

LINE 3 REPLACEMENT PROJECT

Application for Pipeline Routing Permit

**Minnesota Public Utilities Commission
Appendix I**

Same Trench Installation Typicals

Appendix I.1 - Typical Construction Workspace West of Clearbrook - Scenario 1 Same Ditch Installation

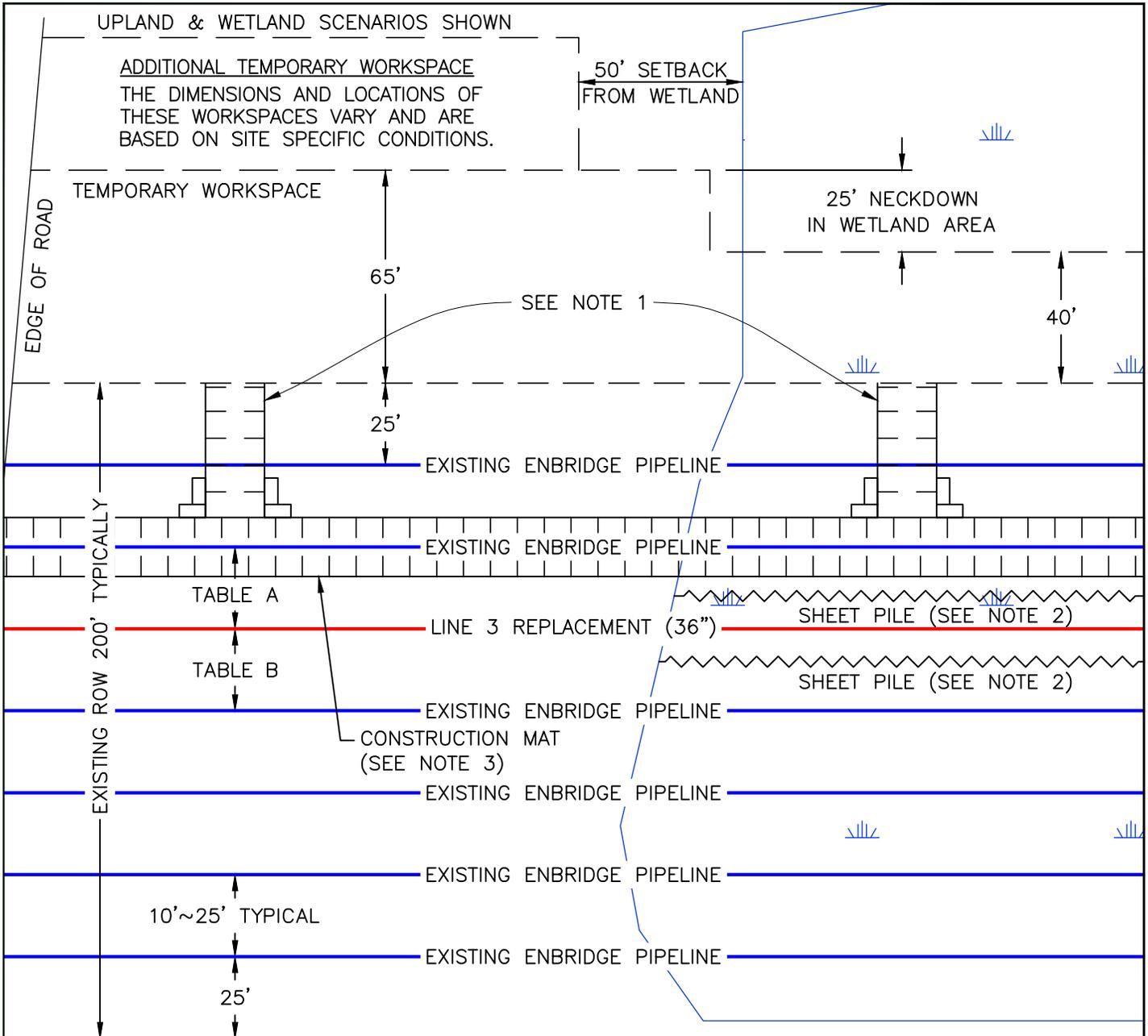


TABLE A

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	3%
2	10'-20'	71%
3	20'+	13%

TABLE B

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	1%
2	10'-20'	25%
3	20'+	40%

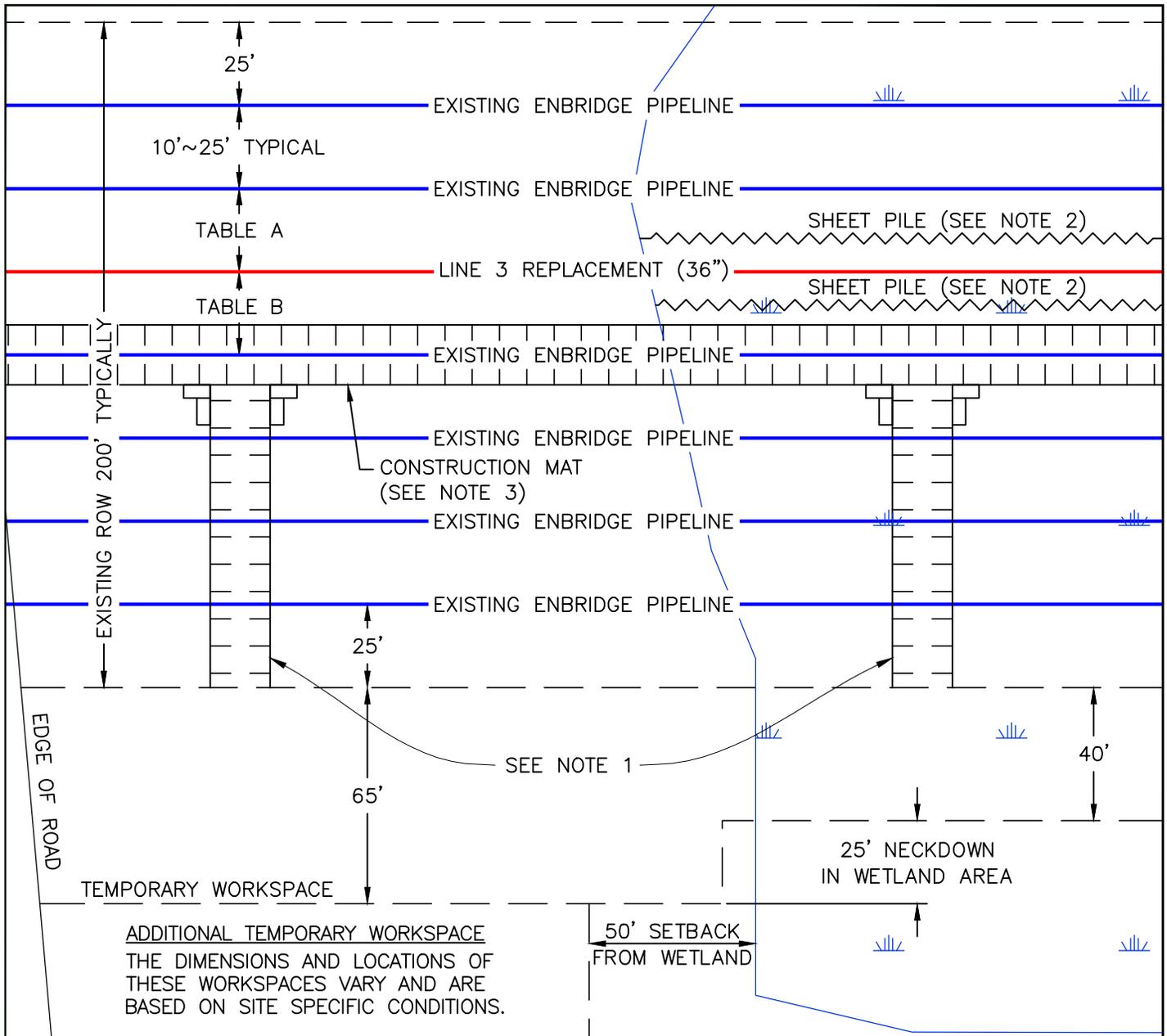
NOTES:

1. ACCESS LOCATIONS VARY DEPENDING ON TERRAIN, ENVIRONMENTAL FEATURES, AND SITE SPECIFIC CONDITIONS.
2. SHEET PILE AS NECESSARY FOR THE PROTECTION OF ACTIVE LINES, PIPE REMOVAL, AND INSTALLATION.
3. SITE SPECIFIC REMOVAL/INSTALLATION PLANS MAY BE REQUIRED IN AREAS WITH SATURATED SOILS.



DWN. BY:	TS	DATE	4/2/15	TYPICAL WORKSPACE LINE 3 REPLACEMENT PIPELINE SAME DITCH INSTALLATION/NORTHERLY WORKSPACE WEST OF ENBRIDGE CLEARBROOK TERMINAL
CHK.	MR	DATE	4/2/15	
PRJ. MGR.	MR	DATE	4/2/15	
SCALE				NO SCALE
DWG. NO.				

Appendix I.2 - Typical Construction Workspace West of Clearbrook - Scenario 2 Same Ditch Installation



UPLAND & WETLAND SCENARIOS SHOWN
TABLE A

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	3%
2	10'-20'	71%
3	20'+	13%

TABLE B

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	1%
2	10'-20'	25%
3	20'+	40%

NOTES:

1. ACCESS LOCATIONS VARY DEPENDING ON TERRAIN, ENVIRONMENTAL FEATURES, AND SITE SPECIFIC CONDITIONS.
2. SHEET PILE AS NECESSARY FOR THE PROTECTION OF ACTIVE LINES, PIPE REMOVAL, AND INSTALLATION.
3. SITE SPECIFIC REMOVAL/INSTALLATION PLANS MAY BE REQUIRED IN AREAS WITH SATURATED SOILS.

DWN. BY:	TS	DATE	4/2/15	TYPICAL WORKSPACE LINE 3 REPLACEMENT PIPELINE SAME DITCH INSTALLATION/SOUTHERLY WORKSPACE WEST OF ENBRIDGE CLEARBROOK TERMINAL	
CHK.	MR	DATE	4/2/15		
PRJ. MGR.	MR	DATE	4/2/15		
SCALE				NO SCALE	
DWG. NO.					

Appendix I.3 - Typical Construction Workspace East of Clearbrook - Scenario 1 Same Ditch Installation

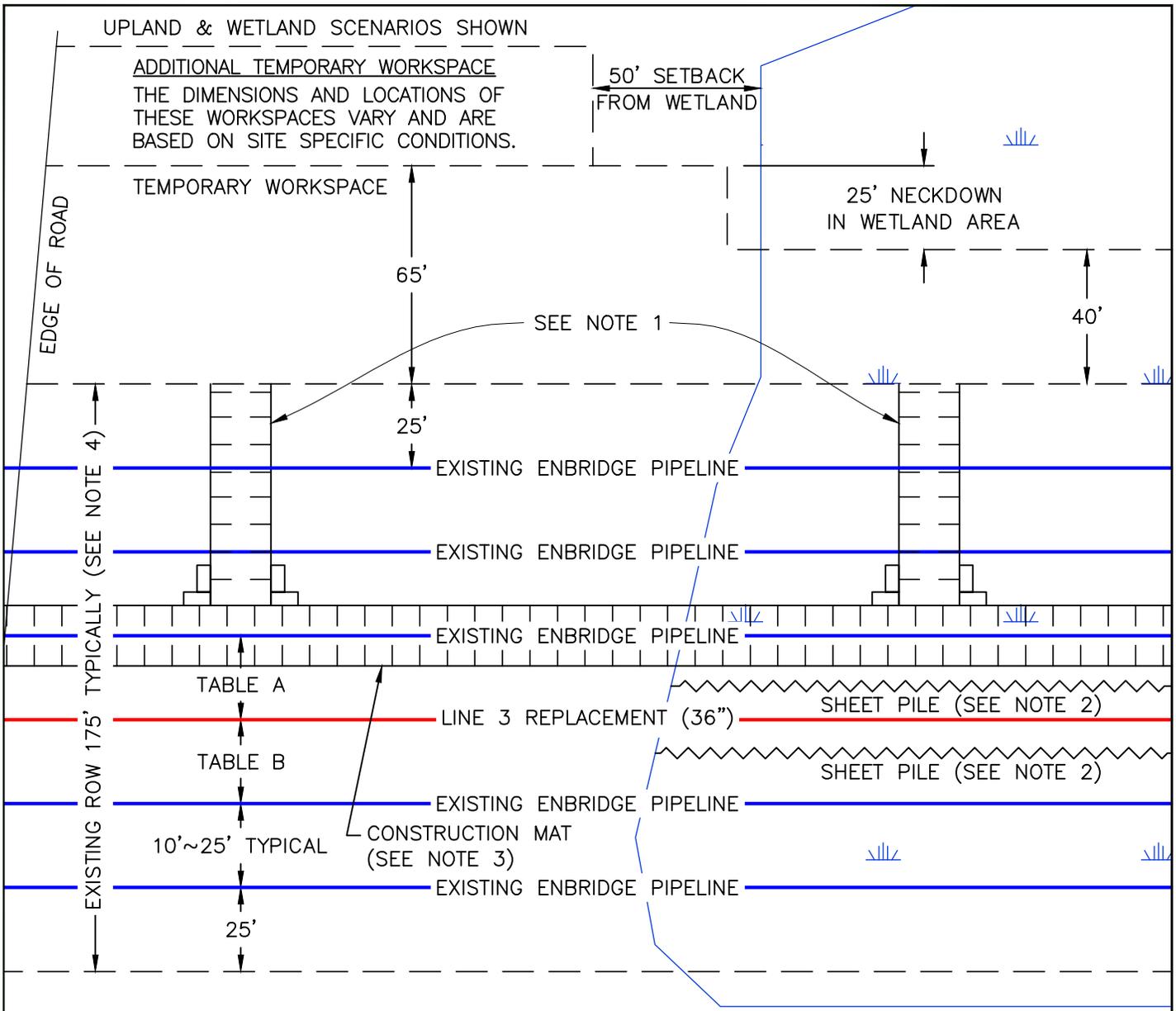


TABLE A

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	3%
2	10'-20'	71%
3	20'+	13%

TABLE B

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	1%
2	10'-20'	25%
3	20'+	40%

NOTES:

1. ACCESS LOCATIONS VARY DEPENDING ON TERRAIN, ENVIRONMENTAL FEATURES, AND SITE SPECIFIC CONDITIONS.
2. SHEET PILE AS NECESSARY FOR THE PROTECTION OF ACTIVE LINES, PIPE REMOVAL, AND INSTALLATION.
3. SITE SPECIFIC REMOVAL/INSTALLATION PLANS MAY BE REQUIRED IN AREAS WITH SATURATED SOILS.
4. EXISTING ROW WIDTH WILL VARY DUE TO NUMBER OF EXISTING PARALLEL PIPELINES.

DWN. BY:	TS	DATE	4/2/15	TYPICAL WORKSPACE LINE 3 REPLACEMENT PIPELINE SAME DITCH INSTALLATION/NORTHERLY WORKSPACE EAST OF ENBRIDGE CLEARBROOK TERMINAL
CHK.	MR	DATE	4/2/15	
PRD.J. MGR.	MR	DATE	4/2/15	
SCALE				NO SCALE
DWG. NO.				

Appendix I.4 - Typical Construction Workspace East of Clearbrook - Scenario 2 Same Ditch Installation

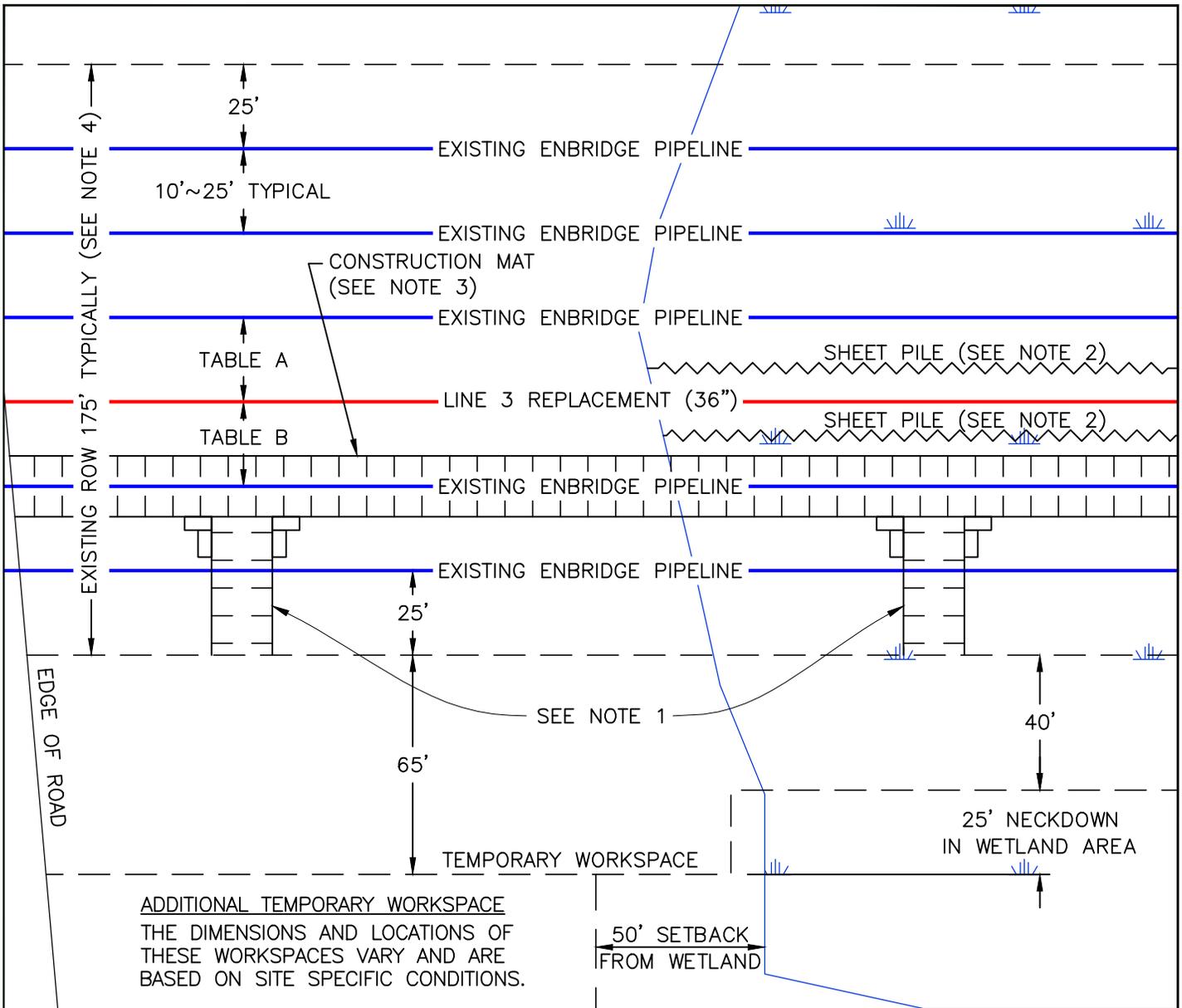


TABLE A

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	3%
2	10'-20'	71%
3	20'+	13%

TABLE B

SCENARIO	TYPICAL SEPARATION	TOTAL SCENARIO %
1	0'-10'	1%
2	10'-20'	25%
3	20'+	40%

NOTES:

1. ACCESS LOCATIONS VARY DEPENDING ON TERRAIN, ENVIRONMENTAL FEATURES, AND SITE SPECIFIC CONDITIONS.
2. SHEET PILE AS NECESSARY FOR THE PROTECTION OF ACTIVE LINES, PIPE REMOVAL, AND INSTALLATION.
3. SITE SPECIFIC REMOVAL/INSTALLATION PLANS MAY BE REQUIRED IN AREAS WITH SATURATED SOILS.
4. EXISTING ROW WIDTH WILL VARY DUE TO NUMBER OF EXISTING PARALLEL PIPELINES.

DWN. BY:	TS	DATE	4/2/15	TYPICAL WORKSPACE LINE 3 REPLACEMENT PIPELINE SAME DITCH INSTALLATION/SOUTHERLY WORKSPACE EAST OF ENBRIDGE CLEARBROOK TERMINAL	
CHK.	MR	DATE	4/2/15		
PROJ. MGR.	MR	DATE	4/2/15		
SCALE		NO SCALE		DWG. NO.	