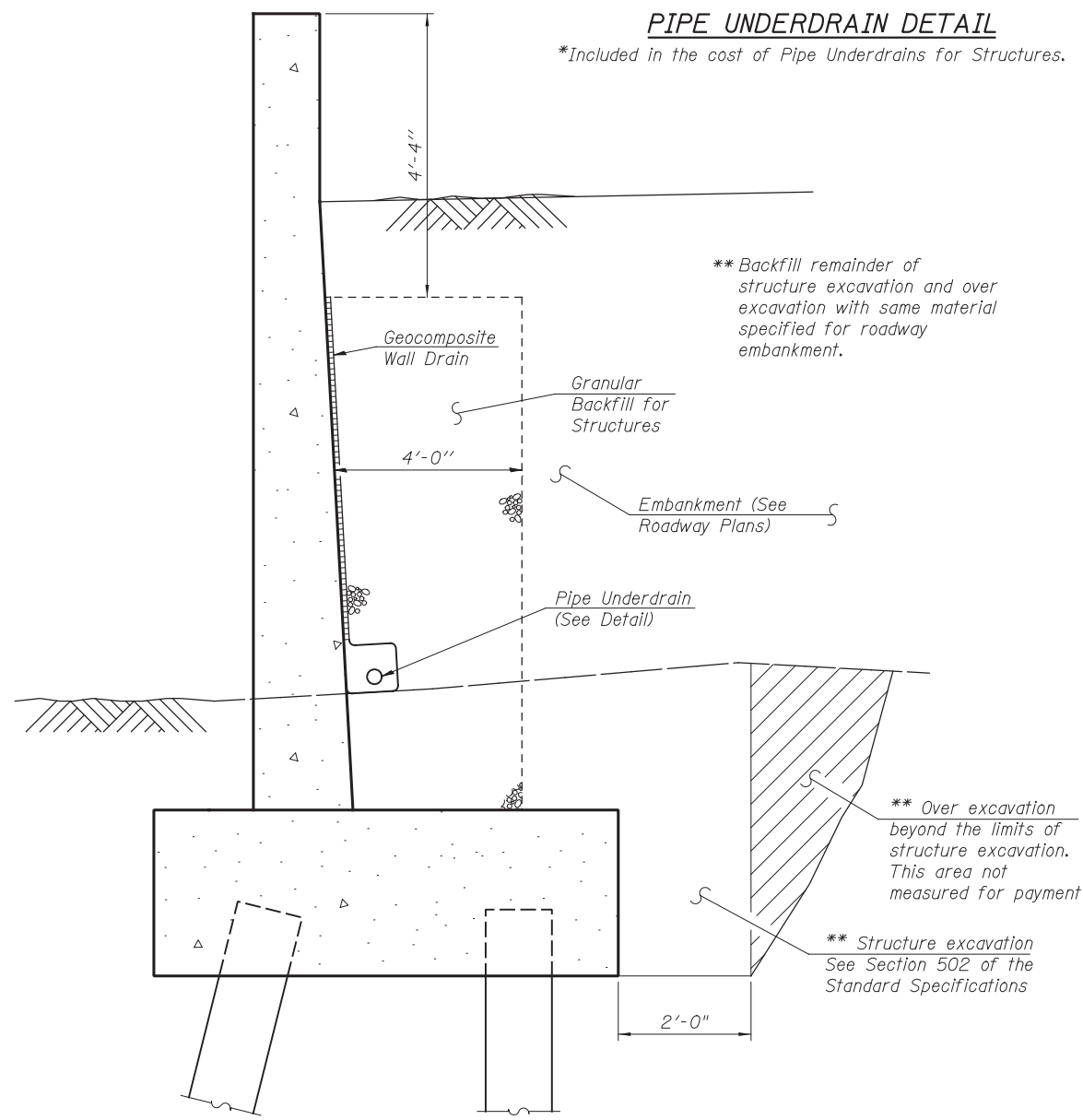
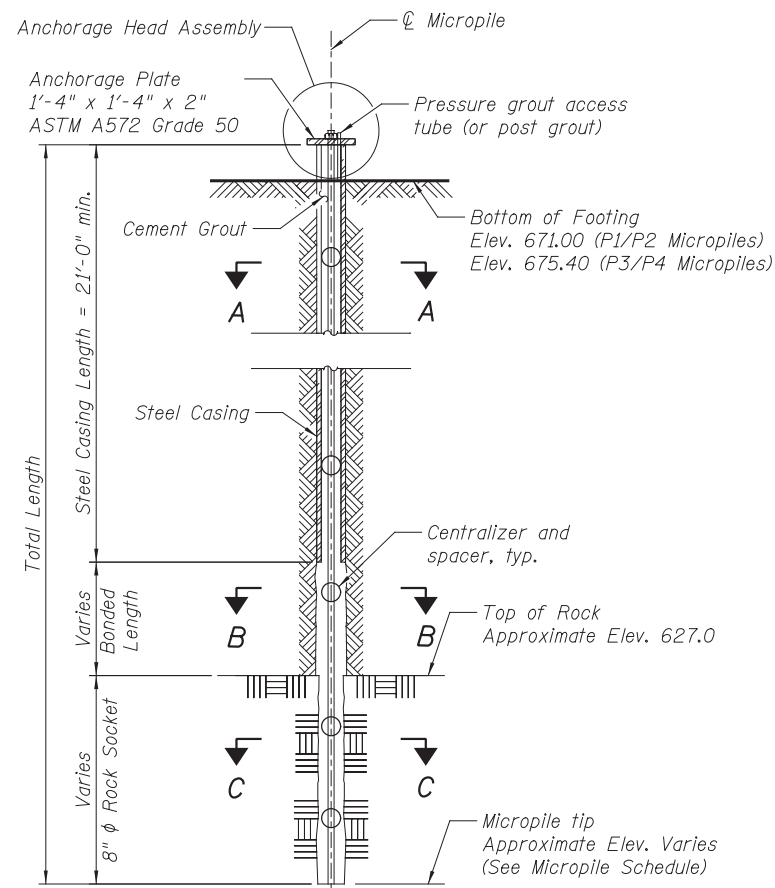


PIPE UNDERDRAIN DETAIL
*Included in the cost of Pipe Underdrains for Structures.

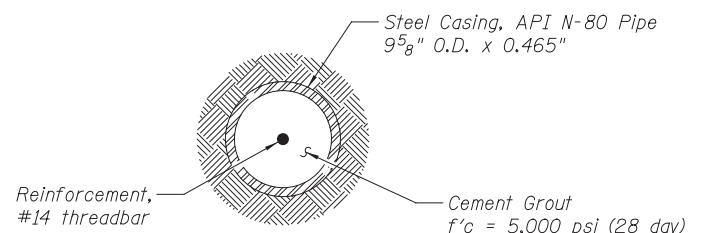


WINGWALL DRAINAGE DETAIL

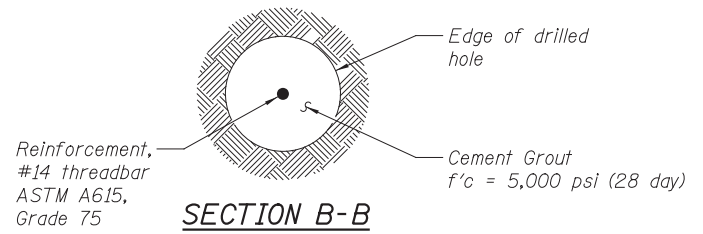
Note:
The pipe shall extend through the formed hole in the wingwall, until intersecting the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).



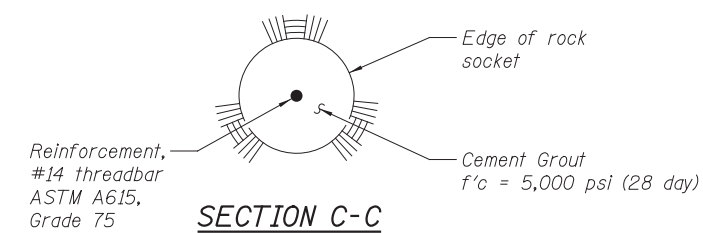
MICROPILE DETAIL
Straight pile shown, battered pile similar



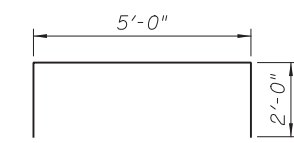
SECTION A-A



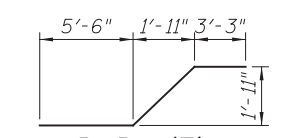
SECTION B-B



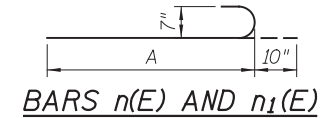
SECTION C-C



BAR h4(E)



BAR w(E)



BARS n(E) AND n1(E)

Bar	A
n(E)	6'-1"
n1(E)	8'-3"

BILL OF MATERIALS

Bar	No.	Size	Length	Shape
h(E)	52	#5	16'-2"	—
h1(E)	52	#5	14'-2"	—
h2(E)	32	#5	1'-6"	—
h4(E)	28	#5	9'-0"	—
n(E)	60	#7	6'-11"	U
n1(E)	68	#7	9'-1"	U
t(E)	86	#6	6'-8"	—
t1(E)	64	#5	6'-8"	—
t2(E)	44	#5	7'-11"	—
t3(E)	102	#8	7'-11"	—
v(E)	34	#5	12'-1"	—
v1(E)	66	#6	12'-1"	—
v2(E)	30	#5	11'-4"	—
v3(E)	58	#6	11'-4"	—
w(E)	32	#5	11'-6"	—
w1(E)	16	#5	16'-2"	—
w2(E)	16	#5	8'-8"	—
w3(E)	16	#5	14'-2"	—
w4(E)	16	#5	6'-8"	—
w5(E)	36	#5	20'-8"	—
Structure Excavation		Cu. Yd.	297	
Concrete Structures		Cu. Yd.	118.5	
Reinforcement Bars, Epoxy Coated		Pound	12,790	
Micro-piles		Each	44	
Micropile Proof Load Test		Each	1	
Geocomposite Wall Drain		Sq. Yd.	54	
Granular Backfill for Structures		Cu. Yd.	71	
Pipe Underdrain for Structures, 4"		Foot	66	

MICROPILE DESIGN STRESSES

Fy = 80,000 psi (Casing)
f'c = 5,000 psi (Grout)

NOTES

- All excess grout shall be contained and disposed of off-site. No grout shall enter the waterway.
- Casing splices shall be capable of developing at least 50% of the full moment capacity of the casing.

MICROPILE SCHEDULE

	P1	P2	P3	P4
No. Production Piles	each 12	8	12	12
Factored Compressive Load	kips 145	196	15	98
Factored Tensile Load	kips --	--	49	--
Estimated Tip Elevation of Steel Casing	ft 651.0	653.1	655.4	655.4
Min. Length of Steel Casing	ft 21	21	21	21
Estimated Bond Length	ft 24	29.2	20	28.8
Estimated Rock Socket Depth	ft 7.7	10.2	--	5.1
Estimated Total Length of Micropiles	ft 52.7	60.4	41	54.9



USER NAME =	DESIGNED - KMP	REVISED
	CHECKED - AMK	REVISED
PLOT SCALE =	DRAWN - KMP	REVISED
PLOT DATE =	CHECKED - AMK	REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WINGWALL AND FOOTING DETAILS 2
STRUCTURE NO. 022-3046

SHEET NO. S-6 OF S-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
311	2012-0371	DuPAGE	45	28
CONTRACT NO. 60T83				
ILLINOIS FED. AID PROJECT				