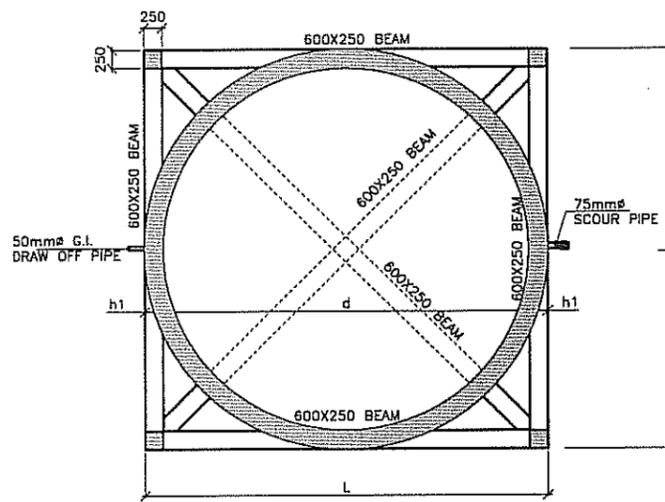
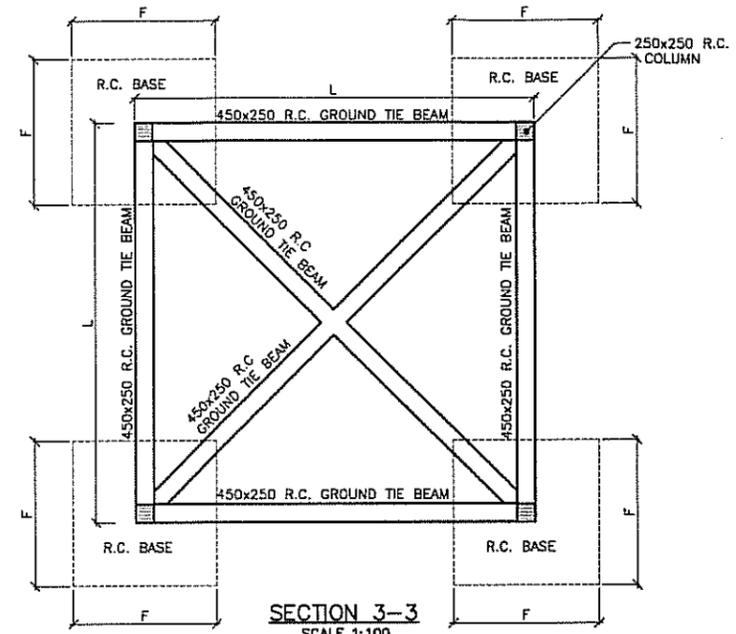


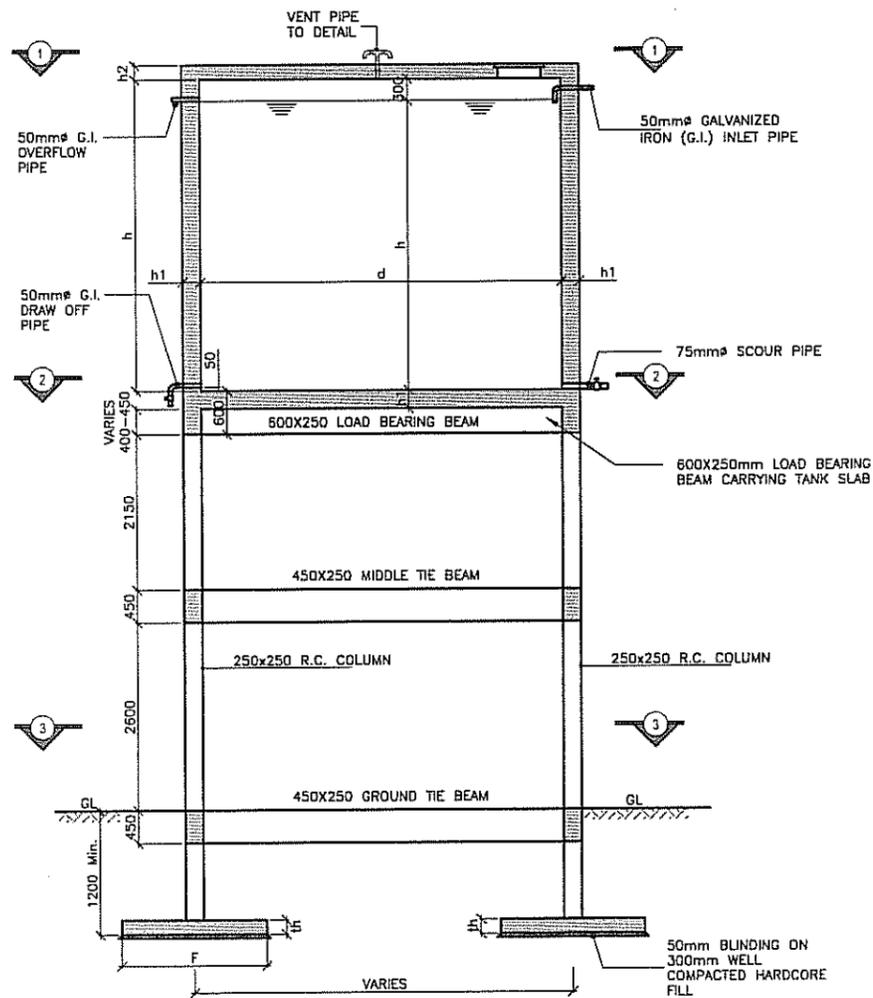
SECTION 1-1
SCALE 1:100



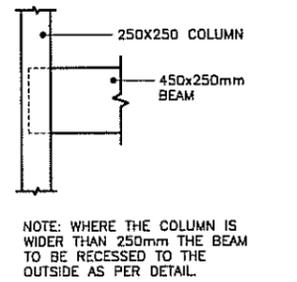
SECTION 2-2
SCALE 1:100



SECTION 3-3
SCALE 1:100

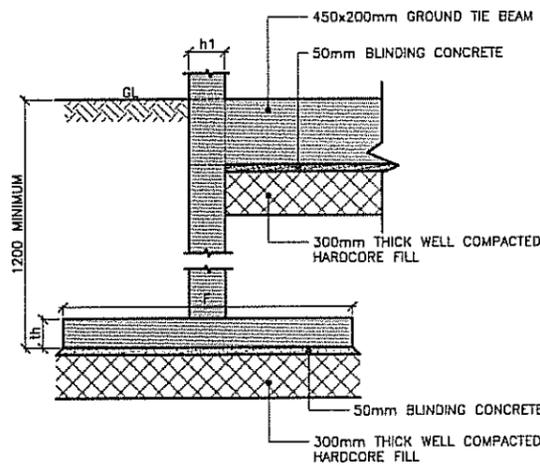


ELEVATED WATER TOWER - SECTIONAL ELEVATION
SCALE 1:100



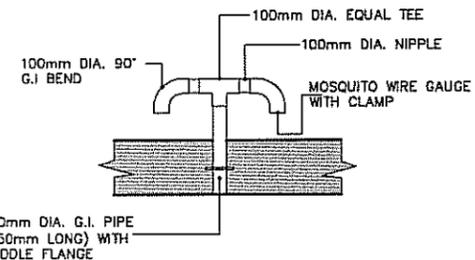
COLUMN/BEAM CONNECTION

SCALE 1:50



FOUNDATION DETAILS

SCALE 1:50



VENT PIPE DETAIL

SCALE 1:50

		TANK SIZE				
		20m ³	25m ³	50m ³	60m ³	75m ³
DIMENSIONS	Column Size	250x250mm	250x250mm	300x300mm	350x350mm	350x350mm
	d	3400	3800	4900	4900	5500
	h	2200	2200	2700	3200	3200
	h1	150	150	200	250	250
	h2	150	150	200	200	250
	F	1200	1200	1600	2000	2000
	th	250	250	300	350	350
	L	4750	5150	6650	7100	7700

TANK SIZE/DIMENSION TABLE

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- CONSTRUCTION JOINT WHERE APPLICABLE SHALL HAVE 200mm WIDE PVC WATER BAR.
- REINFORCED CONCRETE FOR WATER TANK SHALL BE CLASS 30/20 (1:1:2).
- THE CONTRACTOR SHALL ENSURE WATER TIGHTNESS OF THE TANK BY USE OF VANDEX, SIKA OR EQUIVALENT APPROVED WATER PROOF ADMIXTURE ON WALLS AND BASE SLAB TO MANUFACTURES DETAILS.
- FOR TANK R.C. DETAILS, REFER TO DRAWING No. USOM/C/D/012 (ELEVATED CONCRETE STORAGE TANKS R.C. DETAILS).
- FOR ACCESS LADDER DETAILS REFER TO DRAWING No. USOM/C/D/032 & 033 (TYPICAL CAT LADDER DETAILS)
- FOUNDATION FOR THE TANK SUBSTRUCTURES HAVE BEEN SIZED FOR A BEARING CAPACITY OF 350KN/m² (HARD NONFRACTURED MURRAM OR HIGHER)
- THE WASHOUT POURING TO BE DIRECTED TO A CHAMBER AWAY FROM THE TANK FOUNDATION TO PREVENT SCOURING/EROSION

FINAL ISSUE
Signed: SLM/DOO

REV	REVISIONS	BY	CHKD	DATE	APPROVED
P2	STAKEHOLDER'S COMMENTS INCORPORATED	BY SHN	CHKD A.C.	JUL'11	2/11
P1	CLIENT'S COMMENTS INCORPORATED	BY PMN	CHKD	OCT'10	
P0	PRELIMINARY	BY PMN	CHKD	APR'10	

Client
UNICEF - SOMALIA SUPPORT CENTRE

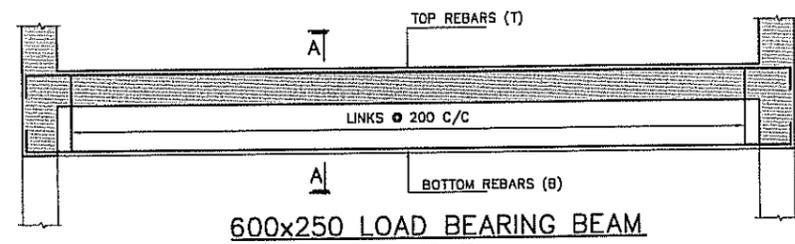
Project
PREPARATION OF STANDARD DETAILS MANUAL FOR WATER SUPPLY AND SANITATION FACILITIES IN SOMALIA

Dwt/Structural Engineers
Howard Humphreys(EA) Ltd Consulting Engineers.

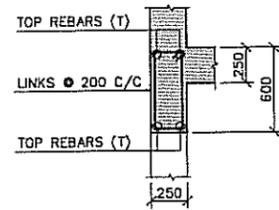
Drawing Title
6m HIGH ELEVATED CONCRETE STORAGE WATER TANKS GENERAL ARRANGEMENT SHEET 1 OF 3

Designed by MKG
Checked by AKG
Scale AS SHOWN
Job No. 1.0335
P STATUS

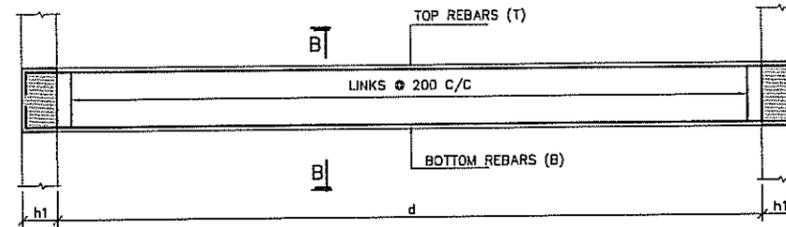
Drawn by PMN
Approved by 08/02/11
Date APRIL 2010
ACAD File: C-D-011-P2
DRAWING No. USOM/C/D/011
REV P2



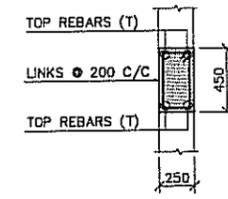
600x250 LOAD BEARING BEAM



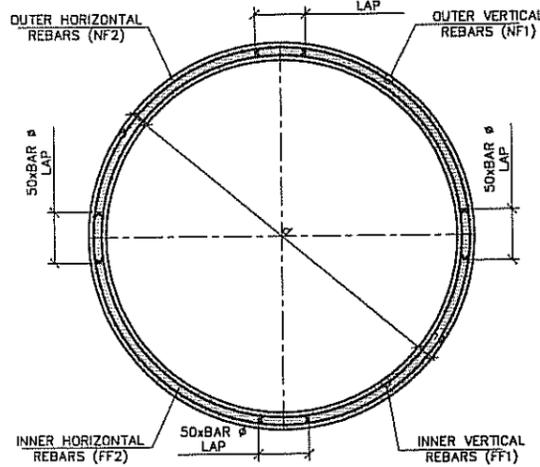
SECTION A-A
SCALE 1:25



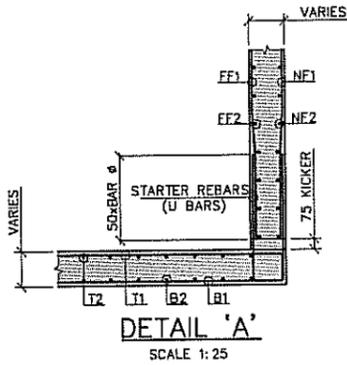
450x250 MIDDLE TIE BEAM



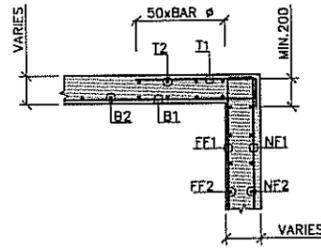
SECTION B-B
SCALE 1:25



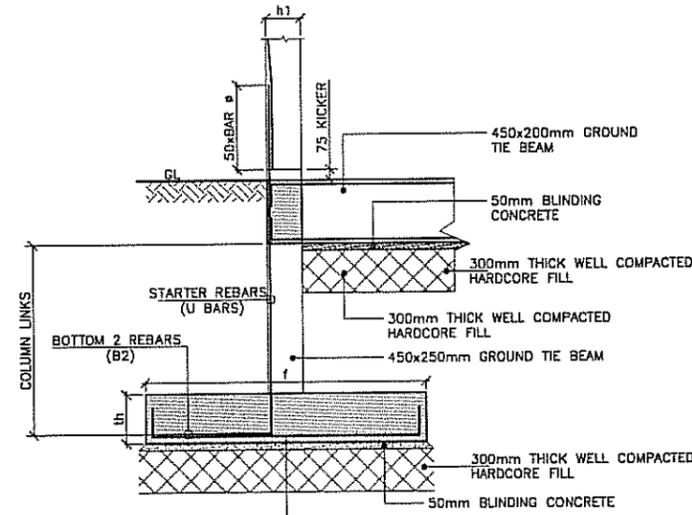
SECTION 1-1
SCALE 1:50



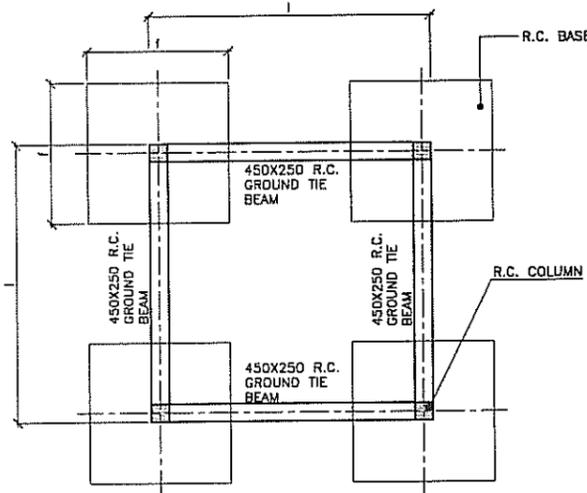
DETAIL 'A'
SCALE 1:25



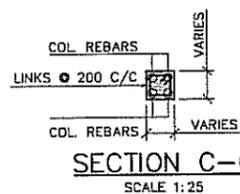
DETAIL 'B'
SCALE 1:25



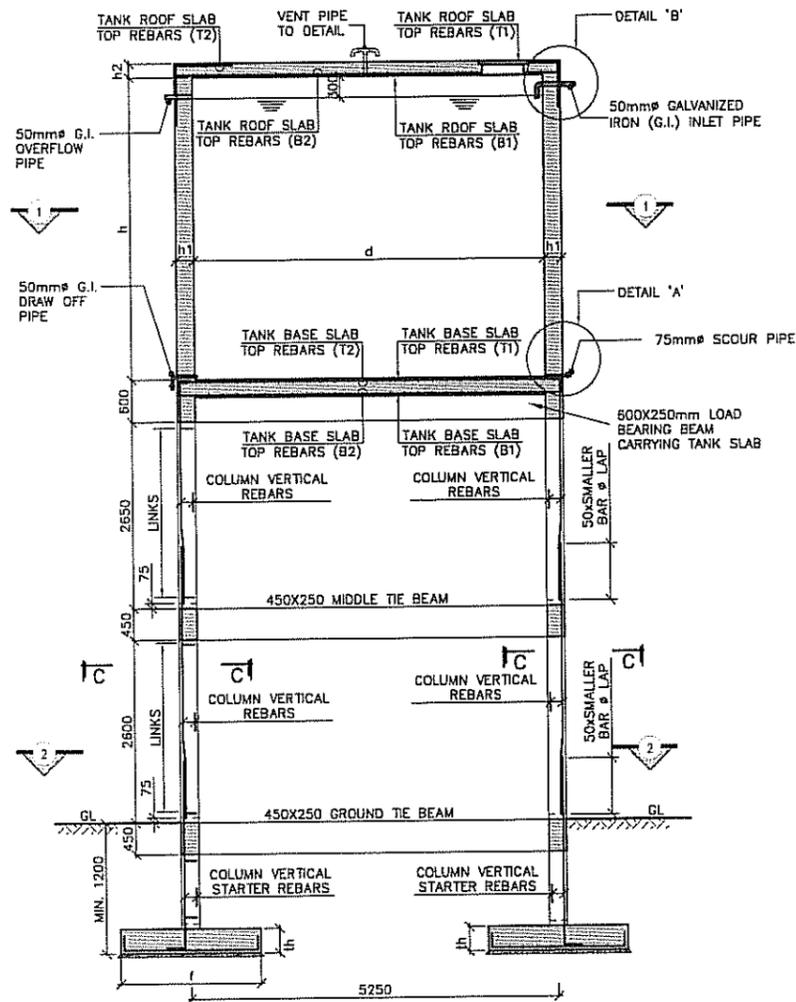
FOUNDATION DETAILS
SCALE 1:25



SECTION 3-3
SCALE 1:50



SECTION C-C
SCALE 1:25



ELEVATED WATER TOWER - SECTIONAL ELEVATION
SCALE 1:50

DIMENSIONS	TANK SIZE				
	20m ³	25m ³	50m ³	60m ³	75m ³
Column Size	250x250mm	250x250mm	300x300mm	350x350mm	350x350mm
d	3400	3800	4900	4900	5500
h	2200	2200	2700	3200	3200
h1	150	150	200	250	250
h2	150	150	200	200	250
f	1200	1200	1600	2000	2000
th	250	250	300	350	350
L	4750	5150	6650	7100	7700

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE
- FREAD THIS DRAWING TOGETHER WITH DRAWING No. USOM/C/D/013 (ELEVATED CONCRETE STORAGE TANKS BAR BENDING SCHEDULE).
- CONSTRUCTION JOINT WHERE APPLICABLE SHALL HAVE 200mm WIDE PVC WATER BAR.
- REINFORCED CONCRETE FOR WATER TANK SHALL BE CLASS 30/20 (1:1:2).
- THE CONTRACTOR SHALL ENSURE WATER TIGHTNESS OF THE TANK BY USE OF VANDEX, SIKA OR EQUIVALENT APPROVED WATER PROOF ADMIXTURE ON WALLS AND BASE SLAB TO MANUFACTURER'S DETAIL.
- FOUNDATION FOR THE TANK SUBSTRUCTURES HAVE BEEN SIZED FOR A BEARING CAPACITY OF 350KN/m² (HARD NONFRACTURED MURRAM OR HIGHER)
- FOR ACCESS LADDER DETAILS REFER TO DRAWING No. USOM/C/D/032 & 033 (TYPICAL CAT LADDER DETAILS)
- THE WASHOUT POURING TO BE DIRECTED TO A CHAMBER AWAY FROM THE TANK FOUNDATION TO PREVENT SCOURING/EROSION

FINAL ISSUE

Signed: SLM/DOO

REV	REVISIONS	SIGN	DATE	APPROVED
	BY CHECKED			
	STAKEHOLDER'S COMMENTS INCORPORATED	BY SHN	JAN/11	0130 23/3/11
P1	CLIENT'S COMMENTS INCORPORATED	BY PUN	OCT/10	
P0	PRELIMINARY	CHECKED LKH	MAY/10	

Client
 UNICEF - SOMALIA SUPPORT CENTRE

Project
 PREPARATION OF STANDARD DETAILS MANUAL FOR WATER SUPPLY AND SANITATION FACILITIES IN SOMALIA

Civil/Structural Engineers
 Howard Humphreys (EA) Ltd Consulting Engineers.
 HOWARD HUMPHREYS HOUSE
 WINDINGAR DRIVE
 P.O. Box 30156-00100, NAIROBI
 Phone 4442254/5, 4441835
 Fax 4440229

Drawing Title
 6m HIGHELEVATED CONCRETE STORAGE TANKS R.C. DETAILS
 SHEET 2 OF 3

Designed by MKG	Drawn by LKM
Checked by AKS	Approved by 0130 23/3/11
Scale As Shown (A1Size)	Date MAY 2010
Job No. 1.0335	ACAD File: C-D-012-P1
P STATUS DRAWING No. USOM/C/D/012	P1 REV

20m ³ TANK							
BAR BENDING SCHEDULE							
MEMBER	TYPE & SIZE	SHAPE CODE	A	B	C	D	COMMENTS
BASES	Y12		150	1100	150		B1 & B2 @ 200 C/C
COLUMNS	Y8		205	205			COLUMN LINKS @ 150 C/C
	Y12		250	1800			COLUMNS STARTER REBAR
	Y12		600	300	2750		COLUMNS VERTICAL REBARS
TIE BEAMS	Y12		600	300	2245	150	COLUMNS VERTICAL REBARS
	Y8		405	205			BEAMS LINKS @ 200 C/C
	Y12		150	4690	150		TOP BEAM REBAR
LOAD BEARING BEAMS	Y16		150	4690	150		BOTTOM BEAM REBAR
	Y8		555	205			BEAMS LINKS @ 200 C/C
	Y12		150	4690	150		TOP BEAM REBAR
TANK FLOOR SLAB	Y10		100	MAX. 3660	100		B1,B2/T1,T2 @ 200 C/C
TANK WALLS	Y10		700	110	700		WALL STARTER REBAR (U BAR) @ 200 C/C
	Y10		100	2255			NF1/FF1 (VERTICAL REBAR) @ 200 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				
TANK ROOF SLAB	Y10		100	MAX. 3660	100		B1/B2 @ 200 C/C
	Y10		200	850			T1 @ 200 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				

50m ³ TANK							
BAR BENDING SCHEDULE							
MEMBER	TYPE & SIZE	SHAPE CODE	A	B	C	D	COMMENTS
BASES	Y12		150	1500	150		B1 & B2 @ 200 C/C
COLUMNS	Y8		255	255			COLUMN LINKS @ 150 C/C
	Y12		250	1800			COLUMNS STARTER REBAR
	Y12		600	300	2750		COLUMNS VERTICAL REBARS
TIE BEAMS	Y12		600	300	2245	150	COLUMNS VERTICAL REBARS
	Y8		405	205			BEAMS LINKS @ 200 C/C
	Y12		150	6590	150		TOP BEAM REBAR
LOAD BEARING BEAMS	Y16		150	6590	150		BOTTOM BEAM REBAR
	Y8		555	205			BEAMS LINKS @ 200 C/C
	Y12		150	6590	150		TOP BEAM REBAR
TANK FLOOR SLAB	Y12		100	MAX. 5160	100		B1,B2/T1,T2 @ 200 C/C
TANK WALLS	Y12		800	160	800		WALL STARTER REBAR (U BAR) @ 100 C/C
	Y12		600	300	1905	150	NF1/FF1 (VERTICAL REBAR) @ 100 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				
TANK ROOF SLAB	Y12		100	MAX. 5160	100		B1 @ 200 C/C
	Y10		100	MAX. 5160	100		B2 @ 200 C/C
	Y12		200	800			T1 @ 200 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				

75m ³ TANK							
BAR BENDING SCHEDULE							
MEMBER	TYPE & SIZE	SHAPE CODE	A	B	C	D	COMMENTS
BASES	Y12		150	1900	150		B1 & B2 @ 200 C/C
COLUMNS	Y8		305	305			COLUMN LINKS @ 190 C/C
	Y16		250	2000			COLUMNS STARTER REBAR
	Y16		800	300	2750		COLUMNS VERTICAL REBARS
TIE BEAMS	Y16		800	300	2045	150	COLUMNS VERTICAL REBARS
	Y8		405	205			BEAMS LINKS @ 200 C/C
	Y12		150	7640	150		TOP BEAM REBAR
LOAD BEARING BEAMS	Y16		150	7640	150		BOTTOM BEAM REBAR
	Y8		555	205			BEAMS LINKS @ 200 C/C
	Y12		150	7640	150		TOP BEAM REBAR
TANK FLOOR SLAB	Y12		100	MAX. 5760	100		B1,B2/T1,T2 @ 200 C/C
TANK WALLS	Y16		900	210	900		WALL STARTER REBAR (U BAR) @ 125 C/C
	Y16		800	300	2205	150	NF1/FF1 (VERTICAL REBAR) @ 125 C/C
	Y12		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				
TANK ROOF SLAB	Y12		100	MAX. 5760	100		B1 @ 150 C/C
	Y10		100	MAX. 5760	100		B2 @ 175 C/C
	Y12		200	750			T1 @ 150 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				

25m ³ TANK							
BAR BENDING SCHEDULE							
MEMBER	TYPE & SIZE	SHAPE CODE	A	B	C	D	COMMENTS
BASES	Y12		150	1100	150		B1 & B2 @ 200 C/C
COLUMNS	Y8		205	205			COLUMN LINKS @ 150 C/C
	Y12		250	1800			COLUMNS STARTER REBAR
	Y12		600	300	2750		COLUMNS VERTICAL REBARS
TIE BEAMS	Y12		600	300	2245	150	COLUMNS VERTICAL REBARS
	Y8		405	205			BEAMS LINKS @ 200 C/C
	Y12		150	5090	150		TOP BEAM REBAR
LOAD BEARING BEAMS	Y16		150	5090	150		BOTTOM BEAM REBAR
	Y8		555	205			BEAMS LINKS @ 200 C/C
	Y12		150	5090	150		TOP BEAM REBAR
TANK FLOOR SLAB	Y10		100	MAX. 4060	100		B1,B2/T1,T2 @ 200 C/C
TANK WALLS	Y10		700	110	700		WALL STARTER REBAR (U BAR) @ 200 C/C
	Y10		100	2255			NF1/FF1 (VERTICAL REBAR) @ 200 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				
TANK ROOF SLAB	Y12		100	MAX. 4060	100		B1 @ 200 C/C
	Y10		100	MAX. 4060	100		B2 @ 200 C/C
	Y12		200	750			T1 @ 200 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				

60m ³ TANK							
BAR BENDING SCHEDULE							
MEMBER	TYPE & SIZE	SHAPE CODE	A	B	C	D	COMMENTS
BASES	Y12		150	1900	150		B1 & B2 @ 200 C/C
COLUMNS	Y8		305	305			COLUMN LINKS @ 190 C/C
	Y16		250	2000			COLUMNS STARTER REBAR
	Y16		800	300	2750		COLUMNS VERTICAL REBARS
TIE BEAMS	Y16		800	300	2045	150	COLUMNS VERTICAL REBARS
	Y8		405	205			BEAMS LINKS @ 200 C/C
	Y12		150	7040	150		TOP BEAM REBAR
LOAD BEARING BEAMS	Y16		150	7040	150		BOTTOM BEAM REBAR
	Y8		555	205			BEAMS LINKS @ 200 C/C
	Y12		150	7040	150		TOP BEAM REBAR
TANK FLOOR SLAB	Y12		100	MAX. 5160	100		B1,B2/T1,T2 @ 200 C/C
TANK WALLS	Y16		900	210	900		WALL STARTER REBAR (U BAR) @ 125 C/C
	Y16		800	300	2205	150	NF1/FF1 (VERTICAL REBAR) @ 125 C/C
	Y12		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				
TANK ROOF SLAB	Y12		100	MAX. 5160	100		B1 @ 200 C/C
	Y10		100	MAX. 5160	100		B2 @ 200 C/C
	Y12		200	750			T1 @ 200 C/C
	Y10		CUT AND BEND TO SUIT ON SITE (MIN. LAP 50x BAR DIAMETER)				

NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE
- FREAD THIS DRAWING TOGETHER WITH DRAWINGS No. USOM/C/D/012 (ELEVATED CONCRETE STORAGE TANKS R.C. DETAILS).
- CONSTRUCTION JOINT WHERE APPLICABLE SHALL BE 200mm WIDE PVC WATER BAR.
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- THE WASHOUT POURING TO BE DIRECTED TO A CHAMBER AWAY FROM THE TANK FOUNDATION TO PREVENT SCOURING/ER

FINAL ISSUE
Signed: SLM/DOO

REV	REVISIONS	SIGN	DATE	APPROVED
	BY			
	CHECKED			
P2	STAKEHOLDER'S COMMENTS INCORPORATED	BY SHH	JUL'11	2/50
	CHECKED	AKB	22/7	23/11
P1	CLIENT'S COMMENTS INCORPORATED	BY PMW	OCT'10	
	CHECKED			
P0	PRELIMINARY	CHECKED	LKM	MAY'10

Client
 UNICEF - SOMALIA SUPPORT CENTRE

Project
PREPARATION OF STANDARD DETAILS MANUAL FOR WATER SUPPLY AND SANITATION FACILITIES IN SOMALIA

Civil/Structural Engineers
 Howard Humphreys(EA) Ltd Consulting Engineers.
HOWARD HUMPHREYS HOUSE
WINDHARER DRIVE
P.O. Box 30156-00100, NAIROBI
Phone 4443251/5, 4441835
Fax 4440239

Drawing Title
6m HIGH ELEVATED CONCRETE STORAGE TANKS BAR BENDING SCHEDULE SHEET 3 OF 3

Designed by MKG	Drawn by LKM
Checked by AKB	Approved by
Scale As Shown (A1Size)	Date MAY 2010
Job No. 1.0335	ACAD File: C-D-013-P2
P STATUS	DRAWING No. USOM/C/D/013 P1 REV