

When replying please quote: AWSB/NARSIP II/W-03/2020 VOL I (06) PE-hto

11th September, 2020

To All Bidders;

**RE: NAIROBI RIVERS BASIN REHABILITATION AND RESTORATION
PROGRAM**

**CONSTRUCTION OF MWIKI AND CLAY WORKS RETICULATION
SEWERS: IFB NO. AWWDA/NaRSIP II/W-03/2020**

CLARIFICATIONS TO ISSUED BIDDING DOCUMENT

Reference is made to the ongoing procurement of works for Lot 3-Construction of Mwiki and Clay Works Reticulation Sewers, Contract No. AWWDA/NaRSIP II/W-03/2020, under the Nairobi Rivers Basin Rehabilitation and Restoration Program Phase II (NaRSIP II).

Pursuant to clause No. 7 of section I: Instructions to Bidders, please find hereby attached responses to clarifications as received by 8th September, 2020.

Please note that the bid submission date remains on 22nd September, 2020 at 12.00 p.m. East African Time.



**ENG. MICHAEL M. THUITA,
CHIEF EXECUTIVE OFFICER.**

Encl;

1. Response to bidding document Clarifications.
2. Revised Form of Bid Security (Bank Guarantee).
3. Corrected bill no.7A(item D462), 8F(item1.11), 8C(totals), 9A(item 9A.8)
4. Standard Manhole and inspection chamber Drawings.



**MINISTRY OF WATER, SANITATION AND IRRIGATION
NAIROBI RIVERS SEWERAGE IMPROVEMENT PROGRAM (PHASE II)
ATHI WATER WORKS DEVELOPMENT AGENCY (AWWDA)**

**LOT 3 - CONSTRUCTION OF MWIKI AND CLAY WORKS RETICULATION SEWERS
IFB NO. AWWDA/NaRSIP II/W-03/2020**

Response to clarification requested by Bidders;

NO.	Reference Section/ Volume	Bidder's Question	AWWDA Response
1	Section I. Instruction to Bidders 19.8	Can the lead party of the joint venture (JV) provide the bid security individually and to use the lead party's name instead of the name of the JV. Or, each party shall provide its own bid security in accordance with the proportion specified in the JV agreement and each bid security name will be their company's own name	No. The Bid Security or the Bid Securing Declaration of a JVCA shall be in the name of the JVCA that submits the bid. If the JVCA has not been legally constituted into a legally enforceable JVCA at the time of bidding, the Bid Security or the Bid Securing Declaration shall be in the names of all future partners as named in the letter of intent referred to in ITB 4.1
2	Section IV. Bidding Forms - Form of Bid Security (Bank Guarantee)	We are requesting for the clarification on the bid security format for the captioned project. We are advised by the Bank that the "ICC Publication No.458" shall be changed to "ICC Publication No.758" in the last paragraph of the bid security, since it can only be accepted with the latter one in the bank system.	Please see attached revised and initialed Form of Bid Security (Bank Guarantee) changing "ICC Publication No.458" to "ICC Publication No.758"
3	Contract Document- Drawing	Q. Provide drawings for the manholes and Masonry Inspection Chambers.	Please see attached standard drawings for manholes and Masonry Inspection Chambers



		Q. Because of the drawings? Could you please extend the period for the deadline? We will be very appreciated.	Please note that the last date for submission of bids remains 22nd September 2020; at 12.00pm East African Time
4	Contract Document-BoQ	We draw your attention to the BQs of Lot 3: Construction of Mwiki & Clay Works Reticulation Sewers. We noticed that Bill No. 7C and Bill No. 8B are exactly the same. Q. Kindly clarify whether it's a mistake or not.	It is not a mistake. The bidders are required to insert rates for both the bills
		Bill No. 2 item K166 Q. There is no difference between Item K166 and K156, is the bidder to assume that the manhole described in item K166 is similar to item K156 of type B size 1200mm with reinforced concrete manhole slab and cover	K156 refers to Manhole type B, size 1200mm, reinforced concrete manhole slab and cover. Whereas, K166 refers to Manhole type B, size 1200mm, reinforced concrete manhole slab and cover <u>WITH BACKDROP.</u>
		Bill No. 8F item no. 1.11 Q. No quantity indicated	The quantity for Bill. No. 8F item 1.11 is 40m³ See attached revised bill no. 8F to include quantity for Bill 8F item 1.11
		Bill No. 9A item no. 9A.8 Q. The description is only indicated as engineer. Kindly elaborate on the description	Item no.9A.8 should read '<i>Provide and place Structural Reinforced Concrete Grade 25/20 in members as directed by the Engineer</i>' See attached revised bill no. 9A elaborating item 9A.8 description.
		Bill No. 8C Total Q. Should total of bill 8C, carried forward to Bill 8D be multiplied by 2 to indicated the 2 units for the One bedroom	Yes. See attached revised bill no. 8C highlighted totals indicating totals of 8C should be multiplied by 2 before carried forward to 8D



		Bill No. 9D-Drilling of Boreholes Q. There is no provision for setting up and dismantling of the rig	Note that the boreholes will be undertaken within the project area. As such, the mobilization and demobilization cost should be factored in bill no. 1 Preliminaries and general items for all the works.
		Bill No. 9D item no. 210 Q. if the casing is 8" then the borehole cap cannot be 8" but 10". Kindly advise	Please note the item 210 description which states <i>'Supply and fix 8" borehole steel cap.'</i> This means that you will be required to supply and fix borehole steel cap for an 8" cased borehole
		Bill No. 9D item no. 211 Q. the surface casing is supposed to be thinner than drilling diameter. Therefore, if the drilling diameter is 254mm (10"), the surface casing should be wider than 10" and also the reaming of the surface.	Please note the item 211 description which states <i>'Supply and fix 10" surface casing.'</i> This means that you will be required to supply and fix surface casing for 10" bore borehole

Form of Bid Security (Bank Guarantee)

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

BID GUARANTEE No.: _____

We have been informed that _____ [name of the Bidder] (hereinafter called "the Bidder") has submitted to you its bid dated _____ (hereinafter called "the Bid") for the execution of _____ [name of contract] under Invitation for Bids No. _____ ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Employer, we _____ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures] (_____) [amount in words] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) _____ has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- (b) _____ having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the performance security, in accordance with **ITB 38**.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

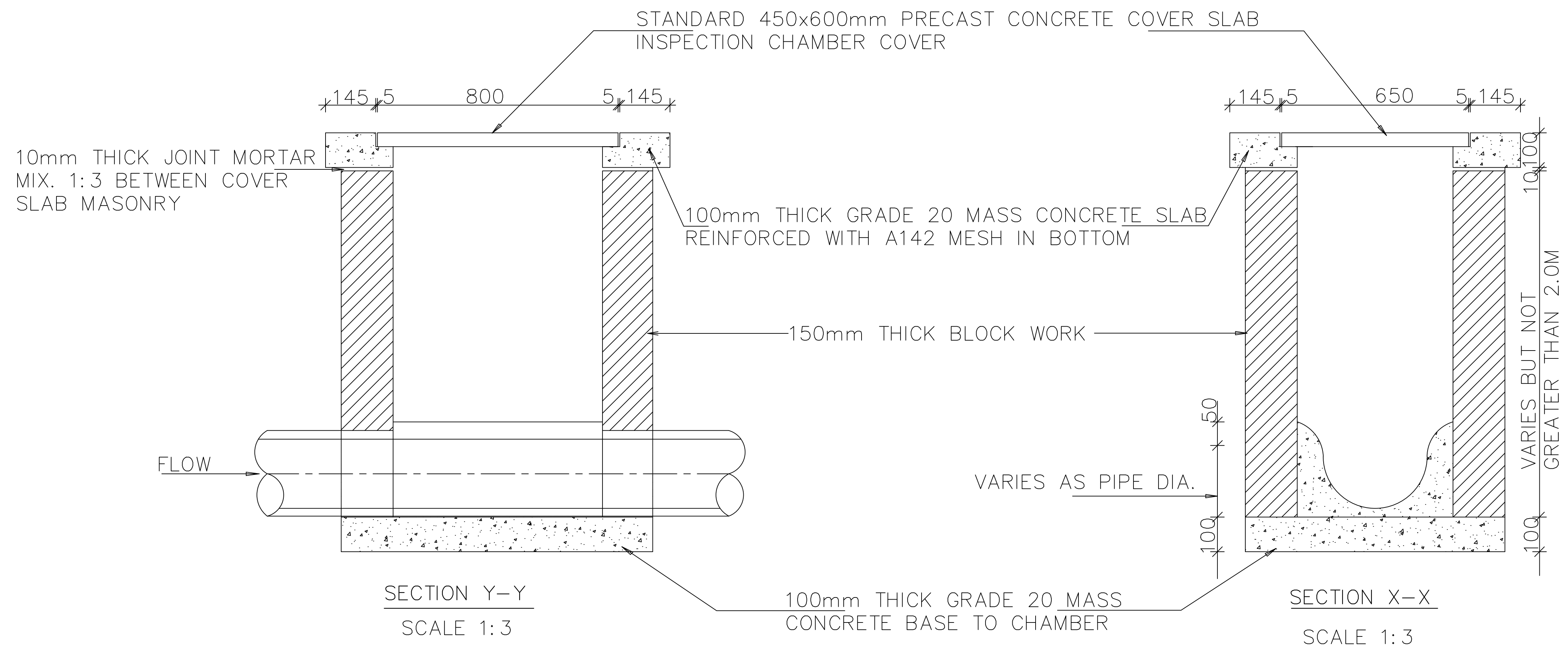
[Signature]

BILL NO. 7A: DN600mm EMBAKASI NORTH TRUNK SEWER					
Item No	Description	Unit	Quantity	Rate (KSh.)	Amount (KShs)
	CLASS A - GENERAL ITEMS				
	Testing of the Works				
A260	Carrying out test on 900mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	5,300.00		
	CLASS B - SITE INVESTIGATION				
B111	Trial holes where ordered to prove location, construction size etc, of pipelines, services or existing structures, max depth ne 1m	nr	2.00		
B112	Trial holes where ordered to prove location, construction size etc, of pipelines, services or existing structures, max depth 1-2m	nr	2.00		
B113	Trial holes where ordered to prove location, construction size etc, of pipelines, services or existing structures, max depth 2-3m	nr	2.00		
B114	construction size etc, of pipelines, services or Trial holes where ordered to prove location, existing structures, max depth 3-5m (Provisional)	nr	2.00		
	CLASS D - DEMOLITION AND SITE CLEARANCE				
D1	General clearance, 1.5m on either side of the centreline of the sewer line route where applicable.	ha	15.90		
D462	Buildings of indeterminate construction Volume not exceeding 50-100m3	nr	2.00		
D561	Other structures of indeterminate construction Volume not exceeding 50m3	nr	3.00		
	CLASS I: PIPEWORK - PIPES				
	PRECAST CONCRETE PIPES TO BS 5911 WITH SPIGOT AND SOCKET FLEXIBLE JOINTS				
I2*	Provision for supply, laying and jointing rigid joint socket & spigot concrete pipes to BS 5911 (or jacking pipes to EU Standards). Rate to include excavation and backfilling of excavations, preparation of excavation surfaces; upholding sides of the excavation, disposal of excess excavated material, removal of dead services.				
I258	Nominal bore 900mm				
I 233	Depth 1.5m - 2.0m	m	851.00		
I 234	Depth 2.0m - 2.5m	m	569.00		
I 235	Depth 2.5m - 3.0m	m	801.00		
I 236	Depth 3.0m - 3.5m	m	885.00		
I 237	Depth 3.5m - 4.0m	m	963.00		
I 238	Depth >4.0m	m	642.00		
I458	Supply, Joint and lay to grade and level DN900 epoxy coated, mortar lined double flanged steel pipes.	m	589.00		
	CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES				
	Provision for supply erecting and installation of pre-cast concrete ring manholes and backdrops (where applicable) to BS 5911. Rate to include excavation to inverts, for preparation of excavation surfaces; upholding sides of the excavation, disposal of excess excavated material, removal of dead services. Rate to include installation of precast concrete manhole cover slabs, triangular cast				
K1*	Manholes Manhole type B, size 1500mm, reinforced concrete manhole slab and cover.				
K 152	Ditto- but depth 1.5m - 2.0m	nr	32.00		
K 153	Ditto- but depth 2.0m - 2.5m	nr	21.00		
K 154	Ditto- but depth 2.5m - 3.0m	nr	33.00		
K 155	Ditto- but depth 3.0m - 3.5m	nr	30.00		
K 156	Ditto- but depth 3.5m - 4.0m	nr	38.00		
K 157	Ditto- but depth >4.0m	nr	21.00		
	Manhole type B, size 1500mm, reinforced concrete manhole slab and cover with backdrop.				
K 166	Ditto- but depth 3.5m - 4.0m	nr	6.00		
K 167	Ditto- but depth >4.0m	nr	8.00		
	Total C/F to Next Page				

BILL NO. 8C: ONE BED ROOM HOUSES, 2No.					
ITEM	DESCRIPTION	UNIT	QTY	RATE (KShs)	AMOUNT
	Total B/F From Previous Page				1,318,837.62
	<u>piped building services</u>				
	Rate to include supplying of materials/fittings/fixing, testing and commissioning				
Z519.1	Services water tank of capacity 500L	nr	1	16,788	
Z519.2	water supply internal plumbing services including all fittings, and fixtures within the house up to the water meter/ valve chamber	sum	1	111,920	
Z519.3	Waste water internal plumbing services including all fittings and fixtures up to the inspection chambers and associated pipework.	sum	1	106,324	
Z530.1	Twyford's equivalent glazed ceramic with WC suite complete, wash hand basin complete, bath tub complete, bowl urinal complete with automatic cistern (1 person) recessed toilet paper roll holder, recessed soap dish and soap dispenser.	nr	1	55,960	
Z530.2	Twyford Hindustan, " Low level WC suite, comprising Vitreous China pan with 'P' taps, 2 gallon plastic cistern, soap dispenser and hand drier.	nr	1	83,940	
	TOTAL FOR 1 NO. ONE BEDROOM HOUSE				
	TOTAL FOR 2 NO. ONE BEDROOM HOUSE			2	
	BILL 8C TOTAL FOR 2 NO. ONE BEDROOM HOUSE CARRIED TO SUMMARY				

BILL 8F ABLUTION BLOCK					
ITEM No.	DESCRIPTION	UNIT	QUANTITY	RATE (KShs.)	AMOUNT
1	SUBSTRUCTURES SITE CLEARANCE & TOP SOIL STRIPPING				
1.1	Clear area around the site of all grass, bushes, shrubs, hedges, grub up roots and cart away to tips as directed by the Engineer	m ²	225		
1.2	Cut down trees, grub up roots and burn debris. Girth n.e. 1.2m (Provisional)	nr	1		
1.3	Excavate over site for buildings, roads, etc.average 150mm deep to remove vegetable soil and stack part of material for use as and where directed by the Engineer, cart away surplus to tips	m ²	225		
	EXCAVATION The rates shall include for all strutting, shuttering, stabilising the excavation faces, and keeping the excavation free of water by pumping, bailing or other means Excavate below stripped level to formation level in common				
1.4	material, part backfill after construction and remainder, cart away to tips or use as fill on site, all as directed by the Engineer. Maximum	m ³	10		
1.5	-Ditto- but maximum depth 1.0 m to 2.0 m	m ³	10		
1.6	-Ditto- but maximum depth 2.0 m to 3.0 m	m ³	10		
	Extra Over Excavation in any Position For:- (Provisional)				
1.7	Excavating in rock Class "A"	m ³	1		
1.8	Excavating in rock Class "B"	m ³	1		
1.9	Excavating in rock Class "C"	m ³	8		
	Approved Selected Filling as Described:- Fill and ram selected excavated materials inside the existing pit	m ³	25		
	Approved Hardcore Filling as Described:- Provide and deposit approved imported hardcore in maximum 150mm thick layers in making up levels including achieving satisfactory compaction	m ³	40		
1.11	Provide, lay and level out fine crushed stone, sand or gravel	m ³	75		
1.12	blinding 50mm thick to surface of filling, including watering and rolling to achieve satisfactory compaction	m ³	35		
1.13	Cart away surplus excavated materials to an approved dumping site	m ³			
	Anti-Termite Treatment Chemical anti-termite treatment to surface of filling with an approved insecticide	m ²	75		
1.14					
	Damp-proof Membrane 500 Gauge polythene sheeting, laid over hardcore	m ²	75		
1.15					
	Disposal of Surplus Spoil:- Concrete Work: Mass Concrete Class 15/20mm Maximum Aggregate as Described in:-				
1.16	50mm Thick blinding under foundation concrete, column bases or over hardcore	m ²	75		
	Guaranteed Strength Reinforced Concrete Class 25/20mm Maximum Aggregate as Described in:-				
1.17	Foundation trenches, column bases and entrance steps	m ³	10		
1.18	150mm Thick surface bed	m ²	75		
1.19	150mm Thick ramp laid to slope not exceeding 15 degrees from horizontal at entrance	m ²	10		
1.20	Extra over concrete for tamping whilst still green to make ribbed	m ²	10		
	Guaranteed Strength Reinforced Concrete Class 25/20mm Maximum aggregate as Described in:- Isolated columns and piers in foundations	m ³	3		
PAGE TOTAL CARRIED FORWARD TO NEXT PAGE					

BILL No. 9A Nairobi North Miscellaneous Works					
Item No	Description	Unit	Quantity	Rate (KSh.)	Amount (KShs)
	Fencing				
	Earthworks				
9A.1	General site clearance through undeveloped land over the wayleave, include for any additional clearance required	ha	2		
9A.2	Removal of trees, girth 0.5-1m	nr	5		
9A.3	Excavate foundation for Trenches in soft material, as directed by the Engineer.				
	Depth: n.e. 1.5 m	m ³	1,800		
	1.5 - 2.0 m	m ³	190		
	2.0 - 2.5 m	m ³	130		
	2.5 - 3.0 m	m ³	650		
	Extras to Excavation and Backfilling Trenches (Note: Blasting not allowed for any rock excavation)				
9A.4	Excavation of Rock				
	Depth: n.e. 3.0 m	m ³	1,200		
	Reinstatement				
9A.6	Breaking up, temporary and permanent reinstatement of murram roads	m	150		
	Concrete works				
9A.7	Provide and place Mass Concrete Grade 15/20 in 150mm Thick Blinding	m ³	300		
9A.8	Provide and place Structural Reinforced Concrete Grade 25/20 in members as directed by the	m ³	1,280		
	Block Works				
9A.9	Provide and place natural stones 225mm wide with cement motor and whoop iron every alternate course as directed by the Engineer.	m ²	5,000		
9A.10	Provide and place machine cut stones 225mm wide with cement motor and whoop iron every alternate course as directed by the Engineer.	m ²	25,000		
	Cut off Drain Works				
9A.12	Clear the route of vegetation boulders and loose material to firm ground level.	m	2000		
9A.14	Excavate in all natural material to the slopes and levels as directed by the Engineer				
	Depth: n.e. 1.5 m	m ³	1,900		
	1.5 - 2.0 m	m ³	2,210		
	2.0 - 2.5 m	m ³	1,510		
	2.5 - 3.0 m	m ³	980		
	Extras to Excavation and Backfilling Trenches (Note: Blasting not allowed for any rock excavation)				
9A.15	Excavation of Rock				
	Depth: n.e. 3.0 m	m ³	3,000		
	Reinstatement				
9A.16	Fill with selected material and compact to 100% maximum dry density(mdd)	m ³	500		
	Concrete works				
9A.18	Provide and fix fair faced form work to the channel	m ²	2,200		
9A.19	Provide and place Mass Concrete Grade 15/20 in 150mm Thick Blinding	m ³	100		
9A.20	Provide, place and compact Reinforced Concrete Grade 25/20 for channel as directed by the Engineer	m ³	900		
9A.21	Provide and place pre-cast concrete culverts 450mm diameter	m	20		
9A.22	Provide and place gabion mattress 300mm thick in the erodible areas	m ²	500		
	Spillway				
	Earthworks				
9A.11	General site clearance through undeveloped land over the wayleave, include for any additional clearance required	ha	1		
9A.14	Excavate in all natural material to the slopes and levels as directed by the Engineer				
	Depth: n.e. 1.5 m	m ³	800		
	1.5 - 2.0 m	m ³	1,232		
	2.0 - 2.5 m	m ³	1,635		
	2.5 - 3.0 m	m ³	700		
	Extras to Excavation and Backfilling Trenches (Note: Blasting not allowed for any rock excavation)				
9A.15	Excavation of Rock				
	Depth: n.e. 3.0 m	m ³	3,000		
	Reinstatement				
9A.16	Fill with selected material and compact to 100% maximum dry density(mdd)	m ³	500		
	Concrete works				
9A.18	Provide and fix fair faced form work to the channel	m ²	2,200		
9A.19	Provide and place Mass Concrete Grade 15/20 in 150mm Thick Blinding	m ³	100		
9A.20	Provide, place and compact Reinforced Concrete Grade 25/20 for channel as directed by the Engineer	m ³	900		
Total C/F to Collection Page					



NOTES

1. ALL DIMENSIONS IN MILLIMETERS.

Reference Drawings						Drawn		Date : MAY. 2017	Designed		Date	 ATHI WATER WORKS DEVELOPMENT AGENCY Africa Re-Centre,Hospital Road,Upper Hill P.O Box 45283-0100 NAIROBI-KENYA	 NAIROBI CITY WATER & SEWERAGE COMPANY (NCW&C) Kampala Road, P.O Box 30656 - 00100, NAIROBI -KENYA.	NARSIP II LOT 3-CONSTRUCTION OF CLAYWORKS AND MWIKI SEWERS			
						Name :		Name :		Drawing Title							
						Checked		Date	Approved		Date			STANDARD INSPECTION CHAMBERS			
B													Scales (A1)		Hor. 1:1000	Drg No.	
A													Vert. 1:100		STD-IC-01		
REV	REVISIONS					Checked	Date	Appr. WD	Name :		Name :						

T12 Ø 150mm C/C

SECTION B - B
SCALE 1:50

SECTION D - D
SCALE 1:50

SECTION E - E
SCALE 1:40

SECTION F - F
SCALE 1:40

NOTES:

- ALL CONCRETE TO BE CLASS 20/20 IN ACCORDANCE WITH THE SPECIFICATION
- uPVC PIPE CUT TO MID DIAMETER INSIDE MANHOLE AS DETAILED.

SECTION A - A
SCALE 1:50

SECTION C - C
SCALE 1:50

Labels for both sections include:
 - CONCRETE CLASS 20/20
 - T12-150 C/C
 - T10-200 C/C
 - STANDARD STEP IRONS STAGGERED AT 300 mm INTERVALS
 - CONCRETE WALL CLASS 20/20
 - 75mm RADIUS
 - BENCHING CLASS 20/20
 - CLASS 20/20 FLOOR SLAB
 - GRADE 'A' HEAVY DUTY SINGLE TRIANGLE HANDLE COVER AND FRAME BEDDED ON 1:3 CEMENT MORTAR
 - CONCRETE CLASS 20/20 MAKE-UP TOP SLAB
 - SLOPE 1:4
 - DIMENSIONS: 125, 2000, 150, 50, 1200, 50

The technical drawings show the cross-sections of the concrete structure for Section G-G and Section H-H.

SECTION G-G
 SCALE: 1:50
 This section shows a cross-section of the structure with a total width of 900mm and a total height of 1000mm. The structure consists of 150mm masonry walls and a concrete core. The concrete core is made of concrete class 20/20 on cement mortar. The walls are made of 150mm masonry walls. The structure is supported by a concrete base. The drawing includes dimensions for the concrete core, the masonry walls, and the overall structure. It also shows the location of the reinforcement bars and the concrete cover to the reinforcement.

SECTION H-H
 SCALE: 1:50
 This section shows a cross-section of the structure with a total width of 900mm and a total height of 1000mm. The structure consists of 150mm masonry walls and a concrete core. The concrete core is made of concrete class 20/20 on cement mortar. The walls are made of 150mm masonry walls. The structure is supported by a concrete base. The drawing includes dimensions for the concrete core, the masonry walls, and the overall structure. It also shows the location of the reinforcement bars and the concrete cover to the reinforcement.

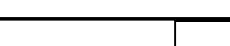
Reference Drawings				Drawn		Date : MAY. 2017		Designed		Date						NARSIP II LOT 3-CONSTRUCTION OF CLAYWORKS AND MWIKI SEWERS			
				Name :				Name :								Drawing Title			
																STANDARD INSPECTION CHAMBERS			
B				Checked		Date		Approved		Date		ATHI WATER WORKS DEVELOPMENT AGENCY Africa Re-Centre, Hospital Road, Upper Hill P.O Box 45283-0100 NAIROBI, KENYA		NAIROBI CITY WATER & SEWERAGE COMPANY (NCW&C) Kampala Road, P.O Box 30656 - 00100, NAIROBI -KENYA.		Scales (A1) Hor. 1:1000 Vert. 1:100		Drg No. STD-M-01	
A								Name :											
REV		REVISIONS				Checked		Date		Appr. WD									

Diagram illustrating a square test specimen with internal layers and dimensions:

- Top Layer:** Labeled "SELECTED FILL FROM EXCAVATED MATERIAL CAREFULLY COMPACTED".
- Bottom Layer:** Labeled "GRANULAR BEDDING CAREFULLY COMPACTED".
- Central Core:** A circular core with a diameter of 300 mm.
- Dimensions:** The overall height of the specimen is 300 mm.
- Other Labels:** "SEE" and "Y" are visible on the left side, and a blue circle is marked on the bottom right corner.

SCALE
(N.T.S)

1. DIMENSION 'Y'
 - IN ROCK OR MIXED SOILS CONTAINING ROCK BANDS BOULDERS OR STONES OR OTHER IRREGULAR HARD SPOTS.
 - Y= 1/4 OD UNDER BARRELS WITH MIN. 150mm (PLUS 12mm PER 300mm OF COVER IN EXCESS OF 4.85m)
 - UNDER BOTH BARRELS AND SOCKETS
 - IN MACHINE DUG UNIFORM SOILS
 - Y= OD UNDER BARRELS WITH MIN. 100mm UNDER BOTH BARRELS AND SOCKETS
2. FOR GRANULAR BED AND SURROUND TO PIPES
 - UNIFORMLY GRADED GRANULAR MATERIAL SUCH AS GRAVEL OR BROKEN STONE TO BE USED. IT SHOULD PASS 12mm SIEVE OR SHALL BE RETAINED ON 5mm SIEVE.
3. TRENCHES MUST BE KEPT TO DESIGN WIDTH

ROAD OR VERGE

FINISHED ROAD OR VERGE LEVEL

FILLING AS SPECIFIED

LESS THAN 1.2m COVER OVER PIPE

BRC No. 142

150

200

300 mm

R.C. CONCRETE RAFT CLASS 15/40

50

50

BEDDING AS SPECIFIED

CONCRETE RAFT TO REST ON A MINIMUM OF 300mm MURRAM OR ROCK ON BOTH SIDES OF THE TRENCH (ANY BLACK COTTON SOIL) AT THIS LEVEL TO BE REPLACED WITH CONCRETE CLASS 15/40

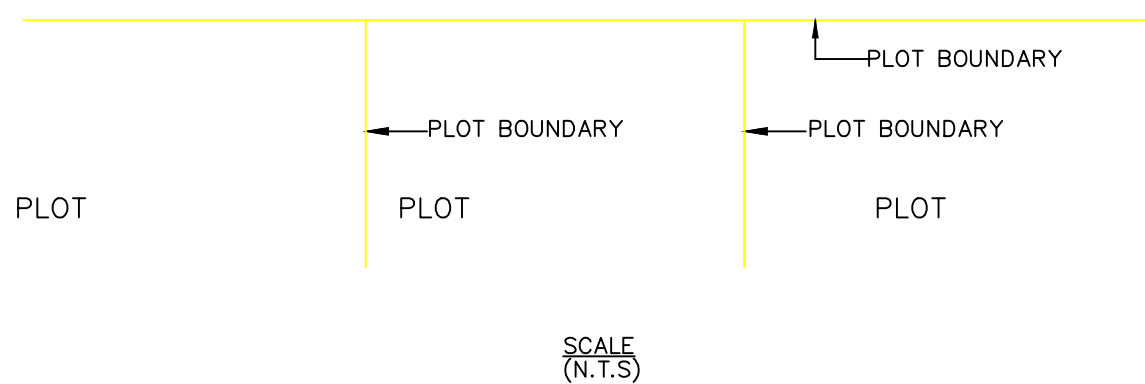
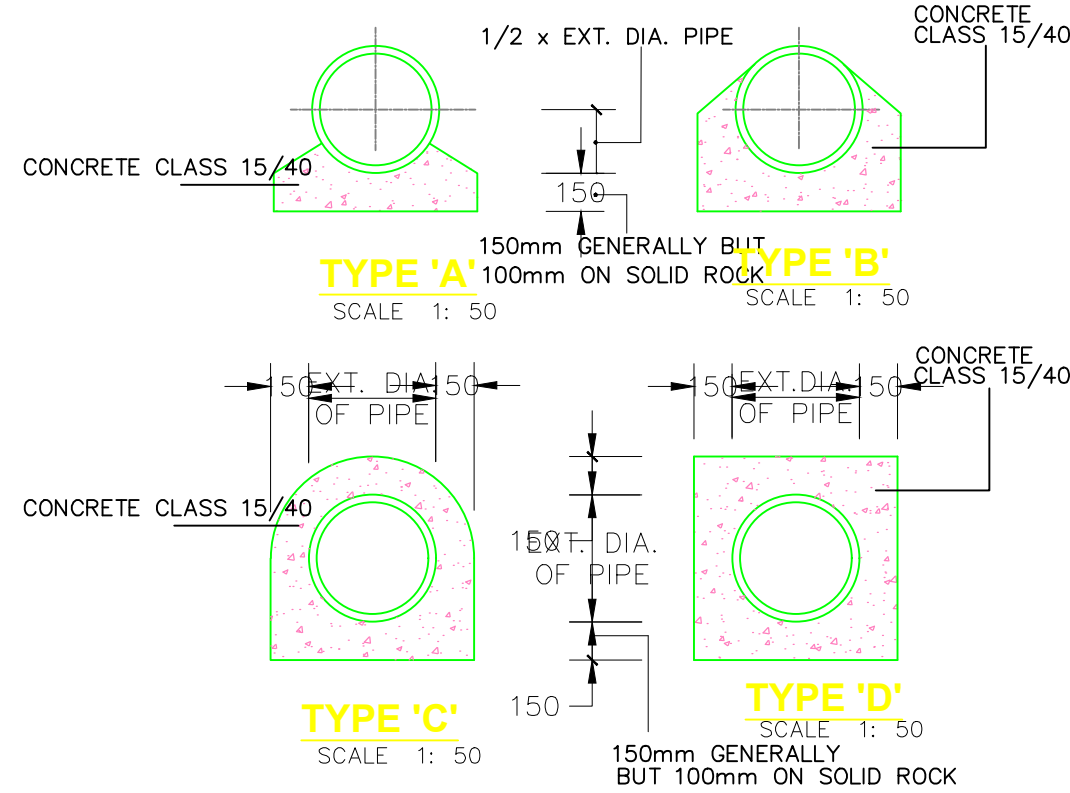
SCALE (N.T.S)

610x460 CAST IRON MANHOLE COVER AND FRAME

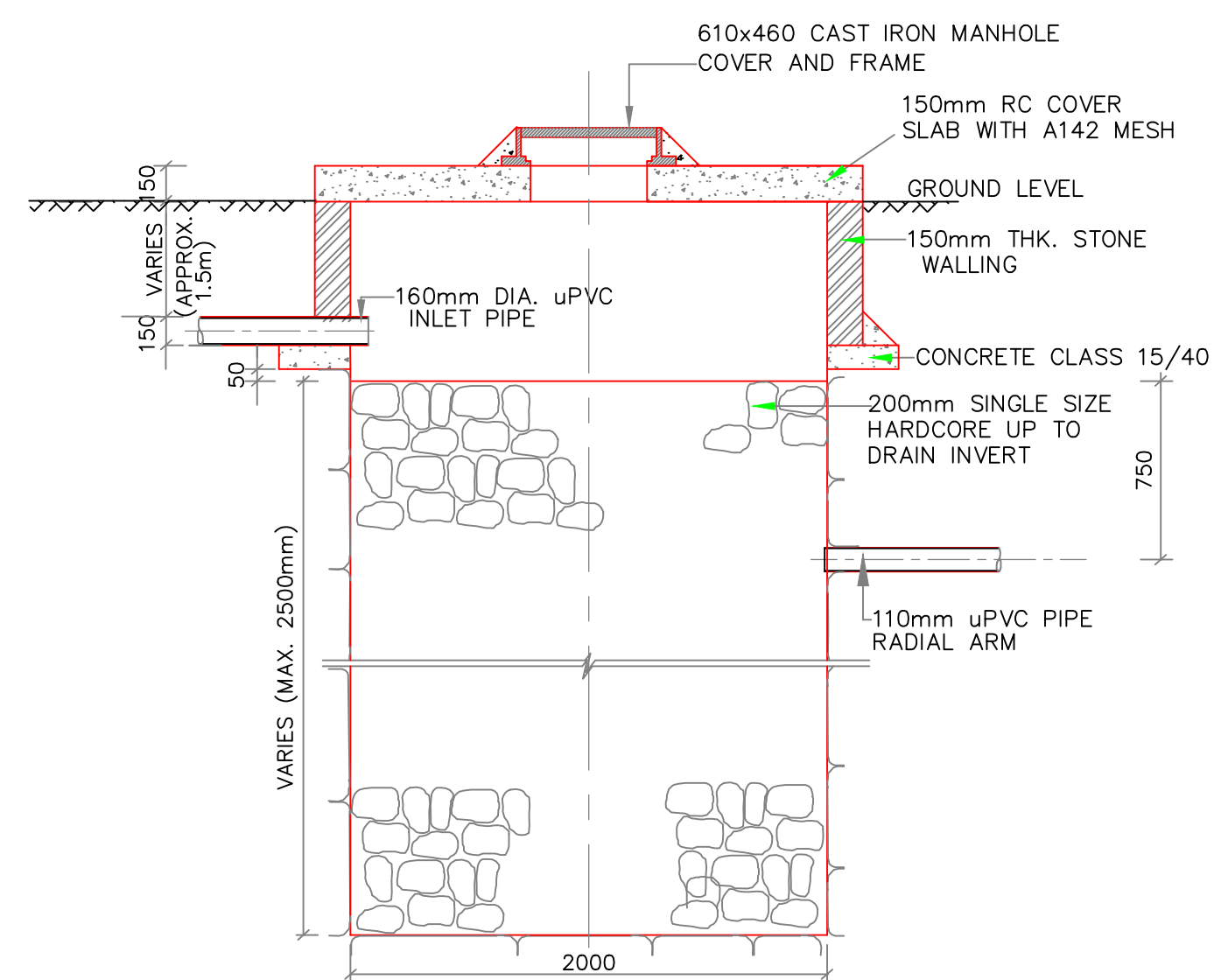
150mm DIA uPVC INLET PIPE

2 Nos 100mm uPVC PIPE RADIAL ARMS 10m LONG WITH 10mm DRAIN HOLES

2000



L - TO BE DETERMINED ON SITE
D - VARIES BETWEEN 160 - 250mm
D1 - 160mm DIA uPVC SEWER PIPE



DEPTH TO THE TOP OF PIPE	PIPE DIAMETER IN mm									
	150	225	300	375	450	525	600	675	750	(>750)
<1.25M IN ROADS <1.00M ELSEWHERE	TYPE 'C'									
<4.00M	TYPE 'A' (CONCRETE BED) MAY BE DELETED AT THE DISCRETION OF THE ENGINEER				TYPE 'B'					
>4.00M	TYPE 'B'									
>6.00M OR IN HEADING	TYPE 'C' OR 'D' AS DIRECTED									

Reference Drawings				Drawn		Date : MAY. 2017		Designed		Date		 ATHI WATER WORKS DEVELOPMENT AGENCY Africa Re-Centre, Hospital Road, Upper Hill P.O Box 45283-0100 NAIROBI-KENYA		 NAIROBI CITY WATER & SEWERAGE COMPANY (NCW&C) Kampala Road, P.O Box 30656 - 00100, NAIROBI -KENYA.		NARSIP II LOT 3-CONSTRUCTION OF CLAYWORKS AND MWIKI SEWERS			
				Name :		Name :		Drawing Title STANDARD INSPECTION CHAMBERS											
				Checked		Date		Approved		Date						Scales (A1) Hor. 1:1000 Vert. 1:100		Drg No. STD-M-02	
				Name :		Name :													
B																			
A																			
REV	REVISIONS			Checked		Date		Appr. WD											

STANDARD LIFTING KEY HOLES

750

550

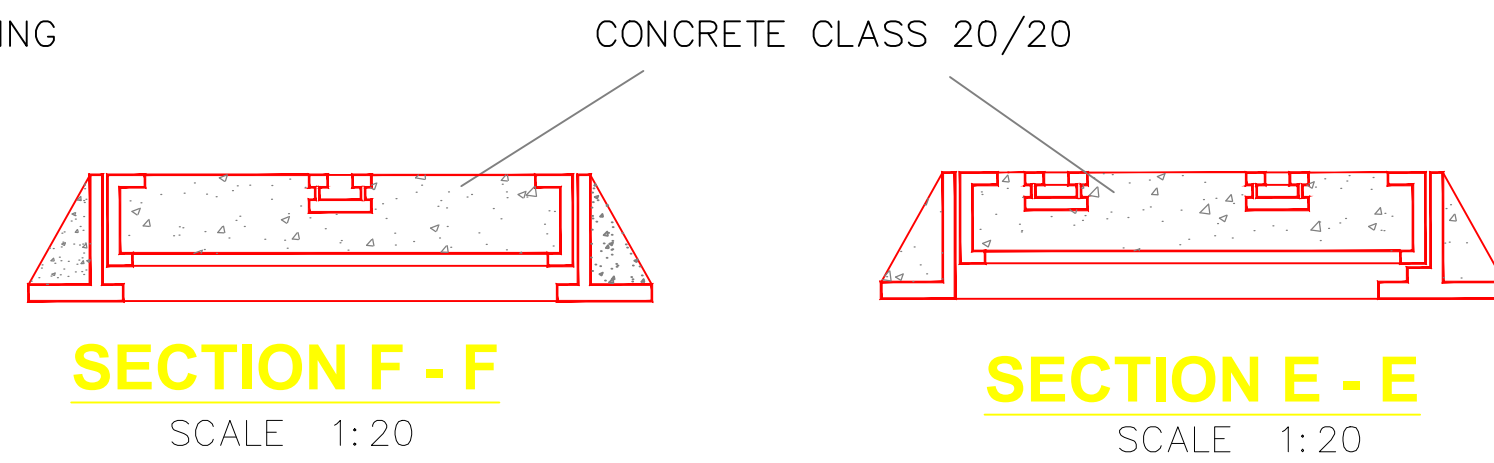
548.50

STANDARD TRIANGULAR HEAVY DUTY FRAME TO B.S. 497

PLAN

SECTION

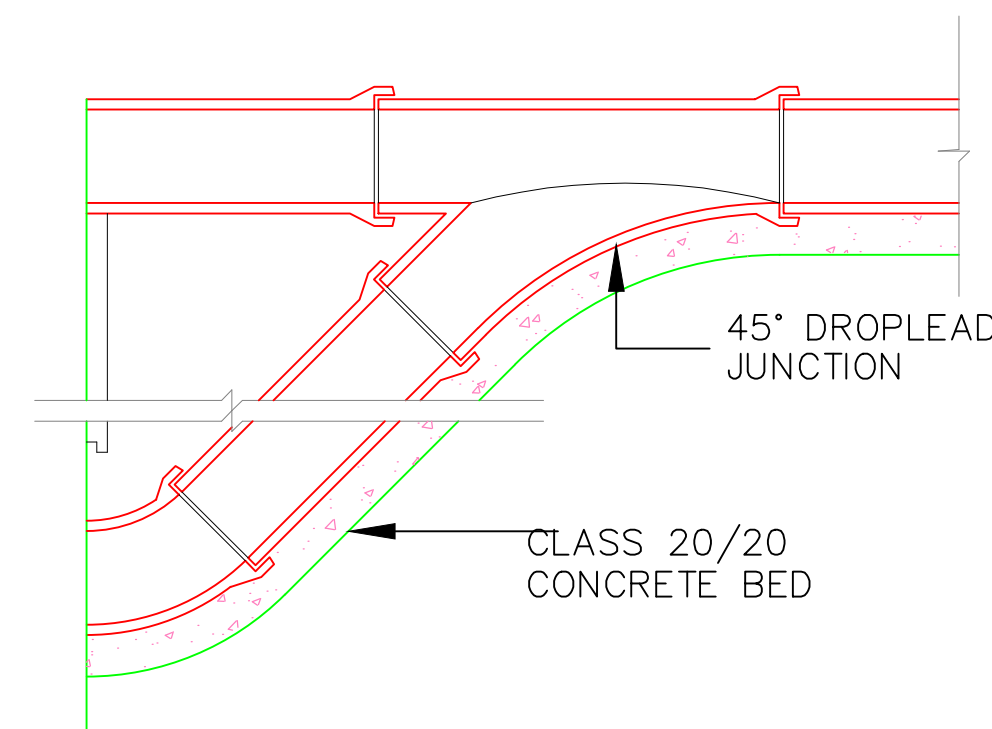
SCALE 1:20



NOTE
COVER FABRICATED FROM 6mm
M.S. PLATE.

Technical drawing of a concrete manhole structure showing dimensions and reinforcement details. The drawing includes the following specifications:

- Overall Dimensions:**
 - Top width: 1100
 - Bottom width: 1200
 - Height from ground level (G.L.) to the top of the structure: 400 MIN.
 - Height from G.L. to the bottom of the structure: 750
 - Height from G.L. to the top of the concrete walling: 125
- Reinforcement Details:**
 - PLASTIC FIBRE REINFORCED COVER:** Indicated by a yellow outline.
 - T12 @ 150mm C/C:** Reinforcement bars in the cover.
 - CONCRETE WALLING CLASS 20/20:** The main structure of the manhole.
 - 40x40x200 HAND HOLD (5 No. EQUALLY SPACED):** Reinforcement bars in the walls.
- Other Dimensions:**
 - Top edge offset: 150
 - Inner width: 800
 - Inner height: 750
 - Wall thickness: 25
 - Bottom offset: 150
- Notes:**
 - INVERT DETAILS SIMILAR TO TYPE 'H' MANHOLES



MANHOLE

CONCRETE BACKDROP SPECIAL

100mm CONCRETE SURROUND

45° BEND

CLASS 20/20 CONCRETE BED

MANHOLE

CONCRETE BACKDROP SPECIAL

100mm CONCRETE SURROUND

45° BEND

CLASS 20/20 CONCRETE BED

Reference Drawings				Drawn		Date : MAY. 2017		Designed		Date						NARSIP II LOT 3-CONSTRUCTION OF CLAYWORKS AND MWIKI SEWERS			
				Name :				Name :				ATHI WATER WORKS DEVELOPMENT AGENCY Africa Re-Centre, Hospital Road, Upper Hill P.O Box 45283-0100 NAIROBI, KENYA.		NAIROBI CITY WATER & SEWERAGE COMPANY (NCW&C) Kampala Road, P.O Box 30656 - 00100, NAIROBI -KENYA.		STANDARD INSPECTION CHAMBERS			
				Checked		Date		Approved		Date						Drawing Title			
				Name :				Name :								STD M-03			
B																Scales (A1) Hor. 1:1000 Vert. 1:100			
A																			
REV	REVISIONS					Checked		Date		Appr. WD									