STATE	FISCAL YEAR	SHEET NO.	TOTAL SHTS.
HAWAII	1967	4	76

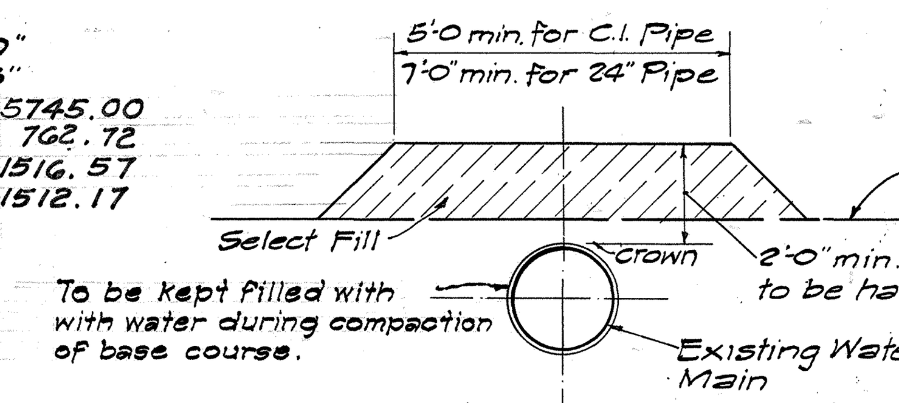
PROJECT NO. B-900-01-64 UNIT I

A. C. CURB SCHEDULE			
STATION		STATION	
Begin	End	Begin	End
185+00	185+33	187+28	188+24
185+64	187+06	~~188+49~~	~~189+18~~

Done under Unit II Contract

EXISTING ¢ ROAD CURVE DATA

Δ =	15° 07' 30"
Δ/2 =	7° 33' 45"
¢ R =	~~5730.00~~ 5745.00
T =	~~760.73~~ 762.72
Lc =	~~1512.50~~ 1516.57
Ch =	~~1508.22~~ 1512.17



DETAIL OF WATER MAIN SPECIAL COMPACTION

Note 3

NOTE:

1. Ditch & Channel Excavation for Swale will measured and paid for under Roadway Excavation.
2. ~~Base Line Stationing is based on distance along Existing Road Centerline.~~ — Delete
3. ~~Base Line Azimuths adopted from plans of Waianae Road (FAP No. 4A).~~ — Delete
4. For CRM Wall location and elevation schedule, see sheet 47.

NOTE: Roadway widening work Sta. 184+50 to Sta. 188+28 deleted from Unit I and completed by C.C.O. #16 under Unit II.

WATER NOTES

1. Materials and construction of water mains and appurtenances shall be in accordance with the Standard Specifications and the Special Provision.

2. The locations of existing water mains and appurtenances shown on the plans are approximate only and the Contractor shall verify the exact locations.

3. Wherever existing water mains are to be in the new pavement areas, or under the proposed shoulder areas and the Cross Sections show the existing ground over the water mains are to be excavated for the sub-base, or where the cover over existing water main is less than 2'-0" from the crown of the water main, no power or other heavy equipment shall be permitted over the water main. Only hand-operated mechanical equipment shall be utilized to compact materials over and adjacent to water main until a minimum cover of 2'-0" is constructed. See Detail this drawing. Any damage to the existing water mains shall be the responsibility of the Contractor.

4. Existing water mains shall be exposed prior to start of trench excavation at new drain and culvert crossings wherever there is a possibility that these drains and culverts may affect the existing water mains.

5. Any excavation work around existing water mains and appurtenances shall be by hand only.

6. The Contractor shall notify The Board of Water Supply in writing one week prior to commencing work on the water system.

7. All existing non-standard non-salvable valve box frames and covers shall be removed and disposed of by the Contractor at his own expense.

8. Adjust existing valve box and M.H. frame and cover to new road grade.

9. (*) Asterisk denotes work to be done by The Board of Water Supply and unless otherwise noted, materials to be furnished by the Contractor. Contractor to excavate and backfill.

10. Unless otherwise indicated on the drawings, the Contractor shall furnish and install all copper service laterals and appurtenances.

11. Items indicated as "relocate" on plans shall be removed, cleaned, painted and reinstalled at the new location by the Contractor unless otherwise specified.

12. All 24" Concrete Cylinder Pipes shall be Class 150 and manufactured in accordance with the requirement of the Special Provisions and the Manufacturer's Detail Drawings, all to be approved by The Board of Water Supply.

13. The Contractor shall submit to B.W.S. the Manufacturer's Layout Schedule for the installation of the 24" Concrete Cylinder Pipes and appurtenances with reference to the stationing and grade line as shown on the plans.

14. Class C-1 concrete for plugging open ends of abandoned pipes shall be incidental to pipeline work.

15. The Contractor shall relocate existing water valve markers as directed by the Engineer at his own expense.

16. Existing 24" main is Southern Pipe Co. (formerly) manufacture. The Contractor shall be held reponsible to furnish all necessary materials, including adaptors if required to facilitate connections into existing mains. Cost of adaptors shall be incidental to pipeline work.

17. Degree of conc. cylinder bends, or lengths of adjacent pipes required at point of connections to existing mains shall be verified after exposure of existing mains prior to start of construction work. Any resulting revisions required shall be done by the Contractor at his own cost. Degree of conc. cylinder bends specified on the plan at connection points are for bidding purpose only.

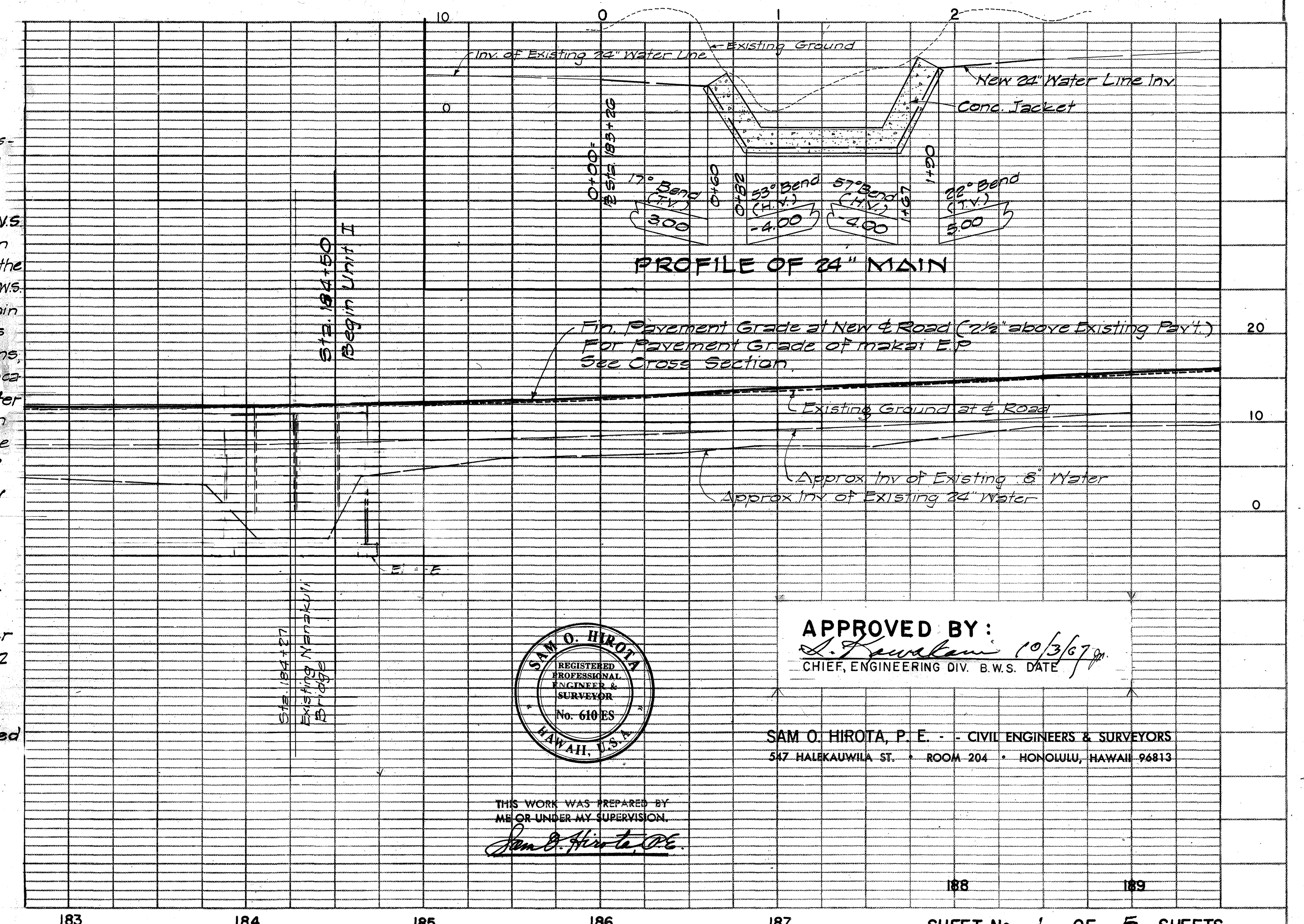
18. The Contractor shall make all connections from new or relocated meter to consumer's service pipe including excavation, backfill and furnishing of all materials. Payment for meter to consumer's service pipe connection will be made at the unit price bid in the Proposal and shall be full compensation for all labor, tools, materials and equipment including excavation and backfill.

19. The Board of Water Supply will tap existing mains for service laterals. The Contractor shall perform all necessary excavation and furnish appropriate size corporation stops.

20. Extension of service laterals, adjustment of meters and meter boxes, relocation of meters and cutting and plugging of service laterals shall be done by B.W.S. The Contractor shall perform all necessary excavation and backfill.

21. Laterals (with 4/5 B.W.S. and 1/5 State) shown on the plans indicate how the cost is shared by the B.W.S. and the State. They pertain only to service laterals and service connections, and do not include relocation of meters and meter boxes, and connection to consumers service pipe, which cost shall be borned entirely by the State.

22. The Contractor shall expose the existing mains by hand excavation to verify the grade where the cover shows a minimum of 2 feet or less on the cross section plans or whenever directed by the Engineer.



APPROVED BY:

[signature] 10/3/67

CHIEF, ENGINEERING DIV. B.W.S. DATE

SAM O. HIROTA, REGISTERED PROFESSIONAL ENGINEER & SURVEYOR No. 610 ES HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

[signature] Sam O. Hirota P.E.

SAM O. HIROTA, P. E. - CIVIL ENGINEERS & SURVEYORS

547 HALEKAUWILA ST. • ROOM 204 • HONOLULU, HAWAII 96813

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

PROFILE	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
NO.	GRADES CHECKED		
	B. M.'S NOTED		
	STRUCTURE NOTAT'NS CH'KD		

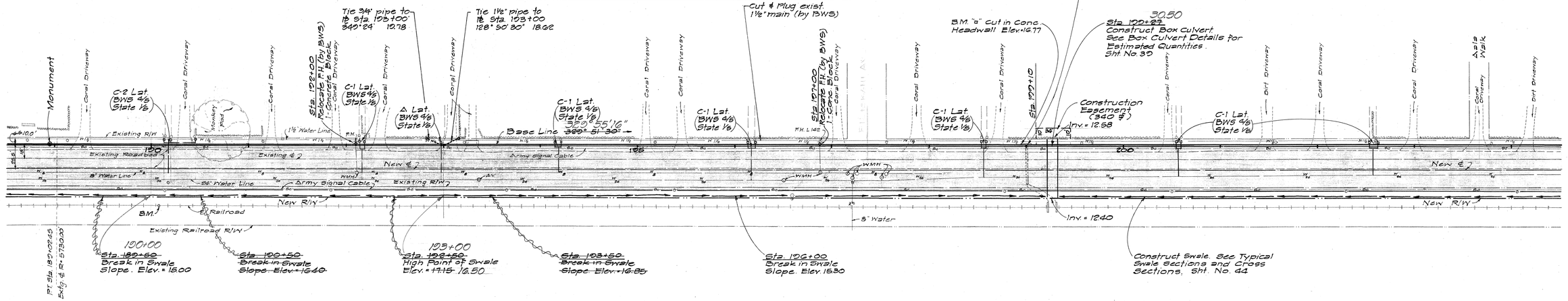
DD-4-2

STATE	FISCAL YEAR	SHEET NO.	TOTAL SHTS.
HAWAII	1967	5	76

PROJECT NO. B-900-01-64 UNIT I

A. C. CURB SCHEDULE

STATION															
	Begin	~~189+38~~	~~190+45~~	~~191+30~~	~~191+06~~	~~192+41~~	~~193+14~~	~~193+37~~	~~195+15~~	~~195+53~~	~~197+15~~	~~197+98~~	~~198+77~~	~~200+53~~	~~201+56~~	~~202+10~~	~~203+05~~
	End	~~190+25~~	~~191+17~~	~~191+83~~	~~192+26~~	~~192+98~~	~~193+23~~	~~195+02~~	~~195+37~~	~~197+00~~	~~197+77~~	~~198+61~~	~~200+40~~	~~201+40~~	~~201+93~~	~~202+88~~	~~203+56~~
		189+43	190+50	191+37	192+07	192+49	193+23	193+50	195+67	197+08	197+95	198+83	200+60	201+61	202+17	203+17	188+55
		190+24	191+10	191+87	192+28	193+03	193+30	195+47	196+89	197+75	198+63	200+30	201+42	201+95	202+97	203+64	189+27



GENERAL NOTES

1. All existing Utility lines shown on these plans are located from the best sources available. The Contractor shall check and verify the exact location and depth of same.

2. All existing Utilities, whether or not shown on the plans shall be protected at all times by the Contractor during construction and any damage to existing Utilities shall be repaired and paid for by the Contractor unless specified on the plans to be abandon.

3. Where connections are made to existing facilities, mortar shall be used to seal around the culvert at the connection. Payment for making this connection shall be considered incidental to structure Excavation. Other existing facilities that are damaged by the Contractor shall be repaired at his expense.

4. Utility Poles shall be relocated as shown on the Utilities plans.

5. Locations of monuments shown are approx. Exact locations to be staked out by the State's Cadastral Engineer.

6. Provide smooth riding connections to existing pavement at all driveways and streets.

7. Demolishing of existing facilities shall not be paid for separately but shall be considered incidental to Structure Excavation, unless otherwise noted.

8. The ends of abandoned pipe culverts shall be plugged with brick and mortar. This work shall not be paid for separately but shall be considered incidental to Structure Excavation.

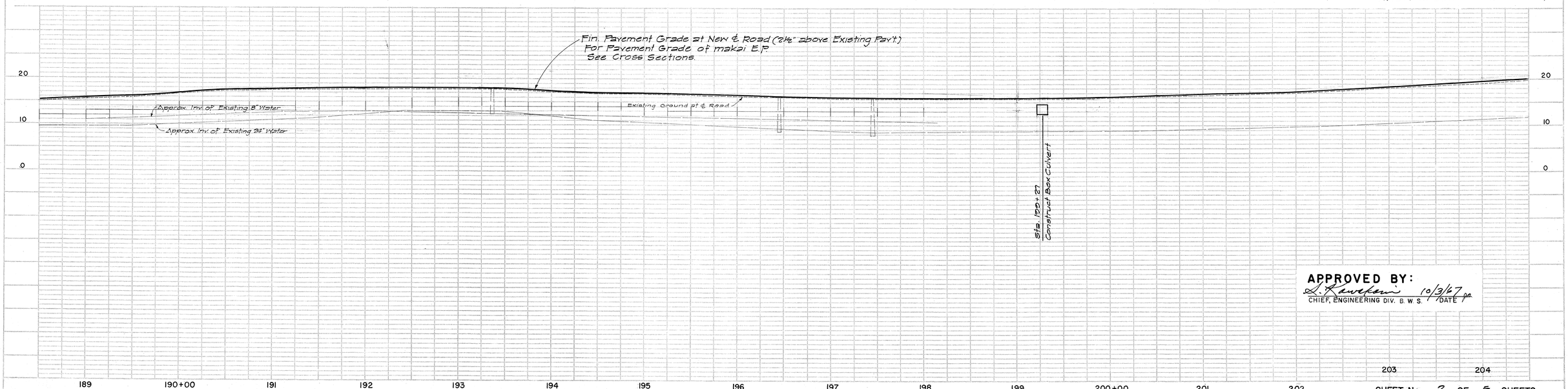
9. See sheet 44 for Typical Cutoff Ditch and Swale Sections. For inverts of earth swales as shown on Typical Roadway Sections, sheet 2 and 3, see Cross Sections, sheets G4 to G8

10. Ditch and Channel Excavation for Swale will be measured and paid for under Roadway Excavation.

11. For location of Base line points, the Contractor shall contact Sam O. Hirota - Civil Engineers and Surveyors.

12. Install A.C. Curb at left edge of Roadway as shown Typical Road Sections. See Table on drawings for location.

(General Notes continued on next sheet.)



APPROVED BY:
L. Kawakami 10/3/67
CHIEF, ENGINEERING DIV. B. W. S. DATE

SHEET No. 2 OF 5 SHEETS

5

STATE	FISCAL YEAR	SHEET NO.	TOTAL SHTS.
HAWAII	1967	6	76

PROJECT NO. B-900-01-64 UNIT I

NOTE:
1. Ditch & Channel Excavation for Swale will be measured and paid for under Roadway Exc.
2. For CRM Wall location & elevation schedule, see sheet 47.

Sta 205+06 To 206+23
Lower Exist 24" Main
* 4 - 24" 22° Bend
* 27 L.F. 24" Conc. Cyl. pipe Cl. 150
* 2 24" Butt Strap
4 - Conc. Block (2 with straps see detail)
1 - 2" Air Relief valve - min. working pressure 105 psi
1 - Type "B" M.H. 8.0' Deep

Sta 206+22
25
Construct Box Culvert
See Box Culvert Details for Estimated Quantities Sht No. 40
Demolish existing Headwall and Culvert.

Sta 209+38
82
Construct Box Culvert
See Box Culvert Details for Estimated Quantities. Sht. No. 41
Demolish existing Headwall and Culvert.

True North
Scale: 1"=50'

For New Right-of-Way information, see Right-of-Way Plan

Sta 218+06
High Point of Cut-off Ditch.
Elev. = 72.00
For Estimated Quantities. See Sht No. 7
SEE TRANSITION DETAILS Sht No. 11

Sta 210+20
High Pt. of Swale.
Elev. = 51.67

Sta 216+56.5
Construct Bridge.
See Bridge Details for Estimated Quantities Sht. No. 40

Pili-O-Koe Bridge

Axis Walk
Coral Driveway
Dirt Driveway
A.C. Driveway
Δ Lat (BWS 4/6 (State 1/8))
C-1 Lat (BWS 4/6 (State 1/8))
New CRM Wall
Inv. = 16.72
Existing R/W
Base Line
320° 51' 30"
New ℄
Existing ℄
Existing Roadbed
16" Water Line
24" Water Line
Inv. = 16.58
10.54
New R/W
Existing Railroad R/W
℄ Railroad
Pohakanui Ave
Install new Monument
Inv. = 22.13
Inv. = 20.20
Existing 24" Drain Inlet inv. = 21.00
Construct Swale Elev. = 22.27
Dirt Driveway
Macadam Driveway
Existing Ditch
Base Line 343° 33' 30"
Army Signal Cable
WMH
B.M. "b" Cut in Conc. Wingwall. Elev. = 47.14
Conc. Jacket See Sht No. 56
Existing Railroad R/W and New R/W
Existing CRM Retaining Wall
Existing Fence
Existing wire Fence

Construct Swale Elev. = 10.37
See Typical Swale Details and Cross Sections. Sht. No. 44

B.M. Top of ¾" Pipe in ℄ Railroad. Sta. 206+01 Elev. = 20.76

Construct conc. jacket for existing 24" water line See Sheet No. 56 for Details

Construct conc. jacket for existing 24" water line. See Sheet No. 56 for Details

EXISTING ℄ ROAD CURVE DATA

Δ =	~~13° 42' 00"~~	10° 45' 58"
Δ/2 =	~~6° 51' 00"~~	5° 22' 59"
R =	~~1910.00~~	2,006.08
T =	~~229.44~~	197.51
Lc =	~~456.70~~	393.85
Ch =	~~455.61~~	393.27

℄ Curve
Δ = 2° 20' 56"
½ = 1° 24' 58"
R = 1025.00
T = 47.59
L = 95.16
C = 95.15
℄ PCC Sta 212+79.93
℄ PT Sta 213+64.56
Existing ℄ of Road
℄ PT Sta 213+58.58
New ℄ R = 2000
℄ PT Sta 213+74.09

Sta 209+55 to 209+85
Lower Existing 24" Main
* 4 - 24" 22° Bend
* 30 L.F. 24" Conc. Cyl. pipe Cl. 160
* 2 24" Butt Strap
4 - Conc. Block (2 with straps see Detail)
1 - 2" Air Relief valve - min. working pressure 105 psi
1 - Type "B" M.H. 8.0' Deep

Sta 215+86
* 1 - 24" 45° Bend
* 1 - 24" Butt Strap
* 16 L.F. 24" Conc. Cyl. pipe
* 1 - 24" Conc. Cyl. Nipple 8'-0" long S & PE
1 - Conc. Block w/strut. strut (see detail)

Sta 216+24.50
1 - 24" 45° Bend (B.V.)
1 - Conc. Block

Sta 216+13.50
1 - 24" 48° Bend (H.V.)
1 - Conc. Block

Sta 216+76.50
1 - 24" 36° Bend (B.V.)
1 - Conc. Block

Sta 217+25.50
* 1 - 24" 45° Bend
* 1 - 24" Butt Strap
* 6 - L.F. 24" Conc. Cyl. Pipe
* 1 - 24" Conc. Cyl. Nipple 8'-0" long S & PE
1 - Conc. Block w/strut. strut (see detail)
TEMP FOR TESTING
1 - 24" Plug (re-use from previous test)
1 - 2½" Cleanout
1 - Conc. Block.

Sta 216+00.50
1 - 24" 53° Bend (H.V.)
1 - Conc. Block

Sta 215+00.50
1 - 24" 19° Bend (T.V.)
1 - Conc. Block
TEMP FOR TESTING
1 - 24" Plug (re-use from previous test)
1 - 2½" Cleanout
1 - Conc. Block.

A.C. CURB SCHEDULE

STATION Begin	STATION End	STATION Begin	STATION End
~~80~~	15	~~207+00~~	~~207+86~~
~~203+74~~	~~204+06~~	~~206+95~~	~~208+70~~
84	93	75	3+10
~~204+22~~	~~205+47~~	~~208+92~~	~~209+07~~
~~70~~	~~80~~	~~208+44~~	~~05~~
~~205+70~~	~~205+82~~	~~209+22~~	~~210+93~~
11	22	~~210+75~~	
~~206+62~~	~~206+77~~	~~211+12~~	~~212+88~~

GENERAL NOTES

13. Any grade work done over the existing Signal Corp cable shall be coordinated with H.T. Co.
14. The Contractor shall use extreme care to prevent damage to the buried cables.
15. Decision to lower the existing cables if it becomes exposed will be determined out in the Field.
16. Excavation for Cut-off Ditch to be measured and paid for under Ditch and Channel Excavation.
17. Exist. manhole frame & cover to be adjusted to new road grade.

PROFILE OF 24" MAIN AT PILI-O-KOE BRIDGE

Existing Ground
Existing 24" Water Line Inv.
44.50
New 24" Water Line Inv.
Sta 1+25
53° Bend (H.V.) 4000
Sta 1+00
Conc. Jacket
Sta 0+45
Sta 0+35
Sta 0+00
Sta 215+86
10° Bend (H.V.) 3000
45° Bend (H.V.) 3200
45° Bend (B.V.) 2200
90° Bend (B.V.) 2200
0 1 2

Edge of Pavement Grade at Outbound Lane
31.44 32.42 33.48 34.60 35.77 36.92 38.06 39.03 40.02 40.96 41.87 42.85 43.80 44.68 45.55 46.38 47.13 47.83 48.49
Conform to existing Roadway Super-elevation.
Pavement Grade at New ℄ Road
30.25 31.23 32.20 33.43 34.64 35.87 37.06 38.21 39.32 40.39 41.42 42.41 43.36 44.27 45.13 45.97 46.75 47.50 48.21
28.42 29.04 29.66 30.04 30.16 30.10 31.10 31.32 32.26 32.66 33.51 33.99 34.82 35.37 36.12 36.74 37.30 38.07 38.62 39.37 39.82 40.62 40.97 41.81 41.97 42.99 43.02 43.89 44.80 44.71 45.64 45.56 46.37 47.17 47.88
Edge of Pavement Grade at Inbound Lane
For Pavement Grades of Inbound & Outbound Lanes, See Pavement Grade Details
P.I.V.C. 62.14
Sta 213+50
40.51 50.64 51.02 52.43 52.50

NOTE:
From Sta. 212+00 use new pavement structure for entire Roadway width.

Fin. Pavement Grade at New ℄ Road (2½" above Existing Pav't) For Pavement Grade at makai E.P. See Cross Sections.
+5.00%
Air Valve
Approx. Inv. of Existing 24" Water
Conc. Jacket
Sta 202+64 Construct Box Culvert
Sta 206+18 Construct Box Culvert
Sta 206+01
24" Water 12.00
24" Water 12.00
24" Water 16.50
24" Water 16.60
Provide 200' smooth riding connection between existing & new roadbed.
Sta 212+00
850' V.C.
B.V.C. 34.64
Sta 216+65 Construct Bridge

APPROVED BY:
J. Kawakami 10/3/67
CHIEF, ENGINEERING DIV. B.W.S. DATE

218 219

204 205 206 207 208 209 210+00 211 212 213 214 215 216 217

SHEET No. 3 OF 5 SHEETS

6

PLAN: SURVEYED, PLOTTED, ALIGNMENT CHECKED, R.T. OF WAY CHECKED
PROFILE: SURVEYED, DRAWN, GRADES CHECKED, B.M.'S TIED, STRUCTURE ADJUST'S NO. CHK'D.
NOTE RANK NO.
BY DATE

THE FREDERICK POST CO., CHICAGO

STATE	FISCAL YEAR	SHEET NO.	TOTAL SHTS.
HAWAII	1967	7	76

PROJECT NO. B-900-01-64 UNIT I

Sta. 217+50 to 222+67
Construct Cutoff Ditch See Typical Cutoff Ditch Sections sheet no. 44 and Cross Sections.
ESTIMATED QUANTITIES
Ditch & Channel Exc. = 360 C.Y.
Grouted Rubble Paving = 65 C.Y.

~~EXISTING ℄ ROAD CURVE DATA~~
~~Δ = 11° 60' 00"~~
~~Δ/2 = 5° 55' 00"~~
~~R = 1010.00'~~
~~T = 197.04'~~
~~Lc = 304.47'~~
~~Ch = 303.77'~~

Sta. 222+52
Demolish existing CDI and abandon 18" Pipe Culvert.

Sta. 222+67 53.50' Left
Construct Type 'B' Shoulder Drop Intake and install 30" RCCP Cl. III See Culvert Details for Estimated Quantities Sht. No. 42
Top = 40.31 Inv. = 35.00

Sta. 224+60 to Sta 225+00
Construct cut-off ditch. See Typical Cut-Off Ditch Sections sht. No. 44 and Cross-Sections.
ESTIMATED QUANTITIES
Ditch & Channel Exc. = 8 C.Y.
Grouted Rubble Paving = 8 C.Y.

Sta. 224+60 To Sta. 227+00
Base Line to Face of Wall 56'
Construct Conc. Retaining Wall Type T-1. See Retaining Wall Details for Estimated Quantities. Sht. No. 34

Sta. 227+64
Demolish existing Headwall and abandon 18" Culvert.

Sta. 227+60 56' Left
Construct Type 'B' Shoulder Drop Intake and install 2-24" RCCP Cl. III. See Culvert Details for Estimated Quantities
Sht. No. 43
Top = 22.88
Inv. = ~~17.78~~ 18.78

Sta. 230+52
Demolish existing D. I. (Incidental to structural excavation) Butt 30" RCCP against existing 30" RCCP and place 8" thick by 1'-6" wide rocket-mix with 6x6 - 10/10 wire mesh around joint. (Incidental to Cl. "B" conc.)

Sta. 210+20
High Point of Swale
Elev. = 516.76

SEE TRANSITION DETAILS Sht. No. 11 for Curve Data

For New Right-of-Way information, see Right-of-Way Plan.

Sta. 220+00
High Point of Cutoff Ditch. Elev. = 36.00
Construct Cutoff Ditch.

Direct flow from existing swale to Type 'B' shoulder Drop Intake (Incidental to Ditch & Channel Exc.

NEW ℄ ROAD CURVE DATA
Δ = 1° 30' 00"
Δ/2 = 0° 45' 00"
R = 7,064.00
T = 104.25
Lc = 208.50
Ch = 208.49

True North
Scale: 1"=50'

Swale
Existing R/W
Existing Swale ℄
Existing wire fence
Install new mon.
Base Line
Existing ℄
Existing Roadbed
Existing R/W
New ℄
Connecting Inv. = 15.82
Exist Mon.
Existing 30" RCCP to remain
CGMP
Install new monument
Army Signal Cables
Existing Railroad R/W & New R/W
Existing CRM Retaining Wall
Existing 18" Culvert to remain Inlet inv. = ~~10.22~~ 23.88
Inv. = 34.78
Existing Railroad R/W
℄ Railroad
Existing 24" RCCP to remain Inlet inv. = ~~10.22~~ 15.86
Existing Pavement in New Median Area to be removed.
Pave median area to Sta. 219+80.
Existing Pavement in New Median Area to be removed

Sta. 220+20 To 223+80
Construct Conc. Retaining Wall Type L-1. See Retaining Wall Details for Estimated Quantities. Sht No. 34

Sta. 220+00 to Sta. 227+00
Construct cut-off ditch. See Typical Cut-Off Ditch Sections sht. No. 44 and Cross-Sections.
ESTIMATED QUANTITIES
Ditch & Channel Ex. = 10 C.Y.
Grouted Rubble Paving = 10 C.Y.

B.M. "B" cut in Headwall. Elev. = 19.98

Sta. 227+60 to 230+52
Construct Cutoff Ditch. See Typical Cutoff Ditch Sections sheet no. 44 and Cross Sections.
All radii of curves to be 10 ft. Provide 10% super-elevation about ℄. Provide 10 ft transition between normal & super-elevation. Run-off entry & grouted rubble paving to Drop Intake at Sta. 230+52 shall be similar to run-off entry & grouted rubble paving to Drop Intake at Sta. 227+60 shown sht no. 43
ESTIMATED QUANTITIES
Ditch & Channel Exc. = 203 C.Y.
Grouted Rubble Paving = 60 C.Y.

Sta. 230+52 56' Left
Construct Type 'B' Shoulder Drop Intake and install 30" RCCP Class III with 30 L.F. Concrete protection.
Top = 23.20
Inv. = 19.68
Shoulder Inv. = 23.45

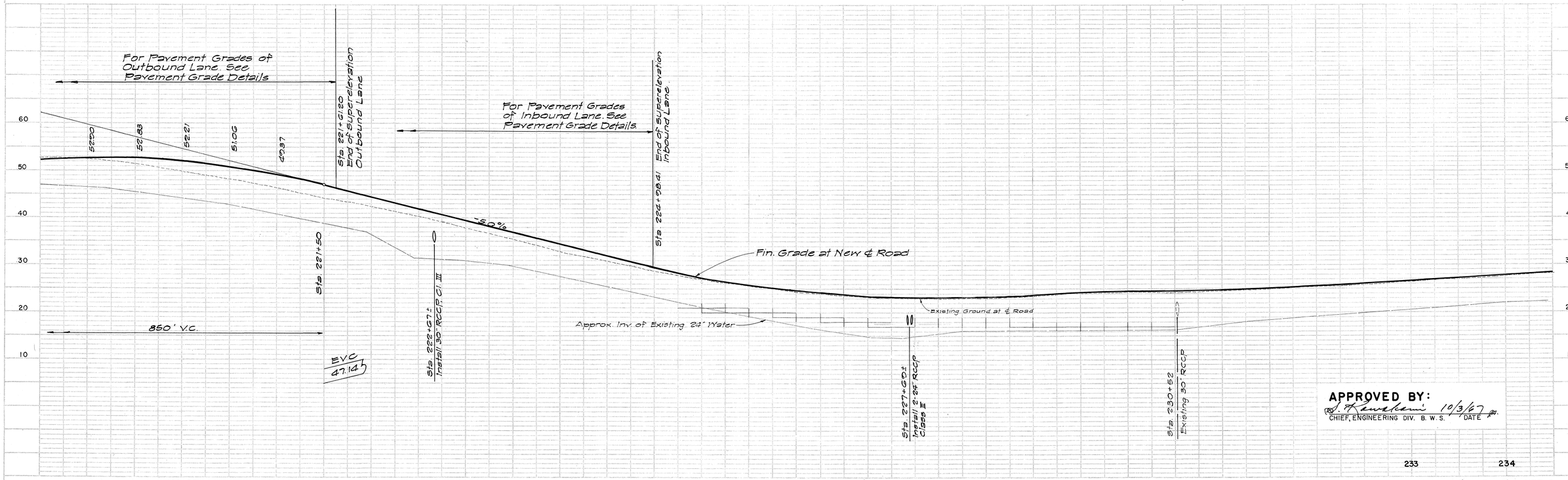
ESTIMATED QUANTITIES

Str. Exc.	=	10 C.Y.
Cl. "A-1" Conc.	=	4 C.Y.
Cl. "B-1" Conc.	=	11 C.Y.
Reinf. Steel	=	810 LB
Type A-2 Steel Frame & Grates	=	1 Ea.
30" Pipe Culvert	=	28 L.F.
Wire Mesh	=	18 LB

NOTE:
1. Ditch & Channel excavation for Swale will be measured and paid for under Road-way Excavation.
2. Excavation for cut-off ditch to be measured and paid for under Ditch & Channel Excavation.

PLAN — SURVEYED, PLOTTED, QUANTITIES CHECKED, R/W & PLOTTED, SYSTEMATIC GOOGTWAS CHECKED, NOTE BOOK, HAWAIS, NO.; BY, DATE

PROFILE — SURVEYED, PLOTTED, QUANTITIES CHECKED, R/W & PLOTTED, SYSTEMATIC GOOGTWAS CHECKED, NOTE BOOK, HAWAIS, NO.; BY, DATE

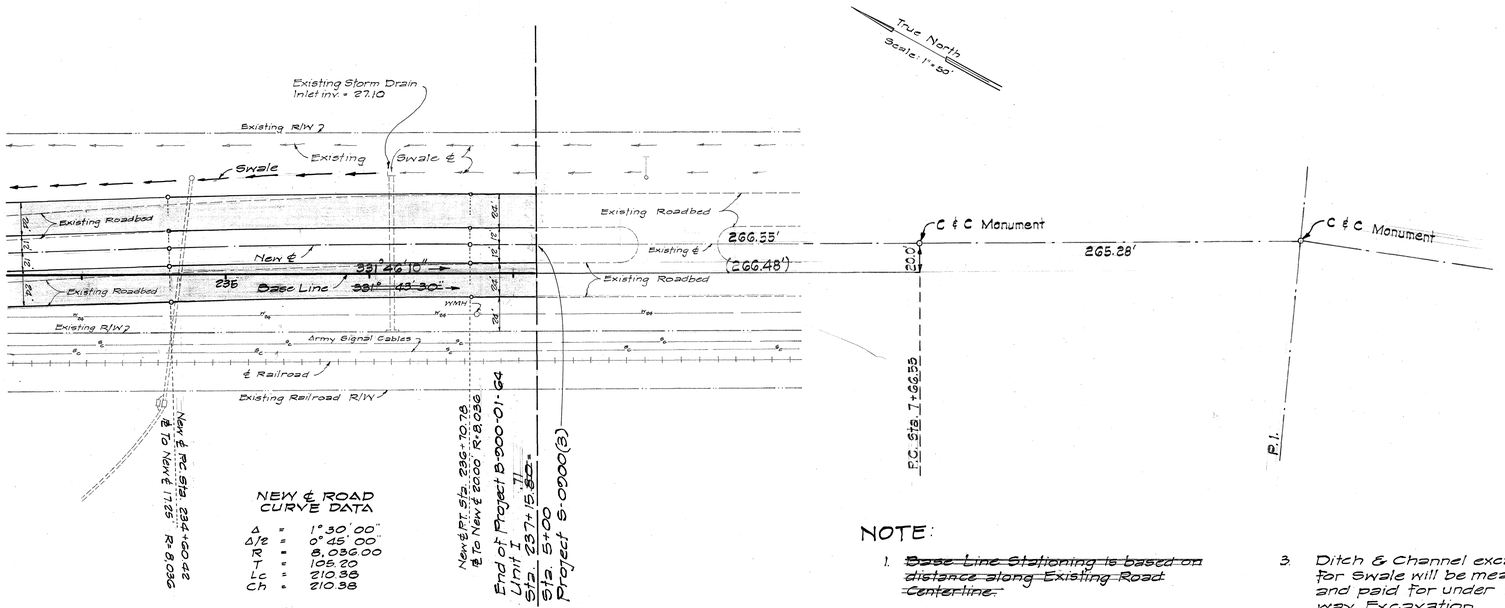


APPROVED BY:
J. Fukuki 10/3/67
CHIEF, ENGINEERING DIV. B. W. S. DATE

SHEET No. 4 OF 5 SHEETS

STATE	FISCAL YEAR	SHEET NO.	TOTAL SHTS.
HAWAII	1967	8	76

PROJECT NO. B-900-01-64 UNIT I

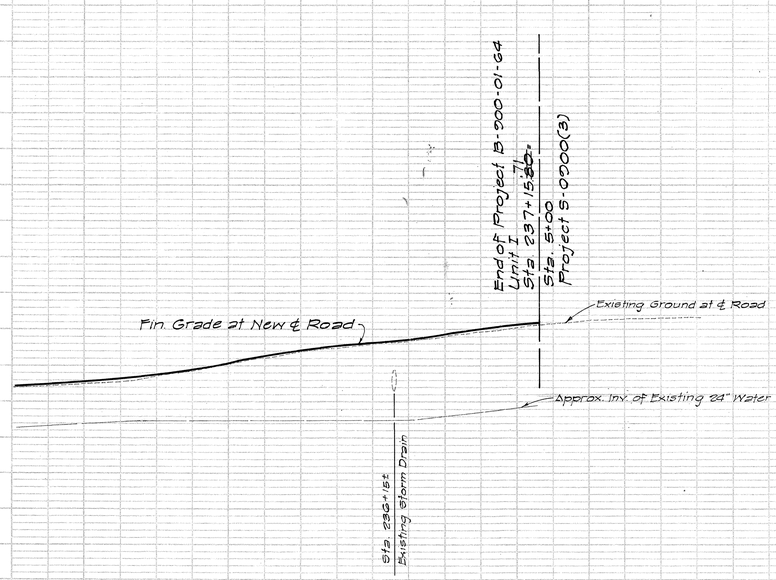


NEW ℄ ROAD
CURVE DATA

Δ	=	1° 30' 00"
Δ/2	=	0° 45' 00"
R	=	8,036.00
T	=	105.20
Lc	=	210.38
Ch	=	210.38

NOTE:

1. ~~Base Line Stationing is based on distance along Existing Road Centerline.~~
2. ~~Base Line Azimuths adopted from plans of Waianae Road (FAP No. 4A).~~
3. Ditch & Channel excavation for Swale will be measured and paid for under Roadway Excavation.



APPROVED BY:
A. Kawasaki 10/3/67
CHIEF, ENGINEERING DIV. B. W. S. / DATE

SHEET No. 5 OF 5 SHEETS