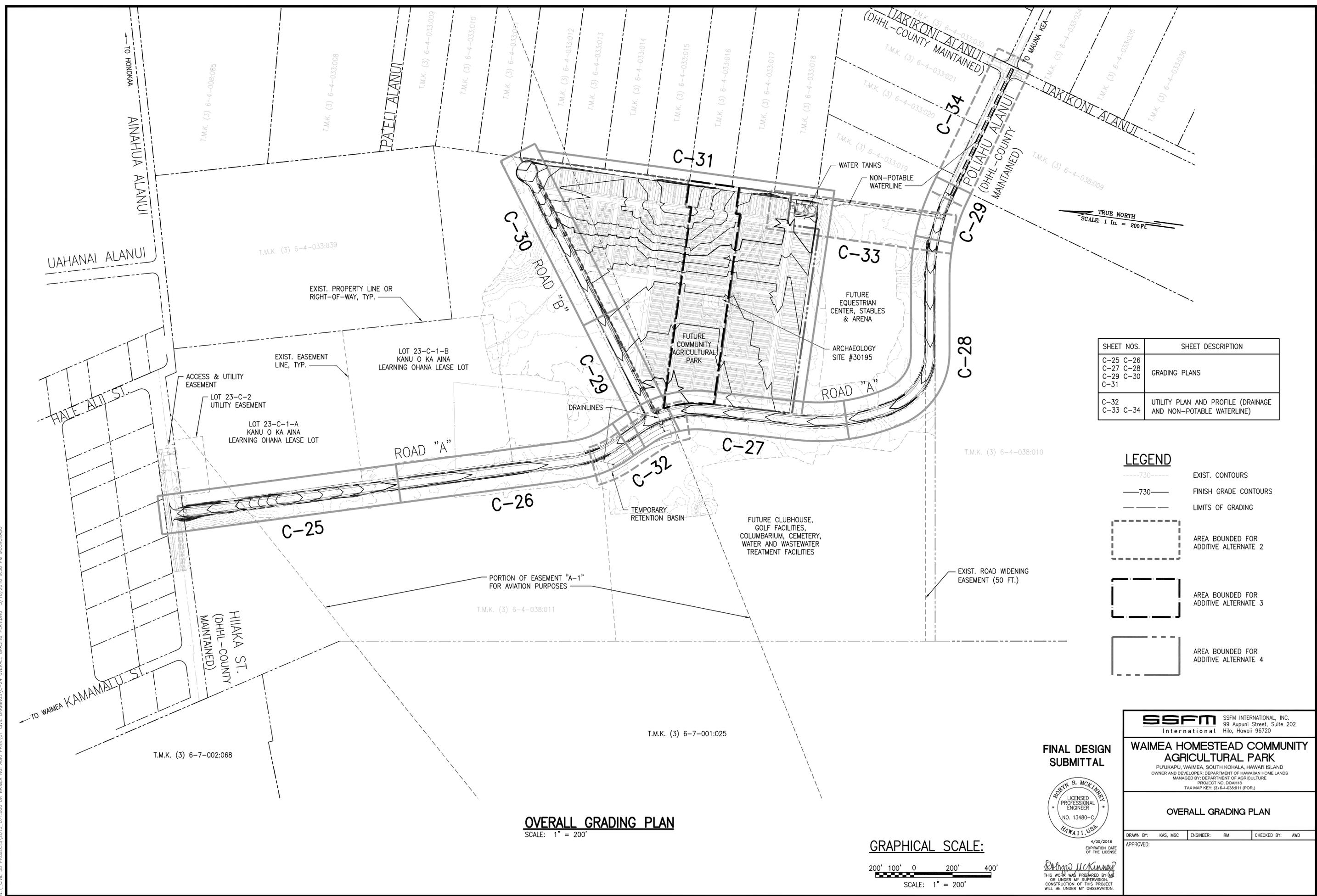


W:\\_CIVIL\_3D\_PROJECTS\2015\_071.000 DA WAMEA NUI AGRIC PARK\01 CIVIL DRAWINGS\C-24 OVERALL GRADING PLAN.DWG 5/10/2016 9:36 PM MCDONNADO



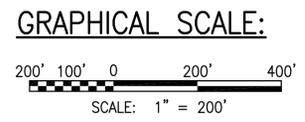
TRUE NORTH  
SCALE: 1 in. = 200 FT.

SHEET NOS.	SHEET DESCRIPTION
C-25 C-26 C-27 C-28 C-29 C-30 C-31	GRADING PLANS
C-32 C-33 C-34	UTILITY PLAN AND PROFILE (DRAINAGE AND NON-POTABLE WATERLINE)

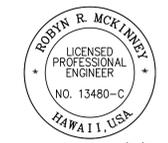
**LEGEND**

	EXIST. CONTOURS
	FINISH GRADE CONTOURS
	LIMITS OF GRADING
	AREA BOUNDED FOR ADDITIVE ALTERNATE 2
	AREA BOUNDED FOR ADDITIVE ALTERNATE 3
	AREA BOUNDED FOR ADDITIVE ALTERNATE 4

**OVERALL GRADING PLAN**  
SCALE: 1" = 200'



**FINAL DESIGN SUBMITTAL**



4/30/2018  
EXPIRATION DATE OF THE LICENSE

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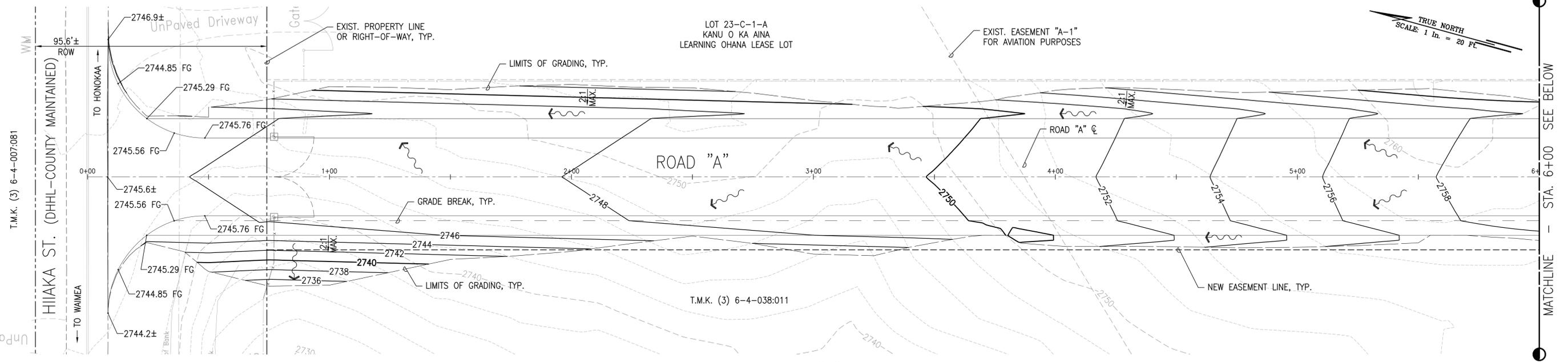
**SSFM International**  
SSFM INTERNATIONAL, INC.  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

**WAMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH18  
TAX MAP KEY: (3) 6-4-038:011 (POR.)

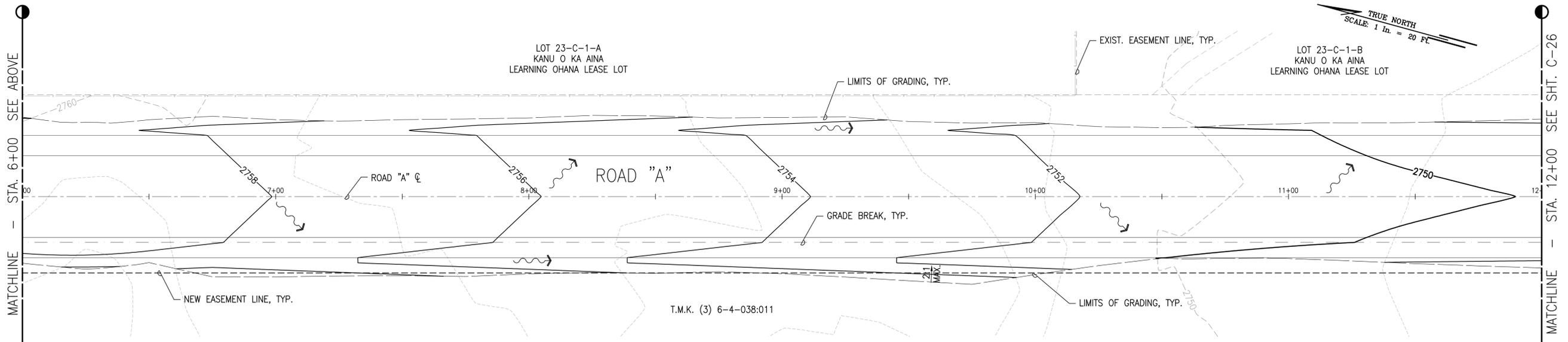
**OVERALL GRADING PLAN**

DRAWN BY: KAS, MGC    ENGINEER: RM    CHECKED BY: AWD

APPROVED:



**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'



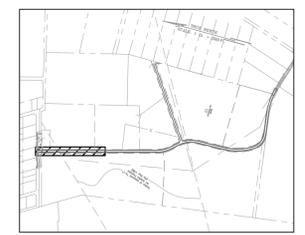
**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'

**LEGEND**

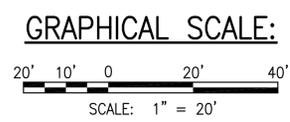
- 730--- EXIST. CONTOURS
- 730— FINISH GRADE CONTOURS
- LIMITS OF GRADING
- - - GRADE BREAK
- - - EXISTING EASEMENT LINE
- - - NEW EASEMENT LINE
- 1.00% SLOPE
- 2746.00 FG FINISH GRADE ELEV.
- ← FLOW ARROW

**NOTE:**

WORK ON THIS SHEET SHALL BE PART OF ADD ALT 1.



**KEY MAP**  
NTS



**GRAPHICAL SCALE:**

**FINAL DESIGN SUBMITTAL**



4/30/2018  
EXPIRATION DATE OF THE LICENSE  
*Robby McKinney*  
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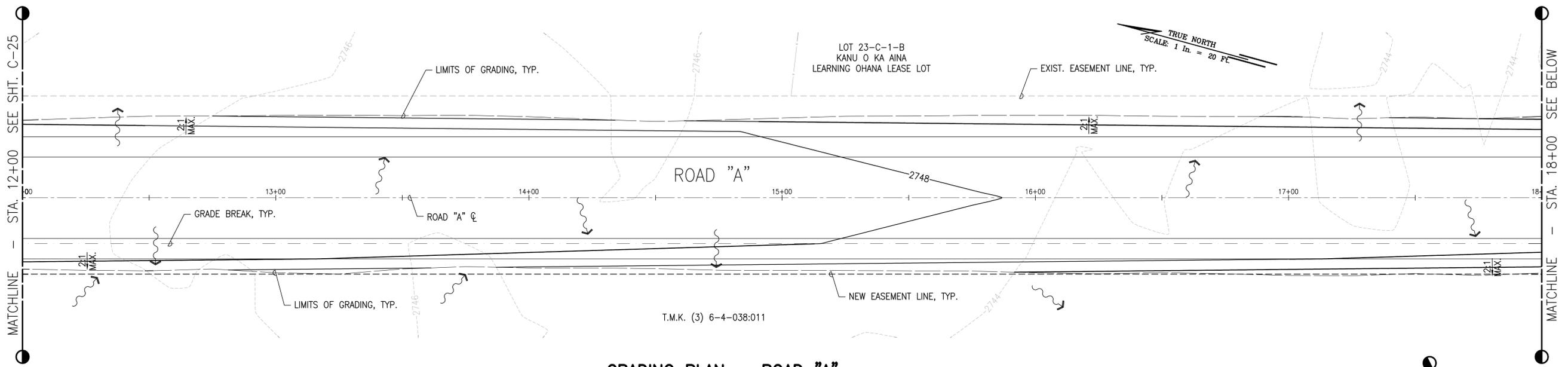
**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH16  
TAX MAP KEY: (3)6-4-038:011 (POR.)

**ROAD "A" GRADING PLAN - 1**

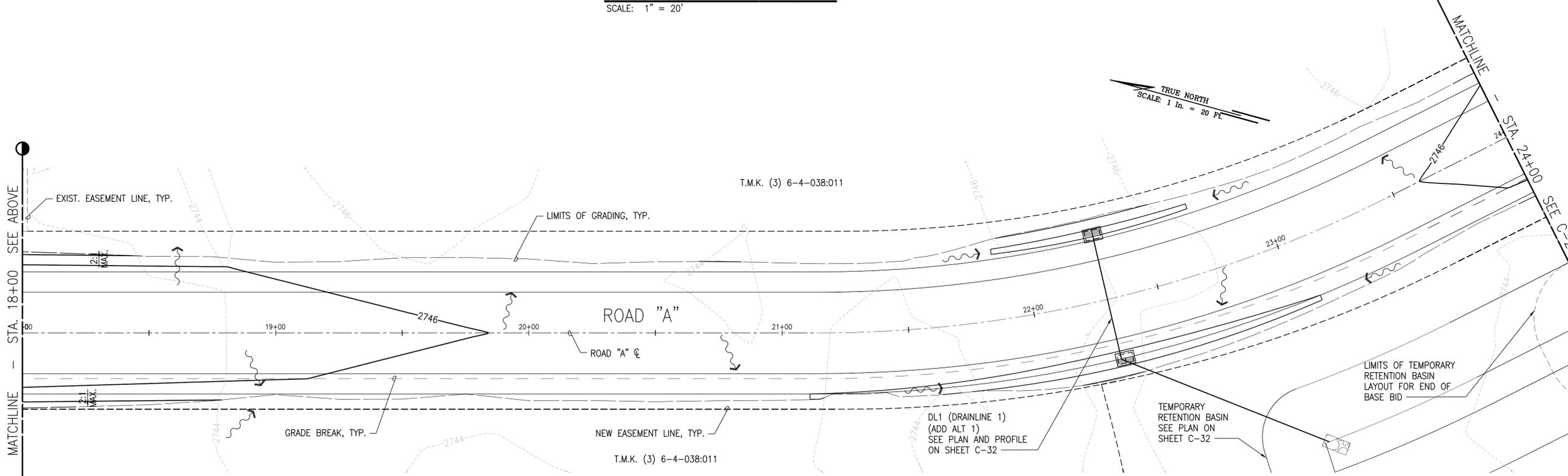
DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD

APPROVED:

W:\\_CIVIL\_3D\_PROJECTS\2015\_071\_000\_DA\_WAIMEA\_NUI\_AGRIC\_PARK\01\_CIVIL\_DRAWINGS\C-25 GRADING PLAN ROAD A.DWG: 5/5/2016 2:14 PM #CSM



**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'



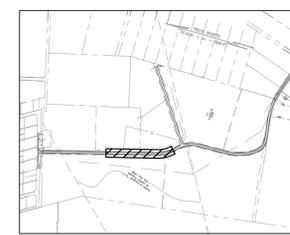
**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'

**LEGEND**

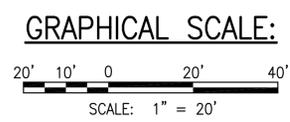
- 730--- EXIST. CONTOURS
- 730— FINISH GRADE CONTOURS
- LIMITS OF GRADING
- - - GRADE BREAK
- - - EXISTING EASEMENT LINE
- - - NEW EASEMENT LINE
- 1.00% SLOPE
- 2746.00 FG FINISH GRADE ELEV.
- ← FLOW ARROW

**NOTE:**

WORK ON THIS SHEET SHALL BE PART OF ADD ALT 1.



**KEY MAP**  
NTS



**FINAL DESIGN SUBMITTAL**



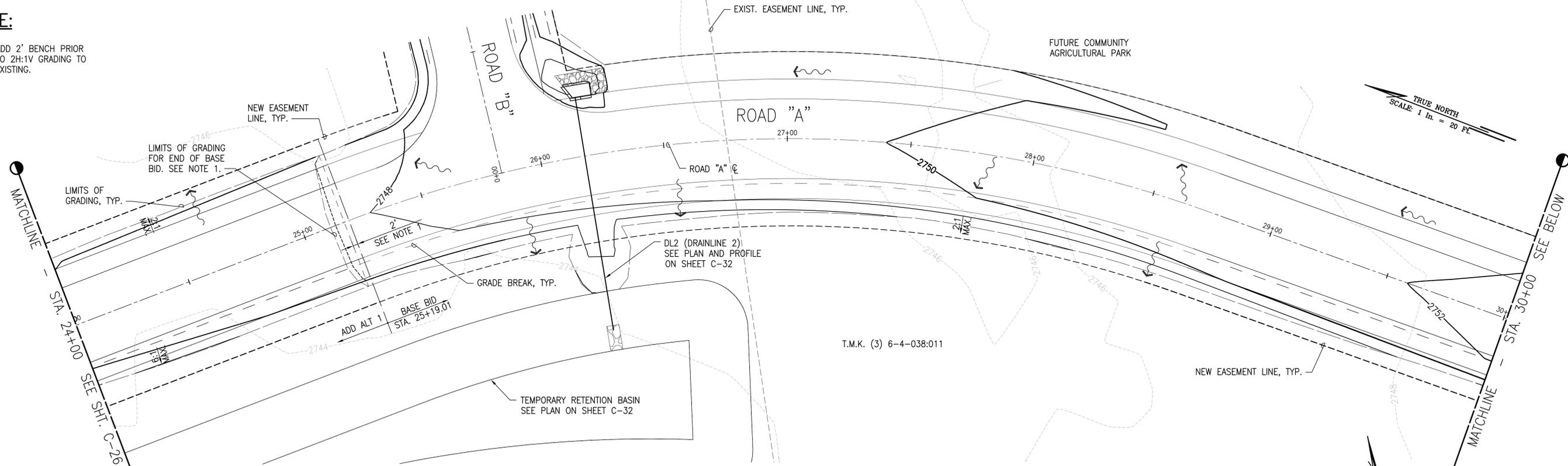
4/30/2018  
EXPIRATION DATE OF THE LICENSE  
*Robyn McKinney*  
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<b>SSFM International</b>		SSFM INTERNATIONAL, INC. 99 Aupuni Street, Suite 202 Hilo, Hawaii 96720	
<b>WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK</b>			
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS MANAGED BY: DEPARTMENT OF AGRICULTURE PROJECT NO. DOAH16 TAX MAP KEY: (3)6-4-038:011 (POR.)			
<b>ROAD "A" GRADING PLAN - 2</b>			
DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD	
APPROVED:			

\\A:\CIVIL\_3D\_PROJECTS\2015\_071\_000\_DA\_WAIMEA\_NUI\_AGRIC\_PARK\01\_CIVIL\_DRAWINGS\C-26 GRADING PLAN ROAD A.DWG. 5/5/2016 3:37 PM #CSM

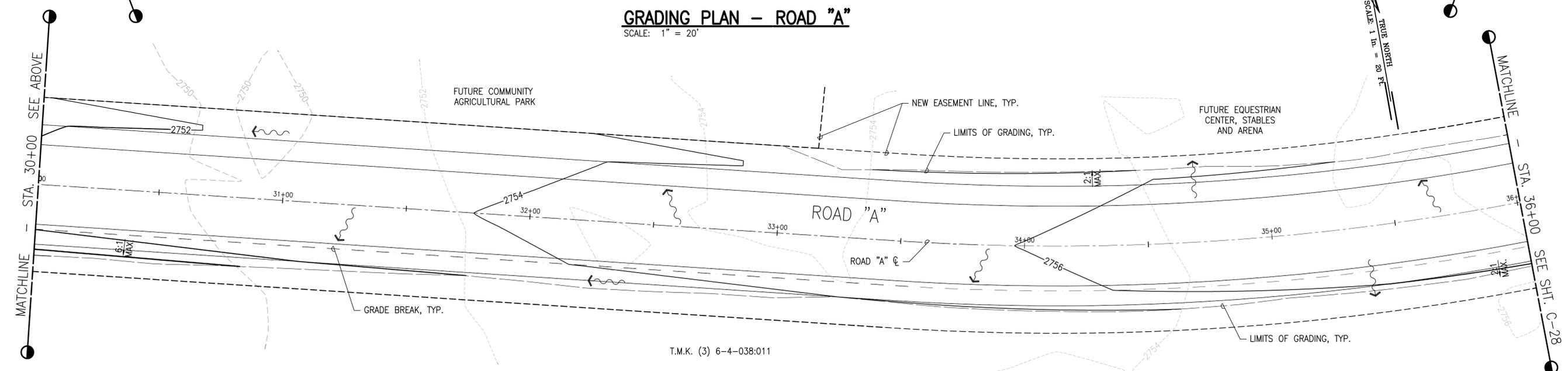
**NOTE:**

1. ADD 2' BENCH PRIOR TO 2H:1V GRADING TO EXISTING.



**GRADING PLAN - ROAD "A"**

SCALE: 1" = 20'



**GRADING PLAN - ROAD "A"**

SCALE: 1" = 20'

**LEGEND**

- 730--- EXIST. CONTOURS
- 730— FINISH GRADE CONTOURS
- - - - - LIMITS OF GRADING
- - - - - GRADE BREAK
- - - - - EXISTING EASEMENT LINE
- - - - - NEW EASEMENT LINE
- 1.00% SLOPE
- 2746.00 FG FINISH GRADE ELEV.
- ~ ~ ~ FLOW ARROW



**KEY MAP**

NTS

**GRAPHICAL SCALE:**



SCALE: 1" = 20'

**FINAL DESIGN  
SUBMITTAL**

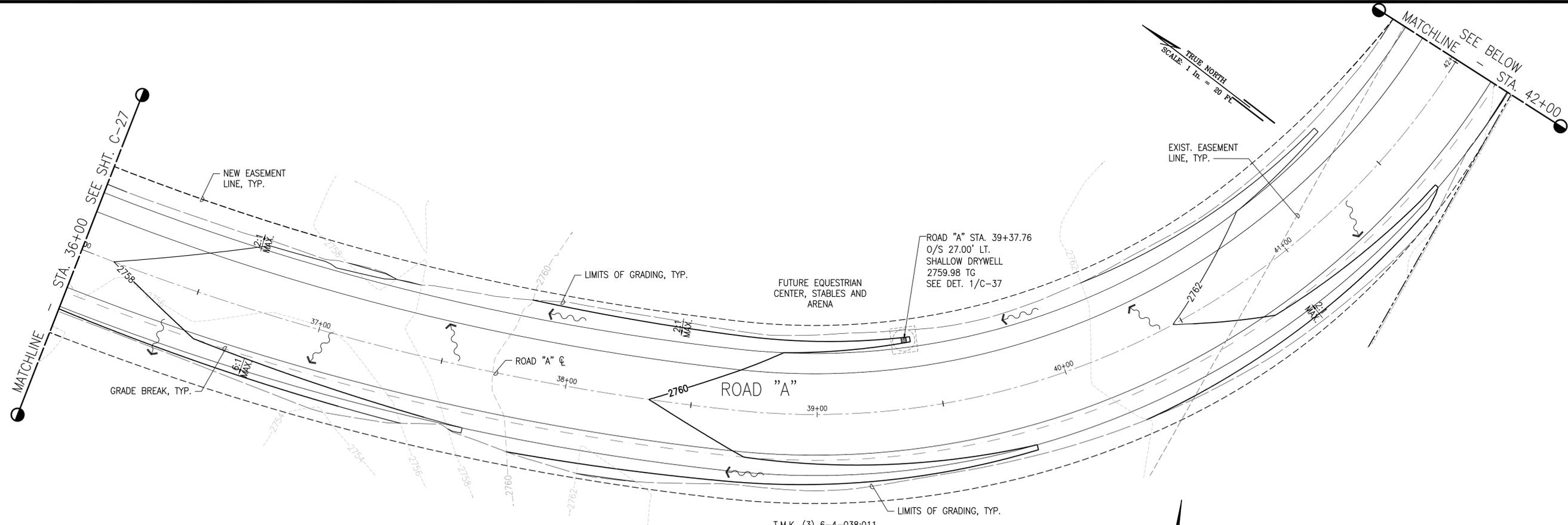


4/30/2018  
EXPIRATION DATE  
OF THE LICENSE

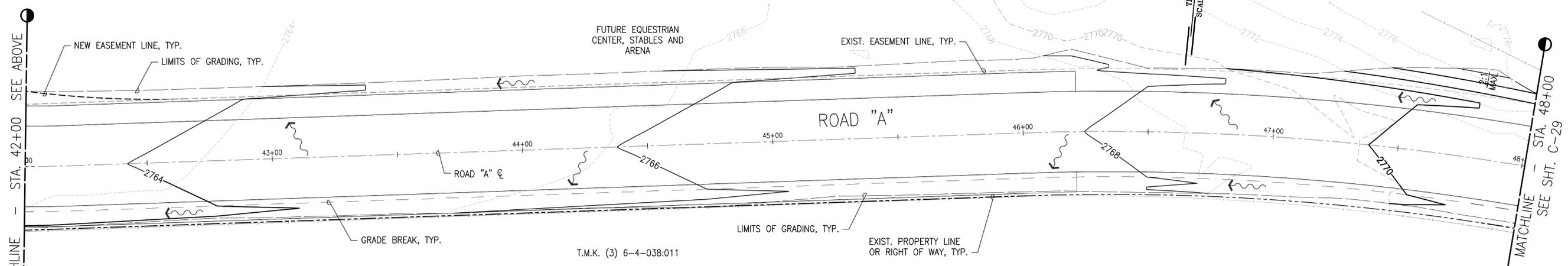
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CONSTRUCTION OF THIS PROJECT  
WILL BE UNDER MY OBSERVATION.

<b>SSFM</b> International SSFM INTERNATIONAL, INC. 99 Aupuni Street, Suite 202 Hilo, Hawaii 96720	
<b>WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK</b> PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS MANAGED BY: DEPARTMENT OF AGRICULTURE PROJECT NO. DOAH16 TAX MAP KEY: (3) 6-4-038:011 (POR.)	
<b>ROAD "A" GRADING PLAN - 3</b>	
DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD	APPROVED:

W:\\_CIVIL\_3D\_PROJECTS\2015\_001\_000\_DA\_WAIMEA\_NUI\_AGRIC\_PARK\01\_CIVIL\_DRAWINGS\C-27 GRADING PLAN ROAD A.DWG. 5/5/2016 3:06 PM #CSM

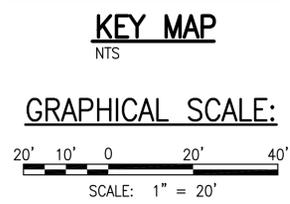


**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'



**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'

- LEGEND**
- 730--- EXIST. CONTOURS
  - 730— FINISH GRADE CONTOURS
  - - - - - LIMITS OF GRADING
  - - - - - GRADE BREAK
  - - - - - EXISTING EASEMENT LINE
  - - - - - NEW EASEMENT LINE
  - 1.00% SLOPE
  - 2746.00 FG FINISH GRADE ELEV.
  - 2746.00 TG TOP OF GRATE ELEV.
  - ← FLOW ARROW
  - SHALLOW DRYWELL



**FINAL DESIGN  
SUBMITTAL**



4/30/2018  
EXPIRATION DATE  
OF THE LICENSE

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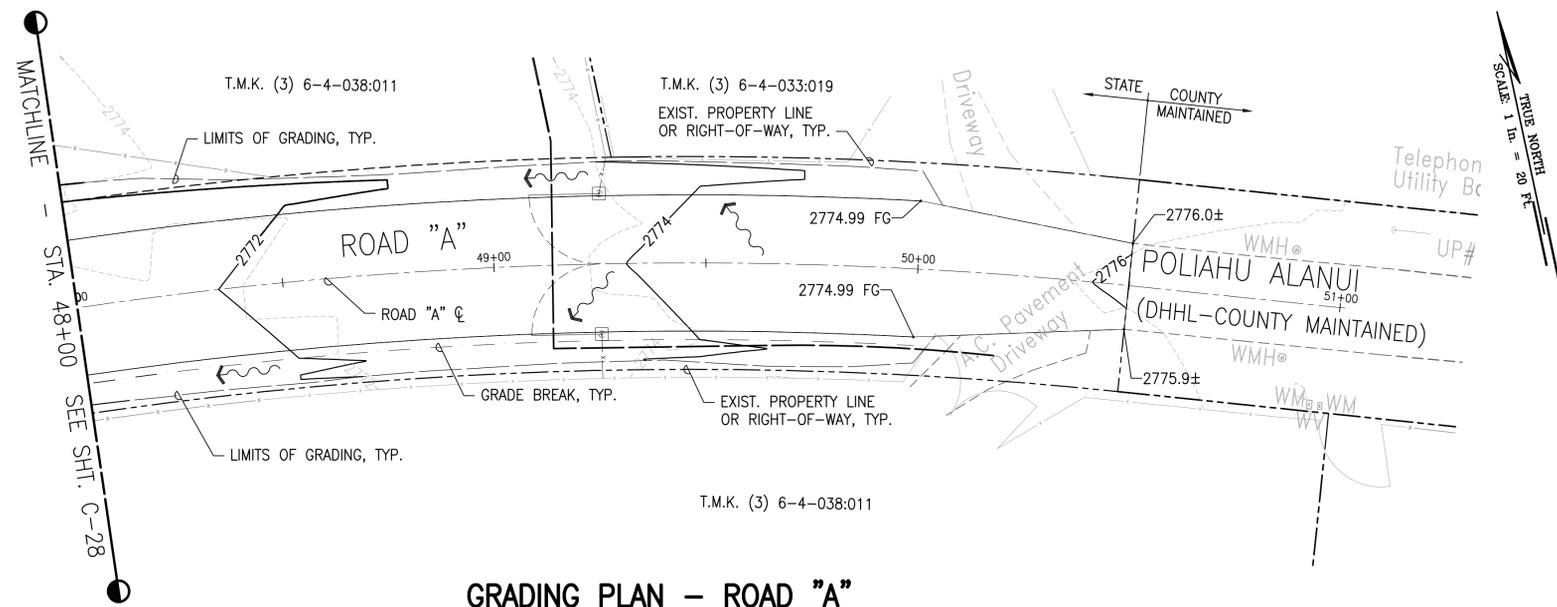
**SSFM International** SSFM INTERNATIONAL, INC.  
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Hilo, Hawaii 96720

**WAIMEA HOMESTEAD COMMUNITY  
AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH16  
TAX MAP KEY: (3) 6-4-038:011 (POR.)

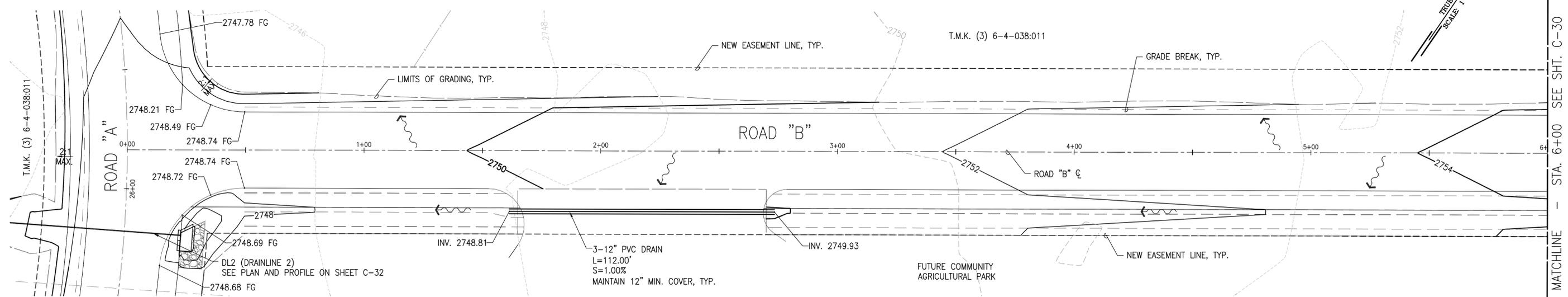
**ROAD "A" GRADING PLAN - 4**

DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD
APPROVED:		

WA\_CIVIL\_3D\_PROJECTS\2015\_001\_000\_DA\_WAIMEA\_NUI\_AGR\_PARK\01\_CIVIL\_DRAWINGS\C-28 GRADING PLAN ROAD A.DWG. 5/5/2016 3:11 PM KASAM



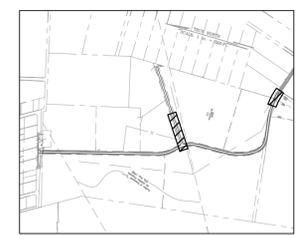
**GRADING PLAN - ROAD "A"**  
SCALE: 1" = 20'



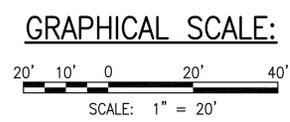
**GRADING PLAN - ROAD "B"**  
SCALE: 1" = 20'

**LEGEND**

- 730--- EXIST. CONTOURS
- 730— FINISH GRADE CONTOURS
- - - - - LIMITS OF GRADING
- - - - - GRADE BREAK
- - - - - EXISTING EASEMENT LINE
- - - - - NEW EASEMENT LINE
- 1.00% SLOPE
- 2746.00 FG FINISH GRADE ELEV.
- INV. 2746.00 INVERT ELEV.
- ← FLOW ARROW



**KEY MAP**  
NTS



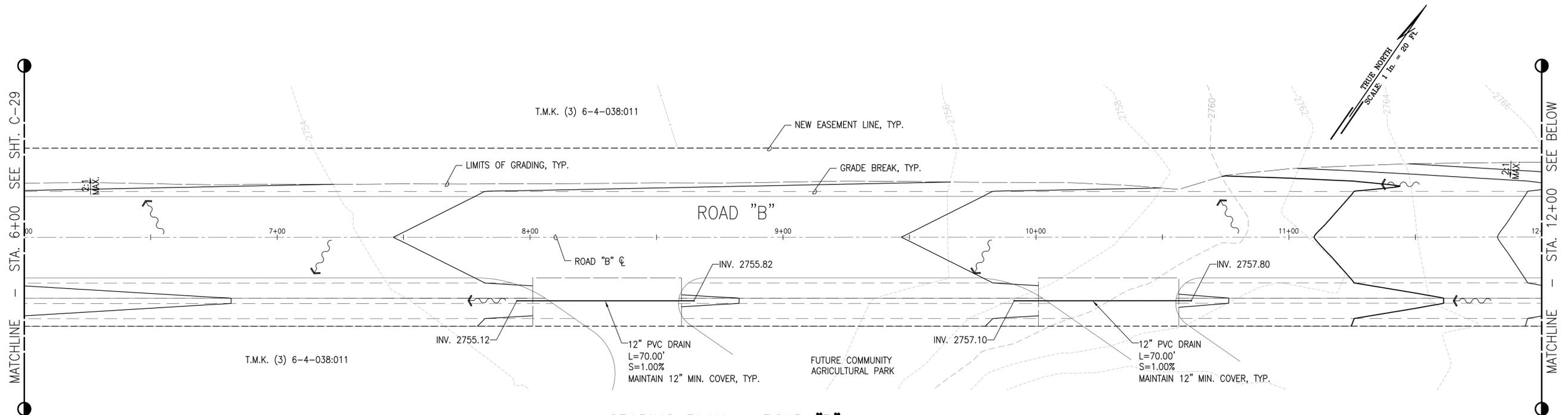
**FINAL DESIGN  
SUBMITTAL**



4/30/2018  
EXPIRATION DATE  
OF THE LICENSE  
*Robby R. McKinney*  
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CONSTRUCTION OF THIS PROJECT  
WILL BE UNDER MY OBSERVATION.

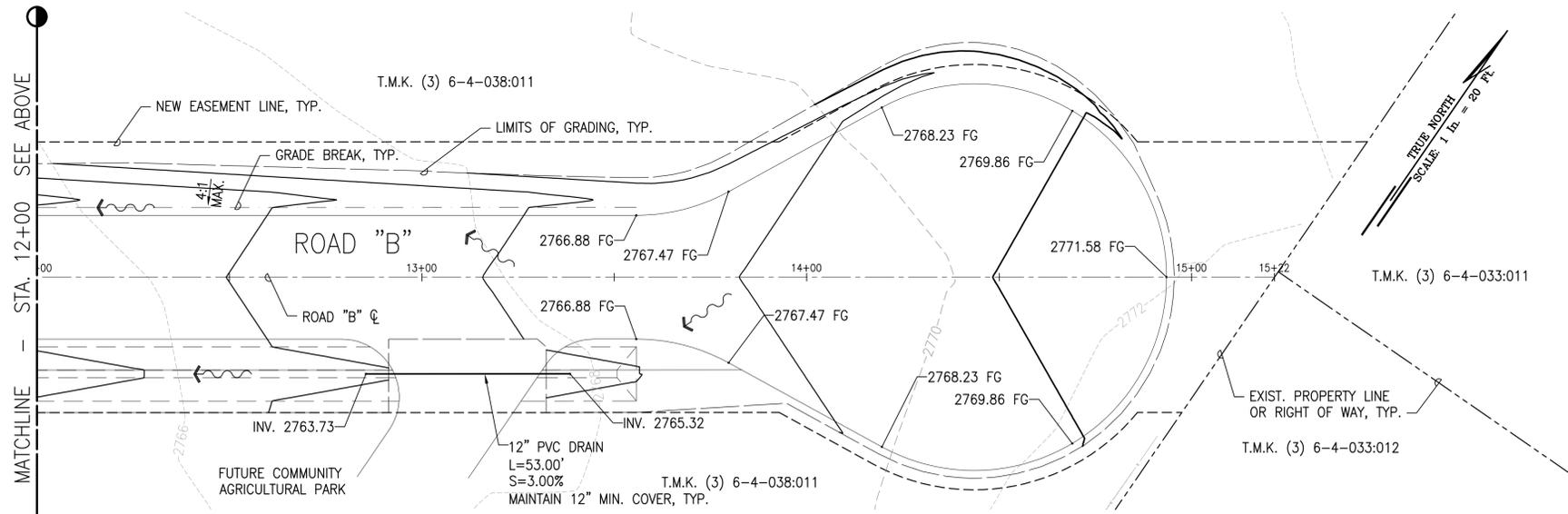
<b>SSFM International</b>		SSFM INTERNATIONAL, INC. 99 Aupuni Street, Suite 202 Hilo, Hawaii 96720	
<b>WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK</b>			
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS MANAGED BY: DEPARTMENT OF AGRICULTURE PROJECT NO. DOAH16 TAX MAP KEY: (3) 6-4-038:011 (POR.)			
<b>ROAD "A" AND ROAD "B" GRADING PLAN - 5</b>			
DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD	APPROVED:

\\A:\CIVIL\3D PROJECTS\2015\_071\_000 DA WAIMEA NUI AGRI PARK\01 CIVIL DRAWINGS\C-29 GRADING PLAN ROAD A.BLDG - 5/5/2016 3:23 PM KSW



**GRADING PLAN - ROAD "B"**

SCALE: 1" = 20'

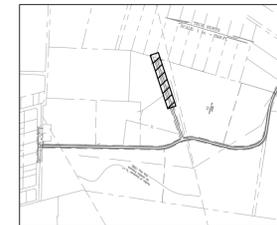


**GRADING PLAN - ROAD "B"**

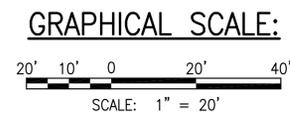
SCALE: 1" = 20'

**LEGEND**

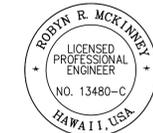
- 730--- EXIST. CONTOURS
- 730— FINISH GRADE CONTOURS
- LIMITS OF GRADING
- - - GRADE BREAK
- - - EXISTING EASEMENT LINE
- - - NEW EASEMENT LINE
- 1.00% SLOPE
- 2746.00 FG FINISH GRADE ELEV.
- INV. 2746.00 INVERT ELEV.
- ← FLOW ARROW



**KEY MAP**  
NTS



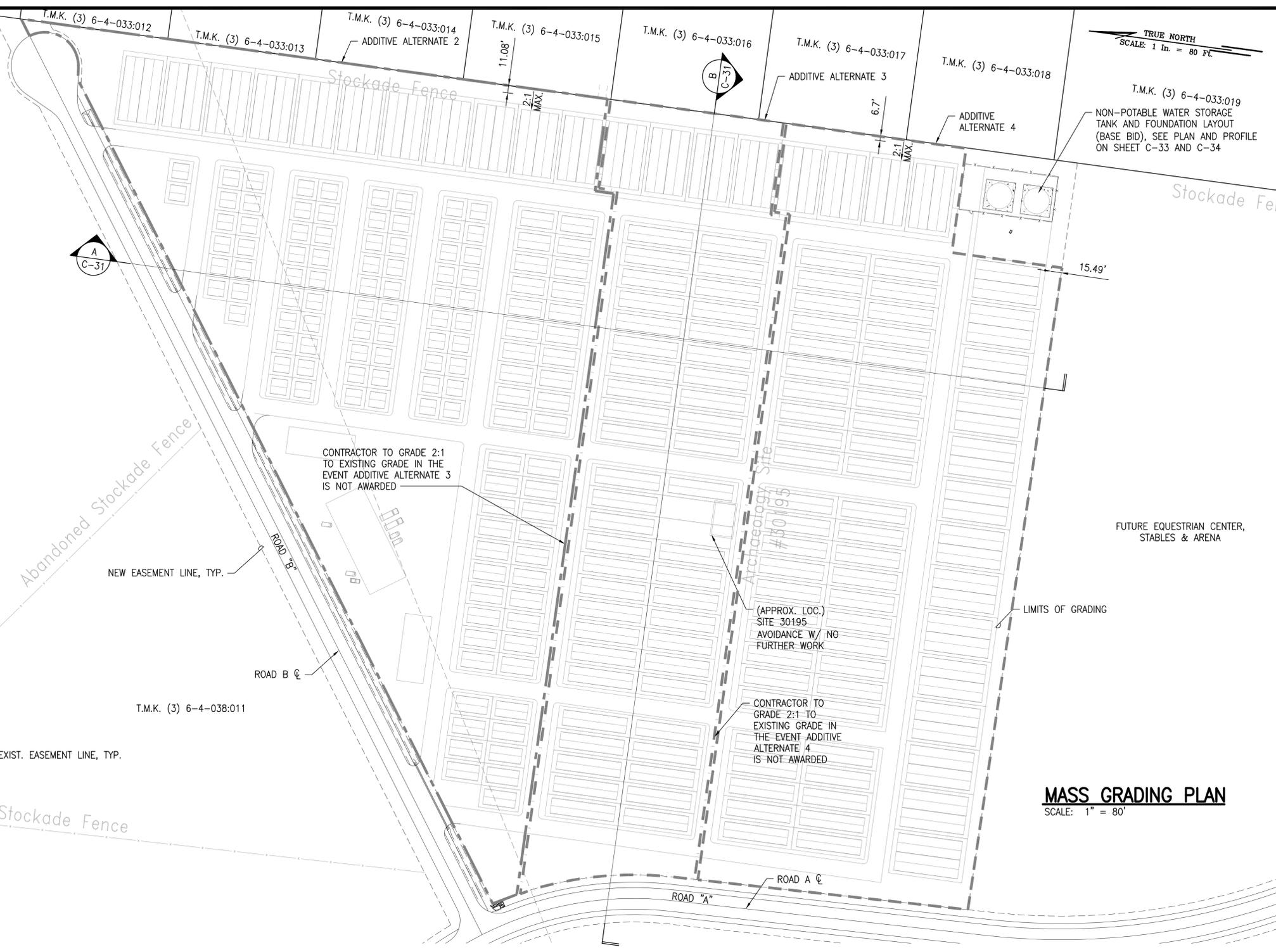
**FINAL DESIGN  
SUBMITTAL**



4/30/2018  
EXPIRATION DATE  
OF THE LICENSE  
*Robby McKinney*  
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<b>WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK</b>			
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS MANAGED BY: DEPARTMENT OF AGRICULTURE PROJECT NO. DOAH16 TAX MAP KEY: (3) 6-4-038:011 (POR.)			
<b>ROAD "B" GRADING PLAN - 6</b>			
DRAWN BY:	KAS, MGC	ENGINEER:	RM
CHECKED BY:	AWD		
APPROVED:			

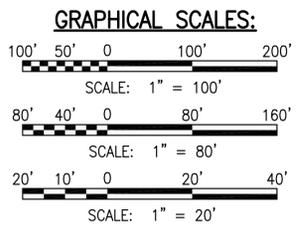
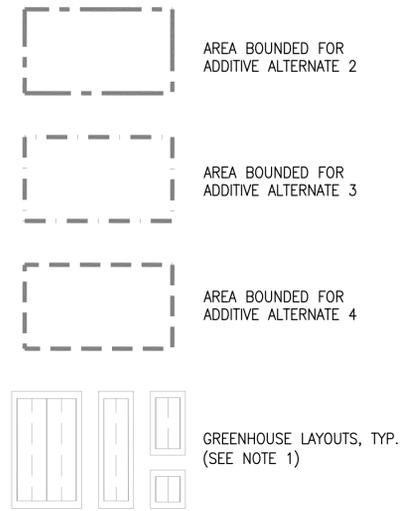
WA\_CIVIL\_3D\_PROJECTS\2015\_071\_000\_DA\_WAIMEA\_NUI\_AGR\_PARK\01\_CIVIL\_DRAWINGS\C-31\_MASS\_GRADING\_PLAN.DWG: 5/10/2016 3:38 AM R10



TRUE NORTH  
SCALE: 1 in. = 80 Ft.

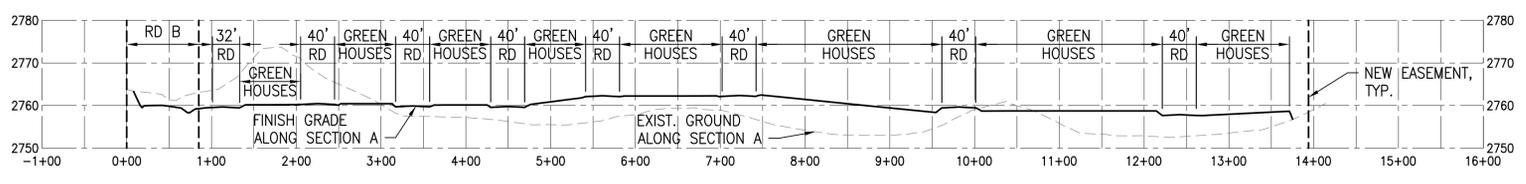
**LEGEND**

---730---	EXIST. CONTOURS
—730—	FINISH GRADE CONTOURS
---	LIMITS OF GRADING
- - -	GRADE BREAK
- - - - -	EXISTING EASEMENT LINE
- - - - -	NEW EASEMENT LINE
1.00%	SLOPE
←	FLOW ARROW

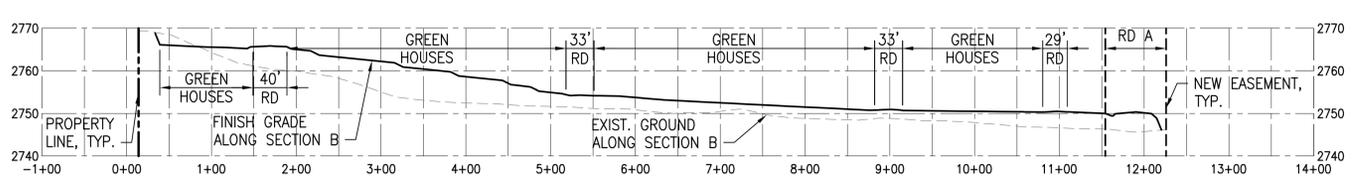


**MASS GRADING PLAN**  
SCALE: 1" = 80'

- NOTE:**
- CONTRACTOR TO PROVIDE MATERIALS FOR GREENHOUSE PER SPEC SECTION 13200 AND COORDINATE ON-SITE DELIVERY WITH WNCDC.



**SECTION A**  
SCALE: HORIZ 1" = 100'  
VERT 1" = 20'



**SECTION B**  
SCALE: HORIZ 1" = 100'  
VERT 1" = 20'

**FINAL DESIGN SUBMITTAL**



4/30/2018  
EXPIRATION DATE OF THE LICENSE

*Robby McKinney*  
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Hilo, Hawaii 96720

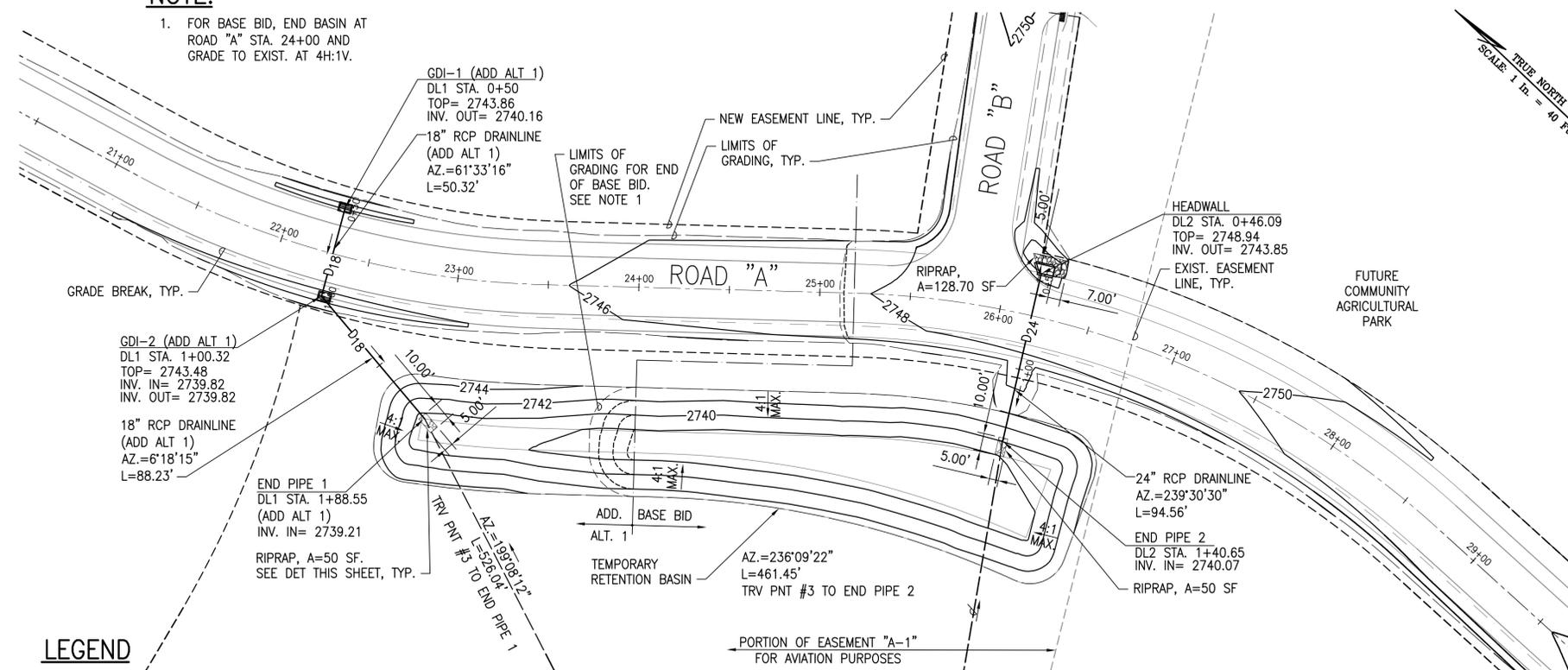
**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH16  
TAX MAP KEY: (3)6-4-038:011 (POR.)

**COMMUNITY AGRICULTURAL PARK MASS GRADING PLAN**

DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD
APPROVED:		

**NOTE:**

- FOR BASE BID, END BASIN AT ROAD "A" STA. 24+00 AND GRADE TO EXIST. AT 4H:1V.



**LEGEND**

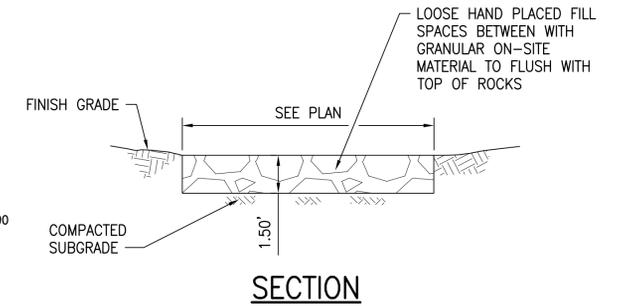
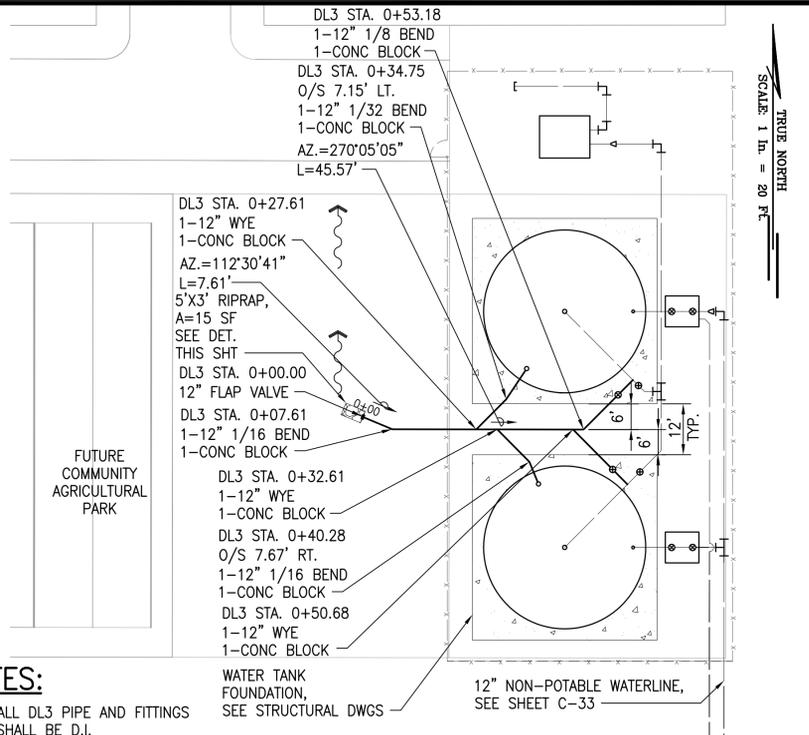
- D<sub>24</sub> PROPOSED DRAINLINE
- GDI (GRADED DROP INLET), SEE DETAIL 5/C-37
- HEADWALL SEE DETAIL 1/C-38
- EXISTING EASEMENT LINE
- NEW EASEMENT LINE

**NOTES:**

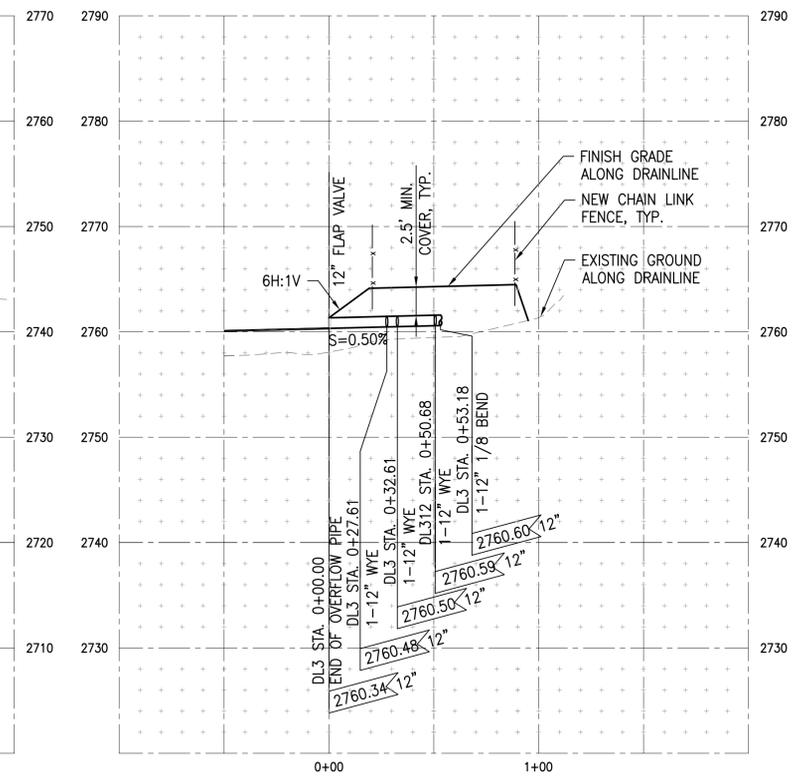
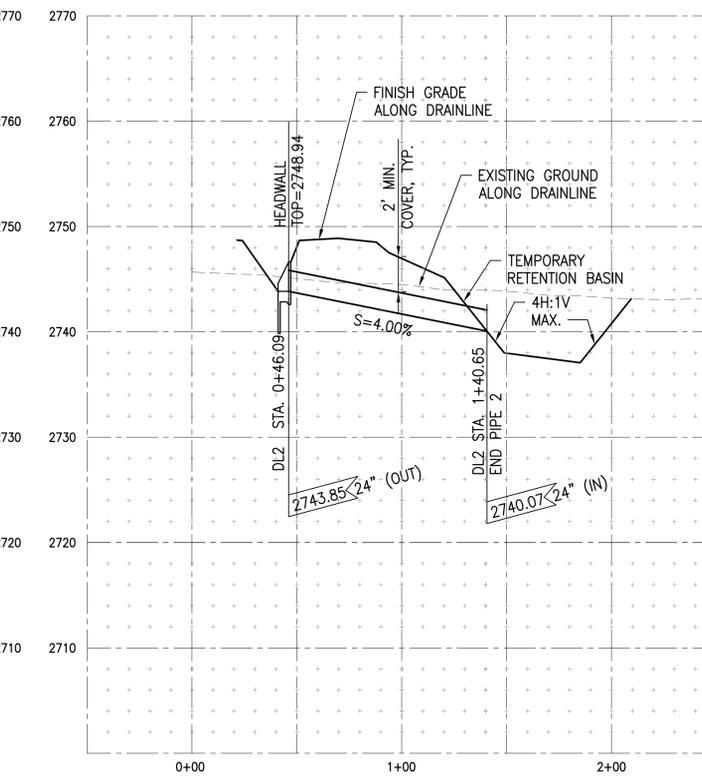
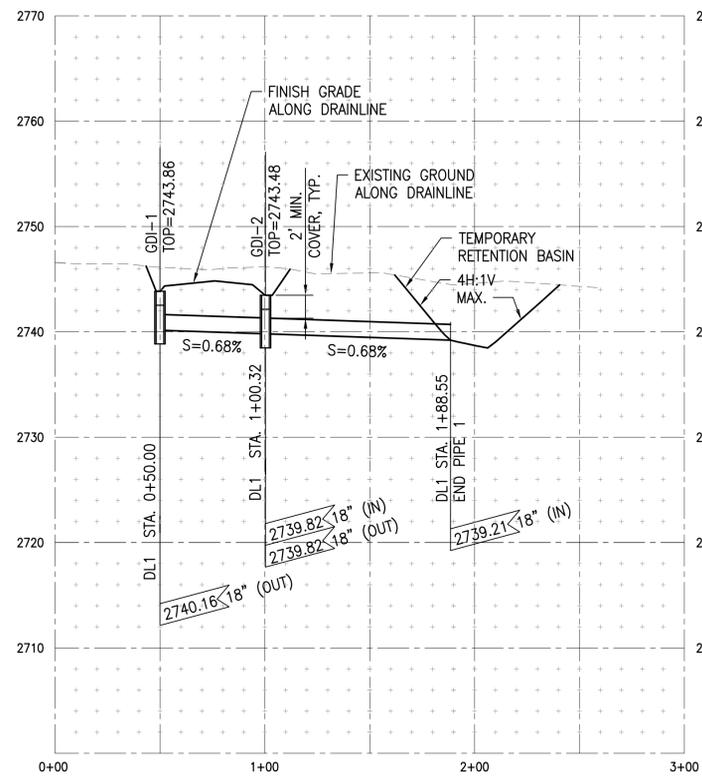
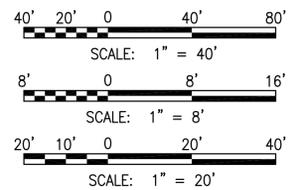
- ALL DL3 PIPE AND FITTINGS SHALL BE D.I.
- FOR OTHER CONNECTION CALLOUTS AND DIMENSIONS, SEE SHT. C-39

**PLAN - DL3**

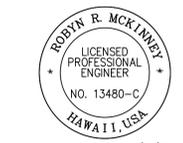
SCALE: 1" = 20'



**GRAPHICAL SCALE:**



**FINAL DESIGN SUBMITTAL**



**SSFM International**  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

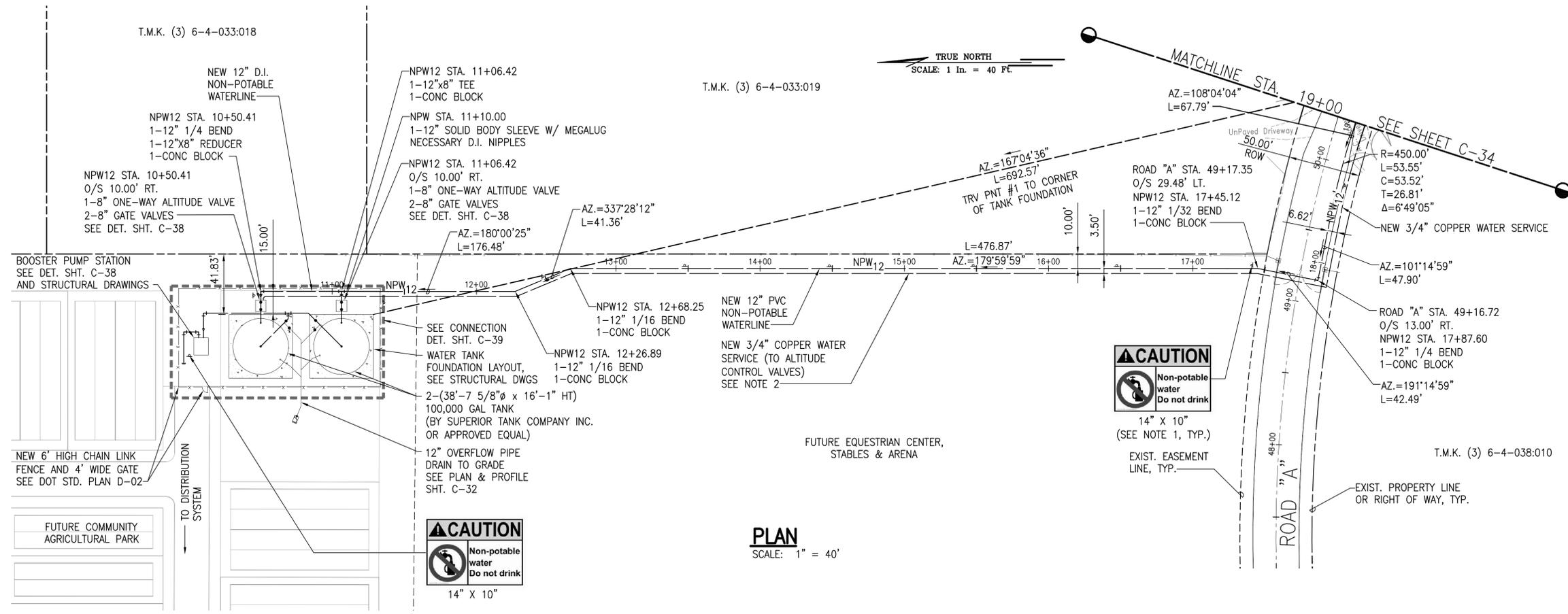
**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH18  
TAX MAP KEY: (3) 6-4-038011 (POR.)

**DRAINLINE PLAN AND PROFILE**

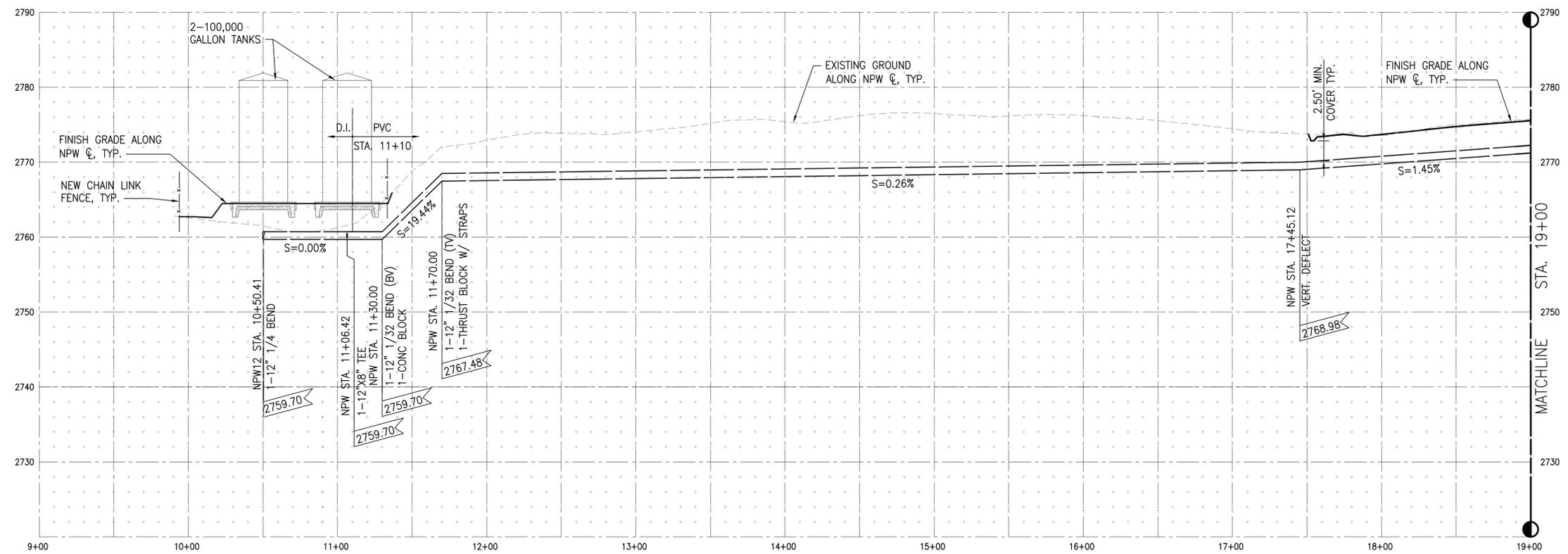
DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD  
APPROVED:

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WA\_CIVIL\_3D\_PROJECTS\_2015\_001\_000\_DA\_WAIMEA\_NUI\_AGRIC\_PARK\_01\_CIVIL\_DRAWINGS\_C-33\_NPWATERLINE\_PWP\_1.DWG: 5/10/2016 9:16 PM KCSH

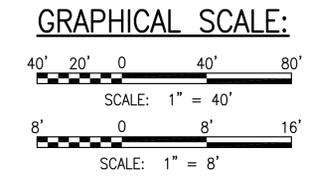
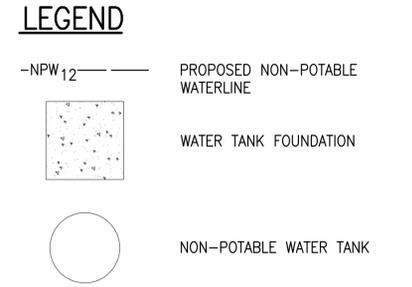


**PLAN**  
SCALE: 1" = 40'



**PROFILE**  
SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

- NOTES:**
1. ADD SIGNS EVERY 100' MAX.
  2. NEW 3/4" COPPER WATER SERVICE SHALL BE AT THE SAME ELEVATION AS THE 12" NON-POTABLE WATERLINE.



**FINAL DESIGN SUBMITTAL**



4/30/2018  
EXPIRATION DATE OF THE LICENSE

*Robby R. McKinney*  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

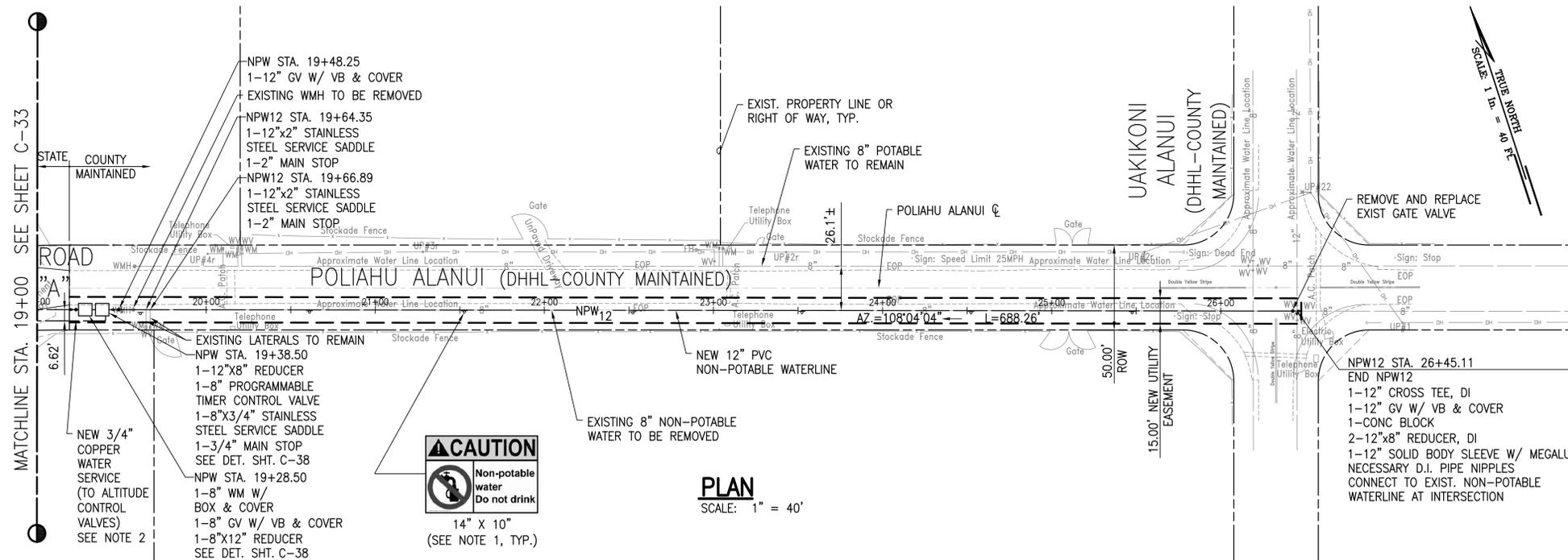
**SSFM International** SSFM INTERNATIONAL, INC.  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DDAH16  
TAX MAP KEY: (3)6-4-038:011 (POR.)

**NON-POTABLE WATERLINE PLAN AND PROFILE - 1**

DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD

APPROVED:

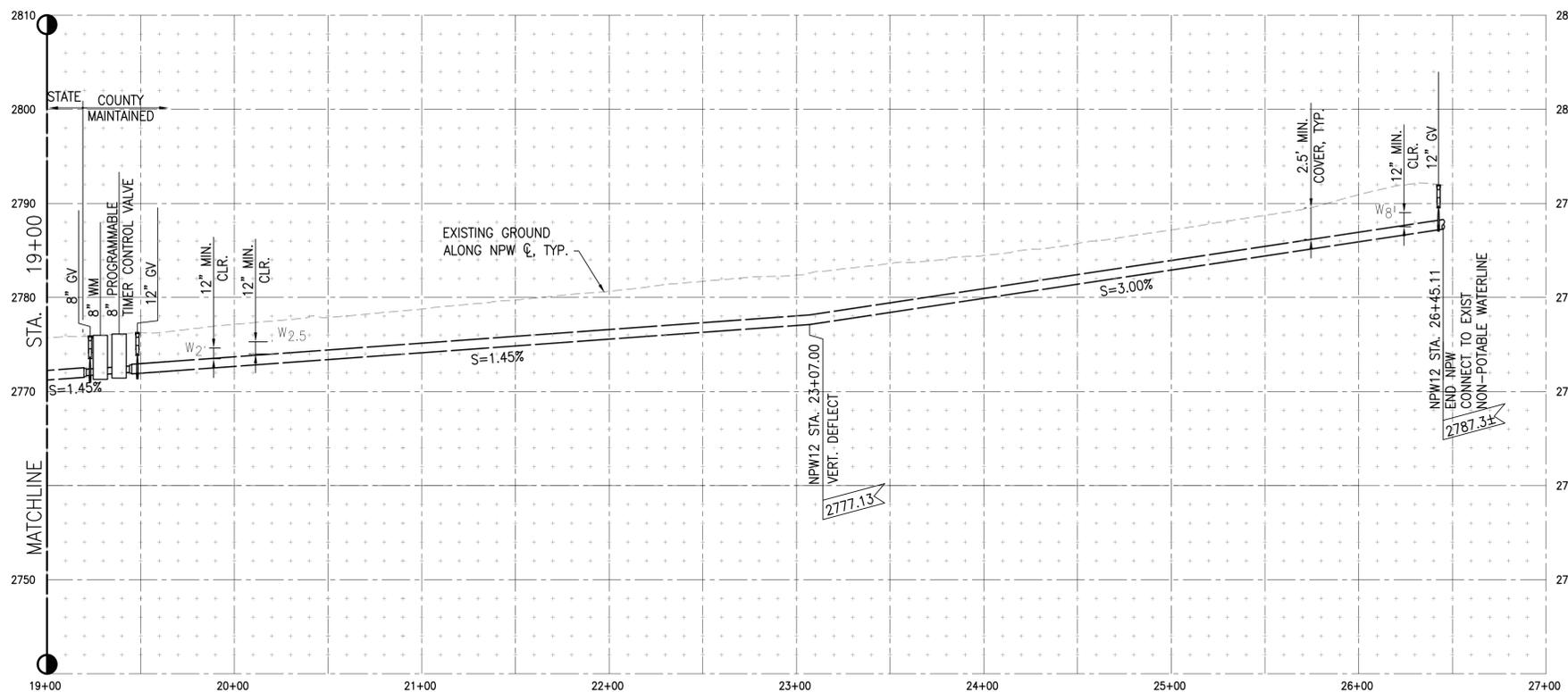


**NOTES:**

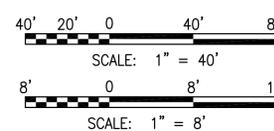
1. ADD SIGNS EVERY 100' MAX.
2. NEW 3/4" COPPER WATER SERVICE SHALL BE AT THE SAME ELEVATION AS THE 12" NON-POTABLE WATERLINE.

**LEGEND**

- NPW12- PROPOSED PVC NON-POTABLE WATERLINE
- PROPOSED UTILITY EASEMENT LINE



**GRAPHICAL SCALE:**



**PROFILE**

SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

**FINAL DESIGN SUBMITTAL**



4/30/2018  
EXPIRATION DATE OF THE LICENSE

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**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PU'UKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH18  
TAX MAP KEY: (3) 6-4-038011 (POR.)

**NON-POTABLE WATERLINE PLAN AND PROFILE - 2**

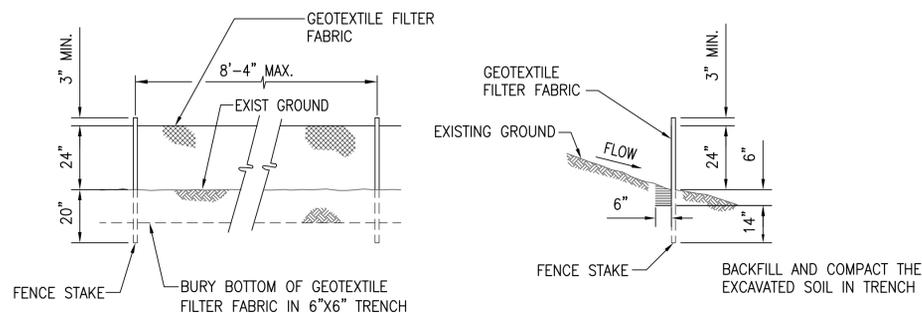
DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD

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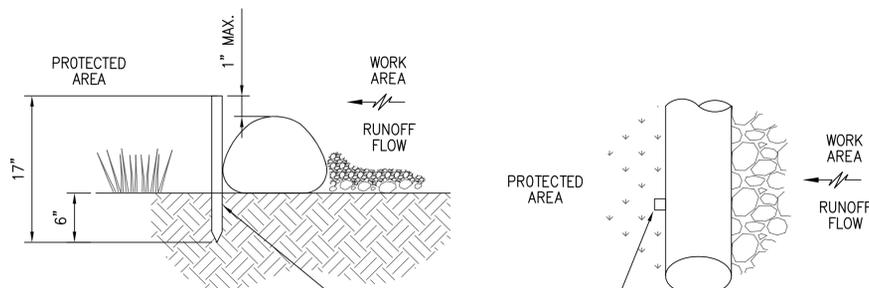
W:\\_CIVIL\_3D\_PROJECTS\2015\_071\_000 DA WAIMEA NUI AGRI PARK\01 CIVIL DRAWINGS\C-34 NPWATERLINE PNP 2.DWG 5/10/2016 7:20 PM KSAW

**NOTES:**

1. THE FILTER FABRIC SHALL BE A MINIMUM OF 36 INCHES WIDE.
2. IF SILT FENCE IS OBTAINED FROM MANUFACTURER AS A PACKAGE (I.E. FABRIC ATTACHED TO POST) THE MANUFACTURER'S INSTALLATION INSTRUCTION SHALL BE ADHERED TO.
3. FENCE STAKES MAY BE WOOD OR METAL, MUST BE CAPABLE OF SUPPORTING ANTICIPATED LOADS.

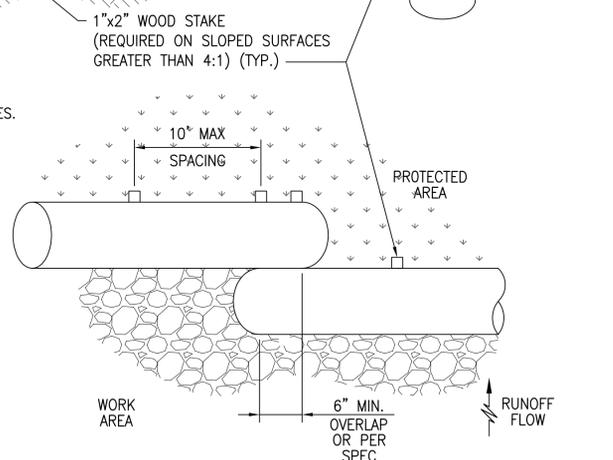


**1 SILT FENCE DETAIL**  
C-35 3/8" = 1'-0"

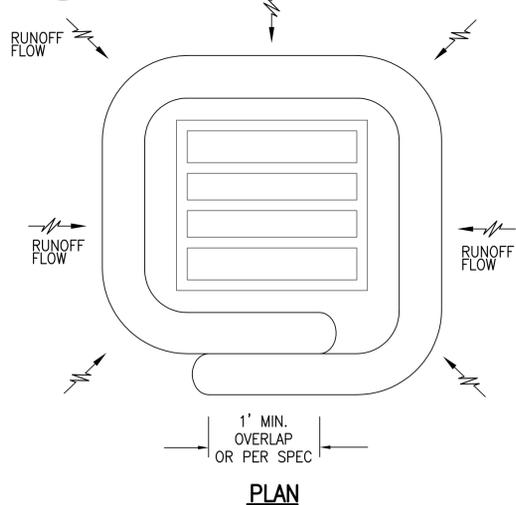


**NOTE:**

1. COMPOST SHALL NOT CONTAIN BIOSOLIDS AND SHALL BE CONSISTENT WITH EPA GUIDELINES.

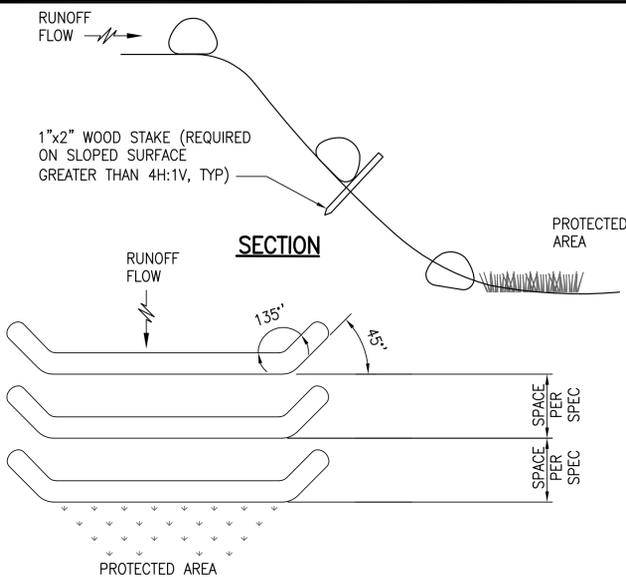


**4 COMPOST FILTER SOCK-PERIMETER PROTECTION**  
C-35 NOT TO SCALE



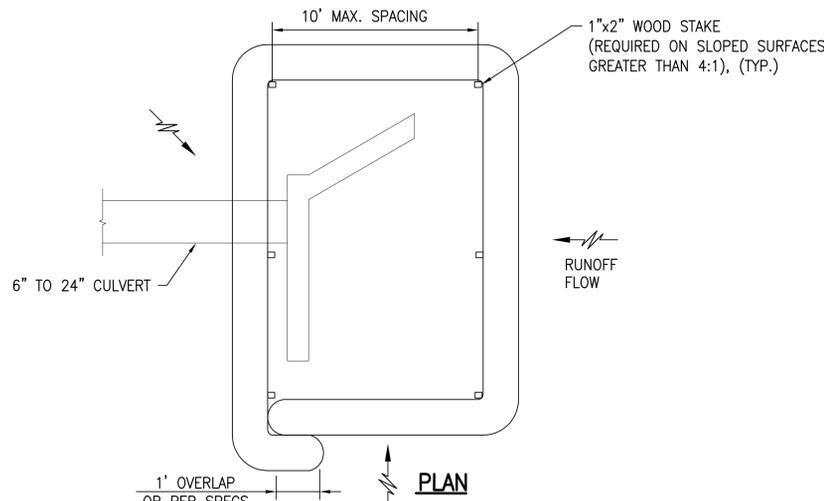
PLAN

**5 COMPOST FILTER SOCK-INLET PROTECTION**  
C-35 NOT TO SCALE



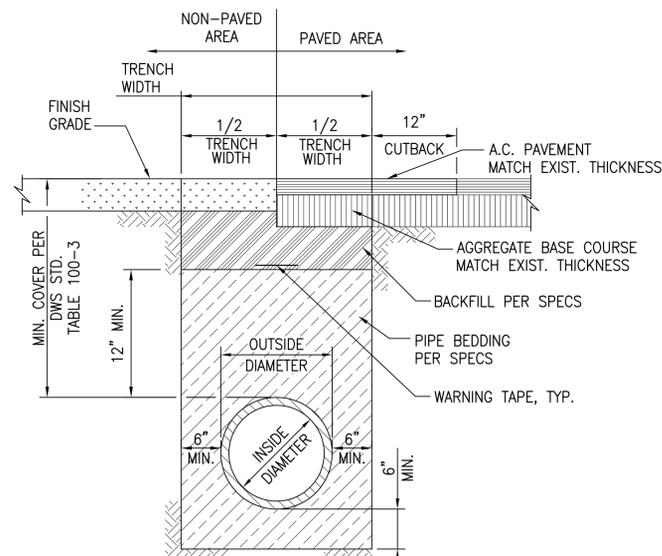
PLAN

**2 COMPOST FILTER SOCK-EMBANKMENT PROTECTION**  
C-35 NOT TO SCALE

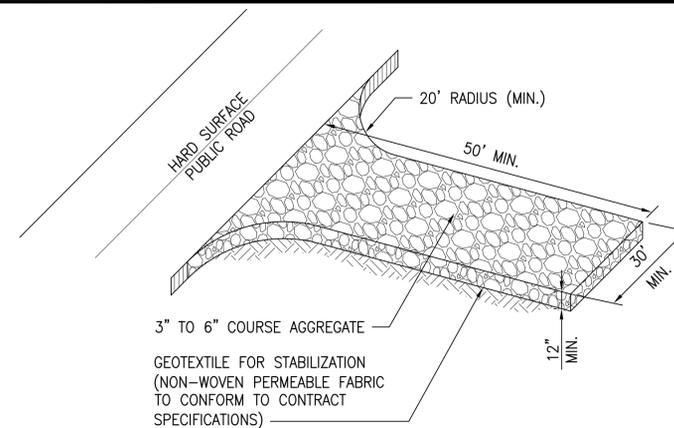


PLAN

**6 COMPOST FILTER SOCK-CULVERT INLET PROTECTION**  
C-35 NOT TO SCALE



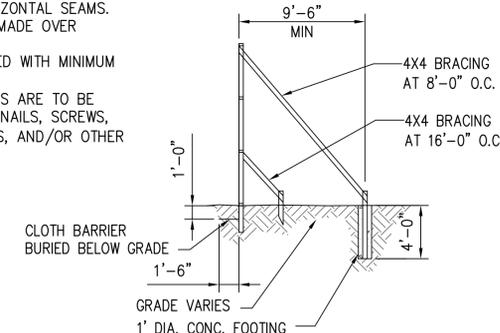
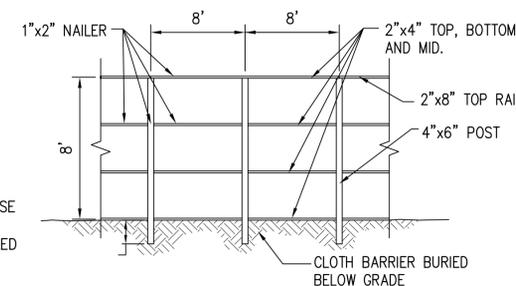
**7 WATER TRENCH DETAIL**  
C-35 NOT TO SCALE



**3 CONSTRUCTION ENTRANCE DETAIL**  
C-35 NOT TO SCALE

**NOTES:**

1. CLOTH BARRIER NOT SHOWN IN FRONT VIEW.
2. CLOTH BARRIER TO BE A "WOVEN GEOTEXTILE", "NURSERY SHADE" OR APPROVED EQUAL.
3. LUMBER SIZES ARE NOMINAL INCHES.
4. AS SHOWN CLOTH TO BE BURIED AT BASE TO INDICATED DIMENSION.
5. 1"x2" CLOTH BARRIER CAPS TO BE NAILED 1' O.C.
6. BURLAP IS NOT ACCEPTABLE AS THE CLOTH BARRIER.
7. CLOTH TO HAVE NO HORIZONTAL SEAMS.
8. VERTICAL SEAMS TO BE MADE OVER UPRIGHTS ONLY.
9. ALL SEAMS TO BE CAPPED WITH MINIMUM OF 1"x2" NAILER.
10. ALL JOINTS FOR BRACINGS ARE TO BE SECURELY FASTENED BY NAILS, SCREWS, BOLTS, METAL FASTENERS, AND/OR OTHER MECHANICAL MEANS.



**8 DUST FENCE DETAIL**  
C-35 NOT TO SCALE

FINAL DESIGN SUBMITTAL



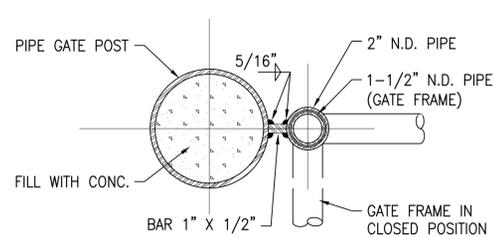
4/30/2018 EXPIRATION DATE OF THE LICENSE  
APPROVED: *Robby R. McKinney*  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

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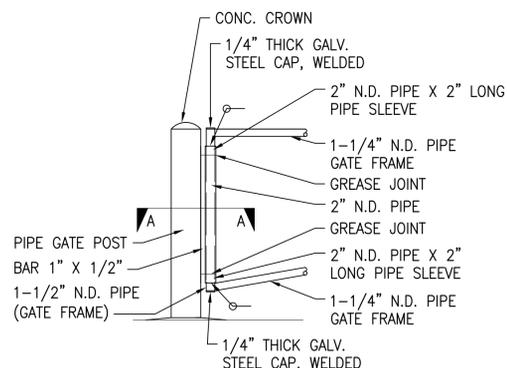
**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH19  
TAX MAP KEY: (3) 6-4-038-011 (POR.)

**CIVIL DETAILS - 1**

DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD
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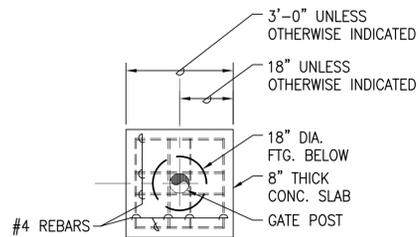


**SECTION A-A**

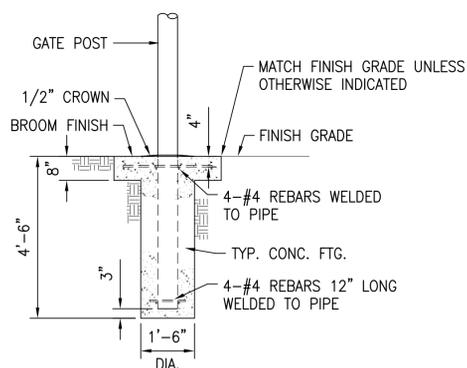


**ELEVATION**

**HINGE DETAIL**

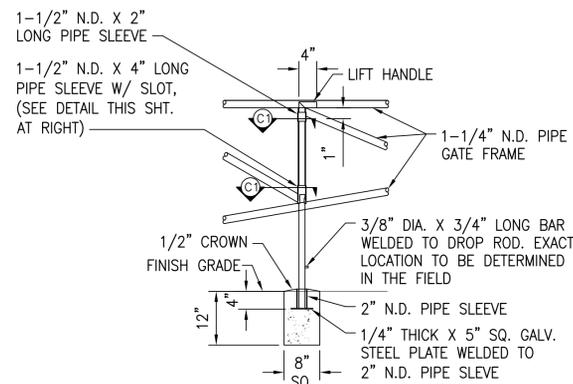


**PLAN**

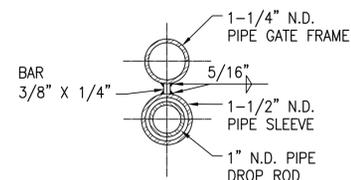


**SECTION**

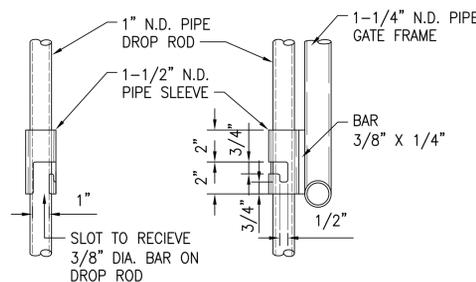
**FOOTING DETAIL**



**FRONT ELEVATION**



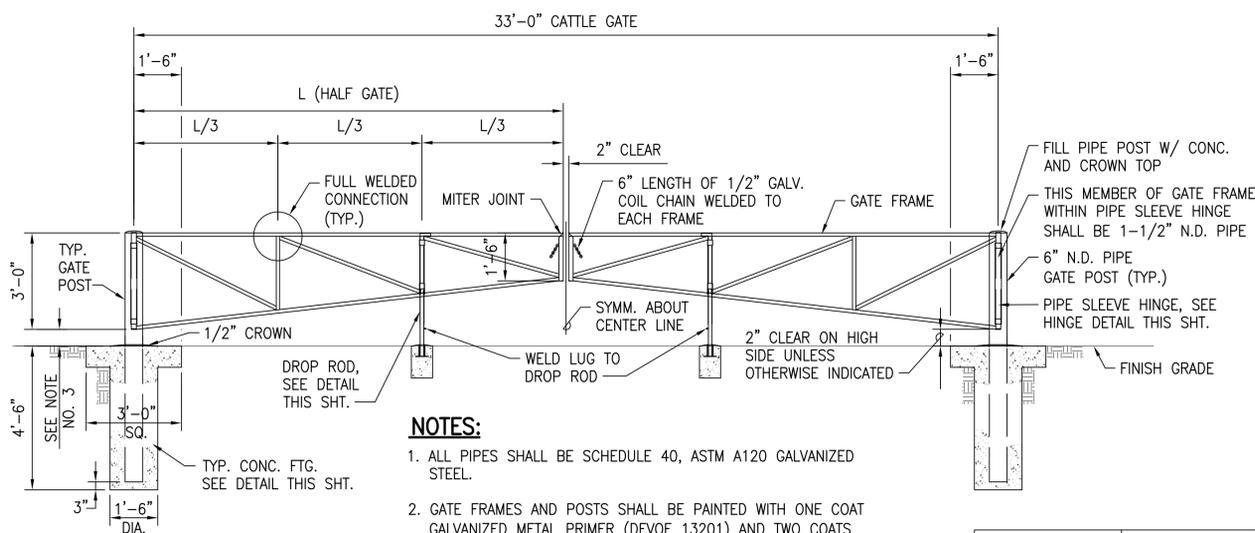
**SECTION "C1"**



**FRONT ELEVATION**

**SIDE ELEVATION**

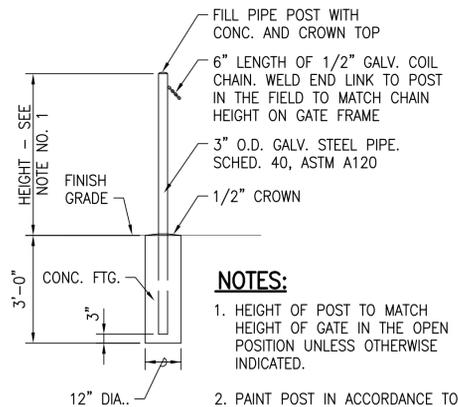
**DROP ROD DETAILS**



**NOTES:**

1. ALL PIPES SHALL BE SCHEDULE 40, ASTM A120 GALVANIZED STEEL.
2. GATE FRAMES AND POSTS SHALL BE PAINTED WITH ONE COAT GALVANIZED METAL PRIMER (DEVOE 13201) AND TWO COATS WHITE FINISH PAINT (DEVOE 417XX-METALCLAD SEMI-GLOSS). PREPARE SURFACE PRIOR TO PAINTING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE CONTRACT SPECIFICATIONS.
3. ADJUST CLEAR DIMENSION TO MAKE BOTH FRAMES LEVEL WITH EACH OTHER AND TO ALLOW GROUND CLEARANCES FOR GATE SWING.
4. ALL WELDS AND DAMAGED GALVANIZED SURFACES SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND PRIOR TO PAINTING.

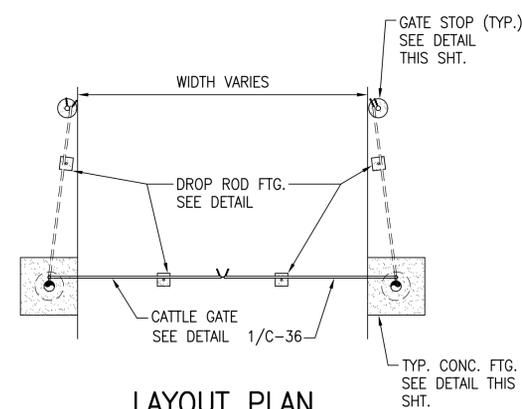
SIZE OF PIPE NOMINAL DIA. (INCHES)	WEIGHT PER FOOT LBS
1"	1.68 LB/FT
1-1/4"	2.27 LB/FT
1-1/2"	2.72 LB/FT
2"	3.65 LB/FT
6"	18.97 LB/FT



**NOTES:**

1. HEIGHT OF POST TO MATCH HEIGHT OF GATE IN THE OPEN POSITION UNLESS OTHERWISE INDICATED.
2. PAINT POST IN ACCORDANCE TO NOTE NO. 2 OF CATTLE GATE DETAIL 1/C-36.

**GATE STOP DETAIL**



**LAYOUT PLAN**

**1 CATTLE GATE DETAILS**  
C-36 3/8" = 1'-0"

**FINAL DESIGN SUBMITTAL**



4/30/2018  
EXPIRATION DATE OF THE LICENSE  
*Robby R. McKinney*  
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99 Aupuni Street, Suite 202  
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OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. 00AH19  
TAX MAP KEY: (3) 6-4-038-011 (POR.)

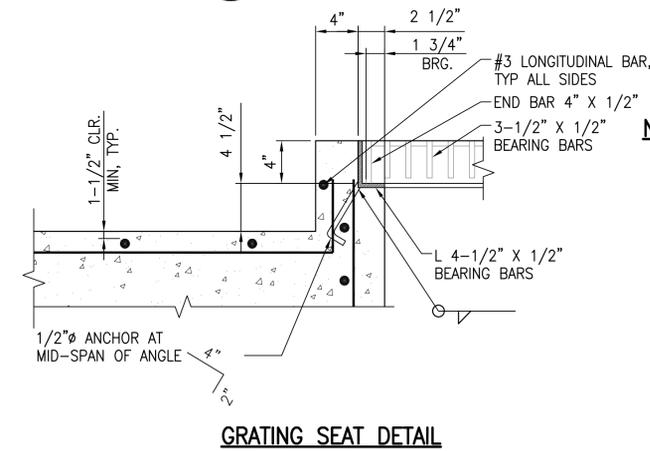
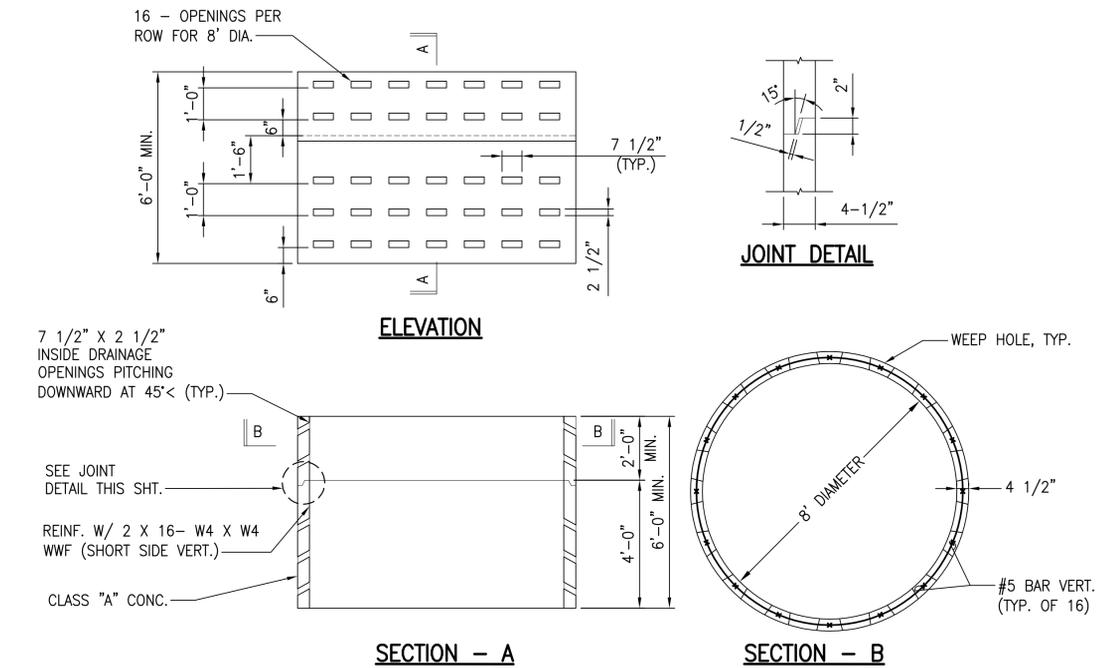
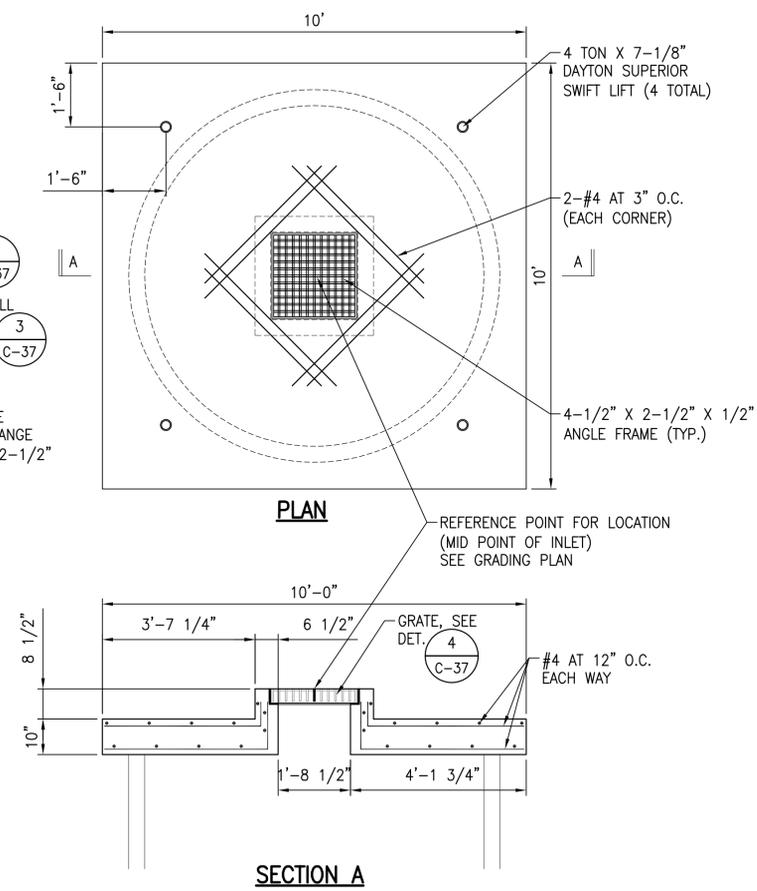
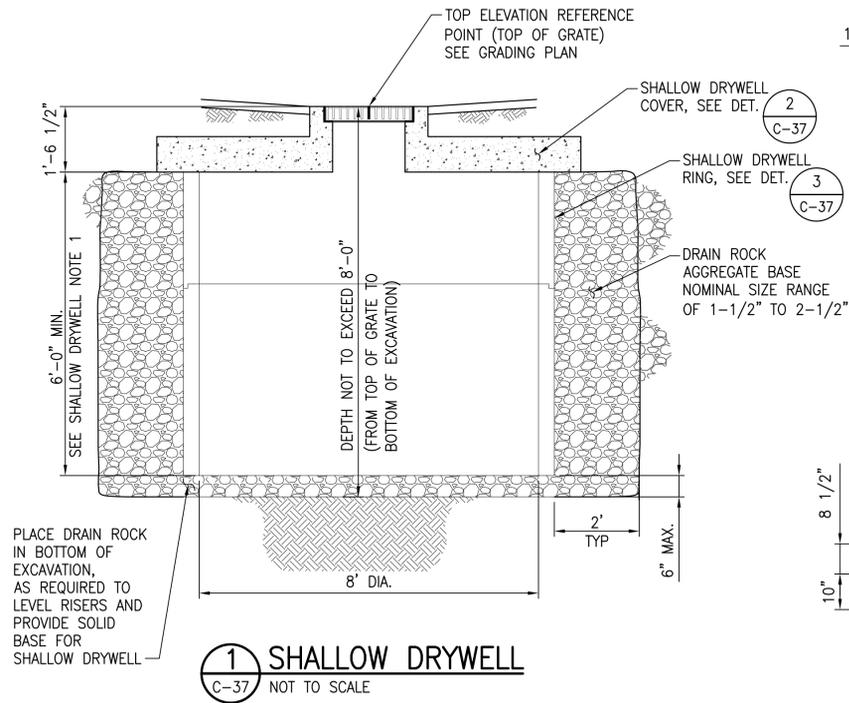
**CIVIL DETAILS - 2**

DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD  
APPROVED:

I:\\_CIVIL\_3D\_PROJECTS\2015\_071\_000\_DA\_WAIMEA\_NUH\_AGR\_PARK\01\_CIVIL\_DRAWINGS\C-36\_CIVIL\_DETAILS\_2.DWG 5/5/2016 10:22 AM JANUANA

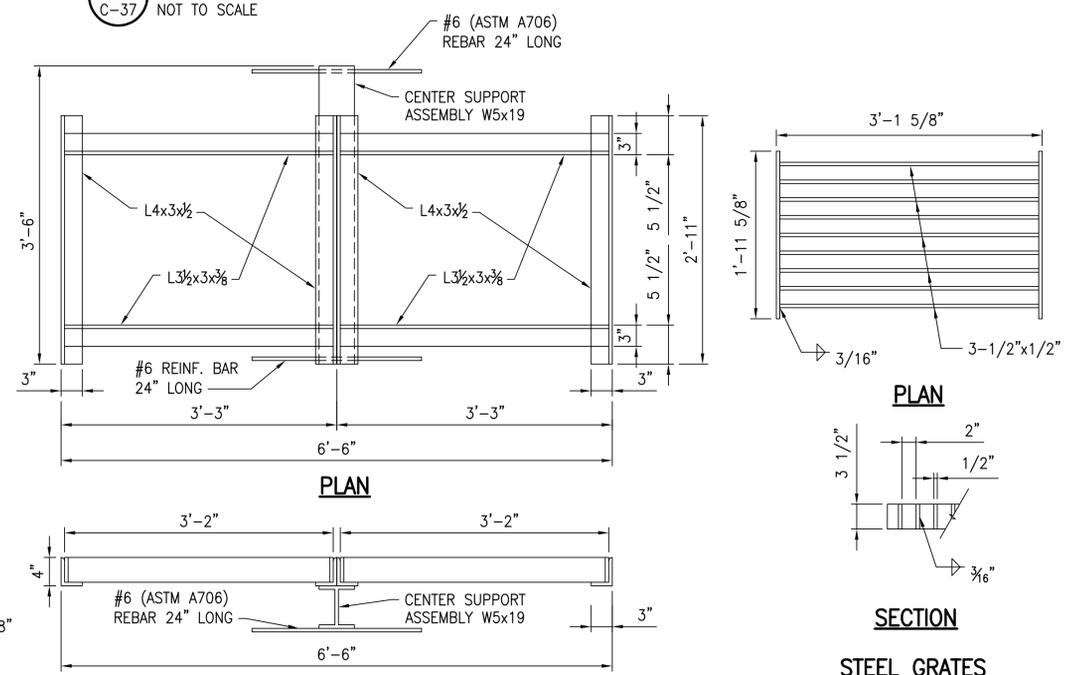
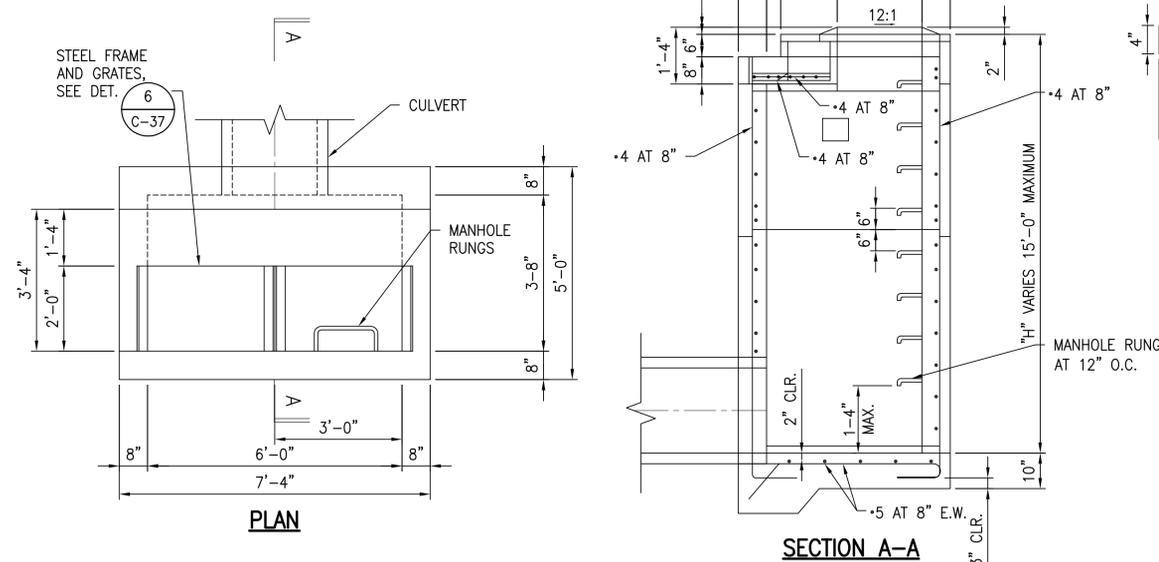
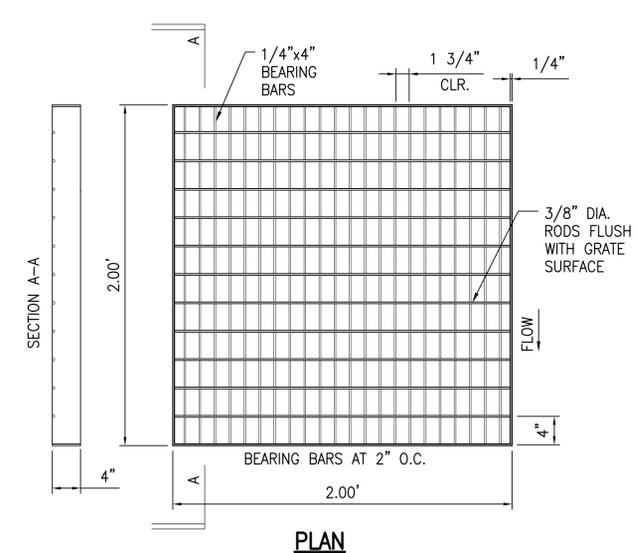
**SHALLOW DRYWELL NOTES:**

1. CONCRETE-28 DAY COMPRESSIVE STRENGTH = 4000 PSI.
2. CONTRACTOR SHALL PRESERVE EXISTING GEOLOGICAL FORMATION AT PROPOSED SHALLOW DRYWELL LOCATIONS TO ENSURE PROPER SHALLOW DRYWELL OPERATION.



**NOTES:**

1. ALL WELDS 3/8".
2. ALL STEEL SHALL BE STRUCTURAL GRADE.
3. GRATES AND FRAME SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
4. PROVIDE 4 UNIVERSAL FASTENERS PER COATING.
5. GRATING BAND BARS SHALL BE 1/4" THICK 4" DEPTH, AND WELDED FLUSH WITH TOP OF GRATING.
6. ADD TWO 3/8" DIA. BOTTOM CROSS BARS TO GRATING NEAR CENTER.



**FINAL DESIGN SUBMITTAL**



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Hilo, Hawaii 96720

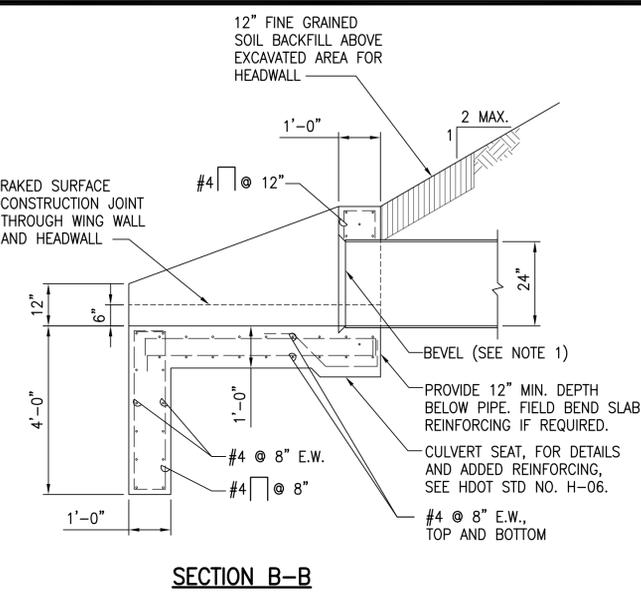
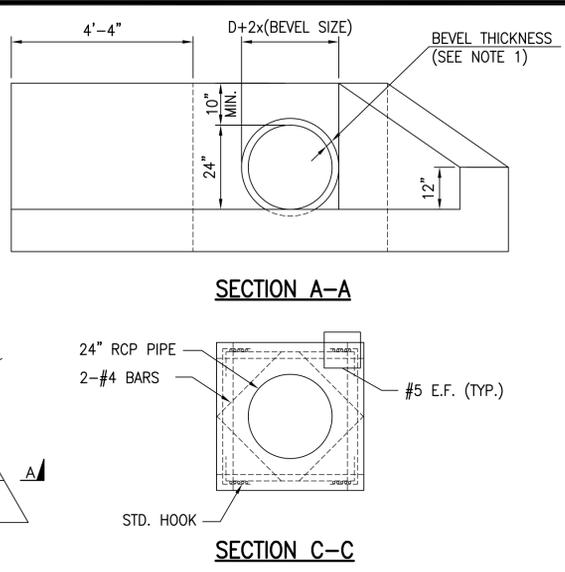
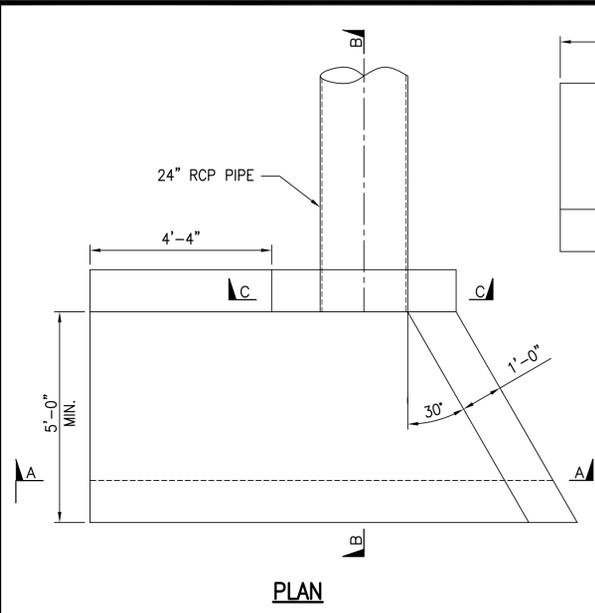
**WAMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH15  
TAX MAP KEY: (3) 6-4-038-011 (POR.)

**CIVIL DETAILS - 3**

4/30/2018 EXPIRATION DATE OF THE LICENSE  
APPROVED: *Robby R. McKinney*  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

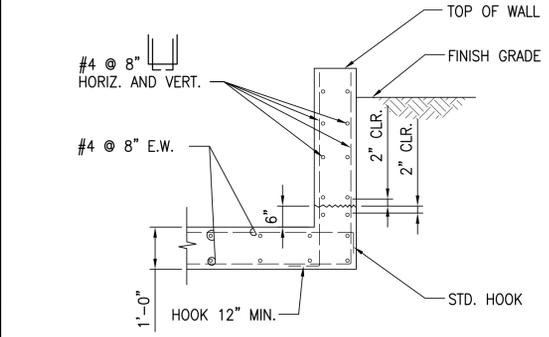
DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD
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W:\\_CIVIL\_3D\_PROJECTS\2015\_071\_000\_DA\_WAMEA\_NUI\_AGRIC\_PARK\01\_CIVIL\_DRAWINGS\C-37\_CIVIL\_DETAILS\_3.DWG 5/9/2016 10:11 AM #5244

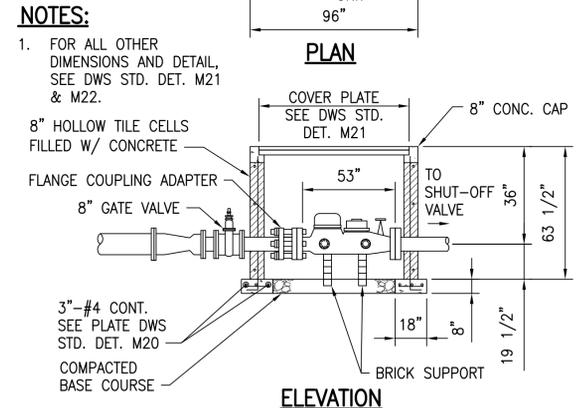
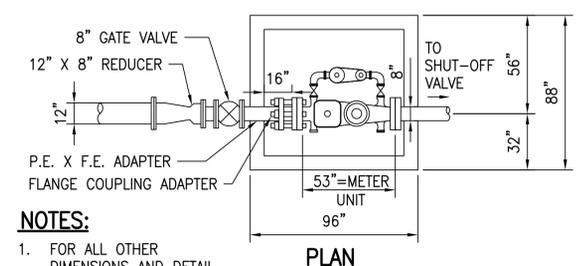


**1 CONCRETE HEADWALL DETAIL**  
1/2" = 1'-0"

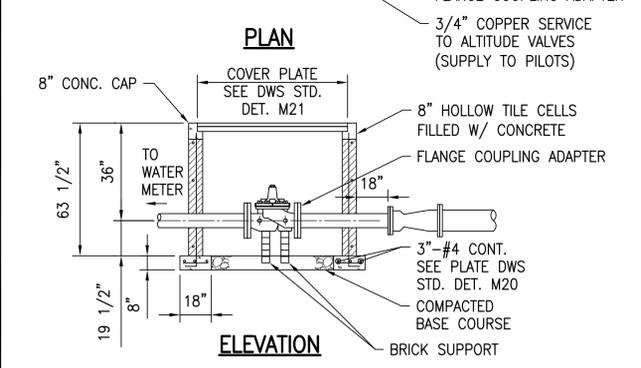
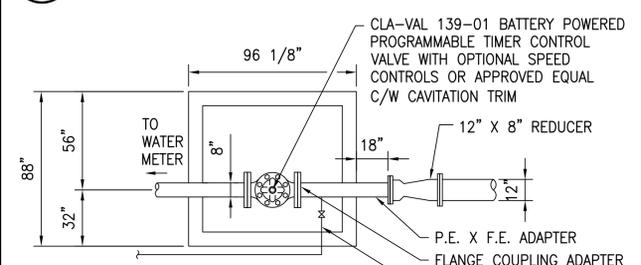
- NOTES:**
- CONSTRUCT BEVELS 1/2 IN/FT OF CULVERT DIAMETER OR RISE.
  - THE GROOVE OR BELL END OF THE CONCRETE CULVERT MAY BE USED IN PLACE OF BEVELS.
  - DESIGN CRITERIA
    - A. ACTIVE HORIZONTAL PRESSURE = 60 PCF (2 TO 1 SLOPING BACKFILL, ABOVE GROUNDWATER)
    - B. ACTIVE VERTICAL PRESSURE = 30 PCF (2 TO 1 SLOPING BACKFILL, ABOVE GROUNDWATER)
    - C. STRENGTH BEARING CAPACITY = 2,500 PSF
    - D. INLET/OUTLET STRUCTURES WERE NOT DESIGNED FOR EXTREME EVENT LOAD COMBINATION.



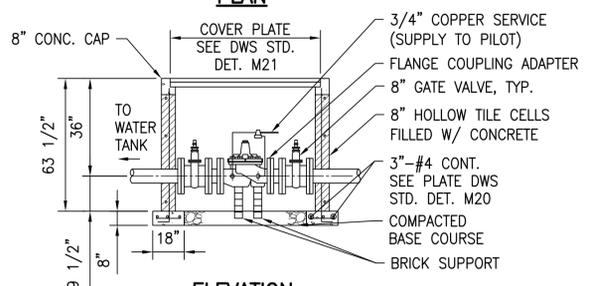
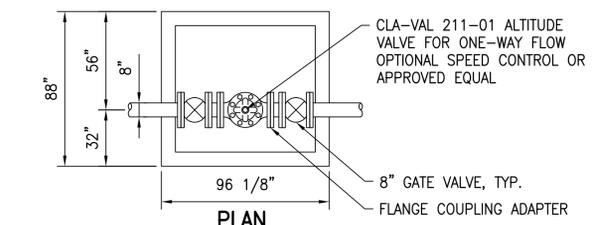
**2 TYPICAL WING WALL REINFORCING SECTION**  
1/2" = 1'-0"



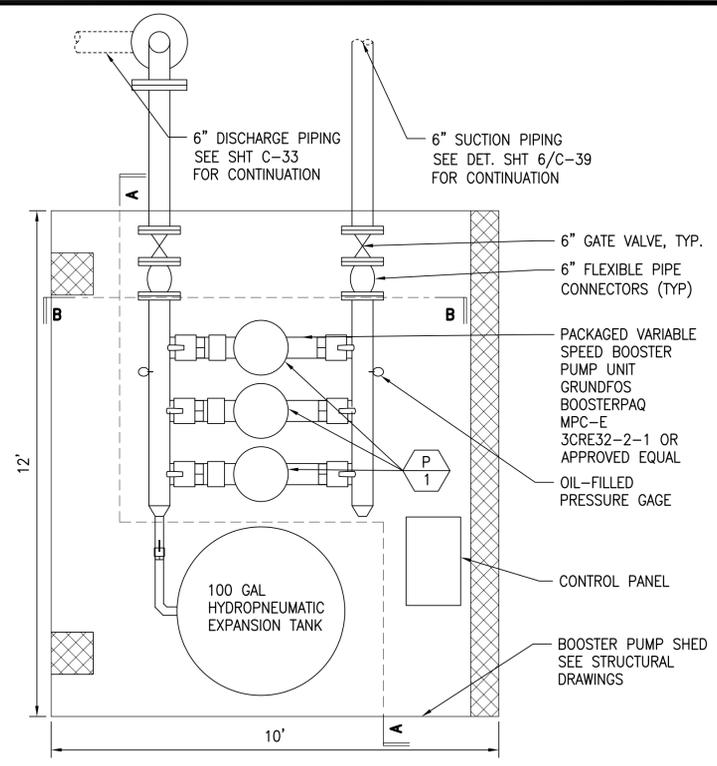
**3 8" WATER METER AND BOX DETAIL**  
NTS



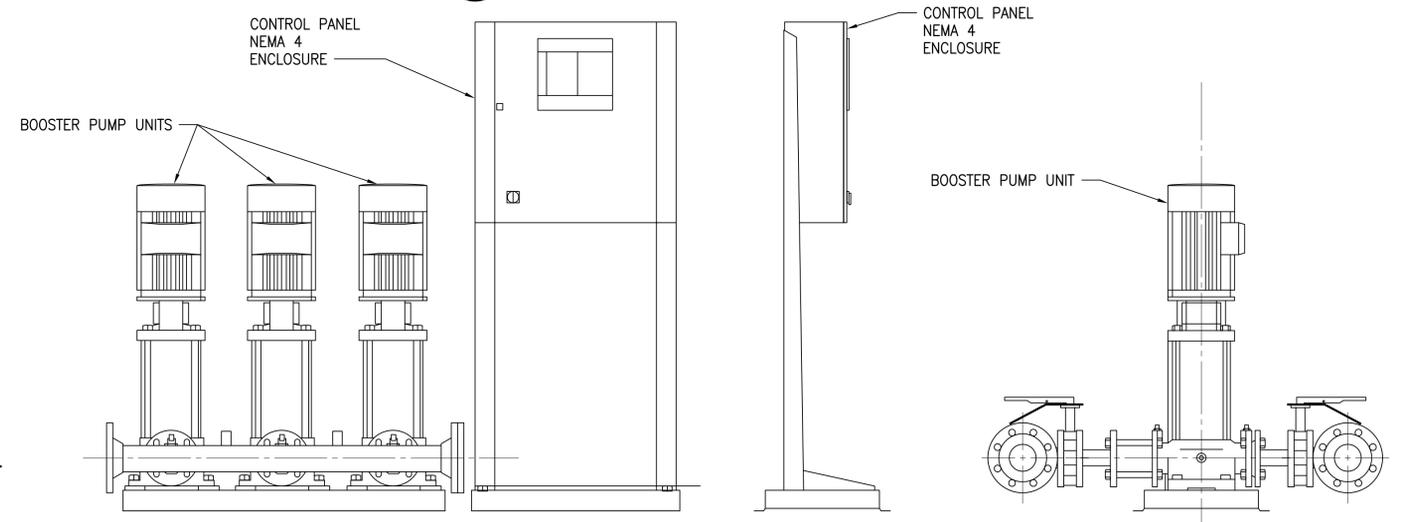
**4 8" PROGRAMMABLE SHUT-OFF VALVE**  
NTS



**5 8" ALTITUDE VALVE**  
NTS

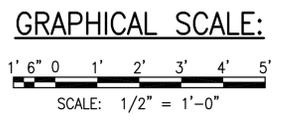


**6 BOOSTER PUMP SHED - PLAN**  
NTS



**7 BOOSTER PUMP SHED - SECTION**  
NTS

BOOSTER PUMP SCHEDULE										
SYMBOL	QTY.	TYPE	SERVICE AREA	GPM	TOTAL HEAD IN FT. W.C.	SERVICE FACTOR	ELECTRICAL		REMARKS	
							HP	RPM	VOLTAGE	
	3-EA	END SUCTION CENTRIFUGAL, VERTICAL MOUNTED, NON-OVERLOADING	IRRIGATION	270	120	0.15	7.5	3600	208V, 3Ø	TEFC, MOTOR



- SEQUENCE OF OPERATION**
- LEAD PUMP STARTS ON DROP OF DISCHARGE PRESSURE AND VARIES SPEED TO MAINTAIN DISCHARGE SET POINT PRESSURE.
  - LAG PUMP STARTS IF LEAD PUMP CANNOT MAINTAIN DISCHARGE SET POINT PRESSURE.
  - ONE PUMP TO REMAIN AS STAND-BY. PUMPS TO ALTERNATE TO ENSURE EVEN WEAR ON ALL 3 PUMPS. WHEN PUMP DISCHARGE PRESSURE EXCEEDS THE SET POINT PRESSURE, THE PUMP WILL SHUT DOWN.
  - DESIGN POINT (WITH 2 PUMPS)  
FLOW 270 GPM  
PUMP ON : 40 PSI  
PUMP OFF : 60 PSI  
SET POINT: 52 PSI

FINAL DESIGN SUBMITTAL



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**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DOAH18  
TAX MAP KEY: (3) 6-4-038011 (POR.)

**CIVIL DETAILS - 4**

DRAWN BY: KAS, MGC ENGINEER: RM CHECKED BY: AWD  
APPROVED:

4/30/2018 EXPIRATION DATE OF THE LICENSE  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.



# GENERAL NOTES FOR TRAFFIC CONTROL PLAN

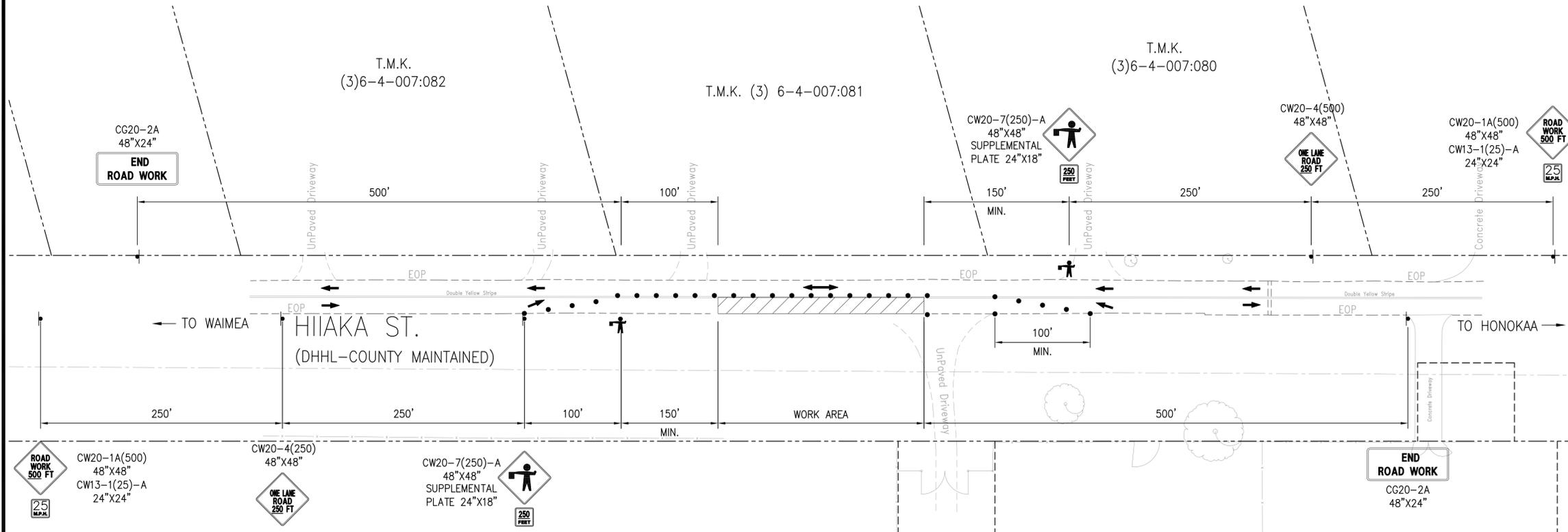
1. THE PERMITTEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF WORK.
5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITTEE SHALL INSTALL A FLASHING ARROW SIGNAL.
7. SIGN SPACINGS (D) AND TAPER LENGTHS (T) AND SPACINGS OF CONES OR DELINEATORS SHALL BE AS SHOWN IN TABLE 1, UNLESS OTHERWISE NOTED ON THE TRAFFIC CONTROL PLANS.
8. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
9. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
10. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
11. AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITTEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION.
12. PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL BE REPLACED UPON THE COMPLETION OF EACH PHASE OF WORK.

## ADDITIONAL TRAFFIC CONTROL PLAN NOTES:

1. REPLACE EXISTING, FADED, OR OBLITERATE PAVEMENT MARKINGS THAT ARE NECESSARY FOR SAFE TRAFFIC FLOW IN THE CONSTRUCTION AREA WITH TEMPORARY OR PERMANENT PAVEMENT MARKINGS BEFORE OPENING THE ROADWAY TO PUBLIC TRAFFIC EACH DAY.
2. TRAFFIC CONTROL PLANS ARE APPROVED FOR WORK ON ANY STREET AREA ONLY BETWEEN THE HOURS OF 8:30 A.M. TO 3:00 P.M..
3. THE CONSULTANT SHALL NOT SUPERVISE, DIRECT OR HAVE CONTROL OVER THE CONTRACTOR'S WORK OR HAVE ANY RESPONSIBILITY FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES SELECTED BY THE CONTRACTOR OR FOR THE CONTRACTOR'S SAFETY AND TRAFFIC CONTROL PRECAUTIONS OR PROGRAMS IN CONNECTION WITH THE WORK. THESE RIGHTS AND RESPONSIBILITIES ARE SOLELY THOSE OF THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
4. THE CONTRACTOR SHALL SEQUENCE THE WORK TO MINIMIZE DISRUPTION OF ACCESS TO THE ADJUTING PROPERTIES. THE CONTRACTOR SHALL NOTIFY THE ADJUTING PROPERTY OWNERS IN ADVANCE OF SCHEDULE WORK REQUIRING TEMPORARY INCONVENIENCES AND DISRUPTION OF ACCESS AND SHALL PROVIDE TEMPORARY FACILITIES AND ACCESS AT NO ADDITIONAL COST TO THE COUNTY.

## TRAFFIC CONTROL PLAN - ONE LANE CLOSURE (ADD. ALT 1)

SCALE: 1" = 30'



### LEGEND:

- SIGN
- CONE OR DELINEATOR
- DIRECTION OF VEHICLE TRAFFIC
- POLICE OFFICER/FLAGGER
- WORK AREA

### NOTES:

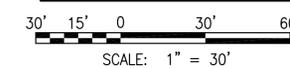
1. CW20-1A SIGN REQUIRED FOR POSTED SPEED LIMIT OF 45 MPH OR GREATER.
2. ONE LANE ROAD (CW20-4) AND FLAGGER AHEAD (CW20-7) SIGNS SHALL BE REMOVED OR COVERED WHEN NO WORK IS BEING PERFORMED AND LANE IS NOT CLOSED.
3. THE ADVISORY SPEED (XX) SHALL BE DETERMINED BY THE ENGINEER.
4. CONES OR DELINEATOR SHALL BE INSTALLED AT 25' O.C. MAX. ON TOPERS.

POSTED SPEED LIMIT (M.P.H.)	SIGN SPACING (D) FEET	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (8) (FEET)	SPACING OF CONES OR DELINEATORS (FEET)		
		W=12' OR LESS (1)	W=GREATER THAN 12' (1)		TAPER	TANGENT	WORK AREA
20	250	200	W X 17	35	20	20	10
25	250	200	W X 17	55	25	25	10
30	250	250	W X 20	85	30	30	10
35	250	250	W X 20	120	35	35	10
40	500	350	W X 30	170	40	40	10
45	500	550	W X 45	220	45	45	10
50	1000	600	W X 50	280	50	50	10
55	1000	700	W X 55	335	55	55	10

NOTES:

- (1) W = WIDTH OF LANE, SHOULDER OR OFFSET

### GRAPHICAL SCALE:



FINAL DESIGN SUBMITTAL



4/30/2018 EXPIRATION DATE OF THE LICENSE  
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

**SSFM International** SSFM INTERNATIONAL, INC.  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
 PUKUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
 OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 MANAGED BY: DEPARTMENT OF AGRICULTURE  
 PROJECT NO. DOAH16  
 TAX MAP KEY: (3)6-4-038-011 (POR.)

**TRAFFIC CONTROL PLAN**

DRAWN BY: KAS, MGC	ENGINEER: RM	CHECKED BY: AWD
APPROVED:		

**GENERAL NOTES**

- A. SEE ALSO:
  1. SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS
  2. SPECIAL NOTES ON DRAWINGS
- B. DISCREPANCIES – CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND SHALL REPORT ANY DISCREPANCIES IN WRITING TO THE ENGINEER BEFORE COMMENCING WORK OR ORDERING MATERIALS
- C. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE IBC 2006 EDITION AND LOCAL BUILDING CODE IN ADDITION TO THE CODES CITED.
- D. DETAILS SHOWN ON THE DRAWINGS SHALL BE TYPICAL FOR ALL SIMILAR CONDITIONS. MODIFY DETAILS FOR SPECIAL CONDITIONS AS DIRECTED BY THE ENGINEER.

**CONSTRUCTION NOTES**

- A. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS IN ADVANCE FOR REVIEW AND OBSERVATION OF EXCAVATIONS, REINFORCING, AND CONCRETE POURS.
- B. CONSTRUCTION LOADING SHALL NOT EXCEED THE DESIGN LIVE LOAD UNLESS SPECIAL SHORING IS PROVIDED. ALLOWABLE LOADS SHALL BE REDUCED IN AREAS WHERE THE STRUCTURE HAS NOT ATTAINED ITS FULL DESIGN STRENGTH.
- C. SHORING:
  1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF TEMPORARY SHORING.

**FOUNDATION NOTES**

- A. FILL MATERIAL:
  1. IF REQUESTED BY ENGINEER, REPRESENTATIVE SAMPLE SHALL BE PROVIDED FOR INSPECTION BY THE ENGINEER PRIOR TO DELIVERY TO THE PROJECT SITE AND AT NO ADDITIONAL COST TO THE ENGINEER.
  2. SEE SPECIFICATIONS FOR FILL UNDER SLABS ON GRADE.
- B. COMPACTION:
  1. BACKFILL AROUND FOOTINGS AND FOUNDATIONS SHALL BE COMPACTED IN LAYERS BY PNEUMATIC TAMPER INTO A DENSE MASS.
  2. FOUNDATIONS AND SLABS ON GRADE SHALL BE UNDERLAIN BY A MINIMUM OF 36" IMPORTED GRANULAR STRUCTURAL FILL. PRIOR TO PLACEMENT OF IMPORTED GRANULAR STRUCTURAL FILL, THE ONSITE CLAYEY SILT/VOLCANIC ASH SHALL BE OVEREXCAVATED AND THE SUBGRADE COMPACTED TO 90% COMPACTION PER ASTM D1557 OR TO A MINIMUM OF 100% OF THE MAXIMUM WET DENSITY DETERMINED FOR THE SOIL AT IN-SITU MOISTURE CONTENT. A MINIMUM 36" THICKNESS OF IMPORTED GRANULAR STRUCTURAL FILL SHALL BE PLACED LEVEL LIFTS NOT TO EXCEED 8" IN THICKNESS AND COMPACTED TO 95% COMPACTION PER ASTM D1557. THE LIMITS OF THE OVEREXCAVATED AREA SHALL EXTEND A MINIMUM OF 24" PAST THE EDGE OF THE FOOTINGS AND SLABS ON GRADE, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- C. ALL EXCAVATIONS SHALL BE PROTECTED AND GUARDED BY THE CONTRACTOR AGAINST DANGER TO LIFE, LIMB AND PROPERTY.
- D. SHORING SHEETING, CRIBBING, AND LAGGING, AS REQUIRED TO PRESERVE THE EXCAVATIONS, EARTH BANKS AND ADJACENT STRUCTURES AND PROPERTY FREE FROM DAMAGE RESULTING FROM THE WORK SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.

**REINFORCING STEEL NOTES**

- A. STRENGTHS—UNLESS OTHERWISE NOTED ON PLANS, ALL REINFORCING STEEL BARS SHALL BE ASTM A615, GRADE 60.
- B. MINIMUM CONCRETE CLEAR COVER UNLESS NOTED OTHERWISE:
  1. CONCRETE POURED AGAINST EARTH . . . . . 3"
  2. CONCRETE POURED AGAINST FORMS AND LATER EXPOSED TO EARTH . . . . . 2"
  3. WALLS AND SLABS EXPOSED TO WEATHER OR GROUND:
    - a) #5 BAR OR SMALLER . . . . . 1 1/2"
    - b) #6 BAR OR LARGER . . . . . 2"
- C. BAR BENDS, HOOKS, AND OFFSETS SHALL BE IN ACCORDANCE WITH THE ACI RECOMMENDATIONS.
- D. SPECIAL SPACER CHAIRS, PLASTIC SPACER CHAIRS SHALL BE USED TO MAINTAIN REQUIRED MINIMUM CONCRETE CLEAR COVER FOR ALL BEAM, COLUMN, AND WALL REINFORCING.

**CONCRETE NOTES**

- A. ALL CONCRETE SHALL DEVELOP THE FOLLOWING MINIMUM ULTIMATE COMPRESSIVE STRENGTHS, WITH CORRESPONDING MAXIMUM SIZE OF AGGREGATES AND WATER CEMENT RATIOS AS FOLLOWS (UNLESS SHOWN ELSEWHERE IN SCHEDULES):
 

ELEMENT	28 DAY STRENGTH (PSI)	MAXIMUM SIZE AGGREGATE	WATER/CEMENT RATIO
1. CONCRETE	4000	3/4"	0.45
- B. ADMIXTURES: USE OF ADMIXTURE AT CONTRACTOR'S OPTION, BUT SUBJECT TO THE ENGINEER APPROVAL.
- C. UNLESS OTHERWISE SHOWN, CONSTRUCTION JOINTS SHALL BE LOCATED BY THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE ENGINEER. THEY SHALL BE SO LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. PROVIDE DOWELS AS DIRECTED AND THOROUGHLY CLEAN AND ROUGHEN SURFACES BEFORE PROCEEDING WITH NEXT POUR (THIS REQUIREMENT APPLIES TO FLOORS AND WALLS).
- D. THE USE OF ANY CALCIUM CHLORIDE IN ANY CONCRETE IS PROHIBITED.

**CONCRETE MASONRY NOTES:**

- A. ALL STANDARD UNITS SHALL BE 2-CELL TYPE, UNLESS OTHERWISE SHOWN. PROVIDE "H" BLOCKS FOR BELOW GRADE FOUNDATION WALLS.
- B. MINIMUM REINFORCING, UNLESS OTHERWISE SHOWN, SHALL BE:
  1. VERTICAL BARS – #5 AT 32" O.C. WITH BARS ALSO AT ENDS, CORNERS, AND INTERSECTIONS. PROVIDE DOWELS SAME AS FOR CONCRETE WALLS.
  2. HORIZONTAL STEEL – FOR 8" THICKNESS #5 AT 32" O.C. AND #5 AT TOP OF WALLS WITH CONNECTIONS TO CONCRETE WALLS OR COLUMNS AS SHOWN REINFORCING SHALL BE CONTINUOUS AROUND ALL CORNERS AND INTERSECTIONS FOR 6" THICKNESS #5 AT 24".
- C. ALL CELLS SHALL BE SOLIDLY GROUTED UNLESS OTHERWISE NOTED.
- D. PROVIDE 1 -#5 AROUND ALL OPENING INCLUDING JAMBS; ALL BARS TO EXTEND A MINIMUM OF 2'-0" BEYOND THE EDGE OF THE OPENING. ALSO, PROVIDE 1-#5 VERTICAL AT ALL CORNERS AND INTERSECTIONS. HORIZONTAL BAR LAPS AT CORNERS AND INTERSECTIONS SAME AS IN TYPICAL CONCRETE DETAILS. PROVIDE 2-#5 VERTICAL AT EACH SIDE OF EXPANSION AND CONTROL JOINTS.
- E. REINFORCEMENT GRADE, BAR BENDS, DETAILS, LAPS ETC., SHALL BE THE SAME AS FOR CONCRETE.
- F. CONCRETE BLOCK UNITS SHALL BE LAID IN RUNNING BOND PATTERN UNLESS OTHERWISE SPECIFIED AND/OR SHOWN.
- G. ALL CONCRETE MASONRY UNITS SHALL BE MODULAR, SIZE AS INDICATED ON PLANS, CONFORMING TO ASTM C90, TYPE-T1 GROUTED AS INDICATED ON DRAWINGS WITH SPECIAL INSPECTION. ALL CMU HAS BEEN DESIGNED FOR AN ULTIMATE COMPRESSIVE STRENGTH  $f_m=1500PSI$
- H. MORTAR SHALL CONFORM TO ASTM C270, TYPE S WITH MINIMUM 28 DAY STRENGTH OF 1,800 PSI.
- I. GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM 28 DAY STRENGTH OF 2,000 PSI.

**TIMBER NOTES**

- A. TIMBER SPECIES AND GRADE
  1. ALL MEMBERS: DOUGLAS FIR-LARCH; NO. 2 AND BETTER WHERE EXPOSED TO VIEW UNLESS NOTED OTHERWISE.
- B. WOOD TREATMENT: SEE SPECIFICATIONS
- C. THE CONTRACTOR SHALL VERIFY ALL FRAMING CONDITIONS WITH THE FLOOR AND ROOF FRAMING PLANS. SPECIAL ATTENTION SHALL BE REQUIRED FOR COORDINATION OF DETAILS AND ELEVATIONS WITH FRAMING REQUIREMENTS.
- D. UNLESS SPECIFIED OTHERWISE, ALL POSTS SHALL BE ALIGNED FROM TOP OF CONCRETE FOOTINGS OR SLAB TO ROOF FRAMING SYSTEM.
- E. ALL METAL CONNECTORS SHALL BE GALVANIZED
- F. SIMPSON STRONG TIE HARDWARE CONNECTORS ARE NOTED TO PROVIDE A LEVEL OF QUALITY AND OTHER CONNECTORS. MAY BE USED WHERE APPROVED BY THE ENGINEER. CURRENT ICBO EVALUATION REPORTS SHALL BE PROVIDED FOR ANY CONNECTORS USED.

**MINIMUM NAILING SCHEDULE**

CONNECTION	COMMON NAILING
JOIST TO TOP PLATE OR GIRDER, TOE NAIL	3 – 8d
BRIDGING TO JOIST, TOE NAIL EACH END	2 – 8d
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL	16d AT 16" O.C.
STUD TO SOLE PLATE, TOE NAIL	4 – 8d
DOUBLE TOP PLATE:	DOUBLE TOP PLATE:
LOWER PLATE TO STUD, FACE NAIL	2 – 20d
UPPER PLATE TO LOWER PLATE, FACE NAIL	16d AT 16" O.C.
TOP PLATE, LAPS, AND INTERSECTIONS, FACE NAIL	2 – 16d
RAFTER (OR TRUSS) TO PLATE, TOE NAIL	3 – 8d
BUILT-UP CORNER STUDS	16d AT 36" O.C.
CONTINUOUS HEADER TO STUD, TOE NAIL	4 – 8d
SOLID BLOCKING TO JOIST	4 – 8d
ROOF AND DIAPHRAGM SHEATHING	8d AT 4" EDGE SPACING 8d AT 6" FIELD SPACING

**STRUCTURAL SPECIAL INSPECTION NOTES**

- A. SPECIAL INSPECTION PROVISIONS OF THE SECTION 17.4 OF THE 2006 INTERNATIONAL BUILDING CODE (AS AMENDED BY COUNTY OF HAWAII) GOVERN PORTIONS OF THE STRUCTURAL WORK AS DESCRIBED IN THE CONSTRUCTION DOCUMENTS. THE SPECIAL INSPECTOR SHALL BE HIRED BY THE CONTRACTOR.
- B. THE MINIMUM RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE OUTLINED IN THE "SPECIAL INSPECTION RECOMMENDED STANDARD OF PRACTICE", 2ND EDITION, PUBLISHED BY THE STRUCTURAL ENGINEERS ASSOCIATION OF HAWAII.
- C. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY THE SPECIAL INSPECTOR(S) OF ALL ITEMS REQUIRING SPECIAL INSPECTION AND TO COORDINATE AND SCHEDULE THE INSPECTIONS.
- D. IT SHALL BE THE DUTY OF THE GENERAL CONTRACTOR TO HAVE THE AREA REMAIN ACCESSIBLE AND EXPOSED FOR INSPECTION PURPOSES. NEITHER THE SPECIAL INSPECTOR(S), NOR THE GOVERNMENT SHALL BE LIABLE FOR EXPENSES ENTAILED IN THE REMOVAL OR REPLACEMENT OF ANY MATERIAL REQUIRED TO ALLOW INSPECTION.
- E. THE SPECIAL INSPECTOR(S) SHALL SUBMIT A FINAL REPORT TO THE ENGINEER STATING THE WORK REQUIRING SPECIAL INSPECTION WAS COMPLETED IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS.
- F. THE SPECIAL INSPECTOR SHALL BE CERTIFIED AS A SPECIAL INSPECTOR BY THE BUILDING DEPARTMENT OR THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO).
- G. SPECIAL INSPECTIONS DO NOT RELIEVE THE GENERAL CONTRACTOR OF HIS RESPONSIBILITIES TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND TO BE RESPONSIBLE FOR THE SAFETY OF THE JOBSITE.

**REINFORCED CONCRETE SPECIAL INSPECTION**

VERIFICATION AND INSPECTION	INSPECTION FREQUENCY
1. INSPECTION OF REINFORCING STEEL AND PLACEMENT.	PERIODIC
2. INSPECTION OF BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE.	CONTINUOUS
3. INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE.	PERIODIC
4. VERIFYING USE OF REQUIRED DESIGN MIX.	PERIODIC
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	CONTINUOUS
6. INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	CONTINUOUS
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	PERIODIC
8. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	PERIODIC

**SHEATHED SHEAR WALLS AND DIAPHRAGMS**

VERIFICATION AND INSPECTION	FREQUENCY
1. NAIL SPACING LESS THAN 4 INCHES	CONTINUOUS
2. ANCHOR BOLTS	CONTINUOUS
3. TIE-DOWNS	CONTINUOUS
4. NAILING	CONTINUOUS

**COMPLETE LOAD PATH AND UPLIFT TIES**

VERIFICATION AND INSPECTION	FREQUENCY
1. METAL CONNECTORS, ANCHORS OR FASTENERS AT ROOF RIDGES, ROOF RAFTERS TO BEAM OR WALL SUPPORTS, BEAM TO POSTS, POSTS OR WALL TO FLOOR FRAMING OR FOUNDATION, AND ALL OTHER CONNECTIONS THAT ARE PART OF THE LOAD PATH TO RESIST UPLIFT FORCES.	PERIODIC

**STANDARDS AND REFERENCES**

- INTERNATIONAL BUILDING CODE, INTERNATIONAL CODE COUNCIL, 2006 EDITION AS AMENDED BY THE HAWAII STATE BUILDING CODE COUNCIL
- ASCE 7-05, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

**DESIGN DATA**

- A. LIVE LOADS:
  1. ROOF LOAD (REDUCIBLE PER 1607.11 OF THE 2006 IBC)
    - a. FLAT OR PITCHED ROOF . . . . . 20 PSF
- B. WIND LOADS (ASCE 7-05, AS AMENDED BY THE HAWAII STATE BUILDING CODE COUNCIL)
  1. BASIC WIND SPEED, V . . . . . 105 mph
  2. WIND IMPORTANCE FACTOR . . . . . II
  3. OCCUPANCY CATEGORY . . . . . 1.0
  4. EXPOSURE . . . . . C
  5. INTERNAL PRESSURE COEFFICIENT, BOOSTER PUMP SHED . +/- 0.18
  6.  $K_{zt}$  . . . . . 1.4
  7.  $K_e$  . . . . . 0.65
- C. SEISMIC LOADS (IBC 2006)
  1. RISK CATEGORY . . . . . II
  2. SEISMIC IMPORTANCE FACTOR, I . . . . . 1.0
  3. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS:
    - a.  $S_s$  . . . . . 1.274 g
    - b.  $S_1$  . . . . . 0.474 g
  4. SITE CLASS . . . . . D
  5. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS
    - a.  $S_{ms}$  . . . . . 0.849 g
    - b.  $S_{m1}$  . . . . . 0.482 g
  6. SEISMIC DESIGN CATEGORY . . . . . D
- D. GEOTECHNICAL INFORMATION:
 

FOUNDATION HAS BEEN DESIGNED BASED ON RECOMMENDATIONS CONTAINED IN GEOTECHNICAL MEMORANDUM DATED MARCH 25, 2016

  1. ALLOWABLE SOIL BEARING PRESSURE . . . . . 1,000 PSF
  2. MODULUS OF SUBGRADE REACTION . . . . . 250 PCI
  3. COEFFICIENT OF FRICTION . . . . . 0.4
  4. PASSIVE EARTH PRESSURE . . . . . 300 PCF

**BOLTED WATER TANK NOTES:**

- A. THE TANK AND TANK ANCHOR BOLTS SHALL BE DESIGNED BY THE TANK MANUFACTURER IN ACCORDANCE WITH IBC 2006, ASCE 7-05, AWWA D103 AND SEISMIC DESIGN FORCES TO BE BASED ON AWWA D100.
- B. THE TANK ROOF SHALL BE A SELF-SUPPORTED ROOF SYSTEM WITH NO CENTER COLUMN(S).
- C. PROVIDE A CAGED LADDER ON THE TANK FOR ROOF ACCESS. THE LADDER SHALL BE DESIGNED IN ACCORDANCE WITH OSHA REQUIREMENTS.
- D. PROVIDE FOUR (4) TIE-DOWN ANCHORS AT THE TOP OF THE TANK THAT ARE DESIGNED IN ACCORDANCE WITH OSHA REQUIREMENTS.
- E. TANK FOUNDATION SIZE SHALL BE ADJUSTED AS REQUIRED PHYSICALLY TO SUIT THE SIZE OF ACTUAL TANK PROVIDED.
- F. SEE CIVIL DRAWINGS, AND SPECIFICATIONS FOR TANK PIPING LOCATIONS AND ACCESSORIES.
- J. DESIGN DRAWINGS AND CALCULATIONS FOR THE WATER TANK SHALL BE SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN HAWAII AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.



4/30/2018  
EXPIRATION DATE OF THE LICENSE  
*Myron G. Okubo*  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

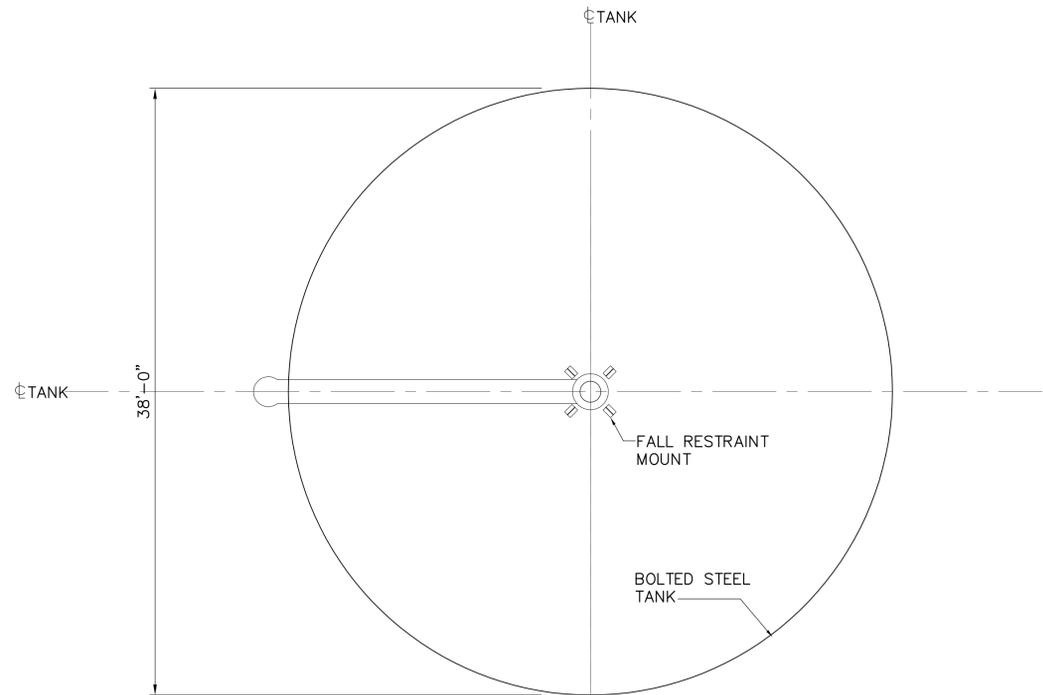
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Hilo, Hawaii 96720

**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DQAH19  
TAX MAP KEY: (3) 6-4-38.011 (POR.)

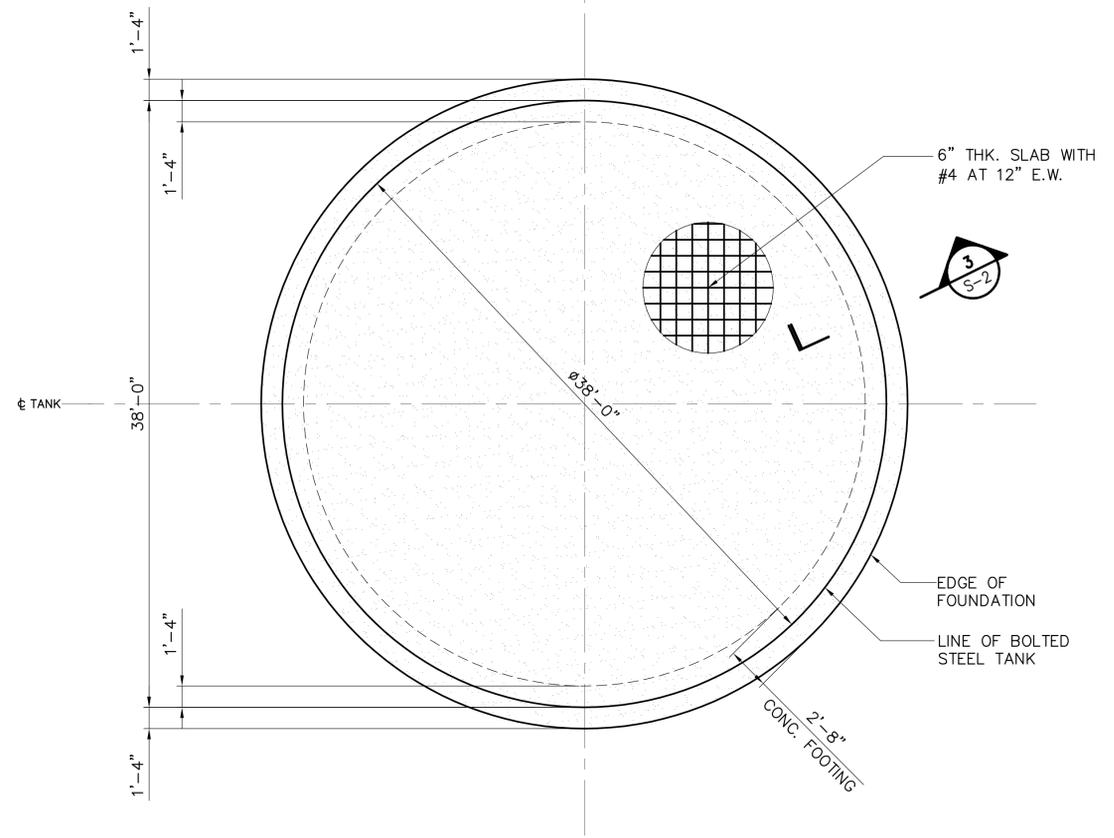
**STRUCTURAL NOTES**

DRAWN BY: NS, RN	ENGINEER: MO	CHECKED BY: MO
APPROVED:		

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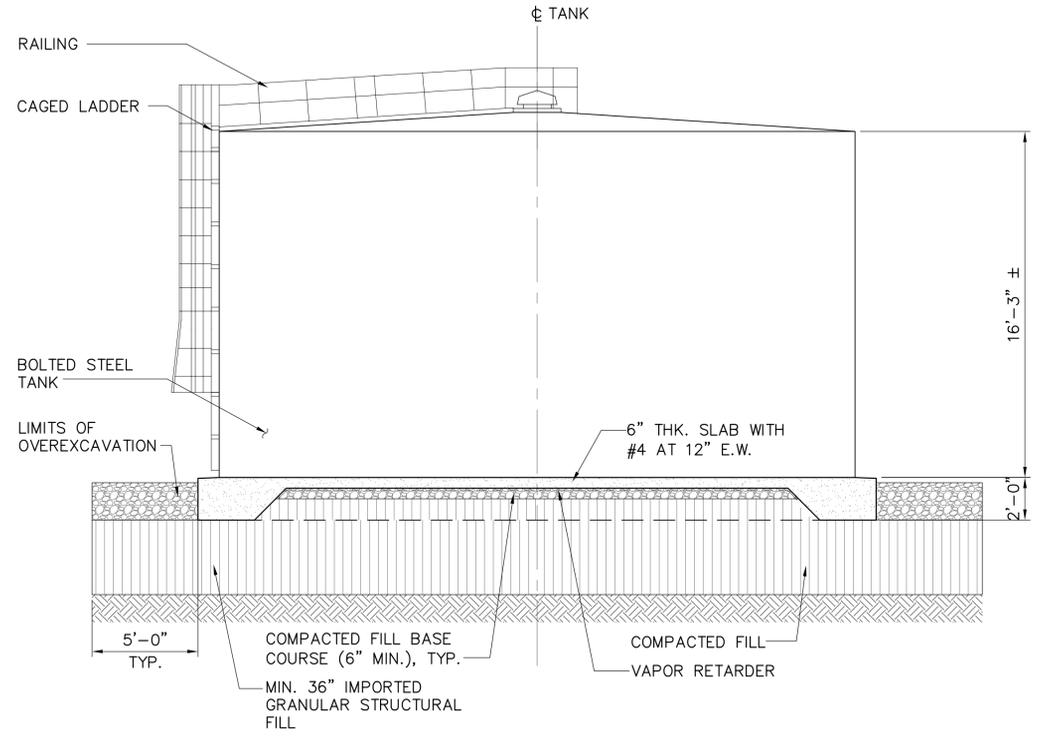


**TANK ROOF PLAN**

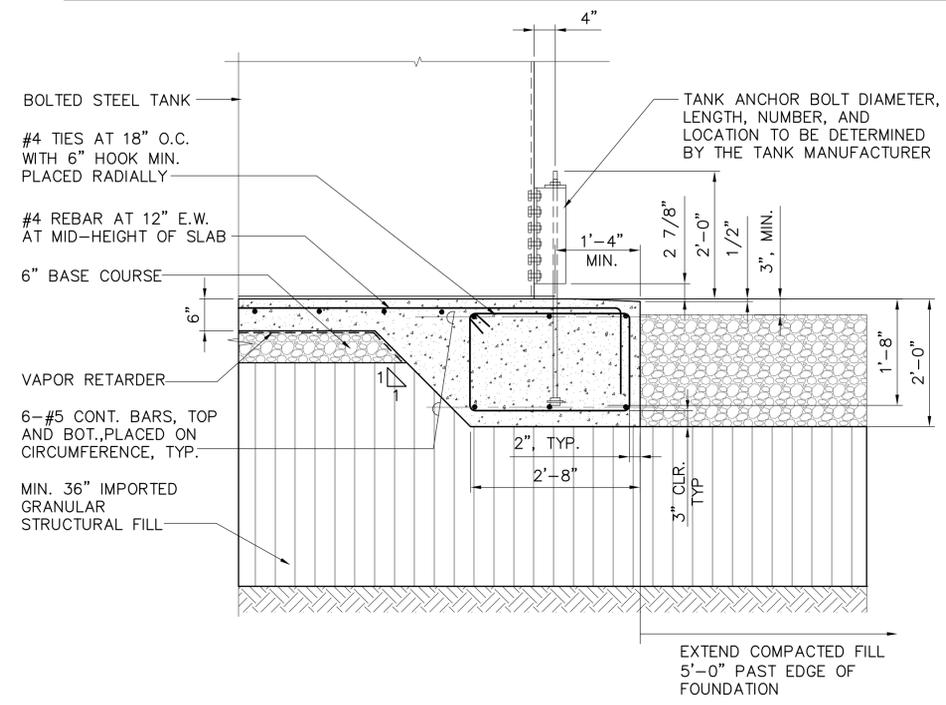


**1 WATER STORAGE TANK FOUNDATION PLAN**  
S-2 SCALE: 3/16"=1'-0"

NOTE: TANK DETAILS ARE SCHEMATIC AND DIMENSIONS ARE APPROXIMATE, AND ARE TO BE CONFIRMED BY THE TANK SUPPLIER.



**2 ELEVATION**  
S-2 SCALE: 1/4"=1'-0"



**3 SECTION**  
S-2 SCALE: 3/4"=1'-0"



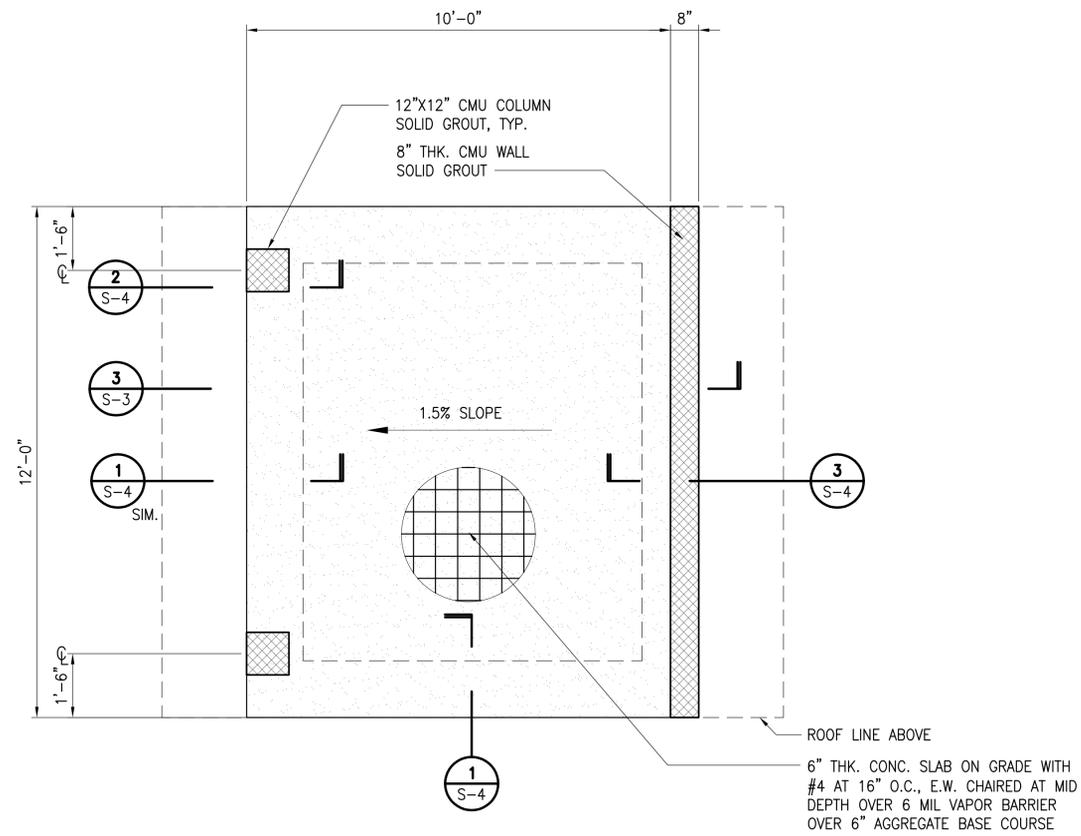
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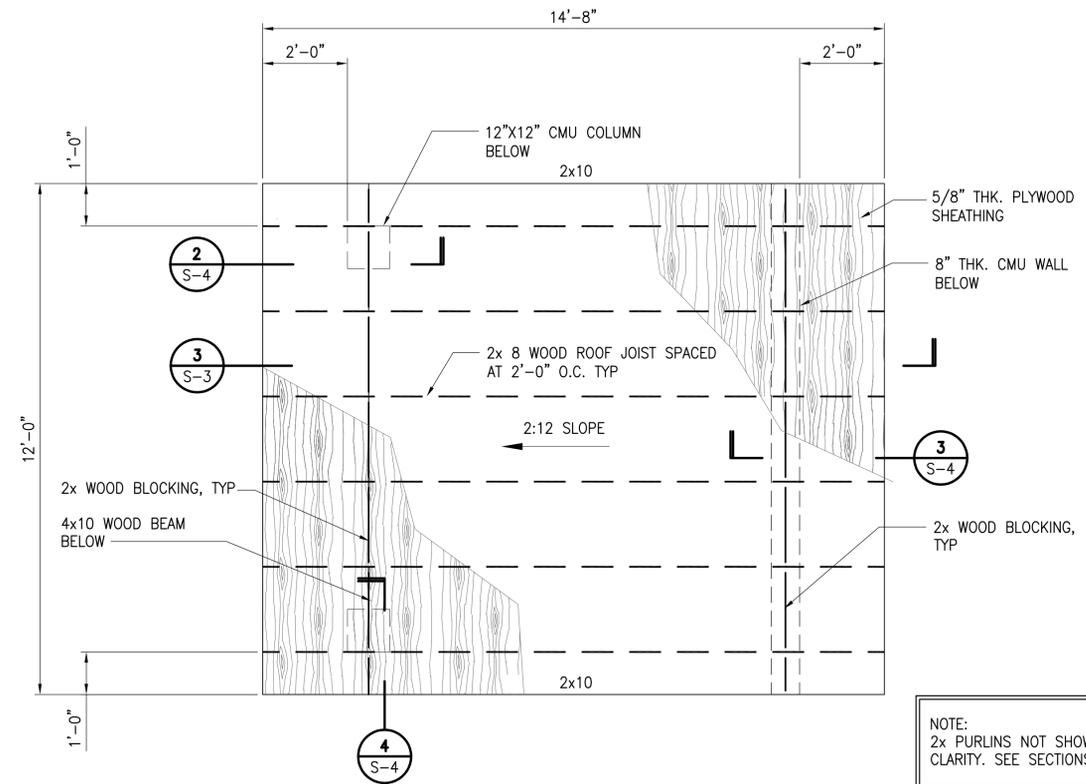
**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PU'UKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF AGRICULTURE  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. DQA#19  
TAX MAP KEY: (3) 6-4-38.011 (POR.)

**WATER STORAGE TANK FOUNDATION PLAN, ELEVATION AND SECTION**

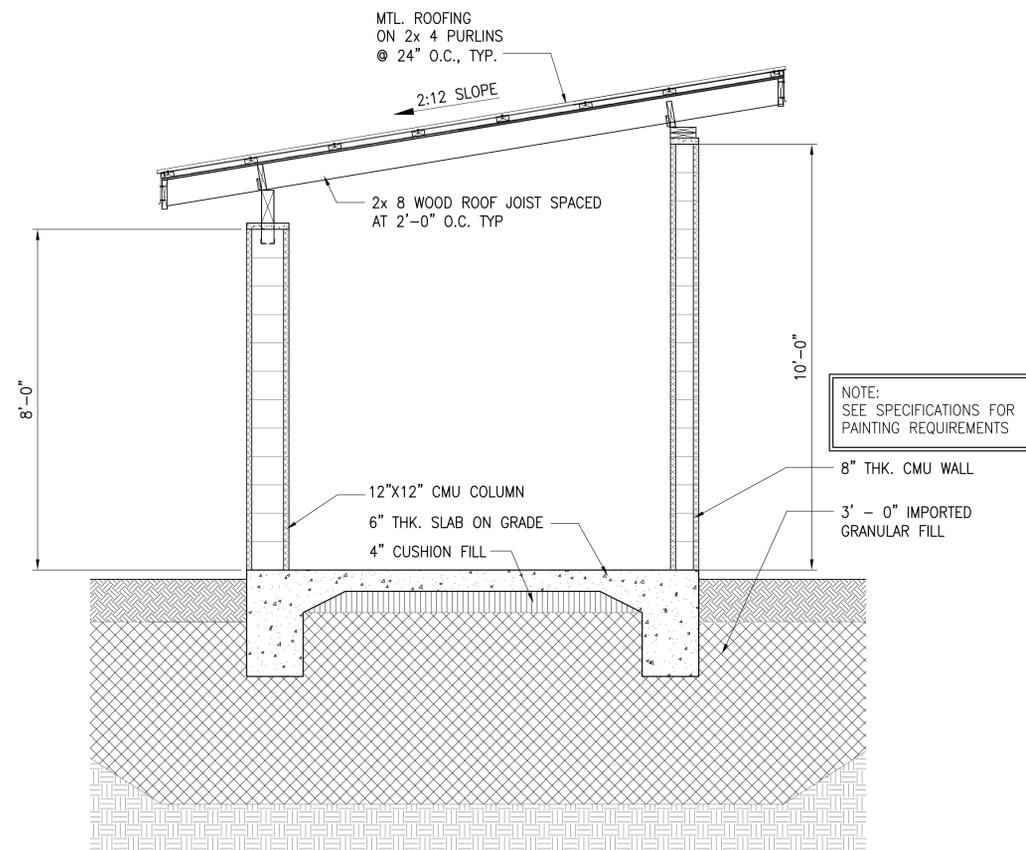
DRAWN BY: NS, RN	ENGINEER: MO	CHECKED BY: MO
APPROVED:		



1 FOUNDATION PLAN  
1/2" = 1'-0"



2 ROOF FRAMING PLAN  
1/2" = 1'-0"



3 BUILDING SECTION  
1/2" = 1'-0"

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4/30/2018  
EXPIRATION DATE  
OF THE LICENSE

*Myron G. Okubo*

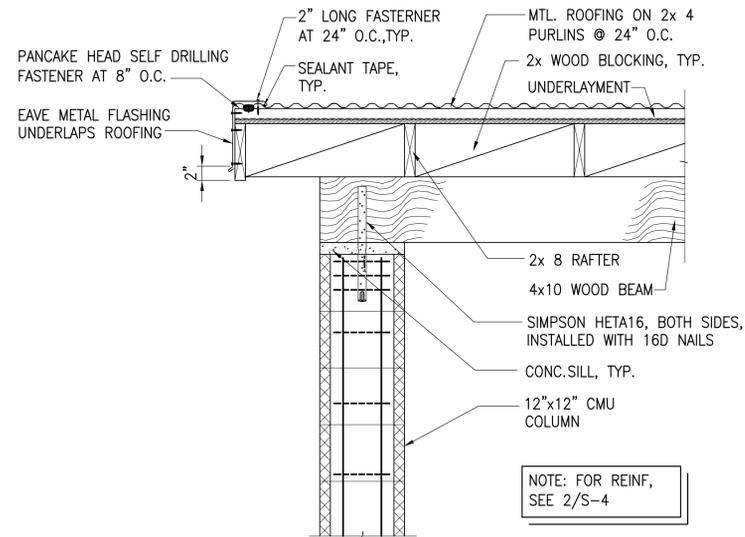
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99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

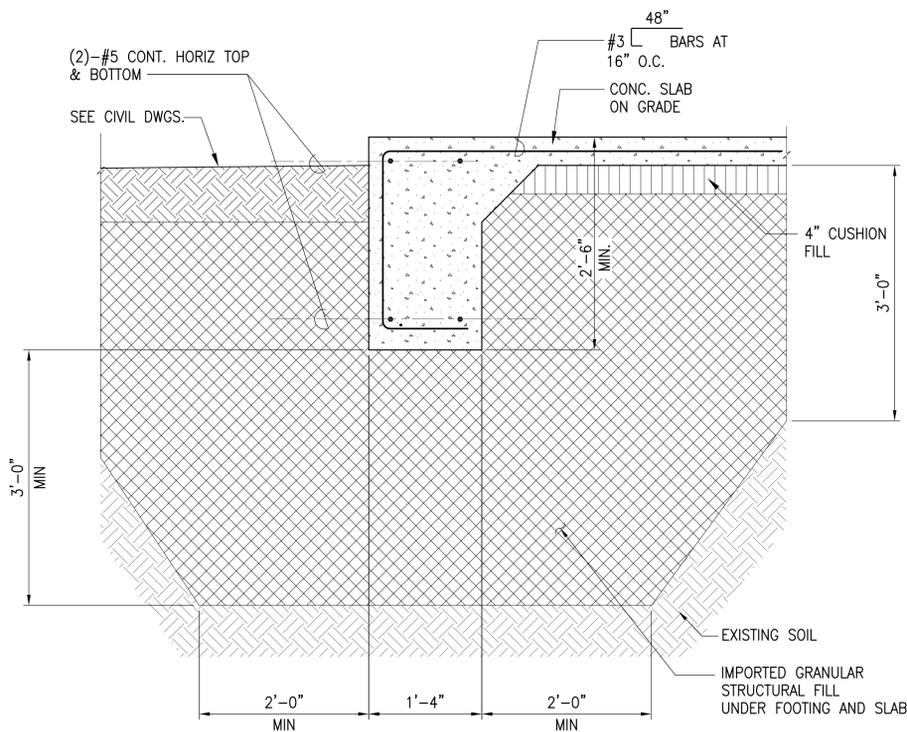
**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. 00AH18  
TAX MAP KEY: (3) 6-4-38-011 (POR.)

**BOOSTER PUMP SHED PLANS AND SECTIONS**

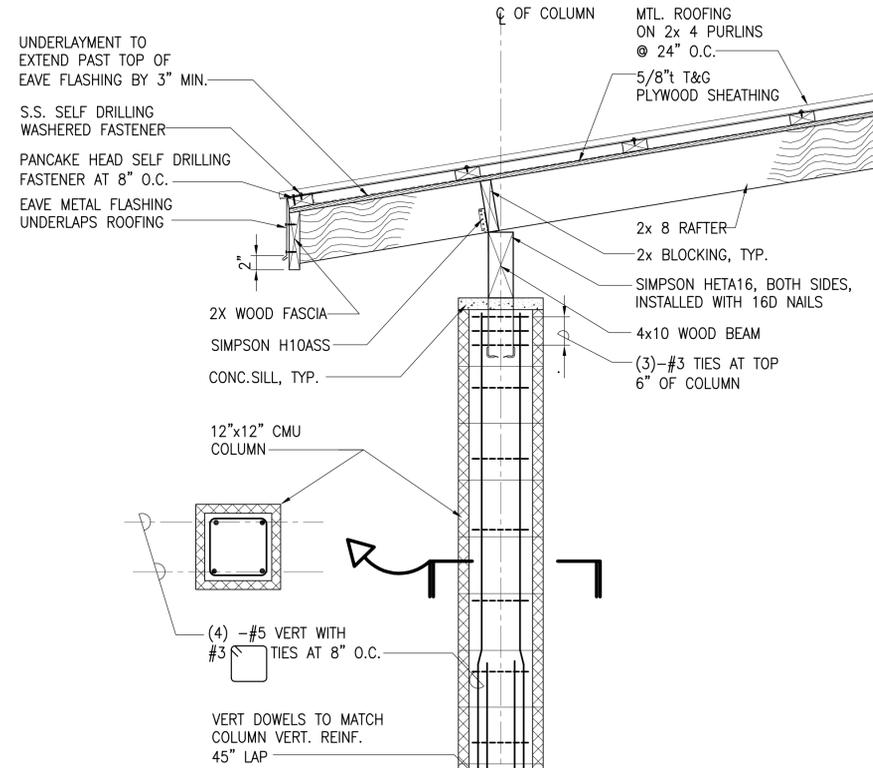
DRAWN BY: NS, RN	ENGINEER: MO	CHECKED BY: MO
APPROVED:		



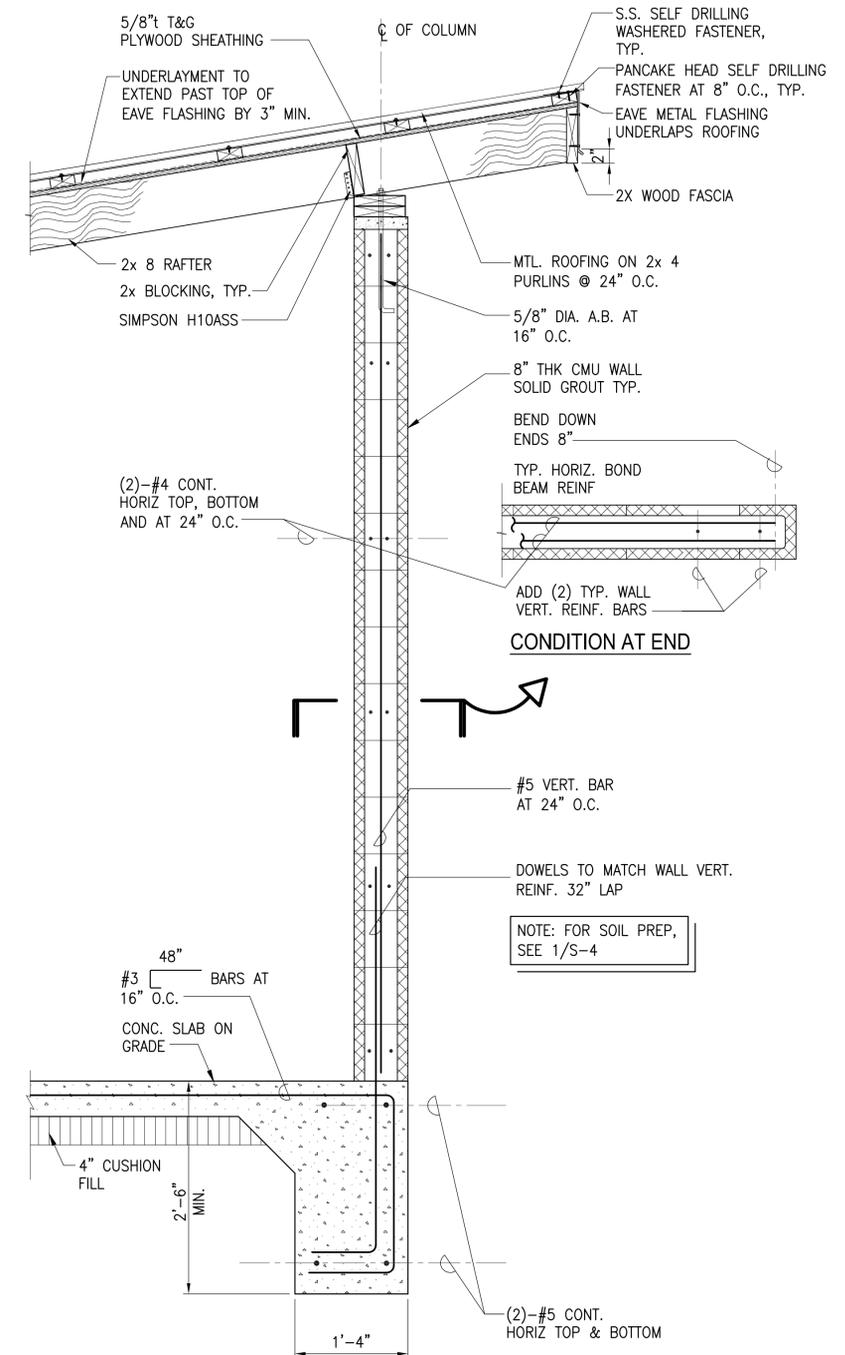
**4** SECTION  
S-4 1" = 1'-0"



**1** SECTION  
S-4 1" = 1'-0"



**2** SECTION  
S-4 1" = 1'-0"



**3** SECTION  
S-4 1" = 1'-0"



4/30/2018  
EXPIRATION DATE OF THE LICENSE  
*Myron Okubo*  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

**SSFM** International  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

**WAIMEA HOMESTEAD COMMUNITY AGRICULTURAL PARK**  
PUUKAPU, WAIMEA, SOUTH KOHALA, HAWAII ISLAND  
OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
MANAGED BY: DEPARTMENT OF AGRICULTURE  
PROJECT NO. 0004118  
TAX MAP KEY: (3) 6-4-38-011 (POR.)

**BOOSTER PUMP SHED SECTIONS**

DRAWN BY: NS, RN	ENGINEER: MO	CHECKED BY: MO
APPROVED:		

I:\A\2015\2015\_071\_000\_DA\_WAIMEA\_NUI\_NORI\_PARK\C\_DWG\STRUCTURAL\CONTRACT\_DOCUMENTS\S-4.DWG - 5/9/2016 11:21 AM NRSRD