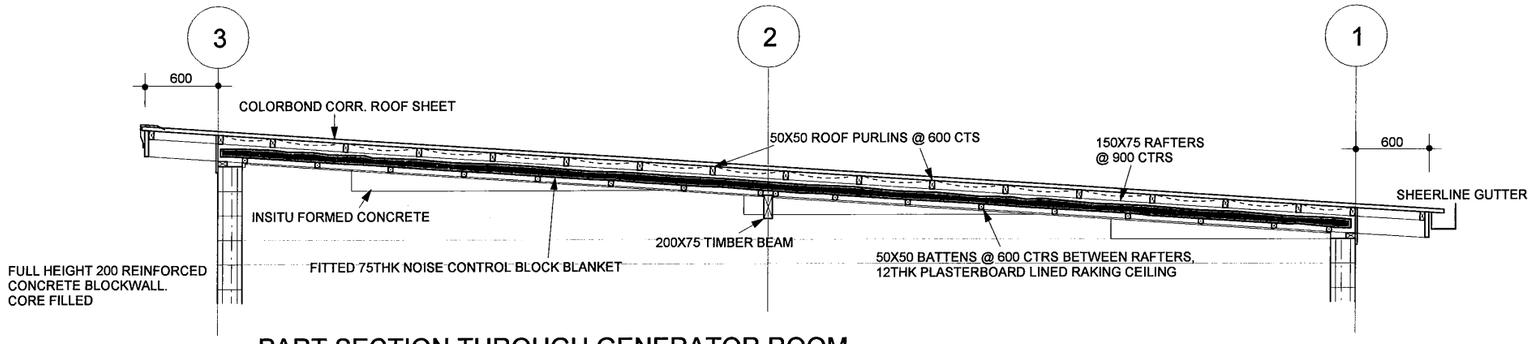
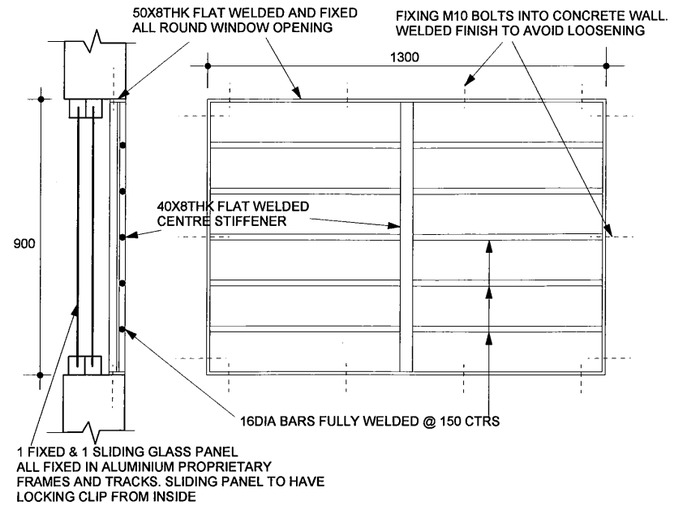


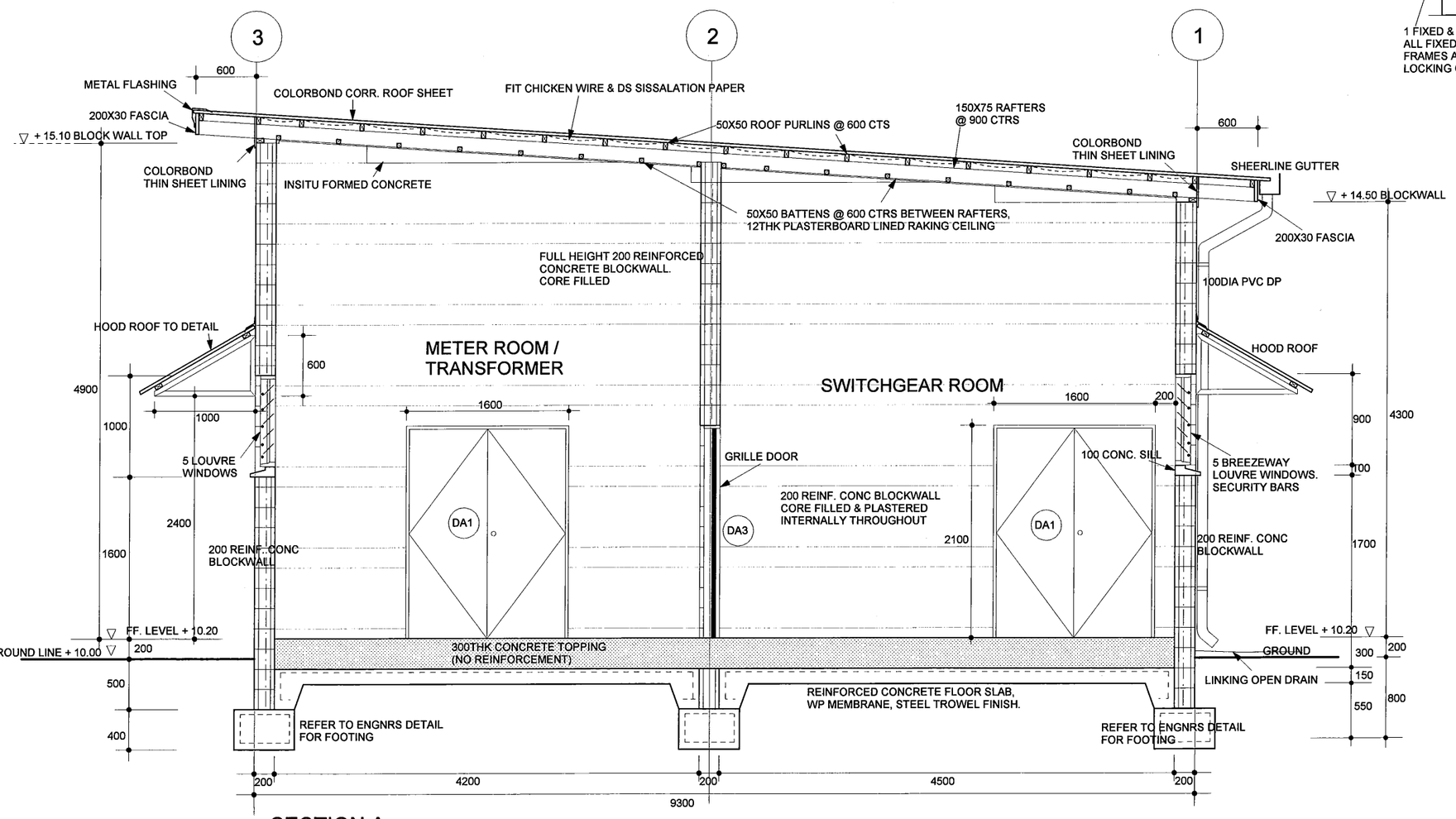
PART SECTION THROUGH GENERATOR ROOM

SCALE: 1:50

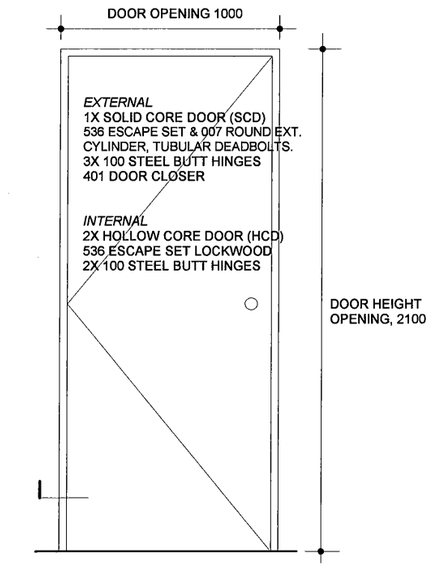


FIXED/SLIDING GLASS WINDOW & GRILLE DETAIL

SCALE. 1: 20

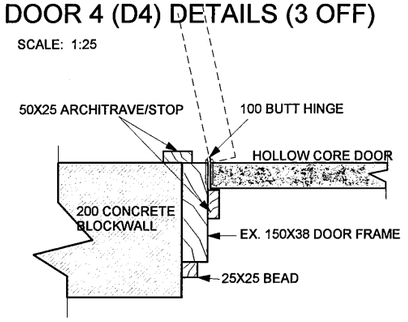


SECTION A SCALE: 1:50



DOOR 4 (D4) DETAILS (3 OFF)

SCALE: 1:25



PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - ELECTRICAL SUB-STATION - Section A & Details

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya

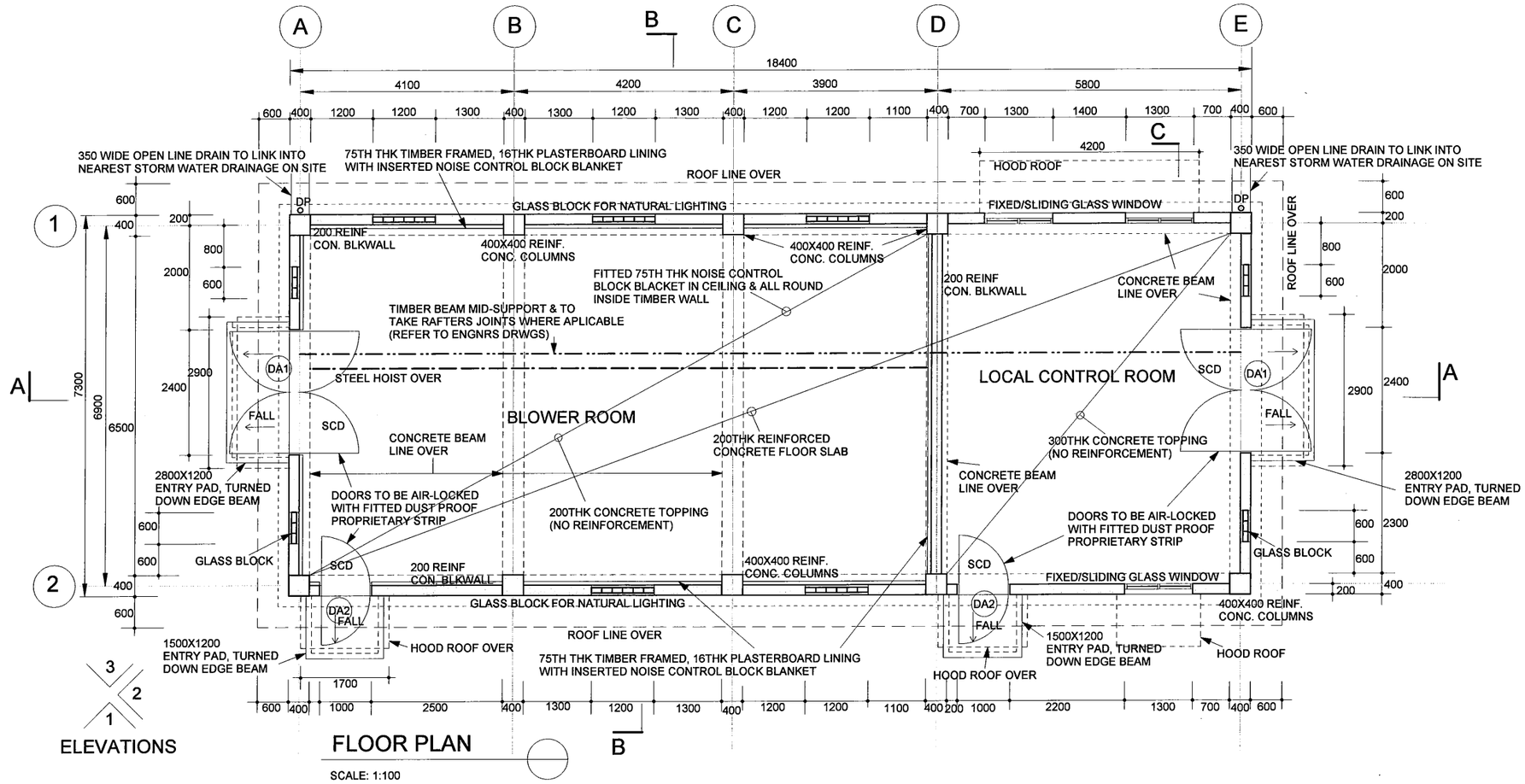
DATE: 1. Dec 2011

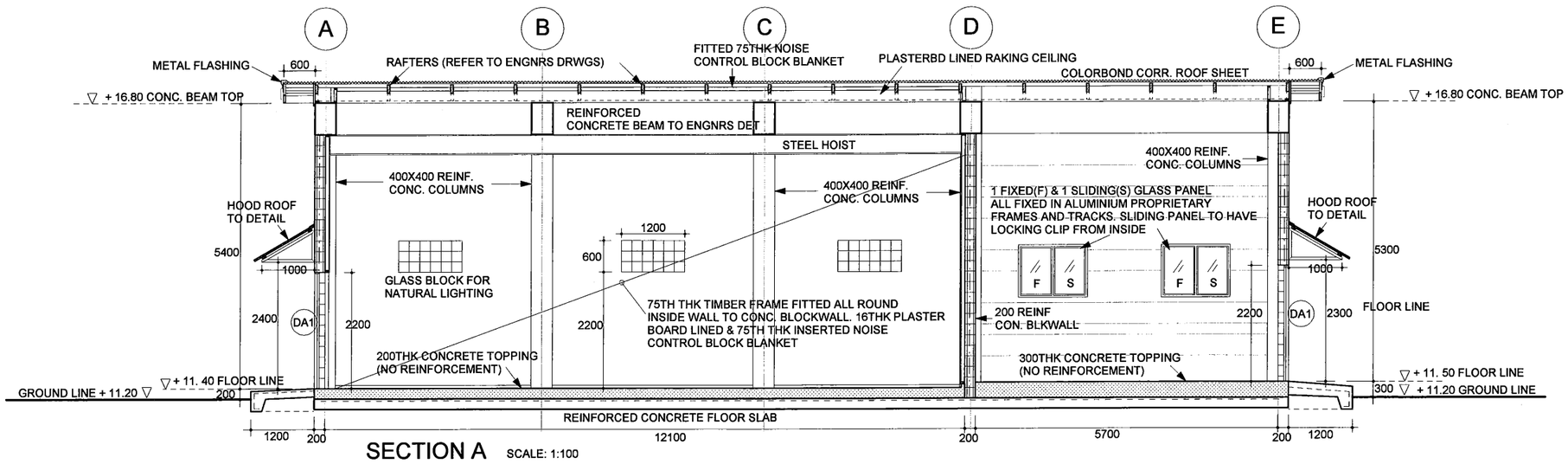
SCALE: 1/50

CHECKED by CONSULTANT
Project Manager
T.Fuji

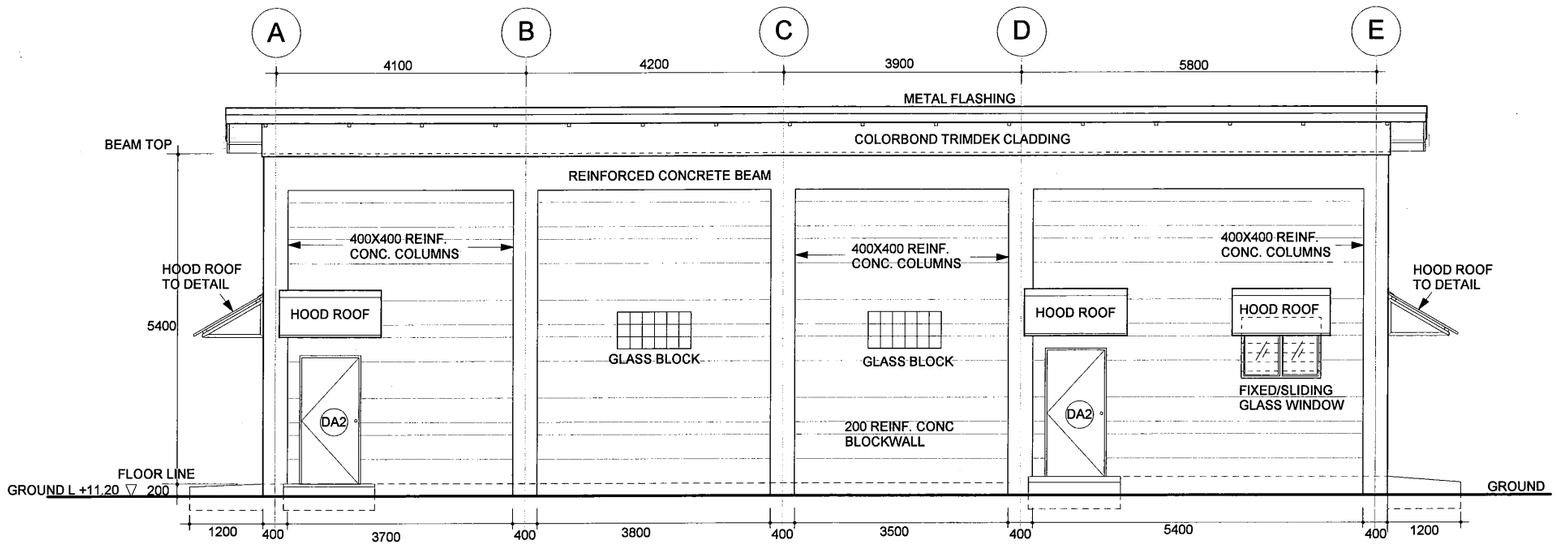
DATE: 1. Dec 2011

DRAWING NO.: STP-ES-A003



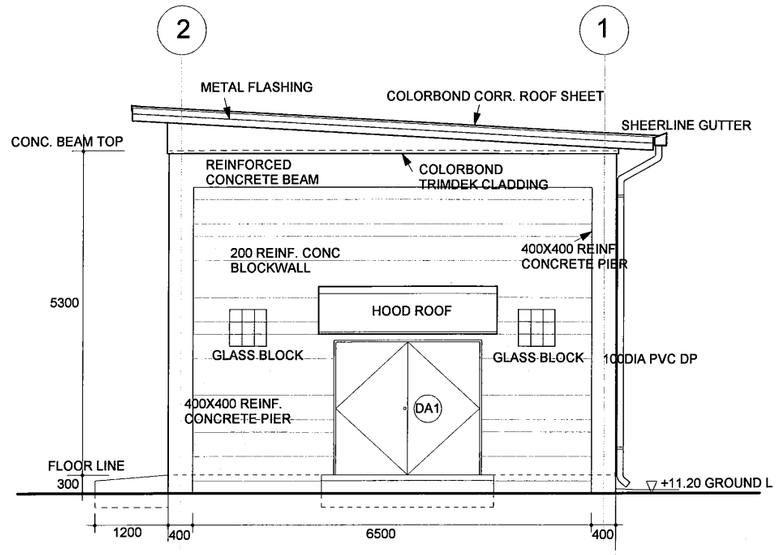


PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - BLOWER / LOCAL CONTROL ROOM - Floor Plan & Section A	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director, Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/100	
CHECKED by CONSULTANT: Project Manager, T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-BL-A001	



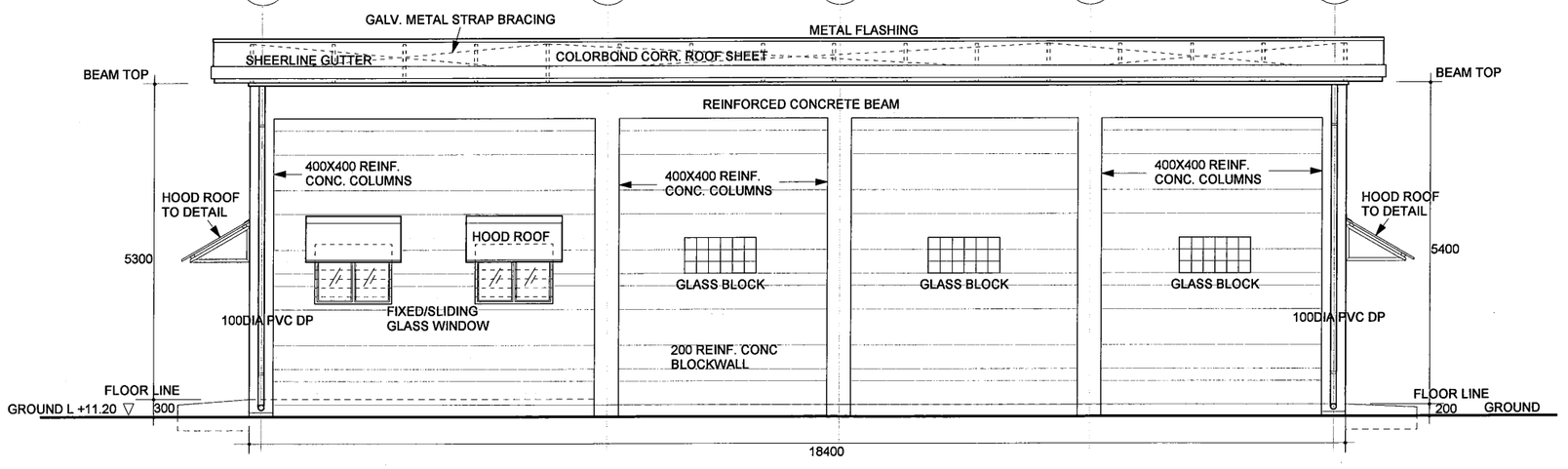
ELEVATION 1

SCALE: 1:100



ELEVATION 2

SCALE: 1:100



ELEVATION 3

SCALE: 1:100

FINISHES SCHEDULE

MATERIAL	LOCATION	FINISH	COLOUR
EXTERNAL			
CONC.	ENTRY PAD	BROOM FINISH	
CONC.	BLK WALLS	2X ACRYLIC GLOSS	TO BE SELECTED
METAL	WALL CLADDING & HOOD	TRIMDEK 0.48 BMT	COLORBOND
	ROOF SHEETING	CORRUGATED	COLORBOND
	FLASHING	COLORBOND	COLORBOND
	EXPOSED FFRAMES	SHOP PRIME, SITE PRIME WITH LUXAPOXY 4 FOLLOWED BY LUXATHANE 2 PACK	BEIGE
TIMBER	WINDOW FRAMES	UNDERCOAT & 2 ACRYLIC SEMI GLOSS	TO BE SELECTED
	FASCIA & BARGE	OIL PRIME, 2 ACRYLIC SEMI GLOSS	TO BE SELECTED
INTERNAL			
CONC.	FLOOR	STEEL TROWEL FINISH	
CONC. BLK WALLS		PLASTERED & 2X ACRYLIC GLOSS	TO BE SELECTED
TIMBER/PLASTERBOARD	WALL & CEILING LINING	2X ACRYLIC SEMI GLOSS	TO BE SELECTED

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - BLOWER / LOCAL CONTROL ROOM - Elevations

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya

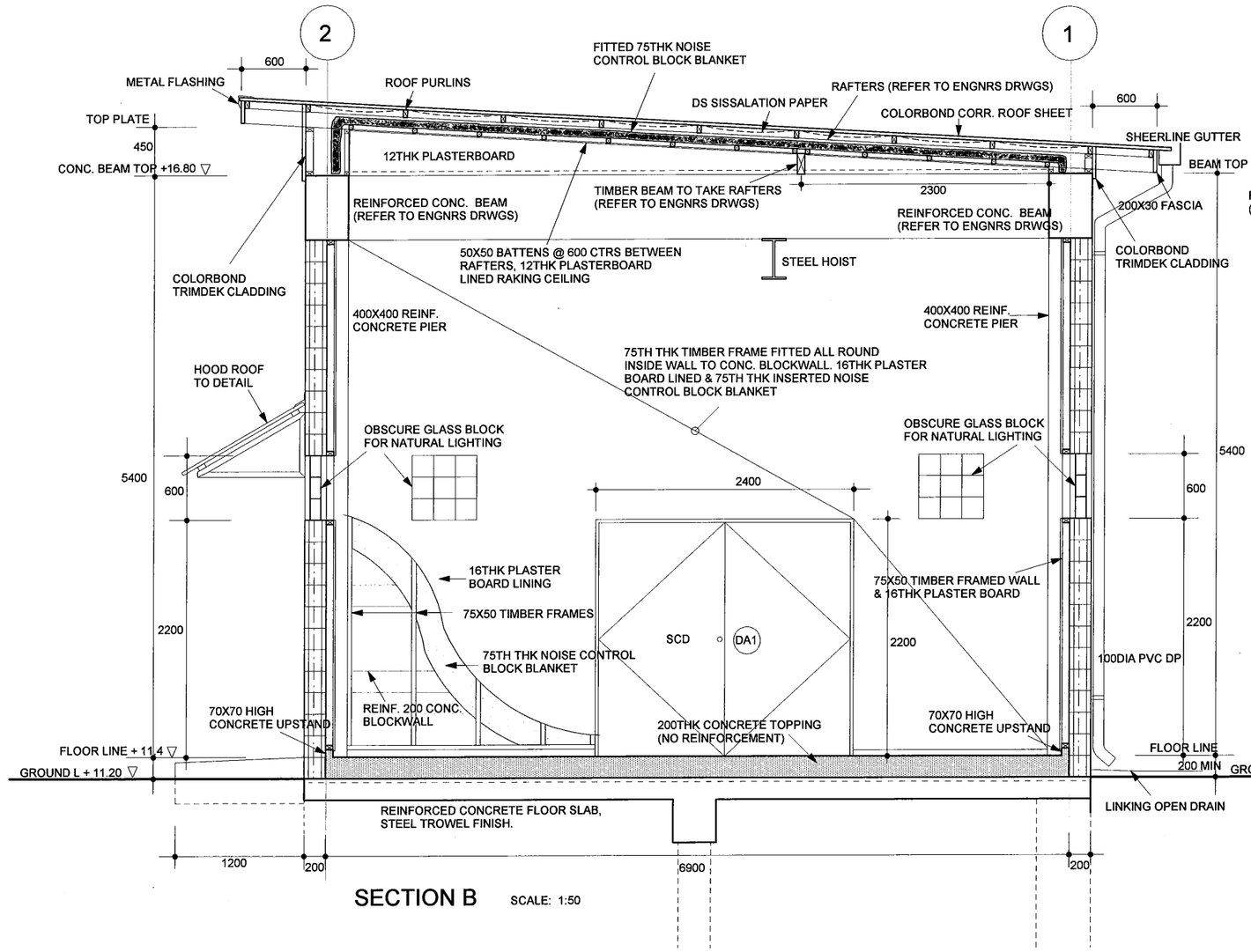
DATE: 1. Dec 2011

SCALE: 1/100

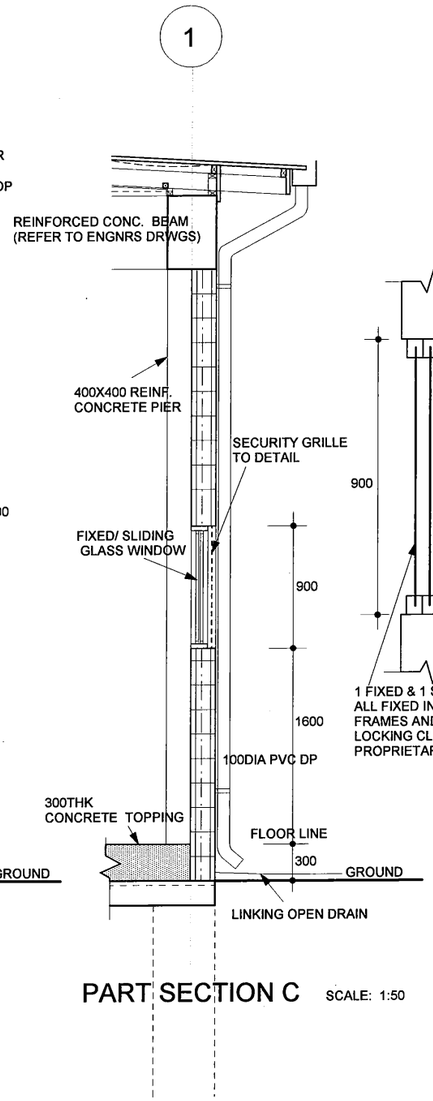
CHECKED by CONSULTANT
Project Manager
T.Fuji

DATE: 1. Dec 2011

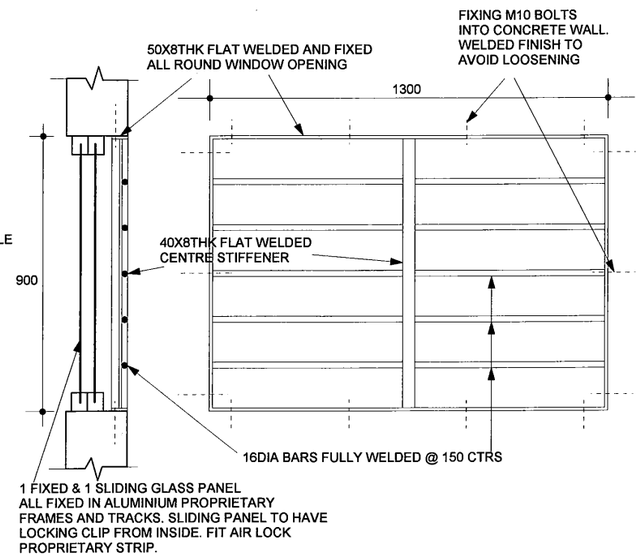
DRAWING NO.: STP-BL-A002



SECTION B SCALE: 1:50



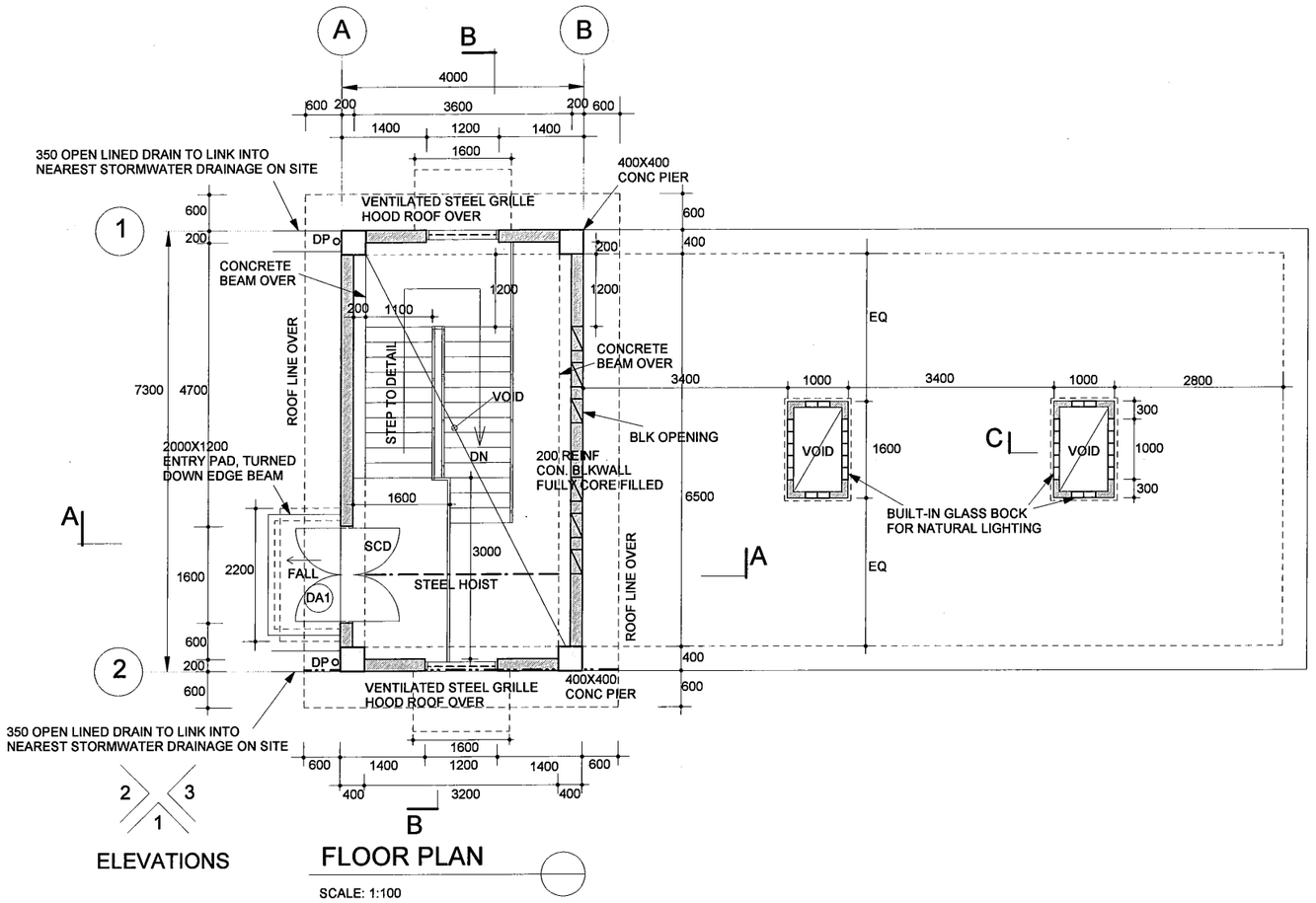
PART SECTION C SCALE: 1:50



FIXED/SLIDING GLASS WINDOW & GRILLE DETAIL

SCALE. 1: 20

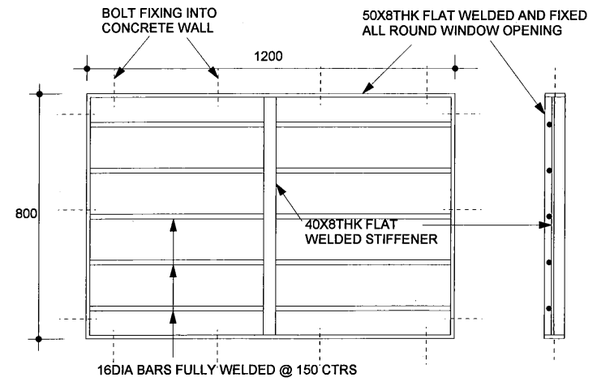
PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - BLOWER / LOCAL CONTROL ROOM - Section B & Details	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/50 & 1/20	
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-BL-A003	



ELEVATIONS

FLOOR PLAN

SCALE: 1:100

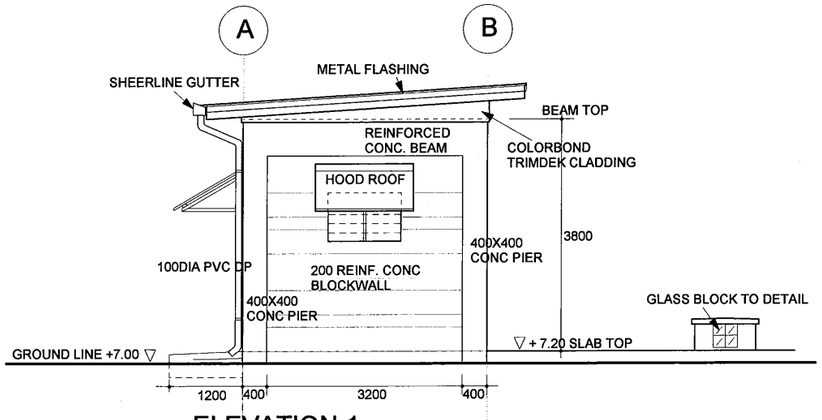


WINDOW (GRILLE) DETAIL

SCALE: 1:20

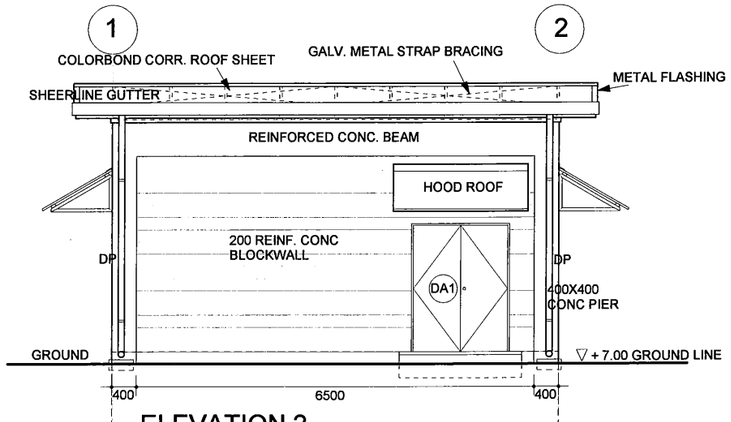
FINISHES SCHEDULE

MATERIAL	LOCATION	FINISH	COLOUR
EXTERNAL			
CONC.	ENTRY PAD	BROOM FINISH	
CONC.	BLK WALLS, PIERS & BEAMS	2X ACRYLIC GLOSS	TO BE SELECTED
METAL	WALL CLADDING & HOOD	TRIMDEK 0.48 BMT	COLORBOND
	ROOF SHEETING	CORRUGATED	COLORBOND
	FLASHING	COLORBOND	COLORBOND
TIMBER	EXPOSED ROOF FRAMES	2 COATS ACRYLIC MATT	TO BE SELECTED
	FASCIA & BARGE	OIL PRIME, 2 ACRYLIC SEMI GLOSS	TO BE SELECTED
INTERNAL			
CONC.	FLOOR	STEEL TROWEL FINISH	
CONC. BLK WALLS		PLASTERED & 2X ACRYLIC GLOSS	TO BE SELECTED
TIMBER	DOORS, WINDOW FRAMES	2X ACRYLIC SEMI GLOSS	TO BE SELECTED
	WALL & CEILING LINING	2X ACRYLIC SEMI GLOSS	TO BE SELECTED



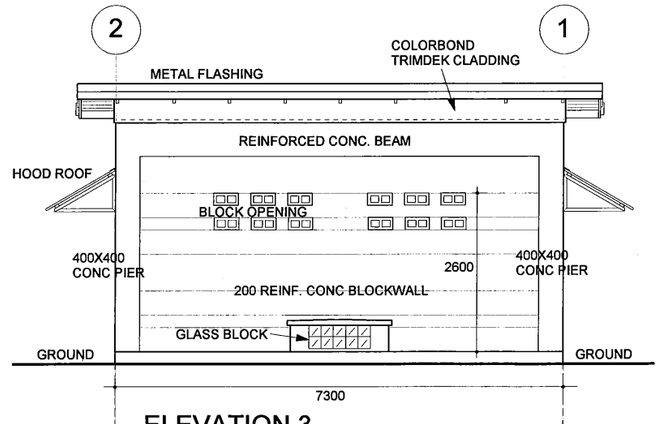
ELEVATION 1

SCALE: 1:100



ELEVATION 2

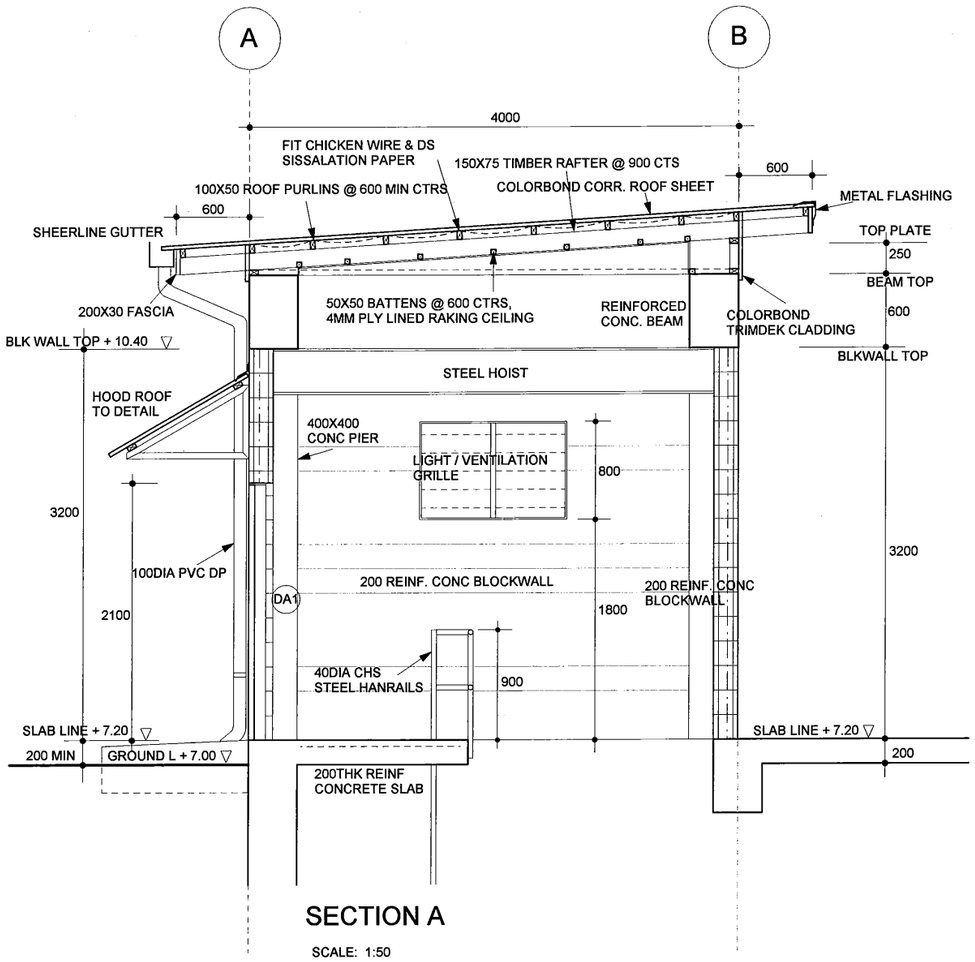
SCALE: 1:100



ELEVATION 3

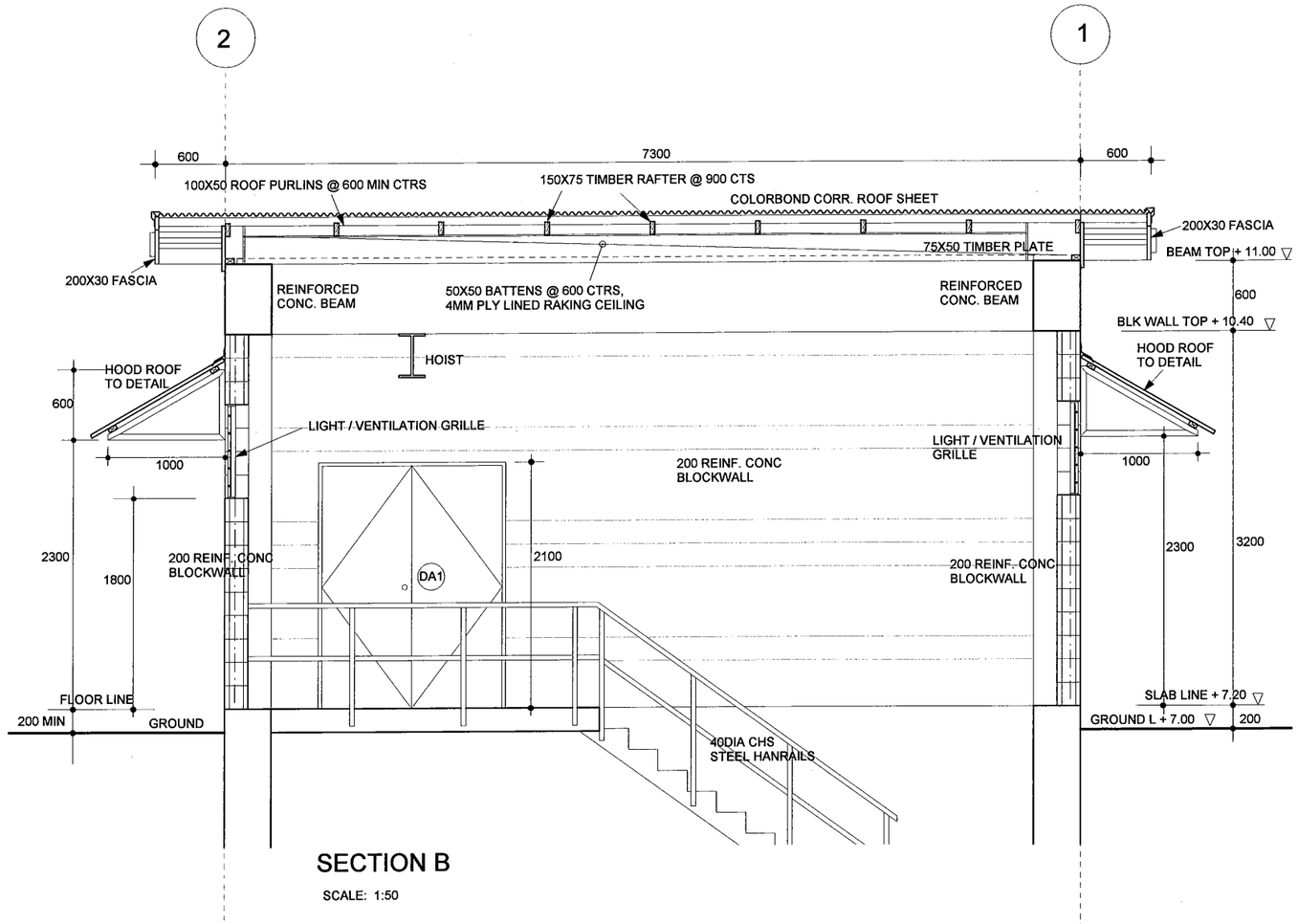
SCALE: 1:100

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - THICKENED SLUDGE PUMP ROOM - Floor Plan & Elevations	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/100	
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-SP-A001	



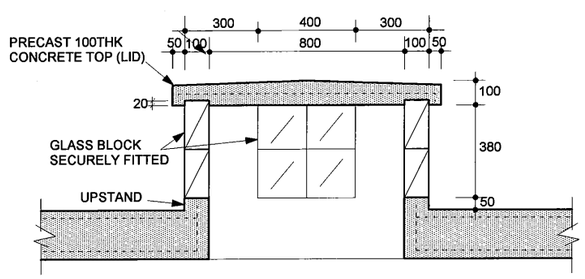
SECTION A

SCALE: 1:50



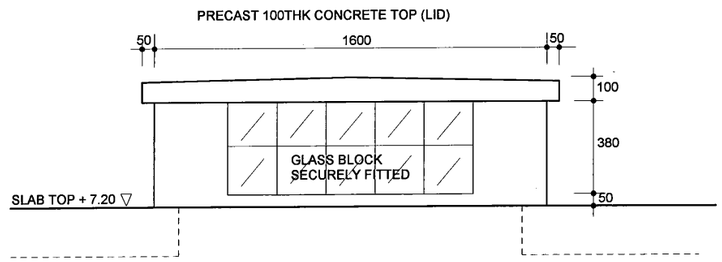
SECTION B

SCALE: 1:50



SECTION C

SCALE: 1:25



ELEVATION

SCALE: 1:25

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - THICKENED SLUDGE PUMP ROOM - Sections A, B & Details

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya
DATE: 1. Dec 2011
SCALE: 1/25 & 1/50

CHECKED by CONSULTANT
Project Manager
T.Fuji
DATE: 1. Dec 2011
DRAWING NO.: STP-SP-A002

NOTE:
- ALL LOOSE FURNITURES ARE TO BE PROVIDED BY OTHERS
- WHERE IDICATED, THE POSITIONS OF EQUAL ANGLES FOR HOOD FRAMINGS ARE SIMILLAR FOR BOTH FL. LEVELS
- ALL STEEL MATERIALS, UNLESS SPECIFIED ARE TO BE PRE GALVANISED OR STAINLESS STEEL. CUTS AND WELDS TO BE IMMEDIATELY PROTECTED WITH COLD GAL. PRIMED AND WHOLE WORKS PAINTED WITH OIL BASE GAL PRIMER, UNDERCOAT & GLOSS FINISH COATS.

350 WIDE OPEN LINED DRAIN TO LINK INTO NEAREST STORMWATER DRAINAGE ON SITE

5400X1800 REINFORCED CONC. ENTRY RAMP SLAB

REFER TO DRWG SHT N0 (STP-UV-A001) FOR SECURITY GRILLE DOOR DET. (D1)

HOOD ROOF LINE OVER

2400X1500 REINFORCED CONC. ENTRY SLAB

STEEL FRAMED & WELDED EXPANDED MESH

200 REINF CON. BLKWALL

ENTRANCE

450X450 REINF. CONC. COLUMNS

CONCRETE BLOCK OPENING

HOPPER

200 REINF CON. BLKWALL

1000X400 CONCRETE BEAM OVER

REFER TO DWG SHEET N0. STP-AB-A007 (ADMINISTRATION BUILDING) FOR FITTINGS DETAILS

STEP TO DETAIL

TOILET

300X300 NON-SLIP CERAMIC TILES

REINFORCED CONCRETE FLOOR SLAB, STEEL TROWEL FINISH (REFER TO ENGRS DRWG FOR DET.)

STEEL HOIST OVER

SLIDING GRILLE DOOR TO DETAIL

REINFORCED CONC. ENTRY RAMP SLAB

CONCRETE BLOCK OPENING

ESCAPE LADDER

200 REINF CON. BLKWALL

450X450 REINF. CONC. COLUMNS

CONCRETE BEAMS OVER (REFER TO ENGNRS DRWGS)

FRP COVER

FRP COVER

FRP COVER

STEEL HOIST

WASTE WATER CONCRETE TANK UNDER TO DETAIL

1000W X 1000L X1000D SUMP PIT

CONCRETE BEAMS OVER

FIRE EXIT DOOR

STEEL FRAMED & WELDED EXPANDED MESH

200 REINF CON. BLKWALL

HOOD ROOF LINE OVER

HOOD ROOF LINE OVER

350 WIDE OPEN LINED DRAIN TO LINK INTO NEAREST STORMWATER DRAINAGE ON SITE

350 WIDE OPEN LINED DRAIN TO LINK INTO NEAREST STORMWATER DRAINAGE ON SITE

1200X1200 X1400H CABLE INCOMING MANHOLE

1000X1000 X1000DP PIT, METAL GRATE OVER

SLAB FALL

GROUND

GROUND FLOOR PLAN

SCALE: 1:100

ELEVATIONS

CABLE INCOMING MAN HOLE

200 REINF. CONC BLOCKWALL

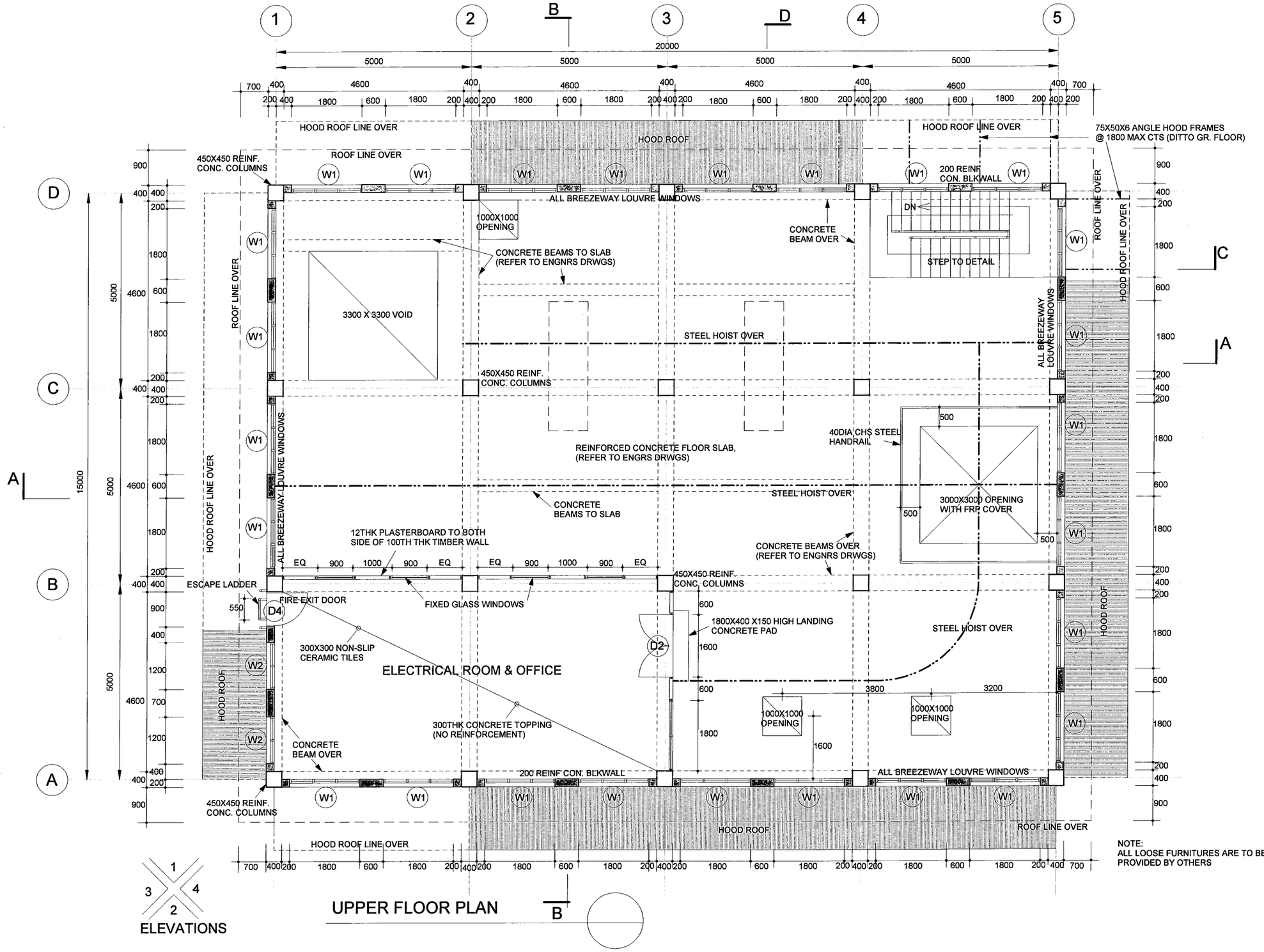
FLOOR SLAB

500X200 OPENING

GROUND

NOTE:
- REFER TO ADMINISTRATION FOR PAINT AND FINISHES SCHEDULE

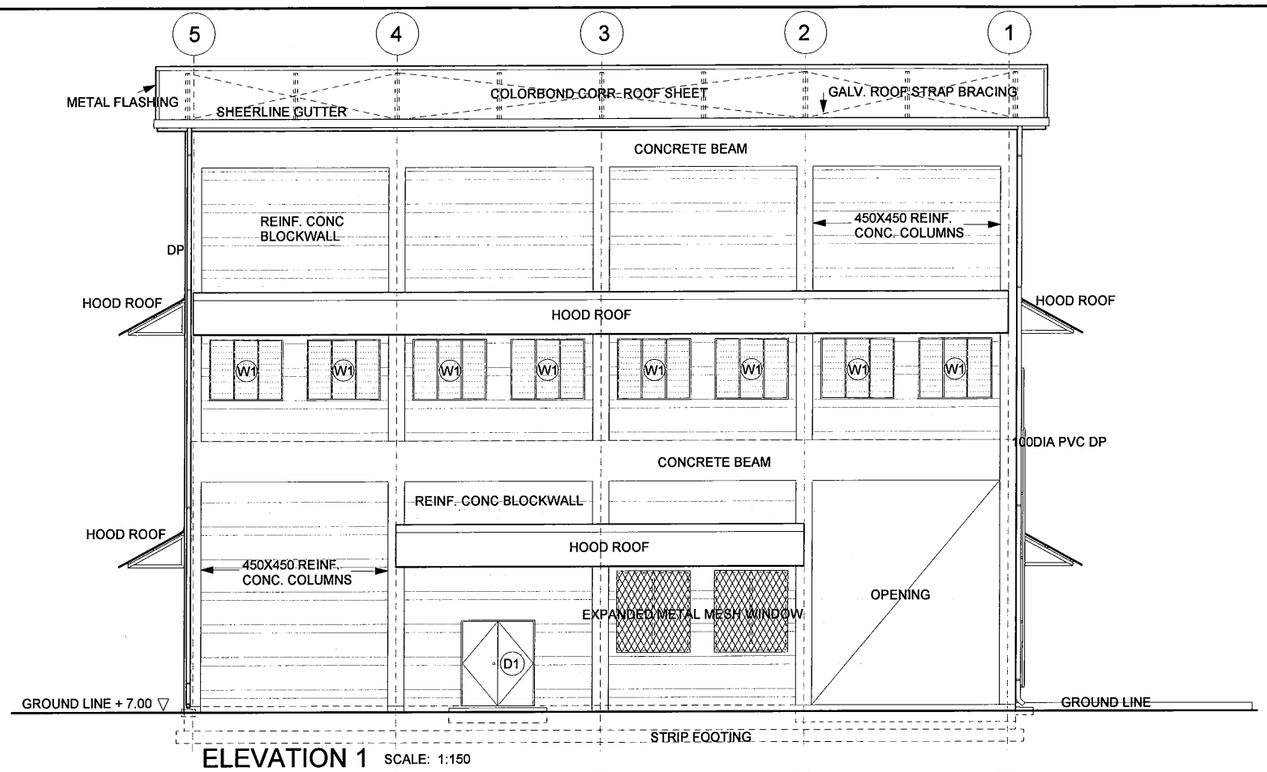
PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - SLUDGE TREATMENT BUILDING - Ground Floor Plan	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director, Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/100	
CHECKED by CONSULTANT Project Manager, T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-ST-A001	



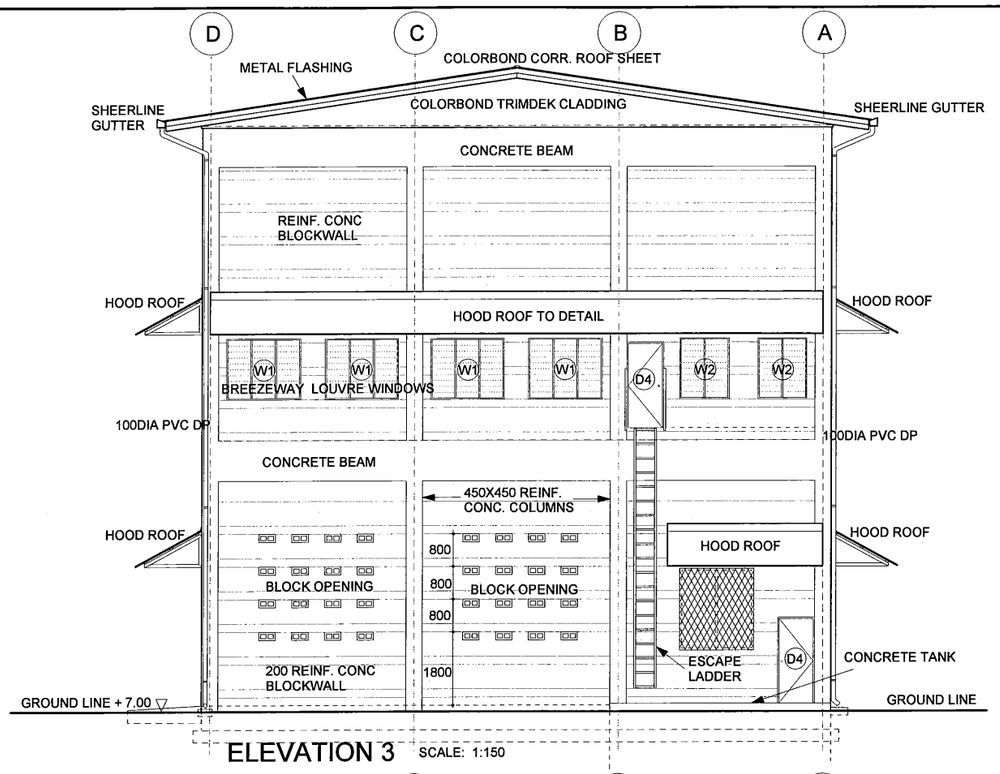
ELEVATIONS

UPPER FLOOR PLAN

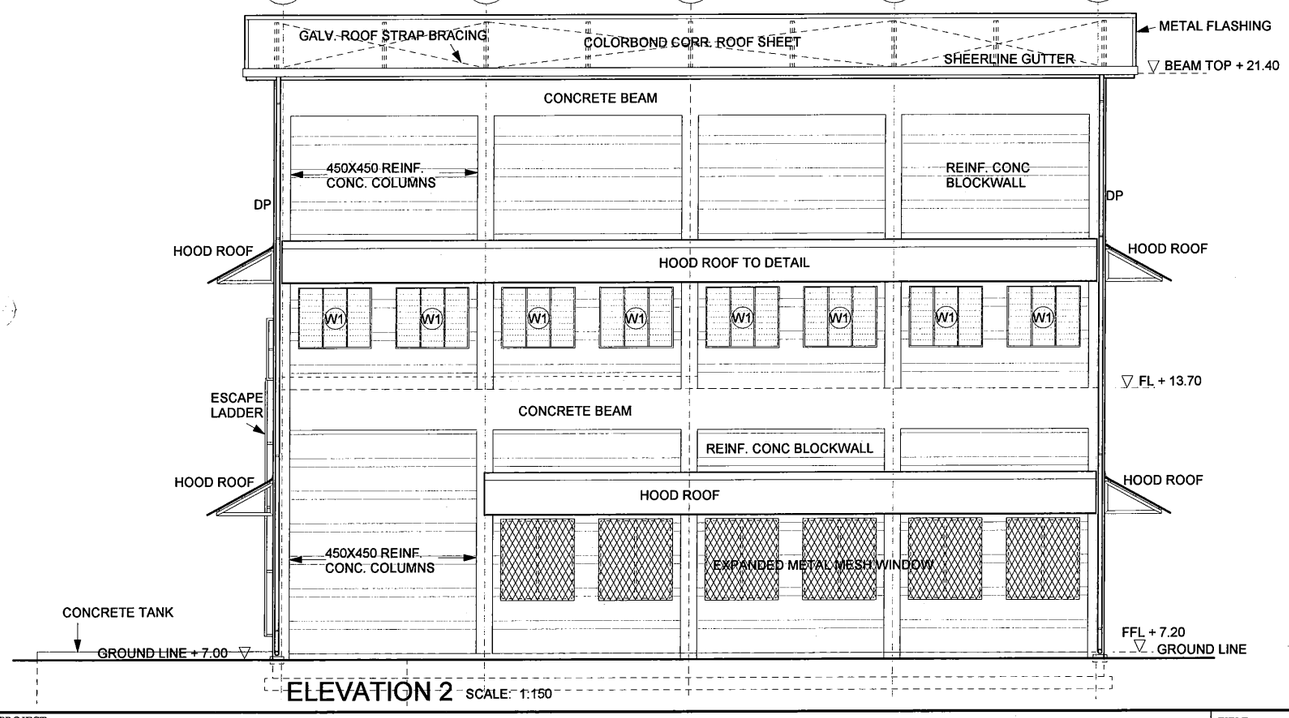
PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - SLUDGE TREATMENT BUILDING - Upper Floor Plan	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director, Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/100	
CHECKED by CONSULTANT Project Manager, T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-ST-A002	



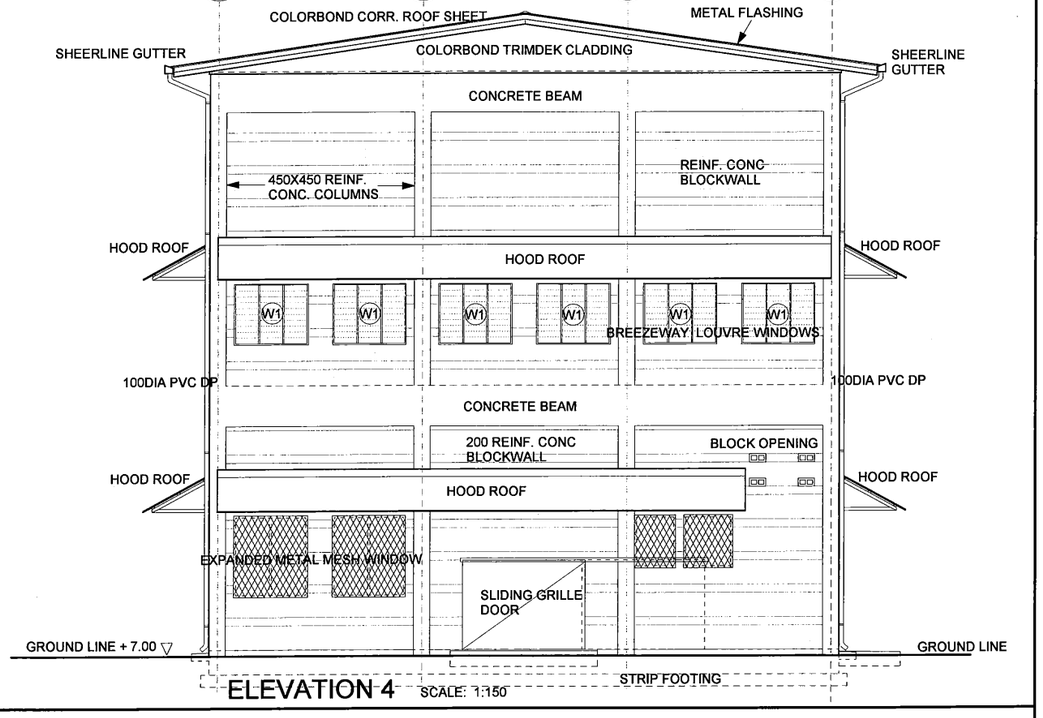
ELEVATION 1 SCALE: 1:150



ELEVATION 3 SCALE: 1:150



ELEVATION 2 SCALE: 1:150



ELEVATION 4 SCALE: 1:150

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - SLUDGE TREATMENT BUILDING - Elevations

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya

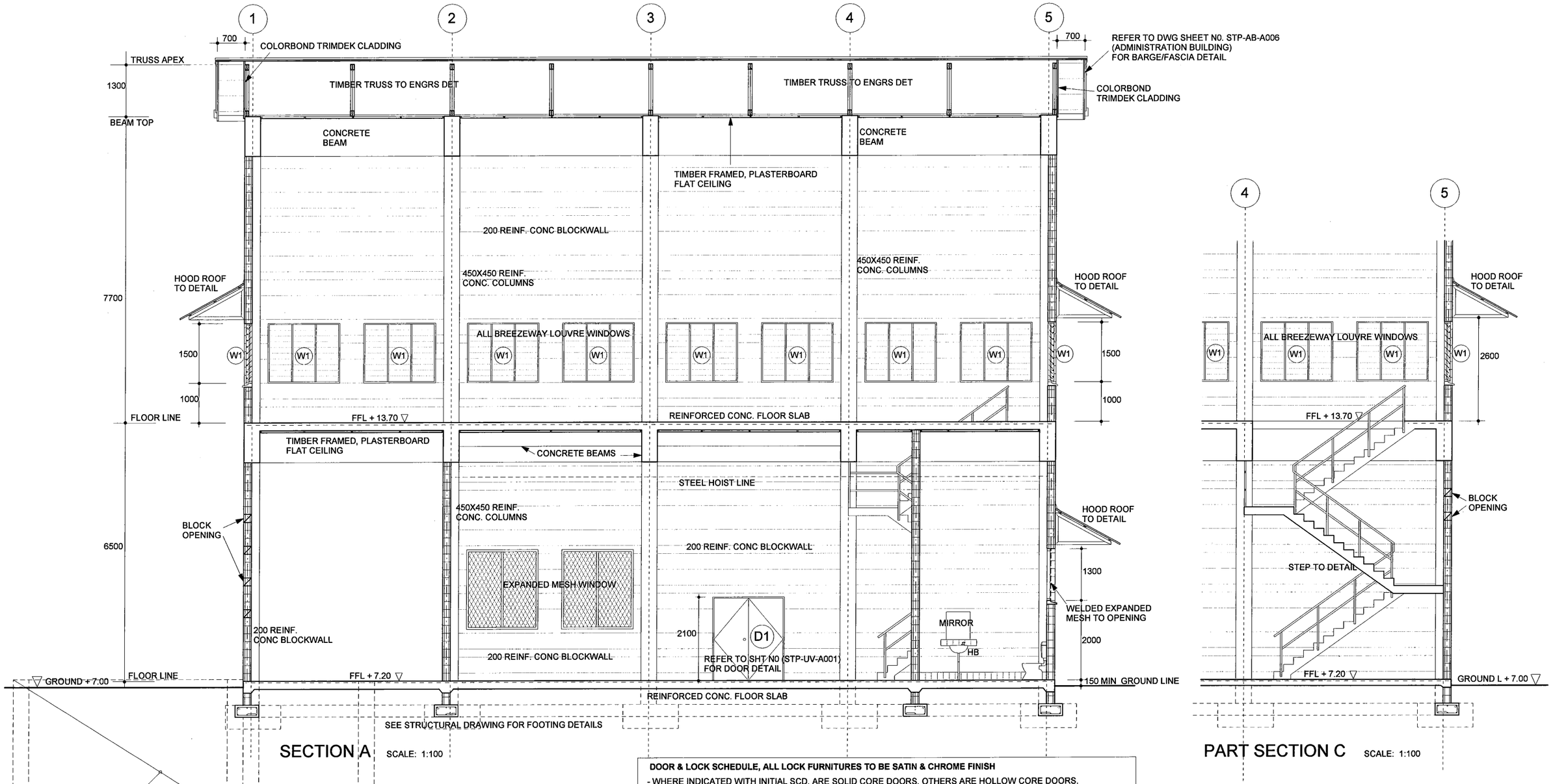
DATE: 1. Dec 2011

SCALE: 1/150

CHECKED by CONSULTANT
Project Manager
T.Fuji

DATE: 1. Dec 2011

DRAWING NO.: STP-ST-A003



DOOR & LOCK SCHEDULE, ALL LOCK FURNITURES TO BE SATIN & CHROME FINISH

- WHERE INDICATED WITH INITIAL SCD, ARE SOLID CORE DOORS, OTHERS ARE HOLLOW CORE DOORS.

DOOR (D1) & SLIDING GRILLE DOOR	- 007 ROUND EXT. CYLINDER, TUBULAR DEADBOLTS.
DOOR (D2)	- 536 ESCAPE SET & 007 ROUND EXT. CYLINDER, TUBULAR DEADBOLTS.
DOOR (D4) EXT TOILET & FIRE ESCAPE	- 536 ESCAPE SET
DOOR (D4) INTERNAL TOILET	- 5107 PRIVACY LATCH
	- 3X 100 STEEL BUTT HINGES FOR EXTERNAL DOORS & 2 X 100 STEEL BUTT HINGES FOR INTERNAL DOORS
DOOR 5 (D5)	- BARREL LOCKING BOLTS OR EQUIVALENT.
DOOR 6 (D6)	- SEE DETAILS
DOOR CLOSERS	- 401 DOOR CLOSERS TO DOOR (D2) & EXTERNAL TOILET DOOR (D4)

(REFER TO DRAWING SHT (STP-AB-A008) ADMINISTRATION BLDG FOR DOOR TYPES DETAILS)

SECURITY GRILLE DOORS (SEE STANDARD DRAWING FOR DETAILS)

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - SLUDGE TREATMENT BUILDING - Sections A & Section C

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya

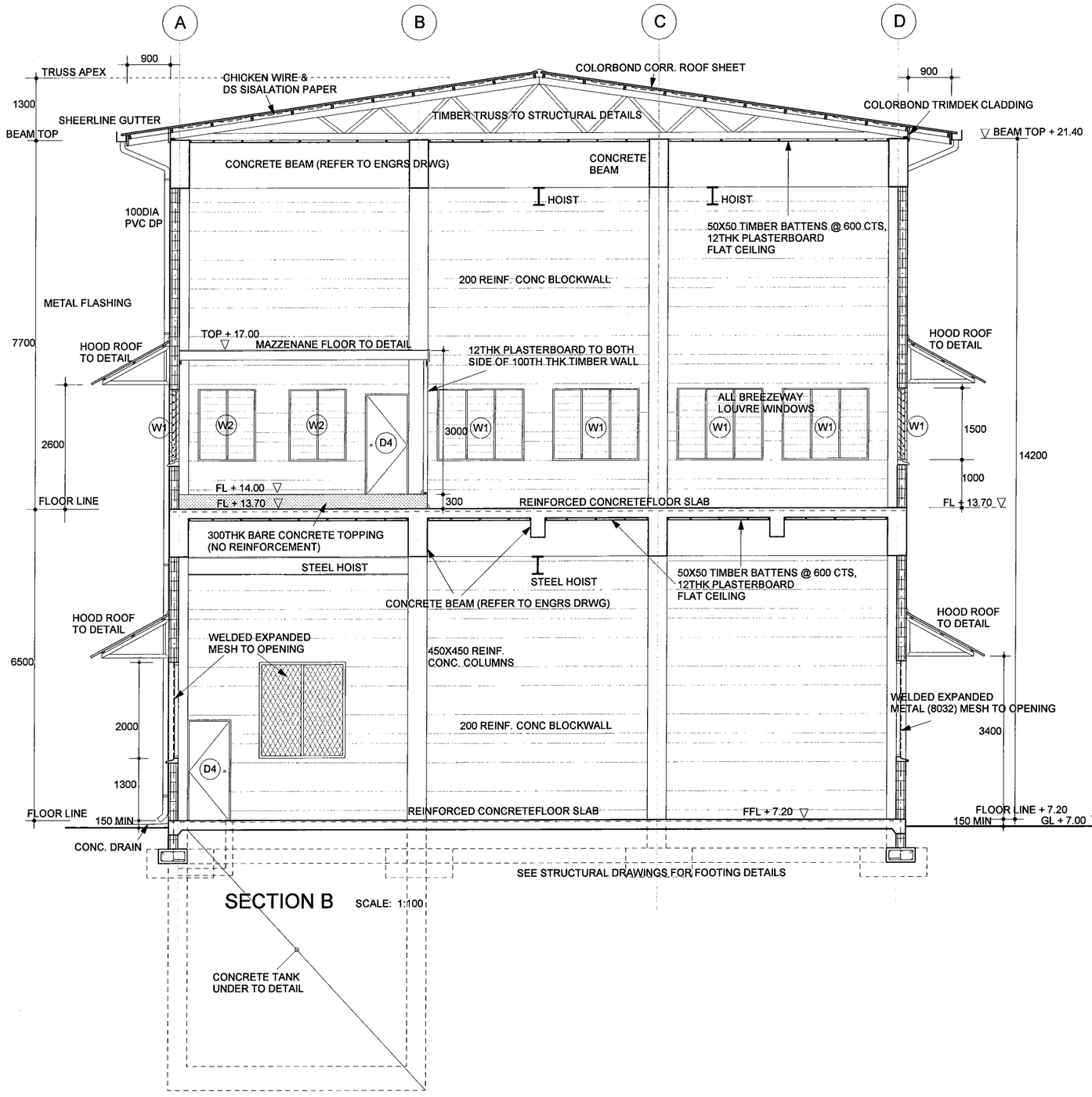
DATE: 1. Dec 2011

SCALE: 1/100

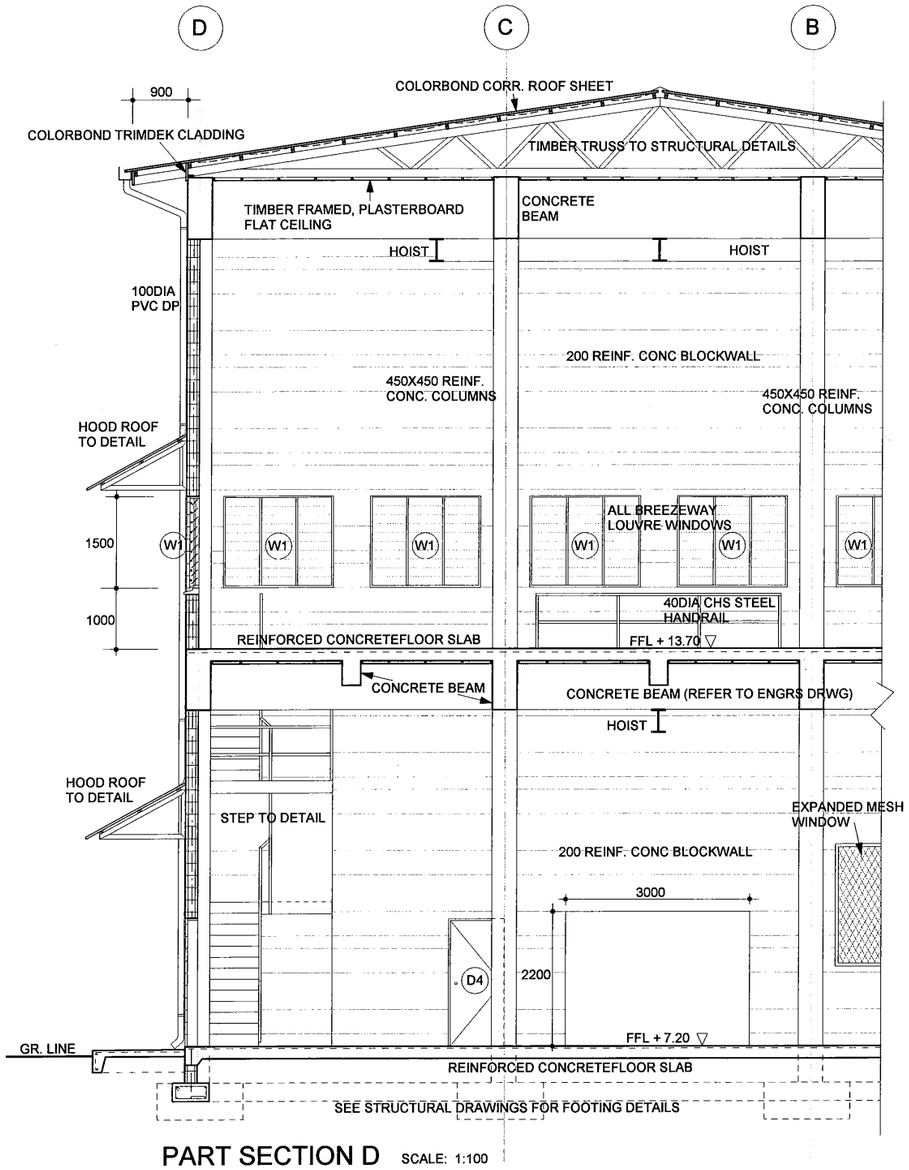
CHECKED by CONSULTANT
Project Manager
T.Fuji

DATE: 1. Dec 2011

DRAWING NO.: STP-ST-A004



SECTION B SCALE: 1:100



PART SECTION D SCALE: 1:100

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - SLUDGE TREATMENT BUILDING - Section B & Section D

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

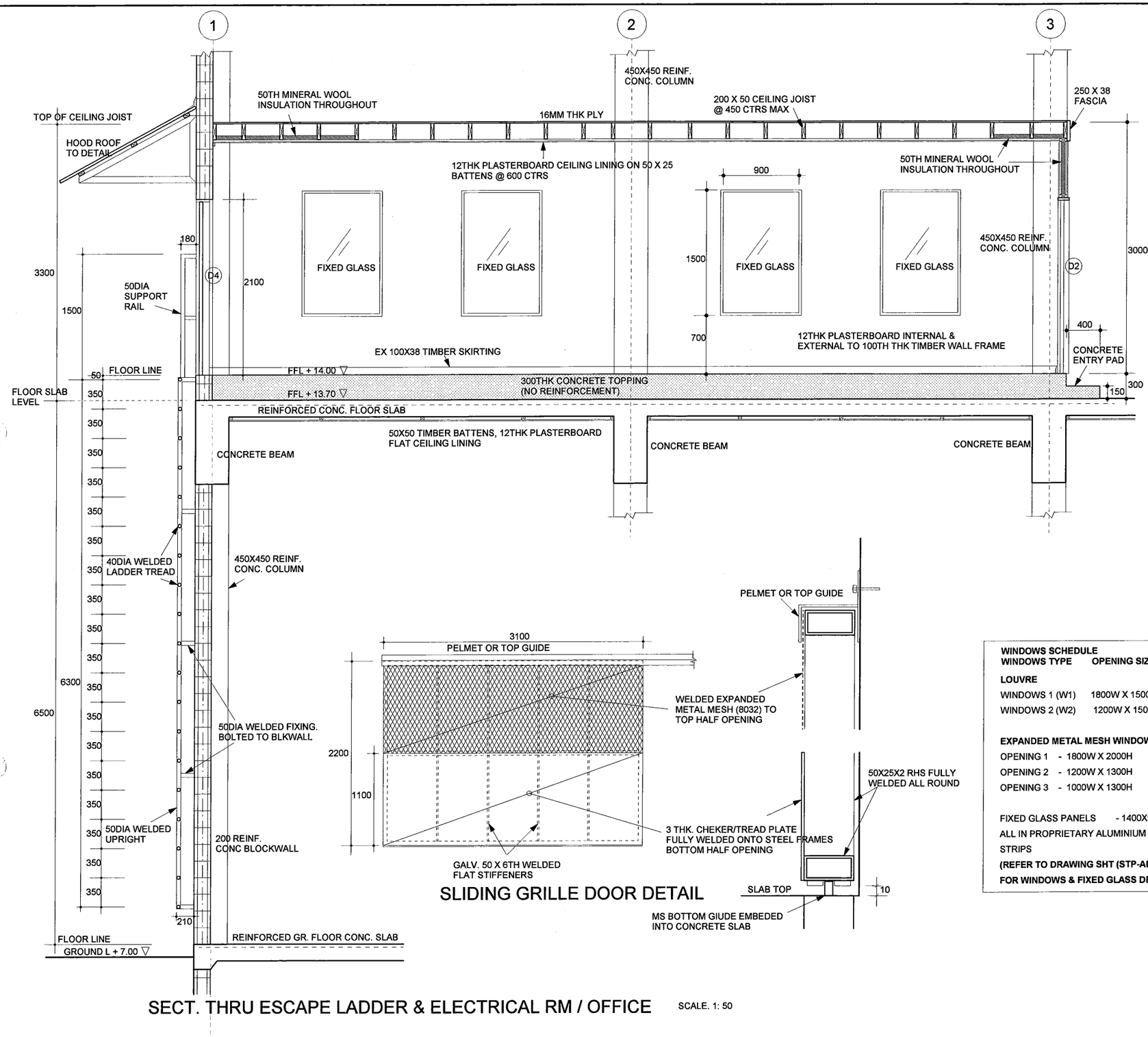
CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya
DATE: 1. Dec 2011
SCALE: 1/100

CHECKED by CONSULTANT
Project Manager
T.Fuji
DATE: 1. Dec 2011
DRAWING NO.: STP-ST-A005



SECT. THRU ESCAPE LADDER & ELECTRICAL RM / OFFICE SCALE. 1: 50

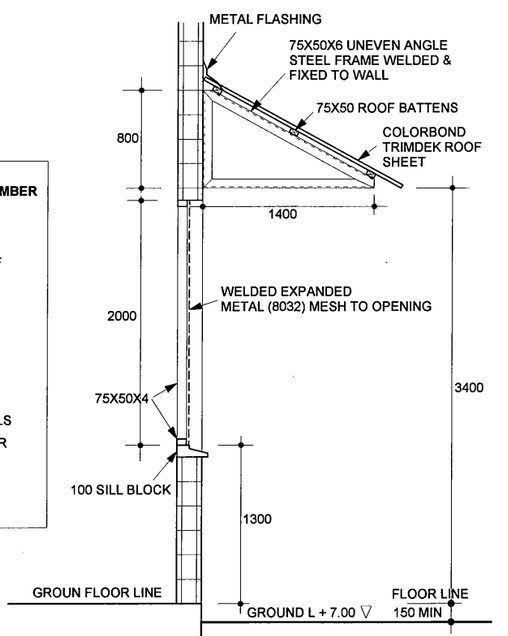
SLIDING GRILLE DOOR DETAIL

WINDOWS SCHEDULE

WINDOWS TYPE	OPENING SIZE	N0. OF BLADES	TOTAL NUMBER
LOUVRE			
WINDOWS 1 (W1)	1800W X 1500H	- 10 LOUVRE BLADES	- 26 OFF
WINDOWS 2 (W2)	1200W X 1500H	- 10 LOUVRE BLADES	- 2 OFF
EXPANDED METAL MESH WINDOWS			
OPENING 1	- 1800W X 2000H		- 10 OFF
OPENING 2	- 1200W X 1300H		- 1 OFF
OPENING 3	- 1000W X 1300H		- 1 OFF
FIXED GLASS PANELS	- 1400X900X9MMTHK		- 6 PANELS

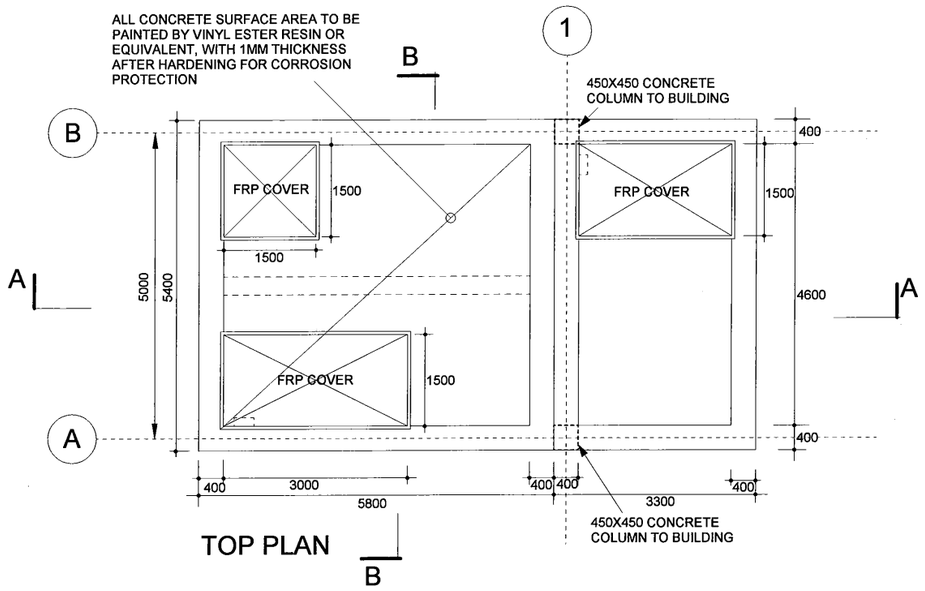
ALL IN PROPRIETARY ALUMINIUM FRAMES AND BEADED WITH TIMBER STRIPS

(REFER TO DRAWING SHT (STP-AB-A008) ADMINISTRATION BLDG FOR WINDOWS & FIXED GLASS DETAILS)

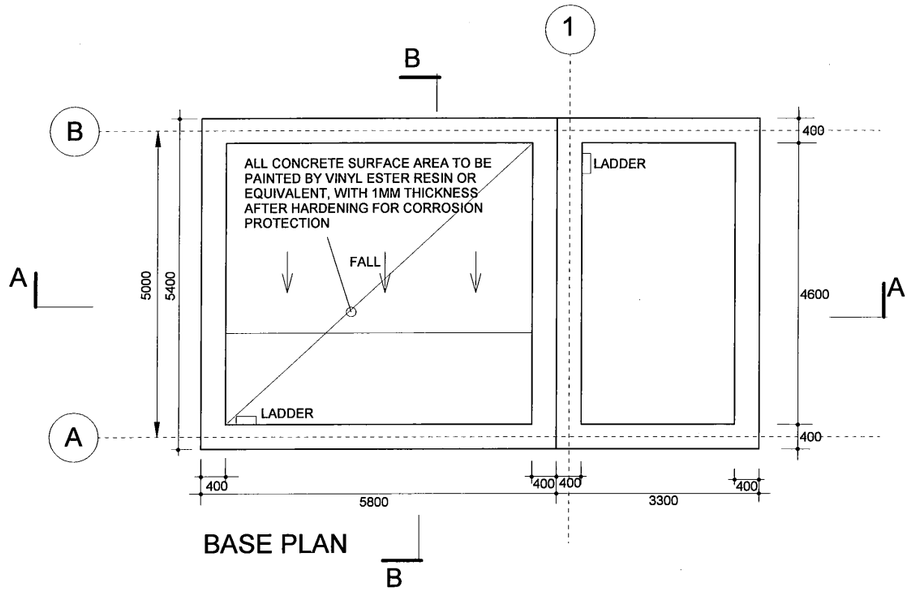


HOOD DETAIL & SECTION THRU WINDOW GRILLE OPENING SCALE. 1: 50

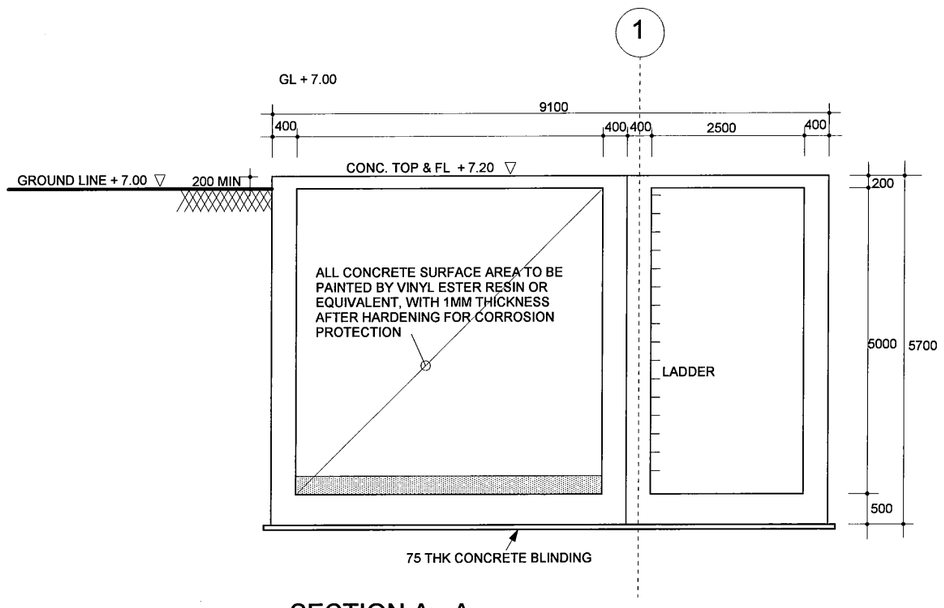
PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - SLUDGE TREATMENT BUILDING - Mezzanane floor & Escape Ladder Details				
CLIENT: IPBC INDEPENDENT PUBLIC BUSINESS CORPORATION; PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT; PROJECT MANAGEMENT UNIT (PMU); JICA JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION	APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/50
				CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-ST-A006



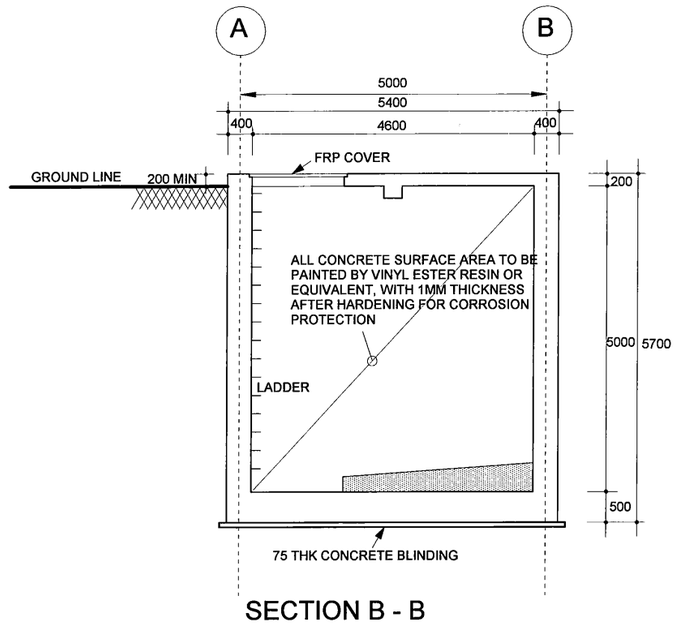
TOP PLAN



BASE PLAN

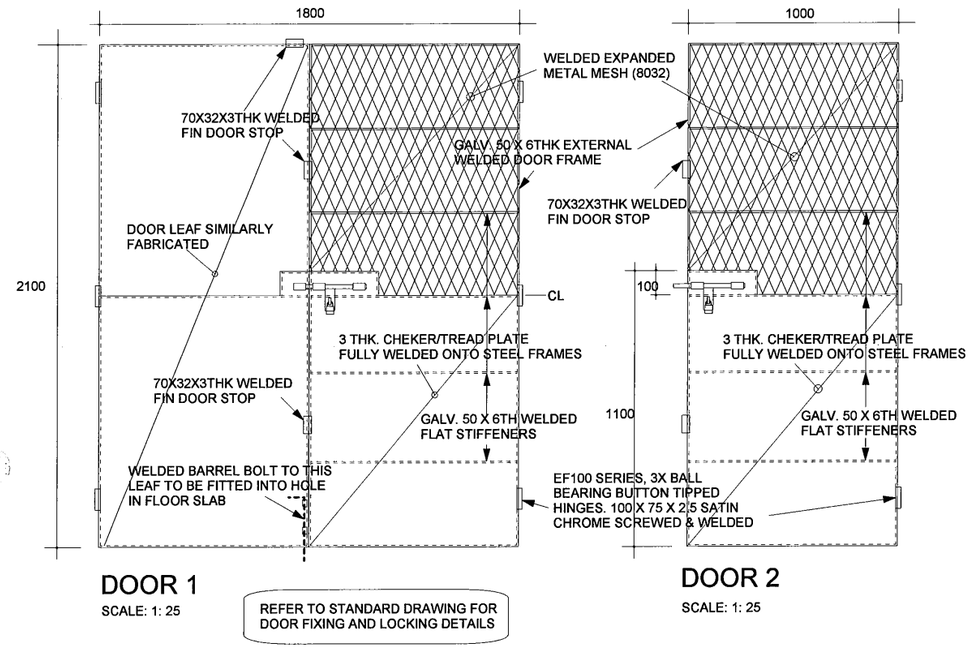


SECTION A - A



SECTION B - B

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - SLUDGE TREATMENT BUILDING - Waste Water Tank Detail	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director, Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/100	
CHECKED by CONSULTANT: Project Manager, T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-ST-A007	



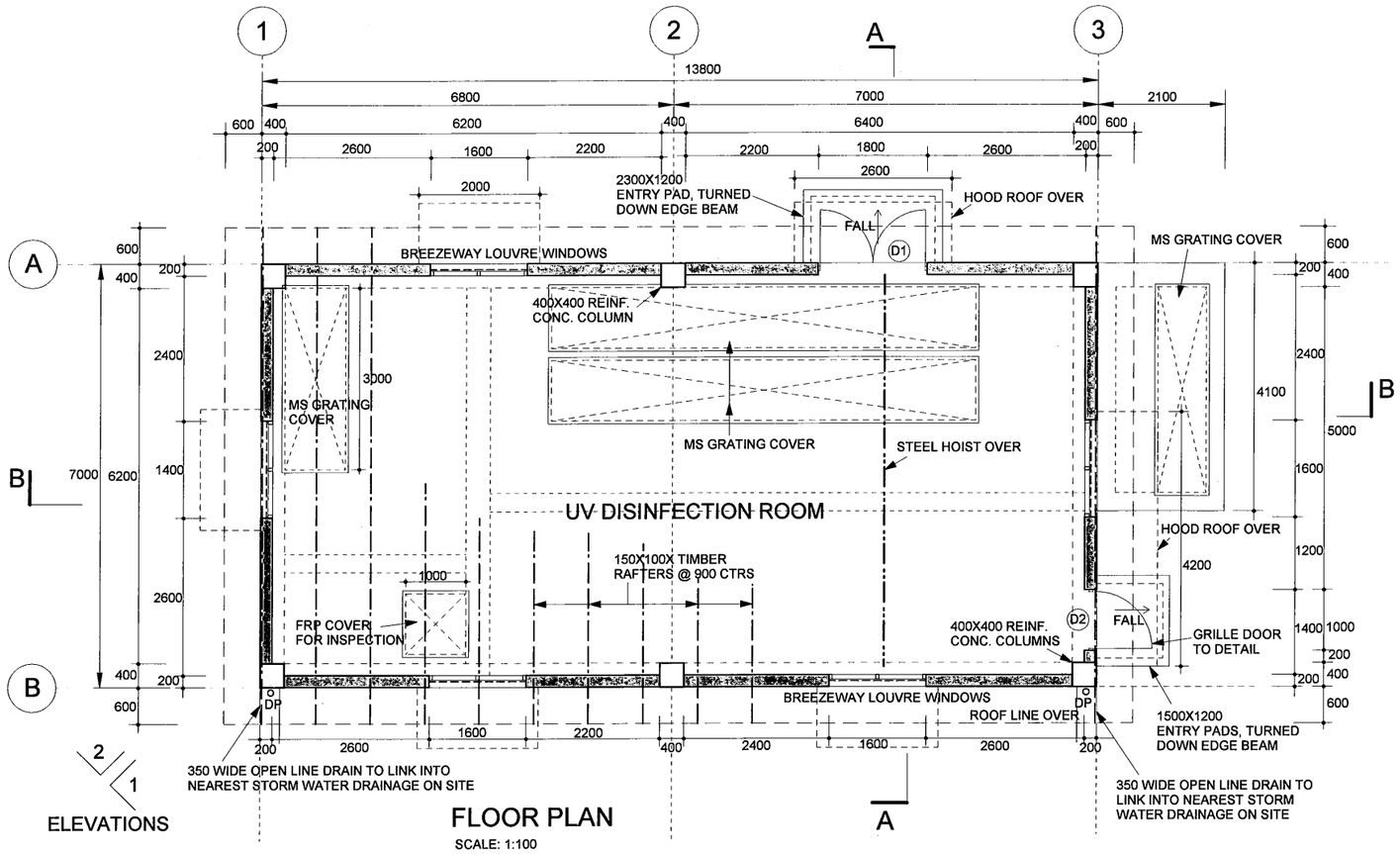
DOOR 1

SCALE: 1: 25

REFER TO STANDARD DRAWING FOR DOOR FIXING AND LOCKING DETAILS

DOOR 2

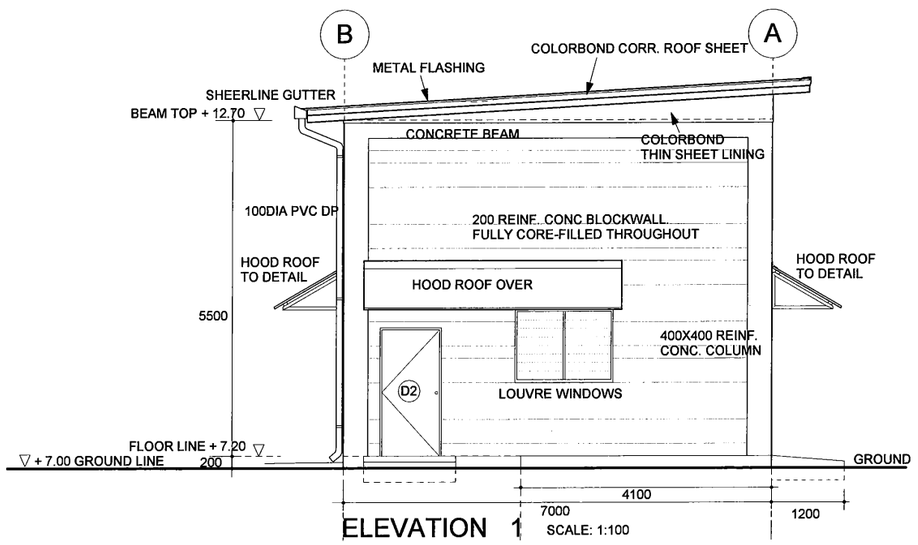
SCALE: 1: 25



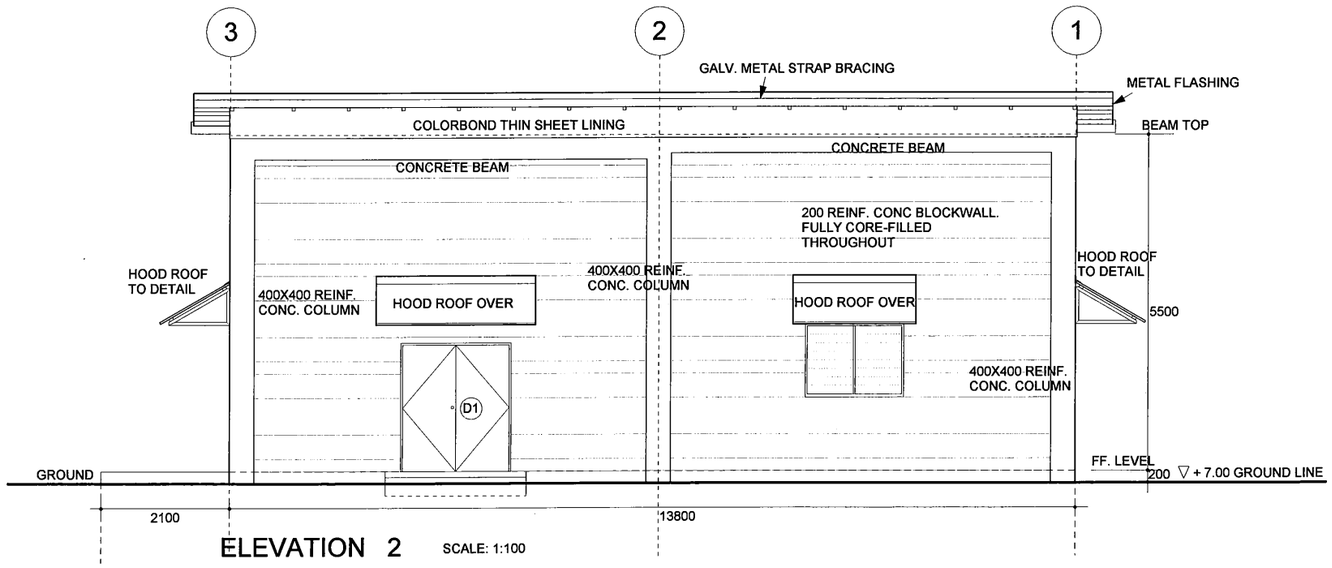
ELEVATIONS 2 1

FLOOR PLAN

SCALE: 1:100

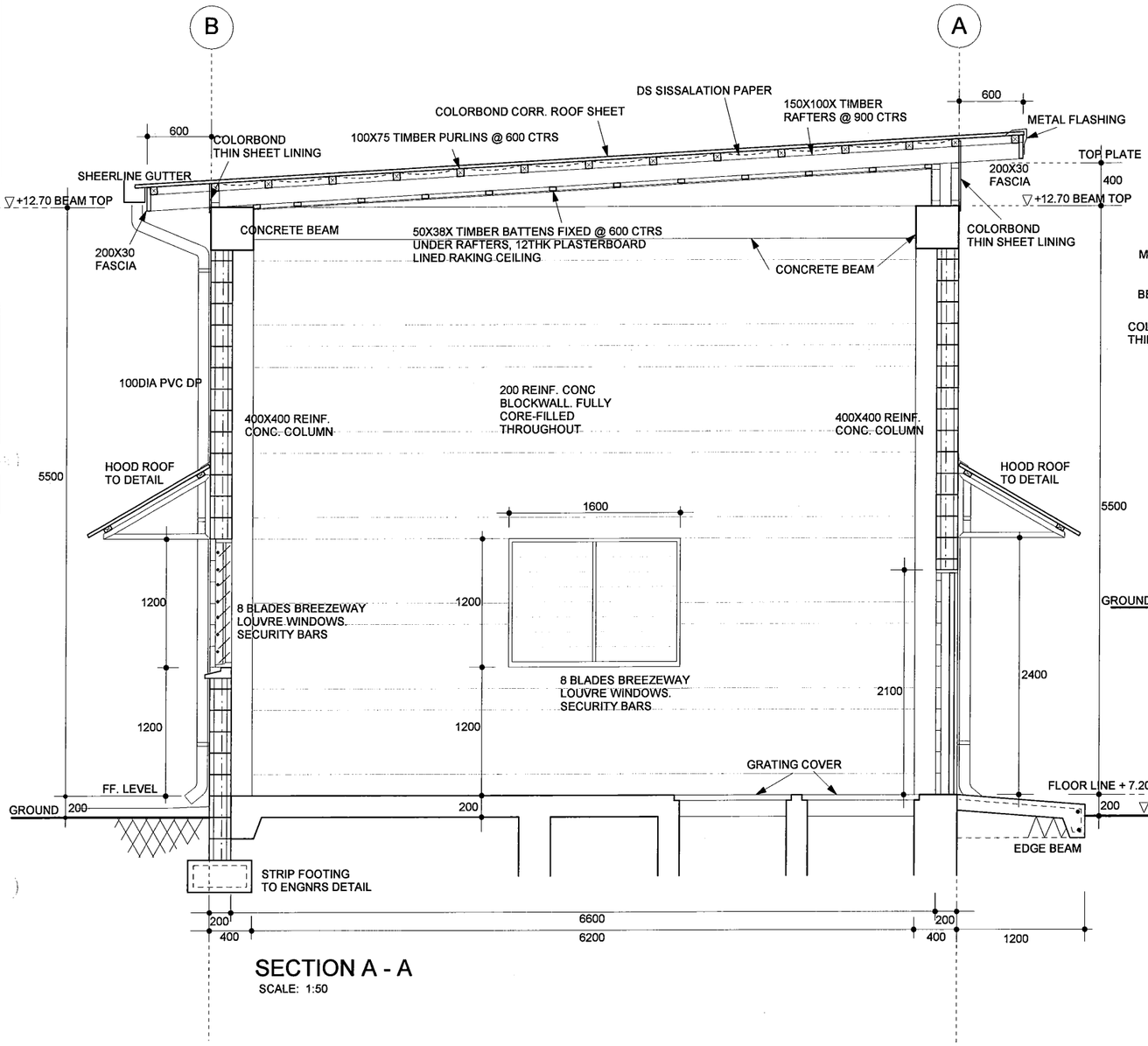


ELEVATION 1 SCALE: 1:100



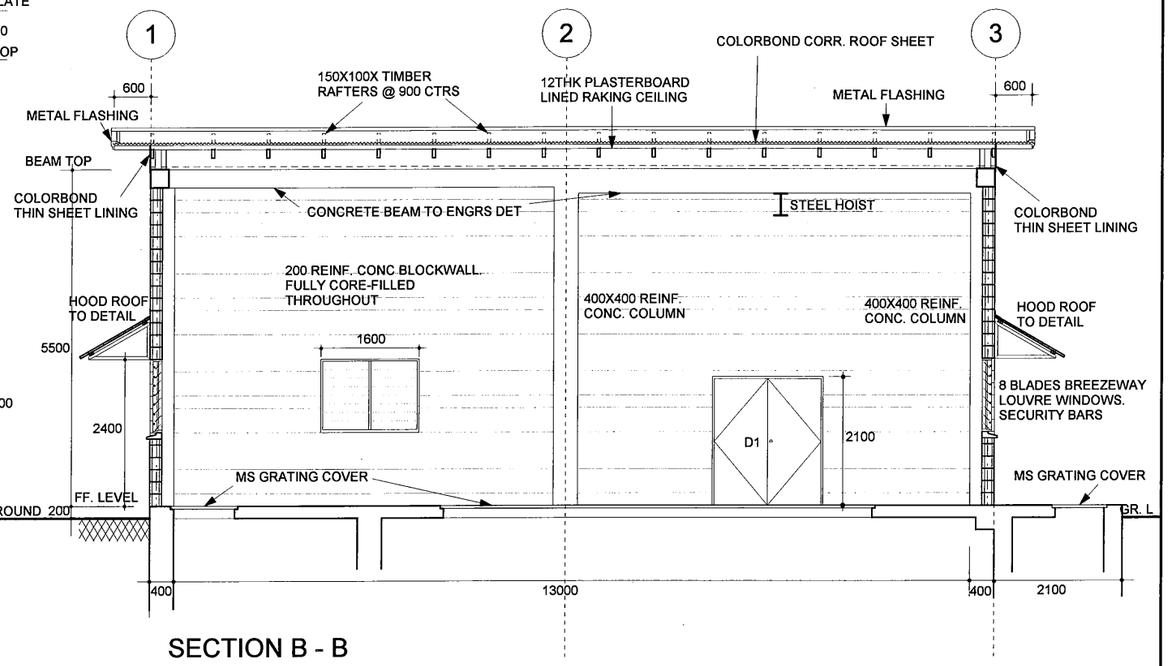
ELEVATION 2 SCALE: 1:100

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - UV DISINFECTION ROOM & TREATED WATER TANK - Floor Plan & Elevations	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/25 & 1/100	
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-UV-A001	



SECTION A - A

SCALE: 1:50



SECTION B - B

SCALE: 1:100

FINISHES SCHEDULE

MATERIAL	LOCATION	FINISH	COLOUR
EXTERNAL			
CONC.	ENTRY PAD	WOOD FLOAT & BROOM FINISH	
CONC.	BLK WALLS	2X ACRYLIC GLOSS	TO BE SELECTED
METAL	WALL CLADDING & HOOD	TRIMDEK 0.48 BMT	COLORBOND
	ROOF SHEETING	CORRUGATED	COLORBOND
	FLASHING	COLORBOND	COLORBOND
	EXPOSED FFRAMES	SHOP PRIME, SITE PRIME WITH LUXAPOXY 4 FOLLOWED BY LUXATHANE 2 PACK	BEIGE
INTERNAL			
CONC.	FLOOR	STEEL TROWEL FINISH	
CONC. BLK WALLS		PLASTERED & 2X ACRYLIC GLOSS	TO BE SELECTED
TIMBER & PLASTERBOARD	WALL & CEILING LINING	2X ACRYLIC SEMI GLOSS	TO BE SELECTED

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP - UV DISINFECTION ROOM & TREATED WATER TANK - Sections A & B

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU:
Project Director
Lot G.Zauya

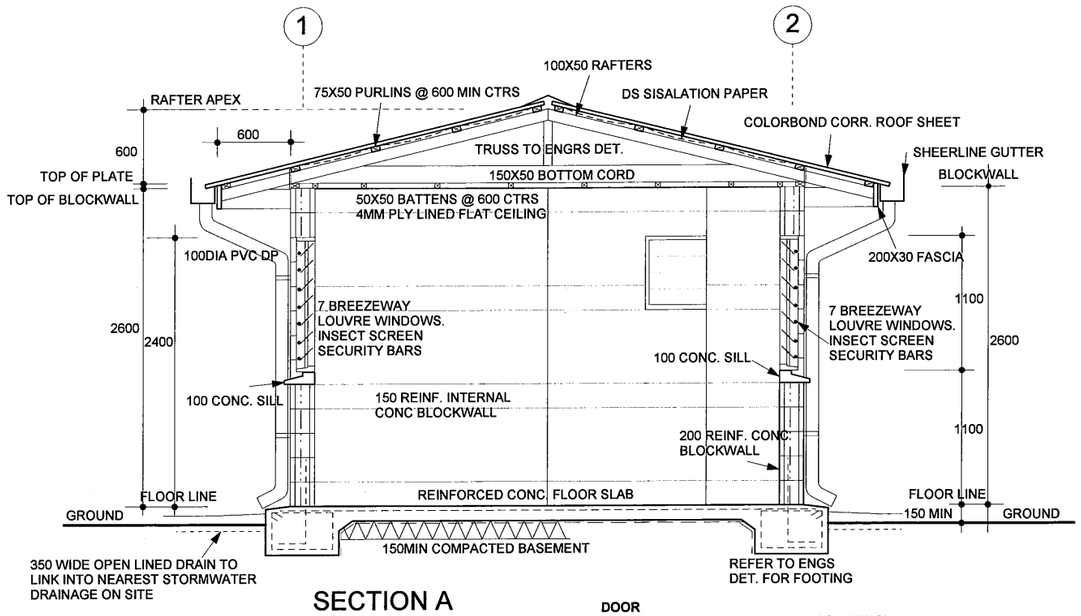
DATE: 1. Dec 2011

SCALE: 1/50 & 1/100

CHECKED by CONSULTANT
Project Manager
T.Fuji

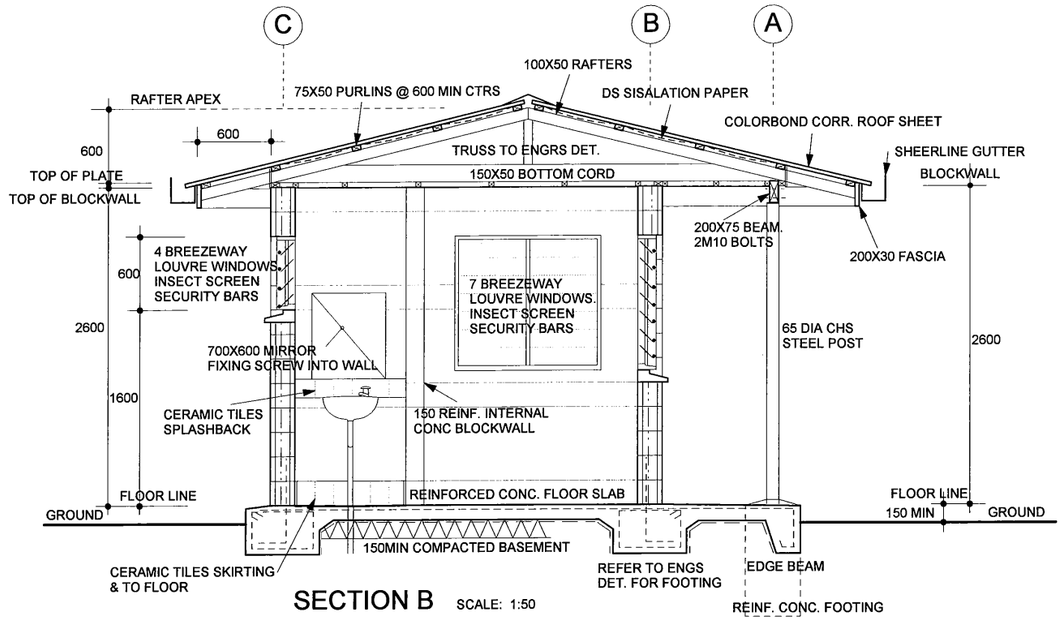
DATE: 1. Dec 2011

DRAWING NO.: STP-UV-A002



SECTION A

SCALE: 1:50



SECTION B

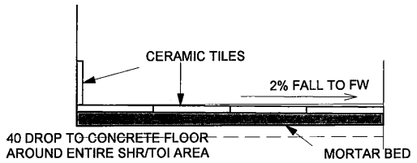
SCALE: 1:50

DOOR
- SOLID CORE DOOR (2100HX900W OPENING)
- 536 ESCAPE SET LOCKWOOD
- 3X 100 STEEL BUTT HINGES
- 401 DOOR CLOSER

- HOLLOW CORE DOOR FOR TOILET (DOOR PANEL TO BE 1850H X730W) ELEVATED 150MM UP FROM FLOOR.
- PRIVACY LATCH LOCKWOOD
- 2X 100 STEEL BUTT HINGES

WINDOWS
FRAME EX 150X38. SILL EX 150X50, REBATED FOR DRIP
LOUVRE GALLERIES TO BE BREEZWAY
OR SIMILAR APPROVED
INSECT SCREEN (IS) CYCLONE OR APPROVED
BEADS TO IS TO BE 30X10 (F)

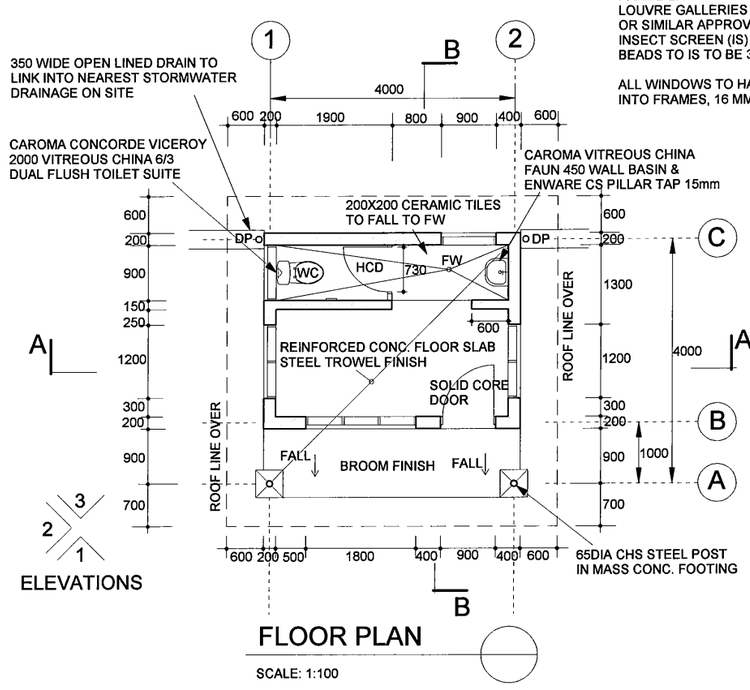
ALL WINDOWS TO HAVE SECURITY BARS DRILLED INTO FRAMES, 16 MM DIA GAL STEEL.



FLOOR TILES DETAILS TO TOILET AND HB AREA

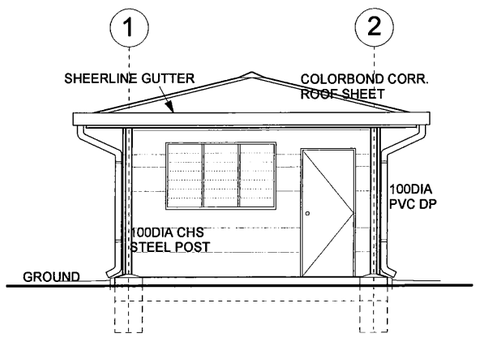
FINISHES SCHEDULE

MATERIAL	LOCATION	FINISH	COLOUR
EXTERNAL			
CONC.	ENTRY PAD	BROOM FINISH	
CONC.	BLK WALLS	2X ACRYLIC GLOSS	TO BE SELECTED
GALV. STEEL	POST	SHOP PRIME, SITE PRIME WITH LUXAPOXY 4 FOLLOWED BY LUXATHANE 2 PACK	BEIGE
METAL	WALL CLADDING & HOOD	TRIMDEK 0.48 BMT	COLORBOND
	ROOF SHEETING	CORRUGATED	COLORBOND
	FASCIA & BARGE	COLORBOND	COLORBOND
TIMBER	DOOR/WINDOW FRAMES	UNDERCOAT & 2 ACRYLIC SEMI GLOSS	TO BE SELECTED
	FASCIA & BARGE	OIL PRIME, 2 ACRYLIC SEMI GLOSS	TO BE SELECTED
INTERNAL			
CONC.	FLOOR	STEEL TROWEL FINISH	
CONC. BLK WALLS		PLASTERED & 2X ACRYLIC GLOSS	TO BE SELECTED
TIMBER	DOOR/WINDOW FRAMES	UNDERCOAT & 2 GLOSS ENAMEL	TO BE SELECTED
	WALL & CEILING LINING	2X ACRYLIC SEMI GLOSS	TO BE SELECTED



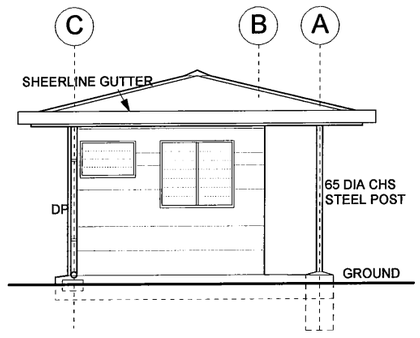
FLOOR PLAN

SCALE: 1:100



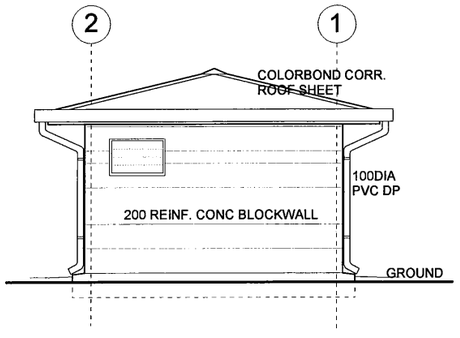
ELEVATION 1

SCALE: 1:100



ELEVATION 2

SCALE: 1:100



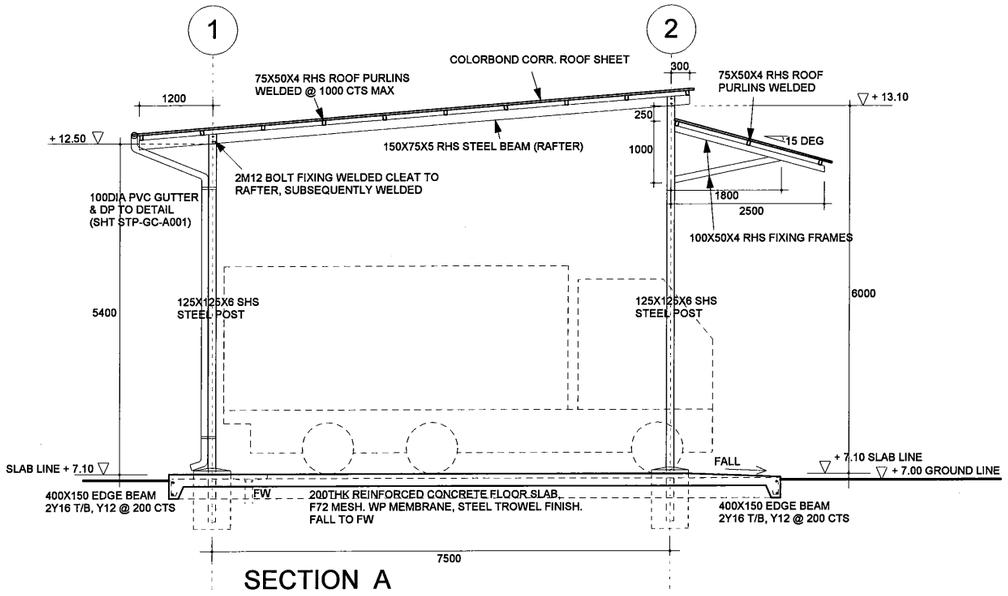
ELEVATION 3

SCALE: 1:100

PROJECT:	PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)
TITLE:	Kila Kila STP - GUARD HOUSE - Floor Plan, Elevations & Sections
CLIENT:	INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY
CONSULTANTS :	NJS CONSULTANTS CO., LTD. - JAPAN
NOTES :	

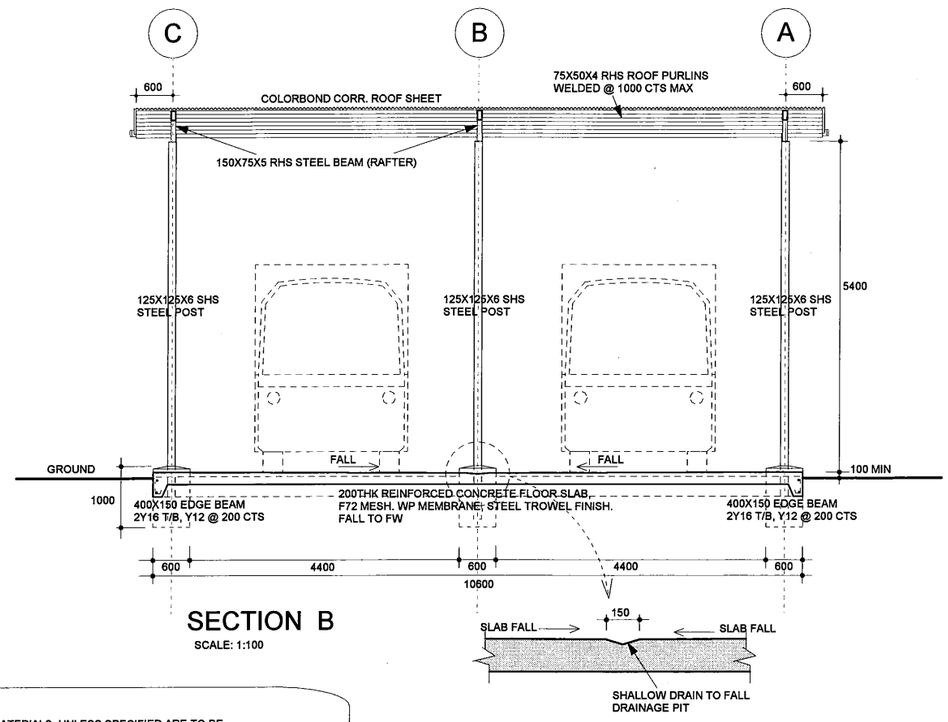
REVISIONS REV.	DATE	DESCRIPTION

APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/50 & 1/100
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-GU-A001



SECTION A

SCALE: 1:100

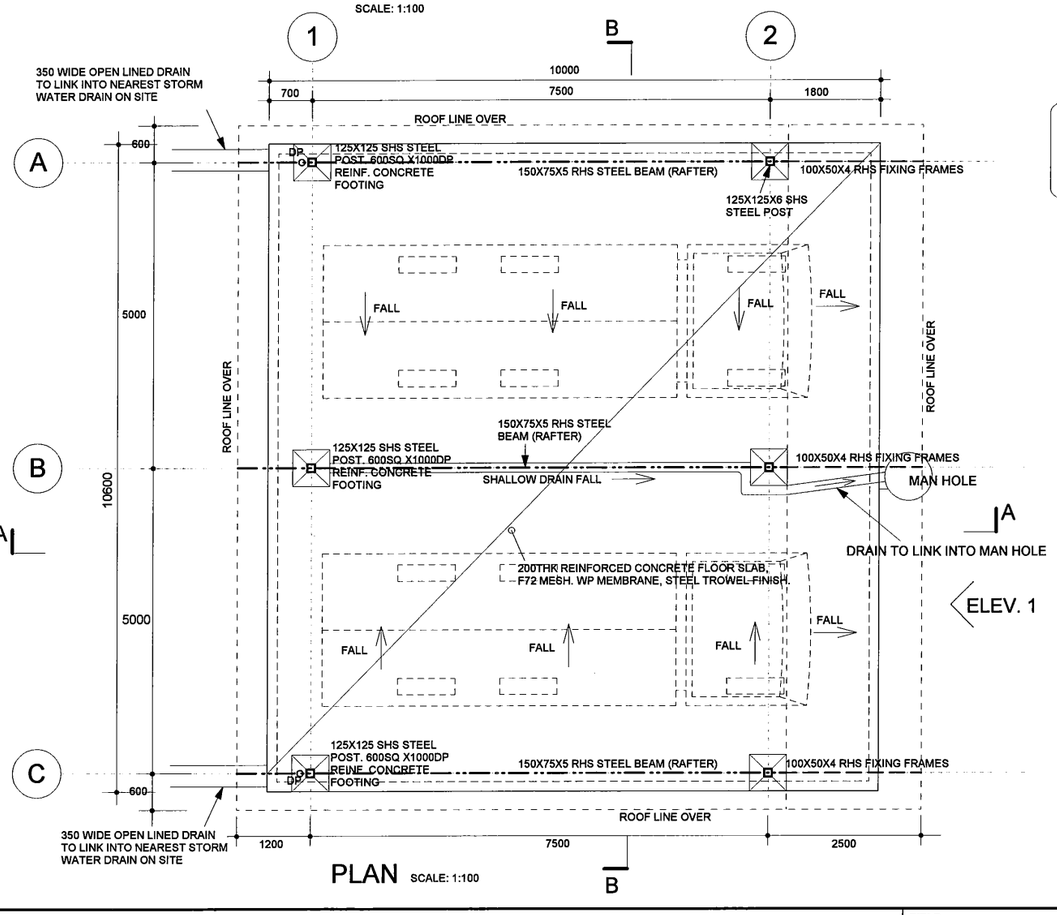


SECTION B

SCALE: 1:100

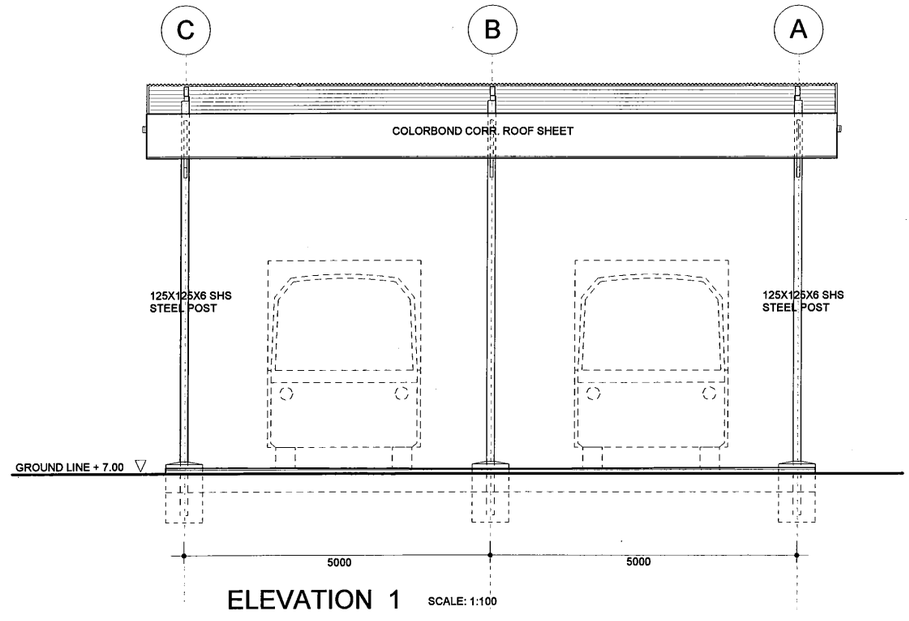
NOTE:

- ALL STEEL MATERIALS, UNLESS SPECIFIED ARE TO BE PRE GALVANISED OR STAINLESS STEEL. CUTS AND WELDS TO BE IMMEDIATELY PROTECTED WITH COLD GAL. PRIMED AND WHOLE WORKS PAINTED WITH OIL BASE GAL PRIMER, UNDERCOAT & GLOSS FINISH COATS.



PLAN

SCALE: 1:100



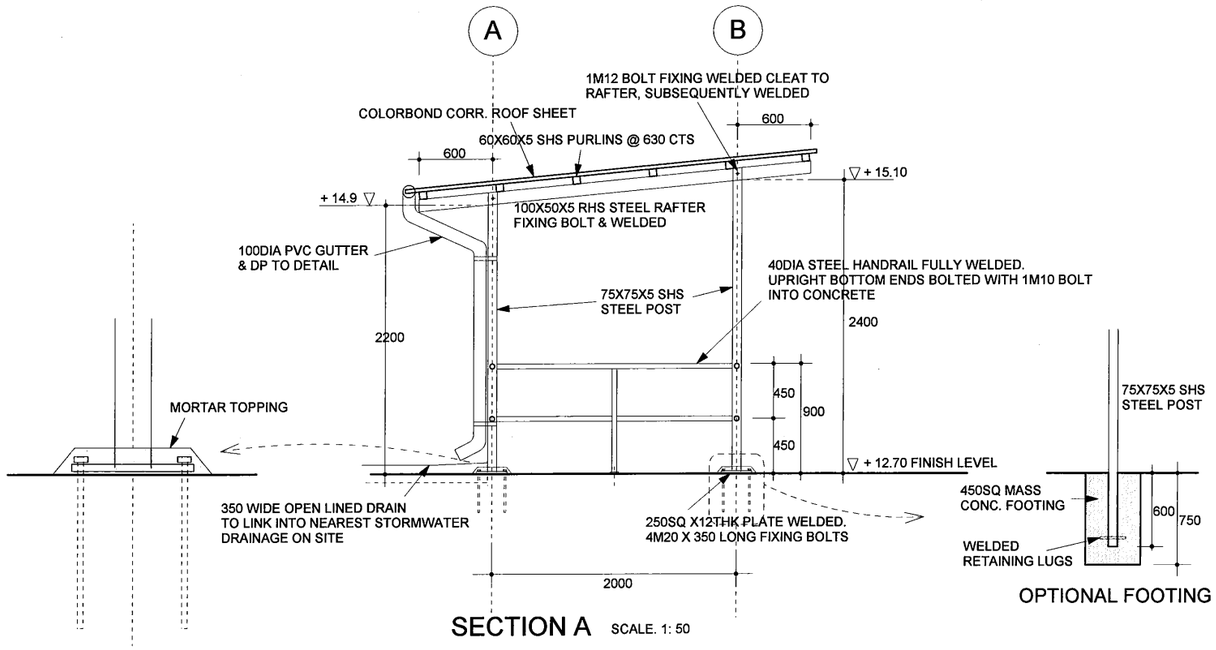
ELEVATION 1

SCALE: 1:100

PROJECT:	PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)
TITLE:	Kila Kila STP - CAR PORT ROOF - Plan, Section & Elevations
CLIENT:	INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY
CONSULTANTS :	NJS CONSULTANTS CO., LTD. - JAPAN
NOTES :	

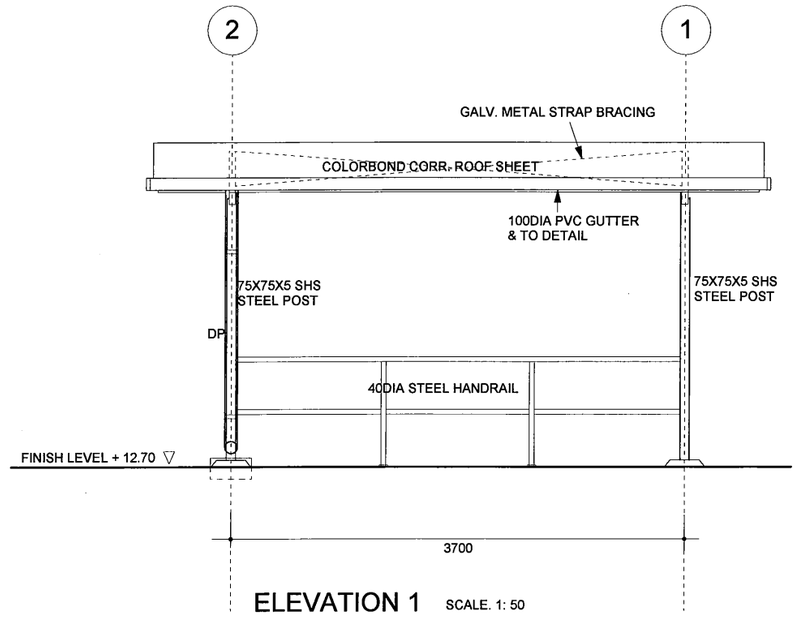
REVISIONS		
REV.	DATE	DESCRIPTION

APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/100
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-CP-A001

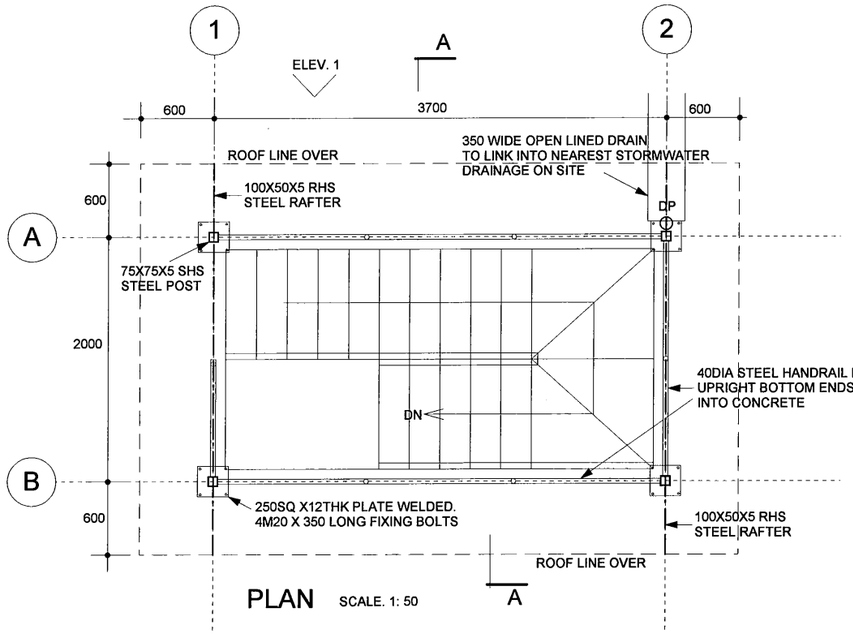


SECTION A SCALE. 1: 50

OPTIONAL FOOTING



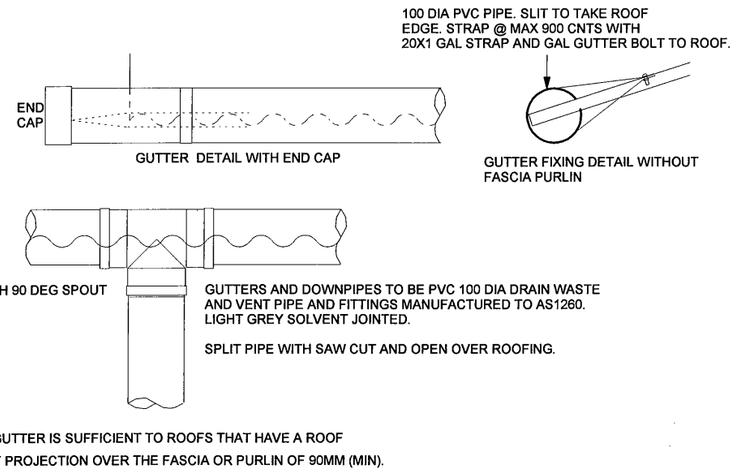
ELEVATION 1 SCALE. 1: 50



PLAN SCALE. 1: 50

NOTE:

- ALL STEEL MATERIALS, UNLESS SPECIFIED ARE TO BE PRE GALVANISED. CUTS AND WELDS TO BE IMMEDIATELY PROTECTED WITH COLD GAL. PRIMED AND WHOLE WORKS PAINTED WITH OIL BASE GAL PRIMER, UNDERCOAT & GLOSS FINISH COATS.
- FINISH PAINTING INCLUDES, SHOP PRIME, SITE PRIME WITH LUXAPOXY 4 FOLLOWED BY LUXATHANE 2 PACK

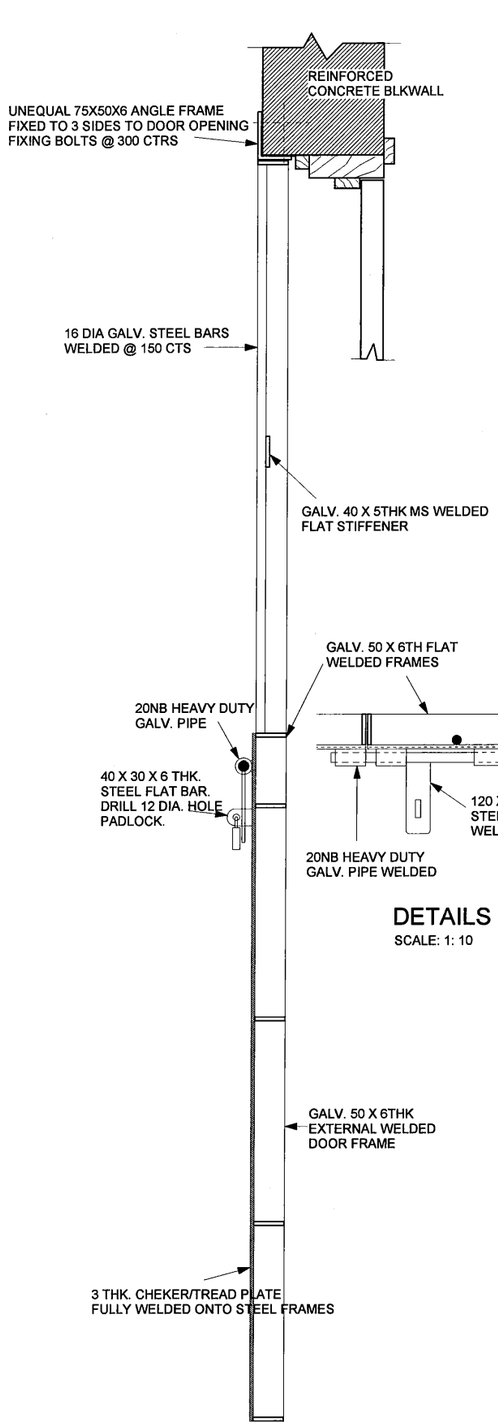


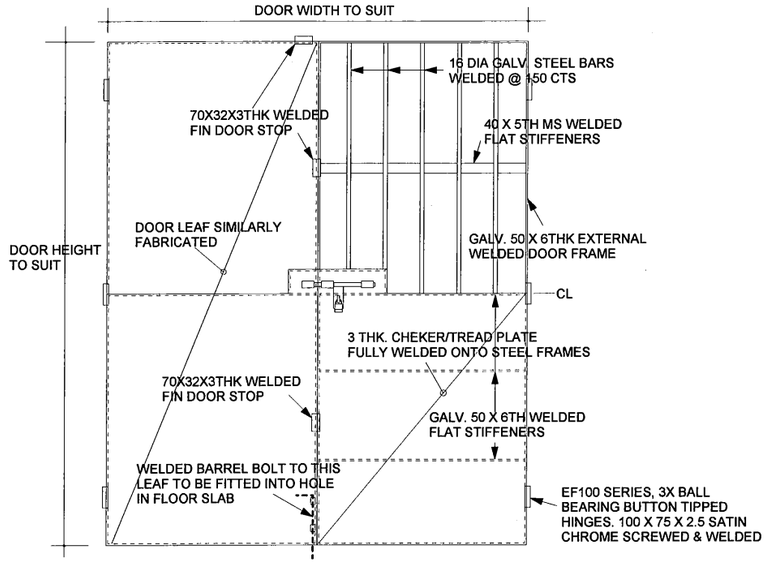
NOTES

- THIS GUTTER IS SUFFICIENT TO ROOFS THAT HAVE A ROOF SHEET PROJECTION OVER THE FASCIA OR PURLIN OF 90MM (MIN).

100DIA PVC GUTTER DETAIL

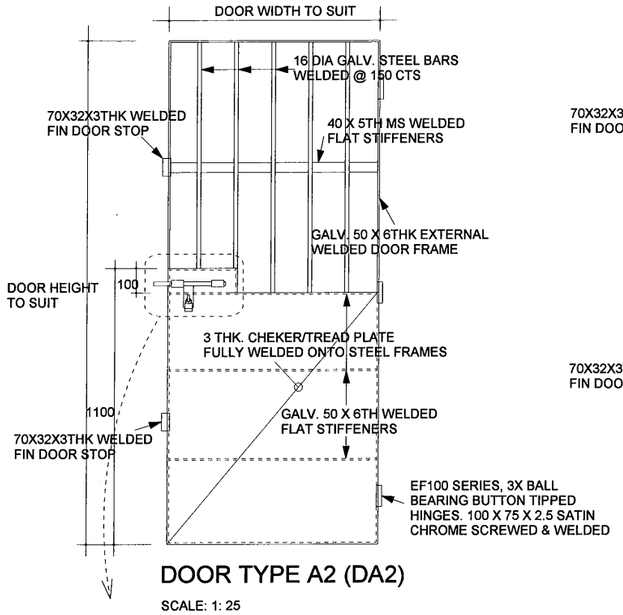
PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - GRIT CHAMBER STEP COVER - Plan, Elevations, Section & Details	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/50	
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-GC-A001	





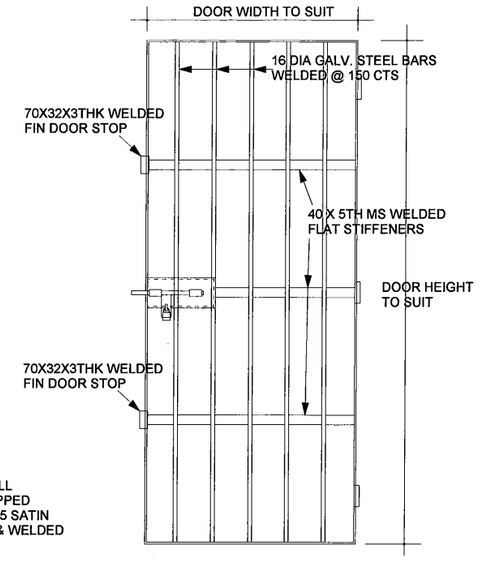
DOOR TYPE A1 (DA1)

SCALE: 1: 25



DOOR TYPE A2 (DA2)

SCALE: 1: 25



DOOR TYPE A3 (DA3)

SCALE: 1: 25

DETAILS

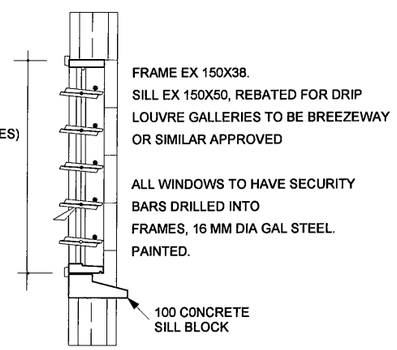
SCALE: 1: 10

STEEL MATERIALS & FINIISHES

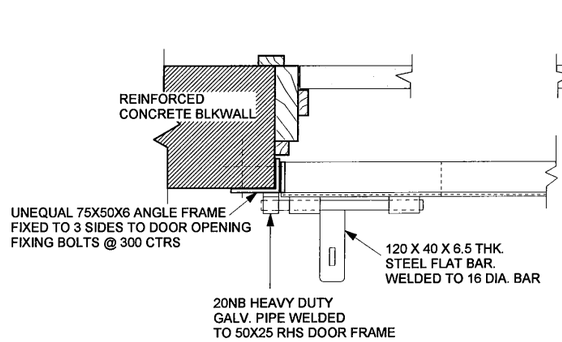
- ALL STEEL MATERIALS, UNLESS SPECIFIED ARE TO BE PRE GALVANISED OR STAINLESS STEEL. CUTS AND WELDS TO BE IMMEDIATELY PROTECTED WITH COLD GAL. PRIMED AND WHOLE WORKS PAINTED WITH OIL BASE GAL PRIMER, UNDERCOAT & GLOSS FINISH COATS.

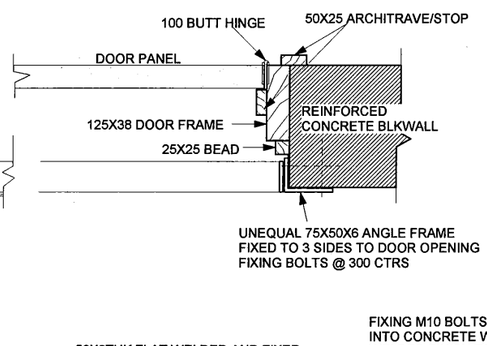
- ALL METAL USED FOR DOOR FRAMES INCLUDING THAT FOR HOOD ROOF ARE TO BE WELL PREPARED, FOLLOWED BY 1 COAT GAL TO WELDS, 1 LUXAPOXY 4 WHITE PRIMER & 1 COAT LUXATHANE 2 PACK

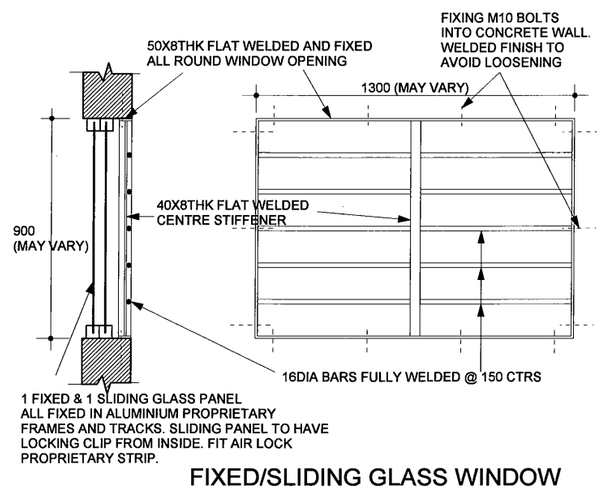
HOOD ROOF DETAIL



WINDOW FRAME (TYPICAL)







FIXED/SLIDING GLASS WINDOW & GRILLE DETAIL

SCALE. 1: 25

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP - STANDARD DRAWING - Door/Windows & Hood Details	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	REVISIONS: REV. / DATE / DESCRIPTION
APPROVED by PMU: Project Director, Lot G.Zauya	DATE: 1. Dec 2011	SCALE: 1/25	
CHECKED by CONSULTANT: Project Manager, T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-STD-A001	

LIST OF TENDER DRAWINGS

Drawing No.	Title	Scale	Drawing No.	Title	Scale
	Structure Works				
STP-GC-S001	Grit Chamber - Structural Plan		STP-AB-S001	Administration Building - Structural Plan	
STP-GC-S002	Grit Chamber -Reinforcement Section		STP-AB-S002	Administration Building - Structural Roof Plan and Truss Section	
STP-GC-S003	Grit Chamber - Reinforcement Details		STP-AB-S003	Administration Building - Structural Section	
			STP-AB-S004	Administration Building - Reinforcement Details	
STP-OD-S001	Oxidation Ditch - Structural Plan		STP-AB-S005	Administration Building - Footing Details	
STP-OD-S002	Oxidation Ditch - Reinforcement Section		STP-AB-S006	Administration Building - Blockwall and Stair Details	
STP-OD-S003	Distribution Tank - Structural Plan and Reinforcement Section				
STP-OD-S004	Blower/Local Control Room - Structural Plan and Section		STP-ES-S001	Electrical Substation - Structural Plan	
STP-OD-S005	Reinforcement Details (1)		STP-ES-S002	Electrical Substation - Structural Section	
STP-OD-S006	Reinforcement Details (2)		STP-ES-S003	Electrical Substation - Footing Details	
			STP-ES-S004	Electrical Substation - Blockwall and Roof Details	
STP-FS-S001	Final Sedimentation Tank - Structural Plan				
STP-FS-S002	Final Sedimentation Tank - Reinforcement Section and Details				
STP-FS-S003	Sludge Pump Room - Structural Plan				
STP-FS-S004	Sludge Pump Room - Reinforcement Section and Details				
STP-FS-S005	Reinforcement Details				
STP-UV-S001	UV Disinfection Room - Structural Plan				
STP-UV-S002	UV Disinfection Room - Structural Section				
STP-UV-S003	UV Disinfection Room - Reinforcement Details				
STP-UV-S004	UV Disinfection Room - Blockwall and Footing Details				
STP-TW-S001	Treated water Tank - Structural Plan				
STP-TW-S002	Treated water Tank - Reinforcement Section				
STP-TW-S003	Treated water Tank - Reinforcement Details				
STP-ST-S001	Sludge Treatment Building - Structural Plan				
STP-ST-S002	Sludge Treatment Building - Structural Roof Plan and Truss Section				
STP-ST-S003	Sludge Treatment Building - Structural Section				
STP-ST-S004	Sludge Treatment Building - Reinforcement Details				
STP-ST-S005	Sludge Treatment Building - Footing Details				
STP-ST-S006	Sludge Treatment Building - Blockwall and Stair Details				
STP-ST-S007	Wastewater Tank - Structural Plan and Reinforcement Section				

GENERAL

G1 This building is situated in an earthquake zone and has been designed and detailed to resist seismic forces. Any variation to either structural or non-structural elements may significantly alter the eartquake response of the building and impair its safety.

ANY PROPOSED ALTERATIONS MUST BE REFERRED TO THE STRUCTURAL DESIGN ENGINEER.

G2 These drawings shall be read in conjunction with all Architectural and other consultants Drawings and Specifications and with such other written instructions as may be issued during the course of contract. All discrepancies shall be referred to Superintendant for decision before proceeding with the work.

G3 All dimensions relevant to setting out and off-site works shall be verified by the Contractor before construction and fabrication is commenced. The Engineers drawings shall not be scaled.

G4 During construction the contractor shall be responsible for maintaining the structure in a stable condition and ensuring no part shall be overstressed under construction activities.

G5 Workmanship and materials are to be in accordance with the relevant current PNGS and SAA standards including all amendments and the local statutory Authorities, except where varied by the the contract documents.

G6 Requirements to comply with a particular code or standard is deemed to refer to the latest edition with all relevant amendments and to include all other codes or standards associated with or referred to in the noted code or standard.

G7 No holes or chases other than those indicated on the structural drawings shall be made without the approval of the Superintendant.

G8 Prior to ordering materials or carrying out any work that may be affected, the Contractor shall submit the following information for approval in accordance with the drawings and specification. These proposals shall include all information neccessary for approval including the following:

1) Source and supplier of materials and products.
2) Cerificates and results of any tests already carried out.
3) Details of tests to be carried out both on and off site.
4) Location of any testing to be carried out off site.
5) Details of any seperate labratory, authority or other body to carry out tests.

The approval of substitution of materials shall be sought from the Superintendant.

All dimensions are in millimetres unless stated otherwise. All levels are expressed in metres.

G9 All props and formwork for beams and slabs shall be removed before construction of any masonry walls or partitions on the floor.

G10 All Non-Load Bearing Walls shall be kept clear of the underside of beams and slabs clearance shall not be less than 20mm unless otherwise shown.

G11 Where proprietary products are specified they shall be manufactured and used in accordance with the manufacturer's specifications and recommendations.

G12 Design loads to Papua New Guinea Standard 1001.

1) Wind - Basic Design Velocity 28m/sec
   Terrain Category 1
2) Seismic - Zone 4

FOUNDATION

F1 Founding levels are provisional and are subject to the Superintendant's approval of the bearing strata.

F2 Anticipated bearing material: Undisturbed Natural Ground.

F3 Required allowable bearing strength of foundation material 550 kPa

F4 All water and loose material shall be removed from the base prior to pouring any concrete.

F5 Compacted fill under slabs and minor strip footings shall comply with the following:

a) Material shall be selected from an approved source, shall be free of vegetable matter and ball of clay, and shall comply with the following requirements.

(i) CBR value after 4 days soaking, not less than 25 when compacted to at least 95% maximum dry density as determined by AS1289 Test No. E1.1

(ii) Maximum linear shrinkage 6%

(iii) Grading

SIEVE SIZE (mm)	BY WEIGHT PASSING
37.5	100
19.0	60 - 100
9.5	40 - 80
4.75	30 - 60
2.36	20 - 45
0.425	15 - 30
0.075	3 - 15

(iv) The fraction passing the 75 micron sieve shall not exceed 2/3 that passing the 425 micron sieve.

(v) The fraction retained on the 2.36mm sieve shall consist of hard durable particles or fragments of stone, gravel or sand and shall not include any material that breaks up when alternately wetted and dried.

(vi) The fraction passing the 425 micron sieve shall have a liquid limit not greater than 30 and a plasticity index not greater than 10.

F6 Over excavating under footings shall be made good with 10 MPa mass concrete.

CONCRETE

C1 All workmanship and material shall be in accordance with PNG 1002.

C2 Minimum cover (mm) to all reinforcement unless otherwise shown shall be as follows:

REINFORCEMENT COVERS

Minimum reinforcement cover requirements to be in accordance with PNGS1002 - 1982 Exposure condition listed below:

Exterior faces of members (above ground) : 3
Interior faces of members : 3
Members below ground : 3

In addition reinforcement cover shall not be less than :

Base Slab : 75mm
Wall : 75mm
Cover Slab : 75mm
BEAMS : 75mm
RC Wall : 75mm

C3 Sizes of concrete elements do not include thickness of applied finishes.

C4 Reinforcement is represented diagrammatically and not neccessarily shown.

C5 Splices in reinforcement shall be made only in the positions shown or as otherwise approved by the Superintendant.

C6 Welding of reinforcement shall not be permitted.

C7 All reinforcement shall be securely supported in its correct position during concreting by approved bar chains, spacers or support bars.

C8 Reinforced symbols:
"Y" denotes hot rolled deformed bars grade 410Y to AS 1302
"S" denotes deformed bars grade 2305 to AS 1302.
"R" denotes plain round bars grade 230R to AS 1302.

C9 Laps, unless noted otherwise, shall be : 40 x bar diameter for rounds and 350mm for fabric.

C10 Bending radii, unless noted otherwise, shall be to PNGS 1002.

C11 Cover will be maintained during casting concrete by the use of plastic chairs and/or mortar blocks 1:2 mix at maximum 500mm centres in each directions. For work in contact with the ground chairs are to be supported on sheet plates.

C12 Reinforcement shall not be exposed for prolonged periods such as to permit the development of scale

C13 Reinforcement and formwork are to be checked by the Superintendant prior to pouring. The Superintendant is to be given 24 hours notice for a check and a futher 24 hours for any remedial work required prior to concrete placement.

C14 All conduits to be placed above bottom reinforcement and below top reinforcement - minimum spacing between conduits 25mm.

C15 Formwork shall be designed and constructed in accordance with AS 3610.

C16 Concrete components and quality shall be as follows, unless noted otherwise;

Element	F'c (MPa)	Water/Cement Ratio
Base Slab	40	0.55
Wall	40	0.55
Beam	40	0.55
Cover Slab	40	0.55

C17 Three test cylinders are to be taken from each sample (sampling in accordance with PNGS 1002.) One cylinder to be tested at seven days, the other two at 20 days. Where ready mix concrete is supplied each truck will constitute a batch in applying PNGS 1002.

C18 The Contractor shall submit for approval his proposals for curing of all insitu concrete work, at least 7 days prior to any pour taking place.

C19 Construction Joints to be cleaned of all loose and foreign materials, scabbled and wetted immediately before continuing the following concreting. Construction Joints other than those indicated on the drawing shall not be made without approval.

CONCRETE MASONRY

B1 All concrete block masonry is to be executed in accordance with the current edition of:

PNGS 1004 - Reinforced Masonry Structures Code.
AS 2733 - Concrete Masonry Units.

B2 Concrete masonry blocks shall have characteristics compressive strength of F'b = 12 MPa and 16 MPa at specific locations denoted as SW1 - SW39.

B3 All blocks shall be laid dry and wetting shall not be permitted during or after laying.

B4 Channel stretcher blocks and lintel blocks shall be used to form bond beams and lintels respectively. Top groove blocks shall be used elsewhere where horizontal reinforcement is required. Otherwise blocks shall conform to AS 2733.

B5 All blocks must be cured for minimum of 28 days before transportation to site.

B6 Clean out blocks are to be used for core filled cavities and all mortar droppings are to be removed from the bottom cavities before grouting.

B7 Mortar shall comply with AS 1475. Part 1, Appendix A. The mix proprtions of table A1 shall be adjusted to give an average compressive strength of 8 MPa.

B8 Mortar joints to be 10mm thick with blocks fully bedded and perpends filled.

B9 Grout for corefilling shall comply with AS 1475, Part 1, Section 2. Characteristic compressive strength F'c = 15 MPa Slump 225. Batching by volume is not permitted.

B10 Corefilling is to be placed for the full height in lifts of not more than 1200mm in height. A minimum delay period of one hour and max, three hours shall be observed between lifts. All cores are to be filled unless noted otherwise.

B11 Corefilling shall be thoroughly compacted into place with the aid of small immersion vibrators.

B12 The corefilling at the top of each lift shall be kept down at a distance of 25mm from the top of the blockwork and this surface shall be thoroughly scabbled before any further blocks are laid or concrete poured.

B13 Masonry walls shall be cured for at least three (3) days before corefilling is placed.

B14 All masonry must be approved by the Superintendant before corefilling takes place.

B15 Vertical reinforcement at any level shall be correctly positioned and securely tied to starters projecting from construction below prior to placing blocks.

B16 Reinforcement is to be left undisturbed for at least 12 hours after corefilling. Any reinforcement showing signs of seperation from the corefilling may render that section of the wall liable to rejection.

B17 Minimum cover to reinforcement : 12mm from inside face of block.

B18 Vertical bars shall be placed with laps at not less than 1600mm centres, unless noted otherwise.

B19 Laps, unless noted otherwise, shall be : 40 x bar diameter.

B20 All bars are to be cogged around openings and openings are to have a bond beam over them.

B21 At the completion of a day's work and during wet weather top and sides of all walls shall be covered to prevent rain penetration to cores or wetting of blocks.

B22 Control joints in blockwork to be at 4m maximum spacing.

STRUCTURAL STEELWORK

S1 All workmanship and materials shall be in accordance with PNGS 1003.

S2 Steel grade - 300 MPa.

S3 Plates, unless noted otherwise, shall be 8mm thick.

S4 Bolts, unless noted otherwise, shall be 16mm diameter, Grade 4.6/s, bolts 20mm diameter and greater shall be Grade 8.8/s.

S5 Welds, unless noted otherwise, shall be 6mm continuous fillet weld.

S6 Welding electrodes shall be class E 41XX.

S7 WElding shall be performed by an experienced qualified operator in accordance with PNGS 1016.

S8 The contractor shall verify that all members can be assembled and erected properly, prior to erection on site.

S9 Before fabrication is commenced the Contractor shall submit copies of the shop drawings to the Superintendant for review. Review does not include checking of dimensions.

S10 Reference shall be made to the Architect's drawings for additional drillings, cleats, fixings, etc.

S11 The contractor shall provide and leave in place until permanent bracing elements are constructed, such temporary bracing as is neccessary to stabilise the structure during erection.

S12 The ends of all tubular members are to be sealed with nominal thickness plates and continuous fillet weld unless otherwise shown.

S13 Unless otherwise specified all steelwork shall be sand blasted to remove all rust and scaled and painted one shop coat of inorganic zinc silicate primer min. 40 micron thickness. Members encased in concrete, fire spray or HSTF bolted connections must not be painted.

S14 All base plates shall be temporarily supported and dry pack grouted with 3:1 sand cement grout in a just wet condition.

S15 Cold formed steelwork shall comply with AS 1530, roll formed from hot-dipped zinc-rolled steel grade G450-Z200 to AS 1397.

S16 All steelwork exposed to the weather including bolts and fixings shall be hot dipped galvanised unless noted otherwise.

TIMBER

T1 Timber materials and workmanship shall comply with AS 1720.

T2 Timber shall be seasoned to moisture content not exceeding 15%, unless noted otherwise.

T3 Where unseasoned timber is specified, in no case shall timber be used having a moisture content exceeding 30% at the time of fabrication.

T3 Timber shall have strength properties not less than that shown below:

Stress Grade - F11
Strength Group - SD4
Joint Group - J3

In the absence of mechanical stress, grading timber shall be visually stress graded in accordance with AS 2082.

T4 The Contractor is required to submit details of the proposed species of timber for approval. If unidentified species are proposed, evidence must be provided from the Papua New Guinea Office of Forestry of identification and compliance with the specified properties.

T5 All sizes quoted are the final dressed sizes of finished timber unless noted otherwise.

T6 The Contractor shall verify that all members can be assembled and erected properly.

T7 Any variations shall be referred to the Superintendant for approval.

T8 Steel Components shall comply with PNGS 1003 Steel grade 250.

T9 Bolt holes are to be of same nominal diameter as bolts, drilled through assembled timber.

T10 Washers, unless noted otherwise, shall be provided under all bolt heads and nuts as follows:
Against timber, 65 x 65 x 5 square washers.
Against steel, standard round washers.

T11 All bolts, nuts and washers shall be galvanised in accordance with AS 1214.

T12 All bolts shall be retightened at completion of construction.

T13 Where neccessary timber shall be chamfered locally to just clean fillet welds connection plates, etc.

T14 Preservative treatment is to be provided as follows : dip diffused.

DESIGN LOADS

TOP LEVEL

DEAD LOAD: 18.0 kPa

BASE LEVEL

MECHANICAL LOADS OF VARIOUS MECHANICAL FACILITIES

HYDROSTATIC PRESURE FORCE (DEPENDS ON DEPTH):
- EARTH PRESSURE FORCE
- EARTHQUAKE PRESSURE FORCE

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila SPT. GRIT CHAMBER- STRUCTURAL NOTES SHEET 1 OF 2

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

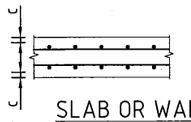
REVISIONS

ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	CM

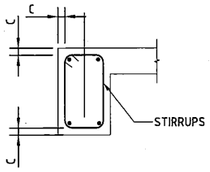
APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: N.T.S.

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-GC-C001

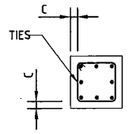
MINIMUM CONCRETE COVER



SLAB OR WALL

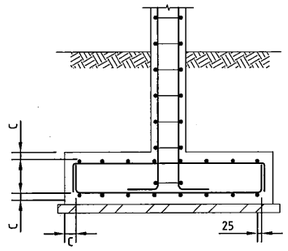


GIRDER OR BEAM

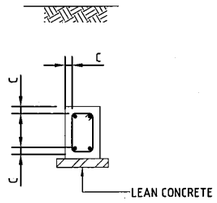


COLUMN OR PEDESTAL

ABOVE GRADE CONCRETE



FOOTING



GRADE BEAM

FOUNDATION

THE MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE AS INDICATED BELOW.

- ELEMENT EXPOSED TO WATER/SPILLAGE (CATCH BASIN/MANHOLE/SPILL BASIN etc	- 75mm
- OTHER STRUCTURE	- 65mm

THE REQUIREMENTS STIPULATED ABOVE SHALL NOT BE APPLIED TO THE FOLLOWING REINFORCED CONCRETE ITEMS :

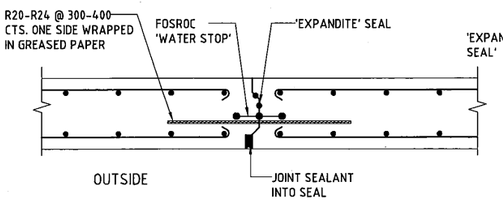
a) CONCRETE PIPES
- AS PER MANUFACTURER'S STANDARD.

b) FIREPROOFING (WITH GALVANISED WIRE MESH)

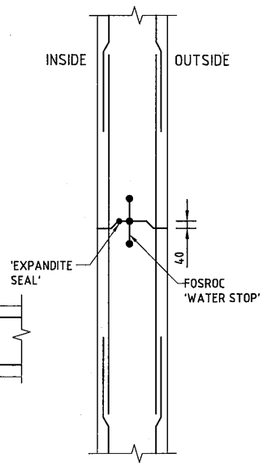
c) DITCH LINING/ SLOPE PROTECTION

d) CONCRETE PAVING

NOTE: FOR CONCRETE CAST AGAINST GROUND (WITHOUT FORMWORK) MINIMUM CONCRETE COVER (C) SHALL BE 75mm.

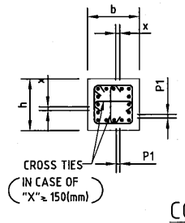


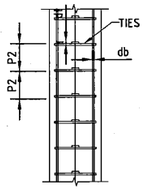
RECTANGULAR STRUCTURES



TYPICAL EXPANSION JOINT DETAIL FOR CIRCULAR LIQUID RETAINING STRUCTURE

SPACING LIMITS

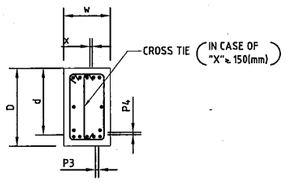


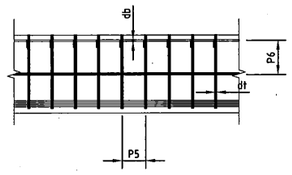


P1 ≥ hagg x 4/3 (mm)
1.5db,
40 (mm)
WHICHEVER IS GREATER

P2 ≤ 15 db or 300(mm) or SMALLEST CROSS SECTIONAL DIMENSION OF COLUMN WHICHEVER IS SMALLER

COLUMN





P3 ≥ hagg x 4/3 (mm)
db
WHICHEVER IS GREATER
hagg = 20(mm)

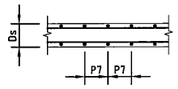
P4 ≥ 25(mm)

P5 ≤ D/2 or 300mm
WHICHEVER IS SMALLER

P6 ≤ 300(mm)

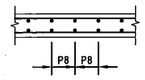
GIRDER AND BEAM

PRIMARY REINFORCEMENT



P7 ≤ 2Ds or 300 (mm)
WHICHEVER IS SMALLER

SECONDARY REINFORCEMENT



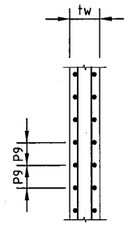
P8 ≤ 2Ds or 300 (mm)
WHICHEVER IS SMALLER

SLAB

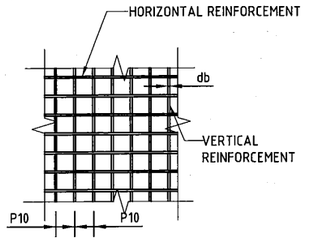
STANDARD HOOKS AND BENDS

FOR MAIN REINFORCEMENT				FOR TIES AND STIRRUPS REINFORCEMENT			
90° HOOK OR BEND / 180° HOOK				90° HOOK / 135° HOOK			
BAR SIZE	MIN.BEND DIA. D1	MIN.EXTENSION L1	MIN.EXTENSION L2	BAR SIZE	MIN.BEND DIA. D2	MIN.EXTENSION L3	MIN.EXTENSION L4
				N10	40	135	100
N12	60	120	70	N12	50	160	120
N16	80	135	70				
N20	100	160	80				
N24	120	195	100				
N28	140	225	115				
N32	160	260	130				
N36	180	290	145				
N40	200	320	160				

(mm)



P9 ≤ 350(mm)
or
2.5tw
or
4db



P10 ≤ 350(mm)
or
2.5tw
or
4db

WALL

NOTE : VERTICAL REINFORCEMENT NEED NOT BE ENCLOSED BY LATERAL TIES IF VERTICAL REINFORCEMENT AREA IS NOT GREATER THAN 0.01 TIMES GROSS CONCRETE AREA, OR WHERE VERTICAL REINFORCEMENT IS NOT REQUIRED AS COMPRESSION REINFORCEMENT.

FOR WALLS GREATER THAN 200mm THICK, THE VERTICAL AND HORIZONTAL REINFORCEMENT SHALL BE PROVIDED IN TWO GRIDS, ONE NEAR EACH FACE OF THE WALL.

NOTES:

1. FOR GENERAL NOTES, SEE DWG No.S001

2. LEGEND
- hagg : NOMINAL MAXIMUM SIZE OF AGGREGATE = 20mm
- d : EFFECTIVE DEPTH
- db : SIZE OF LONGITUDINAL BARS (mm)
- N : BAR SYMBOL
- dt : SIZE OF TIES
- s : SPACING
- D : BEAM HEIGHT
- w : BEAM WIDTH
- b,h : COLUMN SECTION
- tw : THICKNESS OF WALL

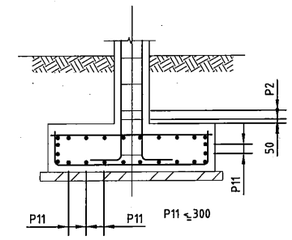
3. SPACING OF TIES AND STIRRUPS SHALL BE IN ACCORDANCE WITH AS 3600-2001

3-1 TIES SPACING (P2)
MAXIMUM TIE SPACING SHALL NOT EXCEED THE FOLLOWING VALUE
- -15db
- -SMALLEST CROSS SECTIONAL DIMENSION OF COLUMN
- -300mm

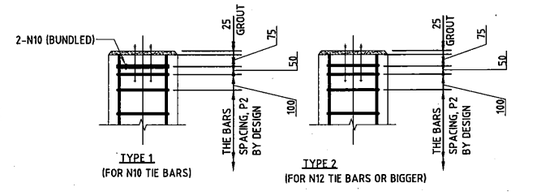
WHICHEVER IS SMALLER

3-2 STIRRUP SPACING (P5)
MAXIMUM STIRRUP SPACING SHALL NOT EXCEED THE FOLLOWING VALUE:
- -D/2
- -15db
- -300mm

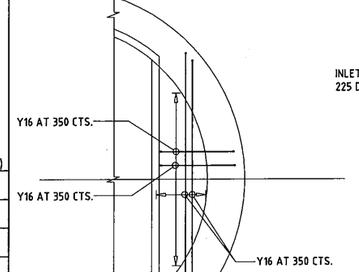
WHICHEVER IS SMALLER



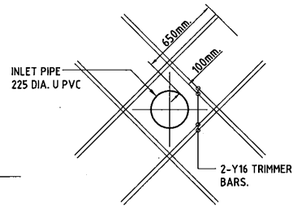
FOOTING



STIRRUP DETAIL FOR TOP OF PEDESTAL



DETAIL 1
SCALE 1:50



TYP. DETAIL
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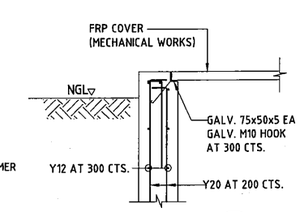


DETAIL 2
SCALE 1:50

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila STP. GRIT CHAMBER- STRUCTURAL NOTES SHEET 2 OF 2

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

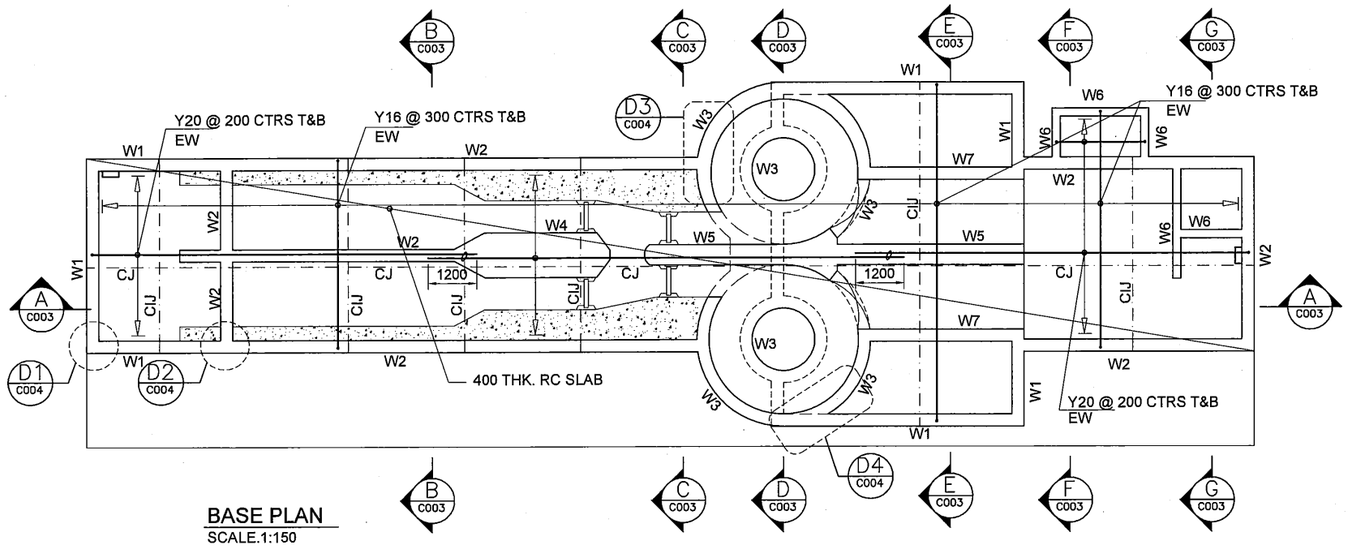
CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

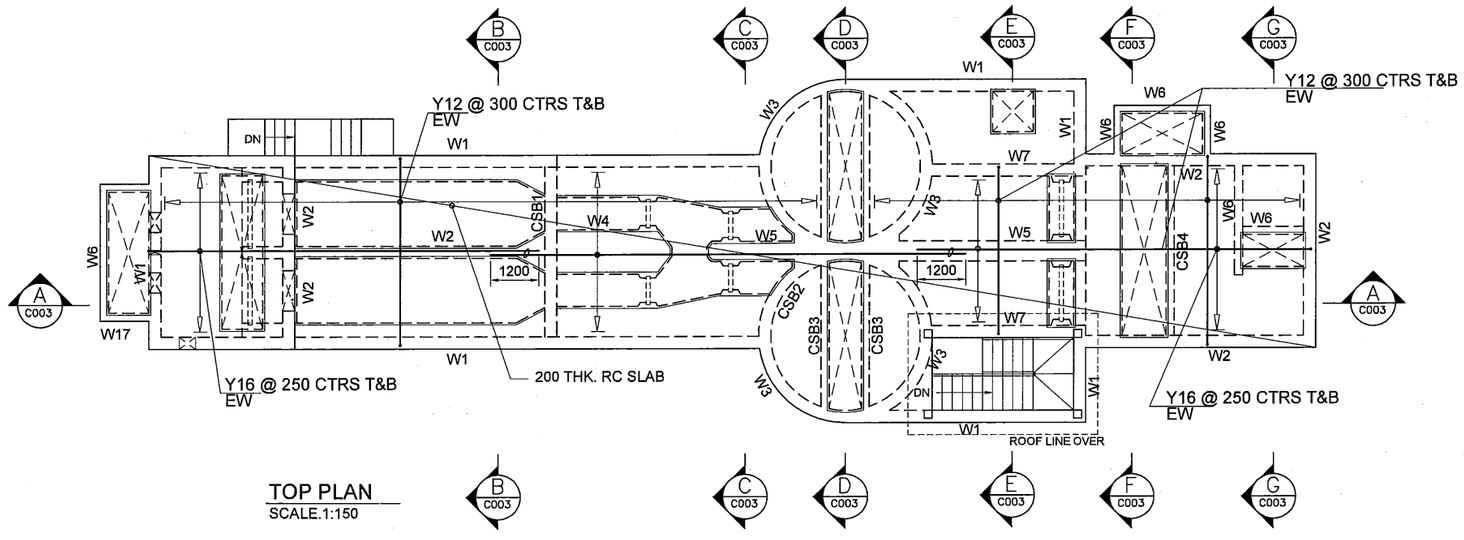
REVISIONS					
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	CM

APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: N.T.S.
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-S001a

2



BASE PLAN
SCALE.1:150



TOP PLAN
SCALE.1:150

MEMBER SCHEDULE

MARK	SIZE/DESCRIPTION		REINFORCEMENT LENGTHWISE	REINFORCEMENT WIDTHWISE	REMARK
BASE LEVEL					
W1	300 THK.	V	Y20-200 CTS.	Y16-200 CTS.	REINF. CONC. WALL
		H	Y16-200 CTS.		
W2	300 THK	V	Y16-300 CTS.	Y12-300 CTS.	REINF. CONC. WALL
		H	Y12-300 CTS.		
W3	300 THK	V	Y16-300 CTS.	Y12-300 CTS.	REINF. CONC. WALL
		H	Y12-300 CTS.		
W4	1100 THK	V	Y16-200 CTS.	Y12-300 CTS.	REINF. CONC. WALL
		H	Y12-300 CTS.		
W5	500 THK	V	Y16-200 CTS.	Y12-300 CTS.	REINF. CONC. WALL
		H	Y12-300 CTS.		
W6	200 THK	V	Y16-300 CTS.	Y12-300 CTS.	REINF. CONC. WALL
		H	Y12-300 CTS.		
W7	200 THK	V	Y16-300 CTS.	Y12-300 CTS.	REINF. CONC. WALL
		H	Y12-300 CTS.		
TOP LEVEL					
CSB1	700 DP x 300 WD		6-Y16	Y12-200 CTS.	RC BEAM
CSB2	500 DP x 400 WD		4-Y16	Y12-200 CTS.	RC BEAM
CSB3	400 DP x 200 WD		4-Y16	Y12-200 CTS.	RC BEAM
CSB4	1400 DP x 200 WD		8-Y16	Y12-200 CTS.	RC BEAM

NOTES:

1. U.N.O. LAP LENGTHS:
   Y12-500 min COG = 200 EMBEDMENT = 250
   Y16-650 min COG = 300 EMBEDMENT = 300
   WITH STD. HOOK
2. ALL FOOTING FOUNDING LEVELS ARE TO BE VARIFIED ON SITE DURING EXCAVATION.

LEGEND:

NGL - DENOTES NATURAL GROUND LEVEL
CIJ - DENOTES CRACK INDUCED JOINT
CJ - DENOTES CONSTRUCTION JOINT
WJ - DENOTES WALL JOINT
EW - DENOTES EACH WAY
BF - DENOTES BOTH FACE
T&B - DENOTES TOP & BOTTOM
V - DENOTES VERTICAL REINF.

GENERAL NOTES

1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP - GRIT CHAMBER REINFORCEMENT PLAN

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

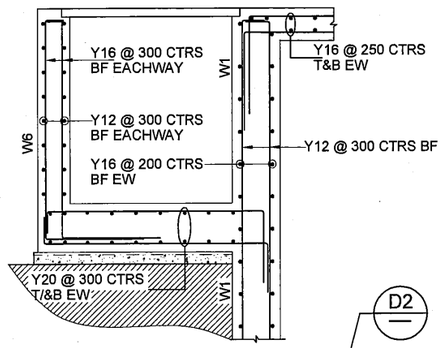
CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS					
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	CM

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-GC-C002



DETAIL D2
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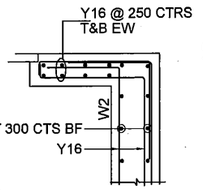

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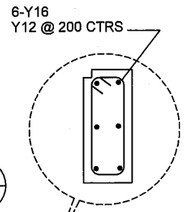

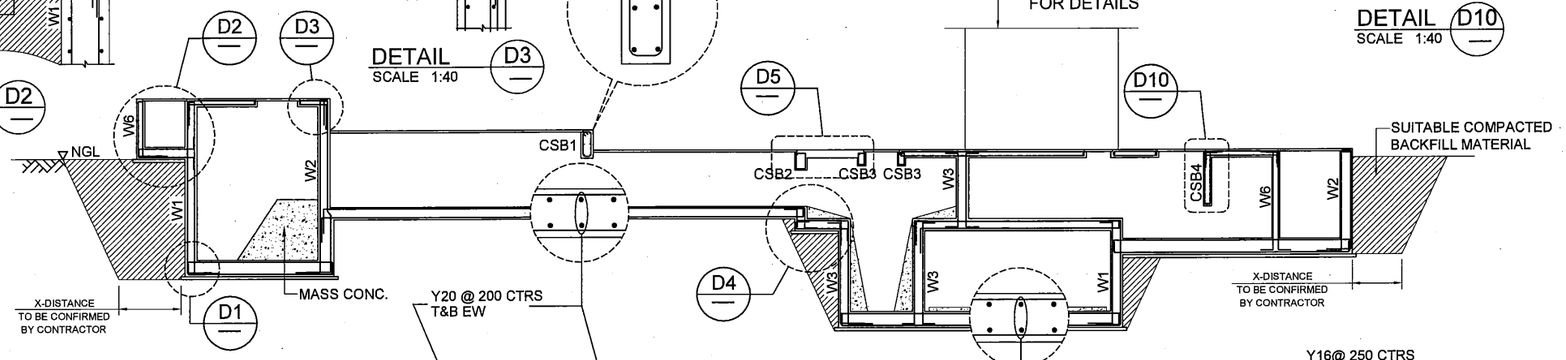

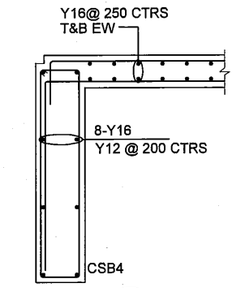

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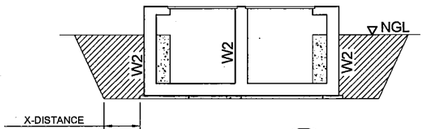
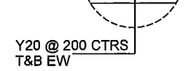


SECTION B C002
SCALE 1:150



SECTION A C002
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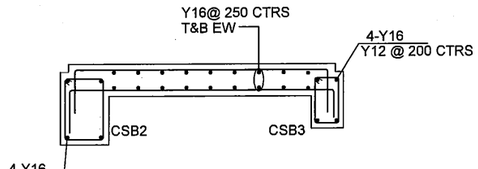

DETAIL D5
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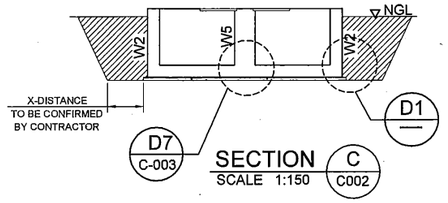

SECTION C C002
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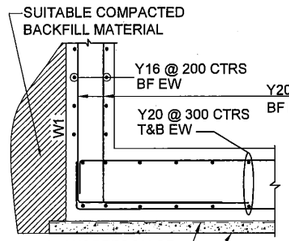

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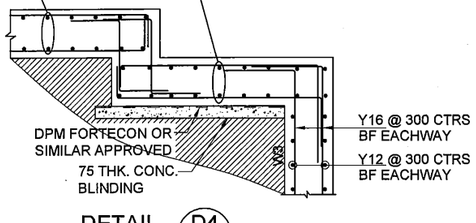

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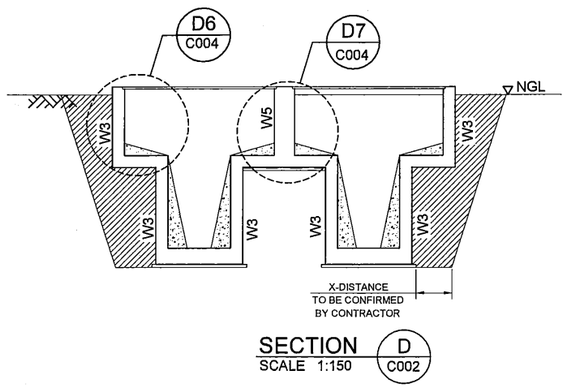

SECTION D C002
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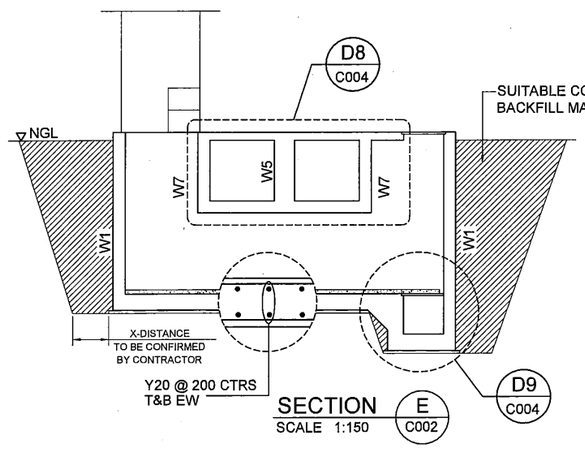
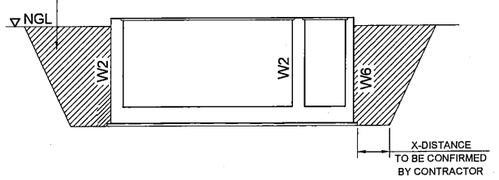


SECTION E C002
SCALE 1:150



SECTION F C002
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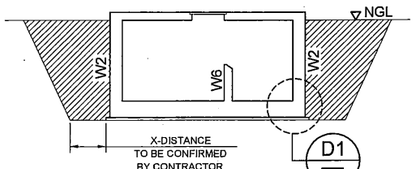

SECTION G C002
SCALE 1:150

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP - GRIT CHAMBER SECTION AND DETAILS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

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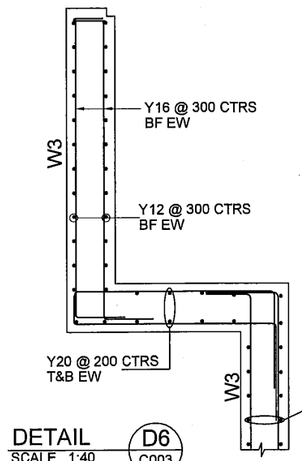
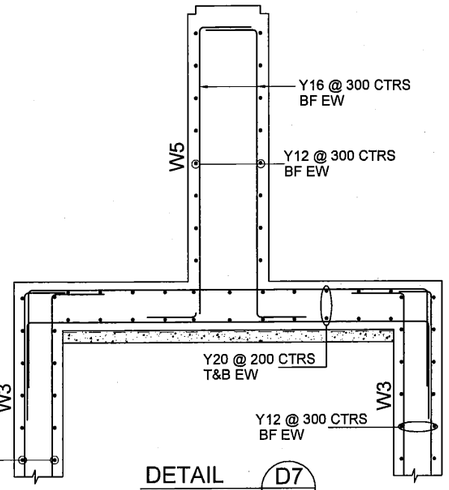
CHECKED by CONSULTANT Project Manager T.Fuji — 1. Dec 2011 — DRAWING NO.: STP-GC-C003



DETAIL D6 (C003)
SCALE 1:40



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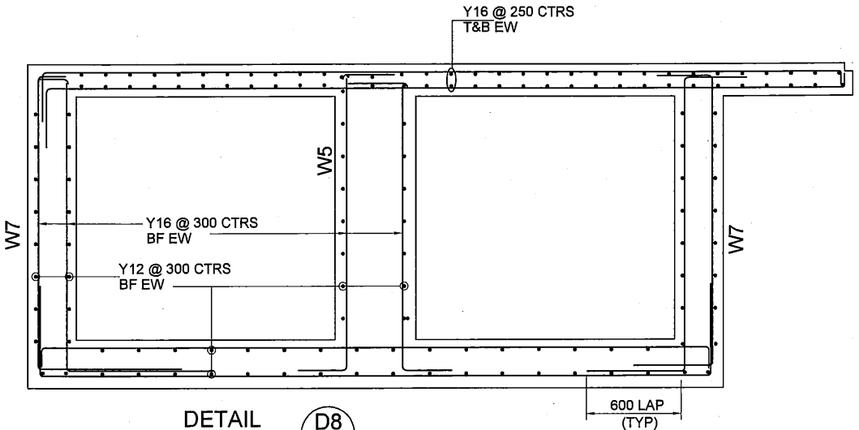

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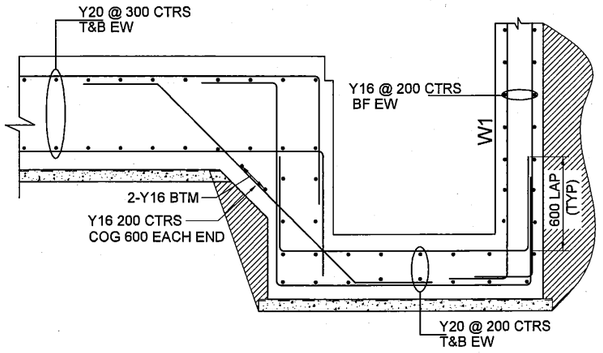

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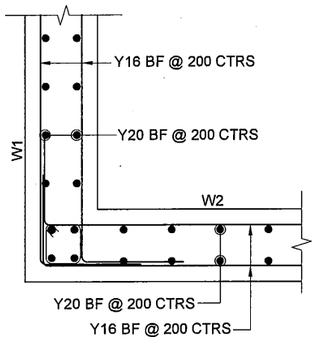

DETAIL D1 (C002)
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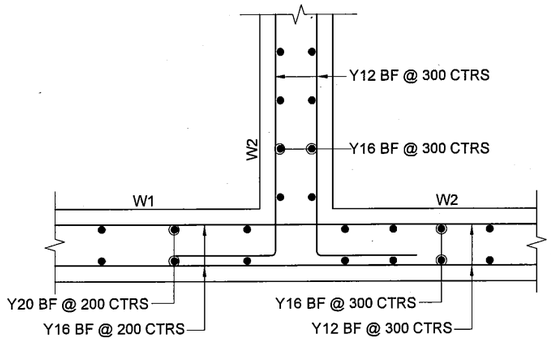

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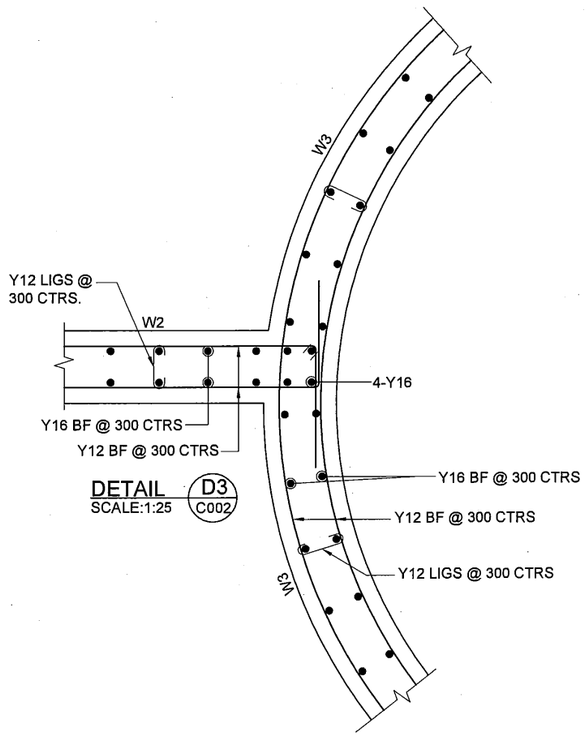

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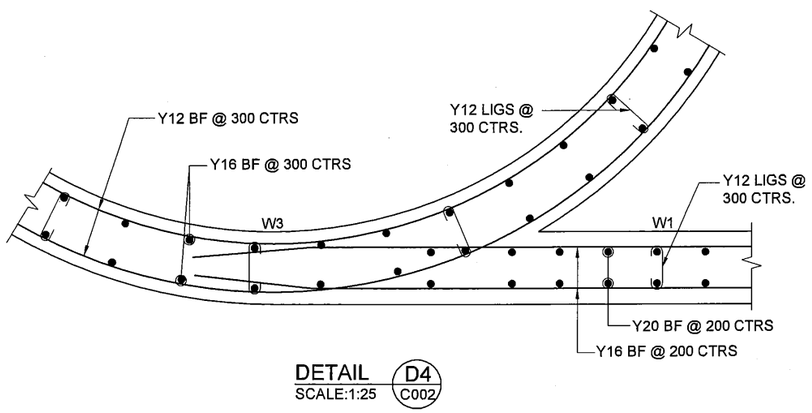

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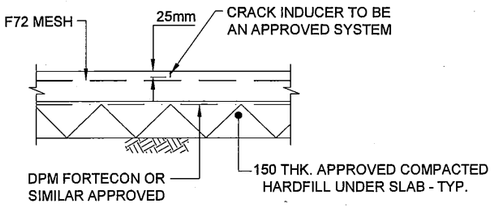
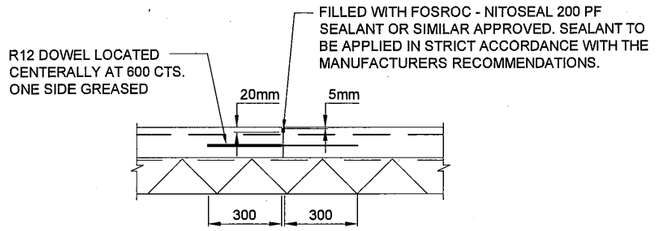


TYP. CRACK INDUCED JOINT (CIJ)
SCALE 1:25



CONSTRUCTION JOINT (CJ)
SCALE 1:25

GENERAL NOTES

1. CORROSION PROTECTION AREA COVERS ALL CONCRETE SURFACE OF TOP, SIDE AND BOTTOM. IT SHALL BE PAINTED BY VINYL ESTER RESIN OR EQUIVALENT, WITH 1mm THICKNESS AFTER HARDENING.

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP - GRIT CHAMBER DETAILS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS

ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	CM

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

CHECKED by CONSULTANT Project Manager T.Fuji — 1. Dec 2011 — DRAWING NO.: STP-GC-C004

GENERAL

G1 This building is situated in an earthquake zone and has been designed and detailed to resist seismic forces. Any variation to either structural or non-structural elements may significantly alter the eartquake response of the building and impair its safety.

ANY PROPOSED ALTERATIONS MUST BE REFERRED TO THE STRUCTURAL DESIGN ENGINEER.

G2 These drawings shall be read in conjunction with all Architectural and other consultants Drawings and Specifications and with such other written instructions as may be issued during the course of contract. All discrepancies shall be referred to Superintendant for decision before proceeding with the work.

G3 All dimensions relevant to setting out and off-site works shall be verified by the Contractor before construction and fabrication is commenced. The Engineers drawings shall not be scaled.

G4 During construction the contractor shall be responsible for maintaining the structure in a stable condition and ensuring no part shall be overstressed under construction activities.

G5 Workmanship and materials are to be in accordance with the relevant current PNGS and SAA standards including all amendments and the local statutory Authorities, except where varied by the the contract documents.

G6 Requirements to comply with a particular code or standard is deemed to refer to the latest edition with all relevant amendments and to include all other codes or standards associated with or referred to in the noted code or standard.

G7 No holes or chases other than those indicated on the structural drawings shall be made without the approval of the Superintendant.

G8 Prior to ordering materials or carrying out any work that may be affected, the Contractor shall submit the following information for approval in accordance with the drawings and specification. These proposals shall include all information neccessary for approval including the following:

1) Source and supplier of materials and products.

2) Cerificates and results of any tests already carried out.

3) Details of tests to be carried out both on and off site.

4) Location of any testing to be carried out off site.

5) Details of any seperate labratory, authority or other body to carry out tests.

The approval of substitution of materials shall be sought from the Superintendant.

All dimensions are in millimetres unless stated otherwise. All levels are expressed in metres.

G9 All props and formwork for beams and slabs shall be removed before construction of any masonry walls or partitions on the floor.

G10 All Non-Load Bearing Walls shall be kept clear of the underside of beams and slabs clearance shall not be less than 20mm unless otherwise shown.

G11 Where proprietary products are specified they shall be manufactured and used in accordance with the manufacturer's specifications and recommendations.

G12 Design loads to Papua New Guinea Standard 1001.

1) Wind - Basic Design Velocity 25m/sec
Terrain Category 1

2) Seismic - Zone 4

FOUNDATION

F1 Founding levels are provisional and are subject to the Superintendant's approval of the bearing strata.

F2 Anticipated bearing material: Undisturbed Natural Ground.

F3 Required allowable bearing strength of foundation material 550 kPa

F4 All water and loose material shall be removed from the base prior to pouring any concrete.

F5 Compacted fill under slabs and minor strip footings shall comply with the following:

a) Material shall be selected from an approved source, shall be free of vegetable matter and ball of clay, and shall comply with the following requirements.

(i) CBR value after 4 days soaking, not less than 25 when compacted to at least 95% maximum dry density as determined by AS1289 Test No. E1.1

(ii) Maximum linear shrinkage 6%

(iii) Grading

SIEVE SIZE (mm)	BY WEIGHT PASSING
37.5	100
19.0	60 - 100
9.5	40 - 80
4.75	30 - 60
2.36	20 - 45
0.425	15 - 30
0.075	3 - 15

(iv) The fraction passing the 75 micron sieve shall not exceed 2/3 that passing the 425 micron sieve.

(v) The fraction retained on the 2.36mm sieve shall consist of hard durable particles or fragments of stone, gravel or sand and shall not include any material that breaks up when alternately wetted and dried.

(vi) The fraction passing the 425 micron sieve shall have a liquid limit not greater than 30 and a plasticity index not greater than 10.

F6 Over excavating under footings shall be made good with 10 MPa mass concrete.

CONCRETE

C1 All workmanship and material shall be in accordance with PNG 1002.

C2 Minimum cover (mm) to all reinforcement unless otherwise shown shall be as follows:

REINFORCEMENT COVERS

Minimum reinforcement cover requirements to be in accordance with PNGS1002 - 1982 Exposure condition listed below:

Exterior faces of members (above ground) : 3
Interior faces of members : 3
Members below ground : 3

In addition reinforcement cover shall not be less than :

FOOTINGS	: 75mm
PEDESTAL	: 75mm
GROUND SLABS	: 30mm TOP
SUSPENDED SLABS	: 30mm TOP
BEAMS	: 65mm EXPOSED FACE, INTERIOR FACE 40mm
COLUMNS	: 75mm IN GROUND, 65mm ABOVE GROUND
SHEARWALLS	: 75mm IN GROUND, 65mm ABOVE GROUND

C3 Sizes of concrete elements do not include thickness of applied finishes.

C4 Reinforcement is represented diagrammatically and not neccessarily shown.

C5 Splices in reinforcement shall be made only in the positions shown or as otherwise approved by the Superintendant.

C6 Welding of reinforcement shall not be permitted.

C7 All reinforcement shall be securely supported in its correct position during concreting by approved bar chains, spacers or support bars.

C8 Reinforced symbols:
"Y" denotes hot rolled deformed bars grade 410Y to AS 1302
"S" denotes deformed bars grade 2305 to AS 1302.
"R" denotes plain round bars grade 230R to AS 1302.

C9 Laps, unless noted otherwise, shall be : 40 x bar diameter for rounds and 350mm for fabric.

C10 Bending radii, unless noted otherwise, shall be to PNGS 1002.

C11 Cover will be maintained during casting concrete by the use of plastic chairs and/or mortar blocks 1:2 mix at maximum 500mm centres in each directions. For work in contact with the ground chairs are to be supported on sheet plates.

C12 Reinforcement shall not be exposed for prolonged periods such as to permit the development of scale

C13 Reinforcement and formwork are to be checked by the Superintendant prior to pouring. The Superintendant is to be given 24 hours notice for a check and a futher 24 hours for any remedial work required prior to concrete placement.

C14 All conduits to be placed above bottom reinforcement and below top reinforcement - minimum spacing between conduits 25mm.

C15 Formwork shall be designed and constructed in accordance with AS 3610.

C16 Concrete components and quality shall be as follows, unless noted otherwise;

Element	F'c (MPa)	Water/Cement Ratio
Foundations	40	0.55
Suspended Slabs	40	0.55
Base Slabs	40	
Concrete Topping	32	
Mass Concrete	15	0.55
Beams Concrete	40	0.55
Columns	32	0.55

C17 Three test cylinders are to be taken from each sample (sampling in accordance with PNGS 1002.) One cylinder to be tested at seven days, the other two at 20 days. Where ready mix concrete is supplied each truck will constitute a batch in applying PNGS 1002.

C18 The Contractor shall submit for approval his proposals for curing of all insitu concrete work, at least 7 days prior to any pour taking place.

C19 Construction Joints to be cleaned of all loose and foreign materials, scabbled and wetted immediately before continuing the following concreting. Construction Joints other than those indicated on the drawing shall not be made without approval.

C20 Control Joints in the ground floor slab shall be provided at 6m centres U.N.O.

CONCRETE MASONRY

B1 All concrete block masonry is to be executed in accordance with the current edition of:

PNGS 1004 - Reinforced Masonry Structures Code.
AS 2733 - Concrete Masonry Units.

B2 Concrete masonry blocks shall have characteristics compressive strength of F'b = 12 MPa and 16 MPa at specific locations denoted as SW1 - SW39.

B3 All blocks shall be laid dry and wetting shall not be permitted during or after laying.

B4 Channel stretcher blocks and lintel blocks shall be used to form bond beams and lintels respectively. Top groove blocks shall be used elsewhere where horizontal reinforcement is required. Otherwise blocks shall conform to AS 2733.

B5 All blocks must be cured for minimum of 28 days before transportation to site.

B6 Clean out blocks are to be used for core filled cavities and all mortar droppings are to be removed from the bottom cavities before grouting.

B7 Mortar shall comply with AS 1475. Part 1, Appendix A. The mix proprtions of table A1 shall be adjusted to give an average compressive strength of 8 MPa.

B8 Mortar joints to be 10mm thick with blocks fully bedded and perpends filled.

B9 Grout for corefilling shall comply with AS 1475, Part 1, Section 2. Characteristic compressive strength F'c = 15 MPa Slump 225. Batching by volume is not permitted.

B10 Corefilling is to be placed for the full height in lifts of not more than 1200mm in height. A minimum delay period of one hour and max, three hours shall be observed between lifts. All cores are to be filled unless noted otherwise.

B11 Corefilling shall be thoroughly compacted into place with the aid of small immersion vibrators.

B12 The corefilling at the top of each lift shall be kept down at a distance of 25mm from the top of the blockwork and this surface shall be thoroughly scabbled before any further blocks are laid or concrete poured.

B13 Masonry walls shall be cured for at least three (3) days before corefilling is placed.

B14 All masonry must be approved by the Superintendant before corefilling takes place.

B15 Vertical reinforcement at any level shall be correctly positioned and securely tied to starters projecting from construction below prior to placing blocks.

B16 Reinforcement is to be left undisturbed for at least 12 hours after corefilling. Any reinforcement showing signs of seperation from the corefilling may render that section of the wall liable to rejection.

B17 Minimum cover to reinforcement : 12mm from inside face of block.

B18 Vertical bars shall be placed with laps at not less than 1600mm centres, unless noted otherwise.

B19 Laps, unless noted otherwise, shall be : 40 x bar diameter.

B20 All bars are to be cogged around openings and openings are to have a bond beam over them.

B21 At the completion of a day's work and during wet weather top and sides of all walls shall be covered to prevent rain penetration to cores or wetting of blocks.

B22 Control joints in blockwork to be at 4m maximum spacing.

STRUCTURAL STEELWORK

S1 All workmanship and materials shall be in accordance with PNGS 1003.

S2 Steel grade - 300 MPa.

S3 Plates, unless noted otherwise, shall be 8mm thick.

S4 Bolts, unless noted otherwise, shall be 16mm diameter, Grade 4.6/s, bolts 20mm diameter and greater shall be Grade 8.8/s.

S5 Welds, unless noted otherwise, shall be 6mm continuous fillet weld.

S6 Welding electrodes shall be class E 41XX.

S7 WElding shall be performed by an experienced qualified operator in accordance with PNGS 1016.

S8 The contractor shall verify that all members can be assembled and erected properly, prior to erection on site.

S9 Before fabrication is commenced the Contractor shall submit copies of the shop drawings to the Superintendant for review. Review does not include checking of dimensions.

S10 Reference shall be made to the Architect's drawings for additional drillings, cleats, fixings, etc.

S11 The contractor shall provide and leave in place until permanent bracing elements are constructed, such temporary bracing as is neccessary to stabilise the structure during erection.

S12 The ends of all tubular members are to be sealed with nominal thickness plates and continuous fillet weld unless otherwise shown.

S13 Unless otherwise specified all steelwork shall be sand blasted to remove all rust and scaled and painted one shop coat of inorganic zinc silicate primer min. 40 micron thickness. Members encased in concrete, fire spray or HSTF bolted connections must not be painted.

S14 All base plates shall be temporarily supported and dry pack grouted with 3:1 sand cement grout in a just wet condition.

S15 Cold formed steelwork shall comply with AS 1530, roll formed from hot-dipped zinc-rolled steel grade G450-Z200 to AS 1397.

S16 All steelwork exposed to the weather including bolts and fixings shall be hot dipped galvanised unless noted otherwise.

TIMBER

T1 Timber materials and workmanship shall comply with AS 1720.

T2 Timber shall be seasoned to moisture content not exceeding 15%, unless noted otherwise.

T3 Where unseasoned timber is specified, in no case shall timber be used having a moisture content exceeding 30% at the time of fabrication.

T3 Timber shall have strength properties not less than that shown below:

Stress Grade - F11
Strength Group - SD4
Joint Group - J3

In the absence of mechanical stress, grading timber shall be visually stress graded in accordance with AS 2082.

T4 The Contractor is required to submit details of the proposed species of timber for approval. If unidentified species are proposed, evidence must be provided from the Papua New Guinea Office of Forestry of identification and compliance with the specified properties.

T5 All sizes quoted are the final dressed sizes of finished timber unless noted otherwise.

T6 The Contractor shall verify that all members can be assembled and erected properly.

T7 Any variations shall be referred to the Superintendant for approval.

T8 Steel Components shall comply with PNGS 1003 Steel grade 250.

T9 Bolt holes are to be of same nominal diameter as bolts, drilled through assembled timber.

T10 Washers, unless noted otherwise, shall be provided under all bolt heads and nuts as follows:
Against timber, 65 x 65 x 5 square washers.
Against steel, standard round washers.

T11 All bolts, nuts and washers shall be galvanised in accordance with AS 1214.

T12 All bolts shall be retightened at completion of construction.

T13 Where neccessary timber shall be chamfered locally to just clean fillet welds connection plates, etc.

T14 Preservative treatment is to be provided as follows : dip diffused.

DESIGN LOADS

ROOF LEVEL:

DEAD LOAD: 0.6 kPa

LIVE LOAD: 0.25 kPa

UPPER FLOOR LEVEL

DEAD LOAD: 6.0 kPa

LIVE LOAD: 4.0 kPa

BASE SLAB LEVEL

DEAD LOAD: 20 kPa

LIVE LOAD: 4.0 kPa

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
KilaKila STP. OXIDATION DITCH. CONTROL & BLOWER ROOM - STRUCTURAL NOTES SHEET 1 OF 2

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

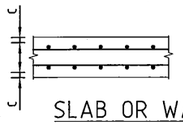
REVISIONS

ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	CM

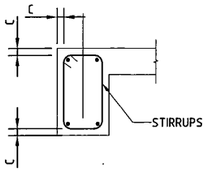
APPROVED by PMU: Project Director Lot G.Zauya
DATE: 1. Dec 2011
SCALE: N.T.S.

CHECKED by CONSULTANT Project Manager T.Fuji
DATE: 1. Dec 2011
DRAWING NO.: STP-S001

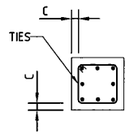
MINIMUM CONCRETE COVER



SLAB OR WALL

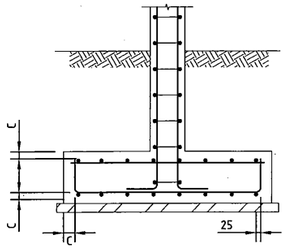


GIRDER OR BEAM

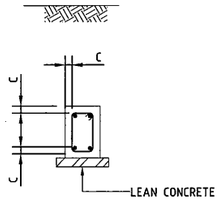


COLUMN OR PEDESTAL

ABOVE GRADE CONCRETE



FOOTING



GRADE BEAM

FOUNDATION

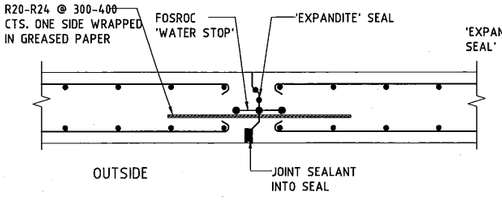
THE MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE AS INDICATED BELOW.

- ELEMENT EXPOSED TO WATER/SPILLAGE (CATCH BASIN/MANHOLE/SPILL BASIN etc - 75mm
- OTHER STRUCTURE - 65mm

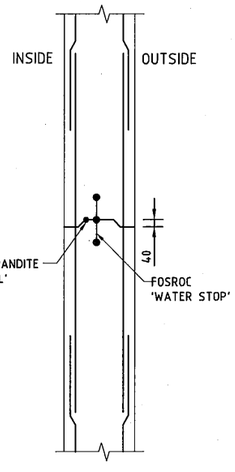
THE REQUIREMENTS STIPULATED ABOVE SHALL NOT BE APPLIED TO THE FOLLOWING REINFORCED CONCRETE ITEMS :

a) CONCRETE PIPES
   - AS PER MANUFACTURER'S STANDARD.
b) FIREPROOFING
c) DITCH LINING/ SLOPE PROTECTION
d) CONCRETE PAVING

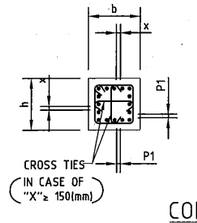
NOTE: FOR CONCRETE CAST AGAINST GROUND (WITHOUT FORMWORK) MINIMUM CONCRETE COVER (C) SHALL BE 75mm.



RECTANGULAR STRUCTURES



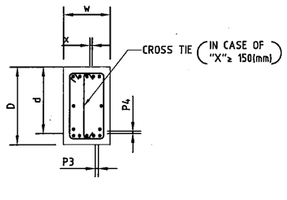
TYPICAL EXPANSION JOINT DETAIL FOR CIRCULAR LIQUID RETAINING STRUCTURE

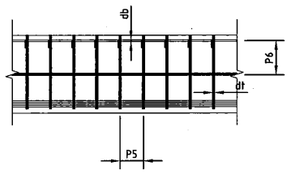


COLUMN

P1 ≥ hagg x 4/3 (mm)
1.5db,
40 (mm)
WHICHEVER IS GREATER

P2 ≤ 15 db or 300(mm) or SMALLEST CROSS SECTIONAL DIMENSION OF COLUMN WHICHEVER IS SMALLER





P3 ≥ hagg x 4/3 (mm)
db
WHICHEVER IS GREATER
hagg = 20(mm)

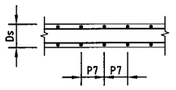
P4 ≥ 25(mm)

P5 ≤ D/2 or 300mm
WHICHEVER IS SMALLER

P6 ≤ 300(mm)

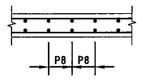
GIRDER AND BEAM

PRIMARY REINFORCEMENT



P7 ≤ 2Ds or 300 (mm)
WHICHEVER IS SMALLER

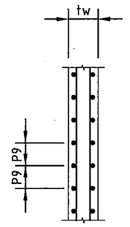
SECONDARY REINFORCEMENT



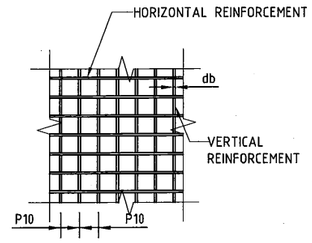
P8 ≤ 2Ds or 300 (mm)
WHICHEVER IS SMALLER

SLAB

SPACING LIMITS



P9 ≤ 350(mm)
≤ 2.5tw
≥ 4db



P10 ≤ 350(mm)
≤ 2.5tw
≥ 4db

WALL

NOTE : VERTICAL REINFORCEMENT NEED NOT BE ENCLOSED BY LATERAL TIES IF VERTICAL REINFORCEMENT AREA IS NOT GREATER THAN 0.01 TIMES GROSS CONCRETE AREA, OR WHERE VERTICAL REINFORCEMENT IS NOT REQUIRED AS COMPRESSION REINFORCEMENT.

FOR WALLS GREATER THAN 200mm THICK, THE VERTICAL AND HORIZONTAL REINFORCEMENT SHALL BE PROVIDED IN TWO GRIDS, ONE NEAR EACH FACE OF THE WALL.

NOTES:

1. FOR GENERAL NOTES, SEE DWG No. S001

2. LEGEND
   hagg : NOMINAL MAXIMUM SIZE OF AGGREGATE = 20mm
   d : EFFECTIVE DEPTH
   db : SIZE OF LONGITUDINAL BARS (mm)
   N : BAR SYMBOL
   dt : SIZE OF TIES
   s : SPACING
   D : BEAM HEIGHT
   w : BEAM WIDTH
   b,h : COLUMN SECTION
   tw : THICKNESS OF WALL

3. SPACING OF TIES AND STIRRUPS SHALL BE IN ACCORDANCE WITH AS 3600-2001

3-1 TIES SPACING (P2)
MAXIMUM TIE SPACING SHALL NOT EXCEED THE FOLLOWING VALUE
- 15db
- SMALLEST CROSS SECTIONAL DIMENSION OF COLUMN
- 300mm

} WHICHEVER IS SMALLER

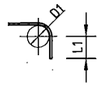
3-2 STIRRUP SPACING (P5)
MAXIMUM STIRRUP SPACING SHALL NOT EXCEED THE FOLLOWING VALUE:
- D/2
- 15db
- 300mm

} WHICHEVER IS SMALLER

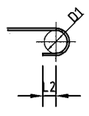
STANDARD HOOKS AND BENDS

FOR MAIN REINFORCEMENT

90° HOOK OR BEND



180° HOOK

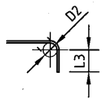


(mm)

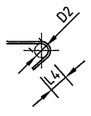
BAR SIZE	MIN.BEND DIA. D1	MIN.EXTENSION L1	MIN.EXTENSION L2
N12	60	120	70
N16	80	135	70
N20	100	160	80
N24	120	195	100
N28	140	225	115
N32	160	260	130
N36	180	290	145
N40	200	320	160

FOR TIES AND STIRRUPS REINFORCEMENT

90° HOOK

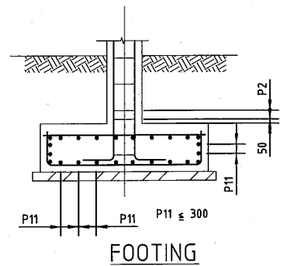


135° HOOK

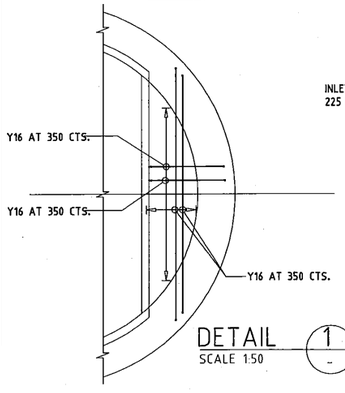


(mm)

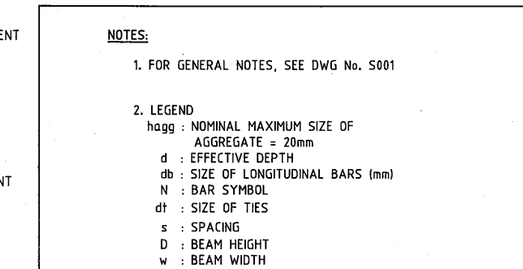
BAR SIZE	MIN.BEND DIA. D2	MIN.EXTENSION L3	MIN.EXTENSION L4
N10	40	135	100
N12	50	160	120



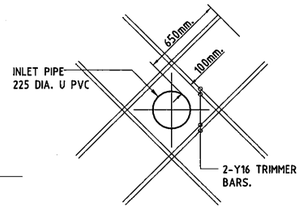
FOOTING



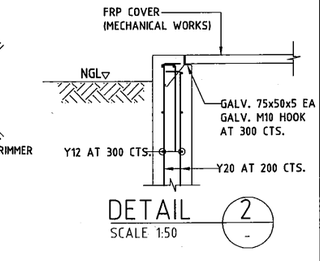
DETAIL 1 SCALE 1:50



STIRRUP DETAIL FOR TOP OF PEDESTAL



TYP. DETAIL SCALE 1:50



DETAIL 2 SCALE 1:50

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila STP. OXIDATION DITCH. CONTROL & BLOWER ROOM - STRUCTURAL NOTES SHEET 2 OF 2

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

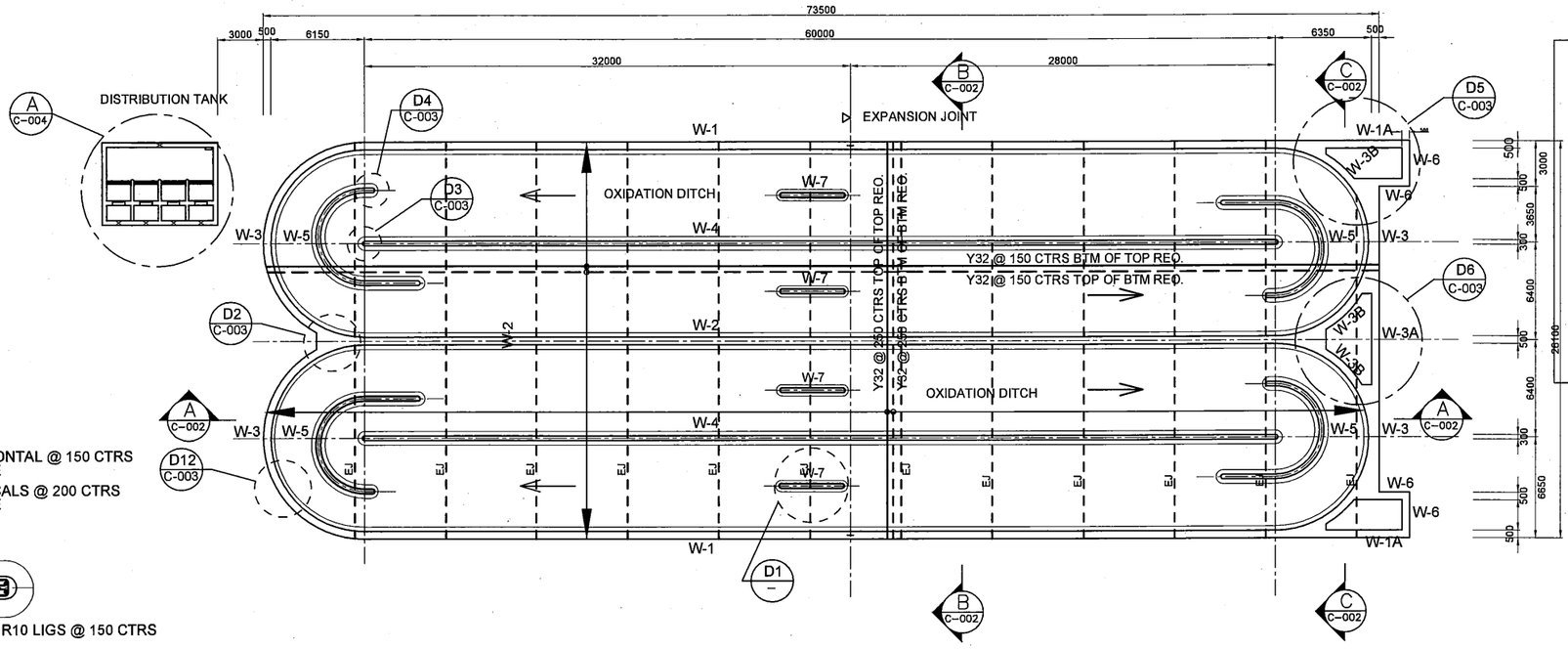
NOTES :

REVISIONS

ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	SG

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: N.T.S.

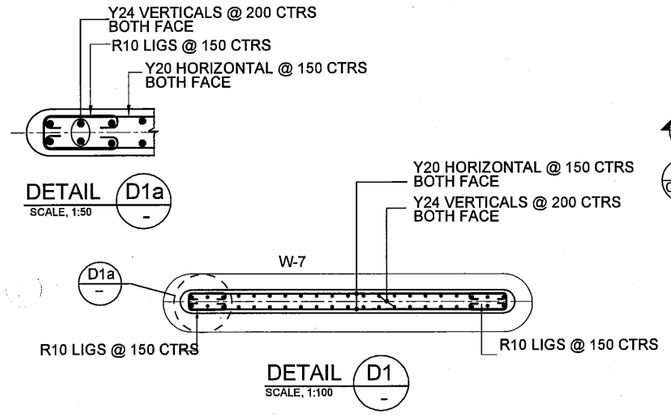
CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-S001a



NOTES

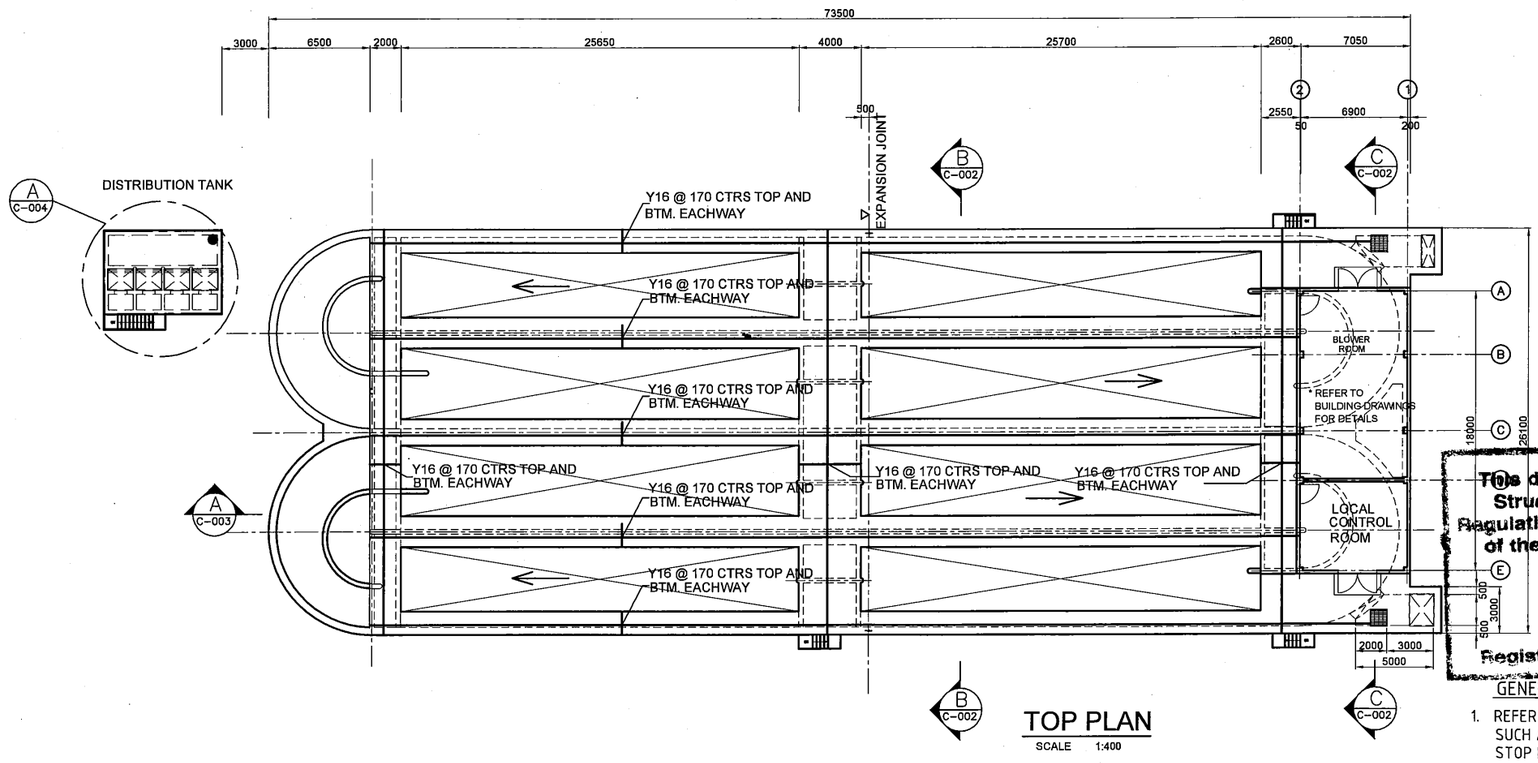
1. EXPANSION JOINTS SHALL BE PROVIDED AT 6M CENTERS
2. EXTEND OF BULK EXCAVATION SHALL BE DETERMINED ON SITE BY THE CONTRACTOR
3. CONCRETE GRADE OXIDATION DITCH
   - BASE SLAB - 40MPa
   - RC.WALL - 40MPa
   - SUSPENDED SLAB - 40MPa
   - RC.BEAMS SUPPORTING FLOOR SLAB - 40MPa
   - RC.ROOF BEAMS - 40MPa
3. CONCRETE COVER
   - BASE SLAB - 75MPa
   - RC.WALL - 75MPa
   - SUSPENDED SLAB - 65MPa
   - RC. BEAMS - 65MPa

BASE PLAN
SCALE 1:400



MEMBER SCHEDULE

MARK	SIZE/DESCRIPTION	REINFT'S.	REMARKS
W1	800 - 500 THICK	REFER TO DETAIL	RC.WALL
W2	800 THICK	REFER TO DETAIL	RC.WALL
W3	800 - 500 THICK	REFER TO DETAIL	RC.WALL
W4	300 THICK	REFER TO DETAIL	RC.WALL
W5	300 THICK	REFER TO DETAIL	RC.WALL
W6	800 - 500 THICK	REFER TO DETAIL	RC.WALL
W7	300 THICK	REFER TO DETAIL	RC.WALL
EJ	EXPANSION JOINT	REFER TO STD. DWG FOR DETAIL	



TOP PLAN
SCALE 1:400

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

GENERAL NOTES

1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP: OXIDATION DITCH. REINFORCEMENT PLANS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS: NJS CONSULTANTS CO., LTD. - JAPAN

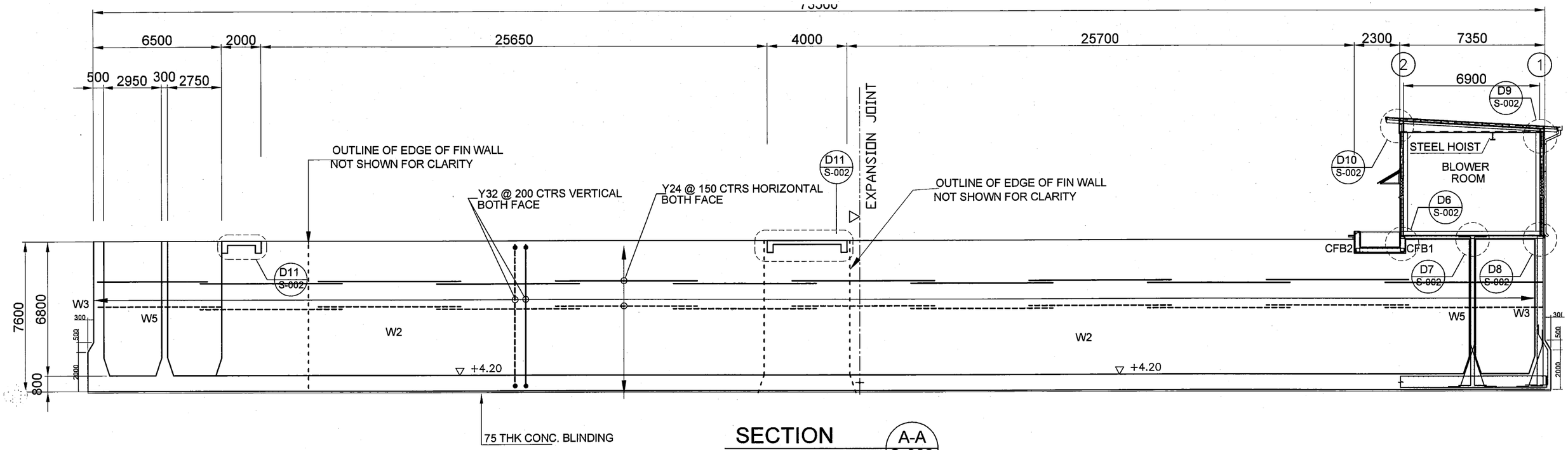
NOTES:

REVISIONS

REV.	DATE	CHKED	DESCRIPTION	BY
-	14/11/2011	TT	ISSUE FOR TENDER	SG

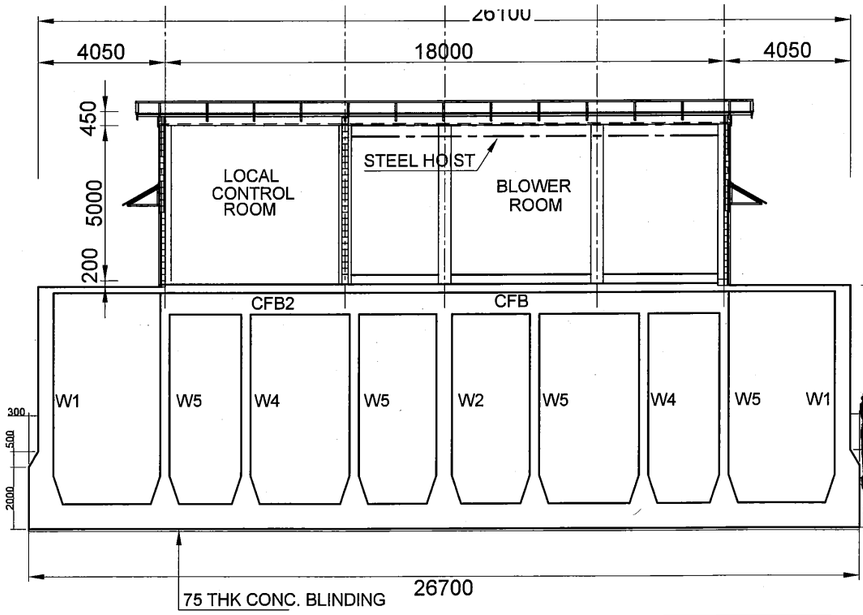
APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-C001



SECTION A-A C-002

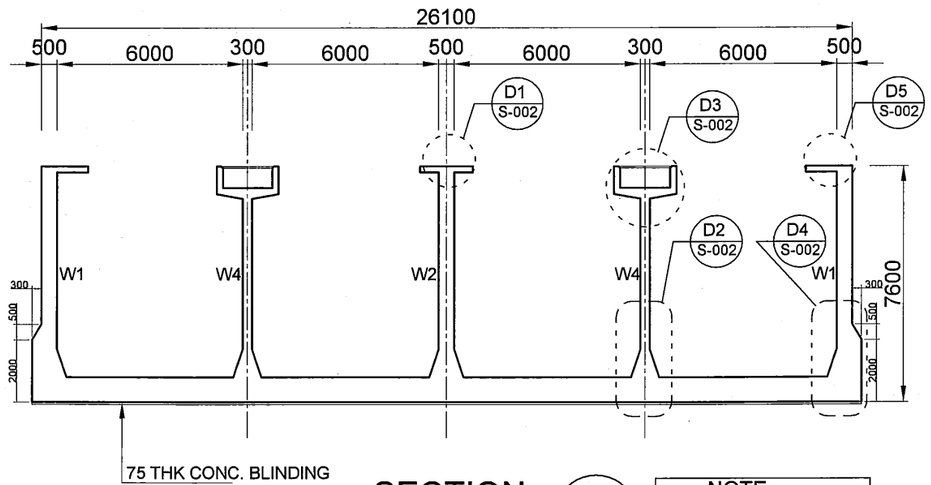
SCALE 1:200



SECTION D–D C–001,2

SCALE 1:300

NOTE:
FOR WALL AND SLAB REINFORCEMENTS SEE DETAIL DRAWINGS ON DWG.S002



SECTION C–C C–001,2

SCALE 1:300

NOTE:
FOR WALL AND SLAB REINFORCEMENTS SEE DETAIL DRAWINGS ON DWG.S002

NOTES

1. EXTEND OF BULK EXCAVATION SHALL BE DETERMINED ON SITE BY THE CONTRACTOR
2. REINFORCEMENTS NOT SHOWN THROUGHOUT FOR CLARITY

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

GENERAL NOTES

1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP: OXIDATION DITCH . CROSS SECTIONS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

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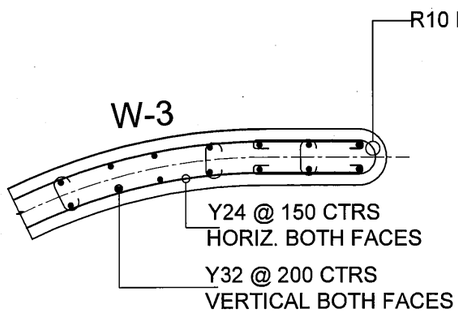
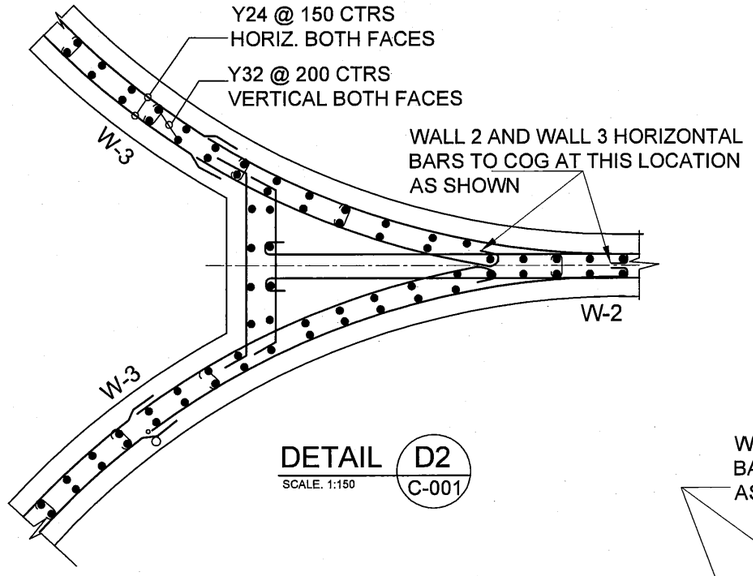
APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

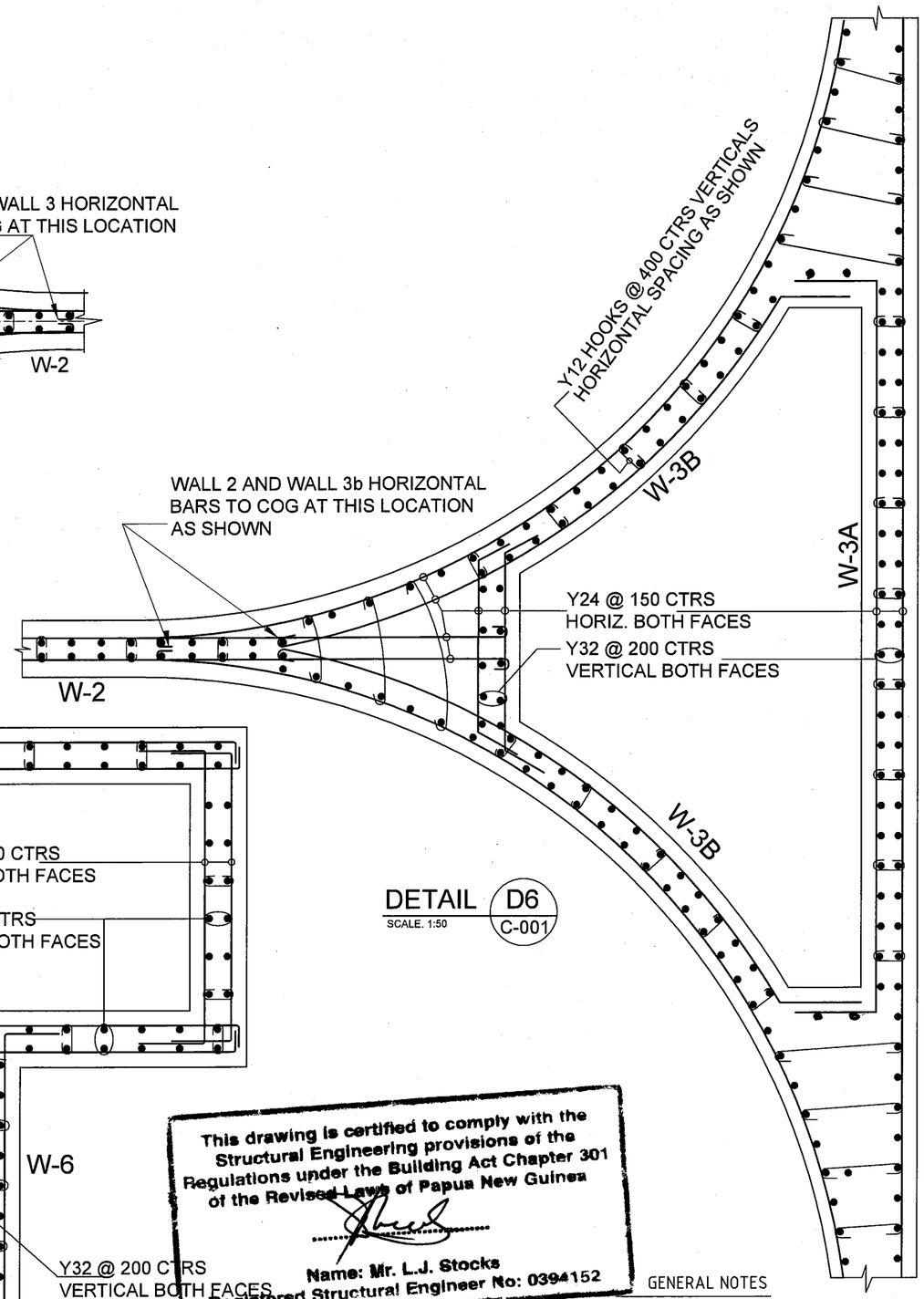
CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-C002



DETAIL D12 C-001
SCALE: 1:50



DETAIL D2 C-001
SCALE. 1:150



DETAIL D6 C-001
SCALE. 1:50

DETAIL D5 C-001
SCALE: 1:50

DETAIL D4 DETAIL 3. Similar
SCALE.1:50 C-001

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

GENERAL NOTES

1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP: OXIDATION DITCH, WALL REINFORCEMENT DETAILS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

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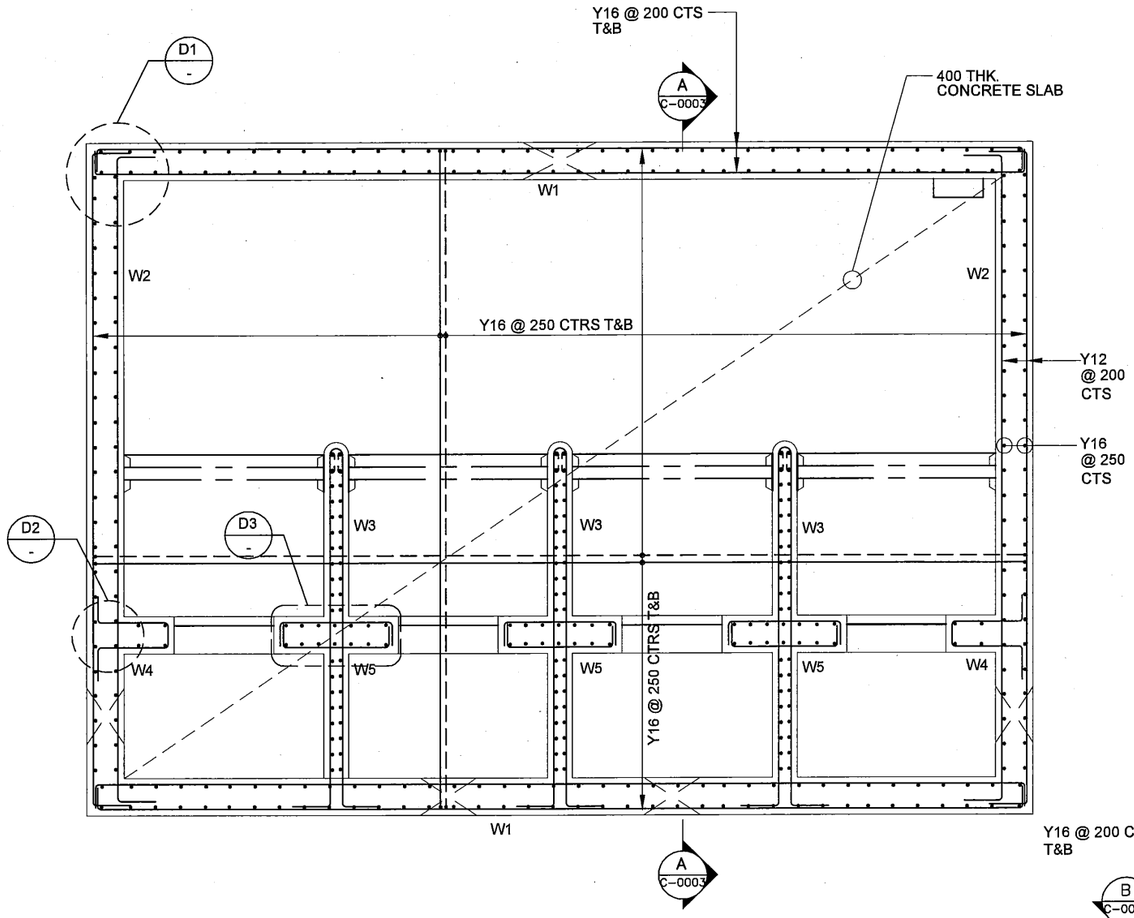
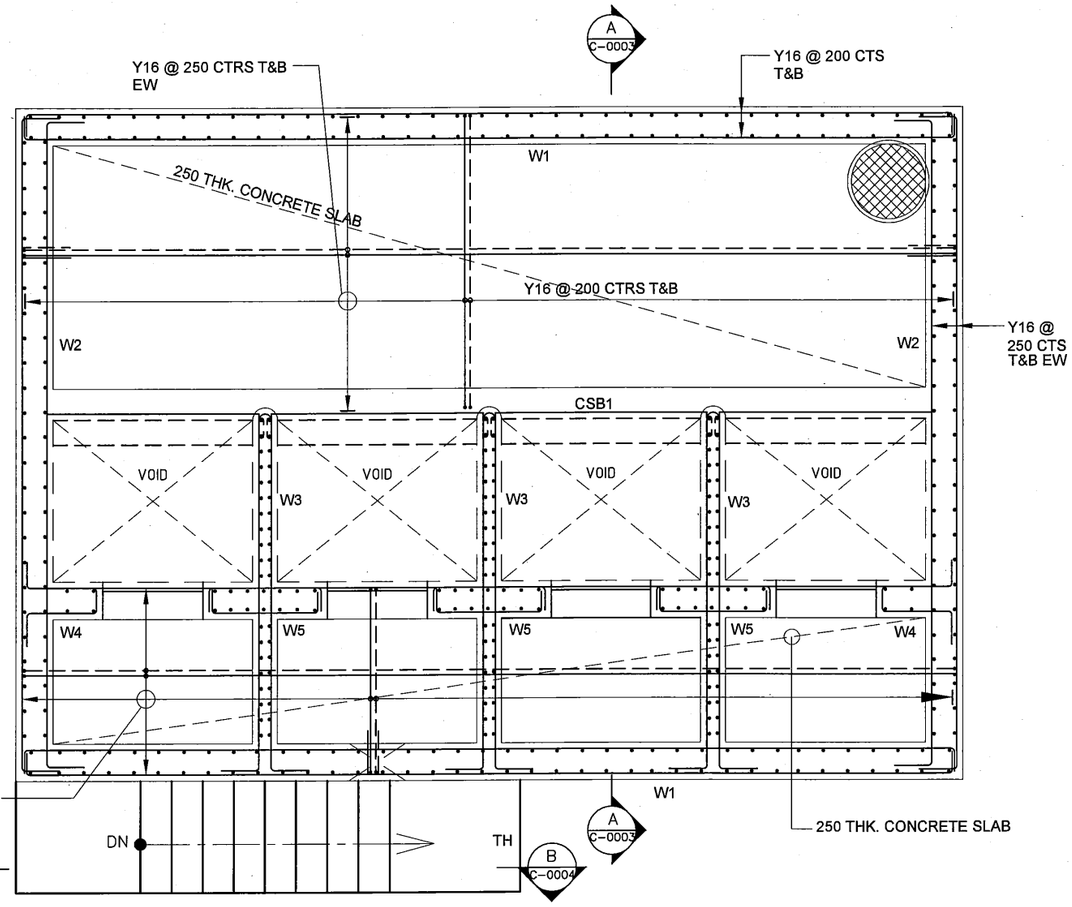
REV.	DATE	CHKED	DESCRIPTION	BY
-	14/11/2011	TT	ISSUE FOR TENDER	SG

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-C003





"A" DETAIL DISTRIBUTION TANK — BASE PLAN SCALE 1:50 — A C-0001

"A" DETAIL DISTRIBUTION TANK — TOP PLAN SCALE 1:50 — A C-0001

MEMBER SCHEDULE

MARK	SIZE / DESCRIPTION	REINFORCEMENT		REMARKS
		LENGTHWISE	WIDTHWISE	
W1	300 THK			RC WALL
W2	300 THK			RC WALL
W3	200 THK			RC WALL
W4	300 THK			RC WALL
W5	300 THK			RC WALL
TH	350 DP X 400 WD	T-Y16 T&B R10 STIRRUPS @ 300 CTS		THICKENING
TOP LEVEL				
CSB1	X	3-Y24 T&B	3-Y24 T&B	CONCRETE SLAB BEAM

NOTES:

1. THE EXTENT OF EXCAVATION REQUIRED FOR ADEQUATE WORKING SPACE SHALL BE DETERMINED BY THE CONTRACTOR.
2. REFER TO ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAILS, COVERS, STEP LADDER, STAIR, STOP LOG AND EXPANSION JOINT.
3. CONCRETE GRADE: F'C = 40 MPa
4. MINIMUM COVER TO BE REINFORCED
   WALL - 75mm
   SLAB ON GROUND - 75mm
   SUSPENDED SLABS - 65mm

LEGEND:

NGL -DENOTES NATURAL GROUND LEVEL
EW -DENOTES EACH WAY
BF -DENOTES BOTH FACE
T&B -DENOTES TOP & BOTTOM

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 305 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: [illegible]

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP: DISTRIBUTION TANK REINFORCEMENT PLAN

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

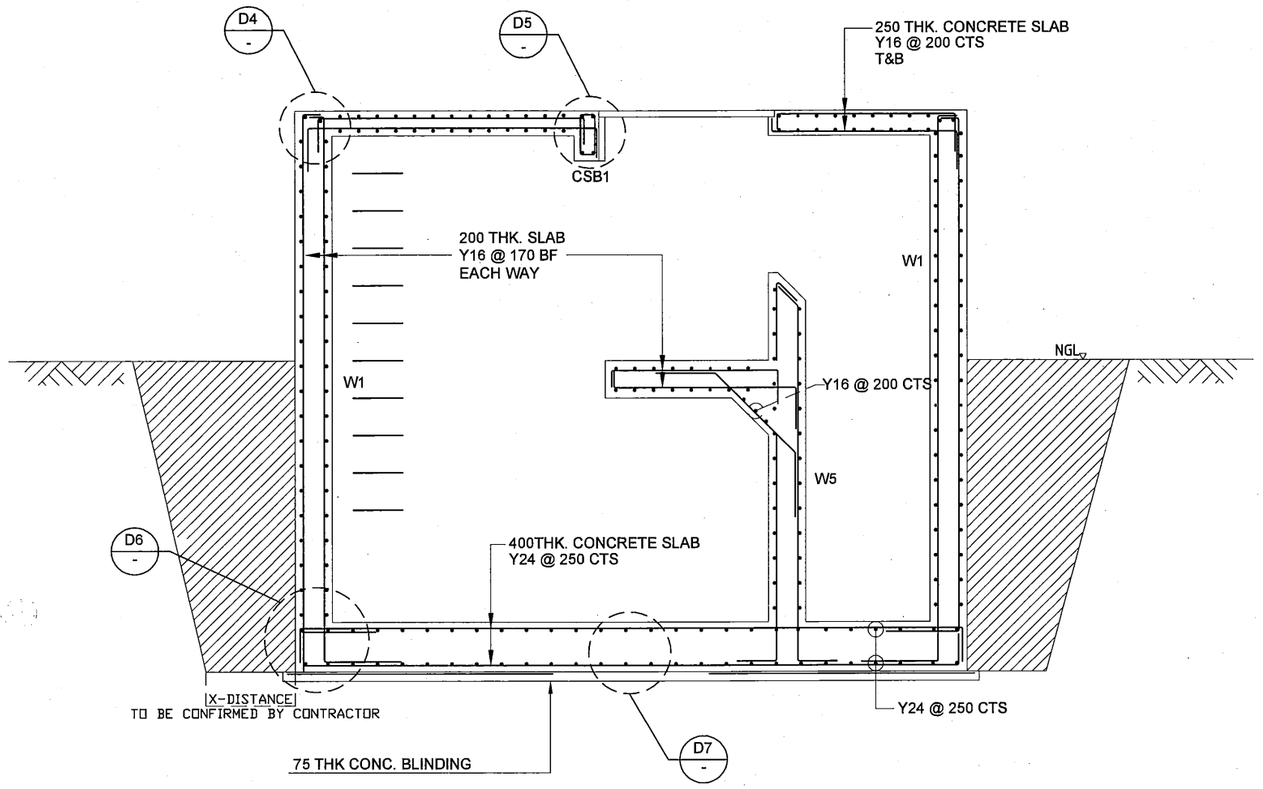
CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

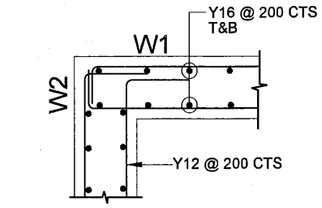
REVISIONS						
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	TT	ISSUE FOR TENDER	CM

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

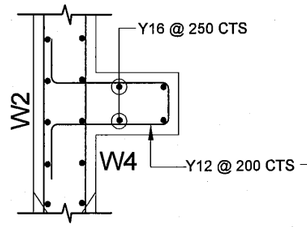
CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-C004



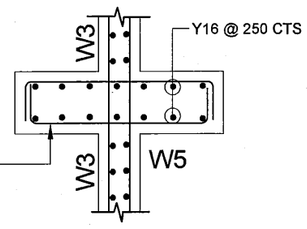
"A" DETAIL DISTRIBUTION TANK — SECTION SCALE 1:50 — A / C-0001



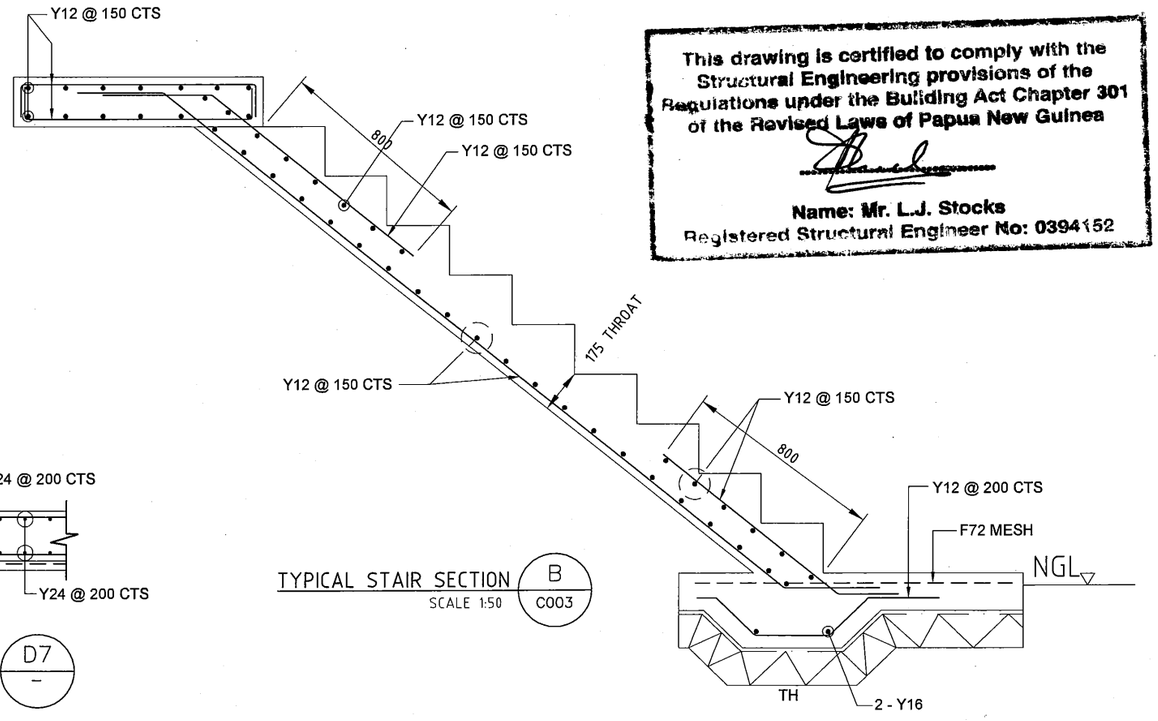
DETAIL SCALE 1:50 — D1 / C003



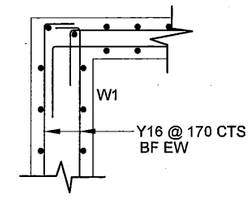
DETAIL SCALE 1:50 — D2 / C003



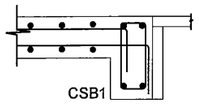
DETAIL SCALE 1:50 — D3 / C003



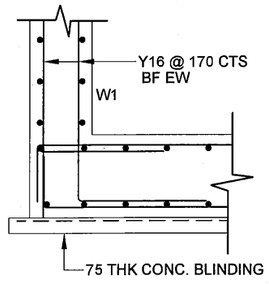
TYPICAL STAIR SECTION SCALE 1:50 — B / C003



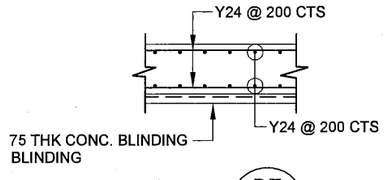
DETAIL SCALE 1:50 — D4 / -



DETAIL SCALE 1:50 — D5 / -



DETAIL SCALE 1:50 — D6 / -



DETAIL SCALE 1:50 — D7 / -

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP: DISTRIBUTION TANK REINFORCEMENT PLAN

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS: NJS CONSULTANTS CO., LTD. - JAPAN

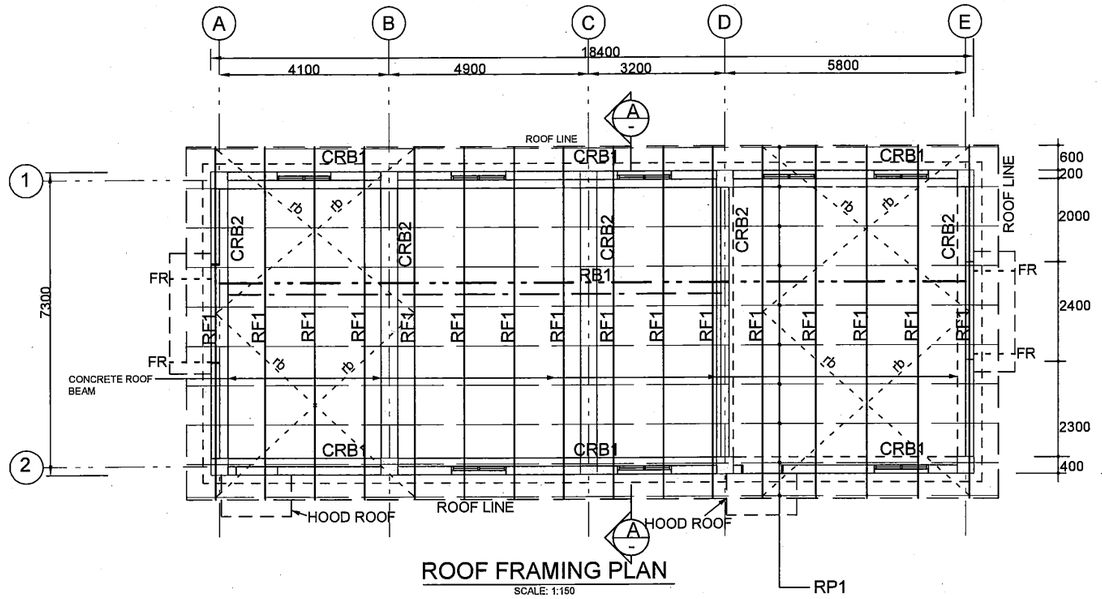
NOTES:

REVISIONS					
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	TT	ISSUE FOR TENDER	CM

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

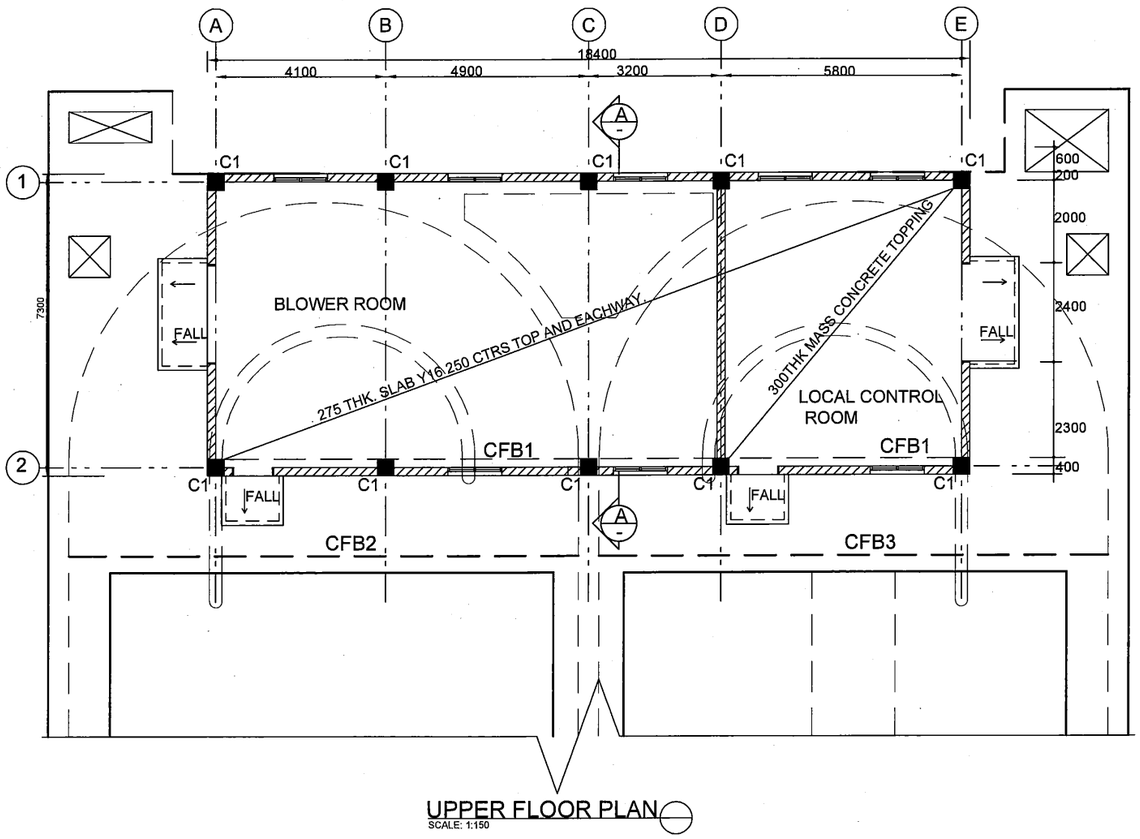
CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-C005

12



ROOF FRAMING PLAN

SCALE: 1:150



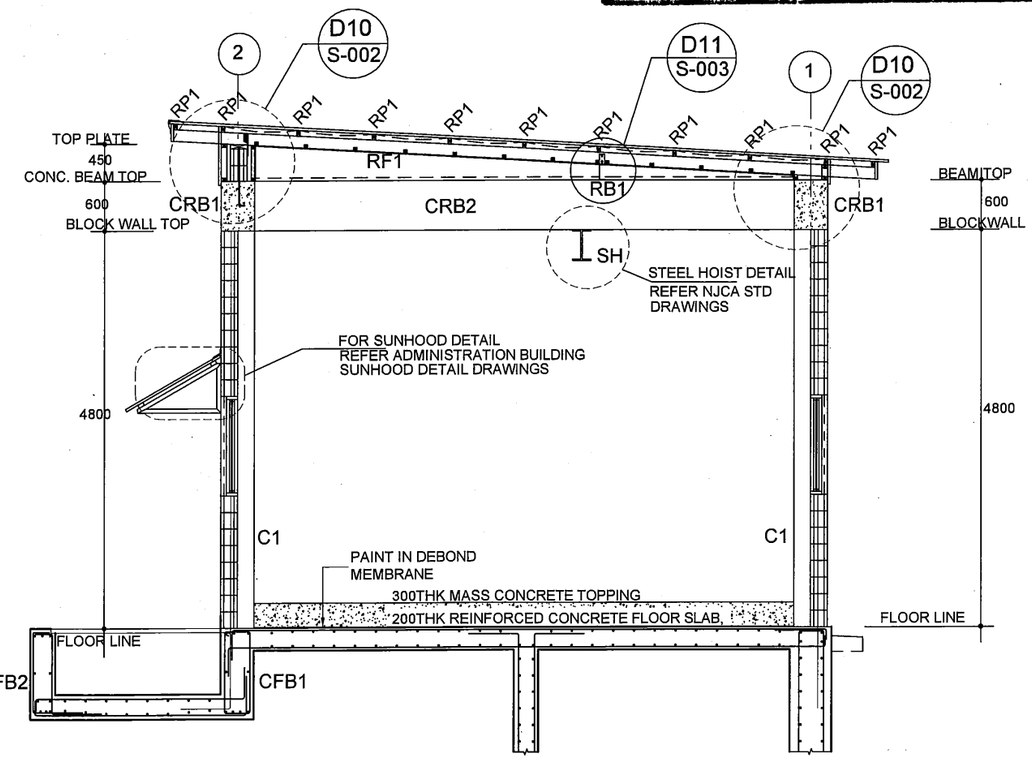
UPPER FLOOR PLAN

SCALE: 1:150

SCHEDULE		
MARK	SIZE	REMARKS
C1	400x400	RC. COLUMN
CFB1	450Wx900DP	CONC.FLOOR BEAM
CFB2	300x110DP	CONC.FLOOR BEAM
RB1	200x75 PFC	STEEL ROOF BEAM
RF1	200x50 HWD	ROOF RAFTERS @ 600 TRS
RP1	75x50 HW	TIMBER PURLINS @ 900 CTRS
SH	STEEL HOIST BEAM	REFER NJSC STD DWGS.
rb	PRYDA STRAP BRACE	
FR	50X50X5.0 EA	STEEL FRAME SUNHOOD

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152



SECTION A-A

SCALE: 1:50

GENERAL NOTES

1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT

TENER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP: BLOWER & CONTROL ROOM PLANS AND SECTION

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

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APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-S001

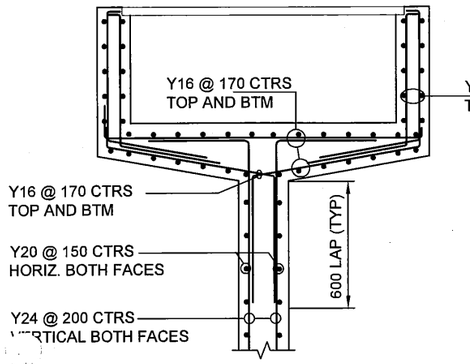
13

GENERAL NOTES

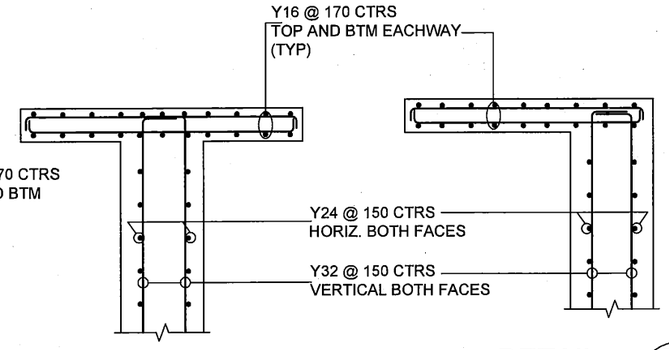
1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT

NOTE:

1. FOR COLUMN AND BEAM REINFORCEMENTS REFER BEAM/COLUMN ELEVATIONS ON DRAWING S004
2. REFINFORCEMENT PLACEMENTS FOR SLAB AND WALL OPENINGS REFER STD DWG, STP-S001a

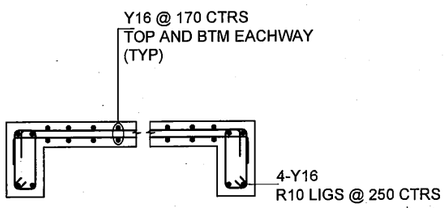


DETAIL D3 C002
SCALE 1:40

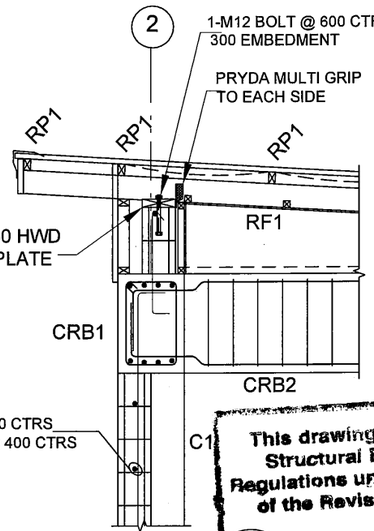


DETAIL D1 C002
SCALE 1:40

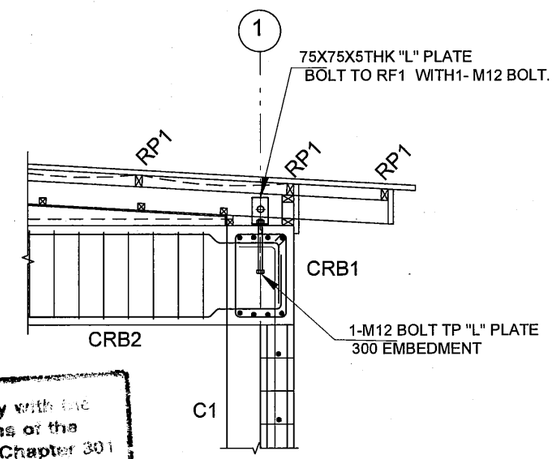
DETAIL D5 C002
SCALE 1:40



DETAIL D11 C002
SCALE 1:40



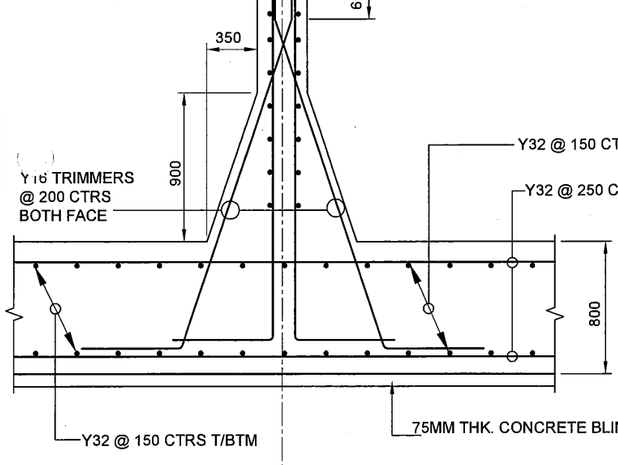
DETAIL D10 C002
SCALE 1:40



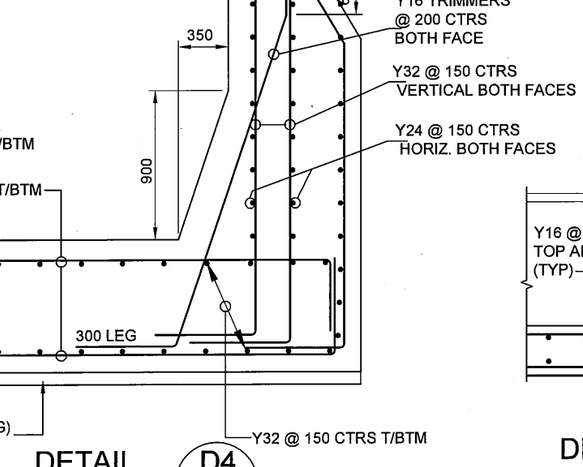
DETAIL D9 C002
SCALE 1:40

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

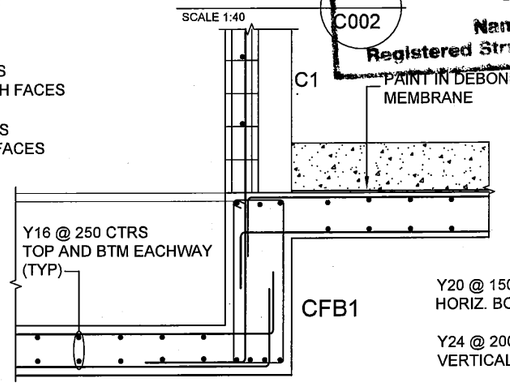
Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152



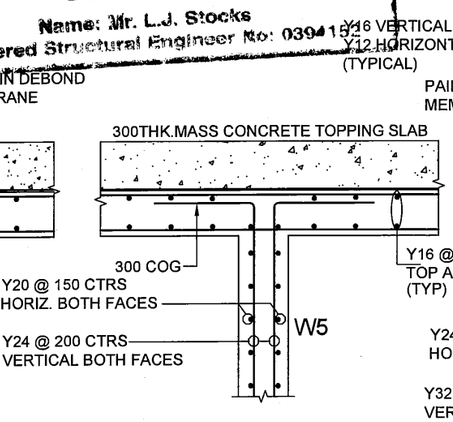
DETAIL D2 C002
SCALE 1:40



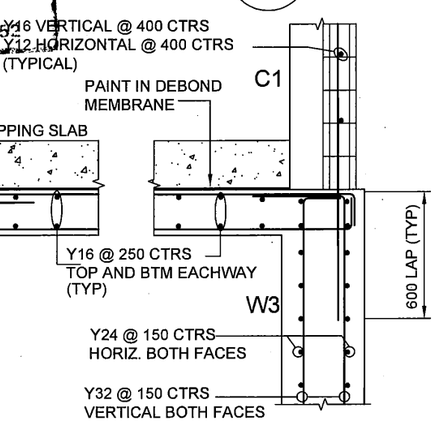
DETAIL D4 C002
SCALE 1:40



DETAIL D6 S002
SCALE 1:40



DETAIL D7 C002
SCALE 1:40



DETAIL D8 C002
SCALE 1:40

TENDER ISSUE

PROJECT:
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE:
Kila Kila STP: OXIDATION DITCH , BLOWER AND CONTROL ROOM CIVIL AND STRUCTURAL DETAILS

CLIENT:
INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS :
NJS CONSULTANTS CO., LTD. - JAPAN

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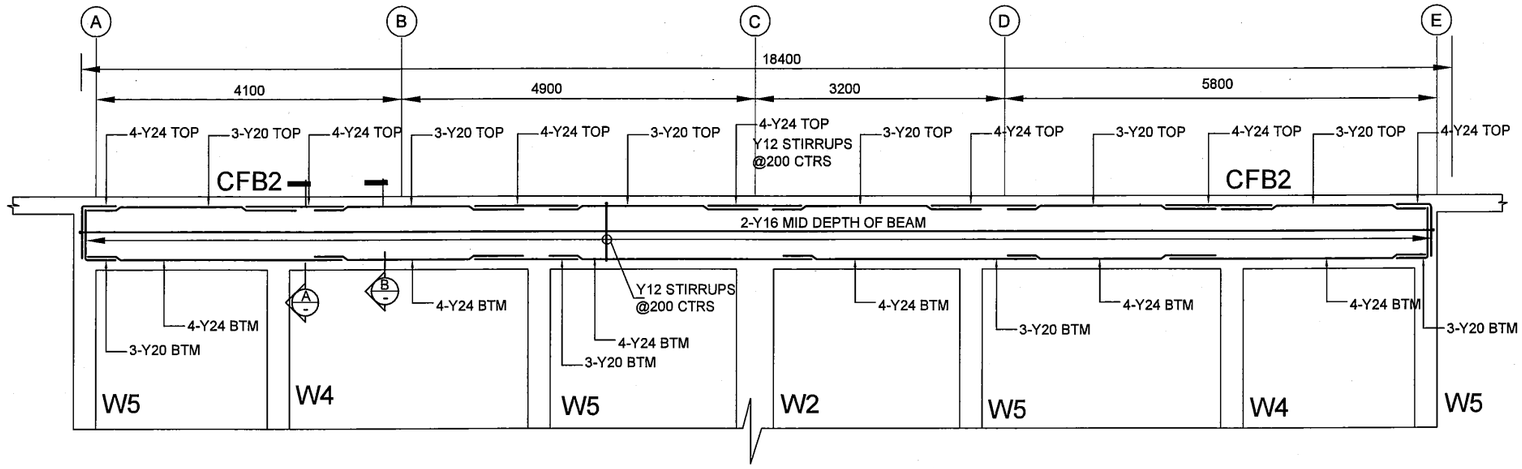
APPROVED by PMU: Project Director Lot G.Zauya	DATE: 1. Dec 2011	SCALE: AS SHOWN
CHECKED by CONSULTANT Project Manager T.Fuji	DATE: 1. Dec 2011	DRAWING NO.: STP-OD-S002



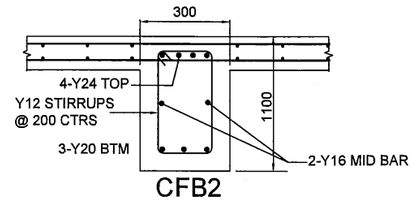
TYPICAL FLOOR BEAM ELEVATION (CFB2)

NTS

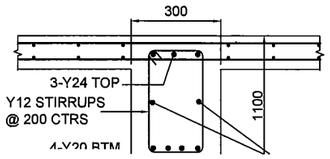
(300W x 1100DP)

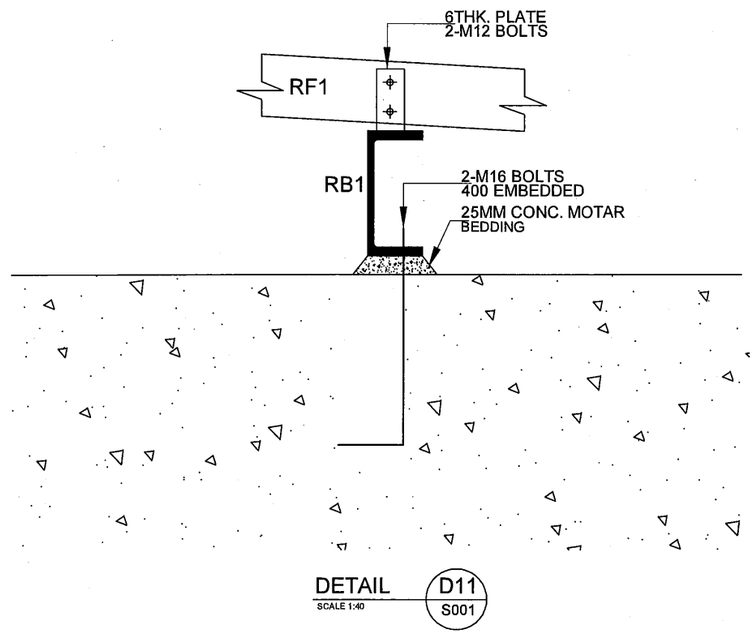
GENERAL NOTES

1. REFER TO STD DRAWINGS FOR MISCELLANEOUS WORKS SUCH AS HANDRAIL, COVER, STEP LADDER, STAIR, STOP LOG AND EXPANTION JOINT



CFB2





DETAIL D11 / S001

SCALE 1:40

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

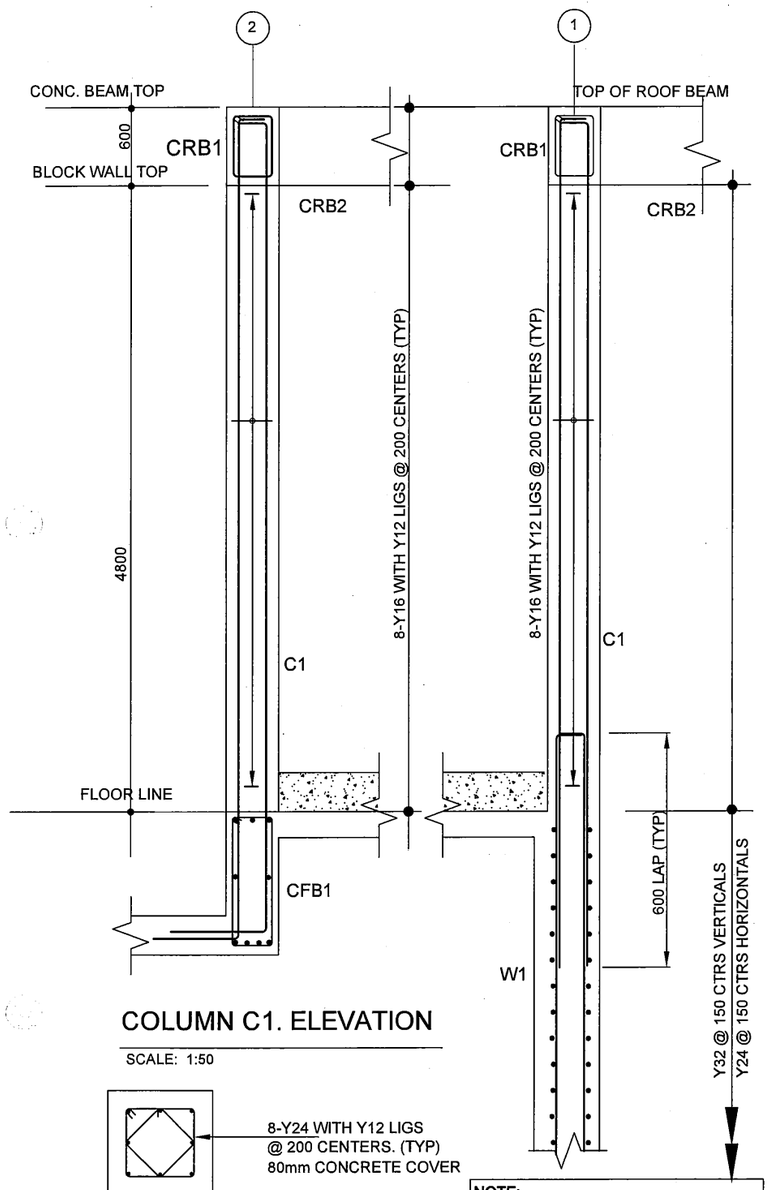
Name: Mr. L.J. Stocks

Registered Structural Engineer No: 0394152

TENER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: Kila Kila STP: BLOWER/CONTROL ROOM , DETAILS AND CFB2 ELEVATION	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES :	APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-S003

REVISIONS					
REV.	DATE	CHKED	DESCRIPTION	BY
-	14/11/2011	TT	ISSUE FOR TENDER	SG



COLUMN C1. ELEVATION

SCALE: 1:50

8-Y24 WITH Y12 LIGS
@ 200 CENTERS. (TYP)
80mm CONCRETE COVER

C1. 400X400

SCALE: 1:25

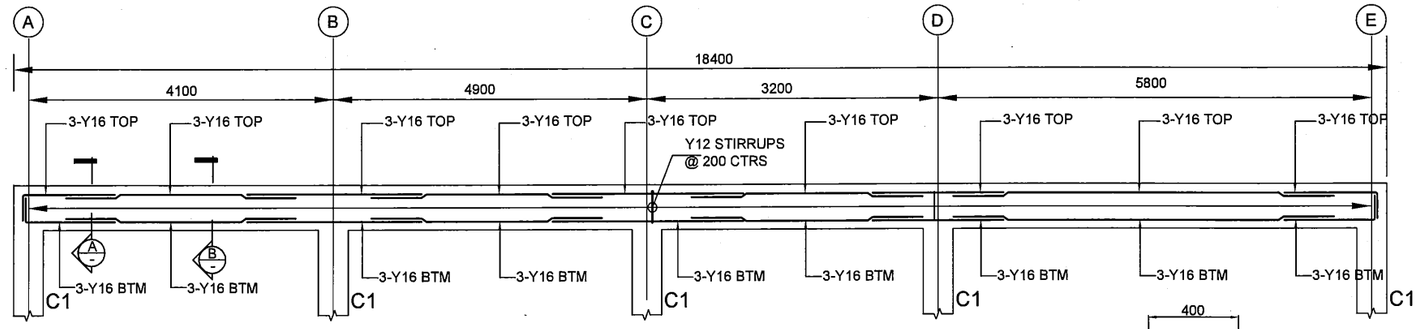
NOTE:

1. COLUMN REINF. SHALL BE LAPPED AS FOLLOWS.- Y16-650 LAP
   - Y20-900 LAP
   - Y24-1000 LAP

VERT. BAR COGS -Y16-250
-Y20-300

COLUMN C1. & RC WALL (W1.) ELEVATION

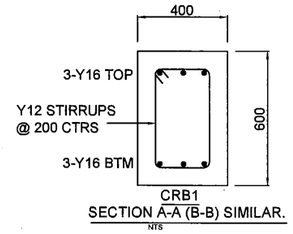
SCALE: 1:50



TYPICAL ROOF BEAM ELEVATION (CRB1)

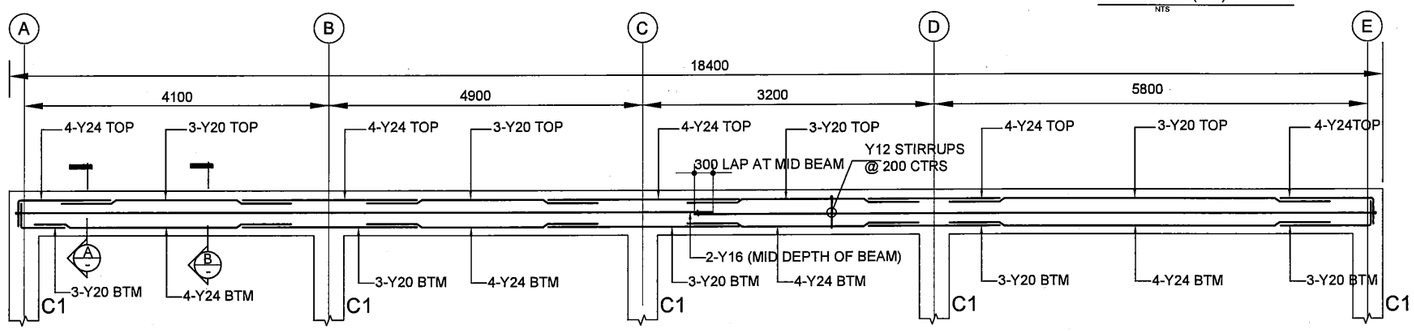
NTS

(400W x 600DP)



CRB1
SECTION A-A (B-B) SIMILAR.

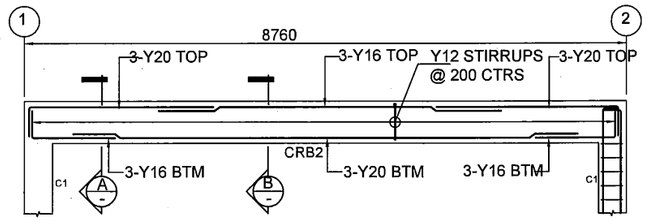
NTS



TYPICAL FLOOR BEAM ELEVATION (CFB1)

NTS

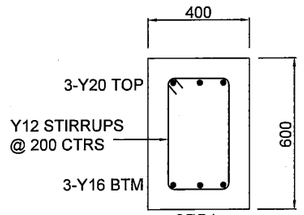
(450W x 900DP)



TYPICAL ROOF BEAM ELEVATION (CRB2)

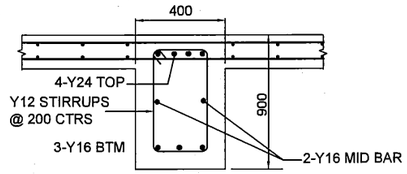
SCALE: NTS

(400W x 600DP)



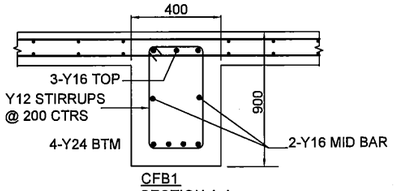
CRB1
SECTION A-A (B-B) SIMILAR.

NTS



CFB1
SECTION A-A

SCALE: 1:25



CFB1
SECTION A-A

SCALE: 1:25

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: Kila Kila STP:BLOWER /CONTROL ROOM COLUMN AND BEAM ELEVATION AND DETAILS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

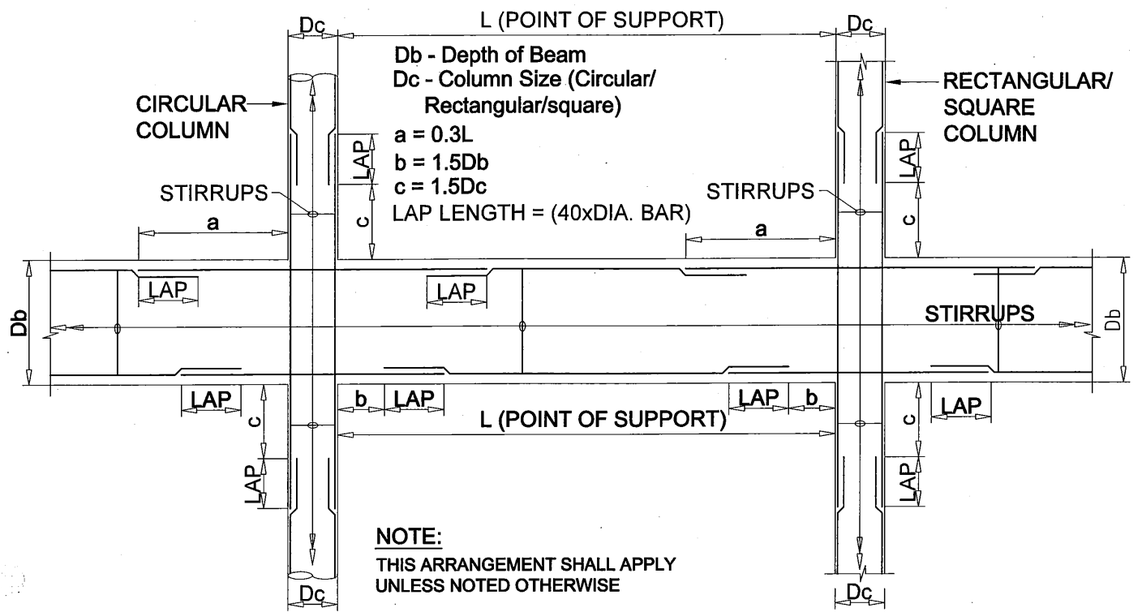
CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS					
	REV.	DATE	CHKED	DESCRIPTION	BY
	-	14/11/2011	TT	ISSUE FOR TENDER	SG

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

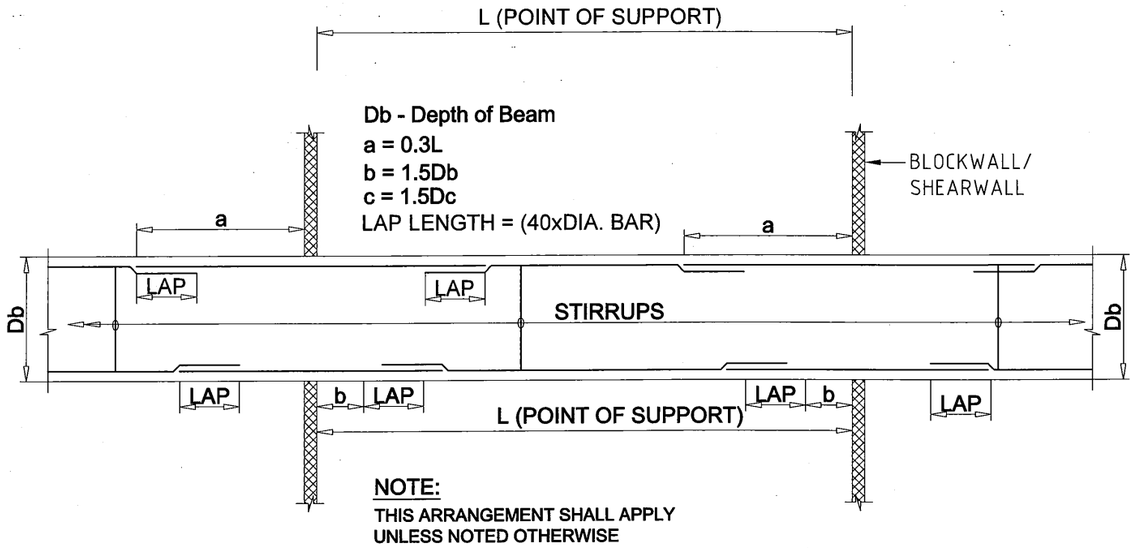
CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-OD-S004



REINFORCEMENT CURTAILMENT TYPICAL REQUIREMENTS

(RC BEAM & BLOCKWALL)

H. 1: 100 V. 1: 25



REINFORCEMENT CURTAILMENT TYPICAL REQUIREMENTS

(RC BEAM & BLOCKWALL)

H. 1: 100 V. 1: 25

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Name: Mr. L.J. Stocks

Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila SPT. OXIDATION DITCH. CONTROL & BLOWER ROOM- TYP. BEAM ELEVATION & SECTIONS

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS: NJS CONSULTANTS CO., LTD. - JAPAN

NOTES:

REVISIONS					
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	TT	ISSUE FOR TENDER	SG

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP - S004a

GENERAL

G1 This building is situated in an earthquake zone and has been designed and detailed to resist seismic forces. Any variation to either structural or non-structural elements may significantly alter the eartquake response of the building and impair its safety.

ANY PROPOSED ALTERATIONS MUST BE REFERRED TO THE STRUCTURAL DESIGN ENGINEER.

G2 These drawings shall be read in conjunction with all Architectural and other consultants Drawings and Specifications and with such other written instructions as may be issued during the course of contract. All discrepancies shall be referred to Superintendant for decision before proceeding with the work.

G3 All dimensions relevant to setting out and off-site works shall be verified by the Contractor before construction and fabrication is commenced. The Engineers drawings shall not be scaled.

G4 During construction the contractor shall be responsible for maintaining the structure in a stable condition and ensuring no part shall be overstressed under construction activities.

G5 Workmanship and materials are to be in accordance with the relevant current PNGS and SAA standards including all amendments and the local statutory Authorities, except where varied by the the contract documents.

G6 Requirements to comply with a particular code or standard is deemed to refer to the latest edition with all relevant amendments and to include all other codes or standards associated with or referred to in the noted code or standard.

G7 No holes or chases other than those indicated on the structural drawings shall be made without the approval of the Superintendant.

G8 Prior to ordering materials or carrying out any work that may be affected, the Contractor shall submit the following information for approval in accordance with the drawings and specification. These proposals shall include all information neccessary for approval including the following:

1) Source and supplier of materials and products.

2) Cerificates and results of any tests already carried out.

3) Details of tests to be carried out both on and off site.

4) Location of any testing to be carried out off site.

5) Details of any seperate labratory, authority or other body to carry out tests.

The approval of substitution of materials shall be sought from the Superintendant.

All dimensions are in millimetres unless stated otherwise. All levels are expressed in metres.

G9 All props and formwork for beams and slabs shall be removed before construction of any masonry walls or partitions on the floor.

G10 All Non-Load Bearing Walls shall be kept clear of the underside of beams and slabs clearance shall not be less than 20mm unless otherwise shown.

G11 Where proprietary products are specified they shall be manufactured and used in accordance with the manufacturer's specifications and recommendations.

G12 Design loads to Papua New Guinea Standard 1001.

1) Wind - Basic Design Velocity 28m/sec
Terrain Category 1

2) Seismic - Zone 4

FOUNDATION

F1 Founding levels are provisional and are subject to the Superintendant's approval of the bearing strata.

F2 Anticipated bearing material: Undisturbed Natural Ground.

F3 Required allowable bearing strength of foundation material 550 kPa

F4 All water and loose material shall be removed from the base prior to pouring any concrete.

F5 Compacted fill under slabs and minor strip footings shall comply with the following:

a) Material shall be selected from an approved source, shall be free of vegetable matter and ball of clay, and shall comply with the following requirements.

(i) CBR value after 4 days soaking, not less than 25 when compacted to at least 95% maximum dry density as determined by AS1289 Test No. E1.1

(ii) Maximum linear shrinkage 6%

(iii) Grading

SIEVE SIZE (mm)	BY WEIGHT PASSING
37.5	100
19.0	60 - 100
9.5	40 - 80
4.75	30 - 60
2.36	20 - 45
0.425	15 - 30
0.075	3 - 15

(iv) The fraction passing the 75 micron sieve shall not exceed 2/3 that passing the 425 micron sieve.

(v) The fraction retained on the 2.36mm sieve shall consist of hard durable particles or fragments of stone, gravel or sand and shall not include any material that breaks up when alternately wetted and dried.

(vi) The fraction passing the 425 micron sieve shall have a liquid limit not greater than 30 and a plasticity index not greater than 10.

F6 Over excavating under footings shall be made good with 10 MPa mass concrete.

CONCRETE

C1 All workmanship and material shall be in accordance with PNG 1002.

C2 Minimum cover (mm) to all reinforcement unless otherwise shown shall be as follows:

REINFORCEMENT COVERS

Minimum reinforcement cover requirements to be in accordance with PNG1002 - 1982 Exposure category listed below:

Exterior faces of members (above ground) : 3
Interior faces of members : 3
Members below ground : 3

In addition reinforcement cover shall not be less than :

BASE SLAB : 75mm
BASE WALL : 75mm
BEAM : 75mm

C3 Sizes of concrete elements do not include thickness of applied finishes.

C4 Reinforcement is represented diagrammatically and not neccessarily shown.

C5 Splices in reinforcement shall be made only in the positions shown or as otherwise approved by the Superintendant.

C6 Welding of reinforcement shall not be permitted.

C7 All reinforcement shall be securely supported in its correct position during concreting by approved bar chains, spacers or support bars.

C8 Reinforced symbols:
"Y" denotes hot rolled deformed bars grade 410Y to AS 1302
"S" denotes deformed bars grade 2305 to AS 1302.
"R" denotes plain round bars grade 230R to AS 1302.

C9 Laps, unless noted otherwise, shall be : 40 x bar diameter for rounds and 350mm for fabric.

C10 Bending radii, unless noted otherwise, shall be to PNGS 1002.

C11 Cover will be maintained during casting concrete by the use of plastic chairs and/or mortar blocks 1:2 mix at maximum 500mm centres in each directions. For work in contact with the ground chairs are to be supported on sheet plates.

C12 Reinforcement shall not be exposed for prolonged periods such as to permit the development of scale

C13 Reinforcement and formwork are to be checked by the Superintendant prior to pouring. The Superintendant is to be given 24 hours notice for a check and a futher 24 hours for any remedial work required prior to concrete placement.

C14 All conduits to be placed above bottom reinforcement and below top reinforcement - minimum spacing between conduits 25mm.

C15 Formwork shall be designed and constructed in accordance with AS 3610.

C16 Concrete components and quality shall be as follows, unless noted otherwise;

Element	F'c (MPa)	Water/Cement Ratio
RC Base Slab	40	0.55
RC Base Wall	40	0.55
Beams Concrete	40	0.55
Mass Concrete	15	0.55
Topping Concrete	40	0.55

C17 Three test cylinders are to be taken from each sample (sampling in accordance with PNGS 1002.) One cylinder to be tested at seven days, the other two at 20 days. Where ready mix concrete is supplied each truck will constitute a batch in applying PNGS 1002.

C18 The Contractor shall submit for approval his proposals for curing of all insitu concrete work, at least 7 days prior to any pour taking place.

C19 Construction Joints to be cleaned of all loose and foreign materials, scabbled and wetted immediately before continuing the following concreting. Construction Joints other than those indicated on the drawing shall not be made without approval.

C20 Control Joints in the Ground Floor slab shall be provided by 6M centres UNO.

CONCRETE MASONRY

B1 All concrete block masonry is to be executed in accordance with the current edition of:

PNGS 1004 - Reinforced Masonry Structures Code.
AS 2733 - Concrete Masonry Units.

B2 Concrete masonry blocks shall have characteristics compressive strength of F'b = 12 MPa and 16 MPa at specific locations denoted as SW1 - SW39.

B3 All blocks shall be laid dry and wetting shall not be permitted during or after laying.

B4 Channel stretcher blocks and lintel blocks shall be used to form bond beams and lintels respectively. Top groove blocks shall be used elsewhere where horizontal reinforcement is required. Otherwise blocks shall conform to AS 2733.

B5 All blocks must be cured for minimum of 28 days before transportation to site.

B6 Clean out blocks are to be used for core filled cavities and all mortar droppings are to be removed from the bottom cavities before grouting.

B7 Mortar shall comply with AS 1475. Part 1, Appendix A. The mix proprtions of table A1 shall be adjusted to give an average compressive strength of 8 MPa.

B8 Mortar joints to be 10mm thick with blocks fully bedded and perpends filled.

B9 Grout for corefilling shall comply with AS 1475, Part 1, Section 2.
Characteristic compressive strength F'c = 15 MPa Slump 225. Batching by volume is not permitted.

B10 Corefilling is to be placed for the full height in lifts of not more than 1200mm in height. A minimum delay period of one hour and max, three hours shall be observed between lifts. All cores are to be filled unless noted otherwise.

B11 Corefilling shall be thoroughly compacted into place with the aid of small immersion vibrators.

B12 The corefilling at the top of each lift shall be kept down at a distance of 25mm from the top of the blockwork and this surface shall be thoroughly scabbled before any further blocks are laid or concrete poured.

B13 Masonry walls shall be cured for at least three (3) days before corefilling is placed.

B14 All masonry must be approved by the Superintendant before corefilling takes place.

B15 Vertical reinforcement at any level shall be correctly positioned and securely tied to starters projecting from construction below prior to placing blocks.

B16 Reinforcement is to be left undisturbed for at least 12 hours after corefilling. Any reinforcement showing signs of seperation from the corefilling may render that section of the wall liable to rejection.

B17 Minimum cover to reinforcement : 12mm from inside face of block.

B18 Vertical bars shall be placed with laps at not less than 1600mm centres, unless noted otherwise.

B19 Laps, unless noted otherwise, shall be : 40 x bar diameter.

B20 All bars are to be cogged around openings and openings are to have a bond beam over them.

B21 At the completion of a day's work and during wet weather top and sides of all walls shall be covered to prevent rain penetration to cores or wetting of blocks.

B22 Control joints in blockwork to be at 4m maximum spacing.

STRUCTURAL STEELWORK

S1 All workmanship and materials shall be in accordance with PNGS 1003.

S2 Steel grade - 300 MPa.

S3 Plates, unless noted otherwise, shall be 8mm thick.

S4 Bolts, unless noted otherwise, shall be 16mm diameter, Grade 4.6/s, bolts 20mm diameter and greater shall be Grade 8.8/s.

S5 Welds, unless noted otherwise, shall be 6mm continuous fillet weld.

S6 Welding electrodes shall be class E 41XX.

S7 WElding shall be performed by an experienced qualified operator in accordance with PNGS 1016.

S8 The contractor shall verify that all members can be assembled and erected properly, prior to erection on site.

S9 Before fabrication is commenced the Contractor shall submit copies of the shop drawings to the Superintendant for review. Review does not include checking of dimensions.

S10 Reference shall be made to the Architect's drawings for additional drillings, cleats, fixings, etc.

S11 The contractor shall provide and leave in place until permanent bracing elements are constructed, such temporary bracing as is neccessary to stabilise the structure during erection.

S12 The ends of all tubular members are to be sealed with nominal thickness plates and continuous fillet weld unless otherwise shown.

S13 Unless otherwise specified all steelwork shall be sand blasted to remove all rust and scaled and painted one shop coat of inorganic zinc silicate primer min. 40 micron thickness. Members encased in concrete, fire spray or HSTF bolted connections must not be painted.

S14 All base plates shall be temporarily supported and dry pack grouted with 3:1 sand cement grout in a just wet condition.

S15 Cold formed steelwork shall comply with AS 1530, roll formed from hot-dipped zinc-rolled steel grade G450-Z200 to AS 1397.

S16 All steelwork exposed to the weather including bolts and fixings shall be hot dipped galvanised unless noted otherwise.

TIMBER

T1 Timber materials and workmanship shall comply with AS 1720.

T2 Timber shall be seasoned to moisture content not exceeding 15%, unless noted otherwise.

T3 Where unseasoned timber is specified, in no case shall timber be used having a moisture content exceeding 30% at the time of fabrication.

T3 Timber shall have strength properties not less than that shown below:

Stress Grade - F11
Strength Group - SD4
Joint Group - J3

In the absence of mechanical stress, grading timber shall be visually stress graded in accordance with AS 2082.

T4 The Contractor is required to submit details of the proposed species of timber for approval. If unidentified species are proposed, evidence must be provided from the Papua New Guinea Office of Forestry of identification and compliance with the specified properties.

T5 All sizes quoted are the final dressed sizes of finished timber unless noted otherwise.

T6 The Contractor shall verify that all members can be assembled and erected properly.

T7 Any variations shall be referred to the Superintendant for approval.

T8 Steel Components shall comply with PNGS 1003 Steel grade 250.

T9 Bolt holes are to be of same nominal diameter as bolts, drilled through assembled timber.

T10 Washers, unless noted otherwise, shall be provided under all bolt heads and nuts as follows:
Against timber, 65 x 65 x 5 square washers.
Against steel, standard round washers.

T11 All bolts, nuts and washers shall be galvanised in accordance with AS 1214.

T12 All bolts shall be retightened at completion of construction.

T13 Where neccessary timber shall be chamfered locally to just clean fillet welds connection plates, etc.

T14 Preservative treatment is to be provided as follows : dip diffused.

DESIGN LOADS

BASEMENT LEVEL:

DEAD LOAD:	22.5 kPa
MECHANICAL LOAD OF VARIOUS MECHANICAL FACILITIES	
EARTH PRESSURE LOAD	
EARTHQUAKE PRESSURE LOAD	
HYDROSTATIC PRESSURE LOAD	
HYDRODYNAMIC PRESSURE LOAD	
LIVE LOAD:	
STAIR:	4 kPa

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila SPT. FINAL SEDIMENTATION TANK - STRUCTURAL NOTES, SHEET 1 OF 2

CLIENT: IPBC INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JICA JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

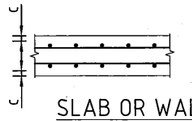
REVISIONS

ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	LKT

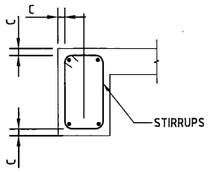
APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: N.T.S.

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-S001

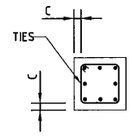
MINIMUM CONCRETE COVER



SLAB OR WALL

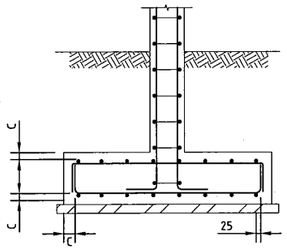


GIRDER OR BEAM

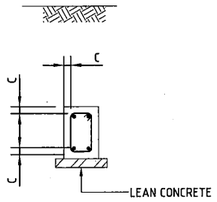


COLUMN OR PEDESTAL

ABOVE GRADE CONCRETE



FOOTING



GRADE BEAM

FOUNDATION

THE MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE AS INDICATED BELOW.

- ELEMENT EXPOSED TO WATER/SPILLAGE (CATCH BASIN/MANHOLE/SPILL BASIN etc	- 75mm
- OTHER STRUCTURE	- 65mm

THE REQUIREMENTS STIPULATED ABOVE SHALL NOT BE APPLIED TO THE FOLLOWING REINFORCED CONCRETE ITEMS :

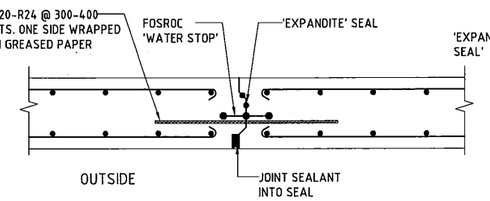
a) CONCRETE PIPES
- AS PER MANUFACTURER'S STANDARD.

b) FIREPROOFING (WITH GALVANISED WIRE MESH)

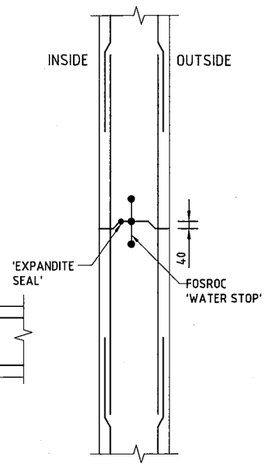
c) DITCH LINING/ SLOPE PROTECTION

d) CONCRETE PAVING

NOTE: FOR CONCRETE CAST AGAINST GROUND (WITHOUT FORMWORK) MINIMUM CONCRETE COVER (C) SHALL BE 75mm.

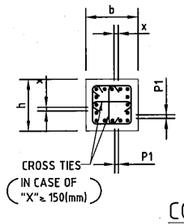


RECTANGULAR STRUCTURES

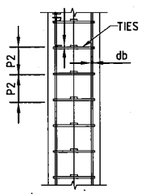


TYPICAL EXPANSION JOINT DETAIL FOR CIRCULAR LIQUID RETAINING STRUCTURE

SPACING LIMITS

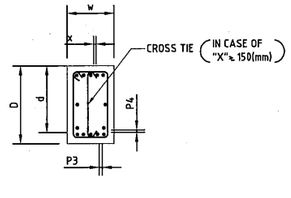


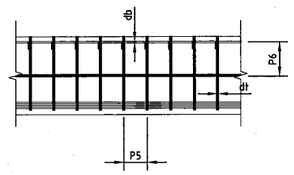
COLUMN



P1 ≥ hagg x 4/3 (mm)
1.5db,
40 (mm)
WHICHEVER IS GREATER

P2 ≤ 15 db or 300(mm) or
SMALLEST CROSS SECTIONAL
DIMENSION OF COLUMN
WHICHEVER IS SMALLER



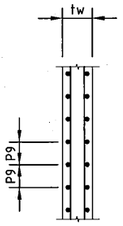


P3 ≥ hagg x 4/3 (mm)
db
WHICHEVER IS GREATER
hagg = 20(mm)

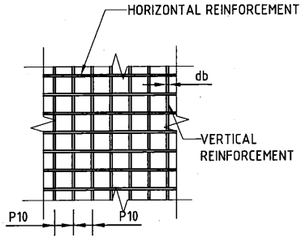
P4 ≥ 25(mm)

P5 ≤ D/2 or 300mm
WHICHEVER IS SMALLER

P6 ≤ 300(mm)



P9 ≤ 350(mm)
≤ 2.5tw
≤ 4db



P10 ≤ 350(mm)
≤ 2.5tw
≤ 4db

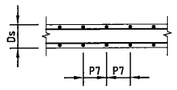
WALL

NOTE : VERTICAL REINFORCEMENT NEED NOT BE ENCLOSED BY LATERAL TIES IF VERTICAL REINFORCEMENT AREA IS NOT GREATER THAN 0.01 TIMES GROSS CONCRETE AREA, OR WHERE VERTICAL REINFORCEMENT IS NOT REQUIRED AS COMPRESSION REINFORCEMENT.

FOR WALLS GREATER THAN 200mm THICK, THE VERTICAL AND HORIZONTAL REINFORCEMENT SHALL BE PROVIDED IN TWO GRIDS, ONE NEAR EACH FACE OF THE WALL.

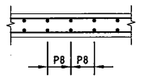
GIRDER AND BEAM

PRIMARY REINFORCEMENT



P7 ≤ 2Ds or 300 (mm)
WHICHEVER IS SMALLER

SECONDARY REINFORCEMENT



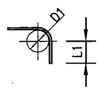
P8 ≤ 2Ds or 300 (mm)
WHICHEVER IS SMALLER

SLAB

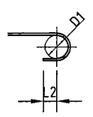
STANDARD HOOKS AND BENDS

FOR MAIN REINFORCEMENT

90° HOOK OR BEND



180° HOOK

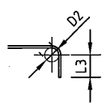


(mm)

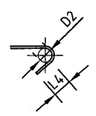
BAR SIZE	MIN.BEND DIA. D1	MIN.EXTENSION L1	MIN.EXTENSION L2
N12	60	120	70
N16	80	135	70
N20	100	160	80
N24	120	195	100
N28	140	225	115
N32	160	260	130
N36	180	290	145
N40	200	320	160

FOR TIES AND STIRRUPS REINFORCEMENT

90° HOOK

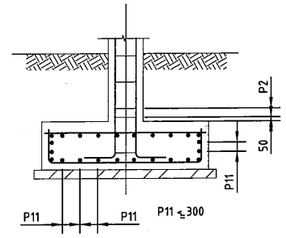


135° HOOK

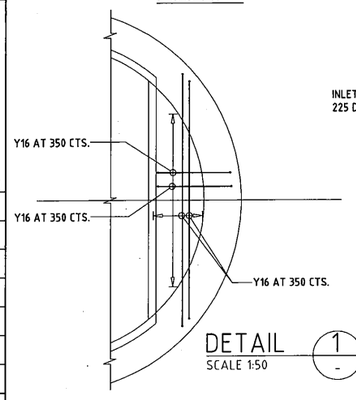


(mm)

BAR SIZE	MIN.BEND DIA. D2	MIN.EXTENSION L3	MIN.EXTENSION L4
N10	40	135	100
N12	50	160	120



FOOTING



DETAIL 1
SCALE 1:50

NOTES:

1. FOR GENERAL NOTES, SEE DWG No.S001

2. LEGEND
hagg : NOMINAL MAXIMUM SIZE OF AGGREGATE = 20mm
d : EFFECTIVE DEPTH
db : SIZE OF LONGITUDINAL BARS (mm)
N : BAR SYMBOL
dt : SIZE OF TIES
s : SPACING
D : BEAM HEIGHT
w : BEAM WIDTH
b,h : COLUMN SECTION
tw : THICKNESS OF WALL

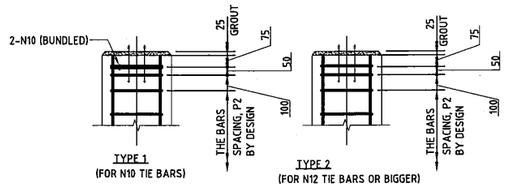
3. SPACING OF TIES AND STIRRUPS SHALL BE IN ACCORDANCE WITH AS 3600-2001

3-1 TIES SPACING (P2)
MAXIMUM TIE SPACING SHALL NOT EXCEED THE FOLLOWING VALUE
- 15db
- SMALLEST CROSS SECTIONAL DIMENSION OF COLUMN
- 300mm

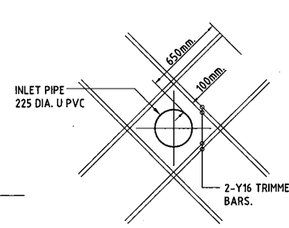
} WHICHEVER IS SMALLER

3-2 STIRRUP SPACING (P5)
MAXIMUM STIRRUP SPACING SHALL NOT EXCEED THE FOLLOWING VALUE:
- D/2
- 15db
- 300mm

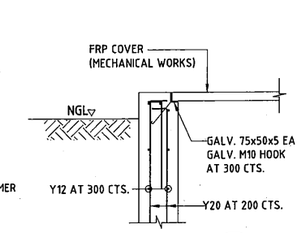
} WHICHEVER IS SMALLER



STIRRUP DETAIL FOR TOP OF PEDESTAL



TYP. DETAIL
SCALE 1:50



DETAIL 2
SCALE 1:50

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENDER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila STP. FINAL SEDIMENTATION TANK - STRUCTURAL NOTES SHEET 2 OF 2

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN

NOTES :

REVISIONS					
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	CM

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: N.T.S.

CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-S001a

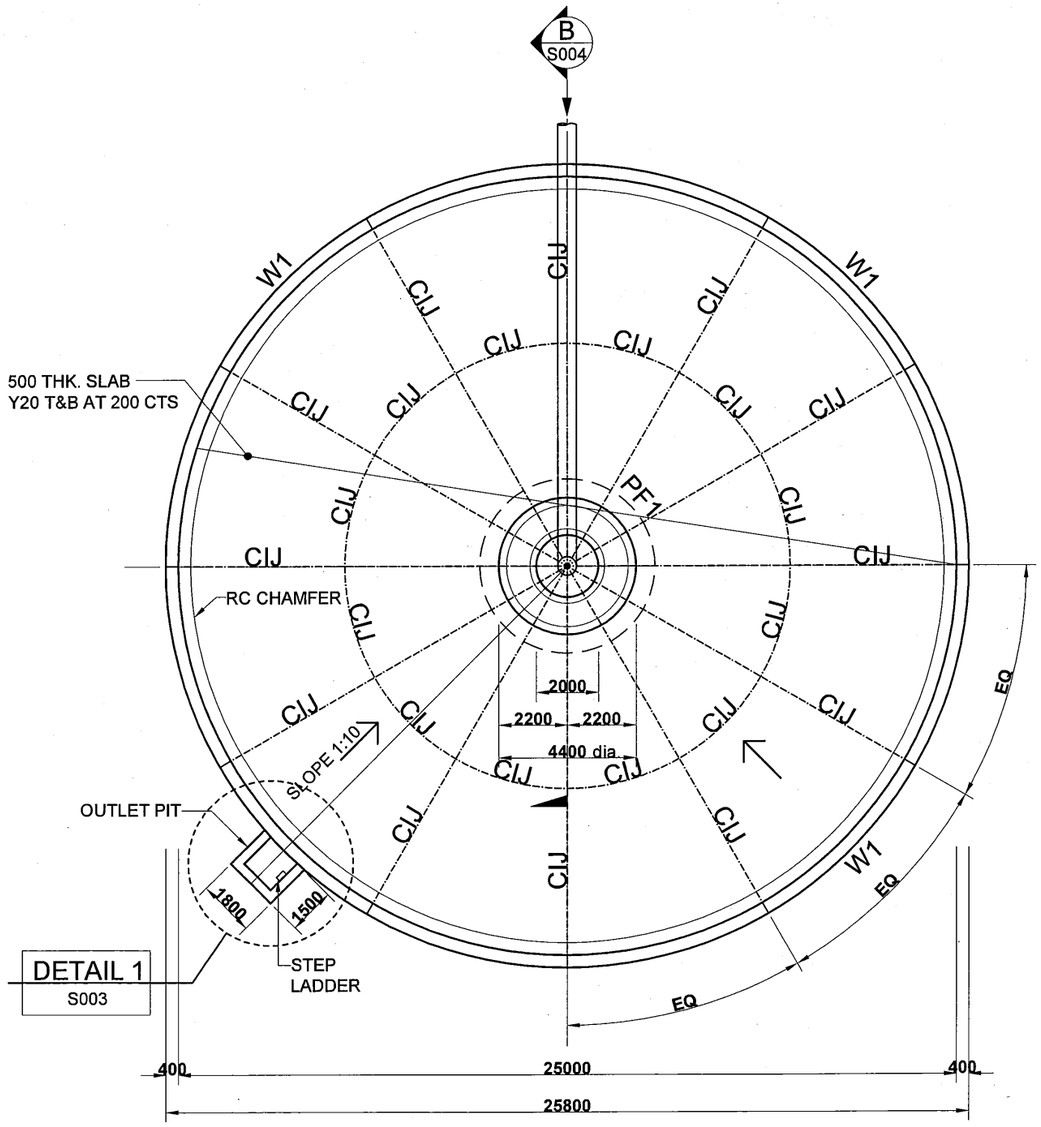
This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 367 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

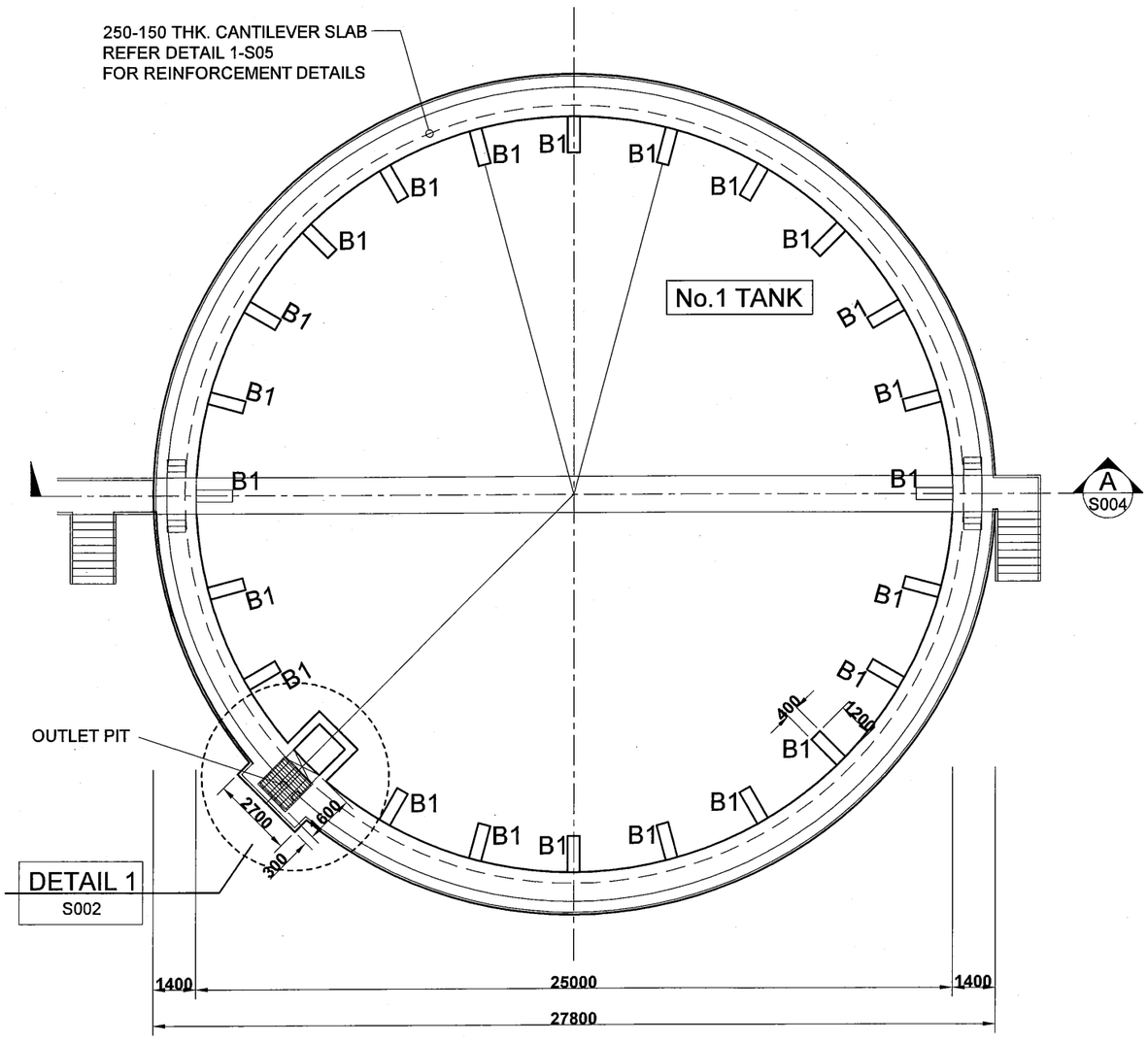
MEMBER SCHEDULE

MARK	SIZE/DESCRIPTION	REINFORCEMENT		REMARK
		LENGTHWISE	WIDTHWISE	
PF1	1200 DP x 5600 DIA.			PAD FOOTING
B1	500-300 DP x 400 WD			RC BEAM
W1	400 THK.	REFER DETAILS		RC WALL
W2	300 THK.	REFER DETAILS		RC WALL
W3	300 THK.	REFER DETAILS		RC WALL

NOTE
CIJ - CRACK INDUCED JOINT



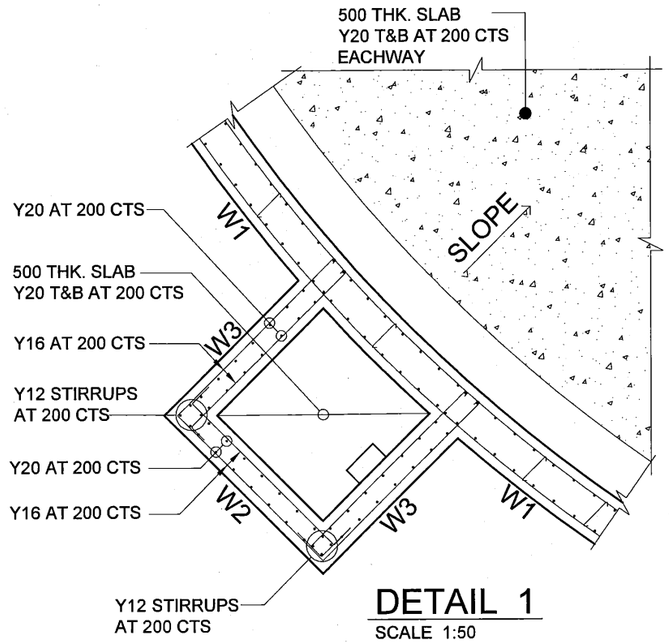
BASE PLAN
SCALE 1:200



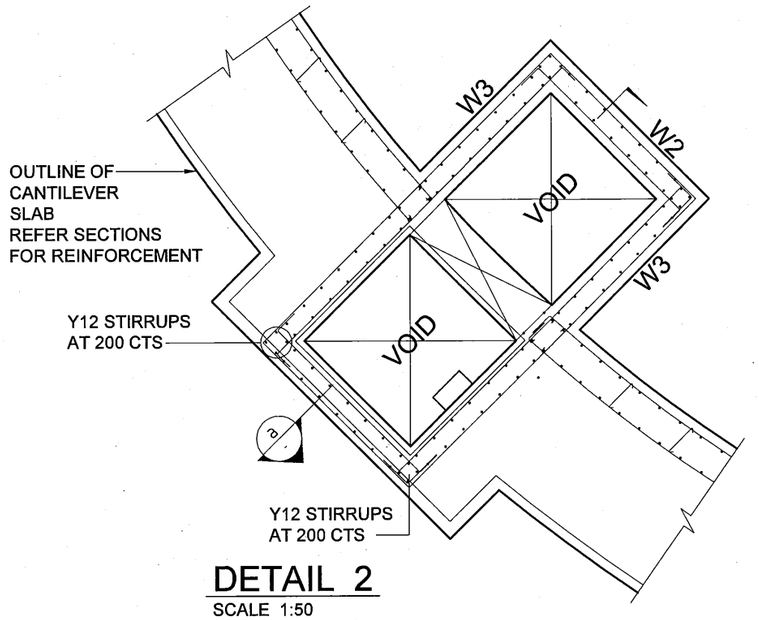
TOP PLAN
SCALE 1:200

TENER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: KilaKila SPT-FINAL SEDIMENTATION TANK	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS: NJS CONSULTANTS CO., LTD. - JAPAN	NOTES:	APPROVED by PMU: / DATE: 1. Dec 2011 / SCALE: AS SHOWN
		REVISIONS: ISSUE TENDER; REV. -; DATE 14/11/2011; CHKED LJS; DESCRIPTION ISSUE FOR TENDER; BY LKT	CHECKED by CONSULTANT / DATE: 1. Dec 2011 / DRAWING NO.: STP-S002



DETAIL 1
SCALE 1:50



DETAIL 2
SCALE 1:50

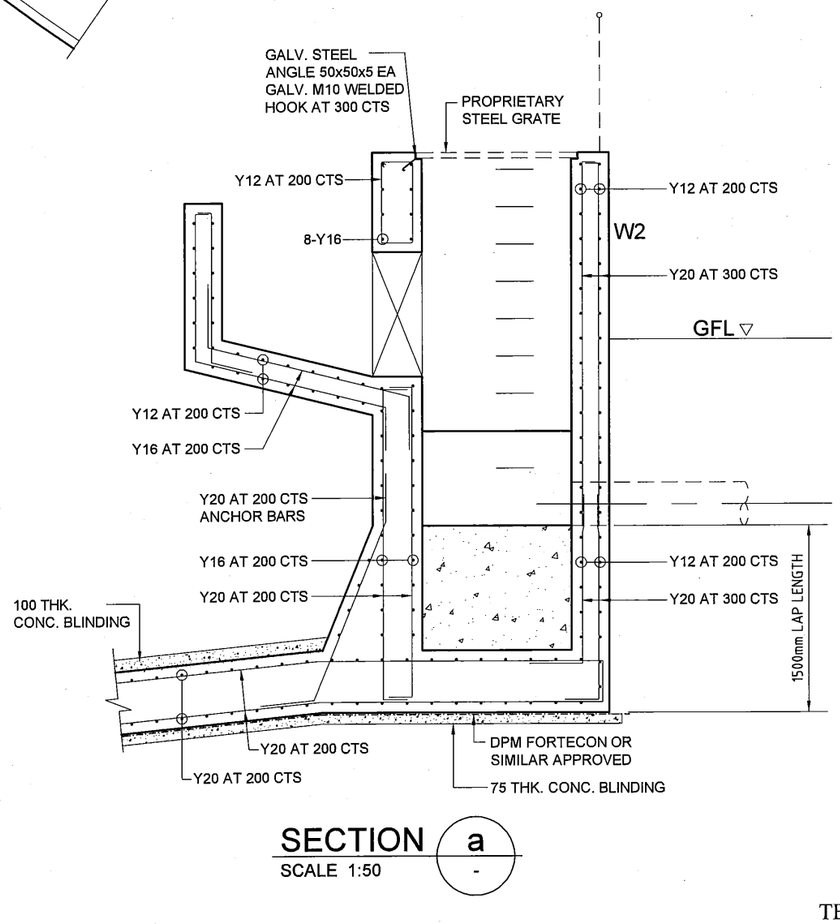
MEMBER SCHEDULE

MARK	SIZE/DESCRIPTION	REINFORCEMENT		REMARK
		LENGTHWISE	WIDTHWISE	
PF1	1200 DP x 5600 DIA.			PAD FOOTING
B1	500-300 DP x 400 WD			RC BEAM
W1	400 THK.	REFER DETAILS		RC WALL
W2	300 THK.	REFER DETAILS		RC WALL
W3	300 THK.	REFER DETAILS		RC WALL

NOTE
CIJ - CRACK INDUCED JOINT

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152



SECTION a
SCALE 1:50

TENER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)

TITLE: KilaKila SPT-FINAL SEDIMENTATION TANK

CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION
PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT
PROJECT MANAGEMENT UNIT (PMU)
JAPAN INTERNATIONAL COOPERATION AGENCY

CONSULTANTS: NJS CONSULTANTS CO., LTD. - JAPAN

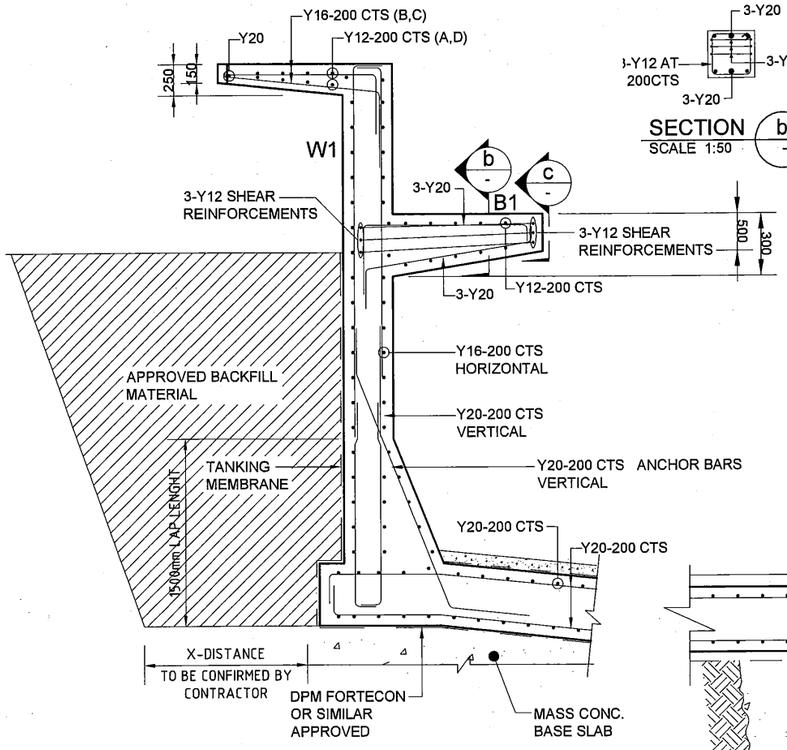
NOTES:

REVISIONS					
ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	LKT

APPROVED by PMU: Project Director Lot G.Zauya — DATE: 1. Dec 2011 — SCALE: AS SHOWN

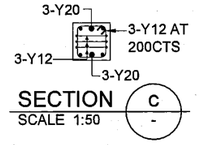
CHECKED by CONSULTANT Project Manager T.Fuji — DATE: 1. Dec 2011 — DRAWING NO.: STP-S003

2

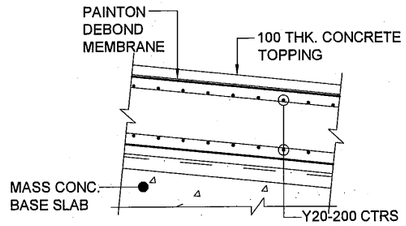


DETAIL 1
SCALE 1:50

SECTION b
SCALE 1:50



SECTION c
SCALE 1:50

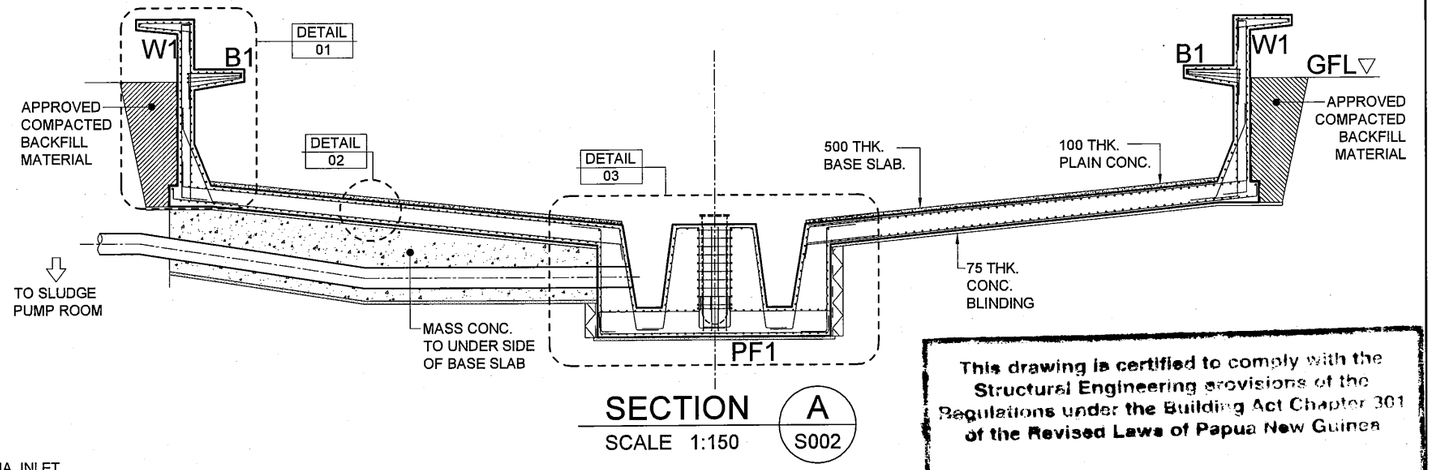


DETAIL 2
SCALE 1:50

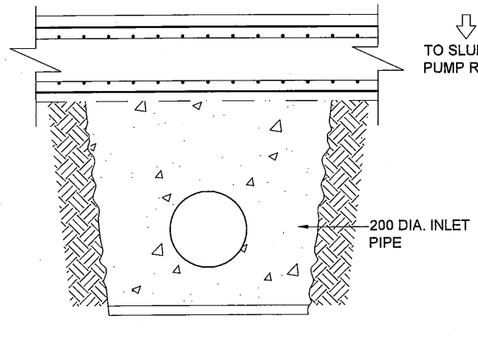
MEMBER SCHEDULE

MARK	SIZE/DESCRIPTION	REINFORCEMENT		REMARK
		LENGTHWISE	WIDTHWISE	
PF1	1200 DP x 5600 DIA.			PAD FOOTING
B1	500-300 DP x 400 WD			RC BEAM
W1	400 THK.	REFER DETAILS		RC WALL
W2	300 THK.	REFER DETAILS		RC WALL
W3	300 THK.	REFER DETAILS		RC WALL

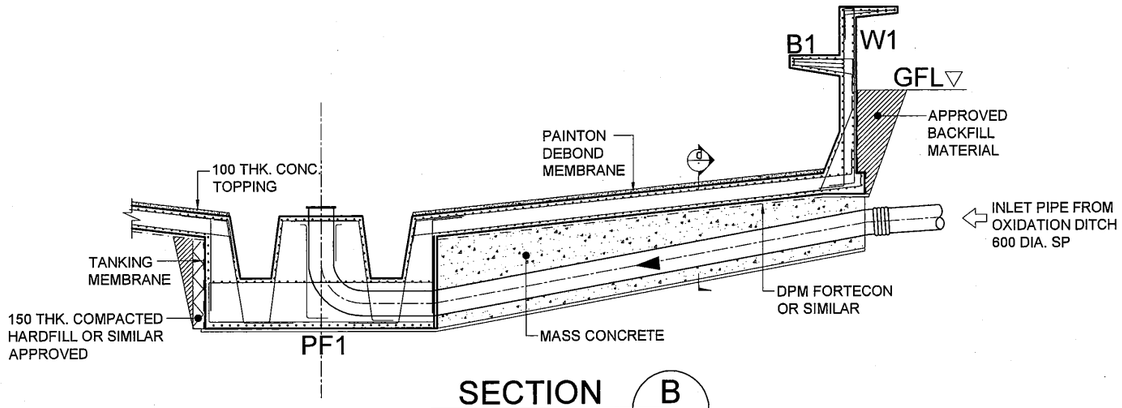
NOTE
CIJ - CRACK INDUCED JOINT



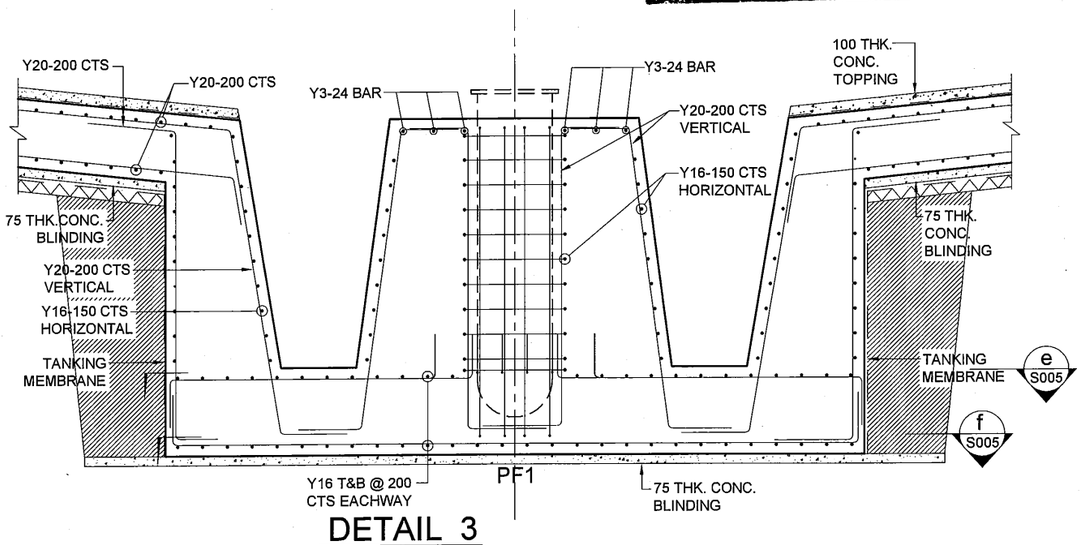
SECTION A
SCALE 1:150
S002



SECTION d
SCALE 1:50



SECTION B
INLET PIPE
SCALE 1:150
S002



DETAIL 3
SCALE 1:50

This drawing is certified to comply with the Structural Engineering provisions of the Regulations under the Building Act Chapter 301 of the Revised Laws of Papua New Guinea

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Name: Mr. L.J. Stocks
Registered Structural Engineer No: 0394152

TENER ISSUE

PROJECT: PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT (POMSSUP)		TITLE: KilaKila SPT-FINAL SEDIMENTATION TANK	
CLIENT: INDEPENDENT PUBLIC BUSINESS CORPORATION PORT MORESBY SEWERAGE SYSTEM UPGRADING PROJECT PROJECT MANAGEMENT UNIT (PMU) JAPAN INTERNATIONAL COOPERATION AGENCY	CONSULTANTS : NJS CONSULTANTS CO., LTD. - JAPAN	NOTES:	APPROVED by PMU: Project Director Lot G.Zauya CHECKED by CONSULTANT Project Manager T.Fuji
DATE: 1. Dec 2011	SCALE: AS SHOWN	DATE: 1. Dec 2011	DRAWING NO.: STP-S004

REVISIONS

ISSUE	REV.	DATE	CHKED	DESCRIPTION	BY
TENDER	-	14/11/2011	LJS	ISSUE FOR TENDER	LKT