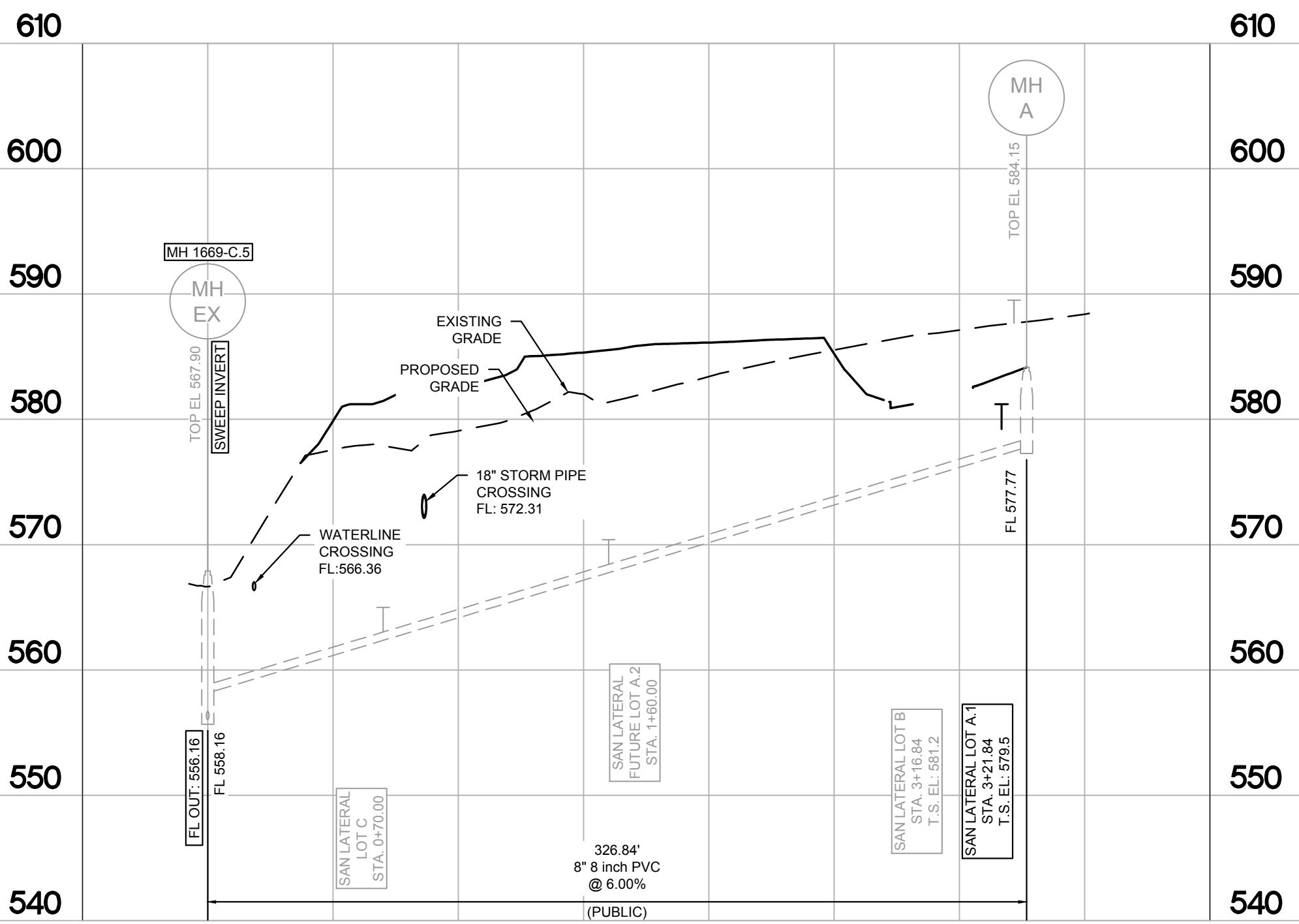


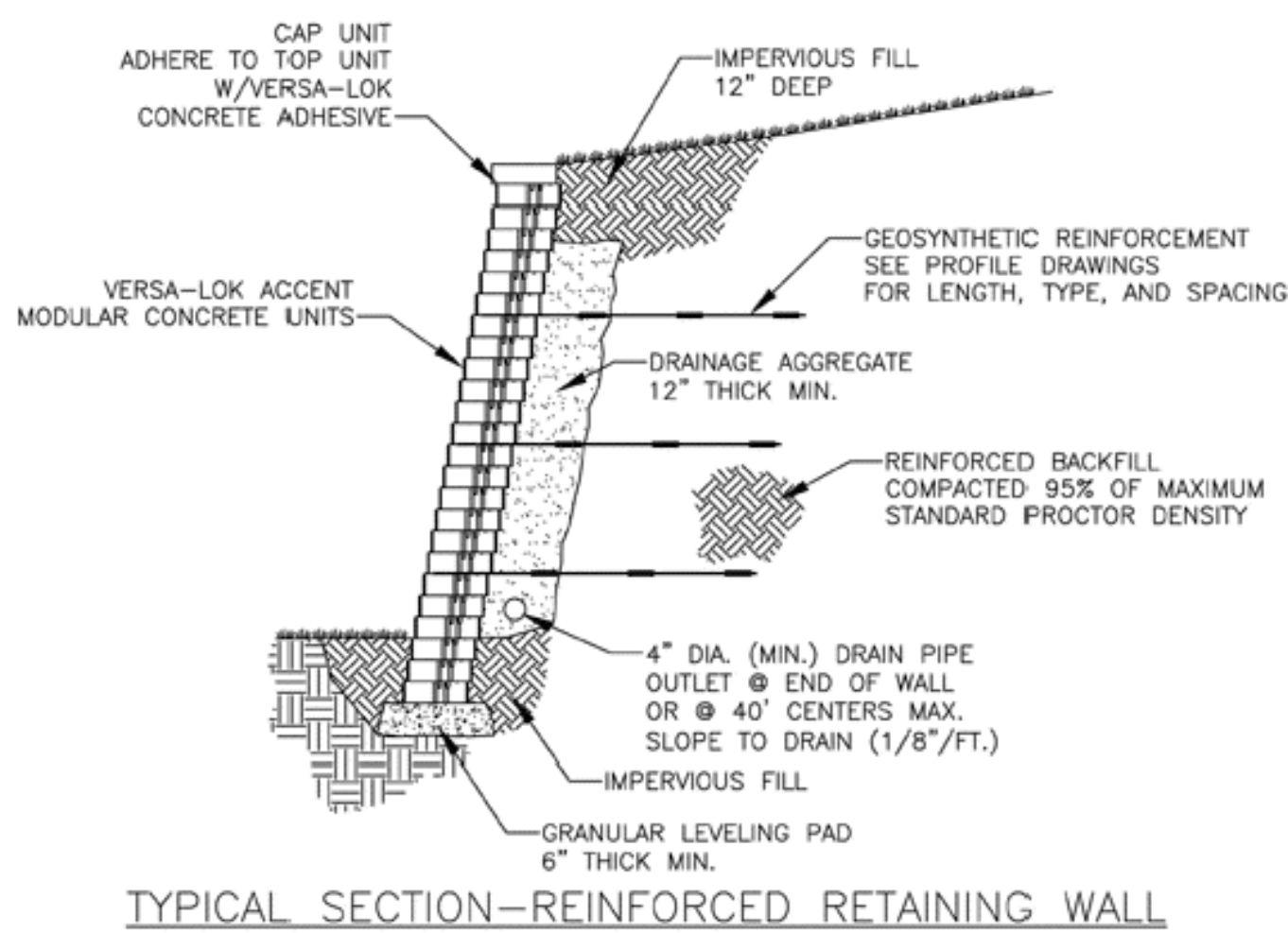
STORM SEWER PROFILES
SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 10'

15YR.-20MIN. PIPE HYRAULICS

Line No.	Line ID	DnStm Ln No	Invert Dn (ft)	Gnd/Rim El Dn (ft)	Invert Up (ft)	Gnd/Rim El Up (ft)	Line Length (ft)	Line Slope (%)	Line Size (in)	n-val Pipe	Capac Full (cfs)	Known Q (cfs)	Flow Rate (cfs)	Vel Ave (ft/s)	Energy Loss (ft)	Minor Loss (ft)	HGL Dn (ft)	HGL Up (ft)	Rim-Hw (ft)
1	10-11	Outfall	572.00	575.47	572.22	585.00	43.000	0.51	18	0.012	8.14	0.80	2.93	1.73	0.027	0.08	573.50	573.52	11.41
2	11-12	1	573.00	585.00	574.13	585.00	112.806	1.00	12	0.012	3.86	0.62	2.13	4.26	0.000	n/a	573.59	574.75	10.25
3	12-13	2	574.33	585.00	580.93	589.20	139.145	4.74	12	0.012	8.40	0.30	1.51	4.22	0.000	n/a	574.75	581.45	7.75
4	13-14	3	581.14	589.20	581.55	590.09	40.922	1.00	12	0.012	3.86	0.32	1.21	3.67	0.000	n/a	581.52	582.01	8.08
5	14-15	4	581.75	590.09	583.22	590.00	146.665	1.00	12	0.013	3.57	0.22	0.89	3.43	0.000	0.18	582.09	583.61	6.39
6	15-16	5	583.42	590.00	584.58	589.77	116.142	1.00	12	0.012	3.86	0.67	0.67	3.26	0.000	0.12	583.70	584.92	4.85



SANITARY SEWER PROFILES
SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 10'



TYPICAL SECTION-REINFORCED RETAINING WALL
ACCENT UNIT
SCALE: NONE

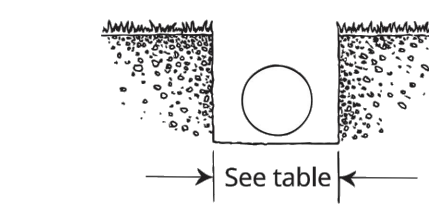
STORM SEWER NOTES:

- ALL STORM SEWER INSTALLATION IS TO BE IN ACCORDANCE WITH M.S.D. STANDARDS AND SPECIFICATIONS EXCEPT AS MODIFIED BY THE CITY OF OFALLON ORDINANCES.
- BRICK SHALL NOT BE USED IN THE CONSTRUCTION OF STORM SEWER STRUCTURES. PRE CAST CONCRETE STRUCTURES ARE TO BE USED UNLESS OTHERWISE APPROVED BY THE CITY OF OFALLON.
- A 5/8" TRASH BAR SHALL BE INSTALLED HORIZONTALLY IN THE CENTER OF THE OPENING(S) IN ALL CURB INLETS AND AREA INLETS. (INTENTIONALLY OMITTED)
- ENCASE WITH CONCRETE BOTH SANITARY AND STORM SEWER AT CROSSING WHEN STORM SEWER IS WITHIN 18 INCHES ABOVE SANITARY SEWER. ADD CONCRETE CRADLE TO ONLY RCP STORM SEWER AND ENCASE FLEXIBLE STORM SEWER WHEN IT IS MORE THAN 18 INCHES ABOVE SANITARY LINE. SHOW ON PROFILE SHEET.
- THE STORM SEWERS SHOULD RUN DIAGONALLY THROUGH THE SIDE YARDS TO MINIMIZE ANY ADDITIONAL UTILITY EASEMENTS REQUIRED.
- ALL CONCRETE PIPES WILL BE INSTALLED WITH O-RING RUBBER TYPE GASKETS.
- CONNECTIONS AT ALL STORM STRUCTURES ARE TO BE MADE WITH A LOCK JOINT OR EQUAL.
- PRE CAST CONCRETE INLET COVERS ARE NOT TO BE USED.
- THE SWALE IN THE DETENTION BASINS SHALL HAVE A MINIMUM 2% LONGITUDINAL SLOPE AND BE LINED WITH A PERMANENT EROSION CONTROL BLANKET THAT WILL ALLOW INFILTRATION OF STORM WATER.
- ALL STRUCTURES AND FLARED END SECTIONS MUST BE CONCRETE. H.D.P.E. PIPE WILL NOT BE ALLOWED FOR DETENTION BASIN OUTFLOWS. FINAL PIPE RUN TO DETENTION BASINS, CREEK DISCHARGE OR OTHER APPROVED MEANS.
- (INTENTIONALLY OMITTED)
- RIP RAP SHOWN AT FLARED END SECTIONS WILL BE EVALUATED IN THE FIELD BY THE ENGINEER, CONTRACTOR, AND CITY INSPECTORS AFTER INSTALLATION FOR EFFECTIVENESS AND FIELD MODIFIED, IF NECESSARY TO REDUCE EROSION ON AND OFF SITE.
- ADD 1" MINUS ROCK BACK FILL TO ALL STORM SEWER THAT LIE WITHIN THE 1:1 SHEAR PLANE OF THE ROAD.
- (INTENTIONALLY OMITTED)

SaniTite DETAILS:

Trench Construction

- Information provided in this pocket installation guide is intended as a quick reference only and does not supersede requirements specified on project plans.
- The trench or ditch should be wide enough to place and compact backfill around the entire pipe.



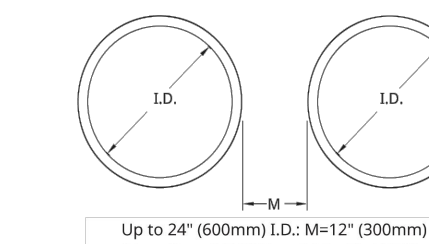
- Refer to Table 2 for recommended minimum trench widths. The design engineer may modify the trench width based on site specific conditions.

Table 2: Minimum Trench Widths

Pipe Diameter in (mm)	Trench Width in (m)
12" (300)	30" (0.8)
15" (375)	34" (0.9)
18" (450)	39" (1.0)
24" (600)	48" (1.2)
30" (750)	56" (1.4)
36" (900)	64" (1.6)
42" (1050)	72" (1.8)
48" (1200)	80" (2.0)
60" (1500)	96" (2.4)

- For parallel pipe installations, allow space between pipes for proper compaction. Refer to Figure 1 for minimum pipe spacing.

Figure 1: Parallel Pipe Installation



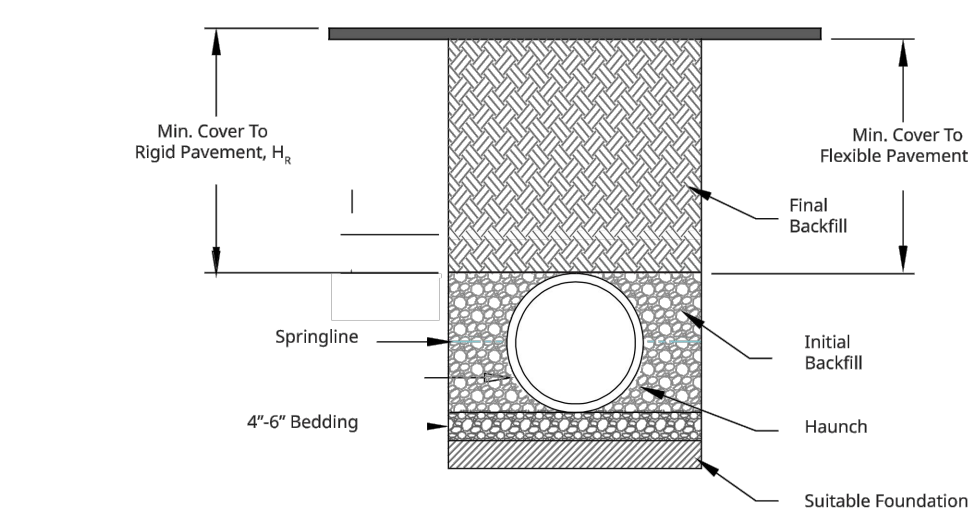
Pocket Guide Pages: 8 & 9

Backfill Recommendations

Backfill Envelope Construction

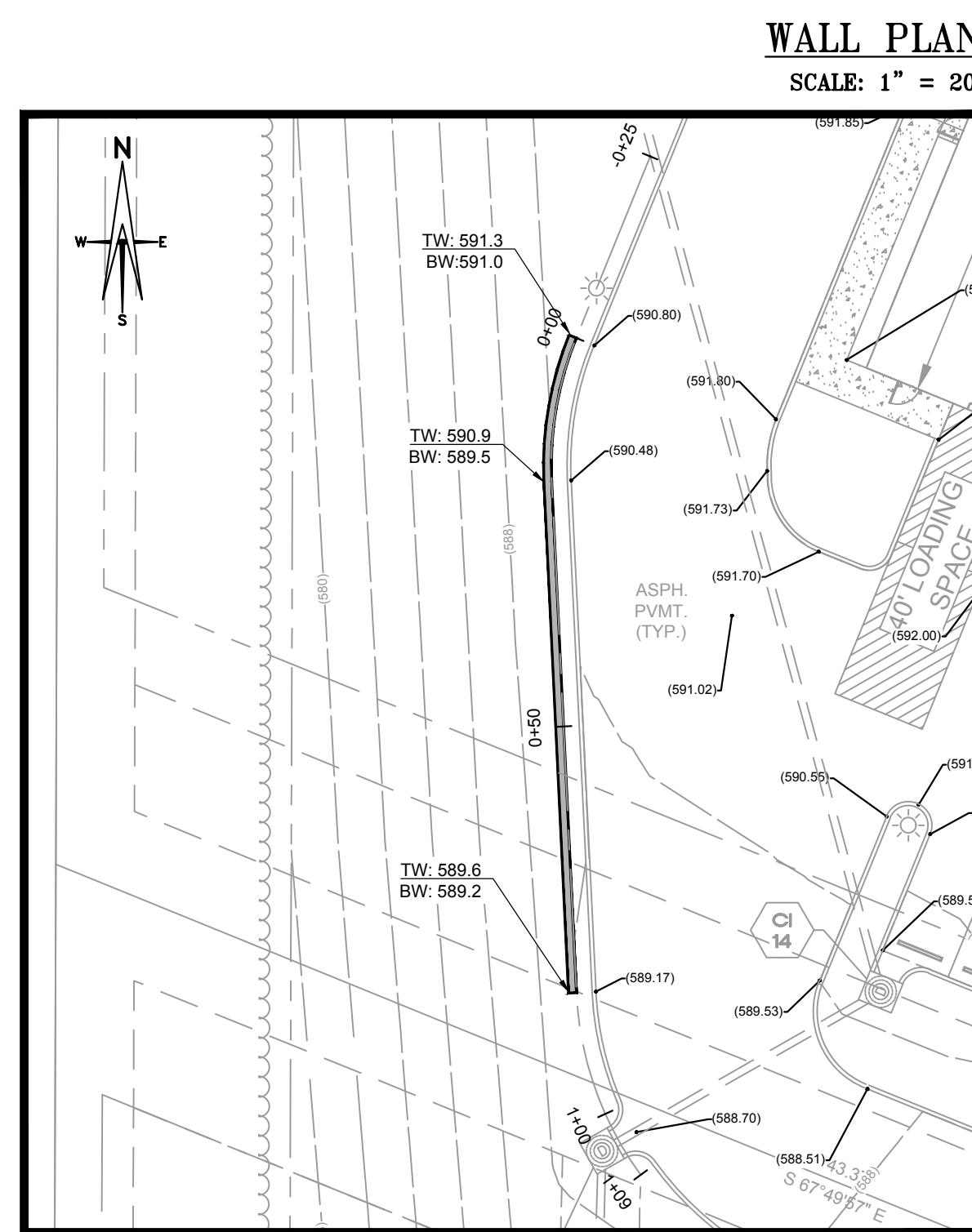
- If native soil cannot carry load, import, compact and level adequate bedding material as in Figure 5.
- Figure 5 represents typical trench construction applicable to all products. See appendix for references to additional product specific resources.

Figure 5:

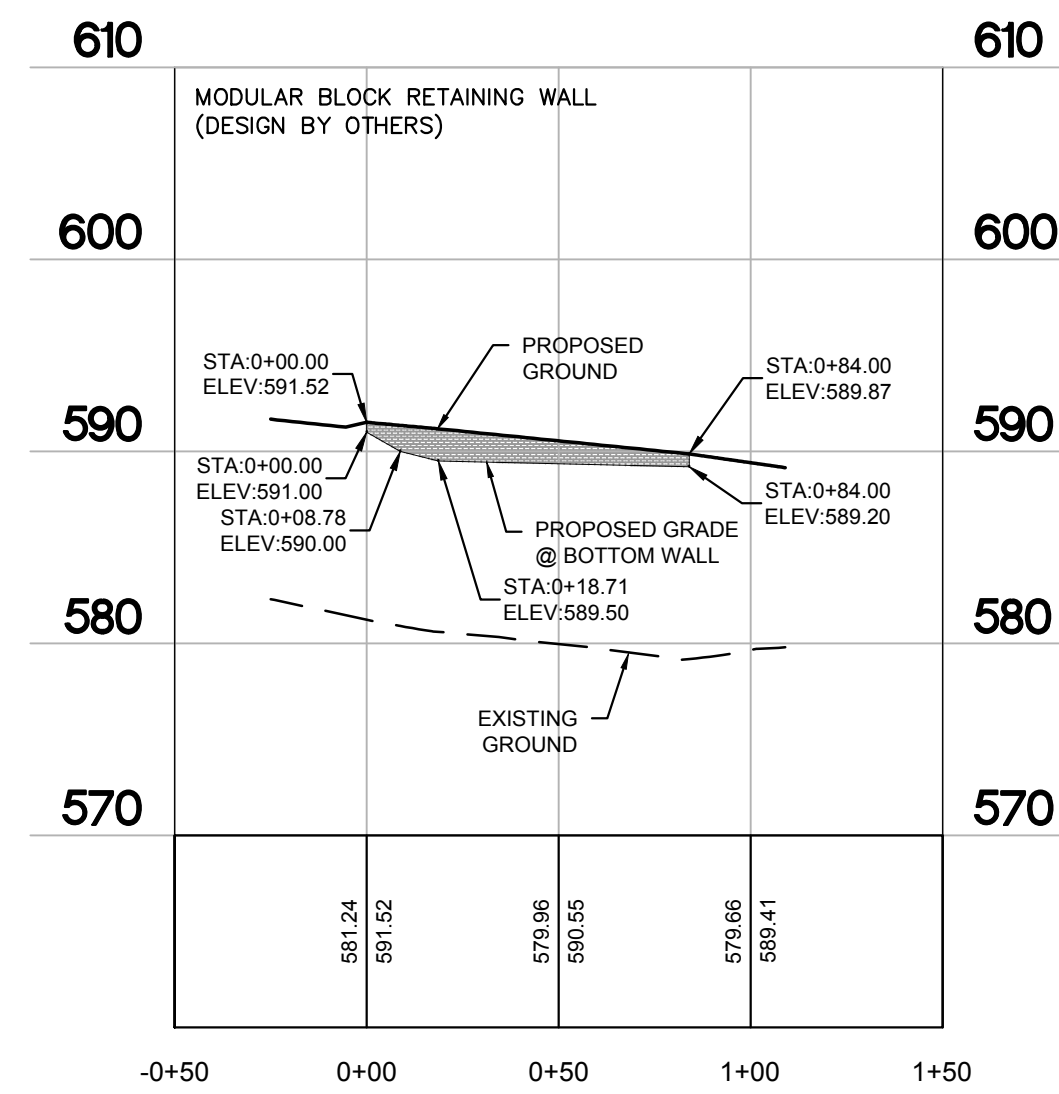


- Place and compact backfill in layers to meet requirements of Table 4 and project requirements. Note that the large diameter pipes may require layer heights less than those indicated in the table to achieve proper compaction.
- Avoid impacting pipe with compaction equipment.
- 12" - 48" (300-1200 mm) single pipe runs receiving H-25 traffic requires final backfill 12" (0.3 m) above initial backfill to provide at least 12" (0.3 m) of total cover as measured from the top of pipe to bottom of flexible pavement or to top of rigid pavement.
- 60" (1500 mm) single pipe runs receiving H-25 traffic require final backfill 24" (0.6 m) above initial backfill to provide at least 24" (0.6 m) of total cover as measured from top of the pipe to the bottom of flexible pavement or to top of rigid pavement.
- Minimum cover may be reduced in areas with no or infrequent light traffic. These situations must first be reviewed by the pipe manufacturer.

Pocket Guide Pages: 26 11



WALL PLAN
SCALE: 1" = 20'



WALL PROFILE
SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 10'

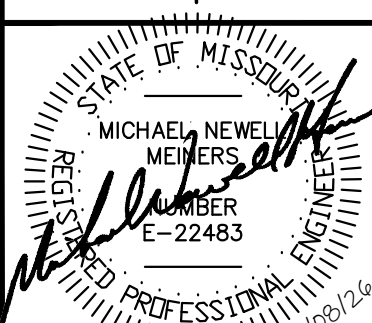
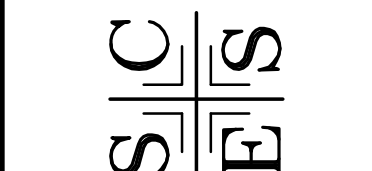
UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING AND/OR CONSTRUCTION OF IMPROVEMENTS.

Call BEFORE you DIG
TOLL FREE
1-800-344-7483
MISSOURI ONE-CALL SYSTEM, INC.

ENGINEER'S AUTHENTICATION

THE RESPONSIBILITY FOR THE PROFESSIONAL ENGINEERING LIABILITY ON THIS PROJECT IS HEREBY LIMITED TO THE SET OF PLANS AUTHENTICATED BY THE SEAL, SIGNATURE AND DATE HEREUNDER ATTACHED. RESPONSIBILITY IS DISCLAIMED FOR ALL OTHER ENGINEERING PLANS INVOLVED IN THE PROJECT AND SPECIFICALLY EXCLUDES REVISIONS AFTER THIS DATE UNLESS REAUTHENTICATED.

ST. CHARLES ENGINEERING & SURVEYING, INC.
801 S. FIFTH STREET, SUITE 202
ST. CHARLES, MO 63301
TEL: (636) 947-0607 FAX: (636) 947-2448
ST. CHARLES ENGINEERING AND SURVEYING, INC.
PROFESSIONAL ENGINEERING AND LAND SURVEYING CORPORATION
MISSOURI STATE CERTIFICATE OF AUTHORITY - 001647 & 000379



ORDER NO.
2024030

DATE
04/05/2026

5.0