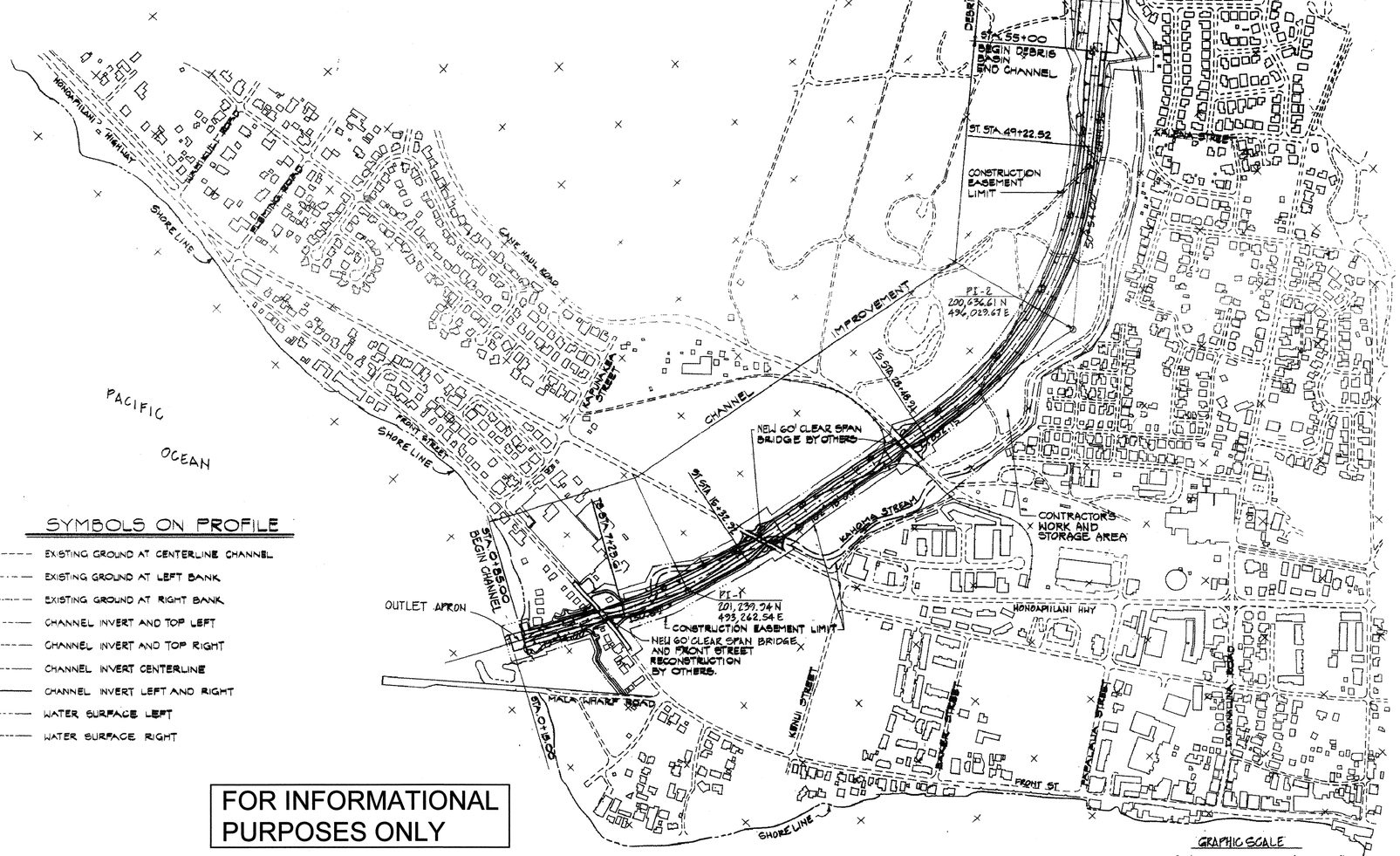
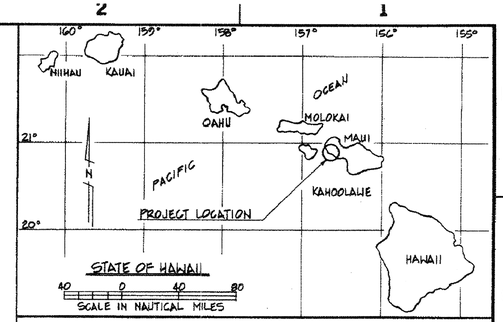
SYMBOLS ON PLAN

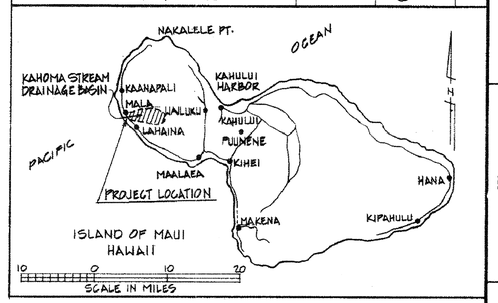
- EXISTING SLOPE
- NEW SLOPE
- △ BENCH MARK & P.I. LOCATION
- EXISTING CONTOUR (2 FT. INTERVAL)
- DIRECTION OF FLOW
- CENTERLINE CHANNEL
- PERMANENT EASEMENT
- CONSTRUCTION EASEMENT
- EXISTING FENCE
- EXISTING RAILROAD TRACKS
- EXISTING STREAM, ROADS, STREETS, HIGHWAY
- W_4 EXISTING 4" WATER LINE
- EXISTING 27' CORRUGATED METAL PIPE
- EXISTING ROCK FOOTINGS
- PERMANENT EASEMENT AND CONSTRUCTION EASEMENT

SYMBOLS ON PLAN

Δc	CENTRAL ANGLE OF CIRCULAR ARC
Θs	SPIRAL ANGLE
Ts	TOTAL TANGENT DISTANCE
Ls	LENGTH OF SPIRAL
Es	TOTAL EXTERNAL DISTANCE
K	ABSCISSA OF P.C. SHIFTED FROM T.S.
P	OFFSET FROM TANGENT TO P.C. OF SHIFTED CIRCLE
Xc	ABSCISSA OF THE S.C. REFERENCED FROM T.S.
Yc	ORDINATE OF THE S.C. REFERENCED FROM T.S.
Rc	RADIUS OF CENTRAL CIRCULAR CURVE
L.T.	LONG TANGENT
S.T.	SHORT TANGENT
LC.	LONG CHORD
R	RADIUS
T	TANGENT
C	LENGTH OF CHORD
Lc	LENGTH OF CURVE
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY







ABBREVIATIONS

BC	BOULDER CONCRETE
B.M.	BENCH MARK
℄	CENTERLINE
CHAN	CHANNEL
CONC.	CONCRETE
CRM	CEMENT RUBBLE MASONRY
CS	CURVE TO SPIRAL
E	EAST
EL	ELEVATION
EXIST	EXISTING
FPS	FEET PER SECOND
GRD	GROUND
GRP	GROUTED RIPRAP
INV	INVERT
L.T.	LEFT
MAX.	MAXIMUM
MIN.	MINIMUM
MSL	MEAN SEA LEVEL
N	NORTH
O.C.	ON CENTER
O/S	OFFSET FROM CHANNEL CENTERLINE
P.I.	POINT OF INTERSECTION
RBK	RIGHT BANK
RT.	RIGHT
S	SLOPE
SC	SPIRAL TO CURVE
ST.	SPIRAL TO TANGENT
STA	STATION
TS	TANGENT TO SPIRAL
TYP.	TYPICAL
V	VELOCITY
WS	WATER SURFACE

SYMBOLS ON PROFILE

- EXISTING GROUND AT CENTERLINE CHANNEL
- EXISTING GROUND AT LEFT BANK
- EXISTING GROUND AT RIGHT BANK
- CHANNEL INVERT AND TOP LEFT
- CHANNEL INVERT AND TOP RIGHT
- CHANNEL INVERT CENTERLINE
- CHANNEL INVERT LEFT AND RIGHT
- WATER SURFACE LEFT
- WATER SURFACE RIGHT

FOR INFORMATIONAL PURPOSES ONLY

KAHOMA STREAM
LAHAINA, MAUI, HAWAII

GENERAL PLAN

U.S. ARMY ENGINEER DISTRICT, HONOLULU
TO ACCOMPANY DESIGN MEMORANDUM NO. 2

PROFILE
SCALE: HORIZONTAL 1"=40'
VERTICAL 1"=8'

PLAN
SCALE: 1"=40'

FOR INFORMATIONAL PURPOSES ONLY

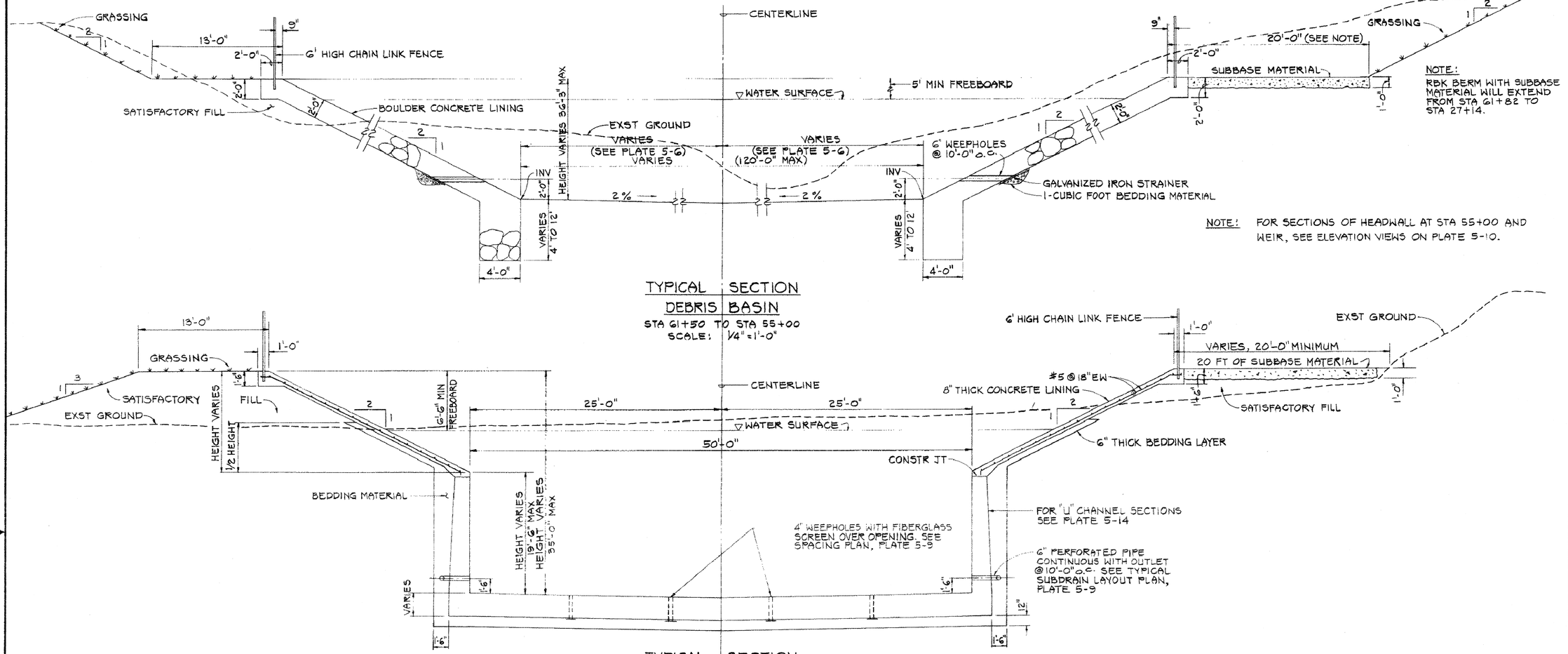
KAHOMA STREAM
LAHAINA, MAUI, HAWAII

PLAN AND PROFILE
STA. 51+00 TO STA. 61+50

U.S. ARMY ENGINEER DISTRICT, HONOLULU
TO ACCOMPANY DESIGN MEMORANDUM NO. 2

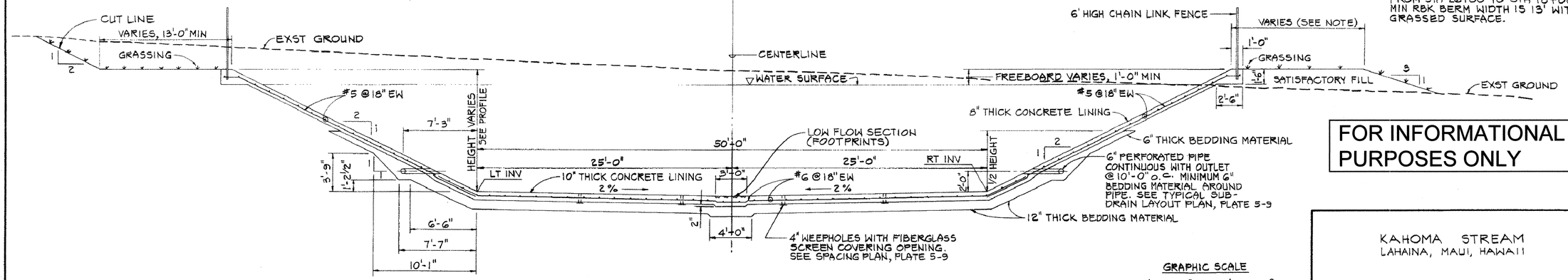
GRAPHIC SCALES
8' 0 8' 16'
SCALE: 1"=8' VERTICAL
40' 0 40' 80'
SCALE: 1"=40' HORIZONTAL

57 | PLATE 5-6



TYPICAL SECTION
DEBRIS BASIN
STA 61+50 TO STA 55+00
SCALE: 1/4"=1'-0"

TYPICAL SECTION
STA 55+00 TO STA 53+50
SCALE: 1/4"=1'-0"



TYPICAL CHANNEL SECTION
STA 53+50 TO STA 49+22.52
STA 26+00 TO STA 18+00
SCALE: 1/4"=1'-0"

NOTE:
FROM STA 53+50 TO STA 49+22.52, MIN RBK BERM WIDTH IS 20' WITH 12" THICK SUBBASE MATERIAL.
FROM STA 26+00 TO STA 18+00, MIN RBK BERM WIDTH IS 13' WITH GRASSED SURFACE.

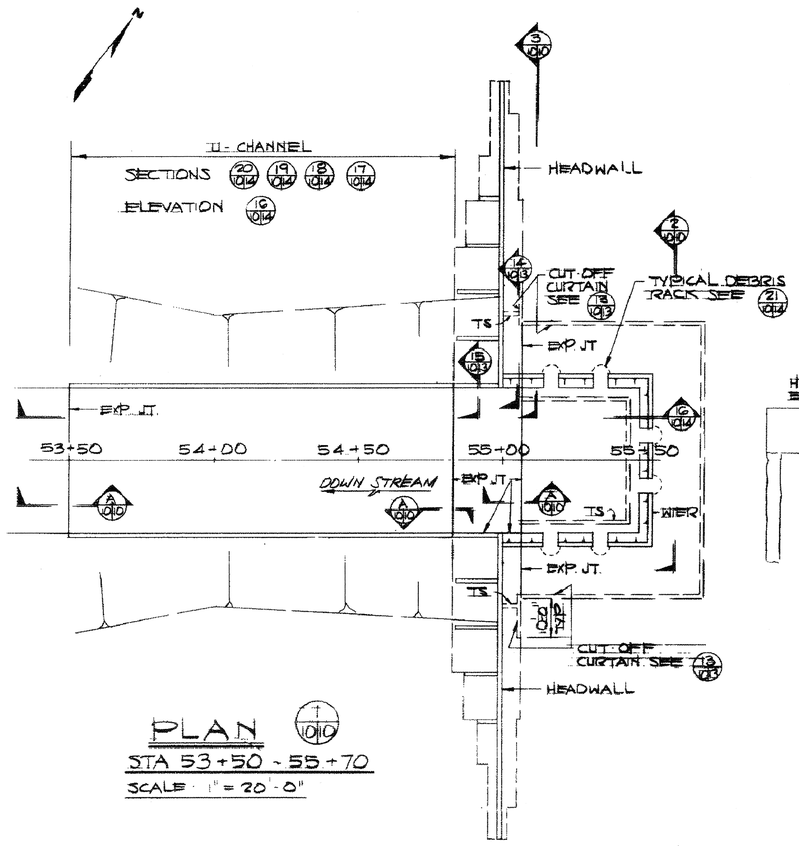
FOR INFORMATIONAL PURPOSES ONLY

GRAPHIC SCALE
4 0 4 8
SCALE IN FEET

KAHOMA STREAM
LAHAINA, MAUI, HAWAII

TYPICAL SECTIONS

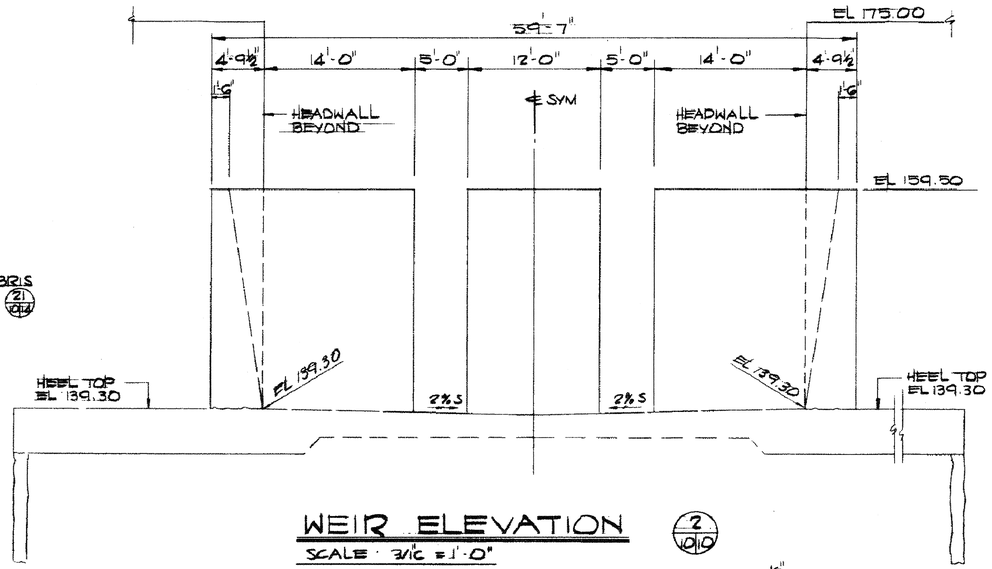
U.S. ARMY ENGINEER DISTRICT, HONOLULU
TO ACCOMPANY DESIGN MEMORANDUM NO. 2



PLAN 1/D10

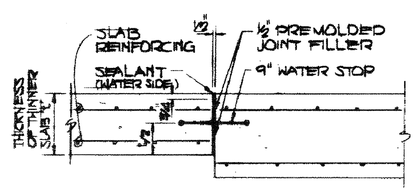
STA 53+50 - 55+70

SCALE: 1" = 20'-0"



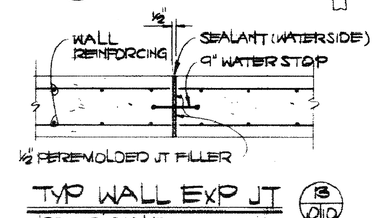
WEIR ELEVATION 2/D10

SCALE: 3/16" = 1'-0"



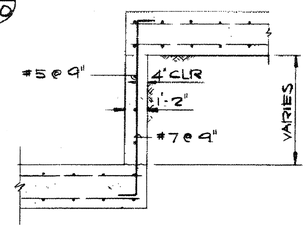
TYP. SLAB EXPANSION JT DET A/D10

NOT TO SCALE



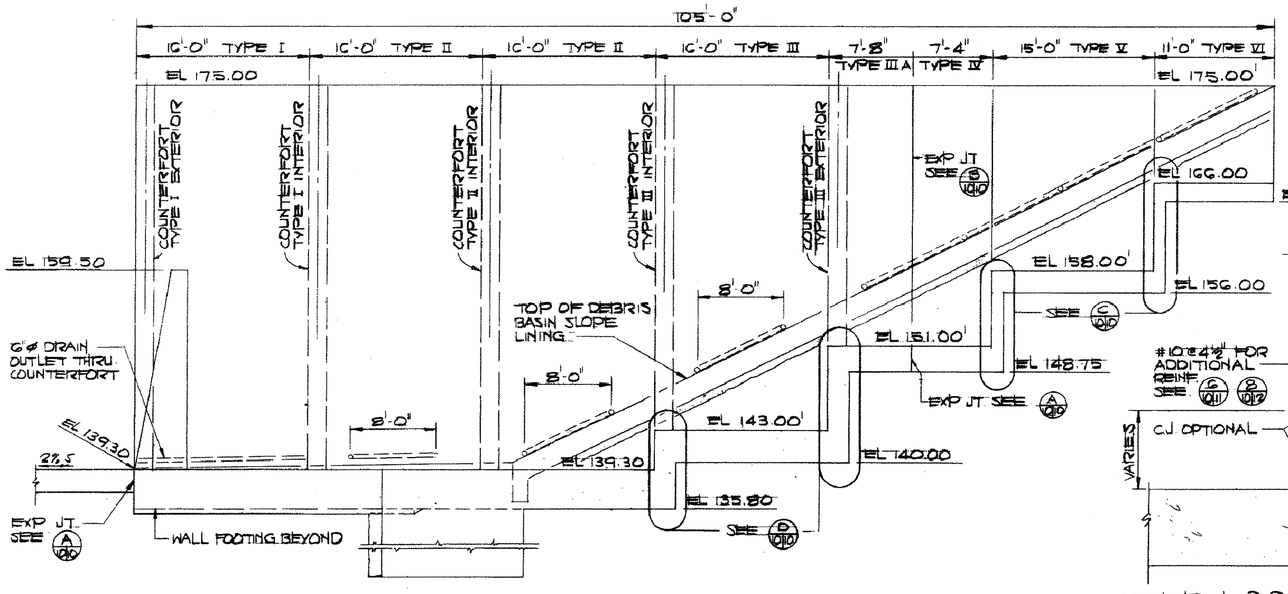
TYP WALL EXP JT 18/D10

NOT TO SCALE



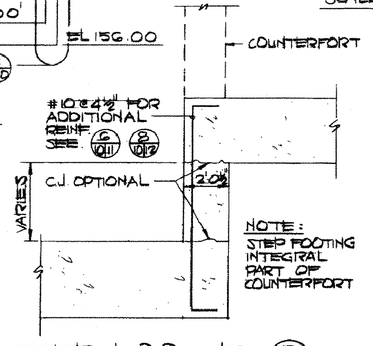
STEP FOOTING C/D10

SCALE: 3/8" = 1'-0"



HEADWALL ELEVATION 3/D10

SCALE: 3/16" = 1'-0"



NOTE: STEP FOOTING INTEGRAL PART OF COUNTERFORT

STEP FOOTING D/D10

SCALE: 3/8" = 1'-0"

GRAPHIC SCALES

1"=20' 20' 0 20' 40'

3/16"=1'-0" 4' 0 4' 8' 12'

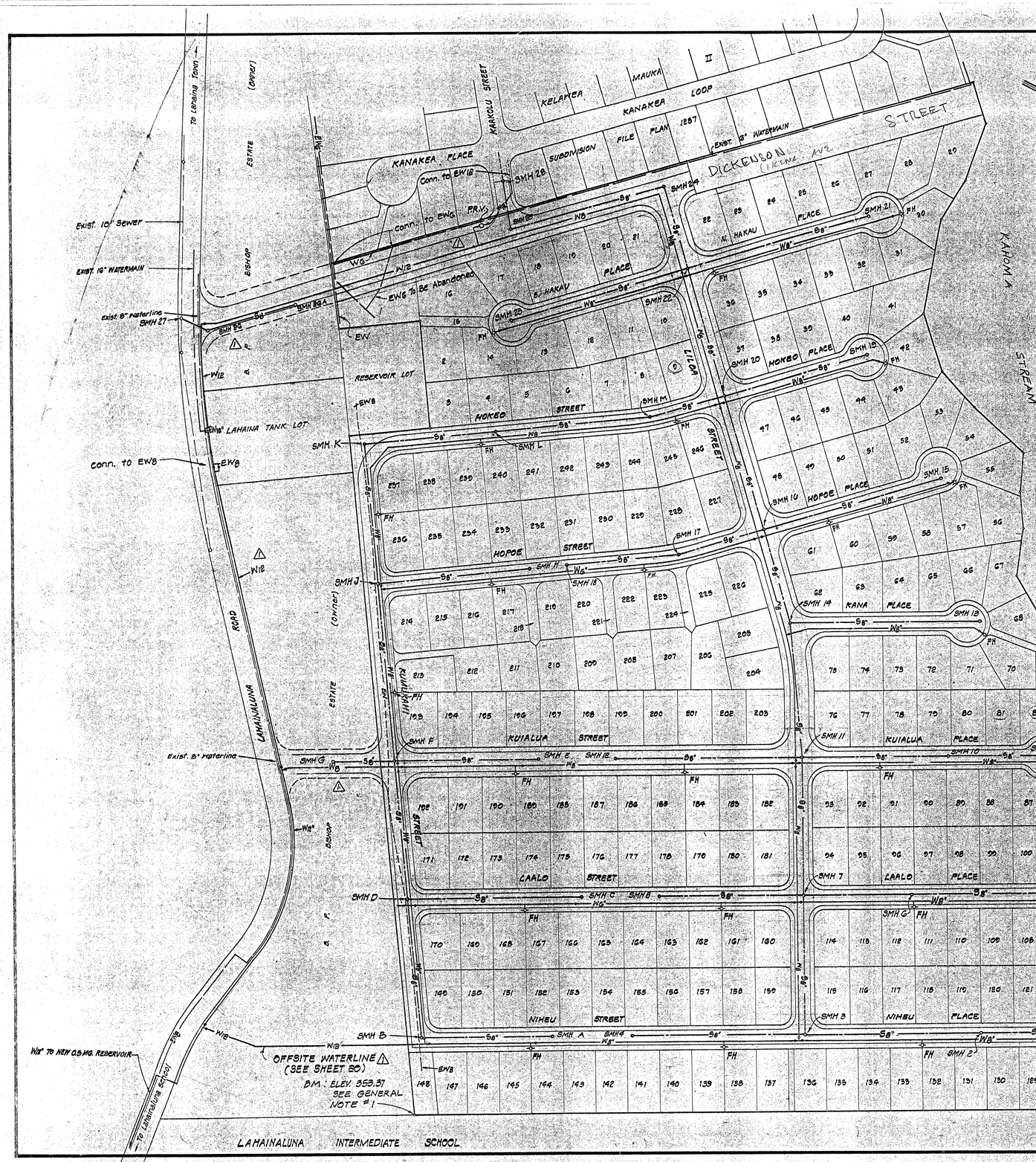
3/8"=1'-0" 1' 0 1' 2' 3' 4' 5' 6' 7'

FOR INFORMATIONAL PURPOSES ONLY

KAHOMA STREAM
LAHAINA, MAUI, HAWAII

DEBRIS BASIN PLAN, ELEVATIONS AND DETAILS

U.S. ARMY ENGINEER DISTRICT, HONOLULU
TO ACCOMPANY DESIGN MEMORANDUM NO. 2



GENERAL NOTES

1. BENCH ELEVATIONS ARE REFERRED TO THE "+" CUT IN CONCRETE INDICATING THE SOUTHWEST PROPERTY CORNER OF THE DEVELOPMENT. B. M. ELEVATION = 353.37, COUNTY OF MAUI DATUM.
2. WATERLINE SHALL BE ASBESTOS CEMENT PIPE, CLASS 200 OR DUCTILE IRON PIPE CLASS 52.
3. SEWER LINES SHALL BE POLYVINYL CHLORIDE PIPE, UNLESS OTHERWISE NOTED.
4. STORM DRAINS SHALL BE CORRUGATED METAL CULVERT PIPES.
5. DISTANCES SHOWN ON THE PLANS FOR SANITARY SEWER OR STORM DRAINS ARE FROM CENTERLINE OF STRUCTURE TO CENTERLINE OF STRUCTURE.
6. ALL SEWER LATERALS SHALL HAVE A MINIMUM COVER OF 30". INSTALL SEWER LATERALS DEEPER AS REQUIRED TO MEET ELEVATIONS SHOWN ON THE PLANS.

☆ = F.H. = FIRE HYDRANT
• = A.R.V. = AIR RELEASE VALVE
▪ = W.V. = WATER VALVE
○ = SMH = SEWER MANHOLE

FOR INFORMATIONAL PURPOSES ONLY

RECORD DRAWING

⚠ OFFSITE WATERLINE, ADD SEWER 2-4-80

GRADING AND ENVIRONMENTAL NOTES

1. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE CHIEF ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
2. THE CONTRACTOR, AT HIS EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE OF DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
3. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN THE PUBLIC HEALTH REGULATIONS, STATE DEPARTMENT OF HEALTH, ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS.
4. ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER THE GRADING WORK HAS BEEN COMPLETED.
5. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE ENGINEER OF THE LOCATION OF DISPOSAL SITES. THE DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCES.
6. THE CONTRACTOR SHALL PERFORM ALL EROSION CONTROL MEASURES SHOWN ON THE APPROVED EROSION CONTROL PLAN AND OUTLINED IN THE ENGINEER'S REPORT ON DRAINAGE AND EROSION CONTROL.

DEPARTMENT OF PUBLIC WORKS

1. THE CONTRACTOR SHALL OBTAIN A "PERMIT TO PERFORM WORK ON COUNTY HIGHWAY" FROM THE LAND USE & CODES ADMINISTRATION FOUR WEEKS PRIOR TO COMMENCEMENT OF WORK ON LAHAINALUNA ROAD AND KAAKOLU STREET.
2. THE CONTRACTOR SHALL OBTAIN A GRADING PERMIT FROM THE LAND USE & CODES ADMINISTRATION A MINIMUM OF FOUR WEEKS PRIOR TO COMMENCEMENT OF ANY CLEARING AND GRUBBING. A SATISFACTORY DRAINAGE AND EROSION CONTROL PLAN SHALL BE SUBMITTED IN THE EVENT THE GRUBBING AREA EXCEEDS ONE ACRE OR THE PROPOSED CUT OR FILL IS GREATER THAN 5 FEET IN HEIGHT.
3. EACH PHASE OF ROAD CONSTRUCTION IS TO BE APPROVED BY THE LAND USE AND CODES ADMINISTRATION, DEPARTMENT OF PUBLIC WORKS, PRIOR TO WORKING ON THE NEXT PHASE OF ROAD CONSTRUCTION.
4. BENCH MARKS SHALL BE ESTABLISHED AND CERTIFIED BY A REGISTERED SURVEYOR, AND SUBMITTED TO THE LAND USE AND CODES ADMINISTRATION, DEPARTMENT OF PUBLIC WORKS.
5. "STANDARD DETAIL DRAWINGS" AND "STANDARD SPECIFICATIONS" OF THE DEPARTMENT OF PUBLIC WORKS ARE CONSIDERED PART OF THE CONSTRUCTION PLANS.
6. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC AND IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1978".
7. ALL EXISTING UTILITIES, WHETHER OR NOT SHOWN ON PLANS, IF DAMAGED DURING CONSTRUCTION BY THE CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE.
8. THE CONTRACTOR SHALL STRIPE THE CENTERLINE AND STOP LINE, AND INSTALL SIGNS IN ACCORDANCE WITH THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAY, 1978".
9. THE DIRECTOR OF THE DEPARTMENT OF PUBLIC WORKS OR THE DIRECTOR OF THE DEPARTMENT OF WATER SUPPLY HAS THE RIGHT TO STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED CONSTRUCTION PLAN OR DETRIMENTAL TO THE PUBLIC INTEREST.

LARRY D. WINTER REGISTERED PROFESSIONAL ENGINEER No. 4634 HAWAII, U.S.A.

This work was prepared by me or under my supervision

KELAWEA MAUKA III SUBDIVISION
LAHAINA, MAUI, HAWAII

GENERAL PLAN FOR SANITARY SEWER AND WATERMAIN SYSTEMS

NORMAN SAITO ENGINEERING CONSULTANTS, INC.
KAHULUI, MAUI, HAWAII

DATE:	9-6-77
DESIGNED BY:	L.W.
DRAWN BY:	Y.M.
CHECKED BY:	H.K.
SCALE:	As Shown
SHEET	3 OF 44 SHEETS

TRUE NORTH
Scale 1" = 40'

0+00 (Existing) R/W Line
Begin Dickenson St.

SMH #27
Top = 224.2 ±
Inv. = 213.0

(+) 0+20.72 Dickenson St. = 12+94.16 Lahainaluna Rd.

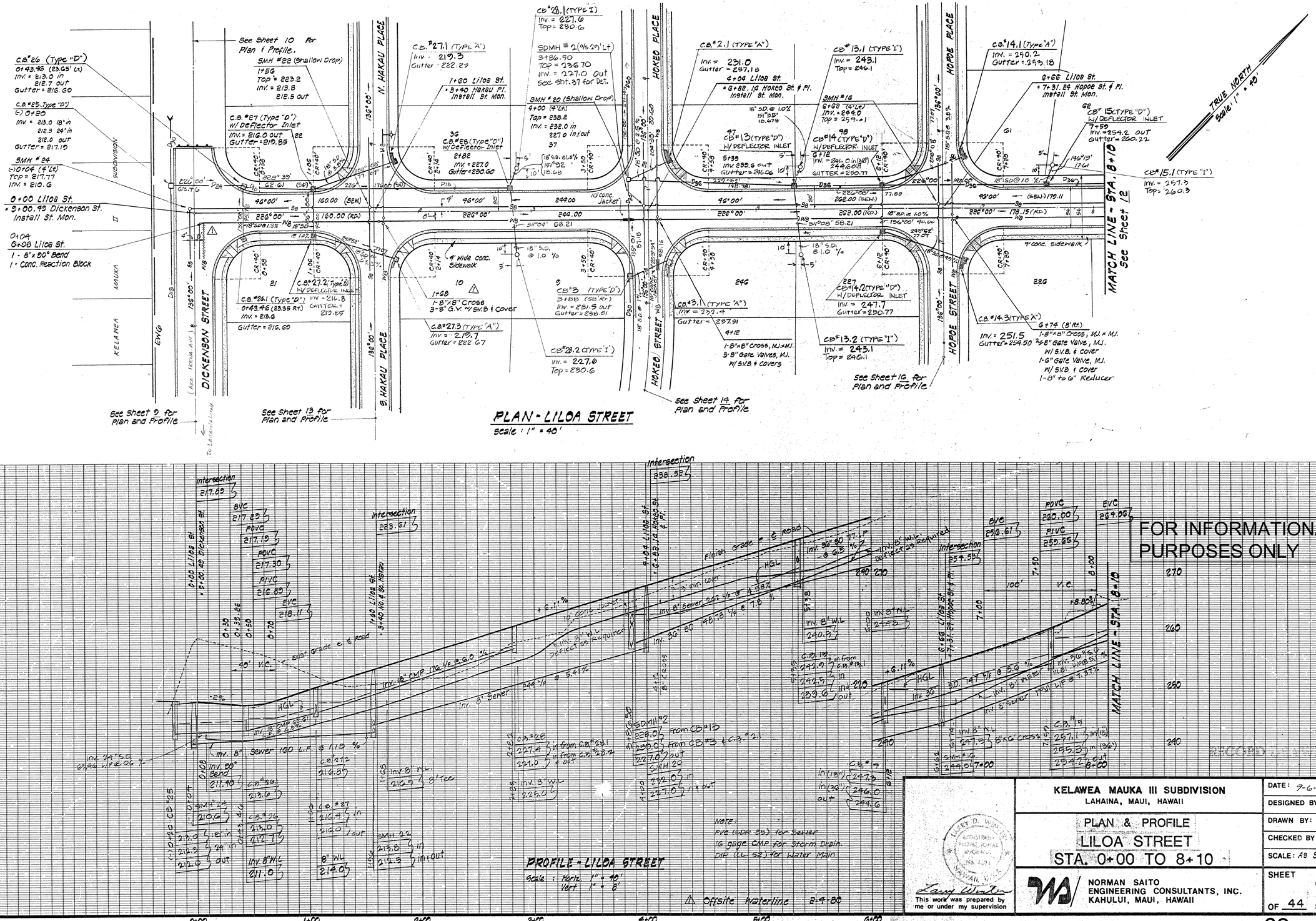
0+08.28 New R/W Line
Install St. Monument

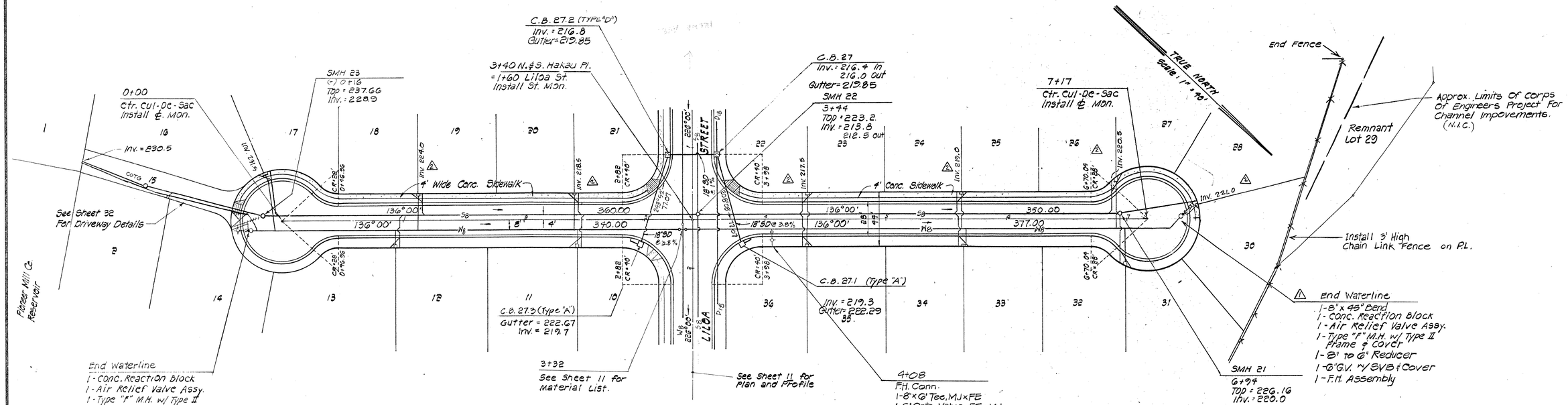
0+02 ⅝ 9' LT.
1-12" 90° Bend
1-12" BFV w/ SVB & Cover
1-Conc. Reac. Block

To Honoapiilani Highway

LAHAINALUNA ROAD
See Sheet 25 for P/P

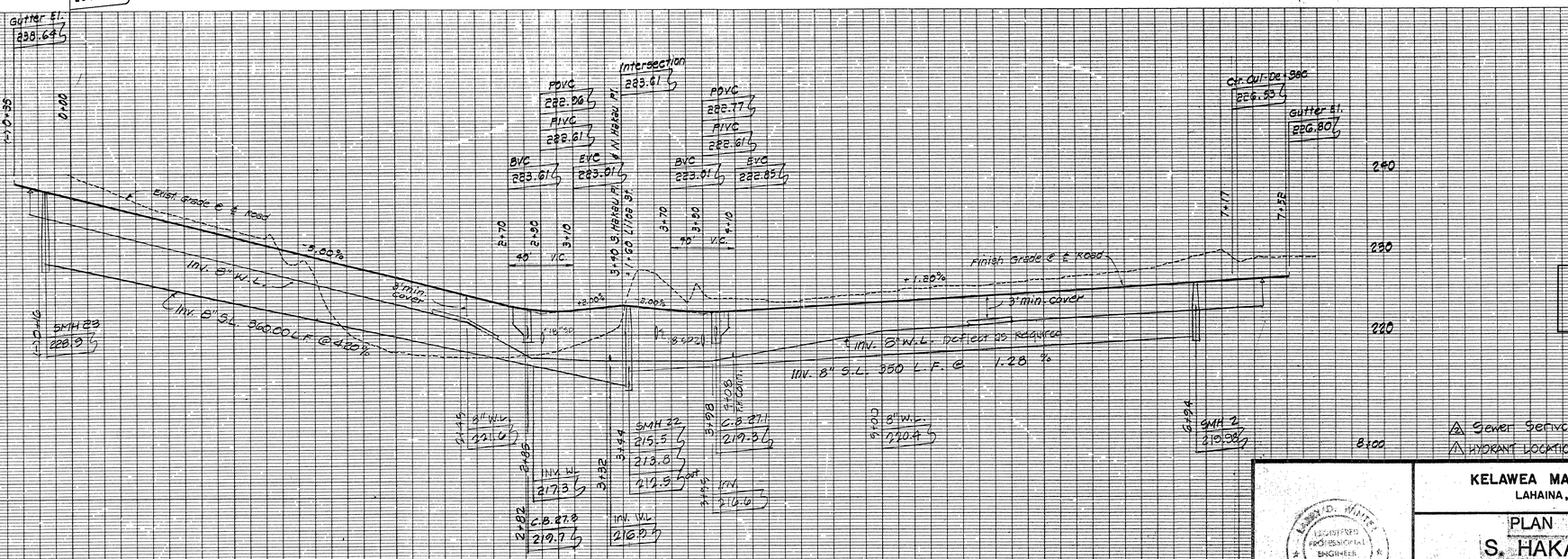
Exist. P.P.
Exist. Sidewalk
Exist. SMH
Exist. 15" Wide Waterline Easement
Exist. 8" W.L.
Exist. Drainage Easement
Exist. Driveway
Exist. Fence
Exist. Gate
Exist. Bldg.
Exist. Bldg. to be removed
Exist. Bldg. to be removed
Exist. Bldg. to be removed


C.B.#26 (Type "D")
0+43.96 (23.65' Lt.)
Inv. = 213.0 in
212.7 out
Gutter = 216.60
C.B.#25 (Type "D")
(-) 0+20
Inv. = 213.0 18" in
212.3 24" in
212.0 out
Gutter = 217.10
SMH # 24
(-) 0+04 (9' Lt.)
Top = 217.77
Inv. = 210.6
0+00 Liloa St.
= 9+00.99 Dickenson St.
Install St. Mon.
0+04
0+08 Liloa St.
1 - 8" x 90° Bend
1 - Conc. Reaction Block
See Sheet 10 for Plan & Profile.
SMH #22 (Shallow Drop)
1+56
Top = 223.2
Inv. = 213.8
212.5 out
C.B.#27 (Type "D") W/ Deflector Inlet
Inv. = 216.0 out
Gutter = 210.85
C.B.#28.1 (Type "D")
0+43.96 (23.35' Rt.)
Inv. = 213.6
Gutter = 216.60
GUTTER = 213.65
C.B.#27.2 (Type D) W/ DEFLECTOR INLET
INV. = 216.8
C.B.#27.1 (Type "A")
Inv. = 219.3
Gutter = 222.23
1+60 Liloa St.
= 3+40 Hakau Pl.
Install St. Mon.
C.B.#28 (Type "D") W/ Deflector Inlet
2+02
Inv. = 227.0
Gutter = 230.00
C.B.#28.1 (TYPE I)
Inv. = 227.6
Top = 230.6
SDMH # 2 (0/6.29') Lt.
3+86.90
Top = 236.70
Inv. = 227.0 Out
See Sht. 37 for Det.
SDMH # 20 (Shallow Drop)
4+00 (4' Lt.)
Top = 238.2
Inv. = 232.0 in
227.0 in+out
C.B.#3 (TYPE "D")
3+88 (58' Rt.)
Inv. = 231.5 out
Gutter = 236.01
C.B.#28.2 (TYPE "I")
Inv. = 227.6
Top = 230.6
C.B.#2.1 (TYPE "A")
Inv. = 231.0
Gutter = 237.18
4+04 Liloa St.
= 6+82.14 HOKEO St. & Pl.
Install St. Mon.
C.B.#3 (TYPE "D") W/ DEFLECTOR INLET
5+35
Inv. 230.6 out
Gutter = 240.06
C.B.#3.1 (TYPE "A")
Inv. = 232.4
Gutter = 237.91
1-8"x8" Cross, M.J.x M.J.
3-8" Gate Valves, M.J.
W/ S.V.B. & covers
C.B.#13.1 (TYPE "I")
Inv. = 243.1
Top = 246.1
C.B.#14 (TYPE "D") W/ DEFLECTOR INLET
6+12
Inv. = 244.0 in (36")
244.6 out
GUTTER = 250.77
C.B.#14.2 (TYPE "D") W/ DEFLECTOR INLET
Inv. = 247.7
Gutter = 250.77
C.B.#13.2 (TYPE "I")
Inv. = 243.1
Top = 246.1
See Sheet 16 for Plan and Profile
C.B.#14.1 (Type "A")
Inv. = 250.2
Gutter = 253.18
6+66 Liloa St.
= 7+31.84 Hopoe St. & Pl.
Install St. Mon.
C.B.#15 (TYPE "D") W/ DEFLECTOR INLET
7+59
Inv. = 254.2 out
Gutter = 260.22
C.B.#15.1 (TYPE "I")
Inv. = 257.3
Top = 260.3
TRUE NORTH
Scale 1" = 40'
C.B.#14.3 (TYPE "A")
G+74 (8' Rt.)
Inv. = 251.5
Gutter = 254.50
1-8"x8" Cross, M.J. x M.J.
2-8" Gate Valve, M.J.
W/ S.V.B. & cover
1-6" Gate Valve, M.J.
W/ S.V.B. & cover
1-8" to 6" Reducer
4' Wide conc. Sidewalk
4' conc. Sidewalk
10' conc. Jacket
See Sheet 9 for Plan and Profile
See Sheet 13 for Plan and Profile
See Sheet 14 for Plan and Profile
MATCH LINE - STA. 8+10
See Sheet 12
DICKENSON STREET
N. HAKAU PLACE
S. HAKAU PLACE
HOKEO PLACE
HOPOE PLACE
HOKEO STREET
KELAWEA
MAUKA
SUBDIVISION
ENG
DIB
W8
SS
Intersection 217.69
Intersection 238.61
Intersection 238.52
Intersection 254.52
0+00 Liloa St. = 9+00.99 Dickenson St.
1+00 Liloa St. = 3+40 Hakau Pl.
2+00 Liloa St. = 6+82.14 Hokeo St. & Pl.
3+00 Liloa St. = 7+31.84 Hopoe St. & Pl.
Existing grade ℄ road
Finish grade ℄ road
Inv. 18" CMP @ 1.0 %
Inv. 8" Sewer 160 L.F. @ 110 %
Inv. 8" Sewer 244 L.F. @ 5.47 %
Inv. 8" Sewer 148.38 L.F. @ 7.8 %
Inv. 8" Sewer 190.1 L.F. @ 4.37 %
Inv. 24" SD 60.96 L.F. @ 2.0 %
Inv. 90° Bend 211.90
Inv. 8" W.L. 211.0
Inv. 8" W.L. 214.0
Inv. 8" W.L. 216.0
Inv. 8" W.L. 240.3
Inv. 8" W.L. 247.3
Inv. 8" W.L. 225.0
Inv. 8" W.L. 240.0
Inv. 8" W.L. 244.0
Inv. 8" W.L. 244.0
Inv. 8" W.L. 240.0
Inv. 8" W.L. 247.3



PLAN - S. HAKAU PLACE & N. HAKAU PLACE

Scale : 1" = 40'



PROFILE - S. HAKAU PLACE & N. HAKAU PLACE

Scale : Horiz. = 1" = 40'
Vert. = 1" = 8'

NOTE:
PVC (SDR 35) for sewer
16 gage CMP for storm drain
DIP (Cl. 52) for Watermain

FOR INFORMATIONAL PURPOSES ONLY

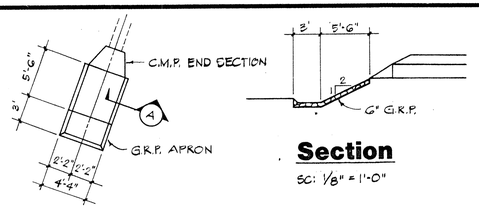
RECORD DRAWING

Sewer Service Invert Elevation 1-7-80
HYDRANT LOCATION 11-20-79

LARRY D. WHITE
REGISTERED PROFESSIONAL ENGINEER
No. 4054
HAWAII, U.S.A.

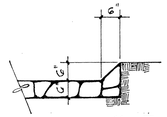
Larry White
This work was prepared by me or under my supervision

KELAWEA MAUKA III SUBDIVISION LAHAINA, MAUI, HAWAII	DATE: 9-6-79
PLAN & PROFILE S. HAKAU PLACE N. HAKAU PLACE	DESIGNED BY: L.W. DRAWN BY: W.S. CHECKED BY: H.K. SCALE: As Shown
NORMAN SAITO ENGINEERING CONSULTANTS, INC. KAHULUI, MAUI, HAWAII	SHEET 13 OF 44 SHEETS



Section

SC: 1/8" = 1'-0"



Section "A"

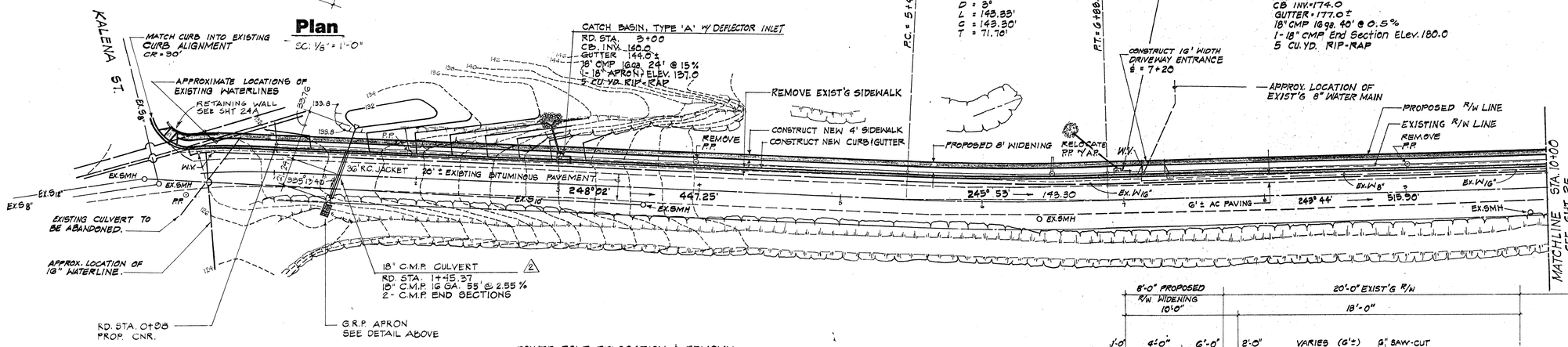
SC: 1/2" = 1'-0"

⚠1 NOTES: Existing power poles in proposed sidewalk or within 2 ft. of the face of proposed curb shall be relocated to 23 ft. left of ℄.

Move Anchor Poles as necessary for clearance over Sidewalk.

Plan

SC: 1/8" = 1'-0"

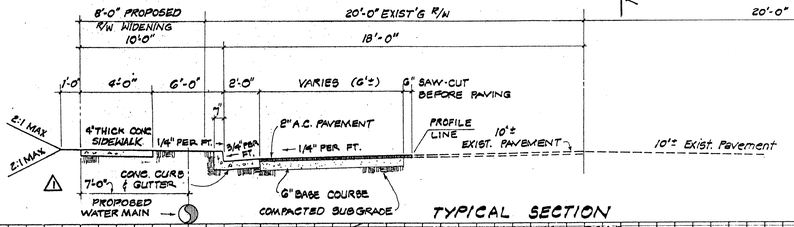


POWER POLE RELOCATION & REMOVAL BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH M.E.Co.

BM: ADJ. ELEV. 117.32
TOP 3/4" PIPE IN CONC.
@ END STONE WALL
@ APPROX. STA. (-) 1+50 RT.

PLAN - LAHAINALUNA ROAD

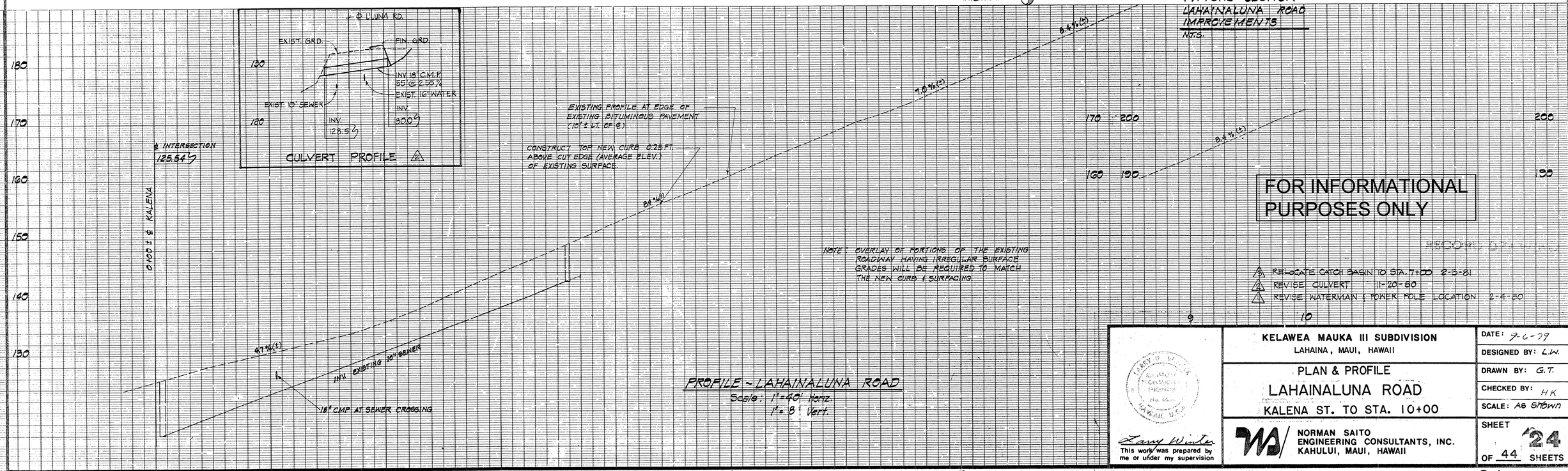
Scale: 1 in. = 40 ft.



TYPICAL SECTION

LAHAINALUNA ROAD IMPROVEMENTS

N.T.S.



PROFILE - LAHAINALUNA ROAD

Scale: 1" = 40' Horiz.
1" = 8' Vert.

FOR INFORMATIONAL PURPOSES ONLY

RECEIVED

⚠3 RELOCATE CATCH BASIN TO STA. 7+00 2-5-81
⚠4 REVISE CULVERT 11-20-80
⚠5 REVISE WATERMAIN & POWER POLE LOCATION 2-4-80

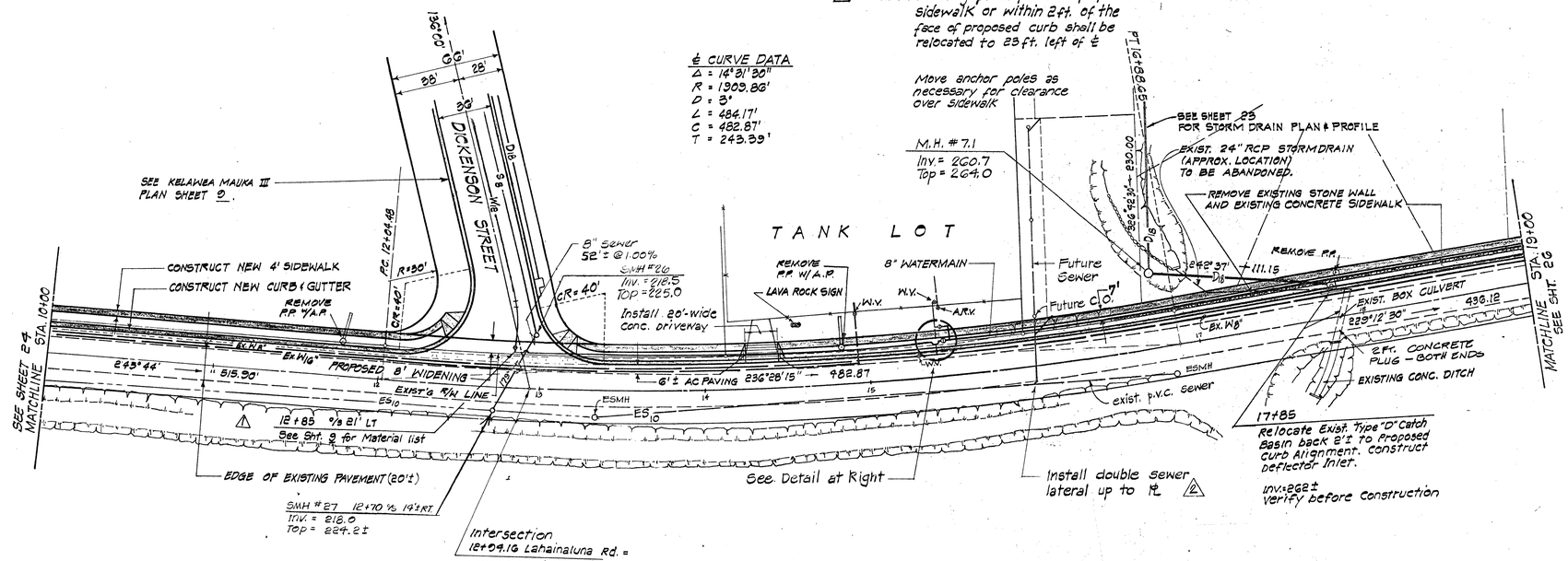
Larry Winter
This work was prepared by me or under my supervision

KELAWEA MAUKA III SUBDIVISION
LAHAINA, MAUI, HAWAII

PLAN & PROFILE
LAHAINALUNA ROAD
KALENA ST. TO STA. 10+00

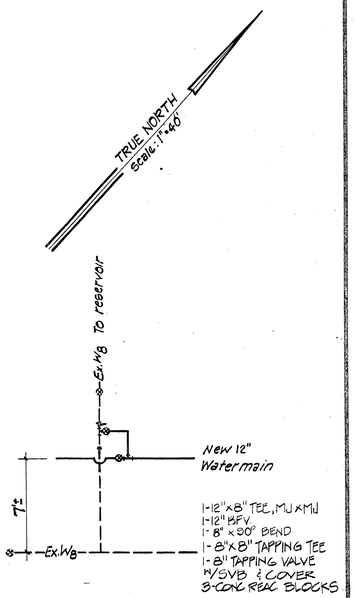
NORMAN SAITO ENGINEERING CONSULTANTS, INC.
KAHULUI, MAUI, HAWAII

DATE: 9-6-79
DESIGNED BY: L.W.
DRAWN BY: G.T.
CHECKED BY: HK
SCALE: As Shown
SHEET 24 OF 44 SHEETS

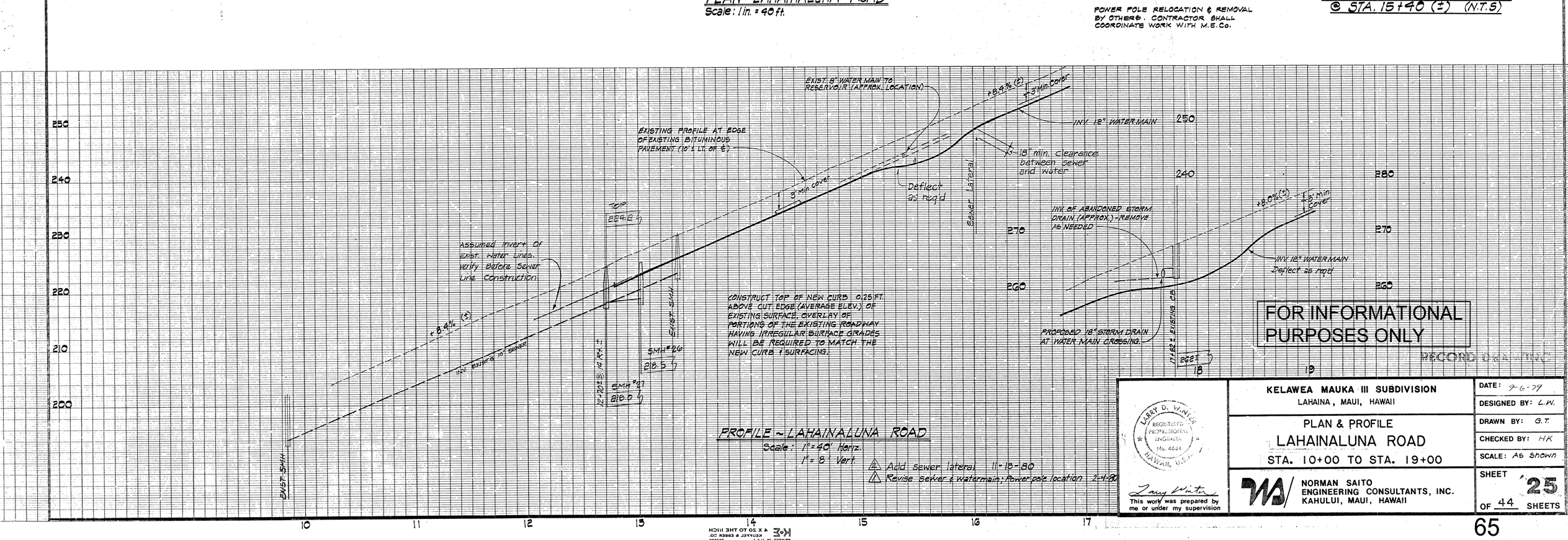


PLAN ~ LAHAINALUNA ROAD
Scale: 1 in. = 40 ft.

POWER POLE RELOCATION & REMOVAL BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH M.E.Co.



WATERMAIN CONN. DETAIL @ STA. 15+40 (±) (N.T.S.)



PROFILE ~ LAHAINALUNA ROAD
Scale: 1" = 40' Horiz.
1" = 8' Vert

⚠2 Add sewer lateral 11-18-80
⚠ Revise sewer & watermain; Power pole location 2-4-80

FOR INFORMATIONAL PURPOSES ONLY

RECORD DRAWING

LARRY D. WINTER REGISTERED PROFESSIONAL ENGINEER No. 4634 HAWAII, U.S.A.

Larry Winter
This work was prepared by me or under my supervision

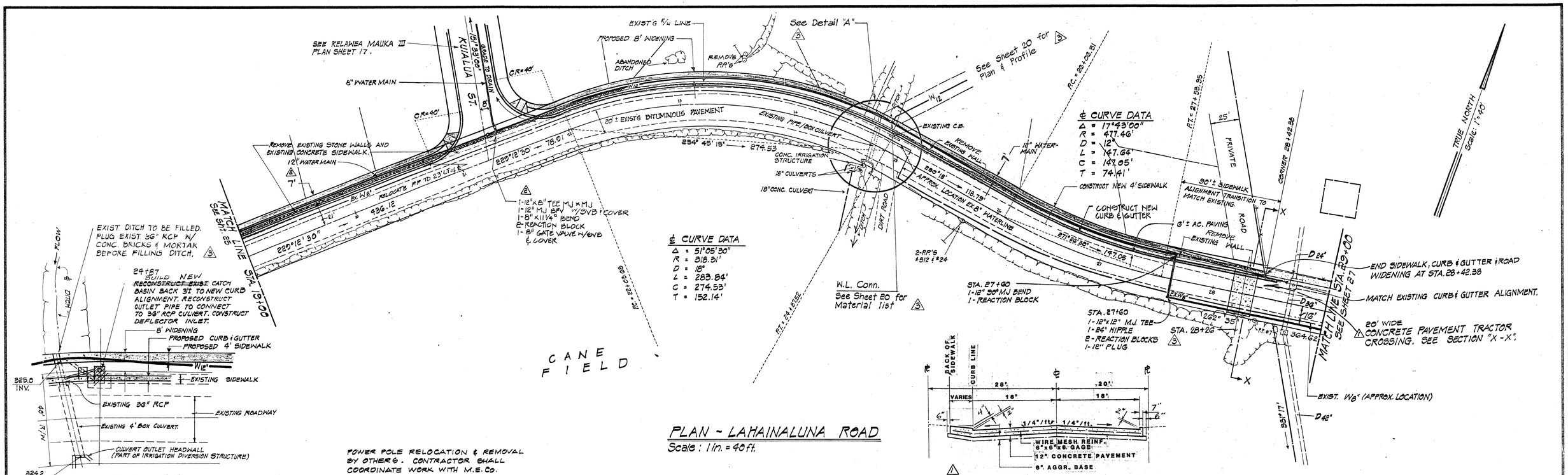
KELAWEA MAUKA III SUBDIVISION
LAHAINA, MAUI, HAWAII

PLAN & PROFILE
LAHAINALUNA ROAD
STA. 10+00 TO STA. 19+00

NORMAN SAITO ENGINEERING CONSULTANTS, INC.
KAHULUI, MAUI, HAWAII

DATE: 9-6-79
DESIGNED BY: L.W.
DRAWN BY: G.T.
CHECKED BY: H.K.
SCALE: As Shown
SHEET 25 OF 44 SHEETS

4 X 20 TO THE INCH KEUFFEL & ESSER CO. PRINTED IN U.S.A. 79020


SEE KELAWEA MAUKA III PLAN SHEET 17.
KUIALUA ST.
16" 332.09' GRADE TO DRAIN
CR=40'
8" WATER MAIN
12" WATER MAIN
7'
Remove existing stone walls and existing concrete sidewalk
Ex W8" Relocate RP to 23'Lt of ℄
220°12'30" 436.12
MATCH LINE STA. 19+00 SEE SHT. 25
EXIST. DITCH TO BE FILLED. PLUG EXIST. 36" RCP W/ CONC. BRICKS & MORTAR BEFORE FILLING DITCH. 3
FLOW
24+87 BUILD NEW ~~RECONSTRUCT EXIST.~~ CATCH BASIN BACK 3' TO NEW CURB ALIGNMENT. RECONSTRUCT OUTLET PIPE TO CONNECT TO 38" RCP CULVERT. CONSTRUCT DEFLECTOR INLET.
8' WIDENING
PROPOSED CURB & GUTTER
PROPOSED 4' SIDEWALK
W12"
EXISTING SIDEWALK
325.0 INV.
EXISTING 36" RCP
EXISTING ROADWAY
EXISTING 4' Box CULVERT.
CULVERT OUTLET HEADWALL (PART OF IRRIGATION DIVERSION STRUCTURE)
324.2 INV.
DETAIL "A"
Scale: 1" =20'
POWER POLE RELOCATION & REMOVAL BY OTHERS. CONTRACTOR SHALL COORDINATE WORK WITH M.E.Co.
EXIST'G ℄/W LINE
PROPOSED 8' WIDENING
ABANDONED DITCH
REMOVE RP'S
See Detail "A" 3
See Sheet 20 for Plan & Profile 3
20'± EXIST'G BITUMINOUS PAVEMENT
EXISTING PIPE/BOX CULVERT
254° 45' 15" 274.53
CONC. IRRIGATION STRUCTURE
18" CULVERTS
18" CONC. CULVERT
1-12"x8" TEE MJ x MJ
1-12" MJ BFV "Y" SVB & COVER
1-8" x 11¼° BEND
2-REACTION BLOCK
1-8" GATE VALVE H/OVB & COVER
2
℄ CURVE DATA
Δ = 51°05'30"
R = 318.31'
D = 18°
L = 283.84'
C = 274.53'
T = 152.14'
R=318.31'
PT = 24+47.62
EXISTING C.B.
REMOVE EXISTING WALL
18" WATER-MAIN
7'
DITCH
DIRT ROAD
280'18" 118.75
APPROX. LOCATION EX 8" WATERLINE
271°28'36" 147.05
2-PP'S & 3 I2 & #24
W.L. Conn. See Sheet 20 for Material list 3
STA. 27+60 1-12"x90° MJ BEND 1-REACTION BLOCK
STA. 27+60 1-12"x12" MJ TEE 1-24" NIPPLE 2-REACTION BLOCKS 1-12" PLUG
STA. 28+26 3
℄ CURVE DATA
Δ = 17°43'00"
R = 477.46'
D = 12°
L = 147.64'
C = 147.05'
T = 74.41'
PT = 27+53.55
RC = 28+05.81
CONSTRUCT NEW 4' SIDEWALK
CONSTRUCT NEW CURB & GUTTER
3'± AC. PAVING
REMOVE EXISTING WALL
25'
PRIVATE ROAD
90°± SIDEWALK ALIGNMENT TRANSITION TO MATCH EXISTING.
CORNER 28+42.38
D 24'
D 36'
D 16'
D 42'
END SIDEWALK, CURB & GUTTER & ROAD WIDENING AT STA. 28+42.38
MATCH EXISTING CURB & GUTTER ALIGNMENT.
20' WIDE CONCRETE PAVEMENT TRACTOR CROSSING. SEE SECTION "X-X".
EXIST. W8" (APPROX. LOCATION)
MATCH LINE STA. 29+00 SEE SHEET 27
TRUE NORTH Scale: 1"=40'
CANE FIELD
PLAN - LAHAINALUNA ROAD
Scale: 1 in. = 40 ft.
BACK OF SIDEWALK
CURB LINE
℄
VARIES
28'
20'
18'
18'
6"
4"
2"
1/4"/ft.
1/4"/ft.
2"
7"
6"
WIRE MESH REINF. 6"x6"x6 GAGE
12" CONCRETE PAVEMENT
6" AGGR. BASE
TRACTOR CROSSING SECTION "X-X"
330
320
310
300
290
280
INTERSECTION 296.8'±
INV. 12" WATERMAIN 3' MIN. COVER
+9.00%(±)
INV. 12" WATERMAIN 3' MIN. COVER
CONSTRUCT TOP OF NEW CURB 0.25 FT. ABOVE CUT EDGE (AVERAGE ELEV.) OF EXISTING SURFACE. OVERLAY OF PORTIONS OF THE EXISTING ROADWAY HAVING IRREGULAR SURFACE GRADES WILL BE REQUIRED TO MATCH THE NEW CURB & SURFACING.
21+25.55 ℄ KUIALUA ST.
PROFILE - LAHAINALUNA ROAD
Scale: 1"=40' Horiz.
1"= Vert.
19
20
21
22
23
24
25
26
330
320
310
300
290
280
360
350
340
EXISTING PROFILE AT EDGE OF EXISTING BITUMINOUS PAVEMENT (10'± LT. OF ℄)
APPROX. ELEVATION EXIST. 8" WATERMAIN @ STA. 27+60
+8.0%(±)
3' MIN. COVER
INV. 12" WATERMAIN Deflect as req'd
INV. W12" @ 27+60 (16'± RT.)
INV. W12" @ 27+60 (22' LT.)
27
28
29
FOR INFORMATIONAL PURPOSES ONLY
RECORD DRAWING
5 Revise location of tractor crossing
Revise location of 12" waterline
Revise Detail "A" 11-18-80
4 Revise Offsite Waterline 2-4-80
3 Add "tractor crossing" section 11-20-79
KELAWEA MAUKA III SUBDIVISION
LAHAINA, MAUI, HAWAII
PLAN & PROFILE
LAHAINALUNA ROAD
STA. 19+00 TO STA. 29+00
DATE: 9-6-79
DESIGNED BY: L.W.
DRAWN BY: G.T.
CHECKED BY: H.K.
SCALE: As shown
SHEET 26 OF 44 SHEETS
NORMAN SAITO ENGINEERING CONSULTANTS, INC. KAHULUI, MAUI, HAWAII
This work was prepared by me or under my supervision
66

KEALOHA ST.

KALENA ST.

Sta. 31+76.93 (See Detail Below)
1 - 16" Tee, M.J.
1 - 16"x10" Reducer, PE. PE.
1 - 10" Tee, M.J.
1 - 10" 1/4 Bend, M.J.
1 - 10" 1/32 Bend, M.J.
2 - 10" Sleeve, M.J.
1 - 10" G.V. M.J.
1 - 16" Butterfly Valve
2 - C.I. Valve box
40 l.f. 10" D.I. pipe M.J.
Conc. Blocks

SEE DET. THIS SHT.

Exist. 18" culvert

TRUE NORTH
SCALE 1" = 50'

℄ Pipe Curve Data
Δ = 4° 18'
½ = 2° 09'
R = 1899.86'
T = 71.32'
O = 142.55'
L = 142.58'

℄ Pipe PC 36+75.86

℄ Pipe PT 38+18.44

℄ Pipe PC 43+98.35

LAHAINALUNA ROAD

PROPOSED 16" WATERLINE

SMH
Inv. 12" = 115.76
Inv. 10" = 115.52

SMH
Inv. = 142.52

249° 02'

243° 44'

P.I. 31+40.21
1-16" 1/16 Bend
1-16" Butterfly Valve
1-C.I. Valve box
Conc. Block

Proposed 10" Sewer under design

P.I. 30+45.60
1-16" 1/4 Bend
1-16" 1/32 Bend
Conc. blocks

214° 15'

P.I. 28+76.70

16" Pipeline

CONNECTION DETAILS AT STA. 31+76.93

Not to Scale

10" Tee, M.J.
10" Sleeve, M.J.
10" 1/32 Bend, M.J.
10" Sleeve, M.J.
16"x10" Reducer, PE.-PE.
10" pipe, M.J.
16" Tee, M.J.
16" Butterfly Valve w/ C.I. Valve box
10" 1/4 Bend
10" pipe, M.J.
10" G.V. M.J. w/ C.I. Valve Box
16" Pipeline

FOR INFORMATIONAL PURPOSES ONLY

PLAN
SURVEYED
PLOTTED
NOTE BOOK
NO.
ALIGNMENT CHECKED
PIT OF VAC CHECKED
BY
DATE

PROFILE
SURVEYED
PLOTTED
NOTE BOOK
NO.
GRADES CHECKED
AS BUILT
STRUCTURE NO. ATTNS CHKD
BY
DATE

Exist. Grade ℄ pipe
Inv. Exist. 18" Culvert
10 LF REINF. CONC. ROCK
Proposed 10" Sewer
Inv. 16" D.I. pipe
Exist. Grade ℄ pipe
Inv. 16" D.I. pipe

PROFILE
Scale: Horiz 1"=50'
Vert 1"=10'

PLATE 1, PLAN-PROFILE

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

℄ Pipe Curve Data
Δ = 14°31'30"
½ = 7°16'45"
R = 1650.86'
T = 242.11'
C = 980.34'
Lc = 981.68'

47+54.27 = ℄ Tank

1.0 M.G. CONC. TANK

46+65.17

℄ Pipe P.C. 44+32.35

PROPOSED 16" WATERLINE

EWB

EWB

LAHAINALUNA ROAD

To Lahainaluna School

45+54.54
1-10 3/4" ½ Bend
Conc. blk.

LIMITS OF SCHEDULE "A"

LIMITS OF SCHEDULE "B"

CO 15-6

True North
Scale 1"=50'

FOR INFORMATIONAL PURPOSES ONLY

PROFILE
SURVEYED
PLOTTED
NOTE BOOK
NO.
GRADES CHECKED
STRUCTURE NOTATIONS CHKD
BY
DATE

260
250
240
230
220
210
200

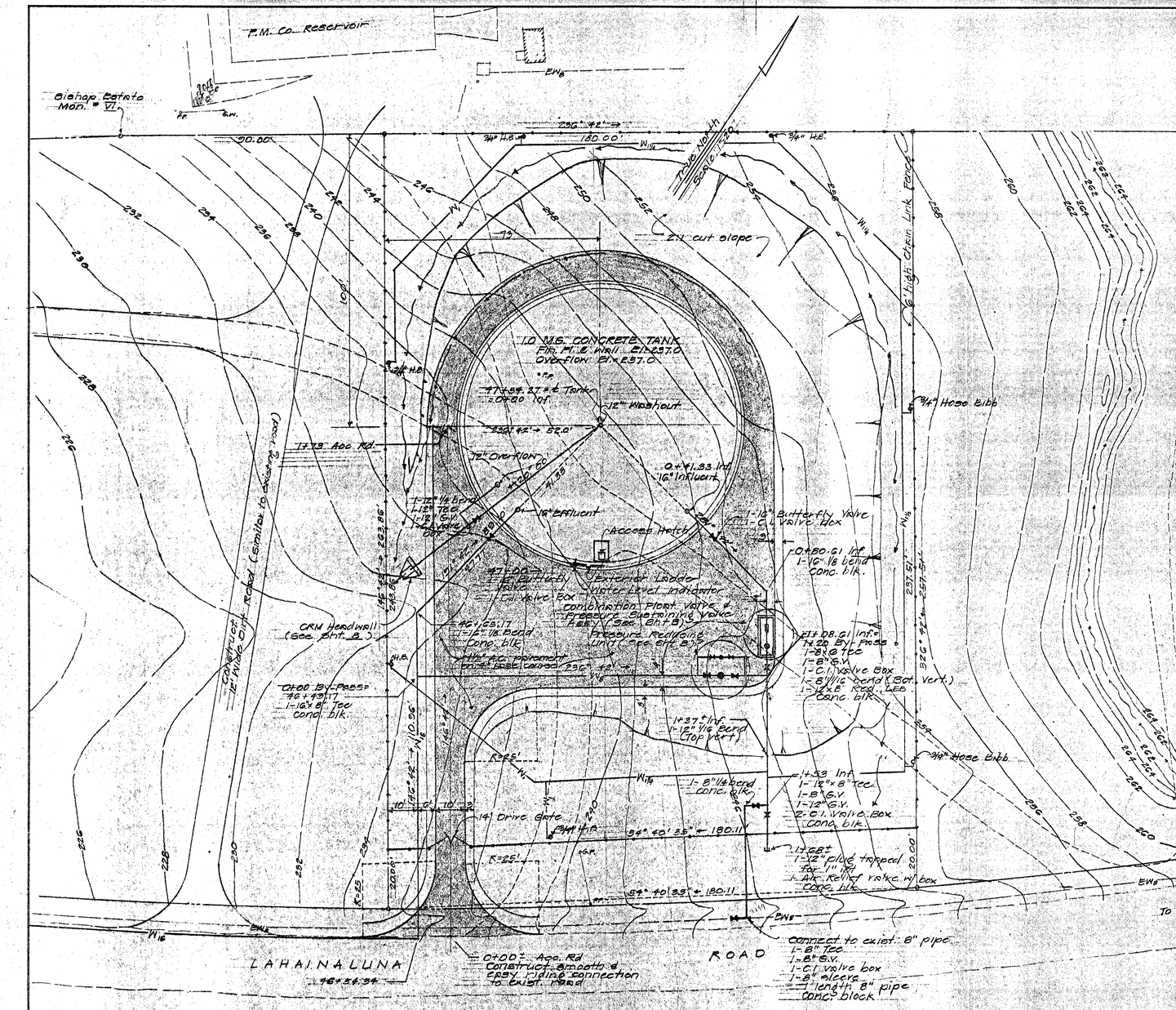
1.0 M.G. CONC. TANK

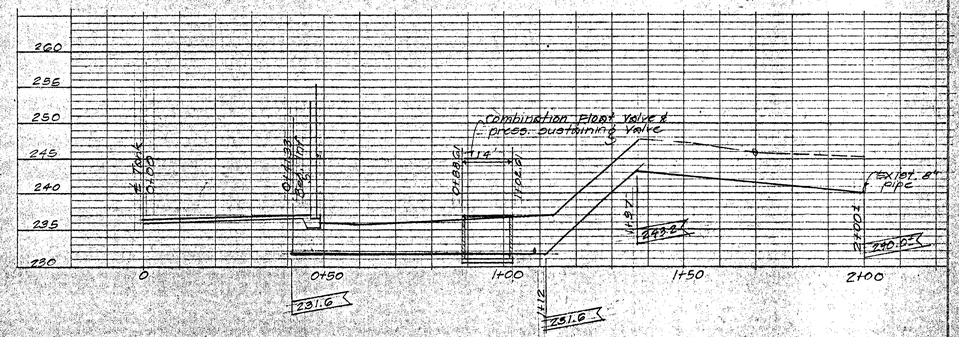
Exist. Grade & Pipe

Inv. 10" C.I. pipe

PROFILE
Scale: Horiz. 1"=50'
Vert. 1"=10'

45
46
47




260
255
250
245
240
235
230
0
0+50
1+00
1+50
2+00
Combination Pilot Valve & Press. Sustaining Valve
16" DI
0+80.61 Inf.
Elev. 237.51
0+41.83 Inf.
Elev. 241.32
1-16"x8" Tee
0+00.00
1-16"x8" Tee
1+37.00
1-12"x8" Tee
1+38.00
1-12" 1/16 bend
1+37.00
1-8" 1/16 bend
1+38.00
1-8" G.V.
1+38.00
1-12" G.V.
1+38.00
1-8" 1/16 bend
1+38.00
1-8" G.V.
1+38.00
1-8" G.V.
1+38.00
1-12" G.V.
1+38.00
1-8" G.V.
1+38.00
1-8" G.V.
1+38.00
1-8

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

TRUE NORTH
SCALE: 1"=50'

STREAM
6" WATERLINE
TOP BANK OF STREAM
KAHOMA

(136.50'± 180') DITCH EXIST'G DITCH
-0.5% -3.5%
6" WATERLINE ℄
EXIST'G WATERLINE

STA. 3+55
1-8" GATE VALVE
1-8" X ⅛ BEND
1-CONC. BLK.

STA. 3+31 F.H.
SEE STA. 0+80
FOR MAT'L

STA. 4+78.2
1-AIR RELIEF VALVE W/ TYPE 'F' M.H.

STA. 0+80 F.H.
1-8"X6" TEE
1-6" X 8 BEND
1- FIRE HYDRANT
1-6" GATE VALVE
1-SIDE V.SIA.
W/ COVER
3-CONC. BLKS.
12 LIN. FT. 6" PIPE

STA. 7+71
C.B. #4

STA. 10+71 F.H.
SEE STA. 0+80
FOR MAT'L

STA. 10+54
1-12"X8" CROSS
1-12" GATE VALVE
1-8" GATE VALVE
1-4" GATE VALVE
1-8"X4" REDUCER
1-CONC. BLOCK

STA. 10+62.2 KANAKEA ST.
=STA. 10+74.33 KAAKOLU ST.
=STA. 0+00 KANAKEA PL.

KANAKEA LOOP
S16°00'W 340.00
S16°00'W 323.21
S16°00'W 282.21
S16°00'W 24.54
S16°00'W 601.83
CURB & GUTTER
ST. MON.
KANAKEA PL.
(60' R/W)
STA. 10+59.2
SMH #6
STA. 10+524
DMH
233°45' STREET
KAAKOLU ST.

STA. 3+05
1-8" X ⅞ BEND
1-CONC. BLK.

STA. 3+58.4
SMH #3
INV. EL. 200.7

STA. 4+35
SMH #4
INV. EL. 200.0

STA. 7+55
SMH #5
INV. EL. 138.7

STA. 7+71
C.B. #5
INV. EL. 135.0

"STOP" SIGN & STREET SIGN

STA. 2+57
SMH #2

STA. 1+37
1-8" ⅛ BEND
1-CONC. BLK.

R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00
R=50.00

WIDEN TO 24' PAVEMENT
EXTEND CULVERT
STA. 0+46
C.B. #2
STA. 0+00
2 ft. RT.
EXIST'G 15" STORM DRAIN
EXIST'G SMH
KANAKEA LP.
EXIST'G 8" WATERLINE
EXIST'G 8" SEWERLINE
STA. 0+48
C.B. #1
EXTEND WATER 1-8" SLEEVE
STA. 0+85.50
SMH #1
STA. 0+88
1-8" X ⅛ BEND
1-CONC. BLK
EXIST'G & SEWERLINES
EXIST'G ℄
KAHENA ST.

NOTE:
ALL WATERLINES AND APPURTENANCES WORK SHALL CONFORM TO DEPT OF WATER SUPPLY STANDARDS.
ENDS OF ALL SEWER LATERALS SHALL BE A MINIMUM 3 FEET BELOW GRADE.

KELAWEA MAUKA SUBDIVISION

PLAN - KANAKEA LOOP
SCALE: 1"=50'

FOR INFORMATIONAL PURPOSES ONLY

PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
B.M. NOTE
STRUCTURE NOTATING CHKD.
NOTE BOOK
NO.
BY
DATE

EXISTING WATERLINE
EXIST'G A.C. PAVEMENT
EXIST'G 8" WATERLINE
EXIST'S 12" STORM DRAIN
EXIST'S 8" SEWER
PVC 210.00
PVC 206.67
BVC 198.02
EVC 194.04
BVC 188.55
POVC 188.67
PINV 186.05
200'VC
EVC 206.28
BVC 202.50
POVC 201.76
PINV 200.00
200'VC
PVC 206.75
POVC 206.92
EVC 206.06
EVC 204.60
BVC 204.10
100'VC
INT 205.6
EXIST'G GROUND @ ℄
FIN. GRADE @ ℄
-2.5%
+1.9%
+1.37%
MAINTAIN SLOPE UP
INV. 8" WATERLINE @ 234½'± S.S. @ 1.03%
277.5'± 18" D @ 0.4%
318.2'± 8" S @ 0.4%
+2.5%
+1.39%
+8.5%
+1.37%
STA. 0+48
STA. 0+88
STA. 1+37
STA. 2+57
STA. 3+58.4
STA. 4+35
STA. 7+55
STA. 7+71
STA. 10+53
STA. 10+59.2
SMH #1 OUT 179.75
SMH #2 IN 179.83
SMH #3 OUT 200.20
SMH #4 IN 190.68
SMH #4 OUT 180.60
SMH #5 OUT FROM SMH #3 197.25
SMH #5 IN 197.10
SMH #5 OUT 197.00
SMH #5 IN 197.85
SMH #5 OUT 195.50
SMH #6 IN FROM SMH #5 199.20
SMH #6 OUT 194.12'±
SMH #7 IN 196.13'±
SMH #7 OUT 196.00'±
C.B. #1 OUT 183.48
C.B. #2 IN 183.33
C.B. #2 OUT 183.85
0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00
220 210 200 190 180

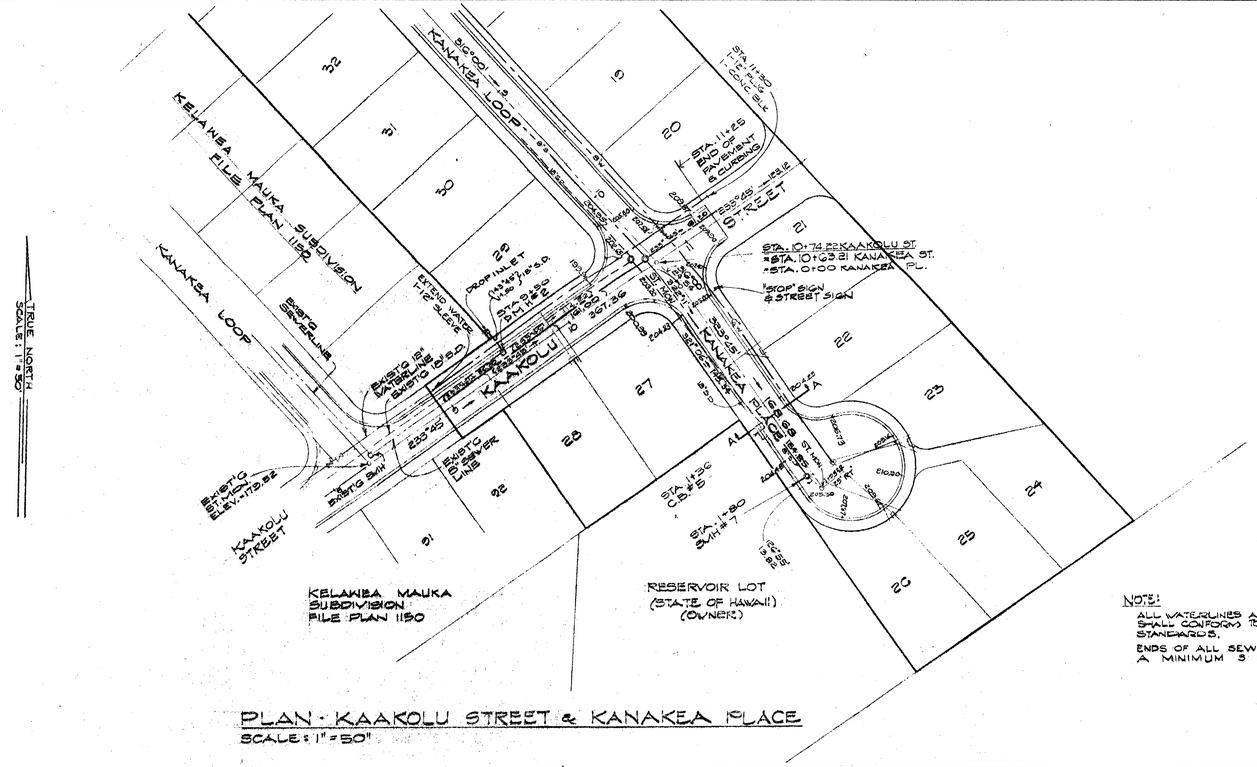
PROFILE
SCALE: HORIZ. 1"=50'
VERT. = 1"=10'

KELAWEA MAUKA II SUBDIVISION
LAHAINA, MAUI, HAWAII

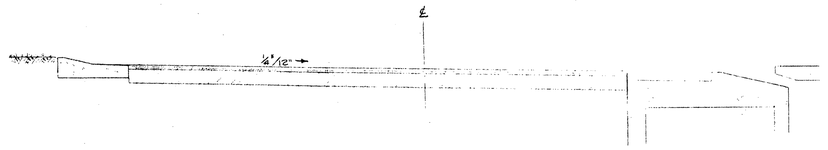
PLAN & PROFILE
KANAKEA LOOP

PREPARED BY:
NAKAYAMA SAITO ENGINEERING CONSULTANTS, INC.
DR. BY: H.K.-N.S. CH. BY: R.K.R.
SCALE: AS SHOWN DATE:
SHEET 4 OF 11 SHTS

K•E PLATE 1, PLAN-PROFILE
PEURIFOY & REAVE CO.



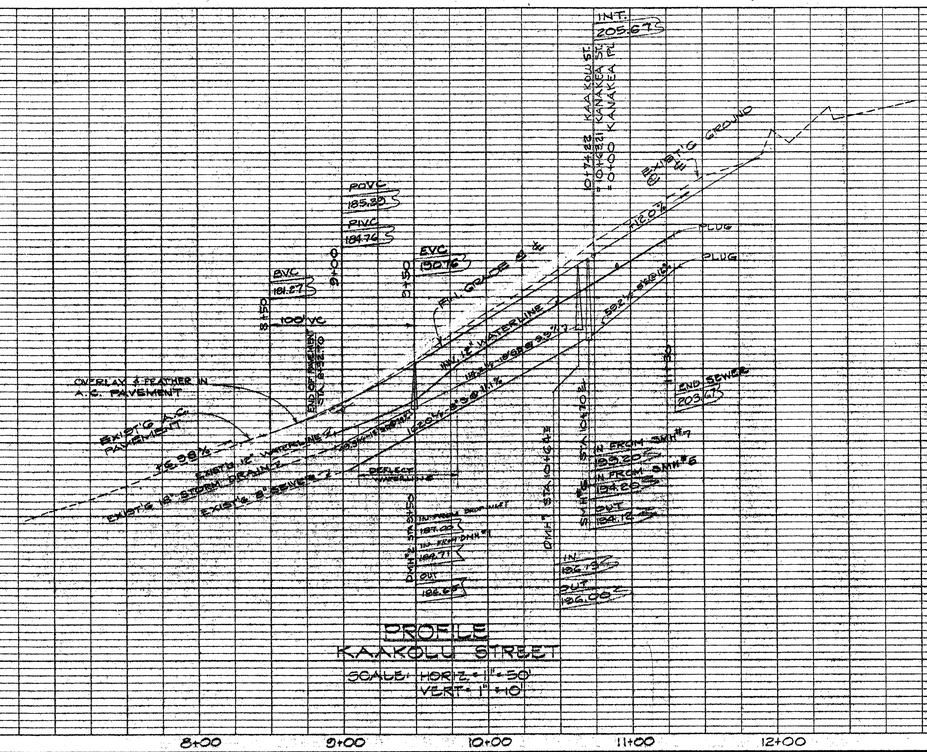
PLAN · KAAKOLU STREET & KANAKEA PLACE
SCALE: 1" = 50'

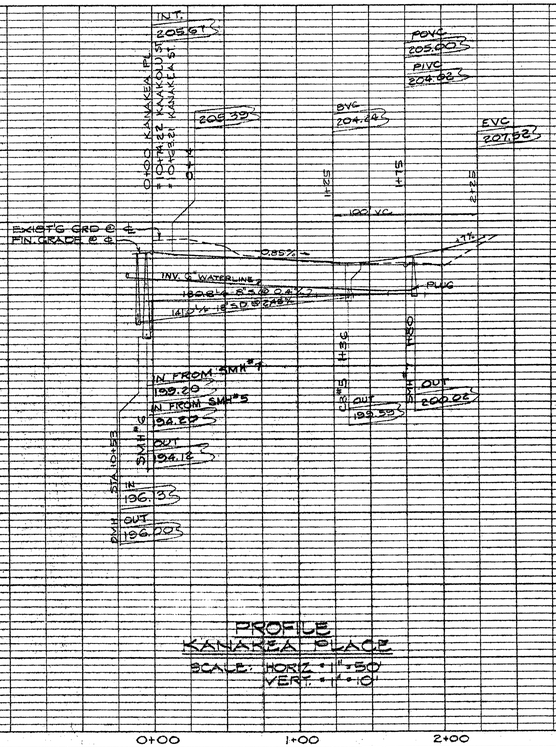


SECTION A-A
SCALE 3/8" = 1'-0"

NOTE:
ALL WATERLINES AND APPURTENANCE WORK SHALL CONFORM TO DEPT. OF WATER SUPPLY STANDARDS.
ENDS OF ALL SEWER LATERALS SHALL BE A MINIMUM 3 FEET BELOW GRADE.

FOR INFORMATIONAL PURPOSES ONLY





KELAWEA MAUKA II SUBDIVISION
LAHAINA, MAUI, HAWAII

PLAN & PROFILE
KAAKOLU STREET
KANAKEA PLACE

PREPARED BY: NORMAN SAITO ENGINEERING CONSULTANTS, INC.
DR. BY: H.K.H.W.S. CH. BY: R.K.R.
SCALE: AS SHOWN DATE:
SHEET 5 OF 11 SHTS.

PLAN: SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED.
PROFILE: SURVEYED, PLOTTED, GRADES CHECKED, B.M. NOTED, STRUCTURE NOTATNS CHKD.
NOTE BOOK NO.
BY DATE

K·E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO.