

SPECIFICATIONS FOR REPAIR OF HYDROMET STATION

S/N	Station	Location	No. of Gauges existing	Rehabilitation Requirements	Remarks
1	R. Sio	36N 0617638 UTM0035586	4	• Construction of pillar gauge with a staff gauge • Construction of 3 benchmarks • Establishing the relationship between the gauges and benchmarks (Survey of station) • Construction of station house • Paint still wells with aluminum paint	The station is installed with a data logger, shaft encoder, thelamides type that is functional but lacks a protective house, bench marks need to be strengthened and the lower gauge need to be constructed.
2	R. Mpologoma at Budumba	36N 0587933 0091421	3	• Construction of pillar gauge with staff gauge • Construction benchmark • Establishing the relationship between the gauges and 3 benchmarks (Survey of station) • Remove floating weed under the bridge	The lower gauge is required to capture low levels, There is a data logger, shaft encoder thelamides type and to be installed with a telemetry logger by GIZ.
3	R. Namalu at Mbale – Moroto Rd	36N 0677846 0197716	3	• Desilting the gauging channel • Construction of 4 stilling wells, 5 intake pipes • Replacing staff gauge on the existing pillar • Installation of a new thelamides data logger • Construction of 3 benchmarks • Establishing the relationship between the gauges and benchmarks (Survey of station)	There is a lot of sedimentation at the present site, may require to be setup slightly near the road, It had automated strip chart recorder that is not working and cannot be repaired with fresh stilling well installations.
4	R. Sipi at Mbale – Moroto Rd	36N 0646237 0152837	2	• Construction of 4 pillar gauges with staff gauges. • Construction of 3 benchmarks • Establishing the relationship between the gauges and benchmarks (Survey of station)	Lower and upper gauges required to capture low levels and floods respectively, all gauges at the station are on angle lines that require to be permanent with pillars,

					The strip chart recorder is faulty beyond repair, Telemetry logger was installed at the station
5	R. Kapir at Kumi – Soroti Rd	36N 0581928 0184257	Nil	• Construction of 4 pillar gauges with staff gauges. • Construction of 3 benchmarks • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	The gauges were destroyed during the reconstruction of the bridge, thus no gauges currently, require four pillar gauges, Telemetry logger was installed recently.
6	R. Akokorio at Soroti – Katakwi Rd	36N 0594278 0205467	3	• Construction of 1 pillar gauges with staff gauges. • Construction of 3 stilling wells, 4 intake pipes • Construction of station house • Installation of a new thelamides data logger • Strengthening of benchmarks • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Strip chart recorder not working as intakes blocked, require fresh installations and the machine itself is faulty beyond repair, Lower gauge required to be installed, one pillar gauge needs to be worked and replaced with another gauge.
7	L. Bisina at Opeta	36N 0624520 0182762	Nil	• Construction of 3 pillar gauges with staff gauges. • Construction of 3benchmarks • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	L. Bisina at Opeta is accessed from Katakwi, all around is covered with water weed, thus, not good gauging site, its better at Osera accessed from Kumi, It requires 3 pillar gauges
8	R. Longiro, Near Kotido	36N 0261373 0331168	Nil	• Construction of 1 pillar gauges with staff gauges. • Installation of 2 staff gauges on the existing weir • Rehabilitating the existing weir • Construction of 3 stilling wells, 3 intake pipes • Installation of a new thelamides data logger	The existing weir need to be rehabilitated, Requires 3 gauges, There was a trip chart recorder, OTT type that was washed away by floods, fresh installations required for the recorder system.

				• Fabrication and fixing of steel protective house to data logger • Construction of 3 benchmarks • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	
9	R. Aswa l at Puranga	36N 0492972 0288077	Nil	• Construction of 5 pillar gauges with staff gauges. • Construction of benchmarks • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Monitoring stopped in 1977 due to insurgency, Proposed number of gauges 5
10	R. Agago at Kitgum – Lira Rd	36N 0496044 0313873	Nil	• Construction of 4 pillar gauges with staff gauges. • Construction of 3 benchmarks • Construction of 4 stilling wells, 5 intake pipes • Installation of a new thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Station was destroyed during the insurgency of 1977, Proposed number of gauges 4
11	R. Aswa ll at Gulu – Kitgum Rd	36N 0453564 0364840	Nil	• Construction of 5 pillar gauges with staff gauges. • Construction of 3 benchmarks • Construction of 5 stilling wells, 5 intake pipes • Installation of a telemetry • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Monitoring stopped in 1977 due to insurgency, Proposed number of gauges 5
12	R. Pager at Kitgum	36N 0486621 0364840	Nil	• Construction of 5 pillar gauges with staff gauges. • Construction of 3 benchmarks	Monitoring stopped around 1977 due to insurgency,

				• Construction of 5 stilling wells, 5 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Due to the physical appearance of the site, 5 gauges are proposed
13	R. Ayugi at Atiak – Laropi Rd	36N 0393450 0370123	Nil	• Construction of 4 pillar gauges with staff gauges. • Construction of 3 benchmarks • Construction of 5 stilling wells, 5 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	The station is not functioning, propose to have 4 gauges.
14	R. Albert Nile at Laropi	36N 0367919 0391804	Nil	• Construction of 5 pillar gauges with staff gauges. • Construction of 3 benchmarks • Construction of 5 stilling wells, 6 intake pipes • Installation of a Telemetry system • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	The station was destroyed by UNRA in an effort to upgrade this landing site for the ferry, The gauges for the station were 4, it also had a data logger that cannot be repaired and the whole system was destroyed.
15	R. Oru at Arua - Yumbe Rd	36N 0292833 0361302	5	• Construction of 1 pillar gauge with staff gauge. • Replacement of 4 staff gauges • Construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of a foot bridge • Construction of station house	Strip chart recorder was vandalized, Lower gauge and upper two gauges require replacement, Generally, the present site require relocation with a foot bridge slightly upstream

				Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	
16	R. Anyau at Arua - Moyo Rd	36N 0281112 0354109	4	• Construction of 1 pillar gauge with staff gauge. • Replacement of 4 staff gauges • strengthening of 3 benchmarks • replacement of 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Strip chart recorder not working as it was destroyed by floods and the whole system require replacement, Lower pillar gauge require replacement and the upper three gauge plates require replacement
17	R. Nyagak	36N 0272892 0269115	Nil	• Construction of 5 pillar gauges with staff gauges. • Construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Construction of a foot bridge • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	The station was destroyed by recent floods, All the five pillar gauges require fresh installations, Strip chart recorder was destroyed beyond repair that require replacement
18	R. Nyarwodho at water works	36N 0288256 0272247	4	• Construction of 1 pillar gauge with staff gauge. • strengthening of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	All the gauges are okay, the station require improvement of the drainage channel that is a threat to the pillar gauges due to drainage water
19	R. Ora 11 at Inde - Pakwach Rd	36N 0321332 0300503	5	• Construction of 2 pillar gauges with staff gauges.	Two lower pillar gauges require reinstallation,

				• Replacement of 3 staff gauges on the existing pillars • strengthening of 3 benchmarks • Construction of 5 stilling wells, 5 intake pipes • Installation of a Telemetry system • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Strip chart recorder cannot be repaired, thus require flesh installations as the intakes and stilling wells rusted.
20	R. Albert Nile at Panyango		6	• Construction of 1 pillar gauge with staff gauge. • Replacement of 4 staff gauges • strengthening of 3 benchmarks • replacement 6 intake pipes • Installation of a thelamides data logger • Painting the existing station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Lower gauge require installation, Data logger, thelamides type faulty that cannot be repaired, Intake pipes require to be replaced.
21	R. Albert Nile at Pakwach	36N 0334123 0272082	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 5 stilling wells, 6 intake pipes • Installation of a Telemetry system • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Destroyed during the insurgency of 1977, Requires four pillar gauges with an automated recording system
22	L. Kyoga at Lwampamga	N 01.50816 ⁰ E 032.51205 ⁰		• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 5 stilling wells, 7 intake pipes • Installation of a thelamides data logger • Construction of station house	It has not been monitored since the insurgency of 1977, Require four gauges and recorder

				Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	
22	R. Mayanja at Kapeka	N 00.68192 E 032.17197	4	- Construction of 1 pillar gauge with staff gauge. - Replacement of 4 staff gauges - strengthening of 3 benchmarks - replacement of 4 intake pipes - Installation of a thelamides data logger - Construction of station house - Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Two lower gauges required as the present one are not good, It had a strip chart recorder that is not working and cannot be repaired.
23	R. Wambabya at Buseruka	N 01.52975 E 031.11489	Nil	- Construction of 3 pillar gauges with staff gauges. - construction of 3 benchmarks - Construction of 4 stilling wells, 4 intake pipes - Installation of a thelamides data logger - Construction of station house - Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Station not functional, It requires three pillar gauges.
24	R. Muzizi at Kyenjojo – Hoima Rd	N 00.87076 E 030.72968	Nil	- Construction of 4 pillar gauges with staff gauges. - construction of 3 benchmarks - Construction of 4 stilling wells, 4 intake pipes - Installation of a thelamides data logger - Construction of station house - Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Gauges were destroyed during flooding, It requires four pillar gauges
25	R. Mpanga at Kiburara	N 00.10076 E 030.46234	Nil	- Construction of 4 pillar gauges with staff gauges. - construction of 3 benchmarks	Was destroyed during reconstruction of the road,

				• Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	It requires four pillar gauges and it had a strip chart recorder that was destroyed.
26	R. Semuliki at Bwelamule	N 00.95492 E 030.18728	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a Telemetry • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	All gauges were washed away during floods, It requires four pillar gauges and a recorder
27	L. Albert at Ntoroko	N 01.05838 E 030.54162	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Not monitored since the insurgence of 1977, Require four pillar gauges and recorder
28	R. Rwimi at Fort Portal - Kasese Rd	N 00.37322 E 030.21129	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation	Requires four pillar gauges

				to the Geo-survey benchmarks(Survey of station)	
29	Mubuku at Fort Portal - Kasese Rd	N 00.26114 E 030.12090	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Requires four pillar gauges
30	Nyamugasani at Katwe - Zaire Rd	S 00.12342 E 029.84327	Nil	• Construction of 5 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 5 stilling wells, 5 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	All gauges and strip chart recorder were washed away during the recent floods, Require five pillar gauges and recorder
31	Rukoki at Fort Portal - Kasese Rd	N 00.19436 E 030.10502	Nil	• Construction of 4 pillar gauges with staff gauges. • Construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Require four pillar gauges
32	George, Kasenyi	S 00.02544 E 030.14940	2	• Construction of 1 pillar gauge with staff gauge. • strengthening of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes	All the gauges are okay, lower gauge required.

				• Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	
33	Ntungwe at Katunguru - Zaire Rd	S 00.57485 E 029.72396	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Require four pillar gauges
34	R. Ishasha at Zaire-Uganda boarder	S 00.72736 E 029.62814	Nil	• Construction of 4 pillar gauges with staff gauges. • construction of 3 benchmarks • Construction of 4 stilling wells, 4 intake pipes • Installation of a thelamides data logger • Construction of station house • Establishing the relationship between the gauges and benchmarks in relation to the Geo-survey benchmarks(Survey of station)	Requires pillar four gauges

SPECIFICATIONS

STAFF GAUGE

One meter vertical graduated enameled metal (100 x 1000mm) 2mm thick, black and white finish, 10mm graduations with 10mm markings



DATA LOGGER (Float- operated Shaft encoder with integrated data logger for measuring water levels):

Measurement range	± 19.999 m / ± 199.99 m
Resolution	0.001 m / 0.01 m
Accuracy	± 0.002 m / ± 0.002 m
Electrical data	
Interface	RS-232, Infrared (IrDA)
Power supply	1 x 1.5 V 'BABY'-cell (LR 14 C AM 2)
Display	LCD single-line, 4 1/2 digits
	LC display (date, time, battery, Measuring value)
Memory	approx. 30,000 measurement values
Float pulley	circumference 200 mm
Standard float cable	1 mm Ø, other diameters programmable
Dimensions	
Logger housing	Ø 244 mm x 47 mm
Protection class	IP68
Sensor	82 mm x 82 mm x 34 mm
Protection class	IP54
Weight	0.320 kg



Operation temperature	-20 ... +70 °C
-----------------------	----------------

Including mounting kit (for wall / attachment to a chart recorder)

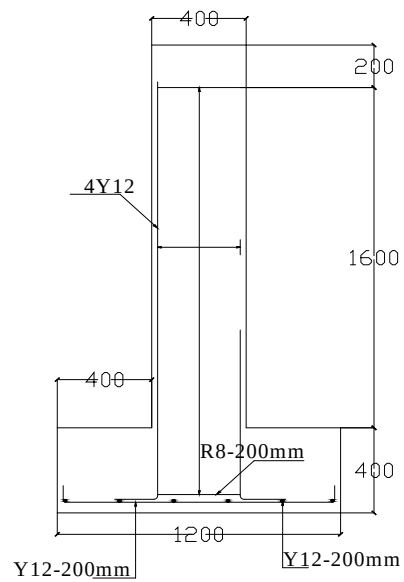
STILLING WELL

- 6mm thick metal sheet, 300mm diameter, 1200mm length with flanges at both ends

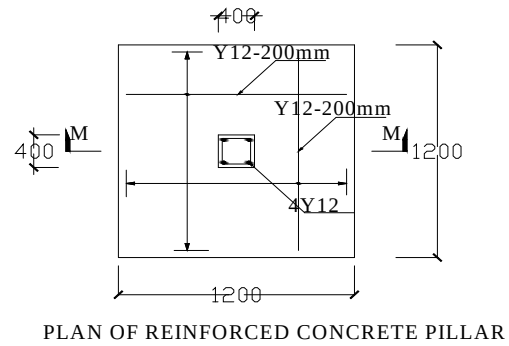
INTAKE PIPES

- 3 inch steel pipes,
- 3 inch flanges

REINFORCED PILLAR GAUGE (1:2:4 concrete mix)



SECTIONAL ELEVATION OF
REINFORCED CONCRETE PILLAR :M-M



PLAN OF REINFORCED CONCRETE PILLAR