



ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE SET ON SITE
21 DECEMBER 2021

Waimakariri Irrigation Limited Wrights Road Storage Ponds

Drawing Issue: Issue 6
Date: August 2021



Drawing Group	Drawing Number WIL1125_30_xxx	Drawing Title	ENVIRONMENTAL CANTEBURY Issue 6 APPROVED SUBJECT TO CONDITIONS							
Overall project layout	1 to 10	Description		Original	R1	R2	R3	R4	R5	
	WIL1125_30_1	General Arrangement - Property Title Appellation and Ownership		31/03/2012	30/04/2012	3/12/2012	13/11/2015	31/08/2021		
	WIL1125_30_2	General Arrangement - Storage Ponds and Features		31/03/2012	30/04/2012	3/12/2012	13/11/2015	31/08/2021		
	WIL1125_30_3	General Arrangement - Flow Concept		31/03/2012	30/04/2012	2/07/2012	3/12/2012	13/11/2015	31/08/2021	
	WIL1125_30_4	General Arrangement - Existing Services Plan		31/03/2012	3/12/2012	13/11/2015	31/08/2021			
	WIL1125_30_5	General Arrangement - Permanent Access		31/03/2012	30/04/2012	3/12/2012	13/11/2015	31/08/2021		
	WIL1125_30_7	General Arrangement - Test Pit Data - Depth of Topsoil and Silt		3/12/2012						
	WIL1125_30_8	General Arrangement - Tub and Pond Area Quantities - Isometric		31/03/2012	30/04/2012	3/12/2012				
	WIL1125_30_9	General Arrangement - Civil Structures Concrete Quantities - Isometric		31/03/2012	30/04/2012	3/12/2012				
	WIL1125_30_11	General Arrangement - Civil Structure Locations		31/03/2012	30/04/2012	3/12/2012	13/11/2015	31/08/2021		
	WIL1125_30_12	General Arrangement - G2 Penstock and R2C Crump Weir Area - Layout		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_13	General Arrangement - G3 Outlet and R3C Crump Weir Area - Layout		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
Ponds	21 to 30	Description		Original	R1	R2	R3	R4	R5	
	WIL1125_30_21	General Arrangement - Plan Set Out - Ponds and Tub		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_22	General Arrangement - Typical Cross Sections - Ponds and Tub - Sheet 1		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_23	General Arrangement - Typical Cross Sections - Ponds and Tub - Sheet 2		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_24	General Arrangement - Location for Double Layer of Geomembrane		3/12/2012	13/11/2015	31/08/2021				
	WIL1125_30_25	General Arrangement - Location for TDR Monitoring System		6/12/2016	31/08/2021					
Inlet race, Inlet and outlet structures, interpond structures	101 to 200	Description		Original	R1	R2	R3	R4	R5	
	WIL1125_30_101	Control Structures - G1 Inlet Structure - Inlet and Outlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_102	Control Structures - G1 Inlet Structure - Inlet and Outlet Concept Isometrics		31/03/2012	3/12/2013	30/01/2013	31/08/2021			
	WIL1125_30_103	Control Structures - G2 Penstock Structure - Inlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_104	Control Structures - G2 Penstock Structure - Outlet Pipework Layout		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_105	Control Structures - G2 Penstock Structure - Inlet and Outlet Concept Isometrics		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_106	Control Structures - G2 Penstock Structure - Outlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_107	Measuring Weir Structures - R2C Crump Structure - Crump Weir Details		31/03/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021		
	WIL1125_30_109	Measuring Weir Structures - R2C Crump Structure - Concept Isometrics		31/03/2012	3/12/2012	13/11/2015	31/08/2021			
	WIL1125_30_110	Control Structures - G3 Outlet Structure - Inlet Details		30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021		
	WIL1125_30_111	Control Structures - G3 Outlet Structure - Outlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_112	Control Structures - G3 Outlet Structure - Inlet and Outlet Concept Isometrics		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_113	Control Structures - G4 Interpond Structure - Inlet and Outlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_114	Control Structures - G4 Interpond Structure - Inlet and Outlet Concept Isometrics		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_115	Control Structures - G5 Interpond Structure - Inlet and Outlet Details		31/03/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021		
	WIL1125_30_116	Control Structures - G5 Interpond Structure - Inlet and Outlet Concept Isometrics		31/03/2012	3/12/2012	30/01/2013	31/08/2021			
	WIL1125_30_117	Control Structures - G6 Outlet Structure - Inlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	
	WIL1125_30_118	Control Structures - G6 Outlet Structure - Outlet Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_119	Control Structures - G6 Outlet Structure - Inlet and Outlet Concept Isometrics		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_120	E1 Emergency Spillway - Pond 1 to Buffer Pond - Plan and Sections		31/03/2012	30/04/2012	3/12/2012	4/04/2013	13/11/2015	31/08/2021	
	WIL1125_30_121	E3 Emergency Spillway - Tub to Race 3 - Plan and Sections		30/04/2012	3/12/2012	4/04/2013	13/11/2015	31/08/2021		
	WIL1125_30_122	E2 Emergency Spillway - Buffer Pond to MR4 Area - Plan and Sections		31/03/2012	3/12/2012	13/11/2015	31/08/2021			
	WIL1125_30_123	Service Spillway Area - Buffer Pond to Pond 2 - Chute Details		30/04/2012	3/12/2012	31/08/2021				
	WIL1125_30_124	S1 Service Spillway - Buffer Pond to Pond 2 - Plan		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_125	S1 Service Spillway - Buffer Pond to Pond 2 - Sections		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_126	S1 Service Spillway - Buffer Pond to Pond 2 - Concept Isometrics		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_127	Measuring Weir Structures - R3C Crump Structure - Crump Weir Details		31/03/2012	3/12/2012	30/01/2013	31/08/2021			
	WIL1125_30_128	Measuring Weir Structures - R3C Crump Structure - Concept Isometrics		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_129	Inlet and Outlet Structures - Typical Geomembrane Connection Details		31/03/2012	3/12/2012	30/01/2013	13/11/2015	31/08/2021	26/10/2021	
	WIL1125_30_130	Inlet and Outlet Structures - Typical Lining Ballast		3/12/2012	31/08/2021					

Waimakariri Irrigation Limited
Wrights Road Storage Ponds

Issue 6

Drawings:

Date: 31 August 2021



Drawing Register Sheet 1 of 3

Drawing Group	Drawing Number WIL1125_30_xxx	Drawing Title		ENVIRONMENT CANTERBURY Issue APPROVED						
Inlet race, Inlet and outlet structures, interpond structures (continued)	101 to 200 (continued)	Description		Original	R1	R2	R3	R4	R5	
	WIL1125_30_131	Handrails - Public Areas		31/03/2012	13/11/2015	31/08/2021				
	WIL1125_30_133	Access to Inlet Structures - Typical Details		3/12/2012	31/08/2021					
	WIL1125_30_134	Inlet and Outlet Structures - Typical Pipe Trench Details		30/01/2013	13/11/2015	31/08/2021				
	WIL1125_30_135	Pump Structures - Pond 2 Pump Station, Inlet Through Embankment Details		3/12/2012	30/01/2013	13/11/2015	31/08/2021			
	WIL1125_30_136	Pump Structures - Pond 2 Pump Station, Inlet Isometrics		3/12/2012	13/11/2015	31/08/2021				
	WIL1125_30_137	Pump Structures - Pond 2 Pump Station, Outlet Through Embankment Details		3/12/2012	13/11/2015	31/08/2021				
	WIL1125_30_138	Pump Structures - Pond 2 Pump Station, Outlet Isometrics		3/12/2012	13/11/2015	31/08/2021				
	WIL1125_30_139	Pump Structures - Buffer Pond Pump Station, Outlet Through Embankment Details		3/12/2012	30/01/2013	13/11/2015	31/08/2021			
	WIL1125_30_140	Pump Structures - Buffer Pond Pump Station, Outlet Isometrics		3/12/2012	30/01/2013	31/08/2021				
	WIL1125_30_141	Structural Standards - Reinforced Concrete - Sheet 1 of 2		31/03/2012	31/08/2021					
	WIL1125_30_142	Structural Standards - Reinforced Concrete - Sheet 2 of 2		31/03/2012	31/08/2021					
	WIL1125_30_143	Structural Standards - Steelwork		31/03/2012	31/08/2021					
	WIL1125_30_146	Services Control Building and Survey Marks - Shed Foundation and Survey Mark Details		30/01/2013	13/11/2015	31/08/2021				
	WIL1125_30_147	F1 Fuseplug Spillway - Plan Section and Detail		13/11/2015	6/12/2016	31/08/2021				
	WIL1125_30_148	F1 Fuseplug Spillway - Sheet Metal Cover and Frames A and B		13/11/2015	31/08/2021					
	WIL1125_30_151	Control Structures - G1 Inlet Structure. Inlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_152	Control Structures - G1 Inlet Structure. Inlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_153	Control Structures - G1 Inlet Structure. Outlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_154	Control Structures - G1 Inlet Structure. Outlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_155	Control Structures - G2 Penstock Structure. Inlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_156	Control Structures - G2 Penstock Structure. Inlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_157	Control Structures - G2 Penstock Structure. Outlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_158	Control Structures - G2 Penstock Structure. Outlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_159	Control Structures - G3 Outlet Structure. Inlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_160	Control Structures - G3 Outlet Structure. Inlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_161	Control Structures - G3 Outlet Structure. Outlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_162	Control Structures - G3 Outlet Structure. Outlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_163	Control Structures - G4 Interpond Structure. Inlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_164	Control Structures - G4 Interpond Structure. Inlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_165	Control Structures - G4 Interpond Structure. Outlet, Reinforcement Details, Sheet 1 of 3		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_166	Control Structures - G4 Interpond Structure. Outlet, Reinforcement Details, Sheet 2 of 3		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_167	Control Structures - G4 Interpond Structure. Outlet, Reinforcement Details, Sheet 3 of 3		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_168	Control Structures - G5 Interpond Structure. Inlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_169	Control Structures - G5 Interpond Structure. Inlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_170	Control Structures - G5 Interpond Structure. Outlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_171	Control Structures - G5 Interpond Structure. Outlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_172	Control Structures - G6 Outlet Structure. Inlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_173	Control Structures - G6 Outlet Structure. Inlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_174	Control Structures - G6 Outlet Structure. Outlet, Reinforcement Details, Sheet 1 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_175	Control Structures - G6 Outlet Structure. Outlet, Reinforcement Details, Sheet 2 of 2		31/03/2012	30/04/2012	3/12/2012	31/08/2021			
	WIL1125_30_176	Measuring Weir Structures - R2C Crump Structure. Reinforcement Details, Sheet 1 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_177	Measuring Weir Structures - R2C Crump Structure. Reinforcement Details, Sheet 2 of 2		31/03/2012	3/12/2012	31/08/2021				
	WIL1125_30_178	Control Structures - Service Spillway - Reinforcement Details		31/03/2012	30/04/2012	3/12/2012	30/01/2013	31/08/2021		
	WIL1125_30_179	Pump Structures - Pond 2 Pump Station Outlet - Reinforcement Details		3/12/2012	13/11/2015	31/08/2021				
	WIL1125_30_180	Pump Structures - Buffer Pond Pump Station Isometric - Reinforcement Section Locations		3/12/2012	30/01/2013	31/08/2021				
	WIL1125_30_181	Pump Structures - Buffer Pond Pump Station Inlet and Access Stairs - Reinforcement Details		3/12/2012	31/08/2021					
	WIL1125_30_182	Pump Structures - Buffer Pond Pump Station Wet Well and Apron - Reinforcement Details		3/12/2012	31/08/2021					
	WIL1125_30_183	Pump Structures - Buffer Pond Pump Station Outlet - Reinforcement Details		3/12/2012	30/01/2013	13/11/2015	31/08/2021			
	WIL1125_30_184	Pump Structures - Pond 2 Pump Station Inlet Isometric - Reinforcement Section Locations		13/11/2015	31/08/2021					
	WIL1125_30_185	Pump Structures - Pond 2 Pump Station Inlet - Reinforcement Details		13/11/2015	31/08/2021					

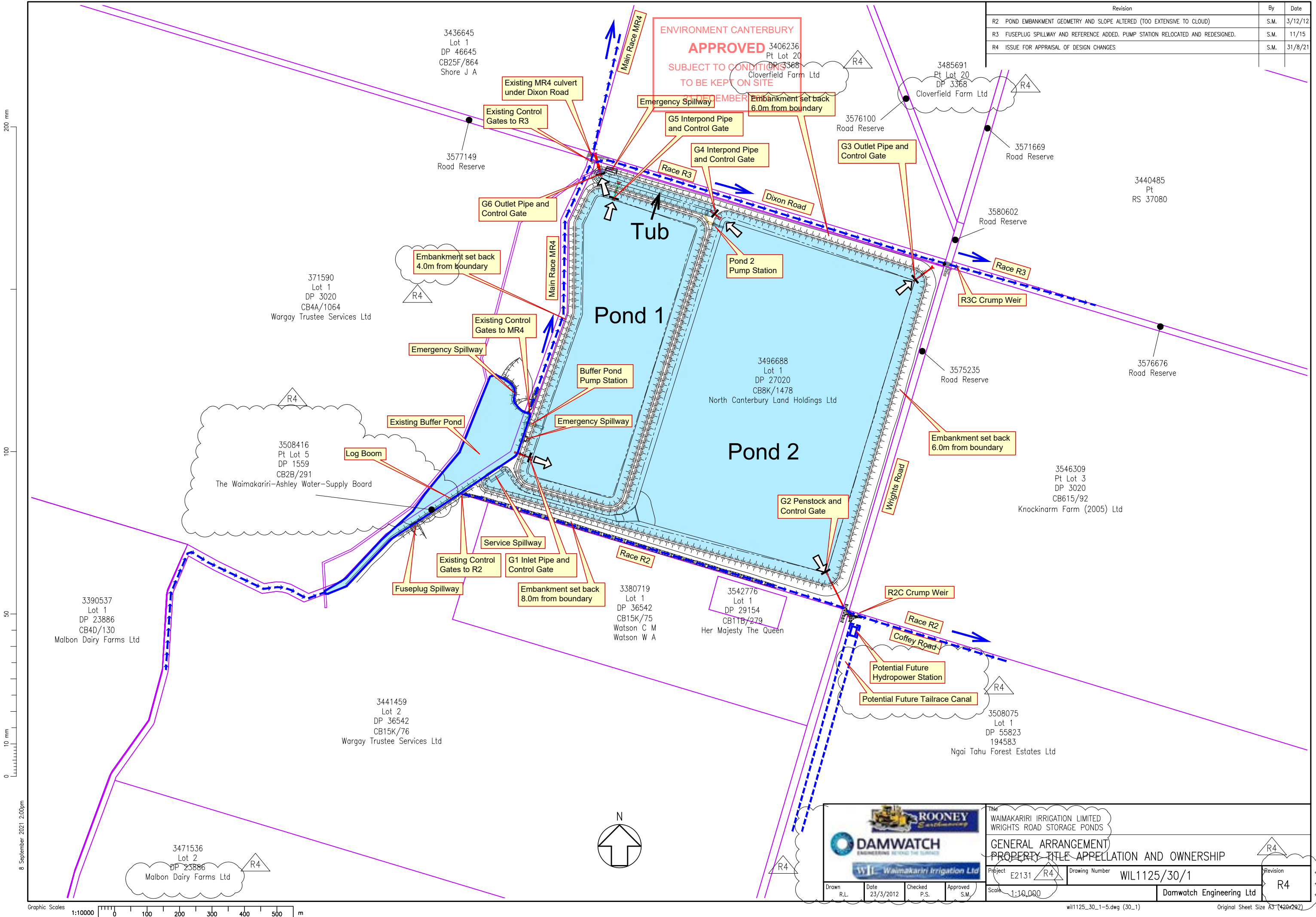
Waimakariri Irrigation Limited
wrights Road Storage Ponds

Issue 6
Drawings:

Date: 31 August 2021



Drawing Register Sheet 2 of 3



Revision	By	Date
R2 POND EMBANKMENT GEOMETRY AND SLOPE ALTERED (TOO EXTENSIVE TO CLOUD)	S.M.	3/12/12
R3 FUSEPLUG SPILLWAY AND REFERENCE ADDED. PUMP STATION RELOCATED AND REDESIGNED.	S.M.	11/15
R4 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

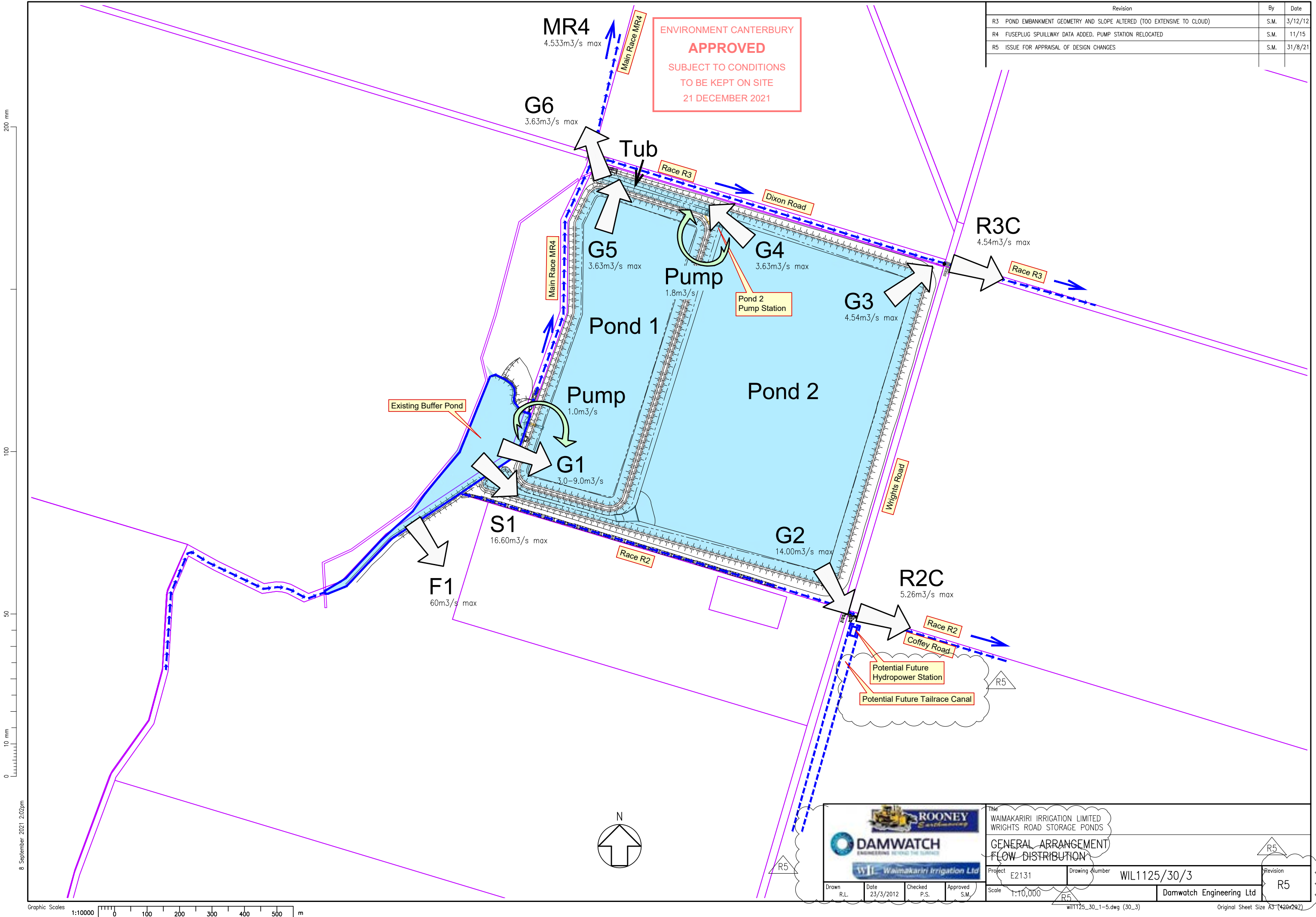
**GENERAL ARRANGEMENT
PROPERTY TITLE APPELLATION AND OWNERSHIP**

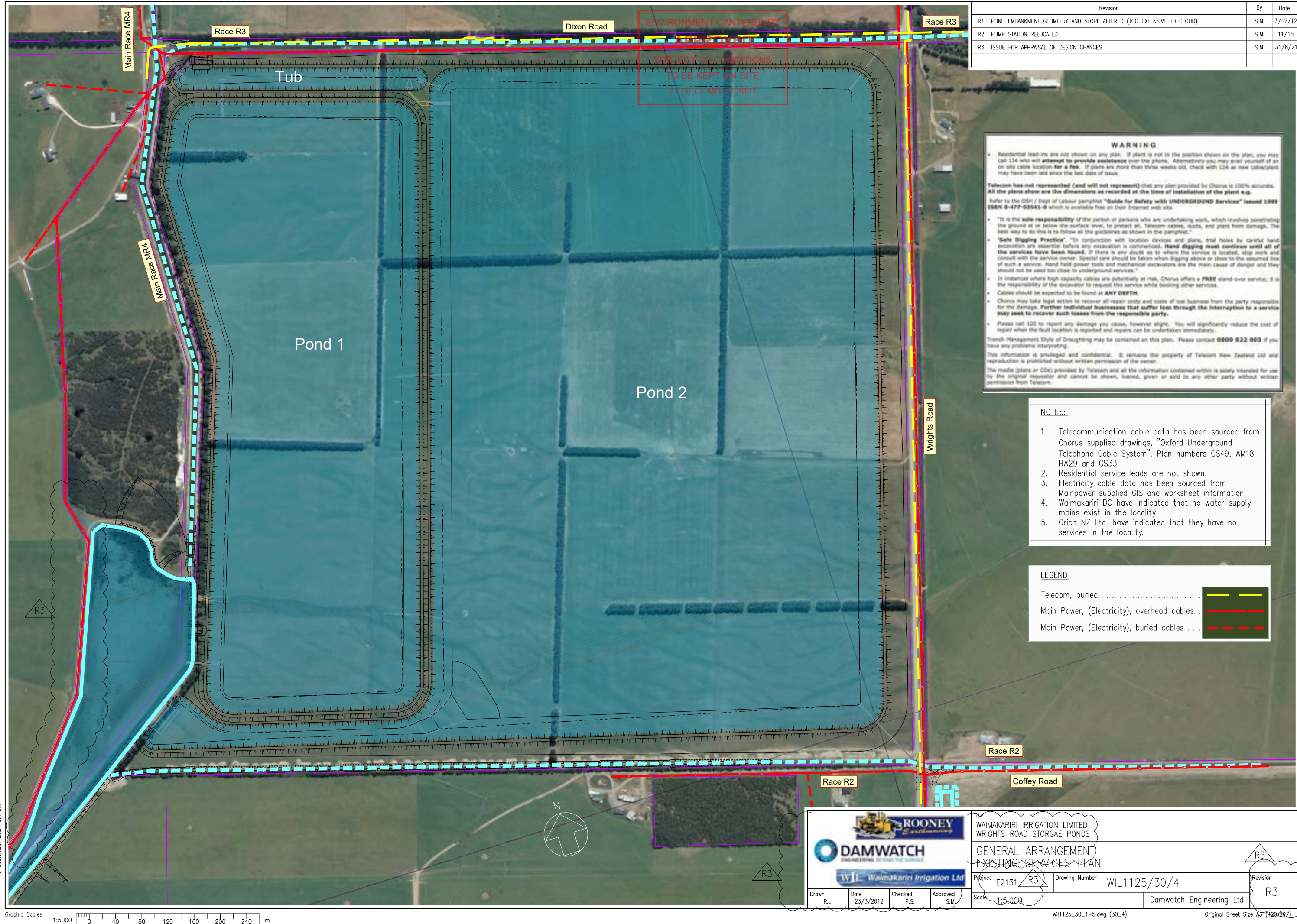
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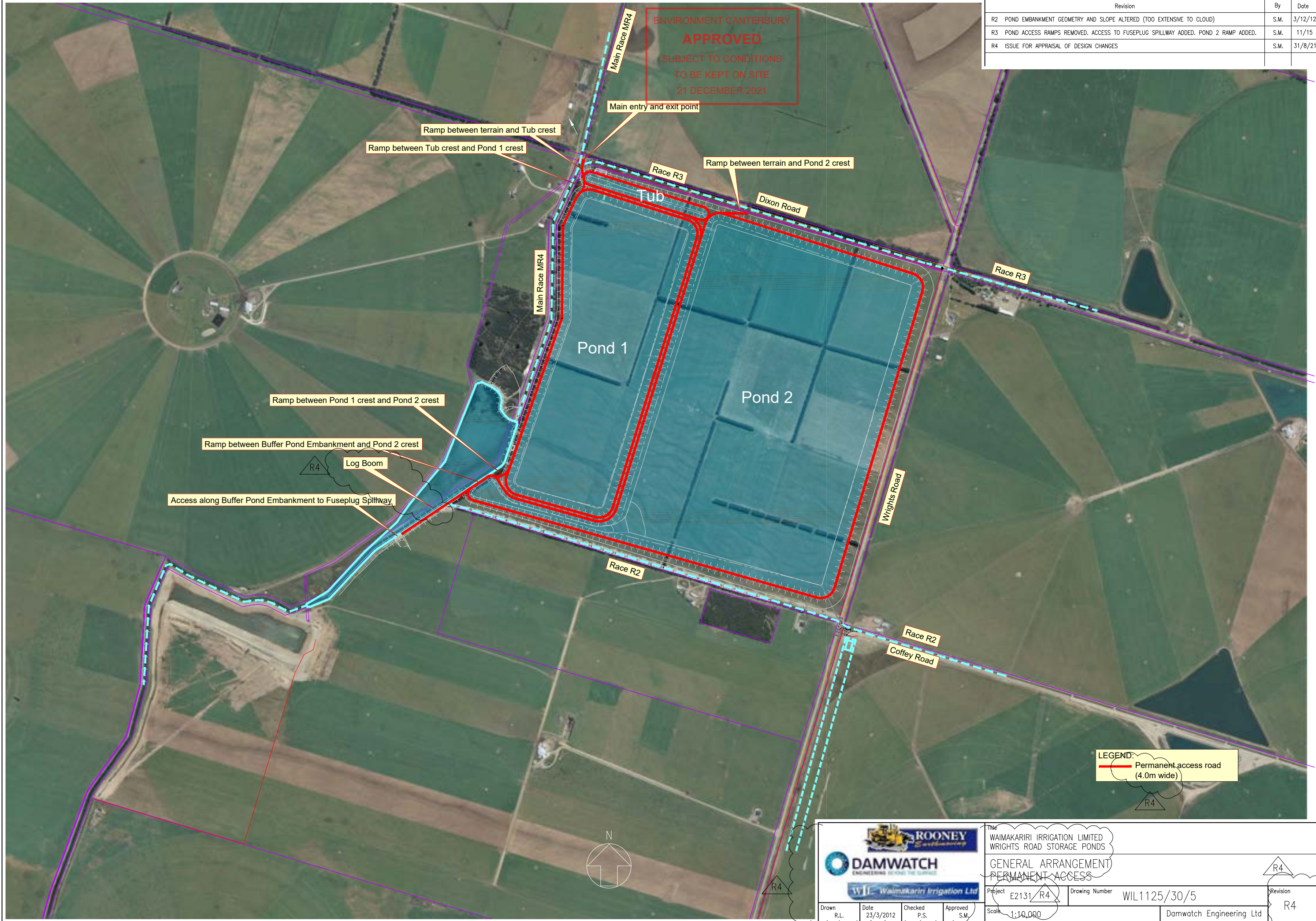
Drawn R.L. Date 23/3/2012 Checked P.S. Approved S.M.

Damwatch Engineering Ltd

Revision R4





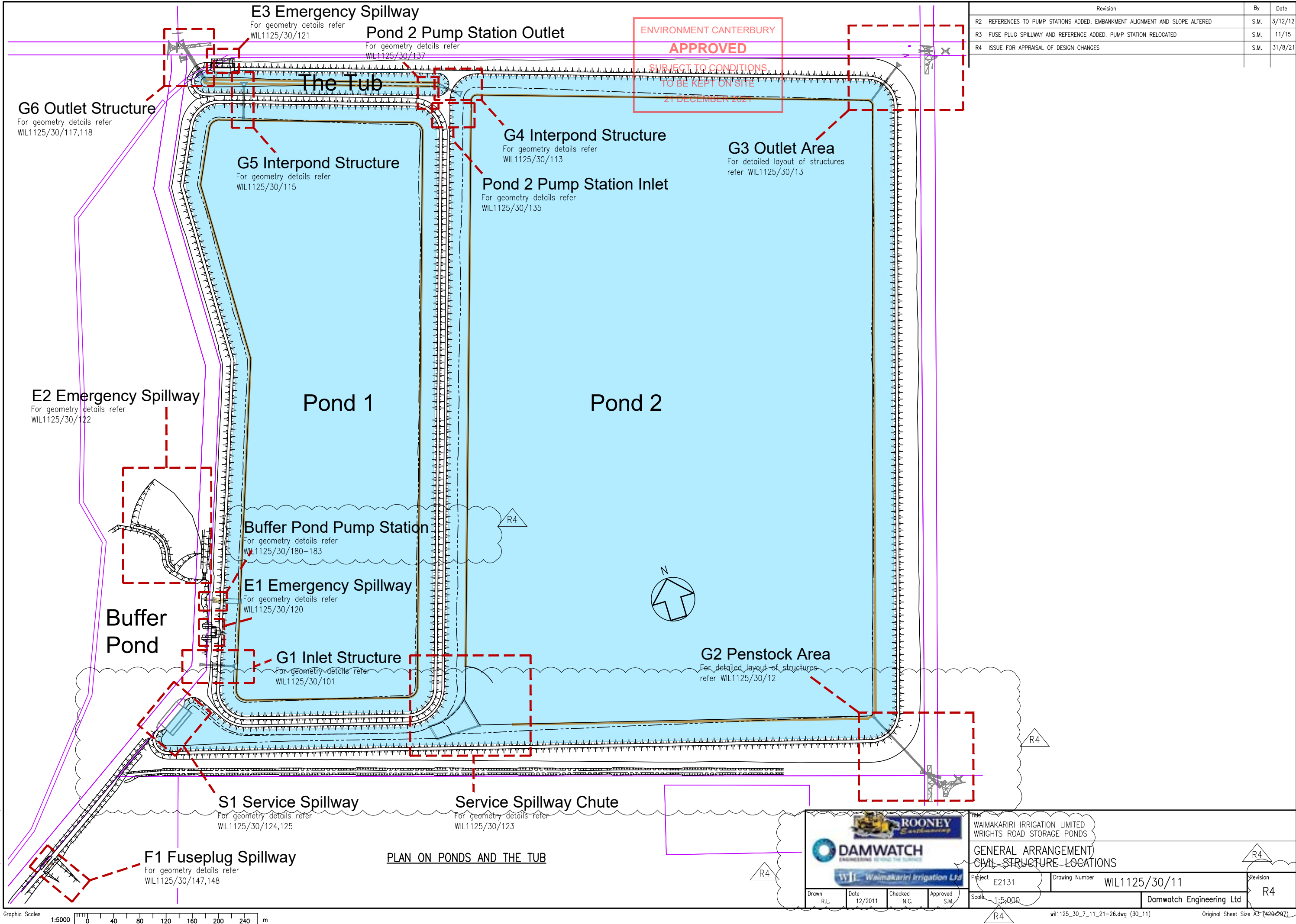


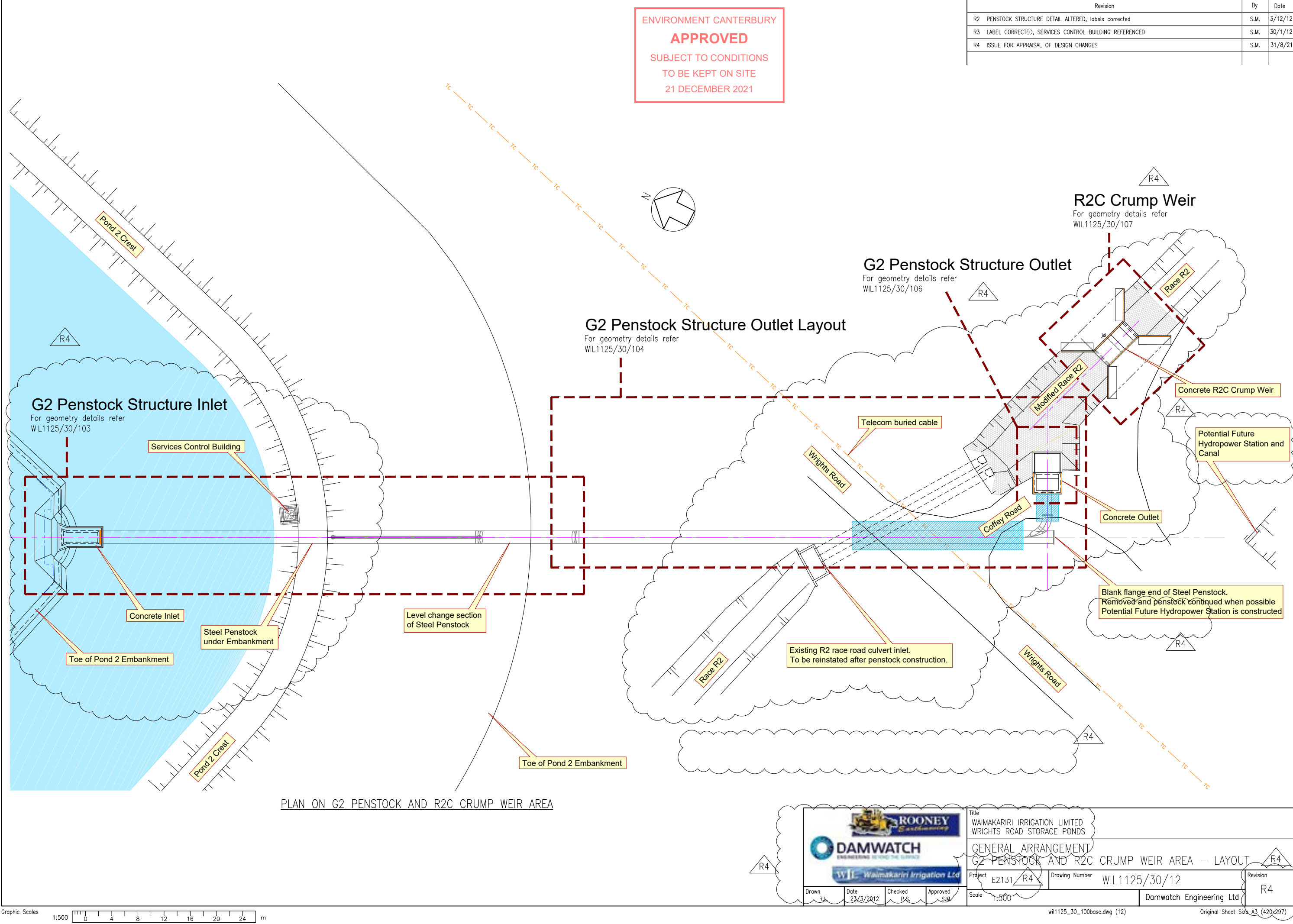
Revision	By	Date
R2 POND EMBANKMENT GEOMETRY AND SLOPE ALTERED (TOO EXTENSIVE TO CLOUD)	S.M.	3/12/12
R3 POND ACCESS RAMPS REMOVED. ACCESS TO FUSEPLUG SPILLWAY ADDED. POND 2 RAMP ADDED.	S.M.	11/15
R4 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

LEGEND:
Permanent access road
(4.0m wide)

Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS		Revision R4	
GENERAL ARRANGEMENT PERMANENT ACCESS			
Project E2131 / R4	Drawing Number WIL1125/30/5	Scale 1:10,000	
Drawn R.L.	Date 23/3/2012	Checked P.S.	Approved S.M.
Damwatch Engineering Ltd		Original Sheet Size A3 (420x297)	





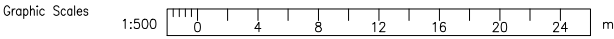
ENVIRONMENT CANTERBURY

APPROVED

SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R2 PENSTOCK STRUCTURE DETAIL ALTERED, labels corrected	S.M.	3/12/12
R3 LABEL CORRECTED, SERVICES CONTROL BUILDING REFERENCED	S.M.	30/1/12
R4 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

PLAN ON G2 PENSTOCK AND R2C CRUMP WEIR AREA



Title
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

GENERAL ARRANGEMENT
G2 PENSTOCK AND R2C CRUMP WEIR AREA – LAYOUT

Project
E2131 / R4

Scale
1:500

Drawn
R.k.

Date
23/3/2012

Checked
P.S.

Approved
S.M.

Drawing Number
WIL1125/30/12

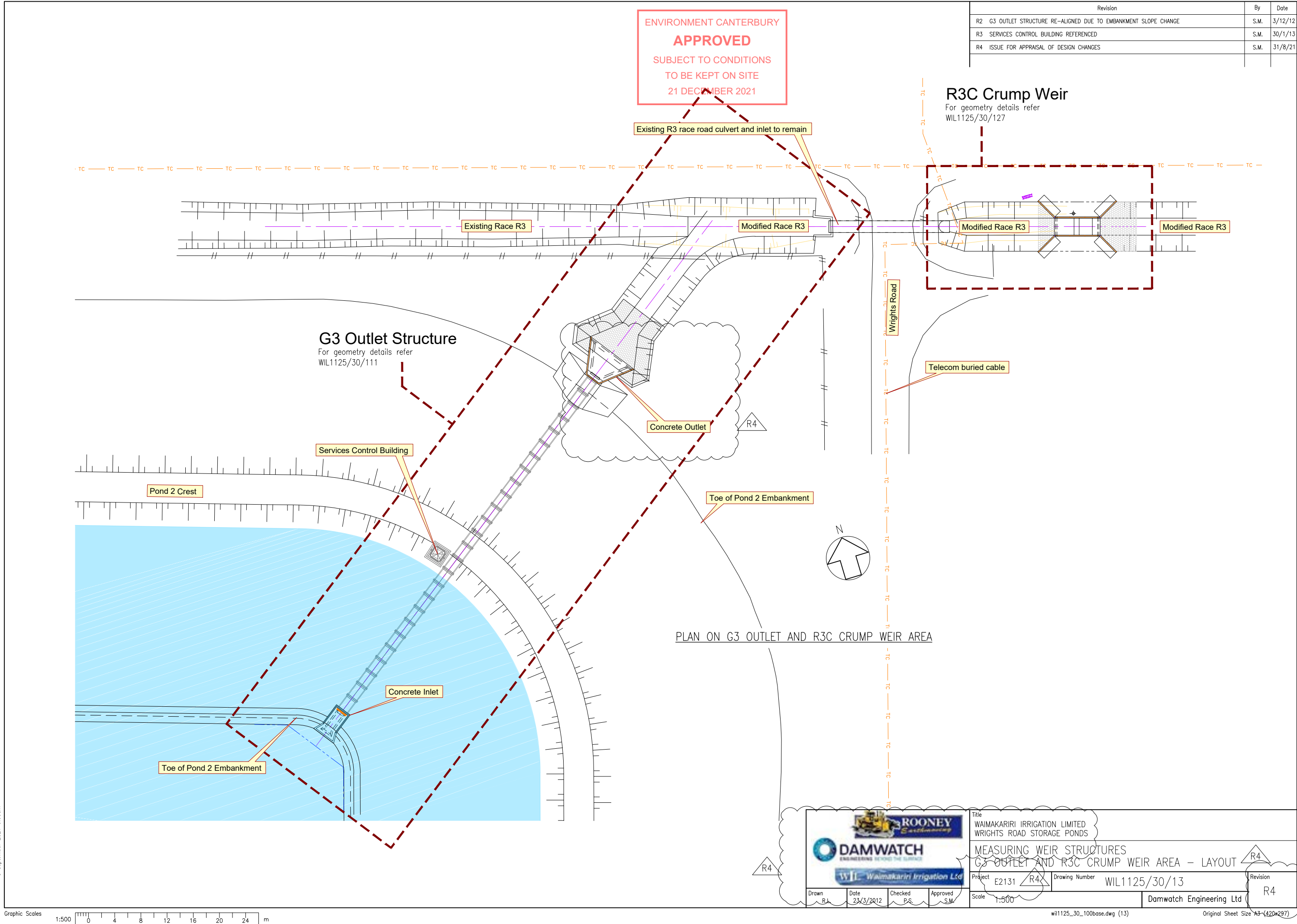
Damwatch Engineering Ltd

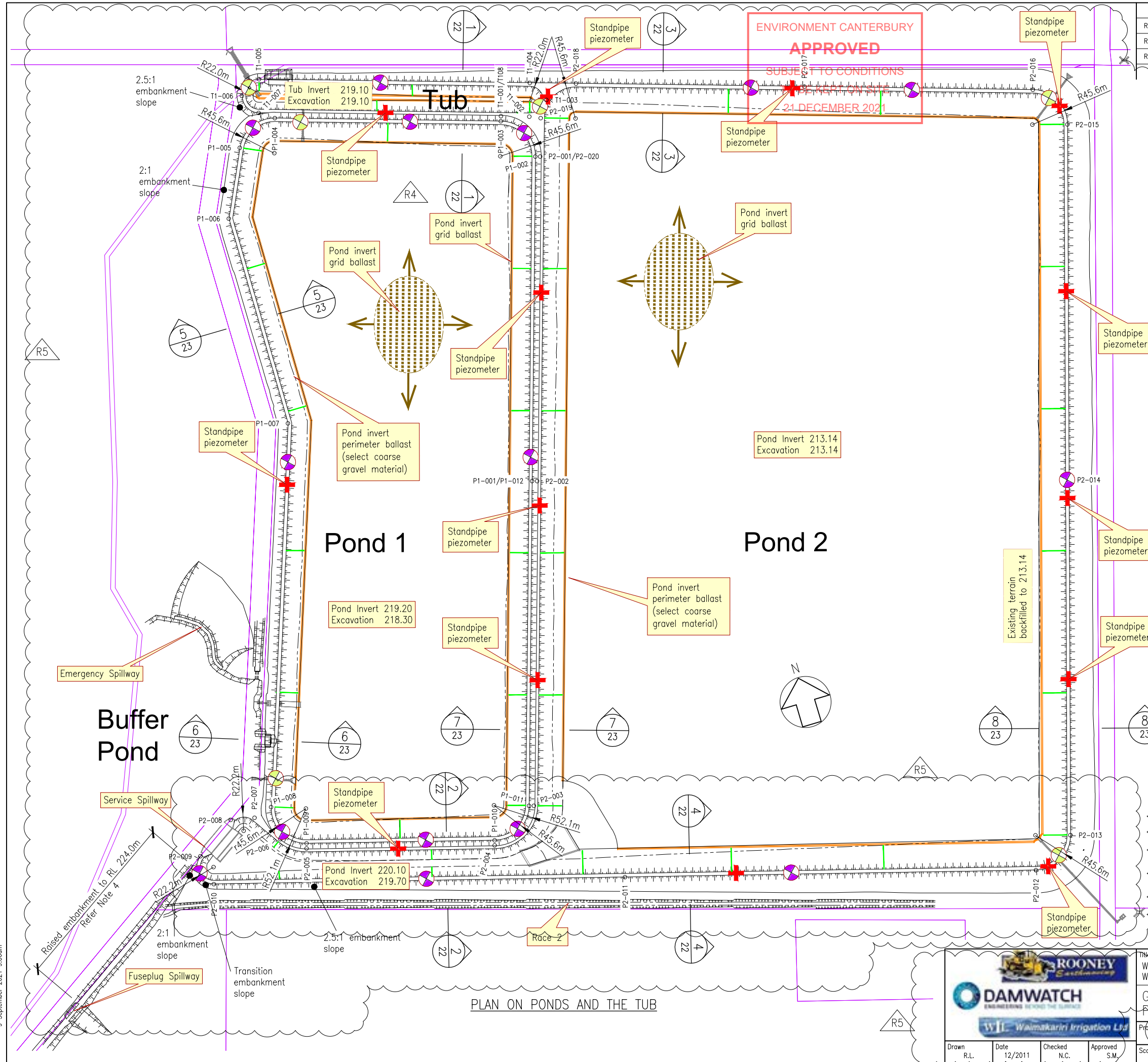
Revision
R4

wil1125_30_100base.dwg (12)

Original Sheet Size A3 (420x297)

8 September 2021 8:54am





ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
21 DECEMBER 2021

Revision

By

Date

R3 BENCHMARKS ADDED, STANDPIPE PIEZOMETER POSITIONS ALTERED (TOO EXTENSIVE TO CLOUD)

S.M.

R4 EMERGENCY SPILLWAY RE-SHAPED. STANDPIPE PIEZOMETERS ADDED. EMBANKMENT STRAIGHTENED.

S.M.

11/15

R5 ISSUE FOR APPRAISAL OF DESIGN CHANGES

S.M.

31/8/21

LEGEND:

Benchmark pin in Services Control Building foundation wall
Refer WIL1125/30/146 for detail.

Survey mark central on embankment crest.
Refer WIL1125/30/146 for detail.

Standpipe piezometer at outside edge of embankment crest.
Refer WIL1125/30/22-23 for cross section location

Pond liner safety ladder @ 200m maximum centres.
Refer to specifications.

THE TUB SET OUT STRING

LABEL	EASTING	NORTHING	CREST RL
T1-001	356703.010	824102.839	224.000
T1-002	356738.442	824091.623	224.000
T1-003	356766.057	824105.956	224.000
T1-004	356751.725	824133.571	224.000
T1-005	356414.681	824240.258	224.000
T1-006	356387.067	824225.923	224.000
T1-007	356401.403	824198.309	224.000
T1-008	356703.010	824102.839	224.000

POND 1 SET OUT STRING

LABEL	EASTING	NORTHING	CREST RL
P1-001	356604.490	823635.198	227.700
P1-002	356730.812	824039.571	227.700
P1-003	356701.048	824096.642	227.700
P1-004	356419.717	824185.694	227.700
P1-005	356364.837	824161.932	227.700
P1-006	356324.337	824077.451	227.700
P1-007	356321.057	823799.404	227.700
P1-008	356155.313	823326.480	227.700
P1-009	356185.912	823267.527	227.700
P1-010	356422.207	823200.550	227.700
P1-011	356478.168	823230.824	227.700
P1-012	2444487.980	5758661.565	227.700

POND 2 SET OUT STRING

LABEL	EASTING	NORTHING	CREST RL
P2-001	356737.017	824037.633	224.000
P2-002	356610.694	823633.260	224.000
P2-003	356484.372	823228.886	224.000
P2-004	356420.434	823194.296	224.000
P2-005	356184.139	823261.273	224.000
P2-006	356154.844	823282.729	224.000
P2-007	356130.756	823319.280	224.000
P2-008	356100.003	823325.601	224.000
P2-009	356048.564	823291.701	224.000
P2-010	356054.726	823251.806	224.000
P2-011	356571.151	823105.427	224.000
P2-012	357087.576	822959.048	224.000
P2-013	357143.722	822989.930	224.000
P2-014	357275.803	823434.409	224.000
P2-015	357407.884	823878.888	224.000
P2-016	357377.934	823935.351	224.000
P2-017	357093.593	824025.356	224.000
P2-018	356809.252	824115.361	224.000
P2-019	356751.965	824085.484	224.000
P2-020	356737.017	824037.633	224.000

NOTES:

1.

All co-ordinates are to NZGD2000 Mt Pleasant and levels are to mean sea level.

2.

Property boundaries of Lot 1 DP 27020 (the site) sourced from Elliot Sinclair survey dated 16 November 2011. Remaining general property boundaries sourced from LINZ 1:50,000 cadastral data.

3.

Pond invert levels and pond excavation levels are minimum design levels. No allowance has been made for any over excavation that may be needed to mitigate poor soil conditions.

4.

Raise existing Buffer Pond canal embankment crest to RL224.0m between Fuseplug Spillway and Service Spillway (approximately 230m).

WIL Waimakariri Irrigation Ltd

Drawn

R.L.

Date

12/2011

Checked

N.C.

Approved

S.M.

WAIMAKARIRI IRRIGATION LIMITED

WRIGHTS ROAD STORAGE PONDS

GENERAL ARRANGEMENT

PLAN SET OUT - PONDS AND TUB

Project

E2131

Drawing Number

WIL1125/30/21

Scale

1:5,000

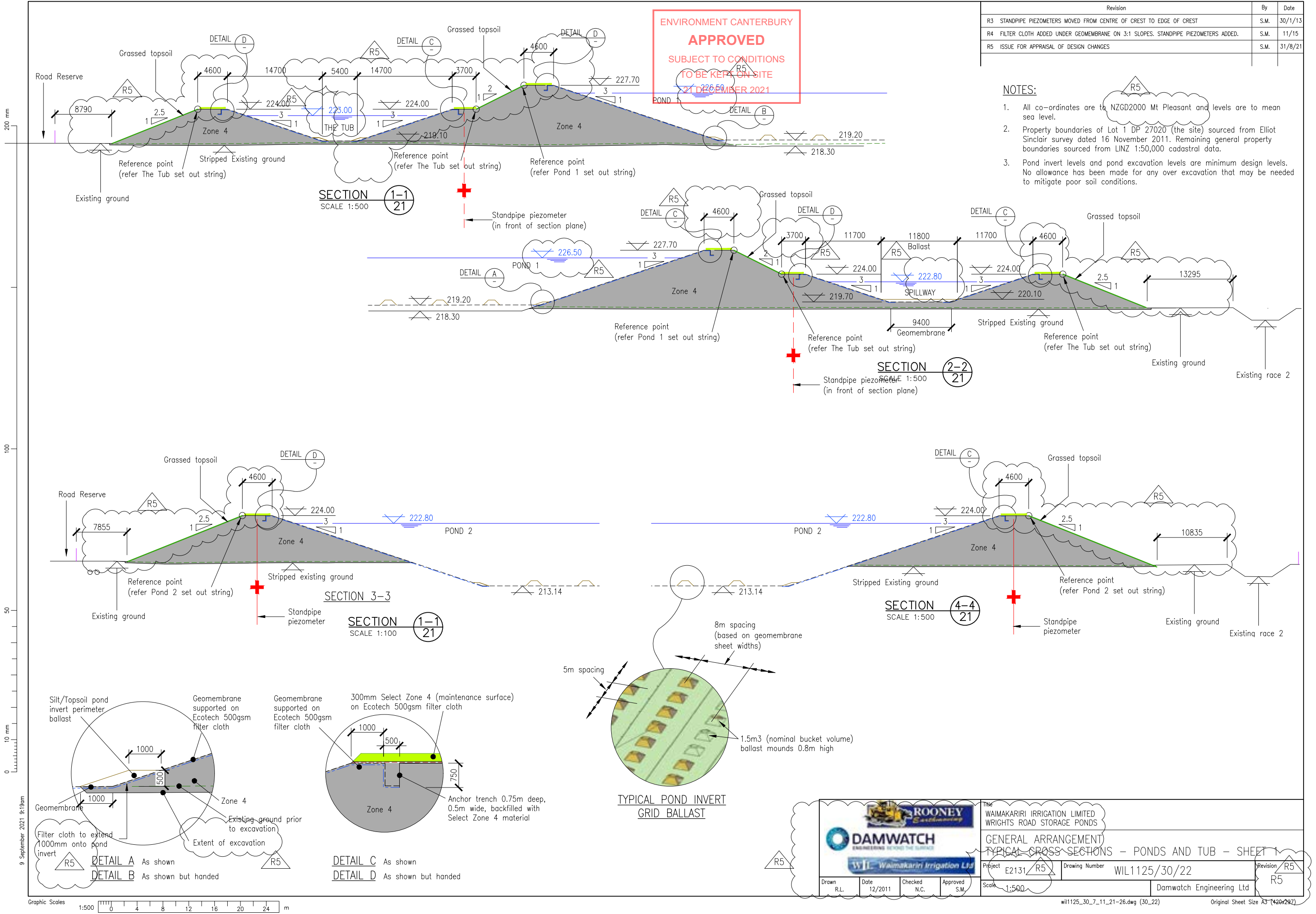
Damwatch Engineering Ltd

Revision

R5

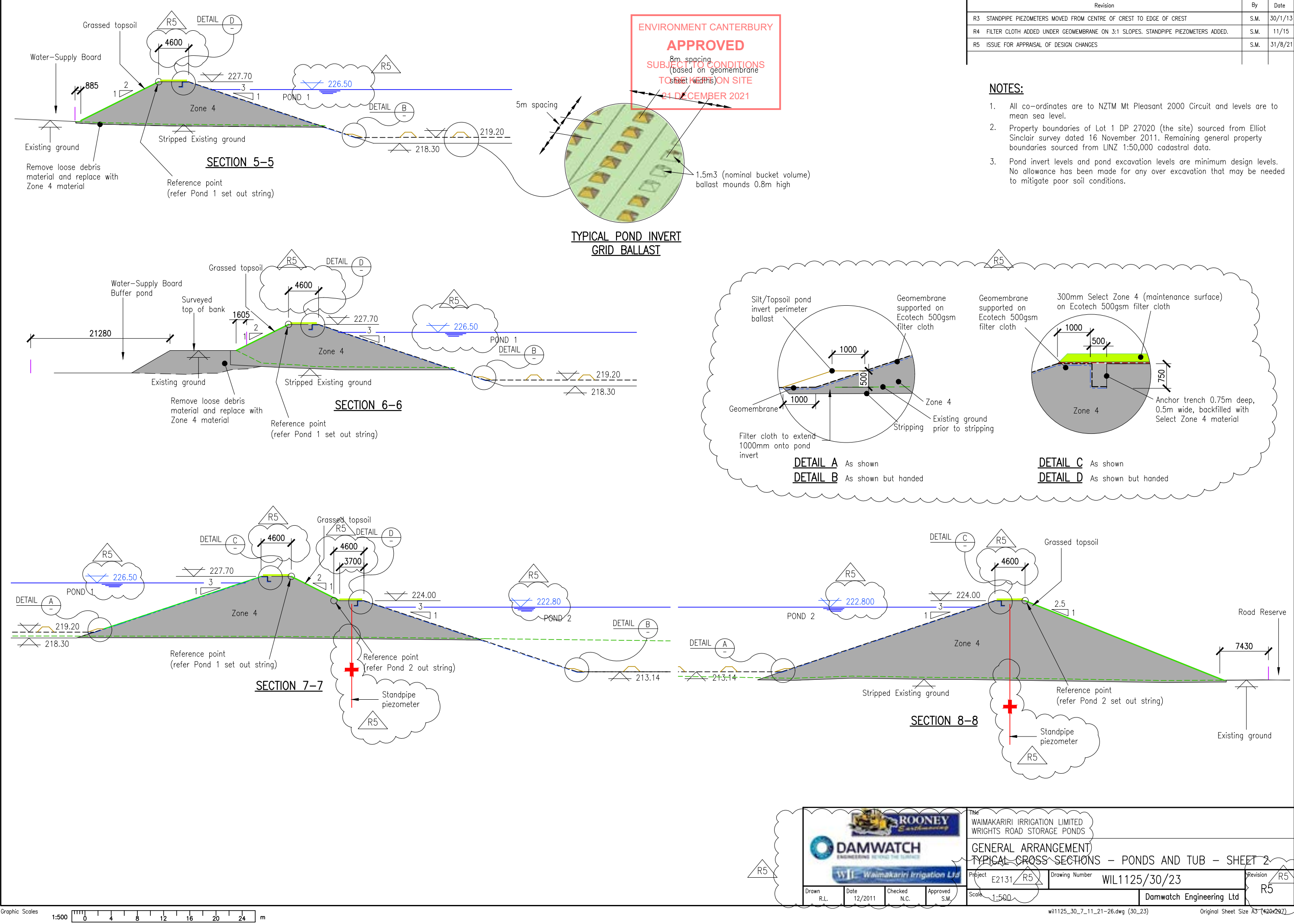
will1125_30_7_11-21-26.dwg (30-21)

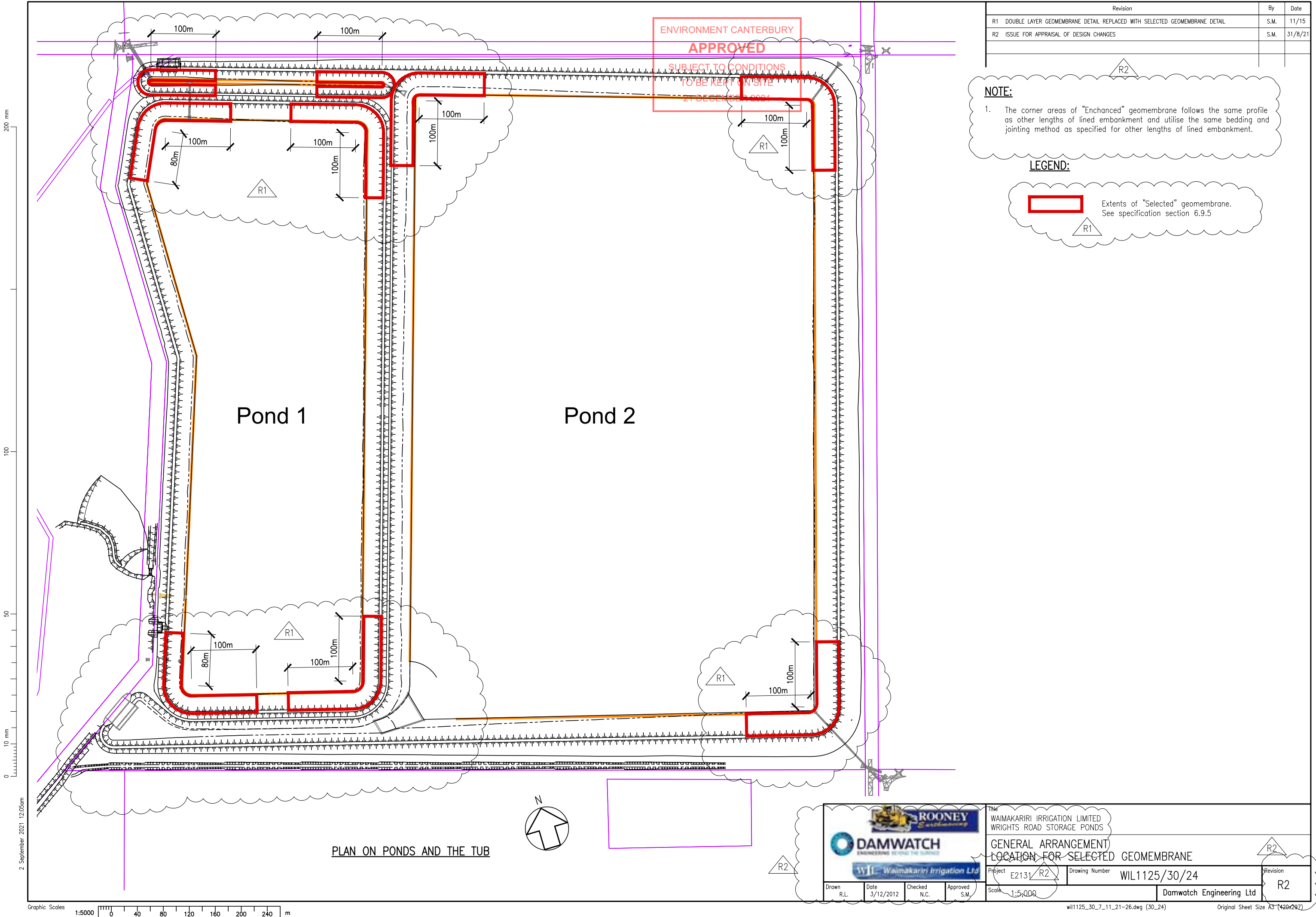
Original Sheet Size A3 (420x297)



200 mm
100
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10 mm
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6 September 2021 11:21am





Revision	By	Date
R1 DOUBLE LAYER GEOMEMBRANE DETAIL REPLACED WITH SELECTED GEOMEMBRANE DETAIL	S.M.	11/15
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

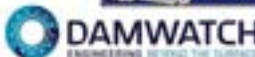
NOTE:

- The corner areas of "Enhanced" geomembrane follows the same profile as other lengths of lined embankment and utilise the same bedding and jointing method as specified for other lengths of lined embankment.

LEGEND:

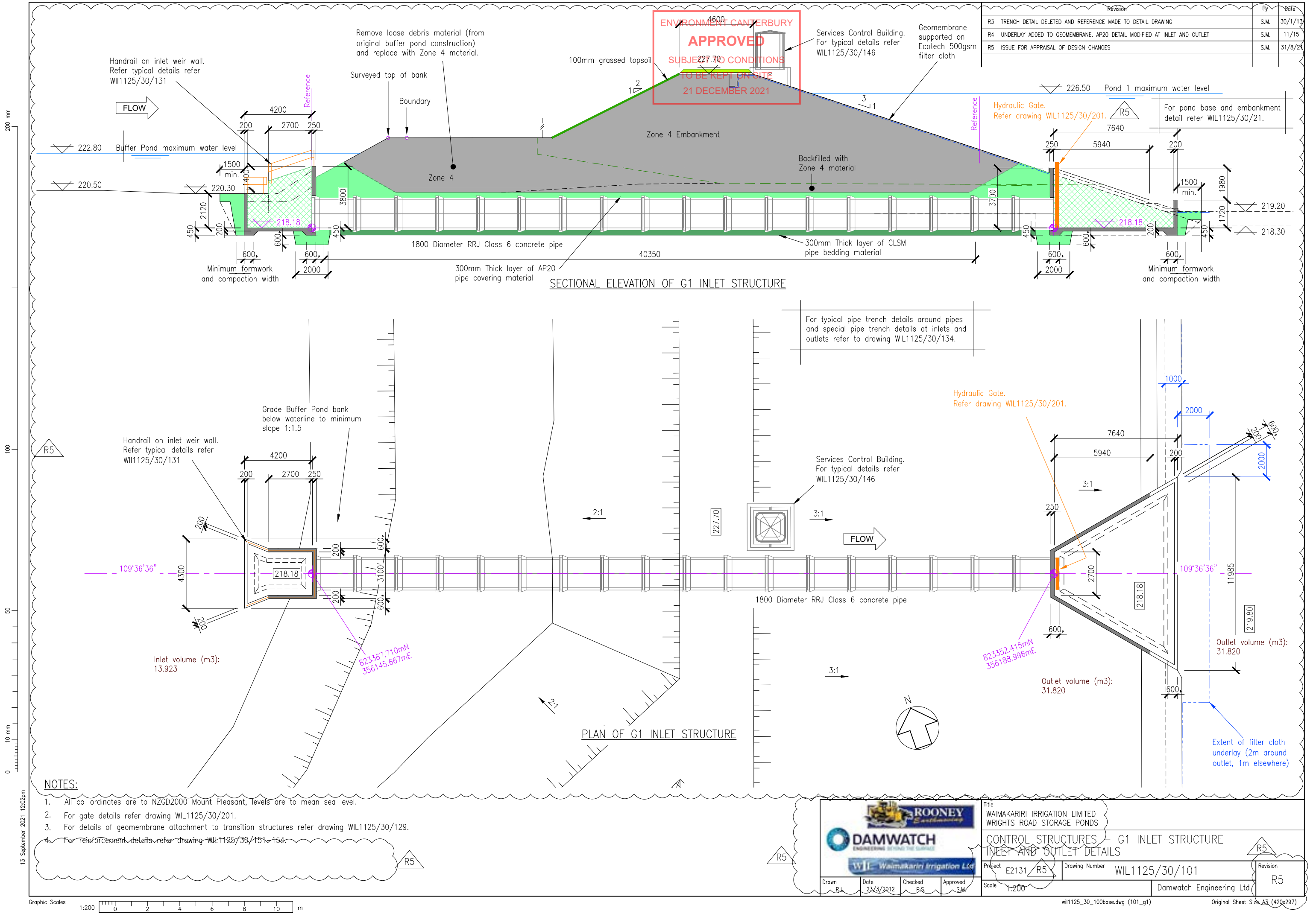
Extents of "Selected" geomembrane.
See specification section 6.9.5

PLAN ON PONDS AND THE TUB



Drawn R.L.	Date 3/12/2012	Checked N.C.	Approved S.M.
---------------	-------------------	-----------------	------------------

Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS		Revision R2
Project E2131		
Drawing Number WIL1125/30/24		Revision R2
Scale 1:5,000		
Damwatch Engineering Ltd		

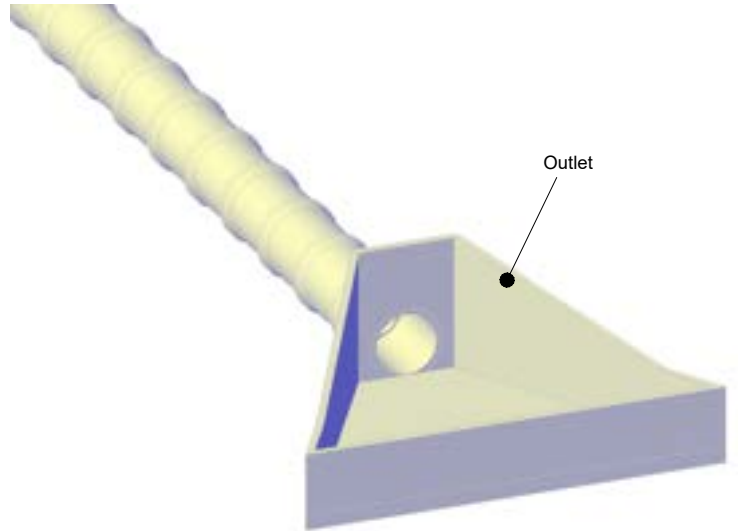
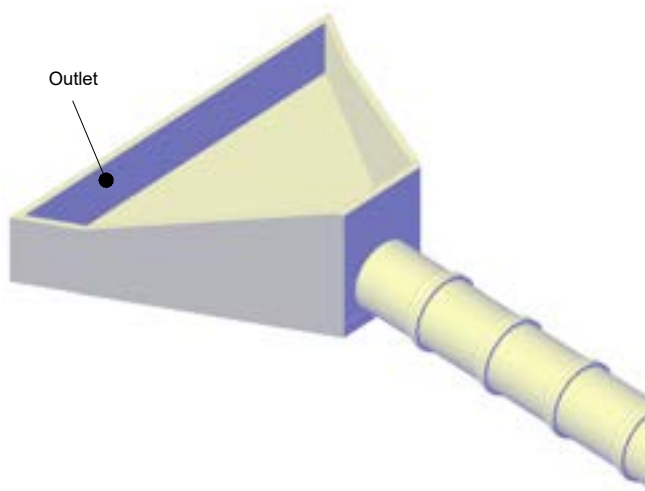
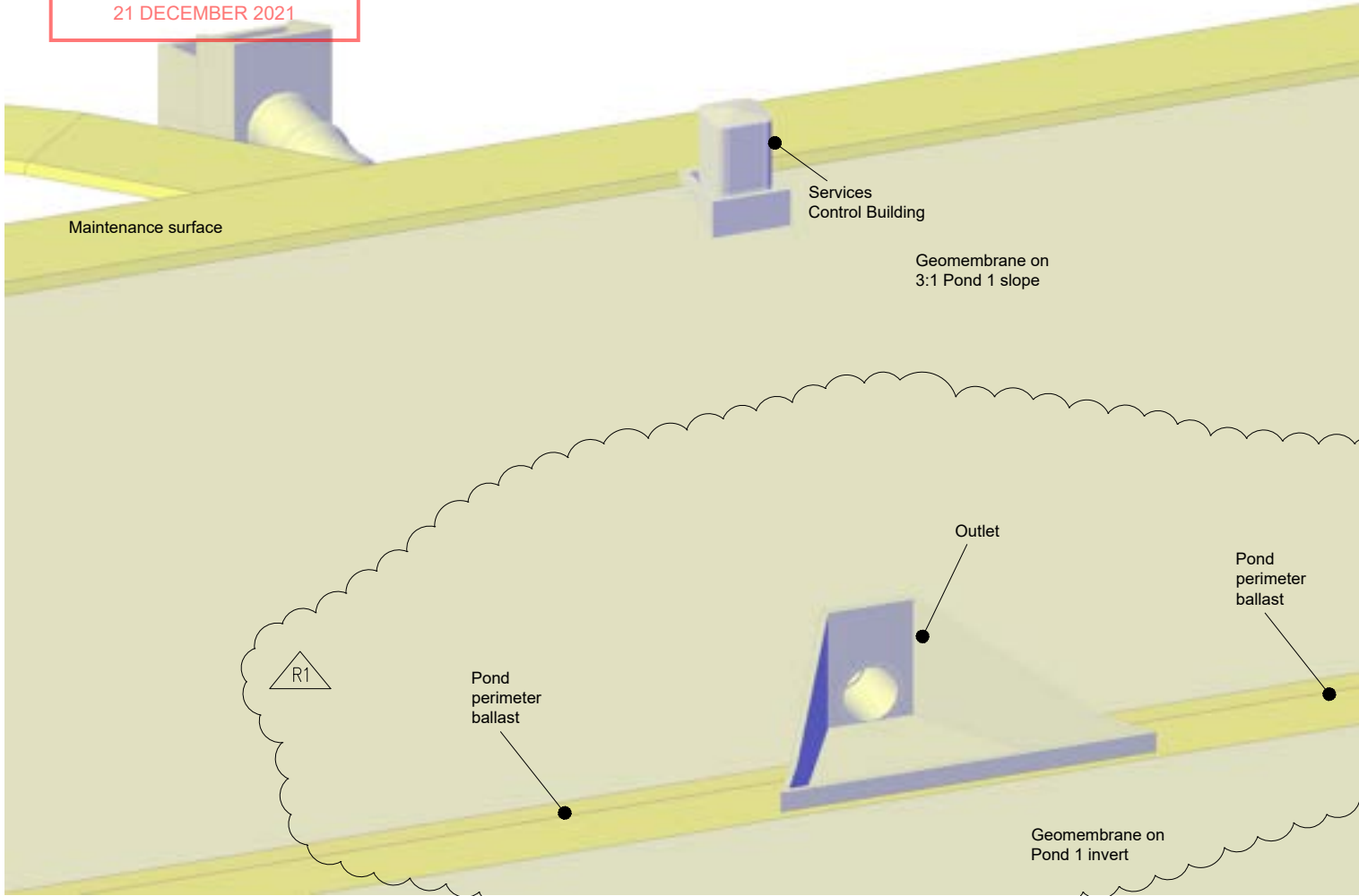


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INLET

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021



OUTLET

NOTES:

1. For geometry and setting out details refer drawing WIL1125/30/101.
2. For reinforcement details refer drawing WIL1125/30/151-154.

6 September 2021 12:13pm

R3

WIL Waimakariri Irrigation Ltd

Drawn R.L. Date 23/3/2012 Checked P.S. Approved S.M.

Title
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G1 INLET STRUCTURE
INLET AND OUTLET ISOMETRICS

Project E2131 Drawing Number WIL1125/30/102

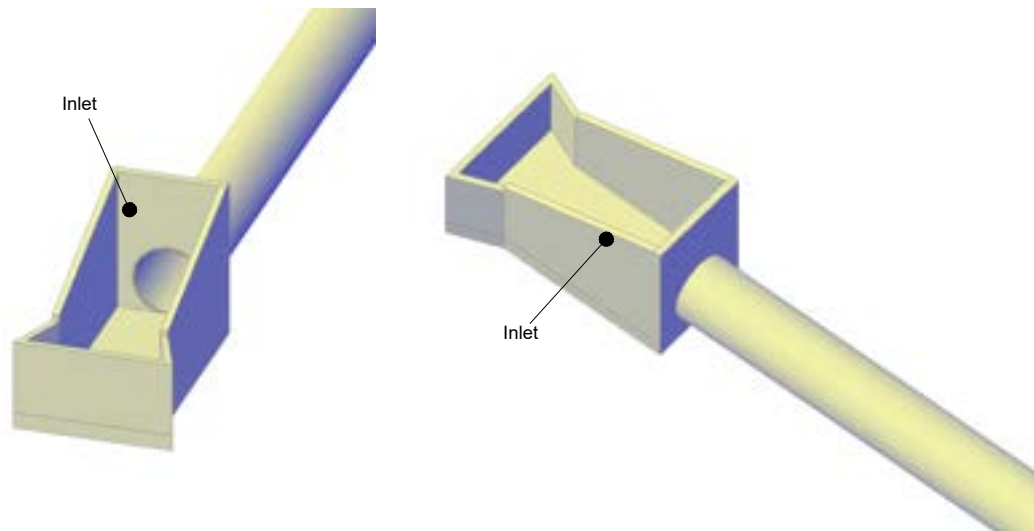
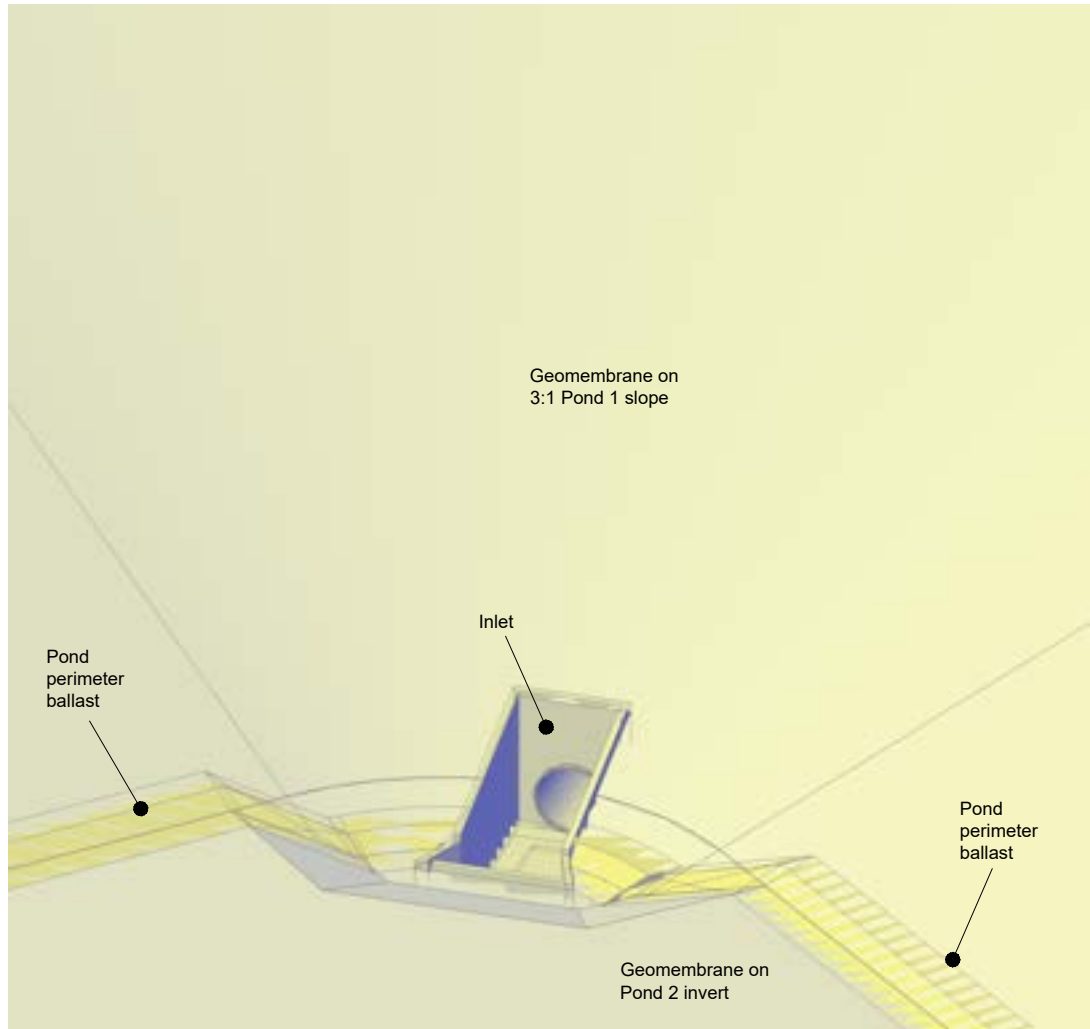
Scale 1:200

Damwatch Engineering Ltd

R3

wil1125_30_100base.dwg (102_g1) Original Sheet Size A3 (420x297)

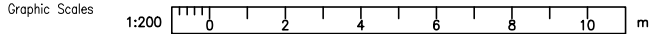
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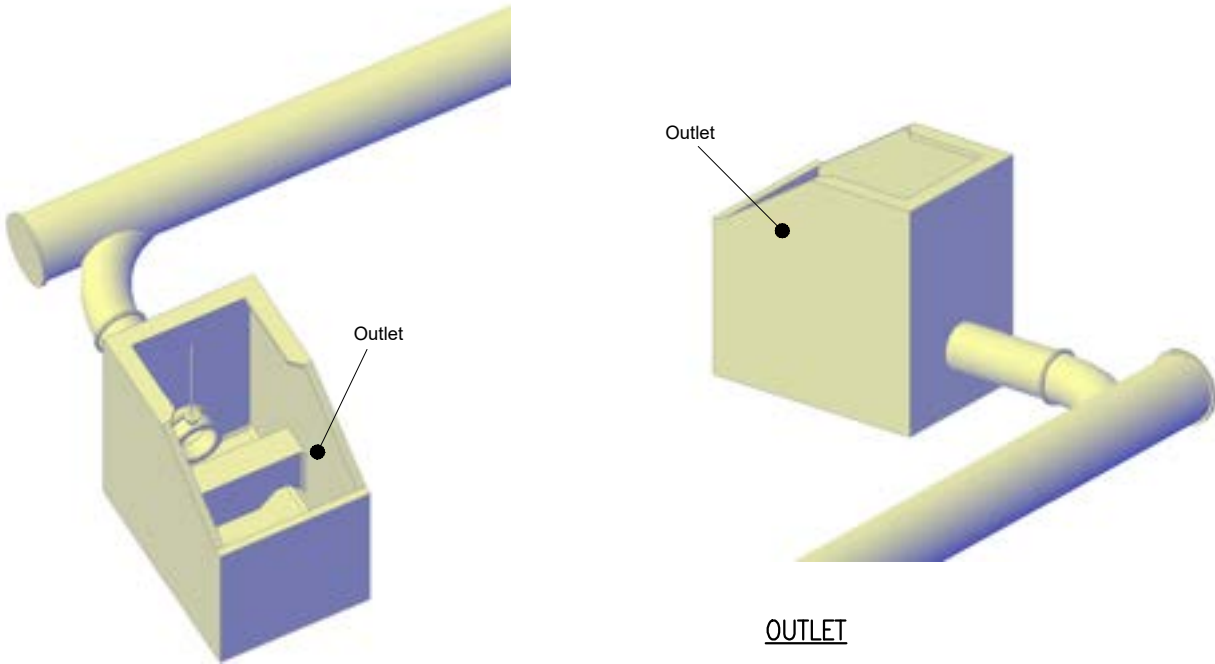
INLET

NOTES:

1. For geometry and setting out details refer drawing WIL1125/30/103,104,106.
2. For reinforcement details refer drawing WIL1125/30/156-158.



ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021



OUTLET

Revision	By	Date
R1 DETAIL AT INLET ALTERED	S.M.	3/12/12
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

8 September 2021 9:33am

DAMWATCH
Engineering. Protecting the Future.

WIL Waimakariri Irrigation Ltd

ROONEY
Engineering

Title
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G2 PENSTOCK STRUCTURE
INLET AND OUTLET ISOMETRICS

Project E2131

Drawing Number WIL1125/30/105

Scale 1:200

Drawn R.L.

Date 23/3/2012

Checked P.S.

Approved S.M.

Revision
R2

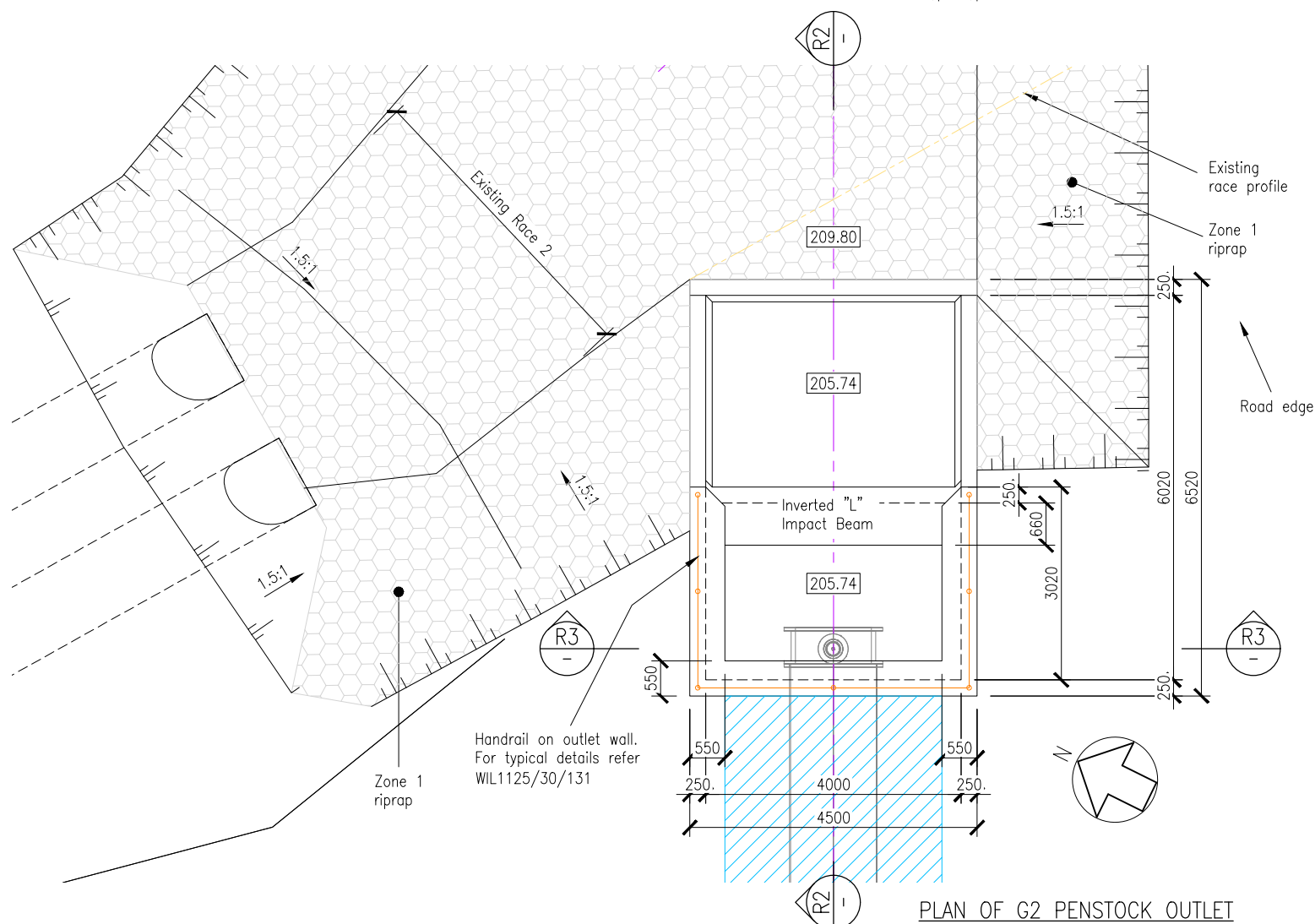
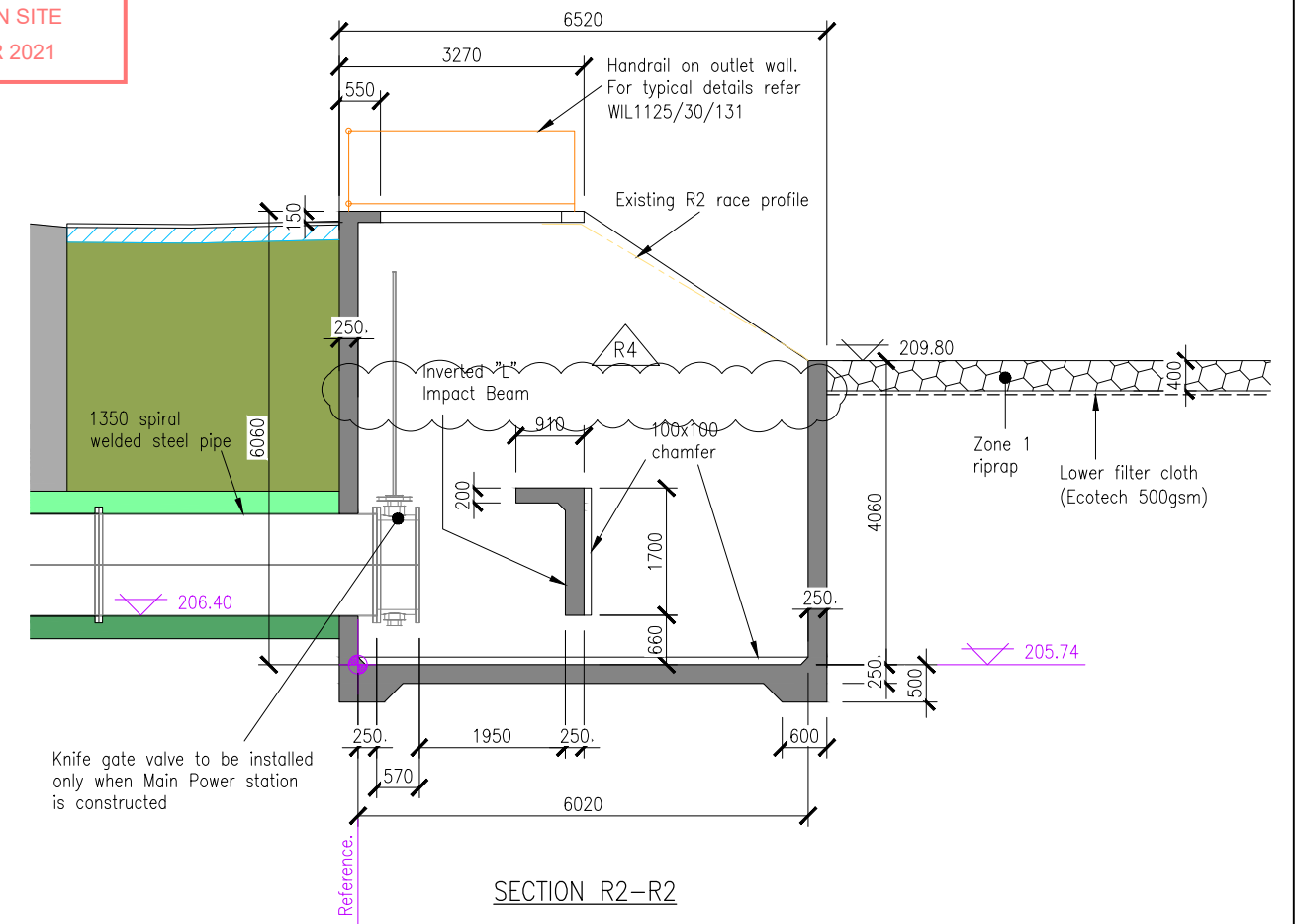
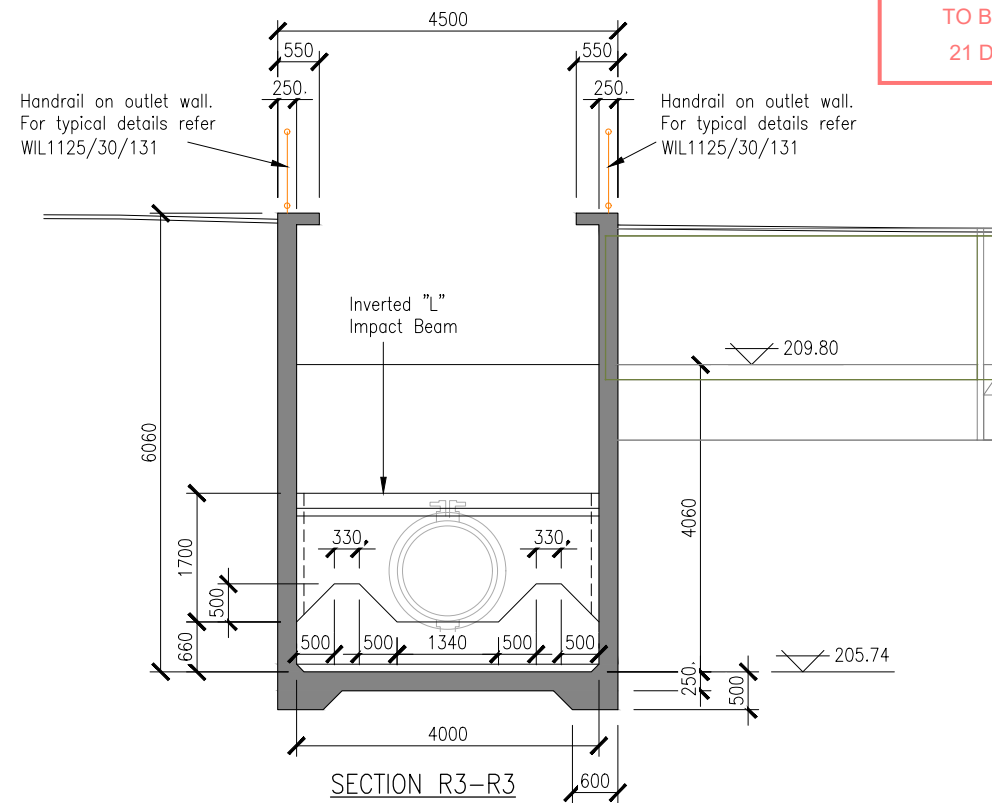
Damwatch Engineering Ltd

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13 September 2021 12:40pm

Graphic Scales 1:100 0 1 2 3 4 5 m

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R2 NOTE CORRECTED	S.M.	3/12/12
R3 REFERENCE TO FILTER CLOTH UNDER RIPRAP ADDED	S.M.	30/1/13
R4 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



- NOTES:**
- All co-ordinates are to NZGD2000 Mount Pleasant, levels are to mean sea level.
 - Concrete strength of Inverted "L" Impact Beam to be 50MPa.
 - For reinforcement details refer drawing WIL1125/30/157-158.

WIL Waimakariri Irrigation Ltd

WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES G2 PENSTOCK STRUCTURE
OUTLET DETAILS

Project E2131 Drawing Number WIL1125/30/106

Scale 1:100

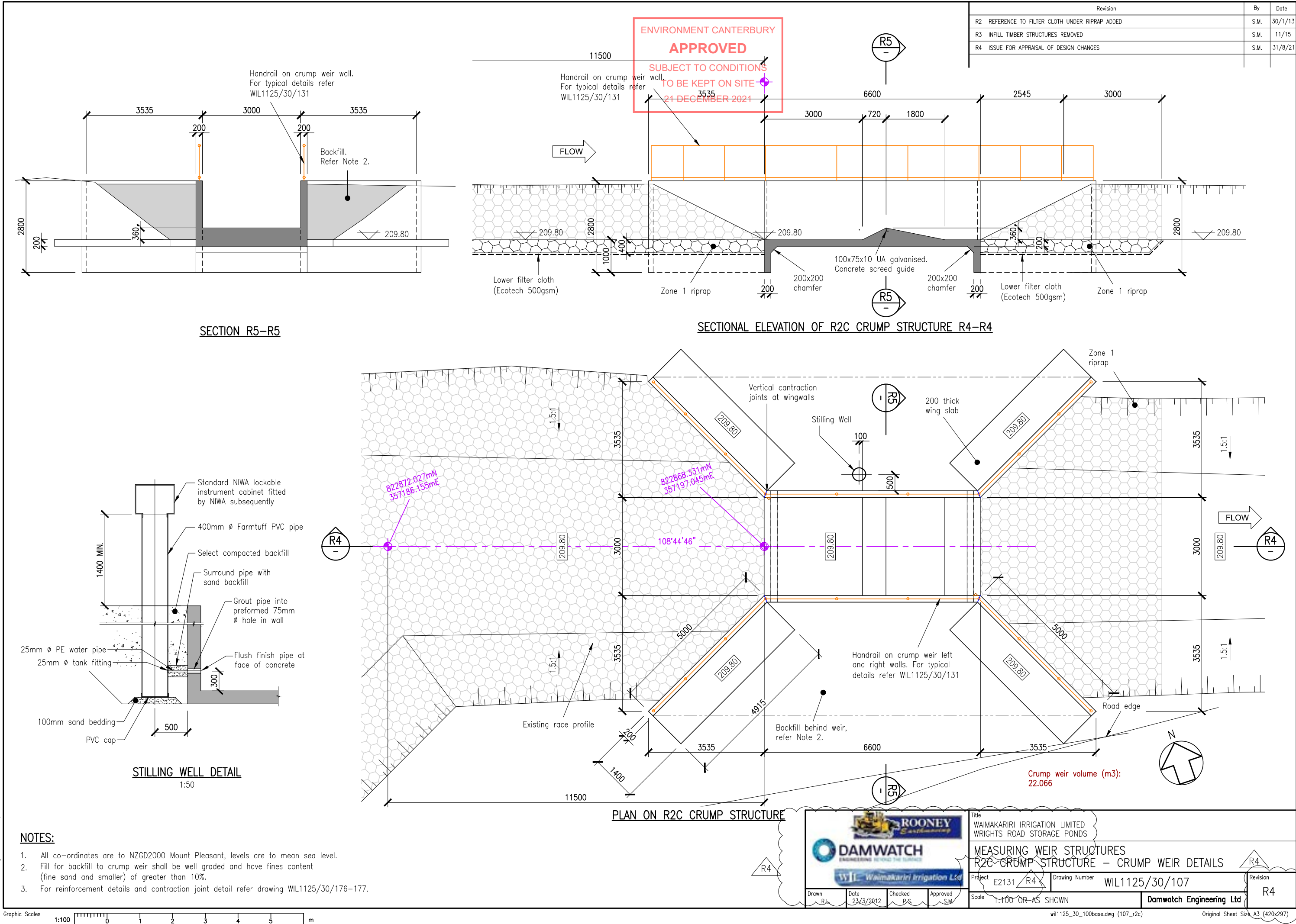
Damwatch Engineering Ltd

Drawn R.k. Date 23/3/2012 Checked P.S. Approved S.M.

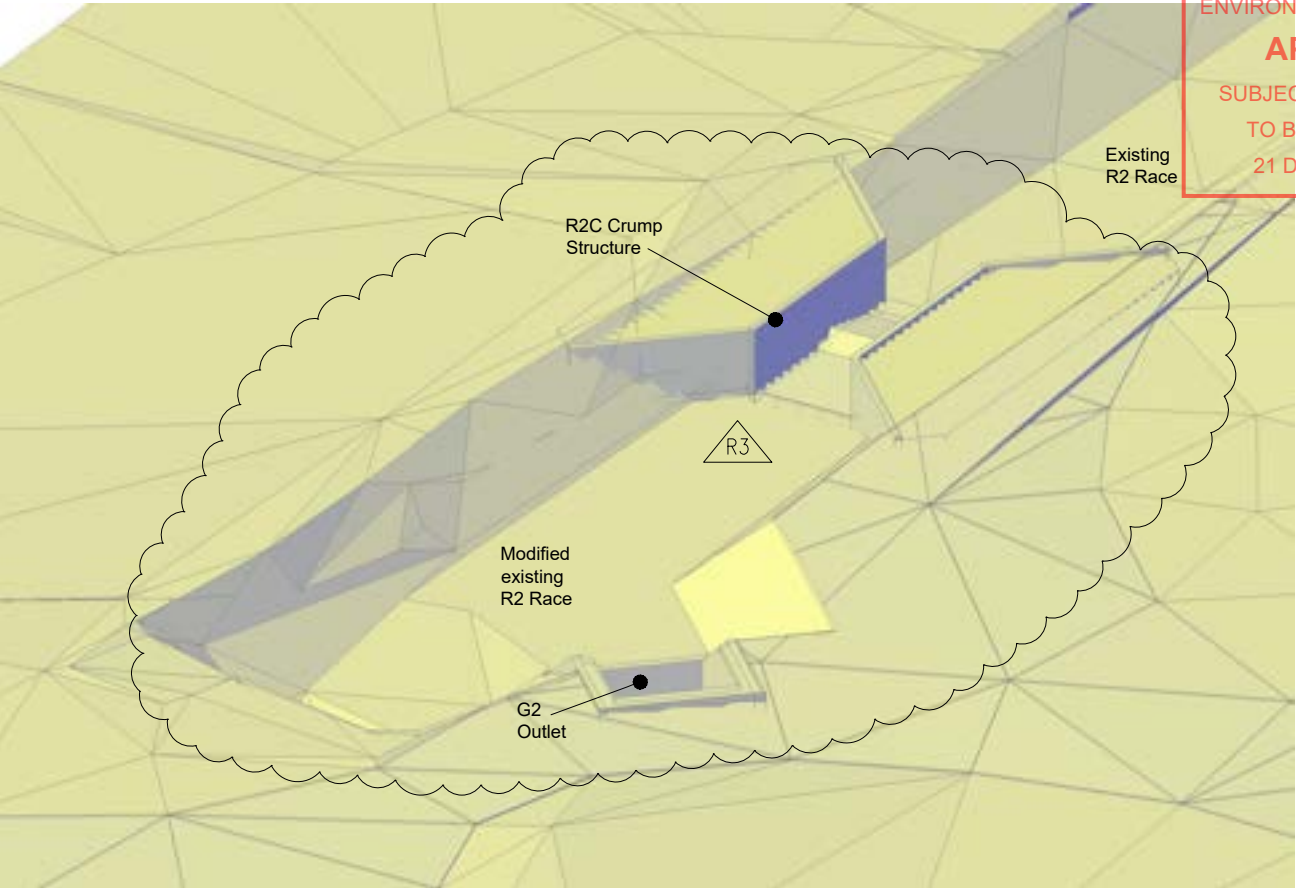
Revision R4

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29 August 2021 10:57pm

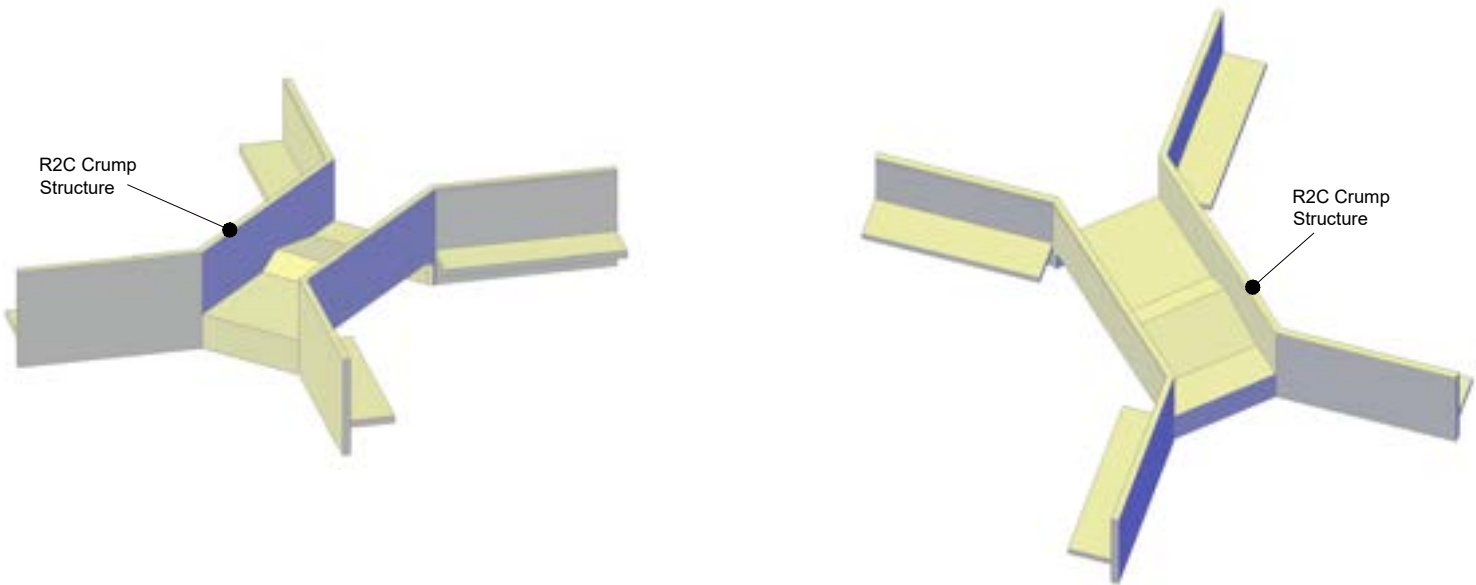


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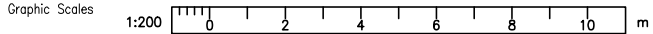
ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 FEATURE LABELS ADDED	S.M.	3/12/12
R2 INFILL TIMBER STRUCTURE REMOVED	S.M.	11/15
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



- NOTES:**
1. For geometry and setting out details refer drawing WIL1125/30/107.
 2. For reinforcement details refer drawing WIL1125/30/176-177.

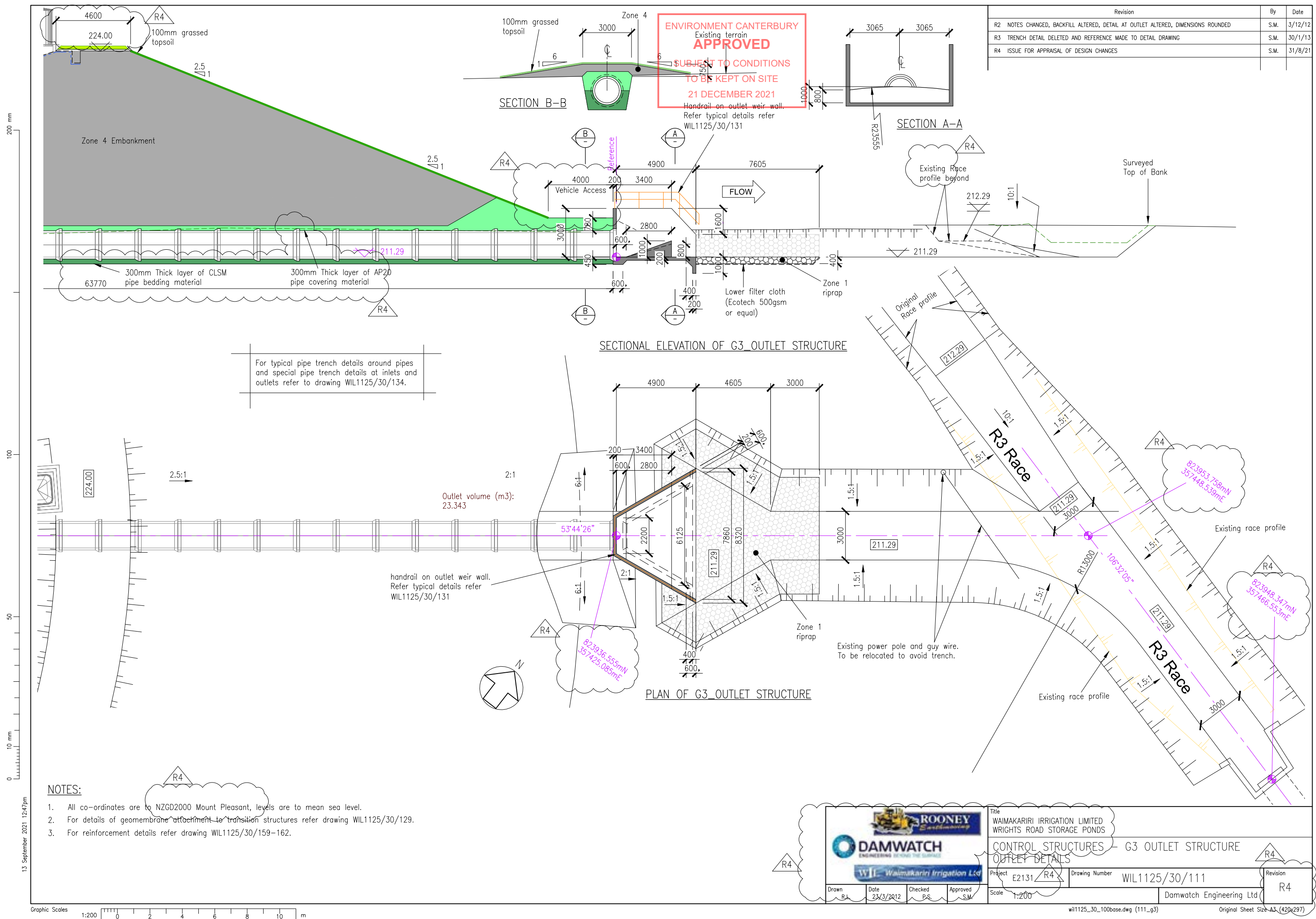
6 September 2021 12:48pm

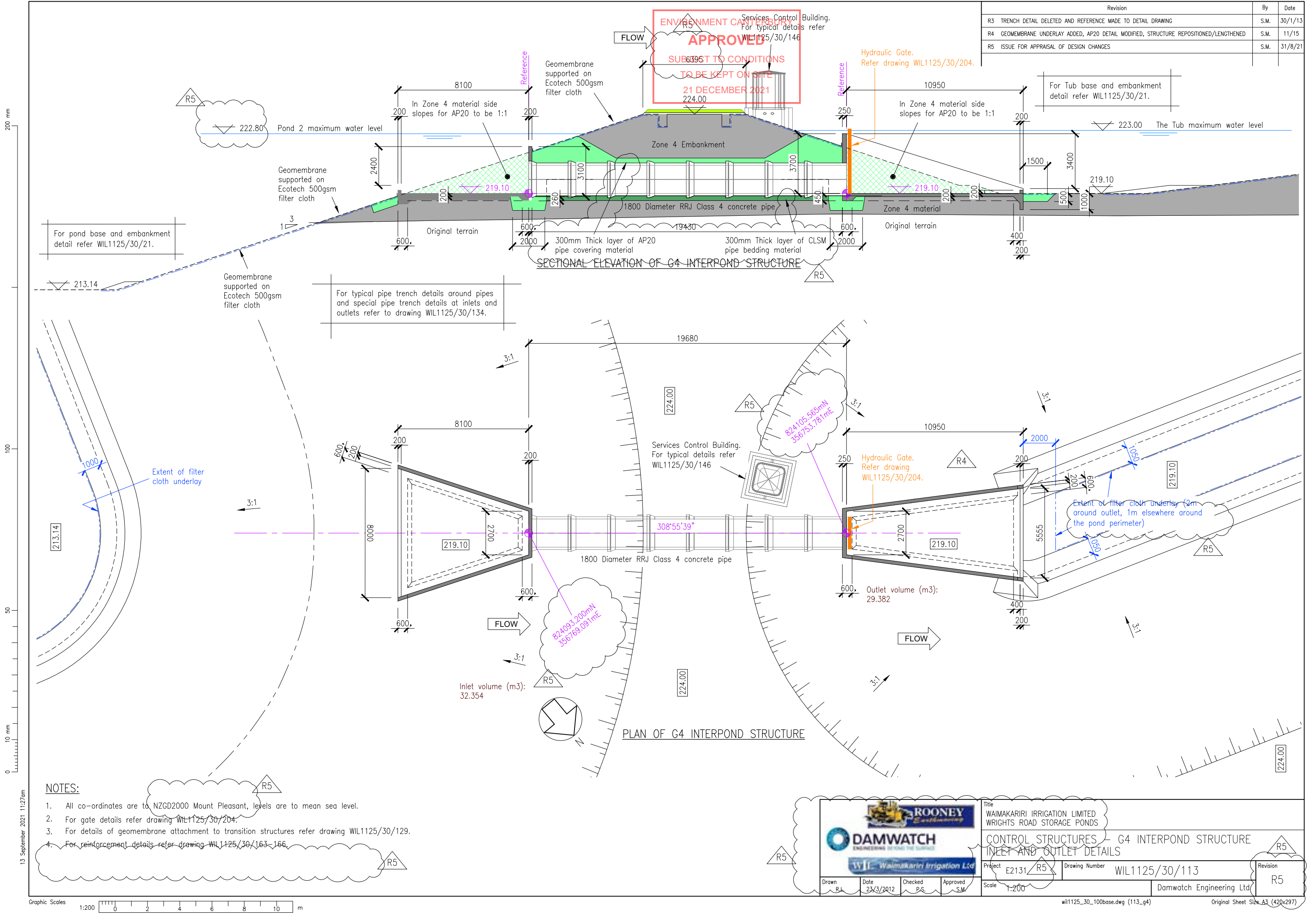


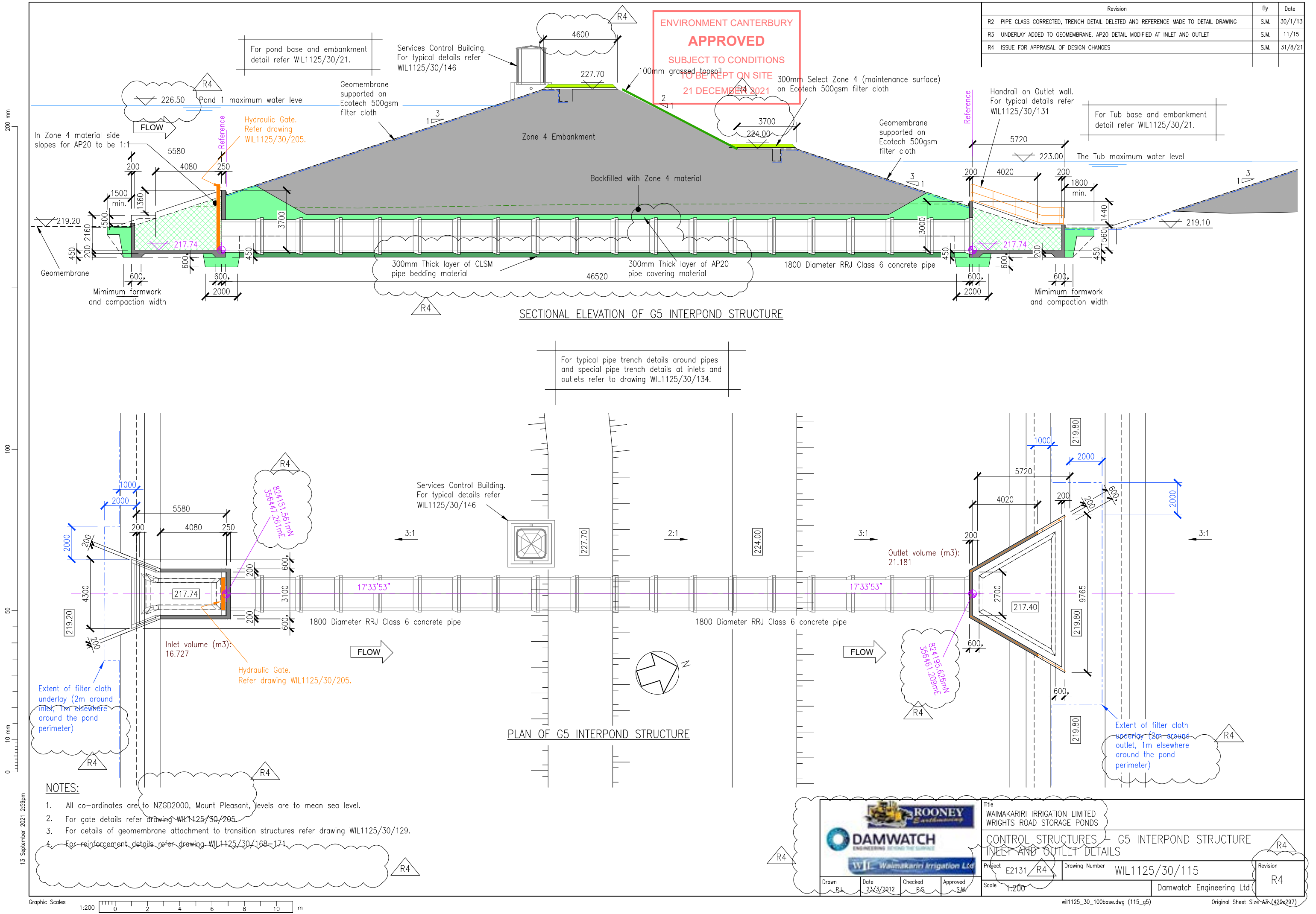
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

MEASURING WEIR STRUCTURES
R2C CRUMP STRUCTURE - ISOMETRICS

Project	E2131	Drawing Number	WIL1125/30/109	Revision	R3
Scale	1:200	Damwatch Engineering Ltd			





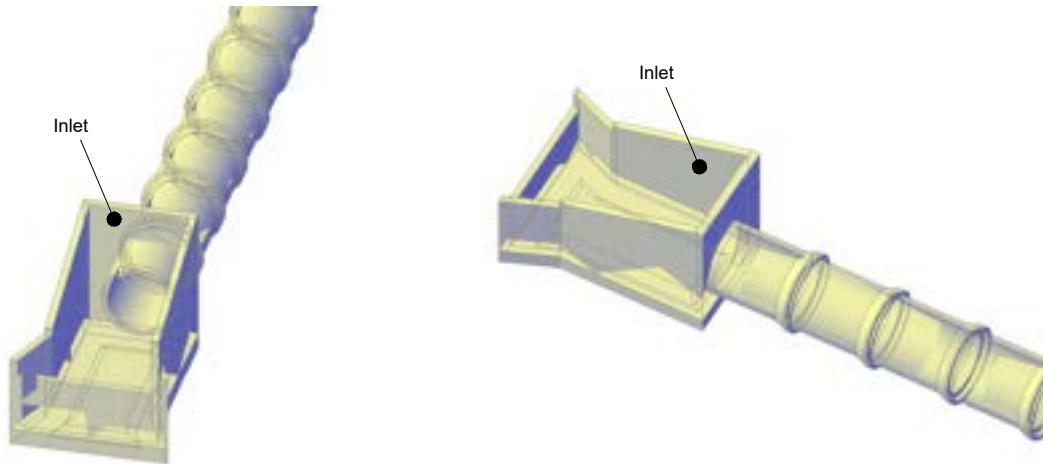
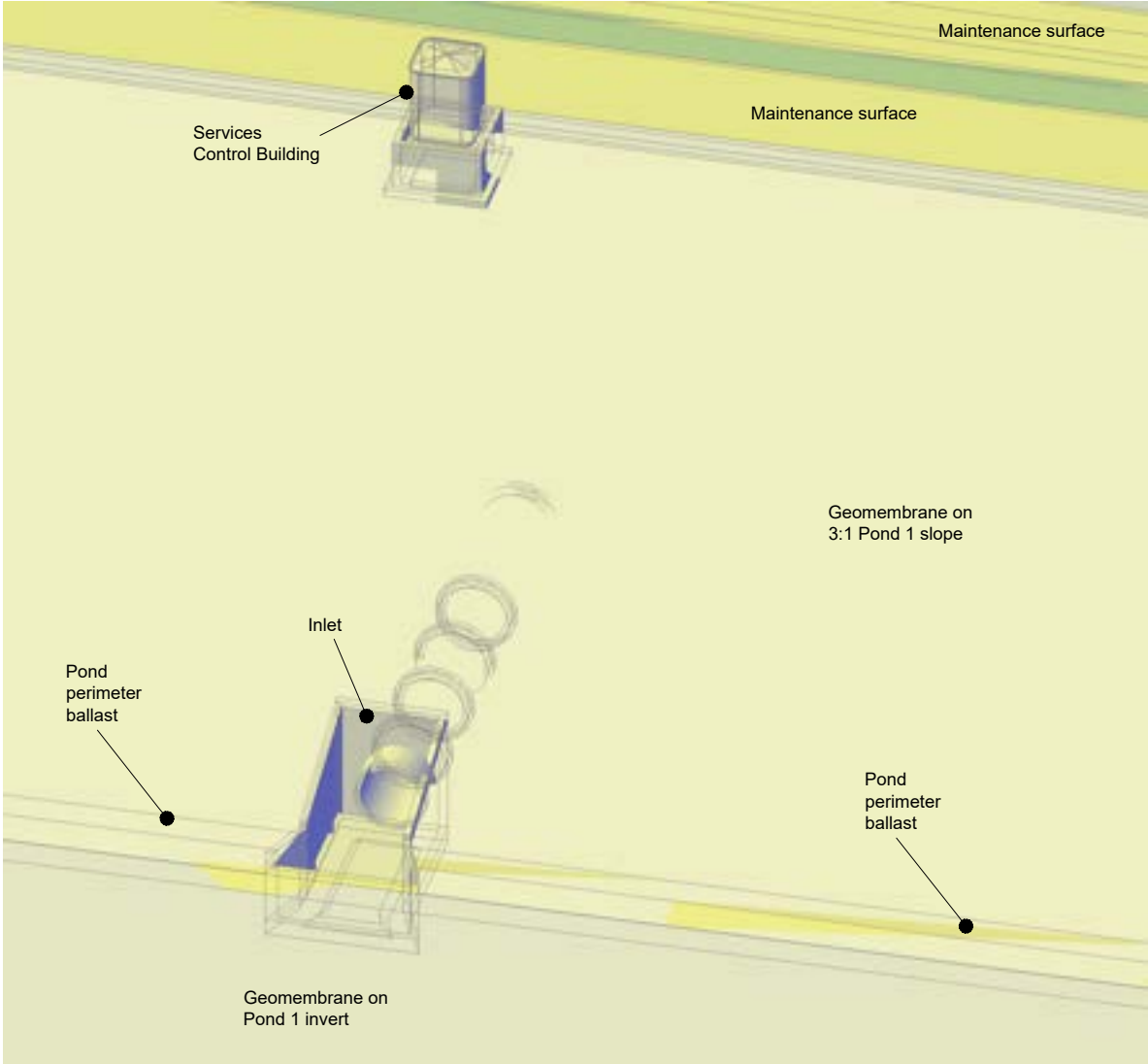


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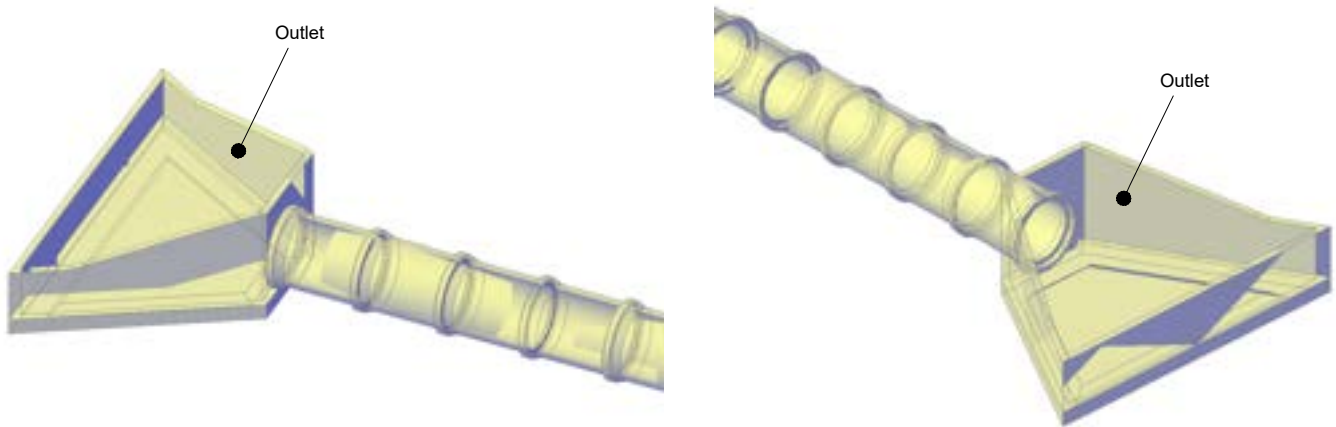
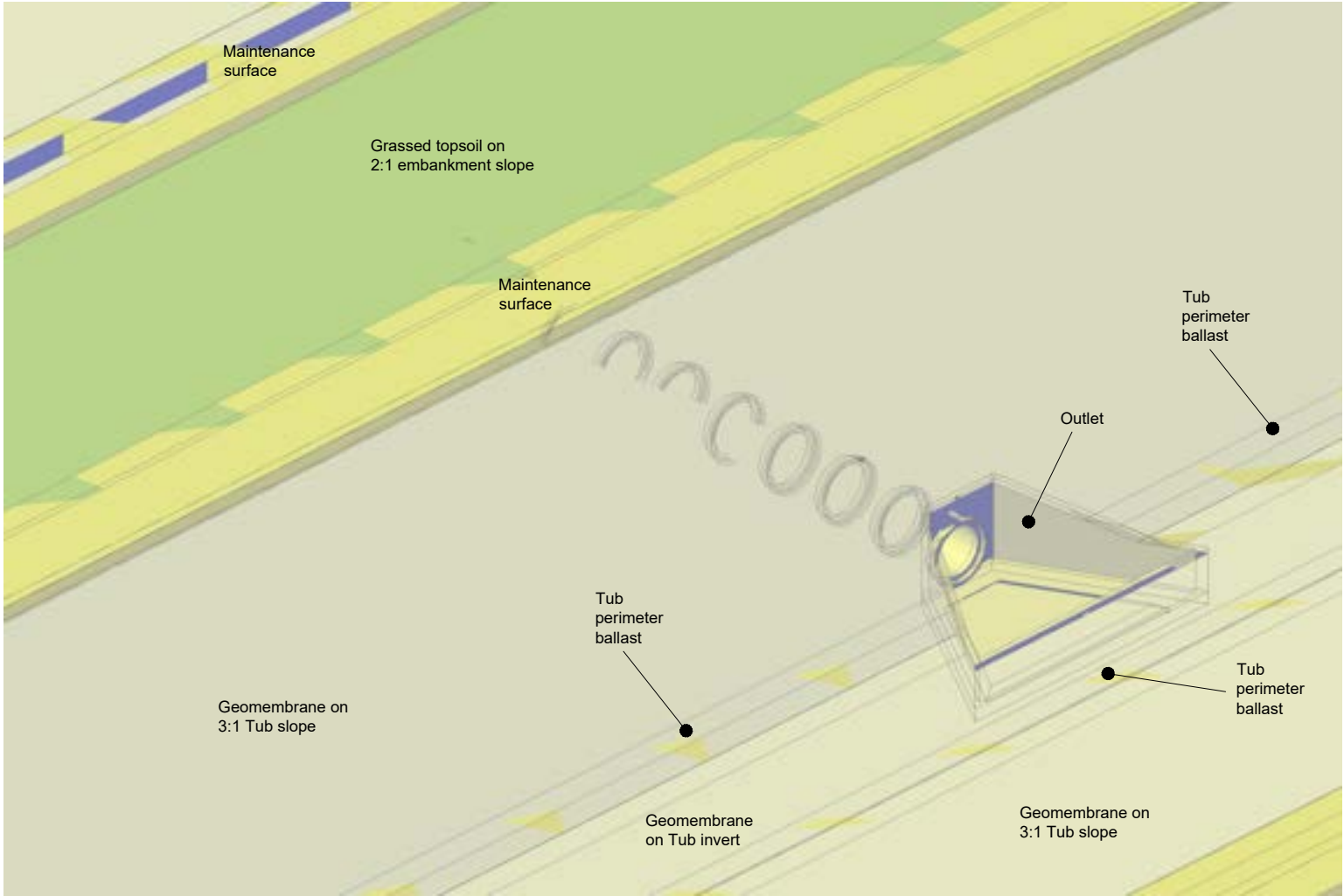
9 September 2021 10:17am

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 DETAIL AT INLET AND OUTLET ALTERED	S.M.	3/12/12
R2 CONTROL SERVICES BUILDING ADDED	S.M.	30/1/13
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



INLET

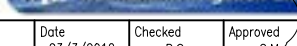


OUTLET

NOTES:

1. For geometry and setting out details refer drawing WIL1125/30/115.
2. For reinforcement details refer drawing WIL1125/30/168-171.

Graphic Scales 1:200 0 2 4 6 8 10 m



WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G5 INTERPOND STRUCTURE
INLET AND OUTLET CONCEPT ISOMETRICS

Project E2131 / R3 Drawing Number WIL1125/30/116

Scale 1:200

Drawn R.M. Date 23/3/2012 Checked P.S. Approved S.M.

Damwatch Engineering Ltd

R3

R3

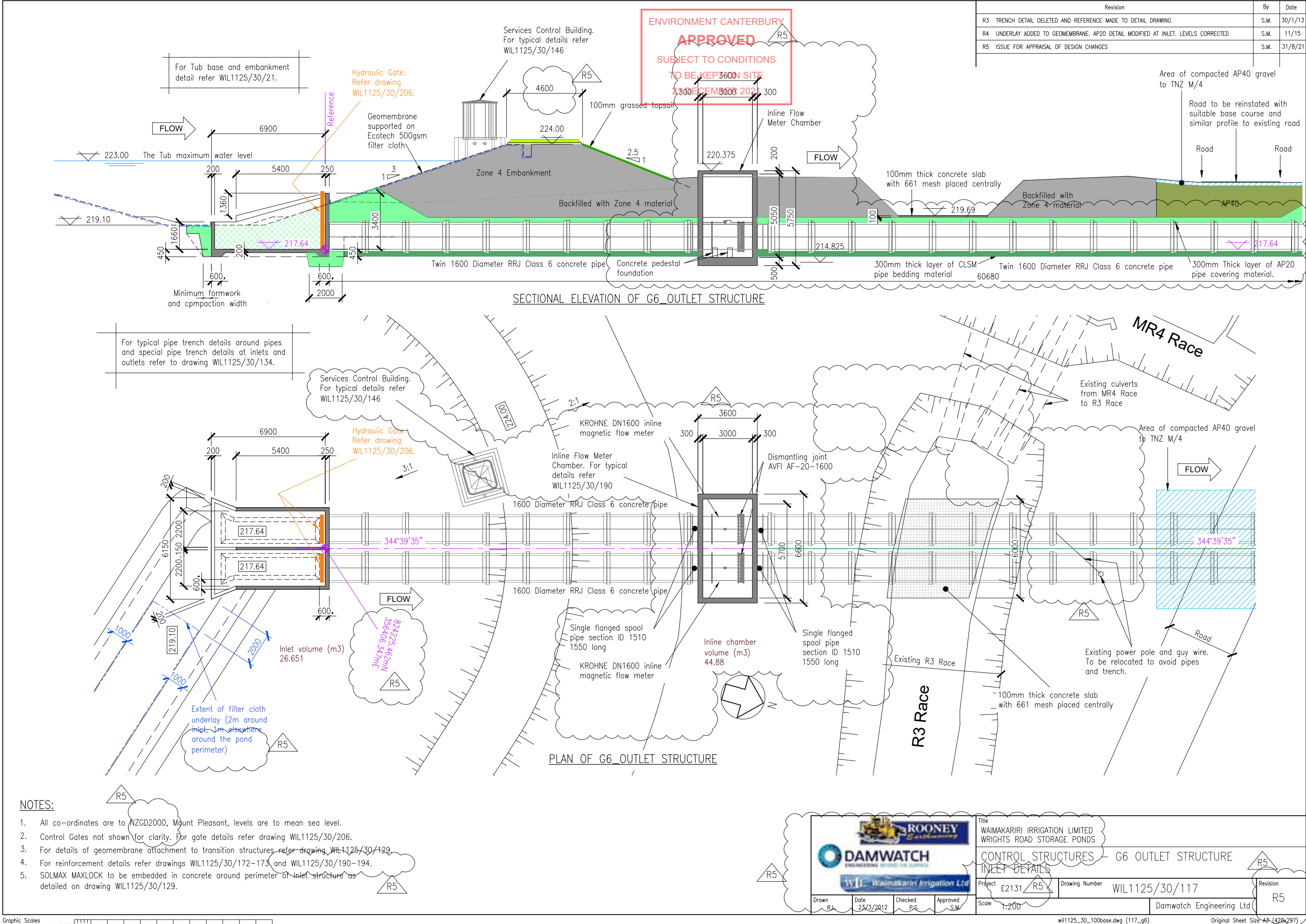
R3

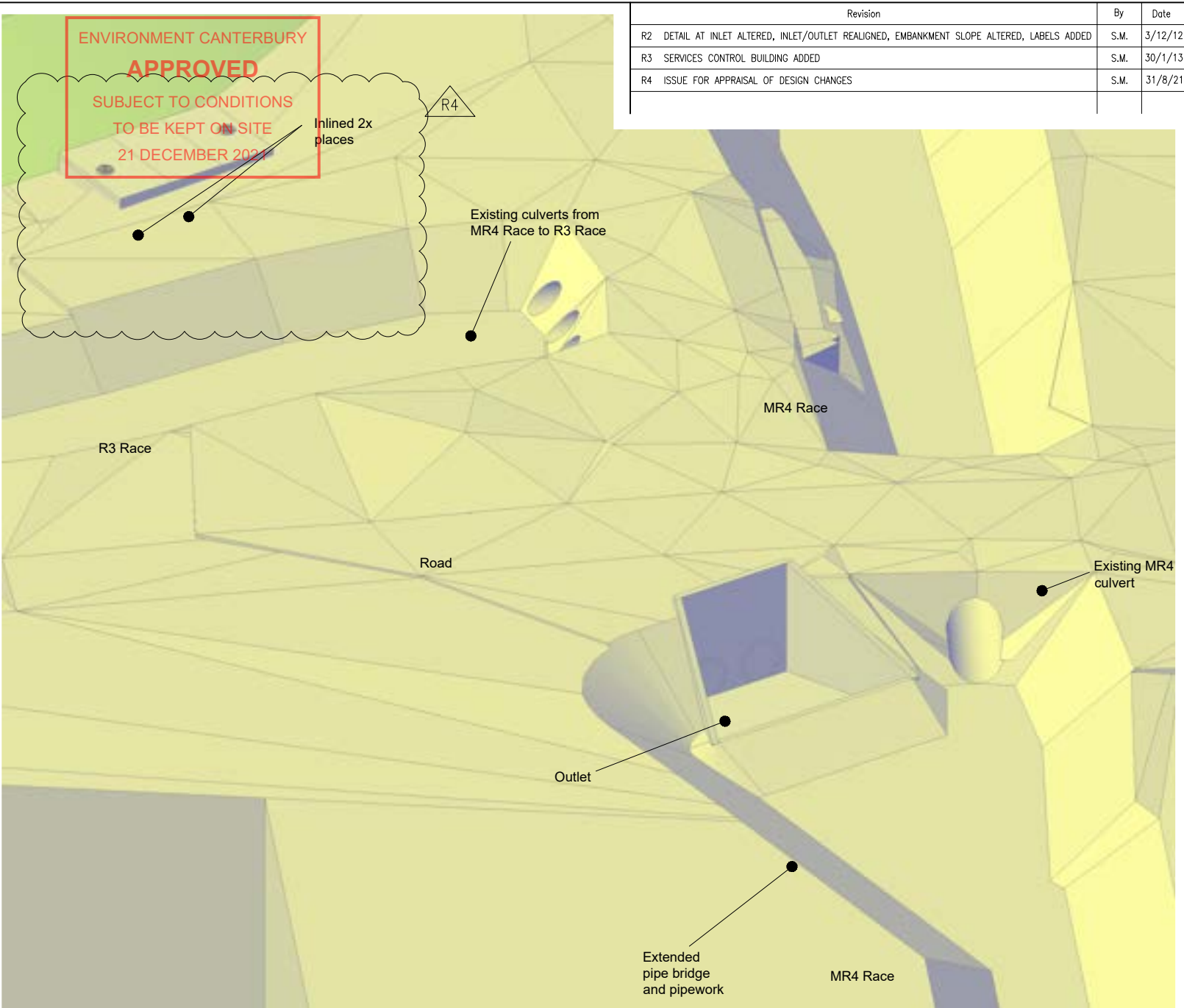
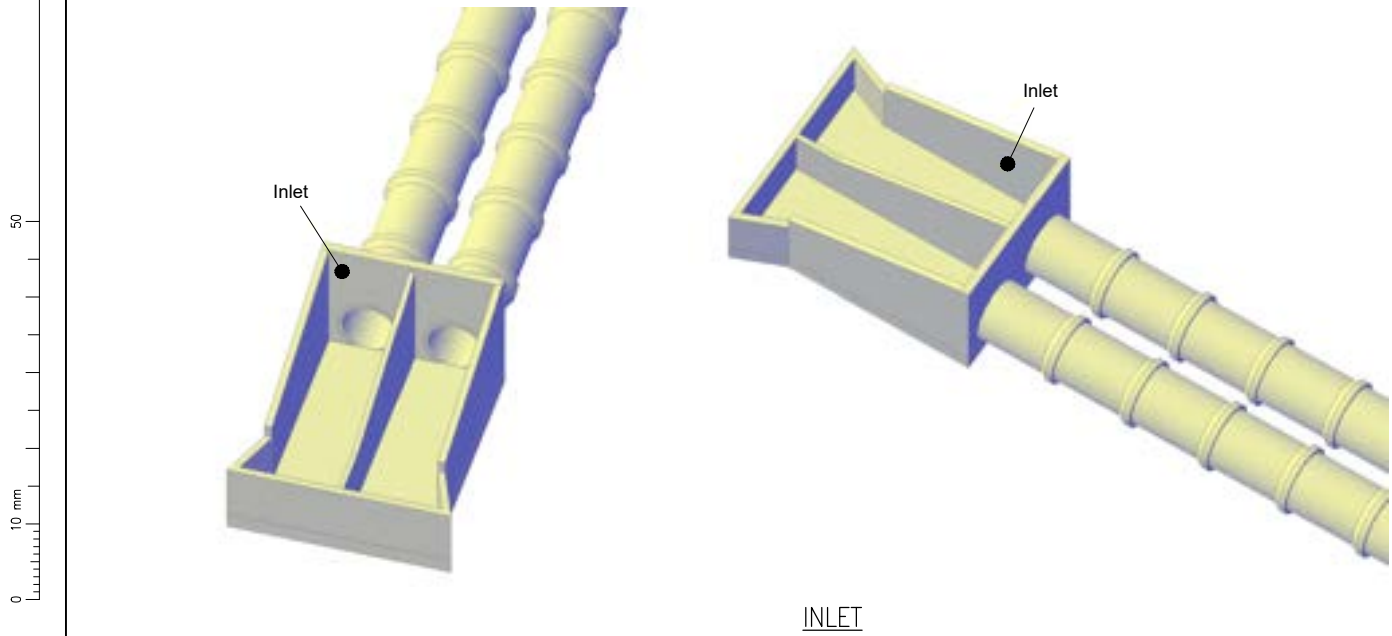
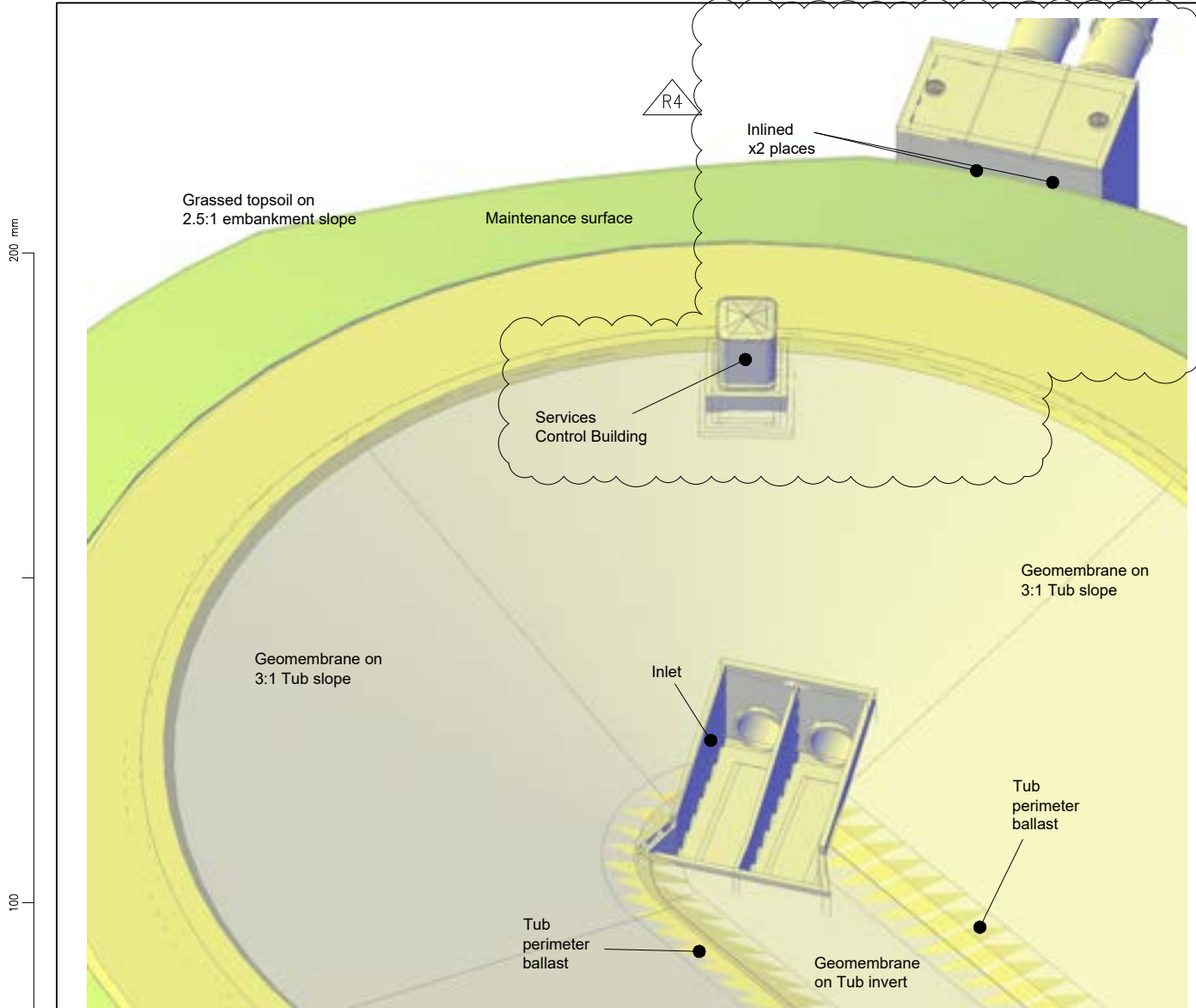
wil1125_30_100base.dwg (116_g5)

Original Sheet Size A3 (420x297)

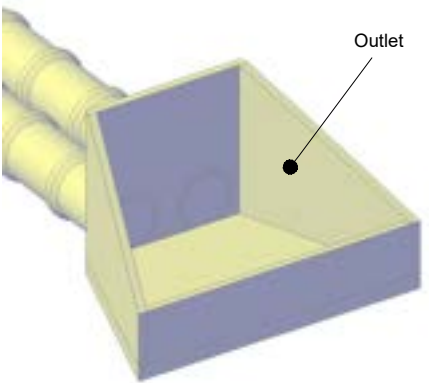
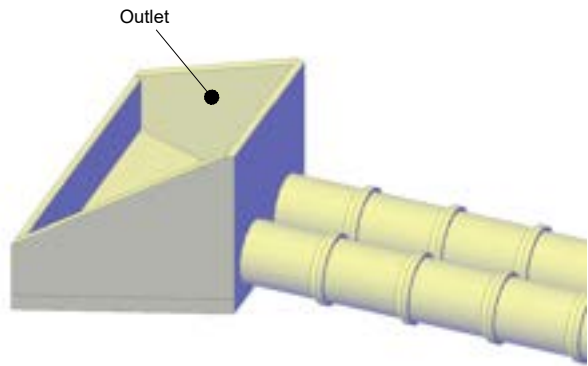
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9 September 2021 11:51am





Revision	By	Date
R2 DETAIL AT INLET ALTERED, INLET/OUTLET REALIGNED, EMBANKMENT SLOPE ALTERED, LABELS ADDED	S.M.	3/12/12
R3 SERVICES CONTROL BUILDING ADDED	S.M.	30/1/13
R4 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



OUTLET

NOTES:

- For geometry and setting out details refer drawing WIL1125/30/117-118.
- For reinforcement details refer drawing WIL1125/30/172-175.

ROONEY
DAMWATCH
WIL Waimakariri Irrigation Ltd

Drawn R4 Date 23/3/2012 Checked P.S. Approved S.M.

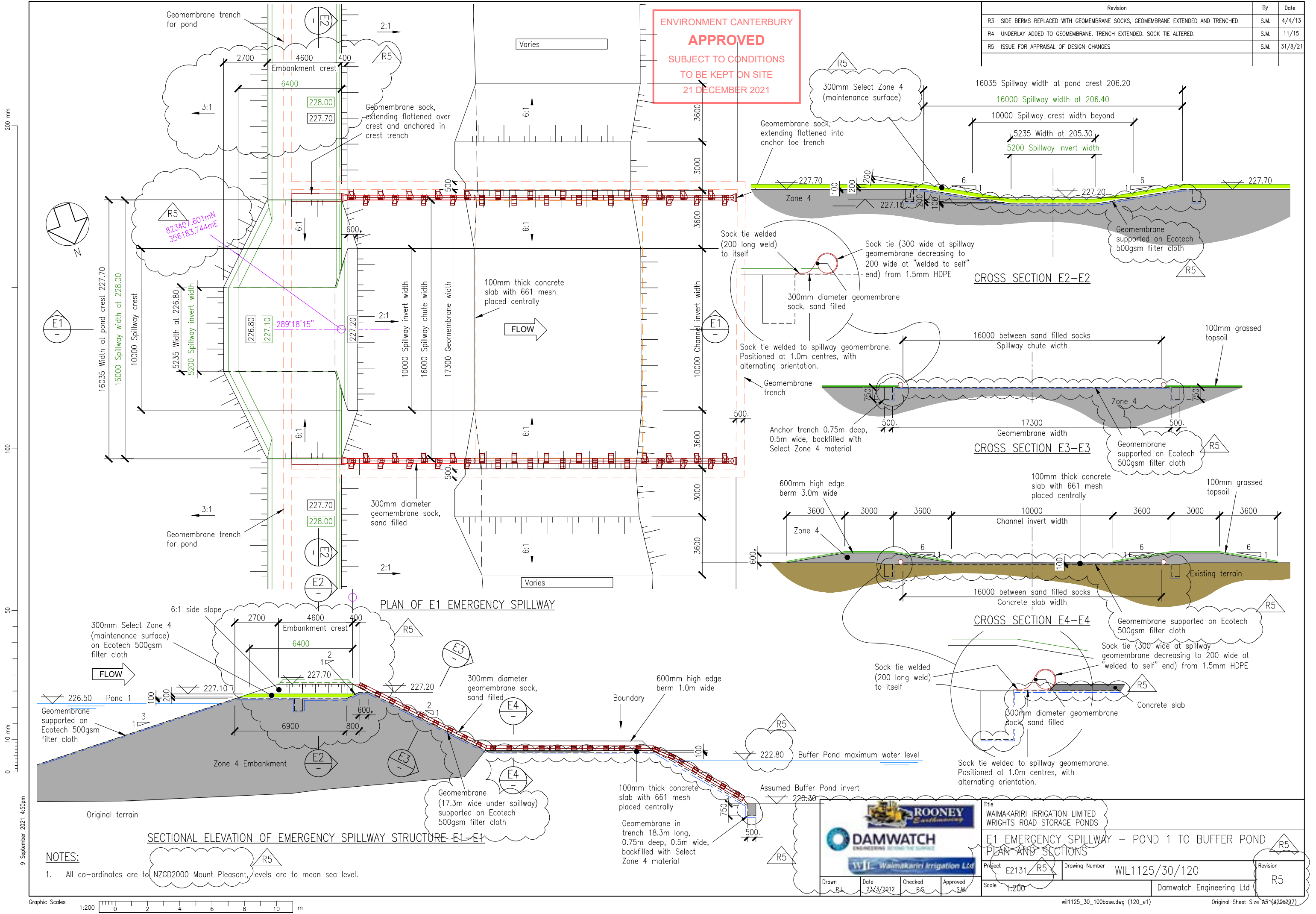
Title
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS
CONTROL STRUCTURES - G6 OUTLET STRUCTURE
INLET AND OUTLET ISOMETRICS

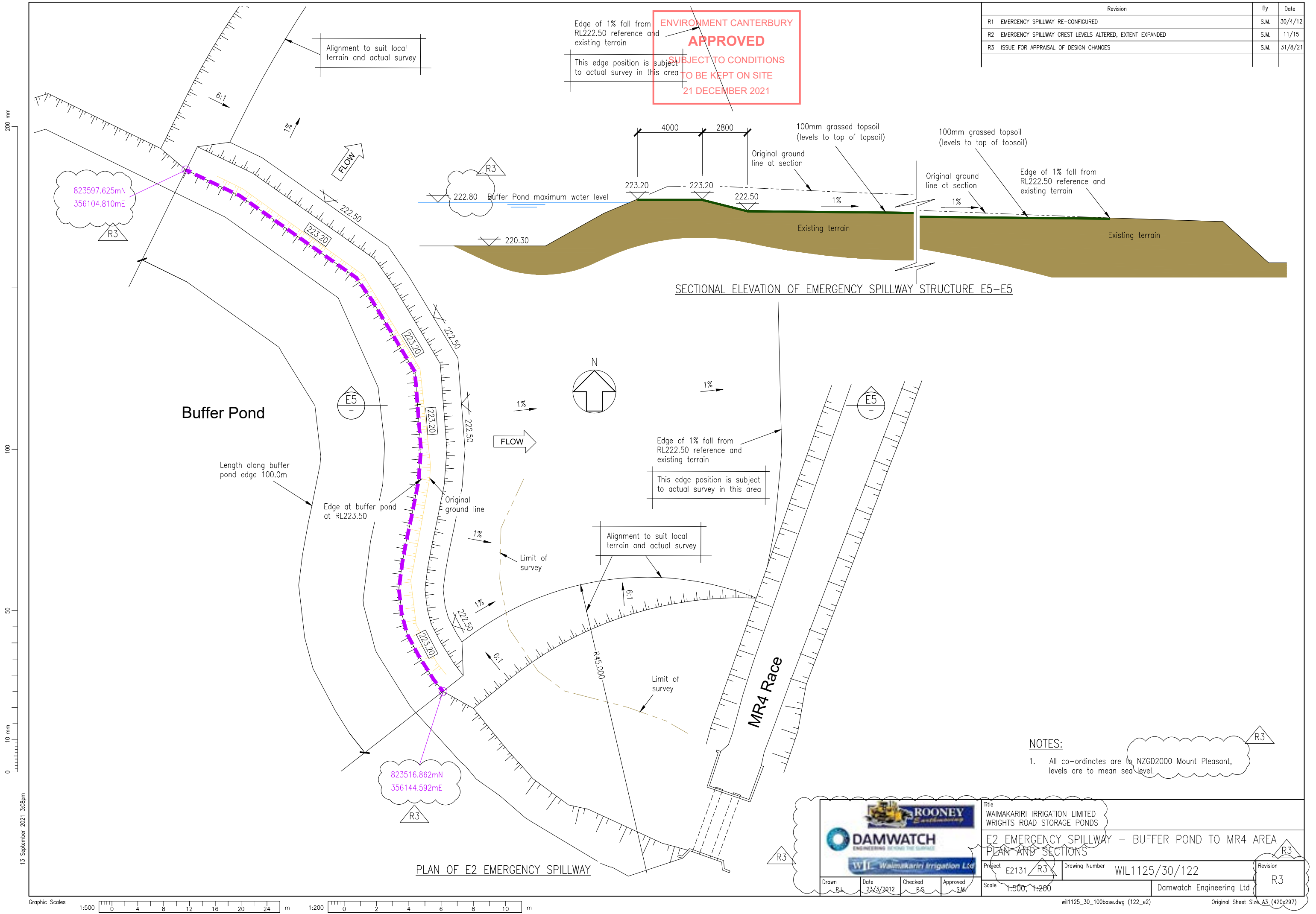
Project E2131 Drawing Number WIL1125/30/119

Scale 1:200

Damwatch Engineering Ltd

R4

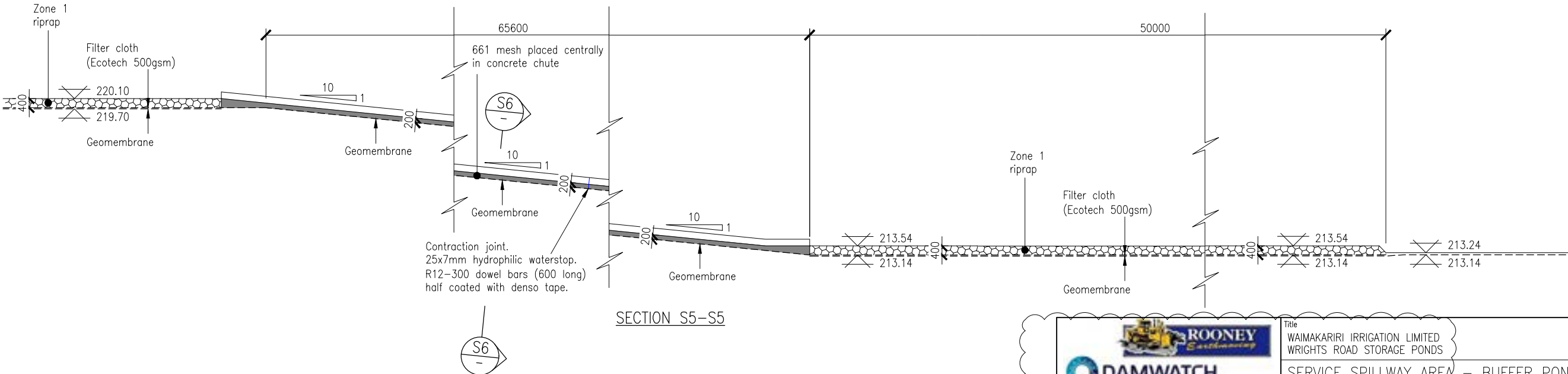
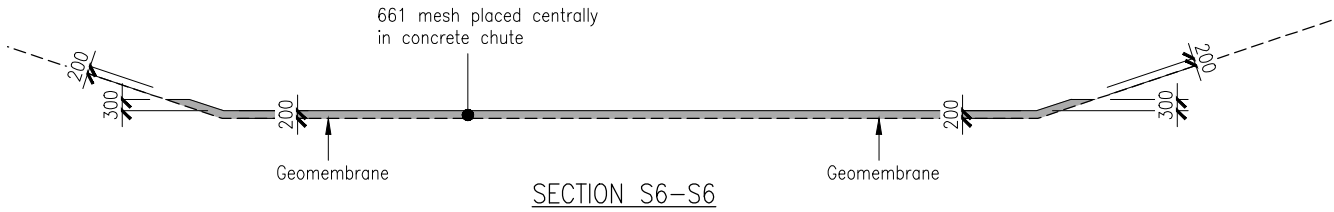
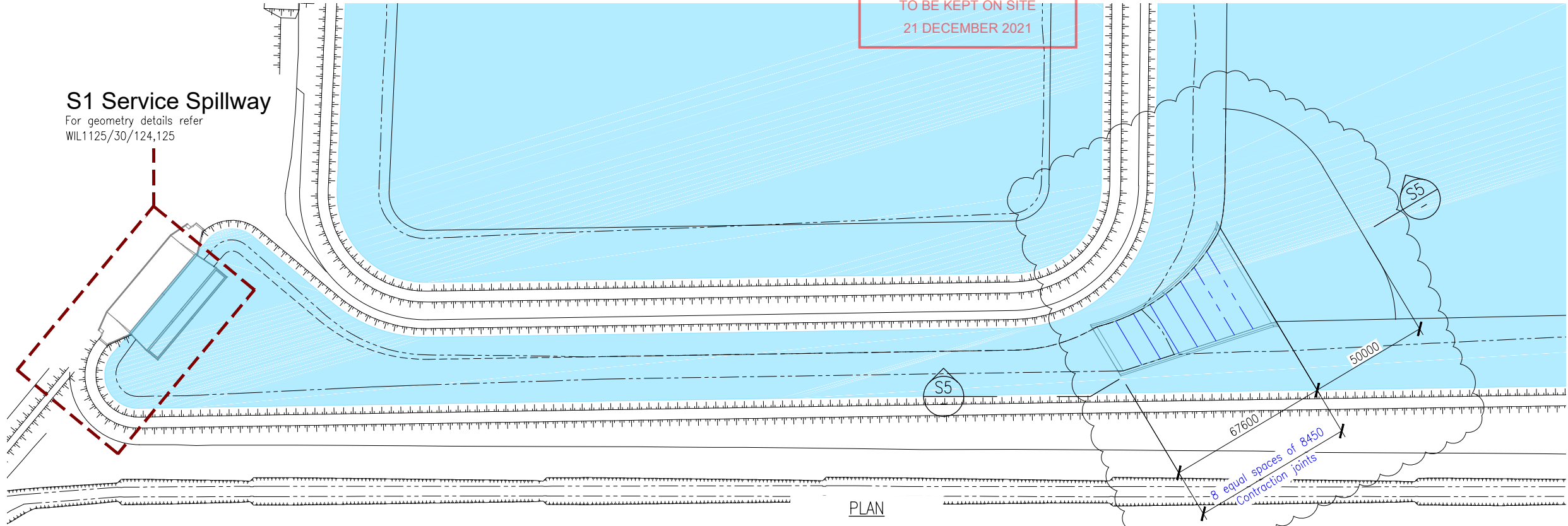




ENVIRONMENT CANTERBURY
APPROVED
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TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 CONCRETE CHUTE REINFORCED AND CONTRACTION JOINTS ADDED	S.M.	3/12/12
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

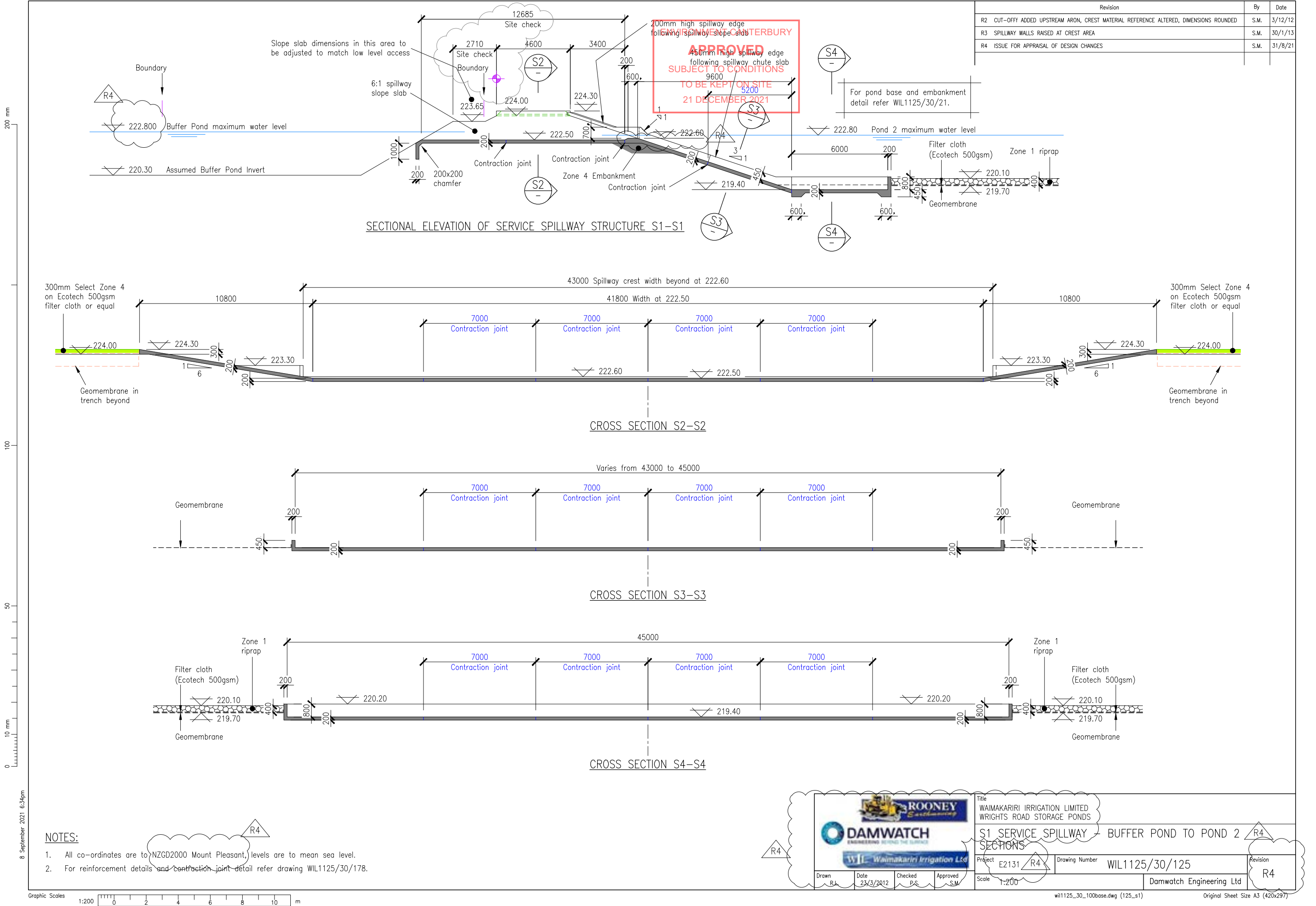
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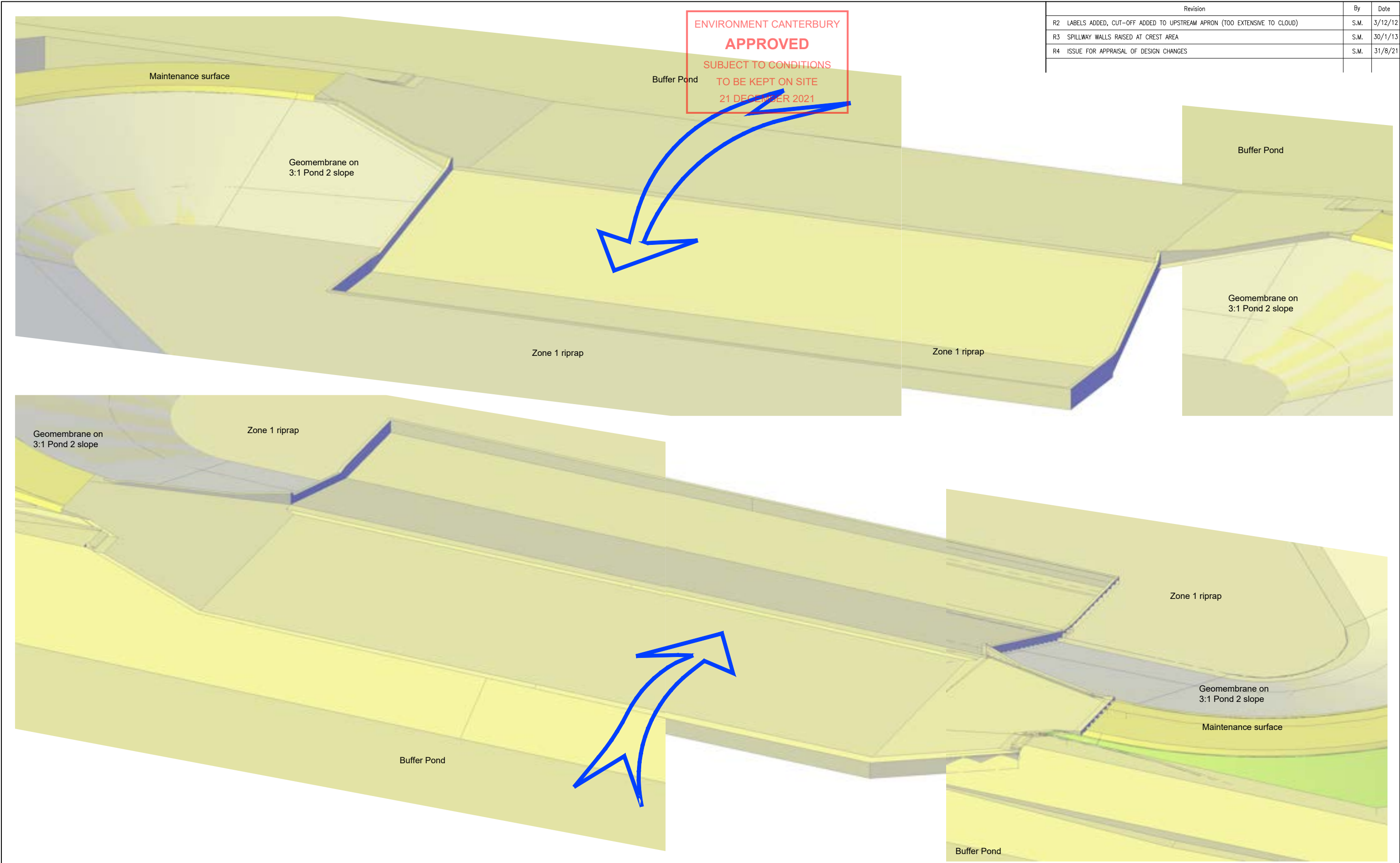


- NOTES:**
- Hydrophilic waterstop to be Hydrotite CJ0725-3K or approved equivalent.

ROONEY
DAMWATCH
WIL Waimakariri Irrigation Ltd

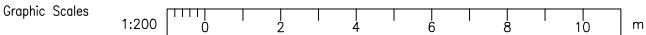
Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS		Revision R2	
SERVICE SPILLWAY AREA - BUFFER POND TO POND 2		R2	
CHUTE DETAILS		R2	
Project E2131	Drawing Number WIL1125/30/123	Scale 1:2,000 AND 1:200	
Drawn R.L.	Date 30/4/2012	Checked P.S.	Approved S.M.
Damwatch Engineering Ltd		Original Sheet Size A3 (420x297)	





Revision	By	Date
R2 LABELS ADDED, CUT-OFF ADDED TO UPSTREAM APRON (TOO EXTENSIVE TO CLOUD)	S.M.	3/12/12
R3 SPILLWAY WALLS RAISED AT CREST AREA	S.M.	30/1/13
R4 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

- NOTES:
- For geometry and setting out details refer drawing WIL1125/30/124-125.
 - For reinforcement details refer drawing WIL1125/30/178.



WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

S1 SERVICE SPILLWAY
CONCEPT ISOMETRICS

Project E2131 / R4

Drawing Number WIL1125/30/126

Scale 1:200

Damwatch Engineering Ltd

Drawn R.R.

Date 23/3/2012

Checked P.S.

Approved S.M.

Revision R4

200 mm
100
50
10 mm
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13 September 2021 11:31am

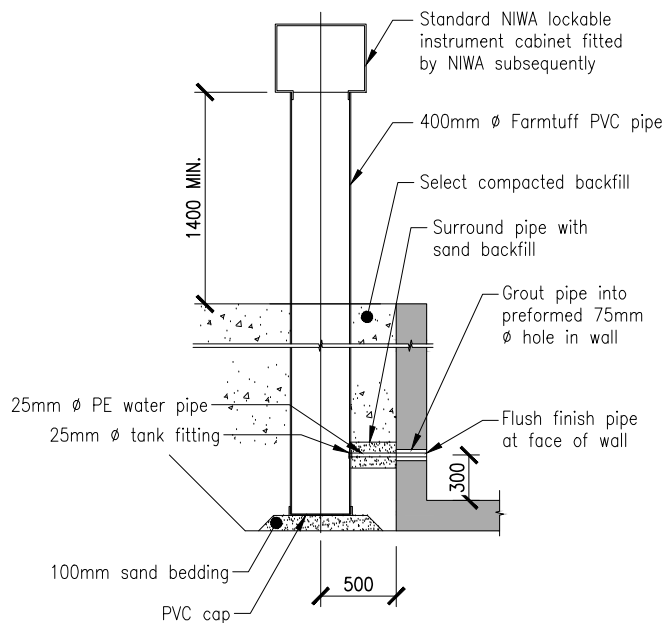
Graphic Scales

1:100 0 1 2 3 4 5 m

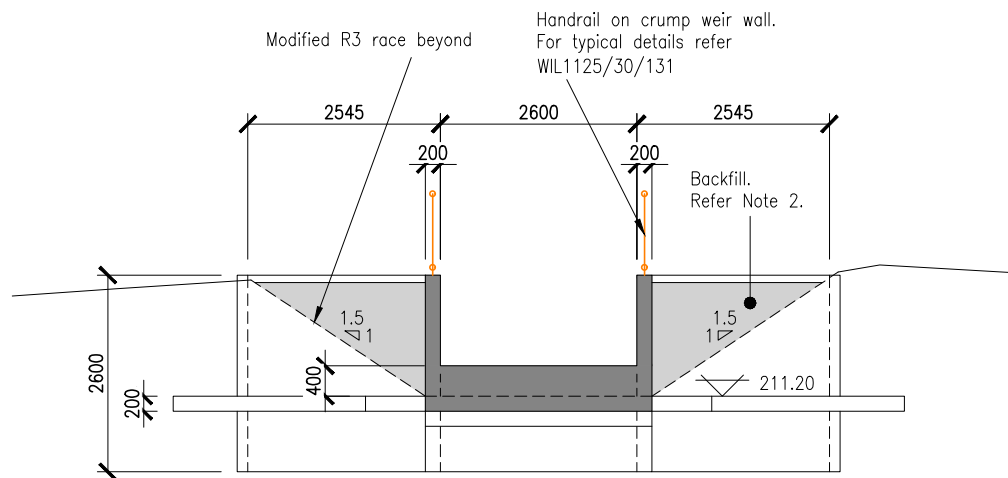
NOTES:

1. All co-ordinates are to NZGD2000 Mount Pleasant, levels are to mean sea level.
2. Fill for backfill to crump weir shall be well graded and have fines content (fine sand and smaller) of greater than 10%.
3. For reinforcement details and contraction joint detail refer drawing WIL1125/30/176-177.

STILLING WELL DETAIL



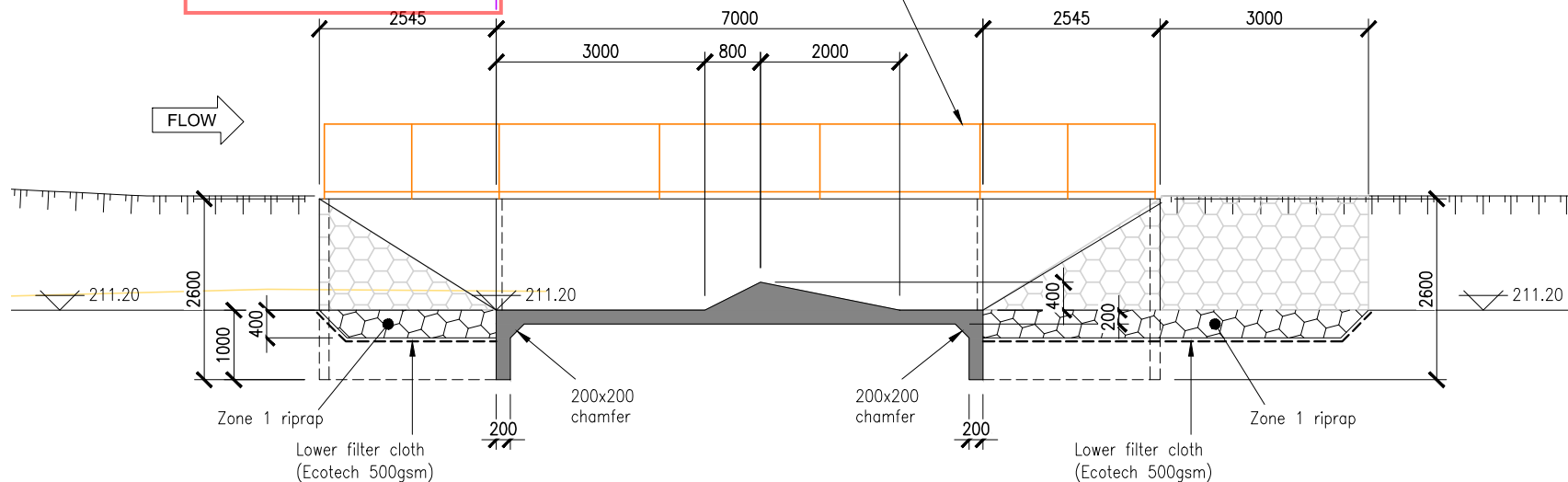
SECTION R7-R7



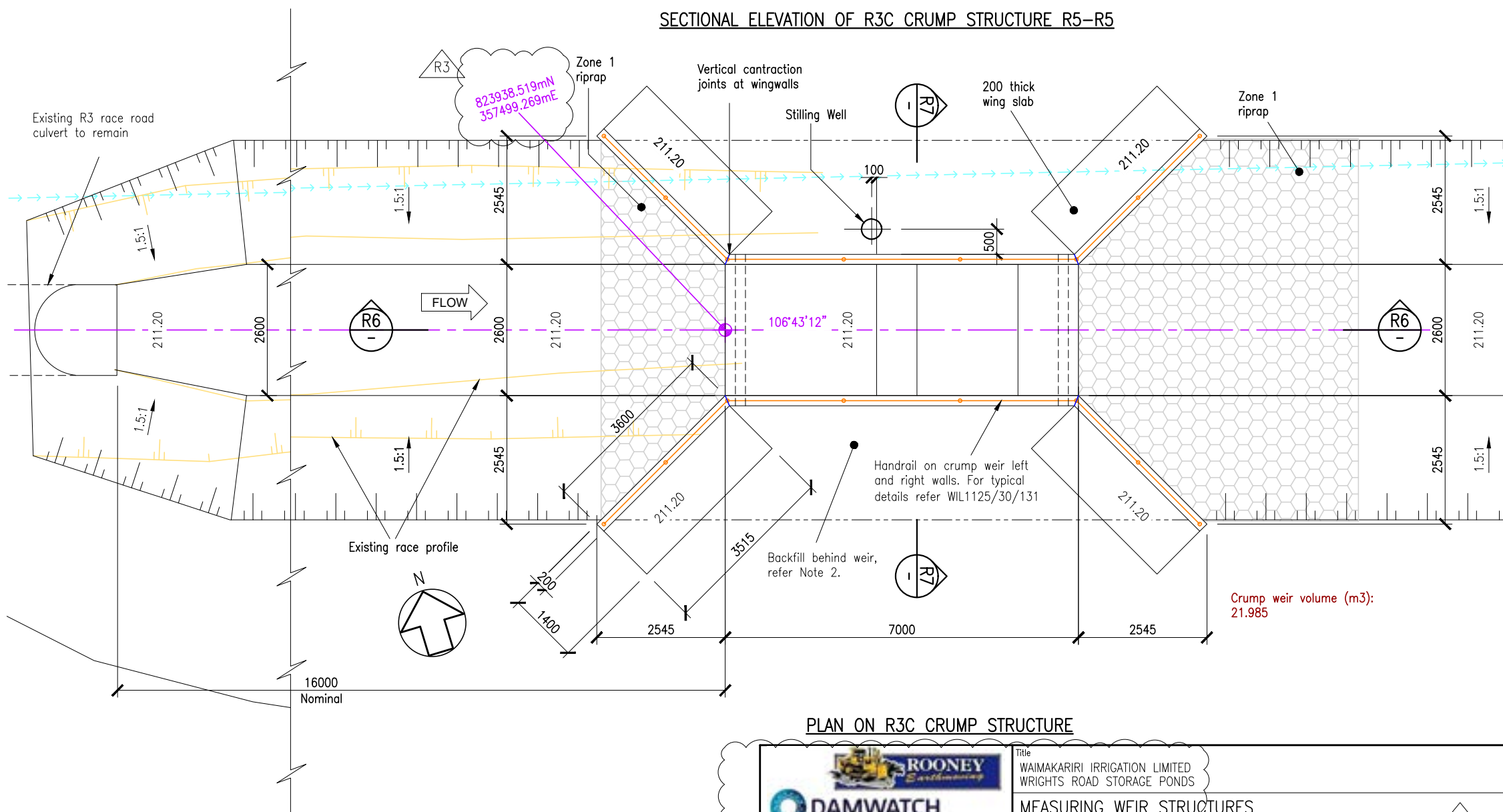
ENVIRONMENT CANTERBURY
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TO BE KEPT ON SITE
21 DECEMBER 2021

Handrail on crump weir wall.
For typical details refer
WIL1125/30/131

SECTIONAL ELEVATION OF R3C CRUMP STRUCTURE R5-R5



PLAN ON R3C CRUMP STRUCTURE



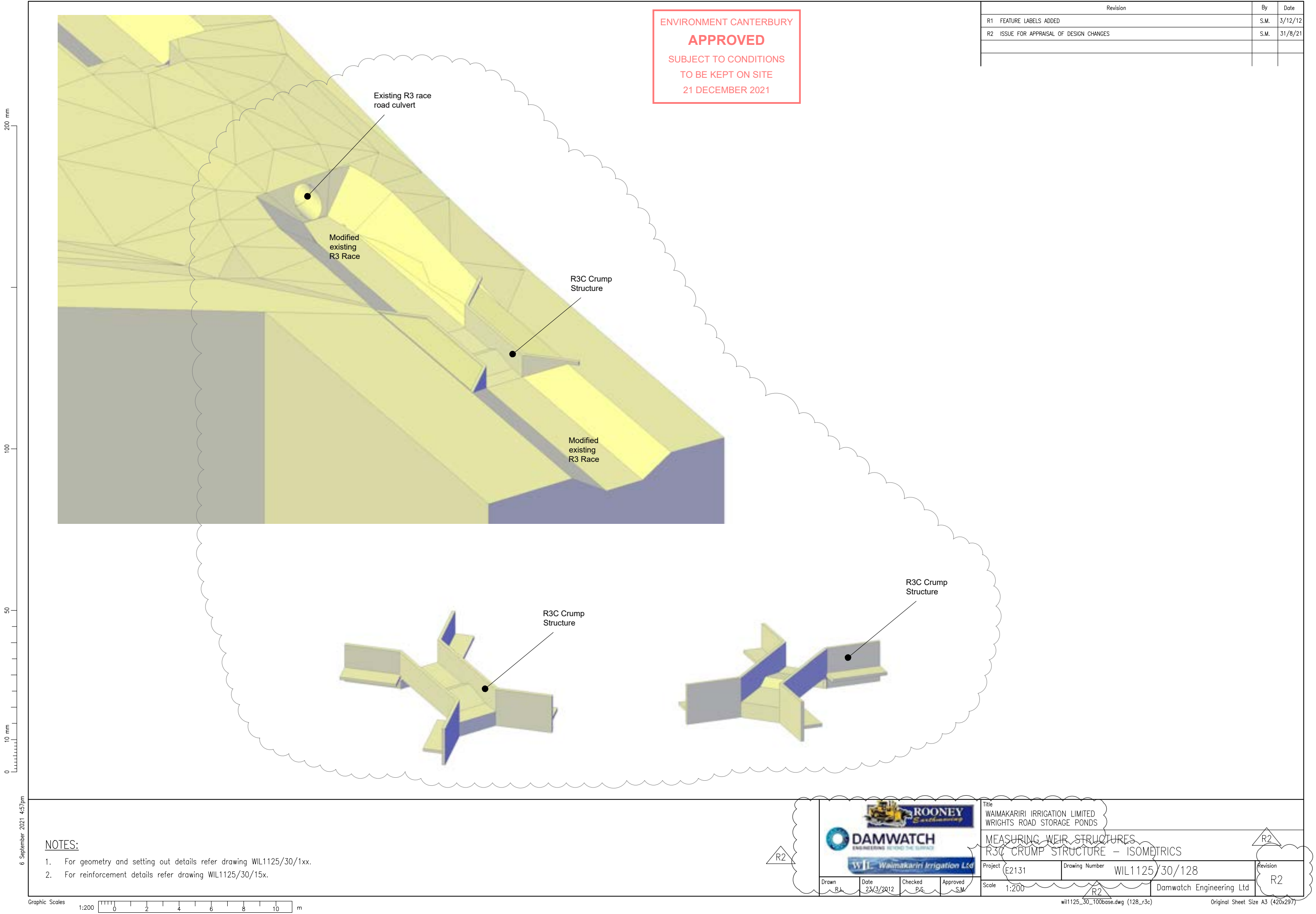
Crump weir volume (m3):
21.985

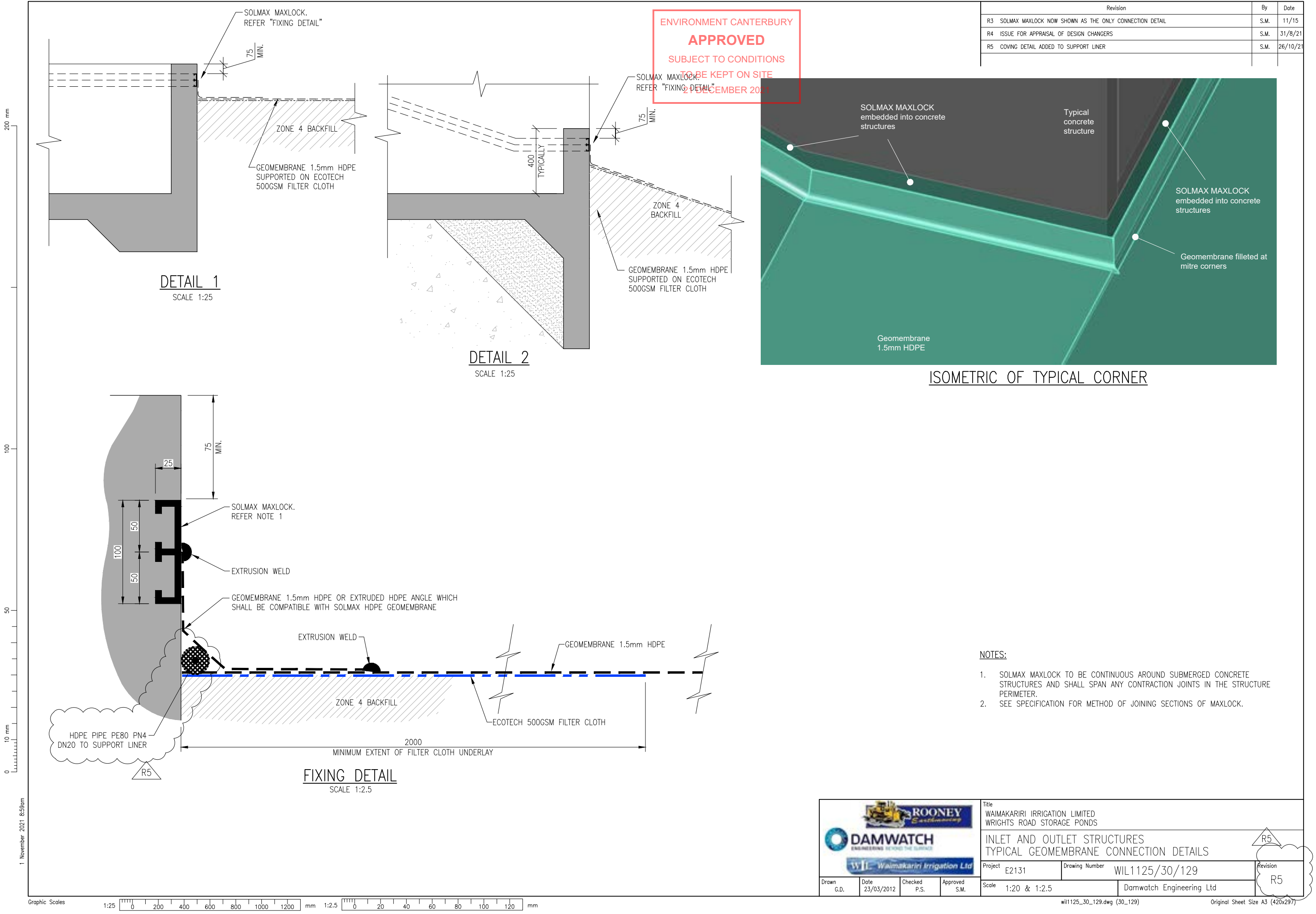
ROONEY
DAMWATCH
WIL Waimakariri Irrigation Ltd

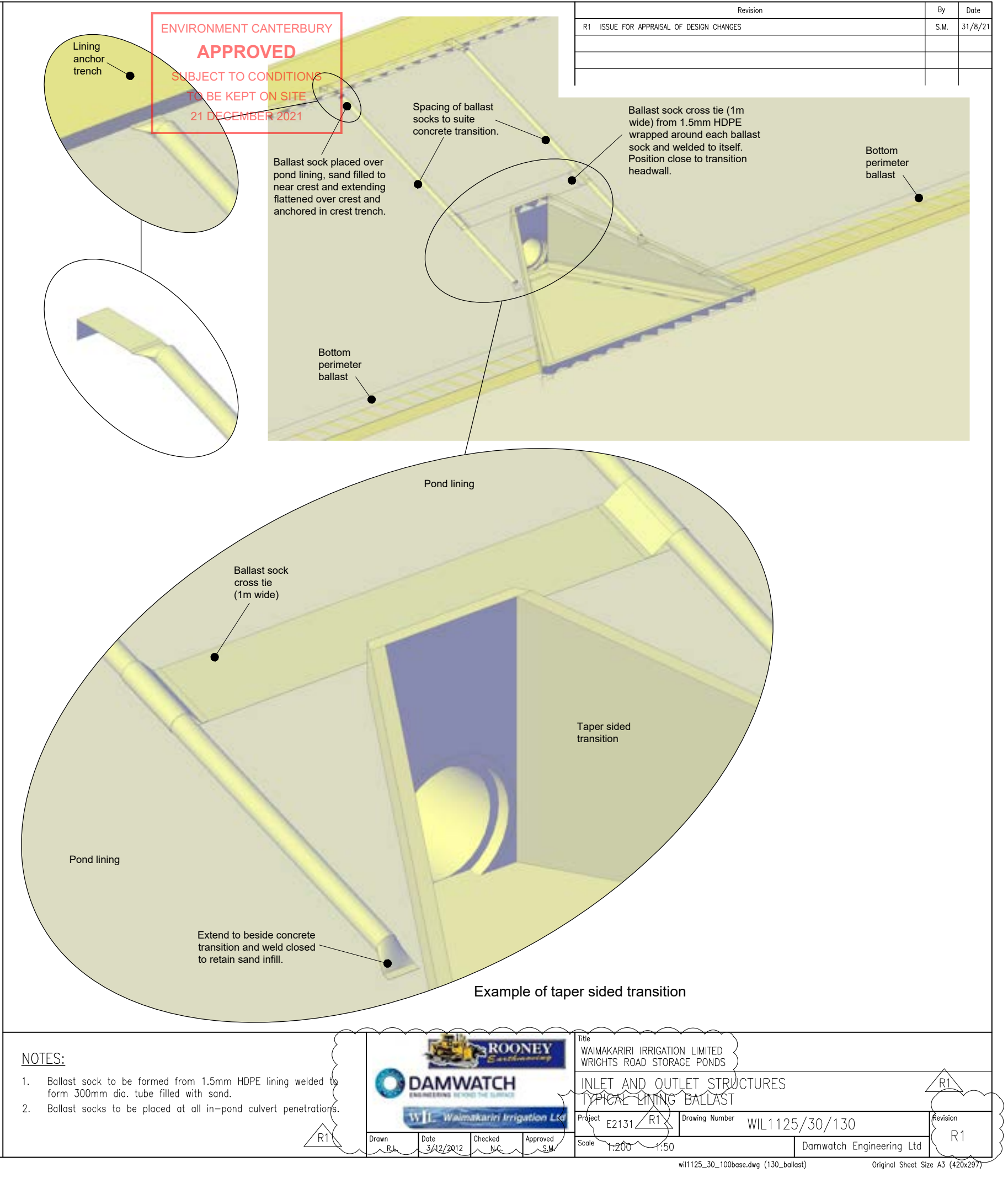
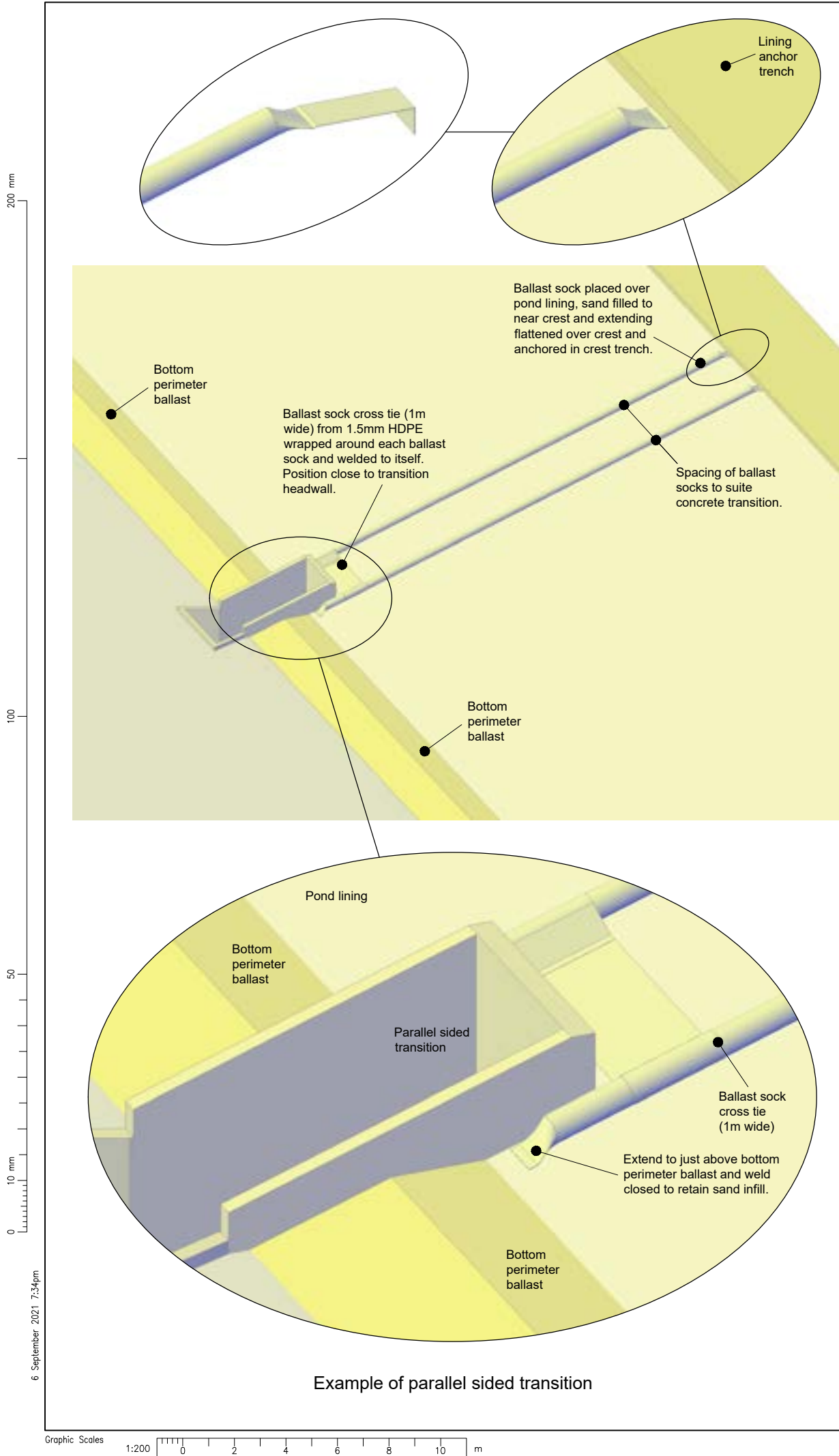
Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS		Revision R3	
Project E2131		Drawing Number WIL1125/30/127	
Scale 1:100		Damwatch Engineering Ltd	

wil1125_30_100base.dwg (127_r3c)

Original Sheet Size A3 (420x297)



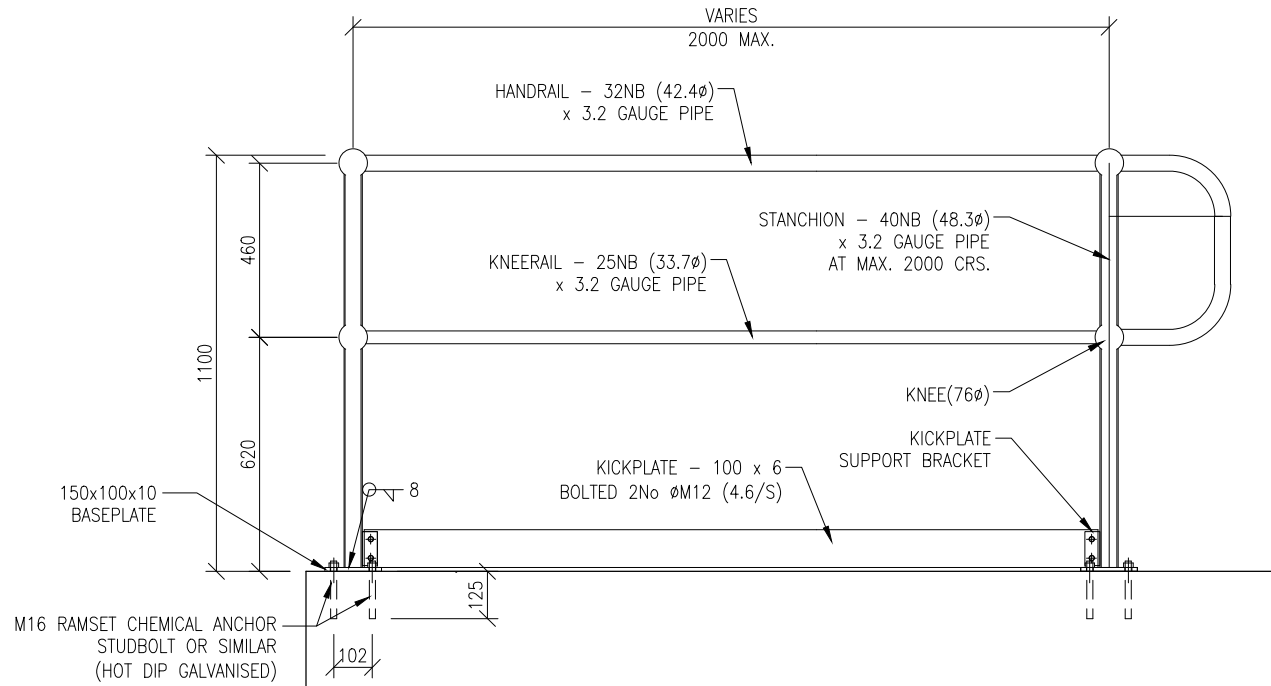




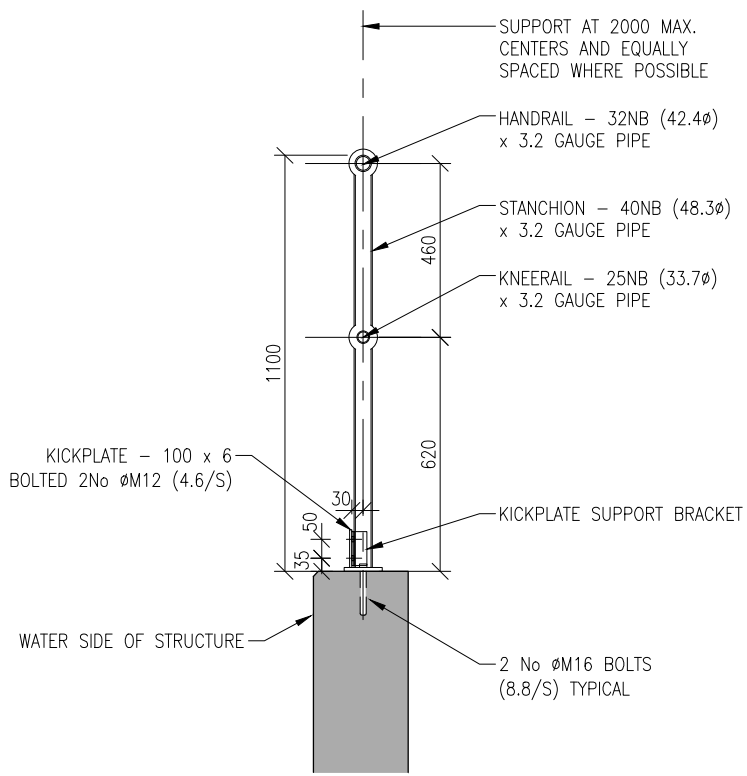
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6 September 2021 5:23pm

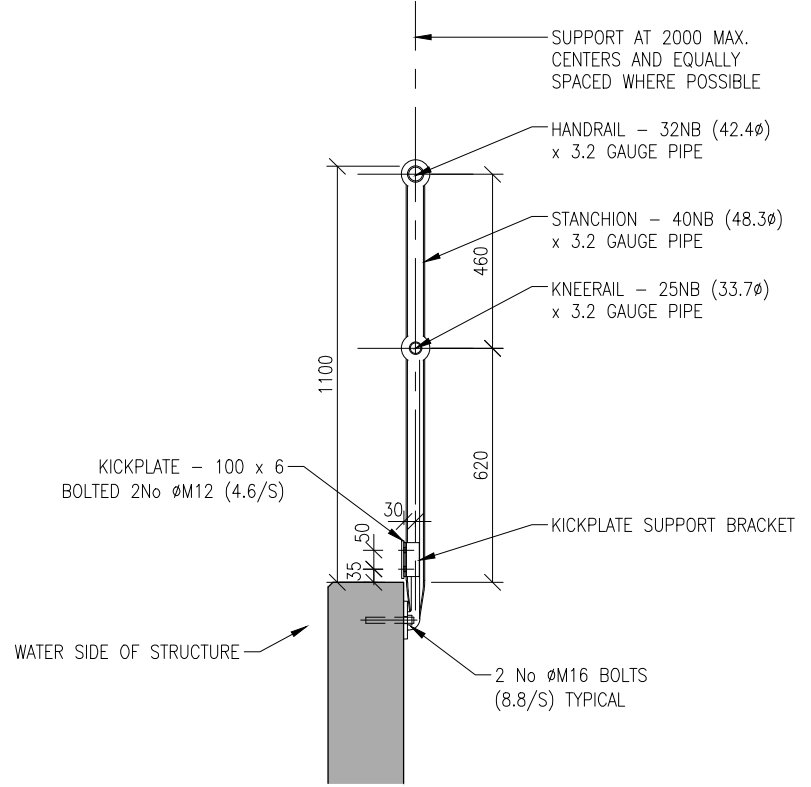
Graphic Scales 1:20 0 100 200 300 400 500 600 700 800 900 1000 mm



TYPICAL ELEVATION
SCALE 1:20



TYPICAL SECTION
SCALE 1:20



TYPICAL SECTION
(WHERE HANDRAIL VERTICAL
PIPE IS FIXED TO WALL SIDE)
SCALE 1:20

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 HANDRAIL DETAILS ALTERED	S.M.	11/15
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



ROONEY
Engineering

DAMWATCH
Innovations Serving The Industry

WIL Waimakariri Irrigation Ltd

Title
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

HANDRAILS
PUBLIC AREAS

Project
E2131

Scale
1:20

Drawn
G.R.

Date
23/03/2012

Checked
P.S.

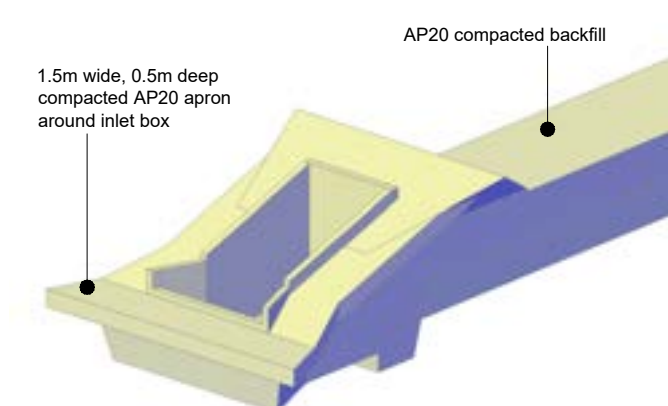
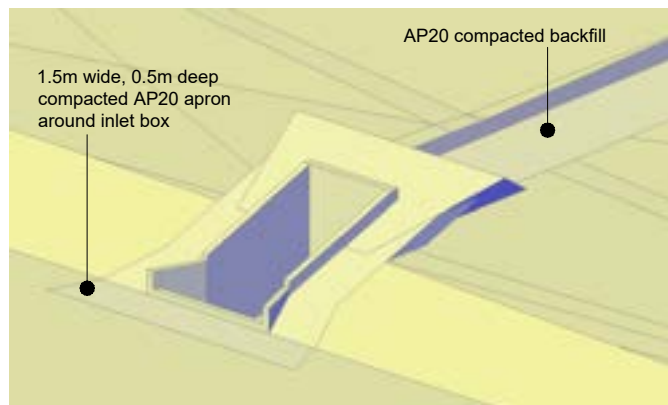
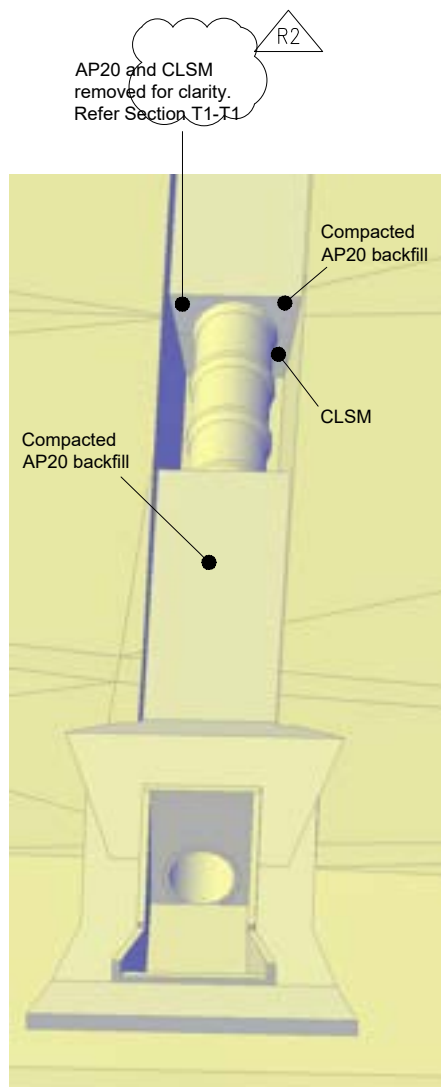
Approved
S.M.

Drawing Number
WIL1125/30/131

Damwatch Engineering Ltd

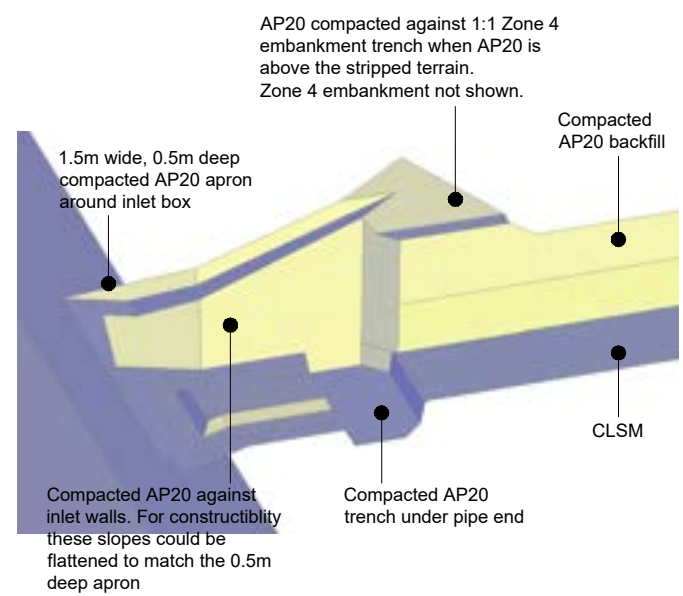
Revision
R2

200 mm
100
50
10 mm
0
10 September 2021 6:01pm

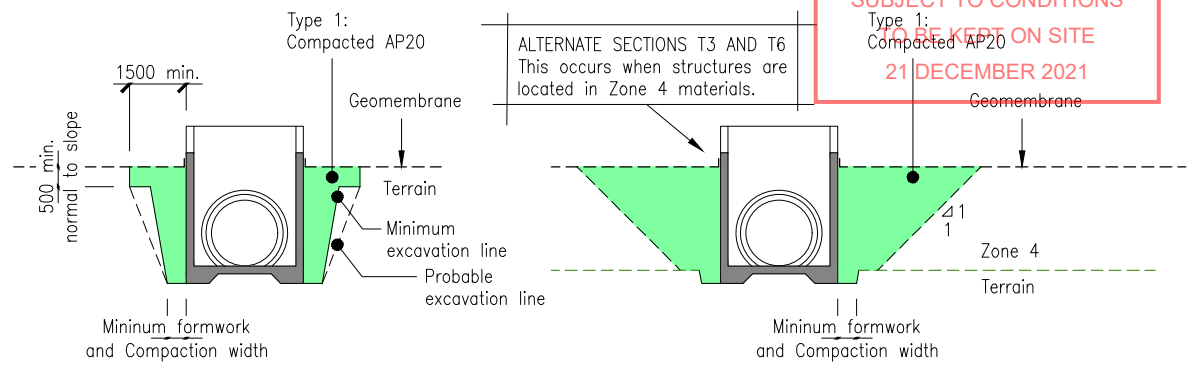


ISOMETRICS OF TYPICAL INLET AREA

Note that the detail of the Compacted AP20 around the inlet is for the G5 Interpond Structure which is located in the original terrain (as opposed to Zone 4 Material). In cases where the structure is in Zone 4 material the AP20 will be more extensive than that shown here. Refer relevant Pipe Trench Detail above.



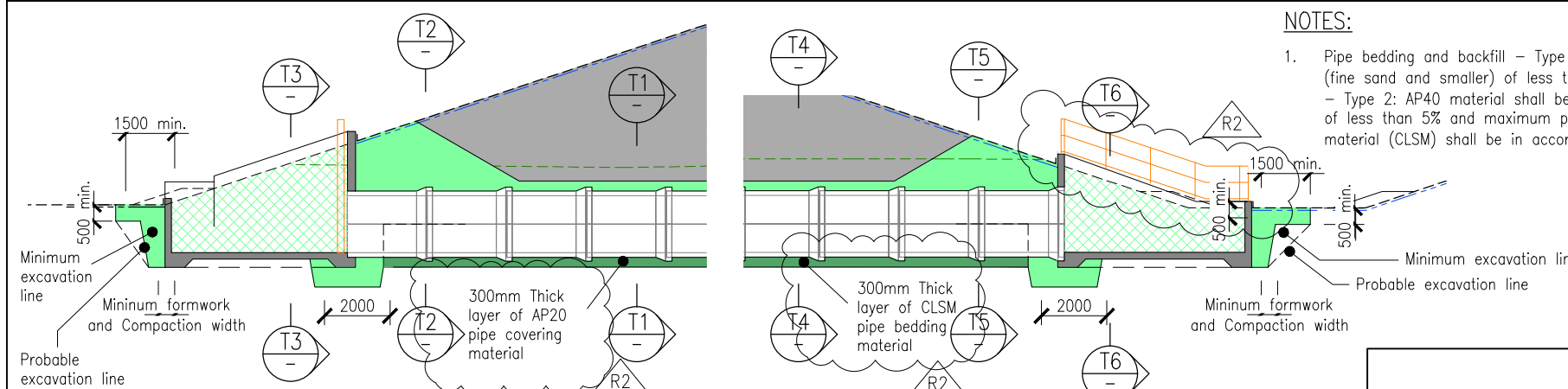
TYPICAL PIPE TRENCH DETAILS
G5 Interpond Structure shown. Other inlet-pipe-outlet structures similar



SECTION T3-T3 as shown
SECTION T6-T6 similar

SECTION T2-T2 as shown
SECTION T5-T5 similar

SECTION T1-T1 as shown
SECTION T4-T4 similar

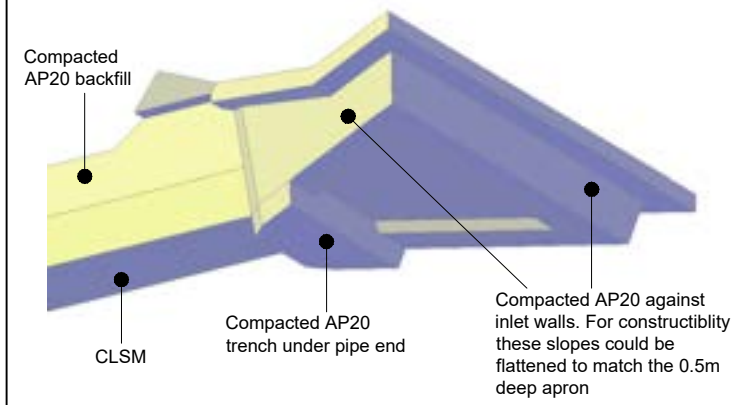


TYPICAL SECTIONAL ELEVATION OF INLET-PIPE- OUTLET STRUCTURE
G5 Interpond Structure shown. Other inlet-pipe-outlet structures similar

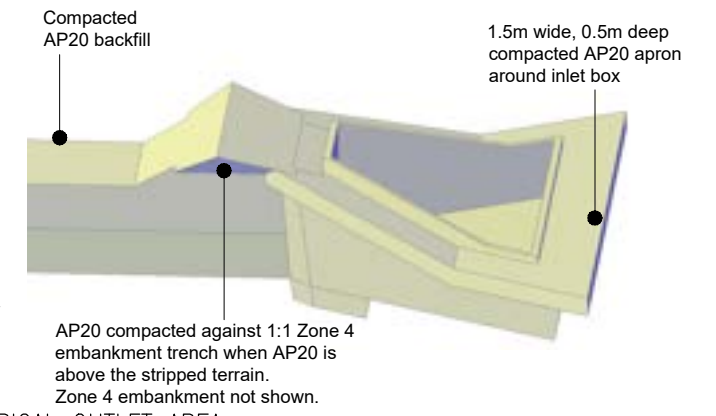
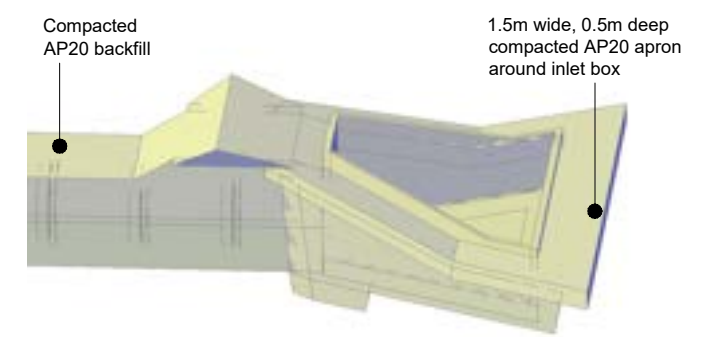
NOTES:

- Pipe bedding and backfill – Type 1: AP20 material shall be well graded and have fines content (fine sand and smaller) of less than 5% and maximum particle size of 20mm; – Type 2: AP40 material shall be well graded and have fines content (fine sand and smaller) of less than 5% and maximum particle size of 40mm; – Type 3: Controlled low strength material (CLSM) shall be in accordance with AS/NZS 3725:2007 Appendix A.

Note that the detail of the Compacted AP20 around the outlet is for the G5 Interpond Structure which is located in the original terrain (as opposed to Zone 4 Material). In cases where the structure is in Zone 4 material the AP20 will be more extensive than that shown here. Refer relevant Pipe Trench Detail above.



ISOMETRICS OF TYPICAL OUTLET AREA



ROONEY Engineering

DAMWATCH

WIL Waimakariri Irrigation Ltd

Title: WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS

INLET AND OUTLET STRUCTURES TYPICAL PIPE TRENCH DETAILS

Project: E2131 / R2

Drawing Number: WIL1125/30/134

Scale: 1:200

Drawn: Rk

Date: 30/1/2013

Checked: NC

Approved: S.M.

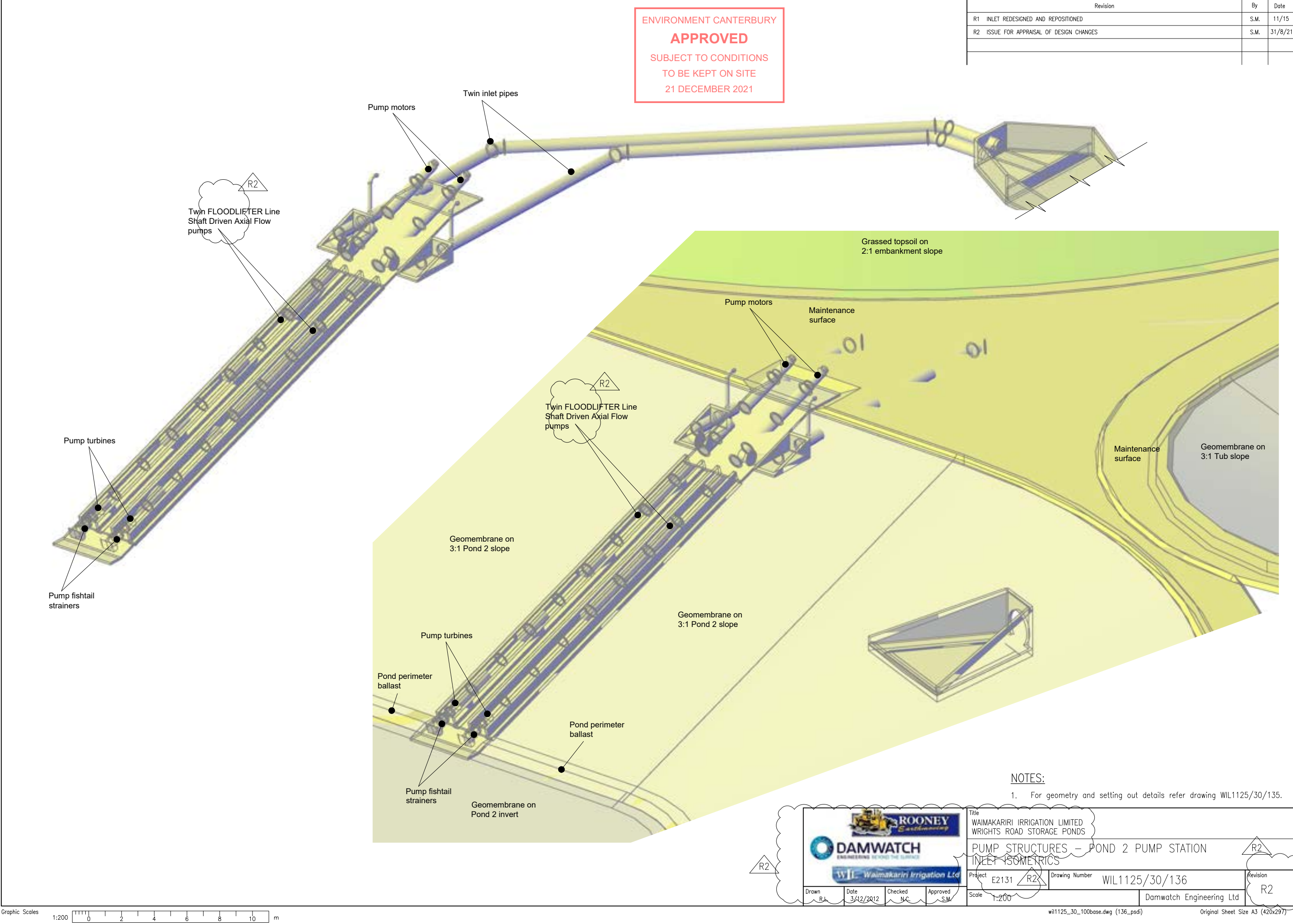
Damwatch Engineering Ltd

Revision

R1	TREATMENT AROUND INLET AND OUTLET ALTERED. TOO COMPLEX TO CLOUD	S.M.	11/15
R2	ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

Revision

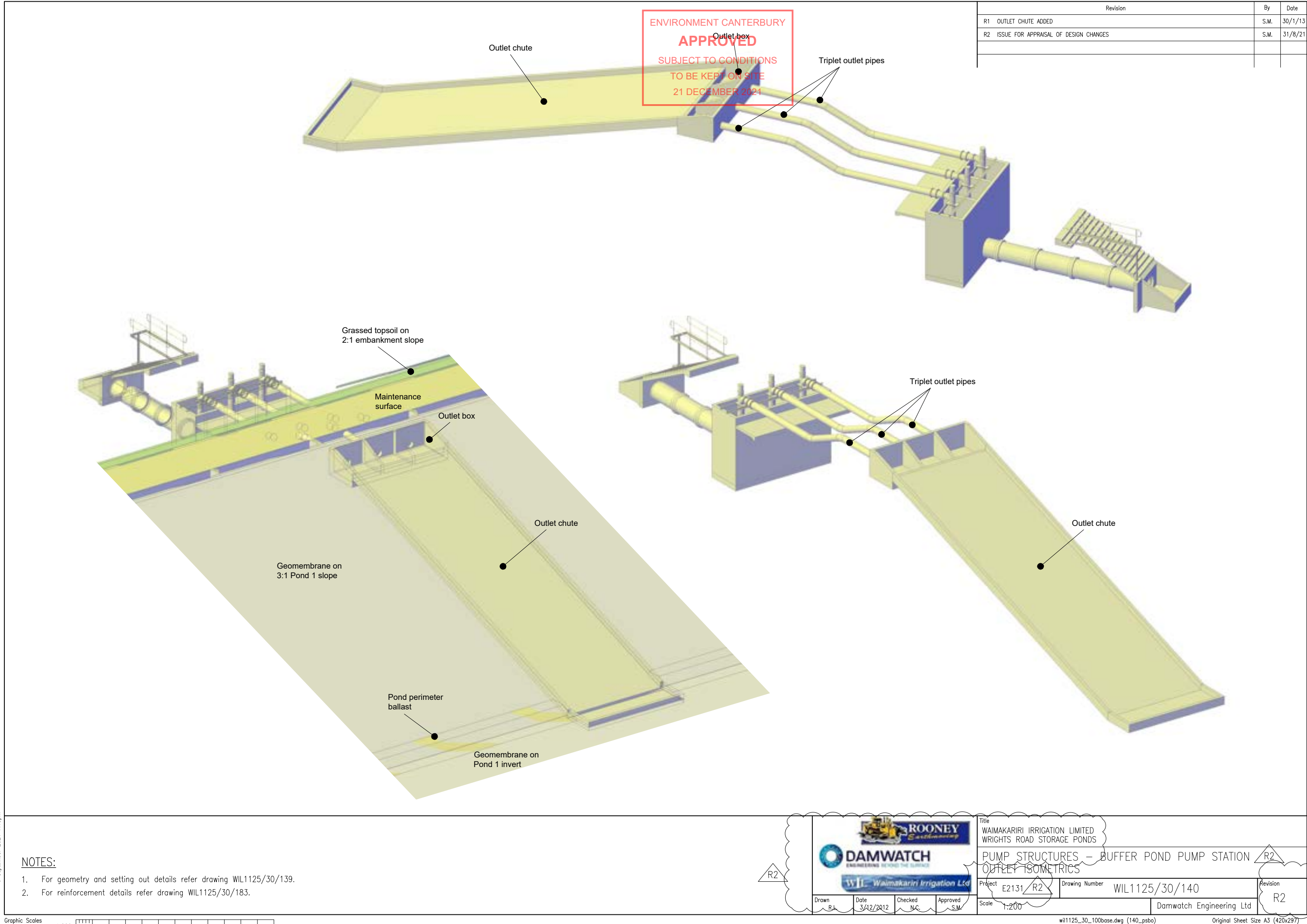
R2



Revision	By	Date
R1 INLET REDESIGNED AND REPOSITIONED	S.M.	11/15
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS		Revision R2	
PUMP STRUCTURES - POND 2 PUMP STATION INLET ISOMETRICS		R2	
Project E2131	Drawing Number WIL1125/30/136	Damwatch Engineering Ltd	
Drawn R.M.	Date 3/12/2012	Checked N.C.	Approved S.M.
Scale 1:200			

NOTES:
1. For geometry and setting out details refer drawing WIL1125/30/135.



Revision	By	Date
R1 OUTLET CHUTE ADDED	S.M.	30/1/13
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

NOTES:

- For geometry and setting out details refer drawing WIL1125/30/139.
- For reinforcement details refer drawing WIL1125/30/183.



ROONEY

WIL Waimakariri Irrigation Ltd

WAIMAKARIRI IRRIGATION LIMITED

WRIGHTS ROAD STORAGE PONDS

PUMP STRUCTURES – BUFFER POND PUMP STATION

OUTLET ISOMETRICS

Project

E2131

Drawing Number

WIL1125/30/140

Scale

1:200

Damwatch Engineering Ltd

R2

R2

R2

Drawn

R.k.

Date

3/12/2012

Checked

N.C.

Approved

S.M.

Revision

R2

6 September 2021 7:18pm

Graphic Scales 1:200 0 2 4 6 8 10 m

wil1125_30_100base.dwg (140_psb0)

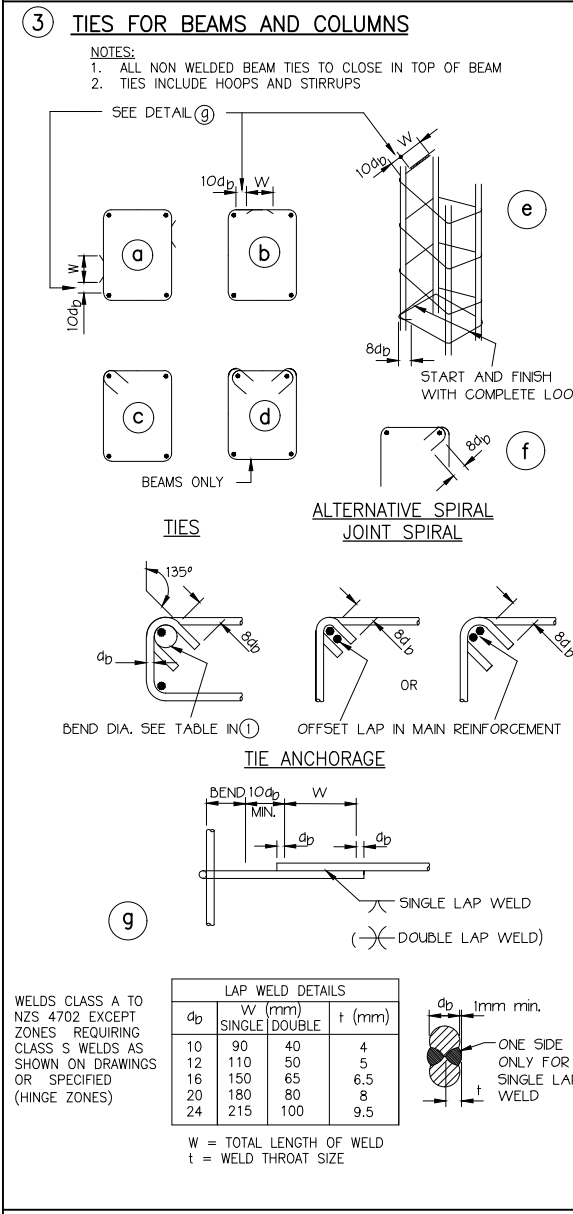
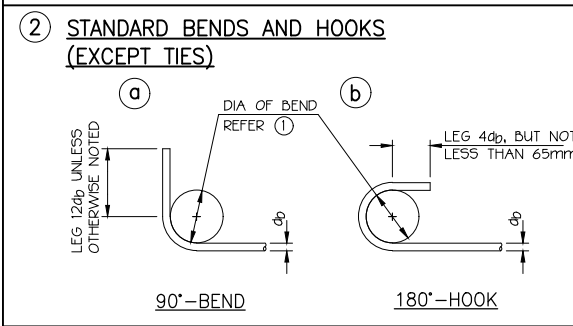
Original Sheet Size A3 (420x297)

200 mm
100
50
10 mm

1 INTERNAL BEND DIAMETER (mm)

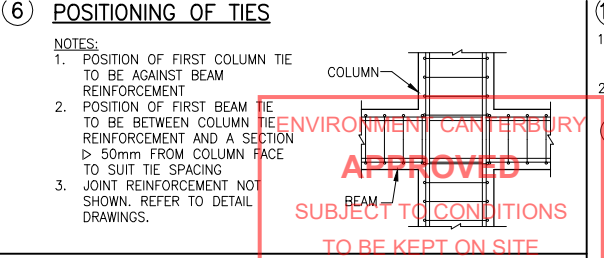
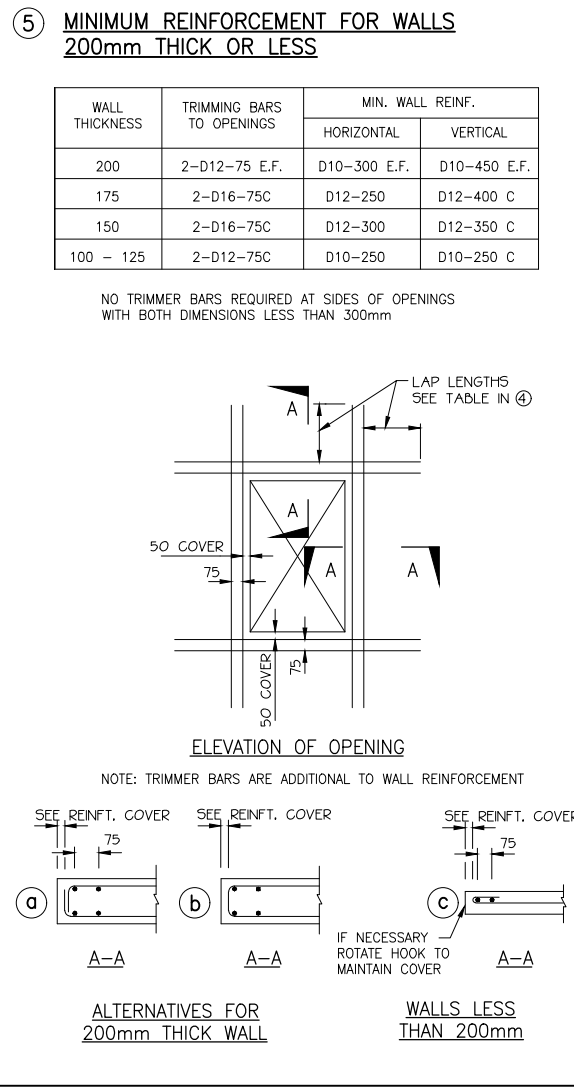
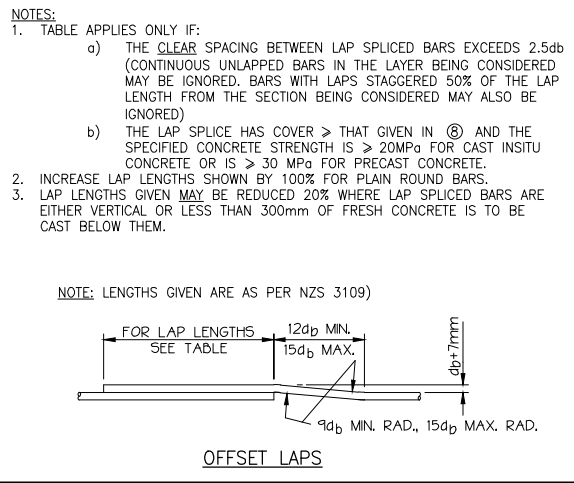
BAR SIZE (d_b)	MAIN STEEL GRADES 300 & 500	STIRRUPS AND TIES GRADES 300 & 500	
		ROUND	DEFORMED
6	30	12*	24*
10	50	20*	40
12	60	24*	48
16	80	32*	64
20	100	40	80
24	144	72	144
28	168		
32	192		
40	240		

* BUT NOT LESS THAN DIAMETER REQUIRED FOR ENCLOSED BARS



4 LAP LENGTHS (mm)

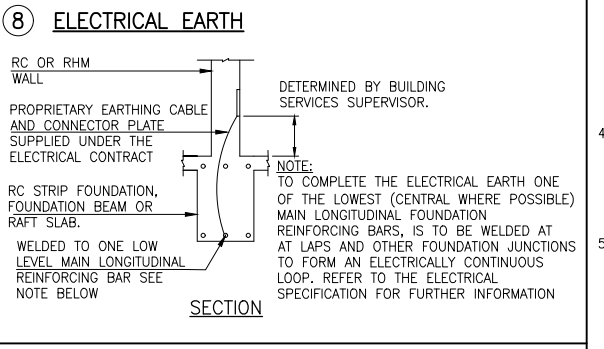
BAR SIZE (d_b)	GRADE 300	GRADE 500
10	390	580
12	470	700
16	620	930
20	770	1160
24	960	1390
28	1200	1660
32	1470	2030
40	NOT PERMITTED UNLESS APPROVED BY THE ARCHITECT	



7 REINFORCEMENT COVER (mm) (MINIMUM)

DIAMETER OF BARS IN mm	CAST IN SITU												PRECAST											
	40	32	28	24	20	16	12	10	40	32	28	24	20	16	12	10	40	32	28	24	20	16	12	10
	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5
NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND																								
WALLS, SLABS AND RIBS	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5
COLUMNS AND BEAMS	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5
OTHER MEMBER	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5	40	30	25	20	15	10	5	5
EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND OR SITE CONCRETE																								
WALLS, SLABS AND RIBS	45	35	30	25	20	15	10	5	45	35	30	25	20	15	10	5	45	35	30	25	20	15	10	5
COLUMNS AND BEAMS	45	35	30	25	20	15	10	5	45	35	30	25	20	15	10	5	45	35	30	25	20	15	10	5
OTHER MEMBER	45	35	30	25	20	15	10	5	45	35	30	25	20	15	10	5	45	35	30	25	20	15	10	5
CAST AGAINST & PERMANENTLY EXPOSED TO THE GROUND	75	65	60	50	40	30	20	10	75	65	60	50	40	30	20	10	75	65	60	50	40	30	20	10

IN COASTAL, MARINE ENVIRONMENTS UP TO 10km FROM COAST, COVERS TO BE INCREASED BY 10mm FOR MEMBERS EXPOSED TO WEATHER.



9 RESIN BONDED REBAR

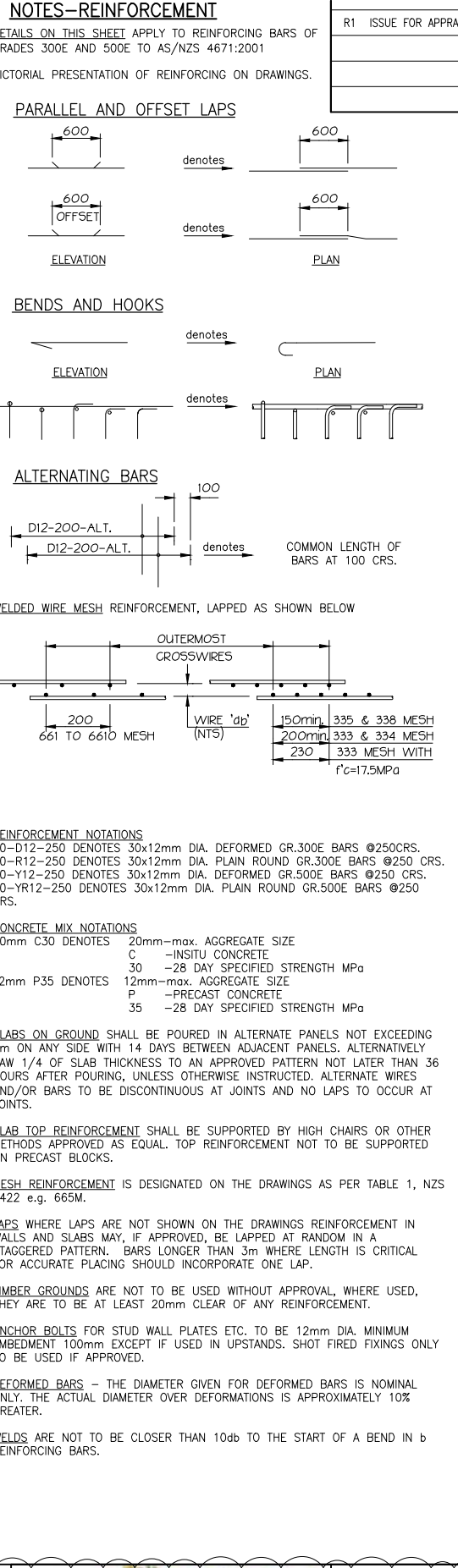
GRADE 300

BAR SIZE (mm)	L (min) (mm)	D (mm)
D10	140	12
D12	170	16
D16	230	20
D20	340	24
D24	470	30
D28	630	36

TABLES BASED ON A MINIMUM CONCRETE STRENGTH OF 20 MPa

GRADE 500

BAR SIZE (mm)	L (min) (mm)	D (mm)
D10	150	12
D12	190	16
D16	270	20
D20	380	24
D24	500	30



11 ABBREVIATIONS

ABR	ALTERNATE BARS REVERSED	IP	INTERSECTION POINT
ALT.	ALTERNATE	LAR	LAP AT RANDOM
B	BOTTOM	max.	MAXIMUM
C	CENTRAL	min.	MINIMUM
COL.	COLUMN	MPa	MEGAPASCAL
CONC.	CONCRETE	NF	NEAR FACE
CJ	CONSTRUCTION JOINT	NL	NO LAP
CRS.	CENTRES OF BARS	NTS	NOT TO SCALE
d_b	NOMINAL BAR DIA. IN mm	O/A	OVERALL
DIA.	DIAMETER	proj.	PROJECTION
D	DEFORMED BARS	R	PLAIN ROUND BARS
DPC	DAMP PROOF COURSE	rad.	RADIUS
DPM	DAMP PROOF MEMBRANE	RAS	REFER TO ARCHITECTS SHET
EF	EACH FACE	RL	REDUCED LEVEL
EW	EACH WAY	reqd.	REQUIRED
extg.	EXISTING	reinf.	REINFORCEMENT
FF	FAR FACE	SFL	STRUCTURAL FLOOR LEVEL
FFL	FINISHED FLOOR LEVEL	SOP	SETTING OUT POINT
fdtn.	FOUNDATION	sta.	STARTER
gr.	GRADE	T	TOP
HD bolt	HOLDING DOWN BOLT	trm.	TRIMMER
HD galv.	HOT DIP GALVANISING	typ.	TYPICAL
H	HIGH TENSILE BARS (GR.500)	UOS	UNLESS OTHERWISE SHOWN
[2,000]	NOTES S.F.L. (m)	VL	VARYING LENGTHS
[150]	NOTES THICKNESS OF CONC. WALL OR SLAB (mm)	RC	REINFORCED CONCRETE
↔	DIRECTION OF PRECAST FLOORING SPAN.	>	GREATER THAN OR EQUAL TO
		<	LESS THAN OR EQUAL TO
		40c	CONCRETE COVER (mm)

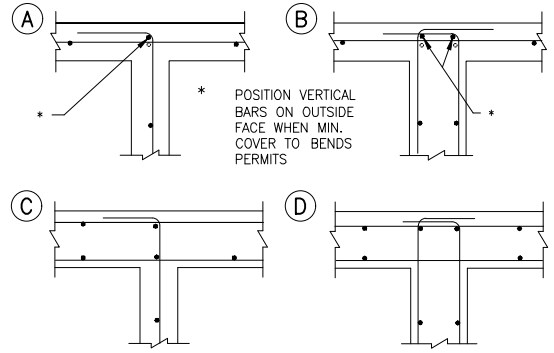
NOTE: CONVENTION IS LOWER CASE WHEN MORE THAN ONE LETTER PER WORD IS USED. FOR OTHER ABBREVIATIONS REFER TO NZS 5902.

- 12 GENERAL NOTES (STANDARD)
- DRAWING INTERPRETATIONS TO COMPLY WITH NZS 5902 EXCEPT WHERE MODIFIED HEREIN.
 - STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DISCIPLINES (eg. ARCHITECTURAL, BUILDING SERVICES, MECHANICAL, ELECTRICAL ETC.) TOGETHER WITH THE SPECIFICATION.
 - WHERE PROPRIETARY ITEMS ARE SHOWN ON THE DRAWINGS, OTHER ALTERNATIVES APPROVED AS EQUAL, MAY BE USED.
 - WHERE ALTERNATIVES ARE SHOWN ON STANDARD SHEETS AND ARE NOT CALLED UP, THE CONTRACTOR MUST OBTAIN APPROVAL TO USE ONE OF THESE.
 - THE ARCHITECT MUST BE NOTIFIED OF ANY DISCREPANCY BETWEEN STRUCTURAL AND OTHER CONTRACT DOCUMENTS BEFORE AFFECTED WORK COMMENCES.
 - CHECK ALL DIMENSIONS ON SITE BEFORE FABRICATING OFF SITE WORK.
 - WHERE POSSIBLE AT JUNCTIONS, BENDS/HOOKS TO HAVE SAME COVER AS MAIN STEEL EXCEPT WHERE THE BENDS/HOOKS ENCLOSES ANOTHER BAR AS SHOWN IN [10b]

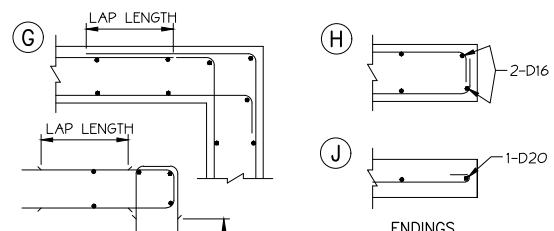
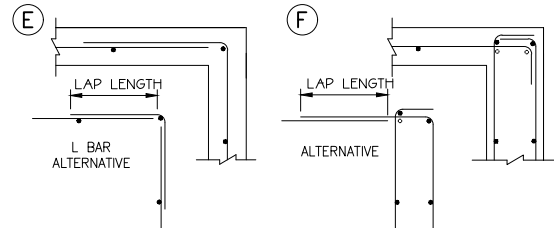
- 13 NOTES/DETAILS SPECIFIC TO THIS CONTRACT
- NOTES:
- UNLESS OTHERWISE SHOWN OR SPECIFIED ON THE DRAWINGS, THESE NOTES AND DETAILS SHALL APPLY, BUT INCLUSION OF THIS SHEET DOES NOT IMPLY THAT ALL DETAILS OCCUR IN THIS CONTRACT.
 - DO NOT SCALE OFF DRAWINGS. CONTRACTOR TO ENSURE HE HAS ADEQUATE INFORMATION FOR CONSTRUCTION.

200 mm
100
50
10 mm

1 JUNCTIONS/END WALLS



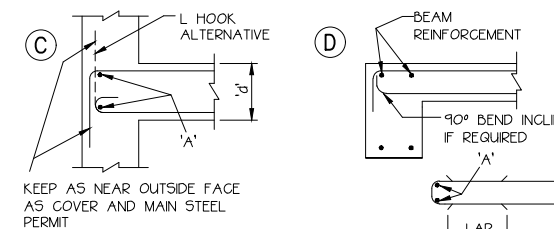
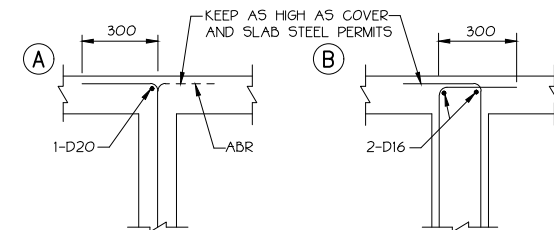
TEE JUNCTIONS



NOTES:

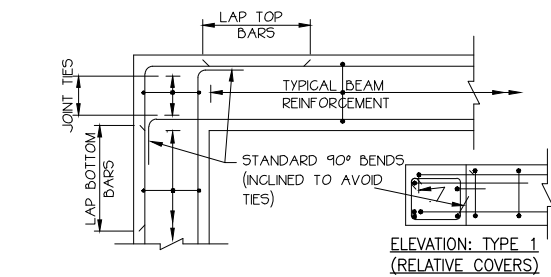
1. FOR LAP LENGTHS SEE TABLE IN ④ ON SHEET 141
2. REFER TO DETAIL SHEETS FOR DIMENSIONS AND REINFORCEMENT DETAILS.
3. ROTATE BENDS AND HOOKS WHEN REQUIRED TO MAINTAIN COVER.

2 SLAB JUNCTIONS: EDGE BEAMS AND WALLS

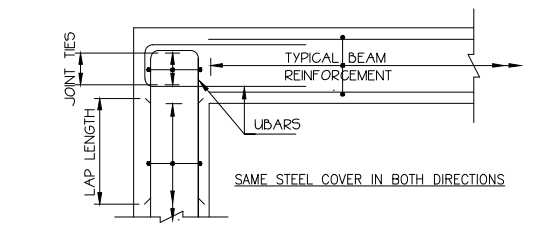


DEPTH OF SLAB 'd'	BAR 'A'
LESS THAN 150	2-D12
150 - 175	2-D16

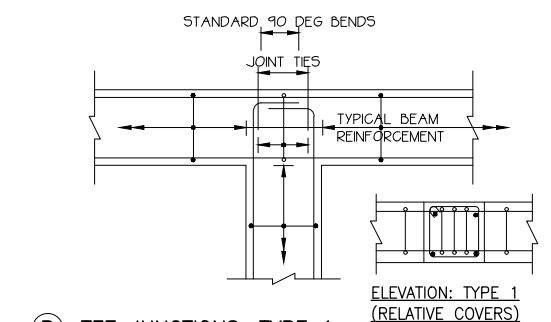
3 BEAM JUNCTIONS



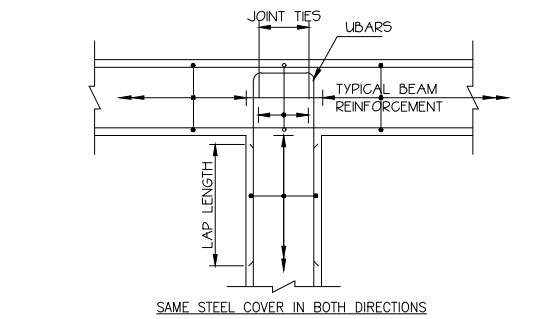
A 'L' JUNCTIONS: TYPE 1



B 'L' JUNCTIONS: TYPE 2

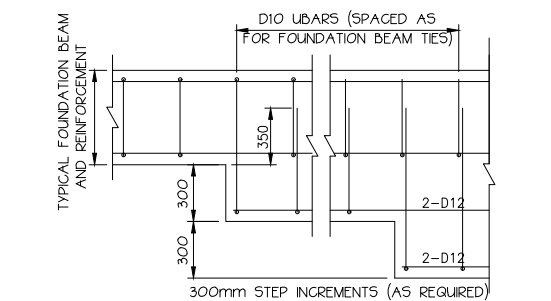


B TEE JUNCTIONS: TYPE 1

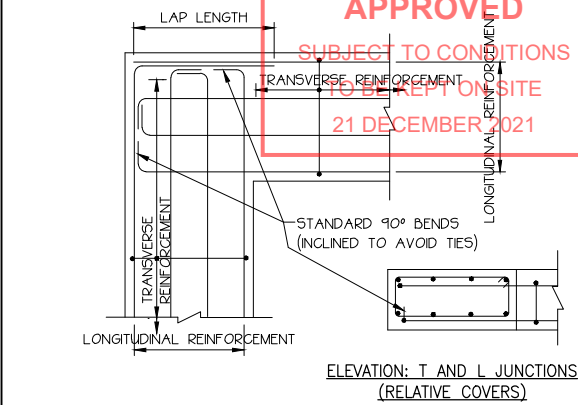


B TEE JUNCTIONS: TYPE 2

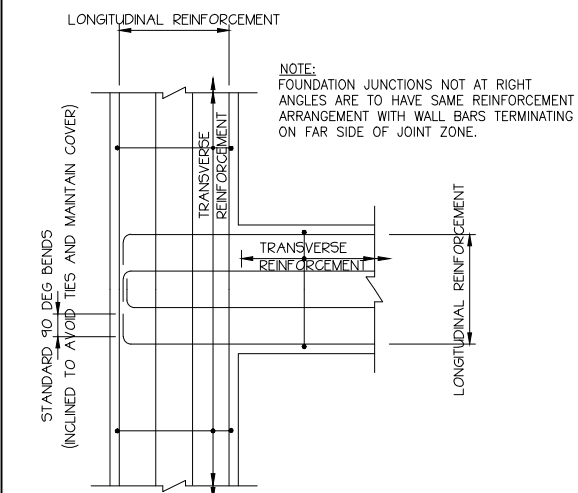
4 FOUNDATION BEAM: STEP DETAILS



5 WALL FOOTINGS: JUNCTIONS



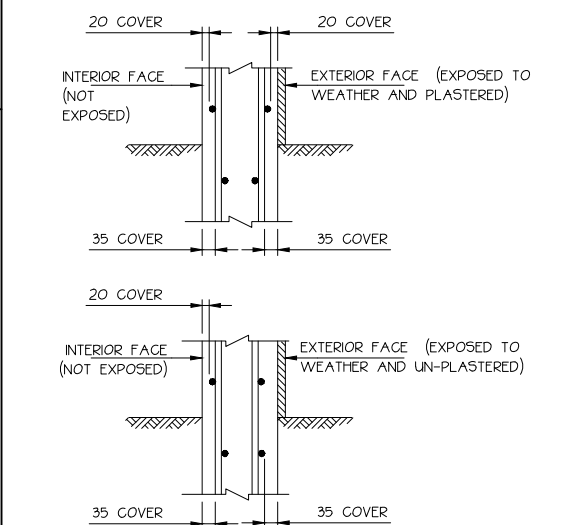
A PLAN VIEW: 'L' JUNCTIONS (REINFORCEMENT ARRANGEMENT)



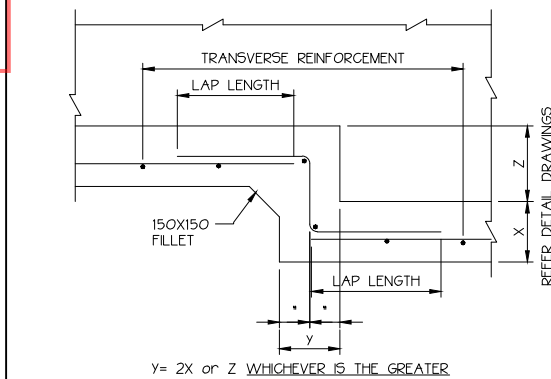
B PLAN VIEW: 'TEE' JUNCTIONS (REINFORCEMENT ARRANGEMENT)

6 DOUBLE REINFORCED WALL: GROUND LEVEL

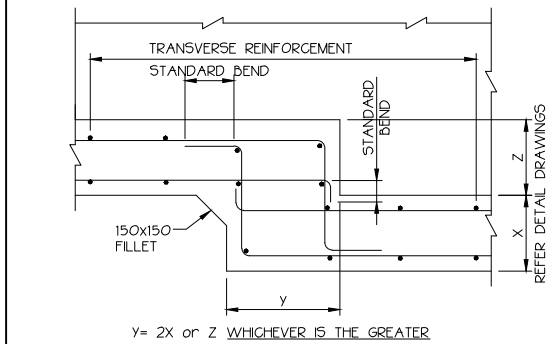
SHOWING METHODS OF ARRANGING REINFORCEMENT TO ACCOMMODATE VARIOUS COVER CONDITIONS FOR BARS UP TO 20mm DIAMETER



7 WALL FOOTINGS: STEP DETAILS

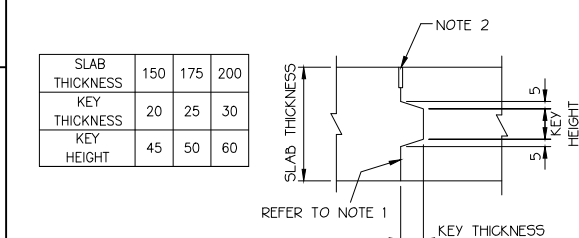


A ELEVATION: SINGLE LAYER REINFORCEMENT

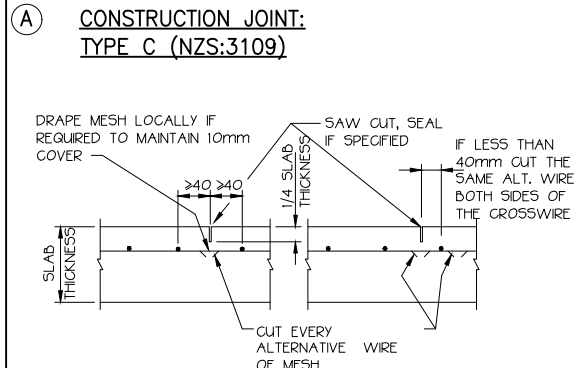


A ELEVATION: DOUBLE LAYER REINFORCEMENT

8 SLAB JOINTS



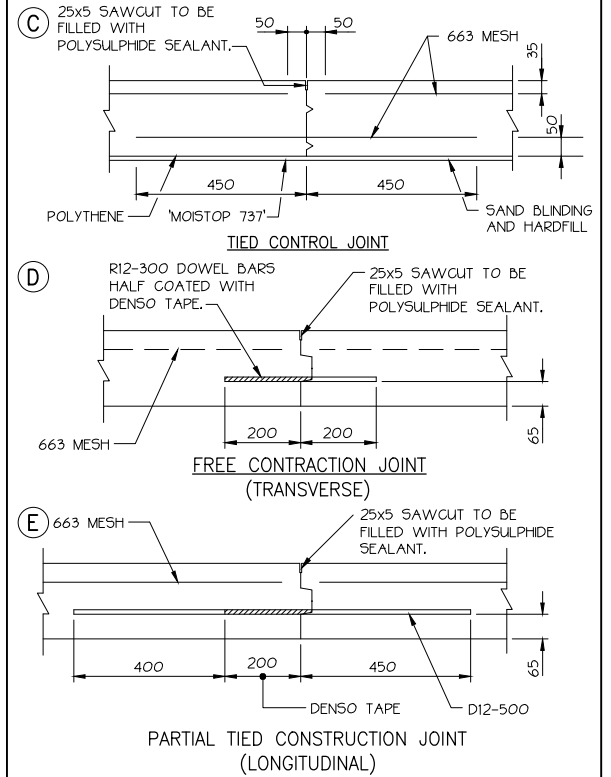
A CONSTRUCTION JOINT: TYPE C (NZS:3109)



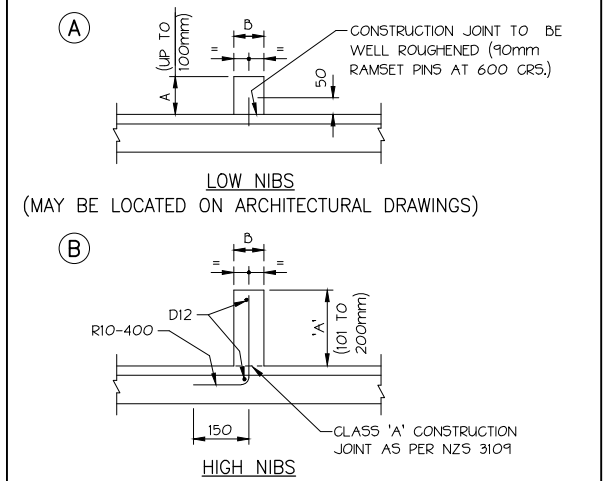
B CONTROL JOINT: SAWN

(REFER ITEM 6, NOTES-REINFORCEMENT SHEET 1)

8 SLAB JOINTS (CON'T)



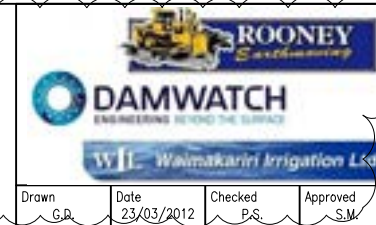
9 LOW AND HIGH NIBS



10 NOTES/DETAILS: SPECIFIC TO THIS CONTRACT

1. UNLESS OTHERWISE SHOWN OR SPECIFIED ON THE DRAWINGS, THESE NOTES AND DETAILS SHALL APPLY, BUT INCLUSION OF THIS SHEET DOES NOT IMPLY THAT ALL DETAILS OCCUR IN THIS CONTRACT.
2. DO NOT SCALE OFF DRAWINGS. CONTRACTOR TO ENSURE HE HAS ADEQUATE INFORMATION FOR CONSTRUCTION.

Revision	By	Date
R1 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS		STRUCTURAL STANDARDS REINFORCED CONCRETE SHEET 2 OF 2		R1
Project E2131	Drawing Number WIL1125/30/142	Scale Damwatch Engineering Ltd		Revision R1

200 mm
100
50
10 mm
0

1 DESIGNATION OF STEELWORK SECTIONS

SYMBOL OR ABBREVIATION	DESCRIPTION	EXAMPLE
UB, UC	UNIVERSAL BEAM OR COLUMN	200 UB 30
RSC	ROLLED STEEL CHANNEL	150x75x17.70KgC
L	ANGLE	80x80x10 L
RHS	RECTANGULAR HOLLOW SECTION	100X50X4.0 RHS
CHS	CIRCULAR HOLLOW SECTION	76.1 ODx4.9 CHS
PL	PLATE	375x185x10 PL
FL	FLAT	80X10 FL
RSJ	ROLLED STEEL JOIST	125x65X13.10Kg RSJ

2 BACK MARKS AND CROSS CENTRES OF SECTIONS (mm)

	UB's AND UC's					
	FLANGE WIDTH	SPACING				
		A	B	C		
	419 TO 368	140	140	75		
	330 & 305	140	120	60		
	292 TO 203	140	—	—		
	190 TO 165	90	—	—		
	152	90	—	—		
	146 TO 127	70	—	—		
	102	54	—	—		
	89	50	—	—		
	76	40	—	—		
	64	34	—	—		
	51	30	—	—		
		CHANNELS				
FLANGE WIDTH		D				
102		55				
89		55				
76		45				
64		35				
51		30				
38		22				
		ANGLES				
		LEG LENGTH	SPACING			
			E	F	G	H
		200	120	75	75	55
	150	90	55	55	—	
	125	75	45	50	—	
	120	75	45	50	—	
	100	55	—	—	—	
	90	50	—	—	—	
	80	45	—	—	—	
	75	45	—	—	—	
	70	40	—	—	—	
	65	35	—	—	—	
	60	35	—	—	—	
	50	28	—	—	—	
	45	25	—	—	—	
	40	23	—	—	—	
	30	20	—	—	—	
	25	15	—	—	—	

3 MINIMUM EDGE DISTANCE FOR BOLTS (mm)

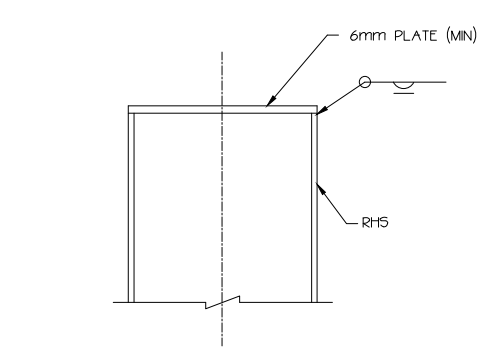
NOMINAL DIAMETER OF BOLT	DISTANCE TO SHEARED OR HAND FLAME CUT EDGE FROM HOLE CENTERLINE	DISTANCE TO MACHINE FLAME CUT, SAWN OR PLANED EDGE FROM CENTERLINE	DISTANCE TO ROLLED EDGE OF A ROLLED SECTION FROM HOLE CENTERLINE
10	18	15	13
12	21	18	15
16	28	24	20
20	35	30	25
24	42	36	30

NOTE: THE DIAMETER OF HOLE SHALL BE 2mm GREATER THAN NOMINAL BOLT SIZE UNLESS NOTED.

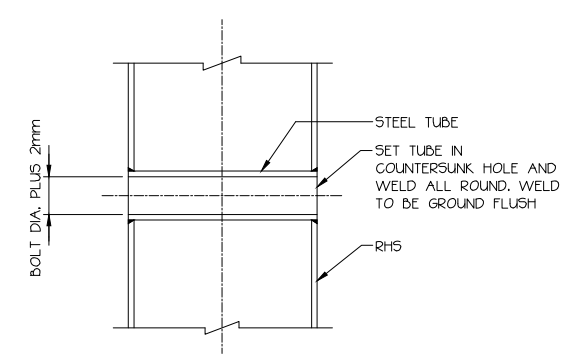
4 HOLE AND BOLT SYMBOLS

		COUNTERSUNK NEAR SIDE		COUNTERSUNK FAR SIDE
		PLAN	SECTION	PLAN
HOLES	PLAN			
	SECTION			
BOLTS	PLAN			
	SECTION			
SLOTTED HOLES	PLAN			

5 TYPICAL RHS CAPPING PLATE



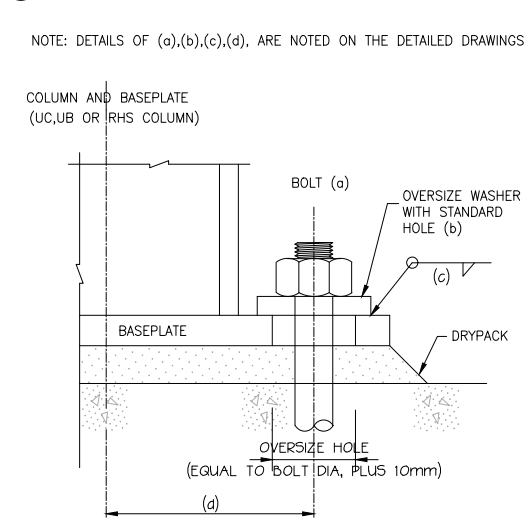
6 TYPICAL DETAIL OF SLEEVED HOLES IN R.H.S.



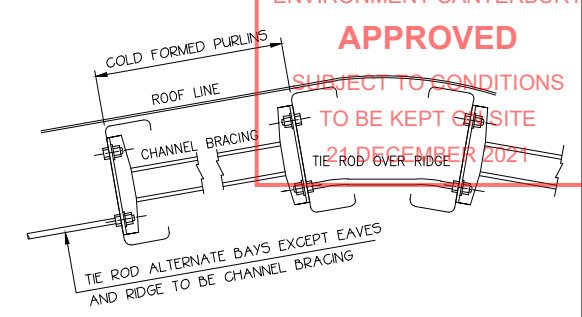
7 RADII FOR COLD BENT FLATS (mm)

THICKNESS	MINIMUM INSIDE RADIUS
6	9
10	15
12	18
16	24
20	30

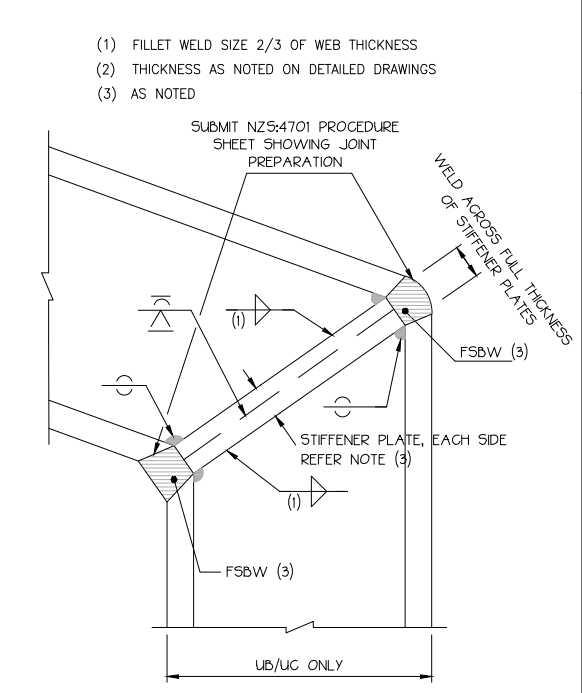
8 BASE PLATE/HOLDING DOWN BOLTS



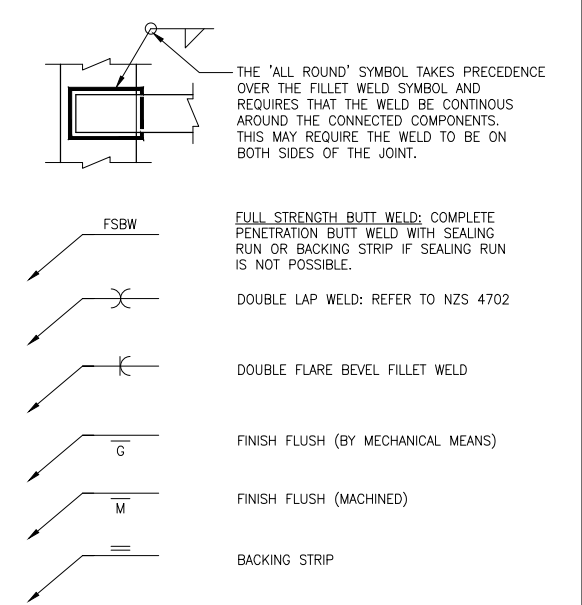
9 TYPICAL PURLIN AND GIRT BRACING



10 PORTAL KNEE OR APEX WELDS



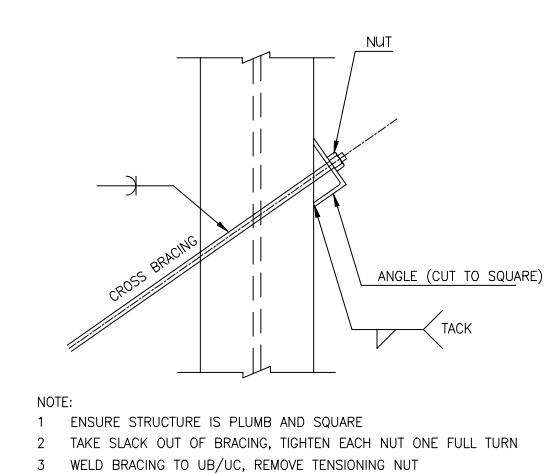
11 ADDITIONAL WELD SYMBOLS



12 ABBREVIATIONS

AI	ALUMINIUM
c/c	CENTRE TO CENTRE
XCRS.	CROSS CENTRES
DIA.	DIAMETER
?	DIAM. (MS ROD ONLY)
HD GALV.	HOT DIPPED GALVANISED
hex.	HEXAGON
HD bolt	HOLDING DOWN BOLT
HSFG bolt	HIGH STRENGTH FRICTION GRIP BOLT
ID	INSIDE DIAMETER
MS	MILD STEEL
no.	NUMBER
OD	OUTSIDE DIAMETER
O/A	OVERALL
PCD	PITCH CIRCLE DIAMETER
projn.	PROJECTION
rad.	RADIUS
SS	STAINLESS STEEL
csk.	COUNTERSUNK
IP	INTERSECTION POINT
SOP	SETTING OUT POINT
UOS	UNLESS OTHERWISE SHOWN
FSBW	FULL STRENGTH BUTT WELD

13 CROSS BRACING: Tension Procedure



13 GENERAL NOTES (STANDARD)

- DRAWING INTERPRETATIONS TO COMPLY WITH NZS:5902 EXCEPT WHERE MODIFIED HEREIN.
- STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DISCIPLINES (eg. ARCH, MECH/ELECT, BLDG SERV) TOGETHER WITH THE SPECIFICATION.
- WHERE PROPRIETARY ITEMS ARE SHOWN ON THE DRAWINGS, OTHER ALTERNATIVES APPROVED AS EQUAL, MAY BE USED.
- WHERE ALTERNATIVES ARE SHOWN ON STANDARD SHEETS AND ARE NOT CALLED UP, THE CONTRACTOR MUST OBTAIN APPROVAL TO USE ONE OF THESE.
- THE ARCHITECT MUST BE NOTIFIED OF ANY DISCREPANCY BETWEEN STRUCTURAL AND OTHER CONTRACT DOCUMENTS BEFORE AFFECTED WORK COMMENCES.
- STRUCTURAL STEELWORK DRAWINGS SHOWS THE DESIGN INTENT. SHOP DRGS. REMAIN THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL HOLDING DOWN BOLTS AND OTHER FIXING DEVICES ARE TO BE SET TO TEMPLATE AND CHECKED FOR LEVEL AND POSITION BEFORE CONCRETING.
- CHECK AND VERIFY ALL RELEVANT DIMENSIONS AND LEVELS. ON SITE BEFORE COMMENCING FABRICATION OF ANY STRUCTURAL STEELWORK REQUIRED TO FIT ON SITE WORK.
- UNLESS OTHERWISE SHOWN, ALL BASEPLATES SHALL BEAR DIRECTLY ON $\pm 20\text{mm}$ OF DRYPACK MORTAR.
- WASHERS, APPROVED WASHERS, TAPERED WHERE NECESSARY, ARE TO BE USED UNDER NUTS AND/OR TURNING BOLT HEADS.
- UNLESS OTHERWISE SHOWN, ALL FILLET WELDS ARE TO BE 5mm MINIMUM CONTINUOUS AROUND THE CONNECTED PIECES.
- WHERE ITEMS ARE TO BE HOT DIP GALVANISED, ALLOW FOR VENT HOLES, TOLERANCES ETC., AS NECESSARY.
- ALL WELDERS AND WELD PROCEDURES TO BE QUALIFIED TO, AND CARRIED OUT IN ACCORDANCE WITH NZS4701. SUBMIT FOR APPROVAL AN NZS4701 WELD PROCEDURE SHEET FOR EACH TYPE OF WELD. ALL WELDS TO BE CLASS GP UNLESS OTHERWISE STATED. CONTRACTOR TO ALLOW FOR ALL WELDS TO BE INSPECTED BY 'CBIP' QUALIFIED INSPECTORS TO NZS4701, APPENDIX [E], UNLESS OTHERWISE STATED. IF MIG OR FLUX CORED ARC WELDING IS USED, REFER TO THE SPECIFICATION FOR TESTING REQUIREMENTS.

14 NOTES AND DETAILS SPECIFIC TO THIS CONTRACT

- ALL BOLTS, EXCEPT FOR COLD ROLLED PURLINS, TO BE CLASS 8.8 TO AS/NZS 1252, WITH MATCHING NUTS AND WASHERS, GALVANISED.
 - BOLTS FOR COLD ROLLED PURLINS TO BE M12 CLASS 4.6, GALVANISED.
- NOTES:
- UNLESS OTHERWISE SHOWN OR SPECIFIED ON THE DRAWINGS, THESE NOTES AND DETAILS SHALL APPLY, BUT INCLUSION OF THIS SHEET DOES NOT IMPLY THAT ALL DETAILS OCCUR IN THIS CONTRACT.
 - DO NOT SCALE OFF DRAWINGS. CONTRACTOR TO ENSURE HE HAS ADEQUATE INFORMATION FOR CONSTRUCTION.

WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

STRUCTURAL STANDARDS
STEELWORK

Project E2131 R1 Drawing Number WIL1125/30/143

Scale - Damwatch Engineering Ltd

Drawn G.D. Date 23/03/2012 Checked P.S. Approved S.M.

Scale -

Project E2131 R1 Drawing Number WIL1125/30/143

Scale -

Damwatch Engineering Ltd

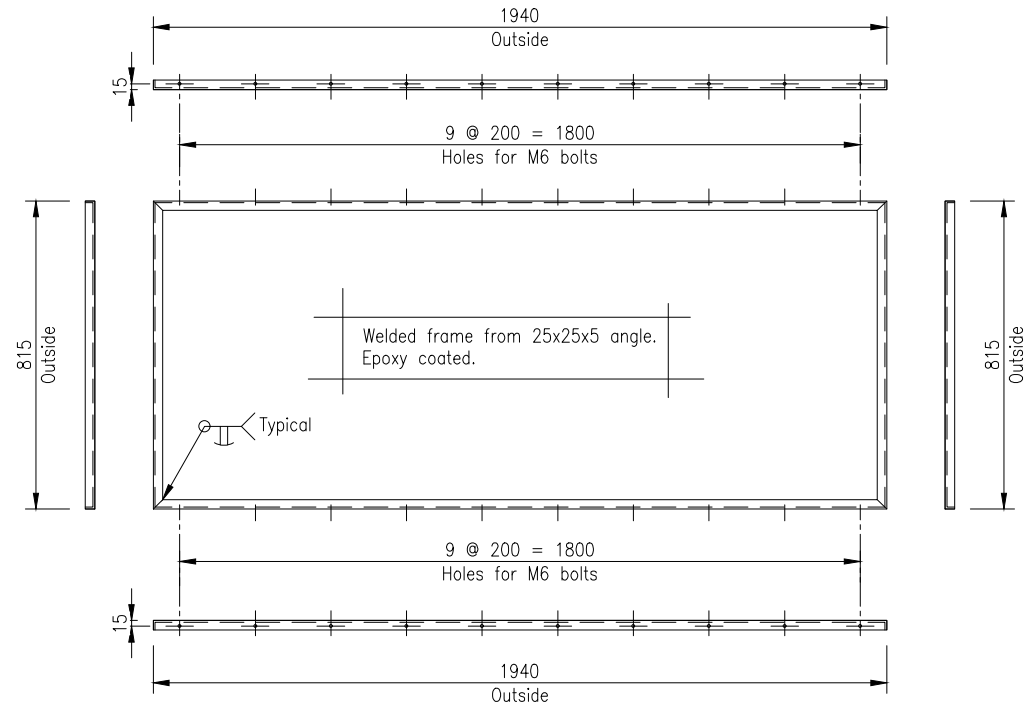
R1

R1

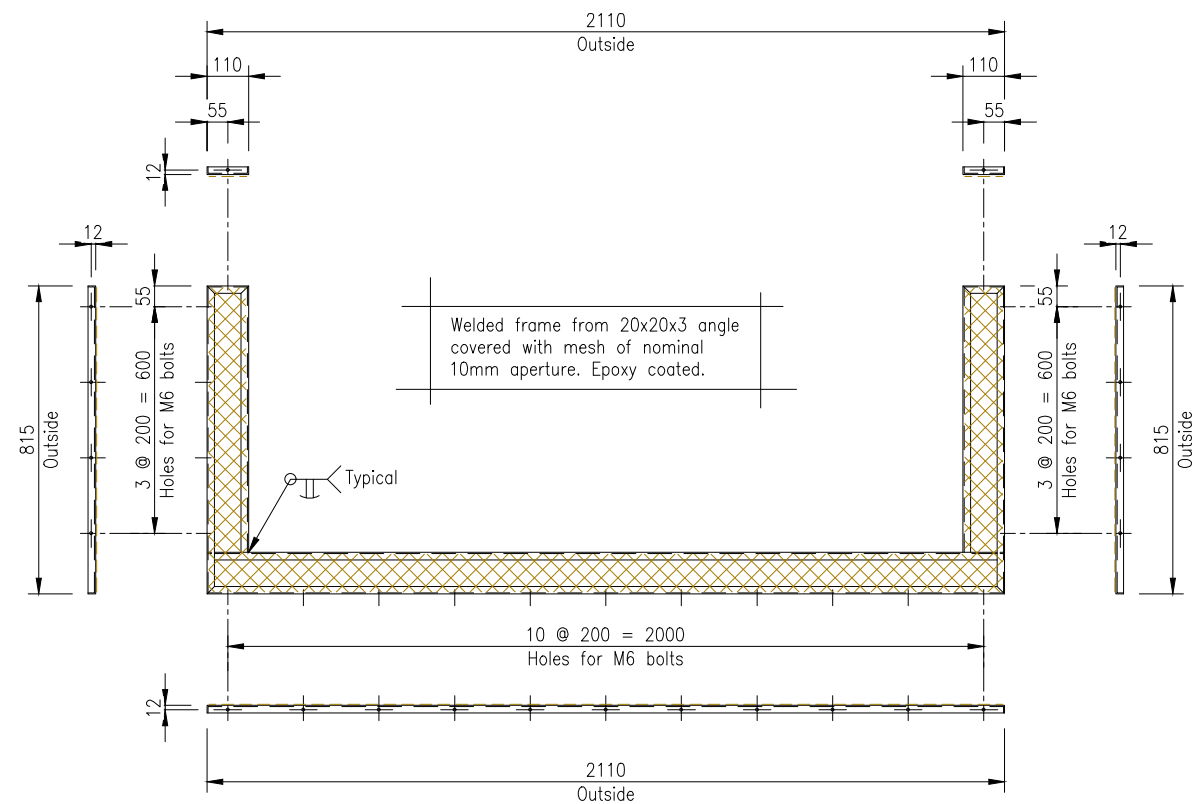
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ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

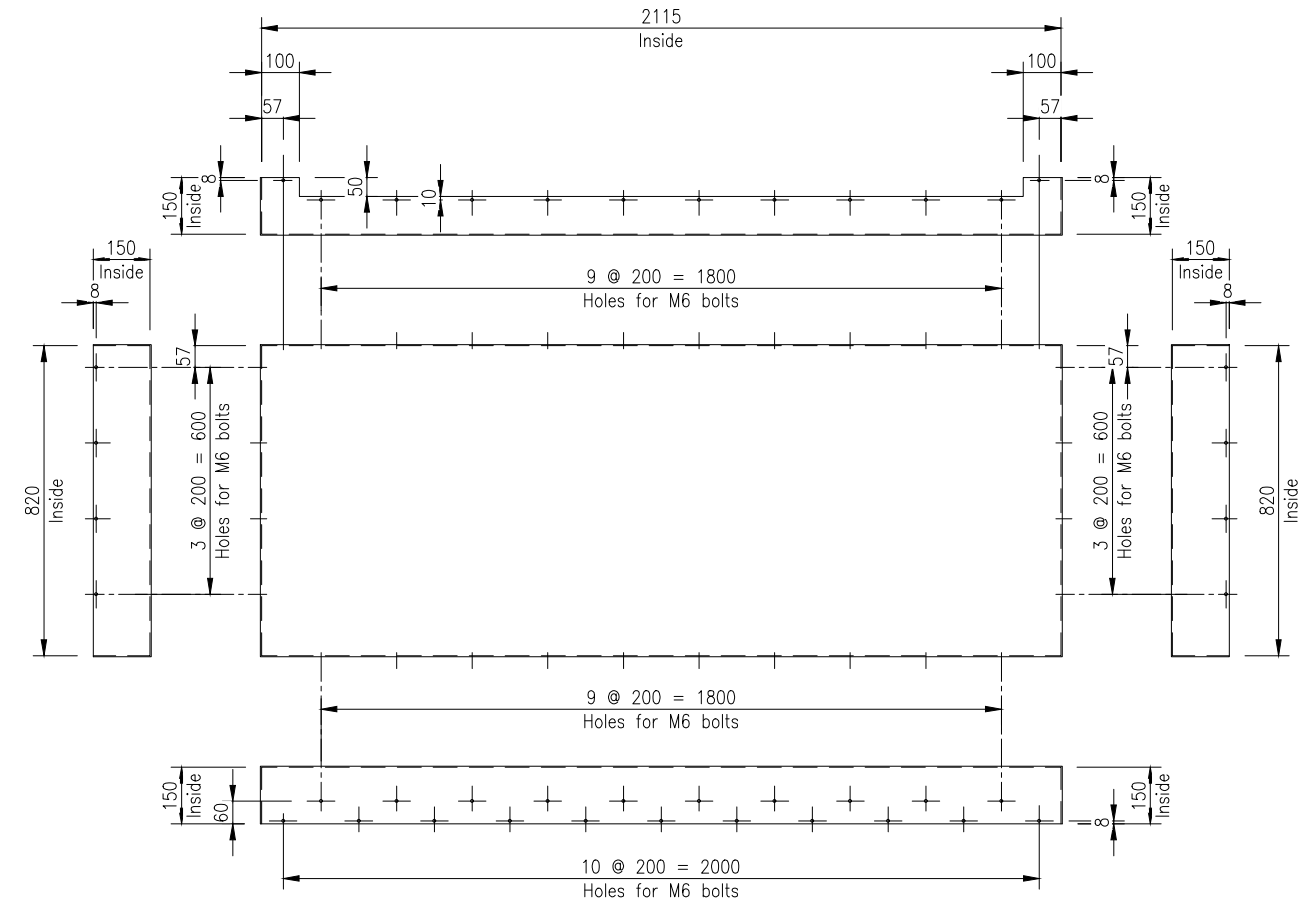
Revision	By	Date
R1	ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M. 31/8/21



3 "FRAME A" as shown



3 "FRAME B" as shown



3 "COVER" as shown

NOTE:

Dimensions for "FRAME A" "FRAME B" and "COVER" assume that the precast concrete trough has the dimensions of 1920 long and 700 wide with sloping sides. If the precast concrete trough dimensions are different to this then corresponding adjustments will need to be made to these fabricated items.

9 September 2021 6:22pm

WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

F1 FUSEPLUG SPILLWAY
SHEET METAL COVER AND FRAMES A AND B

Project E2131 R1 Drawing Number WIL1125/30/148

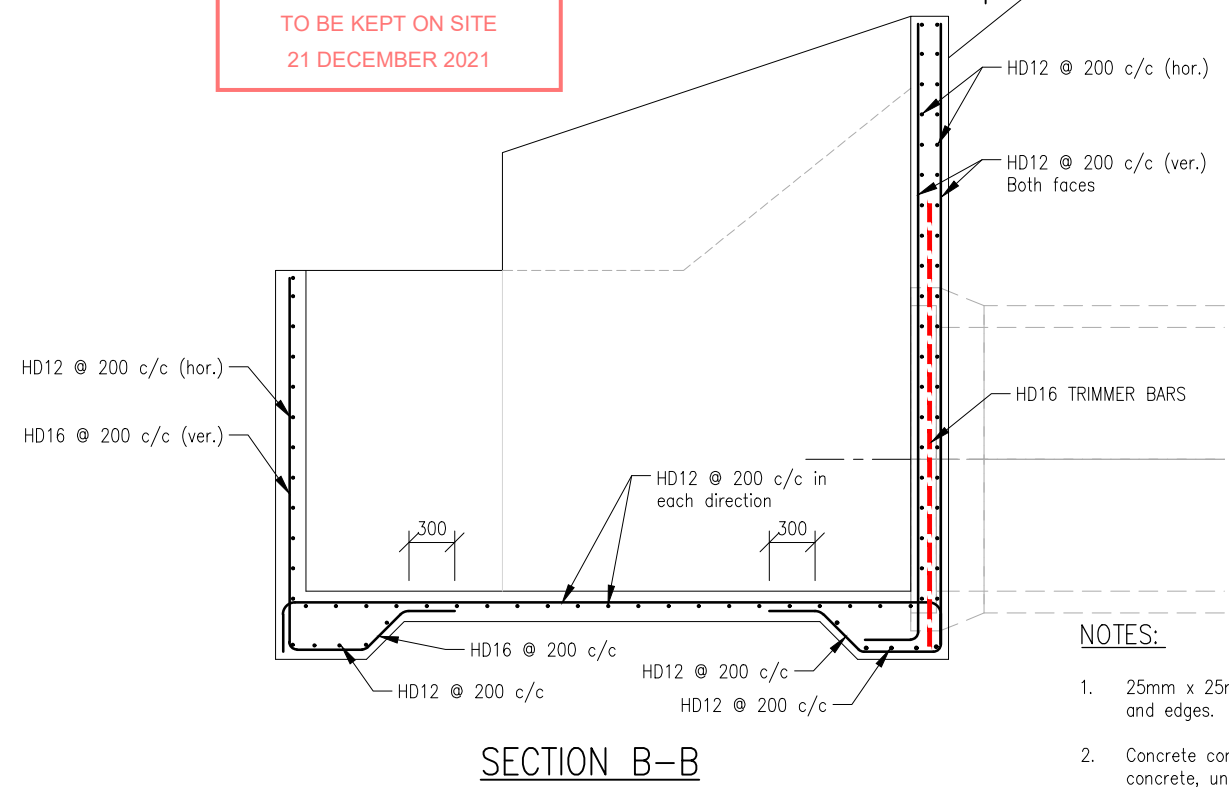
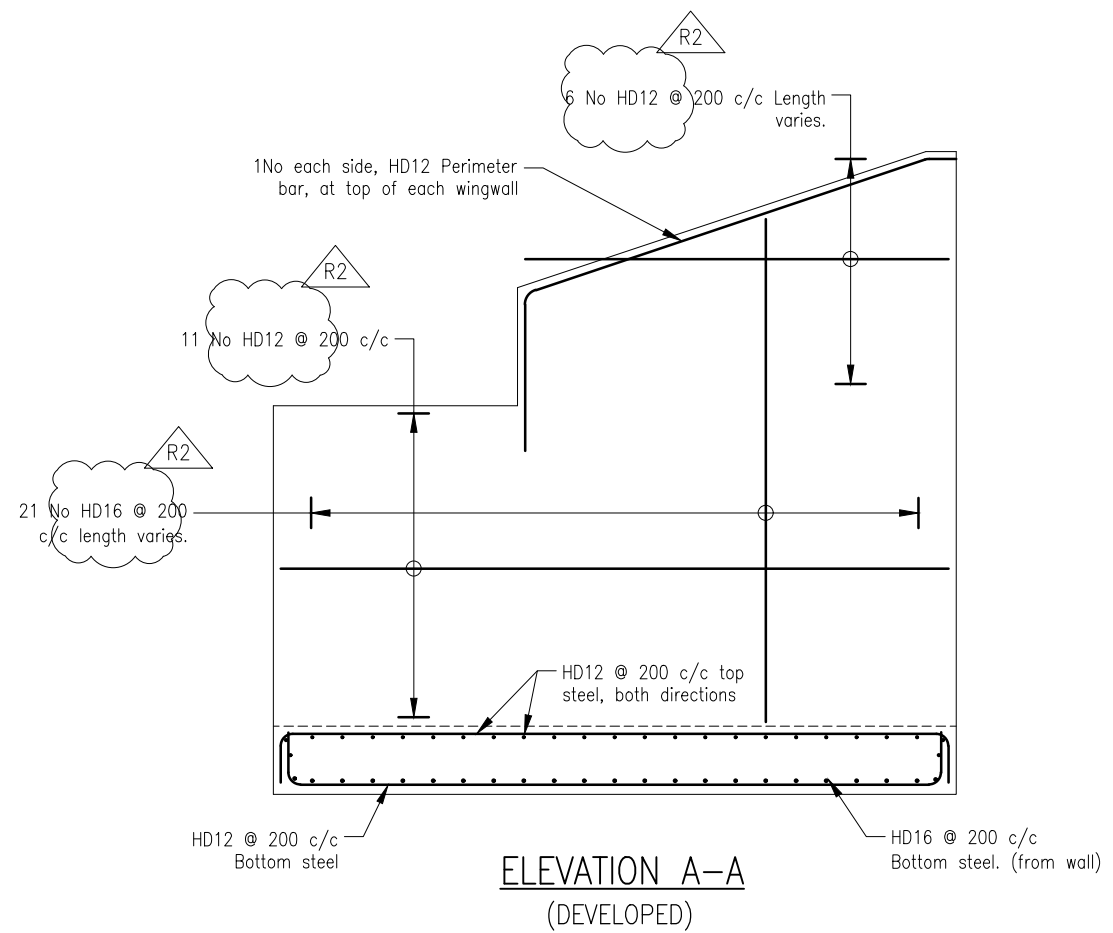
Scale 1:20 Damwatch Engineering Ltd

R1

R1

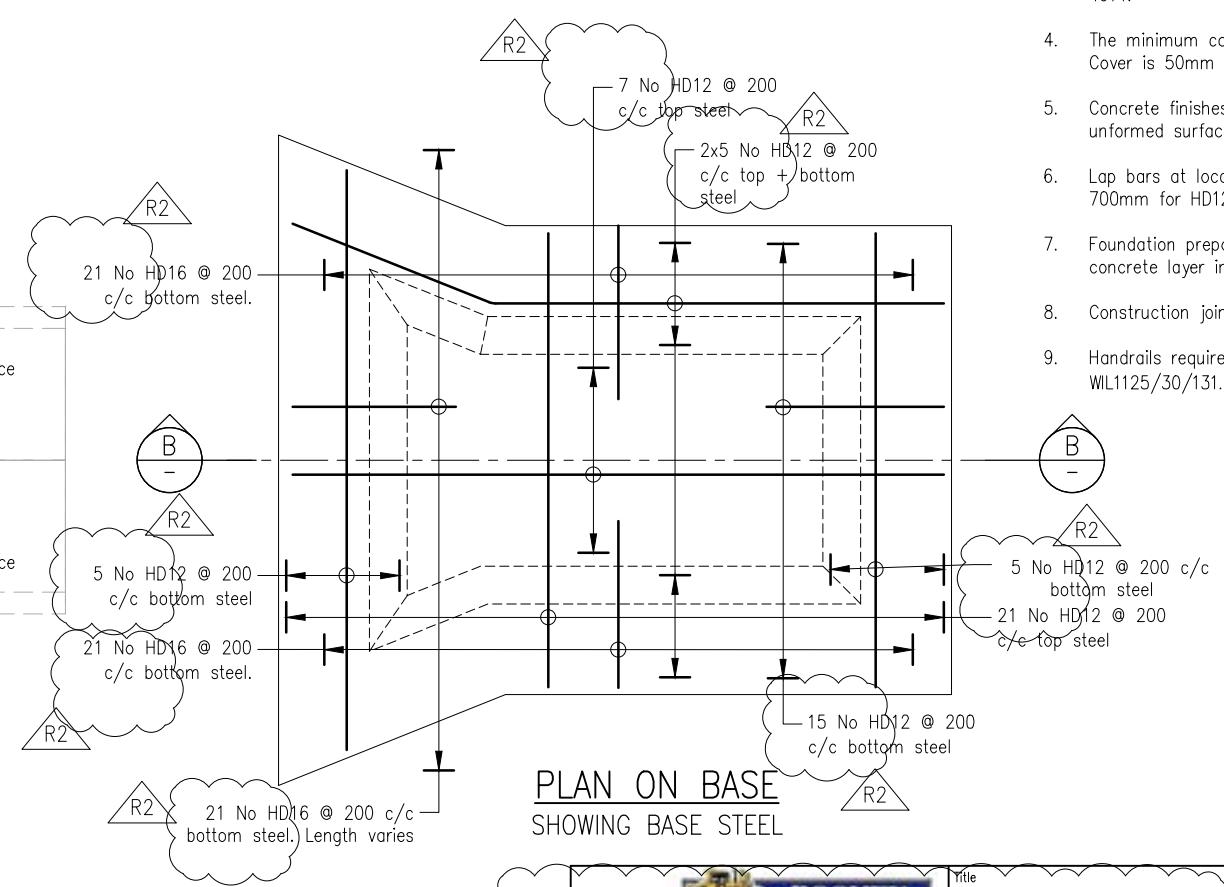
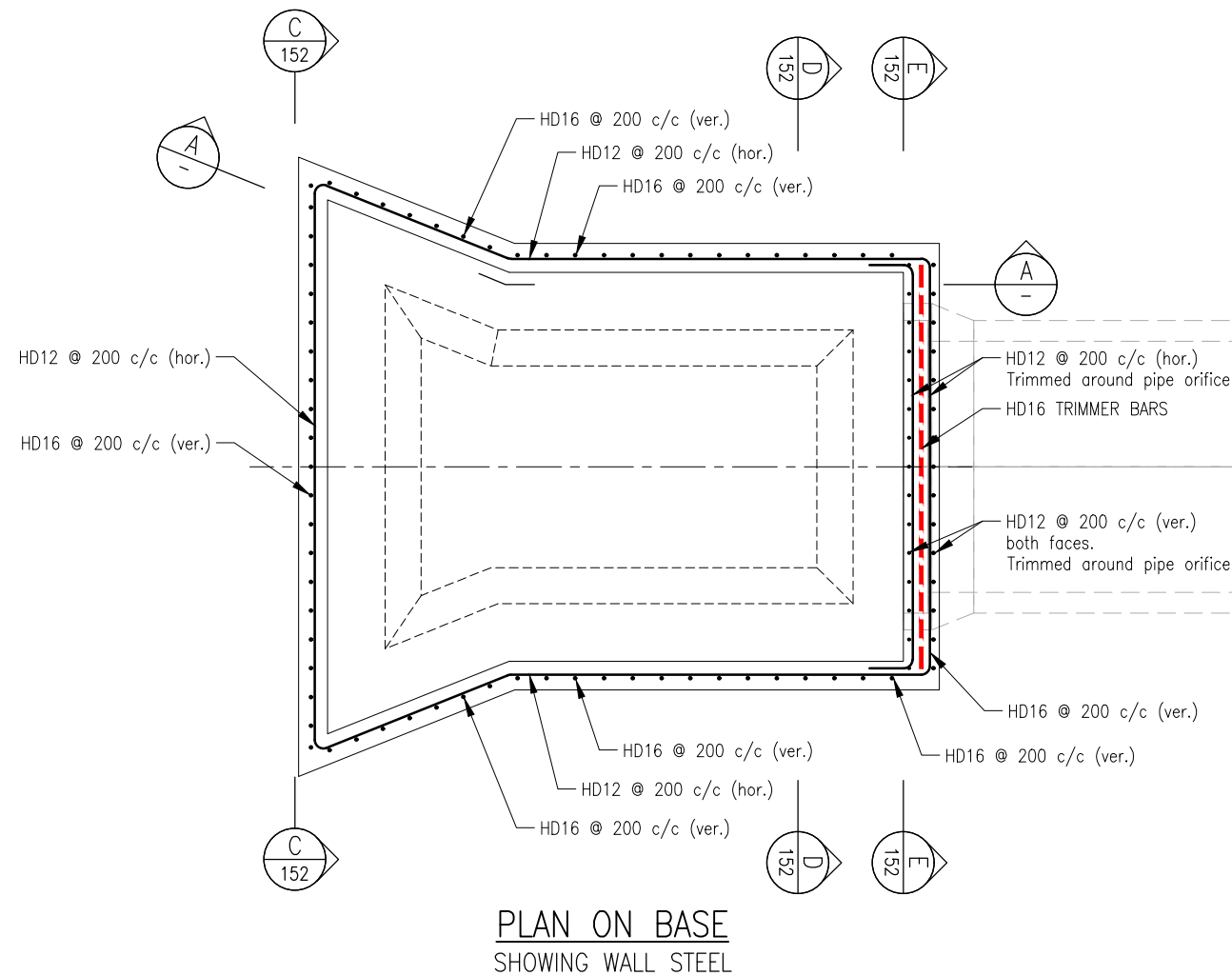
ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 GENERAL UPDATES, TOO NUMEROUS TO CLOUD	S.M.	3/12/12
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



NOTES:

- 25mm x 25mm Fillets and chamfers are to be formed on all corners and edges.
- Concrete compressive strengths shall be 30 MPa for all structural concrete, unless otherwise specified.
- Reinforcement shall be 500MPa for all HD bars complying with AS/NZS 4671.
- The minimum concrete cover is to be 50mm for 200mm thick walls. Cover is 50mm to vertical bars at earth face.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Lap bars at locations as required, lap lengths to be 930mm for HD16, 700mm for HD12 and 200mm for 661 mesh.
- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base slab.
- Construction joint locations are to be approved by the designer.
- Handrails required on the top of side & wing walls, see Drg. No. WIL1125/30/131.



ROONEY Engineering

DAMWATCH

WIL Waimakariri Irrigation Ltd

Title
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G1 INLET STRUCTURE
INLET REINFORCEMENT DETAILS - SHEET 1 OF 2

Project
E2131

Drawing Number
WIL1125/30/151

Scale
1:50

Drawn
G.D.

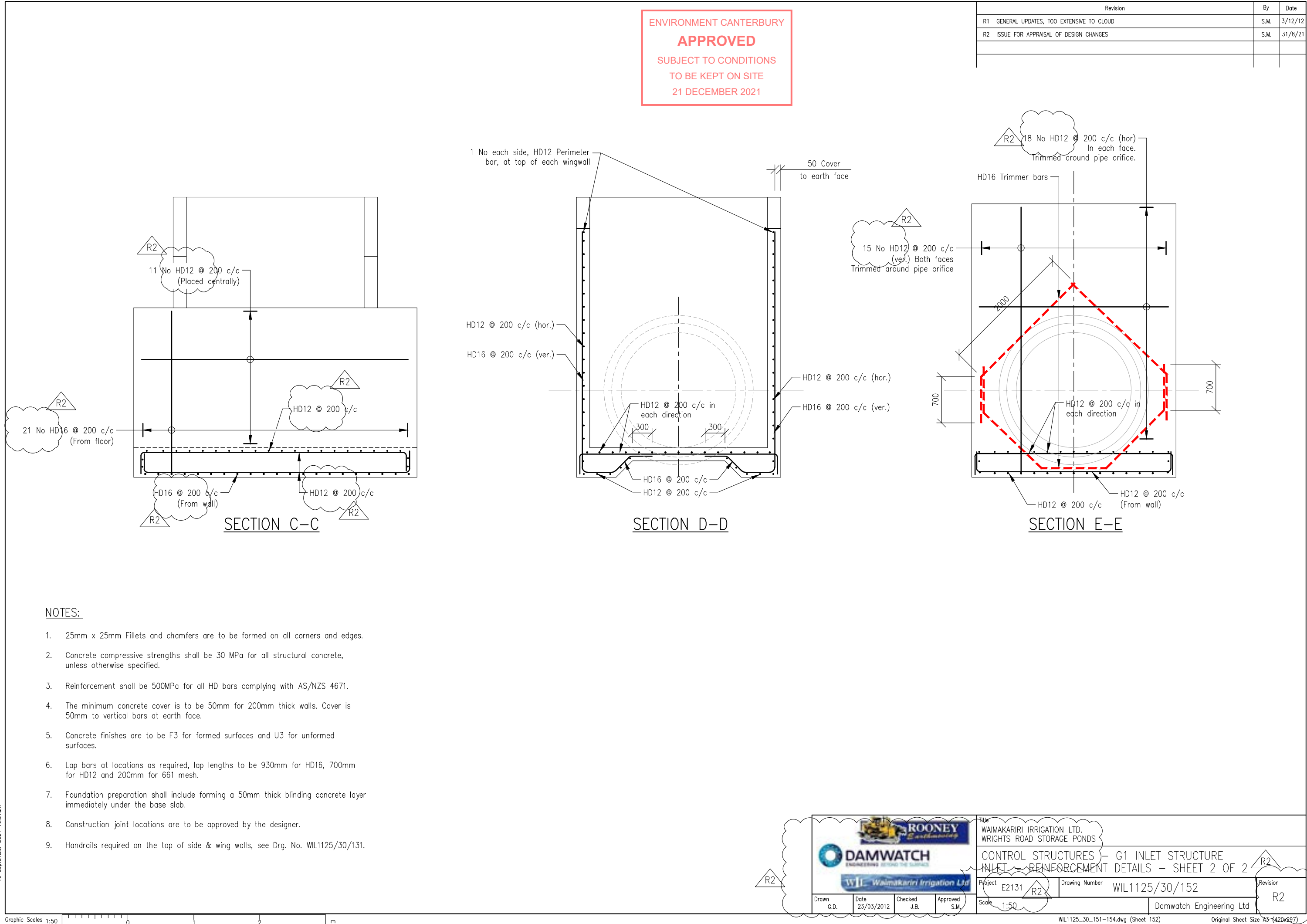
Date
23/03/2012

Checked
J.B.

Approved
S.M.

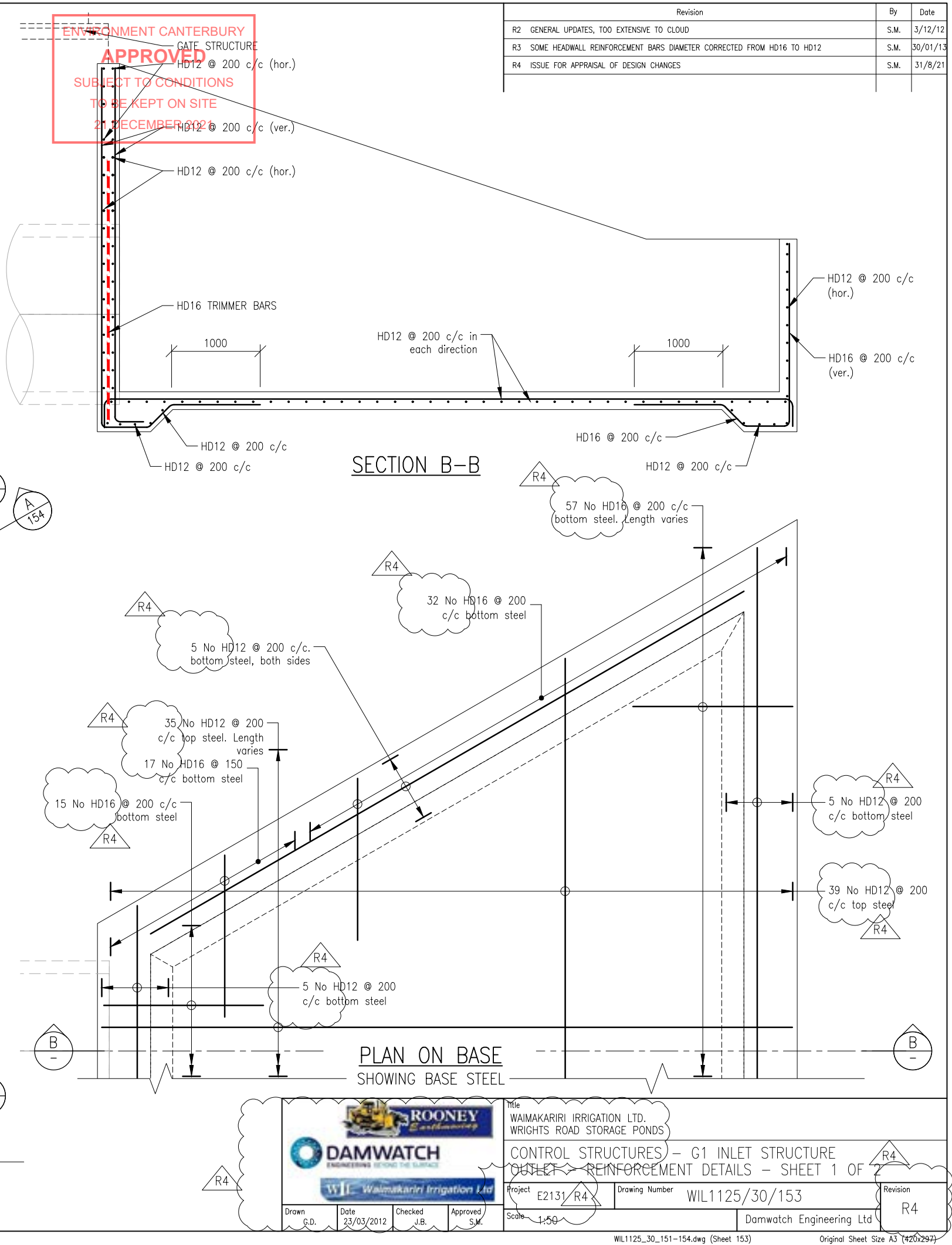
Revision
R2

Damwatch Engineering Ltd



NOTES:

- 25mm x 25mm Fillets and chamfers are to be formed on all corners and edges.
- Concrete compressive strengths shall be 30 MPa for all structural concrete, unless otherwise specified.
- Reinforcement shall be 500MPa for all HD bars complying with AS/NZS 4671.
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- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base slab.
- Construction joint locations are to be approved by the designer.
- Handrails required on the top of side & wing walls, see Drg. No. WL1125/30/131.



NOTES:

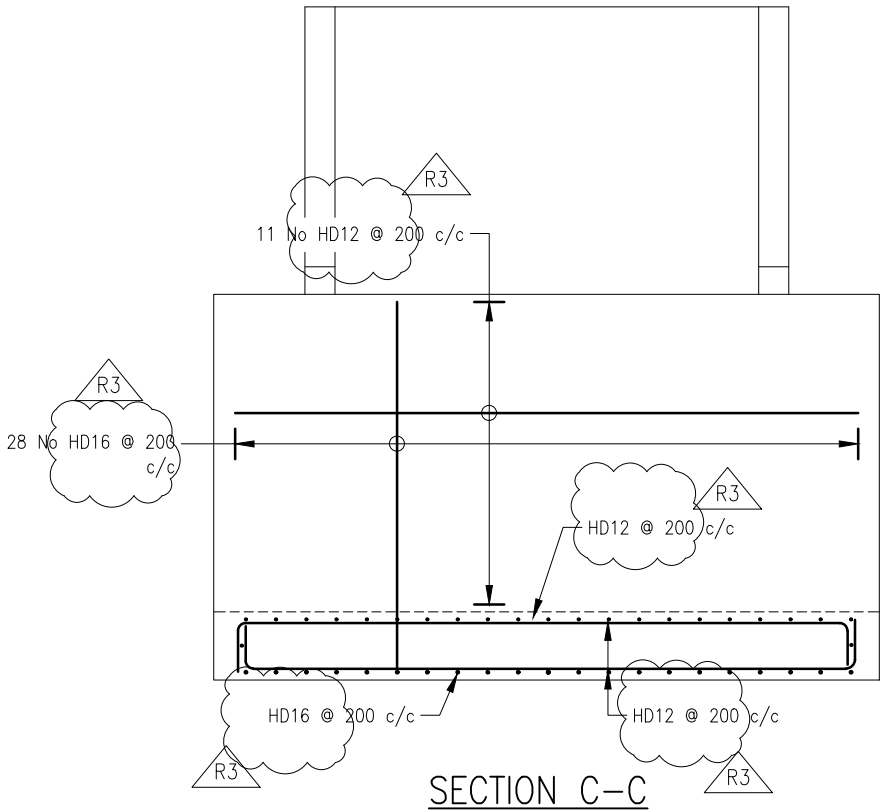
- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
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- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

ENVIRONMENT CANTERBURY

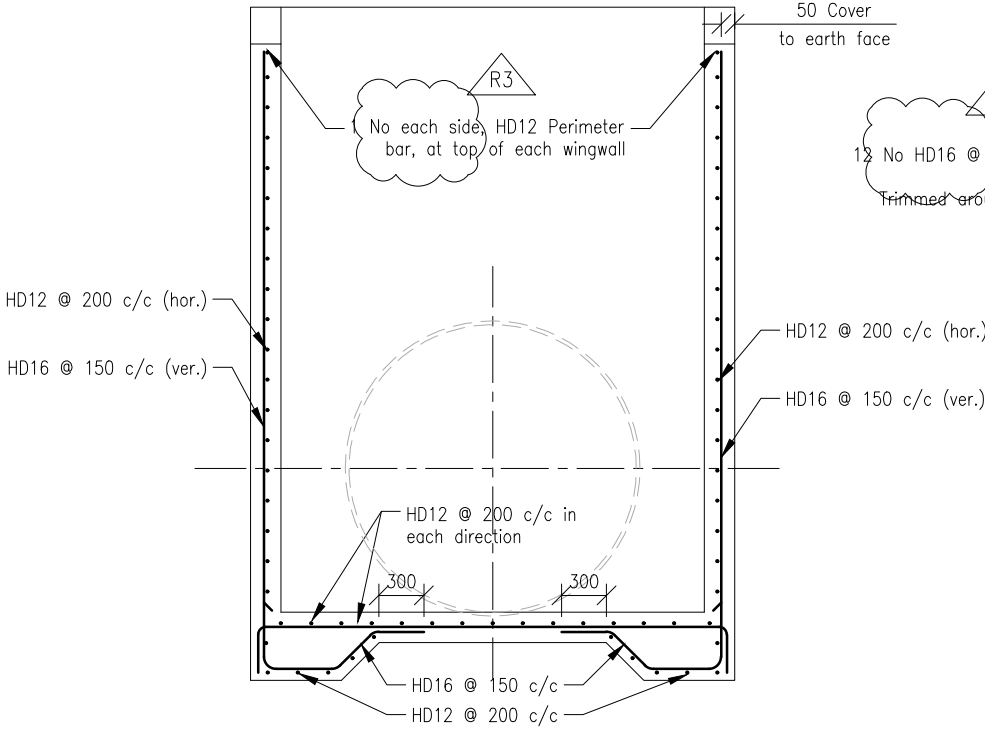
APPROVED

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TO BE KEPT ON SITE
21 DECEMBER 2021

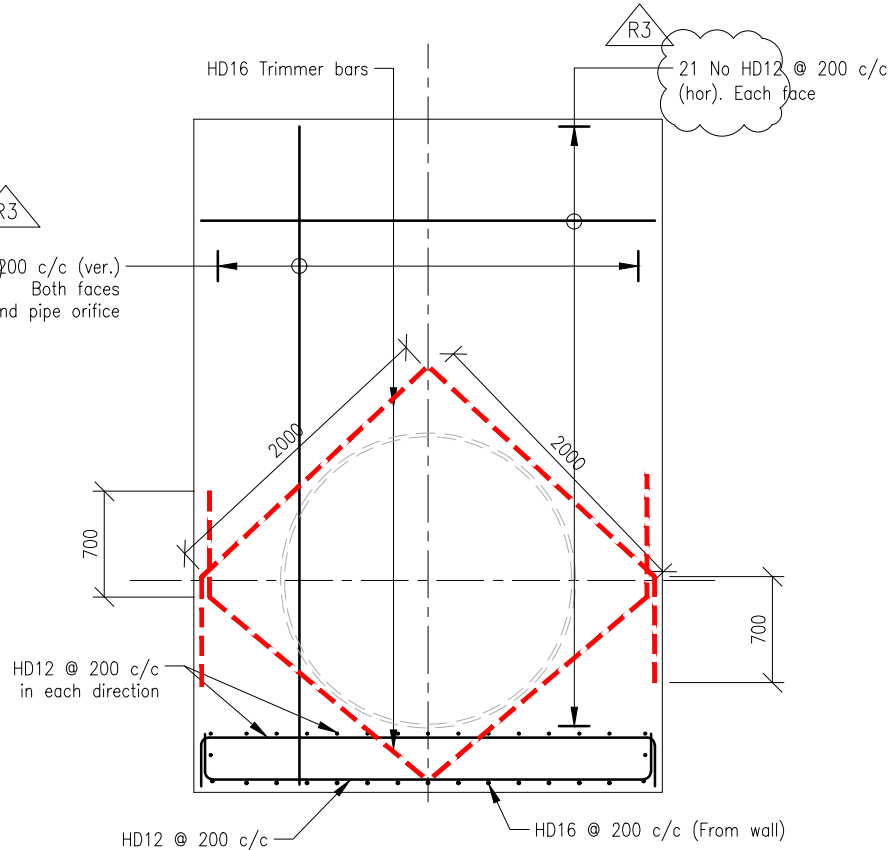
Revision	By	Date
R1 REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



SECTION C-C



SECTION D-D



SECTION E-E

WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G2 PENSTOCK STRUCTURE
INLET REINFORCEMENT DETAILS - SHEET 2 OF 2

Project E2131 Drawing Number WIL1125/30/156

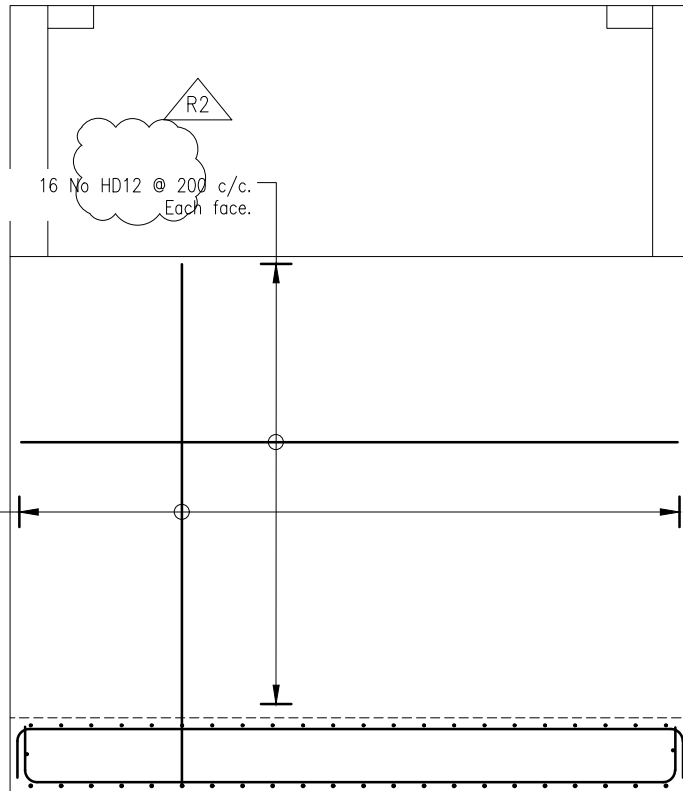
Scale 1:50 Damwatch Engineering Ltd

Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

Revision R3

200 mm
100
50
10 mm
0

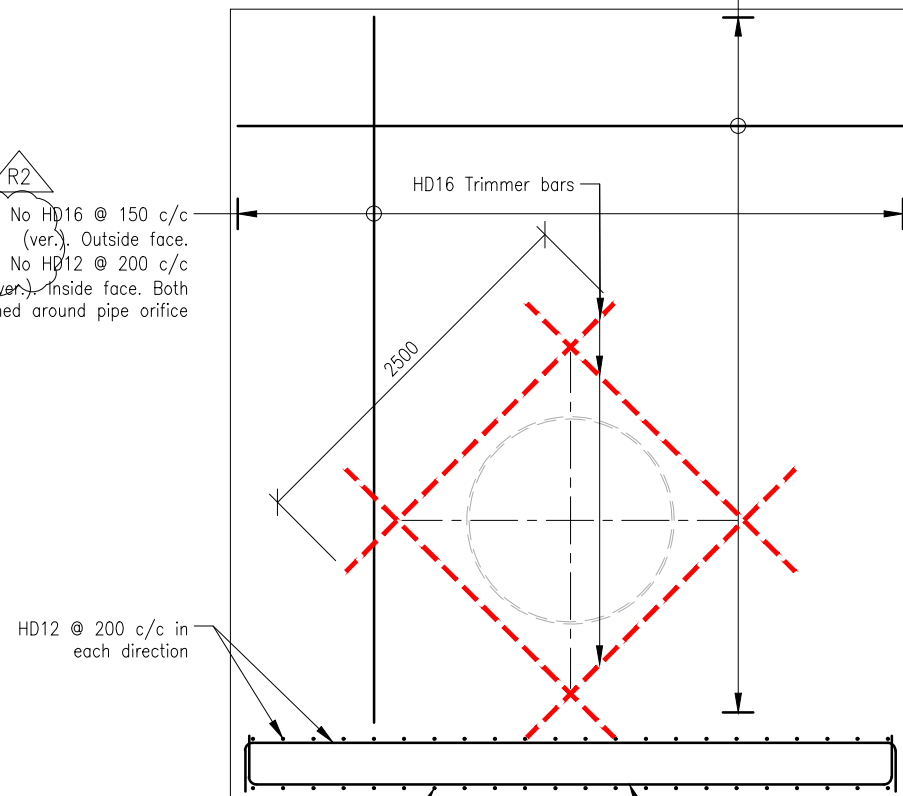
22 No HD16 @ 200 c/c,
outside face.
22 No HD12 @ 200 c/c,
inside face.
R2



SECTION C-C

R2 24 No HD12 @ 200 c/c (hor.)
Both faces and trimmed around
pipe orifice

R2 30 No HD16 @ 150 c/c
(ver.), Outside face.
23 No HD12 @ 200 c/c
(ver.), Inside face. Both
trimmed around pipe orifice



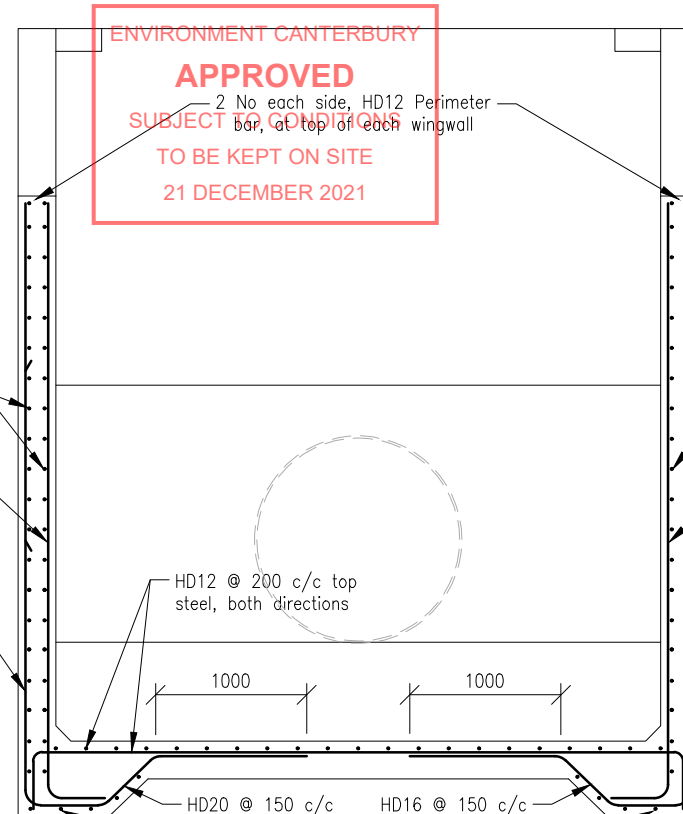
SECTION E-E

HD12 @ 200 c/c
HD16 @ 150 c/c

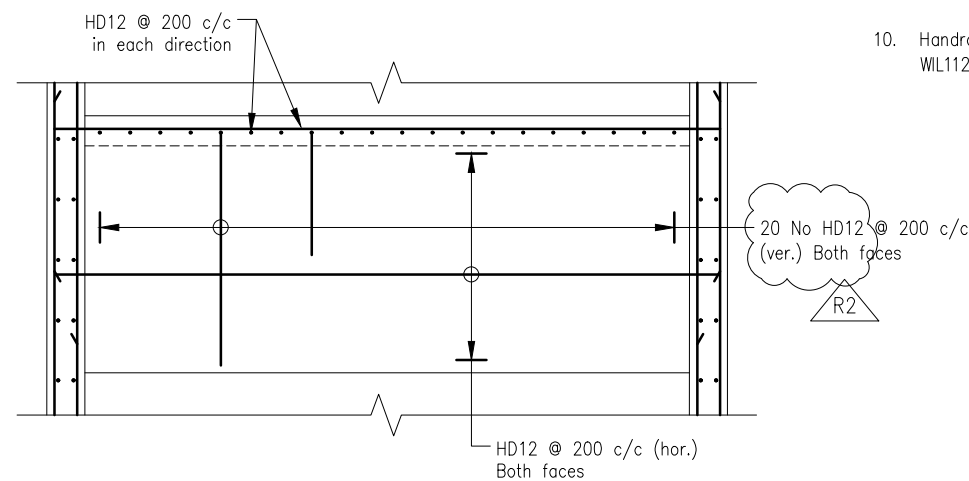
HD12 @ 200 c/c (hor.)

HD12 @ 200 c/c (ver.)
Inside face

HD16 @ 200 c/c (ver.)
Outside face



SECTION D-D



ELEVATION ON BAFFLE WALL

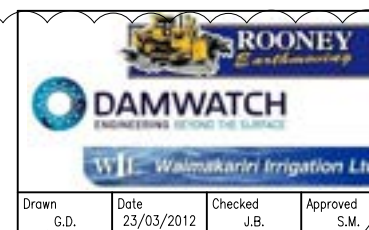
20 No HD12 @ 200 c/c
(ver.) Both faces
R2

NOTES:

- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strengths is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
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- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WL1125/30/131)

Revision	By	Date
R1 GENERAL UPDATES, TOO NUMEROUS TO CLOUD	S.M.	3/12/12
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

R2



Title WAIMAKARIRI IRRIGATION LTD. WRIGHTS ROAD STORAGE PONDS		Revision R2	
Project E2131		Drawing Number WIL1125/30/158	
Scale 1:50		Damwatch Engineering Ltd	
Drawn G.D.	Date 23/03/2012	Checked J.B.	Approved S.M.

ENVIRONMENT CANTERBURY

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21 DECEMBER 2021

Revision	By	Date
R1 REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

200 mm

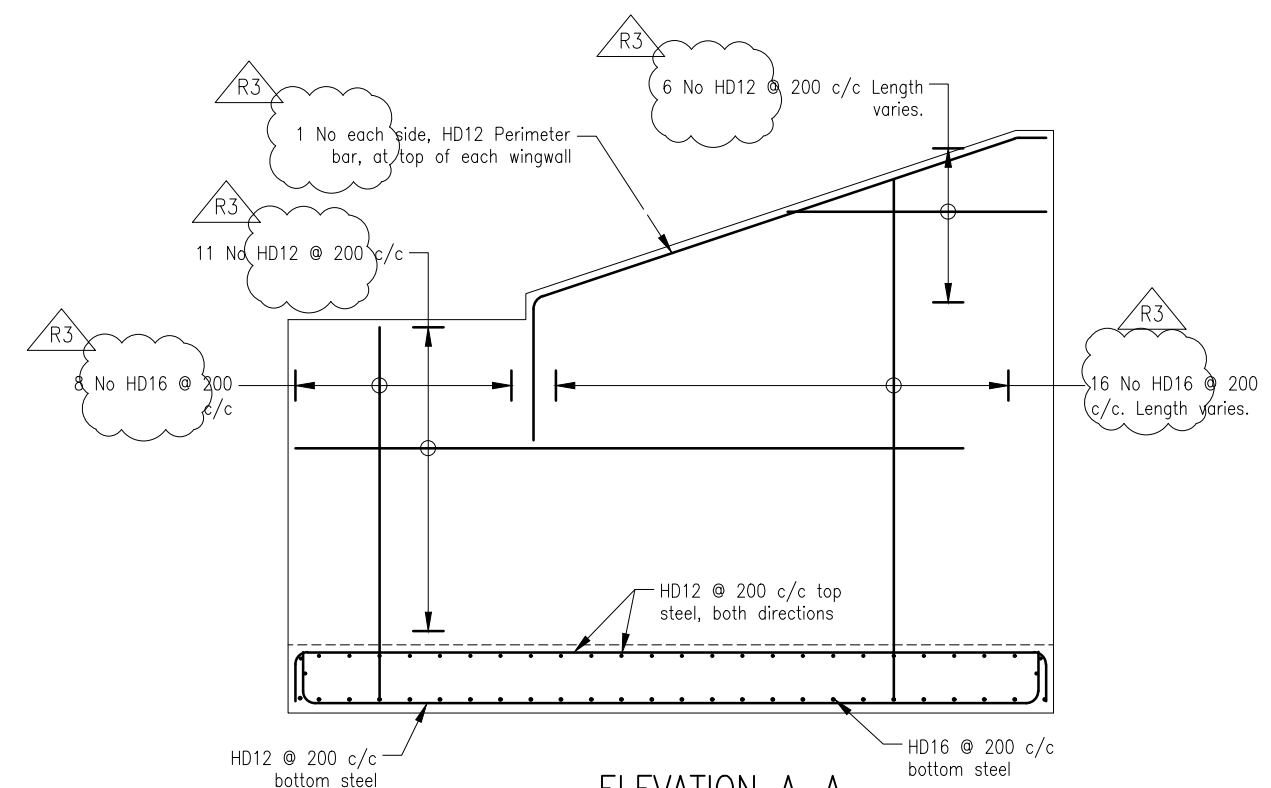
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50

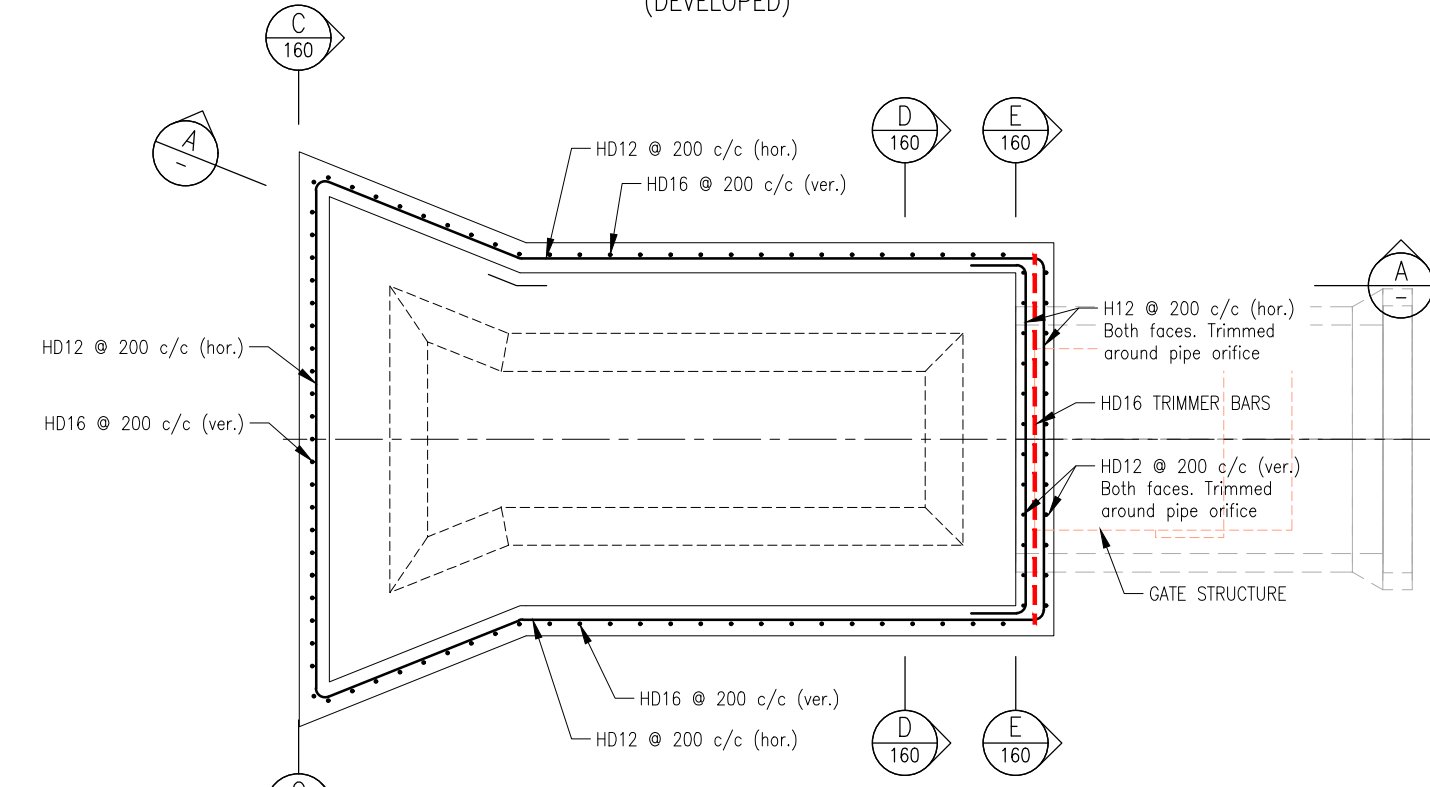
10 mm

0

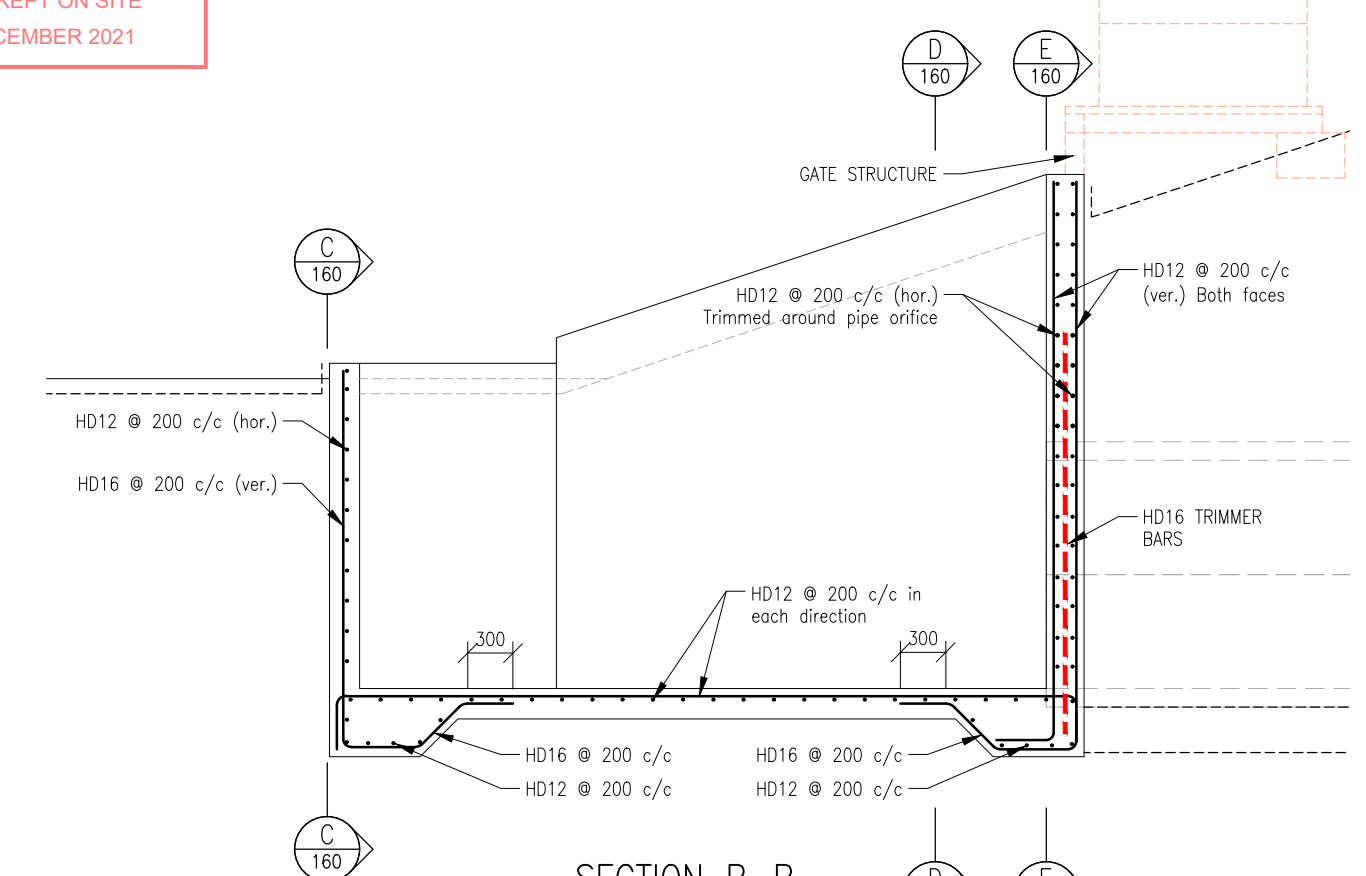
10 September 2021 12:17pm



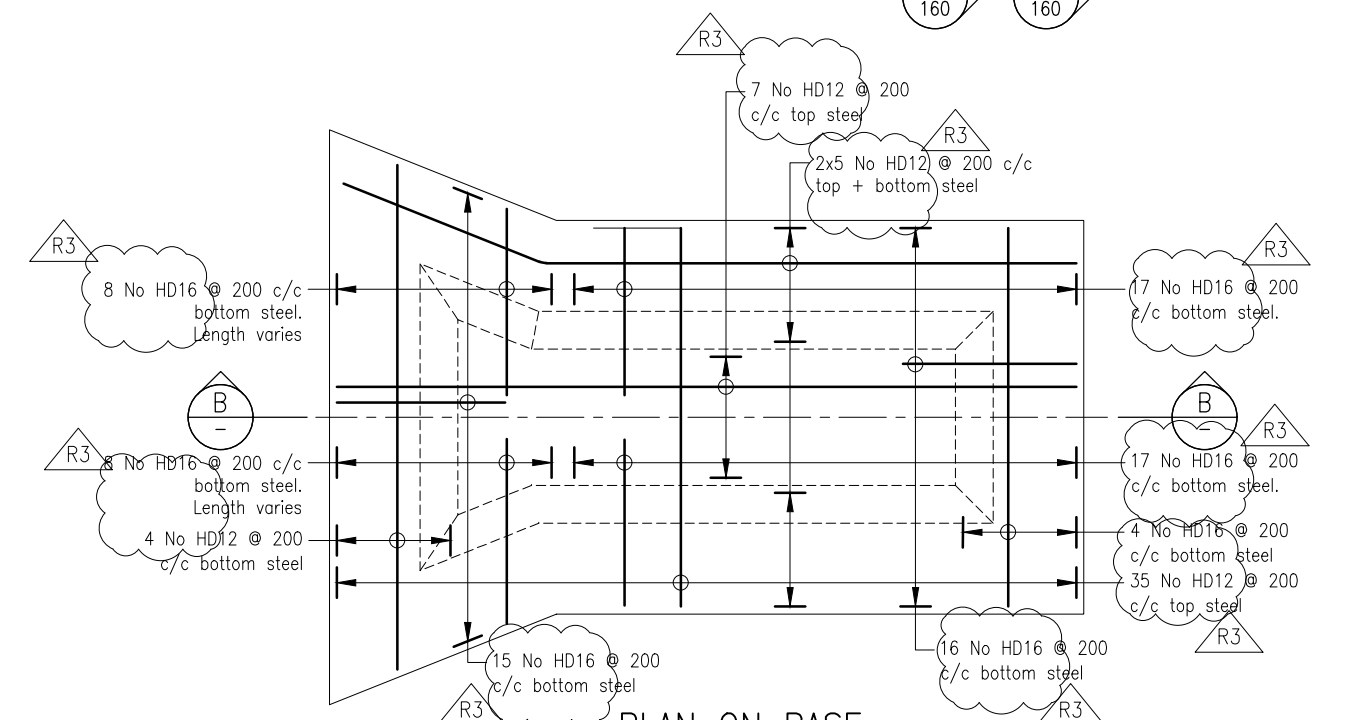
ELEVATION A-A
(DEVELOPED)



PLAN ON BASE
SHOWING WALL STEEL



SECTION B-B



PLAN ON BASE
SHOWING BASE STEEL

WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G3 OUTLET STRUCTURE
INLET REINFORCEMENT DETAILS - SHEET 1 OF 2

Project E2131 Drawing Number WIL1125/30/159

Scale 1:50

Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

Damwatch Engineering Ltd

Revision R3

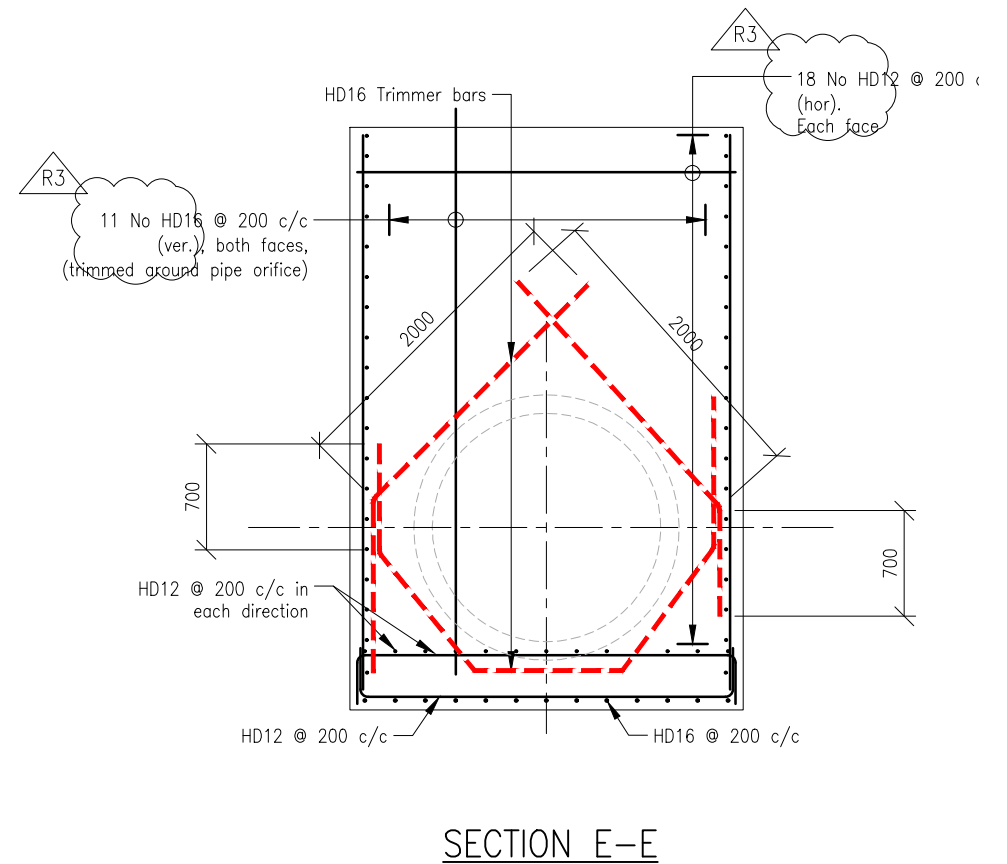
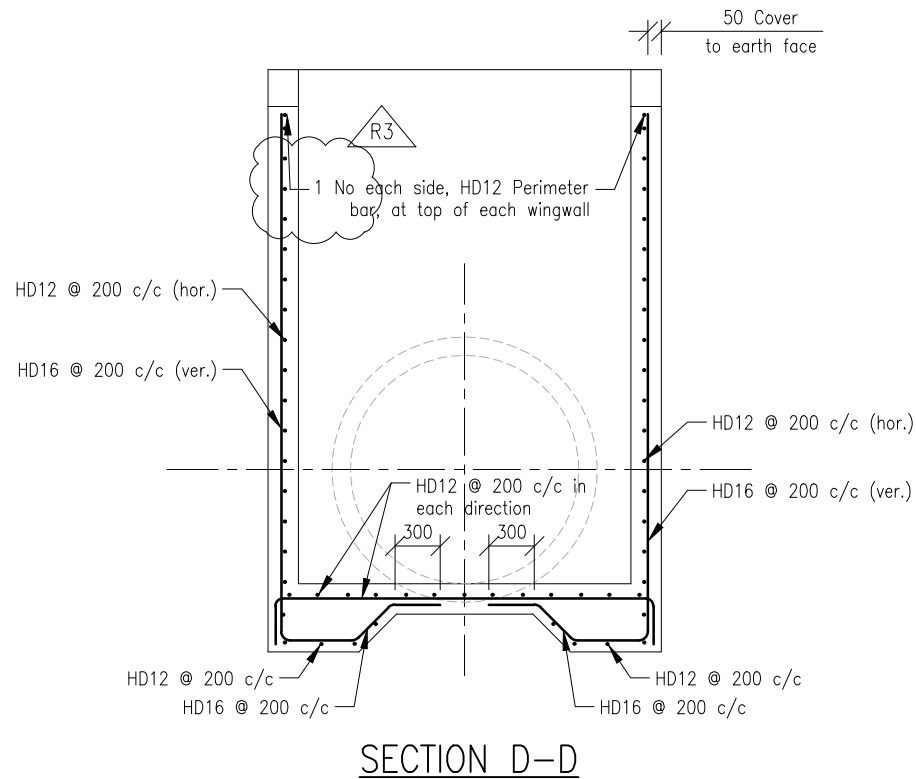
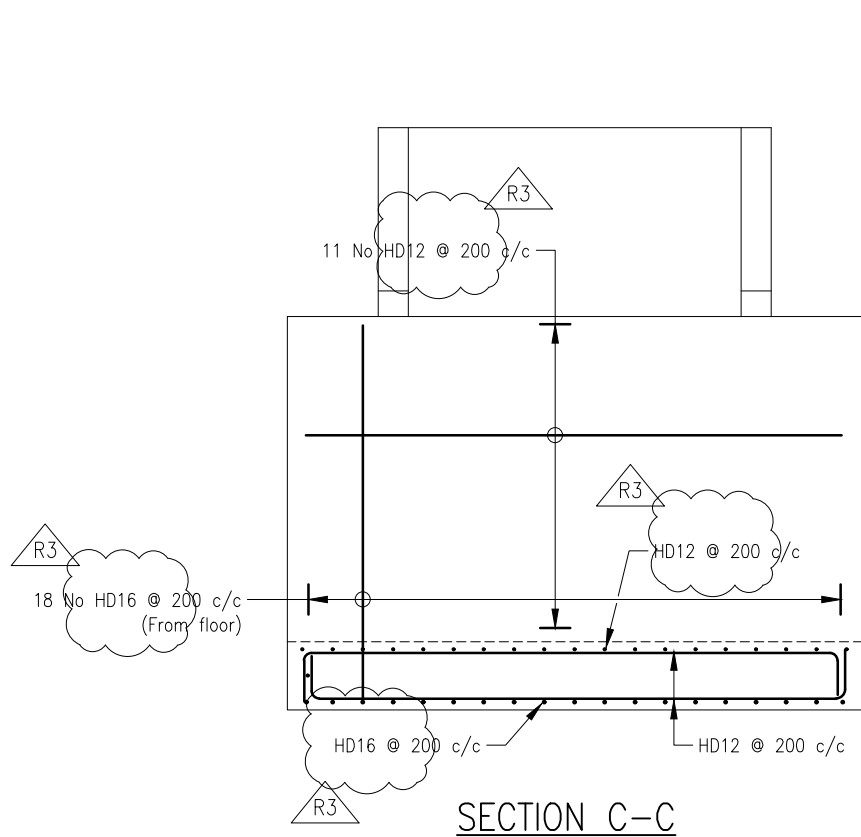
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100
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10 mm
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10 September 2021 12:29pm

Graphic Scales 1:50 0 1 2 m

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



NOTES:

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- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
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- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WL1125/30/131)

ROONEY Engineering
DAMWATCH Engineering Limited
WIL Waimakariri Irrigation Ltd.

Title
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS
CONTROL STRUCTURES - G3 OUTLET STRUCTURE
INLET - REINFORCEMENT DETAILS - SHEET 2 OF 2

Project E2131
Drawing Number WIL1125/30/160
Scale 1:50

Drawn G.D.
Date 23/03/2012
Checked J.B.
Approved S.M.

Damwatch Engineering Ltd

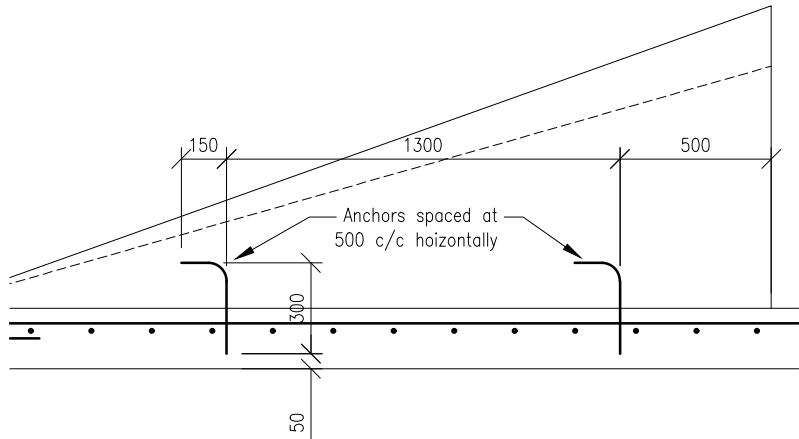
Revision
R3

NOTES:

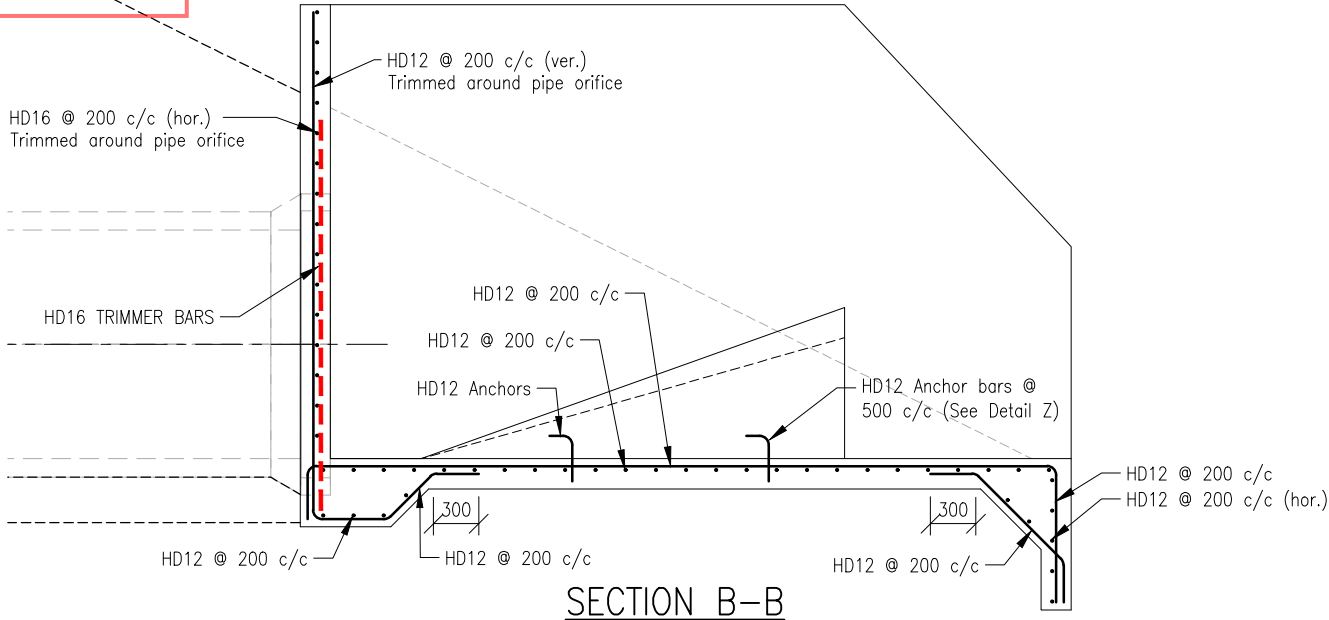
- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
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- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

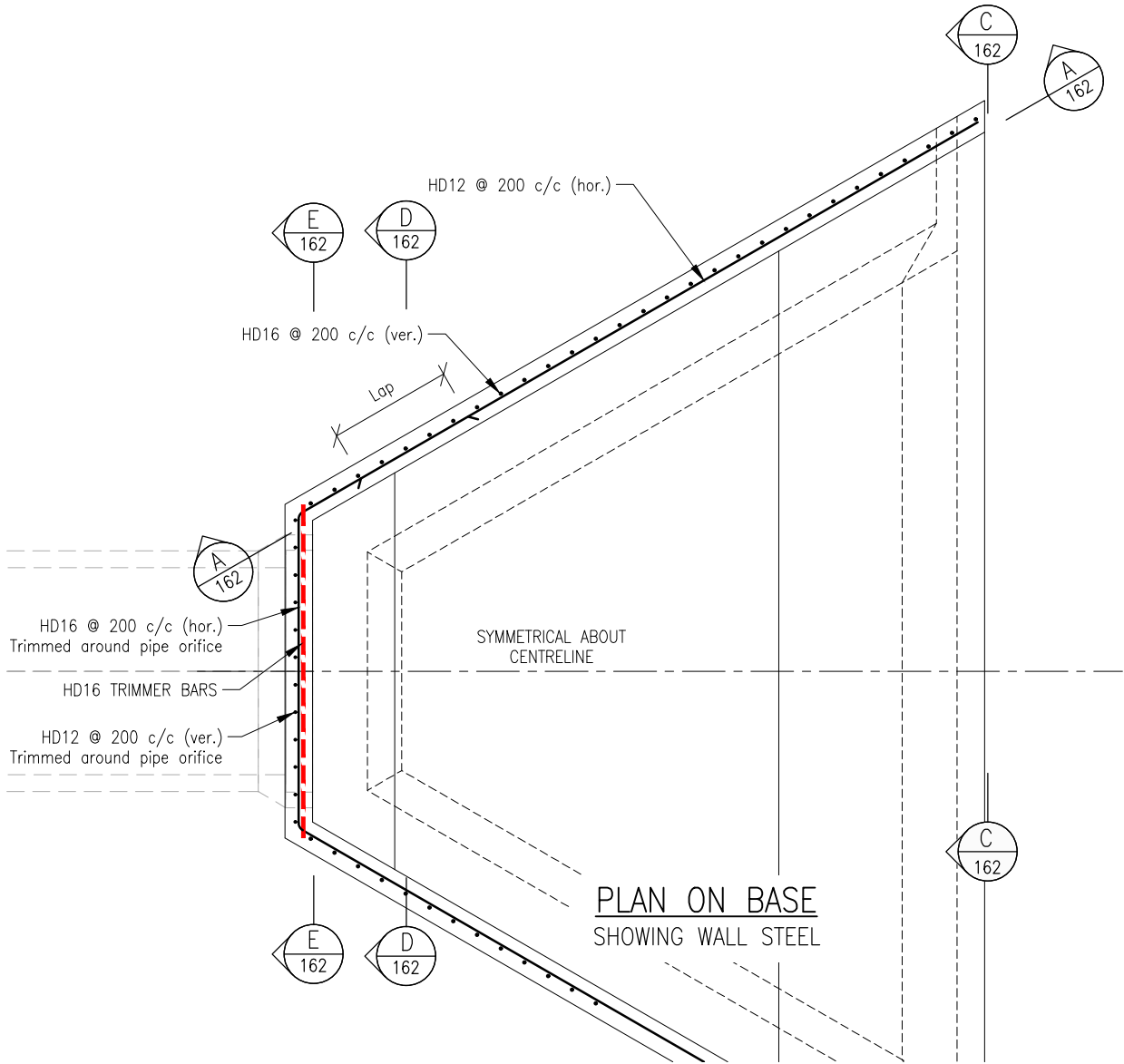
Revision	By	Date
R1 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



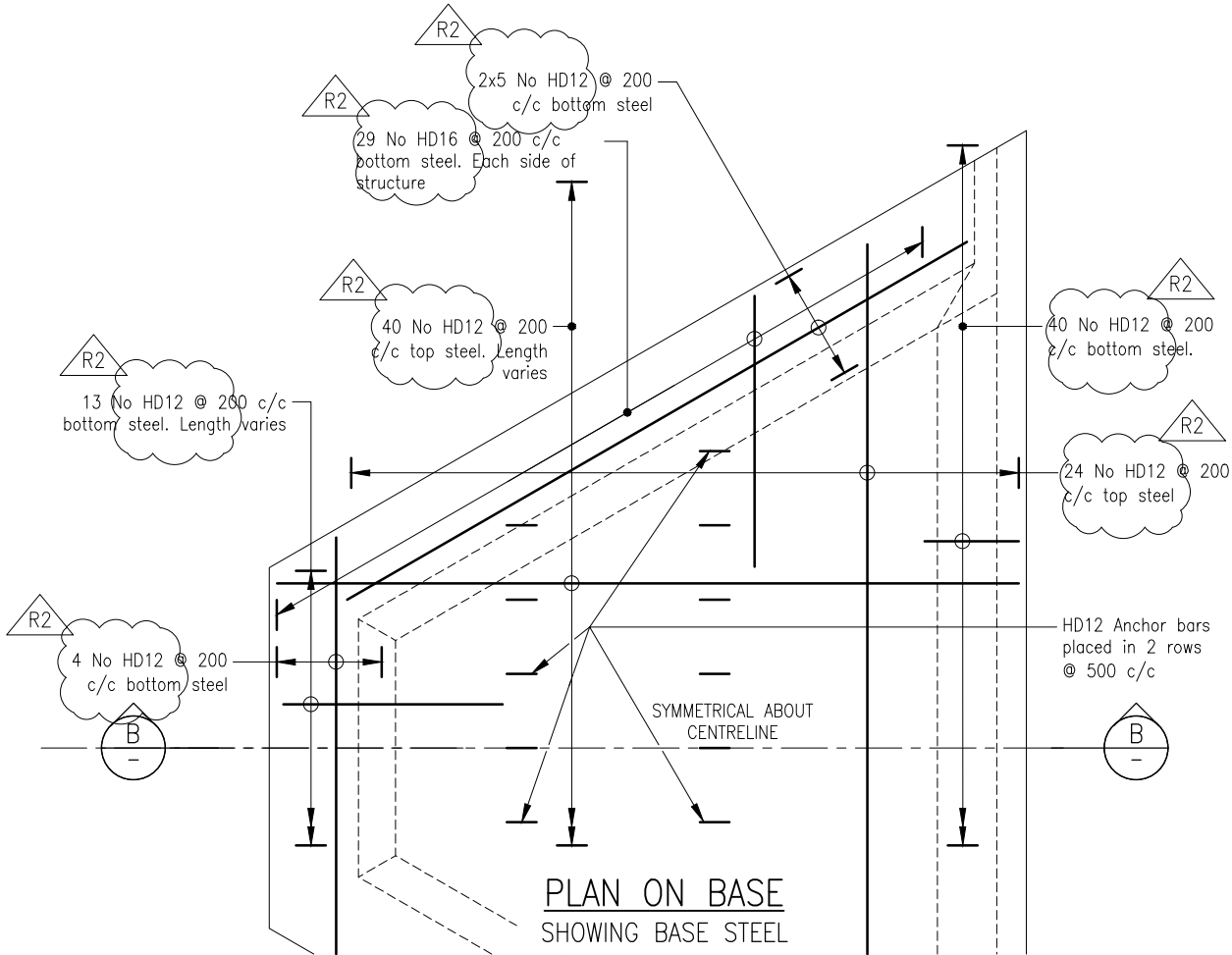
DETAIL Z - ANCHORS
SCALE 1:25



SECTION B-B



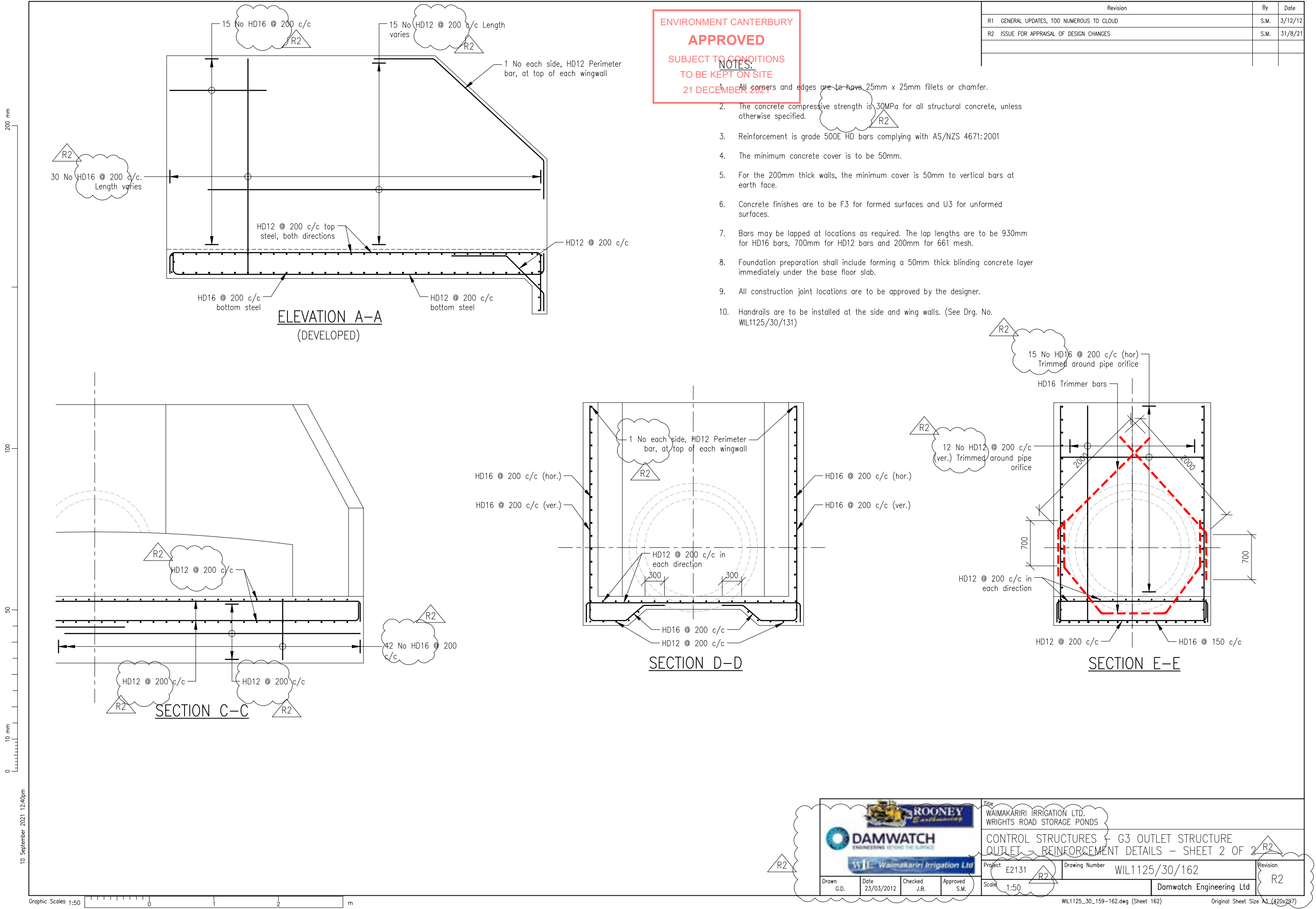
PLAN ON BASE
SHOWING WALL STEEL



PLAN ON BASE
SHOWING BASE STEEL



Title WAIMAKARIRI IRRIGATION LTD. WRIGHTS ROAD STORAGE PONDS		Project E2131		Drawing Number WIL1125/30/161		Revision R2	
CONTROL STRUCTURES - G3 OUTLET STRUCTURE OUTLET REINFORCEMENT DETAILS - SHEET 1 OF 2		Scale 1:50		Damwatch Engineering Ltd		R2	
Drawn G.D.	Date 23/03/2012	Checked J.B.	Approved S.M.				

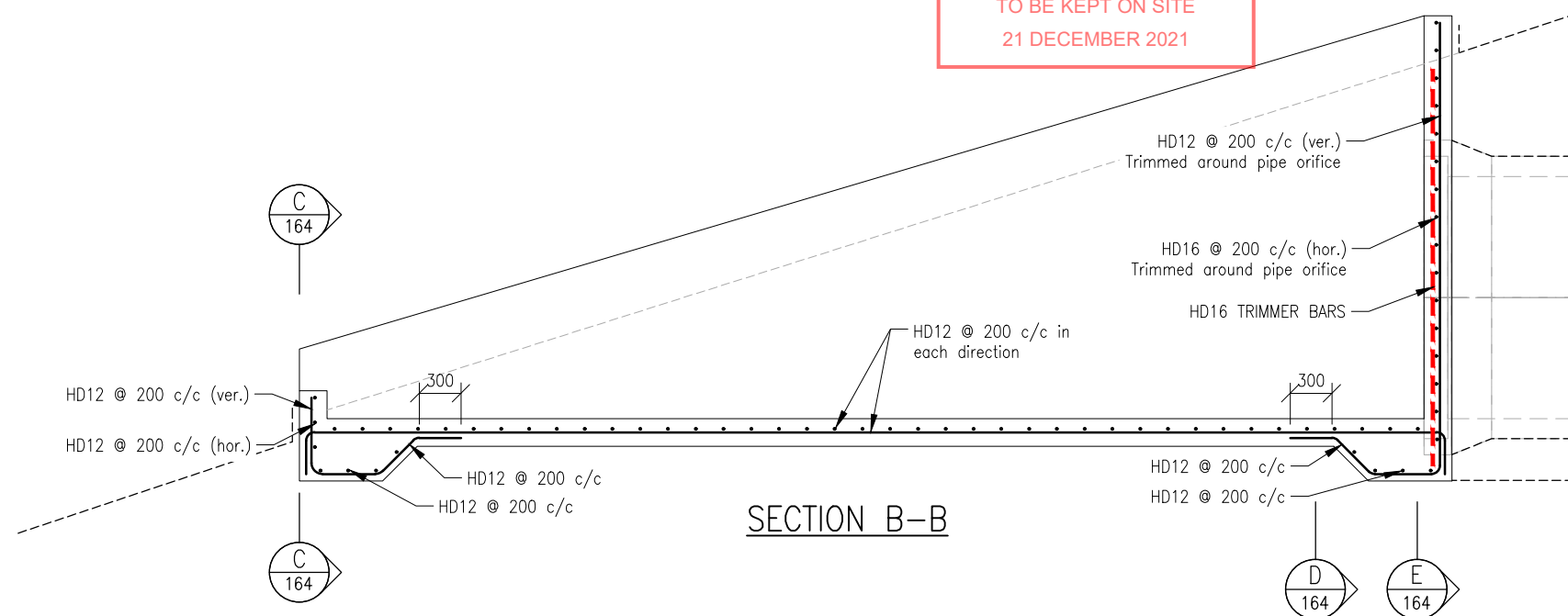


ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

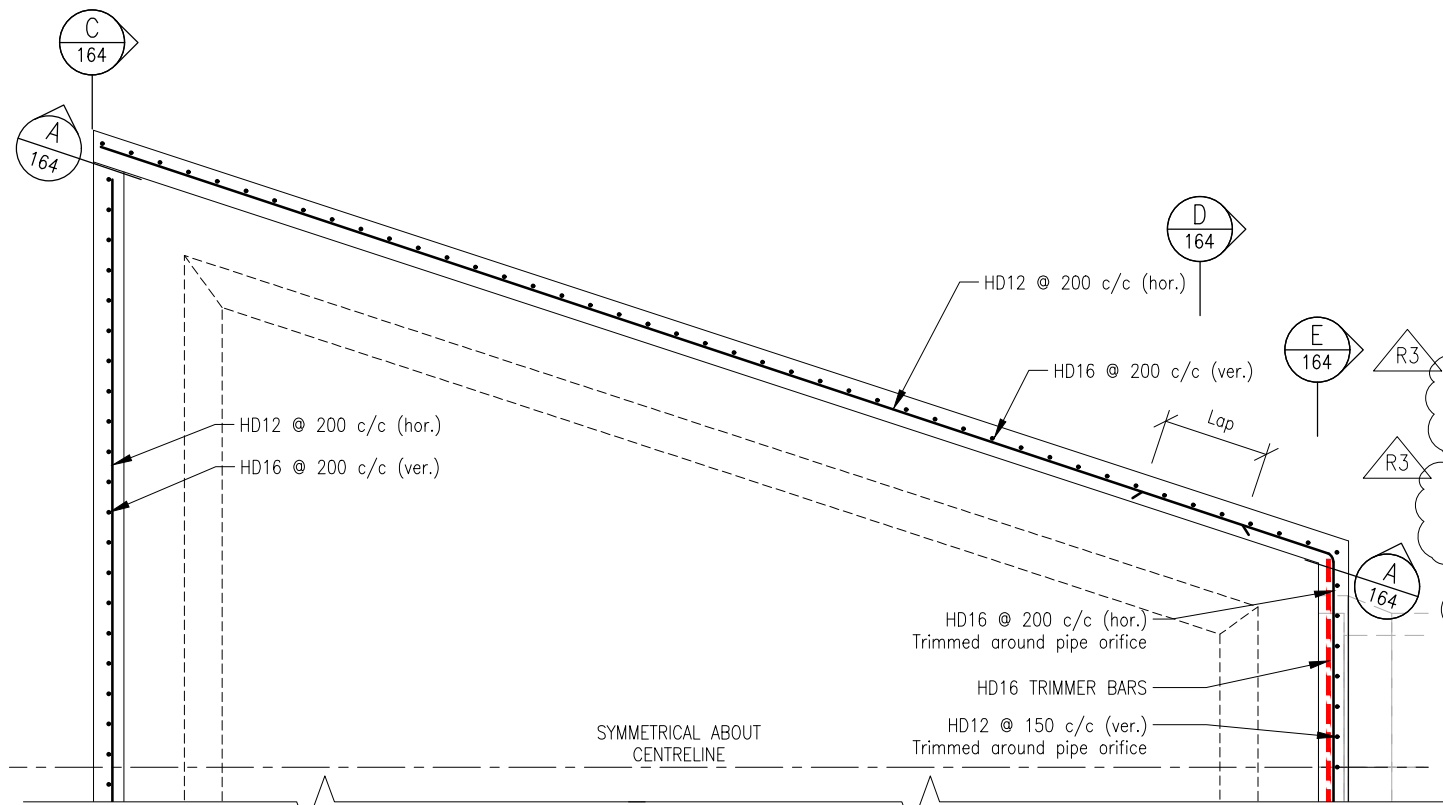
Revision	By	Date
R1 INLET DIMENSIONS REDUCED. REINFORCEMENT MODIFIED ACCORDINGLY	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

NOTES:

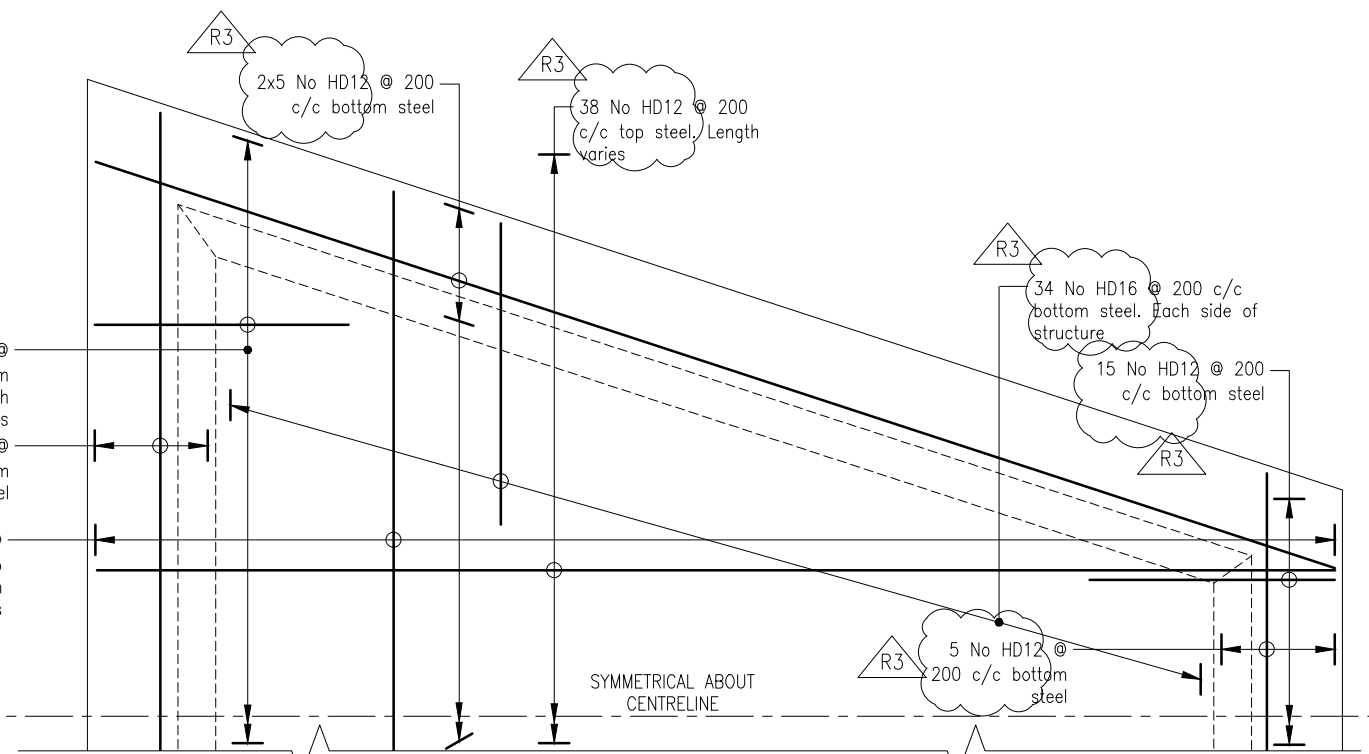
- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)



SECTION B-B



PLAN ON BASE
SHOWING WALL STEEL



PLAN ON BASE
SHOWING BASE STEEL

10 September 2021 12:47pm

Graphic Scales 1:50 0 1 2 m



WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G4 OUTLET STRUCTURE
INLET - REINFORCEMENT DETAILS - SHEET 1 OF 2

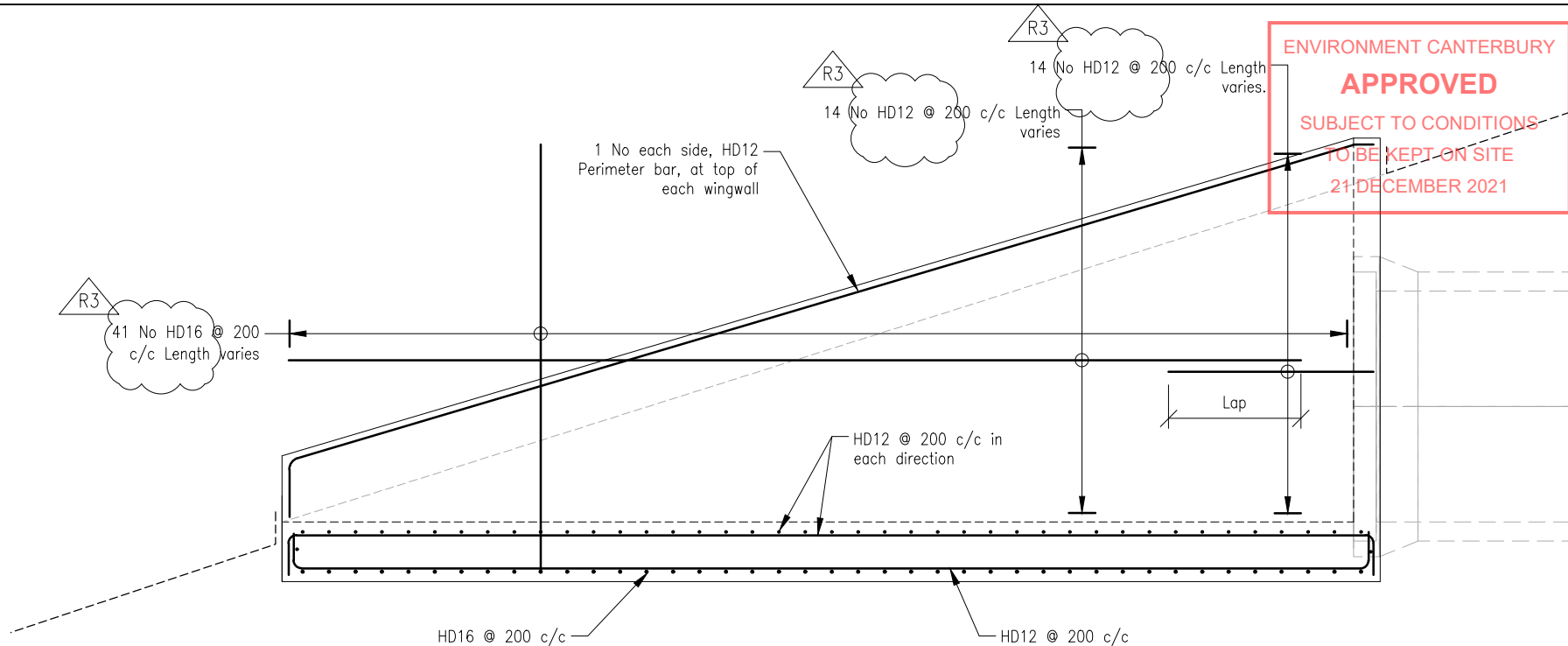
Project	E2131	Drawing Number	WIL1125/30/163	Revision	R3
Scale	1:50	Damwatch Engineering Ltd			

WIL1125_30_163-167.dwg (Sheet 163) Original Sheet Size A3 (420x297)

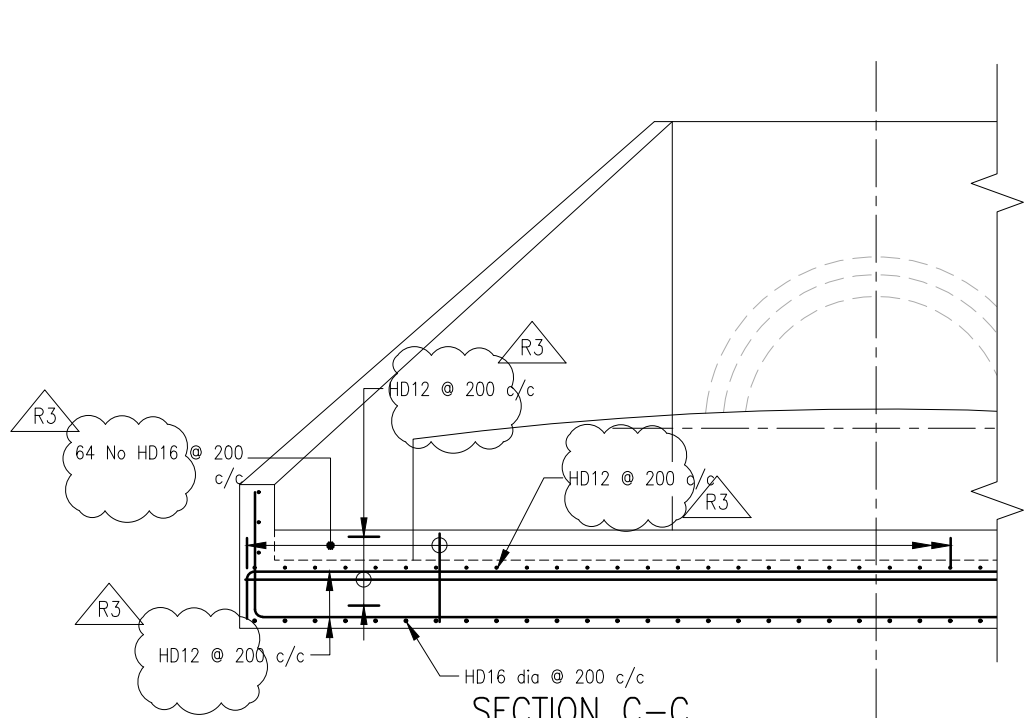
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10 mm
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10 September 2021 12:52pm

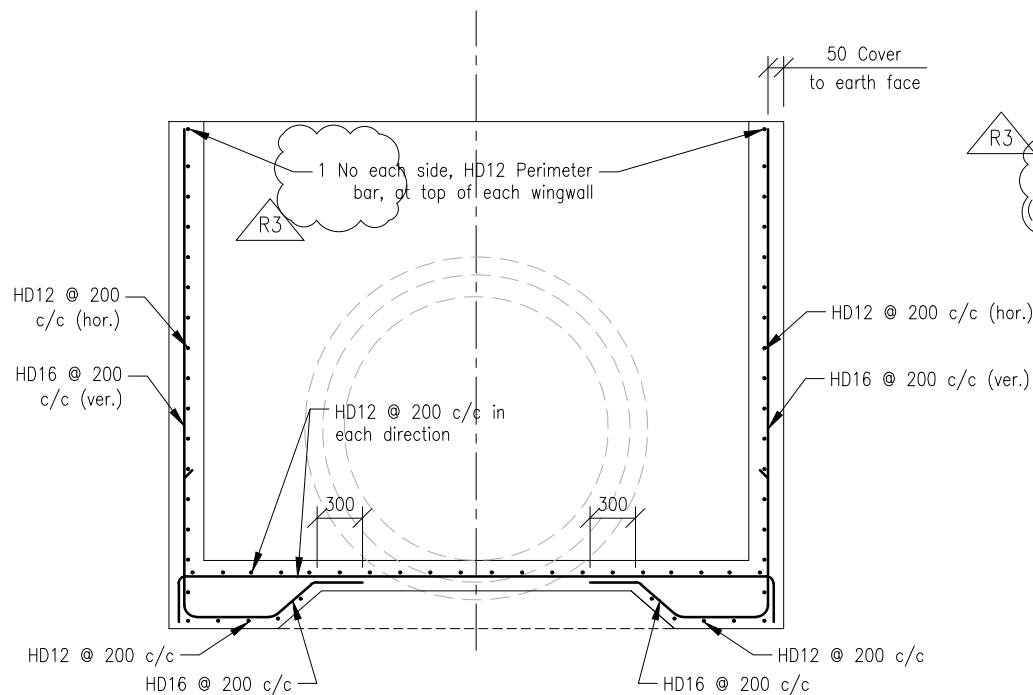
Graphic Scales 1:50 0 1 2 m



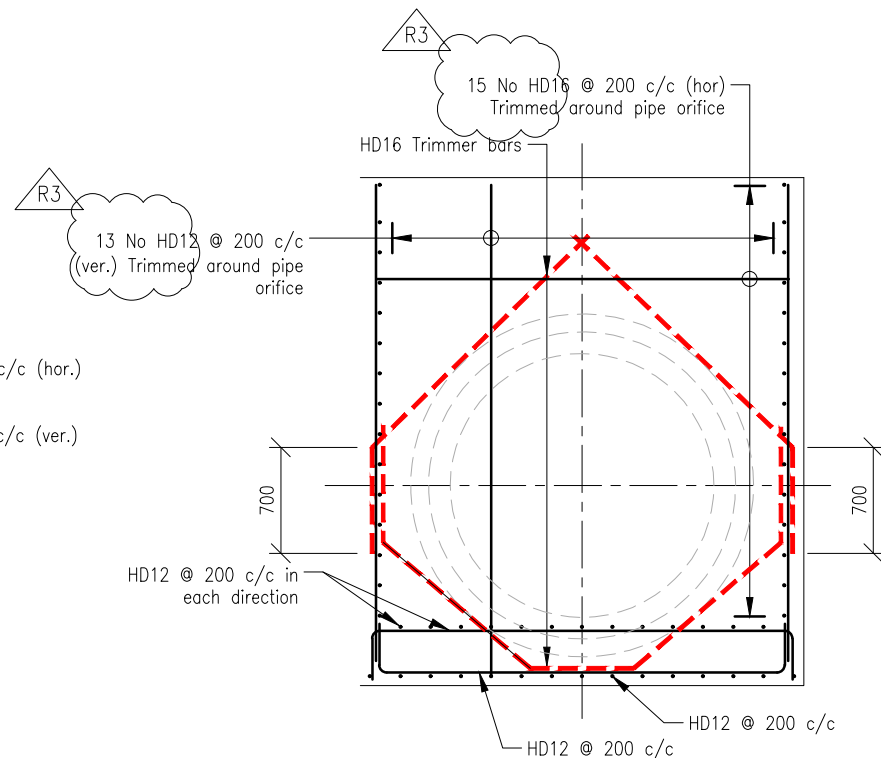
ELEVATION A-A



SECTION C-C



SECTION D-D



SECTION E-E

NOTES:

- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

Revision	By	Date
R1 INLET DIMENSIONS REDUCED, REINFORCEMENT MODIFIED ACCORDINLY	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

ROONEY
DAMWATCH
WIL Waimakariri Irrigation Ltd

Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

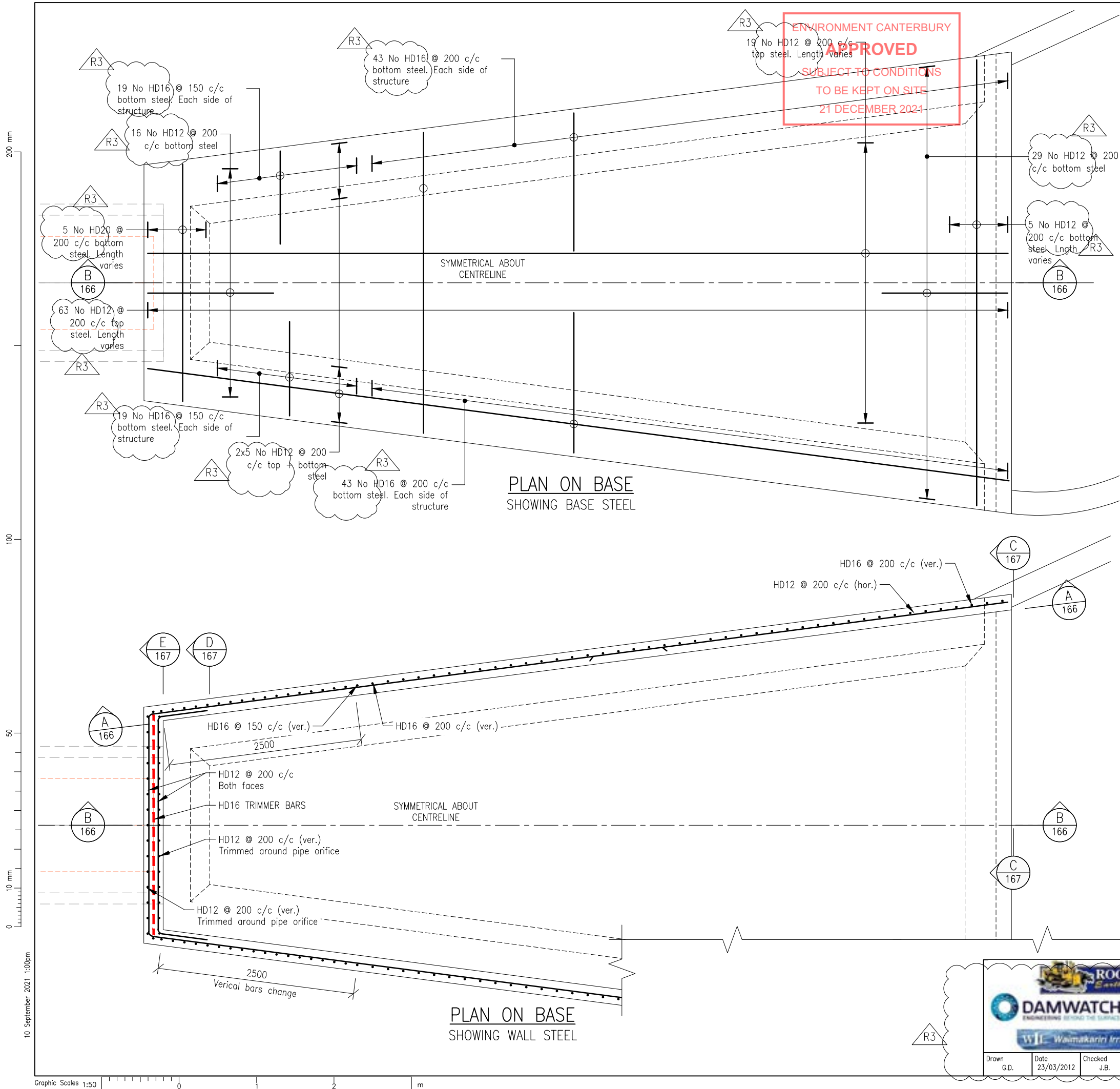
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G4 OUTLET STRUCTURE
INLET - REINFORCEMENT DETAILS - SHEET 2 OF 2

Project E2131 Drawing Number WIL1125/30/164 Scale 1:50

Damwatch Engineering Ltd

Revision R3



Revision	By	Date
R1	OUTLET DIMENSIONS MODIFIED & REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M. 30/4/12
R2	GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M. 3/12/12
R3	ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M. 31/8/21

NOTES:

- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

Project	E2131	Drawing Number	WIL1125/30/165	Revision	R3
Scale	1:50	Damwatch Engineering Ltd			

WIL1125_30_163-167.dwg (Sheet 165) Original Sheet Size A3 (420x297)

ENVIRONMENT CANTERBURY

APPROVED

SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 OUTLET DIMENSIONS MODIFIED & REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

NOTES:

- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

200 mm

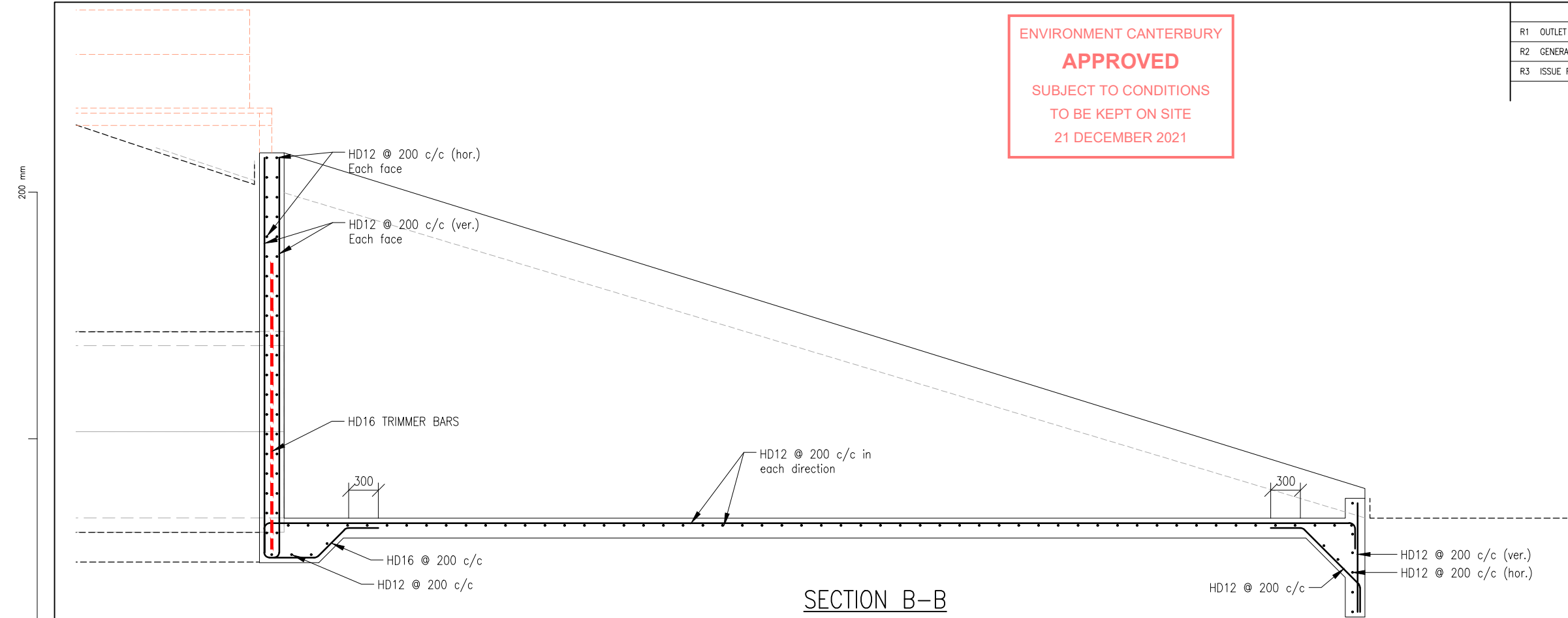
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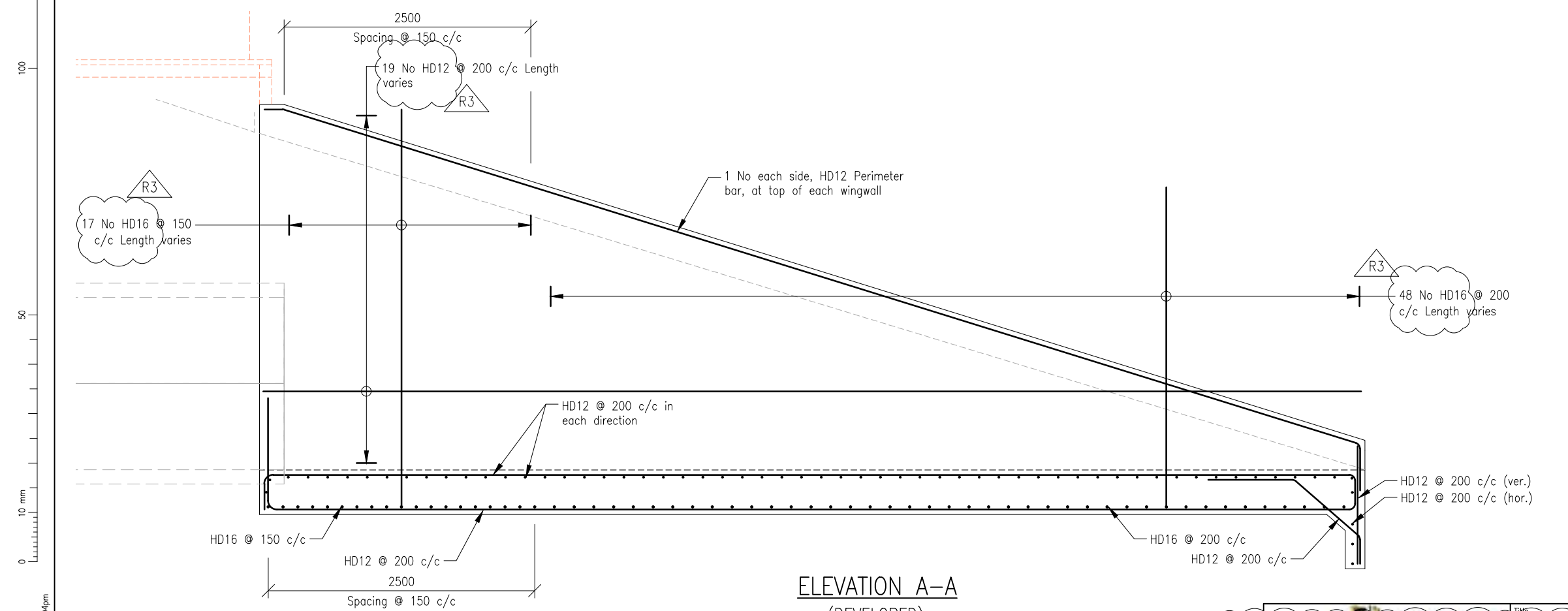
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10 September 2021 1:04pm



SECTION B-B



ELEVATION A-A
(DEVELOPED)

WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES – G4 INTERPOND STRUCTURE
OUTLET – REINFORCEMENT DETAILS – SHEET 2 OF 3

Project E2131 Drawing Number WIL1125/30/166

Scale 1:50 Damwatch Engineering Ltd

Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

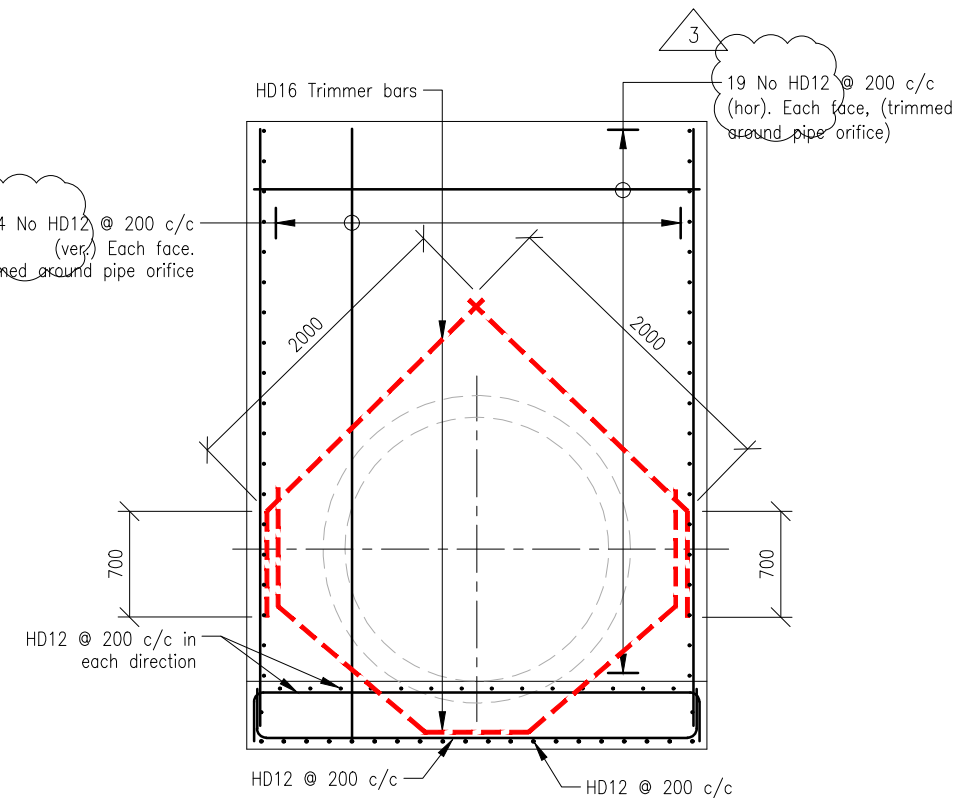
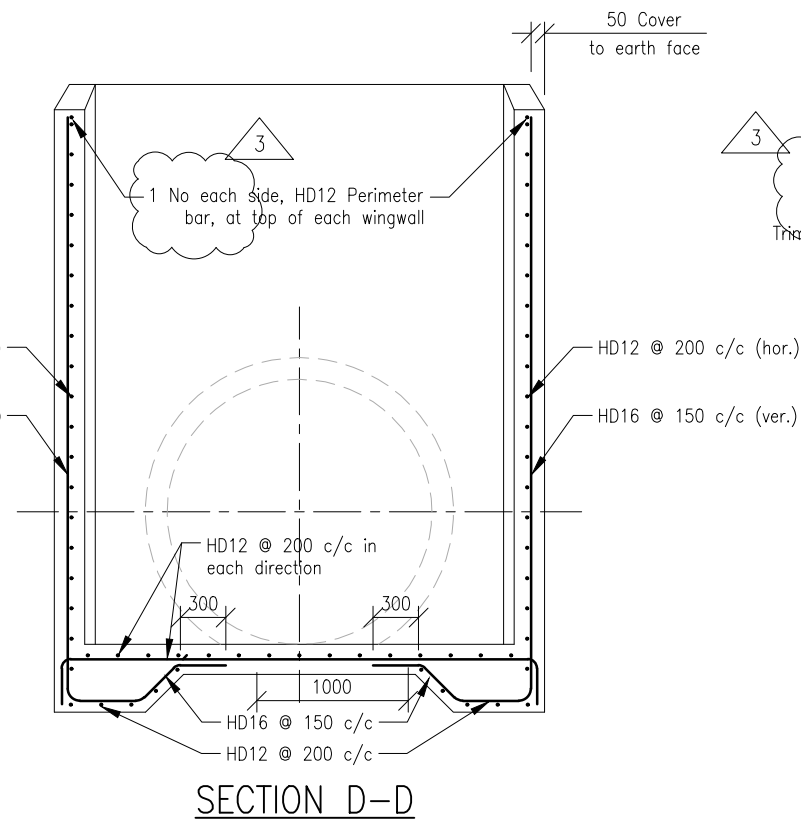
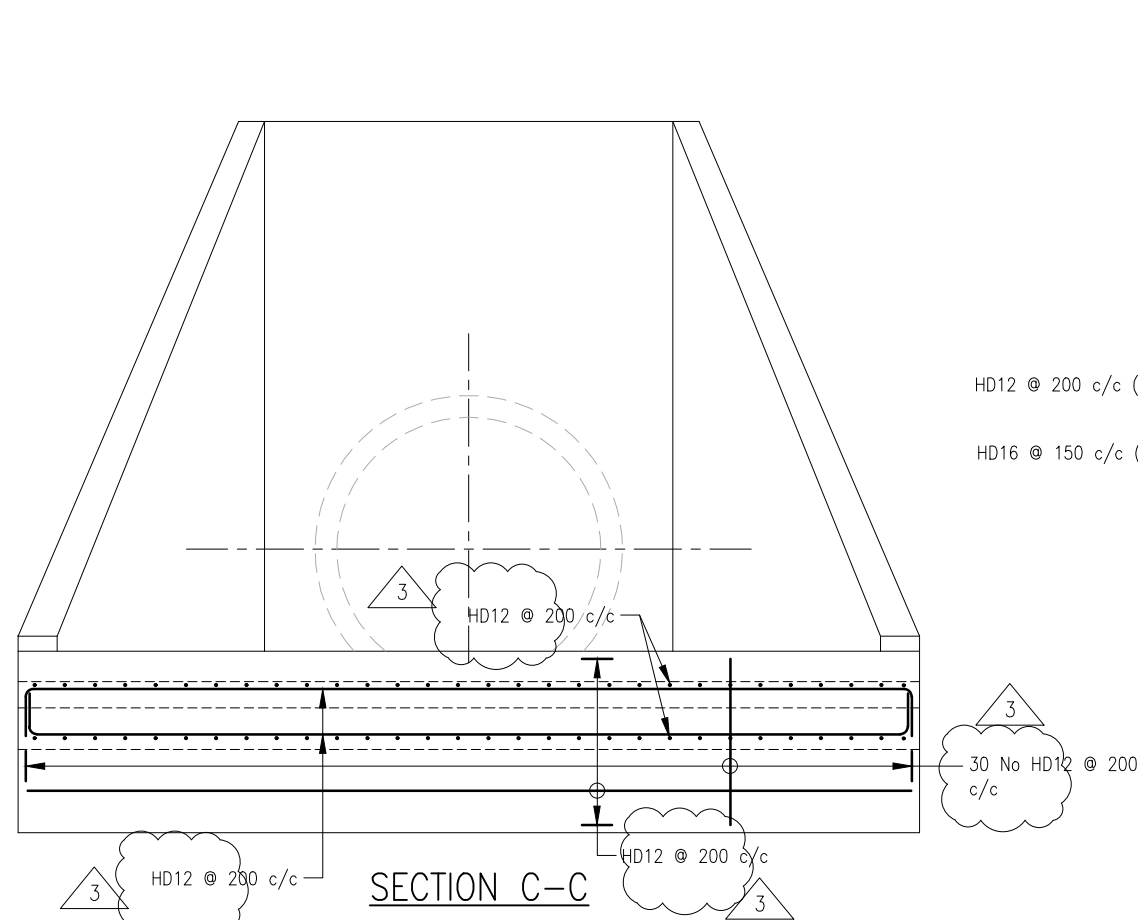
Revision R3

200 mm
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10 mm
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10 September 2021 1:09pm

Graphic Scales 1:50 0 1 2 m

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 OUTLET DIMENSIONS MODIFIED & REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



NOTES:

- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
- Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
- All construction joint locations are to be approved by the designer.
- Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

WIL1125_30_163-167.dwg (Sheet 167)

WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES – G4 INTERPOND STRUCTURE
INLET – REINFORCEMENT DETAILS – SHEET 3 OF 3

Project E2131 Drawing Number WIL1125/30/167

Scale 1:50 Damwatch Engineering Ltd

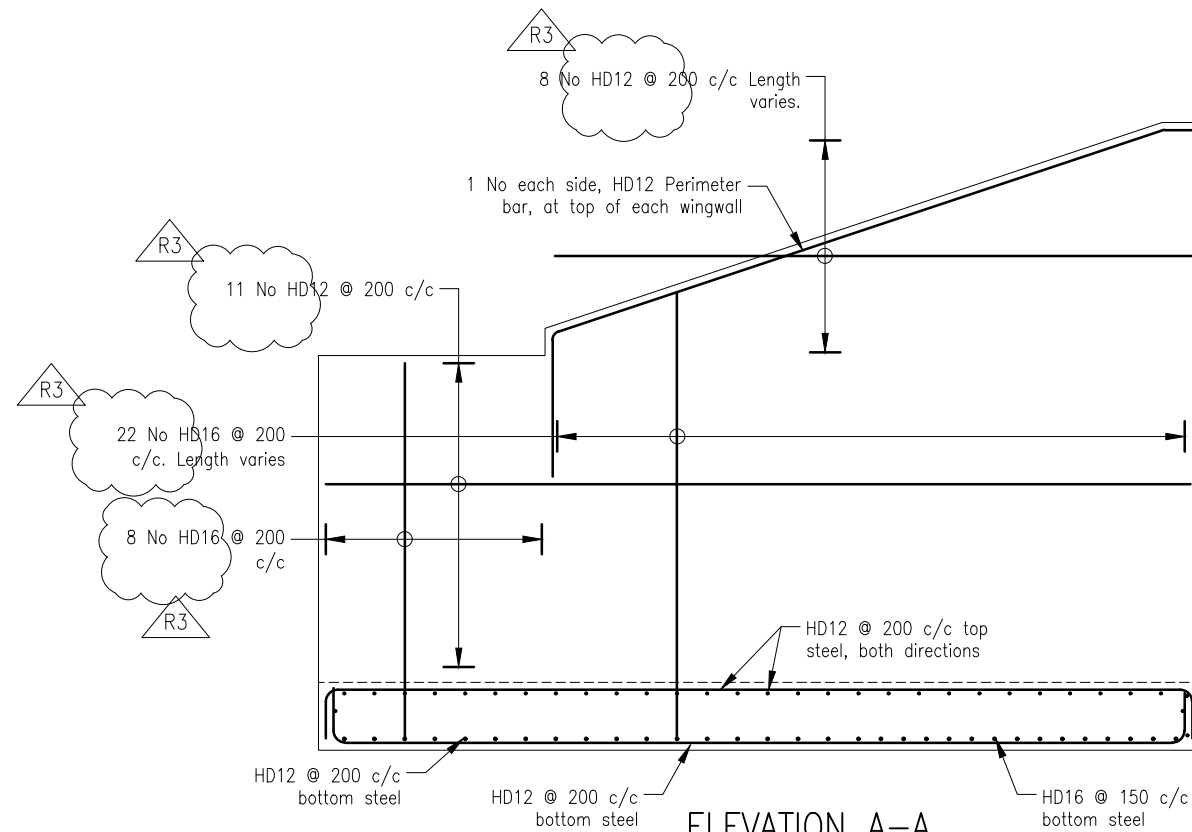
Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

Revision R3

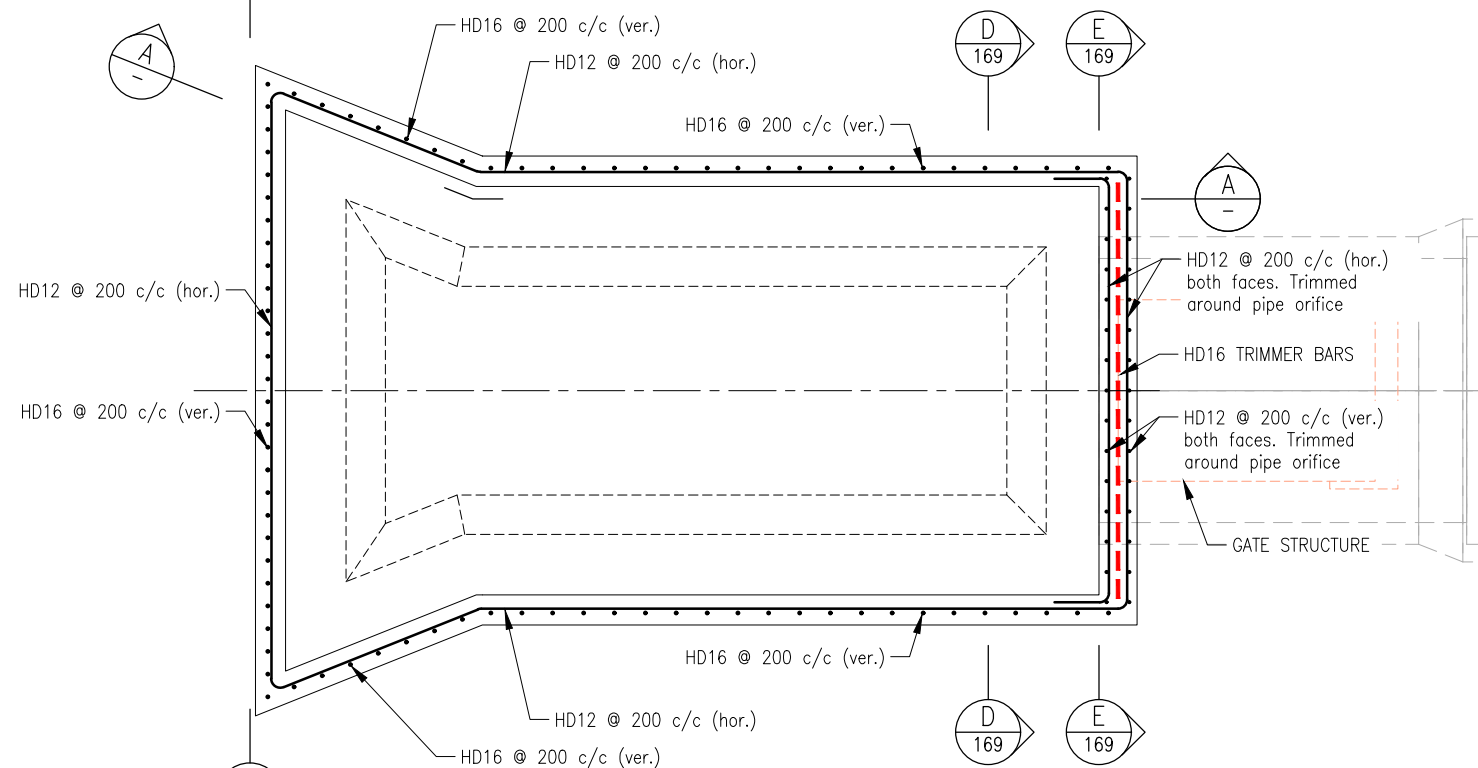
ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

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10 September 2021 1:17pm



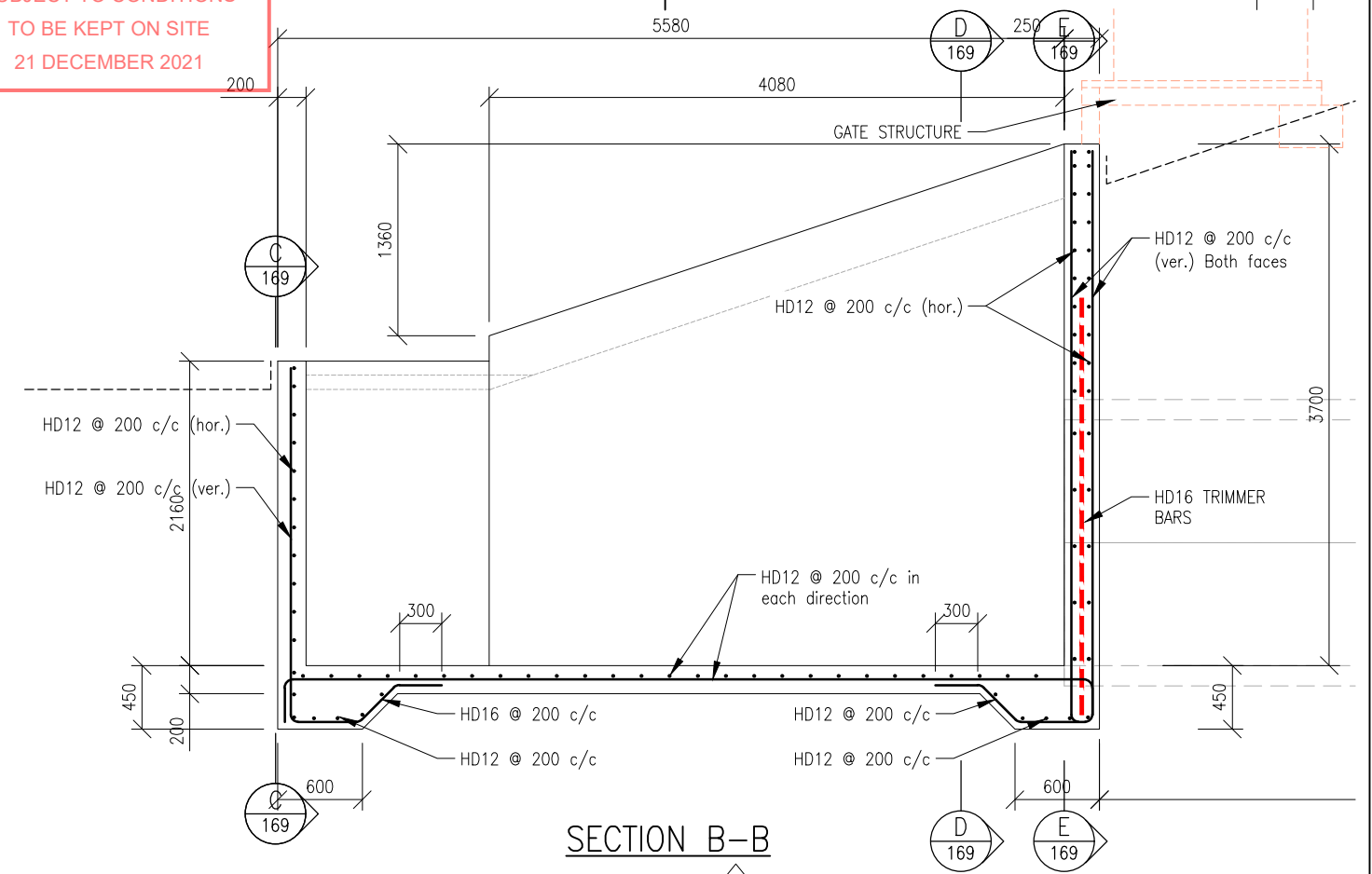
**ELEVATION A-A
(DEVELOPED)**



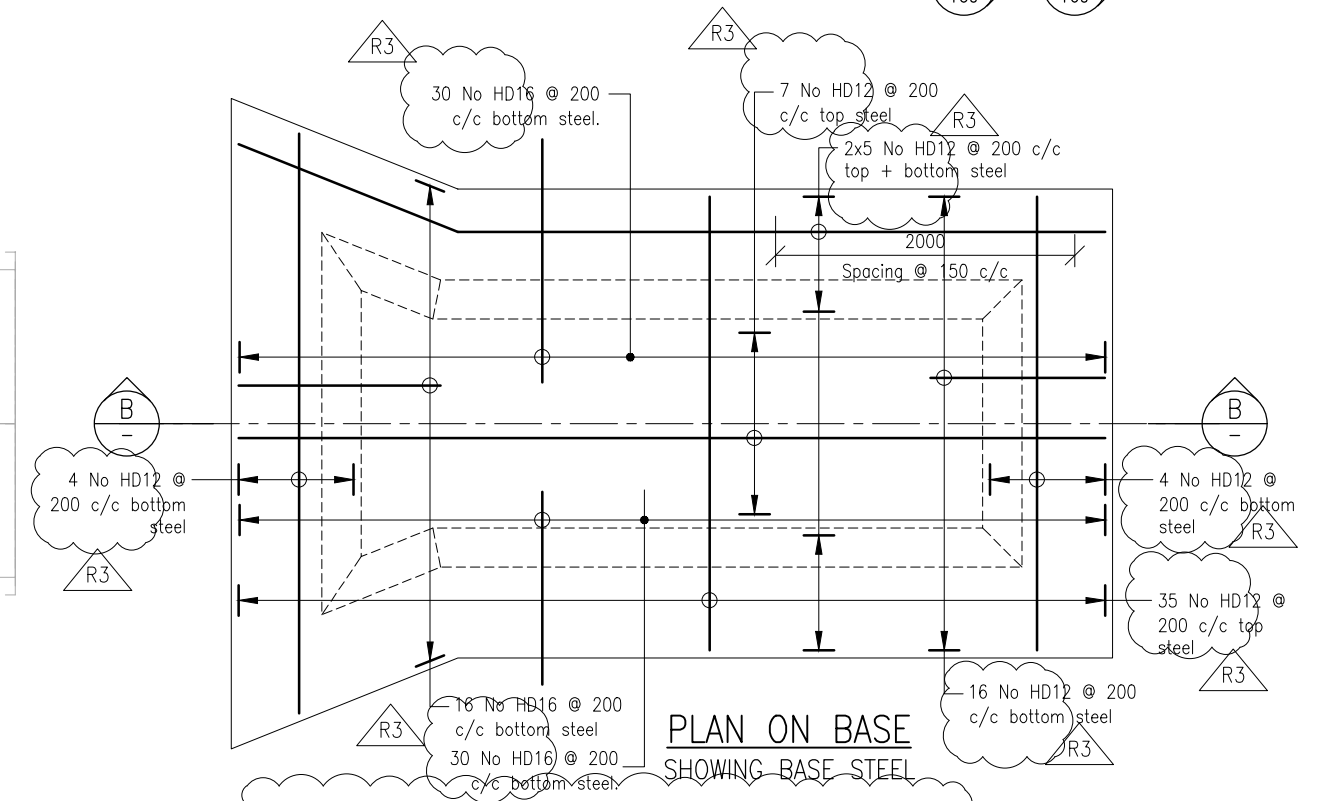
**PLAN ON BASE
SHOWING WALL STEEL**

NOTE:

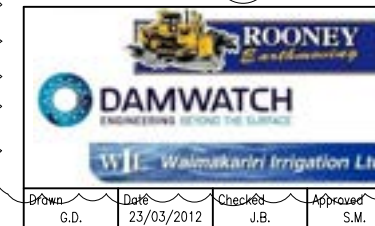
- FOR STANDARD REINFORCEMENT NOTES REFER TO DRAWING No. WIL125/30/169



SECTION B-B



**PLAN ON BASE
SHOWING BASE STEEL**



Title
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G5 INTERPOND STRUCTURE
INLET - REINFORCEMENT DETAILS - SHEET 1 OF 2

Project E2131/R3 Drawing Number WIL1125/30/168

Scale 1:50

DamWatch Services Limited

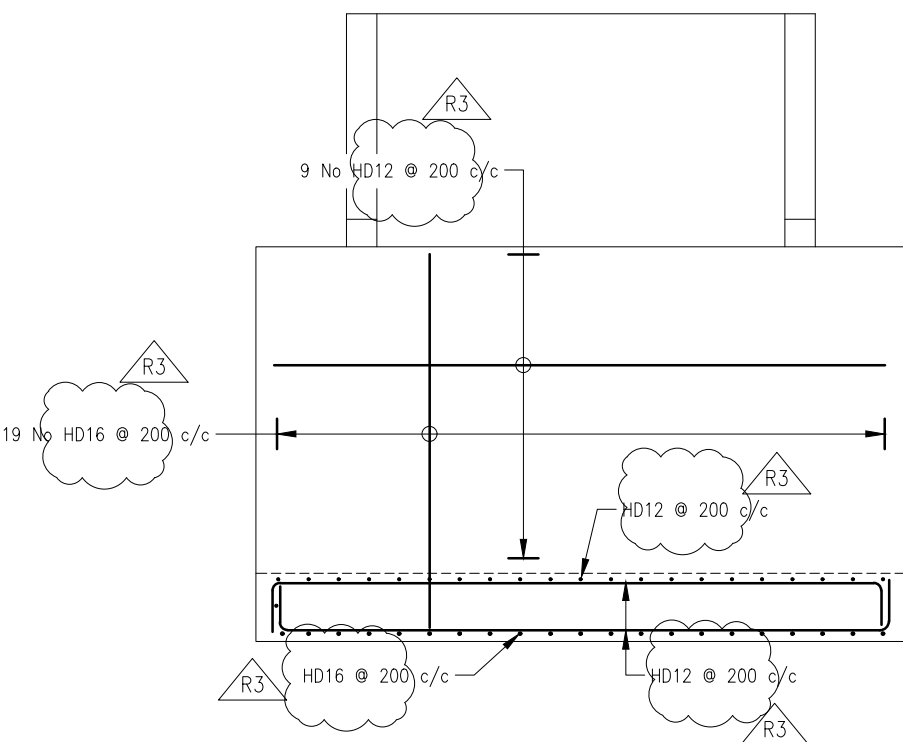
Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

Revision
R3

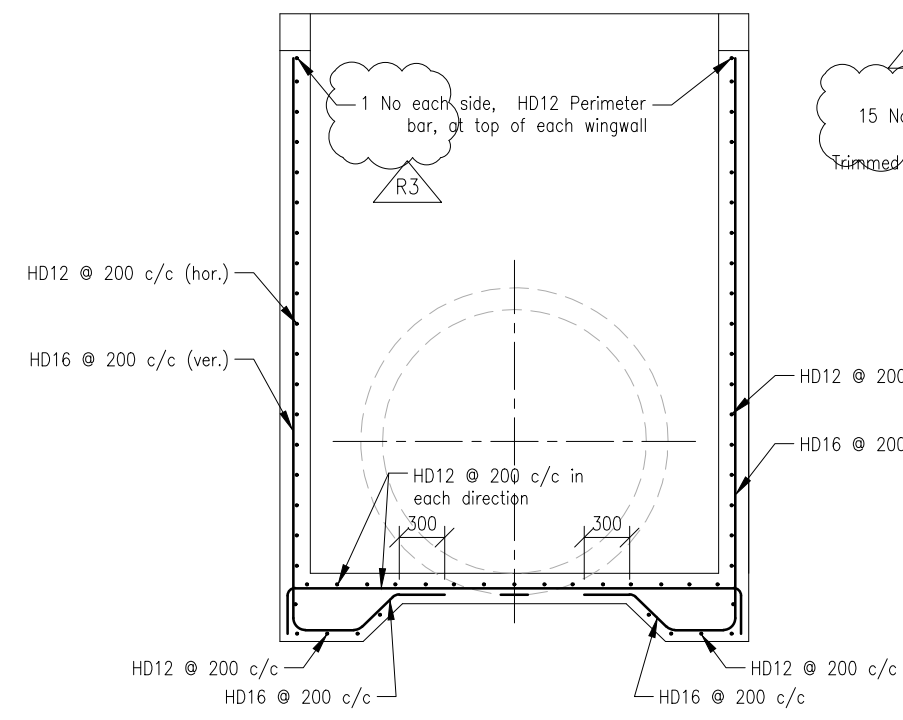
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10 September 2021 1:20pm

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

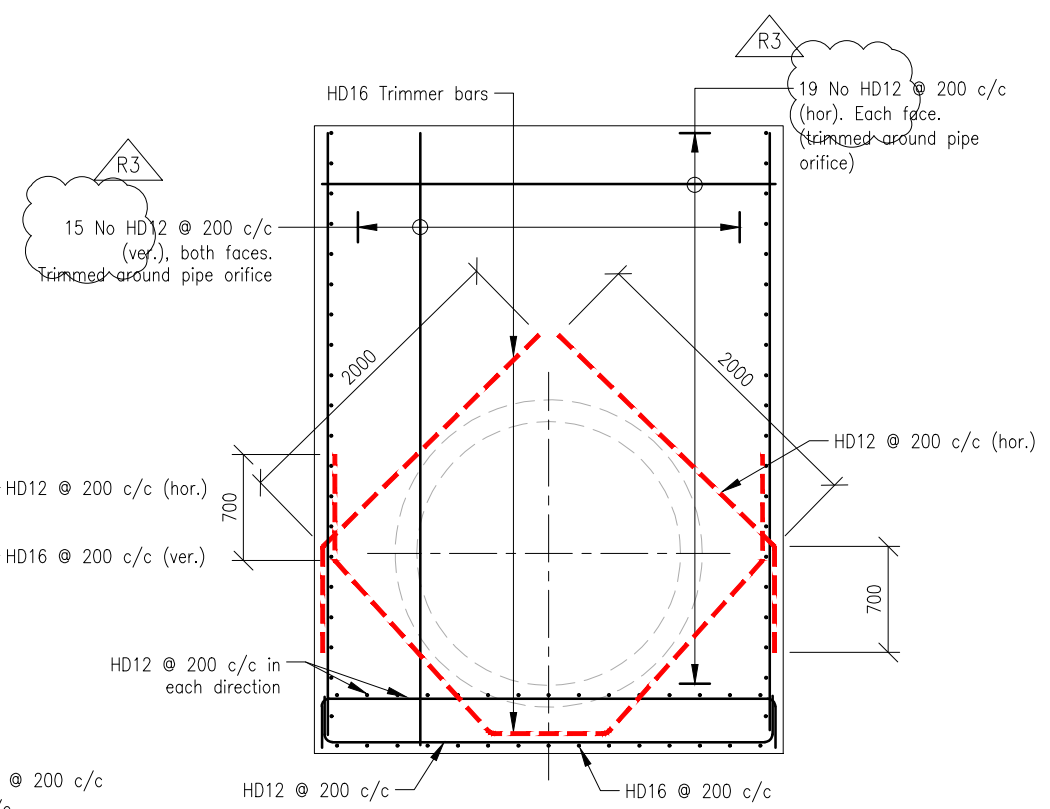
Revision	By	Date
R1 REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



SECTION C-C



SECTION D-D



SECTION E-E

NOTES:

1. All corners and edges are to have 25mm x 25mm fillets or chamfer.
2. The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
3. Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
4. The minimum concrete cover is to be 50mm.
5. For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
6. Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
7. Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
8. Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
9. All construction joint locations are to be approved by the designer.
10. Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

Graphic Scales 1:50 0 1 2 m

WIL1125_30_168-171.dwg (Sheet 169)

Original Sheet Size A3 (420x297)

Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

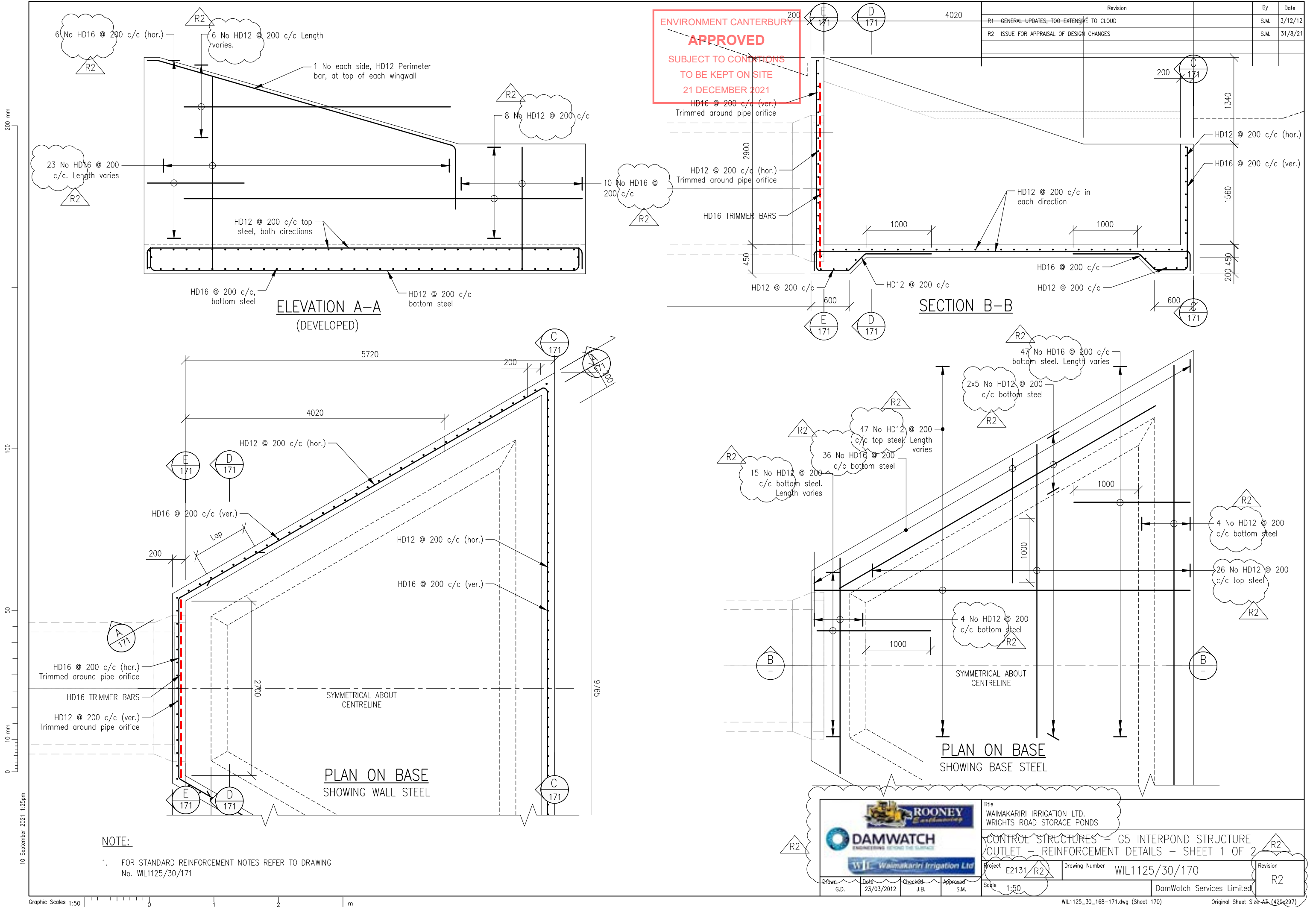
Project E2131/R3 Drawing Number WIL1125/30/169 Scale 1:50

Title WAIMAKARIRI IRRIGATION LTD. WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G5 INTERPOND STRUCTURE INLET - REINFORCEMENT DETAILS - SHEET 2 OF 2

Revision R3

DamWatch Services Limited



ENVIRONMENT CANTERBURY

APPROVED

SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 GENERAL UPDATES, TOO EXTENSIVE TO BE CLOUD	S.M.	3/12/12
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

200 mm

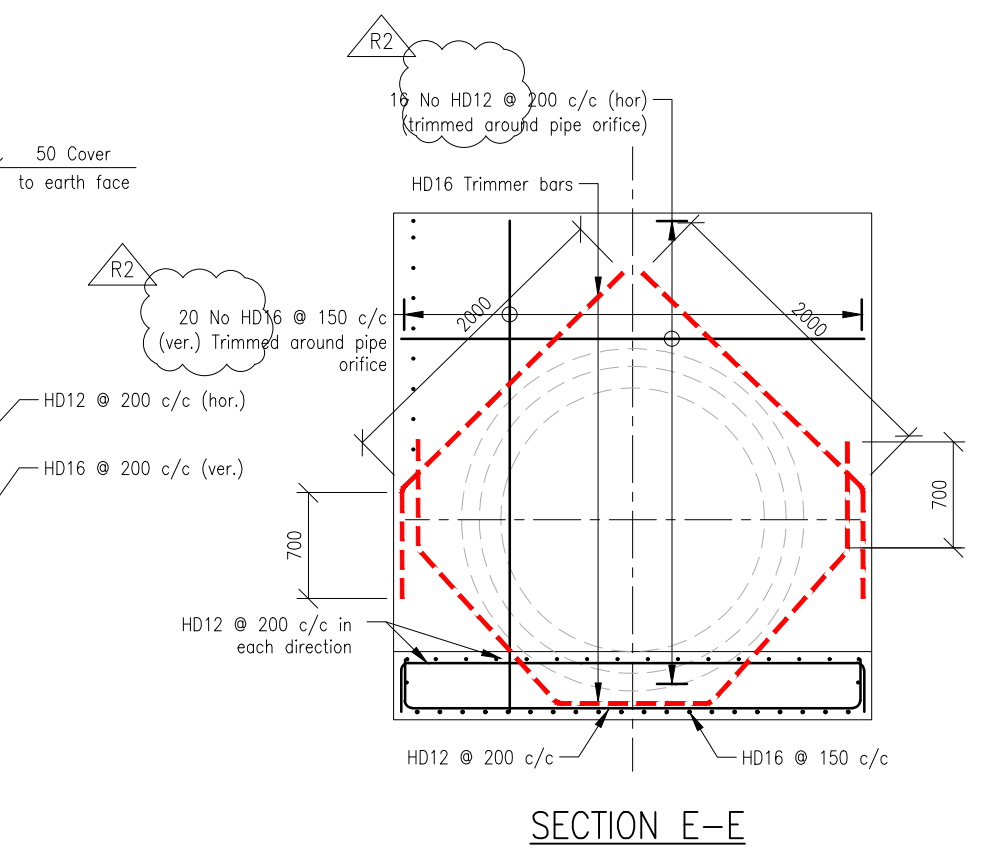
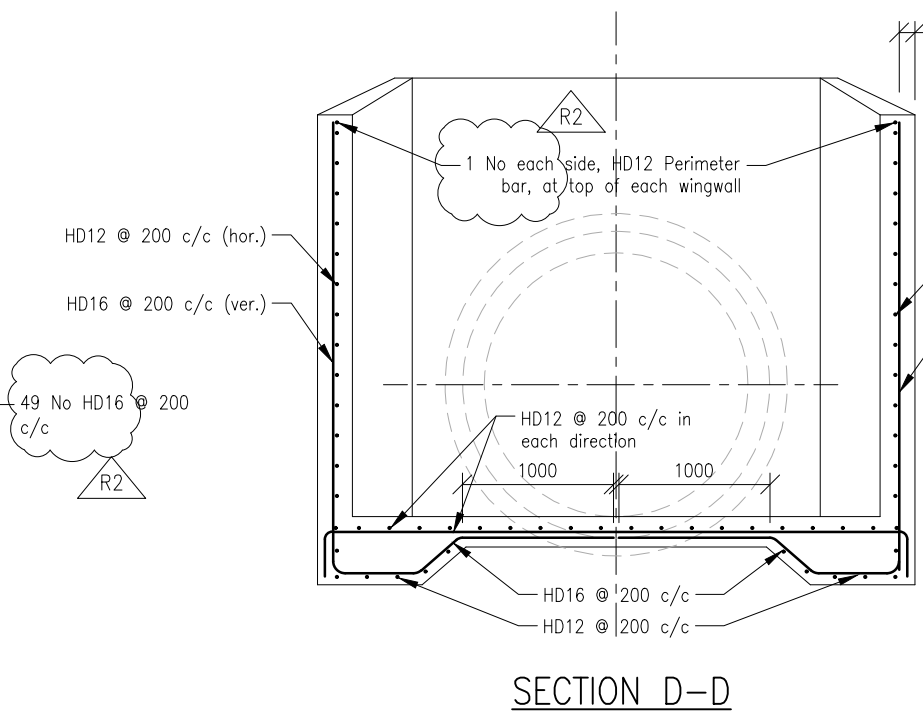
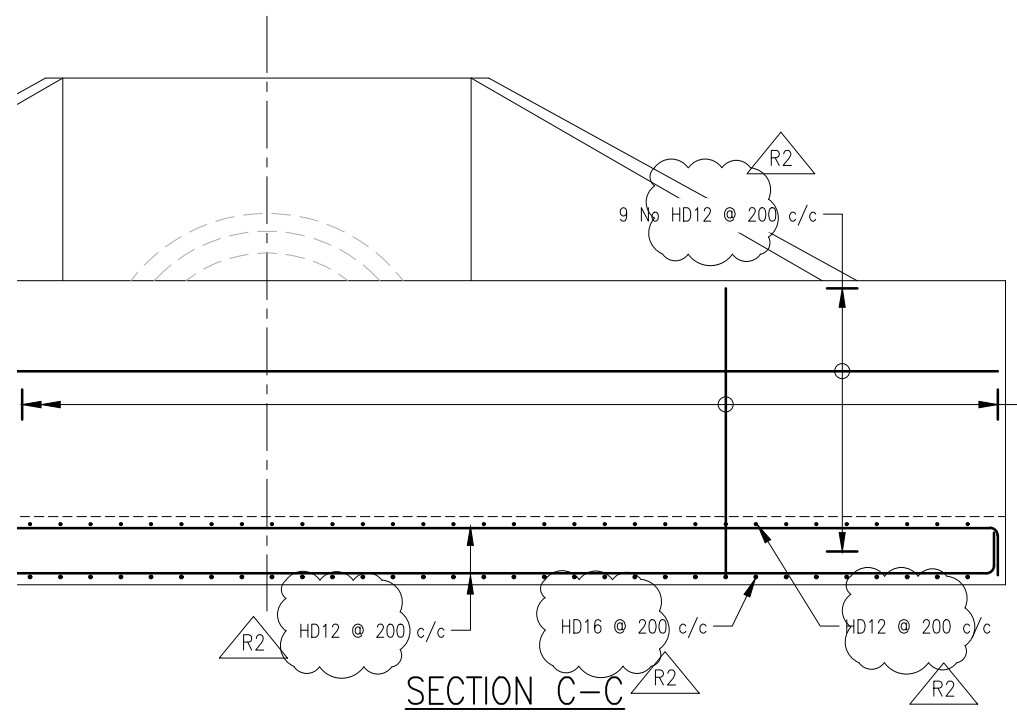
100

50

10 mm

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10 September 2021 1:28pm



- NOTES:
- All corners and edges are to have 25mm x 25mm fillets or chamfer.
 - The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
 - Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
 - The minimum concrete cover is to be 50mm.
 - For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
 - Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
 - Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
 - Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
 - All construction joint locations are to be approved by the designer.
 - Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

Title
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G5 INTERPOND STRUCTURE
OUTLET - REINFORCEMENT DETAILS - SHEET 2 OF 2

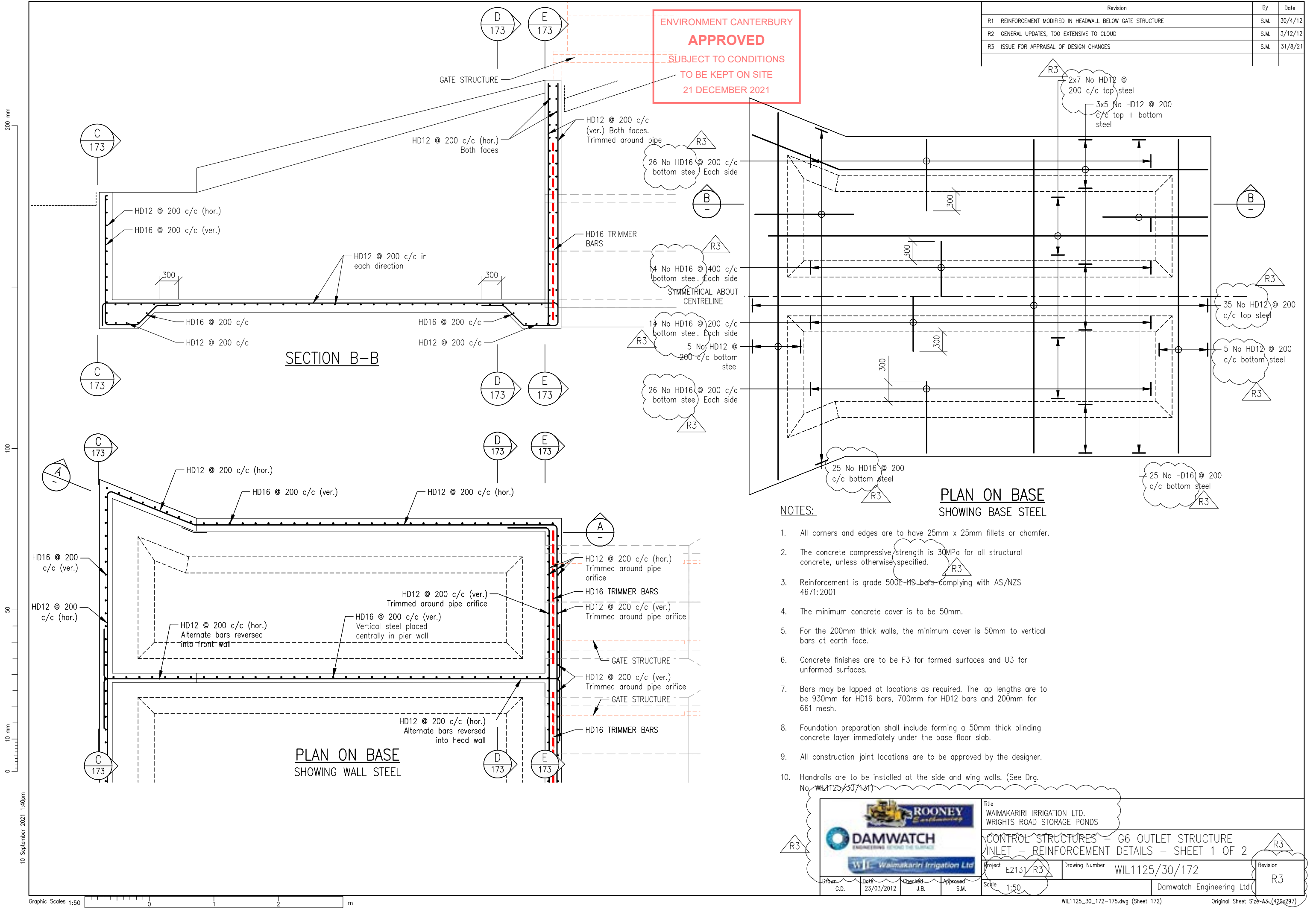
Project E2131/R2 Drawing Number WIL1125/30/171

Scale 1:50

DamWatch Services Limited

Drawn G.D.	Date 23/03/2012	Checked J.B.	Approved S.M.
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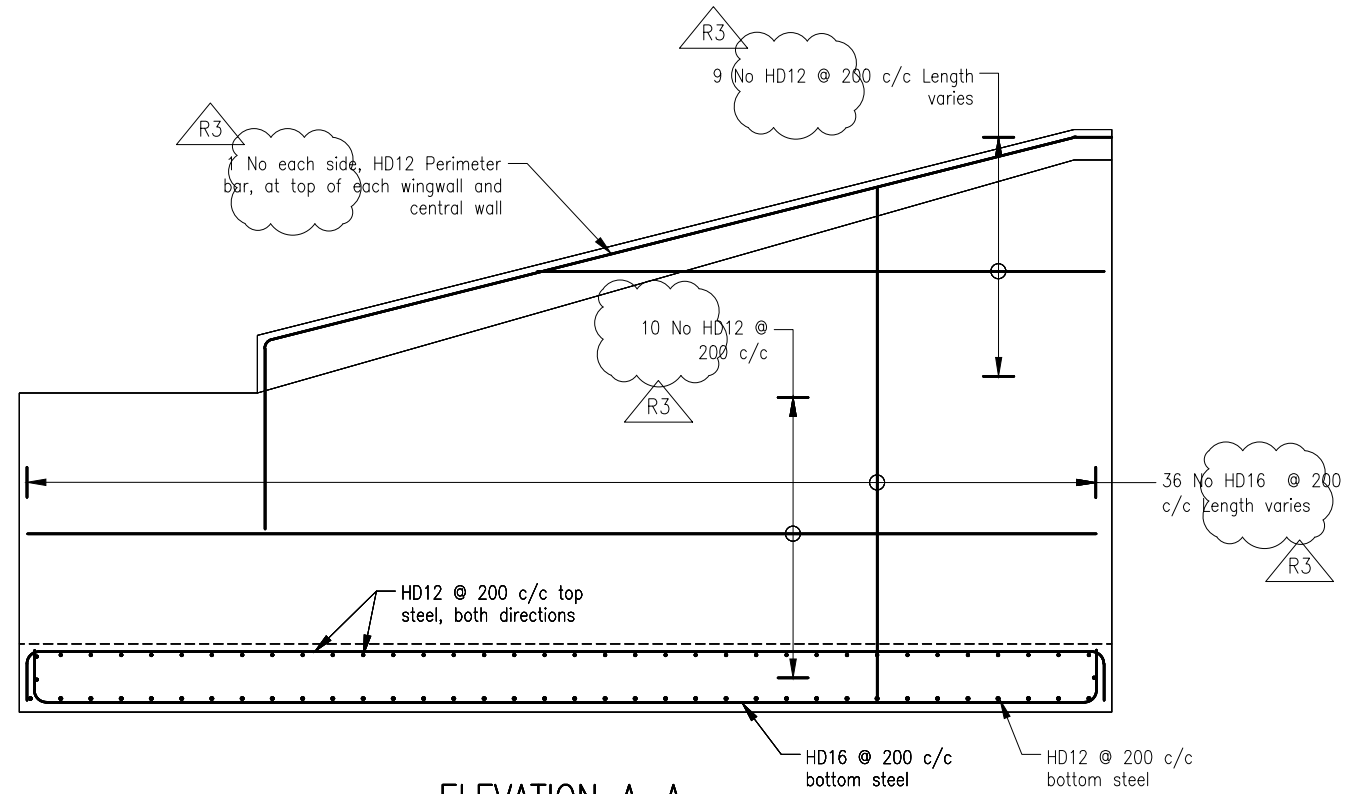
Revision
R2



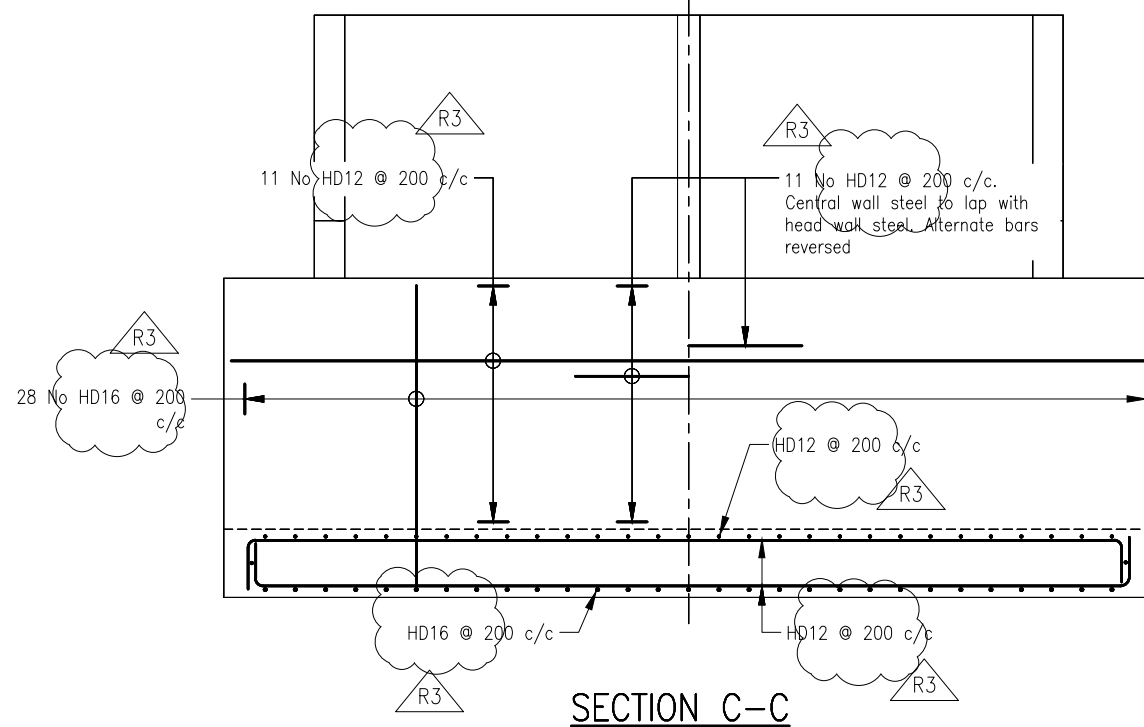
ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 REINFORCEMENT MODIFIED IN HEADWALL BELOW GATE STRUCTURE	S.M.	30/4/12
R2 GENERAL UPDATES, TOO EXTENSIVE TO CLOUD	S.M.	3/12/12
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

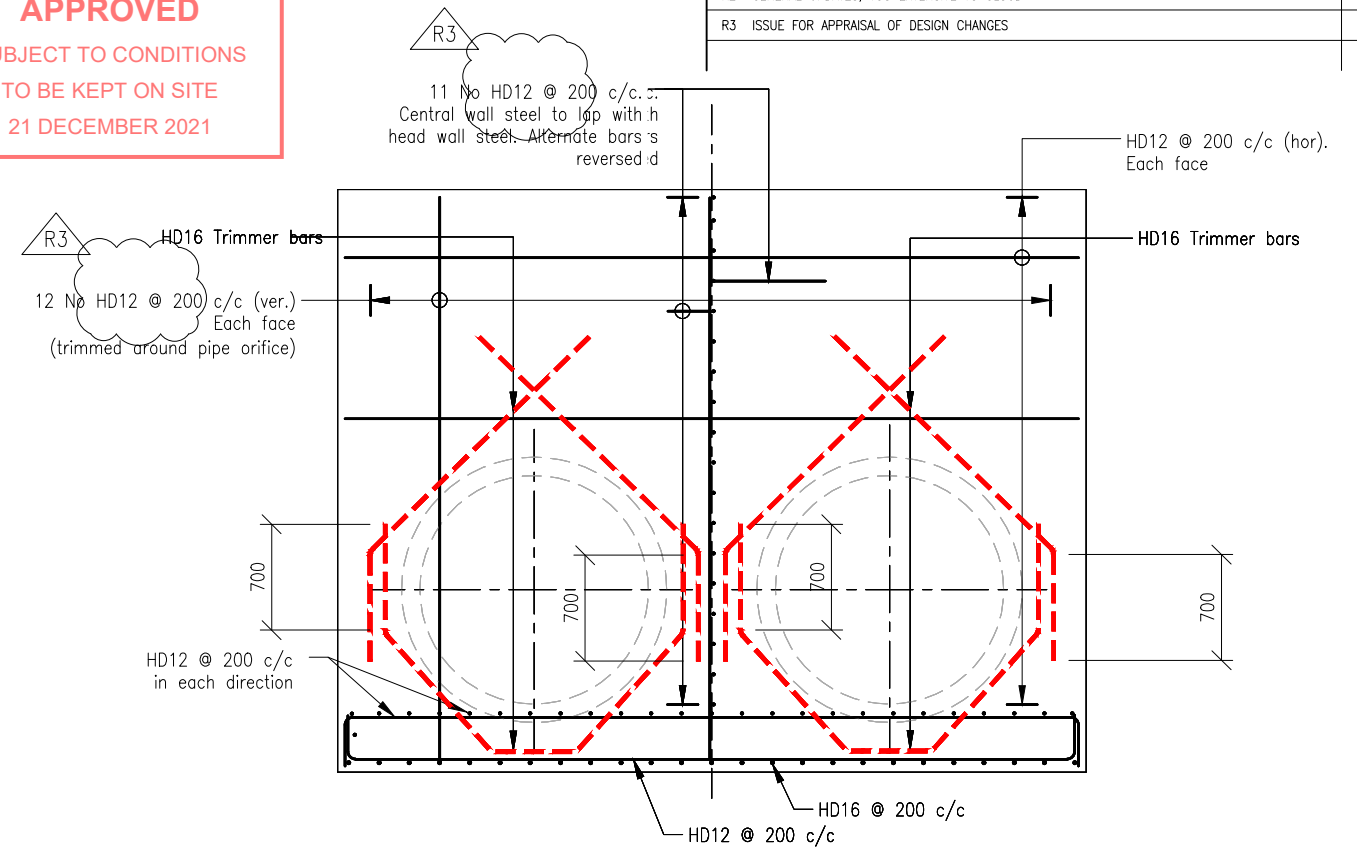
200 mm
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10 mm
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10 September 2021 1:45pm



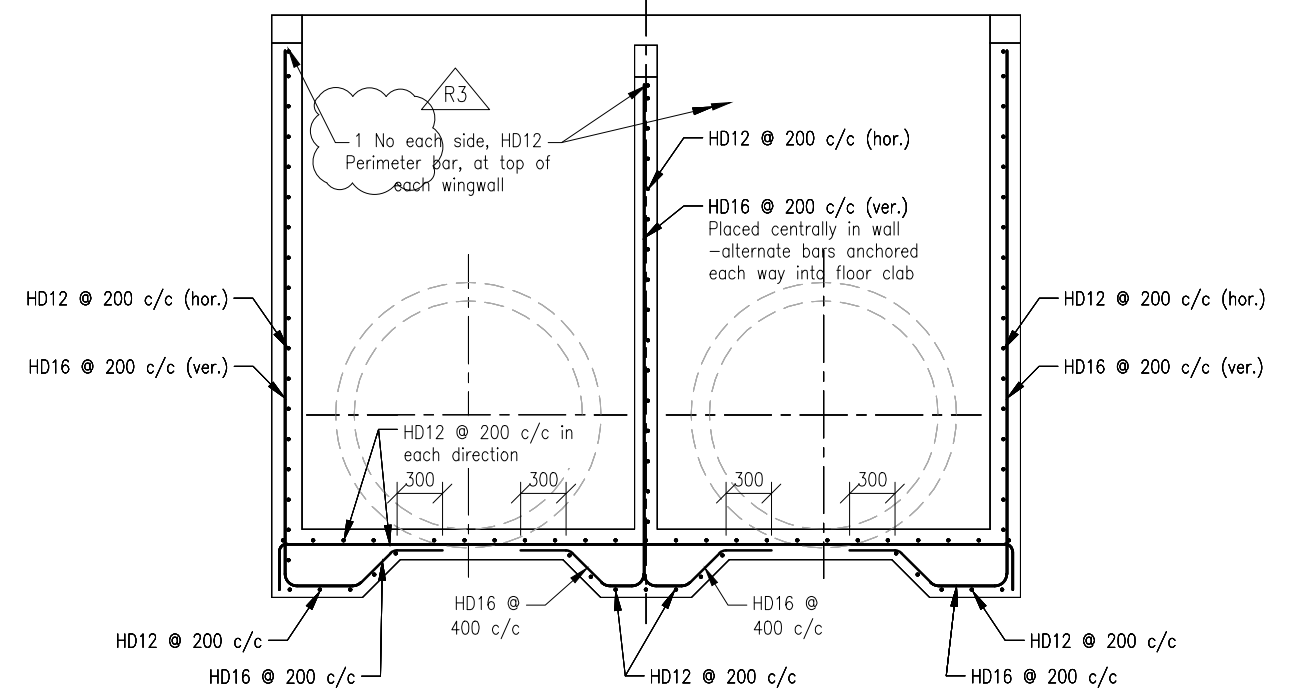
ELEVATION A-A
(DEVELOPED)



SECTION C-C



SECTION E-E



SECTION D-D

NOTE:

- FOR STANDARD REINFORCEMENT NOTES REFER TO DRAWING No. WIL1125/30/172

Graphic Scales 1:50 0 1 2 m

WIL Waimakariri Irrigation Ltd

Title
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

CONTROL STRUCTURES - G6 OUTLET STRUCTURE
INLET - REINFORCEMENT DETAILS - SHEET 2 OF 2

Project E2131 R3 Drawing Number WIL1125/30/173

Scale 1:50

Drawn G.D. Date 23/03/2012 Checked J.B. Approved S.M.

Damwatch Engineering Ltd

Revision
R3

WIL1125_30_172-175.dwg (Sheet 173)

Original Sheet Size A3 (420x297)

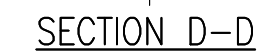
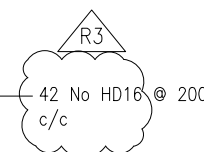
ENVIRONMENT CANTEBURY

APPROVED

SUBJECT TO CONDITIONS

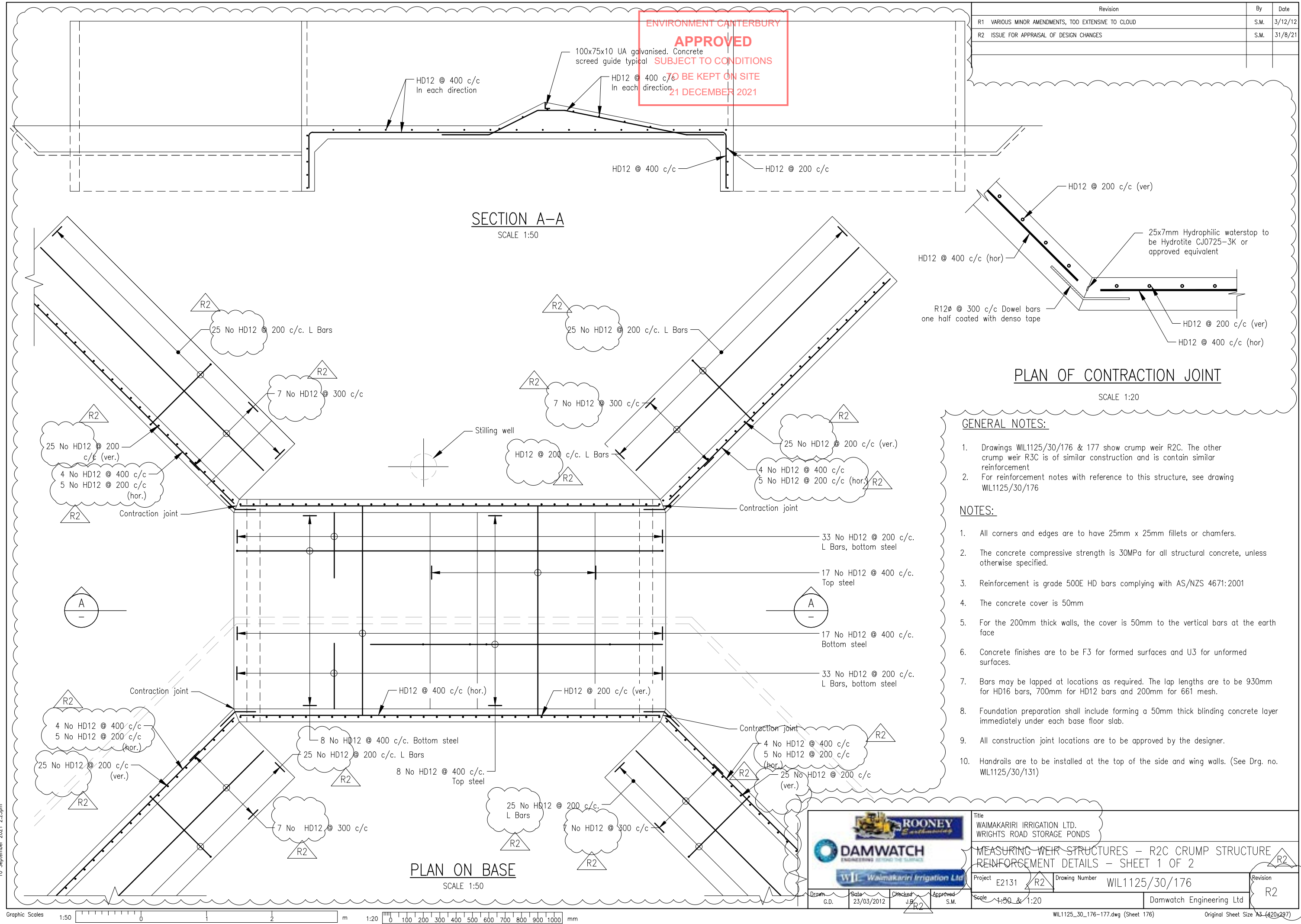
TO BE KEPT ON SITE

21 DECEMBER 2021



1. All corners and edges are to have 25mm x 25mm fillets or chamfer.
2. The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
3. Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
4. The minimum concrete cover is to be 50mm.
5. For the 200mm thick walls, the minimum cover is 50mm to vertical bars at earth face.
6. Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
7. Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 700mm for HD12 bars and 200mm for 661 mesh.
8. Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base floor slab.
9. All construction joint locations are to be approved by the designer.
10. Handrails are to be installed at the side and wing walls. (See Drg. No. WIL1125/30/131)

WIL1125_30_172-175.dwg (Sheet 175)



ENVIRONMENT CANTERBURY

APPROVED

SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 OUTLET CHUTE ADDED	S.M.	30/1/13
R2 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

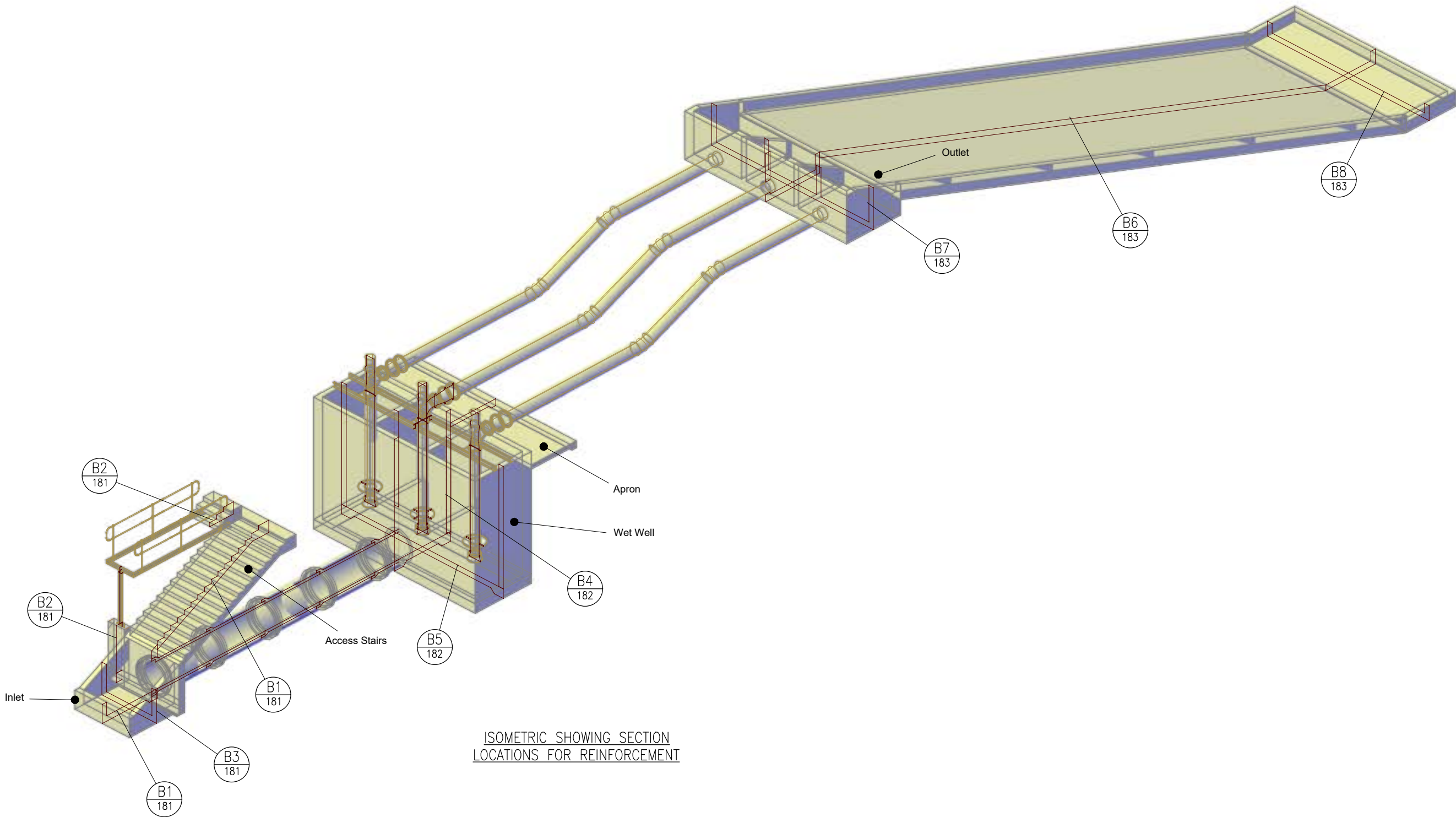
200 mm

100

50

10 mm

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ISOMETRIC SHOWING SECTION
LOCATIONS FOR REINFORCEMENT

- NOTES:
- For geometry and setting out details refer drawing WIL1125/30/21x series.
 - For reinforcement sections refer to drawings referenced on the indicator tags on the isometric view.

WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

PUMP STRUCTURES – BUFFER POND PUMP STATION
ISOMETRIC – REINFORCEMENT SECTION LOCATIONS

Project E2131 / R2 Drawing Number WIL1125/30/180

Scale 1:200

Damwatch Engineering Ltd

Drawn R.k. Date 3/12/2012 Checked N.C. Approved S.M.

Revision R2

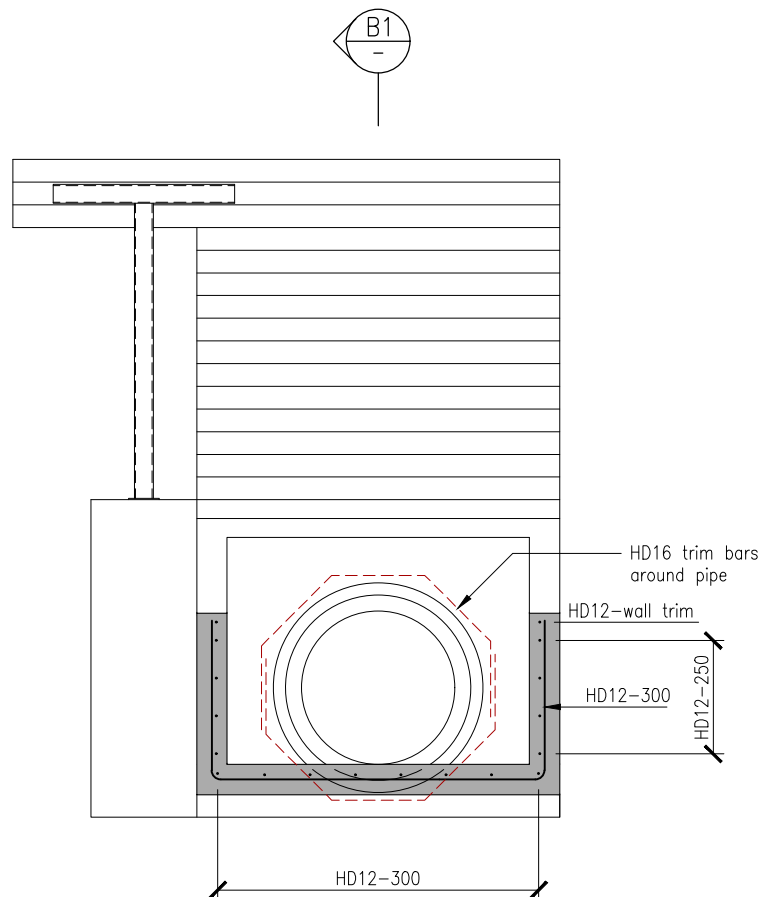
wil1125_30_100base.dwg (180)

Original Sheet Size A3 (420x297)

NOTES:

1. For geometry and setting out details refer drawing WIL1125/30/215-216.
2. For standard reinforcement details refer drawings WIL1125/30/141-142.
3. 25x25mm fillets and chamfers are to be formed on all corners and edges.
4. Concrete compressive strength shall be 30MPa for all structural concrete, unless otherwise specified.
5. Reinforcement shall be 500MPa for all HD bars complying with AS/NZS 4671.
6. Minimum concrete cover shall be 50mm.
7. Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
8. Lap bars at locations as required. Lap lengths to be 930mm for HD16, 700mm for HD12 and 200mm for 661 mesh.
9. Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base slab.
10. Construction joint locations to be approved by designer.

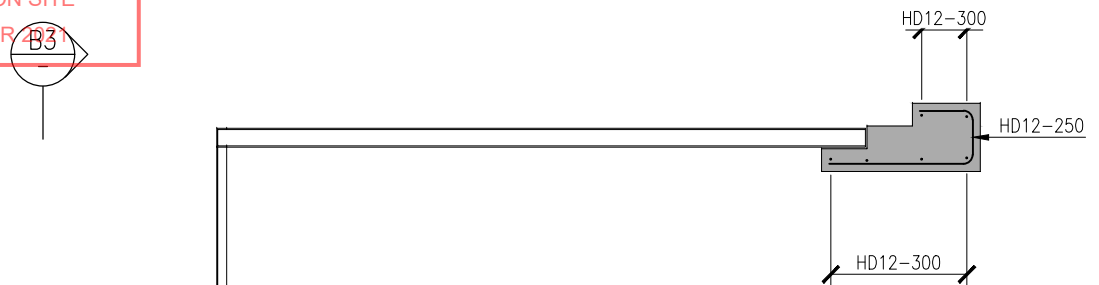
For indicative location of section planes on key isometric refer drawing WIL1125/30/180.



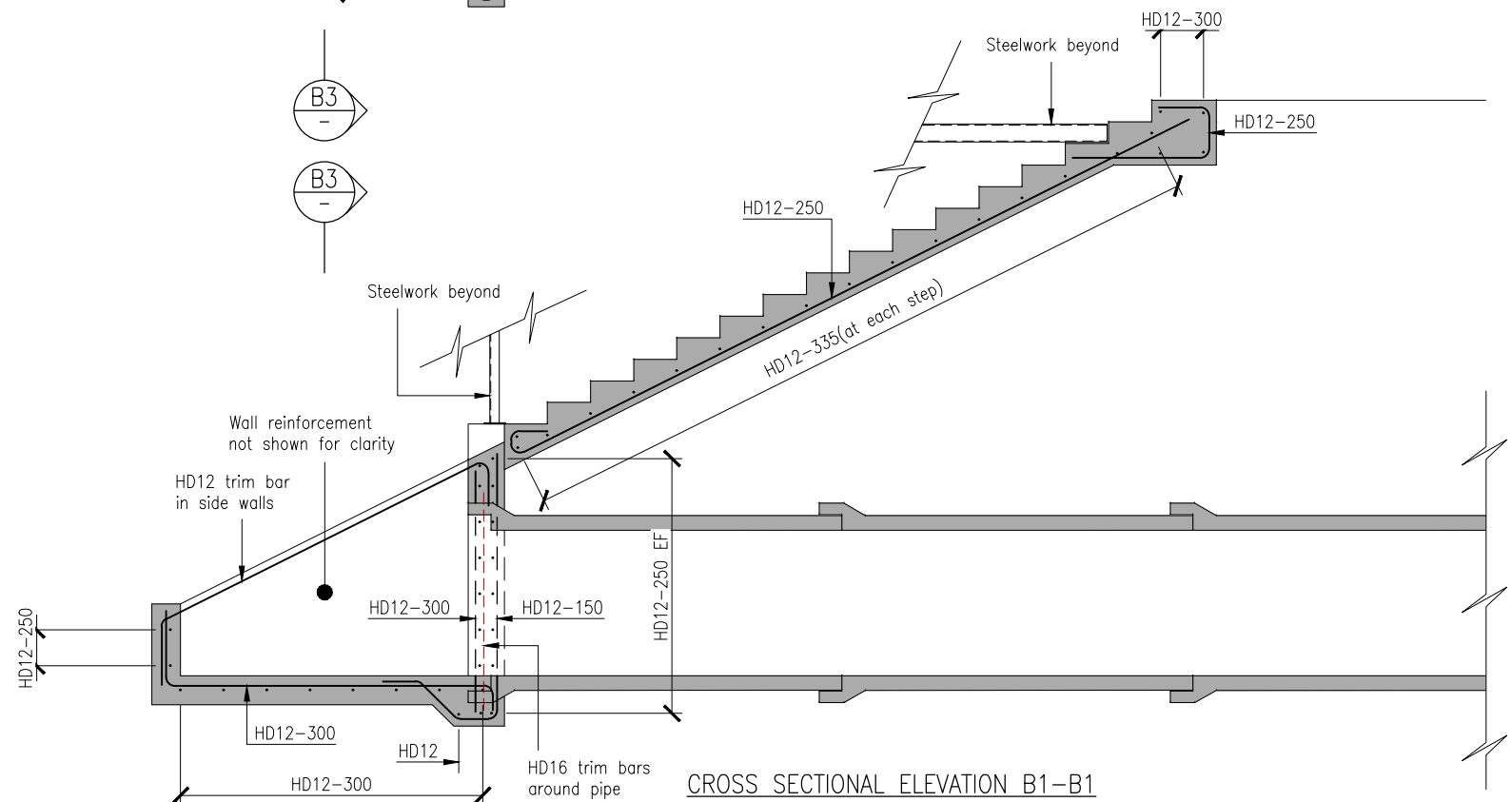
CROSS SECTION B3-B3

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



CROSS SECTIONAL ELEVATION B2-B2



CROSS SECTIONAL ELEVATION B1-B1

		Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS	
Project E2131		Drawing Number WIL1125/30/181	
Scale 1:50		Damwatch Engineering Ltd	
Drawn R.k.		Date 3/12/2012	
Checked N.C.		Approved S.M.	
		Revision R1	

wil1125_30_100base.dwg (181)

Original Sheet Size A3 (420x297)

10 September 2021 5:12pm

Graphic Scales

1:50 0 1 2 m

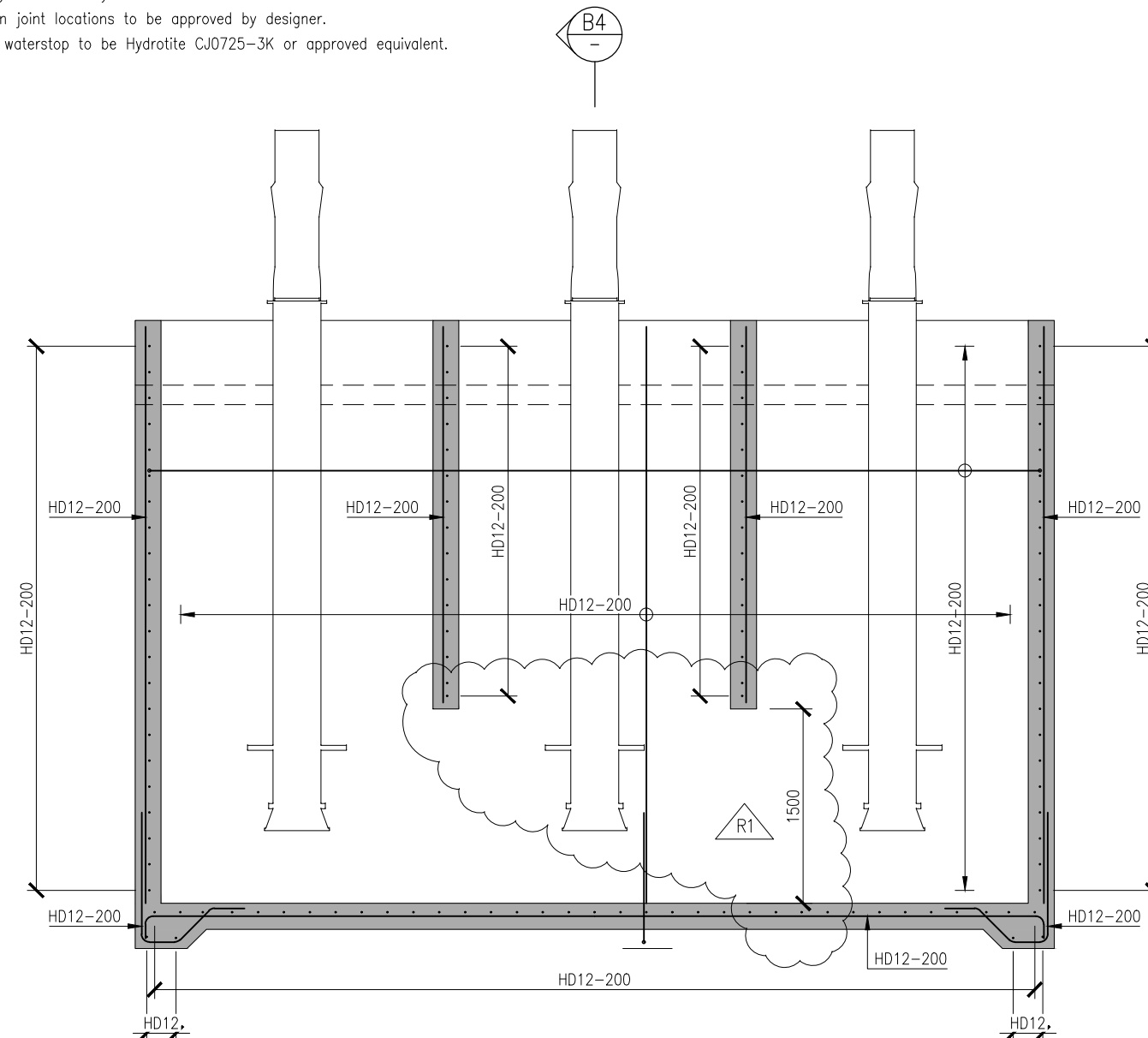
NOTES:

1. For geometry and setting out details refer drawing WIL1125/30/215-216.
2. For standard reinforcement details refer drawings WIL1125/30/141-142.
3. 25x25mm fillets and chamfers are to be formed on all corners and edges.
4. Concrete compressive strengths shall be 30MPa for all structural concrete, unless otherwise specified.
5. Reinforcement shall be 500MPa for all HD bars complying with AS/NZS 4671.
6. Minimum concrete cover shall be 50mm.
7. Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
8. Lap bars at locations as required. Lap lengths to be 930mm for HD16, 700mm for HD12 and 200mm for 661 mesh.
9. Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base slab.
10. Construction joint locations to be approved by designer.
11. Hydrophilic waterstop to be Hydrotite CJ0725-3K or approved equivalent.

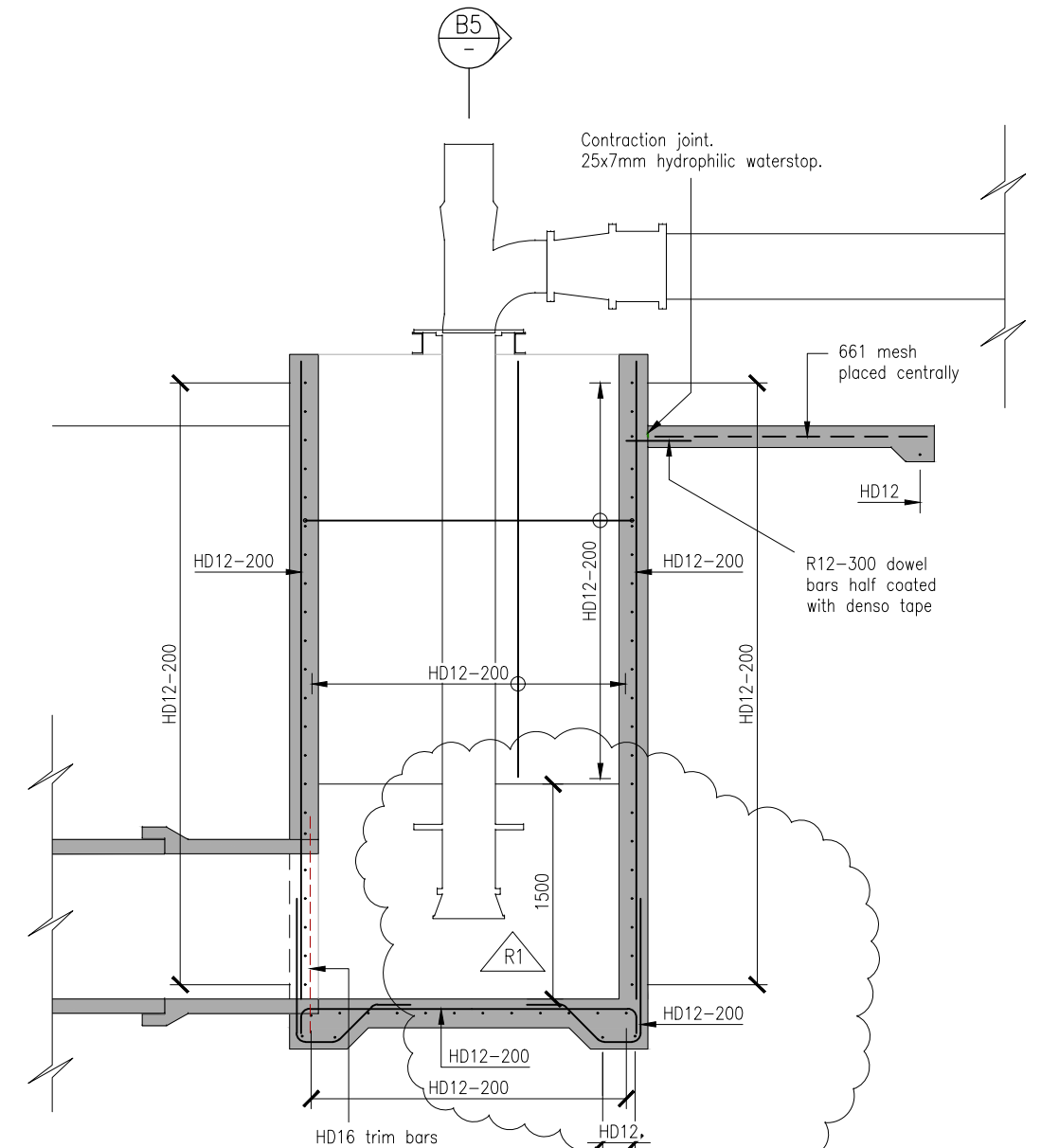
ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS

For indicative location of section planes on
key isometric refer drawing WIL1125/30/180
TO BE KEPT ON SITE
15 SEPTEMBER 2021

Revision	By	Date
R1 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21



CROSS SECTIONAL ELEVATION B5-B4



CROSS SECTIONAL ELEVATION B4-B4

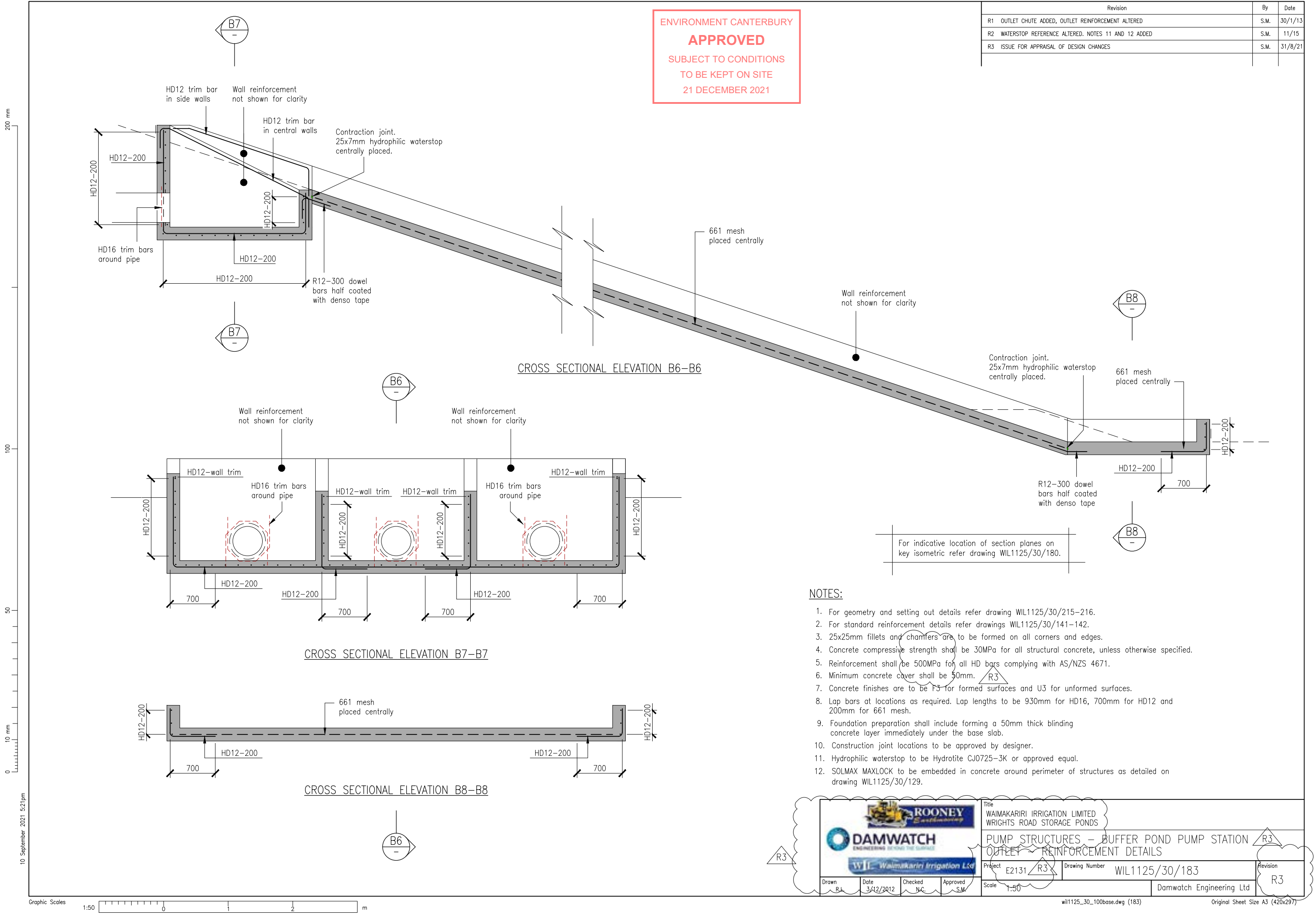
				Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS	
PUMP STRUCTURES – BUFFER POND PUMP STATION WET WELL AND APRON – REINFORCEMENT DETAILS				R1	
Project E2131		Drawing Number WIL1125/30/182		Revision R1	
Drawn R.k.	Date 3/12/2012	Checked N.C.	Approved S.M.	Scale 1:50	Damwatch Engineering Ltd

wil1125_30_100base.dwg (182)

Original Sheet Size A3 (420x297)

10 September 2021 5:18pm

Graphic Scales 1:50 0 1 2 m



ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R1 OUTLET CHUTE ADDED, OUTLET REINFORCEMENT ALTERED	S.M.	30/1/13
R2 WATERSTOP REFERENCE ALTERED. NOTES 11 AND 12 ADDED	S.M.	11/15
R3 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

CROSS SECTIONAL ELEVATION B6-B6

CROSS SECTIONAL ELEVATION B7-B7

CROSS SECTIONAL ELEVATION B8-B8

NOTES:

1. For geometry and setting out details refer drawing WIL1125/30/215-216.
2. For standard reinforcement details refer drawings WIL1125/30/141-142.
3. 25x25mm fillets and chamfers are to be formed on all corners and edges.
4. Concrete compressive strength shall be 30MPa for all structural concrete, unless otherwise specified.
5. Reinforcement shall be 500MPa for all HD bars complying with AS/NZS 4671.
6. Minimum concrete cover shall be 50mm.
7. Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
8. Lap bars at locations as required. Lap lengths to be 930mm for HD16, 700mm for HD12 and 200mm for 661 mesh.
9. Foundation preparation shall include forming a 50mm thick blinding concrete layer immediately under the base slab.
10. Construction joint locations to be approved by designer.
11. Hydrophilic waterstop to be Hydrotite CJ0725-3K or approved equal.
12. SOLMAX MAXLOCK to be embedded in concrete around perimeter of structures as detailed on drawing WIL1125/30/129.

Title
WAIMAKARIRI IRRIGATION LIMITED
WRIGHTS ROAD STORAGE PONDS

PUMP STRUCTURES - BUFFER POND PUMP STATION
OUTLET REINFORCEMENT DETAILS

Project
E2131

Scale
1:50

Drawn
R.k.

Date
3/12/2012

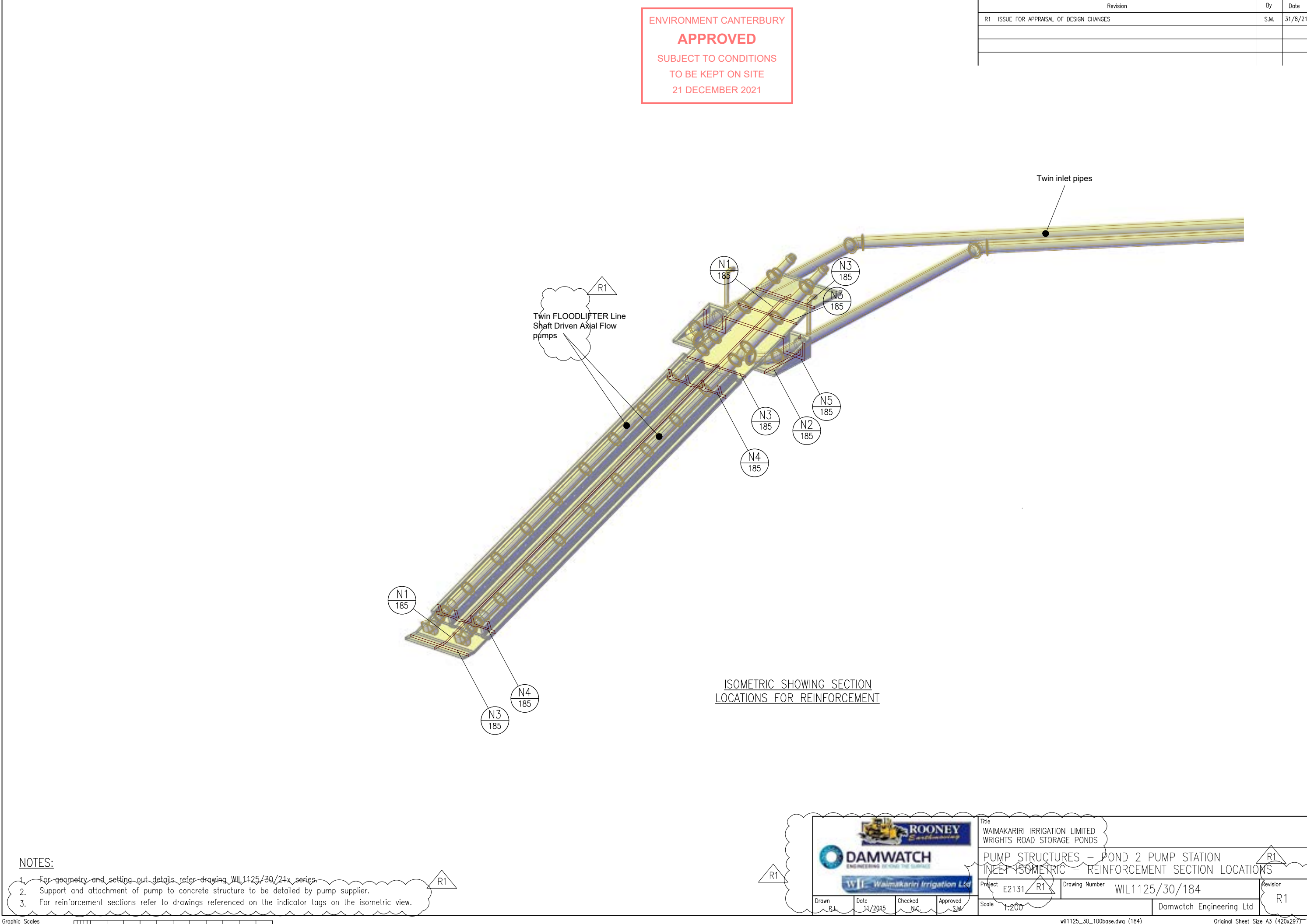
Checked
N.C.

Approved
S.M.

Drawing Number
WIL1125/30/183

Damwatch Engineering Ltd

Revision
R3



ENVIRONMENT CANTERBURY

APPROVED

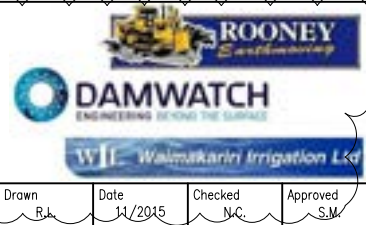
SUBJECT TO CONDITIONS

TO BE KEPT ON SITE

21 DECEMBER 2021

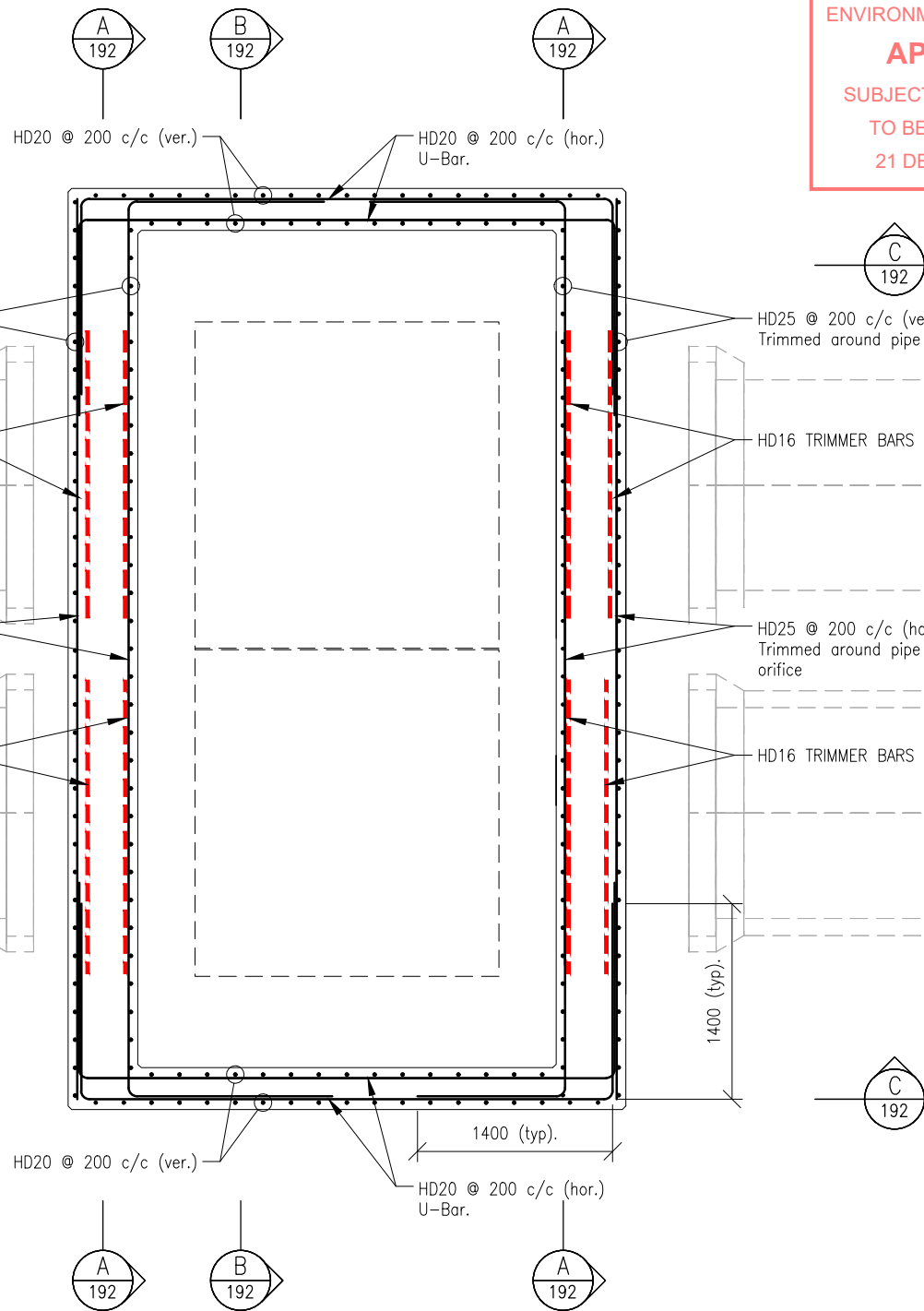
Revision	By	Date
R1 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

- NOTES:
- For geometry and setting out details refer drawing WIL1125/30/21x series.
 - Support and attachment of pump to concrete structure to be detailed by pump supplier.
 - For reinforcement sections refer to drawings referenced on the indicator tags on the isometric view.



Title WAIMAKARIRI IRRIGATION LIMITED WRIGHTS ROAD STORAGE PONDS			
PUMP STRUCTURES – POND 2 PUMP STATION INLET ISOMETRIC – REINFORCEMENT SECTION LOCATIONS			
Project E2131	Drawing Number WIL1125/30/184	Revision R1	
Drawn R.k.	Date 11/2015	Checked N.C.	Approved S.M.
Scale 1:200		Damwatch Engineering Ltd	

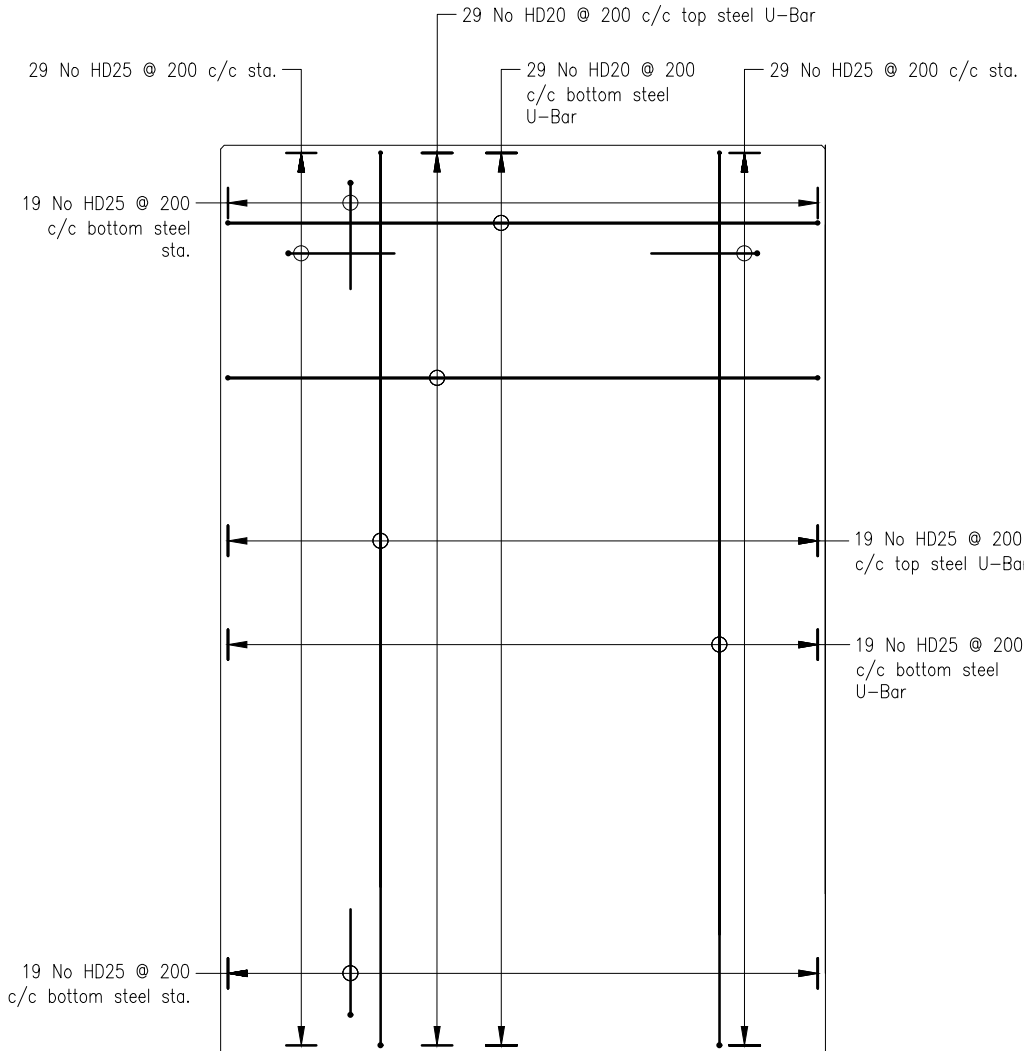
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10 September 2021 2:48pm



PLAN ON BASE

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R0 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

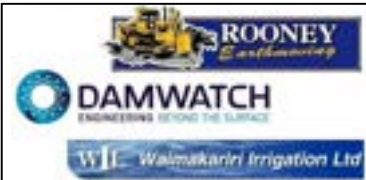


PLAN ON BASE
SHOWING BASE STEEL

NOTES:

- All corners and edges are to have 25mm x 25mm fillets or chamfer.
- The concrete compressive strength is 30MPa for all structural concrete, unless otherwise specified.
- Reinforcement is grade 500E HD bars complying with AS/NZS 4671:2001
- The minimum concrete cover is to be 50mm.
- Concrete finishes are to be F3 for formed surfaces and U3 for unformed surfaces.
- Bars may be lapped at locations as required. The lap lengths are to be 930mm for HD16 bars, 1200mm for HD20 bars and 1400mm for HD25 bars.
- All construction joint locations are to be approved by the designer.

Graphic Scales 1:50 0 1 2 m

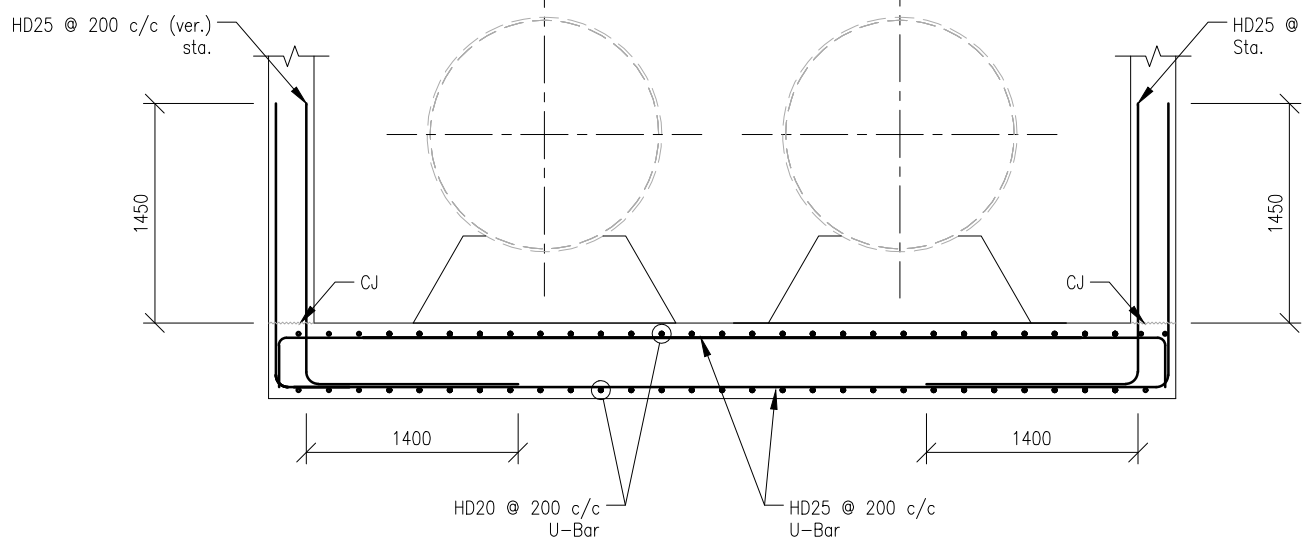


Title WAIMAKARIRI IRRIGATION LTD. WRIGHTS ROAD STORAGE PONDS			
CONTROL STRUCTURES – G6 OUTLET STRUCTURE FLOW METER CHAMBER – REINFOR. DETAILS – SHEET 1 OF 4			
Project	E2131	Drawing Number	WIL1125/30/191
Scale	1:50	Damwatch Engineering Ltd	Revision R0

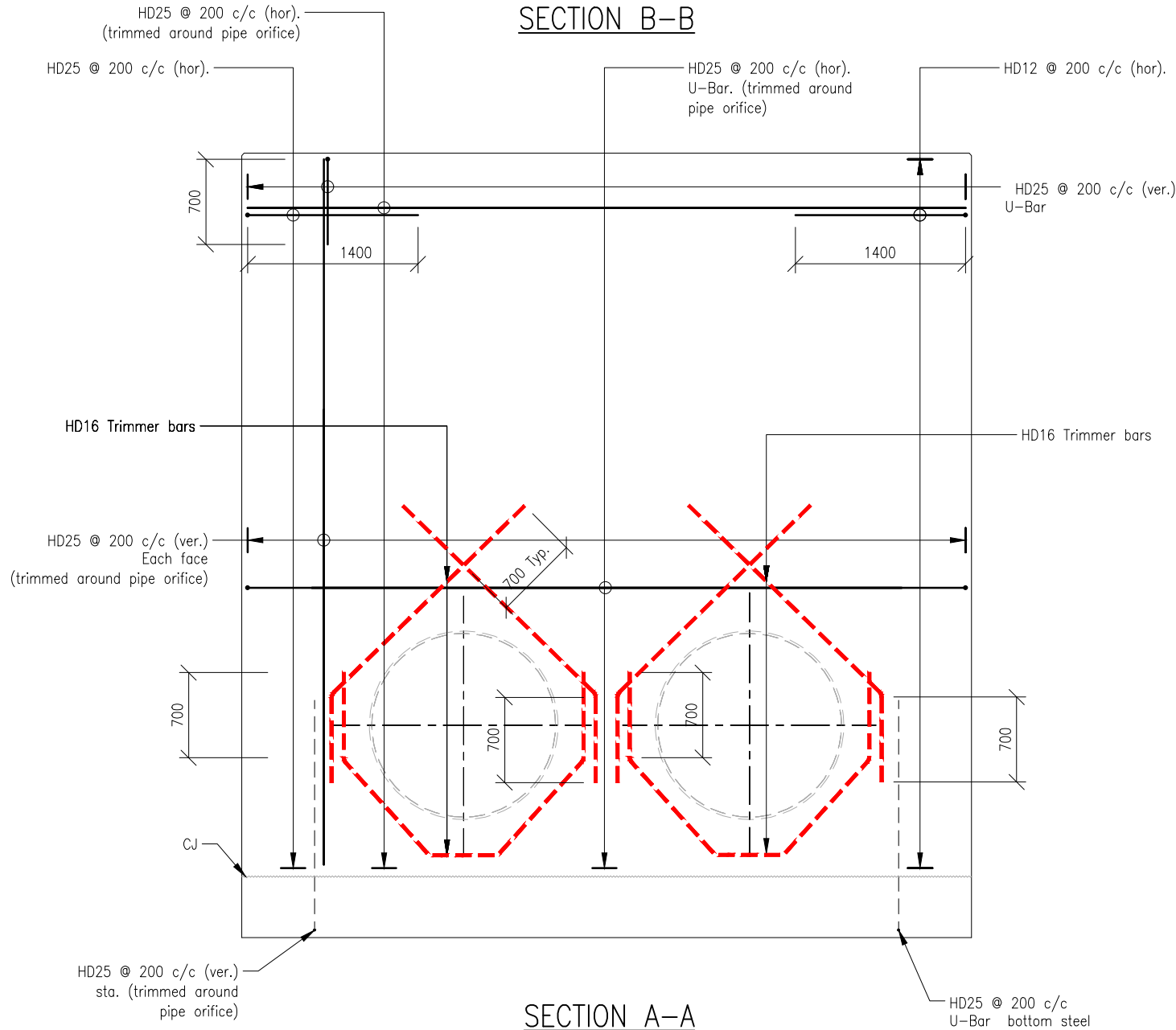
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10 September 2021 2:55pm

Graphic Scales 1:50 0 1 2 m



SECTION B-B

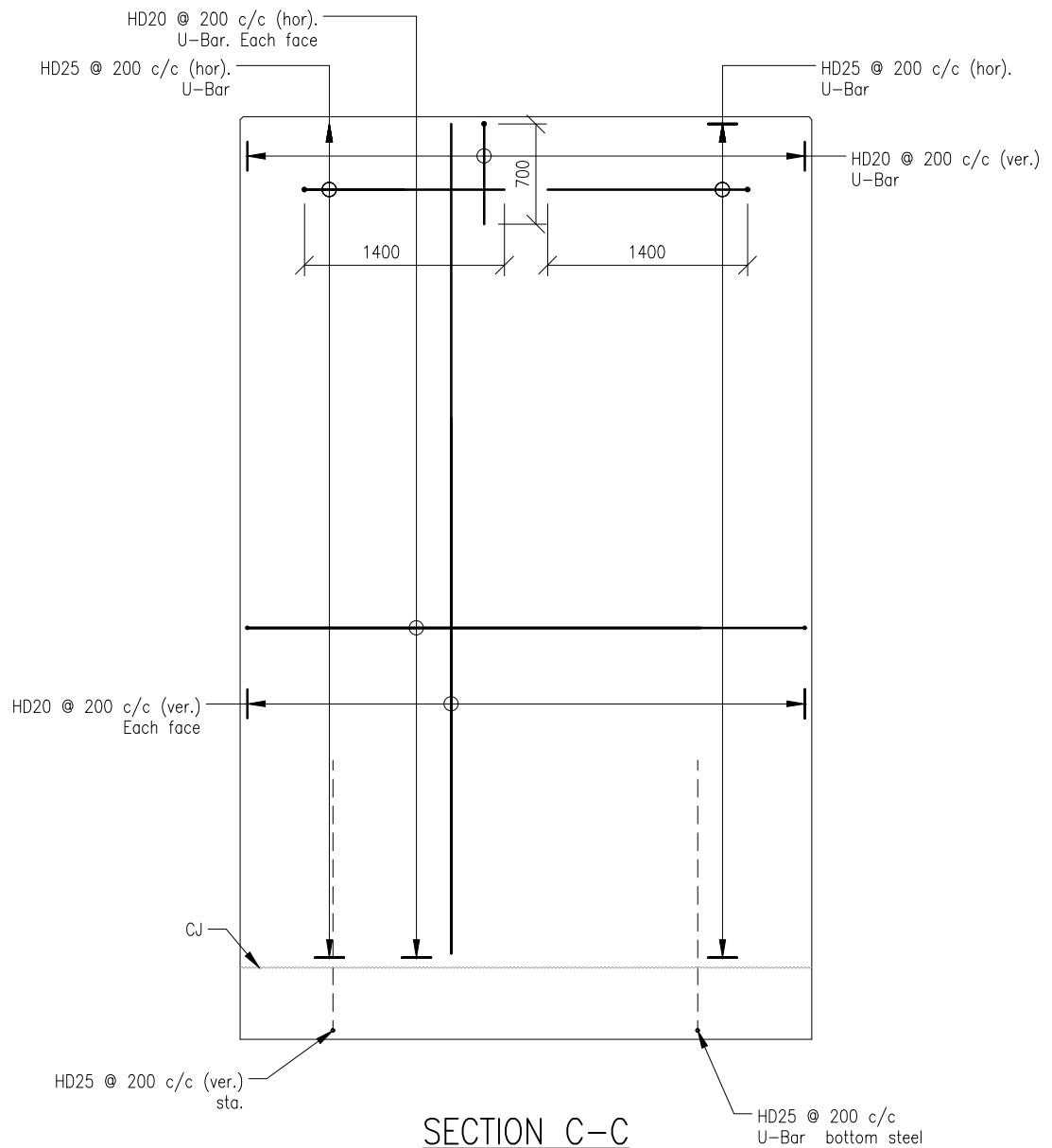


SECTION A-A

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

NOTE:

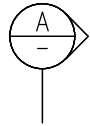
- 1. For standard reinforcement notes refer to drawing no. WIL1125/30/191



SECTION C-C

				Title WAIMAKARIRI IRRIGATION LTD. WRIGHTS ROAD STORAGE PONDS CONTROL STRUCTURES – G6 OUTLET STRUCTURE FLOW METER CHAMBER – REINFOR. DETAILS – SHEET 2 OF 4		
Drawn G.D.	Date 31/8/21	Checked EO/NC	Approved S.M.	Project E2131	Drawing Number WIL1125/30/192	Revision R0
Scale 1:50				Damwatch Engineering Ltd		

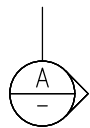
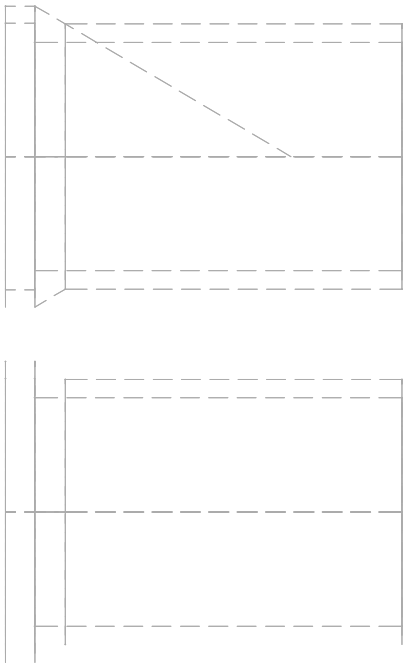
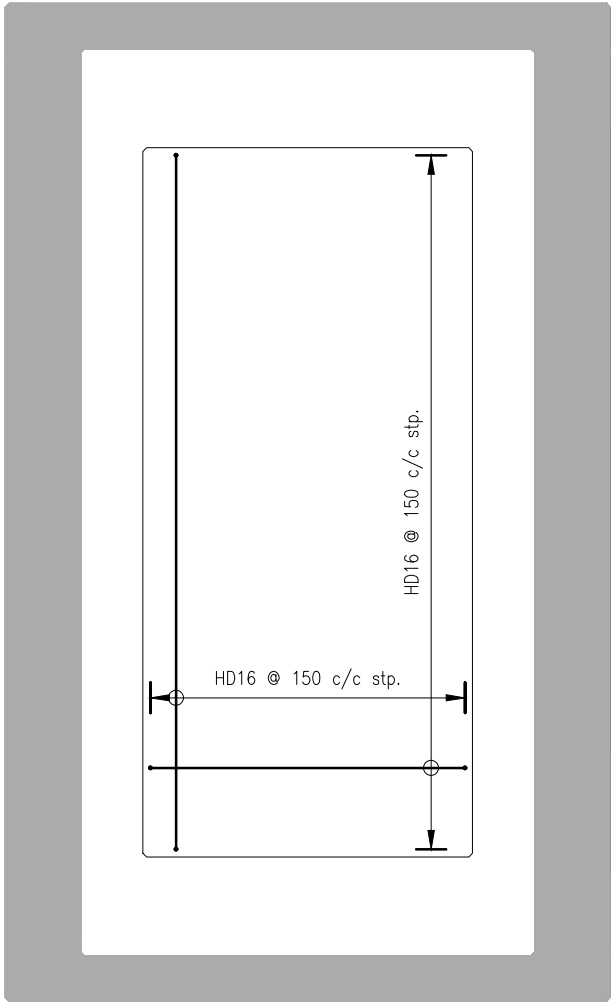
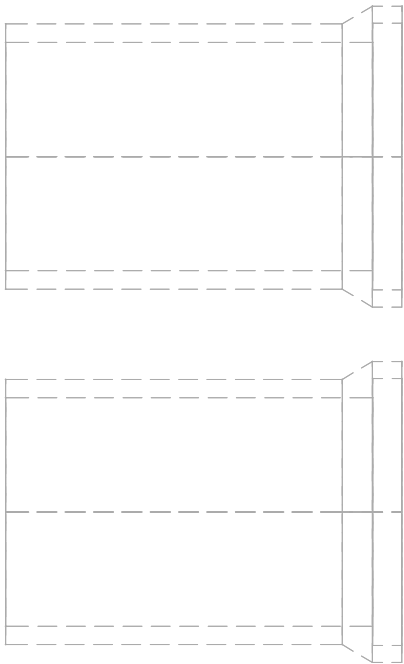
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10 September 2021 2:59pm



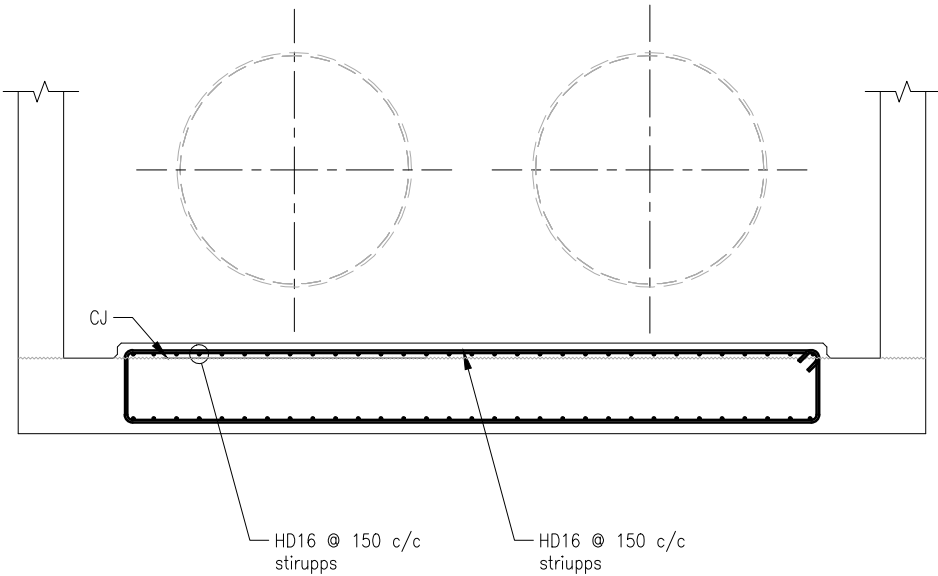
ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R0 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

NOTE:
1. For standard reinforcement notes refer to drawing no. WL1125/30/191



PLAN ON BASE
SHOWING PEDESTALL STEEL



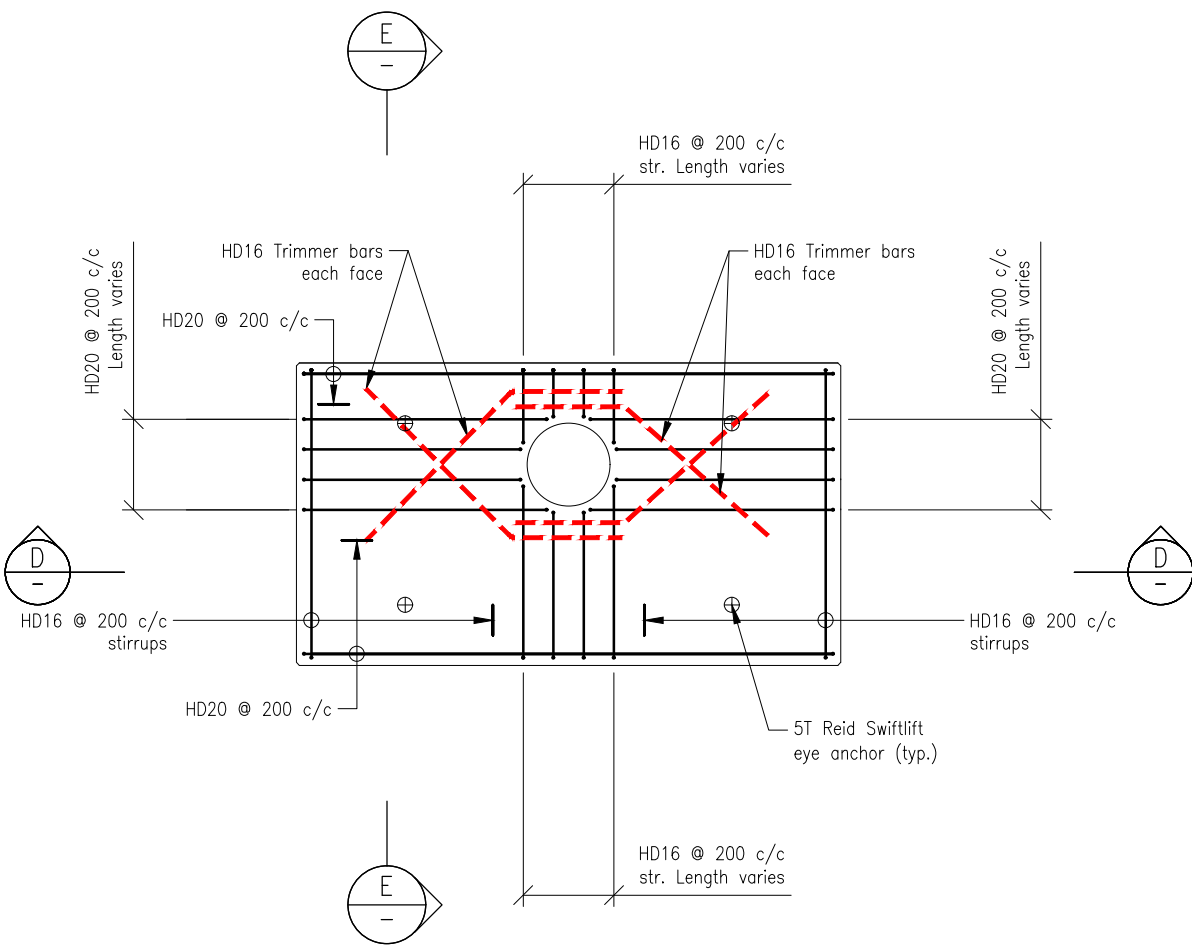
SECTION A-A

				Title WAIMAKARIRI IRRIGATION LTD. WRIGHTS ROAD STORAGE PONDS		
				CONTROL STRUCTURES – G6 OUTLET STRUCTURE FLOW METER CHAMBER – REINFOR. DETAILS – SHEET 3 OF 4		
Drawn G.D.	Date 31/8/21	Checked EO/NC	Approved S.M.	Project E2131	Drawing Number WIL1125/30/193	Revision R0
Scale 1:50				Damwatch Engineering Ltd		

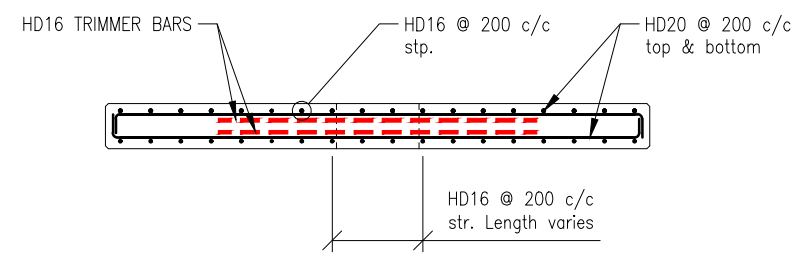
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10 September 2021 3:02pm

Graphic Scales 1:50 0 1 2 m



METER CHAMBER – PRECAST ROOF PLAN

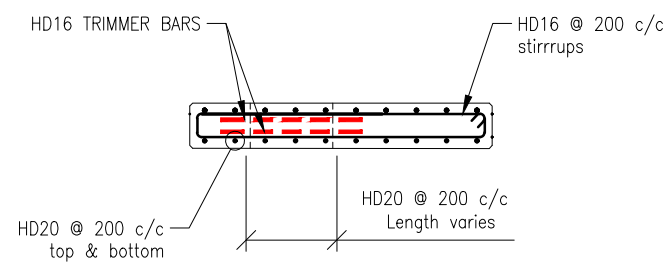


SECTION D-D

ENVIRONMENT CANTERBURY
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE
21 DECEMBER 2021

Revision	By	Date
R0 ISSUE FOR APPRAISAL OF DESIGN CHANGES	S.M.	31/8/21

NOTE:
1. For standard reinforcement notes refer to drawing no. WIL1125/30/191



SECTION E-E

Title
WAIMAKARIRI IRRIGATION LTD.
WRIGHTS ROAD STORAGE PONDS

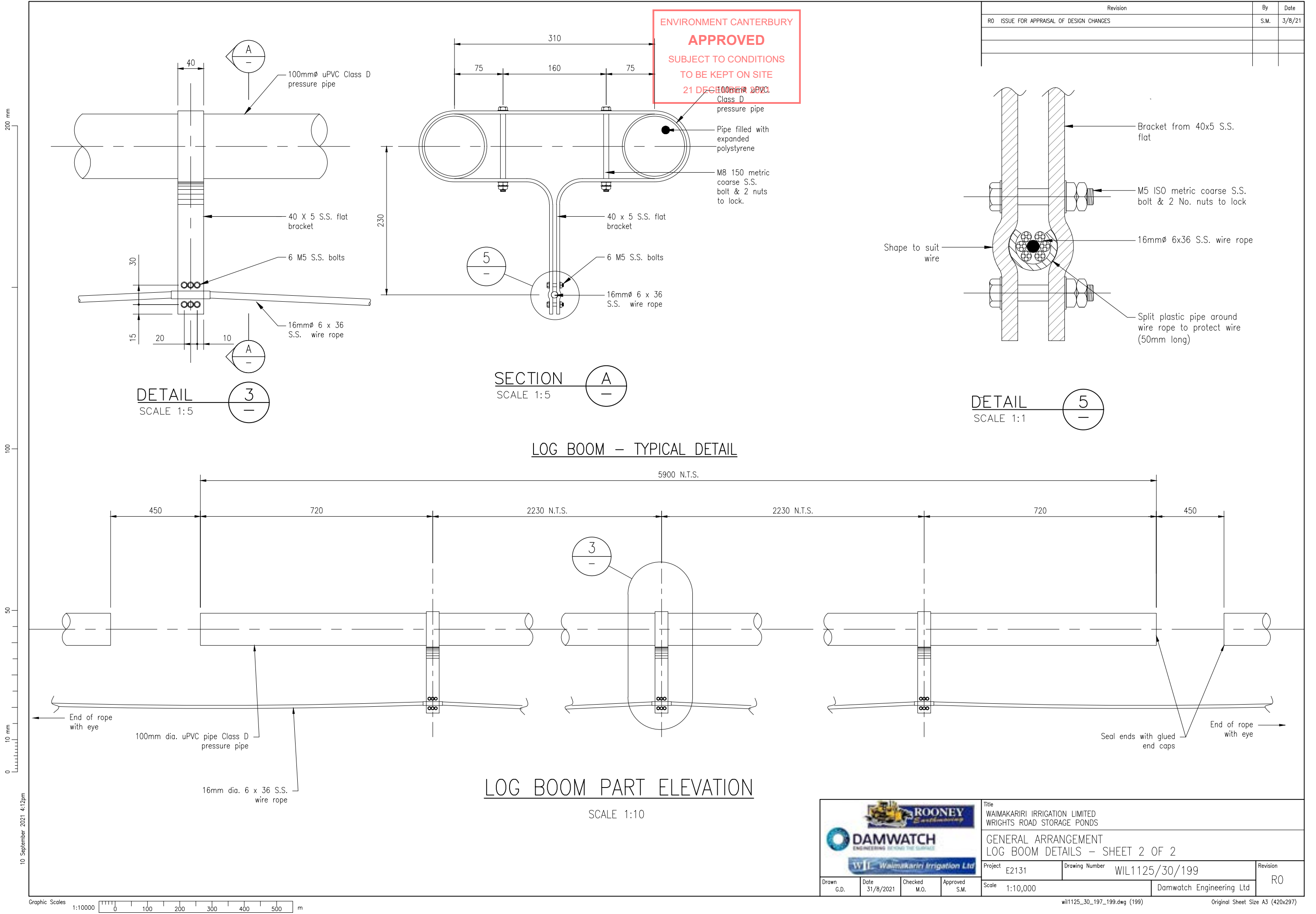
CONTROL STRUCTURES – G6 OUTLET STRUCTURE
FLOW METER CHAMBER – REINFOR. DETAILS – SHEET 4 OF 4

Project E2131	Drawing Number WIL1125/30/194	Revision R0
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Drawn G.D.	Date 31/8/21	Checked EO/NC	Approved S.M.	Scale 1:50	Damwatch Engineering Ltd
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WIL1125_30_190-194.dwg (Sheet 194)

Original Sheet Size A3 (420x297)





Hydraulics Notes

Smart Ram drilled to allow for transducer
Marine Grade Cylinder
Zinc Spray Cylinder Body plus 2 pot epoxy coating
Stainless Steel 2205 shaft and 316 Gland
Stainless Steel hose fittings
Set main Relief valve on Hydraulics power pack to Maximum 2000psi/138.2 bar
Set port relief on the top of the cylinder circuit for down pressure to 1500psi/103.7 bar

Steelwork Notes

- All mild steel and welding to conform to NZS 3404.
- All mild steel to be Grade 250.
- All Gate components to be H.D. Galvanised after fabrication.
- All welds to be 6mm fillet weld unless otherwise stated.
- All welding runs greater than 100mm to be stitched 50 on, 50 off unless otherwise stated.
- Straightening after welding and galvanising may be necessary to remove heat distortions.
- Air vents to be provided around all stiffeners for galvanising purposes.
- High strength bolts to be Grade 8.8.
- Rifle Pipe to be Grade 400.

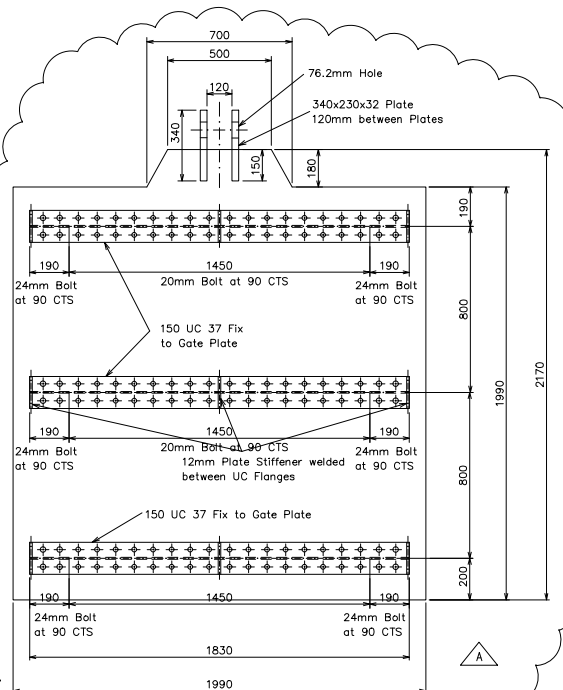
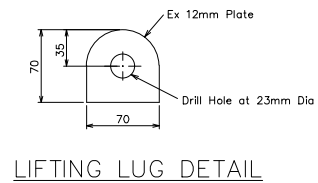
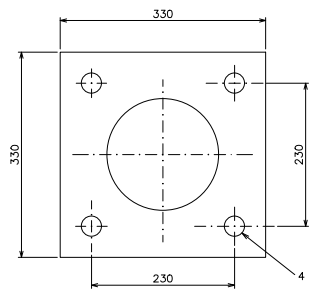
DESIGN: C.S.	DATE: Feb 2012	DRAWN: C.S.
APPROVED: S.N.A.	DATE: Feb 2012	DESIGN FILE: Hydraulic Slide Gates
CHECKED: S.N.A.	DATE: Feb 2012	DWG. NO:
SCALE: :		
ALL DIMENSIONS ARE IN mm		SHEET 1 OF 1

WAIMAKARIRI IRRIGATION SCHEME
STORAGE POND GATE 1 1800mm DIA HYDRAULIC GATE

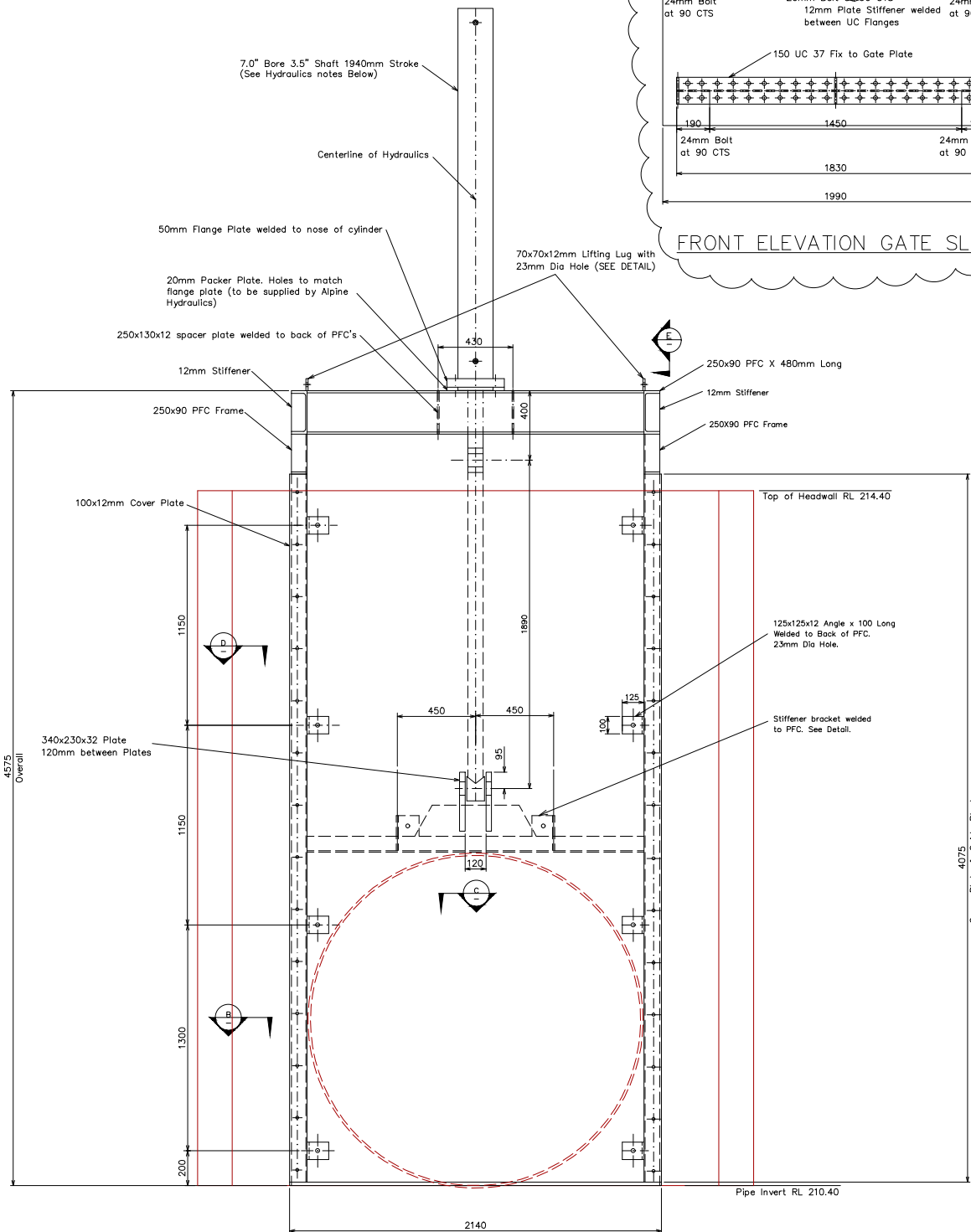


REV	PAGE
R1	110-27

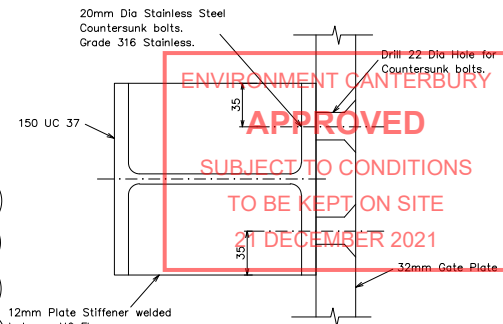
WIL1125/30/201



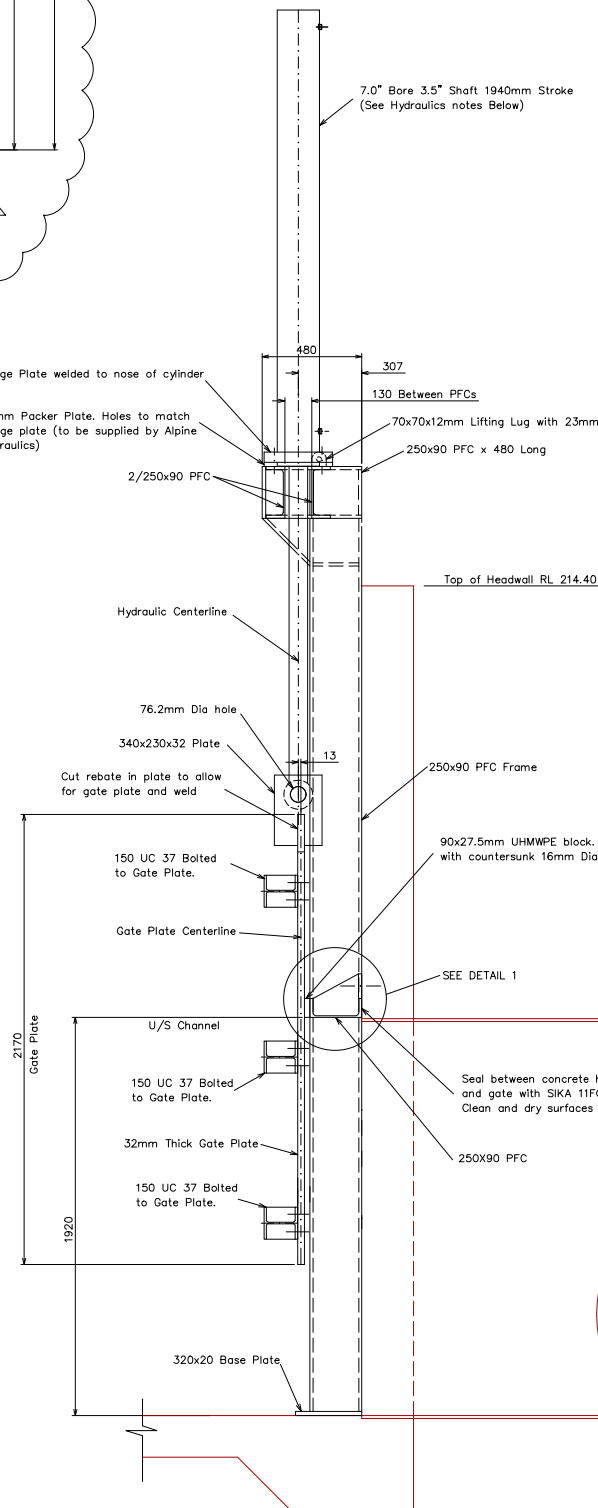
FRONT ELEVATION GATE SLIDE



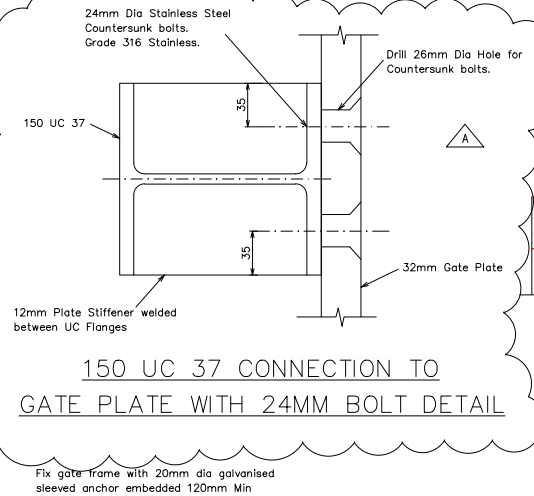
FRONT ELEVATION



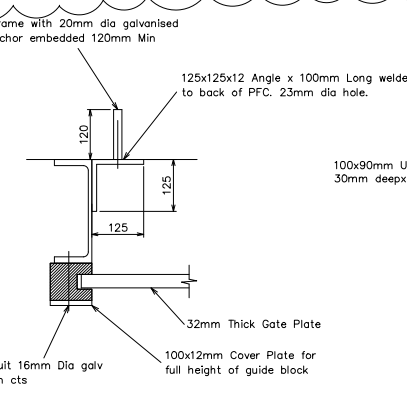
150 UC 37 CONNECTION TO GATE PLATE WITH 20MM BOLT DETAIL



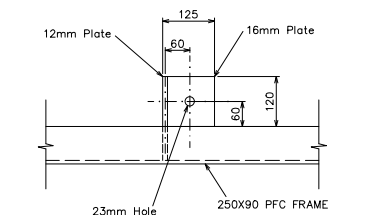
SECTION A



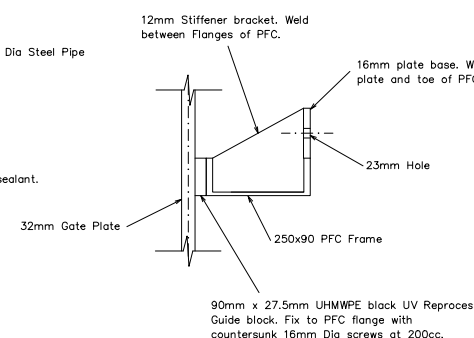
150 UC 37 CONNECTION TO GATE PLATE WITH 24MM BOLT DETAIL



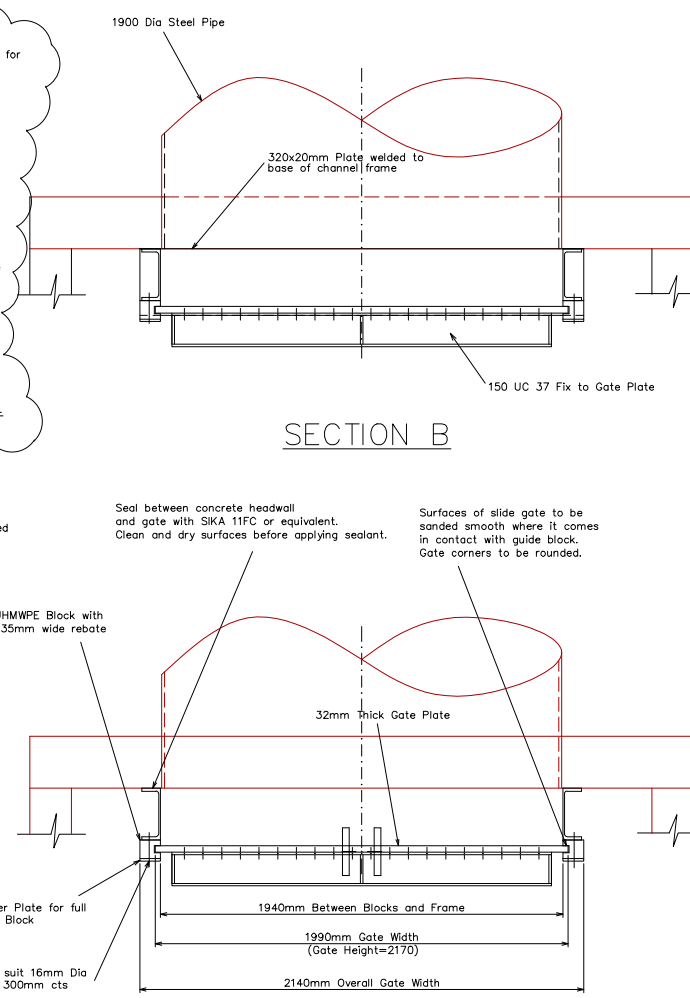
SECTION C



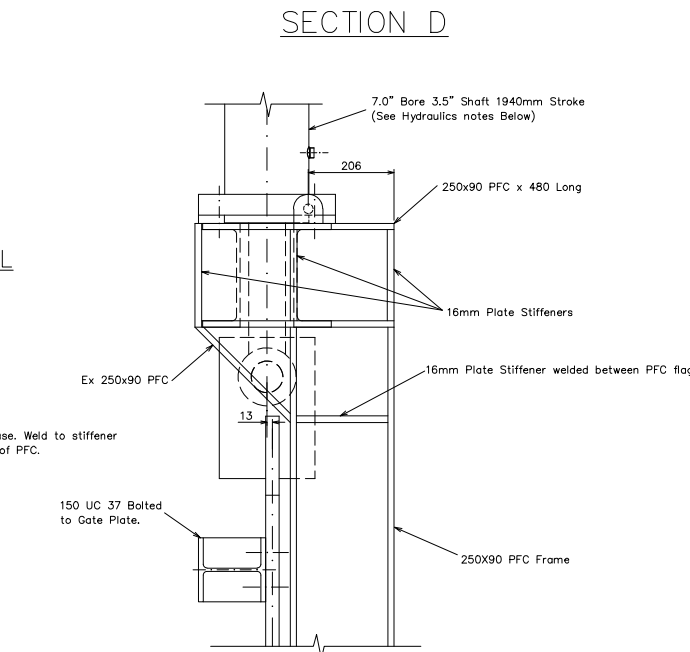
STIFFENER BRACKET DETAIL



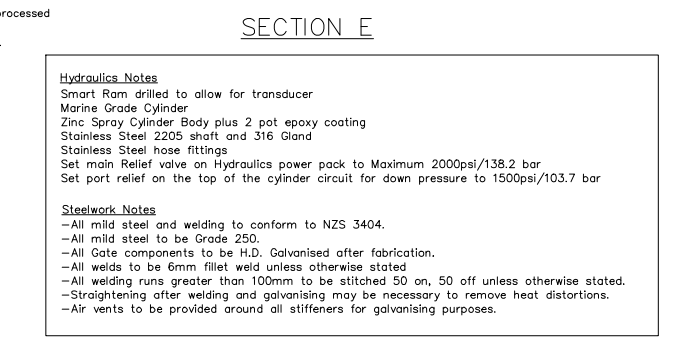
DETAIL 1



SECTION B



SECTION D



SECTION E

Hydraulics Notes
 Smart Ram drilled to allow for transducer
 Marine Grade Cylinder
 Zinc Spray Cylinder Body plus 2 pot epoxy coating
 Stainless Steel 2205 shaft and 316 Gland
 Stainless Steel hose fittings
 Set main Relief valve on Hydraulics power pack to Maximum 2000psi/138.2 bar
 Set port relief on the top of the cylinder circuit for down pressure to 1500psi/103.7 bar

Steelwork Notes
 -All mild steel and welding to conform to NZS 3404.
 -All mild steel to be Grade 250.
 -All Gate components to be H.D. Galvanised after fabrication.
 -All welds to be 6mm fillet weld unless otherwise stated
 -All welding runs greater than 100mm to be stitched 50 on, 50 off unless otherwise stated.
 -Straightening after welding and galvanising may be necessary to remove heat distortions.
 -Air vents to be provided around all stiffeners for galvanising purposes.

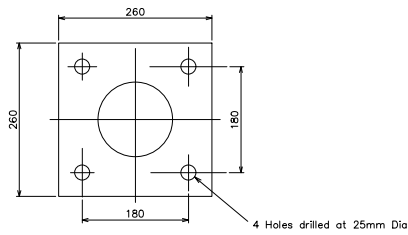
DESIGN: C.S.	DATE: Jan 2013	DRAWN: C.S.
APPROVED: S.N.A.	DATE: Jan 2013	DESIGN FILE: Hydraulic Slide Gates
CHECKED: S.N.A.	DATE: Jan 2013	DWG. NO:
SCALE: :		
ALL DIMENSIONS ARE IN mm	SHEET 1 OF 1	

WAIMAKARIRI IRRIGATION SCHEME STORAGE POND GATE 2 1900mm DIA HYDRAULIC GATE

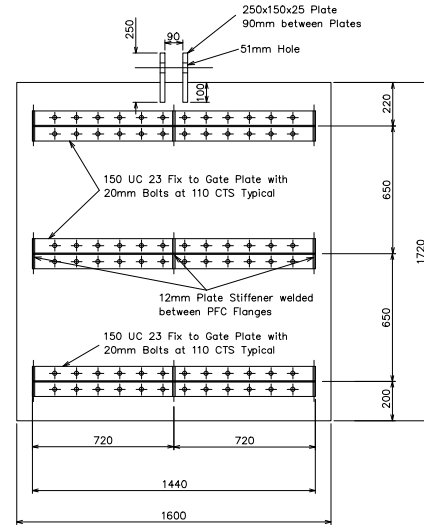


REV	PAGE
A	110-28

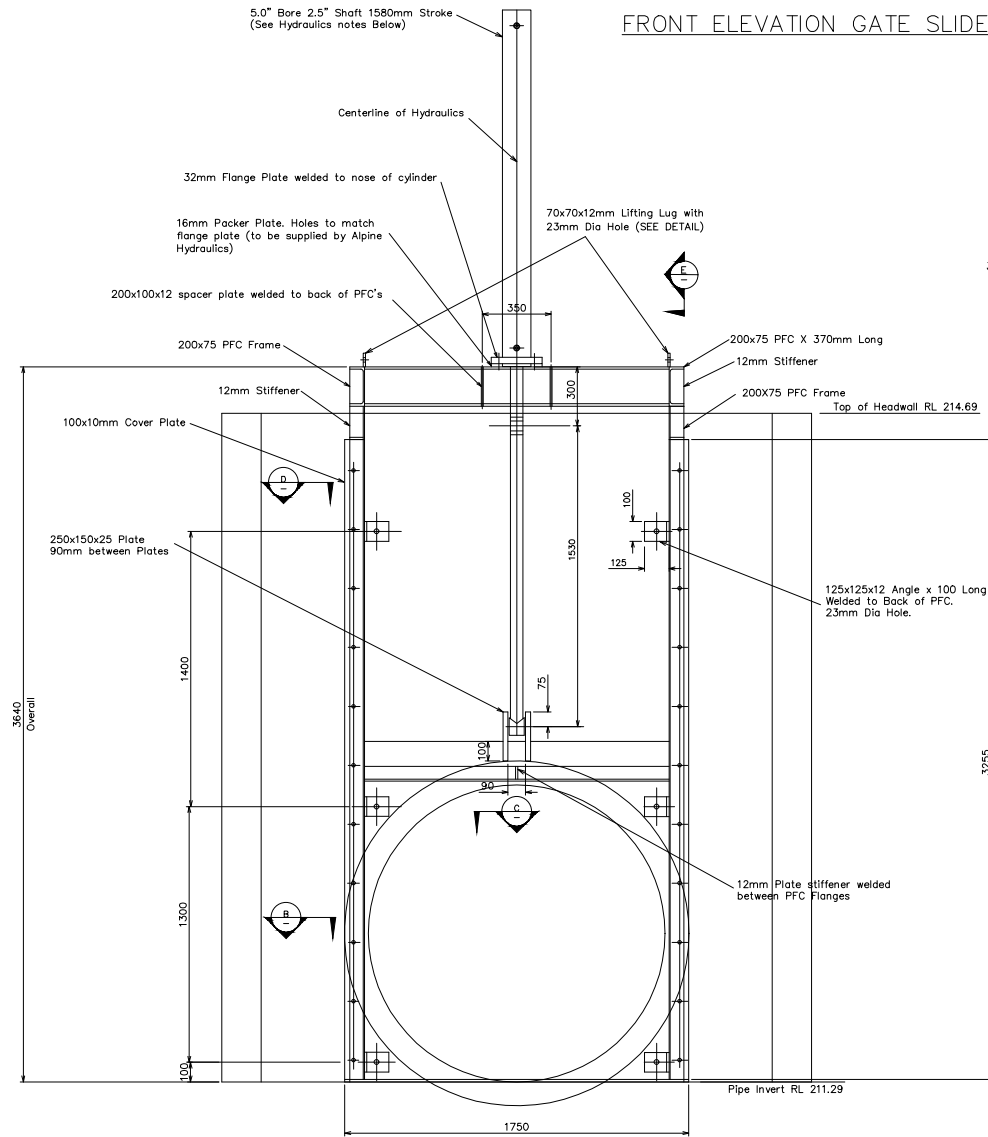
WIL1125/30/202R1



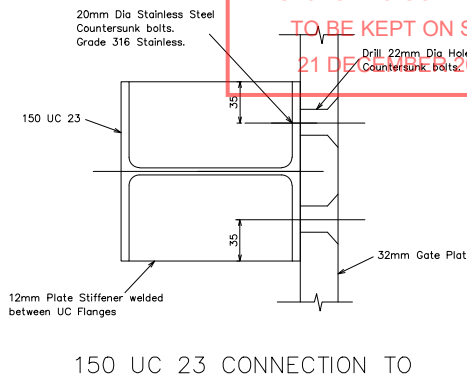
32mm FLANGE PLATE DETAIL
Note: 16mm packer plate to have matching dimensions. Both plates to be sand blasted and zinc sprayed



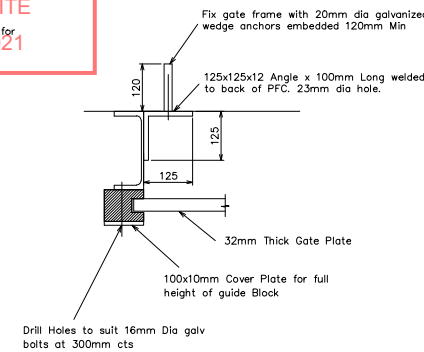
FRONT ELEVATION GATE SLIDE



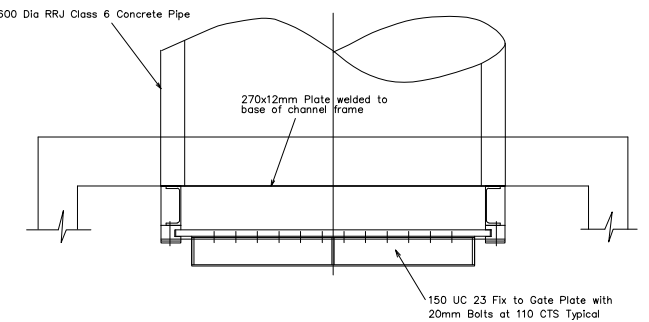
FRONT ELEVATION



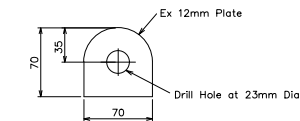
150 UC 23 CONNECTION TO GATE PLATE DETAIL



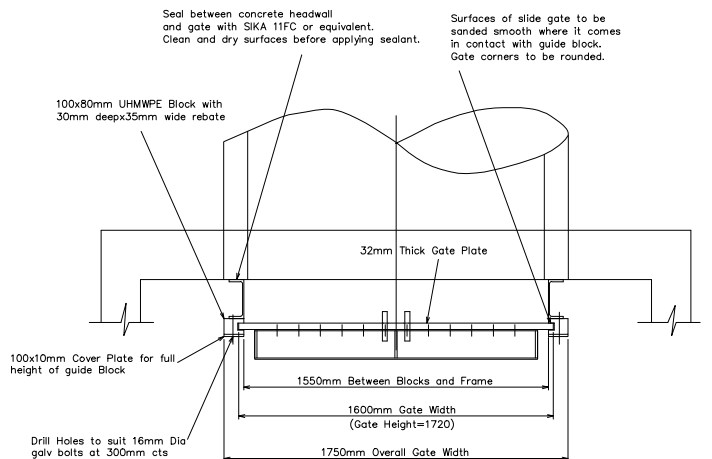
SECTION C



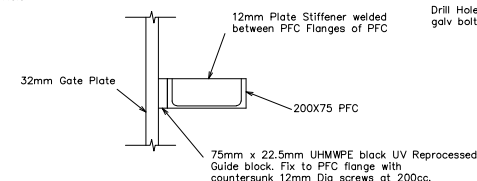
SECTION B



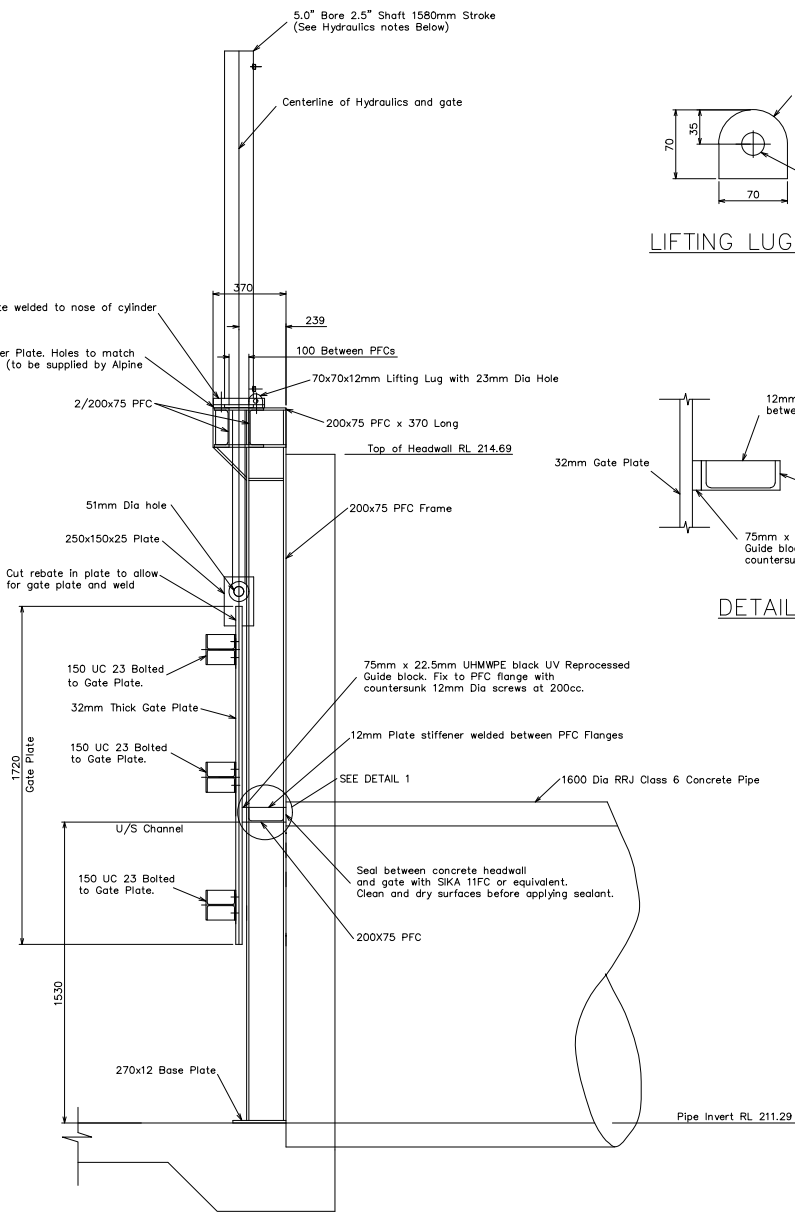
LIFTING LUG DETAIL



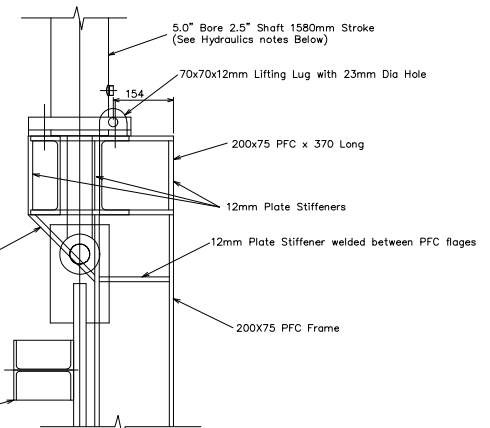
SECTION D



DETAIL 1



SECTION A



SECTION E

Hydraulics Notes
Smart Ram drilled to allow for transducer
Marine Grade Cylinder
Zinc Spray Cylinder Body plus 2 pot epoxy coating
Stainless Steel 2205 shaft and 316 Gland
Stainless Steel hose fittings
Set main Relief valve on Hydraulics power pack to Maximum 2000psi/138.2 bar
Set port relief on the top of the cylinder circuit for down pressure to 1500psi/103.7 bar

Steelwork Notes
-All mild steel and welding to conform to NZS 3404.
-All mild steel to be Grade 250.
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-All welding runs greater than 100mm to be stitched 50 on, 50 off unless otherwise stated.
-Straightening after welding and galvanising may be necessary to remove heat distortions.
-Air vents to be provided around all stiffeners for galvanising purposes.

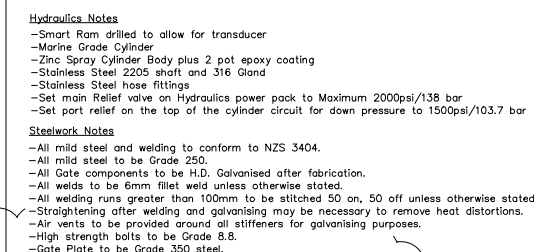
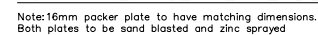
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APPROVED: S.N.A.	DATE: Feb 2012	DESIGN FILE: Hydraulic Slide Gates
CHECKED: S.N.A.	DATE: Feb 2012	DWG. NO:
SCALE: :		
ALL DIMENSIONS ARE IN mm		SHEET 1 OF 1

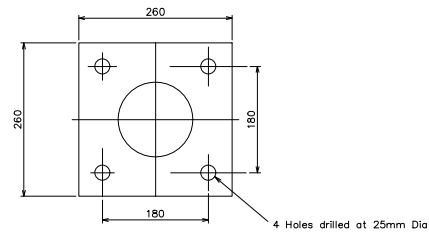
WAIMAKARIRI IRRIGATION SCHEME STORAGE POND GATE 3 1600mm DIA HYDRALIC GATE



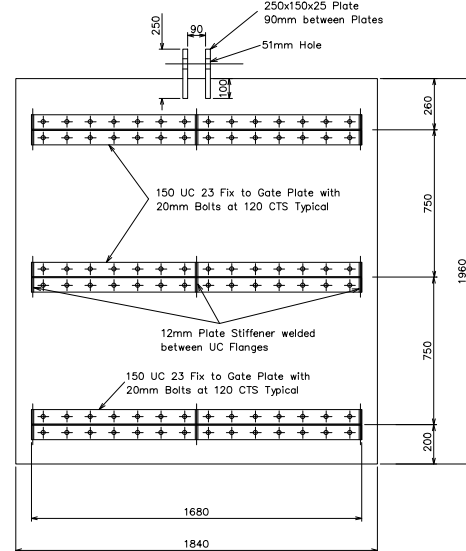
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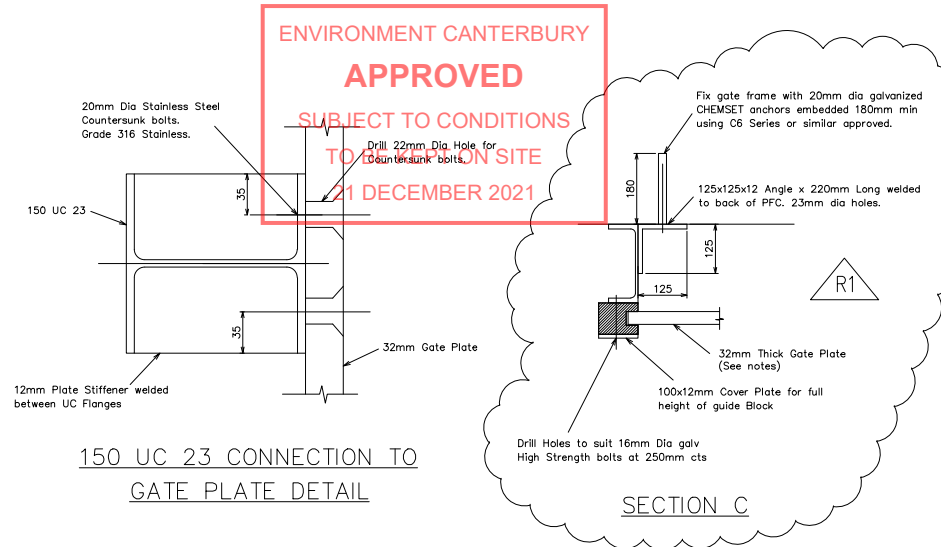
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R1	110-30



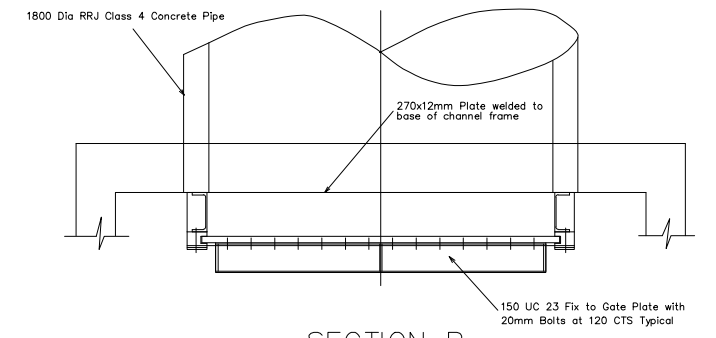
32mm FLANGE PLATE DETAIL
Note: 16mm packer plate to have matching dimensions. Both plates to be sand blasted and zinc sprayed



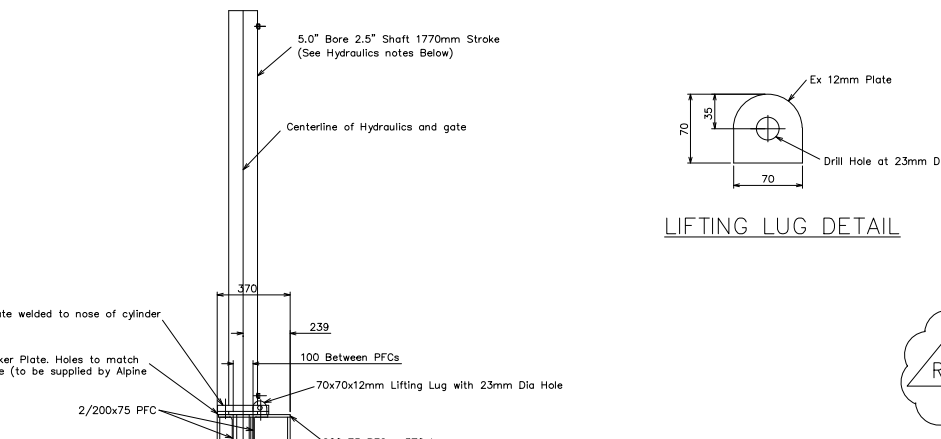
FRONT ELEVATION GATE SLIDE



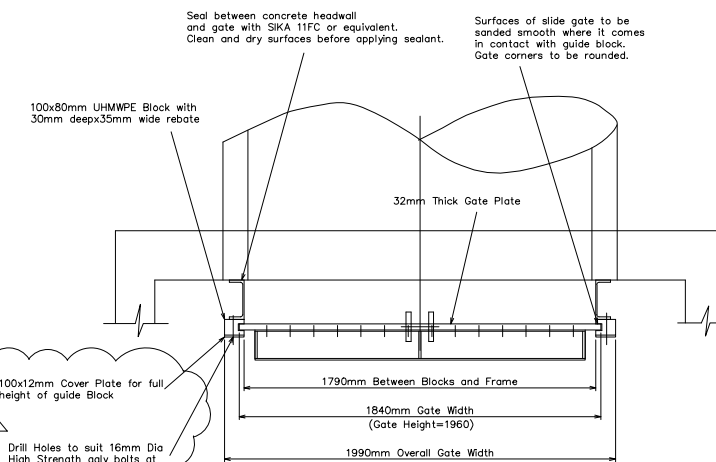
150 UC 23 CONNECTION TO GATE PLATE DETAIL



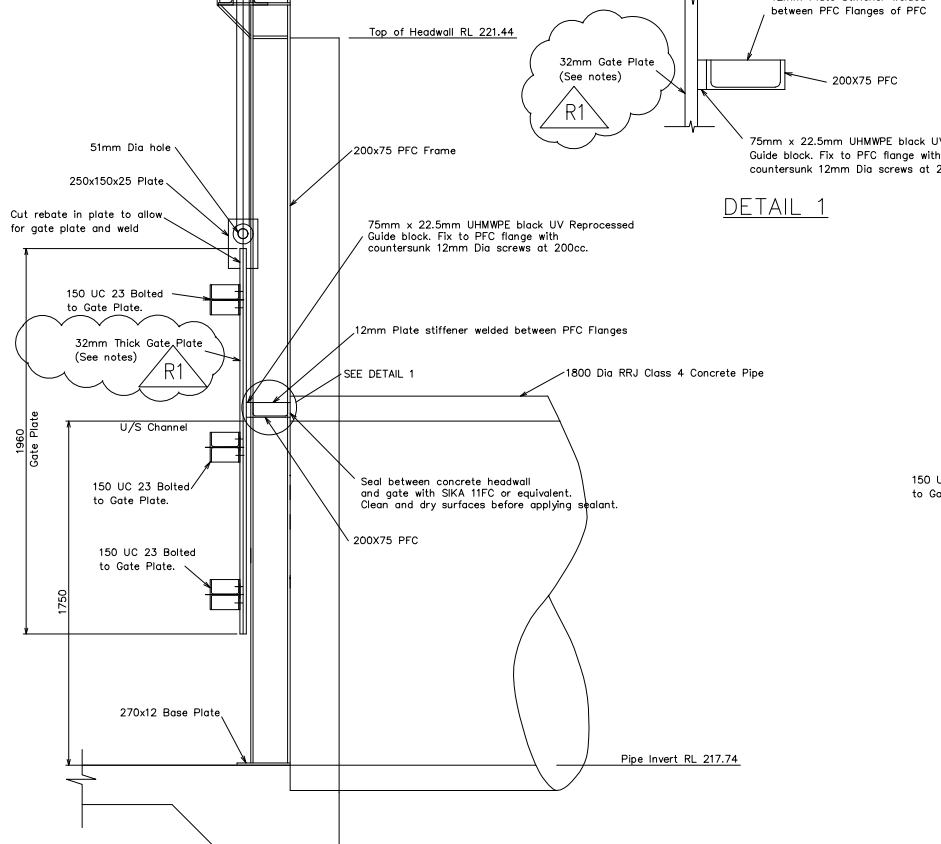
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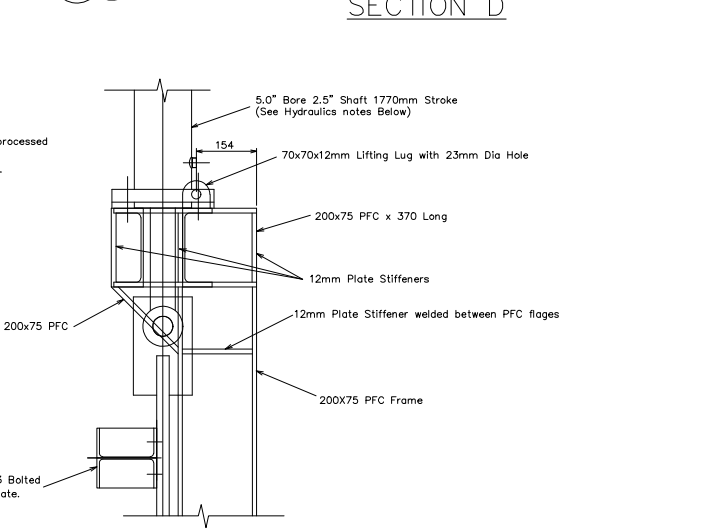
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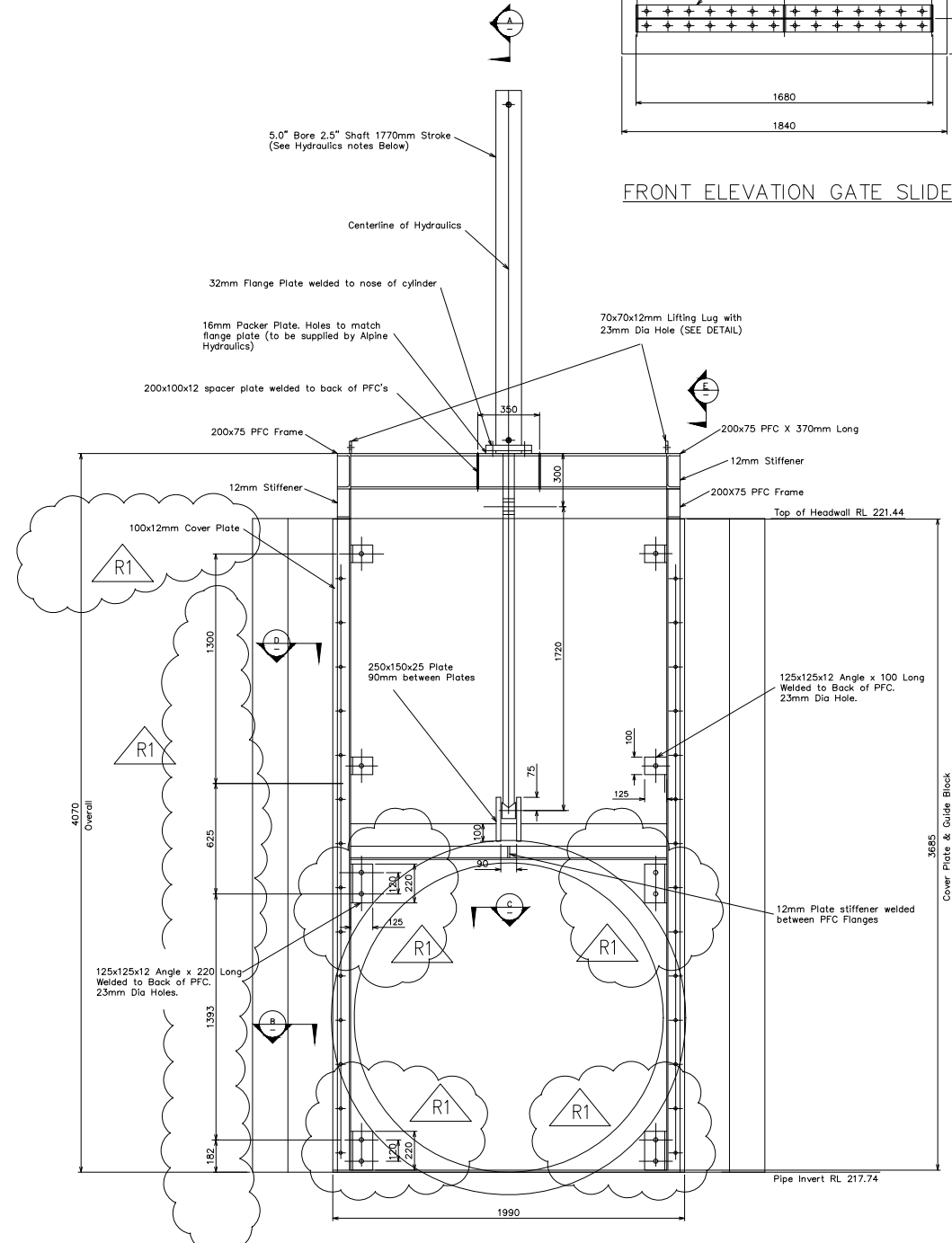
SECTION D



SECTION A



SECTION E



FRONT ELEVATION

Hydraulics Notes
Smart Ram drilled to allow for transducer
Marine Grade Cylinder
Zinc Spray Cylinder Body plus 2 pot epoxy coating
Stainless Steel 2205 shaft and 316 Gland
Stainless Steel hose fittings
Set main Relief valve on Hydraulics power pack to Maximum 2000psi/138.2 bar
Set port relief on the top of the cylinder circuit for down pressure to 1500psi/103.7 bar

Steelwork Notes
-All mild steel and welding to conform to NZS 3404.
-All mild steel to be Grade 250.
-All Gate components to be H.D. Galvanised after fabrication.
-All welds to be 6mm fillet weld unless otherwise stated
-All welding runs greater than 100mm to be stitched 50 on, 50 off unless otherwise stated.
-Straightening after welding and galvanising may be necessary to remove heat distortions.
-Air vents to be provided around all stiffeners for galvanising purposes.
-High strength bolts to be Grade 8.8.
-Gate Plate to be Grade 350 steel.

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WAIMAKARIRI IRRIGATION SCHEME STORAGE POND GATE 5 1800mm DIA HYDRAULIC GATE



WIL1125/30/205

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R1	110-31

Cut 32x32 Triangle x 65mm
Long in gate plate

1600 Dia RRJ Class 6 Concrete Pipe

220x12mm Plate welded to base of channel frame

150x75 PFC Flx to Gate Plate with 16mm Bolts at 80 CTS Typical

Diagram illustrating the Guide block assembly components and dimensions:

- 10mm Plate stiffener welded between PFC Flanges of PFC
- 32mm Gate Plate
- 150x75 PFC
- 75mm x 22.5mm UHMWPE black UV Reprocessed
- Guide block: Fix to PFC flange with countersunk 12mm Dia screws at 200cc.

Seal between concrete headwall and gate with SIKA 11FC or equivalent.
Clean and dry surfaces before applying sealant.

100x80mm UHMWPE Block with 30mm deepx35mm wide rebate

32mm Thick Gate Plate

100x10mm Cover Plate for full height of guide Block

Drill Holes to suit 16mm Dia galv bolts at 300mm cts

Surfaces of slide gate to be sanded smooth where it comes in contact with guide block. Gate corners to be rounded.

1550mm Between Blocks and Frame

1600mm Gate Width (Gate Height=1700)

1750mm Overall Gate Width

Fix gate frame with 20mm dia galvanized wedge anchors embedded 120mm Min

120

100x100x10 Angle x 100mm Long welded to back of PFG. 23mm dia hole.

100

100

32mm Thick Gate Plate

100x10mm Cover Plate for full height of guide Block

Drill Holes to suit 16mm Dia galv bolts at 300mm cts

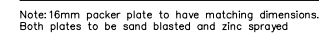
Hydraulics Notes

- Smart Ram drilled to allow for transducer
- Marine Grade Cylinder
- Zinc Spray Cylinder Body plus 2 pot epoxy coating
- Stainless Steel 2205 shaft and 316 Gland
- Stainless Steel hose fittings
- Set main Relief valve on Hydraulics power pack to Maximum 2000psi/138 bar
- Set port relief on the top of the cylinder circuit for down pressure to 1500psi/103.7 bar

Steelwork Notes

- All mild steel and welding to conform to NZS 3404.
- All mild steel to be Grade 250.
- All Gate components to be H.D. Galvanised after fabrication.
- All welds to be 6mm fillet weld unless otherwise stated.
- All welding runs greater than 100mm to be stitched 50 on, 50 off unless otherwise state
- Straightening after welding and galvanizing may be necessary to remove heat distortions.
- Air vents to be provided around all stiffeners for galvanising purposes

REV	PAGE
A	110-32



16mm Dia Stainless Steel countersunk bolts.
Grade 316 Stainless.

150x75 PFC

10mm Plate Stiffener welded between PFC Flanges

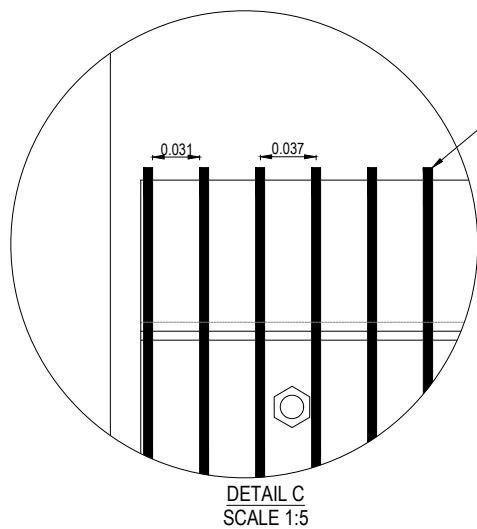
32mm Gate Plate

Drill 18mm Dia Hole for countersunk bolts.

SECTION A

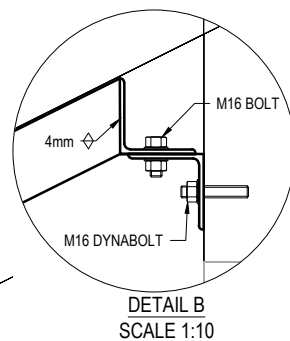
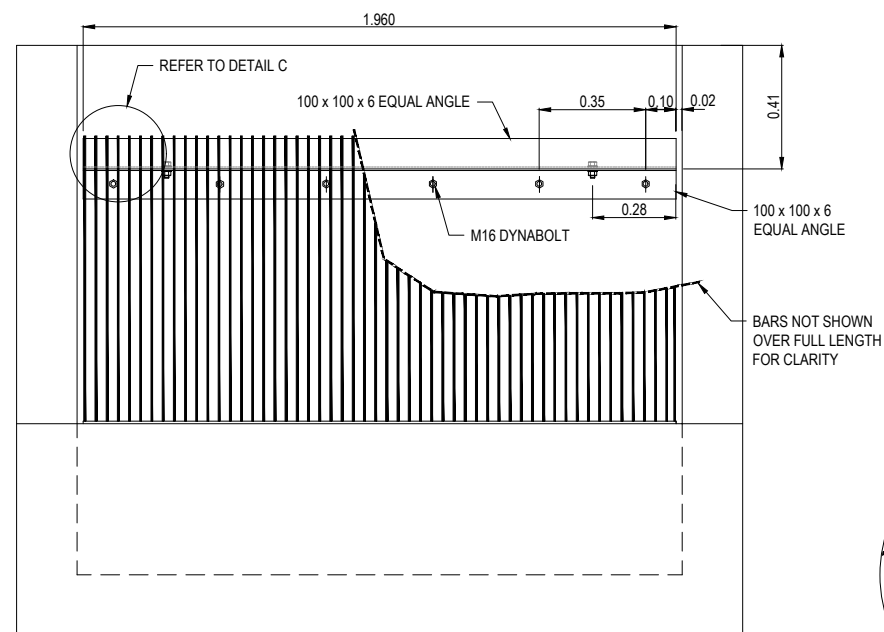
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ALL DIMENSIONS ARE IN mm		SHEET 1 OF 1

WAIMAKARIRI IRRIGATION SCHEME

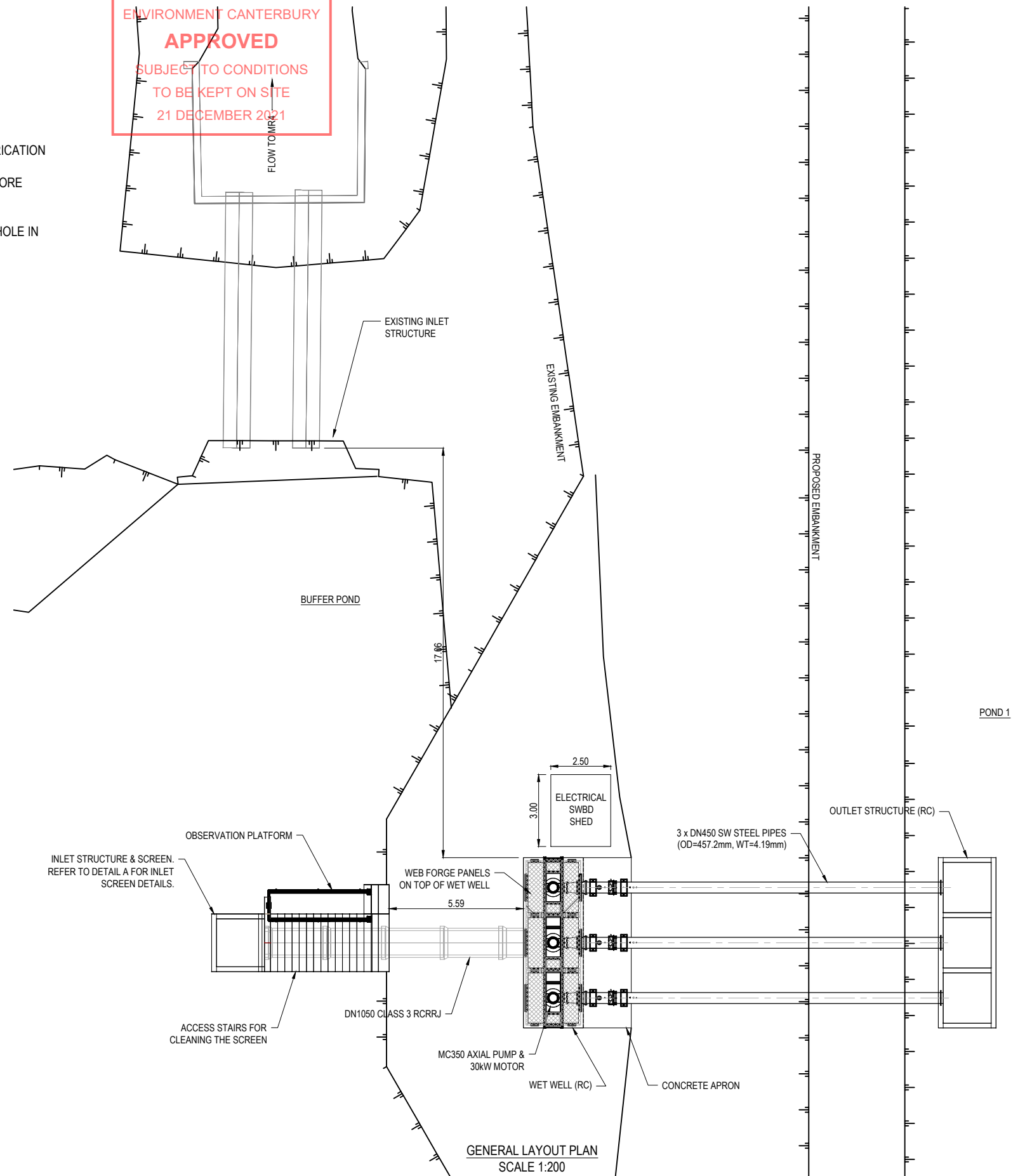


NOTES

1. ALL STEEL TO BE A MINIMUM OF GRADE 250
2. ALL STEEL TO BE HOT DIPPED GALVANISED FOLLOWING FABRICATION
3. ALL WELDING TO COMPLY WITH NZS3404.
4. CONFIRM DIMENSIONS OF CONCRETE INLET STRUCTURE BEFORE MANUFACTURING SCREEN
5. ALL BOLTS TO BE GALVANISED.
6. M16 DYNABOLTS TO BE MINIMUM 55mm LONG. DRILL Ø19mm HOLE IN CONCRETE.



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TO BE KEPT ON SITE
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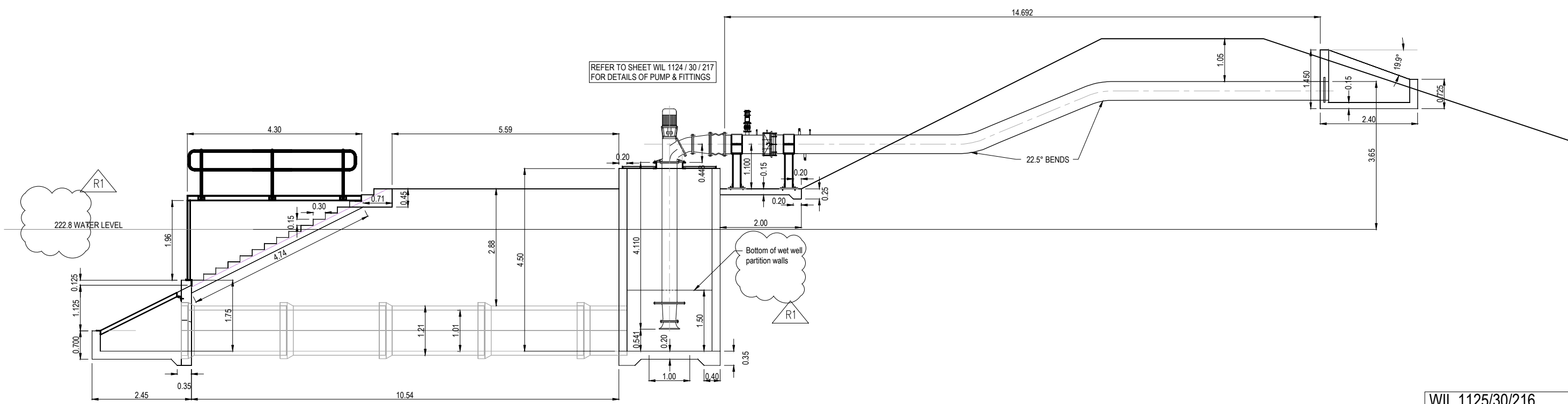
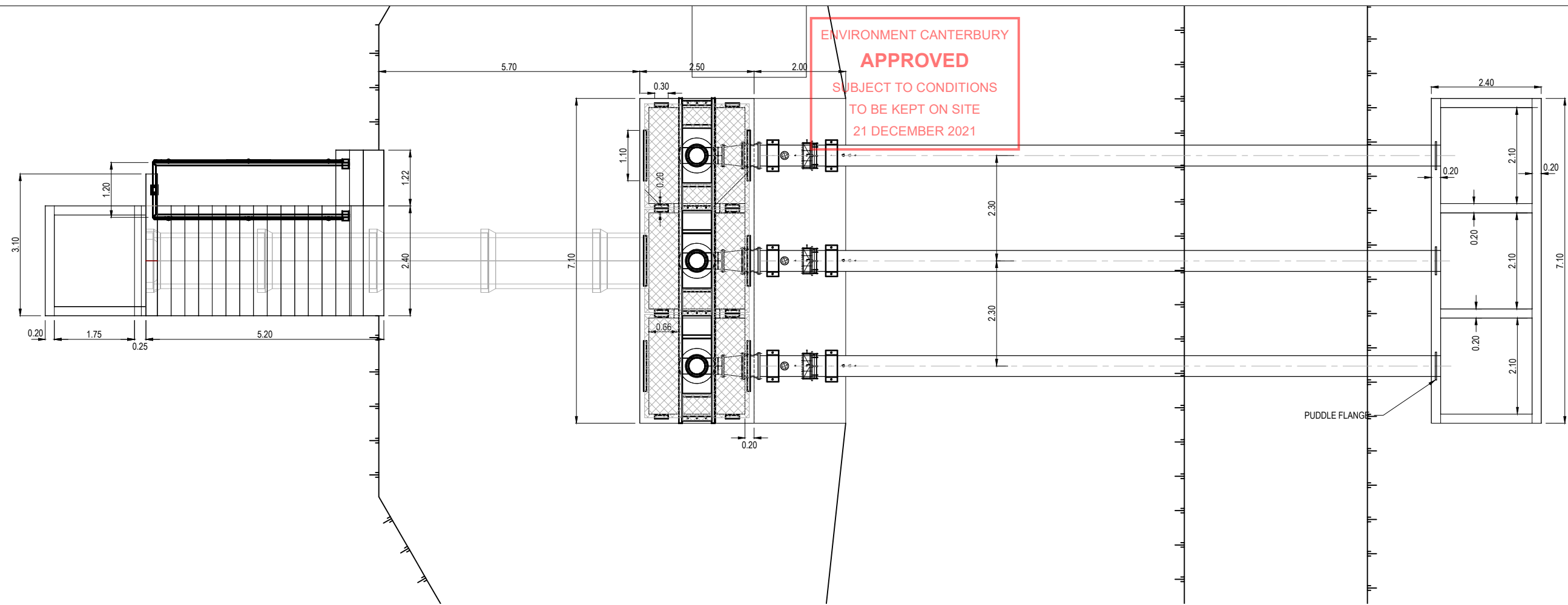
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WAIMAKARIRI IRRIGATION LTD
BUFFER POND PUMP STATION
LOCATION PLAN & SCREEN DETAILS



WIL1125/30/215

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1	1



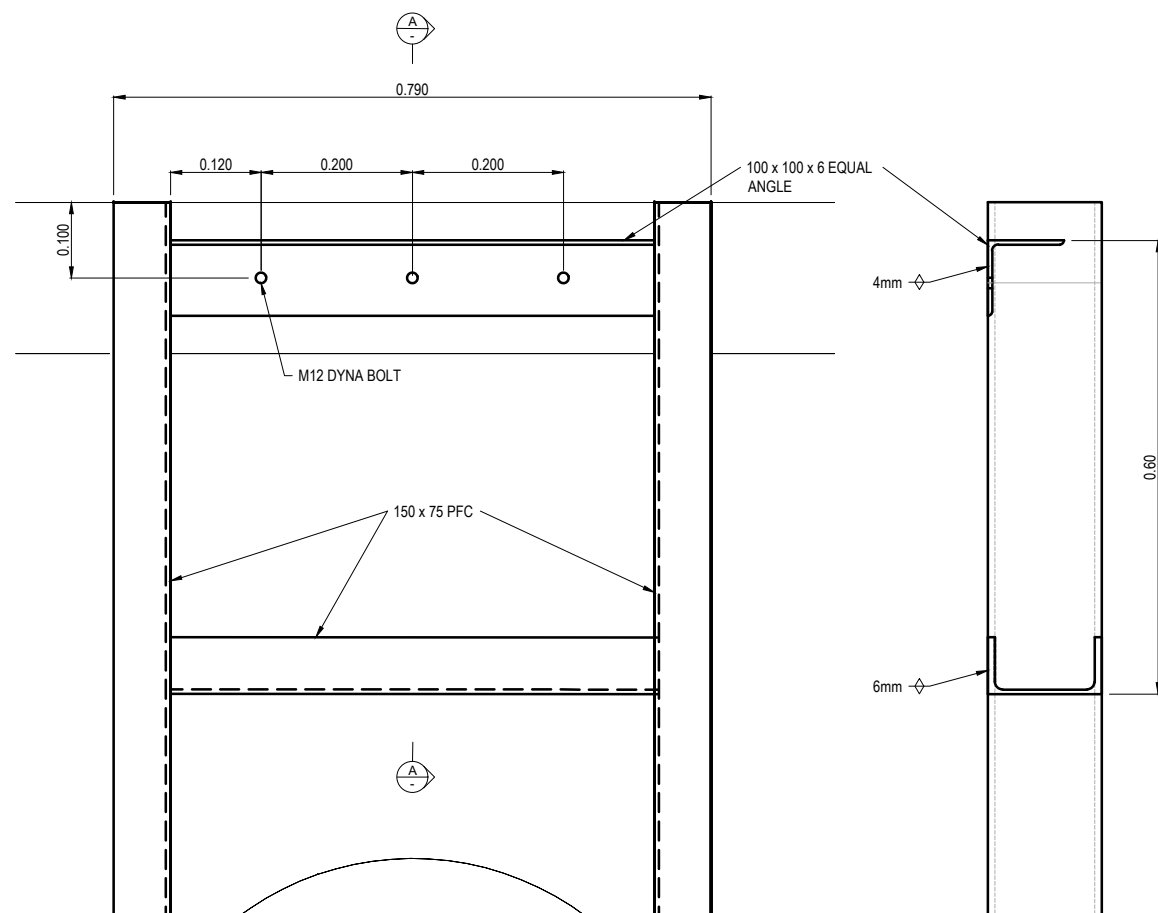
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WAIMAKARIRI IRRIGATION LTD
BUFFER POND PUMP STATION
PUMP STATION LAYOUT



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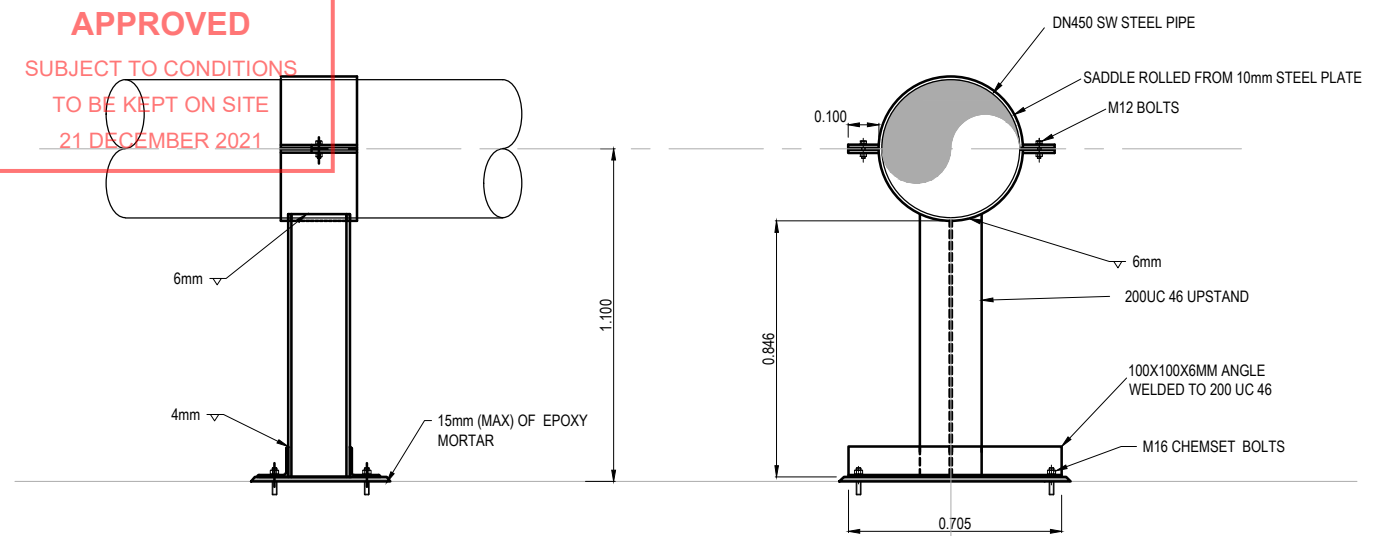
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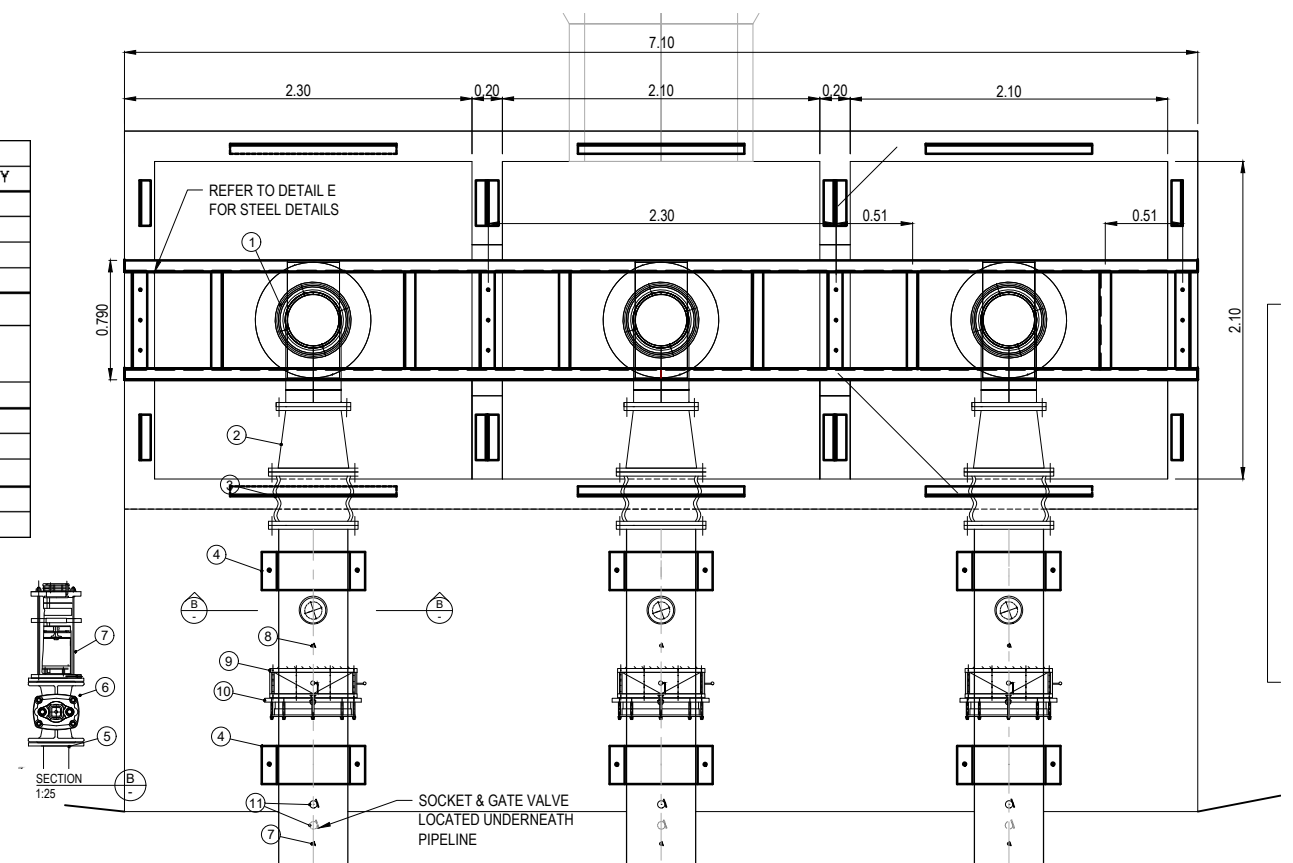
DETAIL E
PIPE SUPPORT BRACKETS
SCALE 1:10

- NOTES**
1. ALL STEEL TO BE MINIMUM GRADE 250
 2. ALL STEEL WORK TO BE HOT DIPPED GALVANISED FOLLOWING FABRICATION
 3. CONFIRM THE DIMENSIONS OF CONCRETE STRUCTURES PRIOR TO FABRICATION OF ALL STEEL SUPPORTS.
 4. ALL WELDING TO COMPLY WITH NZS3404.
 5. ALL BOLTS TO BE GALVANISED
 6. ALL CHEMSET TO BE MINIMUM 55mm LONG. FOR M16 DRILL Ø19mm HOLE IN CONCRETE. FOR M12 DRILL 15Ømm HOLE IN CONCRETE.

SCHEDULE OF FITTINGS				
ITEM	DESCRIPTION	MATERIAL	COATING	QTY
1	MC350 AXIAL PUMP (PITCH ANGLE +2°) & 30kW motor	NA	400 MICRON EXPOXY	3
2	DN350 - DN450 REDUCER	Steel/DI	RILSAN NYLON 11	3
3	DN450 FLEXIBLE DOUBLE SPHERE EXPANSION JOINT	STEEL/RUBBER	RILSAN NYLON 11	3
4	PIPE SUPPORT BRACKET (DETAIL B)	STEEL	HOT DIP GALV	6
5	DN80 SOCKET WITH TABLE D FLANGE	STEEL	400 MICRON EXPOXY	3
6	DN80 GATE VALVE WITH HANDWHEEL (FL-FL TABLE D)	DI	RILSAN NYLON 11	3
7	80NB VENT-O-MAT RBx6 080 AIR VALVE (TABLE D FLANGE)	SS	NA	3
8	DN20 BSP SOCKET WITH M4F GATE VALVE (SS)	STEEL(SOCKET)	400 MICRON EXPOXY	6
9	DN450 CHECK VALVE (TBC)	DI	RILSAN NYLON 11	3
10	DN450 FLANGE - GIBULALT ADAPTOR	STEEL	RILSAN NYLON 11	3
11	DN50 BSP SOCKET WITH M4F GATE VALVE (SS)	STEEL(SOCKET)	400 MICRON EXPOXY	6
OUTLET FITTINGS				
PUDDLE FLANGES (REFER OTHER SHEET)		STEEL	400 MICRON EXPOXY	3



DETAIL D
PIPE SUPPORT BRACKETS
SCALE 1:25



PIPE & PUMP FITTINGS
SCALE 1:50

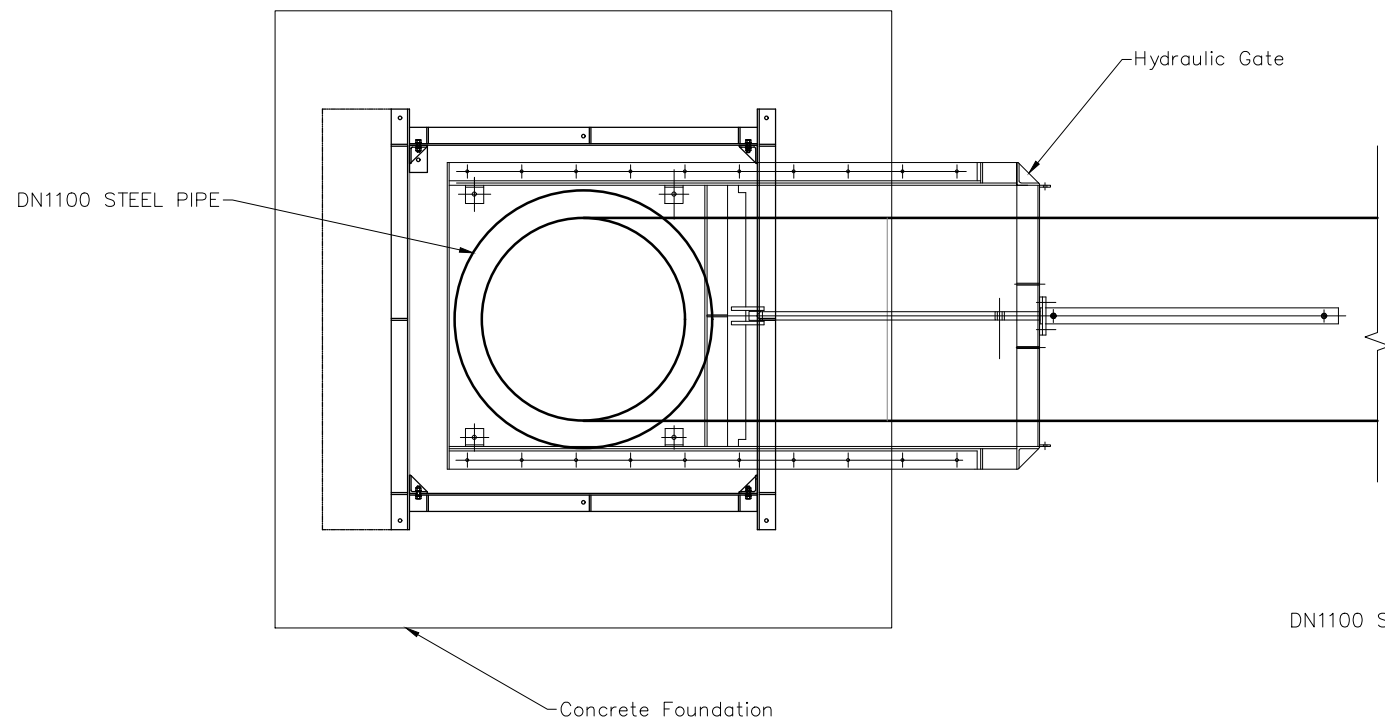
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WAIMAKARIRI IRRIGATION LTD
BUFFER POND PUMP STATION
PIPE & PUMP FITTINGS

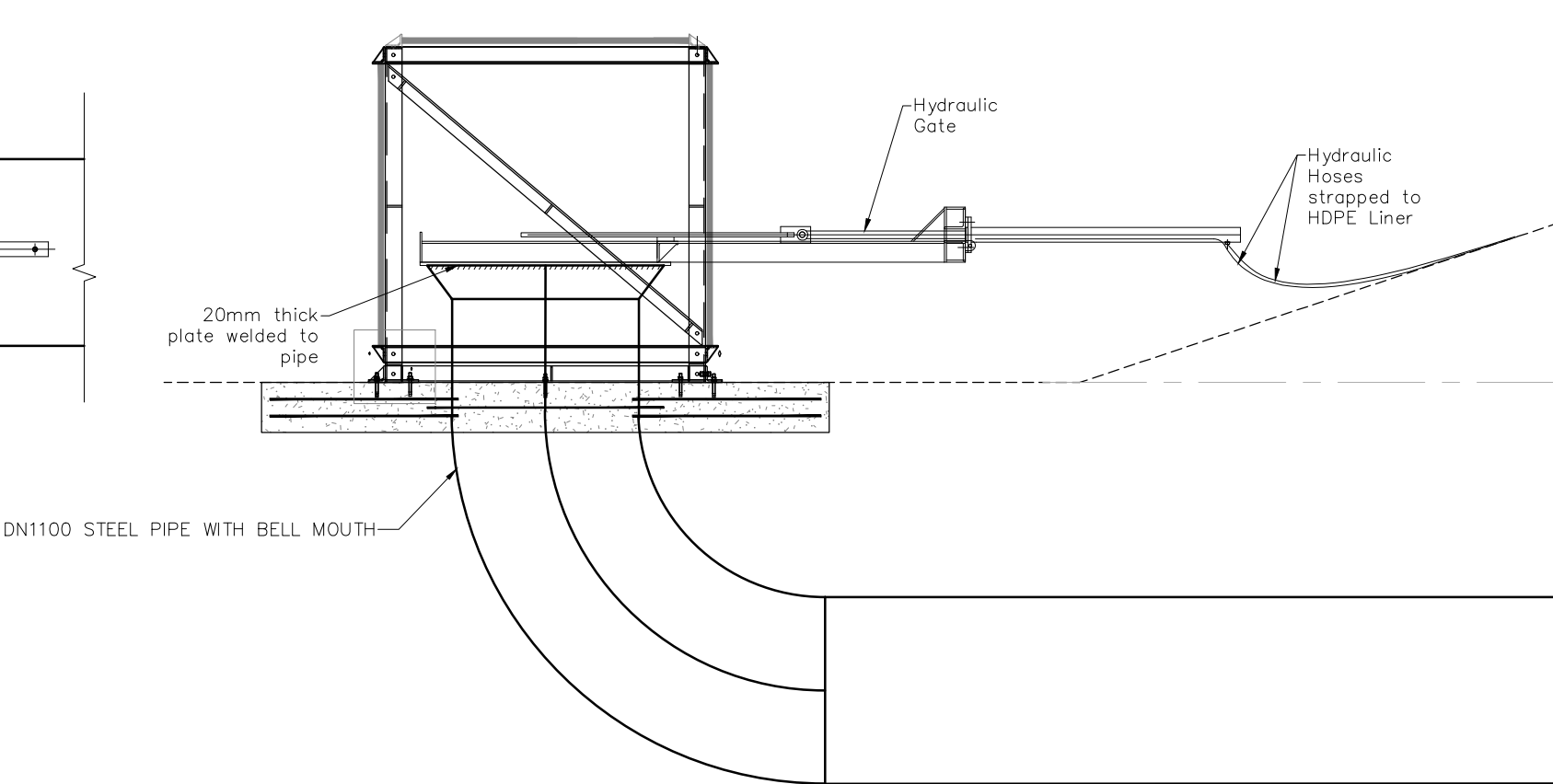


WIL 1125/30/217	
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PLAN



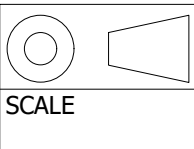
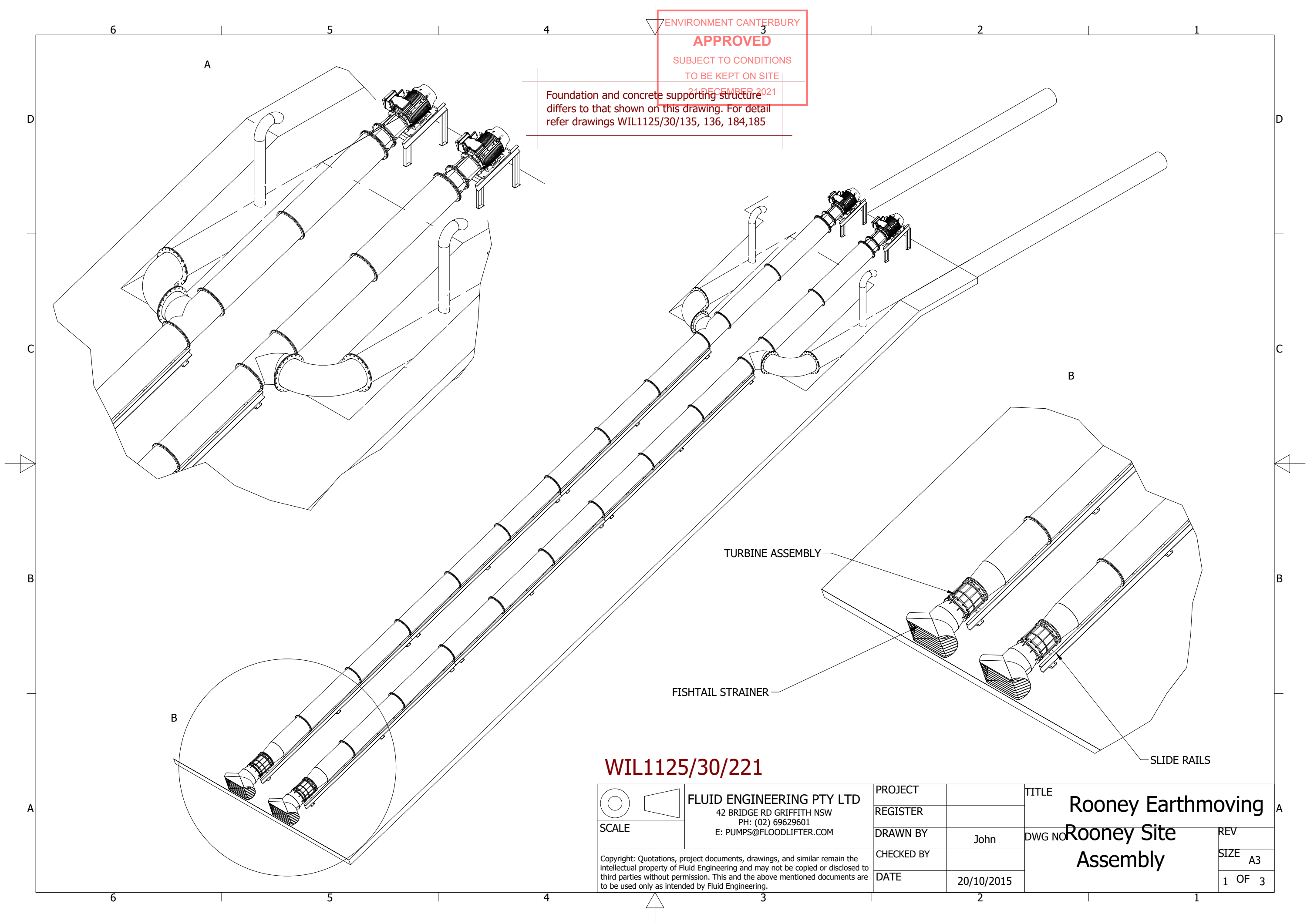
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WAIMAKARIRI IRRIGATION SCHEME
INLET HYDRAULIC GATE FOR DIXON RD PUMP STATION



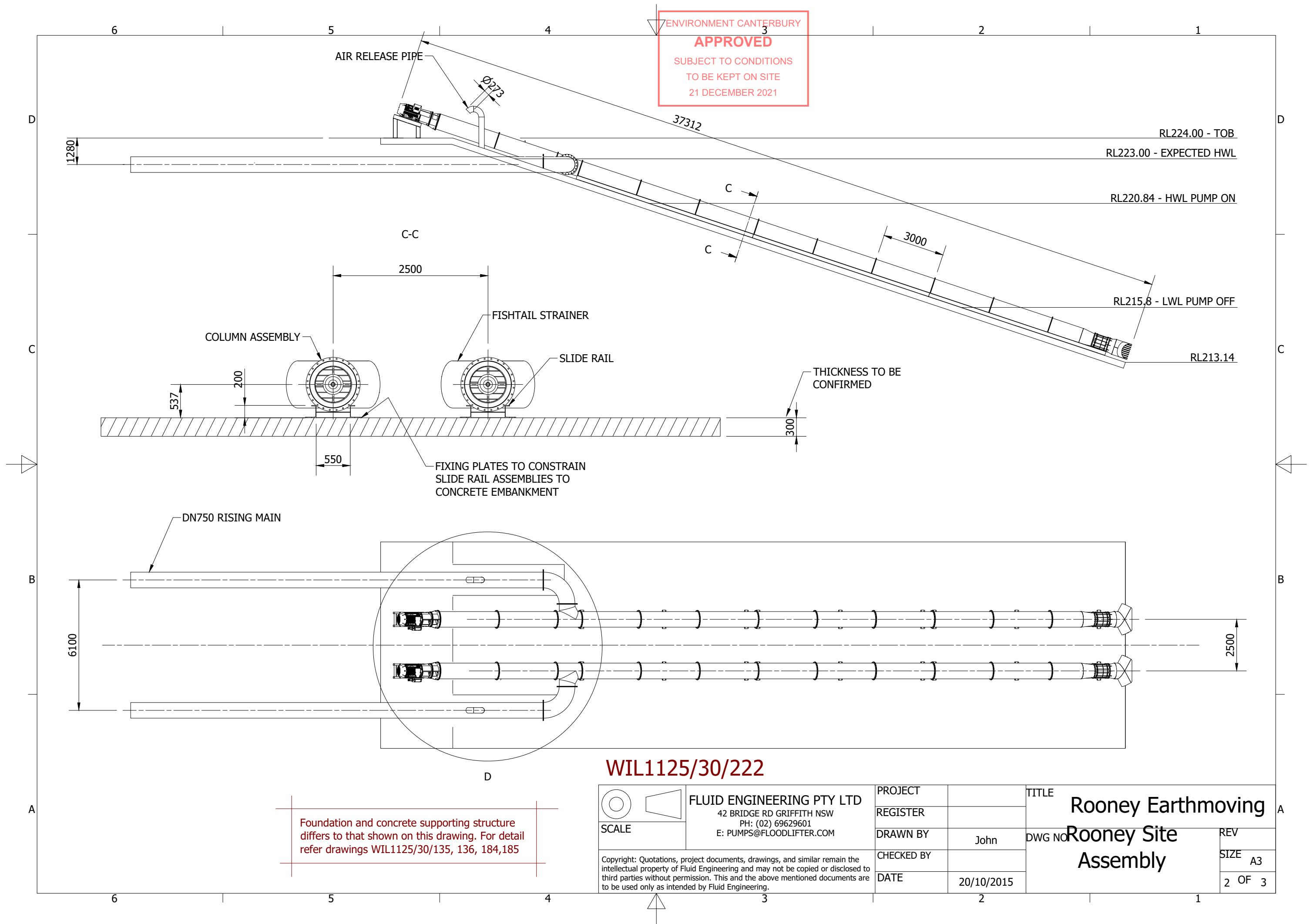
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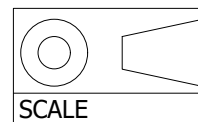
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42 BRIDGE RD GRIFFITH NSW
PH: (02) 69629601
E: PUMPS@FLOODLIFTER.COM

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REGISTER		DWG NO	
DRAWN BY	John	REV	
CHECKED BY		SIZE	
DATE	20/10/2015		A3
			1 OF 3



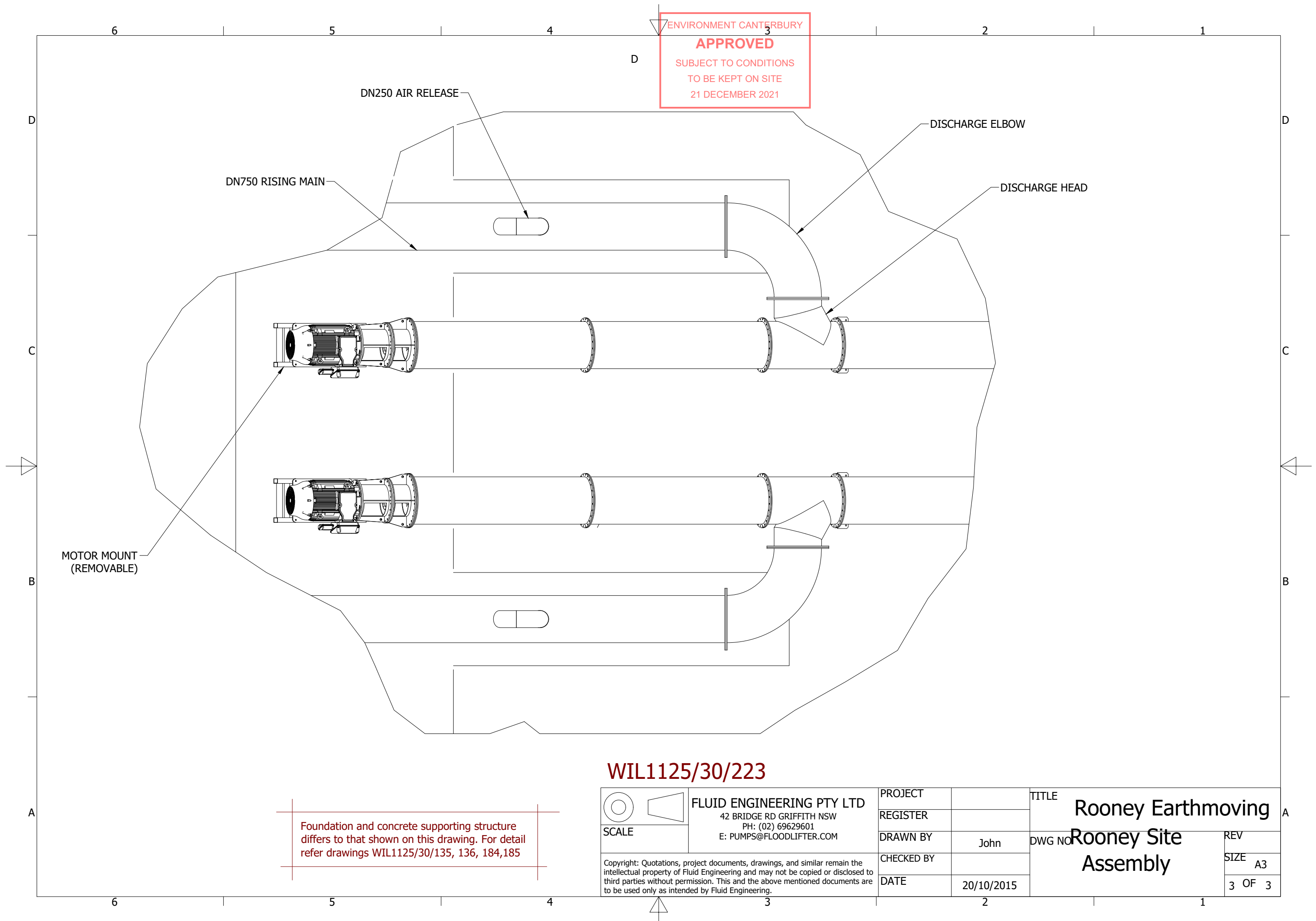
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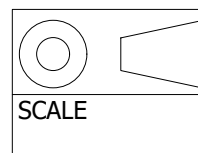
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REGISTER		DWG NO	Rooney Site Assembly
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	REGISTER		Rooney Earthmoving	
	DRAWN BY	John	DWG NO	REV
	CHECKED BY			SIZE
	DATE	20/10/2015		A3
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