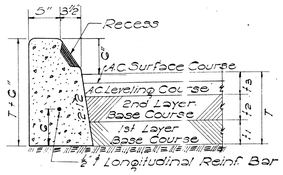
2/17/59

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S-0630(3)	1959	17	19

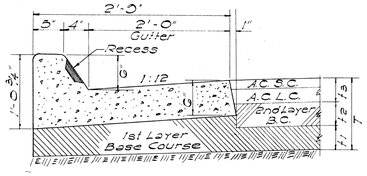
AUG. 1957



TYPE "A" & "B" CURB

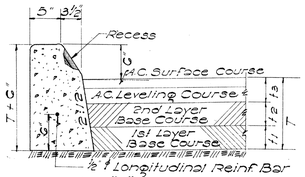
SCALE: 1" = 1'-0"

General Note Covering All Types of Curbs:
Occasionally curb rests on first layer of base course. See typical sections.



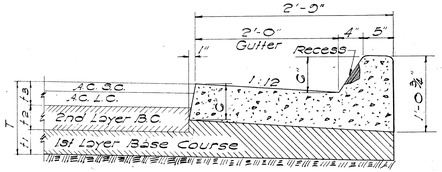
TYPE "AG" & "BG" CURB & GUTTER

SCALE: 1" = 1'-0"



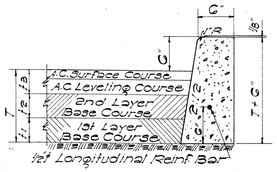
TYPE "C" CURB

SCALE: 1" = 1'-0"



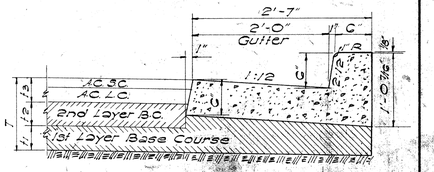
TYPE "CG" CURB & GUTTER

SCALE: 1" = 1'-0"



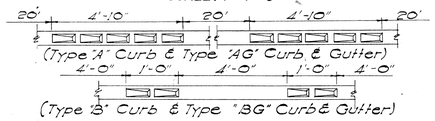
TYPE "D" CURB

SCALE: 1" = 1'-0"



TYPE "DG" CURB & GUTTER

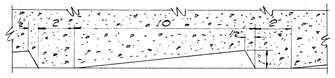
SCALE: 1" = 1'-0"



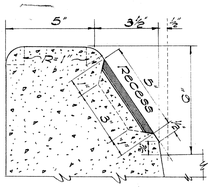
(Type 'A' Curb & Type 'AG' Curb & Gutter)

(Type 'B' Curb & Type 'BG' Curb & Gutter)

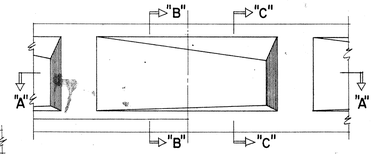
TYPE AND SPACING OF RECESSES



SECTION "A-A"

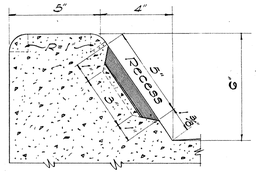


SECTION "B-B"
TYPE "A" & "B" CURB

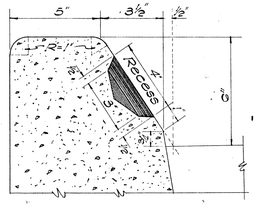


ELEVATION

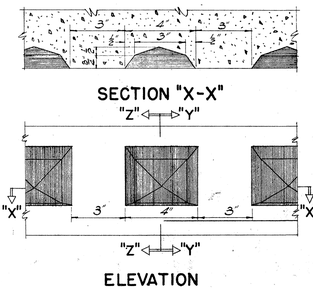
SCALE: 3" = 1'-0"



SECTION "C-C"
TYPE "AG" & "BG" CURB

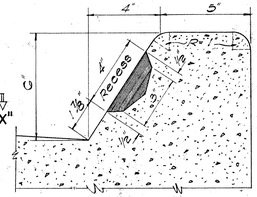


SECTION "Y-Y"
TYPE "C" CURB



ELEVATION

SCALE: 3" = 1'-0"

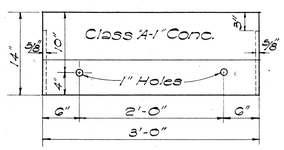


SECTION "Z-Z"
TYPE "CG" CURB

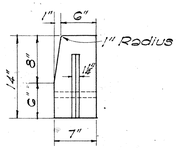
SECTION "X-X"

NOTES:
1.) Types 'AG', 'BG', 'CG', 'DG' and 'EG' Concrete Curbs and Gutters are to be poured monolithically.
2) Types 'A', 'B' and 'C' Curbs and Types 'AG' 'BG' and 'CG' Curbs and Gutters occur at Median Strips and Traffic Islands.
3) Shaded area in Curbs are to be painted with an approved white lacquer. (One Coat)
4) All Conc. Curbs and Gutters shown herein are to be of Class 'A-1' Conc. and Cast in Place.

DETAILS OF CAST-IN-PLACE CONC. CURBS AND GUTTERS



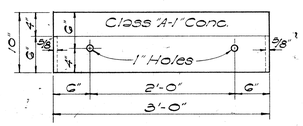
FRONT ELEV.



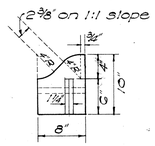
END ELEV.

PRECAST CONC. CURB

SCALE: 1" = 1'-0"



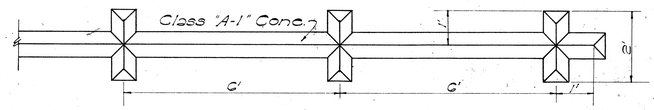
FRONT ELEV.



END ELEV.

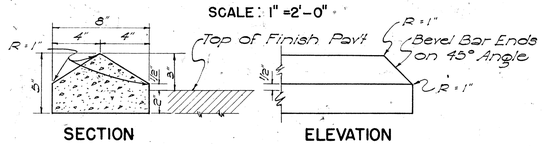
PRECAST CONC. ROLL CURB

SCALE: 1" = 1'-0"



PLAN

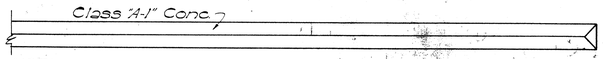
SCALE: 1" = 2'-0"



SECTION ELEVATION

RAISED TRAFFIC BARS

SCALE: 1" = 6"

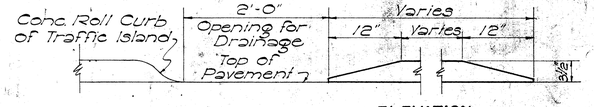


PLAN

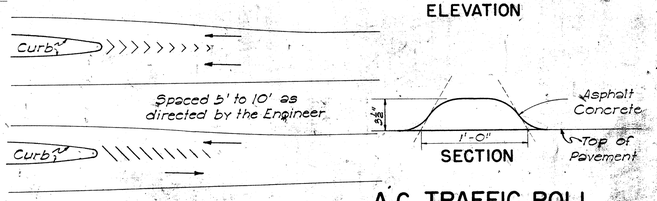
NOTE:
Section and Elevation for Jiggle Bars are same as the Traffic Bars.

RAISED JIGGLE BARS

SCALE: 1" = 2'-0"



ELEVATION

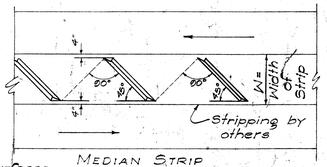


SECTION

A.C. TRAFFIC ROLL

NOT TO SCALE

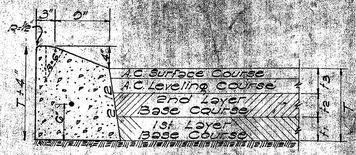
NOTE:
Paint all exposed surfaces of bars with beaded white traffic lacquer.



MEDIAN STRIP

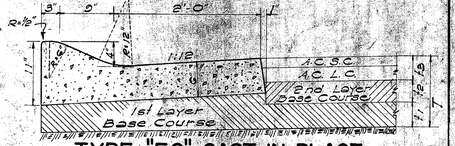
LAYOUT OF JIGGLE BARS

NOT TO SCALE



TYPE "E" CAST-IN-PLACE CONCRETE CURB

SCALE: 1" = 1'-0"



TYPE "EG" CAST-IN-PLACE CONC. CURB & GUTTER

SCALE: 1" = 1'-0"

APPROVED: DATE Aug. 26, 1959

STATE HIGHWAY ENGINEER

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
STANDARD DETAILS
CONCRETE CURBS, CONCRETE CURBS & GUTTERS
SCALES AS NOTED
SHEET Nº OF SHEETS

17

ORIGINAL PLAN | NOTE BOOK No.

SURVEY PLOTTED BY
DESIGNED BY
DRAWN BY L. C. Saito
TRACED BY
QUANTITIES BY
QUANTITIES CHECKED BY
CHECKED BY
DATE

"E" and "EG" Curbs have been revised 7-26-57

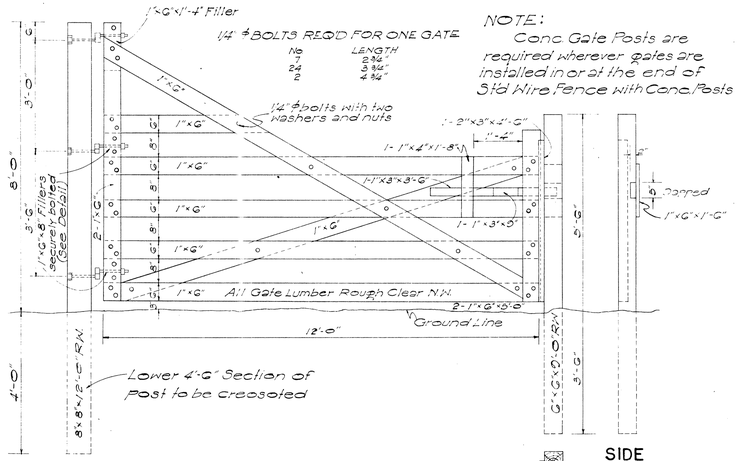
2/17/59

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	S-0630(3)	1959	18	19

AUG. 1957

DETAIL OF CATTLE GATE

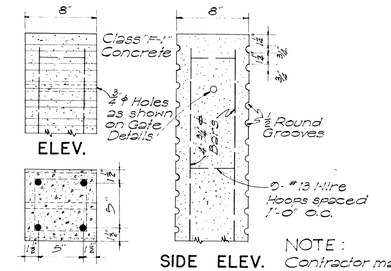
Scale: 1/2" = 1'-0"



PLAN SECT. SIDE ELEV.

CONC. GATE POST

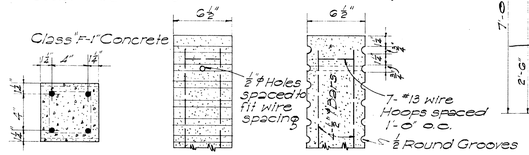
Scale: 1-1/2" = 1'-0"



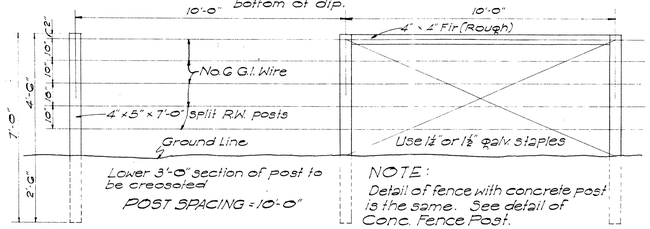
NOTE: Contractor may either cast holes for fastening fence wire or cast post with ¾" x ½ round grooves on 2 sides.

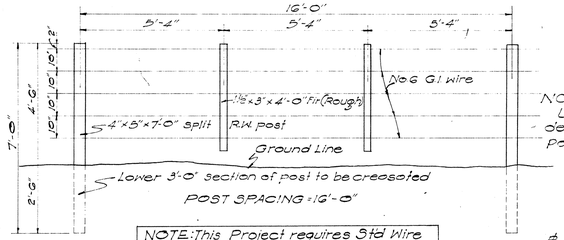
CONC. FENCE POST

Scale: 1-1/2" = 1'-0"



Note: Fence must be anchored against pull at least every 500ft and also at top of rise and bottom of dip.





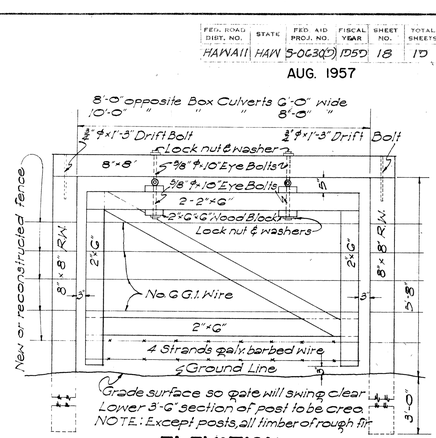
NOTE: This Project requires Std Wire Fence with ft. post spacing (If spacing is not indicated above use 10ft)

DETAILS OF STANDARD WIRE FENCE WITH WOOD POSTS

Scale: 3/8" = 1'-0"

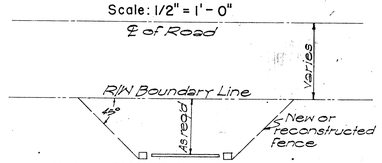
℄ Position in relation to ℄ in front of each separate property must be secured from the Engineer.

Note to Engineer: Fence must be on Road R/W to participate in Federal Aid. Consult office if uncertain what to do.



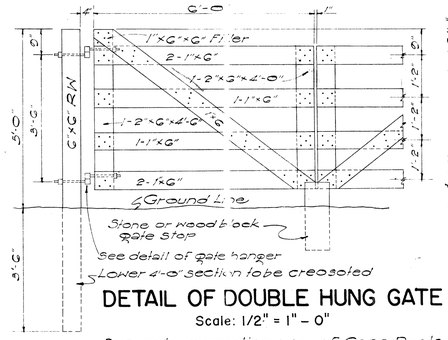
ELEVATION

Scale: 1/2" = 1'-0"



LAYOUT SHOWING HURDLE PLACED BELOW CULVERT IN A POSITION WHICH WILL BE CATTLE TIGHT

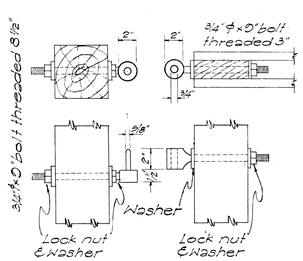
DETAILS OF HURDLE



DETAIL OF DOUBLE HUNG GATE

Scale: 1/2" = 1" - 0"

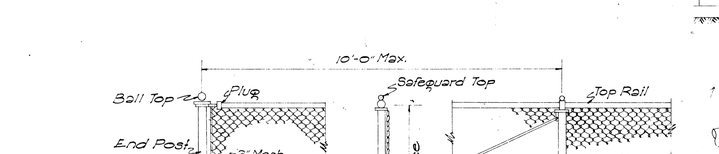
See note regarding use of Conc. Posts



DETAIL OF GATE HANGER

Scale: 1-1/2" = 1'-0"

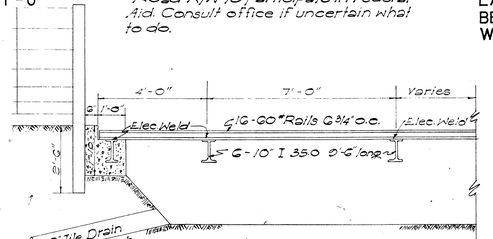
Note: Use ⅝" ϕ×11" bolts for Cattle Gate



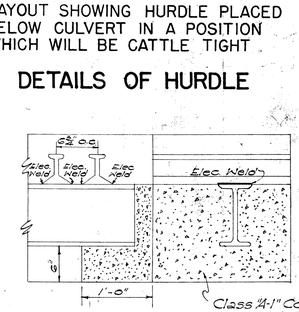
END POST ELEV. TYPICAL SECTION LINE POST ELEV.

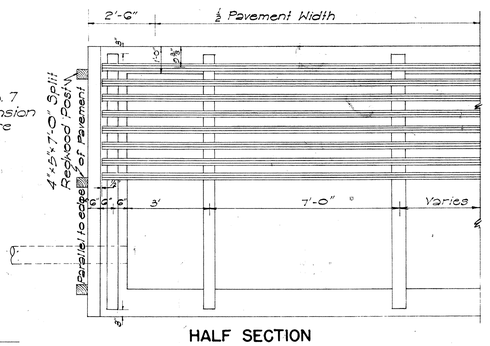
DETAIL OF CHAIN LINK FENCE

Scale: 1/2" = 1'-0"

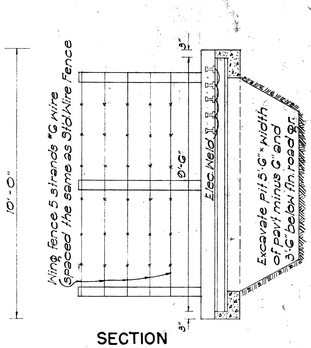


LONGITUDINAL SECTION





HALF SECTION



SECTION

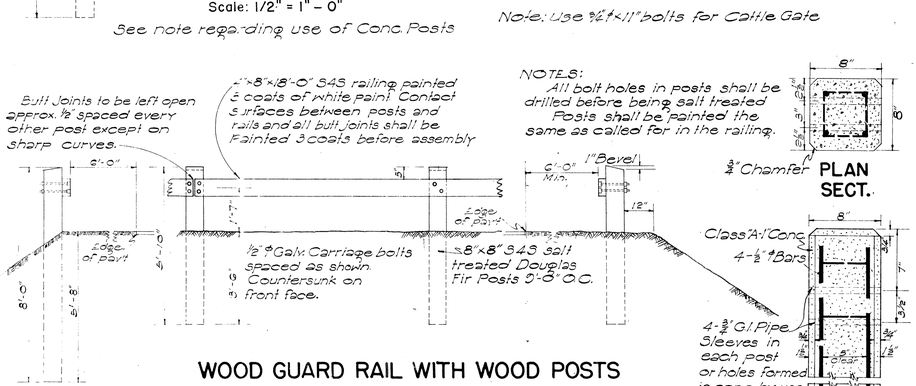
Fencing fence 5 strands ⅝" ϕ wire Spaced the same as Std Wire Fence

DETAIL OF CATTLE GUARD

Scale: 3/8" = 1'-0"

APPROVED: DATE: Aug. 26, 1959

STATE HIGHWAY ENGINEER



WOOD GUARD RAIL WITH WOOD POSTS

Scale: 3/8" = 1'-0"

NOTE: For Conc. Post see detail at right

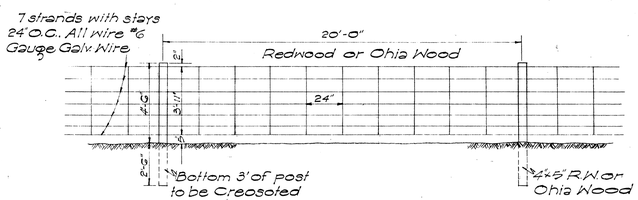
8"×8"×8'-0" S4S salt treated Douglas Fir or 8"×8"×8'-0" precast Concrete Posts shall be used where shoulders are less than 8'-0" wide.

GUIDE POSTS: Wood or Conc. Guide Posts are the same as those used for Wood Guard Rail spaced as shown on plans.

NOTE: All bolt holes in posts shall be drilled before being salt treated Posts shall be painted the same as called for in the railing.

DETAIL OF CONC. POST

Scale: 1-1/2" = 1'-0"



DETAIL OF WOVEN WIRE FENCE

Scale: 1/4" = 1'-0"

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

STANDARD DETAILS

FENCES, GATES, GUARD RAILS, GUIDE POSTS, CATTLE GUARD

SCALES AS NOTED

SHEET NO. OF SHEETS

ORIGINAL	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	TRACED BY L. Gaitero	
NOTE BOOK	QUANTITIES BY	
No.	CHECKED BY	

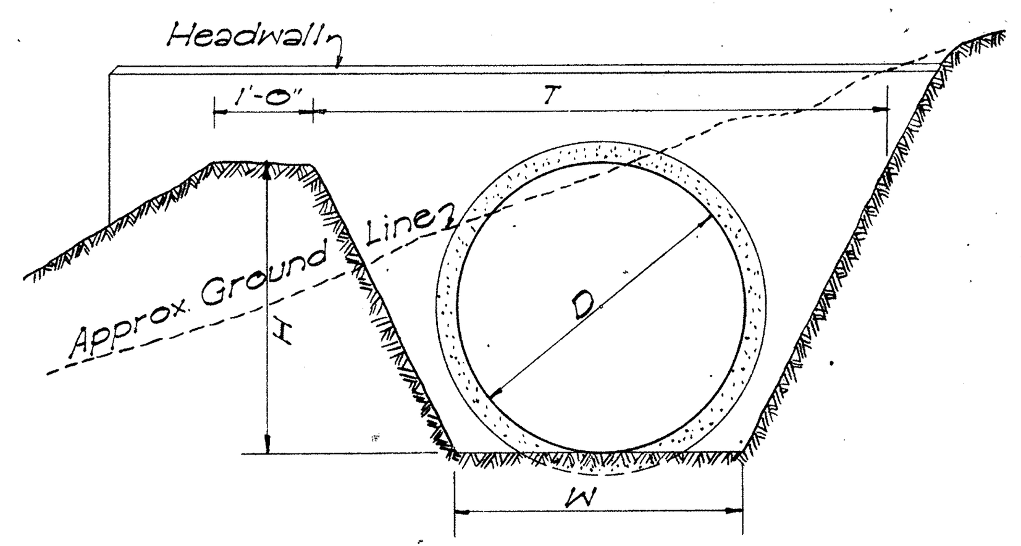
1S

2/17/59

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	5-0630(9)	1959	19	19

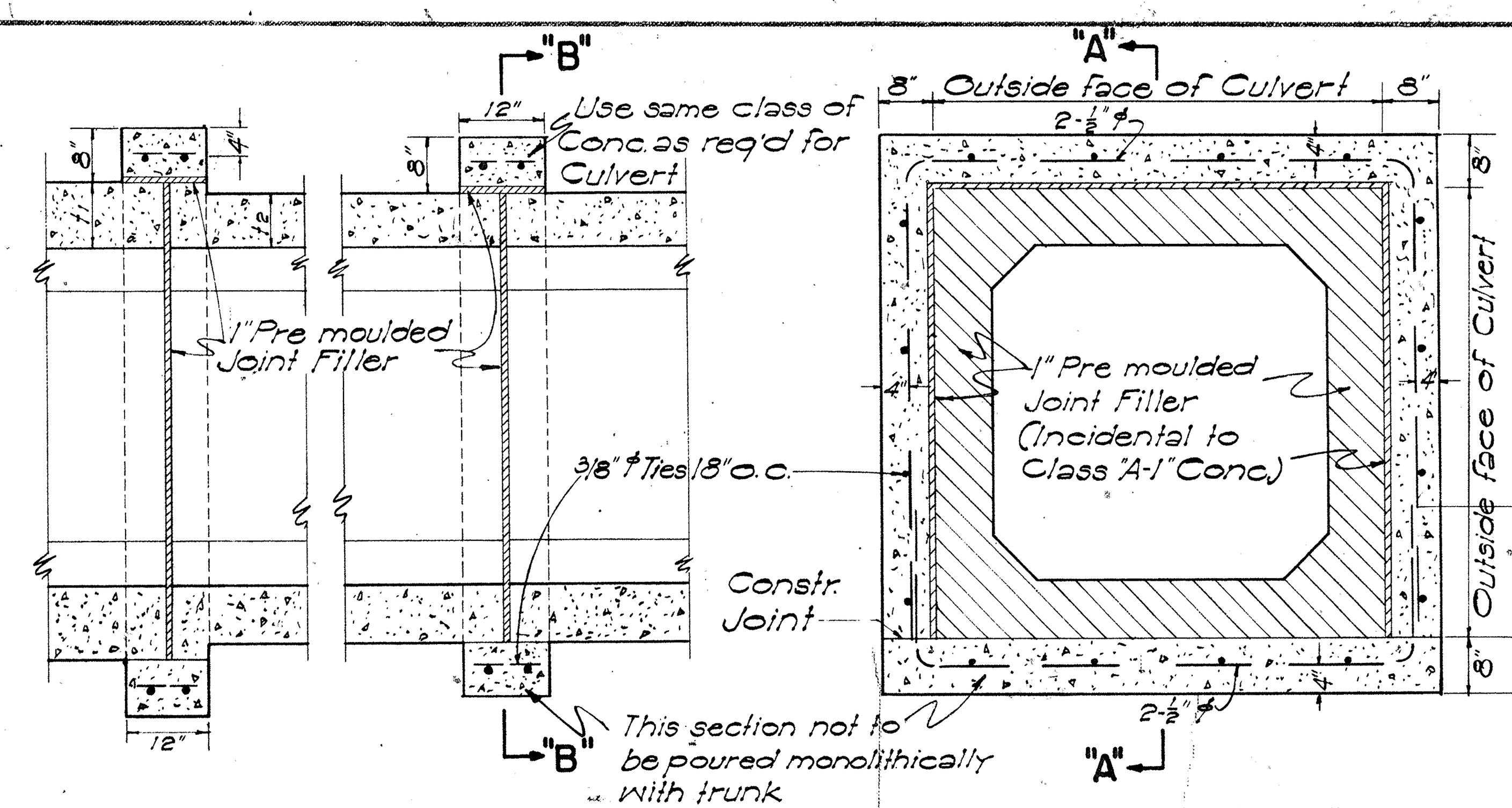
AUG. 1957

DATA FOR OUTLET DITCH			
D	W	H	T=W+H
18"	24"	2'-0"	4'-0"
24"	30"	2'-0"	4'-6"
30"	30"	2'-6"	5'-0"
36"	36"	3'-0"	6'-0"



DETAIL OF OUTLET DITCH

Scale: 1/2" = 1'-0"



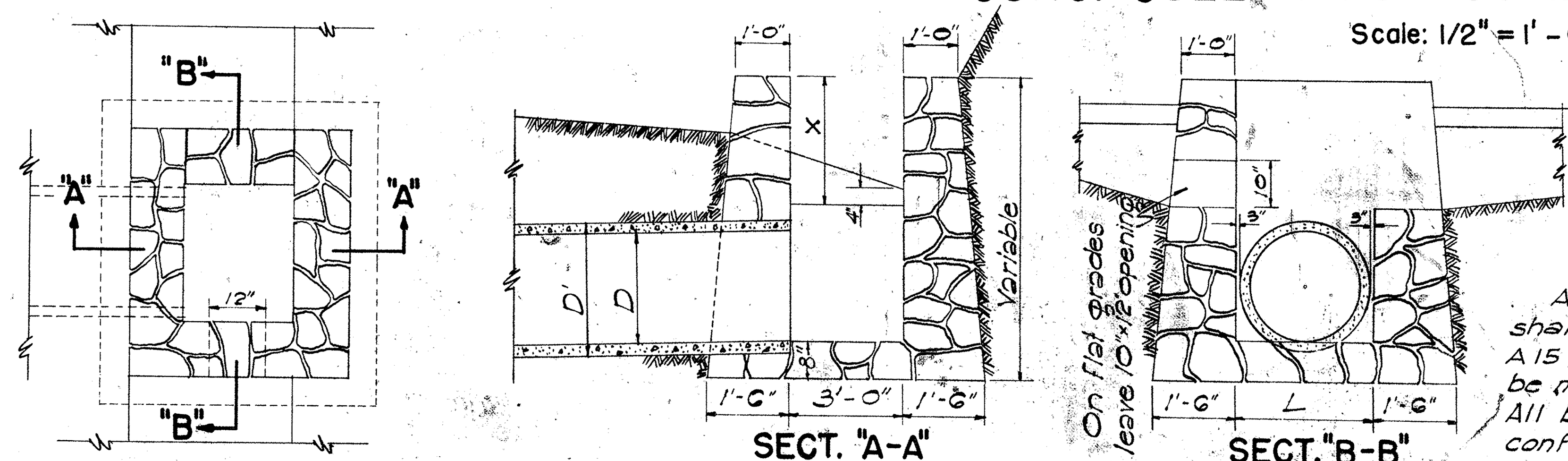
SECTION "A-A" SECTION "B-B"

CONC. COLLAR FOR CONC. BOX CULVERT

Scale: 1/2" = 1'-0"

DATA FOR MASONRY DROP INTAKE				Where Variables Equal
D'	D	L=D'+6"	Cu.Yds.	
23"	18"	2'-5"	3.02	4'-6"
30"	24"	3'-0"	3.61	5'-0"
37"	30"	3'-7"	4.21	5'-6"
44"	36"	4'-2"	4.85	6'-0"

NOTE:
Dimension "X" is assumed as 2'-4" in figuring the above quantities.



SECT. "A-A" SECT. "B-B"

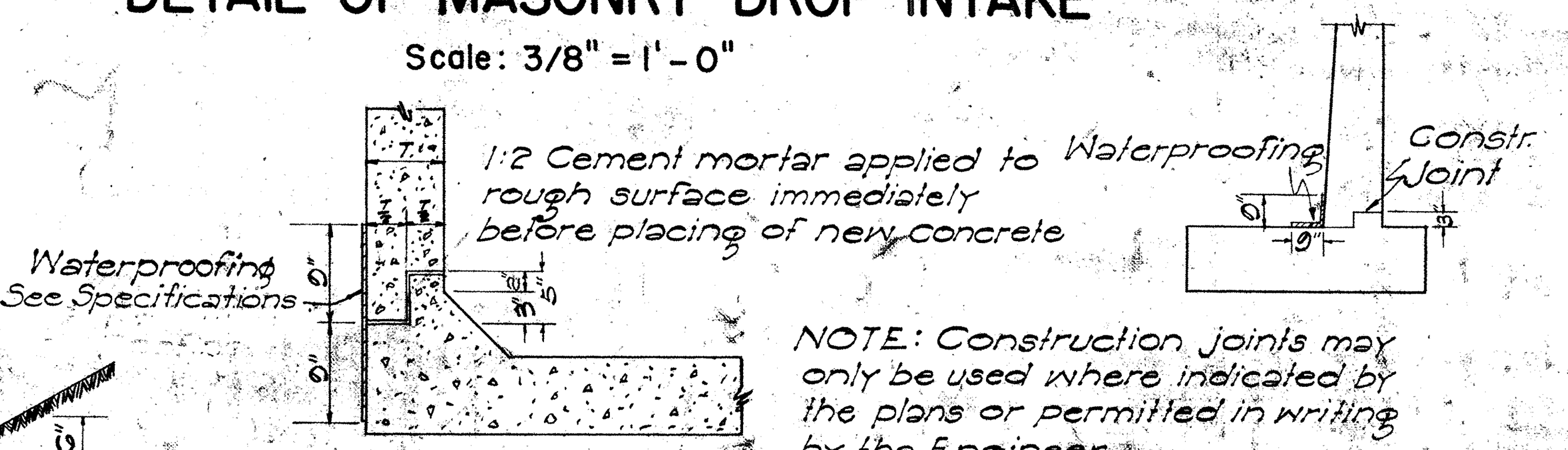
DETAIL OF MASONRY DROP INTAKE

Scale: 3/8" = 1'-0"

REINFORCING BARS

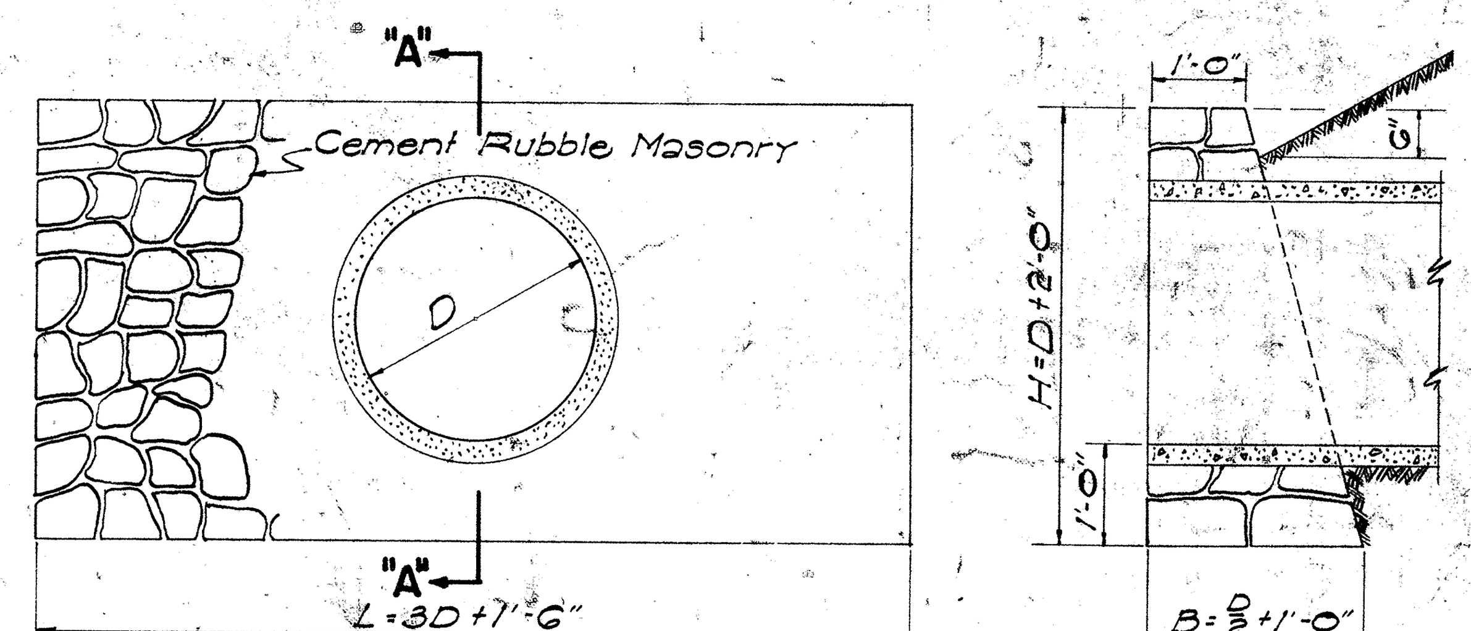
All reinforcing bars for concrete shall be Billet Steel bars, ASTM A15, intermediate grade. Steel shall be made by the open-hearth process. All bars shall be deformed type conforming to ASTM A-305.

DATA—MASONRY HEADWALL				Cast-in-Place Conc. Culv't	Conc. Pipe Culvert	Corrugated Pipe Culv't
D	H	B	L	Cu. Yds.	Cu. Yds.	Cu. Yds.
18"	3'-6"	1'-9"	6'-0"	0.85	0.95	0.93
24"	4'-0"	2'-0"	7'-6"	1.28	1.45	1.41
30"	4'-6"	2'-3"	9'-0"	1.83	2.06	2.00
36"	5'-0"	2'-6"	10'-6"	2.49	2.84	2.72



NOTE: Construction joints may only be used where indicated by the plans or permitted in writing by the Engineer.

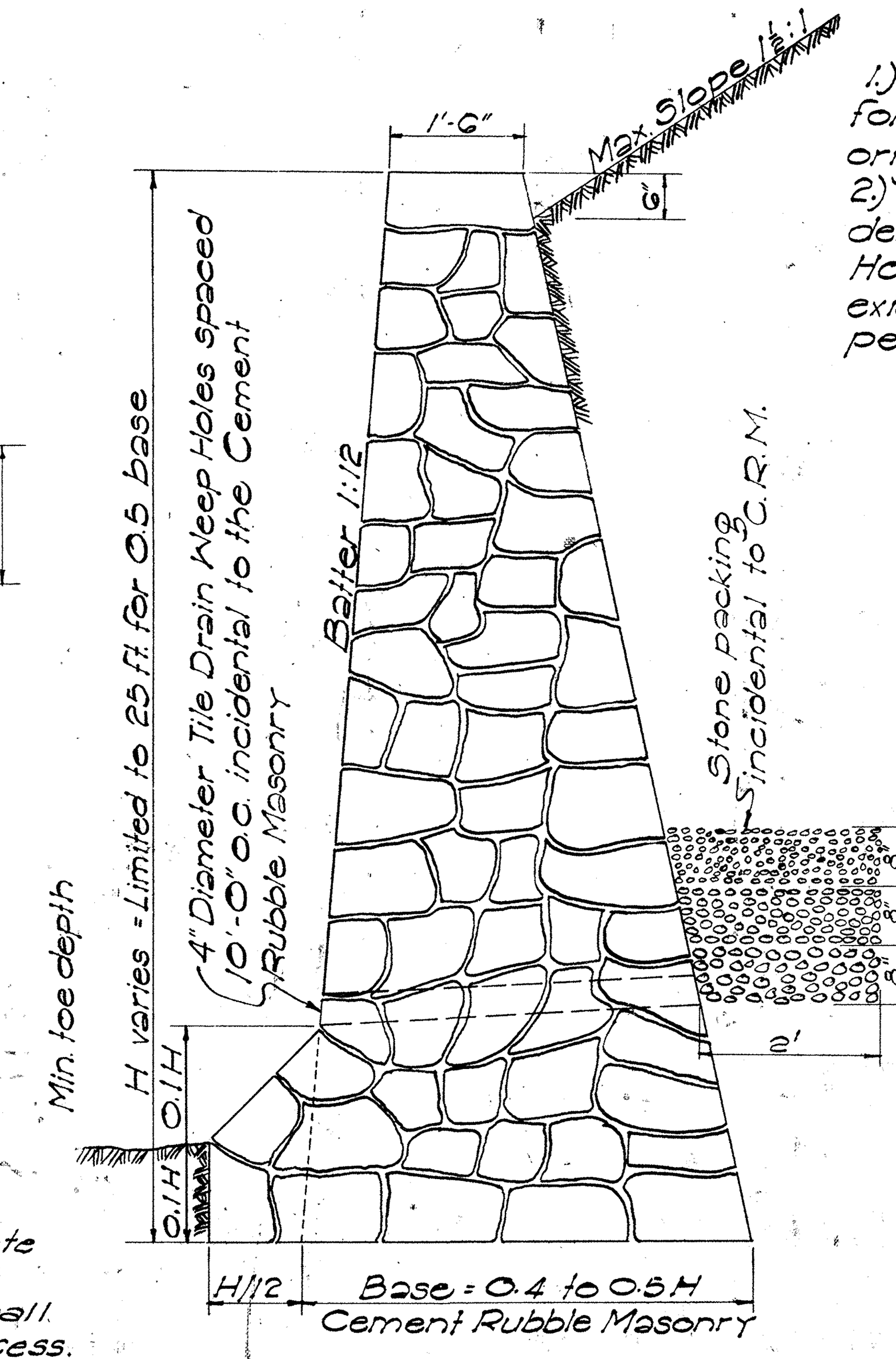
CONSTR. JOINT DETAILS



ELEVATION SECT. "A-A"

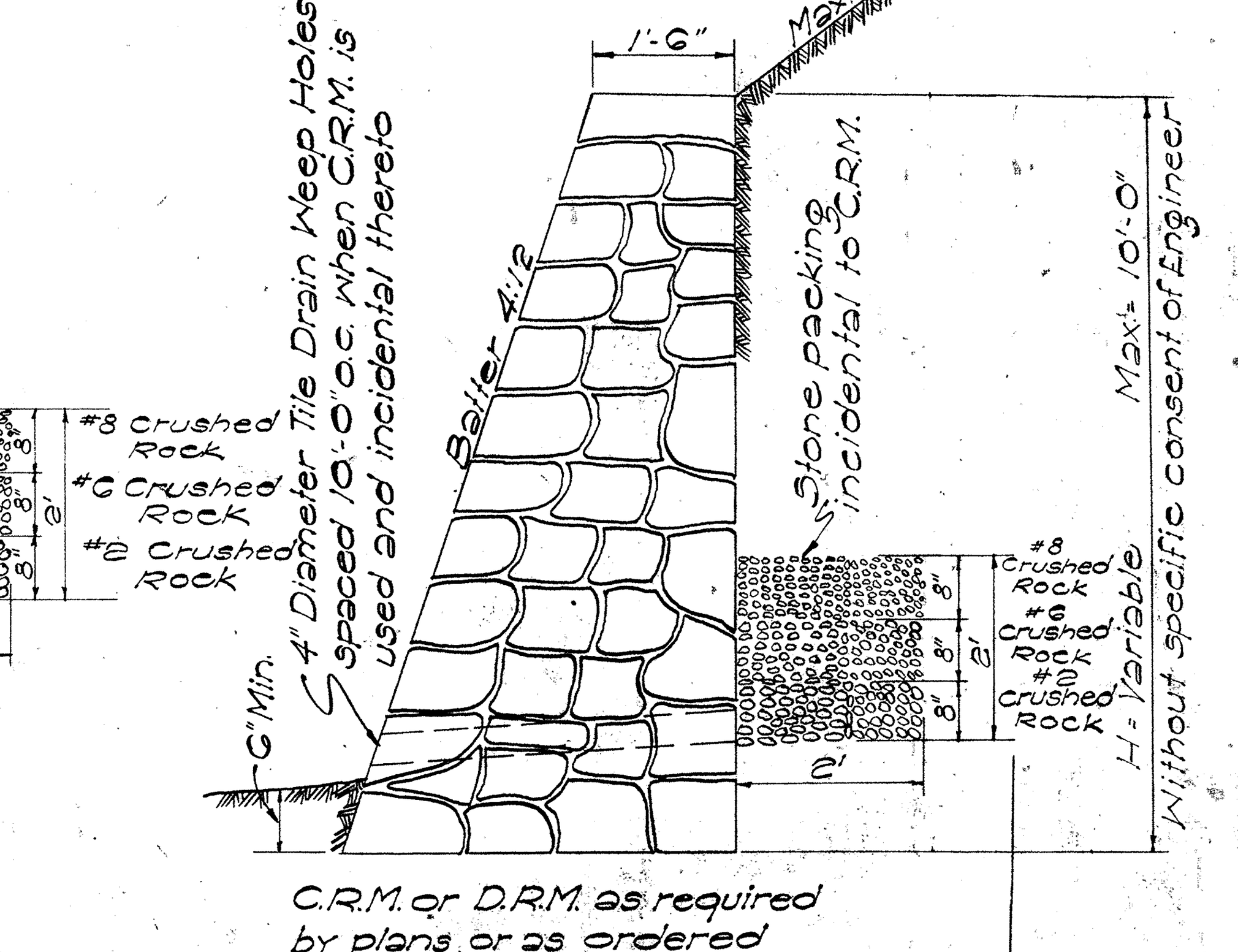
DETAIL OF MASONRY HEADWALL

Scale: 1/2" = 1'-0"



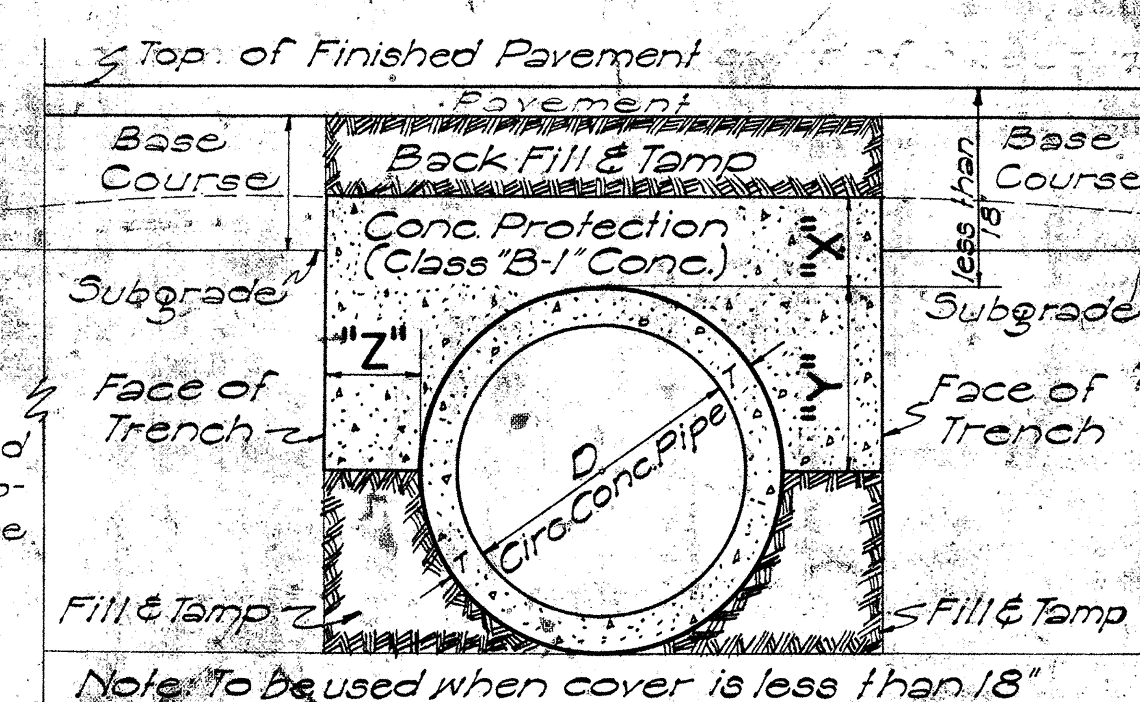
Note: To Resident Engineer
1.) Consider economy of reinf. conc. for high retaining walls which did not originate on plan layout.
2.) Elevation of weep holes to be determined by Resident Engineer. Holes to be placed as close to the existing ground line as local conditions permit.

SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL



C.R.M. or D.R.M. as required by plans or as ordered

SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL



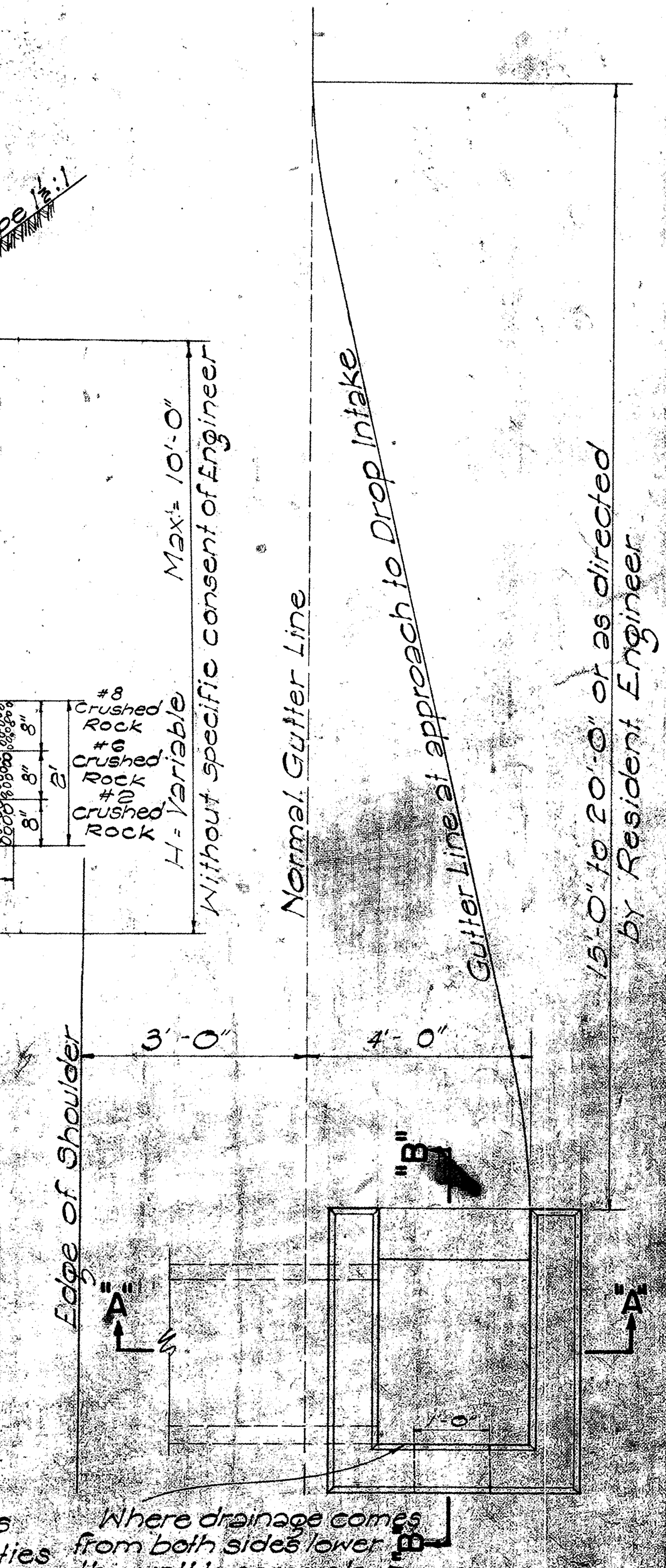
Note: To be used when cover is less than 18"

Note:
When subgrade is below top of jacket, it shall be fully compacted to this line and then re-excavated (struc. exc.) to proper subgrade. This surface shall be rolled again.

DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D	D/2 + T	Z must be from pipe to face of trench. Minimum = X. Maximum pay quantity will be Z = 12"
7" " 24" D		
8" " 30" D		
9" " 36" D		
10" " 42" D		
11" " 48" D		
12" " 54" D		

SECT. OF CULVERT WITH CONC. PROTECTION

Scale: 1" = 1'-0"



DATA—CONC. DROP INTAKE					Where Variable Equals
D'	D	L=D'+6"	S	Cu.Yds.	
23"	18"	2'-5"	8"	1.41	4'-6"
30"	24"	3'-0"	8"	1.72	5'-0"
37"	30"	3'-7"	9"	2.32	5'-6"
44"	36"	4'-2"	9"	2.73	6'-0"
51"	42"	4'-9"	10"	3.54	6'-6"
58"	48"	5'-4"	10"	4.01	7'-0"

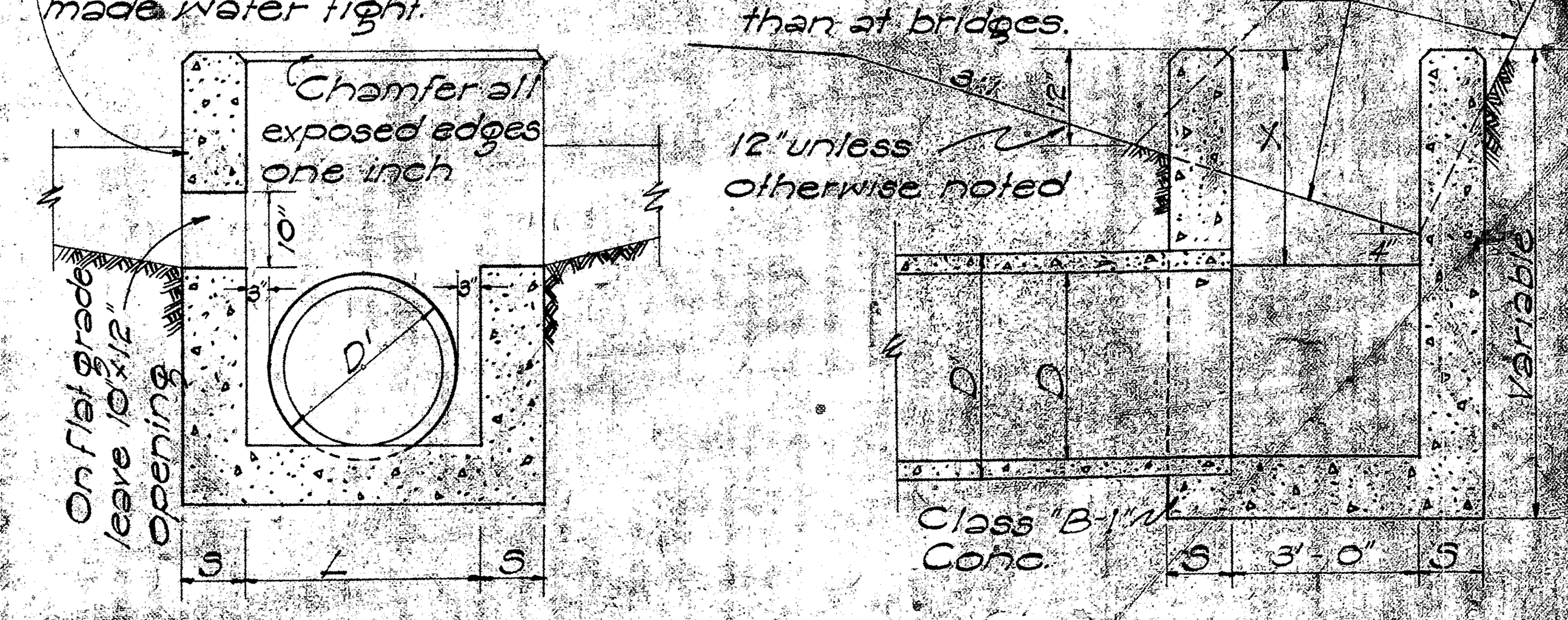
Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

Note: This type of structure shall also be used for the Drop Intakes of Syphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.

Where drainage comes from both sides lower this wall to same elevation as shown for opposite wall.

Excavate recess in roadway excavation slope for inlet to dimensions and form designated by Engineer. This is "Unclassified Excavation."

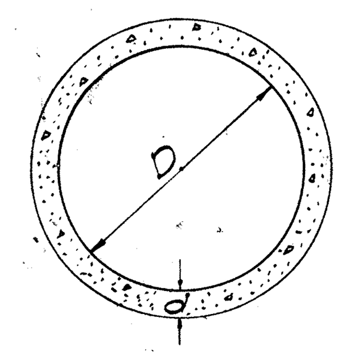
Top limits of structure excavation other than at bridges.



SECTION "B-B" SECTION "A-A"

DETAIL OF CONCRETE DROP INTAKE

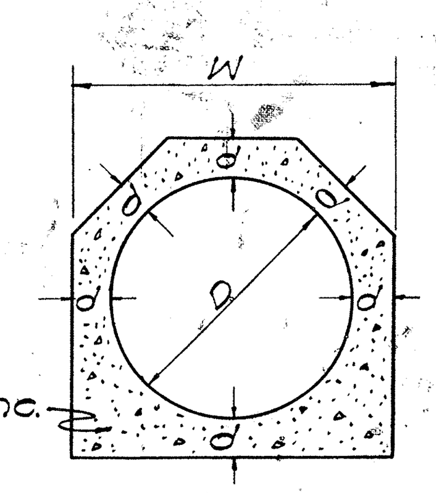
Scale: 1/2" = 1'-0"



SECTION

CONC. PIPE CULVERT

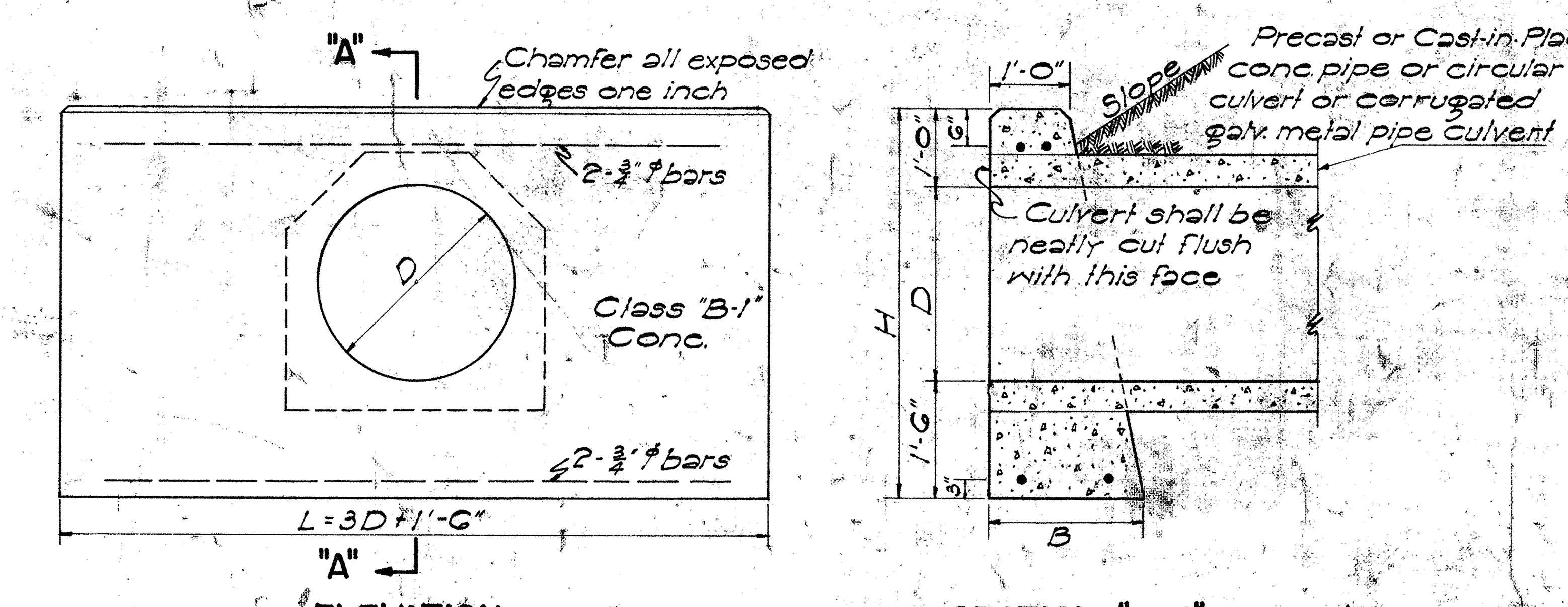
NOTE:
Thickness "d", reinforcing and Concrete used, are to conform with the approved design as provided by the Specifications.



SECTION

DATA—CAST-IN-PLACE CONC. CULV'T			
D	d	W	Cu.Yd. per ft.
18"	4"	2'-2"	0.11
24"	4½"	2'-9"	0.14
30"	5"	3'-4"	0.19
36"	5½"	3'-11"	0.26

CAST-IN-PLACE CONC. CULVERT



ELEVATION SECTION "A-A"

DATA FOR CONC. HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Steel For One Headwall			
D	B	L	H	Cu.Yd.	Cu.Yd.	No. of Bars	Size	Length	Lbs.
18"	1'-6"	6'-0"	4'-0"	0.92	1.00	4	3/4" ϕ	5'-6"	33
24"	1'-6"	7'-6"	4'-6"	1.25	1.38	4	3/4" ϕ	7'-0"	42
30"	2'-0"	9'-0"	5'-0"	1.95	2.17	4	3/4" ϕ	8'-6"	51
36"	2'-0"	10'-6"	5'-6"	2.45	2.74	4	3/4" ϕ	10'-0"	60
42"	2'-6"	12'-0"	6'-0		3.87	4	3/4" ϕ	11'-6"	69
48"	2'-6"	13'-6"	6'-6"		4.66	4	3/4" ϕ	13'-0"	78

DETAIL OF CONCRETE HEADWALL

Scale: 1/2" = 1'-0"

APPROVED: DATE Aug. 26, 1959
STATE HIGHWAY ENGINEER

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
STANDARD DETAILS
DROP INTAKES, RETAINING WALLS, HEADWALLS, CONSTRUCTION JOINTS
SCALES AS NOTED
SHEET No. OF SHEETS

19