

- GENERAL NOTES:**
- LAYERS OF REINFORCED STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 3" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
 - EXCAVATION FOR MANHOLE TO BE INCLUDED IN THE UNIT PRICE BID FOR MANHOLE.
 - DEPTH OF DROP INLET FROM FINISHED GRADE TO FLOW LINE OF INLET VARIABLE. APPROXIMATE DEPTH WILL BE SHOWN ON PLANS AT LOCATION OF INLET.

PLAN

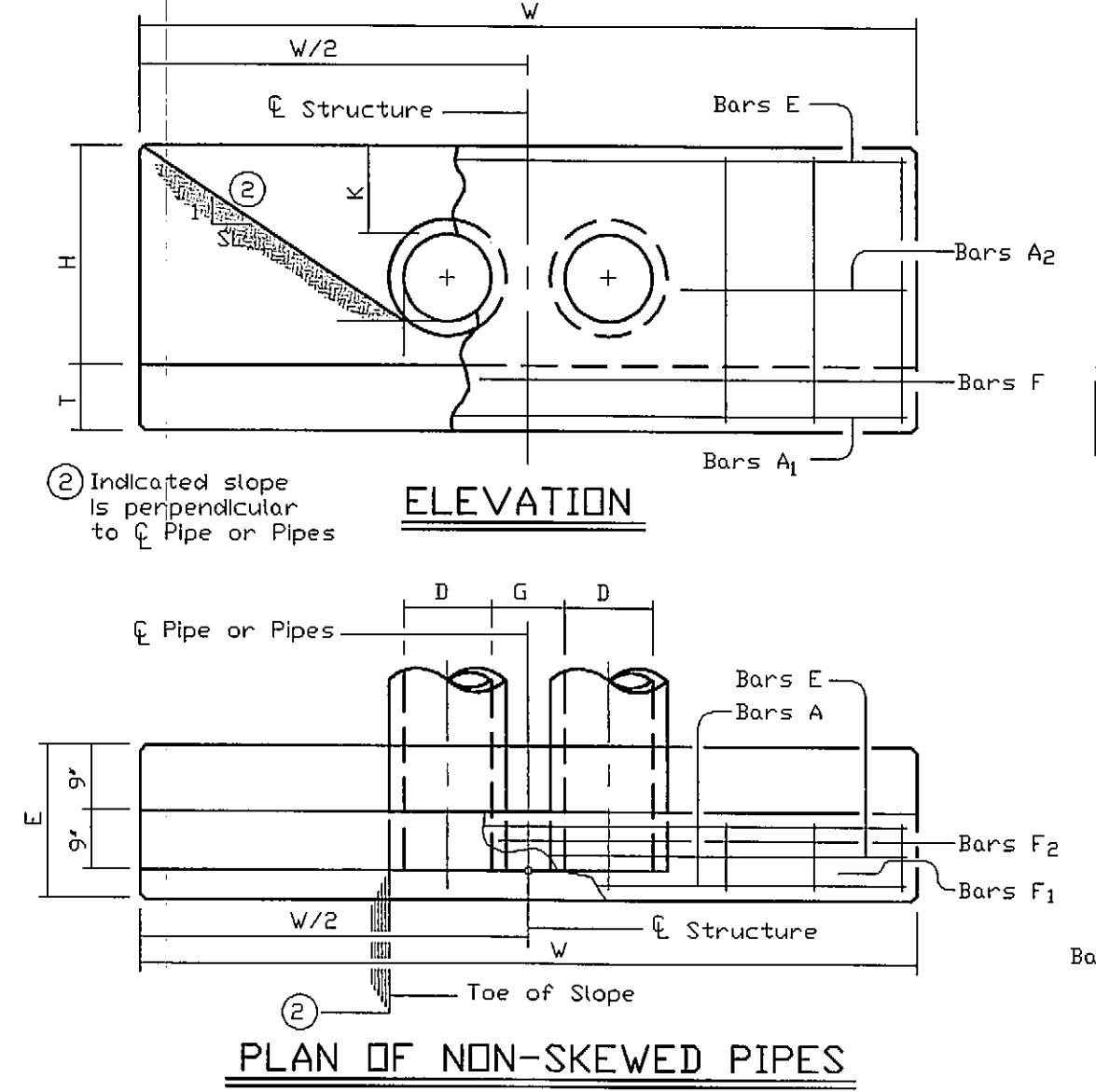
01
C5.04 **OUTLET STRUCTURE**
NOT TO SCALE

- NOTES:**
- CONCRETE TO BE CLASS F, TYPE IA, 4200 PSI AT 28 DAYS. NO FLY ASH ALLOWED.
 - REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
 - BAR LAPS TO BE 48 DIAMETERS.
 - ALL EXPOSED SURFACES TO RECEIVE A CARBGRUNDIUM FINISH.
 - EXPOSED EDGES OR CORNERS TO BE ROUNDED OR CHAMFERED.
 - SUBGRADE TO BE SCARIFIED AND RECOMPACTED TO A MINIMUM 95% STANDARD PROCTOR AT OR 3% ± ABOVE OPTIMUM MOISTURE CONTENT.
 - SOIL BEARING VALUE USED IN DESIGN IS 1,500 PSF. BOTTOM OF FOOTING SHALL BE AT LEAST 24" BELOW NATURAL GRADE OR 95% COMPACTED FILL.

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL

SLOPE	DIA OF PIPE, D	Values for one Pipe			Values to be added for each odd# Pipe			SLOPE	DIA OF PIPE, D	Values for one Pipe			Values to be added for each odd# Pipe		
		W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)			W	Reinf (Lbs)	Conc (CY)	W	Reinf (Lbs)	Conc (CY)
12'	9'-0"	122	1.1	1'-9"	15	0.2	12'	17'-0"	229	2.0	1'-9"	15	0.2		
15'	10'-3"	136	1.3	2'-2"	16	0.2	15'	19'-3"	266	2.4	2'-2"	17	0.2		
18'	11'-6"	163	1.5	2'-8"	19	0.3	18'	21'-6"	308	2.9	2'-8"	19	0.3		
21'	12'-9"	200	1.8	3'-1"	31	0.4	21'	23'-9"	382	3.5	3'-1"	31	0.3		
24'	14'-0"	217	2.1	3'-7"	34	0.4	24'	26'-0"	430	3.9	3'-7"	34	0.4		
27'	15'-3"	254	2.4	3'-11"	37	0.5	27'	28'-3"	496	4.7	3'-11"	37	0.5		
30'	16'-6"	272	2.7	4'-4"	40	0.6	30'	30'-6"	539	5.2	4'-4"	40	0.6		
33'	17'-9"	314	3.1	4'-8"	43	0.6	33'	32'-9"	603	6.0	4'-8"	42	0.6		
36'	19'-0"	371	3.9	5'-1"	46	0.8	36'	35'-0"	738	7.5	5'-1"	47	0.8		
42'	21'-6"	442	4.9	5'-10"	52	1.0	42'	39'-6"	881	9.3	5'-10"	52	1.0		
48'	25'-0"	569	6.4	6'-7"	59	1.3	48'	46'-0"	1102	12.1	6'-7"	61	1.3		
54'	27'-6"	701	7.5	7'-6"	82	1.6	54'	50'-6"	1364	14.4	7'-6"	84	1.6		
60'	30'-0"	794	8.8	8'-3"	90	1.8	60'	55'-0"	1547	16.9	8'-3"	91	1.8		
66'	32'-6"	894	10.2	8'-9"	96	2.0	66'	59'-6"	1741	19.5	8'-9"	98	2.0		
72'	35'-0"	1005	11.7	9'-4"	103	2.3	72'	64'-0"	2069	22.4	9'-4"	102	2.3		
12'	13'-0"	175	1.6	1'-9"	14	0.2	12'	25'-0"	336	3.0	1'-9"	14	0.2		
15'	14'-9"	193	1.9	2'-2"	17	0.2	15'	28'-3"	384	3.6	2'-2"	17	0.2		
18'	16'-6"	228	2.2	2'-8"	19	0.3	18'	31'-6"	452	4.2	2'-8"	19	0.3		
21'	18'-3"	299	2.6	3'-1"	31	0.4	21'	34'-9"	581	5.1	3'-1"	31	0.4		
24'	20'-0"	323	3.0	3'-7"	33	0.4	24'	38'-0"	644	5.1	3'-7"	34	0.4		
27'	21'-9"	371	3.5	3'-11"	37	0.5	27'	41'-3"	737	5.8	3'-11"	37	0.5		
30'	23'-6"	415	4.0	4'-4"	40	0.5	30'	44'-6"	807	6.9	4'-4"	39	0.6		
33'	25'-3"	469	4.6	4'-8"	43	0.6	33'	47'-9"	912	7.7	4'-8"	44	0.6		
36'	27'-0"	556	5.7	5'-1"	46	0.8	36'	51'-0"	1108	8.9	5'-1"	48	0.8		
42'	30'-6"	675	7.1	5'-10"	52	1.0	42'	57'-6"	1318	13.7	5'-10"	54	1.0		
48'	35'-0"	837	9.2	6'-7"	59	1.3	48'	67'-0"	1674	17.9	6'-7"	59	1.3		
54'	39'-0"	1015	11.0	7'-6"	84	1.6	54'	73'-6"	2064	21.3	7'-6"	83	1.6		
60'	42'-6"	1171	12.9	8'-3"	91	1.8	60'	80'-0"	2343	24.9	8'-3"	89	1.8		
66'	46'-0"	1298	14.9	8'-9"	98	2.0	66'	86'-6"	2635	28.9	8'-9"	96	2.0		
72'	49'-6"	1561	17.1	9'-4"	103	2.3	72'	93'-0"	3123	33.1	9'-4"	101	2.3		

① Quantities increase slightly for metal pipe installations.



02
C5.04 **CONCRETE HEADWALL WITH PARALLEL WINGS**
NOT TO SCALE

- GENERAL NOTES:**
- Designed according to current AASHTO Standard and Interim Specifications.
 - Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.
 - All reinforcing steel shall be Grade 60.
 - All concrete shall be Class 'C' and shall have a minimum 28 day compressive strength of 3600 psi.

TABLE OF CONSTANT DIMENSIONS

H	G	K	H	T	E
12'	9'	1'-0"	2'-8"	9'	1'-9"
15'	11'	1'-0"	2'-11"	9'	1'-9"
18'	1'-2"	1'-0"	3'-2"	9'	1'-9"
21'	1'-4"	1'-0"	3'-5"	9'	2'-0"
24'	1'-7"	1'-0"	3'-8"	9'	2'-0"
27'	1'-8"	1'-0"	3'-11"	9'	2'-3"
30'	1'-10"	1'-0"	4'-2"	9'	2'-3"
33'	1'-11"	1'-0"	4'-5"	9'	2'-6"
36'	2'-1"	1'-0"	4'-8"	1'-0"	2'-6"
42'	2'-4"	1'-0"	5'-2"	1'-0"	2'-9"
48'	2'-7"	1'-3"	5'-11"	1'-0"	3'-0"
54'	3'-0"	1'-3"	6'-5"	1'-0"	3'-3"
60'	3'-3"	1'-3"	6'-11"	1'-0"	3'-6"
66'	3'-3"	1'-3"	7'-5"	1'-0"	3'-9"
72'	3'-4"	1'-3"	7'-11"	1'-0"	4'-0"

TABLE OF REINFORCING STEEL

Bar	Size	Spa	No.
A	# 5	-	2
A ₁	# 5	1'-6"	-
E	# 5	-	2
F	# 5	1'-6"	-

- ③ For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

OUTLET FROM PIPE HEADWALLS NEED TO HAVE ADEQUATE EROSION PROTECTION USE FORMULA L=0.37 VD
L=LENGTH OF APRON (H), V=OUTLET VELOCITY FLOW (fps), D=DIAMETER OF PIPE (H)
A) 2 - 5 fps S20 PROTECTION AT THE OUTLET.
B) 5 - 8 fps DRY RIP-RAP (TYPE B, 2.1.6 (B)(1-3)) NCTCOG
C) 8 - 11 fps GROUDED RIP-RAP (TYPE D, 2.1.6 (B)(1-3)) NCTCOG
D) 11 - 18 fps GROUDED RIP-RAP (TYPE B, 2.1.6 (B)(1-3)) NCTCOG
E) >18 fps ADEQUATE ENERGY DISSIPATORS

OUTLET FROM PIPE HEADWALLS NEED TO HAVE ADEQUATE EROSION PROTECTION USE FORMULA L=0.37 VD
L=LENGTH OF APRON (H), V=OUTLET VELOCITY FLOW (fps), D=DIAMETER OF PIPE (H)
A) 2 - 5 fps S20 PROTECTION AT THE OUTLET.
B) 5 - 8 fps DRY RIP-RAP (TYPE A, 2.1.6 (B)(1-3)) NCTCOG (NO TOEWALL FOR TYPE "A")
C) 8 - 11 fps GROUDED RIP-RAP (TYPE D, 2.1.6 (B)(1-3)) NCTCOG (NO TOEWALL FOR TYPE "A")
D) 11 - 18 fps GROUDED RIP-RAP (TYPE A, 2.1.6 (B)(1-3)) NCTCOG
E) >18 fps ADEQUATE ENERGY DISSIPATORS

RECORD DRAWINGS:
IT WAS THE INTENT THAT THE IMPROVEMENTS SHOWN BE CONSTRUCTED ACCORDING TO THESE PLANS AS APPROVED BY THE CITY. THE LINES AND GRADES WERE SET ON THE GROUND FOR CONSTRUCTION ACCORDING TO SAID PLANS. THE CITY INSPECTED THE CONSTRUCTION. THE ENGINEER DID NOT VERIFY LINES OR GRADES AFTER CONSTRUCTION. WE ARE NOT AWARE OF ANY CHANGES OR REVISIONS TO THESE PLANS DURING CONSTRUCTION OTHER THAN THOSE SHOWN.
RANDALL P. POGUE, P.E. DATE: FEBRUARY 25, 2008
TX LIC. NO. 84780

NOTE:
FOR ALL OTHER STORM DETAILS SEE CITY OF ROCKWALL/STANDARDS AND NCTCOG 3rd ADDITION

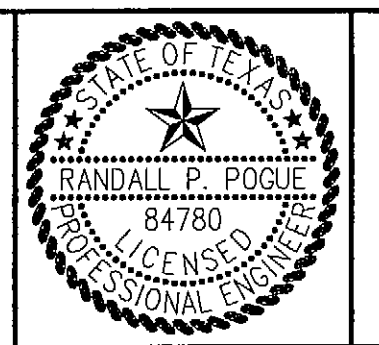
REVISION / DESCRIPTION

NO.	DATE	REVISION / DESCRIPTION
02-25-08		RECORD DRAWINGS
04-12-07		FIRE HYDRANT DETAILS REVISIONS
03-12-07		CITY WATER MAIN RELOCATION
02-26-07		SITE PLAN REVISIONS
02-09-07		NORTHERMOST ACCESS DRIVE & FIRE HYDRANT REVISIONS

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RPP 1-25-07



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STORM SEWER DETAILS
SPR PACKAGING
BLOCK A, LOT 1, SPR PACKAGING ADDITION
NWC OF INDUSTRIAL BLVD. @ JUSTIN ROAD
CITY OF ROCKWALL, TEXAS
C5.04