



Municipal Planning & Design Review Commission  
Regular Meeting Agenda  
Thursday, January 8, 2026, 5:30 PM  
City Hall, Lakeland, Tennessee 38002

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- I. CALL TO ORDER:
- II. ROLL CALL:
- III. APPROVAL OF MINUTES OF PREVIOUS MEETING:
  1. **Regular Meeting Minutes** - December 11, 2025
- IV. ELECTION OF OFFICERS:
  1. Chair
  2. Vice Chair
  3. Secretary
- V. REPORTS OF OFFICERS AND COMMITTEES:
- VI. UNFINISHED BUSINESS:
- VII. NEW BUSINESS:
  1. **Action** - approval of a land disturbance permit application for the Smokestack Mitigation Bank.
  2. **Discussion** - sketch plan for Chapel Lakes.
- VIII. ANNOUNCEMENTS:
- IX. ADJOURNMENT:

Municipal Planning & Design Review Commission  
Regular Meeting Agenda Minutes  
Thursday, December 11, 2025, 5:30 PM  
City Hall, Lakeland, Tennessee 38002

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I. CALL TO ORDER:

The meeting was called to order by Chair Adam Henry at 5:30 p.m. on Thursday, December 11, 2025.

II. ROLL CALL:

Adam Henry	Present
Amber Hitchcock	Present
Shawn Rowland	Present - late arrival 5:31pm
Carl Helton	Present
Bill Sheridan	Present
Jason Eaton	Present
Commissioner Jim Atkinson	Present - early departure 6:00pm
Sal Feraci	Absent
Cat Wright	Absent

Staff personnel in attendance were Planning Director Paul Luker, Staff Planner Alex Barthol, Administrative Assistant Olivia Wing and City Recorder pro tempore Lisa West.

III. APPROVAL OF MINUTES OF PREVIOUS MEETING:

1. **Regular Meeting Minutes** - October 9, 2025

Shawn Rowland moved to bring this item to the floor, seconded by Bill Sheridan.

Discussion ensued.

***When the question was called the meeting minutes passed as presented, voice vote, 7 in favor 0 against 0 abstain (7-0-0).***

IV. PUBLIC DISCUSSION:

None.

V. REPORTS OF OFFICERS AND COMMITTEES:

None.

VI. UNFINISHED BUSINESS:

None.

VII. NEW BUSINESS:

1. **Action** - approval of an amended Preliminary Development Plan for the Lake District Planned Development.

Amber Hitchcock moved to bring this item to the floor, seconded by Bill Sheridan.

Alex Barthol presented this item.

David Smith, applicant, answered questions for the board.

Discussion ensued.

***When the question was called the action item passed as presented, voice vote, 7 in favor 0 against 0 abstain (7-0-0).***

Tim Hathaway, 10000 block of Monroe Rd, spoke on the item.

Jim Wheeler, 3500 block of Cobb Rd, spoke on the item.

2. **Discussion** - land uses along Highway 70.

Shawn Rowland moved to bring this item to the floor, seconded by Bill Sheridan.

Paul Luker presented this item.

Discussion ensued.

Mayor Josh Roman spoke on the item.

3. **Discussion** - board training in 2026.

Amber Hitchcock moved to bring this item to the floor, seconded by Shawn Rowland.

Paul Luker presented this item.

Discussion ensued.

VIII. ANNOUNCEMENTS:

None.

IX. ADJOURNMENT:

There being no other business on which to act, the meeting was adjourned without objection at 6:29pm on Thursday, December 11, 2025.

These minutes were approved on January 8, 2026.

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Shawn Rowland  
*Secretary*

ATTEST:

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Lisa West  
*City Recorder Pro tempore*

DRAFT

Meeting Cycle: Thursday, January 8, 2026

Subject: **Action** - approval of a land disturbance permit application for the Smokestack Mitigation Bank.

Staff Contact: Paul Posey, Staff Engineer

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### **STAFF RECOMMENDATION**

City Staff recommends the approval of this project.

### **BUDGET IMPACT**



N/A

### **DISCUSSION**

The City's Engineering Department is tracking that all the necessary permits for this project have been acquired. City staff recommends the approval of this project in order to restore streams and enhance wetlands in our local floodplain.

The project site is located in the floodplain of the Loosahatchie River on a parcel bounded on the east by the Clear Creek canal, on the north by the Loosahatchie River, on the south by a CSX rail line and on the west by an agricultural ditch and levee. The site is divided into three floodplain fields separated by a north-to-south flowing unnamed tributary to the Loosahatchie River and a north-to-south flowing Clear Creek canal. A thin forested riparian buffer currently exists around each stream feature on site. The stream and wetland restoration will occur in former agricultural lands within the floodplain of the Loosahatchie River. The project site involves Priority I/II stream restoration of a channelized unnamed tributary to the Loosahatchie River. An unnamed tributary to Scotts Creek, Clear Creek and an unnamed tributary to Clear Creek will receive restoration via buffer re-establishment. Wetland restoration will occur in the western field south of the overhead electric easement in areas not receiving stream restoration. Wetland enhancement will occur in the central field outside of areas receiving stream restoration.

# Map Legend

-  Bank Boundary
-  Property Boundary

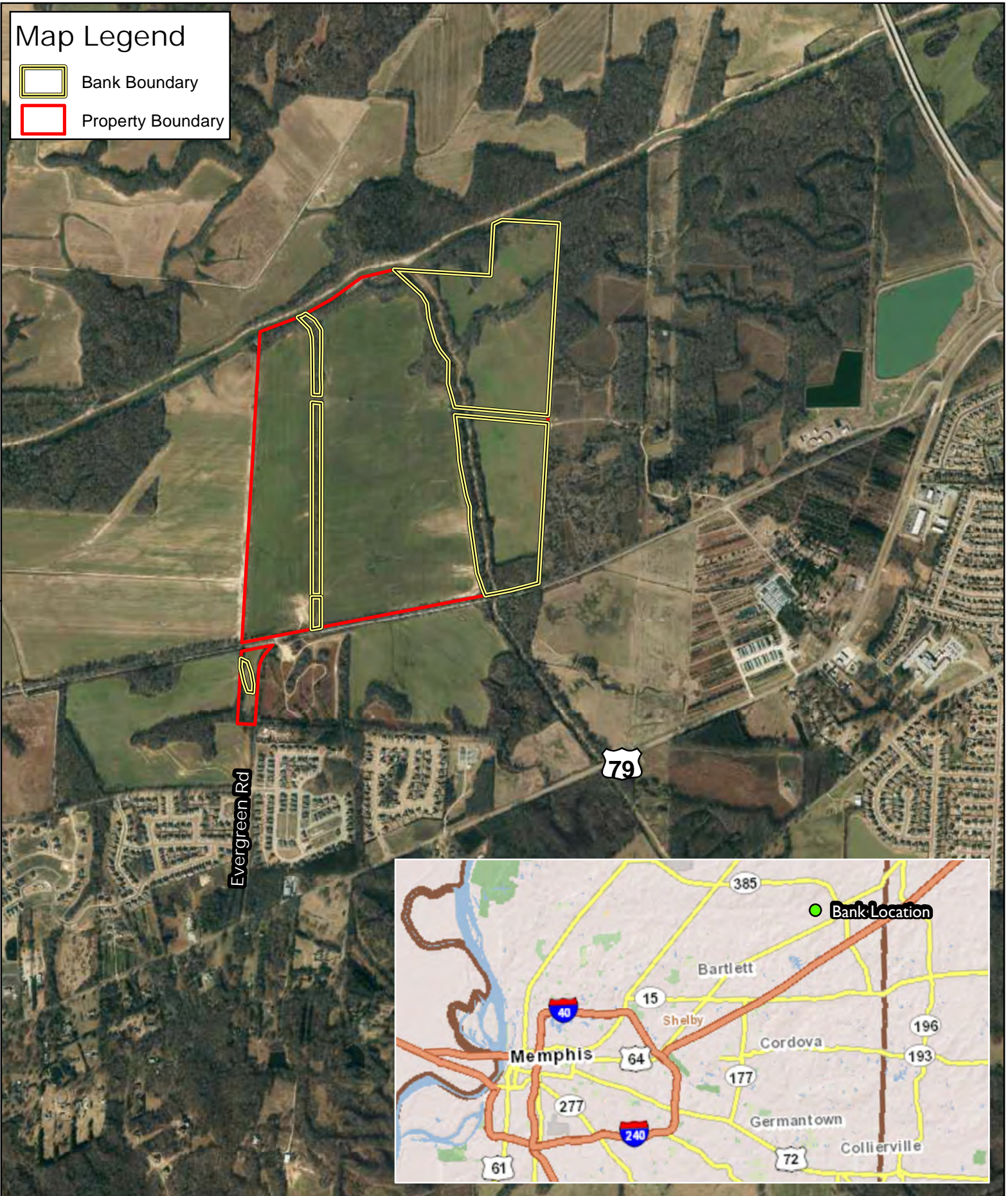
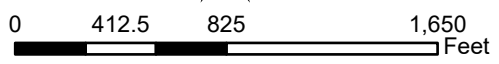
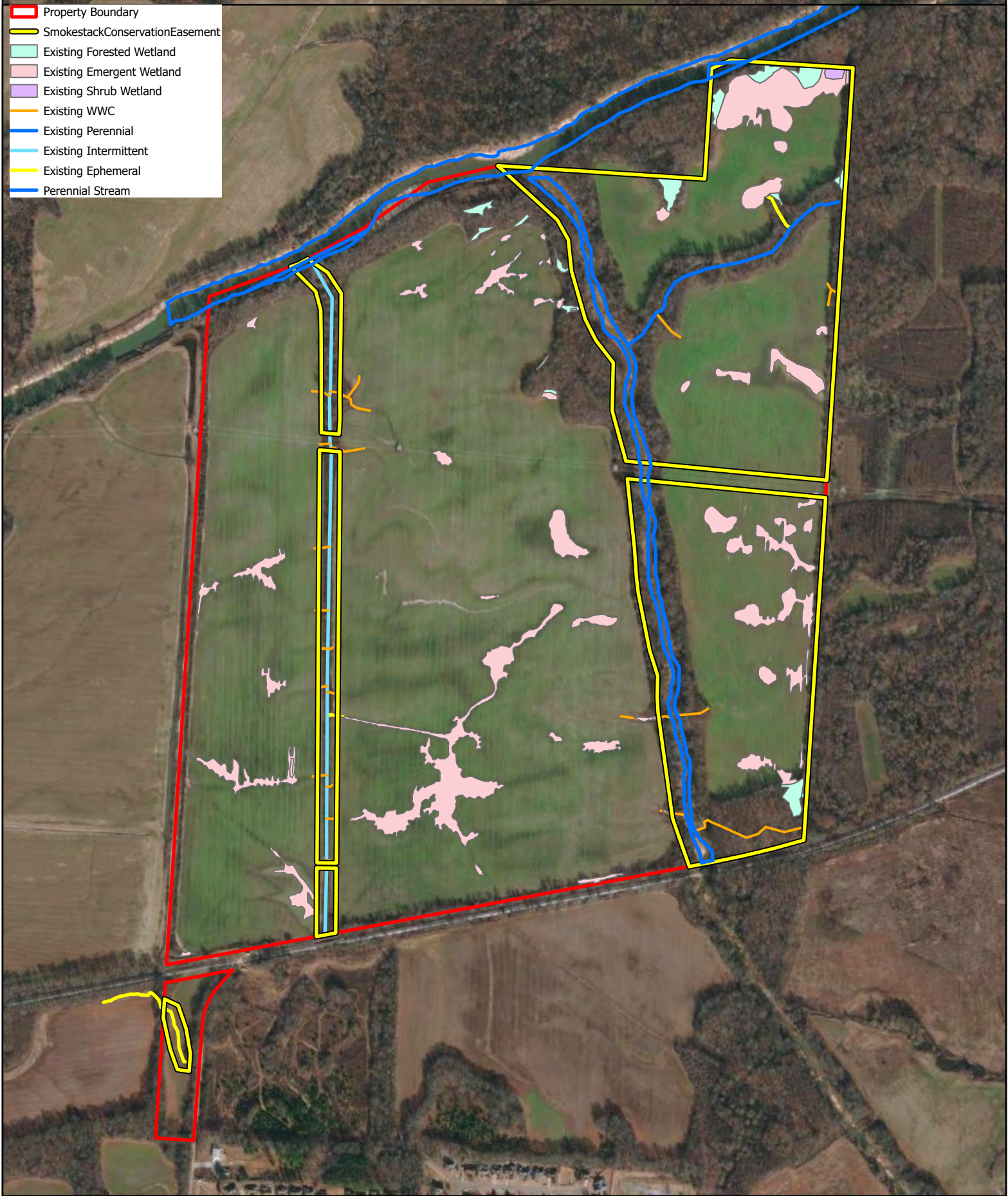











Figure 1: Aerial Location Map  
Smokestack Mitigation Bank  
Arlington, Shelby County, Tennessee

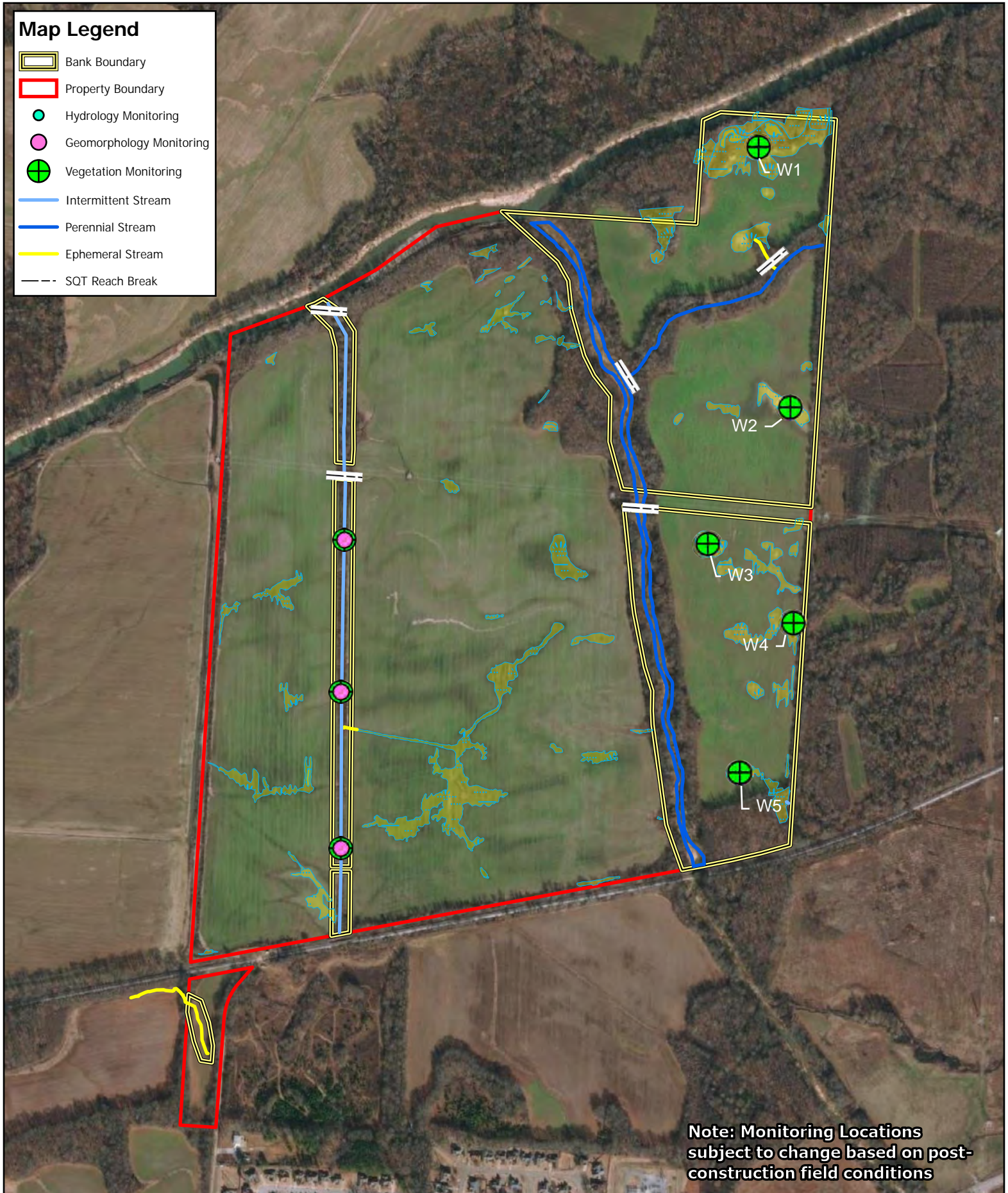
- ▬ Property Boundary
- ▬ SmokestackConservationEasement
- ▭ Existing Forested Wetland
- ▭ Existing Emergent Wetland
- ▭ Existing Shrub Wetland
- ▬ Existing WWC
- ▬ Existing Perennial
- ▬ Existing Intermittent
- ▬ Existing Ephemeral
- ▬ Perennial Stream



**Figure 5: Existing Conditions Map  
Smokestack Mitigation Bank  
Arlington, Shelby County, Tennessee**

### Map Legend

-  Bank Boundary
-  Property Boundary
-  Hydrology Monitoring
-  Geomorphology Monitoring
-  Vegetation Monitoring
-  Intermittent Stream
-  Perennial Stream
-  Ephemeral Stream
-  SQT Reach Break



**Figure 7: Proposed Monitoring Locations Map  
Smokestack Mitigation Bank  
Arlington, Shelby County, Tennessee**

# SMOKESTACK MITIGATION BANK

## SHELBY COUNTY, TENNESSEE

USACE PROJECT NUMBER: MVM-2019-087

### BI MODIFICATION PLANS

**EX. CONDITIONS LEGEND:**

- EX. PROPERTY LINE
- EX. PROPERTY ADJACENT
- EX. RIGHT-OF-WAY
- EX. EASEMENT
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. CONCRETE
- EX. EDGE OF PAVEMENT
- EX. EDGE OF GRAVEL
- EX. ROAD CENTERLINE
- EX. FENCE
- EX. TREELINE
- OHE EX. OVERHEAD ELECTRIC
- W EX. WATER LINE
- EX. BUILDING
- EX. BRIDGE
- EX. TRAIL
- EX. TOP OF BANK
- EX. BOTTOM OF BANK
- EX. STREAM CENTERLINE
- EX. EMERGENT WETLAND
- EX. FORESTED WETLAND
- EX. SCRUB-SHRUB WETLAND
- ▨ EX. FEMA FLOODWAY
- ▨ EX. FEMA FLOODPLAIN

**DESIGN LEGEND:**

- PR. MAJOR CONTOUR
- PR. MINOR CONTOUR
- PR. STREAM CENTERLINE
- PR. GULLY BACKFILL LOW SPOT
- PR. TOP OF BANK
- PR. EASEMENT
- PR. GRADING LIMITS
- ▨ PR. GULLY FILL
- PR. VALLEY LOG
- PR. FLOODPLAIN ROOTWAD
- PR. LOG SILL
- PR. ROCK CROSS VANE

**PROFILE LEGEND:**

- EX. GRADE
- PR. GRADE
- PR. BANKFULL
- PR. VALLEY LOG
- PR. LOG SILL
- PR. ROCK CROSS VANE

**ESC LEGEND:**

- LOD PR. OVERALL LIMITS OF DISTURBANCE
- SF PR. SILT FENCE
- SSF PR. SUPER SILT FENCE
- ▨ PR. EROSION CONTROL BLANKET
- ▨ PR. CONSTRUCTION EXIT
- ▨ PR. TEMP. STREAM CROSSING
- ▨ PR. PERMANENT STREAM CROSSING
- ▨ PR. TIMBER MAT WETLAND CROSSING
- PR. ACCESS ROAD
- PR. PUMP-AROUND DIVERSION & DE-WATERING
- PR. OUTFALL PROTECTION RIPRAP
- PR. CHECK DAM
- ST PR. SEDIMENT TRAP


- PR. RIPARIAN WETLAND PLANTING AREA
- PR. UPLAND SEED MIX



LOCATION MAP (NOT TO SCALE)

Sheet List Table	
Sheet Number	Sheet Title
0	Cover
1	General Notes
2	Sheet Index - Grading and Plan & Profile
3	Sheet Index - Planting
4	Sheet Index - Erosion & Sediment Control
5	Existing Conditions
6	Grading - G1
7	Grading - G2
8	Grading - G3
9	Grading - G4
10	STR-1 - S1
11	STR-1 - S2
12	STR-1 - S3
13	STR-1 - S4
14	STR-1 - S5
15	Planting - P1
16	Planting - P2
17	Pre Construction E#5 - ES1
18	Pre Construction E#5 - ES2
19	Pre Construction E#5 - ES3
20	Pre Construction E#5 - ES4
21	Pre Construction E#5 - ES5
22	Pre Construction E#5 - ES6
23	Construction E#5 - ES1
24	Construction E#5 - ES2
25	Construction E#5 - ES3
26	Construction E#5 - ES4
27	Construction E#5 - ES5
28	Construction E#5 - ES6
29	Post Construction E#5 - ES1
30	Post Construction E#5 - ES2
31	Post Construction E#5 - ES3
32	Post Construction E#5 - ES4
33	Post Construction E#5 - ES5
34	Post Construction E#5 - ES6
35	Details - D1
36	Details - D2
37	Details - D3
38	Details - D4
39	Details - D5
40	Details - D6
41	Details - D7
42	Details - D8
43	Details - D9
44	Details - D10
45	Details - D11
46	Details - D12

JOB NUMBER: 100111  
SMOKESTACK MITIGATION BANK

<b>SMOKESTACK MITIGATION BANK</b>	
PROJECT MANAGER: SH	JOB NUMBER: 100111
DESIGNED: AB/SO/UW/M	DESIGN TYPE: FINAL
DRAWN: UW/M/SO	INITIAL PLAN DATE: 03-12-2024
	
103 Continental Place, Ste. 202 Brentwood, Tennessee 37027 WWW.RES.US	

**GENERAL NOTES:**

1. THE PROJECT SITE IS LOCATED IN LAKE LAND, SHELBY COUNTY, TENNESSEE WITHIN THE LOOSAHATCHIE WATERSHED (HUC 08010209).
2. SURVEY PROVIDED BY BARCE DESIGN SOLUTIONS IN 2019 & 2020 IN TENNESSEE STATE PLANE FEET, NAD83. CONTOURS MAPPED AT A 1 FT INTERVAL. THE VERTICAL DATUM IS NAVD 1988.
3. SURVEY CONTROL BENCHMARKS PROVIDED, TBD.
4. CONTRACTOR RESPONSIBLE TO FIELD LOCATE ALL ON-SITE UTILITIES.
5. NO EARTH DISTURBANCE ACTIVITIES TO BEGIN PRIOR TO INSTALLATION OF ALL EROSION & SEDIMENT CONTROL MEASURES.
6. ONLY TREES IDENTIFIED BY THE OWNER ARE TO BE REMOVED.
7. ANY MATERIAL AND/OR CONSTRUCTION DEBRIS TO BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL & STATE REGULATIONS.

**STREAM CONSTRUCTION NOTES:**

1. INSTALL EROSION CONTROL MEASURES AS DESCRIBED IN THE EROSION CONTROL PLAN AND NOTES. EROSION CONTROL MEASURES MAY BE PHASED-IN TO THOSE AREAS OF THE PROJECT CURRENTLY BEING WORKED ON. THE CONTRACTOR MAY MODIFY OR RELOCATE EROSION CONTROL MEASURES TO MAKE ADJUSTMENTS FOR UNFORESEEN FIELD CONDITIONS SO LONG AS PROPER CONSTRUCTION IS MAINTAINED TO ENSURE THE INTEGRITY AND USEFULNESS OF THE PROPOSED MEASURES. ALL DISTURBED AREAS ALONG CHANNEL BANKS SHALL BE STABILIZED WITH TEMPORARY SEED AND MULCH AT THE END OF EACH DAY.
2. IN GENERAL, STREAM CONSTRUCTION SHALL PROCEED FROM AN UPSTREAM TO DOWNSTREAM DIRECTION.
3. EXISTING WETLANDS CANNOT BE ENCLOSED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED AS DESIGNATED IMPACT AREAS. HIGH VISIBILITY FENCING MUST BE PLACED AROUND ALL EXISTING WETLANDS THAT ARE LOCATED ADJACENT TO CONSTRUCTION ACTIVITIES AND/OR ARE LOCATED WITHIN THE PROPOSED CONSERVATION EASEMENT.
4. DURING STREAM CONSTRUCTION ACTIVITIES, THE WORK AREA SHALL BE STABILIZED AT THE END OF EACH WORKING DAY.
5. UNLESS NOTED OTHERWISE, FOR CHANNEL RE-ALIGNMENT WORK, FILL MATERIAL GENERATED FROM CHANNEL EXCAVATION AND STABILIZATION SHALL BE PLACED INSIDE THE EXISTING CHANNEL TO BE ABANDONED AT AN ELEVATION THAT PROVIDES POSITIVE DRAINAGE TOWARDS THE PROPOSED CHANNEL. THE ABANDONED CHANNEL SHOULD NOT BE BACKFILLED UNTIL IT IS RECEIVING ZERO STREAM FLOW AND THE NEW ALIGNMENT IS ON-LINE.
6. STOCKPILE AREAS MAY BE RELOCATED UPON THE APPROVAL OF THE ENGINEER. SILT FENCING / EROSION CONTROL WATTLE MUST BE INSTALLED AROUND ALL STOCKPILE AREAS.
7. CONTRACTOR SHALL NOT COMPACT SOIL AROUND ROOTS OR TREES TO REMAIN, AND SHALL NOT DAMAGE SUCH TREES IN ANY WAY. EXCAVATED OR OTHER MATERIAL SHALL NOT BE PLACED, PILED OR STORED WITHIN THE CRITICAL ROOT ZONE AREA OF THE TREES TO BE SAVED. ANY COMPROMISED TREES NOT USED IN CONSTRUCTION ARE TO BE REMOVED AND DISPOSED OF OFF SITE.
8. NO WORK TO BE CONDUCTED ON ADJACENT PROPERTY. LIMIT OF DISTURBANCE TERMINATES AT PROPERTY BOUNDARY.
9. NO LAND DISTURBANCE TO BE CONDUCTED WITHIN 50 FT OF EDGE OF EXISTING RAILROAD TRACK OR EXISTING OVERHEAD ELECTRIC TOWER.
10. ALL TEMPORARY MATERIAL & SOIL STOCKPILES AS WELL AS CONSTRUCTION STAGING TO BE KEPT OUTSIDE OF THE FEMA 100-YR FLOODWAY.
11. REMOVE AND STOCKPILE GRAVEL/COBBLE SUBSTRATE LOCATED WITHIN EXISTING CHANNELS TO BE ABANDONED. THIS MATERIAL SHALL BE INSTALLED ON THE PROPOSED BED OF SHALLOW CHANNEL SECTIONS.
12. IN-STREAM STRUCTURES PROPOSED ALONG THE OUTSIDE OF MEANDER BENDS (BRUSH TOES, LOG VANES, AND LOG TOES) MAY BE USED INTERCHANGEABLY THROUGHOUT THE PROJECT PER APPROVAL FROM DESIGNER.
13. THE WORK TO RESHAPE THE CHANNEL BANKS WILL BE PERFORMED USING EQUIPMENT WORKING FROM THE TOP OF THE EXISTING STREAM BANK, WHERE POSSIBLE.
14. CONSTRUCTION EQUIPMENT WILL NOT BE PLACED WITHIN THE ACTIVE CHANNEL TO PERFORM WORK IF POSSIBLE. PLATFORMS SHOULD BE USED TO CROSS CHANNEL WHERE ACCESS IS NOT POSSIBLE.
15. NO MORE CHANNEL SHALL BE DISTURBED THAN CAN BE STABILIZED BY THE END OF THE WORK DAY OR PRIOR TO RESTORING FLOW TO NEWLY CONSTRUCTED CHANNEL SEGMENTS.
16. CONTRACTOR SHALL REMOVE ALL TEMPORARY CONTROL DEVICES ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED. A MAXIMUM OF 200 LINEAR FEET OF STREAM MAY BE DISTURBED AT ANY ONE TIME.
17. ALL EXCAVATED MATERIAL MUST BE PLACED WITHIN DESIGNATED STOCKPILE AREAS.
18. AT LOCATIONS IN WHICH THE EXISTING CHANNEL IS BEING MAINTAINED, TEMPORARY PUMP AROUND DAMS AND BYPASS PUMPING WILL BE USED TO DE-WATER THE WORK AREA AS DESCRIBED IN THE DETAILS.
19. WHEN THE PROPOSED CHANNEL HAS BEEN SUFFICIENTLY STABILIZED TO PREVENT EROSION, ALL TEMPORARY PUMP AROUND DAMS WILL BE REMOVED FROM THE ACTIVE STREAM CHANNEL AND NORMAL FLOW RESTORED. ACCUMULATED SEDIMENT SHALL BE DISPOSED OF IN DESIGNATED SPOILS AREAS PRIOR TO REMOVAL OF TEMPORARY PUMP AROUND DAM.
20. AT LOCATIONS IN WHICH ROCK STRUCTURES, BOULDER TOE STABILIZATION, AND LOG TOE STABILIZATION ARE CALLED FOR ON THE PLANS, TEMPORARY COFFER DAMS AND BYPASS PUMPING WILL BE USED TO DE-WATER THE WORK AREA, EXCEPT AT LOCATIONS IN WHICH THE NORMAL FLOW CAN BE DIVERTED AROUND THE WORK AREA WITH THE USE OF AN EXISTING CHANNEL. WHEN THE TOE HAS BEEN SUFFICIENTLY STABILIZED TO RESTRAIN EROSION ALL TEMPORARY COFFER DAMS WILL BE REMOVED FROM THE ACTIVE STREAM CHANNEL AND NORMAL FLOW RESTORED. ACCUMULATED SEDIMENT SHALL BE DISPOSED OF IN DESIGNATED SPOILS AREA PRIOR TO REMOVAL OF TEMPORARY COFFER DAM.
21. MATERIAL THAT IS REMOVED FROM THE STREAM WILL BE RE-DEPOSITED OUTSIDE OF THE ACTIVE CHANNEL AND ITS FLOODPLAIN.
22. TEMPORARY AND PERMANENT STABILIZATION OF ALL DISTURBED GRASSED AREAS AT THE TOP OF THE CHANNEL BANKS WILL BE IN ACCORDANCE WITH THE SEEDING AND MULCHING SPECIFICATION AS SHOWN ON PLANS.
23. RE-FERTILIZE AND RE-SEED DISTURBED AREAS IF NECESSARY.
24. TEMPORARY AND/OR PERMANENT IMPACTS TO EXISTING WETLANDS SHALL BE AVOIDED TO THE EXTENT POSSIBLE. HIGH VISIBILITY FENCING SHALL BE INSTALLED AROUND ALL EXISTING WETLANDS LOCATED WITHIN THE PROJECT AREA AND/OR ADJACENT TO ANY CONSTRUCTION ACTIVITIES.

**STREAM CONSTRUCTION SEQUENCE (GENERAL NOTES):**

1. CONDUCT PRE-CONSTRUCTION MEETING INCLUDING OWNER, ENGINEER, ASSOCIATED CONTRACTORS, TDEC EROSION CONTROL PERSONNEL, CULTURAL RESOURCE PERSONNEL AND OTHER AFFECTED PARTIES.
2. OBTAIN EROSION CONTROL PERMIT FROM TDEC AND ALL OTHER APPROVALS NECESSARY TO BEGIN AND COMPLETE THE PROJECT.
3. CONTRACTOR IS FULLY RESPONSIBLE FOR CONTACTING ALL APPROPRIATE PARTIES AND ASSURING THAT UTILITIES ARE LOCATED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. CALL TN 811 AT 1-800-351-1111 FOR UTILITY LOCATING SERVICES 72 HOURS PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. PRIOR TO CONSTRUCTION, STABILIZED GRAVEL ENTRANCE/EXIT AND ROUTES OF INGRESS AND EGRESS SHALL BE ESTABLISHED AS SHOWN ON THE PLANS AND DETAILS. MAINTAIN EXISTING DRIVEWAY OVERTOPPING ELEVATION / PROFILE.
5. PREPARE STAGING AND STOCKPILING AREAS IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS OR AS APPROVED BY THE ENGINEER. ANY EXCESS SPOIL FROM STREAM CONSTRUCTION SHALL BE USED TO CONSTRUCT CHANNEL PLUGS AS SHOWN ON PLANS.
6. ALL INSTREAM WORK TO BE CONDUCTED IN THE DRY. INSTALL PUMP AROUND APPARATUS AND IMPERVIOUS DIKES AT UPSTREAM END OF PROJECT. AS CONSTRUCTION PROGRESSES, MOVE PUMP AROUND OPERATION DOWNSTREAM (SEE DETAIL 9).
7. INSTALL SILT FENCE, TEMPORARY CROSSINGS AND ALL OTHER EROSION CONTROL MEASURES AS SHOWN ON PLANS.
8. CONSTRUCT UPSTREAM PORTION OF THE CHANNEL FIRST, WORKING IN AN UPSTREAM TO DOWNSTREAM DIRECTION.
9. ROUGH GRADING OF CHANNEL SHALL BE PERFORMED PRIOR TO INSTALLATION OF STRUCTURES.
10. INSTALL STRUCTURES AS SHOWN ON PLANS AND DETAILS. PRIOR TO FINE GRADING, OBTAIN APPROVAL OF THE ENGINEER ON INSTALLATION OF STRUCTURES.
11. UPON COMPLETION OF FINE GRADING, INSTALL EROSION CONTROL MATTING OR SOD MATS ALONG CHANNEL BANKS.
12. FILL AND STABILIZE ABANDONED SEGMENTS OF THE EXISTING CHANNEL PER DIRECTION OF THE ENGINEER.
13. ALL IMPERVIOUS DIKES AND PUMPING APPARATUS SHALL BE REMOVED FROM THE STREAM AT THE END OF EACH DAY TO RESTORE NORMAL FLOW BACK TO THE CHANNEL.
14. DURING STREAM CONSTRUCTION ACTIVITIES, THE WORK AREA SHALL BE STABILIZED AT THE END OF EACH WORKING DAY.
15. INSTALL LIVE STAKE, BARE ROOT, AND CONTAINERIZED PLANTINGS AS SPECIFIED ON PLANTING PLANS.

**EROSION CONTROL GENERAL NOTES:**

1. REVIEW CONSTRUCTION SEQUENCE FOR ADDITIONAL EROSION CONTROL MEASURES. ALL PERMANENT AND TEMPORARY EROSION CONTROL STRUCTURES (IE ROCK CHECK DAMS, SILT FENCE AND TEMPORARY CONSTRUCTION EXIT) SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION OF THE LAND-DISTURBING ACTIVITY.
2. CONSTRUCTION ACCESS AREAS SHOWN ARE TO GUIDE CONTRACTOR DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH ENGINEER IF ALTERNATIVE CONSTRUCTION ACCESS ROUTES WILL IMPROVE EFFICIENCY OF CONSTRUCTION.
3. EXISTING WETLANDS CANNOT BE ENCLOSED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED AS DESIGNATED IMPACT AREAS. HIGH VISIBILITY FENCING MUST BE PLACED AROUND ALL EXISTING WETLANDS THAT ARE LOCATED ADJACENT TO CONSTRUCTION ACTIVITIES AND/OR ARE LOCATED WITHIN THE PROPOSED CONSERVATION EASEMENT.
4. EXISTING WETLANDS OUTSIDE GRADING LIMITS TO BE CROSSED ONLY VIA TIMBER MAT, SEE DETAIL 11 (TYP.)
5. CULTURAL RESOURCE AREA CANNOT BE ENCLOSED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED AS DESIGNATED IMPACT AREAS. HIGH VISIBILITY FENCING MUST BE PLACED AROUND THE CULTURAL RESOURCE AREA.
6. ALL AREAS DISTURBED BY THE CONTRACTOR SHALL BE SEEDED PER THE SPECIFICATIONS IN THE SEEDING SCHEDULE SHOWN IN DETAIL 8.
7. CONTRACTOR TO PERFORM SOIL TESTING TO DETERMINE VEGETATIVE VIABILITY PRIOR TO LAND DISTURBANCE.
8. MULCH: APPLY 2 TONS/ACRE GRAIN STRAW, AND ANCHOR STRAW ON ALL OTHER DISTURBED AREAS.
9. EROSION CONTROL:
  - A. INSTALL PERMANENT VEGETATIVE COVER AND THE LONG-TERM EROSION PROTECTION MEASURES OR STRUCTURES AS DIRECTED BY ENGINEER UPON CONSTRUCTION COMPLETION. APPROPRIATE EROSION CONTROL MEASURES MUST BE PLACED BETWEEN THE DISTURBED AREA AND AFFECTED WATERWAY AND MAINTAINED UNTIL PERMANENTLY VEGETATED.
  - B. PROVIDE FOR HANDLING THE INCREASED RUNOFF CAUSED BY CHANGED SOIL AND SURFACE CONDITIONS. USE EFFECTIVE MEANS TO CONSERVE EXISTING ON-SITE SOIL CONDITIONS.
  - E. STABILIZATION MEASURES SHALL BE INITIATED AT THE END OF EACH DAY IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. USE TEMPORARY PLANT COVER, MULCHING, AND/OR STRUCTURES TO CONTROL RUNOFF AND PROTECT AREAS SUBJECT TO EROSION DURING CONSTRUCTION. GROUND COVER MUST BE ESTABLISHED WITHIN 14 CALENDAR DAYS IN AREAS WHERE CONSTRUCTION HAS TEMPORARILY CEASED. ALL AREAS WHERE FINAL GRADE HAS BEEN ESTABLISHED SHALL BE PERMANENTLY STABILIZED WITHIN 2 CALENDAR DAYS.
  - F. ALL SEDIMENT AND EROSION CONTROLS ARE TO BE INSPECTED AT LEAST TWICE EVERY CALENDAR WEEK. INSPECTIONS SHALL BE PERFORMED AT LEAST 72 HOURS APART. MAINTENANCE OF SEDIMENT TRAPPING STRUCTURES SHALL BE PERFORMED AS NECESSARY PER THESE INSPECTIONS. SILT FENCING / EROSION CONTROL WATTLE SHALL BE INSTALLED AS SHOWN ON PLANS.
  - G. CONTRACTOR MUST TAKE THE NECESSARY ACTION INCLUDING BUT NOT LIMITED TO TIRE WASHING STATIONS AT EACH ACCESS POINT TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY FROM CONSTRUCTION AREAS. DAILY REMOVAL OF MUD/SOIL MAY BE REQUIRED.
  - H. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFF-SITE SEDIMENTATION. CONTRACTOR SHALL REMOVE ALL TEMPORARY CONTROL DEVICES ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
  - I. EROSION CONTROL MATTING (SEE DETAIL 5) SHALL BE INSTALLED ALONG CONSTRUCTED CHANNELS PER TYPICAL SECTIONS, DETAILS, AND TO MANUFACTURERS' SPECIFICATIONS.
  - J. SILT FENCING / EROSION CONTROL WATTLE TO BE INSTALLED AROUND INDICATED STOCKPILE AREAS TO PREVENT LOSS OF SEDIMENT. STOCKPILE AREAS MAY BE RELOCATED UPON APPROVAL FROM ENGINEER AND TDEC.
  - K. SILT FENCE OR WATTLE TO BE REPLACED WHEN DAMAGED. REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF STRUCTURE HEIGHT (TYP.)
  - L. ASPHALT TACKIFIER SHALL NOT BE USED.
  - M. ALL NECESSARY MEASURES MUST BE TAKEN TO PREVENT OIL, TAR, TRASH, AND OTHER POLLUTANTS FROM ENTERING THE ADJACENT OFF-SITE AREAS.
  - N. ACTIVITIES MUST AVOID DISTURBANCE OF WOODY RIPARIAN VEGETATION WITHIN THE PROJECT AREA TO THE GREATEST EXTENT PRACTICABLE. REMOVAL OF VEGETATION MUST BE LIMITED TO ONLY THAT NECESSARY FOR CONSTRUCTION OF THE BREACH AND CHANNEL.
  - O. NO ON-SITE BURIAL OF VEGETATION OR CONSTRUCTION DEBRIS WILL BE PERMITTED. VEGETATIVE DEBRIS SHALL BE STOCKPILED AND DISPOSED OF ON-SITE PER DIRECTION OF ENGINEER.
  - P. GRADING SHOULD NOT EXTEND BEYOND THE CONSTRUCTION LIMITS SHOWN ON THE PLAN.
  - Q. PLEASE REFERENCE PLAN SHEET DETAILS AND TDEC STANDARDS FOR CONSTRUCTION OF EROSION CONTROL MEASURES.
  - R. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL MEASURES RELATED TO THE CONSTRUCTION SITE.
5. THE LOCATIONS OF SOME EROSION CONTROL MEASURES MAY HAVE TO BE ALTERED FROM THOSE SHOWN ON THE PLANS IF DRAINAGE PATTERNS CHANGE DURING CONSTRUCTION.
- T. IF IT IS DETERMINED DURING THE COURSE OF CONSTRUCTION THAT SIGNIFICANT SEDIMENT IS LEAVING THE SITE (DESPITE THE PROPER IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES), THE PERSON RESPONSIBLE FOR THE LAND DISTURBING ACTIVITY IS OBLIGATED TO TAKE ADDITIONAL PROTECTIVE ACTION.
- U. ALL EROSION & SEDIMENT CONTROL BMPs TO BE REMOVED AFTER ACHIEVING FINAL STABILIZATION IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS (TYP.)

**CONSTRUCTION NOTES:**

1. INSTALL EROSION CONTROL MEASURES AS DESCRIBED IN THE EROSION CONTROL PLAN AND NOTES. EROSION CONTROL MEASURES MAY BE PHASED-IN TO THOSE AREAS OF THE PROJECT CURRENTLY BEING WORKED ON. THE CONTRACTOR MAY MODIFY OR RELOCATE EROSION CONTROL MEASURES TO MAKE ADJUSTMENTS FOR UNFORESEEN FIELD CONDITIONS SO LONG AS PROPER CONSTRUCTION IS MAINTAINED TO ENSURE THE INTEGRITY AND USEFULNESS OF THE PROPOSED MEASURES.
2. STOCKPILE AREAS AND TEMPORARY STREAM CROSSINGS MAY BE RELOCATED OR ADDED UPON THE APPROVAL OF THE ENGINEER.
3. CONSTRUCTION EQUIPMENT WILL NOT BE PLACED WITHIN THE ACTIVE CHANNEL TO PERFORM WORK IF POSSIBLE. TIMBER MATS OR APPROVED EQUIVALENT SHOULD BE USED TO CROSS CHANNEL WHERE ACCESS IS NOT POSSIBLE.
4. CONTRACTOR SHALL REMOVE ALL TEMPORARY CONTROL DEVICES ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
5. ALL EXCAVATED MATERIAL MUST BE PLACED WITHIN DESIGNATED STOCKPILE AREAS.
6. TEMPORARY AND PERMANENT STABILIZATION OF ALL DISTURBED GRASSED AREAS AT THE TOP OF THE CHANNEL BANKS WILL BE IN ACCORDANCE WITH THE SEEDING AND MULCHING SPECIFICATION AS SHOWN ON PLANS.
7. RE-FERTILIZE AND RE-SEED DISTURBED AREAS AS SPECIFIED BY DETAIL 8 OR PER DIRECTION OF RES OVERSIGHT PERSONNEL.



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SMOKESTACK MITIGATION BANK

General Notes

SHELBY COUNTY, TENNESSEE

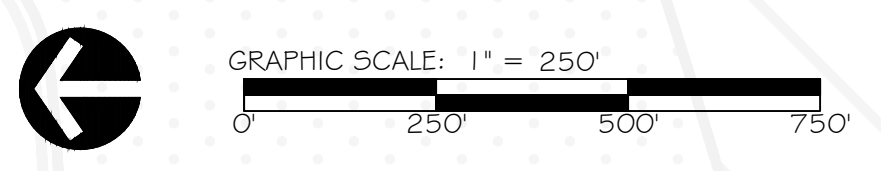
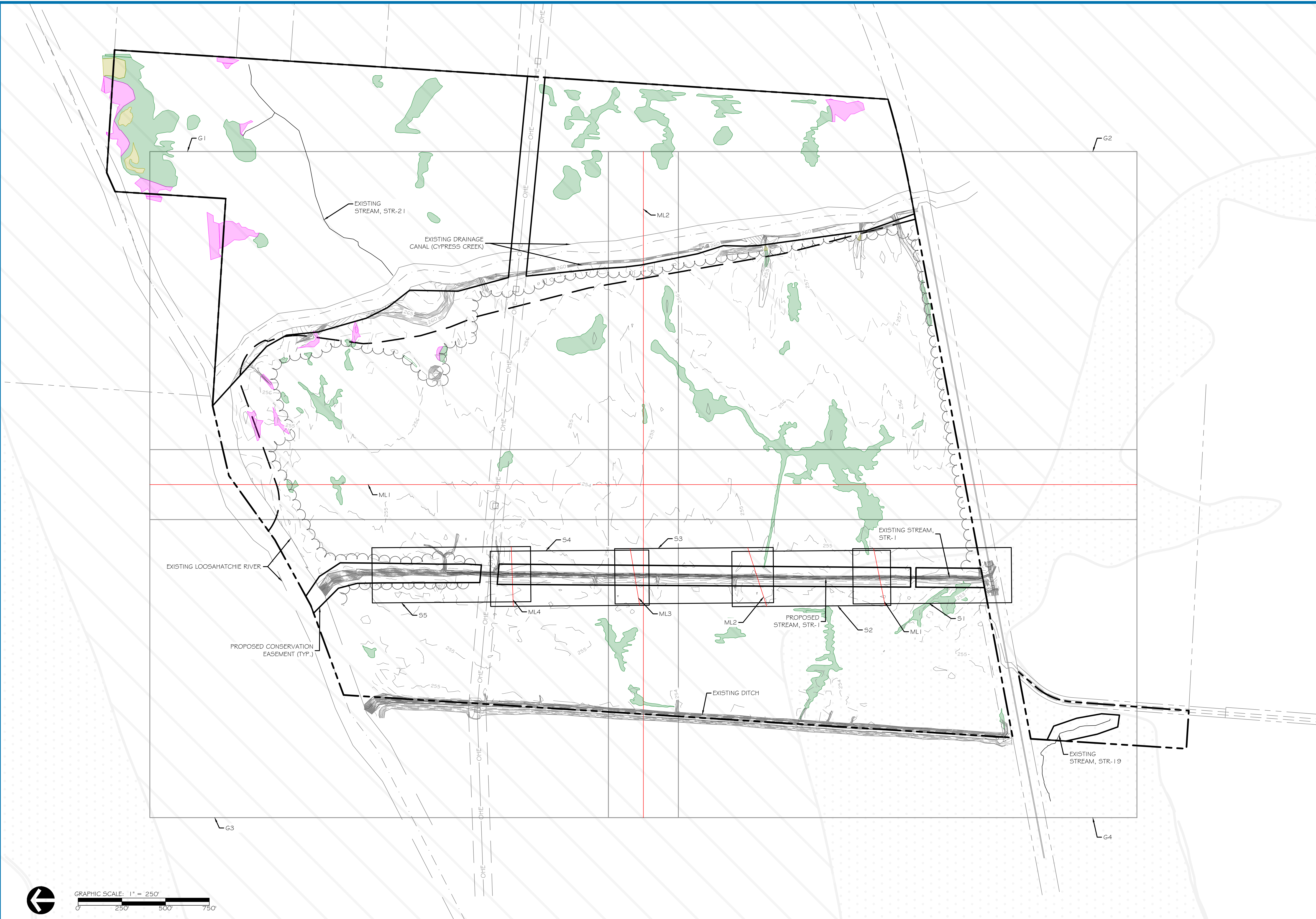
**REVISIONS:**



**PROJECT STATUS:**

**BI MODIFICATION**

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO:	1 of 46



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SMOKESTACK MITIGATION BANK

Sheet Index - Grading And Plan & Profile

SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SQ/UW/WM
DRAWN:	UW/WM/SO
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SHEET NO.:	2 of 46





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SMOKESTACK MITIGATION BANK

Sheet Index - Erosion & Sediment Control

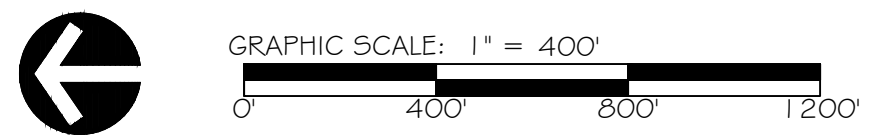
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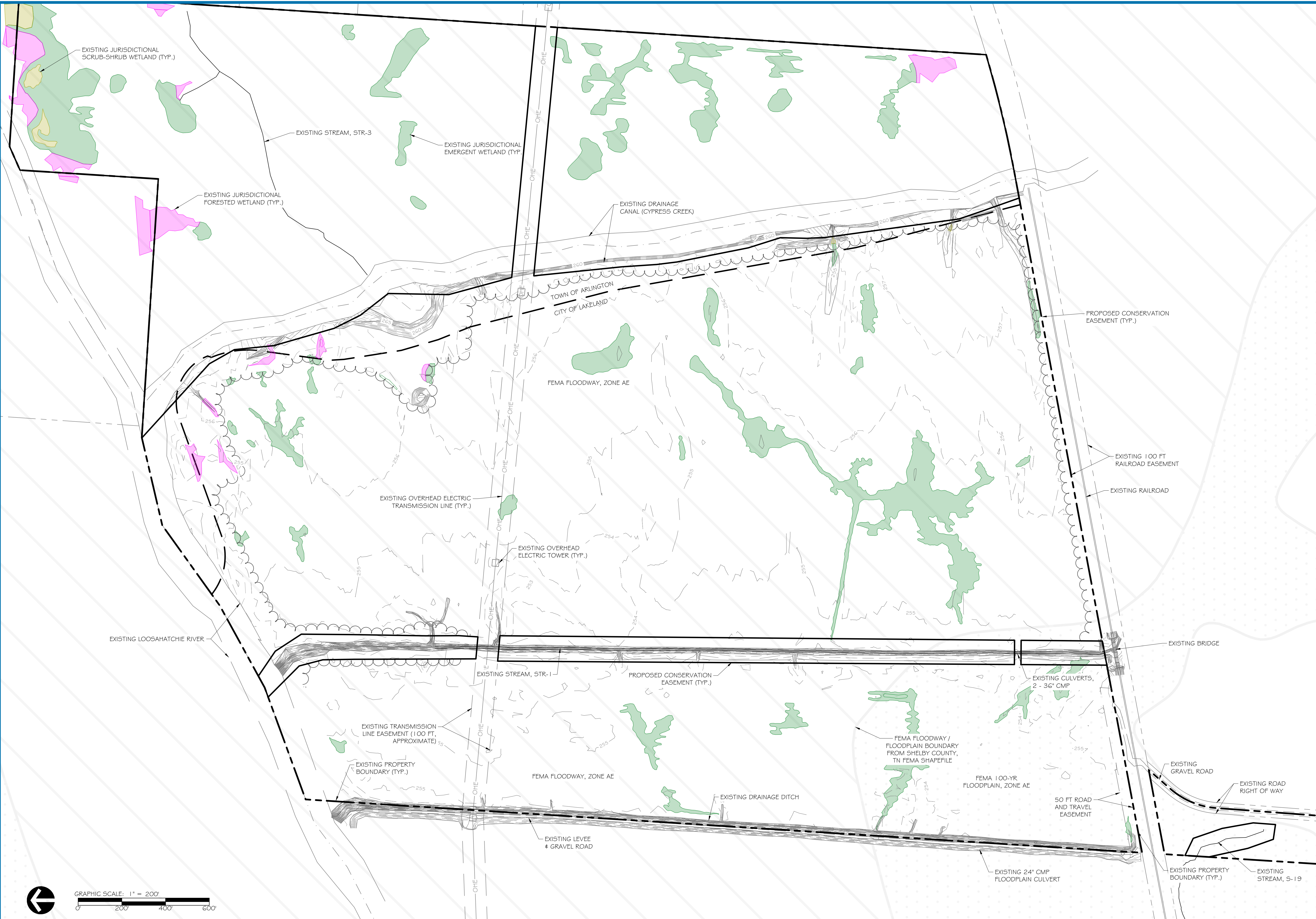
REVISIONS:  
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PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SQ/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	4





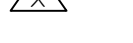
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SMOKESTACK MITIGATION BANK

Existing Conditions

SHELBY COUNTY, TENNESSEE

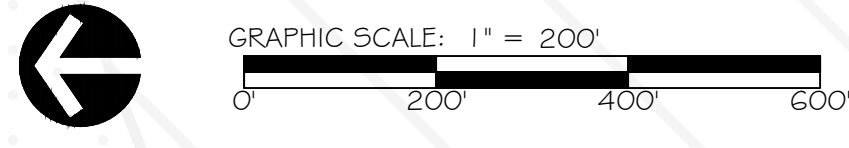
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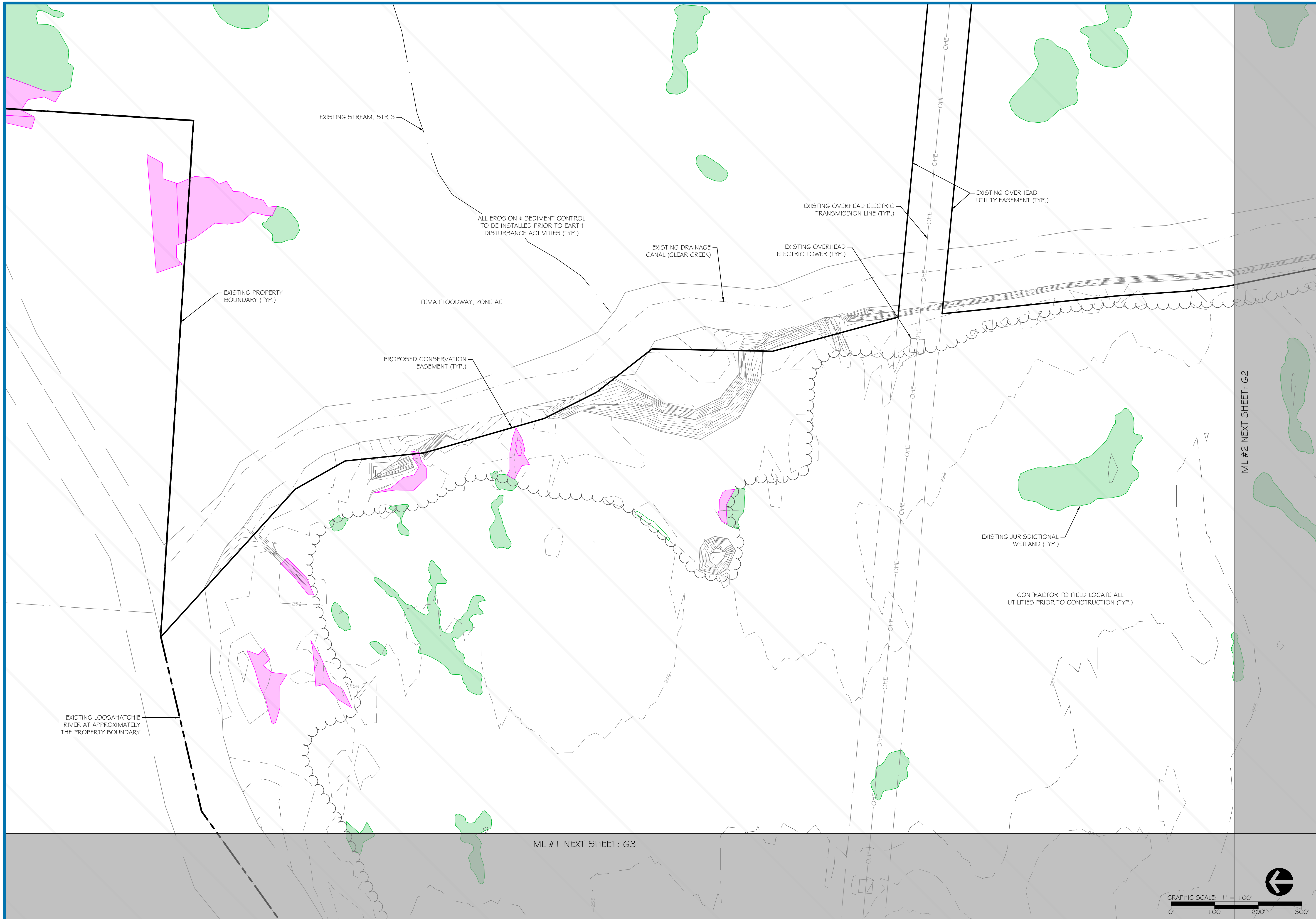


PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SQ/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
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SMOKESTACK MITIGATION BANK

Grading - G1

SHELBY COUNTY, TENNESSEE

REVISIONS:



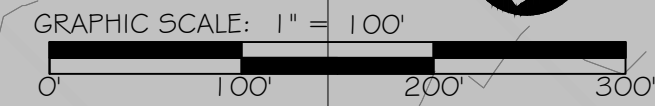
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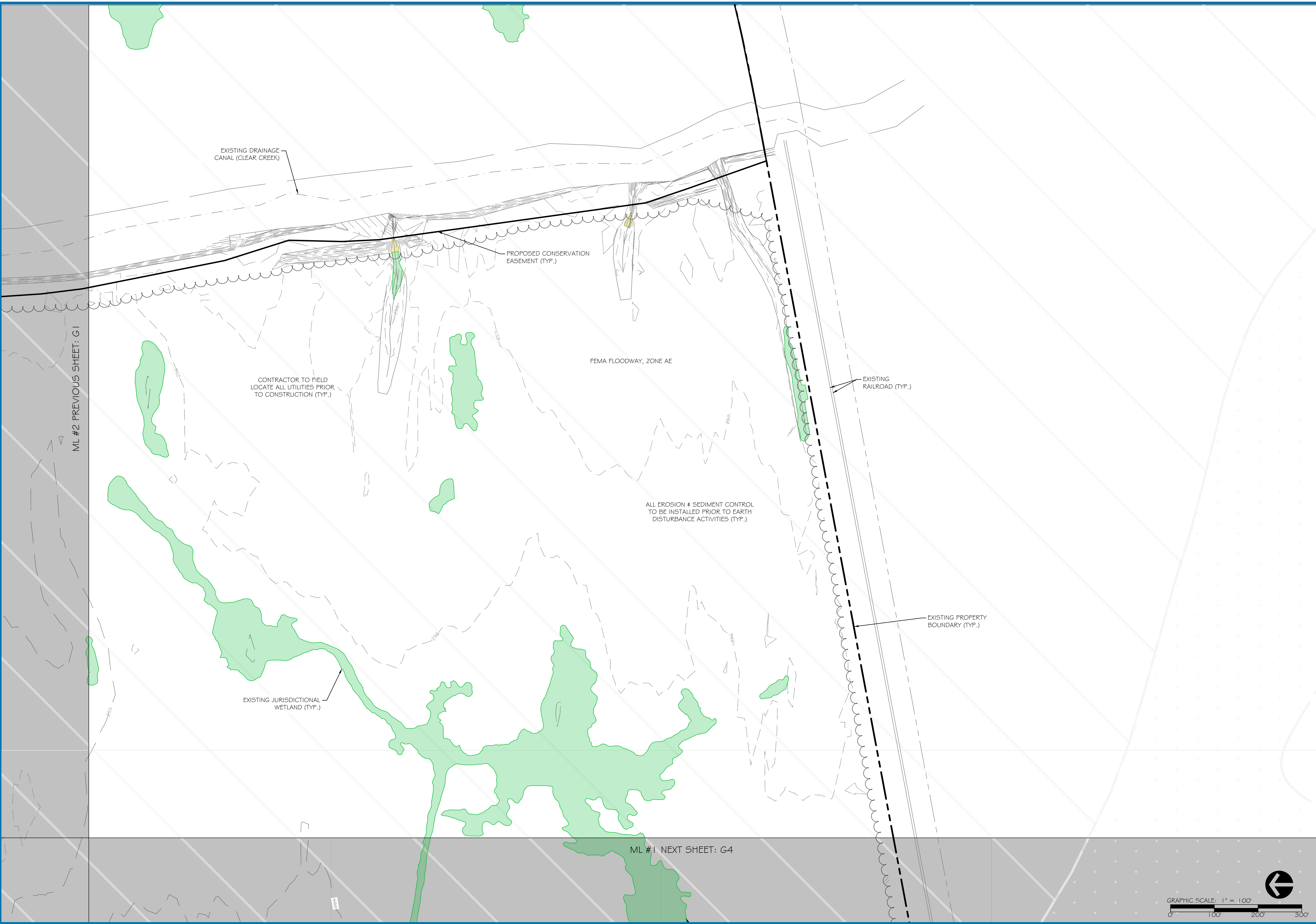
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DRAWN:	UW/WM/SO
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DATE:	03-12-2024
SHEET NO:	6 of 46

ML #2 NEXT SHEET: G2

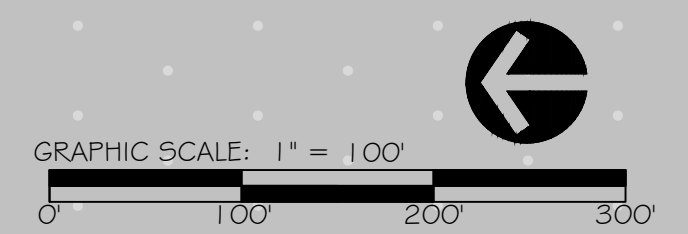
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ML #2 PREVIOUS SHEET: G1

ML #1 NEXT SHEET: G4



REVISIONS:

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PROJECT STATUS:  
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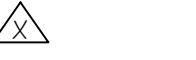
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SMOKESTACK MITIGATION BANK

Grading - G4

SHELBY COUNTY, TENNESSEE

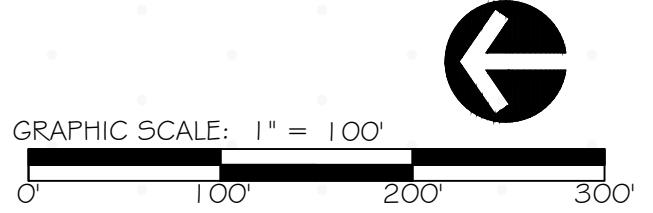
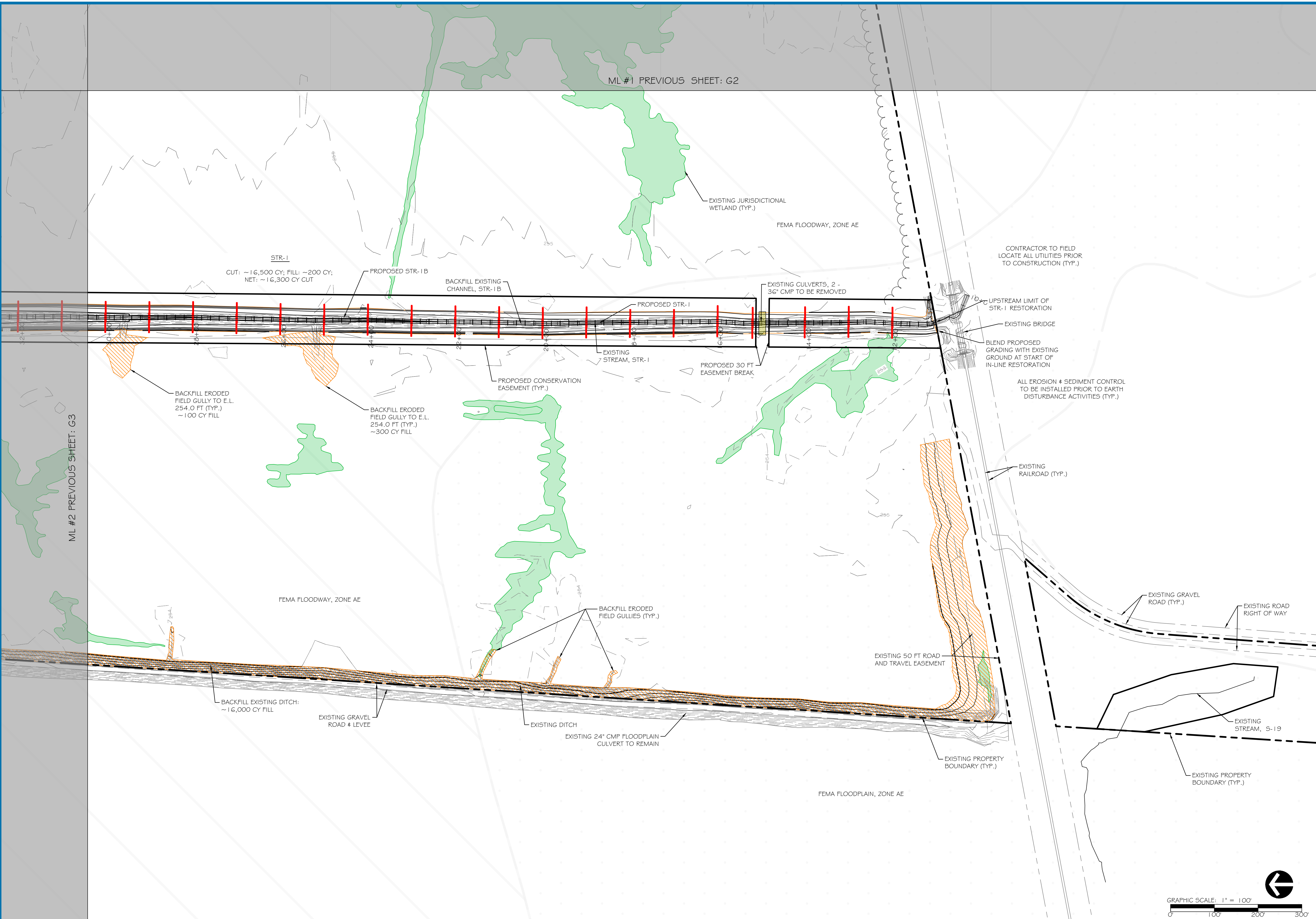
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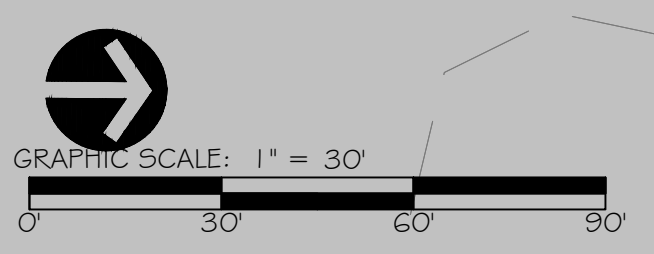
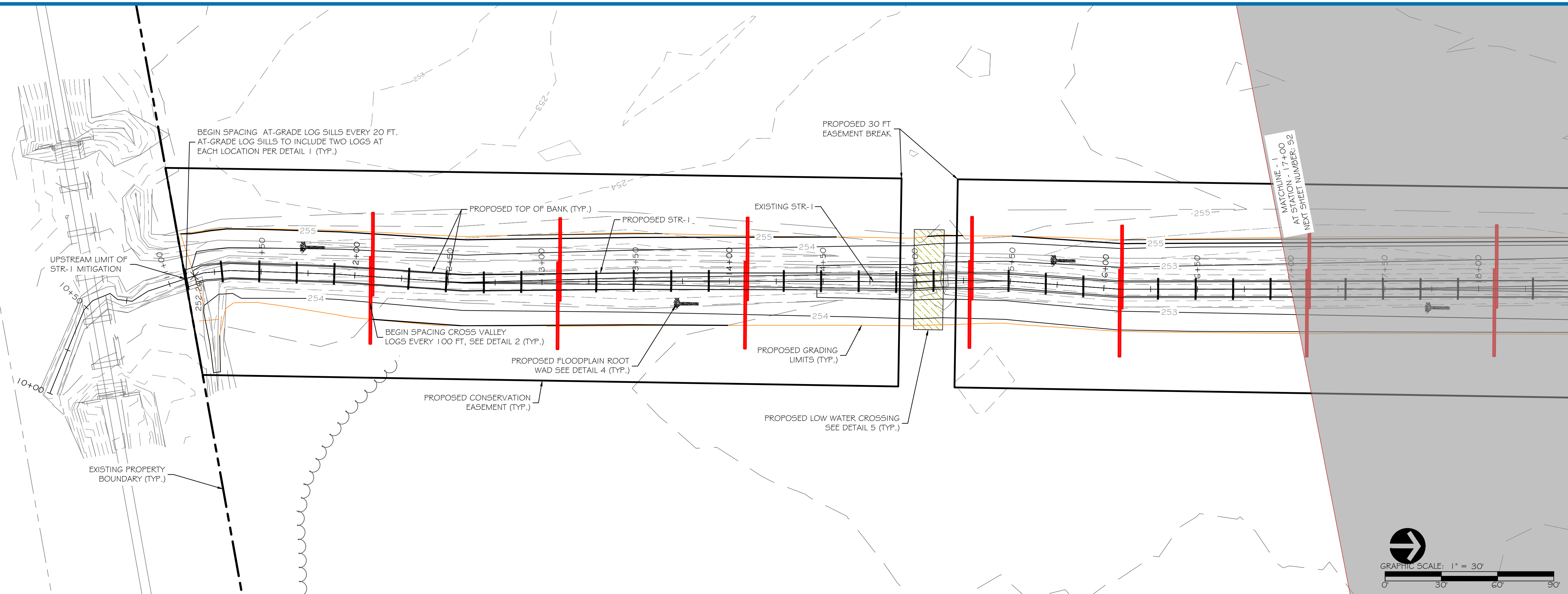


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DATE:	03-12-2024
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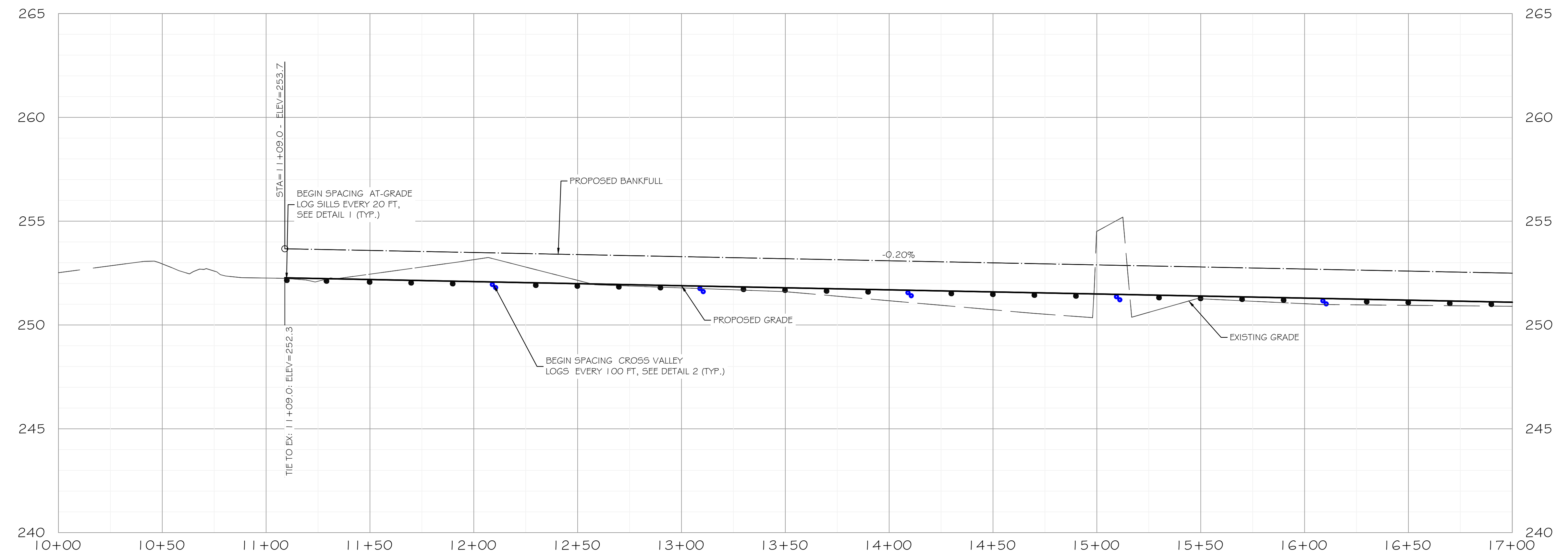


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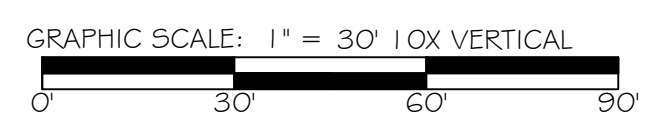
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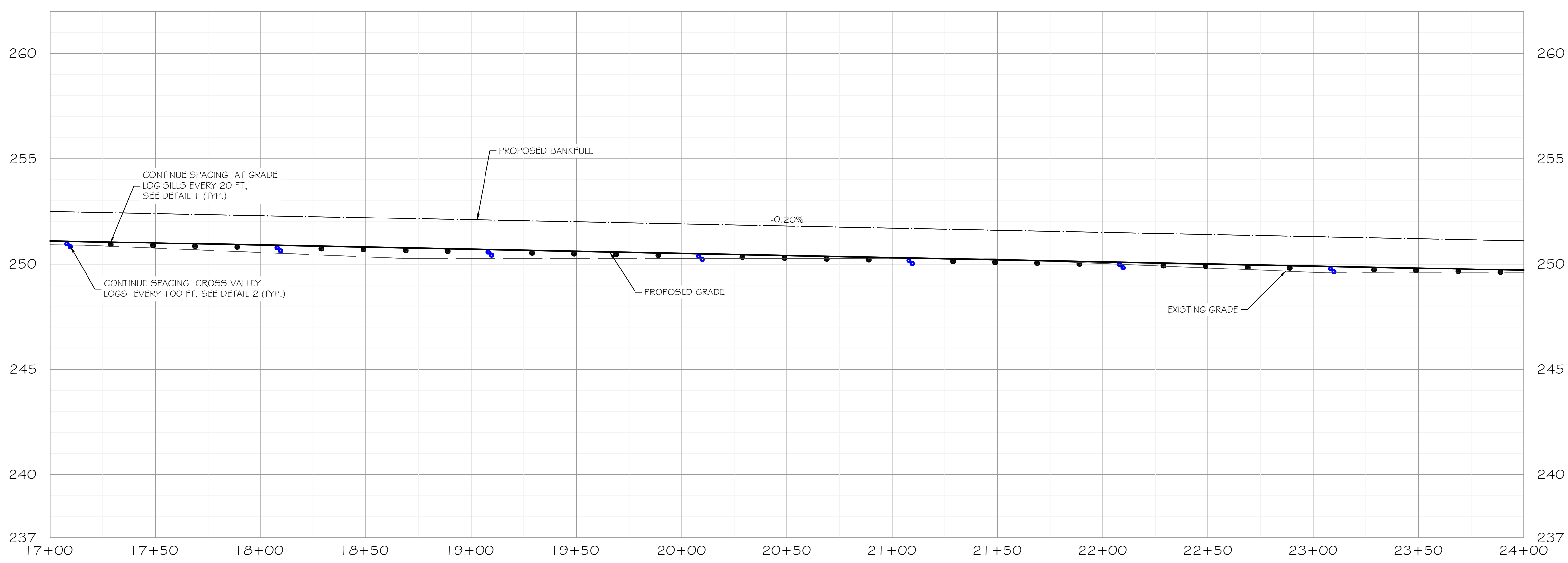
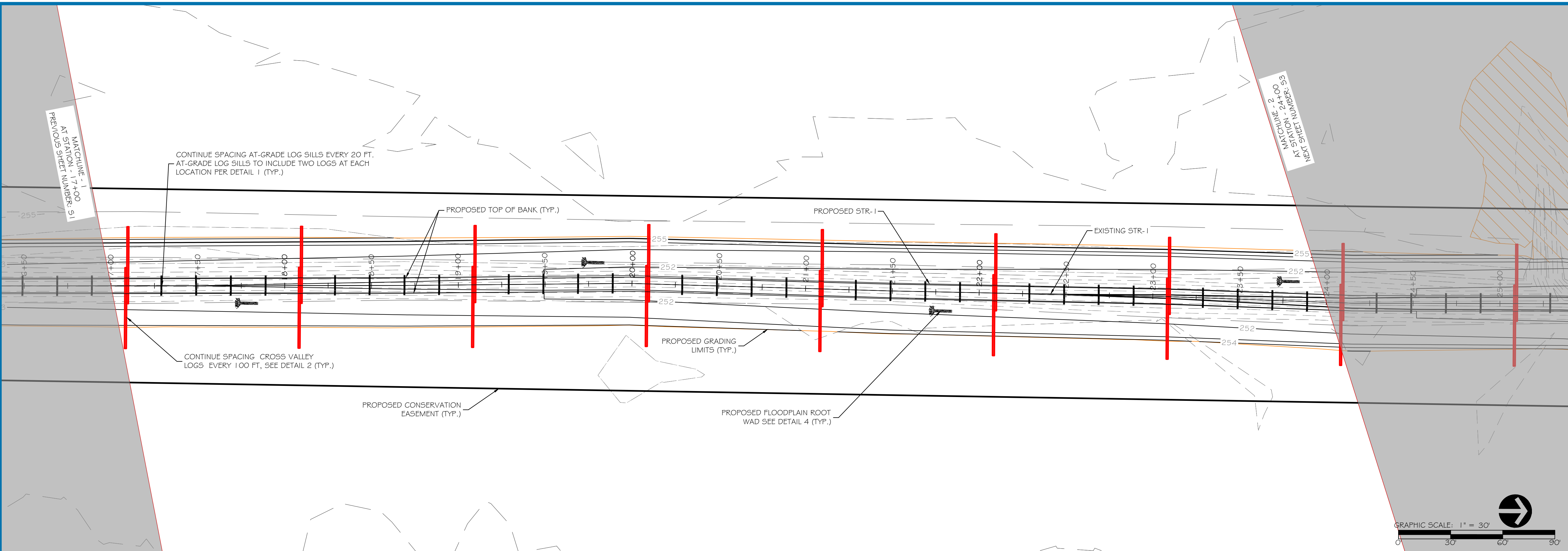
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 DATE: 03-12-2024  
 SHEET NO: 10 of 46

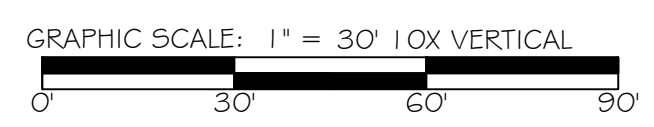


STR-1: 10+00 TO 17+00





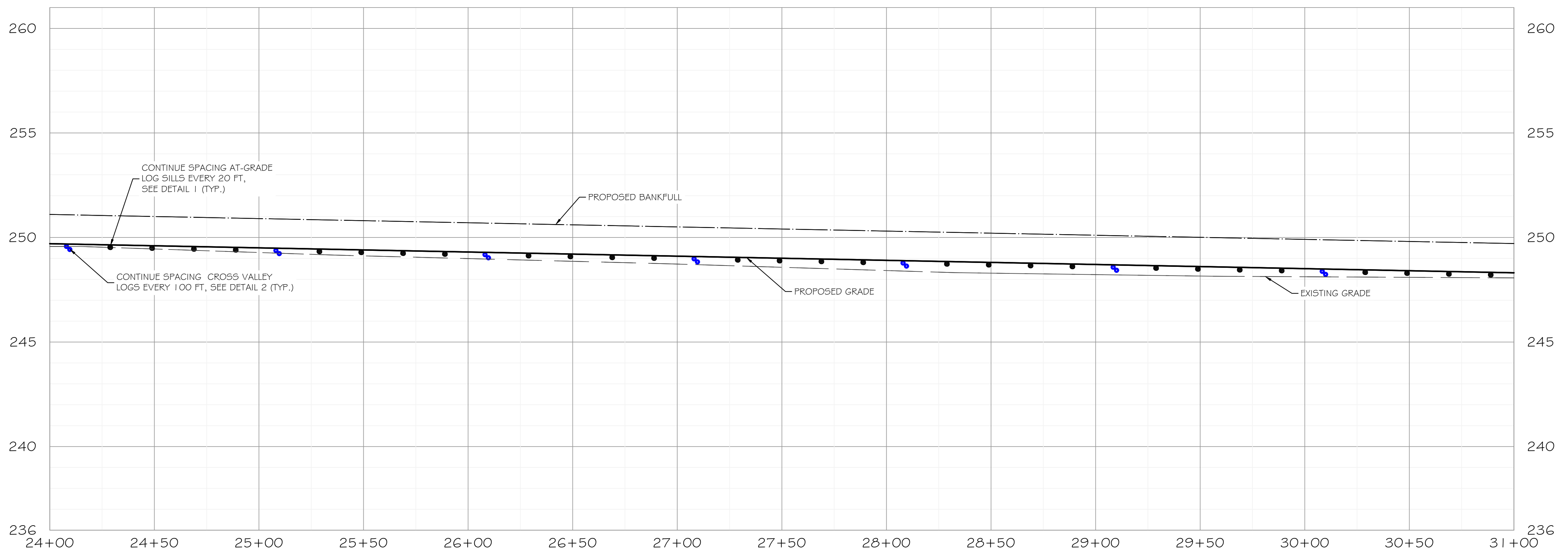
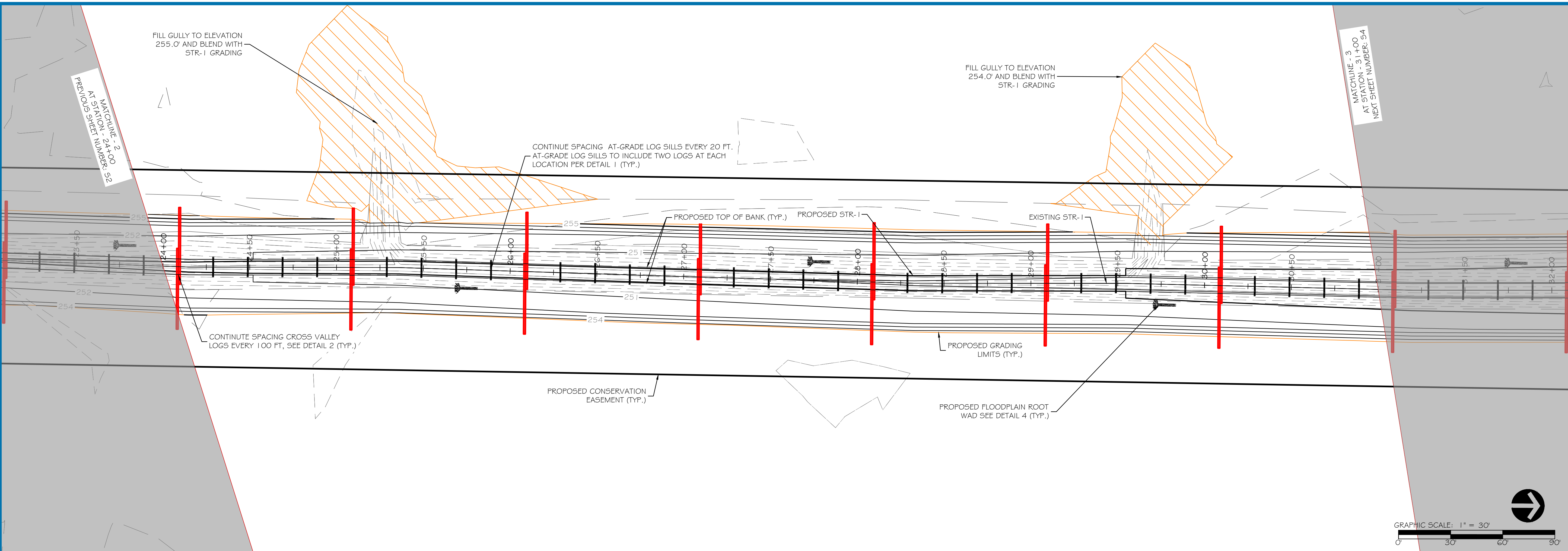
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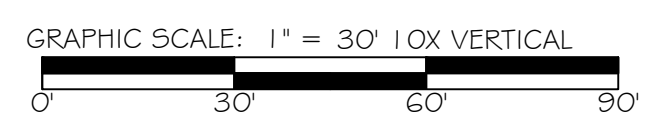
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PROJECT STATUS:  
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DATE:	03-12-2024
SHEET NO.:	11 of 46



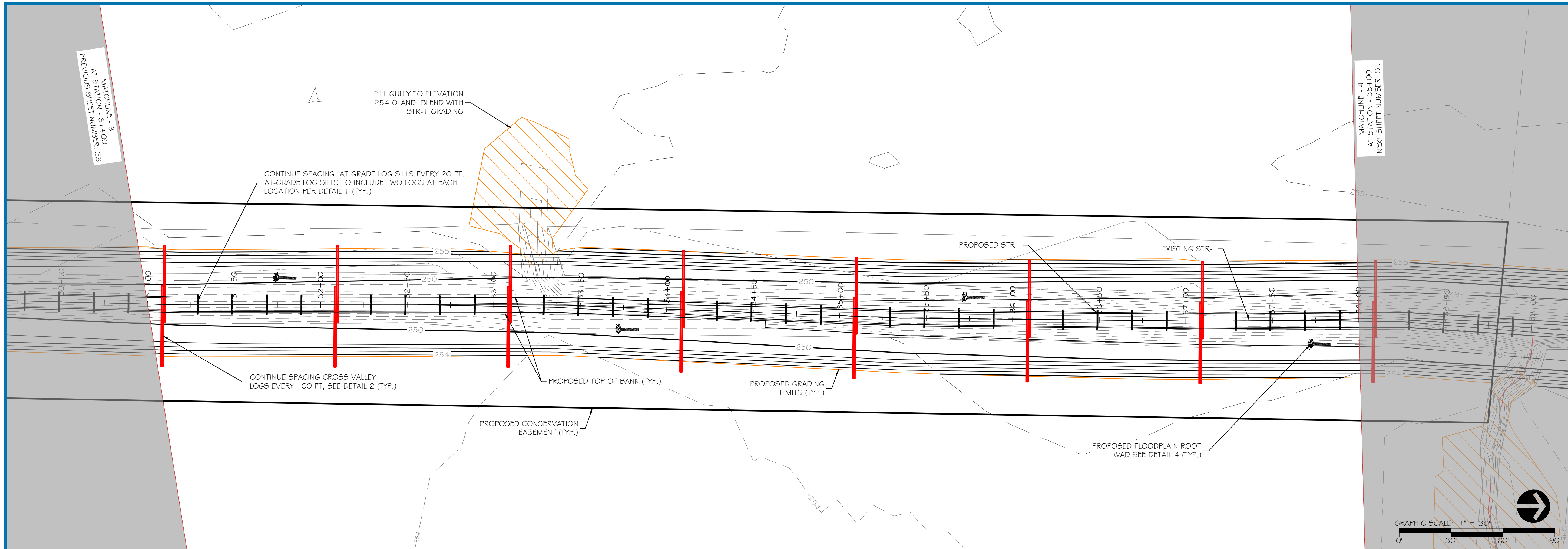
STR-1 : 24+00 TO 31+00



REVISIONS:

PROJECT STATUS:  
**BI MODIFICATION**

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 DESIGNED: AB/SO/UW/WM  
 DRAWN: UW/WM/SO  
 JOB NUMBER: 100111  
 DESIGN TYPE: FINAL  
 DATE: 03-12-2024  
 SHEET NO: 12 of 46



SMOKESTACK MITIGATION BANK

STR-1 - S4

SHELBY COUNTY, TENNESSEE

REVISIONS:

PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER: SH

DESIGNED: AB/SO/UW/WM

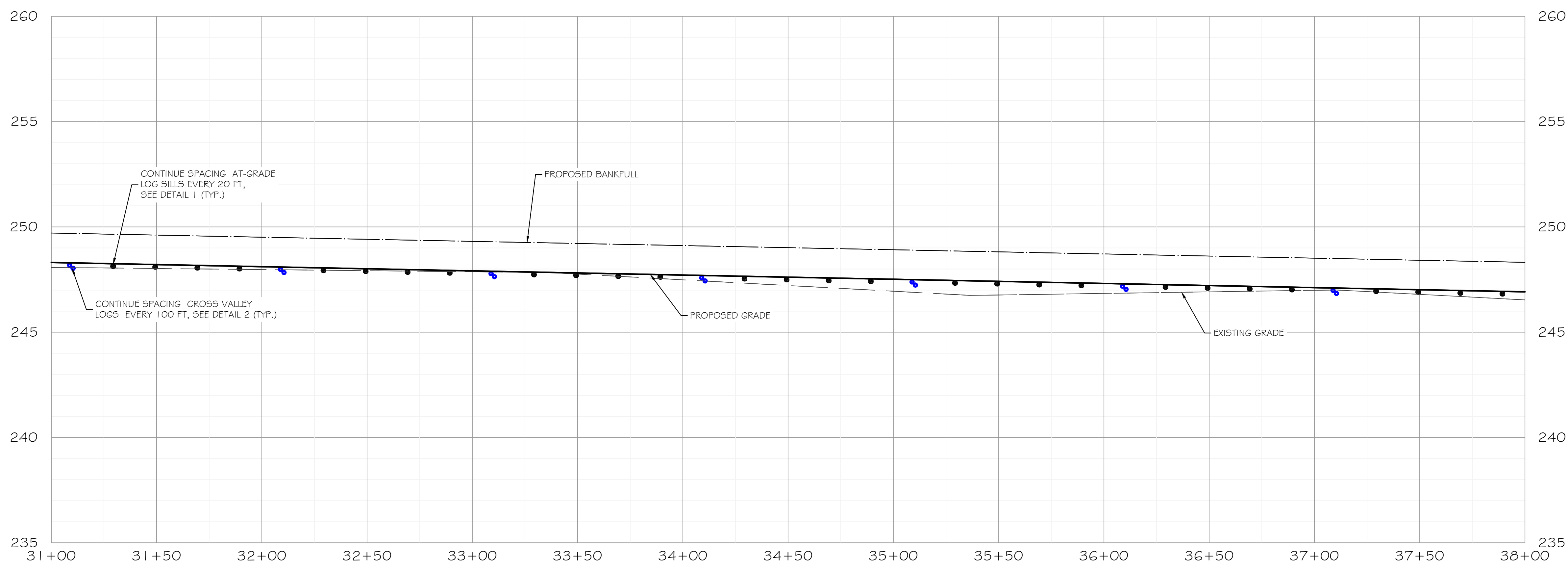
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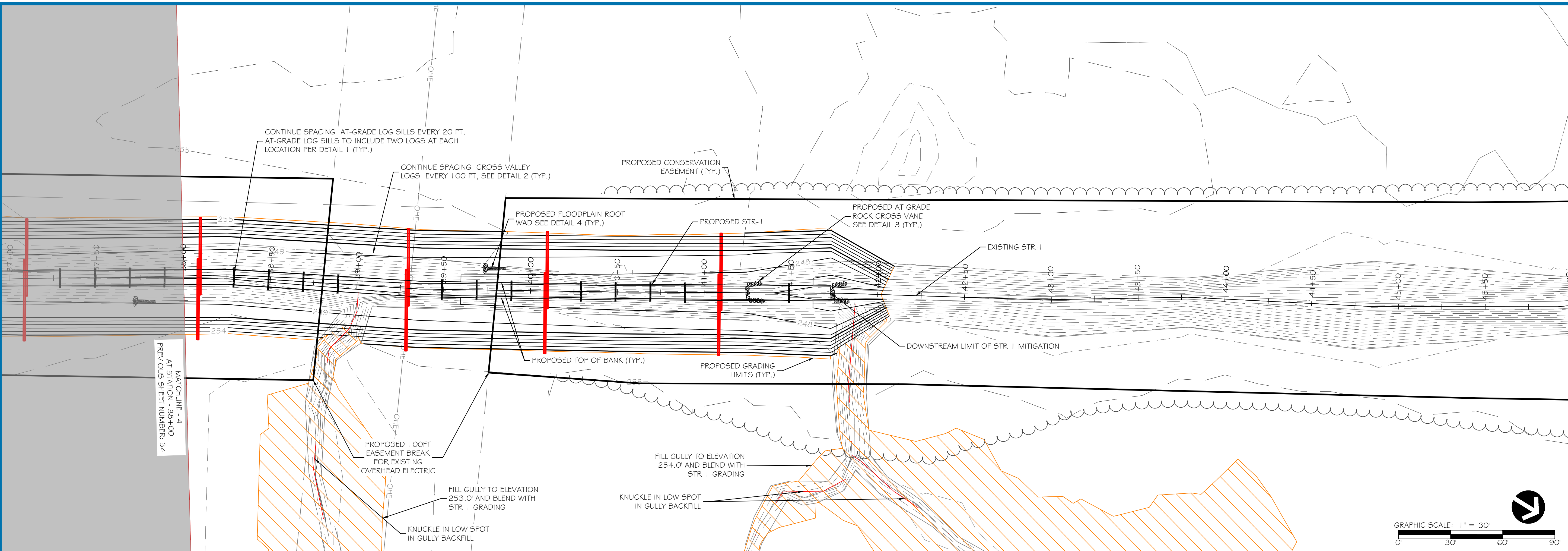
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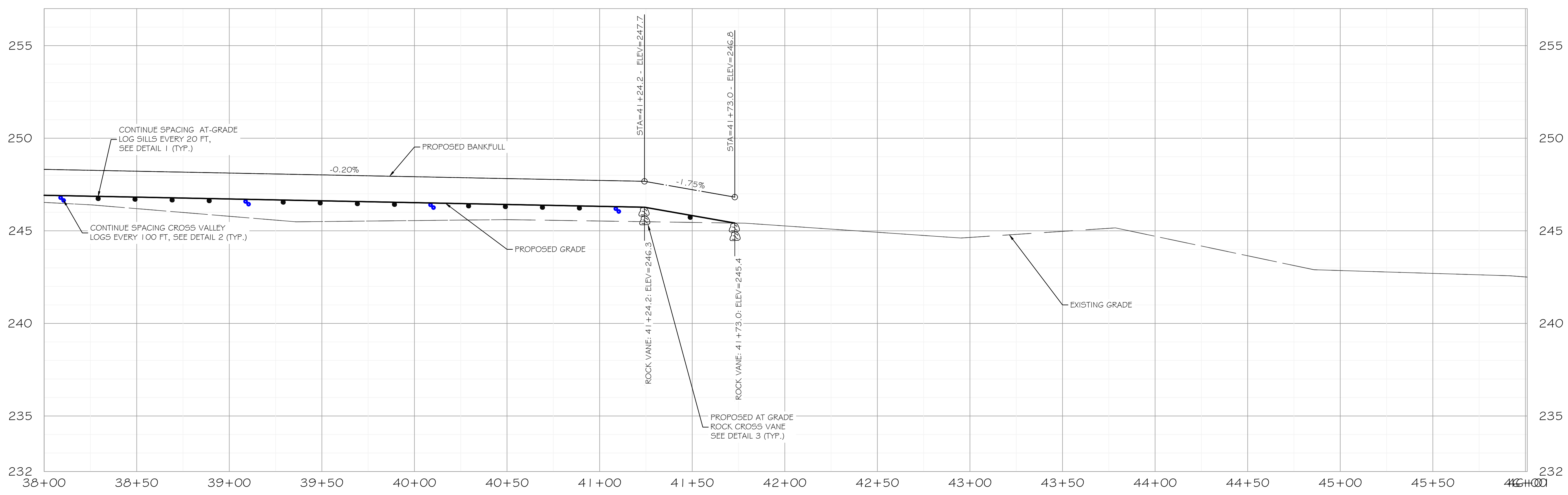
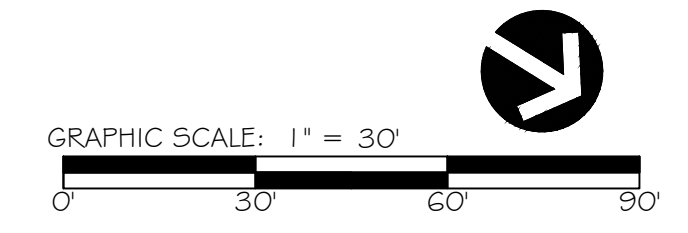
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SHEET NO: 13 of 46

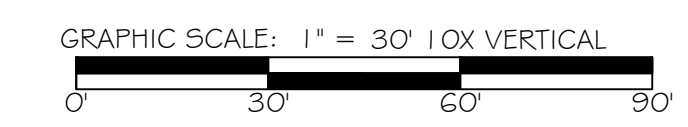




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AT STATION - 38+00  
PREVIOUS SHEET NUMBER - 54



STR-1 : 38+00 TO 46+01



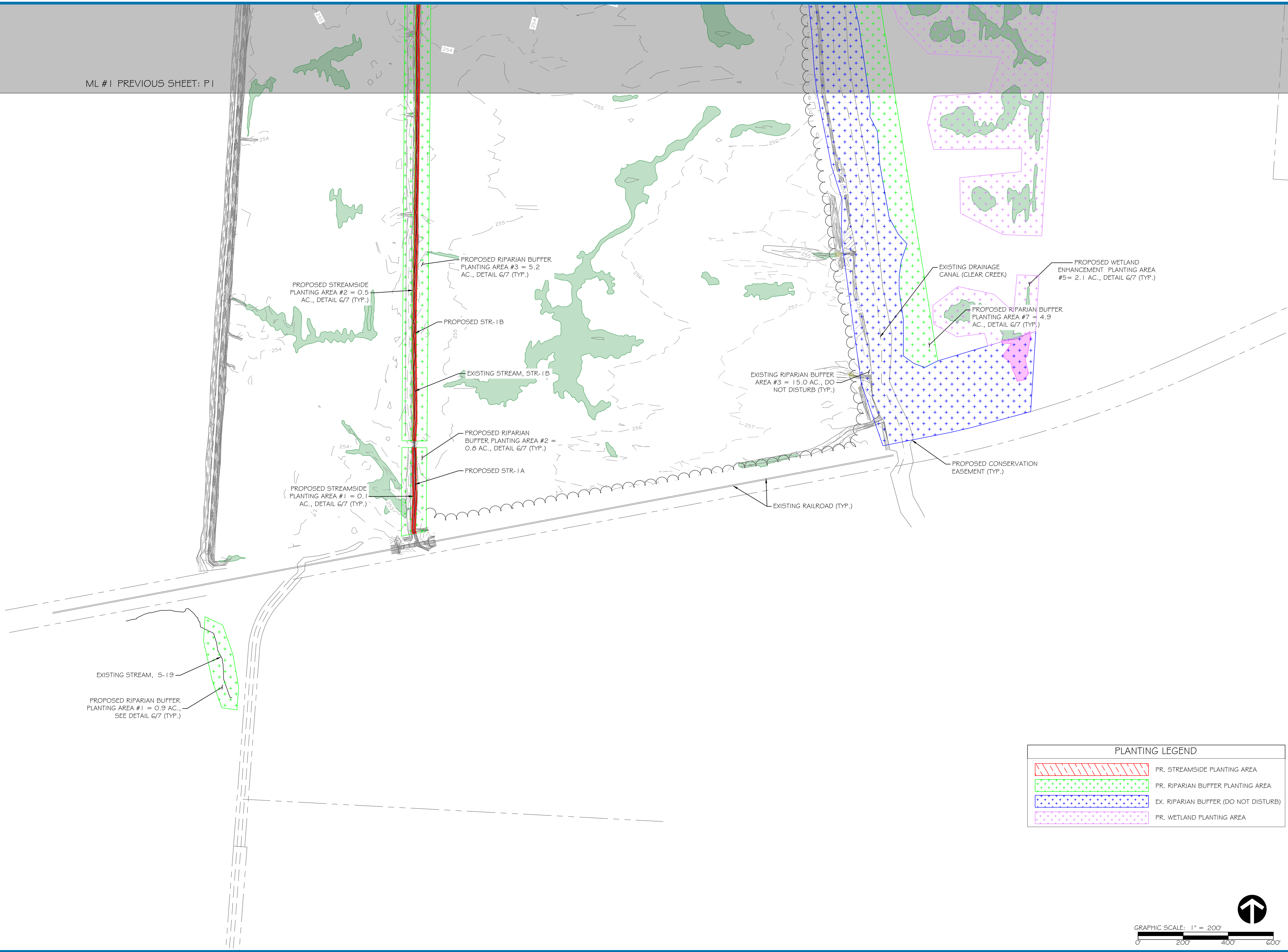
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PROJECT STATUS:  
BI MODIFICATION

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DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	14 of 46



ML #1 PREVIOUS SHEET: P1



EXISTING STREAM, S-19  
 PROPOSED RIPARIAN BUFFER PLANTING AREA #1 = 0.9 AC., SEE DETAIL G/7 (TYP.)

PROPOSED STREAMSIDE PLANTING AREA #1 = 0.1 AC., DETAIL G/7 (TYP.)

PROPOSED STREAMSIDE PLANTING AREA #2 = 0.5 AC., DETAIL G/7 (TYP.)

PROPOSED RIPARIAN BUFFER PLANTING AREA #3 = 5.2 AC., DETAIL G/7 (TYP.)

PROPOSED STR-1B

EXISTING STREAM, STR-1B

PROPOSED RIPARIAN BUFFER PLANTING AREA #2 = 0.8 AC., DETAIL G/7 (TYP.)

PROPOSED STR-1A

EXISTING RIPARIAN BUFFER AREA #3 = 15.0 AC., DO NOT DISTURB (TYP.)

EXISTING RAILROAD (TYP.)

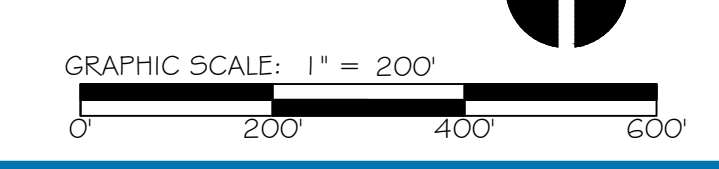
EXISTING DRAINAGE CANAL (CLEAR CREEK)

PROPOSED RIPARIAN BUFFER PLANTING AREA #6 = 4.9 AC., DETAIL G/7 (TYP.)

PROPOSED WETLAND ENHANCEMENT PLANTING AREA #5 = 2.1 AC., DETAIL G/7 (TYP.)

PROPOSED CONSERVATION EASEMENT (TYP.)

PLANTING LEGEND	
	PR. STREAMSIDE PLANTING AREA
	PR. RIPARIAN BUFFER PLANTING AREA
	EX. RIPARIAN BUFFER (DO NOT DISTURB)
	PR. WETLAND PLANTING AREA



SMOKESTACK MITIGATION BANK

Planting - P2

SHELBY COUNTY, TENNESSEE



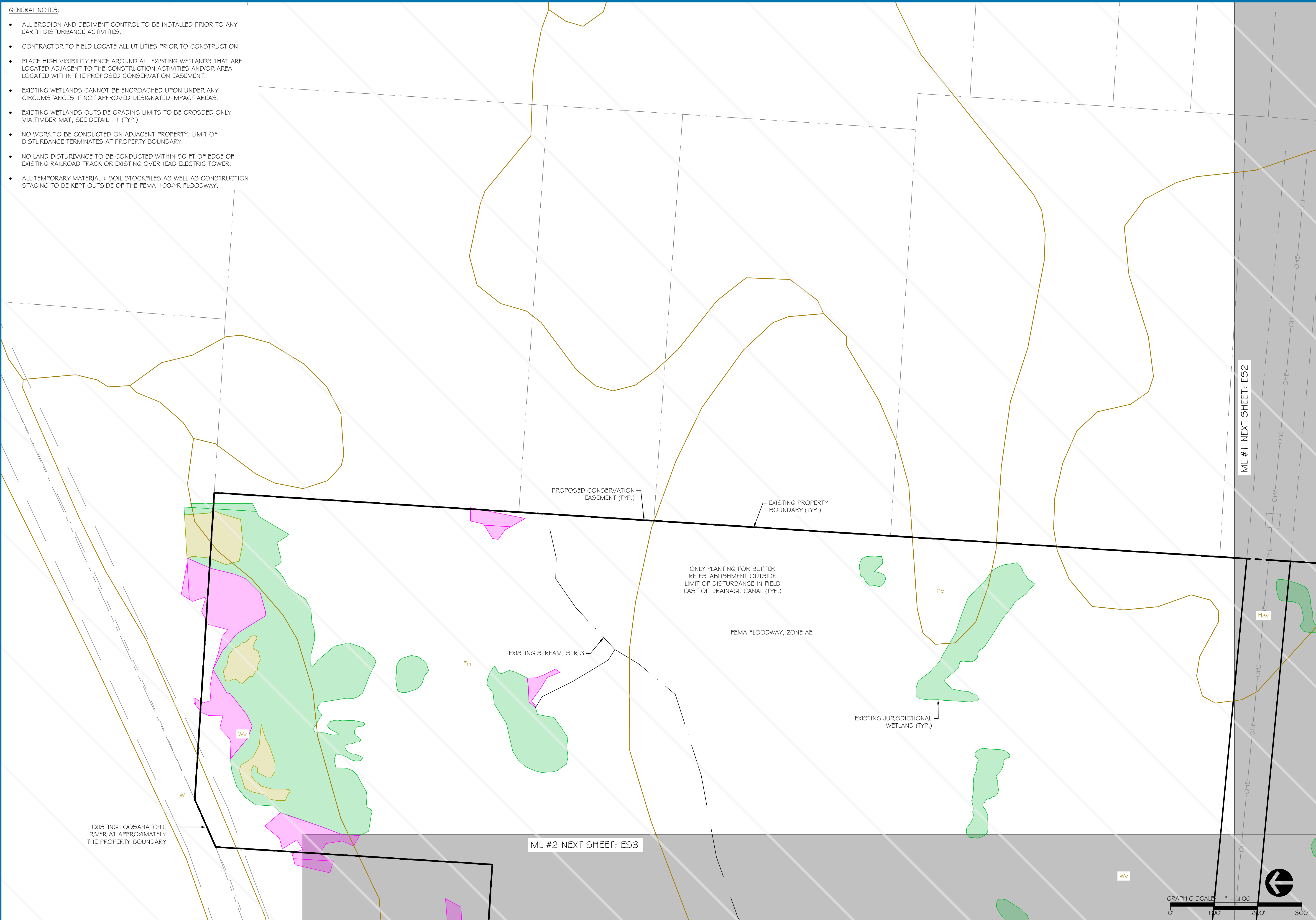
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PROJECT STATUS:  
**BI MODIFICATION**

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	16 of 46

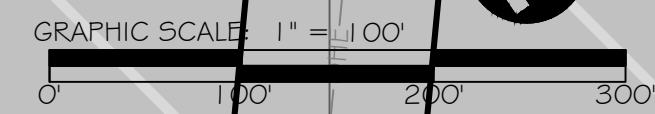
GENERAL NOTES:

- ALL EROSION AND SEDIMENT CONTROL TO BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES.
- CONTRACTOR TO FIELD LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
- PLACE HIGH VISIBILITY FENCE AROUND ALL EXISTING WETLANDS THAT ARE LOCATED ADJACENT TO THE CONSTRUCTION ACTIVITIES AND/OR AREA LOCATED WITHIN THE PROPOSED CONSERVATION EASEMENT.
- EXISTING WETLANDS CANNOT BE ENCRoACHED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED DESIGNATED IMPACT AREAS.
- EXISTING WETLANDS OUTSIDE GRADING LIMITS TO BE CROSSED ONLY VIA TIMBER MAT, SEE DETAIL 11 (TYP.)
- NO WORK TO BE CONDUCTED ON ADJACENT PROPERTY. LIMIT OF DISTURBANCE TERMINATES AT PROPERTY BOUNDARY.
- NO LAND DISTURBANCE TO BE CONDUCTED WITHIN 50 FT OF EDGE OF EXISTING RAILROAD TRACK OR EXISTING OVERHEAD ELECTRIC TOWER.
- ALL TEMPORARY MATERIAL & SOIL STOCKPILES AS WELL AS CONSTRUCTION STAGING TO BE KEPT OUTSIDE OF THE FEMA 100-YR FLOODWAY.



ML #1 NEXT SHEET: ES2

ML #2 NEXT SHEET: ES3



SMOKESTACK MITIGATION BANK

Pre Construction E&S - ES1

SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
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DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	17 of 46

GENERAL NOTES:

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SMOKESTACK MITIGATION BANK

Pre Construction E&S - ES2

SHELBY COUNTY, TENNESSEE

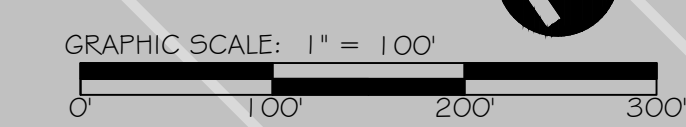
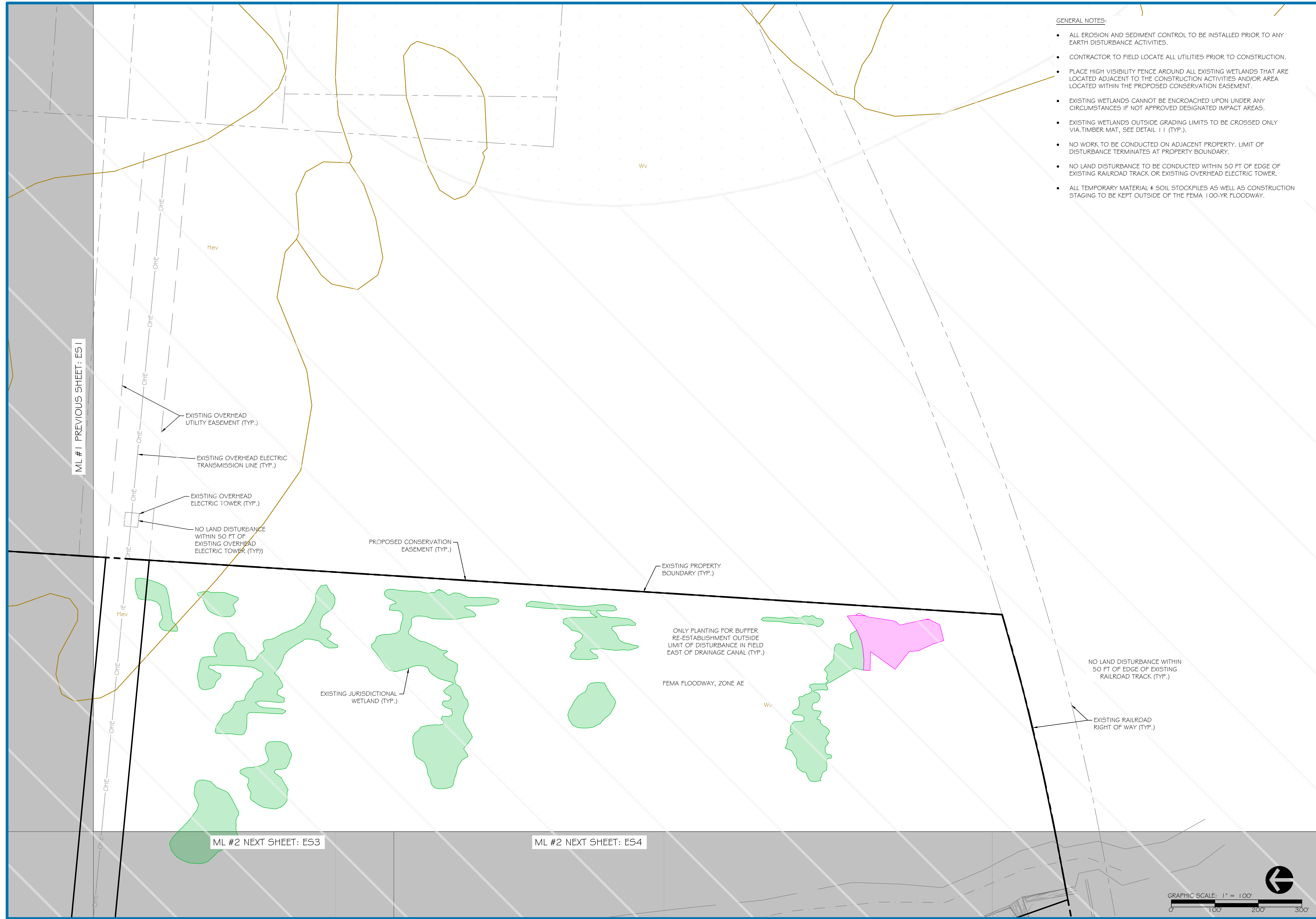
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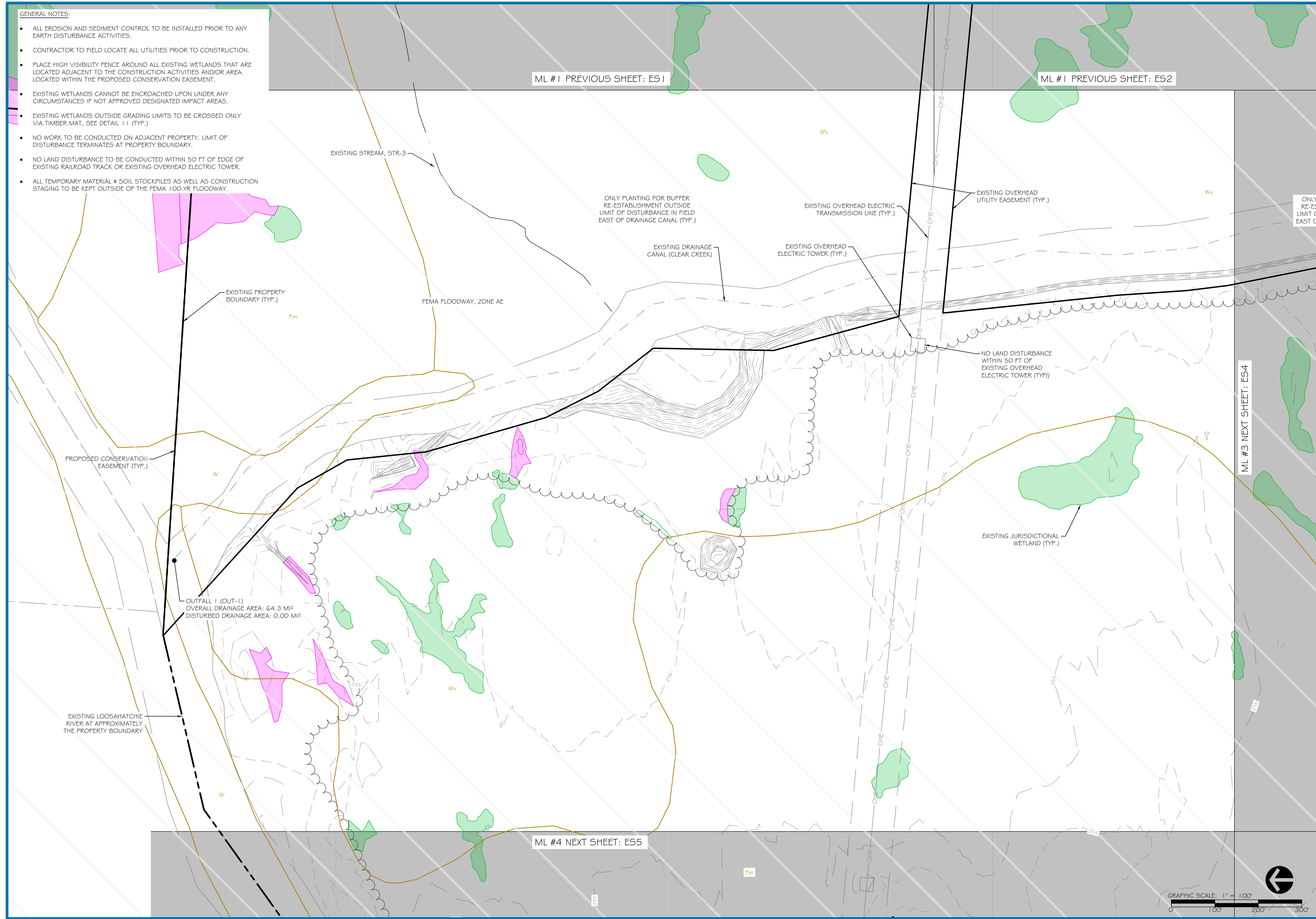
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PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
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**GENERAL NOTES:**

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- CONTRACTOR TO FIELD LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
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ML #1 PREVIOUS SHEET: ES1

ML #1 PREVIOUS SHEET: ES2

ML #3 NEXT SHEET: ES4

ML #4 NEXT SHEET: ES5



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SMOKESTACK MITIGATION BANK

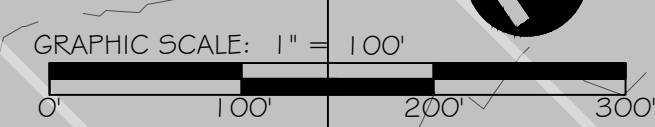
Pre Construction E&S - ES3

SHELBY COUNTY, TENNESSEE

REVISIONS:  
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PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
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ML #2 PREVIOUS SHEET: ES2

GENERAL NOTES:

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- ALL TEMPORARY MATERIAL + SOIL STOCKPILES AS WELL AS CONSTRUCTION STAGING TO BE KEPT OUTSIDE OF THE FEMA 100-YR FLOODWAY.

EXISTING DRAINAGE CANAL (CLEAR CREEK)

ONLY PLANTING FOR BUFFER RE-ESTABLISHMENT OUTSIDE LIMIT OF DISTURBANCE IN FIELD EAST OF DRAINAGE CANAL (TYP.)

PROPOSED CONSERVATION EASEMENT (TYP.)

FEMA FLOODWAY, ZONE AE

EXISTING RAILROAD (TYP.)

EXISTING PROPERTY BOUNDARY (TYP.)

EXISTING JURISDICTIONAL WETLAND (TYP.)



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SMOKESTACK MITIGATION BANK

Pre Construction E&S - ES4

SHELBY COUNTY, TENNESSEE

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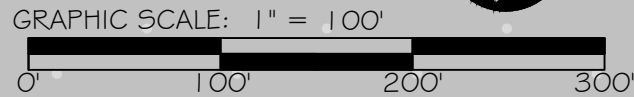
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DRAWN:	UW/WM/SO
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ML #4 NEXT SHEET: ES5

ML #4 NEXT SHEET: ES6

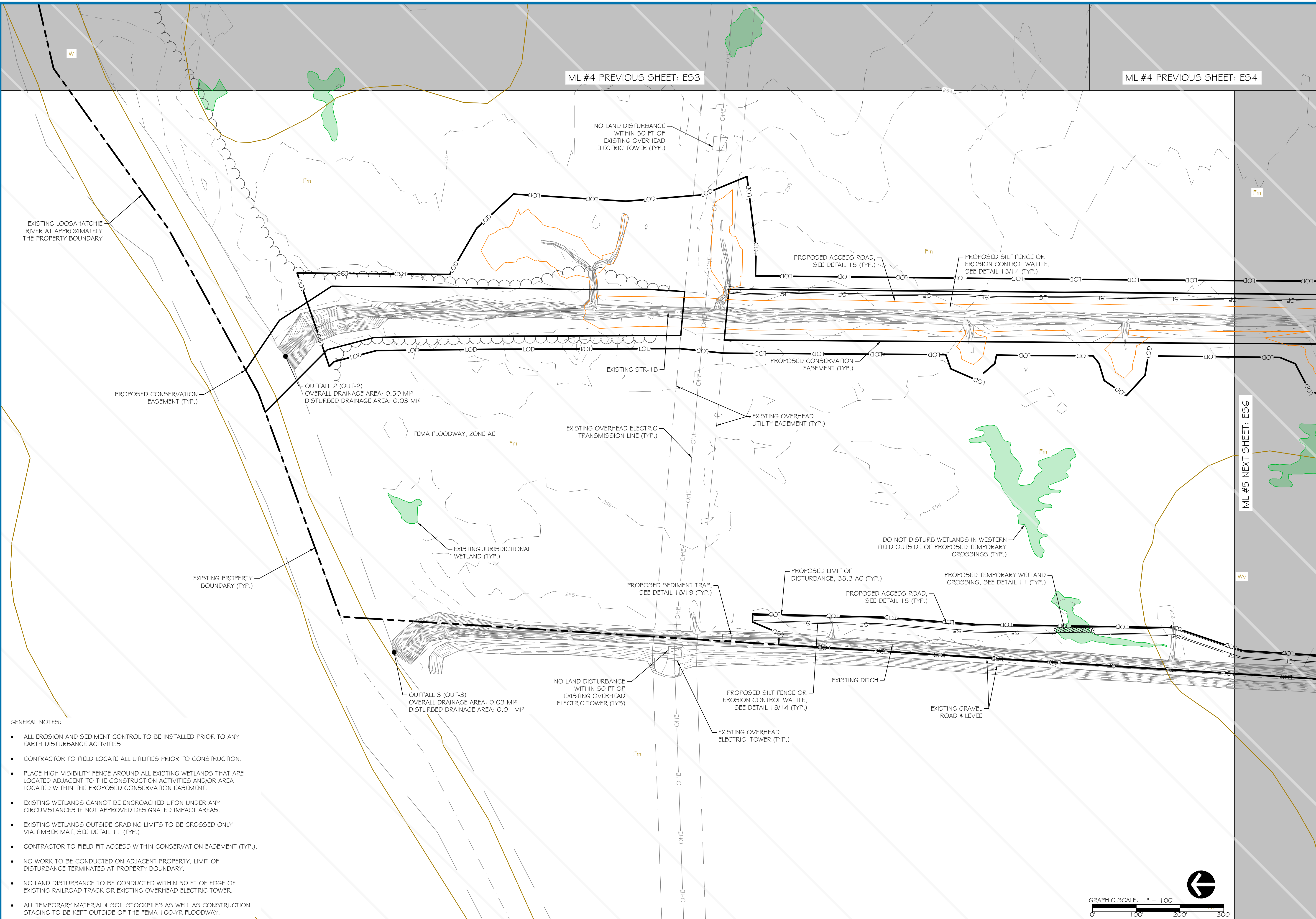


REVISIONS:  
▲

PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER: SH  
DESIGNED: AB/SO/UW/WM  
DRAWN: UW/WM/SO  
JOB NUMBER: 100111  
DESIGN TYPE: FINAL  
DATE: 03-12-2024  
SHEET NO: 21 of 46

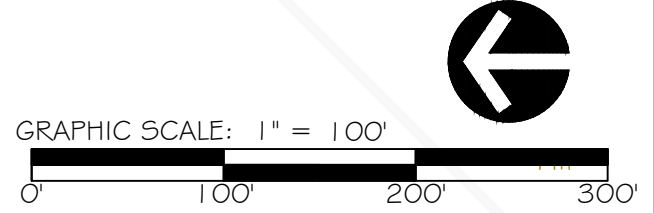


ML #4 PREVIOUS SHEET: ES3

ML #4 PREVIOUS SHEET: ES4

ML #5 NEXT SHEET: ES6

- GENERAL NOTES:
- ALL EROSION AND SEDIMENT CONTROL TO BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES.
  - CONTRACTOR TO FIELD LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
  - PLACE HIGH VISIBILITY FENCE AROUND ALL EXISTING WETLANDS THAT ARE LOCATED ADJACENT TO THE CONSTRUCTION ACTIVITIES AND/OR AREA LOCATED WITHIN THE PROPOSED CONSERVATION EASEMENT.
  - EXISTING WETLANDS CANNOT BE ENCLOSED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED DESIGNATED IMPACT AREAS.
  - EXISTING WETLANDS OUTSIDE GRADING LIMITS TO BE CROSSED ONLY VIA TIMBER MAT, SEE DETAIL 11 (TYP.)
  - CONTRACTOR TO FIELD FIT ACCESS WITHIN CONSERVATION EASEMENT (TYP.).
  - NO WORK TO BE CONDUCTED ON ADJACENT PROPERTY. LIMIT OF DISTURBANCE TERMINATES AT PROPERTY BOUNDARY.
  - NO LAND DISTURBANCE TO BE CONDUCTED WITHIN 50 FT OF EDGE OF EXISTING RAILROAD TRACK OR EXISTING OVERHEAD ELECTRIC TOWER.
  - ALL TEMPORARY MATERIAL & SOIL STOCKPILES AS WELL AS CONSTRUCTION STAGING TO BE KEPT OUTSIDE OF THE FEMA 100-YR FLOODWAY.



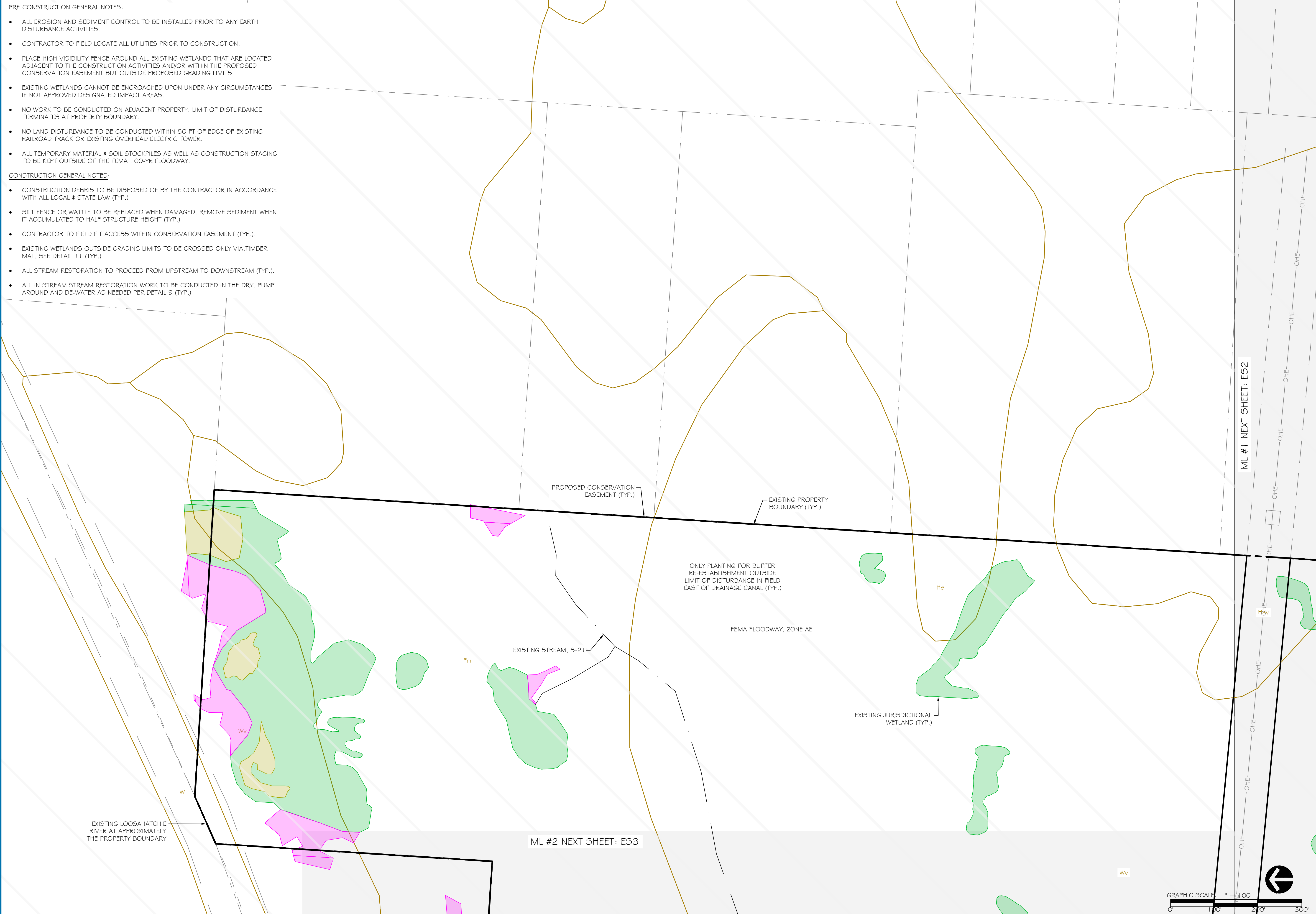


**PRE-CONSTRUCTION GENERAL NOTES:**

- ALL EROSION AND SEDIMENT CONTROL TO BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES.
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**CONSTRUCTION GENERAL NOTES:**

- CONSTRUCTION DEBRIS TO BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL LOCAL & STATE LAW (TYP.)
- SILT FENCE OR WATTLE TO BE REPLACED WHEN DAMAGED. REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF STRUCTURE HEIGHT (TYP.)
- CONTRACTOR TO FIELD FIT ACCESS WITHIN CONSERVATION EASEMENT (TYP.)
- EXISTING WETLANDS OUTSIDE GRADING LIMITS TO BE CROSSED ONLY VIA TIMBER MAT, SEE DETAIL 11 (TYP.)
- ALL STREAM RESTORATION TO PROCEED FROM UPSTREAM TO DOWNSTREAM (TYP.)
- ALL IN-STREAM STREAM RESTORATION WORK TO BE CONDUCTED IN THE DRY. PUMP AROUND AND DE-WATER AS NEEDED PER DETAIL 9 (TYP.)



ML #1 NEXT SHEET: ES2

ML #2 NEXT SHEET: ES3



SMOKESTACK MITIGATION BANK

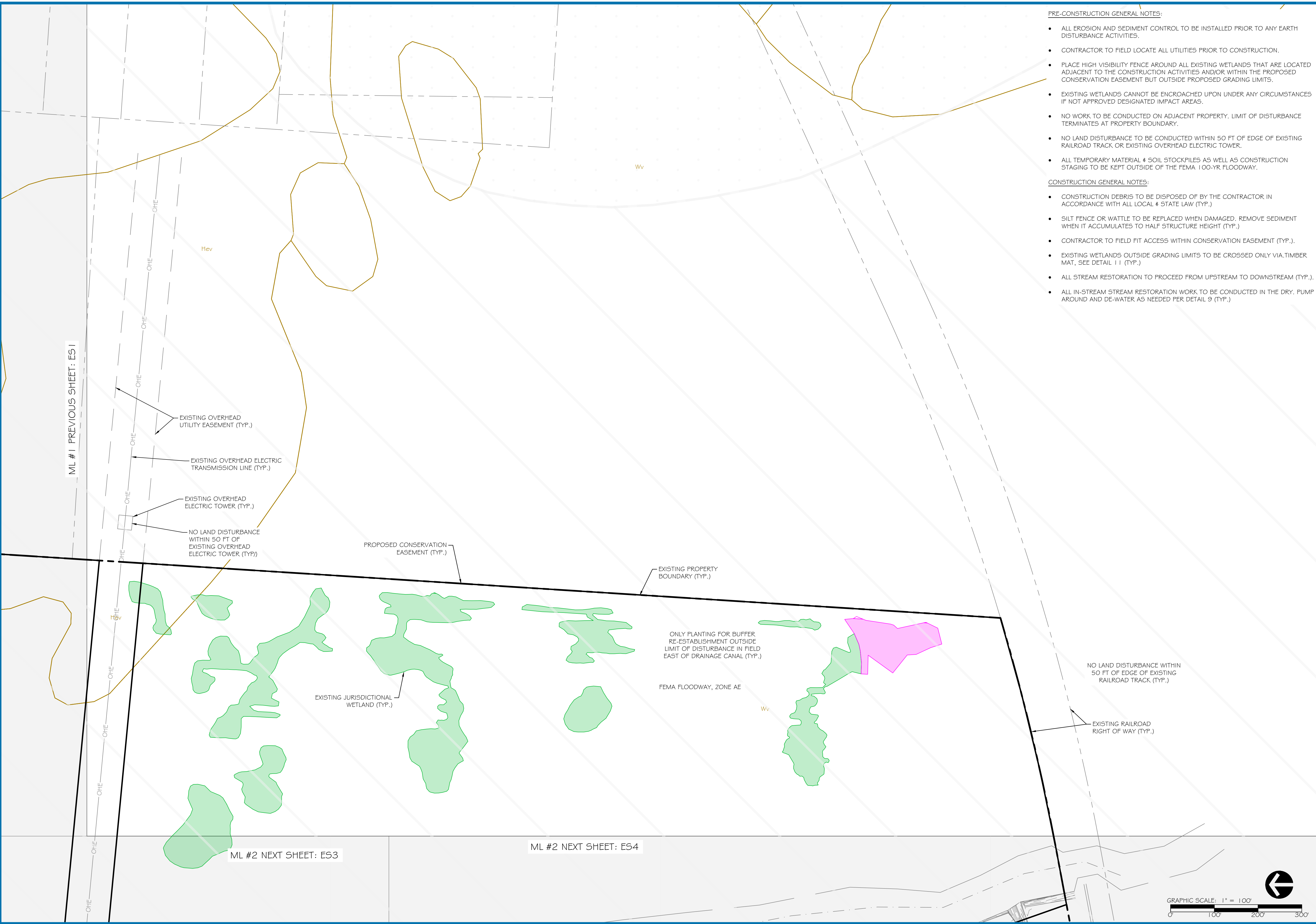
Construction E&S - ES1

SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	23 of 46



**PRE-CONSTRUCTION GENERAL NOTES:**

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ML #1 PREVIOUS SHEET: ES1

ML #2 NEXT SHEET: ES3

ML #2 NEXT SHEET: ES4

SMOKESTACK MITIGATION BANK

Construction E&S - ES2

SHELBY COUNTY, TENNESSEE

REVISIONS:

PROJECT STATUS:  
**BI MODIFICATION**

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO:	24 of 46

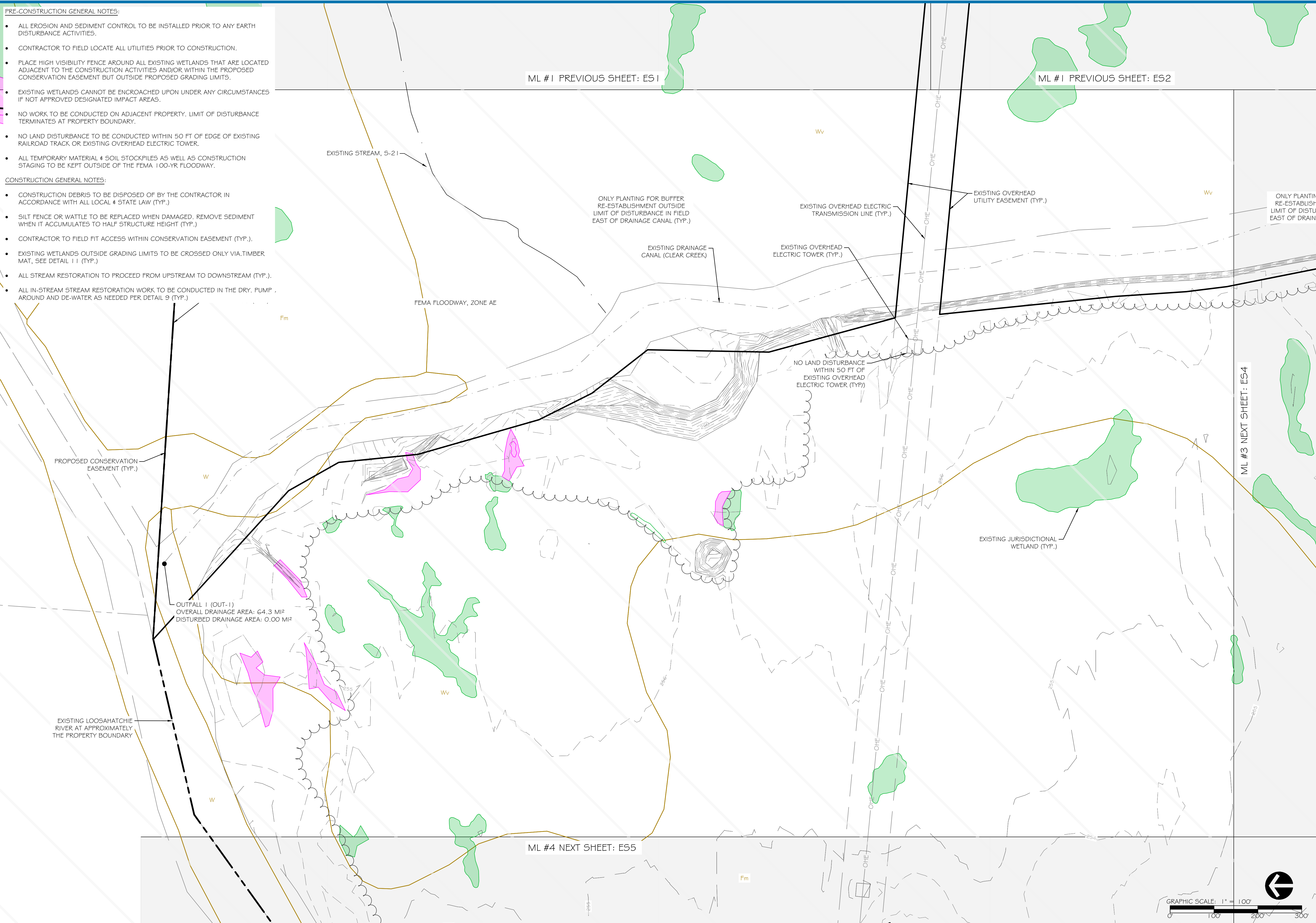
103 Continental Place, Ste. 202 Brentwood, TN 37027  
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**PRE-CONSTRUCTION GENERAL NOTES:**

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SMOKESTACK MITIGATION BANK

Construction E&S - ES3

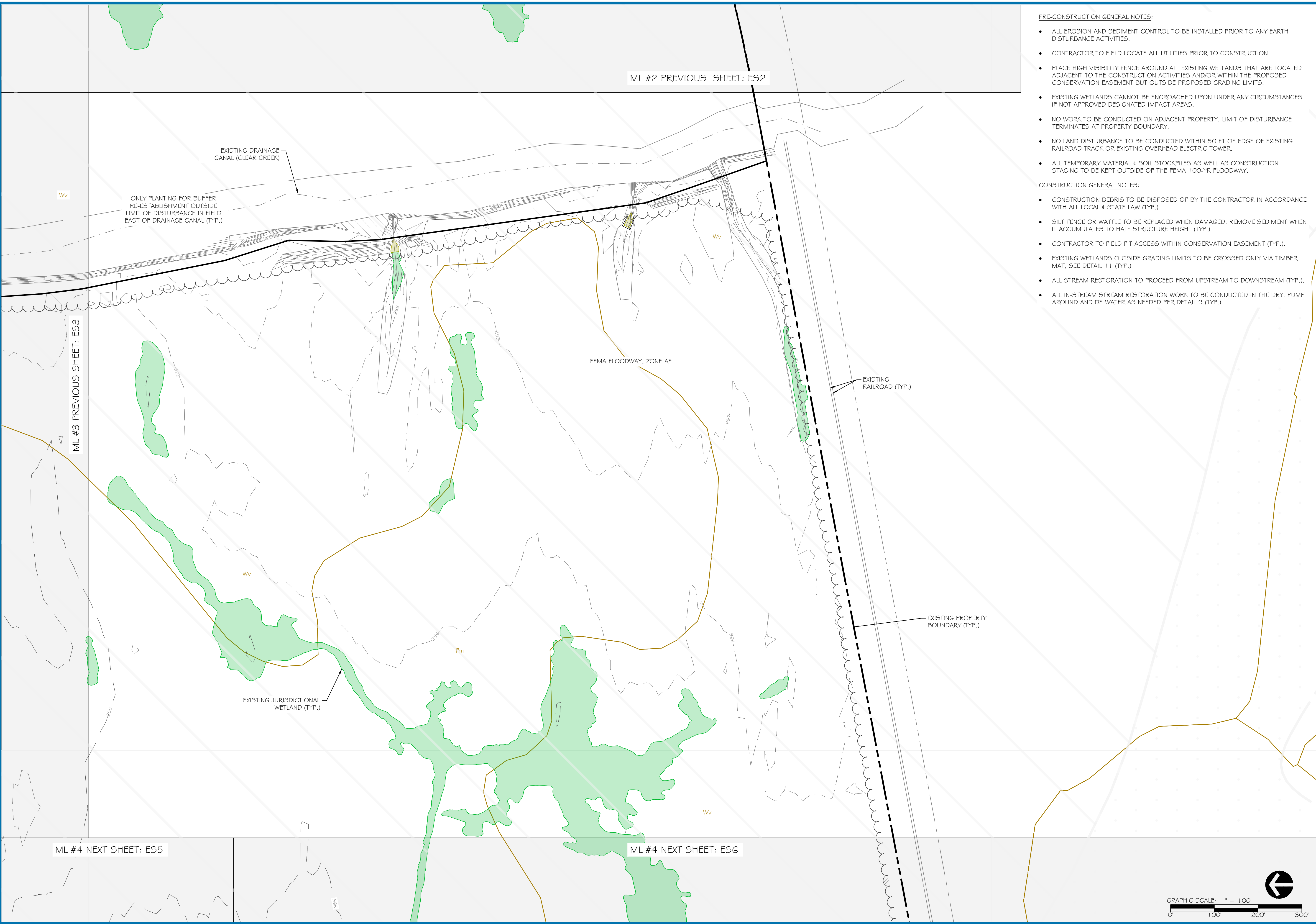
SHELBY COUNTY, TENNESSEE

REVISIONS:

PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	25 of 46



ML #2 PREVIOUS SHEET: E52

EXISTING DRAINAGE CANAL (CLEAR CREEK)

ONLY PLANTING FOR BUFFER RE-ESTABLISHMENT OUTSIDE LIMIT OF DISTURBANCE IN FIELD EAST OF DRAINAGE CANAL (TYP.)

FEMA FLOODWAY, ZONE AE

EXISTING RAILROAD (TYP.)

EXISTING PROPERTY BOUNDARY (TYP.)

EXISTING JURISDICTIONAL WETLAND (TYP.)

ML #4 NEXT SHEET: E55

ML #4 NEXT SHEET: E56

**PRE-CONSTRUCTION GENERAL NOTES:**

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SMOKESTACK MITIGATION BANK

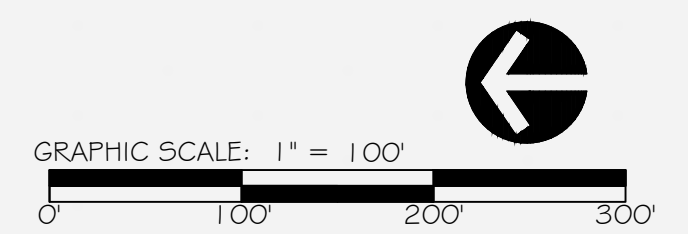
Construction E&S - ES4

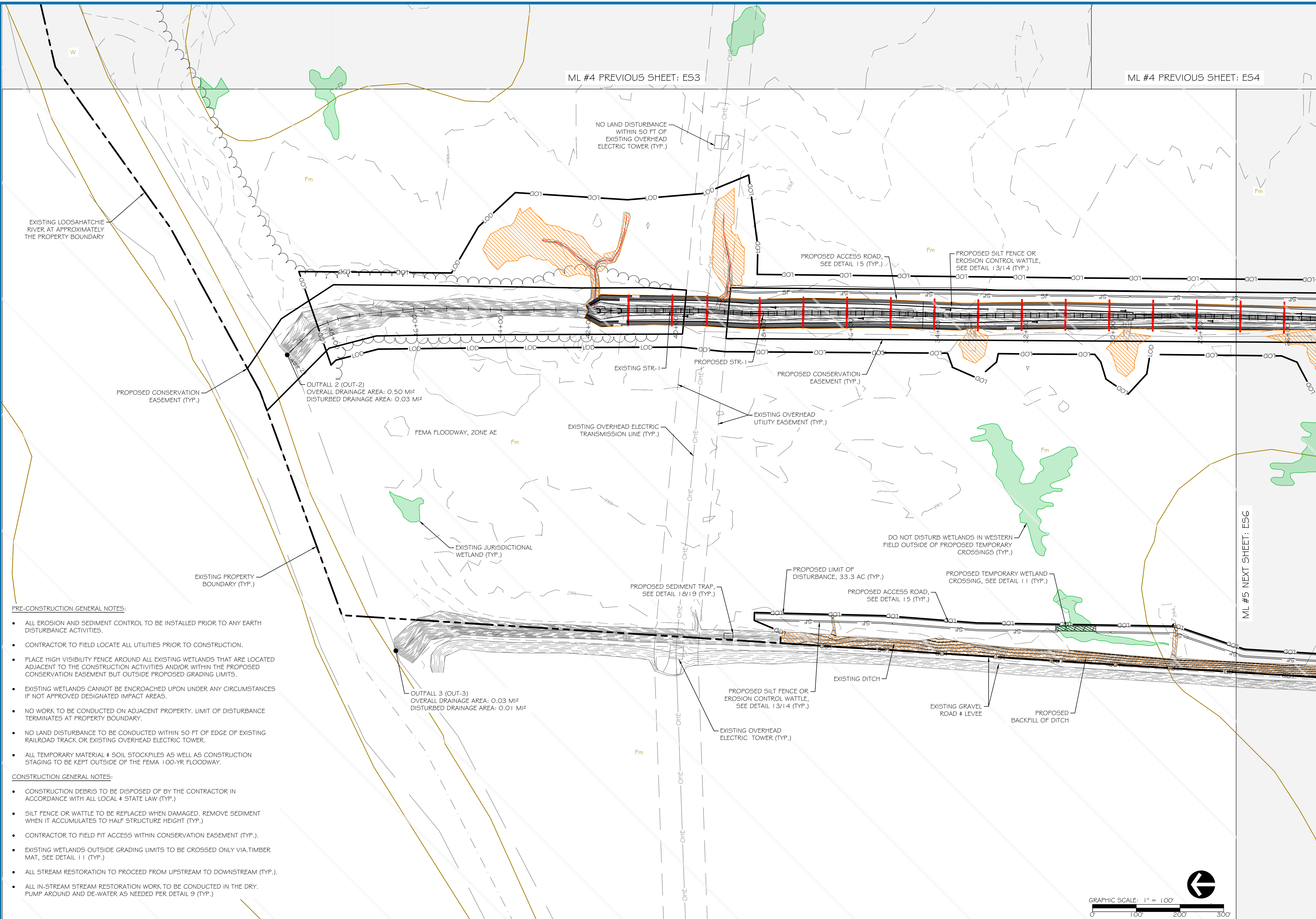
SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO:	26 of 46





ML #4 PREVIOUS SHEET: ES3

ML #4 PREVIOUS SHEET: ES4

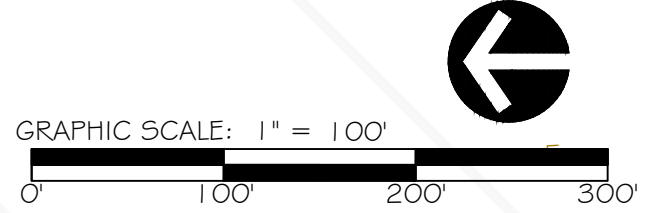
ML #5 NEXT SHEET: ES6

**PRE-CONSTRUCTION GENERAL NOTES:**

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SMOKESTACK MITIGATION BANK

Construction E&S - ES5

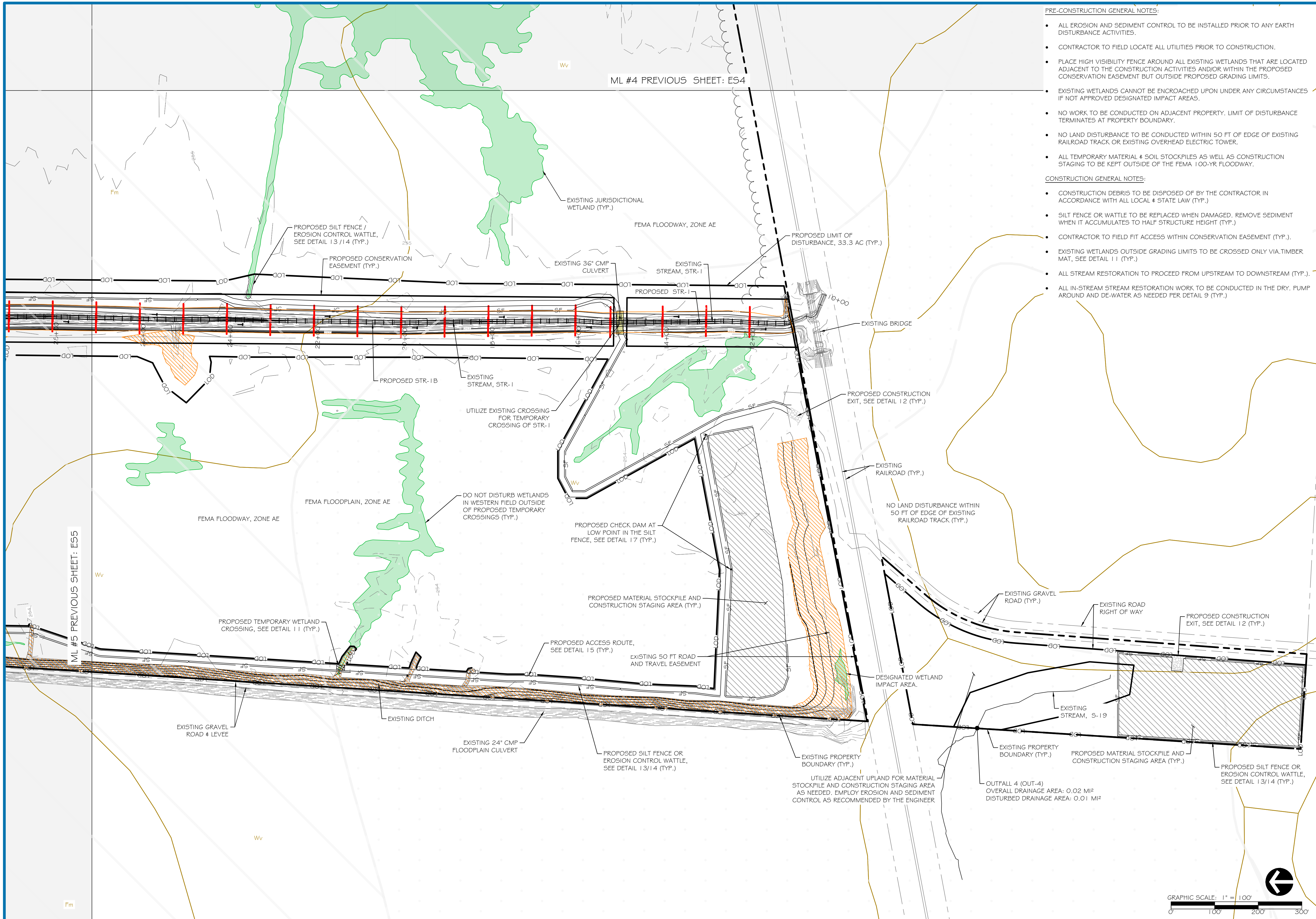
SHELBY COUNTY, TENNESSEE

REVISIONS:

PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	27 of 46



ML #4 PREVIOUS SHEET: ES4

ML #5 PREVIOUS SHEET: ES5

- PRE-CONSTRUCTION GENERAL NOTES:**
- ALL EROSION AND SEDIMENT CONTROL TO BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES.
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SMOKESTACK MITIGATION BANK

Construction E&S - ES6

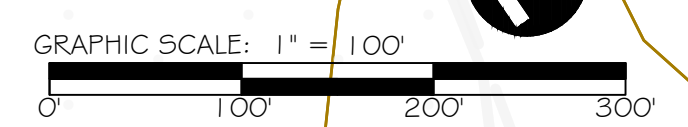
SHELBY COUNTY, TENNESSEE

103 Continental Place, Ste. 202 Brentwood, TN 37027  
WWW.RES.US

REVISIONS:  
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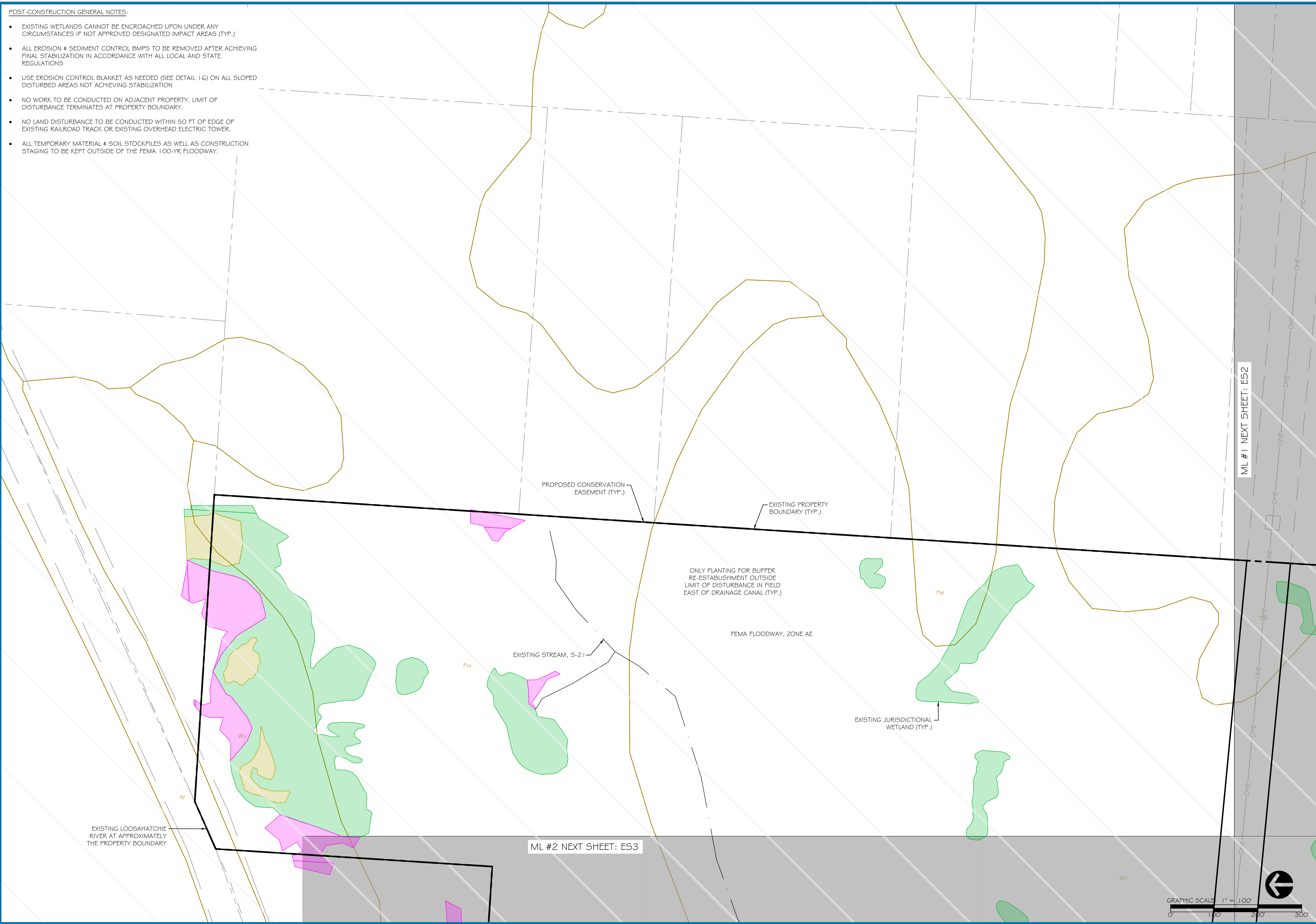
PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	28 of 46



POST-CONSTRUCTION GENERAL NOTES:

- EXISTING WETLANDS CANNOT BE ENCROACHED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED DESIGNATED IMPACT AREAS (TYP.)
- ALL EROSION & SEDIMENT CONTROL BMPs TO BE REMOVED AFTER ACHIEVING FINAL STABILIZATION IN ACCORDANCE WITH ALL LOCAL AND STATE REGULATIONS
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SMOKESTACK MITIGATION BANK

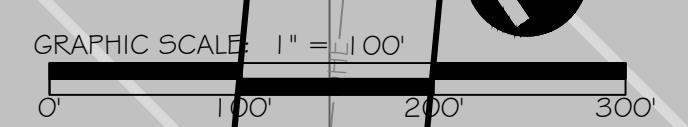
Post Construction E&S - ES1

SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO:	29 of 46



POST-CONSTRUCTION GENERAL NOTES:

- EXISTING WETLANDS CANNOT BE ENCROACHED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED DESIGNATED IMPACT AREAS (TYP.)
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SMOKESTACK MITIGATION BANK

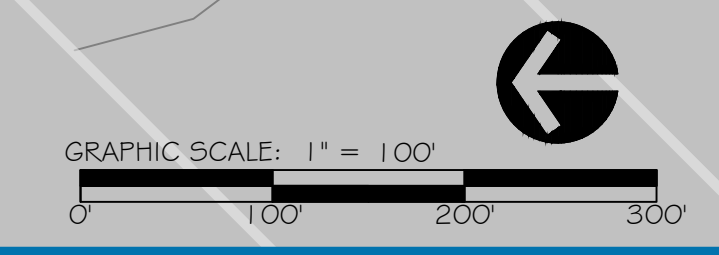
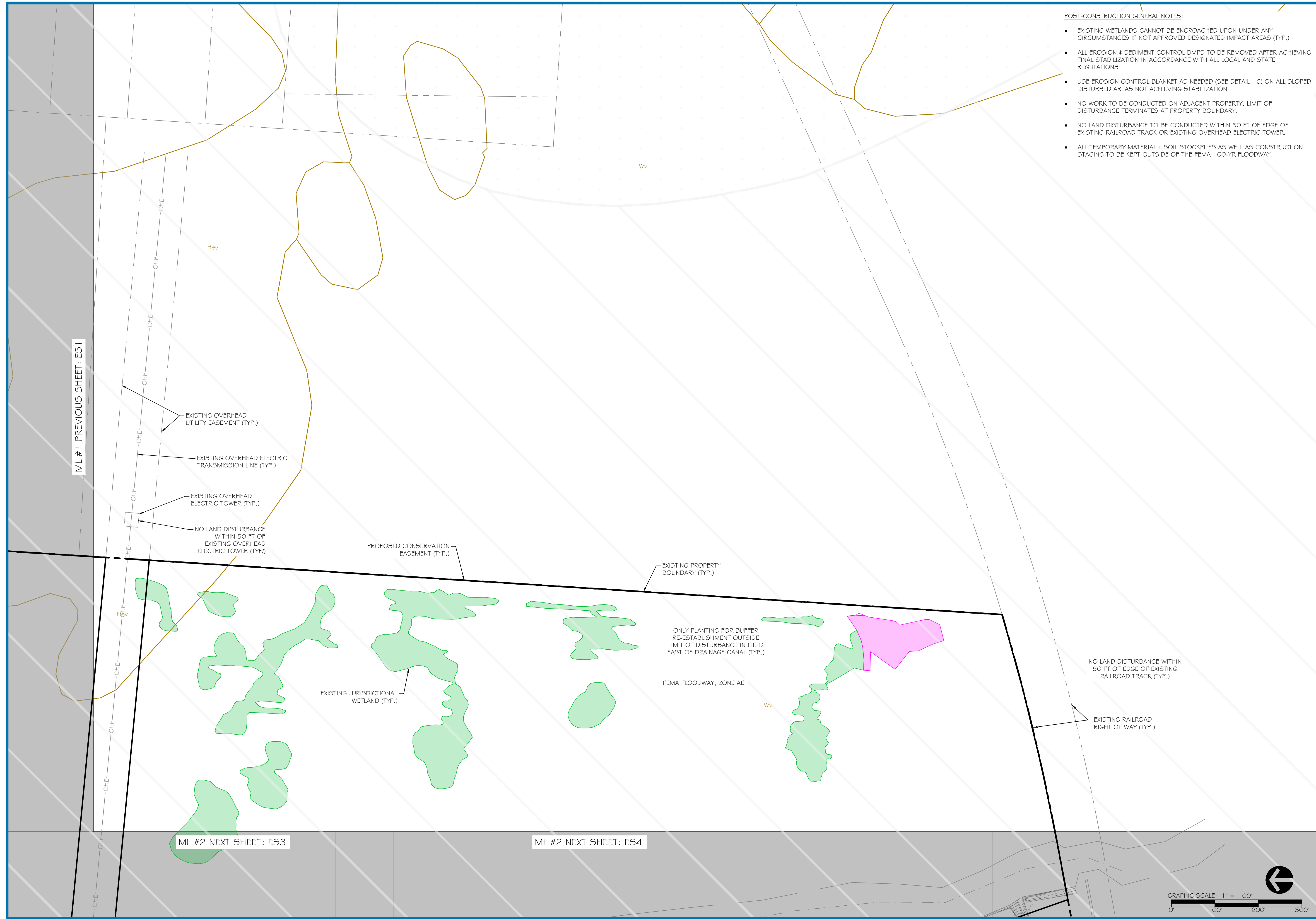
Post Construction E&S - ES2

SHELBY COUNTY, TENNESSEE

REVISIONS:  
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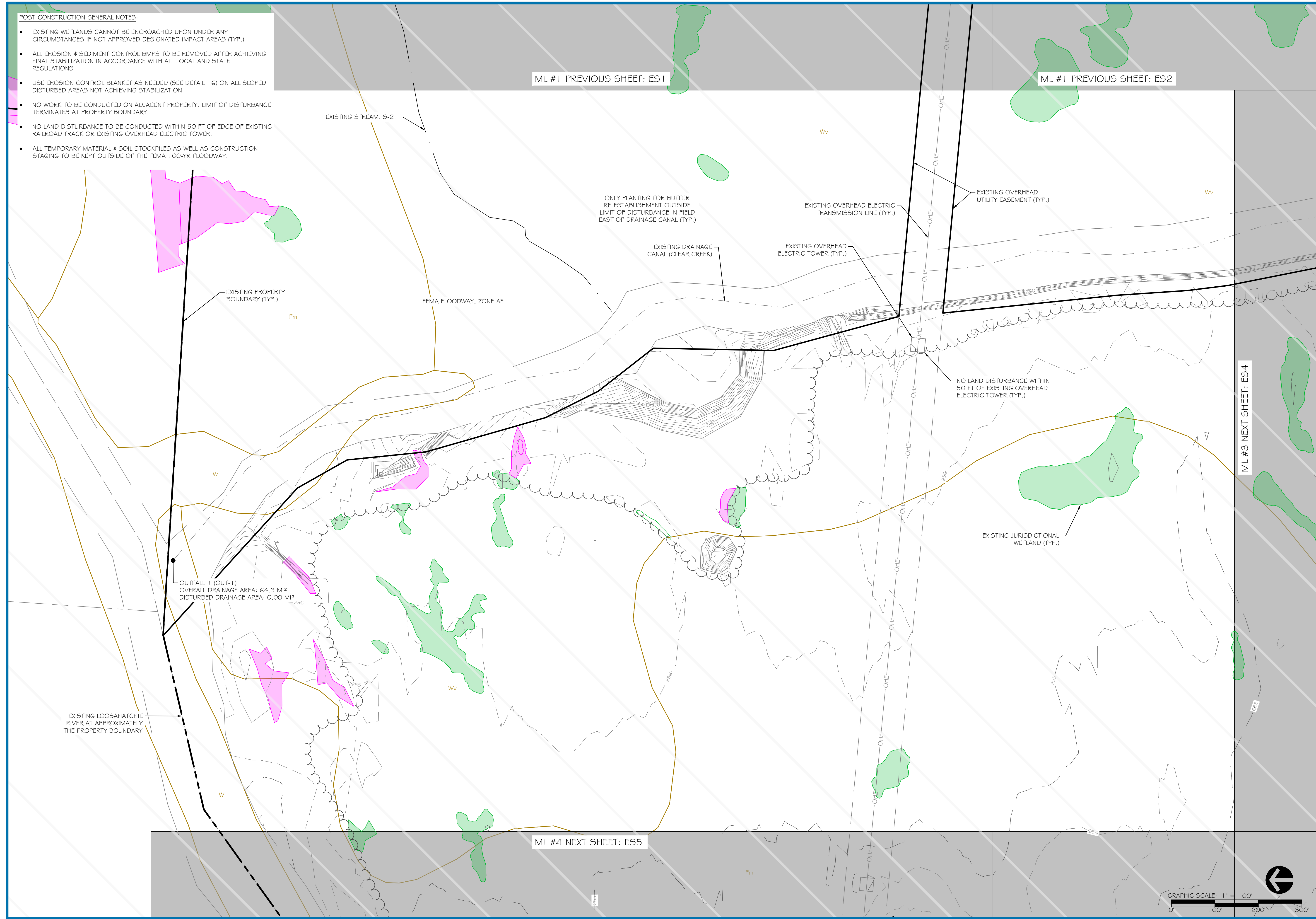
PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	30 of 46



**POST-CONSTRUCTION GENERAL NOTES:**

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SMOKESTACK MITIGATION BANK

Post Construction E&S - ES3

SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	31 of 46

POST-CONSTRUCTION GENERAL NOTES:

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ML #2 PREVIOUS SHEET: ES2

EXISTING DRAINAGE CANAL (CLEAR CREEK)

FEMA FLOODWAY, ZONE AE

EXISTING RAILROAD (TYP.)

NO LAND DISTURBANCE WITHIN 50 FT OF EDGE OF EXISTING RAILROAD TRACK (TYP.)

EXISTING PROPERTY BOUNDARY (TYP.)

EXISTING JURISDICTIONAL WETLAND (TYP.)

ML #3 PREVIOUS SHEET: ES3

ML #4 NEXT SHEET: ES5

ML #4 NEXT SHEET: ES6



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SMOKESTACK MITIGATION BANK

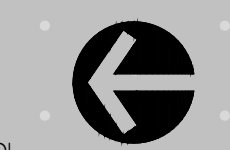
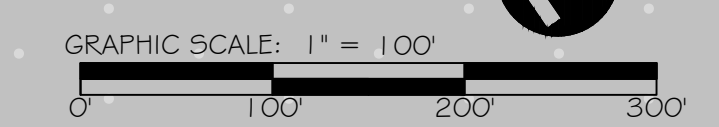
Post Construction E&S - ES4

SHELBY COUNTY, TENNESSEE

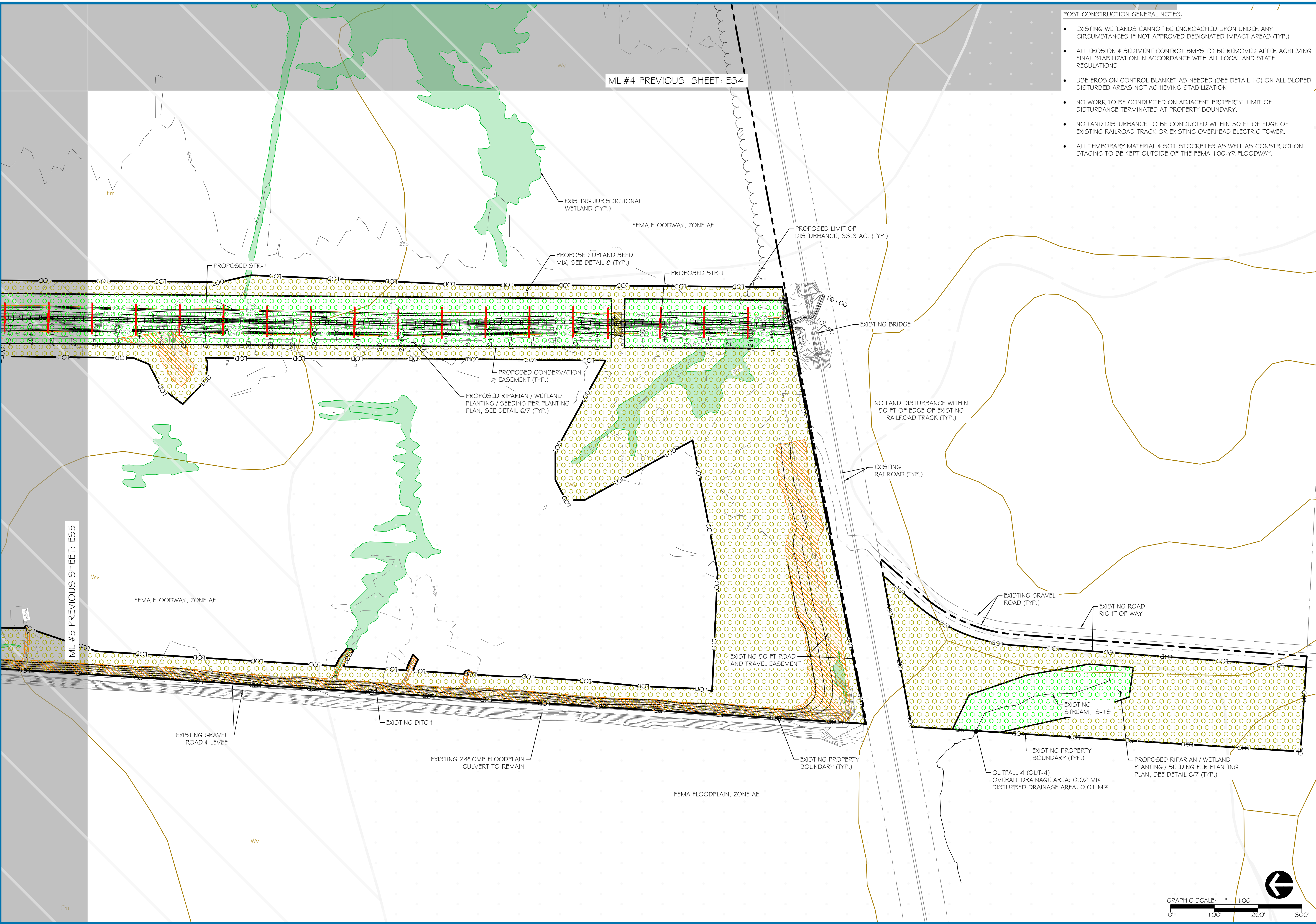
REVISIONS:  
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PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	32 of 46







ML #4 PREVIOUS SHEET: ES4

ML #5 PREVIOUS SHEET: ES5

POST-CONSTRUCTION GENERAL NOTES:

- EXISTING WETLANDS CANNOT BE ENCLOSED UPON UNDER ANY CIRCUMSTANCES IF NOT APPROVED DESIGNATED IMPACT AREAS (TYP.)
- ALL EROSION & SEDIMENT CONTROL BMPs TO BE REMOVED AFTER ACHIEVING FINAL STABILIZATION IN ACCORDANCE WITH ALL LOCAL AND STATE REGULATIONS
- USE EROSION CONTROL BLANKET AS NEEDED (SEE DETAIL 1 G) ON ALL SLOPED DISTURBED AREAS NOT ACHIEVING STABILIZATION
- NO WORK TO BE CONDUCTED ON ADJACENT PROPERTY. LIMIT OF DISTURBANCE TERMINATES AT PROPERTY BOUNDARY.
- NO LAND DISTURBANCE TO BE CONDUCTED WITHIN 50 FT OF EDGE OF EXISTING RAILROAD TRACK OR EXISTING OVERHEAD ELECTRIC TOWER.
- ALL TEMPORARY MATERIAL & SOIL STOCKPILES AS WELL AS CONSTRUCTION STAGING TO BE KEPT OUTSIDE OF THE FEMA 100-YR FLOODWAY.



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SMOKESTACK MITIGATION BANK

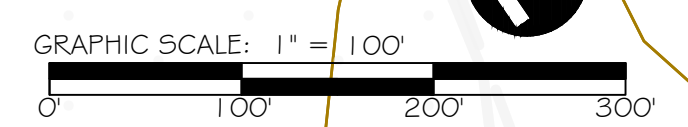
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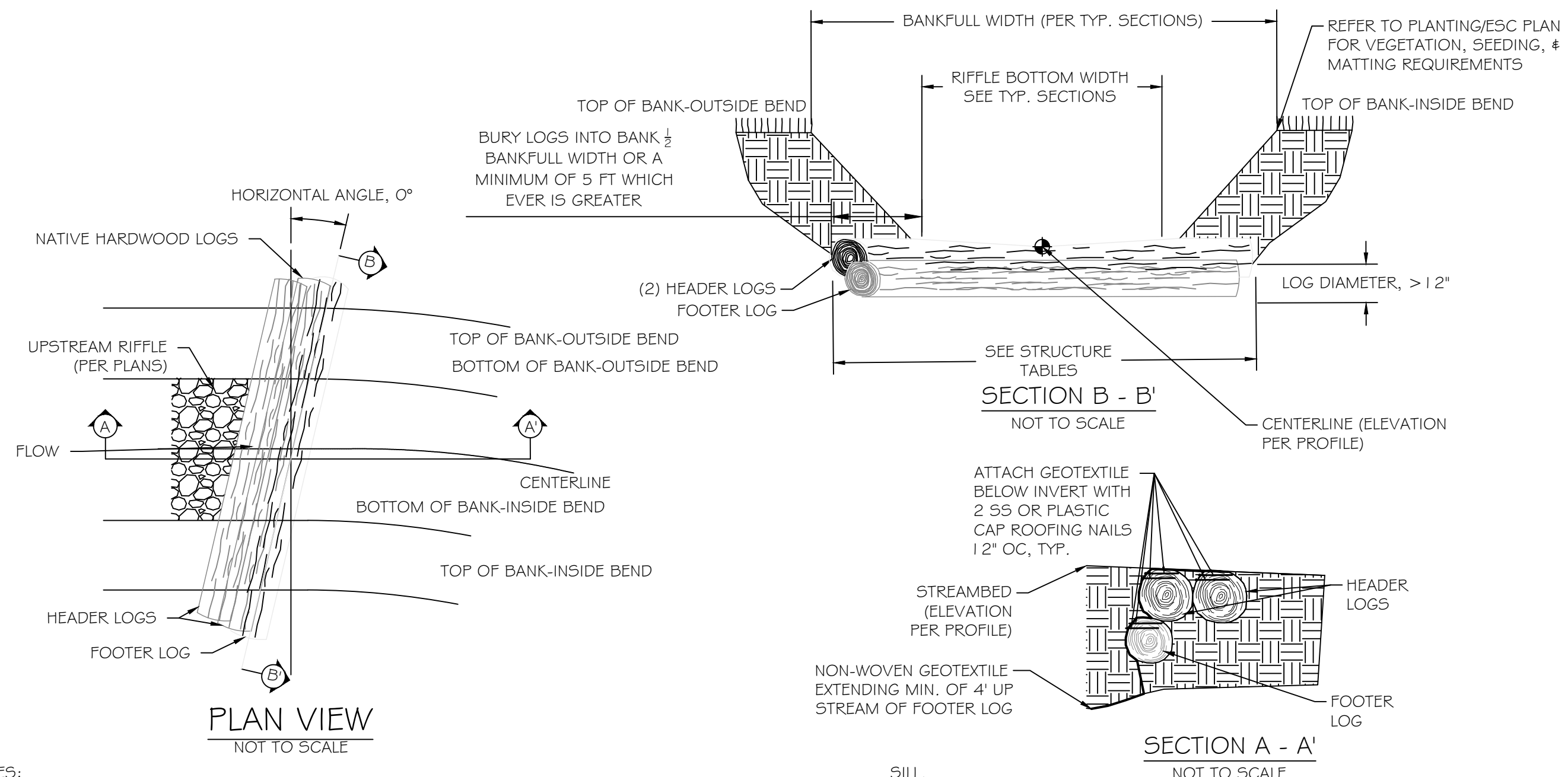
SHELBY COUNTY, TENNESSEE

REVISIONS:  
▲

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	34 of 46





- NOTES:
- 1) CONTRACTOR TO FOLLOW PLAN AND PROFILE SHEETS FOR SPECIFIC STRUCTURE LOCATION, UNLESS OTHERWISE DIRECTED BY FIELD ENGINEER.
  - 2) SEE CROSS SECTION GEOMETRY TABLE FOR CHANNEL DIMENSIONS & SIDE SLOPES. SEE PROFILE FOR CHANNEL SLOPES.
  - 3) INSTALL DUCKBILL® ANCHOR AT EACH END OF ALL LOG SILLS. USE ALUMINUM DB 68 (1,100 LBF), PLATIPUS S6 ANCHOR, OR ENGINEER APPROVED ANCHOR. PLACE A MINIMUM OF 2.5FT BELOW LOG SILL. USE 1/8" MINIMUM DIAMETER STAINLESS STEEL CABLE TO CONNECT ANCHOR TO LOG

① AT GRADE LOG SILL  
NOT TO SCALE

Structure #	Station	Elevation (ft)	Length (ft)
1	1109	252.27	19
2	1129	252.23	19
3	1149	252.19	19
4	1169	252.15	19
5	1189	252.11	19
6	1229	252.03	19
7	1249	251.99	19
8	1269	251.95	19
9	1289	251.91	19
10	1329	251.83	19
11	1349	251.79	19
12	1369	251.75	19
13	1389	251.71	19
14	1429	251.64	19
15	1449	251.60	19
16	1469	251.56	19
17	1489	251.52	19
18	1509	251.48	19
19	1549	251.40	19
20	1569	251.36	19
21	1589	251.32	19
22	1629	251.24	19
23	1649	251.20	19
24	1669	251.16	19
25	1689	251.12	19
26	1729	251.04	19
27	1749	251.00	19
28	1769	250.96	19
29	1789	250.92	19
30	1829	250.84	19
31	1849	250.80	19
32	1869	250.76	19
33	1889	250.72	19
34	1929	250.64	19
35	1949	250.60	19
36	1969	250.56	19
37	1989	250.52	19
38	2029	250.44	19
39	2049	250.40	19
40	2069	250.36	19

AT GRADE LOG SILL

Structure #	Station	Elevation (ft)	Length (ft)
41	2089	250.32	19
42	2129	250.24	19
43	2149	250.20	19
44	2169	250.16	19
45	2189	250.12	19
46	2229	250.04	19
47	2249	250.00	19
48	2269	249.96	19
49	2289	249.92	19
50	2329	249.84	19
51	2349	249.80	19
52	2369	249.77	19
53	2389	249.73	19
54	2429	249.65	19
55	2449	249.61	19
56	2469	249.57	19
57	2489	249.53	19
58	2529	249.45	19
59	2549	249.41	19
60	2569	249.37	19
61	2589	249.33	19
62	2629	249.25	19
63	2649	249.21	19
64	2669	249.17	19
65	2689	249.13	19
66	2729	249.05	19
67	2749	249.01	19
68	2769	248.97	19
69	2789	248.93	19
70	2829	248.85	19
71	2849	248.81	19
72	2869	248.77	19
73	2889	248.73	19
74	2929	248.65	19
75	2949	248.61	19
76	2969	248.57	19
77	2989	248.53	19
78	3029	248.45	19
79	3049	248.41	19
80	3069	248.37	19

AT GRADE LOG SILL

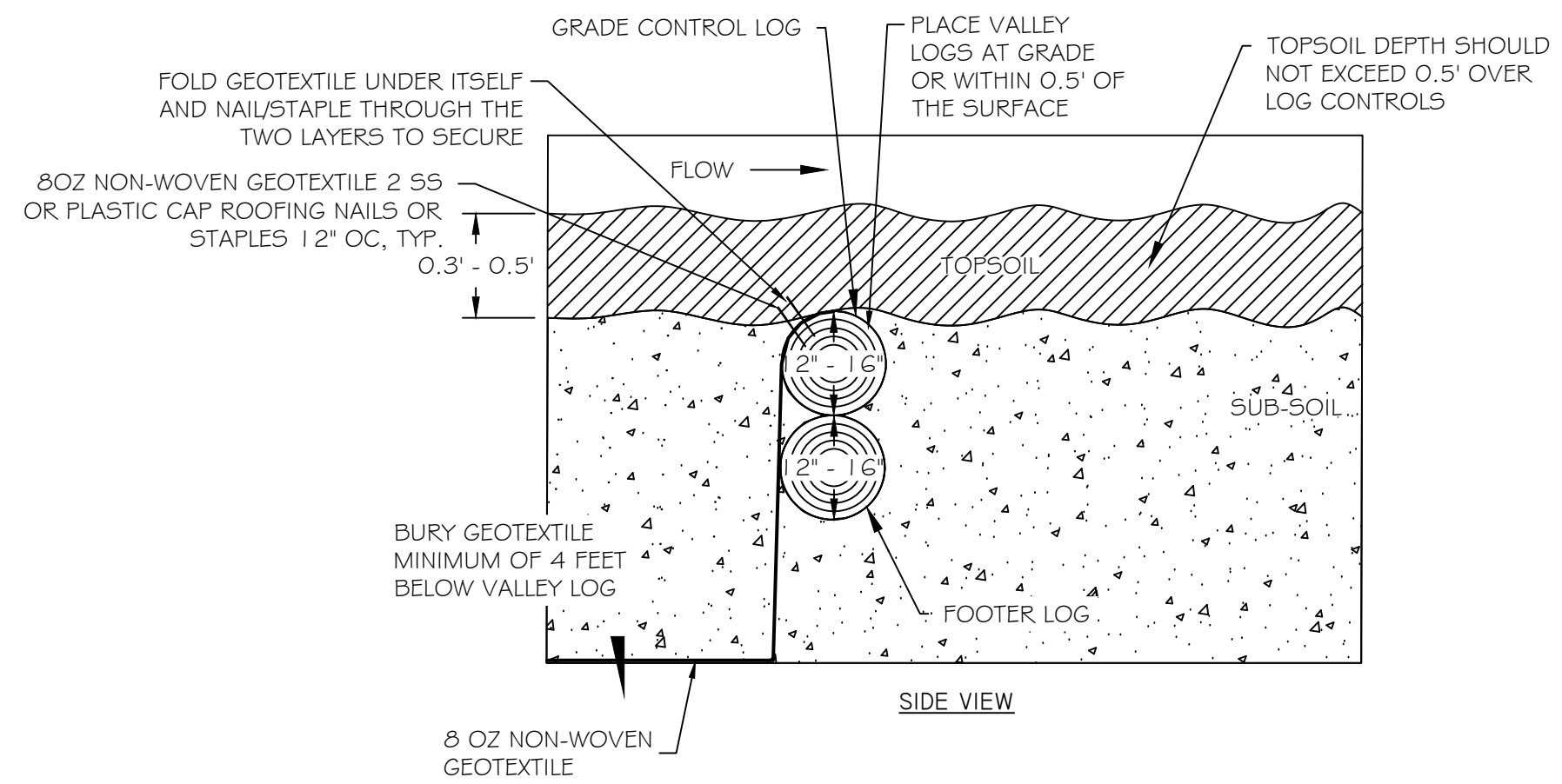
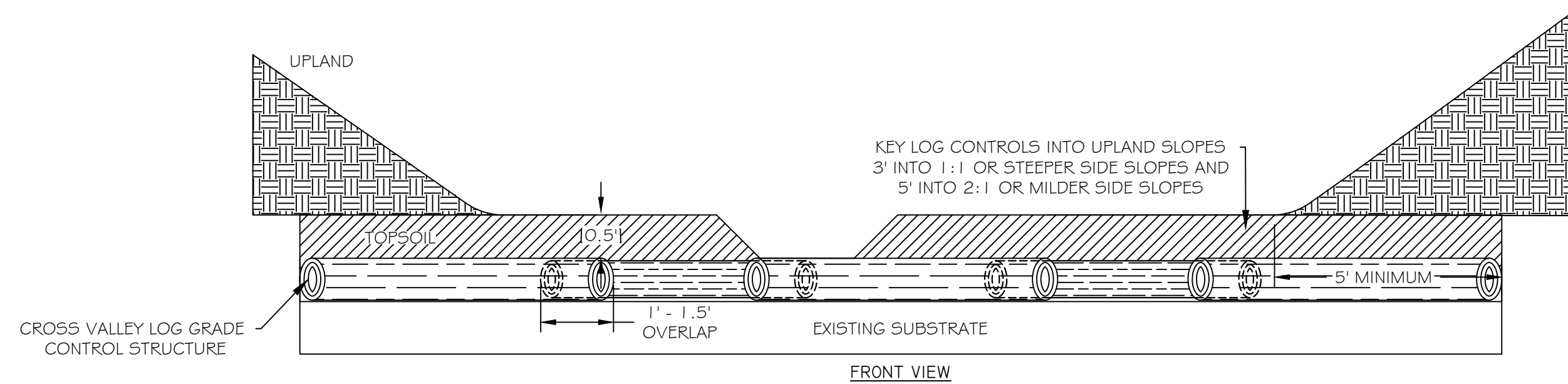
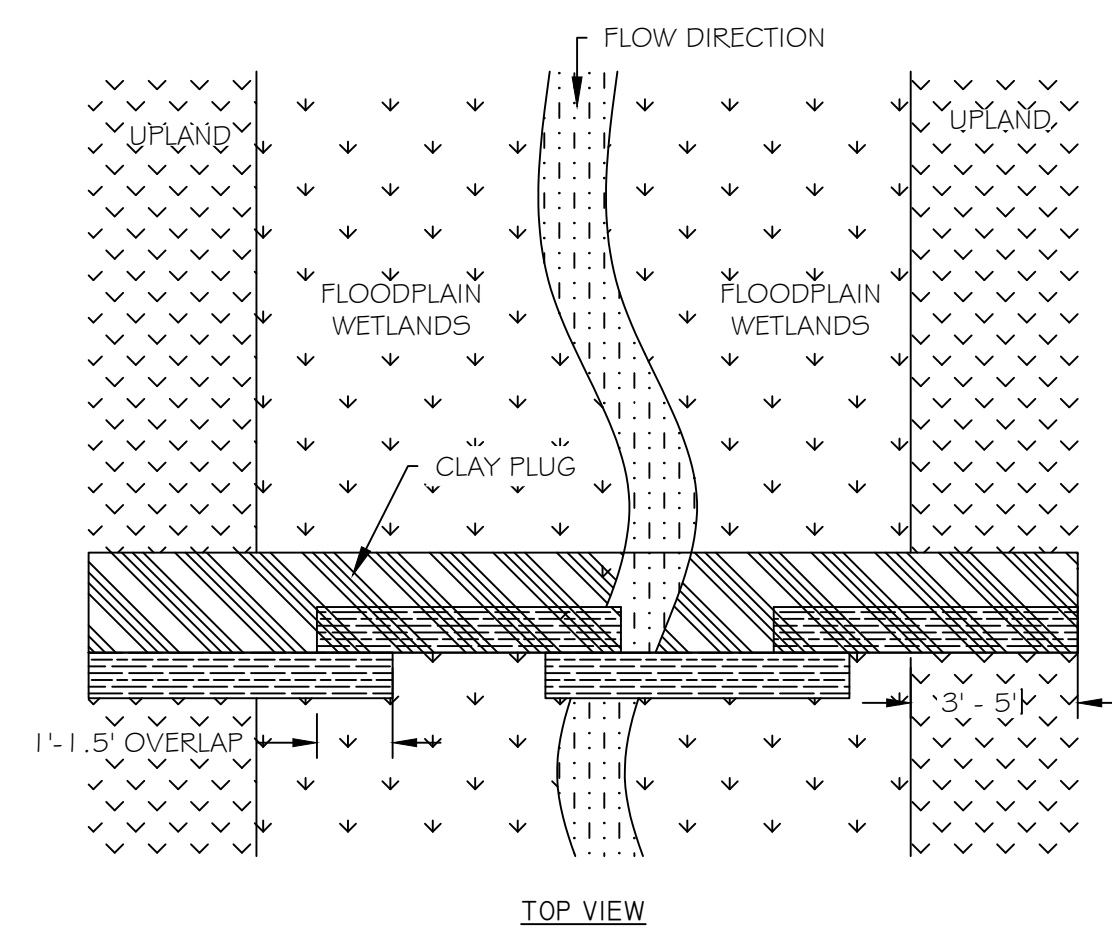
Structure #	Station	Elevation (ft)	Length (ft)
81	3089	248.33	19
82	3129	248.25	19
83	3149	248.21	19
84	3169	248.17	19
85	3189	248.13	19
86	3229	248.05	19
87	3249	248.01	19
88	3269	247.97	19
89	3289	247.93	19
90	3329	247.86	19
91	3349	247.82	19
92	3369	247.78	19
93	3389	247.74	19
94	3429	247.66	19
95	3449	247.62	19
96	3469	247.58	19
97	3489	247.54	19
98	3529	247.46	19
99	3549	247.42	19
100	3569	247.38	19
101	3589	247.34	19
102	3629	247.26	19
103	3649	247.22	19
104	3669	247.18	19
105	3689	247.14	19
106	3729	247.06	19
107	3749	247.02	19
108	3769	246.98	19
109	3789	246.94	19
110	3829	246.86	19
111	3849	246.82	19
112	3869	246.78	19
113	3889	246.74	19
114	3929	246.66	19
115	3949	246.62	19
116	3969	246.58	19
117	3989	246.54	19
118	4029	246.46	19
119	4049	246.42	19
120	4069	246.38	19
121	4089	246.34	19
122	4149	245.86	19

AT GRADE LOG SILL

REVISIONS:  
△

PROJECT STATUS:  
BI MODIFICATION

PROJECT MANAGER: SH  
DESIGNED: AB/SO/UW/WM  
DRAWN: UW/WM/SO  
JOB NUMBER: 100111  
DESIGN TYPE: FINAL  
DATE: 03-12-2024  
SHEET NO:



**NOTES:**

1. STRUCTURES TO BE CONSTRUCTED OUT OF WOOD; ALL MATERIAL IS TO BE APPROVED BY THE DESIGN ENGINEER OR CONSTRUCTION MANAGER PRIOR TO INSTALLATION ON-SITE
2. WOODY MATERIAL IS TO BE BETWEEN 1 2" - 1 6" AND RELATIVELY STRAIGHT; HIGHLY VARIABLE OR CURVED TRUNKS ARE NOT TO BE USED
3. ALL STRUCTURES ARE TO BE PLACED ON BEDROCK OR SIMILAR NON-EROSIVE BASE SUCH AS A DENSE CLAY. IF BEDROCK OR A NON-EROSIVE FOUNDATION IS NOT AVAILABLE A SPLASH LOG MUST BE INSTALLED DOWNSTREAM OF THE GRADE CONTROL LOGS AS SHOWN ON THE DESIGN PLANS
4. LOGS WITHIN THE FLOODPLAIN ARE TO BE OVERLAPPED BY A MINIMUM OF 1.5'; WHERE THE LOGS ARE TOED INTO THE VALLEY SIDE SLOPES, ARE TO BE TOED IN A MINIMUM OF 3 - 5'. IF INSUFFICIENT MATERIAL IS AVAILABLE TO TOE IN THE WOODY MATERIAL IT IS TO BE ANCHORED IN PLACE USING MINING LAG BOLTS DRILLED INTO THE BEDROCK OR LOGS WILL BE KEYED INTO THE BEDROCK A MINIMUM OF 3 INCHES.
5. MATERIAL WITH A HEAVY CLAY OR CLAYEY SILT CONTENT SHALL BE USED TO CONSTRUCT A CLAY PLUG ON THE UPSTREAM SIDE OF THE LOG SILL. THE CLAY PLUG SHALL BE TIED INTO BEDROCK OR OTHER NON-PERMEABLE MATERIAL AT THE BASE OF THE STRUCTURE AND SHALL EXTEND UPWARDS TO WITHIN 2 INCHES OF THE TOP OF THE STRUCTURE. THE CLAY PLUG SHALL HAVE A WIDTH OF 3 FEET UPSTREAM OF THE LOG SILL AND EXTEND ACROSS THE ENTIRE VALLEY BOTTOM IN ORDER TO PREVENT WATER-PIPING THROUGH THE STRUCTURE. MATERIAL EXCAVATED FOR THE LOG SILLS MAY BE USED AT THE DISCRETION OF THE ENGINEER OR CONSTRUCTION MANAGER TO CONSTRUCT THE CLAY PLUG.
6. FINAL STRUCTURE ALIGNMENT AND LOCATION MAY BE ADJUSTED BY DESIGN ENGINEER IN THE FIELD AS NEEDED.
7. INSTALL DUCKBILL® ANCHOR AT EACH END OF ALL VALLEY LOGS. USE ALUMINUM DB GØ (1,100 LBF), PLATIFUS 5G ANCHOR, OR ENGINEER APPROVED ANCHOR. PLACE A MINIMUM OF 2.5FT BELOW THE VALLEY LOG. USE 1/8" MINIMUM DIAMETER STAINLESS STEEL CABLE TO CONNECT ANCHOR TO VALLEY LOG.

**2 CROSS VALLEY LOG**  
NOT TO SCALE

Structure #	Station	Elevation (ft)	Length (ft)
1	1209	252.07	65
2	1309	251.87	65
3	1409	251.67	65
4	1529	251.44	65
5	1609	251.28	65
6	1709	251.08	65
7	1809	250.88	65
8	1909	250.68	65
9	2009	250.48	65
10	2109	250.28	65
11	2209	250.08	65
12	2309	249.88	65
13	2409	249.69	65
14	2509	249.49	65
15	2609	249.29	65
16	2709	249.09	65
17	2809	248.89	65
18	2909	248.69	65
19	3009	248.49	65
20	3109	248.29	65
21	3209	248.09	65
22	3309	247.89	65
23	3409	247.70	65
24	3509	247.50	65
25	3609	247.30	65
26	3709	247.10	65
27	3809	246.90	65
28	3909	246.70	65
29	4009	246.50	65
30	4109	246.30	65

**CROSS VALLEY LOGS**



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SMOKESTACK MITIGATION BANK

Details - D2

SHELBY COUNTY, TENNESSEE

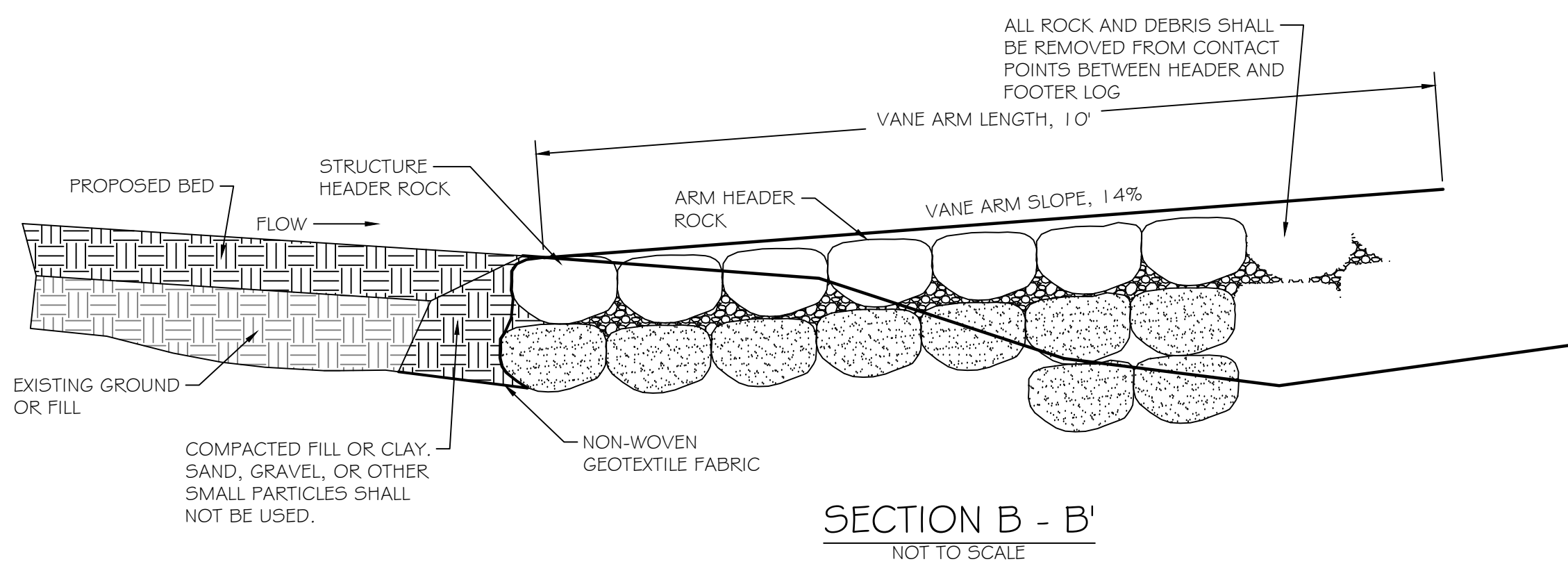
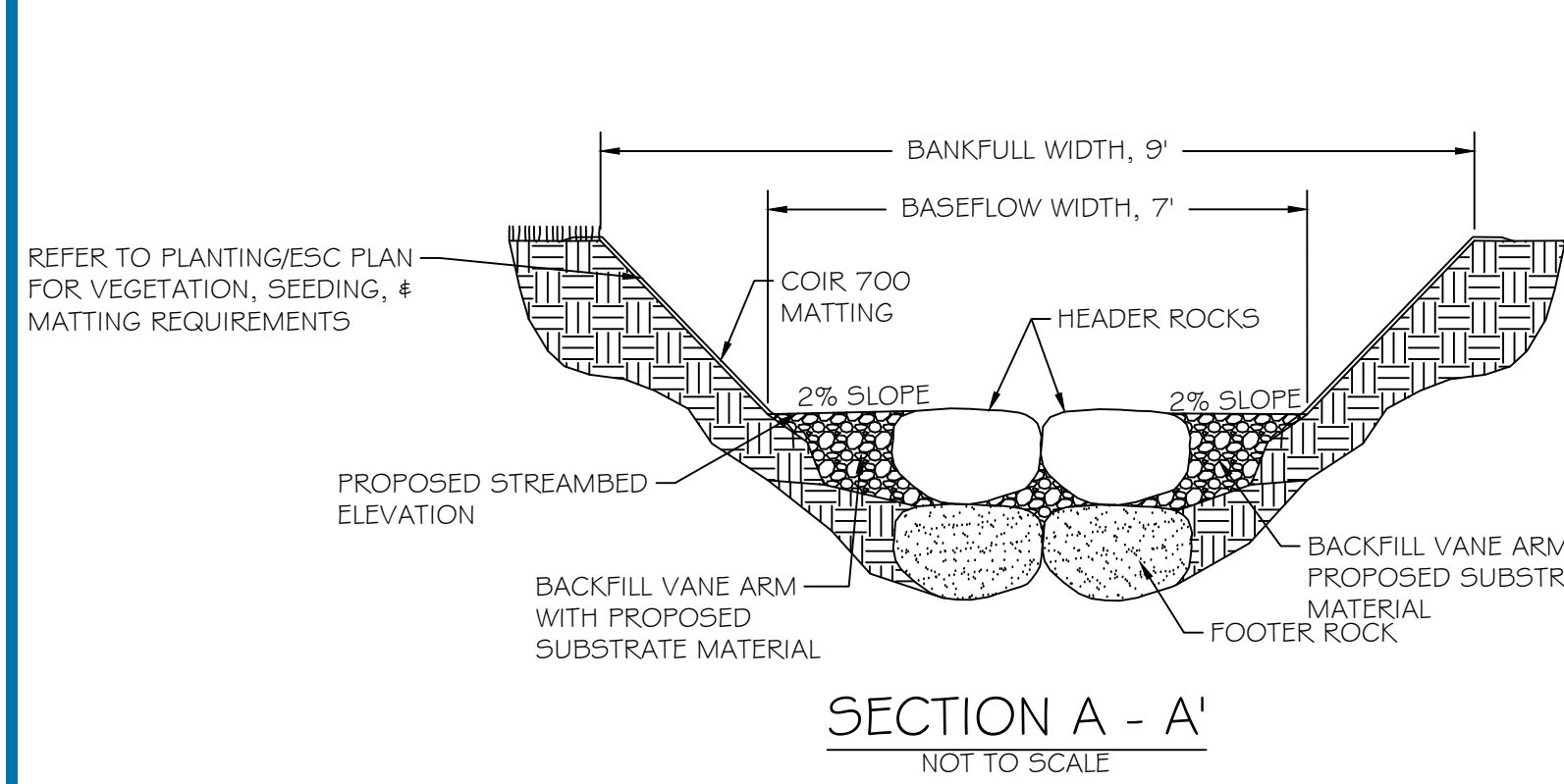
REVISIONS:  
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PROJECT STATUS:

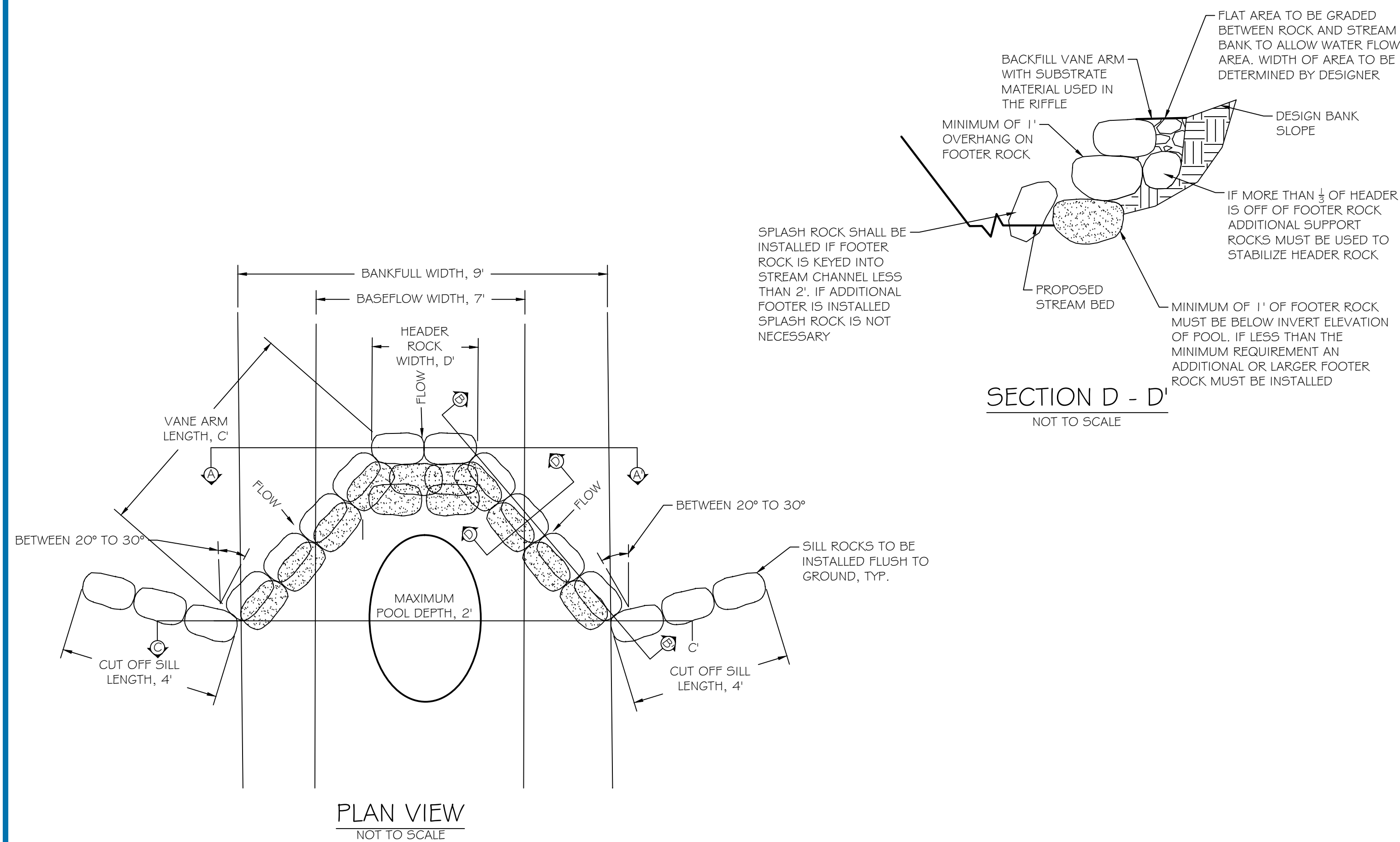
BI MODIFICATION

PROJECT MANAGER: SH  
DESIGNED: AB/SO/UWWM  
DRAWN: UWWM/SO  
JOB NUMBER: 100111  
DESIGN TYPE: FINAL  
DATE: 03-12-2024  
SHEET NO:

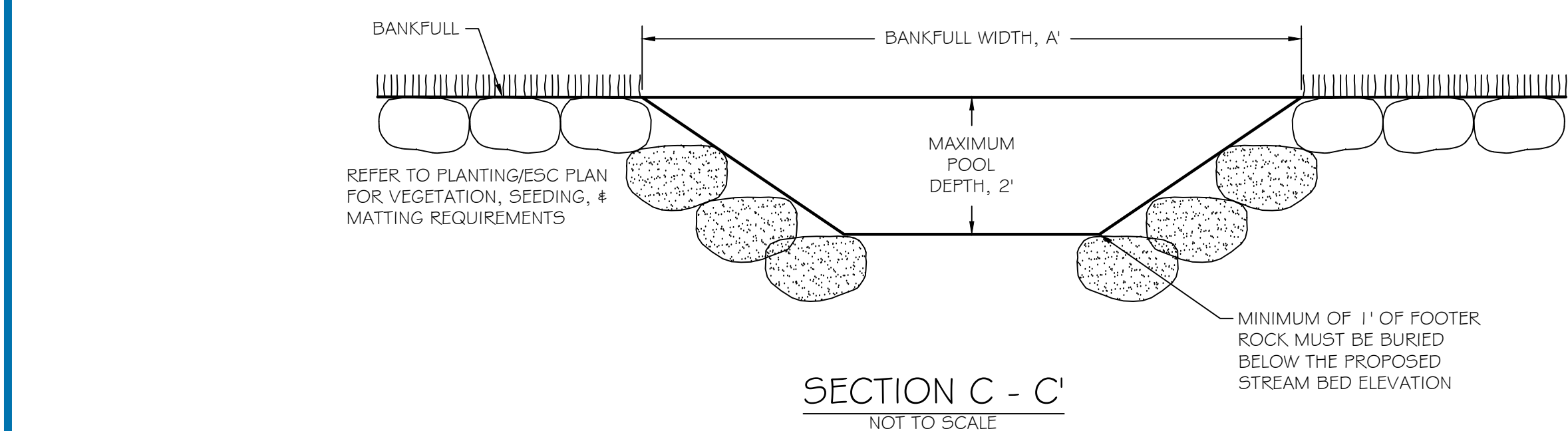
36 of 46



EXAMPLE OF FLOODPLAIN ROOT WAD



PLAN VIEW NOT TO SCALE



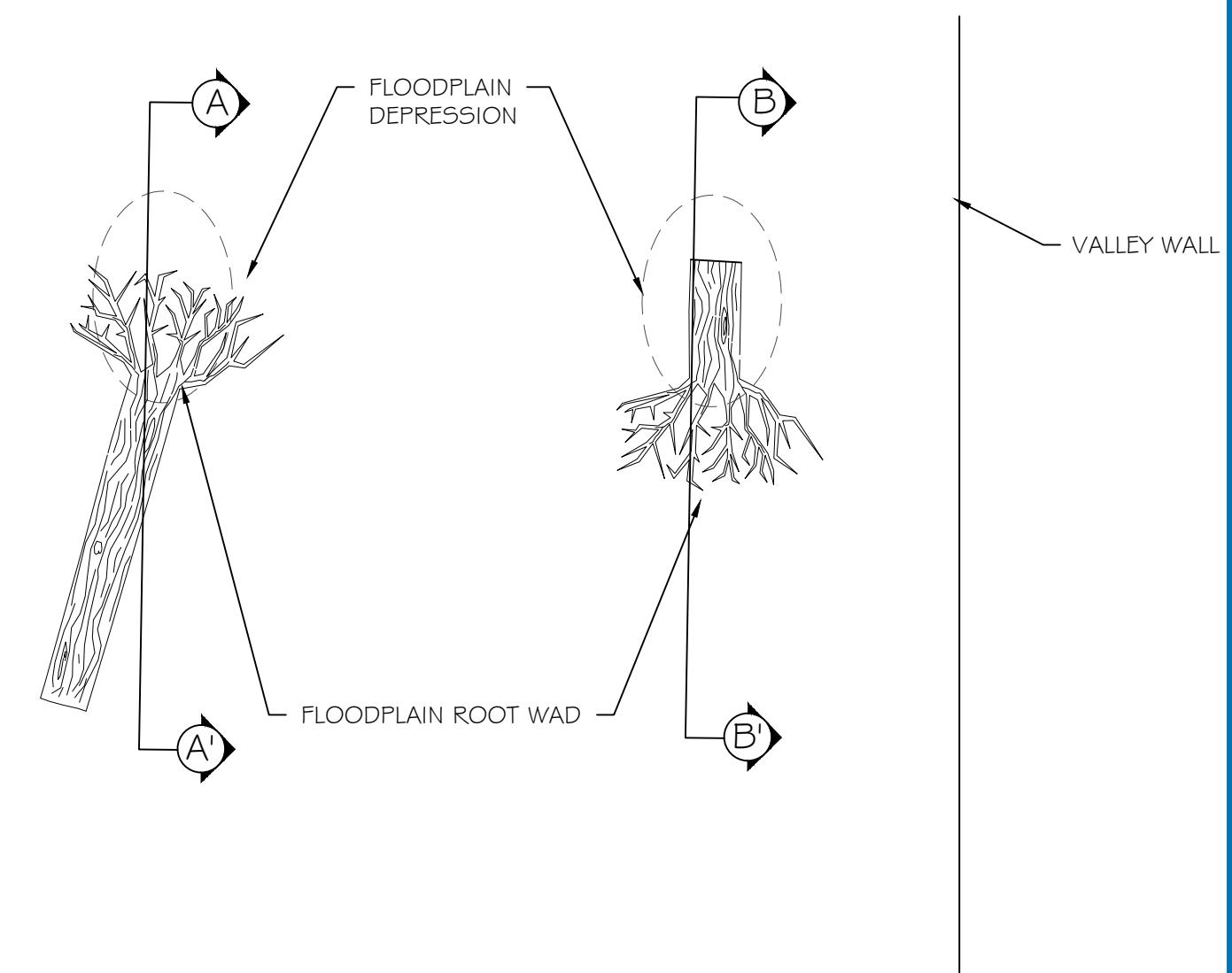
SECTION C - C' NOT TO SCALE

③ ROCK CROSS VANE NOT TO SCALE

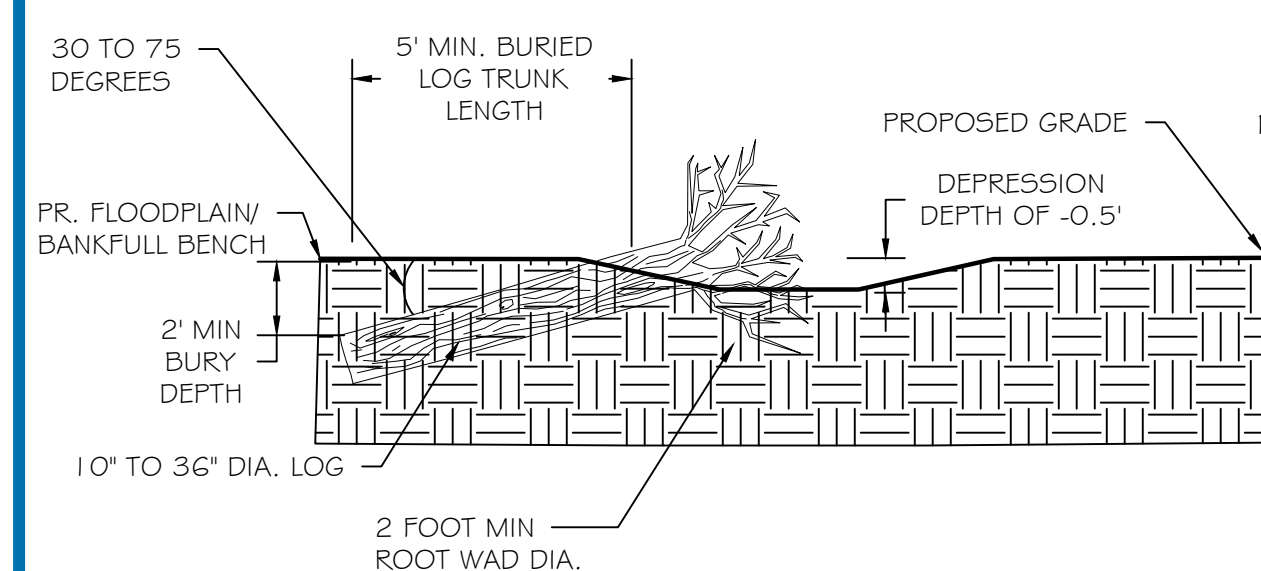
- NOTES:
- FLOODPLAIN ROOT WADS ARE INSTALLED TO PROVIDE FLOODPLAIN ROUGHNESS AND TO ENHANCE FLOODPLAIN HABITAT.
  - FLOODPLAIN ROOT WADS SHALL BE HARVESTED ON SITE USING HARDWOOD TREES OF APPROPRIATE SIZE. IF THERE ARE NOT ENOUGH TREES ON SITE TO SUPPLY ALL THE FLOODPLAIN ROOT WAD STRUCTURES MARKED WITHIN THE PLANS, THE ENGINEER SHALL DETERMINE WHETHER TO HARVEST TREES LOCATED OFFSITE OR TO DECREASE THE NUMBER OF STRUCTURES ON THE PLANS.
  - FLOODPLAIN ROOT WADS SHALL CONSIST OF ROOT WAD AND TRUNK OF A HARDWOOD TREE SPECIES WITH A MINIMUM TRUNK DIAMETER OF 10-INCHES AND A MAXIMUM TRUNK DIAMETER OF 36-INCHES AND WILL HAVE 1 FOOT TO 10 FEET OF TRUNK LENGTH REMAINING FOR PROPER INSTALLATION. THE ROOT WAD SHALL EQUAL OR EXCEED TWO (2) FEET IN DIAMETER.
  - FLOODPLAIN ROOT WADS SHALL BE INSTALLED USING THE TRENCHING METHOD. EITHER THE LOG TRUNK OR THE ROOT WAD WILL BE BURIED, WITH THE OPPOSITE END EXPOSED:
    - OPTION 1 - BURIED LOG TRUNK: A MIN. OF 5' OF THE LOG TRUNK SHALL BE BURIED A MIN. OF 2' AND ANGLED UPWARDS 30 TO 75 DEGREES.
    - OPTION 2 - BURIED ROOT WAD: THE ROOT WAD SHALL BE BURIED A MIN. OF 3'. 1' TO 3' OF THE LOG TRUNK WILL BE EXPOSED AND TRUNK ANGLED UPWARDS AT A 30 TO 75 DEGREE ANGLE.
  - A 0.5' DEEP DEPRESSION WILL BE GRADED UPSTREAM AND AROUND THE EXPOSED PORTION OF THE FLOODPLAIN ROOT WAD TO CREATE MICRO-POOL FLOODPLAIN HABITAT.
  - INSTALL DUCKBILL® ANCHOR AT EACH END OF ALL FLOODPLAIN ROOT WADS. USE ALUMINUM DB 68 (1,100 LBF), FLATIPUS 56 ANCHOR, OR ENGINEER APPROVED ANCHOR. PLACE A MINIMUM OF 2.5 FT BELOW THE FLOOD PLAIN ROOT WAD. USE 1/8" MINIMUM DIAMETER STAINLESS STEEL CABLE TO CONNECT ANCHOR TO FLOODPLAIN ROOT WAD.

OPTION 1 - BURIED LOG TRUNK

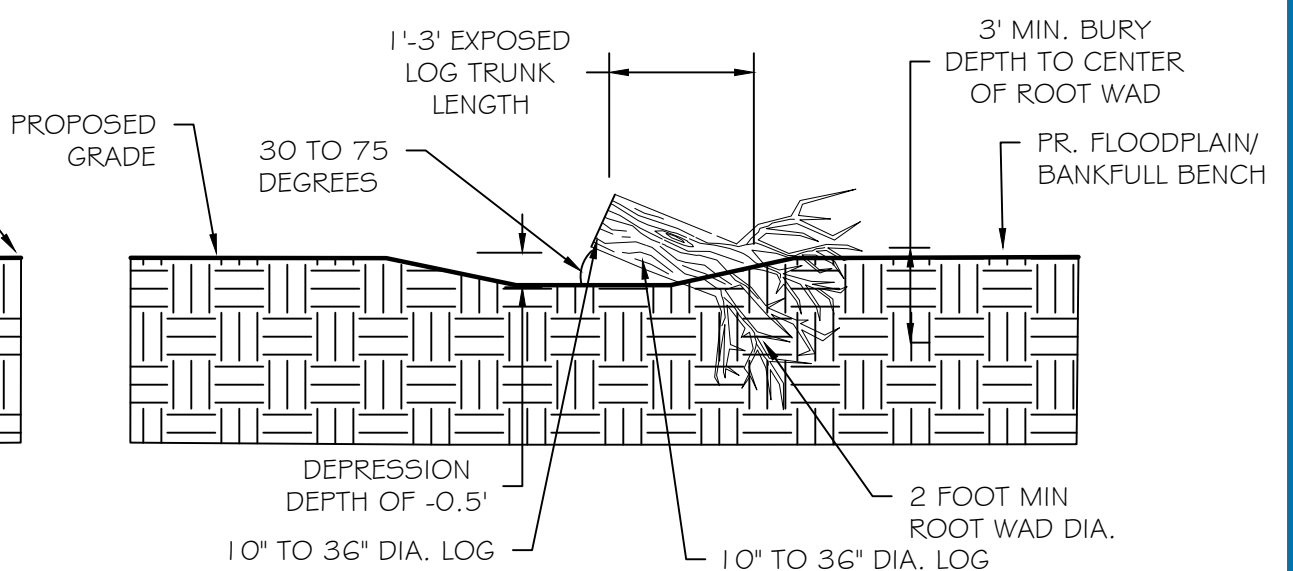
OPTION 2 - BURIED ROOT WAD



PLAN VIEW NOT TO SCALE

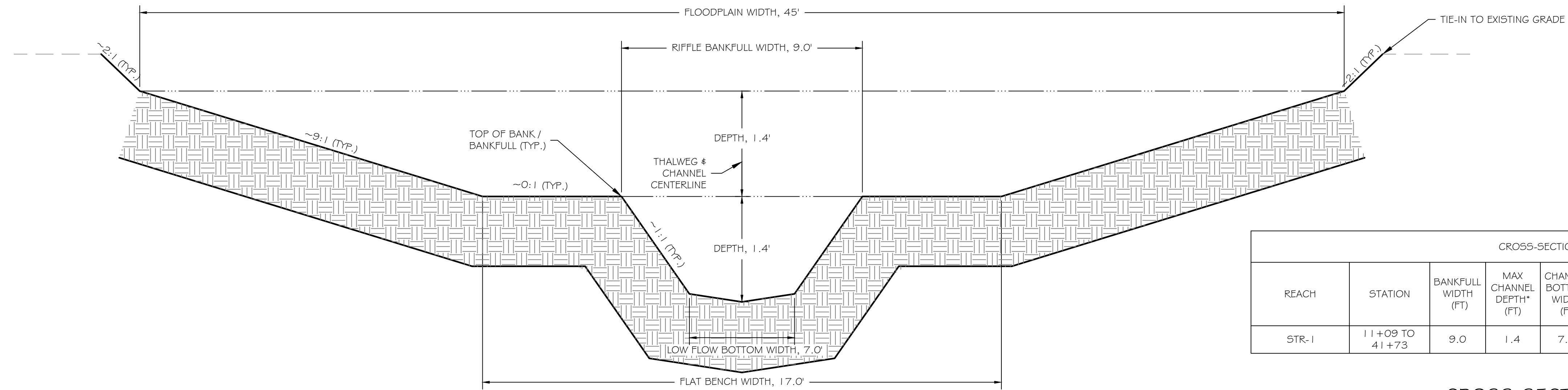


SECTION A-A' OPTION 1 - BURIED LOG TRUNK NOT TO SCALE



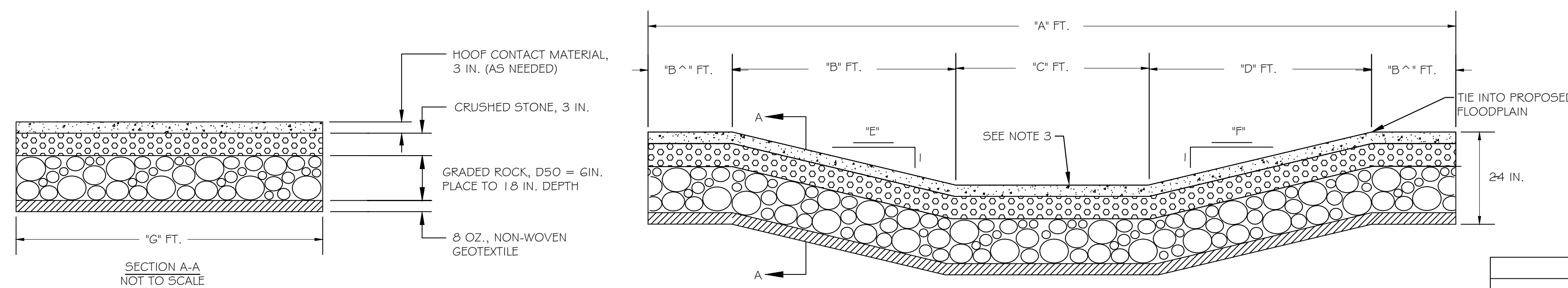
SECTION B-B' OPTION 2 - BURIED ROOT WAD NOT TO SCALE

④ FLOODPLAIN ROOT WAD NOT TO SCALE



CROSS-SECTION GEOMETRY										
REACH	STATION	BANKFULL WIDTH (FT)	MAX CHANNEL DEPTH* (FT)	CHANNEL BOTTOM WIDTH (FT)	RIFFLE SIDE SLOPE (X:1)	POOL BKF WIDTH (FT)	MAX POOL DEPTH* (FT)	POOL BOTTOM WIDTH (FT)	POOL SLOPE A (X:1)	POOL SLOPE B (X:1)
STR-1	11+09 TO 41+73	9.0	1.4	7.0	1.0	N/A	N/A	N/A	N/A	N/A

CROSS-SECTION GEOMETRY  
NOT TO SCALE

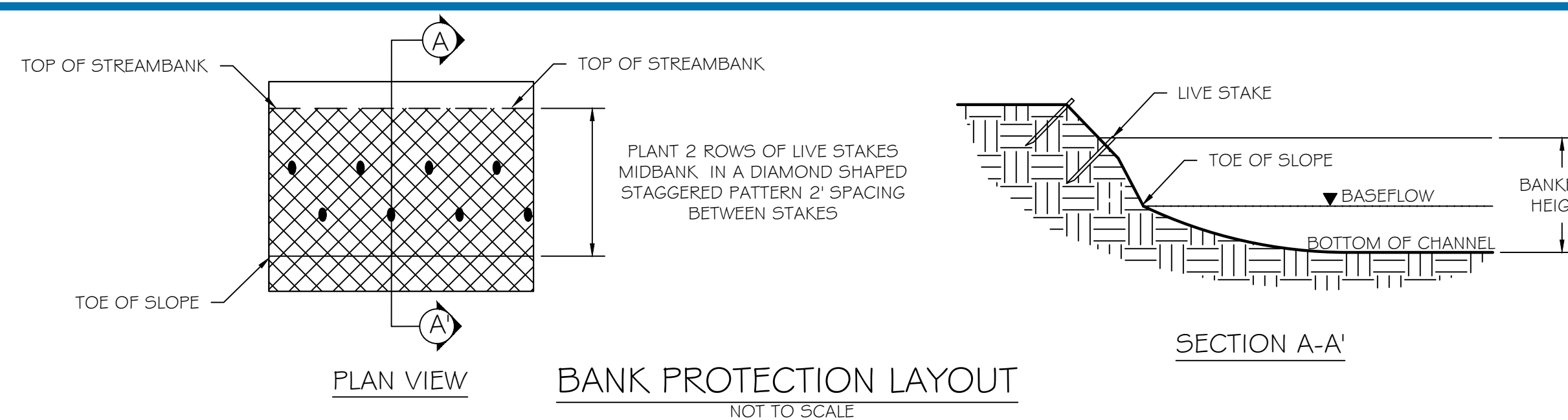


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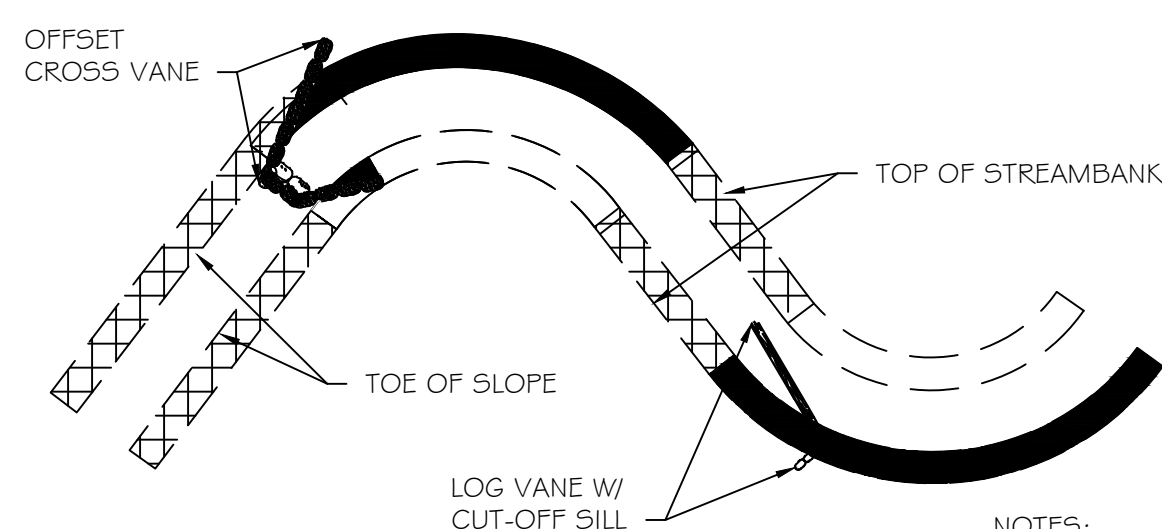
- UTILIZE THIS DETAIL FOR CROSSING 1. REFER TO CROSS SECTION TABLE FOR ADDITIONAL GEOMETRY INFORMATION.
- COMPACT SURFACING MATERIAL BY EQUIPMENT TRAVEL.
- CROSSINGS SHALL HAVE THE TOP-MOST SURFACE LAYER AT THE SAME LEVEL AS THE PROPOSED STREAM BED IMMEDIATELY UPSTREAM AND DOWNSTREAM FROM THE CROSSING.
- GRADED ROCK: D50=6 IN. 100% PASSING 1 1/2 IN.; 15-50% PASSING 6 IN.; 0-15% PASSING 3 IN. MAX OF 10% PASSING 3/4 IN.
- CRUSHED STONE: 100% PASSING 3/4 IN. AND 10% MAX PASSING #200 SIEVE.
- HOOF CONTACT MATERIAL (AS NEEDED): 1/2 IN. TO 2 IN. ROCK PLACED TO A MINIMUM 3 IN. LAYER.
- GEOTEXTILE: INSTALL GEOTEXTILE MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PLACE ON THE EXCAVATED SURFACE OF THE FORD AND EXTEND ACROSS THE BOTTOM OF THE STREAM. TIE 20 FT INTO THE BANKFULL ELEVATION. COVER GEOTEXTILE MATERIAL WITH AT LEAST 6 INCHES OF CRUSHED ROCK.
- TIE OUT AT 10:1 TO THE EXISTING ACCESS ROAD & CONSTRUCT ROAD SURFACE PER DETAIL 16.
- \* DIMENSION IS APPROXIMATE. CONTRACTOR SHALL FOLLOW EXISTING GRADE.

LOW WATER CROSSING GEOMETRY									
CROSSING	REACH	A (FT.)	B ^ (FT)	B (FT.)	C (FT.)	D (FT.)	E	F	G (FT.)
1	FR STR-1	73.0	10.0	24	7.0	22	7	7	16.0

5 PROPOSED LOW WATER CROSSING  
NOT TO SCALE

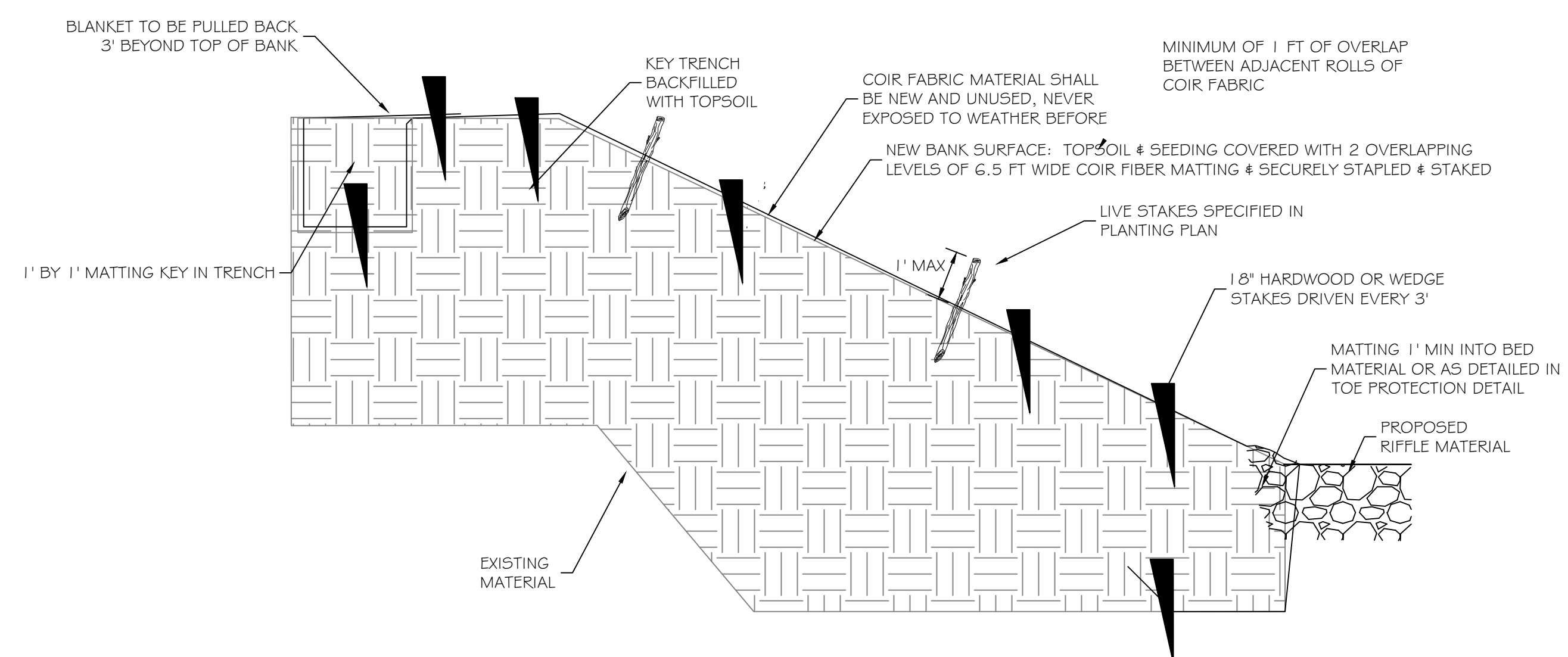


PLAN VIEW BANK PROTECTION LAYOUT  
NOT TO SCALE



LIVE STAKE SPACING PLAN VIEW

- NOTES:
- DO NOT INSTALL STAKES THAT HAVE BEEN SPLIT.
  - STAKES MUST BE INSTALLED WITH BUDS POINTING UPWARDS.
  - STAKES SHOULD BE MINIMUM OF 1/2 INCHES IN DIAMETER AND A MINIMUM OF 1 1/8 INCHES IN LENGTH.
  - STAKES SHOULD BE INSTALLED LEAVING 1/5 OF STAKE ABOVE GROUND.



5 COIR FIBER MATTING WITH LIVE STAKES  
NOT TO SCALE

REVISIONS:

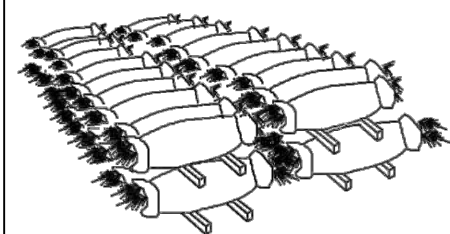


PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
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DATE:	03-12-2024
SHEET NO.:	38 of 46

**PLANTING BARE-ROOTED SEEDLINGS**



**CARE OF SEEDLINGS UNTIL PLANTED**

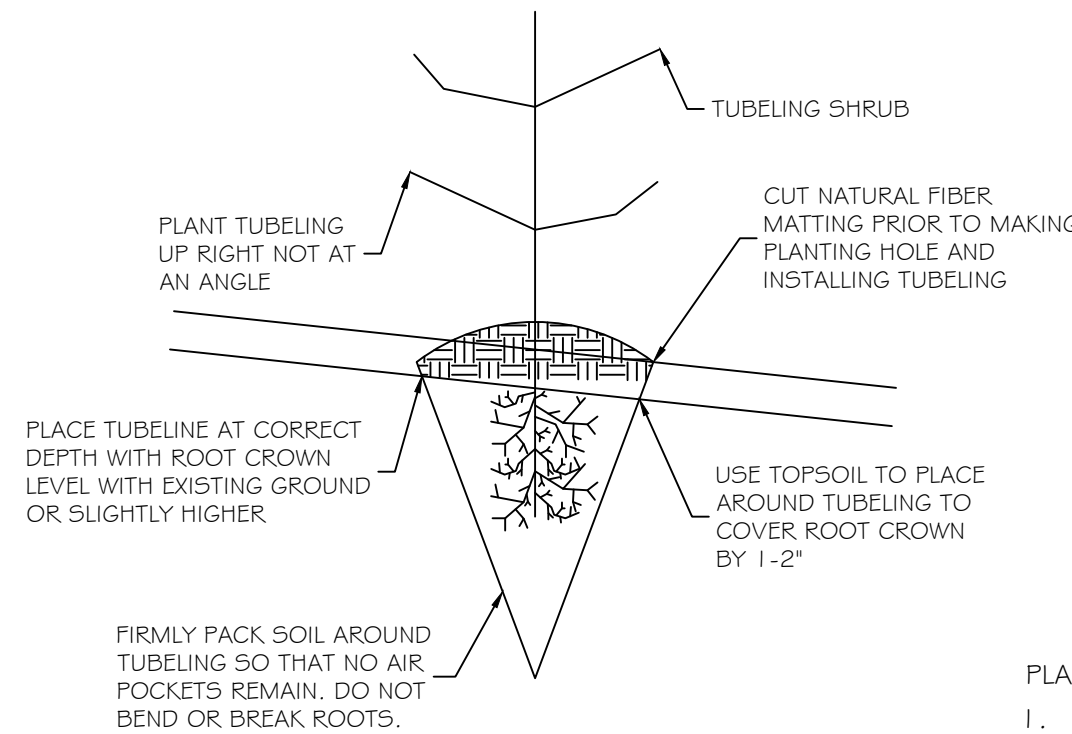
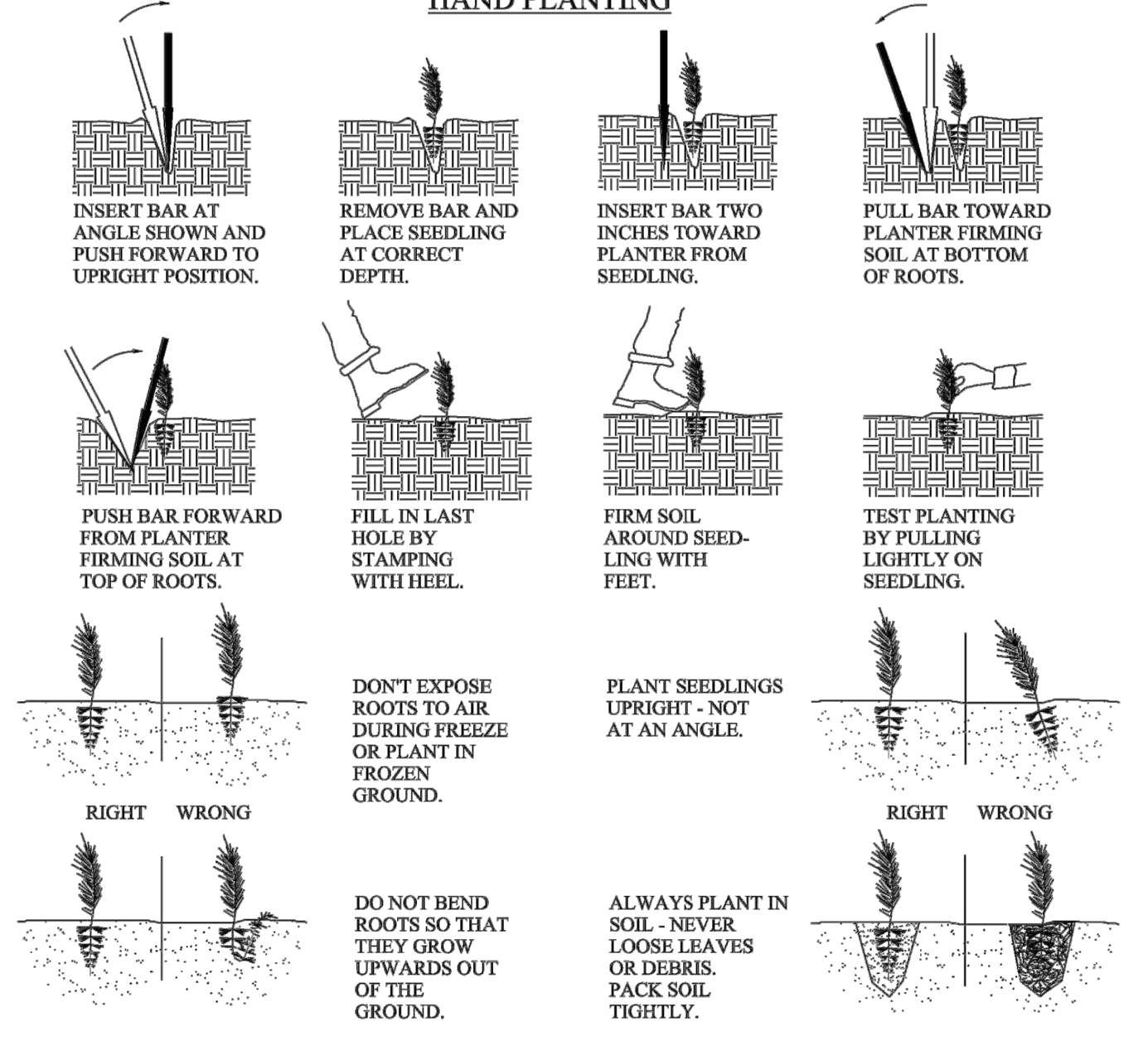
SEEDLINGS SHOULD BE PLANTED IMMEDIATELY. IF IT IS NECESSARY TO STORE MOSS PACKED SEEDLINGS FOR MORE THAN 2 WEEKS, ONE PINT OF WATER PER PKG. SHOULD BE ADDED. IF CLAY-TREATED, DO NOT ADD WATER TO PKG. PACKAGES MUST BE SEPARATED TO PROVIDE VENTILATION AND STORE OUT OF THE WIND IN A SHADED, COOL (NOT FREEZING) LOCATION.



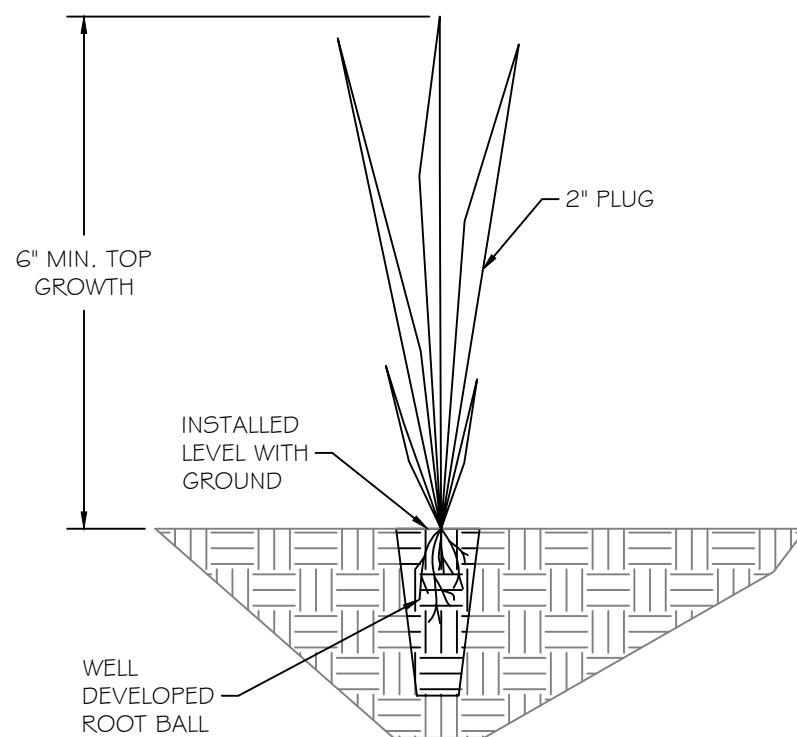
**CARE OF SEEDLINGS DURING PLANTING**

WHEN PLANTING, ROOTS MUST BE KEPT MOIST UNTIL TREES ARE IN THE GROUND. DO NOT CARRY SEEDLINGS IN YOUR HAND EXPOSED TO THE AIR AND SUN. KEEP MOSS-PACKED SEEDLINGS IN A CONTAINER PACKED WITH WET MOSS OR FILLED WITH THICK MUDDY WATER. COVER CLAY-TREATED SEEDLINGS WITH WET BURLAP ONLY.

**HAND PLANTING**



**TUBELING DETAIL**



**HERBACEOUS PLUG DETAIL**

**PLANTING NOTES:**

1. RIPARIAN PLANTING AT 420 STEMS PER ACRE OVER 25.1 AC.
2. WETLAND PLANTING AT 430 STEMS PER ACRE OVER 27.2 AC.
3. STREAMSIDE PLANTING AT 1,700 STEMS PER ACRE OVER 0.64 AC.
4. PLANTS AND SEEDS SHALL BE OBTAINED FROM A COMMERCIAL SUPPLIER. THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH RELIABLE SOURCES TO ENSURE THAT AN ADEQUATE SUPPLY OF THE REQUIRED PLANT AND SEED MATERIALS IS AVAILABLE.
5. IN THE EVENT THAT A PLANT OR SEED SPECIFIED IS NOT COMMERCIALY AVAILABLE, THE CONTRACTOR MAY REQUEST A SUBSTITUTION IN WRITING. ALL REQUESTS FOR SUBSTITUTIONS SHALL BE MADE AT LEAST 1 MONTH PRIOR TO INSTALLATION AND BE APPROVED BY THE OWNER.
6. ALL PLANT MATERIALS RECEIVED FROM COMMERCIAL SUPPLIERS SHALL CONFORM TO THE CURRENT ISSUE OF THE AMERICAN STANDARD FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN ASSOCIATIONS OF NURSERYMEN.
7. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL PLANT MATERIAL IN THE APPROPRIATE SEASON FOR EACH TYPE OF STOCK. THE PLANTING SEASON FOR CONTAINER TREES, SHRUBS, TUBELINGS, CONTAINER SEEDLINGS, AND LIVE STAKES SHALL BE FROM NOVEMBER 1 THROUGH DECEMBER 15, AND FEBRUARY 15 THROUGH APRIL 1. LIVE STAKES AND BAREROOT TREES AND SHRUBS MUST BE INSTALLED IN THE DORMANT SEASON. ADJUSTMENTS TO THE PLANTING SEASONS MAY BE MADE BY THE OWNER BASED ON SEASONAL AND SITE CONDITIONS.
8. LIVE STAKING NOTE: STAKES MUST NOT BE ALLOWED TO DRY OUT. ALL CUTTINGS SHOULD BE SOAKED IN WATER FOR 5-7 DAYS (A MINIMUM OF 24 HOURS). SOAKING SIGNIFICANTLY INCREASES THE SURVIVAL RATE OF THE CUTTINGS, HOWEVER THEY MUST BE PLANTED THE SAME DAY THEY ARE REMOVED FROM WATER. USE AN IRON STAKE OR BAR TO MAKE A PILOT HOLE IN FIRM SOIL. PLANT THE STAKES BUTT-ENDS INTO THE GROUND, WITH THE LEAF BUD SCARS OR EMERGING BUDS ALWAYS POINTING UP. BE CAREFUL NOT TO DAMAGE THE BUDS, STRIP THE BARK OR SPLIT THE STAKE DURING INSTALLATION. SET THE STAKE AS DEEP AS POSSIBLE INTO THE SOIL, PREFERABLY WITH 80 PERCENT OF ITS LENGTH INTO THE SOIL AND IN CONTACT WITH MID-SUMMER MOIST SOILS. THE STAKE SHOULD PROTRUDE ONLY TO A MAXIMUM OF ONE-QUARTER ITS LENGTH ABOVE THE GROUND LEVEL TO PREVENT IT FROM DRYING. STAKES SHOULD BE CUT SO THAT CUTTING EXTENDS ABOVE COMPETING HERBACEOUS VEGETATION. AT LEAST 2 BUDS AND/OR BUD SCARS SHALL BE ABOVE THE GROUND AFTER PLANTING. IT IS ESSENTIAL TO HAVE GOOD CONTACT BETWEEN THE STAKE AND SOIL FOR ROOTS TO SPROUT. TAMP THE SOIL AROUND THE CUTTING.
9. ALL PLANT MATERIAL SHALL BE UNIFORMLY SHAPED AND HAVE A VIGOROUS ROOT SYSTEM. THE PLANT MATERIAL SHALL BE HEALTHY, AND FREE OF DEFECTS, DECAY, ABRASIONS OF THE BARK, PLANT DISEASE, INSECT PEST EGGS, AND ALL FORMS OF INFESTATIONS. THE PLANT MATERIALS MUST BE FRESH AND FREE OF TRANSPLANT SHOCK OR VISIBLE WILT. UNHEALTHY PLANT STOCK ARE UNACCEPTABLE AND WILL BE REJECTED.
10. ALL CONTAINER GROWN STOCK, INCLUDING PLUGS, SHALL HAVE BEEN PROPAGATED FOR A SUFFICIENT TIME FOR THE ROOTS TO HAVE DEVELOPED SUFFICIENTLY TO HOLD THE SOILS TOGETHER WHEN REMOVED FROM THE CONTAINER. CONTAINER STOCK WITH POORLY DEVELOPED ROOTS ARE UNACCEPTABLE AND WILL BE REJECTED.
11. NO SEEDING OR PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN OR THE SITE IS FLOODED.
12. THE CONTRACTOR SHALL NOTIFY THE OWNER A MINIMUM OF 48 HOURS PRIOR TO THE COMMENCING OF PLANTING OR SEEDING OPERATIONS.
13. THE FINAL LOCATION OF PLANT MATERIAL, AS WELL AS LOCATION OF PLANTING ZONES, WILL BE SUBJECT TO THE APPROVAL OF THE OWNER. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPLANTING OR RESEEDING ANY PLANT MATERIAL INSTALLED WITHOUT APPROVAL OF THE OWNER.
14. THE ENGINEER MAY REQUIRE REPLANTING AT ANY TIME OF AN AREA OR A PORTION OF SUCH AREA WHICH FOR ANY CAUSE SHOWS UNSATISFACTORY GROWTH. EXCEPT AS OTHERWISE SPECIFIED OR PERMITTED BY THE ENGINEER, AREAS TO BE REPLANTED SHALL BE PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS AS IF SUCH REPLANTING WERE THE INITIAL PLANTING. HOWEVER, THE TYPE FERTILIZER AND THE APPLICATION RATE OF THE FERTILIZER TO BE FURNISHED AND APPLIED BY THE CONTRACTOR AS A PART OF PLANT ESTABLISHMENT OCCASIONED BY REPLANTING SHALL BE DETERMINED BY SOIL TESTS OR OTHERWISE ESTABLISHED BY THE ENGINEER.
15. EACH CONTAINER PLANT SHALL BE FERTILIZED WITH 20-10-5 CONTROLLED RELEASE TABLETS. FORMULATIONS VARY CONSIDERABLY BY MANUFACTURER, AND OTHER FORMULATIONS ARE ACCEPTABLE, PROVIDED THE TABLETS ARE NOT WATER-SOLUBLE. THE TABLETS SHALL BE BURIED NEAR THE PLANT'S ROOT SYSTEM. THE PLANT STOCK SHALL BE FERTILIZED AT THE FOLLOWING RATES:
 

STOCK	TABLETS
PLUGS AND QUARTS	ONE 5 GRAM TABLET
BAREROOT, TUBELINGS AND SEEDLINGS	ONE 10 GRAM TABLET
#1 CONTAINER	ONE 21 GRAM TABLETS
#5 CONTAINER	TWO 21 GRAM TABLETS
16. DURING PLANTING THE CONTRACTOR SHALL WATER EACH PLANT WITH THE FOLLOWING MINIMUM QUANTITIES OF WATER, UNLESS OWNER DETERMINES THERE IS SUFFICIENT SOIL MOISTURE ON SITE:
 

TREES	1 GALLON OF WATER
SHRUBS	1 GALLON OF WATER
PLUGS	1 PINT OF WATER

Common Name	Scientific Name	Indicator Status	Min. Size	Stock	%	Quantity
<b>Riparian Planting</b>						
<b>Trees (70%)</b>						
Box Elder	Acer negundo	FAC	18"	Bareroot	0.1	1,084
River Birch	Betula nigra	FACW	18"	Bareroot	0.03	325
Sugarberry	Celtis laevigata	FACW	18"	Bareroot	0.05	542
Black Tupelo	Nyssa sylvatica	FAC	18"	Bareroot	0.05	542
American Sycamore	Platanus occidentalis	FACW	18"	Bareroot	0.1	1,084
Cottonwood	Populus deltoides	FAC	18"	Bareroot	0.1	1,084
Laurel Oak	Quercus laurifolia	FACW	18"	Bareroot	0.03	325
Swamp Chestnut Oak	Quercus michauxii	FACW	18"	Bareroot	0.03	325
Water Oak	Quercus nigra	FAC	18"	Bareroot	0.03	325
Cherry-bark Oak	Quercus pagoda	FACW	18"	Bareroot	0.05	542
Willow Oak	Quercus phellos	FACW	18"	Bareroot	0.05	542
Shumard's Oak	Quercus shumardii	FAC	18"	Bareroot	0.02	217
Slippery Elm	Ulmus rubra	FAC	18"	Bareroot	0.03	325
<b>Shrubs / Understory Trees (30%)</b>						
Giant Cane	Arundinaria gigantea	FACW	18"	Bareroot	0.1	1,084
Common Buttonbush	Cephalanthus occidentalis	OBL	18"	Bareroot	0.05	542
Sweetpepperbush	Clethera alnifolia	FACW	18"	Bareroot	0.05	542
Rough-leaved dogwood	Cornus drummondii	FAC	18"	Bareroot	0.05	542
Deciduous Holly	Ilex decidua	FACW	18"	Bareroot	0.05	542
<b>TOTAL</b>						<b>10,836</b>
<b>Wetland Planting</b>						
<b>Trees (70%)</b>						
Box Elder	Acer negundo	FAC	18"	Bareroot	0.1	1,170
River Birch	Betula nigra	FACW	18"	Bareroot	0.06	702
Sugarberry	Celtis laevigata	FACW	18"	Bareroot	0.05	585
Black Tupelo	Nyssa sylvatica	FAC	18"	Bareroot	0.05	585
American Sycamore	Platanus occidentalis	FACW	18"	Bareroot	0.1	1,170
Cottonwood	Populus deltoides	FAC	18"	Bareroot	0.1	1,170
Laurel Oak	Quercus laurifolia	FACW	18"	Bareroot	0.03	351
Swamp Chestnut Oak	Quercus michauxii	FACW	18"	Bareroot	0.03	351
Water Oak	Quercus nigra	FAC	18"	Bareroot	0.05	585
Cherry-bark Oak	Quercus pagoda	FACW	18"	Bareroot	0.05	585
Willow Oak	Quercus phellos	FACW	18"	Bareroot	0.05	585
Slippery Elm	Ulmus rubra	FAC	18"	Bareroot	0.03	351
<b>Shrubs / Understory Trees (30%)</b>						
Giant Cane	Arundinaria gigantea	FACW	18"	Bareroot	0.1	1,170
Common Buttonbush	Cephalanthus occidentalis	OBL	18"	Bareroot	0.05	585
Sweetpepperbush	Clethera alnifolia	FACW	18"	Bareroot	0.05	585
Rough-leaved dogwood	Cornus drummondii	FAC	18"	Bareroot	0.05	585
Deciduous Holly	Ilex decidua	FACW	18"	Bareroot	0.05	585
<b>TOTAL</b>						<b>11,696</b>
<b>Streamside Vegetation</b>						
Common Buttonbush	Cephalanthus occidentalis	OBL	18"	Bareroot	0.3	326
Black Willow	Salix nigra	OBL	18"	Bareroot	0.3	326
Sweetpepperbush	Clethera alnifolia	FACW	18"	Bareroot	0.05	54
Rough-leaved dogwood	Cornus drummondii	FAC	18"	Bareroot	0.2	218
Box Elder	Acer negundo	FAC	Bareroot	Bareroot	0.15	163
<b>TOTAL</b>						<b>1,088</b>

<b>Riparian Buffer Seed Mix</b>				
Acres	25.8			
Pounds per Acre	8.8			
Total Pounds	227.0			
Common Name	Scientific Name	Indicator Status	%	Total Pounds of Seed
Virginia Wild Rye	<i>Elymus virginicus</i>		15.0%	34.1
Barnyard Grass	<i>Echinochloa muricata</i>		3.1%	7.1
Upland Bentgrass	<i>Agrostis perennans</i>		0.1%	0.3
Big Bluestem	<i>Andropogon gerardii</i>		8.8%	19.9
Deer Tongue Grass	<i>Panicum clandestinum</i>		8.8%	19.9
Fall Panicum	<i>Panicum anceps</i>		8.8%	19.9
Switchgrass	<i>Panicum virgatum</i>		15.0%	34.1
Fox Sedge	<i>Carex vulpinoidea</i>		3.0%	6.8
Wild Senna	<i>Cassia marilandica</i>		6.3%	14.2
Illinois Bundleflower	<i>Desmanthus illinoensis</i>		3.1%	7.1
False Sunflower	<i>Heliopsis helianthoides</i>		3.8%	8.5
Spiked Blazing Star	<i>Liatris spicata</i>		3.1%	7.1
Bergamot	<i>Monarda fistulosa</i>		0.6%	1.4
Cup Plant	<i>Silphium perfoliatum</i>		6.3%	14.2
Showy Tickseed	<i>Bidens aristosa</i>		3.8%	8.5
Joe-Pye Weed	<i>Eupatorium fistulosum</i>		1.3%	2.8
Sneezeweed	<i>Helenium autumnale</i>		1.3%	2.8
Yellow Wingstem	<i>Verbesina alternifolia</i>		3.1%	7.1
Iron Weed	<i>Vernonia altissima</i>		2.5%	5.7
Narrow-Leaved Sunflower	<i>Helianthus angustifolius</i>		2.5%	5.7
<b>Total</b>			<b>100.0%</b>	<b>227.0</b>
<b>PFO Wetland &amp; PFO Wetland Enhancement Seed Mix</b>				
Acres	26.0			
Pounds per Acre	25.0			
Total Pounds	650.0			
Common Name	Scientific Name	Indicator Status	%	Total Pounds of Seed
<b>Grass / Sedges (95%)</b>				
Woolgrass	<i>Scirpus cyperinus</i>	OBL	0.1%	0.7
Lurid Sedge	<i>Carex lurida</i>	OBL	4.0%	26.0
Fox Sedge	<i>Carex vulpinoidea</i>	OBL	10.0%	65.0
Franks sedge	<i>Carex frankii</i>	OBL	10.0%	65.0
Va Wildrye	<i>Elymus virginicus</i>	FACW	20.9%	135.9
Riverside Wildrye	<i>Elymus riparius</i>	FACW	20.0%	130.0
Yellow Nutsedge	<i>Cyperus esculentus</i>	FACW	10.0%	65.0
Deer Tongue	<i>Panicum clandestinum</i>	FACW	20.0%	130.0
<b>Forbs (5%)</b>				
Swamp Sunflower	<i>Helianthus angustifolius</i>	FACW	1.0%	6.5
PA Smartweed	<i>Polygonum pennsylvanicum</i>	FACW	1.0%	6.5
Showy Tickseed (NC)	<i>Bidens aristosa</i>	FACW	3.0%	19.5
<b>Total</b>			<b>100.0%</b>	<b>650.0</b>

SMOKESTACK MITIGATION BANK

Details - D5

SHELBY COUNTY, TENNESSEE

**REVISIONS:**

**PROJECT STATUS:**

**BI MODIFICATION**

PROJECT MANAGER: SH  
 DESIGNED: AB/SO/UW/WM  
 DRAWN: UW/WM/SO  
 JOB NUMBER: 100111  
 DESIGN TYPE: FINAL  
 DATE: 03-12-2024  
 SHEET NO: 39 of 46



**TEMPORARY SEEDING MIXTURE - GENERAL SPECIES RATE (LB/ACRE)**

OATS	30
WINTER WHEAT	30

SEEDING DATES: EAST - AUG. 15 - DEC. 15  
MIDDLE - AUG. 15 - DEC. 30  
WEST - AUG. 15 - DEC. 30

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

MULCH:  
APPLY 4,000 LB/ACRE 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 OR EARLY MARCH.

GRADING AND SHAPING: EXCESSIVE WATER RUNOFF SHALL BE REDUCED BY PROPERLY DESIGNED AND INSTALLED EROSION 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 A MORE IRREGULAR SURFACE OF LARGE CLODS AND STONES.

LIMING: APPLY LIME ACCORDING TO SOIL TEST RECOMMENDATIONS. IF THE PH (ACIDITY) OF THE SOIL IS NOT KNOWN, AN APPLICATION OF GROUND AGRICULTURAL LIMESTONE AT THE RATE TO 1 TO 1 1/2 TONS/ACRE ON COARSE TEXTURED SOILS AND 2-3 TONS/ACRE ON FINE TEXTURED SOILS IS USUALLY SUFFICIENT. 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: BASE APPLICATION RATES ON SOIL TESTS. WHEN SOIL TESTS ARE NOT POSSIBLE, APPLY A 10-10-10 GRADE FERTILIZER AT 700-1000LB/ACRE. 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.

**TEMPORARY SEEDING - LATE WINTER/EARLY SPRING**

SEEDING MIXTURE SPECIES	RATE (LB/ACRE)
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RYE (GRAIN) 120

SEEDING DATES: EAST - \*ABOVE 2,500 FT\*: FEB. 15 - MAY 15  
\*BELOW 2,500 FT\*: FEB. 1 - MAY 1  
MIDDLE - JAN. 1 - MAY 1  
WEST - DEC. 1 - APR. 15

SOIL AMENDMENTS:  
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10-10-10 FERTILIZER.

MULCH:  
APPLY 4,000 LB/ACRE 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:  
RE-FERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RE-SEED. RE-FERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

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 ABOVE 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 1/4 TO 1/2 INCHES DEEP. APPROPRIATE DEPTH OF PLANTING IS 1.0 TIMES THE SEED DIAMETER. SOIL SHOULD BE RAKED LIGHTLY TO COVER SEED WITH SOIL IF SEEDED 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 (SHALLOW, ROCKY, OR HIGH IN CLAY OR SAND), 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 SEEDED AREAS REQUIRE MORE WATER THAN MORE MATURE PLANTS.

**TEMPORARY SEEDING SCHEDULE - SUMMER**

SEEDING MIXTURE SPECIES	RATE (LB/ACRE)
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OATS 60  
BROWN TOP MILLET 30

SEEDING DATES: EAST - MAY. 15 - AUG. 15  
MIDDLE - MAY 1 - AUG. 15  
WEST - APR. 15 - AUG. 15

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

MULCH:  
APPLY 4,000 LB/ACRE 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:  
RE-FERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RE-SEED. RE-FERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

GROUND COVER SCHEDULE		
SITE AREA DESCRIPTION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 1:1 OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS)

**PERMANENT SEEDING BY REGION:**

	ZONE	BEST	MARGINAL	PREFERRED RATE MIX (LB/AC PLS)	
<b>Region I: West Tennessee</b>	POORLY DRAINED SOILS	FEB. 1 - MAR. 20, SEPT. 1 - SEPT. 30	MAR. 20 - APR. 30, SEPT. 30 - OCT. 31	15 BROWNTOP MILLET (NURSE CROP)	
				2 SWITCH GRASS	
				4 LITTLE BLUESTEM	
	WELL DRAINED SOILS	APR. 1 - JULY 15			4 VIRGINIA WILD RYE
					4 PURPLETOP
					2 PARTRIDGE PEAS
					2 BLACK-EYED SUSAN
					15 BROWNTOP MILLET (NURSE CROP)
	HIGH MAINTENANCE	APR. 1 - JULY 15			4 LITTLE BLUESTEM
4 PURPLETOP					
2 SIDE OATS GRAMMA					
<b>Region II: Middle Tennessee</b>	LOW MAINTENANCE; SLOPES AND POOR SHALLOW SOIL	AUG. 25 - SEPT. 15, FEB. 15 - MAY 30	SEPT. 15 - OCT. 15, MAR. 21 - MAY 30	2 PARTRIDGE PEAS	
				2 BLACK-EYED SUSAN	
				1 GREYHEADED CONEFLOWER	
	LOW MAINTENANCE; MODERATE SLOPES; SOIL >6 IN. DEPTH	AUG. 25 - SEPT. 15, FEB. 15 - MAY 30	SEPT. 15 - OCT. 25, MAR. 21 - APR. 15		15 BROWNTOP MILLET (NURSE CROP)
					5 PURPLETOP
					5 LITTLE BLUESTEM
					5 VIRGINIA WILD RYE
					2 PARTRIDGE PEAS
	HIGH MAINTENANCE	AUG. 30 - OCT. 15	FEB. 15 - APR. 15		2 BLACK-EYED SUSAN
1 GREYHEADED CONEFLOWER					
15 BROWNTOP MILLET (NURSE CROP)					
<b>Region III: East Tennessee</b>	>2500 FT ELEV., STEEP SLOPES	MAR. 20 - APR. 30	AUG. 15 - AUG. 30, MAR. 1 - MAR. 20, APR. 20 - JUNE 15	2 PARTRIDGE PEAS	
				45 RED FESCUE	
				45 HARD FESCUE	
	<2500 FT ELEV., STEEP SLOPES	AUG. 15 - SEPT. 1, MAR. 1 - APR. 1	SEPT. 1 - SEPT. 15, APR. 1 - JUNE 10		25 CHEWING FESCUE
					15 BROWNTOP MILLET (NURSE CROP)
					5 PURPLETOP
	>2500 FT ELEV., SHALLOW SOILS	MAR. 20 - APR. 20	AUG. 15 - AUG. 30, MAR. 5 - MAR. 20, APR. 20 - JUNE 15		5 PURPLETOP
					10 LITTLE BLUESTEM
					10 INDIAN GRASS
<2500 FT ELEV., SHALLOW SOILS	AUG. 15 - SEPT. 1, MAR. 1 - APR. 1	SEPT. 1 - SEPT. 15, APR. 1 - JUNE 10		2 BLACK-EYED SUSAN	
				0.5 MONARDA (BERGAMOT)	
				4 MARYLAND SENNA	
>2500 FT ELEV., MODERATE SLOPES	MAR. 20 - APR. 20	AUG. 15 - AUG. 30, MAR. 5 - MAR. 20, APR. 20 - JUNE 15		15 BROWNTOP MILLET (NURSE CROP)	
				4 PURPLETOP	
				10 LITTLE BLUESTEM	
<2500 FT ELEV., MODERATE SLOPES	AUG. 15 - SEPT. 1, MAR. 1 - APR. 1	SEPT. 1 - SEPT. 15, APR. 1 - JUNE 10		10 BROOMSEDGE	
				2 PARTRIDGE PEA	
				2 BLACK-EYED SUSAN	
>2500 FT ELEV., HIGH MAINTENANCE	MAR. 20 - APR. 20	AUG. 15 - AUG. 30, MAR. 5 - MAR. 20, APR. 20 - JUNE 15		0.5 MONARDA (BERGAMOT)	
				15 BROWNTOP MILLET (NURSE CROP)	
				4 PURPLETOP	
<2500 FT ELEV., HIGH MAINTENANCE	AUG. 15 - SEPT. 1, MAR. 1 - APR. 1	SEPT. 1 - SEPT. 15, APR. 1 - JUNE 10		10 LITTLE BLUESTEM	
				10 INDIAN GRASS	
				2 BLACK-EYED SUSAN	
>2500 FT ELEV., HIGH MAINTENANCE	MAR. 20 - APR. 20	AUG. 15 - AUG. 30, MAR. 5 - MAR. 20, APR. 20 - JUNE 15		0.5 MONARDA (BERGAMOT)	
				15 BROWNTOP MILLET (NURSE CROP)	
				4 PURPLETOP	
<2500 FT ELEV., HIGH MAINTENANCE	AUG. 15 - SEPT. 1, MAR. 1 - APR. 1	SEPT. 1 - SEPT. 15, APR. 1 - JUNE 10		10 LITTLE BLUESTEM	
				10 INDIAN GRASS	
				2 BLACK-EYED SUSAN	
>2500 FT ELEV., HIGH MAINTENANCE	MAR. 20 - APR. 20	AUG. 15 - AUG. 30, MAR. 5 - MAR. 20, APR. 20 - JUNE 15		45 RED FESCUE	
				45 HARD FESCUE	
				25 CHEWING FESCUE	
<2500 FT ELEV., HIGH MAINTENANCE	AUG. 15 - SEPT. 1, MAR. 1 - APR. 1	SEPT. 1 - SEPT. 15, APR. 1 - JUNE 10		15 BROWNTOP MILLET (NURSE CROP)	
				45 RED FESCUE	
				45 HARD FESCUE	

**PERMANENT SEEDING NOTES (CONT.):**

**BROADCAST SEEDING:**

- SEEDBED PREPARATION MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING EQUIPMENT IS TO BE 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.

DEPTH (INCHES)	PER 1,000 SQUARE FEET	PER ACRE
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806

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 ONE-FOURTH 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.

ANY AREAS THAT HAVE 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 SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEEDINGS WITHIN THE SAME SEASON, IF POSSIBLE.

RESEEDING: IF A STAND HAS INADEQUATE COVER (<70% UNIFORM COVER), RE-EVALUATE 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.

**PERMANENT SEEDING NOTES:**

GRADING AND SHAPING: GRADING AND SHAPING MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIPMENT IS TO BE 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. CONCENTRATIONS OF WATER THAT COULD CAUSE EXCESSIVE SOIL EROSION SHOULD BE DIVERTED TO A SAFE OUTLET. DIVERSIONS AND OTHER TREATMENT PRACTICES MUST CONFORM TO THE APPROPRIATE STANDARDS AND SPECIFICATIONS.

PLANT SELECTION: ONLY CERTIFIED SEED SHALL BE USED. REFER TO 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 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 THE 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 COMPETE 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 REPLACED ON ALL AREAS TO BE SEEDED. 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. THE FIGURE BELOW PROVIDES GUIDANCE ON THE VOLUME OF TOPSOIL REQUIRED TO PROVIDE SPECIFIC TOPSOIL DEPTHS. SOIL PH SHOULD BE ABOVE 5 - PREFERABLY BETWEEN 6.0 AND 6.5. SOIL ON THE SITE SHOULD BE TESTED TO DETERMINE LIME AND FERTILIZER RATES. SOIL SHOULD BE SUBMITTED TO A SOILS SPECIALIST OR COUNTY AGRICULTURAL EXTENSION AGENT FOR TESTING AND SOIL AMENDMENT RECOMMENDATIONS. IN THE ABSENCE OF SOIL TEST RESULTS, THE FOLLOWING APPLICATION RATES CAN BE USED:

**GROUND AGRICULTURAL LIMESTONE:**

- LIGHT-TEXTURED, SANDY SOILS: 1 - 1 1/2 TONS/ACRE
- HEAVY-TEXTURED, CLAYEY SOILS: 2-3 TONS/ACRE

**FERTILIZER:**

- GRASSES: 800-1200 LB/ACRE OF 10-10-10 (OR THE EQUIVALENT)
- GRASS-LEGUME MIXTURES: 800-1200 LB/ACRE OF 5-10-10 (OR THE EQUIVALENT)



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SMOKESTACK MITIGATION BANK

Details - D6

SHELBY COUNTY, TENNESSEE

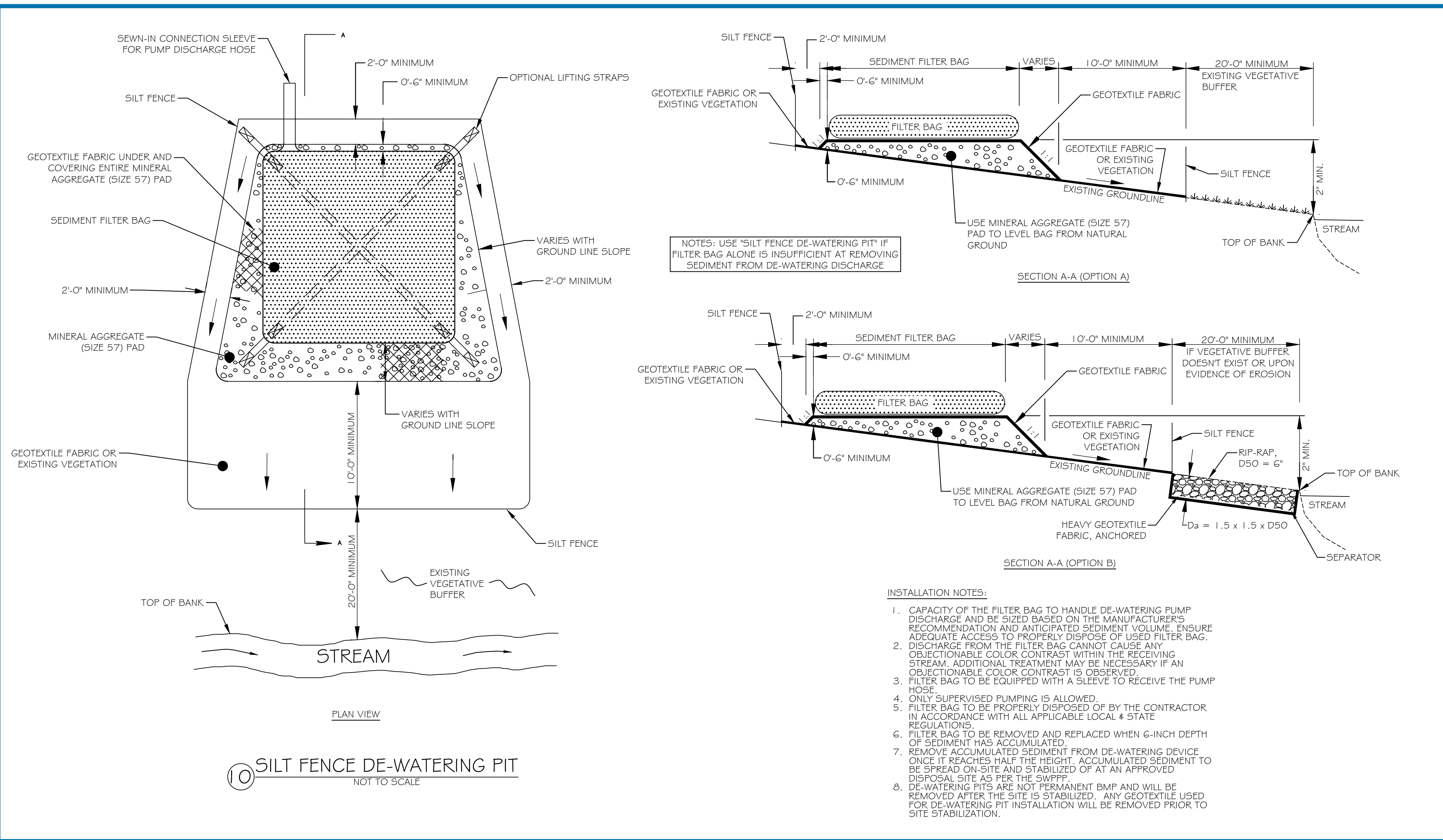
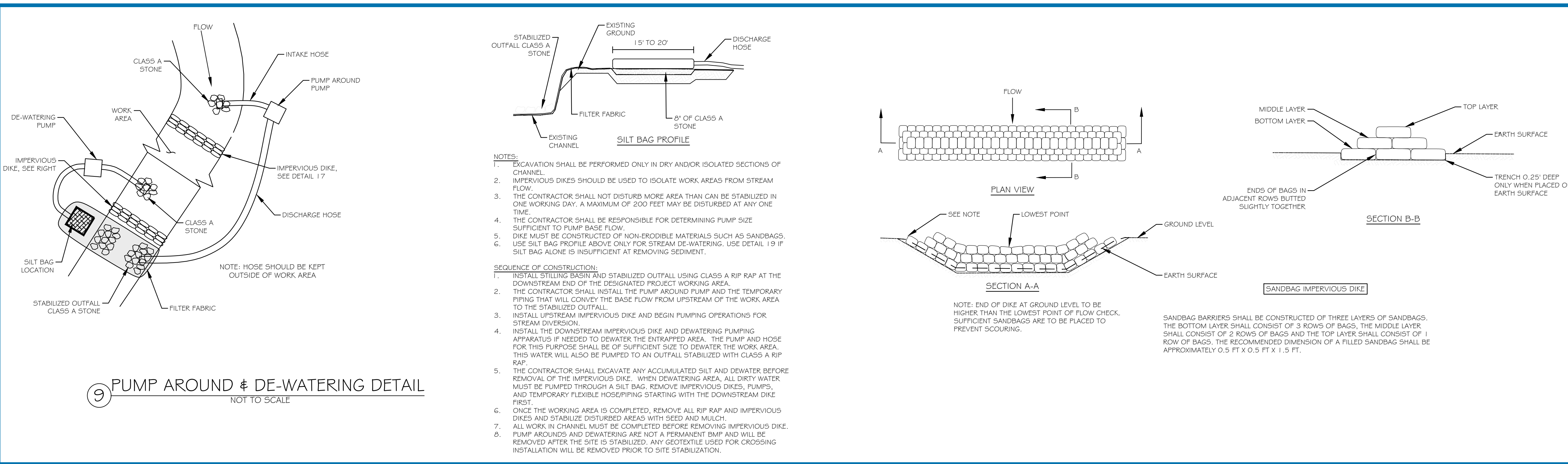
REVISIONS:  
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PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO:	40 of 46

8 TEMPORARY / PERMANENT SEEDING & STABILIZATION  
NOT TO SCALE

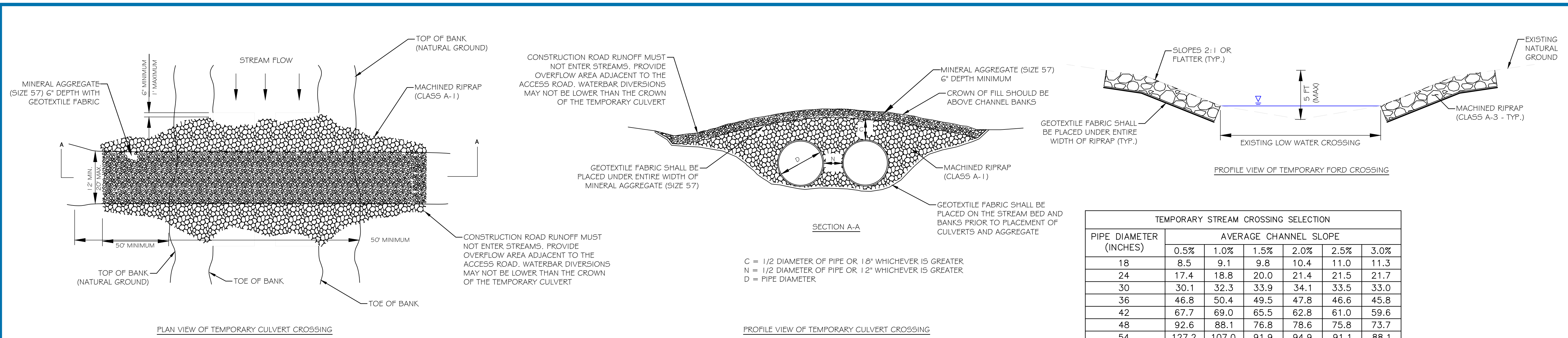


REVISIONS:

PROJECT STATUS:

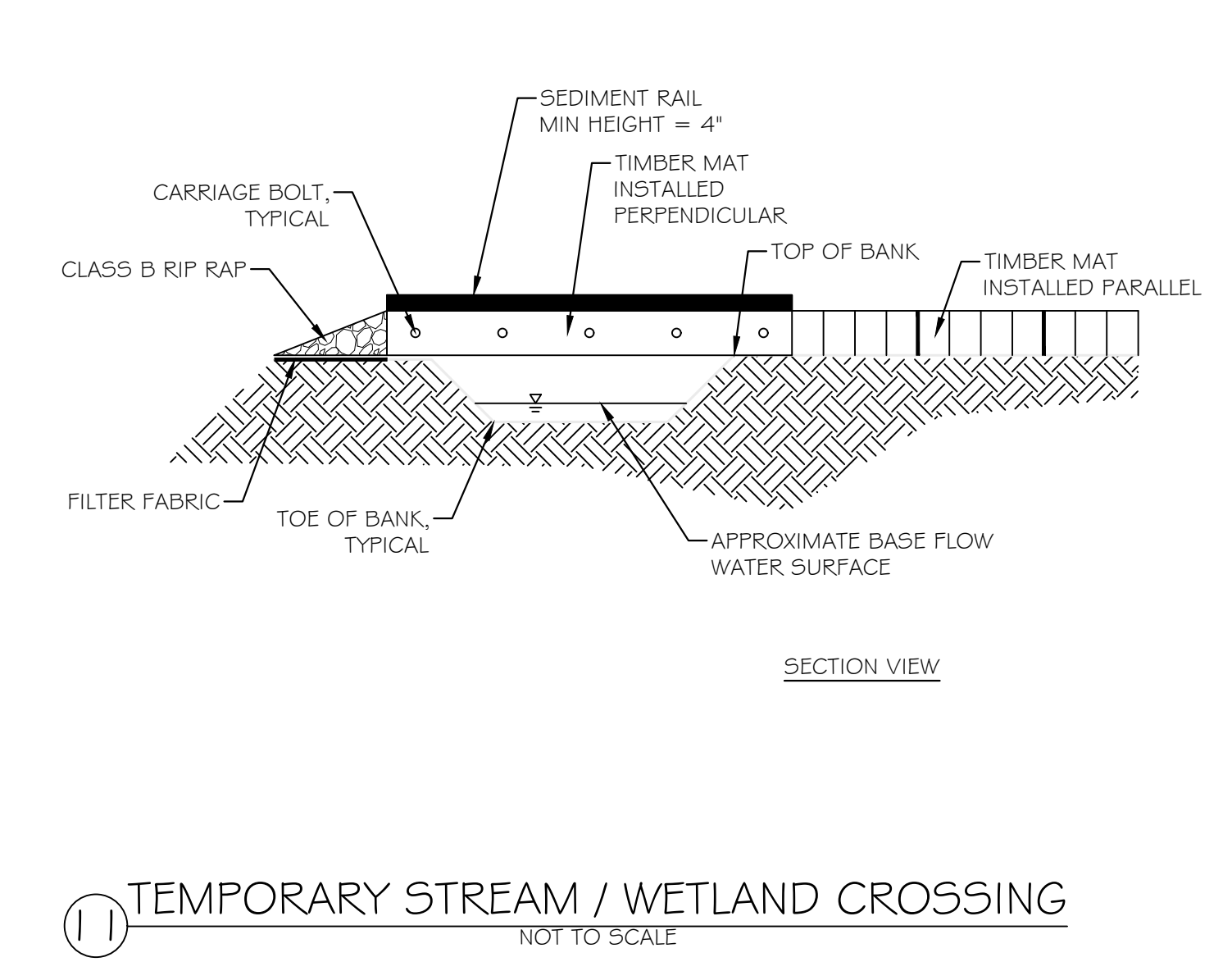
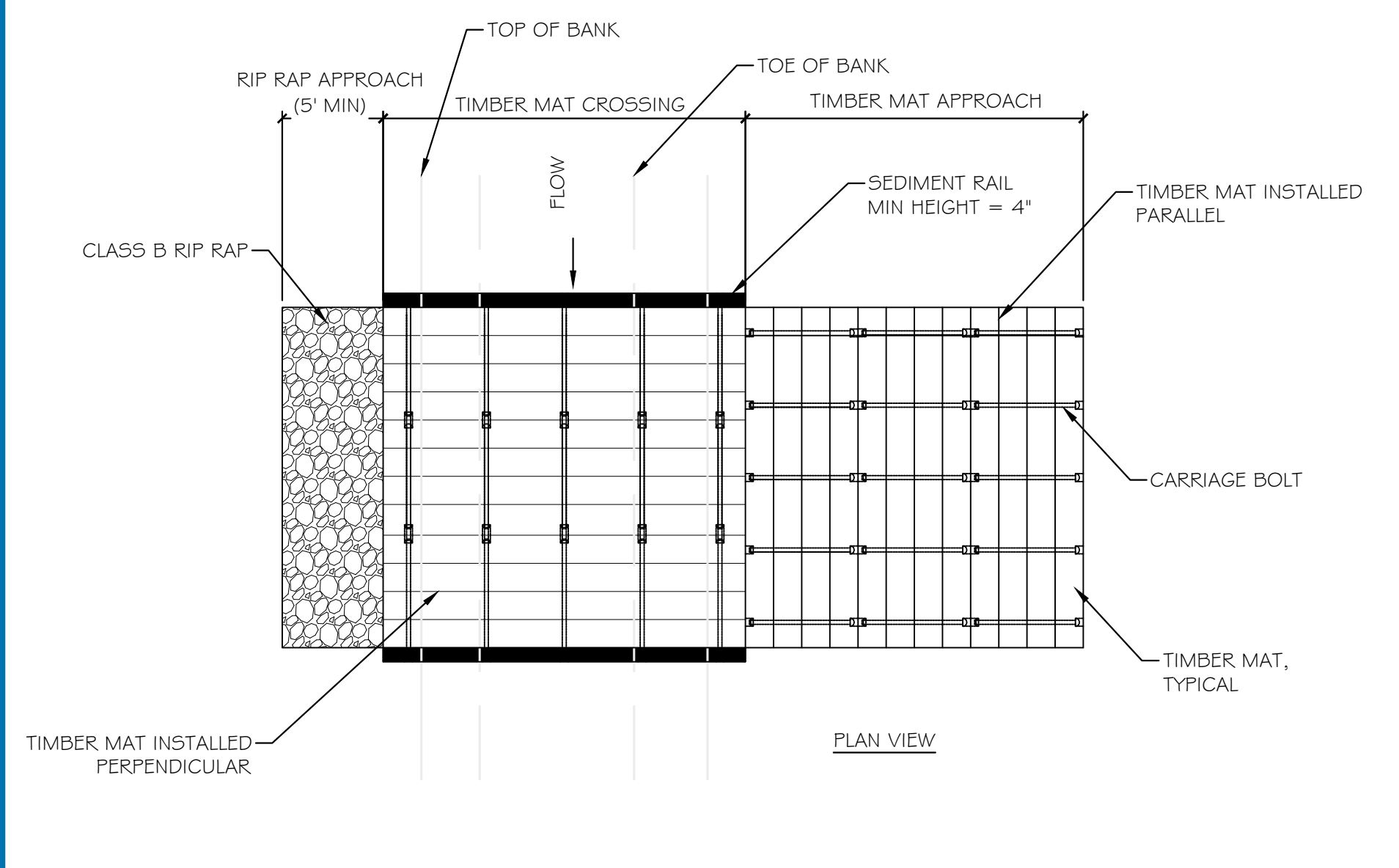
BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	41 of 46



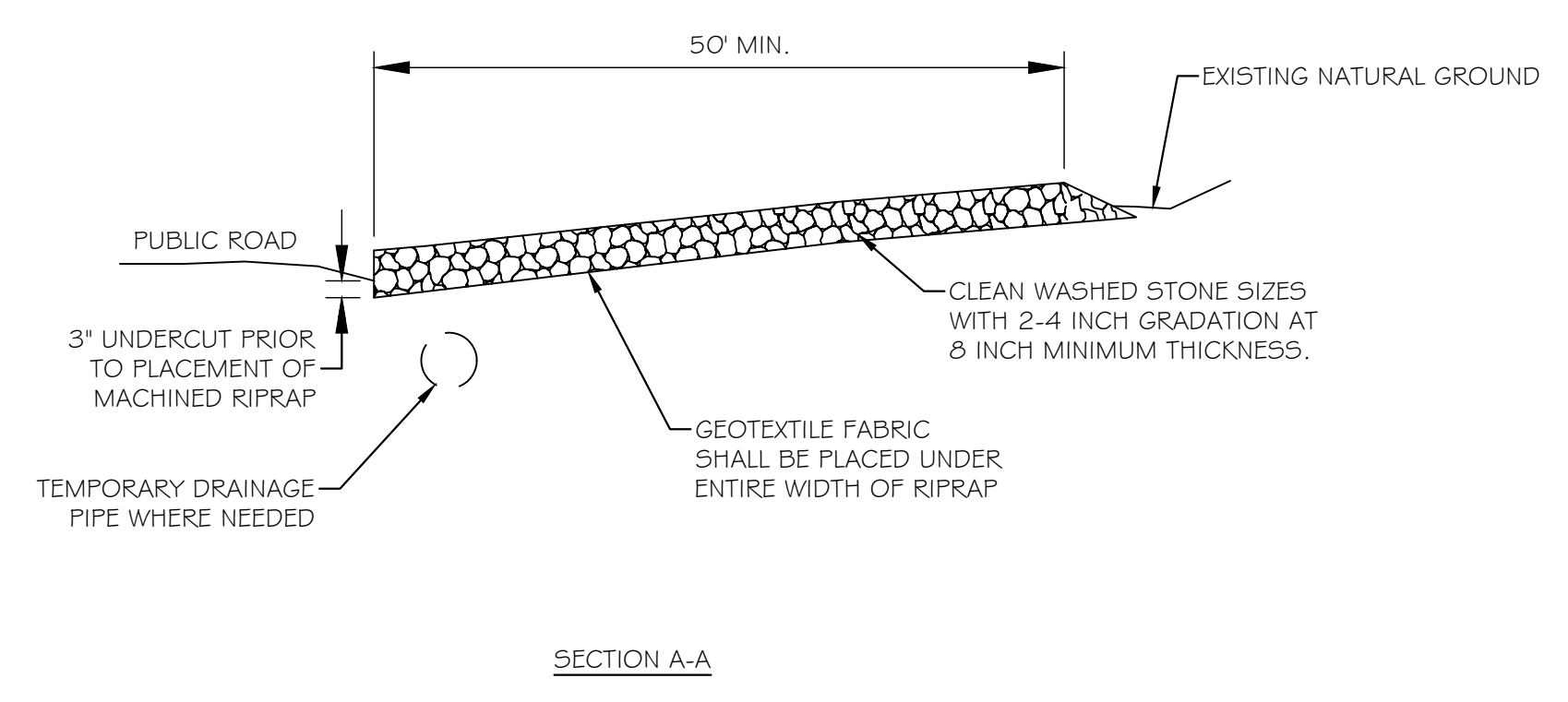
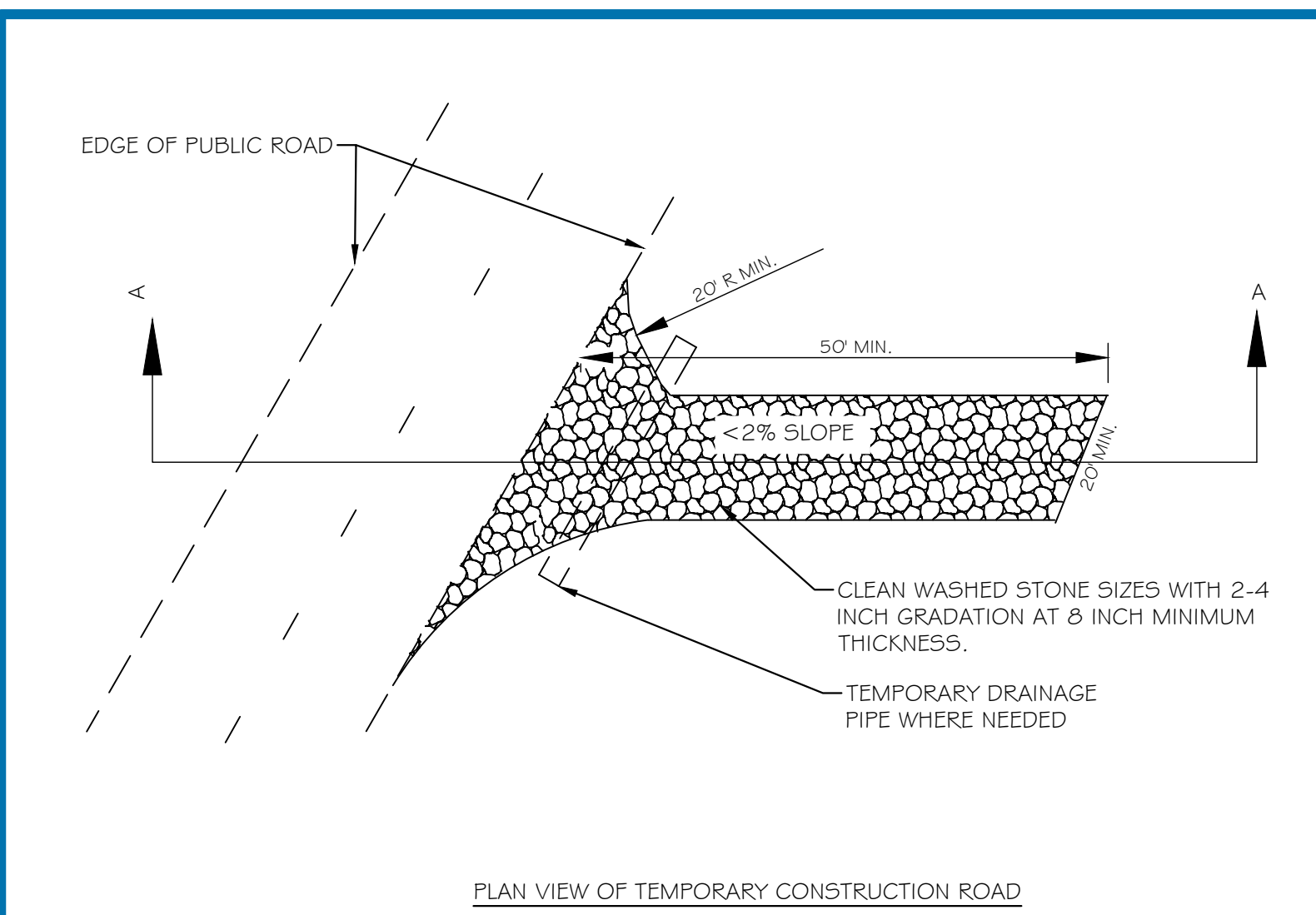
**TEMPORARY STREAM CROSSING SELECTION**

PIPE DIAMETER (INCHES)	AVERAGE CHANNEL SLOPE				
	0.5%	1.0%	1.5%	2.0%	3.0%
18	8.5	9.1	9.8	10.4	11.0
24	17.4	18.8	20.0	21.4	21.5
30	30.1	32.3	33.9	34.1	33.5
36	46.8	50.4	49.5	47.8	46.6
42	67.7	69.0	65.5	62.8	61.0
48	92.6	88.1	76.8	78.6	75.8
54	127.2	107.0	91.9	94.9	91.1
60	146.5	121.1	118.4	111.1	106.1
72	194.9	142.2	153.6	141.3	133.3
RIPRAP	B	B	B	B	B/C



- NOTES:**
- TIMBER MATS SHALL BE USED FOR TEMPORARY CONSTRUCTION ACCESS TO TRAVERSE WET AND/OR MUDDY AREAS ADJACENT TO THE STREAM AND TO CROSS THE STREAM AND OTHER CONCENTRATED FLOW AREAS.
  - THE STREAM CROSSING SHALL BE INSTALLED IN A DRY CONDITION WHEN FLOW IS LOW. THERE SHALL BE MINIMAL TO NO DISTURBANCE OF THE CHANNEL BED AND BANKS AS A RESULT OF INSTALLING THE APPROACHES OR CROSSING.
  - THE LENGTH OF TIMBER MAT REQUIRED TO CROSS THE STREAM OR CONCENTRATED FLOW AREAS SHALL BE SUCH THAT THE TIMBER MAT EXTENDS PAST THE TOP OF BANK ON EACH SIDE OF THE CROSSING A SUFFICIENT DISTANCE TO SUPPORT THE MAXIMUM EQUIPMENT SIZE USING THE CROSSING.
  - STREAM CROSSINGS SHALL BE INSTALLED WITH THE TIMBER MAT LENGTHS ORIENTED PERPENDICULAR TO THE TOPS OF THE STREAM BANKS. TIMBER MAT STREAM APPROACHES SHALL BE INSTALLED WITH THE TIMBER MAT LENGTHS ORIENTED PARALLEL TO THE TOPS OF THE STREAM BANKS.
  - A 4" MINIMUM HEIGHT SEDIMENT RAIL SHALL BE PROVIDED AT STREAM CROSSINGS TO PREVENT TRACKED SEDIMENT FROM FALLING INTO THE STREAM BED.
  - STREAM CROSSING APPROACHES FROM DRY AREAS SHALL BE CONSTRUCTED USING CLASS B RIP RAP PLACED OVER FILTER FABRIC.
  - ALL TIMBER MATS, FILTER FABRIC, AND RIP RAP SHALL BE COMPLETELY REMOVED FROM THE SITE WHEN THE CROSSING IS REMOVED.
  - TEMPORARY STREAM/WETLAND CROSSINGS ARE NOT A PERMANENT BMP AND WILL BE REMOVED AFTER THE SITE IS STABILIZED. ANY GEOTEXTILE USED FOR CROSSING INSTALLATION WILL BE REMOVED PRIOR TO SITE STABILIZATION.

**11** TEMPORARY STREAM / WETLAND CROSSING  
NOT TO SCALE



- CONSTRUCTION SPECIFICATIONS:**
- STABILIZED CONSTRUCTION EXITS SHOULD BE USED AT ALL POINTS WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD.
  - CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
  - EXCAVATE AREAS WHERE CONSTRUCTION EXISTS ARE TO BE CONSTRUCTED TO A DEPTH OF AT LEAST 3 INCHES.
  - INSTALL A GEOTEXTILE FABRIC UNDERLINER ACROSS THE FULL WIDTH AND DEPTH OF THE CONSTRUCTION EXIT. FABRIC SHOULD MEET THE REQUIREMENTS OF THE STANDARDS SPECIFICATIONS FOR GEOTEXTILES, AASHTO DESIGNATED M-280, EROSION CONTROL.
  - PLACE THE GRAVEL TO THE SPECIFIC GRADE AND DIMENSIONS SHOWN ON THE DETAIL, AND SMOOTH IT.
  - DIVERSIONS OR WATERBARS TO BE INSTALLED AT UPSTREAM END OF PAD TO DIVERT WATER TO SEDIMENT TRAP OR OTHER SUITABLE OUTLET UPON EVIDENCE OF DISCHARGE RUNOFF INTO THE PUBLIC ROAD RIGHT OF WAY.
  - CONSTRUCTION EXITS ARE NOT A PERMANENT BMP AND WILL BE REMOVED AFTER THE SITE IS STABILIZED. ANY GEOTEXTILE USED FOR CONSTRUCTION EXIT INSTALLATION WILL BE REMOVED PRIOR TO SITE STABILIZATION.
- MAINTENANCE:**
- MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2-INCH STONE. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS, OR AIRFIELD PAVEMENTS.

**12** CONSTRUCTION EXIT  
NOT TO SCALE

**REVISIONS:**

NO.	DATE	DESCRIPTION

**PROJECT STATUS:**

**BI MODIFICATION**

**PROJECT MANAGER:** SH  
**DESIGNED:** AB/SO/UW/WM  
**DRAWN:** UW/WM/SO  
**JOB NUMBER:** 100111  
**DESIGN TYPE:** FINAL  
**DATE:** 03-12-2024  
**SHEET NO.:** 42 of 46

**CONSTRUCTION SPECIFICATIONS:**

- USE A SYNTHETIC FILTER FABRIC OF AT LEAST 95% BY WEIGHT OF POLYOLEFINS OR POLYESTER, WHICH IS CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE REQUIREMENTS IN ASTM D 6411. SYNTHETIC FILTER FABRIC SHOULD CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0° TO 120° F.
- FOR SEDIMENT FENCE WITHOUT BACKING INSTALL ON HARDWOOD POSTS 2.25" (NOMINAL) X 2.25" (NOMINAL) X 58". FOR SEDIMENT FENCE WITH BACKING, INSTALL ON ON 1.33 LB/LINEAR FT STEEL T-POSTS WITH 14 GAUGE WIRE BACKING MINIMUM MESH SIZE OF 6 INCHES. MAKE SURE THAT STEEL POSTS HAVE A MINIMUM LENGTH OF 5 FEET AND HAVE PROJECTIONS TO FACILITATE FASTENING THE FABRIC.

**CONSTRUCTION:**

- DO NOT PLACE SILT FENCE ACROSS WHERE CONCENTRATED FLOW IS GREATER THAN 0.5 CFS, CHANNELS OR USE IT AS A VELOCITY CONTROL BMP.
- CONSTRUCT THE SEDIMENT BARRIER OF EXTRA STRENGTH SYNTHETIC FILTER FABRICS. ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 24 INCHES ABOVE THE GROUND SURFACE. (HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.)
- 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 OR 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.
- INSTALL POSTS NO MORE THAN 6 FEET APART.
- 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 (3/4" WIDE X 1/2" LONG), AT LEAST 5 TO A POST. 3 STAPLES SHOULD BE INSTALLED IN THE UPPER 8 INCHES FOR TOP STRENGTH.
- EXCAVATE A TRENCH APPROXIMATELY 4 INCHES WIDE AND 8 INCHES DEEP ALONG THE PROPOSED LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
- PLACE 12 INCHES OF THE FABRIC ALONG THE BOTTOM AND SIDE OF THE TRENCH.
- BACKFILL THE TRENCH WITH SOIL PLACED OVER THE FILTER FABRIC AND COMPACT. THOROUGH COMPACTION OF THE BACKFILL IS CRITICAL TO SILT FENCE PERFORMANCE.
- DO NOT ATTACH FILTER FABRIC TO EXISTING TREES.

**MAINTENANCE:**

- REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO 1/2 THE ORIGINAL HEIGHT OF THE BARRIER.
- MONITOR THE TOE FOR EVIDENCE OF PIPING OR EROSION ALONG THE TOE. INSTALL J-HOOKS WHEREVER RUNOFF FLOWS ALONG THE TOE OF THE FENCING TO PREVENT UNDERMINING.
- SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
- REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
- REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

**INSTALLATION NOTES:**

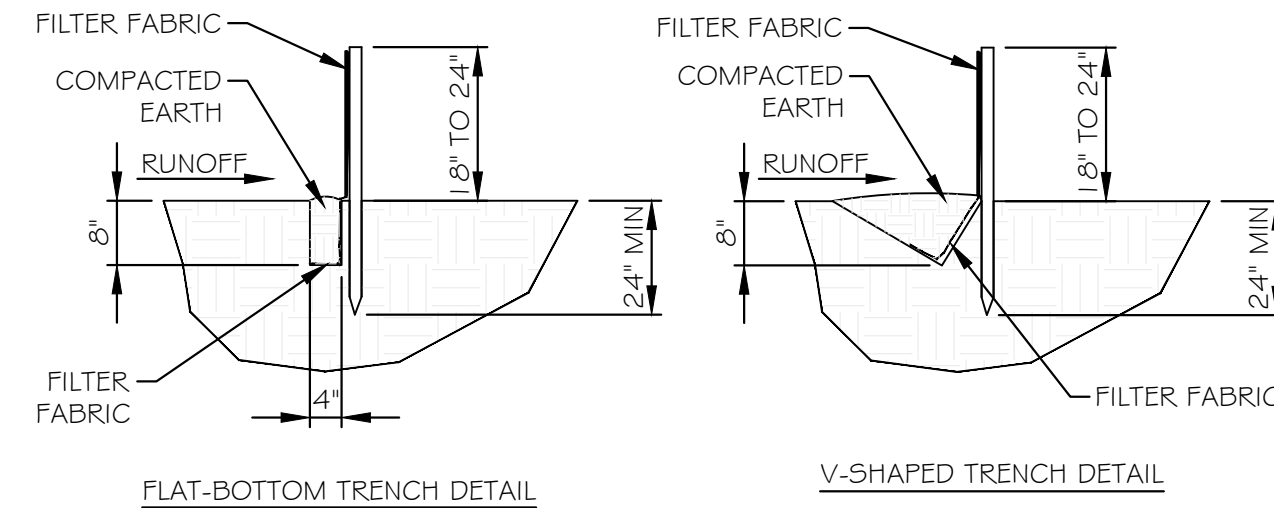
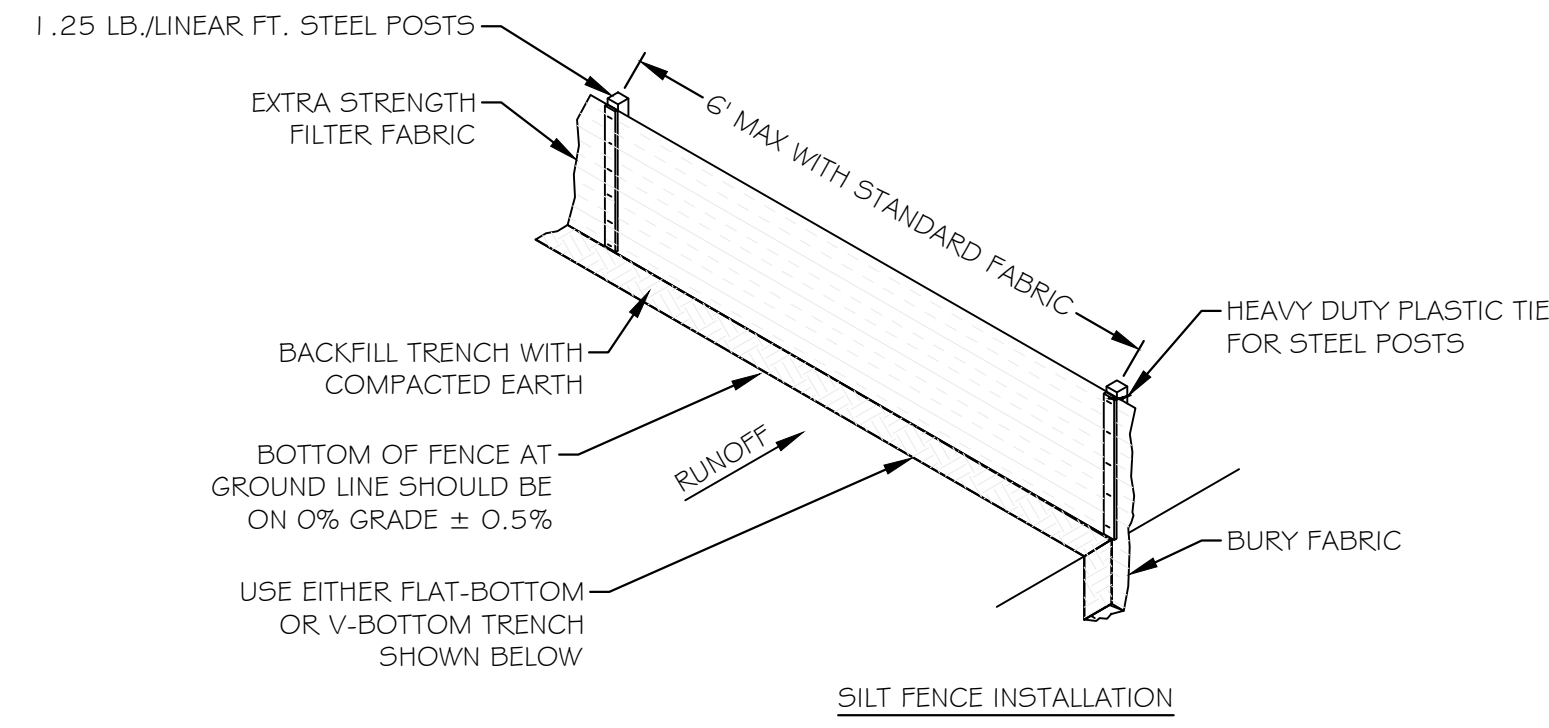
- EROSION CONTROL WATTLES OR COIR LOGS/WATTLES MAY BE USED IN PLACE OF SILT FENCE.
- DO NOT INSTALL TUBES, WATTLES OR SOCKS ON PAVEMENT, ROCKY SOIL, OR AT ANY LOCATION WHERE THE STAKE CANNOT BE DRIVEN TO THE REQUIRED DEPTH.
- PLACE TEMPORARY SEDIMENT TUBES ALONG THE CONTOUR, AND TURN THE END OF THE TUBES UPSLOPE TO PREVENT EROSION FROM FLOW BYPASS.
- ENDS OF INDIVIDUAL TUBE SEGMENTS SHOULD BE OVERLAPPED. DO NOT LEAVE GAPS BETWEEN INDIVIDUAL TUBE SEGMENTS.
- INSTALL TUBES BY LAYING THEM FLAT ON THE GROUND. EXCAVATE A SMALL TRENCH 2-3 INCHES IN DEPTH ON THE CONTOUR AND PERPENDICULAR TO WATER FLOW. SOIL FROM THE EXCAVATION
- SHOULD BE STORED CLOSE BY FOR USE AFTER THE WATTLE HAS BEEN INSTALLED.
- INSTALL TUBES SO NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE SEDIMENT TUBE.
- LAP THE ENDS OF ADJACENT SEDIMENT TUBES A MINIMUM OF 6-INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT.
- WOODEN STAKES SHOULD BE USED TO FASTEN THE WATTLES TO THE SOIL. WHEN CONDITIONS WARRANT, A STRAIGHT METAL BAR CAN BE USED TO DRIVE A "PILOT HOLE" THROUGH THE WATTLE AND INTO THE SOIL.
- DRIVE WOODEN STAKES THROUGH THE WATTLE AND ANGLED SLIGHTLY AGAINST THE DIRECTION OF FLOW. INSTALL WOODEN STAKES AT 4 FEET INTERVALS, UNLESS THE WATTLE MANUFACTURER SPECIFIES OTHERWISE. LEAVING LESS THAN 1-2 INCHES OF STAKE EXPOSED ABOVE THE WATTLE. ALTERNATELY, STAKES MAY BE PLACED ON EACH SIDE OF THE WATTLE TYING ACROSS WITH A NATURAL FIBER TWINE OR STAKING IN A CROSSING MANNER ENSURING DIRECT SOIL CONTACT AT ALL TIMES.
- TERMINAL ENDS OF WATTLES MAY BE DOG LEGGED UP SLOPE TO ENSURE CONTAINMENT AND PREVENT CHANNELING OF SEDIMENTATION.
- BACKFILL THE UPSLOPE LENGTH OF THE WATTLE WITH THE EXCAVATED SOIL AND COMPACT.

**MAINTENANCE NOTES:**

- INSPECT WATTLES AND TUBES AFTER INSTALLATION FOR GAPS UNDER AND BETWEEN THE JOINTS OF ADJACENT ENDS OF WATTLES AND TUBES.
- REPAIR ALL RILLS, GULLIES, AND UNDERCUTTING NEAR WATTLES AND TUBES.
- REMOVE ALL SEDIMENT DEPOSITS THAT IMPAIR THE FILTRATION CAPABILITY OF THE TUBES WHEN THE SEDIMENT REACHES 1/3 THE HEIGHT OF THE EXPOSED TUBE.
- REMOVE AND/OR REPLACE INSTALLED SEDIMENT TUBES AS REQUIRED TO ADAPT TO CHANGING CONSTRUCTION SITE CONDITIONS.
- PRIOR TO FINAL STABILIZATION, BACKFILL ALL TRENCHES, DEPRESSIONS AND OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE DEVICES.

**NOTE:**

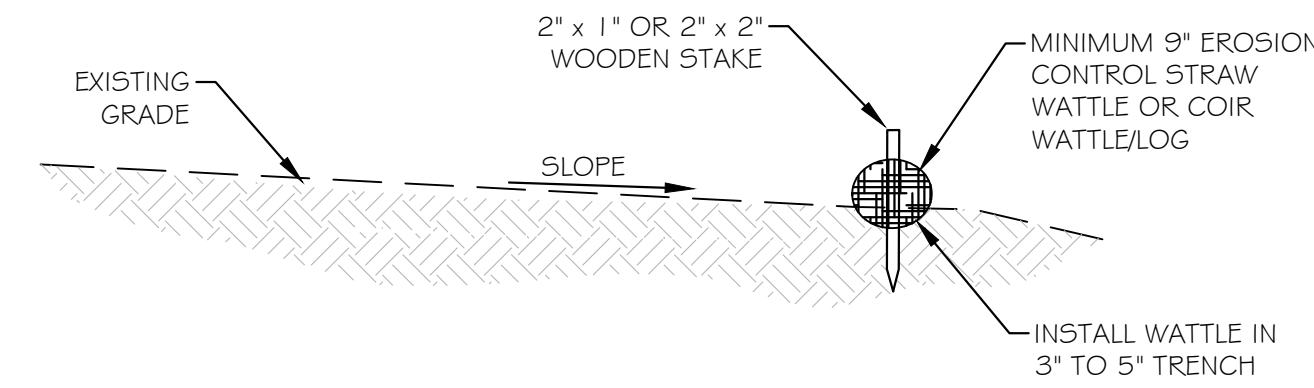
- MAINTAIN HAUL ROAD DURING CONSTRUCTION.
- A 6-INCH LAYER OF COARSE AGGREGATE (DOT #57) SHOULD BE APPLIED IMMEDIATELY AFTER GRADING (AS-NEEDED). IN AREAS EXPERIENCING HEAVY TRAFFIC, STONE SHOULD BE PLACED AT 8-10 INCH DEPTH. A GEOTEXTILE CAN BE PLACED BENEATH THE STONE FOR ADDITIONAL STABILITY.
- TREAT ANY SEDIMENT PRODUCING AREAS IMMEDIATELY.
- RETURN TO ORIGINAL GRADE AT THE COMPLETION OF WORK.
- VEGETATE ALL DISTURBED AREAS.
- REMOVE SILT FENCE FROM OBSOLETE HAUL ROADS UPON ESTABLISHMENT OF VEGETATION.
- HAUL ROADS ARE NOT A PERMANENT BMP AND WILL BE REMOVED AFTER THE SITE IS STABILIZED. ANY GEOTEXTILE USED FOR HAUL ROAD INSTALLATION WILL BE REMOVED PRIOR TO SITE STABILIZATION.



13 TEMPORARY SILT FENCE  
NOT TO SCALE

	TEST MATERIAL	WITHOUT BACKING	WITH BACKING
MAXIMUM DRAINAGE AREA	N/A	1/4 AC / 100 LF UP TO 2 ACRES	1 AC / 150 LF
MAXIMUM SLOPE LENGTH	N/A	110 FT @ 2:1 (H:V) PERPENDICUALR TO THE FENCE	300 FT @ 2:1 (H:V) PERPENDICUALR TO THE FENCE
GEOTEXTILE FABRIC TYPE	N/A	WOVEN SLIT FILM	WOVEN MONOFILAMENT
APPARENT OPENING SIZE	ASTM D4751	#30 TO #70 STANDARD SIEVE	#70 TO #100 STANDARD SIEVE
WATER FLUX	ASTM D4491	≥ 4 GPM/FT2	≥ 18 GPM/FT2
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	≥ 70%	≥ 90%
ELONGATION	ASTM D4632	≤ 20% MAX.	---
BURST STRENGTH	ASTM D3786	≥ 250 PSI	≥ 400 PSI
PUNCTURE STRENGTH	ASTM D4833	≥ 60 LB.	≥ 105 LB.
TRAPEZOIDAL TEAR	ASTM D4533	≥ 50 LB (WARP DIRECTION) 40 LB (FILL DIRECTION)	≥ 100 LB (WARP DIRECTION) 60 LB (FILL DIRECTION)

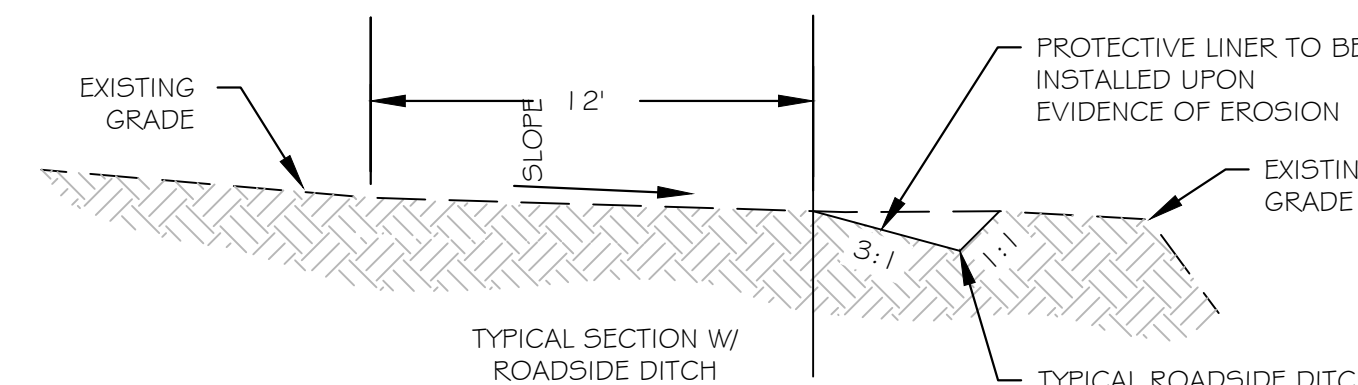
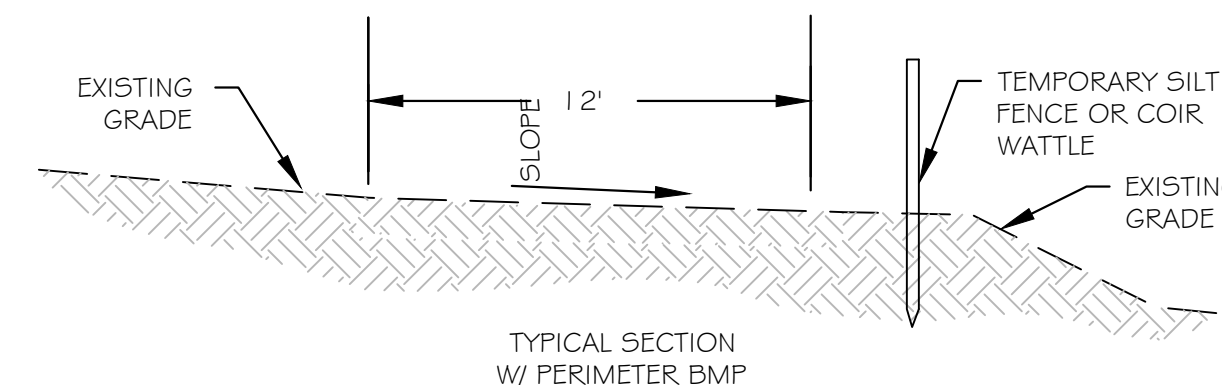
SLOPE	WATTLE AND TUBE DIAMETER				
	8"	12"	18"	20"	36"
2%	70'	100'	N/A	N/A	N/A
5%	30'	60'	100'	100'	100'
10%	20'	30'	70'	85'	100'
6:1	N/A	20'	40'	50'	55'
4:1	N/A	20'	30'	30'	30'
3:1	N/A	N/A	20'	20'	25'
2:1	N/A	N/A	20'	20'	20'



14 EROSION CONTROL WATTLE  
NOT TO SCALE

COMPOST FILTER SOCK FABRIC MINIMUM SPECIFICATIONS					
MATERIAL TYPE	3 MIL HDPE	5 MIL HDPE	5 MIL HDPE	MULTI-FILAMENT POLYPROPYLENE (MPPP)	HEAVY DUTY MULTI-FILAMENT POLYPROPYLENE (HDMPPP)
MATERIAL CHARACTERISTICS	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE	BIO-DEGRADABLE	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE
SOCK DIAMETERS	12' / 18'	12' / 18' / 24' / 32'	12' / 18' / 24' / 32'	12' / 18' / 24' / 32'	12' / 18' / 24' / 32'
MESH OPENING	3/8"	3/8"	3/8"	3/8"	1/8"
TENSILE STRENGTH	N/A	26 PSI	26 PSI	44 PSI	202 PSI
ULTRAVIOLET STABILITY % ORIGINAL STRENGTH (ASTM G-155)	23% AT 1000 HR	23% AT 1000 HR	N/A	100% AT 1000 HR	100% AT 1000 HR
MINIMUM FUNCTIONAL LONGEVITY	6 MONTHS	9 MONTHS	6 MONTHS	1 YR	2 YRS
TWO-PLY SYSTEMS					
INNER CONTAINMENT NETTING	HPDE BIAXIAL NET				
	CONTINUOUSLY WOUND				
	FUSION- WELDED JUNCTURES				
OUTER FILTRATION MESH	3/4" X 3/4" MAX. APERTURE SIZE				
	COMPOSITE POLYPROPYLENE FABRIC (WOVEN LAYER AND NON-WOVEN FLEECE MECHANICALLY FUSED VIA NEEDLE PUNCH				
3/16" MAX APERTURE SIZE					
SOCK FABRICS COMPOSED OF BURLAP MAY BE USED ON PROJECTS LASTING 6 MONTHS OR LESS					

COMPOST STANDARDS	
ORGANIC MATTER CONTENT	80%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5 - 8.0
MOISTURE CONTENT	35% - 55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS/m (mmhos/cm) MAXIMUM



15 TYPICAL HAUL ROAD SECTION  
NOT TO SCALE



103 Continental Place, Ste. 202 Brentwood, TN 37027  
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SMOKESTACK MITIGATION BANK

Details - D9

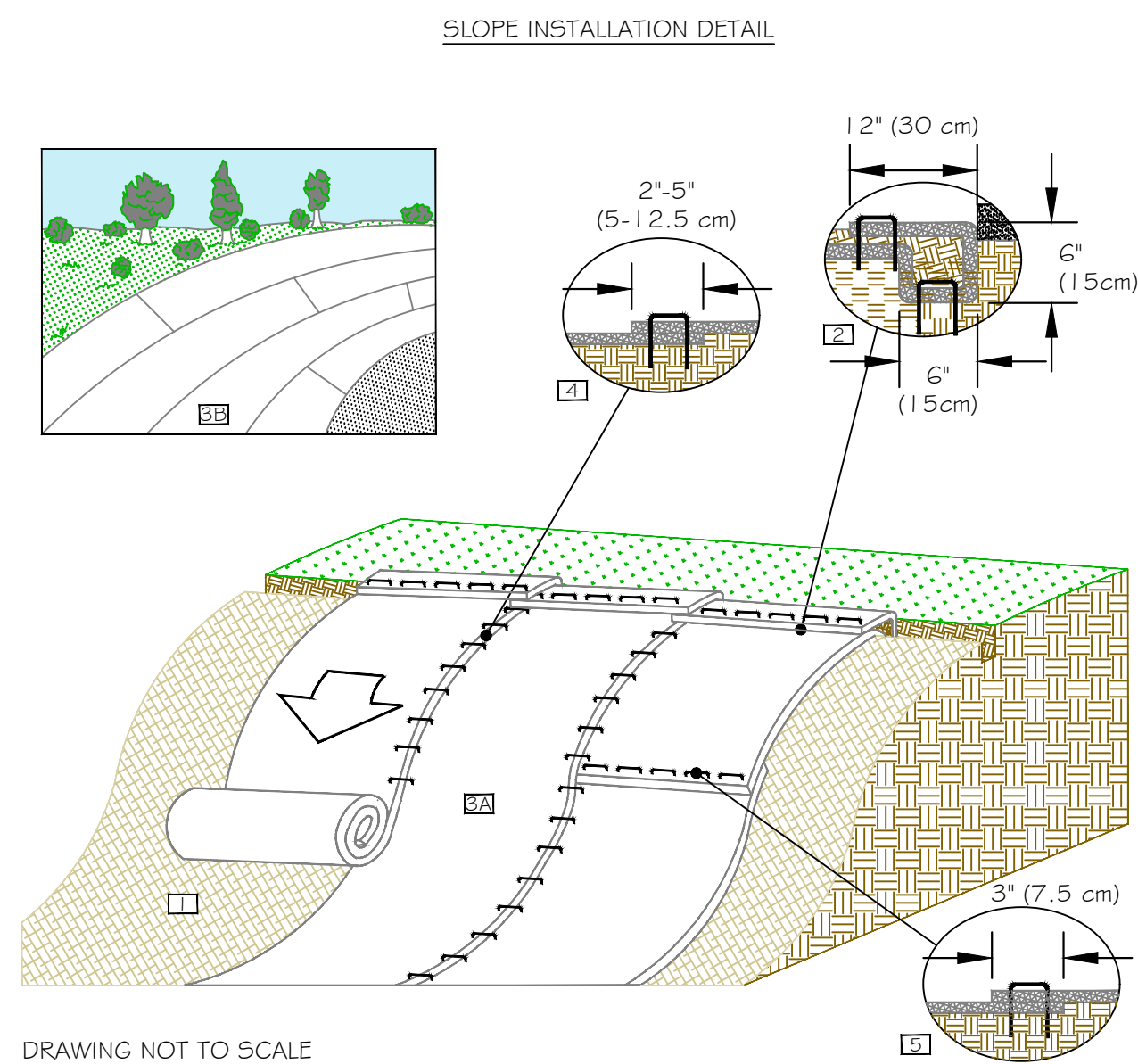
SHELBY COUNTY, TENNESSEE

REVISIONS:  
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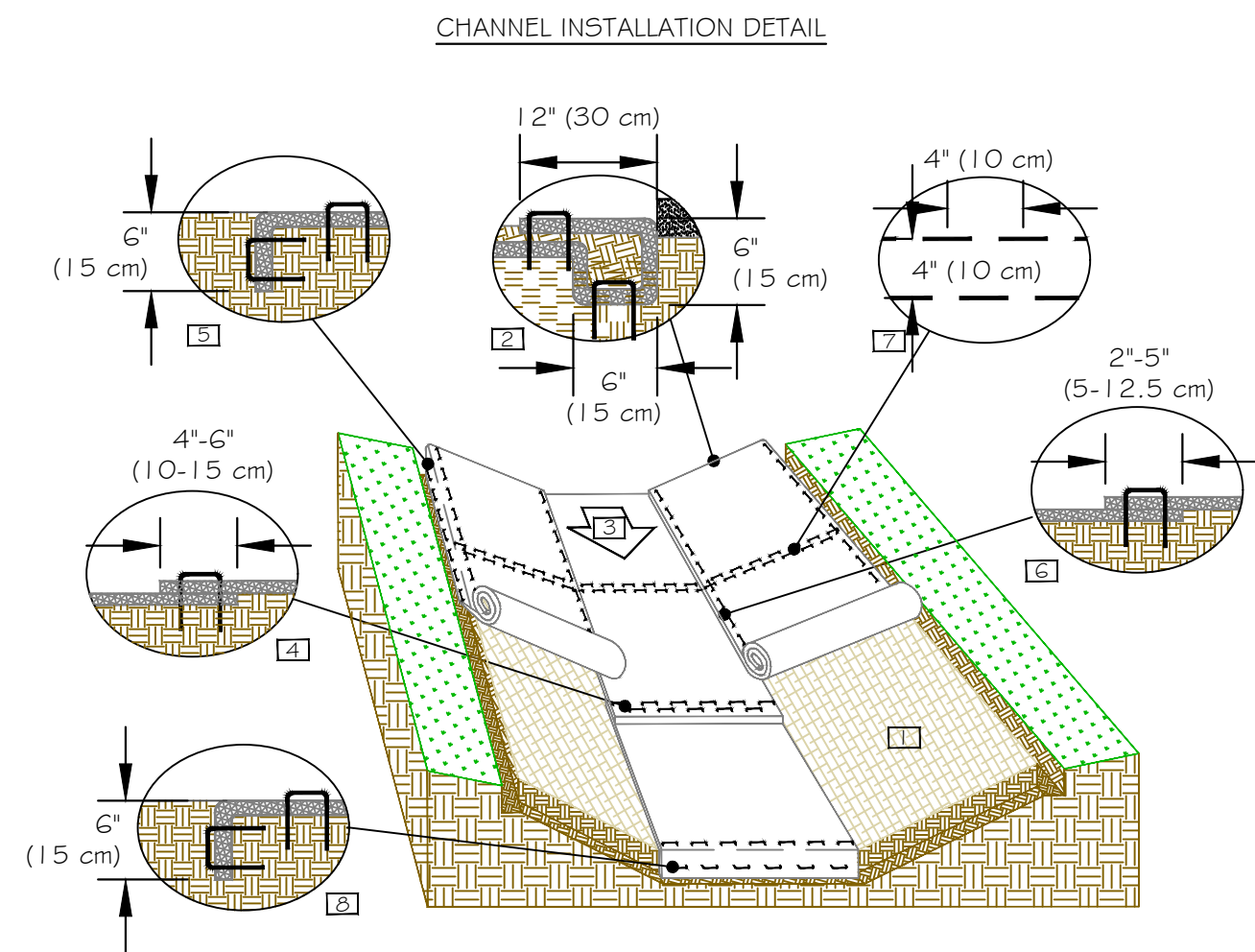
PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	43 of 46



DRAWING NOT TO SCALE

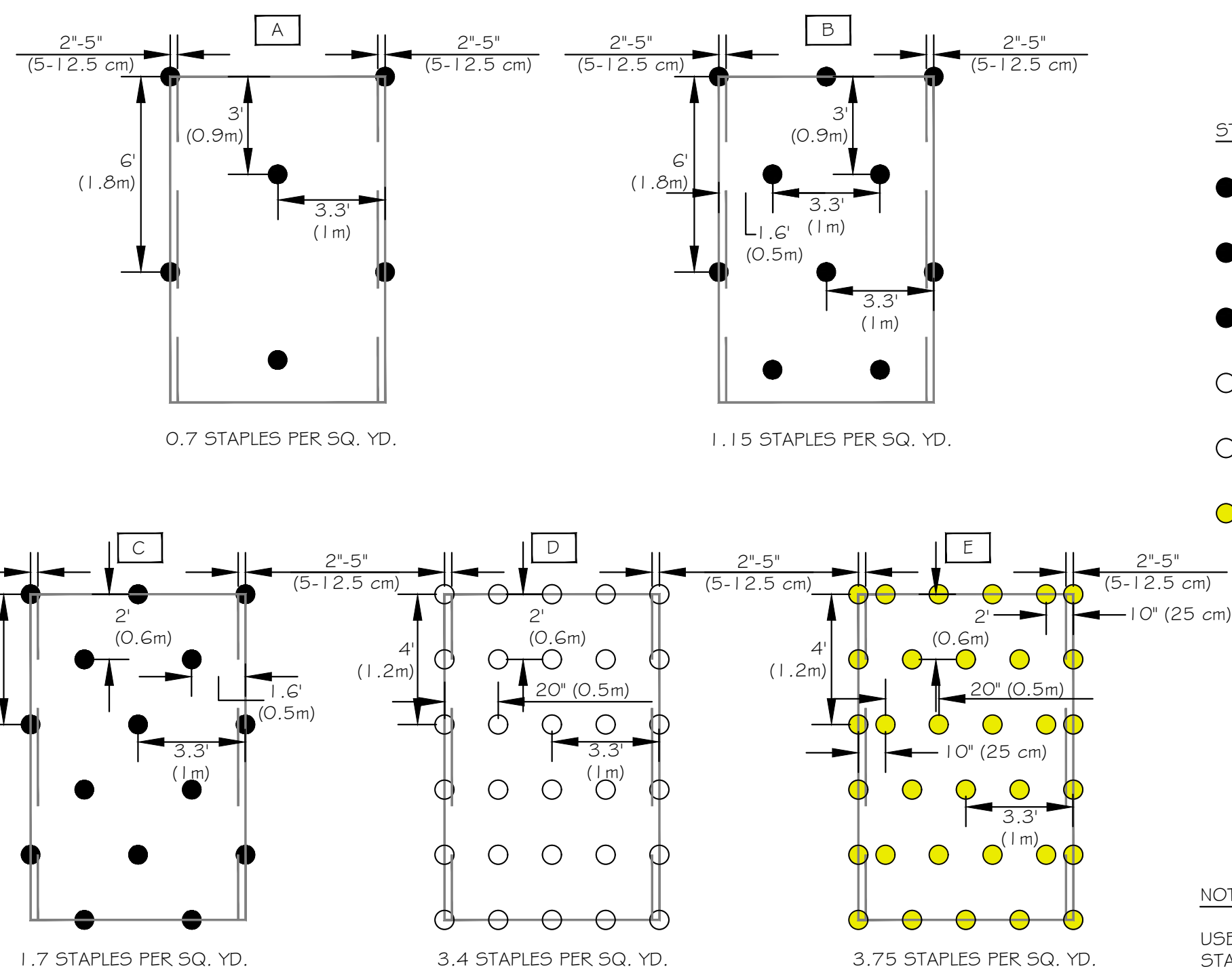


DRAWING NOT TO SCALE

- CRITICAL POINTS:**
- A. OVERLAPS AND SEAMS
  - B. PROJECTED WATER LINE
  - C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

**NOTES:**  
 \*HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

\*\*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6\"/>



**STAPLE PATTERN GUIDE**

- 4:1 SLOPES (A)
- 3:1 SLOPES (B)
- 2:1 SLOPES (C)
- 1:1 SLOPES (D)
- MEDIUM FLOW CHANNEL (D)
- HIGH FLOW CHANNEL AND SHORELINE (E)

**NOTES:**

USE ECMD5<sup>®</sup> FOR MORE ACCURATE STAPLE PATTERN SELECTION

**SLOPE INSTALLATION NOTES:**

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPS IN A 6\"/>

**\*NOTE:**

IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6\"/>

**MATERIAL SELECTION NOTES:**

1. FOR SMOKESTACK, USE NORTH AMERICAN GREEN SC150 EROSION CONTROL BLANKET OR EQUIVALENT AS APPROVED BY THE ENGINEER. THIS IS A BIO-DEGRADABLE PRODUCT COMPOSED OF 70% STRAW AND 30% JUTE.

**CHANNEL INSTALLATION NOTES:**

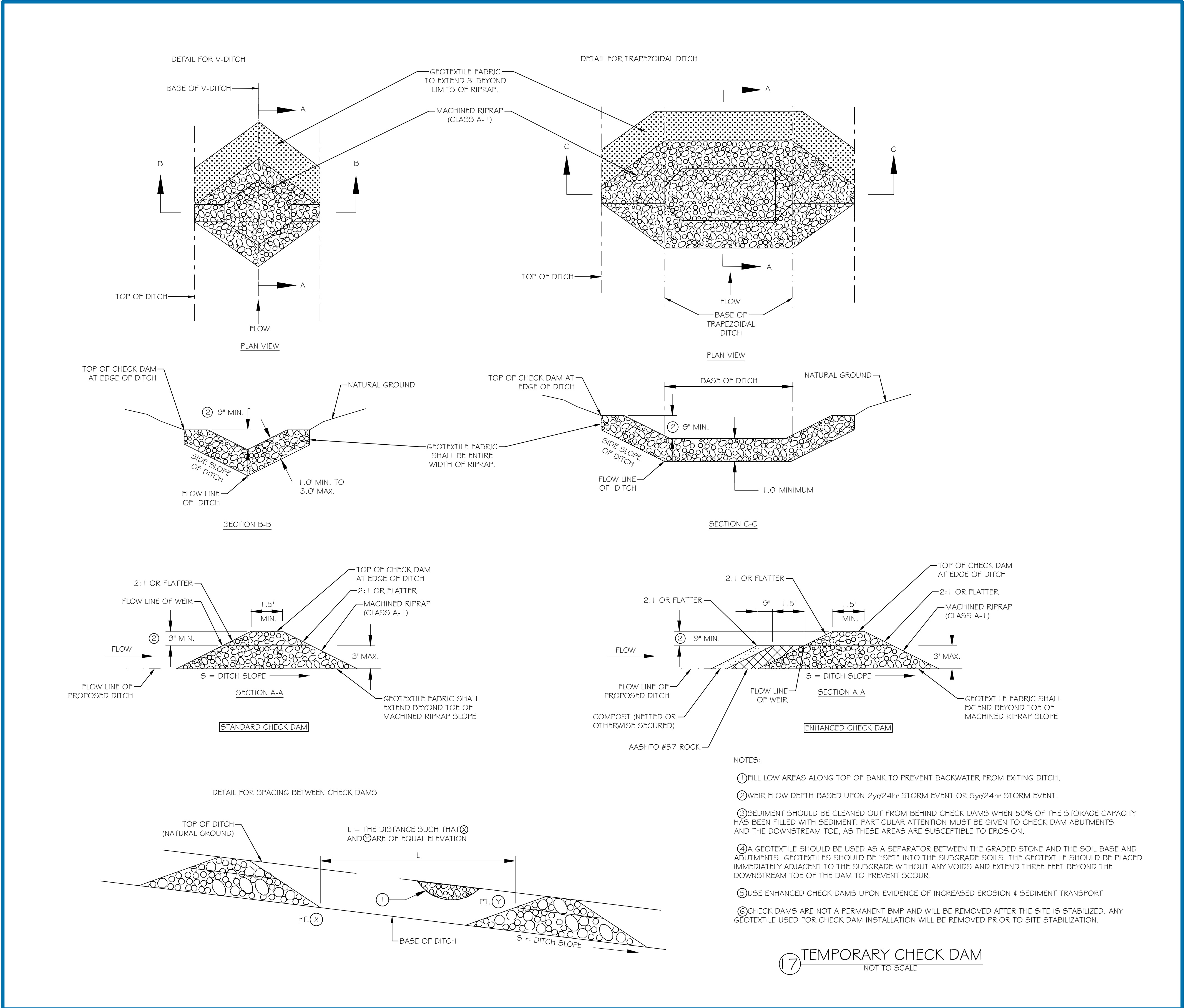
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECPS IN A 6\"/>

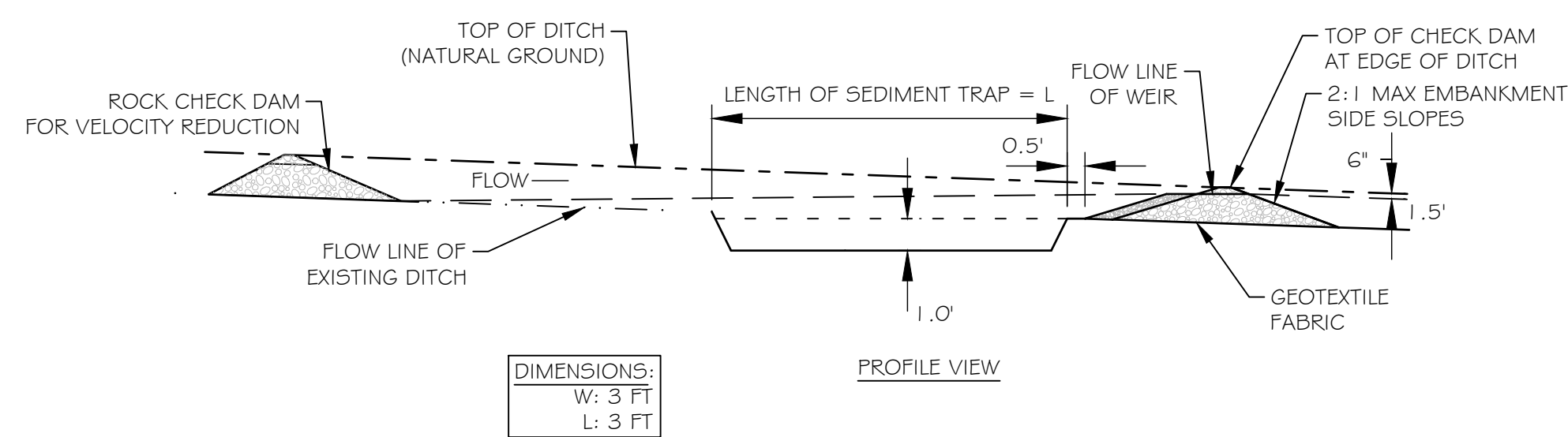
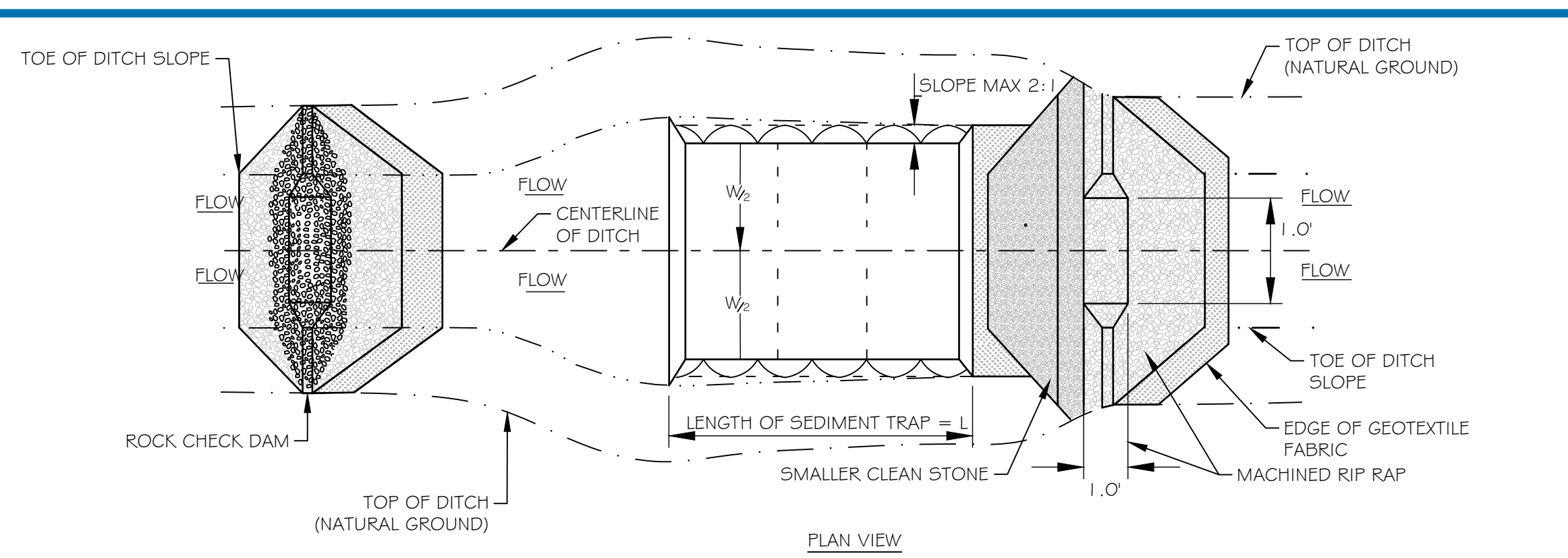
**EROSION CONTROL BLANKET**  
 NOT TO SCALE

REVISIONS:

PROJECT STATUS:  
 BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	44 of 46





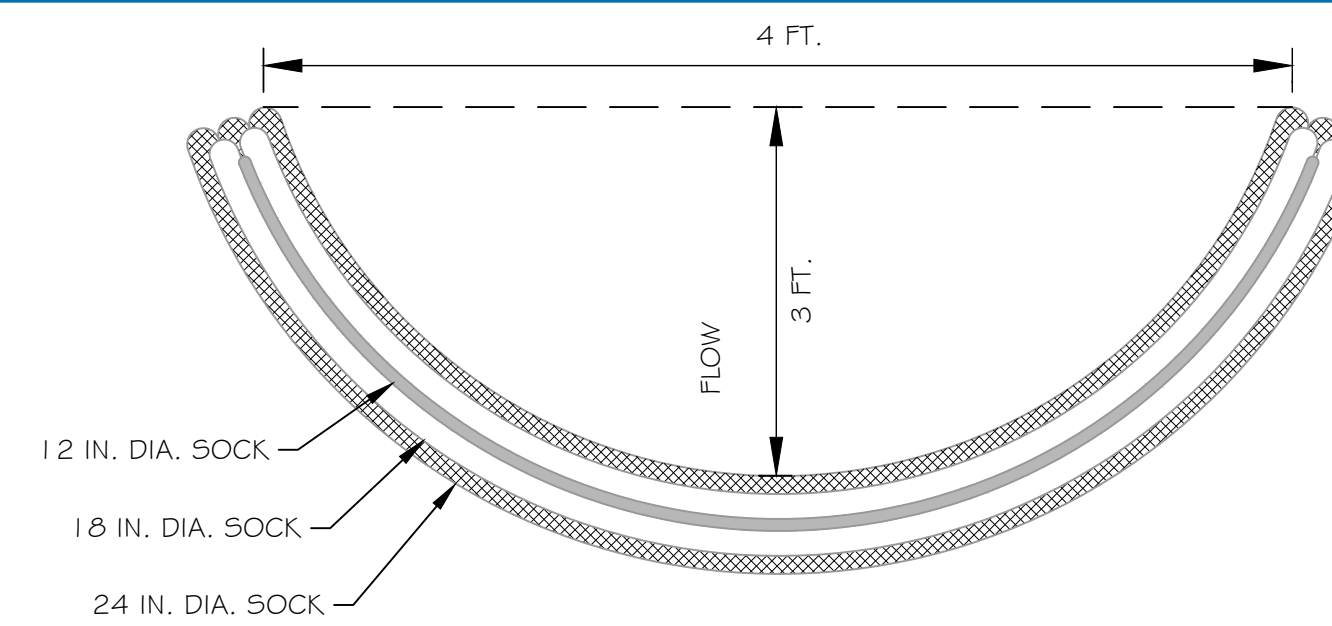
**INSTALLATION NOTES:**

- CLEAR, GRUB, AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER, AND STOCKPILE IT OR DISPOSE OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA.
- ENSURE THAT FILL MATERIAL FOR THE EMBANKMENT IS FREE OF ROOTS, WOODY VEGETATION, ORGANIC MATTER, AND OTHER OBJECTIONABLE MATERIAL. PLACE THE FILL IN LIFTS NOT TO EXCEED 9 INCHES, AND MACHINE COMPACT IT. OVERFILL THE EMBANKMENT 6 INCHES TO ALLOW FOR SETTLEMENT.
- CONSTRUCT THE OUTLET SECTION IN THE EMBANKMENT. PROTECT THE CONNECTION BETWEEN THE RIPRAP AND THE SOIL FROM PIPING BY USING GEOTEXTILE FABRIC BETWEEN THE RIP RAP AND SOIL. PLACE THE FILTER FABRIC BETWEEN THE SOIL AND RIP RAP. EXTEND THE FABRIC ACROSS THE SPILLWAY FOUNDATION AND SIDES TO THE TOP OF THE DAM.
- CLEAR THE SEDIMENT TRAP STORAGE ZONE AREA BELOW THE ELEVATION OF THE CREST OF THE SPILLWAY TO FACILITATE CLEANOUT.
- ALL CUT AND FILL SLOPES MUST BE 2:1 OR FLATTER.
- ENSURE THAT THE STONE SECTION OF THE EMBANKMENT HAS A MINIMUM BOTTOM WIDTH OF 3 FEET AND MAXIMUM SIDE SLOPES OF 1:1 THAT EXTEND TO THE BOTTOM OF THE SPILLWAY SECTION.
- CONSTRUCT THE MINIMUM FINISHED STONE SPILLWAY BOTTOM WIDTH, AS SHOWN ON THE PLANS, WITH 2:1 SIDE SLOPES EXTENDING TO THE TOP OF THE OVER FILLED EMBANKMENT. THE WEIR MUST BE LEVEL AND CONSTRUCTED TO THE WIDTH NOTED ON THE PLANS.
- MATERIAL USED IN THE STONE SECTION SHOULD BE A WELL GRADED MIXTURE OF STONE WITH A D50 SIZE OF 9 INCHES (CLASS A-1). THE STONE CAN BE MACHINE PLACED AND THE SMALLER STONES WORKED INTO THE VOIDS OF THE LARGER STONES.
- RUNOFF SHOULD BE DISCHARGED INTO THE TRAP IN A MANNER TO PREVENT EROSION. USE TEMPORARY SLOPE DRAINS OR DIVERSIONS WITH OUTLET PROTECTION TO DIVERT RUNOFF TO THE UPPER END OF THE STORAGE AREA TO IMPROVE TRAP EFFICIENCY. AVOID DISCHARGING RUNOFF OVER UNPROTECTED STEEP SIDE SLOPES.
- ENSURE THAT THE STONE SPILLWAY OUTLET SECTION EXTENDS DOWNSTREAM PAST THE TOE OF THE EMBANKMENT UNTIL STABLE CONDITIONS ARE REACHED AND OUTLET VELOCITY IS ACCEPTABLE FOR THE RECEIVING SYSTEM. KEEP THE EDGES OF THE STONE SECTION FLUSH WITH THE SURROUNDING GROUND.
- STABILIZE THE EMBANKMENT AND ALL DISTURBED AREAS ABOVE THE SEDIMENT POOL AND DOWNSTREAM FROM THE TRAP IMMEDIATELY AFTER CONSTRUCTION.
- ROCK CHECK DAM SEDIMENT TRAPS ARE NOT A PERMANENT BMP AND WILL BE REMOVED AFTER THE SITE IS STABILIZED. ANY GEOTEXTILE USED FOR CROSSING INSTALLATION WILL BE REMOVED PRIOR TO SITE STABILIZATION.

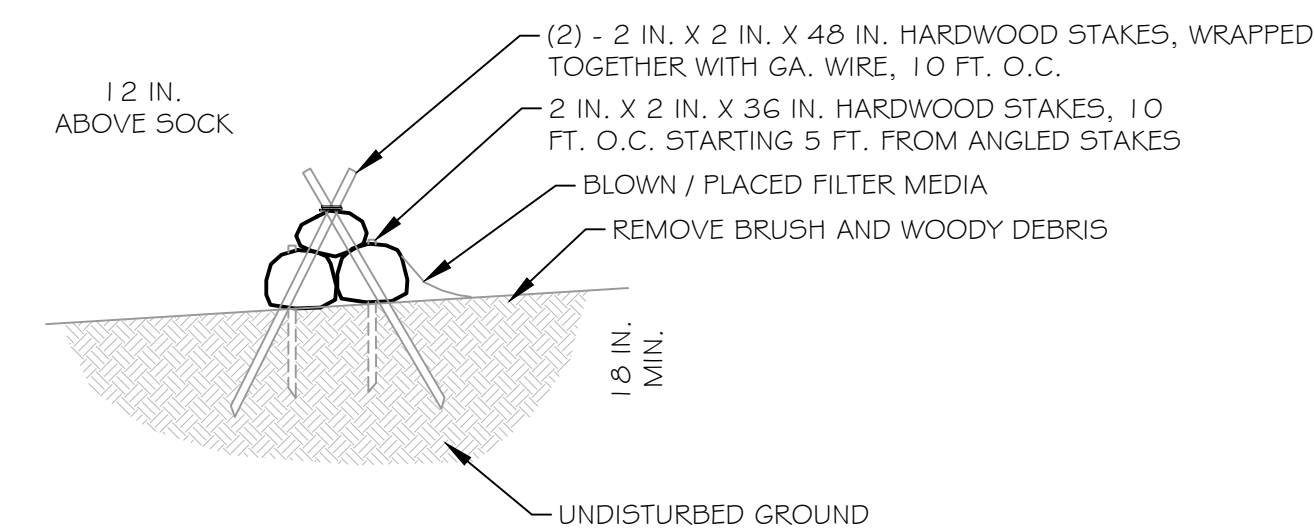
**MAINTENANCE NOTES:**

- SEDIMENT TRAPS MUST BE MAINTAINED AND FUNCTION AS DESIGNED UNTIL ALL AREAS DRAINING TO THE TRAP HAVE BEEN STABILIZED.
- THE STRUCTURE SHOULD BE CHECKED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT. THE HEIGHT OF THE STONE OUTLET SHOULD BE CHECKED TO ENSURE THAT ITS CENTER IS AT LEAST 1 FOOT BELOW THE TOP OF THE EMBANKMENT.
- ANY RIP RAP DISPLACED FROM THE SPILLWAY MUST BE REPLACED IMMEDIATELY.
- FILTER STONE SHOULD BE CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. REPLACE STONE CAKED WITH SEDIMENT.
- SEDIMENT SHALL BE REMOVED WHEN IT HAS ACCUMULATED TO ONE HALF THE DESIGN VOLUME OF THE WET STORAGE. SEDIMENT REMOVED FROM THE TRAP SHOULD BE DEPOSITED IN AN AREA UP GRADIENT FROM THE SEDIMENT TRAP AND OTHER MEASURES AND STABILIZED OR REMOVED FROM THE SITE. DO NOT PLACE REMOVED SEDIMENT BELOW SEDIMENT CONTROLS.
- ONCE THE AREAS DRAINING TO THE SEDIMENT TRAP HAVE BEEN STABILIZED, REMOVE THE STONE AND RIP RAP SPILLWAY AND BACKFILL THE SEDIMENT STORAGE AREA. STABILIZE THE AREA.

**18** ROCK CHECK DAM SEDIMENT TRAP  
NOT TO SCALE



PLAN VIEW



STAKING DETAIL

**DESIGN NOTES:**

1. COMPOST SOCK SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2000 CUBIC FEET OF STORAGE CAPACITY FOR EACH ACRE TRIBUTARY TO THE TRAP.
2. MINIMUM BASE WIDTH IS EQUAL TO THE HEIGHT.
3. SEDIMENT ACCUMULATION SHALL NOT EXCEED 1/3 THE TOTAL HEIGHT OF THE TRAP.
4. SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS AS SHOWN ON THE PLAN VIEW.
5. ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAN THE MID-SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.

**GENERAL NOTES:**

1. SOCK MATERIAL & COMPOST SHALL MEET THE STANDARDS OF DETAIL 23.
2. COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.
3. COMPOST SOCK SEDIMENT TRAPS SHALL PROVIDE 2,000 CUBIC FEET STORAGE CAPACITY WITH 12" FREEBOARD FOR EACH TRIBUTARY DRAINAGE ACRE. (SEE MANUFACTURER FOR ANTICIPATED SETTLEMENT.)
4. THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THROUGH," NO SPILLWAY IS REQUIRED.
5. COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF THE SOCKS.
6. PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.

**19** COMPOST SOCK SEDIMENT TRAP  
NOT TO SCALE



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SMOKESTACK MITIGATION BANK

Details - D12

SHELBY COUNTY, TENNESSEE

REVISIONS:



PROJECT STATUS:

BI MODIFICATION

PROJECT MANAGER:	SH
DESIGNED:	AB/SO/UW/WM
DRAWN:	UW/WM/SO
JOB NUMBER:	100111
DESIGN TYPE:	FINAL
DATE:	03-12-2024
SHEET NO.:	

**Meeting Date:** Thursday, January 8, 2026  
**Project:** Chapel Lakes PD - Sketch Plan  
**Staff Contact:** Alex Barthol, Staff Planner

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**PROJECT INFORMATION**

**Location:** 4532 Maple Walk Drive  
**Parcel ID:** L0151 00483 & L151 00049  
**Site Area:** 126.4 acres  
**Applicant:** Valleybrook Development, LLC  
**Representative:** The Bray Firm

**STAFF RECOMMENDATION**

The Sketch Plan phase of the Planned Development process gives Planning Commissioners an early opportunity to provide feedback and recommendations to the applicant. Staff will rely on the Commission's directions and the City's guiding and regulatory documents when reviewing the Outline Plan and subsequent plans for this project. Staff recommendations will be provided during future stages of the Planned Development process.

**BACKGROUND**

Chapel Lakes PD is a proposed planned residential development having a combined area of 126.4-acres. The subject property is bound generally on the west by Maple Walk Drive, the east by Chambers Chapel Road, the north by Oakwood Grove Subdivision, and the south by the future site of the Estates at Chambers Chapel PD.

## 2021 PLAN

A previous version of the proposed development was presented to the Municipal Planning Commission (MPC) in 2021 and is included in the list of attachments. The application was recommended for denial due to the amount of open space being less than what is expected for a Conservation Overlay Area as designated by the previous Comprehensive Plan in addition to the density of lots that was proposed.

## PLAN COMPARSION

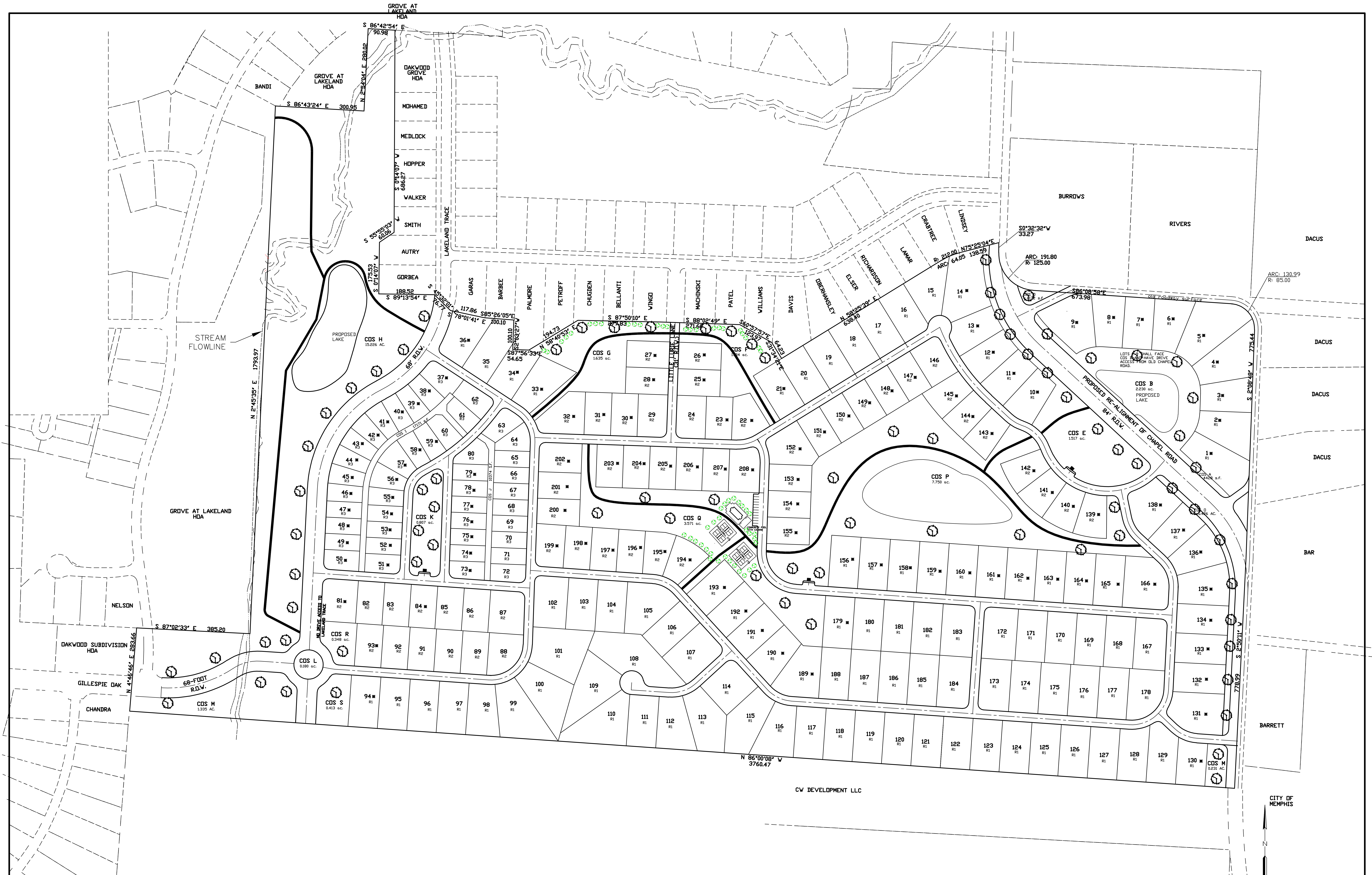
The following changes have been made to this sketch plan from the 2021 Chapel Lakes submittal:

- This plan proposes 208 lots, the 2021 plan proposed 261 lots.
- This plan provides 37.9 acres of open space, the 2021 plan provided 28.6 acres of open space.

<b>Lot Sizes</b>	<b># of Lots 2026 Sketch Plan</b>	<b># of Lots 2021 Plan</b>
R-1 (min. 17,500 sq.ft.)	108	30
R-2 (min. 10,000 sq.ft.)	56	113
R-3 (min. 5,500 sq. ft.)	44	118

## ANALYSIS

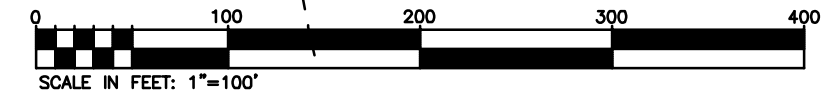
Staff has reviewed the plans as submitted and is in agreement with that what has been submitted does conform to the Land Development Regulations and the intent of the newly approved Comprehensive Plan.



CW DEVELOPMENT LLC

CITY OF MEMPHIS

ALL STREETS (UNLESS OTHERWISE DESIGNATED)  
ARE 31-FOOT RIGHT OF WAY WITH 9.5-FOOT  
PEDESTRIAN EASEMENT (BOTH SIDES)



**PLAN DATA**  
 ACREAGE 126.4 ACRES  
 LOTS 208 LOTS  
 R-1 (100X175) 108 LOTS (52%)  
 R-2 (90X145) 56 LOTS (27%)  
 R-3 (55X120 w/ alley) 44 LOTS (21%)  
 DENSITY 1.66 DU./ACRE  
 PROPOSED USE SFR  
 CDS AREA 37.920 ACRES (29.0%)  
 ■ INDICATES LOT FRONTS OR ABUTS GREENSPACE  
 (119 LOTS - 57%)

CONCEPTUAL PLAN	
CHAPEL LAKES PLANNED DEVELOPMENT	
LAKELAND, TENNESSEE	
LOTS: 208	AREA: 126.4 ACRES
PREPARED FOR: CUMMINGS LLC. 6515 CHERRY HILL PLACE MEMPHIS, TN 38120	ENGINEER: THE BRAY FIRM 2950 STAGE PLAZA NORTH BARTLETT, TN 38134 (901) 383-8668
DATE: NOVEMBER 26, 2025	SCALE: 1"=100' SHEET 1 OF 1