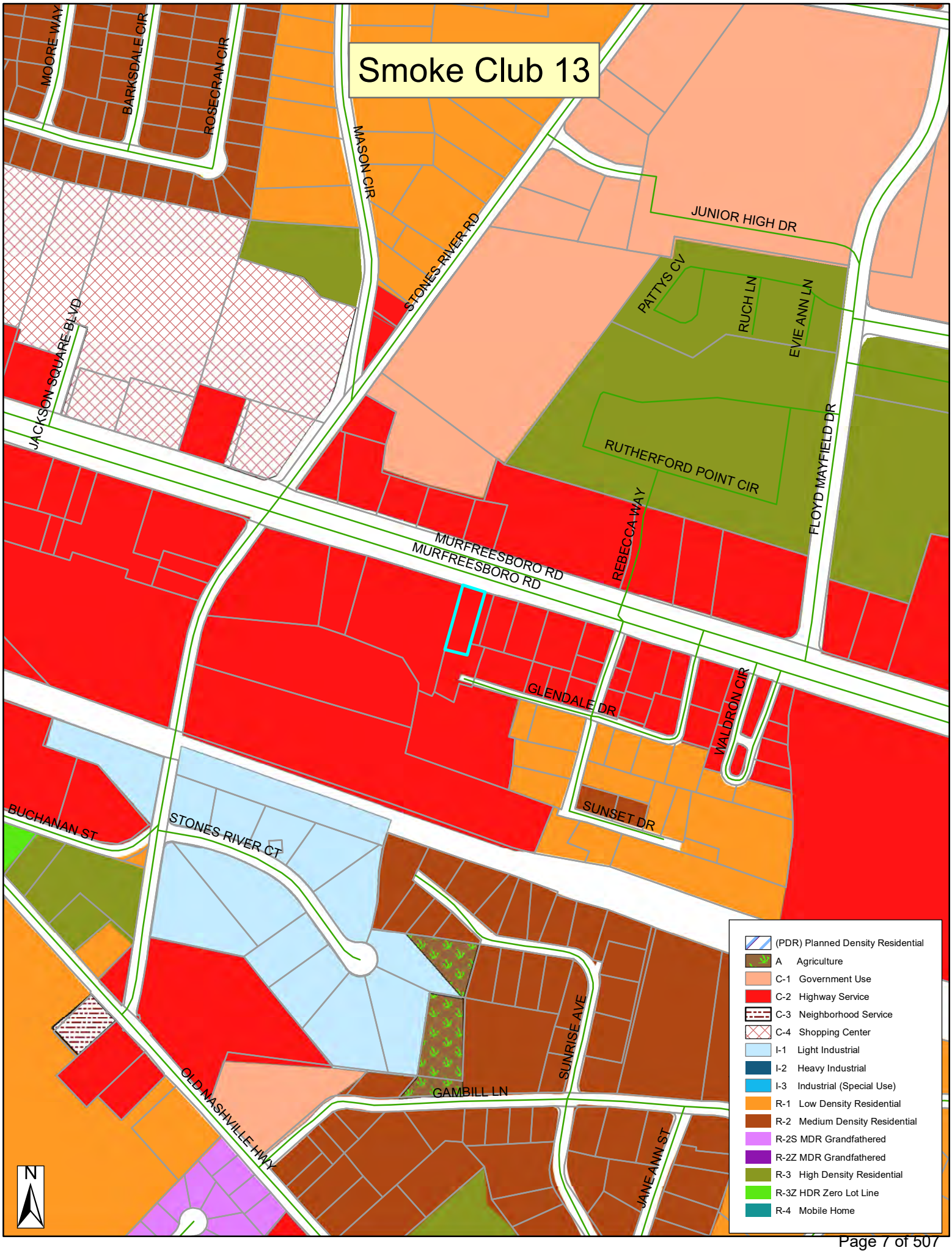
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

Smoke Club 13
FREESBORO RD
N

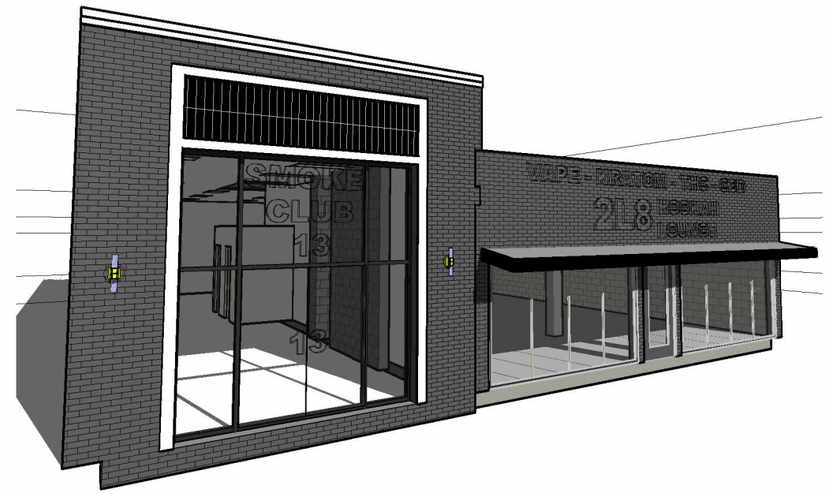
Smoke Club 13
MASON CIR
STONES RIVER RD
RUTHERFORD POINT CIR
REBECCA WAY
MURFREESBORO RD
MURFREESBORO RD
GLENDALE DR
SUNSET DR
SUNRISE AVE
STONES RIVER CT
N

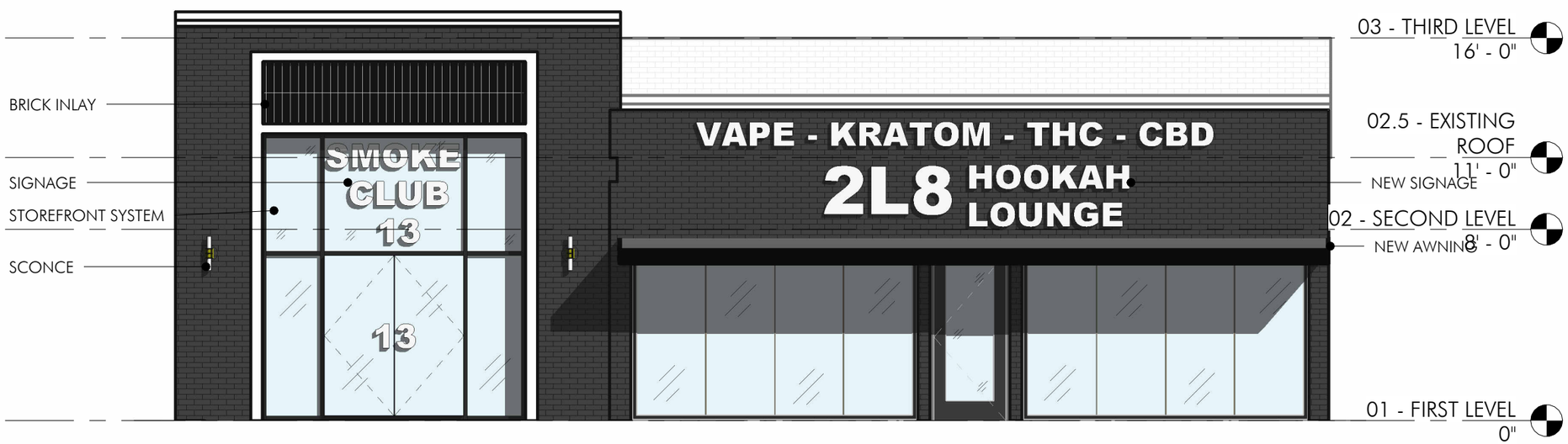

Smoke Club 13
MOORE WAY
BARKSDALE CIR
ROSECRAN CIR
MASON CIR
STONES RIVER RD
JUNIOR HIGH DR
PATTYS CV
RUCH LN
EVIE ANN LN
JACKSON SQUARE BLVD
RUTHERFORD POINT CIR
FLOYD MAYFIELD DR
REBECCA WAY
MURFREESBORO RD
MURFREESBORO RD
GLENDALE DR
WALDRON CIR
SUNSET DR
BUCHANAN ST
STONES RIVER CT
SUNRISE AVE
GAMBILL LN
OLD NASHVILLE HWY
JANE ANN ST
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home

800 INJURED?
800
800
4600
HUGHES & COLEMAN
LAMAR
SMOKE CLUB 13
13

INJURED?
800 800 4600
HUGHES & COLEMAN
APPLIANCE SERVICE
HEATING & COOLING
793-9712
SMOKE CLUB 13
FIX-IT-YOURSELF
APPLIANCE PARTS
793-9712 · 287-5749
HVAC SALES · SERVICE · PARTS
RUUD
ALL MAJOR BRANDS
NO PARKING

VAPE - KRATOM - THC - CBD
2L8 HOOKAH LOUNGE
SMOKE CLUB 13
13


SMOKE CLUB 13
13

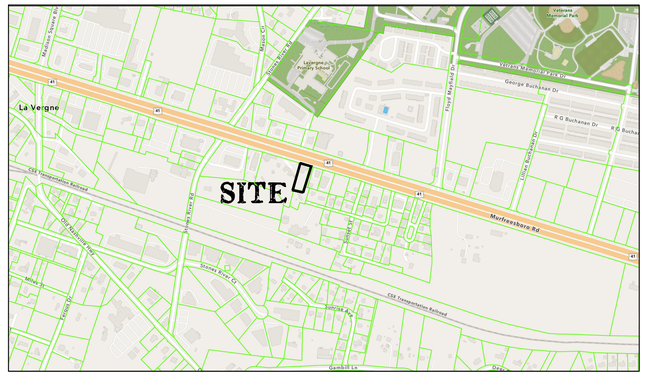

BRICK INLAY
SIGNAGE
STOREFRONT SYSTEM
SCONCE
SMOKE CLUB 13
13
VAPE - KRATOM - THC - CBD
2L8 HOOKAH LOUNGE
NEW SIGNAGE
NEW AWNING
03 - THIRD LEVEL 16' - 0"
02.5 - EXISTING ROOF 11' - 0"
02 - SECOND LEVEL 8' - 0"
01 - FIRST LEVEL 0"

VAPE - KRATOM - THC - CBD
2L8 HOOKAH LOUNGE
03 - THIRD LEVEL
16' - 0"
02.5 - EXISTING ROOF
11' - 0"
NEW SIGNAGE
02 - SECOND LEVEL
8' - 0"
NEW AWNING
01 - FIRST LEVEL
0"

Smoke Club 13

Map 15M, Group C, Parcel 6.00 in Rutherford Co
5234 Murfreesboro Road, La Vergne, Tennessee

GENERAL NOTES:
1. The contractor shall verify the location of all existing utilities in the proximity of the construction area and report any plan discrepancies to the owner's representative prior to beginning work.
2. The contractor shall conform to all local, state and federal codes and obtain all permits prior to beginning work.
3. The contractor shall check all finished grades and dimensions and report any discrepancies to the owner's representative prior to beginning work.
4. Dimensions are to the face of curb, edge of concrete and face of building unless noted otherwise.
5. Proposed building footprint is for graphic purposes only. Contractor shall use the current architectural drawings for building stakeout and verify that there are no discrepancies with these plans.
6. All traffic markings shall conform to the manual of uniform traffic control device (MUTCD). All pavement marking shall be thermoplastic unless directed otherwise by the owner's representative.
7. All handicap ramps, parking spaces and accessible routes shall comply with the current ADA requirements. If there is a discrepancy between the requirements and the plans, the contractor must notify the owner's representative prior to beginning work.
8. Exterior door landings shall be provided per the local building code. Contractor shall coordinate door locations and adjacent sidewalk/landing grades with these plans and the architectural plans and report any discrepancies to the owner's representative.
9. Maintain one set of as-built drawings on the job site for distribution to the architect/engineer upon completion: include all utility locations, materials and sizes, all new sidewalk ramps, elevations for all sanitary and storm sewer structures, vertical and horizontal information on all new utilities as well as existing utilities discovered during construction.
10. Provide a smooth transition between existing pavement and new pavement. Field adjustment of final grades may be necessary. Install all utilities prior to installation of pavement.
11. The necessary permits for the work shown on these site development plans must be obtained by the contractor prior to commencement of any work on this project. The contractor shall give all necessary notices and obtain all permits and pay all fees involved in securing all permits. They shall also comply with all city, county and state building laws, ordinances or regulations relating to the construction of the project.
12. The contractor shall be responsible for and shall bear all expenses of field staking necessary for site and building layout. All site layout shall be performed in accordance with the site layout plan. All building layout shall be performed in accordance with the latest architectural plans.
13. The location of existing piping and underground utilities, such as water and gas lines, electrical and telephone conduits, etc., as shown on this portion of the plans have been determined from the best available information by actual surveys, or taken from the records and drawings of the existing utilities. However, the civil engineer does not assume responsibility that, during construction, the possibility of utilities other than those shown may be encountered or that actual location of those shown may vary somewhat from the location designated on this portion of the plans. In areas where it is necessary that the exact locations of underground lines be known, the contractor shall, at this own expense, furnish all labor and tools to either verify and substantiate or definitively establish the location of the lines.
14. The contractor must understand that all work is entirely at his risk until all work is accepted and he will be held responsible for its safety by the owner. Therefore, the contractor shall furnish and install all necessary temporary works for the protection of the work, including barricades, warning signs, and lights.
15. The site development portion of this project will be subject to the inspection and final approval of the local planning, codes, water and sewer departments (and/or utility districts), engineering/public works departments and fire marshal's office.
16. If during the construction of the site development portion of this project a question of intent or clarity arises from either the plans or specifications, the contractor will immediately bring the matter to the attention of the civil engineer or owner's representative for resolution before the affected work items are initiated or pursued further.
17. The contractor will exercise extreme caution in the use of equipment in and around overhead and/or underground power lines. If at any time in the pursuit of this work the contractor must work in close proximity of the above-noted lines, the electric and/or telephone companies shall be contacted prior to such work and the proper safety measures taken. The contractor should make a thorough examination of the overhead lines in the project area prior to the initiation of construction.
18. The contractor shall be responsible for any damage done to the premises or adjacent premises, or injuries to the public during the construction of the work, caused by himself, his subcontractors, or the carelessness of any of his employees.



Vicinity Map — Not to Scale

SITE DATA TABLE

PROJECT NAME:	Smoke Club 13
ADDRESS:	5234 Murfreesboro Road
CITY / (COUNTY) / STATE:	LaVergne (Rutherford) , Tennessee
EXISTING ZONING:	C-2 (Highway Service)
ADJOINING ZONING	C-2 (Highway Service)
EXIST & PROPOSED USE- PERMITTED:	General Retail Trade (All SF)- PERMITTED
TOTAL SITE AREA:	0.42 Acres (18,381 square feet)
MINIMUM LOT SIZE:	No minimum required
MAX LOT COVERAGE:	No Maximum in C2
PROPOSED COVERAGE:	3,656 sf Total 1229 sf Existing 2427 sf Proposed
FLOOR AREA RATIO:	3,656 sf / 18,381 sf = 19.9%
MAXIMUM HEIGHT:	40' Maximum Allowed (Proposed 18' to Parapet, 1-Story)
FRONT BUILDING SETBACK:	35 feet
SIDE BUILDING SETBACK:	10 Feet
REAR BUILDING SETBACK:	20 Feet
DISTURBED AREA:	0.39 Acres (17,000 sf)
REQUIRED PARKING:	1 Space per 250 sf
	3,988 sf / 250 = 15.9 => 16 Spaces
PROPOSED PARKING:	18 Total Spaces including 1 Accessible Space
EXIST. IMPERVIOUS SURFACE:	0.25 acres (59.5%) 0.17 acres of gravel (40.5%)
PROP. IMPERVIOUS SURFACE:	0.35 acres (83.3%)

STANDARD NOTES:
1. This property IS NOT within an area designated as a special flood area, as shown on Community Map/Panel Number 47149C0015J, Effective date May 9, 2023.

Sheet Schedule

C0.0 Cover Sheet
C1.0 Demolition & Erosion Control Plan
C2.0 Site Plan
C3.0 Grading & Drainage Plan

Property Owner/Developer:
Smoke Club 13, LLC
c/o Mina George
2012 Delaware Drive
Nolensville, TN 37135
Phone: 615-955-1539
EMail: buildtrustconstruction@hotmail.com

Cover Sheet

Created:
April 28, 2025
Revised:
May 30, 2025

Not to Scale

Designed By:
Charley Dean, PE

Dean Design Group
Civil Engineering, Land Planning & Zoning
1633 West Main Street, Suite 1002, Lebanon TN 37087
Phone: 615-300-6316, EMail: charley@deandesigngroupllc.com

CHARLES TAYLOR DEAN
STATE OF TENNESSEE
2025

Smoke Club 13
Map 15M, Group C, Parcel 6.00 in Rutherford Co
5234 Murfreesboro Road, La Vergne, Tennessee

Permit Info:

Project: 24057

C0.0

Sheet 1 of 4

EROSION & SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL FOLLOW THE STORMWATER ORDINANCES OF THE LOCAL MUNICIPALITY FOR GRADING AND EROSION CONTROL MEASURES AS INDICATED ON THESE PLANS. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICE, OBTAIN ALL APPLICABLE PERMITS, AND PAY ALL FEES AS REQUIRED TO COMPLY WITH LOCAL REGULATIONS. CONTRACTOR SHALL COMPLY WITH ALL CITY, COUNTY, LOCAL, STATE AND FEDERAL LAWS AND ORDINANCES GOVERNING THE PORTIONS OF WORK HE IS TO PERFORM.

2. CONTRACTOR MUST ENSURE THAT THE CONSTRUCTION SITE IS PREPARED PRIOR TO THE ONSET OF ANY STORM. CONTRACTOR SHALL HAVE ALL EROSION AND SEDIMENT CONTROL MEASURES IN PLACE AND IN GOOD WORKING ORDER.

3. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED UNTIL THOSE DISTURBED AREAS ARE STABILIZED. CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS AND RESOLVE ANY ISSUES. THOSE CHANGES SHALL BE COORDINATED WITH THE LOCAL STORMWATER INSPECTORS AND/ OR THE DESIGN ENGINEER.

4. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING THE CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS AND/OR CONSTRUCTION PRACTICES. VARIATIONS TO THE PLAN MUST BE MADE BY THE CONTRACTOR AND COORDINATED WITH THE LOCAL INSPECTORS, E.P.S.C. PROFESSIONAL, AND DESIGN ENGINEER.

5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED BEFORE AND AFTER STORM EVENTS TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.

6. CONTRACTOR OR THE E.P.S.C. PROFESSIONAL SHALL MAINTAIN A LOG AT THE SITE OF THE INSPECTIONS AND MAINTENANCE OF ALL B.M.P.'S, AS WELL AS ALL CORRECTIVE CHANGES TO THE B.M.P.'S OR THE EROSION AND SEDIMENT CONTROL PLAN.

7. IN AREAS WHERE THE SOIL IS EXPOSED, PROMPT STABILIZATION SHALL BE PERFORMED. ALL DISTURBED AREAS WITHOUT ACTIVE GRADING SHALL BE STABILIZED WITHIN 14 DAYS OF COMPLETION OF WORK ON THOSE AREAS.

8. THE CONTRACTOR SHALL INSTALL THE TEMPORARY CONSTRUCTION ENTRANCE PRIOR TO COMMENCEMENT OF ANY GRADING ACTIVITIES. ALL CONSTRUCTION TRAFFIC ENTERING THE ROAD MUST CROSS THE STABILIZED CONSTRUCTION ENTRANCE. THIS ENTRANCE MUST REMAIN IN PLACE UNTIL THE THE BASE COURSE OF THE SITE PAVING IS INSTALLED.

9. ALL SEDIMENT DEPOSITED WITHIN THE PUBLIC RIGHT OF WAY MUST BE SWEPT UP AND DISPOSED OF AT THE END OF EACH DAY, OR MORE FREQUENTLY IF NECESSARY.

10. CONTRACTOR SHALL INSTALL INLET PROTECTION MEASURES AROUND ALL EXISTING AND NEW DRAINAGE STRUCTURE OPENINGS IN THE PROJECT VICINITY IMMEDIATELY AFTER THE STRUCTURE OPENING IS PLACED. THESE MEASURES SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL FINAL STABLIZATION IS ACHIEVED.

11. STABILIZATION MEASURES MUST BE INITIATED WITHIN SEVEN (7) DAYS ON PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, AND WITHIN FIFTEEN (15) DAYS AFTER FINAL GRADING OR OTHER EARTHWORK. PERMANENT STABILIZATION WITH PERENNIAL VEGETATION OR OTHER STABLE, NON-ERODING SURFACE SHALL REPLACE ANY TEMPORARY MEASURES AS SOON AS PRACTICAL.

12. STRUCTURAL PRACTICES TO DIVERT FLOWS FROM AREAS OF DISTURBANCE, STORE FLOWS, OR OTHERWISE LIMIT RUNOFF AND THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE MUST BE IMPLEMENTED. SUCH PRACTICES MAY INCLUDE: SILT FENCES, EARTH DIKES, DRAINAGE SWALES, SEDIMENT TRAPS, CHECK DAMS, SUBSURFACE DRAINS, PIPE SLOPE DRAINS, INLET PROTECTION, ROCK OUTLET PROTECTION, REINFORCED SOIL RETAINING SYSTEMS, GABION BASKETS, AND OTHER MEASURES AS NECESSARY.

13. ALL TOPSOIL EXCAVATED FROM SITE SHALL REMAIN THE PROPERTY OF THE OWNER AND THE CONTRACTOR MUST COORDINATE WITH THE OWNER ON THE PLACEMENT OR STOCKPILING OF THAT MATERIAL FOR FUTURE USE.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO THE PREMISES OR ADJACENT PREMISES OR INJURIES CAUSED BY NEGLIGENCE OF THEIR WORKERS AND/OR SUBCONTRACTORS.

15. ALL DISTURBED AREAS ARE TO BE FINISH GRADED TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND OFF DEVELOPED SURFACES. IF A DISCREPANCY ARISES DURING CONSTRUCTION, THE CONTRACTOR SHALL ALERT THE DESIGN ENGINEER BEFORE MAKING ANY ADJUSTMENTS TO THE GRADING SCHEME.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION AND FIELD LOCATING OF ALL EXISTING UTILITIES ON AND AROUND THE SITE. THIS PLAN IS INTENDED AS A SCHEMATIC REPRESENTATION OF THOSE LOCATIONS BUT SHOULD NOT BE TAKEN AS AN EXACT LOCATION OF THOSE IMPROVEMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID DAMAGE TO ALL EXISTING UTILITIES DURING CONSTRUCTION, AND TO FULLY REPAIR ANY DAMAGE TO MEET CURRENT SPECIFICATIONS SHOULD IT OCCUR.

CALL BEFORE YOU DIG

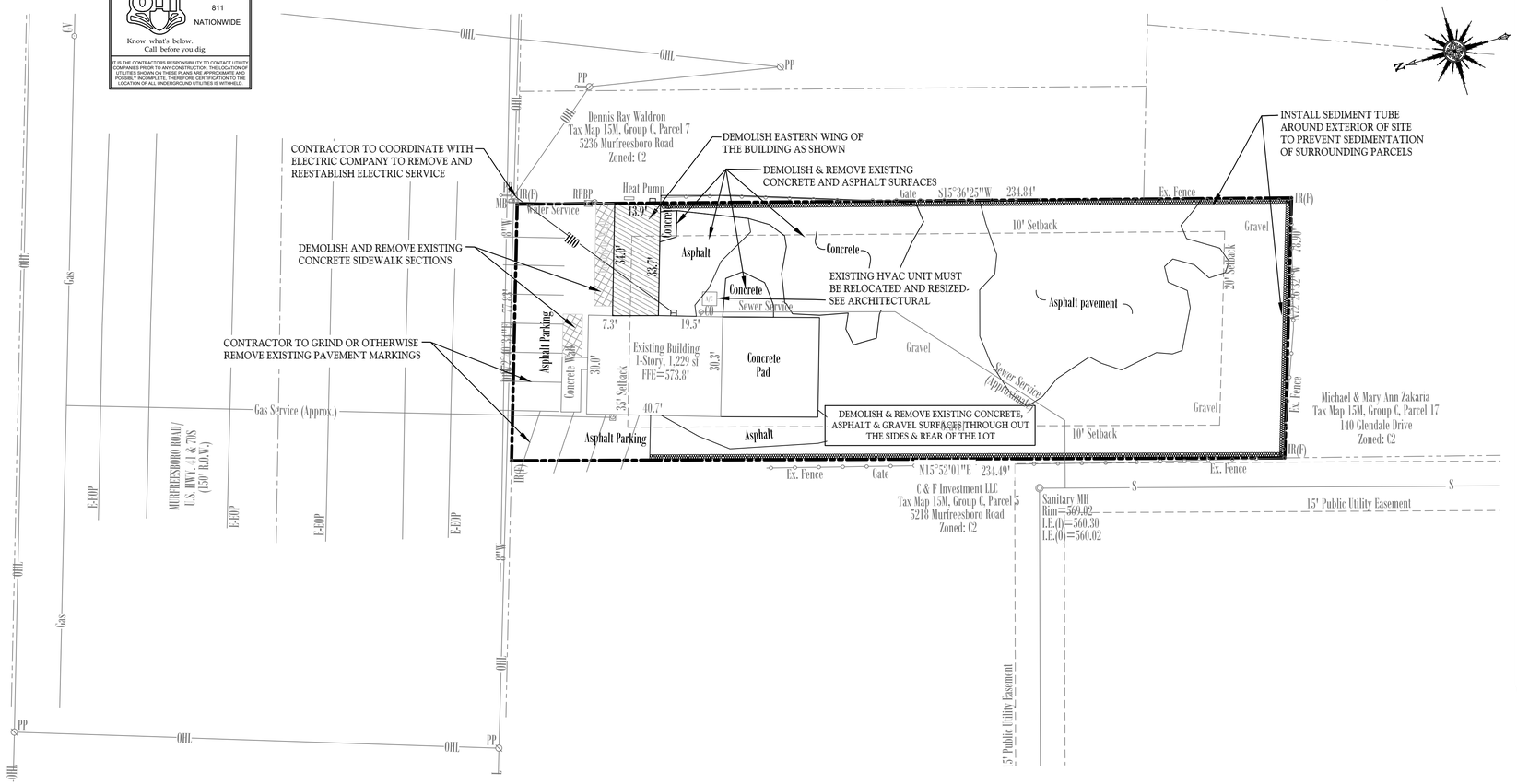
CALL 811 NATIONWIDE

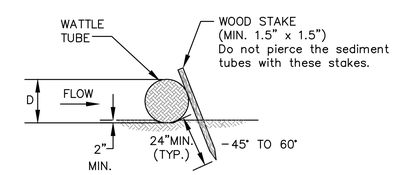
Know what's below. Call before you dig.

IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. THE LOCATION OF UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND POSSIBLY INCOMPLETE. THEREFORE CERTIFICATION TO THE LOCATION OF ALL UNDERGROUND UTILITIES IS WITHHELD.

Total Property Area = 0.42 acres (18,381 s.f.)
Disturbed Area = 0.39 acres (17,000 s.f.)

20 0 20 40
Scale 1 = 20'





SEDIMENT TUBE

Not to Scale

Initial Sediment Control Plan

Demo & Erosion Control Plan

Created: April 28, 2025
Revised: May 30, 2025

20 Scale

Designed By: Charley Dean, PE

Dean Design Group
Civil Engineering, Land Planning & Zoning
1633 West Main Street, Suite 1002, Lebanon TN 37087
Phone: 615-300-6316, EMail: charley@deandesigngroupllc.com

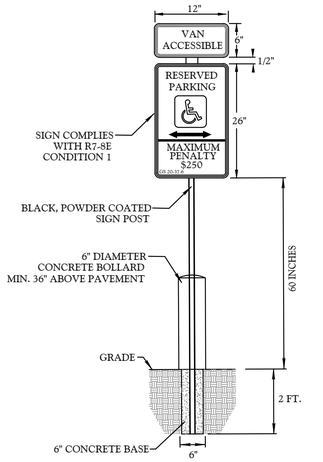
Smoke Club 13
Map 15M, Group C, Parcel 6.00 in Rutherford Co
5234 Murfreesboro Road, La Vergne, Tennessee

Permit Info:

Project: 24057

C1.0

Sheet 2 of 4

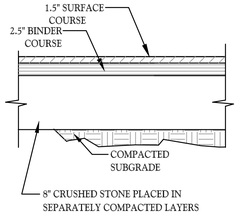


GENERAL NOTES:

1. ALL ACCESSIBLE SPACES SHALL BE IDENTIFIED BY ABOVE GROUND SIGNS ONLY. SPACES SHALL NOT USE GROUND PAINTED SYMBOLS.
2. ACCESSIBLE SPACES ARE REQUIRED TO BE STRIPED OFF ONLY; BLUE COLORING IS NOT NECESSARY, NOR REQUIRED. WHITE STRIPING SHALL BE USED ON DARK PAVEMENT
3. STANDARD COLORS: BACKGROUND- WHITE; LETTERING/BORDER- GREEN; ARROW- GREEN; FIGURE- WHITE ON BLUE FIELD.
4. SIGN TO HAVE 1-1/2" CORNER RADIUS (TYPICAL)
5. SIGN MAY BE PLACED ON BUILDING AS LONG AS OTHER REQUIREMENTS ARE MET INCLUDING HEIGHT OF SIGN FROM PAVEMENT SURFACE

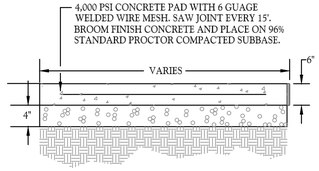
ACCESSIBLE PARKING SIGNAGE

Not to Scale



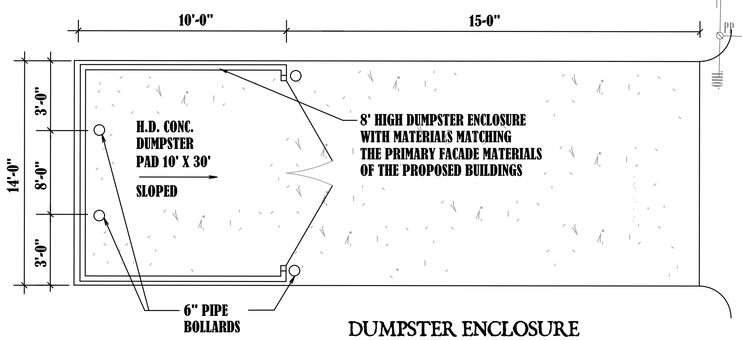
HEAVY-DUTY ASPHALT PAVEMENT

Not to Scale



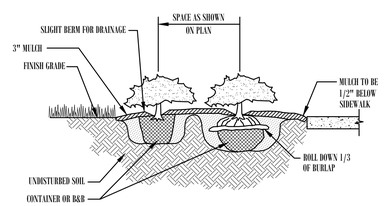
HEAVY DUTY CONCRETE PAD

Not to Scale



DUMPSTER ENCLOSURE

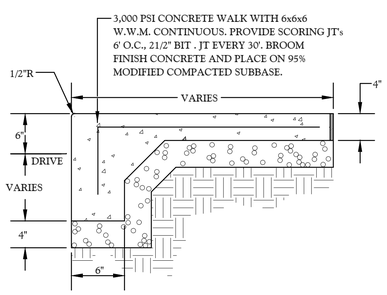
Not to Scale



SHRUB / GROUNDCOVER PLANTING DETAIL

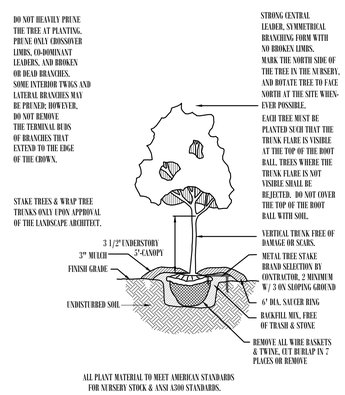
Not to Scale

LANDSCAPE TABLE	
REQUIRED PLANTINGS (Non-Residential) 3 Canopy Trees per Acre x 0.42 acres = 2 3 Understory Trees per Acre x 0.42 acres = 2 15 Shrubs per Acre x 0.42 acres = 7	PROVIDED



TURNDOWN SIDEWALK DETAIL

Not to Scale

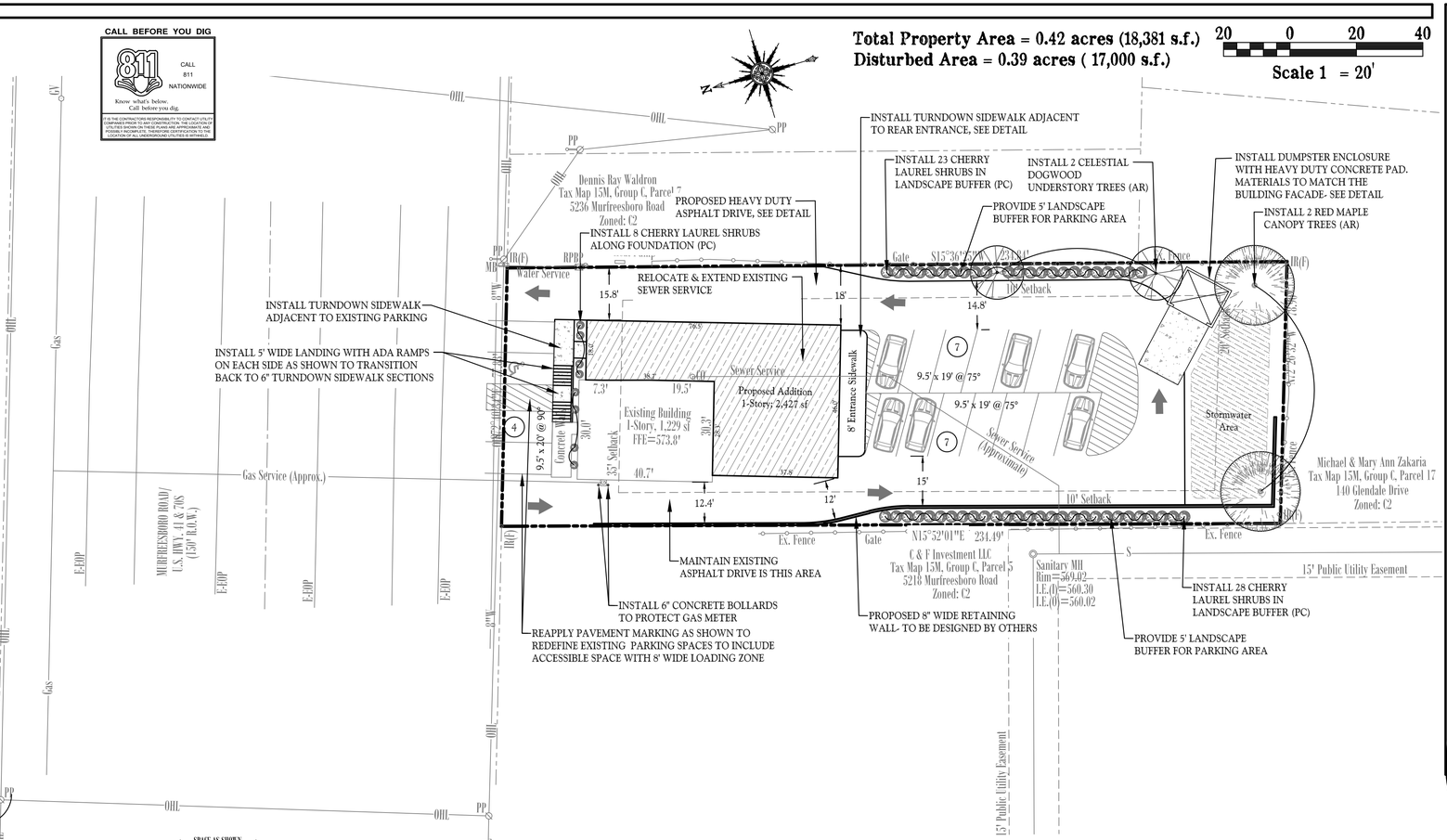


DECIDUOUS TREE PLANTING DETAIL

Not to Scale

MATERIALS SCHEDULE

KEY	QTY.	SCIENTIFIC NAME/ COMMON NAME	HEIGHT	SPREAD	TRUNK	REMARKS
TREES						
AR	2	Acer Rubrum Red Maple	6'-8'	4'-5'	2.5"	4' Clear Trunk
CR	2	Cornus forida x cornus kousa 'Celestial' Celestial Dogwood	6'-8'	4-5'	2"	4' Clear Trunk
SHRUBS						
PC	59	Prunus Carolina / Cherry Laurel	24"-30"	24"-30"		Full to Bottom
TURF						
SEED		Turf Mixture	80% Rebel Supreme,20% Merion Bluegrass. Seed all disturbed areas @ 5#/1,000 sf.			
MISCELLANEOUS			REMARKS			
		Shredded Hardwood Bark Mulch	Minimum 3" depth throughout. Min. 4" deep on slopes greater than 3:1.			



NOTES:

1. NO SITE SIGNAGE IS PROPOSED WITH THIS PROJECT. ALL SIGNAGE WILL BE ON FACE OF BUILDING.
2. NO NEW PUBLIC UTILITY CONNECTIONS ARE PROPOSED WITH THIS PROJECT. ALL UTILITY CONNECTIONS WILL BE MADE TO EXISTING SERVICES.

Layout Plan

Created: April 28, 2025
Revised: May 30, 2025

20 Scale

Designed By: Charley Dean, PE

Dean Design Group
Civil Engineering, Land Planning & Zoning
1633 West Main Street, Suite 1002, Lebanon TN 37087
Phone: 615-300-6316; EMail: charley@deandesigngroupllc.com

CHARLES TAYLOR DEAN
STATE OF TENNESSEE
NO. 120944
LICENSED PROFESSIONAL ENGINEER

Smoke Club 13
Map 15M, Group C, Parcel 6.00 in Rutherford Co
5234 Murfreesboro Road, La Vergne, Tennessee

Permit Info:

Project: 24057

C2.0

Sheet 3 of 4

SITE GRADING & DRAINAGE NOTES:

1. Erosion control sediment barriers shall be installed prior beginning site work.
2. No heavy equipment shall cross or be stored outside the limits of construction, within tree protections zones, or under the drip line of existing trees to remain.
3. Topsoil stripped from areas to be graded shall be stockpiled on site in a location approved by the owner's representative. Drainage shall be routed around stockpile locations for the duration of grading operations. Erosion control measures shall be installed to prevent loss of topsoi l material.
4. . All cut and fill shall be performed under the direction/observation of the geotechnical engineer.
5. The suitability of soils for fill material shall be determined by the geotechnical engineer.
6. Unless directed otherwise by geotechnical engineer, all fill areas shall be raised in lifts not exceeding 8" in thickness . The relative compaction of each layer shall not be less than 95% of the standard proctor maximum dry density (ASTM D-698) in all areas of fill within open areas and 98% of same specification for areas under roads, parking, sidewalks, building slabs, and foundations.
7. All grading shall be completed to the grades indicated within these plans. Final grades shall provide proper drainage and prevent standing water.
8. All storm drainage castings to be John Bouchard & Sons Co. or approved equal, unless otherwise noted.
9. All storm drainage pipes to be RCP, Class III, unless otherwise noted.
10. Installation of pipe material shall be placed with a screen stone envelope and when under pavement entire trench to be backfilled with screen stone to subgrade. Size of stone, envelopes, and trenches to be specified by municipalities for public lines and private lines to adhere to common practices for installation requirements.
11. Existing structure castings to remain shall be adjusted to match new grade.

CALL BEFORE YOU DIG

811 CALL 811 NATIONWIDE

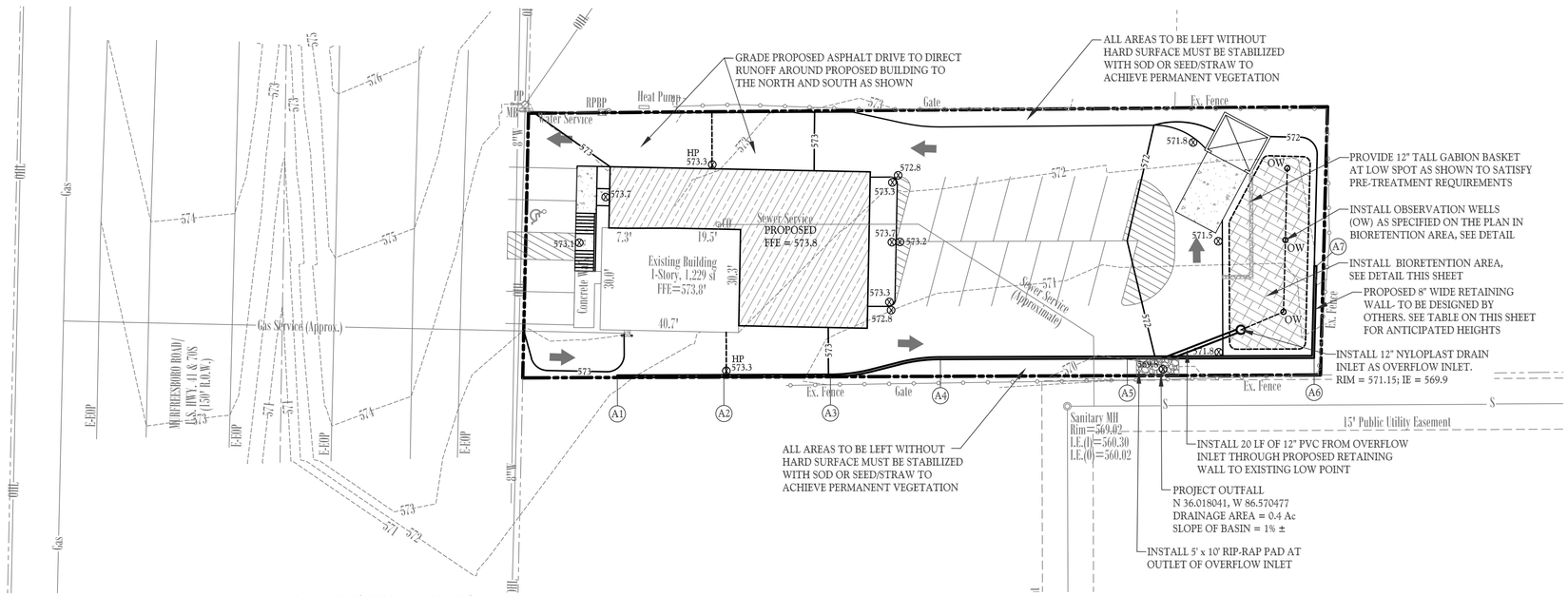
Know what's below. Call before you dig.

IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE ONLY POSSIBLY ACCURATE. THEREFORE CERTIFICATION TO THE LOCATION OF ALL UNDERGROUND UTILITIES IS WITHHELD.

Total Property Area = 0.42 acres (18,381 s.f.)
Disturbed Area = 0.39 acres (17,000 s.f.)

20 0 20 40

Scale 1 = 20'

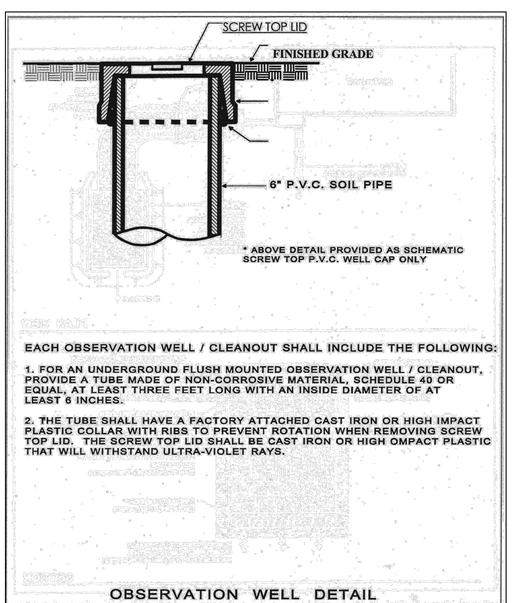


RETAINING WALL TABLES

Point	Top of Wall	Finish Grade Inside Wall	Finish Grade Outside Wall	Approx. Wall Height (feet)
A1	572.5	572.2	572.2	0.3
A2	574.0	573.3	571.5	2.5
A3	573.5	573.0	570.9	2.6
A4	573.2	572.7	570.6	2.6
A5	572.6	572.1	569.8	2.8
A6	572.0	571.5	570.6	1.4
A7	572.5	571.5	572.1	0.4

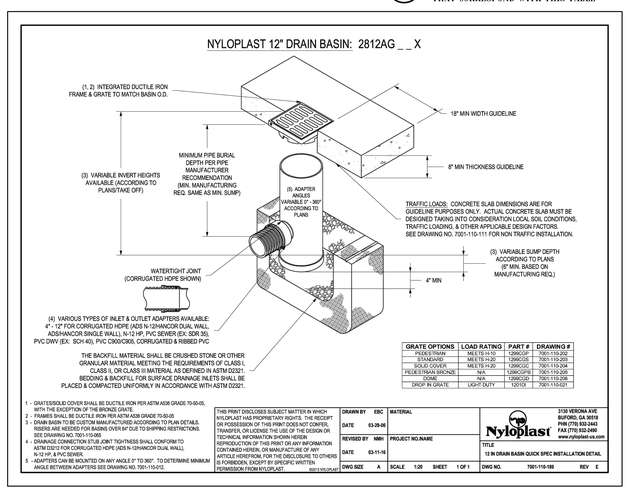
A1 :: INDICATES POINTS ALONG SPECIFIED WALL THAT CORRESPOND WITH THIS TABLE

Retaining Wall Notes:
1. Structural design of retaining walls to be performed by others.
2. Heights in this table are visible heights according to proposed finished grade elevations. Consult retaining wall design for recommended elevation difference between top of footing and finished grade.
3. Walls exceeding 30 inches in height require handrails, consult with architect on style and material.
4. Retaining walls over 4' tall require separate plans to be submitted to building inspection & must be approved prior to installation.



OBSERVATION WELL DETAIL

(Source: Metro Stormwater Management Manual, 2000)



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1299CGP	7001-110-202
STANDARD	MEETS H-20	1299CGS	7001-110-203
SOLID COVER	MEETS H-20	1299CGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1299CGPB	7001-110-205
SIGNAL	N/A	1299CGR	7001-110-206
DROP IN GRATE	LIGHT DUTY	12D1DI	7001-110-021

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-08.
4 - WATERTIGHT CONNECTION OR JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, N-12 HP), & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

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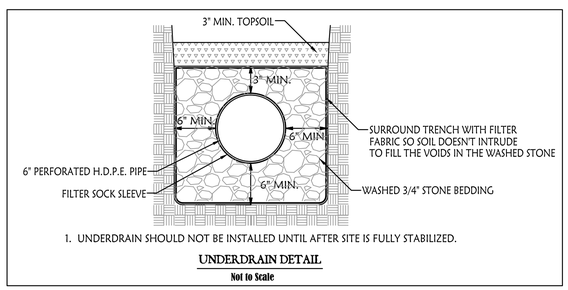
DRAWN BY	ESC	MATERIAL	
DATE	03-29-06		
REVISED BY	MMH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:20	SHEET 1 OF 1

Nyloplast
3135 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE
12 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL

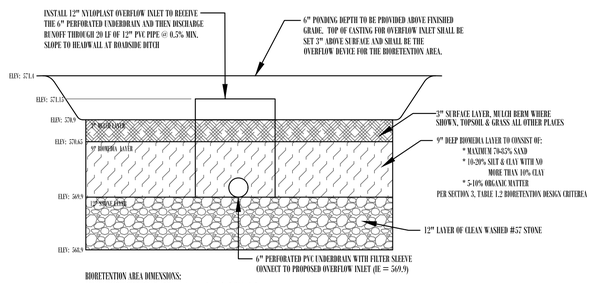
DWG NO. 7001-110-189 REV E



1. UNDERDRAIN SHOULD NOT BE INSTALLED UNTIL AFTER SITE IS FULLY STABILIZED.

UNDERDRAIN DETAIL

Not to Scale



BIORETENTION AREA DIMENSIONS:
*PLAN SHOWS IRREGULAR AREA ± (approximately 1,206 sf shown)

NOTES:
1. IT IS OF HIGH IMPORTANCE THAT NO COMPACTION OF THE SUBSURFACE FILTER BED TAKES PLACE. MATERIAL IS DESIGNED TO FILTER AND STORE RUNOFF FOR WATER QUALITY TREATMENT AND DETENTION STORAGE. BACKFILL SHOULD BE ACCOMPLISHED USING HAND TOOLS OR LIGHT DUTY EQUIPMENT. NO HEAVY EQUIPMENT SHALL BE PERMITTED ON OR ADJACAN THE FILTER BED OR PONDS.
2. INSTALL PERMEABLE FILTER FABRIC IN BIORETENTION AREA ALONG SIDES OF EXCAVATION AND DIRECTLY ABOVE UNDERDRAIN. FABRIC SHOULD NOT BE INSTALLED ALONG THE BOTTOM OR OVER THE ENTIRETY OF THE AREA BETWEEN THE WEIRS AND STONE LAYERS.
3. CONTRACTOR OR OWNER'S REP. MUST NOTIFY LEBANON STORMWATER AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF THE BIORETENTION, SOIL FILTER BED, CITY OF LEBANON STORMWATER DEPARTMENT MUST BE PRESENT FOR THE INSTALLATION OF THE BIORETENTION AREAS. CONTRACTOR TO COORDINATE WITH STORMWATER INSPECTOR.
4. 1x4" PERFORATED UNDERDRAIN SYSTEM MUST BE INSTALLED ALONG THE BOTTOM OF THE BIORETENTION CELL. SEE DETAIL. DIRECT UNDERDRAIN PIPE TO CONNECT TO OVERFLOW INLET WITHIN BIORETENTION AREA AS SHOWN ON THIS SHEET. UNDERDRAIN SHALL BE ABOVE STONE SUMP LAYER AS SHOWN IN DETAIL.
5. ALL STONE SHOULD BE #57 GRADE, WASHED AND FREE OF FINES.
6. UPON COMPLETION, CONTRACTOR MUST PROVIDE THE FOLLOWING DOCUMENTATION TO THE ENGINEER FOR SUBMITTAL TO THE LEBANON STORMWATER DEPARTMENT:
* BIORETENTION CERTIFIED MIX TICKETS MEETING THE PLAN DETAIL FOR THE PROPOSED MATERIALS
* PRE, DURING, AND POST CONSTRUCTION INSTALLATION PHOTOS.

BIORETENTION AREA

Not to Scale

Final Sediment Control Plan
Grading & Drainage Plan

Created: April 28, 2025
Revised: May 30, 2025

20 Scale

Designed By: Charley Dean, PE

Dean Design Group
Civil Engineering, Land Planning & Zoning
1633 West Main Street, Suite 1002, Lebanon TN 37087
Phone: 615-300-6316, EMail: charley@deandesigngroupllc.com

CHARLES TAYLOR DEAN III — STATE OF TENNESSEE — 121101

Smoke Club 13
Map 15M, Group C, Parcel 6.00 in Rutherford Co
5234 Murfreesboro Road, La Vergne, Tennessee

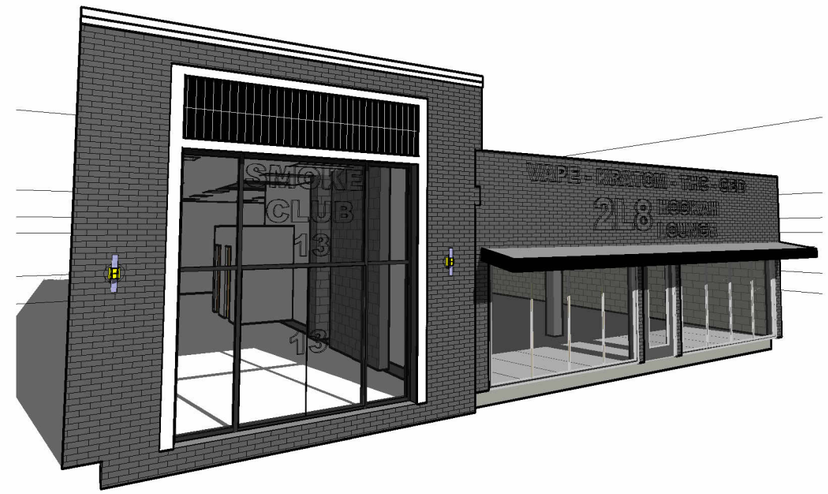
Permit Info:

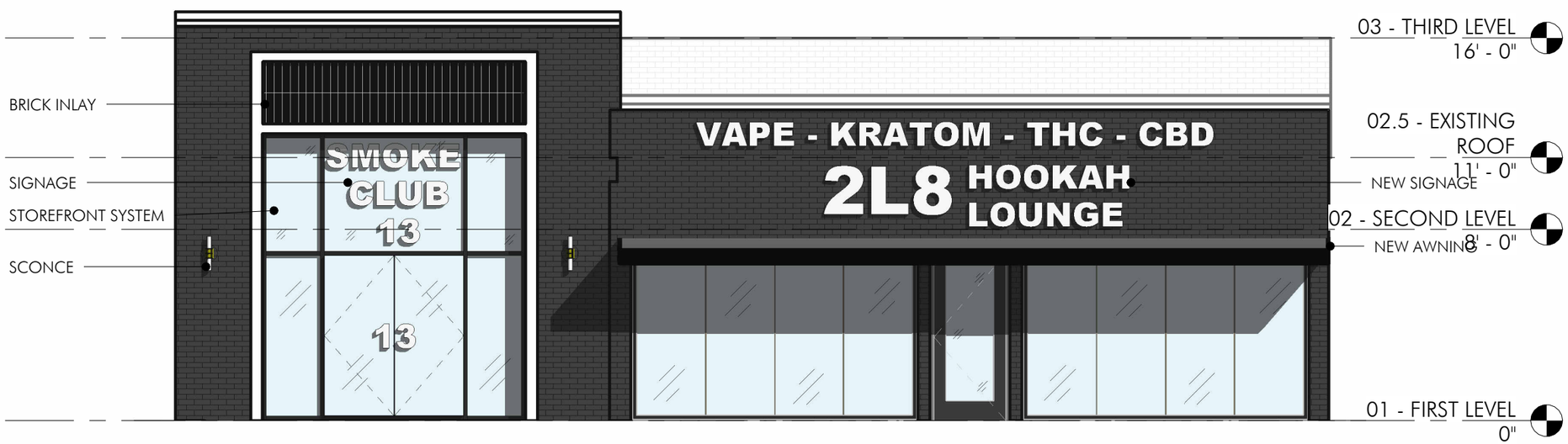
Project: 24057

C3.0

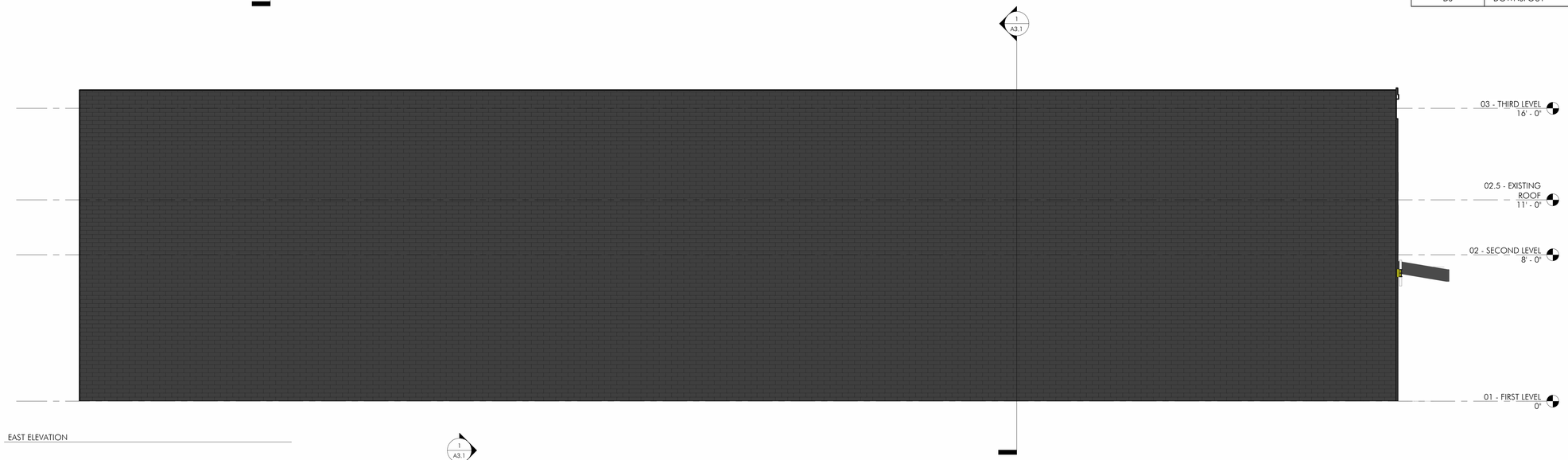
Sheet 4 of 4

VAPE - KRATOM - THC - CBD
2L8 HOOKAH LOUNGE
SMOKE CLUB 13
13

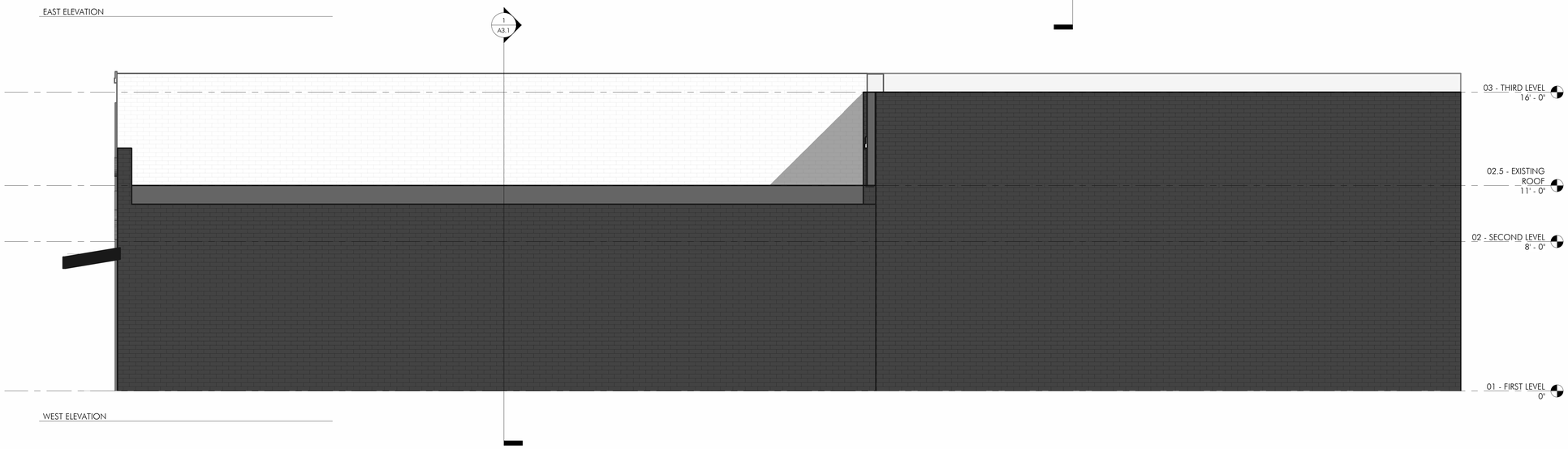

SMOKE CLUB 13
13


BRICK INLAY
SIGNAGE
STOREFRONT SYSTEM
SCONCE
SMOKE CLUB 13
13
VAPE - KRATOM - THC - CBD
2L8 HOOKAH LOUNGE
NEW SIGNAGE
NEW AWNING
03 - THIRD LEVEL 16' - 0"
02.5 - EXISTING ROOF 11' - 0"
02 - SECOND LEVEL 8' - 0"
01 - FIRST LEVEL 0"

FRONT ELEVATION



EAST ELEVATION



WEST ELEVATION

ELEVATION MATERIAL LEGEND

	BRICK VENEER
	LAP SIDING
	EXTERIOR INSULATED FINISH SYSTEM
	STANDING SEAM METAL ROOF
	SHINGLED ROOF
	GLAZING
	CONCRETE MASONRY UNIT
	VERTICAL SIDING
	BRICK ROWLOCK
	BRICK SOLDIER COURSE
CJ	CONTROL JOINT
RA	RELIEF ANGLE
DS	DOWNSPOUT

daniels chandler +
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Nashville, TN 37203
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info@danielschandler.com

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Do Not Scale Drawings.

Contractor must verify all dimensions prior to construction.

Renovation for
5234 Murfreesboro Rd

5234 Murfreesboro Rd

PROJECT No.	25111
DATE:	Issue Date
REV DATE:	

SHEET NAME
BUILDING ELEVATIONS

SHEET NUMBER
A2.1

DESIGN DEVELOPMENT - NOT FOR CONSTRUCTION

VAPE - KRATOM - THC - CBD
2L8 HOOKAH LOUNGE
03 - THIRD LEVEL
16' - 0"
02.5 - EXISTING ROOF
11' - 0"
NEW SIGNAGE
02 - SECOND LEVEL
8' - 0"
NEW AWNING
01 - FIRST LEVEL
0"

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 4. **Site Plan – 314 Retail Building – New Building of 9,750 Square Feet on 1.01 Acres. Requested by Danny Wamble. Property located at 314 Old Nashville Highway (Tax Map 17D, Group B, Parcel 15). C-2 (Highway Service) Zoning District. Property owned by Good Brothers, LLC.**

Reviewed By:
Bo Logan, City Planner
Scott Tatalovich, Utility Engineer
Gary Lide, City Engineer

Summary:

The applicant is requesting site plan approval of a new retail building of 9750 SF at this site located on Old Nash Hwy. The site is 1+ acres. Structures will consist of a new building, associated parking areas and driveways.

The property currently has two dwellings on it.

Staff has serious concerns about keeping the older house as proposed on the plan.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)

1. Staff has serious concerns about keeping the older house on the site;
2. Staff opines the best plan will show a complete demolition of the site;
3. Because the applicants wish to keep the two current dwellings, then the property is in violation of City codes;
4. After the illegal home is removed the remaining home will no longer be allowed to stay residential - it must become commercial, (unless subdivided by plat);
5. No one may have a house and a commercial use on the same parcel - this parcel is now zoned commercial.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. Site Plan submittal is very incomplete. Staff cannot recommend approval of the one-page document which was provided. It was utilized to create the following comments to assist the developer.
2. Solid waste and emergency access to both sites from Woody Thomas Drive appears to be intended to be gravel at the time that the commercial retail receives its CO. There is no provision in the ordinance that allows for a surface which is not 'dustless' to be in place when the CO is issued.
3. The city would prefer that a small 'speed bump' be added immediately downstream of the proposed trench drain in order to minimize bypass flows.
4. Correct the spelling of the work 'municipal' on access easement note.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)

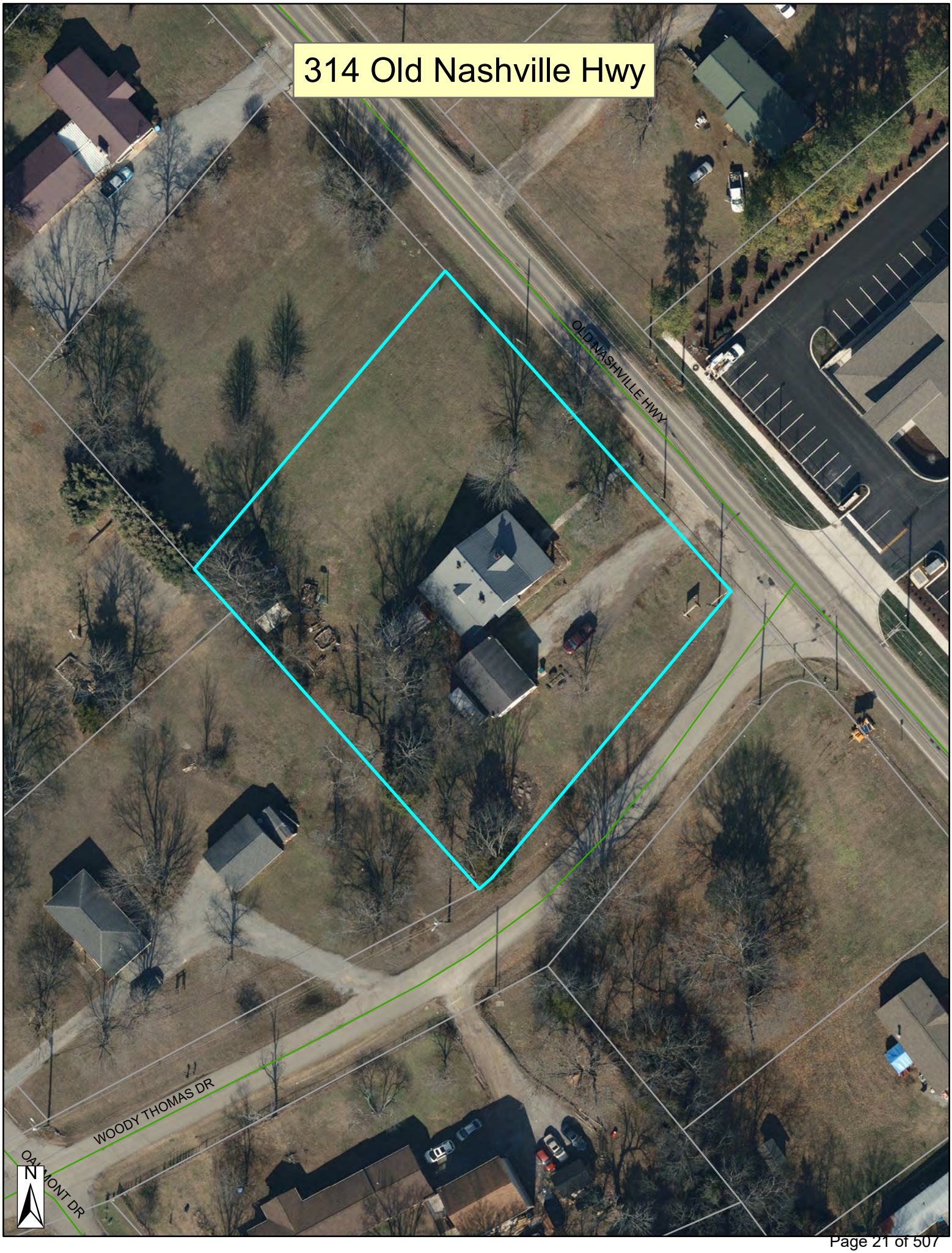
1. No comment at this time.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

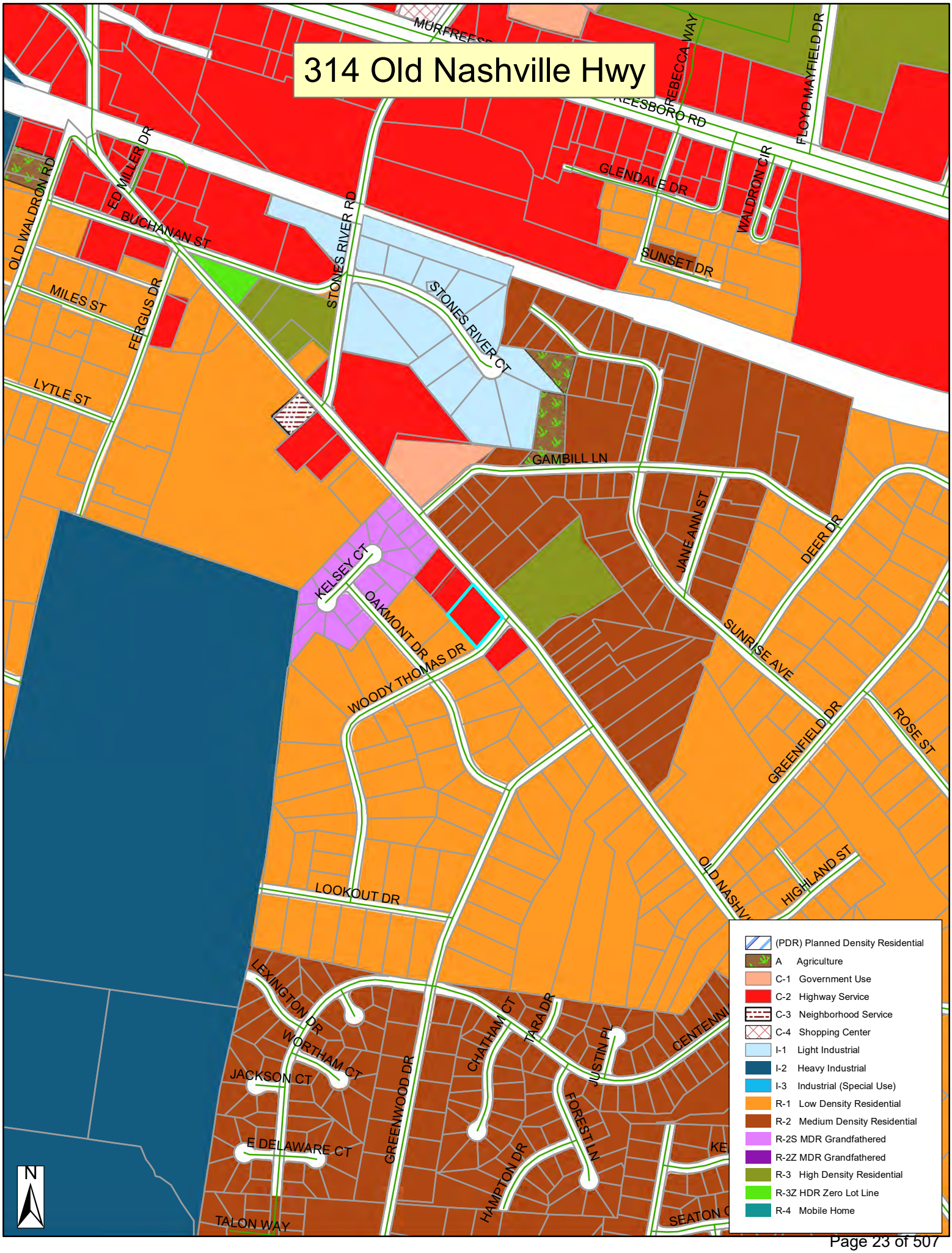
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

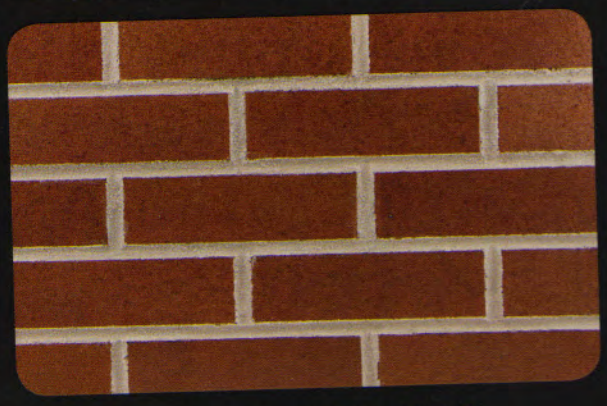
Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.


314 Old Nashville Hwy
OLD NASHVILLE HWY
WOODY THOMAS DR
OAKMONT DR
N

314 Old Nashville Hwy
GAMBILL LN
SUNRISE AVE
OLD NASHVILLE HWY
KELSEY CT
OAKMONT DR
WOODY THOMAS DR
GREENWOOD DR
N

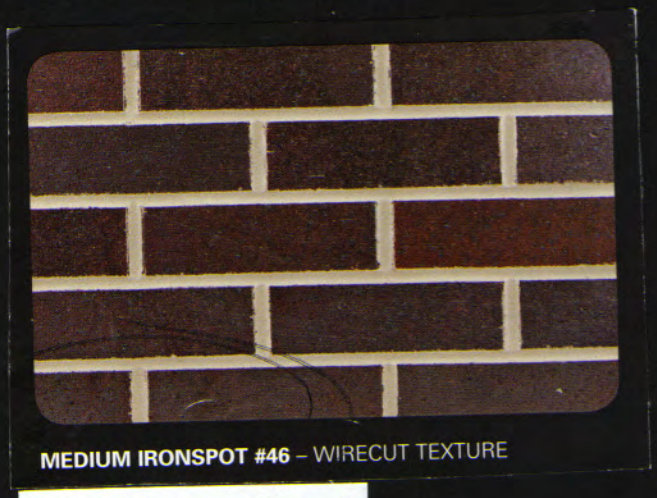

314 Old Nashville Hwy
MURFREESBORO RD
REBECCA WAY
FLOYD MAYFIELD DR
GLENDALE DR
WALDRON CIR
SUNSET DR
OLD WALDRON RD
ED MILLER DR
BUCHANAN ST
STONES RIVER RD
STONES RIVER CT
MILES ST
FERGUS DR
LYTLE ST
GAMBILL LN
JANE ANN ST
DEER DR
KELSEY CT
OAKMONT DR
WOODY THOMAS DR
SUNRISE AVE
GREENFIELD DR
ROSE ST
HIGHLAND ST
LOOKOUT DR
LEXINGTON DR
WORTHAM CT
JACKSON CT
E DELAWARE CT
GREENWOOD DR
CHATHAM CT
TARA DR
JUSTIN PL
FOREST LN
HAMPTON DR
TALON WAY
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home
N



MEDIUM IRONSPOT #77 – SMOOTH TEXTURE

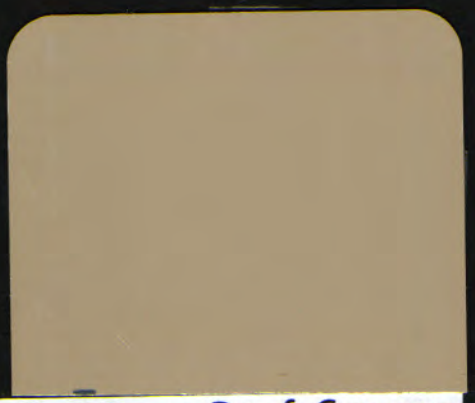
Brick Veneer No. 1

Brick Veneer No 2

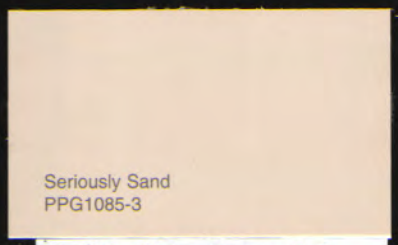


MEDIUM IRONSPOT #46 – WIRECUT TEXTURE

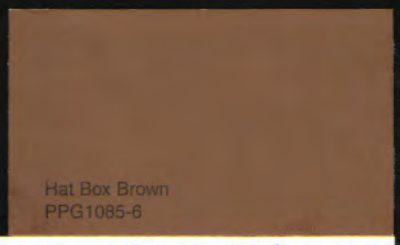
Brick Veneer No. 3



Standing Seam Roof, Canopy Gutters & Downspouts, Trim



EIFS Signband & Eave Gable at Rear



Hardie Board Lap Siding at Rear & Temporary Wall

A Commerical Building For:
Amen and Amgad Zakher

314 Old Nashville Highway

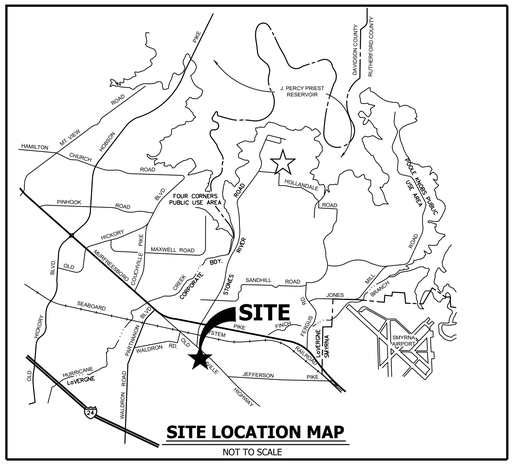
LaVergne , Tennessee

WM BARRY HUCKABEE - ARCHITECT
49 Carter Lane
Mt. Juliet, Tennessee 37122

Phase One Site Construction Plans

314 OLD NASHVILLE HIGHWAY

La Vergne, Rutherford County, Tennessee



N

Owner/Developer:

AMGAD & AMIN ZAKHER

2409 Newberry Lane, MT Juliet, Tennessee 37122

Contact: Amin Zakher - (201)-539-5656

Civil Engineering & Land Surveying:

Wamble & Associates, PLLC

216 Centerview Dr., Suite 180, Brentwood, TN, 37027

Contact: James D. Wamble, PE, RLS - (615) 251-9555

WATER & SEWER APPROVAL CERTIFICATE

CITY OF LA VERGNE HAS APPROVED THE PUBLIC WATER AND SANITARY SEWER LINE DESIGN FOR LAKE WOODS PHASE 11 AND AGREES TO OWN, OPERATE AND MAINTAIN THE PROPOSED IMPROVEMENTS.

NAME: CITY OF LA VERGNE

BY:_____ DATE: _____

TITLE:_____
SCOTT TATALOVICH
UTILITY ENGINEER

GRADING & DRAINAGE APPROVAL CERTIFICATE

APPROVED BY THE CITY OF La VERGNE ENGINEERING DEPARTMENT.

_____ _____

GARY LIDE, P.E. DATE
CITY ENGINEER

JAMES D. WAMBLE
REGISTERED
ENGINEER
NO. 014238
STATE OF TENNESSEE
05/19/2025

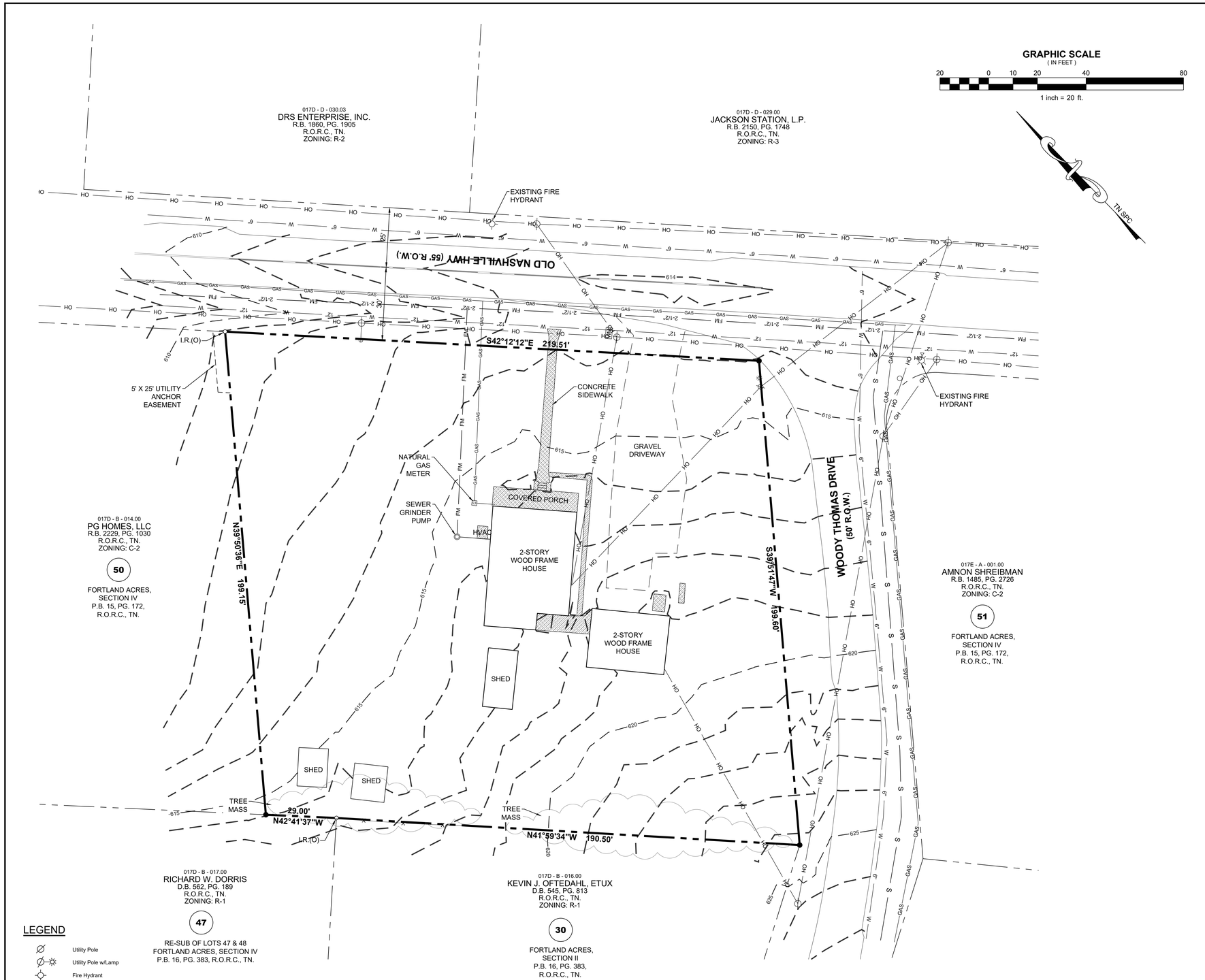
REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

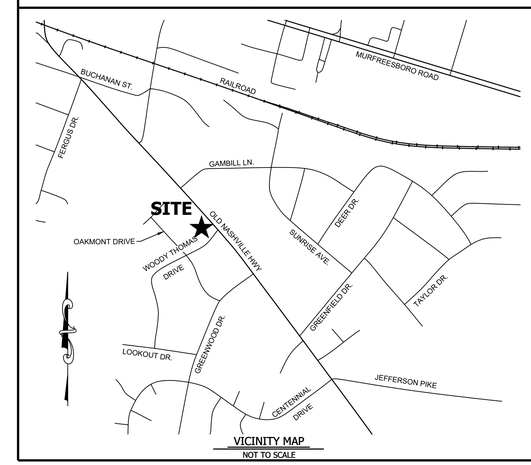
W&A NO.: 1092-0124

SHEET NUMBER:

C-0.0



TOTAL SITE AREA: 43,304.31 Sq. Ft. or 0.99 ACRES



MAP REFERENCE

Property is Parcel 15.00 on Rutherford County Property Map 017D, Group "B".

DEED REFERENCE

Owner; Good Brothers, LLC as of record in Record Book 2452, Page 1657 in the Register's Office for Rutherford County, Tennessee (R.O.R.C., TN)

SURVEYOR'S NOTES

1. Property is located at 314 Old Nashville Highway in La Vergne, Rutherford County, Tennessee 37167 and is Currently Zoned Residential C-2, Commercial Highway Services District.
2. The property is located in an area designated as Zone "X" (Areas determined to be outside the the 0.2% Annual Chance Flood) as shown on FEMA FIRM Community Map Panel No. 47149C0015H F, effective date January 5, 2007.
3. Utilities shown hereon were taken from visible structures in the field. Verification of existence, size, location and depth should be confirmed with the appropriate utility sources. See Utility Disclaimer hereon.
4. Bearings shown hereon based on Tennessee State Plane (NAD83).
5. This is a Global Positioning System (GPS) Survey Using the Following Equipment and Criteria:
   - Global Navigation Satellite Systems (GNSS) Multi Frequency Base-Rover Carlson BRx7.
   - Tennessee Department of Transportation (TDOT) Continuously Operated Reference Station (CORS) Network
   - North Orientation Based on Geodetic North or Tennessee State Plane Grid North
   - Horizontal Datum Based on North American Datum (NAD) 83, Realizations 2011, EPOCH 2010.00 with All Dimensions Shown Hereon Being Horizontal Ground Values.
   - Vertical Datum Based on North Americal Vertical Datum (NAVD) 88.
   - Data Collection Scheme Used Modified Radial Techniques with Data Evaluations Based on Point Accuracy as Opposed to Loop Closures. Single Control Points were Observed Six (6) Times with the Average Value Being Used with GNSS Real-time Kinematics (RTK) Observations with Loss of Satellite Lock and Re-inilization Between Control Points Regardless of Time or Distance Separation
   - The Accuracy of Bearings and Distances Obtained from Inversing Between Corner Positions Does Not Exceed the Maximum Allowable Relative Positional Precision of 0.08 Feet as Established by the Department of Interior, Bureau of Land Management, Cadastral Survey Standards for Global Navigation Satellite System Technology
6. The property is currently served by public water, sanitary sewer by the City of La Vergne and electricity provided by Nashville Electric Service, Natural Gas by Atmos Energy Corporation, Telephone, Cable TV and Internet by various providers.
7. A Commitment for Title Insurance was not provided prior to the preparation of this survey therefore it is subject to the findings of a current title search.
8. Existence or non-existence of jurisdictional streams and/or wetlands are subject to the findings of a Hydrologic Determination Report (HD) for natural resource features prepared following the Tennessee Department of Environment and Conservation (TDEC) standard operating procedures for Hydrologic Determinations. HD reports are subject to verification by TDEC, for streams and wetlands, and the U.S. Army Corps of Engineers (USACE), for wetlands. If these natural resource features are found they are subject to 30-feet average width buffers.

SURVEYOR'S CERTIFICATE

I Certify That This Plat and the Survey on Which it is Based Were Made on the Ground Under My Direct Supervision in Accordance with the April, 2018 Standards of Practice For Land Surveyors Pursuant to Tennessee Code Annotated Section 62-18-105(d) and 62-18-106(c) Chapter 0820-03-.05 Established by the Tennessee Board of Examiners of Land Surveyors.

I Further Certify That There Are No Encroachments or Projections Other Than Those Shown.

I Further Certify That This Survey is True and Correct to the Best of My Knowledge and Belief.

By: Jimmy C. Yates
TN R.L.S. No.: 1597
Date: January 30, 2025

LEGEND

- Utility Pole
- Utility Pole w/Lamp
- Fire Hydrant
- Sewer Grinder Pump
- Water Valve
- WM Water Meter
- Fence Line
- OH Overhead Utility Line
- FM Sanitary Sewer Force Main
- W Water Line
- IR (O) Iron Rod (Old) U.N.O.
- IR (N) Iron Rod (New) w/ "Wamble" Cap

UNDERGROUND UTILITY NOTE

THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS AND/OR MAPS PREPARED BY OTHERS. THERE ARE NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THIS SURVEY DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

Tennessee 811 Know what's below. Call before you dig.

WAMBLE & ASSOCIATES, P.L.L.C.
Civil Engineering
Land Surveying
Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

BOUNDARY AND TOPOGRAPHIC SURVEY

314 OLD NASHVILLE HIGHWAY
La VERGNE, RUTHERFORD COUNTY, TENNESSEE
PREPARED FOR:
AMIN ZAKHER & AMGAD ZAKHER
2409 NEWBERRY LANE
MT. JULIET, TENNESSEE, 37122

JIMMY C. YATES
REGISTERED LAND SURVEYOR
TENNESSEE NO. 1597
01/30/2025

REVISIONS:

DATE: January 30, 2025
W&A NO.: 1092-0124
SHEET NUMBER:
V-1.0

CITY OF LA VERGNE GENERAL NOTES

1. ALL WORK HEREON SHALL CONFORM TO THE CITY OF LA VERGNE STANDARD SPECIFICATIONS AND DETAILS.
2. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
3. DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO TRENCHING. CONTACT THE TENNESSEE UTILITY LOCATION SERVICE AT 811 OR 800-351-1111, 3-10 DAYS BEFORE YOU DIG, NO EXCEPTIONS.
4. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT ON RECORD OR NOT SHOWN ON THESE PLANS.
5. ALL CONSTRUCTION AND OPERATIONS BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH OSHA.
6. THE CONTRACTORS SHALL MAINTAIN A SET OF REDLINE AS-BUILT DRAWINGS AT THE PROJECT SITE. AS-BUILT PLANS SHALL BE PROVIDED TO THE ENGINEER WITHIN 30-DAYS OF SUBSTANTIAL COMPLETION OF THE PROJECT. ELECTRONIC RECORD DRAWINGS SHALL BE PREPARED BY THE ENGINEER AT THE END OF THE PROJECT BASED ON AS-BUILT DRAWINGS SUPPLIED BY THE CONTRACTOR.
7. TRAFFIC CONTROL, SIGNAGE, AND CONSTRUCTION RELATED BARRIERS ARE THE RESPONSIBILITY OF THE CONTRACTOR, AND NO TRENCHES SHALL BE LEFT OPEN OVERNIGHT WITHOUT PROPER SAFETY MEASURES SUCH AS BARRICADES, PLATING, OR OTHER AS AGREED BY THE CITY.
8. SURFACE IMPROVEMENTS DAMAGED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO THE LOCAL GOVERNING AGENCY'S REQUIREMENTS.
9. ALL REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE CITY ENGINEER.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY MONUMENTS IN PLACE. IF ANY MONUMENT IS DISTURBED OR DESTROYED, THE CONTRACTOR WILL BE REQUIRED TO CONTRACT WITH A REGISTERED LAND SURVEYOR FOR THE RE-ESTABLISHMENT AND MAPPING OF THE DESTROYED MONUMENT.
11. PUBLIC UTILITY AND DRAINAGE EASEMENTS SHALL BE PROVIDED FOR ANY CITY FACILITIES NOT LOCATED IN THE RIGHT OF WAY AND INDICATED ON THE PLANS.
12. ALL UNDERGROUND FACILITIES WITH LATERALS SHALL BE IN PLACE PRIOR TO FINAL PAVING, INCLUDING BUT NOT LIMITED TO DRAINAGE, SEWER, WATER, TELEPHONE, ELECTRICITY, GAS, AND CABLE.
13. ALL CONSTRUCTION WATER TAKEN FROM A CITY FH SHALL BE FROM A CITY APPROVED FIRE HYDRANT METER ASSEMBLY, AND CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF THE PUBLIC DOMESTIC WATER SYSTEM AT ALL TIMES BY MAINTAINING PROPER CROSS CONNECTION CONTROL PER THE GOVERNING AUTHORITY. FH METER ASSEMBLY RENTAL MAY BE OBTAINED BY FILLING OUT PAPERWORK AT PUBLIC WORKS.
14. THE CONTRACTOR SHALL CONFINE ALL OF HIS ACTIVITIES TO THE AREAS WITHIN THE EXISTING STREET RIGHTS-OF-WAY AND CITY PROPERTY OR EASEMENTS AS SHOWN ON THESE PLANS UNLESS WRITTEN CONSENT IS PROVIDED IN ADVANCE BY THE AFFECTED PROPERTY OWNER.
15. PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAN MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURE.
16. VERTICAL PIPE BENDS SHALL BE FULLY RESTRAINED BY MECHANICAL METHODS (JOINT RESTRAINT, TIE-RODS, ETC), NO CREDIT SHALL BE GIVEN FOR CONCRETE THRUST BLOCKS. ANCHOR BLOCK DESIGN WILL BE CONSIDERED ON A CASE BY CASE BASIS.
17. MAINLINE VALVES SHALL ONLY BE INSTALLED ON SLOPES NOT TO EXCEED 6 PERCENT.
18. ALL BURIED BOLTS AND NUTS SHALL BE TYPE 316 STAINLESS STEEL.
19. AIR RELEASE VALVES SHALL BE INSTALLED AT ALL LOCAL HIGH POINTS OF PRESSURIZED UTILITY LINES.
20. SEPARATION OF WATER AND SEWER LINES SHALL COMPLY WITH STATE OF TENNESSEE REQUIREMENTS, AND SEPARATION OF WATER OR SEWER FROM OTHER UTILITIES SHALL NOT BE LESS THAN 12 INCHES OR THAT UTILITIES REQUIREMENT.
21. CITY SEWER CLEANOUTS SHALL BE CUT AND CAPPED BELOW GRADE AND COVERED WITH A BOX AND LID PER THE CITY OF LA VERGNE.
22. SURPLUS AND ALL MATERIAL REMOVED WHICH IS NOT SUITABLE FOR USE IN THIS PROJECT SHALL BE DISPOSED OF AWAY FROM THE JOB SITE IN A MANNER OR AT A LOCATION ACCEPTABLE TO THE CITY OF LA VERGNE AND THE STATE OF TENNESSEE.
23. NO DRAINAGE SINK HOLE SHALL BE FILED IN, UNLESS DESIGNED AND SHOWN ON THE PLANS.
24. GENERALLY ROADS SHALL BE BORED UNLESS OPEN CUT HAS BEEN APPROVED.
25. ROAD CUT BONDS ARE REQUIRED FOR ANY STREET CUT OR BORE AND MAY BE FILLED OUT AT THE PUBLIC WORKS DEPARTMENT.
26. NO MORE THAN 500 FEET OF UTILITY AND DRAINAGE PIPE TRENCH WILL BE ALLOWED AT TO BE OPEN AT ONE TIME.
27. ALL SEWERS SHALL BE SUFFICIENTLY DEEP TO SERVE ADJACENT LOTS, BUILDINGS, AND BASEMENTS OR OTHER SOURCES EXCEPT WHERE OTHERWISE NOTED ON THE PLANS.
28. SEWER MANHOLES IN CROSS-COUNTRY APPLICATIONS (NOT IN STREET R.O.W. OR MAINTAINED SLOPES) SHALL BE INSTALLED WITH CONCENTRIC CONES THAT TERMINATE AT LEAST 2 FEET ABOVE GROUND WITH A WASTEWATER MARKER ON BREAKAWAY POST AT LEAST 6 FEET HIGH. SIGN SHALL BE BOLTED TO POST AND SHALL BE AT LEAST 9" SQUARE AND HAVE DARK GREEN LETTERS ON WHITE BACKGROUND, ALL REFLECTIVE PAINT.
29. ALL ROAD CONSTRUCTION WILL BE IN COMPLETE CONFORMANCE TO THE CITY OF LA VERGNE PUBLIC WORKS SPECIFICATIONS MANUAL (LATEST EDITION). THESE SPECIFICATIONS GIVE REQUIRED STANDARDS AND MATERIALS. THE CITY OF LA VERGNE RESERVES THE RIGHT TO REQUIRE TEST RESULTS, MIX DESIGNS, AND MIX TICKETS WHICH DEMONSTRATE COMPLIANCE WITH THE SPECIFICATIONS AS A CONDITION OF CITY ACCEPTANCE OF THE ROAD.

WATER NOTES

1. ALL WATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPECIFICATION OF THE CITY OF LAVERGNE AND THE TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT.
2. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION AND SIZE OF ALL EXISTING UTILITIES. IF ANY EXISTING LINES ARE FOUND DURING EXCAVATION THAT ARE NOT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
3. ALL WATER AND SANITARY SEWER CONSTRUCTION SHALL BE PERFORMED IN A MANNER THAT WILL PROVIDE AT A MINIMUM OF 10' HORIZONTAL AND/OR 18" VERTICAL SEPARATION BETWEEN THE WATER MAIN AND THE SANITARY SEWER LINE.
4. WATER MAIN TO BE INSTALLED WITH A MINIMUM COVER OF 36" IN ROADWAYS & 30" IN ALL OTHER AREAS.
5. EXCAVATION FOR WATER MAIN AND SANITARY SEWER LINE SHALL BE UNCLASSIFIED AND SHALL EXTEND TO 6" BELOW THE BOTTOM OF THE SANITARY SEWER PIPE AND 6" BELOW THE BOTTOM OF THE WATER PIPE IF IN ROCK.
6. WATER LINE PIPE TO BE BACKFILLED TO SUBGRADE WITH ENGINEERED FILLED MATERIAL COMPACTED TO 95% OPTIMUM DENSITY IN ALL AREAS. WHERE UTILITIES ARE PLACED IN ROADWAY BACKFILL WITH NO. 67 GRADED STONE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING ALL APPLICABLE UTILITY SERVICE FEES AND/OR CHARGES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING SEQUENCING OF CONSTRUCTION OF ALL UTILITIES SO THAT WATER LINES DO NOT CONFLICT WITH SANITARY SEWERS, SANITARY SEWER SERVICES OR STORM SEWERS AND THAT POWER OR TELEPHONE POLE LOCATIONS DO NOT CONFLICT WITH UNDER-GROUND UTILITIES.
9. WATER SERVICES TO BE 3/4" PEXa. TAPS ON WATER MAIN SPACED 24" APART AS SHOWN HEREON. WATER SERVICE TO INCLUDE INSTALLATION OF METER BOXES BY CONTRACTOR WITHOUT METERS, METERS TO BE SUPPLIED BY THE CITY OF LaVERGNE. WATERMETERS TO BE LOCATED ON THE R.O.W. LINE.
10. THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND SUPPLIES REQUIRED FOR SERVICE AS INDICATED ON THESE PLANS AND SHALL PROVIDE A COMPLETE WORKING SYSTEM APPROVED BY THE CITY OF LAVERGNE.
11. CONTRACTOR TO OBTAIN A COPY OF THE CITY OF LAVERGNE WATER SPECIFICATIONS AND KEEP A SET ON THE JOB SITE DURING CONSTRUCTION.
12. REQUIRED COVER FOR LA VERGNE PUBLIC WATERLINES IS 36" FOR WATER LINES8 INCH AND SMALLER, AND 42" FOR WATER LINES LARGER THAN 8".

FILL REQUIREMENT NOTES

1. THE OWNER/DEVELOPER OR CONTRACTOR SHALL EMPLOY A TESTING AGENCY TO OBSERVE FILL PLACEMENT.
2. AN ENGINEER STAMP BY THE TESTING AGENCY IS REQUIRED FOR EACH LOT CONTAINING FILL MATERIAL.
3. ANY LOTS LOCATED IN THE 100-YEAR FLOOD PLANE SHALL BE CONSTRUCTED TO AND REQUIRE FEMA CERTIFICATION.
4. ALL REPORTS FROM THE TESTING AGENCY SHALL BE SUBMITTED TO THE CITY ENGINEER PRIOR TO LOT ACCEPTANCE.
5. STRUCTURAL FILL FOR RESIDENTIAL STRUCTURES SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF STANDARD PROCTOR DRY DENSITY.
6. ANY SINKHOLE AND/OR DEPRESSION REMEDIATION SHALL BE EVALUATED BY THE TESTING AGENCY.
7. FOUNDATIONS EXCAVATED ON A FILL LOT WILL BE EVALUATED BY THE TESTING AGENCY AND WILL REQUIRE AN ENGINEER'S STAMP. IF FOUNDATIONS ARE EXCAVATED BELOW THE FILL MATERIAL AND INTO IN-SITU MATERIAL, THE MINIMUM REQUIREMENTS WILL BE ALLOWED.
8. CRITICAL LOTS WILL REQUIRE A CERTIFICATION BY A REGISTERED CIVIL OR GEOTECHNICAL ENGINEER AS TO THE STABILITY OF THE STRUCTURE AND COMPLIANCE WITH SOUND CONSTRUCTION METHODS FOR AREAS WITH STEEP SLOPED AND LANDSLIDE PROBLEMS.
9. ALL ROADS SHALL COMPLY WITH THE PUBLIC WORKS SPECIFICATION MANUAL, PART III, BASE AND SUB-GRADE TREATMENT FOR STREET CONSTRUCTION. THESE SPECIFICATIONS SHALL BE IN THE MINIMUM STANDARDS FOR ANY SUBDIVISION WITHIN THE JURISDICTION AREA.

GRADING, DRAINAGE AND EROSION CONTROL NOTES

1. ALL GRADING, DRAINAGE AND EROSION CONTROL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND DETAILS OF THE CITY OF LaVERGNE.
2. THE GRADING CONTRACTORS SHALL KEEP THE DUST WITHIN TOLERABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER MEANS APPROVED BY THE ENGINEER.
3. PROPOSED CONTOURS AND ELEVATIONS INDICATE FINISHED SURFACE GRADE.
4. ALL NEWLY GRADED AREAS (INCLUDING SLOPES) SHALL BE SEEDED AND MULCHED OR SODDED TO EFFECTIVELY PREVENT SOIL EROSION IMMEDIATELY AFTER FINAL GRADE IS ESTABLISHED.
5. ALL DIMENSIONS AND LOCATIONS OF TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL DEVICES SHALL BE SUBJECT TO ADJUSTMENT AS DESIGNATED BY THE ENGINEER. IT IS THE RESPONSIBILITY OF THE GRADING CONTRACTOR TO PERFORM THE WORK IN SUCH A MANNER AS TO PREVENT THE WASHING OF ANY SOIL, SILT OR DEBRIS ONTO ADJACENT PROPERTIES.
6. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR KEEPING EXISTING AND PROPOSED DRAINAGE STRUCTURES, STRAW BALE FILTERS CLEAR OF SEDIMENT BUILDUP DURING CONSTRUCTION.
7. WHEN, IN THE OPINION OF THE ENGINEER, THE TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL DEVICES ARE NO LONGER REQUIRED FOR THEIR INTENDED PURPOSES, THEY SHALL BE REMOVED BY THE GRADING CONTRACTOR.
8. NO WORK SHALL BE PERFORMED OUTSIDE THE PROJECT CONSTRUCTION LIMITS WITHOUT PROPER AGREEMENTS WITH PROPERTY OWNERS.
9. PRIOR TO CONSTRUCTION OF THE PROPOSED IMPROVEMENTS ALL BASEMENTS OR DEPRESSED AREAS SHALL BE FILLED WITH ENGINEERED FILL. ANY UNSUITABLE SILT OR MUCK SHALL BE EXCAVATED FROM THE SITE AND MAY BE USED FOR TOPSOIL SPREAD ONLY.
10. A SUBMITTAL OF A NOTICE OF INTENT (NOI) AND AN APPROVED NOTICE OF COVERAGE (NOC) FROM T.D.E.C. SHALL BE OBTAINED PRIOR TO THE ISSUANCE OF A GRADING PERMIT.

SANITARY SEWER NOTES

1. THE CONTRACTOR'S FIELD REPRESENTATIVES SHALL NOTIFY THE WATER AND SEWER DEPARTMENT PRIOR TO COMMENCING ANY WORK ON THE PROPOSED IMPROVEMENTS.
2. SEWER IMPROVEMENT CONSTRUCTION SHALL BE ACCOMPLISHED IN STRICT COMPLIANCE WITH THE CURRENT SPECIFICATIONS COVERING SUCH WORK BY THE CITY OF LAVERGNE. THE FULL TEXT OF THE SPECIFICATIONS CAN BE OBTAINED FROM THE WATER AND SEWER DEPARTMENT.
3. ALL AND ANY FEES, LICENSES, AND PERMITS NECESSARY FOR THIS CONSTRUCTION ARE TO BE OBTAINED PRIOR TO INITIATION OF CONSTRUCTION AND THE COST OF SAME TO BE BORNE BY THE CONTRACTOR.
4. SEWER IMPROVEMENT CONSTRUCTION SHALL BE SUBJECT TO THE INSPECTION AND FINAL ACCEPTANCE OF THE WATER AND SEWER DEPARTMENT.
5. THE OWNER DOES NOT ASSUME RESPONSIBILITY FOR THE POSSIBILITY THAT, DURING CONSTRUCTION UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT ACTUAL LOCATION OF THOSE SHOWN MAY BE DIFFERENT FROM THE LOCATIONS DESIGNATED ON THE CONTRACT DRAWINGS. IN AREAS WHERE IT IS NECESSARY THAT EXACT LOCATIONS BE KNOWN OF UNDERGROUND FACILITIES, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE POSITION OF UNDERGROUND UTILITY LINES.
6. PRESSURE SEWER LINE SHALL BE GENERALLY INSTALLED IN THE CENTER OF THE 2-FOOT GRASS STRIP BETWEEN THE BACK OF CURB AND EDGE OF SIDEWALK.
7. ALL PRESSURE SEWER ISOLATION VALVES SHALL BE TRUE UNION BALL VALVES

VERTICAL DATUM BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD) 88
HORIZONTAL DATUM BASED ON NORTH AMERICAN DATUM (NAD) 83,
REALIZATION 2011, EPOCH 2010.00 WITH ALL DIMENSIONS SHOWN HEREON
BEING HORIZONTAL GROUND VALUES.

UTILITY DISCLAIMER

THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS AND/OR MAPS PREPARED BY OTHERS. THERE ARE NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THIS SURVEY DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

Tennessee 811 — Know what's below. Call before you dig.

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216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

NOTES

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE — REGISTERED ENGINEER — No. 101018 — 05/19/2025 — STATE OF TENNESSEE

REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

W&A NO.: 1092-0124

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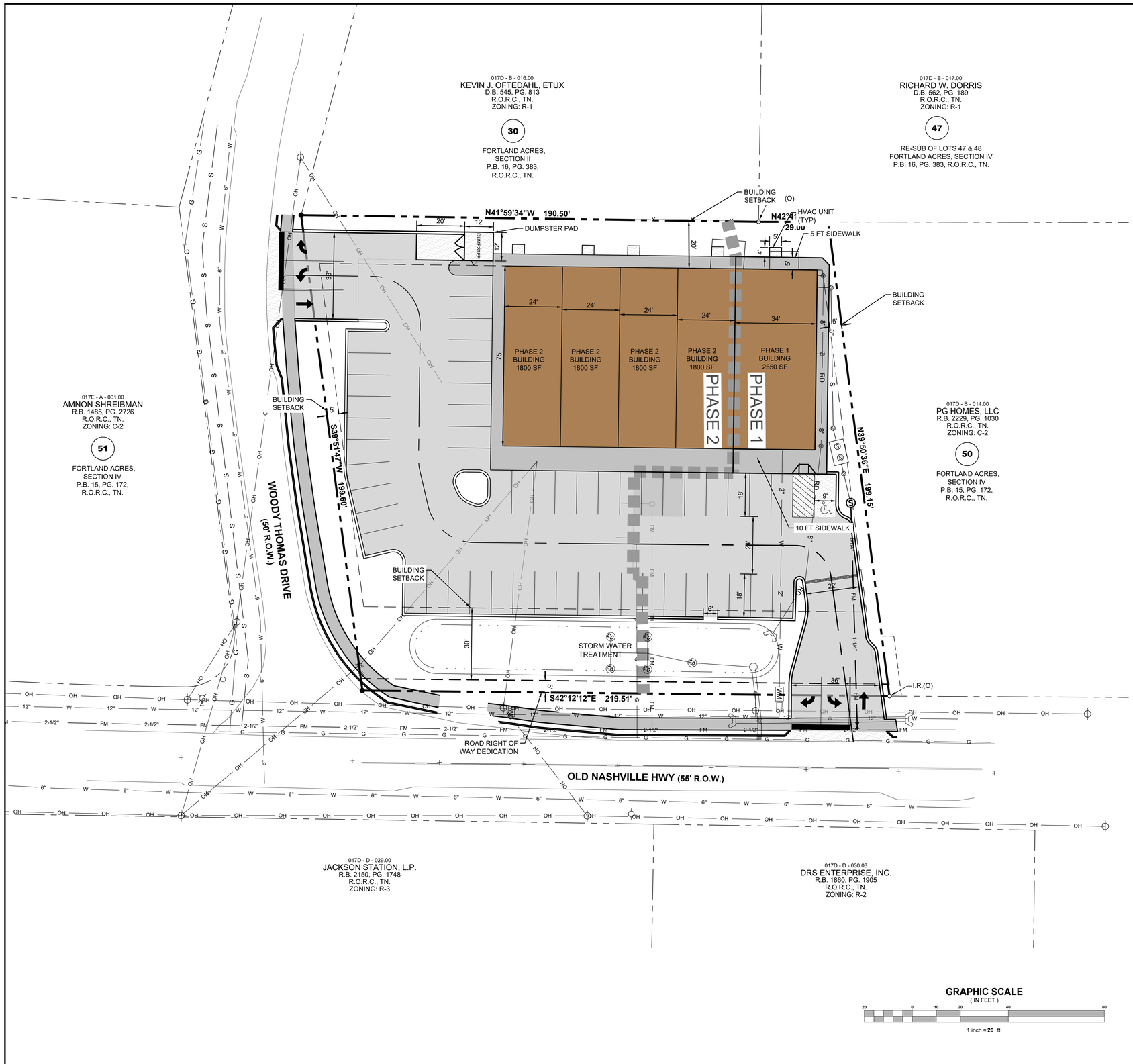

SITE DATA TABLE

PARCEL NO.	017D B 01500		
TOTAL SITE AREA	1.00 AC.		
REQUIRED PARKING	(1 SPACE PER 200 SF) = 49		
PROVIDED PARKING	(51 STANDARD + 1 ADA) = 52 SPACES		
ZONING	C-2 HIGHWAY SERVICE		
SETBACKS FOR C-2		REQUIRED	PROVIDED
	FRONT BUILDING	30	97
	SIDE BUILDING	5	7
	REAR BUILDING	20	20
OWNER / DEVELOPER	AMIN ZAKHER & AMGAD ZAKHER 2409 NEWBERRY LANE MT. JULIET, TENNESSEE, 37122		
DESIGN ENGINEER	JAMES D. WAMBLE, P.E., R.L.S. WAMBLE & ASSOCIATES, PLLC. 216 Centerview Dr., #180 Brentwood, TN. 37027 PHONE: (615) 251-9555 EMAIL:jdwamble@wambleassociates.com		

NOTES

1. ALL DESIGN AND CONSTRUCTION TO COMPLY WITH CITY OF LA VERGNE SPECIFICATIONS AND REGULATIONS.
2. BOUNDARY AND TOPOGRAPHY INFORMATION SHOWN HEREON IS FROM A FIELD RUN SURVEY BY WAMBLE & ASSOCIATES, PLLC.
3. CONSTRUCTION PLANS FOR THIS CONCEPT WILL HAVE TO COMPLY WITH THE CITY OF LA VERGNE STORMWATER MANAGEMENT ORDINANCE.
4. WATER AND SANITARY SEWER AVAILABILITY TO BE OBTAINED FROM THE CITY OF LA VERGNE.
5. SEE SHEET C-5.0 FOR SITE UTILITIES.

GRAPHIC SCALE
(IN FEET)
20 0 10 20 40 80
1 inch = **20** ft.

WAMBLE & ASSOCIATES PLLC
Civil Engineering
Land Surveying
Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

OVERALL SITE LAYOUT PLAN

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE REGISTERED ENGINEER
05/19/2025
LICENSE NO. 014236
STATE OF TENNESSEE

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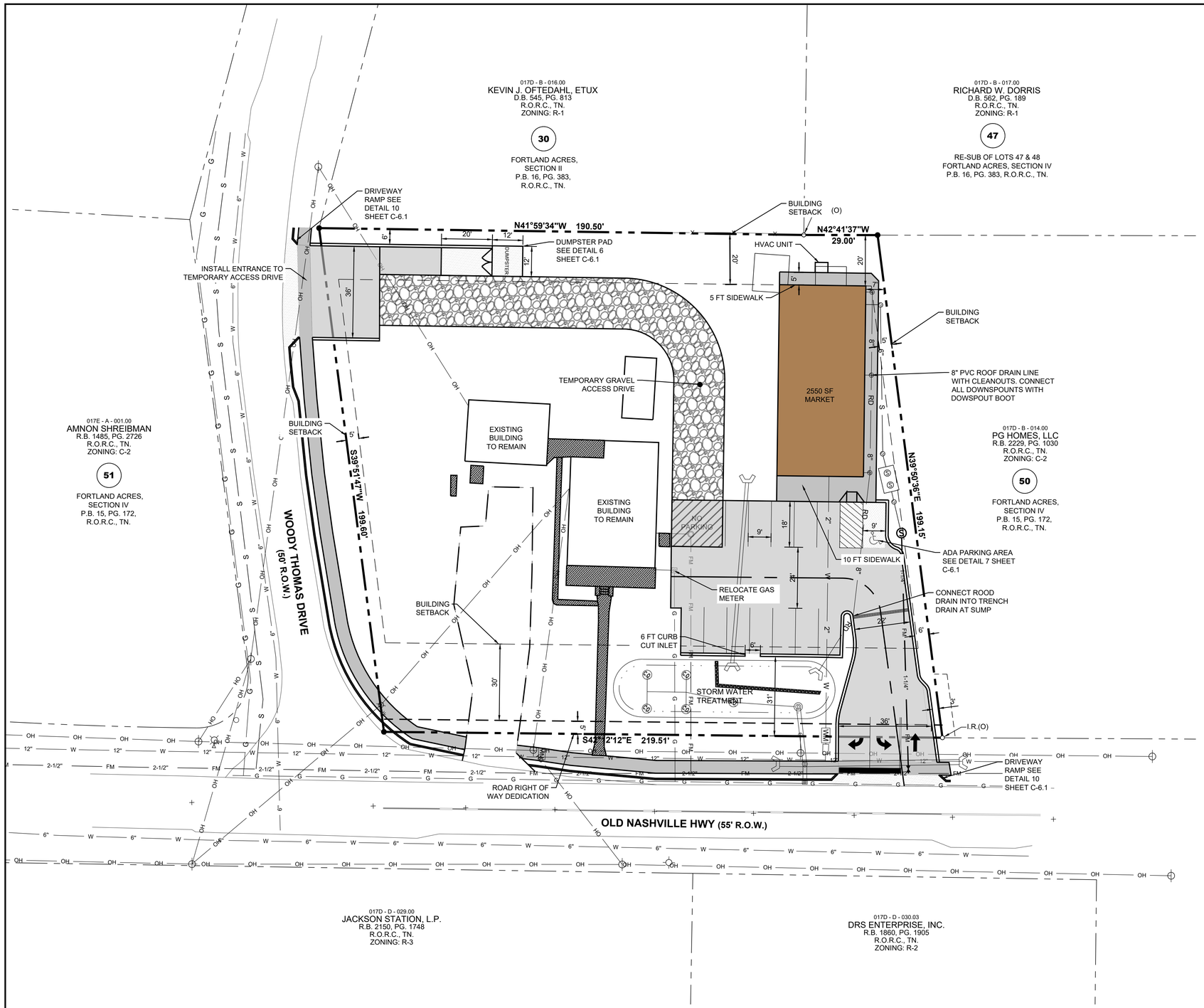
SHEET NUMBER:

C-2.0



SITE DATA TABLE

PARCEL NO.	017D B 01500
TOTAL SITE AREA	1.00 AC.
REQUIRED PARKING	(1 SPACE PER 200 SF) = 13
PROVIDED PARKING	(12 STANDARD + 1 ADA) = 13 SPACES
ZONING	C-2 HIGHWAY SERVICE
SETBACKS FOR C-2	REQUIRED PROVIDED FRONT BUILDING 30 97 SIDE BUILDING 5 7 REAR BUILDING 20 20
OWNER / DEVELOPER	AMIN ZAKHER & AMGAD ZAKHER 2469 NEWBERRY LANE MT. JULIET, TENNESSEE, 37122
DESIGN ENGINEER	JAMES D. WAMBLE, P.E., R.L.S. WAMBLE & ASSOCIATES, PLLC. 216 Centerview Dr., #180 Brentwood, TN. 37027 PHONE: (615) 251-9555 EMAIL:jdwamble@wambleassociates.com

NOTES

1. ALL DESIGN AND CONSTRUCTION TO COMPLY WITH CITY OF LA VERGNE SPECIFICATIONS AND REGULATIONS.
2. BOUNDARY AND TOPOGRAPHY INFORMATION SHOWN HEREON IS FROM A FIELD RUN SURVEY BY WAMBLE & ASSOCIATES, PLLC.
3. CONSTRUCTION PLANS FOR THIS CONCEPT WILL HAVE TO COMPLY WITH THE CITY OF LA VERGNE STORMWATER MANAGEMENT ORDINANCE.
4. WATER AND SANITARY SEWER AVAILABILITY TO BE OBTAINED FROM THE CITY OF LA VERGNE.
5. SEE SHEET C-5.0 FOR SITE UTILITIES.

GRAPHIC SCALE
(IN FEET)
20 0 10 20 40 80
1 inch = **20** ft.

WAMBLE & ASSOCIATES PLLC
Civil Engineering
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Land Planning
216 Centerview Dr., Ste 180
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615.251.9555

PHASE ONE SITE LAYOUT PLAN

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE
REGISTERED ENGINEER
No. 101298
STATE OF TENNESSEE
05/19/2025

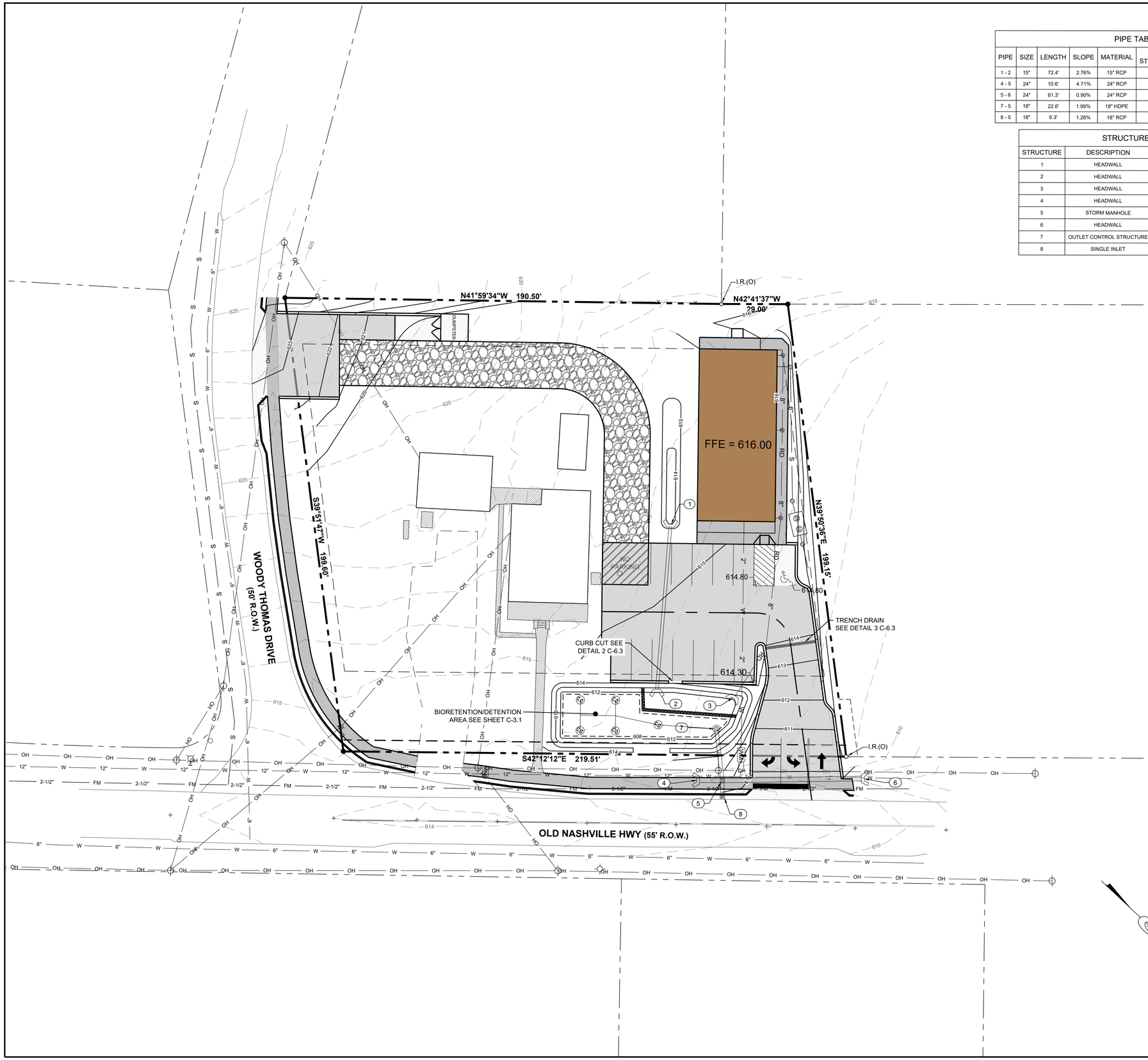
REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

W&A NO.: 1092-0124

SHEET NUMBER:

C-2.1



PIPE TABLE								
PIPE	SIZE	LENGTH	SLOPE	MATERIAL	UP STRUCTURE	DOWN STRUCTURE	IE UP	IE DOWN
1 - 2	15"	72.4'	2.76%	15" RCP	1	2	614.00	612.00
4 - 5	24"	10.6'	4.71%	24" RCP	4	5	611.00	610.50
5 - 6	24"	61.3'	0.90%	24" RCP	5	6	608.55	608.00
7 - 5	18"	22.6'	1.99%	18" HDPE	7	5	609.00	608.55
8 - 5	18"	6.3'	1.26%	18" RCP	8	5	608.65	608.57

STRUCTURE TABLE				
STRUCTURE	DESCRIPTION	GRATE	DEPTH	DETAIL
1	HEADWALL	615.94	----	DETAIL 4 , C-6.3
2	HEADWALL	613.94	----	DETAIL 4 , C-6.3
3	HEADWALL	613.55	----	DETAIL 4 , C-6.3
4	HEADWALL	613.75	----	DETAIL 4 , C-6.3
5	STORM MANHOLE	613.75	5.2'	DETAIL 5 , C-6.3
6	HEADWALL	610.75	----	DETAIL 4 , C-6.3
7	OUTLET CONTROL STRUCTURE	612.00	3.0'	
8	SINGLE INLET	610.86	2.2'	DETAIL 6 , C-6.3

FILL REQUIREMENT NOTES

1. THE OWNER/DEVELOPER OR CONTRACTOR SHALL EMPLOY A TESTING AGENCY TO OBSERVE FILL PLACEMENT.
2. AN ENGINEER STAMP BY THE TESTING AGENCY IS REQUIRED FOR EACH LOT CONTAINING FILL MATERIAL.
3. ANY LOTS LOCATED IN THE 100-YEAR FLOOD PLANE SHALL BE CONSTRUCTED TO AND REQUIRE FEMA CERTIFICATION.
4. ALL REPORTS FROM THE TESTING AGENCY SHALL BE SUBMITTED TO THE CITY ENGINEER PRIOR TO LOT ACCEPTANCE.
5. STRUCTURAL FILL FOR RESIDENTIAL STRUCTURES SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF STANDARD PROCTOR DRY DENSITY.
6. ANY SINKHOLE AND/OR DEPRESSION REMEDIATION SHALL BE EVALUATED BY THE TESTING AGENCY.
7. FOUNDATIONS EXCAVATED ON A FILL LOT WILL BE EVALUATED BY THE TESTING AGENCY AND WILL REQUIRE AN ENGINEER'S STAMP. IF FOUNDATIONS ARE EXCAVATED BELOW THE FILL MATERIAL AND INTO IN-SITU MATERIAL, THE MINIMUM REQUIREMENTS WILL BE ALLOWED.
8. CRITICAL LOTS WILL REQUIRE A CERTIFICATION BY A REGISTERED CIVIL OR GEOTECHNICAL ENGINEER AS TO THE STABILITY OF THE STRUCTURE AND COMPLIANCE WITH SOUND CONSTRUCTION METHODS FOR AREAS WITH STEEP SLOPED AND LANDSLIDE PROBLEMS.
9. ALL ROADS SHALL COMPLY WITH THE PUBLIC WORKS SPECIFICATION MANUAL, PART III, BASE AND SUB-GRADE TREATMENT FOR STREET CONSTRUCTION. THESE SPECIFICATIONS SHALL BE IN THE MINIMUM STANDARDS FOR ANY SUBDIVISION WITHIN THE JURISDICTION AREA.

GRADING, DRAINAGE AND EROSION CONTROL NOTES

1. ALL GRADING, DRAINAGE AND EROSION CONTROL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND DETAILS OF THE CITY OF LaVERGNE.
2. THE GRADING CONTRACTORS SHALL KEEP THE DUST WITHIN TOLERABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER MEANS APPROVED BY THE ENGINEER.
3. PROPOSED CONTOURS AND ELEVATIONS INDICATE FINISHED SURFACE GRADE.
4. ALL NEWLY GRADED AREAS (INCLUDING SLOPES) SHALL BE SEEDED AND MULCHED OR SODDED TO EFFECTIVELY PREVENT SOIL EROSION IMMEDIATELY AFTER FINAL GRADE IS ESTABLISHED.
5. ALL DIMENSIONS AND LOCATIONS OF TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL DEVICES SHALL BE SUBJECT TO ADJUSTMENT AS DESIGNATED BY THE ENGINEER. IT IS THE RESPONSIBILITY OF THE GRADING CONTRACTOR TO PERFORM THE WORK IN SUCH A MANNER AS TO PREVENT THE WASHING OF ANY SOIL, SILT OR DEBRIS ONTO ADJACENT PROPERTIES.
6. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR KEEPING EXISTING AND PROPOSED DRAINAGE STRUCTURES, STRAW BALE FILTERS CLEAR OF SEDIMENT BUILDUP DURING CONSTRUCTION.
7. WHEN, IN THE OPINION OF THE ENGINEER, THE TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL DEVICES ARE NO LONGER REQUIRED FOR THEIR INTENDED PURPOSES, THEY SHALL BE REMOVED BY THE GRADING CONTRACTOR.
8. NO WORK SHALL BE PERFORMED OUTSIDE THE PROJECT CONSTRUCTION LIMITS WITHOUT PROPER AGREEMENTS WITH PROPERTY OWNERS.
9. PRIOR TO CONSTRUCTION OF THE PROPOSED IMPROVEMENTS ALL BASEMENTS OR DEPRESSED AREAS SHALL BE FILLED WITH ENGINEERED FILL. ANY UNSUITABLE SILT OR MUCK SHALL BE EXCAVATED FROM THE SITE AND MAY BE USED FOR TOPSOIL SPREAD ONLY.
10. A SUBMITTAL OF A NOTICE OF INTENT (NOI) AND AN APPROVED NOTICE OF COVERAGE (NOC) FROM T.D.E.C. SHALL BE OBTAINED PRIOR TO THE ISSUANCE OF A GRADING PERMIT.

Utility disclaimer:

The underground utilities have not been physically located. Above grade and underground utilities shown were taken from visible appurtenances at the site, public records and/or maps prepared by others. There are no guarantees that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. Furthermore, this survey does not warrant that the underground utilities are in the exact location indicated. Therefore, reliance upon the type, size and location of utilities shown should be done so with this circumstance considered. Detailed verification of existence, location and depth should also be made prior to any decision relative thereto is made. Availability and cost of service should be confirmed with the appropriate utility company. In tennessee, it is a requirement, per "the underground utility damage prevention act", that anyone who engages in excavation must notify all known underground utility owners, no less than three (3) nor more than ten (10) working days prior to the date of their intent to excavate and also to avoid any possible hazard or conflict. Tennessee one call 811.

Tennessee 811
Know what's below. Call before you dig.

GRAPHIC SCALE
(IN FEET)
20 0 10 20 40 80
1 inch = 20 ft.

WAMBLE & ASSOCIATES, P.L.L.C.
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GRADING & DRAINAGE PLAN

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE REGISTERED ENGINEER NO. 0142 STATE OF TENNESSEE
05/19/2025

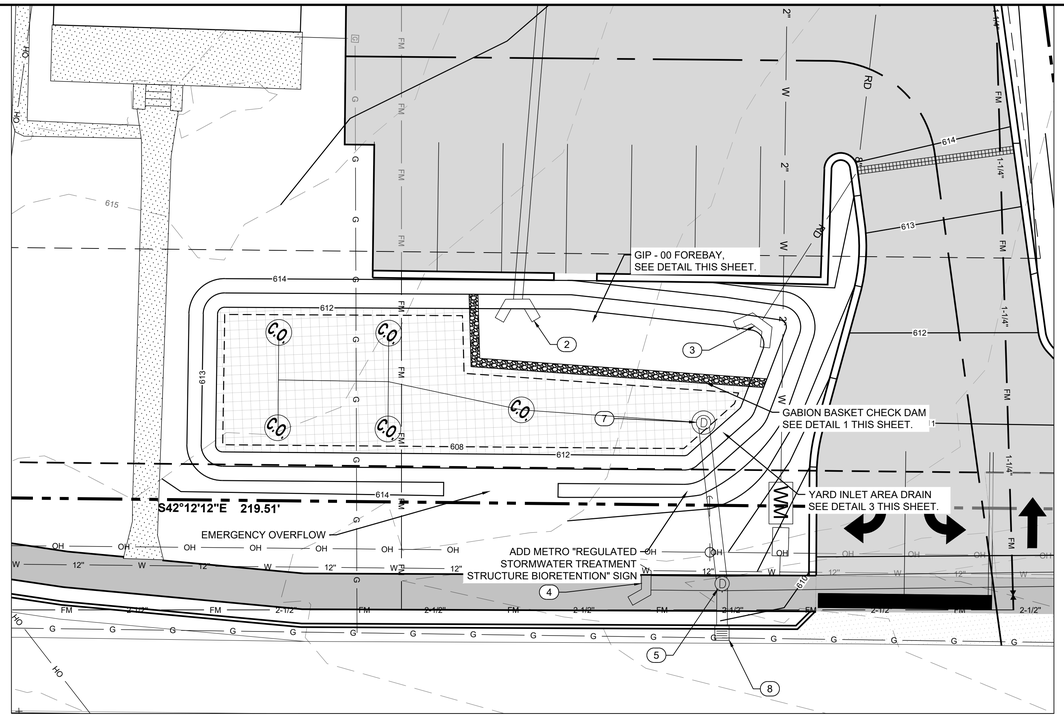
REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

W&A NO.: 1092-0124

SHEET NUMBER:

C-3.0



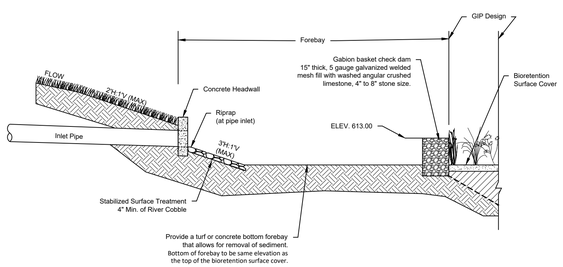
LEVEL 2 BIO-RETENTION POND - PLAN VIEW

SCALE: 1"=10'

GRAPHIC SCALE
(IN FEET)
10 0 5 10 20
1 inch = **10** ft.

NOTE: VEHICULAR AND EQUIPMENT TRAFFIC SHALL BE PROHIBITED IN THE BIORETENTION AREA TO PREVENT COMPACTION AND SEDIMENT DEPOSITION.

GIP - 00 FOREBAY



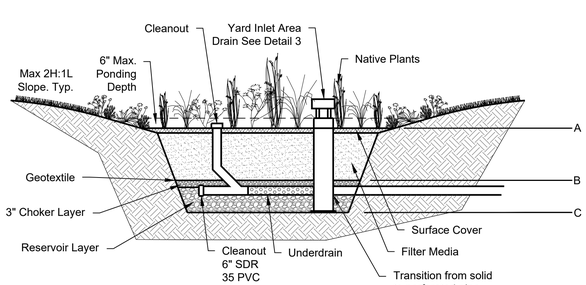
DETAIL NOTES:

- The main goal of pretreatment filtering is to capture floatables, debris, grease, oils, silt and sediment where they can be easily cleaned at the surface of the GIP through regular maintenance, and before they have the opportunity to clog the practice.
- When concentrated flow is directed at a GIP through curb turnouts or pipe outlets, a sediment forebay shall be used to allow material to be captured where it can be easily cleaned.
- A sediment forebay shall be designed so that it is integrated into the GIP.
- Direct mainenance access to the forebay must be provided.
- Exit velocities from the forebay must be non-erosive. Velocities over the weir shall be provided. If high runoff velocity is a potential problem, some type of energy dissipation device must be incorporated.
- Sediment removal in the forebay shall occur in accordance with the long-term maintenance plan.
- A fixed vertical sediment depth marker shall be installed in the forebay to measure sediment deposition over time. The marker shall be made of durable, non-corroding material (not steel). The elevation at which sediment removal is required shall be marked with a line in contrasting color or shade.
- All disturbed areas must be immediately stabilized after construction to minimize erosion.

Forebay Number : 1		
	Design	As-Built
Top of Bank Elevation	614.00	
Top of Check Dam	613.00	
Bottom of Forebay	612.00	
Surface Area, SF	295	
Pretreatment Volume, CF	295	
All elevations shall be NAVD88		

1

GIP - 01B BIORETENTION WITH UNDERDRAIN



DETAIL NOTE:

- At the completion of installation, the contractor will collect one sample per bioretention area for analysis and confirmation of the filter media as defined by GIP-01. Media testing not required when using a certified media product.
- Vehicular traffic shall be prohibited on the planting bed in order to prevent compactions.
- Minimum 2' separation between subgrade and water table / bedrock required.

Bioretention Number :		
	Design	As-Built
Treatment Volume (Tv), CF	1959	
Surface Area, SF	933	
Top of Bank Elevation	614.00	
Emergency Spillway Elevation*	613.50	
Overflow (TOC) Elevation*	N/A	
(A) GIP Surface Elevation	612.00	
(B) Top of Stone Elevation	610.00	
(C) Subgrade Elevation	608.50	
* N/A if not required		
All elevations shall be NAVD88		

Bioretention Without Underdrain Material Specifications		
Material	**Specifications**	**Notes**
Surface Cover	• Shredded hardwood • Hardwood bark • River stone • Coir or jute matting • Turf	Lay a 3 inch layer on the surface of the filter bed in order to suppress weed growth & prevent erosion. Stone shall not comprise more than 50% of the surface area.
Filter Media * Composition	• 70% - 85% sand; • 10%-30% silt + clay, with clay $\leq$ 10%; and • 5% to 10% organic matter	The volume of filter media based on 110% of the plan volume, to account for settling or compaction. Contact staff for testing procedures..
Geotextile	Use a non-woven geotextile fabric with a flow rate of > 110 gal./min./ft^2 (e.g., Geotex 351 or equivalent)	Apply to the sides and above the underdrain (2'-4' wide strip). AASHTO M288-06, ASTM D4491 & D4751
Choker Layer *	#8 or #89 clean washed stone	Meet TDOT Construction Specifications.
Reservoir Layer *	#57 clean washed stone	Meet TDOT Construction Specifications.
Observation Well	6" SDR 35 PVC pipe with vented cap and anchor plate.	Number of wells equals the number of test pits required for infiltration testing (see Appendix 1-A)

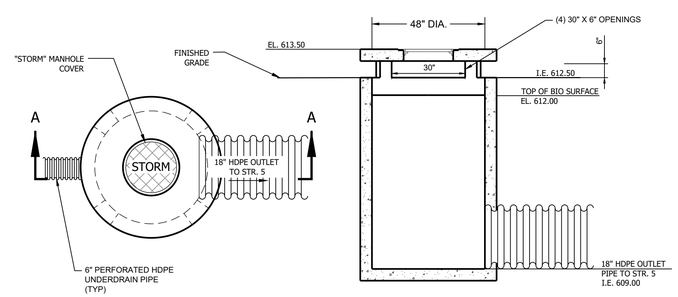
*Item receipts may be required to be included with as-built submittal.

2

NOTES FROM METRO NASHVILLE - DAVIDSON COUNTY, STORMWATER MANAGEMENT MANUAL, VOLUME 5, LOW IMPACT DEVELOPMENT

SECTION 7: CONSTRUCTION

7.1 Construction
Construction Stage Erosion and Sediment Controls. Small-scale bioretention areas should be fully protected by silt fence and construction fencing to prevent sedimentation and compaction. Ideally, bioretention should remain outside the limit of disturbance during construction to prevent soil compaction by heavy equipment. Sediment traps or basins may be located within bioretention excavation limits during construction. However, these must be accompanied by notes and graphic details on the erosion prevention and sediment control (EPSC) plan specifying that the maximum excavation depth at the construction stage must be at least 1 foot above the post-construction subgrade elevation. The
plan must also show the proper procedures for converting the temporary sediment control practice to a bioretention facility, including dewatering, cleanout and stabilization.
Excavation. The proposed site should be checked for existing utilities prior to any excavation. It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, excavators should work from the sides of the bioretention area to remove original soil. If the bioretention area is excavated using a loader, the contractor must use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.
7.2 Bioretention Installation
Construction should take place during appropriate weather conditions. The following is a typical construction sequence to properly install a bioretention basin. These steps may be modified to reflect different bioretention applications or expected site conditions:
Step 1. The designer and the installer should have a preconstruction meeting, checking the boundaries of the contributing drainage area and the actual inlet elevations to ensure they conform to original design. Since other contractors may be responsible for constructing portions of the site, it is quite common to find subtle differences in site grading, drainage and paving elevations that can produce hydraulically important differences for the proposed bioretention area. The designer should clearly communicate, in writing, any project changes determined during the preconstruction meeting to the installer and the plan review/inspection authority.
Step 2. Ensure that the entire contributing drainage area has been stabilized prior to bioretention construction. Otherwise, use EPSC measures as outlined in Section 7.1.
Step 3. Excavation of the bioretention area should follow the guidelines found in Section 7.1. Contractors should use a cell construction approach in larger bioretention basins, whereby the basin is split into 500 to 1,000 sq. ft. temporary
cells with a 10-15 foot earth bridge in between, so that cells can be excavated from the side.
Step 4. It may be necessary to rip the bottom soils to a depth of 6 to 12 inches to promote greater infiltration.
Step 5. Install all layers, components, and landscaping of the bioretention per plans. Media shall be tested per MWS standards. Irrigate plantings as needed.
Step 6. Conduct the final construction inspection (see Section 8). Then log the GPS coordinates for each bioretention facility and submit them to MWS.



YARD INLET AREA DRAIN

3

UTILITY DISCLAIMER

THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS AND/OR MAPS PREPARED BY OTHERS. THERE ARE NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THIS SURVEY DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

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BIO-RETENTION POND

314 Old Nashville Highway
LaVERGNE, RUTHERFORD COUNTY, TENNESSEE
FOR
Amgad & Amin Zakher

JAMES D. WAMBLE REGISTERED ENGINEER NO. 01425 STATE OF TENNESSEE
05/19/2025

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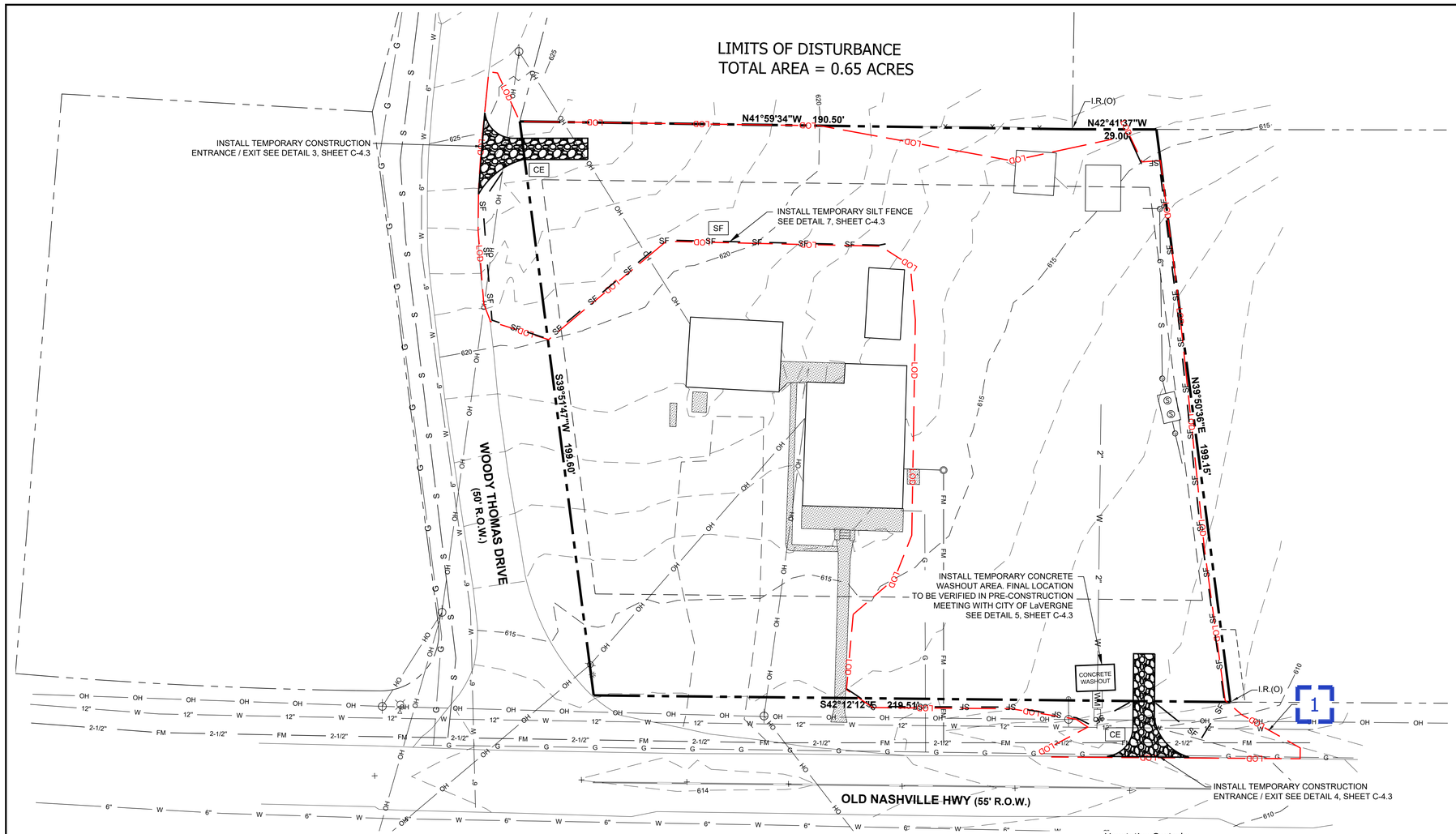

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INITIAL SWPPP

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

EROSION CONTROL LEGEND

CODE	PRACTICE	
CE	CONSTRUCTION EXIT	
PP	STORM PIPE INLET PROTECTION	
IP	INLET PROTECTION	
OP	STORM PIPE OUTLET PROTECTION	
SF	SILT FENCE	—SF—
LOD	LIMITS OF DISTURBANCE	—LOD—
CD	CHECK DAM	

EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN THE "TENNESSEE EROSION AND SEDIMENT CONTROL HANDBOOK" AND THE CITY OF LAVERGNE, CURRENT EDITION.

GRAPHIC SCALE
(IN FEET)
20 0 10 20 40
1 inch = **20** ft.

NOTE: STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT SOIL STABILIZATION AT THE CONSTRUCTION SITE (OR A PHASE OF THE PROJECT) MUST BE COMPLETED NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 7 DAYS WITH SLOPES GREATER THAN OR EQUAL TO 3:1 SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

T.D.E.C. NOTES:

Construction Management Techniques:

a. Clearing And Grubbing Must Be Held To The Minimum Necessary For Grading And Equipment Operation.
b. Construction Must Be Sequenced To Minimize The Exposure Time Of Cleared Surface Area.
c. Construction Must Be Staged Or Phased For Large Projects. Areas Of One Phase Must Be Stabilized Before Another Phase Can Be Initiated. Stabilization Shall Be Accomplished By Temporarily Or Permanently Protecting The Disturbed Soil Surface From Rainfall Impacts And Run-Off.
d. Erosion And Sediment Control Measures Must Be In Place And Functional Before Earth Moving Operations Begin, And Must Be Constructed And Maintained Throughout The Construction Period. Temporary Measures May Be Removed At The Beginning Of The Work Day, But Must Be Replaced At The End Of The Work Day.
e. All Control Measures Shall Be Checked, And Repaired As Necessary, Weekly In Dry Periods And Within 24 Hours After Any Rainfall Of 0.5 Inches Within A 24 Hour Period. During Prolonged Rainfall, Daily Checking And Repairing Is Necessary. The Permittee Shall Maintain Records Of Checks And Repairs.
f. A Specific Individual Shall Be Designated To Be Responsible For Erosion And Sediment Controls on each project site.
g. As Specified In The NPDES General Permit In Section 3.5.3.1.e, Sediment Shall Be Removed From Sediment Traps, Silt Fence, Sediment Ponds, When Design Capacity Has Benn Reduced By 50 Percent.
h. As Specified In The NPDES General Permit In Section 3.5.8.2.a, Inspections Of The Outfall And EPSC Measures Shall Be Performed At Least Twice Every Week And At Least 72 Hours Apart.

The Design Storm:

As Specified In the General NPDES Permit In Section 3.5.3.3 The Erosion Prevention And Sediment Prevention Measures Have Been Designed To Minimize Erosion And Maximize Sediment Removal Resulting From A 2-Year, 24-Hour Storm, And A Impaired Stream Must Be Designed For A 5 Year, 24 Hour Storm As Specified In The General Permit In Section 3.5.4.1.a.

GENERAL NOTES:

1. All Erosion Prevention And Sediment Control Work Shall Be Performed In Accordance With The Standard Specifications And Details Of The City of LaVergne Engineering and Stormwater Department, And The Tennessee Department of Environment and Conservation General NPDES Permit No. TNR 100000 issued on May 23, 2011.
2. All Erosion Prevention And Sediment Control Measures Shall Be Removed Prior To As-Built Approvals.

Site Assessment Assurance Criteria:

Quality Assurance Of Erosion Prevention And Sediment Controls Shall Be Done By Performing Site Assessment At The Construction Site. The Site Assessment Shall Be Conducted At Each Outfall Within A Month Of Construction Commencing. The Site Assessment Shall Be Performed By One Of The Following Individuals:

- A Licensed Professional Engineer or Landscape Architect
- A Certified Professional In Erosion And Sediment Control (CPESC); Or
- A Person That Successfully Completed The "Level II Desing Principles For Erosion Prevention And Sediment Control For Construction Sites" Course.

Site Assessment Should Be Performed To Verify The Installation, Functionality And Performance Of The EPSC Measures Described In The SWPPP, And Should Include A Review And Update (If Applicable) Of The SWPPP.

The Site Assessment Findings Shall Be Documented And The documentation Kept with The SWPPP At The Site. At A Minimum, The Documentation Shall Include Information Included In The Inspection Form Provided In Appendix C Of The General NPDES Permit.

Vegetative Controls:

a. Pre-Construction Vegetative Ground Cover Shall Not Be Destroyed, Removed Or Disturbed More Than 20 Calendar Days Prior To Grading Or Earth Moving.
b. As Specified In The NPDES General Permit In Section 3.5.7 And 3.5.8.2.a, Vegetation, EPSC And Other Protective Measures Are Repaired, Replaced, Or Modified Within 7 Days.
c. Permanent Soil Stabilization With Perennial Vegetation Shall Be Applied As Soon As Practical After Final Grading.

Structural Controls:

d. All Surface Water Flowing Toward The Construction Area Shall Be Diverted By Using Berms, (j) Channels, Or Sediment Traps, As Necessary.
e. Erosion And Sediment Control Measures Shall Be Designed According To The Size And Slope (k) Of Disturbed Or Drainage Areas, To Detain Runoff And Trap Sediment.
f. Discharges From Sediment Basins And Traps Must Be Through A Pipe Or Lined Channel So The Discharge Does Not Cause Erosion.
g. Muddy Water To Be Pumped From Excavation And Work Areas Must Be Held In Settling Basins (m) Or Treated By Filtration Prior To Its Discharge Into Surface Waters. Water Must Be Discharged Through A Pipe Or Lined Channel So That The Discharge Does Not Cause Erosion And Sedimentation.

Discharge Quality:

h. There Shall Be No Distinctly Visible Floating Scum, Oil Or Other Matter Contained In The Stormwater Discharge.
i. The Stormwater Discharge Must Not Cause An Objectionable Color Contrast In The Receiving Stream.
j. The Stormwater Discharge Must Result In No Materials In Concentrations Sufficient To Be Hazardous Or Otherwise Detrimental To Humans, Livestock, Wildlife, Plant Life, Or Fish And Aquatic Life In The Receiving Stream.
k. Reporting And Record Keeping Requirements.
l. The Permittee Shall Maintain Records Of Checks And Repairs On Site Or At A Nearby Office.
m. Records And Information Resulting From The Monitoring Activities Required By This Rule Shall Be Retained For A Minimum Of Three (3) Years, Or Longer If Requested By The Division Of Water Pollution Control.
n. Knowingly Making Any False Statement On Any Report Required By This Rule May Result In (t) The Imposition Of Criminal Penalties As Provided For In Section 309 Of The Federal Water Pollution Control Act and in Section 69-3-115 Of The Tennessee Water Quality Control Act.

CONTRACTOR MANAGEMENT PRACTICE NOTES:

1. Contractor Shall Perform All Work Shown On Plans In Accordance With Metro Nashville, Stormwater Management Manual, Section 2 Entitled "Contractor Management Practices".
2. Contractor Shall Schedule Construction Activities In A Manner That Will Minimize The Exposure Of Disturbed Soils To Wind, Rain, Run-On And Run-Off To Reduce The Discharge Of Pollutants To The Storm Drain System Or Watercourses As Defined In More Detail In CP-01.
3. Contractor Shall Perform Dewatering Operation By Using Sediment Controls To Prevent Or Reduce The Discharge Of Pollutants To Stormwater And Test The Groundwater For Pollutant Accumulation As Defined In More Detail In CP-02.
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OVERALL SITE OUTFALLS		
LOCATION	TYPE	ACRES
1	Roadside Ditch	1.00

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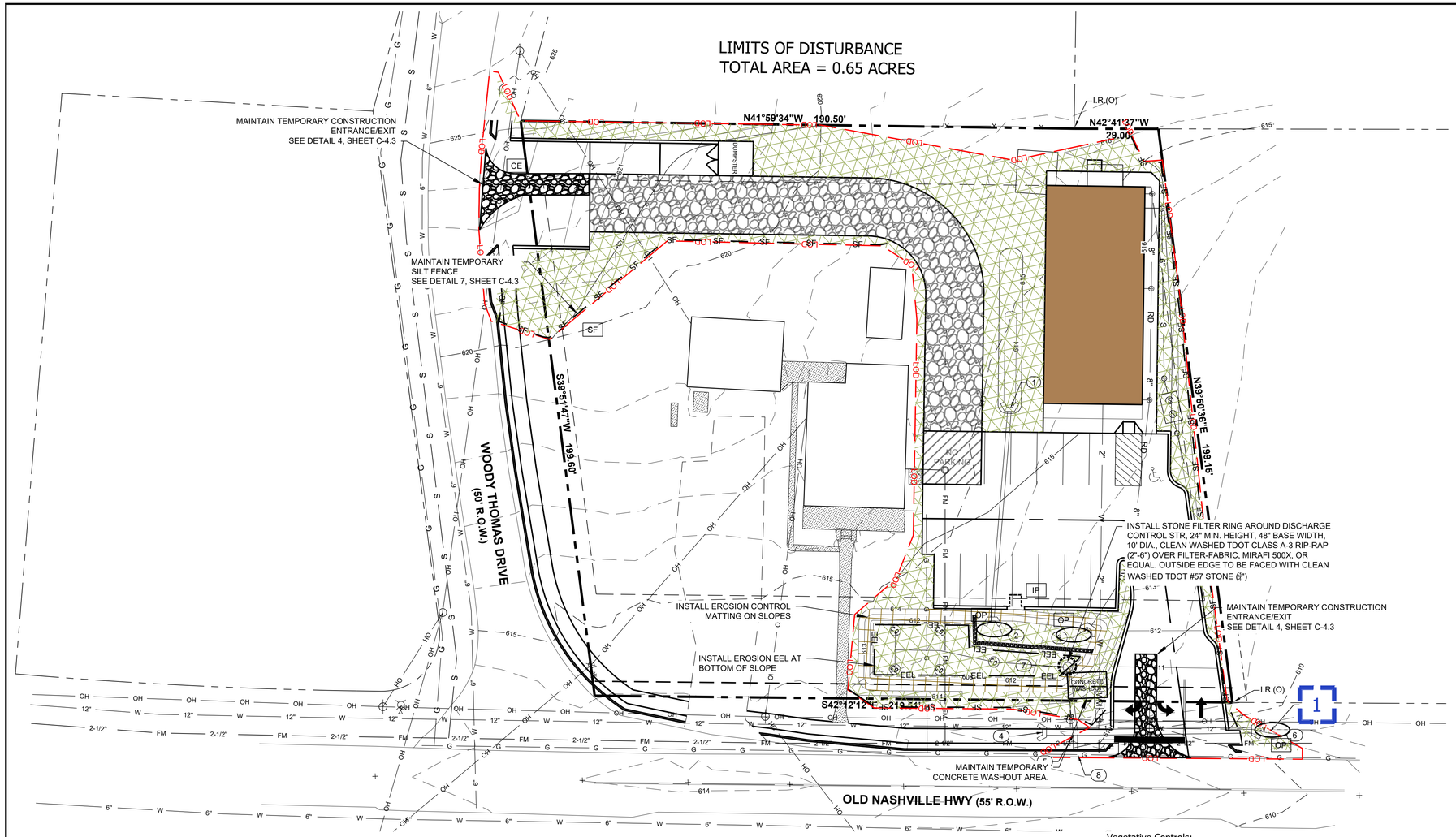
Tennessee 811
Know what's below. Call before you dig.

REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025
W&A NO.: 1092-0124
SHEET NUMBER:
C-4.0



IN AREAS SHOWN THUS PERMANENT EROSION CONTROL MEASURES SHALL BE APPLIED TO DENUDED AREAS WITHIN 14 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION SHALL ALSO BE APPLIED WITHIN 14 DAYS TO ANY DENUDED AREA, WHICH MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT (UNDISTURBED BY CONSTRUCTION ACTIVITY) FOR LONGER THAN 14 DAYS. FOR SLOPES 3:1 OR STEEPER, THEY MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS OF GRADING CEASING ON THOSE SLOPES.

EROSION CONTROL LEGEND

CODE	PRACTICE	
CE	CONSTRUCTION EXIT	
PP	STORM PIPE INLET PROTECTION	
IP	INLET PROTECTION	
OP	STORM PIPE OUTLET PROTECTION	
SF	SILT FENCE	—SF—
LOD	LIMITS OF DISTURBANCE	—LOD—
CD	CHECK DAM	

EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN THE "TENNESSEE EROSION AND SEDIMENT CONTROL HANDBOOK" AND THE CITY OF LAVERGNE, CURRENT EDITION.

NOTE: STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT SOIL STABILIZATION AT THE CONSTRUCTION SITE (OR A PHASE OF THE PROJECT) MUST BE COMPLETED NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 7 DAYS WITH SLOPES GREATER THAN OR EQUAL TO 3:1 SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

T.D.E.C. NOTES:

Construction Management Techniques:

a. Clearing And Grubbing Must Be Held To The Minimum Necessary For Grading And Equipment Operation.
b. Construction Must Be Sequenced To Minimize The Exposure Time Of Cleared Surface Area.
c. Construction Must Be Staged Or Phased For Large Projects. Areas Of One Phase Must Be Stabilized Before Another Phase Can Be Initiated. Stabilization Shall Be Accomplished By Temporarily Or Permanently Protecting The Disturbed Soil Surface From Rainfall Impacts And Run-Off.
d. Erosion And Sediment Control Measures Must Be In Place And Functional Before Earth Moving Operations Begin, And Must Be Constructed And Maintained Throughout The Construction Period. Temporary Measures May Be Removed At The Beginning Of The Work Day, But Must Be Replaced At The End Of The Work Day.
e. All Control Measures Shall Be Checked, And Repaired As Necessary, Weekly In Dry Periods And Within 24 Hours After Any Rainfall Of 0.5 Inches Within A 24 Hour Period. During Prolonged Rainfall, Daily Checking And Repairing Is Necessary. The Permittee Shall Maintain Records Of Checks And Repairs.
f. A Specific Individual Shall Be Designated To Be Responsible For Erosion And Sediment Controls on each project site.
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As Specified In the General NPDES Permit In Section 3.5.3.3 The Erosion Prevention And Sediment Prevention Measures Have Been Designed To Minimize Erosion And Maximize Sediment Removal Resulting From A 2-Year, 24-Hour Storm, And A Impaired Stream Must Be Designed For A 5 Year, 24 Hour Storm As Specified In The General Permit In Section 3.5.4.1.a.

GENERAL NOTES:

1. All Erosion Prevention And Sediment Control Work Shall Be Performed In Accordance With The Standard Specifications And Details Of The City of LaVergne Engineering and Stormwater Department, And The Tennessee Department of Environment and Conservation General NPDES Permit No. TNR 100000 issued on May 23, 2011.
2. All Erosion Prevention And Sediment Control Measures Shall Be Removed Prior To As-Built Approvals.

Site Assessment Assurance Criteria:

Quality Assurance Of Erosion Prevention And Sediment Controls Shall Be Done By Performing Site Assessment At The Construction Site. The Site Assessment Shall Be Conducted At Each Outfall Within A Month Of Construction Commencing. The Site Assessment Shall Be Performed By One Of The Following Individuals:

- A Licensed Professional Engineer or Landscape Architect
- A Certified Professional In Erosion And Sediment Control (CPESC); Or
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Site Assessment Should Be Performed To Verify The Installation, Functionality And Performance Of The EPSC Measures Described In The SWPPP, And Should Include A Review And Update (If Applicable) Of The SWPPP.

The Site Assessment Findings Shall Be Documented And The documentation Kept with The SWPPP At The Site. At A Minimum, The Documentation Shall Include Information Included In The Inspection Form Provided In Appendix C Of The General NPDES Permit.

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a. Pre-Construction Vegetative Ground Cover Shall Not Be Destroyed, Removed Or Disturbed More Than 20 Calendar Days Prior To Grading Or Earth Moving.
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k. Reporting And Record Keeping Requirements.
l. The Permittee Shall Maintain Records Of Checks And Repairs On Site Or At A Nearby Office.
m. Records And Information Resulting From The Monitoring Activities Required By This Rule Shall Be Retained For A Minimum Of Three (3) Years, Or Longer If Requested By The Division Of Water Pollution Control.
n. Knowingly Making Any False Statement On Any Report Required By This Rule May Result In (t) The Imposition Of Criminal Penalties As Provided For In Section 309 Of The Federal Water Pollution Control Act and in Section 69-3-115 Of The Tennessee Water Quality Control Act.

CONTRACTOR MANAGEMENT PRACTICE NOTES:

1. Contractor Shall Perform All Work Shown On Plans In Accordance With Metro Nashville, Stormwater Management Manual, Section 2 Entitled "Contractor Management Practices".
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Tennessee 811 Know what's below. Call before you dig.

WAMBLE & ASSOCIATES P.A.
Civil Engineering
Land Surveying
Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

INTERIM SWPPP

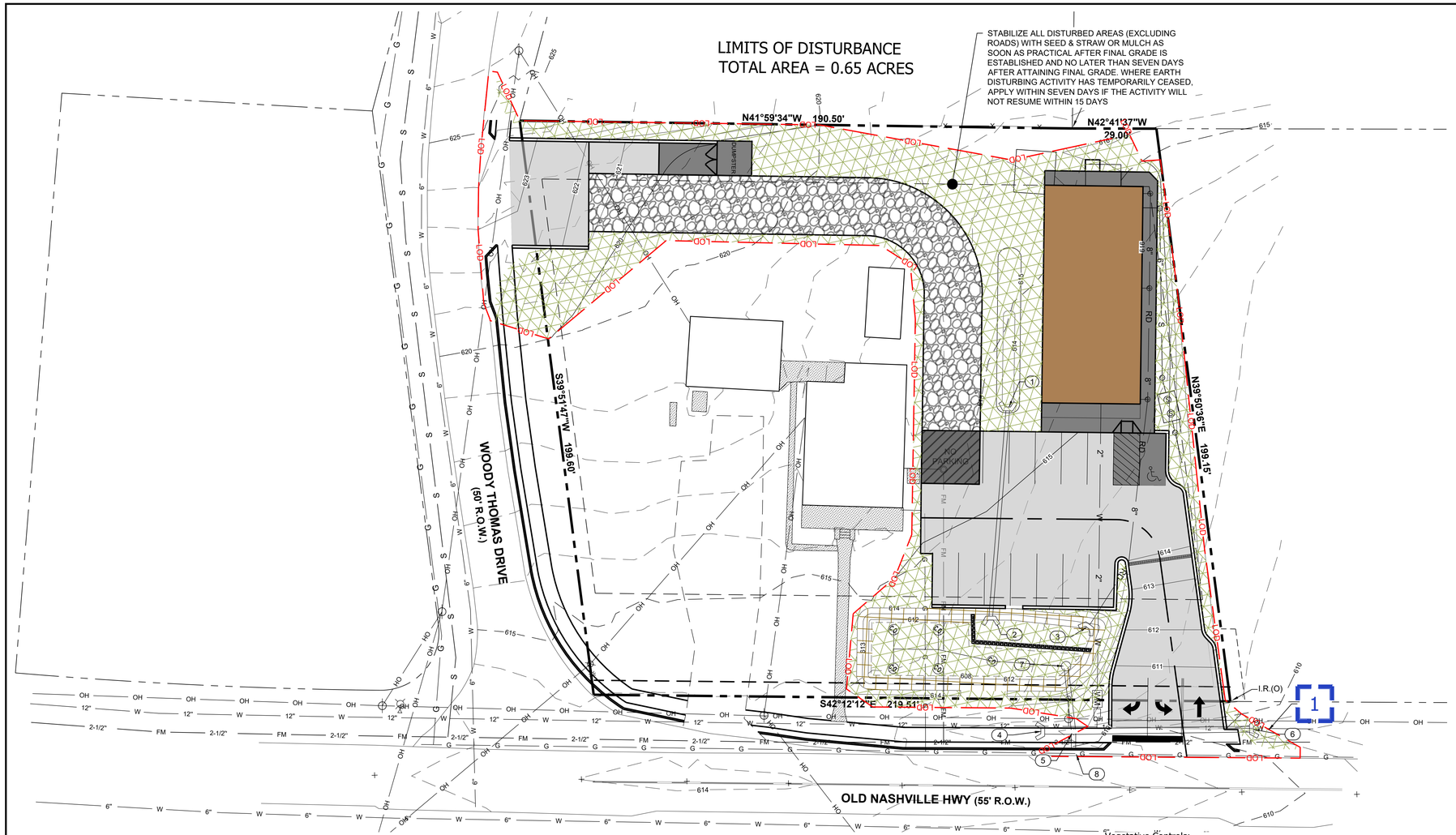
314 Old Nashville Highway
LaVERGNE, RUTHERFORD COUNTY, TENNESSEE
FOR
Amgad & Amin Zakher

JAMES D. WAMBLE REGISTERED ENGINEER NO. 0142036 STATE OF TENNESSEE 05/19/2025

REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025
W&A NO.: 1092-0124
SHEET NUMBER:
C-4.1

GRAPHIC SCALE
(IN FEET)
20 0 10 20 40
1 inch = 20 ft.



FINAL SURFACE LEGEND

- ASPHALT PAVEMENT
- SIDEWALK CONCRETE
- VEGETATIVE GROUND COVE

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WAMBLE & ASSOCIATES
Civil Engineering
Land Surveying
Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

FINAL SWPPP

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

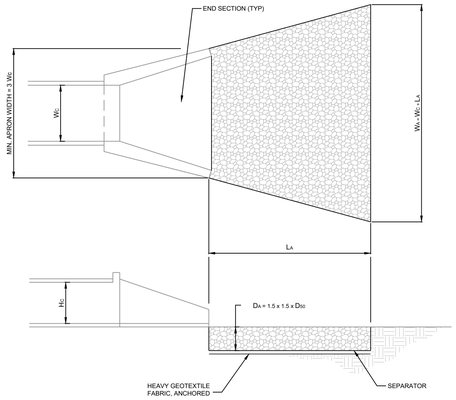
FOR

Amgad & Amin Zakher

JAMES D. WAMBLE III
REGISTERED ENGINEER
NO. 014626
STATE OF TENNESSEE
05/19/2025

REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025
W&A NO.: 1092-0124
SHEET NUMBER:
C-4.2

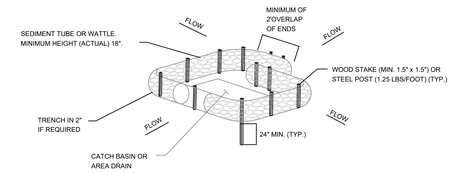


TAILWATER < O.5 Hc AND ASSUMING FULL CULVERT FLOW (LOW TAILWATER CONDITIONS)

H_C = HEIGHT OF CULVERT
W_C = WIDTH OF CULVERT
L_A = LENGTH OF RIP-RAP APRON
W_A = WIDTH OF RIP-RAP APRON AT END
D_{50} = MEDIAN RIP-RAP SIZE
D_{MAX} = MAXIMUM SIZE OF RIP-RAP = 1.5 D_{50}
D_A = DEPTH OF RIP-RAP APRON = 1.5 D_{MAX}
SEPARATOR = GEOTEXTILE UNDERLAYMENT OR GRAVEL FILTER BLANKET

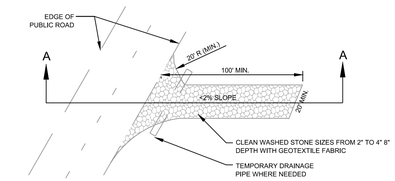
OP OUTLET PROTECTION 1

RESERVED 2

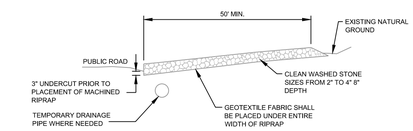


CATCH BASIN PROTECTION (TYPE D)

IP INLET SEDIMENT FILTER 3

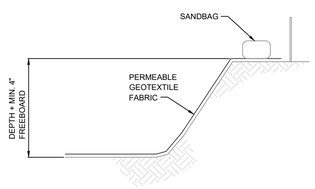


PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD

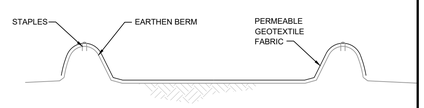


SECTION A-A

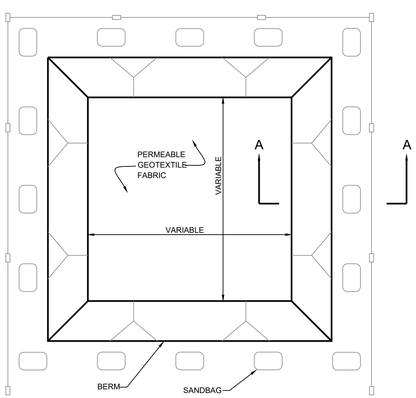
CE CONSTRUCTION ENTRANCE/EXIT 4



SECTION A-A
NOT TO SCALE

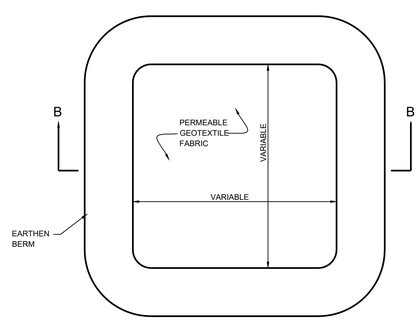


SECTION B-B
NOT TO SCALE



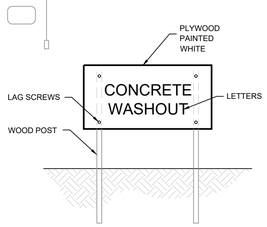
PLAN VIEW
NOT TO SCALE

TYPE "BELOW GRADE"



PLAN VIEW
NOT TO SCALE

TYPE "ABOVE GRADE" WITH EATHERN BERMS



CONCRETE WASHOUT SIGN (OR EQUIVALENT)

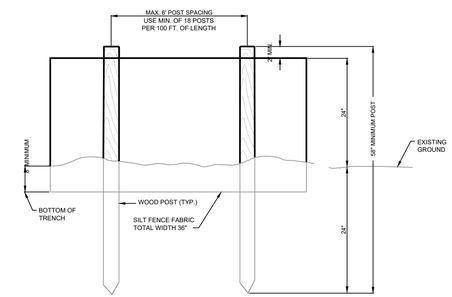
NOTES:

1. ACTUAL LAYOUT DETERMINED IN THE FIELD.

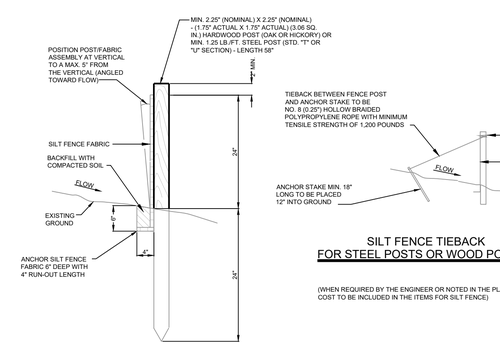
2. SIGNAGE IDENTIFYING THE CONCRETE WASHOUT AREA SHALL BE INSTALLED WITHIN 5FT.OF THE WASHOUT FACILITY.

CONCRETE WASHOUT 5

RESERVED 6



ELEVATION VIEW



SECTIONAL VIEW

SILT FENCE TIEBACK
FOR STEEL POSTS OR WOOD POSTS

(WHEN REQUIRED BY THE ENGINEER OR NOTED IN THE PLANS. COST TO BE INCLUDED IN THE ITEMS FOR SILT FENCE)

SF SILT FENCE 7

WAMBLE & ASSOCIATES P.C.
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Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

SWPPP DETAILS

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE
REGISTERED ENGINEER
NO. 014296
05/19/2025
STATE OF TENNESSEE

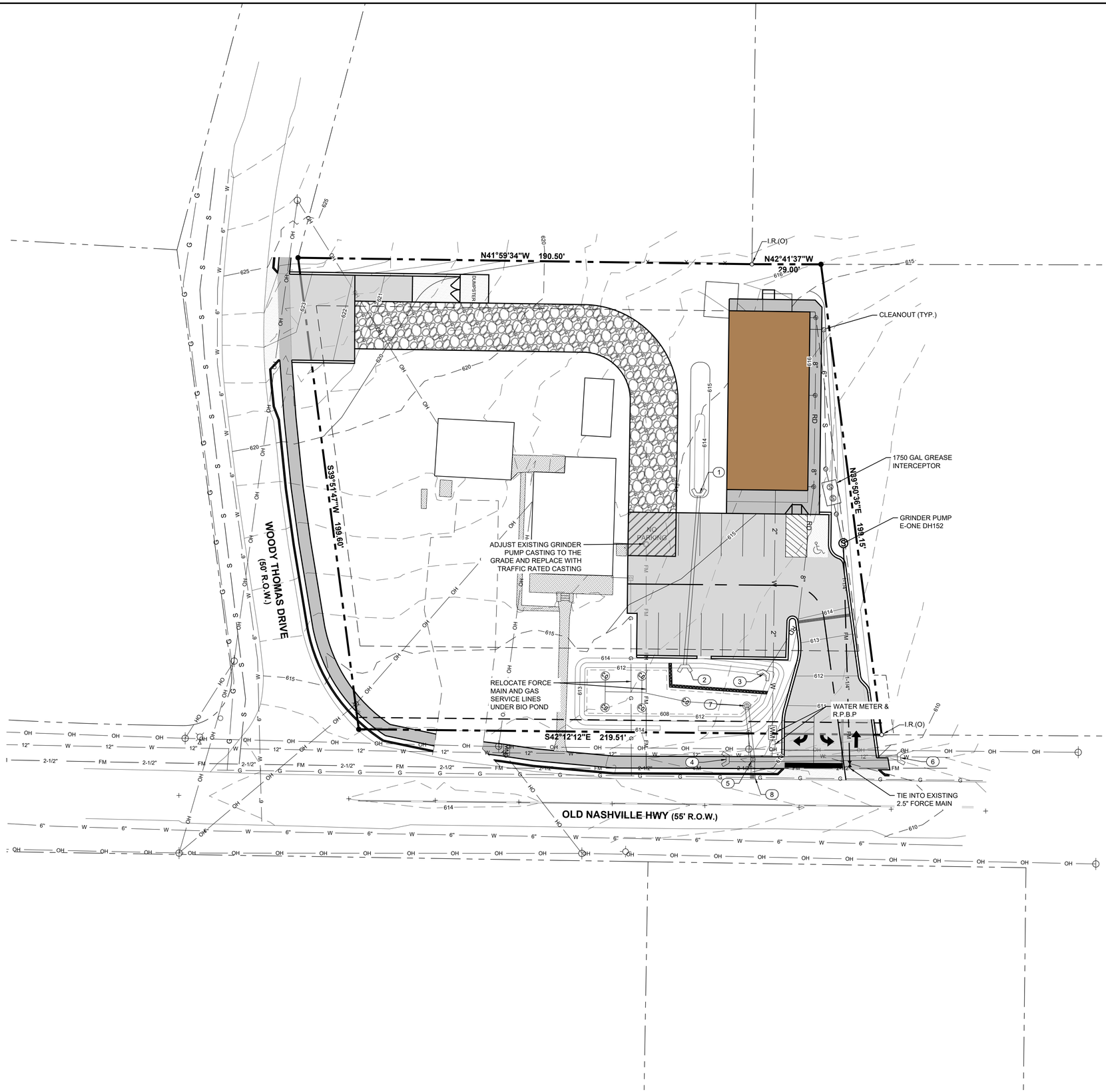
REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

W&A NO.: 1092-0124

SHEET NUMBER:

C-4.3



WATER NOTES

1. ALL WATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS OF THE CITY OF LAVERGNE.
2. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION AND SIZE OF ALL EXISTING UTILITIES. IF ANY EXISTING LINES ARE FOUND DURING EXCAVATION THAT ARE NOT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
3. ALL WATER AND SANITARY SEWER CONSTRUCTION SHALL BE PERFORMED IN A MANNER THAT WILL PROVIDE AT A MINIMUM OF 10' HORIZONTAL AND/OR 18" VERTICAL SEPARATION BETWEEN THE WATER MAIN AND THE SANITARY SEWER LINE.
4. REQUIRED COVER FOR LA VERGNE PUBLIC WATERLINES IS 36" FOR WATER LINES8 INCH AND SMALLER, AND 42" FOR WATER LINES LARGER THAN 8".

   EXCAVATION FOR WATER MAIN AND SANITARY SEWER LINE SHALL BE UNCLASSIFIED AND SHALL EXTEND TO 6" BELOW THE BOTTOM OF THE SANITARY SEWER PIPE AND 6" BELOW THE BOTTOM OF THE WATER PIPE IF IN ROCK.
6. WATER LINE PIPE TO BE BACKFILLED TO SUBGRADE WITH ENGINEERED FILLED MATERIAL COMPACTED TO 95% OPTIMUM DENSITY IN ALL AREAS. WHERE UTILITIES ARE PLACED IN ROADWAY BACKFILL WITH NO. 67 GRADED STONE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING ALL APPLICABLE UTILITY SERVICE FEES AND/OR CHARGES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING SEQUENCING OF CONSTRUCTION OF ALL UTILITIES SO THAT WATER LINES DO NOT CONFLICT WITH SANITARY SEWERS, SANITARY SEWER SERVICES OR STORM SEWERS AND THAT POWER OR TELEPHONE POLE LOCATIONS DO NOT CONFLICT WITH UNDER-GROUND UTILITIES.
9. THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND SUPPLIES REQUIRED FOR SERVICE AS INDICATED ON THESE PLANS AND SHALL PROVIDE A COMPLETE WORKING SYSTEM APPROVED BY THE CITY OF LAVERGNE.
10. CONTRACTOR TO OBTAIN A COPY OF THE CITY OF LAVERGNE WATER SPECIFICATIONS AND KEEP A SET ON THE JOB SITE DURING CONSTRUCTION.
11. ALL WATER LINES SHALL BE INSTALLED ACCORDING TO THE CITY OF LA VERGNE SPECIFICATIONS.

SANITARY SEWER NOTES

1. THE CONTRACTOR'S FIELD REPRESENTATIVES SHALL NOTIFY THE WATER AND SEWER DEPARTMENT PRIOR TO COMMENCING ANY WORK ON THE PROPOSED IMPROVEMENTS.
2. SEWER IMPROVEMENT CONSTRUCTION SHALL BE ACCOMPLISHED IN STRICT COMPLIANCE WITH THE CURRENT SPECIFICATIONS COVERING SUCH WORK BY THE CITY OF LAVERGNE. THE FULL TEXT OF THE SPECIFICATIONS CAN BE OBTAINED FROM THE WATER AND SEWER DEPARTMENT.
3. ALL AND ANY FEES, LICENSES, AND PERMITS NECESSARY FOR THIS CONSTRUCTION ARE TO BE OBTAINED PRIOR TO INITIATION OF CONSTRUCTION AND THE COST OF SAME TO BE BORNE BY THE CONTRACTOR.
4. SEWER IMPROVEMENT CONSTRUCTION SHALL BE SUBJECT TO THE INSPECTION AND FINAL ACCEPTANCE OF THE WATER AND SEWER DEPARTMENT.
5. THE OWNER DOES NOT ASSUME RESPONSIBILITY FOR THE POSSIBILITY THAT, DURING CONSTRUCTION UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT ACTUAL LOCATION OF THOSE SHOWN MAY BE DIFFERENT FROM THE LOCATIONS DESIGNATED ON THE CONTRACT DRAWINGS. IN AREAS WHERE IT IS NECESSARY THAT EXACT LOCATIONS BE KNOWN OF UNDERGROUND FACILITIES, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE POSITION OF UNDERGROUND UTILITY LINES
6. ALL PRESSURE SEWER ISOLATION VALVES SHALL BE TRUE UNION BALL VALVES
7. ALL PARTS OF THE SEWER COLLECTION SYSTEM SHALL BE INSTALLED ACCORDING TO THE CITY OF LA VERGNE SEWER SPECIFICATIONS.

GRAPHIC SCALE
(IN FEET)
30 0 15 30 60 120
1 inch = 30 ft.

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Brentwood, TN 37027
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SITE UTILITY PLAN

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE
REGISTERED ENGINEER
05/19/2025
NO. 0142
STATE OF TENNESSEE

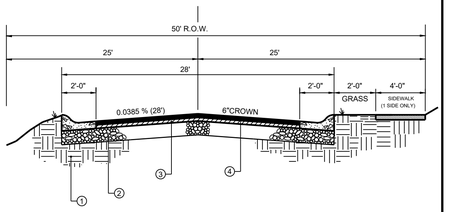
REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

W&A NO.: 1092-0124

SHEET NUMBER:

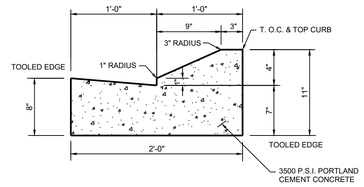
C-5.0



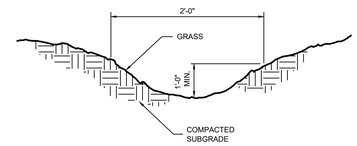
PROPOSED PAVEMENT SCHEDULE	
1	COMPACTED SUBGRADE - 100% OPTIMUM DENSITY IN FILL AREAS - PROOF-ROLL w/HEAVILY LOADED PNEUMATIC TIRE VEHICLE
2	8" CRUSHED STONE BASE
3	2" ASPHALTIC CONCRETE BINDER
4	2" ASPHALTIC CONCRETE SURFACE

1. SECTION APPLIES TO ALL PAVED AREAS

TYPICAL ROADWAY SECTION 1

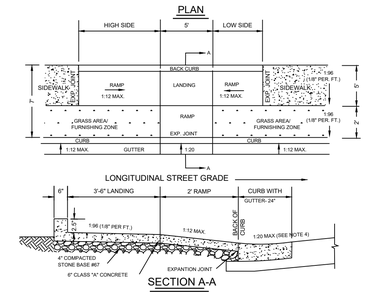


CURB AND GUTTER 2



1. TO BE INSTALLED BY HOME BUILDER WHERE SHOWN ON C-3.0

BUILDER LOT LINE SWALE 3

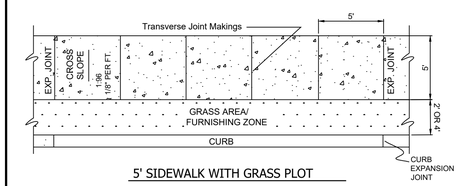


GENERAL NOTES

1. Ramp shall be flush with the gutter or edge of pavement.
2. Cross slope ok landing and of sidewalk shall not exceed 1:48 (vertical:horizontal)
3. Surface texture of the curb ramp shall be stable, firm, and slip-resistant. The surface shall be coarse broomed finish transverse to the slope of the ramp.
4. The normal gutter slope of 1:12 (vertical:horizontal) shall be reduced to 1:20 (vertical:horizontal) at the ramp when the curb and gutter is poured before the ramp, or the gutter at the ramp must be cut out, removed, and repoured when the ramp is poured.
5. Back curb height along ramp shall transition from 0 inches at expansion joints to 2.5 inches at landing and shall be a constant height of 2.5 inches through landing. Cross slope (back to front) of top of back curb shall be the same as sidwalk cross slope.
6. High side low side ramps shall have a maximun slope of 1:12 (vertical:horizontal) and shall not be required to exceed 8 feet (96 inches) in length.

HANDICAP RAMP 4

NOTE:
1/2" EXPANSION JOINTS SHALL BE EQUALLY SPACED AT 30' ON CENTER (MAX.) WITH 1/4" CONTRACTION JOINTS EQUALLY SPACED AT 5' ON CENTER BETWEEN EXPANSION JOINTS. JOINTS IN SIDEWALK TO BE IN LINE WITH JOINTS IN CURB AND GUTTER.

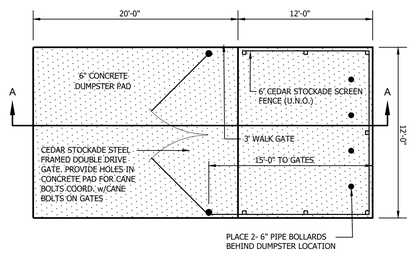


5' SIDEWALK WITH GRASS PLOT

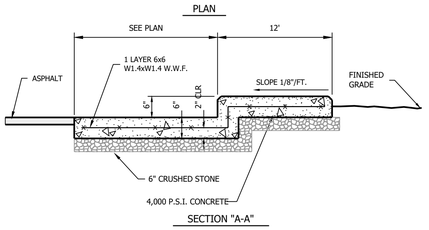
GENERAL NOTES

1. Sidewalks shall be a minimum of 4 inches in thickness and maintain a minimum of 3 feet clearance through the path of travel.
2. Maximum cross slope for sidewalks shall not exceed 1:48 (vertical:horizontal).
3. Sidewalks shall be constructed of white concrete.
4. 1/2" Expansion joints material shall be placed between curb and gutter and drainage inlets.

STANDARD 4' SIDEWALK DETAIL 5

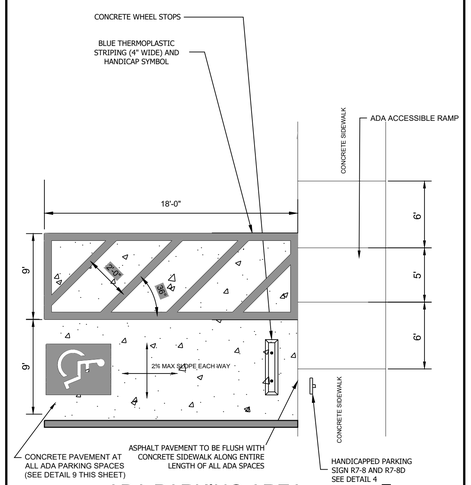


PLAN

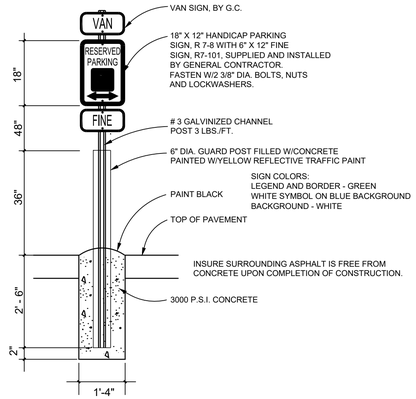


SECTION "A-A"

DUMPSTER PAD 6

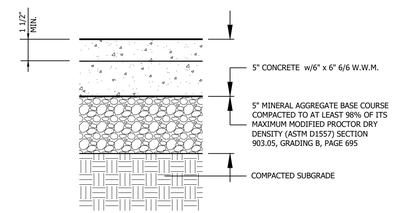


ADA PARKING AREA 7

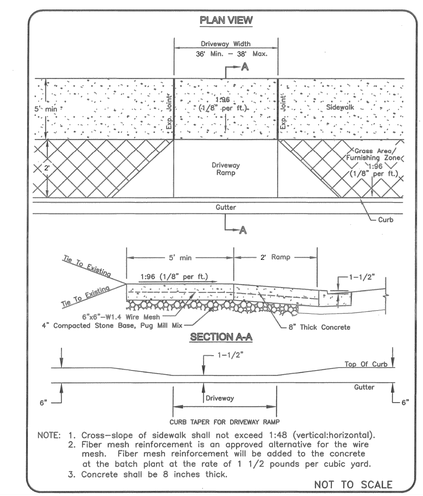


HANDICAP PARKING SIGN, FINE SIGN AND VAN SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

ADA PARKING SIGN 8



CONCRETE PAVEMENT 9



DRIVEWAY RAMP 10

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Civil Engineering
Land Surveying
Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

SITE DETAILS

314 Old Nashville Highway

LaVERGNE, RUTHERFORD COUNTY, TENNESSEE

FOR

Amgad & Amin Zakher

JAMES D. WAMBLE III
REGISTERED ENGINEER
No. 101359
05/19/2025
LICENSED PROFESSIONAL ENGINEER
STATE OF TENNESSEE

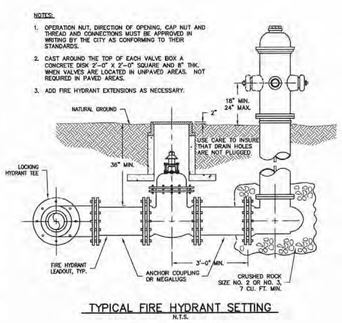
REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025

W&A NO.: 1092-0124

SHEET NUMBER:

C-6.1



TYPICAL FIRE HYDRANT SETTING
N.T.S.
Revised September, 2015
STANDARD DETAIL 040
CITY OF LAVERGNE, TENNESSEE
G & M File No. 442-56
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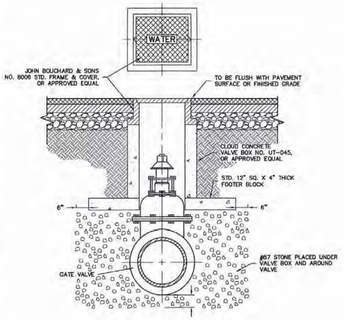
Engineering & Environmental Consulting
P.O. BOX 2988, MURFREESBORO, TN 37133-2988
(615) 893-5221 * FAX (615) 895-0632
FILE NAME: L:\Engineering\442-56\005 Updates\Cad Drawings\Fire Hydrant Setting.dwg

FIRE HYDRANT SETTING 1



TYPICAL VALVE BOX SETTING
INSIDE & OUTSIDE OF PAVEMENT
N.T.S.
Revised September, 2015
STANDARD DETAIL 030
CITY OF LAVERGNE, TENNESSEE
G & M File No. 442-56
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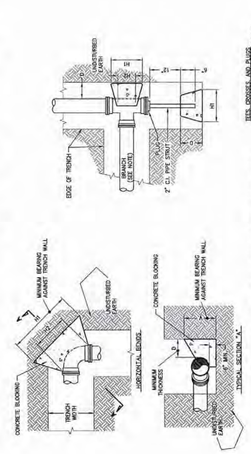
FILE NAME: L:\Engineering\442-56\005 Updates\Cad Drawings\030 Typical Valve Box Setting.dwg

VALVE BOX SETTING 2



TYPICAL CONCRETE KICKERS
N.T.S.
NOTE: SEE SHEET 2 FOR TABLE OF DIMENSIONS FOR CONCRETE BLOCKING
Revised September, 2015
STANDARD DETAIL 081
CITY OF LAVERGNE, TENNESSEE
G & M File No. 442-56
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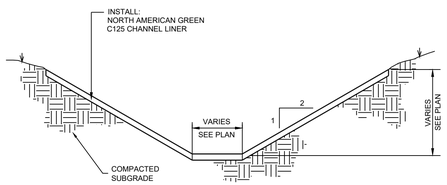
FILE NAME: L:\Engineering\442-56\005 Updates\Cad Drawings\081 Typical Concrete Kickers.dwg

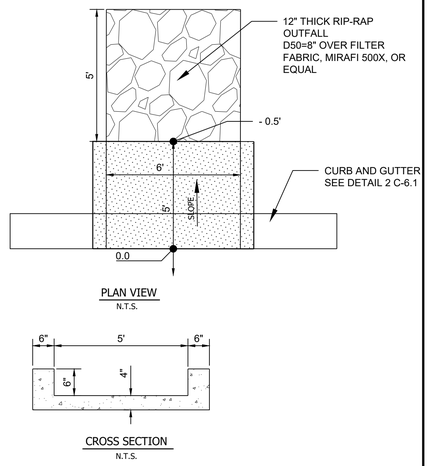
TYPICAL CONCRETE KICKERS 3

TABLE OF DIMENSIONS FOR CONCRETE BLOCKING

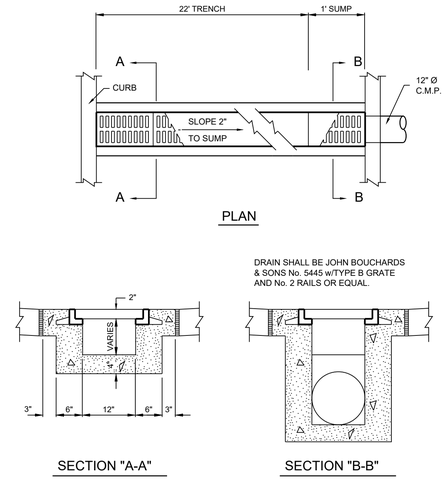
| 90° BENDS | | |



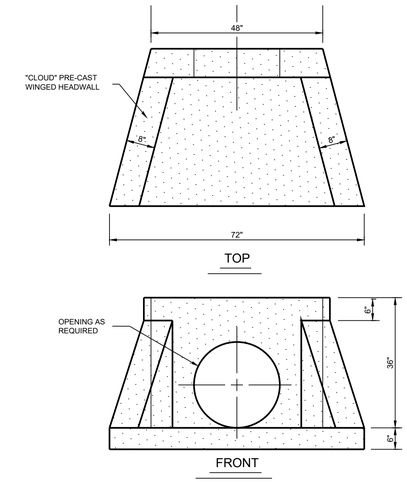
FLAT BOTTOM DITCH
WITH CHANNEL LINER 1



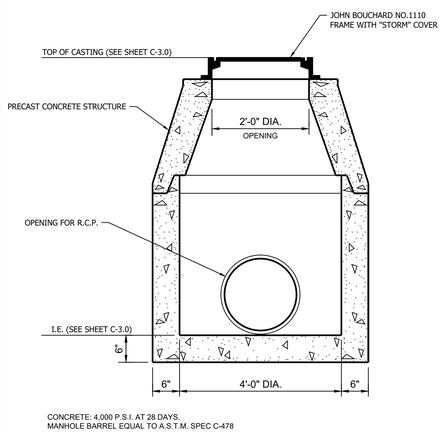
CURB OPENING 2



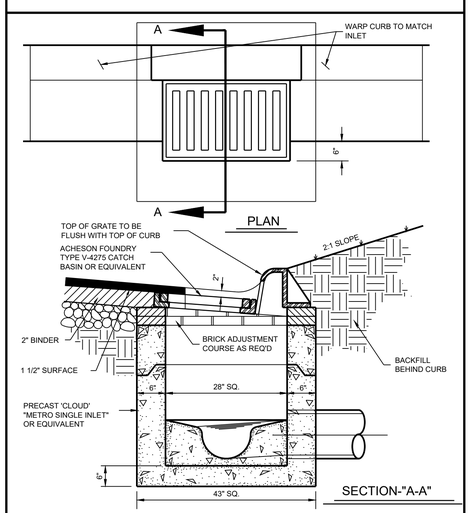
TRENCH DRAIN 3



PRECAST CONCRETE END SECTION 4



STORM MANHOLE 5



SINGLE INLET PRECAST 6

WAMBLE & ASSOCIATES
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Brentwood, TN 37027
615.251.9555

STORM WATER DETAILS

314 Old Nashville Highway
LaVERGNE, RUTHERFORD COUNTY, TENNESSEE
FOR
Amgad & Amin Zakher

JAMES D. WAMBLE
REGISTERED
ENGINEER
05/19/2025
NO. 014238
STATE OF TENNESSEE

REVISIONS:
05/19/25 PC Workshop Review Comments

DATE: April 28, 2025
W&A NO.: 1092-0124
SHEET NUMBER:
C-6.3

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 5. **Final Plat - The Resubdivision of Lot 15 Morningside Acres, Section 1 - Two Lots on 1.02 Acres. Requested by Huddleston - Steele. Property located on Old Jones Mill Road (Tax Map 13H, Group A, Parcel 39). R-1 (Low Density Residential) Zoning District. Property owned by Martha H. Queener.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer

Summary:

This minor final plat consists of two (2) lots on 1.02 Acres. Approval is requested by Huddleston Steele. The property is located on Old Jones Mill Road (Tax Map 14, Parcel 54). The property is zoned R-1 which is Low Density Residential.

The property currently has one (1) home located on it. The owner is Martha Queener.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. TCA 68-221-407 states that "No proposed subdivision shall be approved by a local planning commission or other agency authorized to approve subdivisions until the plans for such subdivisions have been approved by the commissioner." Therefore, the Planning Commission cannot approve this plat prior to TDEC approval of the subsurface sewage disposal systems. Provide proof that TDEC has given this approval.
2. Complete the "Tennessee Department of Environment and Conservation Notes" shown on the plat based on the TDEC approval required above.
3. Provide a "Certification of Approval for Installation of Subsurface Sewage Disposal Systems" to be signed by TDEC
4. Add owner's names to lots 16 and 53.
5. Show total ROW width of Old Jones Mill Road.
6. Show size of waterline in Meadowlark Lane.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)

1. Notes under Tennessee Department of Environment and Conservation are not populated.

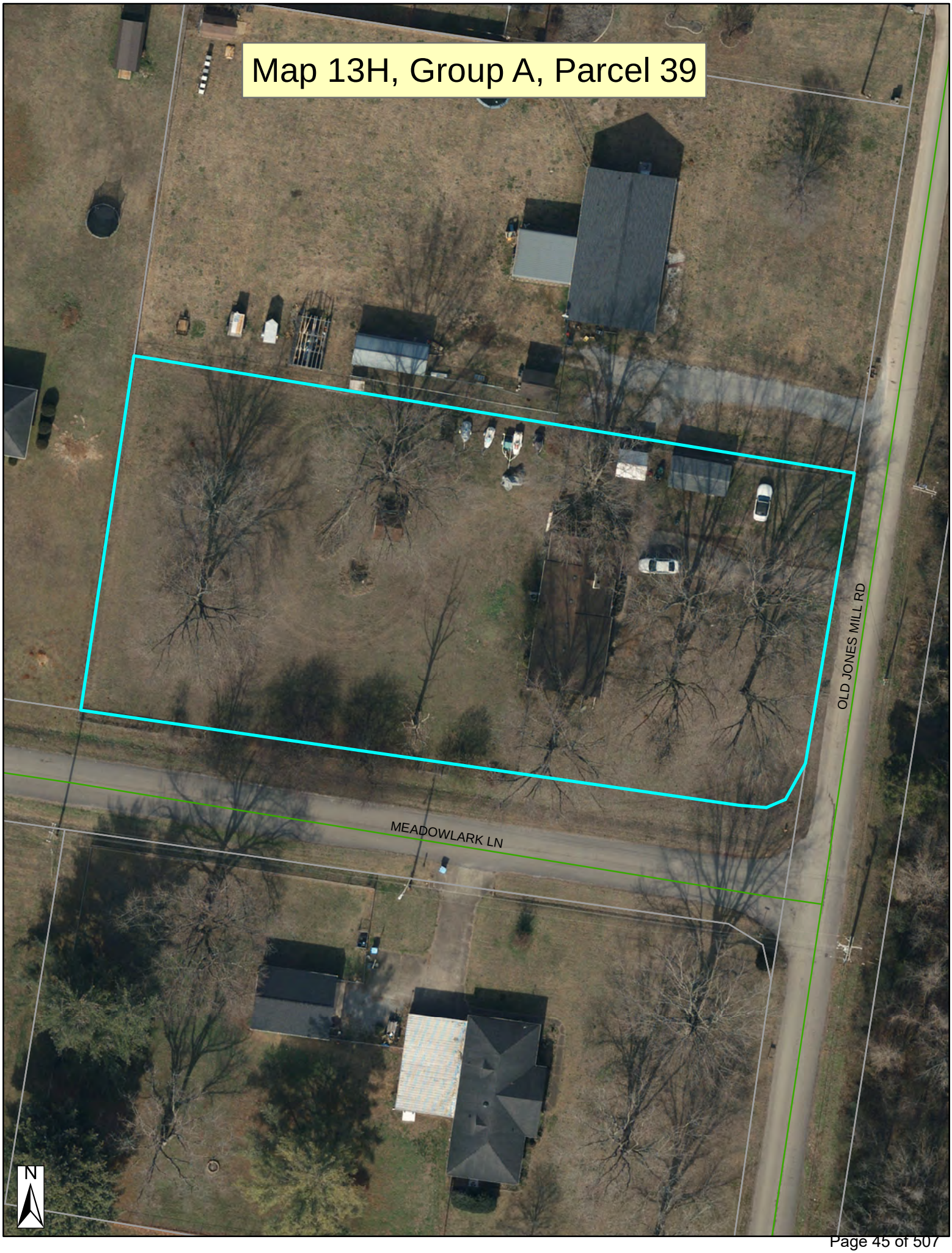
Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)

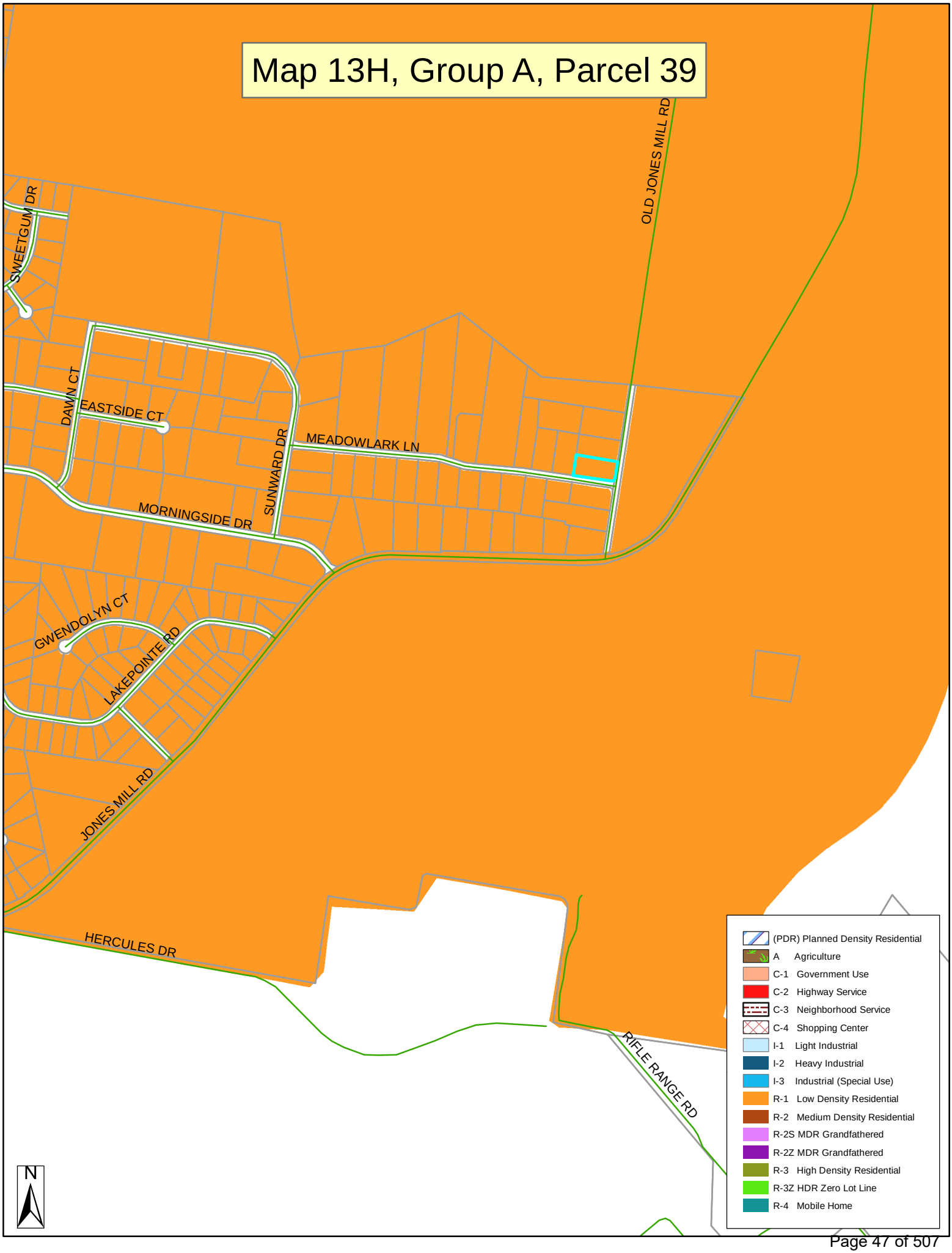
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.


Map 13H, Group A, Parcel 39
OLD JONES MILL RD
MEADOWLARK LN
N

Map 13H, Group A, Parcel 39
MEADOWLARK LN
OLD JONES MILL RD
JONES MILL RD
N


Map 13H, Group A, Parcel 39
OLD JONES MILL RD
SWEETGUM DR
DAWN CT
EASTSIDE CT
SUNWARD DR
MEADOWLARK LN
MORNINGSIDE DR
GWENDOLYN CT
LAKEPOINTE RD
JONES MILL RD
HERCULES DR
RIFLE RANGE RD
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home

25

NOTES

1. The purpose of this plat is to resubdivide Lot 15 Morningside Acres Subdivision Section 1, creating (2) two lots of record.
2. The recording of this plat voids, vacates, and supersedes the previous recording of Lot 15, Morningside Acres Subdivision Section 1 recorded in Plat Book 3, Page 69. All other information on said plat remains the same.
3. In Tennessee, it is a requirement per "The Underground Utility Damage Prevention Act" that anyone who engages in excavation must notify all known underground utility owners, no less than three nor more than ten working days of their intent to excavate. A list of these utilities may be obtained from the County Register of Deeds. Those utilities that participate in the Tennessee One Call system can be notified by calling toll free 1-800-351-1111.
4. Underground utilities shown were located using available above ground evidence, as well as information obtained from the respective utility companies. The existence or nonexistence of the utilities shown and any other utilities which may be present on this site or adjacent sites should be confirmed with the utility owner prior to commencing any work.
5. It is the responsibility of each builder to design and construct a suitable grading and drainage scheme which will convey surface water, without ponding in the lot or under the house, from his structure to the drainage system.
6. Parcels may be subject to additional easements and/or restrictions, by record or prescription, that a complete title search may reveal.

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

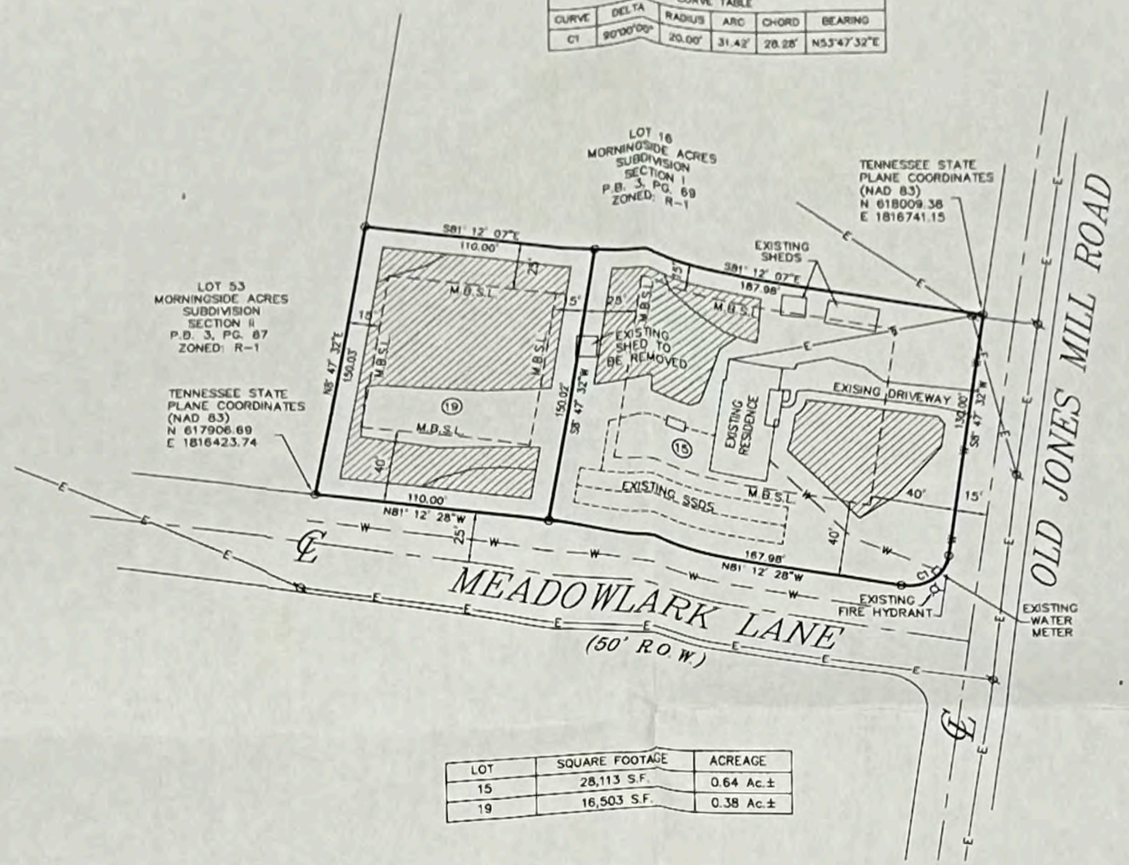
1. Any cutting or filling after _____ may render lots unsuitable for subsurface sewage disposal.
2. Lot 15 has an existing system. Adequate suitable soil is available to duplicate a _____ bedroom conventional subsurface sewage disposal system. Plat approval does not constitute approval of the of the existing system. See existing system re-inspection letter completed in conjunction with this lot evaluation.
3. Lot 19 is approved for up to a ____ bedroom residence.
4. All shaded areas are to be reserved for subsurface sewage disposal systems. Keep all buildings, utilities, & drives outside shaded areas.

75 MPI
60 or 45 MPI

SOILS AREAS

LOT	≤60 MPI	75 MPI	EXISTING SSDS	TOTAL
15	6,917 SF	0 SF	3,300 SF	10,217 SF
19	8,875 SF	0 SF	0 SF	8,875 SF

CURVE TABLE					
CURVE	DELTA	RADIUS	ARC	CHORD	BEARING
C1	90°00'00"	20.00'	31.42'	28.28'	N53°47'32"E



LOT	SQUARE FOOTAGE	ACREAGE
15	28,113 S.F.	0.64 Ac.±
19	16,503 S.F.	0.38 Ac.±

LOCATION MAP
N.T.S.

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book Number 2483 page 2905, County Registers Office, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restrictions lines, and that offers or irrevocable dedication for all public ways, utilities, and other facilities have been filed.

Record Book 2127, Page 3205

Date _____ Martha H. Queener

CERTIFICATE OF SURVEY ACCURACY

I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this survey exceeds the minimum requirements of an "Urban Land Survey," category "I" as per standards of practice adopted by the Board of Examiners for Land Surveyors for the State of Tennessee, revised January 4, 1992, and that the ratio of precision is greater than 1:10,000.

5/1/2025
Date

Phillip G. Chapman Tenn. R.L.S. No. 2007

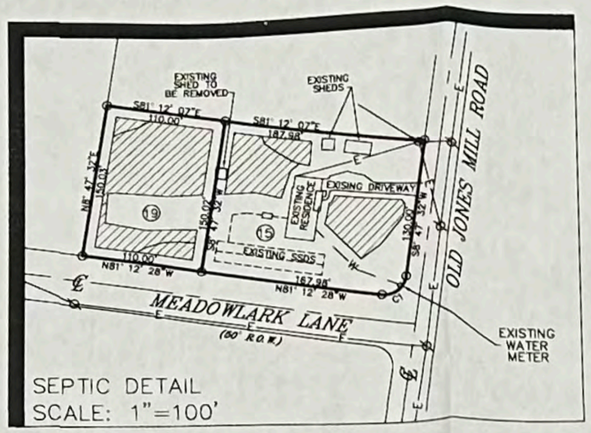
CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Subdivision Regulations for LaVergne, Tennessee with the exception of such variances, if any, as are noted in the minutes of the planning commission and that it has been approved for recording in the office of the County Register of Deeds.

Date _____ SECRETARY, PLANNING COMMISSION

LEGEND

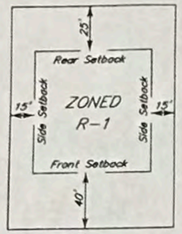
IPS ○ IRON PIN SET (1/2" REBAR WITH STAMPED H-S ENGR)
IPF ○ IRON PIN FND.
● SURVEY POINT
Ø POWER POLE
—X——X— EXISTING FENCE LINE
—E——E— EXISTING ELECTRIC LINE
—W——W— EXISTING WATER LINE



SEPTIC DETAIL
SCALE: 1"=100'

I HEREBY CERTIFY THAT THIS IS A CATEGORY " IV " SURVEY AND THE PRECISION OF THE GPS PORTION OF THIS SURVEY (IN RELATIVE POSITIONING ACCURACY GIVEN AT THE 95% CONFIDENCE LEVEL) IS 1:10,000 AS SHOWN HEREON AND THAT THIS SURVEY WAS DONE IN COMPLIANCE WITH CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE FOR LAND SURVEYORS.

ZONED: R-1
FRONT SETBACK: 40'
SIDE SETBACK: 15'
REAR SETBACK: 25'



TYPICAL BUILDING SETBACK DETAIL
N.T.S.

BEARINGS BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD 83).

2 LOTS – 44,616 S.F. OR 1.02 Ac.±

0 50 100

OWNER: MARTHA H. QUEENER
OWNER ADDRESS: 3103 STEPHANIE COURT
MURFREESBORO, TN 37128
PROPERTY ADDRESS: 321 OLD JONES MILL ROAD
LA VERGNE, TN 37086
TAX MAP: 013H, GROUP: "A", PARCEL: 39.00
RECORD BOOK: 2127, PAGE: 2305
MAP NUMBER: 47149C0020K
DATED: MAY. 9, 2023 ZONE: X
NOTE: THIS PARCEL IS SUBJECT TO ALL EASEMENTS AS SHOW AND ANY OTHER EASEMENTS AND/OR RESTRICTIONS EITHER RECORDED OR BY PRESCRIPTION THAT A COMPLETE TITLE SEARCH MAY REVEAL.

PHILLIP G. CHAPMAN
REGISTERED
LAND SURVEYOR
AGRICULTURE
COMMERCE
TENNESSEE No. 2007
5/1/2025

HUDDLESTON-STEELE ENGINEERING, INC.
2115 N.W. BROAD STREET, MURFREESBORO, TN 37129
SURVEYING : 893 – 4084, FAX: 893 – 0080

FINAL PLAT
THE RESUBDIVISON OF LOT 15
MORNINGSIDE ACRES SECTION I

2nd CIVIL DISTRICT – RUTHERFORD COUNTY – TN.

DATE: MAY 2025	SCALE: 1"=50'	SH. 1 OF 1

\\Share\ACAD2236\Civil 3D Projects\LOT 15 MORNINGSIDE ACRES\321 OLD JONES MILL ROAD - RESUB PLAT.dwg, 4/30/2025 3:50:16 PM, KIP 7770 No. 1 Series K

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 6. **Final Plat - Replat Lot 8 of Richland South, LLC Property - Two Lots on 1.33 Acres. Requested by TTL. Property located on Murfreesboro Road (Tax Map 14, Parcel 72.16). C-2 (Highway Service) Zoning District. Property owned by Woodhaven Development Group.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer

Summary:

The applicant is requesting this final plat approval as part of a development that contains the newly opened ALDI grocery store totaling 19,432 SF as well as the new Chipotle restaurant. The site is located at Murfreesboro Road near Veterans Memorial Parkway.

This plat will replat one existing lot into two (2) new lots on approximately 1.33 acres.

The purpose of the plat is to establish the property boundaries for a new 7 Brew.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)

1. Add Purpose Note.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. Provide book and page number for 30' PUDE along Murfreesboro Road.
2. Provide book and page number for 30' PUDE along rear property line of lot 10.
3. Provide book and page number for sewer easement along rear property line of both lots. This was provided on the latest approved and recorded plat.
4. There is a 20' easement along Murfreesboro Road which is described in DB 560, PG 754. Show this easement or explain why it is no longer in place.
5. Remove unnecessary certificates to avoid confusion.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)

1. Note 1 appears to be incorrect. Not all easements shown can be used for any utility. I believe the 20' Sanitary Sewer Easement per PB43 PG261 is only for City of La Vergne Sewer.
2. Informational Comment: This subdivision has replatted a few times. The development is no longer covered under the original water and sewer availability application. The new tenants will have to apply for water and sewer availability. They may reach out to Scott Tatalovich, Utility Engineer, statalovich@lavergnetn.gov, when ready.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

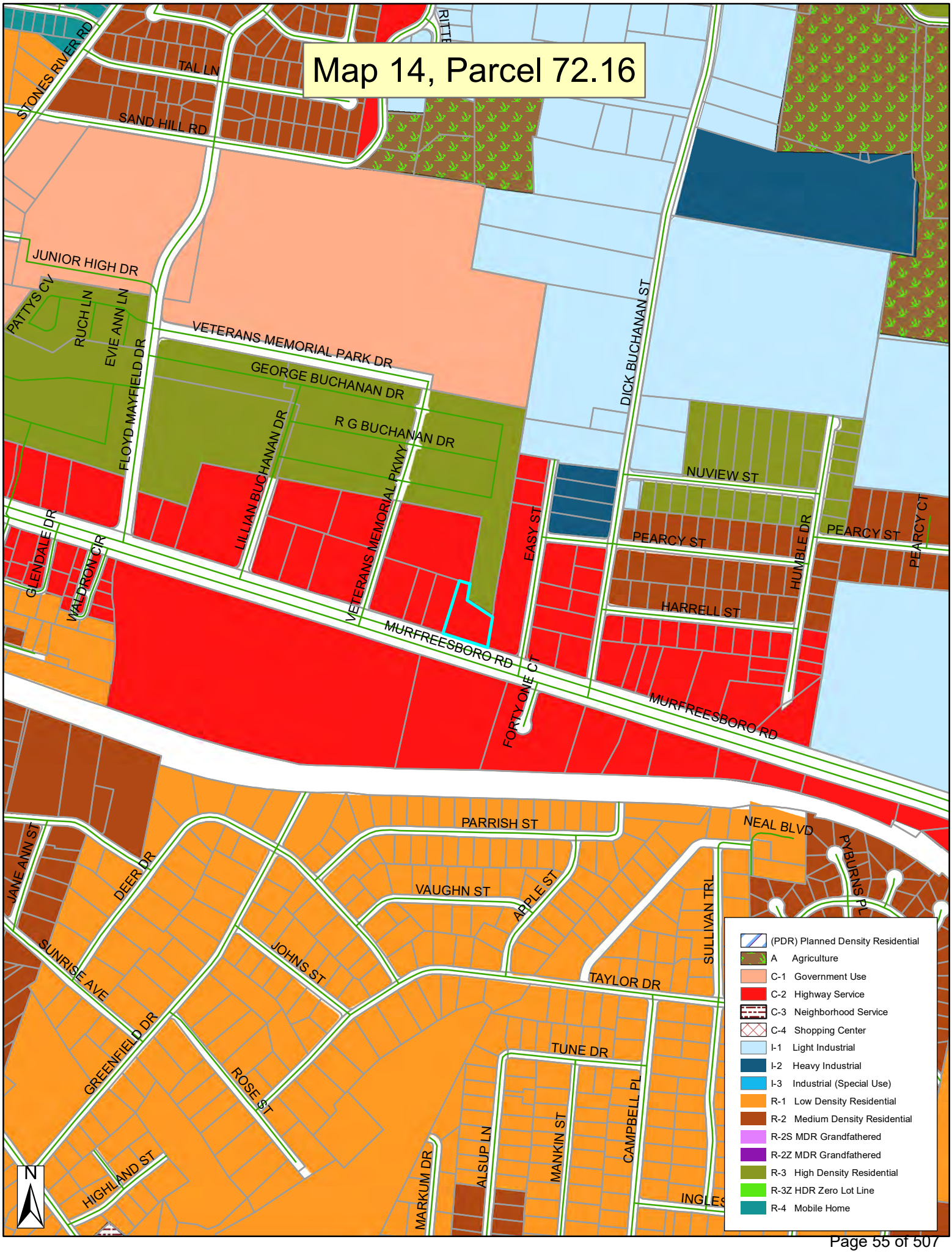
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

Map 14, Parcel 72.16
MURFREESBORO RD
MURFREESBORO RD
EASY ST
N

Map 14, Parcel 72.16
R G BUCHANAN DR
GEORGE BUCHANAN DR
VETERANS MEMORIAL PKWY
EASY ST
PEARCY ST
DICK BUCHANAN ST
NUVIEW ST
HARRELL ST
MURFREESBORO RD
MURFREESBORO RD
FORTY ONE CT
PARRISH ST
N


Map 14, Parcel 72.16
STONES RIVER RD
TAL LN
SAND HILL RD
JUNIOR HIGH DR
PATTYS CV
RUCH LN
EVIE ANN LN
FLOYD MAYFIELD DR
VETERANS MEMORIAL PARK DR
GEORGE BUCHANAN DR
R G BUCHANAN DR
LILLIAN BUCHANAN DR
VETERANS MEMORIAL PKWY
DICK BUCHANAN ST
NUVIEW ST
EASY ST
PEARCY ST
HUMBLE DR
PEARCY CT
HARRELL ST
GLENDALE DR
WALDRON CIR
MURFREESBORO RD
FORTY ONE CT
PARRISH ST
NEAL BLVD
PYBURNS PL
JANE ANN ST
DEER DR
VAUGHN ST
APPLE ST
SULLIVAN TRL
SUNRISE AVE
JOHNS ST
TAYLOR DR
GREENFIELD DR
ROSE ST
TUNE DR
CAMPBELL PL
MANKIN ST
ALSUP LN
MARKUM DR
HIGHLAND ST
INGLES
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home

TENNESSEE
EROSION CONTROL

VICINITY MAP
(NOT TO SCALE)

NORTH BASED ON
TENNESSEE STATE PLANE
COORDINATES
N.A.D. 83 GRID NORTH

REPLAT
LOT 8
OF FINAL PLAT OF
THE RICHLAND
SOUTH, LLC PROPERTY

5355 MURFREESBORO ROAD
LA VERGNE,TN 37086

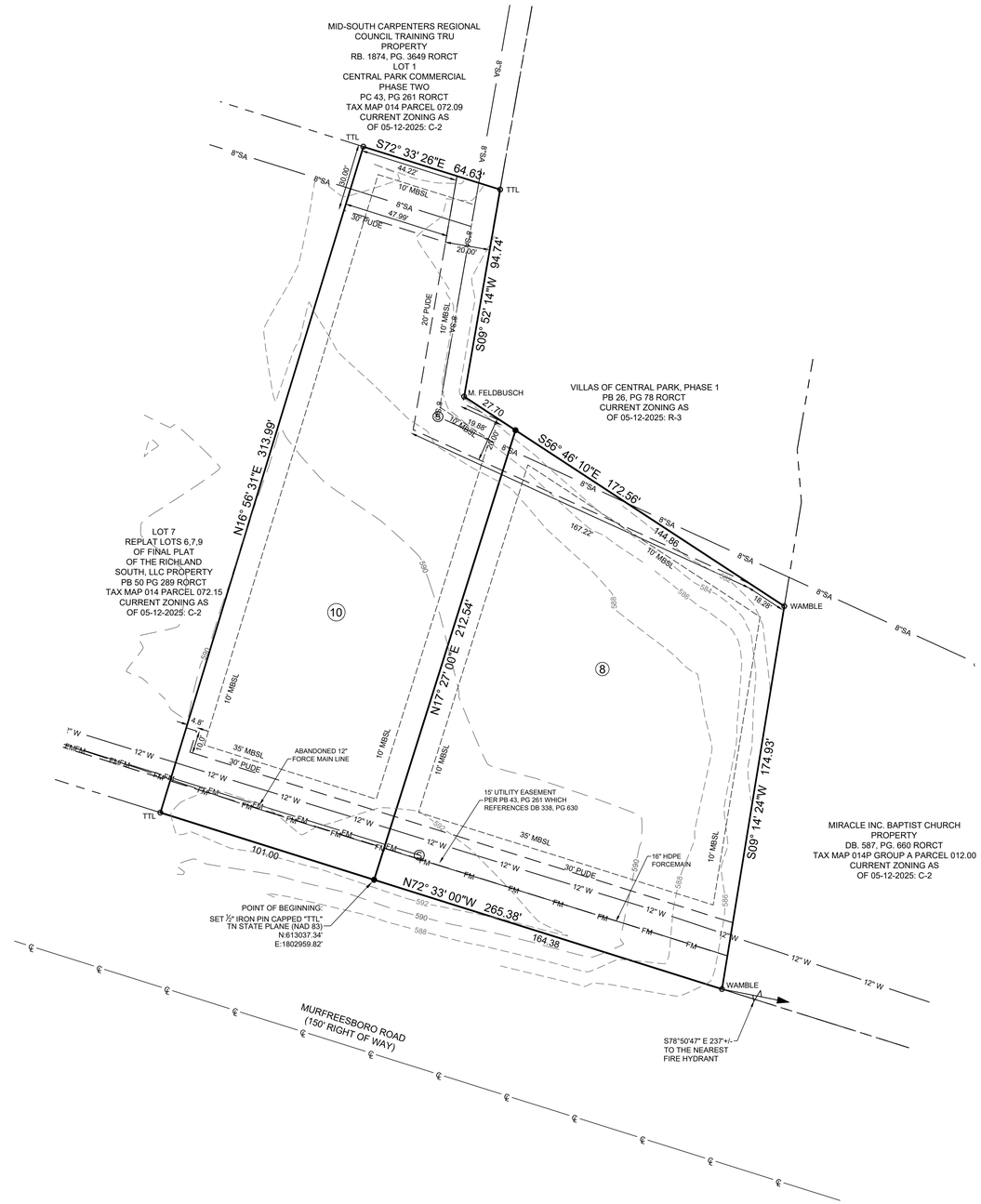
RUTHERFORD COUNTY, TENNESSEE

LEGEND

- BOUNDARY LINE
- CENTERLINE
- PUDE
- ADJOINING BOUNDARY LINE
- MBSL
- 12" W — 12' WATERLINE
- FM — FM — FORCE MAIN
- 8"SA — 8" SANITARY LINE
- SANITARY SEWER MANHOLE
- MONUMENT FOUND (SIZE AND MATERIAL AS NOTED)
- MONUMENT SET (1/2" REBAR WITH A CAP MARKED TTL)

PG=PAGE
POB=POINT OF BEGINNING
NAD=NORTH AMERICAN DATUM
RB=RECORD BOOK
RLS=REGISTERED LAND SURVEYOR
MBSL=MINIMUM BUILDING SETBACK LINE
PUDE=PUBLIC UTILITY & DRAINAGE EASEMENT
RORCT=REGISTER'S OFFICE OF RUTHERFORD COUNTY, TENNESSEE
SQFT=SQUARE FEET
PC=PLAT CABINET
DB=DEED BOOK

NOTES
1) ALL EASEMENTS SHOWN MAY BE USED FOR POWER, TELEPHONE, GAS, SANITARY SEWER, STORM SEWER, WATER AND SURFACE DRAINAGE, AS WELL AS THE DESIGNED USE.
2) BEARINGS AND DISTANCES SHOWN TAKE PRECEDENCE OVER SCALE.
3) ANY LOT IN THIS SUBDIVISION MAY BE REPLATTED WITH THE APPROVAL OF THE CITY OF LA VERGNE PLANNING COMMISSION.
4) UNDERGROUND UTILITIES SHALL BE INSTALLED.
5) PROPERTY IS ZONED C-2 AND IS WITHIN THE MURFREESBORO ROAD OVERLAY DISTRICT.
6) THE LONG-TERM MAINTENANCE AGREEMENT FOR THE STORMWATER FACILITIES SERVING THIS LOT HAVE BEEN RECORDED IN RECORD BOOK 2937 PAGE 1317, RORCT.
7) THIS TRACT DOES NOT LAY WITHIN A SPECIAL FLOOD HAZARD AREA OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY ACCORDING TO THE FLOOD INSURANCE RATE MAP (47149 C 0015 J ZONE X AND 47149 C 0020 K ZONE X) OF THE CITY OF LA VERGNE, ROBERTSON COUNTY, TENNESSEE, DATED: MARCH 9, 2023, UNLESS OTHERWISE NOTED ON SURVEY.



AREA TABLE		
LOT #	AREA (SQ FT)	AREA (ACRES)
8	29044.84	0.67
10	28957.56	0.66

GENERAL INFORMATION:

OWNER/DEVELOPER:
WOODHAVEN DEVELOPMENT GROUP
6000 FAIRVIEW ROAD SUITE 1530
CHARLOTTE, NC 28210
CONTACT: ZACK KOSOFSKY
PH#: 704-731-0117

NOTARIZATION

STATE OF TENNESSEE , RUTHERFORD COUNTY
PERSONALLY APPEARED BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR SAID STATE AND COUNTY,

THE WITHIN NAMED BARGAINOR(S), WITH WHOM I AM PERSONALLY ACQUAINTED AND WHO ACKNOWLEDGED THAT THEY EXECUTED THE WITHIN DESCRIBED INSTRUMENT.

NOTARY PUBLIC — DATE — MY COMMISSION EXPIRES

CERTIFICATE OF OWNERSHIP AND DEDICATION

I / WE HEREBY CERTIFY THAT I AM / WE ARE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I / WE HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT ESTABLISHING THE MINIMUM BUILDING RESTRICTION LINES AND DEDICATE ALL STREETS , ROADS , ALLEYS , WALKS, PARKS , AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS SHOWN.
RECORD BOOK: 2442, PAGE 2536

OWNER(S) — DATE

CERTIFICATE OF ACCURACY

I HEREBY CERTIFY THAT THE PLAN SHOWN AND DESCRIBED HEREON IS A TRUE AND CORRECT SURVEY TO THE ACCURACY REQUIRED BY THE CITY OF LA VERGNE PLANNING COMMISSION AND THAT THE MONUMENTS HAVE BEEN PLACED AS SHOWN HEREON TO THE [illegible] ENGINEER.

PRELIMINARY
(NOT FOR CONSTRUCTION, RECORDING PURPOSES OR IMPLEMENTATION)

LANDON S. BAGWELL TN RLS# 3466 TTL, INC — DATE

CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I HEREBY CERTIFY THAT THE SEWER SYSTEMS OUTLINED OR INDICATED ON THE FINAL SUBDIVISION PLAT ENTITLED FINAL PLAT OF THE RICHLAND SOUTH, LLC PROPERTY HAVE BEEN INSTALLED IN ACCORDANCE WITH CURRENT LOCAL AND STATE GOVERNMENT REQUIREMENTS OR A SUFFICIENT BOND OR CASH HAS BEEN FILED WHICH WILL GUARANTEE SAID INSTALLATION.

NAME TITLE AND AGENCY OR AUTHORIZED APPROVAL AGENT — DATE

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I HEREBY CERTIFY THAT ALL WATER SYSTEM(S) OUTLINED OR INDICATED ON THE FINAL SUBDIVISION PLAT ENTITLED FINAL PLAT OF THE RICHLAND SOUTH, LLC PROPERTY HAS/HAVE BEEN INSTALLED IN ACCORDANCE WITH CURRENT LOCAL AND STATE GOVERNMENT REQUIREMENTS, OR A SUFFICIENT BOND OR OTHER SURETY HAS BEEN FILED TO GUARANTEE SAID INSTILLATION.

NAME TITLE AND AGENCY OR AUTHORIZED APPROVAL AGENT — DATE

CERTIFICATE OF APPROVAL OF DRAINAGE OUTSIDE RIGHT OF WAY

I HEREBY CERTIFY THAT ALL DRAINAGE STRUCTURES OUTSIDE OF THE ROAD RIGHT OF WAYS HAVE BEEN INSTALLED IN AN ACCEPTABLE MANNER AND ACCORDING TO THE COUNTY STORM WATER MANAGEMENT RESOLUTION AND THAT A MAINTENANCE BOND OF $753,910.50 HAS BEEN POSTED.

CITY OF LA VERGNE BUILDINGS & CODES DEPT. — DATE

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HERON COMPLIES WITH ALL SUBDIVISION STANDARDS FOR LA VERGNE, TENNESSEE WITH THE EXCEPTION OF SUCH VARIANCES IF ANY AS NOTED IN MINUTES OF THE COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE RUTHERFORD COUNTY REGISTER.

SECRETARY, PLANNING COMMISSION — DATE

No.	Date	Revision Description

TTL
2971 International Blvd, Suite C| Clarksville, TN 37040
931.647.6959 | www.ttlusa.com

REPLAT LOT 8 OF FINAL PLAT OF THE RICHLAND SOUTH, LLC PROPERTY

FINAL PLAT 03-20-25 DATE — DEED REFERENCE: MAP 014, PARCEL 072.16 RECORD BOOK 2442, PAGE 2536, RORCT

TOTAL ACRES 1.33 — TOTAL LOTS 2
ACRES NEW ROAD 0.0 — MILES NEW ROAD 0.0
OWNER WOODHAVEN DEVELOPMENT GROUP — CIVIL DISTRICT 3RD
CURRENTLY ZONED C-2 — AS OF 03-20-24

0 30 60 90
SCALE: 1" = 30'

X:\2023\12\23-12-01586 LA VERGNE ALTA\SS\SURVEY\CAD\LA VERGNE REPLAT LOT 8.DWG PLOTTED: 5/19/2025 3:55 PM

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 7. **Final Plat - Bola Gabriel Subdivision - Two Lots on 5.04 Acres. Requested by Huddleston - Steele. Property located on Hollandale Road (Tax Map 14, Parcel 23.2). R-1 (Low Density Residential) Zoning District. Property owned by Bola Gabriel & Mariam Girges.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer

Summary:

This is a request for approval of a minor, final plat.

It consists of two (2) lots on 5.04 acres. Approval is requested by Huddleston Steele. The property is located on Hollandale Road (Tax Map 014, Parcel 23.20).

The property is zoned R-1 which is Low Density Residential. This property currently contains one house.

This plat proposes that Lot 1 will be 1.87 acres and Lot 2 will be 3.17 acres.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. TCA 68-221-407 states that "No proposed subdivision shall be approved by a local planning commission or other agency authorized to approve subdivisions until the plans for such subdivisions have been approved by the commissioner." Therefore, the Planning Commission cannot approve this plat prior to TDEC approval of the subsurface sewage disposal systems. Provide proof that TDEC has given this approval.
2. Complete the "Tennessee Department of Environment and Conservation Notes" shown on the plat based on the TDEC approval required above.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)

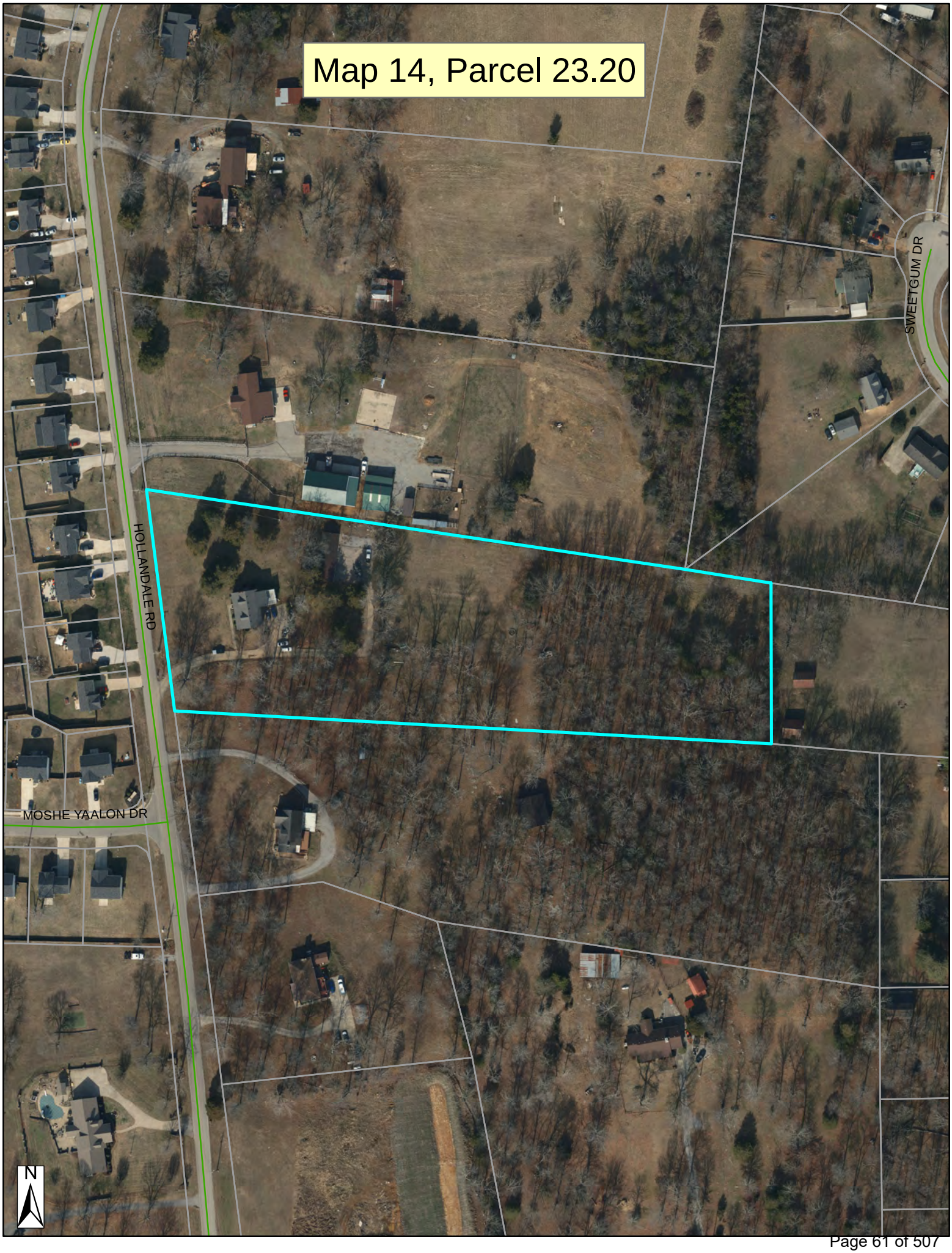
1. Engineering has covered my concerns. No comments.

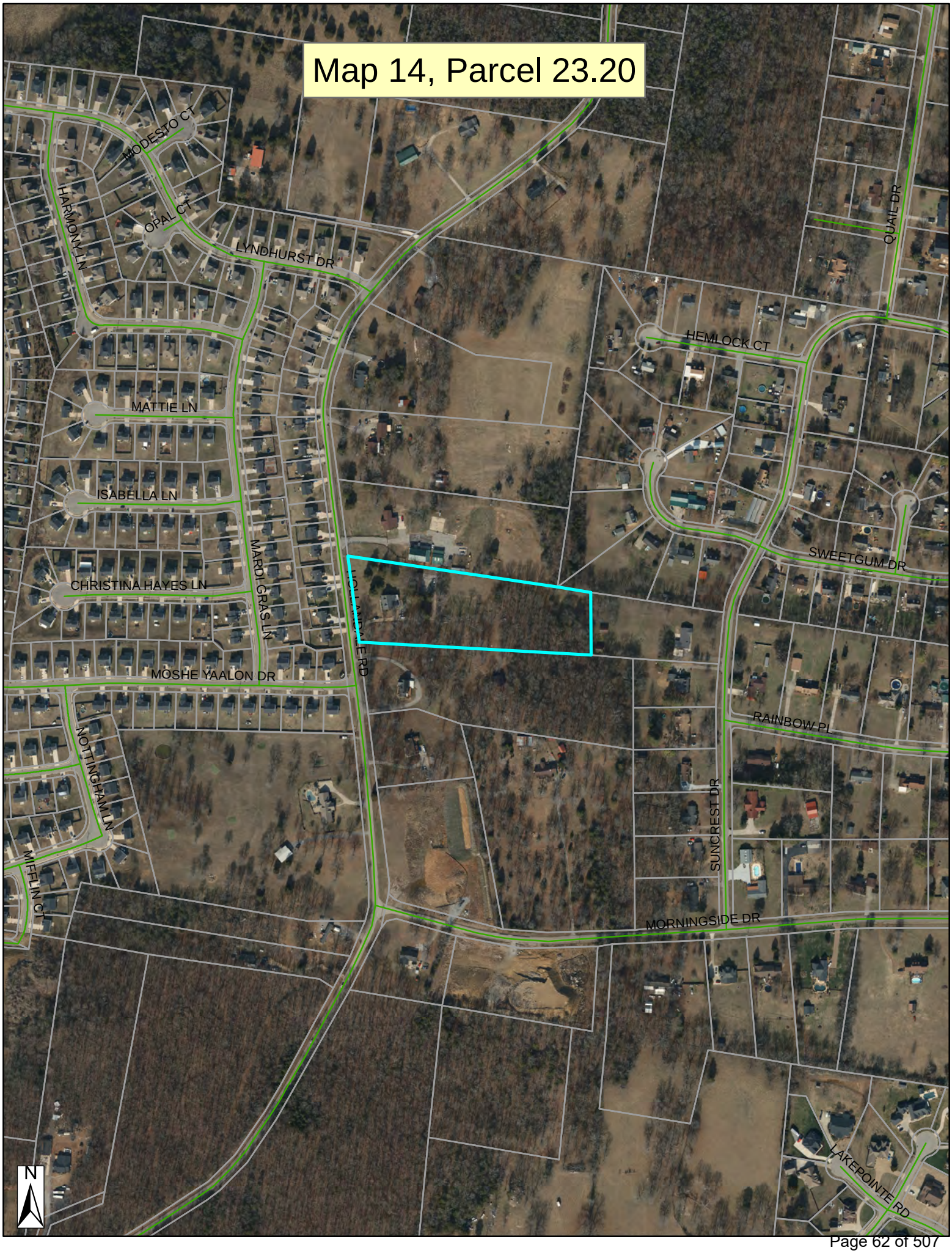
Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

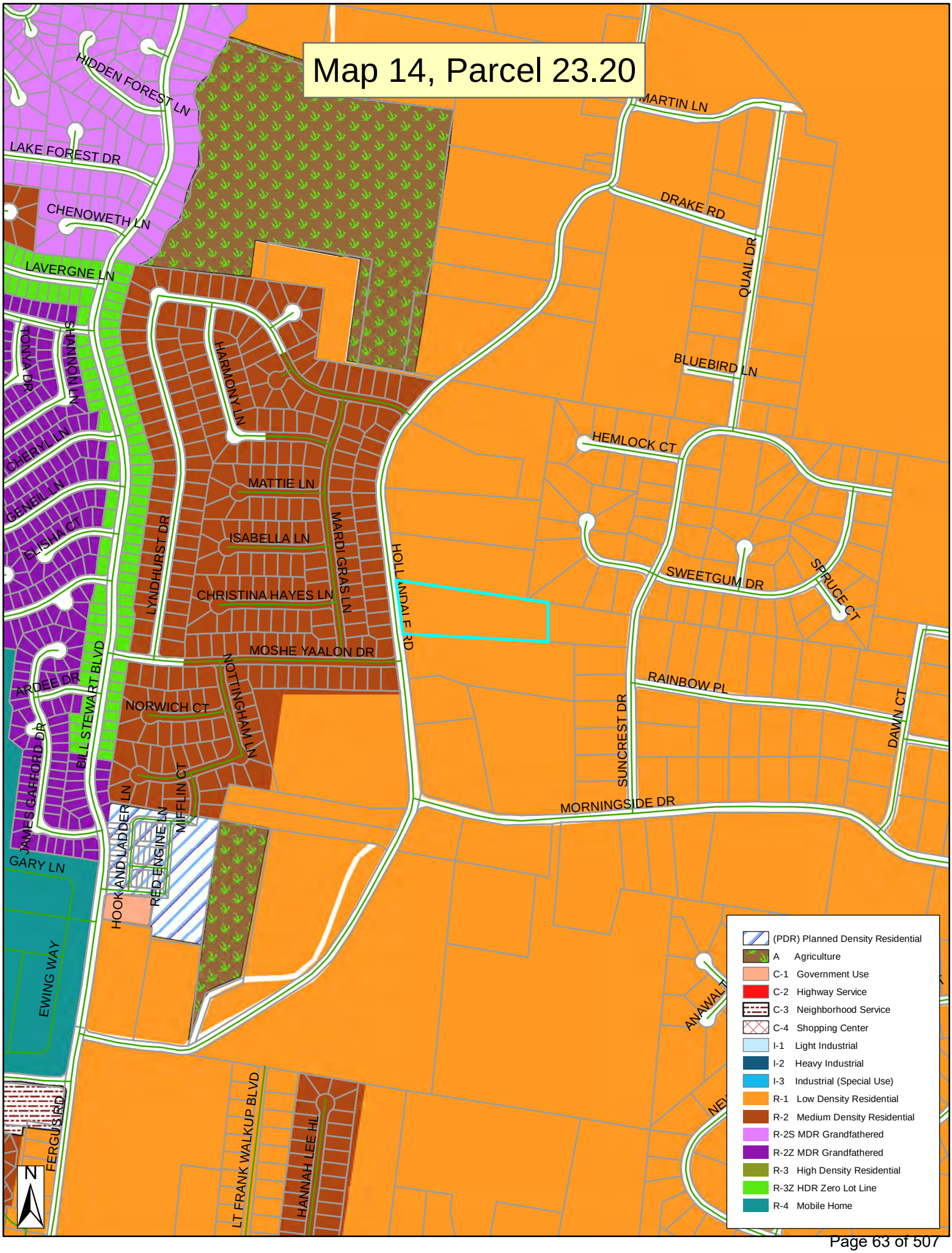
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.


Map 14, Parcel 23.20
HOLLANDALE RD
SWEETGUM DR
MOSHE YAALON DR
N


Map 14, Parcel 23.20
MODESTO CT
HARMONY LN
OPAL CT
LYNDHURST DR
QUAIL DR
HEMLOCK CT
MATTIE LN
ISABELLA LN
MARDI GRAS LN
SWEETGUM DR
CHRISTINA HAYES LN
HOLLINDALE RD
MOSHE YAALON DR
RAINBOW PL
NOTTINGHAM LN
MIFFLIN CT
SUNCREST DR
MORNINGSIDE DR
LAKEPOINTE RD
N


Map 14, Parcel 23.20
HIDDEN FOREST LN
LAKE FOREST DR
CHENOWETH LN
LAVERGNE LN
TONYA DR
SHANNON LN
CHERYL LN
GENEIL LN
ELISHA CT
ARDEE DR
JAMES GAFFORD DR
GARY LN
EWING WAY
FERGUS RD
BILL STEWART BLVD
LYNDHURST DR
HARMONY LN
MATTIE LN
ISABELLA LN
CHRISTINA HAYES LN
MARDI GRAS LN
MOSHE YAALON DR
NOTTINGHAM LN
NORWICH CT
MIFFLIN CT
HOOK AND LADDER LN
RED ENGINE LN
LT FRANK WALKUP BLVD
HANNAH LEE HL
HOLLANDALE RD
MARTIN LN
DRAKE RD
QUAIL DR
BLUEBIRD LN
HEMLOCK CT
SWEETGUM DR
SPRUCE CT
RAINBOW PL
SUNCREST DR
DAWN CT
MORNINGSIDE DR
ANAWALT
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home

NOTES

1. The purpose of this plat is to resubidivde Tax Map 14, Parcel 23.20 creating (2) two lots of record.
2. In Tennessee, it is a requirement per "The Underground Utility Damage Prevention Act" that anyone who engages in excavation must notify all known underground utility owners, no less than three nor more than ten working days of their intent to excavate. A list of these utilities may be obtained from the County Register of Deeds. Those utilities that participate in the Tennessee One Call system can be notified by calling toll free 1-800-351-1111.
3. Underground utilities shown were located using available above ground evidence, as well as information obtained from the respective utility companies. The existence or nonexistence of the utilities shown and any other utilities which may be present on this site or adjacent sites should be confirmed with the utility owner prior to commencing any work.
4. It is the responsibility of each builder to design and construct a suitable grading and drainage scheme which will convey surface water, without ponding in the lot or under the house, from his structure to the drainage system.
5. Parcels may be subject to additional easements and/or restrictions, by record or prescription, that a complete title search may reveal.

CERTIFICATION OF GENERAL APPROVAL FOR INSTALLATION OF SUBSURFACE SEWAGE DISPOSAL SYSTEMS WITH RESTRICTIONS

General approval is hereby granted for lot(s) proposed hereon as being suitable for subsurface sewage disposal with the listed and/or attached restrictions.
Before the initiation of construction, the location of the house or other structure(s) and plans for the subsurface sewage disposal system shall be approved by the Division of Water Resources.

Date

Tennessee Department of Environment and Conservation Division of Ground Water Protection

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION:

1. Any cutting or filling after _____ may render lots unsuitable for subsurface sewage disposal.
2. Lot 1 has an existing system. Adequate suitable soil is available to duplicate a _____ bedroom conventional subsurface sewage disposal system. Plat approval does not constitute approval of the of the existing system. See existing system re-inspection letter completed in conjunction with this lot evaluation.
3. Lot 2 is approved for up to a ___ bedroom residence.
4. All shaded areas are to be reserved for subsurface sewage disposal systems. Keep all buildings, utilities, & drives outside shaded areas.

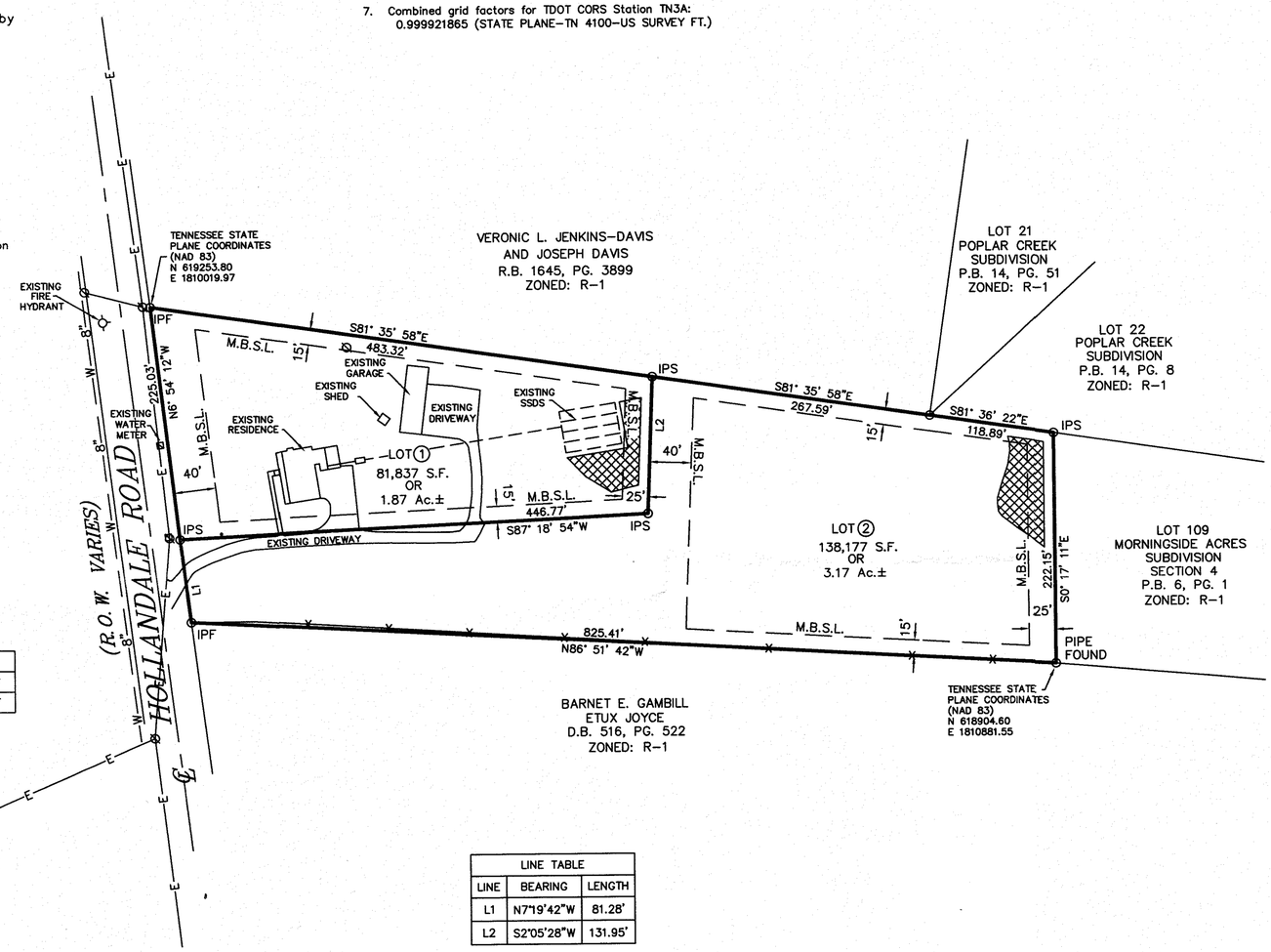
75 MPI
60 or 45 MPI

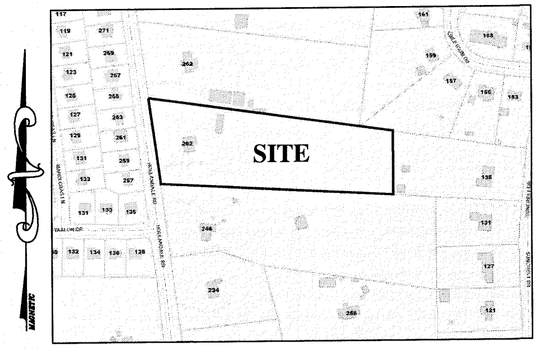
SOILS AREAS

LOTS	≤60 MPI	75 MPI	EXISTING SSDS	TOTAL
1	0 SF	2,690 SF	2,339 SF	4,499 SF
2	0 SF	3,375 SF	0 SF	3,375 SF

GLOBAL POSITION SYSTEM SURVEY NOTES

1. For boundary and topographic aspects of this survey, RTK positioning system (GPS) survey equipment: SOKKIA GRX2 (#1001138-06) (Dual frequency). The GPS portion of this survey was performed using RTK (Real-Time Kinematic) surveying methods. Topographic features shown were obtained by using the TDOT CORS station TN3A for horizontal and for vertical control.
2. The relative positional accuracy is stated in the Category "IV" survey certification located above the surveyor's seal on this drawing.
3. The dates that fieldwork was performed for this survey were: May 2025.
4. The datum(s) for the TDOT CORS Network Station 3A that was used:
   HORIZ.: NAD83(2011) EPOCH 2010
   VERT.: NAVD 1988
5. Fixed Control Station designation with positional data:
   TDOT CORS STATION-TN3A
   STATE PLANE (TN 4100-US SURVEY FT.)- NORTHING: 553,312.4528
   EASTING: 1,860,677.584
   ELEVATION: 650.209 FT.
6. Geoid model used- GEOID03
7. Combined grid factors for TDOT CORS Station TN3A:
   0.999921865 (STATE PLANE-TN 4100-US SURVEY FT.)





LOCATION MAP
N.T.S.

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book Number 2483 page 2905, County Registers Office, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restrictions lines, and that offers or irrevocable dedication for all public ways, utilities, and other facilities have been filed.

Record Book 2264, Page 2670

Date

Bola Gabriel

Mariam Girges

CERTIFICATE OF SURVEY ACCURACY

I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this survey exceeds the minimum requirements of an "Urban Land Survey," category "I" as per standards of practice adopted by the Board of Examiners for Land Surveyors for the State of Tennessee, revised January 4, 1992, and that the ratio of precision is greater than 1:10,000.

5/22/2025
Date

Phillip G. Chapman Tenn. R.L.S. No. 2007

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Subdivision Regulations for LaVergne, Tennessee with the exception of such variances, if any, as are noted in the minutes of the planning commission and that it has been approved for recording in the office of the County Register of Deeds.

Date

SECRETARY, PLANNING COMMISSION

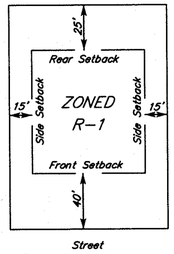
LEGEND

IPS ○ IRON PIN SET (1/2" REBAR WITH STAMPED H-S ENGR)
IPF ○ IRON PIN FND.
● SURVEY POINT
Ø POWER POLE
—X———X— EXISTING FENCE LINE
—E———E— EXISTING ELECTRIC LINE
—W———W— EXISTING WATER LINE

LINE TABLE		
LINE	BEARING	LENGTH
L1	N7°19'42"W	81.28'
L2	S2°05'28"W	131.95'

I HEREBY CERTIFY THAT THIS IS A CATEGORY " IV " SURVEY AND THE PRECISION OF THE GPS PORTION OF THIS SURVEY (IN RELATIVE POSITIONING ACCURACY GIVEN AT THE 95% CONFIDENCE LEVEL) IS 1:10,000 AS SHOWN HEREON AND THAT THIS SURVEY WAS DONE IN COMPLIANCE WITH CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE FOR LAND SURVEYORS.

ZONED: R-1
FRONT SETBACK: 40'
SIDE SETBACK: 15'
REAR SETBACK: 25'



TYPICAL BUILDING SETBACK DETAIL
N.T.S.

BEARINGS BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD 83).

2 LOTS – 220,014 S.F. OR 5.05 Ac.±

0 100 200

OWNER: BOLA GABRIEL AND MARIAM GIRGES
OWNER ADDRESS: 252 HOLLANDALE ROAD
LAVERGNE, TN 37086
TAX MAP: 014 PARCEL: 23.20
RECORD BOOK: 2264, PAGE: 2670
MAP NUMBER: 47149C0020K
DATED: MAY. 9, 2023 ZONE: X
NOTE: THIS PARCEL IS SUBJECT TO ALL EASEMENTS AS SHOW AND ANY OTHER EASEMENTS AND/OR RESTRICTIONS EITHER RECORDED OR BY PRESCRIPTION THAT A COMPLETE TITLE SEARCH MAY REVEAL.

PHILLIP G. CHAPMAN REGISTERED LAND SURVEYOR No. 2007 AGRICULTURE FINANCE COMMERCE TENNESSEE
5/22/2025

HUDDLESTON-STEELE ENGINEERING, INC.
2115 N.W. BROAD STREET, MURFREESBORO, TN 37129
SURVEYING : 893 – 4084, FAX: 893 – 0080

FINAL PLAT
LOTS 1 & 2
BOLA GABRIEL SUBDIVISION
2nd CIVIL DISTRICT – RUTHERFORD COUNTY – TN.

DATE: MAY 2025 | SCALE: 1"=100' | SH. 1 OF 1

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 8. **Site Plan – Mid-South Carpenter's Training Trust – New Pavillion of 6,767 Square Feet on 4 Acres. Requested by Wamble & Associates. Property located at 130 Veterans Memorial Parkway (Tax Map 14, Parcel 72.09). C-2 (Highway Service) Zoning District. Property owned by Mid-South Carpenter's Training Trust.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer

Summary:

This site plan proposes a new, open-air pavilion to be built at the existing Mid-South Carpenter's Training Trust located on Veterans Blvd.

The pavilion will be 6,767 square feet. The dimensions are 62.5 feet x 108.4 feet.

There is an already an outdoor classroom located in this area of the site, so the pavilion will provide covering.

The architectural elevations have been provided.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. (Sheet C-1.0 Special Notes) The City Engineer will require removal of three parking spaces to meet the requirements of the Stormwater Management Ordinance.
2. Provide a Vicinity/Location Map
3. Since land is being disturbed, provide an EPSC plan. It can be a single sheet.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)
No comments.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

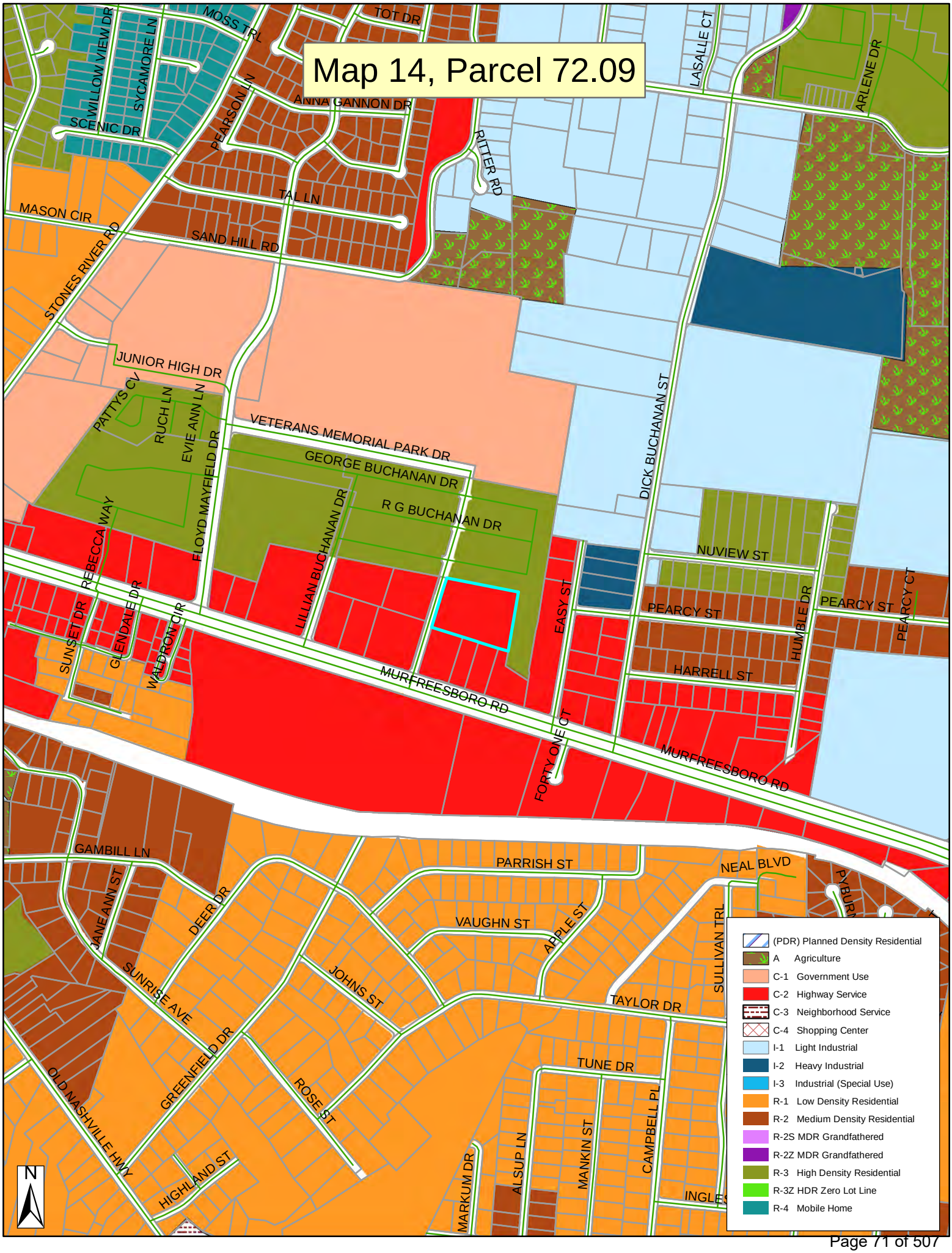
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

<u>*Note:</u> The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

Map 14, Parcel 72.09
GEORGE BUCHANAN DR
VETERANS MEMORIAL PKWY
MURFREESBORO RD
N

Map 14, Parcel 72.09
VETERANS MEMORIAL PARK DR
GEORGE BUCHANAN DR
R G BUCHANAN DR
LILLIAN BUCHANAN DR
VETERANS MEMORIAL PKWY
DICK BUCHANAN ST
NUVIEW ST
EASY ST
PEARCY ST
HARRELL ST
MURFREESBORO RD
MURFREESBORO RD
FORTY-ONE CT
GREENFIELD DR
DEER DR
PARRISH ST
N


Map 14, Parcel 72.09
WILLOW VIEW DR
SYCAMORE LN
MOSS TRL
TOT DR
LASALLE CT
ARLENE DR
SCENIC DR
PEARSON LN
ANNA GANNON DR
RITTER RD
TAL LN
MASON CIR
SAND HILL RD
STONES RIVER RD
JUNIOR HIGH DR
PATTYS CV
RUCH LN
EVIE ANN LN
VETERANS MEMORIAL PARK DR
GEORGE BUCHANAN DR
R G BUCHANAN DR
FLOYD MAYFIELD DR
LILLIAN BUCHANAN DR
DICK BUCHANAN ST
REBECCA WAY
SUNSET DR
GLENDALE DR
WALDRON CIR
EASY ST
NUVIEW ST
PEARCY ST
HUMBLE DR
PEARCY CT
HARRELL ST
MURFREESBORO RD
FORTY ONE CT
GAMBILL LN
PARRISH ST
NEAL BLVD
JANE ANN ST
DEER DR
VAUGHN ST
APPLE ST
SULLIVAN TRL
SUNRISE AVE
JOHNS ST
TAYLOR DR
GREENFIELD DR
TUNE DR
ROSE ST
OLD NASHVILLE HWY
MARKUM DR
ALSUP LN
MANKIN ST
CAMPBELL PL
HIGHLAND ST
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home

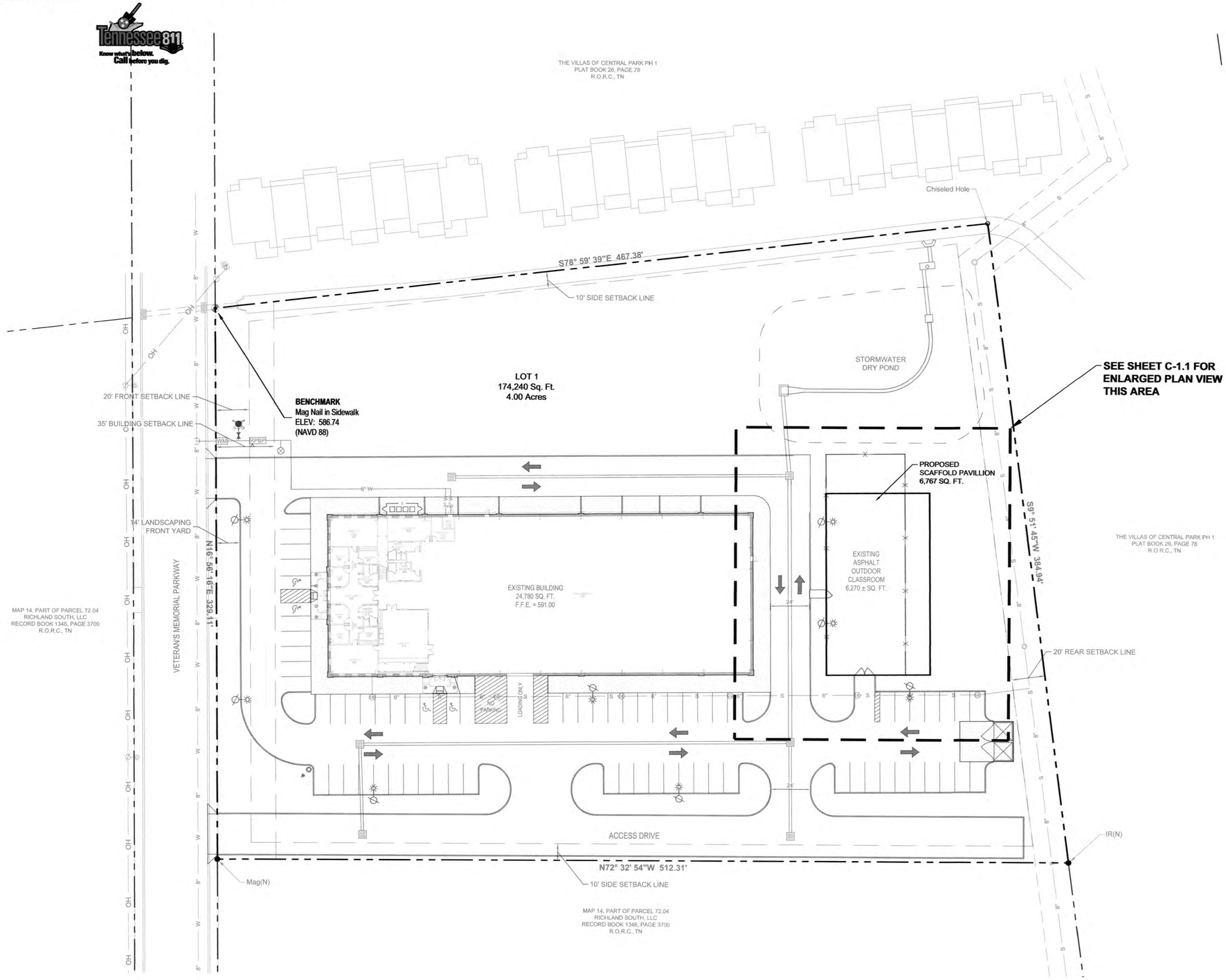
Middle TN Carpenters and
Millwrights Training Center

Middle TN Carpenters and
Millwrights Training Center
Millwrights Local
#1554

UTILITY DISCLAIMER

THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS AND/OR MAPS PREPARED BY OTHERS. THERE ARE NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THIS SURVEY DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

Tennessee811
Know what's below. Call before you dig.



NOTES:

1. THE PURPOSE OF THIS APPLICATION IS FOR SITE PLAN APPROVAL TO CONSTRUCT A 62.5' X108.4' (6,767 S.F.) PAVILLIONS OVER THE OUTSIDE CLASSROOM FOR THE MIDSOUTH CARPENTERS TRAINING TRUST.
2. ANY EXCAVATION, FILL OR DISTURBANCE OF THE EXISTING GROUND ELEVATION MUST BE DONE IN ACCORDANCE WITH THE CITY OF La Vergne STORM WATER MANAGEMENT ORDINANCE.
3. CITY OF La Vergne SHALL BE PROVIDED SUFFICIENT AND UNENCUMBERED INGRESS AND EGRESS AT ALL TIMES IN ORDER TO MAINTAIN, REPAIR, REPLACE, AND INSPECT ANY STORMWATER FACILITIES WITHIN THE PROPERTY.
4. ALL DEVELOPMENT WITHIN THE BOUNDARIES OF THIS PLAN MEETS THE REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT.
5. THIS PROJECT WILL MEET CURRENT REQUIREMENTS OF THE CITY OF La Vergne ZONING CODE FOR TREE REPLACEMENT/LANDSCAPING.
6. THIS PROJECT WILL NOT HAVE ANY NEED FOR WATER OR SANITARY SEWER
7. THIS PROJECT WILL REQUIRE ELECTRICITY FOR LIGHTS IN THE PAVILLION
8. THE PAVILLION WILL BE OPEN ON ALL 4 SIDES
9. SEE ARCHITECTURAL PLANS FOR PAVILLION AND CONCRETE SLAB DESIGN DETAILS

SPECIAL NOTE:

THE IMPERVIOUS AREA OF THE ASPHALT IS 6,270 SQ. FT. AND WILL BE REMOVED THE PROPOSED CONCRETE SLAB FOR THE PAVILLION WILL BE 6,767 SQ. FT.

THIS RESULTS IN A NET INCREASE OF 497 SQ. FT.

WE REQUEST CITY ENGINEERS APPROVED THIS PLAN WITHOUT REQUIRING STORMWATER QUALITY OR QUANTITY ADJUSTMENTS TO THE EXISTING DRAINAGE SYSTEM.

IN THE EVENT THE CITY ENGINEER CANNOT APPROVE THE 497 SQ. FT. INCREASE OF IMPERVIOUS AREA, WE WILL CONVERT 3 PARKING SPACES (525 SQ. FT) TO GRASS IN ORDER TO HAVE A NET ZERO INCREASE IN IMPERVIOUS AREA USING THIS DESIGN.

EXISTING LEGEND

- Utility Pole
- Utility Pole w/Lamp
- Fire Hydrant
- Sewer Manhole
- Storm Drain
- OH — Overhead Utility Line
- S — Sanitary Sewer
- W — Water Line
- IR (O) — Iron Rod (Old)
- IR (N) — Iron Rod (New)
- Fence

GRAPHIC SCALE
(IN FEET)

30 0 15 30 60 120

1 inch = 30 ft.

WAMBLE & ASSOCIATES PLLC
Civil Engineering
Land Surveying
Land Planning
216 Centerview Dr., Ste 180
Brentwood, TN 37027
615.251.9555

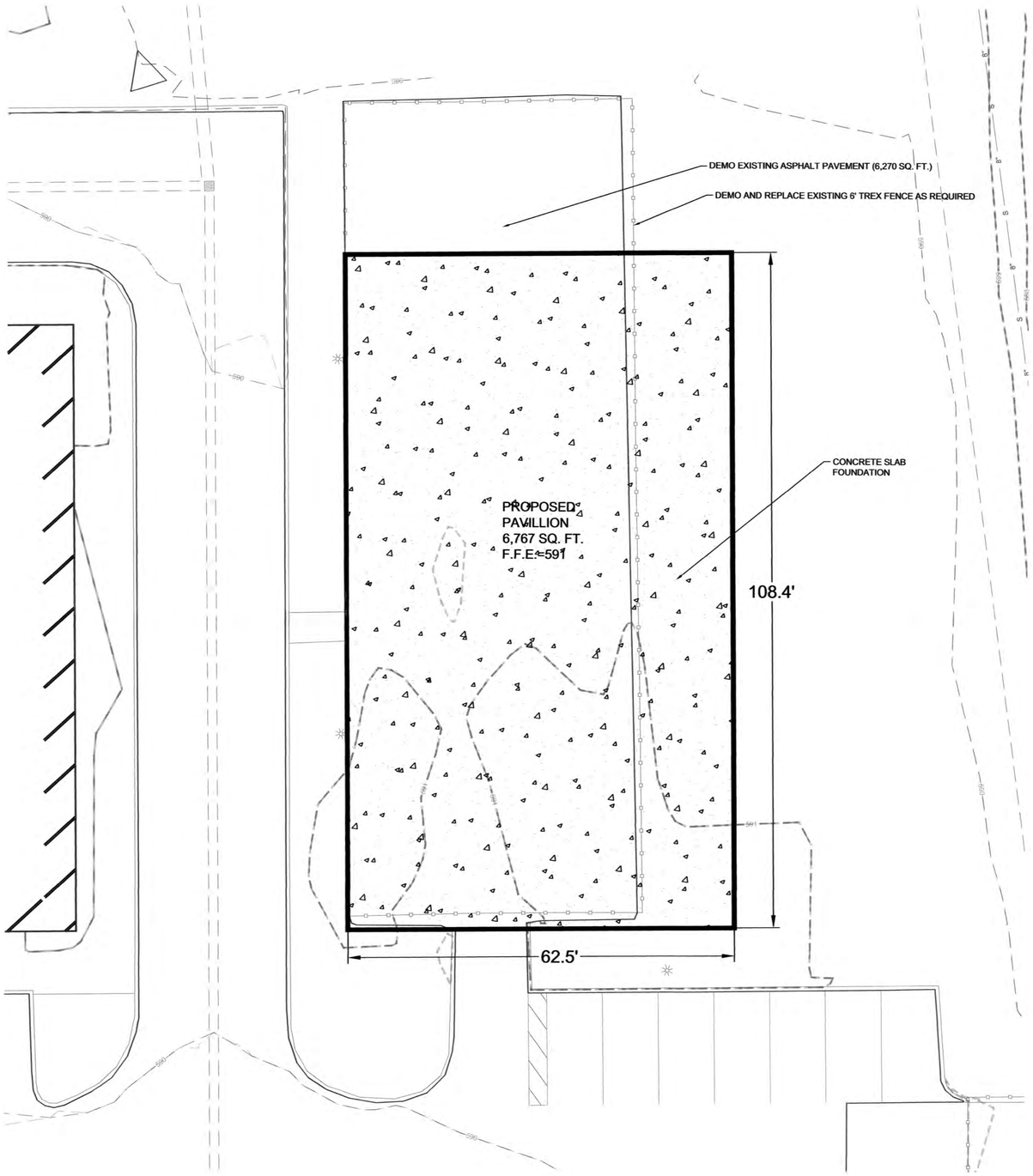
OVERALL SITE PLAN - SCAFOLD PAVILION

MIDSOUTH CARPENTER'S TRAINING TRUST
LA VERGNE, RUTHERFORD COUNTY, TENNESSEE
OWNER AND DEVELOPER
MID-SOUTH CARPENTERS REGIONAL COUNCIL TRAINING TRUST
6138 AIRWAYS BLVD.
CHATTANOOGA, TN 37421
CONTACT: RICKEY MOORE, PH: (256) 349-0849 , EMAIL: rmoore@sdtff.org

JAMES D. WAMBLE
REGISTERED ENGINEER
05-23-2025
NO. 014236
STATE OF TENNESSEE

REVISIONS:

DATE: May 23, 2025
W&A NO.: 992-0119
SHEET NUMBER:
C-1.0



SITE DATA

Project Name:	Midsouth Carpenters Training Trust
Map/Parcel:	14/72.09
Subdivision	Central Park Commercial Phase 2
Lot numbers:	1
Address:	130 Veterans Memorial Parkway
City:	La Vergne
County:	Rutherford
State:	Tennessee
Civil District:	2nd
Existing zoning:	C-2 (Highway Service District)
Proposed Use:	Educational Services
Total Site Acreage:	4.00 Acres
Minimum required setback lines:	
Front yard:	20 Feet
Side yard:	10 Feet
Rear yard:	20 Feet
Building Setback:	35 Feet
Owners representative:	Rickey Moore
Address:	6136 Airways Blvd. Chattanooga, TN 37421
Phone number:	(423) 892-5282
Email address:	rmoore@sdttf.org
Contact name:	Mr. Rickey Moore
Applicant / Engineer :	Wamble & Associates, PLLC
Address:	216 Centerview Drive, Suite 180 Brentwood, TN 37027
Phone number:	(615) 251-9555
Contact names:	James D. Wamble, PE, RLS
Total Building Sq. Ft.:	24,780 Sq. Ft
Building Height Requirements:	40 Feet in Height
Maximum Lot Coverage:	None
Proposed Lot Coverage	NA
Floor Area Ratio:	NA
Parking Requirements:	1 space for each 4 classroom seats, plus 1 space for each 3 employees on maximum shift 30 Classroom Seats/4 = 8 Spaces 5 Employees/3 = 2 Spaces Total Required = 10 Spaces
Parking Provided:	63 Spaces + 4 H.C. Spaces = 67 Spaces Provided

NOTES:

1. THE PURPOSE OF THIS APPLICATION IS FOR SITE PLAN APPROVAL TO CONSTRUCT A 62.5' X108.4' (6,767 S.F.) PAVILLIONS OVER THE OUTSIDE CLASSROOM FOR THE MIDSOUTH CARPENTERS TRAINING TRUST.
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- OH — Overhead Utility Line
- S — Sanitary Sewer
- W — Water Line
- IR (O) — Iron Rod (Old)
- IR (N) — Iron Rod (New)

GRAPHIC SCALE

(IN FEET)

10 0 5 10 20 40

1 inch = 10 ft.

WAMBLE & ASSOCIATES PLLC
Civil Engineering
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216 Centerview Dr., Ste 180
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ENGLARGED SITE PLAN - SCAFOLD PAVILION

MIDSOUTH CARPENTER'S TRAINING TRUST
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JAMES D. WAMBLE
REGISTERED ENGINEER
AGENT OF OWNERSHIP
05-23-2025
NO. 014236
STATE OF TENNESSEE

REVISIONS:

DATE: May 23, 2025
W&A NO.: 992-0119
SHEET NUMBER:
C-1.1

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 9. **Recommendation to the Board of Mayor and Aldermen: Rezoning of Property - Requested by Cory McClellan - 4.36 Acres. Property located at 782 Waldron Road (Tax Map 29, Parcel 38). Current Zoning District: R-1 (Low Density Residential) Zoning District; Proposed Zoning District: C-2 (Highway Service) Zoning District. Property owned by Cory McClellan.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer

Summary:

The applicant is requesting to rezone approximately 4.36 acres from R-1 (Low Density) to C-2 (Highway Service Commercial). The property is located at 782 Waldron Road.

The applicant has not disclosed any specific plans regarding the future development of this property.

The main zoning in the area is R-1 and R-3 in the Mission Hills development. This request lies very close to the future Twinning Station PDR as well.

The property that borders this site on all sides is R-1 which is Low Density Residential.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)
No Engineering comments.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)
No comments.

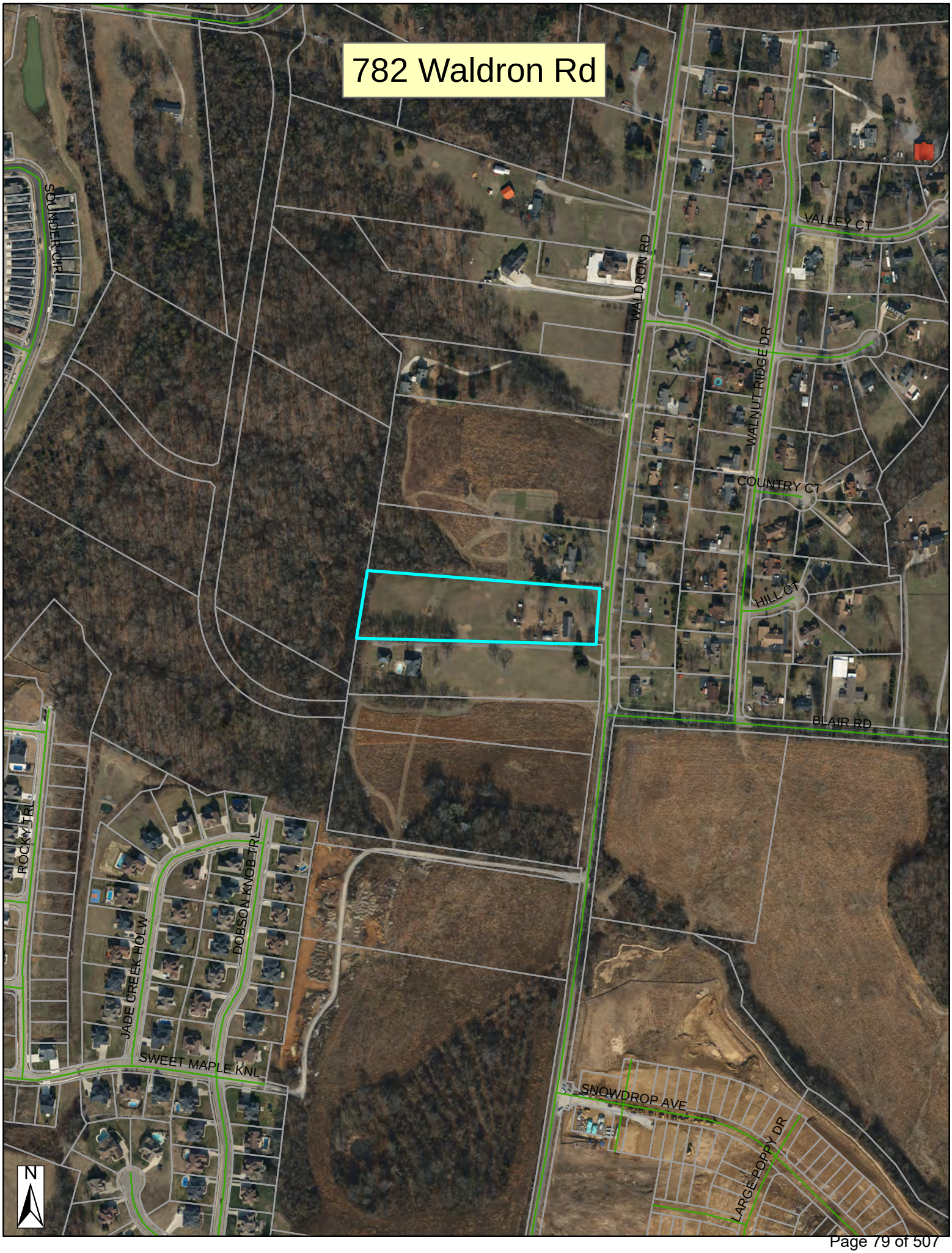
Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

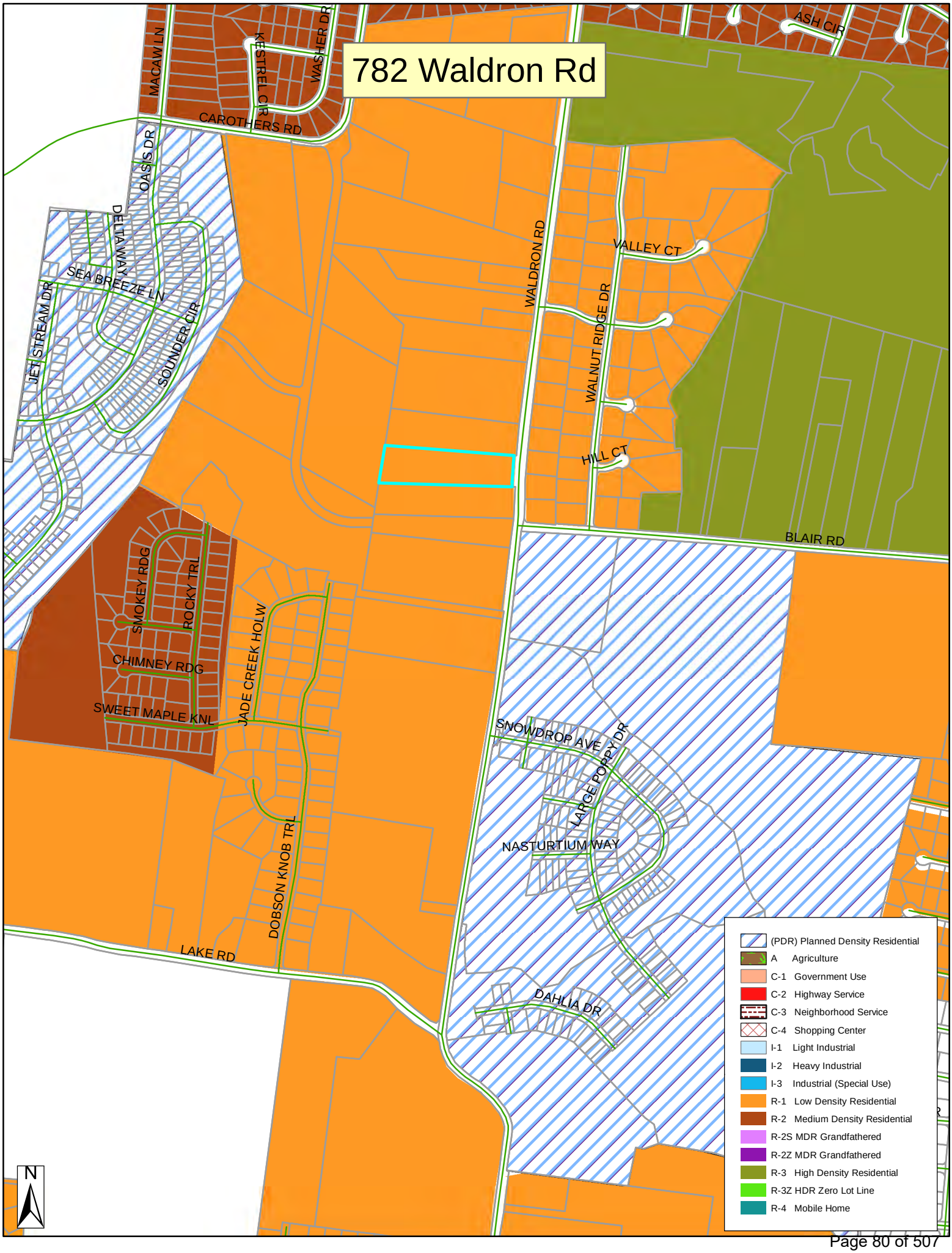
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

<u>*Note:</u> The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

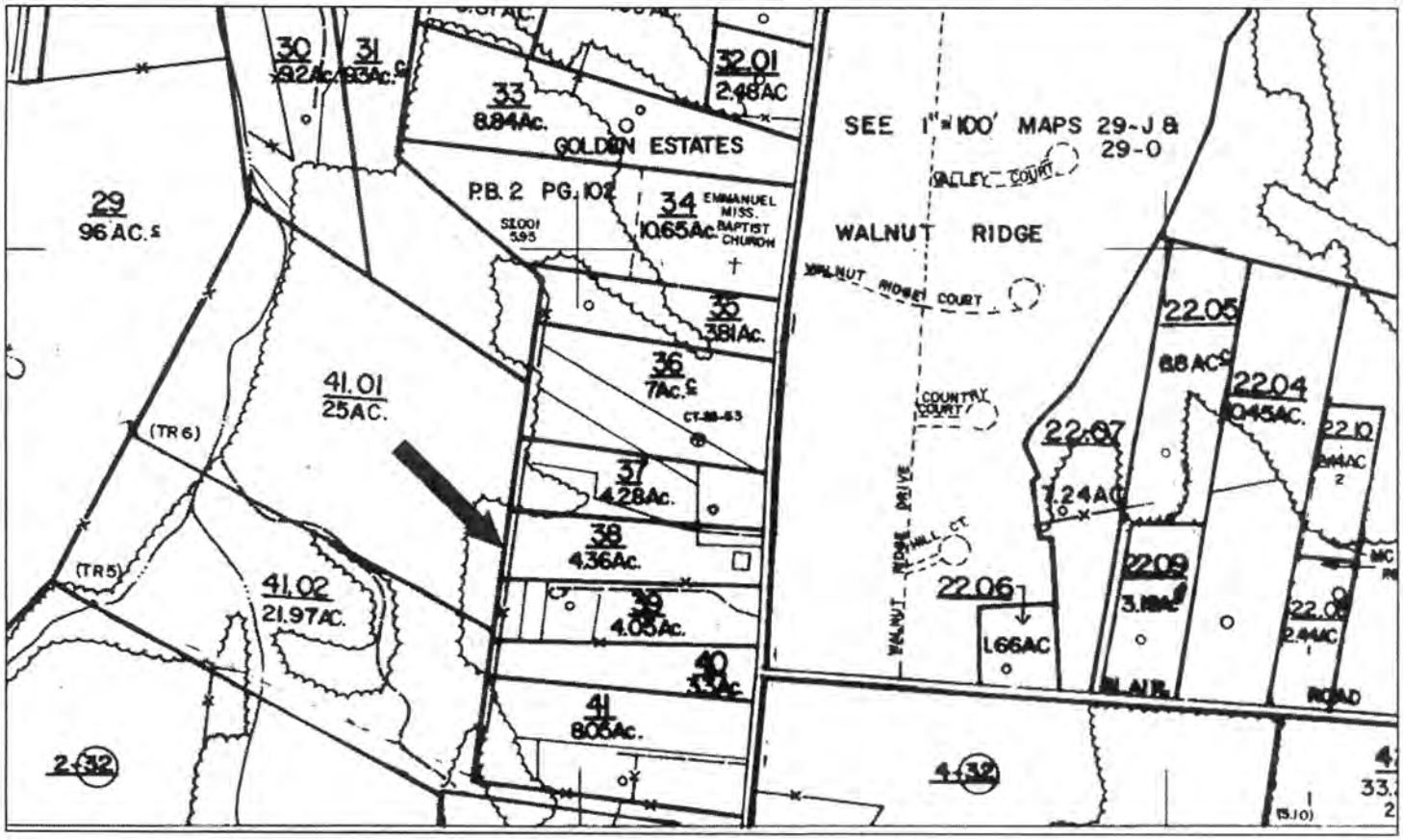
782 Waldron Rd
WALDRON RD
BLAIR RD
N


782 Waldron Rd
SOLINGER CIR
WALDRON RD
VALLEY CT
WALNUT RIDGE DR
COUNTRY CT
HILL CT
BLAIR RD
ROCKY TRL
DOBSON KNOB TRL
JADE CREEK HOLW
SWEET MAPLE KNL
SNOWDROP AVE
LARGE POPPY DR
N

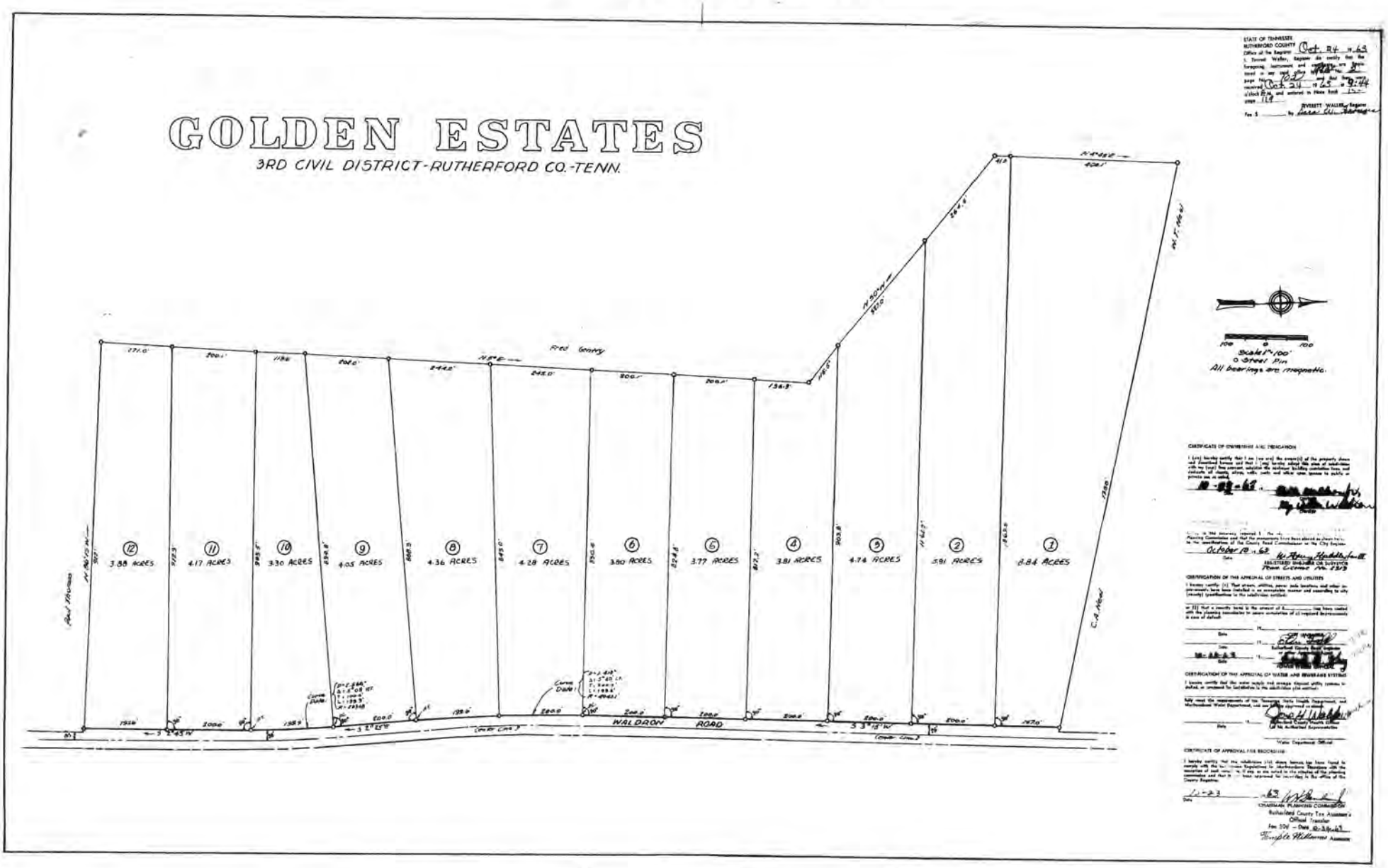

782 Waldron Rd
MACAW LN
KESTREL CIR
WASHER DR
CAROTHERS RD
ASH CIR
OASIS DR
DELTAWAY
SEA BREEZE LN
JET STREAM DR
SOUNDER CIR
WALDRON RD
VALLEY CT
WALNUT RIDGE DR
HILL CT
BLAIR RD
SMOKEY RDG
ROCKY TRL
CHIMNEY RDG
SWEET MAPLE KNL
JADE CREEK HOLW
DOBSON KNOB TRL
LAKE RD
SNOWDROP AVE
LARGE POPPY DR
NASTURTIUM WAY
DAHLIA DR
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home
N

PLAT MAP

Borrower/Client Cory D. & Tracy G. McClellan
Address 782 Waldron Road Unit No. N/A
City LaVergne County Rutherford State TN Zip Code 37086
Lender/Client SunTrust Mortgage, Inc.



Plat Book 2, Page 102



Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 10. **Recommendation to the Board of Mayor and Aldermen for Subdivision Acceptance - Brookside, Phase 2 - 88 Lots. Requested by Mitchell Bowman. Property located off Macaw Lane (Tax Map 29, Parcel 28). R-2 (Medium Density Residential) Zoning District.**

Reviewed By:
Gary Lide, City Engineer

Summary:
This is a request for subdivision acceptance at Brookside Subdivision.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No Comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)
There are no outstanding staff comments on this subdivision. All have been resolved.

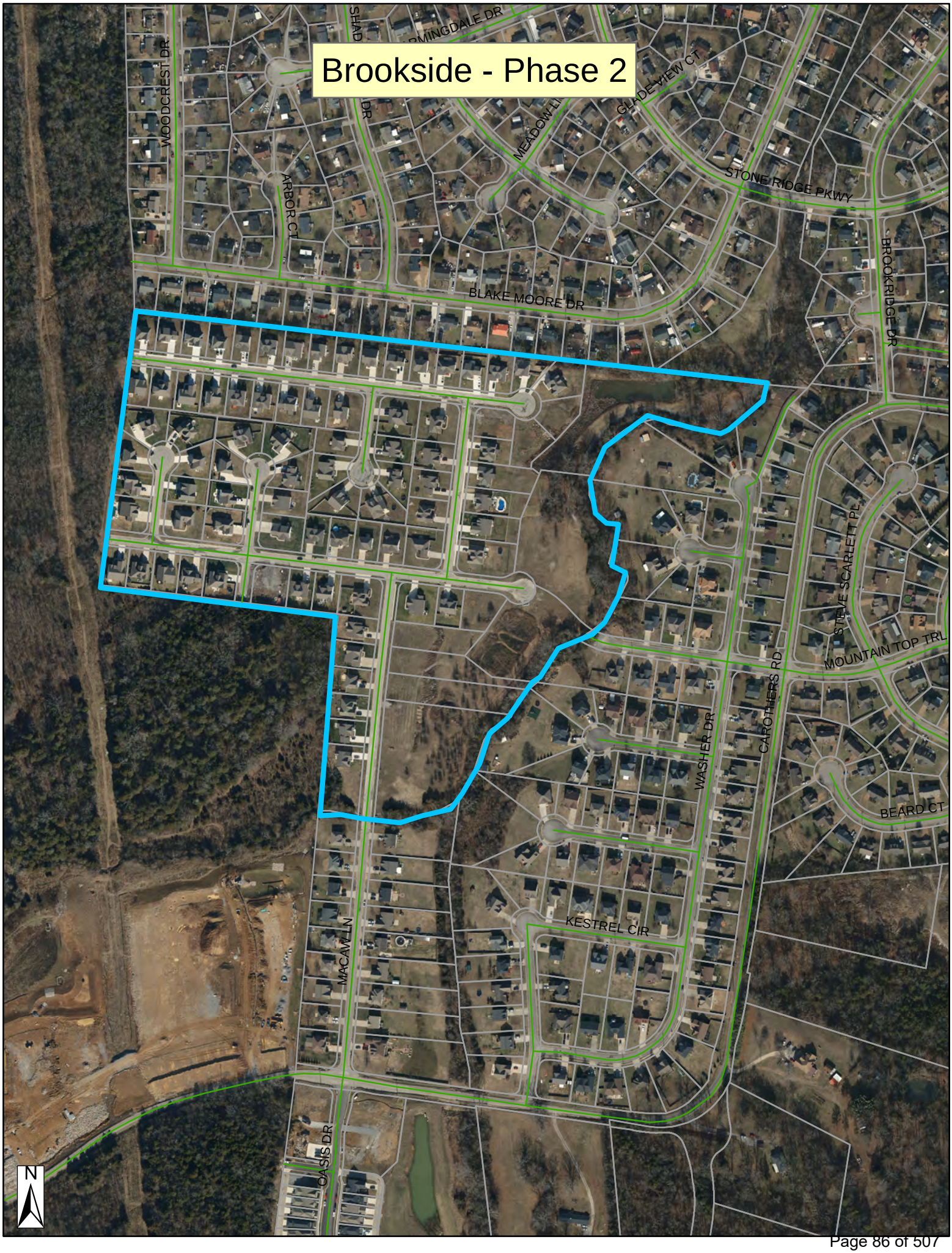
Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)
No comments.

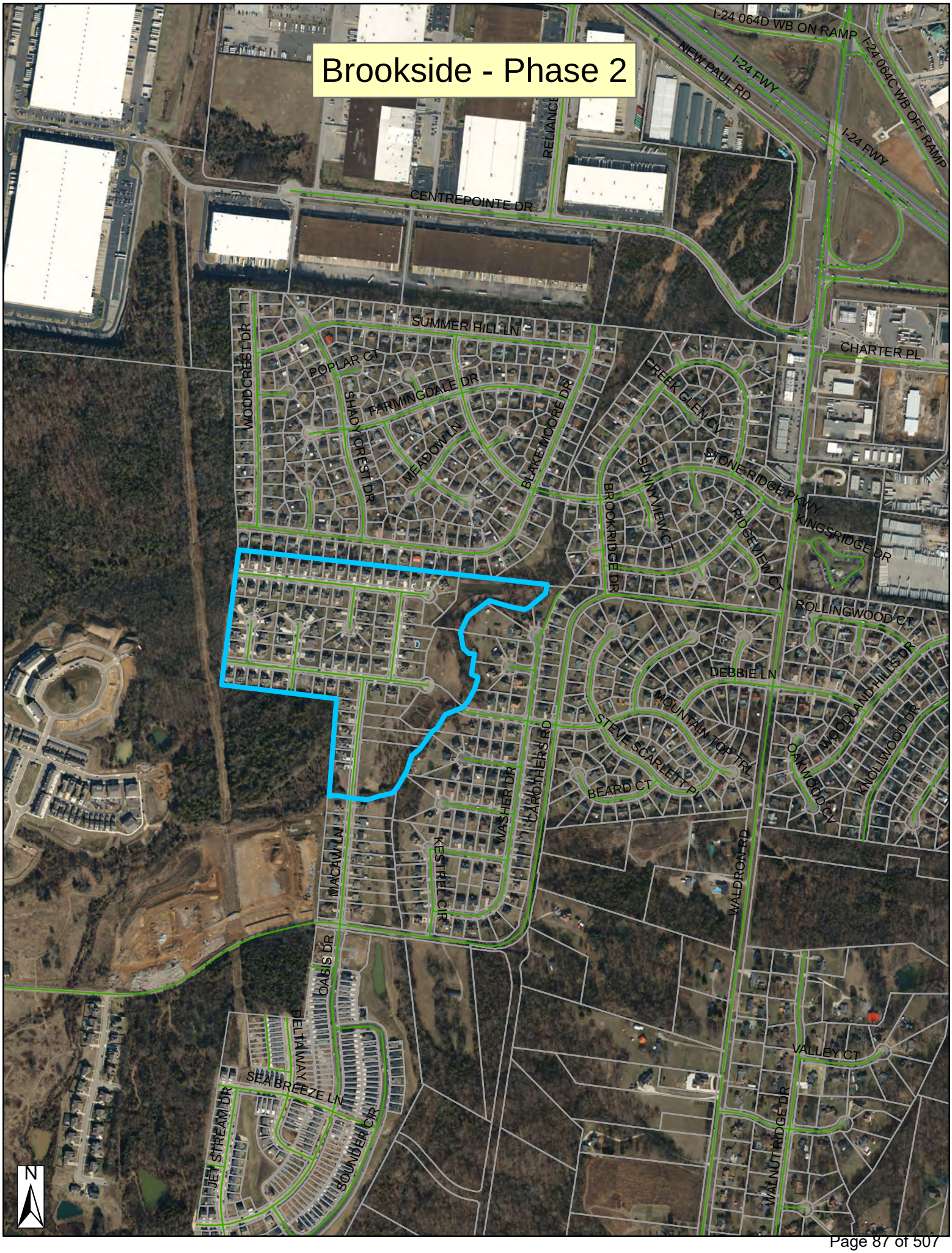
Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

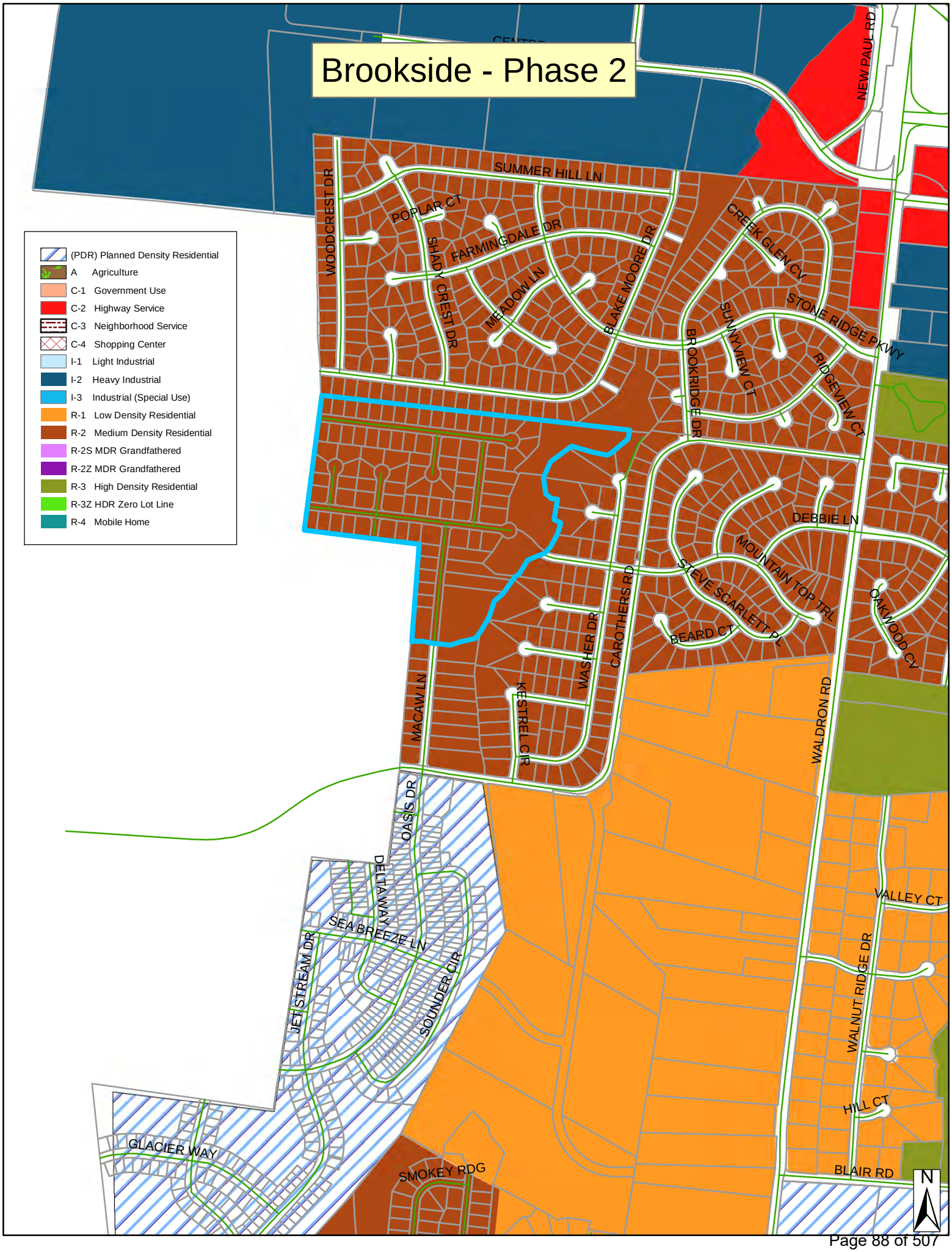
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.


Brookside - Phase 2
WOODCREST DR
ARBOR CT
MEADOW LN
GLADE VIEW CT
STONE RIDGE PKWY
BROOKRIDGE DR
BLAKE MOORE DR
STEVE SCARLETT PL
MOUNTAIN TOP TRL
CAROTHERS RD
WASHER DR
BEARD CT
KESTREL CIR
MACAW LN
OASIS DR
N


Brookside - Phase 2
I-24 064D WB ON RAMP
I-24 064C WB OFF RAMP
NEW PAUL RD
I-24 FWY
I-24 FWY
RELIANCE
CENTREPOINTE DR
SUMMER HILL LN
CHARTER PL
WOODCREST DR
POPLAR CT
FARMINGDALE DR
SHADY OREST DR
MEADOW LN
BLAKE MOORE DR
CREEK GLEN CT
STONE RIDGE PKWY
SUNNYVIEW CT
BROOKRIDGE DR
RIDGEVIEW CT
KINGSRIDGE DR
ROLLINGWOOD CT
DEBBIE LN
MOUNTAIN TOP TRL
STEVE SCARLETT PL
BEARD CT
WOODLAND HILLS DR
OAKWOOD CT
KNOLLWOOD DR
CAROTHERS RD
WASHER DR
KESTREL CIR
MACAW LN
WALDRON RD
OASIS DR
DELTAWAY
SEABREEZE LN
JET STREAM DR
SOUNDER CIR
VALLEY CT
WALNUT RIDGE DR
N


Brookside - Phase 2
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
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NEW PAUL RD
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POPLAR CT
FARMINGDALE DR
SHADY CREST DR
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BLAKEMOORE DR
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STONE RIDGE PKWY
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KESTREL CIR
MACAW LN
WALDRON RD
OASIS DR
DELTAWAY LN
SEA BREEZE LN
JETSTREAM DR
SOUNDER CIR
VALLEY CT
WALNUT RIDGE DR
HILL CT
BLAIR RD
GLACIER WAY
SMOKEY RDG
N

B
Brookside II

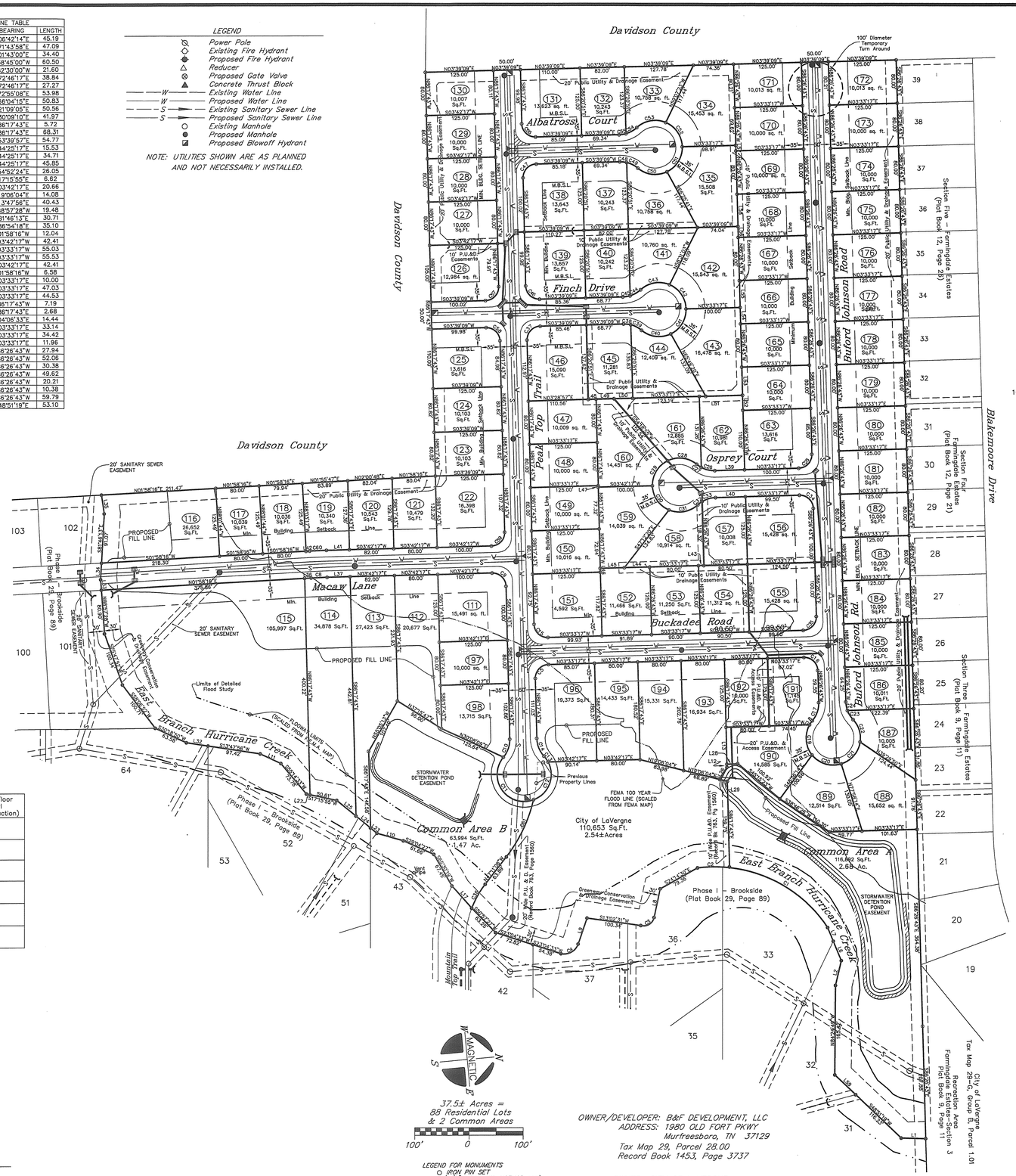
CURVE TABLE					
CURVE	DELTA	RADIUS	ARC	CHORD	BEARING
C1	50°20'33"	250.00	219.66	212.66	S36°39'01"W
C2	13°33'15"	250.00	59.14	59.00	S04°42'07"W
C3	92°54'45"	19.78	32.07	28.67	N26°27'46"W
C4	83°42'23"	27.12	39.63	36.20	N24°13'03"W
C5	89°51'00"	25.00	39.20	35.31	S41°27'13"E
C6	33°53'00"	176.37	104.30	102.79	N21°48'30"E
C7	53°11'28"	205.80	191.06	184.27	N68°26'48"E
C8	1°44'01"	975.00	29.50	29.50	S02°50'16"W
C9	90°00'00"	25.00	39.27	35.36	S48°42'17"W
C10	41°24'13"	50.00	36.13	35.35	N65°35'36"W
C11	150°10'02"	50.00	131.05	96.63	N60°01'30"E
C12	97°23'38"	50.00	85.02	75.14	N63°48'12"W
C13	15°11'38"	50.00	13.26	13.22	S59°53'10"W
C14	41°24'56"	50.00	36.14	35.36	N72°59'49"E
C15	90°09'00"	25.00	39.34	35.40	N48°37'47"E
C16	90°00'00"	25.00	39.27	35.36	S48°33'17"W
C17	41°24'35"	50.00	36.14	35.36	N65°44'25"W
C18	10°29'16"	50.00	9.15	9.14	S50°16'46"E
C19	68°15'11"	50.00	59.56	56.10	S89°39'00"E
C20	68°15'11"	50.00	59.56	56.10	N22°05'49"E
C21	64°29'11"	50.00	56.27	53.35	N44°16'21"W
C22	51°20'21"	50.00	44.80	43.32	S77°48'53"W
C23	22°48'32"	50.00	19.90	19.77	N63°32'59"E
C24	18°36'03"	50.00	16.23	16.16	N84°15'16"E
C25	90°00'00"	25.00	39.27	35.36	N41°26'43"W
C26	29°57'48"	50.00	26.15	25.85	N18°32'12"E
C27	11°28'46"	50.00	9.99	9.97	N39°14'29"E
C28	65°42'17"	50.00	57.34	54.25	S12°08'43"W
C29	65°42'17"	50.00	57.34	54.25	S53°35'34"E
C30	65°42'17"	50.00	57.34	54.25	N60°42'09"E
C31	65°42'17"	50.00	57.34	54.25	N05°00'09"W
C32	11°28'46"	50.00	9.99	9.97	S32°07'54"E
C33	29°57'48"	50.00	26.15	25.85	S11°25'37"E
C34	90°00'00"	25.00	39.27	35.36	S48°33'17"W
C35	90°00'00"	25.00	39.27	35.36	N41°26'43"W
C36	16°39'55"	175.00	50.90	50.72	S55°31'05"E
C37	89°56'52"	25.00	39.25	35.34	S41°19'17"E
C38	15°20'52"	50.00	13.39	13.35	S11°19'35"W
C39	26°03'43"	50.00	22.74	22.55	S32°01'52"W
C40	65°42'17"	50.00	57.34	54.25	N12°12'35"E
C41	65°42'17"	50.00	57.34	54.25	N53°28'43"W
C42	65°42'17"	50.00	57.34	54.25	S60°48'00"W
C43	65°42'17"	50.00	57.34	54.25	S04°54'17"E
C44	26°03'43"	50.00	22.74	22.55	N24°43'35"W
C45	15°20'52"	50.00	13.39	13.35	N04°01'17"W
C46	90°03'08"	25.00	39.29	35.37	N48°40'43"E
C47	89°56'52"	25.00	39.25	35.34	S41°19'17"E
C48	14°39'43"	50.00	12.79	12.76	S10°59'00"W
C49	26°44'52"	50.00	23.34	23.13	S31°41'18"W
C50	65°42'17"	50.00	57.34	54.25	N12°12'35"E
C51	65°42'17"	50.00	57.34	54.25	N53°28'43"W
C52	65°42'17"	50.00	57.34	54.25	S60°48'00"W
C53	65°42'17"	50.00	57.34	54.25	S04°54'17"E
C54	26°44'52"	50.00	23.34	23.13	N24°23'00"W
C55	14°39'43"	50.00	12.79	12.76	N03°40'43"W
C56	90°03'08"	25.00	39.29	35.37	N48°40'43"E
C57	89°56'52"	25.00	39.25	35.34	N41°19'17"W
C58	90°03'08"	25.00	39.29	35.37	S48°40'43"W
C59	90°00'00"	25.00	39.27	35.36	N41°17'43"W
C60	1°44'01"	1025.00	31.01	31.01	S02°50'16"W
C61	24°29'05"	275.00	117.52	116.63	N59°25'41"W

LINE TABLE		
LINE	BEARING	LENGTH
L1	N06°42'14"E	45.19
L2	S71°43'58"E	47.09
L3	S01°43'00"E	34.40
L4	S38°45'00"W	60.50
L5	S82°30'00"W	21.60
L6	N72°46'17"E	38.84
L7	N72°46'17"E	27.27
L8	S72°55'08"E	53.98
L9	S86°04'15"E	50.83
L10	N21°09'05"E	50.56
L11	N30°09'10"E	41.97
L12	S86°17'43"E	5.72
L13	S86°17'43"E	68.31
L17	N53°39'57"E	54.77
L23	N44°25'17"E	15.53
L24	N44°25'17"E	34.71
L25	N44°25'17"E	45.85
L26	S54°52'24"E	26.05
L27	N17°15'55"E	6.62
L28	N03°42'17"E	26.66
L29	N19°06'04"E	14.08
L32	N13°47'58"E	40.43
L33	N88°57'28"W	19.48
L34	S81°46'13"E	30.71
L35	N86°54'18"E	35.10
L36	S01°58'16"W	12.04
L37	S03°42'17"W	42.41
L39	S03°33'17"W	55.03
L40	S03°33'17"W	55.53
L41	N03°42'17"E	42.41
L42	S01°58'16"W	6.58
L43	N03°33'17"E	10.00
L44	N03°33'17"E	47.03
L45	N03°33'17"E	44.53
L46	N86°17'43"E	5.19
L47	S86°17'43"E	2.68
L48	N04°06'33"E	14.44
L49	N03°33'17"E	33.14
L50	N03°33'17"E	34.42
L51	N03°33'17"E	11.96
L52	N86°26'43"W	27.94
L53	N86°26'43"W	52.06
L54	N86°26'43"W	30.38
L55	N86°26'43"W	49.62
L56	N86°26'43"W	20.21
L57	N86°26'43"W	10.38
L58	N86°26'43"W	59.79
L59	N48°51'19"E	53.10

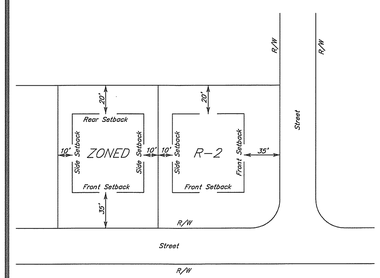
LEGEND

- Power Pole
- Existing Fire Hydrant
- Proposed Fire Hydrant
- Reducer
- Proposed Gate Valve
- Concrete Thrust Block
- W — Existing Water Line
- W — Proposed Water Line
- S — Existing Sanitary Sewer Line
- S — Proposed Sanitary Sewer Line
- Existing Manhole
- Proposed Manhole
- Proposed Blowoff Hydrant

NOTE: UTILITIES SHOWN ARE AS PLANNED AND NOT NECESSARILY INSTALLED.



Lot No.	100 Year Flood Elev.	Min. Building Pad Elev.	Min. Finish Floor Elev. (Slab Construction)	Min. Finish Floor Elev. (Crawl Space Construction)
188	621.2	621.2	622.2	624.2
189	621.7	621.7	622.7	624.7
190	622.2	622.2	623.2	625.2
191	622.2	622.2	623.2	625.2
192	622.5	622.5	623.5	625.5
193	622.7	622.7	623.7	625.7
194	623.6	623.6	624.6	626.6
195	624.4	624.4	625.4	627.4
196	624.9	624.9	625.9	627.9
197	626.5	626.5	627.5	629.5
198	626.1	626.1	627.1	629.1
111	626.7	626.7	627.7	629.7
112	626.9	626.9	627.9	629.9
113	627.3	627.3	628.3	630.3
114	627.7	627.7	628.7	630.7
115	628.1	628.1	629.1	631.1
116, 117	630.0	630.0	631.0	633.0



TYPICAL BUILDING SETBACK DETAIL

N.T.S.

37.5± Acres = 88 Residential Lots & 2 Common Areas

100' 0 100'

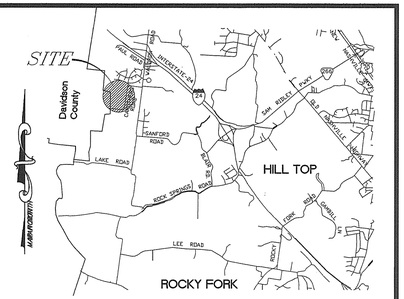
LEGEND FOR MONUMENTS
- IRON PIN SET (1/2" rebar with HSENGR cap)
- IPF IRON PIN FND.
- RAILROAD SPIKE
- FENCE
- SURVEY POINT
- NAIL
- CONC. MARKER FND.

OWNER/DEVELOPER: B&F DEVELOPMENT, LLC
ADDRESS: 1980 OLD FORT PKWY
Murfreesboro, TN 37129
Tax Map 29, Parcel 28.00
Record Book 1453, Page 3737

OWNER: CITY OF LaVERGNE
ADDRESS: 5093 MURFREESBORO ROAD
LaVERGNE, TN 37086
Tax Map 29, Parcel 28.01
Record Book 763, Page 1560

PLAT NOTES

1. In Tennessee, it is a requirement per "The Underground Utility Damage Prevention Act" that anyone who engages in excavation must notify all known underground utility owners, no less than three nor more than ten working days prior of their intent to excavate. A list of these utilities may be obtained from the County Register of Deeds. Those utilities that participate in the Tennessee One-Call system can be notified by calling toll free 1-800-351-1111.
2. Underground utilities shown were located using available above ground evidence, and also from information obtained from the respective utility companies. The existence or non-existence of the utilities shown and any other utilities which may be present on this site or adjacent sites should be confirmed with the utility owner prior to commencing any work.
3. It is the responsibility of each builder to design and construct a suitable grading and drainage scheme which will convey surface water, without ponding in the lot or under the structure, from his structure to the drainage system constructed by the subdivision developer.
4. Parcels may be subject to additional easements, and/or restrictions, by record or prescription, that a complete title search may reveal.
5. Public utility and drainage easements where shown hereon are intended to indicate an easement for construction, operation, and maintenance of public utilities and drainageways; including, but not limited to, sanitary sewers,forcemains, water lines, telephone signal conduits, electric conductors, drainage pipes, and natural gas lines. Easements in this subdivision may not have infrastructure constructed within them until some future time and there may be no notice or consultation with the individual lot Owners of this construction.
6. Permanent or temporary soil stabilization shall be applied to denuded areas within 15 days after final grade is reached on any portion of the site. Soil stabilization shall also be applied within 15 days to denuded areas which may not be at final grade, but will remain dormant (undisturbed) for longer than 60 days.
7. Properties adjacent to the site of land disturbance shall be protected from sediment deposition. This may be accomplished by preserving a well-vegetated buffer strip around the lower perimeter of the land disturbance; by installing perimeter controls such as sediment barriers, filters, or dikes, or sediment basins; or by a combination of such measures.
8. Areas within subdivision defined as floodway or sinkholes shall be designated conservation easements and no structures, fill, or building shall be permitted.
9. No fill material, rubbish, or building may be placed in any natural drainageway such as streambeds, sinkholes, underground streams or channels, or wet weather streambeds or floodways.
10. Areas within the subdivision defined as Greenway, Conservation, and Drainage Easements shall receive no fill, structures, buildings, obstructions, or fences. These areas are intended to protect the streams and adjoining land from damage or blockage.



LOCATION MAP

N.T.S.

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and dedicate all streets, alleys, walks, parks and other open spaces to public or private use as noted.

6/28/18 Date

Record Book: 763, Page: 1560

CITY LaVERGNE OWNER

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and dedicate all streets, alleys, walks, parks and other open spaces to public or private use as noted.

6/28/18 Date

Record Book: 1453, Page: 3737

B & F DEVELOPMENT, LLC OWNER

CERTIFICATE OF SURVEY ACCURACY

I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this survey exceeds the minimum requirements of an "Urban Land Survey," category "I" as per standards of practice adopted by the Board of Examiners for Land Surveyors for the State of Tennessee, revised January 4, 1992, and that the ratio of precision is greater than 1:10,000.

6/28/2018 Date

Phillip G. Chapman, Tenn. R.L.S. No. 2007

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Subdivision Regulations for LaVergne, Tennessee with the exception of such variances, if any, as are noted in the minutes of the planning commission and that it has been approved for recording in the office of the County Register of Deeds.

6/28/18 Date

SECRETARY, PLANNING COMMISSION

CERTIFICATE OF THE APPROVAL OR BONDING OF ROADS

I hereby certify: (1) that all designated roads on this final plat have been installed in an acceptable manner and according to the specifications of the LaVergne Subdivision Regulations, or (2) that a surety bond has been posted with the Planning Commission to assure completion of all required improvements in case of default.

6/28/18 Date

DIRECTOR OF ENGINEERING

CERTIFICATE OF APPROVAL OF WATER SYSTEMS

I hereby certify that the water system outlined or indicated on the final subdivision plat shown hereon, have been installed in accordance with the current local and state government requirements, or sufficient bond or other surety has been filed to guarantee said installation.

6/28/18 Date

DIRECTOR OF ENGINEERING

CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I hereby certify that the sewer systems outlined or indicated on the final subdivision plat shown hereon, have been installed in accordance with the current local and state government requirements, or sufficient bond or cash has been filed which will guarantee said installation.

6/28/18 Date

DIRECTOR OF ENGINEERING

Heather Dawbarn, Register
Rutherford County Tennessee

Rec #: 962764		
Rec'd:	15.00	Instrument #: 2154686
State:	0.00	
Clerk:	0.00	Recorded
Other:	2.00	7/3/2018 at 11:30 AM
Total:	17.00	in
		Plat Cabinet 42 Pgs 54-54

PORTIONS OF THIS PARCEL ARE INCLUDED IN AREAS DESIGNATED AS "SPECIAL FLOOD HAZARD" ON THE NATIONAL FLOOD INSURANCE PROGRAM COMMUNITY MAP 47149C, PANEL NO. 0105H DATED: 01-05-07 ZONES: A, AE & X

CERTIFICATE OF ACCURACY – I hereby certify that this is a category "I" survey and the ratio of precision of the unadjusted survey is 1:10000 as shown hereon.

I hereby certify that this plat has been reviewed and payment received for the Rutherford County Development Tax.
6/28/18
TAX CHARGE No. 2518 $10 7-2-18
RUTHERFORD COUNTY REGIONAL PLANNING COMMISSION

PHILLIP G. CHAPMAN REGISTERED LAND SURVEYOR No. 2007 TENNESSEE

6/28/2018

HUDDLESTON-STEELE ENGINEERING, INC.
2115 N.W. BROAD STREET, MURFREESBORO, TN 37129
SURVEYING : 893 – 4084, FAX: 893 – 0080

FINAL PLAT BROOKSIDE SECTION II

3rd Civil District of Rutherford County, Tennessee

Date: June, 2018	Scale: 1"=100'	Sheet 1 of 1

C:\Land Projects 3\CAROTHERS\dwg\SECTION II Final Rev 2018.dwg, 6/28/2018 9:30:00 AM, ACAD199

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 11. **Final Plat – 314 Retail Building – Two Lots on 1.01 Acres. Requested by Danny Wamble. Property located at 314 Old Nashville Highway (Tax Map 17D, Group B, Parcel 15). C-2 (Highway Service) Zoning District. Property owned by Good Brothers, LLC.**

Reviewed By:
Gary Lide, City Engineer
Bo Logan, City Planner

Summary:

This is a request for approval of a minor, final plat. The plat consists of two (2) lots on 1.01 acres. Approval is requested by Danny Wamble.

The property is zoned C-2 which is Highway Service Commercial. This property currently contains two (2) separate dwellings.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)

1. Staff has serious concerns about keeping the older house on the site;
2. Staff opines the best plan will show a complete demolition of the site;
3. No one may have a house and a commercial use on the same parcel - this parcel is now zoned commercial.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. A private stormwater detention easement providing access to the commercial lot onto the residential lot in order to maintain the stormwater detention basin is required. The public drainage and utility easement alone does not work since the city has no responsibility to maintain the detention basin.
2. Plat Note must be included as follows: The Long-Term Maintenance Agreement for the stormwater facilities serving as shown hereon have been recorded in Record Book XX, Page XX, RORCT.
3. Are certificates for public water, public sewer, and public ways necessary? If not, then their inclusion causes confusion.

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)

1. Informational Comment: Each lot shall have its own water and sewer service.

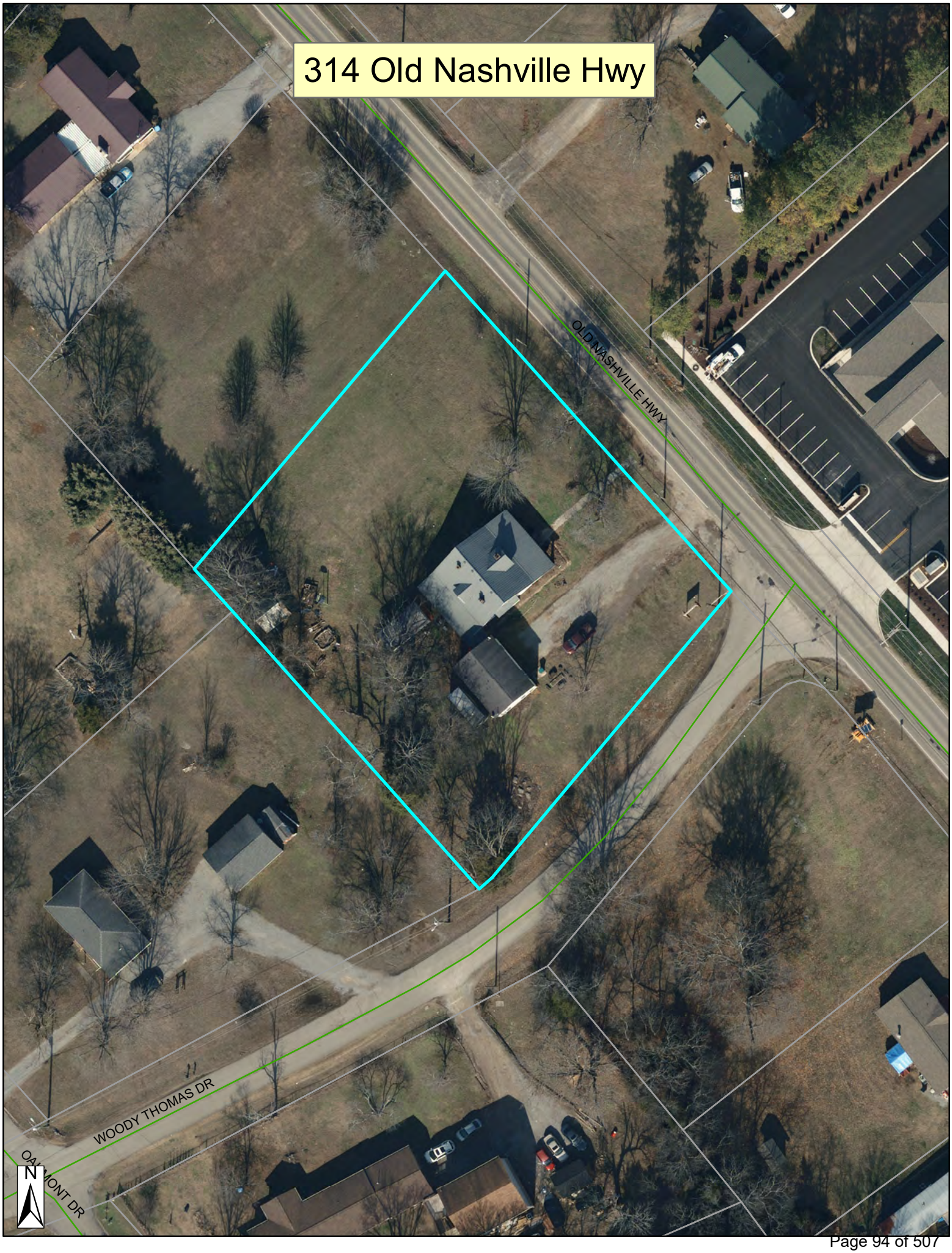
Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)

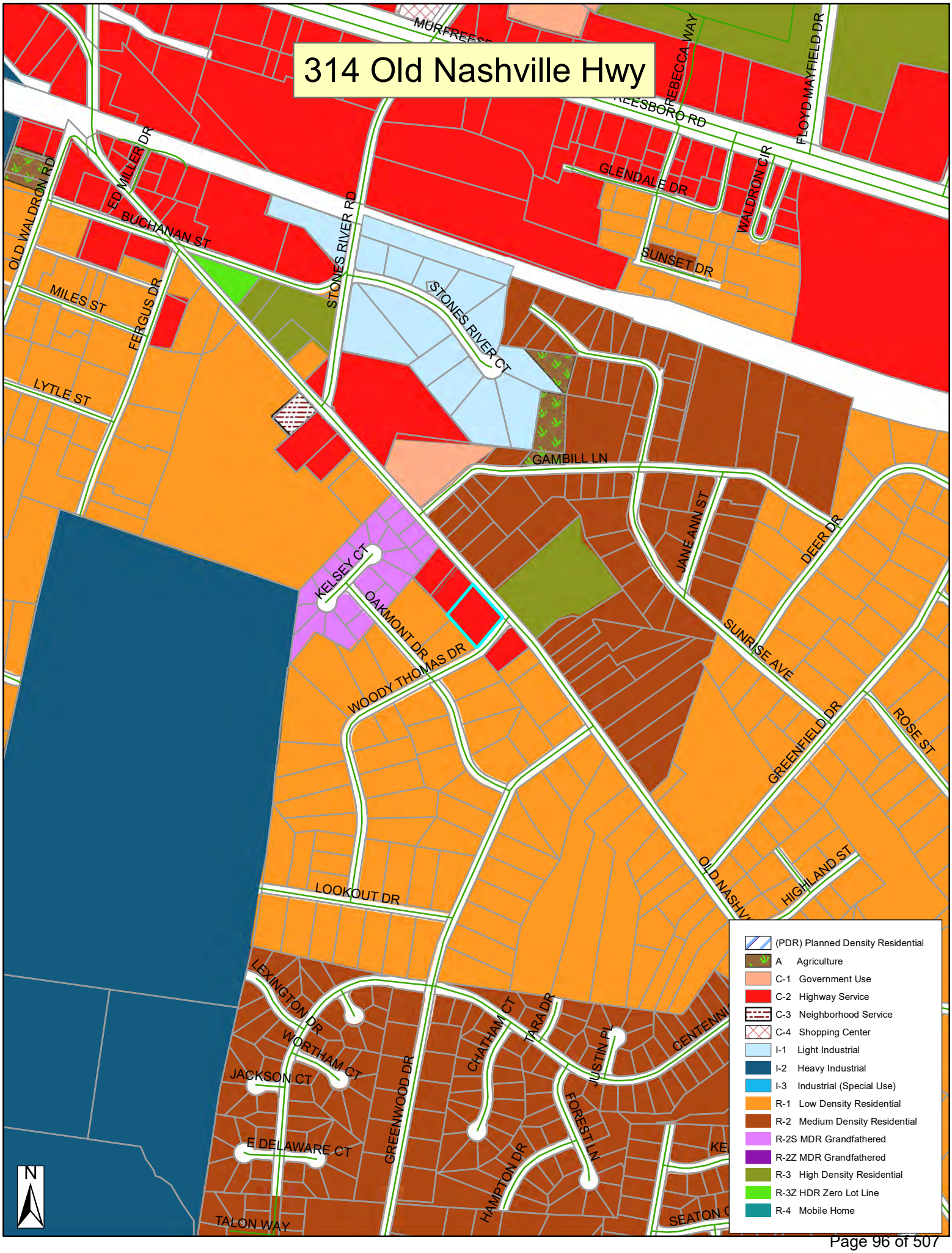
No comments.

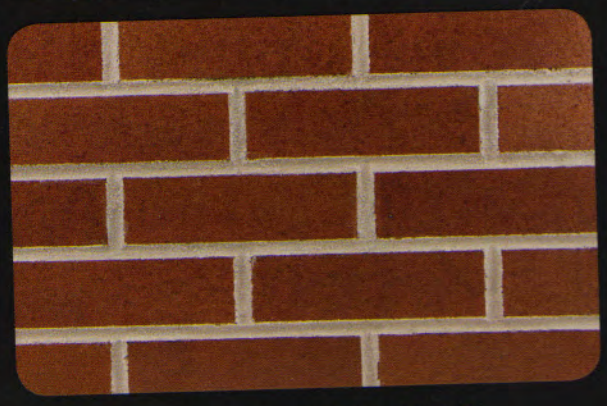
Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.


314 Old Nashville Hwy
OLD NASHVILLE HWY
WOODY THOMAS DR
OAKMONT DR
N

314 Old Nashville Hwy
GAMBILL LN
SUNRISE AVE
OLD NASHVILLE HWY
KELSEY CT
OAKMONT DR
WOODY THOMAS DR
GREENWOOD DR
N


314 Old Nashville Hwy
MURFREESBORO RD
REBECCA WAY
FLOYD MAYFIELD DR
GLENDALE DR
WALDRON CIR
SUNSET DR
ED MILLER DR
OLD WALDRON RD
BUCHANAN ST
STONES RIVER RD
STONES RIVER CT
MILES ST
FERGUS DR
LYTLE ST
GAMBILL LN
JANE ANN ST
DEER DR
KELSEY CT
OAKMONT DR
WOODY THOMAS DR
SUNRISE AVE
GREENFIELD DR
ROSE ST
HIGHLAND ST
LOOKOUT DR
LEXINGTON DR
WORTHAM CT
JACKSON CT
E DELAWARE CT
GREENWOOD DR
CHATHAM CT
TARA DR
JUSTIN PL
FOREST LN
HAMPTON DR
TALON WAY
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home



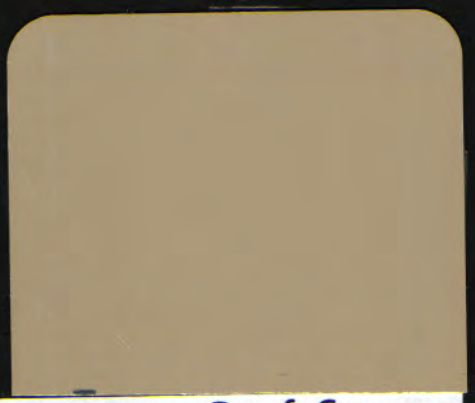
MEDIUM IRONSPOT #77 – SMOOTH TEXTURE

Brick Veneer No. 1

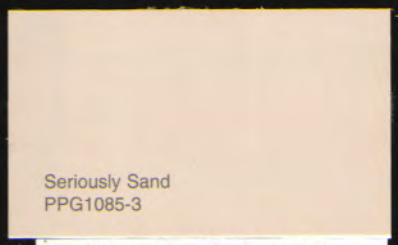
Brick Veneer No 2

MEDIUM IRONSPOT #46 – WIRECUT TEXTURE

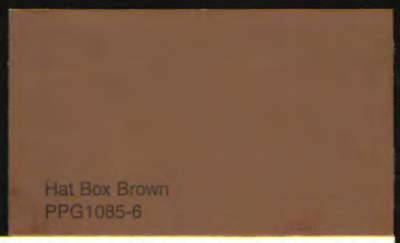
Brick Veneer No. 3



Standing Seam Roof, Canopy Gutters & Downspouts, Trim



EIFS Signband & Eave Gable at Rear



Hardie Board Lap Siding at Rear & Temporary Wall

A Commerical Building For:
Amen and Amgad Zakher

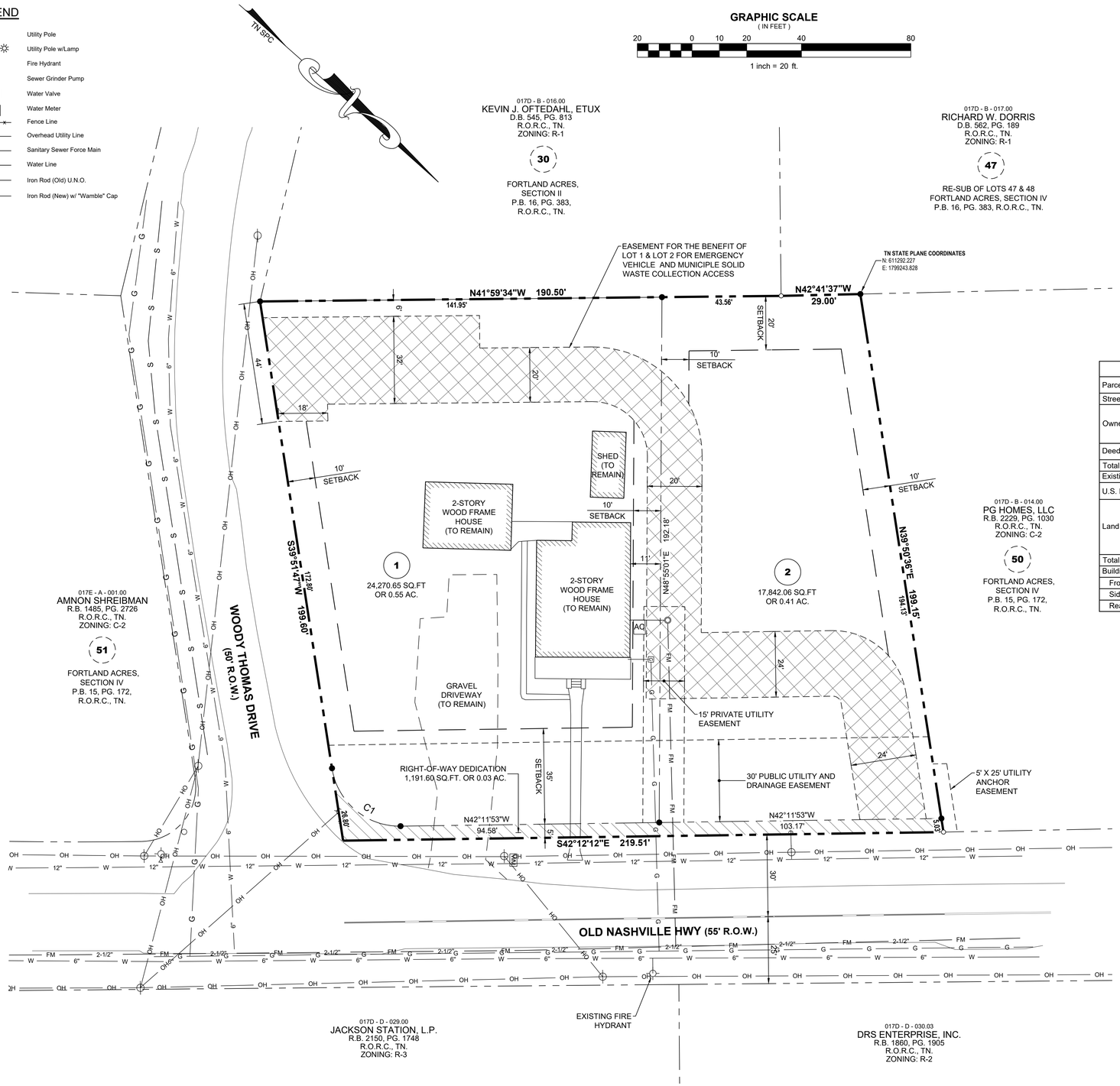
314 Old Nashville Highway

LaVergne , Tennessee

WM BARRY HUCKABEE - ARCHITECT
49 Carter Lane
Mt. Juliet, Tennessee 37122

LEGEND

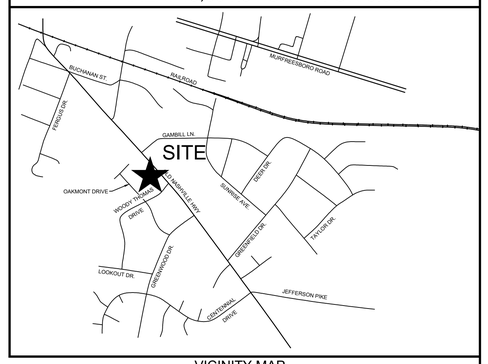
- Utility Pole
- Utility Pole w/Lamp
- Fire Hydrant
- Sewer Grinder Pump
- Water Valve
- Water Meter
- Fence Line
- OH — Overhead Utility Line
- FM — Sanitary Sewer Force Main
- W — Water Line
- Iron Rod (Old) U.N.O.
- Iron Rod (New) w/ "Wamble" Cap



PLAT NOTES

1. The purpose of this Final Plat is to create two commercial lots.
2. Property is located at 314 Old Nashville Highway in La Vergne, Rutherford County, Tennessee 37167 and is Currently Zoned Residential C-2, Commercial Highway Services District.
3. The property is located in an area designated as Zone "X" (Areas determined to be outside the the 0.2% Annual Chance Flood) as shown on FEMA FIRM Community Map Panel No. 47149C0015H F, effective date January 5, 2007.
4. Utilities shown hereon were taken from visible structures in the field. Verification of existence, size, location and depth should be confirmed with the appropriate utility sources. See Utility Disclaimer hereon.
5. Bearings shown hereon based on Tennessee State Plane (NAD83).
6. Public utility and drainage easements where shown hereon are intended to indicate an easement for construction, operation, and maintenance of public utilities and drainage ways; Including but not limited to sanitary sewers, forcemains, water lines, and drainage pipes.
7. The property is currently served by public water, sanitary sewer by the City of La Vergne and electricity provided by Nashville Electric Service, Natural Gas by Atmos Energy Corporation, Telephone, Cable TV and Internet by various providers.

TOTAL AREA: 43,304.31 SQ.FT. OR 0.99 AC.



VICINITY MAP
N.T.S.

SITA DATA TABLE

Parcel ID Number	017D-B-15.00
Street Address	314 Old Nashville Highway, 37167
Owner & Developer	Good Brothers, LLC 2409 Newberry Lane Mt.Juliet TN 37122 Phone: (201) 539-5656
Deed of Record, Deed Book / Page	DB 2452, Pg. 1657-1659 R.O.R.C., TN
Total Site Area	0.99 ac.
Existing Zoning	C-2 (Commercial)
U.S. FEMA Firm	Zone "X", Map 47149C0015H, 01-05-2007
Land Surveyor	Wamble & Associates, PLLC. 216 Centerview Drive, Suite 180 Brentwood, TN 37027 Phone: (615) 251-9555 email: jcyates@wambleassociates.com
Total number of lots:	2
Building Setbacks	
Front:	30'
Side:	5'
Rear:	20'

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book 2452, Page 1657-1659, Rutherford County Registers Office, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and that offers or irrevocable dedication for all public ways, utilities and other facilities have been filed.

Owner: Good Brothers, LLC

By: _____ Date: _____
Amin Zakher

CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I hereby certify (1) that the following sewer system outlined or indicated on the final subdivision plat entitled "**314 OLD NASHVILLE HIGHWAY**" has been installed in accordance with the current local and/or state government requirements, or (2) a sufficient bond or other surety has been filed to guarantee said installation.

Sewer System _____ ,2025 _____
Date City of La Vergne - City Engineer

CERTIFICATE OF APPROVAL OF WATER SYSTEMS

I hereby certify (1) that the following water system outlined or indicated on the final subdivision plat entitled "**314 OLD NASHVILLE HIGHWAY**" has been installed in accordance with the current local and/or state government requirements, or (2) a sufficient bond or other surety has been filed to guarantee said installation.

Water System _____ ,2025 _____
Date City of La Vergne - City Engineer

CERTIFICATE OF APPROVAL FOR PUBLIC WAYS FOR BOND POSTING

I hereby certify (1) that all designated public ways on this final subdivision plat have been installed in an acceptable manner and according to the specifications of the La Vergne Subdivision Regulations, or (2) a sufficient bond or other surety has been filed to guarantee said installation

_____ , 2025 _____
Date Appropriate Government Representative

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the La Vergne Subdivision Regulations, with the exception of such variances, if any, as are noted in the minutes of the Planning Commission and that it has been approved for recording in the office of the County Register.

_____ , 2025 _____
Date Secretary, Planning Commission

CERTIFICATE OF SURVEY ACCURACY

I hereby certify that the plan shown and described hereon is true and correct and that this survey exceeds the minimum requirements of an "Urban Land Survey", Catergory "I", as per current Standards of Practice adopted by the Board of Examiners for Land Surveyors for the State of Tennessee and that the ratio of precision is greater than 1:15,000.

Surveyor: Wamble & Associates, PLLC
By: Jimmy C. Yates, TN RLS No.1597
Date: June 2, 2025

JIMMY C. YATES
REGISTERED LAND SURVEYOR
No. 1597
6-2-25
STATE OF TENNESSEE NO. 1597

UNDERGROUND UTILITY NOTE

THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS AND/OR MAPS PREPARED BY OTHERS. THERE ARE NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THIS SURVEY DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

Tennessee 811
Know what's below. Call before you dig.

PLAT BOOK _____ PAGE _____

FINAL PLAT
314 OLD NASHVILLE HIGHWAY
LaVERGNE, RUTHERFORD COUNTY, TENNESSEE 37086

OWNER:
AMGAD & AMIN ZAKHER
2409 NEWBERRY LANE
MT. JULIET, TENNESSEE 37122
(201) 539-5656

WAMBLE & Associates, PLLC
Civil Engineering • Land Surveying • Land Planning
216 Centerview Dr., Suite 180, Brentwood, TN. 37027
(615)251-9555

DATE: JUNE 2, 2025
W&A FILE NO.: 1092-0124

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 12. **Combination Plat - 192 and 198 Old Nashville Highway - One New Lot on 1.35 Acres. Requested by Huddleston - Steele. Property located at 192 and 198 Old Nashville Highway (Tax Map 15M, Group E, Parcels 4 & 5). C-2 (Highway Service) Zoning District. Property owned by Better Home, LLC.**

Reviewed By:
Bo Logan, City Planner
Gary Lide, City Engineer

Summary:
The applicant wishes to combine two (2) lots into one. The total acreage will be 1.35 acres. The site is located on Old Nashville Highway. The site is zoned C-2 which is commercial.

This site contains one of the oldest standing original buildings in La Vergne.

The applicant has not disclosed any plans regarding the future development of this site.

Staff Comments / Technical Items:
Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)

1. Show ROW widths of Old Nashville Highway, Old Waldron Road, and Buchanan Street
2. Show building setback lines
3. Show sizes of public sewer lines

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)
No comments.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

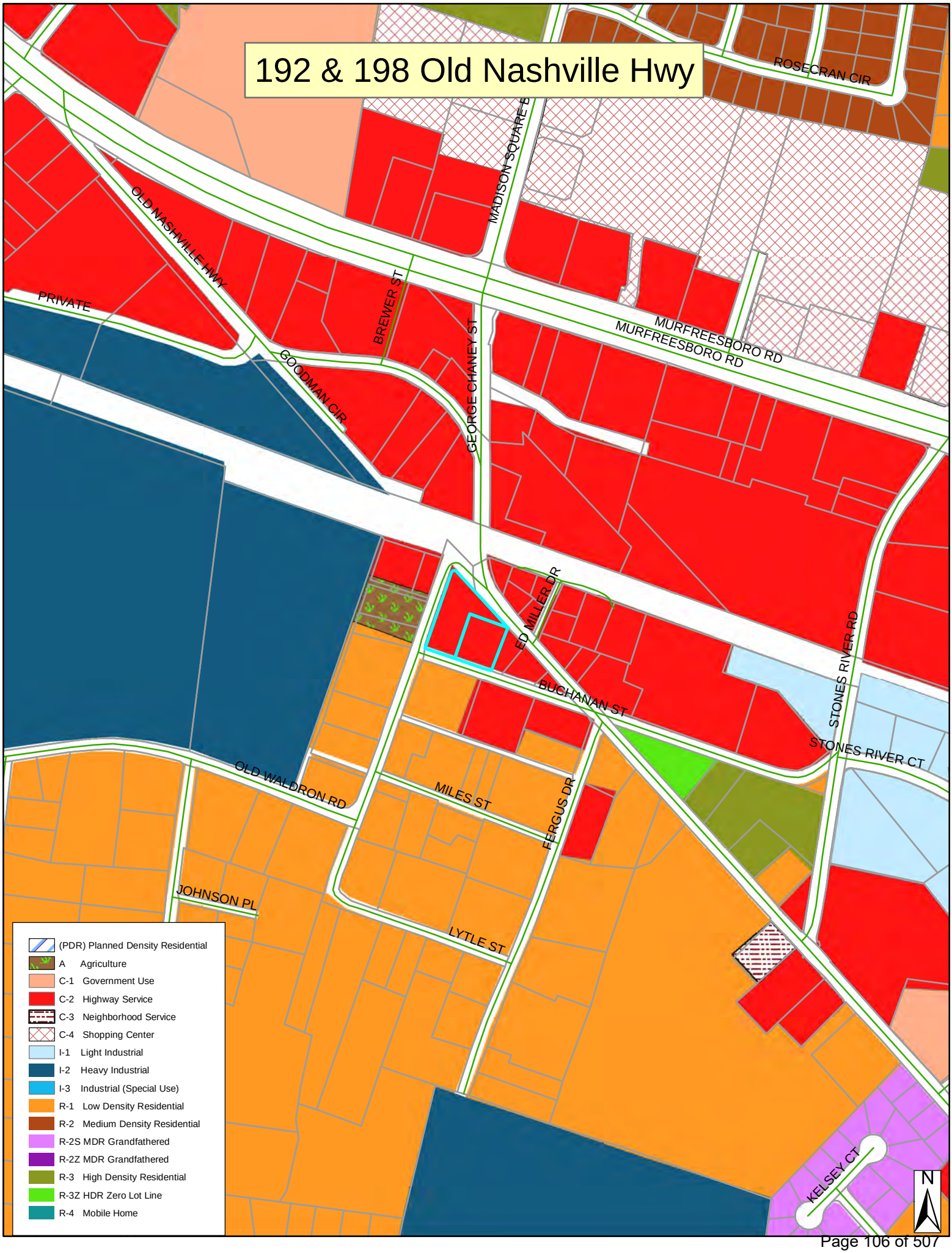
Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

<u>*Note:</u> The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

192 & 198 Old Nashville Hwy
ED MILLER DR
OLD WALDRON RD
OLD NASHVILLE HWY
ED MILLER DR
BUCHANAN ST
N

192 & 198 Old Nashville Hwy
GOODMAN CIR
GEORGE CHA
ED MILLER DR
BUCHANAN ST
OLD WALDRON RD
OLD NASHVILLE HWY
MILES ST
FERGUS DR
LYTLE ST
N


192 & 198 Old Nashville Hwy
ROSECRAN CIR
MADISON SQUARE B
OLD NASHVILLE HWY
PRIVATE
BREWER ST
GEORGE CHANEY ST
MURFREESBORO RD
MURFREESBORO RD
GOODMAN CIR
ED MILLER DR
BUCHANAN ST
STONES RIVER RD
STONES RIVER CT
OLD WALDRON RD
MILES ST
FERGUS DR
JOHNSON PL
LYTLE ST
KELSEY CT
N
(PDR) Planned Density Residential
A Agriculture
C-1 Government Use
C-2 Highway Service
C-3 Neighborhood Service
C-4 Shopping Center
I-1 Light Industrial
I-2 Heavy Industrial
I-3 Industrial (Special Use)
R-1 Low Density Residential
R-2 Medium Density Residential
R-2S MDR Grandfathered
R-2Z MDR Grandfathered
R-3 High Density Residential
R-3Z HDR Zero Lot Line
R-4 Mobile Home

LALI'S
LALI'S

STOP

NOTES

The purpose of this plat is to combine both Tax Map 15M, Group "E" Parcels 4.00 and 5.00, and create (1) lot of record.

In Tennessee, it is a requirement per "The Underground Utility Damage Prevention Act" that anyone who engages in excavation must notify all known underground utility owners, no less than three nor more than ten working days of their intent to excavate. A list of these utilities may be obtained from the County Register of Deeds. Those utilities that participate in the Tennessee One Call system can be notified by calling toll free 1-800-351-1111.

3 Underground utilities shown were located using available above ground evidence, as well as information obtained from the respective utility companies. The existence or nonexistence of the utilities shown and any other utilities which may be present on this site or adjacent sites should be confirmed with the utility owner prior to commencing any work.

4 It is the responsibility of each builder to design and construct a suitable grading and drainage scheme which will convey surface water, without ponding in the lot or under the house, from his structure to the drainage system.

5. Parcels may be subject to additional easements and/or restrictions, by record or prescription, that a complete title search may reveal

LOCATION MAP

N.T.S.

GLOBAL POSITION SYSTEM SURVEY NOTES

1 For boundary and topographic aspects of this survey, RTK positioning system (GPS) survey equipment: TOPCON Hiper V-Model #100137-04 (Dual frequency). The GPS portion of this survey was performed using RTK (Real-Time Kinematic) surveying methods. Topographic features shown were obtained by using the TDOT CORS station TN3A for horizontal and for vertical control.

2. The relative positional accuracy is stated in the Category "IV" survey certification located above the surveyor's seal on this drawing.

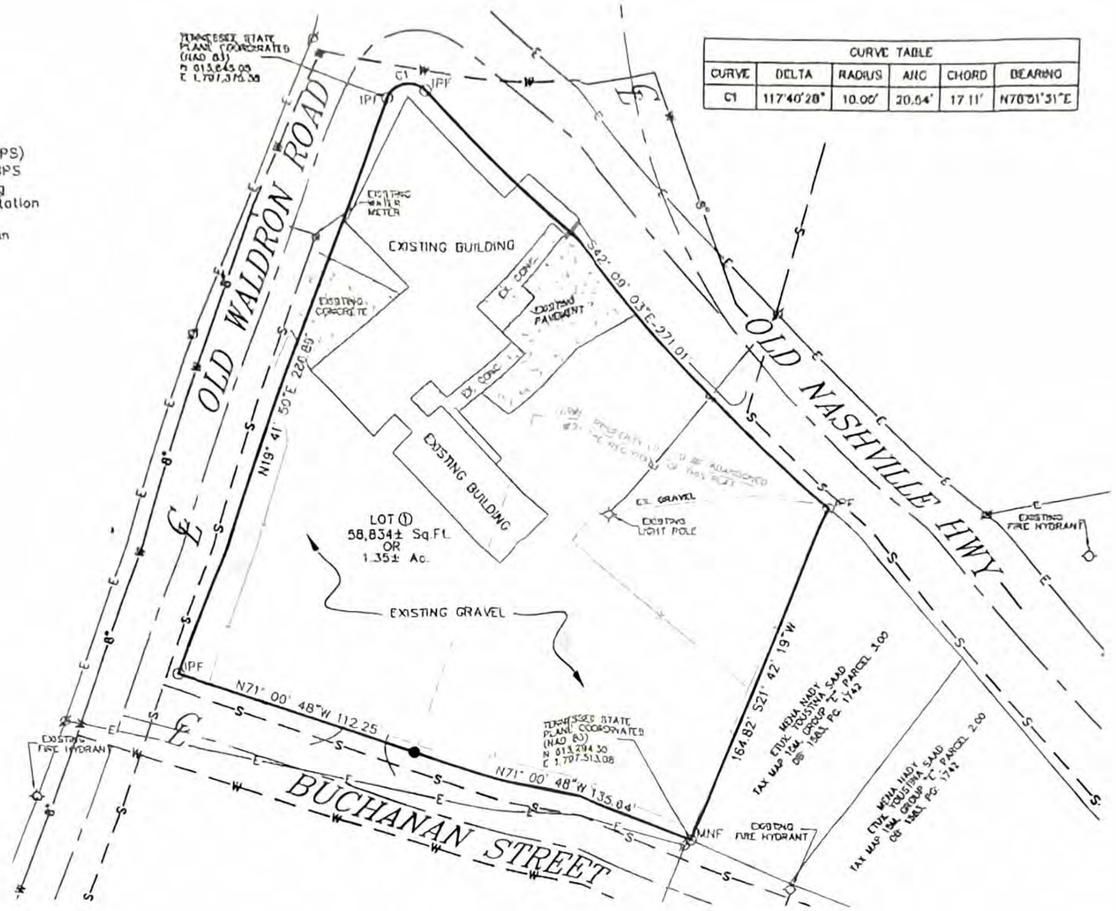
3. The date that fieldwork was performed for this survey was: 04/02/2025

4 The datum(s) for the TDOT CORS Network Station 3A that was used:
HORIZ: NAD83(2011) EPOCH 2010
VERT.: NAVD 1988

5. Fixed Control Station designation with positional data:
TDOT CORS STATION-TN3A
STATE PLANE (TN 4100-US SURVEY FT.)- NORTHING: 553,312.4528
EASTING: 1,860,677.584
ELEVATION: 650.209 FT

6. Geoid model used- GEOID03

7 Combined grid factors for TDOT CORS Station TN3A:
0.999921865 (STATE PLANE-TN 4100-US SURVEY FT.)



CURVE TABLE					
CURVE	DELTA	RADIUS	ARC	CHORD	BEARING
C1	117°40'28"	10.00'	20.54'	17.11'	N70°51'31"E

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book Number 2483 page 2905, County Registers Office, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restrictions area, and that offers or irrevocable dedication for all public ways, utilities, and other facilities have been filed.

Date — Better Home LLC

Record Book 2483, Page 2905

CERTIFICATE OF SURVEY ACCURACY

I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this survey exceeds the minimum requirements of an "Urban Land Survey, category "I" as per standards of practice adopted by the Board of Examiners for Land Surveyors for the State of Tennessee, effective March 17, 2011 and that the ratio of precision is greater than 1:10,000.

5/6/25 — William H. Huddleston IV, Tenn. R.L.S. No. 1630

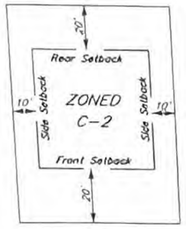
Date

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Subdivision Regulations for LaVergne, Tennessee with the exception of such variances, if any, as are noted in the minutes of the planning commission and that it has been approved for recording in the office of the County Register of Deeds.

Date — SECRETARY, PLANNING COMMISSION

ZONED: C-2
FRONT SETBACK: 20'
SIDE SETBACK: 10'
REAR SETBACK: 20'



TYPICAL BUILDING SETBACK DETAIL
N.T.S.

LEGEND

IPS ○ IRON PIN SET (1/2" REBAR WITH STAMPED H-S ENGR)
IPF ○ IRON PIN FND
● SURVEY POINT
Ø POWER POLE
—X—X— EXISTING FENCE LINE
—E—E— EXISTING ELECTRIC LINE
—W—W— EXISTING WATER LINE
—S—S— EXISTING SEWER LINE

BEARINGS BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD 83).

1 LOT - 1.35 Ac.±

0 50 100

I HEREBY CERTIFY THAT THIS IS A CATEGORY " IV " SURVEY AND THE PRECISION OF THE GPS PORTION OF THIS SURVEY (IN RELATIVE POSITIONING ACCURACY GIVEN AT THE 95% CONFIDENCE LEVEL) IS 1:10,000 AS SHOWN HEREON AND THAT THIS SURVEY WAS DONE IN COMPLIANCE WITH CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE FOR LAND SURVEYORS.

OWNER: BETTER HOME LLC
OWNER ADDRESS: 192 OLD NASHVILLE HWY
LA VERGNE, TN 37086
PROPERTY ADDRESS: 192, 198 OLD NASHVILLE HWY
LA VERGNE, TN 37086
TAX MAP: 15M, GROUP: "E", PARCELS: 4.00 & 5.00
RECORD BOOK: 2483, PAGE: 2905
MAP NUMBER: 47149C0015J
DATED: MAY. 9, 2023 ZONE: X
NOTE: THIS PARCEL IS SUBJECT TO ALL EASEMENTS AS SHOW AND ANY OTHER EASEMENTS AND/OR RESTRICTIONS EITHER RECORDED OR BY PRESCRIPTION THAT A COMPLETE TITLE SEARCH MAY REVEAL.

WILLIAM H HUDDLESTON IV
REGISTERED LAND SURVEYOR
AGRICULTURE
COMMERCIAL
5/6/25
TENNESSEE No. 1630

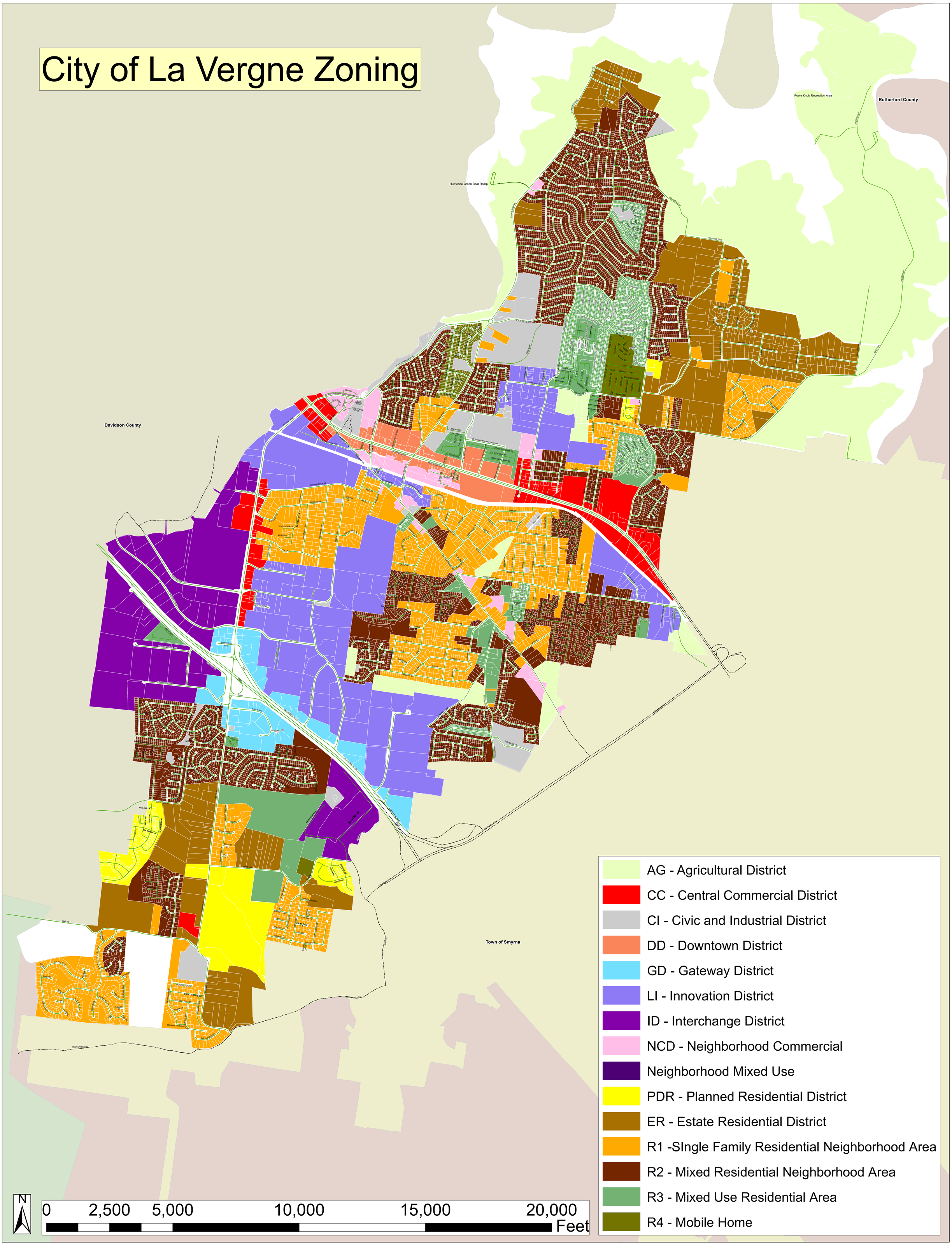
HUDDLESTON-STEELE ENGINEERING, INC.
2115 N.W. BROAD STREET, MURFREESBORO, TN 37129
SURVEYING : 893 - 4084, FAX: 893 - 0080

COMBINATION PLAT
192 AND 198
OLD NASHVILLE HWY

15TH CIVIL DISTRICT - RUTHERFORD COUNTY - TN.

DATE: MAY, 2025 | SCALE: 1"=50' | SH. 1 OF 1

City of La Vergne Zoning



Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 15. **Discussion - Community and Development Services General Information for Website Publication**

Reviewed By:
Gary Lide, City Engineer

Summary:
This document is designed to be an all-inclusive guide to Community Development Services procedures, checklists, requirements, and regulations. By having this document available on the city website, staff will save many work hours by being able to simply provide a link to this document to handle questions from new developers and contractors. Presently, each such request is handled individually with lengthy phone calls, e-mails, or meetings.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)
Presentation to be made by City Engineer

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)
No comments.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

CITY OF LA VERGNE PUBLIC WORKS
STANDARD SPECIFICATIONS

GENERAL INFORMATION AND REQUIREMENTS

CITY OF LA VERGNE
1500 E NIR SHREIBMAN BLVD
LA VERGNE, TENNESSEE 37086
(615) 287-8703

GARY LIDE, PE,
CITY ENGINEER

SPECIFICATION SECTIONS:

SECTION 0 – GENERAL INFORMATION AND REQUIREMENTS
SECTION 1 – STANDARD SEWER SPECIFICATIONS AND DETAILS
SECTION 2 – WATER DISTRIBUTION SYSTEM
SECTION 3 – ROADS, BRIDGES, DRAINAGE, AND GRADING

REVISED:

MAY 01, 2025

LA VERGNE
TENNESSEE
Engineering Department

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LA VERGNE TENNESSEE
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Process P00 - List of City Development Processes in Chronological Order

Table 1 - Subdivisions

Order	Description	City Contact	Reference
1	Preapplication Conference	City Planner	Sub Regs 2-101.201
2	Concept Plan	City Planner	Sub Regs 2-102
3	Preliminary Plat	City Planner	Sub Regs 2-103
4	Long-Term Maintenance Agreement - City Approval	Stormwater Coordinator	Item P02
5	Construction Drawings	City Engineer	Sub Regs 2-104
6	Pre-Construction Conference	City Engineer	Item P08
7	Obtain Land Disturbance Permit	City Engineer	Items P07a or P07b
8	Set Performance Bond Amount	City Engineer	Item P01
9	Recording of Long-Term Maintenance Agreement	Stormwater Coordinator	Item P02
10	Final Plat	City Planner	Sub Regs 2-105
11	File Performance Bond	City Bond Coordinator	P03
12	Signing and Recording Final Plat	City Planner	P04
13	Individual Building Permits	City Codes Director	City Codes Department
14	Subdivision Acceptance	City Planner	P05
15	Changing from Performance Bond to Maintenance Bond and Release of Bonds (Simultaneous with Subdivision Acceptance)	City Bond Coordinator	P06

Table 2 – Site Plans

Order	Description	City Contact	Reference
1	Preapplication Conference (recommended but not required)	City Planner	
2	Site Plan Approval	City Planner	Zoning Ordinance 3.110
3	Long-Term Maintenance Agreement - City Approval	Stormwater Coordinator	Item P02
4	Pre-Construction Conference	City Engineer	Item P08
5	Obtain Land Disturbance Permit	City Engineer	Item P07c
6	Building Permit	City Codes Director	Codes Department
7	Recording of Long-Term Maintenance Agreement	Stormwater Coordinator	Item P02
8	Certificate of Occupancy	City Codes Director	Codes Department

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Process P01 - Process for Setting a Performance Bond Amount (reference Subdivision Regulations 5-101)

Special Note:

The performance bond must be for the complete value of all public infrastructure items shown on the final plat and construction drawings which will not be in place at the time that the developer wishes to record the final plat. The plat and bond amount may be approved by the Planning Commission but the City Engineer will not sign the plat for recording until all required improvements are in. Example: If the performance bond amount is for wearing surface of the road only, then the City Engineer will not sign the plat for recording until the binder is in to city standards.

Timing:

The performance bond amount must be set before the Planning Commission can vote to approve a final plat. The Planning Commission approval of the performance bond amount can be concurrent with the final plat.

Submittal:

The following must be submitted to the city engineer BEFORE THE PLANNING COMMISSION SUBMITTAL DEADLINE FOR THE FINAL PLAT:

1. Form for Offer of Irrevocable Dedication – with all blanks filled in. It does not need to be signed at this time.
2. Three separate contractor's estimates to complete the improvements.
    a. Each estimate must be hand-signed and dated by the contractor
    b. The estimates must be valid to the date of the Planning Commission meeting
    c. These estimates must be for all public infrastructure items shown on the final plat and construction drawings which will not be in place at the time that the developer wishes to record the final plat including paving, walks, water, sewer, stormwater, etc.
3. Calculations showing how the engineer determined the median/average value of the three above quotes used in the certified Engineer's Estimate. The value used must be the higher value between the median and the average.
4. A certified Engineer's Estimate (stamped and signed by the engineer) which includes at a minimum the following:
    a. Average/Median value from the Contractor Quotes;
    b. Estimated cost of maintenance of Stormwater Management system through the bondable period;
    c. Cost of contractor's quality control for the installation of the bonded items;
    d. Cost of preparation and submittal of as-built drawings by the engineer of record;
    e. An additional twenty percent (20%) over and above the cost of securing all necessary improvements;
    f. The total amount of bond.

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Process P02 - Process for Recording a Long-Term Maintenance Agreement (LTMA)

Special Notes:

1. The Long-Term Maintenance Agreement (LTMA) is comprised of two parts: the agreement form and the Long-Term Maintenance Plan (LTMP). Both of them together form the LTMA which must be recorded in its entirety.
2. The LTMP must be signed and stamped by a registered professional engineer in the State of Tennessee.
3. The final plat must reference the recorded book and pages of the LTMA.

Timing:

A draft of the agreement form (filled out) and the LTMP must be submitted to the City of La Vergne Stormwater Coordinator:

a. For a subdivision, with the Construction Drawing submittal.
b. For a site plan, with the Planning Commission Site Plan submittal

The recorded LTMA (in its entirety) must be submitted to the City of La Vergne Stormwater Coordinator:

a. For a subdivision, prior to recording the final plat.
b. Fort a site plan, prior to issuance of the certificate of occupancy.

Process:

1. Submit the LTMA agreement form (draft) and the LTMP to the City Stormwater Coordinator for review.
2. Receive comments from the City Stormwater Coordinator.
3. Comply with comments and resubmit to Stormwater Coordinator.
4. On approval from the Stormwater Coordinator, submit signed and executed agreement (original signatures not copies) along with a stamped and sealed copy of the LTMP to the Stormwater Coordinator.
5. Stormwater Coordinator will deliver it to the City Engineer who will sign the document and have it notarized. Please assume that one full business day will be required for this.
6. After it is fully executed by the City, the City Engineer will notify the developer that it is ready to pick up.
7. The developer will then pick it up and get it recorded with the Registrar's Office of Rutherford County (RORC).
8. After recording, the developer will deliver a copy of the recorded document to the City Stormwater Coordinator.
9. The developer will make sure that the book and page number for the LTMA is written on the final plat prior to city signing, if applicable.

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Process P03 - Process for Filing a Performance Bond

Timing:

The Performance Bond must be accepted by the City of La Vergne Bond Coordinator prior to the city signing the final plat for recording.

Process:

1. Make a complete submittal for a performance bond including draft Form of Offer of Irrevocable Dedication as described in 'Process for Setting a Performance Bond Amount'
2. Receive City Attorney's review comments for the Form of Offer of Irrevocable Dedication and make all necessary changes
3. Complete the Form of Offer of Irrevocable Dedication with signature and notarization
4. Record the Form of Offer of Irrevocable Dedication with the Registrar's Office of Rutherford County (RORC)
5. The performance bond may be provided in one of three formats as follows:
    a. Performance Bond from a Bond Agency
    b. Letter of Credit from an accredited banking institution
    c. Cashiers Check
6. Submit the performance bond and a copy of the recorded Form of Offer of Irrevocable Dedication to the City of La Vergne Bond Coordinator.
7. Once the bond is accepted, the City of La Vergne Bond Coordinator will notify the City Engineer that the final plat may be signed.

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Process P04 - Process for Getting a Final Subdivision Plat Signed, Recorded, and Addresses Created Prior to Pulling Building Permits

1. Developer completes the process for filing a performance bond with the City of La Vergne Bond Coordinator
2. Developer gets the Form of Offer of Irrevocable Dedication approved and fully executed by the City.
3. Developer records the Form of Offer of Irrevocable Dedication with the Registrar's Office of Rutherford County (RORC)
4. Developer records the Long-Term Maintenance Agreement (LTMA) including the Long-Term Maintenance Plan (LTMP) with the Registrar's Office of Rutherford County (RORC)
5. Developer places references to the performance bond and the recorded documents above on the final plat
6. Developer provides copies of the recorded documents above to the City Engineer
7. Developer provides Performance Bond to the City of La Vergne Bond Coordinator.
8. Developer delivers a mylar of the final plat (signed by owner, developer, and surveyor) to the City Planner and requests signatures for recording
9. The City Engineer reviews the final plat and, if complete, signs on behalf of the city for acceptance of city infrastructure improvements
    a. City Engineer's review includes confirmation that the Performance Bond has been accepted by the City of La Vergne Bond Coordinator.
10. Once the plat is signed by the City Engineer, the City Planner takes it to the Secretary of the Planning Commission for the final city signature.
11. Once all signatures are in place, the City Planner notifies the developer that the original mylar is ready for pick-up.
12. The developer picks up the signed mylar plat and records it with the Registrar's Office of Rutherford County (RORC)
13. The developer provides a mylar copy of the recorded final plat to the City Planner
14. The City Planner works with the City GIS department to get the properties addressed. This process can take several days.
15. Once the properties are addressed, building permits can be requested.

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Process P05 - Process for Subdivision Acceptance (reference Subdivision Regulations 5-101.7)

Special Note:

The Land Disturbance Permit includes the costs for two close-out inspections by the city:

1. Final Punch List Inspection
2. Final Acceptance Inspection

Once the developer has requested formal acceptance, these are the only two inspections which will be performed by the City without additional charge. Any time that a developer or contractor requests any city employee to come to their site to look at any part of the project, no matter how small, it will be considered an inspection. (For example, a developer requests the stormwater inspector to come out to look at the grading around a single headwall would be an inspection).

Once two inspections have been used, then a payment per linear foot will be charged for the total length of roadway within the development or phase as shown on the plat regardless of how small an area was inspected. This cost per linear foot is shown on the City of La Vergne Fee Schedule as the "Public Works Department, Inspection of Street Fee". (For example, if the total length of streets shown on the plat for a development is 1,000 feet. And a contractor requests the stormwater inspector to look at the grading around a single headwall, then the developer would have to pay $300 [1,000 LF * $0.30 per linear foot] in advance to get that inspection).

Link to Fee Schedule:

https://www.lavergnetn.gov/DocumentCenter/View/3851/Fee-Schedule

The City has no responsibility to keep track of how many inspections that the developer or contractor has requested. It is the developer's responsibility to maintain control over these requests. Once the two inspections have been used, the City will require the inspection fee in advance prior to making further inspections. This will slow the approval process.

The following are strongly recommended:

- The developer/contractor conducts a detailed quality control process against the approved plans and the City of La Vergne Public Works Specifications and have all requirements complete prior to requesting acceptance.
- After the Final Punch Inspection, the developer/contractor conducts a detailed quality control process against the City's Final Punch List prior to requesting the Final Acceptance Inspection.
- Once final acceptance has been requested, the developer/contractor should avoid requesting any city personnel to come to the site for the purpose of any review of the

installation unless the developer is prepared for the complete inspection of all trades on the site.

Timing:

The Planning Commission recommendation must be complete before the Board of Mayor and Aldermen vote to accept. Applicants should plan for the Board of Mayor and Aldermen meeting to occur roughly five weeks after the Planning Commission meeting.

Process:

1. Developer/contractor must complete all work on public infrastructure items prior to requesting acceptance. There will be no partial inspections.
2. Developer sends a letter to the City Planner stating that the developer of record wishes to have the City formally accept the subdivision, section, or phase in question. This letter should cc the City Engineer. The City Engineer may also be notified by other means such as e-mail.
    a. The acceptance will NOT be placed on the Planning Commission agenda at this time.
3. Upon notification, the City Engineer will coordinate final punch list inspections for all departments of the city.
4. Upon completion of the inspections, the City Engineer will compile them into a single city punch list and send that list to the developer.
5. Upon completion of all final punch work, the developer shall notify the City Engineer that the project is ready for Final Acceptance Inspection. All work must be completed, there will be no partial inspections.
6. The city will perform the final inspection and the City Engineer will notify the developer whether the inspection has passed.
7. When the Final Acceptance Inspection passes, the developer will provide the following additional information to the City Engineer:
    a. As-Built (record) Drawings (stamped and signed) provided by the Engineer-of-Record meeting city standards
8. Once the work and this additional information has been accepted as complete by City staff, then the development will be placed by staff on the next Planning Commission agenda.
9. The Planning Commission meeting occurs on the last Tuesday of every month except for December. There is no December Planning Commission meeting.
10. The Planning Commission will vote to recommend acceptance of the public infrastructure improvements.
11. The acceptance will then be placed on the next available Board of Mayor and Aldermen (BOMA) agenda. This will be just over five weeks after the Planning Commission meeting and on the first Tuesday of the month.
12. Once accepted by BOMA, the performance bond may be replaced by the maintenance bond if this has been requested. See Item P06 for more detail.

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Process P06 - Changing from Performance Bond to Maintenance Bond and Filing for Release of Bond

1. (Reference Item P05) Once the public infrastructure has been accepted as complete by City staff, then the development will be placed by staff on the next Planning Commission agenda.
    a. Prior to the Planning Commission meeting, the developer may submit a maintenance bond amount to replace the performance bond. This maintenance bond must be at least 25% of the performance bond and will be in place through the twelve-month maintenance period.
    b. If no maintenance bond amount is requested, then the performance bond must remain in place through the twelve-month maintenance period.
    c. The City is not responsible for reminding the developer that they have the opportunity to submit a maintenance bond to replace the performance bond.
2. The Planning Commission meeting occurs on the last Tuesday of every month except for December. There is no December Planning Commission meeting.
3. The Planning Commission will vote to accept the maintenance bond amount and to recommend acceptance of the public infrastructure improvements.
4. The acceptance will then be placed on the next available Board of Mayor and Aldermen (BOMA) agenda. This will be just over five weeks after the Planning Commission meeting and on the first Tuesday of the month.
5. Once accepted by BOMA, the performance bond may be replaced by the maintenance bond if this has been requested.
6. After twelve months or more have passed from the BOMA acceptance date, the developer must request a release of bond to the City of La Vergne Bond Coordinator. No bond will be released prior to such a request regardless of the lapsing of the twelve-month maintenance period.
7. The Bond Coordinator will contact the City Engineer who will perform an inspection and either recommend the release of the bond or will provide a list of deficiencies that must be corrected.
8. Once there are no noted deficiencies, the City Engineer will recommend to the Bond Coordinator to release the bond.

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Process P07a – Obtaining a Land Disturbance Permit with a Subdivision Project with Construction Drawings

References:

1. Subdivision Regulations Section 2-104
2. Subdivision Regulations Section 3-103
3. Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)

Special Notes:

1. A Plans Review Fee (see City of La Vergne Fee Schedule, Engineering Department, Plans Review) is required for the review of Mass Grading Plans and/or Construction Drawings reviews. If the developer chooses to submit Mass Grading Plans as well as Construction Drawings, then BOTH reviews will be charged the full fee. (Link to La Vergne Fee Schedule: https://www.lavergnetn.gov/DocumentCenter/View/3851/Fee-Schedule)

Timing:

1. The Construction Drawings may not be submitted to the City Engineer for review until after the Preliminary Plat has been approved by the Planning Commission
2. The Construction Drawings must be approved by the City Engineer before a pre-construction conference can be requested.
3. The final plat cannot be considered by the Planning Commission until the Construction Drawings have been approved (Subdivision Regulations 3-103.1).

Process:

1. Developer receives Preliminary Plat approval from the Planning Commission.
2. Developer submits Construction Drawings to City Engineer for approval. This submittal must include the following:
    a. <u>All</u> calculations required by Section 14-603 of the Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)
    b. Draft Long-Term Maintenance Agreement (LTMA) including:
        i. Agreement Form filled out but not signed
        ii. Long-Term Maintenance Plan
    c. Hydrologic Determination for conveyances and streams through the site
    d. All calculations required by the City Utilities Engineer
    e. Land Disturbance Permit Application Form (filled out and signed)
    f. Plans Review fee
3. Once the submittal is deemed complete, two separate and parallel reviews will be conducted by the City:
    a. City Engineer Review for compliance with:

i. Approved Preliminary Plat
ii. Subdivision Regulations
iii. Stormwater Management Ordinance
iv. Public Works Specifications – Roadway, Stormwater, and Grading

b. City Utilities Engineer for compliance with:
    i. Public Work Specifications – Water and Sewer Utilities

4. Developer's engineer will coordinate directly with both the City Engineer and the City Utilities Engineer. The Construction Drawings will not be approved until all comments by both the City Engineer and the City Utilities Engineer have been addressed and retired.
5. Once all comments are retired, the City Engineer will notify the developer's engineer that the plans are approved by the City. The City Engineer will provide a set of city-approved plans to the developer's engineer for the sole purpose of water and sewer submittals to TDEC.
6. It is the responsibility of the developer's engineer to coordinate all TDEC comments with the City Utilities Engineer to avoid delays in final approvals.
7. Once all of the items required on the Pre-Construction Conference checklist (shown on the Land Disturbance Permit Application) are in hand, then the developer contacts the City Engineer to schedule a pre-construction conference. The city makes every effort to get this conference scheduled within two weeks but cannot guarantee that timeframe.
8. As long as the fee is paid, the contractor is in attendance, and all other items are provided, the Land Disturbance Permit will be issued at the Pre-Construction Conference.

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Process P07b – Obtaining a Land Disturbance Permit with a Subdivision Project with Mass Grading Plans

References:

1. Subdivision Regulations Section 2-104
2. Subdivision Regulations Section 3-103
3. Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)

Special Notes:

1. The Mass Grading Permit is not allowed by right by the City Municipal Code in the City of La Vergne. It is a courtesy provided by the city staff to assist developers in timely prosecution of their construction projects. If any work (such as utilities) is performed under the Mass Grading Land Disturbance Permit, a stop work order will be issued until such time as the Construction Drawings are fully approved by both the City and TDEC. THERE WILL BE NO LENIENCY OR CLEMENCY GRANTED AND NO NEGOTIATIONS WILL BE ENTERTAINED. The only work allowed on the site during this period will be maintenance of the erosion and sediment control measures. Any work other than this maintenance will immediately result in penalties as listed in the Stormwater Management Ordinance. Any damages resulting from these delays due to the developer/contractor performing unpermitted construction will be the sole responsibility of the developer.
2. In the event that the developer chooses to request a Mass Grading Permit, then a separate permit will be needed for the approved Construction Drawings. That will require two complete and separate Land Disturbance Permit processes.
3. A Plans Review Fee (see City of La Vergne Fee Schedule, Engineering Department, Plans Review) is required for the review of Mass Grading Plans and/or Construction Drawings reviews. If the developer chooses to submit Mass Grading Plans as well as Construction Drawings, then BOTH reviews will be charged the full fee. (Link to La Vergne Fee Schedule: https://www.lavergnetn.gov/DocumentCenter/View/3851/Fee-Schedule)
4. A Land Disturbance Permit may be obtained for a Mass Grading Plan prior to TDEC approval of the water and sewer utilities under the following conditions:
    a. All TDEC stormwater, grading, and stream-related permits, notices, and approved plans must be in place. This includes NOIs, NOCs, SWPPPs, ARAPs, etc.
    b. The Mass Grading Plans cannot show any roads, curbs, walks, utilities, catch basins, stormwater piping, or any other items which are not intended to be constructed until after the total Construction Drawings are approved.
    c. The Mass Grading Plans must show the contours as if the items not shown in item b above will never be put in place. For example, ditches may be required in locations where stormwater pipes are ultimately planned in order to avoid flooding of neighboring properties due to fill. Simply turning off the layers and hiding the things listed in item b above will not be sufficient to get a permit for Mass Grading.

Timing:

1. The Mass Grading Plans may not be submitted to the City Engineer for review until after the Preliminary Plat has been approved by the Planning Commission
2. The Mass Grading Plans must be approved by the City Engineer before a pre-construction conference can be requested.
3. The final plat cannot be considered by the Planning Commission until the Construction Drawings have been approved (Subdivision Regulations 3-103.1). For the purpose of this section, Mass Grading approval is NOT SUFFICIENT to be Construction Drawing approval.

Process:

1. Developer receives Preliminary Plat approval from the Planning Commission.
2. Developer submits Mass Grading Plans to City Engineer for approval. This submittal must include the following:
    a. All calculations required by Section 14-603 of the Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)
    b. Draft Long-Term Maintenance Agreement (LTMA) including:
        i. Agreement Form filled out but not signed
        ii. Long-Term Maintenance Plan
    c. Hydrologic Determination for conveyances and streams through the site
    d. Plans Review fee
    e. Once the submittal is deemed complete, the City Engineer Review for compliance with:
        i. Approved Preliminary Plat
        ii. Subdivision Regulations
        iii. Stormwater Management Ordinance
        iv. Public Works Specifications – Roadway, Stormwater, and Grading
        v. Any comments from the City Utilities Engineer applicable to Mass Grading
3. Mass Grading Plans will not be approved until all comments by the City Engineer have been addressed and retired.
4. Once all comments are retired, the City Engineer will notify the developer's engineer that the plans are approved by the City. The City Engineer will provide a set of city-approved plans to the developer's engineer for their files. These will not count against the sets required for the Pre-Construction Conference.
5. Once all of the items required on the Pre-Construction Conference checklist (shown on the Land Disturbance Permit Application) are in hand, then the developer contacts the City Engineer to schedule a pre-construction conference. The city makes every effort to get this conference scheduled within two weeks but cannot guarantee that timeframe.
6. As long as the fee is paid, the contractor is in attendance, and all other items are provided, the Land Disturbance Permit for Mass Grading will be issued at the Pre-Construction Conference.

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Process P07c – Obtaining a Land Disturbance Permit with a Development with Site Plans

References:

1. Zoning Ordinance Section 3.110
2. Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)

Special Notes:

1. Mass Grading Permits are not allowed for Site Plan projects.
2. Site Plans must be complete Civil and Landscape Drawing (ready for construction) prior to submittal to the Planning Commission. This includes all calculations required by both the Zoning Ordinance and the Stormwater Management Ordinance

Timing:

1. No grading work will be allowed on project sites prior to issuance of a Land Disturbance Permit.
2. A Land Disturbance Permit will not be issued prior to Planning Commission approval.
3. The removal of trees by such means that the root balls are disturbed is land disturbance.

Process:

1. Developer receives Planning Commission approval.
2. Developer resolves any minor outstanding details with the City Utilities Engineer in preparation for TDEC Water and Sewer submittal.
3. City Engineer provides approved set of plans for the sole purpose of making TDEC submittals.
4. Developer's engineer makes the water and sewer submittals to TDEC. It is the responsibility of the developer's engineer to coordinate all TDEC comments with the City Utilities Engineer to avoid delays in final approvals.
5. Developer's engineer makes grading, stormwater, and stream protection submittals to TDEC.
6. Once all of the items required on the Pre-Construction Conference checklist (shown on the Land Disturbance Permit Application) are in hand, then the developer contacts the City Engineer to schedule a pre-construction conference. The city makes every effort to get this conference scheduled within two weeks but cannot guarantee that timeframe.
7. As long as the fee is paid, the contractor is in attendance, and all other items are provided, the Land Disturbance Permit will be issued at the Pre-Construction Conference.

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Process P08 – Setting up a Pre-Construction Conference

References:

1. Subdivision Regulations Section 2-104.2
2. Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6, Paragraph 14-604, (3)(b))

Special Notes:

1. Pre-Construction Conferences are conducted in the Codes Conference Room at the Public Works and Community Development Services Building, 1500 E. Nir Shreibman Blvd, La Vergne TN.
2. PRE-CONSTRUCTION CONFERENCES DO NOT OCCUR AT THE PROJECT SITE.
3. For a subdivision which is getting Land Disturbance Permits for Mass Grading as well as Construction Drawings, two pre-construction conferences will be required.

Timing:

1. For a subdivision, the Preliminary Plat and The Land Disturbance Permit (LDP) will be issued immediately following the Pre-Construction Conference
2. No grading work will be allowed on project sites prior to issuance of a LDP.

Process:

1. Developer downloads a copy of the Pre-Construction Conference Checklist (shown on the Land Disturbance Permit Application) from the City's website.
2. Developer receives all drawing and plan approvals from the City, State, and other government agencies required to perform the work. These are listed in the checklist.
3. Developer gets LTMA approved by the City Stormwater Coordinator. Having the LTMA recorded prior to the Pre-Construction Conference is preferred but it can be done later (see LTMA process)
4. The developer calls or e-mails the City Engineer to request a date and time for the conference. If the City Engineer is unavailable, the developer may make this request of the Stormwater Coordinator.
5. The City Engineer coordinates with other city departments and will notify the developer of a recommended time. The city will make every effort to get this scheduled for within two weeks of the request but this cannot be guaranteed.
6. Developer confirms the date with the City Engineer.
7. Developer reviews the checklist (shown on the Land Disturbance Permit Application) and provides all items required to be submitted prior to the meeting. NOTE: FAILURE TO PROVIDE THE ITEMS BY THE TIME REQUIRED WILL RESULT IN POSTPONEMENT OF THE CONFERENCE.
8. At a minimum, a representative of the contractor must attend the meeting. IF THERE IS NO CONTRACTOR'S REPRESENTATIVE, THEN THE MEETING WILL BE CANCELLED AND RESCHEDULED. NO PERMIT WILL BE ISSUED.

9. It is preferred to have a representative of the developer but not required.
10. The attendance of the developer's engineer is optional.
11. The approved plans which are brought by the developer's team to the meeting must include approval stamps from TDEC as applicable. IF ALL REQUIRED APPROVALS HAVE NOT BEEN RECEIVED, THEN THE MEETING WILL BE CANCELLED AND RESCHEDULED. NO PERMIT WILL BE ISSUED.
12. The city reserves the right to cancel and reschedule the pre-construction conference if every item on the checklist has not been provided. However, in the interest of expediency, the City Engineer may conduct the meeting but withhold the issuance of the permit if the developer has failed to provide <u>one</u> of the listed items below. If this is the case, the City Engineer will conduct the meeting but will not issue the permit until that item is provided. If more than one of the items is incomplete at the scheduled time of the conference, then the meeting will be cancelled and rescheduled. The list is as follows:
    a. Land Disturbance Permit Fee (in the event that city's credit card machine is not functioning and no check is available). Cash cannot be accepted.
    b. Contractor's Certificate of Insurance
    c. An insufficient number of full-size paper drawing sets. If none are provided, then the meeting will be cancelled and postponed.
    d. PDF copy of the drawings either e-mailed, FTP's, or brought on a thumb drive.
13. Once the meeting is conducted, the Land Disturbance Permit will be issued.

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Process P09 – Downloading Staff Comments Prior to a Planning Commission or Board of Zoning Appeals Meeting

Process:

Staff comments for submittals to the La Vergne, TN Planning Commission Meeting, Planning Commission Workshop, or Board of Zoning Appeals Meeting will be uploaded to the City of La Vergne Agenda Center by close-of-business the day before the meeting (usually a Monday). They are frequently up earlier than that and you can check on them earlier in the day. This is done so that applicants can familiarize themselves with staff comments prior to the meeting to make discussions with the Planning Commission or Board of Zoning Appeals more productive. It is the applicant's responsibility to download the staff comments.

These can be found at the following link:

https://www.lavergnetn.gov/598/Current-Meeting-Agendas

If this does not work, then use the following process:

1. Get on the City website (www.lavergnetn.gov)
2. Click on the "Your Government" button to the upper left
3. Click on "Boards & Committees" to the left
4. Click on "Planning Commission" to the left
5. Click on "Agenda Center" under the heading "Current Meeting Agendas" to the right
6. Scroll down through the list of meetings to the meeting for your date and time. Please note that Planning Commission Meetings, Planning Commission Workshops, and Board of Zoning Appeals Meetings will be listed separately.
7. Click on the blue "Planning Commission" or "Board of Zoning Appeal" button under the correct meeting
8. On the left, under "Agenda Packet", scroll down to your project and click the download button next to "Planning Commission Report". This will download a pdf of the complete staff comments which have been submitted to the Planning Commission or the Board of Zoning Appeals for your submittal.

Important Notes

- Do not make any form of formal resubmittal to staff in the one day between receiving the comments and attending the meeting
- Do not contact staff to discuss items in the one day between receiving the comments and attending the meeting
- The provision of these comments one day prior to the meeting is solely for the purpose of allowing the spokespersons for your team at the meeting to have a few hours to become familiar with the comments so they can better discuss the comments with the Planning Commission of Board of Zoning Appeals at the meeting itself.

- The Planning Commission or Board of Zoning Appeals may give you additional comments verbally during the meeting. These verbal comments are just as binding as staff comments. It is the responsibility of the applicant to record these comments and to address them in follow-up submittals. If they are not addressed, the follow-up submittal will be considered incomplete.

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Checklist C01 – Subdivision Concept Plan

At a minimum, the following items must be shown and/or provided:

1. Site location plan
2. All adjoining property owners: name and reference
3. Overall parcel size
4. All roads, easements, etc. adjoining or in the property
5. 5' existing contours
6. 100-year floodplain limits and elevations, as well as floodways, and floodway fringe areas
7. Proposed roadways and lots
8. Proposed phasing
9. Date of Plans
10. North arrow
11. Name of the property owner
12. Name of the developer
13. Zoning classification
14. Stamp and signature of the appropriate design professional shown along with name and contact information
15. Hydraulic calculations specific to stormwater quantity requirements (pre- and post-) provided with descriptions and sizes of detention basins required. These calculations must meet the requirements of the Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)
16. Proof of water availability from La Vergne Utilities Department.
17. Existing and required water pressures shown.
18. Proof of wastewater availability from La Vergne Utilities Department.
19. Wastewater lift stations shown, and impacts on the existing system discussed.
20. If required from the preapplication conference, provide a traffic study.

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Checklist C02 – Subdivision Preliminary Plat

At a minimum, the following items must be shown and/or provided:

1. Preliminary Plat must agree with the approved Concept Plan
2. Site location plan
3. All adjoining property owners: name and reference
4. All adjoining roadway names
5. All bearings and distances (to the nearest 100th foot) around the overall perimeter
6. All existing public ways, easements, water bodies, streams, swamps, railroads, buildings, parks, cemeteries, drainage ditches, and bridges
7. The locations and widths of all existing easements, alleys, and roadways
8. The locations and widths of all proposed easements, alleys, and roadways
9. All building setback lines
10. Distances shown on all proposed or existing lots
11. Proposed culverts, driveway tiles, and associated drainage structures sized along with necessary easements
12. All proposed electrical and communications easements
13. (Condominiums only) The positions of all existing and proposed buildings
14. Locations and dimensions and designation shown for all land proposed to be for group or public use? (parks, playgrounds, common area, mail kiosks, stormwater detention) If applicable, provide any conditions that have been applied to those areas
15. 100-year floodplain limits and elevations, as well as floodways, and floodway fringe areas
16. The name and address of the property owner
17. The name and address of the developer
18. The stamp and signature of the appropriate design professional shown along with name and contact information
19. Date, north arrow, graphic scale
20. The name of subdivision
21. A property corner attached to a neighboring property shown as a starting point
22. The names of all proposed roads
23. The zoning classification
24. Show all uses other than residential
25. Bearings and distances from a corner of the proposed development to the nearest existing intersection
26. Bearings and distances from a corner of the proposed lot to the starting point of the original survey from which all phases were subdivided
27. All public ways, railroads, and water courses to a distance of at least ½ mile
28. Existing contours (Minimum 2’ for 5% or less, 5’ for greater than 5%)
29. The map and parcel numbers for the development
30. Proposed walls (including retaining walls four feet or taller

31. Proposed fences
32. Proposed freestanding (not building mounted) signs
33. Existing vegetation as follows:
    a) Tree masses with general description of tree species contained therein
    b) Location and identification of trees 15” and larger diameter (except cedar)
    c) Location and identification of cedar trees 10” and larger diameter
34. Proposed vegetation by type of plant shown
35. Slopes between 12% and 20% identified with general soil types
36. Slopes between 20% and greater identified with general soil types
37. Site profiles are required if site excavation and embankments are likely to exceed 5’
38. Explanation of drainage easements provided
39. Explanation of site easements provided
40. Explanation of reservations provided
41. Show public water and sewer for all lots (If public water or sewer is not provided, see Subdivision Regulations Section 3-102.2, item 27.)
42. Copy of Restrictive covenants, if applicable
43. Form of endorsement meeting the requirement of the Subdivision Regulations Section 3-102.2, item 29
44. If access for construction is through an existing subdivision, provide a narrative of how streets will be protected and maintained during construction to minimize negative impact on existing residents

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Checklist C03 – Subdivision Mass Grading Plans

At a minimum, the following items must be shown and/or provided:

1. Plan Review Fee (see City of La Vergne Fee Schedule on the City Website). No review will be started and the plans will not be put in the queue for review until fee is received.
2. Drawings must agree with the approved Concept Plan
3. Drawings must agree with the approved Preliminary Plat
4. The plans must be clearly shown as Mass Grading
5. Mass Grading Plans can include nothing other than what is intended to be constructed during the mass grading phase. Inclusion of roads, walks, utilities, storm drains, etc that are not a part of mass grading will result in immediate rejection of the plans without further review.
6. The latest City of La Vergne General Notes for Construction Drawings
7. Site location plan
8. All adjoining property owners: name and reference
9. All adjoining roadway names
10. All bearings and distances (to the nearest 100th foot) around the development perimeter
11. All existing public ways, easements, water bodies, streams, swamps, railroads, buildings, parks, cemeteries, drainage ditches, and bridges
12. The locations and widths of all existing easements, alleys, and roadways
13. 100-year floodplain limits and elevations, as well as floodways, and floodway fringe areas
14. The name and address of the property owner
15. The name and address of the developer
16. The stamp and signature of the appropriate design professional shown along with name and contact information
17. A legend of EPSC BMPs
18. Details for the EPSC BMPs
19. BMP details must meet or exceed the requirements of The Tennessee Department of Environment and Conservation (TDEC) Erosion and Sediment Control Manual
20. All locations where stormwater leaves the site must protected by a sediment basin or other BMPs
21. In the event that stormwater run-off previously sheet-flowed off the property and it is now a concentrated flow, mitigation measures must be put in place to slow/spread the water to avoid erosion to downstream properties
22. Sediment basins must be provided for all drainage basins of 5 acres or larger
23. Stormwater quality calculations meeting the requirements of the Stormwater Management Ordinance 14-603 (4)
24. Stormwater quantity calculations meeting the requirements of the Stormwater Management Ordinance 14-603 (5)
25. Show proper ground cover for all slopes steeper than 5:1
26. Provide proper protection for cases where concentrated flows are taken down cut or fill slopes

27. If applicable, provide details for temporary stream crossings. Note: If no detail is provided, no crossing will be allowed and stop work orders will be issued if streams are crossed without all proper approvals
28. Construction access details and locations
29. The locations where stormwater leaves the site must be the same as approved on the Preliminary Plat
30. Mass grading proposed contours must be such that stormwater will not back up onto neighbors or create a nuisance

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Checklist C04 – Subdivision Construction Drawings

At a minimum, the following items must be shown and/or provided:

1. Plan Review Fee (see City of La Vergne Fee Schedule on the City Website). No review will be started and the plans will not be put in the queue for review until fee is received.
2. A draft Long-Term Maintenance Agreement Form with all blanks filled in must be provided. No review will be started and the plans will not be put in the queue for review until fee is received.
3. Draft Hydrologic Determination showing wet weather conveyances and streams
4. Final stormwater quality calculations meeting the requirements of the Stormwater Management Ordinance 14-603 (4)
5. Final stormwater quantity calculations meeting the requirements of the Stormwater Management Ordinance 14-603 (5)
6. Critical service roads identified
7. Stormwater quantity calculations must match or exceed those approved at Concept Plan stage.
8. City Standard General Notes
9. Drawings must agree with the approved Concept Plan
10. Drawings must agree with the Preliminary Plat
11. The latest City of La Vergne General Notes for Construction Drawings
12. Mail kiosk must be shown
13. No single family residential building can be more than 500’ from a fire hydrant
14. No building which is not single family residential can be more than 400’ from a fire hydrant?
15. If there is a dead-end longer than 150 feet, a turnaround meeting fire code requirements must be provided
16. Site location plan
17. All adjoining property owners: name and reference
18. All adjoining roadway names
19. All bearings and distances (to the nearest 100th foot) around the development perimeter
20. All existing public ways, easements, water bodies, streams, swamps, railroads, buildings, parks, cemeteries, drainage ditches, and bridges
21. The locations and widths of all existing easements, alleys, and roadways
22. The locations and widths of all proposed easements, alleys, and roadways
23. All building setback lines
24. Bearings and distances on all proposed or existing lots
25. Proposed culverts, driveway tiles, and associated drainage structures sized along with necessary easements
26. All proposed electrical and communications easements
27. (Condominiums only) Are the positions of all existing and proposed buildings
28. Locations and dimensions and designation shown for all land proposed to be for group or public use? (parks, playgrounds, common area, mail kiosks, stormwater detention) If applicable, provide any conditions that have been applied to those areas

29. 100-year floodplain limits and elevations, as well as floodways, and floodway fringe areas
30. Name and address of the property owner
31. Name and address of the developer
32. The stamp and signature of the appropriate design professional shown along with name and contact information
33. A legend of EPSC BMPs
34. Details for the BMPs
35. BMP details must meet or exceed the requirements of The Tennessee Department of Environment and Conservation (TDEC) Erosion and Sediment Control Manual
36. All locations where stormwater leaves the site must protected by a sediment basin or other BMPs
37. In the event that stormwater run-off previously sheet-flowed off the property and it is now a concentrated flow, mitigation measures must be designed to slow/spread the water to avoid erosion to downstream properties
38. In all channels or ditches, show appropriate surface treatment as follows: sod or seeding with erosion control mat will be the minimum requirement up to 6 inches deeper than the 10-year, 24-hour design peak flow depth. In the event that flow velocities for the 5-year, 24-hour design storm exceed 4.5 feet/second, a liner (e.g., riprap, bioengineered liner, or concrete) will be required.
39. Sod, erosion control matting, or comparable ground cover must be used for all slopes steeper than 5:1 (seed and straw will not be accepted)
40. Provide proper protection for cases where concentrated flows are taken down cut or fill slopes
41. All storm sewer inlets which are made operable during construction must be protected so that sediment-laden run-off is filtered or diverted before entering them
42. If applicable, provide details for temporary stream crossings. Note: If no detail is provided, no crossing will be allowed and stop work orders will be issued if streams are crossed without all proper approvals
43. Provide construction access details and locations
44. Easement widths over storm pipes must meet the requirements of the Stormwater Management Ordinance Section 14-603 (5)(n)
45. The maximum allowable slope of public roads is 10%
46. The locations where stormwater leaves the site must be the same as approved on the Preliminary Plat
47. Public Roadway Drawings
    a. General
        i. Construction Drawings will not be reviewed if the following roadways sheets are not included for all public roads: Present Layout, Proposed Layout, and Profile. Note: Proposed Layout and Profile sheets can share a Plan/Profile Sheet.
        ii. If it does not cause too much clutter, Present Layout information can be included on the Proposed Layout
        iii. The roadway sheets listed above must be stand-alone to be filed separately as part of the City's roadway archives

b. Present Layout
    i. Existing topography
    ii. Present ROW
    iii. Survey centerline
    iv. Existing drainage pipes, culverts, and bridges
    v. Top of cut and toe of fill lines
    vi. Proposed ROW with width dimensions
    vii. Proposed ramps shown (if applicable)
c. Plan/Profile
    i. Direction of stationing on the Plan View must match that of the Profile View?
    ii. All lettering on the Plan View must be readable from the top or the right side of the sheet
    iii. (Plan View) Baseline with stationing
    iv. (Plan View) Station and coordinate data at all intersections?
    v. (Plan View) Curve data including POT, PI, PC, and PT (TS, and CS, if spiral)?
    vi. (Plan View) Proposed paving, curb, curb&gutter, and walks
    vii. (Plan View) Proposed complete drainage including sizes and inverts
    viii. (Plan View) Station/offset or coordinate data for all drainage structures
    ix. (Plan View) Proposed ramps (if applicable)
    x. (Profile) Existing ground profile shown
    xi. (Profile) Finished grade profile shown
    xii. (Profile) Vertical curve data shown incl. PVI, PVT, PVC, Length of Curve, and Design Speed
    xiii. (Profile) All slopes
    xiv. (Profile) All intersections with stations of both roads listed
    xv. (Profile) Location with accurate depths and sizes shown for water, sewer, and drainage pipes
d. Drainage Cross Section
    i. Drainage cross sections shown for all box culverts, plate arch culverts, any other culvert other than a standard pipe, or any culvert 60” diameter or larger

48. Public Water Drawings
    a. Drawings for public water infrastructure improvements must meet the criteria described in “City of La Vergne Public Works Standard Specifications, Section 2: Water Distribution System” Section 2.0.3. This document is available for download on the city website
    b. Drawings for public water infrastructure improvements must be approved by the City of La Vergne Utilities Engineer and meet all requirements stipulated through that review process
49. Public Wastewater Drawings
    a. Drawings for public wastewater infrastructure improvements must meet the criteria described in “Standard Sewer Specifications and Details, City of La Vergne, Tennessee” Sections 1.3, 1.4, 1.5, 1.6, and 1.7. This document is available for download on the city website

b. Drawings for public wastewater infrastructure improvements must be approved by the City of La Vergne Utilities Engineer and meet all requirements stipulated through that review process

LA VERGNE
TENNESSEE
Engineering Department

Checklist C05 – Subdivision Final Plat

At a minimum, the following items must be shown and/or provided:

1. Drawings must agree with the approved Preliminary Plat
2. The long term maintenance agreement must be ready to be recorded
3. The Performance Bond calculation must be included and meet the requirements of the Subdivision Regulations Section 5-101.1and Item P03. Bond amount includes the following:
    a. Includes three bids and is stamped by a professional engineer
    b. Includes complete cost of all public infrastructure items which will not be complete at the time of final plat recording
        i. City will not sign the final plat until work is complete so that no items are remaining that are not included in the approved Performance Bond amount.
    c. Cost of maintenance of erosion and sediment control
    d. Cost of As-Built and Record Drawings
    e. Any other public improvements which are not yet complete at the time of final plat
    f. Required 20% contingency
4. Plat Note must be included as follows: The Long-Term Maintenance Agreement for the stormwater facilities serving <project name> as shown hereon have been recorded in Record Book XX, Page XX, RORCT.
5. Site location plan
6. All adjoining property owners: name and reference
7. All adjoining roadway names
8. All bearings and distances (to the nearest 100th foot) around the perimeter and all lots
9. All existing public ways, easements, water bodies, streams, swamps, railroads, buildings, parks, cemeteries, drainage ditches, and bridges
10. 100-year floodplain limits and elevations, as well as floodways, and floodway fringe areas
11. The locations and widths of all existing easements, alleys, and roadways
12. All building setback lines
13. All bearings and distances (to the nearest 100th foot) shown on all proposed or existing lots
14. Locations and dimensions (to the nearest 100th foot) and designation shown for all land proposed to be for group or public use? (parks, playgrounds, common area, mail kiosks, stormwater detention) If applicable, provide any conditions applied to those areas
15. (Condominiums only) An as-Built building location and title survey with complete dimensions (to the nearest 100th foot)
16. (Condominiums only) A suitable vertical reference
17. (Condominiums only) Copies of all covenants, charters, and by-laws
18. The name and address of the property owner provided?
19. The name and address of the subdivider (if not the owner)
20. The stamp and signature of the appropriate design professional shown along with name and contact

21. Are the following provided: date, north arrow, graphic scale, and name of subdivision shown?
22. Has sufficient information been provided for a surveyor to stake the subdivision with all lots, rights-of-way, easements, and common areas
23. The names of all proposed roads
24. The zoning classification
25. A listing of all uses other than residential
26. The total acreage of the subdivision
27. Lot numbers
28. All water lines including size
29. All sanitary sewer lines including size
30. All fire hydrants
31. The diameter and width of all driveway culverts
32. If public water or sewer is not available, see 3-104.2.23
33. All required certificates including LTMA
34. Water and sewer approval certificates
35. Stream and pond buffers meeting the requirements of the Stormwater Management Ordinance must be shown.

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Engineering Department

Checklist C06 – Subdivision Acceptance

At a minimum, the following items must be completed and/or provided:

1. Notify the City Planner (cc the City Engineer) that the project is substantially complete and request final punch inspections from the City. Please note that there are 6 inspections (Codes, Engineering, Streets, Stormwater, Water and Sewer, and Fire Marshal). These will be coordinated by the City.
2. Provide a draft Form of Offer of Irrevocable Dedication to the City Engineer
3. Get wording of the draft Form of Offer of Irrevocable Dedication approved by City Attorney.
4. Submit Preliminary As-Built (Record) drawings (3 copies) to the City Engineer for review. (see Checklist C09)
5. Receive final punch list from the City of La Vergne. This punch list will cover all city departments and come from the City Engineer
6. Correct all items listed on the final punch lists
7. Provide Draft Maintenance Bond amount to City Engineer
8. Confirm with the City Engineer that all punch list items (Including As-Built Drawings and Maintenance Bond Amount) are complete and that the City Engineer has notified the City Planner that the subdivision is ready to be placed on the Planning Commission agenda for acceptance.
9. Get Planning Commission meeting dates from the City Planner.
10. Attend Planning Commission Workshop
11. Attend Planning Commission Meeting
12. Attend Board of Mayor and Aldermen Meeting
13. Record Form of Offer of Irrevocable Dedication
14. Get Maintenance Bond to City of La Vergne Bond Coordinator.
15. Request release of Performance Bond from City of La Vergne Bond Coordinator.
16. A minimum of eleven months after Board of Mayor and Aldermen meeting where the subdivision was accepted, request release of Maintenance Bond to City of La Vergne Bond Coordinator.
17. Within roughly thirty days of the request but no sooner than twelve months after Board of Mayor and Aldermen meeting where the subdivision was accepted, either the Maintenance Bond will be released or a list of warranty items requiring repair will be provided to the developer. All items must be corrected before the release of the Maintenance Bond.

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Checklist C07 – Site Plan

At a minimum, the following items must be shown and/or provided:

1. Draft Long Term Management Plan and Long Term Maintenance Agreement for stormwater must be included
2. Bearings and distance around the complete property
3. Location Map
4. Dimensions or coordinates shown which precisely locate any new buildings or other structures which are to be erected, altered, or moved or that already exist on the lot
5. Existing and proposed contours (min. 5 foot intervals)
6. Driveways shown including the following:
    a. Width of driveway
    b. Lane layout of driveway with lane widths
    c. Proposed section or detail of driveway
    d. Radius return dimensions
    e. Distance of edge of driveway to nearest property line
    f. Distance between driveways
7. Traffic Study, if required by staff
8. Offstreet parking including:
    a. Width of spaces
    b. Details of H/C spaces
    c. Width of travelway through parking areas
    d. Distance from edge of parking to property line
9. Locations shown of off-street loading areas including dimensions, elevations, and details
10. Open spaces clearly designated including dimensions of open space with areas calculated and shown
11. Fences shown including material, height, and dimensions showing location
12. Landscaping plan including buffer areas
13. Signage plan provided including location, size, height, and type of sign (Note: this is not the submittal for a sign permit, that is done through the Codes Department)
14. A functional grading plan provided including at least the following:
    a. Existing and proposed contours
    b. Detention basins with calculations and sufficient dimensions to confirm volumes from the calculations
    c. Detention outlet details for both construction and post-construction phases
    d. Location, size, slope, invert elevations, length, and type of storm drain pipe and culverts
    e. Location, size and type of catch basins, area drains, inlets, junction boxes, and other structures including top of casting and invert elevations
    f. Details such as curb, internal site walks, pavement section, handicap ramps, headwalls, etc

15. Erosion and Sediment Control (ESC) plans meeting the City of La Verge Stormwater Ordinance. This includes:
    a. Initial ESC Plan
    b. Intermediate ESC Plan
    c. Final ESC and Grading Plan
    d. ESC Details
16. Layout and structural design of any retaining walls four feet or higher (measured from proposed grade) which are required for the finished grading of the property. (Note: Retaining walls four feet tall or higher must also receive a building permit from the Codes Department.
17. All site utilities with piping (or underground electric locations, sizes, slopes (for sewer), and materials shown including fire suppression? This includes:
    a. Water meter locations and details
    b. Backflow preventer locations and details
    c. Sewer manhole locations and details including top of casting and invert elevations
    d. Sewer lift station locations and details
    e. Transformer pad locations and details (this may be estimated)
    f. Fire hydrant locations and details
    g. Post Indicator Valve locations and details
    h. Fire department connection locations and details
    i. Easements as required
18. Tree masses shown along with individual trees 15 inches in caliper or larger
19. Slopes 12 percent or greater called out on the plans with USDA-NRCS soil types listed
20. Site profiles shown in areas where cutting or filling is proposed to exceed 5 feet
21. New public sidewalks provided by developer and at developer's cost meeting the requirements of Sub Regs 4-108
22. Dumpster pads located and dumpster screening details provided
23. Provide hydrologic determination (HD) to determine if there are streams or wetlands on the site
24. Where streams are identified, show limits of stream buffers (60 feet from top of bank)
25. Building elevations and materials board as required by City Planner

<u>Required by Stormwater Management Ordinance</u>

26. Site Plan must include design and calculations meeting all requirements of the La Vergne Stormwater Management Ordinance Section 14-605(5). The ordinance can be found at the following link: CHAPTER 6 - STORMWATER MANAGEMENT ORDINANCE | Code of Ordinances | La Vergne, TN | Municode Library

<u>On Sites with Sinkholes</u>

27. An overview of these design and calculation requirements for sites with sinkholes is as follows:
    a. Calculations proving that all water quality requirements of the Stormwater Management Ordinance are met prior to stormwater entering the throat of any sinkhole or injection well.

b. Drainage calculations and support drawings for any development in or around sinkholes. These calculations must be signed and sealed by a registered professional engineer in the State of Tennessee and must include, at a minimum, the following:
    i. Drawing showing the onsite and offsite stormwater management channels that discharge to a sinkhole or injection well.
    ii. Drawing showing the area inundated by the 100-year/24-hour storm event in the pre-developed condition and the post-developed condition.
    iii. A proposed grading plan demonstrating that development (placement of habitable structures or structures that may cause a water quality concern) will not occur within the area inundated by the 100-year/24-hour stormwater event.
    iv. Drawings and details showing how the water quality requirements of this ordinance will be met prior to stormwater entering the throat of the sinkhole.
    v. Calculations comparing pre-development and post-development flows entering the throat of the sinkhole or injection well for the storm events listed in (d) below. Detention may be used to control post-developed flows and must be quantified in the calculations.
    vi. Calculations supporting the elevations used fore the drawing described in item (ii) above.
    vii. The contributing drainage area for the sinkhole or injection well shall be delineated on a map to show basin wide contours.
    viii. Calculations and drawings demonstrating the area of inundation and elevations for the 100-year/24-hour storm in the event that the sinkhole or injection well is completely blocked and allowing no flow.
c. Post-developed flows and volume shall not exceed pre-developed flow and volumes entering into a sinkhole for the 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year/24-hour storm events for a development or redevelopment.
d. Drainage formerly entering the capped sinkhole shall be accounted by providing stormwater calculations showing equal conveyance capacity by an alternative outfall.
e. Any alternative stormwater management measure requested in lieu of the sinkhole/injection well policy requirements shall be presented to the La Vergne Stormwater Appeals Board.
f. Any filling, capping, or change in capacity of a sinkhole which increases flood depth or flood coverage for the 100-year/24-hour stormwater event on other properties will not be allowed.
g. Any filling, capping, or change in capacity of a sinkhole which redirects flow to or through a neighboring property will not be allowed.
h. Any modification or alteration of a sinkhole which, in the opinion of the City Engineer, increases the potential for pollutant inflow into the uppermost aquifer or the subterranean stormwater system will not be allowed.

<u>Water Quality Requirements</u>

28. Site Plan must include design and calculations meeting all requirements of the La Vergne Stormwater Management Ordinance Section 14-603(4). The ordinance can be found at the following link: CHAPTER 6 - STORMWATER MANAGEMENT ORDINANCE | Code of Ordinances | La Vergne, TN | Municode Library
29. An overview of the design and calculation requirements for water quality is as follows:
    a. The design storm for water quality treatment design shall be the 1-year, 24-hour design storm event.
    b. Provide design and calculations demonstrating that the proposed Stormwater Control Measures (SCMs) achieve a minimum overall treatment efficiency of eighty percent (80%) TSS removal from the water quality treatment volume (WQTV)
    c. Manufactured Treatment Devices (MTDs) must be NJDEP-certified
    d. The quantity of the WQTV that must be provided from a new development or redevelopment depends on the type of treatment provided, as established in the following table:

Water Quality Treatment Volume and the Corresponding SCM Treatment Type for the 1-year, 24-hour design storm		
SCM Treatment Type	WQTV	Notes
infiltration, evaporation, transpiration, and/or reuse	Runoff generated from the first 1 inch of the design storm	Examples include, but are not limited to bioretention, stormwater wetlands, and infiltration systems
Biologically active filtration, with an underdrain	Runoff generated from the first 1.25 inches of the design storm	To achieve biologically active filtration, SCMs must provide minimum of 12 inches of internal water storage.
Sand or gravel filtration, settling ponds, extended detention ponds, and wet ponds	Runoff generated from the first 2.5 inches of the design storm or the first seventy-five percent (75%) of the design storm, whichever is less	Examples include, but are not limited to, sand filters, permeable pavers, and underground gravel detention systems. Ponds must provide forebays comprising a minimum of 10% of the total design volume. Existing regional detention ponds are not subject to the forebay requirement.

Hydrodynamic separation, baffle box settling, other manufactured treatment devices (MTDs), and treatment trains using MTDs	Maximum runoff generated from the entire design storm	flow-through MTDs must provide an overall treatment efficiency of at least 80% TSS reduction

e. Treatment trains using MTDs shall use the following calculation:
   R = A + B - (A x B) / 100
   Where:
   R = total TSS percent removal from application of both SCMs
   A = the TSS percent removal rate applicable to the first SCM
   B = the TSS percent removal rate applicable to the second SCM
   TSS removal rates for MTD must be evaluated using industry-wide standards
   TSS removal rates for other SCMs must be from published reference literature
f. SCMs must be designed to provide full treatment capacity within 72 hours following the end of the preceding rain event for the life of the new development or redevelopment project.

Water Quantity Requirements

30. Site Plan must include design and calculations meeting all requirements of the La Vergne Stormwater Management Ordinance Section 14-603(4). The ordinance can be found at the following link: CHAPTER 6 - STORMWATER MANAGEMENT ORDINANCE | Code of Ordinances | La Vergne, TN | Municode Library
31. An overview of these design and calculation requirements for water quantity is as follows:
    a. Detention methodology and sizing
    b. Outlet control structure design calculations
    c. TR-55 method is the City standard but other methods may be accepted with pre-approval from the City Engineer
    d. Soil Type Analysis (including map)
    e. Curve Number Calculations (including map)
    f. Time of concentration calculations (including map)
    g. Pre-development (existing conditions), hydrograph-based peak flow calculations for the 2-, 5-, 10-, 25-, 50-, 100-year, 24-hour design storms (including hydrographs)
    h. Post-development (proposed conditions WITHOUT detention or other means of peak flow reduction), hydrograph-based peak flow calculations for the 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour design storms (including hydrographs)

i. Post-development (proposed conditions WITH detention or other means of peak flow reduction), hydrograph-based peak flow calculations for the 2-, 5-, 10-, 25-, 50-, 100-year, 24-hour design storms (including hydrographs)
j. Provide a table comparing the peak flow rates resulting from the above three hydrograph calculations
k. Pipe capacity calculations for the 25-year, 24-hour design storm (whether pipe is inlet-, outlet- or pipe-controlled must be clearly stated) (TDOT methodology)
l. Open channels and ditches must be sized to handle the 25-year, 24-hour storm
m. Velocity calculations in all open channels and ditches (worst cast slopes shall be used) which supports that the surface treatment proposed for the channel or ditch can handle the velocities (TDOT methodology)

32. Catch basins, curb inlets, stormwater junction boxes and other confined spaces into which city personnel may need to enter in the future for maintenance activities shall not be more than ten feet in depth from top of casting to invert out.
33. For drainage easements which contain pipes or culverts, the width of the required drainage easement shall be based on the following table:

Depth of Pipe (Feet to bottom of outside of pipe)	Width of Easement
0 feet to 8 feet	20 feet
8.1 feet to 12 feet	28 feet
12.1 feet to 16 feet	36 feet
Deeper than 16.1 feet	50 feet

34. For drainage easements which contain open channels, the minimum width of the required easement will be the width of flow in the channel calculated for the 100-year/24-hour storm.

Checklist C08 – Record Drawings and As-Built Drawings

Definitions

1. This checklist applies to any drawings referred to as 'Record Drawings', 'As-Built Drawings', and 'As-Built Surveys' within the City of La Vergne Public Works Specifications, Subdivision Regulations, or Zoning Ordinance.
2. 'Red-Line Drawings' are sets of approved construction drawings which are maintained during construction showing all of the field changes and change orders made to the project. These must be updated weekly and available at any time during working hours for review by city inspectors or engineers. These may be paper copies or pdf copies. All changes made thereon

shall be clearly discernible from the original drawing (preferably in red) and shall include the date of the change.

General Requirements

3. Must be stamped and signed by an engineer registered in the State of Tennessee
4. Must be labeled 'Record Drawings'.
5. The revisions must be clouded with the revision numbered and named "As-Built Information".
6. PDF copy of Final As-Built plans provided
7. GIS files compatible with the City of La Vergne GIS system must be provided for all plans included in the record set (as-built) submittal.
8. Certification must be included on the plans or in writing from the Engineer-of-Record that the plans represent the as-built condition. Certification must also include a statement that the electronic files provided match the paper plans submitted.

Public Water Distribution System Improvements

9. Record Drawings for Public Water projects must be prepared by the Engineer of Record (EOR) and accepted by the City of La Vergne Utilities Director prior to acceptance of the water system improvements by the City. The Utilities Director may authorize the La Vergne City Engineer or the La Vergne Utilities Engineer to act on their behalf for this purpose.
10. The record drawings must meet the requirements of the City of La Vergne, Tennessee – Public Works Standard Specifications Section 2: Water Distribution System, Section 2.0.3 a).
11. These drawings must be a complete set of the approved construction drawings showing all revisions. Drawings within the approved set that have no changes must be included so that the Record Drawings can completely replace the approved set within the city files. The revisions must be clouded with the revision numbered and named "As-Built Information".

Public Sewer System Improvements

12. As Built Drawings for Public Sewer projects must be prepared by the Engineer of Record (EOR) and accepted by the City of La Vergne City Engineer prior to acceptance of the sewer system improvements by the City. The City Engineer may authorize the La Vergne Utilities Engineer to act on their behalf for this purpose.
13. The record drawings must meet the requirements of the City of La Vergne, Tennessee –Standard Sewer Specifications, Section 1.11.
14. These drawings must be a complete set of the approved construction drawings showing all revisions. Drawings within the approved set that have no changes must be included so that the Record Drawings can completely replace the approved-for-construction set within the city files. The revisions must be clouded with the revision numbered and named "As-Built Information".

Public Road Improvements

15. All rights-of-way are shown and labeled.

16. Street names are shown.
17. Pavement and curb and gutter locations are shown and labeled.
18. Sidewalks are shown and labeled with widths
19. Handicap ramp locations are shown and labeled
20. Widths of all streets are labeled.

Public Stormwater and Storm Drainage Improvements

21. Location (lat/long) of drainage pipes are shown with size and type labeled.
22. The following structures are shown and labeled: headwalls, catch basins, area drains, and any other structure determined to be necessary by the City Engineer.
23. Ditches are labeled with size and type and required permanent ground cover.
24. Ditches are labeled with size and type and required permanent ground cover.
25. Detention ponds are shown and labeled with design information (volume of pond, top of pond elevation, 100-year storm elevation, etc). Note also needs to be placed on pond showing who owns and maintains it.
26. Invert elevations of drainage pipes and structures are labeled.
27. If any portion of a lot or property is located in a flood zone, the finish floor elevations of all structures are shown.
28. A separate plan sheet has been submitted showing the "as built" grading. Plan shows final contours in all areas and drainage arrows are shown on all lots to show the general direction of run-off flow.

Planning Items (Only for Subdivisions)

29. Building setbacks are shown and labeled.
30. Lot numbers are shown and labeled.
31. Lot lines around all items being dedicated to the city are completely shown and labeled.
32. Recorded plat is referenced on the plan.

Private Developments Based on Site Plan Approvals from Planning Commission

33. Any public utility, roadway, or stormwater improvements must provide Record Drawings meeting the requirements listed above.
34. Requirements of the 'General Requirements' section above apply to private developments.
35. Location (lat/long) of drainage pipes are shown with size and type labeled.
36. The following structures are shown and labeled: headwalls, catch basins, area drains, and any other structure determined to be necessary by the City Engineer.
37. Detention ponds are shown and labeled with design information (volume of pond, top of pond elevation, 100-year storm elevation, etc). Note also needs to be placed on pond showing who owns and maintains it.
38. Invert elevations of drainage pipes and structures are labeled.
39. If any portion of a lot or property is located in a flood zone, the finish floor elevations of all structures are shown.
40. Private site water system located horizontally with all piping, valve boxes, meter boxes, backflow preventers, private fire hydrants etc. located and labeled.

41. Private sewer system with all piping, clean-outs, manholes, grinder pumps, other pumps, etc. located and labeled.

LA VERGNE
TENNESSEE
Engineering Department

General Information G01 – Required General Notes for Public Water/Sewer Improvements Funded by City Funds

1. ALL WORK HEREON SHALL CONFORM TO THE CITY OF LA VERGNE STANDARD SPECIFICATIONS AND DETAILS FOR WATER AND SEWER. THESE ARE AVAILABLE ON THE CITY OF LA VERGNE WEBSITE.
2. A PRE-CONSTRUCTION CONFERENCE AND LAND DISTURBANCE PERMIT IS REQUIRED PRIOR TO COMMENCING WORK.
3. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY REQUIRED OR REQUESTED INSPECTIONS.
4. DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO EXCAVATION OR TRENCHING. CONTACT THE TENNESSEE UTILITY LOCATION SERVICE AT 811 OR 800-351-1111, 3-10 DAYS BEFORE YOU DIG, NO EXCEPTIONS.
5. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT ON RECORD OR NOT SHOWN ON THESE PLANS.
6. ALL CONSTRUCTION AND OPERATIONS BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH OSHA.
7. IN RESIDENTIAL AREAS, NO CONSTRUCTION WORK CAN BE CONDUCTED OUTSIDE OF THE FOLLOWING HOURS WITHOUT A SPECIAL PERMIT:
    a. MONDAY-FRIDAY, 7:00 AM TO 6:00 PM
    b. SATURDAY-SUNDAY, 8:00 AM TO 6:00 PM
8. THE CONTRACTORS SHALL MAINTAIN A SET OF REDLINE DRAWINGS AT THE PROJECT SITE WHICH SHALL BE AVAILABLE FOR REVIEW BY CITY INSPECTORS. THESE REDLINE PLANS MUST BE UPDATED WEEKLY.
9. AS-BUILT PLANS (RECORD DRAWINGS) SHALL BE PROVIDED TO THE CITY WITHIN 30-DAYS OF SUBSTANTIAL COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE PROVIDED IN THREE FORMATS:
    a. PAPER (ONE SET)
    b. PDF (THUMB DRIVE OR E-MAIL)
    c. GIS-COMPATIBLE (ONE FILE)
10. TRAFFIC CONTROL, SIGNAGE, AND CONSTRUCTION RELATED BARRIERS ARE THE RESPONSIBILITY OF THE CONTRACTOR, AND NO TRENCHES SHALL BE LEFT OPEN OVERNIGHT WITHOUT PROPER SAFETY MEASURES SUCH AS BARRICADES, PLATING, OR OTHER AS AGREED BY THE CITY.
11. SURFACE IMPROVEMENTS DAMAGED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO CITY OF LA VERGNE REQUIREMENTS.
12. ALL REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE CITY ENGINEER.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY MONUMENTS IN PLACE. IF ANY MONUMENT IS DISTURBED OR DESTROYED, THE CONTRACTOR WILL BE REQUIRED TO

CONTRACT WITH A REGISTERED LAND SURVEYOR FOR THE RE-ESTABLISHMENT AND MAPPING OF THE DESTROYED MONUMENT.

14. PUBLIC UTILITY AND DRAINAGE EASEMENTS SHALL BE PROVIDED FOR ANY CITY FACILITIES NOT LOCATED IN THE RIGHT OF WAY AND INDICATED ON THE PLANS. IF THERE IS ANY PUBLIC IMPROVEMENTS SHOWN AS BEING CONSTRUCTED OUTSIDE OF A PUBLIC UTILITY AND DRAINAGE EASEMENT, CONTRACTOR MUST NOTIFY THE CITY BEFORE PROCEEDING.
15. ALL UNDERGROUND FACILITIES WITH LATERALS SHALL BE IN PLACE PRIOR TO FINAL PAVING, INCLUDING BUT NOT LIMITED TO DRAINAGE, SEWER, WATER, TELEPHONE, ELECTRICITY, GAS, AND CABLE.
16. ALL CONSTRUCTION WATER TAKEN FROM A CITY FH SHALL BE FROM A CITY APPROVED FIRE HYDRANT METER ASSEMBLY, AND CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF THE PUBLIC DOMESTIC WATER SYSTEM AT ALL TIMES BY MAINTINING PROPER CROSS CONNECTION CONTROL PER THE GOVERNING AUTHORITY.
17. THE CONTRACTOR SHALL CONFINE ALL OF HIS ACTIVITIES TO THE AREAS AS SHOWN ON THESE PLANS UNLESS WRITTEN CONSENT IS PROVIDED IN ADVANCE BY THE AFFECTED PROPERTY OWNER.
18. WHERE WATER AND SEWER LINES CROSS OTHER UTILITIES A MINIMUM OF 12” CLEARANCE SHALL BE MAINTAINED.
19. PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAT MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURE.
20. VERTICAL PIPE BENDS SHALL BE FULLY RESTRAINED BY MECHANICAL METHODS (JOINT RESTRAINT, TIE-RODS, ETC), NO CREDIT SHALL BE GIVEN FOR CONCRETE THRUST BLOCKS. ANCHOR BLOCK DESIGN WILL BE CONSIDERED ON A CASE-BY-CASE BASIS.
21. MAINLINE VALVES SHALL ONLY BE INSTALLED ON SLOPES NOT TO EXCEED 6 PERCENT.
22. ALL BURIED BOLTS AND NUTS SHALL BE TYPE 316 STAINLESS STEEL.
23. COMBINATION AIR RELEASE AND VACUUM VALVES SHALL BE INSTALLED AT ALL LOCAL HIGH POINTS OF PRESSURIZED UTILITY LINES.
24. SEPARATION OF WATER AND SEWER LINES MUST COMPLY WITH STATE OF TENNESSEE REQUIREMENTS.
25. CITY SEWER CLEANOUTS SHALL BE CUT AND CAPPED BELOW GRADE AND COVERED WITH A BOX AND LID PER THE CITY OF LA VERGNE STANDARD SPECIFICATIONS.
26. SURPLUS AND ALL MATERIAL REMOVED WHICH IS NOT SUITABLE FOR USE IN THIS PROJECT SHALL BE DISPOSED OF AWAY FROM THE JOB SITE IN A MANNER OR AT A LOCATION ACCEPTABLE TO THE CITY OF LA VERGNE AND THE STATE OF TENNESSEE. NO WASTE MATERIAL SHALL BE PLACE IN A SINKHOLE WITHIN THE CITY LIMITS OF LA VERGNE.
27. IN THE EVENT THAT TRENCH DEWATERING IS REQUIRED, A DEWATERING PLAN WILL BE SUBMITTED TO THE CITY OF LA VERGNE CITY ENGINEER FOR APPROVAL PRIOR TO BEGINNING DEWATERING OPERATIONS.
28. NO MORE THAN 500 FEET OF UTILITY AND DRAINAGE PIPE TRENCH WILL BE ALLOWED AT TO BE OPEN AT ONE TIME.
29. ALL SEWERS ARE SUFFICIENTLY DEEP TO SERVE ADJACENT LOTS, BUILDINGS, AND BASEMENTS OR OTHER SOURCES EXCEPT WHERE OTHERWISE NOTED ON THE PLANS.

LA VERGNE
TENNESSEE
Engineering Department

General Information G02 – Required General Notes for Roadway and Grading Improvements Funded by City Funds

1. ALL WORK HEREON SHALL CONFORM TO THE CITY OF LA VERGNE STANDARD SPECIFICATIONS AND DETAILS FOR ROADS, BRIDGES, DRAI8NAGE, AND GRADING. THESE ARE AVAILABLE ON THE CITY OF LA VERGNE WEBSITE.
2. A PRE-CONSTRUCTION CONFERENCE AND LAND DISTURBANCE PERMIT IS REQUIRED PRIOR TO COMMENCING WORK.
3. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY REQUIRED OR REQUESTED INSPECTIONS.
4. CITY INSPECTORS ARE NOT QUALITY CONTROL. THE CONCTRACTOR'S QUALITY CONTROL REPRESENTATIVE MUST BE ONSITE DURING ALL REQUIRED INSPECTIONS. CONTRACTOR'S QUALITY CONTROL MUST SIGN-OFF OR APPROVE EACH INSPECTION. CITY INSPECTORS WILL CONFIRM THAT THIS IS DONE BUT WILL NOT PROVIDE APPROVALS.
5. REQUIRED CITY INSPECTIONS ARE AS FOLLOWS:
    a. PROOF ROLL OF SUBGRADE PRIOR TO PLACING AGGREGATE
    b. PROOF ROLL OF AGGREGATE PRIOR TO PLACING BINDER COURSE
    c. VISUAL INSPECTION OF BINDER COURSE (CITY INSPECTORS WILL WORK WITH CONTRACTOR'S QUALITY CONTROL REPRESENTATIVE TO MARK UNACCPETABLE AREAS THAT MUST BE REMOVED AND REWORKED)
    d. FINAL ACCEPTANCE
6. DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO EXCAVATION OR TRENCHING. CONTACT THE TENNESSEE UTILITY LOCATION SERVICE AT 811 OR 800-351-1111, 3-10 DAYS BEFORE YOU DIG, NO EXCEPTIONS.
7. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT ON RECORD OR NOT SHOWN ON THESE PLANS.
8. IN RESIDENTIAL AREAS, NO CONSTRUCTION WORK CAN BE CONDUCTED OUTSIDE OF THE FOLLOWING HOURS WITHOUT A SPECIAL PERMIT:
    a. MONDAY-FRIDAY, 7:00 AM TO 6:00 PM
    b. SATURDAY-SUNDAY, 8:00 AM TO 6:00 PM
9. ALL CONSTRUCTION AND OPERATIONS BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH OSHA.
10. THE CONTRACTORS SHALL MAINTAIN A SET OF REDLINE DRAWINGS AT THE PROJECT SITE WHICH SHALL BE AVAILABLE FOR REVIEW BY CITY INSPECTORS. THESE REDLINE PLANS MUST BE UPDATED WEEKLY.
11. AS-BUILT PLANS (RECORD DRAWINGS) SHALL BE PROVIDED TO THE CITY WITHIN 30-DAYS OF SUBSTANTIAL COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE PROVIDED IN THREE FORMATS:
    a. PAPER (ONE SET)
    b. PDF (THUMB DRIVE OR E-MAIL)

c. GIS-COMPATIBLE (ONE FILE)

12. TRAFFIC CONTROL, SIGNAGE, AND CONSTRUCTION RELATED BARRIERS ARE THE RESPONSIBILITY OF THE CONTRACTOR, AND NO TRENCHES SHALL BE LEFT OPEN OVERNIGHT WITHOUT PROPER SAFETY MEASURES SUCH AS BARRICADES, PLATING, OR OTHER AS AGREED BY THE CITY.
13. SURFACE IMPROVEMENTS DAMAGED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO CITY OF LA VERGNE REQUIREMENTS.
14. ALL REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE CITY ENGINEER.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY MONUMENTS IN PLACE. IF ANY MONUMENT IS DISTURBED OR DESTROYED, THE CONTRACTOR WILL BE REQUIRED TO CONTRACT WITH A REGISTERED LAND SURVEYOR FOR THE RE-ESTABLISHMENT AND MAPPING OF THE DESTROYED MONUMENT.
16. ALL CONSTRUCTION WATER TAKEN FROM A CITY FH SHALL BE FROM A CITY APPROVED FIRE HYDRANT METER ASSEMBLY, AND CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF THE PUBLIC DOMESTIC WATER SYSTEM AT ALL TIMES BY MAINTINING PROPER CROSS CONNECTION CONTROL PER THE GOVERNING AUTHORITY.
17. THE CONTRACTOR SHALL CONFINE ALL OF HIS ACTIVITIES TO THE AREAS AS SHOWN ON THESE PLANS UNLESS WRITTEN CONSENT IS PROVIDED IN ADVANCE BY THE AFFECTED PROPERTY OWNER.
18. PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAT MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURE.
19. SURPLUS AND ALL MATERIAL REMOVED WHICH IS NOT SUITABLE FOR USE IN THIS PROJECT SHALL BE DISPOSED OF AWAY FROM THE JOB SITE IN A MANNER OR AT A LOCATION ACCEPTABLE TO THE CITY OF LA VERGNE AND THE STATE OF TENNESSEE. NO WASTE MATERIAL SHALL BE PLACE IN A SINKHOLE WITHIN THE CITY LIMITS OF LA VERGNE.
20. NO MORE THAN 500 FEET OF UTILITY AND DRAINAGE PIPE TRENCH WILL BE ALLOWED AT TO BE OPEN AT ONE TIME.
21. ALL ROAD CONSTRUCTION WILL BE IN COMPLETE CONFORMANCE TO THE CITY OF LA VERGNE PUBLIC WORKS SPECIFICATIONS MANUAL (LATEST EDITION). THESE SPECIFICATIONS GIVE REQUIRED STANDARDS AND MATERIALS.
22. THE CITY OF LA VERGNE RESERVES THE RIGHT TO REQUIRE TEST RESULTS, MIX DESIGNS, AND MIX TICKETS WHICH DEMONSTRATE COMPLIANCE WITH THE SPECIFICATIONS AS A CONDITION OF CITY ACCEPTANCE OF THE ROAD.
23. IF PUBLIC SIDEWALKS ARE TO BE CLOSED BY CONSTRUCTION FOR MORE THAN TWENTY-FOUR HOURS, THEN A PEDESTRIAN TRAFFIC RE-ROUTING PLAN WHICH PROVIDES AN ACCESSIBLE ROUTE OF TRAVEL FOR PEDESTRIANS MUST BE APPROVED AND IMPLEMENTED PRIOR TO CONSTRUCTION.

LA VERGNE
TENNESSEE
Engineering Department

General Information G03 – Required General Notes for Public Water, Sewer, Drainage, Roadway, and Grading Improvements Funded by Private Developers

1. ALL WORK HEREON SHALL CONFORM TO THE CITY OF LA VERGNE STANDARD SPECIFICATIONS AND DETAILS. THESE ARE AVAILABLE ON THE CITY OF LA VERGNE WEBSITE.
2. A PRE-CONSTRUCTION CONFERENCE AND LAND DISTURBANCE PERMIT IS REQUIRED PRIOR TO COMMENCING WORK.
3. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY REQUIRED OR REQUESTED INSPECTIONS.
4. REQUIRED CITY INSPECTIONS FOR ROADS ARE AS FOLLOWS:
    a. PROOF ROLL OF SUBGRADE PRIOR TO PLACING AGGREGATE
    b. PROOF ROLL OF AGGREGATE PRIOR TO PLACING BINDER COURSE
    c. VISUAL INSPECTION OF BINDER COURSE (CITY INSPECTORS WILL WORK WITH CONTRACTOR'S QUALITY CONTROL REPRESENTATIVE TO MARK UNACCPETABLE AREAS THAT MUST BE REMOVED AND REWORKED)
    d. FINAL ACCEPTANCE
5. CITY INSPECTORS ARE NOT QUALITY CONTROL. THE CONTRACTOR'S QUALITY CONTROL REPRESENTATIVE MUST BE ONSITE DURING ALL REQUIRED INSPECTIONS. CONTRACTOR'S QUALITY CONTROL MUST SIGN-OFF OR APPROVE EACH INSPECTION. CITY INSPECTORS WILL CONFIRM THAT THIS IS DONE BUT WILL NOT PROVIDE APPROVALS.
6. DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO EXCAVATION OR TRENCHING. CONTACT THE TENNESSEE UTILITY LOCATION SERVICE AT 811 OR 800-351-1111, 3-10 DAYS BEFORE YOU DIG, NO EXCEPTIONS.
7. ALL CONSTRUCTION AND OPERATIONS BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND RECOMMENDED PRACTICES.
8. IN RESIDENTIAL AREAS, NO CONSTRUCTION WORK CAN BE CONDUCTED OUTSIDE OF THE FOLLOWING HOURS WITHOUT A SPECIAL PERMIT:
    a. MONDAY-FRIDAY, 7:00 AM TO 6:00 PM
    b. SATURDAY-SUNDAY, 8:00 AM TO 6:00 PM
9. THE CONTRACTORS SHALL MAINTAIN A SET OF REDLINE DRAWINGS AT THE PROJECT SITE WHICH SHALL BE AVAILABLE FOR REVIEW BY CITY INSPECTORS. THESE REDLINE DRAWINGS MUST BE UPDATED WEEKLY.
10. AS-BUILT PLANS (RECORD DRAWINGS) SHALL BE PROVIDED TO THE CITY WITHIN 30-DAYS OF SUBSTANTIAL COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE PROVIDED BY THE ENGINEER-OF-RECORD IN THREE FORMATS:
    a. PAPER (ONE SET)
    b. PDF (THUMB DRIVE OR E-MAIL)
    c. GIS-COMPATIBLE (ONE FILE)
11. TRAFFIC CONTROL, SIGNAGE, AND CONSTRUCTION RELATED BARRIERS ARE THE RESPONSIBILITY OF THE CONTRACTOR, AND NO TRENCHES SHALL BE LEFT OPEN OVERNIGHT WITHOUT PROPER SAFETY MEASURES SUCH AS BARRICADES, PLATING, OR OTHER AS AGREED BY THE CITY.

12. SURFACE IMPROVEMENTS DAMAGED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO CITY OF LA VERGNE REQUIREMENTS.
13. ALL REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE CITY ENGINEER.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY MONUMENTS IN PLACE. IF ANY MONUMENT IS DISTURBED OR DESTROYED, THE CONTRACTOR WILL BE REQUIRED TO CONTRACT WITH A REGISTERED LAND SURVEYOR FOR THE RE-ESTABLISHMENT AND MAPPING OF THE DESTROYED MONUMENT.
15. ALL UNDERGROUND FACILITIES WITH LATERALS SHALL BE IN PLACE PRIOR TO FINAL PAVING, INCLUDING BUT NOT LIMITED TO DRAINAGE, SEWER, WATER, TELEPHONE, ELECTRICITY, GAS, AND CABLE.
16. ALL CONSTRUCTION WATER TAKEN FROM A CITY FH SHALL BE FROM A CITY APPROVED FIRE HYDRANT METER ASSEMBLY, AND CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF THE PUBLIC DOMESTIC WATER SYSTEM AT ALL TIMES BY MAINTINING PROPER CROSS CONNECTION CONTROL PER THE GOVERNING AUTHORITY.
17. THE CONTRACTOR SHALL CONFINE ALL OF HIS ACTIVITIES TO THE AREAS AS SHOWN ON THESE PLANS UNLESS WRITTEN CONSENT IS PROVIDED IN ADVANCE BY THE AFFECTED PROPERTY OWNER.
18. WHERE WATER AND SEWER LINES CROSS OTHER UTILITIES A MINIMUM OF 12" CLEARANCE SHALL BE MAINTAINED.
19. PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAT MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURE.
20. VERTICAL PIPE BENDS SHALL BE FULLY RESTRAINED BY MECHANICAL METHODS (JOINT RESTRAINT, TIE-RODS, ETC), NO CREDIT SHALL BE GIVEN FOR CONCRETE THRUST BLOCKS. ANCHOR BLOCK DESIGN WILL BE CONSIDERED ON A CASE-BY-CASE BASIS.
21. MAINLINE VALVES SHALL ONLY BE INSTALLED ON SLOPES NOT TO EXCEED 6 PERCENT.
22. ALL BURIED BOLTS AND NUTS SHALL BE TYPE 316 STAINLESS STEEL.
23. COMBINATION AIR RELEASE AND VACUUM VALVES SHALL BE INSTALLED AT ALL LOCAL HIGH POINTS OF PRESSURIZED UTILITY LINES.
24. SEPARATION OF WATER AND SEWER LINES MUST COMPLY WITH STATE OF TENNESSEE REQUIREMENTS.
25. CITY SEWER CLEANOUTS SHALL BE CUT AND CAPPED BELOW GRADE AND COVERED WITH A BOX AND LID PER THE CITY OF LA VERGNE STANDARD SPECIFICATIONS.
26. SURPLUS AND ALL MATERIAL REMOVED WHICH IS NOT SUITABLE FOR USE IN THIS PROJECT SHALL BE DISPOSED OF AWAY FROM THE JOB SITE IN A MANNER OR AT A LOCATION ACCEPTABLE TO THE CITY OF LA VERGNE AND THE STATE OF TENNESSEE. NO WASTE MATERIAL SHALL BE PLACE IN A SINKHOLE WITHIN THE CITY LIMITS OF LA VERGNE.
27. IN THE EVENT THAT TRENCH DEWATERING IS REQUIRED, A DEWATERING PLAN WILL BE SUBMITTED TO THE CITY OF LA VERGNE CITY ENGINEER FOR APPROVAL PRIOR TO BEGINNING DEWATERING OPERATIONS.
28. NO MORE THAN 500 FEET OF UTILITY AND DRAINAGE PIPE TRENCH WILL BE ALLOWED AT TO BE OPEN AT ONE TIME.
29. ALL SEWERS ARE SUFFICIENTLY DEEP TO SERVE ADJACENT LOTS, BUILDINGS, AND BASEMENTS OR OTHER SOURCES EXCEPT WHERE OTHERWISE NOTED ON THE PLANS.

30. THE CITY OF LA VERGNE RESERVES THE RIGHT TO REQUIRE TEST RESULTS, MIX DESIGNS, AND MIX TICKETS WHICH DEMONSTRATE COMPLIANCE WITH THE SPECIFICATIONS AS A CONDITION OF CITY ACCEPTANCE OF THE ROAD.
31. IF PUBLIC SIDEWALKS ARE TO BE CLOSED BY CONSTRUCTION FOR MORE THAN TWENTY-FOUR HOURS, THEN A PEDESTRIAN TRAFFIC RE-ROUTING PLAN WHICH PROVIDES AN ACCESSIBLE ROUTE OF TRAVEL FOR PEDESTRIANS MUST BE APPROVED AND IMPLEMENTED PRIOR TO CONSTRUCTION.

LA VERGNE
TENNESSEE
Engineering Department

General Information G04 – Required General Notes for Private Projects with No Public Improvements

1. A PRE-CONSTRUCTION CONFERENCE AND LAND DISTURBANCE PERMIT IS REQUIRED PRIOR TO COMMENCING WORK.
2. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY REQUIRED OR REQUESTED INSPECTIONS.
3. CITY INSPECTORS ARE NOT QUALITY CONTROL. THE CONTRACTOR'S QUALITY CONTROL REPRESENTATIVE MUST BE ONSITE DURING ALL REQUIRED INSPECTIONS. CONTRACTOR'S QUALITY CONTROL MUST SIGN-OFF OR APPROVE EACH INSPECTION. CITY INSPECTORS WILL CONFIRM THAT THIS IS DONE BUT WILL NOT PROVIDE APPROVALS.
4. DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO EXCAVATION OR TRENCHING. CONTACT THE TENNESSEE UTILITY LOCATION SERVICE AT 811 OR 800-351-1111, 3-10 DAYS BEFORE YOU DIG, NO EXCEPTIONS.
5. ALL CONSTRUCTION AND OPERATIONS BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH OSHA.
6. THE CONTRACTORS SHALL MAINTAIN A SET OF REDLINE DRAWINGS AT THE PROJECT SITE WHICH SHALL BE AVAILABLE FOR REVIEW BY CITY INSPECTORS. THESE REDLINE PLANS MUST BE UPDATED WEEKLY.
7. AS-BUILT PLANS (RECORD DRAWINGS) SHALL BE PROVIDED TO THE CITY WITHIN 30-DAYS OF SUBSTANTIAL COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE PROVIDED IN THREE FORMATS:
    a. PAPER (ONE SET)
    b. PDF (THUMB DRIVE OR E-MAIL)
    c. GIS-COMPATIBLE (ONE FILE)
8. TRAFFIC CONTROL, SIGNAGE, AND CONSTRUCTION RELATED BARRIERS ARE THE RESPONSIBILITY OF THE CONTRACTOR, AND NO TRENCHES SHALL BE LEFT OPEN OVERNIGHT WITHOUT PROPER SAFETY MEASURES SUCH AS BARRICADES, PLATING, OR OTHER AS AGREED BY THE CITY.
9. IN RESIDENTIAL AREAS, NO CONSTRUCTION WORK CAN BE CONDUCTED OUTSIDE OF THE FOLLOWING HOURS WITHOUT A SPECIAL PERMIT:
    a. MONDAY-FRIDAY, 7:00 AM TO 6:00 PM
    b. SATURDAY-SUNDAY, 8:00 AM TO 6:00 PM
10. SURFACE IMPROVEMENTS DAMAGED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO CITY OF LA VERGNE REQUIREMENTS.
11. ALL REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE CITY ENGINEER.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY MONUMENTS IN PLACE. IF ANY MONUMENT IS DISTURBED OR DESTROYED, THE CONTRACTOR WILL BE REQUIRED TO CONTRACT WITH A REGISTERED LAND SURVEYOR FOR THE RE-ESTABLISHMENT AND MAPPING OF THE DESTROYED MONUMENT.
13. ALL CONSTRUCTION WATER TAKEN FROM A CITY FH SHALL BE FROM A CITY APPROVED FIRE HYDRANT METER ASSEMBLY, AND CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF THE PUBLIC

DOMESTIC WATER SYSTEM AT ALL TIMES BY MAINTINING PROPER CROSS CONNECTION CONTROL PER THE GOVERNING AUTHORITY.

14. THE CONTRACTOR SHALL CONFINE ALL OF HIS ACTIVITIES TO THE AREAS AS SHOWN ON THESE PLANS UNLESS WRITTEN CONSENT IS PROVIDED IN ADVANCE BY THE AFFECTED PROPERTY OWNER.
15. SURPLUS AND ALL MATERIAL REMOVED WHICH IS NOT SUITABLE FOR USE IN THIS PROJECT SHALL BE DISPOSED OF AWAY FROM THE JOB SITE IN A MANNER OR AT A LOCATION ACCEPTABLE TO THE CITY OF LA VERGNE AND THE STATE OF TENNESSEE. NO WASTE MATERIAL SHALL BE PLACE IN A SINKHOLE WITHIN THE CITY LIMITS OF LA VERGNE.
16. NO MORE THAN 500 FEET OF UTILITY AND DRAINAGE PIPE TRENCH WILL BE ALLOWED AT TO BE OPEN AT ONE TIME.
17. IF PUBLIC SIDEWALKS ARE TO BE CLOSED BY CONSTRUCTION FOR MORE THAN TWENTY-FOUR HOURS, THEN A PEDESTRIAN TRAFFIC RE-ROUTING PLAN WHICH PROVIDES AN ACCESSIBLE ROUTE OF TRAVEL FOR PEDESTRIANS MUST BE APPROVED AND IMPLEMENTED PRIOR TO CONSTRUCTION.

LA VERGNE
TENNESSEE
Engineering Department

General Information G05 – Quality Control Testing Required for Roadway, Drainage, and Grading Construction of Public Improvements

Requirement	Specification Section
For all materials, maintain quarry tickets, plant tickets, delivery tickets, truck tickets, manufacturer's information, and/or sieve analyses verifying that materials comply with specification requirements.	General
A concrete delivery ticket shall accompany each load of concrete to the placement site and, for public projects, all tickets shall be maintained by the contractor through the maintenance period (12 months after acceptance of improvements by the city).	Section 3, Part 6, A.03, B.
For all materials with required application rates and thicknesses, testing and inspection by the contractor's quality control team is required. Scheduling of the inspections and tests is at the discretion of the contractor's quality control representative. The results must be available for the city upon request.	General
All projects must have a written quality control plan meeting the requirements of the City of La Vergne Public Works Standard Specifications. This will be available for review by city inspectors.	Section 3, Part 4, E.03, D, 3.
Provide blasting records to the City Engineer upon request.	Section 3, Part 2, C.03, C.
Representative samples of proposed borrow material shall be independently tested at Contractor's cost for pH (EPA600/2-78-054 or ASTM D4239).	Section 3, Part 2, C.03, E.
Submit a proposed mix design for controlled low strength material (CLSM) (flowable fill) to Engineer for approval.	Section 3, Part 2, D.02, C, ii.
Consistency tests for CLSM. 1 per 100 CY.	Section 3, Part 2, D.02, C, ii.
Provide an approved Concrete Daily Report of CLSM placement, and furnish the resources, information, and tools to allow the City or their agents to witness testing.	Section 3, Part 2, D.02, C, ii.
If OSHA regulations require shoring, submit to the Engineer, prior to starting work, computations and drawings, prepared by and stamped by a Professional Engineer licensed in the State of Tennessee, showing the basis for the design.	Section 3, Part 2, D.05, D.
For foundations for structures, bridges, box culverts, and other major structures , after completing the foundation preparation to the specified elevation, Contractor's quality control team shall test the bearing capacity of the foundation subgrade at a rate of one test per lift per 500 SF of surface area. At least one test per lift must be performed.	Section 3, Part 2, D.06, A, 1.
For Structures, Bridges, Box Culverts, and Other Major Structures backfill, perform soil density testing at a rate of one test per lift per 500 SF of surface area. At least one test per lift must be performed.	Section 3, Part 2, D.07, A.

Requirement	Specification Section
For pipe and pipe culvert backfill under pavement or concrete walks, perform soil density testing at a rate of one test per lift per 500 LF of pipe. At least one test per lift must be performed regardless of pipe length.	Section 3, Part 2, D.07, B.
For pipe and pipe culvert under grass or landscaped areas, the backfill in those areas will be placed in 8-inch lifts and compacted to a minimum of 90% density. Testing rate to be determined by Contractor's Quality Control Team.	Section 3, Part 2, D.07, B.
For embankments using materials that can be tested by be tested by approved methods, determine the density of the soil in place according to an approved AASHTO method. Compact each embankment layer to the required density, and confirm the moisture and density through field testing at a rate of one test/2,500 SF/lift.	Section 3, Part 2, E.06.
For embankments, if deemed necessary by the Project Engineer, the Contractor shall conduct test or tests with a 60,000-pound static tamping foot roller to determine whether the material is degradable or non-degradable. Consider material that readily breaks down under three passes of the 60,000-pound static tamping foot roller as degradable.	Section 3, Part 2, E.06.
For embankments using solid rock fill, provide testing and maintain records that the material meets the requirements of the table in Spec Section 3, Part 2, E.06, E.	Section 3, Part 2, E.06, E.
For subgrades, field tests must be conducted at a rate of one test/2,500 SF.	Section 3, Part 2, G.03.
For subgrade treatment with lime, divide the completed subgrade treatment into lots of approximately 10,000 square yards, and perform five density tests on each lot.	Section 3, Part 3, A.10.
For mineral aggregate base, divide each completed layer into lots of approximately 10,000 square yards, and average the results of five density tests performed on each lot. Smaller lots may be considered as directed or approved by the Engineer.	Section 3, Part 3, B.10, C.
For soil-cement base, the Contractor's Quality Control Team will divide the soil-cement base into lots of approximately 10,000 square yards for density testing purposes, and will perform five density tests on each lot.	Section 3, Part 3, C.08.
For bituminous plant mixes, submit to the Project Engineer a Job Mix Formula (JMF) from a TDOT-Certified Asphalt Plant meeting the requirements of the Plans, Project Specifications, and these specifications. Project Engineer must approve the JMF in writing.	Section 3, Part 4, E.03, C.
For bituminous plant mixes, at start-up, confirm that the mixture meets the requirements of Table 407.03-2.	Section 3, Part 4, E.03, D, 2, d, 1.

Requirement	Specification Section
For bituminous plant mixes, test all mix designs per the requirements of Table 407.03-2 for each day of production.	Section 3, Part 4, E.03, D, 2, d, 2. AND Section 3, Part 4, E.03, E.
For bituminous plant mixes, always keep equipment on hand to test hot mixes for correct mixing temperature. Test and document each batch. In addition, test temperature as requested by City Inspector.	Section 3, Part 4, E.11.
For bituminous plant mix placement and compaction, inspection by the contractor's quality control team is required. The results must be available for the city upon request.	Section 3, Part 4, E.15.
For bituminous plant mixes, construct test strips for all A, B, BM, BM-2, C, CW, D, and E mixes to establish rolling patterns, to verify that the base course or surface course mixture meets the density requirements of the specifications, and for mix design and production verification as required. A test strip is not required for mixes AS, A-CRL, CS, TL, TLD, and TLE.	Section 3, Part 4, E.15,C.
For bituminous plant mixes, perform and document 12-foot straightedge testing applied parallel to the centerline of the pavement. Scheduling of the tests is at the discretion of the contractor's quality control representative. The results must be available for the city upon request. Keep the straight-edge available so that city inspectors can request tests.	Section 3, Part 4, E.16.
For bituminous plant mixes, perform and document tests of transverse slopes of tilted pavements with a string-line and string-level applied at right angles to the centerline of the pavement. Scheduling of the tests is at the discretion of the contractor's quality control representative. The results must be available for the city upon request. Keep the straight-edge available so that city inspectors can request tests.	Section 3, Part 4, E.16.
For concrete pavement, submit a concrete mix design to the Project Engineer	Section 3, Part 5, A.03, A, 2.
For concrete pavement, perform and document 15-foot straightedge testing. Scheduling of the tests is at the discretion of the contractor's quality control representative. The results must be available for the city upon request. Keep the straight-edge available so that city inspectors can request tests.	Section 3, Part 5, A.16, F.
For concrete pavement, all sampling and testing of materials will be performed in conformance with Tennessee Department of Transportation procedures. Determine pavement thickness based on the average measurement of cores taken from each unit per the requirements of this section.	Section 3, Part 5, A.23.
For concrete structures, submit a concrete mix design to the Project Engineer	Section 3, Part 6, A.03, A, 2.

Requirement	Specification Section
Provide qualified technicians to perform sampling, testing, and inspection for process control. A TDOT Certified Concrete Field-Testing Technician or ACI equivalent shall provide process control of the concrete at the placement site and shall be present during all concrete placement. For placement of concrete for minor structures (as defined in the Section 3, Part 6, A.03, B of the City of La Vergne Public Works Standard Specifications), a TDOT Certified Field-Testing Technician or ACI equivalent is not required but any sampling and testing that does not mandate such a certified technician (such as slump testing) is still required.	Section 3, Part 6, A.03, B.
For concrete, make all early break cylinders for self- consolidating concrete according to ASTM C1758, and deliver to the laboratory for testing	Section 3, Part 6, A.03, B.
For concrete, all acceptance cylinders must be transported and cured according to AASHTO T 23.	Section 3, Part 6, A.03, B.
For concrete, all acceptance cylinders must be tested for compressive strength according to AASHTO T 22.	Section 3, Part 6, A.03, B.
For concrete truck mixers, each truck shall display the NRMCA certification card.	Section 3, Part 6, A.14, B.
Concrete slump testing shall be performed in accordance with AASHTO T 119 at a rate of one test per load.	Section 3, Part 6, A.13.
For flexible pipes in projects (including all phases) with 500 linear feet or more of stormwater piping, conduct a deflection test (mandrel, laser, video, or manual) on at least 10% of the total number of pipe culvert runs, representing a minimum 10% of the total project footage including a minimum of one run of each pipe culvert diameter.	Section 3, Part 6, B.09, A.
For exterior lighting conduit, test it with a metallic mandrel in the presence of the Quality Control Representative.	Section 3, Part 7, I.04, C.
For exterior lighting, after installation is completed, perform all electrical tests listed in Section 3, Part 7, I.14.	Section 3, Part 7, I.14.
For traffic signals, maintain on file Mill Test Reports (MTR) or Certifications of Conformance to the Specifications for Materials and Design for all materials incorporated into the Work.	Section 3, Part 7, K.04.
For traffic signals, prior to completing work, conduct all of the tests listed in Section 3, Part 7, K22.	Section 3, Part 7, K22.

LA VERGNE
TENNESSEE
Engineering Department

General Information G06 – Applicable Municipal Codes and Permits

Code or Permit	Requirement	Code or Ordinance
Construction Noise in a Residential Area	In a residential area, no construction work can take place outside of the hours of 7:00 AM to 6:00 PM Monday through Friday or 8:00 AM to 6:00 PM Saturday and Sunday,	Municipal Code 11-202(1)(h)
Burn Permit	Open burning shall only be allowed with an air curtain destructor and a burn permit issued by the City of La Vergne Fire Marshall	Municipal Code 7-218(2)(l) and (n)
Requirements for Stormwater Quality Design	Design must meet the requirements of the Stormwater Management Ordinance	Stormwater Management Ordinance [Section 14-603(4)]. This can be found at the City of La Vergne Website under the 'Stormwater' Department page
Requirements for Stormwater Quantity Design	Design must meet the requirements of the Stormwater Management Ordinance	Stormwater Management Ordinance [Section 14-603(4)]. This can be found at the City of La Vergne Website under the 'Stormwater' Department page
Requirements for Sinkholes	Design must meet the requirements of the Stormwater Management Ordinance	Stormwater Management Ordinance [Section 14-605(5)]. This can be found at the City of La Vergne Website under the 'Stormwater' Department page
Land Disturbance Permit	A land disturbance permit is required and any grading, drainage, or land disturbance activity.	Stormwater Management Ordinance [Section 14-604]. This can be found at the City of La Vergne Website under the 'Stormwater' Department page
Longterm Maintenance Agreement / Longterm Maintenance Plan (LTMA/LTMP)	LTMA/LTMP is required to be recorded with Rutherford County prior to recording the final plat for a subdivision or prior to issuance of land disturbance permit for a commercial/industrial site	Stormwater Management Ordinance [Section 14-605(3)]. This can be found at the City of La Vergne Website under the 'Stormwater' Department page

Code or Permit	Requirement	Code or Ordinance
Irrevocable Offer of Dedication	An Irrevocable Offer of Dedication is required prior to recording of a Final Plat for a subdivision with public right-of-way or easement dedications.	Subdivision Regulations [Sections 2-105.1, 2-106.3, and 3-105]
Performance Bond	A performance bond amount is required to be submitted with or prior to the submittal of the final plat for Planning Commission approval and the performance bond must be in place prior to city acceptance of public improvements	Subdivision Regulations [Sections 2-105.1, 2-106.3, and 5-101]
Maintenance Bond	A maintenance bond must be maintained for a minimum of twelve months after city acceptance of public improvements	Subdivision Regulations [Section 5-103]

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Engineering Department

INSERT SECTION 1 – SEWER SPECIFICATIONS HERE

INSERT SECTION 2 – WATER SPECIFICATIONS HERE

INSERT SECTION 3 – ROAD, BRIDGE, DRAINAGE, AND GRADING SPECIFICATIONS HERE

Planning Commission Report Meeting: June 10, 2025	City of La Vergne

Item #: 16. **Discussion - Updated Public Works Road and Civil Specifications**

Reviewed By:
Gary Lide, City Engineer

Summary:
The last update of the Public Works Specifications for Roadways and Civil Work was done in 2006. Many items within it have become outdated and reference third-party standards which are no longer applicable. This new specification is based on the TDOT specifications, which are considered the state standard and includes updated and new standard drawings which better match the Subdivision Regulations and precedents set by the Planning Commission.

Staff Comments / Technical Items:

Planning (**Bo Logan** - blogan@lavergnetn.gov; and **Jake Blair** - jblair@lavergnetn.gov)
No comments.

Engineering (**Gary Lide** - glide@lavergnetn.gov)
City Engineer to make presentation

Utilities (**Scott Tatalovich** - statalovich@lavergnetn.gov)
No comments.

Codes (**Joe White** - jwhite@lavergnetn.gov)
No comments.

Fire (**Curtis Brinkley** - cbrinkley@lavergnetn.gov)
No comments.

Police
No comments.

***Note:** The above technical items may not be the only corrections and/or issues needing to be resolved to get approval from the planning commission. New items can be brought up at the workshop and staff can add items at any time that might have been overlooked. It is the applicant's responsibility to make sure that all technical items are addressed and that no new issues exist before the planning commission meeting. Addressing all technical items does not constitute approval. It is the planning commission's decision whether an item passes or fails. Revised plans are due to staff by the following Monday at close of business unless other arrangements are made and documented.

CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS

SECTION 3 – ROADS, BRIDGES, DRAINAGE, AND GRADING

CITY OF LA VERGNE
1500 E NIR SHREIBMAN BLVD
LA VERGNE, TENNESSEE 37086
(615) 287-8703

Prepared by:

GARY LIDE, PE,
CITY ENGINEER

20 May 2025

Signed:

Director of Public Works _____ Date _____
Michael Dietz

Asst City Administrator _____ Date _____
Kyle Brown, PE

LA VERGNE
TENNESSEE
Engineering Department

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LA VERGNE
TENNESSEE
Engineering Department

STANDARD DRAWINGS

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C003	Minimum Pavement Section – Collector Street
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PART 1A – GENERAL PROVISIONS FOR DEVELOPER-FUNDED INFRASTRUCTURE PROJECTS

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SECTION A – DEFINITIONS AND TERMS

A.01 General

These Standard Specifications provide standards for the construction of public improvements which are going to be constructed by private-funding and then accepted by the City of La Vergne to be incorporated in the city-maintained infrastructure.

These standards must be met in order for the city to accept any improvements regardless of whether they are at variance with any contract documents which form a contract between any parties other than the City of La Vergne.

A.02 Work in TDOT Rights-of-Way or on TDOT Roadways

All work performed on TDOT roadways or within TDOT rights-of-way shall be in full compliance with the TDOT Standard Specifications for Road and Bridge Construction, latest edition and TDOT Standard Drawings. All permits required for work in TDOT rights-of-way must be requested, pulled, and paid for by the Contractor. All portions of the TDOT permit application process (roadway, traffic control, driveway, utility, etc.) are the responsibility of the Contractor.

A.03 Referenced TDOT Specifications

All references to TDOT Specification, TDOT Sections, TDOT Spec Sections, or any similar reference to TDOT Specifications refers to the Tennessee Department of Transportation Standard Specifications for Road and Bridge Construction dated 01 January 2021. Later editions may be used with approval of the Project Engineer. In all references to TDOT Specifications, do the following:

1. Exclude paragraphs regarding measurement and payment.
2. References to ‘Engineer’ shall be replaced with ‘Project Engineer’.
3. All references to ‘Department’ or other references to the Tennessee Department of Transportation shall be replaced with ‘City of La Vergne’.

A.04 Abbreviations

These Specifications and other Contract documents use the following abbreviations:

ANLA	American Nursery Landscaping Association
AAR	Association of American Railroads
ACI	American Concrete Association
AASHTO	American Association of State Highway and Transportation Officials
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
FHWA	Federal Highway Administration

FSS	Federal Specifications and Standards, General Services Administration
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IMSA	International Municipal Signal Association
ITE	Institute of Traffic Engineers
ISSA	International Slurry Surfacing Association
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NCHRP	National Cooperative Highway Research Program
OSHA	Occupational Safety and Health Administration
SAE	Society of Automotive Engineers
TCA	Tennessee Code Annotated
TDEC	Tennessee City of Environment and Conservation
UL	Underwriters Laboratories, Inc.

A.05 Terms

Wherever, in these Specifications, the following terms, or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows:

Addendum. Written interpretation or modification of any of the Contract documents, which is delivered to prospective bidders prior to the opening of proposals.

Award. The formal acceptance by the City of a proposal.

Base Course. The layer or layers of specified or selected material of designed thickness placed on a subbase or a subgrade to support a surface course.

Bidder. A pre-qualified individual, partnership, firm, corporation, or joint venture acting directly or through a duly authorized representative to submit a proposal to perform the advertised Work.

BOMA. The City of La Vergne Board of Mayor and Aldermen.

Box Bridge. A box culvert type structure consisting of a single box or multiple boxes, with or without a bottom slab, having a length, measured along the centerline of the roadway, of more than 20 feet between the inside faces of the outside walls.

Bridge. A structure erected over a stream, watercourse, highway, railroad or opening, for carrying traffic, having a length, measured along the centerline of the roadway, of more than 20 feet between the faces of end supports.

Calendar Day. Every day shown on the calendar.

City Engineer. The Director of Engineering for the City of La Vergne.

Completion Date. The calendar date by which the Contract shall be completed when

such date is shown in the proposal instead of a stipulation of a number of working days, or the date of final acceptance of the Work.

Construction Change. A completed document, approved by the City of La Vergne Board of Mayor and Aldermen, covering changes in the Plans, Specifications or quantities, and additional items and the basis of payment that have been established by a previously executed Change Order.

Contract. The written agreement between the City and the Contractor setting forth the obligations of the parties thereunder, including but not limited to, performance of the Work, which includes the furnishing of labor, equipment, and materials, and the basis of payment. The Contract will not be executed without a vote accepting the Contract by the City of La Vergne Board of Mayor and Aldermen.

Contract Time. The number of working days or calendar days allowed for completion of the Contract or an item(s) of work, or the number of calendar days between the time of starting as determined by the Work Order, and the Completion Date including all authorized time extensions.

Contractor. The individual, firm, partnership, limited liability company, corporation, joint venture, or other business entity performing the Work.

City. The City of La Vergne.

Detour. A temporary rerouting of road users onto an existing highway in order to avoid a temporary traffic control zone.

Equipment. All machinery, apparatus, and tools necessary for the proper construction and acceptable completion of the Project, plus the necessary repair parts, tools, and supplies for upkeep and maintenance.

Highway, Road, and Street. Each of these words is a general term denoting a public way for the purpose of vehicular travel including the entire area within the right-of-way.

Inspector. The authorized representative of the City Engineer assigned to make inspections required by the city-issued permits.

Materials. Any substance specified to be furnished or proposed for use in the construction of the Project and its appurtenances.

Plans. The approved plans, profiles, cross-sections, structure drawings, working drawings and supplemental drawings, or exact reproductions thereof, which show the location, character, dimensions, and details of the construction to be performed.

Project. The specific improvement, together with all appurtenances, to be constructed under the Contract.

Project Engineer. The Design Engineer working for the developer or private owner. Also called the Engineer-of-Record (EOR) or the Designer-of-Record (DOR). This may be an architect, engineer, landscape architect, or other design professional. Any

reference to 'Project Engineer' or 'Engineer', which is not explicitly called out as being the 'City Engineer', refers to the 'Project Engineer'.

Quality Control Program. The Quality Control Program consists of all of the testing and inspection required to confirm compliance with these specifications and with the Project Specifications and the Project Drawings. The City is not responsible for any of the costs of performing the Quality Control Program. Test results from the Quality Control Program are not required to be submitted to the City but they must be kept on file by the Owner, the Developer, the Project Engineer, the Contractor, or a delegated agent fort a period of five years after acceptance of the project by the City. Further, any of these documents must be provided to the City Engineer or their agent upon request.

Quality Control Representative. The Quality Control Representative is a Professional Engineer in the State of Tennessee or such an engineer's agent. This person may be employed or contracted by the Owner, the Developer, the Project Engineer, or Contractor. This person is not the responsibility of the City and the City is not responsible for any of the costs of performing the Quality Control Program.

Right-of-Way. A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to a highway and its appurtenant structures.

Roadside Development. Those items necessary to the complete roadway that provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers; and such suitable planting and other improvements as may increase the effectiveness and enhance the appearance of the roadway.

Roadway. The portion of a highway within limits of construction.

Shoulder. The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles for emergency use, and for lateral support of base and surface courses.

Standard Specifications. The *City of La Vergne Public Works Standard Specifications for Road, Bridge, Stormwater, and General Earthwork Construction* and its revisions effective on the Contract execution date.

Superintendent. The Contractor's authorized representative in responsible charge of the Work.

Work Zone. The entire area required for the complete performance of all work required by the Contract.

Working Day. A calendar day as regulated by the City of La Vergne Code Section 11-202(1)h regarding noise nuisances caused by construction operations in or near residential areas.

Working Drawings. Approved Construction Drawings as defined by the *City of La Vergne Subdivision Regulations* and the *City of La Vergne Public Works Standard Specifications for Road, Bridge, Stormwater, and General Earthwork Construction*.

SECTION B – SCOPE OF WORK

B.01 Maintenance of Traffic

Unless otherwise provided, keep all roadways and access for vehicular travel open to all traffic while under construction. Maintain all traffic control features over the section of road under construction in accordance with the MUTCD and a Traffic Control Plan as described later in these Standard Specifications.

B.02 Maintenance During Construction

Continuously maintain the Work with adequate equipment and forces so that the public facilities within the work zone are kept in satisfactory condition at all times. Provide litter pickup, mowing, and vegetation removal throughout the life of the Project.

B.03 Operation of Heavy Equipment

When operating heavy equipment or hauling equipment on or across city streets or public roads, keep the affected streets or public roads reasonably free of loose earth and debris during movement of equipment, and thoroughly clean the affected streets or roads at the end of each day they have been used.

Provide flagging services at locations where heavy equipment crosses or enters a city street or public road.

Repair damage to city streets, public roads, and adjacent property at no additional cost to the City.

B.04 Dust Control

Take all available precautions to control dust. If the City Engineer or any City inspector judges dust to be a problem, control the dust by sprinkling, by applying calcium chloride, or by other methods. No additional compensation will be allowed for delays caused by necessary dust control operations.

B.05 Final Cleanup

Before requesting final acceptance of the Work, clean the entire work zone, all material pits, all waste areas, all areas and access roads used by the Contractor, all streams affected by the Work, and all ground occupied by the Contractor, in connection with the Work. Remove all forms, false work and temporary structures, temporary erosion control measures, excess materials, equipment, rubbish, and waste. Leave all parts of the Work in a neat and presentable condition. Stabilize the entire work zone, all material pits, all waste areas, all areas and access roads used by the Contractor according to the TN NPDES Construction General Permit criteria and the City of La Vergne Stormwater Management Ordinance. Mow work zone as required for final cleanup. Do not deposit rubbish, waste, or debris on or in sight of the work zone. Replace and repair all damage to private and public property.

SECTION C – CONTROL OF WORK

C.01 Construction Plans and Working Drawings

The following plans are required to be submitted to the City Engineer and approved prior to requesting a pre-construction conference:

1. All drawings required by the City of La Vergne Subdivision Regulations or the City of La Vergne Zoning Ordinance
2. Standard Engineering Notes as follows:
    a. All sewers are sufficiently deep to serve homes or buildings shown except where otherwise specifically noted on plans.
    b. All road construction will be in complete conformance to the City of La Vergne Public Works Specifications Manual (latest edition).
    c. The City of La Vergne reserves the right to require test results, mix designs, and mix tickets which demonstrate compliance with the specifications as a condition of City acceptance of the road.
    d. No more than 500 feet of open utility and stormwater trench will be allowed at one time.
    e. All construction work will abide by City of La Vergne Municipal Code Section 11-202 "Anti-Noise Regulations".
3. Erosion Prevention and Sediment Control (EPSC) Plans including the following:
    a. Stamped Engineer's calculations demonstrating the efficacy of the EPSC plan as designed. These calculations must meet the requirements of the City of La Vergne Stormwater Management Ordinance (City of La Vergne Municipal Code Title 14, Chapter 6)
    b. Initial EPSC Plans
    c. Intermediate EPSC Plans (unless special approval is provided by City Engineer to not include them)
    d. Final EPSC Plans
    e. Construction Details for the EPSC system meeting the requirements of the City of La Vergne Stormwater Management Ordinance (City of La Vergne Municipal Code Title 14, Chapter 6)
4. Stamped Engineer's Hydrologic and Hydraulic Calculations meeting the requirements of the City of La Vergne Stormwater Management Ordinance (City of La Vergne Municipal Code Title 14, Chapter 6)
5. Roadways Drawings must be stand-alone documents and cannot reference other sheets such as site grading sheets. They must include (at a minimum) the following:
    a. Roadway Layout Sheets showing:
        i. Existing topography
        ii. Present right-of-way
        iii. Proposed right-of-way and easements with dimensions
        iv. Survey centerline of proposed roadway
        v. All existing drainage pipes, culverts, and bridges
    b. Roadway Plan/Profile Sheets showing:
        i. The plan and the profile must be shown on the same sheet unless a specific exclusion is granted by the City Engineer
        ii. The direction of stationing must be the same on the plan and profile
        iii. All lettering my read from the bottom or the right side of the sheet

iv. (Plan View) Survey baseline and stationing must be shown
v. (Plan View) Station and coordinate data must be shown at all intersections
vi. (Plan View) Curve data including POT, PI, PC, and PT must be shown for all horizontal curves
vii. (Plan View) Limits of proposed paving must be shown
viii. (Plan View) Locations of all items included for the stormwater system including culverts (with size), pipes (with size and type), catch basins, curb inlets, and headwalls
ix. (Plan View) Show all proposed driveway connections.
x. (Plan View) Show station/offset information for all drainage structures
xi. (Profile View) Show existing ground profile at centerline
xii. (Profile View) Show finished grade profile at centerline
xiii. (Profile View) Show all vertical curve data including PVI, PVT, PVC, Length of Curve, and Design Speed.
xiv. (Profile View) Show all slopes
xv. (Profile View) Show all intersection with stations of both roads
xvi. (Profile View) Show all water, sewer, and drainage pipes at centerline

c. Drainage Cross Sections must be shown on separate sheets for concrete box culverts, plate arch culverts, and any other culverts which are to be field-constructed.

6. Water and Sewer Plans shall be provided meeting the requirements of the City of La Vergne Public Works Water Specifications and the City of La Vergne Public Works Sewer Specifications

Approval of these drawings by the City of La Vergne is general in nature and will not operate to relieve the Contractor or Developer from any responsibility in meeting City of La Vergne Municipal Codes requirements, City of La Vergne Specification requirements, City of La Vergne Subdivision Regulations requirements, City of La Vergne Zoning Ordinance requirements, special items included in Planning Commission approval, or any other city, state, or federal laws or regulations.

C.02 Required Site Documents

Maintain one complete set of the Contract documents, including applicable Standard Drawings, on the Project at all times. Also maintain all permits, TDEC NOC, and TDEC SWPPP at the project site.

C.03 Cooperation with Utilities, Railroads, and Pipelines

The Contractor must notify all city and non-city utility companies, including pipeline and railroad companies, having facilities within the Project limits concerning the planned construction.

Provide all necessary protective measures to safeguard existing utilities from damage during construction of the Work. Correct and pay for repairs to damaged utilities that result from the Contractor's breach of the standard of care, and restore damaged facilities to their preexisting condition.

At least three (3) business days prior to the start of operations around the utility, notify each individual utility owner of the plan of operation, and request that they to properly locate their respective utility on the ground. This may be coordinated through Tennessee One Call (811)(www.tenn811.com).

C.04 Authority and Duties of Inspectors

Inspectors employed by or contracted with the City are inspecting for conformance with city-issued permits and have no responsibility for contractor's quality control. City inspectors shall only be contacted to schedule an inspection after the Contractor's quality control team has inspected and approved the item of work as complete. The City reserves the right to request quality control documentation from the Contractor in the event that project quality concerns arise during construction. The City further reserves the right to charge inspection fees per the City of La Vergne Fee Schedule if more than two inspections are needed on any specific item.

City inspectors are not be authorized to issue instructions contrary to the Plans and Specifications. If changes are desired by the Contractor. They must first contact the Engineer (hired by the developer) who will coordinate any requested changes with the City Engineer.

C.05 Removal of Unacceptable and Unauthorized Work

If the City Engineer rejects portions of the Work during the acceptance process for the work being not in accordance with City requirements, specifications, permits, codes, etc. the Contractor shall immediately remove and replace this work in an acceptable manner at no cost to the City. All such work must be complete prior to acceptance.

C.06 Acceptance

Work to be accepted by the city into the municipal infrastructure must go through the acceptance process described in the City of La Vergne Subdivision Regulations.

SECTION D – CONTROL OF MATERIALS

This section left blank for uniformity.

SECTION E – LEGAL RELATIONS AND RESPONSIBILITY

E.01 Laws to be Observed

The Developer and Contractor shall:

Keep fully informed and comply with all of the following that affect the conduct of the Work or those engaged or employed on the Work: Federal and State laws, local laws and ordinances, regulations, and all orders and decrees of bodies or tribunals having jurisdiction or authority related to the Work.

Protect and indemnify the City and its representatives against claims or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor, its employees, subcontractors and suppliers, or any others engaged by the Contractor.

Should the Contractor's unapproved activities relating to the performance of the Work be in violation of any of the above laws or regulations and cause fines and/or penalties to be assessed against the City, the City may deduct all fines and penalties from monies due the Contractor.

E.02 Load Restrictions on Projects Under Construction

The gross weight of trucks delivering material to construction projects shall be governed by both the La Vergne Municipal Code Section 16-115, State Law as set forth in Tennessee Code, and Federal Law. Conspicuously display the tare weight, the allowable gross weight for State Highways, and the allowable gross weight for the Interstate System on the side of all delivery trucks.

Do not operate equipment of excessive weight or loading that may cause damage to structures, the roadway, or to any other type of construction.

E.03 Permits, Licenses, and Taxes

Obtain all permits and licenses, pay all charges, fees, and taxes, and give all notices and submit all paperwork necessary and incidental to the due and lawful prosecution of the Work. Under no circumstances will work proceed without all city, state, and federal permits in place.

E.04 Environmental Protection

Developer and Contractor shall:

Comply with the City of La Vergne Stormwater Management Ordinance (City of La Vergne Municipal Code Title 14, Chapter 6).

Obtain necessary permits related to operations covered by the Plans or required for the work, including use of waste and borrow sites. Obtain necessary permits for offsite staging areas. Determine if additional permits are required to complete the Work as shown on the Plans. All costs associated with any support activities including obtaining permission from landowners, permits, and compliance are to be included in the bid cost for the project.

E.05 Sanitary Provisions

Provide and maintain in a neat, sanitary condition accommodations for employees in accordance with OSHA standard 1926.51 Table D-1. At least one toilet accommodation must be provided for up to 20 workers. Follow Table D-1 for twenty or more workers. The City of La Vergne interprets the requirement for '1 toilet seat and 1 urinal' to mean providing them separately so that they can be used simultaneously. A single lockable port-a-potty which contains both a toilet seat and a urinal will not suffice for over twenty workers.

No work shall take place on a work site without adequate toilet facilities.

E.06 Safety

A. Public Convenience and Safety

Conduct the Work at all times to ensure the least possible obstruction to traffic. Provide for the safety and convenience of the general public and the residents around the work zone.

B. Traffic Control Plans and Night Work Lighting Plans

Traffic Control Plans are required for any of the following situations:

1. Temporary closures of public streets
2. Lane closures of public streets
3. Construction operations along the edge of a street such as driveway installation or utility installation/hook-up which might require construction equipment to utilize public roadways and travel lanes for access to the work

Traffic Control Plans shall meet Manual of Uniform Traffic Control Devices (MUTCD) standards.

Traffic Control Plans shall be submitted to the City Engineer for review at least two full working days prior to operations within the public roadway. The City Engineer will not approve the plan but will notify the Contractor that the plan has been received and they are able to proceed with the work. Said notification does not constitute approval nor does it create any liability on the City for the plan or the implementation of the plan.

The Traffic Control Plan must be accompanied by the contract name and 24-hour number for the Contractor's responsible party for project traffic control.

Night Work Lighting Plans must meet the requirements of Section 7. The plans must be submitted to the City Engineer at least seven calendar days prior to commencing work to allow the City to schedule inspectors to be on site during the work.

C. On-Site Safety and Health

The Contractor is responsible for work site safety and conducting all operations to protect the workers engaged in duties connected with the Work.

City inspectors have no responsibility regarding safety on the Contractor's project site. However, like all construction professionals, they may stop work if they believe that individuals or the public at large are in immediate jeopardy.

E.07 Use of Explosives

The State of Tennessee has jurisdiction over construction blasting operations. The City of La Vergne does not issue blasting permits.

Contractor shall notify the City Engineer at least four hours prior to blasting operations taking place. This notification may be verbally, written, or by electronic means.

When using explosives, exercise the utmost care not to endanger life or property, and comply with applicable Federal, State, and local laws regarding the use of explosives, including new work. Assume responsibility for all damage resulting from the use of explosives.

As required by State law, the Contractor shall notify each property owner and public utility company having structures or facilities in proximity to the Work before using explosives. Provide such notice sufficiently in advance to allow owners to protect their property from damage.

PART 1B – GENERAL PROVISIONS FOR CITY-FUNDED PROJECTS

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SECTION A – DEFINITIONS, TERMS, AND REFERENCES

A.01 General

These Standard Specifications for Public Projects for the City of La Vergne apply to the bidder, before the award of the Contract, and to the Contractor after award.

These specifications are meant to work with the Project Specifications which will be prepared by the Engineer and which will be specific to the project. In the event of a discrepancy between these Standard Specifications and the Project Specifications or the Contract, the priority listed in Section C.02 of this document will be followed.

A.02 Work in TDOT Rights-of-Way or on TDOT Roadways

All work performed on TDOT roadways or within TDOT rights-of-way shall be in full compliance with the TDOT Standard Specifications for Road and Bridge Construction, latest edition and TDOT Standard Drawings. All permits required for work in TDOT rights-of-way must be requested, pulled, and paid for by the Contractor. All portions of the TDOT permit application process (roadway, traffic control, driveway, utility, etc.) are the responsibility of the Contractor.

A.03 Referenced TDOT Specifications

All references to TDOT Specification, TDOT Sections, TDOT Spec Sections, or any similar reference to TDOT Specifications refers to the Tennessee Department of Transportation Standard Specifications for Road and Bridge Construction dated 01 January 2021. Later editions may be used with approval of the Project Engineer. In all references to TDOT Specifications, do the following:

1. Exclude paragraphs regarding measurement and payment.
2. References to 'Engineer' shall be replaced with 'Project Engineer'.
3. All references to 'Department' or other references to the Tennessee Department of Transportation shall be replaced with 'City of La Vergne'.

A.04 Abbreviations

These Specifications and other Contract documents use the following abbreviations:

ANLA	American Nursery Landscaping Association
AAR	Association of American Railroads
ACI	American Concrete Association
AASHTO	American Association of State Highway and Transportation Officials
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards, General Services Administration

IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IMSA	International Municipal Signal Association
ITE	Institute of Traffic Engineers
ISSA	International Slurry Surfacing Association
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NCHRP	National Cooperative Highway Research Program
OSHA	Occupational Safety and Health Administration
SAE	Society of Automotive Engineers
TCA	Tennessee Code Annotated
TDEC	Tennessee City of Environment and Conservation
UL	Underwriters Laboratories, Inc.

A.05 Terms

Wherever, in these Specifications, the following terms, or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows:

Addendum. Written interpretation or modification of any of the Contract documents, which is delivered to prospective bidders prior to the opening of proposals.

Award. The formal acceptance by the City of a proposal.

Base Course. The layer or layers of specified or selected material of designed thickness placed on a subbase or a subgrade to support a surface course.

Bidder. A pre-qualified individual, partnership, firm, corporation, or joint venture acting directly or through a duly authorized representative to submit a proposal to perform the advertised Work.

BOMA. The City of La Vergne Board of Mayor and Aldermen.

Box Bridge. A box culvert type structure consisting of a single box or multiple boxes, with or without a bottom slab, having a length, measured along the centerline of the roadway, of more than 20 feet between the inside faces of the outside walls.

Bridge. A structure erected over a stream, watercourse, highway, railroad or opening, for carrying traffic, having a length, measured along the centerline of the roadway, of more than 20 feet between the faces of end supports.

Calendar Day. Every day shown on the calendar.

City. The City of La Vergne.

City Engineer. The Director of Engineering for the City of La Vergne.

Completion Date. The calendar date by which the Contract shall be completed when such date is

shown in the proposal instead of a stipulation of a number of working days, or the date of final acceptance of the Work.

Construction Change. A completed document, approved by the City of La Vergne Board of Mayor and Aldermen, covering changes in the Plans, Specifications or quantities, and additional items and the basis of payment that have been established by a previously executed Change Order.

Contract. The written agreement between the City and the Contractor setting forth the obligations of the parties thereunder, including but not limited to, performance of the Work, which includes the furnishing of labor, equipment, and materials, and the basis of payment. The Contract will not be executed without a vote accepting the Contract by the City of La Vergne Board of Mayor and Aldermen.

Contract Time. The number of working days or calendar days allowed for completion of the Contract or an item(s) of work, or the number of calendar days between the time of starting as determined by the Work Order, and the Completion Date including all authorized time extensions.

Contractor. The individual, firm, partnership, limited liability company, corporation, joint venture, or other business entity contracting with the City for performance of the Work.

Detour. A temporary rerouting of road users onto an existing highway in order to avoid a temporary traffic control zone.

Equipment. All machinery, apparatus, and tools necessary for the proper construction and acceptable completion of the Project, plus the necessary repair parts, tools, and supplies for upkeep and maintenance.

Highway, Road, and Street. Each of these words is a general term denoting a public way for the purpose of vehicular travel including the entire area within the right-of-way.

Inspector. The authorized representative of the City Engineer assigned to make detailed inspections of materials and Contract performance.

Materials. Any substance specified to be furnished or proposed for use in the construction of the Project and its appurtenances.

Notice to Proceed. Written notice to the Contractor to proceed with the Work under the Contract, including, when applicable, the date of beginning of Contract Time.

Plans. The approved plans, profiles, cross-sections, structure drawings, working drawings and supplemental drawings, or exact reproductions thereof, which show the location, character, dimensions, and details of the construction to be performed under the Contract.

Project. The specific improvement, together with all appurtenances, to be constructed under the Contract.

Project Engineer. The Design Engineer hired under contract to the City of La Vergne. Also called the Engineer-of-Record (EOR) or the Designer-of-Record (DOR). This may be an architect, engineer, landscape architect, or other design professional. Any reference to 'Project Engineer' or 'Engineer',

which is not explicitly called out as being the 'City Engineer', refers to the 'Project Engineer'.

Project Specifications. Each project will have a set of Project Specifications prepared by the Engineer which are specific to that project. The Project Specifications will work with these Standard Specifications.

Right-of-Way. A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to a highway and its appurtenant structures.

Roadside Development. Those items necessary to the complete highway that provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers; and such suitable planting and other improvements as may increase the effectiveness and enhance the appearance of the highway.

Roadway. The portion of a highway within limits of construction.

Shoulder. The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles for emergency use, and for lateral support of base and surface courses.

Specifications. A general term applied to all directions, provisions, and requirements pertaining to the performance of the Work.

Standard Specifications. The *City of La Vergne Public Works Standard Specifications for Road, Bridge, Stormwater, and General Earthwork Construction* and its revisions effective on the Contract execution date.

Subcontractor. Any individual, firm, partnership, limited liability company, corporation, joint venture, or other business entity to whom the Contractor or any Subcontractor, regardless of tier, sublets any part of the Work under the Contract.

Superintendent. The Contractor's authorized representative in responsible charge of the Work.

Superstructure. The entire structure except the substructure.

Work. The furnishing of all labor, materials, equipment, and incidentals necessary for the satisfactory completion of the Project, including the carrying out of all duties and obligations imposed by the Contract.

Work Zone. The entire area required for the complete performance of all work required by the Contract.

Working Day. A calendar day, exclusive of Saturdays, Sundays, and Holidays, on which weather or other conditions not under the control of the Contractor will allow construction operations to proceed for at least 5 hours of the day (as regulated by the City of La Vergne Municipal Code Section 11-202[1]h regarding noise nuisances caused by construction operations in or near residential areas) with the normal working force engaged in performing the Work, which are normal to progress at the time, as determined by the Engineer.

Working Drawings. Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data that the Contractor is required to submit to the Engineer for approval.

SECTION B – SCOPE OF WORK

B.01 Maintenance of Traffic

Unless otherwise provided, keep all roadways and access for vehicular travel open to all traffic while under construction. Maintain all traffic control features over the section of road under construction in accordance with the MUTCD and a Traffic Control Plan as described later in these Standard Specifications.

B.02 Maintenance During Construction

Continuously maintain the Work with adequate equipment and forces so that the public facilities within the work zone are kept in satisfactory condition at all times. Provide litter pickup, mowing, and vegetation removal throughout the life of the Project.

B.03 Operation of Heavy Equipment

When operating heavy equipment or hauling equipment on or across city streets or public roads, keep the affected streets or public roads reasonably free of loose earth and debris during movement of equipment, and thoroughly clean the affected streets or roads at the end of each day they have been used.

Provide flagging services at locations where heavy equipment crosses or enters a city street or public road.

Repair damage to city streets, public roads, and adjacent property at no additional cost to the City.

B.04 Dust Control

Take all available precautions to control dust. If the City Engineer or any City inspector judges dust to be a problem, control the dust by sprinkling, by applying calcium chloride, or by other methods. No additional compensation will be allowed for delays caused by necessary dust control operations.

B.05 Final Cleanup

Before final acceptance of the Work, clean the entire work zone, all material pits, all waste areas, all areas and access roads used by the Contractor, all streams affected by the Work, and all ground occupied by the Contractor, in connection with the Work. Remove all forms, false work and temporary structures, temporary erosion control measures, excess materials, equipment, rubbish, and waste. Leave all parts of the Work in a neat and presentable condition. Stabilize the entire work zone, all material pits, all waste areas, all areas and access roads used by the Contractor according to the TN NPDES Construction General Permit criteria and the City of La Vergne Stormwater Management Ordinance. Mow work zone as required for final cleanup. If the Project was graded under a previous contract, perform final cleanup within the construction limits of the current work being performed and other areas disturbed or otherwise requiring cleanup due to the Contractor's operations. Do not deposit rubbish, waste, or debris on or in sight of the work zone. Replace and repair all damage to private

and public property.

SECTION C – CONTROL OF WORK

C.01 Plans and Working Drawings

In addition to any requirements of the Project Specifications, contractors must submit the following:

1. Contractors and subcontractors directly engaged in the erection or removal of any structure over an active roadway, railroad, or any navigable stream, shall prepare an erection plan prepared and stamped by a Professional Engineer licensed in the State of Tennessee.

2. Shop drawings for all types of structures shall be submitted by, or on behalf of the Contractor, directly to the Engineer. Proof of appropriate fabricator certification for the type of structure to be fabricated shall be submitted along with the shop drawings.

3. Submit shop drawings for the following items:

   - Structural steel, metal bridge rails
   - Precast prestressed concrete beams
   - Precast prestressed concrete deck panels
   - Precast reinforced concrete beams
   - Precast concrete box and three-sided culverts (not required if built in accordance with TDOT standards)
   - Post-tensioned concrete
   - Roadway expansion devices
   - Steel stay-in-place forms
   - Overhead and cantilever sign structures
   - High mast light foundations
   - Retaining walls and noise walls
   - Cofferdams

4. Submit required erection drawings for all bridge structures to be erected over active roads, railroads, and navigable waterways; drawings of falsework, bracing, cofferdams, sheeting, and bending of reinforcing steel; and other supplementary plans required for the project.

All working drawings shall be approved by the Engineer; such approval will be general in nature and will not operate to relieve the Contractor of its responsibility under the Contract for the successful completion of the Work in accordance with the contract. In addition to such approval, working drawings involved in construction over or under railroad tracks will require approval of the railroad company before approval is granted by the Engineer.

C.02 Coordination of Plans and Specifications

These Standard Specifications, the Plans, and all other documents that are part of the Contract, are intended to be complementary and to describe and provide for a complete Contract. Requirements in one of these are as binding as if occurring in all of them. In case of discrepancy the City's order or

precedence is as follows:

1. Contract
2. Project Specification
3. Standard Specifications
4. Plans

If an item is listed herein and not listed within the Contract or Project Specifications, then the requirements contained herein apply.

Do not take advantage of any error or omission in the Plans or Specifications or of any discrepancy between the Plans, the Specifications, or any other of the Contract documents. Notify the City Engineer immediately upon discovering any apparent error or discrepancy. The City Engineer will provide an interpretation and final decision. At the Contractor's request, the City Engineer will provide the final decision in writing.

C.03 Required Site Documents

Maintain one complete set of the Contract documents, including applicable Standard Drawings, on the Project at all times. Also maintain all permits, TDEC NOC, and TDEC SWPPP at the project site.

C.04 Cooperation with Utilities, Railroads, and Pipelines

The Contractor must notify all non-city utility companies, including pipeline and railroad companies, having facilities within the Project limits concerning the planned construction.

Provide all necessary protective measures to safeguard existing utilities from damage during construction of the Work. Correct and pay for repairs to damaged utilities that result from the Contractor's breach of the standard of care, and restore damaged facilities to their preexisting condition.

At least three (3) business days prior to the start of operations around the utility, notify each individual utility owner of the plan of operation, and request that they to properly locate their respective utility on the ground. This may be coordinated through Tennessee One Call (811)(www.tenn811.com).

C.05 Cooperation between Contractors

The City reserves the right, at any time, to contract for and perform additional work on or near the Work. When separate contracts are let within the limits of a project, cooperate fully with the other contractors. Conduct the Work and place and dispose of materials to not interfere with or hinder the progress or completion of the portions of the Work being performed by other contractors within the project limits. Coordinate work with that of the other contractors in an acceptable manner and in proper sequence with regard to the work of other contractors. Each contractor involved shall assume all liability, financial or otherwise, in connection with its contract, and shall protect and save harmless the City from any and all damages and claims that may develop because of inconvenience, delay, or loss experienced by any contractor because of the presence and operations of others

C.06 Construction Stakes, Lines, and Grades

The Contractor shall cooperate in the matter of setting and preserving stakes, bench marks, lines, and grades for controlling the construction. Carefully preserve stakes and markings the Engineer may set for either its own or the Contractor's guidance. In case of negligence by the Contractor or its employees resulting in the destruction of such stakes or markings, the City at its discretion may deduct an amount equal to the cost of replacing the same from subsequent estimates due the Contractor.

C.07 Authority and Duties of Inspectors

Inspectors employed by or contracted with the City will confirm that the Contractor has a complete and functional quality control system. The City is not responsible for quality control. If special structural or other inspections are being performed by the City, they shall not be considered to remove the Contractor's requirement for quality control on all items under the contract. City inspectors shall only be contacted to schedule an inspection after the Contractor's quality control team has inspected and approved the item of work as complete. The City reserves the right to request quality control documentation from the Contractor in the event that project quality concerns arise during construction.

Inspectors will not be authorized to revoke, alter, enlarge, or relax the provisions of the Specifications, nor will they be authorized to approve or accept any portion of the completed Project, or to issue instructions contrary to the Plans and Specifications.

C.08 Removal of Unacceptable and Unauthorized Work

If the City or the Engineer rejects portions of the Work found to be unacceptable, or found to be unacceptable prior to final acceptance of the Work due to poor workmanship, the use of defective materials, or damage through carelessness, the Contractor shall immediately remove and replace this work in an acceptable manner at no cost to the City.

C.09 Acceptance

Upon due notice from the Contractor of presumptive completion of the entire Project, the City Engineer will make an inspection. If the City Engineer finds that all construction provided for and contemplated by the Contract is satisfactorily complete, then the inspection will constitute the final inspection and the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance effective on the final inspection date.

If, however, the inspection discloses any work not in close conformity with the Plans and Specifications, in whole or in part, the City Engineer will instruct the Contractor to correct the unsatisfactory work. The Contractor shall immediately comply with and execute such instructions. After correction of the Work, the Engineer will make another inspection, which shall constitute the final inspection, provided the Work has been satisfactorily completed. If satisfactory, the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance to be effective on the final inspection date.

C.10 Alternative Equipment

Although certain Specification Sections may specify use of equipment of a particular size and type, or use of certain methods to perform portions of the Work, it is to be understood that the development and use of new or improved equipment or methods are encouraged.

The Contractor may request, in writing, permission from the Engineer to use equipment of a different size or type in place of the equipment specified. The Contractor may request to use new methods in the same way.

If the City Engineer grants such permission, it shall be understood that permission is granted for the purpose of testing the quality of work actually produced by such equipment or method and is subject to continuous attainment of results that are equal to, or better than that which can be obtained with the equipment or method specified. The City Engineer will withdraw such permission at any time if it is determined that the alternative equipment or method is not producing work that is equal, in all respects, to that which can be produced by the equipment and methods specified.

The Contractor shall not pursue any claim against the City for either withholding or granting permission to use alternative equipment or methods or for the withdrawal of such permission.

SECTION D – CONTROL OF MATERIALS

D.01 Quality of Materials

Only use materials in the Work that conform to all of the Contract quality requirements. Control and incorporate materials to produce completed construction that conforms to and is fully acceptable under the terms of the Contract.

Where reference is made in the Contract to certain manufacturers' materials or products, it is not the intent to preclude the use of others, but rather to establish minimum acceptable design standards. The Contractor may substitute material and products of other manufacturers provided they are equal to or better than the minimum design standards and are approved by the City.

SECTION E – LEGAL RELATIONS AND RESPONSIBILITY

E.01 Laws to be Observed

Keep fully informed and comply with all of the following that affect the conduct of the Work or those engaged or employed on the Work: Federal and State laws, local laws and ordinances, regulations, and all orders and decrees of bodies or tribunals having jurisdiction or authority related to the Work.

Protect and indemnify the City and its representatives against claims or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor, its employees, subcontractors and suppliers, or any others engaged by the Contractor.

Should the Contractor's unapproved activities relating to the performance of the Work be in violation of any of the above laws or regulations and cause fines and/or penalties to be assessed against the City, the City may deduct all fines and penalties from monies due the Contractor.

E.02 Load Restrictions on Projects Under Construction

The gross weight of trucks delivering material to construction projects shall be governed by both the La Vergne Municipal Code Section 16-115, State Law as set forth in Tennessee Code, and Federal Law. Conspicuously display the tare weight, the allowable gross weight for State Highways, and the allowable gross weight for the Interstate System on the side of all delivery trucks. Use the Bridge Formula to determine allowable Interstate System gross weights as defined in the FHWA's publication, *Bridge Formula Weights*.

Do not operate equipment of excessive weight or loading that may cause damage to structures, the roadway, or to any other type of construction.

E.03 Permits, Licenses, and Taxes

Obtain all permits and licenses, pay all charges, fees, and taxes, and give all notices and submit all paperwork necessary and incidental to the due and lawful prosecution of the Work, the City may waive payment of fees for City permits. Please note that the City does not provide permits electrical work. Those must be received from the State of Tennessee. Under no circumstances will work proceed without all city, state, and federal permits in place.

E.04 Environmental Protection

A. Protection of Streams, Lakes and Reservoirs

Comply with the City of La Vergne Stormwater Management Ordinance (City of La Vergne Municipal Code Title 14, Chapter 6).

Obtain necessary permits related to operations covered by the Plans or required for the work, including use of waste and borrow sites. Obtain necessary permits for offsite staging areas. Determine

if additional permits are required to complete the Work as shown on the Plans. All costs associated with any support activities including obtaining permission from landowners, permits, and compliance are to be included in the bid cost for the project.

Conduct and schedule operations to not interfere with the movement and habitat of species such as mussels, fish, and birds as indicated in plans or permits. Comply with the provisions and requirements of all applicable permits and United States Fish and Wildlife Service Biological Opinion.

B. Hazardous or Toxic Waste

When the Contractor's operations encounter or expose any abnormal condition that may indicate the presence of hazardous or toxic waste, discontinue such operations in the vicinity of the abnormal condition and immediately notify the City Engineer. Do not resume operations until so directed by the City Engineer.

E.05 Sanitary Provisions

Provide and maintain in a neat, sanitary condition accommodations for employees in accordance with OSHA standard 1926.51 Table D-1. At least one toilet accommodation must be provided for up to 20 workers. Follow Table D-1 for twenty or more workers. The City of La Vergne interprets the requirement for '1 toilet seat and 1 urinal' to mean providing them separately so that they can be used simultaneously. A single lockable port-a-potty which contains both a toilet seat and a urinal will not suffice for over twenty workers.

No work shall take place on a work site without adequate toilet facilities.

E.06 Safety

A. Public Convenience and Safety

Conduct the Work at all times to ensure the least possible obstruction to traffic. Provide for the safety and convenience of the general public and the residents around the work zone.

B. Traffic Control Plans

Traffic Control Plans are required for any of the following situations:

1. Temporary closures of public streets
2. Lane closures of public streets
3. Construction operations along the edge of a street such as driveway installation or utility installation/hook-up which might require construction equipment to utilize public roadways and travel lanes for access to the work

Traffic Control Plans shall meet Manual of Uniform Traffic Control Devices (MUTCD) standards.

Traffic Control Plans shall be submitted to the City Engineer for review at least two full working days prior to operations within the public roadway. The City Engineer will not approve the plan

but will notify the Contractor that the plan has been received and they are able to proceed with the work. Said notification does not constitute approval nor does it create any liability on the City for the plan or the implementation of the plan.

The Traffic Control Plan must be accompanied by the contract name and 24-hour number for the Contractor's responsible party for project traffic control.

Night Work Lighting Plans must meet the requirements of Section 7. The plans must be submitted to the City Engineer at least seven calendar days prior to commencing work to allow the City to schedule inspectors to be on site during the work.

C. Employee Safety and Health Program

The Contractor is responsible for work site safety and conducting all operations to protect the workers engaged in duties connected with the Work. Provide an Employee Safety and Health Program (ESHP) at the preconstruction conference that meets or exceeds all Federal, State, and local safety and health standards and is certified by the safety professional responsible for developing the ESHP. Certification of the ESHP is required before any work can begin. Maintain an original copy of the ESHP and provide to the City upon request.

The Contractor is responsible for implementing, monitoring, updating, and revising the ESHP. Describe in detail how the ESHP is implemented and monitored. Provide guidelines for protecting personnel from hazards associated with project operations and activities. Establish the policies and procedures for safety practices that are necessary for the Work to be in compliance with the requirements of TOSHA, the MUTCD, and other State and Federal regulatory agencies with jurisdiction, rules, regulations, standards, or guidelines in effect at the time the Work is in progress. If an incident occurs that requires hospitalization or TOSHA Citation to be submitted, send notification of the incident to the City Engineer.

All workers within the work zone shall wear head protection meeting current ANSI requirements. Also, all workers within the work zone shall wear high-visibility safety apparel. High-visibility apparel shall be considered personal protective clothing that meets performance Class 2 or Class 3 of the ANSI/ISEA 107-2004 publication. Class 3 apparel shall be required for night work.

E.07 Use of Explosives

The State of Tennessee has jurisdiction over construction blasting operations. The City of La Vergne does not issue blasting permits.

Contractor shall notify the City Engineer at least four hours prior to blasting operations taking place. This notification may be verbally, written, or by electronic means.

When using explosives, exercise the utmost care not to endanger life or property, and comply with applicable Federal, State, and local laws regarding the use of explosives, including new work. Assume responsibility for all damage resulting from the use of explosives.

As required by State law, notify each property owner and public utility company having structures or facilities in proximity to the Work before using explosives. Provide such notice sufficiently in advance to allow owners to protect their property from damage.

E.08 Legal Responsibilities of the Contractor

The Contractor is charged with broad legal responsibilities under these Specifications. These responsibilities include but are not limited to various areas as follows:

1. To perform the Work in accordance with all Contract terms.

2. To maintain traffic including the use of all proper and necessary protective devices and procedures.

3. To conduct all operations to protect the members of the general public, residents near the Project, workmen engaged in or on the Work, and representatives of the State, the Federal Government and railroads, while they are engaged in duties connected with the Work. This responsibility also extends to the protection of public and private property under all circumstances.

4. To hold harmless and defend against all claims of any nature arising out of or resulting from the performance of the Work, the City, any political subdivision thereof, and all employees of the City provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a subcontractor, or anyone directly employed by them for whose acts they may be liable. This responsibility generally extends to innocent third parties.

5. To pay just claims for materials, supplies, equipment, tools, labor, injury or damage to persons or property, and all other items, against the Contractor or any subcontractor or supplier in connection with the Work.

Be fully familiar with these responsibilities and with the many others that are stated in the Contract; and make certain that all things required to be performed are performed to fulfill the responsibilities involved and that all appropriate and required precautions are taken at all times.

E.09 Right-of-Way

Unless specifically stated in the Contract or the Project Specifications, the City will secure all necessary right-of-way in advance of construction.

SECTION F – PROSECUTION AND PROGRESS

F.01 Subletting of Contract and Legal Employees

Do not sublet, allow second tier sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof or a right, title, or interest in the Contract without the City Engineer's written consent.

As a part of this proposal the Contractor agrees as follows:

1. No personnel will work on the Project under the terms of this Contract except legal employees and legal employees of official subcontractors.

2. Contractor books and records will be available for inspection by State or Federal auditors at any time to confirm the above requirement.

The Contractor shall incorporate the provisions of the preceding two paragraphs into all subcontracts.

Subletting or transferring the Contract will not release the Contractor from liability under the Contract and bonds.

F.02 Beginning of Construction

Do not begin the Work before receipt of the Notice-to-Proceed (NTP) and issuance of a Land Disturbance Permit (LDP). The NTP will stipulate the expected start date for construction and the date from which Contract time will be charged. No work may commence prior to issuance of the LDP.

A Pre-Construction meeting is required before an NTP can be issued.

F.03 Prosecution of Construction and Required Project Schedules

In addition to any requirements of the Project Specifications, the following requirements apply:

1. Plan and execute the Work in a manner to meet the required Contract time set forth in the Contract and Project Specifications.
2. Provide adequate manpower, equipment, and materials in accordance with the plan of operations and scheduling requirements described therein so that construction of the various items or groups of items can be carried out and completed within the Contract time based on a completion date or dates, or calendar or working days.
3. Once Work has begun on a given schedule or portion thereof, prosecute the Work fully and continuously according to the details and requirements of the Contract to its completion.

The following Progress schedules will be required at a minimum:

A. Project Durations Less Than 90 Days

Submit a plan of operation with sufficient detail to show the sequence and location of operations and the period of time required for completion of the portion of the Work under each item or group of like items. Indicate in a plan of operations the manpower and equipment required to handle the phases of the Work. The City Engineer will use a straight-line plot to determine progress.

B. Project Durations Greater than 90 Days

At the preconstruction meeting, submit a schedule in Microsoft Project format providing both written start and end dates and a Gantt chart. Also provide a Statement of Values aligned to the line items in the schedule to create the basis for an earned value analysis to determine progress. Submit a hard copy and an electronic copy in MS Project format. The progress schedule shall include the following:

1. Activities that describe the essential features of the Work, activities that might delay Contract completion, and controlling activities;

2. The planned start and completion dates for each activity, the duration of each activity in workdays; and the calendar (number of workdays per week, holidays, number of shifts per day, and number of hours per shift) as described in the narrative. Durations should be no more than 20 workdays, unless approved by the City Engineer;

3. The sequencing of all activities including predecessor(s) and successor(s). If scheduling software is used to create the bar chart schedule, submit related reports such as a predecessor and successor report, a sort by total float, and a sort by early start;

4. Dates related to the procurement of materials, equipment, and articles of special manufacture; and dates related to the submission of working drawings, plans, and other data specified for review or approval by the City;

5. Dates related to key City inspections;

6. Dates related to specified activities by the City and third parties; and

7. A schedule timeline broken down into weekly time periods with a vertical line to identify the first working day of each week.

8. The schedule must be fully functional, provide a single critical path, and contain no negative lags.

The City Engineer, the Project Engineer, and the Contractor will review the draft baseline schedule at the preconstruction conference. The City Engineer will accept the baseline schedule, provide review comments, or request additional information (as necessary), make appropriate adjustments, or provide additional information. Review comments made by the City Engineer or Engineer on the baseline schedule will not relieve the Contractor from compliance with the

Contract.

Conduct periodic job site meetings with the City Engineer and the Engineer as required (minimum monthly) to assess progress. Submit an updated schedule on a monthly basis matching the date of the monthly pay application.

F.04 Character of Workers

A. Workers

Employ, at all times, satisfactory labor and equipment for prosecuting the required classes of work to full completion in the manner and time specified. The City Engineer may direct the Contractor in writing to discharge any personnel employed by the Contractor or by any subcontractor, who in the opinion of the City Engineer, does not perform work in a proper and skillful manner, or who is disrespectful, intemperate, disorderly, or otherwise objectionable. Such personnel shall not be employed again on the Work.

Do not engage the services of any person or persons who are, or have been, during the period of the Contract, in the employment of the City, except regularly retired employees, without the City Engineer's written approval. In addition, do not engage the services of any firm or any principal officer or employee of a firm that participated in the development of the design of the Project to be constructed under the Contract.

F.05 Determination of Time for Completion

Complete the Work in accordance with the Contract and Project Specifications. Liquidated Damages will be assessed as per the Contract.

F.06 Determination of Contract Time Extensions and Excusable Delays

A. General

The City Engineer will recommend to the BOMA to extend the Contract time or completion date only if an excusable delay affects the critical path of the Work shown on the accepted progress schedule. This delay is not accepted by the City until an affirmative vote by the BOMA and a signed contract modification has been fully executed.

Time extensions will be evaluated using the most recently submitted and accepted project schedule. Notify the City Engineer by submitting a written request for a time extension including a schedule update with an analysis showing the impact of the delay on the critical path and documentation to support this request.

B. Excusable, Non-Compensable Delays

Excusable, non-compensable delays are delays caused by force majeure events that are not the fault of either the Contractor or the City. The City will provide schedule relief from liquidated damages but will not provide additional compensation for excusable, non-compensable delays. The

following force majeure events may be causes for excusable non-compensable delays:

1. **Natural Disasters** – Floods, fires, tornadoes, earthquakes, infestations, epidemics, pandemics, or other natural disasters where a Declaration of Emergency has been declared for the affected area of the State;

2. **Extreme or Adverse Weather** – Unusually severe or adverse weather for an extended period of time that greatly exceeds weather pattern history as determined by the Engineer;

3. **Major Acts of Violence** – War, invasion, hostilities (whether war is declared or not), terrorist threats or acts, riots, or other civil unrest;

4. **Government Actions** – Actions by governmental agencies or courts that stop or delay the Contractor's performance of the Work if the Contractor was not at fault in creating the condition that led to the government agency or court action;

5. **Shortage of Materials** – Extraordinary delays in material deliveries that the Contractor cannot foresee resulting from freight embargoes, government acts, or area wide material shortages; and

6. **Labor Disputes** – Delays from labor strikes, stoppages, or slowdowns that are beyond the Contractor's, subcontractor's, or supplier's power to settle and not caused by improper acts or omissions of the Contractor or subcontractors.

C. Excusable, Compensable Delays

Excusable, compensable delays are delays affecting the critical path of Work that are determined to be the result of changes in the Scope of Work approved by the City.

If the Contractor incurs liquidated damages if the City extends the Contract time for an excusable, compensable delay, the City will relieve the Contractor from associated liquidated damages commensurate with the time extension. The City will determine compensation for delay in accordance with the Contract and Project Specifications.

D. Concurrent Delays

Concurrent delays are separate critical delays that occur at the same time. When an excusable, non-compensable delay is concurrent with an excusable, compensable delay, the Contractor is entitled to additional time but not entitled to additional compensation. When a non-excusable delay is concurrent with an excusable delay, the Contractor is not entitled to a time extension or additional compensation.

E. Weather Delays

Weather delays will be requested utilizing the methods indicated in the Project Specifications. Such requests will be reviewed by the City Engineer and will be approved if all of the following are included:

1. Updated project schedule clearly showing that the work which was delayed is on the critical path.
2. Delay report from the day requested proving the requirements set forth in the Project Specifications. In the absence of detailed requirements in the Project Specifications, the daily report must provide and demonstrate the following:
   - A detailed description of the weather event and how it impacted the ability to perform work
   - Confirmation that the critical path work was scheduled for that day
   - A listing of when the work actually started and stopped. To qualify for a weather delay, less than five hours of work must have been performed during the day.
3. If the requested day is on a Saturday, a Sunday, or a Holiday, there must be a written daily report from that date stating what work was planned and confirming that weather kept the work from being done, or a daily report from the previous day stating what work was being planned for the following day. Post-dated documents are not acceptable to meet this criteria.

F.07 Failure to Complete the Work on Time

Liquidated damages will be assessed per the Contract and Project Specifications.

PART 2 – EARTHWORK

This section is intended for all work associated with improvements which are to be accepted by the city and become a part of the city's infrastructure including buildings, public roads and drives, public parking lots, curbs, gutters walks, parks, utilities, and any other items determined by the City Engineer and approved by the Board of Mayor and Aldermen (BOMA).

Relation to Project Specifications

The construction requirements contained herein are the minimum standard for all public infrastructure projects in the City of La Vergne. This includes developer-built as well as city-built projects. In the event that there are Project Specifications and there is a discrepancy between these City Standard Specifications and the Project Specifications, then the more strict requirements shall apply. The determination of which requirements is the more strict will be made by the City Engineer.

City of La Vergne Stormwater Management Ordinance

All work done on all projects within the City of La Vergne shall comply with the requirements of the Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6). All engineers and contractors working on projects in the city must be familiar with this document. If there are any questions regarding interpretation, please contact the City Engineer.

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SECTION A – CLEARING AND GRUBBING

DESCRIPTION

A.01 Description

This work consists of clearing, grubbing, removing, and disposing of all vegetation and debris within the designated limits, except such objects that are to remain or are to be removed according to other items of work. This work also includes preserving from injury or defacement all vegetation and objects designated to remain.

CONSTRUCTION REQUIREMENTS

A.02 Clearing and Grubbing

Select clearing is defined as cutting off trees and other vegetation above the ground without disturbing the earth or the root ball. This may be done without a land disturbance permit.

No grubbing or clearing that disturbs earth or the root balls of trees is allowed without a land disturbance permit.

No clearing and grubbing operations are allowed in stream buffers (areas within 60 feet of a top of bank of a stream) or in areas designated to remain undisturbed in the Project's Stormwater Pollution Prevention Plan and applicable environmental permits.

A.03 Disposal of Debris

Burning is not allowed.

Materials being removed from the site may not be provided to other landowners within the City of La Vergne without a plan approved by the City Engineer showing the ultimate disposition of the material. Under no circumstances will any such materials be allowed to be placed in sinkholes with the city limits.

SECTION B – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

DESCRIPTION

B.01 Description

This work consists of removing, entirely or partially, and disposing of all buildings, fences, structures, old pavements, abandoned pipelines, and other obstructions not designated or permitted to remain. The work also includes backfilling the resulting trenches, holes, and pits, and salvaging designated materials.

CONSTRUCTION REQUIREMENTS

B.02 General

Demolition of exterior improvements such as concrete or asphalt paving, site retaining walls not attached to a building and less than four feet tall, patios, etc. may be removed under the Land Disturbance Permit. Buildings of any sort or any above-ground structure or portion of a structure which is taller than four feet from surrounding grade must get a Demolition Permit from the City of La Vergne Codes Department.

Contractor is responsible for protecting all public utilities or other structures designated to remain. Contractor is further responsible for the repair to the original state of any items, utilities, or pavements not designated to be removed.

No material removed during demolition and removal activities shall become the property or responsibility of the city.

Take ownership of material not designated for the Department's use, and dispose of such material properly and according to applicable federal, state, and local laws and regulations. Materials being removed from the site may not be provided to other landowners within the City of La Vergne without a plan approved by the City Engineer showing the ultimate disposition of the material. Under no circumstances will any such materials be allowed to be placed in sinkholes with the city limits.

Contractor is responsible for any and all notifications required to other Government agencies for the purpose of this demolition and removal.

Remove foundations of buildings and other structures to a depth of not less than 1 foot below natural ground, except that within construction limits, remove to a depth of not less than 2 feet below subgrade elevation. Break up basement floors to prevent

water retention. Fill basements or cavities left by structure removal to the level of the surrounding ground or to subgrade elevation within the prism of construction. Compact the material placed in these cavities as specified in Section E.

B.03 Removal of Bridges, Culverts, and Other Drainage Structures

Do not remove structures in use by traffic until after making arrangements to accommodate traffic.

Remove all bridges, culverts, and drainage structures from streams according to the terms and conditions specified in the applicable environmental permits, including the TN Construction General Permit. Use highly visible markers to clearly mark permit boundaries and disturbed area limits.

Unless otherwise specified or directed, remove portions of bridge substructures that are located outside a stream to 1 foot below the adjacent ground level or natural stream bottom. For those portions that are located in a stream or wetland, adhere to the permit form of the applicable State and Federal agencies approving the location and plans and authorizing the construction of the bridge.

Complete blasting or other operations necessary to remove an existing structure or obstruction without damaging new construction. Complete such operations prior to placing the new work, or take adequate precautions to prevent such damage.

B.04 Removal of Pipe

Remove, and store when necessary, pipe designated for salvage so that no loss or damage occurs. Replace, at no cost to the Department, sections damaged by negligence or by the use of improper methods.

B.05 Removal of Pavement, Sidewalks, and Curbs Constructed of Portland Cement Concrete

As directed, dispose of pavement, base course, sidewalks, curbs, gutters, and similar features constructed of Portland cement concrete designated for removal. If the Plans do not to identify the existence of concrete pavement under asphaltic pavement, do not interpret this as meaning that no concrete is present. Remove and dispose of concrete pavement, parking strip, and base, all with or without bituminous overlay, concrete curb and gutter, sidewalk, driveways, and similar features as follows or as directed:

1. If the items are no more than 2 feet below subgrade elevation, remove and dispose of the items.

2. If the items are more than 2 feet below subgrade elevation, break them into sections no greater than 2 feet in maximum dimension and leave in place, unless doing so will interfere with succeeding items of construction.

3. When specified, remove and stockpile ballast, gravel, bituminous pavement, or other pavement materials; otherwise, dispose of such materials as directed.

B.06 Removal of Underground Storage Tanks

Before work begins, submit an application for closure of each Petroleum Underground Storage Tank or Tank System to the TDEC, Division of Underground Storage Tanks. In addition, the Contractor shall:

1. Provide the Engineer with copies of the application for closure, the TDEC's approval of that application, laboratory test reports, closure notification form, and all pertinent correspondence.

2. Engage a laboratory approved by the TDEC to perform all required sampling and testing for leakage and contamination before and after removal of the tank(s). Upon receipt of written approval from the TDEC, remove the tank(s) according to TDEC regulations. If soil testing either before or after tank removal reveals soil contamination, remove and dispose of the contaminated soil according to TDEC regulations.

3. After removal, take ownership of the tank(s) and tank fixtures unless otherwise shown on the Plans. Ownership of the tank(s) shall not relieve the Contractor of the responsibility of labeling, transporting, and disposing of the tank(s) according to TDEC regulations.

4. After removing the tank(s) and contaminated soil, backfill the hole or trench as necessary with material specified on the Plans or approved by the Engineer.

B.07 Water Well Abandonment

Locate and seal abandoned water wells, and remove and dispose of pumps, pipe, and other related items not provided for elsewhere in the Contract. Perform all work according to applicable TDEC regulations.

Seal abandoned wells as follows:

A. Wells with a Diameter of 1 Foot or Less

Retain a licensed driller or pump installer to remove all pumps and related plumbing. Clear the bore hole of all other obstructions. A licensed well driller shall clean the bore hole by drilling, blowing, or bailing as applicable. To disinfect the well, add laundry bleach to the water in the well to equal 1 quart of bleach for each 100 gallons of water. Obtain the number of gallons of water in the well as follows:

$$V = [D_{well} - D_{swl}] \times 0.0408\ (Dia^2)$$

Where:

V	=	volume of water in the well in gallons
D_{well}	=	total depth of the well in feet
D_{swl}	=	depth to static water level in feet
Dia	=	diameter of the well in inches

After disinfecting the well, the licensed well driller shall fill the well using flowable fill. Use bentonite or other approved colloidal reagent as an admixture in an amount equal to 1.5% by volume of the cement.

The flowable fill material shall extend from the bottom of the well to within 5 feet of the final surface where the well is in a roadway cut, or to within 5 feet of the existing ground surface where the well is located under roadway embankment or where the well is outside of the construction limits. Pipe the flowable fill directly to the point of application by a tremie or dump bailer to avoid segregation or dilution. Cut off the well casing flush with the top of the flowable fill material.

B. Wells with Diameter Greater than 1 Foot

Remove all pumps and related plumbing, and clear the well of all other obstructions. Disinfect the water in the wellby adding 1 quart of bleach for each 100 gallons of water.

Fill the bottom 5 feet of the well or a depth equal to the depth of the water, whichever is greater, with flowable fill. Fill the remainder of the well with compacted soil. Remove projecting well casings or walls or cut off 5 feet below the existing or proposed ground surface, as applicable.

If flowable fill loss is excessive due to crevices in the borehole wall, use Mineral Aggregate, Type A Base, Grading D, to seal the crevices. After sealing the crevices, resume filling with flowable fill.

Immediately after sealing the wells, provide an affidavit to the Tennessee Water Supply Division stating the name of the licensed contractor(s) who performed the cleaning and sealing of the wells, the project number, location of the wells, type and sequence of material used, volume of material used, and date completed.

SECTION C – EXCAVATION AND UNDERCUTTING

DESCRIPTION

C.01 Description

This work consists of excavating and grading the roadway (including the removal of slides), borrow pits, waterways, and ditches (including structure inlet and outlet ditches, channels, waterways, and similar features, even if they extend beyond the construction limits); excavating for benches under the side-hill embankments; excavating unsuitable material beneath embankment areas; excavating selected material found in the construction area that is required for specific use in the construction; the construction and removal of detours authorized by the Engineer or otherwise shown on the Plans; trimming and shaping of all slopes; and disposing of all excavated material.

The work also includes all embankment construction, shoulder and ditch construction, and Subgrade Construction and Preparation.

C.02 Classification

Excavation will be classified as follows:

A. Road and Drainage Excavation (Unclassified)

The City will consider all excavation performed under this item, including Portland cement concrete located above subgrade elevation, other than Borrow Excavation, Channel Excavation, and Undercutting, as unclassified excavation regardless of the nature of the material excavated.

B. Borrow Excavation

Borrow Excavation consists of material required for the construction of embankments or other portions of the work.

The Contractor may use excavated materials, other than Borrow Excavation (Unclassified), on the Project provided it meets the specifications of the designated borrow material.

Do not obtain borrow material from wetland areas, unless otherwise shown on the Plans and approved by applicable environmental permits.

Borrow will be classified as:

1. **Borrow Excavation (Solid Rock)**, which consists of removing and placing non-degradable rock that cannot be economically excavated by the proper use of a power shovel or without the use of explosives.

2. **Borrow Excavation (Unclassified)**, which consists of removing and placing all approved material included under the classification of Borrow Excavation (Solid Rock) and all other approved material.

3. **Borrow Excavation (Graded Solid Rock)**, which consists of removing and placing sound, non-degradable rock having the following characteristics:

   a. Maximum particle size of 3 feet in any direction.

   b. Particle size distribution in which at least 50% of the rock is uniformly distributed between 1 foot and 3 feet in diameter, and no more than 10% is less than 2 inches in diameter.

   c. Roughly equi-dimensional in shape.

   d. No thin, slabby material.

   Process the material until it meets the required gradation and quality requirements. Obtain the Engineer's approval before using the material.

4. **Borrow Excavation (Select Material)**, which is used for special construction purposes and meets the requirements set forth in the Contract or shown on the Plans.

   Borrow material other than solid rock, graded solid rock, or select materials shall be AASHTO M 145, classification A-6 or better if reasonably available. If classification A-6 is not reasonably available, the borrow shall be no worse than the predominant soil type in the construction area excavation based on AASHTO classification.

   Unless otherwise designated in the Contract, arrange for obtaining borrow material according to the manual *Procedures for Providing Offsite Waste and Borrow on TDOT Construction Projects, latest edition*.

C. Channel Excavation (Unclassified)

This item consists of removing and disposing of all material excavated in widening, deepening, and straightening existing channels or constructing new ones, which have a bottom width of more than 14 feet as shown on the Plans. Construct channel excavation that includes an existing stream or a proposed

stream relocation in accordance with the applicable environmental permits.

D. Undercutting

This item consists of removing and disposing of unsatisfactory materials below grade in cut sections and from areas upon which embankments are to be placed, and may also include excavating material below the foundation elevation for structures. Undercutting does not include the stripping, stockpiling, and placing of topsoil, nor does it include step-benching in the preparation of embankment areas on hillsides

CONSTRUCTION REQUIREMENTS

C.03 General

Perform the required Clearing and Grubbing, Removal of Structures and Obstructions, and placement of Erosion Control Devices before starting excavation, grading, and embankment operations.

Address both natural and created steep-slope areas as required in the TN Construction General Permit. Maintain and stabilize steep slopes according to the TN Construction General Permit and all applicable environmental permits.

Remove excavation materials so that the slopes may be neatly trimmed to the lines given.

Use all suitable materials removed from the excavation areas to construct embankments, intersecting road approaches, and in such other places as directed by the Engineer.

Remove all loose rock on cut slopes immediately.

Do not waste, deposit or dispose of excavated material outside the construction lines without the Engineer's approval.

Temporarily discontinue excavating operations upon encountering remains of prehistoric archeological sites or artifacts of historical or archaeological significance. The Engineer will contact archaeological authorities to determine the disposition thereof.

Scarify, obliterate, and apply topsoil and seed to all existing pavement and structures within the construction area, and not in the graded area, which are to be abandoned. Obliteration of old roadways shall include all grading operations necessary to incorporate the old roadway into the new construction and surroundings to provide a natural terrain appearance from the new construction.

A. Additional Material

If more material is required to complete the embankments after all cuts have been brought to grade and all Unclassified Excavation has been removed from within the balance, obtain additional materials from within the construction area by flattening, widening, or daylighting cut slopes, or by depressing raised areas at locations designated and as directed by the Engineer, provided:

1. The cost of this material is more economical than borrow excavation.

2. The material can be excavated without blasting.

3. The material has not been designated as potentially acid producing material.

B. Rock Cuts

Construct rock cuts to the grading line shown on the Plans, with an allowable working tolerance of plus 1 inch to minus 3 inches. Bring areas that are less than 3 inches below grade up to grade with spalls or other suitable granular material that is available from the excavation.

If the area is excavated in excess of 3 inches below the grading line shown on the Plans, provide and place, at no additional cost to the City, sufficient amounts of spalls or base material to bring the area to a line 3 inches below the grading line.

Where the Plans require placement of sod on rock cuts, remove the rock to 1 foot below the grading line and backfill to grade with earthen material before placing the sod.

Where boulder formations occur, scarify the excavation area and remove all boulders to a depth of 12 inches below grade. Backfill and compact resulting cavities with suitable material.

C. Presplitting and Blasting

Follow State of Tennessee requirements for notification for blasting.

In addition to the State of Tennessee requirements, notify the City Engineer and the City Codes Director each morning that blasting is planned. This notification can be by telephone, text, or e-mail.

Presplit all rock cuts at the outside limits of the cut areas. Presplitting shall consist of forming a plane of split rock, for the entire depth of the cut or to a predetermined bench level, prior to any primary blasting.

To accomplish presplitting, drill holes of appropriate size to the desired depth along

the outside limits of the cut area, load such holes with appropriate charges of explosives, stem with minus 3/8-inch clean stone chips to the collar of each hole, and simultaneously detonate the charges. The initial horizontal spacing of holes and vertical spacing of charges and blasting cord for simultaneous detonation shall be as recommended by a reliable powder company. Adjust horizontal hole spacing and vertical spacing of charges as necessary to obtain a relatively smooth shear plane. Do not use sand, gravel, clay, or dirt for stemming. In drilling holes for presplitting, ensure that the drills are plumbed for vertical slopes or set on the required slope when other than vertical slopes are specified, and that all holes are drilled in the same plane. Presplitting will not be required on slopes flatter than 1:1.

After presplitting is done, drill primary blast holes at least 3 feet from the presplit face. Provide blasting records to the City Engineer upon request. Do not perform blasting within 300 feet of any structure or concrete until at least 72 hours after concrete placement. Replace and/or repair all damage associated with blasting operations at no cost to the City.

D. Unsuitable Soil

The Project Specifications will define unsuitable soils. If unsuitable soils are not defined in the Project Specification, Contractor shall request a definition from the Engineer prior to beginning work. Dispose of all unsuitable soil as directed by Engineer and at no additional cost to the City.

In the event that unsuitable or surplus soil is removed from the site, please follow Section C.06.

E. Borrow Areas

Borrow areas within the City of La Vergne will require a Land Disturbance Permit as described in the City of La Vergne Municipal Code Title 14, Chapter 6, *The Stormwater Management Ordinance*.

Borrow materials shall not contain acid producing materials. Representative samples of the proposed borrow material shall be independently tested at Contractor's cost for pH (EPA600/2-78-054 or ASTM D4239). Material with a pH less than 5 is considered acid producing and will not be accepted.

Unless otherwise allowed, do not place borrow material until after the excavation material has been placed in the embankments. Do not excavate beyond the dimensions and elevations established.

If the Contractor removes fencing to create a borrow area, replace the fencing removed with new fence at no cost to the City, and assume responsibility for confining pets or livestock, as necessary.

Excavate borrow pits to be self-draining where possible and practicable.

After completing excavation operations, provide the area with a neat appearance. Cover all self-draining borrow areas with topsoil and stabilize. Provide and place topsoil and seeding (with mulch for slopes less 5:1 and with erosion control matting for slopes 5:1 and steeper).

For borrow pits 1 acre or larger in size, Contractor must obtain approval of a Stormwater Pollution Prevention Plan (SWPPP) from TDEC prior to beginning excavation.

C.04 Undercutting

Backfill undercut areas with suitable material from within the construction area, if obtainable. If suitable excavation is not available, use borrow excavation as backfill.

Compact backfill materials per Project Specifications.

If disposing of undercutting material off the project site, obtain advance approval for the disposal site from the Engineer and the City Engineer.

C.05 Stripping, Stockpiling, and Placing Topsoil

The Engineer will designate areas for stripping and stockpiling existing topsoil on the plans to be approved by the City Engineer.

Strip the quantity of material necessary to cover all areas to be seeded with 2 to 3 inches of topsoil. If the quantity of topsoil available in such areas is insufficient, obtain additional topsoil from an offsite borrow area. If borrow area is within the city limits of La Vergne, a separate Land Disturbance Permit will be required.

Neatly dress each stockpile per the approved erosion and sediment control plan.

Place a minimum 3-inch layer of topsoil unless Project Specifications or Drawings require thicker topsoil on all areas requiring seeding or sod. On cut slopes steeper than 2:1. On cut slopes steeper than 2:1 that require seeding or sod, spread topsoil to a minimum depth of 2 inches unless Project Specifications or Drawings require thicker.

Cover rock slopes and other rock areas that require seeding with minimum 9 inches of suitable material and minimum 3 inches of topsoil unless Project Specifications or Drawings require thicker.

C.06 Disposing of Excess or Unsuitable Material

Use excess excavation material to raise, widen, or flatten the slopes of embankments; to

fade embankments into cuts; or to place in such other locations and for such purposes as the Engineer may direct.

Place and compact excess or unsuitable material within the project or right-of-way limits as per Project Specifications. Foundation preparation for and drainage through these waste areas shall be equivalent to that provided for the adjacent work embankment.

Dispose of surplus material as directed in Project Specifications. In addition to the Project Specifications, in the event that excess or unsuitable soil is removed from the site, please note the following:

1. If it is placed anywhere in the City of La Vergne, a Land Disturbance Permit will be required for the final disposition location
2. It cannot be placed in a sinkhole within the city limits of La Vergne
3. If it is removed from the city limits of La Vergne, then it is the contractor's responsibility to comply with all applicable local, state, and federal regulations regarding its disposition.

C.07 Shaping and Dressing

Trim and shape the slopes of all excavated areas, ditches, waterways, channels, borrow pits, and embankments to be in reasonably close conformity with the Plans unless otherwise directed by the Engineer.

Scale all loose fragments, projecting points, and debris from rock cuts, and leave in a neat, safe, and workmanlike condition.

Dispose of excess material created by trimming slopes, resloping, and shaping as specified in **C.06**.

Perform Final Dressing as specified in Project Specifications.

C.08 Construction in Rock

1. Contractual requirements for additional rock excavation shall be defined in the Project Specifications. In the absence of such requirements in that document, rock surface elevations will be determined by the contractor based on soil profiles and/or the geotechnical report. Straight-line interpolations between borings will be utilized for this determination. Only rock excavation above these determinations will be considered as additional rock excavation.

2. Authorized excavation of rock, shale, or unsuitable material below grade consists of that excavation necessary to provide the designed thickness of backfill. If the plane of the designated bottom of excavation falls within a layer or stratum of rock, the

below-grade excavation to the bottom of the layer, not exceeding 3 inches below grade, will be considered as authorized.

3. If the project or roadway is excavated in excess of 3 inches below the grading line shown on Plans, the Contractor shall furnish and place, at no cost to the City, sufficient amount of spalls or approved base course material, or other suitable approved granular material, to bring the roadway to a line 3 inches below the grading line.

SECTION D – STRUCTURE EXCAVATION FOUNDATION PREPARATION, AND BACKFILL

DESCRIPTION

D.01 Description

This work consists of excavation, foundation preparation, and backfill for the installation or construction of structures including buildings, bridges, culverts, underdrains, and other structures not otherwise provided for in the Specifications.

This work also includes constructing and subsequently removing all bracing, shoring, cribbing, and cofferdams, all pumping and bailing, backfilling, and disposing of excess or unsuitable material.

MATERIALS

D.02 Relation to Project Specifications

Materials are defined in the Project Specifications. In the event that there are no Project Specifications or the Project Specifications do not provide such definitions, the following shall apply:

A. Foundation Fill Material

Material for foundation fill shall consist of suitably graded sand, gravel, slag or stone, as approved by the Engineer.

B. Bedding Material

i. Support for Pipe Culverts

For Class A bedding, use Portland Cement Concrete, Class A.

For Class B bedding, use sand or a natural sandy soil, all of which passes a 3/8-inch sieve and not more than 10% passes a No. 200 sieve, or a Type A or Type B Aggregate, Grading C, D, or E.

ii. Areas Requiring Free Drainage Material

In rock cuts or other areas that require a free drainage bedding or backfill material, provide crushed stone, crushed slag, or washed gravel.

C. Backfill Material

i. General

Material for backfill shall be fine compatible soil selected from structure excavation and shall be approved by the Engineer.

Granular Backfill Material for Structures shall be Type A aggregate, Grading D.

ii. Flowable Fill

If shown on the Plans, place as backfill material a controlled low strength material (CLSM) (flowable fill) at the locations shown on the Plans or as directed by the Engineer or Project Specifications.

Submit a proposed mix design for CLSM to Engineer for approval.

As defined herein, there are three types of CLSM: general use flowable fill, excavatable flowable fill, and early strength flowable fill.

Perform testing as required by Project Specifications. The following field testing is the minimum required and applies to each of the types of CLSM.

a. Place an inverted slump cone on a smooth, level surface.

b. Fill the inverted slump cone with a representative sample of the flowable fill without rodding in one lift.

c. Remove the slump cone by lifting it straight up, thus allowing the sample to diffuse on the smooth, level surface.

d. The flowable fill should diffuse into a circular shape having an approximate diameter of not less than 15 inches.

Each consistency test will represent up to 100 cubic yards of flowable fill at each installation.

The Engineer may adjust the Specification Limits identified below to obtain the consistency required for satisfactory flow.

1. **General Use Flowable Fill.** When not otherwise shown on the Plans, or specified in the Contract, provide general use flowable fill proportioned to meet the consistency of a 15-inch minimum spread.

2. **Excavatable Flowable Fill (EFF).** If shown on the Plans, design, proportion, and deliver to the Project an EFF that meets the performance requirements specified in the below Table.

Specification Limits for EFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% (1)
Consistency	15 inches spread minimum
Compressive strength (ASTM D4832) (2)	30 psi minimum at 28 days 100 psi maximum at 28 days

(1) When using air entrained mixture design

(2) ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.

The Contractor may adjust the mixture design with the Engineer's approval to obtain the required properties.

3. **Early Strength Flowable Fill (ESFF).** If shown on the Plans, design, proportion, and deliver to the Project ESFF that meets the performance requirements specified in the below Table.

Specification Limits for ESFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% (1)
Consistency	15 inches spread minimum
Compressive strength (ASTM D4832) (2)	30 psi minimum at 24 hours

(1) When using air entrained mixture design.

(2) ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.

Include in the proportions of ESFF sufficient amounts of cementitious materials, high range water reducers, accelerators, and other chemical admixtures so the ESFF can be loaded/backfilled as specified.

The Contractor may adjust the mixture design with the Engineer's approval to obtain the required properties.

4. Provide an approved Concrete Daily Report, and furnish the resources, information, and tools to allow the City or their agents to witness testing.
5. To produce the desired consistency, the Contractor may use chemical admixtures, air entraining admixtures, or both, at no additional cost to the City.

CONSTRUCTION REQUIREMENTS

D.03 Excavation

D. Structures, Bridges, Box Culverts, and Other Major Structures

Before the start of excavation, the Engineer, or Contractor when required, will set stakes locating and outlining the structure.

Before starting excavation, clearly mark the limits of disturbed area and undisturbed area using highly visible markers that are readily visible to project personnel including equipment operators.

Excavate to the lines and elevations shown on the Plans.

If solid rock is encountered in cut sections and channel sections under bridges, perform presplitting operations. Hole spacing shall not exceed 12 inches. If overshooting of rock requires modification of the design, make such modifications at no additional cost to the City and submit to the Engineer for approval.

Excavate inclined surfaces of rock used as foundation either level or in steps. When necessary to obtain good bond, roughen the surface of rock foundation or install suitable anchors. Over-excavations that require re-design, increased quantities, supplemental retaining walls or other earth retaining structures, shall be approved by the Engineer and at no additional cost to the City.

Remove existing concrete foundations, boulders, or ledge streaks of rock projecting into the bottom of the excavation to a depth of 6 inches below foundation elevation. Backfill and compact the resulting cavity with approved material.

Only excavate below the specified foundation elevations as directed by the Engineer. Replace, at no cost to the City, all materials moved without such authority by constructing a sub-footing of the same materials as the footing of the structure

unit and 6 inches wider on every side.

E. Pipe Culverts

Excavate for pipe culverts as specified in Project Specifications and as follows:

1. The width of the pipe trench shall be as shown on the Plans to allow satisfactory joining of the pipe, thorough tamping of the bedding material under and around the pipe, and placement of flowable fill.

2. Remove rock, hardpan, or other unyielding material encountered in the pipe trench to below the foundation grade for a depth of 6 inches, or as directed by the Engineer.

3. Project Engineer must ensure that the widths of all stormwater drainage easements containing culverts is in full compliance with minimum easement width requirements found in Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6)

F. Use of Excavated Materials

Use suitable excavated material as backfill or embankment. When disposing of excess or unsuitable material, do not obstruct a stream or otherwise impair the efficiency or appearance of the structure. Deposit excavated material so as not to damage a partly finished structure.

Carefully handle, deposit, and protect excavated materials that will be incorporated in the structure.

In streams, dispose of material according to the approved Aquatic Resource Alteration Permit (ARAP), Stormwater Pollution Prevention Plan (SWPPP), and the laws of the U.S. Government, the requirements in the TN Construction General Permit, and all other applicable environmental permits.

G. Protection of Excavation

Protect excavation areas and ensure that the excavation remains intact.

If OSHA regulations require shoring, submit to the Engineer, prior to starting work, computations and drawings, prepared by and stamped by a Professional Engineer licensed in the State of Tennessee, showing the basis for the design.

When dewatering work areas, comply with the requirements of the Approved ARAP, Approved SWPPP, TN Construction General Permit, and do not violate water quality standards.

If the foundation excavation becomes disturbed or distorted, clean out and restore it to satisfactory condition.

D.04 Foundation Preparation

A. Structures, Bridges, Box Culverts, and Other Major Structures

Prepare foundations for structures, bridges, box culverts, and other major structures according to the following:

1. After completing the foundation preparation to the specified elevation, Contractor's quality control team shall test the bearing capacity of the foundation subgrade using (at a minimum) a small-diameter steel-tupped probe rod and a Dynamic Cone Penetrometer (DCP). Written results stating that these tests were conducted and passed must be onsite before City Inspectors are called to make the pre-concrete-placement inspection for the foundations. If the inspector requests to see these results and they are not available, then the inspection is failed. This is in addition to all quality control requirements of the Project Specifications.

2. If these tests reveal unsatisfactory foundation conditions, continue the excavation lower for another 12 inches until a satisfactory foundation is obtained.

3. If satisfactory foundation conditions are not found with the additional 12 inches of excavation. Notify Engineer and request direction.

4. It is the Contractor's responsibility to protect foundation excavations from inclement weather conditions. Failed foundation tests due to moisture from weather events is solely the responsibility of the Contractor as are all mitigation requirements.

5. If rock is encountered in the excavation for the foundation, remove loose fragments and debris and notify the Engineer. Drill test holes in the rock as shown on the Plans or as directed by the Engineer to determine the lines of demarcation and the stability of the rock. Continue the excavation to the elevation designated by the Engineer. If required by the Engineer, drill test holes and continue excavation until a foundation approved by the Engineer is secured. As stated previously, the presence of rock will only be considered as an unforeseen condition if the depth to rock shown in the geotechnical report and soil profiles is lower than that actually encountered.

   Strip and clean rock used as foundation of all overlying materials. Remove all loose, disintegrated, or light slabby portions of the rock.

In rock foundations, if the rock is shattered by construction activities below the foundation elevation, remove the shattered material and rebuild the resulting space with the same type of construction as the proposed overlying construction, at no additional cost to the City. The definition of the 'same type of construction' will be determined by the Engineer.

6. Remove unsatisfactory material in the foundation and replace with satisfactory material as defined by the Project Specifications or designated by the Engineer. Place the satisfactory material in layers not exceeding 6 inches in loose depth and compact to 100% of maximum density up to the foundation elevation.

7. If dewatering is required for foundation installation, prevent the possibility of concrete material being carried away by pumping operations. Use a suitable sump located outside the concrete forms to perform any pumping required during the placing of concrete, or for a period of at least 24 hours thereafter. When dewatering work areas, comply with the requirements of the approved ARAP, SWPPP, TN Construction General Permit, La Vergne Stormwater Management Ordinance, and do not cause a water quality violation.

B. Pipe Culverts

Bedding and trench installation shall conform to the requirements in the Standard Drawings, Specifications, or the Plans. Pipe Culvert shall be placed into an excavated trench. Bedding for plastic pipe shall be Class B, Type A or B Aggregate, Grading D or E meeting TDOT Section 903.05.

If placing bell and spigot pipe, dig recesses in the bedding material of sufficient width and depth to ensure that the bell will not rest on the bottom of the recess. The width of the recess shall not exceed the width of the bell by more than 2 inches. If the class of bedding is not shown, cut a shallow trench in natural ground or compacted embankment to a depth of not less than 10% of the outside vertical pipe diameter, and shape to fit the lower pipe exterior for the specified embedment. If placing bell and spigot pipe culvert, dig recesses in the earth foundation of sufficient width and depth to ensure that the bell will not rest on the bottom of the recess. The width of the recess shall not exceed the width of the bell by more than 2 inches.

D.05 Backfilling

Place all backfill, other than flowable fill, which will become a part of the roadway prisms or their foundations, in layers, and compact to the density specified in the Plans, Project Specifications. or within these Standard Specifications (whichever is greater).

Determine maximum density and optimum moisture according to AASHTO T 99. For material with less than 5% retained on a No. 4 sieve, method A with 4-inch mold will

be used. For material with more than 5% retained on a No. 4 sieve but less than 50% retained on a 3/4-inch sieve, Method D with corrections according to AASHTO T 224 will be used.

Use the correction on soils containing less than 50% plus 3/4-inch material.

A. Structures, Bridges, Box Culverts, and Other Major Structures

Backfill all excavated areas not occupied by structures with acceptable earth material to the normal ground surface, unless otherwise directed. Place backfill in layers, not more than 6 inches in loose depth for mechanical tamps and 10 inches in loose depth for tamping rollers, on both sides of the structure or around the structure unit, maintaining the layers at equal elevation and thoroughly compacting each layer by tamping with suitable rapid-striking power-driven mechanical tampers or sheepsfoot rollers before placing the succeeding layer.

Place Granular Backfill Material for Structures (Type A, Grading D or 67 Stone), so that the compacted depth does not exceed 6 inches per layer. Compact every 6-inch layer to 100% density. Determine maximum density and optimum moisture according to AASHTO T 99. For material with less than 5% retained on a No. 4 sieve, method A with 4-inch mold will be used. For material with more than 5% retained on a No. 4 sieve but less than 50% retained on a 3/4-inch sieve, Method D with corrections according to AASHTO T 224 will be used. Perform testing at a rate of one test per lift per 500 SF of surface area. At least one test per lift must be performed.

If any part of the structure is to function as a retainer for backfill, such as basement walls, abutments, retaining walls, wing walls, arches, side walls of box culverts, or minor structures, step the boundary slopes as necessary to prevent wedge action during backfilling.

Do not place backfill against a structure or any section or unit thereof, until the following conditions have been met:

1. Forms have been removed and concrete surfaces have been finished;

2. Representative specimens of the structural concrete, cured by the same methods and in the same manner as the concrete in the structure, attain a compressive strength of 3,000 psi (or more, if directed by Project Specifications of the Engineer); and

3. The concrete has been in place a minimum of 7 days, not counting the days of 24 hours each in which the temperature falls below 40 °F, or 21 calendar days, whichever occurs first.

When backfilling behind abutments held at the top by a superstructure, and behind the sidewalls of culverts, bring up backfill simultaneously behind abutments or sidewalls.

Promptly backfill box culverts and bridge ends after the strength requirements have been met, but no longer than 30 days following strength attainment, and before placing a bridge deck, or as directed by the Engineer.

B. Pipe and Pipe Culverts

All pipe of any type which is under a public street, parking lot, or walk shall be fully backfilled with Number 67 stone unless this is at variance with and less strict than culvert manufacturer's recommendations. If that is the case, then install as per manufacturer's recommendations. In no case will backfill under pavement be soil. For work within a public right-of-way, all pipes within the width of the right-of-way shall be backfilled with said aggregate. Compact this material to 95% density.

Place Granular Backfill Material for pipes and pipe culverts (67 Stone), so that the compacted depth does not exceed 6 inches per layer. Compact every 6-inch layer to 100% density. Determine maximum density and optimum moisture according to AASHTO T 99. For material with less than 5% retained on a No. 4 sieve, method A with 4-inch mold will be used. For material with more than 5% retained on a No. 4 sieve but less than 50% retained on a 3/4-inch sieve, Method D with corrections according to AASHTO T 224 will be used. Perform testing at a rate of one test per lift per 500 LF of pipe. At least one test per lift must be performed regardless of pipe length.

Soil backfill will not be allowed under public streets, parking lots, or walks.

Soil backfill shall be allowed under surfaces to be grass or landscaped unless the pipe is plastic. The backfill in those areas will be placed in 8-inch lifts and compacted to a minimum of 90% density. Backfill for plastic pipe culvert shall be Class B, Type A Aggregate, Grading D or Number 67 stone.

After the bedding has been prepared and the pipe culvert installed; place backfill and embankment uniformly as shown in the Standard Drawings, Specifications, or Plans. Compact material with mechanical tampers to the required density. Use vibratory plate type compactors to achieve required density. Do not use hydrohammer compactors over the top of the pipe culvert.

C. Backfill Material (Flowable Fill)

Flowable Fill backfill is not a standard for the City of La Vergne. It must be specifically required by either the Project Engineer or the City Engineer.

Place Excavatable Flowable Fill at the locations shown on the Plans. Cover or otherwise protect the flowable fill while in the plastic state. Do not place embankment or base materials on the flowable fill prior to final set or hardening as determined by the Project Engineer.

Before placing flowable fill, install pipe and bedding as shown on the Plans. Securely brace or anchor all sections of pipe both horizontally and vertically, as required, to prevent movement of the pipe during placement of the flowable fill. Join pipe sections to prevent the influx of flowable fill around the joints. Replace, at no cost to the City, all pipe or sections of pipe that cannot withstand placement of flowable fill. Make provisions to form up, or provide earthen berms, to prevent the flowable fill from escaping at the ends of the trench and around headwalls.

SECTION E – EMBANKMENTS

DESCRIPTION

E.01 Description

This work consists of constructing embankments, including preparing the area upon which they are to be placed; constructing dikes within or outside the project area or right-of-way; placing and compacting approved material where unsuitable material has been removed; and placing and compacting embankment material in holes, pits, and other depressions within the project or roadway area.

MATERIALS

E.02 Relation to Project Specifications

Materials are defined in the Project Specifications. In the event that there are no Project Specifications or the Project Specifications do not provide such definitions, the following shall apply:

E.03 Materials

For embankment and backfill, only use approved materials, consisting of Excavation, Channel Excavation, and Borrow Excavation material as previously specified.

CONSTRUCTION REQUIREMENTS

E.04 Relation to Project Specifications

Materials are defined in the Project Specifications. In the event that there are no Project Specifications or the Project Specifications do not provide such definitions, the following shall apply:

E.05 Preparation of Embankment Areas

Before beginning embankment or fill construction in any area, complete Clearing and Grubbing, Removal of Structures and Obstructions, and installation of preliminary erosion control measures according to the approved Construction Drawings and SWPPP as specified in the City of La Vergne Stormwater Management Ordinance. No work may commence beyond installation of the initial erosion control measures until the Initial Erosion Control Inspection has been conducted by the city stormwater inspector and passed.

Remove snow, ice, and mud before placing embankment materials on the ground. Do not place embankment materials on top of ground surfaces and existing embankment layers that are frozen.

Fill all depressions or holes below the natural ground surface, whether caused by grubbing or otherwise, with suitable material and compact to the ground surface before starting embankment construction.

Unless otherwise shown on the Plans, if constructing embankment of less than 3 feet above subgrade:

1. Remove all sod and vegetative matter from the surface.

2. Remove unsuitable material and replace with suitable material.

3. Break up the cleared surface by plowing, scarifying, or stripping to a minimum depth of 6 inches, and then re-compact this area.

4. If a compacted road surface containing granular materials lies within 3 feet of the subgrade, scarify the old road surface to a depth of at least 6 inches, and then re-compact the scarified material.

Remove and dispose of concrete pavement, parking strip, and base, all with or without bituminous overlay, concrete curb and gutter, sidewalk, driveways, and similar features.

When placing embankment material on or against existing slopes that are steeper than 4:1, cut benches into the existing slope while bringing up the new embankment material in layers. Cut each bench of sufficient width to accommodate the operation of placing and compacting equipment. Begin each successive cut at the intersection of the original ground and the vertical side of the previous cut. Re-compact the cut material along with the new embankment material.

Before placing embankment material on a structure or any unit of a structure, ensure that the surrounding backfill has been completed and thoroughly compacted to ground surface.

E.06 Formation of Embankments

Do not incorporate or bury any perishable materials, such as brush, hedge, roots, stumps, and parts of trees, in the fill or embankments. Do not place rock, broken concrete, or other solid objects in embankments areas where piling will be installed.

Construct embankments to provide adequate surface drainage at all times. If roadway embankment materials consist predominantly of soil, place the material in

horizontal layers not to exceed 10 inches in loose thickness, and compact each layer to a density not less than 95% of maximum density. Unless otherwise specified, compact the top 6 inches in both cut and fill sections to 100% of maximum density.

Determine maximum density and optimum moisture according to AASHTO T 99. For material with less than 5% retained on a No. 4 sieve, method A with 4-inch mold will be used. For material with more than 5% retained on a No. 4 sieve but less than 50% retained on a 3/4-inch sieve, Method D with corrections according to AASHTO T 224 will be used.

Use the correction on soils containing less than 50% plus 3/4-inch material.

Determine the density of the soil in place according to an approved AASHTO method. Compact each embankment layer to the required density, and confirm the moisture and density through field testing at a rate of one test/2,500 SF/lift. Do not place the next succeeding layer until all failing tests have been mitigated and the passing follow-up tests documented. Keep placing and compacting areas separate. These test results do not have to be submitted to the city but have to be available for inspection by city personnel on request.

When constructing embankment across low swampy ground that will not support earth moving equipment, construct the lower part of the fill in a uniformly distributed layer of a thickness not greater than necessary to support the hauling equipment while placing subsequent layers. Construct the embankment full width unless otherwise shown on the Plans. The Quality Control Representative may waive the density requirement for such a lift, but the moisture content of the material used shall not exceed the optimum moisture range for 95% density for that material. Comply with the maximum thickness and minimum density requirements for all succeeding layers of the embankment.

When a minimum of 95% of maximum density is required, ensure that the moisture content of the material being compacted meets both of the following conditions:

1. The moisture content shall be within the range of values at which 95% of the maximum density can be obtained as indicated by the moisture-density relationship curve; and

2. The moisture content shall not exceed the optimum moisture content to the extent that the material pumps under loads applied by the construction equipment.

Even if the required density is achieved and the moisture content is in range, if pumping occurs, remove the affected sections.

When 100% of maximum density is required, the moisture content of the material being compacted shall meet condition (2) above and shall not vary from the optimum moisture content by more than plus or minus 3%.

Aerate the material, or distribute and incorporate water uniformly into the material, as necessary, to control the moisture content within the applicable limits.

If the excavated material consists predominantly of rock, the following shall apply:

A. Definition of Material

If deemed necessary by the Project Engineer, the Contractor shall conduct test or tests with a 60,000-pound static tamping foot roller to determine whether the material is degradable or non-degradable. Consider material that readily breaks down under three passes of the 60,000-pound static tamping foot roller as degradable.

B. Non-Degradable Rock

If sound, non-degradable rock is encountered in the unclassified excavation, the Project Engineer may require the Contractor to provide a mechanical means for separating the sound rock from degradable rock and other soils. The Project Engineer may allow the use of sound, non- degradable rock in the backfilling of benches, lower and outside portions of embankments, rock buttresses, or other areas.

If the material for embankments consists of sound, non-degradable rock of a size that makes placing the material in 10-inch layers impracticable, place the material in layers no thicker than 3 feet. Do not use rock fragments greater than 2 feet in maximum dimension. With the Project Engineer's approval, the Contractor may place occasional individual rocks and boulders not exceeding 4 feet in height in the exterior portions of the embankment next to the slope face. Place such rocks to prevent nesting and fill the adjacent voids with fine fragments to form a dense and compact mass.

Do not dump rock material into its final position. Place rock by blading or dozing in a manner that will minimize voids, pockets, and bridging. Ensure that each layer is leveled the full width of the embankment. Rolling is not required if the rock embankment consists of sound, non- degradable material placed in greater than 10-inch layers.

C. Degradable Rock

Compact degradable rock for use in embankment with an approved vibratory tamping-foot roller in conjunction with a static tamping-foot roller. The minimum weight for the static tamping-foot roller shall be 60,000 pounds. The minimum compaction effort, as rated by the manufacturer, for the vibratory tamping-foot roller shall be 55,000 pounds.

Place degradable rock in 10-inch maximum loose lifts and provide a minimum of three passes with the static roller and two passes with the vibratory roller.

The Quality Control Representative may direct additional passes with either or both rollers until satisfactory breakdown and compaction is accomplished. Do not place degradable rock in the top 5 feet of an embankment.

If embankment composed of degradable rock does not contain sufficient moisture to compact properly, the Contractor must apply water in sufficient quantities to achieve the approximate optimum moisture for the particular material involved. Uniformly mix the added water with the material for the entire depth of the lift by blading, discing, or other approved methods.

D. Combination of Degradable and Non-Degradable Rock

Do not blend or combine degradable rock and non-degradable rock in a common lift without the Project Engineer's written approval.

If approved, place embankment material consisting of a mixture of degradable rock and non-degradable rock, or rock and soil, in layers not exceeding 10 inches in thickness. If the combined material is predominantly sound, non-degradable rock with fragments thicker than 10 inches, the Project Engineer may increase the layer thickness to be consistent with the size of the material, not to exceed 3 feet. Place the mixture by blading or dozing in a manner that will minimize voids, pockets, and bridging. Compact the mixture with suitable compaction equipment and apply water to facilitate compaction as necessary. Uniformly mix the added water with the material for the entire depth of the lift by blading, discing, or other approved methods.

E. Density Requirements

Density requirements will not apply to portions of embankments constructed of materials that cannot be tested by approved methods.

When the Plans require Solid Rock Fill, the material shall meet the following quality requirements:

Aggregate Quality Requirements

Fine Aggregate Quality Requirements

Application	Sodium Sulfate Soundness Loss AASHTO T 104, %max	L A Abrasion AASHTO T 96, %max	Absorption AASHTO T 84, %max
Concrete (**903.01**)	10	40 (1)	N/A
Mortar (**903.02**)	10	N/A	N/A
Hot Mix Asphalt Mix Base and Leveling Courses (**903.06**)	12	40 (1)	N/A
Hot Mix Asphalt Surface Courses (**903.11**)	12	40 (1)	N/A
Slurry Seal (**903.12**)	12	40 (1)	N/A
Microsurface (**903.12**)	12	40 (1)	N/A

(1)Applicable for fine aggregate manufactured from limestone or dolomite.

Do not use plastic soil or shale material. Place Solid Rock Fill as shown on the Plans or as directed by the Project Engineer.

Construct the roadway through rock fills to the grading line shown on the Plans with an allowable working tolerance of plus 1 to minus 3 inches. Bring up to grade those portions of the embankment that are then below grade with spalls or other suitable granular material that is available from the excavation within the balance.

If embankment material is to be placed on both sides of a concrete wall or box type structure, bring the material up equally on both sides of the structure.

At the location of basements. abutments, bents, and similar features, construct embankment to the finished grade before starting excavation on the respective section of the substructure, unless otherwise shown on the Plans. If embankment material is to be placed on only one side of basements, abutments, wing walls, piers, and similar features, do not begin construction until the superstructure is in place. Perform compaction operations without causing wedge action or placing excessive pressure against the structure.

E.07 Stability of Embankments and Cut Slopes

Assume responsibility for the stability of all embankments and cut slopes until final acceptance. Replace or rework all portions that have become displaced or damaged at no additional cost to the City.

E.08 Disposal of Excess or Unsuitable Material

Dispose of excess or unsuitable material as previously described in these specifications meeting all state, local, and federal regulations and the requirements of the Project Specifications.

SECTION F – FINAL DRESSING

DESCRIPTION

F.01 Description

This work consists of dressing all slopes and areas, including borrow pits and embankments, and generally preparing the Project for final inspection and acceptance. The costs of this work are incidental to other items of construction.

CONSTRUCTION REQUIREMENTS

F.02 Method and Scope of Work

Perform final dressing by hand work and machines to produce a uniform satisfactory finish to all parts of the earthwork for the Project. Shape the final grades to within reasonably close conformity to the specified lines, grades, and cross-sections. Dress spoil banks, borrow areas, waste areas, and similar areas. Clear rock cuts of all loose fragments, and leave in a neat, safe, and workmanlike condition.

Clean the project area of all weeds, briars, and brushes unless otherwise shown on the Plans. Clear and clean all structures, both old and new, of all brush, drifts, heavy vegetation, sediment, rubbish, obstructions, and other objectionable material.

Perform final dressing before sodding and seeding operations if the Contract includes these construction items.

Run tracked machines used in dressing slopes up and down slopes as opposed to longitudinally.

SECTION G – SUBGRADE CONSTRUCTION AND PREPARATION

DESCRIPTION

G.01 Description

This work consists of constructing and preparing part of or all the roadbed to a condition suitable for supporting the immediate construction of a base or pavement.

CONSTRUCTION REQUIREMENTS

G.02 Preparing Subgrade

Perform Excavation and Undercutting as specified in Project Specifications and this document.

Where the finished grade is below existing grade, haul, spread, and compact, as specified in Project Specifications and this document, suitable material in sufficient quantity to bring the roadbed to grade.

Where portions of the project area have been seeded for erosion protection or has established vegetative growth, clip those areas to remove vegetation and other deleterious material before placing the base or subbase material. Correct depressions resulting from the removal of deleterious material by hauling, spreading, and compacting suitable material as specified in Project Specifications or this document.

Where subbases are to be constructed on the subgrade, extend the limits of subgrade preparation across the entire section that will receive the subbase course, including the shoulders.

Where forms are required to construct base or pavement, prepare the subgrade 12 inches wider, on each side, than the neat width of the base or pavement.

G.03 Compacting Subgrade

On subgrades that require reworking, remove all vegetation within the limits of subgrade preparation, and appropriately dispose of this material before beginning reworking and re-compacting operations.

The density of the finished subgrade shall not be less than 100% of the maximum density. The optimum moisture, maximum density, and density of the soil in place will be determined in accordance with the testing specifications in this document. Field tests must be conducted at a rate of one test/2,500 SF. If field tests show failure to meet the density requirement, loosen the subgrade by discing, harrowing, or other approved methods to a depth of not less than 6 inches, then reshape and re-compact the subgrade material as specified in this document. Moisten or aerate the subgrade material as necessary during mixing and compacting to provide optimum moisture content.

Rework, or remove and replace, all soft, yielding material that will not compact readily, and compact the replacement material as specified in this document.

G.04 Drainage and Protection

Grade the subgrade to provide for ready drainage of water from the subgrade. Maintain ditches and drains to provide proper drainage during the construction.

Take all precautions necessary to protect the subgrade from damage. Limit hauling over the finished subgrade to that which is essential for construction purposes.

Correct ruts or rough places that develop in a completed subgrade and re- compact as necessary.

G.05 Checking Subgrade

Check the lines, cross-sections, and grades of the subgrade as completed to ensure they are in reasonably close conformity with those shown on the Plans for the bottom of subbase, base, or pavement.

Construct the subgrade to the grading line shown on the Plans, with an allowable working tolerance of plus or minus 1 inch.

Recheck the subgrade as specified in the respective sections governing construction of the particular type of base and pavement.

G.06 Disposal of Excess or Unsuitable Material

Dispose of excess or unsuitable material as specified in this document.

SECTION H – PROJECT EROSION PREVENTION AND SEDIMENT CONTROL

DESCRIPTION

H.01 Description

This work consists of implementing temporary and permanent best management practices (BMPs) to prevent erosion and control sediment through the use of structural and non-structural controls.

Implement erosion prevention and sediment control (EPSC) measures during all phases of construction. Ensure that all EPSC measures shown on the initial phase drawings of the Stormwater Pollution Prevention Plan (SWPPP) are in place before beginning soil disturbing activities.

Comply with all provisions of the SWPPP, noting that additional EPSC measures beyond those shown in the SWPPP may be needed to maintain compliance with the City of La Vergne Stormwater Management Ordinance, approved plans, and State or other agency permits.

CONSTRUCTION REQUIREMENTS

H.02 Project Review

At the preconstruction conference, discuss with the City Engineer the potential problems with implementing EPSC measures due to construction activities, as well as the actions to be taken to prevent such problems. If the Contractor's planned operations and construction staging differ significantly from the Project SWPPP or the approved Construction Drawings, Contractor must propose modifications to the Project Engineer who, in turn, will work with the City Engineer to obtain city approval. Contractor is not to proceed with any such changes to the Project SWPPP prior to City Engineer approval.

If a waste or borrow area is needed, prepare a Waste and Borrow Plan. If the location for the waste or borrow area is within the City of La Vergne a stamped and sealed engineered plan will be required.

H.03 Preconstruction Conference

Once the Construction Drawings have been approved by the City Engineer, the City will host a preconstruction conference at the City Engineer's office. For developer- or private-owner-funded projects, a request must be made to the City Engineer at least two weeks prior to the requested date

for the meeting. City personnel from multiple departments are needed for a successful meeting, therefore the city cannot guarantee that coordinating this meeting will not take longer than two weeks. At a minimum, a representative of the developer and the contractor shall be present.

The following conditions (if applicable) must be met before the developer or contractor can request that a Pre-Construction Conference be scheduled:

1. The Preliminary Plat for the development has been approved by the City of La Vergne Planning Commission
2. The Construction Drawings for the development have been approved by the City Engineer.
3. The Long-Term Maintenance Agreement has been approved by the City, signed by all parties, and recorded with the Register's Office of Rutherford County.
4. All TDEC water and sewer submittals are complete and approved by TDEC.
5. Water and sewer availability letters have been received.
6. SWPPP and NOC have been approved by TDEC. Any other government approvals such as an ARAP have been approved.

The following items are required to be submitted to the City Engineer's office at least 48 hours before the Pre-Construction Conference:

1. One copy each of the approved SWPPP, NOC, and any other required state or federal approvals other than the approved water and sewer plans. PDF is preferred and can be e-mailed.
2. A completed copy of the Land Disturbance Permit application. This may also be a pdf and may be e-mailed.
3. One copy of the Contractor's Tennessee license. PDF is preferred and can be e-mailed.
4. One copy of the Contractor's Certificate(s) of Insurance. This must include Contractor's General Liability and Workmen's Compensation.

The following items are required to be brought to the Pre-Construction Conference but can be delivered in advance:

1. Payment for the Land Disturbance Permit application fee.
2. Seven full-size (min. 24x36) paper copies of the approved Construction Drawings including the approved TDEC water and sewer plans. Two of these sets will be stamped approved by the City Engineer and returned to the applicant. If the applicant desires more than two sets, then they must provide five sets plus the number that they will need.
3. The drawings must be provided as a pdf files as well. This can be brought on a thumb drive or e-mailed.

The meeting itself will be conducted by the City Engineer and will include the following items:

1. Introductions and Sign-in
2. Safety Brief
3. Review of Items Required for the Pre-Construction Conference
4. Confirmation of Receipt of Land Disturbance Permit Application and Fee
5. Confirmation of Recorded LTMA

6. Project Contacts
7. Project Schedule
    a. Weekday Allowable Working Hours: 7:00 AM to 6:00 PM
    b. Weekend Allowable Working Hours: 8:00 AM to 6:00 PM
8. Health and Safety Requirements on the Project Site
9. Codes Department Review Comments and Questions
10. Fire Marshal Review Comments and Questions
11. Public Works / Utilities Review Comments and Questions
12. Stormwater and Erosion and Sediment Control Plans Review
13. Stormwater and Erosion and Sediment Control Inspections
14. Engineering Department Plans Review
15. Certificate of Occupancy Process
16. Final Comments and Questions

The Land Disturbance Permit will be issued at the meeting and initial erosion control work on the site can begin at that time. No land disturbing work can be conducted on the site prior to issuance of the Land Disturbance Permit accept the following:

1. Tree harvesting with no disturbance to the root ball. Cutting only.
2. Normal maintenance such as grass-mowing, tree-trimming or maintenance of existing items.
3. Minimal clearing (no disturbance to root balls) required for land surveying activities.
4. Minimal clearance along access track pre-approved by City Engineer including borehole locations and test pits required for geotechnical exploration.

H.04 Construction Requirements

Mark the disturbed area limits and environmental boundaries in the field before starting construction in each section or portion of the Project.

After issuance of the Land Disturbance Permit, the contractor is released to work ONLY on work required to install the items required by the approved Initial EPSC Plan. After those items are installed, the Contractor must contact the Cit of La Vergne Stormwater Department and request the Initial EPSC Inspection. After the City Stormwater Inspector has signed off on the initial EPSC installation, the Contractor will be free to move forward with the installation of all other items covered under the Land Disturbance Permit.

Do not pump water from cofferdams or other dewatering activities directly into streams. Pump such water into sediment basins, traps, or filter bags, or otherwise adequately treat before discharging.

Protect stockpiled topsoil or fill material to prevent sediment runoff from contaminating surrounding areas or entering nearby streams. To reduce sediment in runoff, promptly install EPSC structures during all construction phases and maintain these measures until the areas they are serving have been permanently stabilized.

Manage and stabilize existing or constructed steep slopes according to the approved EPSC plans.

Stage construction operations so that graded or otherwise disturbed erodible surfaces remain protected as the Work progresses. Once started, complete grading of cuts or embankments as a continuous, viable operation to subgrade elevation. As grading operations progress, perform final dressing, place topsoil, and protect exposed erodible cut or embankment slopes with permanent seeding, sodding, matting, or other acceptable EPSC measures in vertical increments not exceeding 25 feet. Do not allow any portion of these slopes to remain unprotected longer than allowed by the TN Construction General Permit unless the Project Engineer determines that weather conditions or other special circumstances prevent prompt placement of permanent control measures. Implement temporary erosion control measures as directed by the Project Engineer.

Perform seeding, sodding, matting, or other acceptable EPSC operations within 48 hours of the occurrence of either of the following:

1. Each 25-foot vertical increment is graded, or
2. Upon suspension or completion of grading operations in a specific area.

Incorporate all permanent EPSC practices into the Project as soon as practicable and in accordance with the approved Final EPSC Plan. Use temporary EPSC features to control erosive conditions before permanent control features can be installed or to temporarily control erosion that develops during construction, but which is not associated with permanent control features on the Project.

Where construction activities cross or border areas of depression (i.e., sinkholes without openings or open throats), install and maintain EPSC measures as shown on the Plans and as required by the TN Construction General Permit and all other applicable environmental permits. If construction activities encounter an open throated sinkhole (Class V Injection Well), immediately notify the Project Engineer and implement the applicable measures as described in the approved Construction Drawings. Prevent silt or other potential pollutants from entering the sinkhole opening.

Remove temporary EPSC measures when no longer needed or permanent control measures are installed. Any materials removed shall become the property of the Contractor.

Inspect EPSC measures on a regular basis. Remove accumulated sediment and maintain the structural components of the EPSC measures as necessary to ensure that they continue to function properly. Repair EPSC measures damaged by the Contractor's sediment removal operations. Upon complete removal of sediment traps, special ditches, and similar structures, restore the area upon which they were constructed by placing topsoil, seed, and mulch, or otherwise stabilizing.

If temporary EPSC measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of work as scheduled, perform such work at no cost to the City.

If there is a conflict between these requirements, the TN Construction General Permit, and the laws, rules, or regulations of other Federal, State, or local agencies, adhere to the more restrictive laws, rules, or regulations.

H.05 Construction of Structures

Structural controls include, but are not limited to riprap, inlet protection, check dams, silt fence, and sediment basins. Install and maintain structural measures according to the approval EPSC plans, the manual for Management of Storm Water Discharges Associated with Construction Activities, and the TN Construction General Permit.

In all instances where dewatering is taking place from a trench or other excavation, sediment traps, sediment filter bags, or some other approved method for controlling sediment from the pumping operations must be used.

If sediment filter bags are used, provide filter bags consisting of a non-woven geotextile bag resistant to rot, mildew, puncture, and tearing, and that has a minimum seam breaking strength of 200 pounds. The seams shall demonstrate less elongation and deformation than the geotextile fabric. Ensure that each bag has a permanently attached label from the manufacturer designating the bag's maximum allowable flow rate in gallons per minute. Do not allow the flow into the filter bag to exceed the designated flow rate. Upon Project completion, remove the sediment filter bag and permanently stabilize the disturbed areas at the dewatering structure location. Dispose of the bag and the sediment contained in the bag as directed for waste soil materials in this specification.

If the Contractor fails to control project related erosion or the discharge of pollutants, either on or off the right-of-way, the City may issue a Stop Work Order and/or issue fines fort illicit discharge as per the La Vergne Municipal Code Title 14, Chapter 6, 'Stormwater Management Ordinance'.

PART 3 – BASE AND SUBGRADE TREATMENTS

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SECTION A – SUBGRADE TREATMENT (LIME)

DESCRIPTION

A.01 Description

This work consists of treating in-place subgrade material with lime, and includes preparing the existing subgrade, distributing the specified percentage of lime, initial mixing, mellowing, final mixing, compacting, finishing, and curing.

MATERIALS

A.02 Materials

A. Lime

Provide either hydrated lime or quicklime meeting TDOT Section 921.04.

B. Water

Only use water that meets the requirements of TDOT Section 921.04.

C. Soil

Use in-place subgrade material, removing unsuitable soil and replace it with suitable material.

Before the work is started, sample the in-place material and perform laboratory testing to determine the percentage of lime required and the appropriate optimum moisture content of the lime-soil mixture according to AASHTO T 99, Method C.

D. Bituminous Material

For use as a curing agent, provide bituminous material as specified in:

PG64-22, 70-22, 76-22, and 82-22:	TDOT Section 904.01
Emulsified Asphalt:	Types allowed for Tack Coat in La Vergne Specifications Part 4, Section C

The Contractor may select the type of bituminous material to use for curing.

EQUIPMENT

A.03 Equipment

A. Distributing Equipment

Provide equipment to distribute the lime uniformly, at the required rate and without excessive loss.

B. Mixers

Provide an acceptable mixer capable of attaining final mixing.

C. Compaction Equipment

Provide compaction equipment of the size and weight required to obtain the specified density and quality of finished surface.

CONSTRUCTION REQUIREMENTS

A.04 Limitations

Handle and store lime in completely enclosed, moisture resistant containers until immediately before use. Store bagged lime in weatherproof buildings with adequate protection from ground dampness.

Do not stabilize areas that will not be covered with the succeeding stage of sub-base or base construction during the same construction season.

Do not apply lime:

1. to frozen subgrade material;
2. if the air temperature in the shade is less than 40 °F;
3. during periods of high winds; and
4. to areas that cannot be mixed and sealed as specified on the same day as application.

Do not leave lime exposed to the open air for a period of 6 hours or more.

Do not allow traffic or equipment on the spread lime other than that required for spreading, watering, or mixing.

A.05 Preparing the Existing Subgrade

Grade and shape the existing roadway in reasonably close conformity with the lines, grades, and cross-sections shown on the Plans or as directed by the Project Engineer.

Remove all grass turfs and other deleterious substances from the subgrade and prepare the subgrade as specified.

Correct wet or unstable underlying foundation material, if encountered, as directed by the Project Engineer.

A.06 Extra Depth Stabilization

If directed by the Project Engineer, perform extra depth lime stabilization as follows:

1. Blade the overlying material to the sides, and incorporate the lime slurry or, in dry applications, the hydrated lime and any necessary water, into the underlying material at the rate and to the depth specified.

2. Thoroughly mix and compact the lime-soil mixture to obtain the required stability.

3. Moisten the compacted surface, and cover with the previously windrowed subgrade material.

4. Compact the overlying subgrade material, which will serve as the curing medium.

Curing and mellowing periods will not be required for the lime-stabilized underlying material unless otherwise directed by the Project Engineer.

A.07 Applying Lime

After preparing the subgrade as specified, apply lime using the dry or slurry application method for either hydrated lime or quicklime. Use the slurry application method unless otherwise shown on the Plans.

A. Dry Application

Spread hydrated lime at the required rate, using an approved spreader that will uniformly distribute the material without excessive loss, or by bag distribution.

B. Slurry Preparation and Application

Mix lime with water in approved agitating equipment, and apply to the roadway as a thin water suspension or slurry through approved distributing equipment. The distributing equipment shall be equipped to continuously agitate the mixture from the mixing site until applied on the roadbed. Proportion the mixture so that the dry solids content is at least 30% by weight.

In preparing, transporting, distributing, and mixing slurry with the soil, do not cause injury, damage, discomfort, or inconvenience to individuals or private property.

A.08 Initial Mixing and Mellowing

In dry applications, immediately after applying the hydrated lime, scarify the course, if necessary, and mix to the required depth, width, and cross-sections.

In slurry applications, before applying the lime slurry, scarify or partially pulverize with approved mixing equipment the full width of the course to be treated to the depth required for stabilization. Perform successive passes over a measured section until the specified percentage of lime has been distributed. After each successive pass, incorporate the slurry into the soil with approved mixing equipment.

Incorporate lime into the soil to the depth needed to provide a finished course of lime-treated material conforming to the specified thickness and surface

requirements.

Continue mixing, and applying water as necessary, until a homogeneous mixture of soil, lime, and water is obtained. During this initial mixing operation, add the quantity of water needed for the moisture content of the mixture to reach 5% above its optimum moisture content, plus or minus 3%, unless otherwise directed by the Project Engineer.

If applying the lime as a slurry, ensure that the water added with the slurry does not cause the moisture content of the lime-soil mixture to exceed the above tolerance.

After completing mixing operations, reshape the treated course to the approximate lines, grades, and cross-sections, and seal with a pneumatic-tire roller, and other approved equipment as necessary, and allow the treated course to mellow for 2 to 7 days as directed by the Project Engineer. During the mellowing period, maintain the entire surface of the treated course in a moist condition.

A.09 Final Mixing

After the required mellowing period, reshape and grade the initially mixed material to the required lines, grades, and cross-sections.

Thoroughly mix the previously mixed material with approved mixers while adding water as necessary.

Continue mixing until 100% of the material, except for gravel and stone, will pass a 1-inch sieve, and 60% by dry weight will pass the No. 4 sieve.

The quantity of water added shall be such that at the end of the final mixing and during compaction and finishing operations the percentage of moisture in the mixture and the unpulverized soil lumps will not vary more than plus or minus 3% from the specified optimum moisture of the lime-soil mixture.

A.10 Compaction and Finishing

Immediately after completing the final mixing, blade the material to uniform thickness and shape, and start compaction operations. Use sheepsfoot rollers to compact the material in a continuous operation until the entire depth of the lime-soil mixture is uniformly compacted to the required density. The Contractor may remove the sheepsfoot rollers when a surface mulch not exceeding 1 inch remains. Lightly scarify the resulting surface and shape to the required lines, grades, and cross-sections within the tolerances specified. Perform final rolling with the roller specified by the Project Engineer.

The completed lime stabilized subgrade shall be smooth, dense, well bonded, unyielding, and free of cracks or loose material.

Compact the lime-soil mixture in layers as shown on the Plans. The maximum density and optimum moisture content of the lime-soil mixture must be determined according to AASHTO T 99. In developer- or private-owner-funded projects, this determination

will be made at the expense of the developer or private owner. The sample used to determine the maximum density and optimum moisture content will be representative field samples of the lime-soil mixture that have undergone the same treatment as the lime treated subgrade being tested.

For density testing purposes, divide the completed subgrade treatment into lots of approximately 10,000 square yards, and perform five density tests on each lot. The average dry density of each lot shall not be less than 95% of maximum density, and no individual test shall be less than 92% of maximum density. The results of the above tests are not required to be submitted to the City but must be maintained by the Contractor, the Project Engineer, the Developer, or the Private Owner until at least five years after acceptance of the project by the city. Further these results must be made available to the City Engineer upon request.

Immediately scarify, moisten (if required), rework, and compact to the required density all areas that do not meet density requirements at no additional cost to the Department.

A.11 Curing

After finishing the lime-treated subgrade as specified, seal the surface by applying one of the bituminous materials specified using a pressure distributor a minimum rate of 0.15 gallons per square yard, unless a higher value is directed by the Project Engineer or shown on the Plans. Heat or otherwise prepare the bituminous material to ensure uniform distribution and apply as soon as possible.

A.12 Tolerances and Reconstruction

The Contractor's Quality Control must determine the thickness of the completed lime-treated subgrade by measuring test holes at random locations. The measured thickness at the locations shall not deviate from that shown on the Plans by more than plus 1-1/2 inches or minus 1 inch.

Immediately reconstruct areas of lime-treated subgrade that do not meet thickness requirements. For areas having a thickness greater than that allowed, add sufficient lime to correct the deficiency in lime content.

Repair areas of lime-treated subgrade that become unstable or that lose the required density or surface finish. Use additional lime and water if and as needed.

Limit hauling over the treated subgrade to the minimum amount necessary to construct the overlying base or sub-base.

When at least one course of base or sub-base has been constructed upon the treated subgrade, the Contractor may resume hauling, provided the layer or layers of base or sub-base are constructed and maintained as specified.

SECTION B – MINERAL AGGREGATE BASE

DESCRIPTION

B.01 Description

This work consists of furnishing and placing one or more courses of aggregates, and additives if required, on a prepared subgrade.

Mineral aggregates base shall be Type B, unless Type A is shown on the Plans or called for in the Project Specifications. Recycled Concrete Aggregate (RCA) may be used as an alternate for Type A or Type B base material if approved by the Project Engineer. No type other than B, A, or RCA may be used without written agreement from City Engineer.

MATERIALS

B.02 Aggregate

Provide Type B, Grading D base meeting the requirements of TDOT Specification 903.05 unless specifically directed otherwise by the Project Engineer, the Project Specifications, or the Project Drawings.

Acceptable Alternates (Approval by Project Engineer is required):

1. If Type A is specified by the Project Engineer, then Grading D must be used.
2. For Type B base, Grading C may be used in lieu of Grading D with approval by the Project Engineer.
3. RCA use grading specified in TDOT Specification 903.05 with approval from the Project Engineer.

B.03 Calcium Chloride

Provide calcium chloride meeting TDOT Specification 921.02 for Type 1, Type 2 or calcium chloride liquor.

B.04 Emulsified Asphalt

Use emulsified asphalt of a type allowed for Prime Coat in La Vergne Specifications Part 4, Section A.01, meeting the test requirements specified in TDOT Specification 904.03.

EQUIPMENT

B.05 Equipment

Provide a stationary mixing plant, mechanical road mixer, or motor grader, whichever is applicable to the type of work to be performed.

A. Stationary Mixing Plant

Provide a twin-shaft pugmill capable of producing a constant, uniform mixture. Equip the mixing plant with the following:

1. A suitable truck-loading hopper with a gate that will prevent segregation of the material when dumped into the truck;

2. A spray bar, capable of ensuring an even wetting of the aggregate, mounted at the entrance of or above the pugmill;

3. A meter, valve, or other approved type of regulating device to control the flow of water through the spray bar to maintain a uniform moisture content in the mixture;

4. A separate, quick, and automatically operating on-and-off device to shut the water off instantly when the pugmill stops; and

5. Adjustable mechanical feeders for each size material capable of regulating a constant, uniform flow of material.

B. Mechanical Mixer (for Road Mixing)

Provide a pugmill or rotary type mechanical mixer capable of producing a uniform blend of all materials to the full depth of the course being placed. The mixer may be either self-propelled or trailer-drawn.

C. Compaction Equipment

Provide one or more rollers of a type and sufficient weight to obtain the required density and seal the surface of the base course.

CONSTRUCTION REQUIREMENTS

B.06 General

Construct Mineral Aggregate Base, Type B or other specified by Project Engineer in one or more layers, to the compacted thickness shown on the Plans.

Prepare the subgrade as specified in this specification for Subgrade or Subgrade with Lime Treatment, whichever is applicable.

Obtain the Quality Control Representative's approval of the subgrade before spreading any mineral aggregate. A proof-roll must be conducted. The proof roll must be attended by the City Engineering Inspector. Contact the City Engineering Inspector two days in advance of the requested subgrade inspection. Both the City Inspector and Quality Control Representative of the ownership/development team must be on site for the proof-roll. Subgrade that has been previously checked and approved, but subsequently subjected to freezing conditions or prolonged wet

weather, shall be rechecked for approval.

Do not spread mineral aggregate on a subgrade that is frozen or contains frost.

Do not haul over any material that has been placed until it has been spread, mixed, shaped and compacted to the required density.

B.07 Mixing

A. Mixing Methods

Unless otherwise specified, mix the base course material, including an additive if shown on the Plans, by one or more of the following three methods:

1. **Stationary Plant Method.** Mix the base course material and water in an approved stationary mixing plant as specified herein. Add sufficient water during the mixing operation to provide a moisture content satisfactory for compacting. If combining materials to meet the grading requirements, blend the materials, as specified in TDOT Specification 903.05, before mixing. Ensure that all material fed into the plant travels the full length of the pugmill.

2. **Road Mix Method (Mechanical Mixer).** After placing the material for each layer of base course through an aggregate spreader or windrow-sizing device, mix the material using approved mechanical mixing machines as specified herein.

   During mixing, add sufficient water to provide a moisture content satisfactory for compacting.

3. **Road Mix Method (Motor Grader).** After depositing and uniformly spreading material for each layer of base course, sprinkle it with just enough water to moisten all particles, but without causing segregation of sizes or softening of the subgrade. Immediately after applying water, thoroughly mix the material by windrowing and spreading with motor graders until the mixture is uniform throughout.

For Mineral Aggregate Base, Type B, requiring the blending of two or more materials, use either the stationary plant method or the road mix method (mechanical mixer), except as provided for in TDOT specification 903.05. For Mineral Aggregate Base, Type B, requiring additive, use either stationary plant mixing or road mixing.

Alternates (with Project Engineer approval): For Mineral Aggregate Base, Type A, use the stationary plant method. When using RCA as a replacement for Mineral Aggregate Base, Type A or Type B, use the intended method of mixing for the material listed above.

B.08 Use of Calcium Chloride

If using calcium chloride, incorporate it in either the solid or liquid form, at the approximate rate of 6 pounds per ton of aggregate, noting that:

- 6 pounds is equivalent to 1.29 gallons 60 °F 32% solution
- 6 pounds is equivalent to 1.02 gallons 60 °F 38% solution

For stationary plant mixing, proportion chloride material, in solid form, through a hopper equipped with an approved vibratory feeder and an adjustable opening capable of accurately controlling the flow of material. Proportion calcium chloride liquor using an approved calibrated meter that has a registering capacity capable of indicating the total amount of liquid used during any single day's operation.

For road mixing, add the chloride material to the aggregate at the point in the mixing operation and in the manner directed by the Project Engineer or a competent professional with at least five-years of experience in field paving operations.

B.09 Spreading

Spread material as follows according to the mix method used:

A. Stationary Plant Mixing

After mixing, transport material to the site for each layer of base while it contains the proper moisture content. Spread the material to the required thickness and cross-section using an approved mechanical spreader.

B. Road Mixing (Mechanical Mixer)

Before mixing, spread material with an approved mechanical spreader that can be adjusted to spread materials in the proper proportions.

C. Road Mixing (Motor Grader)

After thoroughly mixing the aggregate and water, spread the base material while at optimum moisture content in layers of specified thickness and cross-section using approved motor graders.

If the required compacted depth of the base course exceeds 6 inches, construct the base in two or more layers of approximate equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches.

In some cases, the Plans may show the base as extending for the full width of the roadbed. In other cases, the edges of the base may be shown as coinciding with the inside edges of the shoulders. In the latter case, place shoulder material to a minimum width of 3 feet before spreading each layer of base material in order to confine the base material and to allow for proper compaction.

The Contractor may spread and mix any base material used for constructing detours, for maintenance of traffic, for backfilling rock cuts, and for capping rock fills as specified in Section B.09.B above.

B.10 Shaping and Compaction

A. Final Shaping

Immediately after spreading, shape the base material to the required degree of uniformity and smoothness. Except where using mechanical aggregate spreading equipment to place the base material, use a motor grader to shape each layer before compacting. If the mechanical spreading equipment fails to shape the base material properly, use a motor grader or other approved means to perform final shaping.

B. Compaction

Compact the base material to the required density before any appreciable evaporation of surface moisture occurs. Continuously compact each layer until the minimum density requirement, as specified herein, is achieved. The Contractor may use any type of compacting equipment provided the required density is attained.

If the density requirement does not apply, as provided for herein, gradually compact the base material, progressing from the edges of the base to the center, parallel with the centerline of the road. Continue compacting until the base layer has been compacted to its full width. Where lifts of shoulder materials are placed to confine the base material, overlap the initial pass of the compacting equipment with the shoulder to a width of not less than 12 inches.

Construct the surface of each layer so that the aggregates become firmly keyed and a uniform texture is produced. Maintain the surface in this condition until it is covered by the following stage of construction or until final acceptance of the project. Correct irregularities by loosening the material at those places and adding or removing material as required.

Use approved distributors to apply water uniformly over the base materials during compaction in sufficient quantity to allow for proper compaction without causing softening of the underlying subgrade due to excessive water use.

C. Compaction Acceptance

1. **Lot Sizes and Testing.** For density testing purposes, divide each completed layer into lots of approximately 10,000 square yards, and average the results of five density tests performed on each lot. Smaller lots may be considered as directed or approved by the Engineer.

2. **Density Requirements**

   a. **Type B Base (City Standard).** The average density of each lot of Type B base, unless otherwise specified, shall be not less than 97% of maximum density as determined according to AASHTO T 99, Method D, with no individual test being less than 95% of maximum density.

   b. **Type A Base (Requires Written Direction or Approval from the Project Engineer).** The average density of each lot of Type A base,

unless otherwise specified, shall be not less than 100% of maximum density as determined according to AASHTO T 99, Method D, with no individual test less than 97% of maximum density.

c. **RCA Base (Requires Written Direction or Approval from the Project Engineer).** The average density of each lot of RCA base, unless otherwise specified, shall be not less than 100% of maximum density as determined according to AASHTO T 99, Method D, with no individual test less than 97% of maximum density. The moisture content shall be within plus or minus 3% of the optimum moisture content as determined by Departmental analysis. Mixing of the material with water shall be completed per **303.08**.

If the specified density is not obtained for either type of base, rework or replace the material to comply with the density requirement.

3. **Exclusions.** Unless otherwise specified, the density requirements specified above will not apply to:

a. Type A or Type B base construction on projects that do not include the construction of a surface upon the base, or to

b. Projects having a specified total base thickness of less than 4 inches.

When the specified density requirements do not apply, the Quality Control Representative must approve the compaction of each layer before placing material for the next successive layer. These approvals must be documented in writing and maintained by the Contractor.

B.11 Maintenance

Maintain the completed base in a smooth and uniform condition until it is covered by the following stage of construction or the Project has been completed and accepted.

B.12 Thickness Requirements

Construct the base to the grade and compacted thickness shown on the Plans, with an allowable working tolerance of plus or minus 1/2 inch. The thickness will be measured at such frequency as established by the Project Engineer using test holes or other approved methods.

B.13 Surface Requirements

The surface of the finished base shall be in reasonably close conformity to the lines, grades, and cross-sections shown on the Plans and shall have a satisfactorily smooth riding quality.

SECTION C – SOIL-CEMENT BASE

DESCRIPTION

C.01 Description

This work consists of mixing in-place or select soil with Portland cement, and moistening and compacting the soil-cement mixture in one or more courses.

MATERIALS

C.02 Materials

Provide materials as specified in:

Portland Cement, Type I: TDOT Section 901.01
Portland-Pozzolan Cement, Type IP: TDOT Section 901.01
Bituminous Curing Seal, Emulsified Asphalt,
Types allowed for Tack Coat: TDOT Section 904.03
Select Material for Soil-Cement Base: TDOT Section 902.05

Provide water as specified in TDOT Section 921.01.

Provide emulsified asphalt, of a type allowed for Tack Coat, meeting the test requirements specified in TDOT Specification Table 904.03-1.

The Contractor may select the kind of bituminous material to use for curing.

Submit a sample of the cement and the select material to be used to the Materials and Tests Laboratory for approval at least 15 days before use. Project Engineer must review and accept the laboratory test results.

EQUIPMENT

C.03 Equipment

Provide a mechanical cement spreader that will distribute the cement uniformly at the required rate without excessive loss.

Provide mechanical mixers or a stationary mixing plant.

CONSTRUCTION REQUIREMENTS

C.04 Limitations

Only process the amount of soil-cement that will be covered with the succeeding stage of base or pavement construction during the same construction season. Only apply cement to subgrade or select material that is unfrozen and when the air temperature in the shade is at least 40 °F and rising.

Limit application of cement to an area that will allow for continuous operations and for the completion of all but the final surface finish within three hours from the time the cement is applied. Do not leave any uncompacted soil-cement mixture undisturbed for more than 30 minutes.

If the uncompacted soil-cement mixture is wetted by rain so that the average moisture content exceeds the specified tolerance, reconstruct the entire section.

C.05 Preparing the Existing Subgrade

If in-place soil is to be used, grade and shape the area to be treated as required to construct the soil-cement base in reasonably close conformity with the lines, grades, thickness, and cross-sections shown on the Plans. Place any additional soil needed as directed and blend with the in-place material. Remove unsuitable soil or material and replace with acceptable soil. When removing and replacing unsuitable soil, and placing additional soil, comply with the pertinent provisions of this specification or the Project Specification, whichever has the strictest requirements as determined by the Project Engineer.

Where only select material is to be used, prepare the subgrade as specified in these specifications or the Project Specifications.

Slightly dampen the subgrade just before spreading the select material or soil-cement mixture upon it.

C.06 Pulverizing

If required, before applying cement, scarify the soil and pulverize for sufficient depth and width to achieve the cross-section shown on the Plans. Pulverize the soil-cement mixture so that, at the completion of mixing, at least 80% of the dry material passes the No. 4 sieve and 100% of the combined material passes the 1-inch sieve, exclusive of gravel or stone retained on these sieves. Remove material retained on a 3-inch sieve and other unsuitable material.

C.07 Cement Application, Mixing, and Spreading

Use an approved mechanical spreader to spread select material on the subgrade before mixing to the required thickness, width, and cross-section. The Project Engineer must establish the percentage of cement to be used based on tests of the in-place soil or select material.

Apply the specified quantity of Portland cement uniformly over the spread select material or in-place soil. Do not apply cement if the moisture content of the soil exceeds 3% the optimum moisture content specified by the Project Engineer for the soil-cement mixture. Before starting mixing, replace spread cement that has been lost due to the Contractor's negligence at no additional cost to the Department.

Use a mechanical mixer to perform road mixing. At least one pass of the mixer may be required before adding water. When required, add water uniformly by

distributors or other approved methods to bring the mixture to the required moisture content. Continue mixing until the pulverization requirements of this specification are met and a homogeneous mixture of soil, cement, and water is obtained.

If using stationary plants or mixers, ensure they are equipped with feeding and metering devices that will introduce the cement, soil, and water into the mixer in the quantities specified. All material fed into the plant shall travel the full length of the pugmill. Continue mixing until a uniform and intimate mixture of cement, soil, and water has been obtained. Transport the mixture from the plant to the road in numbered trucks equipped with tight metal rear- end dump beds. Provide a sufficient number of trucks to ensure satisfactory progress of construction operations.

Spread the material using approved mechanical spreaders within one hour after being discharged from the mixer and in ample time to secure compaction during daylight hours. If the moisture content of the uncompacted mixture exceeds the specified tolerance, reconstruct the material as specified in this specification. When mixing, handling, and placing the base material, take care to prevent segregation.

When using select material, place shoulder material for a width of at least 3 feet before spreading the base material in order to confine the base material and allow satisfactory compaction along the edges of the base.

C.08 Compaction

At the start of compaction, the percentage of moisture in the mixture and in the pulverized soil lumps, based on oven-dry weights, shall not vary more than plus or minus 2% from the specified optimum moisture content, and shall be less than the quantity that will cause the soil-cement mixture to become unstable during compaction and finishing. The Contractor may use any type of compaction equipment that will produce the required results. Extend compaction efforts over the edges of the base material into the shoulders.

During final rolling, reshape the surface of the base course and lightly scarify to loosen any imprints left by the compacting or reshaping equipment.

The Contractor's Quality Control Team will divide the soil-cement base into lots of approximately 10,000 square yards for density testing purposes, and will perform five density tests on each lot. The results must be documented and the documentation maintained by the Contractor. The average dry density of each lot shall be not less than 95% of maximum density as determined according to AASHTO T 134, and no individual test shall be less than 92% of the maximum density.

Rework material not meeting the required density at no cost to City. The Project Engineer must evaluate the rolling procedures in the event of a pattern of failed tests.

Complete compaction and final shaping operations within three hours from the time the cement is mixed with the soil or select material.

C.09 Finishing

After compaction, shape the surface of the soil-cement to the required lines, grades, and cross-sections. Sprinkle the surface until it is damp, but not wet, and clip with a motor grader as required. Dispose of the material removed by clipping. Following clipping, seal the surface with a roller.

C.10 Construction Joints

At the beginning of each day's construction, form a straight transverse construction joint by cutting back into the previously completed work to form a true vertical face free of loose or shattered material.

C.11 Thickness and Surface Tolerances

The measured thickness shall not deviate from that shown on the Plans by more than plus 1-1/2 inches or minus 1 inch. Reconstruct or replace work found not to be within this tolerance.

The finished base shall meet the surface requirements specified herein, and when tested as specified in that Subsection, the deviation of the surface from the testing edge of the straight edge shall not exceed 1/2 inch.

C.12 Curing

After the soil-cement has been finished, protect it against drying for 7 days by applying one of the bituminous materials specified herein. Apply the curing material at the rate shown on the Plans or, in the absence of direction on the Plans, at a rate recommended by a competent person with at least 5 years of experience in subgrade and preparation. Apply the curing material as soon as possible after completing the base construction, but in no case later than 24 hours after completing finishing operations. Maintain the finished soil-cement in a continuously moist condition until the curing material is placed.

If construction equipment or other traffic must use the bituminous-covered surface before the bituminous material has dried sufficiently to prevent pickup, first apply sufficient granular cover, consisting of clean sand passing a 3/8-inch sieve or other material approved by the Project Engineer.

During the 7-day protection period, maintain the curing material to ensure that all the soil-cement remains effectively covered.

Protect finished portions of soil-cement that are traveled on by equipment used in

constructing an adjoining section to prevent equipment from marring or damaging completed work.

Sufficiently protect soil-cement from freezing for 7 days after its construction.

C.13 Reconstruction and Replacement

If reconstruction becomes necessary, repeat all construction procedures and adhere to the time limitations specified herein. The Project Engineer must determine the amount of cement to be used in the reconstructed soil-cement base.

Replace faulty work for the full depth of treatment. Correct low areas by replacing the material for the full depth of treatment rather than by adding a thin layer of soil-cement to the completed work.

C.14 Traffic

The Contractor may open completed portions of soil-cement to local traffic after the 7-day curing period, provided the soil-cement has hardened sufficiently to prevent marring or distorting of the surface by equipment or traffic. However, provide ingress and egress for property owners and public crossroads as necessary before the 7-day curing period.

C.15 Maintenance

Maintain the soil-cement in good condition until all work has been completed and accepted. Immediately repair defects that may occur at no cost to the City.

SECTION D – BITUMINOUS PLANT MIX BASE (HOT MIX)

DESCRIPTION

D.01 Description

This work consists of constructing one or more base course layers of aggregate and asphalt, prepared in a hot bituminous mixing plant and spread and compacted on a prepared subgrade, granular sub-base, or base.

The La Vergne Standard for Binder Course on public roadways is 307-BM2 as per the tables shown in this section.

The La Vergne Standard for Shoulder Pavement is 307-C as per the tables shown in this section.

MATERIALS

D.02 Materials

Provide materials as specified in:

Aggregate for Mixture, Grading A, ACRL, AS, B, BM, BM2, C, CS, or CW	TDOT Section 903.06
Asphalt Cement, Grade PG 64-22, 70-22, 76-22, 82-22	TDOT Section 904.01
Bituminous Additives	TDOT Section 921.06.B

The specific grading of aggregate to be used will be specified in the Contract or shown on the Plans. The Engineer will accept mineral aggregate, bituminous material, and the plant mix in accordance with this Part.

D.03 Composition of Mixtures

A. General

The bituminous base and/or leveling course shall be composed of aggregate and bituminous materials. The hot plant mixes shall comply with the applicable requirements of Part 4.

Combine the specified mineral aggregate and asphalt cement in proportions that will meet the design composition limits specified in the following tables.

Table 307.03-1: Mixture Composition

Mixtures	Proportions of Total Mixture, Percent by Weight	
	Combined Mineral Aggregate, %	Asphalt Cement, % (1)
Grading AS and ACRL	96.3 - 97.7	2.3 - 3.7
Grading A	95.8 - 96.7	3.3 - 4.2
Grading B, BM, and BM2	**93.8 - 95.8**	**4.2 - 6.2**
Grading C and CW	**93.8 - 95.8**	**4.2 - 6.2**
Grading CS	92.3 - 94.7	5.3 - 7.7

(1) If the effective combined specific gravity of the aggregate exceeds 2.80, the Engineer may adjust the proportions specified.

In addition, combine the materials with the required amount of bitumen to meet the design properties specified in Table 307.03-2, except that on low volume roads (ADT 1,000 or below), the minimum stability shall be 1,500 pound-feet and the VMA and dust-asphalt ratio will be waived for 307-B, 307-BM, 307-BM2 and 307-C mixes.

Table 307.03-2: Mixture Design Properties

Mix (1)	Stability (minimum) lbf (2)	Design Void Content % (2)	Production Void Content, % (2)	VMA (minimum) % (2)	Dust-Asphalt Ratio (3)
307-B	2,000	4.0±0.2	3-5.5	11.5	0.6-1.5
307-BM	2,000	4.0±0.2	3-5.5	13.5	0.6-1.5
307-BM2	**2,000**	**4.0±0.2**	**3-5.5**	**13.5**	**0.6-1.5**
307-C	**2,000**	**4.0±0.2**	**3-5.5**	**13.0**	**0.6-1.5**
307-CS	2,000	3.0±0.5	1-5	---	---
307-CW	1,500	4.0±0.2	3-5	13.0	0.6-1.5

(1) To identify critical mixes and make appropriate adjustments, the mix design shall meet these design properties for the bitumen content range of Optimum Asphalt Cement ±0.25%.

(2) Tested according to AASHTO T 245 with 75 blows with the hammer on each end of the test specimen, using a Marshall Mechanical Compactor.

(3) The dust-asphalt ratio is the percent of the total aggregate sample that passes the No. 200 sieve, as determined by AASHTO T 11, divided by the percent asphalt in the total mix.

If the materials proposed for use do not meet the design criteria specified in Table 307.03-2, find other suitable sources of materials. If the material at the asphalt plant will not combine within

the tolerances of the Job Mix Formula (JMF), provide a new design.

Table 307.03-4: Stockpile Gradation Tolerance

Sieve Size	Tolerance
3/8 inch and larger	± 10%
No. 4	± 8%
No. 8	± 6%
No. 30	± 5%
No. 200	± 4%

Provide a special mix design with asphalt content in the range of 5 to 7% where 307-C Mix is used as a surface on the shoulder.

Perform sampling and testing of the planings as well as new materials for bid purposes, and for the submission of the Job Mix Formula (JMF) as specified in Part 4. Submit all additives to the Engineer for approval at the same time other materials are submitted for design verification.

After mixing, verify the moisture content of the total mix is no more than 0.1% as determined by oven drying. Provisions for lowering the temperature because of boiling or foaming shall not apply.

B. Anti-Strip Additive

Check asphaltic concrete mixtures (Grading A, AS, ACRL, B, BM, BM2, C, CS, and CW) for stripping by the following methods:

1. The Ten-Minute Boil test for dosage rate and the Root- Tunnecliff procedure (ASTM D4867) for moisture susceptibility.

   Do not use the Root-Tunnecliff procedure (ASTM D4867) with the following mixtures: Grading A, AS, ACRL, and B.

2. For mixtures not requiring design, the Ten-Minute Boil test for dosage rate and moisture susceptibility.

   Mix an approved antistrip agent with the asphalt cement at the dosage as specified in TDOT Section 921.06.B.

EQUIPMENT

D.04 Equipment

Provide equipment as specified in Part 4.

If using recycled mix, modify the asphalt plant as approved by the Engineer to accommodate the addition of asphalt planings. If using a batch plant to produce recycled mix, heat the aggregate to a

temperature that will transfer sufficient heat to the cold planings to produce a mix of uniform temperature within the specified range.

CONSTRUCTION REQUIREMENTS

D.05 General

Conform to the construction requirements specified in Part 4.

D.06 Preparing the Subgrade, Sub-base, or Surface

The Plans will indicate whether the plant-mixed base is to be constructed on a treated or untreated subgrade or sub-base, on a granular base, or on an existing surface. Ensure that the surface upon which the plant mix base is to be constructed meets the requirements of Part 2 and this Part, as applicable. If shown on the Plans, condition the surface as specified in Part 4. Condition existing mineral aggregate base as specified in this Part. Construct prime coat or tack coat as specified in Part 4.

Do not place AS/ACRL which cannot be covered by the next course of pavement within the same construction season.

Only place bituminous plant-mix base mixture on a surface that is dry and free of loose particles and other undesirable materials.

D.07 Thickness and Surface Requirement

Control thickness during the spreading operation by frequently measuring the freshly spread mixture to establish a relationship between the uncompacted mixture and the completed course. Thickness or spread rate in pounds per square yards shall be within reasonably close conformity with that shown on the Plans. Each course shall have a thickness after compaction of not more than 4 inches.

The surface of the base shall meet the requirements specified in Part 4, and when tested in accordance with that Part, the deviation of the surfaces from the testing edge of the straightedge shall not exceed the amounts specified in Table 307.07-1.

Table 307.07-1: Maximum Surface Deviation

Mixture	Maximum Deviation (inches)
Grading A, ACRL, and AS	1/2
Grading B, BM, BM2, C, CS, and CW	**3/8**

SECTION E – OTHER BASE METHODOLOGIES

DESCRIPTION

E.01 Description

Part 3, Sections A and C describe the standard Subbase Treatment and Base Course means and materials to be utilized within the City of La Vergne. Project Engineer may direct the Contractor to use the following methods as specified in the referenced document. Exclude paragraphs regarding measurement and payment. All references to 'Engineer' shall be replaced with 'Project Engineer'. All references to 'Department' shall be replaced with 'City'.

METHODS AND REFERENCE SPECIFICATIONS

E.02 Methods and Reference Specifications

Portland Cement Concrete Base ..... TDOT Spec Section 306
Aggregate Cement Base Course ..... TDOT Spec Section 309

SECTION F – CONDITIONING MINERAL AGGREGATE BASE

DESCRIPTION

F.01 Description

This work consists of reshaping and compacting an existing mineral aggregate base or surface.

MATERIALS

F.02 Materials

Provide materials as specified in:

Aggregate for Conditioning Base ..... TDOT Section 903.05
Calcium Chloride, Type 1, Type 2 or
Calcium Chloride Liquor..... TDOT Section 921.02

EQUIPMENT

F.03 Equipment

Provide motor graders and water distributors in the number necessary for satisfactory prosecution and completion of the work, as well as one or more rollers of a type and sufficient weight to obtain the required density and to seal the surface of the base course.

CONSTRUCTION REQUIREMENTS

F.04 Conditioning

Condition the existing base by applying water, blading, and compacting to conform to the lines and grades shown on the Plans. Scarify sections of existing base that are pot-holed to the full depth of the potholes. Scarify and shape warped and distorted sections to conform to the lines and grades shown on the Plans. Moisten the material as necessary, and mix, shape, and roll until the base is uniformly and thoroughly compacted. Continue applying water, blading, and rolling until a smooth, dense, well- bonded surface is obtained.

Divide the completed base into lots of approximately 10,000 square yards for density testing purposes, and perform five density tests in each lot. The average dry density shall be not less than 100% of maximum density as determined according to AASHTO T 99 Method D, and no individual test shall be less than 97% of maximum density. Test results must be documented and Contractor must retain copies of the documentation.

Distribute calcium chloride, when specified, at the approximate rate of 1 pound per square yard and incorporate it in the base material during blading and rolling operations as directed by the Project Engineer.

If additional material is to be added to the existing base, lightly scarify the existing base, add the material, and condition the base as specified above.

F.05 Surface Requirements

The surface of the conditioned base shall be in reasonably close conformity with the lines, grades, and cross-sections shown on the Plans or as directed by the Project Engineer and shall provide a satisfactory riding surface.

SECTION G - OTHER BASE METHODOLOGIES

DESCRIPTION

G.01 Description

Part 3, Section B describes the standard Subbase Treatment and Aggregate Base Course means and materials to be utilized within the City of La Vergne. Project Engineer may direct the Contractor to use the following methods as specified in the referenced document. Exclude paragraphs regarding measurement and payment. All references to 'Engineer' shall be replaced with 'Project Engineer'. All references to 'Department' shall be replaced with 'City'.

METHODS AND REFERENCE SPECIFICATIONS

G.02 Methods and Reference Specifications

Aggregate-Lime-Fly Ash Stabilized Base Course..... TDOT Section 312
Treated Permeable Base ..... TDOT Section 313

PART 4 – FLEXIBLE SURFACES

This section is intended for all work associated with improvements which are to be accepted by the city and become a part of the city's infrastructure including buildings, public roads and drives, public parking lots, curbs, gutters walks, parks, utilities, and any other items determined by the City Engineer and approved by the Board of Mayor and Aldermen (BOMA).

Relation to Project Specifications

The construction requirements contained herein are the minimum standard for all public infrastructure projects in the City of La Vergne. This includes developer-built as well as city-built projects. In the event that there are Project Specifications and there is a discrepancy between these City Standard Specifications and the Project Specifications, then the more strict requirements shall apply. The determination of which requirements is the more strict will be made by the City Engineer.

City of La Vergne Stormwater Management Ordinance

All work done on all projects within the City of La Vergne shall comply with the requirements of the Stormwater Management Ordinance (Municipal Code Title 14, Chapter 6). All engineers and contractors working on projects in the city must be familiar with this document. If there are any questions regarding interpretation, please contact the City Engineer.

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SECTION A – MINERAL AGGREGATE SURFACE

DESCRIPTION

A.01 Description

This work consists of furnishing and placing one or more courses of aggregates, and an admixture if required, on a prepared surface.

MATERIALS

A.02 Materials

Provide materials as specified in:

Aggregate, Type B ..... TDOT Section 903.05B
Calcium Chloride, Type I, Type 2, or
Calcium Chloride Liquor..... TDOT Section 921.02

Aggregate gradation shall be as per Part 3 of this specification.

EQUIPMENT

A.03 Equipment

Provide equipment as per Part 3 of this specification.

CONSTRUCTION REQUIREMENTS

A.04 Construction Methods

Obtain approval from the Quality Control Representative for the completed roadbed before placing any surface material upon it.

On projects not requiring placement of surface material over the entire width of the roadbed, blade sufficient subgrade material from the subgrade, forming windrows on the shoulders from which to complete the compacted shoulders to the required cross-section after completing the surface course.

The surface course material may be spread with mechanical spreaders, dumped in windrows, or end dumped. Use approved machine methods to spread material dumped in windrows or end dumped, taking care to destroy all compaction planes caused by dumping or hauling over the material.

Construct the mineral aggregate surface in layers as shown on the Plans, with spreading, machining, sprinkling, and compaction operations progressing until the work is in reasonably close conformity to the lines, grades, and cross-sections shown on the Plans or established by the Project Engineer. Construct and maintain the surface of each layer to produce a uniform texture and to firmly key the aggregate. Uniformly apply water over the surface material during compaction in the amount necessary to ensure proper consolidation.

Roll each layer using approved rollers until the surface is thoroughly compacted and approved by the Quality Control Representative. If the required compacted depth of the surface course exceeds 6 inches, construct the surface course in two or more layers of approximately equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches; however, if using vibrating or other approved types of special compacting equipment, the Contractor may increase the compacted depth of a single layer of the surface course to 8 inches with the Project Engineer's approval.

If two or more sizes or types of aggregates are to be blended on the road, spread the different aggregates separately using an approved mechanical spreader that can be adjusted to spread the materials in the proper proportions.

After spreading the material, and additive if specified, perform mixing using an approved mechanical mixer that is capable of producing a thorough and intimate mixture of aggregates, additive, and water.

Incorporate calcium chloride, if required, as specified in Part 3.

A.05 Thickness and Surface Requirements

The thickness and surface of the completed Mineral Aggregate Surface shall meet the requirements of Part 3.

SECTION B – PRIME COAT

DESCRIPTION

B.01 Description

This work consists of applying bituminous material, and cover material if required, on a designated base.

MATERIALS

B.02 Materials

Provide materials as specified in:

Aggregate for Cover Material, Size 7, 8, or 78..... TDOT Section 903.13
Emulsified Asphalt, Grade AE-P, CAE-P, or tack coats
in 403.02..... TDOT Section 904.03

When prime coat quantity is 6 tons or more, AE-P or CAE-P will be applied unless otherwise directed by the Project Engineer.

Apply Emulsified Asphalt, Grade AE-P or CAE-P, at a temperature range of 60 to 140 °F.

When prime coat quantity is less than 6 tons, the use of emulsions for tack coat in this specification will be permitted. Dilute all tack coat emulsions with water at 1 part water to 1 part emulsion.

EQUIPMENT

B.03 Equipment

Provide a power broom or other mechanical sweeping equipment, bituminous heating equipment, a water sprinkler, a pressure distributor, and such other equipment and small tools as may be required to perform the work in a satisfactory manner.

The distributor shall be designed, equipped, maintained, and operated so that bituminous material at even heat may be applied uniformly on variable surface widths at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard, with uniform pressure, and with an allowable variation from any specified rate of plus or minus 0.02 gallons per square yard.

Distributor equipment shall include: a tachometer, pressure gauges, accurate volume measuring devices, a calibrated tank, a thermometer for measuring the

temperature of the material in the tank, a power unit for the pump, and full circulation spray bars that are adjustable laterally and vertically.

CONSTRUCTION REQUIREMENTS

B.04 Limitations

When applying bituminous prime coat, adhere to the same seasonal and temperature limitations as those specified for the succeeding stage of construction. The Contractor may apply the prime coat to a surface that is slightly damp, but never to a wet surface.

B.05 Preparing the Surface

Prepare the surface to be primed as specified in Part 3.

If delays in the priming operation occur, maintain or rework the prepared surface to meet the requirements of Part 3 before resuming the priming operation.

B.06 Applying Priming Material

Before applying the treatment, obtain the Quality Control Representative's approval of all areas to be treated. Apply and spread the bituminous material uniformly over the width of the section to be primed using a pressure distributor. The surface to be primed shall be damp. Do not apply prime coat if there is standing water on the surface or if it has dried. If there is delay between preparing the surface and priming operation occur, lightly rewet the surface.

If using AE-P or CAE-P, the Engineer will designate the application rate within the extreme limits shown on the Plans. If using emulsion other than AE-P or CAE-P diluted at 1:1, the Engineer will designate the application rate of application 1.5 times the rate specified for AE-P or CAE-P.

Maintain the application temperatures within the ranges specified in this Section.

To correct areas containing an excess or deficiency of priming material, add blotter material or bituminous material, as directed by the Project Engineer.

Protect all structures and concrete surfaces from the bituminous material during construction.

B.07 Applying Cover Material

If the bituminous material fails to penetrate before the time the roadway must be used by traffic, spread dry cover material at a rate established by the Project Engineer, between 8 and 12 pounds per square yard, to prevent damage to the primed surface. Avoid applying an excess of cover material.

B.08 Maintenance and Protection

Maintain the prime coat and the surface intact until it has been covered by the wearing surface or the project is completed. Do not place any succeeding stage of construction upon the prime coat until it has properly cured.

Repair spots where the prime coat may have failed, due to disintegration of the underlying surface material or other reasons, as follows:

1. Lightly dampen the exposed areas.

2. Refill such areas with approved material and thoroughly compact to conform with the surrounding surface.

3. Apply bituminous prime material to the surface with a hand spray.

If this method cannot produce satisfactory repairs, fill the depressions with approved mixtures of bituminous material and fine aggregate, and compact the mixture to conform to the surrounding surface.

SECTION C – TACK COAT

DESCRIPTION

C.01 Description

This work consists of furnishing and applying emulsified asphalt to a previously prepared base or surface course to provide bond for a superimposed course.

MATERIALS

C.02 Bituminous Materials

Provide materials as specified in:

Emulsified Asphalt, SS-1, SS-1h, CSS-1, CSS-1h, TST-1P,
CQS-1h, CQS-1hp, RS-1, CRS-1 ..... TDOT Section 904.03
Approved Trackless Tack.....TDOT Qualified Product List (QPL)

Apply tack coat at the temperature ranges specified in the following table (based on TDOT Specification Table 403.02-1):

Table: Tack Coat Application Temperatures

Material	Temperature Range
SS-1, SS-1h, CSS-1, TST-1P, CQS-1h, CQS-1hp, and CSS-1h	70 to 160 °F
Approved Trackless Tack from the QPL	Per Manufacturer's Recommendation

Dilution of asphalt emulsion used for tack coat on hot mix asphalt paving projects after leaving the terminal is not allowed. Apply the emulsion as delivered from the terminal.

EQUIPMENT

C.03 Equipment

Provide a power broom, equipment for heating bituminous material, a pressure distributor meeting the requirements of this specification, and such other equipment and small tools as may be required to perform the work in a satisfactory manner.

C.04 Preparing the Surface

Prepare the designated surface as specified in this specification. Ensure that the surface is dry when applying tack coat.

C.05 Applying Emulsified Asphalt

A. Emulsified Asphalt

Immediately after cleaning the surface, apply emulsified asphalt with the pressure distributor at a rate, established by the Project Engineer, within the range of 0.05 to 0.10 gallons per square yard of applied emulsion. If the bituminous material is to be placed upon a milled surface, apply at a rate, established by the Project Engineer, within the range of 0.08 to 0.12 gallons per square yard of applied emulsion. When applying tack coat on freshly- placed asphalt, lower application rates may be permitted, provided a full coverage application is still achieved.

For slurry seal and microsurface, apply a tack coat of SS-1h, CQS-1h, or CQS-1hp emulsion. The tack coat shall consist of one part emulsion and three parts water. The application rate shall be 0.10 to 0.15 gallons per square yard of the diluted emulsion. The Project Engineer will determine the actual application rate.

Protect the surfaces of trees and structures adjacent to the area being treated to prevent their being splattered or marred.

Allow the emulsified asphalt to break prior to paving the next course. Apply tack coat only so far in advance of the paving operations as is necessary to obtain this proper condition of tackiness. Protect the tack coat from damage until the next course is placed.

B. Test Strip

When setting up an initial roller pattern and density test strip for the first layer of asphalt mixture, prepare a tack coat test strip to demonstrate that the proposed equipment and methods will achieve proper application of tack coat.

For the test strip, apply the tack material at a rate of between 0.05 and 0.10 gallons of applied emulsion per square yard. If placing the bituminous material upon a milled surface, apply the tack material at a rate of between 0.08 and 0.12 gallons applied emulsion per square yard.

In all cases, ensure that the application will result in a minimum double overlap of the actual tack spray as it lands on the surface. Adjustment of the spray-bar and the nozzles may be necessary to achieve this minimum double overlap. Corn-rows or any other pattern that would result in less than double overlap coverage of the tack coat is not acceptable for the tack application. The goal is to have a very thin but uniform coating of asphalt left on the surface when the emulsion has broken.

Once the test strip has been demonstrated and approved by the Quality Control Representative, use the same procedure and application rates for the entire project or until another design is proposed and accepted.

C. Fog Sealing

When the Contract requires bituminous material for fog sealing of shoulders, provide emulsified asphalt meeting the requirements of this section or an item from TDOT Qualified Product List (QPL) 40A. Apply diluted emulsified asphalt at a rate of 0.10 to 0.15 gallons per square yard based on a dilution rate of one part emulsified asphalt to one part water. This application may require two equal increments if run-off occurs.

SECTION D – BITUMINOUS SEAL COAT

DESCRIPTION

D.01 Description

This work consists of constructing a bituminous seal coat consisting of one or more applications each of bituminous material and cover aggregate.

MATERIALS

D.02 Materials

Provide materials as specified in:

Mineral Aggregate, Size Nos. 7, 8, 78, 89.....TDOT Section 903.13
Mineral Aggregate.....TDOT Section 903.14
Emulsified Asphalt, CRS-2p .....TDOT Section 904.03

Apply seal coat at a temperature range of 60 to 140 °F.

EQUIPMENT

D.03 Equipment

Provide a power broom or other mechanical sweeping equipment, equipment for heating bituminous material, a pressure distributor meeting the requirements of this specification, two pneumatic-tire rollers, self-propelled mechanical aggregate spreading equipment that can be adjusted to spread accurately at the specified rate, and such other equipment and small tools as may be required to perform the work in a satisfactory manner.

CONSTRUCTION REQUIREMENTS

D.04 Limitations

Only apply bituminous material:

1. When the designated surface is dry, firm, and properly cured;

2. Between April 15 and October 1; and, unless otherwise directed,

3. When the ambient temperature in the shade and away from artificial heat is 70 °F or more.

D.05 Preparing the Designated Surface

Before placing seal coat, clean all surfaces to be sealed by sweeping with a motorized broom to remove any loose material. Clean depressions and cracks not reached by the power broom using hand brooms or pressurized air.

Remove pavement markers and adhesives. Abrade all types of existing pavement markings. Work shall be accomplished without the pavement being gouged or damaged and in a manner which ensures the bituminous treatment will adhere in all areas applied. Work shall be performed to the satisfaction of the Quality Control Representative.

Cover any utility installations to prevent adherence of the bituminous mixture. Suitable covering includes plywood disks, sand, craft paper, roofing felt or other approved methods. Remove the protective coverings before opening the road to traffic. The cost for these adjustments shall be included in the bid price for other items.

The Plans prepared by the Project Engineer must indicate whether the surface is to be constructed on a treated or untreated subbase, a granular base, an asphalt base, or on an existing surface. The surface of the base or sub-base upon which the construction is to be placed shall meet the requirements of the applicable Section of Part 3, Bases and Subgrade Treatments, of these Specifications.

Condition existing surface, if called for on the Plans, as specified in this specification. Condition existing mineral aggregate base as specified in Part 3.

Construct and maintain Prime Coat or Tack Coat, if shown on the Plans, as per this specification.

D.06 Application

A. Applying Bituminous Material

Have all equipment calibrated prior to starting work. The Quality Control Representative shall be present during calibration to determine aggregate spread rate and distributor rates. Distributor trucks shall have proper calibration of spray equipment. Spray nozzles should be clean, properly angled, and appropriately sized for the desired application rate. Stop work if the distributor is not applying material properly, such as gaps in application or streaking.

Place a 500-foot test strip for the bituminous seal coat at the beginning of the project to assure proper coverage and proper equipment calibration. The test section is to verify break time of emulsion and chip retention. The test strip shall be able to carry normal traffic within 3 hours. If normal traffic cannot be carried, the emulsion shall be adjusted and another test strip is required.

At least 14 working days before the scheduled start of construction of any bituminous seal coat, submit to the Project Engineer a sample of aggregate

intended for use for the determination of the appropriate application rates of bituminous material and aggregate. Apply emulsified asphalt by pressure distributor at a uniform rate in accordance with the table below (based on Table 405.06-1 of the TDOT Standard Specifications). The exact rate will be established by the Project Engineer or a competent professional with a minimum of five of years of experience in asphalt paving.

Table 405.06-1: Application Rates for Bituminous Material

Aggregate Size (per 903.22)	Aggregate Spread Rate (lb/yd^2)	Emulsion Shot Rate (gal/yd^2)
7	25 – 30	0.30 – 0.45
78	22 – 28	0.28 – 0.38
8	20 – 25	0.20 – 0.35
89	17 – 23	0.17 – 0.28

Before beginning each spread, place building paper across the roadway surface with the forward edge exactly coinciding with the end of the preceding covered spread. Start distributors on the paper, the width of which shall allow the full force of all nozzles to be in effect before the forward edge of the paper is reached. If required by the Engineer, also stop the spread on building paper. Remove the paper immediately after its use, and dispose of properly. Immediately correct all defects in application.

The length of spread of bituminous material shall not exceed that which is required by trucks loaded with cover material to immediately cover.

The spread of bituminous material shall not extend more than 6 inches wider than the width covered by the cover material. Do not allow the bituminous material to chill or otherwise impair retention of the cover material.

Do not allow traffic on the bituminous material until it has been covered with mineral aggregate.

Treat areas that are inaccessible to the distributor with either hand sprays or pouring pots.

B. Application of Double Bituminous Surface Treatment

1. First Application

Apply the first application of emulsified asphalt using pressure distributors at a uniform rate established by the Project Engineer within the range of 0.30 to 0.38 gallons per square yard. Apply each spread of bituminous material to not be more than 6 inches wider than the width covered by the immediate spread of cover aggregate. Each width of spread shall not be less than half the surface

to be treated.

Before beginning each spread, place building paper across the roadway surface with the forward edge exactly coinciding with the end of the preceding covered spread. Start distributors on the paper, the width of which shall allow the full force of all nozzles to be in effect before the forward edge of the paper is reached. Remove the paper immediately after its use, and dispose of properly. Immediately correct all defects in application.

Treat areas that are inaccessible to the distributor with hand sprays or pouring pots.

If treating less than the full width of the roadway, do not spread the aggregate on the inside 6 inches of either the first or second application until the adjacent lane has been treated. Immediately following each application, uniformly cover the applied bituminous material with Size No. 7 mineral aggregate that is reasonably free of surface moisture.

For projects over ½ mile in length, spread the aggregate at a rate between 24 and 30 pounds per square yard, as established by the Project Engineer, using a self-propelled mechanical spreader. Back the truck on the aggregate being spread, without driving on or over uncovered bituminous material.

On short projects of ½ mile in length or less, self-propelled mechanical spreading equipment will not be required. All other requirements listed in the above paragraph must be met.

The length of bituminous material spread shall not exceed that which trucks loaded with cover material can immediately cover.

2. Second Application

Apply the second application of emulsified asphalt in the same manner as the first application, at a uniform rate established by the Project Engineer within the range of 0.20 and 0.35 gallons per square yard.

Spread mineral aggregate, Size No. 8, in the same manner as the first spread at a rate established by the Project Engineer within the range of 16 to 28 pounds per square yard.

Immediately after each spread of cover aggregate, broom to achieve uniform coverage. Use a power source, which is independent of the drive train that propels the equipment, to power the revolving brooms of mechanical sweeping equipment. Place additional aggregate by hand on thin or bare areas.

D.07 Spreading and Rolling Aggregate

A. Spreading

Immediately after bituminous material has been applied, no more than two minutes, spread and embed the mineral aggregate cover in the bituminous material. Spread the aggregate as close to the application of bituminous material as is practicable, and cover each distributor load applied immediately. Aggregates shall be moistened and visually damp at the time of placement.

Spread the aggregate in accordance with the rates specified in the table shown above (based on TDOT Specification Table 405.06-1). The exact rate will be established by the Project Engineer. Back the truck onto the aggregate being spread, without driving on or over uncovered bituminous material. If treating less than the full width of roadway, do not spread the aggregate on the inside 6 inches of the bituminous spread until the adjacent lane is treated. Immediately after spreading the aggregate, perform hand-brooming to achieve uniform coverage. Place additional aggregate by hand on thin or bare areas.

The speed of the spreader shall be such that the aggregates are not rolling over, and starting and stopping of the spreader is minimized. Use of previously used (swept) aggregates is not permitted.

B. Rolling – Bituminous Seal Coat

Immediately after distributing the aggregate, roll the entire surface by moving in a longitudinal direction, beginning at the outer edges and progressing toward the center of the roadway, with each trip of the roller overlapping the previous trip by half the width of the rear wheel. The amount and sequence of rolling shall be as directed by the Quality Control Representative. Complete the initial rolling of the aggregate within 1 hour after applying the bituminous material.

Use power brooms to correct irregularities by sweeping the aggregates from areas of thick or heavy distribution to areas of thin or light distribution. Then continue rolling until the aggregate is thoroughly embedded in the bituminous material. The Engineer may require additional rolling at a later date. Redistribute excess or loose aggregate that was thrown out of place.

Slow moving traffic may use the section or roadway upon which the aggregate has been spread.

C. Rolling and Curing – Double Bituminous Seal Coat

Immediately after spreading and brooming the cover aggregate, roll the entire surface, beginning at the edges and progressing to the center. Begin rolling within 30 minutes after spreading the aggregate. The amount and sequence of rolling shall be as directed by the Engineer.

Allow the first application of bituminous material and aggregate to cure for as

long as deemed necessary by the Quality Control Representative before beginning the second application.

For the second application of bituminous material and cover aggregate, repeat the same rolling and curing procedures as required for the first application.

The Contractor may allow slow-moving traffic to use sections of the roadway where the bituminous material has been covered with mineral aggregate.

D.08 Shoulders

Restore shoulders that have been disturbed by the Contractor's construction operations at no cost to the City. Remove all objectionable material placed on the shoulders by the Contractor.

Construct shoulders, when specified, as provided for under this specification.

D.09 Maintenance and Protection

Maintain in a satisfactory condition each completed section of seal coat until the entire Project is complete. Maintenance shall include making repairs where failures occur, and maintaining the seal coat in a smooth uniform condition; and brooming, dragging, and rolling when required.

After the final application, maintain the work in a satisfactory condition for at least 10 calendar days prior to final acceptance.

For final cleanup, sweep up all excessive quantities of loose, dislodged cover aggregate that may have collected along the edge of the completed seal coat, and appropriately dispose of this material.

SECTION E – BITUMINOUS PLANT MIX PAVEMENTS (GENERAL)

DESCRIPTION

E.01 Description

This section is applicable to all types of bituminous pavements of the asphalt plant mix type as described in Parts 3 and 4. Deviations from these general requirements will be indicated in the specific requirements for each pavement type.

This work consists of constructing one or more courses of bituminous mixture on a prepared foundation in accordance with this section and the specific requirements of the pavement type.

MATERIALS

E.02 Materials

Provide materials as specified in:

Aggregates.....TDOT Section 903
Mineral Filler..... TDOT Section 903.16
Bituminous Materials ..... TDOT Section 904
Chemical Admixtures and Additives..... TDOT Section 921.06.B

Recycled asphalt pavement (RAP) is not allowed for use on public infrastructure projects in the City of La Vergne.

Separate aggregate into coarse and fine aggregate stockpiles. If stockpiling of coarse aggregate causes segregation, separate into coarse and medium coarse stockpiles.

Store each size and type of aggregate in a separate pile, bin, or stall. Maintain the storage yard in an orderly condition, clearing a walkway between stockpiles that are not separated by partitions. Make the stockpiles readily accessible for sampling.

If anti-stripping additive, other than hydrated lime, meeting TDOT Section 921.06.B.1 is required, use approved in-line blending equipment to add it at the mixing plant or inject it at the asphalt terminal. Manufacture's documentation that asphalt binders will continue to meet requirements listed in TDOT Section 904 after the anti-stripping additive is added shall be approved by the Project Engineer with documentation maintained as required. For mix designs submitted more than six months in advance, the documentation shall be resubmitted to Project Engineer prior to use of the mix design with updated test results.

If using a warm mix asphalt additive meeting TDOT Section 921.06.B.3, use

approved blending equipment to add it at the mixing plant, or deliver it premixed with the asphalt cement.

For 411-OGFC mixtures, include a stabilizing additive listed on the TDOT Qualified Products List (QPL). Do not use fiber pellets. Slag wool fiber or cellulose fiber shall be blown into the asphalt plant measured by a flow meter or sensing device that is accurate to within plus or minus 10% of the amount required. For batch plants, add fibers in to the pugmill or weigh hopper. For drum plants, place the fiber line 1 foot upstream of the asphalt binder line so that the fibers are captured by the asphalt binder before being exposed to high-velocity gases in the drum. The minimum additivefor a slag wool fiber shall be 0.4% and the minimum for a cellulose fiber shall be 0.3% of the total mix.

E.03 Composition of Mixtures

A. General

Develop a bituminous mixture composed of aggregate (coarse, fine, or mixtures thereof), mineral filler if required, anti-strip additive if required, and bituminous material. Ensure that the aggregate fractions are sized, uniformly graded, and combined in such proportions so that the resulting mixture will meet the grading and physical properties of the Job Mix Formula (JMF) which is approved by the Project Engineer.

B. Gradation and Bituminous Material Requirement

The requested aggregate gradation and bituminous material percentages shown on the JMF shall be within the design ranges specified in TDOT Section 903 and Parts 3 and 4 wherein. Establish a recommended asphalt cement content for all mixes, with the final optimum asphalt cement content to be determined by the Project Engineer.

C. Job Mix Formula (JMF)

1. **For City-Funded Projects of Length ½ Mile or Less and for All Privately-Funded Projects:** Submit to the Project Engineer a JMF from a TDOT-Certified Asphalt Plant meeting the requirements of the Plans, Project Specifications, and these specifications. Project Engineer must approve the JMF in writing.
2. **For City-Funded Projects Longer than ½ Mile:** Follow all procedures for Job Mix Formula (JMF) listed in TDOT Standard Specifications Section 407.03 C. Substitute 'Project Engineer' for 'Engineer'.

D. Contractor's Quality Control

1. **General.** Assume responsibility for the quality of construction and materials incorporated in the Work. Provide and maintain a quality control system that will provide reasonable assurance that all materials

conform to specification requirements.

Conduct all quality control sampling and testing according to the Quality Control Plan and the TDOT Policies on Sampling and Testing Procedures and Sampling of Asphalt Mixes for Verification of Laboratory Design. The requirements for the Contractor's quality control sampling and testing will remain in effect until final Project acceptance.

2. **Contractor Quality Control System.** Develop, implement, and maintain a quality control system that will provide reasonable assurance that all materials and products submitted to the City for acceptance as City infrastructure conform to the specified requirements.

   a. **Documentation.** Document all quality control procedures, inspections, and tests and, for any public infrastructure, make this information available for review by the City to a point five years past the acceptance of the infrastructure by the City. Maintain adequate records of all inspections and tests. The records shall indicate the nature and number of tests performed, the number and type of deficiencies found, and the nature of corrective action taken as appropriate.

      On City-Funded projects, the Contractor's documentation procedures will be subject to the review and approval of the City before the start of the work and to compliance checks during progress of the work. Provide copies of all charts and records documenting quality control tests and inspections to the Engineer on a daily basis.

      On Privately- Funded projects, the Contractor's documentation procedures will be reviewed and approved by the Project Engineer.

   b. **Corrective Actions.** Promptly correct all errors, equipment malfunctions, process changes, or other assignable causes that have resulted or could result in the submission of materials, products, and completed construction that do not conform to the specifications.

   c. **Sampling and Testing.** Sampling and testing methods and procedures to determine quality conformance of the materials and products shall be in accordance with TDOT Section 106.04.

   d. **Minimum Mixture Quality Control Testing.** During production of the mixture, provide material that conforms to the approved JMF. Perform testing on mixtures to confirm conformance to the acceptance criteria and the JMF as follows. Mixes with a project total of less than 1,000 tons are exempt from all verification testing requirements unless deemed necessary by the Project Engineer.

      1) **Start Up Testing**. At start-up, confirm that the mixture meets the follow requirements:

a) All mix requirements are within the tolerance defined in the table shown below (based on TDOT Specification Table 407.03-2).

Sample mixture for startup testing from one of the first ten trucks loaded of any mixture to complete this testing.

If any of the above criteria fail verification, cease production. Make adjustments to the process and produce no more than 100 tons to retest the mixture. Once the mixture passes verification, full production may proceed. If the retest fails, submit a modified JMF to the Project Engineer.

Table 407.03-2: Mix Design Requirements

Property	Value
Maximum Theoretical Gravity	± 0.025 of Mix Design Value
Voids in Total Mix	As noted for production in Parts 3 and 4 of this specification
Voids in Mineral Aggregate	Minimum as noted in Parts 3 and 4 of this specification
Marshall Stability	Minimum as noted in Parts 3 and 4 of this specification
Dust/Asphalt Ratio	As noted in Parts 3 and 4 of this specification

2) **Volumetric Testing:** Test all the mix design requirements per the above table (based on TDOT Table 407.03-2) for each day of production. Record all results on control charts made available to the department. If results fall outside the tolerance established in Table 407.03-2 then the following applies:

a. Resample and retest.
b. If the retest meets the criteria continue on without interruption.
c. If the retest fails to meet criteria, cease production. Make adjustments to the process and produce no more than 100 tons for testing purposes. If this retest fails, submit a modified JMF to the Project Engineer. The Project Engineer shall not allow resumption of the project unless some corrective action has been taken and documented. Once compliance is achieved, resume full production.

3. **Quality Control Plan.** All projects must have a written Quality Control

Plan as follows:

1. **For City-Funded Projects of Length ½ Mile or Less and for All Privately-Funded Public Infrastructure Projects:** Quality Control Plan must be prepared and submitted to the Project Engineer for approval. Notice-to-Proceed must be withheld until the Plan has been approved. If a change is made to the Quality Control Plan during the project, provide the updated plan to the Project Engineer.

2. **For City-Funded Projects Longer than ½ Mile:** Quality Control Plan must be prepared and submitted to the City Engineer for approval. Notice-to-Proceed will be withheld until the Plan has been approved. If a change is made to the Quality Control Plan during the project, provide the updated plan to the City Engineer.

3. The Plan must include the sampling, testing, and inspection activities, and the anticipated frequencies of each, which the Contractor will follow to maintain process control.

E. Testing Procedures

Conduct the Tensile Strength Ratio (TSR), Stripping, and Loss on Ignition (LOI) testing in accordance with the following:

1. **Tensile Strength Ratio.** Perform testing for stripping and moisture susceptibility of the mixture according to ASTM D 4867, Standard Test Method for Effect of Moisture on Asphalt-Concrete Paving Mixtures. For all mixtures requiring design, except OGFC, follow ASTM D4867. For OGFC follow ASTM D4867 except as noted:

   a. Modify step 8.6.1 so that the three conditioned samples are subjected to a partial vacuum of 26 inches Hg for 10 minutes to whatever degree of saturation achieved.

   b. Subject the 3 conditioned samples to one freeze thaw cycle per note 6 listed in ASTM D4867 8.7. except as noted.

   c. After 15h in freezer, remove samples and immediately immerse the still wrapped specimen in 77 °F water for 2 hours.

   d. After 2 hours remove specimen from water bath and remove wrapping from specimen then immerse sample in 140 °F water bath for 24 hours.

   All specimens tested for stripping and moisture susceptibility shall meet the criteria specified in the below table (based on TDOT Table 407.03-4).

Table 407.03-4: Criteria for Stripping and Moisture Susceptibility

Asphalt Cement	Minimum Tensile Strength	Minimum TSR
Polymer Modified	100 psi	80%
Non-Polymer Modified	80 psi	80%
411 OGFC	50 psi	80%

2. **Ten Minute Boil Test (Stripping)**

   a. **Field Test.** Test the completed mix for stripping at the asphalt plant as follows:

      1) From a sample of the completed mix, visually select a minimum of 50 grams of the plus No. 4 material and place immediately in boiling water.

      2) Continue to boil for 10 minutes, pour off water, and place coated aggregate on a paper towel.

      3) Perform a visual inspection to verify that the coated aggregate shows no evidence of stripping.

   b. **Laboratory Test.** Determine the dosage rate for anti-stripping additive in the laboratory as follows:

      1) Wash and surface dry 50 grams of the mineral aggregate passing the ½-inch sieve and retained on the No. 4 sieve.

      2) Thoroughly coat the selected aggregate with the blend by stirring the mixture heated to 250° F.

      3) Immediately place the material in boiling water.

      4) Continue to boil for 10 minutes, pour off water, and place coated aggregate on a paper towel.

      5) Perform a visual inspection to verify that the coated aggregate shows no evidence of stripping.

3. **Test for Percent Loss on Ignition (LOI) of the Mineral Aggregate in an Asphalt Paving Mixture.** Conduct Loss on Ignition Testing as follows:

   a. Obtain a representative aggregate sample and weigh approximately 600 grams into an assayer's fire clay crucible that has been ignited to constant

weight. Place a cover on the crucible to prevent pop-out of aggregate while heating.

b. Ignite the covered crucible and its contents in a muffle furnace at 1742° F to constant weight (minimum of 8 hours).

c. Cool the crucible and contents to room temperature and weigh.

If the aggregate sample is obtained by extraction with a vacuum extractor, correct the weights before and after ignition for filter aid using the following equation:

Percent loss on ignition =((A-B)*100)/A

Where:

A = weight of sample before ignition (corrected for filter aid)
B = weight of sample after ignition (corrected for filter aid)

EQUIPMENT

E.04 Bituminous Mixing Plant

Use a mixing plant that meets all of the requirements of TDOT Standard Specifications 407.04.

E.05 Hauling Equipment

1. Comply with the following City of La Vergne Municipal Codes:

   a. (15-120) No person shall operate or cause to be operated upon any street of the municipality any vehicle, motor propelled or otherwise, which by reason of its weight or the character of its wheels, tires, or track is likely to damage the surface or foundation of the street.

   b. (16-115) No person shall drive any commercial truck or trailer in excess of fifteen thousand (15,000) pounds gross vehicle weight upon any street owned and maintained by the City of La Vergne. Trucks making deliveries or pickups on streets not designated as a state or federal highway may do so provided that a state or federal highway is used until reaching the intersection nearest the destination point and then expeditiously returned to by the most direct route.

2. Trucks used for hauling bituminous mixtures shall have tight, clean, smooth metal beds that have been thinly coated with a minimum amount of paraffin oil, hydrated-lime solution, or other approved material from the TDOT Qualified Product List (QPL) to prevent the mixture from adhering to the beds. Immediately

after loading at the plant, cover each truck with a cover of canvas or other suitable material that is of sufficient size to protect the mixture from the weather. Allow the cover to lap down along the sides and rear of the truck bed a minimum of 6 inches, and use tie downs to secure the cover at a maximum of 5-foot spacing along the sides and rear of the truck bed. When necessary to ensure the mixture will be delivered on the road at the specified temperature, insulate truck beds and securely fasten the covers. Provide a 3/8-inch hole in both sides of each truck bed for inserting a thermometer.

E.06 Bituminous Pavers and Material Transfer Devices

A. Pavers

Bituminous pavers shall be self-contained, power-propelled units provided with an activated screed, equipped to be heated, and capable of spreading and finishing courses of bituminous plant mix material in lane widths applicable to the specified typical section and thickness shown on the Plans. All screed extensions shall be full assembly extensions, including activated and heated screeds. Pavers shall include throw-back blades, reverse augers, or equivalent to place mix beneath the auger gearbox. Auger extensions shall be incorporated in a manner such that the maximum distance from the augers to the end plate shall be 18 inches. Screed extensions may extend beyond the 18-inch maximum from auger extensions only when extending for short-term temporary deviations in pavement width such as driveways. Do not use strike-off boxes, with the exception of sections with continuously varying width.

Equip the paver with a receiving hopper that has sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed.

The screed or strike-off assembly shall produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

Equip all asphalt paving machines with automatic grade and slope controls. Both the grade and slope controls shall be in working order at all times; however, if the automatic controls fail, the Contractor may finish the day's work using manual controls, but shall not resume work the following day until both the grade and slope controls are in first class working order.

B. Material Transfer Devices (MTDs)

Provide a Material Transfer Device (MTD) capable of transferring the asphalt from the truck or trailer to the asphalt paver without coming in contact with the asphalt paver. Use a MTD when placing all asphalt mixes, including shoulder mixes. An exception may be allowed due to lane width or safety issues if approved by the Project Engineer.

The MTD shall have a minimum storage capacity of 15 tons, and shall be equipped with mixing augers in the bottom of the storage hopper that are capable of remixing or re-blending the material as the material is removed from the storage hopper. The mixing augers shall be operational and used at all times during placement of the asphalt mixes. The MTD shall have a rear discharge conveyor that swivels a minimum of 150 degrees to allow feeding the paving machine from the front, side or rear.

Insert a stationary surge hopper into the paving hopper of the paver being fed by the MTD. The stationary surge hopper shall be considered as part of the MTD and shall have sloping sides (minimum of 60 degrees from horizontal) and a minimum storage capacity of 15 tons.

E.07 Rollers

Provide self-propelled rollers, of steel-wheel, pneumatic tire, and/or vibratory type, which are in good condition and capable of reversing without backlash. Operate rollers at speeds slow enough to avoid displacement of the bituminous mixture. Equip rollers with a device for moistening and cleaning the wheels as required.

Rollers shall meet the following additional requirements:

1. The steel-wheel roller shall weigh a minimum of 8 tons and may be either a three wheel or tandem type.

2. Pneumatic tire rollers shall have a minimum contact pressure of 85 pounds per square inch. The roller shall contain two axles upon which at least seven pneumatic-tire wheels are mounted to ensure the rear set of tires will not track the front set. The axles shall be mounted in a rigid frame provided with a loading platform or body suitable for ballast loading. Uniformly inflate the tires. Provide the Engineer with charts or tabulations of the contact area and contact pressures for the full range of tire inflation pressures and loadings for each size of roller tire provided.

3. In place of a pneumatic tire roller, the Contractor may substitute a combination roller (pneumatic and steel wheel combination).

4. The Contractor may use vibratory rollers.

When paving the inside shoulder concurrently with the inside traffic lane, provide an additional roller, having a minimum width of 4 feet to a maximum width of 1 foot wider than the inside shoulder being paved, to compact the shoulder. Do not allow either the roller(s) on the inside traffic lane or the roller on the shoulder to traverse between the inside shoulder and the inside traffic lane.

E.08 Small Tools

Provide all necessary small tools, and keep them clean and free from

accumulations of bituminous materials.

CONSTRUCTION REQUIREMENTS

E.09 Weather Limitations

The Contractor may place bituminous plant mix on properly constructed and accepted subgrade or previously applied layers if:

1. The subgrade and the surface upon which the bituminous plant mix is to be placed is free of excessive moisture, and

2. The bituminous plant mix is placed according to the temperature limitations specified in the following table (based on TDOT Table 407.09-1) and when weather conditions otherwise allow the pavement to be properly placed, compacted, and finished.

Table 407.09-1: Temperature Limitations

Compacted Thickness	Minimum Air or Surface Temperature (°F)	
	Unmodified mixes (PG 64, 67)	Modified mixes (PG 70, 76, 82)
≤ 1.5 inches	45	55
> 1.5 inches to < 3.0 inches	40	50
≥ 3.0 inches	35	45

3. Do not place bituminous plant mix, with a compacted thickness of 1.5 inches or less, between November 30 and April 1. Do not place bituminous plant mix, with a compacted thickness greater than 1.5 inches, between December 15 and March 16. Only place wearing surface when the pavement surface temperature and the ambient air temperature are a minimum of 55°F and rising; limit placement to the period from April 1 to November 1. If the temperature and immediate forecast meets the above requirements, outside of normal paving season, a request for a seasonal limitation waiver may be submitted to the Project Engineer for all pavement types other than wearing surface.

4. The Contractor may request a variance from the above required temperatures and seasonal limitations to pave at lower temperatures by submitting a Cold Weather Paving and Compaction Plan to the Project Engineer.

   In no cases will a Cold Weather Paving and Compaction Plan or seasonal limitation waiver be approved for wearing surface placement.

If the specified densities are not obtained, stop all paving operations and develop a new plan.

E.10 Conditioning the Existing Surface

If bituminous mixes are to be placed upon an existing concrete pavement, with or without a bituminous overlay, remove all excess bituminous material from joints and cracks. Remove sections of existing pavement that are broken and pumping under traffic. Remove pavement where blowups have occurred at joints or cracks to provide a minimum opening of 1 foot for the full width of the pavement.

If the bituminous mixture is to be placed upon an existing bituminous pavement, remove areas containing excess bitumen and failures in the existing surface and base.

Adjust all manholes and catch basin frames, which are associated with the storm sewer system, to the finished grades of the pavement. On sloped pavements, match the grade at the downhill point of the casting.

Remove unsatisfactory subgrade material encountered when removing the existing pavement and replace with approved material. Use overlay mixture or other approved material to fill openings left by the pavement and base removal to the full depth of the existing pavement and compact the material in layers not to exceed 3 inches in thickness.

Paint contact surfaces of curbing, gutters, manholes, and other structures with a thin, uniform coating of bituminous material before placing the mixture against them.

Bring existing surfaces that are warped and irregular to uniform grade and cross-section using Bituminous Plant Mix Base [Hot Mix] as specified in TDOT Specification 307.

E.11 Preparing the Bituminous Material

A. Hot Mix Asphalt (HMA)

Heat the bituminous materials for hot mixes to the required mixing temperature specified in the below table (based on TDOT Table 407.11-1):

Table 407.11-1: Mixing Temperatures

PG Binder Grade	Minimum Temperature (°F)	Maximum Temperature (°F)
PG 64-22, PG 67-22	270	310
PG 70-22	290	330

PG 76-22	290	330
PG82-22	290	330

Minimum temperature for OGFC mixes shall be 280º.

The temperature for Grading AS, Grading ACRL, and Grading TPB mixtures shall be between 225 and 275 °F, except when modified binders are used, and then the temperatures shall be between 250 and 310 °F. Aggregate should be coated, and no visible drain down should occur in storage silos or hauling equipment.

E.12 Preparation of Aggregates

Unless otherwise specified, dry and heat the aggregate for hot mixes to produce a completed mix of a uniform temperature as specified in the above table. Adjust flames used for drying and heating to avoid damage to the aggregate and to avoid soot on the aggregate.

On all plants requiring screens, screen the hot dried aggregate into two or more fractions as specified. Convey the separated fractions into separate compartments ready for batching and mixing with bituminous material.

E.13 Mixing

Combine the dried aggregates within the mixer in the amount of each fraction of aggregates required to meet the JMF. Measure the bituminous material and introduce it into the mixer in the amount specified by the JMF.

After introducing the required amounts of aggregate and bituminous material into the mixer, mix the materials as long as necessary to obtain a complete and uniform coating of the particles and a thorough distribution of the bituminous material. The Engineer will determine wet-mixing time for each plant and for each type of aggregate used, but in no case shall the wet-mixing time be less than 25 seconds for batch type plants and 40 seconds for continuous mix plants.

The temperature of the completed mixture (determined at the time it is dumped from the mixer), made with aggregates containing absorbed moisture that causes foaming or boiling in the completed mix, shall be not less than 225 °F. The temperature of the mix when it is discharged from the mixer shall not deviate from that specified herein.

E.14 Spreading and Finishing

For Contracts requiring night work, supply sufficient lighting and equipment to safely perform the work (see TDOT 712.04.H for reference)

The temperature of the mixture at the time of depositing in the paver hopper shall be as specified in Table 407.11-1 above.

Place the mixture upon an approved surface, and spread and strike-off to the established lift thickness, line, grade, and elevation using approved asphalt paving machine(s). Use preset control string lines to control the alignment of the outside edge of the pavement. Where multi-course pavements are placed, offset the longitudinal joint in one layer from that in preceding layer by approximately 1 foot; however, construct the joint in the top layer at the centerline of the pavement if the roadway comprises two lane widths, or at lane lines if the roadway is more than two lanes in width. Pave in the direction of traffic.

Do not feed a paving machine from more than one asphalt plant. Coordinate plant production and paving operations to ensure constant forward movement of the pavers. Do not have repetitive interruptions or stopping of the paver. If the paver must be stopped for a significant period of time, construct a joint and move the paver from the roadway before the bituminous mixture has cooled sufficiently to prevent proper compaction. If the bituminous mixture cools to the extent that the required density cannot be obtained, remove and replace the mixture.

Do not allow unevenness of texture, segregation (including end-of-load segregation) or tearing or shoving of bituminous mixture during the paving operation. If such occur, stop work and only resume paving operations when the condition is corrected. Immediately remove unacceptable mix and replace. Any amount of mixture not fully adhered to the roadway shall be repaired prior to completion of the project. If the failure is not repaired the same day as originally placed, the method of repair must be approved by the Project Engineer prior to beginning of the repair.

Provide automatic screed controls using either the string line, ski type grade reference system, or a non-contact averaging system on all work regardless of the paver width. A string line reference system is required on new construction unless otherwise specified or approved by the Project Engineer. When the string line system is required on a multi- course pavement, use it on at least two courses exclusive of the surface course. When using the ski type system, the ski shall have the maximum practical length and in no case shall it be less than 40 feet in length. Pavement lanes previously placed with automatic controls or to form grade may serve as the longitudinal control reference for placing adjacent lanes by using a ski or joint matching shoe.

The string line reference system shall consist of suitable wire or twine supported by approved devices that are compatible with the type of automatic paver control system used. The string line and supports shall be capable of maintaining the line and grade shown on the Plans at the point of support while withstanding the tensioning necessary to prevent sag in excess of ¼ inches between supports spaced 50 feet apart. Install additional supports to provide a minimum spacing of 25 feet to remove the apparent deviation of the string line from theoretical grade.

Provide all materials, equipment, labor, and incidentals necessary to construct the string line reference system, and maintain the system until its use is no longer required. Have

the string line reference system complete in place at least 300 feet in advance of the point where the pavement is being placed. Automatic screed controls are not required on sections of projects where service connections and other conditions interfere with their efficient operation.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, take the mixture from the hopper of the spreading machine and distribute it immediately into place using suitable shovels and other tools, and spread the mixture with rakes and lutes in a uniformly loose layer of such depth as will result in a completed course having the required thickness.

For public infrastructure roadways projects longer than ½ mile, the Quality Control Representative team must include an individual onsite that is certified by the Tennessee Department of Transportation through the HMA Roadway Certification Course.

E.15 Compaction

A. General

After spreading and striking-off the bituminous mixture and adjusting surface irregularities, thoroughly compact the mixture using methods that are capable of achieving the specified density while the material is in a workable condition. When no density requirements are specified, use a system of compaction for roadway pavements that has previously produced the required bituminous pavement densities. For public infrastructure projects more than ½ mile long, a control strip will be required.

In general, accomplish compaction using a combination of the equipment specified herein. As a minimum, meet the roller requirements in the below table (based on TDOT Table 407.15), but increase the number of rollers if the required results are not being obtained.

Table 407.15 – Roller Requirements by Mix Type

Mix Type	Roller Requirements
307-A, 307-B, 307-BM-2, 307-C, 307-CW (except surface)	3 Rollers (Intermediate roller shall be Pneumatic)
307-AS, 307-ACRL, 411-D, 411-E, 307-CW (surface), 313-Asphalt Treated Permeable Base	3 Rollers (unspecified)
411-TL, 411-TLD, 411-TLE, 307-CS (when paved as a continuous layer)	2 Rollers (unspecified)
411-OGFC	2 Rollers (both rollers shall be static steel double drum, 10 Ton minimum
Any mix used for scratch paving	2 Rollers (breakdown shall be pneumatic)

1. The Contractor may reduce the minimum number of rollers listed above to one roller of either the steel-wheel or vibratory type on the following types of construction and projects:

   a. Shoulder construction,

   b. Incidental construction such as bridge approaches and driveways, and

   c. Projects containing less than 1,000 tons of bituminous pavement.

2. Compaction of 411-OGFC mixtures shall consist of a minimum of two passes before the material temperature has fallen below 185 °F. Begin rolling at the low side and proceed longitudinally parallel to the road centerline. When paving in echelon, or abutting a previously placed lane, roll the longitudinal joint first, followed by the regular rolling procedure. When paving in echelon, rollers shall not compact within 6 inches of an edge where an adjacent lane is to be placed. Operate rollers at a slow uniform speed with the drive wheels nearer the paver, and keep the rollers as nearly as possible in continuous operation. Continue rolling until all roller marks are eliminated. Do not park rollers on the bituminous pavement.

To prevent adhesion of the mixture to the rollers, keep the wheels properly moistened with water or water mixed with very small quantities of detergent or other approved material. Limit excess use of liquid.

Do not refuel rollers on bituminous pavements.

Along forms, curbs, headers, walls and other places not accessible to the rollers, compact the mixture thoroughly using hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, the Contractor may use a trench roller to compact the mix.

B. Density Requirements

Meet the applicable density requirements specified in the below table (based on TDOT Table 407.15-1).

Table 407.15-1: Density Requirements for Bituminous Pavement

Mix Type	% of Maximum Theoretical Density (Lot Average)	No Single Test Less Than, % (Sub Lot)
Travel Lanes ADT <1,000 A, B, BM, BM-2, C, CW, D, E	90.0	87.0

Travel Lanes 1,000 <ADT <3,000 A, B, BM, BM-2, C, CW, D, E	91.0	89.0
Travel Lanes ADT >3,000 A, B, BM, BM-2, C, CW, D, E	92.0	90.0
Travel Lanes and Shoulders Any ADT CS, TL, TLD, TLE, OGFC	NA	NA
Shoulders B, BM, BM-2, D, E	88.0	85.0

Correct sublots that test below the minimum density so that the density of the area is equal to or above the minimum, at which point it can be used to determine the average density of the lot. Do not place any successive layers until the area has been corrected. As necessary to determine the classification of open graded or dense graded mixes and to measure segregation, use AASHTO T 269 or ASTM D3203.

Repair or replace defective mixture to the satisfaction of the Project Engineer.

C. Test Strips (required for public infrastructure projects, regardless of funding, longer than ½ mile)

Construct test strips for all A, B, BM, BM-2, C, CW, D, and E mixes to establish rolling patterns, to verify that the base course or surface course mixture meets the density requirements of the specifications, and for mix design and production verification as required. A test strip is not required for mixes AS, A-CRL, CS, TL, TLD, and TLE.

Before constructing the test strip, obtain the Quality Control Team's approval of the underlying base or other pavement course. Compact the test strip using equipment as specified herein.

Construct the test strip at the beginning of work on the pavement course. Prepare new test strips when:

1. A change in the JMF is necessary;

2. A change in the source of materials occurs;

3. A change in the material from the same source is observed;

4. There is reason to believe that the test strip density is not representative of the bituminous mixture being placed; andwhen

5. A change in paving or compaction equipment occurs.

Construct each test strip with approved bituminous mixture. The test strip shall remain in place as a section of the completed work. Construct each test strip to be 1 paver width wide, with an area of at least 400 square yards and of the depth specified for the pavement course concerned.

Immediately after placing the bituminous mixture, begin compacting the test strip. Perform compaction in a continuous and uniform manner over the entire test strip.

Continue compacting the test strip until additional roller coverage will produce no appreciable increase in density (1 pound per cubic foot), as measured using a nuclear gauge. Use the roller coverage necessary to obtain this maximum density as the rolling pattern for the remainder of the project.

Take cores on the test strip at ten locations. If a different mix design to be used, it will be necessary to cut new cores from the ongoing pavement construction.

When testing test strip cores, density (bulk specific gravity) must be determined in accordance with AASHTO T 166, Method A only. All core samples shall be completely dry before testing. Air drying is permitted provided core samples are weighed at 2-hour intervals until dry in accordance with AASHTO T166, Section 6.1. Cores may also be dried in accordance with ASTM D7227.

If the density of the asphaltic concrete in the test strip does not meet specification requirements, make whatever changes are necessary to obtain the specified density. Use other sources and combinations of aggregates as necessary, subject to the Project Engineer's approval, to produce a mix meeting the required density.

E.16 Joints

Place bituminous paving as continuously as possible. Do not pass rollers over the unprotected end of a freshly laid mixture. Form transverse joints by cutting back on the previous run to expose the full depth of the course. Use a brush or sprayed coat of bituminous material on contact surfaces of longitudinal and transverse joints just before placing additional mixture against the previously rolled material.

E.17 Surface Requirements

Test the surface with a 12-foot straightedge applied parallel to the centerline of the pavement. The deviation of the surface from the testing edge of the straightedge shall not exceed that specified for the respective types of bituminous construction under the applicable Subsections of these Specifications.

Test the transverse slopes of tilted pavements with a string-line and string- level

applied at right angles to the centerline of the pavement. The percent of slope, when computed for the full width of the pavement, shall not deviate more than 0.5 percentage points from that shown on the Plans.

Test the crown in crowned pavements with a string-line applied at right angles to the centerline of the pavement. The crown shall not deviate more than ½ inch from that shown on the Plans.

Correct deviations that exceed the specified tolerances. Remove and replace pavement that cannot be corrected to comply with the specified tolerances.

SECTION F – BITUMINOUS PLANT MIX SURFACE COURSE (COLD MIX)

Cold Mix shall not be used for construction, permanent patching, or permanent repair of any public infrastructure or streets. No streets which contain cold mix patches or repairs will be accepted by the City.

City of La Vergne Public Works crews may make temporary patches or repairs with cold mix at their discretion.

Private contractors must have the approval of the Director of Public Works before using cold mix on city pavements for temporary patches and repairs.

SECTION G – ASPHALTIC CONCRETE SURFACE (HOT MIX)

DESCRIPTION

G.01 Description

This work consists of constructing an asphaltic concrete pavement, composed of a mixture of coarse aggregate, fine aggregate, mineral filler if specified or required, and asphalt cement, on a prepared roadbed at the rate of application shown on the Plans or established by the Project Engineer.

The provisions of Section E of this Part shall apply to this work unless otherwise stipulated.

MATERIALS

G.02 Materials

Provide materials as specified in:

Mineral Aggregate .....TDOT Section 903.11
Mineral Filler .....TDOT Section 903.16
Asphalt Cement, PG 64-22, 70-22, 76-22,
or 82-22 .....TDOT Section 904.01
Chemical Additive .....TDOT Section 921.06.B

G.03 Composition of Mixtures

A. General

Composition of mixtures shall be as specified in Section E.

<u>The standard for the City of La Vergne wearing surface (surface course) is TDOT 411, Grading D.</u>

TDOT 411, Grading E (shoulders) is the standard for shoulders.

For wearing surface of the driving lane, TDOT 411, Grading E or TDOT 411, Grading OGFC may be used if specified or approved by the Project Engineer.

Use of any other pavement mixes for the driving lane wearing surface requires submittal by the Project Engineer to the City Engineer for approval.

B. Proportioning

Combine the specified mineral aggregate and asphalt cement according to the proportions specified in the following table (based on TDOT Table 411.03-1).

Table 411.03-1: Proportions of Total Mixture, Percent by Weight

Surface Course	Effective Combined Mineral Aggregate	Asphalt Cement
Grading D	93.0 – 94.3	5.7 – 7.0 (1)
Grading E (2)	93.0 – 94.3	5.7 – 7.0 (1)
Grading E (shoulders)	92.0 – 94.7	6.0 – 6.5 (1)
Grading OGFC	92.0 – 94.0	6.0 – 8.0 (1)

(1) If the effective combined specific gravity of the aggregate exceeds 2.80, the above proportions may be adjusted as directed by the Project Engineer. The upper limit for flow values shall not apply to mixes with modified asphalt liquids.

(2) The minimum allowable asphalt cement content for 411E low volume mixtures is 5.3%.

1. **Grading D.** In addition to the other requirements of these Specifications, the composition of the mineral aggregate shall be such that when combined with the required amount of bitumen, the resultant mixture will meet the following table (based on TDOT Table 411.03-2).

Table 411.03-2: Mixture Properties (All Roads)

Mix(1)	Stability, Min. lb-ft (2)	Flow 0.01 inch (3)	Design Void Content % (2)	Production Void Content % (2)	VMA, Min. % (2)	Dust-Asphalt Ratio (4)
411D	2,000	8 – 16	4.0 ± 0.2	3 – 5.5	14	0.6 – 1.2

(1) In order to identify critical mixes and make appropriate adjustments, the mix design shall have these required production properties for the bitumen content range of Optimum Asphalt Cement ±0.25%.

(2) Tested in accordance with AASHTO T 245 with 75 blows of the hammer on each side of the test specimen, using a Marshall Mechanical Compactor.

(3) Flow will only be required when using a non-modified binder (PG 64-22 or 67-22).

(4) The dust to asphalt ratio is the percent of the total aggregate sample that passes the No. 200 sieve, as determined by AASHTO T 11, divided by the percent asphalt in the total mix.

2. **Grading E.** In addition to the other requirements of these Specifications, the composition of the mineral aggregate shall be such that, when combined with the required amount of bitumen, the resultant mixture will meet the following table (based on TDOT Table 411.03-3).

Table 411.03-3: Mixture Properties (High vs. Low Volume Roads)

Mix	Traffic Volume	Stability Minimum lb-ft (1, 3)	Flow 0.01 inch (2)	Design Void Content % (1)	Production Void Content % (1)	VMA, Min % (1)
411E	High Volume (ADT > 1,000)	2,000	8 – 16	4.0 ± 0.2	3 – 5.5	14
411E	Low Volume (ADT ≤ 1,000)	1,500	8 – 16	3.5 ± 0.5	2 – 5	n/a

(1) Tested according to AASHTO T 245 with 75 blows of the hammer on each side of the test specimen, using a Marshall Mechanical Compactor.

(2) Flow will only be required when using a non-modified binder (PG 64-22 or 67-22).

(3) Minimum stability for shoulder mixes will be 1,500 lb-ft and optimum asphalt cement content for shoulder mixes shall be as directed by the Regional Materials Supervisor.

If the design criteria specified above cannot be obtained with the aggregate submitted to the laboratory for design, provide another source of aggregate.

3. **Grading OGFC.** In addition to the other requirements of these specifications, the composition of the mineral aggregate shall be such that, when combined with the required amount of bitumen, the resultant mixture will meet the following table (based on TDOT Table 411.03-5).

Table 411.03-5: Mixture Properties (Grading OGFC)

Mix	Minimum Void Content %	Voids in Coarse Aggregate % (1)	Max. Cantabro Abrasion Loss (Non-Aged) % (1)	Drain Down Loss % (2)
411OGFC	20	$VCA_{DRC} > VCA_{MIX}$	20	<0.3%

(1) As described in National Asphalt Pavement Association (NAPA) Publication IS-115, "Design, Construction and Maintenance of Open-Graded Friction Courses."

(2) Tested in accordance with AASHTO T 305.

C. Anti-Strip Additive

Check asphaltic concrete surface mixtures for stripping by the Ten Minute Boil test for dosage rate and ASTM D4867 (Root-Tunnecliff procedure) for moisture susceptibility.

Mix an approved anti-strip agent with the asphalt cement at the dosage specified in TDOT Section 921.06.B.

EQUIPMENT

G.04 Equipment

Provide equipment as specified in Section E.

CONSTRUCTION REQUIREMENTS

G.05 General Requirements

Construct the pavement as specified in Section E and the following Subsections.

G.06 Preparing the Designated Surface

Prepare the designated surface upon which the material is to be placed as specified in Part 3 and in this Part, Section A.

Ensure that loops used for traffic signals are installed before applying the final surface.

G.07 Mixing

Perform mixing as specified in Section E. In addition, the mixing cycle for surface course mixtures may require a dry-mixing period.

G.08 Surface Requirements

The surface shall meet the requirements specified in Section E and when tested according to the provisions of that Section, the deviation of the surface from the testing edge of the straightedge shall not exceed ¼ inch.

PART 5 – RIGID PAVEMENT

Table of Contents

SECTION A – PORTLAND CEMENT CONCRETE PAVEMENT 3

SECTION A – PORTLAND CEMENT CONCRETE PAVEMENT

DESCRIPTION

A.01 Description

This work consists of constructing a pavement for pedestrian or vehicular traffic of Portland cement concrete, with or without reinforcement as specified, on a prepared surface.

MATERIALS

A.02 Materials

A. General

Provide materials as specified in:

Portland Cement.....TDOT Section 901.01
Fine Aggregate.....TDOT Section 903.01
Coarse Aggregate.....TDOT Section 903.03
Preformed Joint Fillers
(Non-Extruding and Resilient Types).....TDOT Section 905.01
Joint Sealants.....TDOT Section 905.05
Reinforcing Steel and Dowel Bars.....TDOT Section 907
Curing Materials.....TDOT Section 913
Water.....TDOT Section 921.01
Air-Entraining Admixtures.....TDOT Section 921.06
Chemical Additives.....TDOT Section 921.06
Fly Ash.....TDOT Section 921.15
Slag Cement.....TDOT Section 921.16

B. Fly Ash and Slag Cement

Meet the requirements in Part 6 – Concrete Structures

A.03 Proportioning and Quality Assurance of Concrete

A. Proportioning

1. **Design and Production Parameters.** The concrete design shall be air entrained and produce a workable concrete mix meeting the design and production parameters specified in the following table (based on TDOT Table

501.03-1).

Table 501.03-1: Class CP – Paving Concrete

28 Day Compressive Strength, min (PSI)	Minimum Cementitious Content (pounds per cubic yard)	Maximum Water/Cement Ratio (pound/pound)	Air Content (%)	Slump (inch)
3000	526 [1] 545 [2]	0.45	5% design 3 – 8% production	0 – 2 [3] 3 ± 1 [4]

(1) 526 pounds required when the coarse aggregate is crushed stone
(2) 545 pounds required when the coarse aggregate is gravel
(3) Allowable slump for slipform paving
(4) Allowable slump for other than slipform paving

The fine aggregate shall not exceed 44% by volume calculation of the total aggregate.

Do not use sand manufactured from limestone or other polishing aggregates in the construction of traffic lanes.

The Contractor may include chemical admixtures in the concrete mixture based on the ambient air temperature and expected weather conditions.

Admixtures to be incorporated into the concrete shall be compatible and incorporated into the concrete in accordance with the manufacturer's recommendations. Concrete mixtures utilizing multiple admixture manufacturers shall prove compatibility in accordance with Departmental procedures.

2. Mix Design Submittal

Submit in accordance with Part 6 – Concrete Structures a concrete mix design to the Project Engineer, except that compressive strength specimens (7, 14, 28-day, etc.) shall be 6-inch by 12-inch due to the size of the coarse aggregate.

3. Partial Cement Replacement with Fly Ash or Slag Cement

Meet the requirements in Part 6 – Concrete Structures

The Contractor may use ternary cementitious mixtures (mixtures with Portland cement, slag cement, and fly ash) for Class CP Concrete so long as the minimum Portland cement content is 50%. The maximum amount of fly ash substitution in a ternary blend shall be 20%. Substitution rates shall be at a 1:1 ratio.

4. **Use of Class A Concrete.** The Contractor may use Class A Concrete, as specified in Part 6 – Concrete Structures and modified herein, in variable width sections, ramps, and on projects containing 10,000 square yards of concrete pavement or less. The slump shall be modified to be a maximum of 3 inches, and the compressive strength of cylindrical specimens molded, cured and tested in an approved laboratory shall be not less than 3,000 psi at 28 days.

B. Quality Control and Acceptance of Concrete

Meet the requirement of Part 6 – Concrete Structures.

EQUIPMENT

A.04 Equipment

Use equipment that is fit to task and in good operating condition.

A. Mixers

Meet the requirements in Part 6 – Concrete Structures.

1. **Mixers at Site of Construction.** In addition to meeting the requirements of Part 6 – Concrete Structures, mixers at the site of construction shall be capable of discharging and distributing the mix without segregation on the prepared subgrade or sub-base.

2. **Truck Mixers and Truck Agitators.** In addition to meeting the requirements of Part 6 – Concrete Structures, mixers or agitators used to mix and transport paving concrete shall be of the hydraulic drum lift type or other specially designed types that will discharge low slump concrete ½ to 1-1/2 inches at a satisfactory rate without segregation. The Contractor may use approved conventional or standard truck mixers or truck agitators for mixing and hauling concrete under Part 6 – Concrete Structures, for projects that contain 10,000 square yards or less of concrete paving.

3. **Non-agitator Trucks.** Bodies of non-agitator hauling equipment for

concrete shall be smooth, mortar-tight, metal containers, and shall be capable of discharging the concrete at a satisfactorily controlled rate without segregation. Provide covers to protect the concrete.

B. Forms

Use straight side forms of metal having a thickness of not less than 7/32 inch and furnished in sections not less than 10 feet in length. Forms shall have a depth at least equal to the required edge thickness of the concrete, without horizontal joint, and a base width equal to at least the depth of the forms. For curves of 100-foot radius or less, use flexible or curved forms of wood or metal, of the proper radius, and of a design acceptable to the Engineer. Provide forms with adequate devices for secure setting so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Flange braces shall extend outward on the base not less than 2/3 the height of the form. Ensure that the top face of the form does not vary from a true plane by more than 1/8 inch in 10 feet, and the face of the form does not vary more than ¼ inch. The forms shall contain provisions for locking the ends of abutting form sections together tightly, and for secure setting. Metal pins shall be of proper size and length to hold the forms rigidly and securely in place.

Do not use built-up forms except where the total area of pavement of any specified thickness on the Project is less than 10,000 square yards. Built- up forms shall have a minimum base width of 8 inches.

Remove forms with battered top surfaces and forms that are bent, twisted, or broken. Do not use repaired forms until inspected and approved by the Quality Control Representative.

Provide and maintain in satisfactory condition an adequate supply of forms to meet the needs of a full day's production.

C. Spreading and Finishing Equipment

Equipment shall include a paving machine designed to uniformly vibrate and finish the concrete full width and to its final grade.

1. **Vibrators.** Vibrators for full-width and full-depth vibration of concrete paving slabs shall be multiple spuds or other types approved by the Engineer. Either attach the vibrators to the spreader or the finishing machine or mount them on a separate carriage. Operate the vibrators at the frequency recommended by the manufacturer. Follow the manufacturer's recommendations for installing and operating vibrators.

2. **Longitudinal Floats.** Provide a mechanical longitudinal float which is in

good working condition and constructed to allow accurate adjustment to the required crown.

3. **Bridges.** Furnish a minimum of two individual work bridges.

4. **Finishing Straightedge.** Provide at least two straightedges, with handles at least 3 feet longer than half the width of the slab, constructed of light metal, and not less than 10 feet long. Ensure that the straightedges remain clean and straight.

5. **Straightedge Templates.** Provide at least two straightedge templates for testing the completed surface. They may be of wood or metal; shall not be less than 12 feet long; and shall be clean, straight, and free from warp.

6. **Water Supply Equipment.** Water supply equipment shall include pumps, or tanks mounted on trucks, of adequate capacity to furnish more than sufficient water to accommodate the construction and at the required and necessary pressure. A pipeline appropriate to the requirements of the construction may be used.

7. **Small Tools.** Provide edgers, trowels, hand floats, brushes, and other small tools necessary to produce the results required.

8. **Special Equipment and Tools.** Equipment and tools necessary to construct special features as shown on the Plans shall be able to produce the results required.

9. **Transverse Grooving Equipment.** Mechanical transverse grooving equipment shall consist of a steel tine comb with a minimum width of 6 feet, a vibrating beam roller, or other approved devices.

10. **Concrete Saw.** If sawed joints are elected or specified, provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions and at the required rate. The saws shall be equipped with water-cooled diamond edge blades. For sawing longitudinal joints, use saws equipped with guides to ensure proper alignment of the joints.

    Provide at least one standby saw in good working order. Maintain an ample supply of saw blades onsite at all times during sawing operations. Provide adequate artificial lighting facilities for night sawing. Have all equipment onsite both before and continuously during concrete placement.

11. **Slip-form Paver.** Provide slip-form pavers designed to spread, consolidate, screed, and float-finish freshly placed concrete in one

complete pass of the paver so that only a minimum of hand finishing will be necessary to provide a dense and homogeneous pavement that conforms with the Plans and Specifications. The slip-form paver shall be an approved self-propelled type, equipped with a crawler type track of sufficient area to prevent track slippage under load or sinking into the supporting subbase/subgrade. The length of ground contact per track and arrangement of track units shall be adequate to ensure the established straightedge tolerance. When using slip-form pavers, comply with all provisions and requirements of these Specifications that do not conflict with slip-form construction.

Control pavement alignment with an electronic sensing device in continuous contact with a sensing guide. Furnish equipment with electronic controls for vertically adjusting the paver strike-off and finishing components. Provide, install, and maintain electronic controls, sensing devices, and sensing guides.

CONSTRUCTION REQUIREMENTS

A.05 Subgrade Preparation

Prepare the subgrade as provided for under Part 2 – Subgrade Construction and Preparation.

A.06 Construction of Base

Construct the base as specified in the applicable Section of Part 3 – Bases and Subgrade Treatments, of these Specifications.

Construct the base to such grade tolerances as will ensure the required concrete pavement thickness is obtained.

Complete the base at least 500 feet in advance of paving.

Equip the base grading machine and slip-form paver with automatic line (guidance) and grade controls.

A.07 Setting Forms

A. Base Support

Ensure that the foundation under the forms is firm and true to grade so that each form, when set, will be firmly in contact for its whole length and at the specified grade. Fill all grade at the form line, which is found to be below established grade, up to grade with suitable material in lifts of ½ inch or less for a distance of 18 inches on each side of the base of the form, and thoroughly compact the material.

Correct all grade at the form line found to be above grade by tamping or cutting as necessary. Do not rest the forms on pedestals of earth or other material to bring them to grade.

B. Form Setting

Set and obtain approval of forms a minimum of 500 feet in advance of the point where concrete is being placed. The Contractor may reduce this distance for projects which are less than 500 feet long or as approved by the Project Engineer. After setting the forms to the correct grade, thoroughly tamp, mechanically or by hand, the material supporting the forms, at both the inside and outside edges of the base of the forms. Stake forms into place with not less than three pins for each 10-foot section. Place a pin at each side of every joint. Ensure that form sections are tightly locked and free from play or movement in any direction. Do not allow the forms to deviate from true line by more than ¼ inch at any point. Reset or remove as directed forms that settle or spring under the spreading and finishing equipment. Clean and oil the top and face of forms before placing concrete.

C. Grade and Alignment

Immediately before placing the concrete, check the alignment and grade elevations of the forms and correct as necessary. When a form has been disturbed or a grade has become unstable, reset and recheck the affected form.

A.08 Conditioning of Base

Check and correct the grade immediately ahead of concrete placing operations. Use an appropriate machine with automatic grade control to attain the final section. If the slip-form method of paving is used, place, compact, and finish the base to the proper grade to a width beyond the pavement limits sufficient to support all paving equipment.

Remove and replace high areas. The Contractor may fill low areas with base material and compact to correspond with the surrounding areas; except that for low areas in cement treated bases and bituminous bases, fill with concrete integral with the pavement. Repair low areas in lean concrete base as directed by the Engineer.

The base shall have been previously wetted and shall be in a moist condition at the time of placing concrete. If the base subsequently becomes dry before the actual placing of concrete, sprinkle it, while taking care to avoid forming pools of water. The base shall not be muddy or soft.

A.09 Handling, Measuring, and Batching Material

Meet the requirements in Part 6.

A.10 Mixing Concrete

Meet the requirements in Part 6 – Concrete Structures.

Transport mixed concrete as required by Part 6 – Concrete Structures or in non-agitating trucks having special bodies. When truck mixers are used on hauls in excess of 1 hour, add the cement at the site of construction and perform mixing as specified under this Subsection.

From the time water is added to the mix to the time the concrete is deposited in place, no more than 30 minutes shall elapse for concrete hauled in non- agitating trucks, and no more than 60 minutes shall elapse for concrete hauled in truck mixers or truck agitators.

A.11 Mixing Limitations

Meet the requirements in Part 6 – Concrete Structures.

A.12 Placing Concrete

Either unload the concrete into an approved spreading device, or deposit it directly on the base, and mechanically spread the concrete in a manner that prevents segregation of the materials. When using central or transit mixed concrete, deposit it in an approved spreader. Place the mixture to minimize rehandling and relocation from point of placement. The mechanical spreader will not be required on areas too small to accommodate the paving equipment, projects that contain 10,000 square yards or less of concrete paving, and on variable width sections and ramps. Placing shall be continuous between transverse joints without the use of intermediate bulkheads. Do not place concrete on frozen grade.

Perform any necessary hand spreading with shovels or other approved tools. Do not allow workmen to walk in the freshly mixed concrete with boots or shoes coated with earth or other foreign substances.

If placing concrete adjacent to a previously constructed lane of pavement and mechanical equipment is to be operated on this existing lane of pavement, that lane shall meet the requirements for opening to traffic specified in this Part. If the existing lane is to only carry finishing equipment, the Contractor may begin paving the adjoining lanes after 7 days.

Deposit concrete as near to expansion and contraction joints as possible without disturbing them; do not dump concrete from the discharge bucket or hopper onto a joint assembly unless the hopper is well centered on the joint assembly.

Immediately remove all concrete materials that may fall on or be worked into the surface of a completed slab using approved methods.

When using the slip-form method of concrete paving, place the concrete with an approved slip-form paver meeting the requirements of this Part.

Ensure that the sliding forms are rigidly held together laterally to prevent spreading of the forms. The forms shall trail behind the paver for such a distance that no appreciable slumping of the concrete will occur and so that necessary finishing can be accomplished while the concrete is still within the forms. Before the concrete has hardened, correct any edge slump of the pavement, exclusive of edge rounding, in excess of ¼ inch.

Operate the slip-form paver with as nearly a continuous forward movement as possible, and coordinate all operations of mixing, delivering, and spreading of concrete to provide uniform progress while minimizing the stopping and starting of the paver. If, for any reason, it is necessary to stop the forward movement of the paver, also immediately stop the vibratory and tamping elements. Apply no tractive force to the machine, other than that which is controlled from the machine. Replace slabs with random cracks before completion of paving operations.

Contractor may choose to utilize a single lift or two lift paving process according to the following requirements.

A. Single Lift Pavement

Use vibrators to thoroughly consolidate the concrete against and along the faces of all forms and along the full length and on both sides of all joint assemblies. Do not allow vibrators to come in contact with a joint assembly, the grade, or a side form. Do not operate the vibrator for longer than 5 seconds in any one location.

The Contractor may only use hand-operated vibrators on projects containing 10,000 square yards or less of concrete paving and on variable width sections. Only operate vibrators mounted on a machine while the machine is in motion.

Equip the slip-form paver with vibrators meeting the applicable requirements of this Part to vibrate the concrete for the full width and depth of the strip of pavement being placed.

B. Two Lift Composite Pavement

When placing two lift composite pavements, the upper lift shall be of a lesser thickness as designated by contract design. It shall be placed such that the result is a wet-on-wet application. The lower lift will be one foot less in width than the upper lift.

Paving operations shall be adjusted as necessary to assure a wet-on-wet monolithic

pavement section. If the bonding between lifts or the consolidation of concrete is determined to be unsuitable by the Quality Control Representative, the lower lift shall be removed and replaced prior to the upper lift placement.

1. **Lower Lift.** Uniformly spread concrete with a spreader or slipform machine. Internal vibration will be required for the lower lift. Tie bars and dowel bars (with the use of dowel baskets) shall be placed in the lower lift at mid-depth of the finished concrete pavement thickness. The lower lift shall not require curing, texturing, or sawing before the upper lift is placed. The lower lift shall be struck off to provide a nominal lower lift thickness that complies with the pavement design. The upper lift shall be struck off to allow for the finished total pavement to conform to the cross section shown in the contract plans.

2. **Upper Lift.** Place the upper lift within 45 minutes following the placement of the lower lift. Placement of the upper lift shall be such that intermingling of the two concrete mixtures is minimal. External vibration for the upper lift will be allowed if proper consolidation and finishing can be demonstrated in accordance with this Part. Dowel bars can be inserted during the placement of the upper lift. Cure the upper lift only in accordance with this Part. At no time shall the total thickness be less than shown on the pavement design and the cross section shown in the contract plans.

   Frequency of the vibrators shall be established based on the workability of the concrete mixture and past experiences. Electronic, internal, T-shaped, poker vibrators shall be used. Vibrator impulses shall be delivered directly to the concrete and the intensity of vibration shall be sufficient to consolidate the concrete thoroughly and uniformly throughout the depth and width of the lift.

   Concrete for each lift shall be produced from the same ready-mix facility.

A.13 Testing Concrete

All sampling and testing of materials will be performed in conformance with Tennessee Department of Transportation procedures. During the process of work if either the slump or air consistency tests give results outside the allowable specification range, do not place any additional concrete until the slump, air content, or both is brought within specification limits.

The 28-day compressive strength of the concrete under construction will be determined by conducting tests during the progress of work in accordance with Part 6 – Concrete Structures. The method of making and curing test specimens will be in accordance with AASHTO T 23. Furnish the concrete necessary for the Quality Control Representative to conduct the field tests and provide a storage facility with watertight tanks, as necessary, of satisfactory size and number to accommodate the cylinder specimens.

Contractor is to provide test cores to the Quality Control Representative to determine pavement thickness for vehicular pavement. There should be no less than one test core taken regardless of the size of the paving area. If the paving is divided into specific zones (such as parking in front of and behind a building) provide one test core for each zone. For larger projects, provide test cores from each unit of pavement as defined the Section 'Tolerance in Pavement Thickness' in this Part.

A.14 Strike-Off of Concrete and Placement of Reinforcement

Following the placing of concrete, strike it off to conform to the cross-section shown on the Plans and to an elevation such that when the concrete is properly consolidated and finished, the surface of the pavement will be in reasonably close conformity with the elevation shown on the Plans. When reinforced concrete pavement is placed in two layers, strike off the entire width of the bottom layer to such length and depth that the sheet of fabric or bar mat may be laid full length on the concrete in its final position without further manipulation. When steel fabric is indicated, place it in strips transverse to the roadway at the depth and with the lap shown on the Plans. The fabric shall extend to within 2 inches of the ends and sides of the slab. Place the reinforcement directly on the concrete, and then place, strike off, and screed the top layer of the concrete. Remove and replace with freshly mixed concrete all portions of the bottom layer of concrete left in place for more than 30 minutes without being covered with the top layer. When reinforced concrete is placed in one layer, the Contractor may position reinforcement in advance of concrete placement or place it after spreading the concrete by mechanical or vibratory means.

Ensure that reinforcing steel is free from dirt, oil, paint, grease, mill scale, and loose or thick rust that could impair the bond of the steel with the concrete.

A.15 Joints

Construct joints of the type and dimensions and at the locations shown on the Plans and in accordance with the Project Specifications and/or these Specifications.

Unless otherwise specified or directed, all contraction and construction joints shall be of the plain sawed groove type.

A. Longitudinal Joints

Install longitudinal joints perpendicular to the pavement surface and along or parallel to the centerline of the pavement, unless otherwise specified.

Place deformed steel tie bars of the specified length, size, spacing, and materials across and perpendicular to the longitudinal joints. Place the tie bars using approved mechanical equipment or rigidly secure them by chairs or other approved supports to prevent displacement. When using the slip-form method of paving,

place the tie bars before vibrating.

To install tie bars in existing hardened concrete, pre-drill holes into the existing concrete slab to a minimum depth of half the tie-bar length and to a diameter of no more than 1/8 inch greater than the tie-bar. Thoroughly clean all pre-drilled holes using a wire brush and compressed air. Secure the tie bars using epoxy or adhesive material capable of withstanding minimum average pull-out resistance of 12,000 pounds or a maximum slippage of 1/32 inch. Provide jacking equipment or other suitable means to test the tie bars to meet the minimum pull-out resistance. A representative test section of a minimum of 15 tie bars or 2% of the total amount used on the Project shall be tested to determine if the installation method is acceptable.

Cut longitudinal sawed joints with appropriate concrete saws to the depth, width, and line shown on the Plans, not later than 10 days after placing concrete and before any equipment or vehicles are allowed on the pavement.

Immediately after sawing, thoroughly clean all longitudinal contraction and construction joints of all residue by flushing with water under pressure.

B. Transverse Expansion Joints

Construct transverse joints to be straight, vertical to the pavement surface, and at the angle to the centerline of the pavement shown on the Plans.

Provide dowels across transverse expansion joints as shown on the Plans.

Secure dowels in position, parallel to the surface and centerline of the slab, with an approved metal device that is left in the slab. Unless otherwise specified, paint dowels with one coat of approved primer and thoroughly coat with a thin film of oil or approved bond breaker. If using oil, apply it after the paint has dried and immediately before placement. If corrosion resistant dowels are specified, use the bond breaker recommended by the dowel or coating manufacturer. Cover one end of each dowel with a close fitting, closed-end metal or plastic sleeve, not less than 4 inches long. Provide a flange or other approved device to separate the end of the sleeve and the end of the dowel during the placing of the concrete so that a space of not less than the proposed thickness of the joint plus ¼ inch will be provided for subsequent movement of the dowel in the sleeve. Dowels shall have ends free from burrs and distortions. Cut wires of dowel baskets before concrete placement.

To install premolded joint filler, if specified, the Contractor may use either of the alternate expansion joint and dowel assembly devices shown on the Plans or other approved expansion joint assemblies. The installing device shall have a length of ½ inch less than the width of the slab. Assemblies shall be a rigid metal device capable of holding dowels and filler firmly in position during the entire construction operation and shall remain in place. Set the top of the filler below the surface of the

proposed slab to accommodate the type of sealant specified, as shown on the Plans. When in position, the filler shall be perpendicular to the surface of the slab. While placing the concrete, protect the top edge of the filler with an approved metal channel cap. The Contractor may use an assembly device with a self-contained cap.

C. Transverse Contraction Joints

Place transverse contraction joints at the intervals specified and to result in the desired shape. Do not use formed contraction joints unless specified or required by the Project Engineer to control random cracking.

Place load transfer dowels at the intervals and depths shown on the Plans. Unless otherwise specified, paint dowels with one coat of approved primer and thoroughly coat with a thin film of oil or approved bond breaker. If using oil, apply it after the paint has dried and immediately before placement. If corrosion resistant dowels are specified, use the bond breaker recommended by the coating manufacturer.

Instead of using dowel assemblies at contraction joints, the Contractor may place dowel bars in the full width of pavement using a mechanical device. To use a dowel implanting device, first demonstrate accurate dowel placement and pavement finish.

1. **Sawing.** Begin sawing the joints as soon as concrete has hardened sufficiently to allow sawing without excessive raveling. Once started, continue with the sawing operation until all transverse contraction joints are sawed. When necessary, provide for bad weather or nighttime operations. Omit the sawing of a joint if a crack occurs at or near the joint location before the time of sawing. Discontinue the sawing of a joint when a crack develops ahead of the saw. In general, saw all joints in sequence.

   Saw all contraction joints in lanes adjacent to previously constructed lanes before uncontrolled or sympathy cracking occurs. If extreme conditions exist that make it impracticable to prevent erratic cracking by early sawing, form a contraction joint groove at intervals of every third or fourth joint or as often as required prior to initial set of concrete as provided for under paragraph (2) below. Immediately after sawing, thoroughly clean the joints of all residue by flushing with water under pressure.

   Only use lightweight sawing equipment on the newly constructed pavement. The Contractor may use gang saw units or similar heavy equipment if the equipment is operated from a bridge or platform supported independently of the pavement.

2. **Formed Joints.** Construct formed contraction joints during the placing of the concrete. Form these joints by placing inserts in the plastic concrete,

at the angle to the centerline of the pavement shown on the Plans and perpendicular to the surface. When the concrete has attained its initial set and after the joint has been carefully finished, remove the insert. Ensure that the groove so formed maintains its full width and depth as shown on the Plans, and the pavement at the joint meets surface requirements.

D. Transverse Construction Joints

Construct transverse construction joints to provide a uniform surface. Provide the surface texture as specified in this Part as needed. Install transverse construction joints when an interruption of more than 30 minutes occurs during the concreting operations. Do not construct transverse joints within 10 feet of an expansion joint, contraction joint, or plane of weakness. If sufficient concrete has not been mixed at the time of interruption to form a slab at least 10 feet long, remove the excess concrete back to the previous joint and dispose of as directed.

E. Expansion Joints at Structures

Place premolded joint filler against all structures and features projecting through, into, or against the slab to form expansion joints. Such joints shall extend the full depth of slab and, unless otherwise specified, shall be ½ inch in width.

A.16 Final Strike-Off, Consolidation and Finishing

A. Sequence

Perform operations in the following sequence: strike-off and consolidation, floating and removal of laitance, straight-edging, and final surface finish.

B. Finishing at Joints

Consolidate concrete adjacent to joints to eliminate voids or segregation, against the joint material, under and around all load transfer devices, joint assembly units, and other features designed to extend into the pavement.

After the concrete has been placed and vibrated adjacent to the joints as specified in this Part, bring the finishing machine forward, operating it in a manner that will avoid damage or misalignment of joints.

C. Machine Finishing

Distribute or spread the concrete as soon as placed. Immediately after spreading, strike off and screed the concrete with an appropriate finishing machine that meets the requirements of this Part. When the pan-float finisher combination machine is

used for finishing the pavement, longitudinal floats are not necessary.

Vibrators, for full width and depth vibration of concrete paving slabs, shall meet the requirements of this Part. If uniform and satisfactory consolidation of the concrete is not obtained by the vibratory method at joints, along forms, at structures, and throughout the pavement, furnish equipment and methods that will produce satisfactory work.

D. Hand Finishing

Hand finishing methods may be used in the following situations:

1. Mechanical equipment breaks down after concrete has already been deposited on the grade.

2. (With Project Engineer Approval) Variable width sections make the use of finishing machines impracticable.

When hand finishing is used, strike-off and screed the concrete as soon as it is placed. Use a screed that is at least 2 feet longer than the maximum width of the slab to be struck off, of approved design, and sufficiently rigid to retain its shape. When reinforcement is used in the pavement, provide a strike-off template for striking off the bottom layer of concrete.

Consolidate the concrete using a suitable vibrator and other approved equipment.

Repeat screeding until the surface is of uniform appearance, true to grade and cross-section, and free from porous areas.

E. Floating

After the concrete has been struck off and consolidated, use one of the following methods to further smooth, true, and consolidate the concrete. Do not over-finish, or add water to the surface, under either of these methods.

1. **Hand Method.** If hand finishing is allowed as provided for under the 'Hand Finishing' section above, use appropriate equipment and methods.

2. **Mechanical Method.** Use a mechanical float meeting the requirements of this Part unless otherwise specified. Adjust the tracks from which the float operates to the required cross-section. Accurately adjust and coordinate the float with the adjustments of the transverse finishing machine so that a small amount of mortar is carried ahead of the float at all times. If excessive evaporation is occurring, the Contractor may apply a light fog spray of water. Adjust the forward speed so that the float will lap the required

distance on each transverse trip. Pass the float over each area of pavement at least two times, while preventing excessive operation over a given area. Waste excess water or soupy material over the side forms on each pass.

After floating, remove excess water and laitance from the surface of the pavement with a straightedge 10 feet or more in length. Lap successive drags one half the length of the blade.

F. Straightedge Testing and Surface Correction

After the floating has been completed and the excess water removed, but while the concrete is still plastic, test the concrete surface for trueness using an accurate metal straightedge, not less than 15 feet in length, swung from handles at least 3 feet longer than half the width of the slab. Hold the straightedge in contact with the surface in successive positions parallel to the road center-line, and go over the whole area from one side of the slab to the other as necessary. Advance the straightedge along the road in successive stages of no more than half the length of the straightedge. Immediately fill depressions found with freshly mixed concrete, and strike off, consolidate, and refinish the concrete. Cut down and refinish high areas. Ensure that the surface across joints meets these straightedge requirements. Continue to perform straightedge testing and surface corrections until the entire surface is free from observable departures from the straightedge and the slab conforms to the required grade and cross-section.

If superficial water is needed to assist in finishing, apply such water by lightly fogging.

G. Surface Texturing

Texture the surface using a burlap drag, consisting of a seamless strip of damp burlap which, when dragged longitudinally along the full width of pavement, produces a uniform surface of gritty texture. Maintain the drag in such condition that the resultant surface is of uniform appearance and reasonably free from grooves over 1/16 inch in depth.

After finishing the pavement by the burlap drag, texture the surface by forming transverse grooves. Form the transverse grooves with mechanical equipment using a comb made of steel tines, vibrating beam roller, or other approved device. The Contractor may use manual tools, such as rakes with spring steel tines, on areas inaccessible to mechanical equipment, or areas of 1,000 square yards or less and variable width.

Form the grooves in the concrete at an appropriate time while the concrete is still in a plastic state, so that in the hardened concrete, the grooves will be between 0.09 and 0.13 inches in width, and between 0.12 and 0.19 inches in depth. Space the grooves at random intervals between 0.3 and 1.0 inches.

Regardless of the method used to form the grooves, ensure that the grooves are relatively smooth and uniform, and are formed without excessive tearing of the surface and without bringing pieces of the coarse aggregate to the top of the surface.

If the equipment breaks down or experiences mechanical failure, the Contractor may use manual tools for grooving, provided all mixing and placing operations cease until proper repairs are made.

Correct all individual areas of 50 square yards or larger of the hardened grooved concrete that do not conform to these requirements, by cutting acceptable grooves in the hardened surface with an approved cutting machine or by other approved methods.

H. Edging at Forms and Joints

After the final finish, but while the concrete is still in a plastic state, round the outside edges of the pavement to a ¾-inch radius. When pavement is formed along a lane line, round the edges to a ¼-inch radius. Round the edges of the pavement on each side of transverse expansion joints, formed joints, and transverse construction joints to a ¼-inch radius. Perform edging with an approved edging tool that will produce a well-defined and continuous radius. Eliminate all tool marks formed by the edging tool by brushing to form a texture similar to the burlap drag finish.

A.17 Corrective Action

All required corrective work required by the Quality Control Representative and/or the Project Engineer shall be performed as soon as practicable and before sealing joints and opening to traffic.

A grinding strategy plan is required before any corrective action begins. Submit a copy of the grinding plan to the Project Engineer at least 5 days prior to starting any work. Perform required corrective work with appropriate grinding equipment or by removing and replacing pavement, if required. Grinding equipment must meet the requirements of Part 6 – Concrete Structures.

After Corrective action is complete, the Quality Control Representative will retest and evaluate the pavement. Seal all surfaces that are ground with a penetrating sealant listed on the TDOT Qualified Products List (QPL).

Establish a positive means for removing grinding and grooving residue. Remove solid residue from pavement surface during the grinding or grooving operations. Do not allow residue to flow across lanes used by public traffic, into gutters, or drainage facilities. Dispose of residue in a manner that will prevent residue, whether in solid or slurry form, from reaching any waterway in a concentrated state.

After the Contractor performs corrective grinding, test the affected pavement for thickness in accordance with this Part.

A.18 Curing

Immediately after completing the finishing operations and as soon as marring of the concrete will not occur, cover and cure the entire surface of the newly placed concrete.

Where curing requires the use of water, ensure that sufficient water is available. Failure to provide a sufficient quantity of one of the curing materials specified in TDOT Section 913, or lack of water for wet-curing methods, shall be cause for immediate suspension of concreting operations. Do not leave the concrete exposed for more than 30 minutes between stages of curing or during the curing period.

Perform curing according to one of the following methods:

A. Cotton or Burlap Mats

Entirely cover the surface of the pavement with cotton or burlap mats. The mats used shall be of such length (or width) that, as laid, they will extend at least twice the thickness of the pavement beyond the edges of the slab. Place the mats so that the entire surface and both edges of the slab are completely covered. Thoroughly saturate the mats with water prior to placement. Place and weight down the mats to ensure that they remain in intimate contact with the surface covered. Keep the covering fully saturated and in place for 72 hours after the concrete has been placed unless otherwise specified.

B. Waterproof Paper

Entirely cover the top surface and sides of the pavement with waterproof paper. Lap the units at least 18 inches. Place and weight down the paper to ensure it will remain in intimate contact with the surface covered. The paper shall have such dimensions that each unit as laid will extend beyond the edges of the slab at least twice the thickness of the pavement, or it shall be of pavement width with 3-foot strips of paper provided for the edges. If laid longitudinally, cement together paper not manufactured in sizes that provide this width in such a manner that the joints do not open up or separate during the curing period. Unless otherwise specified, keep the covering in place for 72 hours after the concrete has been placed. Thoroughly wet the surface of the pavement before placing the paper.

C. Impervious Membrane Method

Spray the entire pavement surface and edges uniformly with white pigmented curing compound immediately after finishing the surface and before concrete

set has taken place, or, if the pavement is cured initially with jute or cotton mats, apply the curing compound upon removal of the mats. Do not apply curing compound during rainfall.

Apply curing compound under pressure by mechanical sprayers at the rate recommended by the manufacturer. Use spraying equipment of the fully atomizing type equipped with a tank agitator. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. During application, stir the compound continuously by effective mechanical means. The Contractor may hand spray odd widths or shapes and concrete surfaces exposed by the removal of forms. Do not apply curing compound to the inside faces of joints to be sealed. Should the film become damaged from any cause within a 72-hour curing period, repair the damaged portions immediately with additional compound.

Upon removal of side forms, immediately protect the sides of the slabs exposed by applying curing treatment equal to that provided for the surface.

D. White Polyethylene Sheeting

Entirely cover the top surface and sides of the pavement with polyethylene sheeting. Lap the units at least 18 inches. Place and weight down the sheeting to ensure it remains in intimate contact with the surface covered. Use sheeting with such dimensions that each unit as laid will extend beyond the edges of the slab at least twice the thickness of the pavement. Thoroughly wet the surface of the pavement before placing the sheeting. Unless otherwise specified, keep the covering in place for 72 hours after the concrete has been placed.

E. Curing in Cold Weather

Meet the requirements in Part 6 – Concrete Structures.

When placing concrete in conditions where the air temperature is expected to drop below 35 °F, provide a sufficient supply of straw, hay, grass, or other suitable blanketing material along the work. At any time the temperature is expected to reach the freezing point during the day or night, spread such material over the pavement to a sufficient depth to prevent freezing of the concrete. Take care so as not to mar the concrete surface. Maintain such protection for not less than 5 days.

The Contractor is responsible for the quality and strength of concrete laid during cold weather. The Department reserves the right to require the Contractor to core the concrete to check for damage caused by freezing temperatures. Remove and replace concrete damaged by freezing action.

A.19 Removing Forms

The Contractor may remove forms once removal will not cause damage to the slab edges. Remove the forms carefully to avoid damaging the pavement. After the forms have been removed, cure the sides of the slab using one of the methods specified above. Honeycombed areas are considered to be defective work. Remove and replace all unsound material with satisfactory material.

A.20 Sealing Joints

Seal joints with a joint sealing material before opening the pavement to traffic and as soon after completion of the curing period as is feasible. Select the sealant from the TDOT Qualified Products List (QPL) and apply it in strict accordance with the manufacturer's recommendations. Immediately before sealing, thoroughly clean each joint of all foreign material, including membrane curing compound, by sandblasting. Subject all joints to high- pressure air blowing prior to sealing. Ensure that the joint faces are clean and dry when applying the seal. Apply the sealant to the joint immediately after cleaning.

Apply the sealing material to each joint opening to conform to the details shown on the Plans or as directed by the Project Engineer. Perform sealing so as not to spill material on the exposed surface of the concrete. Immediately remove any excess material on the surface of the concrete pavement and clean the pavement surface.

Remove sealing material that does not bond to the concrete, and re-clean and reseal the joint.

Ream all random cracks with a suitable tool and fill with an approved joint sealant.

A.21 Protection of Pavement

Protect the pavement and its appurtenances against both public traffic and traffic caused by the Contractor's employees and agents. This shall include watchmen to direct traffic and the erection and maintenance of the warning signs, lights, pavement bridges, or crossovers.

Repair or replace all damage to the pavement prior to final acceptance.

Protect all concrete paving against the effects of rain before the concrete is sufficiently hardened; have available at all times materials to protect the edges and surface of plastic concrete. Such protective materials shall include standard metal forms or wood plank having a nominal thickness of not less than 2 inches and a nominal width of not less than the thickness of the pavement at its edge for the protection of the pavement edges, and covering material such as burlap or cotton mats, curing paper, or plastic sheeting material for the protection of the surface of the pavement. When rain appears imminent, stop all paving operations and direct

all available personnel to begin placing forms against the sides of the pavement and covering the surface of the plastic concrete with the protective covering.

A.21 Opening to Traffic

For public roads, the City Engineer will determine when the pavement will be opened to traffic. The Project Engineer will notify the City Engineer when the concrete has attained a compressive strength of 3,000 pounds per square inch or when 14 days have passed since concrete placement, whichever occurs first. The City Engineer or a City Inspector will then inspect the pavement within two working days. After that inspection, the City Engineer will notify the Contractor of one of three outcomes:

1. The concrete which was inspected may receive traffic,
2. The concrete which was inspected may receive traffic, but items remain which must be corrected,
3. The concrete which was inspected is not ready to receive traffic. Schedule another inspection. (Please note that follow-up inspections require a payment per linear foot as is shown in the City of La Vergne fee schedule under Public Works Department 'Inspection of Street'. This fee must be paid before the re-inspection will take place.)

Remove and replace concrete that fails to develop a compressive strength of 3,000 pounds per square inch within 28 days. Ensure pavement is free from construction debris, rocks, and other deleterious materials before opening to traffic. All other testing of the concrete pavement for smoothness and thickness shall be complete before opening to traffic.

A.22 Shoulders

Construct, shape, and dress shoulders according to the shoulder type shown on the Plans as soon as practicable following the completion of the pavement. Shoulders shall be one of the following types:

A. Base with Flexible Surface

Perform this work as specified in the applicable sections of Part 3 – Base and Subgrade Treatments and Part 4 – Flexible Surfaces.

Construct longitudinal joints between the concrete pavement and the asphalt shoulder by sawing to form an opening 1 inch wide by 1 inch deep, as measured from the lowest elevation. Install sealant with equipment recommended by the sealant manufacturer, which can maintain a uniform, homogeneous mixture throughout the sealing operation. Apply the sealant so that it flows into the joint without overlapping onto the pavement. Remove all sealant that overlaps onto the pavement.

B. Base with Rigid Surface

Perform this work in accordance with the applicable Sections of Part 3 – Base and Subgrade Treatments and Part 5 – Rigid Pavement.

Construct the longitudinal joint between the Portland cement concrete pavement and the Portland cement concrete shoulder in accordance with these Specifications and the details shown on the Plans. Use materials, including tie bars and joint sealant, that are of the same type as the Portland cement concrete mainline pavement.

Construct transverse joints in the Portland cement concrete shoulder to correspond to the transverse joints in the Portland cement concrete roadway and to be of the same type, material, and spacing. Both expansion and contraction joints shall include dowel assemblies of the same type specified for the roadway pavement.

A.23 Tolerance in Pavement Thickness

Determine pavement thickness based on the average measurement of cores taken from each unit per the requirements of this section.

A. Defining Units

For the purpose of determining the pavement thickness and for establishing whether pavement is deficient in thickness, 'separate units' will be defined as follows:

1. Placement widths of 1,000 feet in length, starting at the end of the pavement bearing the smaller station number, will be considered separate units. The placement width is the width of a separately placed lane or lanes.
2. Last units having a length between 500 feet and 1,000 feet will be treated as separate units.
3. Each intersection will be considered as one unit.
4. Crossovers, entrances, and similar small areas may be combined to form a unit of 1,000 square yards or less.

B. Average Thickness Measurements

Take core samples at locations determined and witnessed by a Quality Control Representative and documented.

When the measurement of the core from a unit is within ¼ inch from the Plan thickness, that unit will be acceptable.

When such measurement is deficient by more than ¼ inch but not more than 1 inch from the Plan thickness, two additional cores to be taken from within the unit at intervals of not less than 300 feet (or as directed by the Quality Control Representative for a small-sized unit) and will determine the average of the three cores. If the average measurement of these three cores is within ¼ inch of the Plan thickness, the unit will be considered acceptable. On a public infrastructure project (either publicly- or privately-funded), if the average thickness of the three cores is deficient by more than ¼ inch but not more than 1 inch from the Plan thickness, the City Engineer will determine the acceptability of the unit or area represented by these cores.

In calculating the average thickness of the pavement unit, consider measurements that exceed the average thickness by more than ¼ inch as the specified thickness plus ¼ inch. Measurements that are less than the specified thickness by more than 1 inch will be averaged at the actual thickness measured.

On public projects, the City Engineer will evaluate areas found deficient in thickness by more than 1 inch, and if, in the City Engineer's judgment, the deficient areas warrant removal, the Contractor shall remove and replace them with concrete of the thickness shown on the Plans. The Project Engineer may work with the Contractor to create a remediation or corrective action plan for the failed areas but the City Engineer reserves the right for complete removal and replacement.

PART 6 – STRUCTURES

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SECTION A – CONCRETE STRUCTURES

DESCRIPTION

A.01 Description

This work consists of constructing all structures or parts of structures composed of Portland cement concrete, whether plain, reinforced, or a combination of both, on prepared foundations, at the locations shown on the Plans.

Use concrete consisting of a mixture or mixtures of Portland cement, aggregates, air-entraining agents, water, and chemical additives when approved, combined by the methods specified herein and in the proportions specified for the designated class of concrete.

Construct parts of a structure, or structures, which are to be constructed with materials other than Portland cement concrete and concrete reinforcement steel, as specified in the Section of these Specifications covering the particular type of construction.

MATERIALS

A.02 Materials

A. General

Provide materials as specified in:

Hydraulic cement ..... TDOT Section 901.01
Fine Aggregate, (all Classes of concrete) ..... TDOT Section 903.01
Coarse Aggregate ..... TDOT Section 903.03
Lightweight Aggregate ..... TDOT Section 903.19
Joint Filler, Preformed Type ..... TDOT Section 905.01
Steel Bar Reinforcement ..... TDOT Section 907.01
Welded Steel Wire Fabric ..... TDOT Section 907.03
Structural Steel ..... TDOT Section 908.01
Permanent Steel Bridge Deck Forms ..... TDOT Section 908.03
Steel Castings ..... TDOT Section 908.05

Gray Iron Castings..... TDOT Section 908.07
Bronze Bearing Plates, Plain..... TDOT Section 908.09
Bronze Bearing Plates, Self-Lubricating.....TDOT Section 908.10
Elastomeric Bearing Pads.....TDOT Section 908.12
Paints ..... TDOT Section 910
Cement Concrete Curing Materials ..... TDOT Section 913
Precast Concrete Box Culverts.....TDOT Section 914.08
Water ..... TDOT Section 921.01
Chemical Admixtures and Additives.....TDOT Section 921.06
Air-Entraining Admixtures.....TDOT Section 921.06
Waterstops..... TDOT Section 921.08
Precast Prestressed Bridge Deck Panels.....TDOT Section 921.13
Applied Texture Finish..... TDOT Section 921.14
Fly Ash ..... TDOT Section 921.15
Slag Cement ..... TDOT Section 921.16

B. Fly Ash and Slag Cement

Do not use fly ash or slag cement of different classes or sources as partial replacement for Portland cement in concrete mixes.

C. Precast Box Sections

Unless otherwise shown on the Plans, for fill heights less than or equal to those shown in the standard box culvert drawings for cast-in-place concrete box sections, the Contractor may substitute precast reinforced box sections meeting TDOT Specification Section 914.08 and the standard box culvert drawings for precast box culverts.

Submit shop drawings of the proposed precast box section and design calculations to the Project Engineer for approval before construction. As a minimum, the shop drawings shall include a plan and elevation view of the box culvert showing all precast sections, a typical precast box section showing dimensions and reinforcing, and notes and details required for construction.

For fill heights greater than those shown in the standard box culvert drawings for cast-in-place concrete box sections or other non-standard

A.03 Classification, Proportioning and Quality Assurance of Concrete

A. Classification and Proportioning

1. Classification and Design Parameters

a. **Design and Production Parameters.** Proportion the concrete based on a pre-determined minimum cementitious content, and a water-cement ratio that does not exceed the maximum shown in the following table (based on TDOT Specification Table 604.03-1). Below this limit, adjust the quantity of water to meet the slump requirements. The fine aggregate shall not exceed 44% by volume calculation of the total aggregate. For slip formed Class A concrete incorporated into parapets and median barriers, the maximum percent by volume of fine aggregate shall not exceed 46%.

Document mixture adjustments, for moisture corrections, on the daily report. Ensure that the adjusted mix complies with all the performance criteria specified in the following table.

Table 604.03-1: Composition of Various Classes of Concrete

Class of Concrete	Min 28-Day ssive Strength (psi)	Min Cement Content (pound per cubic yard)	m Water/Cement Ratio (pound/pound)	ntent % (Design ± production tolerance)	Slump (inches)
			·5	± 2	)
, 3)			·0	(3)	4)
			·0	(3)	4)
			·7	± 2	

ip forming, the slump shall range from 0 to 3 inches.

(2) Use Class D concrete in all bridge decks except box and slab type structures unless otherwise shown on the Plans. Use Class DS concrete in bridge decks with polish-resistant aggregate described in TDOT Sections 903.03 and 903.24.

(3) Design Class D, Class DS, and Class L concrete at 7% air content. Acceptance range for pumping and other methods of placement is 4.5-7.5%. Sampling will be at the truck chute.

(4) Water reducing admixtures are acceptable; however, do not exceed the maximum water/cement ratio in order to achieve the required slump.

(5) The unit weight of air dried Class L concrete (lightweight concrete) shall not exceed 115 pounds per cubic foot as determined according to ASTM C567.

;pecific requirements

Include chemical admixtures in the concrete mixture based on the ambient air temperature and expected weather conditions.

If using a Type A, F, or G water reducer, then the allowable slump shall be a maximum of 8 inches.

Admixtures to be incorporated into the concrete shall be compatible and incorporated into the concrete in accordance with the manufacturer's recommendations. Concrete mixtures utilizing multiple admixture manufacturers shall prove compatibility.

Do not use fine aggregate manufactured from limestone or other polishing aggregates in concrete to be used as a riding surface in traffic lanes.

b. Self-Consolidating Concrete (SCC) Design and Production Parameters

Proportion the concrete based on a pre-determined minimum cementitious content, and a water-cement ratio that does not exceed the maximum shown in the following table (based on TDOT Specification Table 604.03-2). The fine aggregate shall not exceed 50% by volume calculation of the total aggregate volume. Maximum size of coarse aggregate shall not exceed a No. 67 stone. The Contractor may elect to use SCC as an alternate/option in replacement of Class A concrete.

Document mixture adjustments, for moisture corrections, on the daily concrete report. Ensure that the adjusted mix complies with all the performance criteria specified in the following table.

Table 604.03-2: Composition of Self-Consolidating Concrete

Class of Concrete	Min 28-Day ssive gth (psi)	Min Cement Content (pound per cubic yard)	Maximum Water/Cement Ratio (pound/pound)	ent ± n tolerance)	Slump Flow (inches)
i,5)		5			
		5			

hown on the Plans or approved shop drawings.
(2) Acceptance range for the T50 test in accordance with ASTM C1611 shall be between 2-7 seconds.
(3) Passing ability in accordance with ASTM C1621 shall be equal to or less than 2 inches for acceptance.
(4) Visual Stability Index (VSI) shall not exceed 1 as per ASTM C1611 for acceptance.
egregation as measured by ASTM C1610 shall not exceed 20%.
ntent may be reduced if placed under water or underground if approved Engineer.

Include chemical admixtures in the self-consolidating concrete mixture based on the ambient air temperature and expected weather conditions. Approved viscosity modifying admixtures (VMA) may be used as part of the chemical admixtures if they are shown in the approved mixture design.

Dosage rates for any admixtures incorporated into the concrete shall be stated during the mix design submittal process. All admixtures shall be compatible and incorporated into the concrete in accordance with the manufacturer's recommendations. Concrete mixtures utilizing multiple admixture manufacturers shall prove compatibility.

c. Class X and High Early Strength

When the Plans for structural or pavement repairs, or other type work, require high early strength concrete, a Class X design approval is required per "Tennessee Department of Transportation, Division of Materials and Tests, Submittal and Approval of Concrete Mixture Designs (SOP 4-4)" modified to read as follows:

Any submission that deviates from prescribed contract specifications shall be evaluated as Class X requiring justification in the form of plans, specifications, or a statement of need from the City Engineer. Any form of justification should describe the necessary properties for the mix, properties for field acceptance based on tolerances, and the location or situation in which it will be used. Designs for local programs and bridge grants that come under Class X shall be approved by the La Vergne City Engineer.

The Contractor may use Type I, Type IL, or Type III cement (per ASTM C-595). If Type I or Type IL cement is used, the minimum cement content shall be 714 pounds per cubic yard. If Type III cement is used, the minimum cement content shall be 620 pounds per cubic yard.

The Contractor may substitute high early strength concrete, meeting these requirements, for Class A concrete when approved in writing by the Project Engineer. When electing to use high early strength concrete, use the same source and gradation of fine and coarse aggregates as that specified for the concrete being substituted.

2. **Mix Design Submittal.** For projects where concrete paving is used a vehicular travelway, a submittal must be made to the Project Engineer which is in accordance with "Tennessee Department of Transportation, Division of Materials and Tests, Submittal and Approval of Concrete Mixture Designs (SOP 4-4)" dated October 12, 2022. This document should be revised for use herein by changing all references to the party that is accepting and reviewing submittals is changed to Project Engineer and the party that has authority to create or approve special conditions is changed to City Engineer. No submittals to or approvals from TDOT are required unless specifically required by the Project Engineer, the City Engineer, or the project specifications.

This submittal to the Project Engineer must be made at least 14 days prior to use. Develop the design using saturated surface dry aggregate weights. The design shall be prepared in an approved testing laboratory by a TDOT Certified Concrete Mix Design Technician or a Professional Engineer licensed by the State of Tennessee. The TDOT Certified Concrete Mix Design Technician or Professional Engineer licensed by the State of Tennessee shall certify that the information contained on the design submittal is correct and is the result of information gained from the actual trial batch. Build trial batches for design no more than 90 days before submitting the design. The trial batch shall produce an average compressive strength to indicate that the specified 28-day strength can be obtained in the field. Make all strength determinations using equipment meeting the requirements of, and in the manner prescribed by, AASHTO T 22. The design shall provide concrete of the strength specified in the Plans and Specifications. The approved mix design will expire at the end of each calendar year or if it does not meet the minimum 28-day strength requirements.

Self-consolidating concrete (Classes SCC, SH-SCC, and P-SCC) shall be verified prior to placement either at the ready mix, precast, or prestressed facility. The concrete producer shall perform a trial batch verification of the submitted design. The trial batch will ensure that all batched quantities and target admixture dosage rates are acceptable and meet specification prior to design approval. All quantities and identified admixture target dosage rates shall meet the tolerances specified in this part.

Instead of the above design submittal, an existing design may be submitted for approval provided the design has been approved by the City Engineer within the current calendar year. The approval of this design submittal will not relieve the Contractor of the responsibility of providing concrete meeting the requirements of these Specifications.

If proposing to use materials or admixtures from sources other than those shown on the approved design a new mix design approval shall be developed. Concrete shall not be placed until the new design is approved.

B. Quality Control and Acceptance of Concrete

Determine and measure the batch quantities of all ingredients (including all water and specified or approved admixtures) for all concrete produced for the Project, and to mix, deliver, and place the concrete so that the concrete meets the requirements of these Specifications. The Contractor may withhold some of the water from the mix at the facility provided the delivery ticket indicates the amount of water withheld. If a portion of the water is withheld at the facility, the Contractor may add additional water at the work site provided the design water-cementitious material ratio of the mix is not exceeded.

The minimum size of a batch shall be 2.5 cubic yards.

Provide qualified technicians to perform sampling, testing, and inspection for process control. A TDOT Certified Concrete Field-Testing Technician or ACI equivalent shall provide process control of the concrete at the placement site and shall be present during all concrete placement. For placement of concrete for minor structures as noted in this section, a TDOT Certified Field-Testing Technician or ACI equivalent is not required.

Provide the necessary equipment to perform process control at the placement site during times of concrete placement.

For major projects, develop for the Project Engineer's approval a placement site Process Control Plan stating the procedures for sampling, testing, and inspection of the concrete. Maintain a record of all tests and inspections performed at the facility and placement site. Provide these documents to the Project Engineer upon completion of the Project for inclusion in the Project records. Keep records current and make them available to the Project Engineer or City Engineer for review at any time.

A concrete delivery ticket shall accompany each load to the placement site and, for all public improvements, shall be maintained by the contractor for the duration of the maintenance period (twelve months after acceptance of the improvement by the La Vergne Board of Mayor and Aldermen). The ticket shall include as a minimum the following:

a. Date
b. Contract number
c. County
d. Class of concrete
e. Approved concrete mix design number
f. Number of cubic yards
g. Load number
h. Truck number
i. Maximum water allowed by design
j. Total water added at the plant
k. Maximum water allowed to be added on the project
l. Water-Cementitious material ratio
m. Number of revolutions at mixing speed at plant
n. Time loaded
o. Actual and target batch weights of each component including each aggregate, chemical admixture and mineral admixture used. Include the difference (%) between the actual batch weights and the target weights.
p. Signature of producer's TDOT Certified Concrete Plant Quality Control Technician

The concrete delivery ticket shall be delivered to the Quality Control Representative at the

site of the Work. Loads that do not carry such information or do not arrive in satisfactory condition shall not be used.

Make, cure, and transport all early break cylinders in accordance with this section, and deliver to the laboratory for testing. Make all early break cylinders for self-consolidating concrete according to ASTM C1758, and deliver to the laboratory for testing.

The Quality Control Representative is responsible for performing all acceptance tests. A TDOT Concrete Field-Testing Technician or ACI equivalent is required to sample and test. All acceptance cylinders must be transported and cured according to AASHTO T 23.

All sampling and testing for acceptance and independent assurance will be at the frequencies established in the Project Specifications.

Provide cylinder molds, a wheelbarrow, and a level site to perform testing. Provide a secure location for the initial curing of the concrete acceptance cylinders.

In addition, an approved concrete design is required for minor structures. The Contractor may use pre-approved, pre-packaged concrete mixtures listed in the TDOT's QPL 15 for these applications if the quantity does not exceed 2 cubic yards per day, in which case no design will be required. If the quantity exceeds 2 cubic yards, prior approval must be obtained from the Project Engineer prior to placement. All pre-packaged concrete mixtures are required to be mixed in a mechanical concrete mixing machine and in accordance with manufacturer's recommendations.

The following are considered minor structures:

a. Manholes, catch basins, inlets, and pipe end walls
b. Cement concrete sidewalks, driveways and median pavement
c. Cement concrete curb, gutter, and combined curb and gutter
d. Cement concrete ditch paving
e. Guard rail
f. Fences
g. Rip-rap slope paving
h. Highway signing
i. Roadway and structure lighting

EQUIPMENT

A.04 Equipment

Have the equipment on the jobsite sufficiently ahead of the start of construction operations to be examined by the Quality Control Representative. Use equipment and construction processes that have sufficient capacity to accomplish the maximum continuous concrete placement, as governed by the construction joints shown on the Plans or described in the Project Specifications.

A. Mixers

1. **General.** The Contractor may mix concrete at the site of construction or at a central point or wholly or in part in truck mixers. Each mixer shall have attached in a prominent place a manufacturer's plate showing the capacity of the drum, in terms of mixing and agitating capacity, and the speed of rotation of the mixing drum or blades for both mixing and agitation.

   Mixers shall be capable of combining the aggregates, cement, water and admixtures, when specified, into a thoroughly mixed and uniform mass within the specified mixing period. They shall have sufficient capacity to comply with minimum production requirements.

   Equip mixers with an approved device for accurately measuring water within a range of error of not more than 1%. Provide an accurately calibrated and easily read indicator to show the amount of water used in each batch.

   All mixers shall have blade wear indicators. Repair the pick-up and throw-over blades in the drum or drums once the blade wear reaches the blade wear indicator or when holes are worn through the blades. Place the top of the blade wear indicator at 90% of the total height of the radial part of the blade. Retain at the jobsite or central plant a copy of the manufacturer's design showing dimensions and arrangements of blades. The blade wear indicator shall be a minimum of ¼ inch thick steel, 2 inches wide by 6 inches long.

2. **Mixers at Site of Construction.** In addition to the above requirements, mixers at the site of construction, unless otherwise stipulated, shall also meet all requirements of the General Conditions of this Specification and shall be capable of discharging and distributing the mix without segregation.

3. **Truck Mixers and Truck Agitators.** Truck mixers shall be certified by the National Ready Mix Concrete Association (NRMCA) Delivery Vehicle Certification Program Option A or Option B. Each truck shall display the NRMCA certification card. Ensure that truck mixers used for mixing and hauling concrete, as well as the truck agitators used for hauling central-mixed concrete, meet all the applicable requirements specified in this section. Truck mixers shall have a manufacturer's plate indicating the various uses for which the equipment is designed, the gross volume of the drum, and the minimum and maximum speed of rotation of the drum or blades for charging, mixing and agitating. Equip truck mixers with an approved device for recording the number

of revolutions of the drum or blades.

Provide ample and satisfactory equipment for conveying concrete from the mixer to final position in the forms. Use closed chutes or pipes when concrete is to be dumped or dropped for a distance greater than 5 feet. Where steep slopes are required, equip the chutes with baffle boards, or use chutes in short lengths that will allow the direction of movement to be reversed.

Use vibrators of an approved type and operate them under load at the rate recommended by the manufacturer.

When placing concrete by pumping, do not use aluminum conduit.

Do not pour any concrete for bridge decks or slabs above grade before verifying the availability and operability of all necessary equipment, including finishing machines, continuous water source or portable tanks, water distribution equipment, two work bridges, vibrators, sprayers, a 12-foot straightedge, and appropriate backup items.

Provide at every concrete deck pour a portable, cold fogger capable of changing humidity and cooling air above fresh concrete. The fogger shall be designed to provide a maximum VMD (volume mean diameter) of 15 microns, and a throw distance of 60 feet.

CONSTRUCTION REQUIREMENTS

A.05 Forms

A. Construction

Forms shall be mortar-tight and sufficiently rigid to prevent distortion due to the pressure of the concrete and other stresses incidental to the construction operations, including vibration. Construct and maintain forms to prevent the opening of joints due to shrinkage of the lumber.

Build the forms true to line and grade. Hold the forms in place with studs or uprights, and waling, which shall be sufficiently and substantially braced and tied.

Cut off and cap all forms and studding with not less than a 2 x 4-inch piece.

Chamfer all exposed edges with ¾-inch material, unless otherwise specified. All chamfer strips shall be straight, of uniform width, and dressed.

Remove wood devices used to separate forms before placing concrete within 4 inches of such devices.

B. Form Lumber

Dress form lumber for all exposed concrete surfaces on at least one side and two edges, and construct to produce mortar-tight joints and smooth, even concrete surfaces.

The Contractor may use plywood forms, or forms face-lined with plywood, masonite, or other approved similar material, provided the plywood forms and form linings are substantial, of uniform thickness, and are mortar-tight when in position.

C. Metal Ties

Construct metal ties or anchorages within the forms to allow their removal to a depth of at least 1 inch from the face without damaging the concrete. If wire ties are permitted, cut the wires back at least ¼ inch from the surface of the concrete, and ensure that the surface is left sound, smooth, even, and uniform in color.

D. Walls

Provide sufficient openings at intervals along the bottom of wall forms to allow thorough cleaning before concrete placement. Close such openings before placing concrete in the forms.

E. Surface Treatment

Before placing reinforcement, treat all forms to prevent the adherence of concrete. Treat forms, which are not provided with a special treatment, with an approved oil. Do not use any material that will adhere to or discolor the concrete.

F. Metal Forms

Ensure that metal forms comply with all requirements for forms, as regards design, mortar tightness, filleted corners, beveled projections, bracing, alignment, removal, reuse, and oiling. Construct forms using metal of sufficient thickness to ensure that the forms will remain true to shape. Countersink all bolt heads on the face forming the concrete surface. Use clamps, pins, or other connecting devices designed to hold the forms rigidly together and to allow removal without damaging the concrete. Do not use metal forms that do not present a smooth surface or do not line up properly. Keep metal forms free from rust, grease, or other foreign matter.

A.06 Falsework

Support falsework, used to support the forms and concrete for concrete structures, on sills resting on rigid foundations composed of solid rock, piles driven until the bearing capacity of each pile is sufficient to support the required loading, or earth borne footings as specified below:

Earth borne footings will only be allowed when, in the Engineer's opinion, the soil can adequately support the superimposed loads and the following conditions are met:

1. Only use spread footings on stable ground that is capable of supporting the superimposed load.

2. Grade and maintain the site to prevent ponding of water, or erosion of soil in the proximity of the spread footings.

3. Design and construct the falsework system to not exceed the bearing capacity of the soil, and in no case to exceed 3,000 pounds per square foot.

4. Design and construct the footings to carry the superimposed loads.

5. Construct all footings on a level plane.

In the City of La Vergne, piles must bear on solid bedrock.

Design and construct the falsework to support the required loading without distortion or settlement of the forms.

Place "tell-tales" to allow for observation of the amount of falsework settlement by the Quality Control Representative.

For projects spanning more than 20 feet or higher than 20 feet above ground level, the Project Engineer may require the Contractor to submit detailed falsework plans, together with a soils report, design calculations, and other information necessary for a thorough review. The Contractor is responsible for the design and construction of the falsework system and shall repair, or remove and replace, as directed all concrete, other material, or portions of the structure that are damaged or destroyed due to failure of the falsework.

Have all plans for falsework and formwork for cast-in-place structures over navigable waters or pedestrian or vehicular traffic stamped by a Professional Engineer licensed in the State of Tennessee.

A.07 Reinforcement

A. General

All reinforcement shall consist of deformed steel bars meeting the requirements of ASTM A615 Grade 60, unless otherwise shown on the Plans. Use standard CRSI hook details unless otherwise specified. Reinforcing steel designated with the suffix E shall be epoxy coated as specified in TDOT Section 907.01. Deformed steel bars shall have a net area at all sections equivalent to that of plain round or square bars of the corresponding nominal size.

Steel wire fabric, meeting TDOT Section 907.03, may be furnished in rolls or sheets.

B. Protection of Material

Store reinforcing steel above the ground surface on platforms, skids, or other supports located outside the scope of the active construction operations. Protect the reinforcing steel from physical damage, rust, and other surface deterioration. Remove all brush and weeds from the storage area immediately before storing reinforcing steel in the area.

C. Bending

Cold bend reinforcing steel, where indicated, to the forms and dimensions shown on the Plans. Unless otherwise indicated, ensure that all bends are in one plane. Uncoated bars of ¾ inch or less that have only hooks or a single bend may be bent in the field, provided satisfactory equipment for proper and accurate work is used, and provided the bending is accomplished true to form and dimensions without damage to the bars. Perform all other bending as described in the Project Specifications.

D. Substitution

The Contractor may substitute bars of different sizes from those shown on the Plans only with the Project Engineer's written permission. If substitution is allowed, comply with the following:

1. Do not reduce the total area of steel in any 1 foot in each direction.

2. For cast-in-place concrete, the clear distance between parallel bars in a layer shall not be less than 1.5 bar diameters, 1.5 times the maximum size of the coarse aggregate, or 1-1/2 inches.

3. Where positive or negative reinforcement is placed in two or more layers, place bars in the upper layers directly above those in the bottom layer with the clear distance between layers not less than 1 inch.

4. Clear distance limitation between bars shall also apply to the clear distance between a contact lap splice and adjacent splices or bars. Limit groups of parallel reinforcing bars bundled in contact to act as a unit to four in any one bundle. Limit bars larger than No. 11 to two in any one bundle in beams. Locate bundled bars within stirrups or ties. Individual bars in a bundle cut off within the span of a member shall terminate at different points with at least 40 bar diameters stagger. Where spacing limitations are based on bar diameter, treat a unit of bundled bars as a single bar of a diameter derived from the equivalent total area.

5. In walls and slabs, space the primary flexural reinforcement no farther apart than 1.5 times the wall or slab thickness, or 18 inches.

E. Splicing

Furnish all reinforcement in the full length shown on the Plans. The Contractor may splice temperature reinforcement. Splicing may occur once per bar in the end sections of box and slab type culverts that are on a skew other than 90 degrees and in box and slab type culverts that require no contraction joints due to their length. In end sections of 90-degree skewed structures and in interior sections of all box and slab type culverts, furnish temperature reinforcement in the full length required, with no splices. Do not make any splices, unless shown on the Plans or authorized by the Project Engineer.

Do not splice tension reinforcement at points of maximum stress. Rigidly clamp the members at all splices with at least two approved metal clips located approximately 3 inches from the ends of the bars and bolted around them, or secure with wire.

Splice steel shapes only as shown on the Plans.

Splice steel fabric by overlapping the sheets by not less than 12 inches, matching at least three transverse members, and by securely wiring the overlapped sections.

F. Placing and Fastening

1. Bars

Before placing reinforcing steel, thoroughly clean it of mill scale, rust, dirt, paint, oil, or other foreign substances or coating of any character that will reduce the bond. Once in-place, if reinforcement becomes dirty, rusty, or spattered with mortar that dries before concrete is placed around it, thoroughly clean such reinforcement, or the part affected, before covering it with concrete.

Accurately place and firmly hold in position all reinforcement as shown

on the Plans. Fasten uncoated steel bars together with metal clips or wire at each intersection. Fasten coated steel bars with coated wire ties or coated clips. Where spacing is less than 1 foot in each direction, fasten alternate intersections. Securely space all reinforcing steel from the forms and between adjacent reinforcement with approved metal spacers, concrete blocks, or other approved devices or methods, except only use metal spacers in slabs of bridges and top slabs of box type structures. Where possible, arrange spacer devices so that their use cannot be detected in the completed structure. Mix concrete for spacer block construction in the same proportions as that used in the concrete mixture. Construct the blocks to be rectangular in shape with uniform surfaces and with no dimension greater than the depth required for proper spacing from the forms or between adjacent reinforcement. Do not use gravel, brick, or wooden blocks.

Before depositing concrete, ensure that all reinforcing steel in the section of the concrete pour is accurately and securely placed and the Quality Control Representative has approved the placement. Do not disturb the spacers during concrete placement.

All dimensions relating to the spacing or cover of reinforcing bars are to the centers of the bars or the clear distance respectively, unless otherwise indicated. Tolerances for placement shall be plus or minus ½ inches for spacing and minus 1/8 inch or plus 3/8 inch for cover.

2. Welded Wire Mesh

Welded wire mesh is to be placed as described in ACI 301-20 (Provision 3.3.2.5(a)), CRSI RB4.1 (Section 3.3.2.5), and ACI 302.1R-15 (Section 5.2.4) except as follows:

In the event that a floor or ground slab is being placed and laser screeding is planned for the placement, the Project Engineer may allow the supports to be placed simultaneously with the placement. Under no circumstances may the placement occur with no supports. The location and spacing of the supports must be in compliance with applicable sections of CRSI RB4.1. The Project Engineer must provide this approval in writing at least 24 hours prior to the planned concrete placement and the Contractor must provide this information to the City Engineer at that time.

A.08 Drainage and Weep Holes

Construct drainage openings and weep holes using materials in the manner and at the

locations shown on the Plans. Place ports or vents for equalizing hydrostatic pressure, when required.

Where structures are to be backfilled, protect weep holes or openings by placing a wire basket, with dimensions of 1 foot x 1 foot x 1 foot and filled with coarse aggregate of size 7, 8, 57, 67, 68, or 78, immediately over or behind the holes or openings, as directed by the Engineer. After all finished grading is complete, clean weep holes of all dirt and debris, and ensure that they are free draining.

A.09 Placing Pipes, Conduits, Anchors, Casting, and other Appurtenances

Place, during construction, all pipes, conduits, anchors, castings, bolts, plates, grillages, and other appurtenances that are necessary or desirable to be placed in the concrete of a structure, whether shown on the Plans or not.

A.10 Handling Materials and Admixtures

When placing concrete during hot weather, take appropriate measures to reduce the hazards of increased rate of cement hydration and high concrete temperatures.

The temperature of the concrete at point of discharge shall not exceed 90 °F. Reduce the temperature of the concrete using one or any combination of the following methods:

1. Sprinkle coarse aggregate stockpiles to distribute the water evenly and to prevent moisture variation within the stockpile.

2. Use crushed or chipped ice as a portion of the mixing water, or use water cooled by refrigeration or other means. If using ice, substitute it on a pound for pound basis for water and ensure that it is completely melted before the concrete is discharged from the mixer.

3. The Contractor may employ other means as approved by the Project Engineer.

Unless otherwise specified in the Project Specifications, to use additives or admixtures in a large concrete placement, submit a revised mix design for the Project Engineer's review and approval.

Do not mix different types of cement, and do not use them alternately. Where it is necessary for the color of the concrete to be uniform, only those cements that will produce similar color in concrete may be used alternately.

A.11 Mixing Limitations

Stop mixing concrete in time to allow finishing to be completed in daylight hours,

unless an adequate and approved artificial lighting system is provided and operated.

Discontinue mixing and concreting operations when falling air temperature in the shade and away from artificial heat reaches 40 °F. Do not resume operations until rising air temperature in the shade and away from artificial heat reaches 35 °F.

When concreting at temperatures above 35 °F, the temperature of the concrete mixture shall be no less than 50 °F and no more than 90 °F at the time of placement. If heating is required, use an apparatus that will heat the mass uniformly and that will prevent the possible occurrence of overheated areas that might damage the concrete. Do not use frozen aggregates in the concrete.

When concreting is authorized at temperatures of 35 °F or less, heat the water or the aggregates or both to no less than 70 °F and no more than 150 °F. Ensure that the temperature of the heated mixture is no less than 60 °F and no more than 100 °F at the time of placement on the road.

A.12 Mixing Concrete

The Contractor may mix concrete in a central-mix plant or in truck mixers. The mixer shall be of an approved type and capacity, and shall comply with the applicable requirements of this Part. Clean mixers at suitable intervals to prevent buildup of hardened concrete that could affect the mixer's capacity and mixing ability.

Transport mixed concrete from the central mixing plant in truck mixers or truck agitators. Truck mixers and truck agitators used to transport concrete from a central mixing plant and truck mixers used to mix concrete in transit from a central batching plant shall meet all applicable requirements of this Part, and in addition, the mixing speed and agitating speed shall be those recommended by the manufacturer of the mixer, and the total revolutions at mixing speed shall be within the range of 70 to 100 for drum mixers. Operate truck mixers and truck agitators within the capacity recommended by the manufacturer.

When the concrete is mixed and transported in truck mixers; no more than 90 minutes shall elapse from when the water is added to the mix until the concrete is deposited in place at the site of the work. When the ambient air temperature exceeds 90 °F, no more than 60 minutes shall elapse for concrete placed in bridge decks or elevated slabs.

Do not retemper concrete by adding water or by other means. However, the Contractor may withhold a portion of the mixing water or chemical admixtures from transit mixers and add at the work site if all requirements of the approved concrete mix design is met, provided the delivery ticket indicates the amount of water withheld. The total amount of water in the mix shall not exceed the maximum in the approved concrete mix design. To achieve additional slump, use a water reducing admixture. If water, air entrainers, or chemical admixtures are added at the placement site, mix the concrete a minimum of 30

revolutions at mixing speed after making the additions. Do not use concrete that is not within the specified slump limits, air content limits, temperature limits, or time limits at the time of placement.

A.13 Consistency of Concrete

The slump of the concrete when measured according to AASHTO T 119 shall meet the requirements of Section A.03 of this Part**.** The slump flow of self-consolidating concrete when measured according to ASTM C1611 shall meet the requirements of Section A.03 of this Part.

A.14 Compressive Strength Tests of Concrete

A. General

The Quality Control Representative or the Project Engineer shall determine concrete strength by tests performed during the progress of the work.

The frequency of testing for compressive strength to determine when forms may be removed, or when a structure may be put into service, shall be as requested by the Quality Control Representative in accordance with this Section.

B. Concrete Acceptance Cylinders

The Quality Control Representative will test the specimens for compressive strength according to AASHTO T 22. The Contractor will provide the necessary concrete for making test specimens and adequate curing and storage facilities.

Concrete cylinders submitted for testing beyond 28 days shall comply with the design strength requirements specified in this Section, the Plans, or the Project Specifications.

If the acceptance cylinders fail to meet the specified strengths, the Contractor must provide QC data from companion cylinders that meet or exceed the required strength, and the Quality Control Representative must perform a nondestructive test using a Swiss Hammer on the concrete to prove required strength is achieved, and then the Contractor may drill core samples from the hardened concrete as verification of concrete strength instead of using the concrete cylinders. Companion cylinders shall be made from the same sample as the acceptance cylinders. If these requirements are met, the Contractor may then elect to drill a maximum of three concrete core samples per set of cylinders from the hardened concrete. All core holes must be repaired to the standard set by the Project Engineer.

The compressive strength of concrete cores submitted beyond 28-days from the

placement date will be adjusted using the following equation:

$$A = [[4.1 + (0.85 * B)]/B] * C$$

Where:

A = the Calculated Result of the Compressive Strength of the Concrete at 28 days (psi)
B = the Age of the Concrete (days)
C = the Compressive Strength Result of the Concrete Core (psi)

No concrete cylinders and cores may be submitted for testing beyond 56 days.

The average compressive strength of the two cores taken to represent the failing concrete cylinders will be considered to be the acceptance strength of record for the in-place concrete.

All concrete used shall undergo acceptance testing. The Project Engineer will determine the method to formally accept in-place concrete that is represented by acceptance cylinders that have been lost, damaged, or destroyed. These methods may include coring or non-destructive testing.

C. Early Break Cylinders

Make and cure all test specimens according to AASHTO T 23, and the applicable procedures therein defined for Field Cured Specimens. The Quality Control Representative must test the specimens for compressive strength according to AASHTO T 22. The Contractor must provide the necessary concrete for making test specimens.

Cylinders shall be representative of the concrete placed and shall be cured in the same manner and method as the placed concrete. Specimens shall be protected from the elements in the same manner as the formed work. If specimens are to be used for determining when a structure is capable of being put into service the specimens should be removed from the molds at the time of removal of the form work.

A.15 Placing Concrete

A. General

Do not place concrete until the Quality Control Representative has checked and approved forms and reinforcing steel. Ensure that the forms are clean of all debris and are kept wet immediately before concrete is placed. Unless otherwise allowed, place all concrete in daylight. Do not start placing concrete in any portion of a structure unless it can be entirely completed in daylight. When the placing of concrete is allowed during other than daylight hours, provide and

operate an adequate and approved artificial lighting system. Plans for nighttime operations, including adequate lighting, shall be acceptable to the Project Engineer.

Use tools of an approved type to thoroughly work concrete during placing operations. The working shall be such as to force all coarse aggregate from the surface and to bring mortar against the forms to produce a smooth finish, substantially free from water and air pockets, or honeycomb.

If the forms show bulging or settlement while concrete is being placed, stop placing until a correction has been made.

Construct T-beam girders, slabs, arch rings, and all horizontal sections, except curbs and sidewalks, monolithically and continuously, unless otherwise allowed by the Plans.

B. Chutes and Troughs

Place concrete to prevent segregation of materials and displacement of reinforcement.

Keep all chutes, troughs, and pipes clean and free from coatings of hardened concrete by thoroughly flushing with water after each run. Discharge the water used for flushing clear of the concrete already in place.

Take care to fill each part of the form by depositing the concrete as near final position as possible. Work the coarse aggregate back from the forms and around the reinforcement without displacing the bars.

C. Vibrating

Unless otherwise directed, compact the concrete with suitable mechanical vibrators operating within the concrete. When required, in addition to vibrating, also hand spade with suitable tools to ensure proper and adequate compaction.

Manipulate vibrators to work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. Do not use vibrators to cause concrete to flow or run into position. The vibration at any point shall be of sufficient duration to accomplish compaction without causing segregation.

Have at least one additional stand-by vibrating unit available for all individual pours in excess of 10 cubic yards.

D. Joints

Do not produce a featheredge at construction joints. Do not construct transverse or longitudinal joints through spans, unless otherwise specified.

Placement of bridge deck concrete between specified transverse construction joints shall be continuous unless otherwise approved in writing by the Project Engineer. If the Contractor's placement is interrupted unduly because of failure or repositioning of equipment or any other cause, the Quality Control Representative may direct that all placement be stopped and a transverse construction joint be formed in the deck as shown on the Plans or as directed by the Project Engineer.

Clean layers completing a day's work, or placed just before temporarily discontinuing operations, of all laitance or other objectionable material as soon as the surface has become sufficiently firm to retain its form.

To construct box culverts 6 feet or less in height, the Contractor may construct the side walls and top slab as a monolith. When using this method of construction, construct any necessary construction joints vertical and at right angles to the axis of the culvert.

To construct box culverts more than 6 feet in height, place the concrete in the walls and allow to set at least 4 hours before constructing the top slab. Leave appropriate keys in the side walls for anchoring the top slabs.

Unless otherwise shown on the Plans, transverse contraction joints in box culverts shall be plain butt joints and longitudinal reinforcement shall not extend across the joint. Space contraction joints at intervals of 30 to 40 feet. Predetermine the location of joints, and when practicable, place them at changes in the box section. Locate these joints parallel to the main reinforcing steel in the slab and not necessarily perpendicular to the axis of the box or slab type culverts.

A.16 Bonding Construction Joints

Where dowels, reinforcing bars, or other adequate ties are not shown on the Plans, form keys by constructing projections above the concrete and monolithically with the concrete.

In resuming work, draw the forms tightly against the face of the concrete. Thoroughly clean the entire surface of the concrete to be bonded and roughen with a steel tool. Before proceeding with concreting, soak the surface with clean water.

A.17 Removal of Forms and Falsework

The Contractor may remove forms for ornamental work, railings, parapets, columns, and vertical surfaces that do not carry loads within 12 to 48 hours, unless otherwise directed by the Project Engineer. In cold, damp, or freezing weather, all vertical forms shall remain in place until the concrete has set sufficiently to withstand damage when the forms are removed. When removing forms, take care not to mar the concrete surface or to subject it to any undue pressure.

Remove or cut projecting wires or other metal devices used for holding forms in place and that pass through the body of the concrete. Fill the holes or depressions thus made, and all other holes, depressions, and small voids that show upon the removal of the forms, with cement mortar mixed in the same proportions as that used in the body of the concrete being repaired.

The Contractor may release and remove falsework and supports under concrete structures when the following conditions are met:

1. Representative specimens of the concrete, made and cured in accordance with this Part, attain a compressive strength of 3,000 pounds per square inch.

2. The concrete has been in place a minimum of 7 days, not counting days of 24 hours each in which the temperature falls below 40 °F, or 21 calendar days, whichever occurs first.

After the above conditions have been met, the Contractor may proceed with placing further concrete pours or erecting precast or fabricated members.

For continuous concrete girder or slab units, do not release or remove the falsework and supports from any span in the continuous unit until the concrete in all spans has been placed a sufficient length of time to meet all requirements for the removal of falsework and supports specified above.

A.18 Defective Concrete

Remove and replace defective concrete upon discovery. If the surface of the concrete is bulged, uneven or has honeycombing that cannot be repaired satisfactorily, remove and replace the entire section or unit. The extent of the removal shall be as determined by the Quality Control Representative or the Project Engineer.

Concrete having an acceptance compressive strength less than the minimum specified shall be removed, disposed of, and replaced by the Contractor, unless specifically authorized by the Project Engineer, in writing, to be included in the permanent work. Remove and dispose of nonconforming concrete in a manner that will not damage existing construction or other facilities and property.

The Project Engineer may allow concrete that fails to meet the strength specified to remain in the permanent construction, provided the durability is acceptable.

A.19 Finishing Concrete Surfaces

Finish the surface of the concrete immediately after removing forms.

Give all concrete surfaces a Class I finish.

Give the following surfaces of all structures a Class II or Applied Texture Finish:

1. Roadway face and top of curbs
2. Vertical outside face of curb overhang or sidewalks slab
3. Bottom surface of slab overhang
4. Bridge railings
5. Barrier railings
6. All vertical surfaces of the superstructure of dual bridges exposed to view from either structure
7. All surfaces of retaining walls, wing walls, and end walls that are visible from passing vehicles.

Give all surfaces of structures exposed to general view a Class II or Applied Texture Finish. Such surfaces, in addition to those specified above, will usually include:

1. All parapets, copings, columns, piers, bents, sides and ends of caps
2. The outside of all fascia beams
3. The ends of arch rings
4. The outer surfaces of spandrel walls
5. The exposed surfaces of wing walls
6. The faces of abutments.

The Plans will show if additional surfaces, other than those already indicated, are to receive a Class II or Applied Texture Finish. If an Applied Texture Finish is used, the color of the finish shall be similar to Mountain Gray, Federal Specification No. 36440, Federal Color Standard 595b, except that the inside face and the top of the parapet or rail shall be White, Federal Specification No. 37886. Submit a color sample to the Project Engineer for approval.

Do not combine the Class II and Applied Texture Finish. If the Plans show an Applied Texture Finish, do not use a Class II finish.

The Plans may show other finish classes for designated surfaces.

A. Class I, Ordinary Surface Finish

Begin finishing as soon as forms are removed. Remove all fins and irregular projections from surfaces that are to be exposed or waterproofed. On all surfaces, ensure that the cavities produced by form ties and all other holes, honeycomb spots, broken corners or edges, and other defects, are thoroughly cleaned, saturated with water, and carefully pointed and trued with a mortar of cement and fine aggregate mixed in the proportions used in the class of the concrete being finished. Mortar used in pointing shall not be more than 30 minutes old. Leave all construction and expansion joints in the completed work carefully tooled and free of all mortar and concrete. Leave the joint filler exposed for its full length with clean and true edges.

On all surfaces that cannot be repaired to the Engineer's satisfaction, rub as specified for a Class II finish.

B. Class II, Rubbed Finish

Complete a Class I finish. Saturate the concrete with water. Ensure that sufficient time has elapsed before the wetting down to allow the mortar used in the pointing to thoroughly set. Rub the surfaces to be finished with a wetted wooden block or a medium coarse carborundum stone. Do not use the carborundum stone until the concrete has hardened to the state where the sand will grind, rather than ravel or roll. Continue rubbing until all form marks, projections, and irregularities have been removed, all voids filled, and a uniform surface has been obtained. Leave the paste produced by this rubbing in place. Neither a brush finish nor painting with grout is allowable.

After all concrete above the surface being finished has been cast, obtain the final finish by rubbing with a fine carborundum stone and water. Continue this rubbing until the entire surface is of a smooth texture and uniform color.

After the final rubbing is completed and the surface has dried, rub it with burlap to remove loose powder and ensure it is free from all unsound patches, paste, powder, and objectionable marks.

C. Class III, Float Finish

For unformed surfaces, except slab surfaces for pavements or bases, achieve a Class III finish by placing an excess of material in the form and removing or striking off the excess with a template, forcing the coarse aggregate below the mortar surface. Avoid creating concave surfaces. After the concrete has been struck off, thoroughly work the surface and float with a suitable floating tool of wood, canvas, or cork. Before the finish has set, remove the surface cement film with a fine brush to produce a fine-grained, smooth but sanded texture.

D. Applied Texture Finish

Apply as per Project Specifications.

A.20 Finishing Slab Surfaces for Pavements or Bases

Use approved mechanical finishing machines to finish bridge floors or top slabs of structures serving as finished pavements or bases. For small concrete placements or in extreme cases where mechanical finishing machines cannot be used, such as narrow widths due to phase construction, the use of hand finishing or other methods will be allowed.

Mechanical finishing machines shall be approved power driven machines, traveling on rails adjusted to conform to the profile of the roadway. Equip the machines with oscillating or vibrating transverse or longitudinal screeds that may be adjusted to conform to the profile or the required cross-section of the roadway. The screed shall have sufficient strength to retain their shape after adjustment. Pass over each area of the concrete floor with the finishing machine as many times as necessary to obtain the required profile and cross- section.

When using longitudinal screeds, comply with the following restrictions:

1. The span length of the slab section to be poured shall be 70 feet or less.

2. Place sufficient concrete ahead of the strike-off to fully load the beam or girder prior to strike-off.

3. Control the rate of placement to ensure that the concrete will not take its initial set before the entire placement is complete.

4. The slab to be poured shall be in a tangent section.

5. Assume responsibility for damage to the structure caused by using this method. Do not change the sequence of construction, as shown on the Plans, without the Engineer's written approval.

When using the hand method, strike off the floors or slabs with a screed that is parallel to the centerline of the roadway resting on bulkheads or screed strips cut or set to the required cross-section of the roadway. This screed shall have sufficient strength to retain its shape and a cutting edge that may be adjusted to conform to the profile of the roadway. Screeds shall be of sufficient length to finish the full length of spans 40 feet or less in length. Finish spans over 40 feet in length in two or more sections, but no section shall be less than 20 feet in length. Set screed strips or headers to the specified grades, and check and adjust as necessary before the final screeding operation. Work the screed back and forth over the surface until the proper profile and cross-section is obtained.

Maintain a minimum placement rate of 20 feet of deck or slab per hour when placing concrete in a longitudinal direction.

For bases, finish the surface by grooving lightly with a wire broom at an angle of 60 degrees with the centerline. Begin all strokes at the center and end at the edge.

Finish and texture the surface of structures serving as roadway pavements by Method 3 below, except Method 1 or 2 may be used where shown on the Plans or where the design speed of the roadway on which the structure is located is less than 40 miles per hour.

1. Finish the surface by dragging a seamless strip of damp burlap over the full width of the surface. Use a burlap drag consisting of sufficient layers of burlap to slightly groove the surface and move it forward with a minimum bow of the lead edge. Keep the drag damp, clean, and free of particles of hardened concrete. When allowed by the Engineer, the Contractor may use a light broom or brush herringbone finish that leaves a texture similar to that obtained by the burlap drag.

2. Finish the surface with a burlap drag as noted in Method 1 above. Then, at an appropriate time during the stiffening of the concrete, form transverse grooves in the surface so that in the hardened concrete the grooves will be between 0.09 and 0.13 inches in width; between 0.12 and 0.19 inches in depth; and spaced at random intervals between 0.3 and 1.0 inches. The grooves shall be relatively smooth and uniform. Form the grooves without tearing the surface or bringing pieces of coarse aggregate to the surface, and to drain transversely.

3. Finish the surface with a burlap drag as noted in Method 1 above. Then, after allowing the concrete to cure and to harden sufficiently to support the necessary equipment, groove the surface transversely using a mechanical saw device that will leave grooves 0.125 inches wide, 0.125 inches deep, and randomly spaced from 0.75 to 1.125 inches apart center to center. Perform any corrective grinding for smoothness before transverse grinding, otherwise it will be necessary to re-groove.

Establish positive means for removing grooving residue.

Terminate the grooves formed by Method 2 or 3 approximately 12 inches from curbs, parapets, barrier walls, and other vertical walls.

As soon as the surface has set sufficiently to withstand damage when walking on it, and not later than the morning following the placing of the concrete, apply a 12-foot straightedge and mark all variations exceeding 1/8 inch. Correct and seal such variations.

A.21 Curing Concrete

Cure all concrete surfaces as specified below, except those surfaces protected by forms that remain in place 7 days or longer. Use curing materials that meet the requirements of

TDOT Section 913. Begin curing on unformed surfaces immediately after the water sheen disappears and the surface finish is applied. On formed surfaces, begin curing immediately after removing forms.

When the temperature is expected to fall below 35 °F, protect the concrete as specified herein.

Cure bridge decks and the top slabs of other structures located above the roadway subgrade elevation by using both the Membrane-Forming Compound Method and the Water Method. Use new burlap for each pour, except burlap may be reused on the same project if it is undamaged and deemed acceptable by the Quality Control Representative. The Contractor may cure all other concrete surfaces by either of the following methods.

A. Membrane-Forming Compound Method

Give all surfaces the required surface finish and keep it moist before applying the curing compound. Apply the burlap drag finish on bridge decks, and on the top slabs of other structures that also serve as the roadway surface, as soon as practicable after screeding the surface, and then immediately apply the membrane curing compound.

Apply the curing compound at the manufacturer's recommended rate. Apply the curing compound under pressure. Only use hand sprays in areas that are inaccessible to pressure equipment. At the time of application of the curing compound, the concrete shall be thoroughly moist but without surface water.

At the time of use, ensure that the compound is in a thoroughly mixed condition with the pigment or dye uniformly dispersed throughout the vehicle. If the application of the compound results in a streaked or blotchy appearance, take corrective action at once to obtain a well- dispersed mixture of uniform appearance. For concrete surfaces that are not protected by burlap curing covers, use other means to protect against marring for a period of 5 days from the date of application. Immediately replace membrane coating marred within the 5-day period on an otherwise unprotected surface.

B. Water Method

As soon as possible after applying curing compound to bridge decks and to other top slabs located above subgrade elevation, apply either a combination of damp burlap and white polyethylene sheeting or a white, co-polymer coated, absorbent, non-woven synthetic fabric, from a work bridge, taking care not to mar the surface of the deck. The sheeting material shall meet the performance requirements of ASTM C171. Immediately cover all other concrete slabs with materials suitable for use with the water cure. After placing the protective cover, immediately apply a mist spray and keep the cover thoroughly wet with a continuously fed soaker hose system for 120 hours.

Keep all surfaces other than slabs protected from the sun and wet for a period of at least 72 hours from the beginning of the initial curing period. For finishing, the Contractor may temporarily remove the covering from curbs, walls, handrails and other surfaces requiring a Class II finish, but shall restore the covering as soon as possible.

A.22 Protection of Concrete in Cold Weather

If, after the concrete has been placed, the ambient temperature is expected to drop below 35 °F, provide insulation blankets, sufficient canvas, and framework, or other types of housing, to enclose and protect the structure in such a way that the air surrounding the fresh concrete can be maintained at a temperature of at least 45 °F and the surface temperature of the concrete will not exceed 80 °F. Maintain the above conditions for a period of 120 hours after the concrete is placed. Furnish a maximum-minimum thermometer to the Quality Control Representative for temperature documentation.

A.23 Loading and Opening to Traffic

Do not allow any traffic, heavy equipment, storage of materials, or other loading on a structure, or any part thereof, until all forms and falsework have been removed and 10 calendar days have elapsed thereafter, unless otherwise noted in the Plans.

A.24 Final Cleanup

Perform final cleanup as specified in the Project Specifications or the General Conditions of this Specification.

SECTION B – PIPE CULVERTS AND STORM SEWERS

DESCRIPTION

B.01 Description

This work consists of constructing pipe culverts, side drains, slope drains, and storm sewers of the kinds and dimensions shown on the Plans or specified in the Contract. The work also includes all labor, materials, and equipment as may be necessary to make connections with other drainage structures as shown on the Plans.

MATERIALS

B.02 Materials

A. General

Provide materials as specified in:

Joint Mortar.....TDOT Section 905.02
Rubber Gaskets.....TDOT Section 905.03
Reinforced Concrete Pipe (RCP).....TDOT Section 914.02
Polyvinyl Chloride (PVC) Pipe.....TDOT Section 914.09
High Density Polyethylene (HDPE)
Plastic Pipe.....TDOT Section 914.10
Steel Reinforced Thermoplastic Ribbed
Pipe (SRTRP).....TDOT Section 914.11
Polypropylene (PP) Pipe .....TDOT Section 914.12
Corrugated Metal Pipe (CMP) .....TDOT Section 915.02

Reinforced concrete pipe shall be, round, arch or elliptical, as shown on the Plans.

The sizes of pipe shall be identified by the nominal inside diameter. Provide pipe of the sizes and classes or gauges specified in the Contract or shown on the Plans.

For corrugated metal pipe, and pipe arches, the Contractor may use corrugated steel, provided different corrugations are not mixed in a single line of pipe.

Aluminum coated corrugated metal pipe shall conform to the requirements of AASHTO M 274 for pipe culvert gauge.

Furnish coupling bands and all hardware, except nuts, bolts, and washers, of the same material and coating as the pipe.

When corrugated metal pipe arches are specified as "size equivalent round," the dimensions shall be as shown on the Plans.

B. Pipe Culverts Cross Drains, Side Drains, & Storm Drains

Where Pipe Culverts (Cross Drains & Median Drains) are specified, provide them in accordance with the following:

1. **Pipe Diameters from 18 through 36 inches.** Provide materials meeting one of the following:

    1. RCP Class III, IV, or V meeting AASHTO M 170, M 206, or M 207.
    2. CMP meeting AASHTO M 274.
    3. HDPE pipe meeting AASHTO M 294.
    4. PVC pipe meeting AASHTO M 304.
    5. PP pipe meeting AASHTO M 330.
    6. SRTRP meeting AASHTO M 335.

2. **Pipe Diameters Larger than 36 inches through 60 inches.** Provide materials meeting one of the following:

    1. RCP Class III, IV, or V meeting AASHTO M 170, M 206, or M 207.
    2. CMP meeting AASHTO M 274.
    3. HDPE pipe meeting AASHTO M 294.
    4. PP pipe meeting AASHTO M 330.
    5. SRTRP meeting AASHTO M 335.

3. **Pipe Diameters Larger than 60 inches.** Provide materials meeting the following:

    1. RCP Class III, IV, or V meeting AASHTO M 170, M 206, or M 207.
    2. CMP meeting AASHTO M 274.

C. Slope Drains

Where Slope Drains are specified, provide materials in accordance with one of the following:

4. CMP meeting AASHTO M 274.
5. HDPE pipe meeting AASHTO M 294.
6. PVC pipe meeting AASHTO M 304.
7. PP pipe meeting AASHTO M 330.
8. SRTRP meeting AASHTO M 335.

EQUIPMENT

B.03 Equipment

Provide hoisting equipment capable of handling and placing the pipe culvert in final position without damaging the pipe. Include mechanical tamps.

CONSTRUCTION REQUIREMENTS

B.04 Preliminary Work

Perform Clearing and Grubbing, Removal of Structures and Obstructions, Excavation and Undercutting, and Embankment Construction as specified in Part 2.

B.05 Structure Excavation and Foundation Preparation

Perform Structure Excavation and Foundation Preparation as specified in Part 2.

Provide bedding for pipe culverts that conforms to the requirements of Part 2.

When excavating to install pipe culverts across private property, salvage and replace in its original position, all topsoil and sod disturbed by the excavation operations, unless otherwise specified. The area must be restored to its original condition.

B.06 Laying Pipe Culverts

Lay pipe culverts beginning at the downstream end of the pipe line. Ensure that the lower segment of the pipe is in contact with the shaped bedding throughout its full length. Place bell or groove ends of RCP and outside circumferential laps of flexible pipe facing upstream. Place CMP, HDPE, PP, SRTRP, and PVC pipe with longitudinal laps or seams at the sides.

Lay paved invert pipe so that the longitudinal centerline of the paved segment coincides with the flow line. Place reinforced elliptical concrete pipe with the major axis of the reinforcement less than 5 degrees departure from a vertical plane through the longitudinal axis of the pipe.

B.07 Joining Pipe

RCP may be of bell and spigot or tongue and groove design, unless one type is specified. Join pipe sections so that the ends are fully entered and the inner surfaces are reasonably flush and even.

Use rubber gaskets or other types of joints recommended by the pipe manufacturer.

To form gasket joints for concrete pipe, install rubber ring gaskets meeting ASTM C443 for round pipe.

Join CMP with approved coupling bands in accordance with ASTM D3212.

HDPE, PP, SRTRP, and PVC pipe shall be joined in accordance with ASTM D3212 and meet the performance requirement for soil-tightness, unless water-tightness is specified. Install joints so that the connection of pipe sections, for a continuous line, will be free from irregularities in the flow line.

Inspect the pipe culvert before placing any backfill, and remove and re-lay or replace pipe found to be out of alignment, unduly settled, or damaged.

B.08 Field Strutting

If required, perform strutting or vertical elongation as shown on the Standard Drawing.

Leave ties and struts in place until the embankment is completed, unless otherwise specified.

B.09 Backfilling and Post Installation Inspection

After the pipe culvert is installed, backfill the trench as specified in Part 2. Visually inspect all pipe culverts during and after installation to ensure conformance to these Specifications. Conduct the final visual inspections for all pipe culverts no sooner than 30 days after completing installation and final fill. Conduct final visual inspections from the inlet and outlet ends of all pipe culverts, providing sufficient hand-held lighting to observe any defects. In addition to visual inspection, perform the testing described below not less than 30 days after completing pipe culvert installation and final fill placement. Perform all post installation inspections and testing as follows:

A. Flexible Pipes: HDPE, PVC, SRTRP, PP, and CMP

For projects (including all phases) with 500 linear feet or more of stormwater piping, conduct a deflection test (mandrel, laser, video, or manual) on at least 10% of the total number of pipe culvert runs, representing a minimum 10% of the total project footage including a minimum of one run of each pipe culvert diameter. The Quality Control Representative must randomly select installations to be tested to determine whether the pipe culvert diameter has been reduced greater than 5% of the actual diameter. At any location of a pipe culvert run, if the deflection is greater than 5% but less than 7.5%, further evaluate all pipe culvert installations to identify excessive deflections. Provide documentation with pipe culvert station, material type, diameter, deflection

location, and length results to the City Engineer and Project Engineer for evaluation of excessive deflections based on material type, diameter, deflection location, pipe culvert structural integrity, and effects to pavement stability and drainage.

Replace all pipe culverts with deflections greater than 7.5% of the actual pipe diameter, undue misalignment, or poor joint construction. Perform all excavation, removal and replacement of pipe culverts with same or different material and all additional work including, but not limited to, bedding, backfill, base stone or asphalt removal and repaving, required to correct the pipe installation due to poor construction techniques.

B. Rigid Pipe: RCP

Visually inspect all RCP for alignment, cracking, undue misalignment, abrupt slope changes and joint gasket installation between pipes at headwalls, catch basins, manholes, etc., for continuity, improper backfill or bedding during and after installation; inspect according to Section 27 of AASHTO Standard Specifications for Highway and Bridges or per ASTM C1840. If found, further evaluate installations where visual inspections detect poor construction techniques.

Based on the evaluations, the Project Engineer may allow the pipe culvert to remain in place if remediations are made according to an approved remediation plan submitted by the producer. The Contractor shall have full understanding of the remediation process prescribed and how to perform the remediation.

The Quality Control Representative shall inspect pipe culverts for poor installation practices, undue misalignment, abrupt slope changes, joint gasket installation between headwalls, catch basins, manholes, etc., continuity, and improper backfill or bedding. Based on unsatisfactory results of inspection or deflection testing, the Project Engineer may request additional inspections.

B.10 Disposal of Excess or Unsuitable Material

Dispose of excess or unsuitable excavated material as directed by the Engineer.
Use excavated material as specified in Part 2.

B.11 Final Cleanup

Perform final cleanup as specified in Part 1.

SECTION C – MANHOLES, CATCH BASINS, INLETS, AND PIPE END WALLS

DESCRIPTION

C.01 Description

This work consists of constructing manholes, catch basins, inlets, and pipe end walls at the locations shown on the Plans. The work includes furnishing and installing incidental appurtenances and connections to pipe and other structures as may be necessary to complete the construction as shown on the Plans.

MATERIALS

C.02 Materials

Provide materials as specified in:

Steel Bar Reinforcement .....TDOT Section 907.01
Structural Steel ..... TDOT Section 908.01
Gray Iron Castings..... TDOT Section 908.07
Precast Manholes and Catch Basins .....TDOT Section 921.10
Manhole Steps.....TDOT Section 921.11

For cast-in-place Portland cement concrete, use Class A or when a higher strength concrete is specified in the Plans use Class X concrete. Manufacture, place, and cure structural concrete as specified in this Part.

Use bolts, anchors, frames, and hangers for castings and plates as specified in the Project Plans and Specifications.

The Contractor may use either the manhole and catch basin sections detailed on the Plans or may substitute comparable sections of cast-in-place concrete or precast reinforced concrete, as may be applicable. When a substitution is proposed for a manhole or catch basin section detailed on the Plans, provide shop drawings for the substitute section to the Project Engineer for approval. After obtaining the necessary approval, furnish the Project Engineer an electronic reproducible design file.

CONSTRUCTION REQUIREMENTS

C.03 Preliminary Work

Perform Clearing and Grubbing, Removal of Structures and Obstructions, Excavation and Undercutting, and Embankment Construction as specified in Part 2.

C.04 Structure Excavation, Foundation Preparation, and Backfill

Perform Structure Excavation, Foundation Preparation, and Backfill as specified in Part 2. Do not backfill or allow traffic on cast-in-place sections until 7 calendar days after the representative test specimens reached the required compressive strength.

C.05 Concrete Construction

Perform all concrete construction as specified in this Part.

C.06 Inverts

Construct inverts of Class A, or when a higher strength concrete is specified in the Plans use Class X concrete, to conform to the shapes shown on the Plans and to cause the least possible resistance to flow. The shape of the inverts shall conform uniformly to inlet and outlet pipes. Provide a smooth and uniform finish.

C.07 Inlet and Outlet Pipes

Extend inlet and outlet pipes through the walls of manholes, catch basins, and inlets for a sufficient distance beyond the outside surface to allow for connections, but cut the pipes off flush with the wall on the inside surface, unless otherwise directed.

Construct the concrete or brick and mortar around the pipes to prevent leakage and to form a neat connection.

C.08 Castings and Fittings

Handle castings and fittings in a manner that will prevent damage.

Place all castings and fittings in the positions shown on the Plans and set true to line and grade.

If castings are to be set in concrete or cement mortar, place all anchors or bolts in position before placing the concrete or mortar. Ensure that the casting will not be disturbed until the mortar or concrete has set.

When castings are to be placed upon previously constructed masonry, bring the bearing surface of masonry true to line and grade to present an even bearing surface that will allow the entire face or back of the casting to come in contact with the masonry. Set

castings in mortar beds or anchor to the masonry as shown on the Plans.

Set castings to be firm and snug and to not rattle.

C.09 Final Cleanup

Dispose of all excess or unsuitable material. Perform final cleanup as specified in Part 1.

SECTION D – TEMPORARY STRUCTURES

DESCRIPTION

D.01 Description

This work consists of constructing, maintaining, removing, and disposing of temporary structures and temporary shoring.

CONSTRUCTION REQUIREMENTS

D.02 Construction

Construct all temporary structures at the location and to the dimensions, grades, and load capacity shown on the Plans or in the Contract, or in accordance with drawings prepared by the Contractor and approved by the Engineer. Alternate design and details prepared by the Contractor must be equivalent to the design and details furnished by the Project Engineer. Prepare and submit alternate designs and details as specified in Part 1.

Unless otherwise provided on the Plans or in the Contract, maintain temporary structures until the completion of the Contract or the opening of the permanent structure.

The maintenance of all temporary structures shall include their replacement in case of partial or complete failure. The City reserves the right, in case of the Contractor's delay or inadequate progress in making repairs and replacement, to furnish such labor, materials and supervision of the work as may be necessary to restore the structure for proper movement of traffic and traffic safety. The City will charge any such expenditures to the Contractor or Developer by calling in the Performance Bond.

Unless otherwise noted on the Plans or in the Contract, upon completion and opening to traffic of the permanent construction, remove and dispose of the temporary structure, restore the area as nearly as possible to its original condition, and leave the area in a neat condition.

Use temporary shoring to retain earth during grading operations and bridge construction to maintain traffic. Install temporary shoring at the locations shown on the Plans or as directed by the Project Engineer. For temporary shoring which retains earth four feet tall or taller, a design must be submitted to the Project Engineer prior to installation. Design the temporary shoring for the specific locations and in-situ soil

types. The submittal shall be in accordance with Part 1, shall be stamped by a Professional Engineer, licensed in the State of Tennessee, and shall include detailed drawings, design calculations, and shoring material requirements. Temporary shoring may consist of sheet piling, piling/lagging walls, tie back walls, manufactured systems, and similar structures.

PART 7 – INCIDENTAL CONSTRUCTION AND SERVICES

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SECTION A – CEMENT CONCRETE SIDEWALKS, DRIVEWAYS AND MEDIAN PAVEMENT

DESCRIPTION

A.01 Description

This work consists of constructing, on a prepared subgrade, Portland cement concrete Sidewalks, Driveways, and Median Pavement, excluding those Sidewalks, Driveways, and Median Pavement that are integrally part of structures.

MATERIALS

A.02 Materials

Provide materials as specified in:

Preformed Joint Filler..... TDOT Section 905.01
Cement Concrete Curing Materials ..... TDOT Section 913
Drain Pipe, Standard Strength ..... TDOT Section 914.04

To construct sidewalks, driveways, and median pavement, use Class A concrete meeting the requirements of Part 6.

EQUIPMENT

A.03 Equipment

A. Forms

Use forms of wood, metal, or other suitable material. Extend forms for the full depth of the concrete. Only use forms that are true to line, free from warp, and of sufficient strength to resist the pressure of the concrete without springing. On all radial sections, use curved forms of proper radius. Brace and stake forms to ensure that they will remain in both horizontal and vertical alignment until their removal.

B. Mixing and Finishing Equipment

Use mixers that meet the requirements of Part 6.

Furnish satisfactory floats, templates, straightedges, edgers, spades, and tamps. Compact the subgrade using tamping or rolling equipment that will produce the desired results.

Instead of using forms, the Contractor may use a slip form paver that will produce the required results.

CONSTRUCTION REQUIREMENTS

A.04 Preliminary Work

Perform Clearing and Grubbing, Removal of Structures and Obstructions, Excavation and Undercutting, and Embankment Construction as specified in Part 2.

A.05 Subgrade Preparation

Prepare subgrade for sidewalks, driveways, and median pavement to the required depth and to a width that will allow for the installation and bracing of the forms. Shape and compact the subgrade to a firm, even surface in reasonably close conformity with the grade and cross-section shown on the Plans. Remove all soft and yielding material, replace it with acceptable material, and compact it as required.

A.06 Expansion Joints

Unless otherwise shown on the Plans, place premolded expansion joint filler, 1 inch in thickness, at the locations and in line with expansion joints in the adjoining pavement, gutter, or curb. Cut all premolded expansion joint filler to the full width or length of the proposed construction and extend it to within 1 inch of the top or finished surface. Place all longitudinal expansion joints as shown on the Plans or described in the Project Specifications. Ensure that all expansion joints are true, even, and present a satisfactory appearance.

Form construction joints around all appurtenances, such as manholes and utility poles, that extend into and through the sidewalk or median area. Install 1-inch thick premolded expansion joint filler in these joints. Install expansion joint filler, of the thickness shown on the Plans, between concrete sidewalks and any fixed structure, such as a building or bridge. Install 1-inch thick expansion joint filler between concrete curb and median pavement and, unless otherwise specified, between concrete curb and sidewalk. This expansion joint material shall extend for the full depth of the walk or median pavement.

A.07 Limitations on Mixing

Comply with Part 6.

A.08 Mixing and Placing Concrete

Mix concrete as specified in Part 6.

Place concrete as specified in Part 5, except that mechanical spreaders will not be required. Immediately before placing the concrete, thoroughly wet the subgrade, and give the forms a coating of light oil. Thoroughly clean and oil the forms before each use.

A.09 Finishing

Strike-off the concrete with a transverse template resting upon the side forms. After striking-off the concrete to the required cross-section, finish it with floats and straightedges until the required

surface requirements have been obtained.

When the concrete surface is free from water and just before the concrete obtains its initial set, finish and lightly sweep the surface with a broom to produce a sandy texture. The longitudinal surface variations shall not exceed ¼ inch under a 12-foot straightedge, or 1/8 inch on a 5-foot transverse section. Ensure that the finished concrete surface will drain completely at all times.

Carefully finish the edges of the sidewalks, driveways, and median pavement, and round with an edging tool having a ½-inch radius.

Divide the surface of sidewalks into blocks using a grooving tool. Space the grooves approximately 5 feet apart to produce rectangular blocks unless otherwise directed by the Engineer. Cut the grooves to a depth of not less than 1 inch. Shape the edges of the grooves with an edging tool having a ¼-inch radius.

Place grooves in median pavement to be in line with corresponding joints in adjoining construction.

Unless otherwise shown on the Plans, place marks or grooves at right angles to the centerline of driveways and approximately 8 inches apart. Using a suitable marking tool, make these markings to be between 1/8 and ¼ inch in depth. A grooving tool, of 6 to 8 inches in width, with multiple grooves for grooving alternate strips 8 inches apart, may be used for this purpose. Remove irregularities caused by the edges of the marking tool using a wetted brush or wooden float. Round all marking edges.

Do not place grooves in the surface of sidewalks or driveways reinforced for beam action where the full thickness of concrete is required for strength.

Round the edges of the concrete at expansion joints with an edging tool having a ¼-inch radius. Remove all marks caused by edging. Clean the top and ends of expansion joint material of all concrete and trim the expansion joint material to be slightly below the surface of the concrete.

A.10 Protection and Curing

Forms may be removed as soon as their removal will not damage the concrete. Do not exert pressure upon the concrete when removing forms.

Perform curing and provide cold weather protection as specified in Part 5.

Do not allow pedestrians on concrete sidewalks, driveways, or medians until 12 hours after finishing the concrete. Do not allow vehicles or loads on any sidewalk, driveway, or median until the concrete has attained sufficient strength for such loads.

Construct and place barricades and protection devices as necessary to keep pedestrians and other traffic off the sidewalk, driveway, or median.

Repair all sidewalks, driveways, or paved medians damaged prior to final acceptance of the Project by removing concrete within groove limits and replacing it with concrete of the same type and finish as used in the original construction.

A.11 Backfilling

Immediately after removing the side forms, fill the spaces along the edges of the sidewalk or driveway with suitable material, placed in layers not exceeding 4 inches in loose thickness, and compact this material until firm and stable.

A.12 Final Cleanup

Perform final cleanup as specified in Part 1.

SECTION B – CEMENT CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER

DESCRIPTION

A.01 Description

This work consists of constructing Curb, Gutter, or Combined Curb and Gutter of Portland cement concrete.

MATERIALS

A.02 Materials

Provide materials that meet the applicable requirements of Part 6 and TDOT Specification Section 913, and as specified in:

Preformed Joint Filler.....	TDOT Section 905.01
Drain Pipe, Standard Strength	TDOT Section 914.04

To construct curb, gutter, and combined curb and gutter, use Class A concrete meeting the requirements of Part 6, with the following exception: when placing concrete with a curb extruding machine, the slump shall range from 0 to 3 inches.

The Contractor may adjust water and percentages of fine and coarse aggregate within the limits specified (fine aggregate may range from 40 to 65%) to allow satisfactory placement.

The Quality Control Representative must will make compressive strength test specimens in accordance with AASHTO T 23.

EQUIPMENT

A.03 Equipment

A. Forms

Except for the templates between 10-foot sections, use either wood or metal forms that meet the requirements of Part 7. For the templates, use 1/8-inch thick metal, of the same width as that of the curb, gutter, or combination curb and gutter, and that is not less than ¼ inch more in depth than the respective depth of the type curb and gutter being constructed. The templates shall have lugs or other devices to hold them in position during concrete placement and shall be

of a design that will allow their removal without damaging the concrete. For gutters, use a strike-off template, of the form and shape of the gutter, to shape the top surface of the gutter.

B. Compaction Equipment

Compact the subgrade using tamping or rolling equipment that will produce the desired results.

C. Mixing and Finishing Equipment

Use mixers that meet the requirements of Part 6. The Contractor may use a curb machine that will place the concrete in a satisfactory manner. Provide finishing equipment, including satisfactory floats, edgers, spades, and tamps.

CONSTRUCTION REQUIREMENTS

A.04 Preliminary Work

Perform Clearing and Grubbing, Removal of Structures and Obstructions, Excavation and Undercutting, and Embankment Construction as specified in Part 2.

A.05 Subgrade Preparation

Perform subgrade preparation for curb, gutter, and combined curb and gutter to the required depth, and to a width that will allow the installation and bracing of the forms. Shape and compact the subgrade to a firm, even surface, in reasonably close conformity with the grade and section shown on the Plans. Remove all soft and yielding material, replace it with acceptable material, and compact as required.

A.06 Expansion Joints

Form expansion joints at the intervals and locations shown on the Plans, using 1-inch thick preformed joint filler, unless otherwise specified. Place expansion joints in line with corresponding expansion joints in adjoining pavement or other construction. Cut joint filler to the full cross-section of the curb, gutter, or curb and gutter.

A.07 Limitations on Mixing

Comply with Part 6.

A.08 Mixing, Placing, and Finishing Concrete

Mix concrete as specified in Part 6.

Immediately before placing the concrete, thoroughly wet the subgrade, and apply a coating of light oil to the forms. Thoroughly clean and oil the forms before each use.

Place concrete as specified in Part 5, except that the mechanical spreader will not be required.

Place the concrete immediately after mixing. Spade and vibrate the edges, sides, or faces to thoroughly consolidate the concrete and bring the mortar to the surface. After vibrating, use a wooden float to give the surface a smooth and even finish.

Construct concrete curb, gutter, or combined curb and gutter, to be reasonably true to line, grade, and cross-section, and, unless otherwise shown on the Plans, in sections having uniform lengths of 10 feet. The length of these sections may be reduced to no less than 6 feet where necessary for closures. Carefully set the templates before placing the concrete and keep them in place until the concrete has set sufficiently to hold its shape. Remove templates while the forms are still in place. Remove the forms on the face of all curbs as soon as the concrete will hold its shape, and then use a wooden float on the surface to provide a smooth and even finish. No plastering is permitted. Unless otherwise specified, round the top edges of the curb and the edge of the gutter to a radius of ¾ inch. Finish the edges on each side of templates and expansion joint material with an edging tool having a radius of not over ¼ inch, and then remove all lines or marks with a wet brush. Finish the back of curbs not less than 3 inches below the top of backfill against the curb. Leave all exposed surfaces, against which some rigid type of construction is to be made, smooth and uniform to allow free movement of the curb, gutter, or combined curb and gutter.

Remove all tool marks with a wetted brush or wooden float and ensure that the finished surface presents a uniform and pleasing appearance.

When using curb machines, perform finishing as specified above, except that instead of constructing the curbs in sections, contraction joints may be sawed a minimum depth of ¼ the thickness of the section, at intervals of 6 to 10 feet.

Place weep holes or drainage openings through curbs as shown on the Plans or as needed. Place coarse aggregate behind each opening as needed.

A.09 Protection and Curing

Immediately after finishing the concrete, provide protection and perform curing as specified in Part 5.

Protect the curb, gutter, and combined curb and gutter until final acceptance. Repair concrete that is damaged before final acceptance by removing and reconstructing each 10-foot section that has been damaged.

A.10 Backfilling

Immediately after the concrete has set sufficiently and the forms have been removed, fill the space behind the curb or combined curb and gutter with suitable material, placed in layers not exceeding 4 inches in loose thickness, and compact until firm and stable.

A.11 Final Cleanup

Perform final cleanup as specified in Part 1.

SECTION C – CEMENT CONCRETE DITCH PAVING

DESCRIPTION

B.01 Description

This work consists of constructing paved ditches of Portland cement concrete on a prepared subgrade.

MATERIALS

B.02 Materials

Provide materials that meet the applicable requirements of Part 6.

For Portland cement concrete ditch paving, use Class A concrete meeting the requirements of Part 6.

EQUIPMENT

B.03 Equipment

A. Forms

Use forms of either wood or metal that meet the requirements of Part 6. To shape the top surface of the paved ditch, use a strikeoff template having the same form and shape as the ditch section.

B. Compaction Equipment

Compact the subgrade using tamping or rolling equipment that will produce the required compaction and shape.

C. Mixing and Finishing Equipment

Use mixers that meet the requirements of Part 6. Mechanical ditch paving machines may be used.

Provide finishing equipment, including satisfactory floats, edgers, spades, and tamps.

CONSTRUCTION REQUIREMENTS

B.04 Preliminary Work

Perform Clearing and Grubbing, Removal of Structures and Obstructions, Excavation

and Undercutting, and Embankment Construction as specified in Part 2.

B.05 Subgrade Preparation

Prepare subgrade for ditch paving to the required depth and to a width that will allow the installation and bracing of forms. Shape and compact the subgrade to a firm, even surface, in reasonably close conformity with the grade and section shown on the Plans or as directed by the Engineer. Remove all soft and yielding material, replace it with acceptable material, and compact as required.

B.06 Joints

Form joints at the intervals and locations shown on the Plans. Cut joint filler for expansion joints to the full depth of the ditch pavement.

B.07 Limitations on Mixing

Comply with Part 6.

B.08 Mixing, Placing, and Finishing Concrete

Mix concrete as specified in Part 6.

Before placing concrete, prepare the subgrade and forms as specified in Part 7.

Place the concrete immediately after mixing. After spading the edges and allowing the concrete to thoroughly consolidate, use a wooden float to give the surface a smooth and even finish.

Round the edges of the paved ditch to a radius of ½ inch, and finish edges along expansion and contraction joints with an edging tool having a radius of not over ¼ inch. Remove all edging tool marks with a float and brush.

B.09 Protection and Curing

Immediately after finishing the concrete, cure it as specified in Part 5.

Protect the ditch paving until final acceptance of the Project. Remove concrete that is damaged prior to acceptance by removing and reconstructing the damaged sections.

B.10 Backfilling

Immediately after the concrete has set sufficiently and the forms have been removed, fill the spaces on each side of the ditch paving with suitable material and compact thoroughly; or, if sod is specified, lay it in accordance with Part 8.

B.11 Final Cleanup

Perform final cleanup as specified in Part 1.

SECTION D – GUARDRAIL

DESCRIPTION

C.01 Description

This work consists of furnishing and erecting guardrail, and constructing anchor blocks and approach ends, of the specified kind and dimensions.

Guardrail includes appurtenant materials and work required to make connections with other guardrail or structures, as may be required to complete the Work shown on the Plans.

MATERIALS

C.02 Materials

Provide materials as specified in:

Metal Beam Guardrail .....TDOT Section 909.05
Guardrail Posts .....TDOT Section 909.07
Guardrail Hardware.....TDOT Section 909.08

Use Class A Portland cement concrete. Mix, place, finish, and cure concrete as specified in Part 6.

For all guardrail safety end treatment systems, provide certification from the supplier that the device meets the requirements of and is listed on the Tennessee Department of Transportation's Qualified Product List (QPL) or the Tennessee Department of Transportation Standard Drawings. In addition, submit detailed shop drawings for the QPL or Standard Drawing approved devices to the Project Engineer, and utilize a copy onsite during installation.

CONSTRUCTION REQUIREMENTS

C.03 Preliminary Work

Perform Clearing and Grubbing, Removal of Structures and Obstructions, Excavation and Undercutting, and Embankment Construction as specified in Part 2.

C.04 Posts

Provide posts of the shape, size, and dimensions shown on the Plans and/or the

approved Shop Drawings. Set posts reasonably true to the lines and grades shown on the Plans.

C.05 Installation of Posts

Before beginning any excavation or driving any guardrail post, determine the location of all underground electrical, drainage, and utility lines in the vicinity, and conduct work so as to avoid damaging these facilities. Dig or drill holes to the depth shown on the Plans and/or the approved Shop Drawings and to a size that will allow proper setting of the posts and sufficient room for backfilling and tamping. Alternatively, the Contractor may drive posts using approved methods and equipment, provided the posts are erected in the proper position and are free of distortion, burring, or other damage.

If solid rock is encountered while drilling post holes:

1. Within 18 inches of the ground surface, drill an oversized or elongated hole 24 inches into the rock. Set the post at the roadside edge of the hole, and backfill the hole with the cutting spoils.

    a. If using wooden posts, either drill a single oversized hole 23 inches in diameter, or three overlapping holes 10 inches in diameter, to a length of 23 inches.

    b. For steel posts, drill a single oversized hole, 20 inches in diameter, or three overlapping holes 8 inches in diameter, to a length of 20 inches.

2. Below 18 inches of the ground surface, drill holes 12 inches into the rock or to the depth shown on the Plans. The holes shall be 8 inches in diameter for steel posts, and 12 inches in diameter for wood posts.

3. When installing end terminals using tubes, install posts 1 and 2 to full depth or a minimum of 36 inches into the solid rock. Backfill the holes around the steel tube with the cutting spoils.

4. See approved shop drawings for additional information concerning post depth and hole size.

To validate proper installation of posts, for each guardrail contractor/installer doing work on City infrastructure, the City Engineer may select any post for verification. The Contractor will provide all equipment and personnel required for the pulling of the post. The Quality Control Representative will provide all equipment and labor necessary for all required testing.

If the posts are found to be in accordance with the Plans and Specifications, the Contractor may re-install the posts if they were not damaged during the pulling process. If the post length is found to be deficient, the City will require the contractor/installer to remove the entire run of guardrail or end terminal and replace it properly.

Backfill holes with selected earth or other suitable materials in layers not to exceed 4 inches in thickness. Thoroughly tamp each layer. After backfilling and tamping is complete, hold the posts or anchors securely in place.

For metal divider guardrail on bridges, bolt posts to the structure as shown on the Plans. Set the anchor bolts to the proper location and elevation, with templates, and carefully check after the median is placed and before the concrete has set.

Set anchor bolts for metal divider guardrail, to be placed on a previously constructed bridge, by drilling holes in the proper locations and anchoring the bolts as shown on the Plans.

Repair damaged coating on galvanized steel posts as specified in Part 7 or replace the posts, at the Quality Control Representative's direction.

C.06 Erection

Set guardrail anchors, and make and place attachments as shown on the Plans and/or approved Shop Drawings. Guardrail installed on new alignments is to be complete in place before the mainline roadway is opened to traffic unless otherwise directed by the Project Engineer. On roadways open to traffic, install each section of guardrail complete in place including end sections in a continuous operation.

Draw up tightly all bolts or clips used for fastening the guardrail or fittings to the posts. End bolts shall have sufficient length to extend at least ¼ inch through and beyond the full nut, except where such extension might interfere with or endanger traffic, in which case, cut off the bolt flush with the nut.

Erect, draw, and adjust all railings so that the longitudinal tension will be uniform throughout the entire length of the rail.

Guardrails that are installed on curves with a radius of 150 feet or less must be curved in the shop for Metal Deep Beam Single Guardrail and Protective Guardrail at Bridge Ends.

C.07 Final Cleanup

Perform final cleanup as specified in Part 1.

SECTION E – FENCES

DESCRIPTION

D.01 Description

This work consists of constructing fences, gates, and water crossings.

MATERIALS

D.02 Materials

Provide materials of the kind, size, and type shown on the Plans, including all necessary posts, fittings, and appurtenances.

Provide materials as specified in:

Portland Cement Concrete, Class A .....Part 6
Stock Fence .....TDOT Section 909.01
Chain-Link Fence .....TDOT Section 909.02
Fence Gates .....TDOT Section 909.03
Water Gates and Water Crossings .....TDOT Section 909.04

If galvanized material is damaged, the Contractor may repair damaged galvanized material as specified in Part 7.

CONSTRUCTION REQUIREMENTS

D.03 Preliminary Work

Before beginning construction or placing of fences, perform all necessary Clearing and Grubbing and Removal of Structures and Obstructions as specified in Part 2, respectively. Clearing for fence construction shall not extend beyond the right-of-way line. Do not disturb living trees and shrubs 1 foot or more on each side of the fence line unless otherwise directed by the Project Engineer. Locate the fence as shown on the Plans. Remove rock, which protrudes above the ground surface and is in the line of the fence, to the ground surface.

Turn fences in at drainage structures larger than 24” in diameter, height, or width so as to abut wingwalls and abutments.

Provide two-weeks notice to affected property owners before cutting existing fences. Install access control fences before cutting existing fences in areas used by domestic livestock, pets, or small children.

D.04 Setting Posts and Backfilling

Set line posts for stock fence at intervals not to exceed 10 feet. Erect braced line posts at intervals of 330 feet between end or corner posts, and, when necessary due to terrain features, install additional braced line posts as necessary. Measure the interval between posts parallel to the bottom of the fabric of the proposed fence and in line of fence from center to center of post.

Set posts for chain-link fence at intervals not to exceed 10 feet. Measure the intervals between posts as specified above for stock fence.

Install posts, shown on the Plans to be set in concrete, in dug or drilled holes of the size and to the depth shown on the Plans. For embedment of posts and for anchors, use Class A concrete meeting the requirements of Part 6. Construct the concrete embedment and anchors with a crown at the top to shed water.

If ground conditions allow, the Contractor may drive posts that do not require embedment to the required depth using approved methods, or otherwise shall install such posts in holes dug or drilled to the specified depth and to a size that will allow sufficient room for proper backfilling.

If solid rock is encountered, install posts by drilling the rock to the required depth and grouting the post therein with Portland cement grout composed of one part cement to three parts sand.

Backfill post holes for posts not requiring concrete embedment with selected earth or other approved material. Place backfill material in layers not exceeding 6 inches, and thoroughly tamp each layer. When backfilling and tamping is completed, secure the posts and anchors in the proper position.

Do not apply pull to posts set in concrete until the concrete has cured a minimum of 72 hours.

D.05 Erecting Fence

A. Stock Fences

Place fabric by securing or fastening one end and applying sufficient tension to remove approximately one-half of the tension curve in the wire before making permanent attachment elsewhere. Fasten the fabric and barbed wire to the posts as shown on the Plans. Tightly draw up all bolts and clips or ties used to fasten wire or fittings to the posts. Use bolts of sufficient length to extend at least ¼ inch through and beyond the full nut; however, where such extension might constitute a safety hazard, cut the bolt off flush with the nut.

B. Chain-Link Fence

Place the fabric by securing one end and applying sufficient tension to remove all slack before making attachment elsewhere. Fasten the fabric to the posts at intervals not exceeding 14 inches. When specified, connect the top rail with expansion sleeves to form a continuous rail,

and fasten the fabric to the rail at intervals not exceeding 2 feet. When using aluminum-alloy fabric, attach a tension wire to the bottom of the fabric by means of a hog-ring type fastener at a maximum of 2-foot intervals, and secure the wire at the terminal posts with brace bands.

Pull barbed wire taut before permanently attaching to a post or extension arm.

When chain-link or stock fences cross short depressions or ditches, construct water crossings or water gates of the type, at the locations, and in accordance with the Plans.

Construct and install fence gates as shown on the Plans.

D.06 Final Finishing and Cleanup

The Quality Control Representative will inspect fences after they have been placed in final position. Dispose of all excess or unsuitable material.

Perform final cleanup as specified in Part 1.

SECTION F – RIPRAP AND SLOPE PAVEMENT

DESCRIPTION

E.01 Description

Riprap consists of furnishing and setting or placing rubble stones, crushed stone, sacked sand-cement, machined riprap, and embedded riprap.

Slope Pavement consists of constructing a reinforced concrete mat on prepared slopes.

MATERIALS

E.02 Materials

To construct riprap and slope pavement, provide materials that meet the following:

A. Rubble-Stone Riprap

For Rubble-Stone Riprap, provide stone or broken Class A or paving concrete meeting the requirements of TDOT Specification Section 921.07. Ensure that at least 80% of the stone have a minimum dimension of 10 inches. The remainder shall be 2 to 4 inches and shall be approximately rectangular or trapezoidal in shape. Broken Class A or paving concrete shall be free of steel and wire fabric reinforcement.

For Rubble-Stone Riprap (Grouted), provide sand meeting TDOT Specification Section 903.01 or 903.02 and cement meeting TDOT Specification Section 901.01.

B. Sacked Sand-Cement Riprap

For Sacked Sand-Cement Riprap, provide manufactured or natural sand meeting the quality requirements of TDOT Specification Section 903.01 or 903.02 and cement meeting TDOT Specification Section 901.01.

Use sacks of either cotton or jute, standard grade of cloth, that will hold the sand-cement mixture without leakage during handling and tamping. Sacks shall be strong and sized to hold approximately 1 cubic foot.

C. Reinforced Concrete Slope Pavement

Construct reinforced concrete slope pavement of Class A concrete meeting Part 6 and steel reinforcement meeting TDOT Specification Section 907.01 or 907.03, whichever is specified.

Preformed expansion joint filler shall meet TDOT Specification Section 905.01.

D. Curing Materials

Provide materials meeting TDOT Specification Section 913.

E. Machined Riprap

For Machined Riprap, provide clean shot rock that is essentially free of sand, dust, and organic materials, and that is of the size designated for the class specified. The stone shall be uniformly distributed throughout the size range. Construct the stone layer to the thickness designated for the specified class, as defined in Part 7 unless otherwise noted on the Plans.

Provide washed or clean rock for sensitive areas of the Project, as shown on the Plans, described in permits, or designated by the Project Engineer. Obtain the Project Engineer's approval of washed or clean rock before placing in environmentally sensitive areas.

When using rock or stone as riprap, ensure that the material meets the quality requirements in TDOT Specification Section 903.25.

E.03 Classification

Riprap is classified according to the following designations:

1. Rubble-Stone Riprap (Grouted)

2. Machined Riprap

   a. Machined Riprap (Class A-1) shall vary in size from 2 inches to 1.25 feet with no more than 20% by weight being less than 4 inches. The thickness of the stone layer shall be 1.5 foot with a tolerance of 3 inches.

   b. Machined Riprap (Class A-2) shall be identical to Class A-1 except that the Contractor may substitute hand placed rubble stone riprap placed 1 foot thick in accordance with Part 7 for 1.5 feet of machined riprap.

   a. Machined Riprap (Class A-3) shall vary in size from 2 to 6 inches with no more than 20% by weight being less than 4 inches. The thickness of the 4-inch stone layer shall be as shown on the Plans.

   b. Machined Riprap (Class B) shall vary in size 3 inches to 2.25 feet with no more than 20% by weight being less than 6 inches. The thickness of the layer shall be 2.5 feet with a tolerance of 4 inches.

   c. Machined Riprap (Class C) shall vary in size from 5 inches to 3 feet with no more than 20% by weight being less than 9 inches. The thickness of the layer shall be 3.5 feet with a tolerance of 6 inches.

EQUIPMENT

E.04 Equipment

Provide wooden or metal tamps of sufficient weight and number to properly compact the slopes on which the riprap or slope pavement is to be placed.

When using sacked sand-cement, furnish wooden hand tamps, having a tamping face not greater than 1 square foot, and of sufficient weight and number to properly tamp the riprap.

Provide a mechanical mixer to mix concrete, cement grout, or sand-cement. Provide all necessary small tools or implements to perform the work.

CONSTRUCTION REQUIREMENTS

E.05 Foundation Preparation

Immediately before constructing riprap or slope pavement, trim the slopes or ground surface within reasonably close conformity to the lines and grades shown on the Plans, and thoroughly compact the slopes or ground surface using hand or mechanical tamps.

On slopes, place the bottom of the riprap at least 2 feet below the natural ground surface.

E.06 Rubble-Stone Riprap (Grouted)

A. Placing Stone

Construct Rubble-Stone Riprap (Grouted) by hand on the prepared foundation. Place the stones as close together as is practicable to minimize voids.

When constructing rubble-stone riprap in layers, tie the layers together using large stones protruding from one layer into the other.

Construct rubble-stone riprap to a standard depth of 12 inches, unless otherwise shown on the Plans or directed by the Engineer, but in no case to less than 10 inches in depth. Ensure that, for each 25 square feet of surface, Rubble-Stone Riprap has an average depth of not less than the depth shown on the Plans, or the standard depth required in these Specifications.

Place each stone with the larger dimension parallel to the surface upon which it is set, except as set forth above to provide keys between layers. Set each main stone against the adjoining stones to provide close contact. Place stone so as to equally distribute the large stones to the extent possible.

After a workable area of the riprap has been set, shape the stones by knapping to a uniform surface. Thoroughly chink the voids and fill with the smaller stones and spalls. Continue this work as construction progresses.

B. Grouting

After chinking and filling, fill the voids between the stones with grout. Take care to prevent earth or sand from filling the spaces between the stones before the grout is poured.

To fill the voids, use grout composed of one part Portland cement and four parts sand, measured by volume, and mixed thoroughly with sufficient water to make a grout of a consistency that will flow into and completely fill the voids.

Mix this grout either in a one-bag mixer or larger for not less than 1-1/2 minutes.

Immediately before pouring the grout, sprinkle the stones with water. Pour the grout carefully into the voids between the stones, beginning at the lower portions of the riprap and progressing upward. Ensure that the entire bottom line of voids is filled with grout before pouring the line of voids next above. To pour the grout, use vessels of adequate size and shape. Broadcasting, slopping, or spilling of grout from the vessels on the surface of the riprap will not be permitted. Progress of pouring shall be sufficiently slow to prevent the grout from oozing from the voids and flowing over the surface. During the pouring operations and continuing until the grout has reached its initial set, use fiber brooms to maintain a uniform distribution. Continue the grouting operations until all the voids have been completely filled and the grout has set even with the surface of the riprap.

C. Curing

As soon as any section of the grouted riprap has hardened sufficiently, sprinkle it with water until the riprap has been covered with burlap, cotton, or jute mates, earth, or liquid membrane-forming compound. Maintain the mats or earth by soaking with water for a period of not less than 72 hours. The water used for wetting and curing the grouted riprap shall be free from salt or alkali.

E.07 Reinforced Concrete Slope Pavement

Construct Reinforced Concrete Slope Pavement as shown on the Plans and in accordance with the applicable requirements of Part 6, except that the concrete shall be of such consistency that it will not flow on the slope and that will allow finishing to the thickness shown on the Plans.

Score or saw the slope pavement for a depth of 1 inch on 6-foot centers, both ways, or as directed by the Engineer. Use a ½-inch preformed expansion joint filler wherever the slope pavement abuts a portion of the bridge sub- structure.

Remove forms, which may be of wood or metal, after the concrete has set. Cure the concrete as specified in Part 5**.**

E.08 Machined Riprap

Take care in preparing the riprap subgrade to ensure that no reduction in the design waterway occurs. Do not place any riprap until the final subgrade elevation has been verified. Roll the riprap down with metal tracked equipment to provide a more dense stone mass with final contours in reasonable conformance to the Plans. Do not begin to place the super-structure until the Quality Control Representative has accepted the final elevation of the riprap.

Upon completion of the work, visually inspect to ensure that approximately 50% of the surface area consists of stones no smaller than half of the maximum size specified.

Dump and place the material using appropriate power equipment in a manner that will produce a uniform surface appearance. Hand work may be required to correct irregularities.

When preparing the site, adhere to the provisions for erosion control specified in Part 2 and for channel excavation specified in Part 2.

When required by the Plans or permits, properly tamp into the subsurface, or otherwise blend into the substrate, embedded riprap in streams, conveyances, diversions, or other sensitive areas. Ensure that water will flow over the embedded riprap and that flow is not lost below or within the rock. If clean rock is required by the Plans or permit, provide rock that meets the provisions of Part 7 for clean rock.

E.09 Final Cleanup

Perform final cleanup as specified in Part 1.

SECTION G – UNDERDRAINS

DESCRIPTION

F.01 Description

This work consists of constructing underdrains composed of stone, gravel, slag, sand, or any one of these materials and perforated pipe, semi-circular drain pipe (with connections), or filter cloth, on prepared foundations at the locations shown on the Plans or as directed by the Engineer. The work shall include all necessary excavation and backfill, together with such work and materials as may be necessary to make connections with other drainage structures, as shown on the Plans.

MATERIALS

F.02 Materials

Provide materials as specified in:

Aggregate for Underdrains ..... TDOT Section 903.17
Joint Mortar ..... TDOT Section 905.02
Pipe (Size shown on the Plans)..... TDOT Section 914.03, 914.07, 915.02, 915.03
Polyvinyl Chloride (PVC) Underdrain Pipe .....TDOT Section 914.09
Geotextile.....TDOT Section 921.12

F.03 Kinds and Sizes of Underdrains

Construct underdrains of the kinds specified. Unless otherwise specified, circular pipe for underdrains shall have a diameter of 4 inches. Semi-circular pipe for underdrains shall have a diameter of 4-5/8 inches. In the case of pipe, consider the size to mean the nominal inside diameter.

CONSTRUCTION REQUIREMENTS

F.04 Aggregate Underdrains

Excavate trenches to receive the aggregate at the locations and to the dimensions shown on the Plans or as directed by the Engineer. Make the trench deep enough to intercept the water-bearing strata and provide it with a smooth and uniform finish.

Place aggregate meeting the requirements of TDOT Specification Section 903.17 in the trench in 6-inch layers to the depth shown on the Plans. Tamp each layer with an approved tamp.

Do not construct any underdrains that will not be paved over during the same construction season.

F.05 Aggregate Underdrains (with Pipe)

Excavate the trench to receive the pipe at the locations shown on the Plans. If the Plans do not show dimensions, construct the width of the trench to be not less than the outside diameter of the pipe

plus 12 inches. Make the trench deep enough to intercept the water-bearing strata and to allow installation of the pipe and cover material. Unless otherwise shown on the Plans, spread a 2-inch layer of aggregate on the bottom of the trench, compact it, and bring to a uniform grade.

Ensure that the pipe is firmly embedded in the layer of aggregate. Lay perforated pipe with the flow sector and perforations at the bottom.

If an underdrain is extended through a dry fill or other section where perforated pipe is undesirable, construct the underdrain with the pipe specified, and join sections by forming mortar joints or approved manufactured joints, or by using connecting bands.

After the pipe has been laid and approved, carefully backfill around the pipe with the specified aggregate in a manner that will not displace the pipe. Place the aggregate around and over the pipe in 6-inch layers. Thoroughly tamp each layer with a vibratory compactor.

Make lateral and other connections where shown on the Plans.

F.06 Filter Cloth and Aggregate Underdrain (with and without Pipe)

A. Trench Excavation

Excavate trenches at the locations and to the depth and width shown on the Plans. Prepare the sides and bottom of the trenches to a relatively smooth condition, free of sharp objects, obstructions, depressions, and debris that might damage the filter cloth during installation.

Dispose of material removed from the trench outside of the right-of-way at locations obtained by the Contractor unless the Engineer authorizes its disposal within designated locations.

B. Filter Cloth

Place geotextile meeting TDOT Specification Section 921.12 with the long dimension parallel to the centerline of the channel, laying it loosely without wrinkles or creases. When more than one width of filter cloth is necessary, overlap the joints a minimum of 12 inches. Insert securing pins with washers through both strips of overlapped material and into the material beneath, until the washer bears against the cloth and secures it firmly to the base material. Insert these securing pins through the overlapped cloth at not greater than 2-foot intervals along a line through the midpoint of the overlap.

Protect the cloth at all times during construction to prevent contamination by surface runoff. Remove contaminated cloth and replace with uncontaminated cloth at no cost to the Department. Replace cloth damaged during installation at no cost to the Department. Drop stone for overlaying on the cloth from a height no greater than 3 feet. Place the cloth so that the downstream edges overlap the upstream edges.

Install the filter cloth so that all splice joints are provided with a minimum overlap of 3 feet. Overlap the closure at the top of the trench as shown on the Plans, and secure with mechanical ties. Where outlet pipe passes through the fabric, use a separate piece of fabric of sufficient size to be wrapped around the pipe and flared against the side of the filled drain fabric.

Anchor field splices of filter cloth with securing pins as directed to maintain the required

overlap. Take care when placing the aggregate filler and installing the pipe (when specified) to prevent damage to the filter cloth. To repair a torn, punctured, or otherwise damaged section, cut a piece of filter cloth large enough to cover the damaged area and overlap all around the damaged area a minimum of 12 inches.

C. Aggregate Underdrain

Place the aggregate in 6-inch layers, and compact each layer using a vibratory compactor before making the filter cloth closure at the top of the trench. Protect the exposed end of the outfall pipe by an endwall matching the existing slope.

Bevel the end of the outfall pipe to fit the slope of the endwall. Should the outlet end of the pipe or the endwall fall within the limits of ditch paving, remove to neat lines that portion of the ditch paving within the endwall limits necessary to provide a connection with the new endwall, and make the endwall blend with the ditch paving.

F.07 Final Cleanup

Dispose of all excess or unsuitable material. Perform final cleanup as specified in Part 1.

SECTION H – TEMPORARY TRAFFIC CONTROL

DESCRIPTION

H.01 Description

This work consists of furnishing, erecting, and maintaining all construction warning signs, barricades, flexible drum channelizing units, temporary pavement markings, and other traffic control devices in accordance with the provisions of the current edition of the MUTCD, including all addenda, or as shown on the Plans or as directed by the Project Engineer for the purpose of safely directing traffic through construction zones. This work shall include installing additional devices as necessary in construction work zones.

MATERIALS

H.02 Materials

Provide traffic control and marking devices in accordance with the current edition of the MUTCD, except as herein modified.

Provide materials as specified in:

Signs:

Aluminum.....TDOT Section 916.02
Reflective Sheeting.....TDOT Section 916.06
Paint.....TDOT Section 916.09
Cold Rolled Carbon Steel -16 gauge ..... ASTM A1008
Non-metallic Drums and Barricades .....TDOT QPL
Reflective Sheeting.....TDOT Section 916.06

A. Sign Sheeting Material

Sign sheeting material for all temporary construction signing shall be Type B or better, Fluorescent Orange color meeting the requirements of AASHTO M 268. Provide new or previously used sign sheeting that is in good condition.

B. Temporary Pavement Marking Material

Unless otherwise specified, the material for pavement marking line shall be either temporary pavement marking tape, or reflectorized paint with raised reflective pavement markers placed as shown on the Plans.

Where Removable Pavement Markings are specified, provide materials listed on the TDOT Qualified Products List (QPL).

C. Cones

Cones shall be a minimum of 28 inches high and weighted at the base.

D. Portable Barrier Rail

Portable barrier rail shall meet the requirements of and be listed on the TDOT Qualified Products List (QPL) or TDOT Standard Drawings.

Do not use different shapes, lengths, or connections of rail in the same continuous run.

E. Portable Impact Attenuators

Portable impact attenuators shall be in accordance with the Plans and Project Specifications, meet the requirements for the appropriate test level, and meet the requirements of and be listed on the TDOT Qualified Products List (QPL) or TDOT Standard Drawings.

F. Sign Supports

Stationary sign supports shall be steel posts meeting TDOT Specification Section 916. Do not use wood for stationary or portable sign supports. Provide portable sign supports that meet the requirements of and are listed on the TDOT Qualified Products List (QPL) or TDOT Standard Drawings. In splicing supports, use 5/16-inch diameter galvanized ASTM A449 (SAE J429 Grade 5) or galvanized ASTM F3125 Grade A325 bolts.

G. Vertical Panels

The substrate material for vertical panels shall be aluminum, meeting the requirements of TDOT Specification Section 916.02, or a high density copolymer polyethylene. The high density copolymer polyethylene shall be flexible and shatterproof for temperatures to -50 °F (ASTM D746). The reflective sheeting shall be AASHTO M 268 Type B or better, meeting the requirements for Fluorescent Orange material as specified in TDOT Specification Section 916.06. Attach the vertical panel (aluminum or copolymer) to a steel "U" post (weight 2.0 pounds per foot) meeting the requirements of TDOT Specification Section 916.03.

H. Flexible Drums, Flashing Arrow Boards, and Changeable Message Signs

Select Flexible Drums, Flashing Arrow Boards, and Changeable Message Signs that meet the requirements of and are listed on the TDOT Qualified Products List (QPL) or TDOT Standard Drawings.

CONSTRUCTION REQUIREMENTS

H.03 General

Prior to beginning work in or adjacent to public roadways, prepare and submit a Traffic Control Plan in accordance with the requirements of the Part 1 section of these specifications "Traffic Control Plans".

Erect signs in a workmanlike manner such that all supports are plumb, sign panels are generally perpendicular to the travelway, and legends are horizontal so that they effectively convey the intended message. Do not display advanced warning signs more than 48 hours before physical construction begins. The Contractor may erect signs up to one week before needed, if the sign face is fully covered. Ensure that the sign sheeting is free of any damage that would reduce the reflectivity. Do not use overlay plates on signs. Mount signs on stationary or portable supports dependent on the type work being performed. Drive sign supports a minimum of 3.5 feet into soil or 1 foot into solid rock. Where soil and solid rock are both encountered, the depth of the sign support in the ground shall be:

$$d_1 + 3.5d_2 = 42$$

where

d_1 = depth in inches of support in soil
d_2 = depth in inches of support in solid rock

The Contractor may splice stationary U-Post sign supports that are 3 lbs/ft or less, provided the splice is a minimum of 18 inches. In addition, drive the stubs for the splice as required above and so as not to extend above 18 inches from ground level. A splice is only allowable with U-Posts and shall not be permitted for any other post types (square tube, round post, I-beam, etc.). Fasten the splice with four bolts, two placed at each end of the splice. In general, work being performed at spot locations and of short duration will necessitate the use of portable supports properly weighted for stability.

During periods of non-use, remove warning signs and other devices from the work area, and cover or otherwise position them so they do not convey their message to the traveling public and do not present a safety hazard to drivers. If covered, maintain the covering material in a neat and workmanlike manner during its use. The method of covering the sign face shall not deface or damage the sheeting of the sign.

Use flashing or steady burning lights to light barricades and other devices that require lighting. Procure and bear the expense of a continuous power source.

A. Flaggers

Provide flaggers with proper attire and paddle when necessary to safely handle traffic through the construction zone. Ensure that flaggers are trained and certified in flagging operations by one of the following training programs:

1. American Traffic Safety Services Association (ATSSA)
2. National Safety Council (NSC)
3. Tennessee Transportation Assistance Program (TTAP)
4. ABET Accredited University Programs

The City will accept flagger training programs developed and conducted by construction industry associations, consultant organizations, and contractors if they have an established, written program that meets all MUTCD requirements and Department Policy.

Coordinate flagging operations in a manner that causes as little delay to the traveling public as possible. Delays shall be kept within 2 minutes or ¼ mile, but shall not exceed 5 minutes or a 1 mile maximum, unless prior authorization is granted by the City.

B. City of La Vergne Uniformed Law Enforcement Officers

The City of La Vergne is not obligated to provide on-duty city police department personnel for traffic control on construction projects regardless of whether it is a city-funded project. In the event that the City determines that police personnel being on-site for traffic control is in the best interest of public safety, then the city has the right and authority to place them as needed. In that event, please note the following:

1. Any uniformed police officers on-site are not under the authority of the Contractor.
2. The Contractor must comply with any direction given to them by police officers on site.
3. In the event that a city police presence is determined by the City to be required due to the Contractor not complying with the accepted Traffic Control Plan or any other negligence on the part of the Contractor which is determined by the City to be detrimental to public safety, then an immediate stop work will be issued, regardless of the status of work, and that stop work order will not be lifted until a traffic control system which is acceptable to the City is in place and operational.

C. Flashing Arrow Board

Install Flashing Arrow Board(s), meeting all requirements of the MUTCD, at the locations shown on the Traffic Control Plan or as directed by the Project Engineer. Ensure that the Flashing Arrow Board(s) will perform as specified herein. Correct or immediately replace all Flashing Arrow Boards that exhibit any type of malfunction, including improper dimming.

The Flashing Arrow Board shall be capable of displaying the following configurations:

1. Right Arrow – ten lamps flashing in unison forming an arrow
2. Left Arrow – ten lamps flashing in unison forming an arrow
3. Double Arrow – five lamps in each arrow head and three lamps in a common shaft all flashing in unison
4. Four Point Caution – four outermost corner lamps flashing in unison

Use the Flashing Arrow Board(s) in the single arrow mode for lane closure only, and situate and align them so that the flashing arrow is clearly visible and legible. The single arrow mode display shall have ten lamps flashing in unison. Do not use the sequential arrow configuration, chevron arrow configuration, and horizontal bar configuration. The flash rate shall not be less than 25 flashes per minute or more than 40 flashes per minute. Minimum lamp "on-time" shall be 50% of the cycle.

Mount the Flashing Arrow Board(s) so as to provide a minimum of 7 feet between the bottom of the panel and the roadway.

D. Signs

Portable signs may be used when the duration of the work is less than 3 days. Ensure that all

portable signs and sign mounting devices used in work meet the requirements of and are listed on the TDOT Qualified Products List or TDOT Standard Drawings. When not being used, remove portable signs from the clear zone. Do not turn signs sideways or backwards while the signs are in the clear zone. Mount portable interim signs a minimum of 1 foot above the level of the edge of traveled way and at the height recommended by the manufacturer's crashworthy testing requirements.

All regulatory sign blanks shall be rigid.

Make every effort to eliminate the use of interim signs as soon as the Work allows for the installation of permanent signs.

Maintain existing street name signs at street intersections.

Cover all signs or portions of a sign(s) that are not applicable to the Traffic Control Plan so as not to be visible to traffic, or remove such sign(s) from the roadway when not in use.

Do not remove existing signs and supports without the City Engineer's prior approval. Store and protect all existing signs and supports that are to be removed if this material will be required later in the Work.

Furnish, install, reuse, and maintain interim guide, warning, or regulatory signs required to direct traffic in accordance with the MUTCD. Mount the bottom of all interim signs at least 7 feet above the level of the pavement edge when the signs are used for long-term stationary operations as defined in the MUTCD.

Maintain existing guide and exit directional signs on the Project until conditions require a change in location or legend content. When change is required, the signs shall be in accordance with the Traffic Control Plan. When an existing guide and exit directional sign is in conflict with work to be performed, remove the conflicting sign and reset it in a new, non- conflicting location.

When it is not possible to use existing signs, either in place or relocated, furnish, erect, maintain, modify, relocate, and remove new interim guide and exit directional signs as shown on the Plans, the Traffic Control Plan, or as directed by the Project Engineer.

Complete the installation of new permanent guide and exit directional signs, and the permanent modification or resetting of existing guide and exit directional signs, when included in the Contract, as soon as practicable to minimize the use of interim guide and exit directional signs.

E. Worker Visibility and Safety

Ensure that all workers within or approaching the project limits, who are exposed to either vehicular traffic or to construction equipment in or adjacent to the work area, wear high-visibility safety apparel. Consider high-visibility apparel to be personal protective clothing that meets performance Class 2 or Class 3 of the ANSI/ISEA 107 publication. Provide Class 3 apparel for night work.

F. Portable Barrier Rail

Place all portable barrier rail as far away from the travel lanes as possible while serving the intended purpose. No portion of the barrier may be within 2 feet of the demarcated travelway or, in the absence of clear demarcation, the edge of asphalt or gravel paving. Move or remove all portable barrier as soon as possible after they are no longer needed but in no case may portable barrier rail be in place more than 72 hours after construction in the affected area is complete or suspended.

G. Lane Closures

Hold the length of a lane closure to the minimum length required to accomplish the Work. Locate advanced warning signs for the Project so as to not overlap with the advanced warning signs for lane shifts and lane closures.

Use drums in all transition tapers for lane closures on multi-lane roads.

Contractor's Staff performing a lane closure shall have certifications that meet the requirements in the following table to close lanes on public facilities and shall be onsite during each lane closure performed.

Table: Lane Closure Certification Requirements

Type of Facility	Requirement
Two Lane	Flagging Operations Certification (Shall comply with the requirements of this section)
Multi-Lane	*ATSSA Traffic Control Technician Training or equivalent
Controlled Access Freeways & Expressways	*ATSSA Traffic Control Technician Training or equivalent

* Proof of certification shall be available and provided to the City Engineer upon request.

H. Night Work Lighting

When the Contract requires night work, supply sufficient lighting and equipment as specified herein.

1. **Lighting Plan.** Submit the following information regarding the lighting plan to the City Engineer at least seven full calendar days prior to commencing work:

    a. Descriptions and sketches of the layout of lighting devices including spacing, luminary height, lateral placement, and anticipated illuminance provided.

    b. Photometric and physical specifications of all lighting equipment.

    c. Detailed description of all lighting to be used on construction equipment.

    d. Methods to be employed to reduce glare.

    e. Contractor's frequency and procedure for checking illumination levels.

2. **Protective Equipment and Lighting.** In addition to their standard protective equipment, equip construction personnel and equipment as follows:

a. Traffic Control Persons, all equipment operators, and all other workers shall:

   (1) Wear high-visibility apparel that meets performance Class 2 or Class 3 of the ANSI/ISEA 107 publication. Class 3 apparel shall be required for night work.

   (2) Have a minimum of 12 square inches of reflective material added to their hard hats that is visible from all sides.

b. Also equip Traffic Control Persons with:

   (1) A flashlight complete with semi-transparent red cone, and

   (2) Radios or cell phones so that they may communicate with each other.

c. All workers shall receive specific training on night work operations.

d. All vehicles in the work area must operate rotating or flashing incandescent amber lights visible in 360 degrees around the vehicle.

e. All work vehicles including trucks must have red and white reflective tape applied to all sides such that it defines the outline of the vehicle.

Provide the equipment specified in the following table with non-glare balloon style lights or equivalent. The lights will be required on each piece of equipment in operation.

Table: Night Work Lighting Requirements

Equipment Type	Illuminance Requirement
Paver, Milling Machine, Material Transfer Devices	One 4000-watt assembly or two 2000-watt assemblies
Grader, Roller, Rumble Strip Machine, Shoulder Machine	One 400-watt assembly
Paint truck	One 400-watt assembly or a non-glare 300-watt floodlight assembly
Guardrail driver, stationary operation	One 4000-watt assembly or two 2000-watt assemblies or equipment light plant
Trail Vehicle	One 4000-watt assembly or two 2000-watt assemblies

A trail vehicle will be required to follow the last piece of equipment in a mobile operation (i.e. finish roller, pavement marking, etc.) depicting the beginning of the working area. In addition,

ensure that portable lighting of at least 400 watts is available for the density testing inspector. The Engineer will determine the illuminance requirement for other vehicles not listed in the above table. The Contractor may substitute a 400-watt metal halide lamp or equal for a 2000 or 400-watt balloon light assembly.

Locate and direct all luminaries in such a way to minimize glare to both motorists and work vehicles. If glare is noted from any travel path, adjust the lighting to reduce the glare.

Replace non-functioning lamps immediately. Check the luminary aiming daily. Regularly clean the luminaries.

I. Specification Compliance

The Engineer will notify the Contractor of failure to comply with this Specification or the Plans. The safe passage of pedestrians and traffic through and around the temporary traffic control zone, while minimizing confusion and disruption to traffic flow, shall have priority over all other Contractor activities. Continued failure of the Contractor to comply with the requirements of the Traffic Control Standard Specification or Special Provisions will result in non-refundable deductions of monies from the Contract for non-performance of Work as long as the deficiency remains.

Failure of the Contractor to comply with this Specification or take immediate correction actions required within 48 hours of written notice shall be reason for the Engineer to suspend all other work on the Project, except erosion prevention and sediment control and traffic control, to apply non-refundable deductions of monies from the Contract at a rate of $2,500 per calendar day per notice, and to withhold payment of monies due to the Contractor for any work on the Project until traffic control deficiencies are corrected. These other actions shall be in addition to the deductions for non-performance of traffic control.

H.04 Pavement Marking Removal

Remove conflicting pavement markings to prevent confusion to vehicle operators.

Remove final surface pavement markings by sand blasting, water blasting, or acceptable grinding methods that will cause the least possible damage to the pavement.

Remove intermediate surface pavement markings by sand blasting or water blasting, or other methods that will cause the least possible damage to the pavement. The following methods are acceptable for removing intermediate surface pavement markings: sand blasting using air or water, high pressure water, steam or superheated water, or mechanical devices such as grinders, sanders, scrapers, scarifiers, and wire brushes.

Repair damage to the pavement or surface resulting from pavement marking removal. The removal shall not result in what appears to be a line that conflicts with the current markings.

Accomplish traffic shifts on the final surface using interim traffic marking tape unless otherwise shown on the Plans.

Do not remove an existing pavement marking by painting over with black paint or asphalt.

When the method of removal causes sand or other material to accumulate on the pavement, remove the residue as the work progresses.

H.05 Temporary Centerline and Lane Marking

Unless otherwise specified, install temporary pavement marking as follows:

1. Provide 4-inch wide pavement marking line as shown on the Plans for projects that will have traffic maintained overnight. For temporary pavement line markings on intermediate layers of pavement, use reflective tape, reflectorized paint, and raised pavement markers, or a combination thereof, and install to permanent standards before dark hours. Short, unmarked sections will not be allowed. Preserve established no-passing zones, if any, on the existing pavement; if no-passing zones have not previously been established andf are shown on the Traffic Control Plans, establish them before beginning the work. Mark two-lane, two-way highways with 10-foot long center lines applied on 40-foot centers and appropriate no-passing barrier lines.

2. Where required on the completed permanent surface, for 10-foot lane lines, no-passing barrier line, and edge line, use reflectorized paint applied as specified herein.

3. Maintain pavement markings until they are covered by the subsequent paving course or the Project is accepted.

4. It will not be necessary to remove pavement markings except for markings that convey conflicting or incorrect information to the traveling public.

H.06 Maintenance

Assume full responsibility for the continuous and expeditious maintenance of all signs, barricades, temporary impact attenuators, and all other traffic control devices to meet the "acceptable" category as described in *Quality Guidelines for Temporary Traffic Control Devices and Features* published by ATSSA. Failure to maintain all traffic control devices so as to provide continuous safety to the public will be cause for suspension of construction operations until proper traffic control is re-established.

H.07 Adjustment to Plans

Maintain traffic through the Project in accordance with the traffic control plan and the MUTCD. To request a change to the traffic control plan, submit a plan revision request in writing to the City Engineer for acceptance, with the requested change marked in red on the traffic control plans sheets. The City Engineer may adjust the traffic control plan as deemed necessary to ensure the safety of the workmen and traveling public.

SECTION I – ROADWAY SIGNING

DESCRIPTION

I.01 Description

This work consists of constructing foundations and supports, fabricating, furnishing, assembling, and erecting traffic signs on the supports, including delineators when specified.

Construct and erect roadway signs and devices in accordance with these Specifications and the MUTCD, latest edition.

MATERIALS

I.02 Materials

Provide materials as specified in:

Portland Cement Concrete, Class A .....Part 6
Highway Signing Material ..... TDOT Section 916

CONSTRUCTION REQUIREMENTS

I.03 Construction Methods and Requirements

Before beginning any excavation or driving any sign posts, determine the location of all underground electrical, drainage, and utility lines in the vicinity, and perform work so as to avoid damaging these facilities.

Locate delineators in accordance with the MUTCD**.**

Place the top of all sign footings level with the ground line. Remove the existing footings of signs to be eliminated to 6 inches below ground line.

Ensure steel meets all specifications in Part 6.

A. Flexible Delineator Posts

Drive the flexible delineator posts or anchors into the ground with equipment that does not damage the posts, anchors, or the reflective sheeting. Drill or form pilot holes where necessary to obtain the embedment shown on the Plans.

B. Post Supports for Ground Mounted Signs

Furnish and erect post supports consisting of one or more posts of the type required.

Drive all posts into the ground, or bolt to a stub in the concrete foundation. Plumb, align, and orient posts as shown on the Plans. To drive posts, use a method that will not damage or deface the top of the post.

For sign posts that are to be bolted to or stubbed in a concrete foundation, excavate as nearly to neat lines as possible and generally pour all parts of the sign post foundation against the soil or rock face. Use forming below ground level in sandy soils or when directed by the Engineer. Forming will be required for all concrete work above the finished ground level and the top 12 inches of all concrete work. Provide necessary braces to keep anchor bolts and stubs in proper position. For foundations, use Class A concrete, meeting the requirements of Part 6. Perform forming and concrete work as specified in Part D. Remove and dispose of all surplus excavated material.

Repair all cracked, chipped, or scratched galvanized steel members by "touching-up" with an approved zinc powder, wire, stick, or spray manufactured especially for this purpose. The zinc powder, wire, or stick shall become completely liquid at a temperature no greater than 475 °F. Thoroughly clean the area to be regalvanized, including removing slag on welds, and repair according to the recommendations of the manufacturer of the material being used.

C. Foundations for Sign Supports

Furnish all materials and labor, and perform all necessary construction to complete the foundations upon which the sign supports will be erected.

1. **Excavation and Backfill.** Excavate and backfill as specified in Part 2.

2. **Disposing of Surplus or Unsuitable Material.** Dispose of surplus or unsuitable material as specified in Part 2.

3. **Forms.** Construct forms as specified in Part 6.

4. **Steel Reinforcement.** Provide steel reinforcement as specified in Part 6.

5. **Electrical Conduit.** Install electrical conduit, when specified, in the foundations as shown on the Plans.

6. **Concrete.** Use either (1) Class A concrete meeting the requirements of Part 6 or (2) Class X concrete with a f'c as identified in the plans or required by the design. If Class X concrete is required, use a mix meeting the minimum requirements of Part 6 for Class A concrete, but with a cementitious material quantity necessary to produce the specified strength.

7. **Placing Concrete.** Place concrete as specified in Part 6.

8. **Setting Anchor Bolts and Stubs.** Set anchor bolts and stubs for sign supports to proper locations and elevations with templates, and carefully check them after constructing the sign foundation and before the concrete has set. Anchor rods shall conform to the requirements of this Part.

9. **Surface Finish.** Perform finishing as specified in Part 6.

10. **Curing.** Cure concrete as specified in Part 6.

D. Signs

Furnish, fabricate, and erect signs on their supports.

When alternates are allowed, all legends, borders, and accessories for an entire project shall conform to the requirements of one and only one of the alternates.

Mechanically apply the reflective sheeting to the properly prepared aluminum with the equipment and in the manner prescribed by the sheeting manufacturer.

All completed signs shall be free from defects in materials and workmanship and shall effectively present the specified message under conditions of both day and night viewing. Reflectorized sign surfaces shall exhibit uniform color and brightness over the entire background surface and shall not appear mottled, streaked, or stained when viewed either in ordinary daylight or in the incident beam of an automobile headlamp.

The reflectorized legend optical performance shall uniformly reflect incident light from motor vehicle headlamps back to the eyes of the operator at entrance angles up to 30 degrees without gaps or irregularities.

Position signs on, and fasten them to, the support as shown on the Plans or as directed by the Project Engineer. All signs, once erected, shall be clean and free of substances that would hide or otherwise obscure any portion of the sign face. Attach flat sheet signs to the posts with tamper resistant fasteners.

After the sheeting is thoroughly attached to the sign face, attach demountable letters, digits, borders, shields, and alphabet accessories flush against sign faces, with corrosive resistant fasteners as recommended by the manufacturer. Use a sufficient number of fasteners to securely fasten demountable legends and borders to sign panels.

Provide demountable borders of the width shown on the Plans. Place demountable borders as shown on the Plans. Spacing of all legends shall meet the FHWA Standard Alphabets for Highway Signs. Any improper size or spacing of legends and borders shall be cause for rejection of the entire sign.

I.04 Final Cleanup

Before final inspection, clean exposed sign and support surfaces, and level and repair the site to ensure the effectiveness and neat appearance of the work. Perform final cleanup as specified in Part 1.

SECTION J – ROADWAY AND STRUCTURE LIGHTING

DESCRIPTION

J.01 Description

This work consists of furnishing and installing roadway and structure lighting systems complete or to the extent shown on the Plans.

MATERIALS

J.02 Materials

Provide materials as specified in **917** and as follows:

Portland Cement Concrete, Class A .....Part 6
Crushed Stone Grading D.....TDOT Section 903.05
Steel Bar Reinforcement for Concrete Structures.....TDOT Section 907.01
Welded Steel Wire Fabric.....TDOT Section 907.03
Gray Iron Castings..... TDOT Section 908.07
Inorganic Zinc Paint ..... TDOT Section 910.03
Cement Concrete Curing Materials .....TDOT Section 913
Conduit ..... TDOT Sections 917.05 or 917.07

The following table shows the Luminaires, Lamps, Mast Arms, and Lighting Controls which are approved for use in public street lighting for the City of La Vergne. NOTE: In the event that this lighting is no longer accepted by NES or MTEMC, then the Project Engineer must submit to the City Engineer the most similar model that is acceptable to the electrical utility.

Table: Approved Public Street Lighting for the City of La Vergne

Line Number	ECM Description	Manufacturer	Model Number
1	Local	AEL (American Electrical Lighting)	ATB0 P201 MVOLT R2 3K BL NL P7
2	Collector	AEL (American Electrical Lighting)	ATB0 P301 MVOLT R3 3K BL NL P7
3	Major	AEL (American Electrical Lighting)	ATB0 P305 MVOLT R3 3K BL NL P7
4	Mongoose	Holophane	(40 deg tilt) MGLEDM P6 30K MVOLT WG VH GRSD NL PR7
5	Local Deco Retrofit	EVLUMA	OMNI-40-3K-MO
6	NA	NA	NA
7	Freeway Cobrahead	AEL (American Electrical Lighting)	ATB0 P305 480 R3 3K BL NL P7

Line Number	ECM Description	Manufacturer	Model Number
8	Freeway Mongoose	Holophane	MGLEDM P6 30K 480 WG VH GRSD NL PR7
9	4' Mast Arm	Utility Metals (a Division of Fabricated Metals, LLC)	P200S040 / MTA000033
10	Photocell	FP Outdoor Lighting Controls / Sun-Tech / Sunrise Technologies, Inc.	ELL-124-4
11	NA		NA

The selection of which type of luminaire is to be made by the Project Engineer and submitted to the City Engineer with the Project Design.

Within 30 days after the notice to proceed, the Contractor must submit to the Project Engineer, a collated set of the manufacturer's descriptive literature and technical data, fully describing the types of lighting equipment proposed for use. This submittal must be sufficient for the Project Engineer to confirm that the lighting being installed matches precisely the approved lighting from the design.

In the event that the Contractor desires to utilize alternate products, the Contractor must submit a package to the Project Engineer the following:

1. Descriptive literature which identifies the manufacturer and model, and includes sufficient information for the Project Engineer to determine if the equipment or material meets the requirements of the Plans and these Specifications.
2. A list of the materials submitted.
3. Complete photometric data of luminaires as published by the manufacturer with independent testing laboratory results.
4. Computer printouts showing illumination levels throughout each interchange area where high mast luminaires are to be installed.
5. General details of light standards, breakaway bases, and bracket arms. For light standards taller than 30 feet, submit design calculations and prints of "Design" or "Shop" drawings to the Project Engineer for approval purposes.
6. Dimension sheets and performance data on all related equipment.

After approving the submittal, the Project Engineer must forward the approved document to the City Engineer for final city approval. The Contractor may not install any lighting prior to final City approval. Any purchases made prior to final City approval are at Contractor's risk.

J.03 Codes

Furnish material and perform all work in strict accordance with the latest revision of the National Electrical Code, the National Electrical Safety Code, the Illuminating Engineering Society (IES) publications, ANSI standards, and the codes, regulations, and rules prevailing in the area in which the Work is being performed, as applicable.

CONSTRUCTION REQUIREMENTS

J.04 Conduit

Install conduit of the type, size, and location specified or required. Install pull or drag wires of the type and size specified in conduit. The maximum spacing for public street lights in La Vergne is 300 feet. Submit a street lighting layout plan which has been approved by the electrical utility to the City Engineer.

A. Underground Conduit

1. **General.** Underground conduit shall consist of encased or direct burial conduit. Install conduit in a trench excavated to the dimensions and lines specified.

   Before beginning any excavation, determine the location of all electrical, drainage, and utility lines in the vicinity, and perform work so as to avoid damaging these facilities. Ensure that the conduit will be located so as to avoid conflict with proposed guardrail, sign posts, and other features.

   Build conduit runs in straight lines where possible. Where sweeps are necessary, use standard long sweep conduit bends when feasible, and meet the minimum radius required by the National Electric Code. Install pull boxes at intervals so that the tensile strength of the conductors will not be exceeded.

   Obstructions encountered when excavating trenches for underground conduit may require minor changes, such as in locations of conduit runs and pull boxes. Where possible, provide a minimum of 12 inches between the finished lines of conduit runs and utility facilities, such as gas lines, water mains, and other underground facilities not associated with the electrical system. Where the conduit run is adjacent to concrete walls, piers, footings, and similar structures, maintain a minimum of 4 inches of undisturbed earth or firmly compacted soil between the conduit and the adjacent concrete or, when the conduit is encased, between the encasement and the adjacent concrete.

   Unless shown on the Plans, do not excavate trenches in existing pavement or surfaced shoulders to install conduit. If it is necessary to place a conduit under an existing pavement, install the conduit by jacking or other approved means with galvanized rigid steel conduit or schedule 80 PVC conduit.

   Keep jacking and drilling pits at least 10 feet from the edge of the paved shoulder or sidewalk unless otherwise directed by the Engineer. When the Plans specifically allow excavation of a trench through an existing pavement or surfaced shoulder, restore the pavement and/or surface and base to their original condition. Do not leave boring pits open for extended periods of time.

   Unless otherwise specified, cut trenches for conduit on a slight grade for drainage, and make the walls of the trench essentially vertical. Tamp the bottom of the trench as necessary to produce a firm foundation for the conduit.

   Excavate trenches for rigid metallic conduit, with or without encasement, to a minimum depth of 18 inches, plus conduit diameter, measured from the finished subgrade.

Sheet and brace the trenches as required, and adequately support all pipe and other structures exposed in trenches as necessary to prevent damage.

Ream metallic conduit after threads are cut. Ream other conduit as necessary. Cut all ends square and to butt solidly in the joints to form a smooth raceway for cables.

Ensure that conduit joints form a water-tight seal. Coat metallic conduit threads with pipe compound and then securely connect. Make conduit joints with the materials and in the manner recommended by the conduit manufacturer and as approved by the Engineer.

Install conduit bushings in conduit where necessary and required for protection of the conductors. When the conduit is installed for future use, ensure that the ends of metallic conduit runs are properly threaded and capped, and that the ends of non-metallic conduit runs are satisfactorily plugged or capped to prevent water or other foreign matter from entering the conduit system.

a. **Encased Conduit.** Place encased conduit under roadway and paved shoulders unless trenching is required for installation at the locations shown on the Plans. Unless otherwise specified, construct encasement as follows:

   (1) Construct the encasement of Class A concrete meeting the requirements of Part 6.

   (2) Extend the encasement of conduit under roadway pavements or surfaces to the outer edges of the surfaced or paved shoulders, or 1 foot beyond the outer edge of the sidewalk, or 1 foot beyond the outer edge of the curb when no shoulder or sidewalk is indicated.

   (3) Extend the conduit at least 6 inches beyond the encasement.

   (4) Encase the pipe with a minimum of 3 inches of concrete.

   (5) Plug the ends of the conduit temporarily to prevent the entrance of concrete or other foreign material.

   (6) Do not encase any conduit with concrete until inspected and approved by the Engineer.

   (7) Cure concrete encasement as specified in Part 6, except that the curing period may be reduced to 24 hours if backfilling is to proceed at the time specified in this Part.

b. **Direct Burial Conduit.** When rock is encountered in the bottom of the trench, install the conduit on a bed of well compacted fine grain soil at least 4 inches thick.

2. **Backfilling Conduit.** Do not backfill encased conduit until the concrete encasement has cured a minimum of 24 hours. After the Quality Control Representative has inspected and approved the installation of direct burial conduit, promptly backfill to the required grade with approved material in layers not exceeding 6 inches in loose depth and compact each

layer.

B. Conduit on Structures

Install conduits, conduit fittings, hangers, expansion fittings, and accessories as shown on the Plans and, unless otherwise specified, in accordance with the following:

1. Run conduit parallel to beams, trusses, supports, pier caps, and similar features in the most direct manner.

2. Install horizontal runs on a slight grade, without forming low spots, to ensure proper drainage.

3. Run conduits with smooth, easy bends.

4. Hold conduits in boxes with locknuts and provide bushings for protection of the conductors.

C. Testing Conduit

After completing the installation of conduit, test it with a metallic mandrel in the presence of the Quality Control Representative. Use a mandrel having a diameter ¼ inch smaller than the conduit, and a length of 2 inches. Repair all conduits that will not allow passage of the mandrel. If repairs cannot be accomplished, remove and replace the conduit.

After the mandrel test, scour all conduits with a stiff wire brush having a slightly larger diameter than the conduit.

Test conduits that have been installed under a previous contract with a mandrel and clean as described above before installing the cables.

J.05 Pull Boxes

Construct pull boxes in accordance with the design, dimensions, and at the locations shown on the Plans. Construct concrete pull boxes of Class A concrete meeting the requirements of Part 6. Place non-metallic pull boxes only in non-traffic bearing locations and not in paved areas.

Provide a cast iron frame and cover or reinforced concrete cover, as shown on the Plans, with each pull box.

Plug unused conduit entrance holes and openings for conduit to be extended by others with suitable plugs of plastic, bituminous fiber, or other approved material to prevent the entrance of foreign matter.

J.06 Underground Cable for Lighting Circuits

Underground cable for lighting circuits shall consist of direct burial cable, preassembled cable in duct, or cable in conduit.

If it is necessary to install a cable under an existing pavement or surfaced shoulder, install conduit, when specified, in accordance with the applicable provisions of this Part, and place the cable within the conduit.

Construct walls of trenches for cables to be essentially vertical. Unless otherwise specified, install underground cable as follows:

1. Excavate trenches for direct burial cable to a minimum depth of 24 inches plus the cable diameter as measured from finished subgrade.

2. In general, locate the trenches to avoid conflict with proposed guardrail, sign posts, and other features.

3. Protect direct burial cable, and preassembled cable in duct, in trenches by cushioning with sand or earth that passes a ¼-inch screen. Place the cable, or preassembled cable in duct, and sand or earth in the trench so that a minimum 3-inch thickness of the cushion material will surround each cable.

A. Direct Burial Cable

Do not unreel cables and pull into the trench from one end. Unreel the cables, lay them alongside the trench, and then lay in the trench. Allow the cables to "snake" slightly in the trench to provide adequate slack for settling of earth. Ensure that there are no crossovers of cable in the trench. Where cable is brought up into the base of the lighting standard, leave sufficient slack for making the connections inside the standard.

B. Preassembled Cable in Duct

When installing in the trench, do not pull preassembled cable in duct taut, but allow it to "snake" in the ditch to provide not less than 18 inches slack per 100 feet of trench. The minimum bending radius on the cable duct shall be 18 inches. Where the duct is brought into the base of the lighting standard or into a pull box, leave sufficient length for trimming the duct to expose enough cable to allow for the connections to be made inside the standard or pull box.

C. Cable in Conduit

Carefully pull cables in conduits into place using approved methods so that the cable will be installed without electrical or mechanical damage. Pull all cables within a single conduit at the same time. If necessary, to ease the pulling, use a lubricant of the type recommended by the cable manufacturer. When cables are pulled through hand holes in pole shafts, place a pad of firm rubber or other suitable material between the cable and the edges of the opening to prevent cable damage.

After the cable has been installed in the conduit, seal the ends of buried conduit with approved pliable and non-hardening material to prevent the entrance of dirt, moisture, or other foreign material.

D. Splices

Splice conductors as per NEC requirements and good practice. Only make splices at accessible points, such as handholes and pull boxes. After making a conductor splice, insulate it with heat-shrinkable tubing, supplied by the manufacturer, with an adhesive coating on the inner wall.

E. Ground Wire

Install ground conductors of the type and size required, and to be continuous in trenches with direct burial cable, and continuous inside preassembled cable in duct, and in conduit. Connect the ground conductors to the ground rod at all control points, to the ground lug in pole foundations, and to all metallic conduit runs using a grounding bushing, except that the connections to conduit in pole foundations may be omitted. Make all connections.

F. Backfilling Underground Cable

Backfill cable as specified in this Part.

G. Cable Identification

To assist in the identification of circuits at the pull boxes, mark the phase conductors with colored rubber-based, or equivalent, paint. When final connections are made, provide permanent tape wire markers to identify the branch circuit conductors (X1A, X1B, etc.), neutral (X1N, etc.), and the ground (g).

J.07 Light Standards

Install light standards of the designated design, kind, size, and class in accordance with and at the locations shown on the Plans. Ensure that the installed standards, complete with the bracket arm(s) and luminaire(s) as specified, provide the mounting height shown on the Plans. Determine the pole height as required by bracket arm upsweep, slope conditions, and similar characteristics.

A. Foundations for Light Standards

Consider transformer bases to be an integral part of the lighting standard.

1. Bolt-Down Base Pole Foundations

Excavate a hole of the size and depth required. Remove and dispose of all excavated material as per Part 2. Place anchor bolts of the type and size specified according to the pole manufacturer's recommendations, and securely hold to ensure proper position in the completed foundation. Ensure that no realignment of anchor bolts will occur after the foundation is poured. Accurately place reinforcing steel and securely hold to avoid displacement.

Accurately place conduits in foundations, orient them in the proper direction to accommodate service cables, and securely hold to avoid displacement.

Place Class A concrete in the excavated area against undisturbed earth to an elevation 4 inches below the finished ground line, and in an approved form from 4 inches below said

ground line to the finished top of foundation elevation, as specified. Construct the foundation with a continuous concrete pour. Chamfer the edges of the top and formed portion of the foundation. Apply a Class II finish, as specified in Part 6, to the portion of the foundation above grade and within 4 inches of grade.

2. **Wood Poles.**

   Excavate for wood poles as required. Dig or drill the holes to the depth required and in such diameter to allow satisfactory use of mechanical tamping equipment.

   Place and compact in the bottom of the hole 6 inches of crushed stone, meeting the requirements of TDOT Section 903.05, Grading D.

B. Light Standard Installation

Handle the standards or poles as recommended by the manufacturer and approved by the Project Engineer. Accomplish erection without marring the finish or otherwise damaging the standard. Ground the light standards as required.

1. **Bolt-Down Base Poles.** Set standards with bolt-down bases on foundations constructed as specified in this Part. Use metal shims supplied with the poles to plumb the pole, if the twin bracket arm type is used; and, unless otherwise specified, to rake or lean the pole backward 4 inches, if the single bracket arm type is used.

2. **Wood Poles.** Place wood poles in holes excavated as specified in this Part. Set the pole in the center of the hole, with any vertical curvature of the pole located in the plane of the lines, and rake in a direction opposite that of the unbalanced stress where a guy or underbrace is specified. Backfill the hole with approved material applied in 6-inch layers, and thoroughly compact each layer with mechanical tamping equipment. Install cross arms and guying components, when specified, as shown on the Plans.

J.08 Bracket Arms

Install, on the lighting standards, bracket arms of the specified type, design, kind, dimensions, and number as specified.

J.09 Luminaires

Use Light Emitting Diode (LED) luminaire types.

Install luminaires of the design and size shown on the Plans, and level according to the manufacturer's recommendations. Provide glare shields on luminaires when shown on the Plans.

Clamp the pole and bracket cable in the proper terminals on the terminal board in the luminaire, and then splice the cable to the proper phase and neutral conductors outside of the handhole in the pole base. After other required circuit splices are made outside of the handhole, place all of the wire inside the handhole. Leave slack in all cables for future maintenance. Attach a suitable identification tag to each of the phase cables.

Clean luminaire reflector surfaces and glassware after installation. Perform cleaning, if required,

according to the luminaire manufacturer's recommendations.

Ensure that luminaires for sign lighting are adjustable both horizontally and vertically.

Light Emitting Diode (LED) luminaires must be either of the types pre-approved in the table at the beginning of this section or shall be similar parts and shall meet the following minimum requirements:

Light Emitting Diode (LED) luminaires shall be manufactured in accordance with ANSI C136.37-2011 (or recent version). All testing and data sheets for proposed LEDs shall be included in the submittal package and shall include, but not limited to, the following: Illuminating Engineering Society of North America (IESNA): LM-79-08, LM-80-08, RP-8-14, TM-3-95, and TM-15-07 (all should be up-to-date versions). In addition to these requirements, the LEDs shall meet the following requirements:

1. **Finished surface.** Furnish luminaires with the color mentioned in the plans. The surface of luminaire housing shall meet UL-1598 listed for wet locations, ASTM B117 for salt chamber exposure, and ASTM D1654 for rust creepage.

2. **Thermal Management**. The luminaire shall start and operate in the ambient temperature range of -25C to +25C.

3. **Optical Assembly**. The LED optical assembly package shall have a minimum Ingress Protection rating of IP 66 according to ANSI/IEC 60529. The luminaire shall have a standardized refractor/reflector to meet the required optical distribution as required by the plans. The optical assembly shall utilize high brightness, long life, minimum 70 color rendering index (CRI), (3000 K-5700 K) color temperature (+/-300 K) LEDs binned according to ANSI C78.377. Lenses shall be UV-stabilized acrylic or glass. Provisions for house-side shielding shall be provided when specified.

4. Prevent the entrance of wildlife by limiting openings around the pipe tenon mounting area.

5. Electrical Parts (including Safety Testing) shall comply with an ANSI C136.41 with 7-pin receptacle that is fully pre-wire for LED driver's control.

6. Documents for the materials submitted need a certification from a National Voluntary Laboratory Accreditation Program (NVLAP) and that lab must be recognized by the U.S. Department of Energy.

7. The entire LED luminaire and all of its component parts shall be covered by a 10-year written warranty covering materials, fixture finish, and workmanship. Failure is when one or more of the following occur:

    a. Negligible light output from more than 10 percent of the LED packages.

    b. Condensed moisture inside the optical assembly.

    c. Driver that continues to operate at a reduced output below 15 percent of the rated nominal output. The warranty period shall start from the system acceptance date.

J.10 Lamps

Install lamps of the design, type, and size specified.

J.11 Installation of Overhead Wires

Install overhead wiring as specified.

J.12 Cable Markers

When shown on the Plans, place precast or cast-in-place concrete cable markers, of the dimensions indicated, at all locations where lighting cables make an abrupt change in direction. Construct the markers of Class A concrete meeting the requirements of Part 6. Imprint an arrow on each marker to indicate the direction of the cable run as it approaches and leaves the marker. Also imprint the circuit number on the marker.

Recess the markers into the ground approximately 3 inches, unless otherwise specified.

J.13 Control Center

Furnish and install a service pole or poles of the design, type, size, and class, and at the locations specified. Install the service pole(s) as specified in this Part and as shown on the Plans. Set the service pole(s) plumb.

Notify the power company, at least 30 days before connection, of the need to furnish power to operate the lighting system.

Unless otherwise specified, furnish and install all the control center equipment and electrical supply facilities. The electrical supply facilities shall include the necessary service conduit from the control cabinet to the delivery point designated on the Plans.

Construct a concrete slab, of the dimensions and thickness indicated, around the service pole foundation. Construct the slab of Class A concrete meeting the requirements of Part 6, and reinforce the slab, if specified, as shown on the Plans.

J.14 Testing After Installation

Install all materials and equipment to form a complete installation ready for operation, unless otherwise specified.

After the installation is completed, test the lighting system in the presence of the Quality Control Representative. Tests shall include insulation resistance, voltage, current, and performance tests. Unless otherwise specified, perform the tests in accordance with the following:

A. Voltage Tests

Take a voltage reading at the control center at the load side of the circuit protection device and the last lighting standard served in each branch circuit. In cases where the circuit feeds in two

or more directions, take the voltage reading at the light most remote from the control point. Unless otherwise specified, with the complete lighting system energized and all lamps operating, the voltage of this last standard shall not be less than 90% of the nominal rated voltage of the luminaire supply circuit, and the voltage at the last underpass luminaire in each branch circuit shall not be less than the minimum operating voltage recommended by the manufacturer of the luminaire ballast.

B. Current Test

Conduct current tests at each control center at the load side of each circuit protection device, using a clamp-on type ammeter. Current, in amperes, in each supply conductor shall not be greater than the rated current of a luminaire times the number of luminaires in the circuit.

C. Grounding Resistance Test

Conduct ground resistance tests with a "megger," manufactured by the James H. Biddle Company, or a "vibraground" manufactured by Associated Research Incorporated or approved equal.

Adhere to the following when conducting this test:

1. Ensure that no equipment, such as ballast or oil switches, is connected at the time of the test.

2. Test only one conductor at a time.

3. Isolate the conductor being tested from ground.

4. Ensure that the other phase conductor and the neutral are grounded during each test.

D. Performance Tests

Prior to acceptance and after all faults have been corrected, operate the lighting system, including automatic control equipment and other specified apparatus, for a continuous 48-hour period without interruption or failure attributable to poor workmanship or defective material. After the 48 hours of continuous operation, the Quality Control Representative must inspect all lights and equipment for normal operation. Make all necessary repairs or replacements.

J.15 Repair of Seeded and Sodded Areas

If areas previously seeded or sodded are disturbed during the performance of the work described in this Section, reseed (with mulch) or re-sod such areas as specified in Part 8. Perform these repairs as the work progresses to minimize erosion of disturbed areas.

J.16 Disposal of Excess or Unsuitable Material

Dispose of excess or unsuitable material as specified in Part 2.

J.17 Final Cleanup

Perform final cleanup as specified in Part 1. Remove existing foundations, designated for removal, to a minimum of 6 inches below grade. Before final inspection, touch-up finishes, clean surfaces including signs that are lighted, and perform such other work as necessary to ensure the effectiveness and neat appearance of the work.

SECTION K – PAVEMENT MARKINGS

DESCRIPTION

K.01 Description

This work consists of furnishing and supplying pavement markings in accordance with these Specifications and the latest revision of the MUTCD, including establishing and locating non-passing zones as well as providing the layout of paint striping, preformed plastic pavement markings, raised reflective pavement markers, snowplowable reflective pavement markers, and thermoplastic pavement markings.

MATERIALS

K.02 Materials

Provide materials as specified in:

Paint..... TDOT Section 910
Thermoplastic Pavement Markings ..... TDOT Section 919.01
Spray Thermoplastic Pavement Marking..... TDOT Section 919.02
Preformed Plastic Pavement Marking ..... TDOT Section 919.03
Raised Reflective Pavement Markers..... TDOT Section 919.04
Snowplowable Reflective Pavement Markers ..... TDOT Section 919.05

Plastic pavement markings may be either preformed or thermoplastic.

CONSTRUCTION REQUIREMENTS

K.03 Thermoplastic Pavement Marking

Furnish and apply thermoplastic pavement marking material meeting TDOT Section 919.01 by the screed extrusion or ribbon dispenser methods, or spray thermoplastic pavement marking material meeting TDOT Section 919.02.

As an alternate, the Contractor may apply preformed thermoplastic marking material for stop bars, crosswalks, legends, or directional arrows. The preformed thermoplastic material shall have a minimum thickness of .090 inches and be fused to the pavement by the heat of a torch.

A. Equipment

Provide special kettle(s) for melting and heating the thermoplastic material. Equip the kettle(s) with automatic thermostatic control devices so that heating can be done by controlled heat transfer rather than by direct flame, to provide positive temperature control and prevent over-heating of the material.

Provide equipment that will continuously mix and agitate the material. Conveying parts of the equipment shall prevent accumulation and clogging. All parts of the equipment that come in

contact with the material shall be easily accessible for cleaning and maintenance. All mixing and conveying parts of the equipment, including the shaping die (or spray nozzle in the case of spray thermoplastic marking material), shall maintain the material at the plastic temperature with heat transfer oil or electrical-element-controlled heat. Direct fire heat transfer will not be allowed.

The equipment shall ensure continuous uniformity in the dimensions of the stripe. The applicator equipment shall be mobile and maneuverable to the extent the straight line can be followed and normal curves can be made in a true arc. The applicator equipment shall provide a method of applying "skip" lines. Calibrate the equipment, and check it periodically by marking over a metal plate. The equipment shall provide for varying widths to produce varying widths of traffic markings.

1. **Extruded or Ribbon-Dispensed Thermoplastic Marking.** Apply the material to the pavement by either the screed extrusion method or the ribbon dispenser method.

   The screed extrusion device shall have one side of the shaping die open with the other three sides contained by, or part of, suitable equipment for heating and controlling the flow of material. Do not use pans, aprons, or similar appliances that the die overruns.

   Ribbon dispensers shall be heated, suspended above the road surface, and shall apply the material to the width and thickness specified.

   Apply glass spheres to the surface of the completed stripe by an automatic bead dispenser attached to the striping machine in such a manner that the beads are dispensed almost instantaneously upon the installed line. The glass sphere dispenser shall be capable of applying glass spheres to the surface of the completed stripe by a double drop application for initial traffic striping and marking. Attach the bead dispenser for the first bead drop to the striping machine so that the beads are dispensed closely behind with the thermoplastic material. Attach the second bead dispenser to the striping machine so that the beads are dispensed immediately after the first bead drop application. Equip glass sphere dispensers with an automatic cut-off control that is synchronized with the cut-off of the thermoplastic material and applies the glass spheres so that the spheres appear uniform on the entire traffic stripes and markings surface with 50 to 60% embedment.

   The applicator equipment to be used on roadway installations may consist of either hand equipment or truck mounted units depending on the type of marking required.

   The hand equipment shall have sufficient capacity to hold 150 pounds of molten material and shall be sufficiently maneuverable to install crosswalks, lane, edge, and center lines, arrows, and legends. The truck mounted unit for lane, edge, and center lines shall consist of a mobile self-contained unit carrying its own material capable of operating at a minimum speed of 5 miles per hour continuously during an 8-hour period while installing striping.

   Hand equipment used for stop bars, crosswalks, legends, directional arrows and other specialty markings shall use the same thermoplastic formulation as described above with the exception of placing the marking at a minimum thickness of 0.090 inches and a single drop of AASHTO M 247, Type 1 bead at the rate of 8 to 10 pounds per 100 square feet of stripe.

2. **Spray Thermoplastic Marking.** For lane, edge, and center lines, use truck-mounted applicator equipment consisting of a mobile self- contained unit carrying its own material capable of operating at a minimum speed of 5 miles per hour continuously during an 8-hour period while installing striping.

   Each application machine must be equipped with an automatic counting mechanism capable of recording the number of linear feet of material applied to the roadway surface with an accuracy of 0.50%.

   Apply glass spheres to the surface of the completed stripe by an automatic bead dispenser attached to the striping machine in such a manner that the beads are dispensed almost instantaneously upon the installed line. The glass sphere dispenser cut-off shall be synchronized with automatic cut-off of the thermoplastic material.

B. Application

1. **Contractor's Responsibility for Notification.** Notify the City Engineer and Project Engineer before placing the thermoplastic materials. Furnish the Project Engineer with the manufacturer's name and batch numbers of the thermoplastic materials and glass spheres to be used. Ensure that the approved batch numbers appear on the thermoplastic materials and glass spheres packages.

2. **Application.** Before beginning application, ensure that the pavement temperature is a minimum of 50 °F and rising. Suspend application if the pavement temperature falls below 50 °F. Thoroughly clean all surfaces to be marked of all dust, dirt, grease, oil, and all other foreign matter before applying the striping.

   The pavement marking material, when formed into traffic stripes, shall be readily renewable by placing an overlay of new material directly over old markings of the same material. Such new material shall bond itself to the old markings in a manner that will ensure no splitting or separation will take place.

   Offset longitudinal lines at least 2 inches from longitudinal joints of Portland cement concrete pavements.

   a. **Extruded or Ribbon-Dispensed Thermoplastic Marking.** To ensure optimum adhesion of thermoplastic applied on all Portland cement concrete pavements, apply a binder-sealer material as recommended by the thermoplastic manufacturer. To ensure optimum adhesion, install the thermoplastic material in a melted state at a temperature of 400 to 450 °F.

      Maintain a minimum average film thickness of 0.100 inch for lane and edge lines on all markings. Compute this thickness on the basis of the amount of material used each day. The film thickness shall be uniform in appearance throughout its application. Apply the glass sphere top coating with a pressure type spray gun designed specifically for this purpose, and that will embed the spheres into the line surface to at least one-half their diameter.

      Place Drop on Glass Beads of AASHTO M 247 Type 1 and Type 4 on the

thermoplastic stripe at a rate of 8 to 10 pounds per 100 square feet of stripe.

Place the AASHTO M 247 Type 4 glass beads immediately after the first bead drop application of AASHTO M 247 Type 1 beads.

Regardless of the application methods and procedures, or pavement types, replace all pavement markings that fail to comply with these Specifications, or fail to adhere to the pavement for one year after installation.

b. **Spray Thermoplastic Marking.** Before applying the pavement-marking material, remove all dirt, glaze, grease, and all other material that would reduce the adhesion of the paint to the pavement. Open-graded roadways, such as double- bituminous surface treatment (DBST), require sweeping (brooming) to ensure cleanliness.

Remove all existing material that might cause premature failure of the new material.

To ensure optimum adhesion of spray thermoplastic applied to Portland cement concrete surfaces, apply a binder-sealer material as recommended by the thermoplastic manufacturer.

The binder-sealer material shall form, when applied with conventional mobile paint spraying equipment, a continuous film over the pavement surface that will dry rapidly and adhere to the pavement surface. The binder-sealer shall be that product currently in use and recommended by the thermoplastic material manufacturer. Include all costs, including materials, associated with application of the binder-sealer, in the unit bid price for the spray thermoplastic pavement markings.

Install the pavement-marking material in a molten state, by the spray method, at a minimum temperature of 350 °F and a maximum temperature of 425 °F. Scorching or discoloration of material is cause for rejection by the Engineer. Use equipment constructed so that all mixing and conveying parts, up to and including the spray gun, maintain the material in the molten state.

Do not apply the pavement-marking materials when air and pavement surface temperatures are below 40 °F or when the surface of the pavement contains evidence of moisture.

When the plans specify 60-mil markings, apply the pavement- marking material at a thickness of not less than 0.060 inch for all roads except open-graded roadways such as DBST. For such surfaces, apply material at a thickness of not less than 0.065 inch. In no case shall the applied thickness exceed 0.075 inch.

Place the pavement-markings with adequate drop-on glass spheres in accordance with the above requirements, uniformly applied to ensure adequate nighttime reflectivity. Use a compatible combination of marking material and spheres to preclude the surface spheres from sinking deeply into the marking, or from being prematurely lost from the surface of the marking.

The Quality Control Representative must randomly sample molten thermoplastic material for verification testing in accordance with AASHTO T 250.

3. **Temporary Marking.** When thermoplastic is used on the final surface, the Contractor may use reflectorized paint installed to permanent standards at the end of each day's work and then install the permanent marking after the paving operation is completed. Short, unmarked sections are not allowed.
4. **Protection of Newly Applied Traffic Stripes and Markings.** Do not allow traffic onto or allow vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace portions of the pavement markings damaged by passing traffic or from any other cause.

K.04 Raised Reflective Pavement Markers

To bond markers to the pavement, use an epoxy listed on the TDOT Qualified Products List (QPL) and that is approved by the marker manufacturer or a hot bituminous adhesive conforming to the requirements specified below. Do not use markers manufactured with a self-adhesive backing. Space markers as shown on the Plans. Do not install markers over joints in rigid pavements.

Furnish pavement markers of a type listed on the TDOT Qualified Products List (QPL). Install the markers when the pavement is dry and the pavement temperature is no less than 50 °F.

Clean the portion of the highway surface, to which the marker is to be bonded by the adhesive, of all dirt, curing compound, grease, oil, moisture, loose or unsound layers, paint, and all other material that would adversely affect the bond of the adhesive. Perform cleaning by blast cleaning on Portland cement concrete and old bituminous pavements. Blast clean new bituminous pavement where the surface contains an abnormal amount of asphalt or the surface is contaminated with dirt, grease, paint, oil, or other material that would adversely affect the bond of the adhesive.

Melt and heat the bituminous adhesive in either thermostatically controlled double boiler type units using heat transfer oil or thermostatically controlled electric heating pots. Do not use direct flame melting units. Use a melter/applicator unit that is suited for both melting and pumping application through heated applicator hoses.

Heat the adhesive to between 375 and 425 °F, and apply it directly to the pavement surface from the melter/applicator by either pumping or pouring. Maintain the application temperature between 375 and 425 °F, as lower temperatures may result in decreased adhesion while higher temperatures may damage the adhesive.

Apply the adhesive in a puddle approximately 2/3 to ¾ the diameter of the marker. Apply markers to the adhesive immediately (within 10 seconds) to ensure bonding. Place the marker in position by applying downward pressure until the marker is firmly seated with the required adhesive thickness and squeeze out. Remove excessive adhesive squeeze out from the pavement, and immediately remove adhesive on the exposed surfaces of the markers. Remove adhesive from exposed faces of pavement markers according to manufacturer's recommendations.

Install reflective markers so that the reflective face of the marker is perpendicular to a line parallel to the roadway centerline. Protect the markers against impact until the adhesive has hardened.

The Contractor may reheat and reuse adhesive, provided the manufacturer's recommendations regarding the pot life at application temperatures are not exceeded.

Clean out equipment and tanks using petroleum solvents such as diesel fuel or similar materials. Turn off all heating equipment before beginning cleaning operations. Remove all solvent from the equipment tanks and lines before the next use of the melter.

K.05 Snowplowable Reflective Pavement Marker

Contour the pavement at each snowplowable marker location to match the bottom of the marker casting. Install markers according to the manufacturer's recommendations. For asphalt surfaces, only use the dry saw method to apply snowplowable reflective pavement markers. When using the dry saw method, provide a vacuum system to contain the dust. For other surfaces, regardless of the saw method used, ensure that the saw cut is clean, dry, and free of all dust or residue before applying the adhesive. Accompany each shipment of adhesive with a written statement from the adhesive manufacturer certifying that the material furnished conforms to the recommendations of the marker manufacturer and stating the minimum temperature at which the adhesive can be satisfactorily mixed and applied.

K.06 Preformed Plastic Pavement Markings

Apply preformed plastic pavement markings on clean, dry surfaces free of dirt and foreign matter. Only apply markings when the pavement temperature is at least 60 °F. Should the plastic require activators for the adhesive or various special coatings for different pavement surfaces, include the cost of the activator or special coatings in the unit price of plastic.

Furnish with each package of reflectorized pavement marking materials complete instructions and specifications for applying pavement marking materials to pavement surface. Install the reflectorized pavement marking materials according to the vendor's specifications. Any adhesion used in the installation shall be as specified by the manufacturer. Use an adhesion- promoting primer when recommended by the pavement marking manufacturer.

Establish guides to mark the lateral location of pavement markings as required. Place markings in proper alignment with the guides. The deviation rate in alignment shall not exceed 1 inch per 200 feet of roadway. The maximum deviation shall not exceed 2 inches, and there shall be no abrupt deviations.

Remove and replace markings placed that are not in the alignment or sequence as shown on the Plans or as specified herein. Remove such markings as specified in this Part. Guides placed on the roadway for alignment purposes shall not establish a permanent marking on the roadway.

When specified in the Contract, place markings for newly paved asphalt concrete surfaces immediately after final rolling of the mat. Use a rubber-tired roller cart with a minimum weight of 200 pounds or a truck operated at no more than 3 miles per hour to ensure proper adhesion when the markings are in place. Do not use steel wheel rollers for this purpose.

K.07 Paint

A. Application of Painted Pavement Markings

Apply paint with a spray-type machine capable of satisfactorily applying the paint under pressure through a nozzle that sprays directly upon the pavement at a rate not to exceed 880 feet

per minute. Equip the machine with:

1. Air blast device for cleaning the pavement ahead of the painting operation;

2. Guide pointer to keep the machine on an accurate line;

3. Device to agitate the paint;

4. Device to maintain a uniform flow and application of the paint;

5. Automatic device to provide a broken or skip line of the length required;

6. At least two spray guns capable of being operated either individually or together;

7. Automatic counting mechanism capable of recording the number of linear feet of material applied to the roadway surface with an accuracy of 0.50%; and

8. Accurate meters that register quantities for both white and yellow applied paint to the nearest gallon.

When using waterborne paint, ensure the equipment can heat the material from ambient air temperature to 123 °F. Equip the machine with a bead or sphere dispenser that can be regulated to dispense the spheres automatically at the uniform rate required. The equipment shall be designed and operated so as to allow traffic to safely pass on the roadbed.

Do not apply paint unless the ambient air temperature is at least 45 °F without specific direction from the Project Engineer. However, if the Project Engineer directs that paint be applied when air temperatures are below 45 °F, heat the paint according to the manufacturer's recommendations.

For the following operations, large automatic spray application machinery meeting the preceding requirements is not required, provided the Contractor selects pavement marking equipment capable of producing a uniform, acceptable finished product consistent with the Plans and Specifications:

1. Installation of temporary pavement markings.

2. Installation of permanent pavement markings on projects having a total length of 1,000 feet or less.

3. Installation of permanent pavement markings on an individual project segment having a total length of 1,000 feet or less on an intermittent project.

Clean the pavement surface before placing any pavement marking material.

Locate and place temporary markings on final pavement surfaces to underlie or coincide with the permanent pavement markings.

Perform cleaning and painting using equipment of the kind and in the manner provided by previously specified equipment. On sections where no previously applied line is available to serve as a guide or if the line is to be re-located, spot the proposed location of the new line with paint in advance of the application. On tangent sections, space the control points no more than 500 feet apart and on curves at intervals that will ensure the accurate location of the line. Leave gaps in all lines at intersections in accordance with the MUTCD.

Do not apply any paint over a chalk line, wire, or cord, and instead offset such guide marks from the paint line to be placed. On sections where previously applied lines are visible, use the old lines unless otherwise directed. Do not apply any paint to areas of pavement when moisture remains on the surface, or when wind conditions may cause a film of dust to be deposited on the line areas after these areas have been prepared for painting.

Apply drop-on type glass beads uniformly to the painted surface at a uniform rate of not less than 6 pounds per gallon of paint applied.

Apply paint so as to deposit a uniform final film thickness of 0.015 inch (within a reasonable tolerance) and at a speed not to exceed 880 feet per minute. Use this rate of application for all types of paint, making proper adjustments in gallons for an intermittent line or wider lines. Ensure that the quantity of paint does not under-run the designated amount by more than 5%. If a check of the rate of application indicates a greater variation, stop the work until the paint machine is properly adjusted or replaced. This percent of variation is set out to give the Contractor some leeway in starting the job and in getting the machine in adjustment; it is not expected that there will be either a continuous overrun or under-run, but that the final average rate of application will closely approach the rate established above.

When reflectorized paint is required for temporary or final marking, install the paint to permanent standards at the end of each day's work. Do not leave any short, unmarked sections.

Protect traffic lines and markings. Place warning and directional signs as shown on the Plans or as directed by the Project Engineer to control traffic in the marking area. If the drying time of the material being used exceeds 60 seconds, protect the newly applied markings by placing traffic cones or other approved warning devices at frequent intervals as directed. Leave these devices on the line until the material is dry or firm enough not to track or receive impressions from normal traffic. Remove these devices as soon as possible to prevent a traffic hazard. Do not leave such devices in the roadway overnight. If so directed, provide flaggers to direct traffic.

Apply paint to appear as clearly delineated lines with minimal crookedness and waviness, giving due consideration to the contours and roughness of the pavement. Segments of broken line stripe shall square off positively at each end. The paint lines shall be without mist, drip, or splatter. Remove and/or correct lines that do not meet these requirements when placed.

Operate the paint equipment so that it will be unnecessary for traffic to cross the newly painted line behind the equipment in order to safely pass the painting machine, and to allow traffic to keep moving at all times.

B. Removal of Painted Markings

Remove painted pavement markings where specified or directed by the Engineer. Obtain the

Engineer's approval of the paint removal method before beginning the work. Do not remove existing painted pavement markings by painting over them with black paint or asphalt.

When the method of removal causes sand or other material to accumulate on the pavement, remove the residue as the work progresses. Remove painted markings by methods that cause the least possible damage to the pavement. Repair damage to the pavement or surface caused by pavement marking removal as directed by the Engineer and at no cost to the Department.

Where a plastic marking will replace the painted marking and paint removal is specified in the Contract, remove enough of the paint to ensure proper installation of the plastic. The paint removal shall be uniform and shall expose a minimum of 75% of the surface area that is to receive the plastic materials.

SECTION L – TRAFFIC SIGNALS

DESCRIPTION

L.01 Description of Work

This work consists of furnishing and installing all necessary materials and equipment to complete in-place traffic signal systems, modify existing systems, or both, all as shown on the Plans, and as specified in these Specifications. Unless otherwise shown on the Plans, all materials shall be new.

Where existing systems are to be modified, incorporate the existing material into the revised system, salvage it, or abandon it.

Furnish and install all incidental parts that are not shown on the Plans or specified herein, but that are necessary to complete the traffic signal or other electrical systems, or that are required for modifying existing systems, as though such parts were shown on the Plans or specified herein. All systems shall be complete and in operation at the time of completion of the work.

GENERAL REQUIREMENTS

L.02 Regulations and Code

Ensure that all equipment provided conforms to NEMA Standards Publication, Traffic Control Systems, latest revision, or the Radio Manufacturers Association, whichever is applicable. In addition to the requirements of these Specifications, the Plans, and the Special Provisions, all material and work shall conform to the requirements of the NEC and the NESC; the Standards of ASTM, ANSI, ITE, and IMSA; the MUTCD; and other applicable TDOT and Tennessee State Fire Marshal's Office requirements.

For traffic signals constructed along Murfreesboro Road, at the approaches of Interstate I-24, and within any TDOT rights-of-way, follow TDOT Specifications, TDOT Standard Drawings, and TDOT Special Provisions.

Wherever reference is made to the NEC, or the Standards mentioned above, consider the reference to mean the code or standard that is in effect on the date of advertising the bids or authorization for force account.

L.03 Submittal Data Requirements

Prior to the Pre-Construction Conference, the Project Engineer must submit to the City Engineer a detailed final design for then traffic signal installation. Once approved by the City Engineer, this

design must be approved by TDOT before the Pre-Construction Conference can be held and notice-to-proceed (NTP) provided.

Within 30 days after the Pre-Construction Conference, the Contractor must submit to the City Engineer one collated set of the manufacturer's descriptive literature and technical data that fully describes the types of signal equipment proposed for use. In the descriptive literature, identify the manufacturer and models and include sufficient information for the City Engineer to work with the City Public Works Department to confirm if the equipment or material meets the requirements of the La Vergne Public Works Department. Any materials or equipment that are not of a type that are maintained by Public Works as spare parts will be rejected and the manufacturers and model numbers of the correct materials and equipment will be provided to the Contractor.

The Contractor is welcome to contact the Roads Supervisor of the La Vergne Public Works Department prior to making this submittal to discuss required equipment and materials.

Any equipment or materials ordered prior to City Engineer review of that submittal will be at Contractor's risk.

The Contractor must include with this submittal data a list of the materials submitted along with descriptive material for, but not limited to, the following items:

1. Controller
2. Cabinet and Exhaust Fan
3. Detectors
4. Signal Heads including Lamp Information and Mounting Hardware
5. Loop Wire and Loop Sealant
6. Shielded Detector Cable
7. Signal Cable
8. Cable for Span Wire, Guys, and similar features
9. Pull Boxes
10. Conduit
11. Coordination Equipment

Also include in the submittal a set of detailed scale drawings of all non-standard or special equipment and of all proposed deviations from the Plans. Upon request, submit for approval sample articles of materials proposed for use.

Also Submit an electronic copy in PDF format of "Design" or "Shop" drawings, indicating the proposed dimensions and material specification for each of the supports and mast arms involved, to the Project Engineer for approval purposes within 30 days after the Pre-Construction Conference.

L.04 Mill Test Reports and Certification

Maintain on file Mill Test Reports (MTR) or Certifications of Conformance to the Specifications for Materials and Design for all materials incorporated into the Work. Keep the following on file and be able to provide them as requested by the City Engineer for a period of twelve months after project acceptance:

1. MTRs for MAJOR structural items only, as identified in Table 730.04-1, shall include both physical and chemical descriptions of the material as supplied to the fabricator. When physical

properties are altered during the fabrication, supplement the MTR covering chemical composition with certified test reports indicating the physical properties of this material after fabrication.

2. Certifications of Conformance to the Specifications for all remaining material not covered by MTR as identified in Table 730.04-1.

3. Certification that all welding was performed by operators qualified as follows: Steel welders to AWS and aluminum welders to ASME.

4. Certification of Conformance to the Specification for the Design of all components not completely dimensioned and detailed on the Standard Drawing.

Table: Required Mill Test Reports and Certifications

Component Materials	MTR	Certification
Tubes for arms and poles	X	
Base Castings	X	
Anchor Bolts	X	
Pole tops, misc. fittings, and hardware		X
Fabricated or cast-type arm connections		X
Galvanizing		X

L.05 Working Drawings

Provide within the controller cabinet and to the City Engineer an electrical schematic diagram of the cabinet and system wiring. Submit manufacturer's instructions for installation, maintenance, and operation of all equipment to the City Engineer and also place a copy within the controller cabinet. Place all such materials inside a plastic envelope mounted in the cabinet.

L.06 Guarantee

Guarantee the Traffic Signal System(s) installed under these Specifications, including all equipment, parts, and appurtenances in connection therewith, to the City of La Vergne (local roads) and the City of La Verge and the State of Tennessee (state roads) against defective workmanship and materials for a period of not less than 1 year following the date the signal system is installed and made operational, except in no case shall this guarantee expire prior to 3 months after the final acceptance of the Project. Upon completion of the Project, turn over to the City Engineer all warranties or guarantees on equipment and materials that are offered by the manufacturers as normal trade practice.

L.07 Training

Provide to the La Vergne Public Works Department and/or the Tennessee Department of Transportation a training session on the controller and associated cabinet equipment to be supplied on the Project. The training session shall last for a minimum 4 hours unless the La Vergne Public Works Department and/or the Tennessee Department of Transportation determines a lesser time is

adequate. Train the user in the complete operation and programming features of all controllers. Provide this training prior to the acceptance of the Project at a facility agreed upon by the City of La Vergne Public Works Department.

This training requirement shall not apply if a training program meeting these criteria has been provided to the City of La Vergne Public Works Department by this vendor and/or manufacturer on the equipment being bid within 18 months prior to the date of the invitation to bid. This requirement shall apply if the bidder is proposing new, upgraded, or modified equipment not covered in the previous training program.

MATERIALS AND INSTALLATION

L.08 Excavating and Backfilling

Perform excavation needed to install conduit, foundations, and other equipment, so as to cause the least possible damage to the streets, sidewalks, and other improvements. Excavate trenches no wider than necessary to properly install the electrical equipment and foundations. Do not begin excavating until immediately before installing conduit and other equipment. Place the material from the excavation where it will cause the least disruption and obstruction to vehicular and pedestrian traffic and the least interference with the surface drainage.

Backfill the excavations and compact to at least the density of the surrounding material. Remove all surplus excavation material and dispose of outside the highway right-of-way, in accordance with Part 2.

After backfilling, keep excavations well-filled, and maintain in a smooth and well-drained condition until permanent repairs can be made.

At the end of each day's work, and at all other times when construction operations are suspended, remove all equipment and other obstructions from that portion of the roadway used by public traffic, and park a minimum of 30 feet from the edge of pavement unless otherwise protected by guardrail, bridge rail, or barriers installed for other purposes.

Perform excavation in the street or highway so as to restrict no more than one traffic lane in either direction at any time. Do not obstruct traffic during hours of peak flow unless approved more than two working days in advance with an accepted Traffic Control Plan meeting the requirements of Part 1. Incorporate construction signing in accordance with the MUTCD.

L.09 Removing and Replacing Improvements

Replace or reconstruct, with the same kind of materials as found on the Work, improvements, such as sidewalks, curbs, gutters, Portland cement concrete and asphalt concrete pavement, bituminous surfacing, base material, and all other improvements removed, broken, or damaged by the Contractor.

Before removing the sidewalk and pavement material, use an abrasive type saw to cut, to a minimum depth of 2 inches, the outline of all areas to be removed in Portland cement concrete sidewalks and in all pavements. Cut the remainder of the required depth. Make cuts neat and true

with no shatter outside the removal area.

Whenever a part of a square or slab of existing concrete sidewalk or driveway is broken or damaged, remove the entire square or slab and reconstruct the concrete as specified above.

Perform all work in accordance with these Specifications, or the Project Specifications, whichever is of a higher standard.

L.10 Foundations

Construct foundations for posts, standards, and cabinets of Class A Portland cement concrete.

Pour foundations for posts, standards, and pedestals after the post, standard, pedestal, or anchor bolts or reinforcing steel is in proper position. Form the exposed portions to present a neat appearance. Rest the bottom of concrete foundations on firm undisturbed ground.

Construct forms to be true to line and grade. Finish tops of footings for posts and standards, except special foundations, to curb or sidewalk grade or as ordered by the Engineer. Use rigid forms, securely braced in place. Place conduit ends and anchor bolts by means of a template until the concrete sets. Moisten both the forms and the ground that will be in contact with the concrete before placing concrete. Do not remove forms until the concrete has cured for at least 12 hours and hardened sufficiently to allow form removal without causing damage to the concrete.

Apply an ordinary surface finish to exposed surfaces of concrete. Wherever the edge of a concrete foundation or sidewalk section is within 18 inches of any existing concrete improvement, extend the sidewalk section to meet the existing improvement.

Where obstructions prevent the construction of planned foundations, construct a foundation satisfactory to the Project Engineer.

L.11 Anchor Rods

Furnish, with anchor-base type rods, anchor bolts meeting the requirements of ASTM F1554, grade as required by design. Fit each anchor bolt with two heavy hex nuts. Hot-dip galvanize all nuts and not less than 10 inches of the threaded ends of anchor bolts according to ASTM A153. The anchor bolts shall be capable of resisting at yield strength stress the bending moment of the shaft at its yield strength stress.

Set standards, posts, and pedestals plumb by adjusting the nuts before the foundation is finished to final grade. Do not use shims or similar devices for plumbing or raking. After plumbing or raking has been completed, cut off anchor bolts ¼ inch above the top nut, and paint the exposed surface with rust protective paint.

Furnish all anchor bolts and nuts required for relocating existing standards and posts.

L.12 Pull Boxes

Construct and install pull boxes as shown on the Plans. Additional pull boxes may be required where conduit runs are more than 150 feet long. The maximum spacing between pull boxes shall be 150 feet. Install pull boxes wherever practicable out of the line of traffic. Set covers level with the

pavement, or with the curb or sidewalk grade, or with the surrounding ground as required.

Place electrical conductors within pull boxes to be clear of the metal frame and cover.

Rest the bottom of the pull box firmly on a bed of crushed stone with a minimum depth of 12 inches below the bottom and extending 6 inches beyond the outside edge of the pull box.

A. Concrete Pull Boxes

Construct concrete pull boxes of a mixture of one part cement, two parts sand, and four parts gravel or 1-inch crushed stone with reinforcement placed as shown on the Standard Drawings. Reinforcement shall consist of welded wire reinforcement, 4 x 4 inches – No. 4/4 at 85 pounds per 100 square feet, meeting the requirements of TDOT Section 908.03. Pull boxes may be poured in place or precast. The color of the pull box concrete material shall match the surrounding concrete color.

Install a cast iron frame and cover in each pull box. Provide castings of Class 30, meeting the requirements of TDOT Section 908.07. The covers shall have a roughened top surface of 1/8 inch in relief. Provide notches for removing the cover. Inscribe the words "TRAFFIC SIGNALS" on top of the covers with letters 1-1/2 inches high and 1/8 inch in relief.

The frame shall have a minimum weight of 42 pounds. The cover shall be of the "Extra Heavy" type with a minimum weight of 54 pounds.

B. Reinforced Plastic or Epoxy Mortar Pull Boxes

Ensure that pull boxes composed of reinforced plastic or epoxy mortar are designed and tested to temperatures of -50 °F and meet the requirements of the following: ASTM D543, ASTM D570, ASTM D790, and ASTM D635, and are based on a 30,000-pound single axle load over a 10 x 20 inch area. The top of the pull box shall consist of a concrete frame (ring) and cover. The color of the pull box concrete material shall match the surrounding concrete color. Inscribe the words "TRAFFIC SIGNALS" on top of the covers.

L.13 Transformer Base

Fabricate the transformer base from steel plate and sheet, and design it to harmonize with the shaft. Provide each transformer base with:

1. One 7-1/2 x 9-inch minimum handhole, with a cover secured with stainless steel fastening screws;

2. Four galvanized steel bearing plates to fasten the base to the anchor bolts;

3. Four galvanized steel bolts, nuts, and washers to fasten base and standard; and

4. One ½-inch, 13 UNC grounding nut welded to the inside of the base opposite the handhole opening.

Ensure that the strength of the transformer base is comparable with that of the shaft.

When a transformer base is required, no handhole will be required in the shaft.

L.14 Conduit

Furnish and install plastic and steel conduit in accordance with these Specifications and close conformity with the lines shown on the Plans.

Threads shall be clean cut, straight, and true and of sufficient length to allow proper coupling. Do not use long running threads on any part of the Work. Protect threads in transit and during installation and provide conduit with proper supports and protection during construction to prevent damage. Properly thread, ream, and cap all ends of pipe installed for future connections to prevent water and foreign matter from entering the conduit system. Provide threaded ends with approved conduit bushings.

Signal conduit shall be a minimum 2 inches in diameter, and detector conduit a minimum 1 inch in diameter. Conduit for service connections shall be 1 inch in diameter. Do not use conduits smaller than 1 inch in diameter unless otherwise specified, except grounding conductors at service points shall be enclosed in ¾-inch diameter conduit. Larger-sized conduit may be used in which case it shall be for the entire length of the run with no reducing couplings allowed.

A. Materials

Provide conduits and fittings of the type as shown in the construction plans and as follows:

1. **Steel Conduit**

   a. Rigid conduit and fittings shall be heavy-wall, hot dipped galvanized steel conforming to Federal Specification WW-C- 581-d(3) and ANSI C80.1. It shall be galvanized inside and out and shall meet the requirements of ASTM A53. Each length shall bear the label of Underwriters Laboratories, Inc.

   b. Flexible conduit shall be galvanized flexible steel meeting Federal Specification WW-C-581-d(3), ANSI C80.1, and UL Standard 6 with a minimum 40-mil thickness of polyvinyl chloride (PVC) coating conforming to ASTM D746.

2. **Plastic Conduit.** For plastic conduit, provide high impact PVC, Schedule 40 or Schedule 80.

3. **High-Density Polyethylene (HDPE).** Materials used for the manufacture of HDPE conduit and fittings shall be per ASTM F2160 and consist of a Standard Dimension Ratio (SDR) 9-11. No other substitutions shall be allowed unless directed by the Engineer. HDPE conduit can be used with preassembled cable and rope-in- conduit.

B. Installation

All bends shall be in strict compliance with the NEC.

Lay conduits to a minimum depth of 6 inches below subgrade but not less than 24 inches below pavement grade except when approved by the Project Engineer; conduit may be laid at a depth of not less than 24 inches below top of curb when placed in back of the curb. Place conduit runs for detectors parallel to existing or proposed curbs and not more than 18 inches behind the curb face unless other specified. Place steel conduit or Schedule 80 PVC conduit under existing pavements by approved jacking or drilling methods. Where trenching is allowed in a traffic bearing area, use PVC conduit (Schedule 40) encased in concrete.

Conduits shall be continuous and extend from end point (i.e. pull box, foundation signal pole, pedestal pole, etc.) to another end point. Conduit splicing shall not be permitted between end points.

After completing the installation of the conduit, test all conduits installed under the Contract with a mandrel having a diameter ¼-inch smaller than the conduit and a length of 2 inches. Repair, to the Engineer's satisfaction, all conduits that will not allow passage of the mandrel; if repairs cannot be accomplished, remove and replace the conduit at no additional cost to the Department. After the mandrel test, scour all conduits with a stiff wire brush slightly larger in diameter than the conduit.

Extend conduits terminating in anchor base standards and pedestals approximately 2 inches above the foundation and slope them toward the hand-hole opening. Conduits shall enter concrete pull boxes from the bottom and shall terminate not less than 2 inches nor more than 4 inches above the bottom of the box and near the box walls to leave the major portion of the box clear.

Clean existing underground conduit to be incorporated into a new system by blowing with compressed air.

L.15 Conductors

Furnish and install conductors in accordance with these Specifications and close conformity as shown on the Plans.

Traffic Control Conductors shall be rated at 600 volts. Run all conductors, except loop conductors and cables run along messengers, in conduit, except where run inside poles. Where signal conductors are run in lighting standards containing high voltage street lighting conductors, encase the signal conductors in flexible or rigid metal conduit. Where telephone circuits are introduced into controller foundations, encase the telephone conductors in flexible metal conduit and in conformance with the NEC.

Conductors for traffic loops shall be continuous AWG No. 14 XLP stranded wire to the detector terminals or spliced with shielded detector cable within a pull box, conduit, or pole base.

Detector cable shall be two conductor twisted pair shielded AWG No. 14 stranded meeting IMSA Specification No. 50-2.

L.16 Cable

All signal cable shall conform to applicable IMSA Specification No. 19-1 or 20-1. Use stranded

cable color coded AWG No. 14 for all signal and accessory circuits. Retain the same color identification for the entire length of a circuit run.

L.17 Wiring

1. Terminate all wiring to screw terminals using lugs.

2. Make all splices with solderless connectors, and insulate splices with weatherproof tape applied to a thickness equal to the original insulation.

3. Attach cables to messenger with non-corrosive lashing rods or stainless-steel wire lashings.

4. All wiring within enclosed cabinets shall be neatly formed and harnessed and shall have sufficient length for access and servicing.

L.18 Service Connection

Contractor is responsible to coordinate service connection details and metering with the appropriate local utility in conformance with State Fire Marshal's Office requirements. Obtain the necessary service for each installation.

L.19 Sealant

Provide sealant material selected from the TDOT Qualified Products List (QPL) maintained by the TDOT Material and Test Division for sealing saw-cuts. The sealant material shall resist the upward movement of loop and lead-in and shall exhibit stable dielectric characteristics, including a low permitivity and high dielectric strength. It shall bond to the roadway paving material, preventing entry of moisture, and shall remain flexible without melting through the anticipated temperature and weather conditions.

L.20 Strand Cable

Span cable for suspending signal heads between pole supports shall be 7-strand, Class A, copper-covered steel wire strand or greater, meeting the requirements of ASTM A460, with a minimum breaking strength as noted on the Plans. An acceptable alternate is 7-strand steel wire with a Class A zinc coating meeting the requirements of ASTM A475, with a minimum breaking strength as shown on the Plans.

Strand cable for messenger wire (other than span wire as specified above) and pole guy cable use shall be of the diameter(s) shown on the Plans and shall meet the requirements of ASTM A475 for zinc-coated steel wire strand, 7-strand Siemens-Martin Grade with a Class A zinc coating or greater.

A Figure 8 cable combining the messenger cable and conductor cable in an insulated jacket is an acceptable alternate to conductor cable lashed to a messenger cable.

L.21 Bonding and Grounding

Make metallic cable sheaths, conduit, transformer bases, anchor bolts, and metal poles and pedestals mechanically and electrically secure to form a continuous system, and ensure they are effectively grounded. Bonding and grounding jumpers shall be copper wire or copper strap of not less than the same cross-sectional area as No. 6 AWG.

Furnish and install a ground electrode at each service point. Ground electrodes shall be one-piece lengths of copperweld ground rod not less than 8 feet in length and ½ inch in diameter, installed in accordance with the NEC. Ground the conduit and neutral as required under the NEC, except that grounding conductors shall be No. 6 AWG or approved equal, as a minimum. Enclose exposed ground conductors in ½-inch diameter conduit, and bond to the electrode with a copperweld ground clamp.

L.22 Field Test

Prior to completing the work, conduct the following tests on all traffic signal and lighting circuits in the Quality Control Representative's presence:

1. Test for ground in circuit.

2. Conduct a megger test on each circuit between the circuit and ground. The insulation resistance shall be not less than the values specified in Section 119 of the NEC.

3. Conduct a functional test to demonstrate that each part of the system functions as specified or intended herein.

4. Test all detector loops and leads before and after they are sealed in the pavement to ensure there are no shorts to ground in the system and to ensure that the loop plus lead-in inductance is within the operating range of the detector.

Replace or repair, in a manner approved by the Engineer, all faults in material or in the installation revealed by these tests. Repeat the applicable testing until no fault appears.

L.23 Inspection

After completion of the installation and before final acceptance of the Project, conduct a full operational check of the system under actual traffic conditions in the presence of the Quality Control Representative. The operational check shall cover a minimum time period of 30 calendar days. During this period, perform all necessary adjustments and replace all malfunctioning parts of the equipment required to place the system in an acceptable operational condition. Perform all work and furnish all materials required under these Specifications subject to the direct supervision, inspection, and approval of the Project Engineer.

The inspection of the work shall not relieve the Contractor of the obligation to properly fulfill the Contract as specified.

SIGNAL HEADS

L.24 Signal Heads

Signal heads shall meet the latest requirements published in the "Equipment and Materials Standards of the Institute of Transportation Engineers (ITE) for Adjustable Face Vehicle Traffic Control Signal Heads" and the National Electrical Code. The arrangement of traffic signal heads shall be mounted as shown on the Plans or as specified by the Engineer and be in accordance with the latest versions of the MUTCD and the TDOT Traffic Design Manual.

All circular indications shall use 12-inch lenses unless otherwise shown on the Plans. All arrow indications shall use 12-inch lenses. All new vehicle signal heads installed at any one intersection shall be of the same style and from the same manufacturer. All exposed metal signal housings, doors, visors, backplates and framework parts shall be painted with a powder coated finish and be in accordance to the MUTCD specifications. Suspensions for span wire mounting of multi-faced signal heads and signal head clusters (such as a 5-section signal head) shall include an approved swivel type balance adjuster for proper vertical alignment.

Signal head housings shall be cast aluminum and all associated parts/hardware shall be of non-corrosive material. In addition to these requirements, comply with the following:

A. Optical Units

Traffic signal indications shall be LED type and meet the Institute for Transportation Engineers (ITE) latest LED specifications. All LED indications shall have a five-year warranty.

B. Signal Head Mounting and Mounting Brackets

Furnish signal heads that either have integral serrations or are equipped with positive lock rings and fittings designed to prevent heads from turning due to external forces. Lock ring and connecting fittings shall have serrated contacts. Provide signals with water-tight fittings.

Support bracket-mounted signal heads, as shown on the Plans, by mounting brackets consisting of assemblies of 1-1/2 inch standard pipe size. Ensure that all members are either plumb or level, symmetrically arranged, and securely assembled. Conceal all conductors within poles and mounting assembly. Secure each slip fitter to the pole.

C. Directional Louvers

Where shown on the Plans, furnish and install louvers in the hoods of the signal head sections designated.

Directional louvers shall have a snug fit in the signal hoods. Construct the outside cylinder and vanes from a non-ferrous metal or galvanized sheet steel. Louvers shall be painted with a powder coated finish.

D. Back Plates

Where shown on the Plans, furnish and attach back plates to the signal heads. All back plates shall be louvered and constructed of 3,003, half- hard, 0.051-inch minimum thickness aluminum sheet. Other materials such as plastic or fiberglass may be used where approved. In fabricating back plates, bend back the inside vertical edges, adjacent to the signal head, to form

mounting brackets for attaching to the signal. Form back plates in two or more sections and bolt together, thus allowing for installation after signal heads are in place. Back plates shall have a dull black appearance in the front and back.

E. Wiring

Signal head leads shall be No. 18 AWG stranded with 221 °F thermoplastic insulation. Wire a separate white (common) lead to each socket shell; and wire a colored lead, corresponding to the color code shown on the Plans, to each socket terminal. Provide leads of sufficient length to allow connection to the terminal block specified. Provide each complete signal head with a minimum 4-point terminal block, properly mounted in a signal section. Stud type terminal blocks shall have not less than ¼-inch edge clearance to any portion of the stud. Exterior wiring shall have a 360-degree drip loop in advance of entering the head.

F. Pedestrian Signals

Pedestrian signal heads shall meet the latest requirements published in the "Equipment and Materials Standards of the Institute of Transportation Engineers (ITE) for Adjustable Face Pedestrian Signal Heads", the National Electrical Code and be compatible with NEMA standards. The arrangement of pedestrian signal heads shall be mounted as shown on the Plans or as specified by the Engineer and be in accordance with the latest versions of the MUTCD and the TDOT Traffic Design Manual. The pedestrian indications shall be LED symbols and in conformance with the Institute for Transportation Engineers (ITE) latest LED specifications. All LED indications shall have a five year warranty.

In addition, where pedestrian signal heads are provided, they shall:

1. include a pedestrian change interval countdown display where the calculated pedestrian change interval is more than 7 seconds;

2. include Accessible Pedestrian Signals and pedestrian pushbuttons complying with MUTCD Accessible Pedestrian Signals section;

3. incorporate a locator tone meeting the requirements of the MUTCD Accessible Pedestrian Signals; and

4. include a pedestrian pushbutton with tactile vibrating arrow button and audible sound.

The pedestrian countdown display shall conform to the latest FCC regulation on Emission of Electronic Noise.

The manufacturer must supply certification, which includes a copy of the test report by an independent technical laboratory as to the compliance with ITE specifications (where it applies). The report shall also indicate that the tests were performed only after the modules received a thirty
(30) minute operational warm-up period immediately preceding the tests.

The housing door, door latch, and hinges shall be of aluminum, or polycarbonate or approved equal. Hinge pins shall be stainless steel. Provide the door with a neoprene gasket capable of making a weather resistant, dust-proof seal when closed.

All pedestrian signal heads, mountings, outside of hoods, and pedestrian push button housings shall have a powder coated finish (if aluminum) or colored resin (if polycarbonate) in accordance to MUTCD specifications.

G. Signal Head Installation

Install signal heads and pedestrian signal heads with the faces completely covered until the entire installation is ready for operation.

H. Tether Wires

Tethers wires must be installed on all span wire assemblies to minimize traffic signal face movement due to wind effects. Tether wires must be able to break away from poles when hit or snagged. Tether wires to be a minimum of ¼" wire. Installation must conform to TDOT Standard Drawing T-SG-8.

CONTROLLERS – GENERAL

L.25 Controllers

Controller equipment shall be permanently marked with the manufacturer's name or trademark, part number, and serial number.

Controllers must meet the following applicable industry standards and amendments:

NEMA TS2 Controller ..... NEMA TS-2-2016
ATC Controller..... AASHTO/ITE/NEMA ATC 5.2b

All NEMA TS2 and ATC controllers must provide functionality that meets or exceeds operational characteristics, including NTCIP support, as described in NEMA TS-2-2016.

NEMA TS2 Type 2 controllers shall be used when downward compatibility to existing TS1 cabinets is desired.

Except for replacing controllers in existing systems, all new installations must include controllers that capture high resolution event-based data elements to provide the automated traffic signal performance measures.

The manufacturer must supply certification of the conformance to the above requirements at the time of the bid.

In addition to the above requirements, the controller shall:

1. have all timing values entered via a front panel mounted keyboard. This keyboard shall be an integral part of the controller unit;

2. have an English language menu for programming or reading all controller features;

3. continue to operate the intersection as values are inspected or altered;

4. include the ability to upload and/or download the controller software operating system and user programmed database to or from external media (datakey, usb, sd card etc); and

5. support Flashing Yellow Arrow for Permissive Left-turn Movements applications.

Surge Protection Devices. The cabinet shall have Surge Protective Devices (SPDs) for the main AC power input, all signal head field wiring terminals, interconnect cable terminals and loop lead-in cable terminals which are located in the cabinet. Furnish SPDs to provide effective defense against high transient voltages caused by lightning discharges or other sources. SPDs must be unobstructed and accessible from the front side of any panel used in the cabinet. The SPD for the main AC power input of the cabinet must be connected on the load side of the cabinet circuit breaker. SPDs must meet the following minimum requirements:

1. AC power SPD:

    a. Must be UL 1449 4th Edition Listed
    b. Parallel connected device
    c. UL Nominal Surge Rating (In): 20kA
    d. UL Short Circuit Current Rating (SCCR): 150kA minimum
    e. Surge current rating: 50kA per phase minimum
    f. Visual status indication
    g. Remote signalization contacts for monitoring purposes
    h. 10-year manufacturer's warranty minimum

2. DC power SPD:

    a. Must be UL 1449 4th Edition recognized
    b. Parallel connected device
    c. UL Nominal Surge Rating (In): 10kA minimum
    d. Must provide protection between all +/-/Gnd connections
    e. Surge current rating: 20kA per phase minimum
    f. Visual status indication
    g. Remote signalization contacts for monitoring purposes
    h. 10-year manufacturer's warranty minimum

3. Data and communication SPD:

    a. Must be UL 497B listed
    b. 10-year manufacturer's warranty minimum

4. Signal and interconnect cable field wiring terminal SPD:

    a. Clamp the surge voltage to a level no greater than twice the peak operating voltage of the circuit being protected

    b. Withstand a surge current of 1000A with an 8 by 20 µs waveform six times (at 1 second intervals between surges) without damage to the suppressor

    c. 10-year manufacturer's warranty minimum

5. Loop lead-in cable field wiring terminal SPD:

    a. Protect the detector unit loop inputs against differential (between the loop lead) surges, and against common mode (between loop leads and ground) surges

    b. Clamp the surge voltage to 25 V or less when subjected to repetitive 300A surges

    c. Withstand repetitive 400A surges with an 8 by 20 µs waveform without damage

    d. 10-year manufacturer's warranty minimum

All SPDs must be installed according to the SPD manufacturer's instructions and not affect the operation of equipment. SPD leads must be kept as short and straight as possible.

CABINETS – GENERAL

L.26 Cabinets

Cabinets must be permanently marked with a label including the manufacturer's name or trademark, model/part number, and the year and month of manufacture. The label should be placed on the inside of the main door using a water resistant method. The label must be visible after installation.

Cabinets shall be provided as a complete unit and have all terminals and facilities necessary for traffic signal control as shown on the plans and shall meet at a minimum, the following requirement:

NEMA TS2 Controller Cabinet.....NEMA TS 2 2016

Cabinets shall be in accordance with the latest version of the TDOT Traffic Design Manual.

Two paper copies of the cabinet wiring diagram shall be provided with each cabinet. The nomenclature of signal heads, vehicular movements and pedestrian movements on the wiring diagram must be in accordance with the signal operating plan. Documentation must include a list identifying the termination points of cables used for vehicular and pedestrian signal heads, detector loop lead-ins, and pedestrian pushbutton wires. A heavy duty, resealable plastic bag must be mounted on the backside of main cabinetdoor for storing cabinet documentation.

House the controller in a rigid, weatherproof cabinet, constructed, finished, and equipped as follows, and as shown on the Standard Details:

1. **Material.** Provide weather-tight cabinets fabricated from aluminum sheet or cast aluminum alloy with a minimum 0.125-inch thickness. All welds on fabricated cabinets shall be internal and continuous; spot welding is not acceptable. Painting of cabinets is only required if the final finish presents an unsightly appearance.

2. **Doors.** Type III, IV, and V cabinets shall have a hinged front opening door that shall include substantially the full area of the front of the cabinet. Equip the door with a positive hold fast

device to secure the door in at least two open positions: one position at approximately 90 degrees and the other at 120 degrees or more. The holdfast device shall be easily secured and released without the use of tools. Equip doors for Type II, III, IV, and V cabinets with a switch compartment, and provide the manual switches, specified in this Part, with a hinged front opening auxiliary door. Each door shall have a gasket to provide a weatherproof seal when closed.

Provide the main door with a No. 2 pin-tumbler cylinder lock, and the auxiliary door with a standard police sub-treasury lock. Provide four keys for each lock.

Provide a switch which is to be tied to the cabinet light so that cabinet light will be on when the door is open and off when the door is closed.

3. **Cabinet Mounting.** Mount cabinets as shown on the Plans.

4. **Ventilation.** Unless otherwise specified, provide ventilation as follows:

   a. On all cabinets housing controllers, mount a screened, rain-tight vent, 1-1/2 inches in diameter or larger, on the cabinet top.

   b. Provide screened or filtered inlet ventilation openings, equal to or greater in area than top vents, located in the bottom or lower back side of Type I and II cabinets or around the lower 8 inches portion of Type III cabinets.

   c. Construct the vents so as to project within the cabinet no more than necessary to provide for lock nuts and gaskets to retain the vent.

   d. Locate vents so as to not interfere with the mounting of controller equipment.

5. **Cabinets with Exhaust Fans.** Exhaust fans shall consist of an electric fan with ball or roller bearings and a capacity of at least 100 cubic feet per minute. Mount the fan in a rain-tight housing attached to the top of the controller cabinet.

   The fan shall be controlled by a thermostat having a temperature differential between turn-on and turn-off of 15 °F (-0, +5 °F), adjustable for turn-on through a minimum calibrated range of from 100 °F to 150 °F.

   Whenever a fan is to be installed, provide the air inlet filter and filter holder shown in the TDOT Standard Details, or equal approved by the Project Engineer. Internally seal other air inlets. Provide exhaust fans in all cabinets that house controllers, with the exception of flasher controllers.

6. **Auxiliary Equipment.** With the exception of cabinets used in special applications (Type I and II), provide all cabinets with the following:

   a. Substantial shelves or brackets to support controller and auxiliary equipment.

   b. Panel for terminals arranged for adequate electrical clearance. Panels should be located in the cabinet as described below:

- Detectors..... Lower left wall
- AC power..... Lower right wall
- Auxiliary/police switches ..... Door
- Load switch bay..... Back wall

c. The cabinet shall include an LED light and GFI duplex receptacle which can be used when the main circuit breaker is off.

d. Control panel assembly consisting of:

1. Power supply connections made to a 30-ampere circuit breaker mounted on the cabinet separate from the signal terminal panel. The circuit breaker shall be a magnetic trip type, having an interrupting capacity of at least 2,000 amperes at 125 volts AC. The circuit shall trip between 101% and 125% of rated load, with an inverse time delay characteristic provided. Instantaneous tripping shall occur at ten times the nominal rating. All controllers shall be internally fused.

2. Service line surge protection.

3. Electrical service termination point sized to accept No. 4 AWG copper wire.

4. Ground fault receptacle.

5. Porcelain lamp receptacle to accept a standard traffic signal lamp. If LED lenses are utilized, they shall be dimmable and switchable to reduce glare at night time.

6. Circuit breakers in accordance to the National Electric Code for:

(a) Main power input to provide all power associated with normal operation.
(b) Flasher power input to provide all power associated with flash operation.
(c) Service power to provide power for the lamp and duplex receptacle and cabinet light.

7. Copper ground bus (minimum of 12 positions).

e. Flasher mechanism independent of controller. The cabinet shall be wired for and include a NEMA flasher mounted on the back panel. All cabinets shall have a two-circuit flasher. The flasher shall have output indicators mounted on the front of the flasher case and shall be rated at a minimum of 15 amperes.

f. General purpose relays, where required to perform specified functions. All relays external to the controller or appurtenances shall meet NEMA standards. In addition:

- Flash transfer relays shall be of heavy-duty type and have a minimum contact rating of 10 amperes. Contacts shall be of silver material to reduce contact pitting.

- Unless otherwise specified, each cabinet shall include six (6) flash transfer relays.

- Flash transfer relays shall support Flashing Yellow Arrow for Permissive Left-turn

Movements applications.

g. Type II, III, IV, and V cabinets, when specified as housing for traffic actuated controllers, with two or more insulated terminal blocks mounted within the housing, one or more for terminating each field wire.

h. A minimum of 12 available bare ground positions tied to AC Common Return.

i. Earth (driven) ground tie point to terminate a single No. 4 AWG copper ground.

j. A tie point to tie all ground systems within the cabinet to a single reference point. All grounds (AC - return, Chassis, and Logic Ground) must be referenced to a single ground point at the electric service.

k. A panel (police subpanel) shall contain the following:

1. A main power switch, which shall be wired to remove all cabinet power when in the Off position

2. An Automatic Flash switch, which shall be wired as follows:

(a) The Flash position shall cause the cabinet to provide Flash Operation. The controller shall continue to operate, and Stop Time shall be applied to the controller.

(b) Auto/Manual switch to activate Manual Control Enable.

(c) Manual control pushbutton switch with self- coiling cord. Cord shall attach to a 2 position terminal strip via fork type connector.

(d) Upon return from Flashing to Automatic, the controller shall initialize in the Start-Up Display condition as programmed in the controller, typically major road phases.

3. A panel mounted inside the main door shall contain the following switches:

(a) A technician Stop-Time switch to apply Stop Time to each controller ring.

(b) An Interval Advance switch, enabled only by the Stop Time switch, to be momentary pushbutton switch to apply Interval advance to the timer.

(c) A Signal On-Off switch, which shall remove the AC power applied to the signal heads for normal operation while the controller continues to operate.

(d) Individual phase vehicle and pedestrian detector test switches to be miniature toggle of the On-Off Momentary type to place:

i. No Call - Call provided by detectors
ii. Locked detector call
iii. Momentary detector call

Insulate or shield switch terminals on back of main cabinet door so that no live parts are exposed.

Leads from the terminal block to the auxiliary door switches shall be no less than No. 18 AWG stranded, with TW plasticized polyvinyl chloride or nylon insulation enclosed in an insulating loom, and shall be of sufficient length to allow full opening of the main cabinet door.

l. The cabinet shall be wired with the appropriate number of load switches to accommodate vehicular and pedestrian phasing according to plans. At a minimum, cabinets shall include 16 load switch bases. The load switch wiring shall support Flashing Yellow Arrow for Permissive Left-turn Movement applications.

m. All cabinet wiring shall be neatly routed and labeled, laced and permanently secured. All cable shall be secured to the panel, where practical. There shall be no holes drilled through the cabinet walls to mount panels or secure cables.

n. All terminals in the cabinet shall be of the barrier type. The following field connector terminals shall be provided:

- Four (4) signal output positions per load switch bay (R-Y-G-FL).
- Ten (10) positions per phase for vehicle loop detector harness.
- One position per phase for pedestrian detector inputs.

o. Cabinets shall have SDLC communication between the controller, MMU, Detector Rack, Radar Detector (if applicable) and Video Detection (if applicable).

p. Cabinets should have an electrical outlet (Non GFI) that has 120 VAC from the OUTPUT side of the Main Power Surge unit.

q. Cabinets shall support Flashing Yellow Arrow for Permissive Left-turn Movements applications.

r. All cabinets shall be supplied with a Malfunction Management Unit (MMU) and shall meet at a minimum, the following requirement:

NEMA TS2 Malfunction
Management Unit..... NEMA TS 2 2016

The manufacturer must supply certification of the conformance to the above requirements at the time of the bid.

According to NEMA TS2 the MMU shall be able to detect the presence of voltage on conflicting field connection terminals, the absence of proper voltages on all the signal field connection terminals of a channel, and shall be capable of monitoring for the presence of satisfactory operating voltages within the Controller Unit (CU) and the MMU itself. The MMU shall be able to operate as a Type 16 with sixteen channels or as a Type

12 with twelve channels (compatible with NEMA TS1 cabinets).

The MMU should have an Ethernet port.

L.27 Auxiliary Equipment for Traffic Signal Controllers

Furnish and install the following auxiliary equipment in each cabinet for traffic actuated controllers.

A. Load Switches

Provide each cabinet complete, with the necessary number of NEMA load switches and Flash Transfer relays necessary to affect the specified signal sequence and phasing. Load switches shall:

1. Meet NEMA standards.

2. Have front-face mounted LED indicators to indicate the "On" condition of both the Input and Output circuits.

3. Use replaceable "cube" type circuitry or encapsulated discrete component construction. No unencapsulated discrete component construction are acceptable.

B. Time Clock Switches

Where shown on the Plans, provide time clock switches of solid-state circuitry, continuous duty, with a 7-day cycle clock operating from the 120-volt AC service line. Provide switching for a minimum of one independent output and ensure the time-of-day selection is adjustable to within 1 minute of the desired time. Provide a battery backup system that can maintain time keeping and memory a minimum of 24 hours after power interruption. Furnish an omitting device as an integral part of the time switch to allow the switching operation to be skipped for any preselected day or days of the week. The time clock shall automatically compensate for daylight savings time changes. When the time clock is supplied as an internal component of the controller, supply the clock feature to provide for the selection of Maximum Green II on time of day, day of week, week of year basis. Time clocks shall meet NEMA environmental specifications.

When required in the traffic signal plans, the auxiliary equipment listed below shall meet the following requirements:

1. **Uninterruptable Power Supply (UPS)**. An UPS shall power the traffic signal cabinet in the event of a power failure for a minimum of 3 hours.

   UPS assemblies should include off-the-shelf deep cycle AGM batteries.

   Loss of utility power, transfer from utility power to battery power, and transfer back to utility power must not interfere with normal operation of connected equipment. In the event of UPS failure or battery depletion, connected equipment must be energized automatically upon restoration of utility power.

Removal and replacement of the UPS must not disrupt the operation of the equipment being protected.

All harnesses necessary to connect and operate the system must be included. All connectors must be keyed to prevent improper connection.

UPS assemblies shall be installed in accordance with the manufacturer's recommendations.

An UPS operation and maintenance manual shall be provided in the cabinet where the UPS is installed with cabinet wiring schematics, electrical interconnection drawings, parts layout and parts lists.

The UPS shall include a manufacturer's warranty covering defects for a minimum of three years (5 years for the external batteries) from the date of final equipment acceptance. The warranty must include provisions for providing a replacement UPS within 10 calendar days of notification for any UPS found to be defective during the warranty period at no cost to the maintaining agency.

2. **Communications – Wireless.** Consist of installing a Wireless Network Communications Link with all necessary hardware in accordance with the plans and standard drawings to provide a data link between field devices (i.e. Traffic Signal Controllers).

   Each link shall consist of Master ODU (Out Door Unit, Antenna) connected to a data switch within one of the signal cabinets and a Slave ODU connected to a data switch within the other signal cabinet. Each ODU is aligned to face the opposing ODU. The cable length between the ODU and its associated data switch may not exceed 300 feet.

   The Wireless Network Communications Link components at each of the linked traffic signal cabinets shall include an ODU, a LPU (Lightning Protection Unit), power supply mounting hardware, and CAT 5E cabling. The ODU is pole mounted per manufacturer's specifications. The LPU and power supply are mounted within the traffic signal cabinet. CAT 5E cable is installed between the ODU and LPU.

   For the applicable frequency spectrum of the radios being deployed, perform a spectrum analysis to ensure no competing equipment in the area. Ensure the radio path site survey test is performed using the supplied brand of radio equipment to be deployed. Typically, if the ODUs can be mounted with clear line of sight between them, this is sufficient to ensure proper operation. If this is not possible, it may be determined that a repeater station is necessary to complete the intended link. Provide the test results to the Project Engineer for review and approval. Submit copies of the test results and colored copies of the frequency spectrum scan along with an electronic copy of this information. The Project Engineer will approve final locations of the ODUs and any necessary repeater stations.

   Install each ODU in such a manner that avoids conflicts with other utilities (separation distances in accordance with the guidelines of the NESC) and as specified in the ODU manufacturer's recommendations. Secure the ODU mounting hardware to the pole and route the CAT 5E cable such that no strain is placed on the RJ-45 connectors. Align each antenna/radio to be perpendicular to the ground (using bubble level) and to face the opposing radio.

3. **Fiber optic cables.** Multi-mode type fiber optic cable shall be 50 µm core diameter, with at least 12 fibers per cable unless otherwise specified in the plans. Single-mode type cable shall be between 8-9 µm core diameter, with at least 12 fibers per cable unless otherwise specified. A fiber optic drop cable shall be a minimum of 6 fibers (each type) and be spliced into the trunkline in a splice enclosure either aerially or in a pull box. 50 ft. of slack shall be provided, either lashed to a span aerially, or coiled in a pull box for underground installations. Termination panels shall be provided with sufficient size to provide for a neat installation, and enough panel space to accommodate the specified number of fibers for termination. ST connectors shall be used unless otherwise specified. Any necessary jumpers shall be provided for installed equipment.

L.28 Miscellaneous Traffic Signals

A. Flashing School Signals

Flashing school signals will be maintained by the Rutherford County Board of Education or the school which requests their placement. They may be hard-wired or solar-powered and shall confirm to the MUTCD.

B. Solar Power Flashers

When required, the solar power flasher equipment listed below shall meet the following requirements:

1. Solar panel and mounting equipment shall be installed on cantilever pole shaft as illustrated on layout detail sheet and as directed by manufacturer instructions.

2. Solar power unit assembly shall include all required mounting equipment, wiring/cables, battery supply, battery charging unit and other ancillary equipment necessary to operate the solar panel and properly charge the battery. The photovoltaic array shall include mounting bracket assembly to permit adjustment of the array to optimal sun exposure. The photovoltaic module shall be mounted and aligned per manufacturer recommendations to maximize solar exposure.

A. Battery unit shall meet manufacturer specifications required to operate and power L.E.D. signal displays and continuous time clock switch operation. Battery shall be compatible with cabinet equipment, including the time clock switch and the flasher signal displays. Battery unit shall meet minimum environmental and performance specifications required for system operation as recommended by solar panel and time clock switch manufacturers.

3. Solar panel and battery supply shall be of a size and power rating necessary to provide required power to time switch clock and flasher signal displays. Obtain the power load requirements from the solar power equipment manufacturer and provide as required. On a typical school day, it should be expected that the flasher system will operate up to four (4) hours per day with the time clock continuously operating to maintain its clock timer. Provide a solar system sizing report from the manufacturer indicating the power supply requirements of the proposed system required to meet the expected power demand.

4. The photovoltaic modules shall be warranted for a minimum of five (5) years from date of installation.

5. The battery system shall be a gelled-electrolyte type battery with capacity to provide a minimum of five (5) days continuous operation of the flasher assembly without charging. Batteries shall be field replaceable. Batteries shall have prorated warranty of a minimum of five (5) years from date of installation.

DETECTORS

L.29 Detectors

Provide detectors, of the type shown on the Plans, to actuate signal phases of traffic actuated controllers. Provide ample lightning protection to provide effective defense against high transient voltages caused by lightning discharges or from other sources. The lightning protection unit must withstand repeated 400-ampere surges on a 9 x 20 microsecond waveform. Also, the unit must be a two-stage device capable of clamping a minimum of one hundred 300-ampere surges to 25 volts within 40 nanoseconds for surge applied across the two detector leads.

B. Inductive Loop Detection System

Inductive loop detector units (loop amplifiers) shall meet at a minimum, the following requirement:

NEMA TS2 Inductive
Loop Detector Units ..... NEMA TS 2 2016

Loop amplifiers may be single or multi-channel and shall be of the totally self-contained type.

All loop amplifiers shall be of the type to provide both “Extended” and “Delayed” outputs.

The loop detector amplifier shall be full automatic, requiring no adjustments to effect operational ability other than setting of the operating frequency and sensitivity. The amplifier shall:

1. Sense any legal motor vehicle traveling at speeds up to 65 miles per hour.

2. Have both a “Pulse” and “Presence” Output:

   a. Pulse output shall generate an output of 125 plus or minus 25 millisecond output for each vehicle entry.
   b. Presence output shall provide a continuous output for up to 60 minutes as long as a vehicle is within the detection zone.

3. Provide at least four user selectable sensitivity ranges.

4. Be supplied with at least three frequency ranges for crosstalk minimization.

5. Have a front-face mounted indicator to indicate active output of the internal relay. This

indicator shall indicate the presence of:

a. Normal Output
b. Delayed Output
c. Extended Output

6. Have a front-panel mounted "Reset" switch that when pressed shall cause the unit to completely re-tune itself.

7. Have Delayed or Extended timing features with the following ranges:

   a. Delayed output of 0 to 30 seconds in 1-second increments.
   b. Extended output of 0 to 10 seconds in 1/4-second increments.

8. Have internal diagnostics to determine the operational ability of the loop. These diagnostics shall determine if a loop is opened or shorted and shall provide a visible indication of such condition. Additionally, if such a condition occurs, the amplifier unit shall default to a "constant" output.

9. Provide output by a mechanical relay, which shall be "off" to provide an output.

10. Have all delay functions wired to the associated plan phase green to inhibit that function during controller phase green.

11. Be able to operate with loop lead-in lengths of at least 2,000 feet.

Comply with the details of the detector loop installation as shown on the Plans or Standard Drawings.

C. Video Detection System (VDS)

When specified in the plans, the equipment shall consist of all items necessary to provide a complete functional video detection system that process images and provide detection outputs to the traffic signal controller.

VDS shall be capable of NEMA TS2 operation. VDS shall be waterproof and weather resistant.

VDS shall provide user-defined detection zone programming via a graphical user interface (GUI) and any necessary equipment for future programming. The configuration database shall have the ability to be stored on a removable data storage external to the video card.

VDS shall display programmable detection zones and detection activations overlaid on live video inputs. It shall detect vehicles in real time as they travel across each detection zone.

VDS shall have a minimum of 24 programmable detection zones per camera.

VDS shall be capable of:

1. shadow rejection without special hardware;
2. non-impaired operation under light intensity changes;
3. maintained operation during various weather conditions (e.g. rain, fog, snow);
4. anti-vibration, 5% rejection based on image change;
5. ability to select direction of flow parameters;
6. ability to properly detect directionally;
7. ability to configure presence, pulse, extend and delay outputs;
8. ability to set up a minimum of six detection zones per camera view to count the number of vehicles detected and store the information for retrieval;
9. variable focus providing a minimum of 4 to at least 40-degree horizontal field of view; and
10. store detection zones in non-volatile memory.

VDS shall have no splices between the processors and the cameras. VDS shall provide LED

indicators to show active detection.

VDS camera shall have an internal heater to assure proper operation of the equipment during low temperatures.

VDS shall have surge ratings as set forth in NEMA specifications.

VDS shall have a two-year warranty and updates of all software shall be available without charge during the warranty period.

TRAFFIC SIGNAL SUPPORTS

L.30 Cantilever Signal Supports

This Subsection applies to the manufacture of steel poles and mast arms for the support of traffic signals. The height of poles, shaft dimensions and wall thickness shall meet the design requirements and mounting height of traffic signals as set forth in these Specifications and shown on the Plans. The Plans indicate bracket arm lengths.

Furnish poles consisting of a straight or uniformly tapered shaft, cylindrical or octagonal in cross-section, having a base welded to the lower end and complete with anchor bolts. All castings shall be clean and smooth with all details well defined and true to pattern. Steel castings shall conform to ASTM A27, Grade 65-35. Gray iron castings shall conform to ASTM A126, Class A.

All mast arms shall be compatible with the poles in material, strength, shape, and size.

A. Anchor Base

Secure an anchor base of one-piece cast steel or steel plate of adequate strength, shape, and size to the lower end of the shaft. Place the base so as to telescope the shaft, and weld at the top and bottom faces with continuous fillet welds so that the welded connection develops the full strength of the adjacent shaft section to resist bending action. Provide each base with a minimum of four holes to receive the anchor bolts. Provide cast steel bases with removable cast iron covers for anchor bolts and tapped holes for attaching covers with hex head cap screws.

Provide a welded frame handhole, 5 x 8 inches minimum and located with a clear distance above the base of no less than the pole diameter, "D." Weld a 1/2-inch 13 UNC grounding nut to the inside of the pole at a point readily accessible for wiring.

B. Shaft

Fabricate shafts from the best, hot-rolled basic open hearth steel. The shaft shall have only one longitudinal electrically welded joint and may have electrically welded intermediate transverse full penetration circumferential joints, at intervals of not less than 10 feet. The shaft shall be longitudinally cold-rolled to flatten the weld and increase the physical characteristics so that the metal will have a minimum yield strength of 48,000 pounds per square inch. Where transverse full penetration circumferential welds are used, the shaft fabricator shall furnish to the Project Engineer certification that: (1) all such welds have been radiographed and ultrasonically tested by an independent testing laboratory using a qualified Nondestructive Testing (NDT) technician and (2) the NDT equipment has been calibrated annually.

Fit the shaft with a removable pole cap, a J-hook wire support welded inside near the top, and a flange plate assembly to match that welded to the butt end of the mast arm.

C. Mast Arms

Provide mast arms fabricated and certified in the same manner as the upright shafts and that have the same physical characteristics.

The mast arms shall meet the design requirements necessary to support rigidly mounted traffic signals as shown on the Plans. All arms shall include a removable cap at the tip, grommeted wire outlets, and signal hanger assemblies of the type and number shown on the Plans, and a flange plate welded to the butt end to provide a rigid connection to the mast. The assembly shall be constructed so that all wiring can be concealed internally.

Connect mast arms to the upright pole at a height necessary to provide a minimum clearance of 16 feet 6 inches and a maximum clearance of 19 feet under the traffic signal heads. Install separate signal heads to provide the same clearance.

D. Finish

Galvanize steel poles, mast arms, and hardware in accordance with ASTM A123.

Galvanize all steel and cast iron components, hardware, and threaded fasteners, except anchor bolts, after fabrication in accordance with ASTM A123, or A153 or A385, as applicable.

L.31 Steel Strain Poles

Provide steel strain poles consisting of a uniformly tapered or equivalent upright shaft fitted with a removable pole top, J-hook wire support and 45-degree wire inlet near the top, a span wire clamp, a 5 x 8 inch handhole with reinforced frame and cover, bent anchor bolts, and all other accessories needed to make a complete installation. The pole and all of its component parts shall be designed to support tethered traffic signals of the type and number shown on the Plans, suspended from a span wire assembly. Fabricate and certify the poles as specified for the upright shafts in this Part.

Determine the shaft length required to meet field conditions and vertical clearances of signal heads over the roadway. The signal head clearance shall be a minimum of 16 feet 6 inches and a maximum of 19 feet. Fasten the span wire no closer than 1 foot 6 inches from the top of the pole.

Unless otherwise specified, provide all strain pole traffic signal supports with a one-piece anchor type base, fabricated from drop forged or cast steel of sufficient cross-section to fully develop the ultimate strength of the poles. Fasten the base to the pole with a welded connection that develops the full strength of the pole. Provide the base with a minimum of four holes of sufficient size to accommodate the proper size anchor bolts that are capable of resisting at yield strength stress, the bending moment of the shaft at its yield strength stress. Provide removable cast iron covers for the anchor bolts.

The shaft shall be fabricated from material providing a minimum yield strength of 48,000 pounds per square inch after fabrication.

Galvanize the steel poles and hardware in accordance with ASTM A123.

Galvanize all steel and cast iron components, hardware, and threaded fasteners, except anchor bolts, after fabrication in accordance with ASTM A123, A153, or A385, as applicable.

L.32 Pedestal Support Signal Poles

Provide pedestal poles consisting of one upright pole with suitable base and other accessories or hardware as required to make a complete installation.

All poles shall be made of one continuous piece from top of base connection for the entire height of the pole. The cross-section shall be either cylindrical or octagonal and may or may not be uniformly tapered from butt to tip.

The cross-section at the tip shall have a 4-1/2 inch outside diameter.

A. Type "A" Pedestal (Aluminum)

Pedestals shall be of uniform octagonal or cylindrical cross-section of the tubular tapered type fabricated of one full length sheet.

Bases shall be octagonal or square in shape, of the ornamental type fabricated of cast material. Provide a handhole in each base.

Caps shall be of the nipple or tenon type mounting fabricated of cast material.

Furnish bases with four steel anchor bolts of sufficient size and length to securely anchor the base to the concrete footing. Weld the shaft to the cast metal base. Refer to the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (current edition).

Type A pedestal shaft shall be fabricated from aluminum tubing 6063-T4 heat treated to T-6 temper after fabrication, and meeting ASTM B221.

Type A anchor base shall be made of sand-cast aluminum alloy 356-T6 meeting ASTM B26 - SF 70A-T5 specifications.

B. Type "B" Pedestal (Steel)

Pedestals shall be fabricated from a 4-1/2 inch (outside diameter) seamless steel pipe.

Bases shall be octagonal in shape of the ornamental type fabricated of cast or malleable iron and shall have minimum height of 12 inches. The top opening of the base shall be threaded to receive the shaft. Provide a handhole in each base.

Furnish bases with four steel anchor bolts of sufficient length to securely anchor the base to the concrete footing.

L.33 Wooden Pole Signal Supports

Wooden pole signal supports are not allowed in the City of La Vergne for new or replacement work. If a wooden pole must be replaced, it must be replaced with a Steel Strain Pole as a described above.

L.34 Pole Location

Install all signal support poles at the locations shown on the Plans.

SECTION M – GEOSYNTHETICS

DESCRIPTION

M.01 Description

This work consists of placing geosynthetics in accordance with these Specifications and the Project Drawings.

MATERIALS

M.02 Materials

Provide materials meeting the requirements of TDOT Section 921.12 for the type of geosynthetic shown on the Plans.

Maintain on file a certified laboratory test report from an approved testing laboratory with each shipment of materials. Protect rolls to prevent damage during transportation, storage, and installation. Cover geosynthetic rolls during storage to protect against UV degradation, and store rolls elevated up off of the ground. Do not install material that is torn, punctured, or otherwise damaged.

CONSTRUCTION REQUIREMENTS

M.03 General

Place geosynthetics as shown on the Plans for the specific application. Compact the surface on which the geosynthetic is to be placed to the specified density. Prepare the surface to be as smooth as possible and free from debris, obstructions, and depressions that could result in gaps, tears, or punctures in the fabric during cover operations. Install the geosynthetic so that placement of cover material will not excessively stretch or tear the geosynthetic. After the geosynthetic is placed, install the initial lift of cover material within five calendar days. Do not operate equipment directly on the geosynthetic. Place cover material so that at least the minimum initial lift thickness, as specified by the Engineer, is between the geosynthetic and equipment tires or tracks at all times. Do not turn equipment and vehicles on the first lift above the geosynthetic.

Repair or replace materials that are damaged during or after placement.

PART 8 – GENERAL DEVELOPMENT

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SECTION A – SEEDING

DESCRIPTION

A.01 Description

This work consists of furnishing and placing seed, commercial fertilizer, agricultural limestone, and mulch material on all newly graded earthen areas that are not to be paved, stabilized, or sodded.

MATERIALS

A.02 Materials

Provide materials as specified in:

Water .....Part 8
Mulch Binder: Emulsified Asphalt, Type SS-1 or AE-3 ..... TDOT Section 904.03
Grass Seed ..... TDOT Section 918.01
Commercial Fertilizer..... TDOT Section 918.02
Agricultural Limestone..... TDOT Section 918.04
Mulch Material ..... TDOT Section 918.05
Inoculant for Legumes..... TDOT Section 918.06
Liquid Lime.....TDOT QPL

CONSTRUCTION REQUIREMENTS

A.03 General

Perform seeding work as specified in Part 2.

At the start of permanent seeding operations, prepare, shape, and dress the area to be seeded as specified in Part 2 and herein. Unless otherwise directed by the Engineer, do not sow the seed until after placing the topsoil as specified in Part 2. Use topsoil with all permanent seeding activities except where its use would be detrimental to effective erosion and siltation control, as determined by the Engineer.

The Contractor may perform Temporary Seeding (with Mulch) or Temporary Seeding (without Mulch) without full preparation of the seedbed as specified in this Part and application of permanent erosion and siltation control measures is not practicable.

Perform all seeding and related operations as continuous operations.

One unit is 1,000 square feet.

A.04 Preparing the Seedbed

When the soil is in a tillable and workable condition, prepare the seedbed in the following manner and sequence:

1. Scarify, disc, harrow, rake, or otherwise work each area to be seeded until it has been loosened and pulverized to a depth as directed by the Engineer.

2. Incorporate fertilizer, at the rate of not less than 20 pounds of Grade 10-10-10, or equivalent, per unit (1,000 square feet), and agricultural limestone, at the rate of not less than 100 pounds per unit, uniformly into the soil for a depth of approximately 1/2 inch.

3. If the soil pH is below 5.5, in addition to the required agricultural lime, apply liquid lime selected from the TDOT Qualified Products List (QPL) at a rate of 7.5 gallons per acre (22 ounces per 1,000 square feet).

Incorporating fertilizer into the soil as specified above is not necessary when mixed with seed in water and applied with power sprayer equipment.

A.05 Seeding

The specific seed group will be shown on the Plans or as directed by the Engineer from those specified in TDOT Section 918.01.

Sow the seed immediately after preparing the seedbed as specified in **801.05**. Sow the seed uniformly using a rotary seeder, hydraulic equipment, or other satisfactory means, at the rate specified in Table 801.06-1, unless otherwise specified or directed.

Table: Seed Application Rates

Seed Group	Application Rate, Pounds per Unit (1,000 square feet)
A, B, and C	2.5
B1	0.6
All other groups specified in TDOT Section 918.01	1.5

Before sowing, inoculate Group C seed and seeds of legumes, when sown alone, in accordance with the recommendations of the inoculant manufacturer and as directed by the Engineer.

Do not perform any seeding during windy weather or when the ground surface is frozen, wet, or otherwise non-tillable. Do not perform seeding during December and January unless otherwise allowed.

A.06 Mulching

When seeding with mulch is specified, use hay, straw, or other approved mulch materials.

When using hay or straw as the mulching material, spread it evenly over the seeded area, immediately following the seeding operations, at an approximate rate of 100 pounds per unit for straw and 150 pounds per unit for hay. The Engineer may vary this rate, depending on the texture and condition of the mulch material and the characteristics of the area seeded.

To hold hay or straw mulch in place, apply an approved tackifier, listed on the TDOT QPL, as recommended by the manufacturer.

When using wood fiber mulching material, apply it at a rate of 28 to 35 pounds per unit, using hydraulic mulching equipment. Spray the material uniformly on the surface of the prepared seedbed.

A.07 Care During Construction

Maintain all seeded areas to the Engineer's satisfaction until acceptance of the Work.

Repair all areas previously seeded and mulched in accordance with this Section but that incurred damage or failed to successfully establish an acceptable stand of grasses or legumes. Furnish all material and labor required to repair seeded areas damaged due to Contractor negligence.

After an acceptable stand of grass has been attained, top-dress seeded areas with not less than 10 pounds of fertilizer of Grade 10-10-10, or equivalent, per unit at approximately 6-month intervals through the warranty period.

SECTION B – LANDSCAPE PLANTING

DESCRIPTION

B.01 Description

This work consists of furnishing and planting trees, shrubs, seedlings, and ground cover of the kinds and at the locations shown on the Plans.

MATERIALS

B.02 Materials

A. Planting Material Standards

Consider "collected plant material" to mean plants that are not nursery grown. Do not use collected plant material unless shown on the Plans. Dig collected plant material called for on the Plans with a ball of earth having a minimum diameter at least 25% greater than that specified for nursery grown stock and wrap in burlap. Handle plants to keep their roots protected at all times. During delivery, ensure that the entire load remains suitably covered. Coverings shall not be so tight as to cause heating.

1. **Names and Grades.** Plant material shall conform to the nomenclature of *Standardized Plant Names*, as adopted by the Joint Committee of Horticulture Nomenclature, latest revision. Size and grading standards shall conform to the latest approved revision of the *American Standard for Nursery Stocks*, Z60.1, published by the American Nursery and Landscape Association. Make no substitutions of size or grade without the Project Engineer's written permission. Properly identify each bundle of plants and all separate plants with legible, waterproof tags securely fastened to each plant or bundle of plants.

   Ship plants as follows:

   a. Seedlings in bundles of 100.
   b. Bare Root in bundles of 10.
   c. Ball and Burlap individually.

2. **Health.** Provide plants conforming to the following health requirements:

   a. All plants, including their roots, shall be free of disease, insects, or other injurious qualities.

   b. The trunk bark of all trees shall be sound, trees shall have no large wounds, and small

wounds shall have a satisfactory callus roll formed or forming over them.

c. Plants shall show good annual growth.

d. Buds shall be plump and well filled for the species.

e. Evergreen foliage shall be of good intense color.

3. **Quality.** All plants shall:

a. Be true to type;

b. Have normal, well developed branch systems, and a vigorous fibrous root system;

c. Be sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation; and

d. Have been growing in the same climatic conditions as the location of the Project for at least 2 years prior to the date of the Contract.

4. **Ball and Burlap/Wire Basket.** All balled and burlapped plants shall conform to the *American Standard for Nursery Stock*, Z60.1, latest approved revision. All balls shall be of natural earth in which the plant had been growing. Manufactured or artificially produced or mudded-in balls are not acceptable. Ensure that balls are firm and unbroken. The Engineer may reject balled and burlapped plants if they fail to meet good digging and handling practices.

5. **Container Grown Plants.** In addition to the requirements of the *American National Standard for Nursery Stock*, Z60.1, container grown plants shall conform to the following:

1. The space between the rim or top of the container and the soil line within the container shall not be more than 1-1/2 inches for the 1-gallon and 2-gallon sizes and not more than 2-1/2 inches for the 5-gallon size.

2. Encircling roots shall not have grown in such a manner that they will cause girdling of the trunk or stems. If encircling roots do exist, they shall be cut.

3. Roots shall not protrude through drainage holes or over the rim of the container to the extent that they will be damaged while removing the root ball from the container.

4. Plants shall have been acclimated to outside conditions. Container grown plants may be used provided the Engineer approves of their use in writing.

B. Miscellaneous Planting Materials

1. **Topsoil.** Provide a natural, friable, fertile, fine sandy loam possessing the characteristics of

representative topsoils in the vicinity that produce heavy growths of vegetation. The topsoil shall be free from subsoil, noxious weeds, stones larger than 1 inch in diameter, lime, cement, ashes, slag, and other deleterious matter. Topsoil shall be well drained in its original position and free from toxic quantities of acid or alkaline elements.

2. **Mulch.** Unless otherwise specified, provide a standard, commercial quality of aged hardwood bark mulch with a particle size of less than 3 inches and a contamination rate less than 0.5% by volume.

3. **Fertilizer.** Unless otherwise shown on the Plans, do not fertilize trees.

4. **Tree Wrappings.** Avoid using tree wrappings for any purpose other than providing protection during transport.

5. **Water.** For planting work, use water that is free from harmful or objectionable qualities or organisms.

6. **Stakes for Bracing and Anchoring.** Stakes used for guying trees shall be at least 6 feet long, of sound, sturdy material, reasonably capable of withstanding aboveground and underground conditions. Their top and bottom face dimensions shall be at least 2 x 2 inches, a minimum diameter of 2-3/4 inches, or a substitute approved by the Engineer.

7. **Hose.** For staking, use a new fabric-bearing rubber hose with an inside diameter of not less than 1/2 inch.

8. **Straps.** For staking, use straps consisting of flat, canvas belting with grommets.

CONSTRUCTION REQUIREMENTS

B.03 Time and Condition of Planting

Unless otherwise specified, perform all planting after the growing season, between the dates of November 1 and April 1.

B.04 Staking

The Contractor will stake all plant and bed locations in accordance with the plant list and approximate locations shown on the Plans.

Perform the planting at the approved locations. After planting is complete, outline the ground cover areas and seedling areas with painted stakes and twine.

B.05 Tree Planting

A. Planting Pits

Form circular planting pits with vertical sides. Make the diameter of the pits at least 2 feet greater than the diameter of the ball of the tree. The depth of the pit shall be sufficient to

accommodate the ball or roots of the tree when the tree is set to the finished grade, allowing for a maximum of 1 inch of tamped spoil below the roots of the plant.

B. Backfill

Backfill for tree planting shall consist of spoil material removed from the hole if suitable. If not, this material may be blended with 50% topsoil. Soil amendments are not recommended.

C. Setting of Trees

Place all plants at a level so that, after settlement, the natural relationship between the original grade at which the plant grew and the present one shall be the same. The root flare should be level with the soil grade surrounding the tree. Plant trees plumb and orient them for desired effect. Tamp spoil material from the hole around the base of each ball to fill all voids. Place material in 6 to 8-inch thick layers, thoroughly tamping each layer to prevent air pockets.

Cut back burlap and wire baskets and remove a minimum of one-third of the depth of the root ball. Remove all string from the root ball and around the trunk. When planting bare root trees, carefully work soil around the roots and spread them in a natural position before backfilling. Form, around all trees, shallow basins or saucers, which are slightly larger than the diameter of the ball, to hold additional water.

Thoroughly water all plants immediately after planting, fully saturating the backfill in the pits and beds during the same day of planting. Perform planting and watering as one continuous operation. If applying water by hose, use an open-end hose at very low pressure to avoid air pockets and injury to the roots.

D. Guying and Staking

Only stake trees when necessary to keep them vertical on a slope or in an area with strong winds. Never stake trees less than 6 feet tall or under 1 inch caliper. When staking is necessary, use biodegradable underground staking, or soft straps or flexible hose without wire. Ensure that staking allows for free movement of the tree trunk.

B.06 Wrapping and Pruning of Trees

A. Wrapping

Wrap tree trunks for transport, and then completely remove all wrapping bandage and string at the time of planting.

B. Pruning

Except for branches damaged during digging and transport, do not prune trees at the time of planting unless otherwise directed.

Do not use tree paint on cuts.

B.07 Shrub Planting

A. Planting Beds and Pits

Prepare planting beds to a depth of 4 to 6 inches. Make plant pits 6 inches deeper and 6 inches greater on all sides than the plant balls.

B. Prepared Topsoil

Backfill for shrub planting shall consist of "prepared topsoil" as specified in this Part.

C. Setting of Shrubs

Set shrubs as specified in this Part.

D. Pruning of Shrubs

Except for removing broken or badly bruised branches with a clean cut, do not prune trees at the time of planting unless otherwise directed.

Do not use tree paint on cuts.

B.08 Seedling Planting

This Specification is intended to produce natural appearing wooded areas similar to others in the vicinity. To achieve this effect, mix and plant seedlings specified for a given area as shown on the Plans.

Dig holes to receive these plants of sufficient size and depth to place the roots in a normal position and to allow the plant to be set slightly below grade, leaving a depression to receive and hold water.

After planting the seedlings, provide a thorough watering on the same day. Perform planting and watering as a continuous operation.

After completing the planting, ensure that each plant is solidly in the ground and thoroughly wetted.

B.09 Ground Cover Planting

Ground cover planting shall consist of an overplanting of existing grasses or other growing material. Dig holes to receive these plants of sufficient size and depth to accommodate the roots and to allow the plant to be set slightly below grade, leaving a slight depression to receive and hold water. Place 2 inches of topsoil under the plant and around the roots. Carefully remove containers, except those of organic material, from pot-grown plants to avoid damaging the soil ball.

Perform planting and watering as a continuous operation, thoroughly watering on the same day as planting. This may be done by mechanical means if adequate equipment is available. When watering is complete, ensure that each plant has been thoroughly wetted and that the plant is solidly in the ground.

B.10 Temporary Storage and Heeling-In

Ship plants directly from the nursery. When temporary storage or heeling-in is required, provide and prepare a suitable heeling ground or heeling-in nursery conveniently located near the planting site before shipping the plant material from the growing nursery or other source. Take care in requesting shipment to avoid long periods of temporary storage.

Immediately heel-in, or transport to the planting site and plant, all plant material delivered to the Project. The Engineer will reject material left out of ground overnight, left with its roots bare to the sun and wind, or otherwise left unprotected during transit, unloading, or storage.

B.11 Mulching

Within 2 days of planting trees and shrubs, apply a 4-inch depth of mulch, entirely covering the saucer of individual tree pits and the entire shrub beds. Ensure that mulch does not touch the tree trunk or the stems of shrubs.

B.12 Final Cleanup

Upon completion of all operations described in these Specifications, remove all refuse, brush, including standing dead and rejected plants, sticks, packaging, potting debris, and similar waste, regardless of whether it was directly connected with the Work or previously left by others. Leave the general area in a neat and orderly condition.

B.13 Period of Establishment

Installation of the plant material shall be regarded as partial completion of the horticultural work. The "period of establishment" will be April 1st through November 1st. The Contractor is responsible for all plantings for one full period of establishment.

Keep all plants and plant material installed in a living, healthy condition up to the date for termination of Contractor responsibility for care specified herein. Perform the following work in a continuous manner during the period of establishment

A. Watering

During periods of low rainfall or drought, water all woody plants at weekly intervals unless otherwise directed by the Engineer. Slowly and gradually apply sufficient quantities of water until the root area of the plants is saturated. One inch of water is customary. Apply sufficient quantities of water slowly and gradually until the root area of the plants is saturated. Carefully adjust both the force and volume of water to ensure that no damage occurs to plants, backfill, and mulching material.

B. Cultivating

When shown on the Plans, keep all planting areas free from grass and weeds throughout the entire growing season. Always keep the area clean, open, and properly mulched, unless

covered with plastic and mulched. Closely mow areas such as slope bed plantings.

B.14 Inspection and Replacement of Plants

A. Initial Inspection and Replacement of Plants

Conduct an initial inspection of the plants during and before the end of the planting season (April 1st) and determine the necessity of replacing dead, degenerated, defective, or missing plants. Remove plants fitting into the above categories and plants that are stagnant, whether technically alive or not, and replace them with the specified plants. For each plant replaced, perform all necessary work to establish the plant, regardless of already fulfilled obligations regarding other plant material on the site. Based on the findings of the Project Engineer's inspection, replace all plants that are required to be replaced on or before May 1st.

B. Final Inspection: Replacement and Acceptance of Plants

Conduct a final inspection of planting during and before the end of the first full growing season and on or about October 1st, after the first full growing season. Determine whether to require the Contractor to replace plants as specified in this Part or if such replacement would be inadvisable due to seasonal or other conditions.

The Contractor's responsibility for care of all plantings that are acceptable on the date of the final inspection mentioned above shall end on that date.

Based on findings of the inspection mentioned above, replace plants that require replacement with plants of the same species, size, and quality. Replace non-viable plants before the 15th of February. Upon completion of the work, the Project Engineer will inspect the replacement plantings and accept or reject the work. If accepted, the Contractor's responsibility for care of the replacement plantings shall end on the date of the Engineer's inspection.

SECTION C – SODDING

DESCRIPTION

C.01 Description

This work consists of furnishing and placing sod at the locations shown on the Plans.

Ordinarily, this work will consist of furnishing and placing new sod originating from sources outside the project site. In some cases, however, the work will include removing sod from areas where the requirements of the improvement would destroy existing sod, storing the sod so removed, and resetting it in areas shown on the Plans.

MATERIALS

C.02 Sod

A. General

Provide new sod consisting of live, dense, well-rooted growth of permanent grasses, free from Johnson grass, nut-grass, and other undesirable grasses or weeds, that is well-suited for the intended purpose and for the soil in which it is to be planted. Correct installed sod that does not meet these requirements as directed by the Engineer and at no additional cost to the Department.

Cleanly cut all sod in strips having a reasonably uniform soil thickness of not less than 1 inch and a reasonably uniform width of not less than 8 inches and a length of not less than 12 inches.

B. Department of Agriculture Inspection and Authorization

The sale or movement of turf grass or sod for propagation is controlled by Tennessee Plant Pest Act of 1955, TCA 43-515, et. seq. It requires inspection during the growing season and authorization by the Tennessee Department of Agriculture prior to removal. The authorization may be certificates for “Tennessee Certified Premium” sod, or “Tennessee Certified” sod.

C.03 Fertilizer Grade

Provide fertilizer conforming to TDOT Section 918.02 and that is of Grade 10-10-10 or 1-1- 1 formula, unless otherwise shown on the Plan or specified in the Project Specifications.

C.04 Ammonium Nitrate

Provide ammonium nitrate conforming to TDOT Section 918.03.

C.05 Agricultural Limestone

Provide agricultural limestone conforming to TDOT Section 918.04.

CONSTRUCTION REQUIREMENTS

C.06 Weather Limitations

Set or reset sod only when the soil is moist and favorable to growth. Do not perform any setting or resetting between December 1 and February 1, unless weather and soil conditions are considered favorable.

C.07 Removing and Storing Sod for Resetting

Cut, handle, and store sod removed from such areas as lawns, yards, and lots so that the sod can be reset in the same locations from which it was removed. Do not substitute sod unless approved by the Engineer. Unless resetting sod immediately after cutting, stack the sod in piles, and keep it moist until reset. Reset sod within 7 days after removal, unless otherwise approved by the Engineer.

C.08 Sodding

Bring the area to be sodded to the lines and grades shown on the Plans. Unless otherwise directed by the Engineer, place topsoil as specified in Part 2 before placing sod. When laying sod adjacent to structures, ditch paving, sidewalks, and similar features, ensure that water will not pond and will flow as designed. Loosen the surface of the ground to be sodded to a depth of not less than 1 inch with a rake or other device. If necessary, sprinkle the ground until saturated for a minimum depth of 1 inch, and keep moist until the sod is placed. Immediately before placing the sod, apply fertilizer and lime uniformly to the prepared surface of the ground. Apply fertilizer at the rate of 12 pounds of Grade 10-10-10, or equivalent, per 1,000 square feet. Apply agricultural limestone at the rate of 100 pounds per 1,000 square feet.

Place sod as soon as practicable after removing from the point of origin and keep it in a moist condition during the interim. On urban projects, place the sod on all newly graded cut and fill slopes as work progresses to prevent damage to adjacent facilities and property due to erosion. Take care to retain the soil on the root system during excavating, hauling, and planting. Ensure that all sod is in an acceptable condition upon delivery and placement at the work site. Do not use sod damaged by heat or dry conditions.

Carefully place the sod by hand on the prepared ground surface, with the edges set in close contact and, as far as possible, in a position to break joints. Lay and fit each strip of sod into place, thoroughly wet it, and roll with an approved roller or hand-tamp, as approved by the Engineer. On slopes of 2:1 or steeper, pinning or pegging may be required to hold the sod in place.

C.09 Period of Establishment

A. Watering

Provide all labor and arrange for all watering necessary for rooting of the sod. If rainfall during

the first 14 days of the period of establishment is inadequate to maintain a moist soil, perform the necessary watering, as approved by the Engineer. After 14 days, apply ammonium nitrate at the rate of 3.5 pounds per 1,000 square feet and re-water the sod.

B. Contractor Guarantee

The Contractor shall guarantee a minimum of 95% live sod on the sodded areas and that there are no vacant areas of dead sod larger than 100 square feet. This guarantee shall apply to all permanent sodding performed in conjunction with the Project, regardless of the type protection used or the season in which the sodding is performed.

C. Repairs of Defective Areas

When the sodding does not meet the guarantee requirements at the time of inspection, repair the defective areas. Required repairs may include preparing the sod bed, refertilizing, resodding, and providing any erosion control items that were originally required. Perform such work as soon as favorable working conditions occur after being advised of the repairs required.

D. Care and Maintenance

From the time sodding and protection work begins until the date the entire Project is accepted, keep all sodded areas in good condition at all times.

Do not allow placement of any equipment or material on any planted area, and erect suitable barricades and guards to prevent equipment, labor, or the public from traveling on or over all areas planted with sod.

Promptly repair damage to sodded areas. Perform all work and provide all materials necessary to protect, maintain, and restore sodded areas during the life of the Contract.

C.10 Disposal of Surplus Material

Dispose of all surplus material as per the requirements of Part 2.

SECTION D – EROSION CONTROL BLANKETS

DESCRIPTION

D.01 Description

This work consists of furnishing and placing erosion control blankets, listed on the TDOT Qualified Products List (QPL), over previously prepared and seeded areas as shown on the Plans or as required.

MATERIALS

D.02 Materials

Provide materials as specified in:

Erosion Control Blankets.....TDOT Section 920.01
Staples.....TDOT Section 920.02

CONSTRUCTION REQUIREMENTS

D.03 Surface Preparation and Blanket Placement

Shape, fertilize, and seed the areas to receive the erosion control blankets as shown on the Plans or as directed by the Engineer. The surface shall be smooth and free of depressions and eroded areas that would allow water to collect or flow under the blanket.

Place the appropriate type of blanket as specified within 24 hours after the area has been seeded and prior to any rain or watering. If using a jute mesh blanket, after stapling the blanket into place, press it into the ground with a light lawn roller.

Place the blankets as shown on the Plans. Drive staples vertically into the ground to anchor the plastic mesh. Space staples as shown on the Plans. Where blankets are laid side by side, place the staples so that the staple will anchor mesh from each blanket.

In waterways, ditches, flumes, and channels, unroll the blanket and place in contact with the soil in the direction of the flow of water. The Quality Control Representative may specify additional staples or check slots in waterways where slopes are steep or large water volumes or velocities are anticipated.

D.04 Maintenance

Maintain the blanket installation during the life of the Contract. Prior to Project acceptance, if any staples have become loosened or raised, or if the blanket becomes loose, torn, or undermined for any reason, reshape, re-seed, and re-fertilize the damaged areas, and satisfactorily repair or replace the blanket at no additional cost to the Department.

LA VERGNE
TENNESSEE
Engineering Department

CITY OF LA VERGNE

STANDARD DRAWINGS FOR CIVIL, ROADWAY, AND STORMWATER CONSTRUCTION

UPDATED: 19 MAY 2025

TDOT	I-24	MEET TDOT STANDARDS
	MURFREESBORO ROAD	
ARTERIAL	WALDRON ROAD (I-24 TO MURFREESBORO RD)	STANDARD DETAIL 004
	STONES RIVER RD (OLD NASHVILLE HWY TO SAND HILL ROAD)	
	SAND HILL RD (STONES RIVER RD TO DICK BUCHANAN ROAD)	
	DICK BUCHANAN RD	
	OLD NASHVILLE HIGHWAY	
	JEFFERSON PIKE	
HEAVY INDUSTRIAL	ALL ROADS ABUTTING INDUSTRIAL ZONES	STANDARD DETAIL 004

LA VERGNE ROAD CLASSIFICATIONS (PAGE 1 OF 2)

LA VERGNE
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Engineering Department

Revised November 2024

STANDARD DETAIL C001A

CITY OF LA VERGNE, TENNESSEE

COLLECTOR	WALDRON RD (I-24 TO ROCK SPRINGS ROAD	STANDARD DETAIL 003
	STONES RIVER RD (SAND HILL TO HOLLANDALE)	
	HOLLANDALE ROAD	
	FERGUS ROAD	
	BLAIR ROAD	
MINOR	ALL OTHERS	STANDARD DETAIL 002

LA VERGNE ROAD CLASSIFICATIONS (PAGE 2 OF 2)

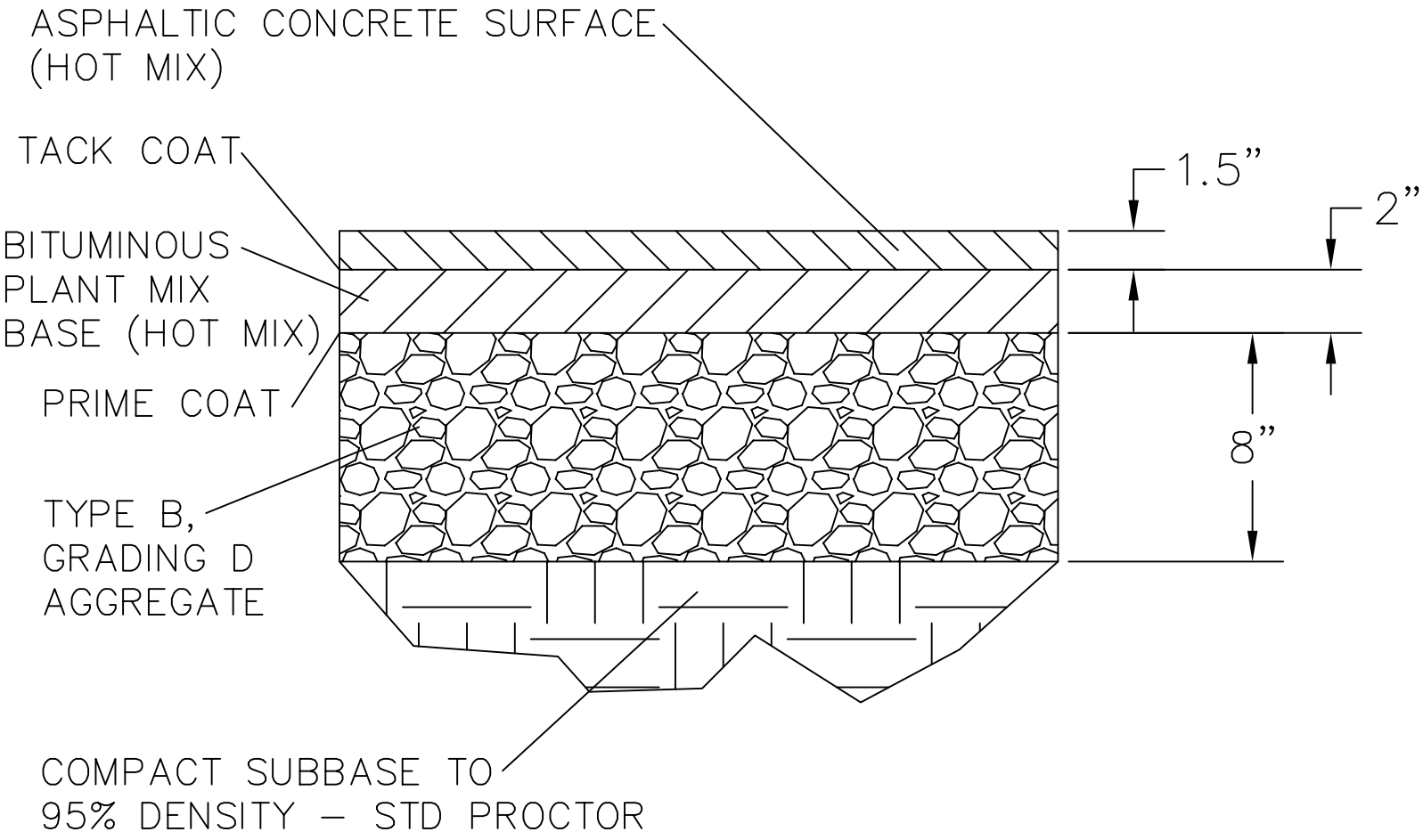
LA VERGNE
TENNESSEE
Engineering Department

Revised November 2024

STANDARD DETAIL C001B

CITY OF LA VERGNE, TENNESSEE

NOTE: THIS SECTION IS A MINIMUM. ENGINEER MUST DESIGN AN APPROPRIATE SECTION FOR THE PROPOSED TRAFFIC. IF IT IS AN EXISTING STREET, AND THE EXISTING PAVEMENT SECTION IS GREATER THAN SHOWN BELOW, THEN THE EXISTING SECTION IS THE MINIMUM.



MINIMUM PAVEMENT SECTION – MINOR STREET

NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

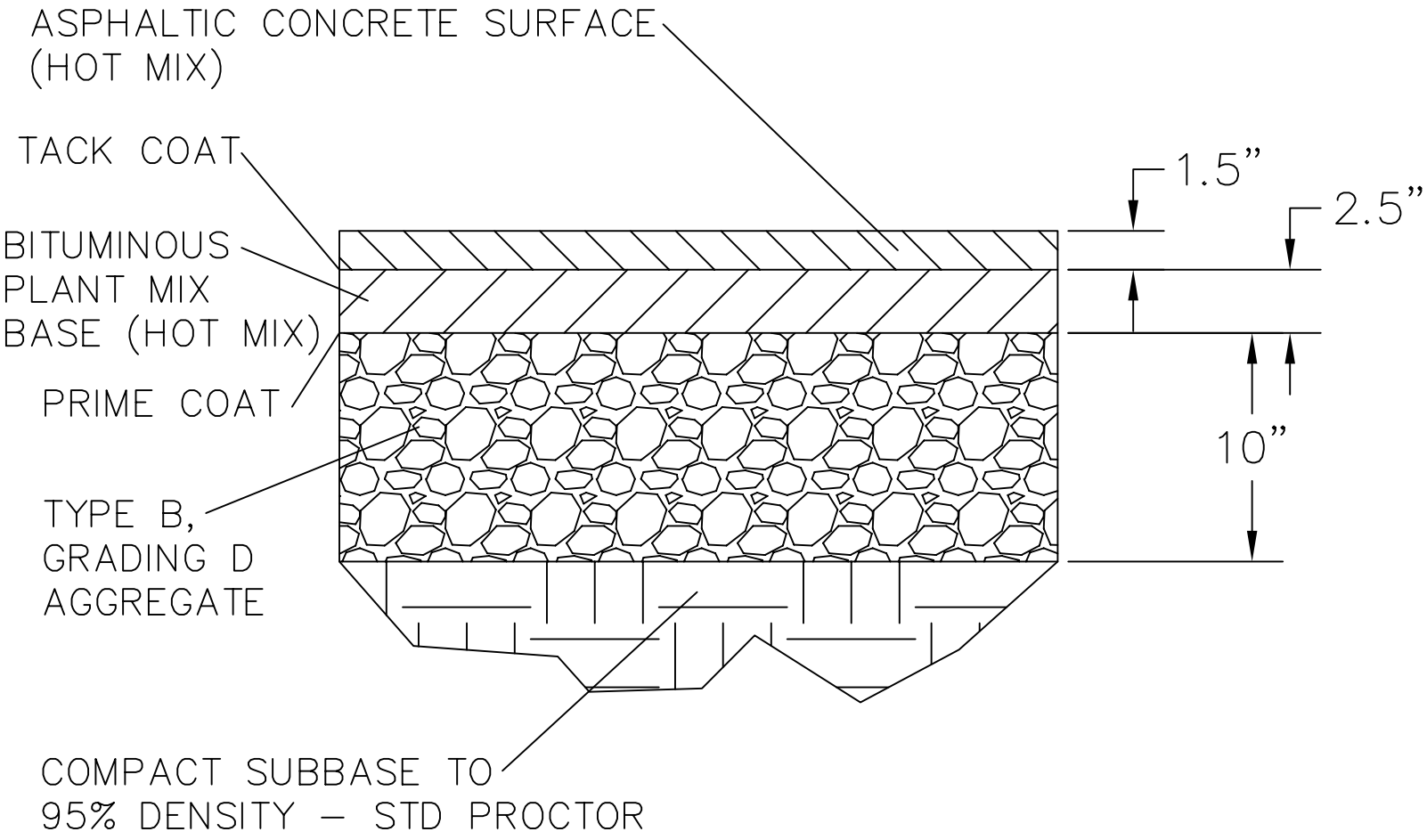
LA VERGNE TENNESSEE Engineering Department

Revised November 2024

STANDARD DETAIL C002

CITY OF LA VERGNE, TENNESSEE

NOTE: THIS SECTION IS A MINIMUM. ENGINEER MUST DESIGN AN APPROPRIATE SECTION FOR THE PROPOSED TRAFFIC. IF IT IS AN EXISTING STREET, AND THE EXISTING PAVEMENT SECTION IS GREATER THAN SHOWN BELOW, THEN THE EXISTING SECTION IS THE MINIMUM.



MINIMUM PAVEMENT SECTION – COLLECTOR STREET

NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

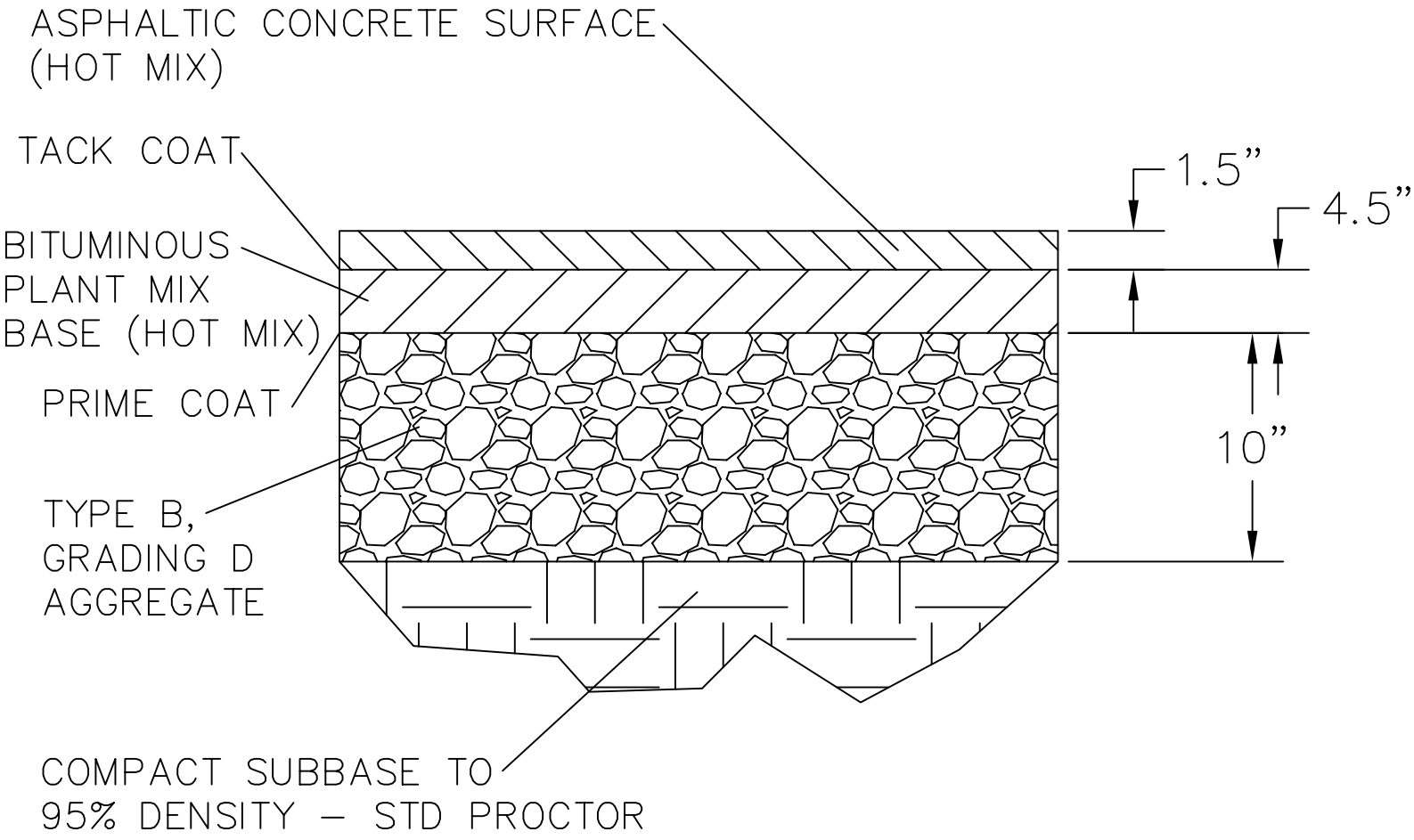
LA VERGNE
TENNESSEE
Engineering Department

Revised November 2024

STANDARD DETAIL C003

CITY OF LA VERGNE, TENNESSEE

NOTE: THIS SECTION IS A MINIMUM. ENGINEER MUST DESIGN AN APPROPRIATE SECTION FOR THE PROPOSED TRAFFIC. IF IT IS AN EXISTING STREET, AND THE EXISTING PAVEMENT SECTION IS GREATER THAN SHOWN BELOW, THEN THE EXISTING SECTION IS THE MINIMUM.



MINIMUM PAVEMENT SECTION – ARTERIAL STREET OR HEAVY INDUSTRIAL STREET

NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

LA VERGNE TENNESSEE Engineering Department

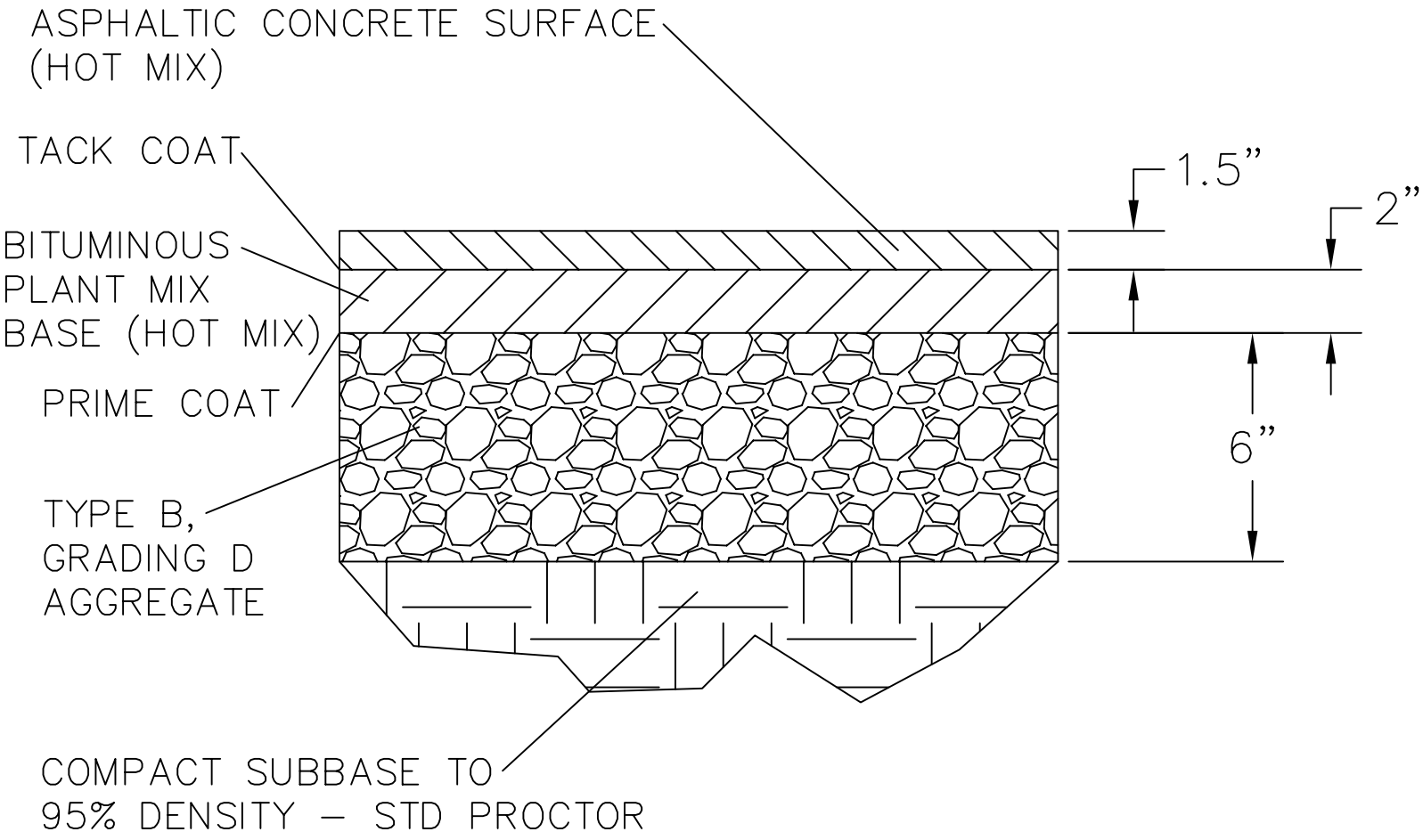
Revised November 2024

STANDARD DETAIL C004

CITY OF LA VERGNE, TENNESSEE

THIS IS THE MINIMUM SECTION TO BE USED IN COMMERCIAL AND MULTI-FAMILY RESIDENTIAL PROJECTS. IT MUST ALSO BE USED IN INDUSTRIAL ZONES FOR CUSTOMER AND EMPLOYEE PARKING LOTS.

HEAVY-DUTY PAVING SECTIONS ARE TO BE DESIGNED BY THE DEVELOPER'S ENGINEER SPECIFIC TO THE LOADS AND TRAFFIC OF THE PROJECT.



STD. PAVEMENT SECTION – PRIVATE PARKING

NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

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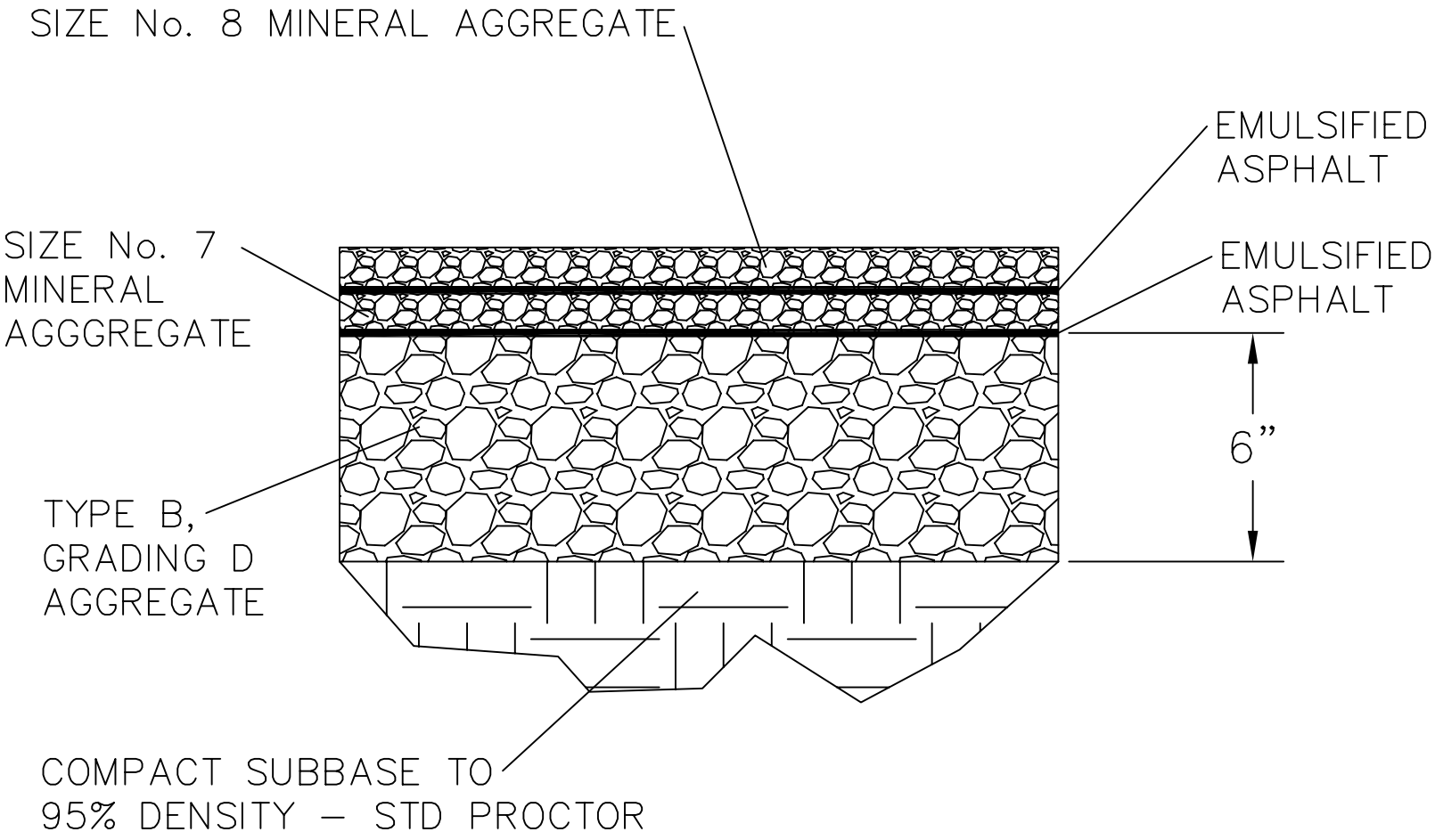
STANDARD DETAIL C005

CITY OF LA VERGNE, TENNESSEE

THIS SECTION MAY ONLY BE USED FOR VEHICLE STORAGE LOTS IN INDUSTRIAL ZONING OR FOR CHURCH PARKING LOTS.



STD SECTION – DOUBLE BITUMINOUS SURFACE TREATMENT (DBST)

NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

LA VERGNE TENNESSEE Engineering Department

Revised November 2024

STANDARD DETAIL C006

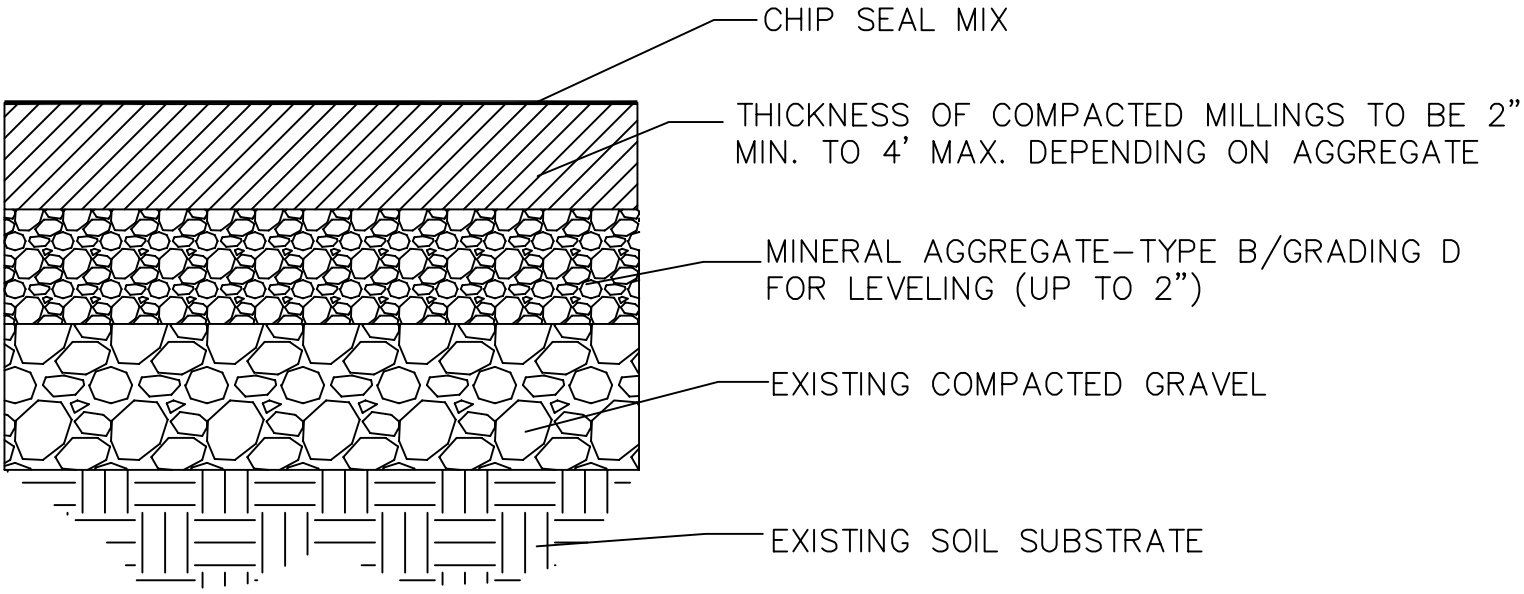
CITY OF LA VERGNE, TENNESSEE

THIS SECTION MAY ONLY BE USED FOR VEHICLE STORAGE LOTS IN INDUSTRIAL ZONING OR FOR CHURCH PARKING LOTS AND ONLY WHERE THERE IS AN EXISTING ESTABLISHED GRAVEL LOT.

RECLAIMED ASPHALT PAVEMENT

COMPACTED ASPHALT MILLING NOTES:

1. ASPHALT TO BE CRUSHED SO THAT THERE ARE NO PIECES TWO INCHES OR LARGER.
2. ADD ASPHALT EMULSION TO THE MIX AT A RATE OF 3% TO 7% BASED ON THE COARSENESS OF THE MATERIAL.
3. SPREAD MILLINGS USING A SPREADER OR AN ASPHALT PAVER. HAND SPREADING MAY BE USED AT THE EDGES OR IN TIGHT AREAS.
4. COMPACT USING A PNEUMATIC-TIRED ROLLER (FIRST RUN) AND THEN A VIBRATORY STEEL-WHEELED ROLLER (SECOND RUN)
5. SEAL WITH A LAYER OF CHIP SEAL MIX AS SHOWN.



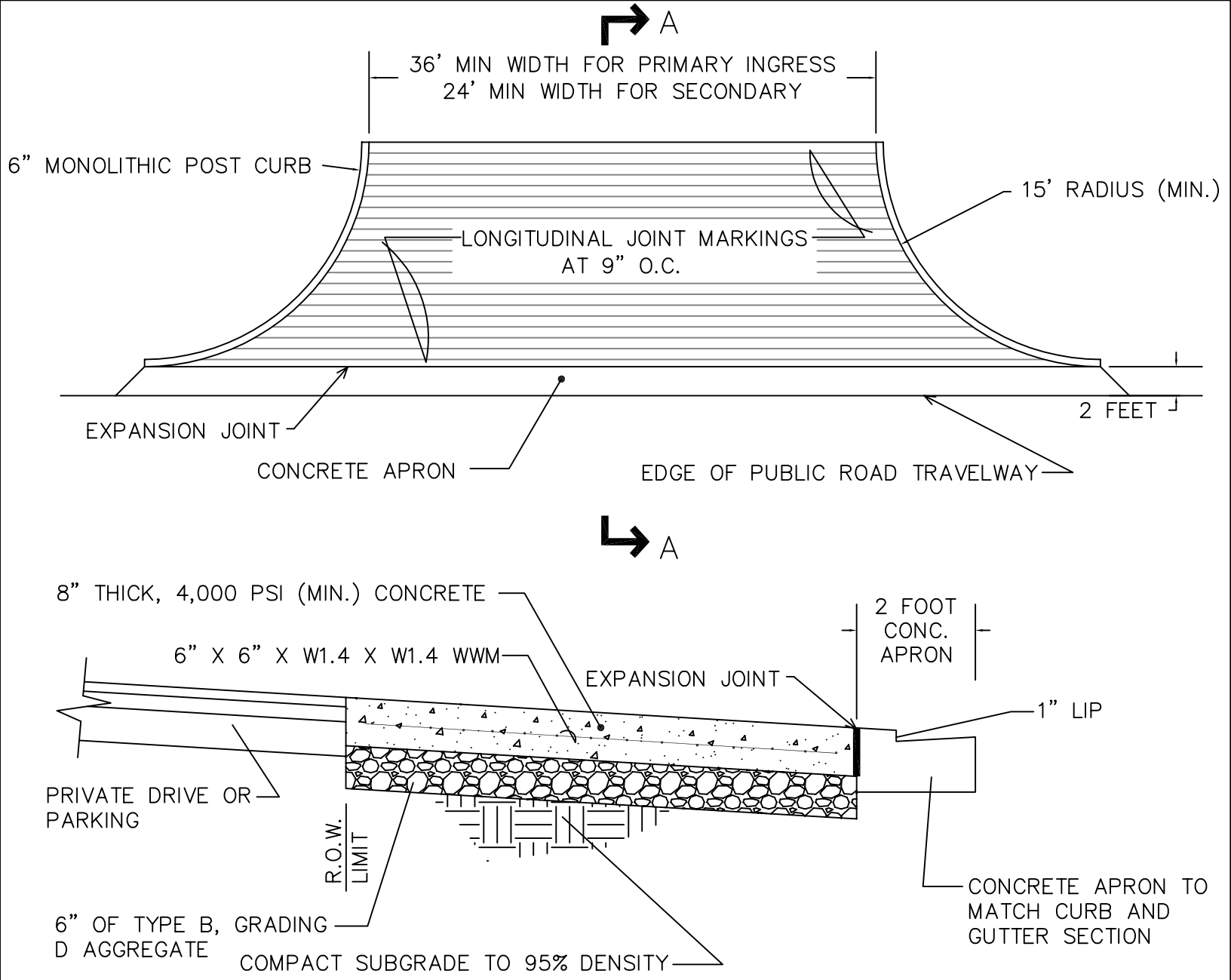
STD SECTION - RECLAIMED ASPHALT PAVEMENT (MILLINGS)

LA VERGNE TENNESSEE Engineering Department

Revised November 2024

STANDARD DETAIL 007

CITY OF LA VERGNE, TENNESSEE



SECTION A–A

COMMERCIAL/INDUSTRIAL DRIVEWAY RAMP

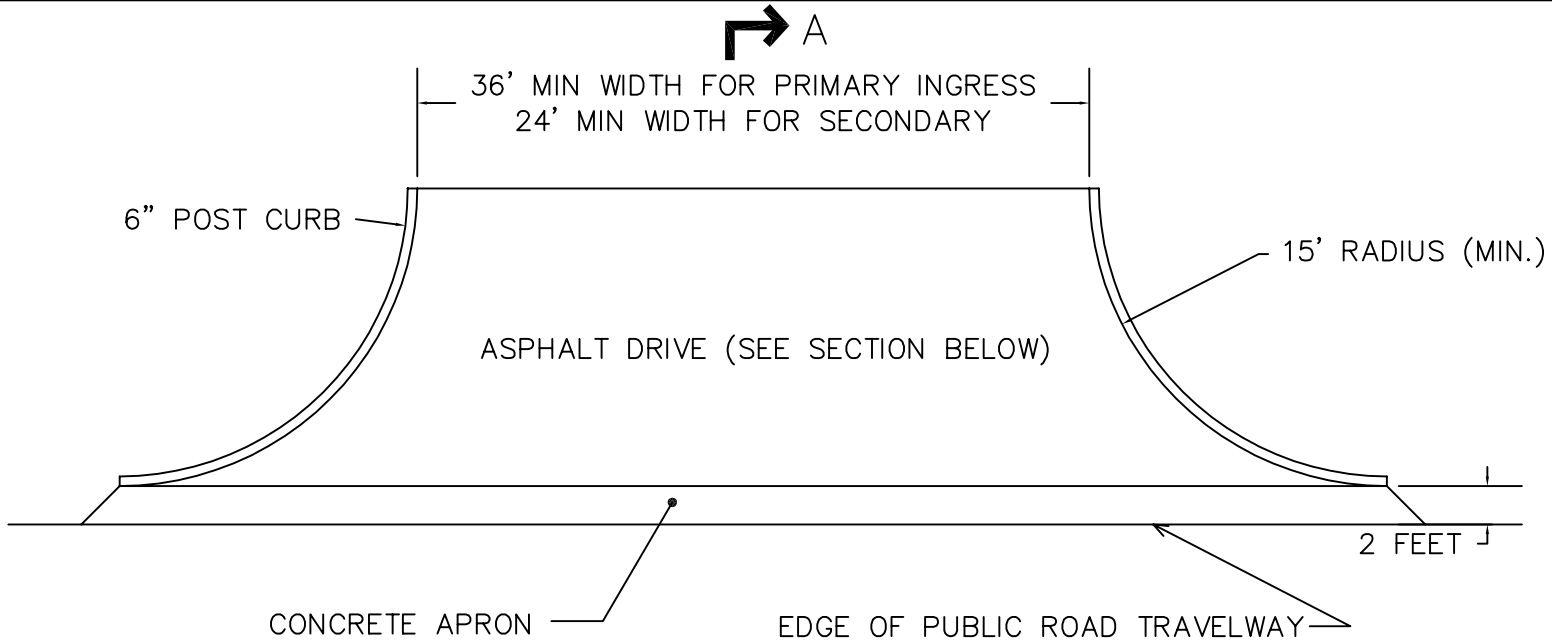
NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

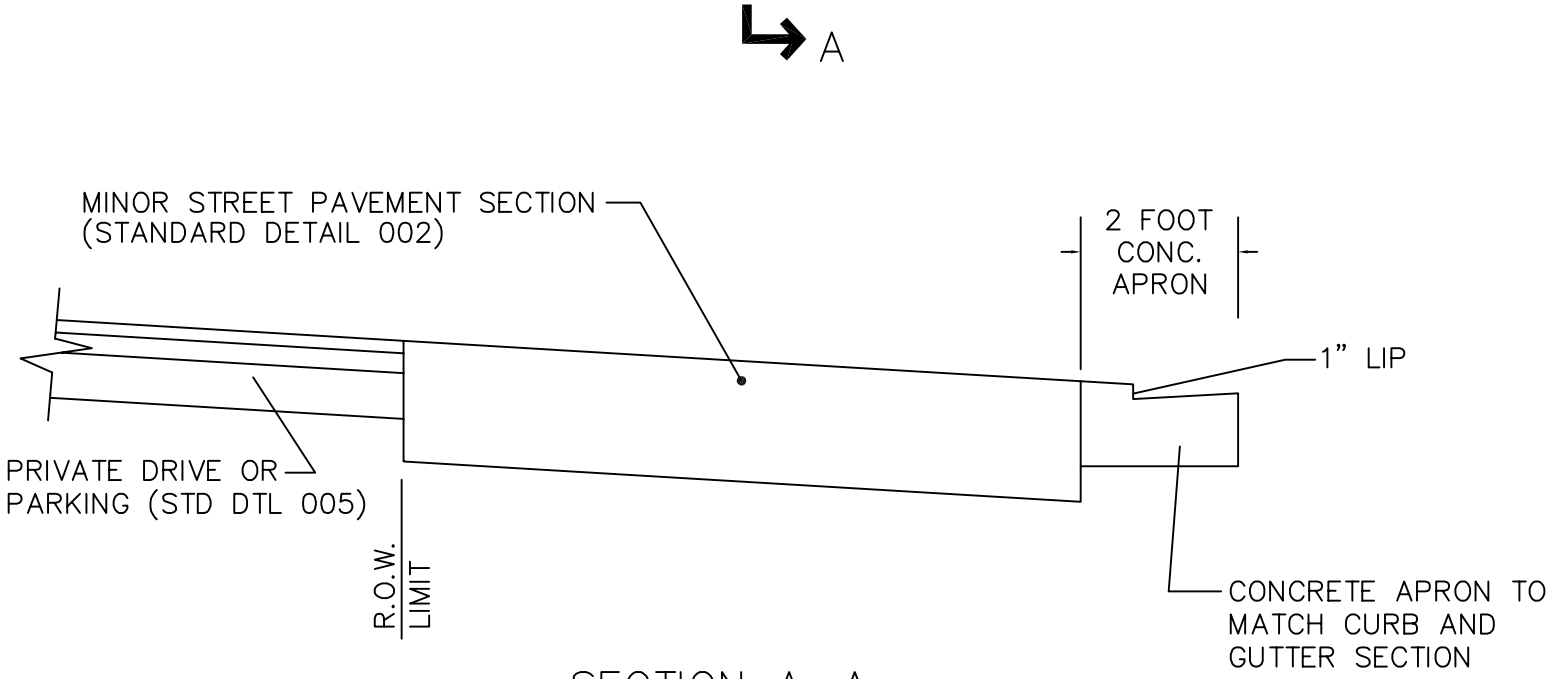
LA VERGNE
TENNESSEE
Engineering Department

Revised November 2024

STANDARD DETAIL C008

CITY OF LA VERGNE, TENNESSEE





SECTION A–A

MULTI–FAMILY DRIVEWAY RAMP

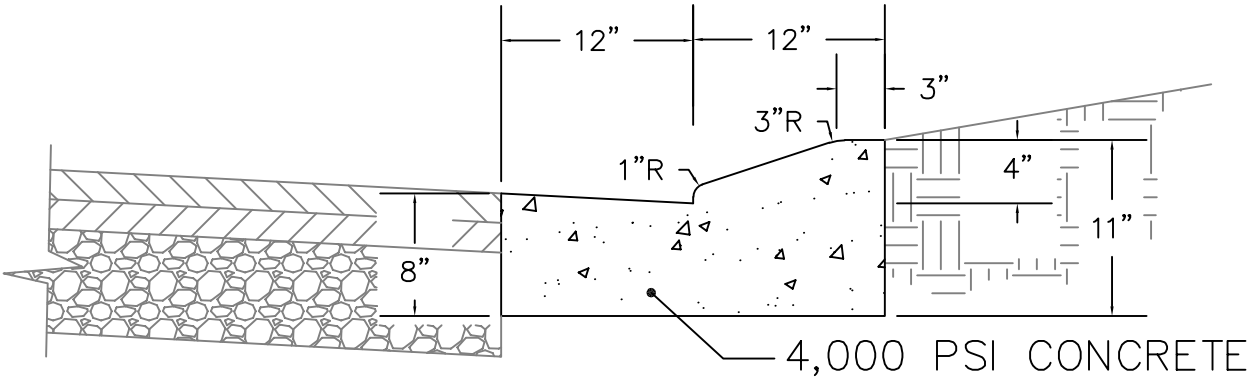
NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

LA VERGNE
TENNESSEE
Engineering Department

Revised November 2024

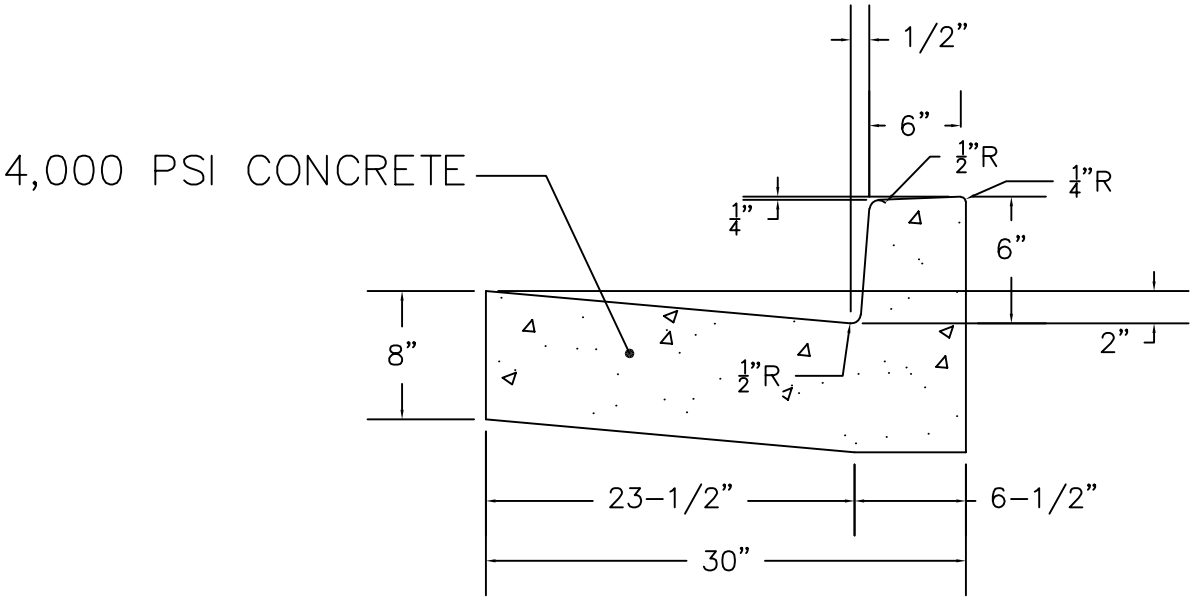
STANDARD DETAIL C009

CITY OF LA VERGNE, TENNESSEE



MOUNTABLE CURB AND GUTTER

FOR USE ON MINOR RESIDENTIAL ROADS



6” POST CURB AND GUTTER

FOR ALL ROADS OTHER THAN MINOR RESIDENTIAL

CURB SECTIONS

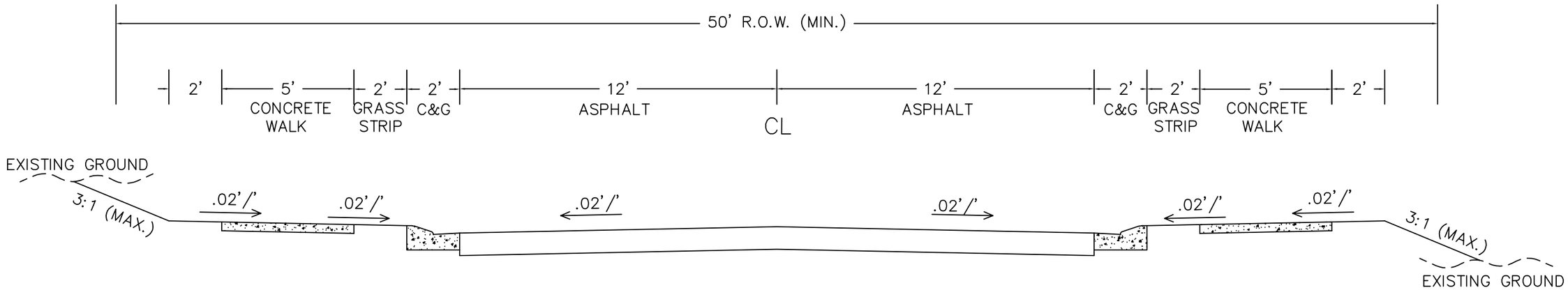
NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

LA VERGNE
TENNESSEE
Engineering Department

Revised November 2024

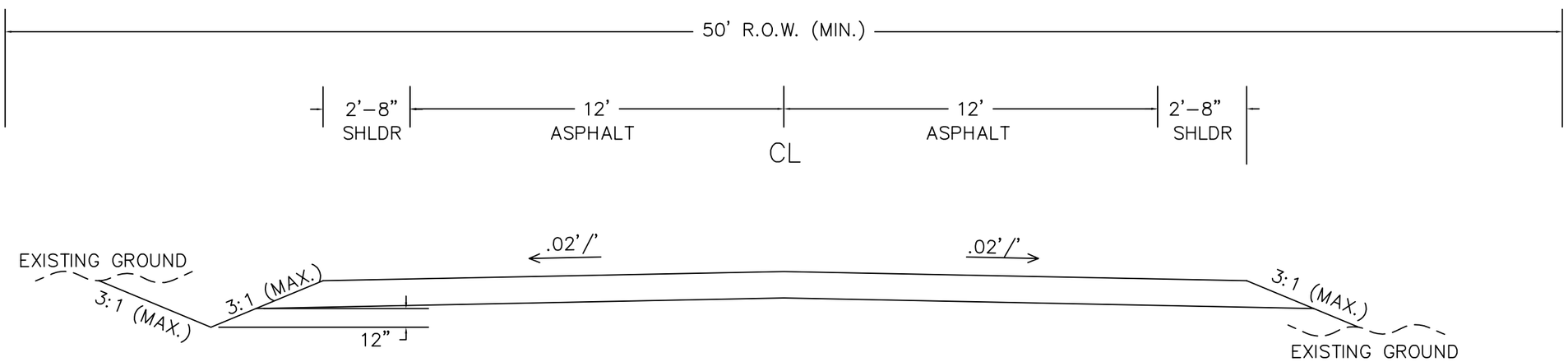
STANDARD DETAIL C010

CITY OF LA VERGNE, TENNESSEE



TYPICAL SECTION FOR NEW RESIDENTIAL SUBDIVISION MINOR ROADS

NOTE: SIDEWALKS ARE REQUIRED ON BOTH SIDES OF THE STREET



TYPICAL SECTION FOR REPAIR/IMPROVEMENT OF EXISTING DITCH-SECTION RESIDENTIAL ROADS

NOTE: SIDEWALKS AND OTHER IMPROVEMENTS MAY BE REQUIRED BY THE PLANNING COMMISSION

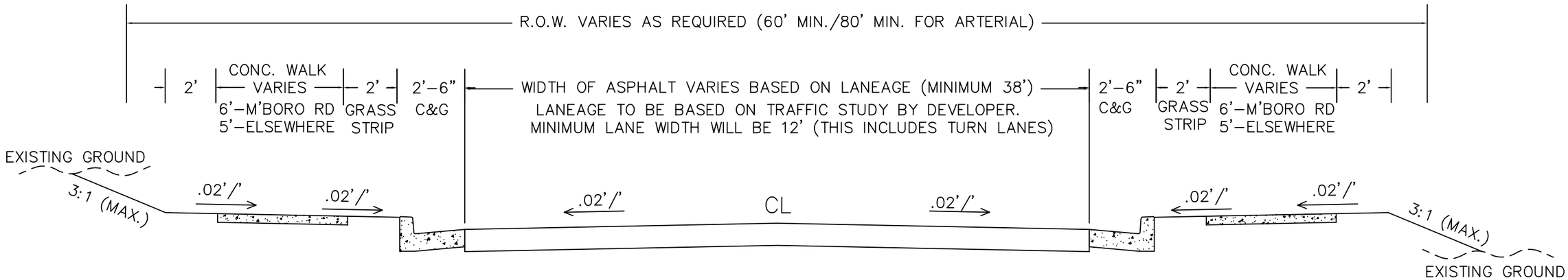
NOTE: SHOULDER MUST BE ASPHALT-PAVED.

LA VERGNE TENNESSEE Engineering Department

Revised November 2024

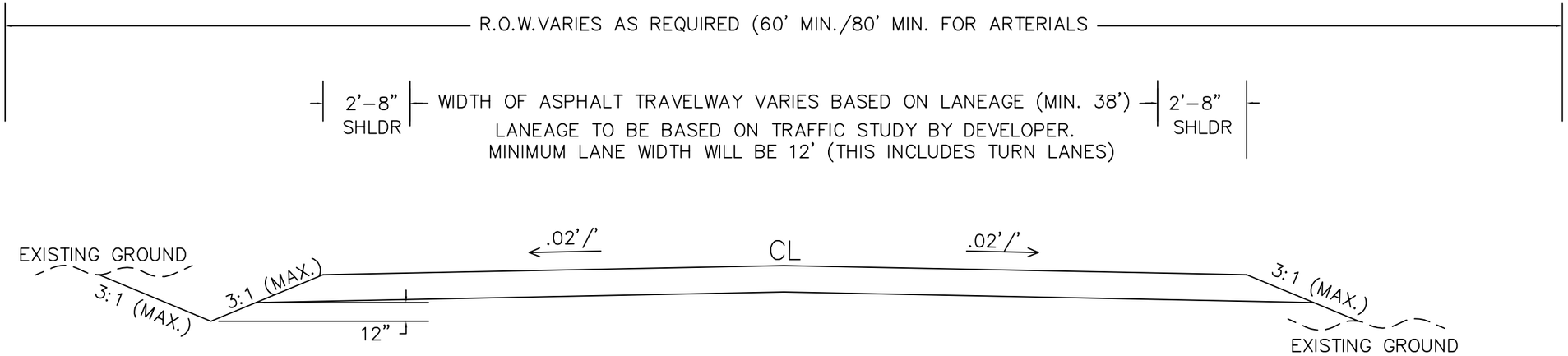
STANDARD DETAIL C011

CITY OF LA VERGNE, TENNESSEE



TYPICAL SECTION FOR NEW RESIDENTIAL COLLECTORS/ARTERIALS AND ALL NON–RESIDENTIAL ROADS

NOTE: SIDEWALKS ARE REQUIRED ON BOTH SIDES OF THE STREET



TYPICAL SECTION FOR REPAIR/IMPROVEMENT OF EXISTING DITCH–SECTION NON–RESIDENTIAL ROADS

NOTE: SIDEWALKS AND OTHER IMPROVEMENTS MAY BE REQUIRED BY THE PLANNING COMMISSION

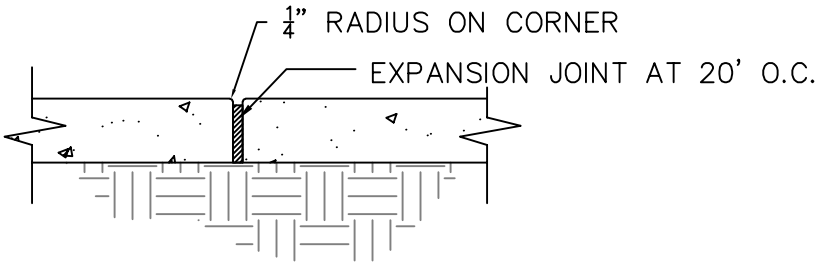
NOTE: SHOULDER MUST BE ASPHALT–PAVED.

LA VERGNE
TENNESSEE
Engineering Department

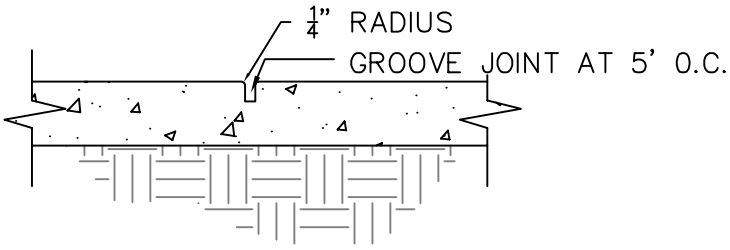
Revised November 2024

STANDARD DETAIL C012

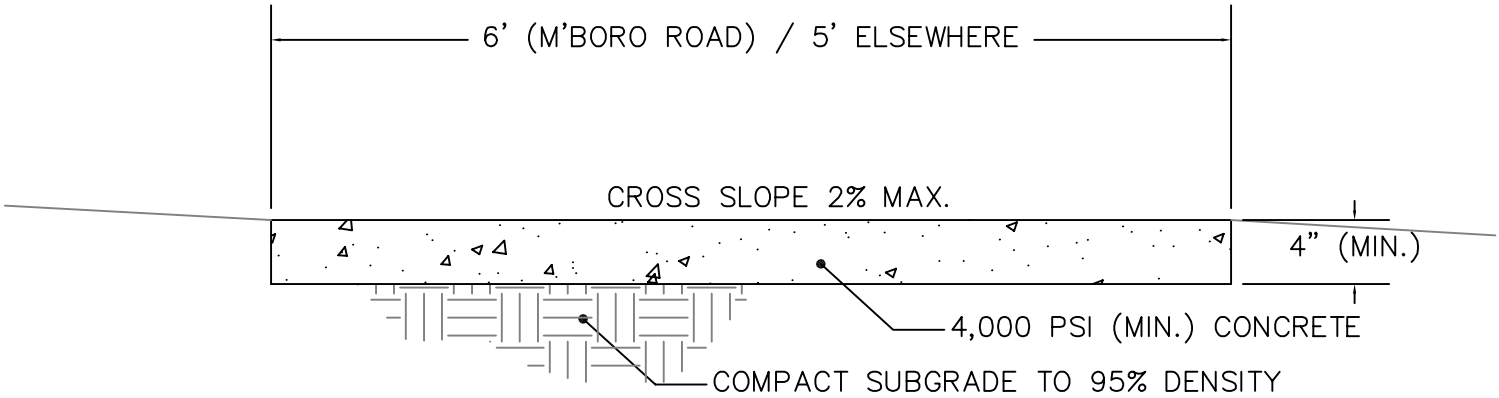
CITY OF LA VERGNE, TENNESSEE



EXPANSION JOINT



CONTRACTION JOINT



NOTE: ALL PUBLIC SIDEWALKS IN THE CITY OF LA VERGNE MUST COMPLY WITH THE LATEST "PUBLIC R.O.W. ACCESSIBILITY GUIDELINES (PROWAG)"(36 CFR 1190) INCLUDING PLACEMENT OF OBSTRUCTIONS SUCH AS SIGNS, POLES, AND MAILBOXES.

NOTE: PUBLIC WALKS MUST BE COMPLETELY INSIDE THE PUBLIC RIGHT-OF-WAY. IN THE EVENT THAT THE LANDOWNER CHOOSES TO PLACE ALL OR ANY PORTION OF THE WALK OUTSIDE OF THE PUBLIC RIGHT-OF-WAY FOR THE PURPOSES IN SUPPORT OF THEIR DEVELOPMENT, THEN SAID LANDOWNER MUST VOLUNTARILY DEDICATE A PUBLIC ACCESS AND MAINTENANCE EASEMENT IN PERPETUITY TO THE CITY COVERING THE FULL EXTEND OF THE WALK. THIS DEDICATION WILL NOT BE CONSIDERED A PUBLIC 'TAKING'.

PUBLIC CONCRETE WALKS

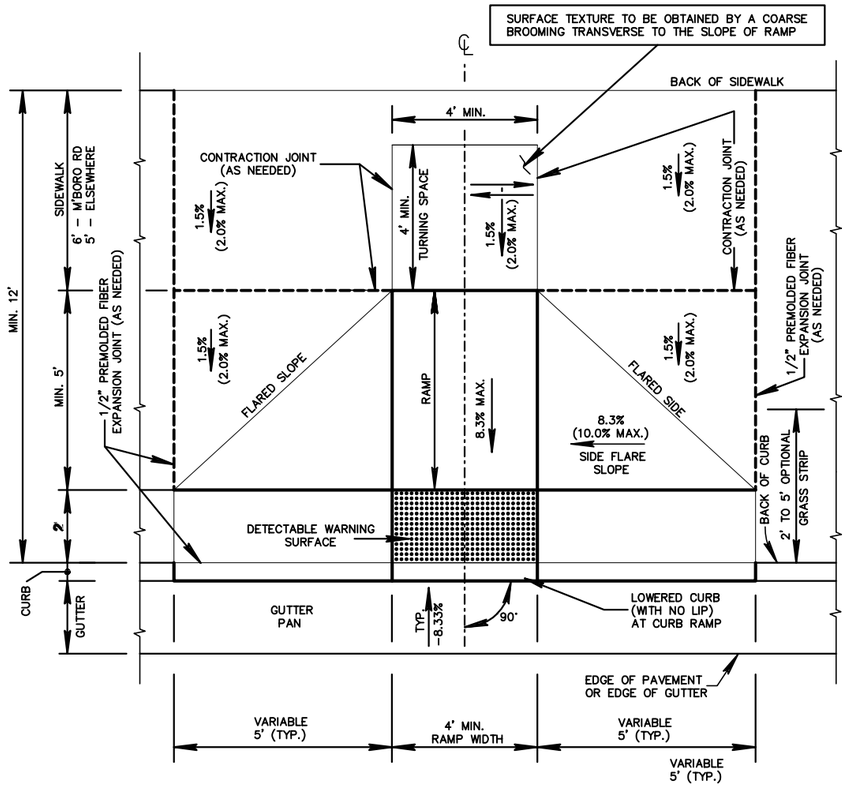
NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

LA VERGNE
TENNESSEE
Engineering Department

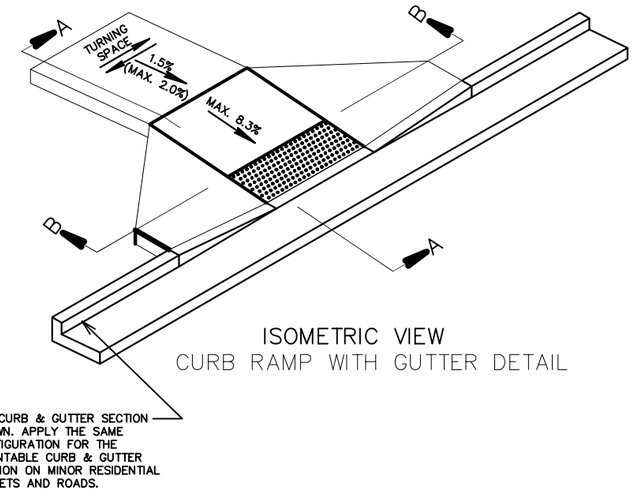
Revised November 2024

STANDARD DETAIL C013

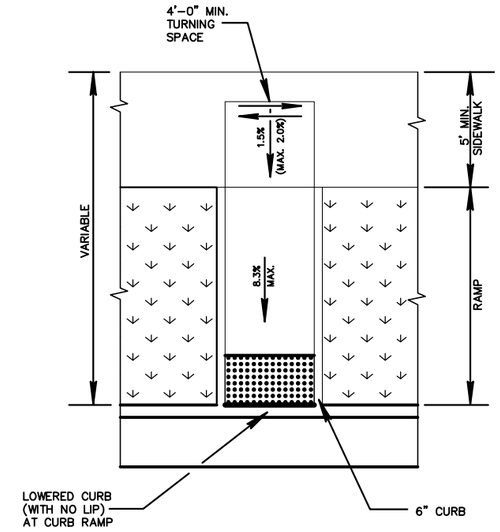
CITY OF LA VERGNE, TENNESSEE



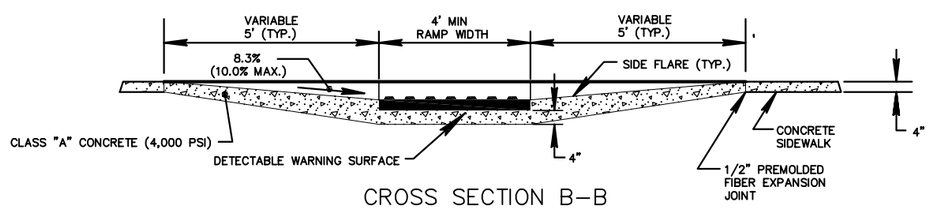
PERPENDICULAR CURB RAMP
PLAN VIEW



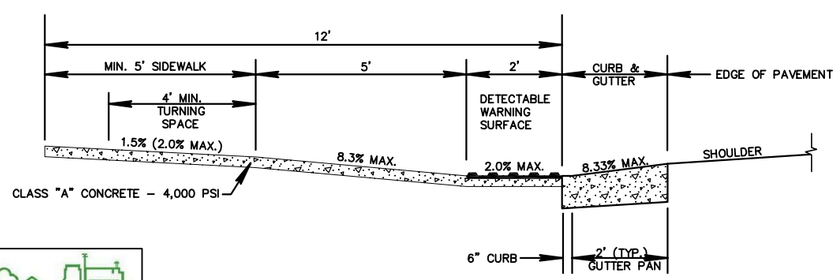
ISOMETRIC VIEW
CURB RAMP WITH GUTTER DETAIL



CURB RAMP WITH
RETURNED CURB



CROSS SECTION B–B



CROSS SECTION A–A
(SHOWN 30" CURB AND GUTTER TRANSITION)
WHEN MOUNTABLE CURB AND GUTTER SECTION FOR MINOR SUBDIVISION ROADS IS USED MODIFY CONFIGURATION ACCORDINGLY

ADA ACCESS RAMP (H/C RAMP)

NOTE: SEE CITY OF LA VERGNE PUBLIC WORKS STANDARD SPECIFICATIONS FOR ROADS AND CIVIL WORK

NOTE: IF ADDITIONAL INFORMATION IS NEEDED, REFERENCE TDOT STANDARD DRAWING MM–CR–2. IGNORE GENERAL NOTE D.

LA VERGNE
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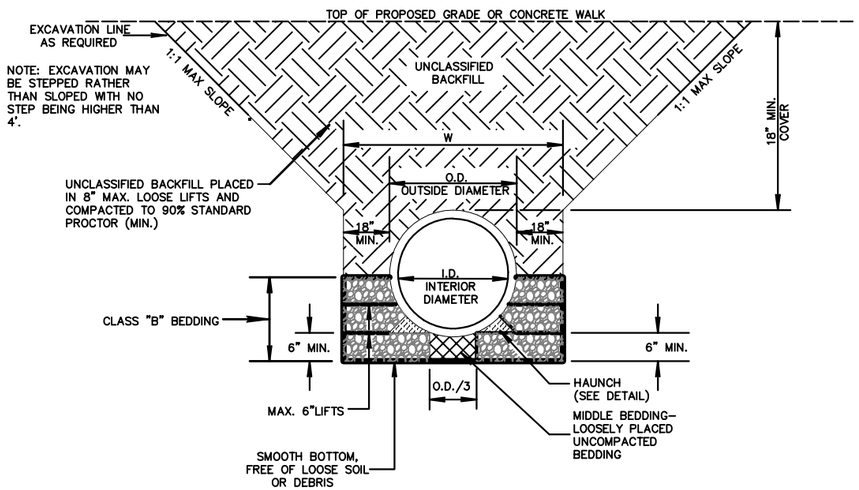
Engineering Department

Revised November 2024

STANDARD DETAIL C014

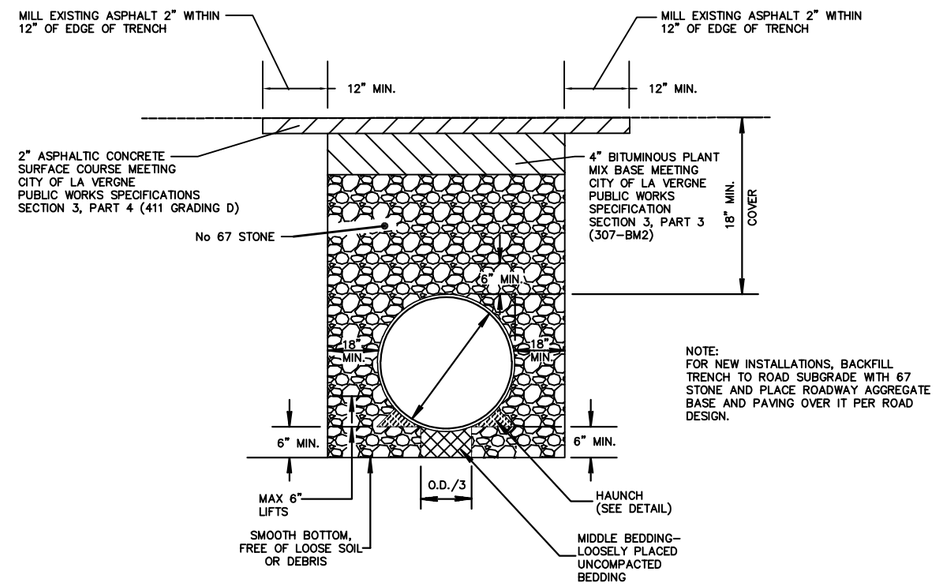
CITY OF LA VERGNE, TENNESSEE



STANDARD TRENCH INSTALLATION
OUTSIDE OF PUBLIC ROADWAY

(PIPE CULVERT INSTALLATION DETAIL)
NOTE: CENTER PIPE IN TRENCH

TABLE A	
REINFORCED CONCRETE PIPE	
FILL HEIGHT	CLASSIFICATION (AASHTO M170)
≤ 16	III
> 16 TO ≤ 24	IV
> 24 TO ≤ 38	V
> 38	SPECIAL DESIGN



NOTE:
FOR NEW INSTALLATIONS, BACKFILL TRENCH TO ROAD SUBGRADE WITH 67 STONE AND PLACE ROADWAY AGGREGATE BASE AND PAVING OVER IT PER ROAD DESIGN.

STANDARD TRENCH INSTALLATION
UNDER PUBLIC ROADWAY

(PIPE CULVERT INSTALLATION DETAIL)
NOTE: CENTER PIPE IN TRENCH

LEGEND

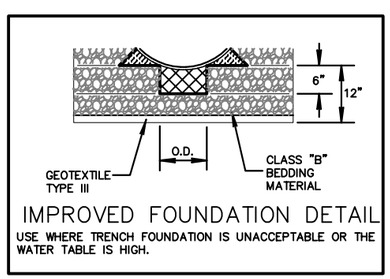
I.D. = INSIDE DIAMETER
O.D. = OUTSIDE DIAMETER

CLASS "B" BEDDING COMPACTED TO 90% STANDARD PROCTOR DENSITY

CLASS "B" BEDDING UNCOMPACTED

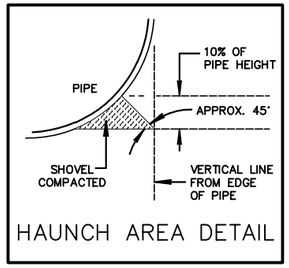
HAUNCH AREA, SHOVEL COMPACTED

UNCLASSIFIED BACKFILL (FINE COMPACTABLE SOIL)

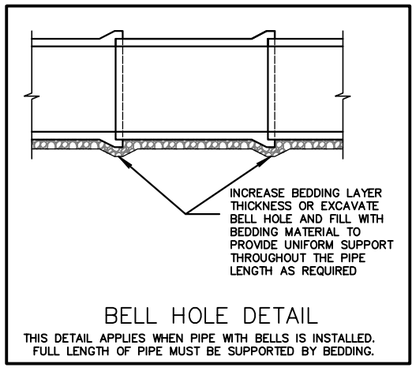


IMPROVED FOUNDATION DETAIL

USE WHERE TRENCH FOUNDATION IS UNACCEPTABLE OR THE WATER TABLE IS HIGH.



HAUNCH AREA DETAIL



BELL HOLE DETAIL

THIS DETAIL APPLIES WHEN PIPE WITH BELLS IS INSTALLED. FULL LENGTH OF PIPE MUST BE SUPPORTED BY BEDDING.

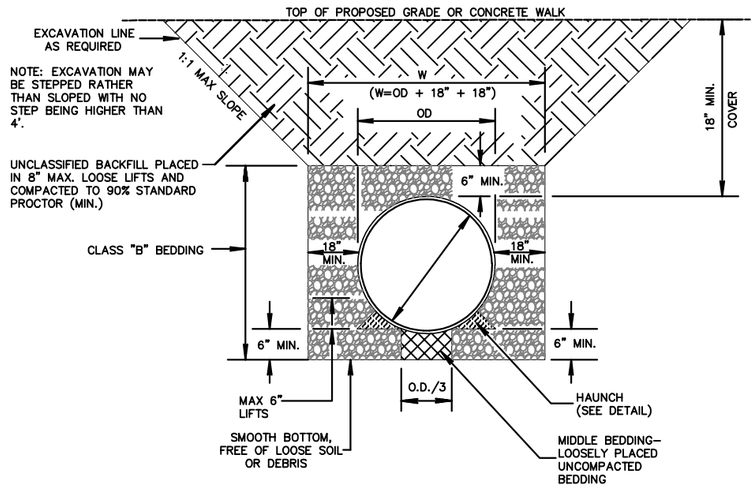
LA VERGNE
TENNESSEE
Engineering Department

CONCRETE STORM PIPE INSTALLATION

Revised November 2024

STANDARD DETAIL S001

CITY OF LA VERGNE, TENNESSEE



STANDARD TRENCH INSTALLATION
OUTSIDE OF PUBLIC ROADWAY

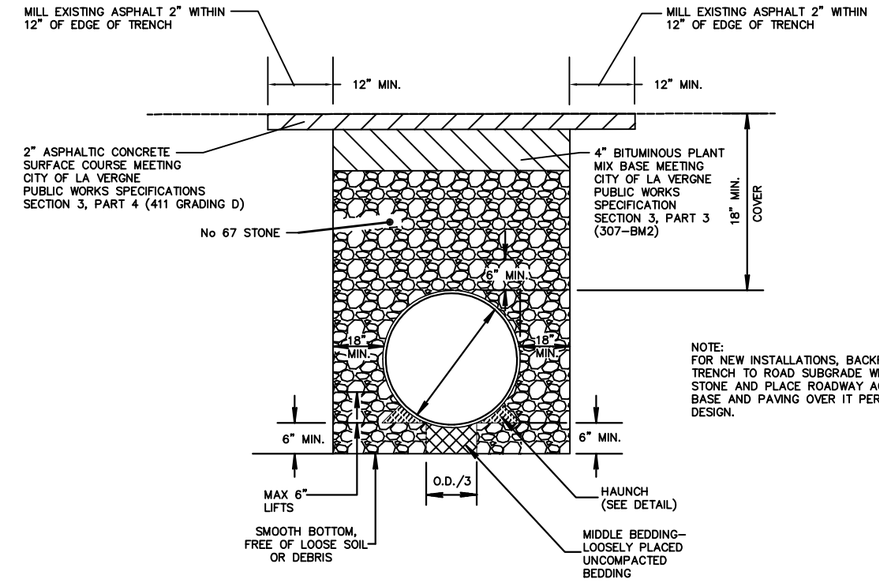
(PIPE CULVERT INSTALLATION DETAIL)
NOTE: CENTER PIPE IN TRENCH

TABLE A	
PIPE TYPE	MAX. INTERIOR DIAMETER (INCHES)
PVC	36
HDPE	60
PP*	60
SRTRP**	60
CMP	72

* POLYPROPYLENE PIPE
** STEEL REINFORCED THERMOPLASTIC RIBBED PIPE

ENGINEERING CALCULATIONS MUST BE PROVIDED FOR DIAMETERS LARGER THAN THOSE SHOWN ABOVE.

SEE TDOT DESIGN DIVISION DRAINAGE MANUAL SECTION 6, APPENDIX TABLE 6A-1 FOR PIPE SELECTION CRITERIA BASED ON SYSTEM AND FILL HEIGHT.



NOTE:
FOR NEW INSTALLATIONS, BACKFILL TRENCH TO ROAD SUBGRADE WITH 67 STONE AND PLACE ROADWAY AGGREGATE BASE AND PAVING OVER IT PER ROAD DESIGN.

STANDARD TRENCH INSTALLATION
UNDER PUBLIC ROADWAY

(PIPE CULVERT INSTALLATION DETAIL)
NOTE: CENTER PIPE IN TRENCH

LEGEND

I.D. = INSIDE DIAMETER
O.D. = OUTSIDE DIAMETER

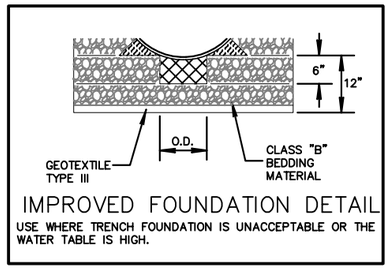
CLASS "B" BEDDING COMPACTED TO 90% STANDARD PROCTOR DENSITY

CLASS "B" BEDDING UNCOMPACTED

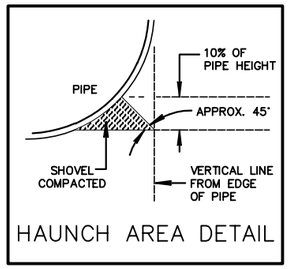
HAUNCH AREA, SHOVEL COMPACTED

UNCLASSIFIED BACKFILL (FINE COMPACTABLE SOIL)

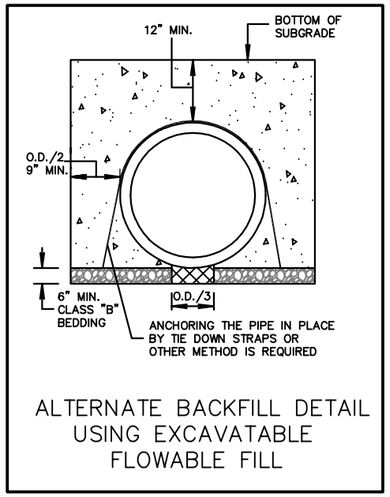
EXCAVATABLE FLOWABLE FILL (EFF)



IMPROVED FOUNDATION DETAIL
USE WHERE TRENCH FOUNDATION IS UNACCEPTABLE OR THE WATER TABLE IS HIGH.



HAUNCH AREA DETAIL



ALTERNATE BACKFILL DETAIL
USING EXCAVATABLE
FLOWABLE FILL

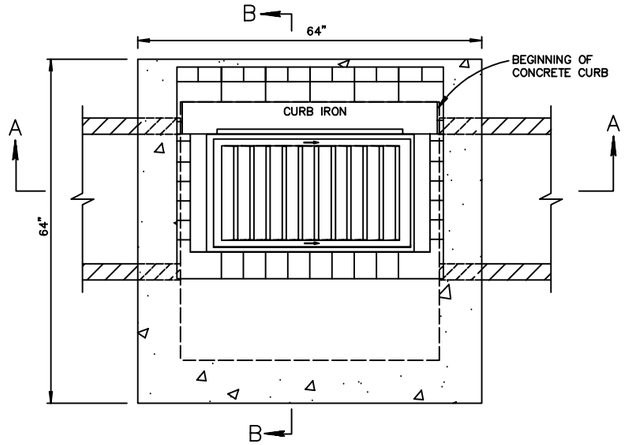
LA VERGNE
TENNESSEE
Engineering Department

FLEXIBLE STORM PIPE INSTALLATION
FOR PVC, HDPE, PP & SRTRP, AND CMP PIPES

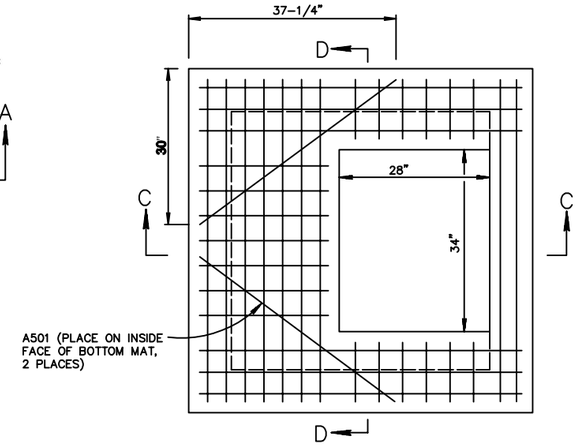
Revised November 2024

STANDARD DETAIL S002

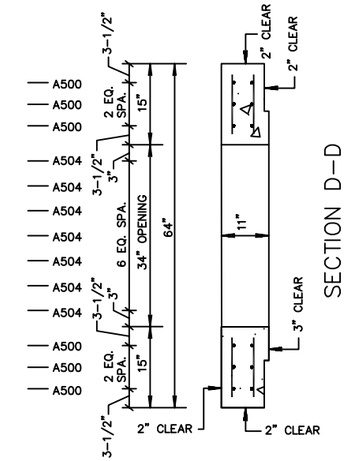
CITY OF LA VERGNE, TENNESSEE



PLAN VIEW



LID REINFORCING



SECTION D–D

CATCH BASIN MAXIMUM DEPTH NOTE

MAXIMUM DEPTH FOR THIS STRUCTURE IS 28.00'.

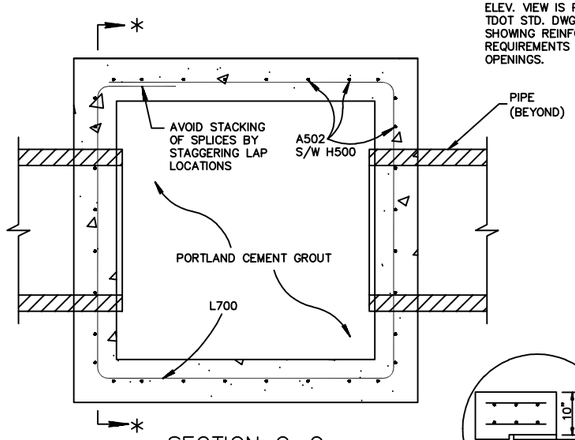
CATCH BASIN DIMENSIONS

INSIDE DIAMETER (D) OF PIPE (INCHES)	PIPE WALL THICKNESS (INCHES)	DIAMETER OF CUT-OUT HOLES (INCHES)	BOX SECTION MINIMUM HEIGHT (INCHES)	CATCH BASIN MINIMUM DESIGN DEPTH (FEET)
18	2-1/2"	25	53	3.9
24	3	32	60	4.45
30	3-1/2"	39	67	4.99
36	4	46	74	5.53

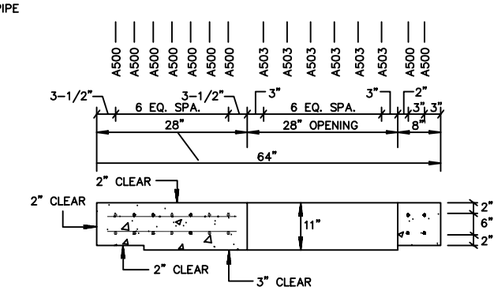
1. CUT–OUT HOLES BASED ON REINFORCED CONCRETE PIPE WITH WALL TYPE "B".
2. ALL FLEXIBLE PIPE MATERIALS REQUIRE GASKET. SEE TDOT STANDARD DRAWING D–PB–2.
3. CUT–OUT HOLES FOR PRECAST STRUCTURES TO BE FORMED IN ORDER TO OBTAIN A SMOOTH–EDGED HOLE. SCORED OR ETCHED HOLES WITH REINFORCING STEEL LEFT UNCUT WILL NOT BE PERMITTED.

SECTION *–*

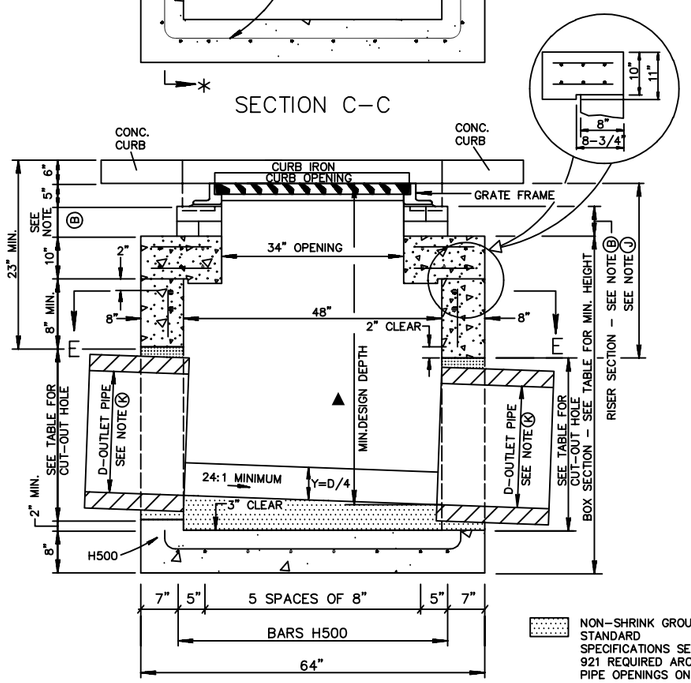
ELEV. VIEW IS PROVIDED ON TDOT STD. DWG. D–CB–99 SHOWING REINFORCEMENT REQUIREMENTS AROUND PIPE OPENINGS.



SECTION C–C

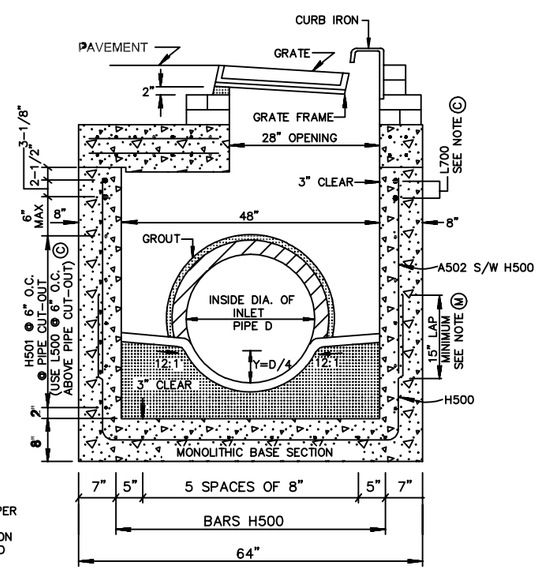


SECTION C–C



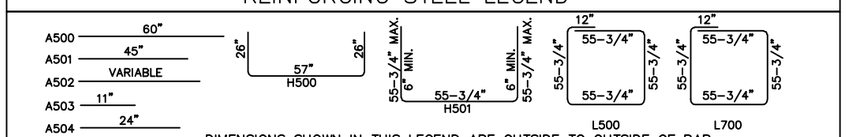
SECTION A–A

NON–SHRINK GROUT PER STANDARD SPECIFICATIONS SECTION 921 REQUIRED AROUND PIPE OPENINGS ONLY



SECTION C–C

REINFORCING STEEL LEGEND



DIMENSIONS SHOWN IN THIS LEGEND ARE OUTSIDE TO OUTSIDE OF BAR. STANDARD C.R.S.I. HOOK AND TIE DETAILS SHALL APPLY, EXCEPT AS NOTED.

LA VERGNE TENNESSEE Engineering Department

STANDARD CURB INLET

Revised November 2024

STANDARD DETAIL S003

CITY OF LA VERGNE, TENNESSEE