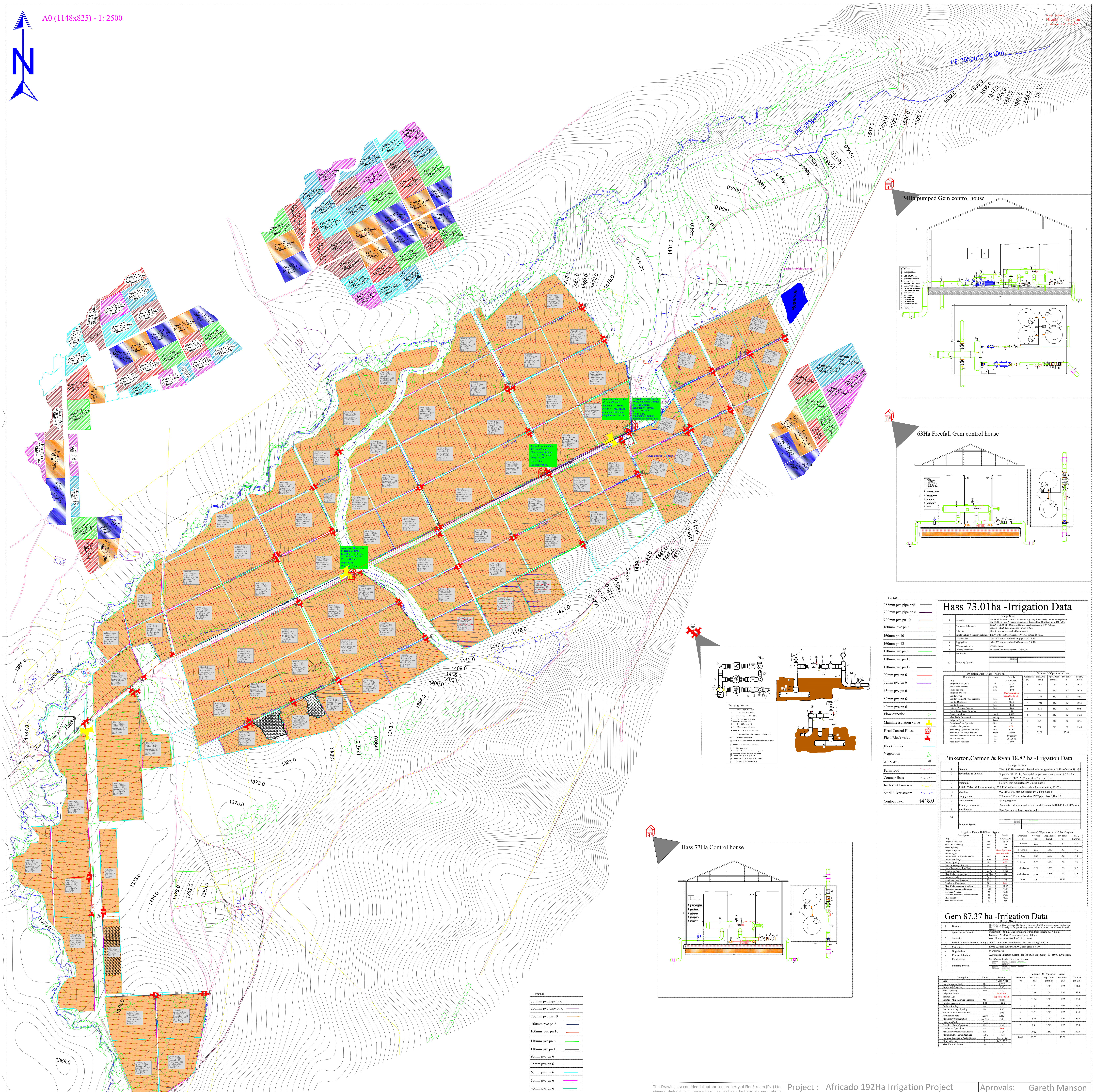

A0 (1148x825) - 1: 2500
N
River Intake
Elevation = 1523.5 m.
Q max= 470 m3/hr
PE 355pn10 - 810m
PE 355pn10 -276m
PVC 355pn10 -710m
1532.0
1535.0
1538.0
1541.0
1544.0
1547.0
1550.0
1553.0
1556.0
1517.0
1520.0
1523.0
1526.0
1529.0
1514.0
1511.0
1508.0
1505.0
1502.0
1499.0
1496.0
1493.0
1490.0
1487.0
1484.0
1481.0
1478.0
1475.0
1472.0
1469.0
1460.0
1457.0
1454.0
1451.0
1448.0
1445.0
1442.0
1439.0
1436.0
1433.0
1430.0
1427.0
1424.0
1421.0
1418.0
1415.0
1412.0
1409.0
1406.0
1403.0
1400.0
1396.0
1393.0
1390.0
1387.0
1384.0
1381.0
1378.0
1375.0
1385.0
1388.0
1373.0
1376.0
1379.0
1382.0
1372.0
1369.0
Future Reservoir Inlet at
Future Reservoir Outlet at
Reservoir
Avocado - Gem - 24 ha
6" Head-Control
Elevation = 1480 m.
Q = 54.4 - 75.0 m3/hr
Automatic Filtration
P top blocks= 16.1 m.
Avocado - gross 18.8 ha
Ryan, Pinkerton, Carmen
4" Head-Control
Elevation = 1480 m.
Q = 48-58 m3/hr
P = 54.8 m.
Automatic Filtration
Required Booster = 54.8 m.
Avocado - Gem 63ha
8" Head-Control
Elevation = 1456 m.
Q = 109-124 m3/hr
Preq = 40.5m.
Pin = 50 m.
Pin max =55 m.
Avocado - Hass 82ha
8" Head-Control
Elevation = 1433 m.
Q = 145-168 m3/hr
Preq = 40.5m.
Pin = 50 m.
Pin max =55 m.
Future Booster - 33 m3/h
ML200/6 - 545m.
Gem B-18 Area = 1.76ha Shift = 6
Gem B-19 Area = 3.87ha Shift = 8
Gem B-13 Area = 2.29ha Shift = 5
Gem B-20 Area = 1.91ha Shift = 5
Gem B-14 Area = 2.41ha Shift = 7
Gem B-7 Area = 2.52ha Shift = 3
GemD-1 Area = 2.27ha Shift = 6
Gem B-15 Area = 2.74ha Shift = 6
Gem B-8 Area = 2.47ha Shift = 4
Gem D-2 Area = 2.34ha Shift = 5
Gem B-16 Area = 2.68ha Shift = 7
Gem B-9 Area = 2.92ha Shift = 3
Gem B-1 Area = 2.11ha Shift = 1
Gem B-17 Area = 1.23ha Shift = 5
Gem B-10 Area = 2.80ha Shift = 5
Gem B-2 Area = 2.41ha Shift = 2
Gem B-4 Area = 1.81ha Shift = 3
Gem B-11 Area = 2.18ha Shift = 8
Gem B-3 Area = 2.83ha Shift = 1
Gem C-1 Area = 1.54ha Shift = 1
Gem C-6 Area = 1.54ha Shift = 3
Gem D-6 Area = 2.86ha Shift = 2
Gem B-5 Area = 2.18ha Shift = 7
Gem C-4 Area = 2.40ha Shift = 2
Gem C-3 Area = 2.35ha Shift = 1
Gem C-8 Area = 2.35ha Shift = 3
Gem D-7 Area = 2.67ha Shift = 1
Gem C-5 Area = 2.53ha Shift = 7
Gem C-10 Area = 2.07ha Shift = 8
Gem C-12 Area = 1.90ha Shift = 8
Gem C-13 Area = 1.80ha Shift = 6
Hass D-12 Area = 1.48ha Shift = 4
Hass D-10 Area = 2.74ha Shift = 5
Hass D-11 Area = 2.46ha Shift = 6
Hass D-8 Area = 2.74ha Shift = 7
Hass D-9 Area = 3.09ha Shift = 8
Hass F-3 Area = 1.60ha Shift = 7
Hass F-4 Area = 1.18ha Shift = 8
Hass E-2 Area = 2.02ha Shift = 2
Hass E-1 Area = 1.55ha Shift = 1
Hass E-3 Area = 2.18ha Shift = 1
Hass E-4 Area = 2.24ha Shift = 2
Hass E-6 Area = 2.14ha Shift = 3
Hass E-5 Area = 1.66ha Shift = 1
Hass E-7 Area = 2.02ha Shift = 4
Hass E-8 Area = 2.18ha Shift = 3
Hass E-11 Area = 1.80ha Shift = 5
Hass F-2 Area = 1.90ha Shift = 8
Hass E-9 Area = 2.24ha Shift = 4
Hass E-12 Area = 1.64ha Shift = 6
Hass E-10 Area = 2.18ha Shift = 7
Hass E-14 Area = 1.40ha Shift = 6
Hass E-15 Area = 1.13ha Shift = 8
Hass F-5 Area = 2.62ha Shift = 4
Hass F-7 Area = 2.82ha Shift = 3
Hass F-8 Area = 2.90ha Shift = 7
Hass F-11 Area = 2.13ha Shift = 6
Hass F-9 Area = 2.98ha Shift = 2
Hass F-12 Area = 2.28ha Shift = 3
Hass F-14 Area = 2.29ha Shift = 4
Hass F-15 Area = 1.92ha Shift = 2
Pinkerton A-13 Area = 1.91ha Shift = 5
Pinkerton A-12 Area = 1.78ha Shift = 5
Pinkerton A-10 Area = 1.13ha Shift = 6
Ryan A-11 Area = 1.89ha Shift = 4
Pinkerton A-8 Area = 1.64ha Shift = 6
Ryan A-5 Area = 1.86ha Shift = 3
Pinkerton A-9 Area = 0.60ha Shift = 6
Ryan A-7 Area = 1.08ha Shift = 3
Carmen A-1 Area = 1.39ha Shift = 2
Carmen A-3 Area = 1.5ha Shift = 2
Carmen A-2 Area = 1.48ha Shift = 1
Carmen A-4 Area = 1.51ha Shift = 1
24Ha pumped Gem control house
63Ha Freefall Gem control house
Hass 73Ha Control house
Drawing Notes

Hass 73.01ha -Irrigation Data

		Design Notes
1	General:	The 73.01 Ha Hass Avokado plantation is gravity driven design with micro sprinkler The 73.01 Ha Hass Avokado plantation is designed for 8 Shifts of up to 168 m3/hr
2	Sprinklers & Laterals:	SuperNet SR 50 l/h , One sprinkler per tree, trees spacing 8.0 * 4.0 m. , Laterals - PE 20 & 25 mm class 4 every 8.0 m.
3	Submain:	50 to 90 mm subsurface PVC pipe class 6
4	Infield Valves & Pressure setting:	3" P.R.V. with electric/hydraulic - Pressure setting 20-30 m.
5	5 Main-Line:	110 to 200 mm subsurface PVC pipe class 6 & 10.
6	Supply-Line:	160 to 355 mm subsurface PVC pipe class 6 & 10.
7	7 Water metering :	6" water meter
8	Primary Filtration:	Auotomatic Filtration system - 168 m3/h
9	Fertilization:	
10	Pumping System	

Irrigation Data - Hass - 73.01 ha

Description	Units	Details
Crop		AVOKADO
Irrigation Area (Ne t)	Ha.	73.01
Rows\Beds Spacing	Mtr.	8.00
Plants Spacing	Mtr.	4.00
Irrigation Sys tem		MicroSprinklers
Emitter Type		SuperNet 50 l/h
Emitter - Min. Allowed Pressure	Mtr.	18.00
Emitter Discharge	L/H	50.00
Emitter Spacing	Mtr.	4.00
Laterals Average Spacing	Mtr.	8.00
No. of Laterals per Row\Bed		1.00
Application Rate	mm/h	1.563
Max. Daily Consumption	mm/day	3.00
Irrigation Cycle	Days	1
Duration of one Operation	Hrs.	1.92
Number of Operations	No.	8.00
Max. Daily Operation Duration	Hrs.	15.36
Maximum Discharge Required	m3/h	168.00
Required Pressure at Water Source	M	by gravity
PRV outlet Se t	M	38 , 30 m.
Max. Flow Variation	%	0.00

Scheme Of Operation - Hass

Operation (#)	Net Area (ha.)	Appl. Rate (mm/h)	Irr. Time (h.)	Total Q (m^3/h)
1	10.53	1.563	1.92	165.5
2	10.37	1.563	1.92	162.5
3	9.42	1.563	1.92	149.2
4	10.65	1.563	1.92	166.8
5	6.16	1.563	1.92	99.5
6	9.16	1.563	1.92	142.5
7	9.42	1.563	1.92	167.8
8	7.30	1.563	1.92	116.7
Total	73.01		15.36	

Pinkerton,Carmen & Ryan 18.82 ha -Irrigation Data

		Design Notes
1	General:	The 18.82 Ha Avokado plantation is designed for 6 Shifts of up to 58 m3/hr
2	Sprinklers & Laterals:	SuperNet SR 50 l/h , One sprinkler per tree, trees spacing 8.0 * 4.0 m. , Laterals - PE 20 & 25 mm class 4 every 8.0 m.
3	Submain:	50 to 90 mm subsurface PVC pipe class 6
4	Infield Valves & Pressure setting:	3" P.R.V. with electric/hydraulic - Pressure setting 22-26 m.
5	Main-Line:	90, 110 & 160 mm subsurface PVC pipe class 6
6	Supply-Line:	200mm to 355 mm subsurface PVC pipe class 6,10& 12.
7	Water metering :	4" water meter
8	Primary Filtration:	Automatic Filtration system - 58 m3/h-Filtomat M100-1500/ 130Micron
9	Fertilization:	FertiOne unit with two soucre tanks
10	Pumping System	

Irrigation Data - 18.82ha - 3 types

Description	Units	Details
Crop		AVOKADO
Irrigation Area (Net)	Ha.	18.82
Rows\Beds Spacing	Mtr.	8.00
Plants Spacing	Mtr.	4.00
Irrigation System		Micro Sprinklers
Emitter Type		SuperNet 50 l/h
Emitter - Min. Allowed Pressure	Mtr.	18.00
Emitter Discharge	L/H	50.00
Emitter Spacing	Mtr.	4.00
Laterals Average Spacing	Mtr.	8.00
No. of Laterals per Row\Bed		1.00
Application Rate	mm/h	1.563
Max. Daily Consumption	mm/day	3.00
Irrigation Cycle	Days	1
Duration of one Operation	Hrs.	1.92
Number of Operations	No.	6.00
Max. Daily Operation Duration	Hrs.	11.52
Maximum Discharge Required	m3/h	58.00
Required Pressure	M	57.00
Required Additional Booster Pressure	M	34.00
PRV outlet Set	M	46.00
Max. Flow Variation	%	0.00

Scheme Of Operation - 18.82 ha - 3 types

Operation (#)	Net Area (ha.)	Appl. Rate (mm/h)	Irr. Time (h.)	Total Q (m^3/h)
1 - Carmen	2.99	1.563	1.92	48.4
2 - Carmen	2.89	1.563	1.92	46.2
3 - Ryan	2.94	1.563	1.92	47.1
4 - Ryan	2.88	1.563	1.92	47.7
5 - Pinkerton	3.69	1.563	1.92	58.5
6 - Pinkerton	3.43	1.563	1.92	55.3
Total	18.82		11.52	

Gem 87.37 ha -Irrigation Data

		Design Notes
1 2	General:	The 87.37 Ha Gem Avokado Plantation is designed for 24Ha as part Gravity system and The 63.37 Ha is designed for part Gravity system with a separate controll room for each System.
	Sprinklers & Laterals:	SuperNet SR 50 l/h , One sprinkler per tree, trees spacing 8.0 * 4.0 m. , Laterals - PE 20 & 25 mm class 4 every 8.0 m.
3	Submain:	40 to 90 mm subsurface PVC pipe class 6
4	Infield Valves & Pressure setting:	3" P.R.V. with electric/hydraulic - Pressure setting 20-30 m.
5	Main-Line:	110 to 225 mm subsurface PVC pipe class 6 & 10.
6	Supply-Line:	8" water-meter
7	Primary Filtration:	Auotomatic Filtration system - for 188 m3/h Filtomat M100- 4500 / 130 Micron
8	Fertilization:	FertiOne unit with two soucre tanks
9	Pumping System	

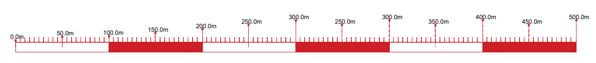
Description	Units	Details
Crop		AVOKADO
Irrigation Area (Net)	Ha.	87.37
Rows\Beds Spacing	Mtr.	8.00
Plants Spacing	Mtr.	4.00
Irrigation System		Sprinklers
Emitter Type		SuperNe t 50 l/h
Emitter - Min. Allowed Pressure	Mtr.	18.00
Emitter Discharge	L/H	50.00
Emitter Spacing	Mtr.	4.00
Laterals Average Spacing	Mtr.	8.00
No. of Laterals per Row\Bed		1.00
Application Rate	mm/h	1.563
Max. Daily Consumption	mm/day	3.00
Irrigation Cycle	Days	1
Duration of one Operation	Hrs.	1.92
Number of Operations	No.	8.00
Max. Daily Operation Duration	Hrs.	15.36
Maximum Discharge Required	m3/h	188.00
Required Pressure at Water Source	M	by gravity
PRV outlet Set	M	14.0 , 25.0
Max. Flow Variation	%	0.00

Scheme Of Operation - Gem

Operation (#)	Net Area (ha.)	Appl. Rate (mm/h)	Irr. Time (h.)	Total Q (m^3/h)
1	11.5	1.563	1.92	181.4
2	11.96	1.563	1.92	189.9
3	11.14	1.563	1.92	175.8
4	11.07	1.563	1.92	177.4
5	13.31	1.563	1.92	190.5
6	8.57	1.563	1.92	135.0
7	9.8	1.563	1.92	155.0
8	10.02	1.563	1.92	132.5
Total	87.37		15.36	

LEGEND:

355mm pvc pipe pn6
200mm pvc pipe pn 6
200mm pvc pn 10
160mm pvc pn 6
160mm pvc pn 10
110mm pvc pn 6
110mm pvc pn 10
90mm pvc pn 6
75mm pvc pn 6
63mm pvc pn 6
50mm pvc pn 6
40mm pvc pn 6
Flow direction
Mainline isolation valve
Head Control House
Field Block valve
Block border
Vegetation
Air Valve
Farm road
Contour lines
Irrelevent farm road
Small River stream
Contour Text 1418.0
14" Gate valve
10" Washout/inlet valve


0.0m
50.0m
100.0m
150.0m
200.0m
250.0m
300.0m
350.0m
400.0m
450.0m
500.0m

This Drawing is a confidential authorised property of FineStream (Pvt) Ltd. General Hydraulic Engineering formulae has been the basis of computations and hence sizes and materials herein indicated are derived from proven engineering methods.

Unless otherwise Stated all dimensions are in Metric Millimeters

Scale:
Paper size: A0
Side view

Projection

Project : Africado 192Ha Irrigation Project
Farm Name : Africado Farm
Location - West Killimanjaro
Customer - J.Parsons
Date - 27/03/2023
Duration - 75 Day Execution
Contract - 192Ha Microsprinklers Irrigation
Materials list:
4'',6''& 8'' steel manifolds ,steel automated filters,Gear operated valves panels ,regev check valves ,ksb centrifugal mono block pumps

Aprovals: Gareth Manson
Designed By: Lovet Chipunza
Checked By : Gareth Manson
Engineer : Lovet Chipunza
Drawn By :
Institue : Zimbabwe Institution of Engineers
Date: 27/03/2023

FINEStream
CONSULTING WATER ENGINEERS

File Name: FS-AFDP03-20
Date Filed : 27-03-2020
Engineer : Lovet Chipunza
Draftsman: Lovet Chipunza

File No. FS-AFDP03-20
CAD Reference - 2D Plan view
Drawing Programme : AUtocad 2019
Design Programme : IrriExpress 2022

C:\Users\Hp\Documents\BaTamupalshe\Fine Stream Pvt Ltd\FineStream Profile\ZIE Membership\Gararagua map for ZIE.dwg, 7/10/2024 9:4