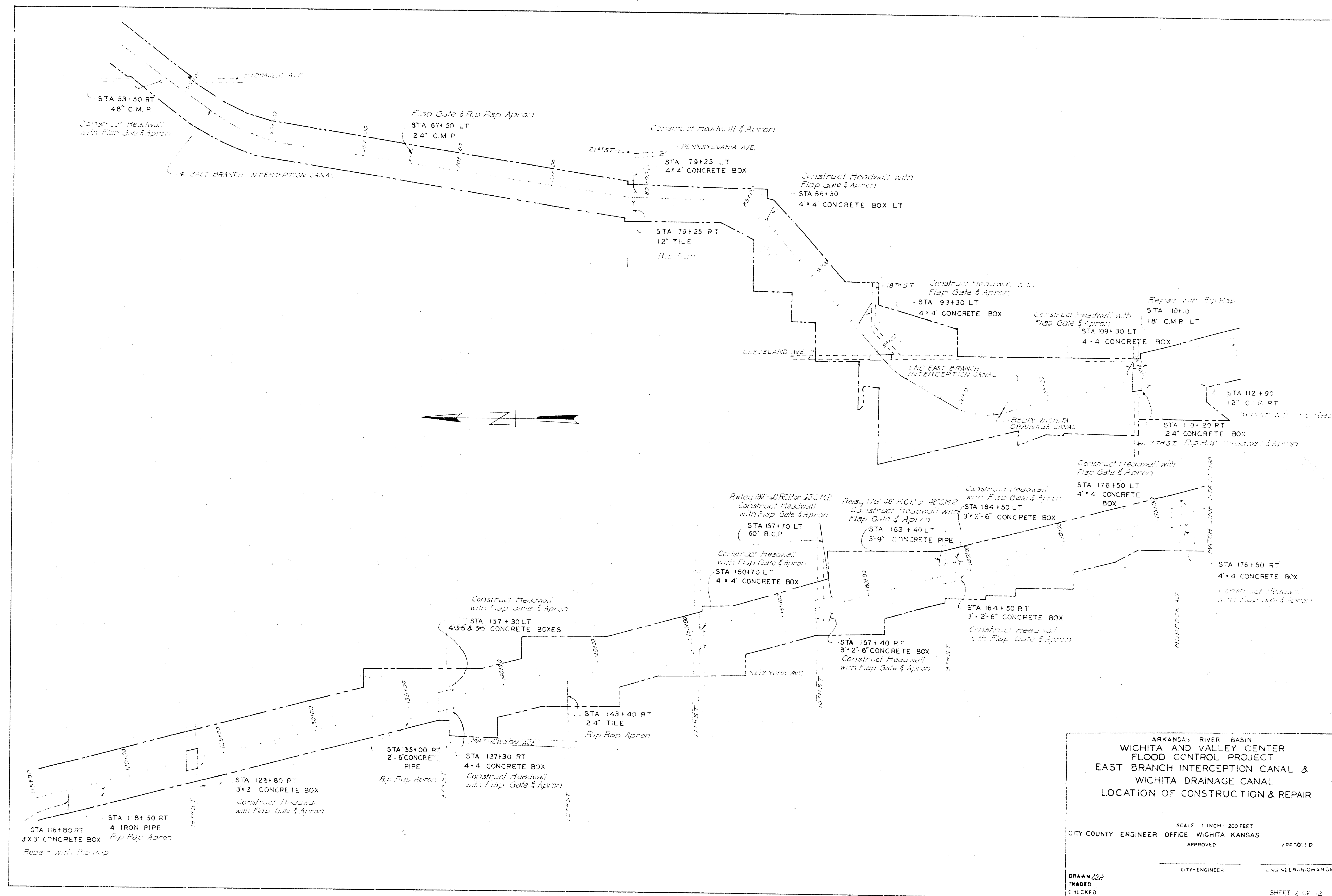
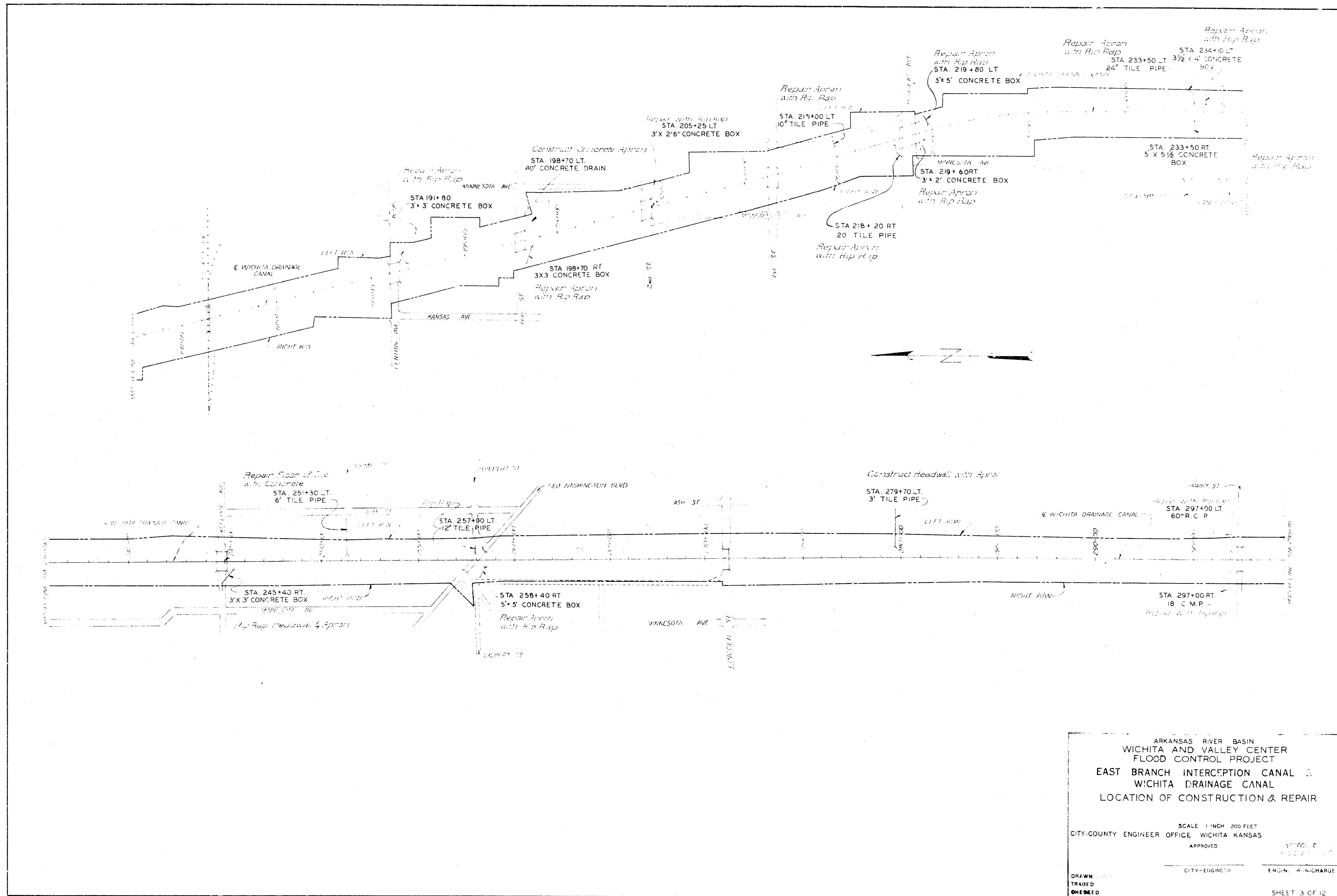
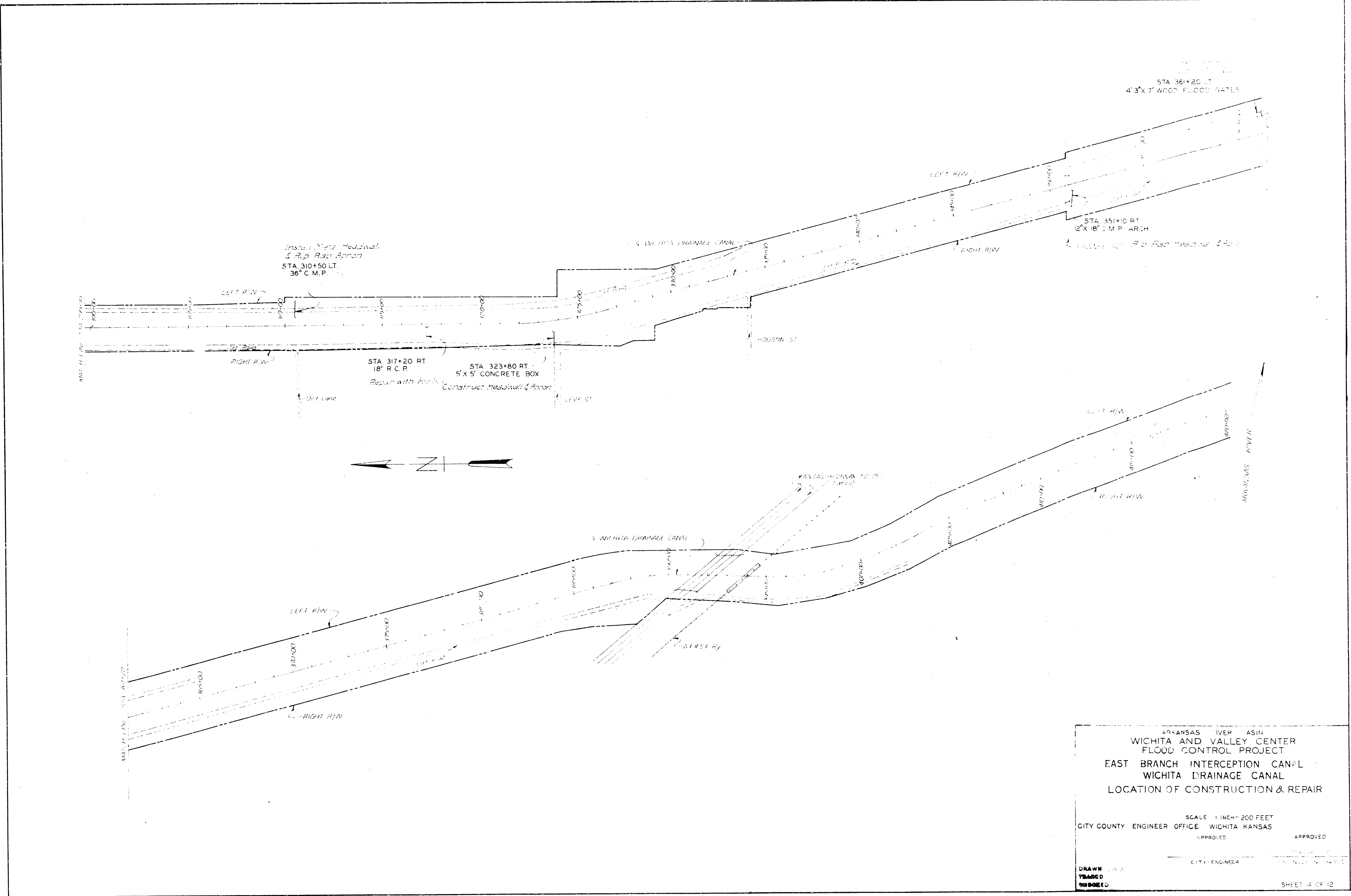
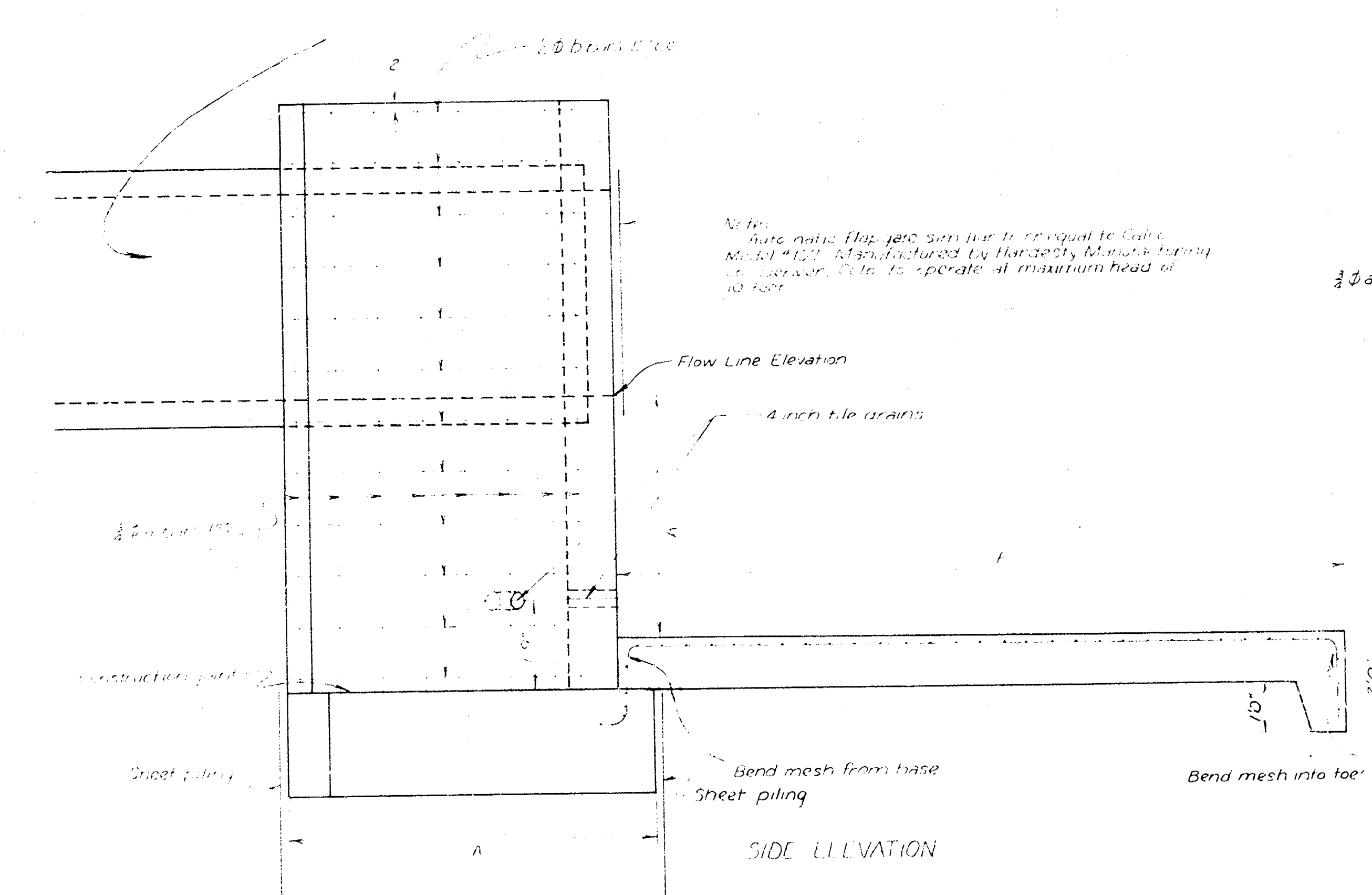






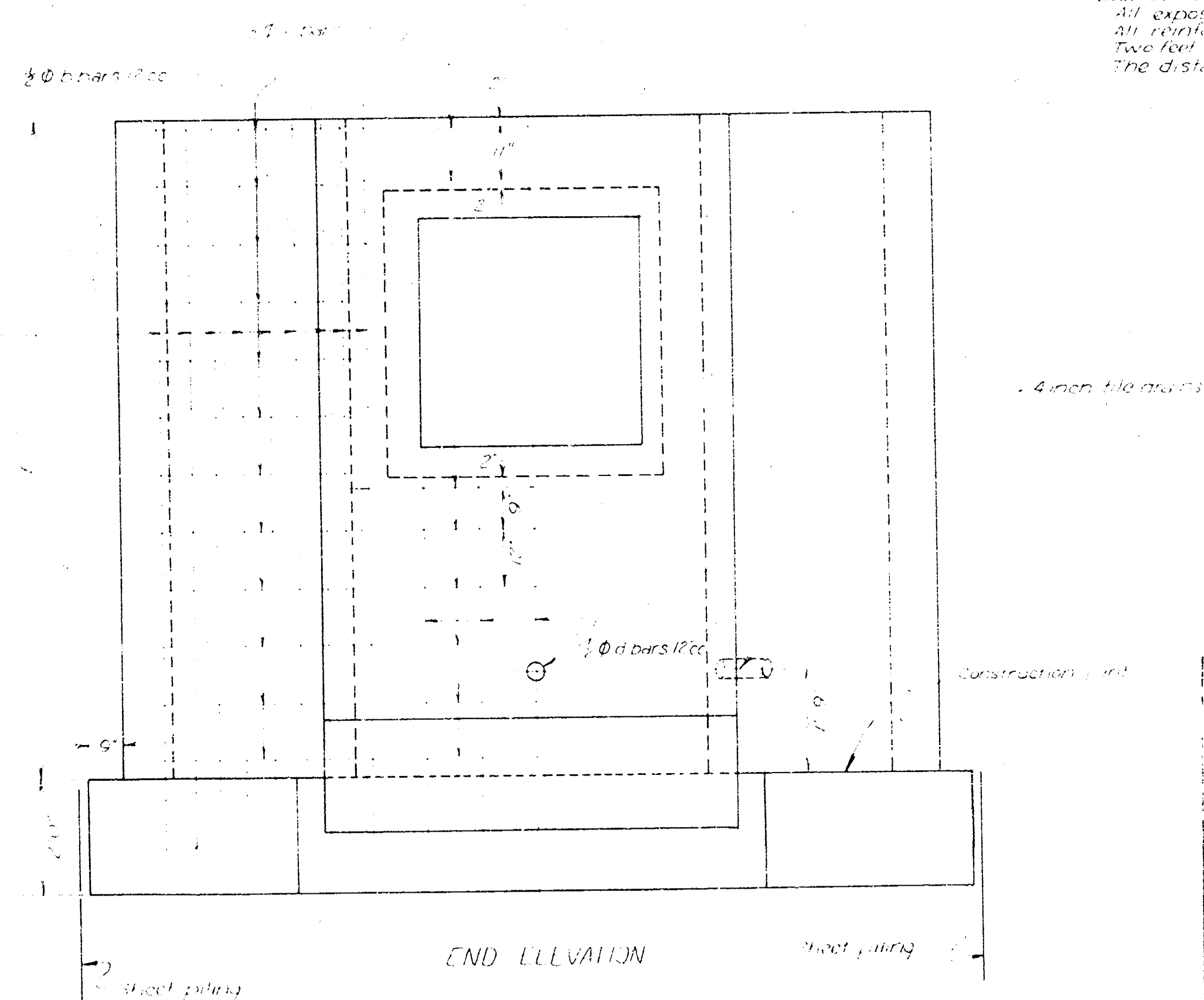




Note
The corrugated sheet piling sections shall be of 12 gauge steel and 6 feet long.
The flange detail see sheet no. 10.
3 rows of bracing shall be required for each headwall.

GENERAL NOTE

Spines approximately parallel to each other and parallel to each other. $\frac{1}{2}$ of 11
spines extending to $\frac{1}{2}$ of 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 8



ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL
WICHITA DRAINAGE CANAL
HEADWALLS FOR BOX CULVERTS

SCALE 1 INCH = 2 FEET
CITY COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED

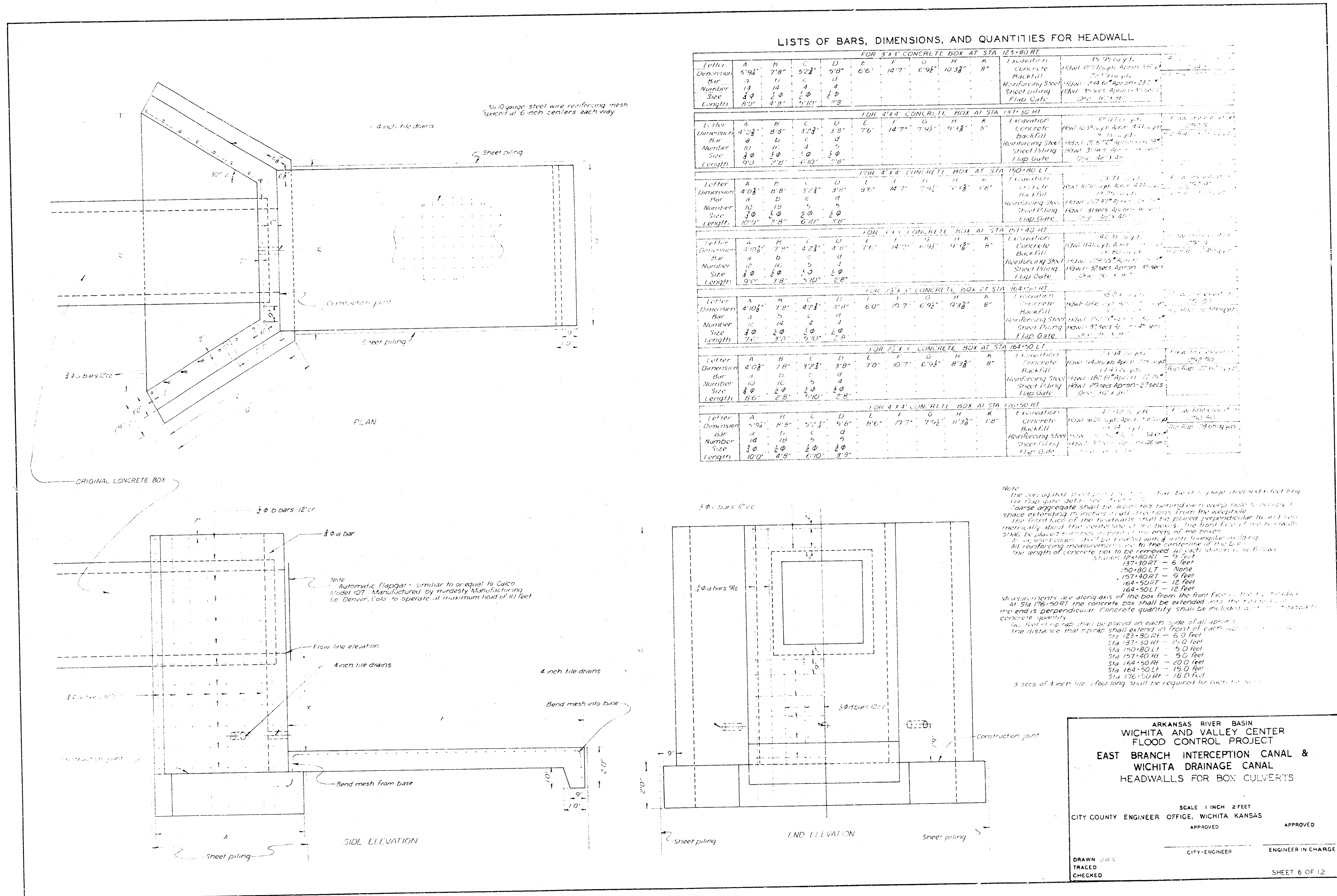
APPROVED

DRAWN JRS.
TRACED
CHECKED

CITY-ENGINEER

UNCLUST, UNGT, UNAGG

SHEET 5 OF 12



STATION	ELEVATION		
	A	B	C
53+50	1309.00	1299.25	1300.10
279+70 LI	1280.20	1274.00	1273.00
157+70	1294.50	1289.00	1288.50

LISTS OF BARS, DIMENSIONS, AND QUANTITIES FOR HEADWALLS FOR

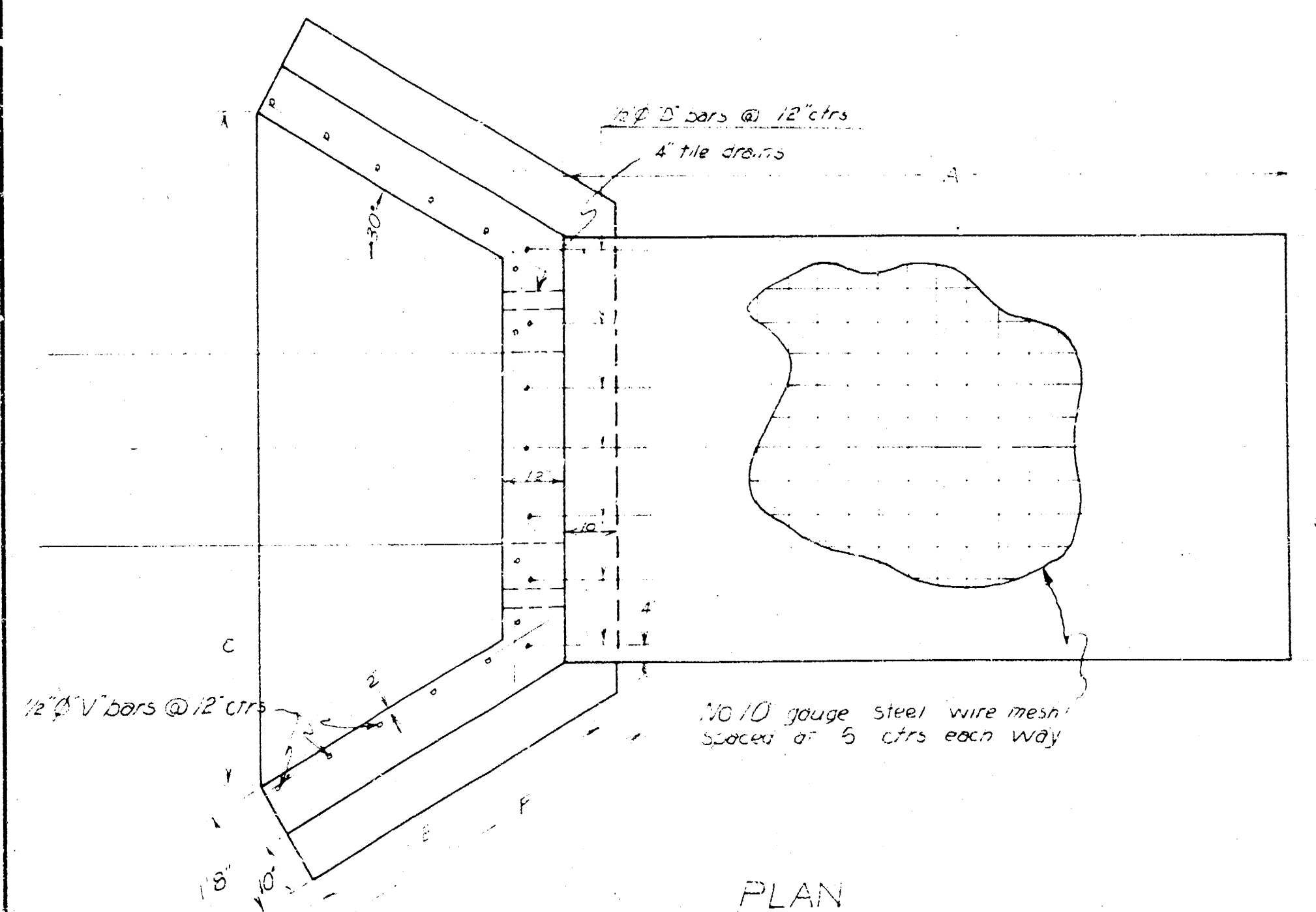
36" TILE PIPE AT STA 279+70 LI												
Letter	A	B	C	D	D ₁	E	F	G	H	J	K	L
Dimension	12'0"	6'0"	102 1/2"	36"	42 1/2"	5'3"	5'0"	11'11"	0'0"	6'0"	10'0"	12"
Bar	A	B	C	V	H	D	F					
Number	3	4	4	14	14	7	4					
Size	20	20	20	20	20	20	20					
Length	7'6"	2'9"	1'9"	7'0"	5'4"	3'6"	3'6"					
Excavation	30179 cu yds											
Concrete	Hawt 160 cu yds Apron 323 cu yds											
Rein Steel	174.35 "											
Sheet Piling	63 Sections*											
Wire Mesh	23.1 "											
Flap Gate	None											
Backfill	Backfill											
Rip Rap	11.65 sq yds											

48" C.M. PIPE AT STA 63+50 LI												
Letter	A	B	C	D	D ₁	E	F	G	H	J	K	L
Dimension	6'0"	6'0"	102 1/2"	48"	5'3"	5'0"	11'11"	9'0"	7'0"	9'0"	12"	
Bar	A	B	C	V	H	D	F					
Number	3	4	14	16	7	4						
Size	20	20	20	20	20	20						
Length	7'6"	2'3"	0'5"	5'4"	3'6"	3'6"						
Excavation	28.16 cu yds											
Concrete	Hawt 176 cu yds Apron 141 cu yds											
Rein Steel	186.41 "											
Sheet Piling	53 Sections*											
Wire Mesh	14.91 "											
Flap Gate	48											
Backfill	11.74 cu yds											
Rip Rap	6.22 sq yds											

60" CONCRETE PIPE AT STA 157+70 LI												
Letter	A	B	C	D	D ₁	E	F	G	H	J	K	L
Dimension	24'0"	0'2"	11'8 1/2"	60"	70"	5'3"	5'0"	13'5"	10'0"	8'0"	5'10"	12"
Bar	A	B	C	V	H	D	F					
Number	3	4	14	16	7	4						
Size	20	20	20	20	20	20						
Length	9'0"	2'4"	9'0"	5'4"	3'6"	3'6"						
Excavation	64.45 cu yds											
Concrete	Hawt 662 cu yds											
Rein Steel	209.43 "											
Sheet Piling	38 Sections											
Rip Rap	5203 sq yds											
Flap Gate	60"											
Backfill	4190 cu yds											

AT STA 157+70 LI

QUANTITIES FOR RELAYING PIPE	
Excavation	1,800 cu yds
Rein. Con. Max	1450' of 24"
Backfill	1,950 cu yds

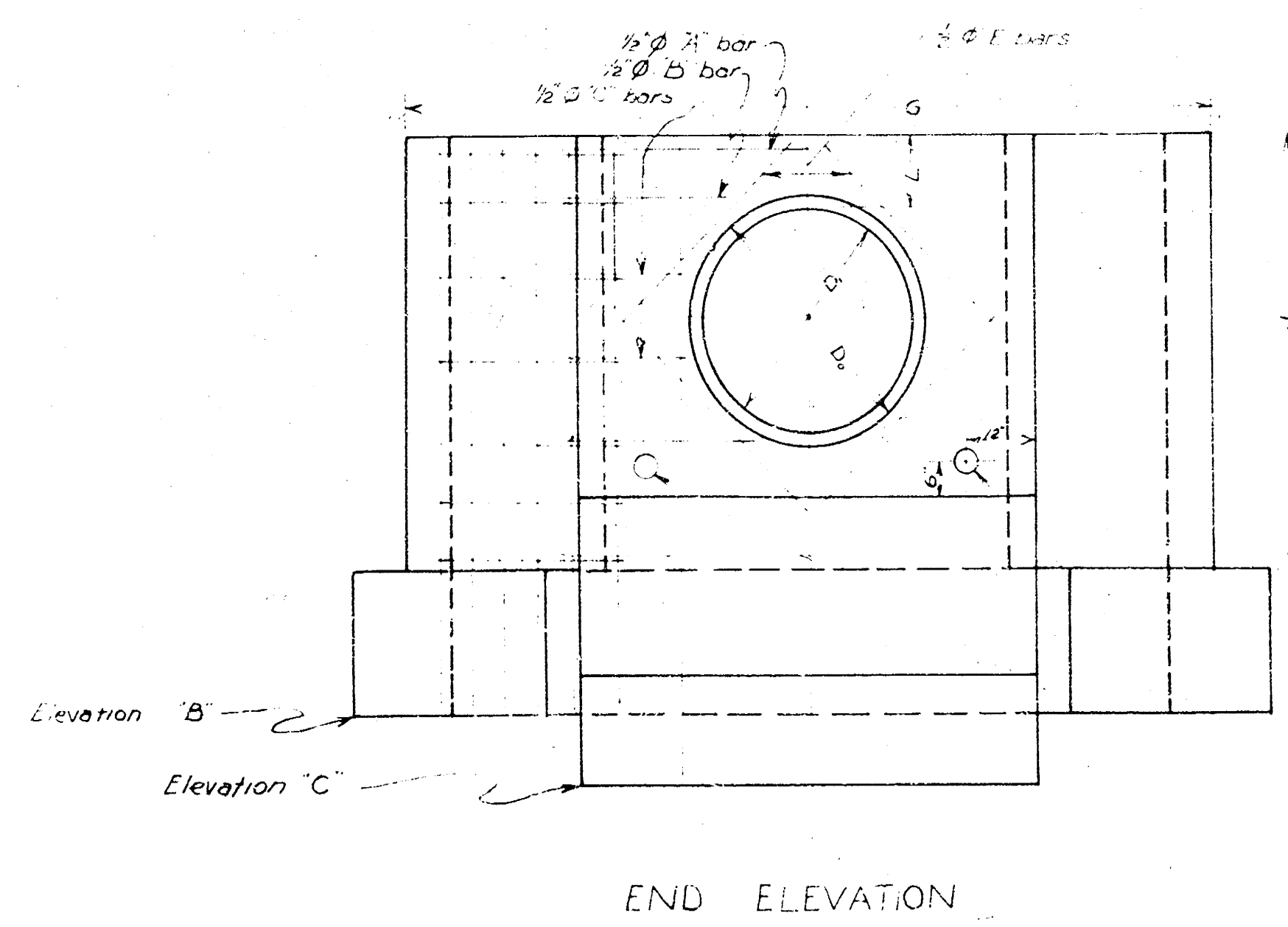
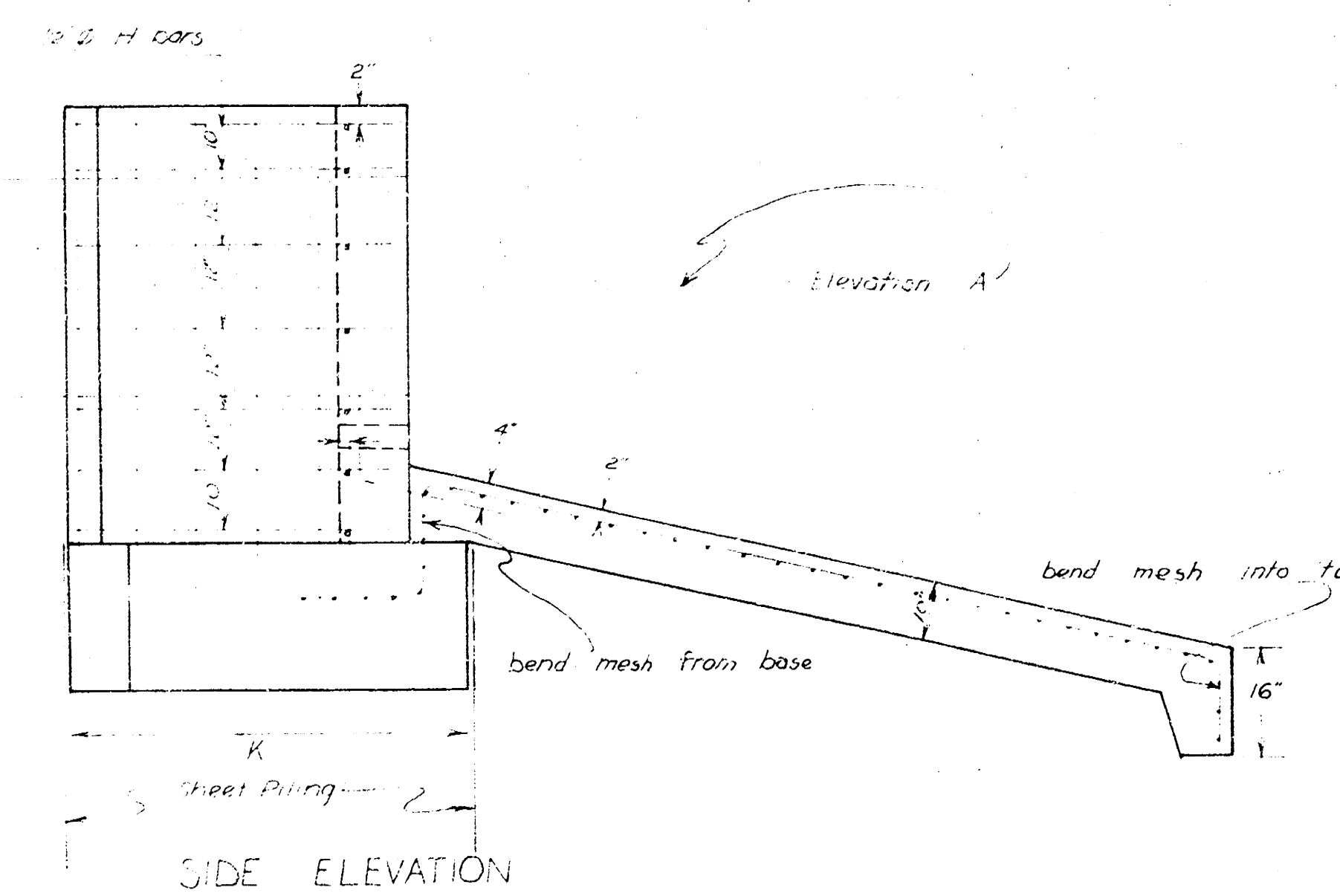


NOTE:
 Rip rap at sta 157+70 to be rip rapped
 back and forth for a length of 24 ft from
 the bottom shall be 2'2" wide.
 Rip rap shall be one to one to top
 of structure bank.

NOTE:
 Automatic flagging to be similar to or equal to
 Calumet, Made in U.S.A. Manufactured by Harsco
 Manufacturing Co. Denver, Colo. to operate at a
 maximum head of 10 ft.
 The corrugated sheet piling sections shall be
 of 12 gauge steel and 6 ft long.
 Section one 40 in section of 36 in tile pipe
 before placing headwall.
 Cut 2 ft off of 48 in C.M.P. before placing
 headwall.
 Headwalls to be placed at 45 degree angles to
 pipe.
 For flap gate detail see sheet no. 11.
 2' x 4' x 1/2" of 1/2" are required for each headwall.

General Notes

Grass aggregate shall be deposited behind each weep hole to occupy
 a space extending 15 in in all direction from the weep hole.
 Weep holes shall be placed with 4 in triangular spacing.
 Forcing dimensions are to centerlines of bars.
 The flap gate shall be placed on each side of all aprons.
 The distance that apron shall extend in front of each apron is as follows:
 Sta 279+70 LI 5 feet
 Sta 44+50 LI 3 feet

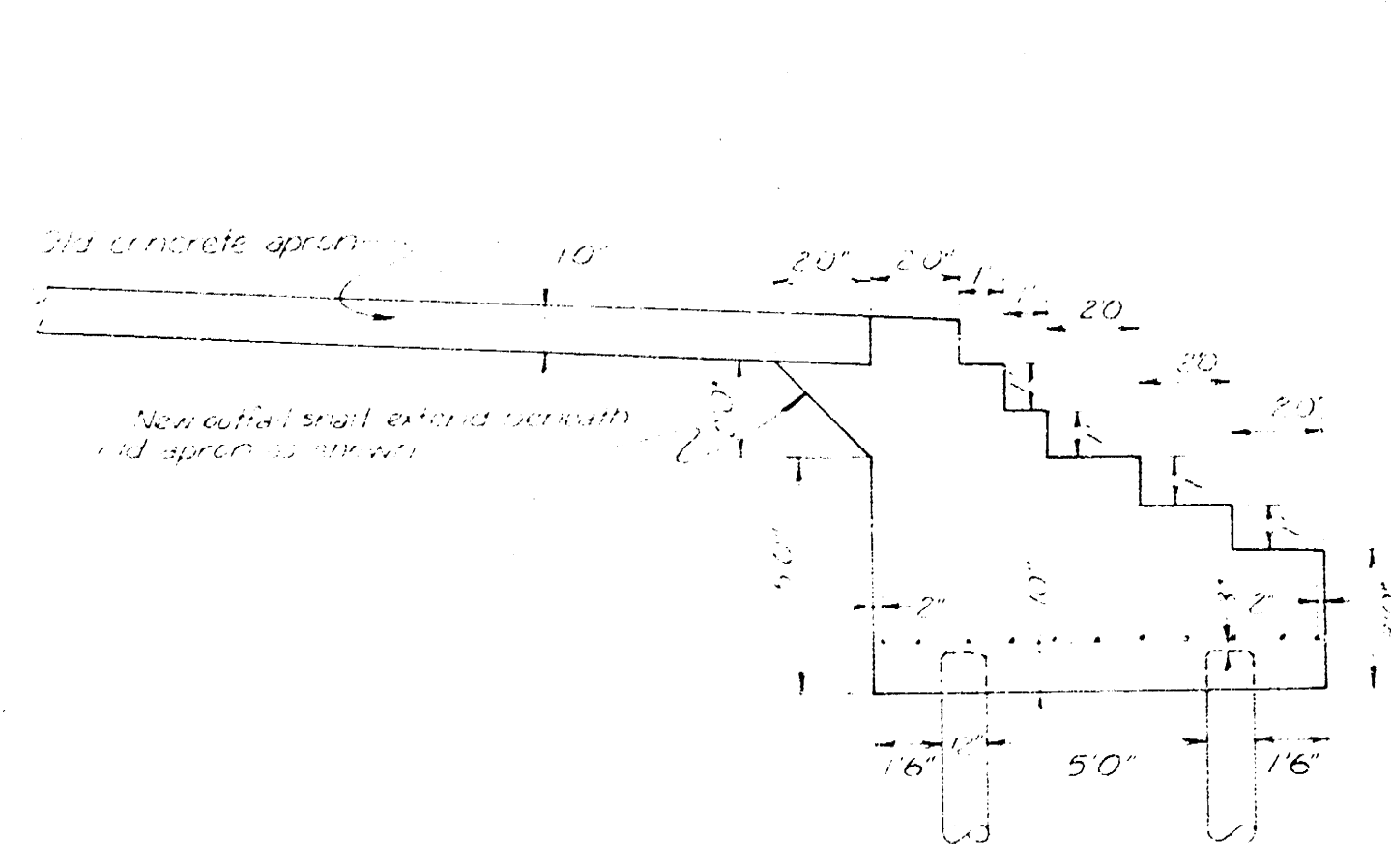


ARKANSAS RIVER BASIN
 WICHITA AND VALLEY CENTER
 FLOOD CONTROL PROJECT
 EAST BRANCH INTERCEPTION CANAL &
 WICHITA DRAINAGE CANAL
 HEADWALLS FOR PIPE CULVERTS

SCALE: 1 INCH = 2 FT.
 CITY-COUNTY ENGINEER OFFICE, WICHITA, KANSAS
 APPROVED: _____
 CITY-ENGINEER ENGINEER-IN-CHARGE

DRAWN: C.W.G.
 TRACED: _____
 CHECKED: _____

SHEET 7 OF 12



END ELEVATION

NOTE
All centering measurements are to the center line of the two
sides of exposed edges with 1 inch triangular molding.
Minimum cast concrete shall be considered part of the excavation and
shall be paid for accordingly.
The apron shall be constructed perpendicular to the axis of the drain
and the center of flow shall be flush with the existing top lip of apron.
New concrete at top of outfall shall be made flush with old apron

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT

EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
OUTFALL APRON AT 3RD STREET
STA. 198+80 LT

SCALE 1 INCH = 4 FEET

CITY-COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED

APPROVED

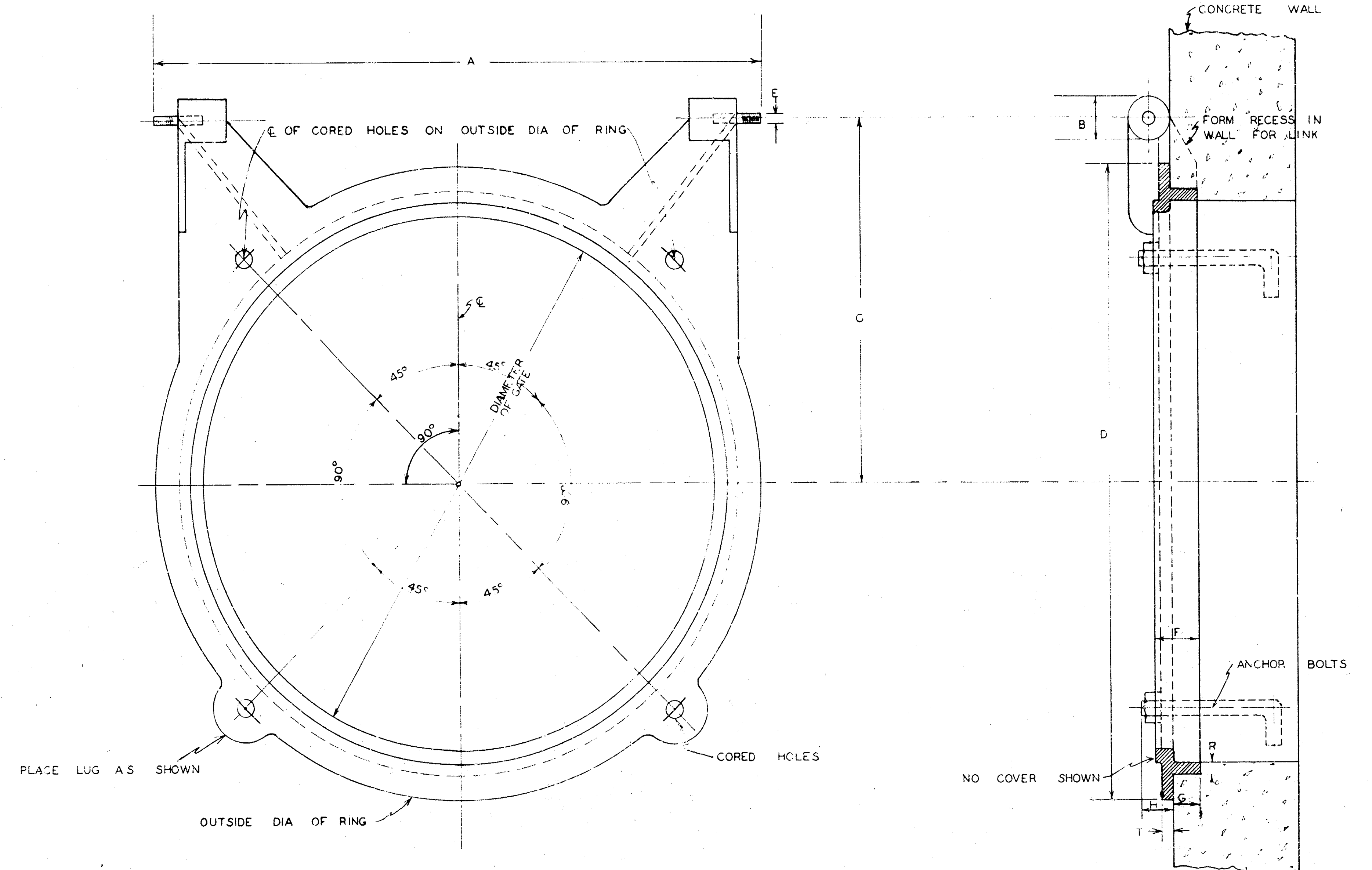
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CITY-ENGINEER

ENGINEER-IN-CHARGE

DRAWN JMS
TRACED
CHECKED

SHEET 10 OF 12

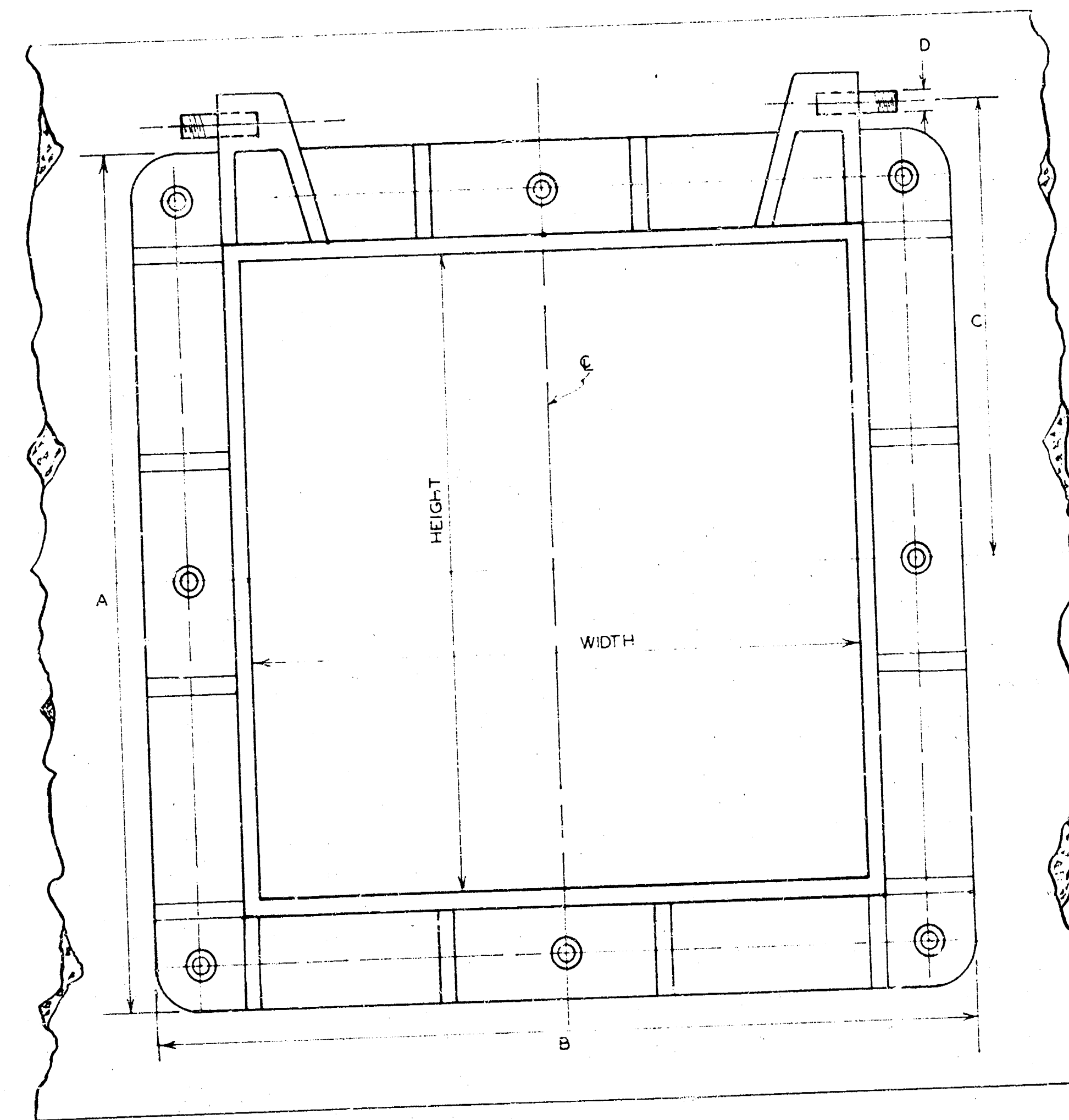


FRONT ELEVATION
RING ONLY

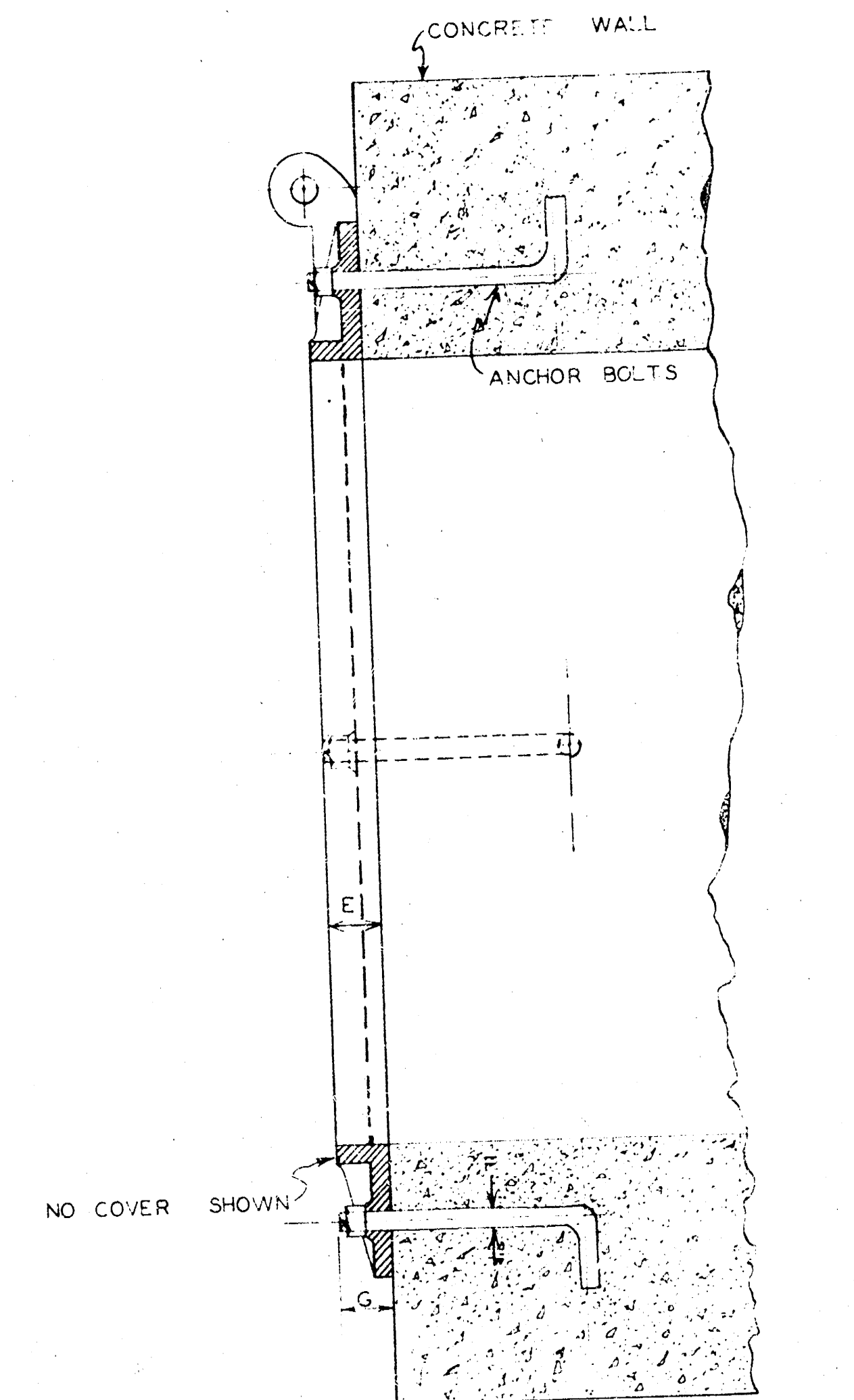
SECTION ON C

STATION	DIA	A	B	C	D	E	F	G	H	R	T	ANCHOR BOLT DIA
53+50	48"	5 1/2"	2 1/2"	34"	54"	1"	4"	2 1/2"	1 1/2"	3/4"	3/4"	3/4"
67+50	24"	2 1/2"	2"	17"	27 1/2"	3/4"	2 1/2"	1 1/2"	1 1/2"	3/4"	3/4"	3/4"
157+70	60"	6 1/2"	2 1/2"	42"	60 1/2"	1 1/4"	4 3/16"	2 3/4"	2 1/4"	7/8"	1 1/2"	1"
163+40	40"	5 3/8"	2 1/2"	34"	54"	1"	4"	2 3/4"	1 3/4"	3/4"	3/4"	3/4"

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
FLAP GATE DETAIL
MODEL 100
SCALE: 1/4" = 1'-0"
CITY COUNTY ENGINEER OFFICE WICHITA KANSAS
APPROVED: _____
CITY ENGINEER ENGINEER-IN-CHARGE
DRAWN: L.W.G.
TRACED
CHECKED SHEET 11 OF 12



FRONT ELEVATION
RING ONLY



SECTION ON C-C

FLAP GATE SCHEDULE — CALCO MODEL 107										
STATION	GATE SIZE		A	B	C	D	E	F	G	
	WIDTH	HEIGHT								
85 + 30 LT	6'0"	6'0"	7'0"	7'0"	4'2"	1'4"	2'2"	1"	2'4"	
93 + 30 LT	4'0"	4'0"	5'1"	5'7"	3'4"	1"	2'2"	3/4"	1'3/4"	
109 + 30	6'0"	6'0"	7'0"	7'0"	4'2"	1'4"	2'2"	1"	2'4"	
123 + 60	3'6"	3'6"	4'4"	4'4"	2'5"	1"	2'2"	3/4"	1'3/4"	
137 + 30 LT	6'0"	6'0"	7'0"	7'0"	4'2"	1'4"	2'2"	1"	2'4"	
151 + 30 LT	6'0"	6'0"	7'0"	7'0"	4'2"	1'4"	2'2"	1"	2'4"	
171 + 30 RH	4'0"	4'0"	5'7"	5'7"	3'4"	1"	2'2"	3/4"	1'3/4"	
150 + 60 LT	4'0"	4'0"	5'7"	5'7"	3'4"	1"	2'2"	3/4"	1'3/4"	
157 + 40 RH	3'6"	3'6"	4'4"	4'4"	2'5"	1"	2'2"	3/4"	1'3/4"	
164 + 60 LT	3'6"	3'6"	4'4"	4'4"	2'5"	1"	2'2"	3/4"	1'3/4"	
164 + 60 RH	3'6"	3'6"	4'4"	4'4"	2'5"	1"	2'2"	3/4"	1'3/4"	
176 + 60 LT	4'0"	4'0"	5'7"	5'7"	3'4"	1"	2'2"	3/4"	1'3/4"	
176 + 60 RH	4'0"	4'0"	5'7"	5'7"	3'4"	1"	2'2"	3/4"	1'3/4"	

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
FLAP GATE DETAIL
MODEL 107

SCALE: 1 INCH = 4 FEET

CITY COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED

ENGINEER IN CHARGE

DRAWN BY: [Signature]
TRACED
CHECKED

SHEET 12 OF 12