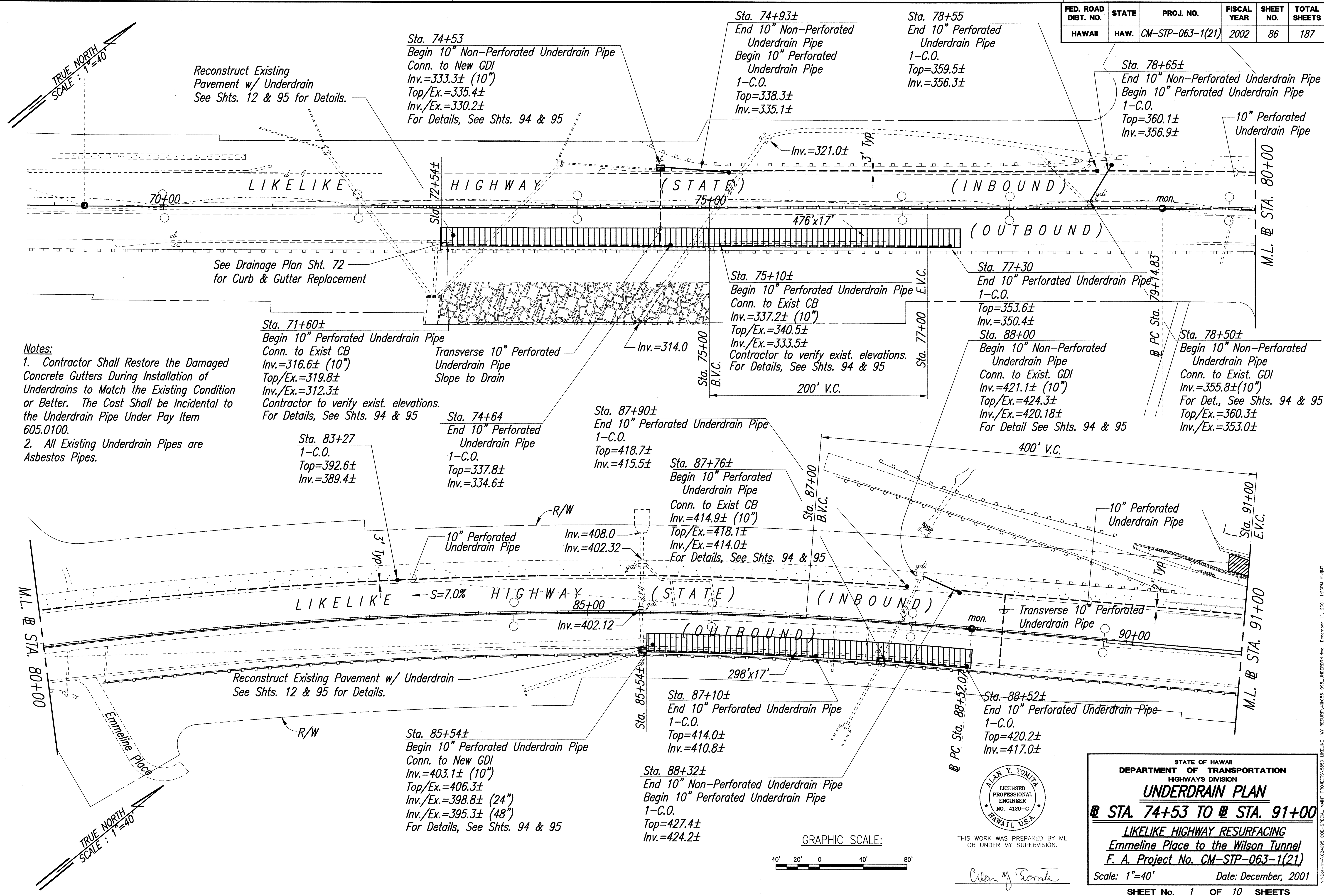


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	86	187



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN PLAN

STA. 74+53 TO STA. 91+00

LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: 1"=40' Date: December, 2001

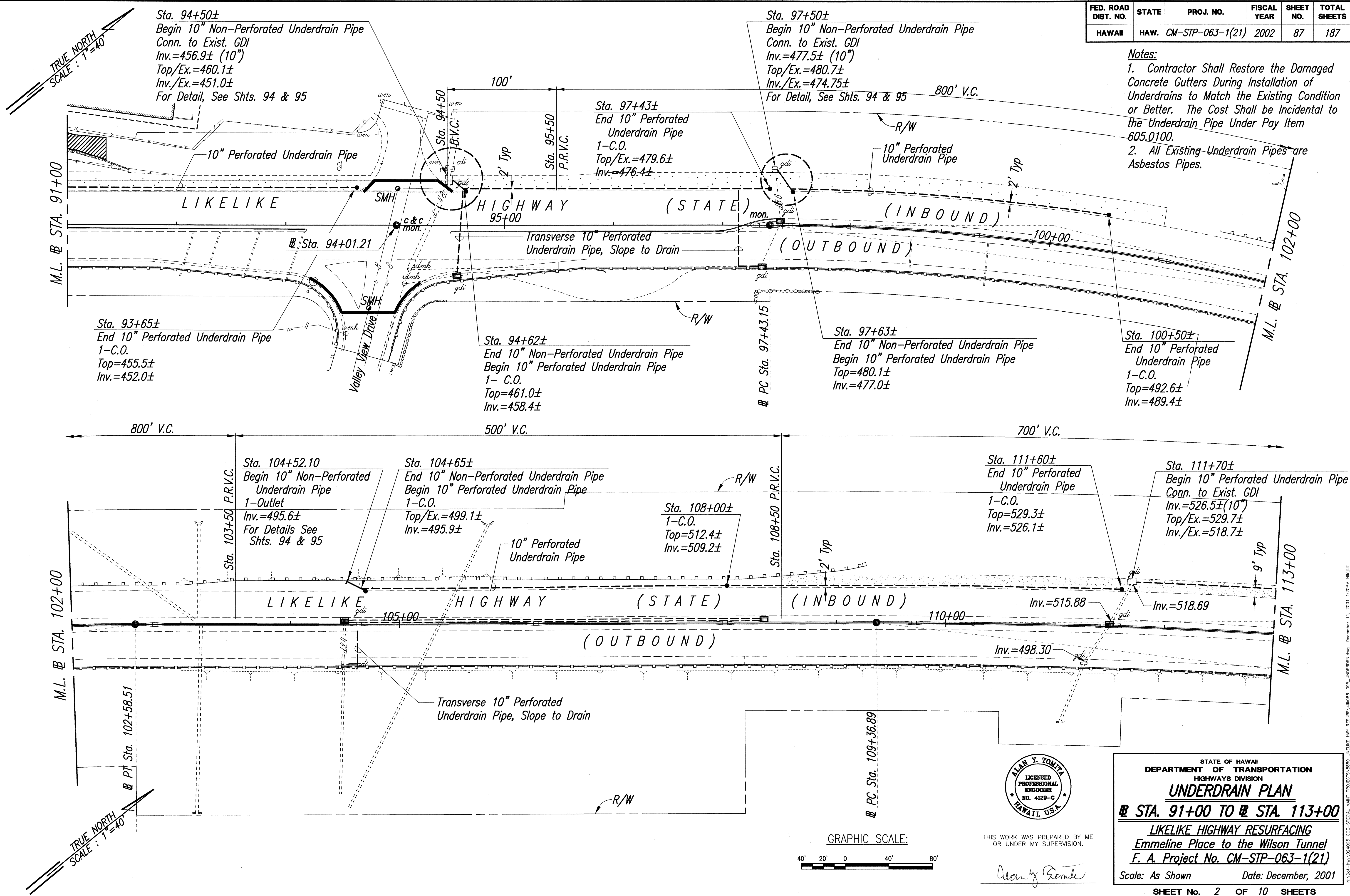
SHEET No. 1 OF 10 SHEETS

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

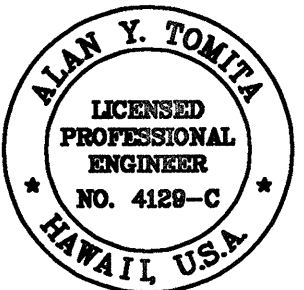
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	87	187

Notes:

- Contractor Shall Restore the Damaged Concrete Gutters During Installation of Underdrains to Match the Existing Condition or Better. The Cost Shall be Incidental to the Underdrain Pipe Under Pay Item 605.0100.
- All Existing Underdrain Pipes are Asbestos Pipes.



SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
NO.	



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Alan Y. Tomita

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN PLAN

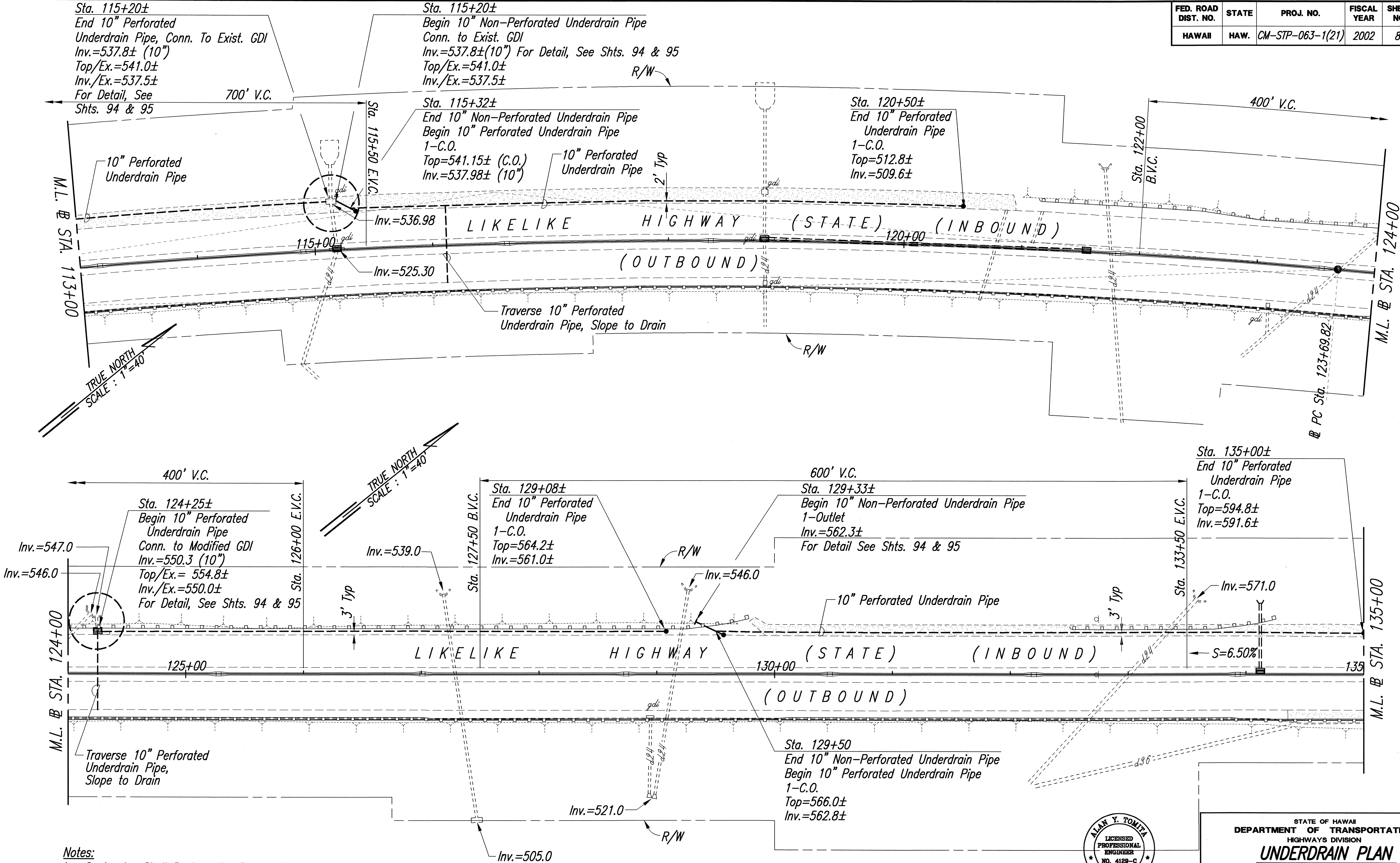
STA. 91+00 TO STA. 113+00

LIKELINE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: As Shown Date: December, 2001

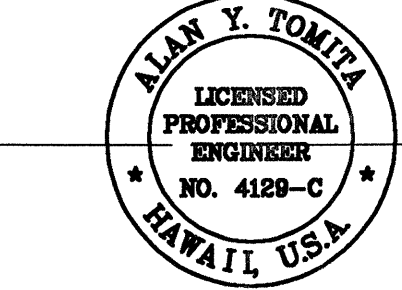
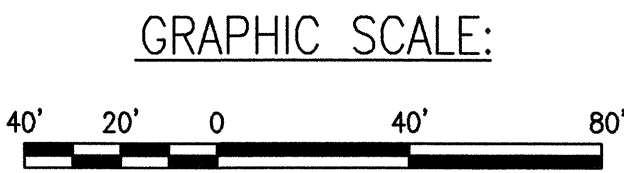
SHEET No. 2 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	88	187



- Notes:
- Contractor Shall Restore the Damaged Concrete Gutters During Installation of Underdrains to Match the Existing Condition or Better. The Cost Shall be Incidental to the Underdrain Pipe Under Pay Item 605.0100.
 - All Underdrain Pipes are Asbestos Pipes.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	NOTE BOOK	
	QUANTITIES BY	
	CHECKED BY	



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Alan Y. Tomita

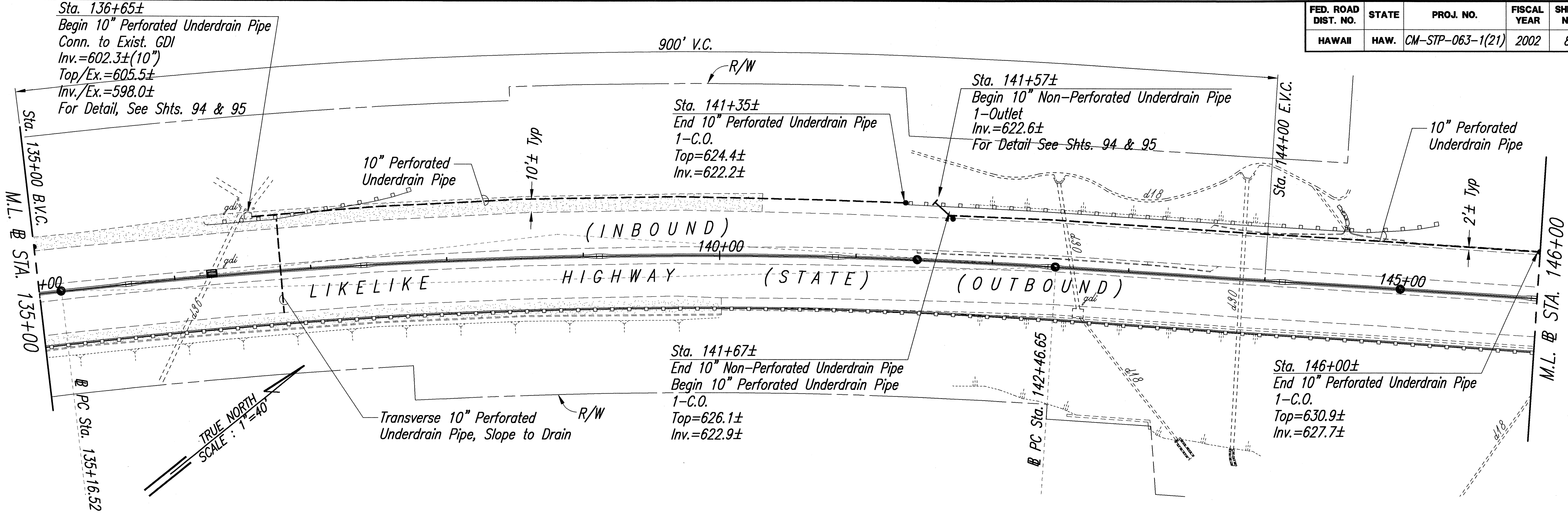
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN PLAN

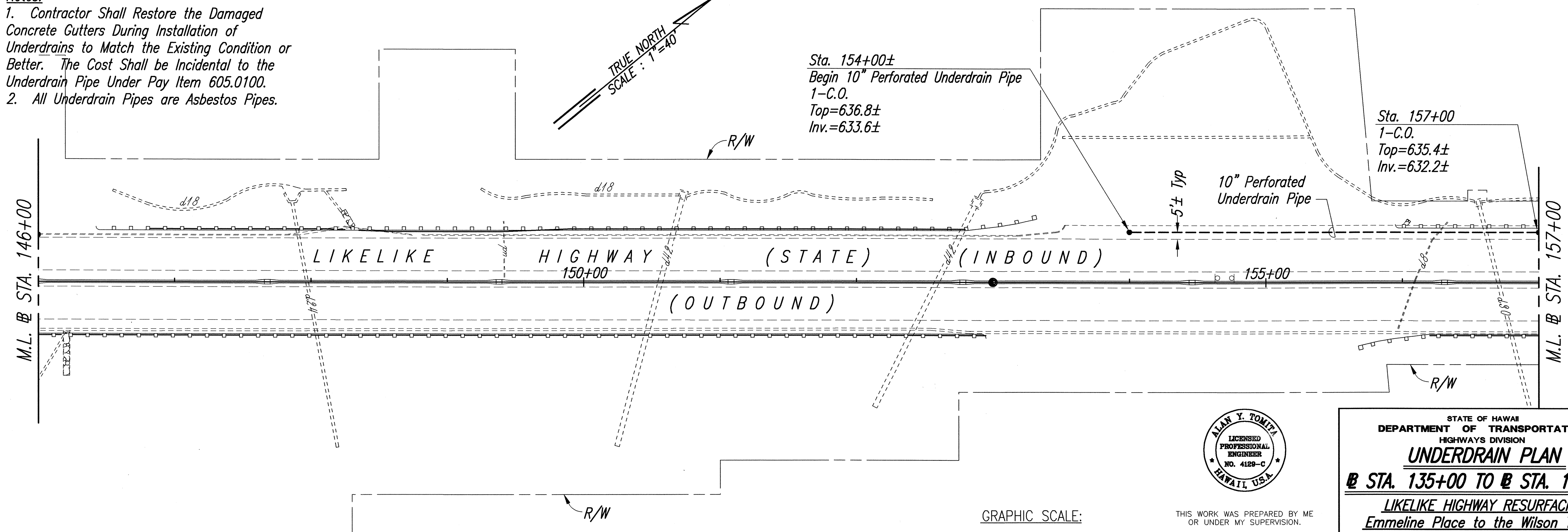
STA. 113+00 TO STA. 135+00
LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: As Shown Date: December, 2001
SHEET No. 3 OF 10 SHEETS

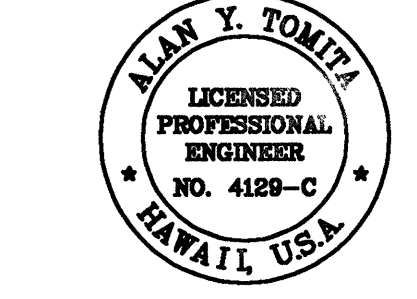
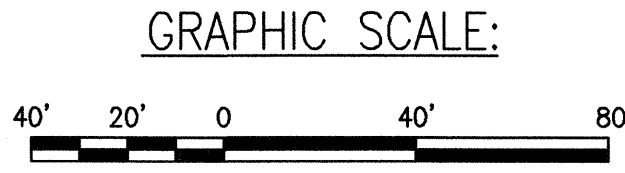
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	89	187



- Notes:**
- Contractor Shall Restore the Damaged Concrete Gutters During Installation of Underdrains to Match the Existing Condition or Better. The Cost Shall be Incidental to the Underdrain Pipe Under Pay Item 605.0100.
 - All Underdrain Pipes are Asbestos Pipes.



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



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OR UNDER MY SUPERVISION.

Alan Y. Tomita

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN PLAN

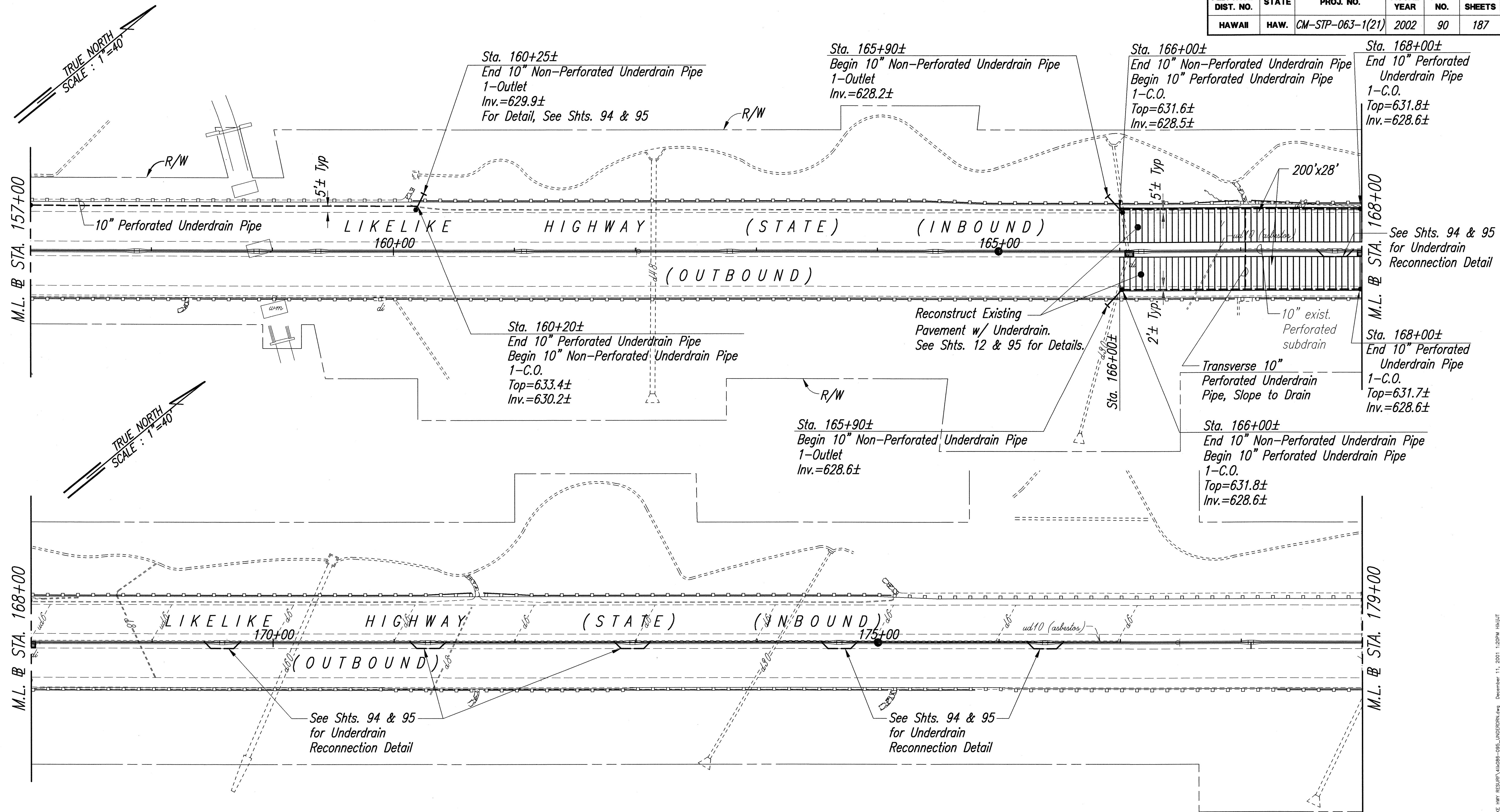
STA. 135+00 TO STA. 157+00

LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: As Shown Date: December, 2001

SHEET No. 4 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	90	187



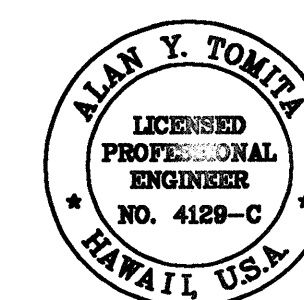
Notes:

1. Contractor Shall Restore the Damaged Concrete Gutters During Installation of Underdrains to Match the Existing Condition or Better. The Cost Shall be Incidental to the Underdrain Pipe Under Pay Item 605.0100.

2. All Existing Underdrain Pipes are Asbestos Pipes.

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

GRAPHIC SCALE:



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Alan Y. Tomita

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN PLAN

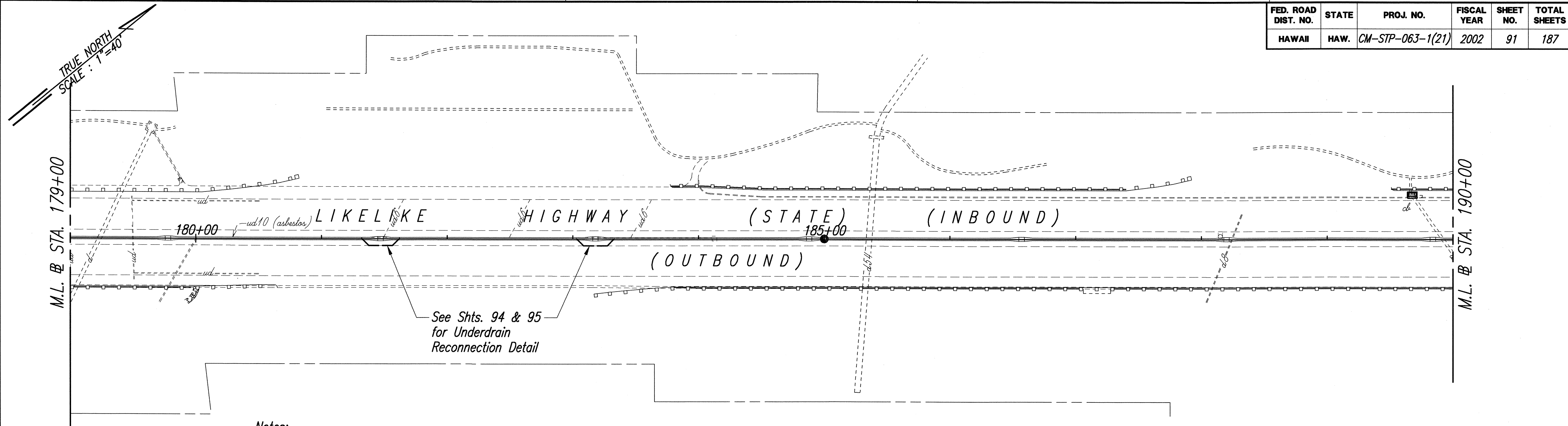
STA. 157+00 TO STA. 179+00

LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

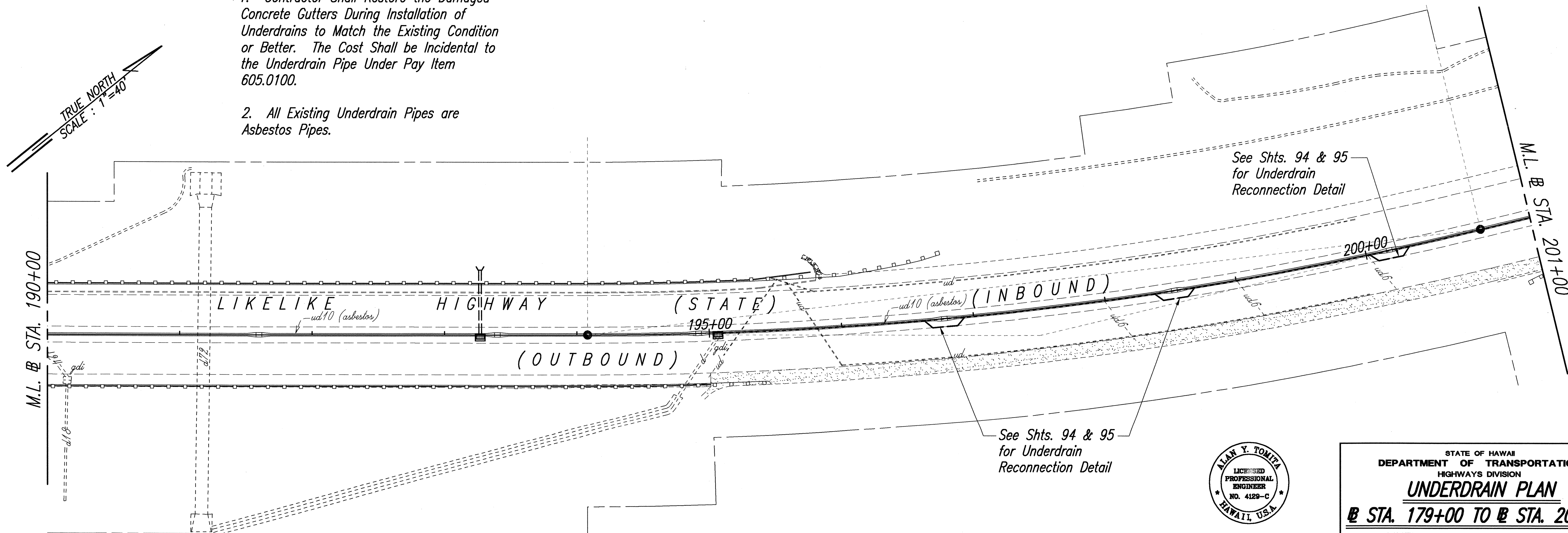
Scale: As Shown Date: December, 2001

SHEET No. 5 OF 10 SHEETS

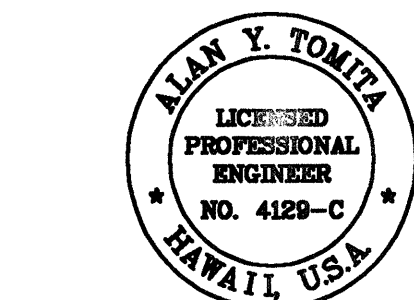
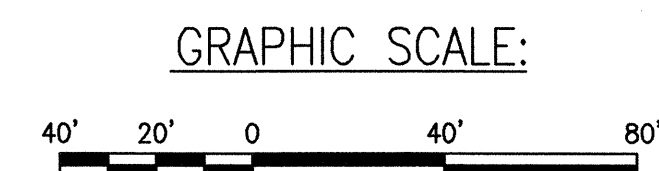
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	91	187



- Notes:**
- Contractor Shall Restore the Damaged Concrete Gutters During Installation of Underdrains to Match the Existing Condition or Better. The Cost Shall be Incidental to the Underdrain Pipe Under Pay Item 605.0100.
 - All Existing Underdrain Pipes are Asbestos Pipes.



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



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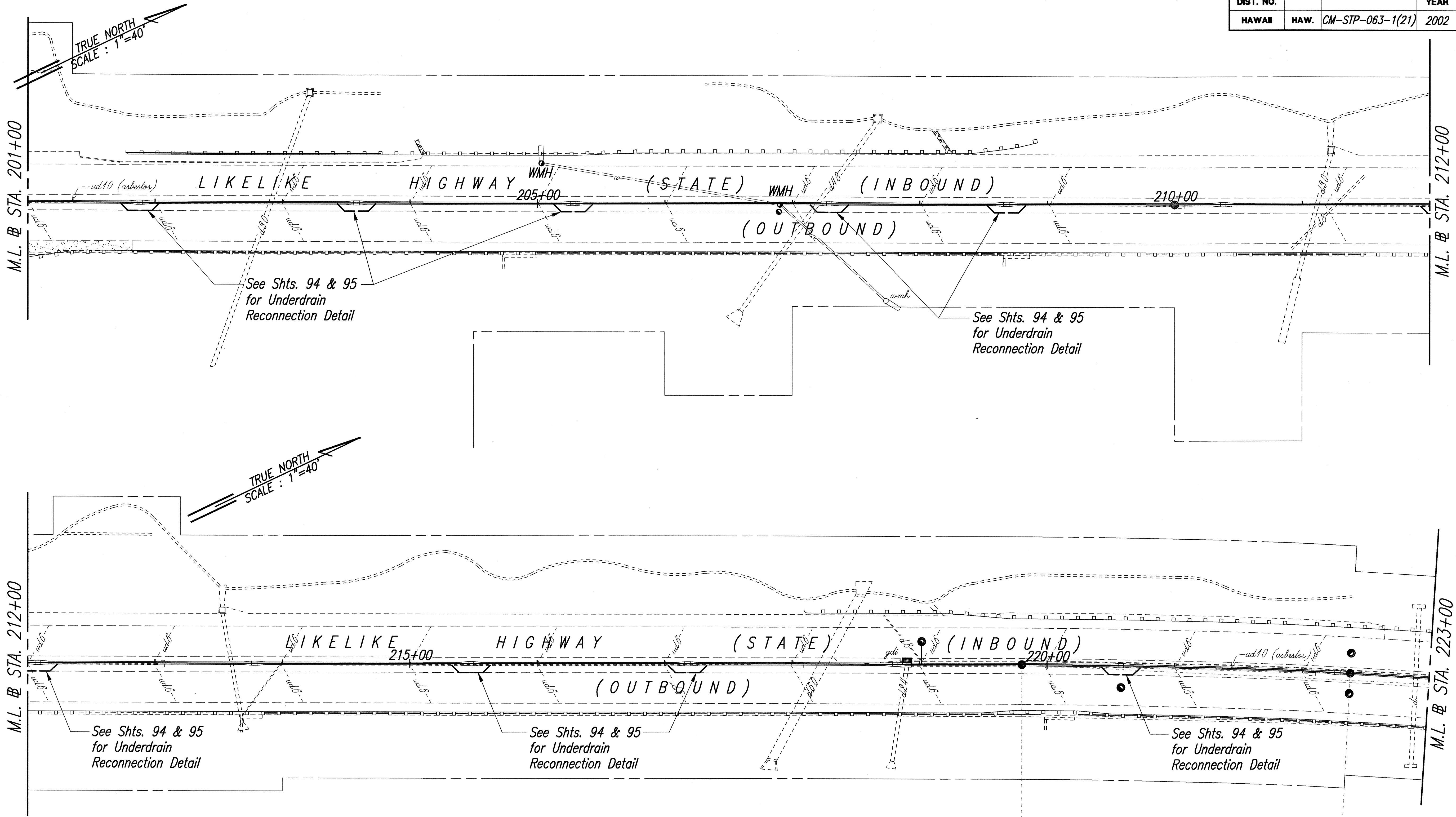
Alan Y. Tomita

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN PLAN
STA. 179+00 TO STA. 201+00
LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)
Scale: 1"=40' Date: December, 2001

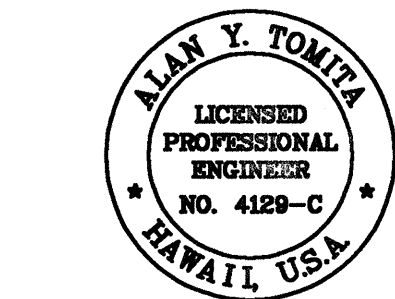
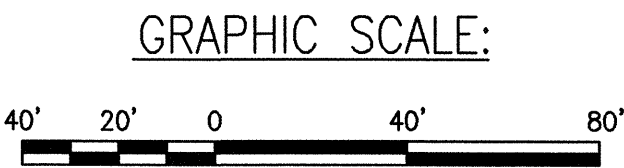
SHEET No. 6 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	92	187



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

- Notes:**
- Contractor Shall Restore the Damaged Concrete Gutters During Installation of Underdrains to Match the Existing Condition or Better. The Cost Shall be Incidental to the Underdrain Pipe Under Pay Item 605.0100.
 - All Existing Underdrain Pipes are Asbestos Pipes.



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OR UNDER MY SUPERVISION.

Alan Y. Tomita

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UNDERDRAIN PLAN
STA. 201+00 TO STA. 223+00
LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)
Scale: 1"=40' Date: December, 2001
SHEET No. 7 OF 10 SHEETS

92

N:\Data\HW\024505 C02-SPECIAL WANT PROJECTS\0630 LIKELIKE HWY RESURF-063-095 UNDERDRAIN.dwg December 11, 2001 1:20PM HspjT

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	ADD94	187

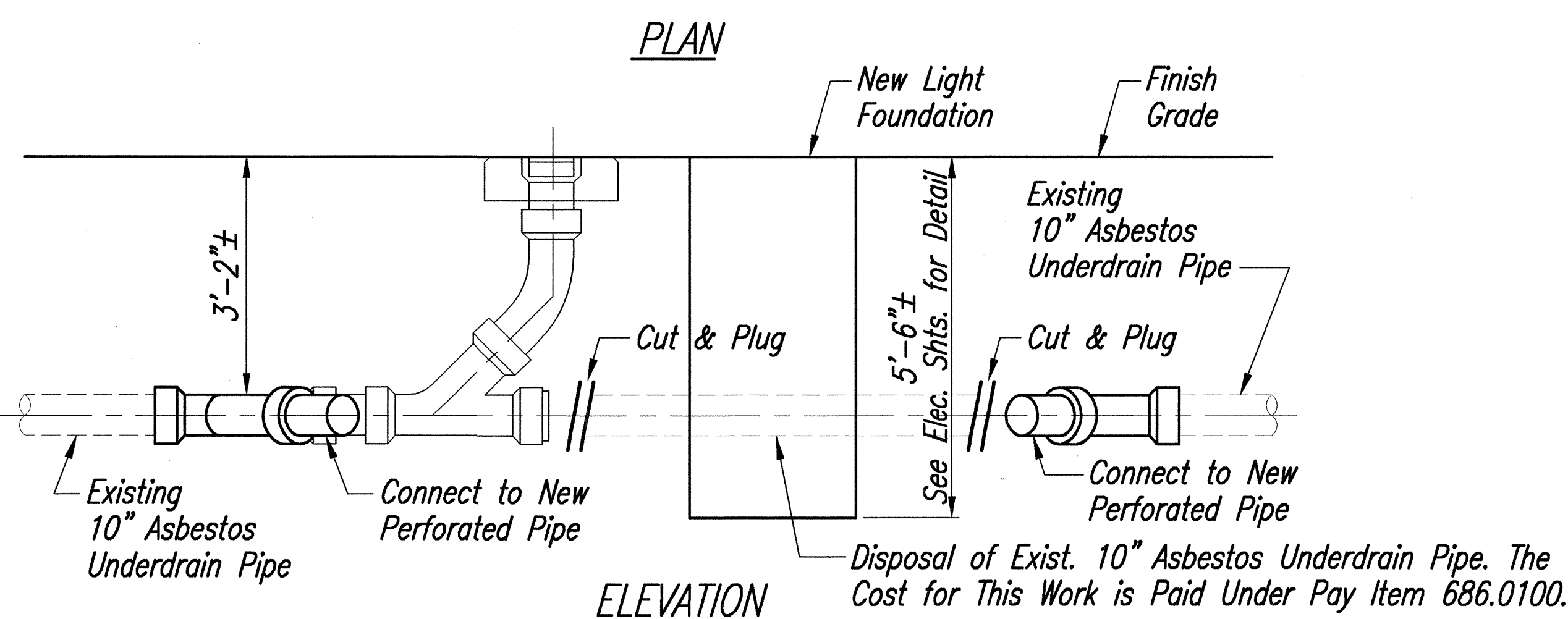
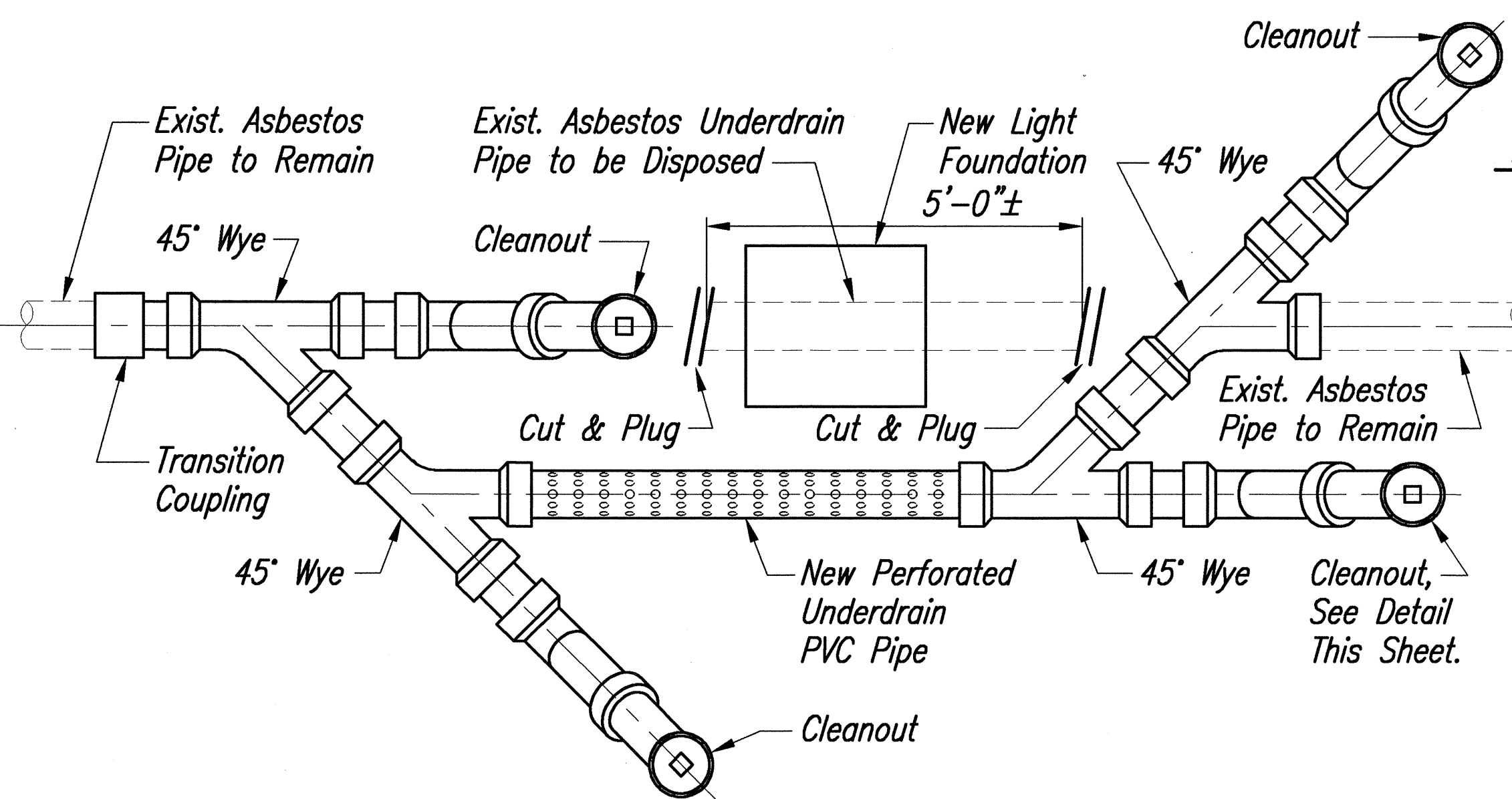
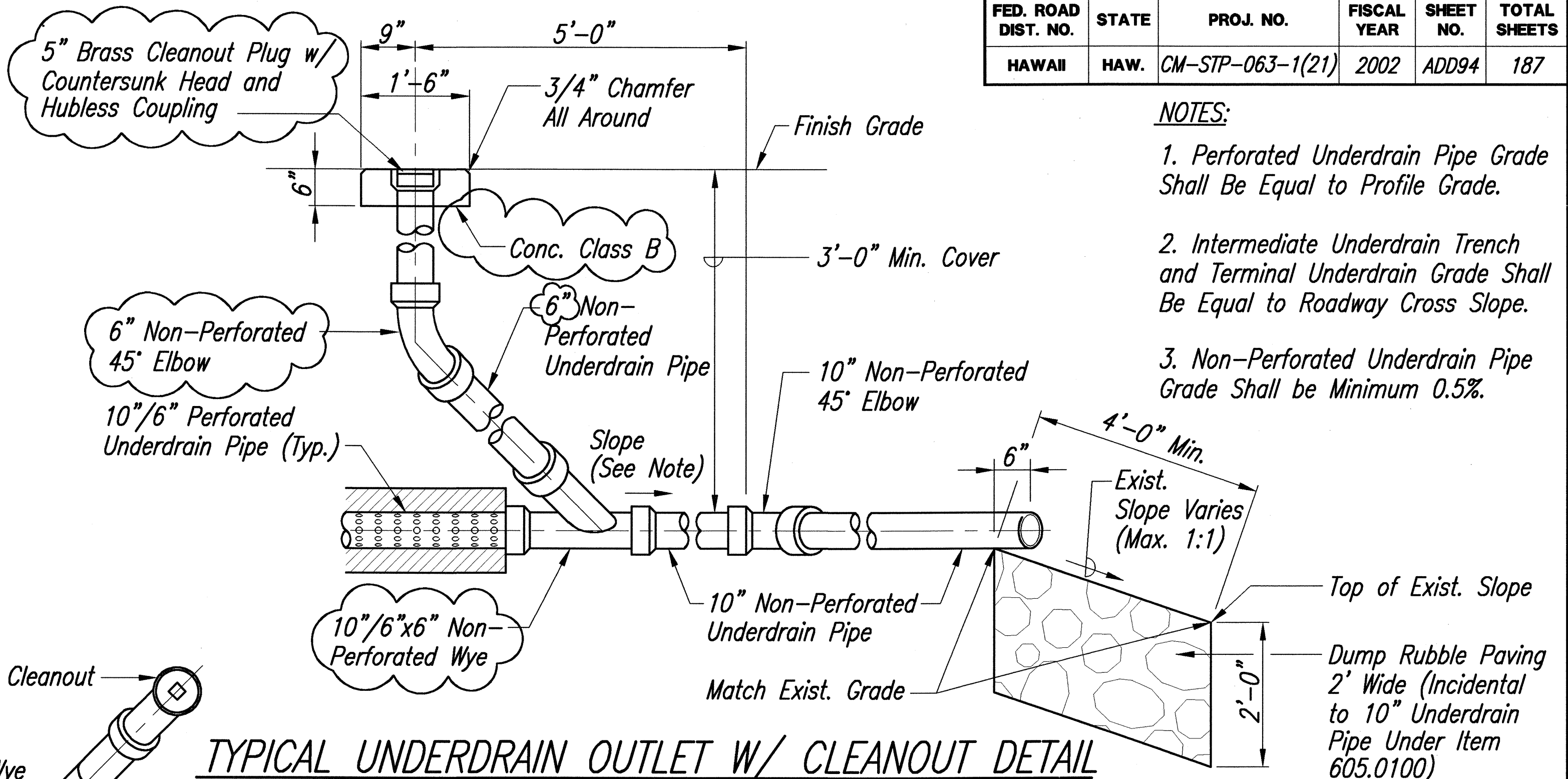
- NOTES:
1. Perforated Underdrain Pipe Grade Shall Be Equal to Profile Grade.
 2. Intermediate Underdrain Trench and Terminal Underdrain Grade Shall Be Equal to Roadway Cross Slope.
 3. Non-Perforated Underdrain Pipe Grade Shall be Minimum 0.5%.

UNDERDRAIN CLEANOUT SUMMARY

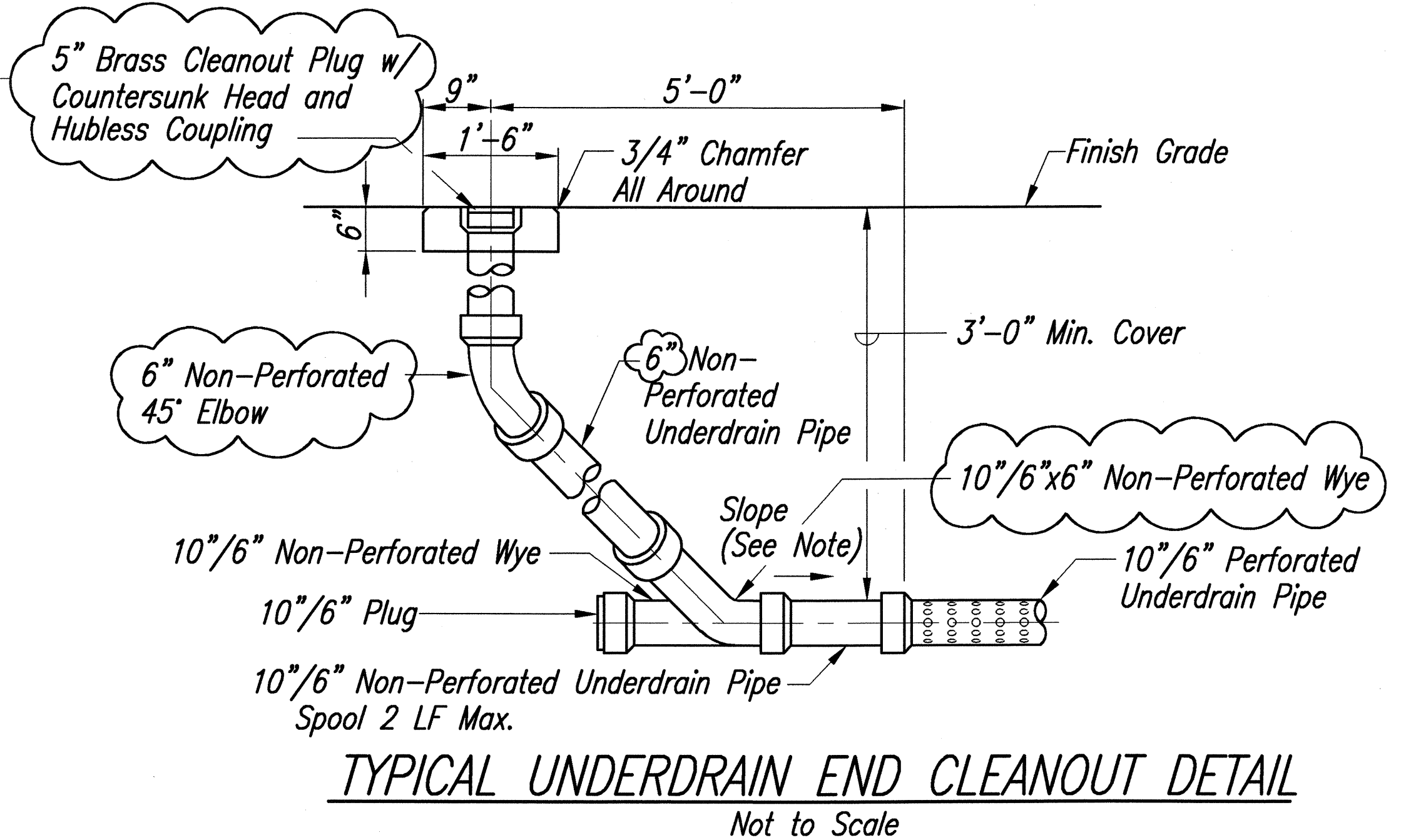
STATION	LEFT	RIGHT
75+10±	•	
78+56±	•	
78+70±	•	
83+27±	•	
87+90±	•	
88+40±	•	
93+65±	•	
94+62±	•	
97+43±	•	
97+53±	•	
100+50±	•	
104+70±	•	
108+00±	•	
111+60±	•	
115+36±	•	
120+50±	•	
129+80±	•	
129+57±	•	
135+00±	•	
141+35±	•	
141+70±	•	
146+00±	•	
154+00±	•	
157+00±	•	
160+20±	•	
166+00±	•	•
168+00±	•	•
223+11±	•	
223+71±	•	•
228+00±	•	•
232+95±	•	•
233+05±	•	•
236+66±	•	•
237+00±	•	•
238+00±	•	•
240+94±	•	
241+20±	•	•
241+58±	•	
241+82±	•	
TOTAL	35	9

UNDERDRAIN OUTLET SUMMARY

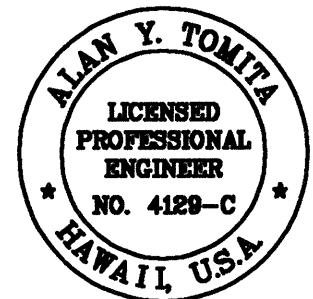
STATION	LEFT	RIGHT
104+52±	•	
129+33±	•	
141+57±	•	
160+25±	•	
165+90±	•	•
223+04±	•	
223+60±		•
TOTAL	6	2



UNDERDRAIN RECONNECTION DETAIL AT LIGHT FOUNDATION
(167+78 ~ 220+58)
Not to Scale



DATE	REVISION
1/23/02	Revise Underdrain Outlet w/ Cleanout & End Cleanout Details



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Wang G. Gerente

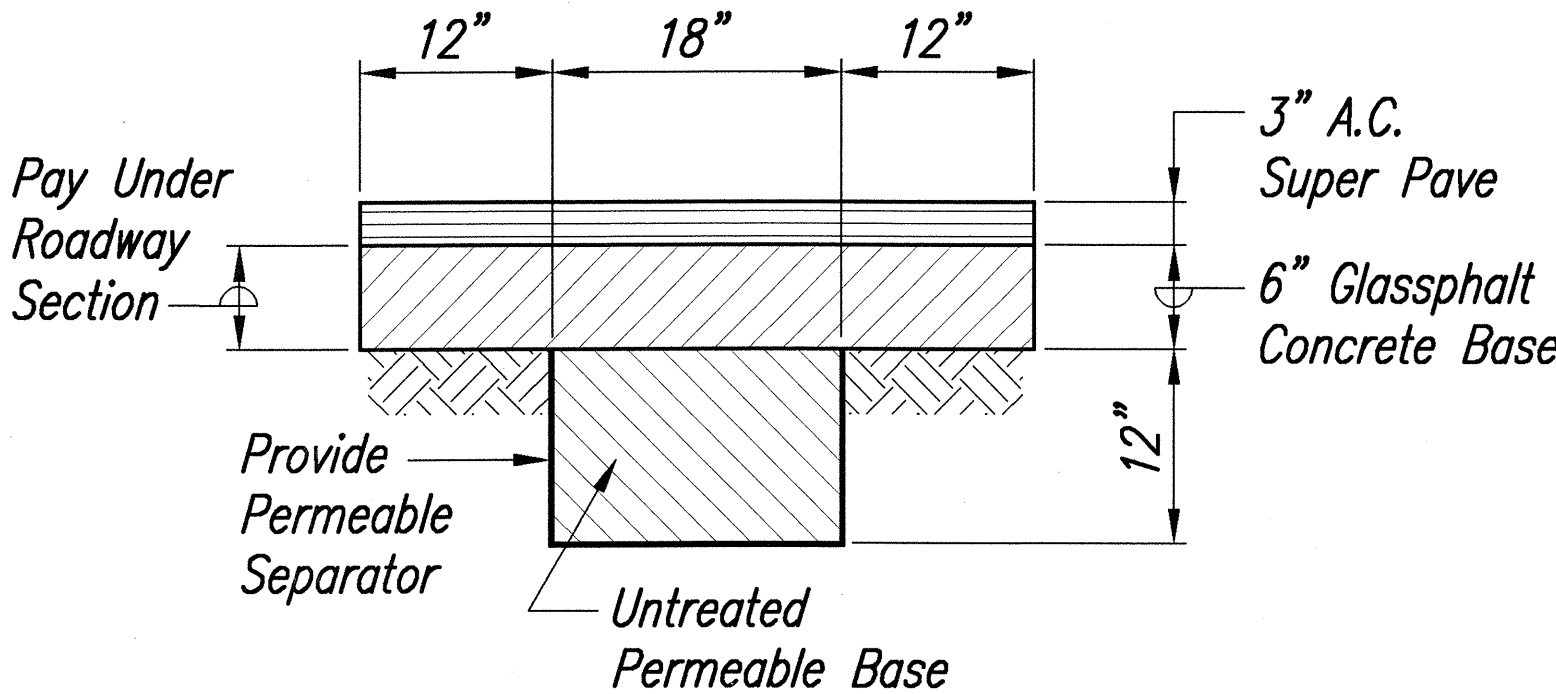
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**UNDERDRAIN SUMMARIES
AND DETAILS**
LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)
Scale: As Shown Date: December, 2001
SHEET No. 9 OF 10 SHEETS

ORIGINAL PLAN
DATE
DESIGNED BY
CHECKED BY
NO.

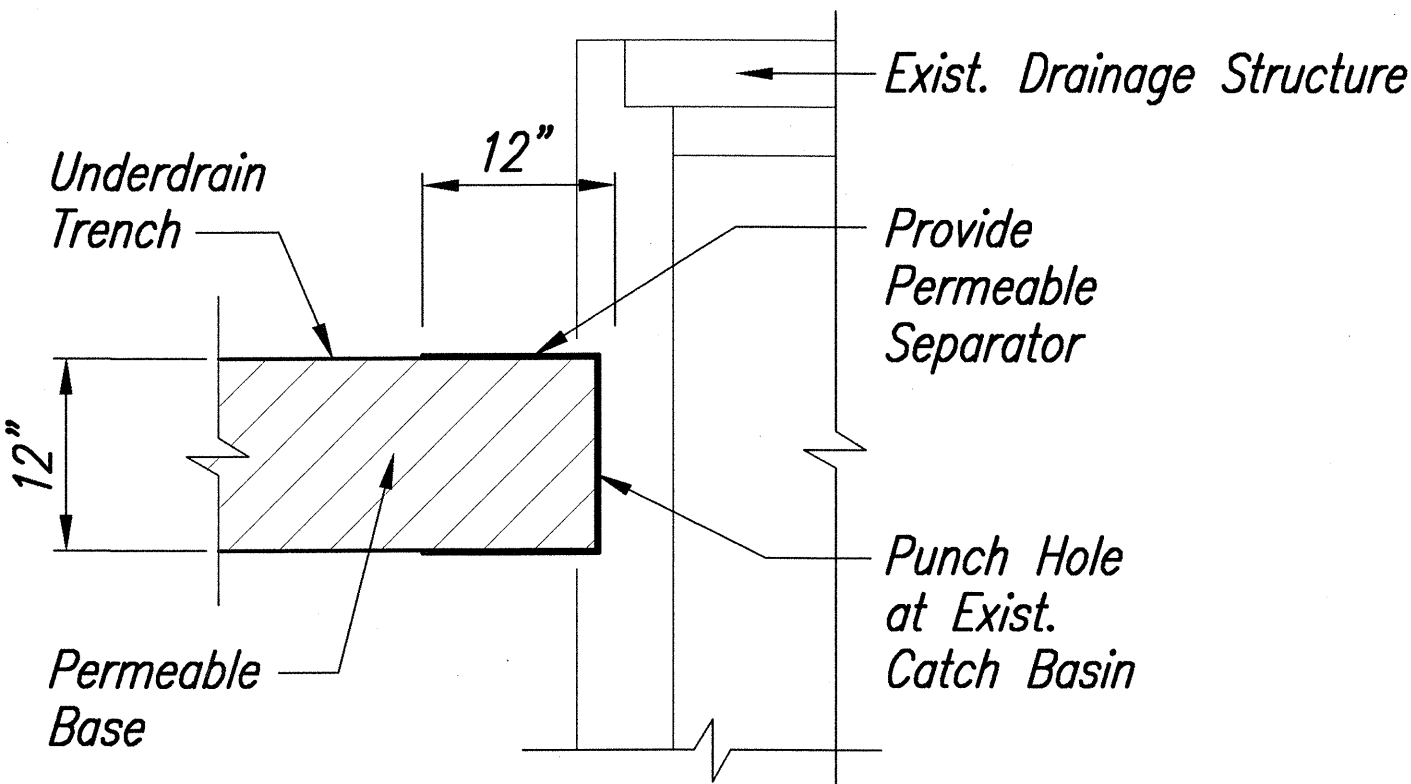
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	95	187

NOTES:

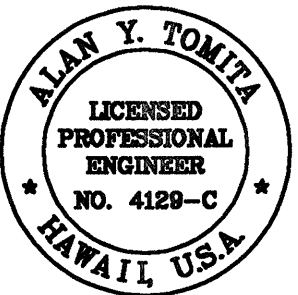
1. Perforated Underdrain Pipe Grade Shall be Equal to Profile Grade.
2. Intermediate Underdrain Trench and Terminal Underdrain Grade Shall be Equal to Roadway Cross Slope.
3. Non-Perforated Underdrain Pipe Grade Shall be Minimum 0.5%.



TRANSVERSE UNDERDRAIN DETAIL
(NEAR THE TUNNEL)
Not to Scale



TRANSVERSE WALL CONNECTION DETAIL
(NEAR THE TUNNEL)
Not to Scale



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OR UNDER MY SUPERVISION.

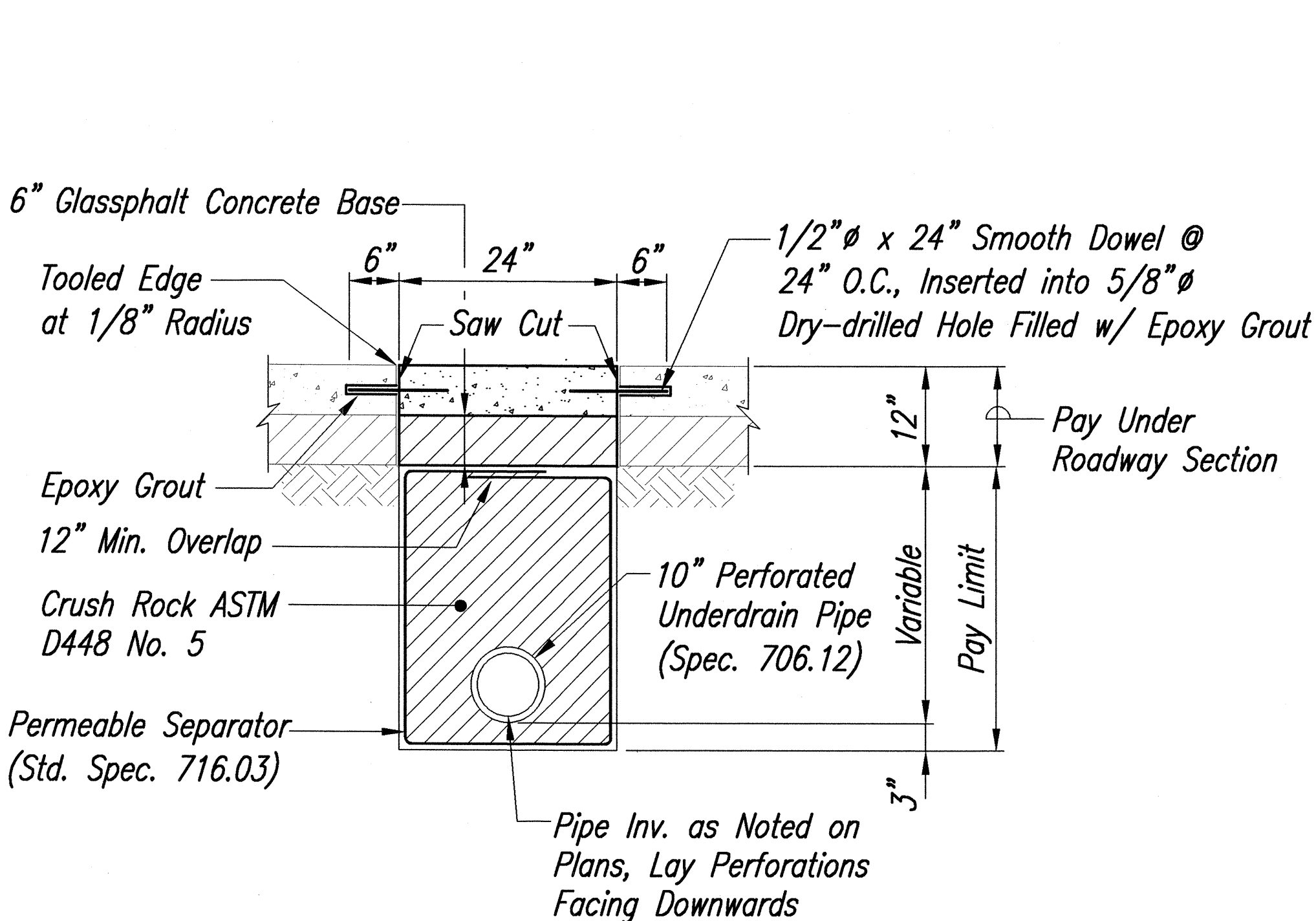
Alan Y. Tomita

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UNDERDRAIN DETAILS

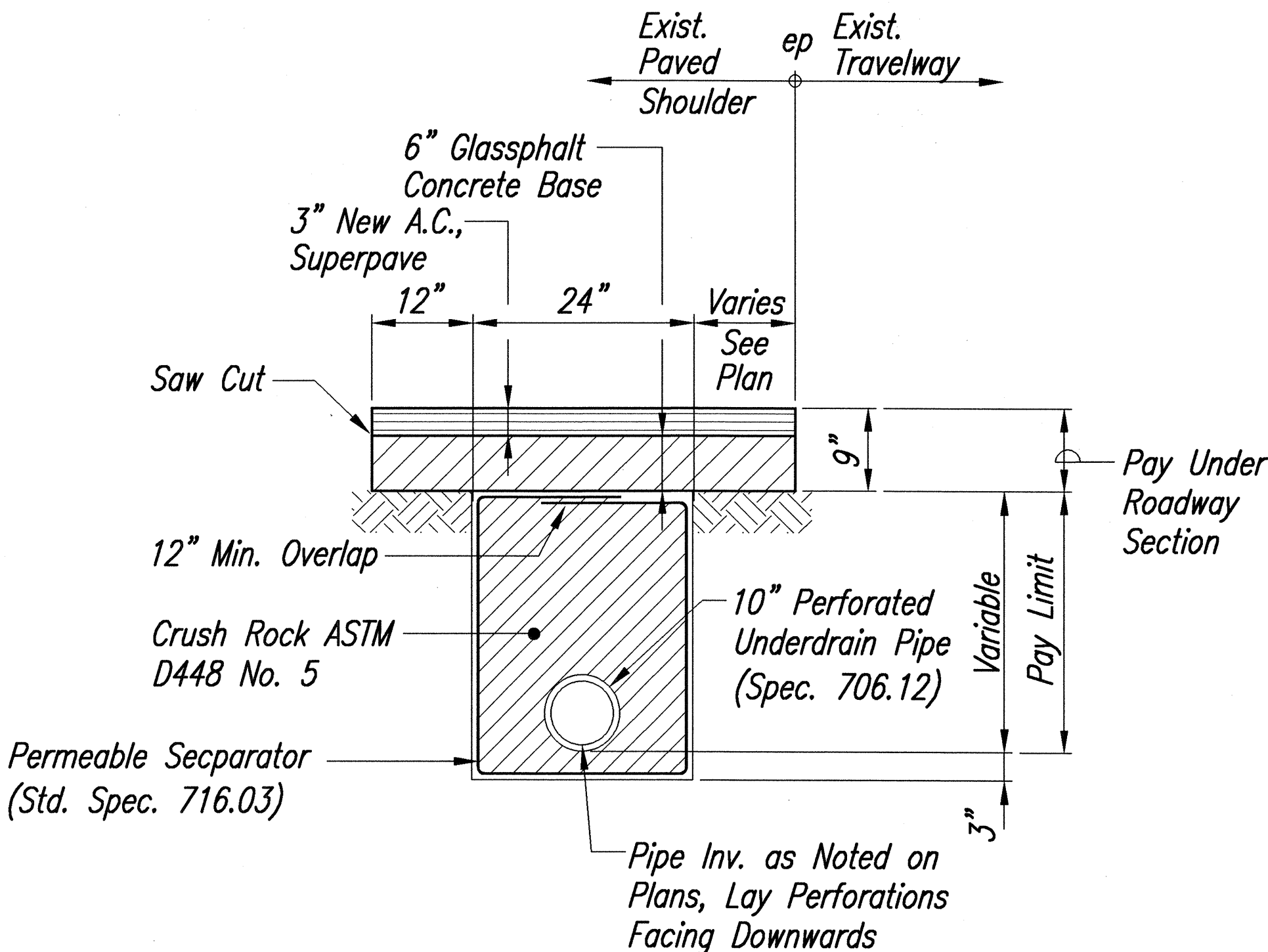
LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: As Shown Date: December, 2001

SHEET No. 10 OF 10 SHEETS

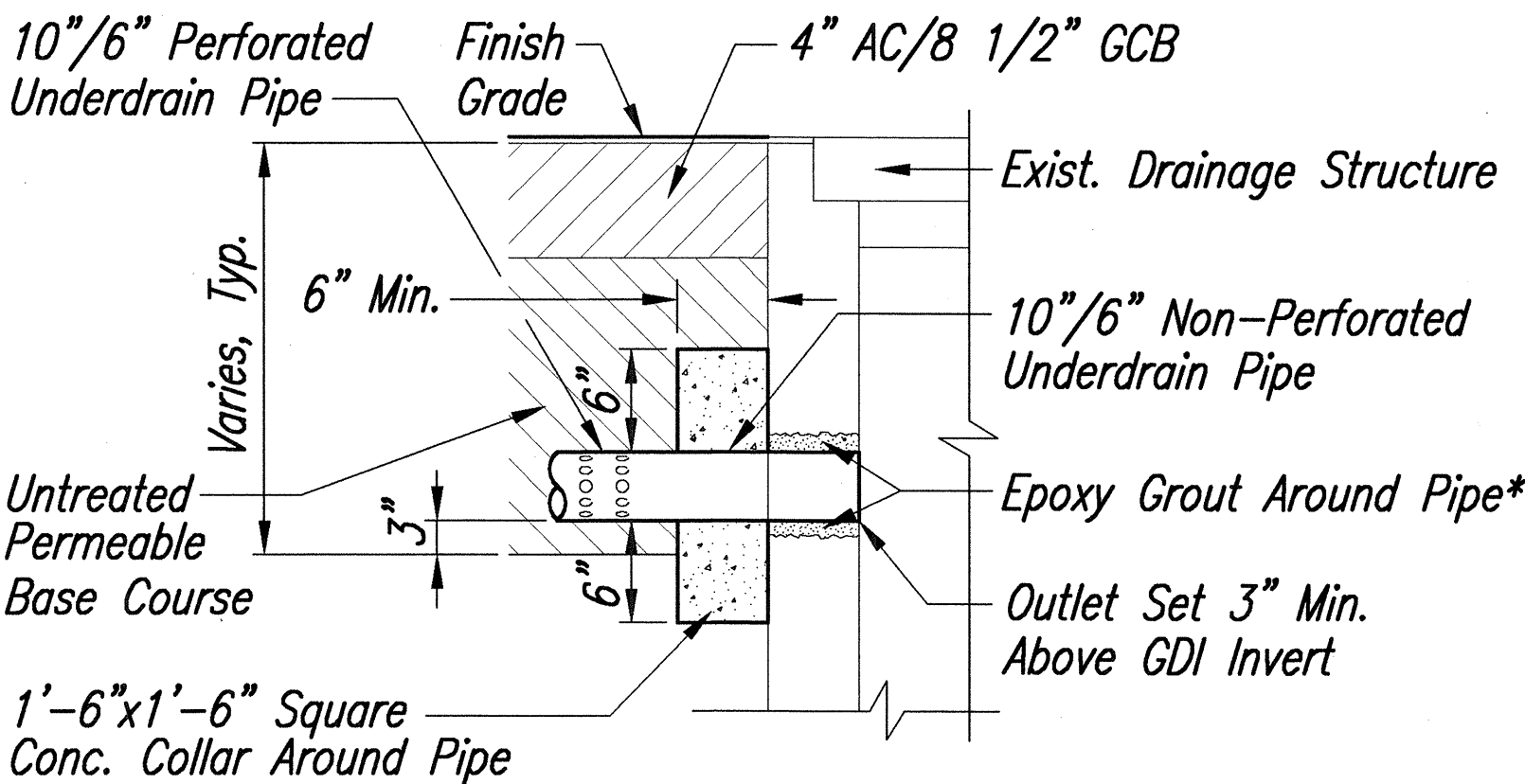


UNDERDRAIN DETAIL @ CONCRETE GUTTER
Not to Scale



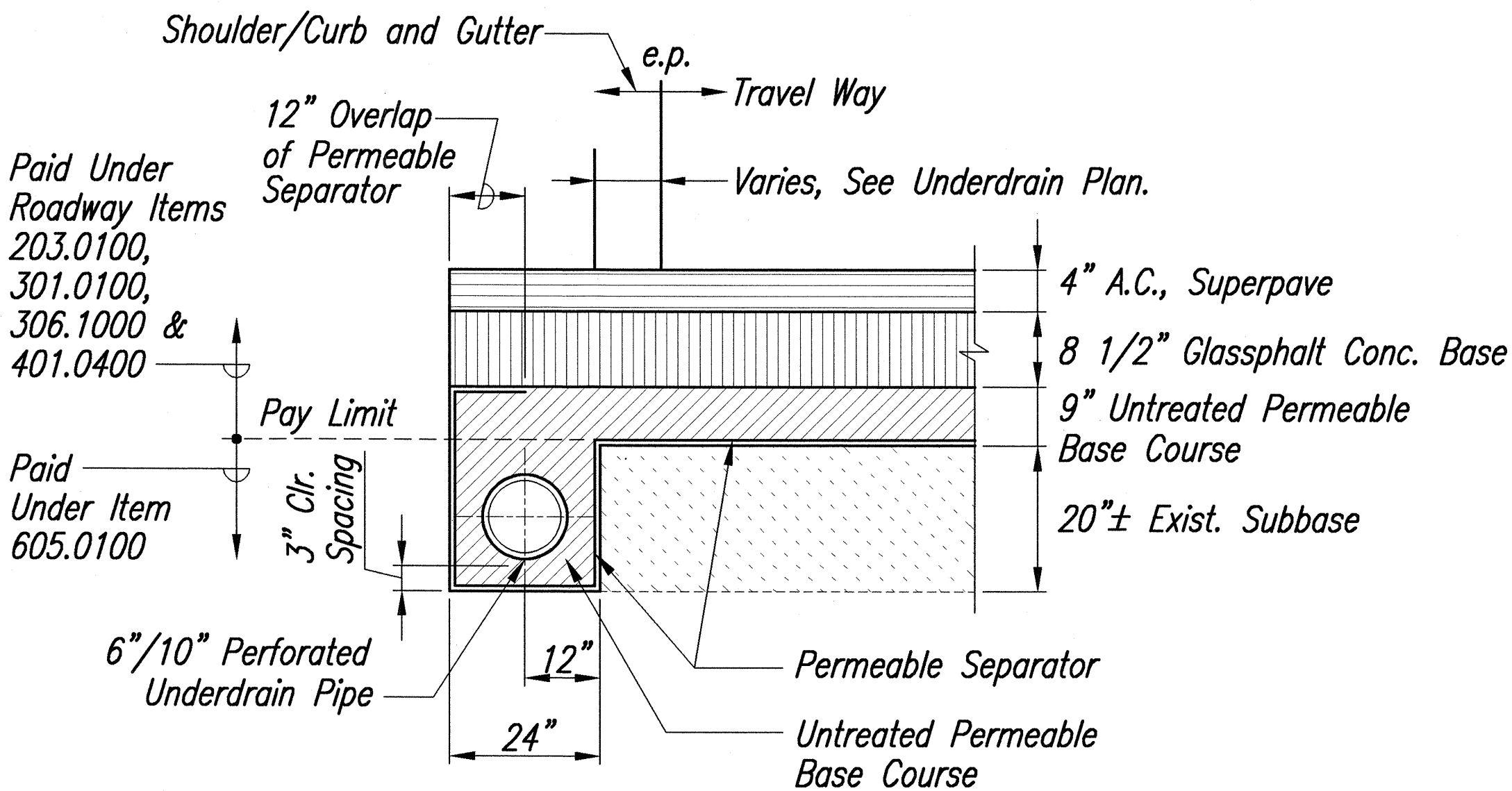
UNDERDRAIN DETAIL @ A.C. PAV'T
Not to Scale

Note: This Detail is Also Applicable for Transverse Underdrain Pipe



* Avoid Cutting any Exist. Reinforcing Bars Where they Conflict with the Pipe Opening. Enlarge the Opening to Allow the Pipe to Pass Between the Reinforcing Bars. Patch the Enlarged Hole with Epoxy Grout.

TYPICAL UNDERDRAIN WALL CONNECTION DETAIL
Not to Scale



UNDERDRAIN PIPE DETAIL
Not to Scale

(Sta. 72+54± ~ Sta. 77+30±, Sta. 85+40 ~ Sta. 88+50,
Sta. 166+00 ~ Sta. 168+00)

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DESIGNED BY	
NOTED BY	
CHECKED BY	
NO.	