

# Molokai Irrigation System Repairs



\*For Gate Details: See Board of Water Supply, Water System Standards 2002, Detail F1

# Kualapu'u Reservoir Vegetation Removal

Northwest Section



~~Northeast Section~~



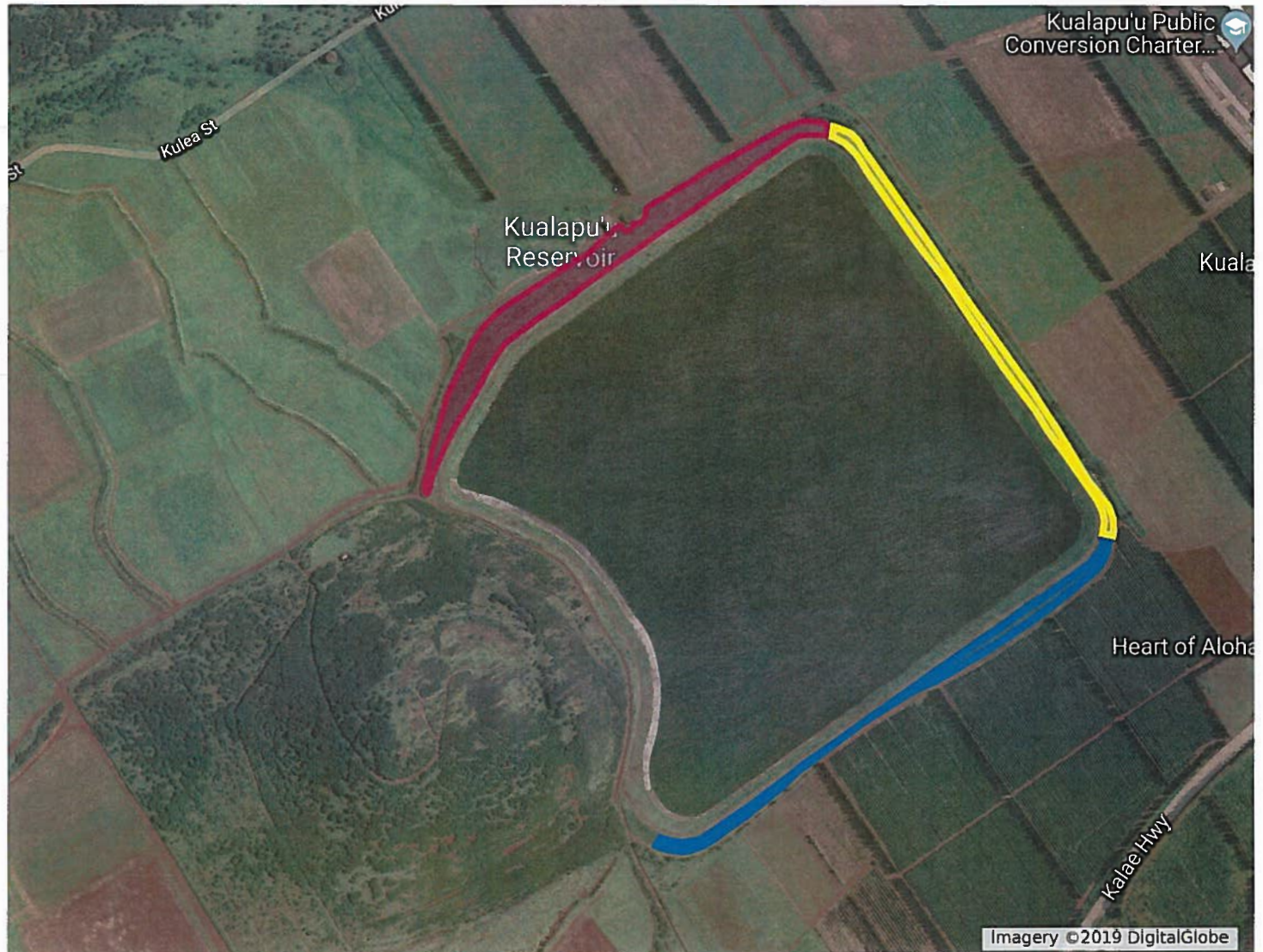
~~Southeast Section~~

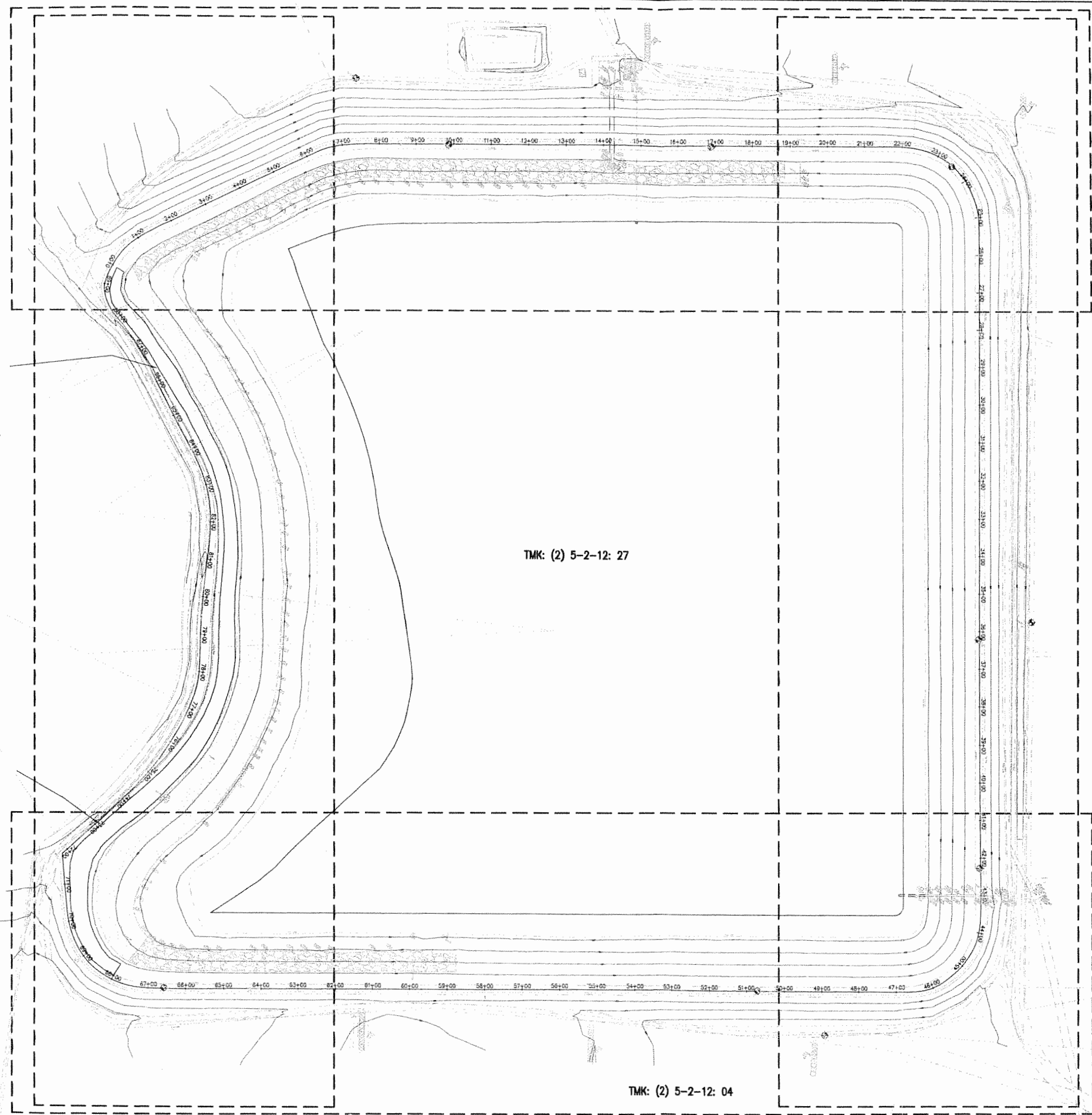
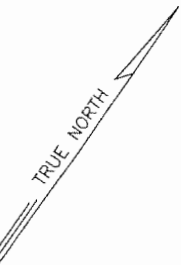


Approximate limits of  
vegetation removal.

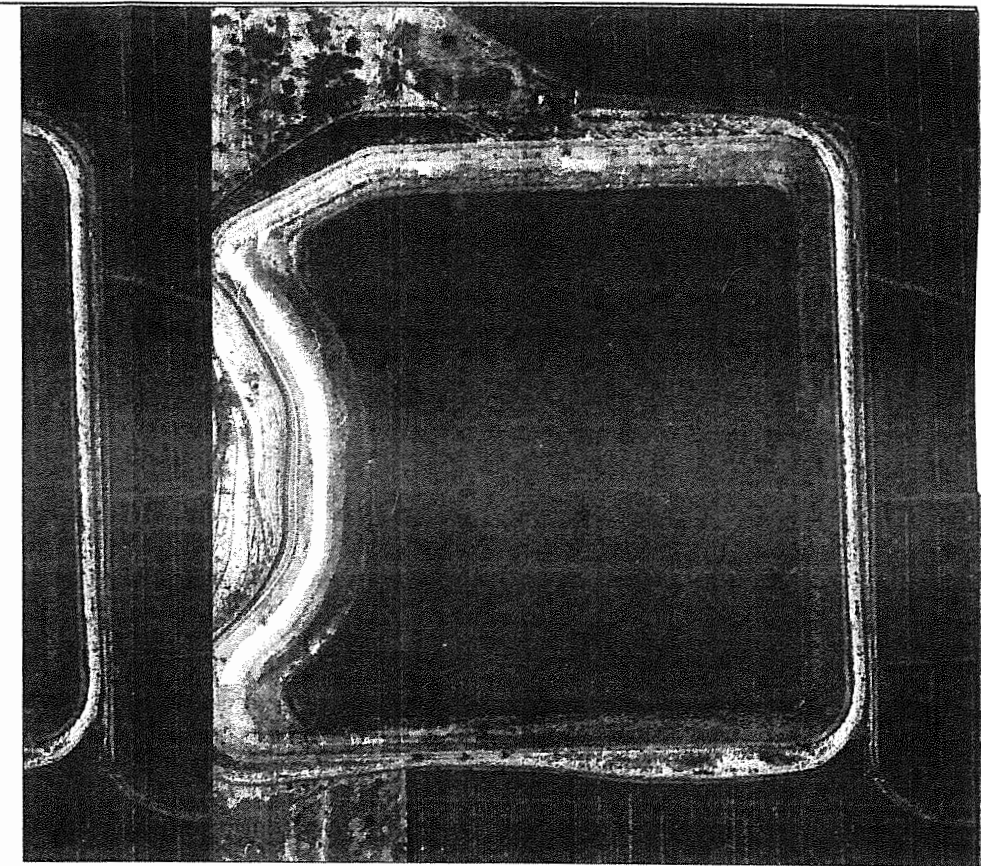
See General Site and Key Plan  
for scale.

**Cut stumps at ground  
level, do not remove root  
ball.**



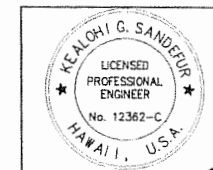
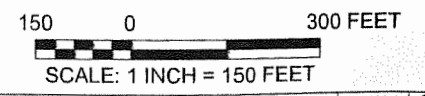


**GENERAL SITE AND KEY PLAN**  
SCALE: 1" = 150'



**AERIAL PHOTOGRAPH (2002)**  
NOT TO SCALE

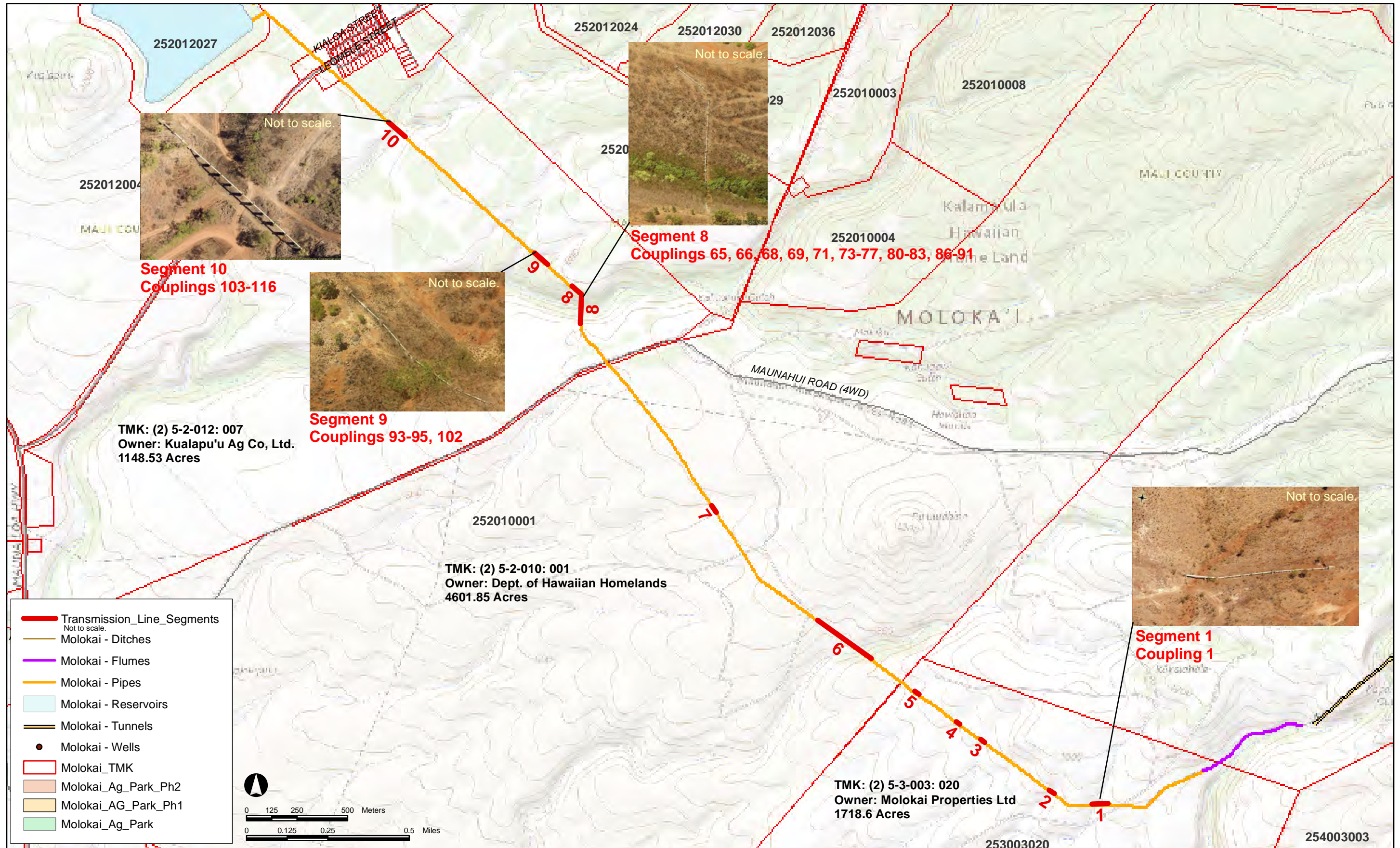
REFERENCE:  
R.M.TOWILL CORPOTATION (09-07-2002)



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONTROL AND I AM A MEMBER OF THE SOCIETY OF PROFESSIONAL ENGINEERS AND SURVEYORS, STATE OF HAWAII.

SYN	DESCRIPTION	DATE	APP'D
REVISIONS			
STATE OF HAWAII DEPARTMENT OF AGRICULTURE AGRICULTURAL RESOURCE MANAGEMENT DIVISION			
PROJECT NO. DOASW01-B KUALAPUU RESERVOIR (HI-0041), HAWAII STATE IRRIGATION SYSTEM RESERVOIR SAFETY IMPROVEMENTS PROJECT			
SHEET TITLE: <b>GENERAL SITE AND KEY PLAN</b>			
Yogi Kwong Engineers, LLC			
DESIGNED:	K'S	APPROVED BY:	
DRAWN:	MS	DATE:	May 5, 2010
CHECKED:	JK	SCALE:	As Shown

# Molokai Irrigation System, Coupling Replacement



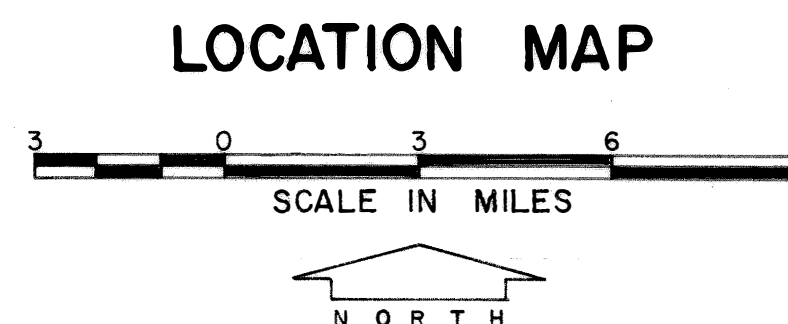
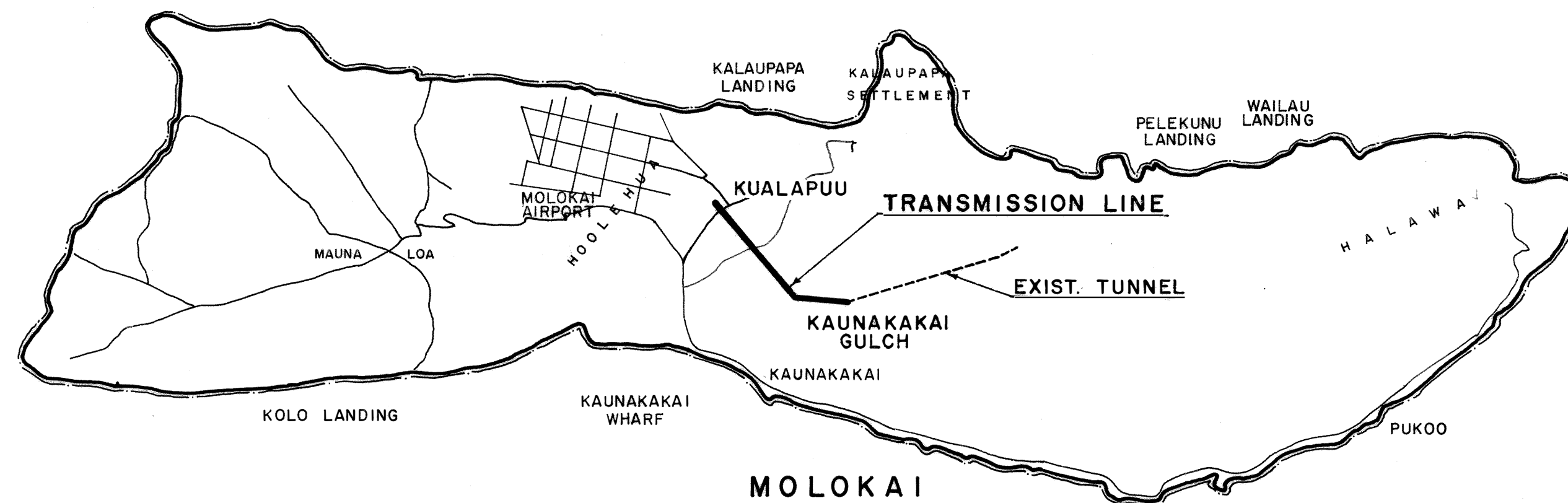
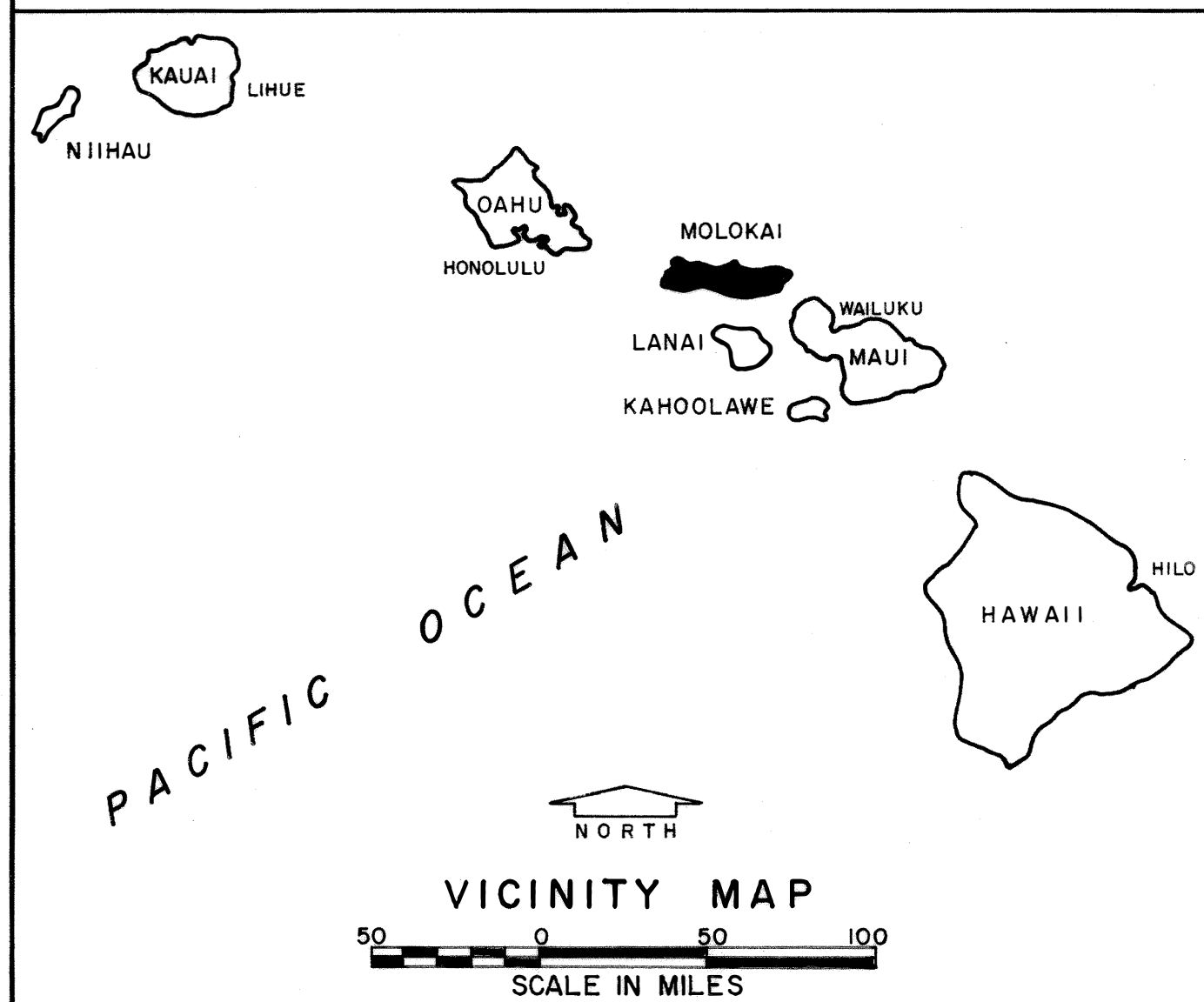
# REPAIR OF COUPLINGS AT

JOB NO. 3-H-5

# 30-INCH TRANSMISSION MAIN KAUNAKAKAI GULCH TO KUALAPUU

MOLOKAI IRRIGATION PROJECT  
MOLOKAI, HAWAII

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF WATER AND LAND DEVELOPMENT



## INDEX

DESCRIPTION	SHEET NO.
TITLE SHEET	1
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PLAN & PROFILE	3-II
CONSTRUCTION DETAILS	12-16

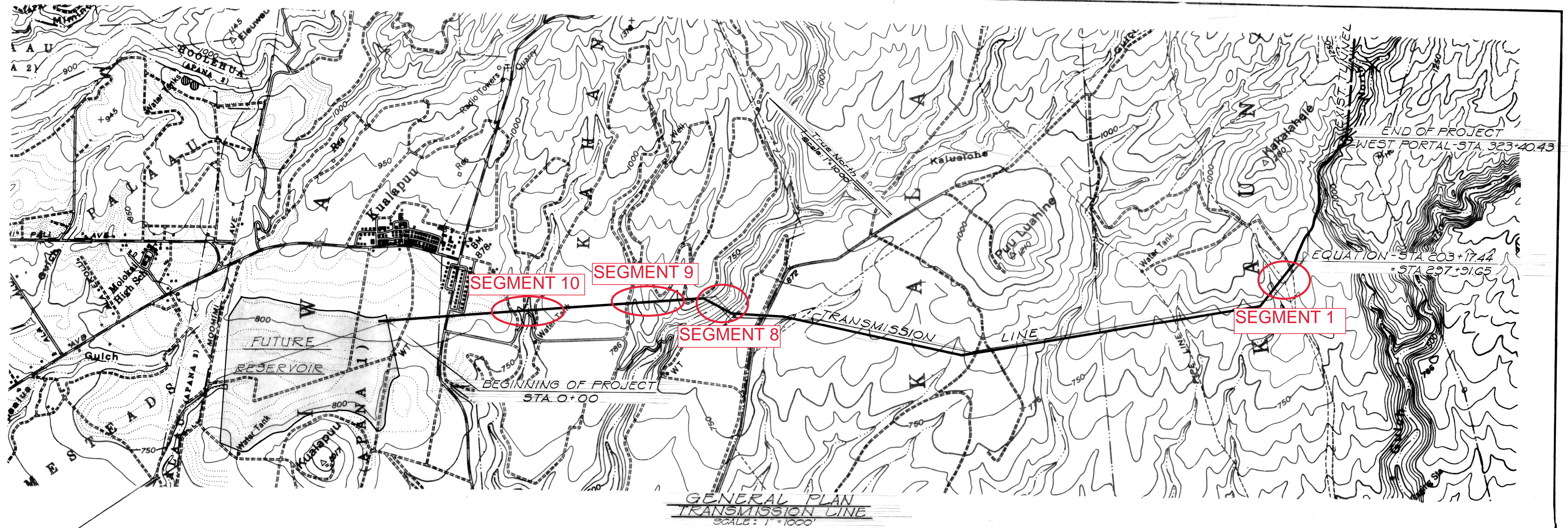
"AS BUILT" PLANS

DATE: January, 1968

APPROVED: *Sam O. Niwata, P.E.* DATE: 12/12/62  
DIRECTOR, DEPARTMENT OF TRANSPORTATION

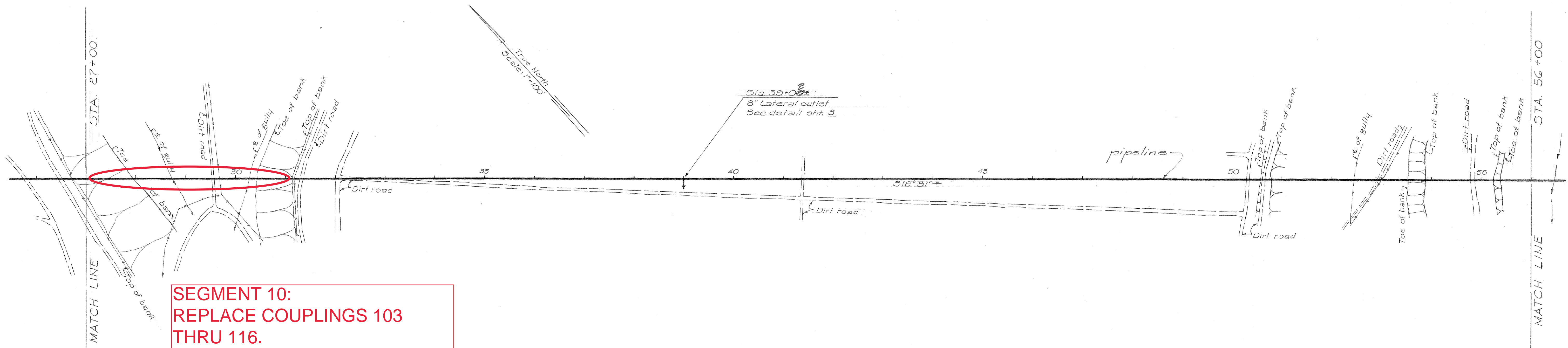
APPROVED: *[Signature]* DATE: 12-27-62  
DIRECTOR, DEPARTMENT OF LAND AND NATURAL RESOURCES

APPROVED: *Robert H. Chuck* DATE: 12-27-62  
MANAGER-ENGINEER  
DIVISION OF WATER AND LAND DEVELOPMENT



STATE OF HAWAII DIVISION OF WATER AND LAND DEVELOPMENT DEPARTMENT OF LAND AND NATURAL RESOURCES		
MOLOKAI IRRIGATION PROJECT		
<b>GENERAL PLAN</b>		
<del>DRAWN:</del>	<del>SUBMITTED:</del>	<del>REVISIONS:</del>
<del>CHECKED:</del>	<del>DATE:</del>	<del>FILE NO.:</del>
APPROVED: <i>Robert H. Mucke</i> MANAGER - ENGINEER		

PLAN	BY	DATE
SURVEYED		
PLOTTED		
NOTE BOOK		
RT. OF WAY CHECKED		
NO.		



**SEGMENT 10:  
REPLACE COUPLINGS 103  
THRU 116.  
\* AT 112 REPLACE BLOW OFF  
ASSEMBLY TYPE B, SEE DETAIL**

Note:  
Pipe exposed from Sta 27+00 to Sta 31+0  
and Sta 51+05 to Sta 54+00

**PLAN**  
Scale: 1" = 100'

PROFILE	BY	DATE
SURVEYED		
NOTE BOOK		
GRADES CHECKED		
B. M'S NOTED		
STRUC. LINE INDICATED		
NO.		

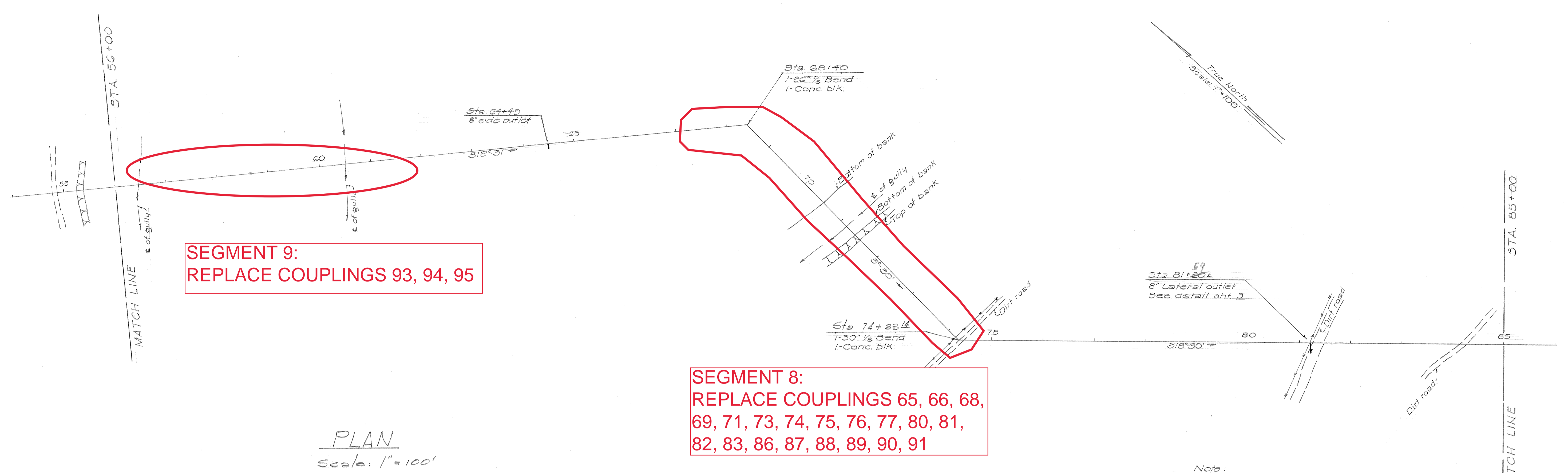


**PROFILE**  
Scale: Horiz: 1" = 100'  
Vert: 1" = 10'

SEE SH. 1 OF 13 ENO NR 2  
# NO. NR 1 FOR PROFILE

PLAN	SURVEYED	DATE
	PLOTTED	BY
	NOTE BOOK	CHECKED
	NO.	RT. OF WAY CHECKED

PROFILE	SURVEYED	DATE
	GRADES CHECKED	BY
	NO.	STRUCTURE NOTATIONS CHECKED



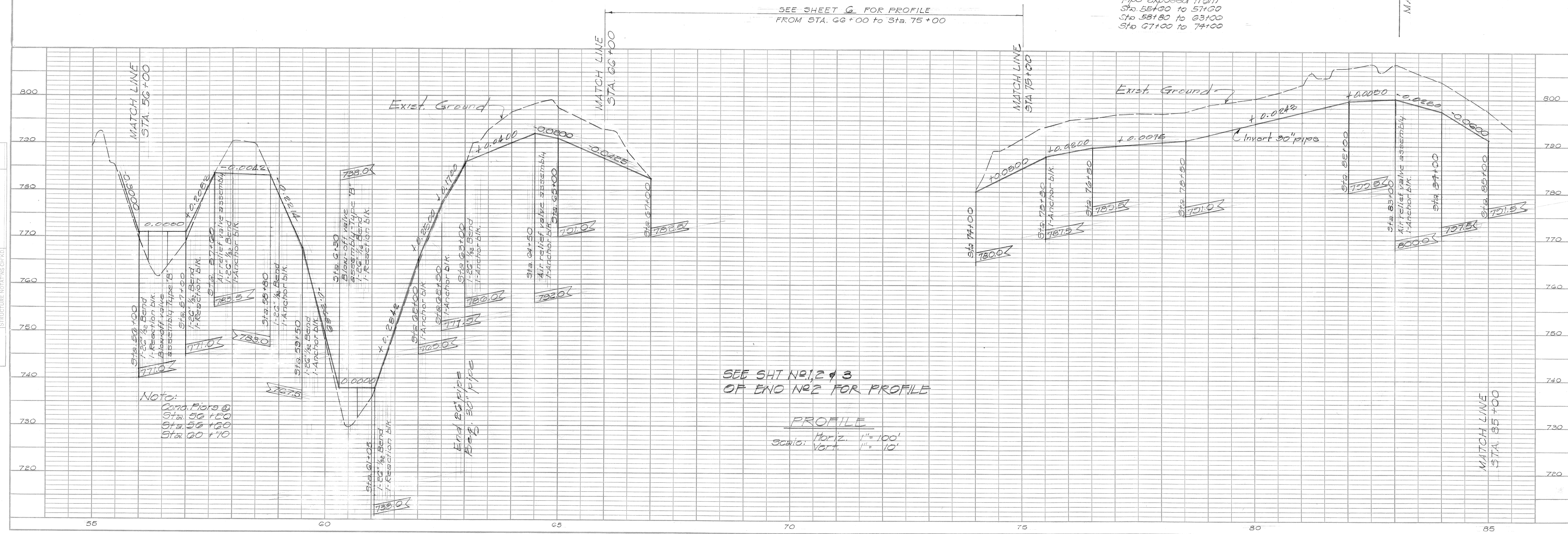
PLAN  
Scale: 1" = 100'

SEGMENT 8:  
REPLACE COUPLINGS 65, 66, 68,  
69, 71, 73, 74, 75, 76, 77, 80, 81,  
82, 83, 86, 87, 88, 89, 90, 91

SEGMENT 9:  
REPLACE COUPLINGS 93, 94, 95

Note:  
Pipe exposed from  
Sta. 55+00 to 57+00  
Sta. 58+80 to 63+00  
Sta. 67+00 to 74+00

SEE SHEET G FOR PROFILE  
FROM STA. 66+00 TO STA. 75+00



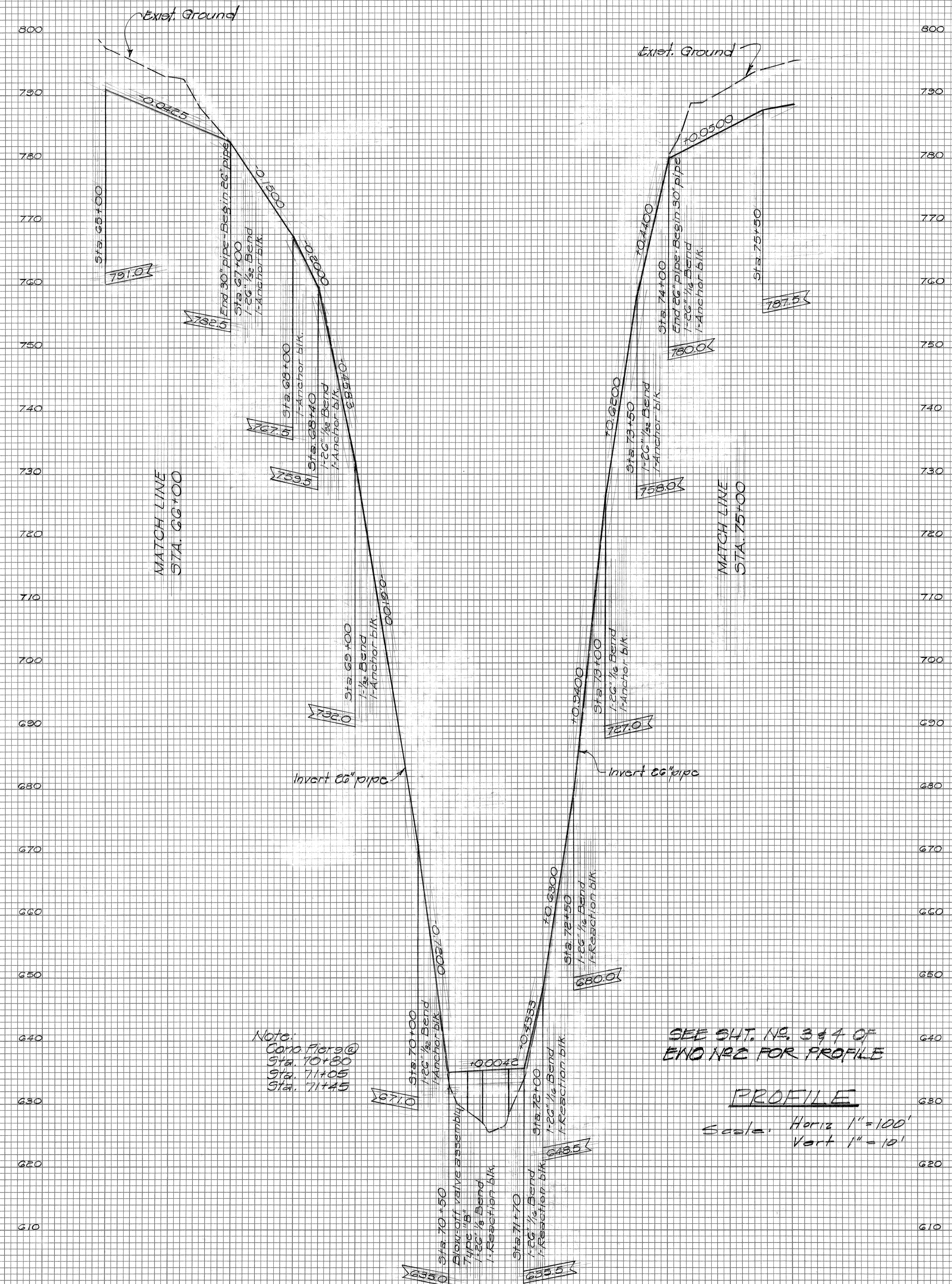
SEE SHI NO. 2 & 3  
OF END NO. 2 FOR PROFILE

PROFILE  
Scale: Horiz. 1" = 100'  
Vert. 1" = 10'

Note:  
Cond. Piers @  
Sta. 55+00  
Sta. 55+80  
Sta. 60+70

FINAL SURVEY SURVEYED BY DATE  
 PLOTTED BY DATE  
 NOTE BOOK NO. TEMPLATE NO. AREAS CHECKED

ORIGINAL SURVEY SURVEYED BY DATE  
 PLOTTED BY DATE  
 NOTE BOOK NO. TEMPLATE NO. AREAS CHECKED

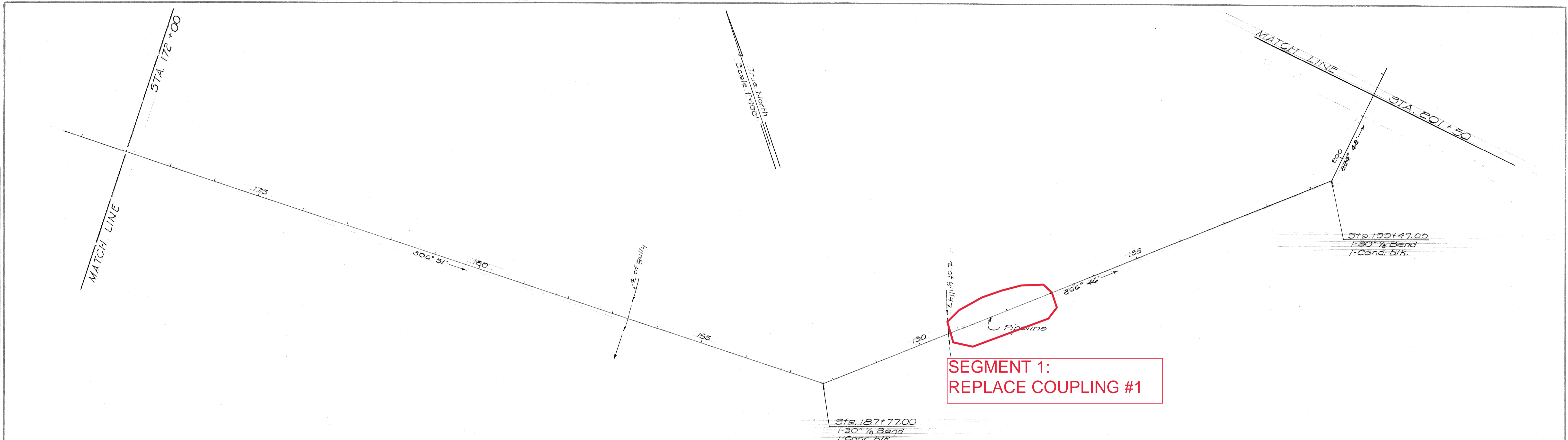


Notes:  
 Canal Piers @  
 Sta. 70+80  
 Sta. 71+05  
 Sta. 71+45

SEE SHT. NO. 347 OF  
 END NR2 FOR PROFILE

**PROFILE**  
 Scale: Horiz 1" = 100'  
 Vert 1" = 10'

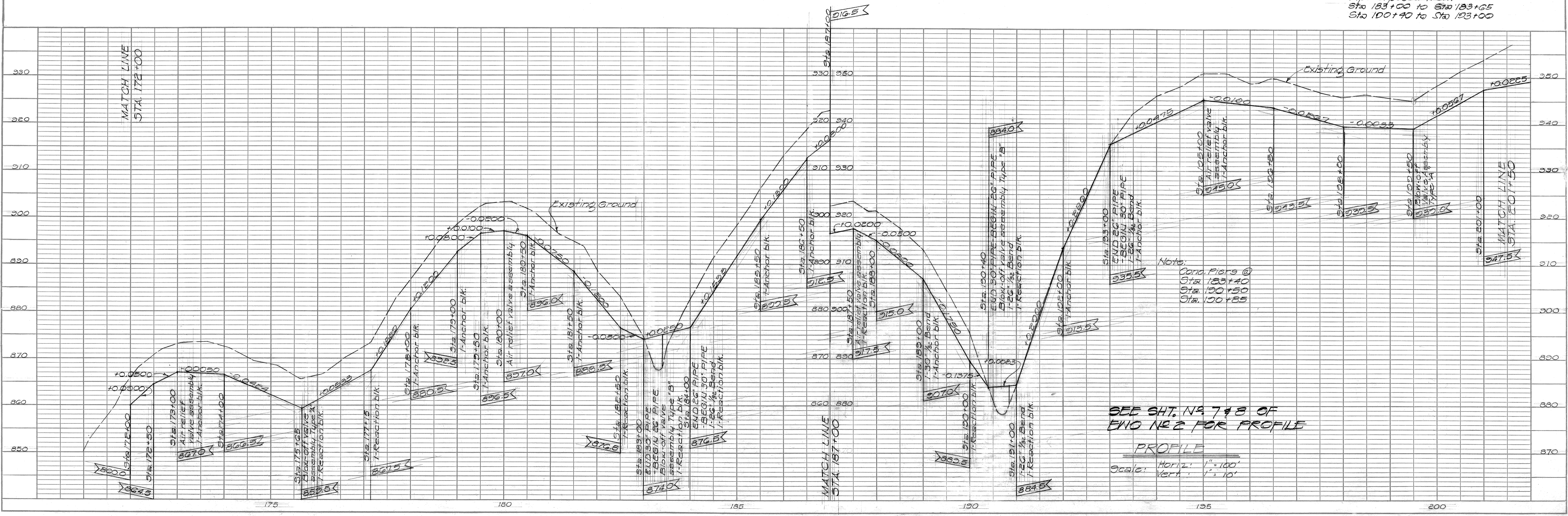
PLAN	SURVEYED	BY	DATE
	PLOTTED		
	CHECKED		
	RT. OF WAY CHECKED		
	NO.		



PLAN  
Scale: 1"=100'

Note:  
Pipe exposed from  
Sta 183+00 to Sta 193+05  
Sta 100+40 to Sta 103+00

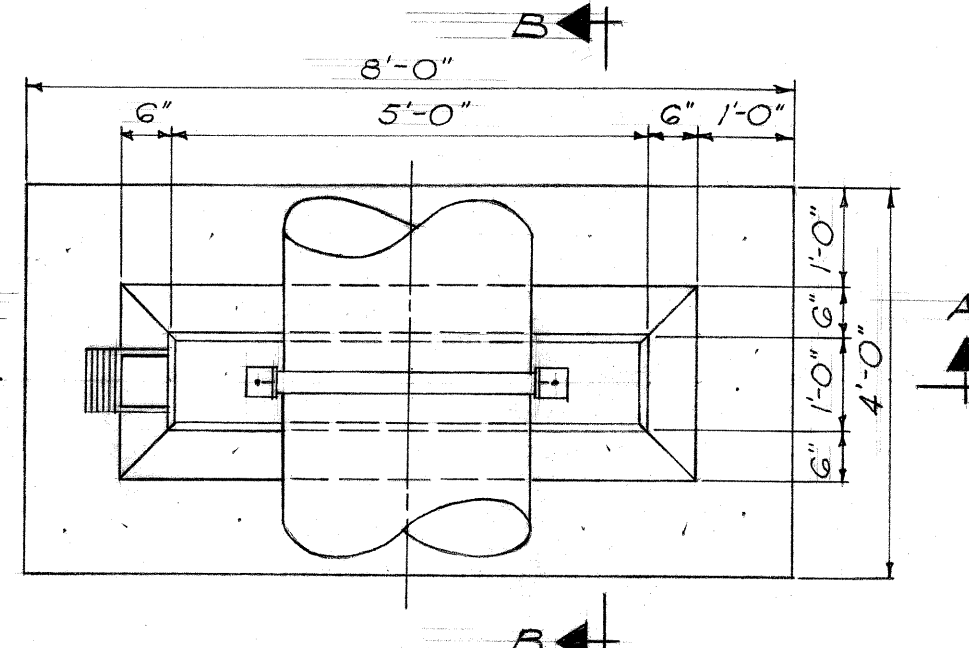
PROFILE	SURVEYED	BY	DATE
	GRADES CHECKED		
	E. M.S. NOTED		
	STRUCTURE NOTATIONS CHECKED		
	NO.		



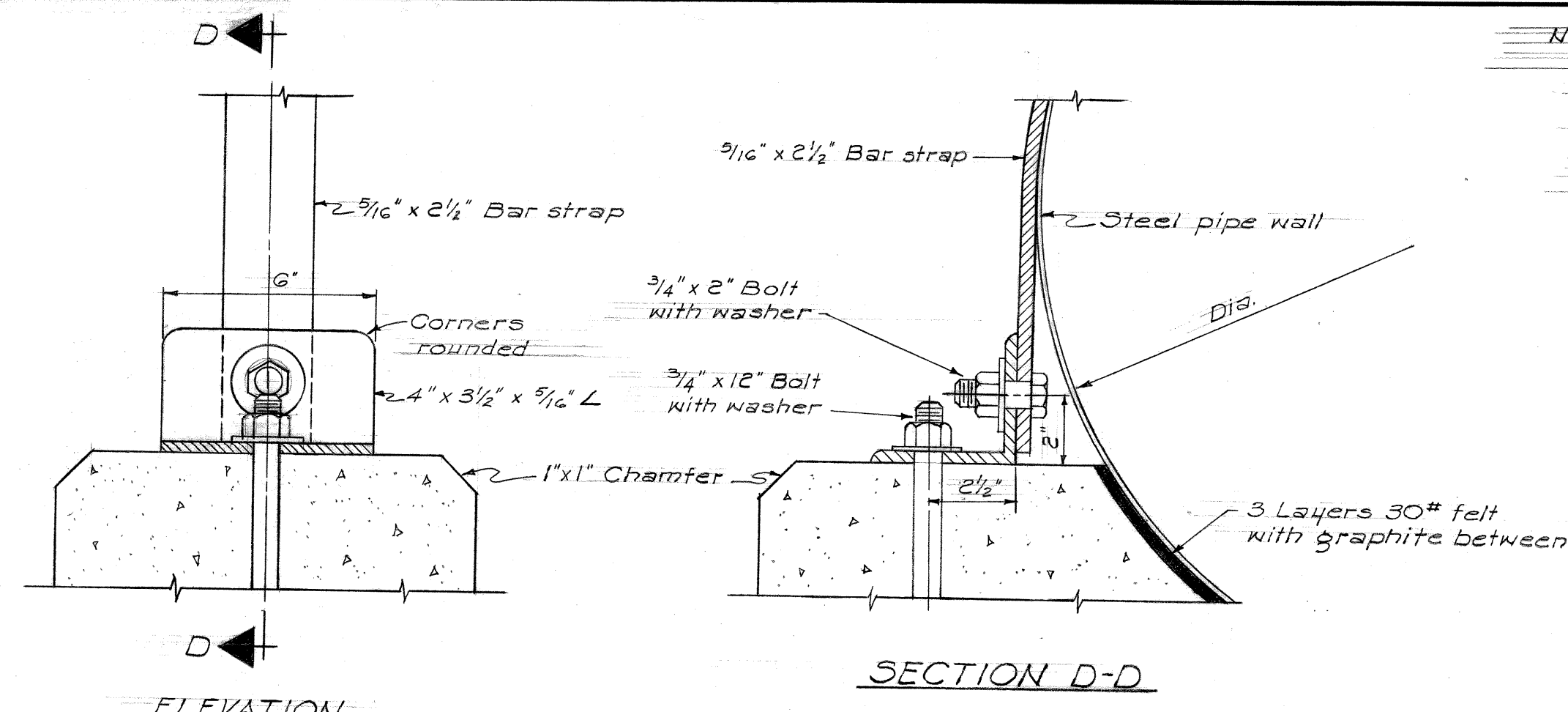
Note:  
Coro. Piers @  
Sta. 183+40  
Sta. 190+50  
Sta. 190+85

SEE SH. NO. 7 & 8 OF  
ENG. NO. 2 FOR PROFILE

PROFILE  
Scale: Horiz. 1"=100'  
Vert. 1"=10'



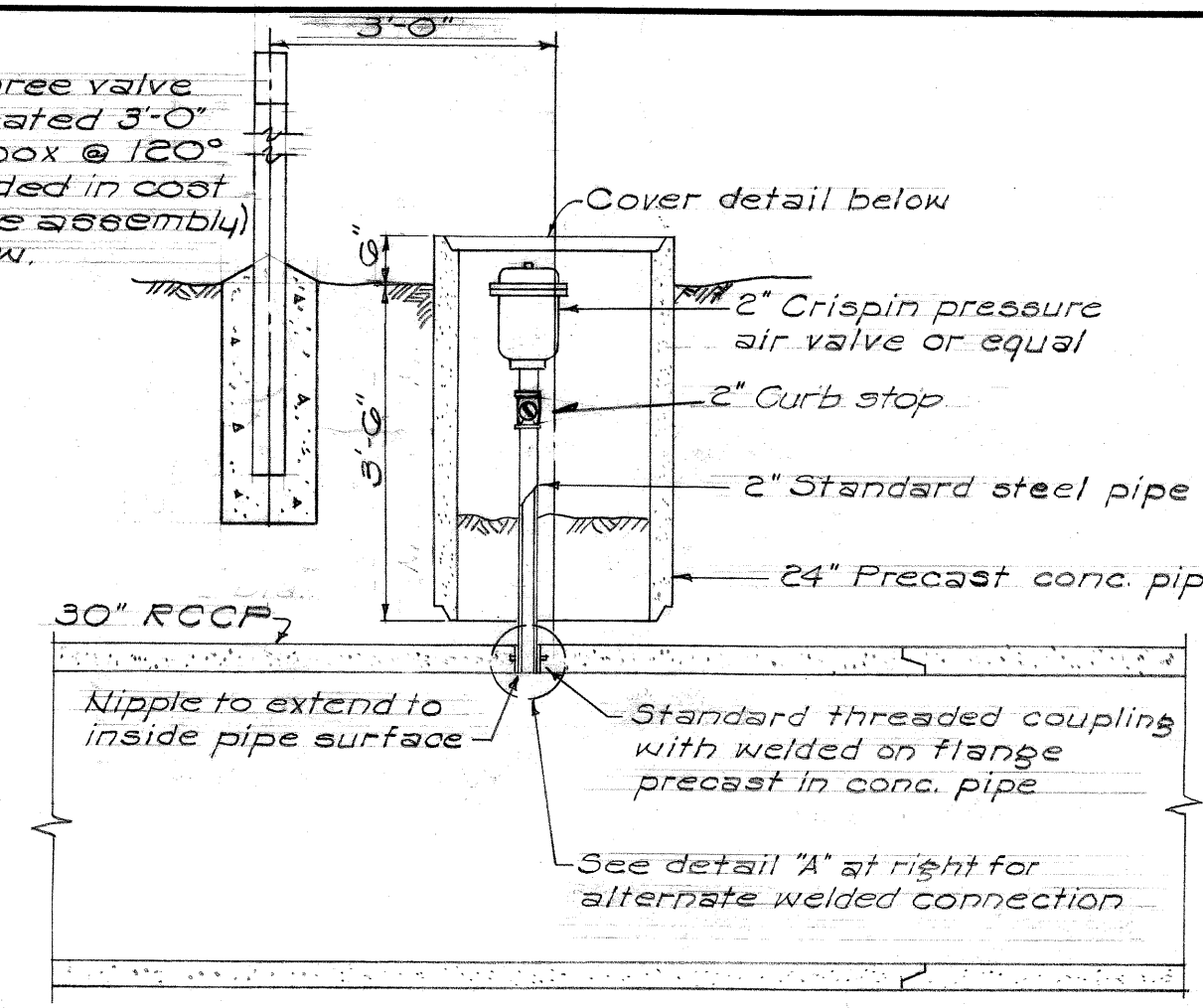
PLAN



ELEVATION

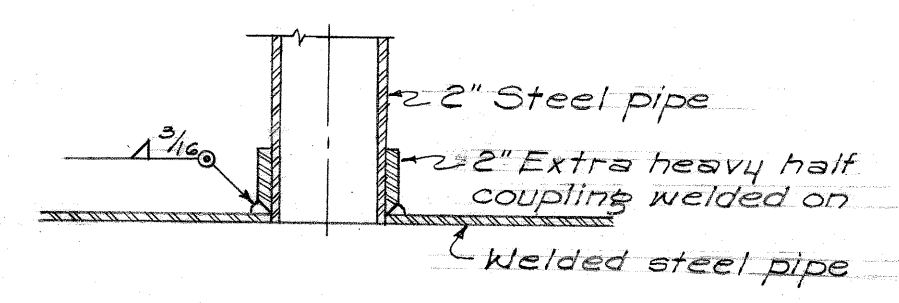
SECTION D-D

NOTE:  
When required, three valve  
guards to be located 3'-0"  
from & of valve box @ 120°  
apart. (Not included in cost  
of air relief valve assembly)  
See detail below.



AIR RELIEF VALVE ASSEMBLY

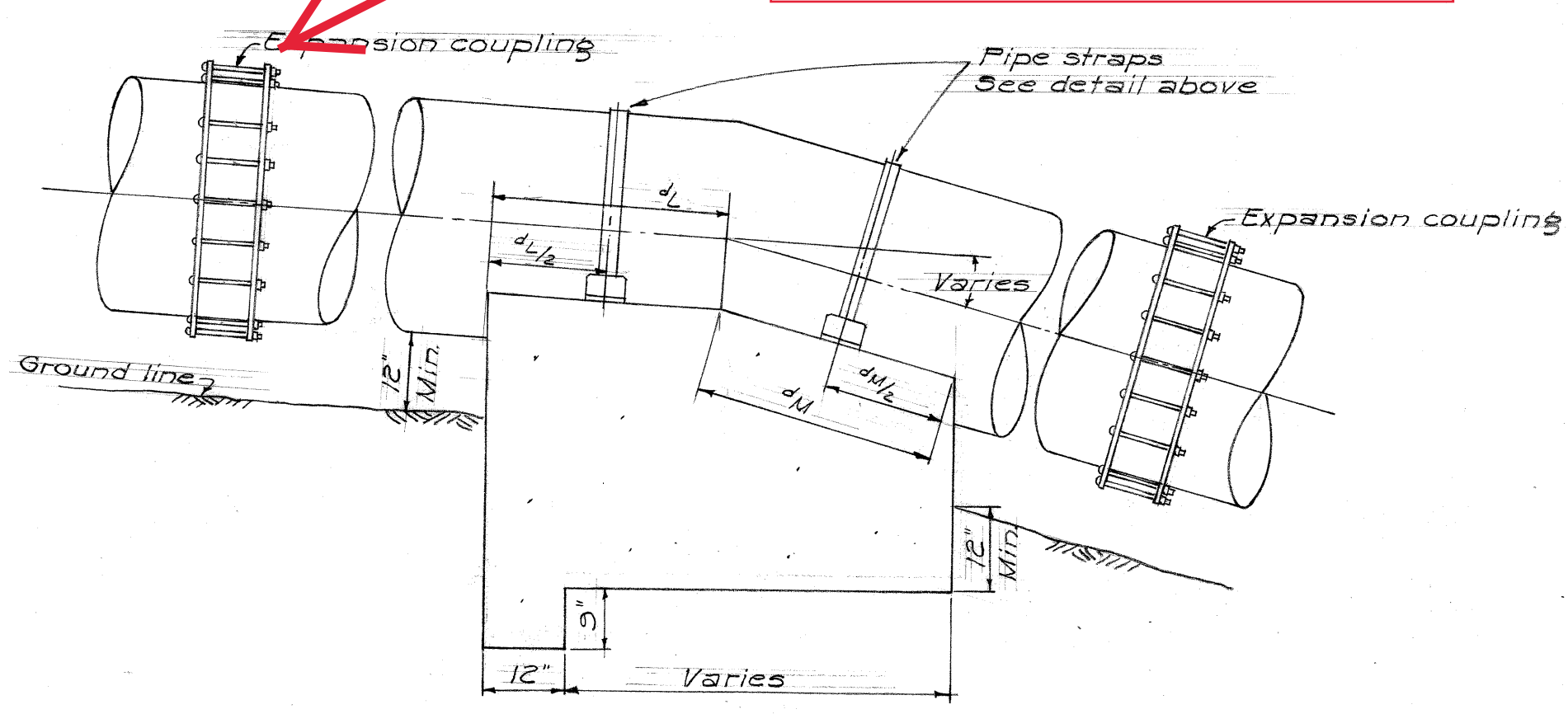
Scale: 1/4" = 1'-0"



DETAIL "A"  
Scale: 3" = 1'-0"

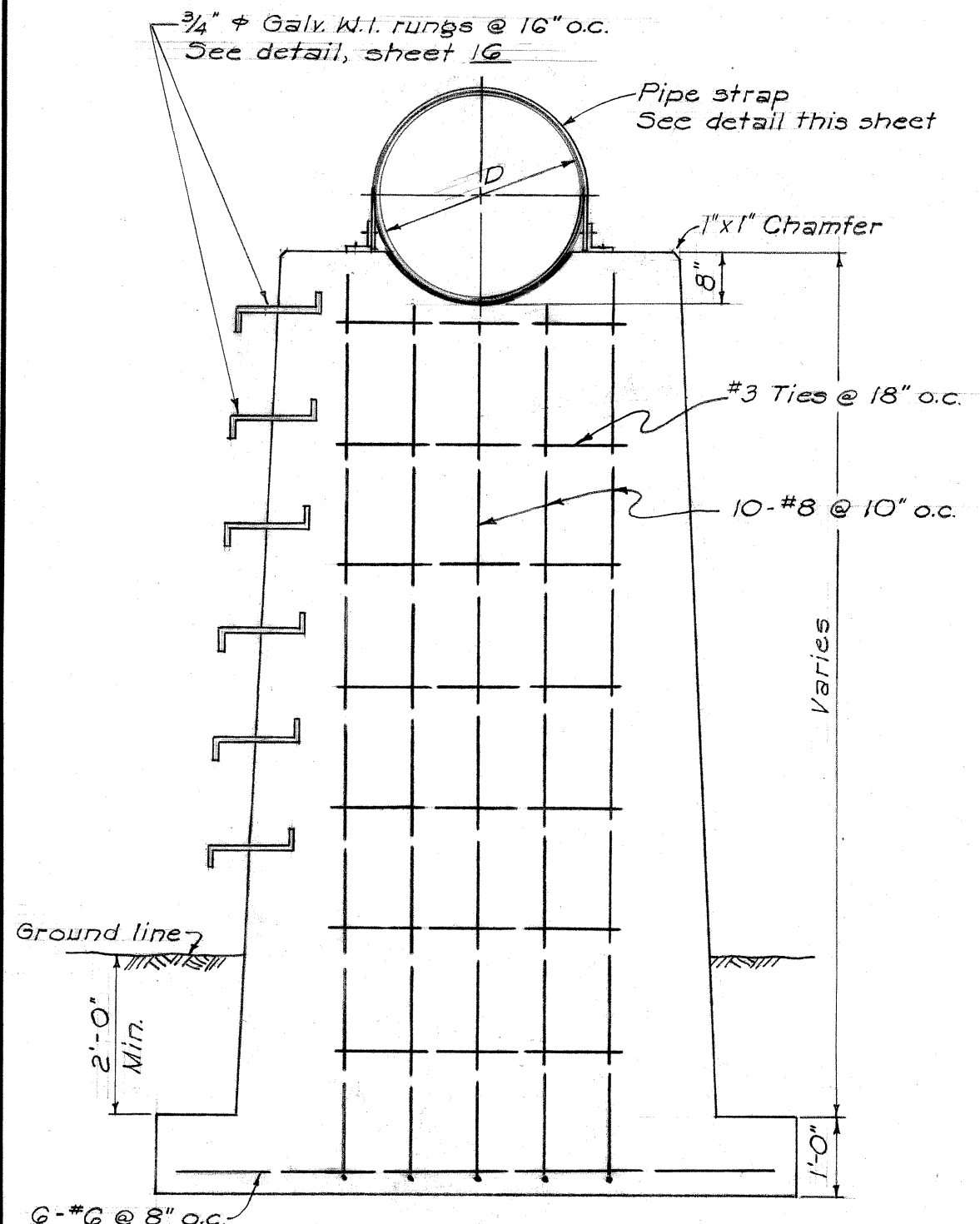
PIPE STRAP DETAIL  
Scale: 3" = 1'-0"

REPLACE COUPLINGS  
WHERE INDICATED ON  
PLANS



TYPICAL ANCHOR BLOCK

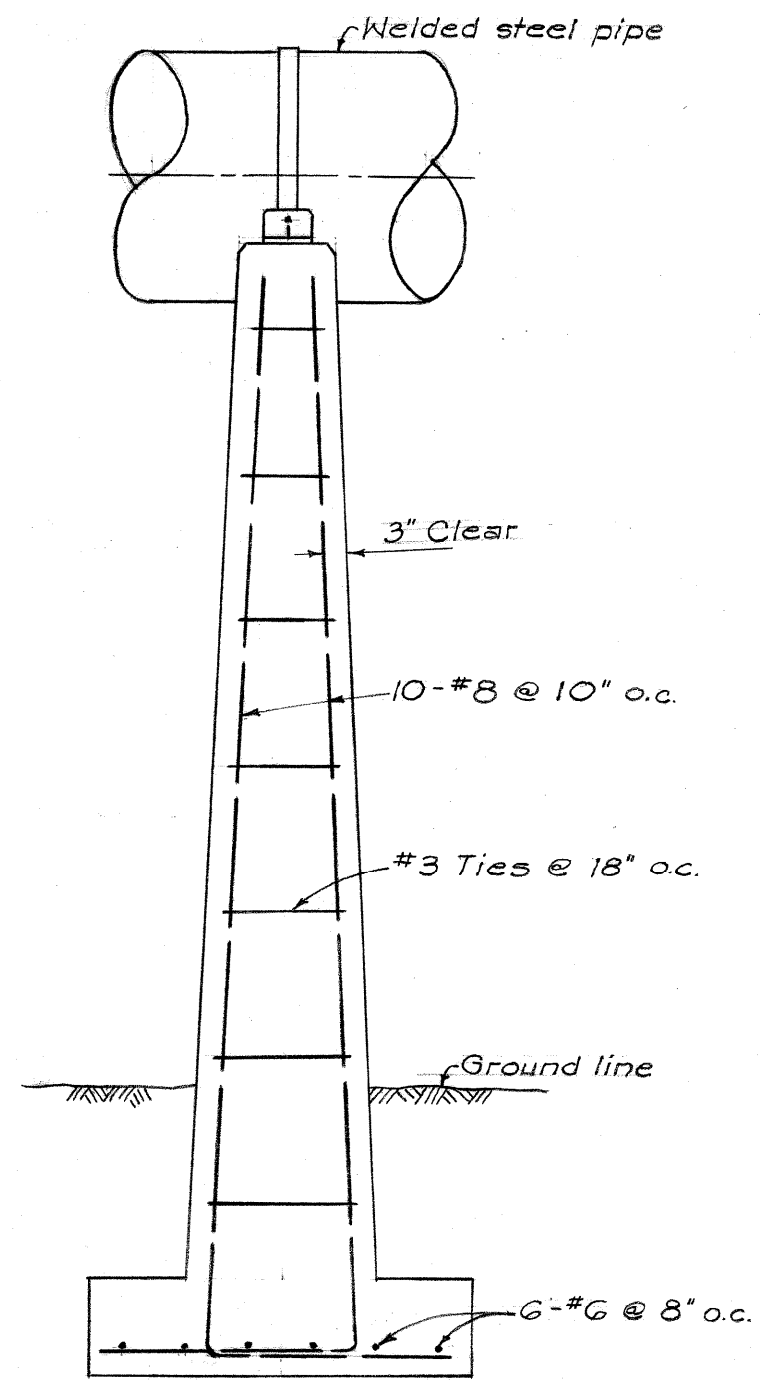
Scale: 1/4" = 1'-0"



SECTION A-A

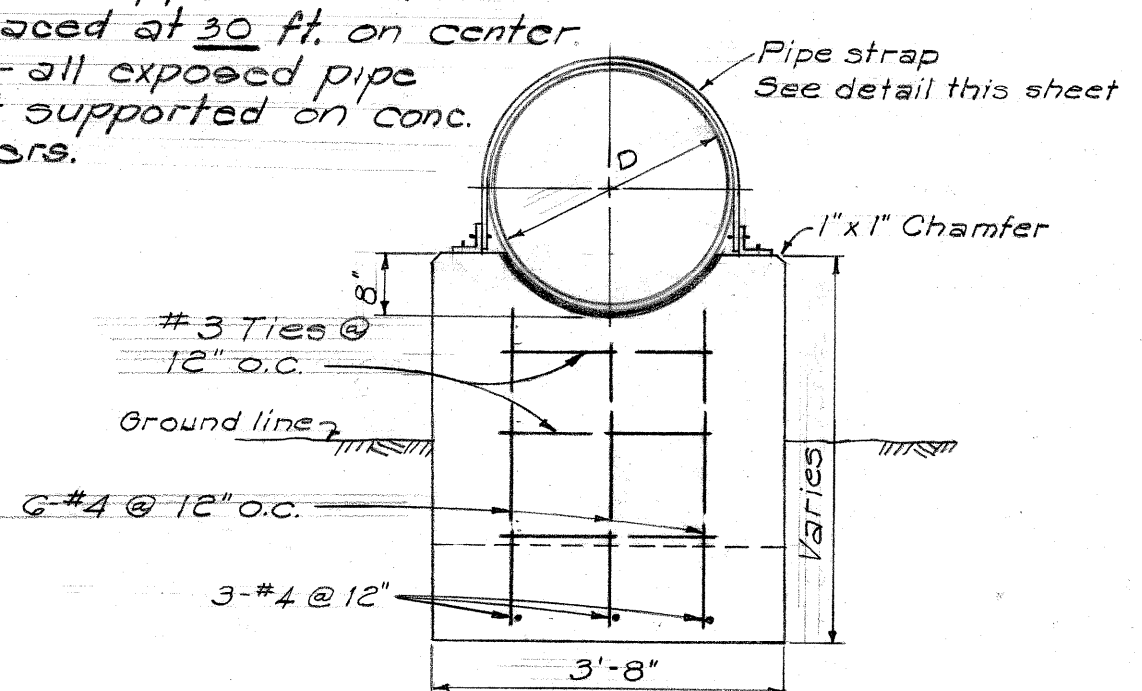
TYPICAL CONCRETE PIER

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



SECTION B-B

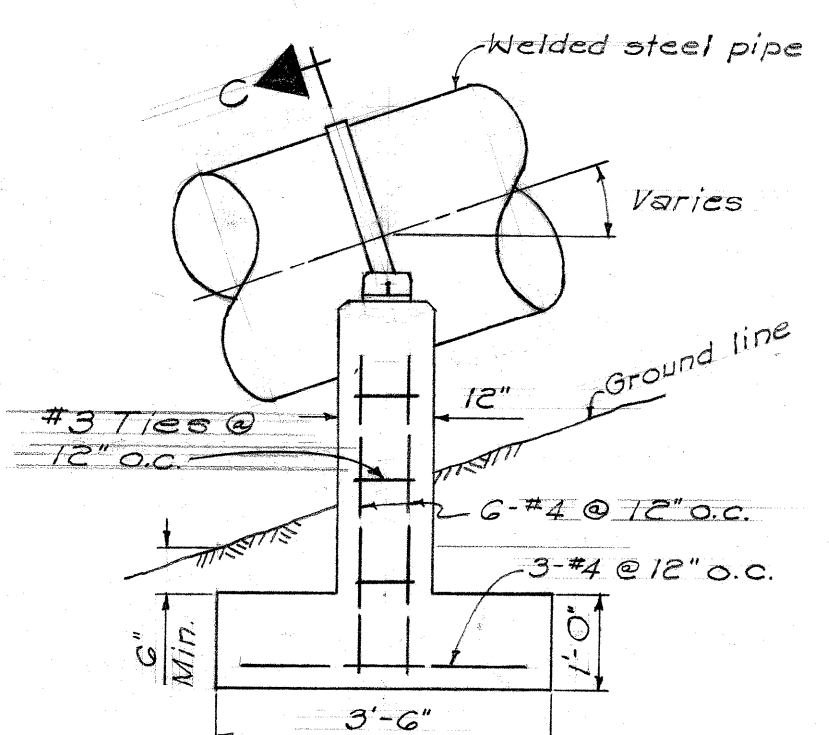
Note:  
Pipe supports shall be  
spaced at 30 ft. on center  
for all exposed pipe  
not supported on conc.  
piers.



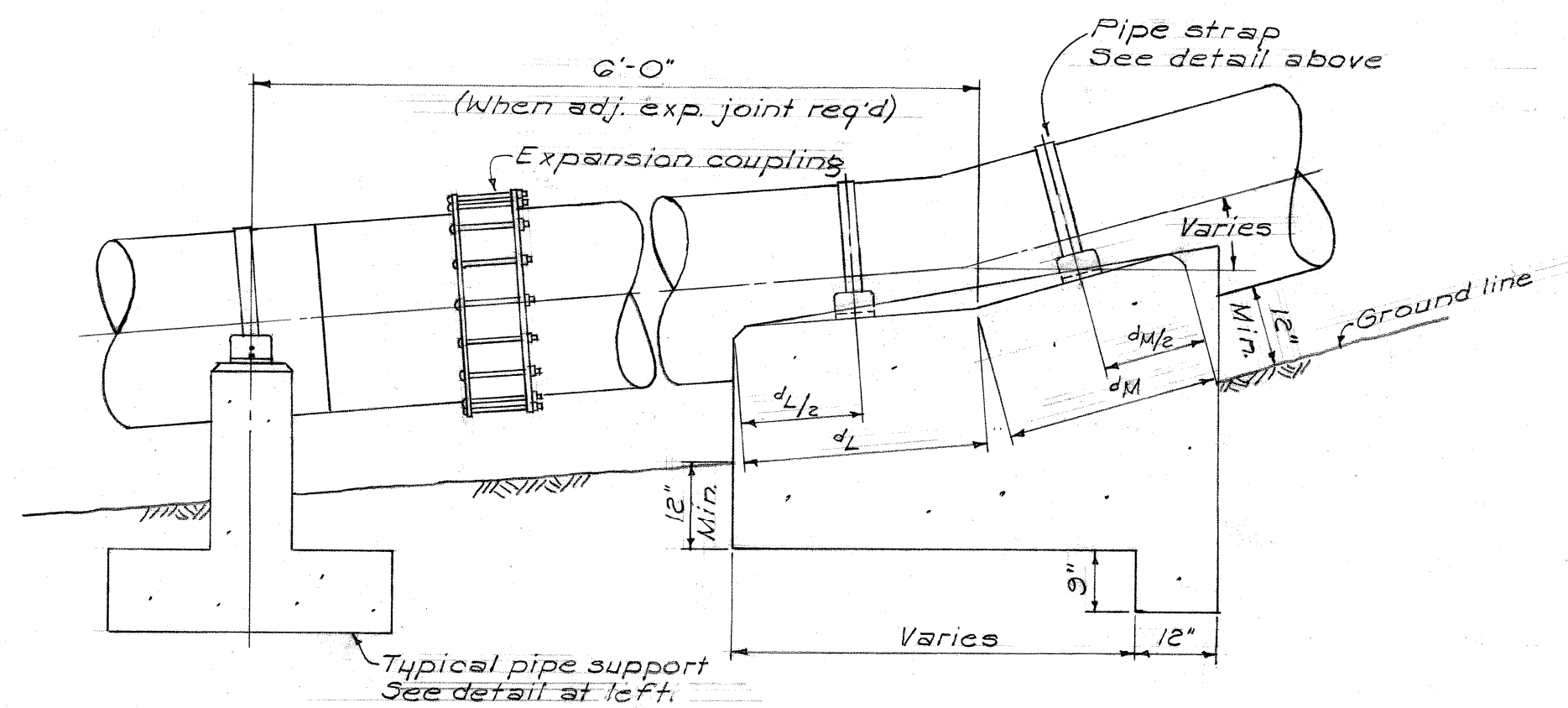
SECTION C-C

TYPICAL PIPE SUPPORT

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

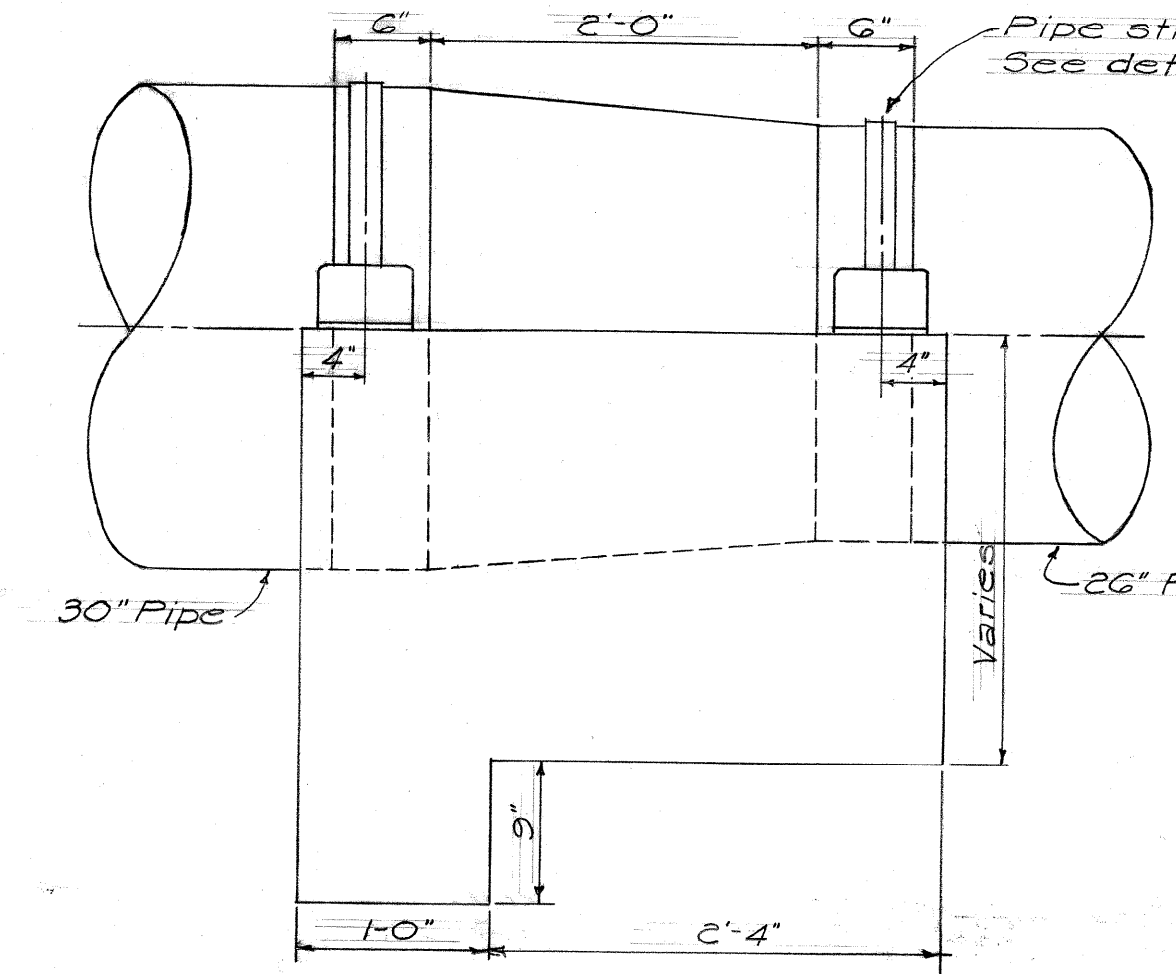


ELEVATION



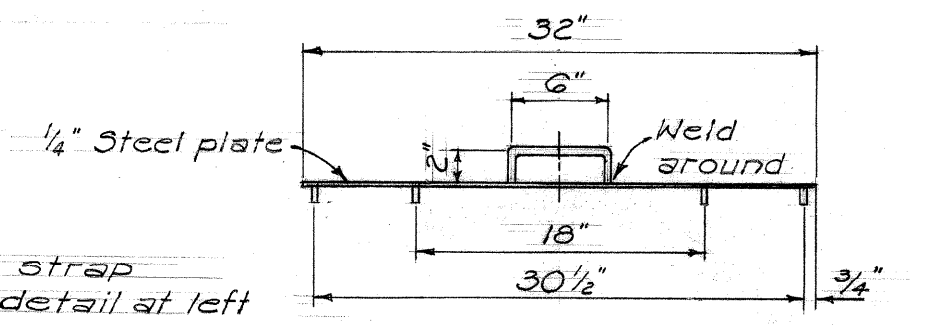
TYPICAL REACTION BLOCK

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

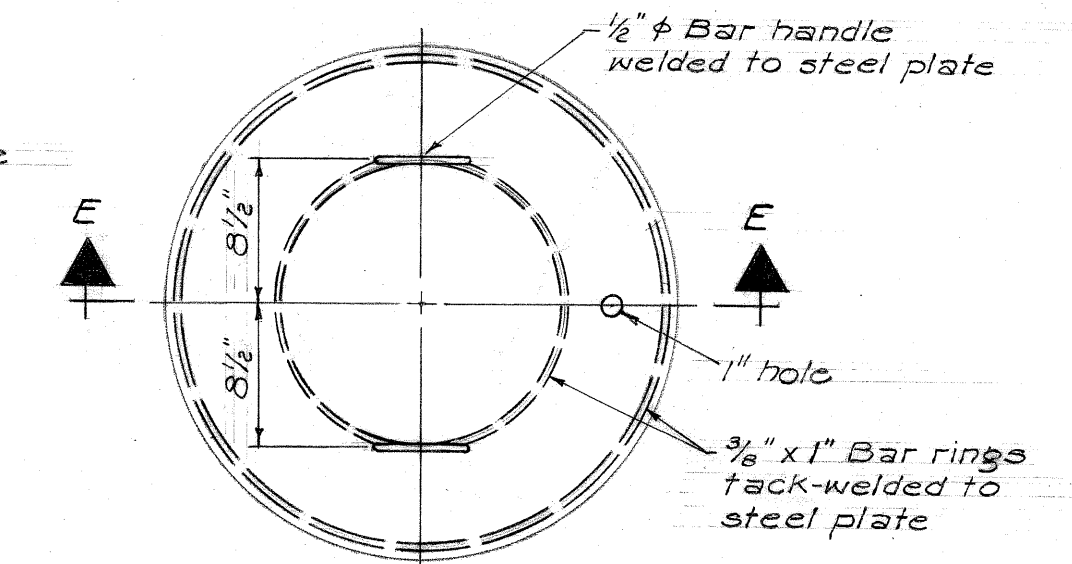


TAPER

Scale: 1" = 1'-0"

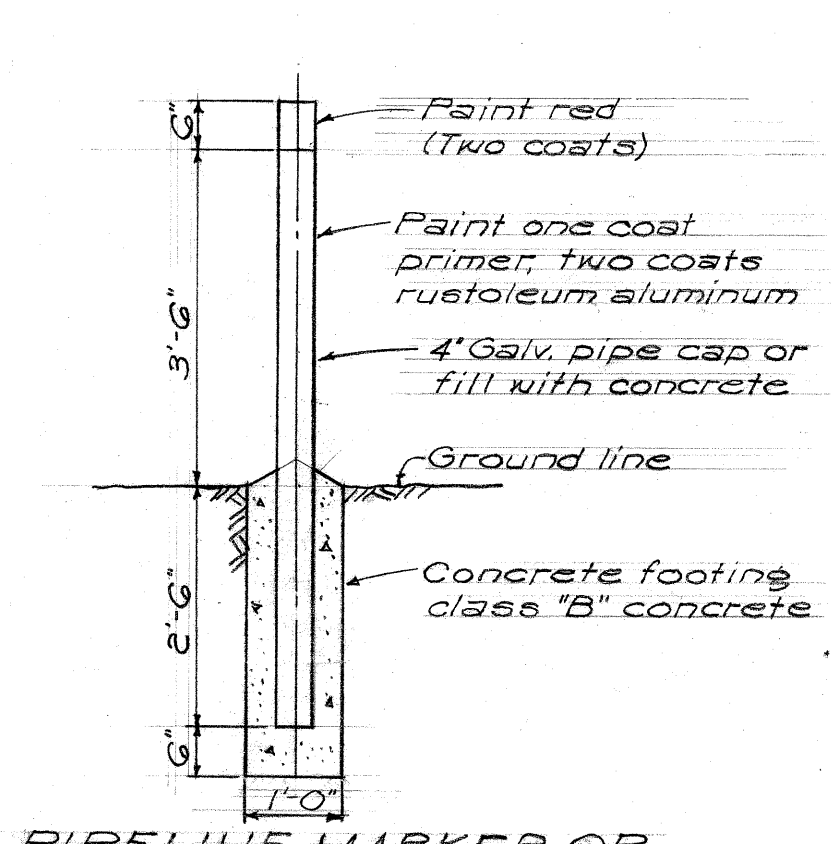


SECTION E-E



AIR VALVE MANHOLE COVER

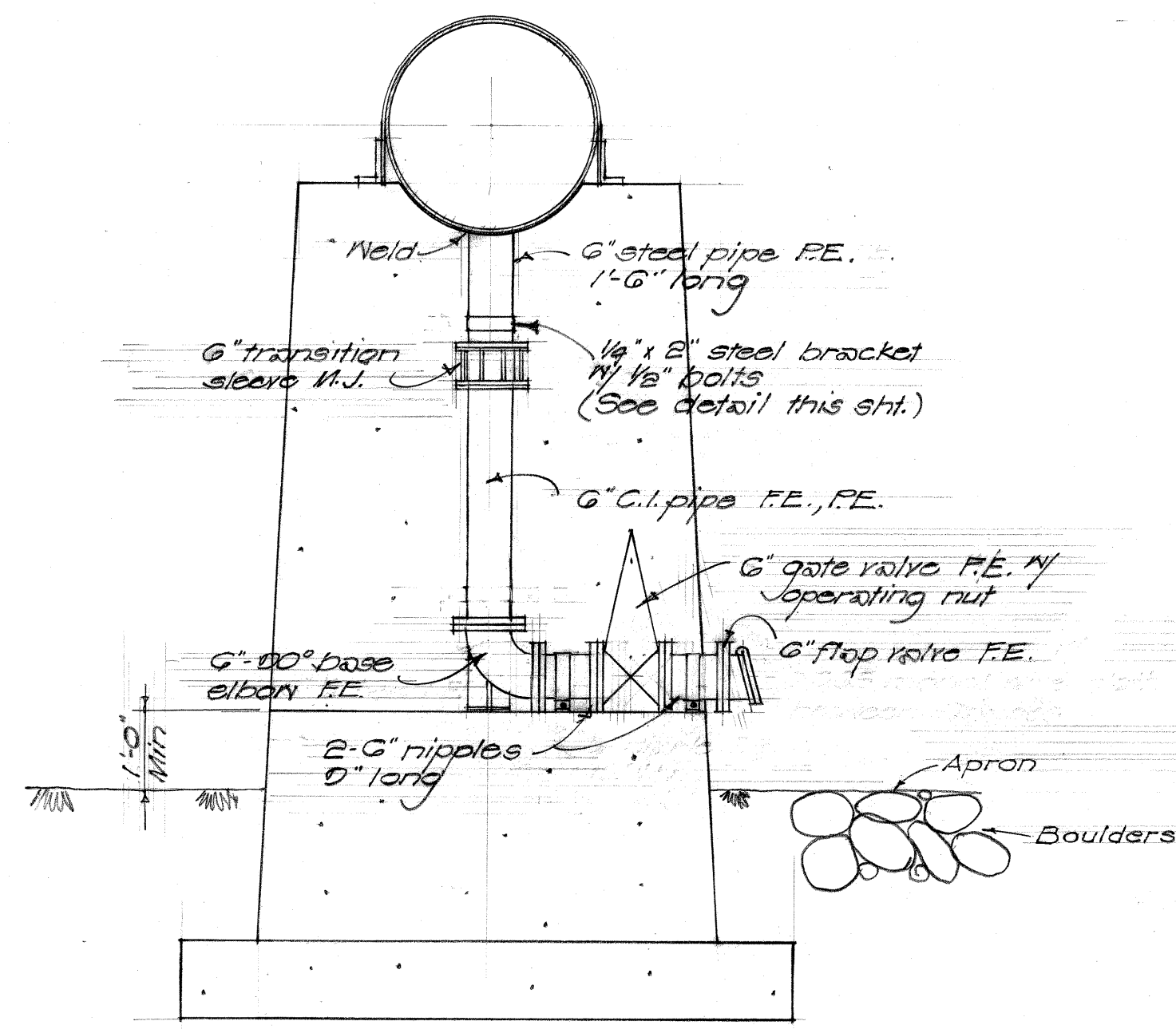
Scale: 1" = 1'-0"



PIPELINE MARKER OR  
VALVE BOX GUARD

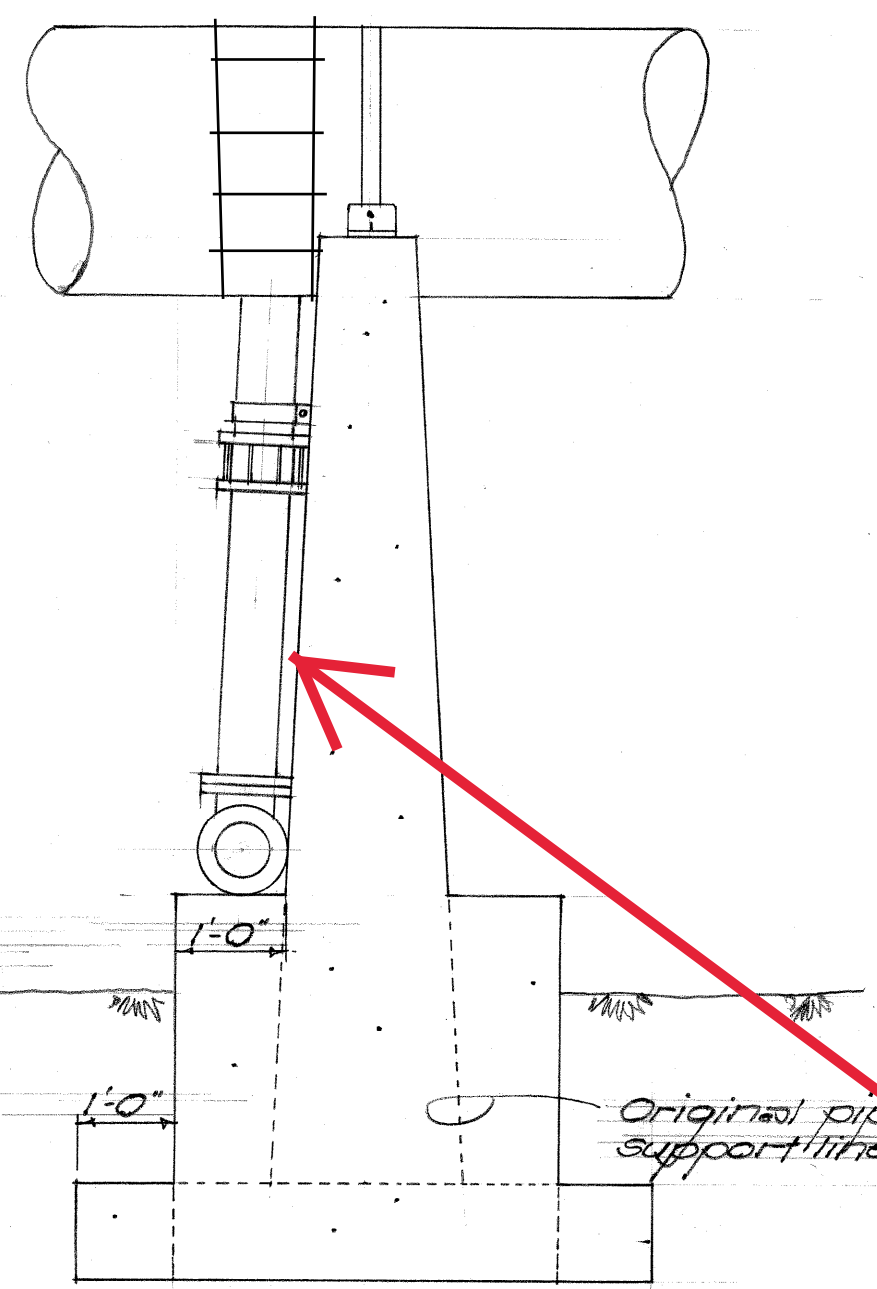
Scale: 1/2" = 1'-0"

SYM	DESCRIPTION	DATE	APP'D
REVISIONS			
STATE OF HAWAII			
DIVISION OF WATER AND LAND DEVELOPMENT			
DEPARTMENT OF LAND AND NATURAL RESOURCES			
MOLOKAI IRRIGATION PROJECT			
<b>CONSTRUCTION DETAILS</b>			
DESIGNED:	SUBMITTED:		
DRAWN:	DATE:		
CHECKED:	DATE:		
APPROVED:	DATE:	FILE NO.	
 MANAGER-ENGINEER		 CHIEF DESIGN & CONSTR. ENGINEER	

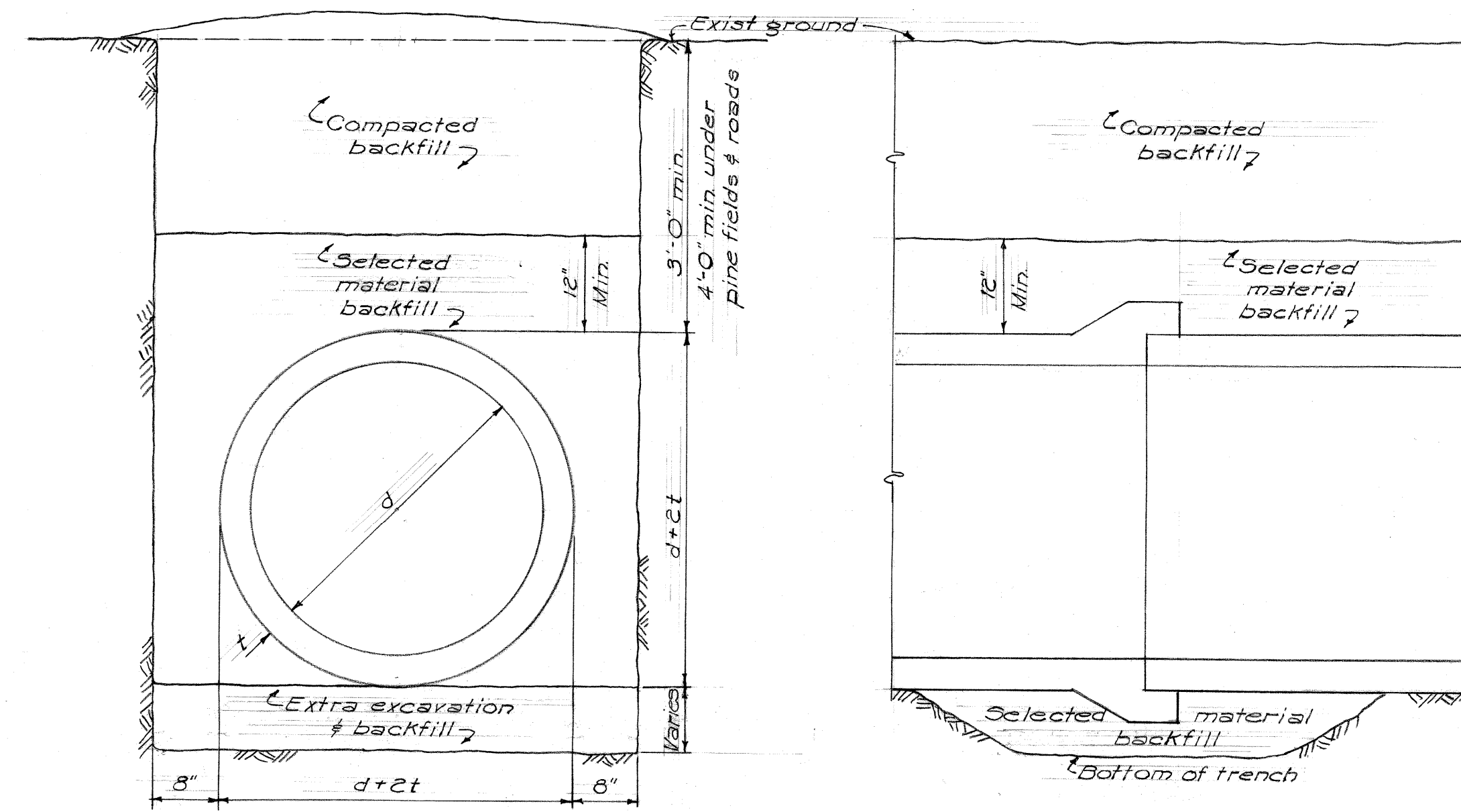


FRONT

**BLOW-OFF ASSEMBLY  
TYPE "B"**  
Scale: 1/8" = 1'-0"



SIDE

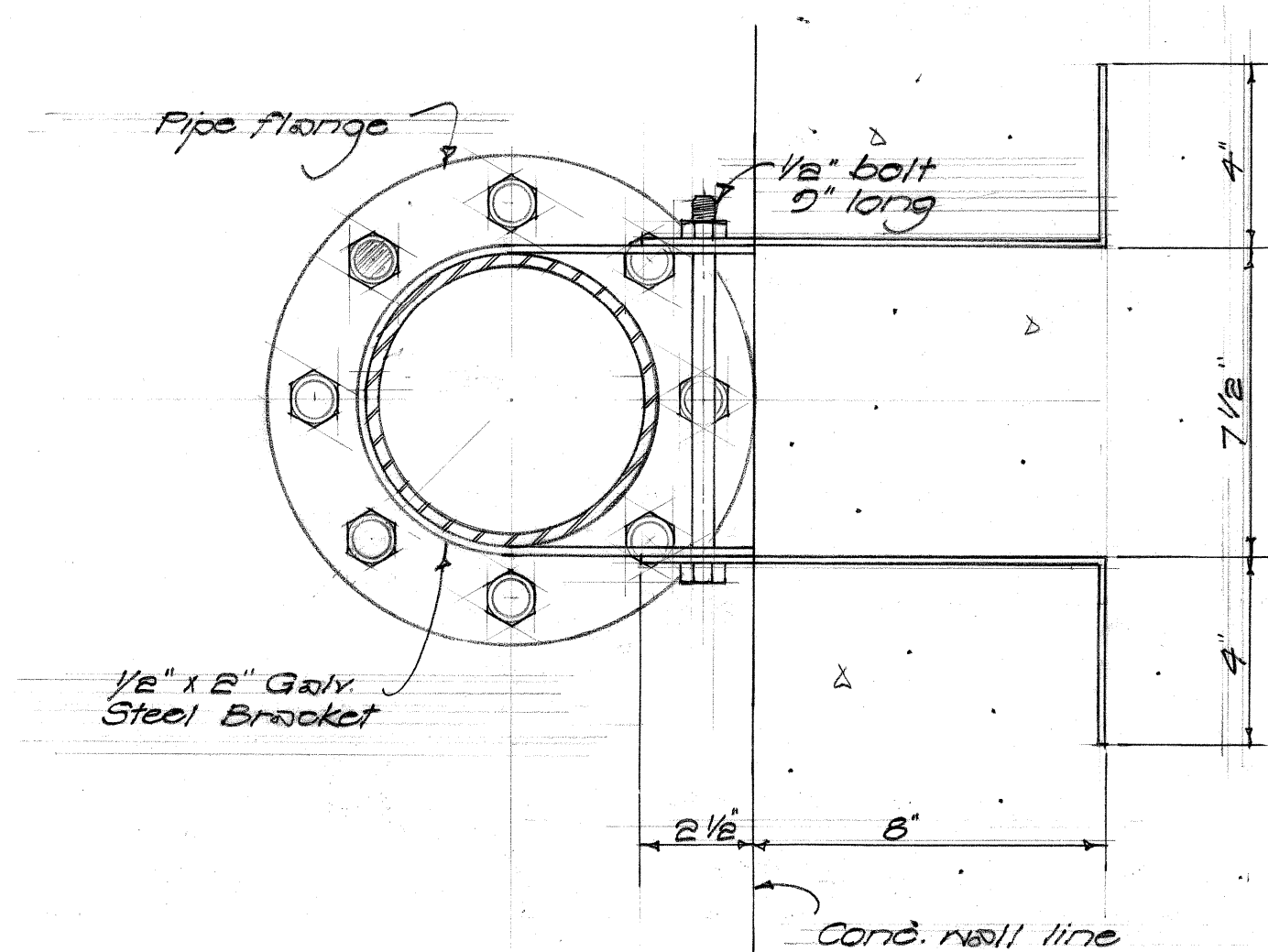


**TYPICAL PIPE TRENCH DETAILS**  
Not to Scale

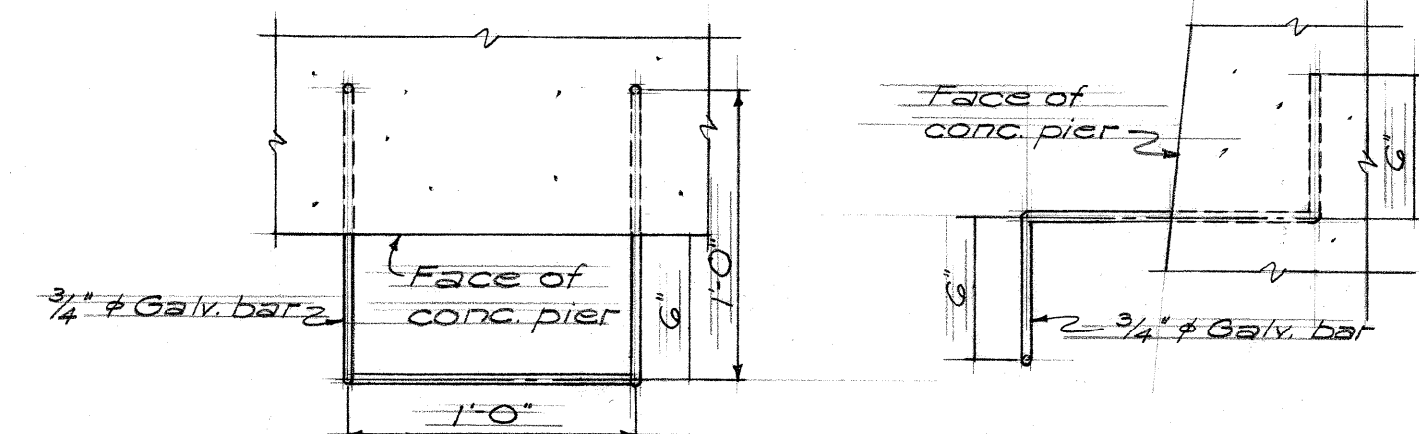
**- REMOVE EXIST. COUPLING, BLOW OFF ASSEMBLY AND PIPE SEGMENT**

**- REPLACE W/ 2-26" PEXPE COUPLINGS, 3LF - 26" PIPE SEGMENT, NEW BLOW OFF ASSEMBLY**

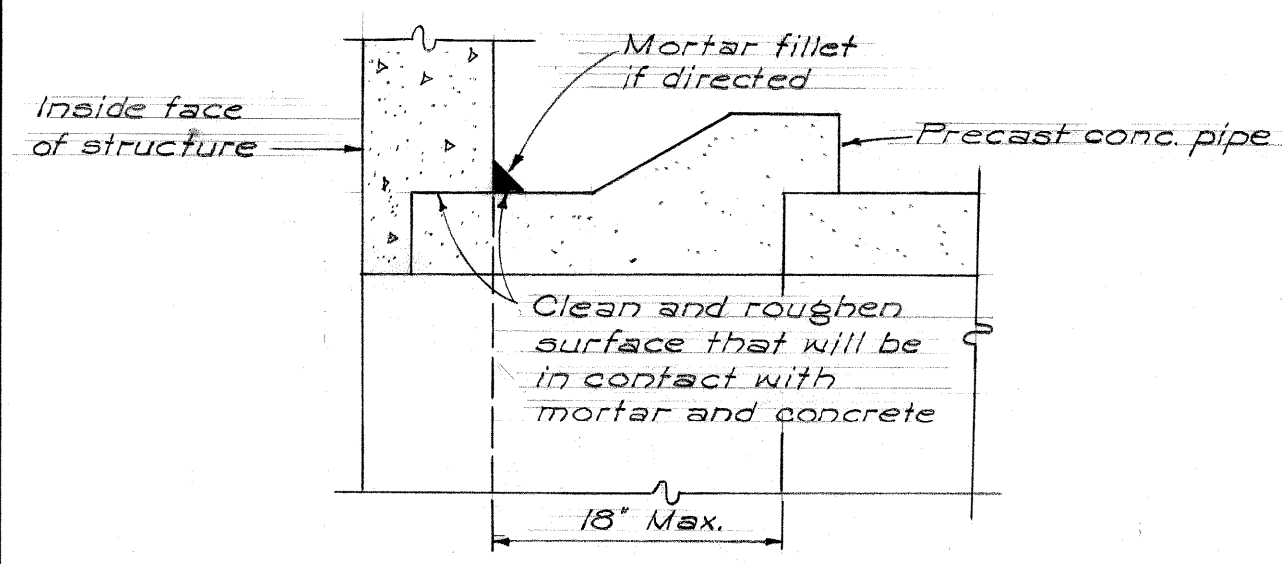
**- CONTRACTOR TO SUBMIT SHOP DRAWINGS.**



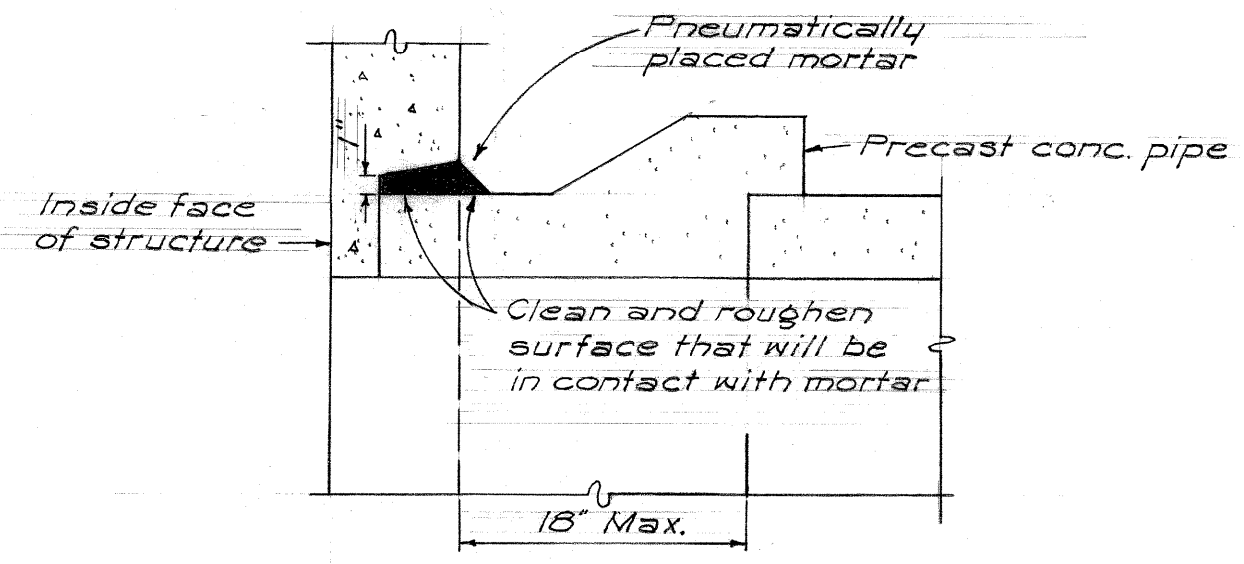
**PIPE BRACKET**  
Scale: 3" = 1'-0"



**RING DETAIL FOR CONCRETE PIER**  
Scale: 1/8" = 1'-0"



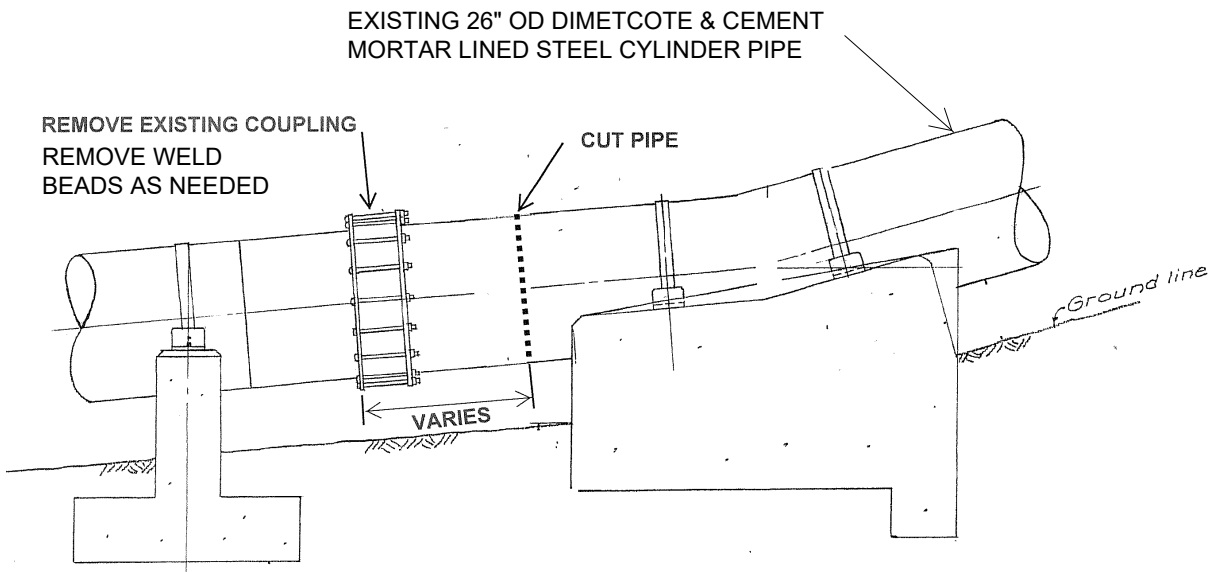
TYPE "A"



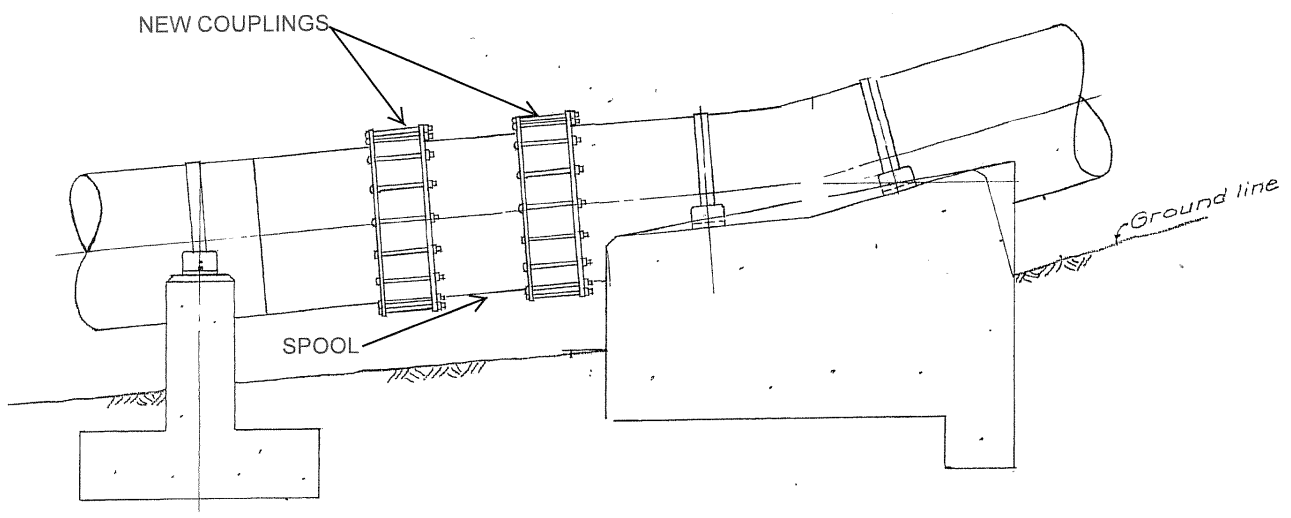
TYPE "B"

**CONNECTION JOINTS  
PIPELINE TO STRUCTURE**  
Not to Scale

SYM	DESCRIPTION	DATE	APPD
REVISIONS			
STATE OF HAWAII			
DIVISION OF WATER AND LAND DEVELOPMENT			
DEPARTMENT OF LAND AND NATURAL RESOURCES			
<b>MOLOKAI IRRIGATION PROJECT</b>			
<b>CONSTRUCTION DETAILS</b>			
DESIGNED:	SUBMITTED:		
DRAWN:	DATE:	<i>Robert H. Chung</i> CHIEF DESIGN & CONSTR. ENGINEER	
CHECKED:	DATE:		
APPROVED:	DATE:	<i>Robert H. Chung</i> MANAGER-ENGINEER	FILE NO.



**EXISTING CONDITIONS**



**FINAL CONDITIONS**

**TYPICAL COUPLING REPLACEMENT DETAIL**

NOT TO SCALE

# Segment 1



Coupling 1 (south side)



Coupling 1 (top)



# Segment 1

Coupling 1 (north side)



## Segment 8

Coupling 65



Coupling 65



Coupling 66



Coupling 65



Coupling 66 (top)



## Segment 8

Coupling 68



Coupling 68



Coupling 69



Coupling 69



Coupling 69



# Segment 8

Coupling 71



Coupling 71



Coupling 71



Coupling 73



Coupling 73



Coupling 73



# Segment 8

Coupling 74



Coupling 74



Coupling 74



Coupling 75



Coupling 75



Coupling 75



# Segment 8

Coupling 76



Coupling 76



Coupling 76



Coupling 77



Coupling 77



Coupling 77



# Segment 8

Coupling 80



Coupling 80



Coupling 80



Coupling 81



Coupling 81



## Segment 8

Coupling 82



Coupling 82



Coupling 83



Coupling 83



Coupling 83



## Segment 8

Coupling 86



Coupling 86



Coupling 87



Coupling 87



Coupling 88



Coupling 88



## Segment 8

Coupling 89



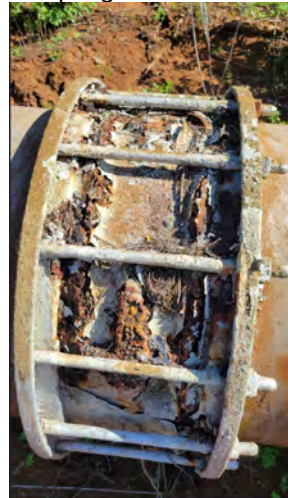
Coupling 89



Coupling 90



Coupling 90



Coupling 91



Coupling 91



## Segment 9

Coupling 93



Coupling 93



Coupling 94



Coupling 94



## Segment 9

Coupling 95



Coupling 95



Coupling 95



Coupling 102



Coupling 102



## Segment 10



Coupling 103 (south side)



Coupling 103 (top view)



## Segment 10

Coupling 104 (north side)



Coupling 104 (bottom)



Coupling 104 BOV



Coupling 104 BOV



Coupling 105



Coupling 105



## Segment 10

Coupling 106 (north side)



Coupling 106 (bottom)



Coupling 106 (bottom)



Coupling 107



Coupling 107



# Segment 10

Coupling 108



Coupling 108



Coupling 109



Coupling 109



Coupling 109



## Segment 10

Coupling 110



Coupling 115



# Segment 10

Coupling 110



Coupling 110



Coupling 110



Coupling 111



Coupling 111



Coupling 111



# Segment 10

Coupling 112



Coupling 112



Coupling 112



Coupling 113



Coupling 113



## Segment 10

Coupling 114



Coupling 114



Coupling 115



Coupling 115



Coupling 115

