

NO.	DATE	DESCRIPTION	BY
1	5/5/20	REVISED TVA EASEMENT	AM

Utilities:
 Information regarding the reputed presence, size, character and location of existing underground utilities and structures is shown hereon. There is no certainty of the accuracy of this information and it shall be considered in that light by those using this drawing. The location and arrangement of underground utilities and structures shown hereon may be inaccurate and utilities and structures not shown may be encountered. The owner, his employees, his consultants and his contractors or anyone else who relies upon this survey shall hereby expressly understand that the surveyor is not responsible for the correctness or sufficiency of this information.

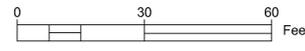
The survey shown hereon was prepared without benefit of any abstract of title; therefore, this Surveyor makes no guarantees or representations regarding information shown hereon pertaining to easements, title, rights of way, setback lines, agreements, reservations, and other similar matters.

Survey fieldwork performed on: March 11, 2020
 This survey was authorized by: Dan Moore

Certification:
 This is to certify that this survey is a Category I survey made under my supervision and is a true representation of the land surveyed. The Ratio of Precision of the unadjusted survey is one foot in 10,000 feet, and an angular error of 05" per angle point. This survey was done in compliance with current Tennessee Minimum Standards of Practice. Angular and linear measurements were made using a Topcon PS-105 Robotic Total Station, and a Topcon Hiper II RTK GPS Unit.

Topographic for:
MSM DEVELOPMENT, LLC
 Date: April 17, 2020
 Scale: 1"=30'
 9th Civil District District
 Blount County, Tennessee
 Deed Book 2499, Page 1572
 Tax Map 057, Parcel 009.06
 Plat Map File 3772B

- Legend:**
- TREE (AS NOTED)
 - PLANTED STONE FOUND
 - IRON PIN FOUND (AS NOTED)
 - ⊗ FENCE POST (AS NOTED)
 - x — FENCE LINE
 - IRON PIN SET (5/8" REBAR W/ CAP)
 - IPS IRON PIN SET
 - ⊙ BEND/BREAK IN LINE
 - CENTERLINE OF ROAD
 - POWER LINE
 - CMF CONCRETE MONUMENT FOUND
 - NS NAIL SET
 - RB REBAR
 - MP METAL T-POST
 - WPT WOOD POST
 - W WATER LINE
 - UT UNDERGROUND TELEPHONE LINE
 - WM WATER METER/WELL
 - FTE FINISHED FLOOR ELEVATION
 - SANITARY MANHOLE
 - ⊗ FIRE HYDRANT
 - ⊗ WATER VALVE
 - BOLLARD
 - ELECTRIC BOX
 - DRIP WALE
 - INV INVERT
 - PVC POLYVINYL CHLORIDE PIPE
 - E.O.P. EDGE OF PAVEMENT
 - METAL GUARD RAIL
 - ⊙ BEND/BREAK IN LINE
 - POWER POLE
 - ⊗ GAS LINE MARKER
 - ⊗ FIBER OPTIC/ COMMUNICATION LINE MARKER
 - SIGN
 - UNDERGROUND GAS LINE
 - CLEANOUT
 - GAS VALVE
 - > GUY WIRE ANCHOR
 - CENTER LINE
 - N/W NOW OR FORMERLY
 - P.O.B. POINT OF BEGINNING
 - FLAG POLE
 - LANDSCAPE LIGHT
 - IR IRON ROD
 - CENTER LINE
 - PROPERTY LINE
 - TOP GREEN TOP PIPE
 - TOP CRAMP TOP PIPE
 - AI ANGLE IRON LINE
 - CONCRETE MONUMENT
 - R/W RIGHT-OF-WAY MONUMENT



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DRAWN BY: AM JN: Matlock-Ledbetter-032320 LSV: BT

Sheet no. 1 of 1

MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
 BLOUNT COUNTY, TENNESSEE

Project
 Engineer/Surveyor

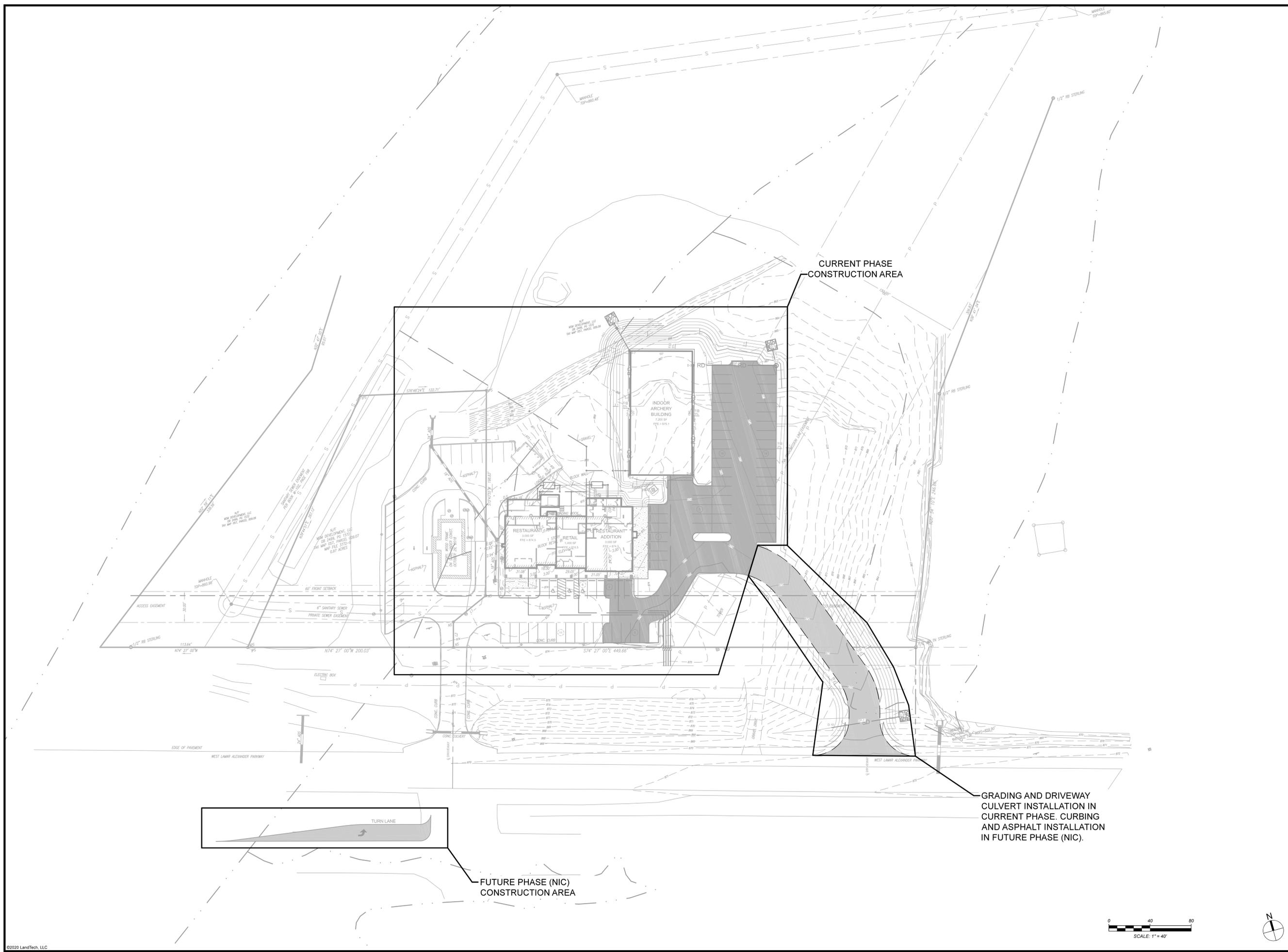
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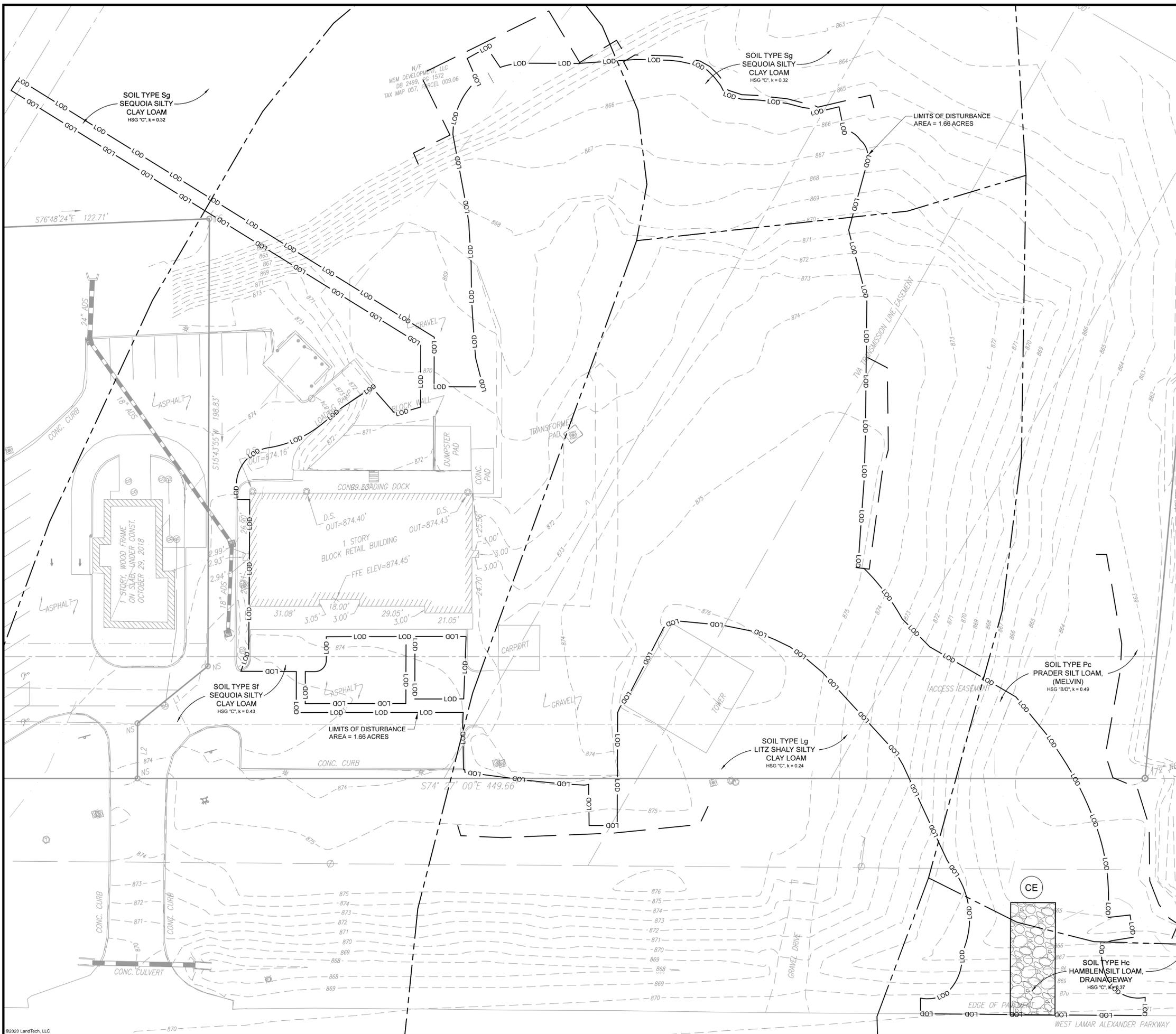


No.	Date	Revision

Drawn By: MBB
 Checked By: JLL
 Approved By: JLL
 LT Project No.: 2004019
 LT Drawing No.: D(O)263-F
 Horiz. Scale: 1" = 40'
 Date: 07/14/20

Sheet Title
Project Phasing Plan
 Sheet ID
C-101
 Sheet No. 4





Sheet General Notes

- AS A MINIMUM, ALL EROSION PREVENTION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE STANDARDS LOCATED IN THE CITY OF MARYVILLE GRADING, SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE, THE TENNESSEE EROSION & SEDIMENT CONTROL HANDBOOK, AND AS REQUIRED BY STATE AND FEDERAL LAWS.
- A COPY OF THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED AT THE PROJECT SITE AT ALL TIMES. THIS COPY SHALL BE MADE AVAILABLE TO THE CITY OF MARYVILLE AND TDEC UPON REQUEST.
- PRIOR TO COMMENCING LAND-DISTURBING ACTIVITIES IN ANY AREA NOT ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION PREVENTION AND SEDIMENT CONTROL PLAN TO THE CITY OF MARYVILLE AND TDEC FOR REVIEW AND APPROVAL.
- ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING AND GRADING. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE CITY OF MARYVILLE AND TDEC.
- THE CITY OF MARYVILLE AND TDEC MUST BE NOTIFIED PRIOR TO DEWATERING OPERATIONS. WATER MUST BE PUMPED THROUGH AN APPROVED FILTERING DEVICE. THE CITY OF MARYVILLE AND TDEC MAY SUSPEND DEWATERING OPERATIONS IF POLLUTION IS OBSERVED.
- THE CONTRACTOR SHALL INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AT LEAST TWICE A WEEK AND AT LEAST ONCE A DAY DURING RAINFALL EVENTS. THE CONTRACTOR SHALL PERFORM ANY REPAIRS OR MAINTENANCE IMMEDIATELY IN ORDER TO ENSURE EFFECTIVE EROSION AND SEDIMENT CONTROL.
- THE CONTRACTOR SHALL MAINTAIN A RECORD OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AT THE PROJECT SITE. THIS RECORD SHALL BE MADE AVAILABLE TO THE CITY OF MARYVILLE AND TDEC UPON REQUEST.
- TEMPORARY SEEDING IS REQUIRED WHEN GRADING OPERATIONS ARE TEMPORARILY HALTED FOR OVER 14 DAYS, AND ON SOIL STOCKPILES. PERMANENT SEEDING IS REQUIRED WHEN GRADING OPERATIONS ARE COMPLETED AND/OR CONSTRUCTION OPERATIONS WILL NOT IMPACT THE DISTURBED AREA. SEED AREAS THAT SHOW SIGNS OF EROSION.
- REFER TO ADDITIONAL REQUIREMENTS IN THE EROSION PREVENTION AND SEDIMENT CONTROL PLANS, DETAILS, SPECIFICATIONS, AND STORMWATER POLLUTION PREVENTION PLANS (SWPPP), AS APPLICABLE.
- SOIL DATA BASED ON MAPPING PROVIDED BY U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE.
- ADEQUATE DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES, BEST MANAGEMENT PRACTICES, AND/OR OTHER STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. DAMAGES TO ADJACENT PROPERTY AND/OR THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR'S OR PROPERTY OWNER'S FAILURE TO PROVIDE AND MAINTAIN ADEQUATE DRAINAGE AND EROSION/SEDIMENT CONTROL FOR THE CONSTRUCTION AREA SHALL BE THE RESPONSIBILITY OF THE GRADING PERMITTEE.

Sequence of Construction

- INSTALL INITIAL EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES BEFORE CLEARING, GRUBBING, EXCAVATION, GRADING, CUTTING, FILLING, OR ANY OTHER EARTHWORK OCCURS, EXCEPT AS SUCH WORK MAY BE NECESSARY TO INSTALL EPSC MEASURES.
- PERFORM CLEARING AND GRUBBING NOT MORE THAN 14 DAYS PRIOR TO GRADING OR EARTH MOVING.
- FLAG AND MARK THE LIMITS OF DISTURBANCE (LOD), CONSTRUCTION BUFFER ZONES, AND CONSTRUCTION STAGING AND STORAGE AREAS.
- INSTALL STABILIZED CONSTRUCTION EXIT.
- CLEAR A PATH FOR THE INSTALLATION OF SILT FENCE PERIMETER EPSC MEASURE. INSTALL SILT FENCE. EVALUATE EFFECTIVENESS AND ADJUST AS NEEDED.
- REMOVE AND STORE TOPSOIL. PROVIDE TEMPORARY SEEDING OR PERIMETER SILT FENCE AT SOIL STOCKPILES.
- STABILIZE DISTURBED AREAS WITHIN 14 DAYS OF COMPLETING ANY STAGE AND/OR PHASE OF ACTIVITY.
- REMOVE TEMPORARY EROSION CONTROLS AND ACCUMULATED SEDIMENT FROM AREAS THAT HAVE ESTABLISHED AT LEAST 70 PERCENT UNIFORM PERMANENT VEGETATIVE COVER.
- TDEC MAY CONDUCT ROUTINE INSPECTIONS OF EP&S MEASURES THROUGHOUT THE PERIOD OF CONSTRUCTION, AND INVESTIGATE COMPLAINTS OF EROSION OR SEDIMENTATION.

Legend

- SF — SILT FENCE
- LOD — LIMITS OF DISTURBANCE
- SOIL LIMITS
- ⊙ CE CONSTRUCTION EXIT
- ▨ RIPRAP AREA



MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
 BLOUNT COUNTY, TENNESSEE

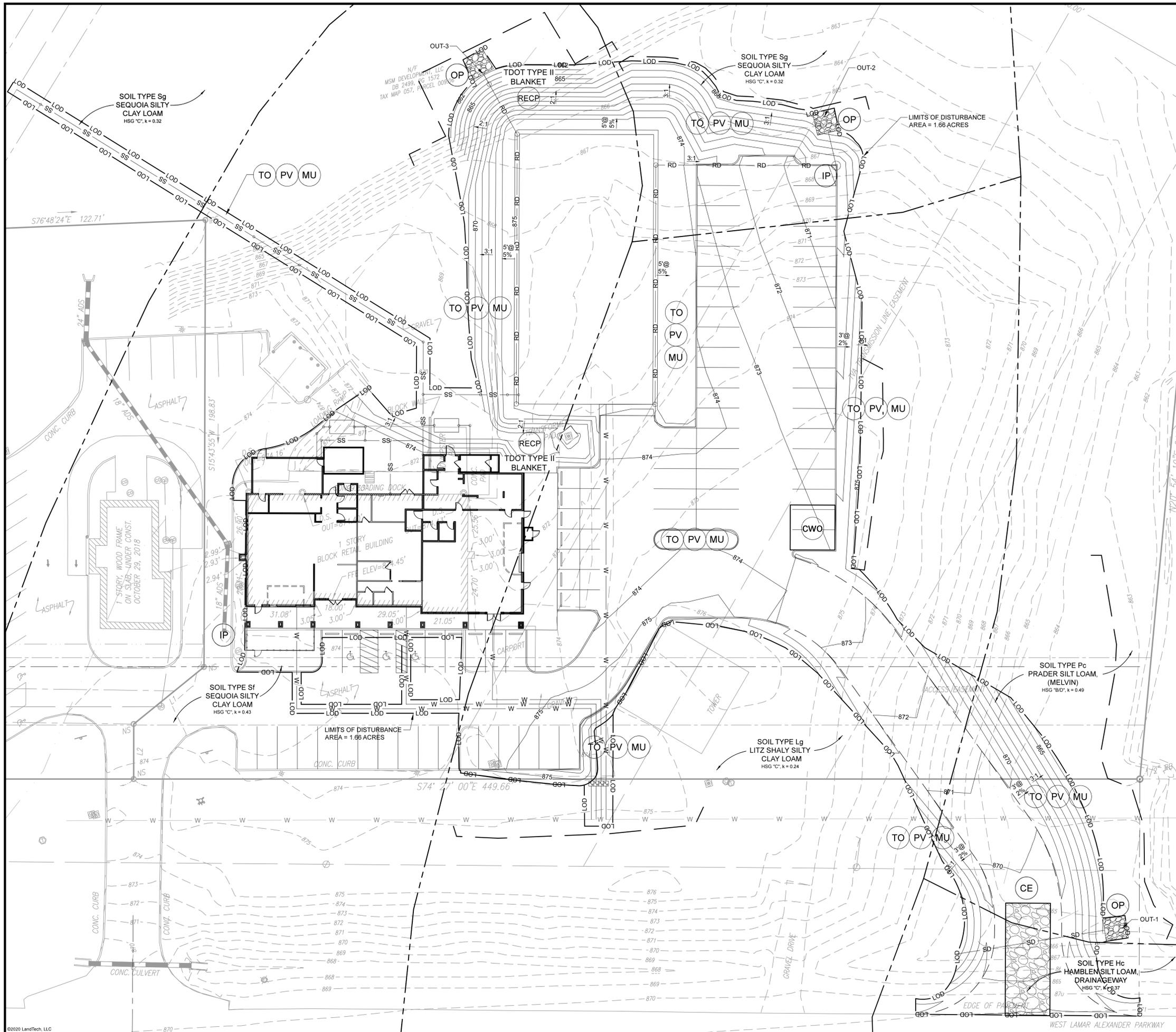
Project
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No.	Date	Revision

Drawn By:	MBB
Checked By:	JLL
Approved By:	JLL
LT Project No.:	2004019
LT Drawing No.:	D/O263-F
Horiz. Scale:	1" = 20'
Date:	07/14/20

Sheet Title
Erosion Control Plan Stage 1
 Sheet ID
C-102
 Sheet No. 5



Sheet General Notes

- AS A MINIMUM, ALL EROSION PREVENTION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE STANDARDS LOCATED IN THE CITY OF MARYVILLE GRADING, SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE, THE TENNESSEE EROSION & SEDIMENT CONTROL HANDBOOK, AND AS REQUIRED BY STATE AND FEDERAL LAWS.
- A COPY OF THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED AT THE PROJECT SITE AT ALL TIMES. THIS COPY SHALL BE MADE AVAILABLE TO THE CITY OF MARYVILLE AND TDEC UPON REQUEST.
- PRIOR TO COMMENCING LAND-DISTURBING ACTIVITIES IN ANY AREA NOT ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION PREVENTION AND SEDIMENT CONTROL PLAN TO THE CITY OF MARYVILLE AND TDEC FOR REVIEW AND APPROVAL.
- ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING AND GRADING. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE CITY OF MARYVILLE AND TDEC.
- THE CITY OF MARYVILLE AND TDEC MUST BE NOTIFIED PRIOR TO DEWATERING OPERATIONS. WATER MUST BE PUMPED THROUGH AN APPROVED FILTERING DEVICE. THE CITY OF MARYVILLE AND TDEC MAY SUSPEND DEWATERING OPERATIONS IF POLLUTION IS OBSERVED.
- THE CONTRACTOR SHALL INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AT LEAST TWICE A WEEK AND AT LEAST ONCE A DAY DURING RAINFALL EVENTS. THE CONTRACTOR SHALL PERFORM ANY REPAIRS OR MAINTENANCE IMMEDIATELY IN ORDER TO ENSURE EFFECTIVE EROSION AND SEDIMENT CONTROL.
- THE CONTRACTOR SHALL MAINTAIN A RECORD OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AT THE PROJECT SITE. THIS RECORD SHALL BE MADE AVAILABLE TO THE CITY OF MARYVILLE AND TDEC UPON REQUEST.
- TEMPORARY SEEDING IS REQUIRED WHEN GRADING OPERATIONS ARE TEMPORARILY HALTED FOR OVER 14 DAYS, AND ON SOIL STOCKPILES. PERMANENT SEEDING IS REQUIRED WHEN GRADING OPERATIONS ARE COMPLETED AND/OR CONSTRUCTION OPERATIONS WILL NOT IMPACT THE DISTURBED AREA. SEED AREAS THAT SHOW SIGNS OF EROSION.
- REFER TO ADDITIONAL REQUIREMENTS IN THE EROSION PREVENTION AND SEDIMENT CONTROL PLANS, DETAILS, SPECIFICATIONS, AND STORMWATER POLLUTION PREVENTION PLANS (SWPPP), AS APPLICABLE.
- SOIL DATA BASED ON MAPPING PROVIDED BY U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE.
- ADEQUATE DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES, BEST MANAGEMENT PRACTICES, AND/OR OTHER STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. DAMAGES TO ADJACENT PROPERTY AND/OR THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR'S OR PROPERTY OWNER'S FAILURE TO PROVIDE AND MAINTAIN ADEQUATE DRAINAGE AND EROSION/SEDIMENT CONTROL FOR THE CONSTRUCTION AREA SHALL BE THE RESPONSIBILITY OF THE GRADING PERMITTEE.

Sequence of Construction

- PROCEED WITH SITE GRADING AND CONSTRUCTION WORK, INSTALLING EPSC MEASURES AT THE EARLIEST TIME POSSIBLE DURING GRADING ACTIVITIES. ESTABLISH EITHER TEMPORARY OR PERMANENT VEGETATION ON ALL DISTURBED AREAS WITHIN 14 DAYS OF COMPLETING GRADING WITHIN THE DISTURBED AREA. PROVIDE TEMPORARY SEEDING ON TEMPORARY SOIL STOCKPILES.
- INSTALL STORM DRAINS, CULVERTS AND UTILITIES.
- INSTALL PIPE INLET AND OUTLET PROTECTION ONCE STRUCTURES ARE IN PLACE AND CAPABLE OF INTERCEPTING FLOW.
- PERFORM FINAL GRADING AND INSTALL BASE STONE.
- COMPLETE FINAL STABILIZATION (TOPSOIL, SEEDING, MULCH, EROSION CONTROL BLANKETS, SOD, ETC.)
- REMOVE TEMPORARY EROSION CONTROLS AND ACCUMULATED SEDIMENT FROM AREAS THAT HAVE ESTABLISHED AT LEAST 70 PERCENT UNIFORM PERMANENT VEGETATIVE COVER.
- RE-STABILIZE AREAS DISTURBED BY REMOVAL ACTIVITIES.
- TDEC MAY CONDUCT ROUTINE INSPECTIONS OF EPSC MEASURES THROUGHOUT THE PERIOD OF CONSTRUCTION, AND INVESTIGATE COMPLAINTS OF EROSION OR SEDIMENTATION.
- A FINAL AS-BUILT INSPECTION AND REVIEW WILL BE PERFORMED AT THE PROJECT SITE PRIOR TO RELEASE OR REDUCTION OF A CONSTRUCTION BOND.

Legend

- SF — SILT FENCE
- LOD — LIMITS OF DISTURBANCE
- SOIL LIMITS
- ▨ RIPRAP AREA
- CE ○ CONSTRUCTION EXIT
- TO ○ TOPSOIL
- IP ○ INLET PROTECTION
- OP ○ OUTLET PROTECTION
- PV ○ PERMANENT VEGETATION
- CWO ○ CONCRETE WASHOUT
- MU ○ MULCH
- RECP ○ ROLLED EROSION CONTROL PRODUCTS



MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
 BLOUNT COUNTY, TENNESSEE

Project
 Engineer/Surveyor

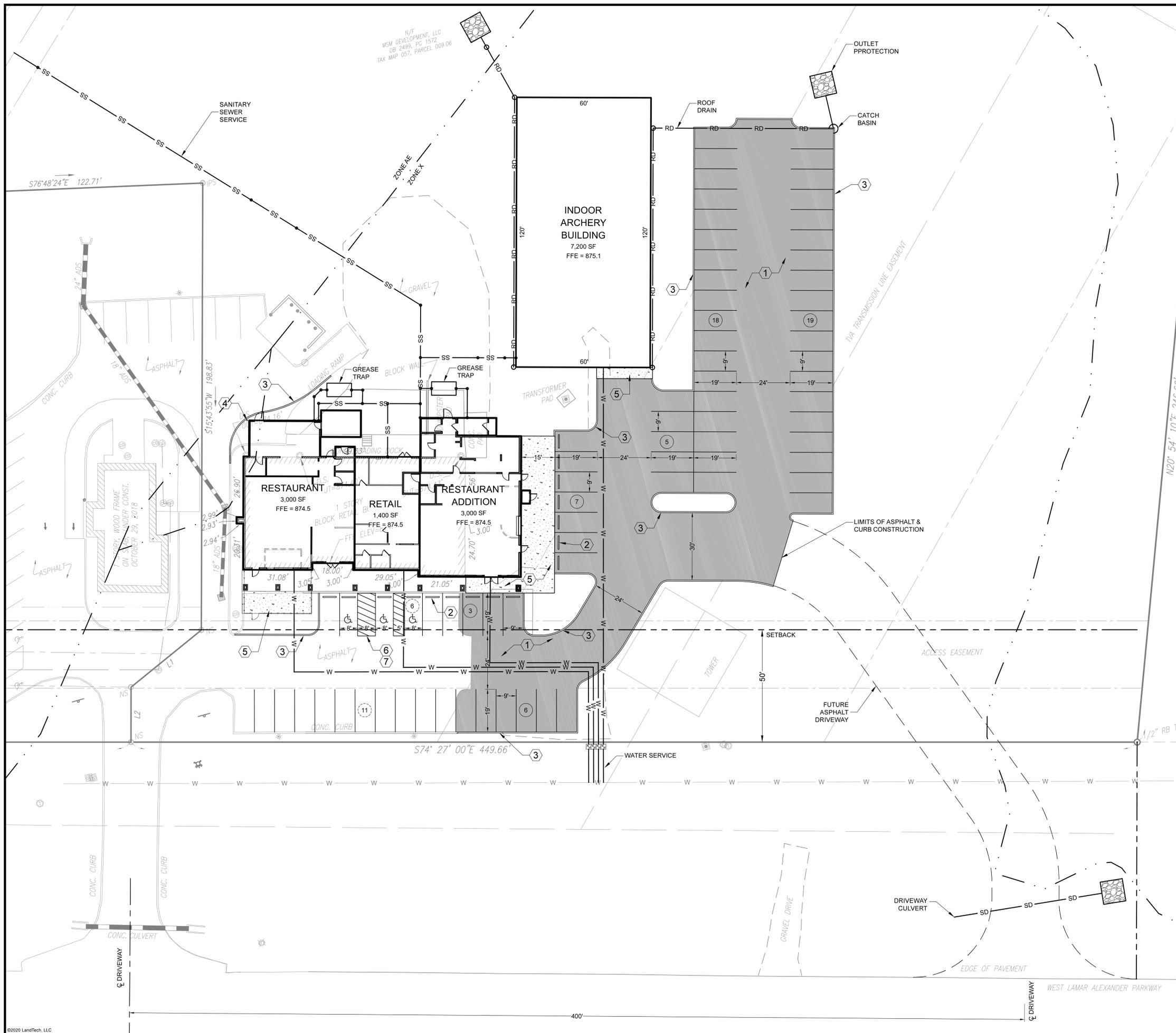
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No.	Date	Revision

Drawn By:	MBB
Checked By:	JJL
Approved By:	JJL
LT Project No.:	2004019
LT Drawing No.:	D\O\263-F
Horiz. Scale:	1" = 20'
Date:	07/14/20

Sheet Title
Erosion Control Plan Stage 2
 Sheet ID
C-103
 Sheet No. 6



Sheet General Notes

- ASPHALT PAVING CONSTRUCTION SHALL BE IN ACCORDANCE WITH TDOTSS PART 4 - FLEXIBLE SURFACES.
- CURB CONSTRUCTION SHALL BE IN ACCORDANCE WITH TDOTSS 702 - CEMENT CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER.
- SIDEWALK CONSTRUCTION SHALL BE IN ACCORDANCE WITH TDOTSS 701 - CEMENT CONCRETE SIDEWALKS, DRIVEWAYS, AND MEDIAN PAVEMENT.
- PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TDOTSS 716 - PAVEMENT MARKINGS.
- BOLLARD CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF KNOXVILLE TECHNICAL SPECIFICATIONS SECTION 50.0 - BOLLARDS.
- SIGNAGE CONSTRUCTION SHALL BE IN ACCORDANCE WITH TDOTSS SECTION 916 - HIGHWAY SIGNING MATERIALS.
- CONTRACTOR SHALL REFER TO THE LATEST EDITIONS OF TDOT STANDARD SPECIFICATIONS AND THE CITY OF MARYVILLE TECHNICAL SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS, AS APPLICABLE.
- DIMENSIONS ARE TO FACE OF CURB, BUILDING, OR STRUCTURE, UNLESS OTHERWISE INDICATED.
- SETBACK LINES SHOWN ON THESE PLANS ARE TAKEN FROM APPLICABLE GOVERNMENT ZONING REGULATIONS AND DO NOT NECESSARILY REFLECT ANY SETBACK REQUIREMENTS THAT MAY BE FOUND UNDER PRIVATE RESTRICTIVE COVENANTS.

MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
 BLOUNT COUNTY, TENNESSEE

Sheet Keynotes

KEYNOTE No.	DETAIL SHEET No.	DESCRIPTION
1	C-407	ASPHALT PAVEMENT - STANDARD DUTY
2	C-407	CONCRETE WHEEL STOP
3	C-407	EXTRUDED CONCRETE CURB
4	C-407	CONCRETE PIPE BOLLARD
5	C-407	CONCRETE SIDEWALK
6	C-407	PARKING SPACE LAYOUT
7	C-407	HANDICAP PARKING SIGN

Engineer/Surveyor

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James J. Johnson, P.E.
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF TENNESSEE
 No. 00116821
 EXPIRES 7-14-20

PARKING REQUIREMENT

- RESTAURANT AREA = 3,000 SF + 3,000 SF = 6,000 SF
 PARKING SPACES REQD = 6,000 SF ÷ 100 SF / SPACE = 60 SPACES
- RETAIL AREA = 1,400 SF ÷ 200 SF / SPACE = 7 SPACES
- INDOOR ARCHERY BUILDING
 RETAIL AREA = 60' x 20' = 1,200 SF ÷ 200 SF / SPACE = 6 SPACES
 ARCHERY RANGE = 60' WIDTH ÷ 10 FT WIDTH PER SHOOTING LANE = 6 LANES ÷ 3 LANES / SPACE = 2 SPACES

TOTAL PARKING SPACES REQD = 60 + 7 + 6 + 2 = 75 SPACES
TOTAL PARKING SPACES PROVIDED = 75 SPACES

No.	Date	Revision

Legend

	RIPRAP AREA
	CONCRETE
	ASPHALT
	SETBACK LINE
	RD - ROOF DRAIN PIPE
	SD - STORM DRAIN PIPE
	SS - SANITARY SEWER PIPE
	W - WATER LINE
	FLOODWAY / FLOOD ZONE
	# - # PARKING SPACES

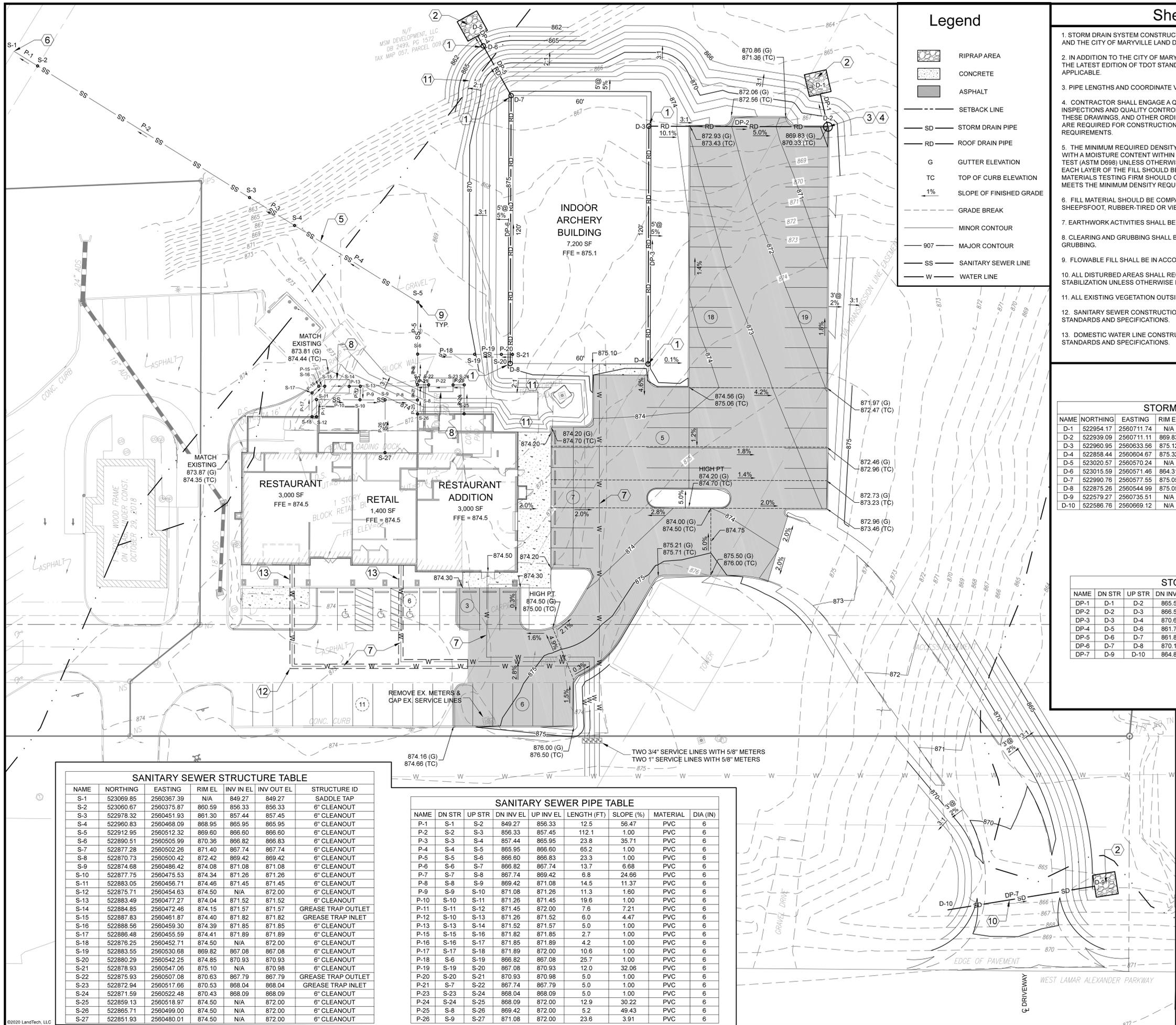
Drawn By: MBB
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 LT Project No.: 2004019
 LT Drawing No.: D(O)263-F
 Horiz. Scale: 1" = 20'
 Date: 07/14/20

Sheet Title: **Site Plan**

Scale: 1" = 20'

North Arrow

Sheet ID: **C-104**
 Sheet No. 7



Legend

- RIPRAP AREA
- CONCRETE
- ASPHALT
- SETBACK LINE
- SD STORM DRAIN PIPE
- RD ROOF DRAIN PIPE
- G GUTTER ELEVATION
- TC TOP OF CURB ELEVATION
- 1% SLOPE OF FINISHED GRADE
- GRADE BREAK
- MINOR CONTOUR
- 907 MAJOR CONTOUR
- SS SANITARY SEWER LINE
- W WATER LINE

Sheet General Notes

1. STORM DRAIN SYSTEM CONSTRUCTION SHALL BE IN ACCORDANCE WITH TDOTSS PART 6 - STRUCTURES AND THE CITY OF MARYVILLE LAND DEVELOPMENT AND PUBLIC WORKS STANDARDS.
2. IN ADDITION TO THE CITY OF MARYVILLE TECHNICAL SPECIFICATIONS, CONTRACTOR SHALL REFER TO THE LATEST EDITION OF TDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS, AS APPLICABLE.
3. PIPE LENGTHS AND COORDINATE VALUES ARE MEASURED CENTER-TO-CENTER OF STRUCTURES.
4. CONTRACTOR SHALL ENGAGE A QUALIFIED CONSTRUCTION MATERIALS TESTING FIRM TO PERFORM INSPECTIONS AND QUALITY CONTROL ACTIVITIES TO VERIFY WORK COMPLIES WITH REQUIREMENTS IN THESE DRAWINGS, AND OTHER ORDINARY CONSTRUCTION PRACTICES. RETESTING AND REINSPECTIONS ARE REQUIRED FOR CONSTRUCTION REPLACING WORK THAT FAILED TO COMPLY WITH QUALITY CONTROL REQUIREMENTS.
5. THE MINIMUM REQUIRED DENSITY OF COMPACTED FILL MATERIAL IS 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ± 2% OF THE OPTIMUM, AS DETERMINED BY THE STANDARD PROCTOR TEST (ASTM D698) UNLESS OTHERWISE SPECIFIED BY THE CONSTRUCTION MATERIALS TESTING FIRM. EACH LAYER OF THE FILL SHOULD BE COMPACTED AS NECESSARY TO OBTAIN MINIMUM DENSITY AND THE MATERIALS TESTING FIRM SHOULD CERTIFY AT THE TIME OF CONSTRUCTION THAT EACH FILL LAYER MEETS THE MINIMUM DENSITY REQUIREMENT.
6. FILL MATERIAL SHOULD BE COMPACTED WITH APPROPRIATE COMPACTION EQUIPMENT SUCH AS A SHEEPSFOOT, RUBBER-TIRED OR VIBRATORY ROLLER.
7. EARTHWORK ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH TDOTSS PART 2 - EARTHWORK.
8. CLEARING AND GRUBBING SHALL BE IN ACCORDANCE WITH TDOTSS SECTION 201 - CLEARING AND GRUBBING.
9. FLOWABLE FILL SHALL BE IN ACCORDANCE WITH TDOTSS SECTION 204.06.B.
10. ALL DISTURBED AREAS SHALL RECEIVE TEMPORARY AND/OR PERMANENT GROUND COVER STABILIZATION UNLESS OTHERWISE NOTED.
11. ALL EXISTING VEGETATION OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE PROTECTED.
12. SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF MARYVILLE STANDARDS AND SPECIFICATIONS.
13. DOMESTIC WATER LINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF MARYVILLE STANDARDS AND SPECIFICATIONS.

STORM SEWER STRUCTURE TABLE

NAME	NORTHING	EASTING	RIM EL	INV IN EL	INV OUT EL	STRUCTURE ID
D-1	522954.17	2560711.74	N/A	865.58	N/A	10'x10'x1.5' TDOT CLASS A-1 RIPRAP APRON
D-2	522939.09	2560711.11	869.83	866.58	865.73	48" CATCH BASIN, NEENAH R-3246-AL
D-3	522960.95	2560833.56	875.12	870.65	870.65	6" CLEANOUT
D-4	522858.44	2560604.67	875.32	N/A	872.55	6" CLEANOUT
D-5	523020.57	2560570.24	N/A	861.75	N/A	10'x10'x1.5' TDOT CLASS A-1 RIPRAP APRON
D-6	523015.59	2560571.46	864.31	861.80	861.80	6" CLEANOUT
D-7	522990.76	2560577.55	875.05	870.15	870.15	6" CLEANOUT
D-8	522875.28	2560544.99	875.05	N/A	872.55	6" CLEANOUT
D-9	522579.27	2560735.51	N/A	864.80	N/A	10'x10'x1.5' TDOT CLASS A-1 RIPRAP APRON
D-10	522586.76	2560669.12	N/A	N/A	866.46	PIPE INLET

STORM SEWER PIPE TABLE

NAME	DN STR	UP STR	DN INV EL	UP INV EL	LENGTH (FT)	SLOPE (%)	MATERIAL	DIA (IN)
DP-1	D-1	D-2	865.58	865.73	15.1	1.00	HDPE	15
DP-2	D-2	D-3	866.58	870.65	80.6	5.05	HDPE	6
DP-3	D-3	D-4	870.65	872.55	106.5	1.78	HDPE	6
DP-4	D-5	D-6	861.75	861.80	5.1	1.00	HDPE	6
DP-5	D-6	D-7	861.80	870.15	25.6	32.66	HDPE	6
DP-6	D-7	D-8	870.15	872.55	120.0	2.00	HDPE	6
DP-7	D-9	D-10	864.80	866.46	66.8	2.48	CMP	18

SANITARY SEWER STRUCTURE TABLE

NAME	NORTHING	EASTING	RIM EL	INV IN EL	INV OUT EL	STRUCTURE ID
S-1	523069.85	2560367.39	N/A	849.27	849.27	SADDLE TAP
S-2	523060.67	2560375.87	860.59	856.33	856.33	6" CLEANOUT
S-3	522978.32	2560451.93	861.30	857.44	857.44	6" CLEANOUT
S-4	522960.83	2560468.09	868.95	865.95	865.95	6" CLEANOUT
S-5	522912.95	2560512.32	869.60	866.60	866.60	6" CLEANOUT
S-6	522890.51	2560505.99	870.36	866.82	866.83	6" CLEANOUT
S-7	522877.28	2560502.26	871.40	867.74	867.74	6" CLEANOUT
S-8	522870.73	2560500.42	872.42	869.42	869.42	6" CLEANOUT
S-9	522874.68	2560486.42	874.08	871.08	871.08	6" CLEANOUT
S-10	522877.75	2560475.53	874.34	871.26	871.26	6" CLEANOUT
S-11	522883.05	2560456.71	874.46	871.45	871.45	6" CLEANOUT
S-12	522875.71	2560454.63	874.50	872.00	872.00	6" CLEANOUT
S-13	522883.49	2560477.27	874.04	871.52	871.52	6" CLEANOUT
S-14	522884.85	2560472.46	874.15	871.57	871.57	GREASE TRAP OUTLET
S-15	522887.83	2560461.87	874.40	871.82	871.82	GREASE TRAP INLET
S-16	522888.56	2560459.30	874.39	871.85	871.85	6" CLEANOUT
S-17	522886.48	2560455.59	874.41	871.89	871.89	6" CLEANOUT
S-18	522876.25	2560452.71	874.50	N/A	872.00	6" CLEANOUT
S-19	522883.55	2560530.68	869.82	867.08	867.08	6" CLEANOUT
S-20	522880.29	2560542.25	874.85	870.93	870.93	6" CLEANOUT
S-21	522878.93	2560547.06	875.10	N/A	870.98	6" CLEANOUT
S-22	522875.93	2560507.08	870.63	867.79	867.79	GREASE TRAP OUTLET
S-23	522872.94	2560517.66	870.53	868.04	868.04	GREASE TRAP INLET
S-24	522871.59	2560522.48	870.43	868.09	868.09	6" CLEANOUT
S-25	522859.13	2560518.97	874.50	N/A	872.00	6" CLEANOUT
S-26	522865.71	2560499.00	874.50	N/A	872.00	6" CLEANOUT
S-27	522851.93	2560480.01	874.50	N/A	872.00	6" CLEANOUT

SANITARY SEWER PIPE TABLE

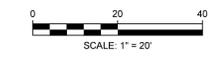
NAME	DN STR	UP STR	DN INV EL	UP INV EL	LENGTH (FT)	SLOPE (%)	MATERIAL	DIA (IN)
P-1	S-1	S-2	849.27	856.33	12.5	56.47	PVC	6
P-2	S-2	S-3	856.33	857.45	112.1	1.00	PVC	6
P-3	S-3	S-4	857.44	865.95	23.8	35.71	PVC	6
P-4	S-4	S-5	865.95	866.60	65.2	1.00	PVC	6
P-5	S-5	S-6	866.60	866.83	23.3	1.00	PVC	6
P-6	S-6	S-7	866.82	867.74	13.7	6.68	PVC	6
P-7	S-7	S-8	867.74	869.42	6.8	24.66	PVC	6
P-8	S-8	S-9	869.42	871.08	14.5	11.37	PVC	6
P-9	S-9	S-10	871.08	871.26	11.3	1.60	PVC	6
P-10	S-10	S-11	871.26	871.45	19.6	1.00	PVC	6
P-11	S-11	S-12	871.45	872.00	7.6	7.21	PVC	6
P-12	S-12	S-13	871.26	871.52	6.0	4.47	PVC	6
P-13	S-13	S-14	871.52	871.57	5.0	1.00	PVC	6
P-14	S-14	S-15	871.57	871.85	2.7	1.00	PVC	6
P-15	S-15	S-16	871.85	871.89	4.2	1.00	PVC	6
P-16	S-16	S-17	871.89	872.00	10.6	1.00	PVC	6
P-17	S-17	S-18	867.74	867.79	25.7	1.00	PVC	6
P-18	S-18	S-19	867.79	870.93	12.0	32.06	PVC	6
P-19	S-19	S-20	870.93	870.98	5.0	1.00	PVC	6
P-20	S-20	S-21	870.98	870.98	5.0	1.00	PVC	6
P-21	S-21	S-22	867.74	867.79	5.0	1.00	PVC	6
P-22	S-22	S-23	868.04	868.09	5.0	1.00	PVC	6
P-23	S-23	S-24	868.09	872.00	12.9	30.22	PVC	6
P-24	S-24	S-25	868.09	872.00	5.2	49.43	PVC	6
P-25	S-25	S-26	869.42	872.00	23.6	3.91	PVC	6
P-26	S-26	S-27	871.08	872.00	23.6	3.91	PVC	6

MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
 BLOUNT COUNTY, TENNESSEE



Sheet Keynotes

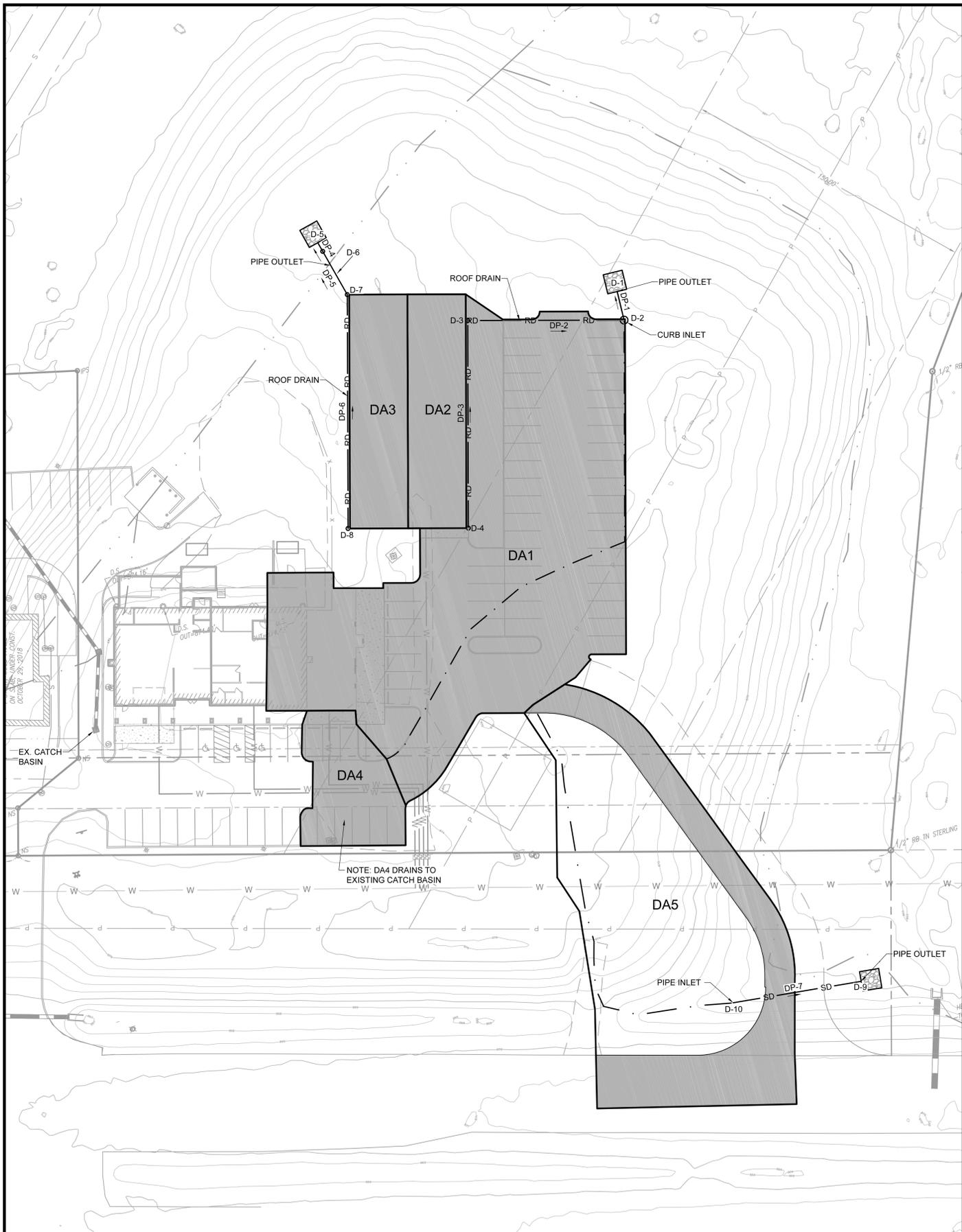
KEYNOTE No.	DETAIL SHEET No.	DESCRIPTION
1	C-407	ROOF DRAIN WITH CLEANOUT
2	C-408	RIPRAP OUTLET PROTECTION
3	C-408	48" ROUND CATCH BASIN
4	C-408	NEENAH R3246-AL GRATE
5	C-409	SEWER TRENCH
6	C-409	SEWER SERVICE ASSEMBLY - SADDLE TAP
7	C-410	WATER LINE TRENCH
8	C-411	GREASE TRAP - 1500 GALLON
9	C-411	CLEANOUT
10	C-411	FLEXIBLE PIPE BEDDING
11	C-411	ROLLED EROSION CONTROL PRODUCTS
12	C-411	ASPHALT TRENCH PATCH
13	C-411	CONCRETE TRENCH PATCH



Drawn By: MBB
 Checked By: JLL
 Approved By: JLL
 LT Project No.: 2004019
 LT Drawing No.: D(O)283-F
 Date: 07/14/20

Grading,
 Drainage &
 Utility Plan

Sheet ID
C-105
 Sheet No. 8



DRAINAGE AREA MAP

GENERAL NOTES:
1. CONTOUR SOURCE IS STATE OF TENNESSEE LIDAR COVERAGE.



DRAINAGE AREA SUMMARY TABLE							
AREA ID	IMPERVIOUS (Ac, CN=98)	GRASS (Ac, CN=74)	TOTAL AREA (Ac.)	WEIGHTED CN	Tc (HR)	Q 25-YR (CFS)	Q 50-YR (CFS)
DA1	0.58	0	0.58	98	0.1	4.6	NA
DA2	0.08	0	0.08	98	0.1	0.6	NA
DA3	0.08	0	0.08	98	0.1	0.6	NA
DA4	0.06	0	0.06	98	0.1	0.5	NA
DA5	0.15	0.43	0.58	80	0.1	NA	3.6

NOTES:
1. 25 YEAR PRECIPITATION = 5.8 INCHES IN A 24 HOUR PERIOD.
2. 50 YEAR PRECIPITATION = 8.5 INCHES IN A 24 HOUR PERIOD.
3. PEAK FLOWS CALCULATED PER SCS TR-55.

PIPE DRAINAGE AREA SUMMARY TABLE				
PIPE ID	DRAINAGE AREA ID	TOTAL AREA (Ac.)	Q 25-YR (CFS)	Q 50-YR (CFS)
DP-1	DA1 + DA2	0.66	5.2	NA
DP-2	DA2	0.08	0.6	NA
DP-3	DA2	0.08	0.6	NA
DP-4	DA3	0.08	0.6	NA
DP-5	DA3	0.08	0.6	NA
DP-6	DA3	0.08	0.6	NA
DP-7	DA5	0.58	NA	3.6

PIPE CAPACITY SUMMARY TABLE				
PIPE ID	PIPE SIZE/TYPE	MANNING'S N	PIPE CAPACITY (CFS)	Q 25-YR (CFS)
DP-1	15" HDPE	0.013	6.5	5.2
DP-2	6" HDPE	0.013	1.3	0.6
DP-3	6" HDPE	0.013	0.8	0.6
DP-4	6" HDPE	0.013	0.6	0.6
DP-5	6" HDPE	0.013	3.2	0.6
DP-6	6" HDPE	0.013	0.8	0.6

NOTE: PIPE CAPACITY BASED ON MANNING'S EQUATION.

CULVERT CAPACITY SUMMARY TABLE							
CULVERT ID	PIPE SIZE/TYPE	MANNING'S N	HW/D	OUTLET VELOCITY (FPS)	Q 50-YR (CFS)	ADJ. HWY. ELEVATION	WATER SURFACE ELEVATION
DP-7	18" CMP	0.024	0.73	4.8	3.6	871.01	887.56

INLET DESIGN SUMMARY TABLE					
STRUCTURE ID	Q 25-YR (CFS)	CAPTURED (CFS)	FLOW DEPTH	RIM ELEVATION	WATER SURFACE ELEVATION
D-2	4.6	4.6	0.43	869.83	870.26

OUTLET PROTECTION SUMMARY TABLE										
OUTLET ID	VELOCITY (FT/S)	MIN WIDTH (FT)	MIN LENGTH (FT)	WIDTH PRVDD (FT)	LENGTH PRVDD (FT)	DEPTH (IN)	TDOT CLASSIFICATION	MIN D50 STONE SIZE	D50 STONE SIZE PRVDD (IN)	
D-1	5.8	3.75	8	10	10	18	CLASS A-1	3	9	
D-5	3.2	0	0	10	10	18	CLASS A-1	0	9	
D-9	4.8	0	0	10	10	18	CLASS A-1	0	9	

NOTES:
1. OUTLET D-1 & D-5 MIN LENGTH, MIN D50 STONE SIZE & MIN WIDTH BASED ON TDEC EROSION AND SEDIMENT CONTROL HANDBOOK TABLE 7.23-1 AND FIGURE 7.23-1.
2. OUTLET D-9 MIN LENGTH, MIN D50 STONE SIZE & MIN WIDTH BASED ON TDOT DRAINAGE MANUAL SECTION 5.04.5.1.2 AND FIGURE 6-12.

STORMWATER DESIGN NARRATIVE

THE PURPOSE OF THE PROJECT IS TO CONSTRUCT A NEW BUILDING AND BUILDING ADDITION ON THE MSM DEVELOPMENT MARYVILLE RETAIL SITE LOCATED AT 1421 W LAMAR ALEXANDER PARKWAY IN MARYVILLE, TN.

THE CONSTRUCTION CONSISTS OF AN APPROXIMATE 2,800 SQUARE FOOT BUILDING EXPANSION ON EXISTING BUILDING, CONSTRUCTION OF A 7,200 SQUARE FOOT NEW BUILDING, ASPHALT DRIVEWAY AND PARKING AREA, AND STORMWATER INFRASTRUCTURE.

THE CLOSED CONDUIT STORM DRAINAGE SYSTEM IS DESIGNED FOR A 25-YEAR RAINFALL FREQUENCY DESIGN STORM OF 5.8 INCHES.

A DOWNSTREAM ANALYSIS IS SHOWN ON SHEET C-302 INDICATING NO INCREASE IN THE PEAK FLOW RATE FOR THE PRE-DEVELOPMENT AND POST-DEVELOPMENT DRAINAGE AREAS. THEREFORE, NO STORMWATER MANAGEMENT MEASURES ARE PROVIDED FOR OVERBANK FLOOD PROTECTION AND EXTREME FLOOD PROTECTION.

CHANNEL PROTECTION AND WATER QUALITY TREATMENT CONTROL IS PROVIDED BY SHEET FLOW ACROSS NATURAL FLOOD PLAIN AREA.

LEGEND

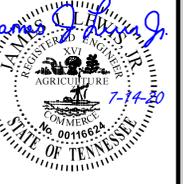
- DA-3 DRAINAGE AREA ID
- Tc FLOW PATH
- MAJOR CONTOUR
- MINOR CONTOUR
- SD STORM DRAIN PIPE
- RD ROOF DRAIN PIPE
- OPEN SPACE AREA (DEFAULT COVER)
- IMPERVIOUS AREA

MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Project

Engineer/Surveyor

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No.	Date	Revision

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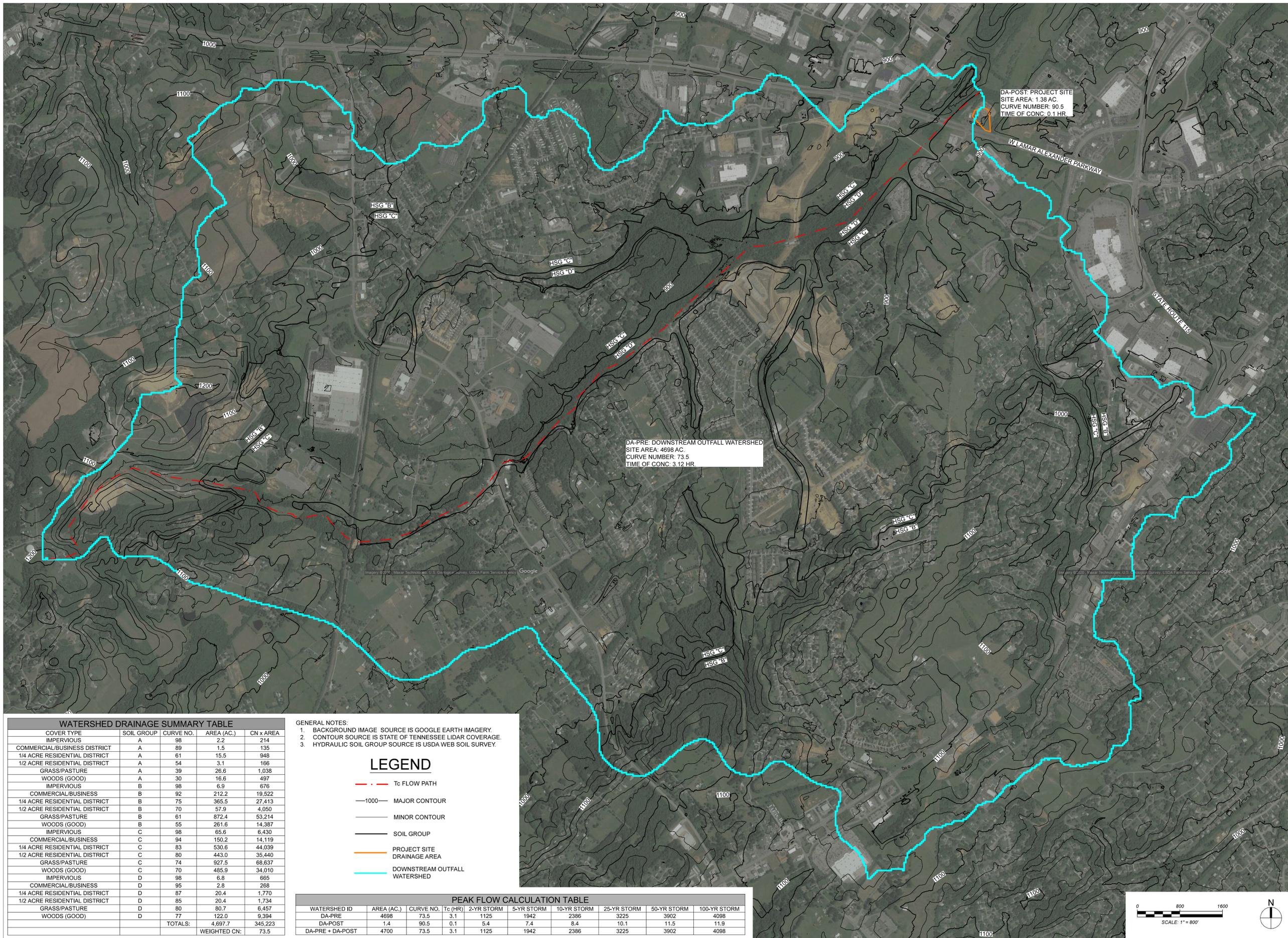
Sheet Title

Drainage Area Map & Calculations

Sheet ID

C-301

Sheet No. 11



DA-POST PROJECT SITE
 SITE AREA: 1.38 AC
 CURVE NUMBER: 90.5
 TIME OF CONC: 0.1 HR

DA-PRE DOWNSTREAM OUTFALL WATERSHED
 SITE AREA: 4698 AC
 CURVE NUMBER: 73.5
 TIME OF CONC: 3.12 HR

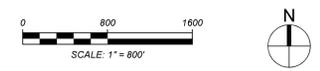
WATERSHED DRAINAGE SUMMARY TABLE				
COVER TYPE	SOIL GROUP	CURVE NO.	AREA (AC.)	CN x AREA
IMPERVIOUS	A	98	2.2	214
COMMERCIAL/BUSINESS DISTRICT	A	89	1.5	135
1/4 ACRE RESIDENTIAL DISTRICT	A	61	15.5	948
1/2 ACRE RESIDENTIAL DISTRICT	A	54	3.1	166
GRASS/PASTURE	A	39	26.6	1,038
WOODS (GOOD)	A	30	16.6	497
IMPERVIOUS	B	98	6.9	676
COMMERCIAL/BUSINESS	B	92	212.2	19,522
1/4 ACRE RESIDENTIAL DISTRICT	B	75	365.5	27,413
1/2 ACRE RESIDENTIAL DISTRICT	B	70	57.9	4,050
GRASS/PASTURE	B	61	872.4	53,214
WOODS (GOOD)	B	55	261.6	14,387
IMPERVIOUS	C	98	65.6	6,430
COMMERCIAL/BUSINESS	C	94	150.2	14,119
1/4 ACRE RESIDENTIAL DISTRICT	C	83	530.6	44,039
1/2 ACRE RESIDENTIAL DISTRICT	C	80	443.0	35,440
GRASS/PASTURE	C	74	927.5	68,637
WOODS (GOOD)	C	70	485.9	34,010
IMPERVIOUS	D	98	6.8	665
COMMERCIAL/BUSINESS	D	95	2.8	268
1/4 ACRE RESIDENTIAL DISTRICT	D	87	20.4	1,770
1/2 ACRE RESIDENTIAL DISTRICT	D	85	20.4	1,734
GRASS/PASTURE	D	80	80.7	6,457
WOODS (GOOD)	D	77	122.0	9,394
TOTALS:			4,697.7	345,223
			WEIGHTED CN:	73.5

- GENERAL NOTES:
 1. BACKGROUND IMAGE SOURCE IS GOOGLE EARTH IMAGERY.
 2. CONTOUR SOURCE IS STATE OF TENNESSEE LIDAR COVERAGE.
 3. HYDRAULIC SOIL GROUP SOURCE IS USDA WEB SOIL SURVEY.

LEGEND

- Tc FLOW PATH
- MAJOR CONTOUR
- MINOR CONTOUR
- SOIL GROUP
- PROJECT SITE DRAINAGE AREA
- DOWNSTREAM OUTFALL WATERSHED

PEAK FLOW CALCULATION TABLE									
WATERSHED ID	AREA (AC.)	CURVE NO.	Tc (HR)	2-YR STORM	5-YR STORM	10-YR STORM	25-YR STORM	50-YR STORM	100-YR STORM
DA-PRE	4698	73.5	3.1	1125	1942	2386	3225	3902	4098
DA-POST	1.4	90.5	0.1	5.4	7.4	8.4	10.1	11.5	11.9
DA-PRE + DA-POST	4700	73.5	3.1	1125	1942	2386	3225	3902	4098



MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
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Sheet Title

Downstream Stormwater Analysis

Sheet ID

C-302

Sheet No. 12

SWPPP INDEX OF SHEETS

DESCRIPTION	SHEET
1. SWPPP REQUIREMENTS (3.0)	C-401
2. SITE DESCRIPTION (3.5.1)	C-401
3. ORDER OF CONSTRUCTION ACTIVITIES (3.5.1.b, 3.5.2.a)	C-401
4. STREAM, OUTFALL, WETLAND, TMDL AND ECOLOGY INFORMATION	C-401
5. EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES (3.5.3)	C-402
6. MAINTENANCE AND INSPECTION	C-402
7. SITE ASSESSMENTS (3.1.2)	C-402
8. STORMWATER MANAGEMENT (3.5.4)	C-402
9. NON-STORMWATER DISCHARGES (3.5.9)	C-403
10. SPILL PREVENTION, MANAGEMENT AND NOTIFICATION (3.5.5.c, 5.1)	C-403
11. RECORD KEEPING	C-403
12. SITE WIDE/PRIMARY PERMITTEE CERTIFICATION (7.7.5)	C-404
13. SECONDARY PERMITTEE (OPERATOR) CERTIFICATION (7.7.6)	C-404
14. ENVIRONMENTAL PERMITS (9.0)	C-404
15. OUTFALL TABLE (3.5.1.d, 5.4.1.g)	C-404

NOTE: CITATIONS IN PARENTHESIS INDICATE SECTIONS OF THE CURRENT CGP.

1. SWPPP REQUIREMENTS (3.0)

1.1. HAS THE SWPPP TEMPLATE BEEN PREPARED BY AN INDIVIDUAL THAT HAS THE FOLLOWING LICENSING AND/OR CERTIFICATIONS (3.1.1).

YES (CHECK ALL THAT APPLY BELOW), OR NO

CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC)

TENNESSEE LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT

HAS SUCCESSFULLY COMPLETED TDEC LEVEL II COURSE

1.2. DO THE EPSC PLANS INVOLVE STRUCTURAL DESIGN, HYDRAULIC, HYDROLOGIC OR OTHER ENGINEERING CALCULATIONS FOR EPSC STRUCTURAL MEASURES (E.G. SEDIMENT BASINS)? (3.1.1)
 YES NO

IF YES, HAVE THE EPSC PLANS BEEN PREPARED, STAMPED AND CERTIFIED BY A TN LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT? YES NO

1.3. DO THE PROJECT STORMWATER OUTFALLS DIRECTLY DISCHARGE INTO THE FOLLOWING? (5.4.1)
 YES (CHECK ALL THAT APPLY BELOW), OR NO

WATERS WITH UNAVAILABLE PARAMETERS (303(d)) FOR SILTATION OR HABITAT ALTERATION

EXCEPTIONAL TENNESSEE WATERS (ETW)

IF "YES" TO SECTION 1.3, HAS THE SWPPP TEMPLATE BEEN PREPARED BY AN INDIVIDUAL THAT HAS THE FOLLOWING LICENSING AND/OR CERTIFICATIONS? (5.1.4.b)
 YES (CHECK ALL THAT APPLY BELOW), OR NO

CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC)

TENNESSEE LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT

HAS SUCCESSFULLY COMPLETED TDEC LEVEL II COURSE

2. SITE DESCRIPTION (3.5.1)

2.1. PROJECT LIMITS (3.5.1.h); REFER TO EPSC PLAN SHEET(S): C-102 & C-103.

2.2. PROJECT DESCRIPTION (3.5.1.a):

TITLE: SITE DEVELOPMENT PLANS FOR MARYVILLE RETAIL SITE

LOCATION: 1421 W LAMAR ALEXANDER PKWY, MARYVILLE, TN 37801

2.3. SITE MAP(S) (2.6.2): REFER TO USGS QUAD SITE LOCATION MAP ON SHEET C-404.

2.4. DESCRIPTION OF EXISTING SITE TOPOGRAPHY (3.5.1.d): REFER TO EXISTING CONTOURS ON SHEET(S) 1, USGS QUAD MAP, AND THE OUTFALL TABLE IN SECTION 15.

2.5. MAJOR SOIL DISTURBING ACTIVITIES (3.5.1.b) (CHECK ALL THAT APPLY):

CLEARING AND GRUBBING

EXCAVATION

CUTTING AND FILLING

FINAL GRADING AND SHAPING

UTILITIES

OTHER (DESCRIBE): _____

2.6. TOTAL PROJECT AREA (3.5.1.c): 8.0 ACRES

2.7. TOTAL AREA TO BE DISTURBED (3.5.1.c): 1.66 ACRES

2.8. NO MORE THAN 50 ACRES OF ACTIVE SOIL DISTURBANCE IS ALLOWED AT ANY TIME DURING THE CONSTRUCTION OF THE PROJECT.

2.9. ARE THERE ANY SEASONAL LIMITATIONS ON THE WORK? YES NO

IF "YES", LIST THE CORRESPONDING PLAN SHEET(S): _____

2.10. SOIL PROPERTIES (3.5.1.f)(4.1.1)

SOIL PROPERTIES FOR THE PRIMARY SOILS ARE LISTED IN THE TABLE BELOW.

SOIL PROPERTIES			
PRIMARY SOIL NAME	HSG	% OF SITE	ERODIBILITY (k value)
Lg - LITZ SHALY SILTY CLAY LOAM, ERODED MODERATELY STEEP PHASE	C	48.1	0.24
Sf - SEQUOIA SILTY CLAY LOAM, ERODED GENTLY SLOPING PHASE	C	28.9	0.43
Sg - SEQUOIA SILTY CLAY LOAM, ERODED SLOPING PHASE	C	10.1	0.32
Pc - PRADER SILT LOAM, (MELVIN)	B/D	8.6	0.49
Hc - HAMBLEN SILT LOAM, DRAINAGEWAY	C	4.3	0.37

2.11. PROJECT RUNOFF COEFFICIENTS AND AREA PERCENTAGES (3.5.1.g)

RUNOFF COEFFICIENTS FOR EXISTING CONDITIONS				
AREA TYPE	AREA(AC)	PERCENTAGE OF TOTAL AREA (%)	CURVE NUMBER (CN)	C FACTOR
GRASS	1.40	86.4	74	N/A
IMPERVIOUS	0.22	13.6	98	N/A
WEIGHTED CN OR C-FACTOR =				77

RUNOFF COEFFICIENTS FOR POST-CONSTRUCTION CONDITIONS				
AREA TYPE	AREA(AC)	PERCENTAGE OF TOTAL AREA (%)	CURVE NUMBER (CN)	C FACTOR
GRASS	0.50	30.9	74	N/A
IMPERVIOUS	1.12	69.1	98	N/A
WEIGHTED CN OR C-FACTOR =				91

3. ORDER OF CONSTRUCTION ACTIVITIES (3.5.1.b, 3.5.2.a)

CONSTRUCTION SHALL BE SEQUENCED AND STAGED TO: MINIMIZE THE EXPOSURE TIME OF GRADED OR DENUDED SOIL AREAS; PRESERVE TOPSOIL, AND MINIMIZE SOIL COMPACTION. NO WORK SHALL BE STARTED UNTIL THE CONTRACTOR'S PLAN FOR THE STAGING OF THEIR OPERATIONS, INCLUDING THE PLAN FOR STAGING TEMPORARY AND PERMANENT EPSC MEASURES, HAS BEEN ACCEPTED BY THE ENGINEER. THE CONTRACTOR'S EPSC PLAN SHALL INCORPORATE AND SUPPLEMENT, AS ACCEPTABLE, THE ORDER OF CONSTRUCTION ACTIVITIES AND THE BASIC EPSC DEVICES DEPICTED ON THE EPSC PLAN CONTAINED WITHIN THE APPROVED SWPPP.

3.1. SPECIAL SEQUENCING REQUIREMENTS: SEE SHEET(S) C-102 & C-103

3.2. INSTALL STABILIZED CONSTRUCTION EXITS.

3.3. INSTALL PERIMETER PROTECTION WHERE RUNOFF SHEET FLOWS FROM THE SITE.

3.4. INSTALL INITIAL EPSC MEASURES BEFORE CLEARING, GRUBBING, EXCAVATION, GRADING, CULVERT OR BRIDGE CONSTRUCTION, CUTTING, FILLING, OR ANY OTHER EARTHWORK OCCURS, EXCEPT AS SUCH WORK MAY BE NECESSARY TO INSTALL EPSC MEASURES.

3.5. PERFORM CLEARING AND GRUBBING NOT MORE THAN 14 DAYS PRIOR TO GRADING OR EARTH MOVING. REFER TO THE STABILIZATION PRACTICES BELOW.

3.6. REMOVE AND STORE TOPSOIL.

3.7. STABILIZE DISTURBED AREAS WITHIN 14 DAYS OF COMPLETING ANY STAGE AND/OR PHASE OF ACTIVITY.

3.8. INSTALL STORM SEWERS, CULVERTS AND UTILITIES.

3.9. INSTALL PIPE INLET AND OUTLET PROTECTION ONCE STRUCTURES ARE IN PLACE AND CAPABLE OF INTERCEPTING FLOW.

3.10. PERFORM FINAL GRADING AND INSTALL BASE STONE.

3.11. COMPLETE FINAL PAVING AND SEALING OF CONCRETE.

3.12. COMPLETE FINAL STABILIZATION (TOP SOIL, SEEDING, MULCH, EROSION CONTROL BLANKETS, SOD, ETC.)

3.13. REMOVE TEMPORARY EROSION CONTROLS AND ACCUMULATED SEDIMENT FROM AREAS THAT HAVE ESTABLISHED AT LEAST 70 PERCENT UNIFORM PERMANENT VEGETATIVE COVER.

3.14. RE-STABILIZE AREAS DISTURBED BY REMOVAL ACTIVITIES.

4. STREAM, OUTFALL, WETLAND, TMDL, AND ECOLOGY INFORMATION

4.1. STREAM INFORMATION (3.5.1.j, 3.5.1.k)

4.1.1. WILL CONSTRUCTION AND/OR EROSION PREVENTION AND SEDIMENT CONTROLS IMPACT ANY STREAMS WITHIN THE PROJECT LIMITS? YES NO

IF YES, THE IMPACT(S) HAVE BEEN INCLUDED IN THE TOTAL PROJECT IMPACTS AND HAVE BEEN INCLUDED IN SECTION 15 - ENVIRONMENTAL PERMITS.

4.1.2. HAVE ANY OF THE RECEIVING STATE WATERS LESS THAN OR EQUAL TO 1 FLOW MILE DOWN GRADIENT OF THE PROJECT LIMITS BEEN CLASSIFIED BY TDEC AS FOLLOWS (CHECK ALL THAT APPLY):

303(d) WITH UNAVAILABLE PARAMETERS FOR SILTATION

303(d) WITH UNAVAILABLE PARAMETERS FOR HABITAT ALTERATION

EXCEPTIONAL TENNESSEE WATERS (ETW)

4.1.3. RECEIVING WATERS OF THE STATE (3.5.1.k)

RECEIVING STREAM INFORMATION					
STATE WATER LABEL	NAME OF RECEIVING STATE WATER	303(d) WITH UNAVAILABLE PARAMETERS FOR SILTATION OR HABITAT ALTERATION (YES OR NO)	ETW (YES OR NO)	LOCATED WITHIN PROJECT LIMITS (YES OR NO)	LOCATED WITHIN <1 FLOW MILE DOWN GRADIENT OF PROJECT LIMITS (YES OR NO)
STR-1	LAUREL BANK CREEK	YES	NO	NO	YES

4.1.4. ARE THERE ANY WATER QUALITY RIPARIAN BUFFER ZONES REQUIRED FOR WATERS OF THE STATE? (4.1.2, 5.4.2) YES NO

IF YES, THEY HAVE BEEN INCLUDED ON PLAN SHEET(S) _____

IF YES, CHECK THE APPROPRIATE BOX BELOW FOR SIZE OF BUFFER:

60-FEET FOR WATERS WITH UNAVAILABLE PARAMETERS AND ETW (AVERAGE WIDTH PER SIDE WITH A MINIMUM OF 30-FEET)

A 60 FOOT NATURAL WATER QUALITY RIPARIAN BUFFER ZONE ADJACENT TO AND ON BOTH SIDES OF THE RECEIVING STATE STREAM WITH THIS DESIGNATION SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE DURING CONSTRUCTION ACTIVITIES AT THE SITE. THE 60 FOOT CRITERION FOR THE WIDTH OF THE BUFFER ZONE CAN BE ESTABLISHED ON AN AVERAGE WIDTH BASIS AT A PROJECT, AS LONG AS THE MINIMUM WIDTH OF THE BUFFER ZONE IS MORE THAN 30 FEET AT ANY MEASURED LOCATION. IF THE CONSTRUCTION SITE ENCOMPASSES BOTH SIDES OF A STREAM, BUFFER AVERAGING CAN BE APPLIED TO BOTH SIDES, BUT MUST BE APPLIED INDEPENDENTLY.

30-FEET FOR ALL OTHER STREAMS (AVERAGE WIDTH PER SIDE WITH A MINIMUM OF 15-FEET)

A 30 FOOT NATURAL WATER QUALITY RIPARIAN BUFFER ZONE ADJACENT TO AND ON BOTH SIDES OF THE RECEIVING STATE STREAM SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE DURING CONSTRUCTION ACTIVITIES AT THE SITE. THE 30 FOOT CRITERION FOR THE WIDTH OF THE BUFFER ZONE CAN BE ESTABLISHED ON AN AVERAGE WIDTH BASIS AT A PROJECT, AS LONG AS THE MINIMUM WIDTH OF THE BUFFER ZONE IS MORE THAN 15 FEET AT ANY MEASURED LOCATION. IF THE CONSTRUCTION SITE ENCOMPASSES BOTH SIDES OF A STREAM, BUFFER AVERAGING CAN BE APPLIED TO BOTH SIDES, BUT MUST BE APPLIED INDEPENDENTLY.

4.1.5. ARE THERE ANY WATER QUALITY RIPARIAN BUFFER ZONES NOT REQUIRED FOR STATE WATERS DUE TO A TDEC ARAP? (9.0) YES NO

4.1.6. ARE THERE WATER QUALITY RIPARIAN BUFFER ZONE EXEMPTIONS? (4.1.2.1) YES NO

IF YES, EXISTING CONDITIONS DESCRIPTION: _____

4.1.7. EVERY ATTEMPT SHOULD BE MADE FOR CONSTRUCTION ACTIVITIES TO NOT TAKE PLACE WITHIN THE WATER QUALITY RIPARIAN BUFFER ZONE AND FOR EXISTING FORESTED AREAS TO BE PRESERVED. (5.4.2)

4.1.8. BECAUSE OF HEAVY SEDIMENT LOAD ASSOCIATED WITH CONSTRUCTION SITE RUNOFF, WATER QUALITY RIPARIAN BUFFER ZONES ARE NOT SEDIMENT CONTROL MEASURES AND SHOULD NOT BE RELIED UPON AS PRIMARY SEDIMENT CONTROL MEASURES. THE WATER QUALITY RIPARIAN BUFFER ZONE SHALL BE ESTABLISHED BETWEEN THE TOP OF THE STREAM BANK AND THE DISTURBED CONSTRUCTION AREA.

4.1.9. WHERE IT IS NOT PRACTICABLE TO MAINTAIN A FULL WATER QUALITY RIPARIAN BUFFER, BEST MANAGEMENT PRACTICES (BMPs) PROVIDING EQUIVALENT PROTECTION AS THE NATURAL RIPARIAN ZONE MUST BE USED. A JUSTIFICATION FOR USE AND DESIGN EQUIVALENCY SHALL BE DOCUMENTED WITHIN THE SWPPP. TDEC SHALL REVIEW AND APPROVE THIS REVISION OF THE SWPPP BEFORE DISTURBANCE OF THE SITE PROCEEDS, UNLESS PREVIOUSLY EXEMPT IN THE NPDES CGP. WHERE ISSUED, ARAP/401 REQUIREMENTS WILL PREVAIL IF IN CONFLICT WITH THESE BUFFER ZONE REQUIREMENTS.

4.2. RECEIVING WATERS OF THE UNITED STATES (WOTUS) (EPHEMERAL)

WILL CONSTRUCTION AND/OR EROSION AND SEDIMENT CONTROLS IMPACT ANY WOTUS (EPHEMERAL)? YES NO

WOTUS LABEL	LOCATED WITHIN PROJECT LIMITS (YES OR NO)	LOCATED WITHIN 15-FT OF THE PROJECT LIMITS (YES OR NO)
N/A	N/A	N/A

4.2.1. ARE WATER QUALITY RIPARIAN BUFFER ZONES REQUIRED FOR WOTUS (EPHEMERAL)? (4.1.2) YES NO

IF "YES", A 15 FOOT NATURAL WATER QUALITY RIPARIAN BUFFER ZONE ADJACENT TO AND ON BOTH SIDES OF THE RECEIVING EPHEMERAL STREAM IDENTIFIED AS A WOTUS (EPHEMERAL) BY THE U.S. ARMY CORPS OF ENGINEERS (USACE) OF THE ENVIRONMENTAL PROTECTION AGENCY (EPA) SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE DURING CONSTRUCTION ACTIVITIES AT THE SITE.

IF "YES", THEY HAVE BEEN INCLUDED ON PLAN SHEET(S): _____

4.2.2. ARE THERE ANY WATER QUALITY RIPARIAN BUFFER ZONES NOT REQUIRED FOR WOTUS (EPHEMERAL) DUE TO A USACE PERMIT? YES NO

4.3. OUTFALL INFORMATION

4.3.1. OUTFALL TABLE (3.5.1.e) SEE SWPPP SHEET C-404 FOR OUTFALL INFORMATION.

4.3.2. HAVE ALL OUTFALLS BEEN LABELED ON THE EPSC PLAN SHEETS? (3.5.1.h) YES NO

4.3.3. HAVE ALL OUTFALLS BEEN LABELED ON A USGS QUAD MAP? (2.6.2) YES NO

MARYVILLE RETAIL SITE
 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Project



Revision	Date	No.

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Sheet Title

Stormwater Pollution Prevention Plan

Sheet ID

C-401

Sheet No. 13

4.3.4. WHERE POSSIBLE, HAS NON-PROJECT RUN-ON BEEN DIVERTED AROUND OR THROUGH THE PROJECT TO ELIMINATE CONTACT WITH DISTURBED AREAS OF THE PROJECT AND SEPARATE IT FROM PROJECT RUN-OFF, THEREBY REDUCING THE DRAINAGE AREA TO THE OUTFALLS IN THIS AREA? YES NO N/A

4.3.5. ARE EQUIVALENT MEASURES BEING SUBSTITUTED FOR A SEDIMENT BASIN(S)? YES NO N/A

4.3.6. A SEDIMENT BASIN OR EQUIVALENT MEASURE(S) WILL BE PROVIDED FOR ANY OUTFALL IN A DRAINAGE AREA:
OF 10 ACRES OR MORE FOR AN OUTFALL(S) THAT DOES NOT DISCHARGE TO A STATE STREAM WITH UNAVAILABLE PARAMETERS OR ETW. A TEMPORARY (OR PERMANENT) SEDIMENT BASIN, OR EQUIVALENT CONTROL MEASURE(S) THAT PROVIDES STORAGE FOR A CALCULATED VOLUME OF RUN-OFF FROM A MINIMUM 2-YEAR / 24-HOUR STORM EVENT, SHALL BE PROVIDED UNTIL FINAL STABILIZATION OF THE SITE. (3.5.3.3);

OR

OF 5 ACRES OR MORE FOR AN OUTFALL(S) THAT DISCHARGES TO A STATE STREAM WITH UNAVAILABLE PARAMETERS OR ETW. A TEMPORARY (OR PERMANENT) SEDIMENT BASIN THAT PROVIDES STORAGE FOR A CALCULATED VOLUME OF RUN-OFF FROM A MINIMUM 5-YEAR / 24-HOUR STORM EVENT AND RUN-OFF FROM EACH ACRE DRAINED, OR EQUIVALENT CONTROL MEASURE(S), SHALL BE PROVIDED UNTIL FINAL STABILIZATION OF THE SITE. (3.4.1.g);

4.4. WETLAND INFORMATION

WILL CONSTRUCTION AND/OR EROSION AND SEDIMENT CONTROLS IMPACT ANY WETLANDS? YES NO

IF "YES" THE STRUCTURAL EPSC MEASURES HAVE BEEN INCLUDED IN THE TOTAL PROJECT IMPACTS, AND IN THE WATER QUALITY PERMITS.

WETLAND INFORMATION		
WETLAND LABEL	TEMPORARY IMPACT AREA(AC)	PERMANENT IMPACT AREA (AC)
N/A	N/A	N/A

4.5. TOTAL MAXIMUM DAILY LOADS (TMDL) INFORMATION (3.5.10)

4.5.1. IS THIS PROJECT LOCATED IN A HUC-8 WATERSHED THAT MAINTAINS AN EPA APPROVED TMDL FOR SILTATION AND HABITAT ALTERATION? YES NO

4.5.2. IF "YES" IS THIS PROJECT LOCATED WITHIN A HUC-12 SUBWATERSHED WITH A WASTE LOAD ALLOCATION (WLA)? YES NO

4.5.3. IF "YES" DOES THE PROJECT HAVE A DIRECT DISCHARGE TO A 303(d) LISTED STREAM FOR SILTATION OR HABITAT ALTERATION? YES NO

4.5.4. IF "YES" HAS A SUMMARY OF THE CONSULTATION LETTER BEEN SUBMITTED/RECEIVED? YES NO

5. EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES (3.5.3)

- 5.1. EPSC MEASURES MUST BE DESIGNED, INSTALLED AND MAINTAINED TO CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE EROSION. (4.1.1)
- 5.2. EPSC MEASURES MUST CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOWS AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS, STREAM CHANNELS AND STREAM BANKS. (4.1.1)
- 5.3. HAVE THE CONTROL MEASURES BEEN DESIGNED ACCORDING TO THE SIZE AND SLOPE OF THE DISTURBED DRAINAGE AREA (3.5.3.3)? YES NO
- 5.4. THE CONTROL MEASURES HAVE, AT A MINIMUM, BEEN DESIGNED FOR THE 2-YEAR, 24 HOUR STORM EVENT (3.5.3.3, 5.4.1.a).
- 5.5. ARE THE LIMITS OF DISTURBANCE CLEARLY MARKED ON THE EPSC PLANS? (3.5.1.h) YES NO
- 5.6. AREAS TO BE UNDISTURBED SHALL BE CLEARLY MARKED IN THE FIELD BEFORE CONSTRUCTION ACTIVITIES BEGIN.
- 5.7. HAVE STAGED EPSC PLANS BEEN PREPARED FOR THE PROJECT? (3.5.2)
YES NO (IF "YES", CHECK ONE BELOW):
 - 5.7.1. PROJECT DISTURBED AREA IS THAN LESS THAN 5 ACRES (MIN. 2-STAGE EPSC PLANS)
 - 5.7.2. PROJECT DISTURBED AREA IS GREATER THAN 5 ACRES (MIN. 3-STAGE EPSC PLANS)
- 5.8. STEEP SLOPES ARE DEFINED AS NATURAL OR CREATED SLOPE OF 35% GRADE OR GREATER, REGARDLESS OF HEIGHT. HAVE STEEP SLOPES BEEN MINIMALLY DISTURBED AND/OR PROTECTED BY CONVEYING RUN-OFF NON-EROSIVELY AROUND OR OVER THE SLOPE (3.5.3.2)? YES NO N/A
- 5.9. STEEP SLOPES SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. (3.5.3.2)
- 5.10. TEMPORARY EPSC MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORKDAY, BUT MUST BE RE-INSTALLED AT THE END OF THE WORKDAY OR BEFORE A PRECIPITATION EVENT.
- 5.11. EPSC MEASURES LOCATED IN A WOTUS (EPHEMERAL) STREAMS MUST BE CONSIDERED TEMPORARY AND SHALL BE REMOVED AT THE END OF CONSTRUCTION.
- 5.12. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN A PROACTIVE METHOD TO PREVENT THE OFF-SITE MIGRATION OR DEPOSIT OF SEDIMENT OFF THE PROJECT LIMITS (E.G., ROW, EASEMENTS, ETC) INTO WATERS OF THE STATE/U.S., OR ONTO ROADWAYS USED BY THE PUBLIC. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT THAT HAVE NOT REACHED A STREAM MUST BE REMOVED TO A LEVEL SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G., FUGITIVE SEDIMENT THAT HAS ESCAPED THE CONSTRUCTION SITE AND HAS COLLECTED IN A STREET MUST BE REMOVED SO THAT IT IS NOT SUBSEQUENTLY WASHED INTO STORM SEWERS AND STREAMS BY THE NEXT RAIN AND/OR SO THAT IT DOES NOT POSE A SAFETY HAZARD TO USERS OF THE PUBLIC STREETS). ARRANGEMENTS CONCERNING REMOVAL OF SEDIMENT ON ADJOINING PROPERTY MUST BE SETTLED

WITH THE ADJOINING PROPERTY OWNER BEFORE REMOVAL OF SEDIMENT. SEDIMENT THAT MIGRATES INTO WATERS OF THE STATE/U.S. SHALL NOT BE REMOVED WITHOUT GUIDANCE FROM TDEC LOCAL ENVIRONMENTAL FIELD OFFICE (EFO).

- 5.13. OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST SHALL BE MINIMIZED. A STABILIZED CONSTRUCTION EXIT (A POINT OF ENTRANCE/EXIT TO THE CONSTRUCTION PROJECT) SHALL BE PROVIDED TO REDUCE THE TRACKING OF MUD AND DIRT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES.
- 5.14. DISCHARGES FROM DEWATERING ACTIVITIES ARE PROHIBITED UNLESS MANAGED BY APPROPRIATE CONTROLS THAT PROVIDE THE LEVEL OF TREATMENT (FILTRATION) NECESSARY TO COMPLY WITH PERMIT REQUIREMENTS. (4.1.4)
- 5.15. SETTLING BASINS AND SEDIMENT TRAPS SHALL BE PROPERLY DESIGNED PER THE SIZE OF THE DRAINAGE AREAS OR VOLUME OF WATER TO BE TREATED. TREATED WATER MUST BE DISCHARGED THROUGH A PIPE OR WELL-VEGETATED OR LINED CHANNEL SO THAT THE DISCHARGE DOES NOT CAUSE EROSION OR SEDIMENT TRANSPORT.
- 5.16. DISCHARGES FROM SEDIMENT BASINS AND IMPOUNDMENTS SHALL UTILIZE OUTLET STRUCTURES THAT ONLY WITHDRAW WATER FROM NEAR THE SURFACE OF THE BASIN OR IMPOUNDMENT. TREATED WATER MUST BE DISCHARGED THROUGH A PIPE OR WELL VEGETATED AND/OR LINED CHANNEL SO THAT THE DISCHARGE DOES NOT CAUSE EROSION OF SEDIMENT TRANSPORT.
- 5.17. WATER DISCHARGED FROM DEWATERING ACTIVITIES SHALL NOT CAUSE AN OBJECTIONABLE COLOR CONTRAST WITHIN THE RECEIVING NATURAL RESOURCE. WATER MUST BE HELD WITHIN SETTLING BASINS UNTIL IT IS AT LEAST AS CLEAR AS THE RECEIVING WATERS.
- 5.18. STABILIZATION PRACTICES: PRE-CONSTRUCTION VEGETATIVE COVER WILL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 14 DAYS PRIOR TO GRADING OR EARTH MOVING UNLESS THE AREA WILL BE SEEDED AND/OR MULCHED OR OTHER TEMPORARY COVER IS INSTALLED. (3.5.3.1.h)
- 5.19. STABILIZATION MEASURES WILL BE INITIATED AS SOON AS POSSIBLE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT STABILIZATION WILL BE COMPLETED WITHIN 14 DAYS AFTER ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IN THAT AREA. PERMANENT STABILIZATION WILL REPLACE TEMPORARY MEASURES AS SOON AS PRACTICABLE. (3.5.3.2).
- 5.20. A SOIL ANALYSIS SHALL BE PERFORMED PRIOR TO THE APPLICATION OF FERTILIZERS TO ANY PORTION OF THE SITE. SOILS SHOULD BE ANALYZED FOR pH, BUFFER VALUE, PHOSPHOROUS, POTASSIUM, CALCIUM AND MAGNESIUM. SOIL SAMPLES SHOULD BE REPRESENTATIVE OF THE AREA FOR WHICH FERTILIZER WILL BE APPLIED. SAMPLE TYPE SHOULD BE COLLECTED AND ANALYZED IN ACCORDANCE WITH THE UT EXTENSION "SOIL TESTING" BROCHURE PB1061. (4.1.5)
- 5.21. FERTILIZERS SHALL BE APPLIED ONLY IN THE AMOUNTS SPECIFIED FROM THE ANALYSES. ONCE APPLIED, FERTILIZERS SHALL BE WORKED INTO THE SOIL TO LIMIT THE EXPOSURE TO STORMWATER.

6. MAINTENANCE AND INSPECTION

- 6.1. INSPECTION PRACTICES (3.5.8)
 - 6.1.1. EPSC INSPECTORS RESPONSIBLE FOR THE INSPECTION, IMPLEMENTATION, MAINTENANCE, AND/OR REPAIR OF EPSC MEASURES SHALL MEET ONE OF THE FOLLOWING REQUIREMENTS (3.5.8.1):
 - 6.1.1.1. SUCCESSFULLY COMPLETED THE TDEC "LEVEL I - FUNDAMENTALS OF EROSION AND SEDIMENT CONTROL" COURSE AND ANY RECERTIFICATION COURSES AS REQUIRED.
 - 6.1.1.2. BE A CURRENT TN LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT.
 - 6.1.1.3. BE A CURRENT CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC).
 - 6.1.1.4. SUCCESSFULLY COMPLETED THE TDEC "LEVEL II - DESIGN PRINCIPLES FOR EROSION PREVENTION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES" COURSE AND ANY RECERTIFICATION COURSES AS REQUIRED.
 - 6.1.2. EPSC CONTROLS SHALL BE INSPECTED TO VERIFY MEASURES HAVE BEEN INSTALLED AND MAINTAINED IN ACCORDANCE WITH STANDARD DRAWINGS, SPECIFICATIONS, AND GOOD ENGINEERING PRACTICES. EPSC INSPECTIONS SHALL BE DOCUMENTED ON THE TDEC EPSC INSPECTION REPORT FORM AND THE TDEC CONSTRUCTION STORMWATER INSPECTION CERTIFICATION (TWICE-WEEKLY INSPECTIONS) FORM.
 - 6.1.3. OUTFALL POINTS SHALL BE INSPECTED TO ASCERTAIN WHETHER EPSC MEASURES ARE EFFECTIVE IN PREVENTING EROSION AND CONTROLLING SEDIMENT, INCLUDING SIGNIFICANT IMPACTS TO SURROUNDING STATE WATERS, WOTUS (EPHEMERAL), WETLANDS, OTHER NATURAL RESOURCES AND ADJACENT PROPERTY OWNERS. WHERE DISCHARGE LOCATIONS ARE INACCESSIBLE, NEARBY DOWN GRADIENT LOCATIONS SHALL BE INSPECTED. LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF-SITE ROADWAY SEDIMENT TRACKING.
 - 6.1.4. INSPECTIONS WILL BE CONDUCTED AT LEAST TWICE EVERY CALENDAR WEEK AND AT LEAST 72 HOURS APART. (3.5.8.2.a). A CALENDAR WEEK IS DEFINED AS SUNDAY THROUGH SATURDAY.
 - 6.1.5. THE FREQUENCY OF EPSC INSPECTIONS MAY BE REDUCED TO ONCE A MONTH WHERE SITES OR PORTIONS OF SITES HAVE BEEN TEMPORARILY STABILIZED UNTIL CONSTRUCTION ACTIVITIES RESUME WITH WRITTEN NOTIFICATION TO THE TDEC LOCAL EFO. WRITTEN NOTIFICATION MUST INCLUDE THE INTENT TO CHANGE FREQUENCY AND JUSTIFICATION. (3.5.8.2.a)
 - 6.1.6. ALL DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED, AREAS USED FOR MATERIAL STORAGE THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE, AND EACH OUTFALL WILL BE INSPECTED. (3.5.8.2.b)
 - 6.1.7. THE INSPECTOR WILL OVERSEE THE REQUIREMENTS OF OTHER CONSTRUCTION-RELATED WATER QUALITY PERMITS (I.E. TDEC ARAP, USACE 404, AND TVA SECTION 26a PERMITS) FOR CONSTRUCTION ACTIVITIES AROUND WATERS OF THE STATE. (10 - DEFINITIONS; INSPECTOR)
 - 6.1.8. THE SWPPP WILL BE REVISED AS NECESSARY BASED ON THE RESULTS OF THE INSPECTION. REVISION(S) WILL BE RECORDED WITHIN 7 DAYS OF THE INSPECTION. REVISION(S) WILL BE IMPLEMENTED WITHIN 14 DAYS OF THE INSPECTION. (3.5.8.2.e AND 3.5.8.2.f)
 - 6.1.9. DOCUMENTATION OF INSPECTIONS WILL BE MAINTAINED ON SITE IN THE "DOCUMENTATION AND PERMITS" BINDER.

6.1.10. TRAINED CERTIFIED INSPECTORS SHALL COMPLETE INSPECTION DOCUMENTATION TO THE BEST OF THEIR ABILITY. FALSIFYING INSPECTION RECORDS OR OTHER DOCUMENTATION OR FAILURE TO COMPLETE INSPECTION DOCUMENTATION SHALL RESULT IN A VIOLATION OF THIS PERMIT AND ANY OTHER APPLICABLE ACTS OR RULES. (3.8.5.2.h).

6.2. MAINTENANCE PRACTICES (3.5.3.1 AND 3.5.7)

- 6.2.1. ALL CONTROLS WILL BE MAINTAINED IN GOOD AND EFFECTIVE OPERATING ORDER AND IN ACCORDANCE WITH STANDARD DRAWINGS AND GOOD ENGINEERING PRACTICES. (3.5.3.1.b)
- 6.2.2. MAINTENANCE AND REPAIR ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- 6.2.3. UPON CONCLUSION OF THE INSPECTIONS, EPSC MEASURES FOUND TO BE INEFFECTIVE SHALL BE REPAIRED, REPLACED, OR MODIFIED BEFORE THE NEXT RAIN EVENT, IF POSSIBLE, BUT IN NO CASE MORE THAN 7 DAYS AFTER THE INSPECTION OR WHEN THE CONDITION IS IDENTIFIED. IF THE REPAIR, REPLACEMENT OR MODIFICATION IS NOT PRACTICAL WITHIN THE 7 DAY TIMEFRAME, WRITTEN DOCUMENTATION PROVIDED BY THE CONTRACTOR SHALL BE PLACED IN THE EPSC INSPECTION REPORT. (3.5.8.2.e)
- 6.2.4. SEDIMENT SHALL BE REMOVED FROM SEDIMENT CONTROL STRUCTURES (SEDIMENT TRAPS, SILT FENCE, SEDIMENT BASINS, OTHER CONTROLS, ETC.) WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT. (3.5.3.1.e)
- 6.2.5. DURING SEDIMENT REMOVAL, THE CONTRACTOR SHALL TAKE STEPS TO ENSURE THAT STRUCTURAL COMPONENTS OF EPSC MEASURES ARE NOT DAMAGED, AND THUS MADE INEFFECTIVE. IF DAMAGE DOES OCCUR, THE CONTRACTOR SHALL REPAIR THE EPSC MEASURE AT THE CONTRACTOR'S OWN EXPENSE.
- 6.2.6. CHECK DAMS WILL BE INSPECTED FOR STABILITY. SEDIMENT WILL BE REMOVED WHEN THE DEPTH REACHES ONE-HALF THE HEIGHT OF THE DAM.
- 6.2.7. SEDIMENT REMOVED FROM SEDIMENT CONTROL STRUCTURES SHALL BE PLACED AND TREATED IN A MANNER SO THAT THE SEDIMENT IS CONTAINED WITHIN THE PROJECT LIMITS, DOES NOT MIGRATE INTO FEATURES REMOVED FROM, AND DOES NOT MIGRATE ONTO ADJACENT PROPERTIES AND/OR WATERS OF THE STATE/U.S.
- 6.2.8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER WILL BE PICKED UP AND REMOVED FROM STORMWATER EXPOSURE PRIOR TO ANTICIPATED STORM EVENTS OR BEFORE BEING CARRIED OFF OF THE SITE BY WIND, OR OTHERWISE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES. AFTER USE, MATERIALS USED FOR EROSION CONTROL WILL BE REMOVED. (3.5.3.1.f)

7. SITE ASSESSMENTS (3.1.2)

ARE SITE ASSESSMENT REQUIRED? YES NO

8. STORMWATER MANAGEMENT (3.5.4)

- 8.1. STORMWATER MANAGEMENT WILL BE HANDLED BY TEMPORARY CONTROLS OUTLINED IN THIS SWPPP AND ANY PERMANENT CONTROLS NEEDED TO MEET PERMANENT STORMWATER MANAGEMENT NEEDS IN THE POST CONSTRUCTION PERIOD. PERMANENT CONTROLS WILL BE SHOWN ON THE PLANS AND NOTED AS PERMANENT.
- 8.2. DESCRIBE ANY SPECIFIC POST-CONSTRUCTION MEASURES THAT WILL CONTROL VELOCITY, POLLUTANTS, AND/OR EROSION (3.5.4): _____
- 8.3. OTHER ITEMS NEEDING CONTROL (3.5.5)

CONSTRUCTION MATERIALS: THE FOLLOWING MATERIALS OR SUBSTANCES ARE EXPECTED TO BE PRESENT ON THE SITE DURING THE CONSTRUCTION PERIOD. (CHECK ALL THAT APPLY)

- LUMBER, GUARDRAIL, TRAFFIC CONTROL DEVICES
- CONCRETE WASHOUT
- PIPE CULVERTS (I.E., CONCRETE, CORRUGATED METAL, HDPE, ETC.)
- MINERAL AGGREGATES, ASPHALT
- EARTH
- LIQUID TRAFFIC STRIPING MATERIALS, PAINT
- ROCK
- CURING COMPOUND
- EXPLOSIVES
- OTHER: _____

THESE MATERIALS WILL BE HANDLED AS NOTED IN THIS SWPPP.

8.4. WASTE MATERIALS (3.5.5.b)

WASTE MATERIAL (EARTH, ROCK, ASPHALT, CONCRETE, ETC.) NOT REQUIRED FOR THE CONSTRUCTION OF THE PROJECT WILL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH FEDERAL AND STATE REGULATIONS. IMPACTS TO WATERS OF THE STATE/U.S. SHALL BE AVOIDED IF POSSIBLE. IF UNAVOIDABLE, THE CONTRACTOR WILL OBTAIN ALL NECESSARY PERMITS INCLUDING, BUT NOT LIMITED TO NPDES, ARAP, USACE 404 PERMITS, AND TVA SECTION 26a PERMITS TO DISPOSE OF WASTE MATERIALS.

8.5. HAZARDOUS WASTE (3.5.5.c) (7.9)

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN A MANNER WHICH IS COMPLIANT WITH LOCAL OR STATE REGULATIONS. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES, AND THE INDIVIDUAL DESIGNATED AS THE CONTRACTOR'S ON-SITE REPRESENTATIVE WILL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED. THE CONTRACTOR WILL OBTAIN ALL NECESSARY PERMITS TO DISPOSE OF HAZARDOUS MATERIAL.

8.6. SANITARY WASTE (3.5.5.b)

PORTABLE SANITARY FACILITIES WILL BE PROVIDED ON ALL CONSTRUCTION SITES. SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS IN A TIMELY MANNER BY A LICENSED WASTE

MARYVILLE RETAIL SITE
1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
PARCEL ID: MAP 57 PARCEL 9.06
CITY OF MARYVILLE
9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Project



Revision	Date	No.

Drawn By:	MBB
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Horiz. Scale:	07/14/20

Sheet Title
Stormwater Pollution Prevention Plan

Sheet ID
C-402
Sheet No. 14

MANAGEMENT CONTRACTOR OR AS REQUIRED BY ANY LOCAL REGULATIONS. THE CONTRACTOR WILL OBTAIN ALL NECESSARY PERMITS TO DISPOSE OF SANITARY WASTE.

8.7. OTHER MATERIALS

THE FOLLOWING MATERIALS OR SUBSTANCES ARE EXPECTED TO BE PRESENT ON THE SITE DURING THE CONSTRUCTION PERIOD. (CHECK ALL THAT APPLY).

- Fertilizers and Lime, Pesticides and/or Herbicides, Diesel and Gasoline, Machinery Lubricants (oil and grease)

THESE MATERIALS WILL BE HANDLED AS NOTED IN THIS SWPPP.

9. NON-STORMWATER DISCHARGES (3.5.9)

9.1. THE FOLLOWING NON-STORMWATER DISCHARGES ARE ANTICIPATED DURING THE CONSTRUCTION OF THIS PROJECT (CHECK ALL THAT APPLY):

- Dewatering of work areas of collected stormwater and ground water, Waters used to wash vehicles, Water used to control dust, Potable water sources, Uncontaminated groundwater or spring water, Foundation or footing drains, Other

9.2. ALL ALLOWABLE NON-STORMWATER DISCHARGES WILL BE DIRECTED TO STABLE DISCHARGE STRUCTURES PRIOR TO LEAVING THE SITE. FILTERING OR CHEMICAL TREATMENT MAY BE NECESSARY PRIOR TO DISCHARGE.

9.3. THE DESIGN OF ALL IMPACTED EPSC MEASURES RECEIVING FLOW FROM ALLOWABLE NON-STORMWATER DISCHARGES MUST BE DESIGNED TO HANDLE THE VOLUME OF THE NON-STORMWATER COMPONENT.

9.4. WASH DOWN OR WASTE DISCHARGE OF CONCRETE TRUCKS WILL NOT BE PERMITTED ON-SITE UNLESS PROPER SETTLEMENT AREAS HAVE BEEN PROVIDED IN ACCORDANCE WITH BOTH STATE AND FEDERAL REGULATIONS.

9.5. ARE ANY DISCHARGES ASSOCIATED WITH INDUSTRIAL (NON-CONSTRUCTION STORMWATER) ACTIVITY EXPECTED (3.5.1.1)? YES NO

IF "YES" SPECIFY THE LOCATION OF THE ACTIVITY AND ITS PERMIT NUMBER: _____

10. SPILL PREVENTION, MANAGEMENT AND NOTIFICATION (3.5.5.c, 5.1)

10.1. SPILL PREVENTION (3.5.5.c)

- 10.1.1. Contractor's bulk fuel and petroleum products stored on-site in above-ground storage tanks with aggregate storage capacity in excess of 1,320 gallons shall have secondary containment.
10.1.2. The contractor shall be responsible for preparing a spill prevention control and countermeasure (SPCC) plan as required by law.
10.1.3. The contractor shall be solely responsible for obtaining any necessary local, state, and federal permits.

10.2. MATERIAL MANAGEMENT

10.2.1. HOUSEKEEPING

ONLY PRODUCTS NEEDED WILL BE STORED ON-SITE BY THE CONTRACTOR. EXCEPT FOR BULK MATERIALS THE CONTRACTOR WILL STORE ALL MATERIALS UNDER COVER AND IN APPROPRIATE CONTAINERS. PRODUCTS MUST BE STORED IN ORIGINAL CONTAINERS AND LABELED.

10.2.2. HAZARDOUS MATERIALS

PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THE CONTAINER IS NOT RESEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHEETS WILL BE RETAINED IN A SAFE PLACE TO RELAY IMPORTANT PRODUCT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S LABEL DIRECTIONS FOR DISPOSAL WILL BE FOLLOWED.

BE COLLECTED ON SITE AND MANAGED TO PREVENT CONTAMINATION OF STORMWATER RUNOFF.

10.3. PRODUCT SPECIFIC PRACTICES

- 10.3.1. PETROLEUM PRODUCTS: ALL ON-SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.
10.3.2. FERTILIZERS: FERTILIZERS WILL BE APPLIED ONLY IN THE AMOUNTS SPECIFIED BY THE MANUFACTURER.
10.3.3. PAINTS: ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE.
10.3.4. CONCRETE TRUCKS: CONTRACTORS WILL PROVIDE DESIGNATED TRUCK WASHOUT AREAS ON THE SITE.

10.4. SPILL MANAGEMENT

IN ADDITION TO THE PREVIOUS HOUSEKEEPING AND MANAGEMENT PRACTICES, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP IF NECESSARY.

- 10.4.1. FOR ALL HAZARDOUS MATERIALS STORED ON SITE, THE MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEAN UP WILL BE CLEARLY POSTED.
10.4.2. APPROPRIATE CLEANUP MATERIALS AND EQUIPMENT SHALL BE MAINTAINED BY THE CONTRACTOR IN THE MATERIALS STORAGE AREA ON-SITE AND UNDER COVER.
10.4.3. ALL SPILLS WILL BE CLEANED IMMEDIATELY AFTER DISCOVERY AND THE MATERIALS DISPOSED OF PROPERLY.
10.4.4. THE CONTRACTOR'S RESPONSIBLE PARTY WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
10.4.5. IF SPILLS REPRESENT AN IMMINENT THREAT OF ESCAPING THE SITE AND ENTERING RECEIVING WATERS, PERSONNEL WILL RESPOND IMMEDIATELY TO CONTAIN THE RELEASE AND NOTIFY THE SUPERINTENDENT AFTER THE SITUATION HAS BEEN STABILIZED.
10.4.6. IF AN OIL SHEEN IS OBSERVED ON SURFACE WATER (E.G. SETTLING PONDS, DETENTION PONDS, SWALES), ACTION WILL BE TAKEN IMMEDIATELY TO REMOVE THE MATERIAL CAUSING THE SHEEN.
10.4.7. IF A SPILL OCCURS THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING THE SPILL REPORTING FORM AND FOR REPORTING THE SPILL TO THE PRIMARY PERMITTEE.

10.5. SPILL NOTIFICATION (5.1)

WHERE A RELEASE CONTAINING A HAZARDOUS SUBSTANCE IN AN AMOUNT EQUAL TO OR IN EXCESS OF A REPORTABLE QUANTITY ESTABLISHED UNDER EITHER 40 CFR 117 OR 40 CFR 302 OCCURS DURING A 24 HOUR PERIOD:

- 10.5.1. THE PRIMARY PERMITTEE WILL NOTIFY THE LOCAL TDEC EFO AND ANY OTHER APPLICABLE REGULATORY AGENCIES WITHIN 24 HOURS OF THE SPILL.
10.5.2. IN ADDITION TO ANY FOLLOW UP NOTIFICATIONS REQUIRED BY FEDERAL LAW, A WRITTEN DESCRIPTION OF THE RELEASE, DATE OF RELEASE AND CIRCUMSTANCES LEADING TO THE RELEASE, WHAT ACTIONS WERE TAKEN TO MITIGATE THE EFFECTS OF THE RELEASE, AND STEPS TAKEN TO MINIMIZE THE CHANCE OF FUTURE OCCURRENCES WILL BE SUBMITTED TO THE APPROPRIATE TDEC EFO WITHIN 14 DAYS OF KNOWLEDGE OF THE RELEASE.
10.5.3. THE SWPPP MUST BE MODIFIED WITHIN 14 DAYS OF KNOWLEDGE OF THE RELEASE PROVIDING A DESCRIPTION OF THE RELEASE, CIRCUMSTANCES LEADING TO THE RELEASE, AND THE DATE OF RELEASE.

11. RECORD-KEEPING

11.1. REQUIRED RECORDS

THE PERMITTEE WILL MAINTAIN AT THE SITE THE FOLLOWING RECORDS OF CONSTRUCTION ACTIVITIES (3.5.3.1.m) (4.1.5) (6.2.1):

- 11.1.1. THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR
11.1.2. THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE
11.1.3. THE DATES WHEN STABILIZATION MEASURES ARE INITIATED

11.1.4. RECORDS OF EPSC INSPECTION REPORTS AND CORRECTIVE MEASURES

11.1.5. RECORDS OF SITE ASSESSMENTS

11.1.6. COPY OF SITE EPSC INSPECTOR'S CERTIFICATION AND/OR LICENSING

11.1.7. COPY OF REQUIRED SOIL ANALYSIS

11.1.8. A COPY OF ANY REGULATORY CORRESPONDENCE REGARDING THE EFFECTIVENESS OF THE SWPPP OR EPSC CONTROLS.

11.2. RAINFALL MONITORING PLAN (3.5.3.1.o)

11.2.1. EQUIPMENT

AT A MINIMUM, THE CONTRACTOR WILL INSTALL A FENCE POST TYPE RAIN GAUGE TO MEASURE RAINFALL. THE STANDARD FENCE POST RAIN GAUGE WILL BE A WEDGE-SHAPED GAUGE THAT MEASURES UP TO 6 INCHES OF RAINFALL.

11.2.2. LOCATION

THE RAIN GAUGE WILL BE LOCATED AT OR ALONG THE PROJECT SITE, AS DEFINED IN THE NOI FOR THE NPDES PERMIT, IF AN OPEN AREA SUCH THAT THE MEASUREMENT WILL NOT BE INFLUENCED BY OUTSIDE FACTORS (I.E., OVERHANGS, GUTTER, TREES, ETC.)

11.2.3. METHODS

RAINFALL MONITORING WILL BE INITIATED PRIOR TO CLEARING, GRUBBING, EXCAVATION, GRADING, CUTTING, OR FILLING, EXCEPT AS SUCH MINIMAL CLEARING MAY BE NECESSARY TO INSTALL A RAIN GAUGE IN AN OPEN AREA.

EACH RAIN GAUGE WILL BE READ (FOR DETAILED RECORDS OF RAINFALL) AND EMPTIED AFTER EVERY RAINFALL EVENT OCCURRING ON THE PROJECT SITE AT APPROXIMATELY THE SAME TIME OF THE DAY (DURING NORMAL BUSINESS HOURS).

11.2.4. DETAILED RECORDS WILL BE RECORDED OF RAINFALL EVENTS INCLUDING DATES, AMOUNTS OF RAINFALL, AND THE APPROXIMATE DURATION (OR THE STARTING AND ENDING TIMES). THE RAINFALL RECORDS SHALL BE RECORDED ON A RAINFALL RECORD SHEET AND SHALL BE MAINTAINED IN THE "DOCUMENTS AND PERMITS" BINDER.

11.2.5. IF THE RAINFALL EVENT IS STILL IN PROGRESS AT THE DAILY RECORDING TIME, THE GAUGE WILL BE EMPTIED AND THE RECORD WILL INDICATE THAT THE STORM EVENT WAS STILL IN PROGRESS.

11.3. KEEPING PLANS CURRENT (3.4)

11.3.1. THE EPSC PLAN IS TO SERVE AS AN INITIAL GUIDE FOR SITE PERSONNEL. AS THE CONSTRUCTION PROCESS DEVELOPS IT MUST BE AMENDED, MODIFIED, AND UPDATED WHENEVER EPSC INSPECTION INDICATE, OR WHERE STATE OR FEDERAL REGULATORY OFFICIALS DETERMINE EPSC MEASURES ARE PROVING INEFFECTIVE.

11.3.2. THE STAGES DEPICTED WITHIN THE EPSC PLANS MAY NOT COINCIDE WITH THE ACTUAL STAGES OF CONSTRUCTION ESTABLISHED BY THE CONTRACTOR DURING CONSTRUCTION. THUS, MODIFICATIONS WILL BE REQUIRED TO ENSURE THE EPSC PLAN IS MAINTAINED TO DEPICT CURRENT SITE CONDITIONS.

11.3.3. THE PRIMARY PERMITTEE OF THEIR REPRESENTATIVE WILL MODIFY AND UPDATE THE SWPPP WHEN ANY OF THE FOLLOWING CONDITIONS APPLY:

11.3.3.1. WHENEVER THERE IS A CHANGE IN THE SCOPE OF THE PROJECT THAT WOULD BE EXPECTED TO HAVE A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO THE WATERS OF THE STATE/U.S. AND WHICH HAS NOT OTHERWISE BEEN ADDRESSED IN THE SWPPP.

11.3.3.2. WHENEVER INSPECTIONS OR INVESTIGATIONS BY SITE OPERATORS, LOCAL, STATE, OR FEDERAL OFFICIALS INDICATE THE SWPPP IS PROVING INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS FROM CONSTRUCTION ACTIVITY SOURCES, OR IS OTHERWISE NOT ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.

11.3.3.3. WHEN ANY NEW OPERATOR AND/OR SUB-OPERATOR IS ASSIGNED OR RELIEVED OF THEIR RESPONSIBILITY TO IMPLEMENT A PORTION OF THE SWPPP.

11.3.3.4. TO PREVENT A NEGATIVE IMPACT TO LEGALLY PROTECTED STATE OR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED AQUATIC FAUNA.

11.3.3.5. WHEN THERE IS A CHANGE IN CHEMICAL TREATMENT METHODS INCLUDING: USE OF DIFFERENT TREATMENT CHEMICALS, DIFFERENT DOSAGE OR APPLICATION RATES OR A DIFFERENT AREA OF APPLICATION NOT SPECIFIED ON THE EPSC PLANS.

MARYVILLE RETAIL SITE
1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
PARCEL ID: MAP 57 PARCEL 9.06
CITY OF MARYVILLE
9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Project

LAND TECH CIVIL ENGINEERING & LAND SURVEYING
100 McCaughey Road, Knoxville, TN 37918
865.978.6510 www.landtechco.com



Table with 3 columns: No., Date, Revision

Table with 2 columns: Field, Value
Drawn By: MBB
Checked By: JLL
Approved By: JLL
LT Project No.: 2004019
LT Drawing No.: D/O/263-F
Date: 07/14/20

Sheet Title
Stormwater Pollution Prevention Plan

Sheet ID
C-403
Sheet No. 15

- 11.3.3.6. ALL SWPPP REVISION(S) SHALL BE RECORDED WITHIN 7 DAYS BY THE EPSC INSPECTOR.
- 11.3.3.7. WHEN A TMDL IS DEVELOPED FOR THE RECEIVING WATERS FOR A POLLUTANT OF CONCERN (SILTATION AND/OR HABITAT ALTERATION), THE CONTRACTOR SHALL NOTIFY THE TDEC EFO FOR PROPER COORDINATION.

11.4. MAKING PLANS ACCESSIBLE

- 11.4.1. A COPY OF THIS SWPPP (INCLUDING A COPY OF THE "DOCUMENTATION AND PERMITS" BINDER) SHOULD BE KEPT AT THE CONSTRUCTION SITE (OR OTHER LOCATION ACCESSIBLE TO TDEC AND THE PUBLIC) FROM THE DATE CONSTRUCTION COMMENCES TO THE DATE OF FINAL STABILIZATION. (6.2)
- 11.4.2. PRIOR TO THE INITIATION OF LAND DISTURBING ACTIVITIES AND UNTIL THE SITE HAS MET THE FINAL STABILIZATION CRITERIA, CONTRACTOR OR THEIR DESIGNEE WILL POST A NOTICE NEAR THE MAIN ENTRANCE OF THE CONSTRUCTION SITE WITH THE FOLLOWING INFORMATION (3.3.3) (6.2.1):
 - 11.4.2.1. A COPY OF THE NOTICE OF COVERAGE (NOC) WITH THE NPDES PERMIT NUMBER FOR THE PROJECT;
 - 11.4.2.2. THE INDIVIDUAL NAME, COMPANY NAME, E-MAIL ADDRESS (IF APPLICABLE) AND TELEPHONE NUMBER OF THE LOCAL PROJECT SITE OWNER AND OPERATOR CONTACT;
 - 11.4.2.3. A BRIEF DESCRIPTION OF THE PROJECT; AND
 - 11.4.2.4. THE LOCATION OF THE SWPPP.
- 11.4.3. ALL INFORMATION DESCRIBED IN SECTION 11.4.2 MUST BE MAINTAINED IN LEGIBLE CONDITION. IF POSTING THIS INFORMATION NEAR A MAIN ENTRANCE IS INFEASIBLE DUE TO SAFETY CONCERNS, THE NOTICE SHALL BE POSTED IN A LOCAL BUILDING. THE NOTICE MUST BE PLACED IN A PUBLICLY ACCESSIBLE LOCATION WHERE CONSTRUCTION IS ACTIVELY UNDERWAY AND MOVED AS NECESSARY.

11.5. NOTICE OF TERMINATION

- 11.5.1. WHEN ALL STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES THAT ARE AUTHORIZED BY THE PERMIT ARE ELIMINATED BY FINAL STABILIZATION, THE PRIMARY PERMITTEE WILL SUBMIT A NOTICE OF TERMINATION (NOT) THAT IS SIGNED IN ACCORDANCE WITH THE PERMIT TO THE TDOT EFO.
- 11.5.2. FOR THE PURPOSES OF THE CERTIFICATION REQUIRED BY THE NOT, THE ELIMINATION OF STORMWATER DISCHARGES ASSOCIATED WITH THE CONSTRUCTION ACTIVITY MEANS:
 - 11.5.2.1. ALL EARTH-DISTURBING ACTIVITIES ON THE SITE ARE COMPLETED AND ALL DISTURBED SOILS AT THE PORTION OF THE CONSTRUCTION SITE WHERE THE OPERATOR HAD CONTROL HAVE BEEN FINALLY STABILIZED.
 - 11.5.2.2. ALL CONSTRUCTION MATERIALS, WASTE AND WASTE HANDLING DEVICES, AND ALL EQUIPMENT, AND VEHICLES THAT WERE USED DURING CONSTRUCTION HAVE BEEN REMOVED AND PROPERLY DISPOSED.
 - 11.5.2.3. ALL STORMWATER CONTROLS THAT WERE INSTALLED AND MAINTAINED DURING CONSTRUCTION, EXCEPT THOSE THAT ARE INTENDED FOR LONG-TERM USE FOLLOWING TERMINATION OF PERMIT COVERAGE, HAVE BEEN REMOVED.
 - 11.5.2.4. ALL POTENTIAL POLLUTANTS AND POLLUTANT GENERATING ACTIVITIES ASSOCIATED WITH CONSTRUCTION HAVE BEEN REMOVED.
 - 11.5.2.5. THE PERMITTEE HAS IDENTIFIED WHO IS RESPONSIBLE FOR ONGOING MAINTENANCE OF ANY STORMWATER CONTROLS LEFT ON THE SITE FOR LONG-TERM USE FOLLOWING TERMINATION OF PERMIT COVERAGE.
 - 11.5.2.6. TEMPORARY EPSC MEASURES HAVE BEEN OR WILL BE REMOVED AT AN APPROPRIATE TIME TO ENSURE FINAL STABILIZATION IS MAINTAINED.
 - 11.5.2.7. ALL STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES FROM THE IDENTIFIED SITE THAT ARE AUTHORIZED BY A NPDES GENERAL PERMIT HAVE OTHERWISE BEEN ELIMINATED FROM THE PORTION OF THE CONSTRUCTION SITE WHERE THE OPERATOR HAD CONTROL.

11.6. RETENTION OF RECORDS (6.2)

THE PERMITTEE WILL RETAIN COPIES OF THE SWPPP, ALL REPORTS REQUIRED BY THE PERMIT, AND RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT FOR THE PROJECT FOR A PERIOD OF AT LEAST THREE (3) YEARS FROM THE DATE THE NOT WAS FILED.

12. SITE WIDE/PRIMARY PERMITTEE CERTIFICATION (7.7.5)

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED BY ME, OR UNDER MY DIRECTION OR SUPERVISION, THE SUBMITTED INFORMATION IS TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. AS SPECIFIED IN TENNESSEE CODE ANNOTATED SECTION 39-16-702(a)(4), THIS DECLARATION IS MADE UNDER PENALTY OF PERJURY.

AUTHORIZED PERSONNEL SIGNATURE (3.3.1)

PRINTED NAME

TITLE

DATE

13. SECONDARY PERMITTEE (OPERATOR) CERTIFICATION (7.7.6)

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE REVIEWED THIS DOCUMENT, ANY ATTACHMENTS, AND THE SWPPP REFERENCED ABOVE. BASED ON MY INQUIRY OF THE CONSTRUCTION SITE OWNER/DEVELOPER IDENTIFIED ABOVE AND/OR MY INQUIRY OF THE PERSON DIRECTLY RESPONSIBLE FOR ASSEMBLING THIS NOI AND SWPPP, I BELIEVE THE INFORMATION SUBMITTED IS ACCURATE. I AM AWARE THAT THIS NOI, IF APPROVED, MAKES THE ABOVE-DESCRIBED CONSTRUCTION ACTIVITY SUBJECT TO NPDES PERMIT NUMBER TNR100000, AND THAT CERTAIN OF MY ACTIVITIES ON-SITE ARE THEREBY REGULATED. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS, AND FOR FAILURE TO COMPLY WITH THESE PERMIT REQUIREMENTS. AS SPECIFIED IN TENNESSEE CODE ANNOTATED SECTION 39-16-702(a)(4), THIS DECLARATION IS MADE UNDER PENALTY OF PERJURY.

AUTHORIZED PERSONNEL SIGNATURE (3.3.1)

PRINTED NAME

TITLE

DATE

14. ENVIRONMENTAL PERMITS (9.0)

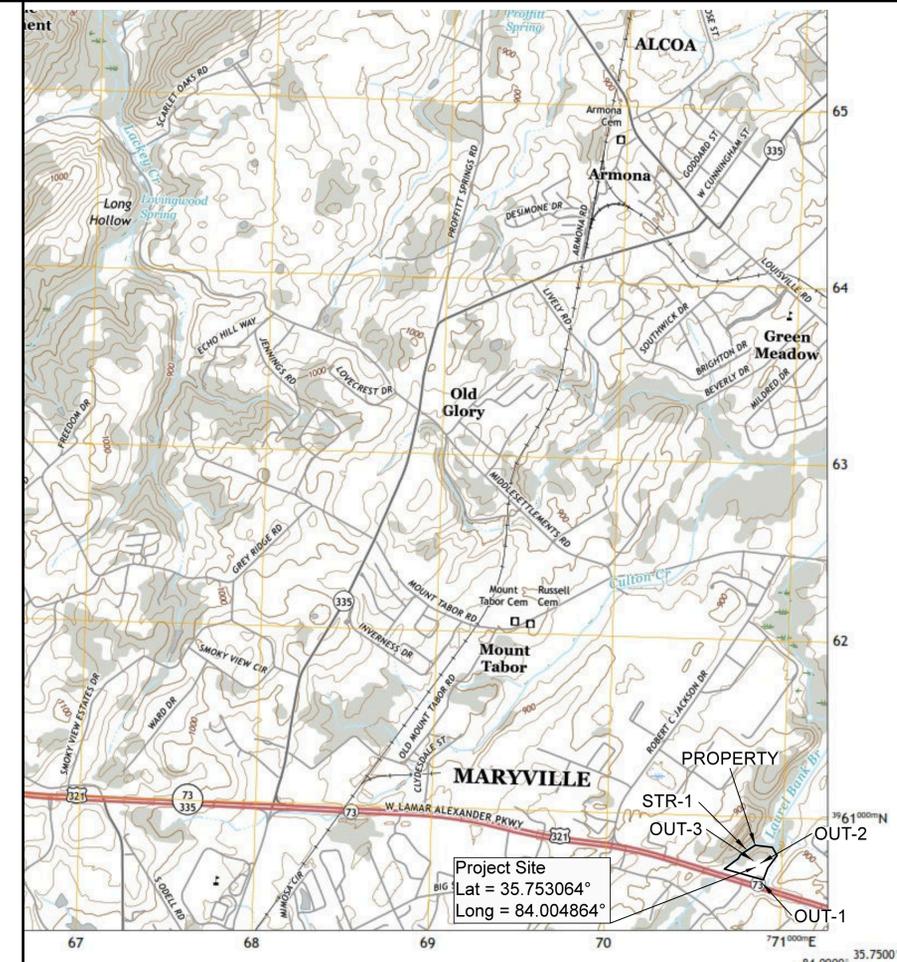
LIST ALL ENVIRONMENTAL PERMITS AND EXPIRATION DATES FOR PROJECT

ENVIRONMENTAL PERMITS			
PERMIT	YES OR NO	PERMIT OR TRACKING NO.	EXPIRATION DATE*
TDEC ARAP	NO		
USACE	NO		
TVA 26A	NO		
TDEC CGP	YES		
OTHER: TDEC SSDS	NO		

15. OUTFALL TABLE (3.5.1.d, 5.4.1.g)

OUTFALL INFORMATION							
EPSC STAGE	OUTFALL LABEL	SUB OUT-FALL	SLOPE (%)	STAGE 1 DRAINAGE AREA (AC)	STAGE 2 DRAINAGE AREA (AC)	SEDIMENT BASIN OR EQUIVALENT MEASURE(S) (YES, NO OR N/A)	RECEIVING RESOURCE
2	OUT-1	N/A	3.8	N/A	0.43	NO	STR-1
2	OUT-2	N/A	3.4	N/A	0.66	NO	STR-1
2	OUT-3	N/A	1.2	N/A	0.08	NO	STR-1

NOTE: ALL UNUSED FIELDS WITHIN THE OUTFALL TABLE ARE TO BE SHADED, HATCHED, OR REMOVED TO INDICATE THEIR NON-USAGE. SOME ROWS WERE LEFT FOR ADDITIONAL OUTFALLS IF NEEDED.



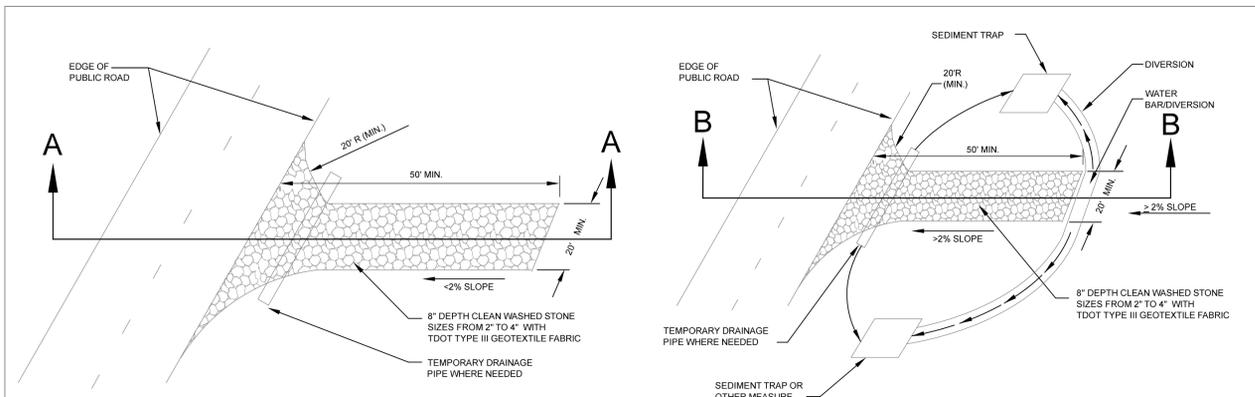
MARYVILLE RETAIL SITE
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PARCEL ID: MAP 57 PARCEL 9.06
CITY OF MARYVILLE
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Engineer/Surveyor
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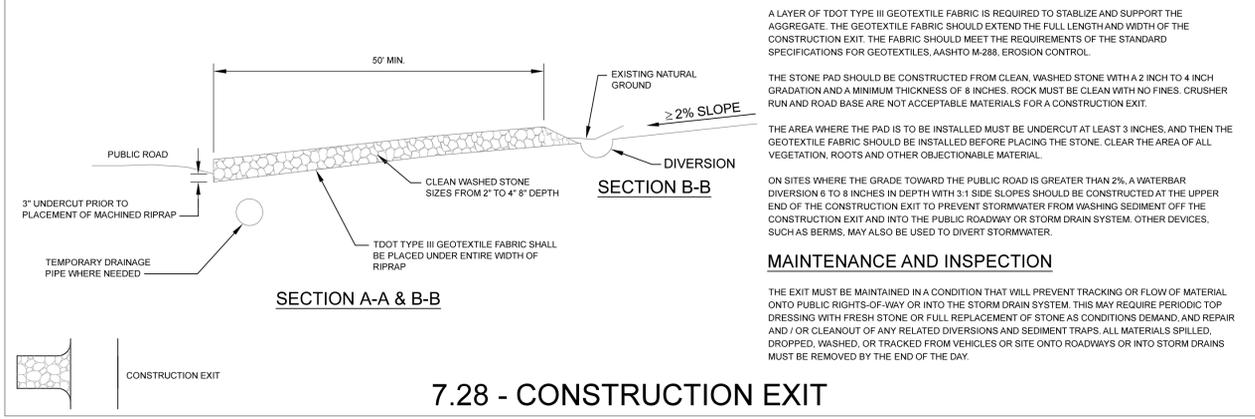


Revision	Date	No.	Drawn By:	Checked By:	Approved By:	LT Project No.:	LT Drawing No.:	Horiz. Scale:	Date:
			MBB	JLL	JLL	2004019	D/O263-F		07/14/20

Sheet Title
Stormwater Pollution Prevention Plan
Sheet ID
C-404
Sheet No. 16



PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



7.28 - CONSTRUCTION EXIT

CONSTRUCTION SPECIFICATIONS

A LAYER OF TDOT TYPE III GEOTEXTILE FABRIC IS REQUIRED TO STABILIZE AND SUPPORT THE AGGREGATE. THE GEOTEXTILE FABRIC SHOULD EXTEND THE FULL LENGTH AND WIDTH OF THE CONSTRUCTION EXIT. THE FABRIC SHOULD MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GEOTEXTILES, AASHTO M-288, EROSION CONTROL.

THE STONE PAD SHOULD BE CONSTRUCTED FROM CLEAN, WASHED STONE WITH A 2 INCH TO 4 INCH GRADATION AND A MINIMUM THICKNESS OF 8 INCHES. ROCK MUST BE CLEAN WITH NO FINES. CRUSHER RUN AND ROAD BASE ARE NOT ACCEPTABLE MATERIALS FOR A CONSTRUCTION EXIT.

THE AREA WHERE THE PAD IS TO BE INSTALLED MUST BE UNDERCUT AT LEAST 3 INCHES, AND THEN THE GEOTEXTILE FABRIC SHOULD BE INSTALLED BEFORE PLACING THE STONE. CLEAR THE AREA OF ALL VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.

ON SITES WHERE THE GRADE TOWARD THE PUBLIC ROAD IS GREATER THAN 2%, A WATERBAR DIVERSION 6 TO 8 INCHES IN DEPTH WITH 3:1 SIDE SLOPES SHOULD BE CONSTRUCTED AT THE UPPER END OF THE CONSTRUCTION EXIT TO PREVENT STORMWATER FROM WASHING SEDIMENT OFF THE CONSTRUCTION EXIT AND INTO THE PUBLIC ROADWAY OR STORM DRAIN SYSTEM. OTHER DEVICES, SUCH AS BERMS, MAY ALSO BE USED TO DIVERT STORMWATER.

MAINTENANCE AND INSPECTION

THE EXIT MUST BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF MATERIAL ONTO PUBLIC RIGHTS-OF-WAY OR INTO THE STORM DRAIN SYSTEM. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH FRESH STONE OR FULL REPLACEMENT OF STONE AS CONDITIONS DEMAND, AND REPAIR AND / OR CLEANOUT OF ANY RELATED DIVERSIONS AND SEDIMENT TRAPS. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES OR SITE ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED BY THE END OF THE DAY.

CONSTRUCTION SPECIFICATIONS

ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 24 INCHES ABOVE THE GROUND SURFACE. PONDING WATER DEPTH SHOULD NOT EXCEED 1.5 FEET.

CONSTRUCT THE FILTER FABRIC FROM A CONTINUOUS ROLL. CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, SECURELY FASTEN THE FILTER CLOTH ONLY AT A SUPPORT POST WITH 4 FEET MINIMUM OVERLAP TO THE NEXT POST. ROLL THE FABRIC TOGETHER AND FASTEN TO ONE POST TO CREATE A STRONGER JOINT. WHERE JOINTS ARE NECESSARY, PLAN THE ROLL LAYOUT SO AS NOT TO HAVE JOINTS AT LOW POINTS.

DO NOT ATTACH FILTER FABRIC TO TREES.

WHEN SILT FENCE IS INSTALLED ADJACENT TO STREAMS, WETLANDS, AND OTHER NATURAL RESOURCES, SILT FENCE WITH BACKING SHOULD BE USED.

INSTALL POSTS NO MORE THAN 6 FEET APART.

INSTALL POSTS 2 FEET DEEP ON THE DOWNSTREAM SIDE OF THE SILT FENCE, AND AS CLOSE AS POSSIBLE TO THE FABRIC, ENABLING POSTS TO SUPPORT THE FABRIC FROM UPSTREAM WATER PRESSURE.

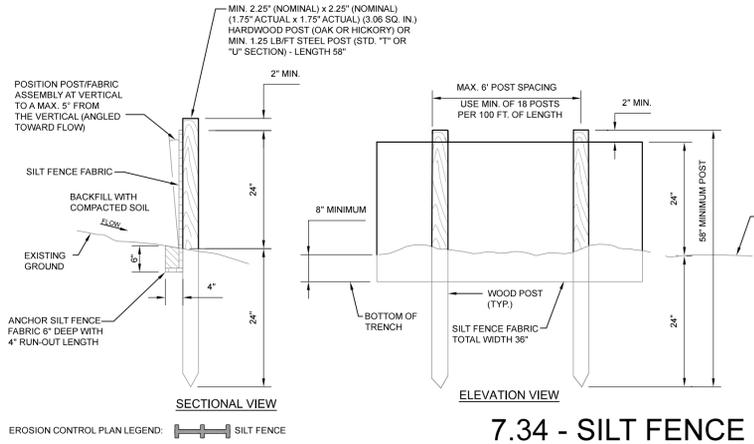
SECURELY ATTACH THE SILT FENCE FABRIC TO THE POSTS ON THE UPSTREAM SIDE OF THE POSTS. FOR STEEL POSTS, ATTACH FABRIC TO THE POSTS USING WIRE OR PLASTIC ZIP TIES WITH A MINIMUM 50 POUND TENSILE STRENGTH, AT LEAST 5 TO A POST. THREE TIES SHOULD BE INSTALLED IN THE UPPER 8 INCHES FOR TOP STRENGTH. TIES SHOULD BE INSTALLED ON THE DIAGONAL AS OPPOSED TO ON THE HORIZONTAL. TO GRAB MORE STRANDS, FOR HARDWOOD POSTS, ATTACH FABRIC WITH 17 GAUGE WIRE STAPLES, (0.75\"/>

INSTALL J-HOOKS FOR CONFINING WATER BEHIND THE FENCE AND MAXIMIZING THE TRAPPING EFFICIENCY.

TRADITIONAL SILT FENCE TRENCHING METHOD FOR INSTALLATION

1. EXCAVATE TRENCH APPROX. 4\"/>

2. PLACE 10\"/>



7.34 - SILT FENCE

CONSTRUCTION SPECIFICATIONS

TRADITIONAL SILT FENCE TRENCHING METHOD FOR INSTALLATION

3. THE BASE OF BOTH END POSTS SHOULD BE AT LEAST 1\"/>

SLICING METHOD FOR INSTALLATION

1. A SLICING MACHINE CAN BE USED TO INSTALL SILT FENCE.

2. POSTS SHOULD BE SET A MAXIMUM 6' APART.

3. THE GEOTEXTILE FABRIC SHOULD BE INSERTED IN A SLIT IN THE SOIL 8-12\"/>

MAINTENANCE AND INSPECTION

REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE BARRIER.

REPLACE FILTER FABRIC WHENEVER IT IS WORN OR HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS IS REDUCED.

ALL SEDIMENT ACCUMULATED AT THE FENCE SHOULD BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE FENCE IS REMOVED.

REPAIR SAGGING SILT FENCE TO PREVENT FAILURE OR OVERTOPPING.

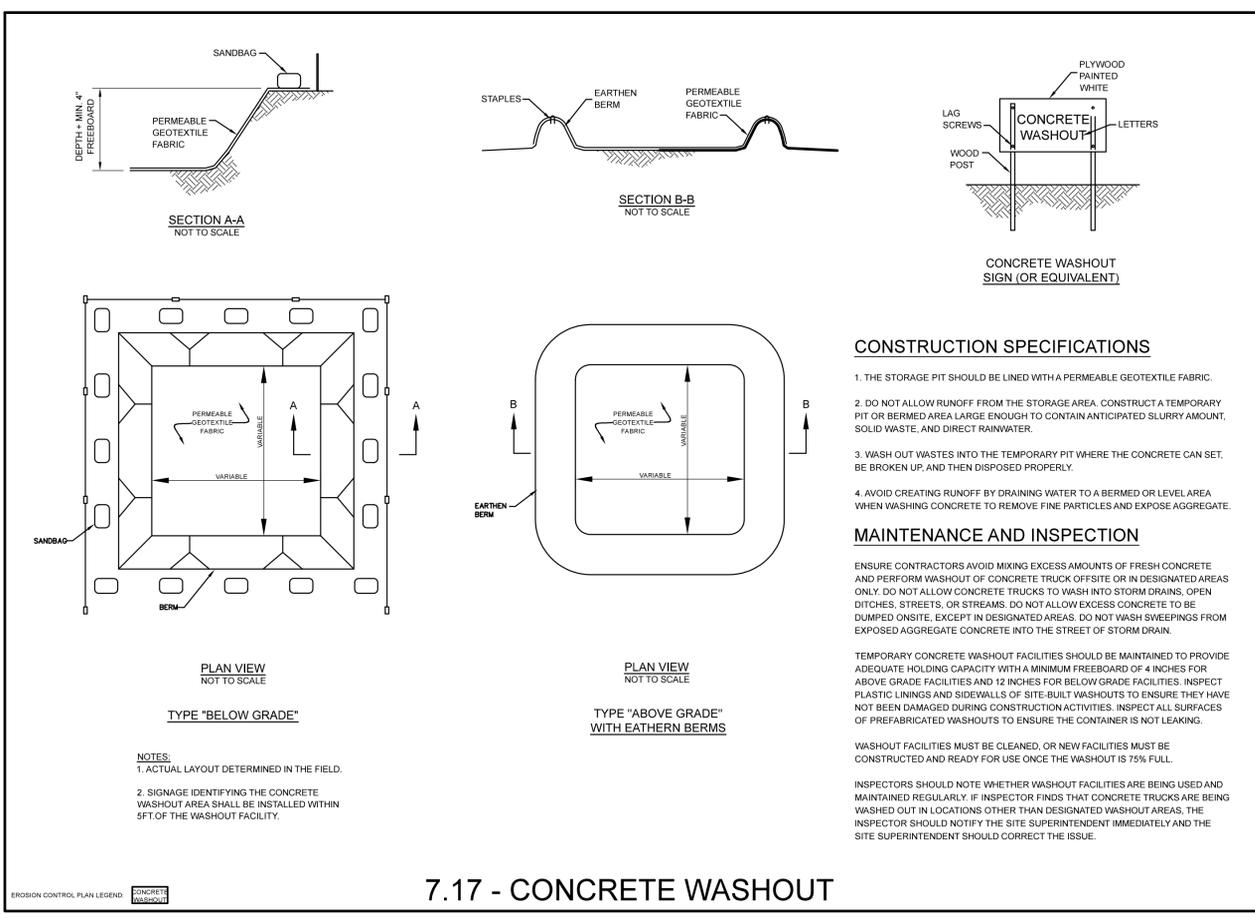
MONITOR THE TOE FOR EVIDENCE OF PIPING OR EROSION. INSTALL J-HOOKS WHERE RUNOFF FLOWS ALONG THE TOE OF THE FENCING TO PREVENT UNDERMINING.

SILT FENCE SHOULD REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

	TEST MATERIAL	WITHOUT BACKING	WITH BACKING
GEOTEXTILE FABRIC TYPE		WOVEN SLIT FILM	WOVEN MONOPLACEMENT
APPARENT OPENING SIZE	ASTM D4751	#30 TO #70 STANDARD SIEVE	#70 TO #100 STANDARD SIEVE
WATER FLUX	ASTM D4491	≥ 4 GPM / SF	≥ 18 GPM / SF
TENSILE STRENGTH	ASTM D4632	≥ 120 LB (WARP DIRECTION) 100 LB (FILL DIRECTION)	≥ 310 LB (WARP DIRECTION) 200 LB (FILL DIRECTION)
UV STABILITY (AFTER 500 HRS)	ASTM D4355	$\ge 70\%$	$\ge 90\%$
ELONGATION	ASTM D4632	$\le 20\%$ MAX.	---
BURST STRENGTH	ASTM D3786	≥ 250 PSI	≥ 400 PSI
PUNCTURE STRENGTH	ASTM D4633	≥ 60 LB	≥ 105 LB
TRAPEZOIDAL TEAR	ASTM D4533	≥ 50 LB (WARP DIRECTION) 40 LB (FILL DIRECTION)	≥ 100 LB (WARP DIRECTION) 60 LB (FILL DIRECTION)

MARYVILLE RETAIL SITE
1421 W LAMAR ALEXANDER HWY., MARYVILLE TN
PARCEL ID: MAP 57 PARCEL 9.06
CITY OF MARYVILLE
9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Engineer/Surveyor
Project
LAND TECH
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7.17 - CONCRETE WASHOUT

CONSTRUCTION SPECIFICATIONS

1. THE STORAGE PIT SHOULD BE LINED WITH A PERMEABLE GEOTEXTILE FABRIC.
2. DO NOT ALLOW RUNOFF FROM THE STORAGE AREA. CONSTRUCT A TEMPORARY PIT OR BERMED AREA LARGE ENOUGH TO CONTAIN ANTICIPATED SLURRY AMOUNT, SOLID WASTE, AND DIRECT RAINWATER.
3. WASH OUT WASTES INTO THE TEMPORARY PIT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED PROPERLY.
4. AVOID CREATING RUNOFF BY DRAINING WATER TO A BERMED OR LEVEL AREA WHEN WASHING CONCRETE TO REMOVE FINE PARTICLES AND EXPOSE AGGREGATE.

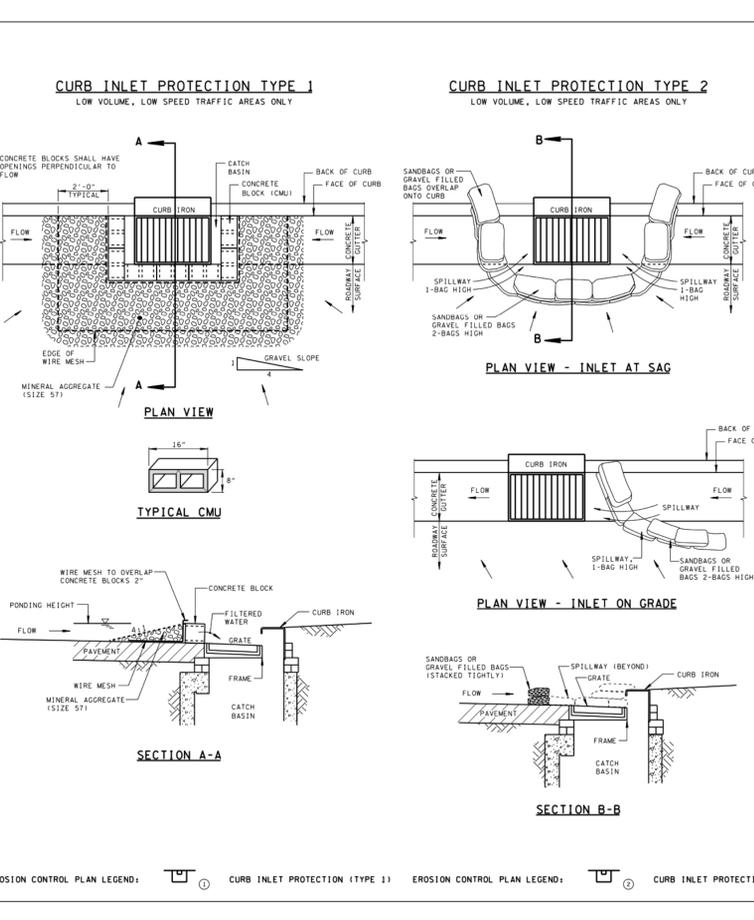
MAINTENANCE AND INSPECTION

ENSURE CONTRACTORS AVOID MIXING EXCESS AMOUNTS OF FRESH CONCRETE AND PERFORM WASHOUT OF CONCRETE TRUCK OFF SITE OR IN DESIGNATED AREAS ONLY. DO NOT ALLOW CONCRETE TRUCKS TO WASH INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS. DO NOT ALLOW EXCESS CONCRETE TO BE DUMPED ON SITE, EXCEPT IN DESIGNATED AREAS. DO NOT WASH SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE INTO THE STREET OF STORM DRAIN.

TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM FREEBOARD OF 4 INCHES FOR ABOVE GRADE FACILITIES AND 12 INCHES FOR BELOW GRADE FACILITIES. INSPECT PLASTIC LININGS AND SIDEWALLS OF SITE-BUILT WASHOUTS TO ENSURE THEY HAVE NOT BEEN DAMAGED DURING CONSTRUCTION ACTIVITIES. INSPECT ALL SURFACES OF PREFABRICATED WASHOUTS TO ENSURE THE CONTAINER IS NOT LEAKING.

WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.

INSPECTORS SHOULD NOTE WHETHER WASHOUT FACILITIES ARE BEING USED AND MAINTAINED REGULARLY. IF INSPECTOR FINDS THAT CONCRETE TRUCKS ARE BEING WASHED OUT IN LOCATIONS OTHER THAN DESIGNATED WASHOUT AREAS, THE INSPECTOR SHOULD NOTIFY THE SITE SUPERINTENDENT IMMEDIATELY AND THE SITE SUPERINTENDENT SHOULD CORRECT THE ISSUE.



CURB INLET PROTECTION TYPE 1 GENERAL NOTES

1. CURB INLET PROTECTION (TYPE 1) IS USED TO INTERCEPT SEDIMENT AND PREVENT SEDIMENT LADEN WATER FROM ENTERING STORM SEWER SYSTEMS. THIS DEVICE IS INTENDED AS A SECONDARY SEDIMENT CONTROL MEASURE. CURB INLET PROTECTION (TYPE 1) IS USED IN AREAS WHERE PONDING IS NOT A CONCERN AND ADEQUATE AREA IS AVAILABLE FOR PONDING.
2. MAXIMUM DRAINAGE AREA IS 1 ACRE.
3. CONCRETE BLOCKS SHALL BE PLACED LENGTHWISE ON THEIR SIDES IN A SINGLE ROW AROUND THE PERIMETER OF THE INLET. THE ENDS OF ADJACENT BLOCKS SHOULD ABUT TIGHTLY TOGETHER.
4. ADDITIONAL BLOCKS WITH OPENINGS PERPENDICULAR TO FLOW MAY BE REQUIRED DEPENDING ON AMOUNT OF FLOW AND AVAILABLE PONDING AREA.
5. WIRE MESH SHALL BE 19 GAUGE GALVANIZED HARDWARE CLOTH WITH 1/2 INCH OPENINGS. WIRE SHALL BE SHAPED TO FIT SECURELY AGAINST CONCRETE BLOCK AND SHALL LAP OVER THE TOP OF THE BLOCK A MINIMUM OF 2 INCHES.
6. CURB INLET PROTECTION (TYPE 1) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:
209-09.40 CURB INLET PROTECTION (TYPE 1) PER EACH
PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CURB INLET PROTECTION (TYPE 1).
7. ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.
8. MAINTENANCE SHALL BE PERFORMED AS NEEDED. FOR PROPER FUNCTION, SEDIMENT REMOVAL SHALL BE PERFORMED CONTINUOUSLY AND/OR AFTER EVERY RAIN EVENT AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

CURB INLET PROTECTION TYPE 2 GENERAL NOTES

1. CURB INLET PROTECTION (TYPE 2) IS USED TO INTERCEPT SEDIMENT AND PREVENT SEDIMENT LADEN WATER FROM ENTERING STORM SEWER SYSTEMS. THIS DEVICE IS INTENDED AS A SECONDARY SEDIMENT CONTROL MEASURE. CURB INLET PROTECTION (TYPE 2) IS USED IN AREAS WHERE PONDING IS NOT A CONCERN AND ADEQUATE AREA IS AVAILABLE FOR PONDING.
2. MAXIMUM DRAINAGE AREA IS 1 ACRE.
3. MAXIMUM TOP OF SPILLWAY ELEVATION + TOP OF CURB ELEVATION MINUS 1 INCH.
4. BAGS SHALL BE MADE OF EITHER BURLAP OR GEOTEXTILE FABRIC AND FILLED WITH CLEAN MINERAL AGGREGATE (SIZE 57) OR SAND.
5. PACK SAND/GRAVEL FILLED BAGS TIGHTLY TOGETHER END TO END TO ENSURE NO SEDIMENT FLOWS BEHIND OR UNDERNEATH THE BAGS. WHERE TIGHT FIT IS UNACHIEVABLE, INSTALL GEOTEXTILE FABRIC (TYPE III) ALONG THE UPSTREAM FACE OF THE BAGS, LAPPING OVER THE TOP BAGS 8 INCHES, AND EXTENDING GEOTEXTILE FABRIC (TYPE III) A MINIMUM OF 18 INCHES UPSTREAM OF THE BAGS. COVER GEOTEXTILE FABRIC (TYPE III) WITH MINERAL AGGREGATE (SIZE 57) STONE WEDGE TO THE TOP OF THE BAGS.
6. ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.
7. AN OVERFLOW SPILLWAY SHALL BE PROVIDED BY LEAVING AN OPENING OF ONE SAND OR GRAVEL BAG WIDE AND HIGH AS SHOWN. STONES GREATER THAN 2-YEARS, 24 HOUR STORM SHOULD NOT COVER THE CURB.
8. CURB INLET PROTECTION (TYPE 2) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:
209-09.41 CURB INLET PROTECTION (TYPE 2) PER EACH
PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CURB INLET PROTECTION (TYPE 2).
9. ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE IS ALSO ACCEPTABLE.
10. MAINTENANCE SHALL BE PERFORMED AS NEEDED. FOR PROPER FUNCTION, SEDIMENT REMOVAL SHALL BE PERFORMED CONTINUOUSLY AND/OR AFTER EVERY RAIN EVENT AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL, PER CUBIC YARD.

NOT TO SCALE
CURB INLET PROTECTION TYPE 1 & 2
1-20-06 EC-STR-39

Revision
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Drawn By: MBB
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CONSTRUCTION SPECIFICATIONS

THE TOPSOIL STOCKPILE MUST BE PROTECTED AGAINST EROSION. STABILIZE THE STOCKPILE WITH A TEMPORARY OR PERMANENT GROUND COVER. IN ADDITION, PERIMETER MEASURES SHOULD BE PROVIDED AROUND THE STOCKPILE AREA TO PREVENT SEDIMENT MIGRATION.

ONCE GRADING ON ANY PORTION OF THE SITE HAS REACHED FINAL GRADE, TOPSOIL SHOULD BE SPREAD PRIOR TO FINAL STABILIZATION. TOPSOIL PLACEMENT SHOULD NOT BE SPECIFIED IN AREAS WHERE SLOPES ARE STEEPER THAN 2:1.

THE DEPTH OF TOPSOIL TO BE APPLIED SHALL BE 5 INCHES UNSETTLED.

TOPSOIL QUALITY

1. GENERAL CHARACTERISTICS - TOPSOIL SHOULD BE FRIABLE AND LOAMY, FREE OF DEBRIS, OBJECTIONABLE WEEDS AND STONES, AND CONTAIN NO TOXIC SUBSTANCES THAT MAY BE HARMFUL TO PLANT GROWTH. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE.

2. TEXTURE - LOAM, SANDY LOAM, AND SILT LOAM ARE BEST. SANDY CLAY LOAM, CLAY LOAM, AND LOAMY SAND ARE FAIR. HEAVY CLAY AND ORGANICS SUCH AS PEAT OR MUCK SHOULD NOT BE USED AS TOPSOIL.

3. ORGANIC MATTER CONTENT - ORGANIC MATERIALS SHOULD BE GREATER THAN 2% BY WEIGHT.

4. FERTILITY AND NUTRIENTS - pH RANGE SHOULD BE 5.5 TO 7.0. LIMING MAY BE SPECIFIED IF pH IS LESS THAN 5.5. SOIL TEST FOR NUTRIENTS BASED UPON THE TYPE OF VEGETATION TO BE ESTABLISHED. ORGANIC AND INORGANIC SOIL AMENDMENTS MAY BE APPLIED TO TOPSOIL TO ACHIEVE THE DESIRED CHARACTERISTICS.

STRIPPING

STRIP TOPSOIL ONLY FROM AREAS THAT WILL BE DISTURBED BY EXCAVATION, FILLING, PAVING, OR COMPACTION BY EQUIPMENT. STRIPPING DEPTH VARIES AND SHOULD BE SITE SPECIFIC.

STOCKPILING

TOPSOIL STOCKPILES SHOULD BE LOCATED TO AVOID SLOPES, NATURAL AND ARTIFICIAL DRAINAGE WAYS, AND CONSTRUCTION TRAFFIC. MULTIPLE STOCKPILES NEAR AREAS TO BE STRIPPED MAY BE SPECIFIED ON LARGE SITES SO THAT RESPREADING TOPSOIL IS MORE EFFICIENT.

SEDIMENT CONTROLS SHOULD BE PLACED WHERE NECESSARY AROUND STOCKPILES TO PREVENT ERODED TOPSOILS FROM LEAVING THE STOCKPILE AREA. TEMPORARY SEEDING PRACTICES SHOULD BE PERFORMED NO MORE THAN 15 DAYS AFTER THE FORMATION OF THE STOCKPILE. PERMANENT GROUNDCOVERS SHOULD BE CONSIDERED WHERE TOPSOIL STOCKPILES ARE TO BE INACTIVE FOR LONGER PERIODS OF TIME.

SPREADING

TOPSOIL SHOULD BE SPREAD ONLY WHEN GRADING ACTIVITIES HAVE BEEN COMPLETED AND PERMANENT VEGETATION IS TO BE APPLIED. GRADES SHOULD BE MAINTAINED ACCORDING TO THE APPROVED PLANS, AND FINAL GRADES SHOULD NOT BE ALTERED BY ADDING TOPSOIL. THE SUBGRADE SURFACE SHOULD BE ROUGHENED BY DISKING OR SCARIFYING TO A MINIMUM DEPTH OF 4 INCHES PRIOR TO SPREADING TOPSOIL TO ENSURE BONDING OF THE TOPSOIL AND SUBSOILS. APPLY LIME OR FERTILIZER TO SUBGRADE BEFORE ROUGHENING.

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED TO A MINIMUM DEPTH OF 5 INCHES AND COMPACTED. DO NOT SPREAD TOPSOIL WHILE IT IS EXCESSIVELY WET OR FROZEN, UNIFORMLY MOISTEN EXCESSIVELY DRY SOIL THAT IS NOT WORKABLE OR TOO DUSTY. CORRECT ANY IRREGULARITIES IN THE SURFACE TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. AFTER TOPSOIL APPLICATION, FOLLOW PROCEDURES FOR PERMANENT VEGETATION.

MAINTENANCE AND INSPECTION

TOPSOILED AREAS SHOULD BE INSPECTED FOR EROSION, DEPRESSIONS OR RIDGES, ROCKS, AND OTHER FOREIGN MATERIAL PRIOR TO BEGINNING PERMANENT VEGETATION APPLICATIONS. THESE AREAS ARE SUBJECT TO ONGOING INSPECTIONS AND MAINTENANCE UNTIL FINAL PERMANENT STABILIZATION HAS BEEN ACHIEVED AND A NOTICE OF TERMINATION HAS BEEN SUBMITTED.

7.3 - TOPSOILING

CONSTRUCTION SPECIFICATIONS

SOIL QUALITY

ALL AREAS SUBJECT TO CLEARING AND GRADING THAT HAVE NOT BEEN COVERED BY IMPERVIOUS SURFACES, INCORPORATED INTO A DRAINAGE FACILITY, OR ENGINEERED AS STRUCTURAL FILL OR SLOPE SHALL AT PROJECT COMPLETION DEMONSTRATE THE FOLLOWING:

1. A TOPSOIL LAYER WITH A MINIMUM ORGANIC MATTER CONTENT OF 10% DRY WEIGHT IN PLANTING BEDS, AND 5% ORGANIC MATTER CONTENT IN TURF AREAS, AND A pH FROM 6.0 TO 8.0 OR MATCHING THE pH OF THE ORIGINAL UNDISTURBED SOIL. THE TOPSOIL LAYER SHALL HAVE A MINIMUM DEPTH OF 8 INCHES EXCEPT WHERE TREE ROOTS LIMIT THE DEPTH OF INCORPORATION OF AMENDMENTS NEEDED TO MEET THE CRITERIA. SUBSOILS BELOW THE TOPSOIL LAYER SHOULD BE SCARIFIED AT LEAST 4 INCHES WITH SOME INCORPORATION OF THE UPPER MATERIAL TO AVOID STRATIFIED LAYERS, WHERE FEASIBLE.

2. PLANTING BEDS MUST BE MULCHED WITH 2 INCHES OF ORGANIC MATERIAL.

3. QUALITY OF COMPOST AND OTHER MATERIALS USED TO MEET THE ORGANIC CONTENT REQUIREMENTS:
A. THE COMPOST MUST HAVE AN ORGANIC MATTER CONTENT OF 35% TO 65%, AND A CARBON TO NITROGEN RATION BELOW 25:1.

B. CALCULATED AMENDMENT RATES MAY BE MET THROUGH USE OF COMPOSTED MATERIALS AS DEFINED ABOVE.

C. THE RESULTING SOIL SHOULD BE CONDUCTIVE TO THE TYPE OF VEGETATION TO BE ESTABLISHED.

THE SOIL QUALITY GUIDELINES LISTED ABOVE CAN BE MET BY USING ONE OF THE METHODS LISTED BELOW:

1. LEAVE UNDISTURBED NATIVE VEGETATION AND SOILD, AND PROTECT FROM COMPACTION DURING CONSTRUCTION.

2. AMEND EXISTING SITE TOPSOIL OR SUBSOIL EITHER AT DEFAULT "PRE-APPROVED" RATES, OR AT CUSTOM CALCULATED RATES BASED ON SPECIFIER'S TESTS OF THE SOIL AND AMENDMENT.

3. STOCKPILE EXISTING TOPSOIL DURING GRADING, AND REPLACE IT PRIOR TO PLANTING. STOCKPILED TOPSOIL MUST ALSO BE AMENDED IF NEEDED TO MEET THE ORGANIC MATTER OR DEPTH REQUIREMENTS, EITHER AT A DEFAULT "PRE-APPROVED" RATE OR AT A CUSTOM CALCULATED RATE.

4. IMPORT TOPSOIL MIX OF SUFFICIENT ORGANIC CONTENT AND DEPTH TO MEET THE REQUIREMENTS. MORE THAN ONE METHOD MAY BE USED ON DIFFERENT PORTIONS OF THE SAME SITE. SOIL THAT ALREADY MEETS THE DEPTH AND ORGANIC MATTER QUALITY STANDARDS, AND IS NOT COMPACTED, DOES NOT NEED TO BE AMENDED.

MAINTENANCE AND INSPECTION

SOIL QUALITY AND DEPTH SHOULD BE ESTABLISHED TOWARD THE END OF CONSTRUCTION AND ONCE ESTABLISHED, SHOULD BE PROTECTED FROM COMPACTION, SUCH AS FROM LARGE MACHINERY USE, AND FROM EROSION.

SOIL SHOULD BE PLANTED AND MULCHED AFTER INSTALLATION.

PLANT DEBRIS OR ITS EQUIVALENT SHOULD BE LEFT ON THE SOIL SURFACE TO REPLENISH ORGANIC MATTER.

IT SHOULD BE POSSIBLE TO REDUCE USE OF IRRIGATION, FERTILIZER, HERBICIDES AND PESTICIDES. THESE ACTIVITIES SHOULD BE ADJUSTED WHERE POSSIBLE, RATHER THAN CONTINUING TO IMPLEMENT FORMERLY ESTABLISHED PRACTICES.

7.15 - SOIL ENHANCEMENT

CONSTRUCTION SPECIFICATIONS

APPLY HYDROMULCH / BFM WITHIN 24 HOURS OF SEED APPLICATION. DO NOT APPLY ANY TYPE OF HYDRAULIC SEEDING OR MULCHING DURING HIGH WIND CONDITIONS OR VERY DRY CONDITIONS.

PROHIBIT FOOT, EQUIPMENT, AND VEHICLE TRAFFIC ACROSS THE AREA AFTER APPLICATION.

HYDRAULIC EQUIPMENT AND ADEQUATE WATER SUPPLY ARE NECESSARY.

APPLY THE HYDROSEED / HYDROMULCH / BFM UNIFORMLY LEAVING NO VISIBLE SOIL. TO AID IN VISUALLY VERIFYING THE CORRECT APPLICATION, A DYE IS TYPICALLY ADDED TO THE MIXTURE. TO ENSURE THE PROPER APPLICATION RATE, MARK OFF A SECTION ON THE GROUND, SUCH AS A 1,000 SF AREA, AND CALIBRATE THE SPRAYER TO APPLY THE CORRECT SEEDING RATE FOR 1,000 SF.

MAINTENANCE AND INSPECTION

INSPECT SLOPES FOR RILL FORMATION. IF NECESSARY, MAKE REPAIRS, RESEED AND REAPPLY HYDRAULIC MATERIAL.

IF RILLING OCCURS THIS MEANS THAT SLOPES ARE TOO STEEP FOR HYDRO APPLICATION. REPAIR THE SURFACE, RESEED AND COVER WITH A STRAW MULCH TO PREVENT EROSION. MULCH SHOULD BE TACKED OR CRIMPED DEPENDING ON THE SOIL TYPE.

7.12 - HYDRO APPLICATIONS

CONSTRUCTION SPECIFICATIONS

BEFORE APPLYING MULCH, COMPLETE THE REQUIRED GRADING, INSTALL SEDIMENT CONTROL PRACTICES, AND IF APPLYING SEED, PREPARE THE SEED BED. WHEN APPLYING SEED IN COMBINATION WITH MULCH, APPLY THE SEED BEFORE MULCH EXCEPT IN THE FOLLOWING CASES:

1. SEED IS APPLIED AS A PART OF A HYDROSEEDER SLURRY CONTAINING MULCH.

2. A HYDROSEEDER SLURRY IS APPLIED OVER STRAW.

APPLICATION

SPREAD MULCH UNIFORMLY BY HAND OR WITH A MULCH BLOWER. WHEN SPREADING MULCH BY HAND, DIVIDE THE AREA TO BE MULCHED INTO SECTIONS OF APPROXIMATELY 1000 SF AND PLACE 70-90 LBS OF STRAW (1.5 TO 2 BALES) IN EACH SECTION TO FACILITATE UNIFORM DISTRIBUTION. AFTER SPREADING MULCH, NO MORE THAN 25% OF THE SOIL SURFACE SHOULD BE VISIBLE. IN HYDROSEEDING APPLICATIONS A GREEN DYE ADDED TO THE SLURRY ASSURES A UNIFORM APPLICATION.

ANCHORING

STRAW MULCH MUST BE ANCHORED IMMEDIATELY AFTER SPREADING. THE FOLLOWING METHODS MAY BE USED:

1. MULCH ANCHORING TOOL. STRAW MULCH MAY BE PRESSED INTO THE SOIL IMMEDIATELY AFTER THE MULCH IS SPREAD. A SPECIAL CRIMPER OR DISK HARROW WITH THE DISCS SET STRAIGHT MAY BE USED. SERRATED DISCS ARE PREFERRED AND SHOULD BE 20 INCHES OR MORE IN DIAMETER AND 8 TO 12 INCHES APART. THE EDGES OF THE DISCS SHALL BE DULL ENOUGH TO PRESS INTO THE GROUND WITHOUT CUTTING IT. MULCH SHOULD NOT BE FLOWED INTO THE SOIL. THIS METHOD IS LIMITED ON SLOPES NO STEEPER THAN 3:1, WHERE EQUIPMENT CAN OPERATE SAFELY. OPERATE MACHINERY ON THE CONTOUR.

2. LIQUID MULCH BINDERS. APPLICATION OF LIQUID MULCH BINDERS AND TACKIFIERS SHOULD BE HEAVIEST AT THE EDGES, CRESTS OF RIDGES, AND BANKS TO RESIST WIND. BINDERS SHOULD BE APPLIED UNIFORMLY TO THE REMAINING AREA. BINDERS MUST BE APPLIED AFTER THE MULCH IS SPREAD, OR MAY BE SPRAYED INTO THE MULCH AS IT IS BEING APPLIED. APPLYING THE STRAW AND BINDER TOGETHER IS THE MOST EFFECTIVE METHOD. LIQUID BINDERS INCLUDE EMULSIFIED ASPHALT AND AN ARRAY OF COMMERCIALY AVAILABLE SYNTHETIC BINDERS.

RAPID SETTING (RS OR CRS) IS FORMULATED FOR CURING IN LESS THAN 24 HOURS, AND IS BEST USED IN FALL AND SPRING. SLOW SETTING (SS OR CSS) IS FORMULATED FOR USE DURING HOT, DRY WEATHER, REQUIRING 48 HOURS OR MORE CURING TIME.

APPLY ASPHALT AT 0.1 GALLONS PER SQUARE YARD (10 GAL PER 1000 SF) IN TRAFFIC AREAS, UNCURED ASPHALT CAN BE PICKED UP ON SHOES AND CAUSE DAMAGE TO RUGS, CLOTHING, ETC. USE TYPES RS OR CRS TO MINIMIZE SUCH PROBLEMS.

SYNTHETIC BINDERS MAY BE USED TO ANCHOR MULCH. FOLLOW MANUFACTURER'S RECOMMENDED APPLICATION METHOD AND RATE.

3. MULCH NETTINGS. LIGHTWEIGHT PLASTIC, COTTON, JUTE, WIRE, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. NOTE THAT SINGLE NET RECP'S WITH INTEGRATED MULCH MAY BE USED INSTEAD OF SEPARATE MULCH WITH NETTING.

MAINTENANCE AND INSPECTION

INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED AND REINSTALL MULCH. CONTINUE INSPECTING MULCHED AREAS UNTIL VEGETATION HAS FIRMLY ESTABLISHED OR UNTIL CONSTRUCTION ACTIVITIES RESUME IN THE AREA.

7.6 - STABILIZATION WITH STRAW MULCH

CONSTRUCTION SPECIFICATIONS

1. PLACE BARRIERS TO PREVENT APPROACH OF EQUIPMENT WITHIN THE DRIP LINE OF THE TREES TO BE PRESERVED.

2. DO NOT NAIL BOARDS TO TREES DURING BUILDING OPERATIONS.

3. DO NOT CUT TREE ROOTS INSIDE THE DRIP LINE.

4. DO NOT PLACE EQUIPMENT, CONSTRUCTION MATERIALS, TOPSOIL, OR FILL DIRT WITHIN THE LIMIT OF THE DRIP LINE OF TREES TO BE PRESERVED.

5. IF A TREE MARKED FOR PRESERVATION IS DAMAGED, REMOVE AND REPLACE WITH A TREE OF THE SAME OR SIMILAR SPECIES, 2-INCH CALIPER OR LARGER, FROM BALLED AND BURLAPED NURSERY STOCK WHEN ACTIVITY IN THE AREA IS COMPLETE.

6. DURING FINAL SITE CLEANUP, REMOVE BARRIERS FROM AROUND TREES.

MAINTENANCE AND INSPECTION

IN SPITE OF PRECAUTIONS, SOME DAMAGE TO PROTECTED TREES MAY OCCUR. IN SUCH CASES, REPAIR ANY DAMAGE TO THE CROWN, TRUNK OR ROOT SYSTEM IMMEDIATELY.

REPAIR ROOTS BY CUTTING OFF DAMAGED PORTIONS. SPREAD PEAT MOSS OR MOIST TOPSOIL OVER EXPOSED ROOTS.

REPAIR DAMAGE TO BARK BY TRIMMING AROUND THE DAMAGED AREA, TAPER THE CUT TO PROVIDE DRAINAGE, AND APPLY TREE PAINT.

CUT OFF ALL DAMAGED TREE LIMBS ABOVE THE TREE COLLAR AT THE TRUNK OR MAIN BRANCH. USE THREE SEPARATE CUTS TO AVOID PEELING BARK FROM HEALTHY AREAS OF THE TREE.

7.4 - TREE PRESERVATION

CONSTRUCTION SPECIFICATIONS

GRADING AND SHAPING

EXCESSIVE WATER RUNOFF SHALL BE REDUCED BY PROPERLY DESIGNED AND INSTALLED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DITCHES, DIKES, DIVERSIONS AND SEDIMENT BASINS. NO SHAPING OR GRADING IS REQUIRED IF SLOPES CAN BE STABILIZED BY HAND-SEEDED VEGETATION OR IF HYDRAULIC SEEDING EQUIPMENT IS TO BE USED.

SEEDBED PREPARATION

GOOD SEEDBED PREPARATION IS ESSENTIAL TO SUCCESSFUL PLANT ESTABLISHMENT. A GOOD SEEDBED IS WELL PULVERIZED, LOOSE, AND UNIFORM. WHERE HYDROSEEDING METHODS ARE USED, THE SURFACE MAY BE LEFT WITH MORE IRREGULAR SURFACE OF LARGE CLODS AND STONES.

LIMING

APPLY LIME ACCORDING TO SOIL TEST RECOMMENDATIONS. APPLY LIMESTONE UNIFORMLY AND INCORPORATE INTO THE TOP 4-6 INCHES OF SOIL. SOILS WITH A pH OF 6 OR HIGHER DO NOT NEED TO BE LIMED.

FERTILIZER

SOIL ANALYSIS SHALL BE PERFORMED PRIOR TO THE APPLICATION OF FERTILIZER TO ANY PORTION OF THE SITE. BOTH FERTILIZER AND LIME SHOULD BE INCORPORATED INTO THE TOP 4-6 INCHES OF SOIL. IF A HYDRAULIC SEEDER IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES BEFORE THE APPLICATION.

SURFACE ROUGHENING

IF RECENT TILLAGE OPERATIONS HAVE RESULTED IN A LOOSE SURFACE, ADDITIONAL ROUGHENING MAY NOT BE NECESSARY. EXCEPT TO BREAK UP LARGE CLODS, IF RAINFALL CAUSED THE SURFACE TO BECOME SEALED OR CRUSTED, LOOSEN IT JUST PRIOR TO SEEDING BY DISKING, RAKING, HARROWING, OR OTHER SUITABLE METHODS. GROOVE OR FURROW SLOPES STEEPER THAN 3:1 ON THE CONTOUR BEFORE SEEDING.

SEEDING

SELECT A NON-INVASIVE GRASS OR GRASS-LEGUME MIXTURE SUITABLE TO THE AREA AND SEASON OF THE YEAR. SEE SEEDING RECOMMENDATION CHARTS FOR SUGGESTIONS OF TEMPORARY SEEDING SPECIES. ALTHOUGH NATIVE PLANTS ARE PREFERRED, THERE ARE CURRENTLY NO AVAILABLE NATIVE SPECIES THAT ARE NOT COST PROHIBITIVE. NON-INVASIVE ANNUAL PLANTS ARE PREFERRED. SEED SHALL BE APPLIED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDRAULIC SEEDER. DRILL OR CULTIPACKER SEEDERS SHOULD NORMALLY PLACE SEED 0.25 TO 0.50 INCHES DEEP. APPROPRIATE DEPTH OF PLANTING IS 10 TIMES THE SEED DIAMETER. SOIL SHOULD BE RAKED LIGHTLY TO COVER SEED WITH SOIL IF SEED BY HAND.

MULCHING

THE USE OF MULCH WILL HELP ENSURE ESTABLISHMENT UNDER NORMAL CONDITIONS, AND IS ESSENTIAL TO SEEDING SUCCESS UNDER HARSH SITE CONDITIONS. HARSH SITE CONDITIONS INCLUDE: SEEDING IN FALL FOR WINTER COVER; SLOPES STEEPER THAN 3:1; EXCESSIVELY HOT OR DRY WEATHER; ADVERSE SOILS; AND AREAS RECEIVING CONCENTRATED FLOW.

IRRIGATION

DURING TIMES OF DROUGHT, WATER SHALL BE APPLIED AT A RATE NOT CAUSING RUNOFF AND EROSION. THE SOIL SHALL BE THOROUGHLY WETTED TO A DEPTH THAT WILL ENSURE GERMINATION OF THE SEED. SUBSEQUENT APPLICATIONS SHOULD BE MADE AS NEEDED. NEWLY SEEDER AREAS REQUIRE MORE WATER THAN MORE MATURE PLANTS.

MAINTENANCE AND INSPECTION

RESEED AND MULCH AREAS WHERE SEEDLING EMERGENCE IS POOR OR WHERE EROSION OCCURS, AS SOON AS POSSIBLE. DO NOT MOW.

7.8 - TEMPORARY VEGETATION

CONSTRUCTION SPECIFICATIONS

GRADING AND SHAPING

GRADING AND SHAPING MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIPMENT IS USED. VERTICAL BANKS SHALL BE SLOPED TO ENABLE PLANT ESTABLISHMENT.

WHEN CONVENTIONAL SEEDING AND FERTILIZING ARE TO BE DONE, GRADE AND SHAPE THE SLOPE, WHERE FEASIBLE AND PRACTICAL, SO THAT EQUIPMENT CAN BE USED SAFELY AND EFFICIENTLY DURING SEEDBED PREPARATION, SEEDING, MULCHING, AND MAINTENANCE OF VEGETATION.

PLANT SELECTION

ONLY CERTIFIED SEED SHALL BE USED. REFER TO SEED MIX TABLE FOR SUGGESTED SPECIES. GRASS TYPE SHOULD BE SELECTED ON THE BASIS OF SPECIES CHARACTERISTICS, SITE AND SOIL CONDITIONS, PLANNED USE AND MAINTENANCE OF THE AREA, TIME OF THE YEAR OF PLANTING, METHOD OF PLANTING, AND THE NEEDS AND DESIRES OF THE LAND USER.

PLANT SELECTION MAY ALSO INCLUDE ANNUAL COMPANION CROPS. ANNUAL COMPANION CROPS SHOULD BE USED ONLY WHEN PERENNIAL SPECIES ARE NOT PLANTED DURING THEIR OPTIMUM PLANTING PERIOD. CARE SHOULD BE TAKEN IN SELECTING COMPANION CROP SPECIES AND SEEDING RATES BECAUSE ANNUAL CROPS WILL COMPLETE WITH PERENNIAL SPECIES FOR WATER, NUTRIENTS, AND GROWING SPACE. A HIGH SEEDING RATE OF THE COMPANION CROP MAY PREVENT THE ESTABLISHMENT OF PERENNIAL SPECIES.

RYEGRASS SHALL NOT BE USED IN ANY SEEDING MIXTURES CONTAINING PERMANENT, PERENNIAL SPECIES DUE TO ITS ABILITY TO OUT-COMPETE DESIRED SPECIES CHOSEN FOR PERMANENT PERENNIAL COVER. HOWEVER, CRIMSON, CLOVER, OATS AND WINTER WHEAT CAN BE PLANTED ANY TIME OF THE YEAR AND ARE RECOMMENDED AS A COVER CROP WITH NATIVE PERENNIAL SPECIES.

TOPSOIL

TOPSOIL SHOULD BE PLACED ON ALL AREAS TO BE SEED. SEE PRACTICE 7.3 FOR MORE INFORMATION ON THE REMOVAL, STORAGE, AND REAPPLICATION OF TOPSOIL.

SEEDBED PREPARATION

WHEN CONVENTIONAL SEEDING IS TO BE USED, TOPSOIL SHOULD BE APPLIED TO ANY AREA WHERE THE DISTURBANCE RESULTS IN SUBSOIL AT THE FINAL GRADE SURFACE. SOIL pH SHOULD BE ABOVE 5, PREFERABLY BETWEEN 6.0 AND 6.5. SOIL ON THE SITE SHOULD BE TESTED TO DETERMINE THE LIME AND FERTILIZER RATES. SOIL SHOULD BE SUBMITTED TO A SOILS SPECIALIST OR COUNTY AGRICULTURAL EXTENSION AGENT FOR TESTING AND SOIL AMENDMENT RECOMMENDATIONS.

LIMING

APPLY LIME ACCORDING TO SOIL TEST RECOMMENDATIONS. APPLY LIMESTONE UNIFORMLY AND INCORPORATE INTO THE TOP 4-6 INCHES OF SOIL. SOILS WITH A pH OF 6 OR HIGHER DO NOT NEED TO BE LIMED.

FERTILIZER

SOIL ANALYSIS SHALL BE PERFORMED PRIOR TO THE APPLICATION OF FERTILIZER TO ANY PORTION OF THE SITE. BOTH FERTILIZER AND LIME SHOULD BE INCORPORATED INTO THE TOP 4-6 INCHES OF SOIL. IF A HYDRAULIC SEEDER IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES BEFORE THE APPLICATION.

BROADCAST SEEDING

SEEDBED PREPARATION MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING EQUIPMENT IS USED. TILLAGE, AT A MINIMUM, SHALL ADEQUATELY LOOSEN THE SOIL TO A DEPTH OF 4 TO 6 INCHES. ALLEVIATE COMPACTION, INCORPORATE TOPSOIL, LIME AND FERTILIZER, SMOOTH AND FIRM THE SOIL. ALLOW FOR THE PROPER PLACEMENT OF SEED, SPRIGS, OR PLANTS; AND ALLOW FOR THE ANCHORING OF STRAW OR HAY MULCH IF A CRIMPER IS TO BE USED. TILLAGE MAY BE DONE WITH ANY SUITABLE EQUIPMENT. TILLAGE SHOULD BE DONE PARALLEL TO THE CONTOUR WHERE FEASIBLE. ON SLOPES TOO STEEP FOR THE SAFE OPERATION OF TILLAGE EQUIPMENT, THE SOIL SURFACE SHALL BE PITTED OR TRENCHED ACROSS THE SLOPE WITH APPROPRIATE HAND TOOLS TO PROVIDE CONSECUTIVE BEDS, 6 TO 8 INCHES APART, IN WHICH SEED MAY LODGE AND GERMINATE. HYDRAULIC SEEDING MAY ALSO BE USED.

INOCULANTS

NATIVE LEGUME SEEDS DO NOT NEED TO BE INOCULATED. ALL NON-NATIVE LEGUME SEED SHALL BE INOCULATED WITH APPROPRIATE NITROGEN FIXING BACTERIA. THE INOCULANTS SHALL BE PURE CULTURE PREPARED SPECIFICALLY FOR THE SEED SPECIES AND USED WITHIN THE DATES ON THE CONTAINER. A MIXING MEDIUM RECOMMENDED BY THE MANUFACTURER SHALL BE USED TO BOND THE INOCULANTS TO THE SEED. FOR CONVENTIONAL SEEDING, USE TWICE THE AMOUNT OF INOCULANTS RECOMMENDED BY THE MANUFACTURER.

NO-TILL SEEDING

NO-TILL SEEDING IS PERMISSIBLE INTO ANNUAL COVER CROPS WHEN PLANTING IS DONE FOLLOWING MATURITY OF THE COVER CROP, OR IF THE TEMPORARY COVER STAND IS SPARSE ENOUGH TO ALLOW ADEQUATE GROWTH OF THE PERMANENT (PERENNIAL) SPECIES. NO-TILL SEEDING SHALL BE DONE WITH APPROPRIATE NO-TILL SEEDING EQUIPMENT. THE SEED MUST BE UNIFORMLY DISTRIBUTED AND PLANTED AT THE PROPER DEPTH. NATIVE GRASSES RESPOND VERY WELL TO DRILL SEEDING AT A DEPTH OF 0.25 INCH.

MULCH

STRAW MULCH IS REQUIRED FOR ALL PERMANENT VEGETATION APPLICATIONS AND MUST BE APPLIED IMMEDIATELY AFTER THE APPLICATION OF SEED. THE APPLICATION RATE FOR MULCH IS 2 TONS PER ACRE WITH OVERALL UNIFORM SOIL COVERAGE OF 70%. ALL MULCH MUST BE ANCHORED. SEE PRACTICE 7.6 FOR MORE INFORMATION ON STRAW MULCH.

7.9 - PERMANENT VEGETATION

SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SPECIES RATE (LB / ACRE)
RYE 120

SEEDING DATES
EAST: ABOVE 2500 FEET: FEB 15 - MAY 15
BELOW 2500 FEET: FEB 1 - MAY 1

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LBS/ACRE OF GROUND AGRICULTURAL LIMESTONE AND 750 LBS/ACRE OF 10-10-10 FERTILIZER.

MULCH
APPLY 4,000 LBS/ACRE OF STRAW ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

SEEDING RECOMMENDATIONS FOR SUMMER

SPECIES RATE (LB / ACRE)
OATS 50
BROWN TOP MILLET 30

SEEDING DATES
EAST: MAY 15 - AUG 15

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LBS/ACRE OF GROUND AGRICULTURAL LIMESTONE AND 750 LBS/ACRE OF 10-10-10 FERTILIZER.

MULCH
APPLY 4,000 LBS/ACRE OF STRAW ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

SEEDING RECOMMENDATIONS FOR FALL

SPECIES RATE (LB / ACRE)
OATS 30
WINTER WHEAT 30

SEEDING DATES
EAST: AUG 15 - DEC 30

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LBS/ACRE OF GROUND AGRICULTURAL LIMESTONE AND 750 LBS/ACRE OF 10-10-10 FERTILIZER.

MULCH
APPLY 4,000 LBS/ACRE OF STRAW ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE. IF NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC CRIMSON CLOVER IN LATE FEBRUARY OF EARLY MARCH.

MAINTENANCE AND INSPECTION

ANY AREAS THAT HAVE BEEN WASHED OUT DUE TO HIGH STORMWATER FLOWS, AREAS THAT HAVE BEEN DISTURBED BY BLOWING WIND, AND AREAS THAT DO NOT SHOW GOOD GERMINATION SHOULD BE RETREATED.

INSPECT SEEDER AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEEDINGS WITHIN THE SAME SEASON, IF POSSIBLE.

RESEEDING: IF A STAND OF GRASS HAS INADEQUATE COVER, RE-EVALUATED THE CHOICE OF PLANT MATERIALS AND QUANTITIES OF LIME AND FERTILIZER. RE-ESTABLISH THE STAND AFTER SEEDBED PREPARATION OR OVER-SEED THE STAND. CONSIDER SEEDING TEMPORARY, ANNUAL SPECIES IF THE TIME OF YEAR IS NOT APPROPRIATE FOR PERMANENT SEEDING.

103.3 DRAINAGE STRUCTURES

DRAINAGE STRUCTURES INCLUDE CATCHBASINS, MANHOLES, JUNCTION BOXES, AND CULVERTS.

1. ALL INVERTS ARE REQUIRED TO BE U-SHAPED.
2. THE ACCESS ENTRANCE SHALL BE AT LEAST 24" IN DIAMETER.
3. APPROVED CATCHBASIN GRATES IN THE CITY OF MARYVILLE ARE:

STANDARD CURB AND GUTTER	NEENAH R-3246-AL EJIW 00751004
MARYVILLE MODIFIED CURB & GUTTER	NEENAH R-3246-AM WITH R-3000-A ENVIRONMENTAL MESSAGE)
ROLL TYPE CURB & GUTTER	NEENAH R-3580
NO CURB OPENING	NEENAH R-3210-L
AREA DRAIN	NEENAH R-3807

APPROVED EQUIVALENTS WILL ALSO BE ALLOWED. ALL CATCHBASINS MUST BE STAMPED "DUMP NO WASTE, DRAINS TO STREAM" OR APPROVED EQUIVALENT.

106 PRODUCTS

Pipe and all accessory fitting and appurtenances, etc., shall be made in America where possible unless approval is obtained from the EPW Department for the use of a product that is not made in America. This requirement shall be construed in a manner that does not violate the North American Free Trade Agreement, any amendments thereto, or any other free trade or other laws.

106.1 Pipe Materials Approved storm pipe is as follows:

1. Reinforced Concrete Pipe (RCP):
 - a. ASTM C76/AASHTO M86M
 - b. ASTM C508/AASHTO M206M
 - c. ASTM C507/AASHTO M207M.
2. Spiral Rib Metal Pipe (SRMP):
 - a. ASTM A760/AASHTO M36.
3. Compugated Steel Pipe (CMP):
 - a. ASTM A760/AASHTO M36.
4. Thermoplastic Pipe (HDPE, PVC):
 - a. High Density Polyethylene (HDPE): ASTM F2306/AASHTO M252 Type S and M294 Type S.
 - b. Polyvinyl Chloride (PVC): ASTM F949.

Acceptable pipe material selection shall adhere to the following table:

TABLE "A"		FILL HEIGHT			
UP TO 10"	OVER 10" UP TO 16"	OVER 16" UP TO 27"	OVER 27" UP TO 41"	>41"	
EXPRESSWAYS, MAJOR AND MINOR ARTERIAL, MAJOR AND MINOR COLLECTOR					
CROSS DRAINS	RCP CL III	RCP CL III	RCP CL IV	RCP CL V	NOTE 3
TRANSVERSE MEDIAN DRAINS	RCP CL III	RCP CL III	RCP CL IV	RCP CL V	NOTE 3
LONGITUDINAL STORM DRAINS	RCP CL III	RCP CL III	RCP CL IV	RCP CL V	NOTE 3
RESIDENTIAL SUB-COLLECTORS, LOCAL STREET, MINOR STREET					
CROSS DRAINS	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL IV	RCP CL V	NOTE 3
TRANSVERSE MEDIAN DRAINS	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL IV	RCP CL V	NOTE 3
LONGITUDINAL STORM DRAINS	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL IV	RCP CL V	NOTE 3
RESIDENTIAL AREAS IN DRAINAGE EASEMENTS					
	RCP CL III HPDE NOTE 1 PVC NOTE 1 ALUMINIZED SRMP NOTE 2	RCP CL III HPDE NOTE 1 PVC NOTE 1 ALUMINIZED SRMP NOTE 2	RCP CL IV	RCP CL V	NOTE 3
OFFSITE DRAINAGE CONVEYANCE					
	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL III HPDE NOTE 1 PVC NOTE 1	RCP CL IV	RCP CL V	NOTE 3

- Note 1: Where also conditions permit and at the discretion of the design engineer.
 Note 2: Spiral rib metal pipe. Minimum gauge as follows: 15 to 30 inch 16 gauge, 36 to 42 inch 14 gauge, 48 to 72 inch 12 gauge. CMP shall not be substituted for SRMP. Bands for pipe ends shall use rubber o-ring seals.
 Note 3: Structural, hydraulic, and cost analysis required for pipes with a fill height of over 41 feet.

106.2 Pipe Fittings

- a) Pipe shall be fitted together per pipe manufacturer's recommendation.
- b) A structure shall be installed when connecting dissimilar pipe materials or sizes.

106.3 Concrete Materials

Concrete used in conjunction with the installation or repair of storm drain lines and appurtenances shall be as follows:

1. Minimum compressive strength: 28 days, 4,000 psi average any 3 cylinders.
2. Coarse aggregate: Size No. 57 crushed limestone.
3. Fine aggregate: Natural sand or manufactured limestone sand proportioned by dry weight of fine to total aggregates between 30-45 percent.
4. Slump: 2-4 inches.
5. Mixing Water: Maximum 6.0 gallons per sack of cement. Deduct the moisture content of the aggregate from the amount of mixing water required.
6. Cement: Use Portland cement meeting the requirements of ASTM Standard C150. Use minimum 6.6 sacks of cement per cubic yard of concrete.
7. Dry aggregate per cement sack: Coarse aggregate-280, fine aggregate using manufactured limestone sand-194, fine aggregate using natural sand-187.

106.4 Drainage Structures

Drainage structures include catchbasins, manholes, junction boxes, and culverts.

- a) General Requirements All structures shall be precast reinforced concrete meeting the requirements of ASTM Standard C478 except as provided otherwise in the following:
 1. Inside diameter shall be based on required pipe diameter. Structures used within the public right of way and in residential applications within drainage easements should be sized on the following criteria:

MINIMUM DIMENSIONS FOR STRUCTURES					
PIPE SIZE	RECTANGULAR: PIPE SIDE DIMENSION	ROUND: INSIDE DIAMETER	PIPE SIZE	RECTANGULAR: PIPE SIDE DIMENSION	ROUND: INSIDE DIAMETER
15 TO 30 INCHES	AT LEAST 6 IN LARGER THAN OD OF PIPE BUT NOT LESS THAN 24 IN	4 FT	60 INCHES	7 FT	8 FT
36 INCHES	4 FT	5 FT	66 INCHES	7 FT	8 FT
42 INCHES	5 FT	6 FT	72 INCHES	8 FT	8 FT
48 INCHES	6 FT	6 FT	78 INCHES	9 FT	10 FT
54 INCHES	6 FT	8 FT			

2. Wall thickness shall be a minimum of 5 inches.
3. The minimum compressive strength of precast risers, bases, cone or top sections, and grade rings shall be 4,000 psi.
4. The access opening in cone or top sections shall be a minimum of 24 inches.
5. Joints: The reinforced concrete base and riser sections, excepting grade rings, shall be formed with male and female ends, so that when the base, riser, and top are assembled they will make a continuous and uniform structure.
6. Lift eyes or holes may be provided in each section for the purpose of handling but must not protrude through the concrete walls.
7. Poured-in-place reinforced concrete structures or polyethylene structures may be used with prior permission of the City.

2. Wall thickness shall be a minimum of 5 inches.
3. The minimum compressive strength of precast risers, bases, cone or top sections, and grade rings shall be 4,000 psi.
4. The access opening in cone or top sections shall be a minimum of 24 inches.
5. Joints: The reinforced concrete base and riser sections, excepting grade rings, shall be formed with male and female ends, so that when the base, riser, and top are assembled they will make a continuous and uniform structure.
6. Lift eyes or holes may be provided in each section for the purpose of handling but must not protrude through the concrete walls.
7. Poured-in-place reinforced concrete structures or polyethylene structures may be used with prior permission of the City.

b) Precast Reinforced Concrete Bases:

1. The base riser sections shall be precast with integral floors.
2. Heights of bases for pipes shall be according to the manufacturer's specifications, subject to prior approval of the City.

c) Precast Reinforced Concrete Tops shall be of the following two types:

1. Eccentric Cone
2. Flat Slab Top

d) Precast Reinforced Concrete Grade Rings:

1. Grade ring wall thickness shall be a minimum of 5 inches.
2. Grade rings shall match the structure being used and be either 2 inches, 4 inches or 6 inches in height.
3. The combined height of grade rings shall be a maximum of 12 inches.

e) Steps:

1. Steps shall be fabricated from aluminum alloy 6061, T6.
2. Steps shall be corrosion resistant, free from sharp edges, burrs, or other projections which may be a safety hazard and shall be of sufficient strength to have a live load of 300 pounds imposed at any point.
3. The minimum width of cleat shall be 10 inches.
4. The legs and studs shall be of sufficient length for the cleat to project a minimum clear distance of 4 inches from the wall when the step is securely imbedded in the structure wall.
5. The top surface of the cleats shall be designed to prevent foot slippage.
6. Steps shall be positioned vertically and at a maximum spacing of 16 inches.
7. Steps shall be the same size, projection, spacing, and alignment in each structure.

f) Openings in the base section wall shall be factory installed for the required number and size of pipes.

g) Pipe Entrance Requirements:

1. Pipe openings made in the field in existing structure walls for pipe installation shall be one of the following:
 - i. Concrete structures shall be cored in the field. All pipe shall be grouted both inside and outside to the structure.
 - ii. Existing brick structures shall be evaluated in the field for replacement with a precast concrete structure. Whenever new lines are installed in existing brick structure, it shall be replaced unless approval is obtained from EPW to leave the existing structure in place. If a connection is made it shall be cored and new pipe grouted both inside and outside to the structure.
2. Other specially designed products may be approved by the Maryville EPW Department.

h) Covers:

1. Frames and covers shall be of gray cast iron meeting the latest requirements of ASTM Standard A48, Class 30, (30,000 psi). The total weight of the frame and cover shall not be less than 375 pounds.
2. Covers shall be round and machine ground horizontally.
3. Frames shall have clear coverings of 24 inches, height between 7.8 & 8 inches, and overall base diameters between 35 & 37 1/2 inches. The base shall have four uniformly spaced holes for attachment to the structure using 5/8-inch diameter bolts. The maximum bolt circle diameter shall be 33 inches.
4. Covers shall have thickness as specified by manufacturer and diameters of 26 inches.
5. Covers shall have two non-penetrating pick holes for lifting purposes.
6. The top face of the covers shall be embossed with the words "STORM SEWER" with letters approximately two (2") inches in size.

107.2 Installing Storm Drainage Pipe

All storm drain pipe systems installed in the City of Maryville shall conform to the standards listed below.

- a) Trench excavation details and dimensions shall be as specified by the design engineer on the approved site plan. Minimum trench width should provide clearance on each side of the pipe between the outside diameter of the pipe and the trench wall equal to 1/2 the nominal pipe diameter, but not to exceed 18 inches.

Minimum Trench Width - Inches

Diameter	Good Soil	Poor Soil
15	32	48
18	37	56
24	48	64
30	56	72
36	64	82
42	72	96
48	80	106
54	89	116
60	98	116

- a) If the trench walls or bottom are found to be unstable the contractor shall consult with the design engineer for an alternative trench design.
- b) Lay pipe true to the lines and grades from the grade and alignment stakes, or equally usable references.
- c) Laser equipment shall be provided at intervals of 100 feet and at every drainage structure location for the purpose of checking grade between sections.
- d) Accurately establish the centerline of each pipe using a transit.
- e) Carefully inspect all pipe and each fitting prior to its placement in the trench, and reject any defective pipe or fitting from the job site.
- f) Lay pipe progressively upgrade on a minimum 6 inch bedding of Class I or II material (ASTM D2321), with bell upstream in such a manner as to form close, concentric joints with smooth bottomed inverts. Joining of all pipe shall be in accordance with manufacturer's specifications. Metal pipe bands shall have rubber o-ring gaskets.
- h) Backfill pipe using clean Class I or II material (ASTM D2321) using the following criteria:

PIPE MATERIAL	BACKFILL DEPTH
THERMOPLASTIC METAL	6 IN ABOVE TOP OF PIPE
CONCRETE	TO SPRING LINE OF PIPE
ALL	TO THE ROAD SUB-GRADE

- i) Keep the pipe free of all unneeded material, and upon completion of a section between any two drainage structures, it shall be possible to view a complete circle of light when looking through the pipe.
- l) When laying pipe ceases, close the open ends of the pipe with a suitable plug to prevent the infiltration of foreign materials.
- k) A structure shall be used when joining dissimilar pipe.
- l) Headwalls and endwalls shall be used at open pipe inlets and outlets.
- m) Outlet protection shall be provided in the form of either riprap aprons, level spreaders, outlet basins, or baffled outlets based on the potential for erosion or scour caused by concentrated flow from the outlet pipe. Riprap aprons shall have a geotextile underlayment.

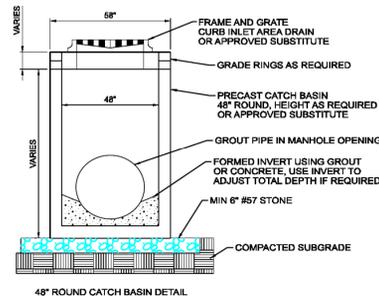
107.3 INSTALLING DRAINAGE STRUCTURES

All storm drain structures installed in the City of Maryville shall conform to the standards listed below.

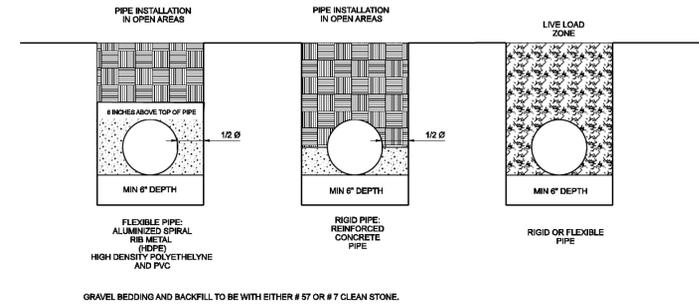
- a) Structures shall be furnished as provided under Section 106.4 of these Standards
- b) Depth of structures shall be the vertical distance from the lowest invert in the structure to the base of the cover frame.
- c) Backfill with the same material used for pipelines
- d) Prepare subgrade on undisturbed earth. Remove all loose earth prior to placing crushed stone base or concrete slab. Fill all disturbed areas below subgrade level with compacted bedding stone.
- e) Structures having a depth of less than 12 feet shall be set on compacted Class I or II (ASTM D2321) bedding material at a minimum of 1/3 the diameter of the pipes being accommodated.
- f) Structures having a depth of 12 feet or more shall be set on a 6 inch thick concrete slab having minimum diameter 1 foot greater than the outside diameter of the base section. The concrete slab shall be poured on a minimum 6-inch thick compacted crushed stone bedding. Concrete shall meet the condition of Section 106.3 of these Standards.
- g) The base shall be placed on dry consolidated and, when possible, undisturbed soil.
- h) Structures shall be set plumb.
- i) Inverts shall be accurately shaped using concrete to a smooth surface texture. Invert flow channels shall be shaped having the same radii as those of the pipes for which the channels are being provided. The depth of the channels shall be a minimum of 1/3 the diameter of the pipes being accommodated.
- j) Inlets and outlets shall be finished smooth and flush with the sides of the structure wall so as not to obstruct the flow of stormwater.
- k) When completed, the structure shall be free from channel obstruction and leakage.
- l) Lift holes shall not completely penetrate the structure walls.
- m) Precast concrete grade rings shall be set using Portland Cement Mortar and/or flexible buy'd resin sealant. Care should be exercised so as not to allow too much water in the Portland Cement Mortar, which may cause shrinkage. All cover frames that are attached to 2 or 4 inch grade rings shall be attached to the grade rings using Portland Cement Concrete mortar and/or buy'd resin sealant. A minimum of 2-inch thickness of mortar shall also be placed over joints of the cover frame as shown on Standard drawings. Joints of precast concrete grade rings and frames shall be made so as to prevent leakage. Alternate attachment for 6-in height grade rings and direct attachment to the cone. The following alternate may be used in lieu of Portland cement mortar for attaching frames to grade rings 6 inches in height directly to the cone. Frames shall be bolted by means of 4.5/8-inch anchor bolts and shall be set in a bed of flexible buy'd resin sealant. No Portland Cement Mortar will be required around the frame when this alternative is used.

107.5 Initial Inspection of Storm Systems

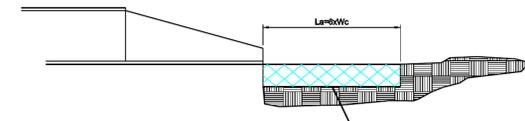
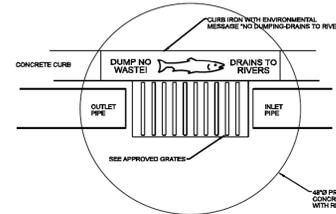
The City of Maryville is required by its NPDES Phase II Permit to accept responsibility of all stormwater runoff discharging into waters of the state. In an effort to prevent premature system failures, which can lead to illicit discharges, the City reserves the right to inspect any storm drain installations in order to establish confidence in the installation and avoid the unnecessary delay of final acceptance. All stormwater installations shall be inspected by the Director of Public Works or his/her designee. Any defects shall be corrected. The contractor shall be aware that any defective pipe or pipe joint will require the line to be dug up and repaired. Great care should be exercised to ensure a proper installation. Other utility installations should be closely supervised to ensure that the stormwater drainage system is not damaged during construction.



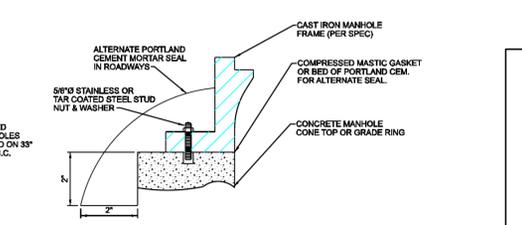
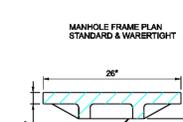
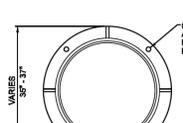
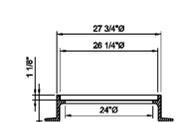
TYPICAL PIPE INSTALLATION



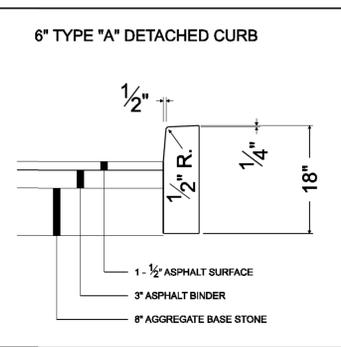
GRAVEL BEDDING AND BACKFILL TO BE WITH EITHER # 57 OR # 7 CLEAN STONE.



REFER TO THE TRENCH EROSION AND SEDIMENT CONTROL HANDBOOK
RIP-RAP OUTLET PROTECTION
 N.T.S.



NOTES:
 1. STUD TO BE THREADED INSERT A MIN 1" (PER MFG'S SPECS)
 2. STUD TO BE SUFFICIENT LENGTH FOR FULL ATTACHMENT OF ALL HARDWARE.



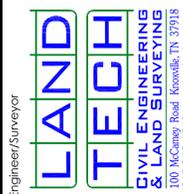
STORMWATER CONSTRUCTION DETAILS



CITY OF MARYVILLE
 ENGINEERING & PUBLIC WORKS
 STORMWATER DEPARTMENT
 416 W. BROADWAY AVE.
 PHONE: 865-273-3500
 FAX: 865-273-3525
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 1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
 PARCEL ID: MAP 57 PARCEL 9.06
 CITY OF MARYVILLE
 9th CIVIL DISTRICT
 BLOUNT COUNTY, TENNESSEE

Project



Revision

No.	Date	Description

Drawn By: MBB
 Checked By: JLL
 Approved By: JLL
 LT Project No.: 2004019
 LT Drawing No.: D/O263-F
 Horiz. Scale: Date: 07/14/20

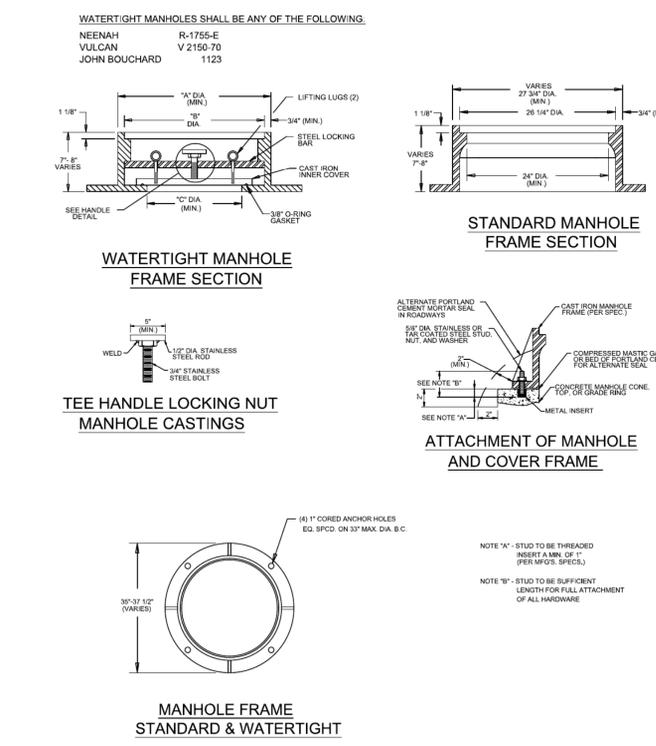
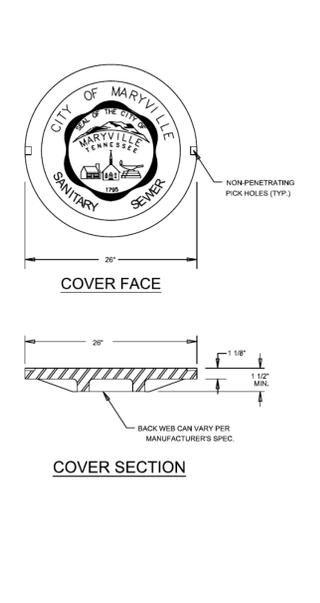
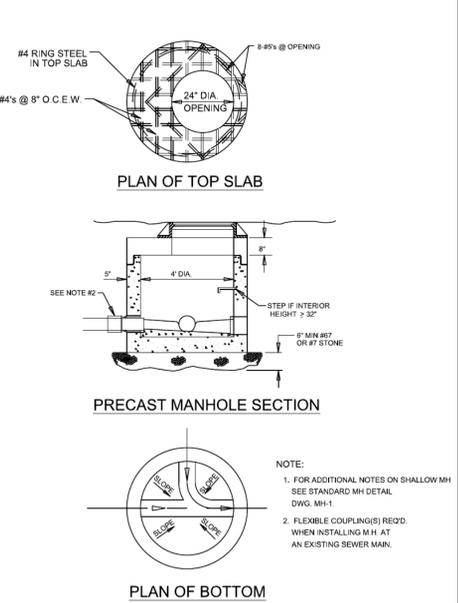
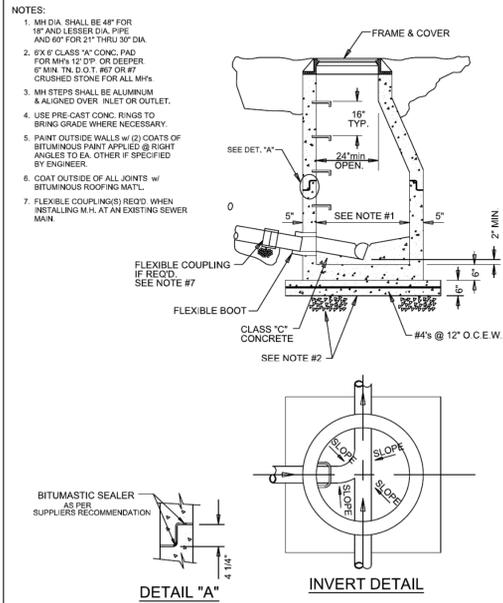
Sheet Title

Details

Sheet ID

C-408

Sheet No. 20



CITY OF MARYVILLE
GENERAL UTILITY NOTES:

All sewer and water extensions shall be built in accordance with the RULES, REGULATIONS, RATES, AND POLICIES of the City of Maryville, Water & Sewer Department, Maryville, Tennessee which are available from the City of Maryville (COM) at www.maryvillegov.com. In cases of conflict, the City of Maryville (COM) regulations shall rule. It shall be the developer and contractor responsibility to obtain and follow the regulations of the City of Maryville (COM). Easements shall exist as per the subdivision plat or recorded easements documents. If no necessary easements are not in place, the developer shall obtain and furnish the City of Maryville (COM) with easements for the portions or utility lines that cross private property. The easement documents shall be reviewed by the City of Maryville (COM) for acceptability prior to signatures. An easement document shall be recorded prior to construction of the utility lines. All water and sewer lines shall be laid in undisturbed native soil whenever practical. At the junction of all undisturbed soil and fill sections of the pipe trench, the backfill material shall be divided by an impermeable section of fill (e.g. compacted clay) around the installed pipe to prevent piping of water through the pipe bedding. Utilities crossing under other utilities shall be back filled with compacted with No. 7 stone to the spring line of the upper utility to prevent settling of the utility. Any utility trench within the roadway has one shall be totally backfilled with compacted stone as per the City of Maryville (COM) requirements. WATER AND SEWER systems shall not be granted final approval by the City of Maryville (COM) until "AS BUILT" drawings have been completed and are acceptable to the City of Maryville (COM).

SANITARY SEWER SPECIAL NOTES:

SEWERS IN FILL: Sewer lines laid in fill shall be:
1. C900
2. installed on piers
This requirement may be waived if shown as in part by WSD. If sufficient compaction has been achieved in the fill (95% AASHTO 1.59 minimum).

MANHOLE DEPTHS: Shall be the contractor responsibility to bring the finish manhole top into conformance with the finish grade and/or ground surface.

MANHOLE INVERTS: When the deflection angle in the invert of a manhole exceeds 90° the City of Maryville (COM) requires that:
1. The inlet invert be at least 2 inches higher than the outlet invert.
2. The channel from the inlet to the outlet shall be formed so no flow enters the main flow stream counter to the main direction of the flow.

DEEP SEWER LINES: Where the existing cover depth is more than 16 feet over the proposed sewer line, the ground must be graded to less than 16 feet of cover over the proposed sewer line prior to sewer construction or the sewer line must be constructed of C900. In all cases where the final cover over the sewer line is greater than 16 feet, the sewer line shall be constructed of C900.

SHALLOW SEWER LINES: Where the existing cover depth is less than 2 1/2 feet in open areas or 4 feet in roadways, the utility line shall be C900. Where required by the City of Maryville (COM) concrete encasement shall be used. (18" is used to meet minimum cover requirements, the 18" must be in place prior to utility line installation.

VACUUM TESTING: All Manholes will be vacuum tested as per the City of Maryville (COM) as per the City of Maryville and State of Tennessee requirements prior to acceptance.

CHECK DAMS: Check dams shall be installed in the bedding and backfill at all junctions of fit and gage soil, and upstream of each manhole to limit the french drain effect of the gravel bedding. The maximum spacing between check dams shall be 500 feet. Check dams shall consist of concrete and backfill at least three feet thick to the top of the trench and cut into the walls of the trench two feet.

TEES AND LATERALS: All tees and laterals connected to C900 sewer mains and all laterals connected to manholes, 16 feet or more in depth, shall be C900.

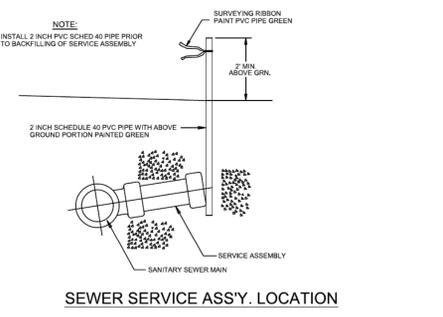
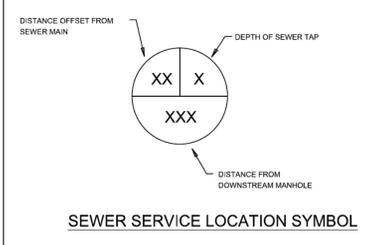
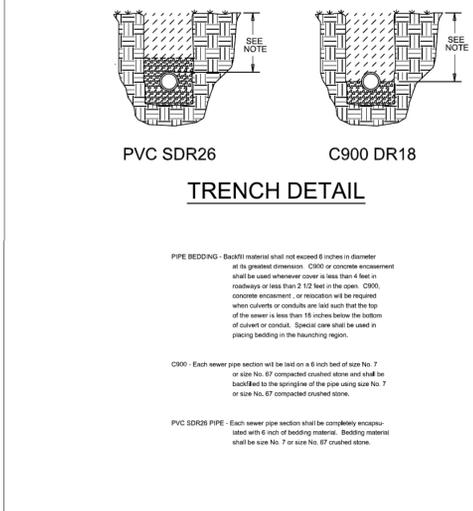
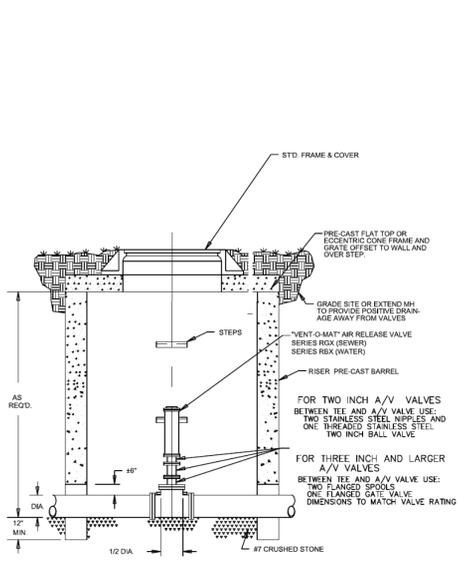
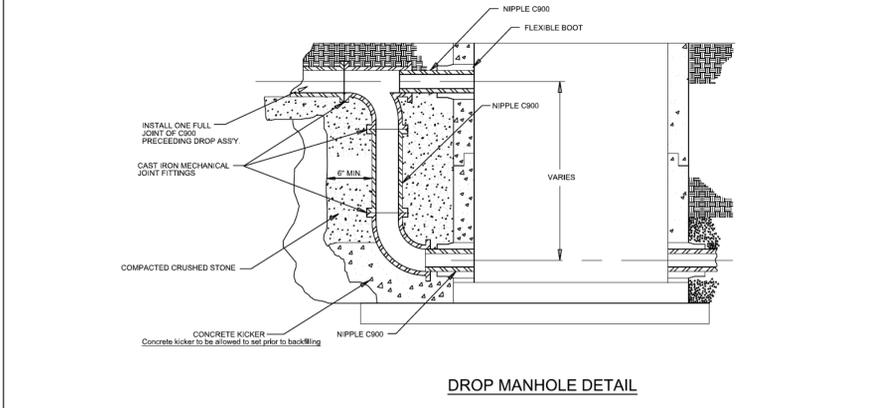
MANHOLE COUPLINGS: All manhole couplings (boots) shall be "Steel Band Fernco Boots" whenever the slope of the line entering or exiting the manhole is 10% or greater.

TRENCH BOTTOM CONDITIONS: Trench Bottom may be required to be undercut to a firm base and back filled with stone to prevent settling in areas of unsatisfactory material. Such a determination will be made by the City of Maryville (COM) at the time of construction.

STANDARD PRE-CAST MANHOLE (MH-1)

SHALLOW MANHOLE DETAIL

MANHOLE FRAME STANDARD & WATERTIGHT



SPECIFICATIONS:

- LOAD RATING: HEAVY DUTY
- MATERIAL SPECIFICATION: ASTM-A8R CLASS 30
- TOTAL WEIGHT OF FRAMES & COVERS: STANDING: 275 LBS. (MIN.) WATERTIGHT: 485 LBS. (MIN.)
- COVER FACE SHALL BE EMBOSSED WITH THE SEAL OF THE CITY OF MARYVILLE AS SHOWN.
- MANHOLE FRAME & COVER VENDOR DWGS SHALL BE SUBMITTED TO THE MARYVILLE WATER & SEWER (WSD) DEPARTMENT AND APPROVED BY WSD PERSONNEL PRIOR TO ACCEPTANCE OF MANHOLE FRAMES & COVER.
- NO VARIATIONS OF MANHOLE FRAME & COVER DWGS. OR SPECS. SHALL BE ACCEPTED EXCEPT WHERE NOTED ON THIS DWG.

NOTES:

- ALL MH PARTS TO MEET C.O.M. STANDARDS
- PERFORATED COVERS MAY BE USED IN LIEU OF VENTS WITH C.O.M. APPROVAL.
- CONTRACTOR TO VERIFY ADEQUATE SIZE OF MANHOLE FOR VALVE USES.
- VERIFY PROPOSED TOP ACCESS MATERIALS AND OPENING SIZE WITH WATER & SEWER DEPT. (WSD) PRIOR TO ORDERING MATERIALS. OPENING MUST MEET WSD REQUIREMENTS FOR ACCESS WHICH MAY VARY WITH SIZE OF AIR RELEASE VALVE, TRAFFIC CONDITIONS, DEPTH OF LINE, AND OTHER ON SITE CONDITIONS.
- GENERALLY A STD. FRAME AND GRATE OR BICO TYPE HATCH WITH 24"X24" OR LARGER OPENING WILL BE REQUIRED. VERIFY TYPE OF ACCESS, OPENING SIZE, AND MATERIAL WITH WSD PRIOR TO ORDERING THE PRECAST PLAT TOP. UNAPPROVED ACCESS MAY BE REQUIRED BY THE CITY OF MARYVILLE.



WATER & SEWER DEPARTMENT
CITY OF MARYVILLE
MARYVILLE, TENNESSEE

DRAWN BY: GEF	TITLE: STANDARD DETAIL DWGS. SEWER	SCALE: NONE
APP'D BY: JG		SHEET 1 of 2
DATE:		
REV:		
DESCRIPTION:		W.O.

MARYVILLE RETAIL SITE
1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
PARCEL ID: MAP 57 PARCEL 9.06
CITY OF MARYVILLE
9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Engineer/Surveyor

LAND TECH
CIVIL ENGINEERING & LAND SURVEYING
100 McCammy Road, Knoxville, TN 37918
865.978.6510 www.landtechco.com



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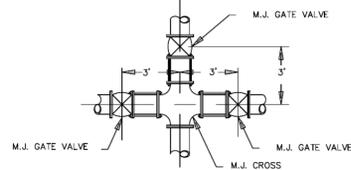
Details

Sheet ID

C-409

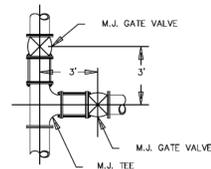
Sheet No. 21

Revision 3/10/99: As an alternate "SwivelX" or approved equal fitting may be used provided the indicated dimensions are maintained.



VALVE LOCATIONS @ CROSS

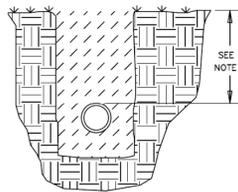
NOTE: In locations where the valve or valve and cap are likely to be disturbed or are for a temporary "dead end" the use of "all thread" as shown in the Fire Hydrant detail will be required by the City of Maryville.



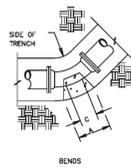
VALVE LOCATIONS @ TEE

PIPE BEDDING - A continuous and uniform bedding shall be provided in the trench for all buried pipe.

PIPE COVER - All distributor mains shall be provided with sufficient earth or other suitable cover to prevent freezing and provide protection to the pipe. The cover shall not be less than 36 inches for 6-inch and 8-inch pipe and 42-inches for 10-inch and 12-inch pipe measured above the top of the pipe. Reference the minimum depth notes "Water System Special Notes"



MLDI WATER LINE TRENCH DETAILS

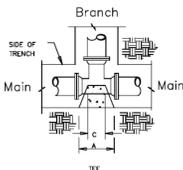


90 degree BENDS

SIZE	2"	4"	6"	8"	10"	12"	18"
A	9"	18"	24"	32"	40"	46"	66"
B	9"	18"	24"	32"	40"	46"	66"
C	9"	9"	12"	12"	15"	16"	22"
D	8"	8"	12"	16"	20"	25"	24"

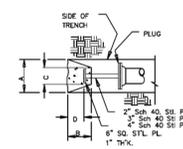
22 1/2 degree BENDS

SIZE	2"	4"	6"	8"	10"	12"	18"
A	9"	9"	13"	18"	21"	24"	36"
B	9"	9"	13"	18"	21"	24"	36"
C	8"	8"	10"	12"	14"	16"	15"
D	4"	4"	6"	9"	11"	13"	18"



TEE

MAIN	2"-6"	8"-12"	8"-10"	12"	12"	12"	18"
BRANCH	2"-6"	2"-6"	8"-10"	2"-6"	8"-10"	12"	16"-18"
A	20"	20"	33"	20"	33"	39"	57"
B	20"	20"	33"	20"	33"	39"	57"
C	12"	12"	12"	12"	12"	12"	30"
D	13"	13"	21"	13"	21"	26"	24"



PLUG

SIZE	2"	4"	6"	8"	10"	12"	18"
A	12"	14"	20"	22"	33"	38"	56"
B	12"	14"	20"	22"	33"	38"	56"
C	12"	12"	12"	12"	12"	12"	30"
D	11"	11"	11"	19"	22"	32"	32"

Thrust blocks for plugs shall be the wider of 1. the dimension shown above or 2. the width of the trench plus 2 inches measured at the soil bearing surface.

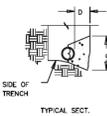
THRUST BLOCK DETAILS

45 degree BENDS

SIZE	2"	4"	6"	8"	10"	12"	18"
A	9"	13"	18"	24"	29"	34"	50"
B	9"	13"	18"	24"	29"	34"	50"
C	8"	8"	10"	12"	14"	16"	14"
D	6"	6"	9"	12"	15"	18"	18"

11 1/4 degree BENDS

SIZE	2"	4"	6"	8"	10"	12"	18"
A	9"	9"	9"	12"	15"	18"	26"
B	9"	9"	9"	12"	15"	18"	26"
C	8"	8"	10"	12"	14"	16"	15"
D	4"	4"	5"	6"	8"	9"	16"



The minimum thrust block dimensions in contact with the bearing soil shall be 9 inches by 9 inches

These dimensions are minimums based on 100 psi working line pressures and 2000 psi soil bearing capacity. For other working pressure and/or different soil bearing capacity the dimensions shall be recalculated by the engineer.

CITY OF MARYVILLE

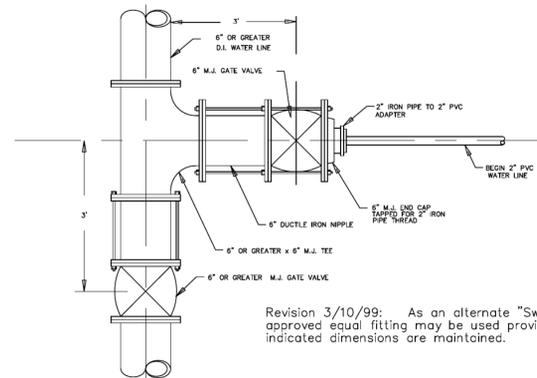
GENERAL UTILITY NOTES:

All sewer and water extensions shall be built in accordance with the RULES, REGULATIONS, RATES, AND POLICIES of the City of Maryville, Water & Sewer Department, Maryville, Tennessee which are available from the City of Maryville CDMO at www.maryville.com. In cases of conflict, the City of Maryville CDMO regulations shall rule. It shall be the developers and contractors responsibility to obtain and follow the regulations of the City of Maryville CDMO. Easements shall exist as per the subdivision plat or recorded easements documents. If the necessary easements are not in place, the developer shall obtain and furnish the City of Maryville CDMO with easements for the portions of utility lines that cross private property. The easement documents shall be reviewed by the City of Maryville CDMO for acceptability prior to signatures. All easement documents shall be recorded prior to construction of the utility lines. All sewer and water lines shall be laid in undisturbed native soil whenever practical. At the junction of all undisturbed soil and fill sections of the pipe trench, the backfill material shall be divided by an impervious section of fill (e.g. compacted clay) around the installed pipe to prevent ponding of water through the pipe bedding. UTILITIES CROSSING UNDER OTHER UTILITIES shall be back filled with compacted No. 7 stone to the spring line of the upper utility to prevent settling of the utility. Any utility trench within the roadway live zone shall be totally backfilled with compacted stone as per the City of Maryville CDMO requirements. WATER AND SEWER systems shall not be granted final approval by the City of Maryville CDMO until "AS BUILT" drawings have been completed and are acceptable to the City of Maryville CDMO.

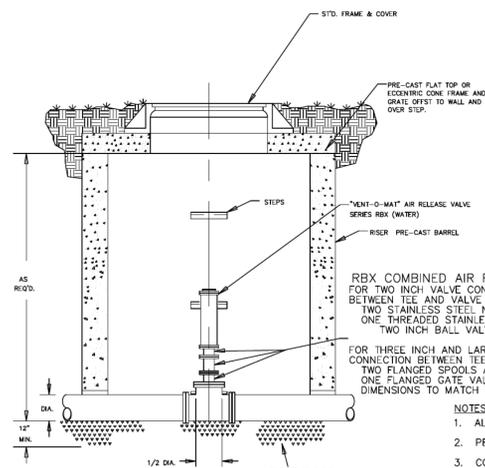
Where a two inch water meter is to be installed --

1. The appropriate sized tee.
2. The six inch gate valves may be eliminated and the tapped end cap (plug) placed directly on the tee.
3. A twelve inch brass nipple - the nipple shall be installed level.
4. A two inch wheel valve
5. The two inch valve shall be installed in either a valve box or meter box.

The City of Maryville will provide the twelve inch brass nipple and the two inch wheel valve.



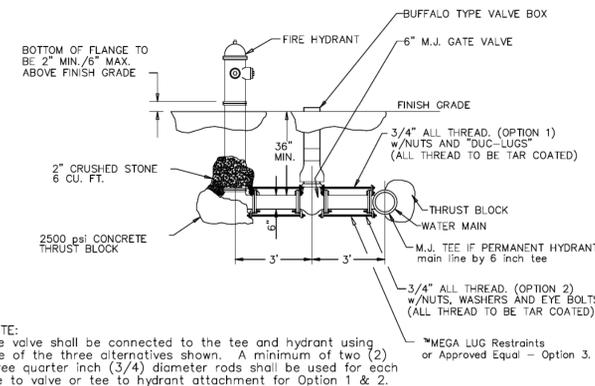
TIE-IN FOR 2" PVC WATER LINE TO 6" OR LARGER MAIN WATER LINE



WATER LINE COMBINED AIR RELEASE VALVE

- NOTES:
1. ALL MANHOLE PARTS TO MEET C.O.M. STANDARDS
 2. PERFORATED COVER MAY BE USED IN LIEU OF VENTS WITH C.O.M. APPROVAL
 3. CONTRACTOR TO VERIFY ADEQUATE CLEARANCES INSIDE OF MANHOLE FOR VALVE USE.
 4. LINE DEPTH MUST BE ADEQUATE TO ALLOW VALVE AND VALVE MANHOLE TO BE BELOW GROUND SURFACE.
 5. VERIFY PROPOSED TOP ACCESS MATERIALS AND OPENING SIZE WITH WATER QUALITY CONTROL DEPT. (WQC) PRIOR TO ORDERING MATERIALS. OPENING MUST MEET WQC REQUIREMENTS FOR ACCESS WHICH MAY VARY WITH SIZE OF AIR RELEASE VALVE, TRAFFIC CONDITIONS, DEPTH OF LINE, AND OTHER ON SITE CONDITIONS.
 6. GENERALLY A STD. FRAME AND GRATE, OR BILCO TYPE HATCH WITH A 24"x24" OR LARGER OPENING WILL BE REQUIRED. VERIFY TYPE OF ACCESS, OPENING SIZE, AND MATERIAL WITH WQC PRIOR TO ORDERING THE PRECAST FLAT TOP. UNAPPROVED ACCESS MAYBE REJECTED BY THE CITY OF MARYVILLE.

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TYPICAL FIRE HYDRANT INSTALLATION

NOTE: The valve shall be connected to the tee and hydrant using one of the three alternatives shown. A minimum of two (2) three quarter inch (3/4) diameter rods shall be used for each tee to valve or tee to hydrant attachment for Option 1 & 2.

CITY OF MARYVILLE WATER SYSTEM SPECIAL NOTES:

Depth - All water lines shall be installed a sufficient depth to provide for minimum cover of not less than 36 inches for 6" and 8" diameter pipes, 42 inches for 10", 12" and 14" pipe. COVER IS TO BE MEASURED FROM THE SUBGRADE ELEVATION AT THE CURB LINE OF THE ROAD ADJACENT TO THE PIPE LINE OR THE EXISTING GROUND AT THE TIME OF CONSTRUCTION OR THE FINISH GRADE DIRECTLY OVER THE PIPE, WHICHEVER IS LOWER. No pipe is to be laid so that a driveway will create a situation that will violate the minimum cover requirements.

MATERIALS - All materials used in the project shall be acceptable to the COM, Water & Sewer Department. All water lines greater than 2 inches in diameter shall be class 51 cement mortar lined ductile iron.

PRESSURE AND FLOW CONTROL - Pressure and flow reducing valves shall be installed in each house or at each connection to a structure to maintain domestic pressure at or below 80 psi unless the pipe system has been specifically designed to handle pressures in excess of 80 psi and permission is obtained from the COM, Water & Sewer Department.



WATER & SEWER DEPARTMENT CITY OF MARYVILLE MARYVILLE, TENNESSEE

DRAWN BY:	TITLE:	SCALE:
APP'D BY: JG	STANDARD DETAIL DWGS.	NONE
DATE:	WATER	SHEET 1 of 1
DESCRIPTION:		

MARYVILLE RETAIL SITE
1421 W LAMAR ALEXANDER HWY, MARYVILLE TN
PARCEL ID: MAP 57 PARCEL 9.06
CITY OF MARYVILLE
9th CIVIL DISTRICT
BLOUNT COUNTY, TENNESSEE

Engineer/Surveyor



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