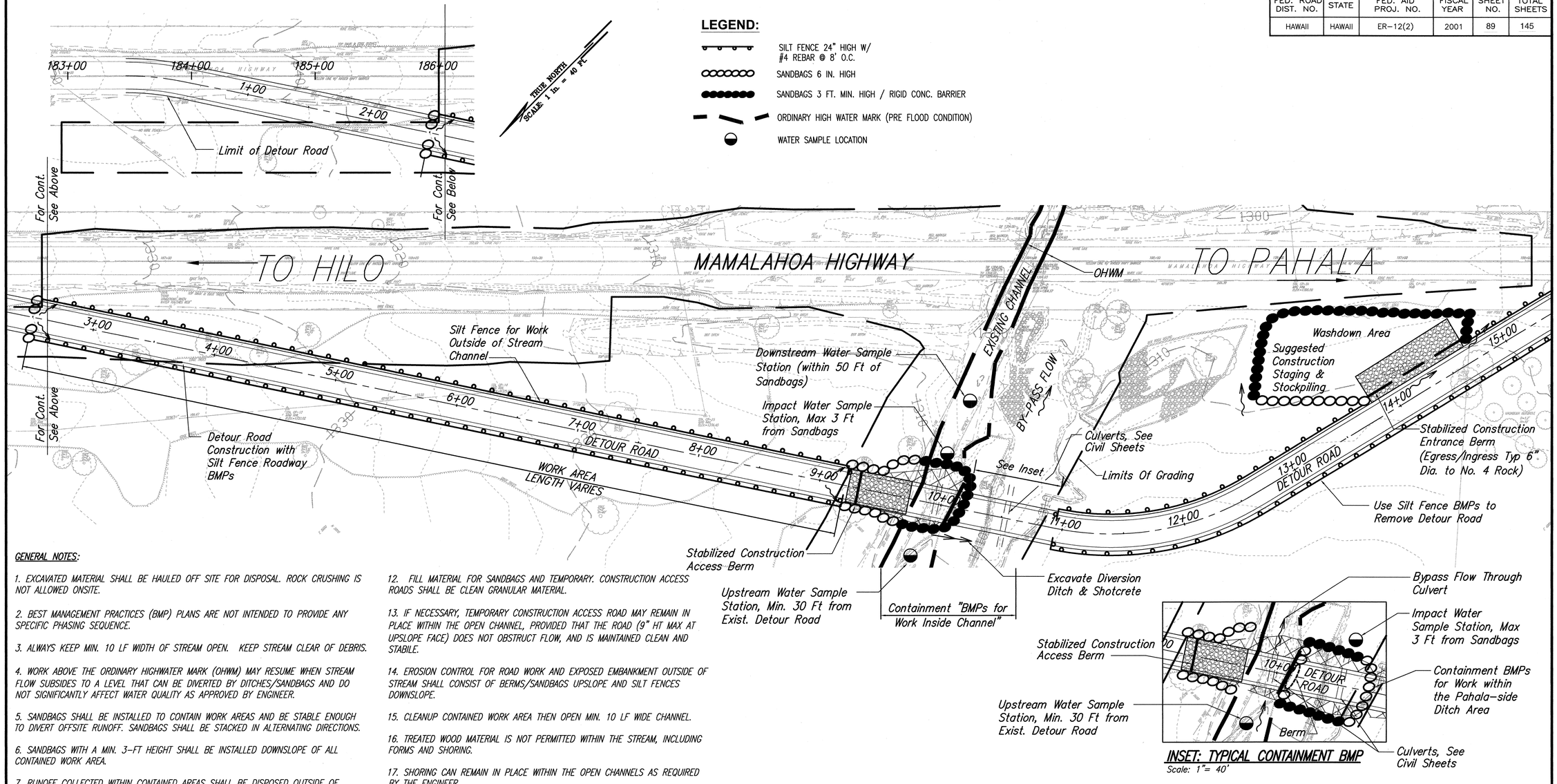
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	ER-12(2)	2001	89	145



INSET: TYPICAL CONTAINMENT BMP

Scale: 1"= 40'

GENERAL NOTES:

1. EXCAVATED MATERIAL SHALL BE HAULED OFF SITE FOR DISPOSAL. ROCK CRUSHING IS NOT ALLOWED ONSITE.

2. BEST MANAGEMENT PRACTICES (BMP) PLANS ARE NOT INTENDED TO PROVIDE ANY SPECIFIC PHASING SEQUENCE.

3. ALWAYS KEEP MIN. 10 LF WIDTH OF STREAM OPEN. KEEP STREAM CLEAR OF DEBRIS.

4. WORK ABOVE THE ORDINARY HIGHWATER MARK (OHWM) MAY RESUME WHEN STREAM FLOW SUBSIDES TO A LEVEL THAT CAN BE DIVERTED BY DITCHES/SANDBAGS AND DO NOT SIGNIFICANTLY AFFECT WATER QUALITY AS APPROVED BY ENGINEER.

5. SANDBAGS SHALL BE INSTALLED TO CONTAIN WORK AREAS AND BE STABLE ENOUGH TO DIVERT OFFSITE RUNOFF. SANDBAGS SHALL BE STACKED IN ALTERNATING DIRECTIONS.

6. SANDBAGS WITH A MIN. 3-FT HEIGHT SHALL BE INSTALLED DOWNSLOPE OF ALL CONTAINED WORK AREA.

7. RUNOFF COLLECTED WITHIN CONTAINED AREAS SHALL BE DISPOSED OUTSIDE OF CHANNEL AND STATE WATERS.

8. UPSTREAM WATER SAMPLE STATION SHALL BE MIN. 30 FEET FROM THE NEAREST POINT OF THE PROJECT SITE.

9. IMPACT WATER SAMPLE STATION SHALL BE 3 FEET DOWNSLOPE FROM THE NEAREST POINT OF THE SILT FENCE AND SANDBAGS.

10. DOWNSTREAM WATER SAMPLE STATION SHALL BE WITHIN 50 FEET OF THE SILT FENCE/SANDBAGS.

11. PHOTO DOCUMENTATION AT WATER SAMPLE STATIONS DURING NO FLOW CONDITION WILL BE THE RESPONSIBILITY OF THE DEPARTMENT OF TRANSPORTATION. THE DEPARTMENT OF TRANSPORTATION TO PROVIDE 10 SETS OVER TWO WEEKS PRIOR TO CONSTRUCTION, 1 SET PER WEEK DURING CONSTRUCTION, AND 5 SETS OVER ONE MONTH PERIOD AT POST CONSTRUCTION. SUBMIT SETS TO THE DEPARTMENT OF HEALTH HILO AND THE DEPARTMENT OF HEALTH CLEAN WATER BRANCH HONOLULU. (NOTE: A SET CONSISTS OF PHOTO DOCUMENTATION OF WATER SAMPLE STATIONS DURING A SAMPLING EVENT.)

12. FILL MATERIAL FOR SANDBAGS AND TEMPORARY. CONSTRUCTION ACCESS ROADS SHALL BE CLEAN GRANULAR MATERIAL.

13. IF NECESSARY, TEMPORARY CONSTRUCTION ACCESS ROAD MAY REMAIN IN PLACE WITHIN THE OPEN CHANNEL, PROVIDED THAT THE ROAD (9" HT MAX AT UPSLOPE FACE) DOES NOT OBSTRUCT FLOW, AND IS MAINTAINED CLEAN AND STABILE.

14. EROSION CONTROL FOR ROAD WORK AND EXPOSED EMBANKMENT OUTSIDE OF STREAM SHALL CONSIST OF BERMS/SANDBAGS UPSLOPE AND SILT FENCES DOWNSLOPE.

15. CLEANUP CONTAINED WORK AREA THEN OPEN MIN. 10 LF WIDE CHANNEL.

16. TREATED WOOD MATERIAL IS NOT PERMITTED WITHIN THE STREAM, INCLUDING FORMS AND SHORING.

17. SHORING CAN REMAIN IN PLACE WITHIN THE OPEN CHANNELS AS REQUIRED BY THE ENGINEER.

18. BMPs ARE REQUIRED FOR CONCRETE POUR AT FOOTINGS. CONFINE POUR AREA WITH SANDBAGS ONE LAYER HIGH.

19. DO NOT POUR CONCRETE ABOVE AND WITHIN STREAM WHEN STREAM IS FLOWING.

20. BMPs ARE REQUIRED FOR CONTRACTOR'S STOCKPILE AND STAGING AREA.

21. ANY DEVIATIONS FROM THESE BMPs SHALL BE AT CONTRACTOR'S COST AND NO ADDITIONAL WORKDAYS SHALL BE ADDED.

22. UNLINED DITCH AND CHANNEL EXCAVATION MAY OCCUR WHILE DETOUR ROAD IS OPEN, PROVIDED PROPER BMPs ARE IN PLACE.

23. SEE BMP DETAIL SHEET.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE Feb 2001
	DRAWN BY JH	
NOTE BOOK	TRACED BY	Feb 2001
	DESIGNED BY LKT	
	QUANTITIES BY	
No. Jump Loop	CHECKED BY	

SCALE IN FEET: 1"=40'

40' 20' 0 40' 80'

ALAN Y. TOMITA
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NO. 4129-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

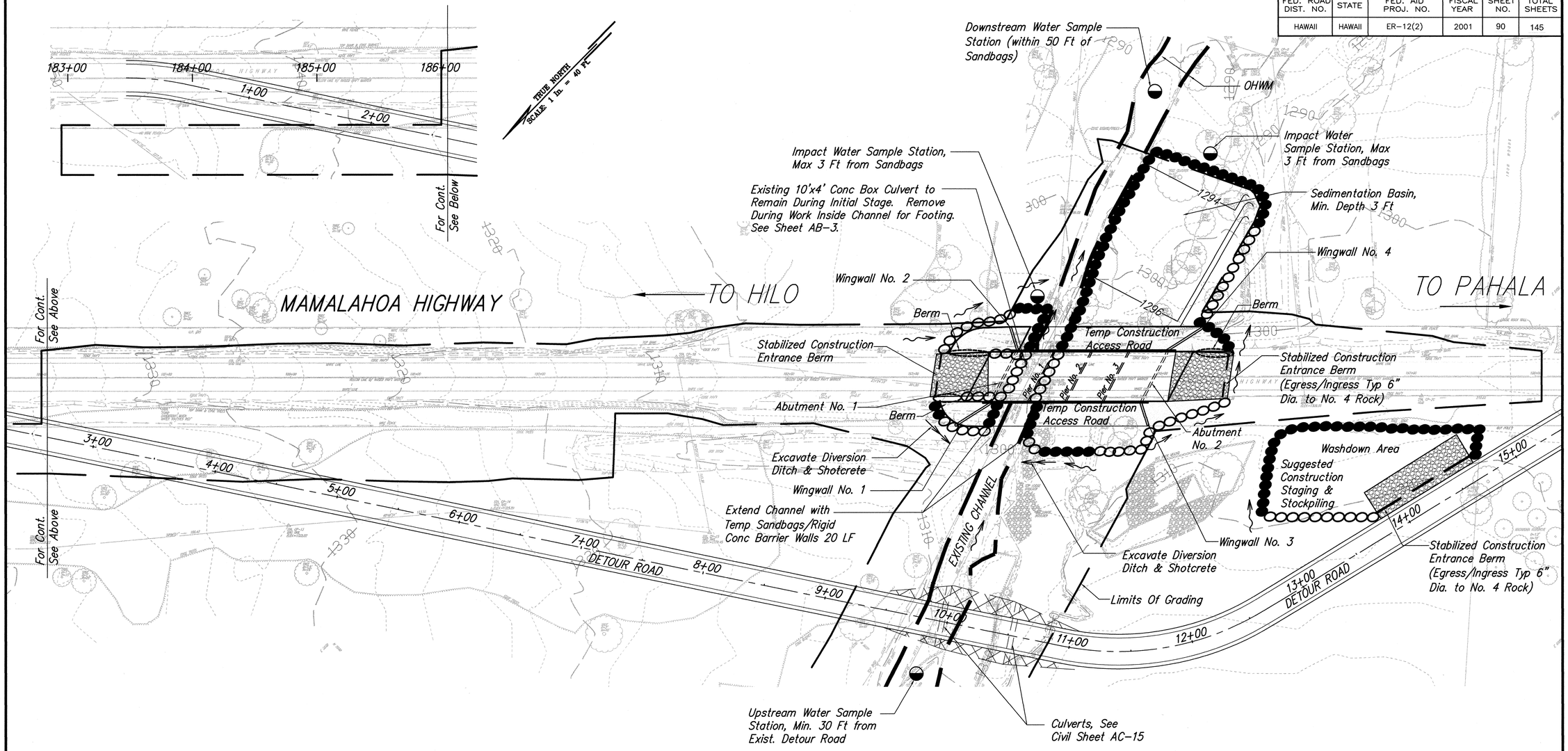
BMPs FOR DETOUR ROAD CONSTRUCTION

MAMALAHOA HIGHWAY
EMERGENCY REPLACEMENT OF FORD CROSSING
Federal Aid Project No. ER-12(2)

Scale: As Noted Date: Feb. 2001

SHEET No. **AB-1** OF **6** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	ER-12(2)	2001	90	145



LEGEND:

- SILT FENCE 24" HIGH W/ #4 REBAR @ 8' O.C.
- SANDBAGS 6 IN. HIGH
- SANDBAGS 3 FT. MIN. HIGH / RIGID CONC. BARRIER
- ORDINARY HIGH WATER MARK (PRE FLOOD CONDITION)
- WATER SAMPLE LOCATION

SCALE IN FEET: 1"=40'

40' 20' 0 40' 80'

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STATE OF HAWAII
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HIGHWAYS DIVISION

BMPs FOR BRIDGE CONSTRUCTION

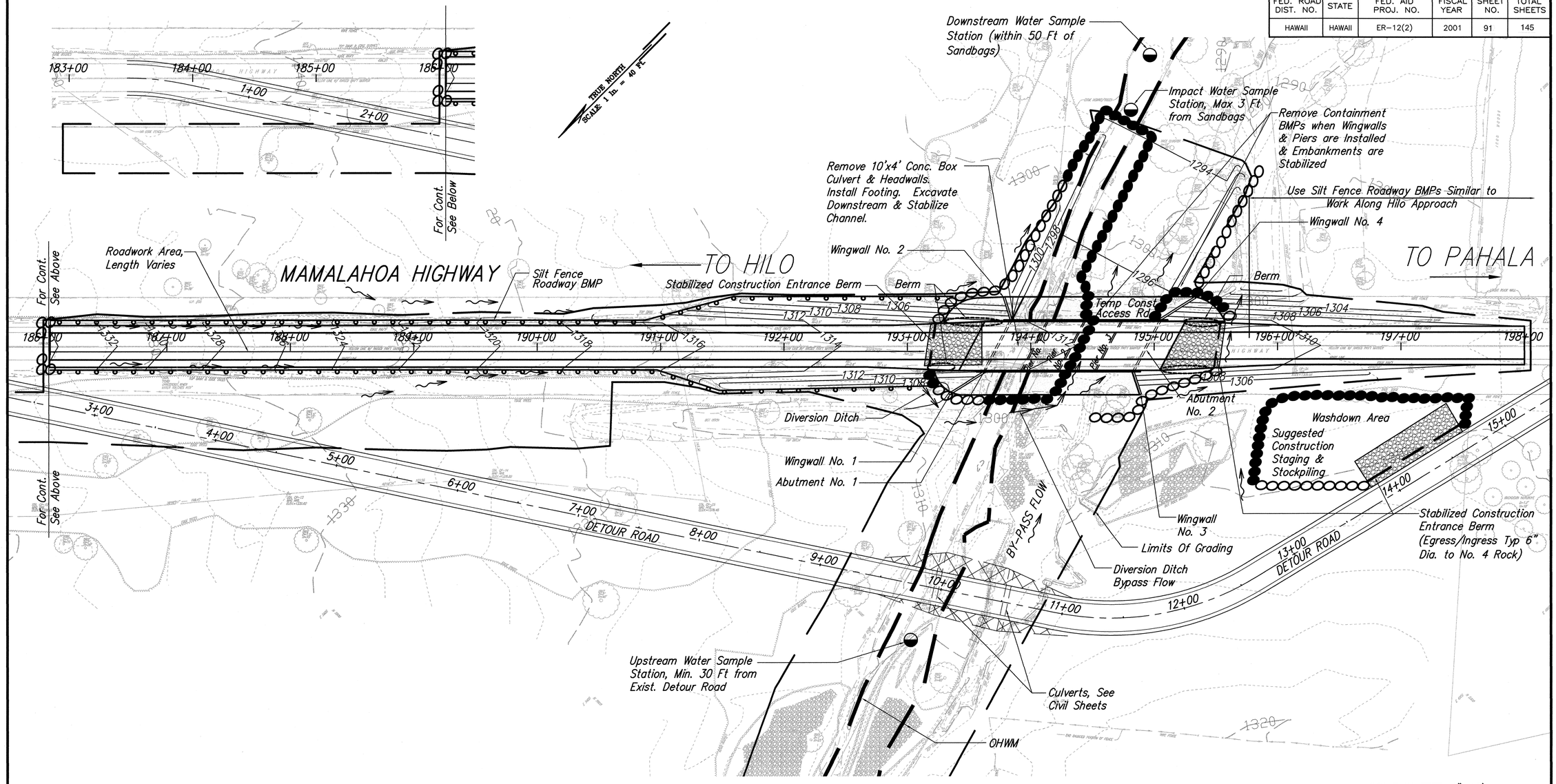
MAMALAHOA HIGHWAY
EMERGENCY REPLACEMENT OF FORD CROSSING
Federal Aid Project No. ER-12(2)

Scale: As Noted Date: Feb. 2001

SHEET No. **AB-2** OF **6** SHEETS

ORIGINAL PLAN
NOTE BOOK No. bmp1.dwg
SURVEY PLOTTED BY
DRAWN BY JH DATE Feb. 2001
TRACED BY
DESIGNED BY LKT Feb. 2001
QUANTITIES BY
CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	ER-12(2)	2001	91	145



SCALE IN FEET: 1"=40'

40' 20' 0 40' 80'

LEGEND:

- SILT FENCE 24" HIGH W/ #4 REBAR @ 8' O.C.
- SANDBAGS 6 IN. HIGH
- SANDBAGS 3 FT. MIN. HIGH / RIGID CONC. BARRIER
- ORDINARY HIGH WATER MARK (PRE FLOOD CONDITION)
- WATER SAMPLE LOCATION

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY JH	Feb. 2001
NOTE BOOK	TRACED BY	
	DESIGNED BY LKT	Feb. 2001
No. bmp2.dwg	QUANTITIES BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

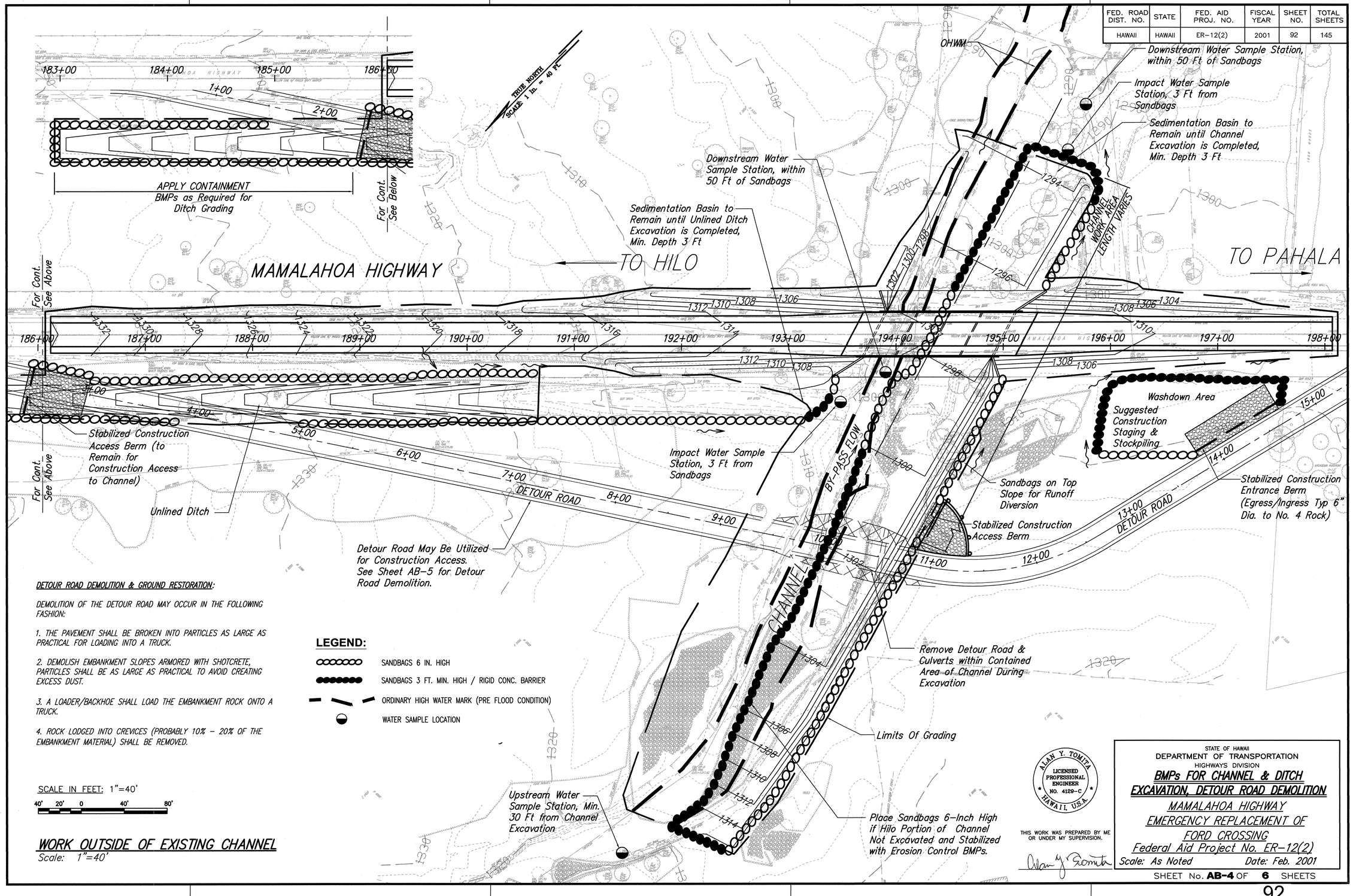
BMPs FOR BRIDGE AND ROAD CONSTRUCTION

MAMALAHOA HIGHWAY
EMERGENCY REPLACEMENT OF FORD CROSSING
Federal Aid Project No. ER-12(2)

Scale: As Noted Date: Feb. 2001

SHEET No. **AB-3** OF **6** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	ER-12(2)	2001	92	145



DETOUR ROAD DEMOLITION & GROUND RESTORATION:

DEMOLITION OF THE DETOUR ROAD MAY OCCUR IN THE FOLLOWING FASHION:

1. THE PAVEMENT SHALL BE BROKEN INTO PARTICLES AS LARGE AS PRACTICAL FOR LOADING INTO A TRUCK.

2. DEMOLISH EMBANKMENT SLOPES ARMORED WITH SHOTCRETE, PARTICLES SHALL BE AS LARGE AS PRACTICAL TO AVOID CREATING EXCESS DUST.

3. A LOADER/BACKHOE SHALL LOAD THE EMBANKMENT ROCK ONTO A TRUCK.

4. ROCK LODGED INTO CREVICES (PROBABLY 10% - 20% OF THE EMBANKMENT MATERIAL) SHALL BE REMOVED.

LEGEND:

- SANDBAGS 6 IN. HIGH
- SANDBAGS 3 FT. MIN. HIGH / RIGID CONC. BARRIER
- ORDINARY HIGH WATER MARK (PRE FLOOD CONDITION)
- WATER SAMPLE LOCATION

SCALE IN FEET: 1"=40'

40' 20' 0 40' 80'

WORK OUTSIDE OF EXISTING CHANNEL

Scale: 1"=40'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY JH	Feb. 2001
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No. bmp3.dwg	DESIGNED BY LKT	Feb. 2001
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

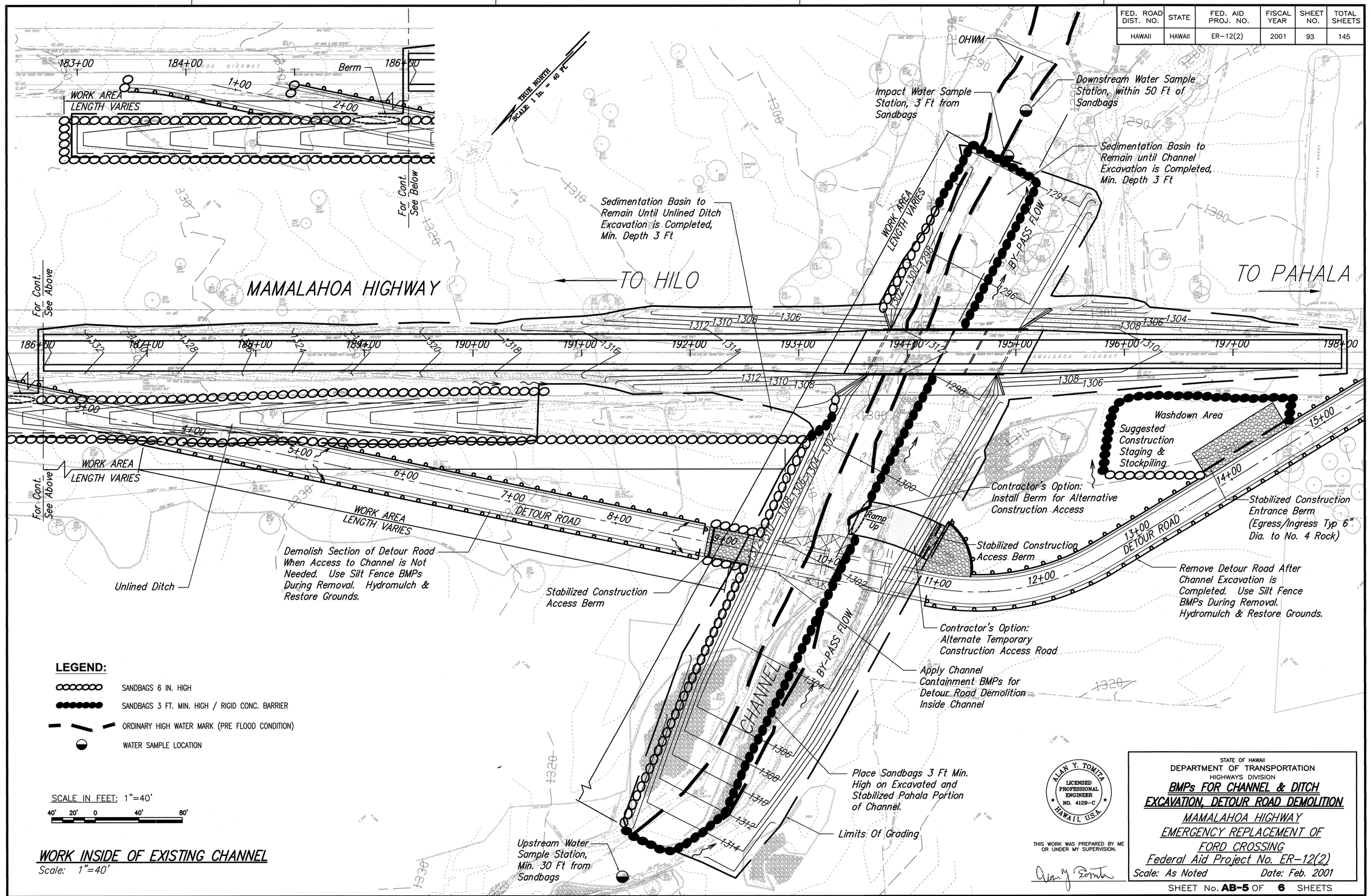
BMPs FOR CHANNEL & DITCH EXCAVATION, DETOUR ROAD DEMOLITION

MAMALAHOA HIGHWAY
EMERGENCY REPLACEMENT OF FORD CROSSING
Federal Aid Project No. ER-12(2)

Scale: As Noted Date: Feb. 2001

SHEET No. **AB-4** OF **6** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	ER-12(2)	2001	93	145



LEGEND:

- SANDBAGS 6 IN. HIGH
- SANDBAGS 3 FT. MIN. HIGH / RIGID CONC. BARRIER
- ORDINARY HIGH WATER MARK (PRE FLOOD CONDITION)
- WATER SAMPLE LOCATION

SCALE IN FEET: 1"=40'

40' 20' 0 40' 80'

WORK INSIDE OF EXISTING CHANNEL

Scale: 1"=40'

		DATE
ORIGINAL PLAN	SURVEY PLOTTED BY	Feb. 2001
	DRAWN BY JH	
NOTE BOOK	TRACED BY	
No. Kmd.dwg	DESIGNED BY LKF	Feb. 2001
	QUANTITIES BY	
	CHECKED BY	

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STATE OF HAWAII
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HIGHWAYS DIVISION

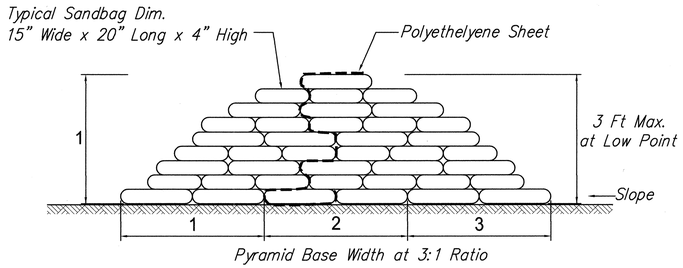
BMPs FOR CHANNEL & DITCH EXCAVATION, DETOUR ROAD DEMOLITION

MAMALAHOA HIGHWAY
EMERGENCY REPLACEMENT OF FORD CROSSING
Federal Aid Project No. ER-12(2)

Scale: As Noted Date: Feb. 2001

SHEET No. **AB-5** OF **6** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	ER-12(2)	2001	94	145



SECTION

NOTES:

1. STACK SANDBAGS SIMILAR TO AS SHOWN. STACK IN ALTERNATING DIRECTIONS.

2. STRIP VEGETATION AND DEBRIS BEFORE LAYING SANDBAGS.

MATERIALS REQUIRED FOR 100 LF		
HEIGHT	SANDBAGS REQ'D	TONS OF SAND
1'	360	15 Tons
2'	1,260	53 Tons
3'	2,780	116 Tons

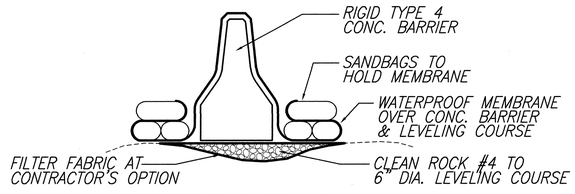
3. SANDBAGS SHOULD BE FILLED ONE-HALF TO TWO-THIRDS FULL.

4. PLACE THE SUCCEEDING BAGS ON THE UNFILLED OR TIED PORTION OF THE PREVIOUSLY LAYED BAGS AND TAMP INTO PLACE TO ELIMINATE VOIDS AND FORM A TIGHT SEAL.

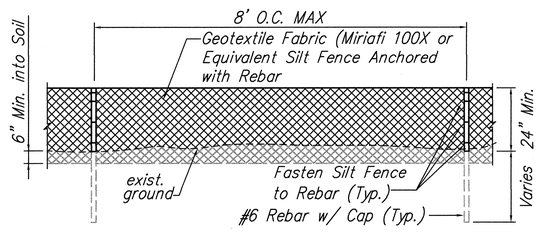
5. STAGGER THE JOINTS WHEN MULTIPLE LAYERS ARE LAID AND STACK SANDBAGS IN A PYRAMID FORMATION.

6. CONSTRUCT THE SANDBAG WALL BASE WIDTH THREE TIMES THE SANDBAG WALL HEIGHT.

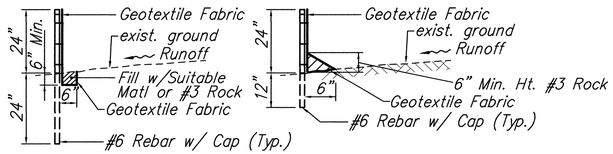
SANDBAG WALL SECTION
Not to Scale



ALTERNATE TO SANDBAG WALLS
Not to Scale

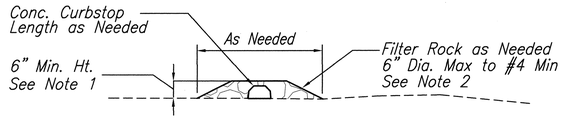


ELEVATION



SECTION FOR SOIL/ASH SECTION FOR ROCK

SILT FENCE DETAIL
Not To Scale



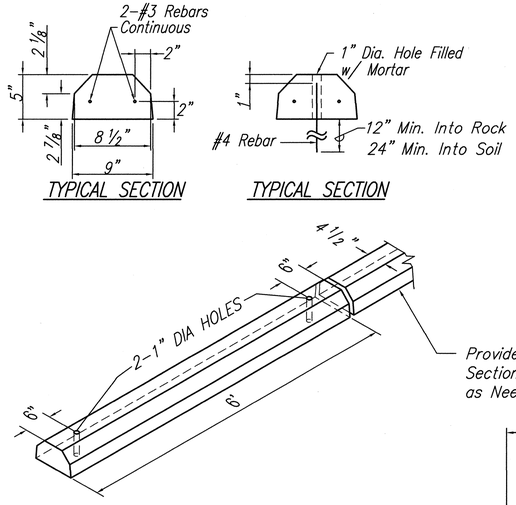
BERM ON ROCK OR AC SURFACE

NOTES:

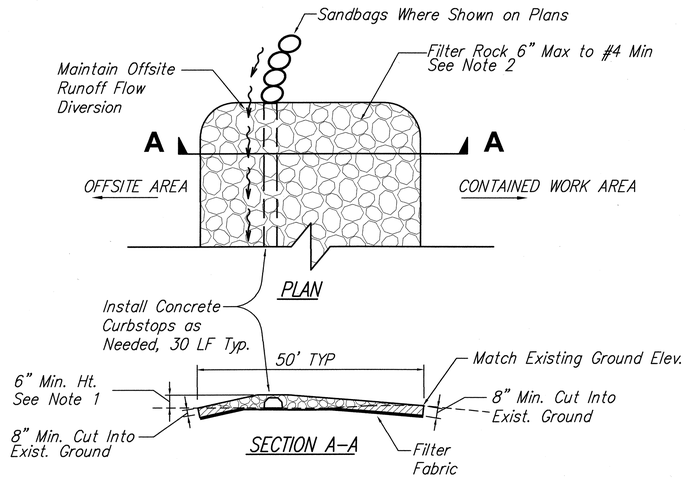
1. MAINTAIN OFFSITE FLOW DIVERSION ACROSS ENTRANCE.

2. FILTER ROCK SHALL BE MAINTAINED AGAINST AGGREGATE LOSS, RUTTING AND TRACKED SOIL DEPOSIT.

TYPICAL BERM
Not To Scale



CONCRETE CURBSTOP DETAIL
Not to Scale

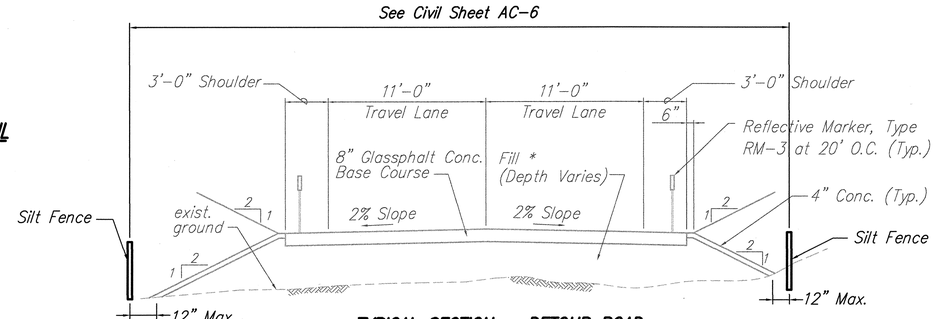


NOTES:

1. MAINTAIN OFFSITE FLOW DIVERSION ACROSS ENTRANCE.

2. FILTER ROCK SHALL BE MAINTAINED AGAINST AGGREGATE LOSS, RUTTING AND TRACKED SOIL DEPOSIT.

STABILIZED CONSTRUCTION ENTRANCE BERM
Not To Scale



TYPICAL SECTION - DETOUR ROAD
Scale: 1" = 5'-0"

SURVEY PLOTTED BY		DATE	Feb. 2001
DRAWN BY	JH		
TRACED BY	LKF		
DESIGNED BY			Feb. 2001
QUANTITIES BY			
CHECKED BY			
ORIGINAL PLAN			
NOTE BOOK		No.	

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HIGHWAYS DIVISION

BMP DETAILS

MAMALAHOA HIGHWAY
EMERGENCY REPLACEMENT OF
FORD CROSSING
Federal Aid Project No. ER-12(2)

Scale: As Noted Date: Feb. 2001

SHEET No. **AB-6** OF **6** SHEETS