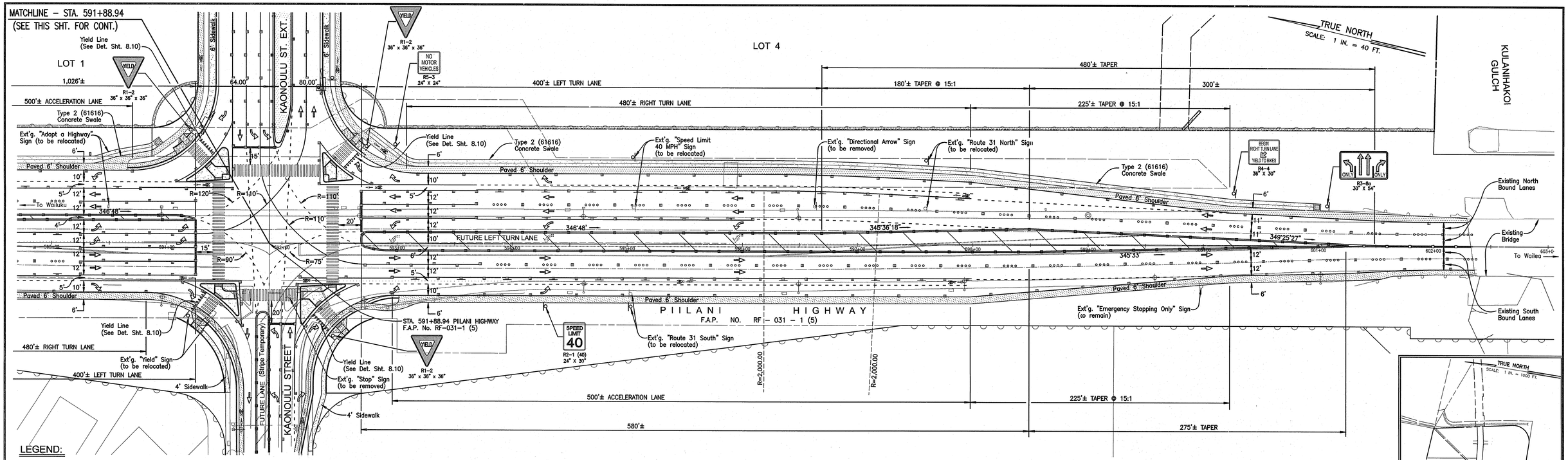
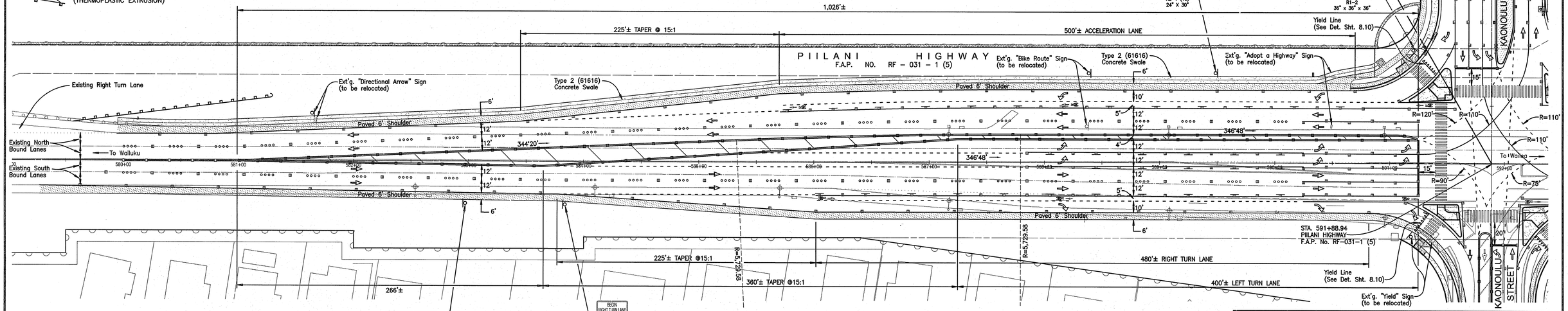


LOCATION MAP
SCALE: 1 IN. = 1000 FT.

LEGEND:

- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "D" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 4 EACH TYPE "A" RAISED PAVEMENT MARKERS TYPE "C" RAISED PAVEMENT MARKERS AT 40'–0" O.C.
- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "H" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 8" SOLID WHITE STRIPE W/ TYPE "C" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 4" YELLOW EDGE STRIPE WITH TYPE "H" RAISED PAVEMENT MARKERS AT 40'–0" O.C. (THERMOPLASTIC EXTRUSION)
- CHANNELIZING ISLAND OR DECELERATION LANE GORE (THERMOPLASTIC EXTRUSION)
- 4" OR 8" WHITE EDGE STRIPE W/ TYPE "C" RAISED PAVEMENT MARKERS AT 40'–0" O.C. (THERMOPLASTIC EXTRUSION)
- BIKE LANE MARKING (THERMOPLASTIC EXTRUSION)
- 4" WHITE GUIDELINES (THERMOPLASTIC EXTRUSION EXCEPT FOR BUS BAYS) (GUIDE LINES FOR TURNING MOVEMENTS THROUGH INTERSECTIONS SHALL BE YELLOW)
- TRANSVERSE MEDIAN MARKING (THERMOPLASTIC EXTRUSION)
- PAVEMENT ARROW (THERMOPLASTIC EXTRUSION)
- CROSSWALK AND STOP LINE. ALL STOP LINES SHALL BE 10'–0" FROM CROSSWALK UNLESS OTHERWISE NOTED. (THERMOPLASTIC EXTRUSION)

PIILANI HIGHWAY
(STA. 590+00 TO 602+00)
Scale: 1 in. = 40 ft.



PIILANI HIGHWAY
(STA. 578+50 TO 590+00)
Scale: 1 in. = 40 ft.

NOTE:
MAINTAIN 5 FT. MINIMUM CLEARANCE BETWEEN TRAVELWAY STRIPING AND FACE OF CURB AT PEDESTRIAN ISLANDS.

DESIGN SPEED : 45 M.P.H.
POSTED SPEED : 40 M.P.H.

LETTER	DESCRIPTION	DATE

DARREN T. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 7937-C
HAWAII, U.S.A.

SIGNATURE 12/22/04 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE STRIPING PLAN – PIILANI HIGHWAY

DESIGNED BY: ALU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 8.02
DRAWN BY: WIS	APPROVED BY: DTU	DATE: 10–10–05	OF SHEETS
SCALE: 1 in. = 40 ft.			

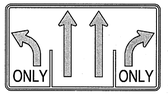
04010.10/dwg2004/conplans/strpe200.dwg

R1-2
36" x 36" x 36"

R10-9
24" X 30"

R11-2
48" X 30"

R3-4
24" X 24"
24" X 18"



R3-8a
30" X 54"

18" X 12"

R3-7(R)
30" X 30"

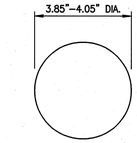
30 MPH SPEED
LIMIT SIGN R2-1
24" X 30"

R4-4
36" X 30"

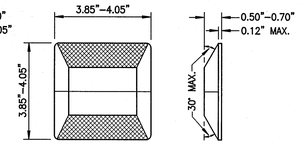
STOP SIGN W/STREET NAMES & NOS.
R1-1
30" x 30"

NOTE:

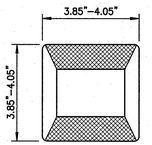
"PAINTED ON" TRAFFIC SIGNS WILL NOT BE PERMITTED.



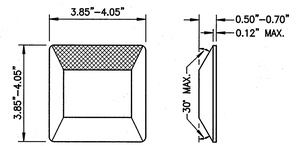
TYPE "A"
NON-REFLECTIVE WHITE MARKER
TYPE "J"
NON-REFLECTIVE YELLOW MARKER



TYPE "C"
RED-CLEAR REFLECTIVE MARKER



TYPE "D"
TWO-WAY YELLOW REFLECTIVE MARKER



TYPE "H"
ONE-WAY YELLOW REFLECTIVE MARKER

RAISED PAVEMENT MARKER DETAILS

NOT TO SCALE

details/roads/reflec00.dwg

NOTES:

1. TRIANGLE HEIGHT IS EQUAL TO 1.5 TIMES THE BASE DIMENSION.
2. YIELD LINES MAY BE SMALLER THEN SUGGESTED WHEN INSTALLED ON NARROWER, SLOW-SPEED FACILITIES SUCH AS SHARED-USE PATHS.

DETAIL - YIELD LINE LAYOUT

NOT TO SCALE

CROSSWALK STRIPING DETAIL

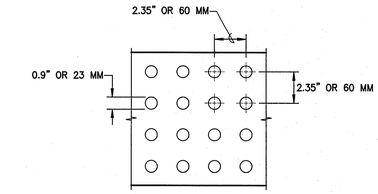
NOT TO SCALE

NOTES:

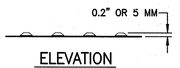
1. FOR LOCATION OF SIGNS AND MARKINGS AT INTERSECTION, SEE INTERSECTION DETAILS.
2. ALL SIGNS AND PAVEMENT MARKINGS AND STRIPING, SHALL CONFORM TO THE LATEST EDITION OF THE U.S. DEPT. OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION PUBLICATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS", AND AS AMENDED.
3. ALL CONSTRUCTION WORK AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARD DETAIL DRAWINGS AND STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORK CONSTRUCTION.
4. LAYOUT OF PAVEMENT MARKINGS AND STRIPING SHALL BE DONE BY THE CONTRACTOR. THE CONTRACTOR SHALL CHECK LAYOUT OF MARKINGS AND STRIPING WITH THE STATE OF HAWAII PRIOR TO PERFORMING WORK.
5. EDGE LINES SHALL NOT BE CONTINUED THROUGH INTERSECTIONS UNLESS OTHERWISE SHOWN OR DIRECTED.
6. ALL EXISTING STRIPING SHALL BE ERADICATED BY GRINDING.

GENERAL NOTES

1. SIGNS SHALL CONFORM TO THE LATEST EDITIONS OF FHWA PUBLICATIONS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS," "STANDARD ALPHABETS FOR HIGHWAY SIGNS," AND "STANDARD HIGHWAY SIGNS," AND AS AMENDED.
2. ALL SIGNS SHALL BE MADE OF HIGH INTENSITY REFLECTIVE SHEETING MATERIALS.
3. PAVEMENT WORDING SHALL CONFORM TO, DOT STANDARD PLAN TE-35.
4. ALL WORK AND MATERIALS REQUIRED TO COMPLETE THE AC PAVING, SIGNS, AND MARKINGS SHALL CONFORM TO THE REQUIREMENTS THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION 1994".



PLAN

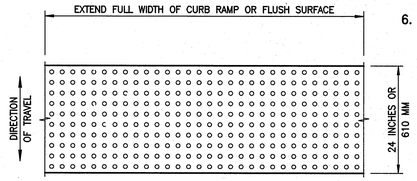


ELEVATION

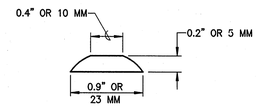
DETAIL - DOME SPACING

NOTES:

1. SIZE: DETECTABLE WARNINGS SHALL BE 24 INCHES (610 MM) IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
2. LOCATION: THE DETECTABLE WARNING SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE OR OTHER POTENTIAL HAZARD IS 6 TO 8 INCHES (150 TO 205 MM) FROM CURB LINE OR OTHER POTENTIAL HAZARD.
3. DOME SIZE AND SPACING: TRUNCATED DOMES SHALL HAVE A DIAMETER OF 0.9 INCH (23 MM) AT THE BOTTOM, A DIAMETER OF 0.4 INCH (10 MM) AT THE TOP, A HEIGHT OF 0.2 INCH (5 MM) AND A CENTER-TO-CENTER SPACING OF 2.35 INCHES (60 MM) MEASURED ALONG ONE SIDE OF A SQUARE ARRANGEMENT.
4. DOME ALIGNMENT: DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
5. VISUAL CONTRAST: THERE SHALL BE A MINIMUM OF 70 PERCENT CONTRAST IN LIGHT REFLECTANCE BETWEEN THE DETECTABLE WARNING AND AN ADJOINING SURFACE, OR THE DETECTABLE WARNING SHALL BE "SAFETY YELLOW". THE MATERIAL USED TO PROVIDE VISUAL CONTRAST SHALL BE AN INTEGRAL PART OF THE DETECTABLE WARNING SURFACE.
6. SEE SITE SPECIFIC WHEELCHAIR RAMP DETAILS ON SHEETS



PLAN - DOME ALIGNMENT



SECTION - TYPICAL DOME

DETAIL - DETECTABLE WARNING ON CURB RAMPS

NOT TO SCALE

details/roads/ramp-warning.dwg

LETTER	DESCRIPTION	DATE

LICENSED PROFESSIONAL ENGINEER
DARREN T. UNEMORI
NO. 7937-C
HAWAII, U.S.A.

SIGNATURE 12/9/04 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
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WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

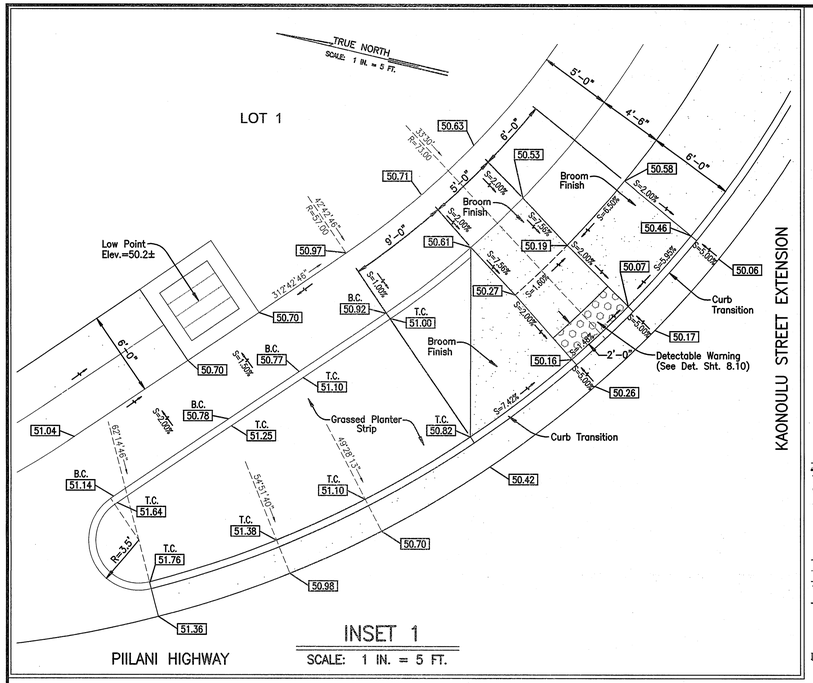
KAONOULU MARKET PLACE

T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE STRIPING DETAILS

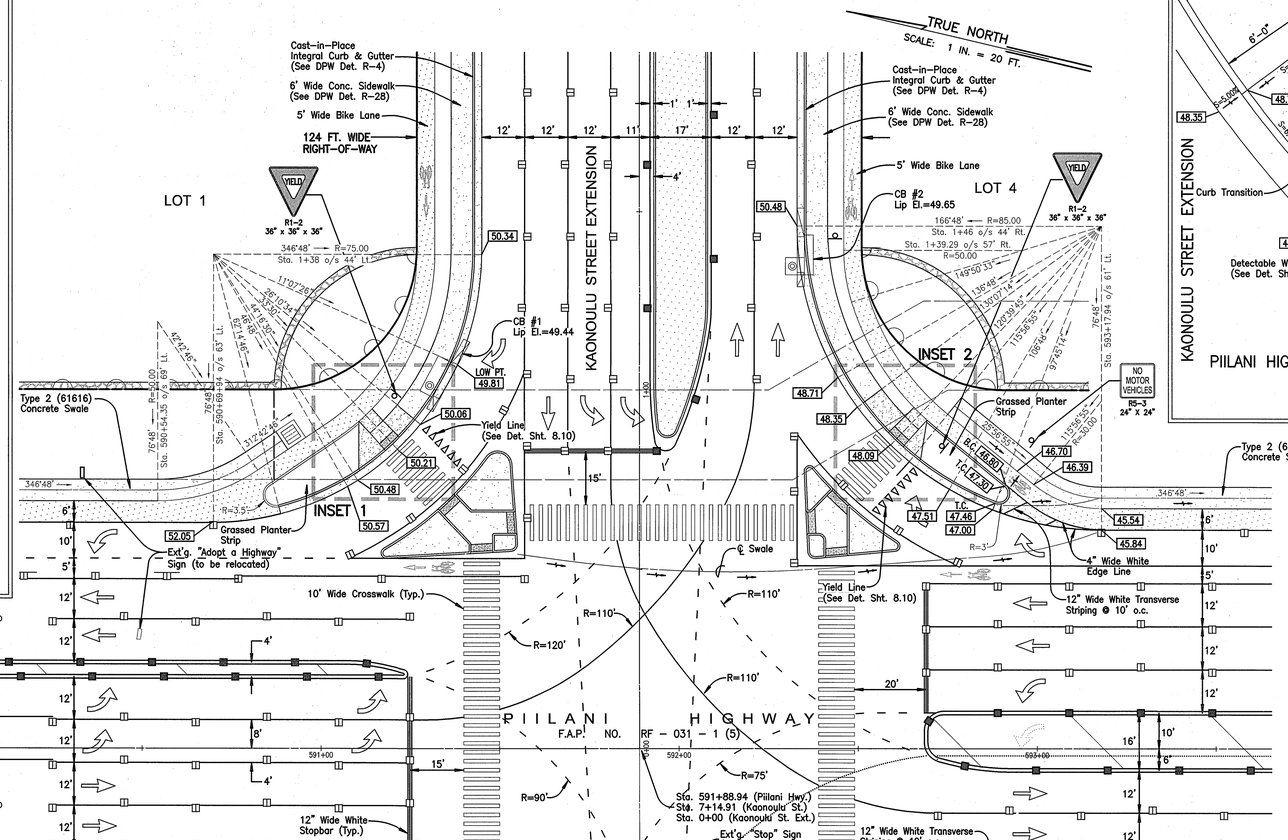
ALU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	8.10 SHEET
WIS DRAWN BY	DTU APPROVED BY	10-10-05 DATE	OF SHEETS
SCALE AS NOTED			

04010.10/dwg2004/conplans/det-strip.dwg



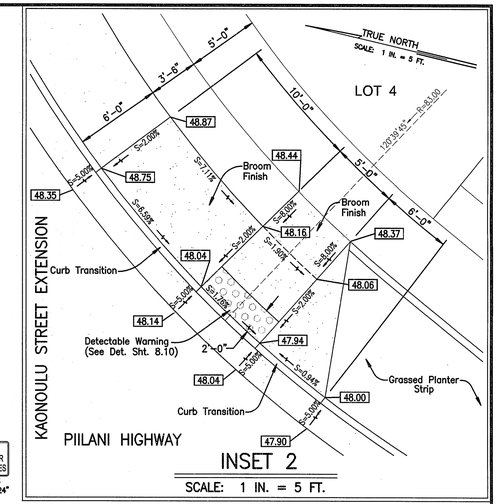
INSET 1

SCALE: 1 IN. = 5 FT.



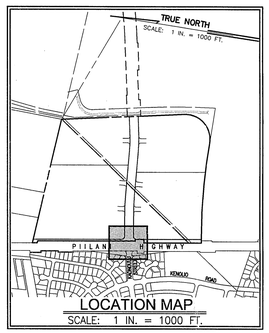
INTERSECTION PIILANI HWY / KAONOULU ST. EXT.

Scale: 1 in. = 20 ft.



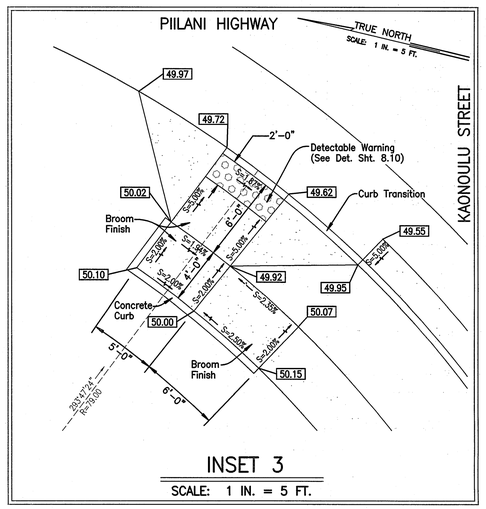
INSET 2

SCALE: 1 IN. = 5 FT.



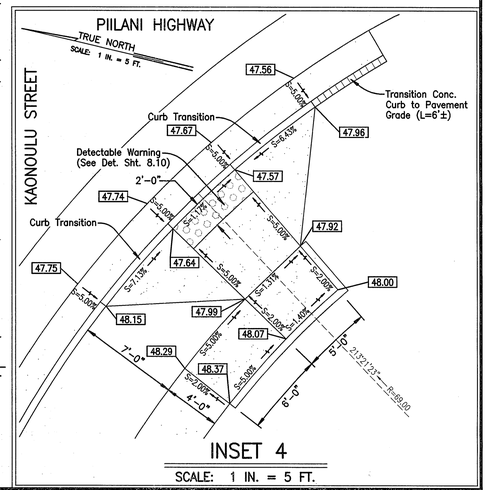
LOCATION MAP

SCALE: 1 IN. = 1000 FT.



INSET 3

SCALE: 1 IN. = 5 FT.



INSET 4

SCALE: 1 IN. = 5 FT.

NOTES:

1. FINISH GRADE SPOT ELEVATIONS, INDICATED ON CONSTRUCTION PLANS, FOR EDGE OF PAVEMENT SHALL BE USED FOR THE PURPOSE OF DETERMINING INITIAL EDGE OF PAVEMENT PROFILE. CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS REQUIRED, DURING CONSTRUCTION, SO THE FINAL PROFILE SATISFIES THE FOLLOWING CONDITIONS:
   A. DRAINAGE PATTERN AS INDICATED ON CONSTRUCTION PLANS SHALL BE MAINTAINED.
   B. PROFILE OF TRANSITION ALONG EDGE OF PAVEMENT FROM STREET TO STREET SHALL BE UNIFORM AND SMOOTH.

   UPON COMPLETION OF LAYOUT OF THE INITIAL EDGE OF PAVEMENT PROFILE, CONTRACTOR SHALL CONTACT ENGINEER FOR APPROVAL, PRIOR TO PROCEEDING WITH ANY FURTHER WORK, OTHERWISE ANY CORRECTIVE WORK REQUIRED BY THE ENGINEER WILL BE DONE AT CONTRACTOR'S EXPENSE.
2. SIGNS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES & MAUI COUNTY TRAFFIC CODE.
3. EXISTING LONGITUDINAL DRAINAGE PATTERN SHOWN ON INTERSECTION DETAILS SHALL BE MAINTAINED AT ALL TIMES.
4. STREET NAMES MAY NOT BE AS SHOWN ON PLANS. CONTRACTOR TO VERIFY STREET NAMES WITH ENGINEER PRIOR TO ORDERING MATERIALS.
5. TRAFFIC STRIPING AND MARKING SHALL BE WITH THERMOPLASTIC EXTRUSION.
6. TRAFFIC SIGNS SHALL BE WITH ALUMINUM SIGN BLANKS AND WITH HIGH INTENSITY SHEETING.
7. DURING EXISTING SIDEWALK AND SHOULDER IMPROVEMENTS, THE CONTRACTOR SHALL PROVIDE NECESSARY ADJUSTMENTS TO ACCOMMODATE BICYCLISTS AND PEDESTRIANS AND SHALL MAINTAIN AN ACCESSIBLE ROUTE AT ALL TIMES.
8. RAISED PEDESTRIAN ISLANDS IN MARKED CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET.

LEGEND:

- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "D" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 4 EACH TYPE "A" RAISED PAVEMENT MARKERS TYPE "C" RAISED PAVEMENT MARKERS AT 40'–0" O.C.
- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "H" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
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- PAVEMENT ARROW (THERMOPLASTIC EXTRUSION)
- CROSSWALK AND STOP LINE. ALL STOP LINES SHALL BE 10'–0" FROM CROSSWALK UNLESS OTHERWISE NOTED. (THERMOPLASTIC EXTRUSION)

LETTER	DESCRIPTION	DATE
5	Spot Elevation and Curb Ramp Revisions	10/21/09

DARREN T. UNEMORI LICENSED PROFESSIONAL ENGINEER NO. 7937-C HAWAII, U.S.A.

SIGNATURE DATE 10/27/09

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

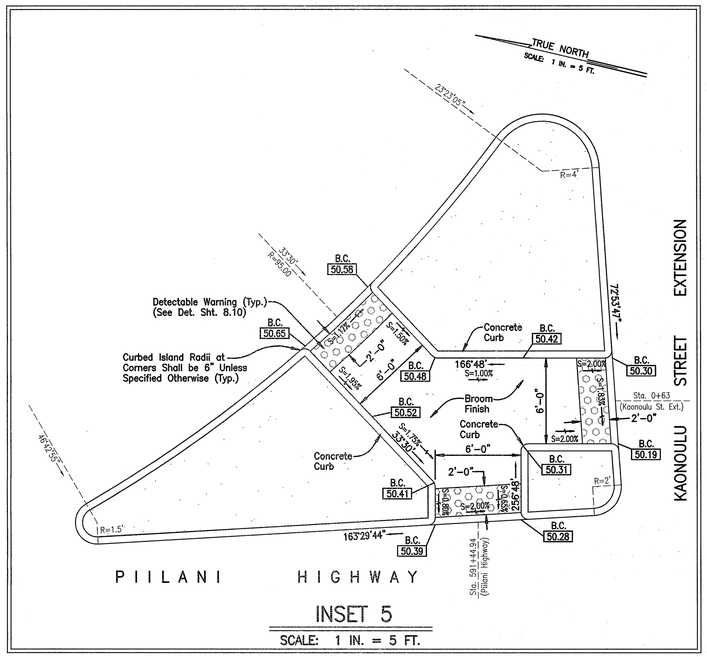
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE INTERSECTION DETAILS

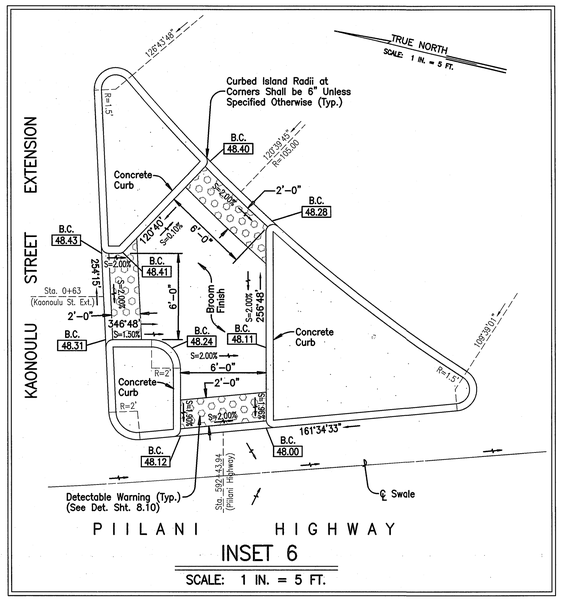
DESIGNED BY ALU	CHECKED BY DTU	JOB NUMBER 04010.10	SHEET 9.01A
DRAWN BY WIS	APPROVED BY DTU	DATE 10-10-05	OF SHEETS
SCALE 1 in. = 20 ft.			

04010.10/dwg2004/complans/inter000.dwg



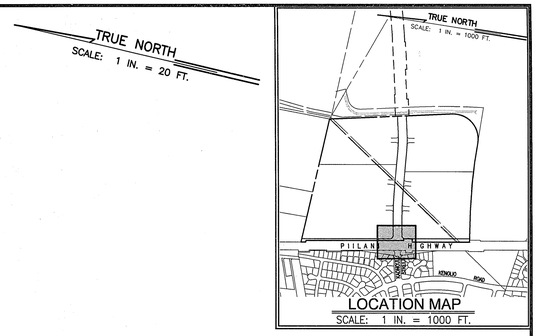
INSET 5

SCALE: 1 IN. = 5 FT.



INSET 6

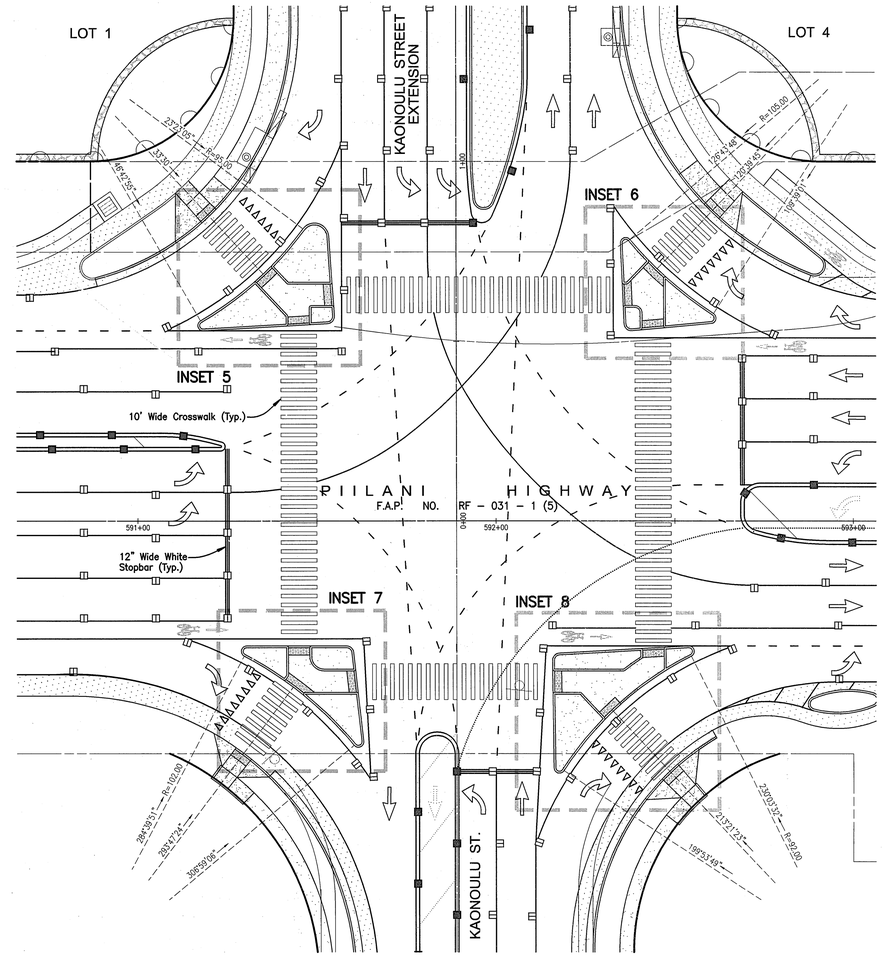
SCALE: 1 IN. = 5 FT.



LOCATION MAP

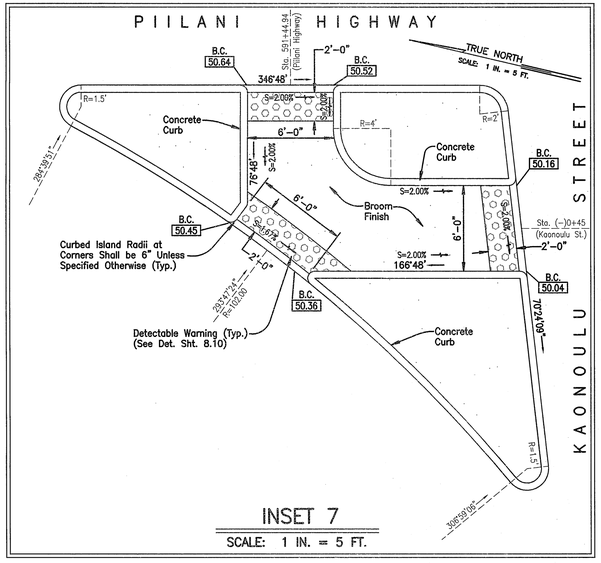
SCALE: 1 IN. = 1000 FT.

TRUE NORTH
SCALE: 1 IN. = 20 FT.



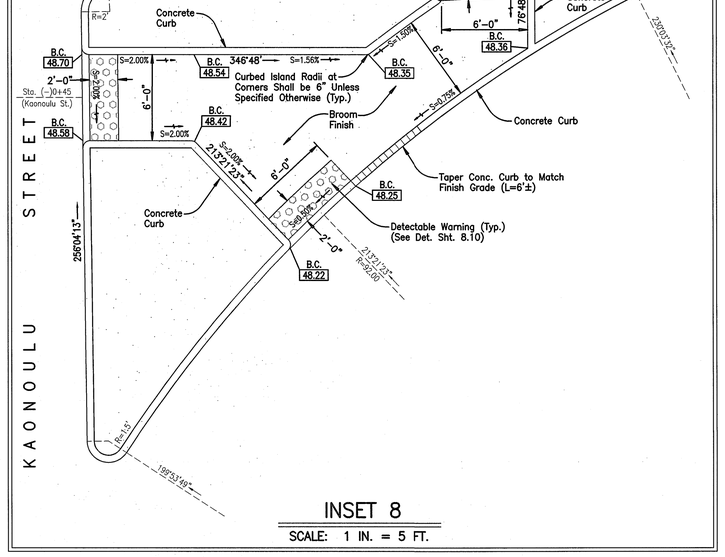
INTERSECTION PIILANI HWY / KAONOULU ST. EXT.

Scale: 1 in. = 20 ft.



INSET 7

SCALE: 1 IN. = 5 FT.



INSET 8

SCALE: 1 IN. = 5 FT.

LEGEND:

- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "D" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
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NOTES:

1. FINISH GRADE SPOT ELEVATIONS, INDICATED ON CONSTRUCTION PLANS, FOR EDGE OF PAVEMENT SHALL BE USED FOR THE PURPOSE OF DETERMINING INITIAL EDGE OF PAVEMENT PROFILE. CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS REQUIRED, DURING CONSTRUCTION, SO THE FINAL PROFILE SATISFIES THE FOLLOWING CONDITIONS:
   A. DRAINAGE PATTERN AS INDICATED ON CONSTRUCTION PLANS SHALL BE MAINTAINED.
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   UPON COMPLETION OF LAYOUT OF THE INITIAL EDGE OF PAVEMENT PROFILE, CONTRACTOR SHALL CONTACT ENGINEER FOR APPROVAL, PRIOR TO PROCEEDING WITH ANY FURTHER WORK, OTHERWISE ANY CORRECTIVE WORK REQUIRED BY THE ENGINEER WILL BE DONE AT CONTRACTOR'S EXPENSE.
2. SIGNS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES & MAUI COUNTY TRAFFIC CODE.
3. EXISTING LONGITUDINAL DRAINAGE PATTERN SHOWN ON INTERSECTION DETAILS SHALL BE MAINTAINED AT ALL TIMES.
4. STREET NAMES MAY NOT BE AS SHOWN ON PLANS. CONTRACTOR TO VERIFY STREET NAMES WITH ENGINEER PRIOR TO ORDERING MATERIALS.
5. TRAFFIC STRIPING AND MARKING SHALL BE WITH THERMOPLASTIC EXTRUSION.
6. TRAFFIC SIGNS SHALL BE WITH ALUMINUM SIGN BLANKS AND WITH HIGH INTENSITY SHEETING.
7. DURING EXISTING SIDEWALK AND SHOULDER IMPROVEMENTS, THE CONTRACTOR SHALL PROVIDE NECESSARY ADJUSTMENTS TO ACCOMMODATE BICYCLISTS AND PEDESTRIANS AND SHALL MAINTAIN AN ACCESSIBLE ROUTE AT ALL TIMES.
8. RAISED PEDESTRIAN ISLANDS IN MARKED CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET.

LETTER	DESCRIPTION	DATE
2	Spot Elevation and Curbed Island Revisions	10/21/09

DARREN T. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 7937-C
HAWAII, U.S.A.

SIGNATURE 10/27/09 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-3 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

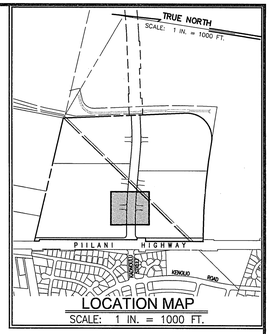
KAONOULU MARKET PLACE

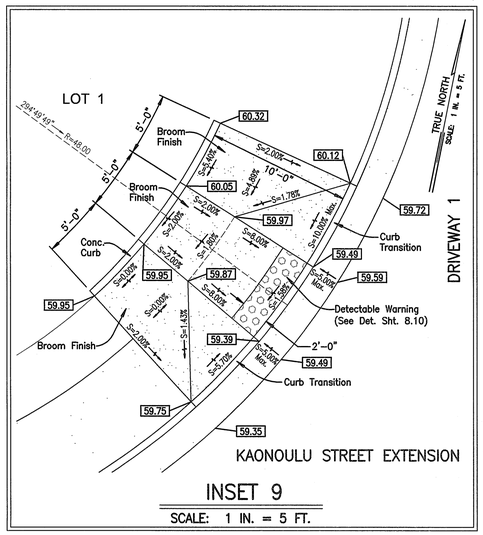
T.M.K.: (2) 3–9–01 : 16
KIHEI, MAUI, HAWAII

TITLE INTERSECTION DETAILS

DESIGNED BY: ALU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 9.01B
DRAWN BY: WIS	APPROVED BY: DTU	DATE: 10–10–05	OF SHEETS
SCALE: 1 in. = 20 ft.			

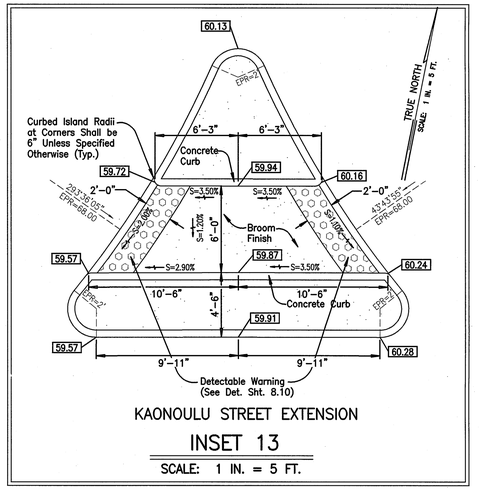
04010.10/dwg2004/compliance/inter000.dwg





INSET 9

SCALE: 1 IN. = 5 FT.



INSET 13

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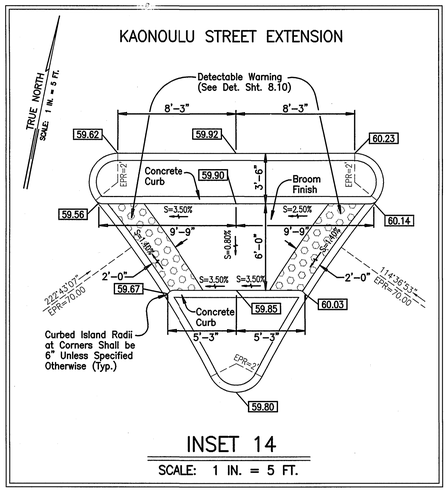

INSET 14

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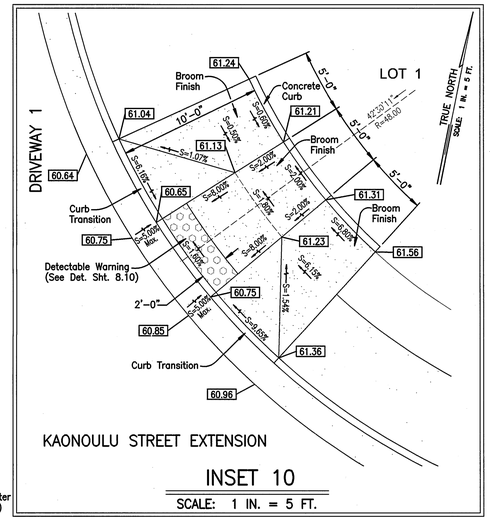
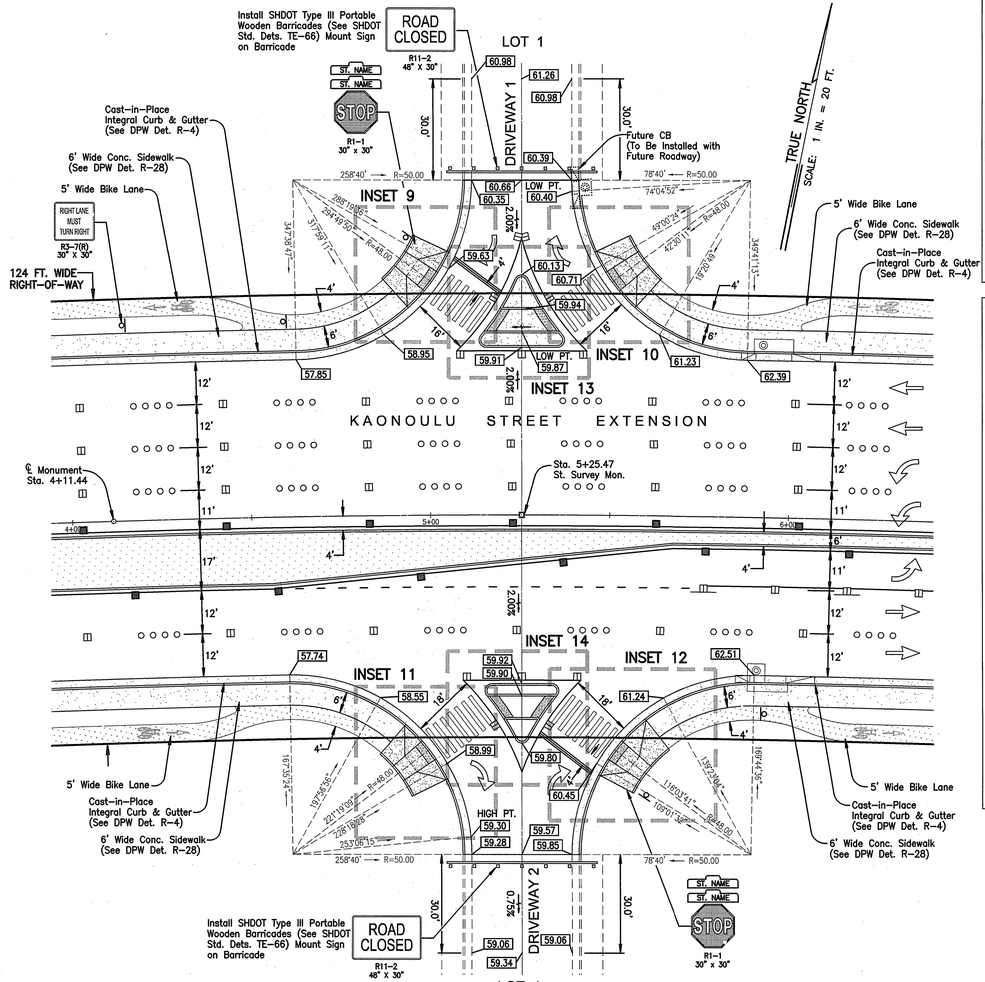


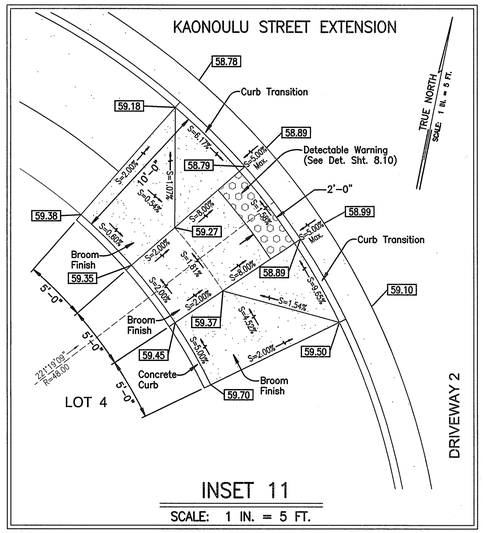
INSET 10

SCALE: 1 IN. = 5 FT.



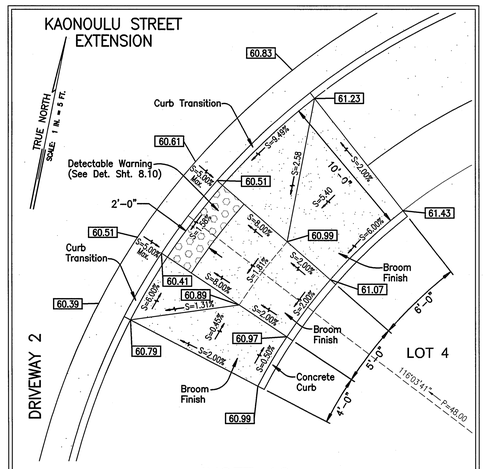
INTERSECTION NO. 1 — KAONOULU STREET EXTENSION

Scale: 1 in. = 20 ft.



INSET 11

SCALE: 1 IN. = 5 FT.



INSET 12

SCALE: 1 IN. = 5 FT.

NOTES:

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   A. DRAINAGE PATTERN AS INDICATED ON CONSTRUCTION PLANS SHALL BE MAINTAINED.
   B. PROFILE OF TRANSITION ALONG EDGE OF PAVEMENT FROM STREET TO STREET SHALL BE UNIFORM AND SMOOTH.

   UPON COMPLETION OF LAYOUT OF THE INITIAL EDGE OF PAVEMENT PROFILE, CONTRACTOR SHALL CONTACT ENGINEER FOR APPROVAL, PRIOR TO PROCEEDING WITH ANY FURTHER WORK, OTHERWISE ANY CORRECTIVE WORK REQUIRED BY THE ENGINEER WILL BE DONE AT CONTRACTOR'S EXPENSE.
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7. DURING EXISTING SIDEWALK AND SHOULDER IMPROVEMENTS, THE CONTRACTOR SHALL PROVIDE NECESSARY ADJUSTMENTS TO ACCOMMODATE BICYCLISTS AND PEDESTRIANS AND SHALL MAINTAIN AN ACCESSIBLE ROUTE AT ALL TIMES.
8. RAISED PEDESTRIAN ISLANDS IN MARKED CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET.

LEGEND:

- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "D" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 4 EACH TYPE "A" RAISED PAVEMENT MARKERS TYPE "C" RAISED PAVEMENT MARKERS AT 40'–0" O.C.
- 4" DOUBLE SOLID YELLOW STRIPES WITH TYPE "H" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 8" SOLID WHITE STRIPE W/ TYPE "C" RAISED PAVEMENT MARKERS AT 20'–0" O.C. (THERMOPLASTIC EXTRUSION)
- 4" YELLOW EDGE STRIPE WITH TYPE "H" RAISED PAVEMENT MARKERS AT 40'–0" O.C. (THERMOPLASTIC EXTRUSION)
- CHANNELIZING ISLAND OR DECELERATION LANE GORE (THERMOPLASTIC EXTRUSION)
- 4" OR 8" WHITE EDGE STRIPE W/ TYPE "C" RAISED PAVEMENT MARKERS AT 40'–0" O.C. (THERMOPLASTIC EXTRUSION)
- BIKE LANE MARKING (THERMOPLASTIC EXTRUSION)
- 4" WHITE GUIDELINES (THERMOPLASTIC EXTRUSION EXCEPT FOR BUS BAYS) (GUIDE LINES FOR TURNING MOVEMENTS THROUGH INTERSECTIONS SHALL BE YELLOW)
- TRANSVERSE MEDIAN MARKING (THERMOPLASTIC EXTRUSION)
- PAVEMENT ARROW (THERMOPLASTIC EXTRUSION)
- CROSSWALK AND STOP LINE. ALL STOP LINES SHALL BE 10'–0" FROM CROSSWALK UNLESS OTHERWISE NOTED. (THERMOPLASTIC EXTRUSION)

LETTER	DESCRIPTION	DATE
5	Spot Elevation and Curb Ramp Revisions	10/21/09

DARREN T. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 7937-C
HAWAII, U.S.A.

SIGNATURE 10/22/09 DATE

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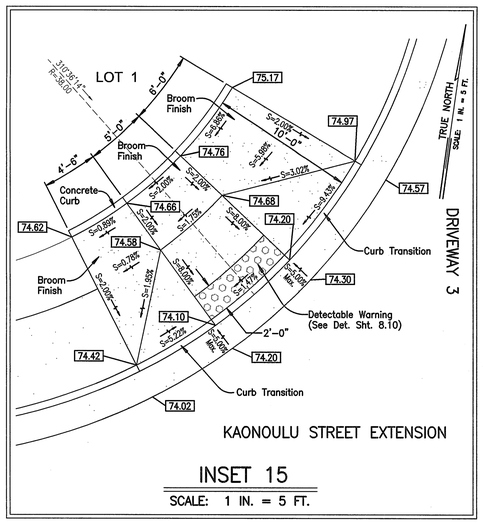
KAONOULU MARKET PLACE
T.M.K.: (2) 3–9–01 : 16
KIHEI, MAUI, HAWAII

TITLE INTERSECTION DETAILS

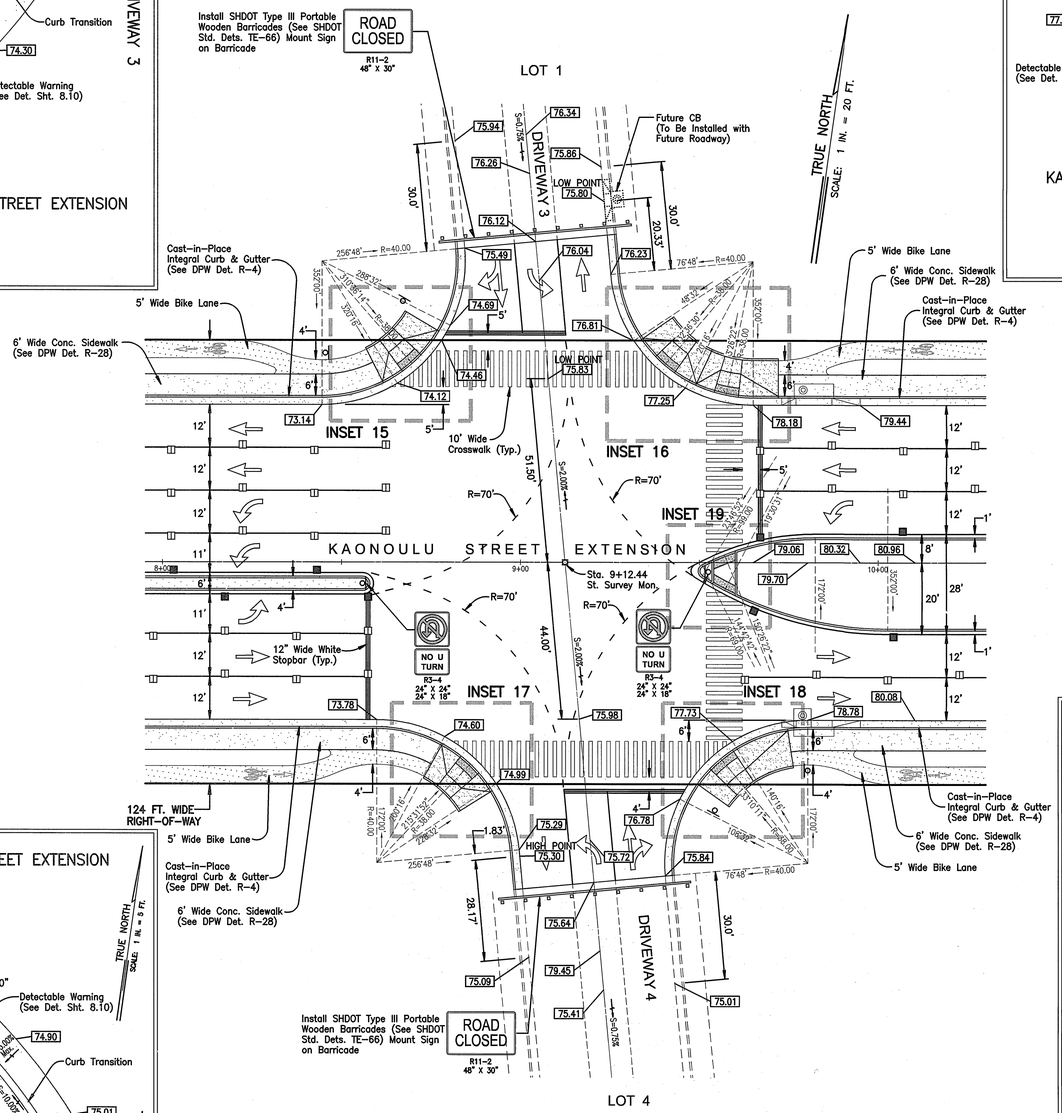
DESIGNED BY: ALU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 9.02
DRAWN BY: WIS	APPROVED BY: DTU		
SCALE: 1 in. = 20 ft.	DATE: 10–10–05		OF SHEETS

04010.10/dwg2004/cenplans/inter000.dwg



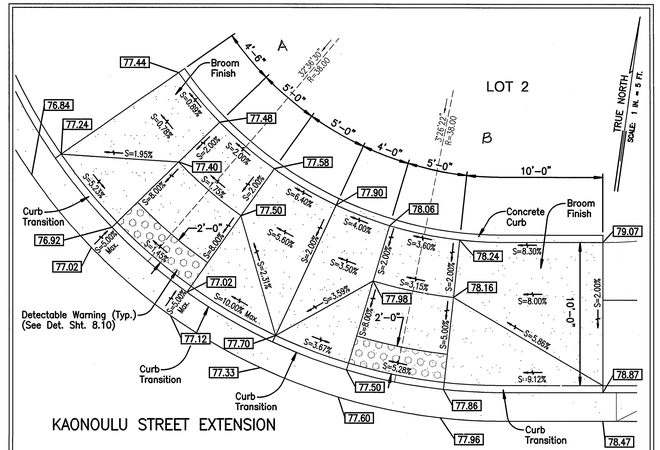
INSET 15

SCALE: 1 IN. = 5 FT.



INTERSECTION NO. 2 – KAONOULU ST. EXTENSION

Scale: 1 in. = 20 ft.



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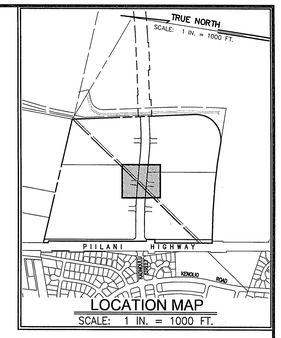
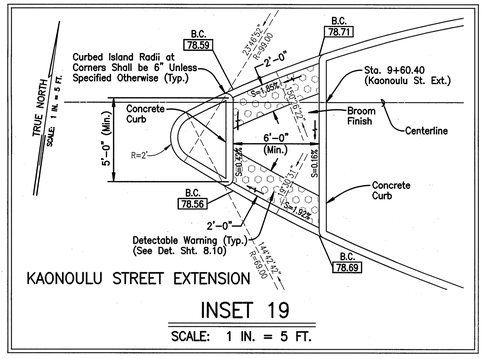
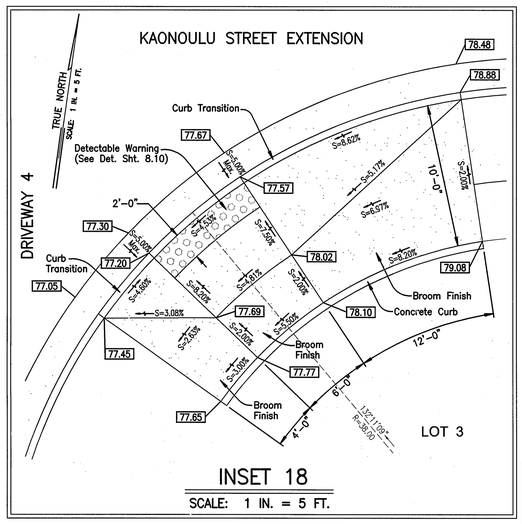




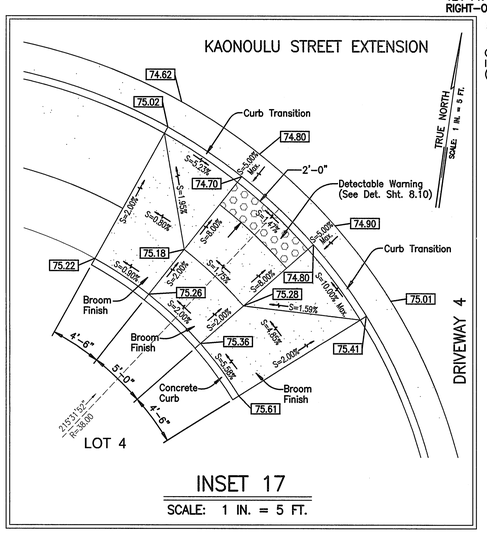
INSET 19

SCALE: 1 IN. = 5 FT.



INSET 18

SCALE: 1 IN. = 5 FT.



INSET 17

SCALE: 1 IN. = 5 FT.

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LEGEND:

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LETTER	DESCRIPTION	DATE
5	Spot Elevation and Curb Ramp Revisions	10/21/09

DARREN T. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 7937–C
HAWAII, U.S.A.

SIGNATURE 10/27/09 DATE

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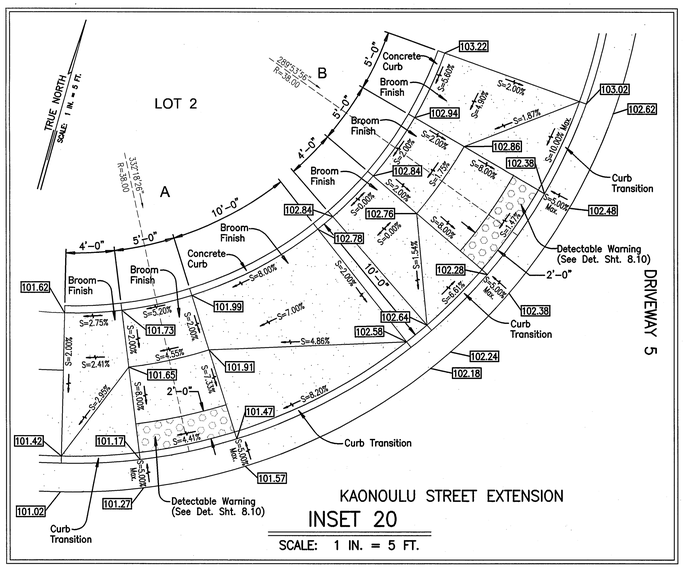
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

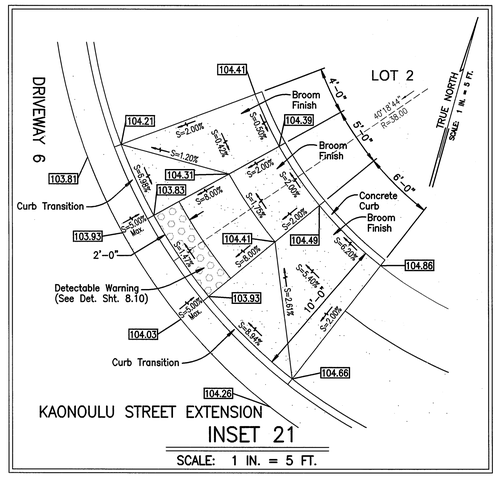
KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

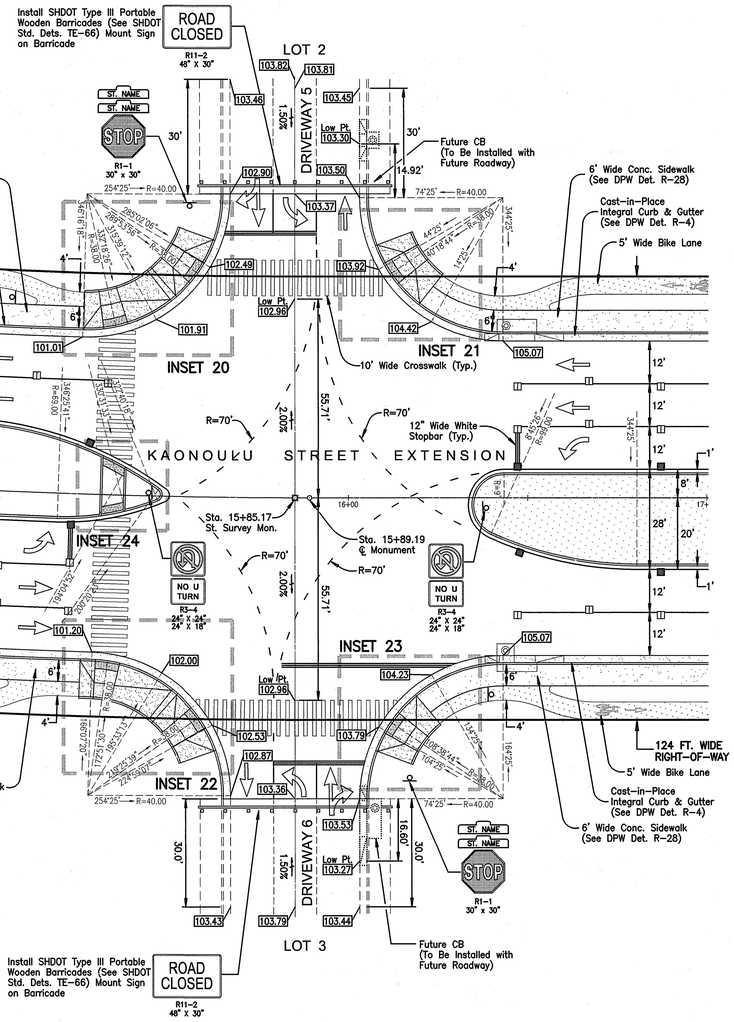
TITLE INTERSECTION DETAILS

ALU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	9.03 SHEET
WIS DRAWN BY	DTU APPROVED BY	10–10–05 DATE	OF SHEETS
SCALE 1 in. = 20 ft.			

04010.10/dwg2004/contplans/inter600.dwg

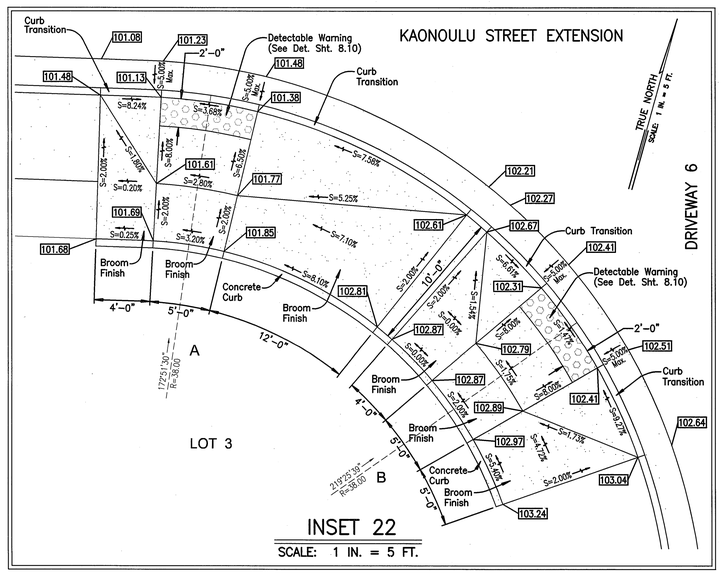


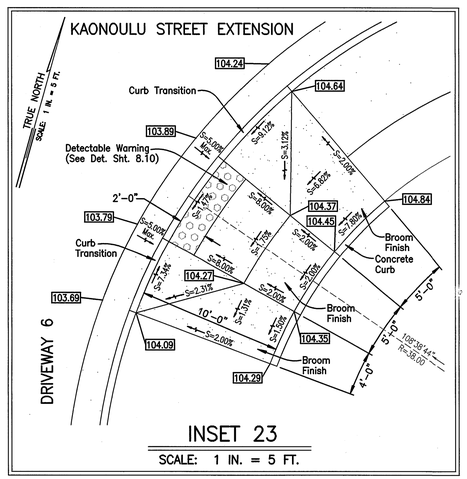


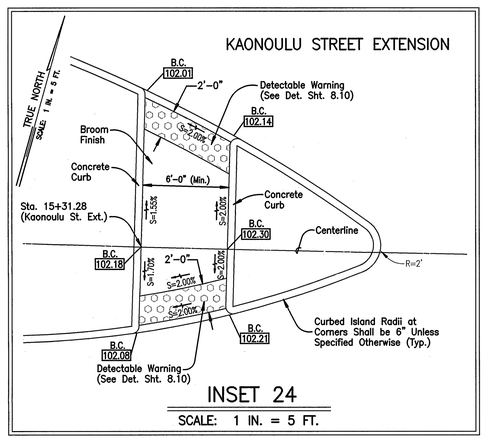


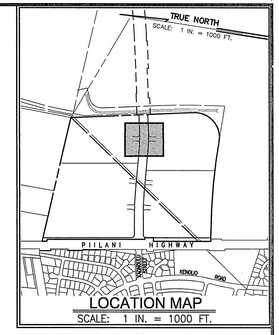
INTERSECTION NO. 3 – KAONOULU ST. EXTENSION

Scale: 1 in. = 20 ft.









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LEGEND:

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LETTER	DESCRIPTION	DATE
5	Spot Elevation and Curb Ramp Revisions	10/21/09

LICENSED PROFESSIONAL ENGINEER
DARREN T. UNEMORI
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HAWAII, U.S.A.

SIGNATURE _____ DATE 10/27/09

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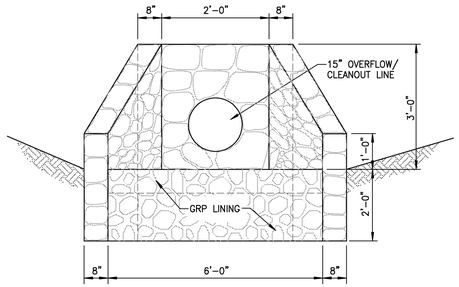
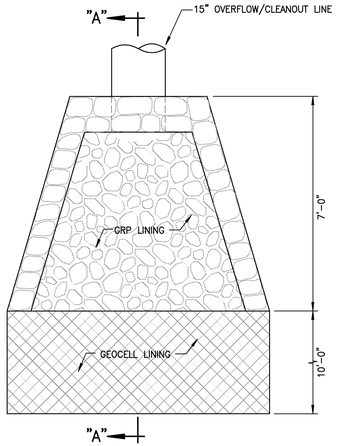
SCALE: 1 in. = 20 ft.			

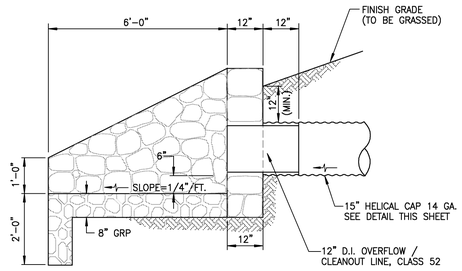
04010.10/dwg2004/conplans/inter000.dwg



ELEVATION



PLAN

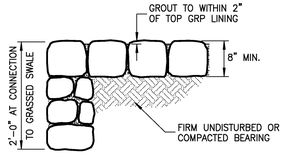


SECTION "A"–"A"

DETAIL – OUTLET STRUCTURE FOR OVERFLOW DRAINLINE (6)

NOT TO SCALE

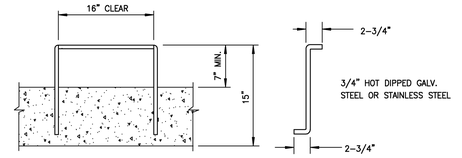
details/drain/culv0004.dwg



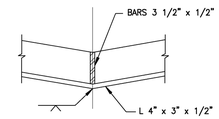
DETAIL – GRP LINING

NOT TO SCALE

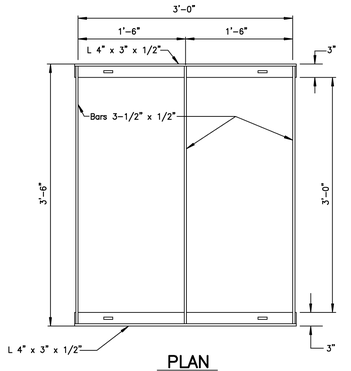
details/drain/culv0004.dwg



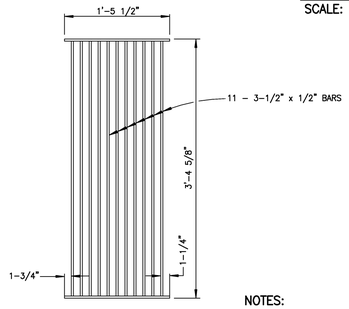
RUNG DETAIL
SCALE: 1" = 1'-0"



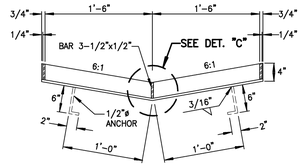
DETAIL "C"
SCALE: 1 1/2" = 1'-0"



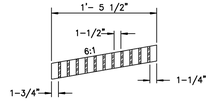
PLAN



PLAN



SECTION



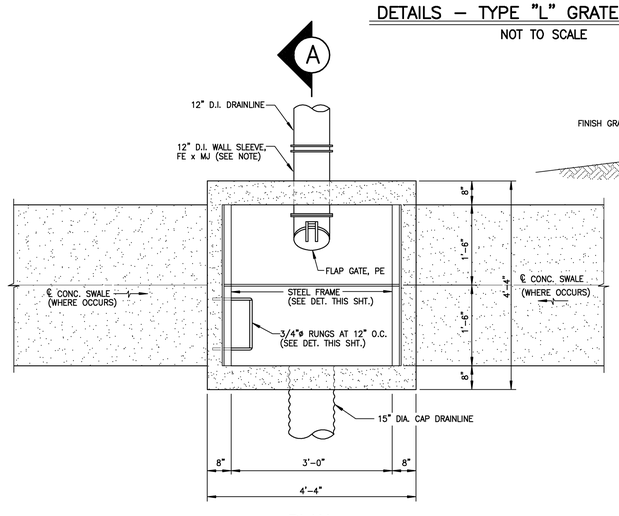
SECTION

NOTES:

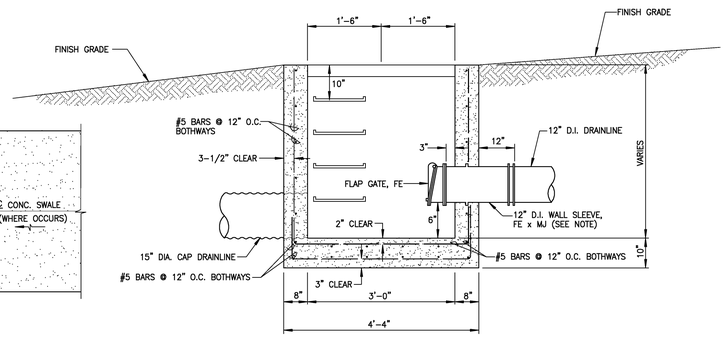
1. CONTRACTOR SHALL HAVE OPTION TO SUBSTITUTE APPROVED HYDRAULICALLY AND STRUCTURALLY EQUIVALENT OR BETTER PRECAST CONCRETE CATCH BASIN DROP INLETS AND PREFABRICATED GRATE ASSEMBLIES. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.
2. ALL GRATES WITHIN PAVED AREAS SHALL BE GARY GRATING "TYPE GO SERIES" (MANUFACTURED BY IKG INDUSTRIES, RATED TO SUSTAIN HS20-44 LOADING, OR APPROVED EQUAL. FRAME ANGLE LEG DIMENSIONS SHALL BE ADJUSTED AS REQUIRED.
3. ALL STEEL COMPONENTS SHALL BE HOT-DIPPED GALVANIZED.
4. SEE D.P.W. STANDARD DETAILS SHEET "D-44" FOR CORNER AFTER FABRICATION.
5. ALL WELDS 3/8" UNLESS OTHERWISE NOTED. CONNECTIONS.
6. THE FRAME AND GRATE MATERIAL SHALL CONFORM TO THE SPECIFICATIONS OF A.S.T.M. DESIGNATION STRUCTURAL STEEL A283, GRADE D AND THE STANDARD SPECIFICATIONS.
7. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND MATERIAL SUBMITTAL OF FLAP GATE INSTALLATION TO ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIALS.

DETAILS – TYPE "L" GRATE & FRAME

NOT TO SCALE



PLAN



SECTION (A)

NOT TO SCALE

DETAILS – GRATED INLET CATCH BASIN AT WATER TANK (4)

NOT TO SCALE

LETTER	DESCRIPTION	DATE
6	REVISED PER DWS COMMENTS	10/16/10
4	REVISED PER DWS COMMENTS	12/12/08

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

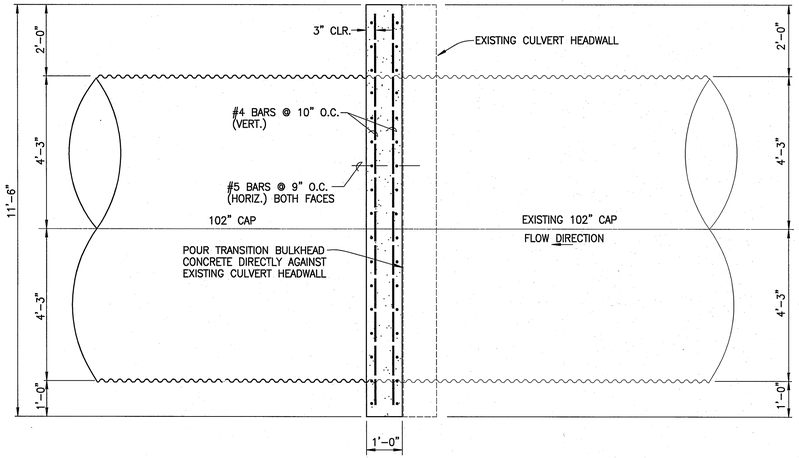
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

DESIGNED BY: ALU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 10.01
DRAWN BY: WIS	APPROVED BY: DTU		
SCALE: AS NOTED	DATE: 10-10-05		OF SHEETS

V:\Projects\[APROJ\]04010.13\Dwg\2601A\constplans\det-drnd.dwg

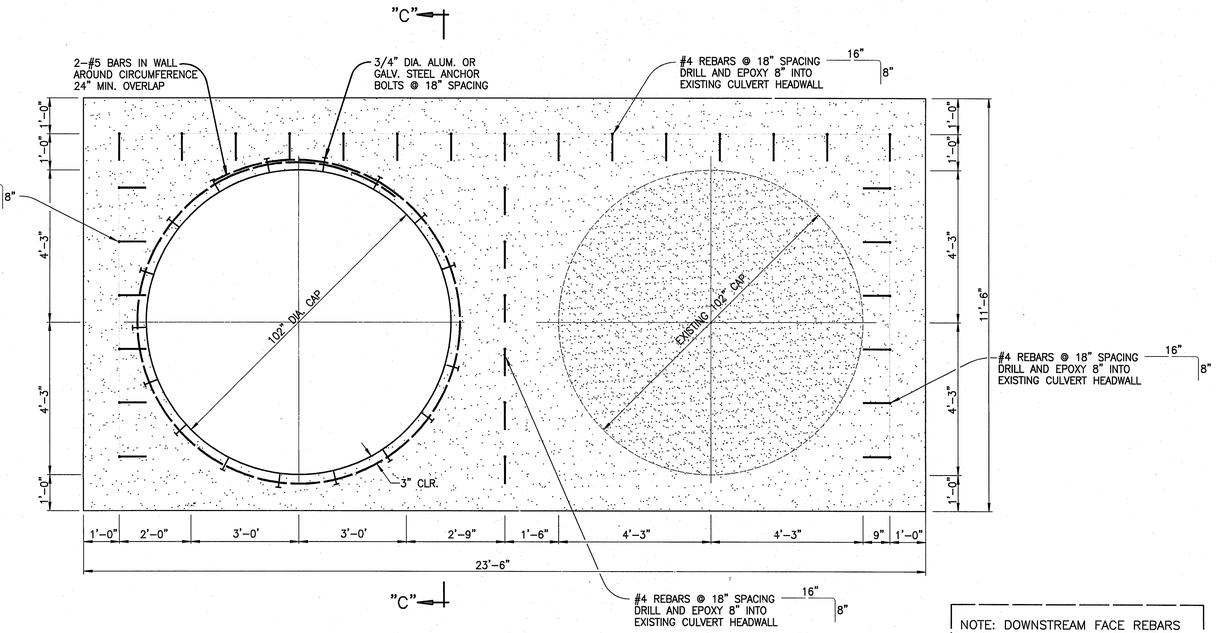


SECTION "A"–"A" ELEVATION VIEW OF TRANSITION BULKHEAD AT STA. (–)0+65±

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

NOTES:

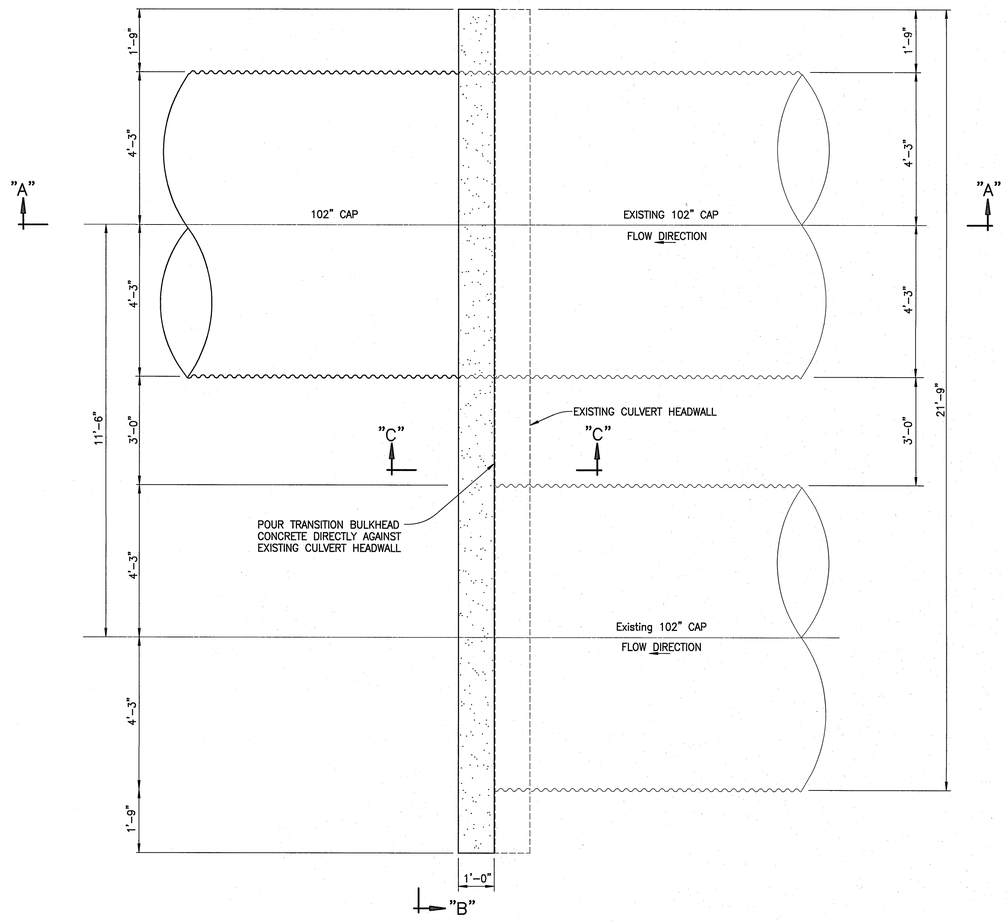
1. HORIZONTAL STEEL IS OUTSIDE VERTICAL STEEL.
2. 2–#5 REBARS AROUND CIRCUMFERENCE OF 72" CAP NOT SHOWN FOR CLARITY.



NOTE: DOWNSTREAM FACE REBARS NOT SHOWN FOR CLARITY

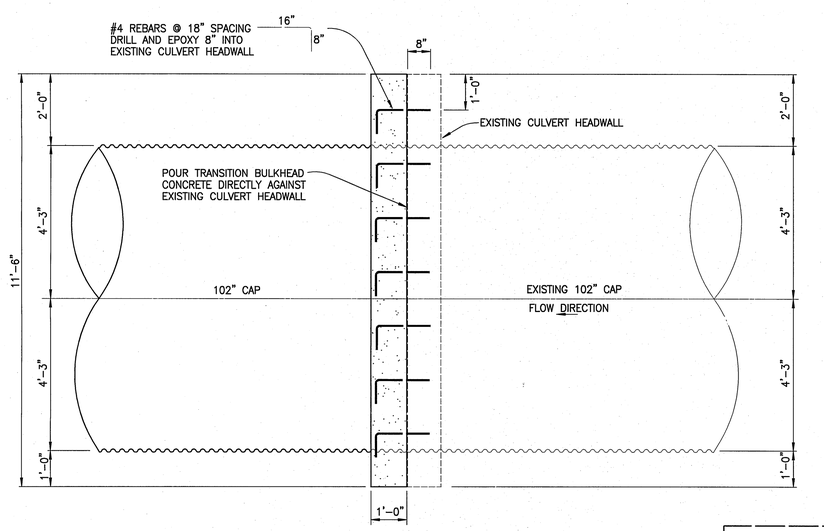
SECTION "B"–"B" ELEVATION VIEW OF TRANSITION BULKHEAD AT STA. (–)0+65±

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



PLAN VIEW OF TRANSITION BULKHEAD AT STA. (–)0+65± BETWEEN EXISTING 102" AND 72" CAP

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



SECTION "C"–"C" ELEVATION VIEW OF DOWNSTREAM TRANSITION BULKHEAD AT STA. (–)0+65±

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

NOTE: HORIZONTAL AND VERTICAL REBARS NOT SHOWN FOR CLARITY

CONCRETE: f_c' = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60

3/4" CHAMFER ALL EXPOSED EDGES OF CAST–IN–PLACE CONCRETE (TYP.)

LETTER	DESCRIPTION	DATE
1	Revised Drawing Details	8/23/06

ALAN L. UNEMORI LICENSED PROFESSIONAL ENGINEER NO. 9354–S HAWAII, U.S.A.

SIGNATURE 10/17/06 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

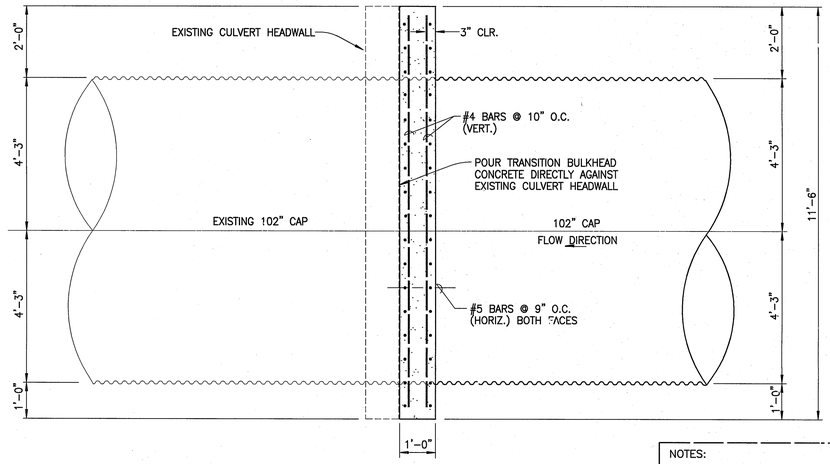
KAONOULU MARKET PLACE

T.M.K.: (2) 2–2–02 : Por. of Par. 15 and 3–9–01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

ALU DESIGNED BY	WSU CHECKED BY	04010.10 JOB NUMBER	10.02 SHEET
WIS DRAWN BY	WSU APPROVED BY	10–10–05 DATE	OF SHEETS
AS NOTED SCALE			

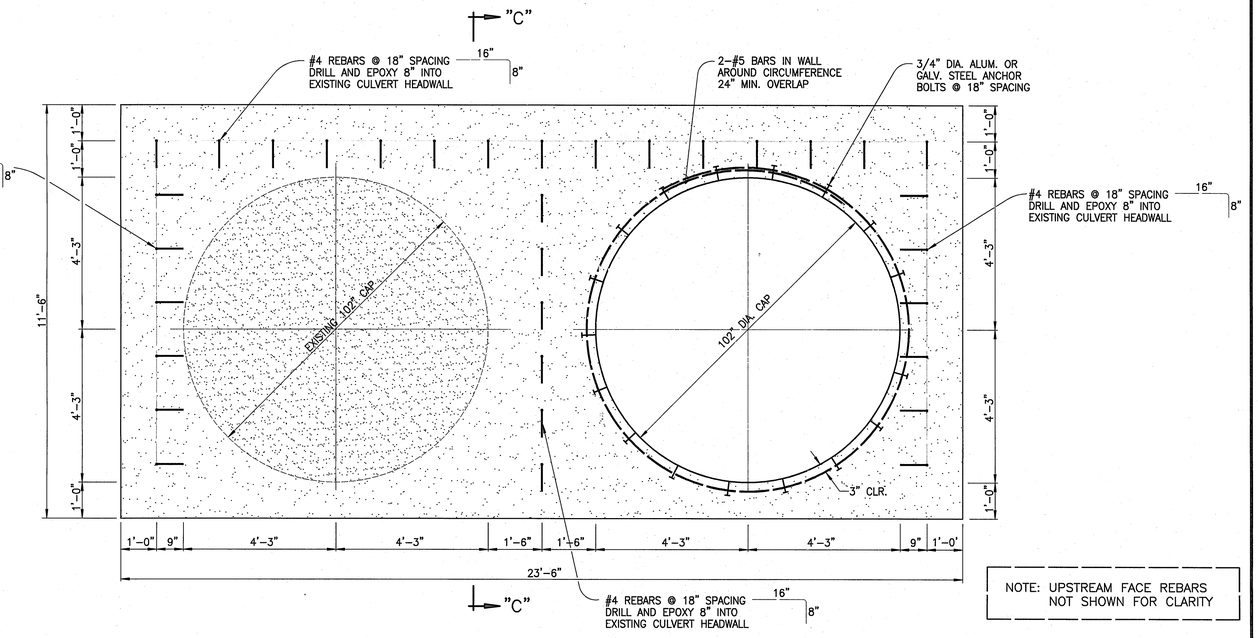
04010.10/dwg2004/conplans/det-dtn0.dwg



SECTION "A"–"A" ELEVATION VIEW OF TRANSITION BULKHEAD AT STA. 0+58.13

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

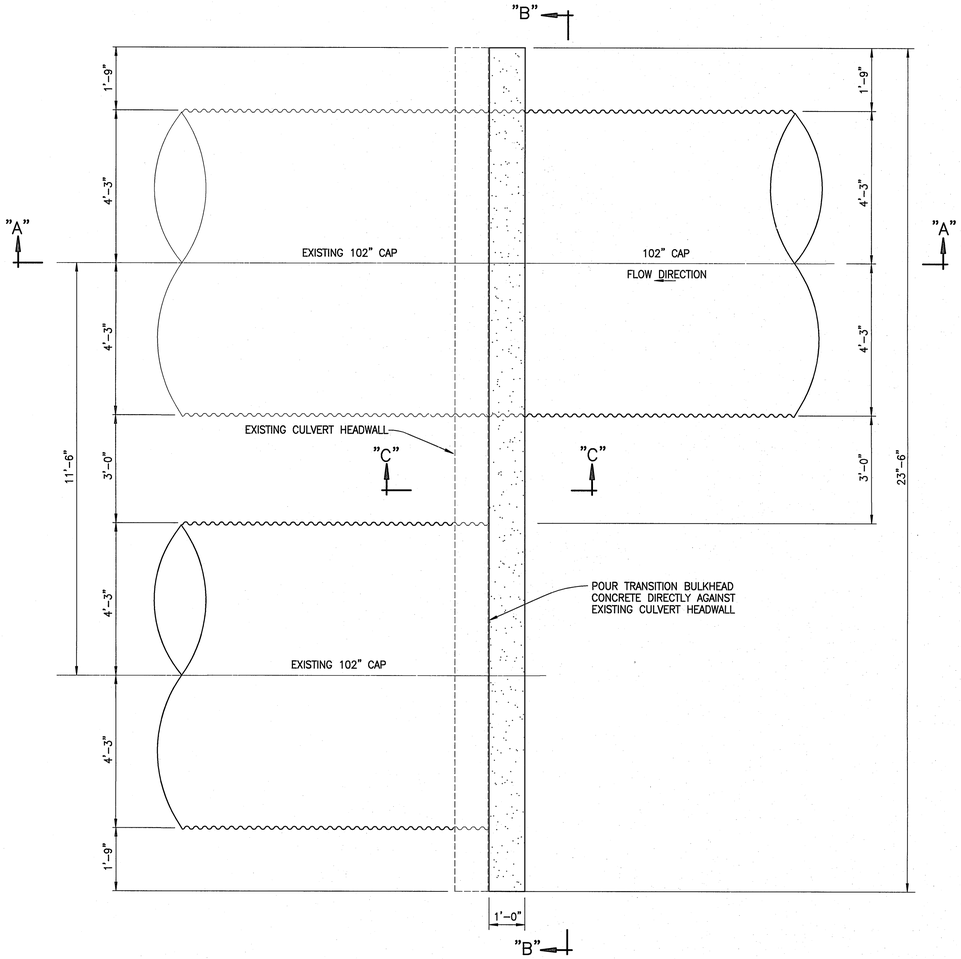
NOTES:
1. HORIZONTAL STEEL IS OUTSIDE VERTICAL STEEL.
2. 2–#5 REBARS AROUND CIRCUMFERENCE OF 72" CAP NOT SHOWN FOR CLARITY.



NOTE: UPSTREAM FACE REBARS NOT SHOWN FOR CLARITY

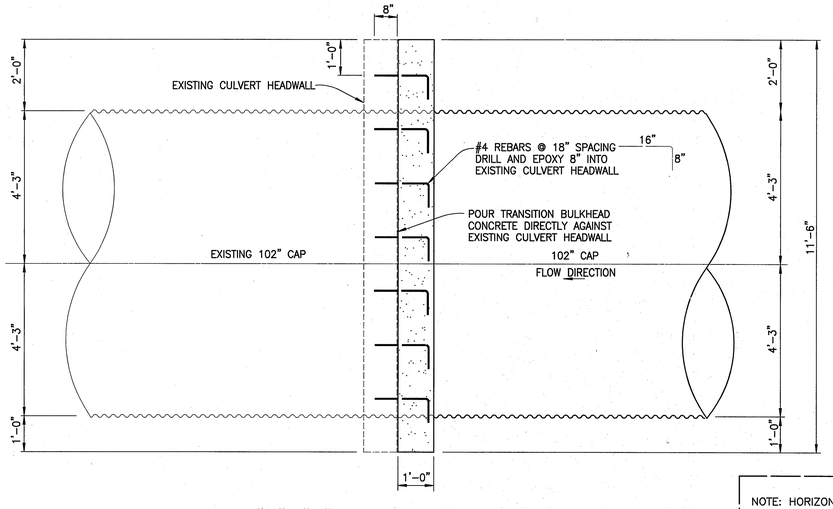
SECTION "B"–"B" ELEVATION VIEW OF TRANSITION BULKHEAD AT STA. 0+58.13

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



PLAN VIEW OF TRANSITION BULKHEAD AT STA. 0+58.13 BETWEEN EXISTING AND PROPOSED 102" CAP

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



NOTE: HORIZONTAL AND VERTICAL REBARS NOT SHOWN FOR CLARITY

SECTION "C"–"C" ELEVATION VIEW OF UPSTREAM TRANSITION BULKHEAD AT STA. 0+58.13

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

CONCRETE: f_c' = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60

3/4" CHAMFER ALL EXPOSED EDGES OF CAST–IN–PLACE CONCRETE (TYP.)

LETTER	DESCRIPTION	DATE
1	Revised Drawing Details	8/23/06

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SIGNATURE 12/12/2006 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

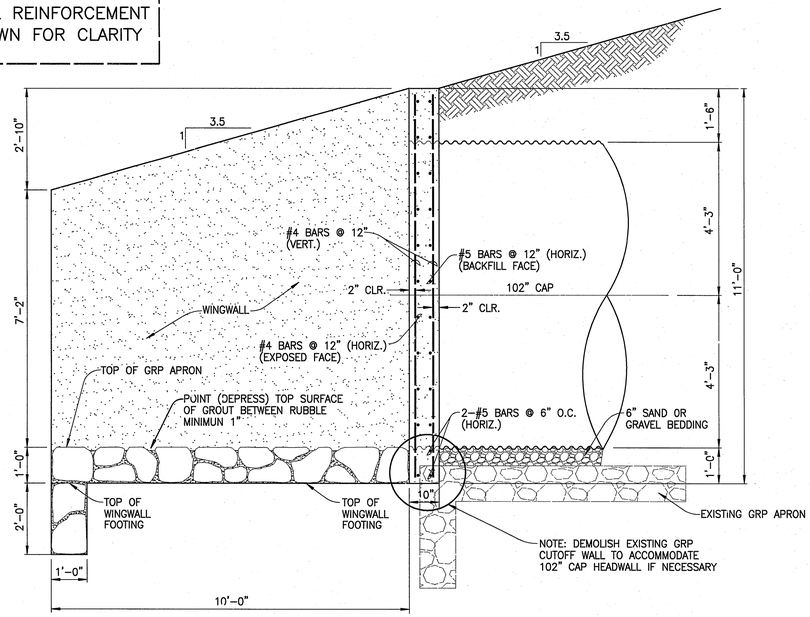
KAONOULU MARKET PLACE
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

ALU DESIGNED BY	WSU CHECKED BY	04010.10 JOB NUMBER	10.03 SHEET
WIS DRAWN BY	WSU APPROVED BY	10-10-05 DATE	OF SHEETS
SCALE AS NOTED			

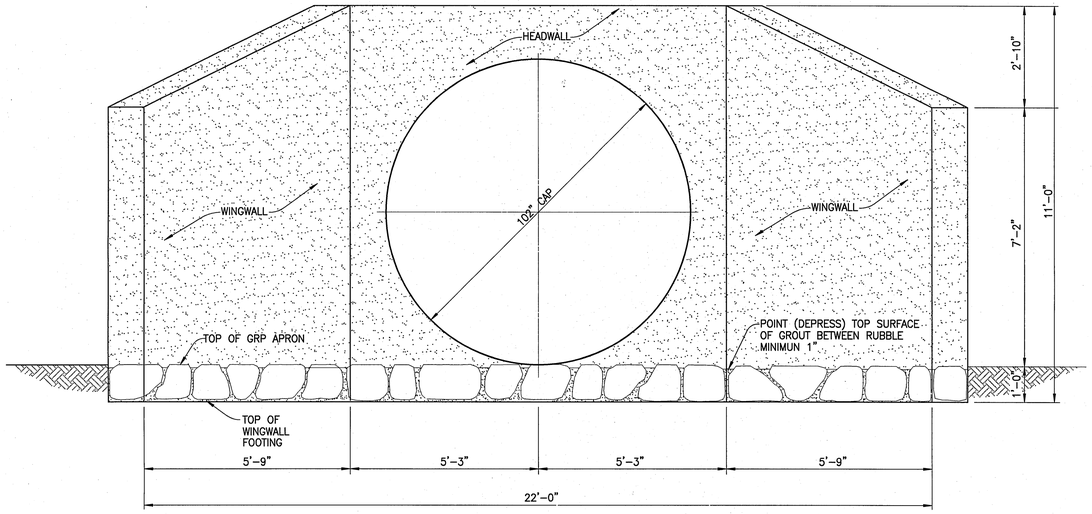
04010.10/dwg2004/conplans/det-dim0.dwg

NOTE: WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION "A"–"A" SIDE ELEVATION VIEW OF WINGWALLS, GRP APRON AND CUTOFF WALL

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



SECTION "C"–"C" FRONT ELEVATION VIEW OF 72" CAP OUTLET

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

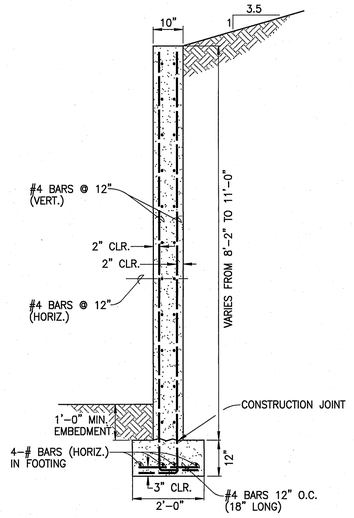
NOTE: GRP APRON AND 1'–0" WIDE x 3'–0" DEEP GRP CUTOFF WALL NOT SHOWN FOR CLARITY

NOTE: 3/4" CHAMFER ALL EXPOSED EDGES OF CAST–IN–PLACE CONCRETE

NOTE: REBARS IN HEADWALL AND WINGWALL NOT SHOWN FOR CLARITY

PLAN VIEW OF 72" CAP OUTLET HEADWALL AND WINGWALL AT STA. (–) 0+85±

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



SECTION "B"–"B" WINGWALL CROSS–SECTION AND FOOTING

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

LETTER	DESCRIPTION	DATE

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

10/27/2010
SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

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WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

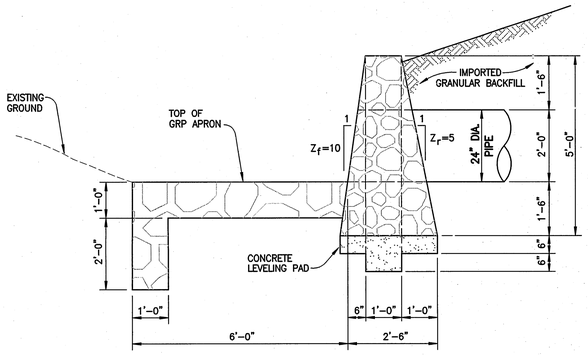
KAONOULU MARKET PLACE

T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

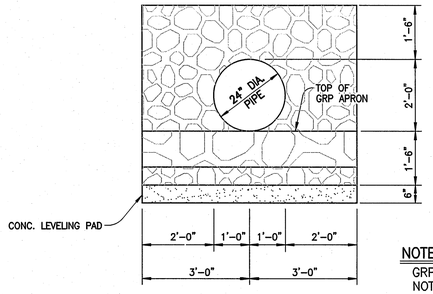
TITLE DRAINAGE DETAILS

DESIGNED BY: ALU	CHECKED BY: WSU	JOB NUMBER: 04010.10	SHEET: 10.04
DRAWN BY: WIS	APPROVED BY: WSU	DATE: 10–10–05	OF SHEETS
SCALE: AS NOTED			

04010.10/dwg2004/conplans/det-dm0.dwg

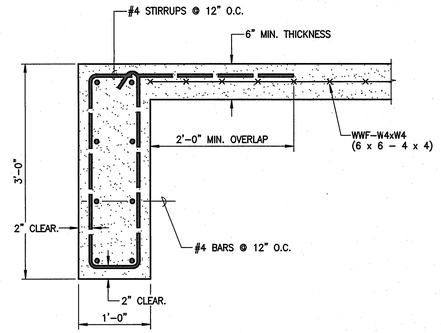


SECTION "A"–"A"
SIDE ELEVATION VIEW OF INLET/OUTLET AT 24" CULVERT CROSSING
SCALE: 1/2" = 1'-0"



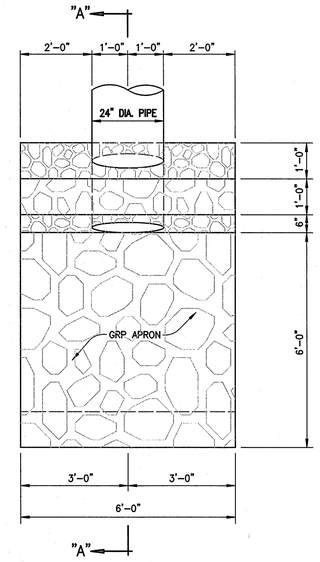
NOTE:
GRP CUTOFF WALL NOT SHOWN FOR CLARITY

FRONT ELEVATION VIEW OF INLET/OUTLET AT 24" CULVERT CROSSING
SCALE: 1/2" = 1'-0"

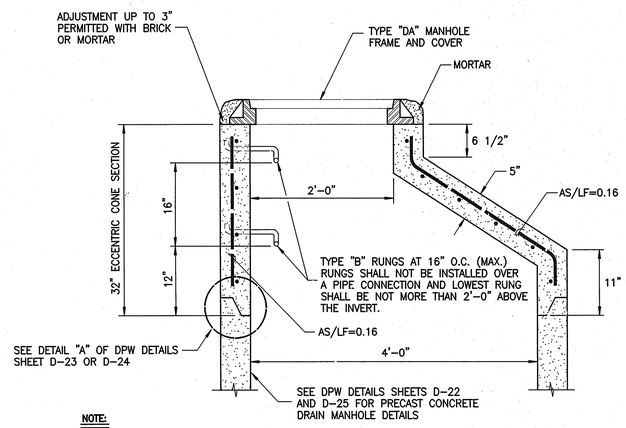


DETAIL – CONCRETE CUTOFF WALL FOR DIVERSION DITCH (STA. 0+00)
SCALE: 1" = 1'-0"

NOTE:
GRP CUTOFF WALL FOR DIVERSION DITCH AT STA. 0+50 SHALL FOLLOW CUTOFF WALL SHOWN ABOVE IN SECTION "A"–"A" DETAIL.



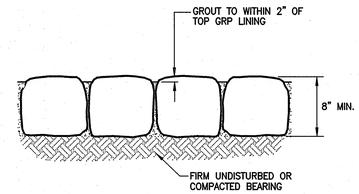
TOP VIEW OF INLET/OUTLET AT 24" CULVERT CROSSING
SCALE: 1/2" = 1'-0"



NOTE:
1. THE CONTRACTOR AT THEIR OPTION MAY SUBSTITUTE PRE-CAST CONCRETE DRAIN MANHOLE WITH ECCENTRIC CONE FOR HELICAL CAP DRAIN MANHOLE.

③ PRE-CAST CONC. ECCENTRIC DRAIN MANHOLE CONE
SCALE: 1" = 1'-0"

details/drain/drnh-cone.dwg



DETAIL – GRP LINING
NOT TO SCALE

LETTER	DESCRIPTION	DATE
③	ADDED ECCENTRIC DRAIN MANHOLE CONE DETAIL	10/22/08

ALAN L. UNEMORI LICENSED PROFESSIONAL ENGINEER NO. 9354-S HAWAII, U.S.A.

12/30/2008
SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER M/ OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

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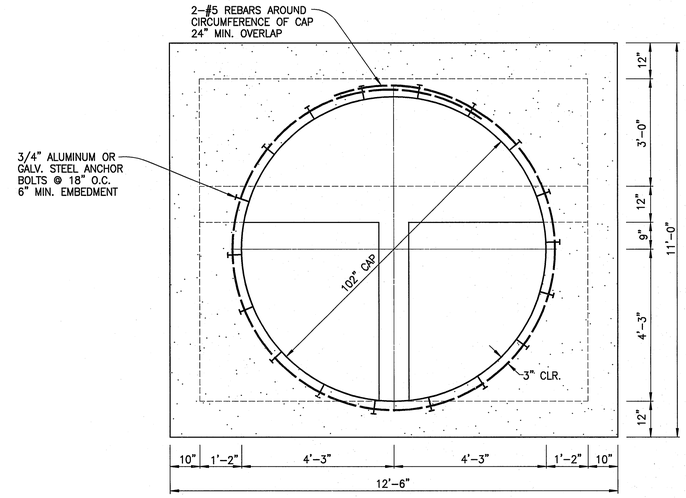
KAONOULU MARKET PLACE
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

ALU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	10.05 SHEET
WIS DRAWN BY	DTU APPROVED BY	10-10-05 DATE	OF SHEETS
AS NOTED SCALE			

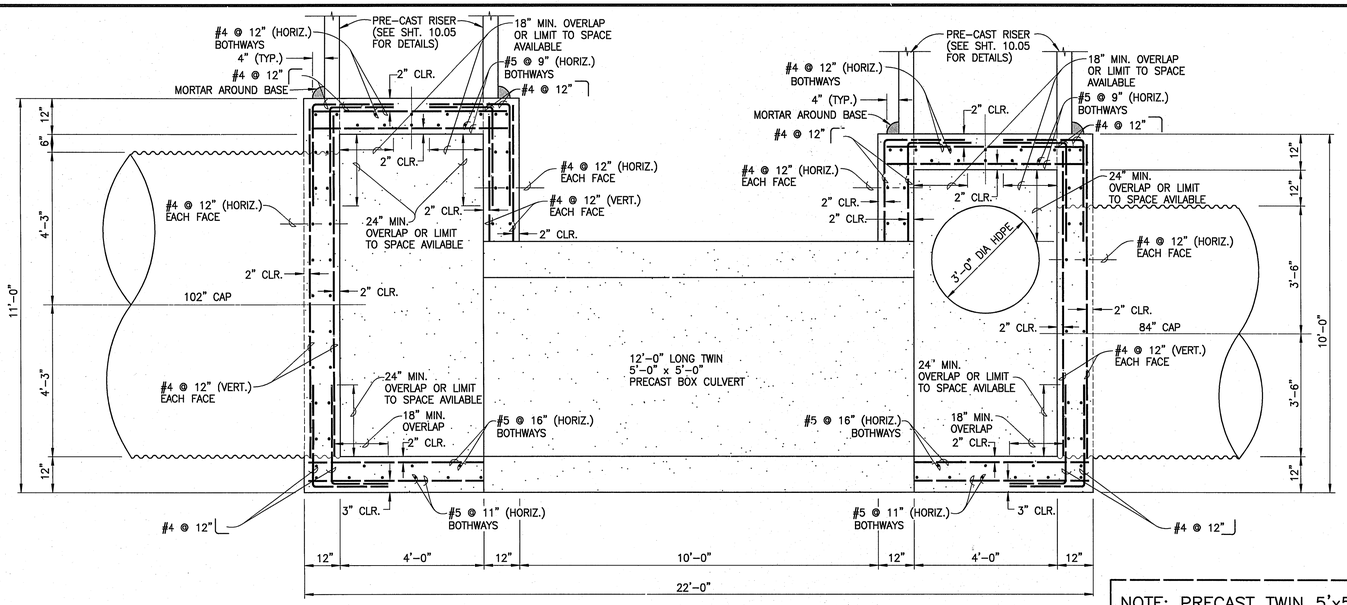
04010.10/dwg2004/conplans/det-drn0.dwg



SECTION "C"–"C"

BACK VIEW OF 84" TO 102" CAP TRANSITION STRUCTURE

SCALE: 1/2" = 1'–0"

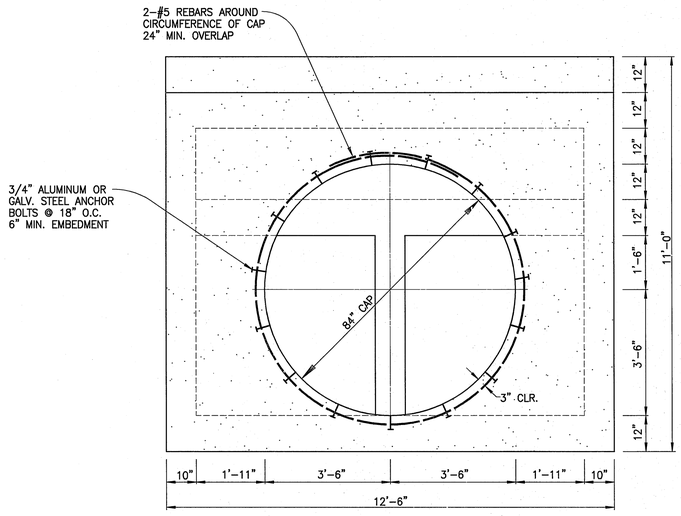


SECTION "A"–"A"

ELEVATION VIEW OF 84" CAP TO 102" CAP TRANSITION STRUCTURE #2

SCALE: 1/2" = 1'–0"

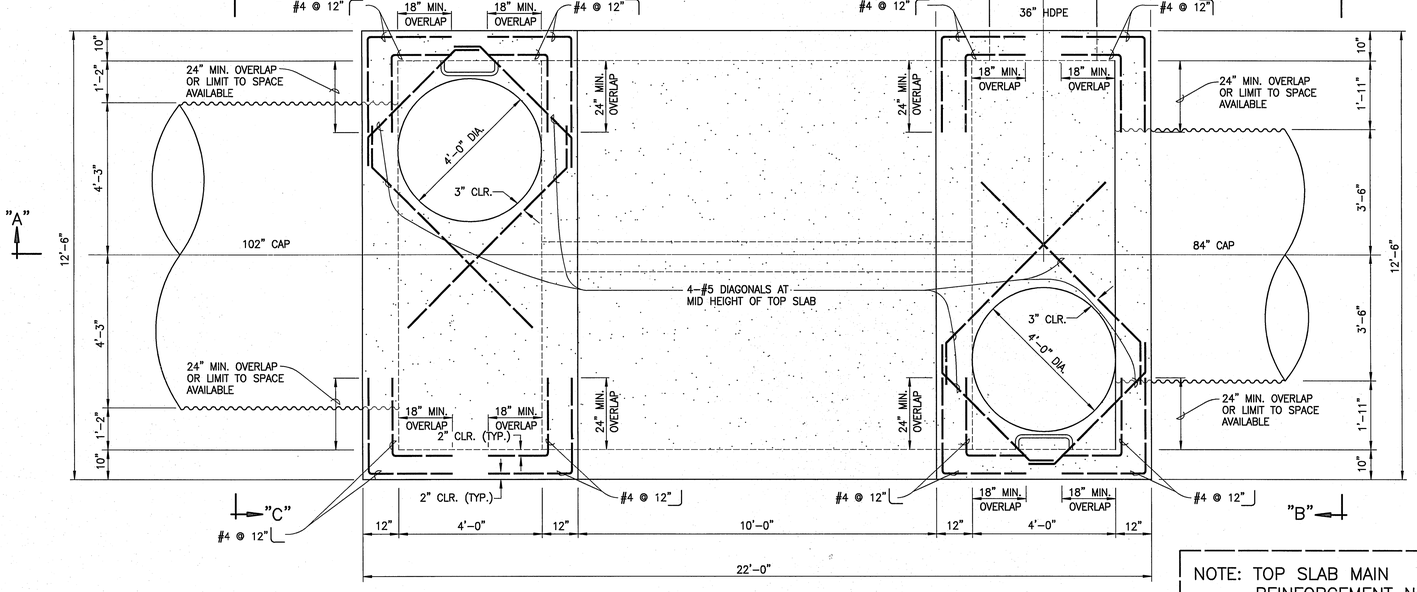
NOTE: PRECAST TWIN 5'x5' BOX CURRENT REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION "B"–"B"

FRONT VIEW OF 84" TO 102" CAP TRANSITION STRUCTURE

SCALE: 1/2" = 1'–0"



PLAN VIEW OF 84" CAP TO 102" CAP TRANSITION STRUCTURE #2

SCALE: 1/2" = 1'–0"

NOTE: TOP SLAB MAIN REINFORCEMENT NOT SHOWN FOR CLARITY

LETTER	DESCRIPTION	DATE
3	SHEET ADDED IN ITS ENTIRETY	10/22/08

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354–S
HAWAII, U.S.A.

SIGNATURE 10/30/2008 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16–115–2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE

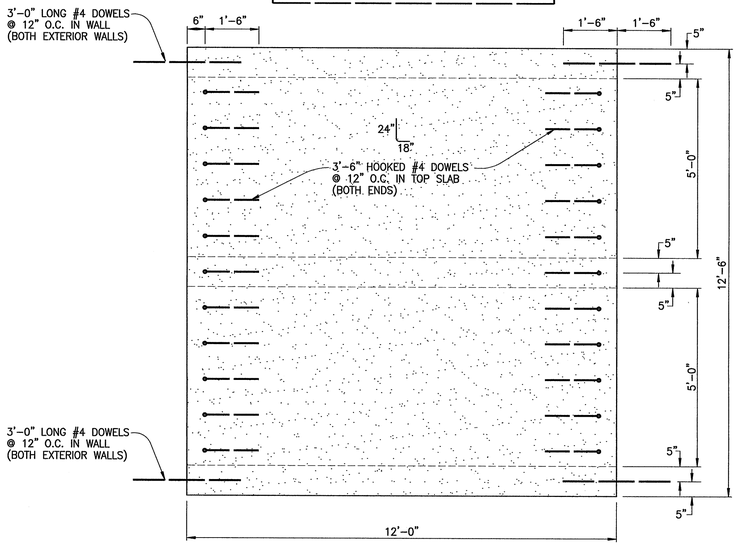
T.M.K.: (2) 2–2–02 : Por. of Par. 15 and 3–9–01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

ALU DESIGNED BY	WSU CHECKED BY	04010.10 JOB NUMBER	10.06 SHEET
WIS DRAWN BY	WSU APPROVED BY	10–10–05 DATE	OF SHEETS
AS NOTED SCALE			

04010.10/dwg2004/conplans/det–dtn0.dwg

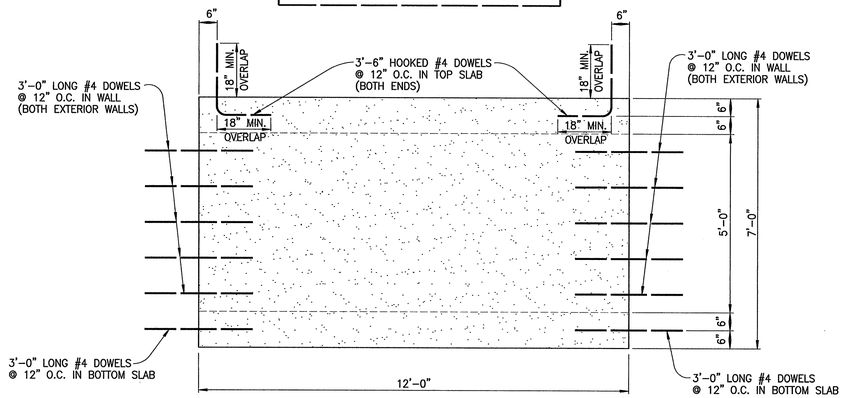
NOTE: TOP SLAB AND WALL REINFORCEMENT NOT SHOWN FOR CLARITY



REBARS FOR PRECAST TWIN 5' x 5' BOX CULVERT
TO 84" CAP AND 102" CAP CAST-IN-PLACE VAULTS

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

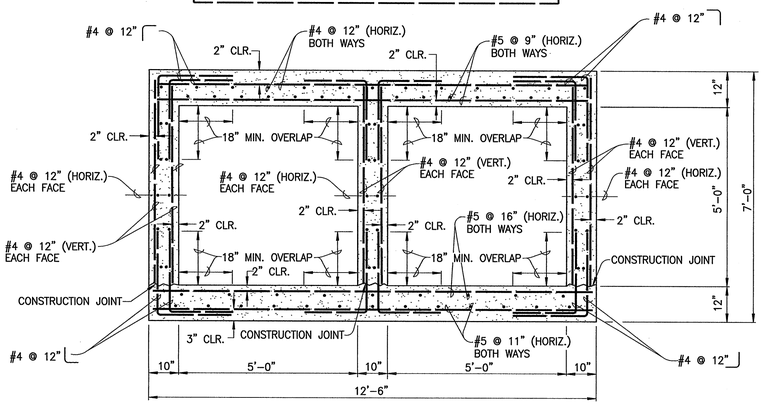
NOTE: TOP SLAB, WALL AND BOTTOM SLAB REINFORCEMENT NOT SHOWN FOR CLARITY



REBARS FOR PRECAST TWIN 5' x 5' BOX CULVERT
TO 84" CAP AND 102" CAP CAST-IN-PLACE VAULTS

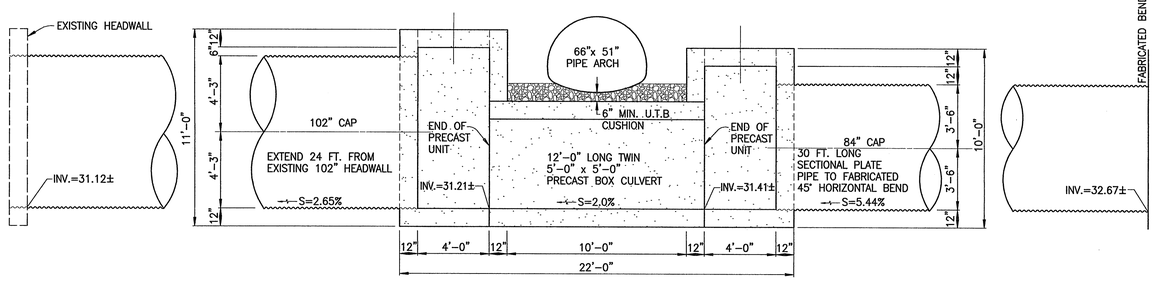
SCALE: 1/2" = 1'-0"

CONCRETE: f'_c = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60



REBARS IN PRECAST TWIN 5' x 5' BOX CULVERT

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



SECTION "A"-"A"

ELEVATION VIEW OF 84" CAP TO 102" CAP TRANSITION STRUCTURE #2

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

LETTER	DESCRIPTION	DATE
3	SHEET ADDED IN ITS ENTIRETY	10/22/08

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SIGNATURE 1/30/2009 DATE

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WARREN S. UNEMORI ENGINEERING, INC.
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2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

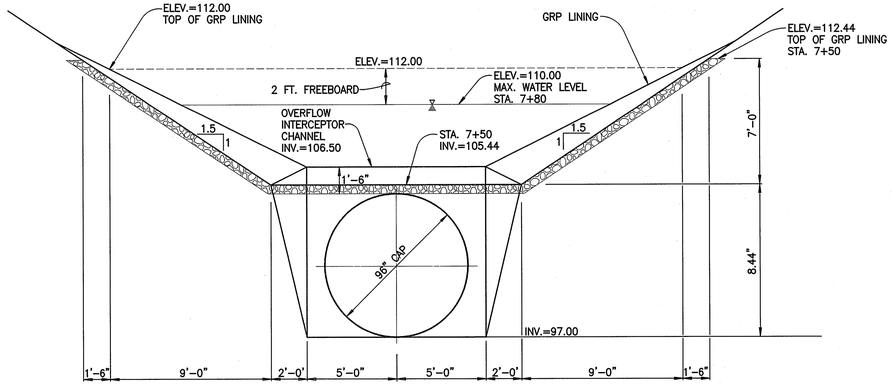
KAONOULU MARKET PLACE

T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

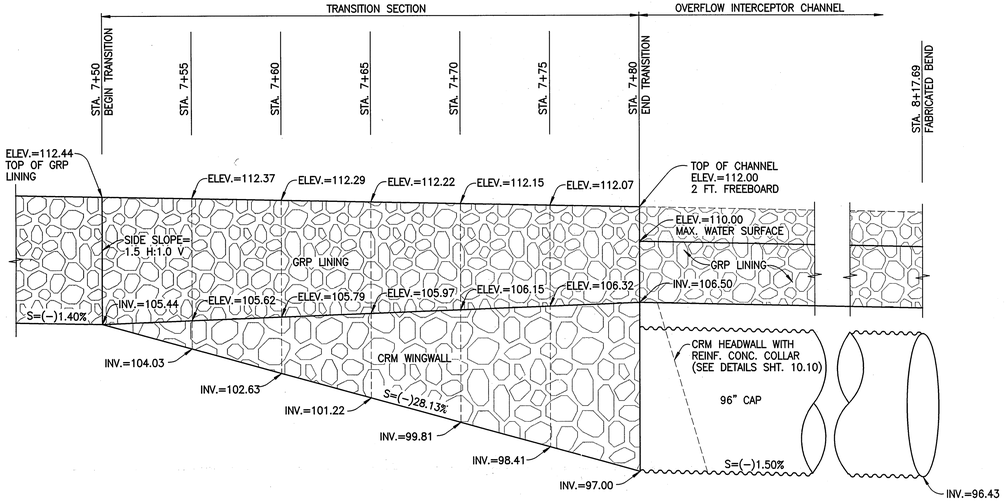
DESIGNED BY: ALU	CHECKED BY: DTU	04010.10 JOB NUMBER	10.07 SHEET
DRAWN BY: WIS	APPROVED BY: DTU		OF SHEETS
SCALE: AS NOTED	DATE: 10-10-05		

04010.10/dwg2004/contains/det-drn0.dwg



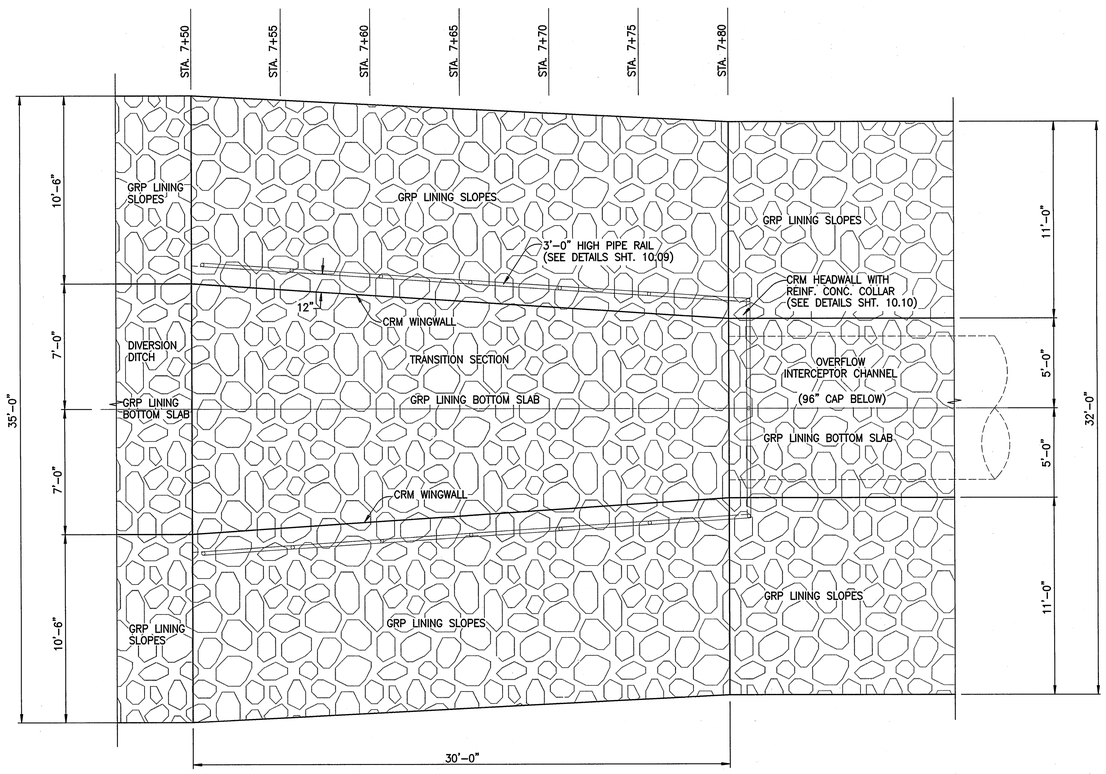
TRANSITION STRUCTURE #1 FROM STA. 7+50 TO STA. 7+80

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



SIDE ELEVATION OF TRANSITION STRUCTURE #1

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



PLAN VIEW OF TRANSITION STRUCTURE #1

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

LETTER	DESCRIPTION	DATE
3	SHEET ADDED IN ITS ENTIRETY	10/22/08

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

10/30/2009
SIGNATURE DATE

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WARREN S. UNEMORI ENGINEERING, INC.
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WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE

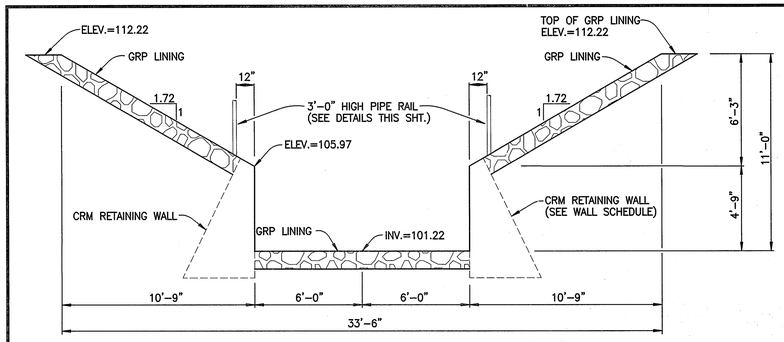
T.M.K.: (2) 3-9-01 : 16

KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

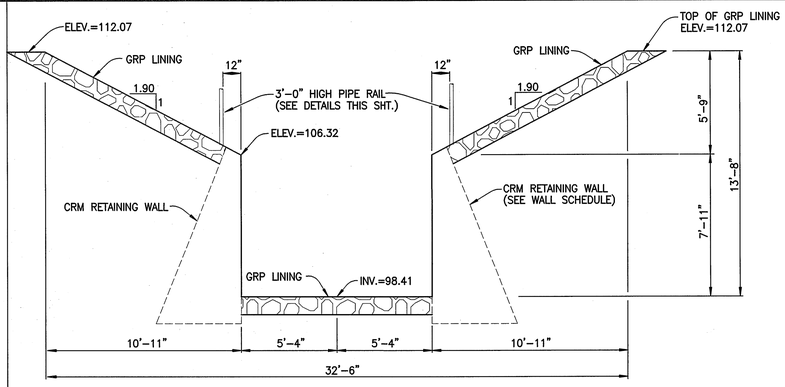
ALU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	10.08 SHEET
WIS DRAWN BY	DTU APPROVED BY	10-10-05 DATE	OF SHEETS
SCALE AS NOTED			

04010.10/dwg2004/conplans/det-drn0.dwg



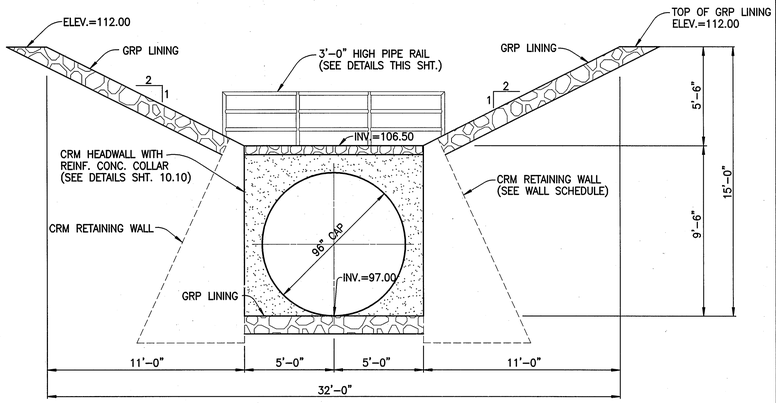
CROSS-SECTION AT STA. 7+65

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



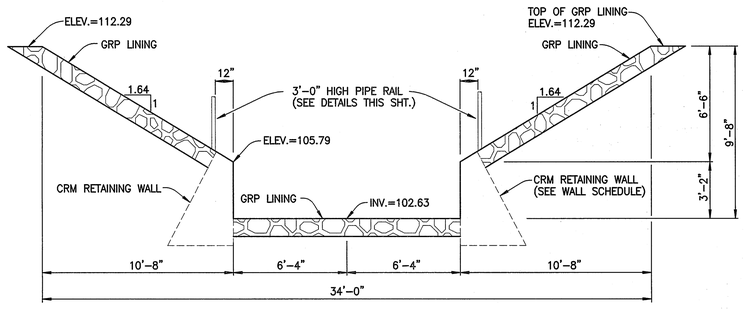
CROSS-SECTION AT STA. 7+75

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



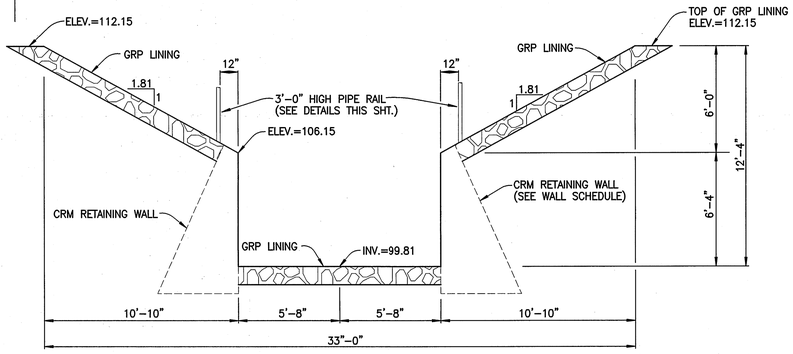
CROSS-SECTION AT STA. 7+80

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



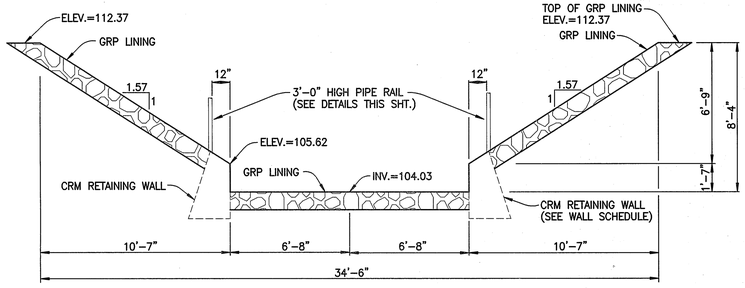
CROSS-SECTION AT STA. 7+60

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



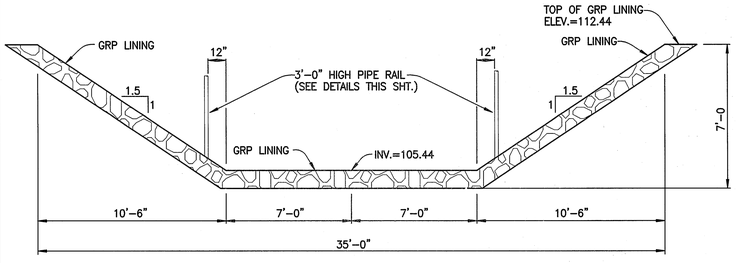
CROSS-SECTION AT STA. 7+70

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



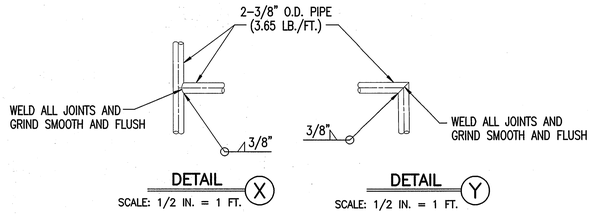
CROSS-SECTION AT STA. 7+55

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



CROSS-SECTION AT STA. 7+50

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

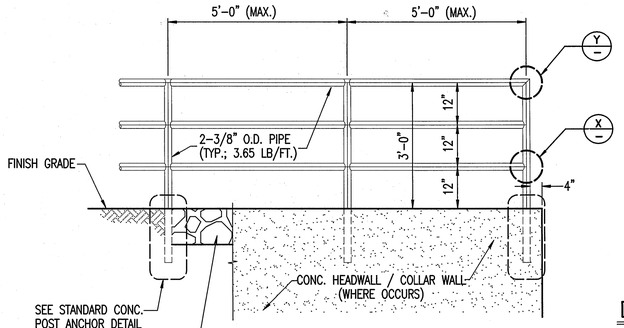


DETAIL (X)

SCALE: 1/2 IN. = 1 FT.

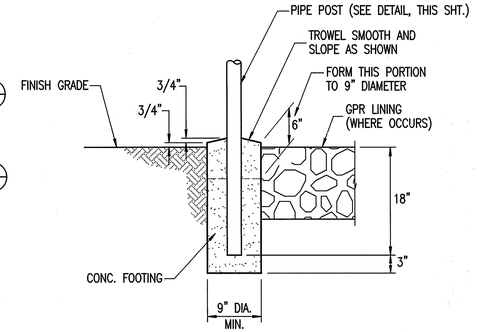
DETAIL (Y)

SCALE: 1/2 IN. = 1 FT.



DETAIL – PIPE RAIL

NOT TO SCALE



DETAIL – STANDARD CONCRETE POST ANCHOR

SCALE: 1 IN. = 1 FT.

DETAIL – REINF. CONC. POST ANCHOR

SCALE: 1 IN. = 1 FT.

NOTES:

1. RAILING SHALL BE HOT-DIPPED, GALVANIZED AFTER FABRICATION. WELDS & DAMAGED GALVANIZING SHALL BE COATED WITH APPROVED GALVANIZING REPAIR COMPOUND.
2. ALL MISCELLANEOUS ITEMS SHALL BE A.S.T.M. A36.
3. ALL ROUGH EDGES ON PIPE FRAME SHALL BE GROUND SMOOTH.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO ORDERING OF MATERIALS.
5. ALL END CAPS, WHERE REQ'D., SHALL BE WELDED METAL PLATES. FRICTION FIT CAPS SHALL NOT BE PERMITTED.

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SIGNATURE 10/30/2009 DATE

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LETTER	DESCRIPTION	DATE

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

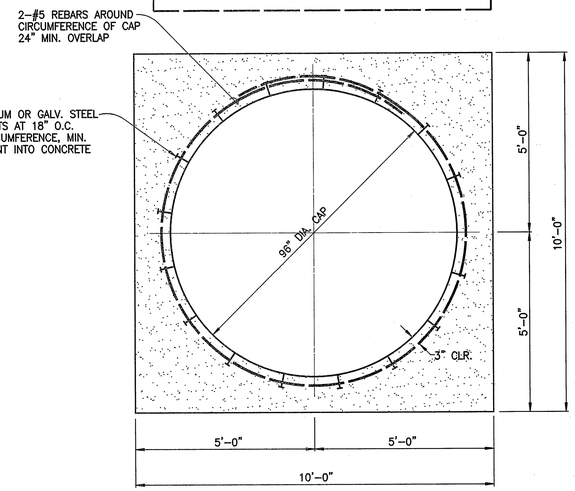
KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE DRAINAGE DETAILS

DESIGNED BY: ALU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 10.09
DRAWN BY: WIS	APPROVED BY: DTU		
SCALE: AS NOTED	DATE: 10-10-05		OF SHEETS

04010.10/dwg2004/contains/det-drn0.dwg

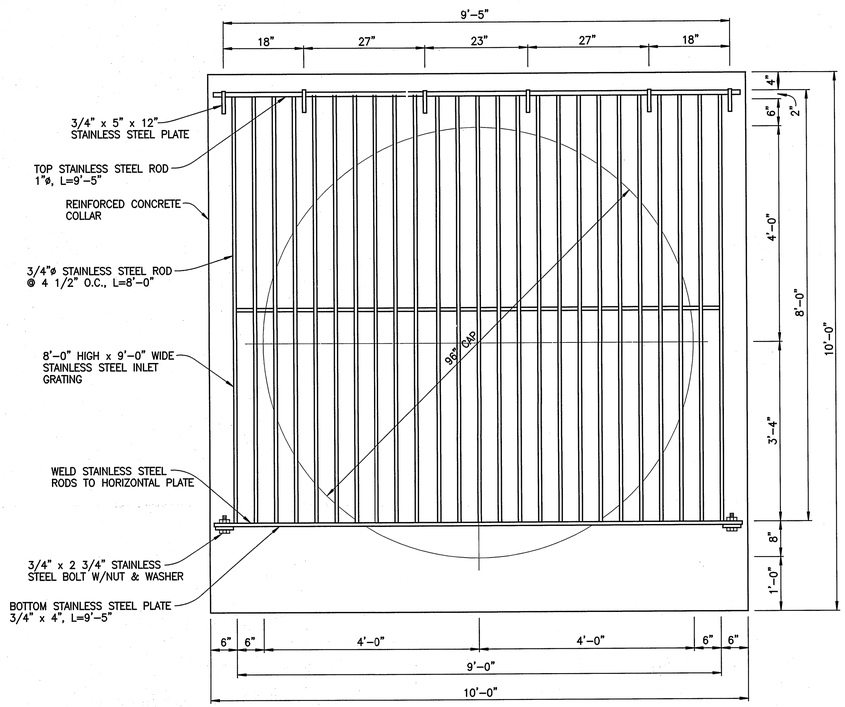
NOTE: COLLAR MAIN REINFORCEMENT NOT SHOWN FOR CLARITY (SEE DETS. THIS SHT.)



FRONT ELEVATION VIEW OF CONCRETE COLLAR CIRCUMFERENTIAL REINFORCEMENT

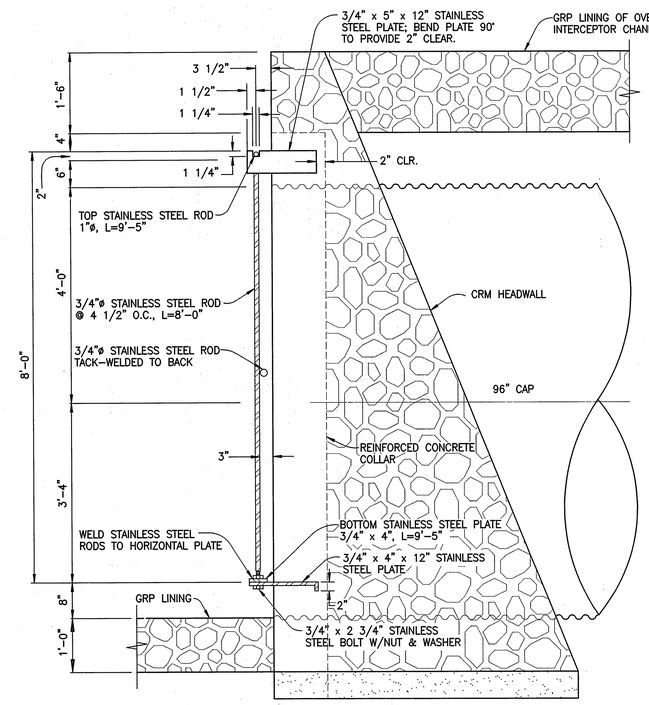
SCALE: 1/2" = 1'–0"

CONCRETE: f'_c = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60



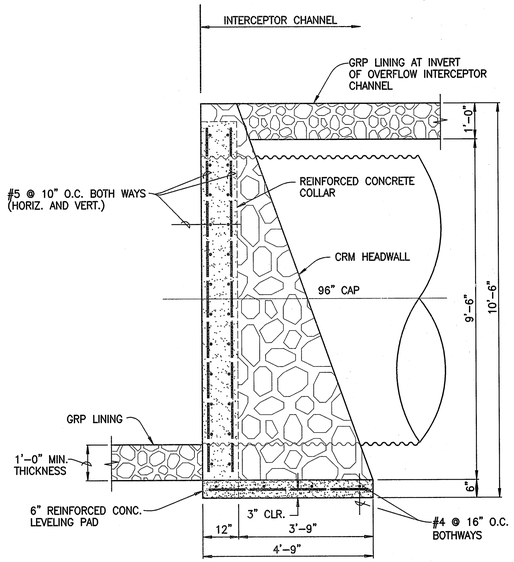
INLET GRATING GEOMETRY AND LOCATION ON REINFORCED CONCRETE COLLAR

SCALE: 3/4" = 1'–0"



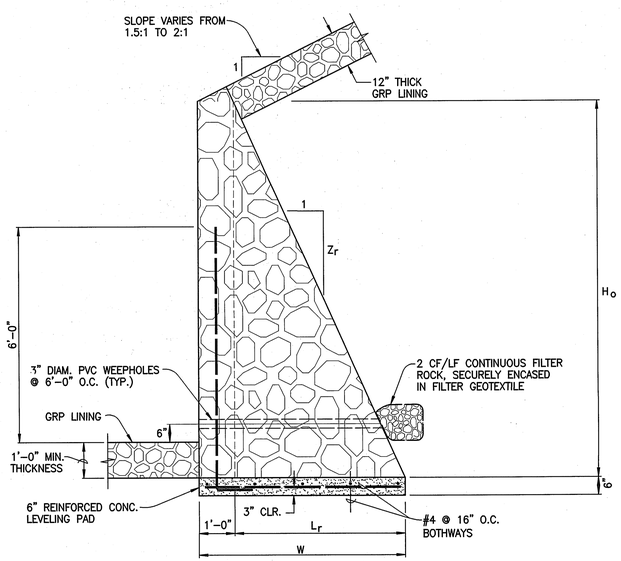
GEOMETRY AND LOCATION OF INLET GRATING SUPPORTS

SCALE: 3/4" = 1'–0"



CROSS–SECTION OF CRM HEADWALL

SCALE: 1/2" = 1'–0"



CROSS–SECTION OF CRM WINGWALL

SCALE: 1/2" = 1'–0"

Component	Sta	Wall Height, Ho (ft)	Backslope	Zr	Lr	W
Wingwall	7+50	0	1.5:1	N/A	N/A	N/A
	7+55	2' – 6"	1.57:1	2.00	1' – 3"	2' – 3"
	7+60	4' – 2"	1.64:1	1.65	2' – 7"	3' – 7"
	7+65	5' – 9"	1.72:1	1.60	3' – 8"	4' – 8"
	7+70	7' – 4"	1.81:1	1.60	4' – 9"	5' – 9"
	7+75	8' – 11"	1.90:1	1.65	5' – 6"	6' – 6"
	7+80	10' – 6"	2.0:1	2.25	4' – 9"	5' – 9"
Headwall	7+80	10' – 6"	Level	2.90	3' – 9"	4' – 9"

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354–S
HAWAII, U.S.A.

SIGNATURE 12/30/2009 DATE

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LETTER	DESCRIPTION	DATE

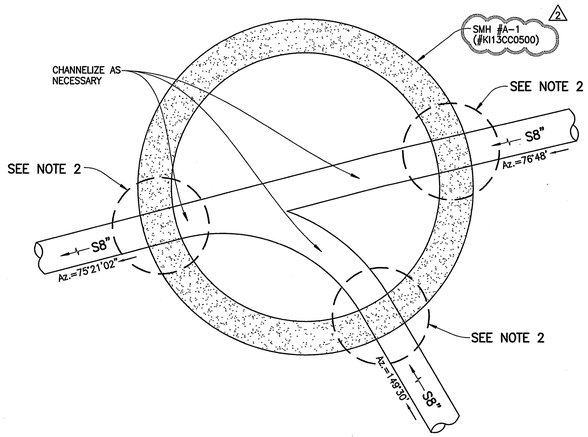
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3–9–01 : 16
KIHEI, MAUI, HAWAII

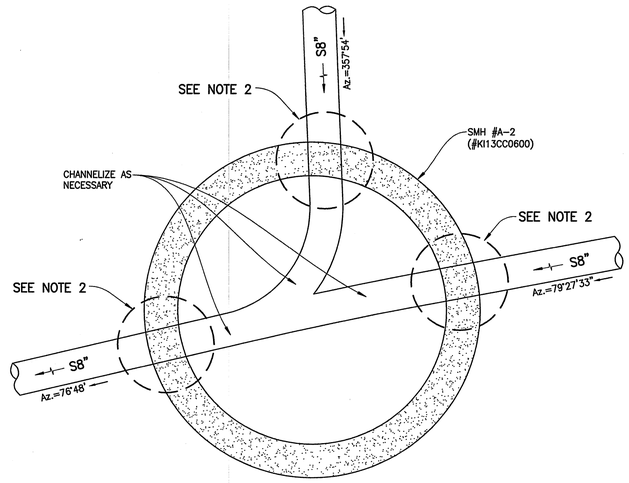
TITLE DRAINAGE DETAILS

DESIGNED BY: ALU	CHECKED BY: DTU	04010.10 JOB NUMBER	10.10 SHEET
DRAWN BY: WIS	APPROVED BY: DTU	10–10–05 DATE	OF SHEETS
SCALE: AS NOTED			

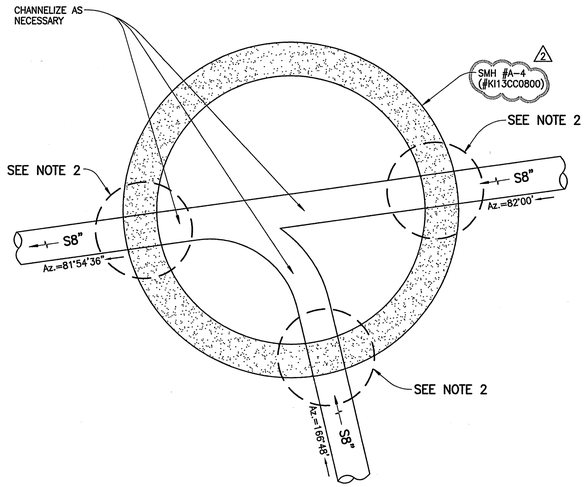
04010.10/dwg2004/contains/det-dm5.dwg



9 DETAIL – CHANNELIZATION OF
SMH #A-1 (#KI13CC0500)
NOT TO SCALE



8 DETAIL – CHANNELIZATION OF
SMH #A-2 (#KI13CC0600)
NOT TO SCALE



DETAIL – CHANNELIZATION OF
SMH #A-4 (#KI13CC0800)
NOT TO SCALE

NOTES:

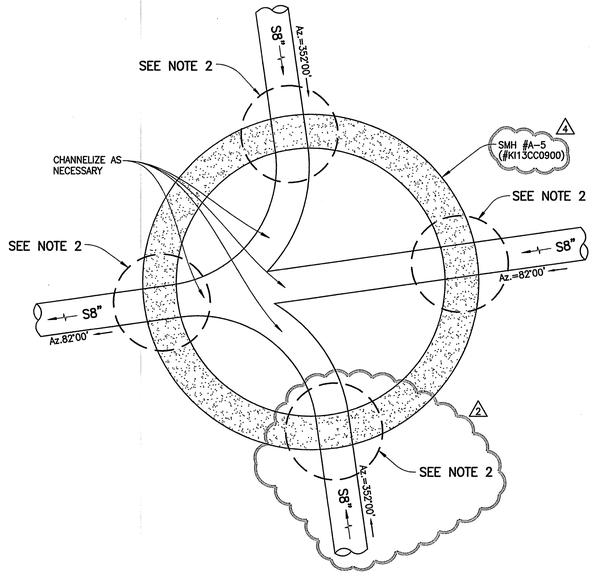
1. FOR CONNECTION OF NEW SEWERLINE INTO EXISTING MANHOLE, CONTRACTOR SHALL USE A-LOK X-CEL GASKET FIELD SLEEVE AS DISTRIBUTED BY WALKER INDUSTRIES LTD., OR APPROVED EQUAL. INSTALLATION SHALL BE AS RECOMMENDED BY MANUFACTURER.

2. FOR ALL NEW SEWERLINE / NEW MANHOLE CONSTRUCTION, CONTRACTOR SHALL USE A-LOK X-CEL GASKET AS DISTRIBUTED BY WALKER INDUSTRIES LTD., OR APPROVED EQUAL. INSTALLATION SHALL BE AS RECOMMENDED BY MANUFACTURER.

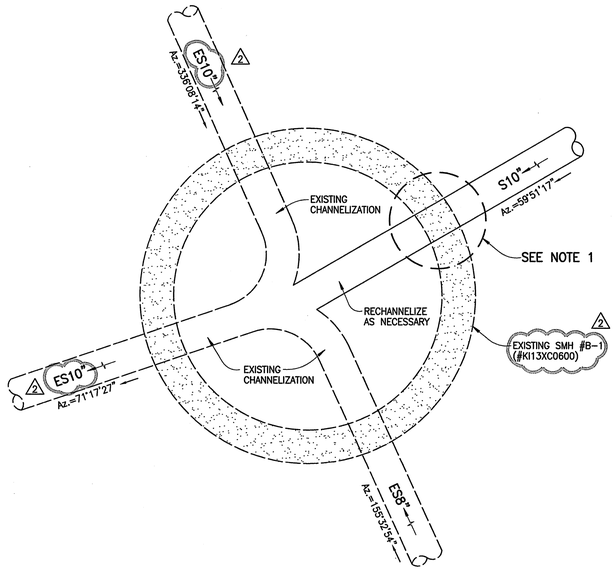
STANDARD SEWER DETAILS

THE FOLLOWING DETAILS AS SHOWN ON "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, STATE OF HAWAII", ARE SPECIFICALLY REFERENCED WITHIN THESE PLANS AND SHALL BE CONSIDERED PART OF THE CONSTRUCTION DRAWINGS. (THIS SHALL NOT BE CONSTRUED TO RELIEVE CONTRACTOR FROM COMPLYING WITH ALL PERTINENT PARTS OF THE AFOREMENTIONED LIST, STANDARD DETAILS AND STANDARDS.)

PLATE	CONTENTS
S-6	LATERALS
S-7	ADVANCE RISER CONNECTION
S-9	CHIMNEY
S-10	INDEX TO SEWER MANHOLE DETAILS
S-11, S-12	MANHOLE NOTES
S-13	PRE-CAST CONCRETE PLAIN MANHOLE
S-15	PRE-CAST CONCRETE SHALLOW DROP MANHOLE
S-16	PRE-CAST CONCRETE SHALLOW DROP MANHOLE-BUTT JOINT DETAILS
S-22	PRE-CAST CONCRETE ECCENTRIC MANHOLE CONE
S-31	MANHOLE COVER-TYPE SA
S-32	MANHOLE FRAME-TYPE SA
S-47	PVC PIPE-BEDDING REQUIREMENTS
S-48	PVC PIPE-RESILIENT MANHOLE CONNECTION



DETAIL – CHANNELIZATION OF
SMH #A-5 (#KI13CC0900) 4
NOT TO SCALE



DETAIL – RE-CHANNELIZATION
OF EXISTING SMH #B-1 (#KI13XC0600)
NOT TO SCALE

LETTER	DESCRIPTION	DATE
9	REMOVED LOT 1 SEWER LATERAL AT SMH #A-1 PER WWRD COMMENT	11/28/11
8	ADJUSTMENTS TO LOT 1 LATERALS	10/18/11
4	REVISED PER WWRD COMMENTS	12/12/08
2	REVISED PER WWRD COMMENTS	10/01/08

LICENSED PROFESSIONAL ENGINEER
WARREN T. UNEMORI
NO. 7937-C
HAWAII, U.S.A.

SIGNATURE 11/27/2011 DATE

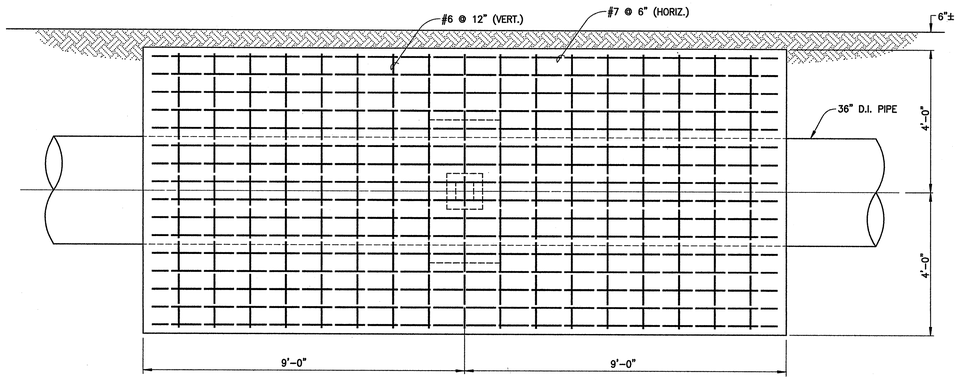
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE SEWER DETAILS

DESIGNED BY: DTU	CHECKED BY: DTU	04010.10 JOB NUMBER	11.01 SHEET
DRAWN BY: WS	APPROVED BY: DTU	10-10-05 DATE	OF SHEETS
SCALE: AS NOTED			

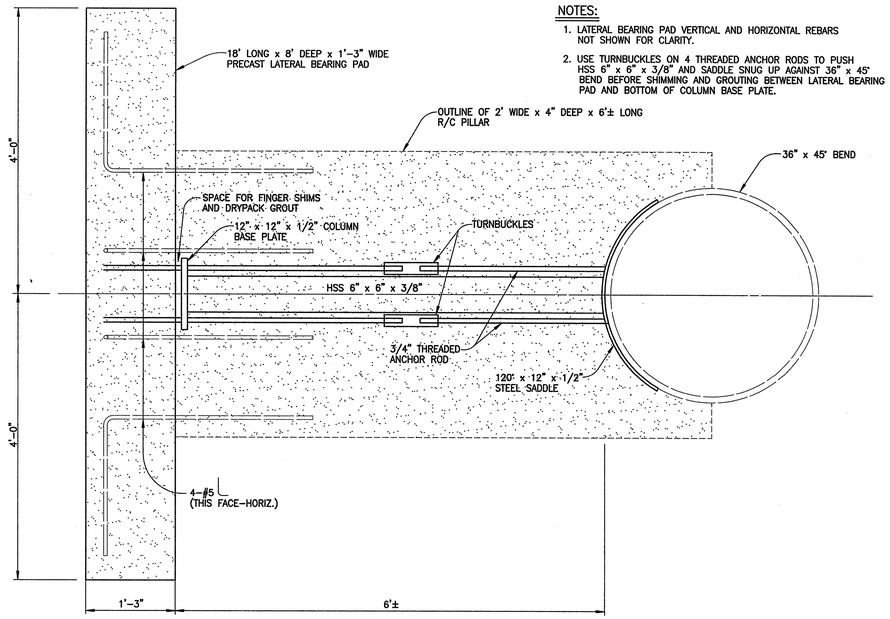


SECTION "B"– "B" BACK ELEVATION VIEW

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

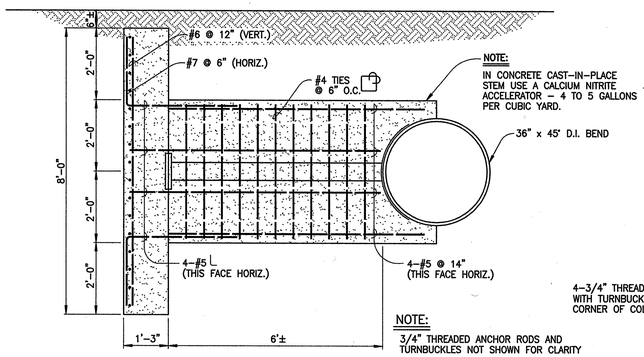
INSTALLATION PROCEDURE FOR 36" X 45° BEND HYBRID THRUST BEAM WITH THREADED ROD AND TURNBUCKLES.

1. PRECAST 18'-0" X 8'-0" X 1'-3" THICK BEARING PAD WITH REINFORCEMENT SHOWN, INCLUDING THE L-SHAPED #5 COLUMN REINFORCEMENT, 4 – 3/4" THREADED ANCHOR RODS (BOTTOM HALF), AND 12" X 12" X 1/2" THREADED ANCHOR ROD BASEPLATE.
2. MANUFACTURE THE 120° X 12" X 1/2" SADDLE WELDED TO THE HSS 6" X 6" X 3/8" WHOSE BASE IS WELDED TO A 12" X 12" X 1/2" COLUMN BASEPLATE.
3. ALSO WELD THE 4 – 3/4" THREADED ANCHOR RODS (TOP HALF) TO THE SADDLE.
4. ASSEMBLE THE HSS 6" X 6" X 3/8" WITH SADDLE AND THREADED RODS (TOP HALF) TO THE PRECAST 18'-0" X 8'-0" X 1'-3" BEARING PAD WITH USING THE TURNBUCKLES TO CONNECT TO THE THREADED RODS (BOTTOM HALF). THIS CAN BE DONE EITHER BEFORE TRANSPORT TO THE FIELD OR ONCE IN THE FIELD.
5. IN THE FIELD INSTALL THE 36" X 45° D.I. BEND.
6. INSTALL THE BEARING PAD PLUS HSS WITH SADDLE ASSEMBLY WITHIN A FEW INCHES OF THE BASE OF THE 36" X 45° D.I. BEND.
7. USE THE TURNBUCKLES TO ADJUST THE LENGTH OF THE HSS STRUT ASSEMBLY TO FIT SNUGLY AGAINST THE BASE OF THE 36" X 45° BEND.
8. INSERT FINGER SHIMS TO SUPPORT THE BASE PLATE FLUSH AGAINST THE PRECAST BEARING PAD.
9. ADD DRY PACK GROUT BETWEEN THE BASE PLATE AND THE PRECAST BEARING PAD.
10. COMPACT AND BACKFILL THE BEARING SIDE OF THE PRECAST BEARING PAD TO SUPPORT THE THRUST OF THE 36" X 45° BEND.
11. BEFORE (OR AFTER) THE LIVE CONNECTION IS MADE AND THE 36" D.I. WATERLINE IS FULLY OPERATIONAL, ADD THE REINFORCEMENT REQUIRED FOR THE CAST-IN-PLACE CONCRETE STEM, INCLUDING THE 10 – #5 COLUMN BARS AND THE #4 COLUMN TIES @ 6" O.C.
12. FORM AND CAST-IN-PLACE THE CONCRETE PEDESTAL.
13. COMPACT AND BACKFILL THE CONCRETE PEDESTAL AND 36" X 45° BEND ASSEMBLY.



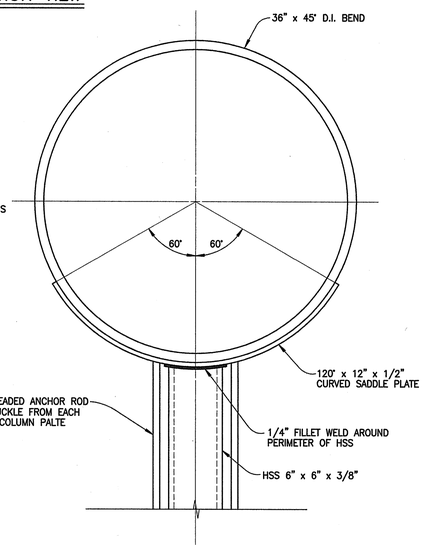
DETAILS OF 3/4" THREADED ANCHOR RODS WITH TURNBUCKLES, COLUMN BASE PLATE AND 120° x 12" x 1/2" STEEL SADDLE SURROUNDING HSS x 6" x 6" x 3/8"

SCALE: 1" = 1'-0"



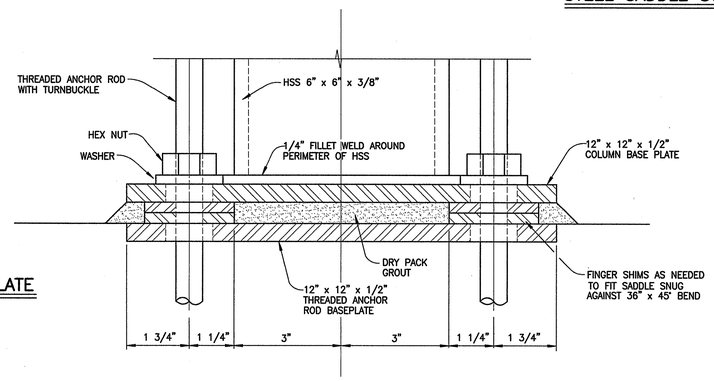
SECTION "A"– "A" SIDE ELEVATION VIEW

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



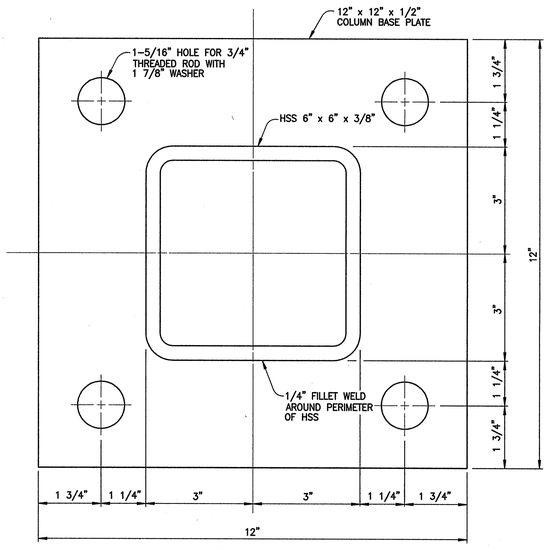
CROSS–SECTION OF 120° x 12" x 1/2" CURVED SADDLE PLATE

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



COLUMN BASE PLATE ASSEMBLY

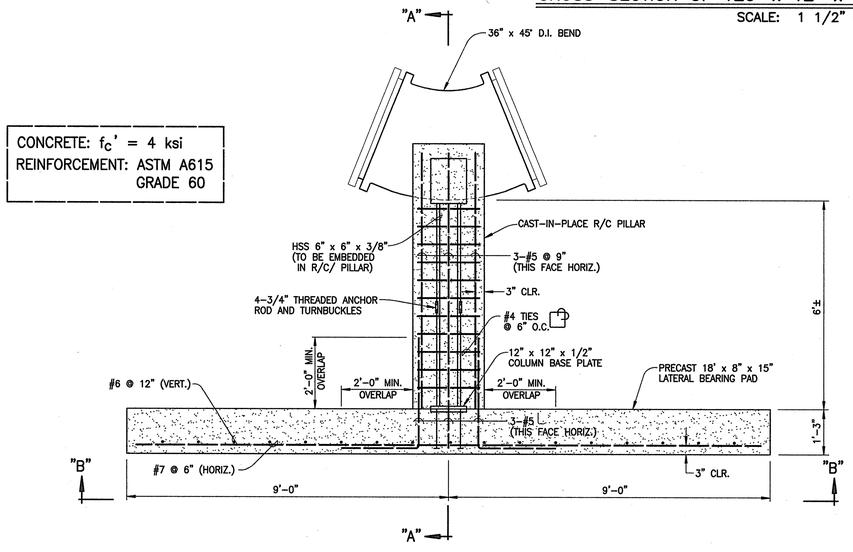
SCALE: 1/2" = 1"



DETAILS OF COLUMN BASE PLATE

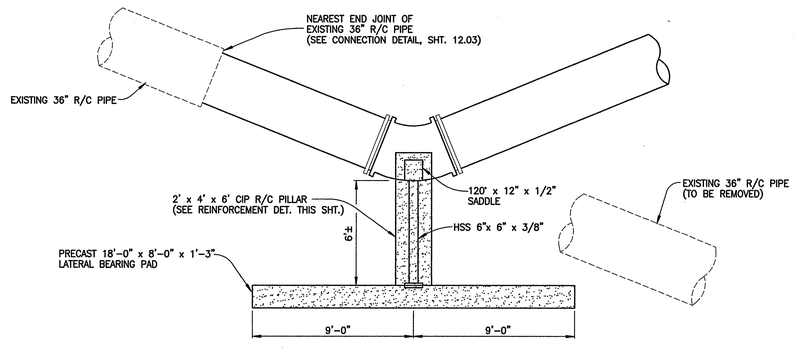
SCALE: 1/2" = 1"

CONCRETE: f_c' = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60



PLAN VIEW OF 36" x 45° BEND HYBRID THRUST BEAM AT STA. 600+50±

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



PLAN VIEW SHOWING LOCATION OF 36" x 45° BEND CONNECTING TO EXISTING 36" R/C PIPE STA. 600+50±

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

1	REVISED PER DWS COMMENTS	07/02/12
LETTER	DESCRIPTION	DATE

ALAN L. UNEMORI LICENSED PROFESSIONAL ENGINEER NO. 9354-S HAWAII, U.S.A.

SIGNATURE 7/2/2012 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

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2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE: DETAILS OF REINFORCED CONCRETE ANCHOR AND THRUST BLOCKS FOR RELOCATED 36" WATERLINE

DTU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	12.01 SHEET
WIS DRAWN BY	DTU APPROVED BY	10-10-05 DATE	OF SHEETS
SCALE AS NOTED			

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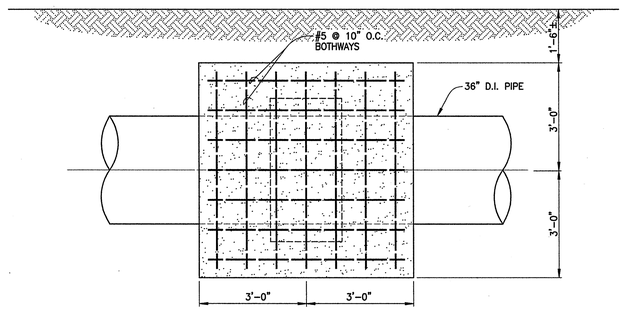
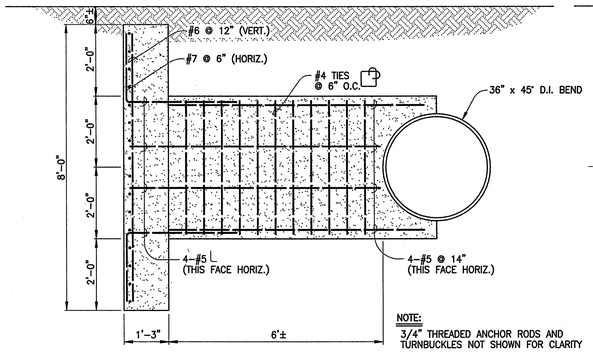
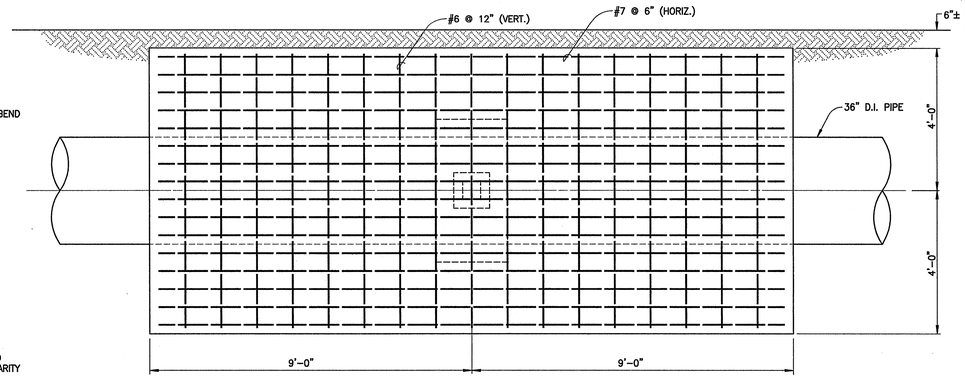


SECTION "B"–"B" BACK ELEVATION VIEW
SCALE: 1/2" = 1'-0"

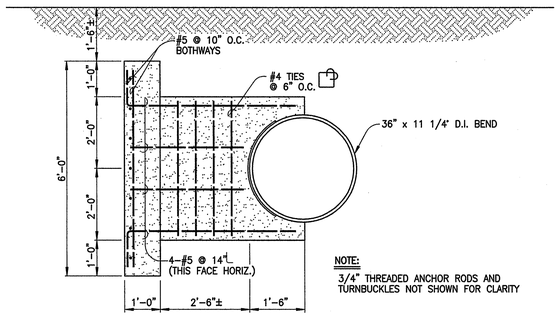


SECTION "D"–"D" SIDE ELEVATION VIEW
SCALE: 1/2" = 1'-0"

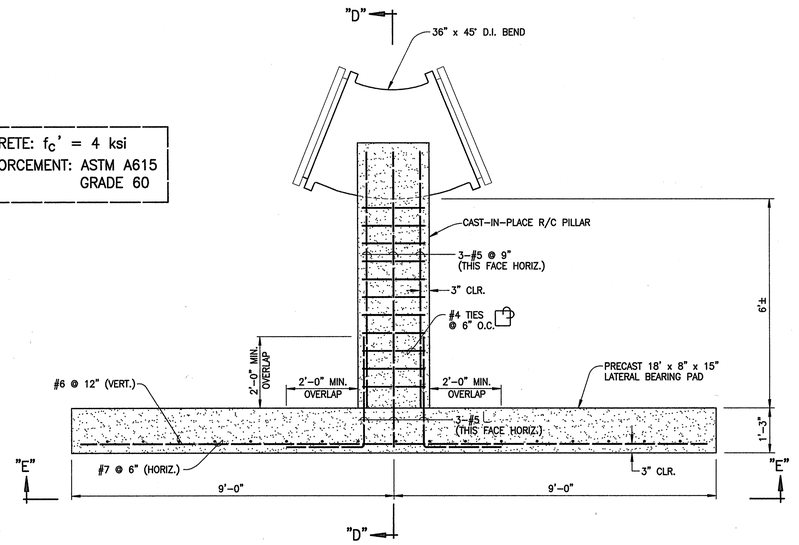


SECTION "E"–"E" BACK ELEVATION VIEW
SCALE: 1/2" = 1'-0"

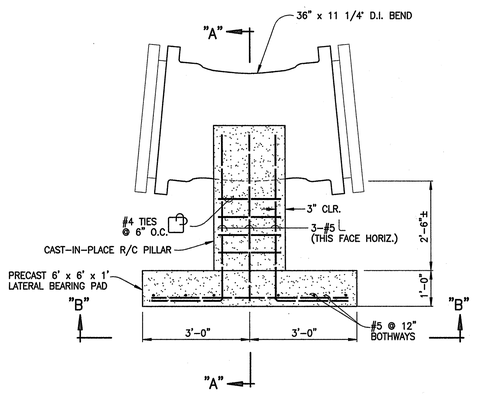
CONCRETE: f_c' = 4 ksi
REINFORCEMENT: ASTM A615
GRADE 60



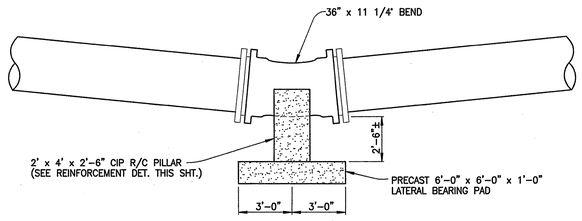
SECTION "A"–"A" SIDE ELEVATION VIEW
SCALE: 1/2" = 1'-0"



PLAN VIEW OF 36" x 45° BEND STANDARD CAST-IN-PLACE THRUST BEAM
SCALE: 1/2" = 1'-0"



PLAN VIEW OF 36" x 11 1/4° BEND THRUST BEAM
SCALE: 1/2" = 1'-0"



PLAN VIEW SHOWING LOCATION OF 36" x 11 1/4° BEND AT STA. 0+50.21
SCALE: 1/4" = 1'-0"

LETTER	DESCRIPTION	DATE
6	REVISED PER DWS COMMENTS	10/16/09

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

6/6/2012
SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS".

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KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE DETAILS OF REINFORCED CONCRETE THRUST BEAMS FOR RELOCATED 36" WATERLINE

DESIGNED BY: DTU	CHECKED BY: DTU	04010.10 JOB NUMBER	12.02 SHEET
DRAWN BY: WIS	APPROVED BY: DTU		
SCALE: AS NOTED		10-10-05 DATE	OF SHEETS

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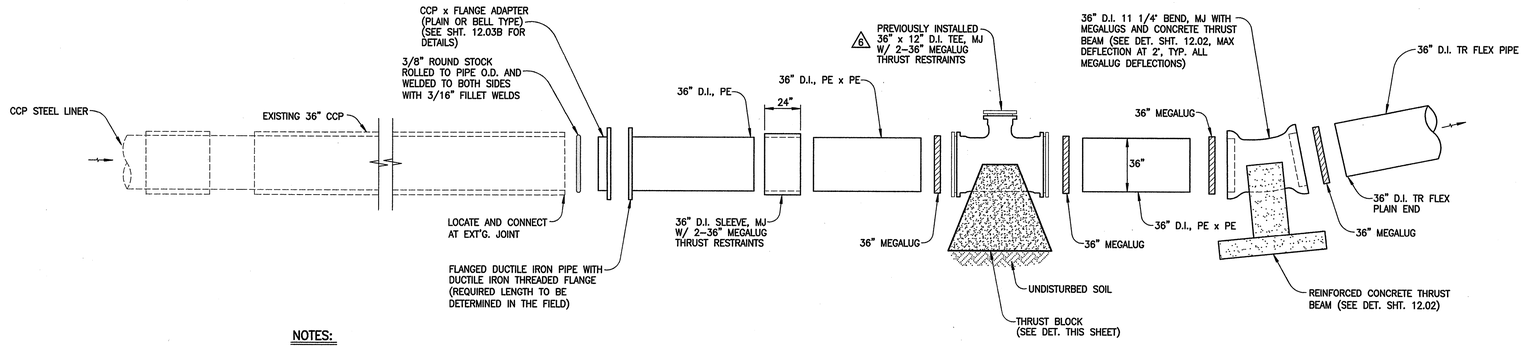


NOTES:

1. BEFORE CONSTRUCTION, CONTRACTOR TO DO FIELD VERIFICATION OF EXISTING PIPE, VERIFY JOINT LOCATIONS, ETC.
2. ANY CHANGES DUE TO FIELD CONDITIONS MUST BE APPROVED BY DWS BEFORE WORK CAN CONTINUE.

SUGGESTED CONSTRUCTION SEQUENCE FOR LIVE CONNECTION TO EXISTING 36" CCP PIPE

PRE-LIVE INSTALLATION ACTIVITIES

(1) CHLORINATE AND PRESSURE TEST RELOCATED LINE FROM UPSTREAM END TO DOWNSTREAM END OF PIPE.

LIVE INSTALLATION ACTIVITIES

(2) CLOSE 36" CCP LINE (2 LOCATIONS UPSTREAM AND DOWNSTREAM OF PROJECT SITE)

(3) CUT 36" LINE

(4) DRAIN 36" LINE CONTENTS INTO TEMPORARY RETENTION BASIN

(5) WELD FLANGE ADAPTORS TO CUT END OF 36" CCP LINE (2 LOCATIONS)

(6) INSTALL 36" X 45 DEGREE BEND

(7) COMPLETE THRUST BEAM CONSTRUCTION AT BEND

(8) PRESSURE TEST AND CHLORINATE 36" PIPE FITTINGS AS NECESSARY

(9) CONNECT 36" JUST INSTALLED LINE TO PRE-INSTALLED RELOCATED LINE (2 LOCATIONS)

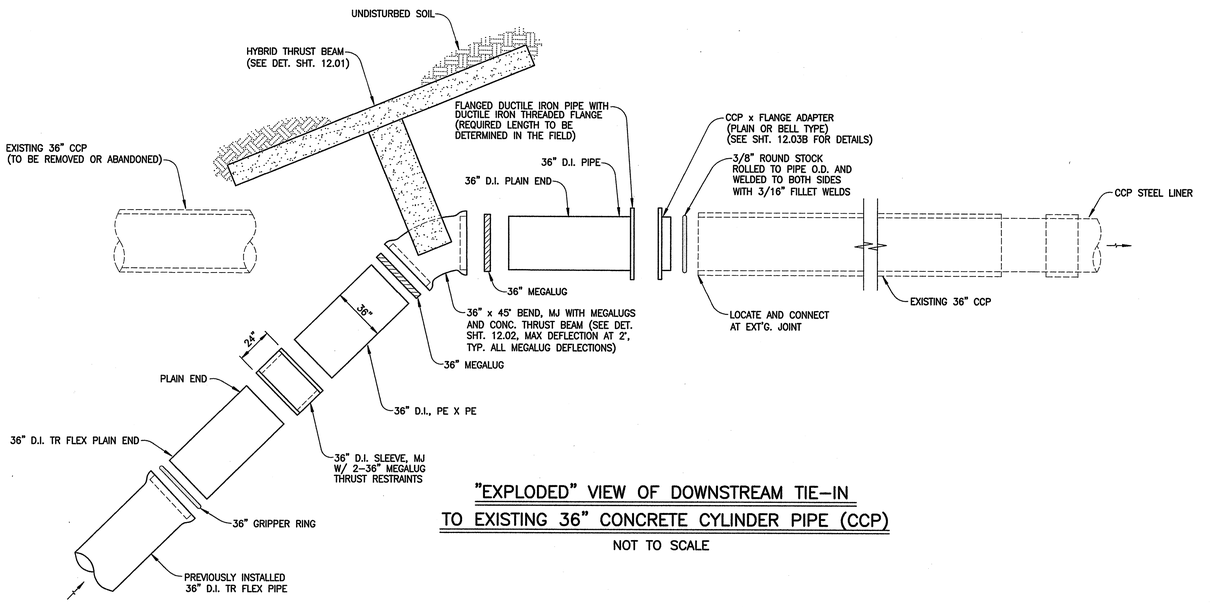
(10) OPEN 36" CCP LINE, CHECK FOR LEAKS

POST-LIVE INSTALLATION ACTIVITIES

(11) ABANDON/REMOVE ONSITE 36" CCP LINE

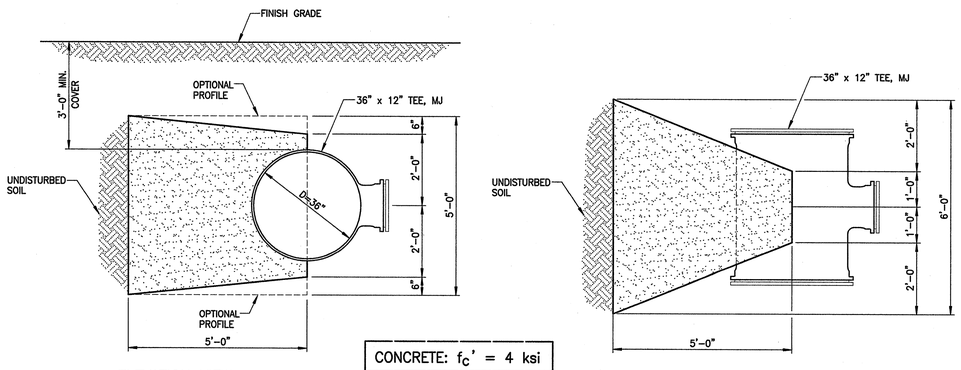
"EXPLODED" VIEW OF UPSTREAM TIE-IN TO EXISTING 36" CONCRETE CYLINDER PIPE (CCP)

NOT TO SCALE



"EXPLODED" VIEW OF DOWNSTREAM TIE-IN TO EXISTING 36" CONCRETE CYLINDER PIPE (CCP)

NOT TO SCALE



THRUST BLOCK GEOMETRY FOR 36" X 12" TEE AT STA. 0+24

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

12	REVISED PER DWS COMMENTS	07/02/12
6	REVISED PER DWS COMMENTS	12/01/09
LETTER	DESCRIPTION	DATE

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SIGNATURE 12/12/12 DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

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2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE

T.M.K.: (2) 3-9-01 : 16

KIHEI, MAUI, HAWAII

DETAILS OF FITTINGS AT TIE-IN TO EXISTING 36" CONCRETE CYLINDER PIPE

DESIGNED BY: DTU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 12.03
DRAWN BY: WIS	APPROVED BY: DTU	DATE: 10-10-05	OF SHEETS
SCALE: AS NOTED			

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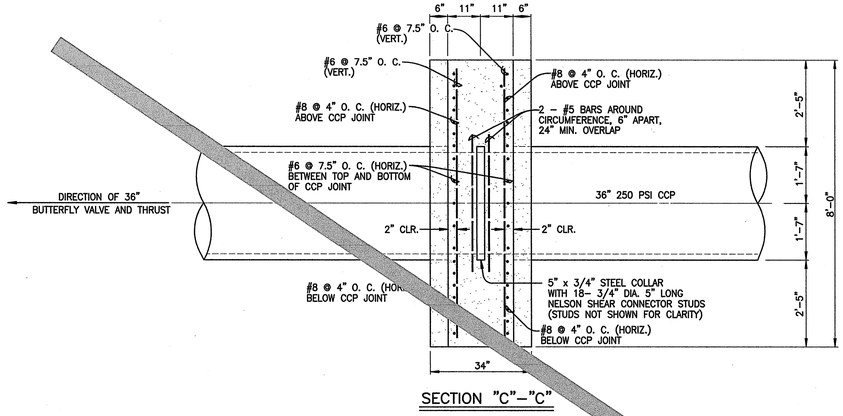
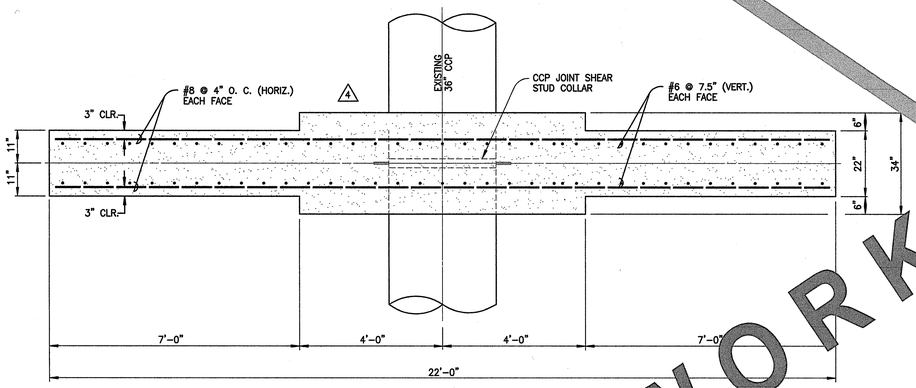


SECTION "C"–"C"

GEOMETRY OF THRUST BEAM FOR 36" BUTTERFLY VALVE

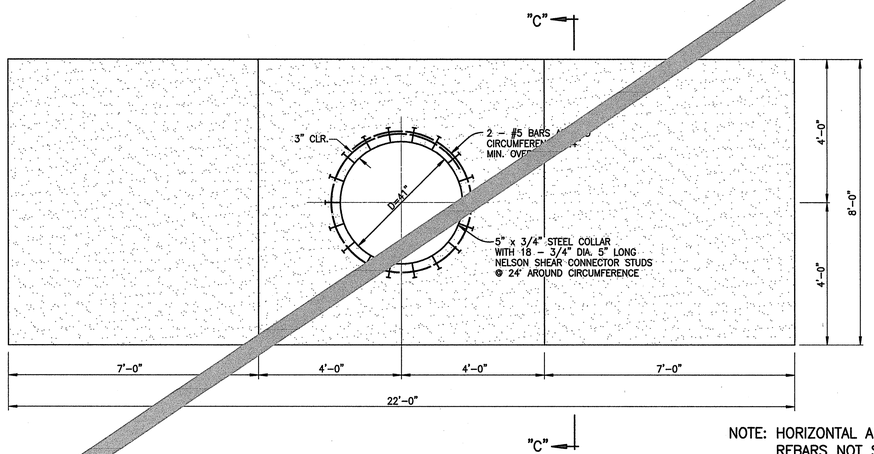
SCALE: 1/2" = 1'-0"



PLAN VIEW

GEOMETRY OF THRUST BEAM FOR 36" BUTTERFLY VALVE

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



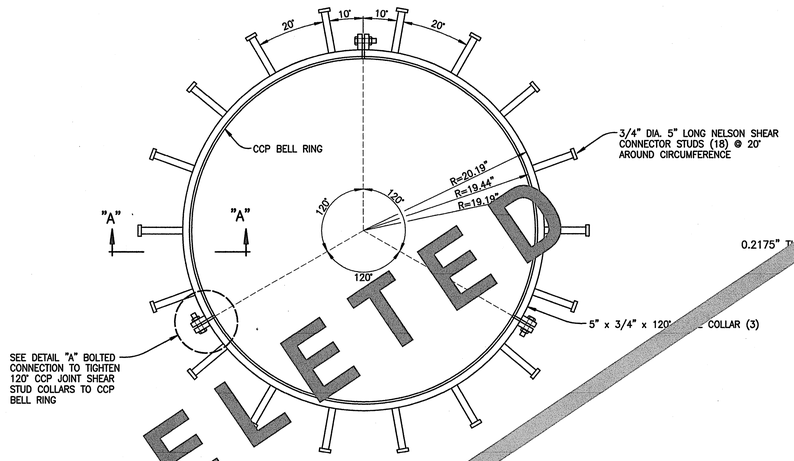
GEOMETRY OF THRUST BEAM FOR 36" BUTTERFLY VALVE

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

NOTE: HORIZONTAL AND VERTICAL REBARS NOT SHOWN FOR CLARITY

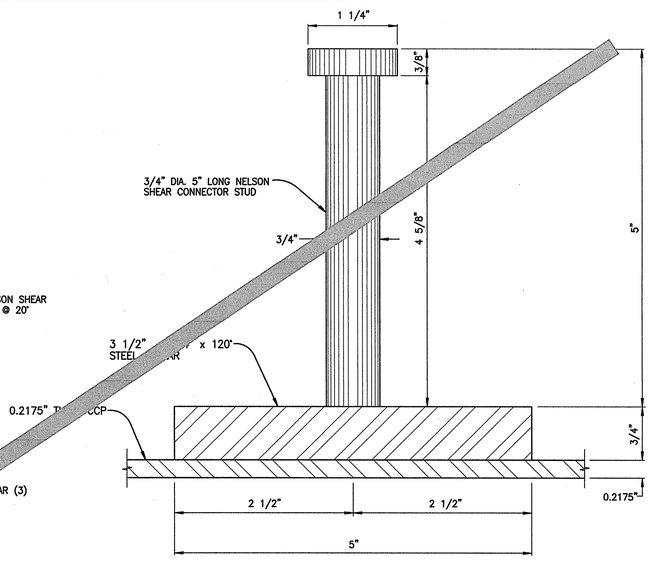
CONCRETE: f_c' = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60

STEEL: ASTM A36
NELSON SHEAR CONNECTION STUDS: ASTM A108 GRADE C-1010 THROUGH C-1020
Fu = 65 ksi
Fy = 51 ksi



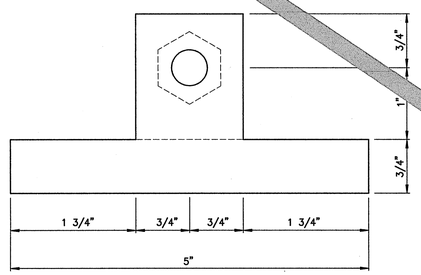
FRONT VIEW OF CCP JOINT SHEAR STUD COLLAR

SCALE: 3/8" = 1"



SECTION "A"–"A" – CROSS-SECTION OF CCP JOINT SHEAR STUD COLLAR

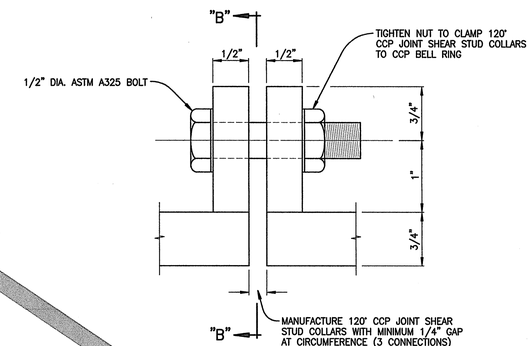
SCALE: 1" = 1"



SECTION "B"–"B"

BOLTED CONNECTION TO TIGHTEN 120° CCP JOINT SHEAR STUD COLLARS TO CCP BARREL

SCALE: 1" = 1"



DETAIL "A" BOLTED CONNECTION TO TIGHTEN 120° CCP JOINT SHEAR STUD COLLARS TO CCP BARREL

SCALE: 1" = 1"

DELETED

WORK

LETTER	DESCRIPTION	DATE
12	REVISED PER DWS COMMENTS	07/02/12
4	INTERIOR PORTION OF THRUST BEAM WIDENED	12-12-08

ALAN L. UNEMORI LICENSED PROFESSIONAL ENGINEER NO. 9354-S HAWAII, U.S.A.

SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2, OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

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WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K. (2) 3-9-01 : 16
KIHEI, HAWAII

TITLE DETAILS OF REINFORCED CONCRETE THRUST BEAM AND SHEAR STUD CO...

DESIGNED BY: DTU	CHECKED BY: DTU	04010.10 JOB NUMBER	12.03A SHEET
DRAWN BY: WIS	APPROVED BY: DTU	10-10-05 DATE	OF SHEETS
SCALE: AS NOTED			

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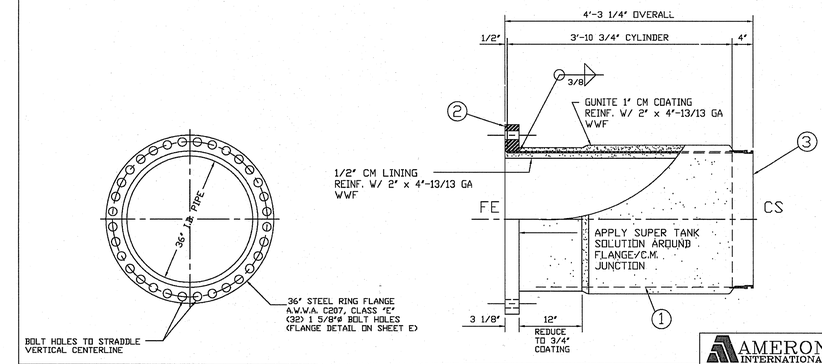
PC MK
1

REF SHEET	ITEM NO.	QUANTITY THIS DWG	DESCRIPTION	MATERIAL SPECIFICATION	PART NUMBER
	1	1	37.875" O.D. x 3/8" CYL x 3.90'	— —	— —
E	2	1	36" STEEL RING FLG-CLASS "E"	AWWA C207	P1910E
	3	1	36" M3516 SPIGOT RING	— —	P1786



AMERON INTERNATIONAL — HAWAII INDUSTRIAL PRECAST PRODUCTS

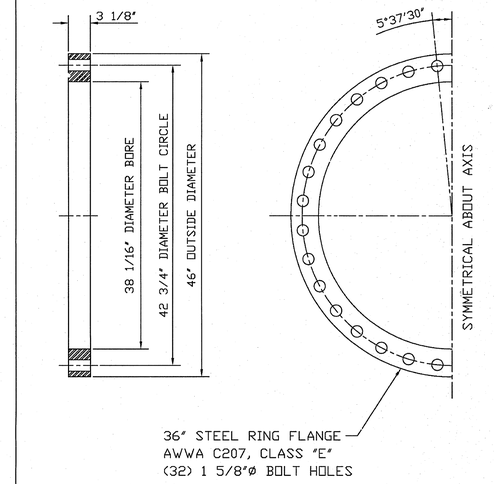
SYMBOL	REVISION	DATE	BY	APPV'D

COST CENTER	PRODUCT CODE		
1311_0021	P8236009		
DRAWN	JT	10-26-07	
CHECKED			
DWG SCALE: NOT TO SCALE	APPV'D		1311-07 D/ 1.0

ACAD\

36" AMERON CCP X FLANGE ADAPTER – MALE

NOT TO SCALE



SPECIFICATIONS

STEEL

FLANGE - ASTM A36
ASTM A283, GRADE C OR D

FACING

FLANGE SHALL BE WELDED AND FACED NORMAL TO THE LONGITUDINAL AXIS OF THE PIPE. THE FLANGE SHALL BE FACED SMOOTH OR MAY HAVE A SERRATED FINISH OF APPROXIMATELY 32 SERRATIONS PER INCH, 1/64" DEEP. SERRATIONS MAY BE SPIRAL OR CONCENTRIC. EDGES OF FACED SURFACES AND BOLT HOLLES SHALL BE DEBURRED.

TOLERANCES

INSIDE DIAMETER:	+1/16",	-0"
OUTSIDE DIAMETER:	+1/8",	-1/8"
THICKNESS OF FLANGE	+1/8",	-0"
BOLT HOLES SHALL BE EQUALLY SPACED	+1/64",	-1/64"
I.D. FLANGE, BOLT CIRCLE, AND O.D. FLANGE SHALL BE CONCENTRIC ABOUT CENTERLINE	+1/16",	-1/16"

AMERON INTERNATIONAL — HAWAII INDUSTRIAL PRECAST PRODUCTS

SYMBOL	REVISION	DATE	BY	APPV'D

DRAWN	JT	10-26-07	
CHECKED			
DWG SCALE: NOT TO SCALE	APPV'D		1311-07 E.0

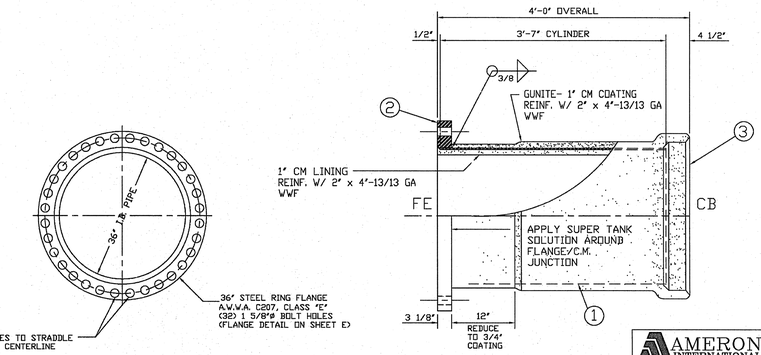
ACAD\

36" AMERON CCP X FLANGE ADAPTER – BOLT PATTERN SPECIFICATIONS

NOT TO SCALE

PC MK
2

REF SHEET	ITEM NO.	QUANTITY THIS DWG	DESCRIPTION	MATERIAL SPECIFICATION	PART NUMBER
	1	1	37.875" O.D. x 3/8" CYL x 3.58'	— —	— —
E	2	1	36" STEEL RING FLG-CLASS "E"	AWWA C207	P1910E
	3	1	36" - 5" x 3/8" BELL RING	— —	P1785



AMERON INTERNATIONAL — HAWAII INDUSTRIAL PRECAST PRODUCTS

SYMBOL	REVISION	DATE	BY	APPV'D

COST CENTER	PRODUCT CODE		
1311_0021	P8236009		
DRAWN	JT	10-26-07	
CHECKED			
DWG SCALE: NOT TO SCALE	APPV'D		1311-07 D/ 2.0

ACAD\

36" AMERON CCP X FLANGE ADAPTER – FEMALE

NOT TO SCALE

LETTER	DESCRIPTION	DATE
4	SHEET ADDED IN ITS ENTIRETY	12/12/08

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

12/30/2008
SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

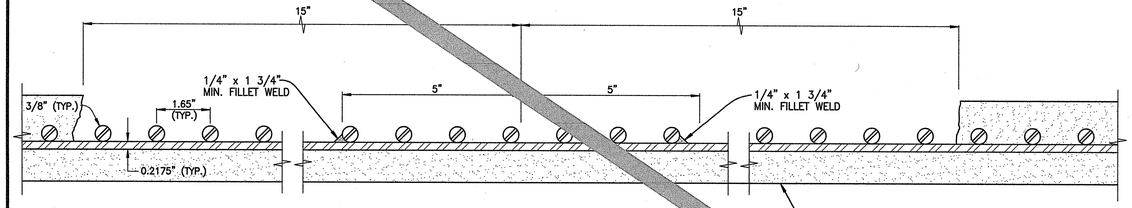
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

TITLE **DETAILS OF AMERON 36" CCP X FLANGE ADAPTER**

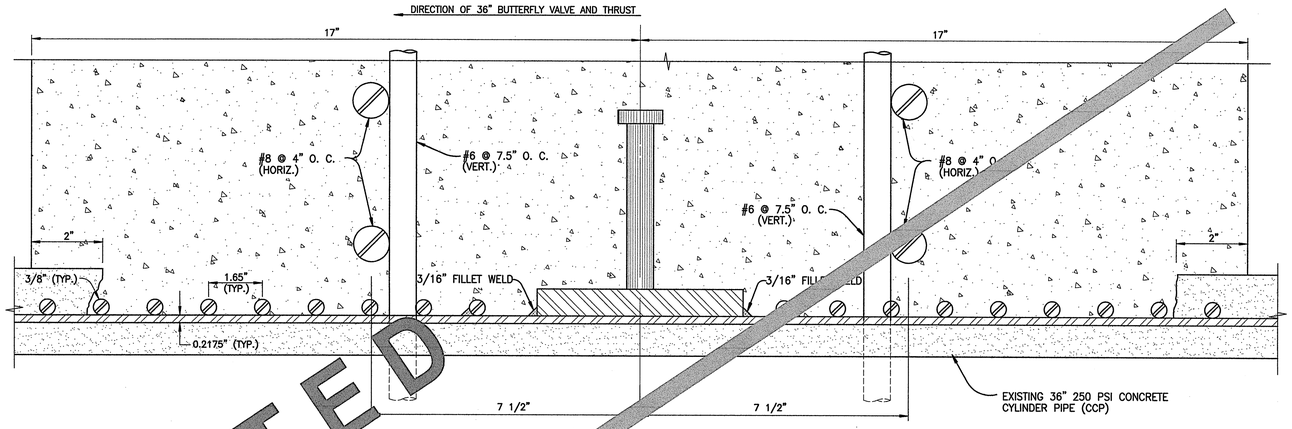
DESIGNED BY: ALU	CHECKED BY: DTU	JOB NUMBER: 04010.10	SHEET: 12.03B
DRAWN BY: WIS	APPROVED BY: DTU		
SCALE: AS NOTED	DATE: 10-10-05		OF SHEETS

04010.10/dwg2004/conplans/det-wtr0.dwg



STEP 3 – FILLET WELD OUTERMOST SPIRAL BARS WITHIN 10 INCHES OF INTENDED SHEAR STUD COLLAR LOCATION.

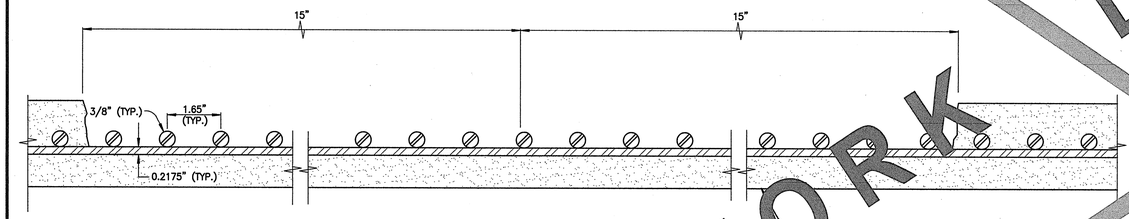
SCALE: 1/2" = 1"



STEP 6 – CONSTRUCT 22" (3'-0" AT MIDSECTION) THICK x 22'-0" LONG x 8'-0" HIGH THRUST BEAM FOR 36" BUTTERFLY VALVE, COMPACT BACKFILL AROUND THRUST BEAM PER RECOMMENDATIONS OF GEOTECHNICAL ENGINEER.

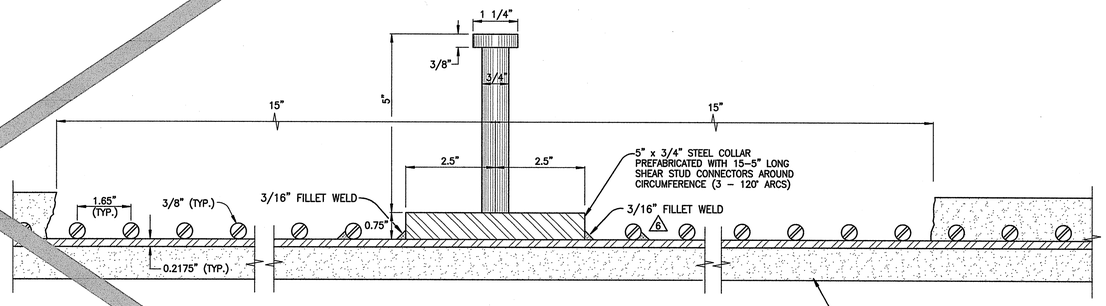
SCALE: 1/2" = 1"

CONCRETE: f_c' = 4 ksi
REINFORCEMENT: ASTM A615 GRADE 60



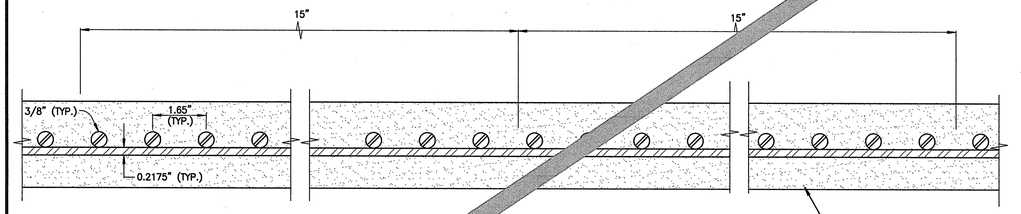
STEP 2 – CHIP AWAY CONCRETE COVER TO EXPOSE 18" WIDE STEEL CYLINDER AND BELL AROUND ENTIRE CIRCUMFERENCE

SCALE: 1/2" = 1"



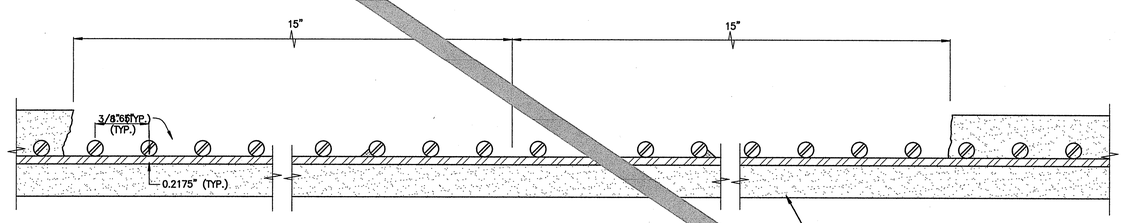
STEP 5 – WELD 5" x 3/4" STEEL COLLAR PREFABRICATED WITH 15–5" LONG SHEAR STUD CONNECTORS AROUND CIRCUMFERENCE

SCALE: 1/2" = 1"



STEP [illegible] UNCOVER SOIL OVER AND AROUND EXISTING 36" CCP PIPE AT JOINT

SCALE: 1/2" = 1"



STEP 4 – REMOVE SPIRAL WRAPPED BARS INSIDE TACK WELDED BARS

SCALE: 1/2" = 1"

DELETED

WORK

1	REVISED PER DWS COMMENTS	07/02/12
6	REVISE WELD PER DWS COMMENTS	10/01/10
LETTER	DESCRIPTION	DATE

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SIGNATURE DATE

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KAONI[illegible]U MARKET PLACE
T.M.K. [illegible] 3-9-01 : 16
KIHEI, HAWAII

TITLE DETAIL OF RECOMMENDED CONSTRUCTION OF THRUST BEAM AT CCP JOI[illegible]

DTU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	12.03C SHEET
WIS DRAWN BY	DTU APPROVED BY	10-10-05 DATE	OF SHEETS
SCALE AS NOTED			

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