

**BILL OF REINF. STEEL FOR 4 WINGWALLS**

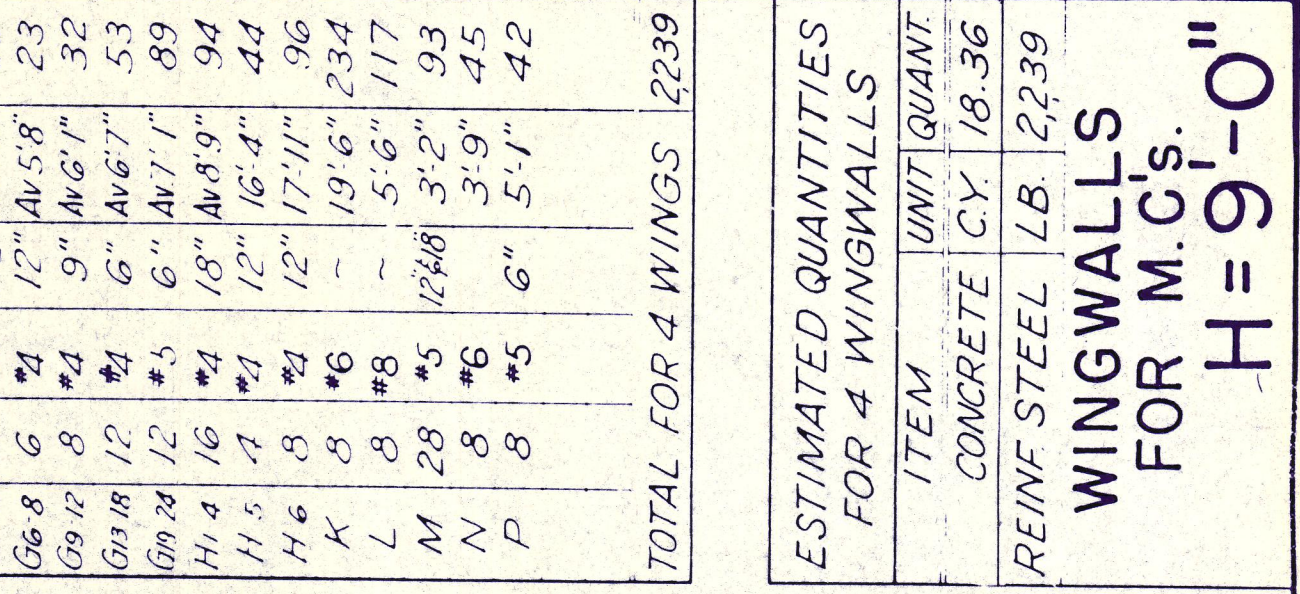
BAR NO.	SIZE	SPAC.	LGTH	WT
A	#4	16"	8'	4.5
B1-14	#4	17"	Av 3.11"	4.2
B5-7	#4	15"	Av 6.2"	4.9
B9-12	#4	12"	Av 7.9"	9.8
B10-16	#4	9"	Av 9.2"	62
C	#5	16"	0"	71
D	#5	17"	0"	71
E	#5	19"	7"	82
F1-4	#4	17"	Av 3.8"	20
F5-7	#4	15"	Av 4.8"	17
F10-14	#4	12"	Av 4.8"	17
G1-4	#4	17"	Av 4.8"	27
G5-7	#4	15"	Av 5.3"	25
G8-10	#4	12"	Av 5.8"	33
G11-14	#4	9"	Av 6.0"	62
H1-3	#4	12"	Av 7.10"	37
H4	#4	12"	Av 7.10"	38
H5	#4	12"	Av 7.10"	38
K	#5	15"	15.5"	129
L	#5	12"	3.2"	66
M	#5	12"	3.2"	66
N	#5	12"	3.2"	26

**TOTAL FOR 4 WINGS** 1,141

**ESTIMATED QUANTITIES FOR 4 WINGWALLS**

ITEM	UNIT	QUANT.
CONCRETE	C.Y.	12.05
REINF. STEEL	LB.	1,141

**WINGWALLS FOR M.C.S. H=7'-0"**



**BILL OF REINF. STEEL FOR 4 WINGWALLS**

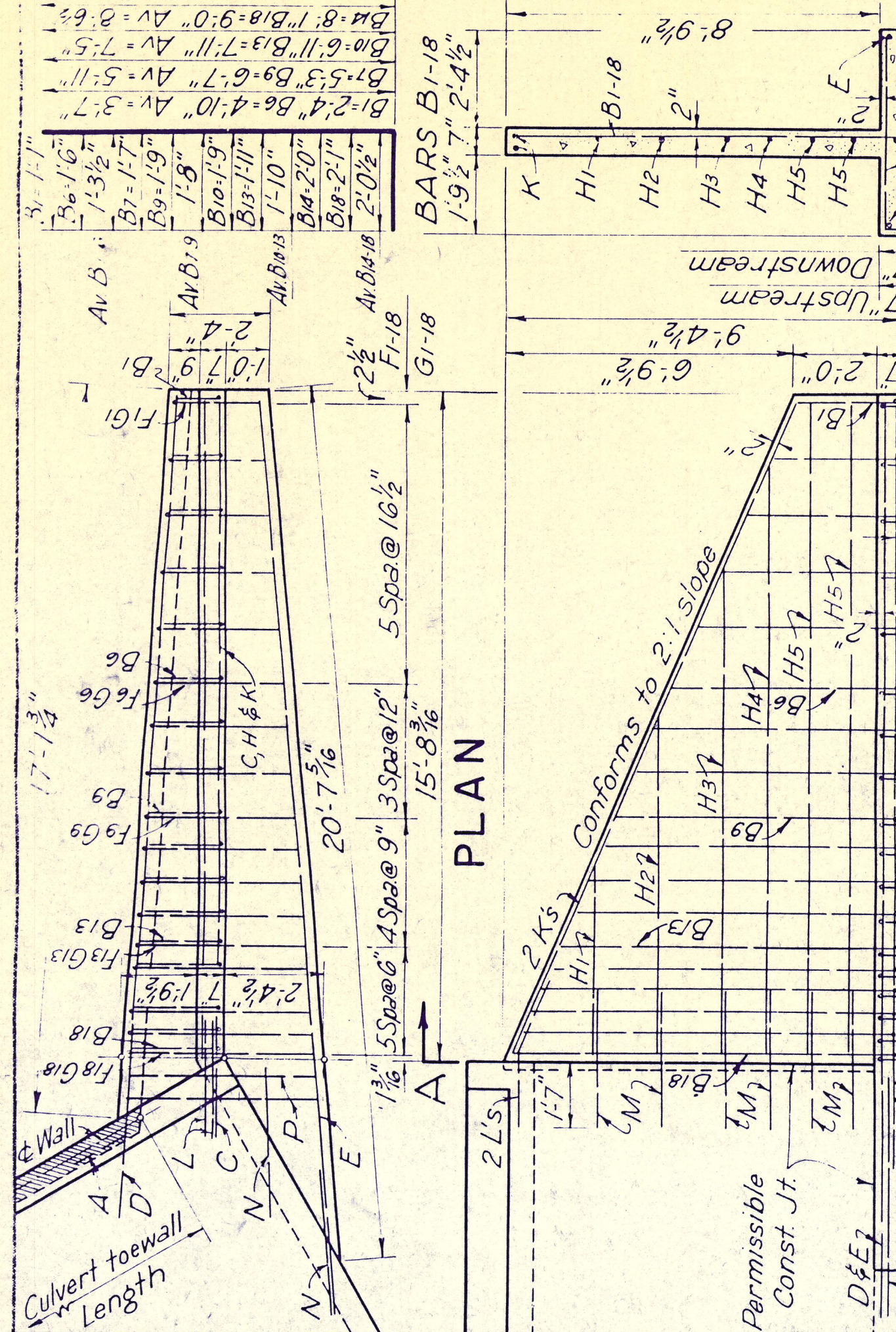
BAR NO.	SIZE	SPAC.	LGTH	WT
A	#4	16"	8'	5.6
B1-5	#4	17"	Av 10.0"	56
B6-8	#4	12"	Av 7.4"	59
B9-12	#4	9"	Av 8.9"	54
B10-16	#4	6"	Av 10.3"	164
B17-24	#4	6"	Av 11.9"	294
C	#5	19"	9"	82
D	#5	21"	9"	88
E	#5	25"	15.0"	26
F1-5	#4	17"	Av 4.8"	19
F6-8	#4	12"	Av 4.8"	19
F9-12	#4	9"	Av 5.1"	27
F13-16	#4	6"	Av 5.7"	45
F17-24	#4	6"	Av 6.1"	76
G1-5	#4	17"	Av 4.10"	32
G6-8	#4	12"	Av 5.8"	33
G9-12	#4	9"	Av 6.7"	52
G13-16	#4	6"	Av 7.7"	89
G17-24	#4	6"	Av 8.9"	94
H1-4	#4	12"	Av 8.4"	44
H5	#4	12"	Av 8.4"	44
H6	#4	12"	Av 8.4"	44
K	#5	19"	17.1"	96
L	#5	16"	3.2"	93
M	#5	16"	3.2"	93
N	#5	16"	3.2"	45

**TOTAL FOR 4 WINGS** 2,239

**ESTIMATED QUANTITIES FOR 4 WINGWALLS**

ITEM	UNIT	QUANT.
CONCRETE	C.Y.	18.36
REINF. STEEL	LB.	2,239

**WINGWALLS FOR M.C.S. H=9'-0"**



**BILL OF REINF. STEEL FOR 4 WINGWALLS**

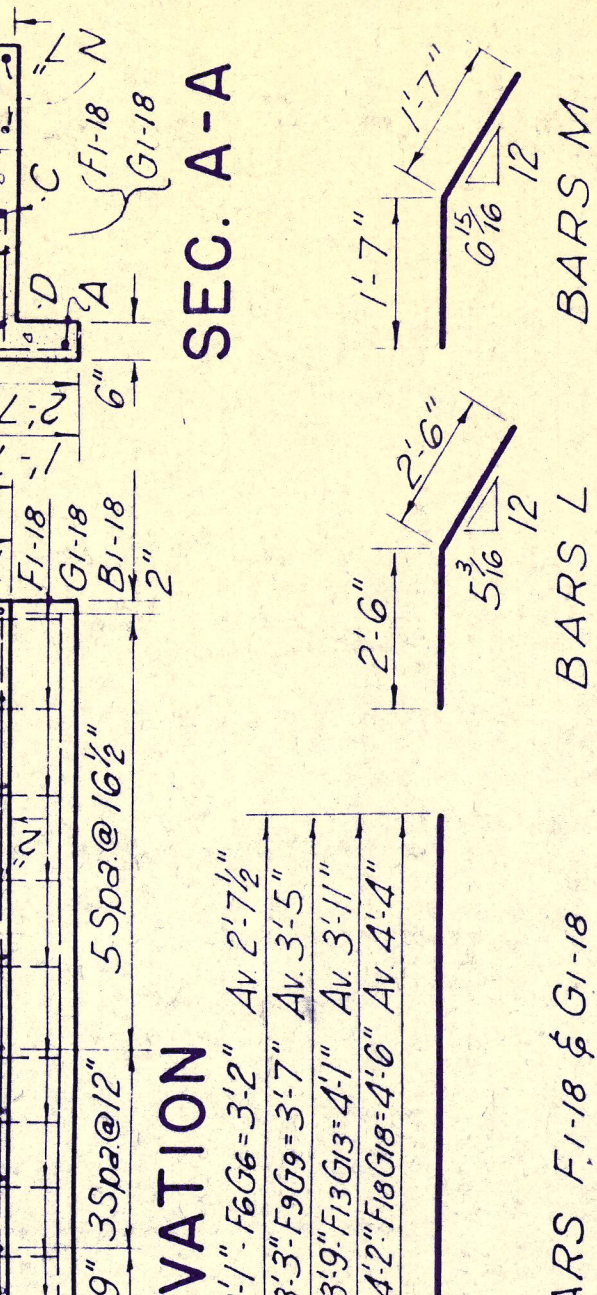
BAR NO.	SIZE	SPAC.	LGTH	WT
A	#4	16"	8'	6.3
B1-4	#4	17"	Av 4.8"	50
B5-8	#4	12"	Av 6.1"	74
B9-12	#4	10"	Av 8.9"	94
B10-16	#4	8"	Av 10.5"	174
B17-18	#4	8"	Av 11.1"	199
C	#5	22"	3.2"	92
D	#5	23"	3.2"	99
E	#5	27"	16.3"	21
F1-4	#4	17"	Av 3.4"	25
F5-8	#4	10"	Av 5.3"	28
F9-12	#4	8"	Av 6.9"	53
F13-16	#4	8"	Av 6.9"	81
G1-4	#4	17"	Av 4.1"	26
G5-8	#4	10"	Av 6.3"	33
G9-12	#4	8"	Av 7.4"	57
G13-16	#4	8"	Av 8.1"	61
G17-18	#4	8"	Av 8.1"	93
H1-4	#4	18"	15.5"	122
H5	#4	18"	15.1"	51
K	#5	22"	20.4"	109
L	#5	5"	5.6"	117
M	#5	5"	5.6"	45
N	#5	5"	5.6"	45

**TOTAL FOR 4 WINGS** 2,753

**ESTIMATED QUANTITIES FOR 4 WINGWALLS**

ITEM	UNIT	QUANT.
CONCRETE	C.Y.	14.78
REINF. STEEL	LB.	1,470

**WINGWALLS FOR M.C.S. H=8'-0"**



**BILL OF REINF. STEEL FOR 4 WINGWALLS**

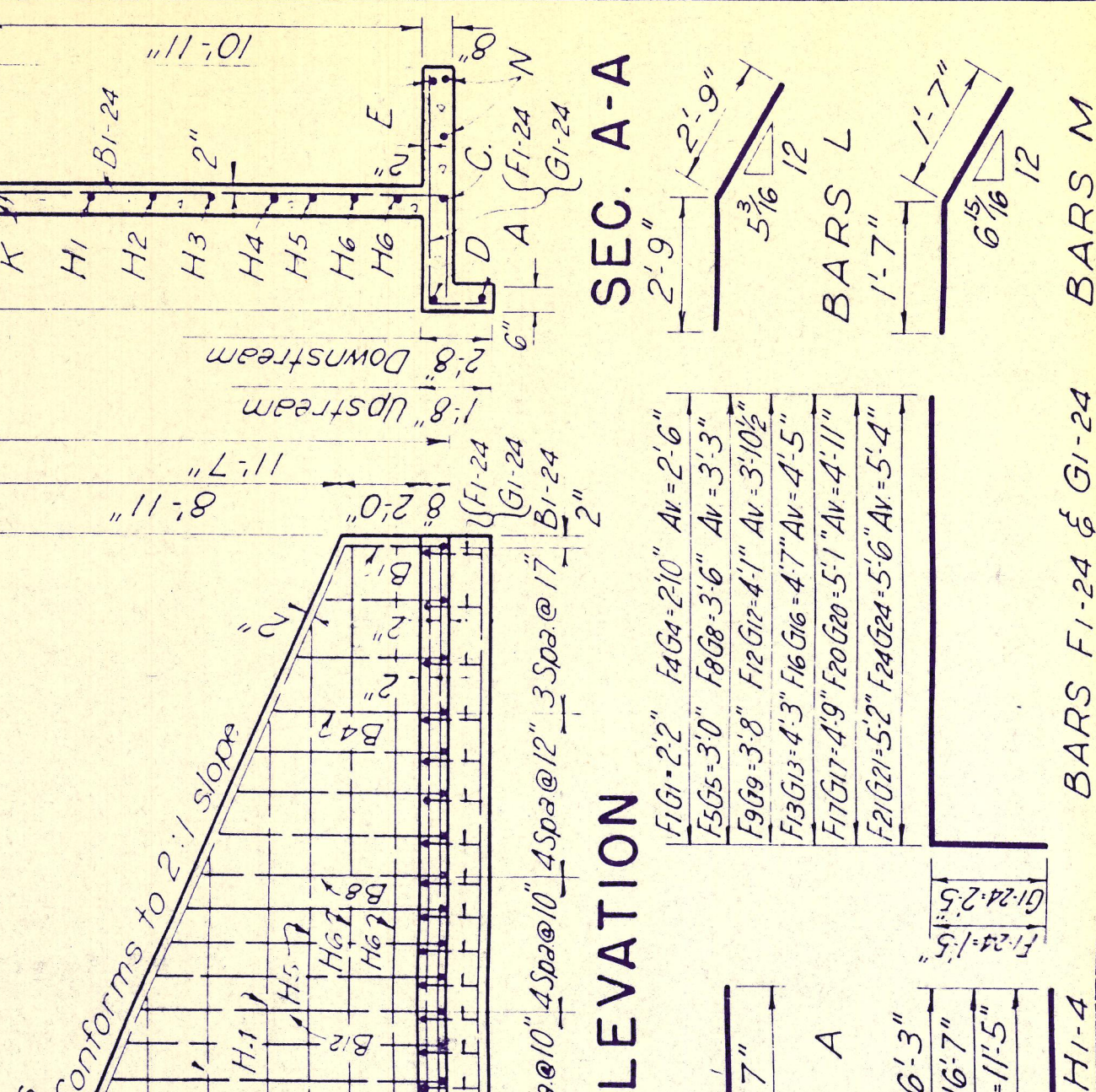
BAR NO.	SIZE	SPAC.	LGTH	WT
A	#4	16"	8'	6.3
B1-4	#4	17"	Av 4.8"	50
B5-8	#4	12"	Av 6.1"	74
B9-12	#4	10"	Av 8.9"	94
B10-16	#4	8"	Av 10.5"	174
B17-18	#4	8"	Av 11.1"	199
C	#5	22"	3.2"	92
D	#5	23"	3.2"	99
E	#5	27"	16.3"	21
F1-4	#4	17"	Av 3.4"	25
F5-8	#4	10"	Av 5.3"	28
F9-12	#4	8"	Av 6.9"	53
F13-16	#4	8"	Av 6.9"	81
G1-4	#4	17"	Av 4.1"	26
G5-8	#4	10"	Av 6.3"	33
G9-12	#4	8"	Av 7.4"	57
G13-16	#4	8"	Av 8.1"	61
G17-18	#4	8"	Av 8.1"	93
H1-4	#4	18"	15.5"	122
H5	#4	18"	15.1"	51
K	#5	22"	20.4"	109
L	#5	5"	5.6"	117
M	#5	5"	5.6"	45
N	#5	5"	5.6"	45

**TOTAL FOR 4 WINGS** 2,753

**ESTIMATED QUANTITIES FOR 4 WINGWALLS**

ITEM	UNIT	QUANT.
CONCRETE	C.Y.	14.78
REINF. STEEL	LB.	1,470

**WINGWALLS FOR M.C.S. H=8'-0"**



**BILL OF REINF. STEEL FOR 4 WINGWALLS**

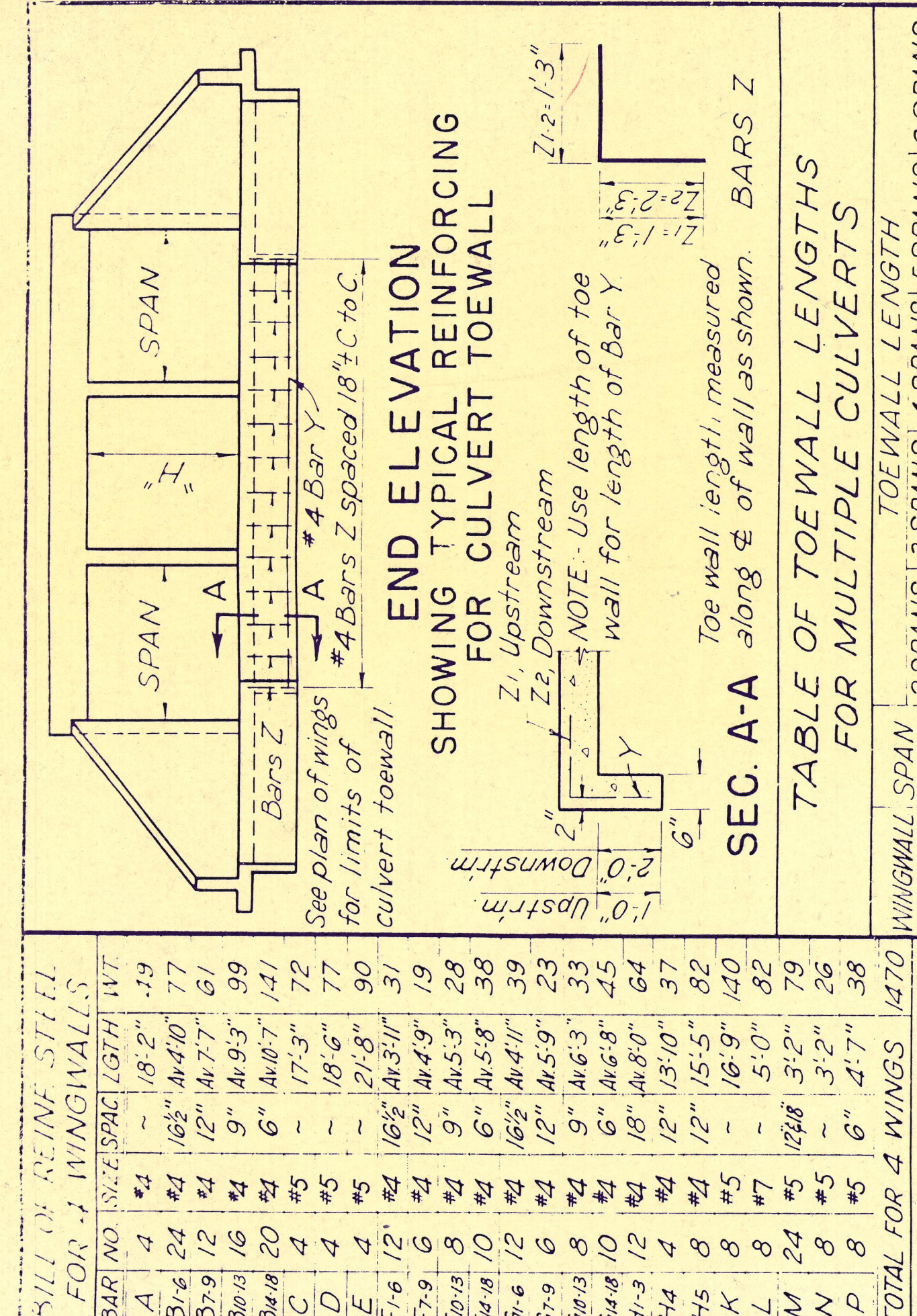
BAR NO.	SIZE	SPAC.	LGTH	WT
A	#4	16"	8'	6.3
B1-4	#4	17"	Av 4.8"	50
B5-8	#4	12"	Av 6.1"	74
B9-12	#4	10"	Av 8.9"	94
B10-16	#4	8"	Av 10.5"	174
B17-18	#4	8"	Av 11.1"	199
C	#5	22"	3.2"	92
D	#5	23"	3.2"	99
E	#5	27"	16.3"	21
F1-4	#4	17"	Av 3.4"	25
F5-8	#4	10"	Av 5.3"	28
F9-12	#4	8"	Av 6.9"	53
F13-16	#4	8"	Av 6.9"	81
G1-4	#4	17"	Av 4.1"	26
G5-8	#4	10"	Av 6.3"	33
G9-12	#4	8"	Av 7.4"	57
G13-16	#4	8"	Av 8.1"	61
G17-18	#4	8"	Av 8.1"	93
H1-4	#4	18"	15.5"	122
H5	#4	18"	15.1"	51
K	#5	22"	20.4"	109
L	#5	5"	5.6"	117
M	#5	5"	5.6"	45
N	#5	5"	5.6"	45

**TOTAL FOR 4 WINGS** 2,753

**ESTIMATED QUANTITIES FOR 4 WINGWALLS**

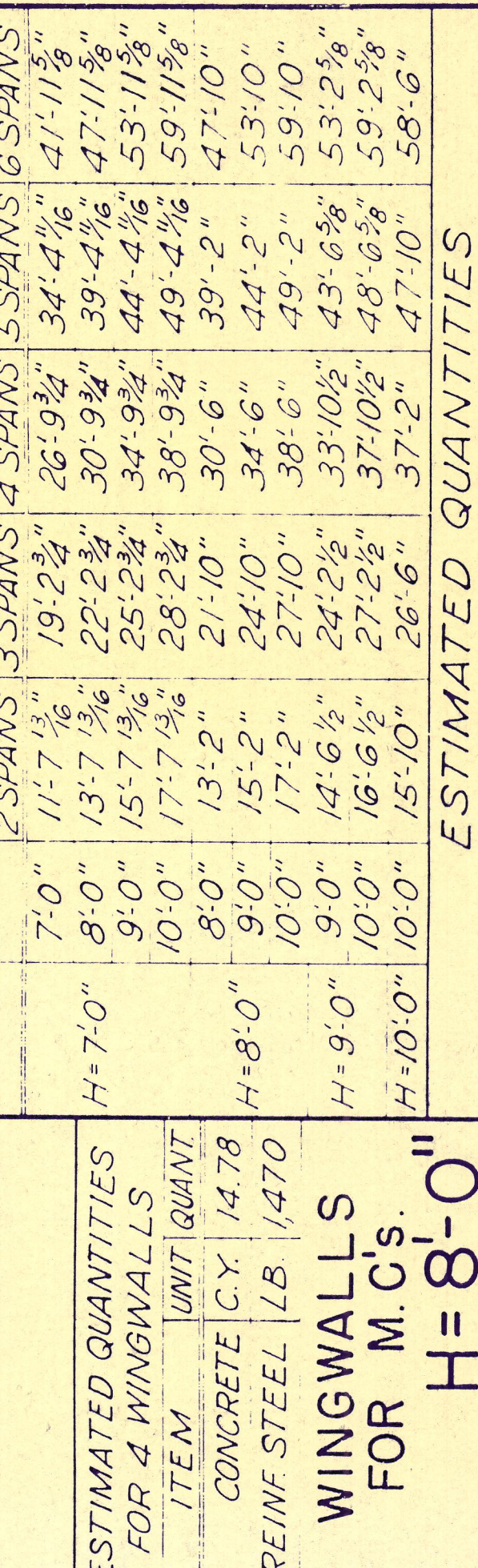
ITEM	UNIT	QUANT.
CONCRETE	C.Y.	25.21
REINF. STEEL	LB.	2,753

**WINGWALLS FOR M.C.S. H=10'-0"**



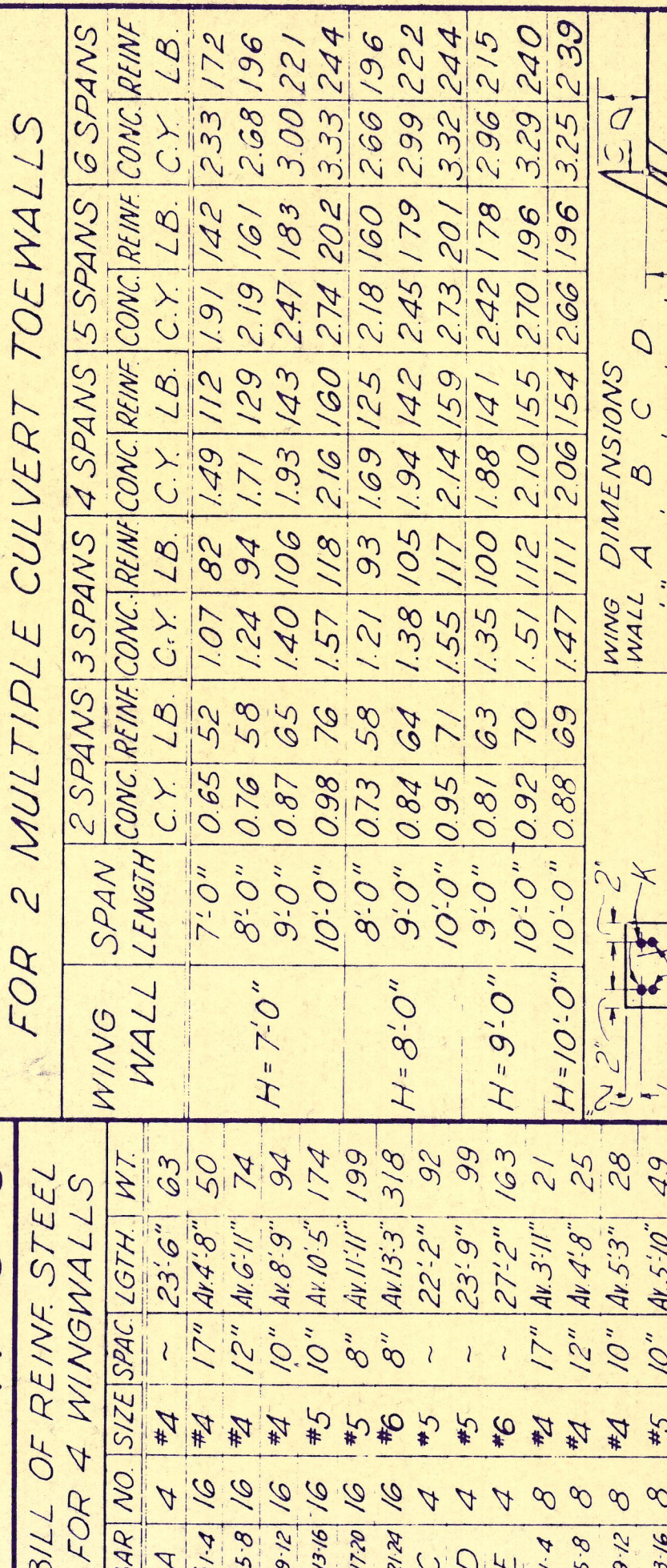
**TABLE OF TOEWALL LENGTHS FOR MULTIPLE CULVERTS**

WINGWALL SPAN	2 SPANS	3 SPANS	4 SPANS	5 SPANS	G SPANS
H=7'-0"	11'-7"	19'-2 1/2"	26'-9 1/2"	34'-4 1/2"	41'-11 1/2"
H=8'-0"	13'-7 1/2"	22'-2 3/4"	30'-9 3/4"	39'-4 1/2"	47'-11 1/2"
H=9'-0"	15'-7 3/4"	25'-2 3/4"	34'-4 1/2"	44'-4 1/2"	53'-11 1/2"
H=10'-0"	17'-7 3/4"	28'-2 3/4"	38'-9 3/4"	49'-4 1/2"	59'-11 1/2"
H=11'-0"	19'-7 3/4"	31'-2"	42'-10"	53'-2"	64'-10"
H=12'-0"	21'-7 3/4"	34'-6"	46'-6"	57'-6"	69'-6"
H=13'-0"	23'-7 3/4"	37'-6"	50'-6"	61'-6"	74'-6"
H=14'-0"	25'-7 3/4"	40'-6"	54'-6"	65'-6"	79'-6"
H=15'-0"	27'-7 3/4"	43'-6"	58'-6"	69'-6"	84'-6"
H=16'-0"	29'-7 3/4"	46'-6"	62'-6"	73'-6"	89'-6"
H=17'-0"	31'-7 3/4"	49'-6"	66'-6"	77'-6"	94'-6"
H=18'-0"	33'-7 3/4"	52'-6"	70'-6"	81'-6"	99'-6"
H=19'-0"	35'-7 3/4"	55'-6"	74'-6"	85'-6"	104'-6"
H=20'-0"	37'-7 3/4"	58'-6"	78'-6"	89'-6"	109'-6"



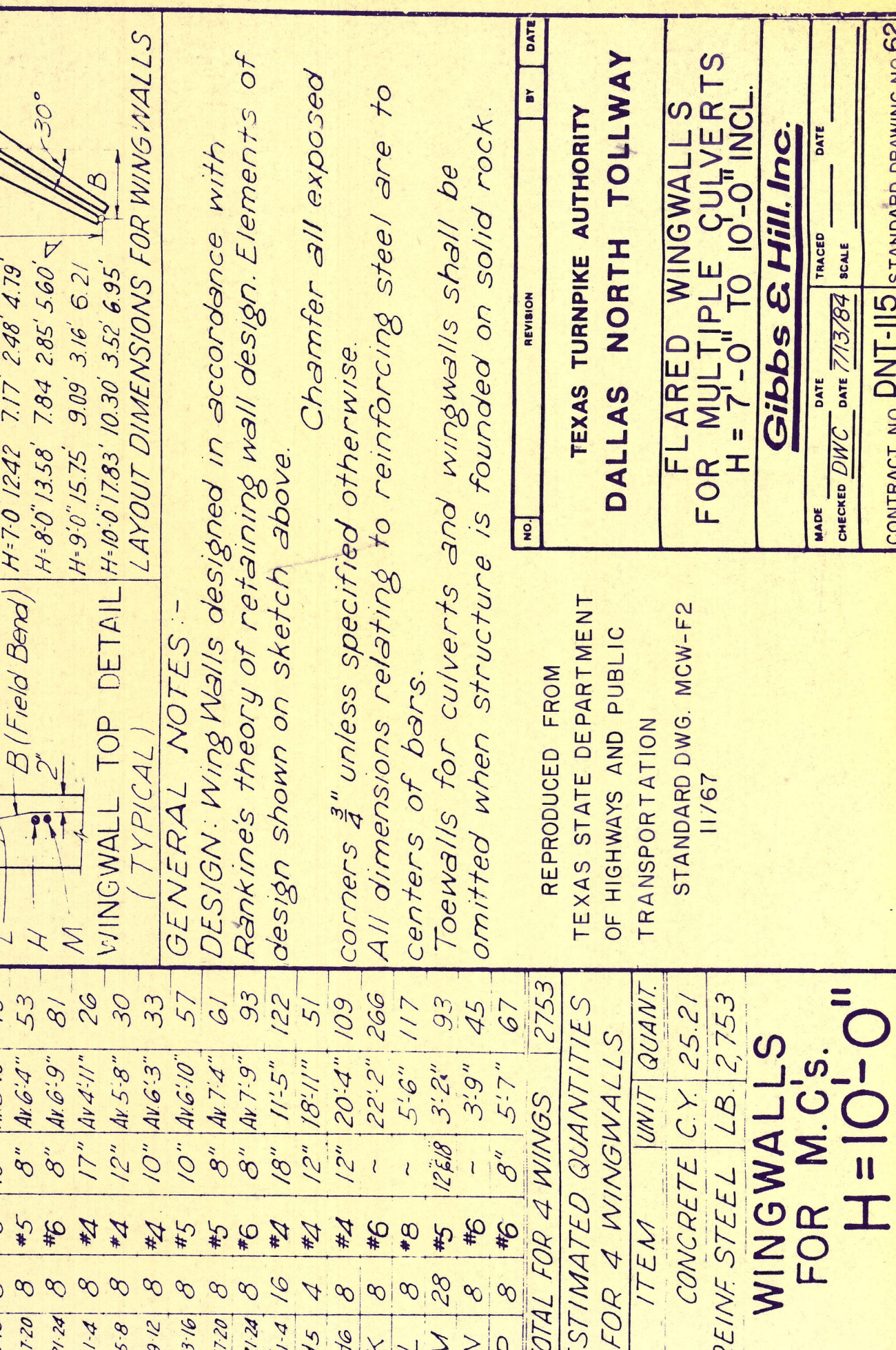
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WINGWALL SPAN	2 SPANS	3 SPANS	4 SPANS	5 SPANS	G SPANS
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H=13'-0"	23'-7 3/4"	37'-6"	50'-6"	61'-6"	74'-6"
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