

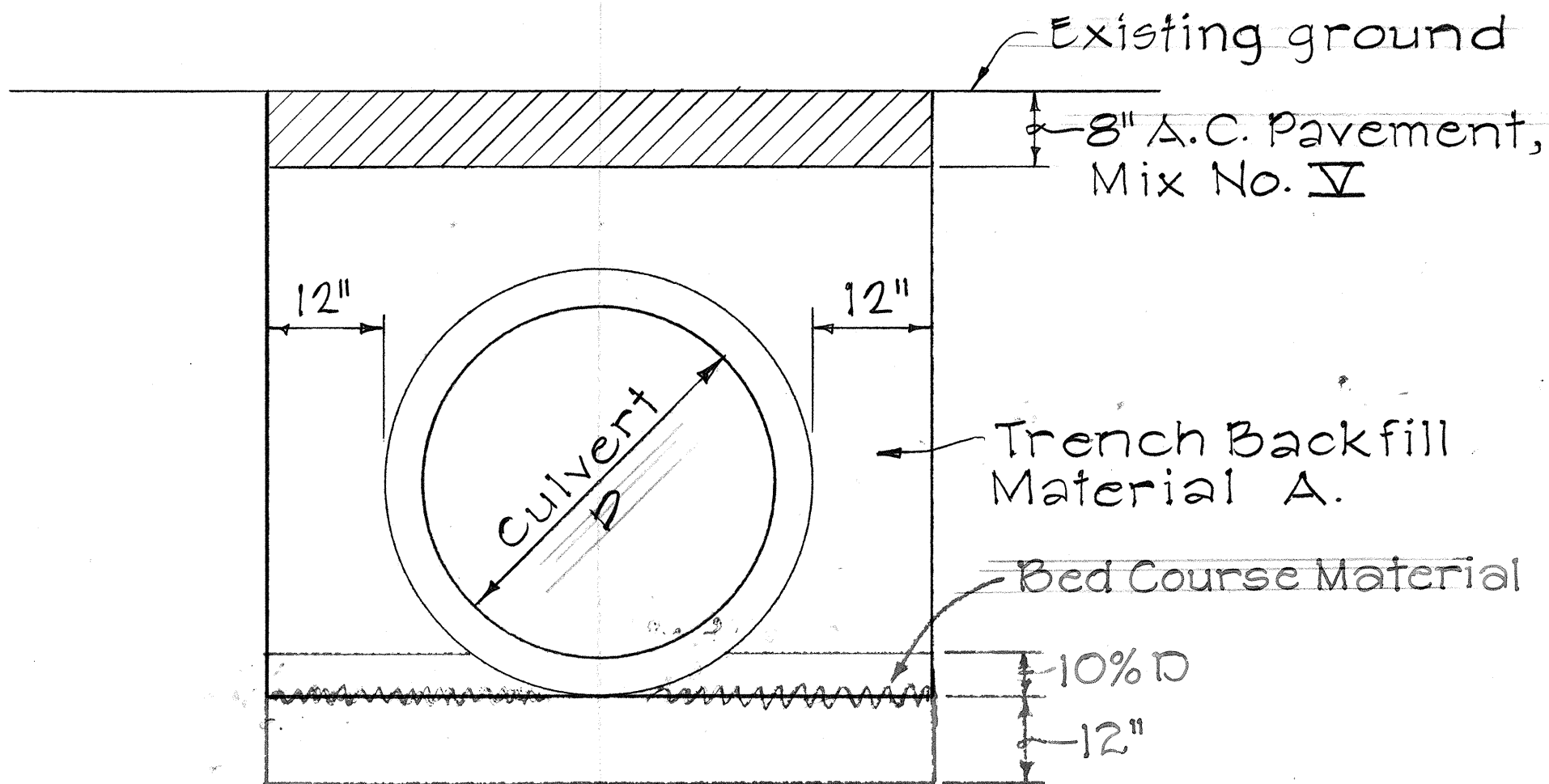
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	260A-01-82 260A-01-83M	1982	21	36

CULVERT REPLACEMENT TABLE

No.	STATION	DRAINAGE STRUCTURES	DETAIL SHT. NO.
1	165+13	36" RCP, Cl. III Standard CRM Headwall 1 ea. Type A CRM Headwall 1 ea.	22
2	170+00	24" RCP, Cl. IV Standard CRM Headwall 1 ea. Concrete Collar 1 ea.	22
3	176+66	24" RCP, Cl. III Standard CRM Headwall 1 ea. Concrete Collar 1 ea.	23
4	281+27	30" RCP, Cl. III Standard CRM Headwall 2 ea. Concrete Jacket	23
5	307+92	18" RCP, Cl. III Standard CRM Headwall 2 ea. Concrete Jacket	24
6	358+38	30" RCP, Cl. IV Standard CRM Headwall 1 ea. Type A CRM Headwall 1 ea.	24
7	403+45	18" RCP, Cl. IV Type A CRM Headwall 1 ea. Concrete Collar 1 ea.	25
8	416+56	30" RCP, Cl. III Type A CRM Headwall 2 ea.	25
9	589+10	24" RCP, Cl. III Standard CRM Headwall 1 ea.	26
C.C.O.	256+89	18" RCP, Cl. IV CRM Drop Inlet 1 ea.	26 S-1
	263+96	18" RCP, Cl. III CRM Drop Inlet 1 ea. Type A CRM Outlet Headwall 1 ea.	26 S-1
	285+55	18" RCP, Cl. IV CRM Drop Inlet 1 ea. Type A CRM Outlet Headwall 1 ea.	26 S-1
	398+68	24" RCP, Cl. III Std. Inlet Headwall 1 ea. Concrete Collar 1 ea.	
FD#5	436+15	18" RCP, Cl. III CRM Drop Inlet 1 ea. Std. CRM Outlet Headwall 1 ea.	26 S-2
	423+00	18" RCP, Cl. III Std. CRM Inlet Headwall 1 ea. CRM Outlet Headwall 1 ea.	26 S-1

GENERAL NOTES:

- Inverts shall be same as existing, as shown on plans or as directed by the Engineer.
- Culvert alignment shall be same as existing or as directed by the Engineer.
- Top Elevation of the Type A CRM Headwall shall conform to existing drywall, as shown on plans, or as directed by Engineer.
- The entrance and outlet condition of the culvert shall be graded to the satisfaction of the Engineer. Above work shall be considered incidental to the various contract items.
- Reinforced concrete collar shall be considered incidental to the culvert.
- Demolishing and removal of existing culverts and structures shall not be paid for separately but shall be considered incidental to the various contract items.



TRENCH DETAIL FOR CULVERTS
Scale: 3/4" = 1'-0"

NOTE: Payment for above work shall be considered incidental to the various contract items.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

DRAINAGE DETAILS

CULVERT REPLACEMENT TABLE,

GENERAL NOTES & TRENCH DETAIL

HANA HIGHWAY IMPROVEMENTS

AND RESURFACING

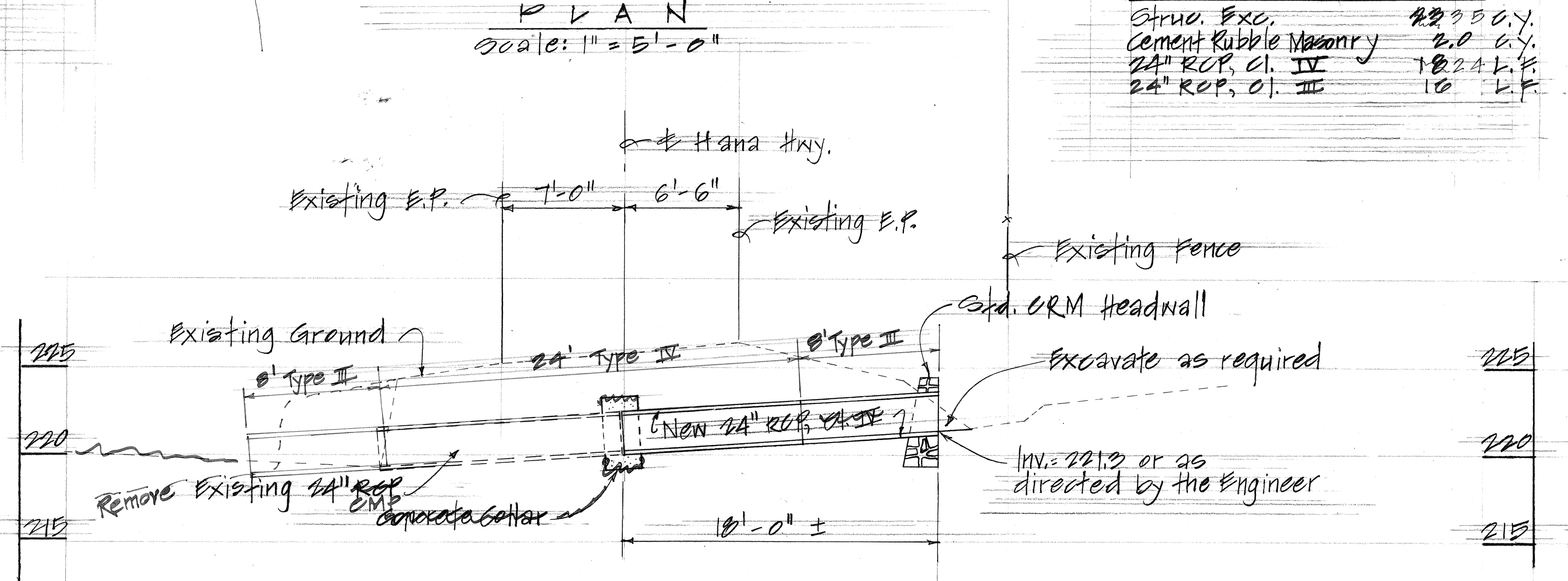
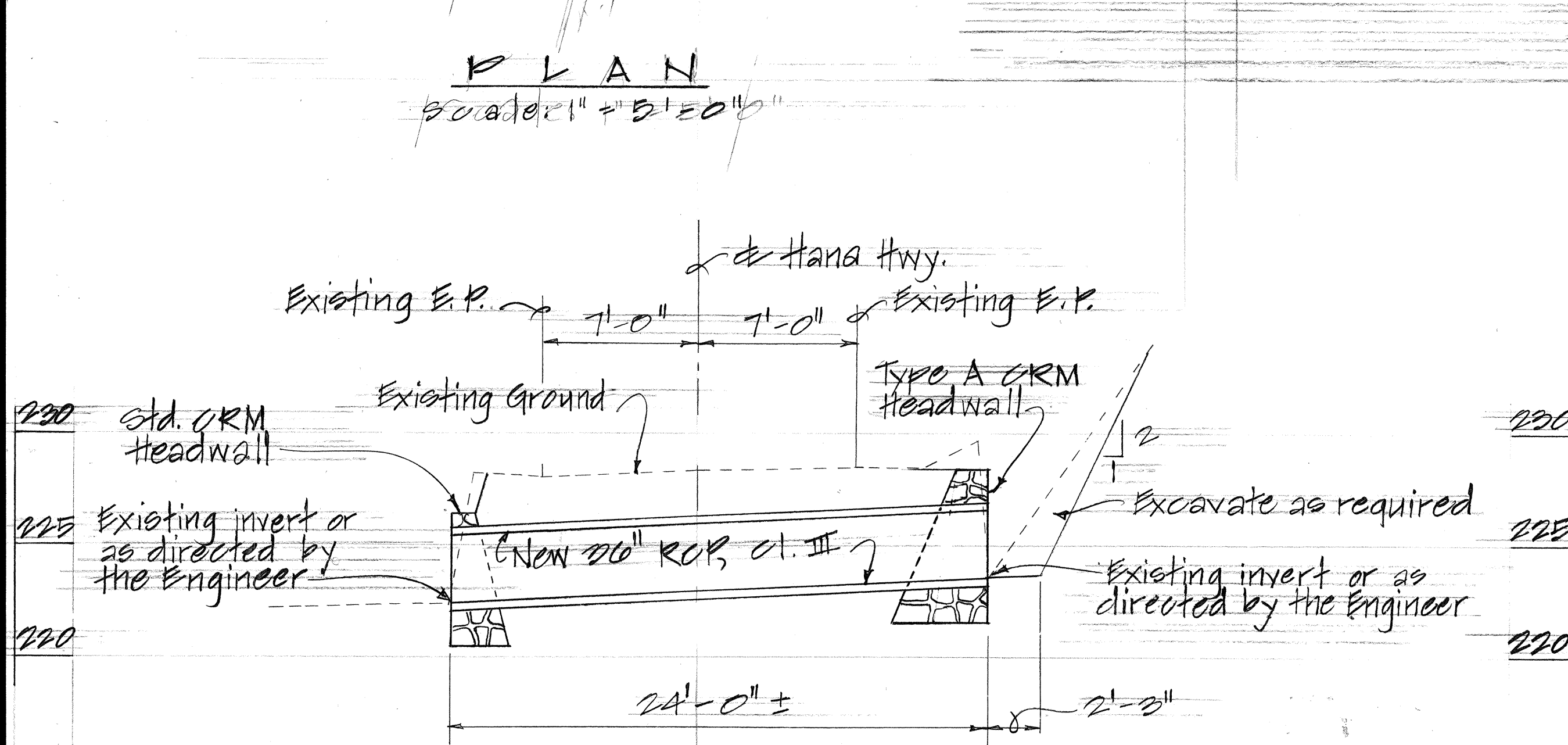
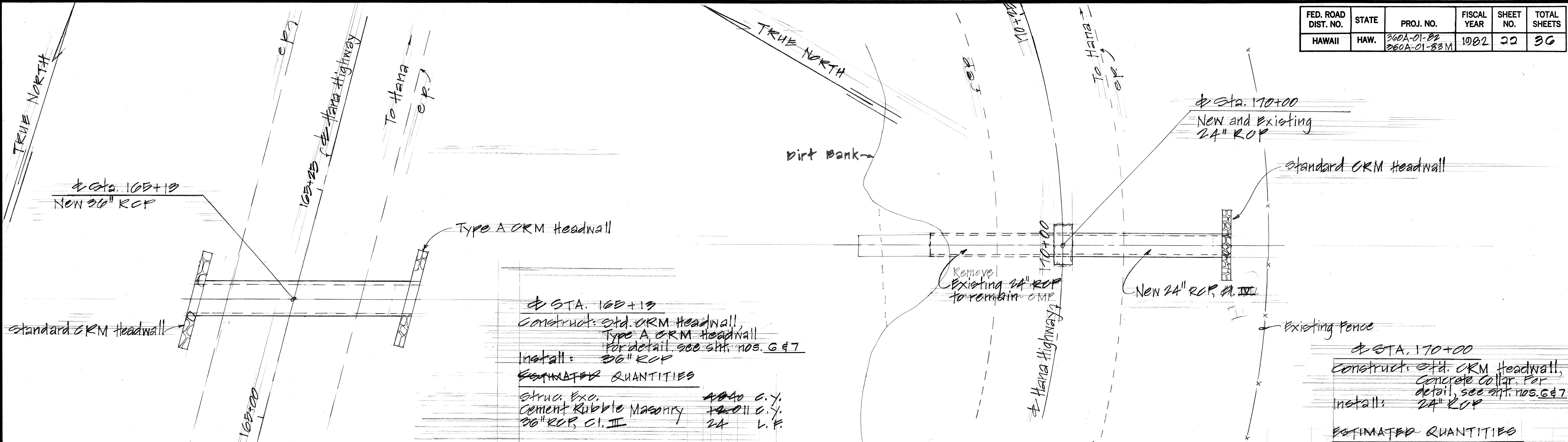
PROJECT NOS. 260A-01-82 AND 260A-01-83M

Scale: As Shown Date: May, 1982

SHEET NO. 1 OF 7 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
DESIGNED BY	TRACED BY	
QUANTITIES BY	CHECKED BY	
NO.		

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 260A-01-83 M	1982	22	36

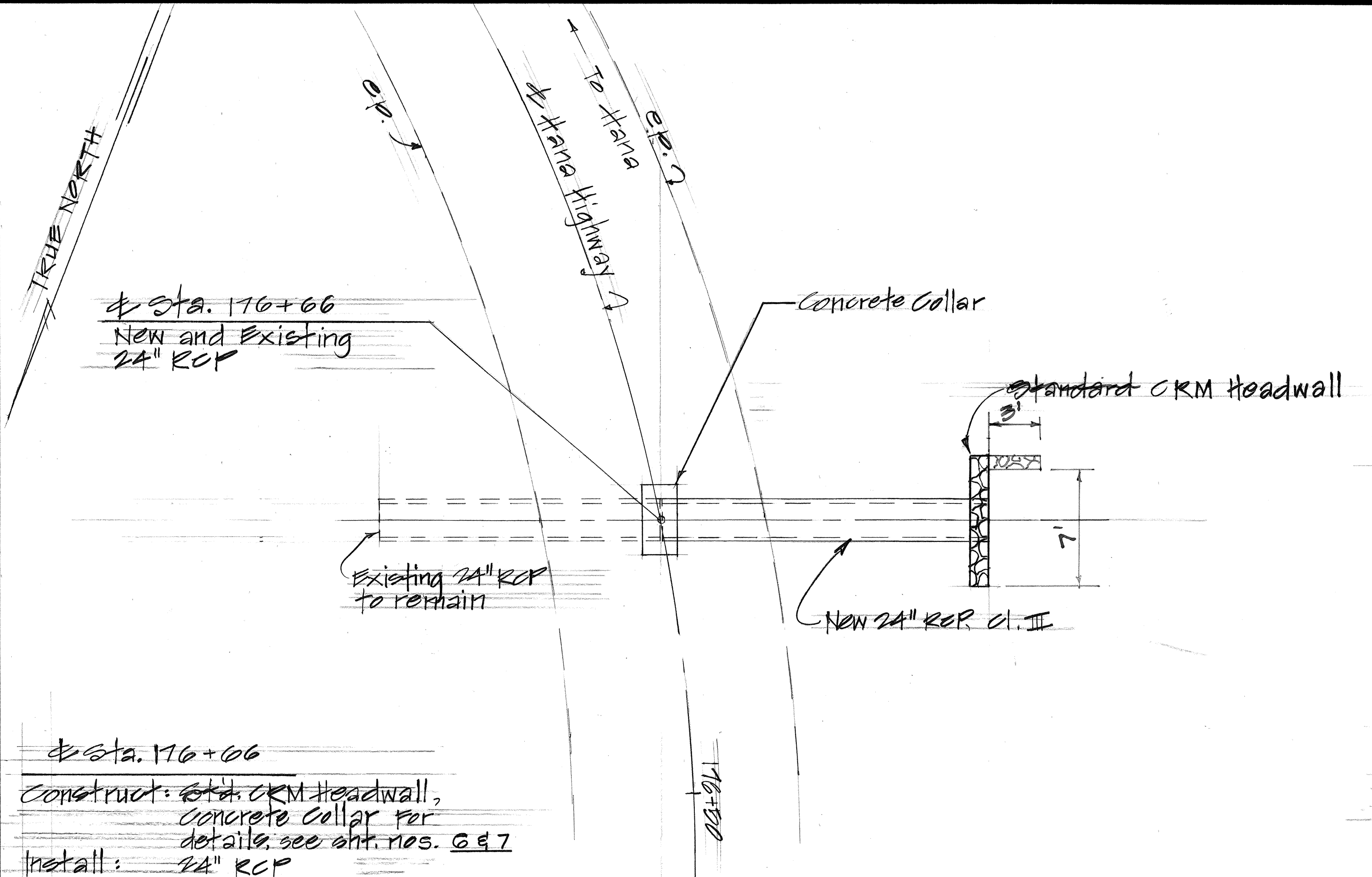


DATE	_____
DESIGNED BY	_____
DRAWN BY	_____
CHECKED BY	_____
NOTED BY	_____
QUANTITIES BY	_____
NO.	_____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN AND PROFILE FOR
CULVERTS AT STA. 165+13 AND 170+00
HANA HIGHWAY IMPROVEMENTS
AND RESURFACING
PROJECT Nos. 360A-01-82 AND 360A-01-83 M
Scale: As Shown Date: May, 1982
SHEET NO. 22 OF 7 SHEETS

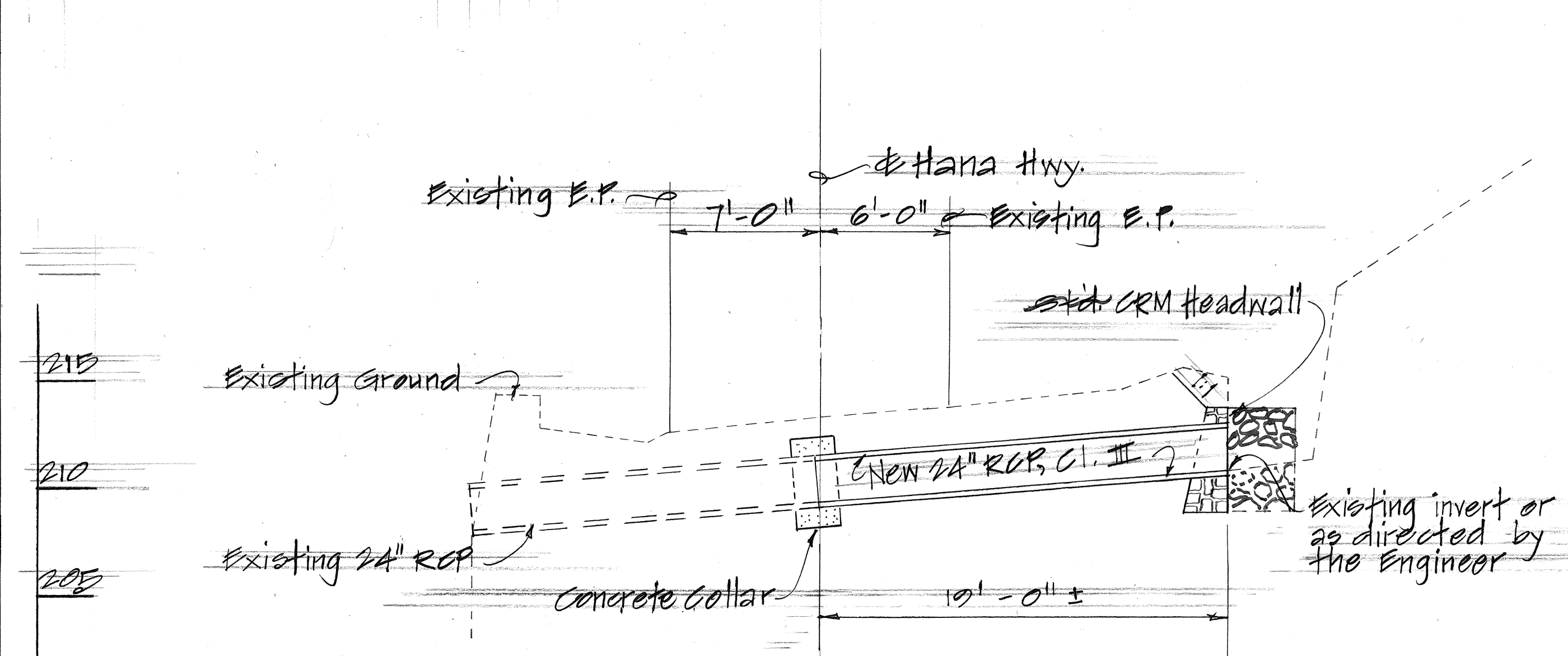
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-02 360A-01-03 M	1982	23	36



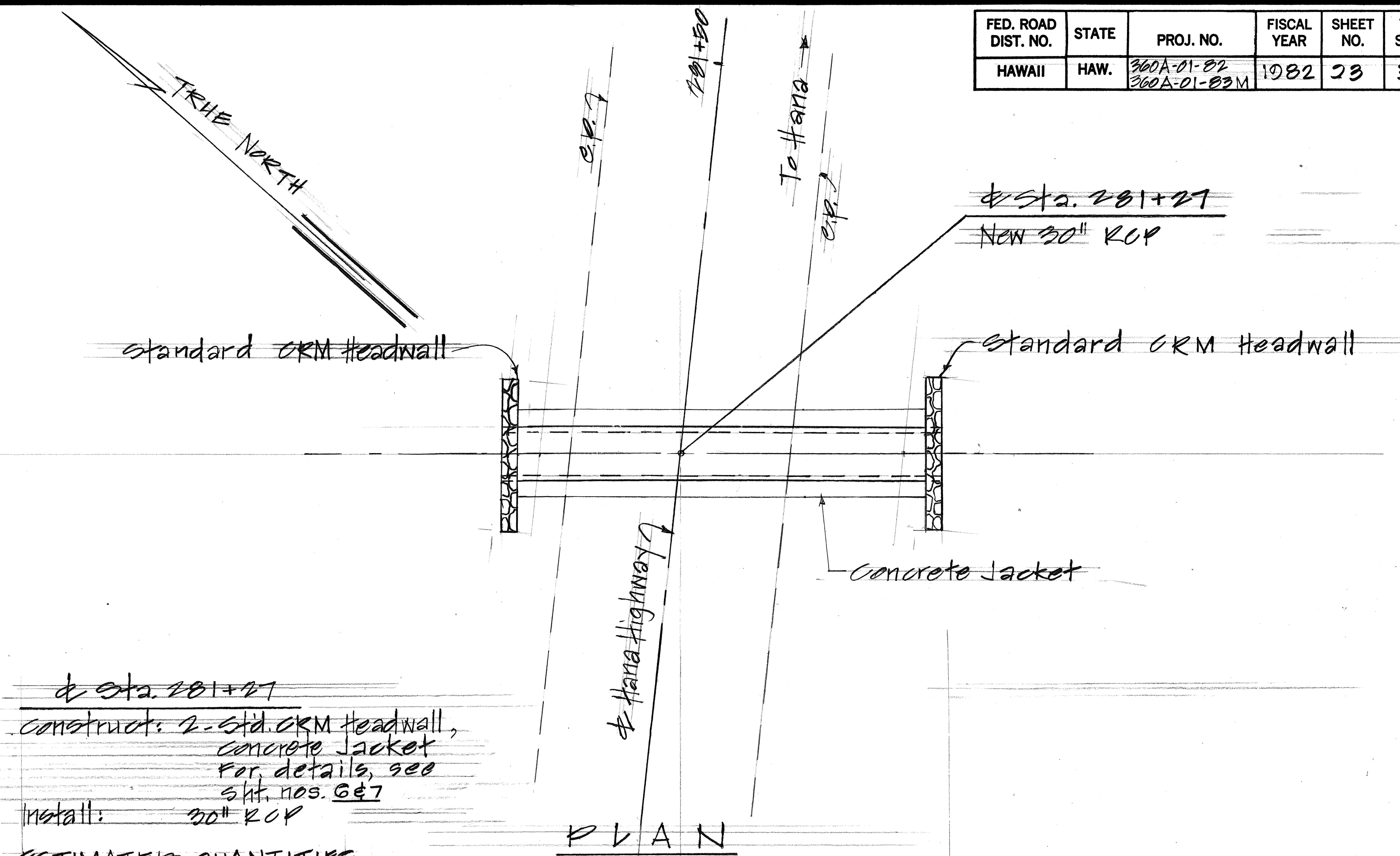
ESTIMATED QUANTITIES

Struct. Exc.	20 ±	C.Y.
Cement Rubble Masonry	2	C.Y.
24" RCP, Cl. II	1	L.F.

PLAN
Scale: 1" = 5' - 0"



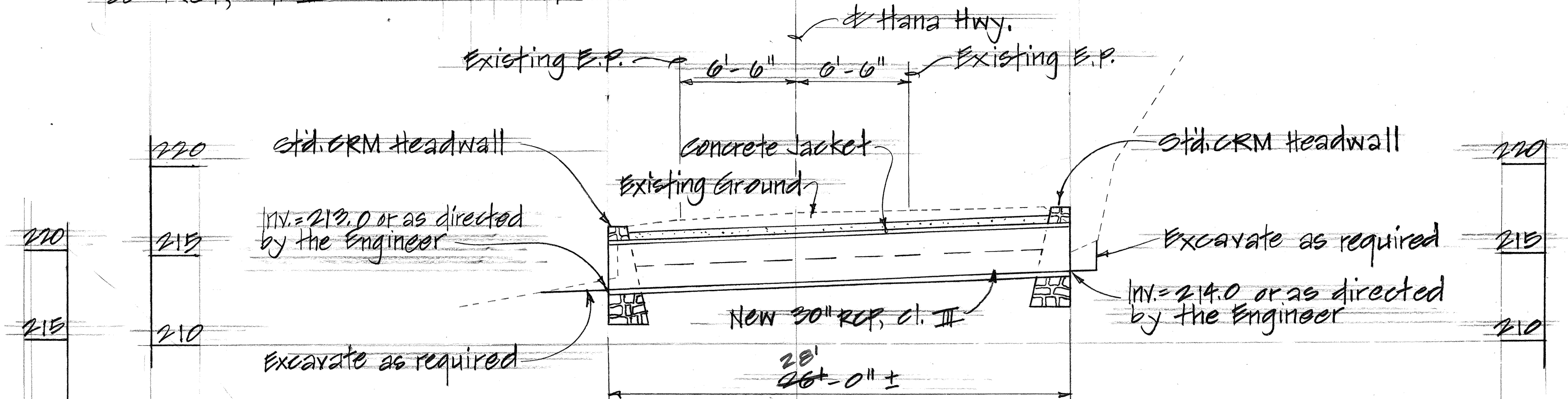
PROFILE - STA. 176+66 ±
Scale: 1" = 5' - 0"



ESTIMATED QUANTITIES

Struct. Exc.	28 ±	C.Y.
Class A Concrete	6	C.Y.
Cement Rubble Masonry	6	C.Y.
Reinforcing Steel	144 ±	LBS.
30" RCP, Cl. II	28 ±	L.F.

PLAN
Scale: 1" = 5' - 0"

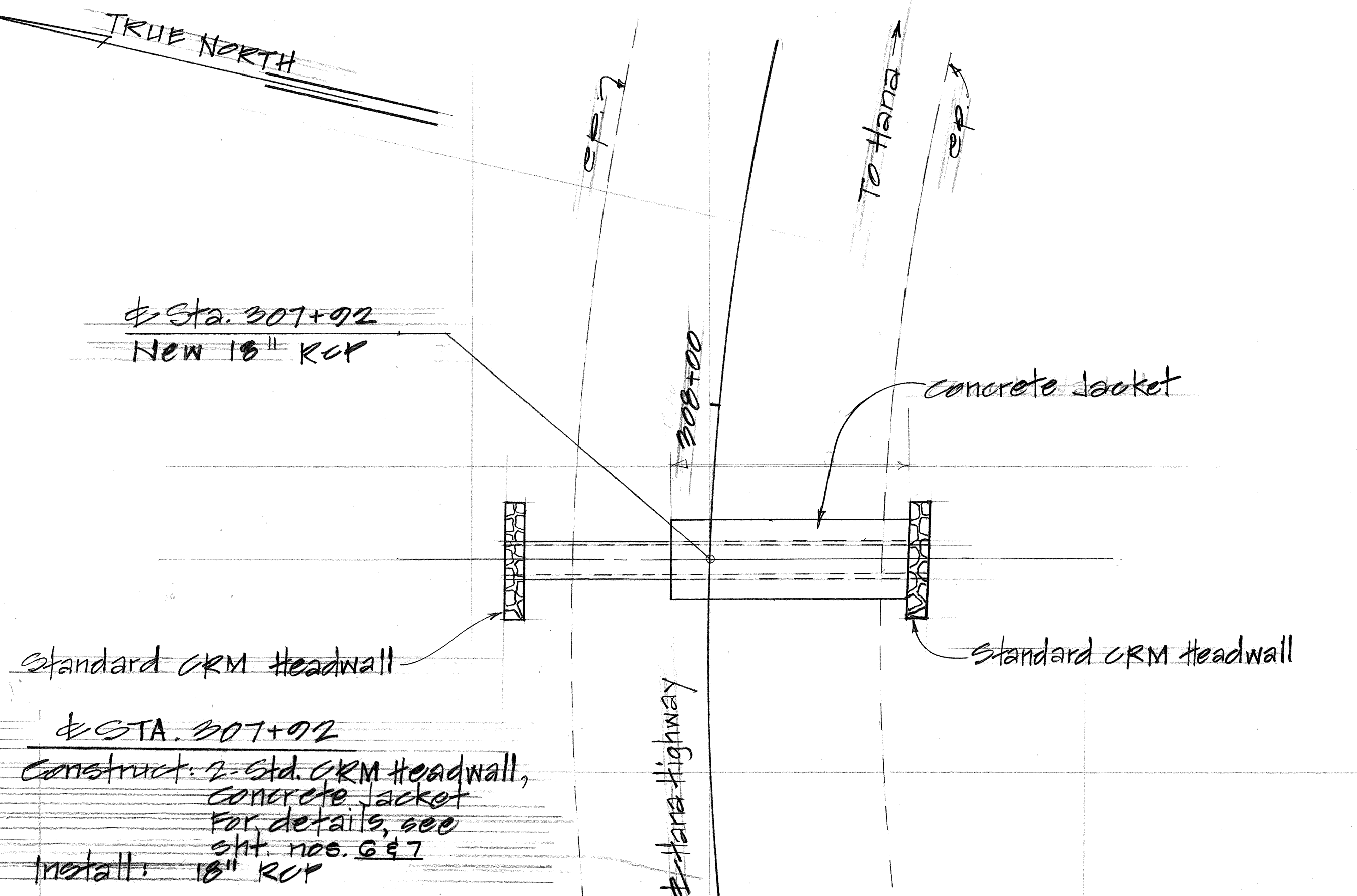


PROFILE - STA. 281+27
Scale: 1" = 5' - 0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN AND PROFILE FOR
CULVERTS AT STA. 176+66 AND 281+27
HANA HIGHWAY IMPROVEMENTS
AND RESURFACING
PROJECT NOS. 360A-01-02 AND 360A-01-03 M
Scale: As Shown Date: May, 1982
SHEET NO. 23 OF 7 SHEETS

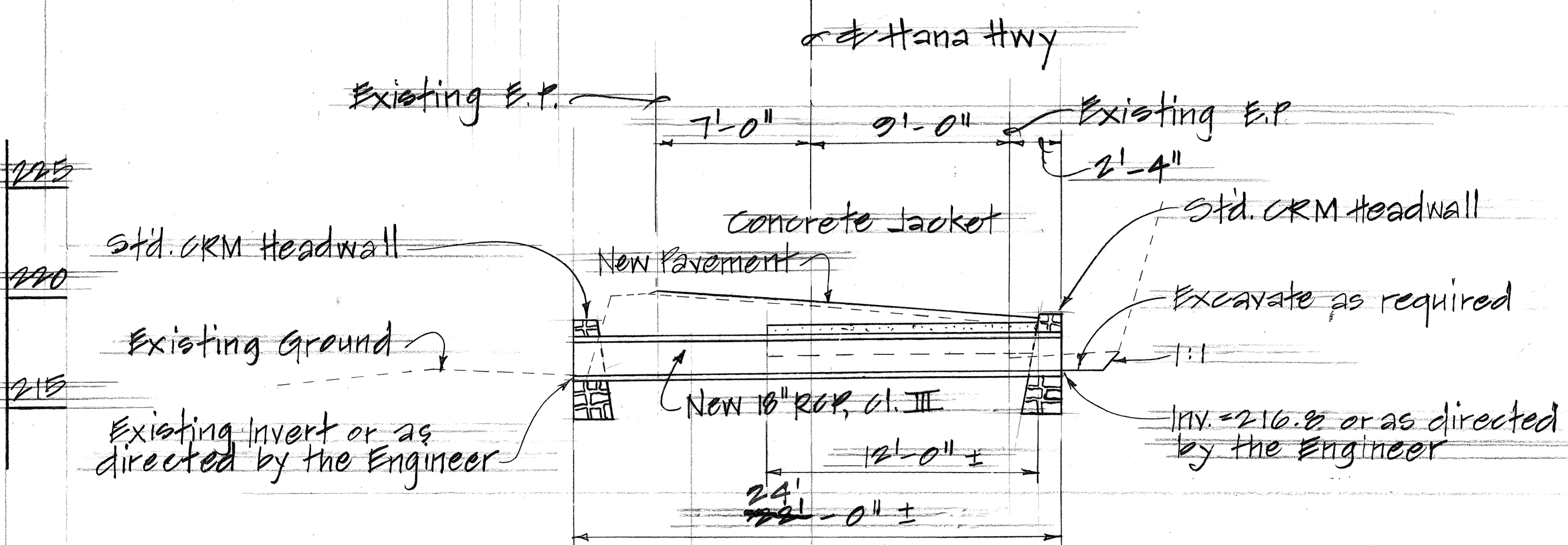
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83 M	1982	24	36



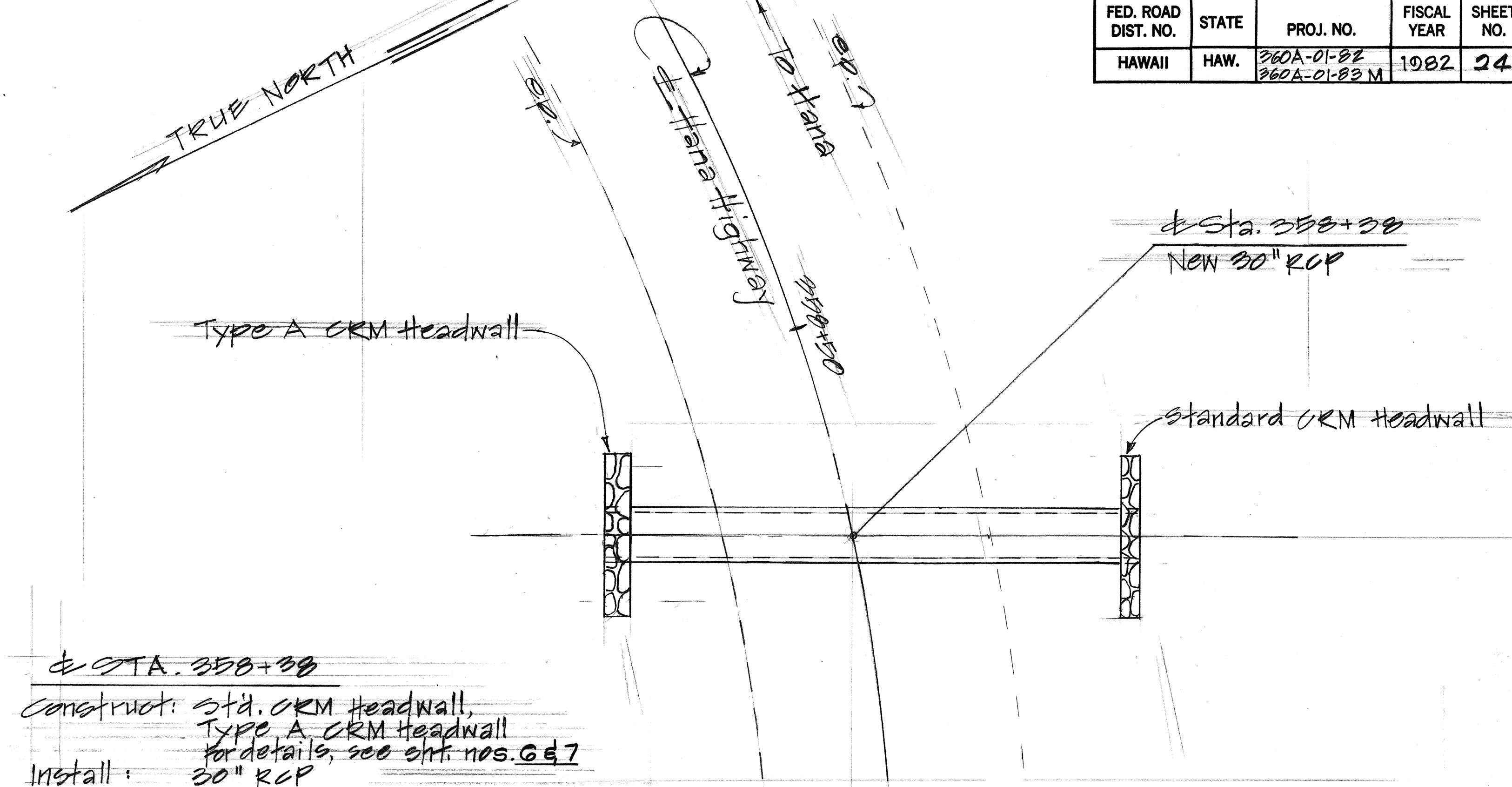
ESTIMATED QUANTITIES

Struc. Exc.	20.14	C.Y.
Class A Concrete	2	C.Y.
Cement Rubble Masonry	5.50	C.Y.
Reinforcing Steel	222.40	LBS.
18" RCP, Cl. III	24.24	L.F.

PLAN
Scale: 1" = 5'-0"



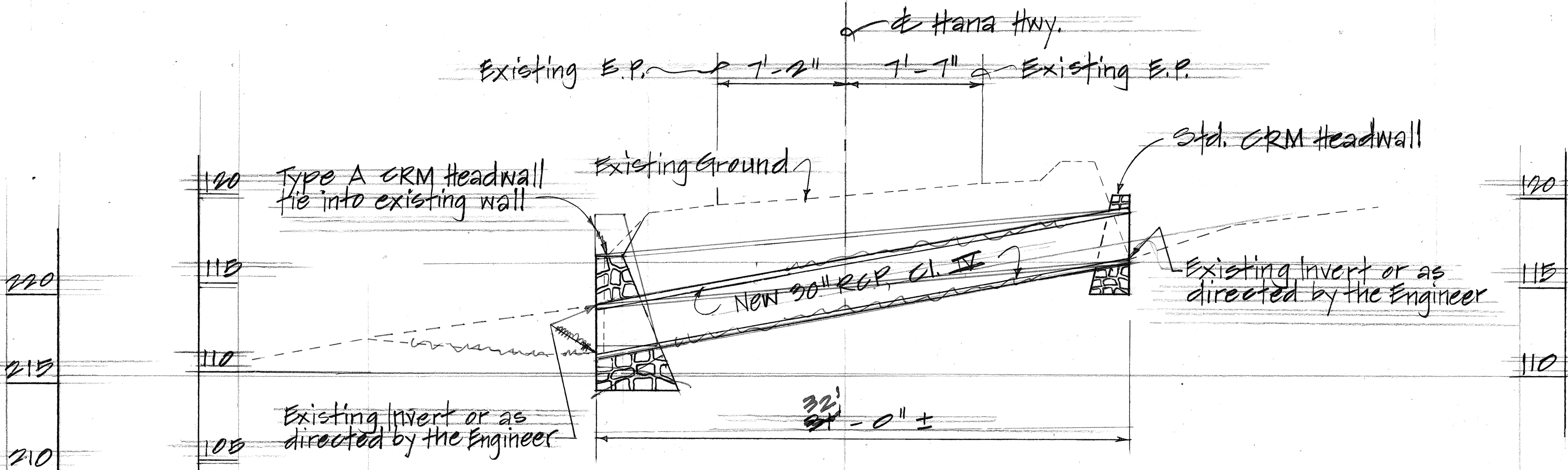
PROFILE - STA. 307+92
Scale: 1" = 5'-0"



ESTIMATED QUANTITIES

Struc. Exc.	38.58	C.Y.
Cement Rubble Masonry	8.44	C.Y.
30" RCP, Cl. IV	32.31	L.F.

PLAN
Scale: 1" = 5'-0"



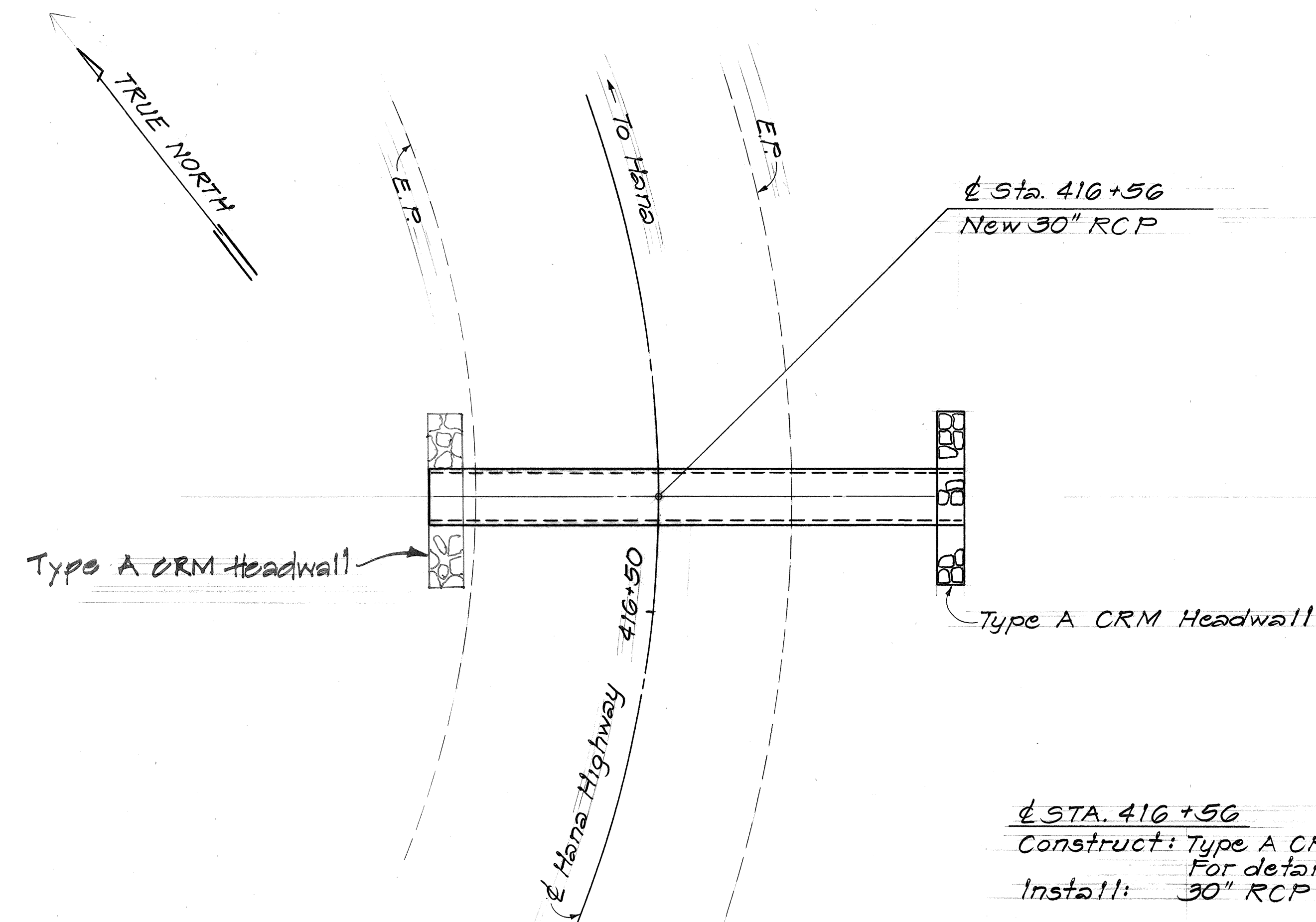
PROFILE - STA. 358+38
Scale: 1" = 5'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN AND PROFILE FOR
CULVERTS AT STA. 307+92 AND 358+38

HANA HIGHWAY IMPROVEMENTS
AND RESURFACING
PROJECT Nos. 360A-01-82 AND 360A-01-83 M
Scale: As Shown Date: May, 1982
SHEET NO. 4 OF 7 SHEETS

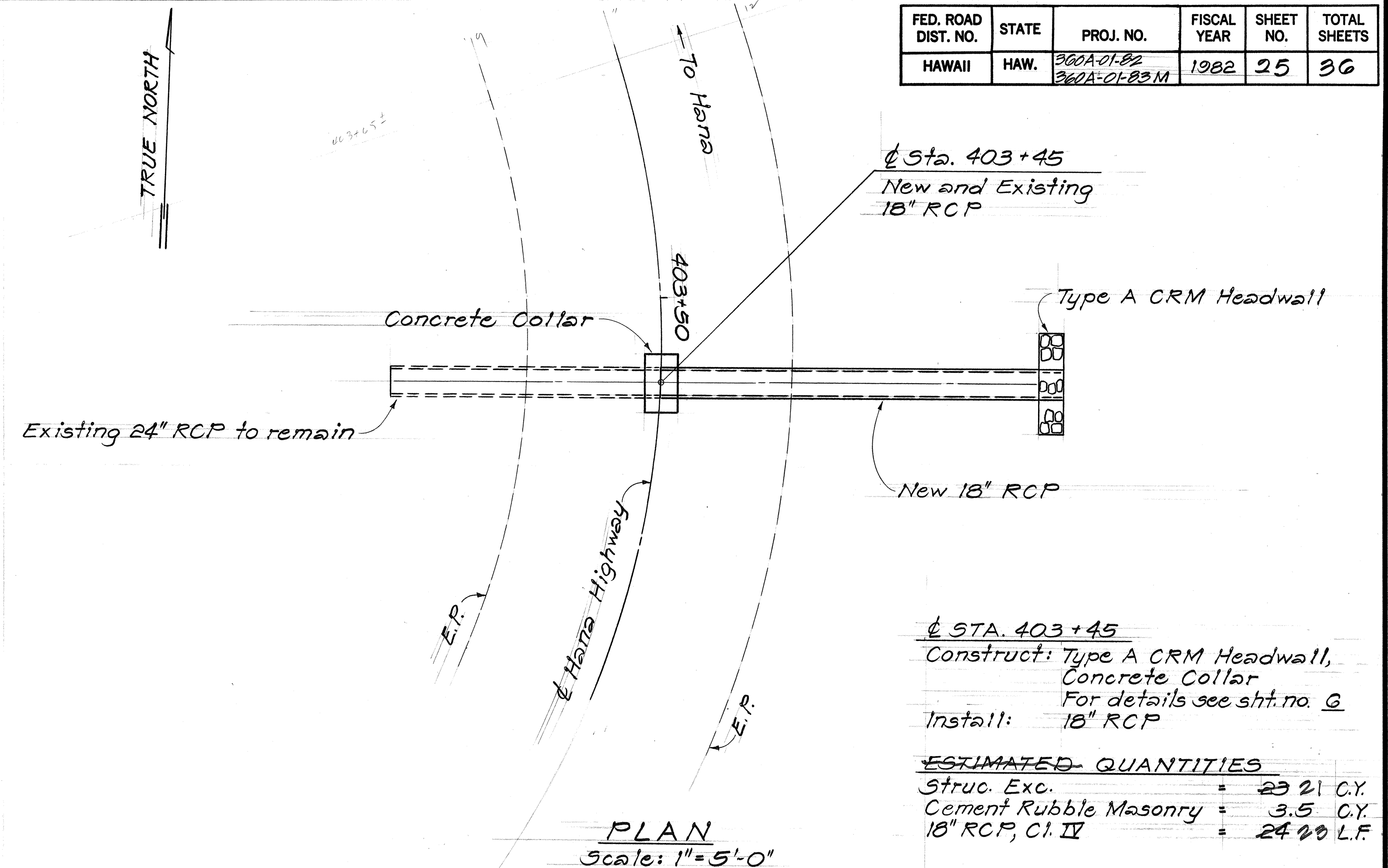
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	260A-01-B2 260A-01-B3 M	1982	25	36



PLAN
Scale: 1"=5'-0"

Sta. 416+56
Construct: Type A CRM Headwall
For detail, see sht. no. 6
Install: 30" RCP

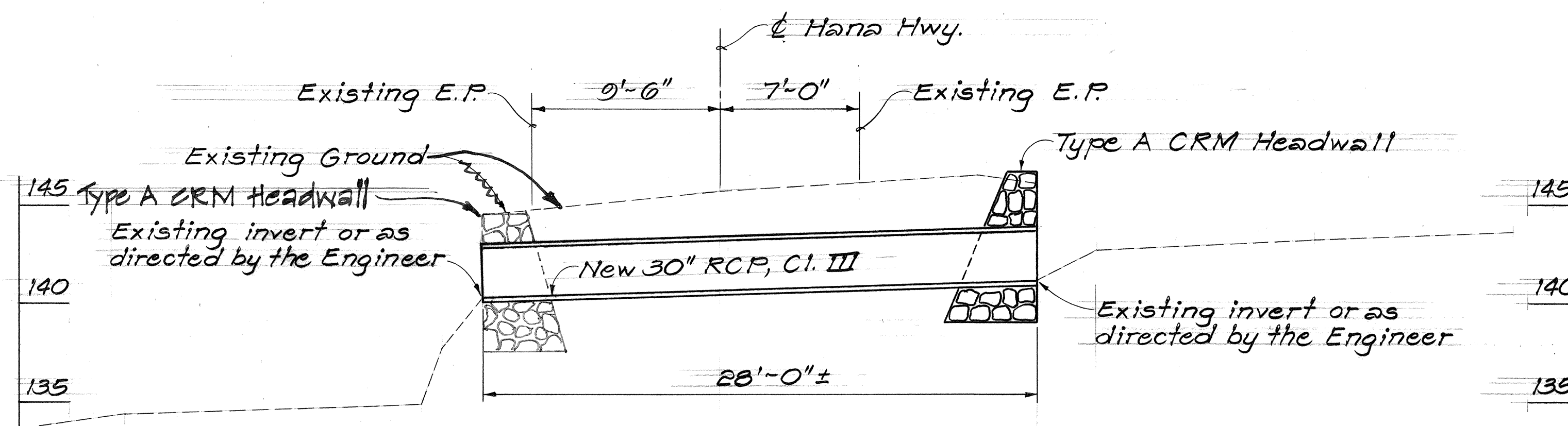
ESTIMATED QUANTITIES
Struc. Exc. = 12.58 C.Y.
Cement Rubble Masonry = 12.75 C.Y.
30" RCP, Cl. III = 28 L.F.



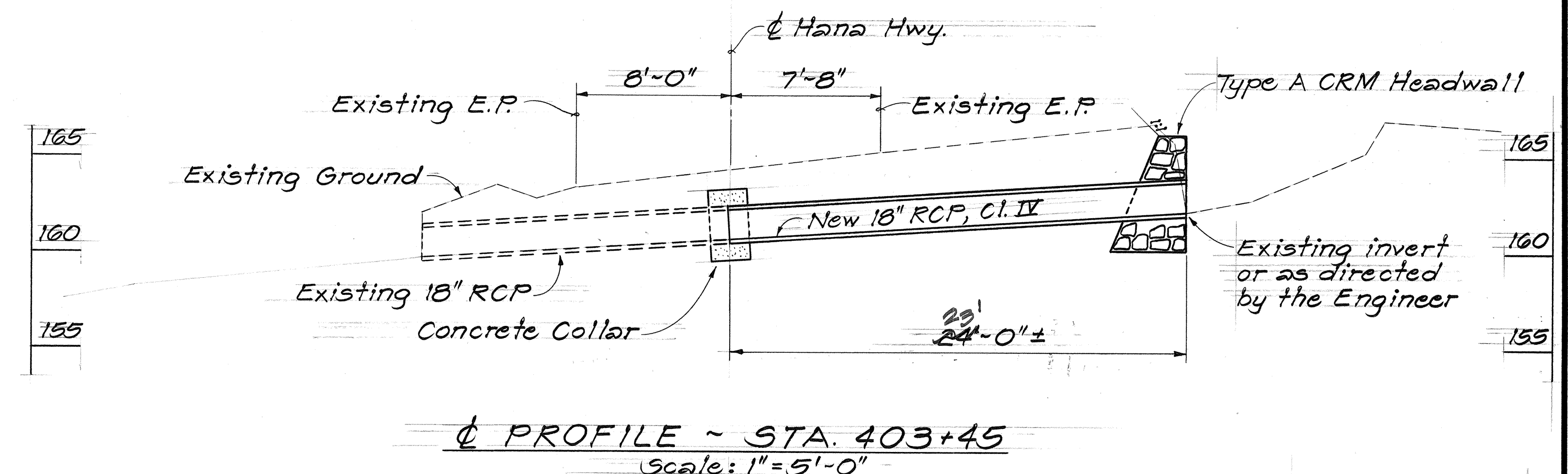
Sta. 403+45
Construct: Type A CRM Headwall,
Concrete Collar
For details see sht. no. 6
Install: 18" RCP

ESTIMATED QUANTITIES
Struc. Exc. = 23.21 C.Y.
Cement Rubble Masonry = 3.5 C.Y.
18" RCP, Cl. IV = 24.25 L.F.

PLAN
Scale: 1"=5'-0"



PROFILE ~ STA. 416+56
Scale: 1"=5'-0"



PROFILE ~ STA. 403+45
Scale: 1"=5'-0"

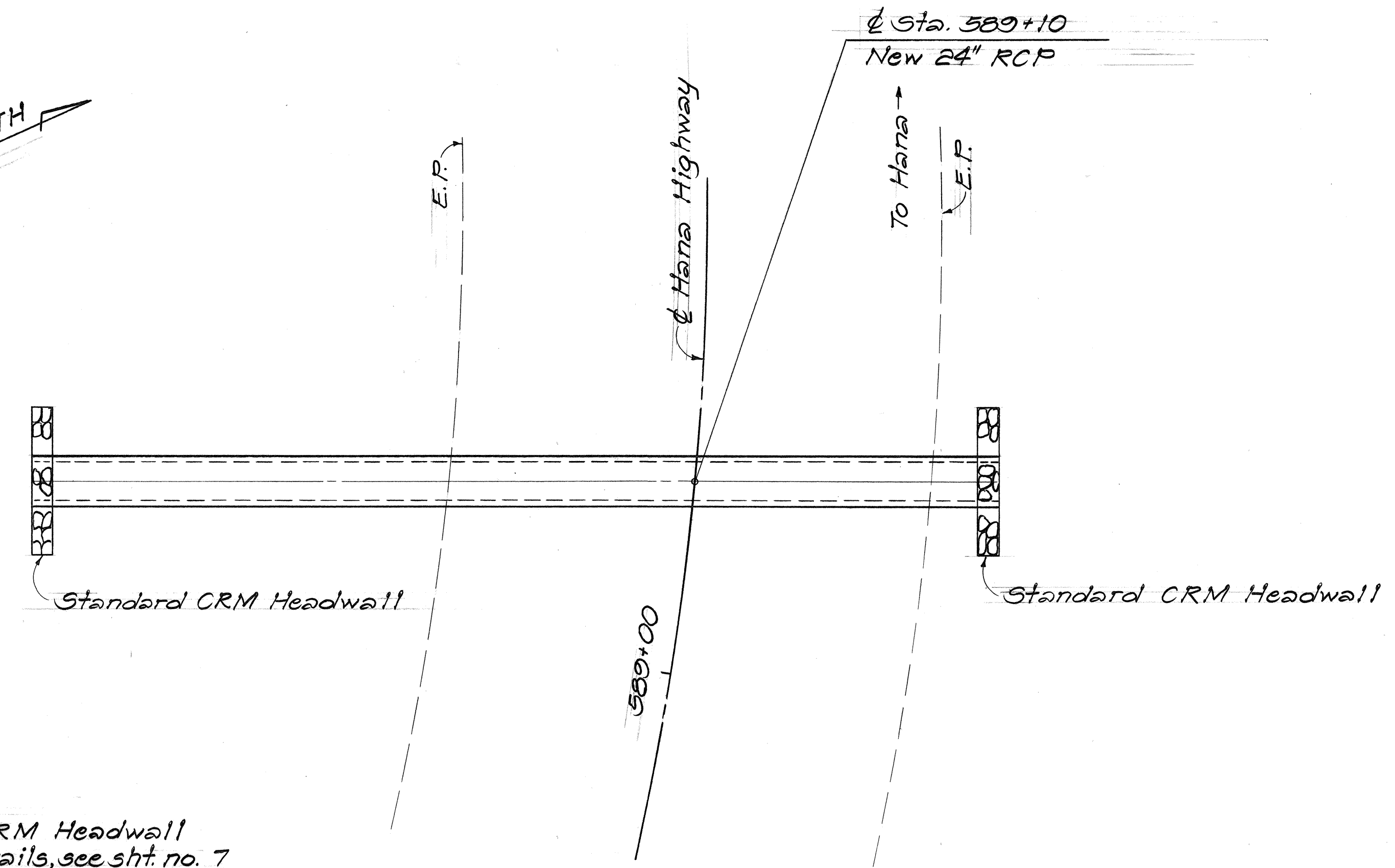
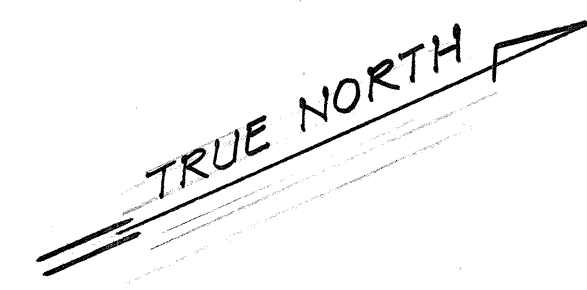
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN AND PROFILE FOR CULVERTS
AT STA. 403+45 AND 416+56
HANA HIGHWAY IMPROVEMENTS
AND RESURFACING
PROJECT Nos. 260A-01-B2 AND 260A-01-B3 M
Scale: As Shown Date: May 1982

SHEET No. 5 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	20	36

STA	H
165+13	2'-0"
358+38	3'-0"
403+45	2'-6"
416+56	3'-0"

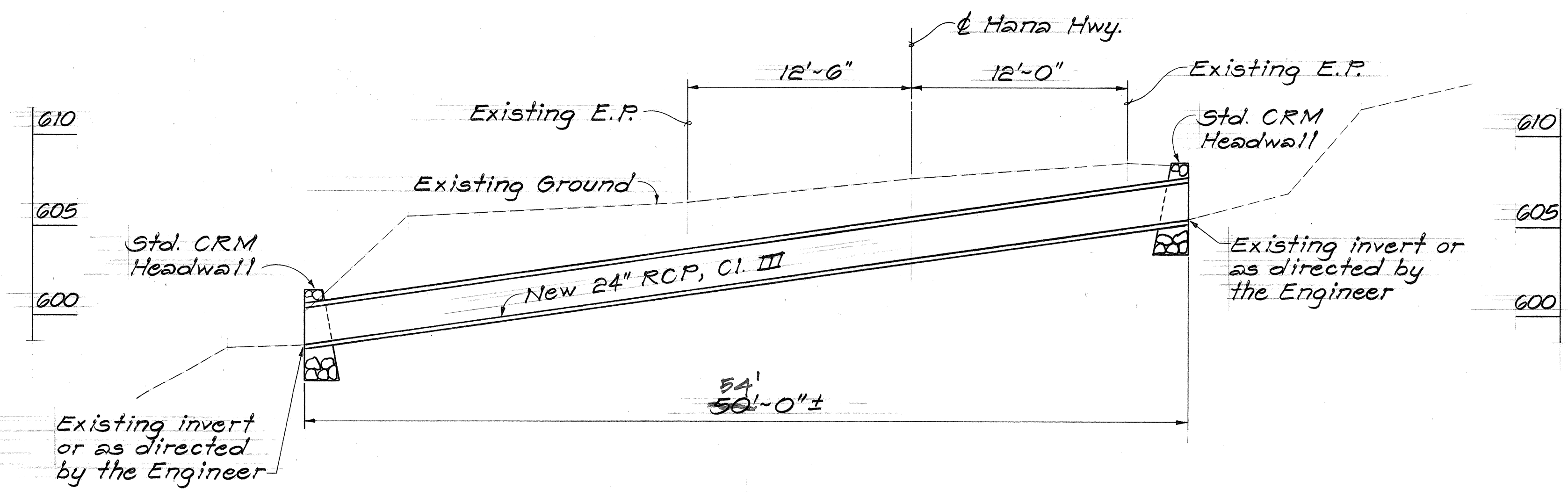


@ STA. 589+10
 Construct: Std. CRM Headwall
 For details, see sht. no. 7
 Install: 24" RCP

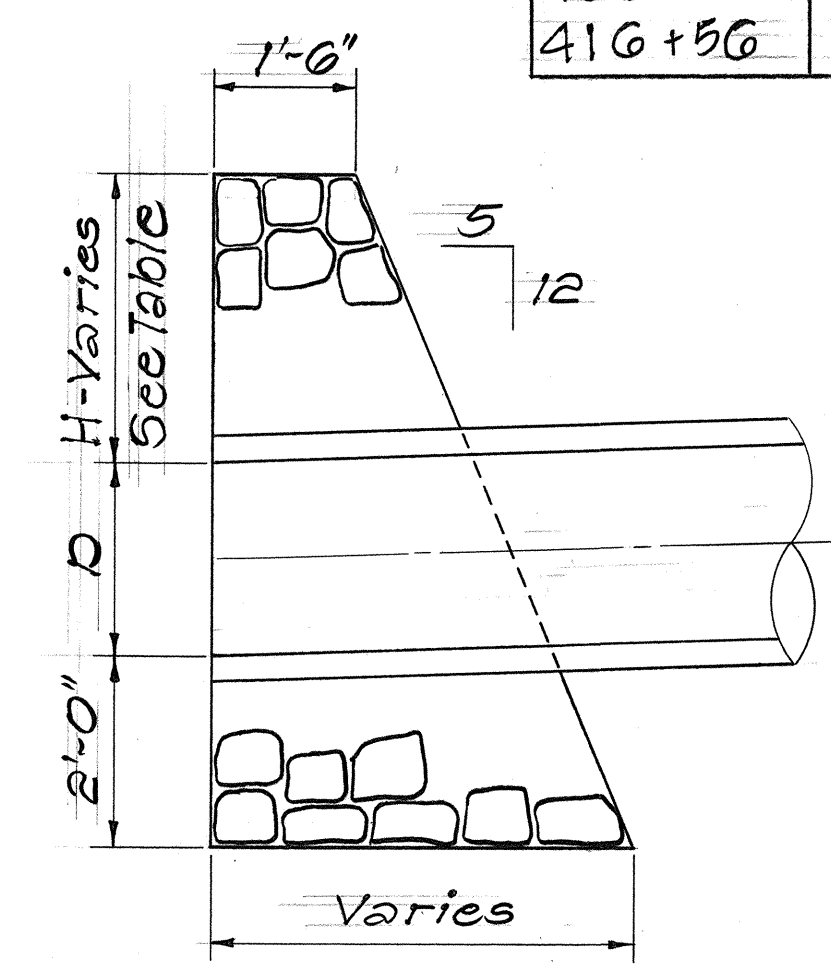
ESTIMATED QUANTITIES

Struc. Exc.	= 80.32	C.Y.
Cement Rubble Masonry	= 4 8+5	C.Y.
24" RCP, Cl. III	= 54.50	L.F.

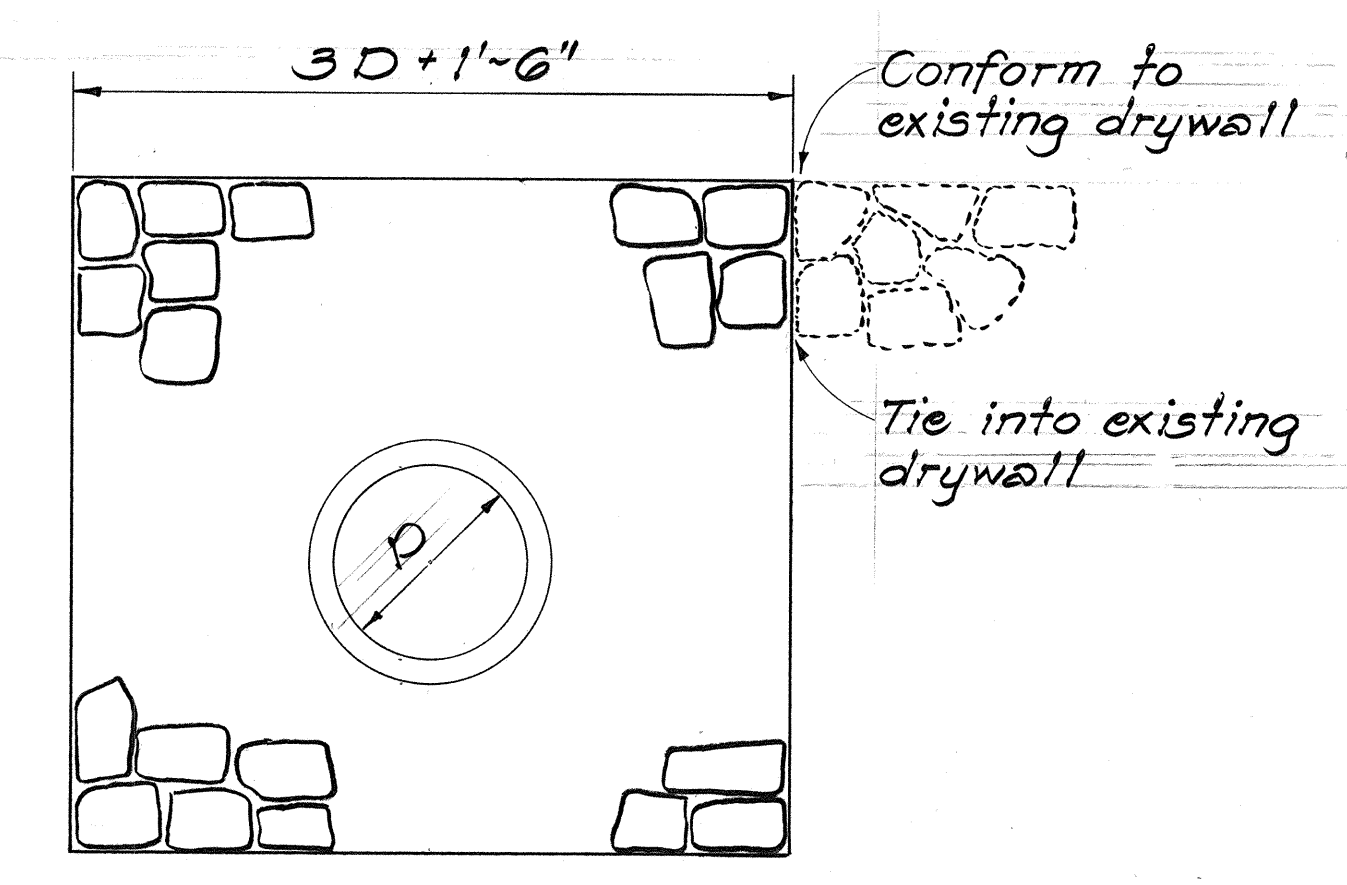
PLAN
 Scale: 1" = 5'-0"



PROFILE - STA. 589+10
 Scale: 1" = 5'-0"

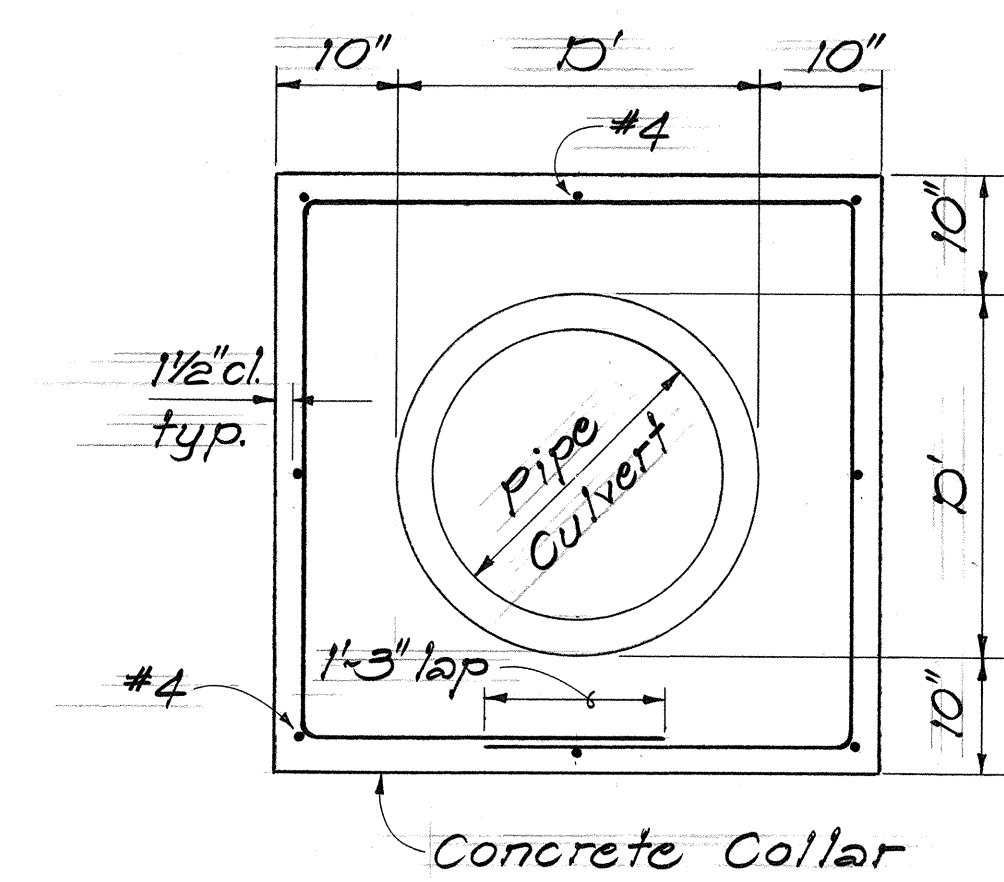


SECTION

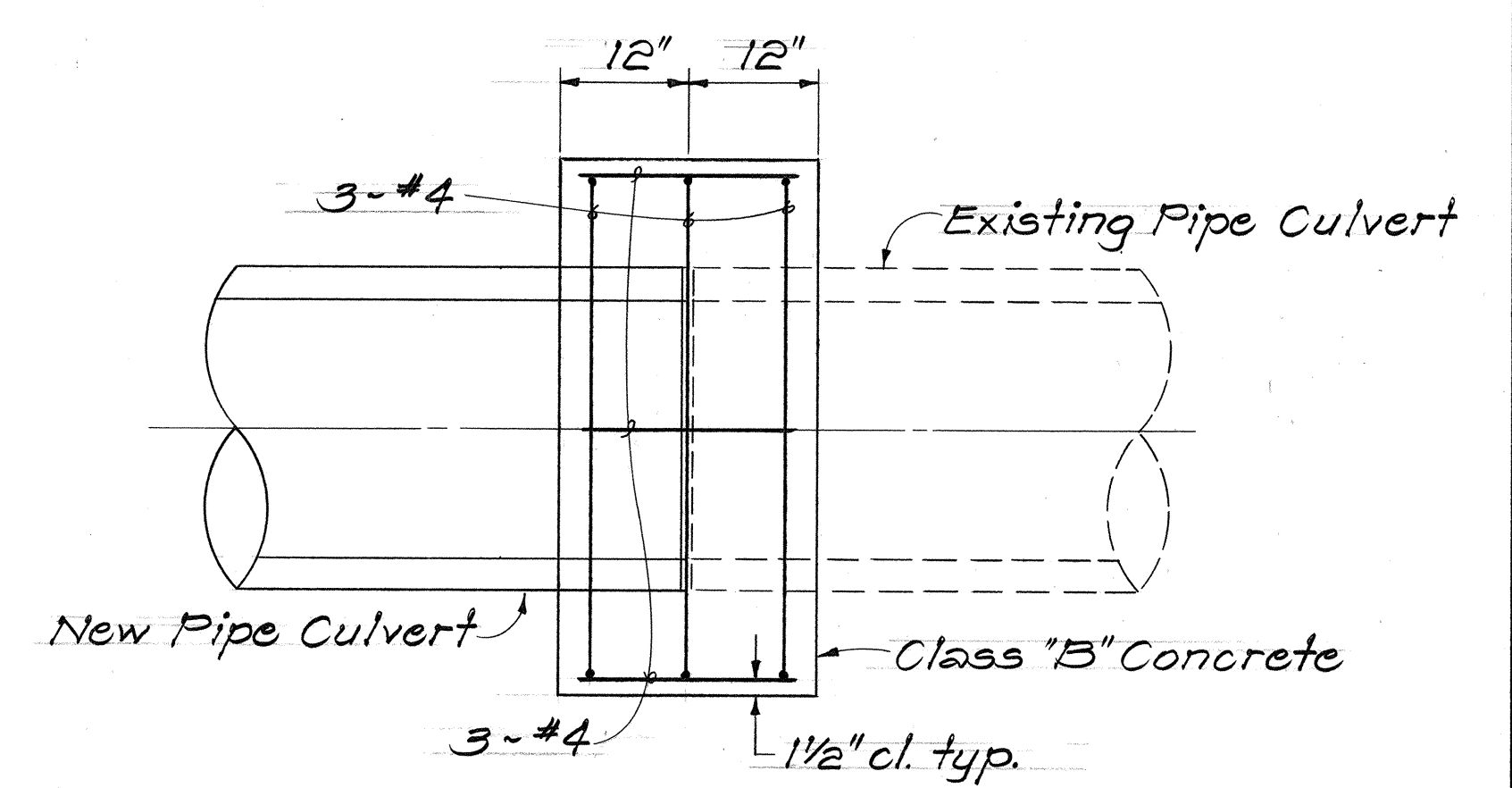


ELEVATION

DETAIL OF TYPE A CRM HEADWALL
 Scale: 1/2" = 1'-0"

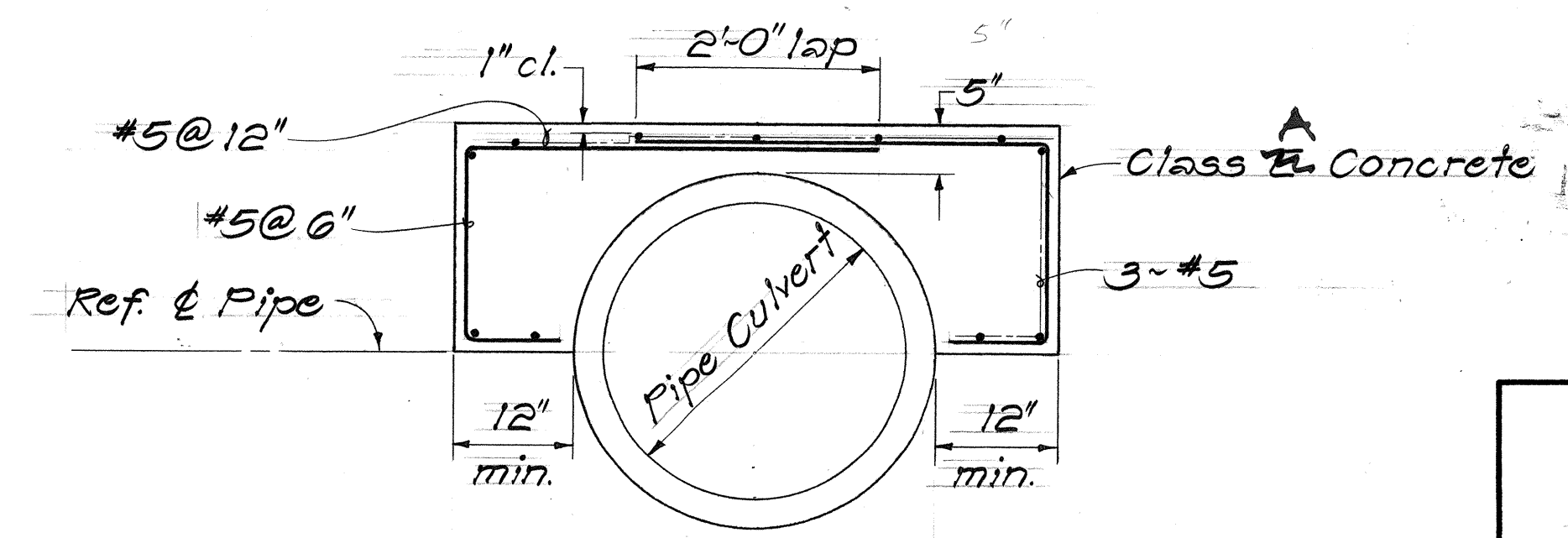


FRONT VIEW



SIDE VIEW

TYPICAL DETAIL OF CONCRETE COLLAR
 Scale: 3/4" = 1'-0"



DETAIL OF CONCRETE JACKET
 Scale: 3/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

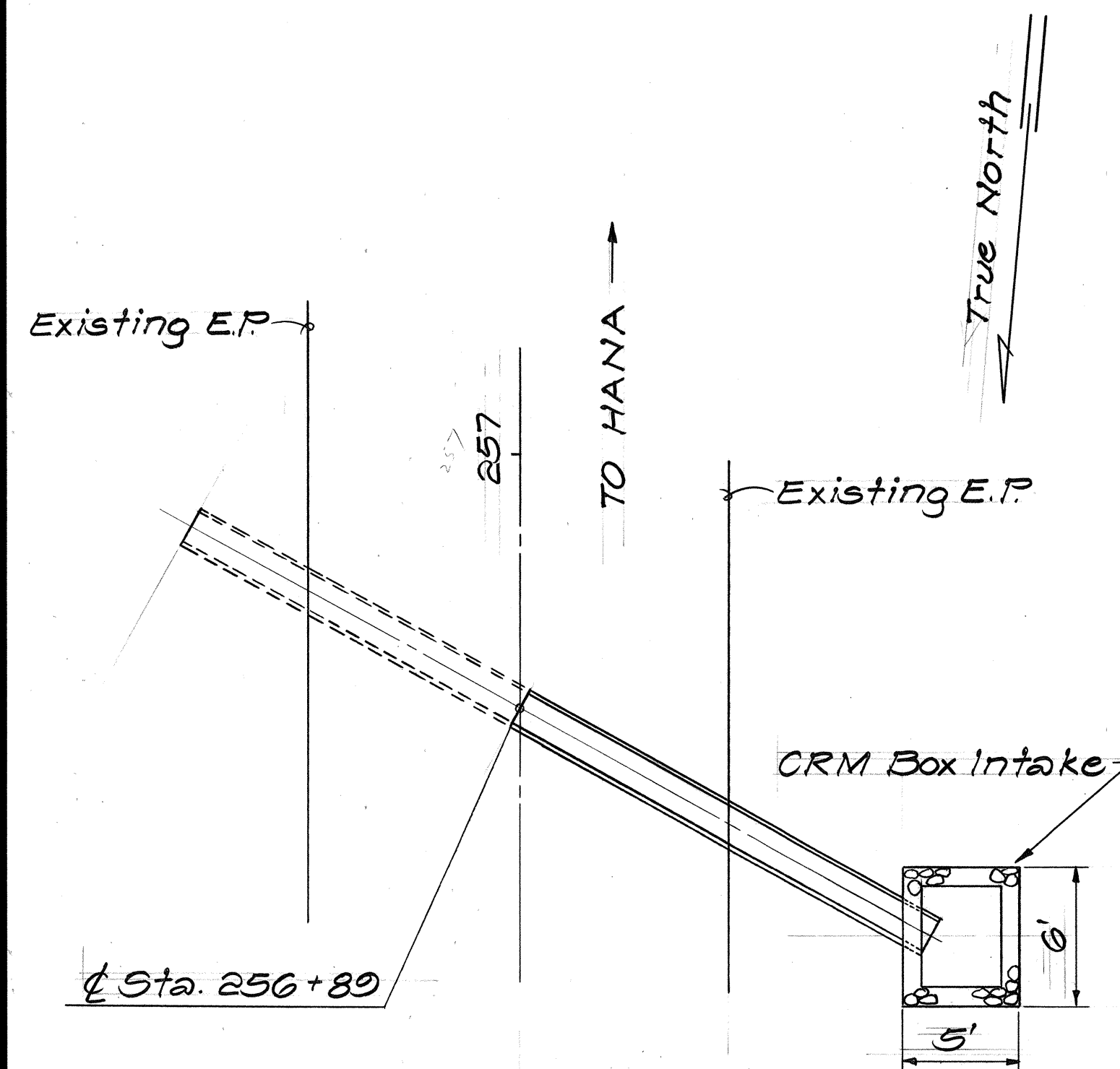
PLAN AND PROFILE - STA. 589+10
AND TYPICAL DETAILS
HANA HIGHWAY IMPROVEMENTS
AND RESURFACING

PROJECT Nos. 360A-01-82 AND 360A-01-83M
Scale: As Shown Date: May 1982

SHEET No. 6 OF 7 SHEETS

DATE	
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

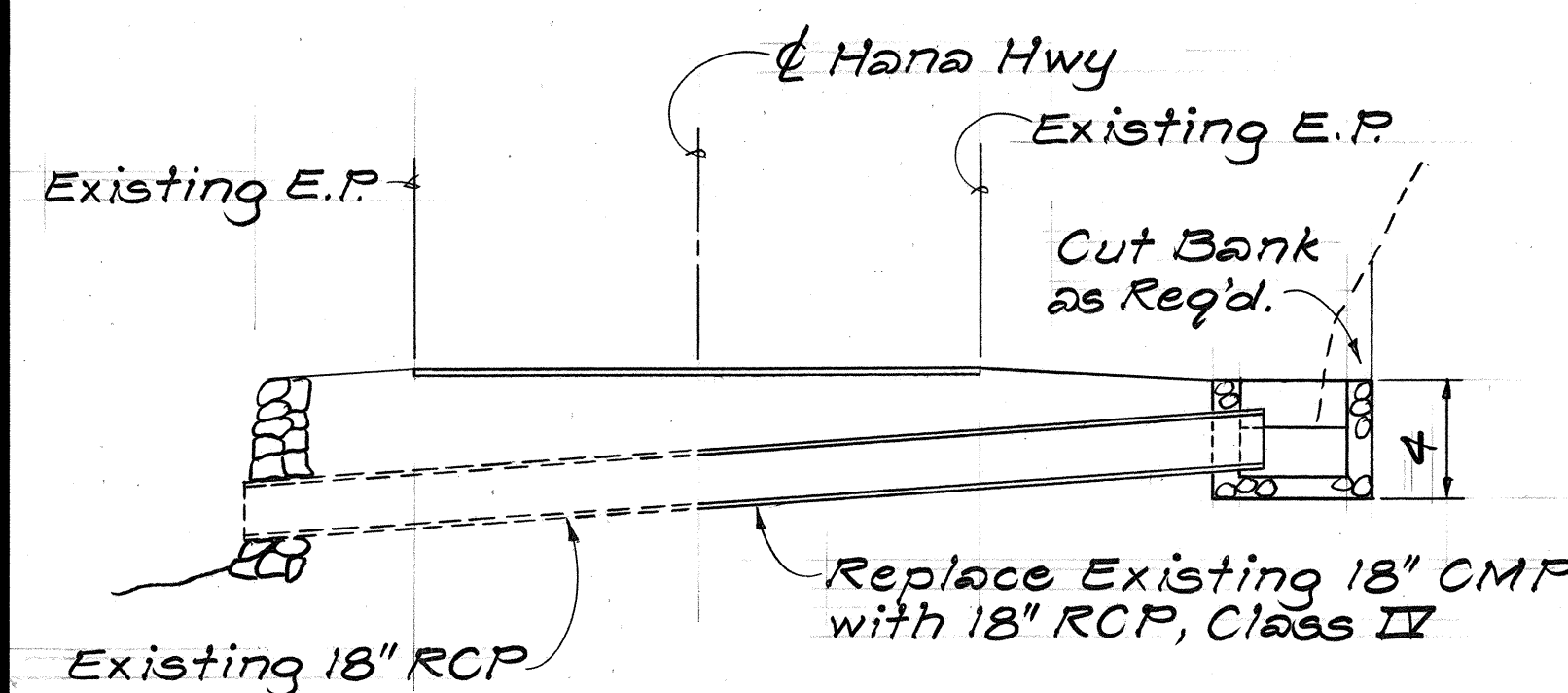
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1984	26-51	36



PLAN
Scale: 1"=6'

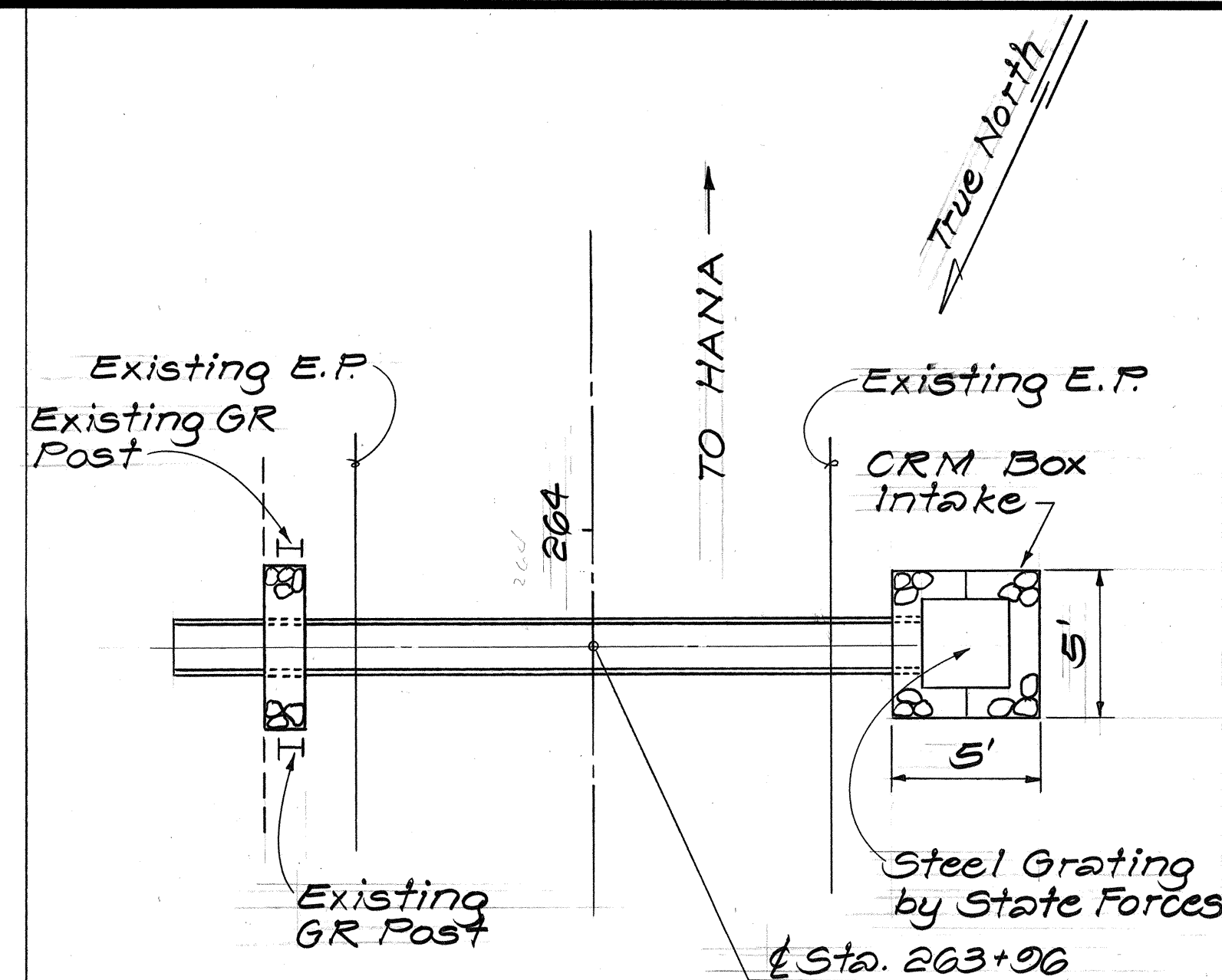
QUANTITIES:

Struct. Exc.	=	16 C.Y.
18" RCP, CL. IV	=	20 L.F.
CRM	=	3.0 C.Y.



PROFILE
Scale: 1"=6'

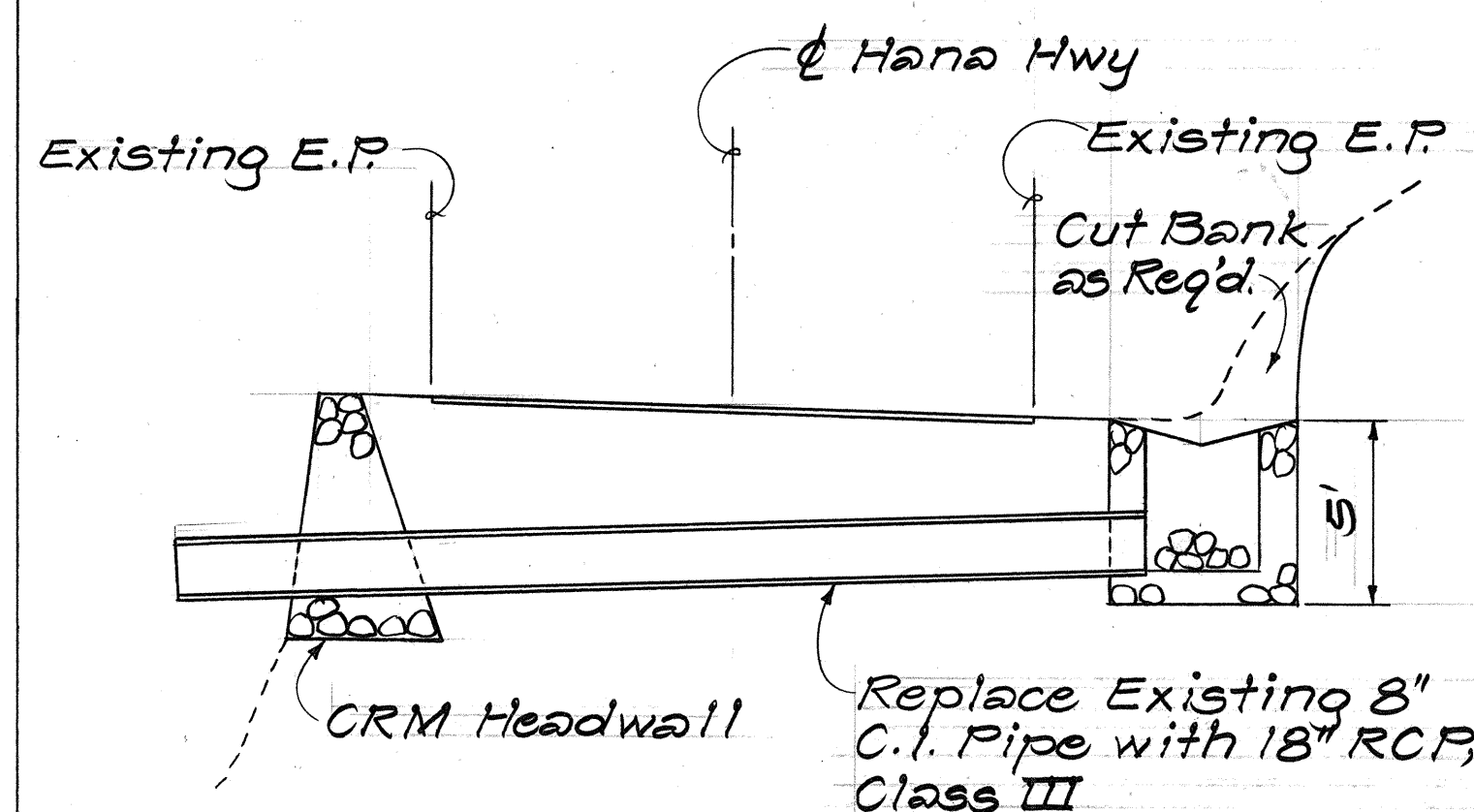
NEW CULVERT-STA. 250+80
C.C.O. NO. 6



PLAN
Scale: 1"=5'

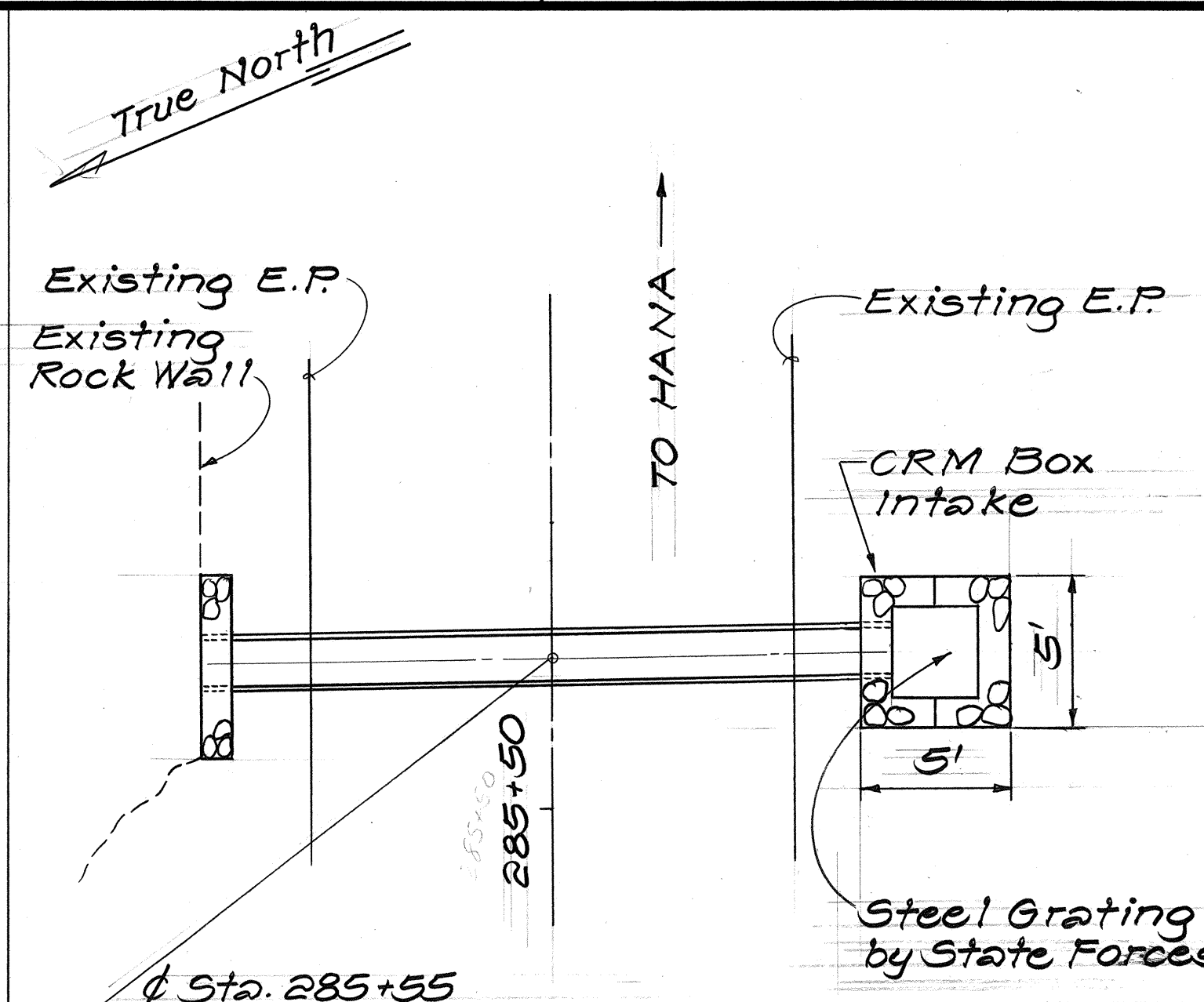
QUANTITIES:

Struct. Exc.	=	18 C.Y.
18" RCP, CL. III	=	25 L.F.
CRM	=	5.0 C.Y.



PROFILE
Scale: 1"=5'

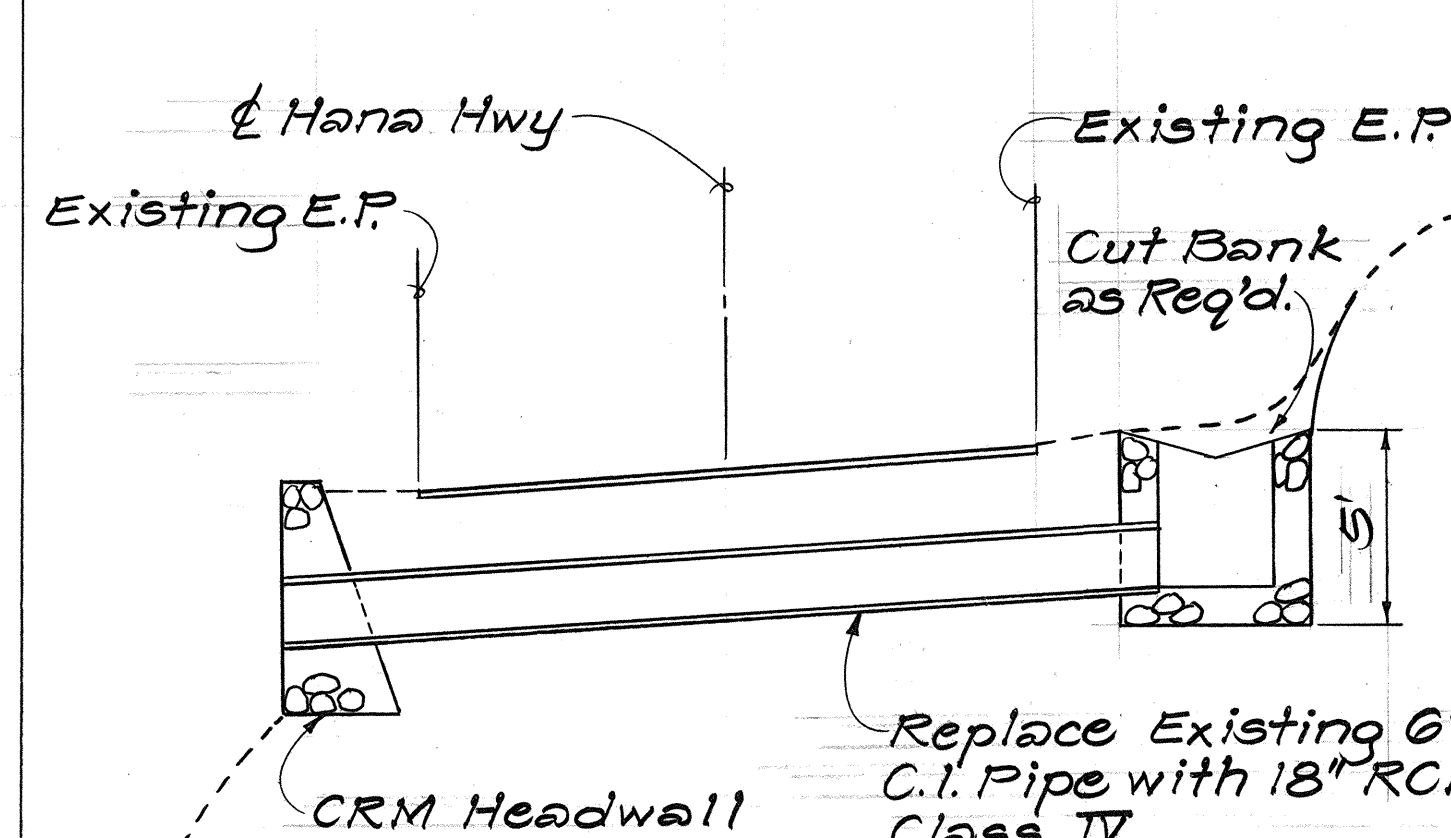
NEW CULVERT-STA. 263+96
C.C.O. NO. 6



PLAN
Scale: 1"=5'

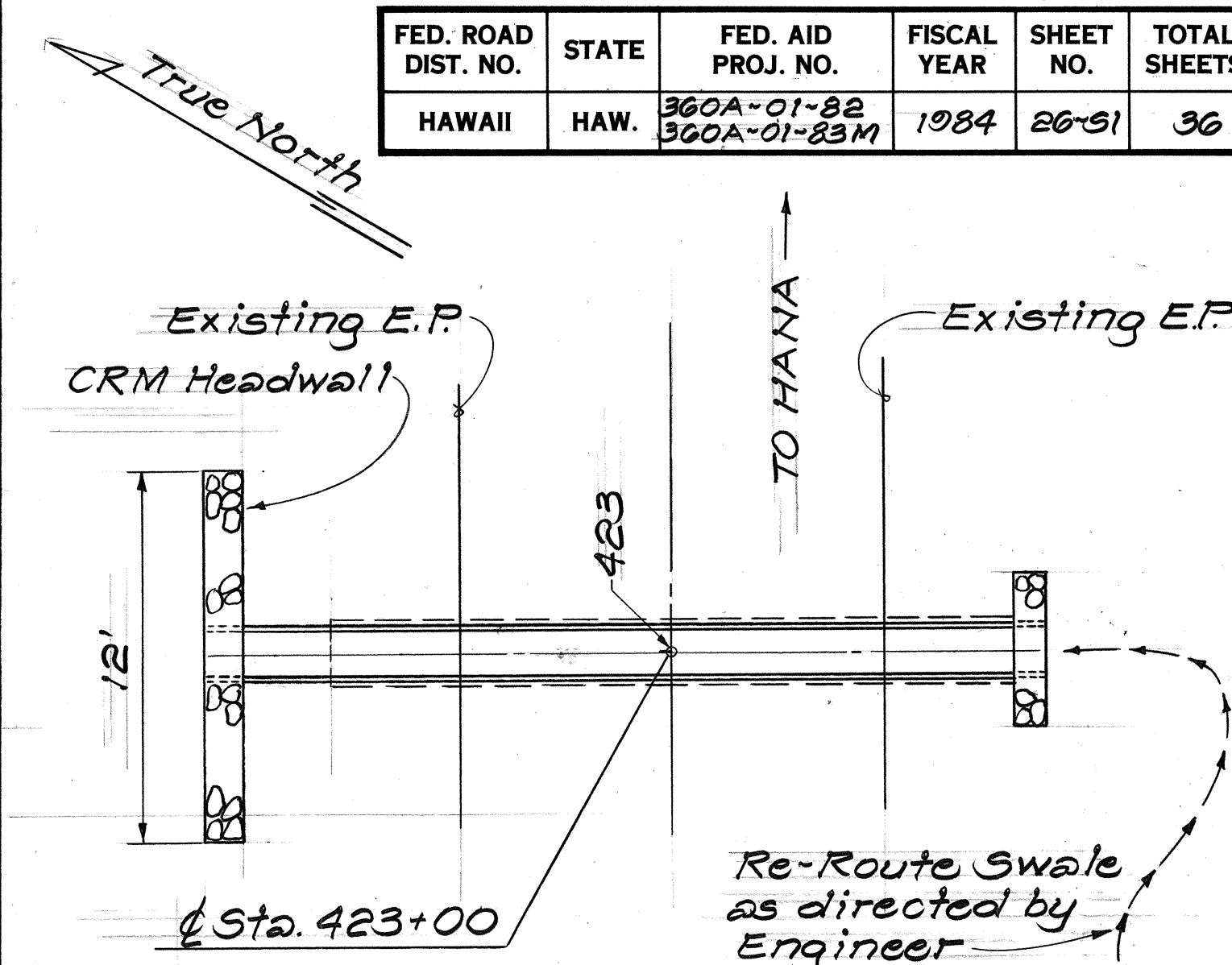
QUANTITIES:

Struct. Exc.	=	23 C.Y.
18" RCP, CL. IV	=	23 L.F.
CRM	=	5.0 C.Y.



PROFILE
Scale: 1"=5'

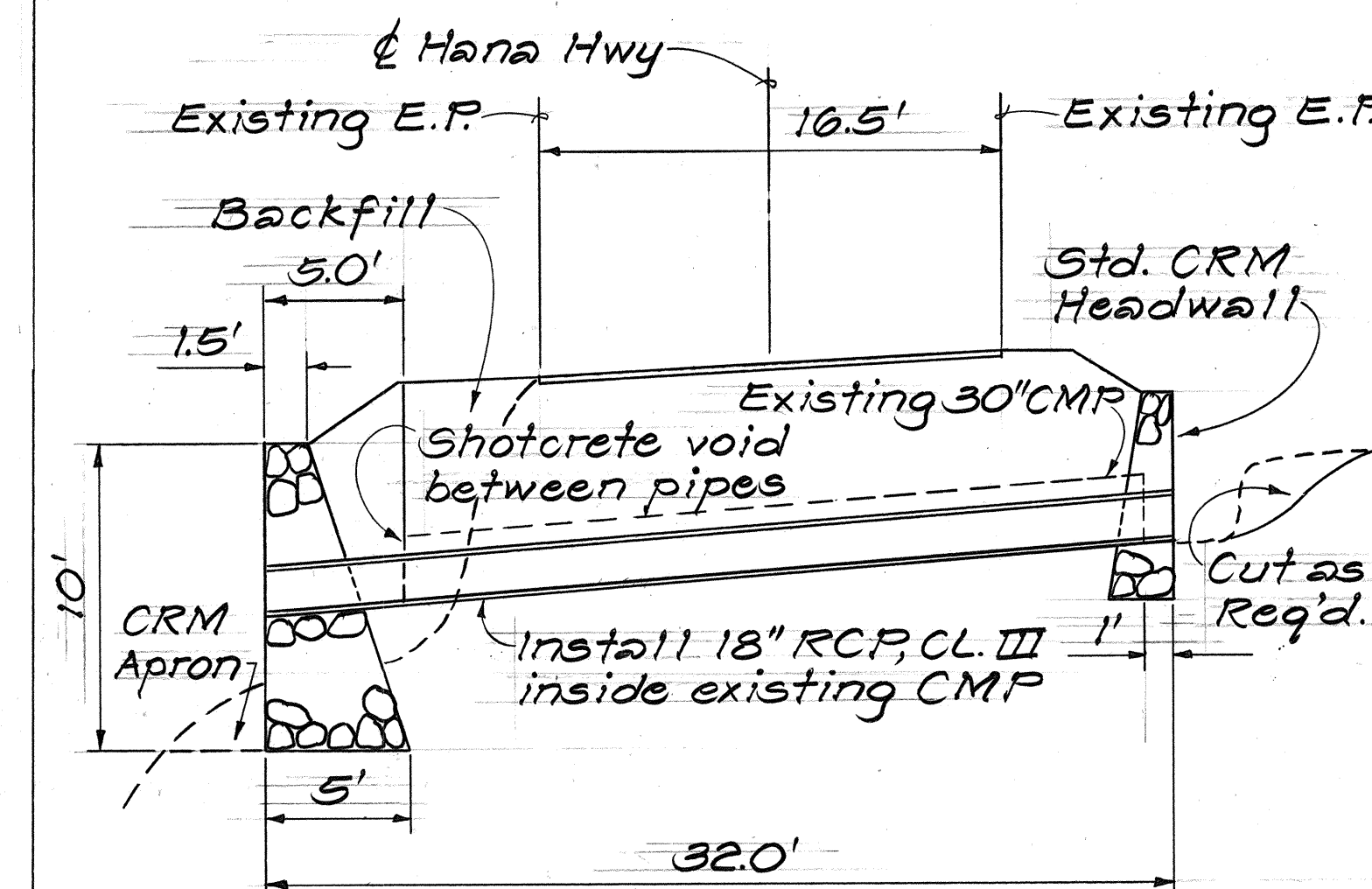
NEW CULVERT-STA. 285+55
C.C.O. NO. 6



PLAN
Scale: 1"=5'

QUANTITIES:

Struct. Exc.	=	15 C.Y.
18" RCP, CL. III	=	32 L.F.
CRM	=	20.0 C.Y.
Shotcrete	=	23 S.Y.



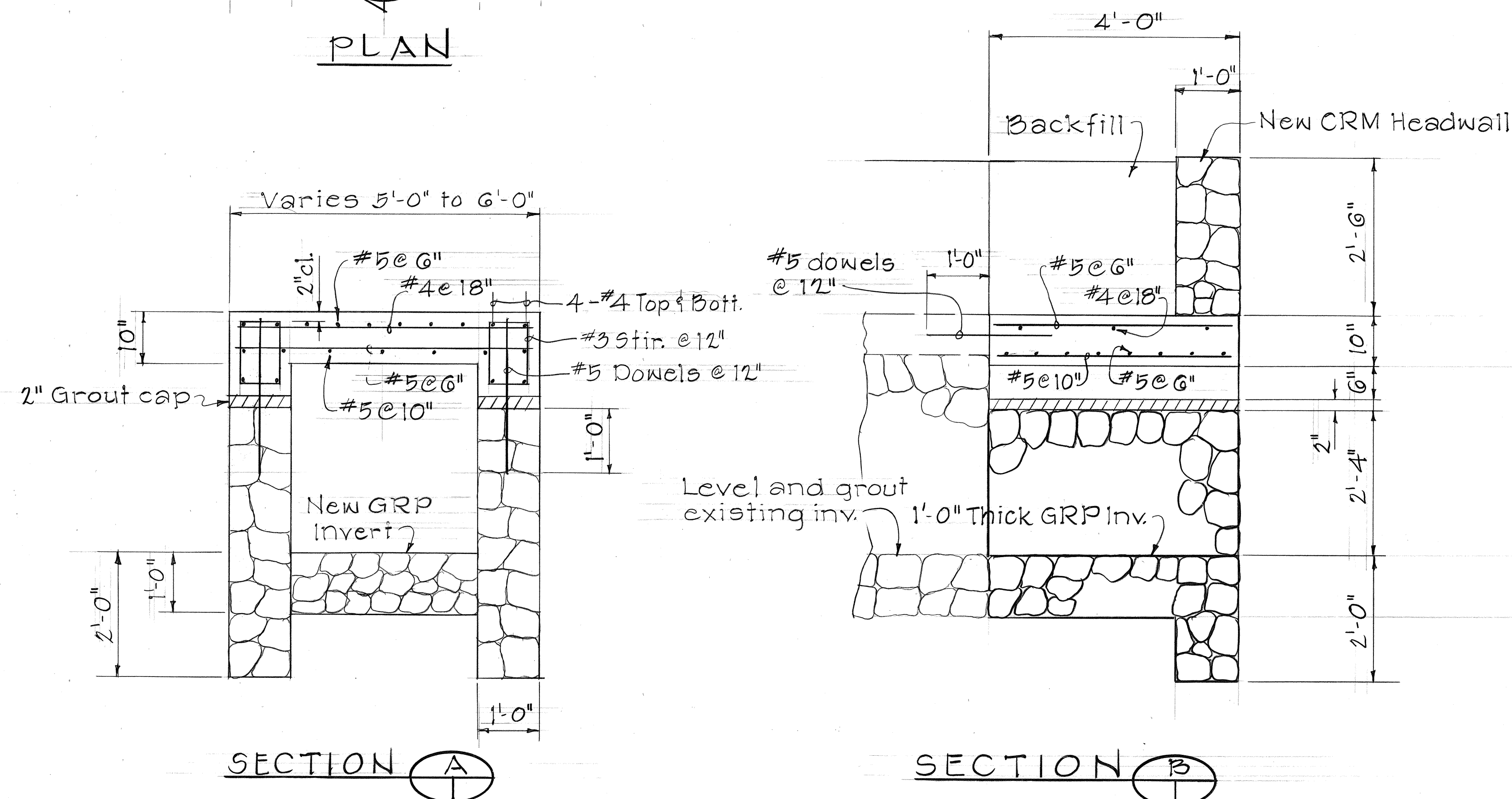
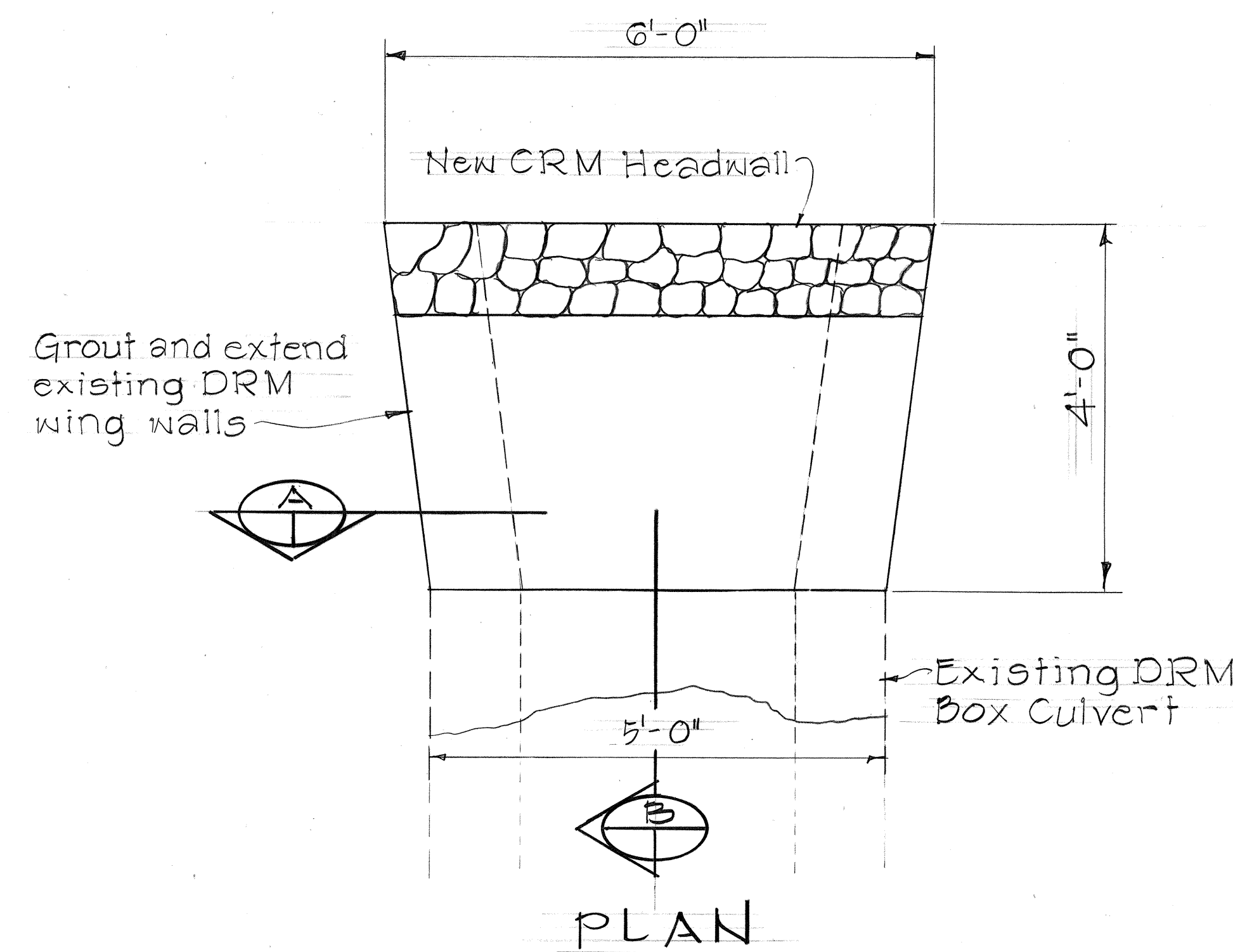
PROFILE
Scale: 1"=5'

NEW CULVERT-STA. 423+00
C.C.O. NO. 7

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DRAINAGE DETAILS	
HANA HIGHWAY	
IMPROVEMENTS & RESURFACING	
PROJ. NOS. 360A-01-82 & 360A-01-83M	
SCALE: AS NOTED DATE: OCT. 1983	

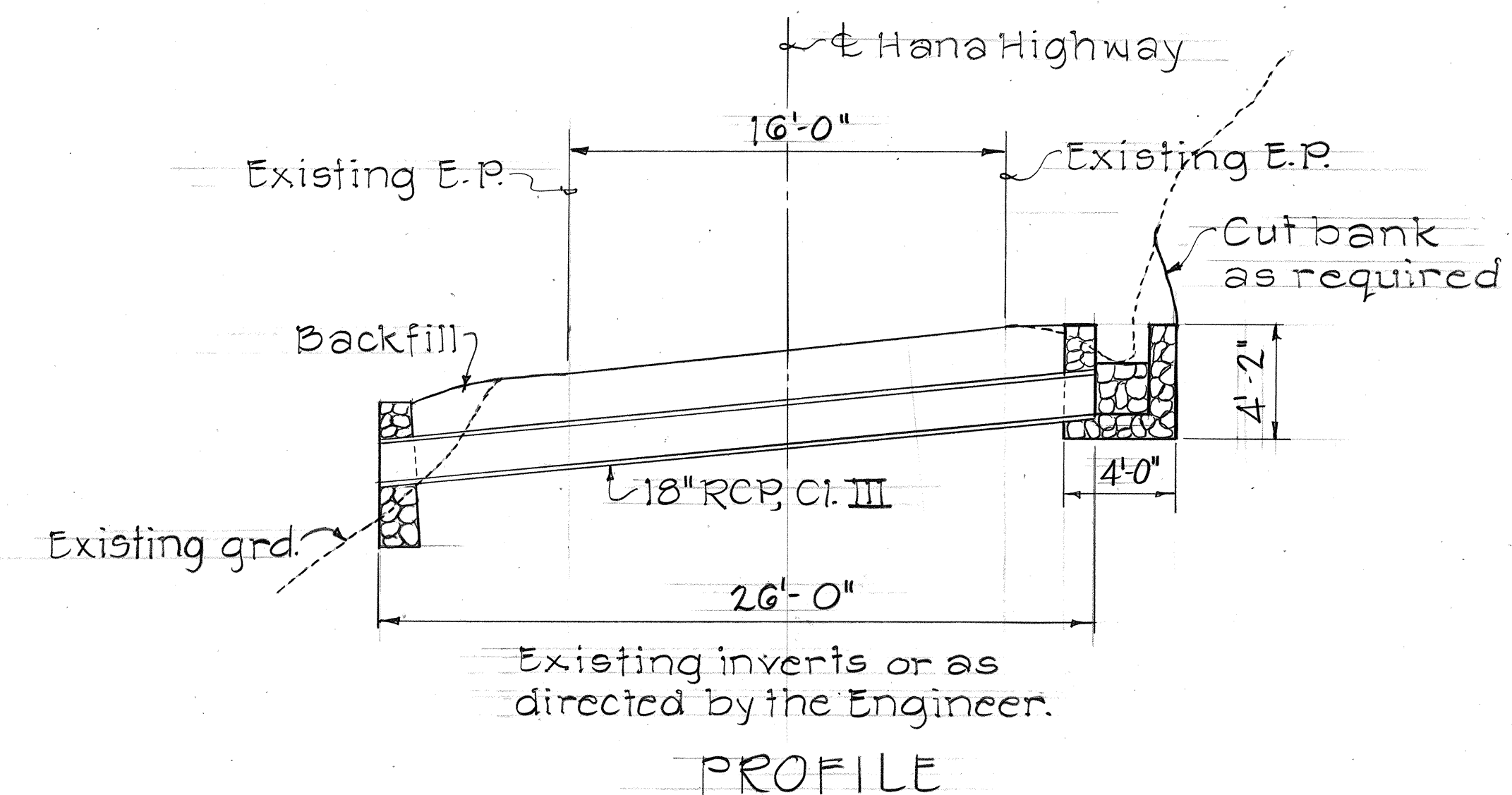
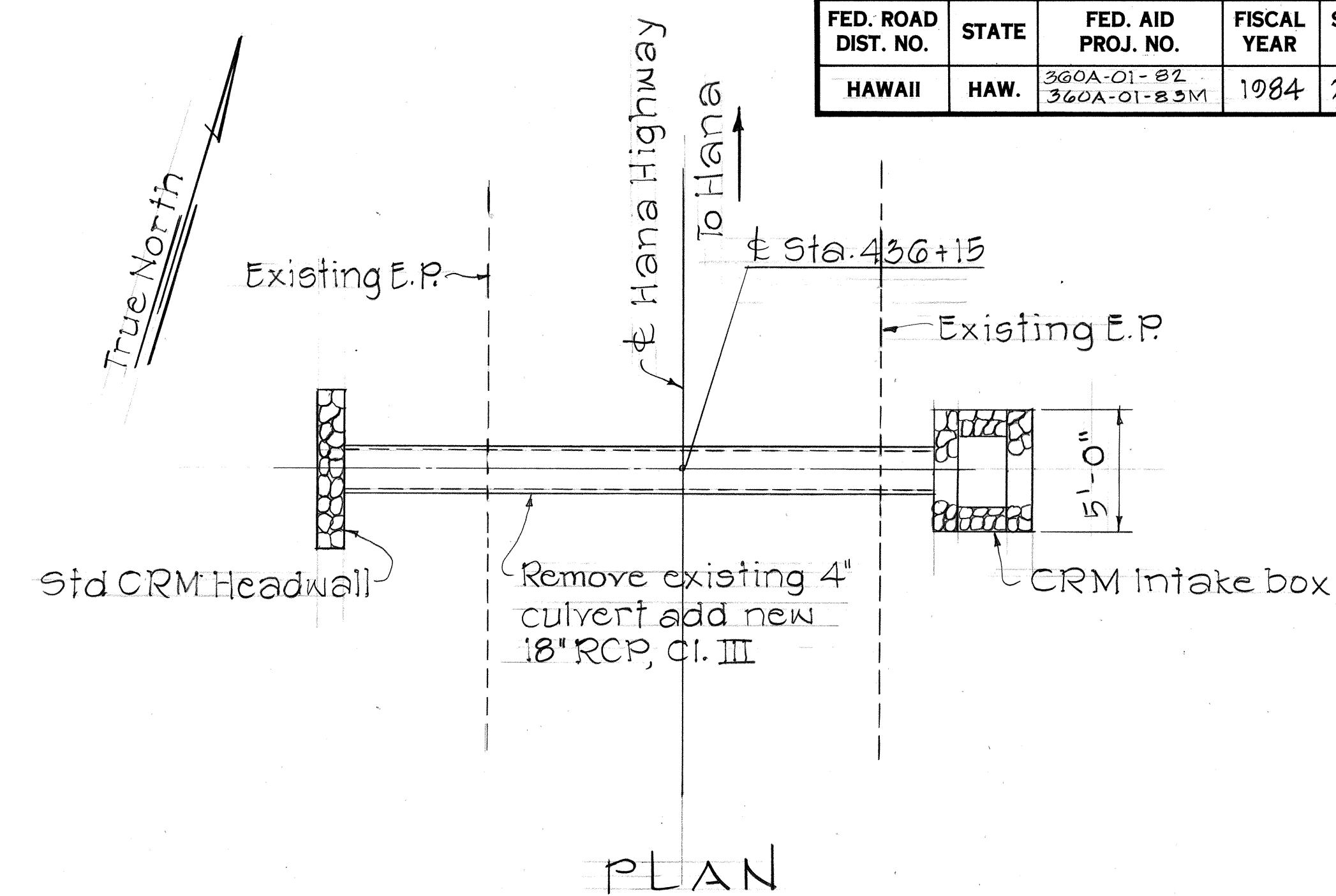
SHEET NO. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1984	2692	36



BOX CULVERT EXTENSION AT STA. 412+00

ESTIMATED QUANTITIES	
Excavation	= 7 C.Y.
CRM	= 5.8 C.Y.
Class A Conc.	= 0.7 C.Y.
Reinf. Steel	= 140 lbs



ESTIMATED QUANTITIES	
Struct. Exc.	= 20 C.Y.
18" RCP, CI. III	= 26 L.F.
CRM	= 4.3 C.Y.

NEW CULVERT - STA. 436+15
FIELD DIRECTIVE NO. 5
Scale: 1" = 5'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

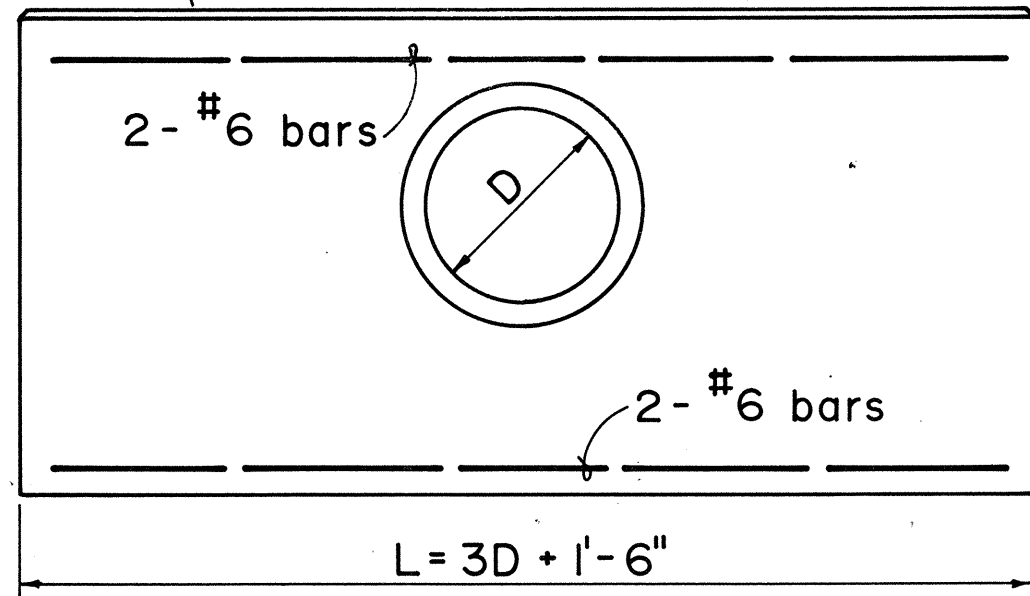
HANA HIGHWAY
IMPROVEMENTS & RESURFACING
Proj Nos. 360A-01-82 & 360A-01-83M
Scale: As Noted Date: Oct. 1983

SHEET NO. 63 OF 7 SHEETS

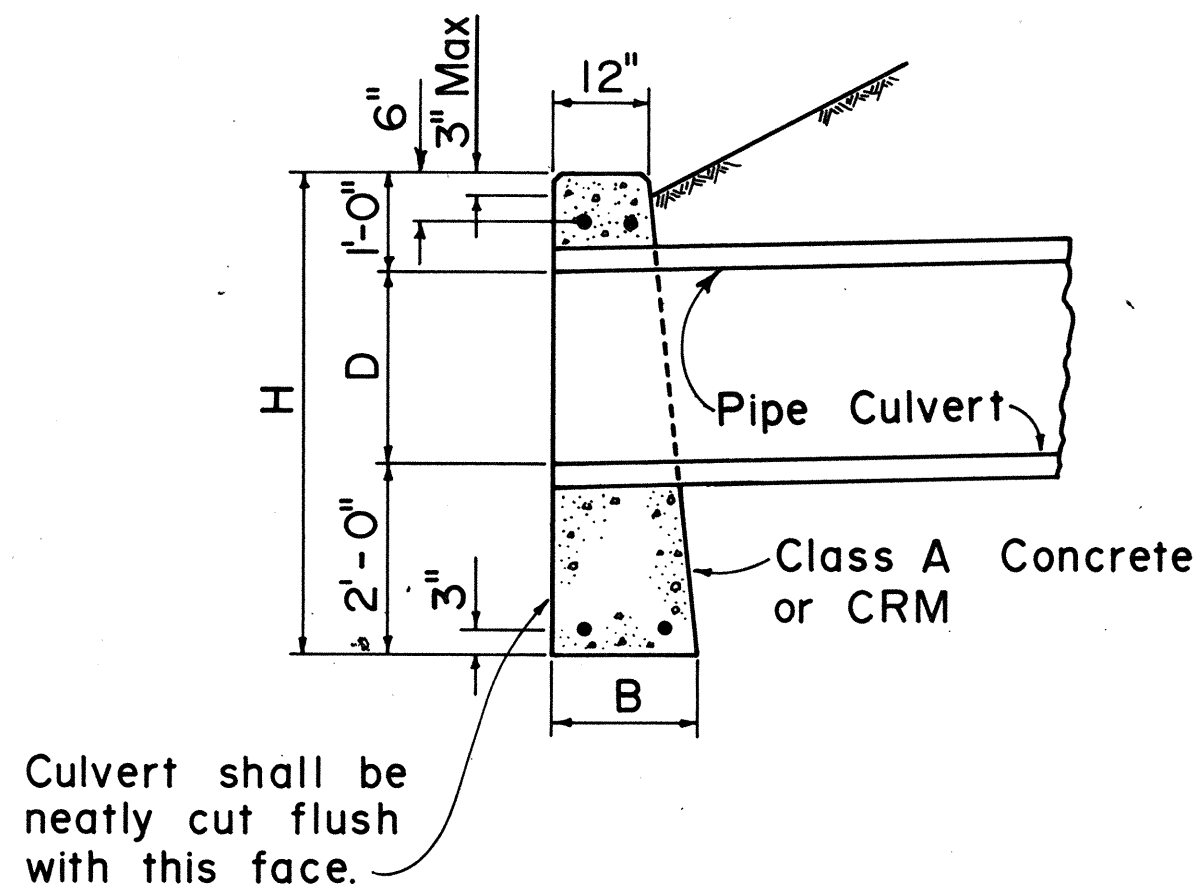
265-2

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-B2 360A-01-B3M	1982	27	30

Chamfer all exposed edges one inch



ELEVATION



SECTION

DATA FOR CONC. HDWL.			
D	B	L	H
18"	1'-6"	6'-0"	4'-6"
24"	1'-6"	7'-6"	5'-0"
30"	2'-0"	9'-0"	5'-6"
36"	2'-0"	10'-6"	6'-0"
42"	2'-6"	12'-0"	6'-6"
48"	2'-6"	13'-6"	7'-0"

DATA FOR CRM HDWL.			
D	B	L	H
18"	1'-9"	6'-0"	4'-6"
24"	2'-0"	7'-6"	5'-0"
30"	2'-3"	9'-0"	5'-6"
36"	2'-6"	10'-6"	6'-0"

CONCRETE OR CRM HEADWALL

APPROVAL RECOMMENDED:
T. Nakano 6-19-79
 HYDRAULIC DESIGN ENGINEER DATE
 APPROVED:
Harold Zalewski 6-22-79
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1.	Supersedes Sht. DH 10 approved 12-17-69	H.T.	6/22/79
2.	Change Class of concrete	H.T.	12/4/80

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 STANDARD DETAILS
 CONCRETE OR CEMENT
 RUBBLE MASONRY HEADWALLS

Not To Scale Date: June 1979