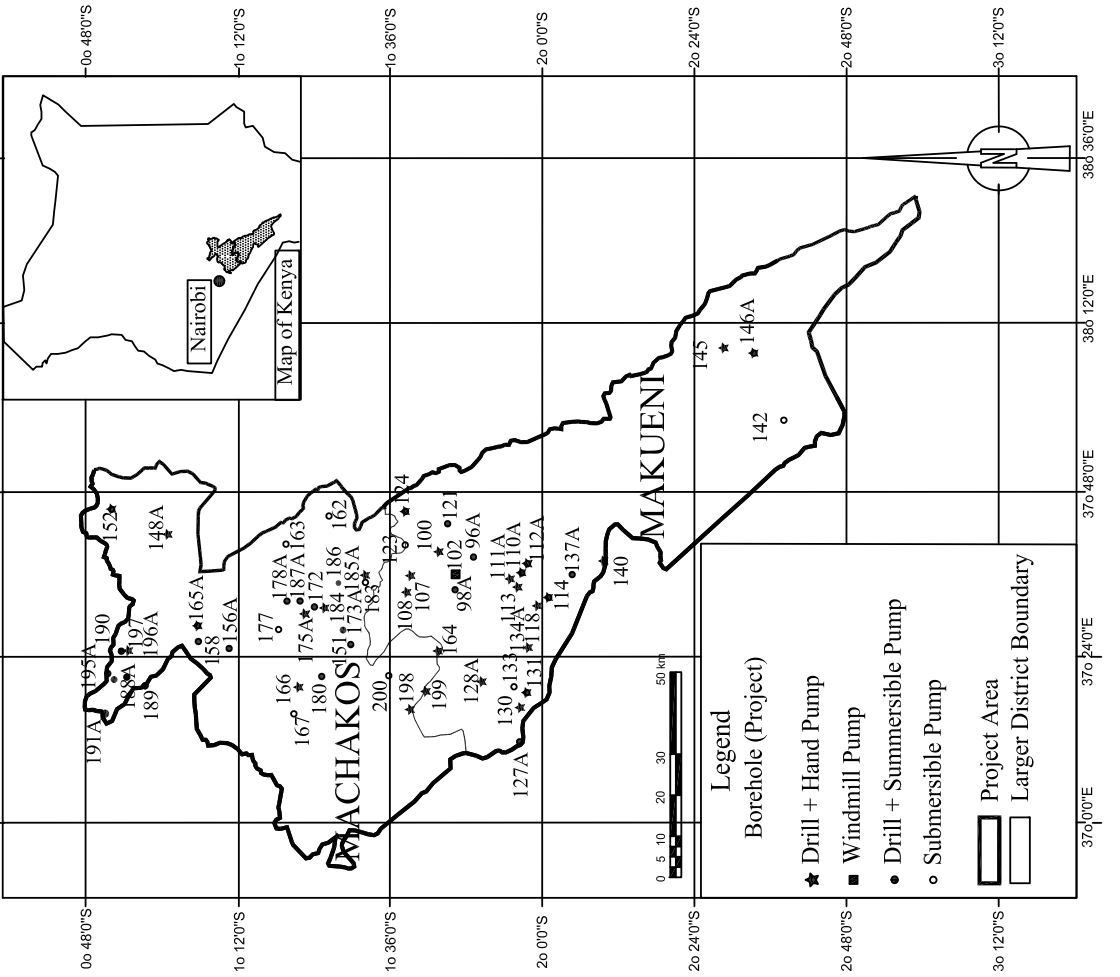


8. 11

概略設計図面集

Major Information on Target Site

| No | Project ID/NO | District | Division | Location | Administrative Information | | Provisional Coordinate (WGS 84) | |
|------|---------------|----------|----------|----------|----------------------------|--------------|---------------------------------|---|
| | | | | | Village (Community) | Sub-location | S | E |
| 98A | 00010001 | Wajir | Wajir | Kakumani | Kakumani | 1°48'33.5" | 37°39'43.8" | |
| 98B | 00010002 | Wajir | Wajir | Kakumani | Kakumani | 1°53'58" | 37°39'00" | |
| 100 | | Wajir | Wajir | Kakumani | Kakumani | 1°48'50.4" | 37°39'51.6" | |
| 102 | | Wajir | Wajir | Kakumani | Kakumani | 1°57'54.2" | 37°39'51.9" | |
| 107 | | Wajir | Wajir | Kakumani | Kakumani | 1°55'36.9" | 37°39'46.9" | |
| 108 | | Wajir | Wajir | Kakumani | Kakumani | 1°57'12.7" | 37°37'48.4" | |
| 110A | | Wajir | Wajir | Kakumani | Kakumani | 1°55'16.1" | 37°39'42.7" | |
| 111A | | Wajir | Wajir | Kakumani | Kakumani | 1°58'19.8" | 37°39'06.9" | |
| 114 | | Wajir | Wajir | Kakumani | Kakumani | 1°58'04.7" | 37°39'06.4" | |
| 118 | | Wajir | Wajir | Kakumani | Kakumani | 1°44'22.5" | 37°43'35.3" | |
| 121 | | Wajir | Wajir | Kakumani | Kakumani | 1°57'34.0" | 37°40'17.6" | |
| 123 | | Wajir | Wajir | Kakumani | Kakumani | 1°57'32.9" | 37°44'56.2" | |
| 124 | | Wajir | Wajir | Kakumani | Kakumani | 1°54'10.9" | 37°40'02.6" | |
| 125A | | Wajir | Wajir | Kakumani | Kakumani | 1°50'16.7" | 37°49'13.2" | |
| 128A | | Wajir | Wajir | Kakumani | Kakumani | 1°57'28" | 37°49'53.5" | |
| 130 | | Wajir | Wajir | Kakumani | Kakumani | 1°59'37.4" | 37°49'45.1" | |
| 131 | | Wajir | Wajir | Kakumani | Kakumani | 1°54'59.6" | 37°49'58.7" | |
| 133 | | Wajir | Wajir | Kakumani | Kakumani | 1°57'46.9" | 37°42'30.2" | |
| 134A | | Wajir | Wajir | Kakumani | Kakumani | 2°04'37.7" | 37°36'09.1" | |
| 132A | | Wajir | Wajir | Kakumani | Kakumani | 2°09'21.4" | 37°38'15.3" | |
| 139 | | Wajir | Wajir | Kakumani | Kakumani | 2°06'43.5" | 37°58'12.7" | |
| 142 | | Wajir | Wajir | Kakumani | Kakumani | 1°40'07.6" | 38°09'01.6" | |
| 143A | | Wajir | Wajir | Kakumani | Kakumani | 0°50'32.9" | 37°44'33.5" | |
| 151 | | Wajir | Wajir | Kakumani | Kakumani | 0°50'32.9" | 37°44'33.5" | |
| 152 | | Wajir | Wajir | Kakumani | Kakumani | 0°50'32.9" | 37°44'33.5" | |
| 156A | | Wajir | Wajir | Kakumani | Kakumani | 1°01'22.6" | 37°25'32.9" | |
| 158 | | Wajir | Wajir | Kakumani | Kakumani | 1°04'46.8" | 37°25'32.9" | |
| 162 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 163 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 164 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 165 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 166 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 167 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 168 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 169 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 170 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 171A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 172A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 173A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 174A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 175A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 177 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 178A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 180 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 183 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 185A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 186 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 187A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 188A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 189 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 190A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 191A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 195A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 196A | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 197 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 198 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 199 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |
| 200 | | Wajir | Wajir | Kakumani | Kakumani | 1°29'58.2" | 37°49'18.2" | |



CONSULTING ENGINEERS:



PROJECT NAME:

THE PROJECT FOR RURAL WATER SUPPLY

OWNER:

THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA

TITLE:

GENERAL

LOCATION MAP

SCALE

NONE

DATE

OCT 2010

DRAWING NO.

GE-001

Boreholes to be drilled and installed

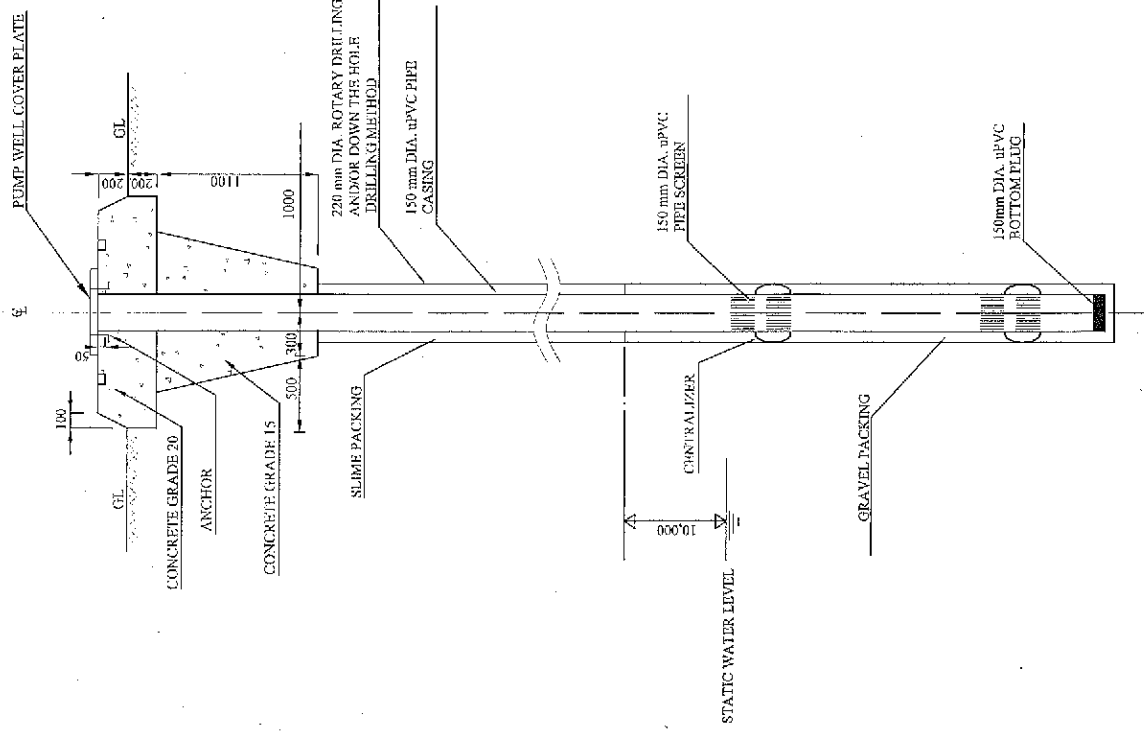
| Serial No. | Well depth (m) | Water Supply Facilities |
|------------|----------------|-------------------------------|
| 96A | 90 | Submersible Pump by Generator |
| 98A | 100 | Submersible Pump by Generator |
| 100 | 110 | Hand Pump |
| 107 | 55 | Hand Pump |
| 108 | 55 | Hand Pump |
| 110A | 100 | Hand Pump |
| 111A | 100 | Hand Pump |
| 112A | 100 | Hand Pump |
| 113 | 110 | Hand Pump |
| 114 | 100 | Hand Pump |
| 118 | 90 | Hand Pump |
| 124 | 55 | Hand Pump |
| 127A | 80 | Submersible Pump by Generator |
| 128A | 100 | Hand Pump |
| 130 | 100 | Hand Pump |
| 131 | 70 | Hand Pump |
| 134A | 100 | Hand Pump |
| 137A | 110 | Submersible Pump by Generator |
| 140 | 55 | Hand Pump |
| 145 | 110 | Hand Pump |
| 146A | 120 | Hand Pump |
| 148A | 150 | Hand Pump |
| 152 | 110 | Hand Pump |
| 156A | 160 | Submersible Pump by Generator |
| 164 | 90 | Hand Pump |
| 165A | 145 | Hand Pump |
| 166 | 185 | Hand Pump |
| 173A | 55 | Submersible pump by Generator |
| 175A | 90 | Hand Pump |
| 176A | 100 | Submersible Pump by Generator |
| 184 | 30 | Hand Pump |
| 185A | 100 | Hand Pump |
| 187A | 130 | Submersible Pump by Generator |
| 188A | 110 | Submersible Pump by Generator |
| 190 | 70 | Hand Pump |
| 191A | 100 | Submersible Pump by Generator |
| 195A | 90 | Submersible Pump by Generator |
| 196A | 120 | Hand Pump |
| 198 | 80 | Hand Pump |
| 199 | 110 | Hand Pump |

Note: Well depth in the above table is estimated depth.

Drilled Boreholes to be installed

| Serial No. | Borehole Depth (GL-m) | Static Water Level (GL-m) | Discharge Yield (m ³ /hr) | Water Supply Facilities |
|------------|-----------------------|---------------------------|--------------------------------------|--|
| 102 | 155 | 5.0 | 137.3 | Windmill pump |
| 123 | 87 | 51.3 | 05.2 | 1.70 Submersible Pump by Solar |
| 133 | 120 | 16.3 | 48.0 | 9.00 Submersible Pump by Electrical Line |
| 142 | 84 | 31.4 | 32.2 | 1.70 Submersible Pump by Solar |
| 162 | 141 | 44.6 | 85.1 | 1.10 Submersible Pump by Solar |
| 163 | 137 | 81.5 | 105.9 | 10.90 Submersible Pump by Generator |
| 167 | 110 | 20.2 | 53.7 | 2.00 Submersible Pump by Generator |
| 177 | 38 | 5.0 | 16.5 | 5.00 Submersible Pump by Generator |
| 183 | 128 | 38.1 | 88.6 | 7.20 Submersible Pump by Generator |
| 200 | 150 | 44.7 | 90.7 | 0.60 Submersible Pump by Solar |
| 121 | 109 | 9.2 | 13.1 | 15.0 Submersible Pump by Generator |
| 151 | 54 | 11.8 | 38.2 | 4.3 Submersible Pump by Generator |
| 158 | 60 | 4.7 | 35.7 | 4.7 Submersible Pump by Generator |
| 172 | 92 | 4.4 | 50.8 | 18.0 Submersible Pump by Generator |
| 180 | 160 | 6.4 | 24.0 | 1.4 Submersible Pump by Generator |
| 186 | 120 | 2.3 | 80.8 | 2.0 Submersible Pump by Generator |
| 189 | 95 | 11.1 | 36.8 | 3.6 Submersible Pump by Electrical Line |
| 197 | 60 | 6.9 | 33.7 | 0.7 Submersible Pump by Generator |

Note: Above data are reference only



STANDARD FIGURE OF BOREHOLE STRUCTURE

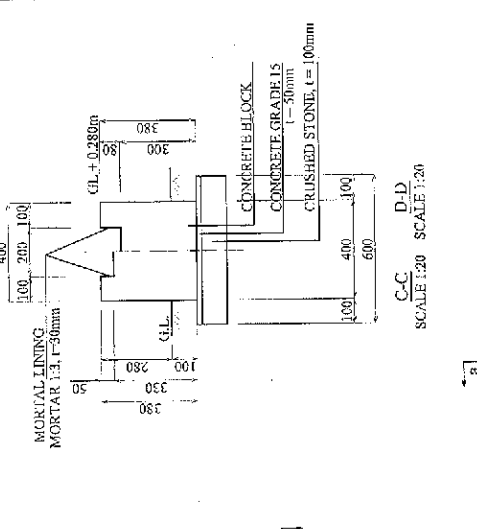
OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA

PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY

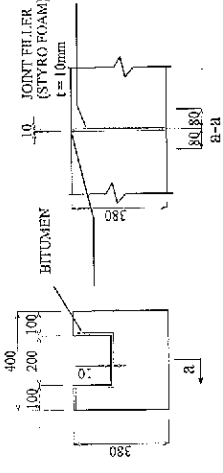
CONSULTING ENGINEERS: NIPPON KOEI CO., LTD.

TITLE: GENERAL DETAILS OF BOREHOLE STRUCTURE

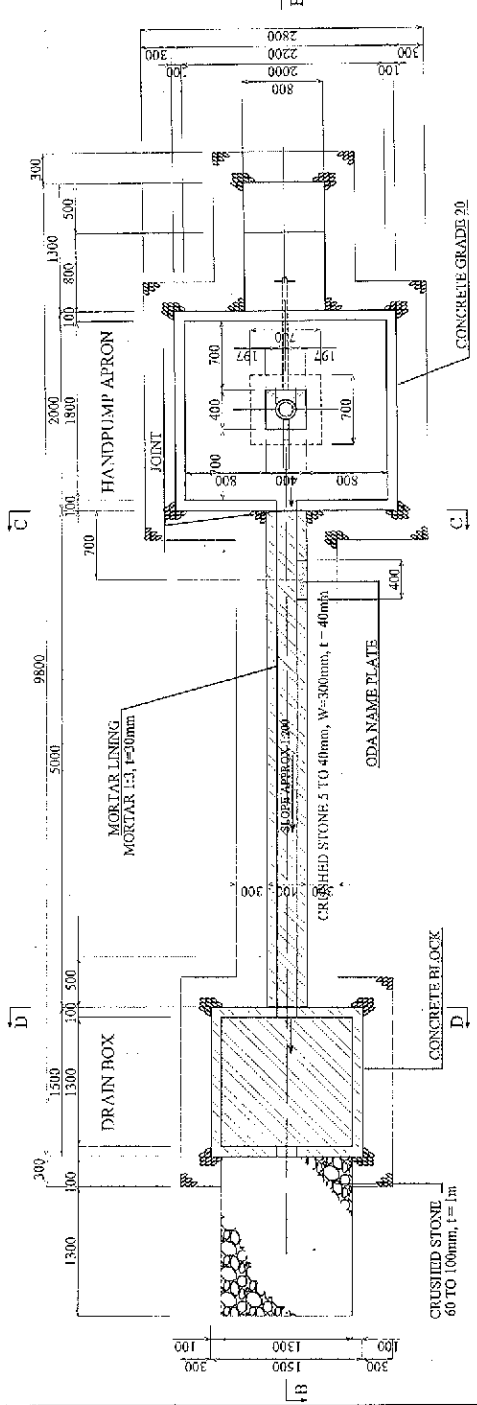
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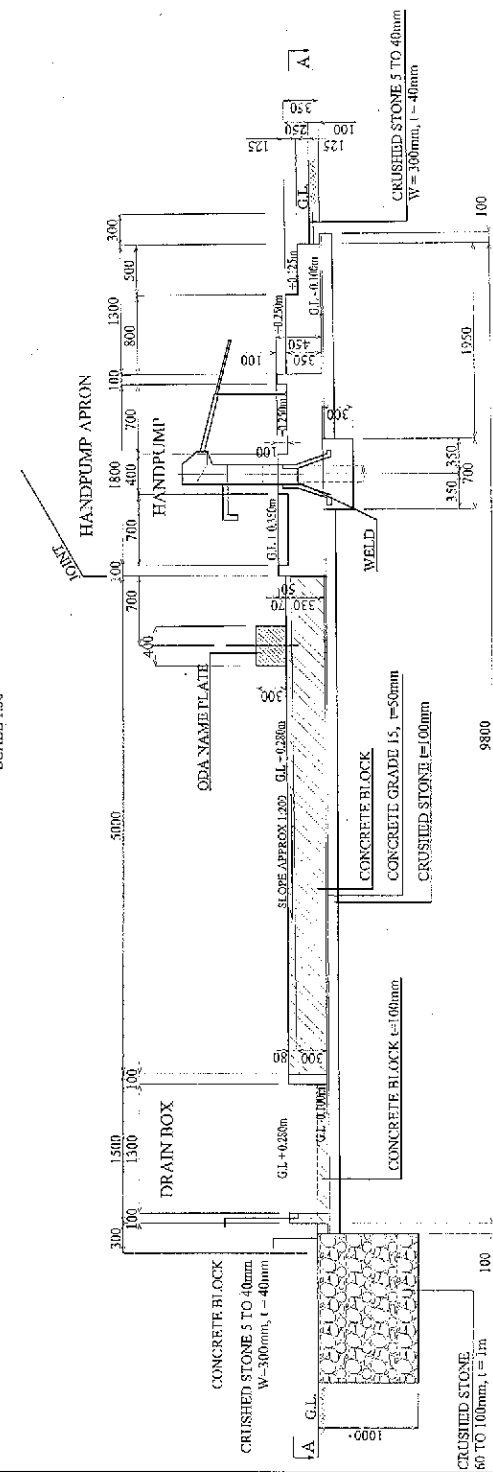
C-C D-D SCALE 1:20



JOINT DETAIL SCALE 1:20

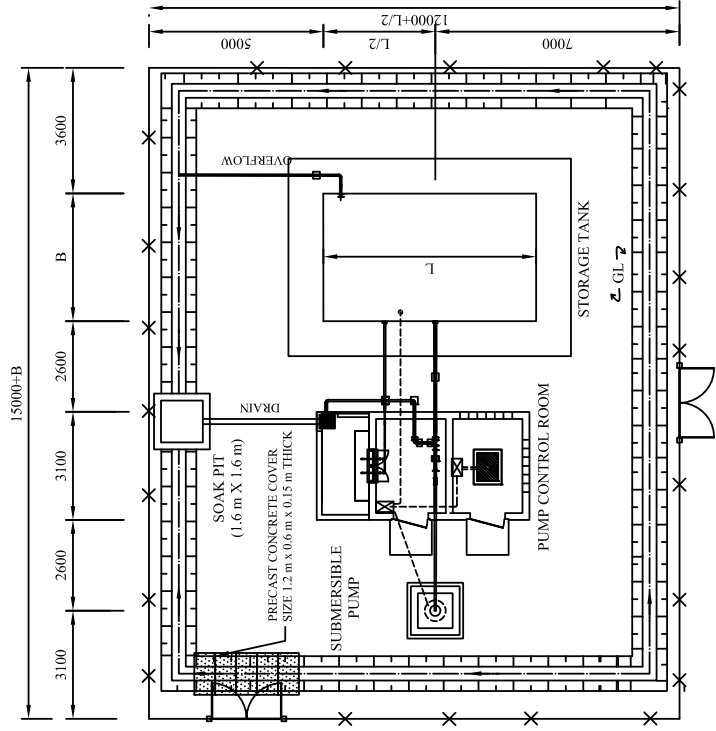


A-A SCALE 1:50



B-B SCALE 1:50

| | | | | | |
|--|---|--|---|------------------|-----------------------|
| OWNER THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | PROJECT NAME THE PROJECT FOR RURAL WATER SUPPLY | CONSULTING ENGINEERS NIPPON KOEI CO., LTD. | TITLE CONSTRUCTION OF BORHOLE WATER SUPPLY FACILITIES HAND PUMP | | |
| | | | SCALE 1:50 1:20 | DATE JAN 2010 | DRAWING NO. BW-002 |

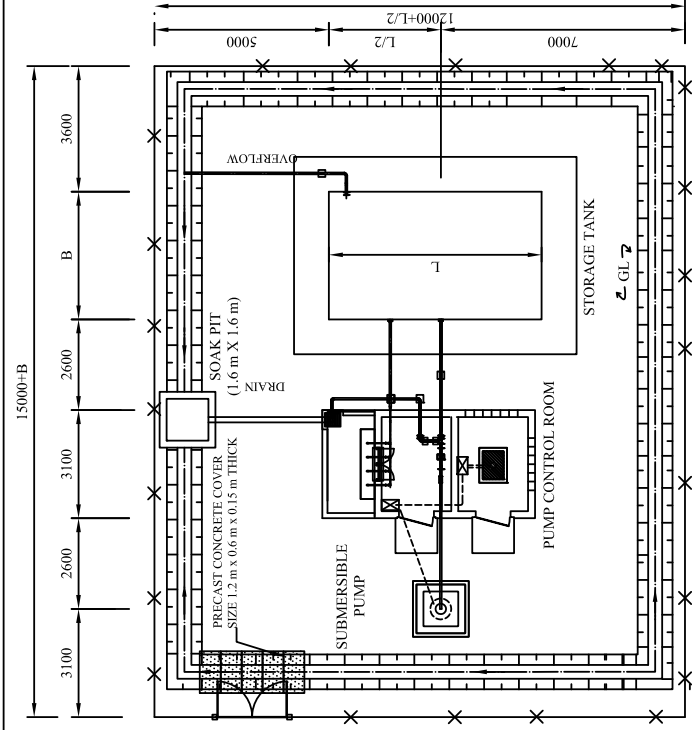


- LEGEND:
- : PRECAST CONCRETE COVER
 - : GATE
 - : CHAIN-LINK FENCE
 - : CUT SLOPE (GRADIENT 1:0.5)
 - : WATER SUPPLY PIPE
 - : CABLE

| SERIAL No. | L (mm) | B (mm) | TYPE |
|------------|--------|--------|------|
| 121 | 6100 | 3660 | S0 |
| 123 | 2000 | 2000 | |
| 142 | 2000 | 2000 | |
| 162 | 2000 | 2000 | |
| 200 | 2000 | 2000 | |

- NOTES:
- FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN IN PVC DITCH, SEE DRAWING NO. SP-409 & 070.
 - CONSTRUCTION WORKS FOR: (1.) FENCES AND (2.) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.
 - THE NUMBER OF WATER TAP SHALL BE REQUIRED 4 FOR THE SERIAL NO. 121 AND 2 FOR THE OTHERS.

| | | | | | |
|---|--|---|--|--|--|
| <p>CONSULTING ENGINEERS:</p> <p>NIPPON KOEI CO., LTD.</p> | | <p>PROJECT NAME:</p> <p>THE PROJECT FOR RURAL WATER SUPPLY</p> | | <p>OWNER:</p> <p>THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA</p> | |
| <p>TITLE:</p> <p>CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP LAYOUT PLAN OF TYPE S0 AND S1</p> | | <p>SCALE</p> <p>1:150</p> | | <p>DATE</p> <p>OCT 2010</p> | |
| | | <p>DRAWING NO.</p> <p>SP-001A</p> | | | |



- LEGEND:**
- : PRECAST CONCRETE COVER
 - : GATE
 - : CHAIN-LINK FENCE
 - : CUT SLOPE (GRADIENT 1:0.5)
 - : WATER SUPPLY PIPE
 - : CABLE

| SERIAL No. | L (mm) | B (mm) | TYPE |
|------------|--------|--------|------|
| 96A | 6100 | 3660 | S1 |
| 98A | 4880 | 2440 | |
| 127A | 4880 | 2440 | |
| 133 | 6100 | 3660 | |
| 137A | 6100 | 3660 | |
| 151 | 4880 | 2440 | |
| 156A | 6100 | 3660 | |
| 163 | 4880 | 2440 | |
| 172 | 6100 | 3660 | |
| 173A | 4880 | 2440 | |
| 186 | 4880 | 2440 | |
| 195A | 4880 | 2440 | |
| 197 | 6100 | 3660 | |

- NOTES:**
- FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN @PVC DITCH, SEE DRAWING No. SP-069 & 070.
 - CONSTRUCTION WORKS FOR: (1.) FENCES AND (2.) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.

OWNER:
 THE MINISTRY OF WATER AND IRRIGATION
 THE REPUBLIC OF KENYA

PROJECT NAME:
 THE PROJECT FOR
 RURAL WATER SUPPLY

CONSULTING ENGINEERS:
NIPPON KOEI CO., LTD.

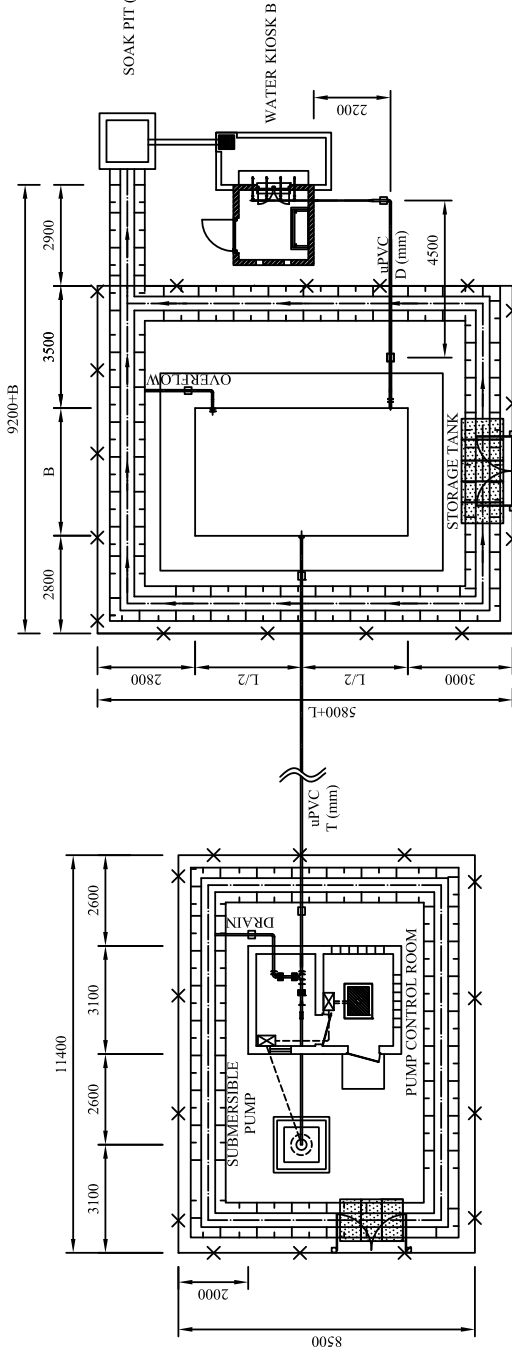
TITLE:
 CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP
 LAYOUT PLAN OF TYPE S0 AND S1

SCALE: 1:150 **DATE:** OCT 2010 **DRAWING NO.:** SP-001B

NOTES:

- FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN UPVC DITCH, SEE DRAWING NO. SP-469 & 070.
- CONSTRUCTION WORKS FOR 1) FENCES AND 2) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.

| SERIAL No. | L (mm) | B (mm) | upVC T (mm) | upVC D (mm) |
|------------|--------|--------|-------------|-------------|
| 167 | 4880 | 2440 | 50 | 50 |
| 178A | 4880 | 2440 | 50 | 50 |
| 187A | 4880 | 2440 | 50 | 50 |
| 188A | 4880 | 2440 | 50 | 50 |
| 191A | 4880 | 2440 | 50 | 50 |



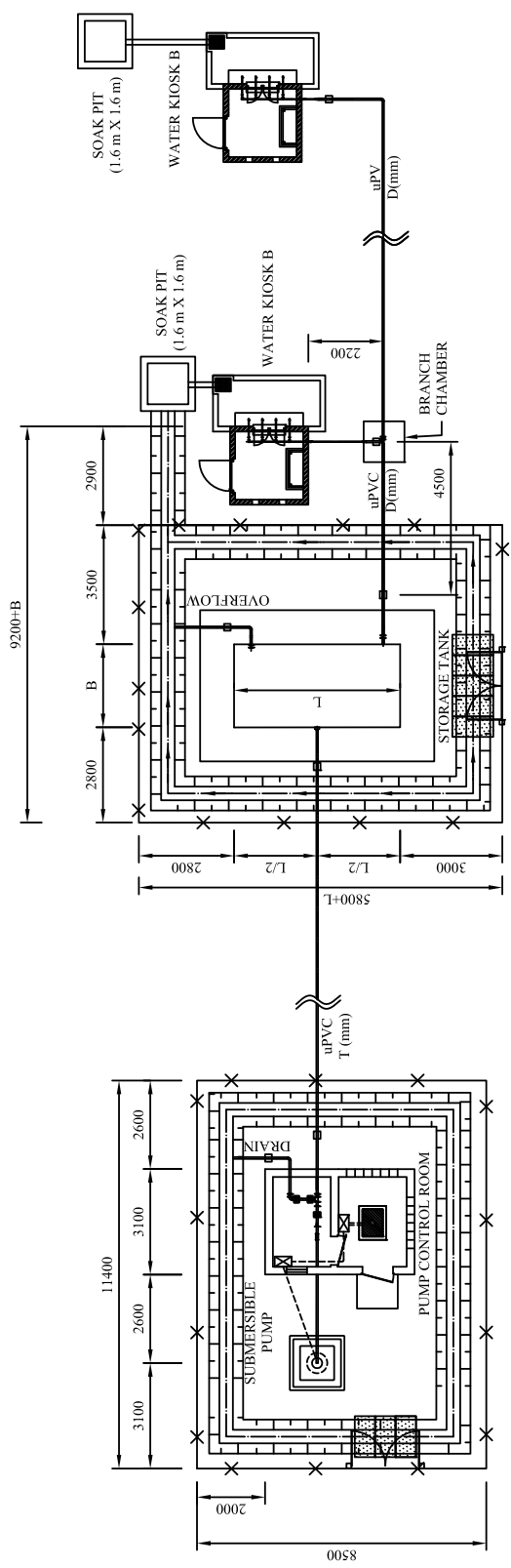
LEGEND:

- : PRECAST CONCRETE COVER
- : GATE
- : CHAIN-LINK FENCE
- : CUT SLOPE (GRADIENT 1:0.5)
- : WATER SUPPLY PIPE
- : CABLE

| | | | | |
|---|--|-------------------|---|---|
| OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY | | CONSULTING ENGINEERS: NIPPON KOEI CO., LTD. | TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP LAYOUT PLAN OF TYPE S2 |
| | SCALE 1:150 | DATE OCT. 2010 | | DRAWING NO. SP-002 |

NOTES:

- 1. FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN uPVC DITCH, SEE DRAWING No. SP-069 & 070.
- 2. CONSTRUCTION WORKS FOR 1) FENCES, AND 2) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.



- LEGEND:**
- [Symbol] : PRECAST CONCRETE COVER
 - [Symbol] : GATE
 - [Symbol] : CHAIN-LINK FENCE
 - [Symbol] : CUT SLOPE (GRADIENT 1:0.5)
 - [Symbol] : WATER SUPPLY PIPE
 - [Symbol] : CABLE

| SERIAL No. | L (mm) | B (mm) | uPVC T (mm) | uPVC D (mm) |
|------------|--------|--------|-------------|-------------|
| 189 | 6100 | 3600 | 50 | 50 |

CONSULTING ENGINEERS:



PROJECT NAME:

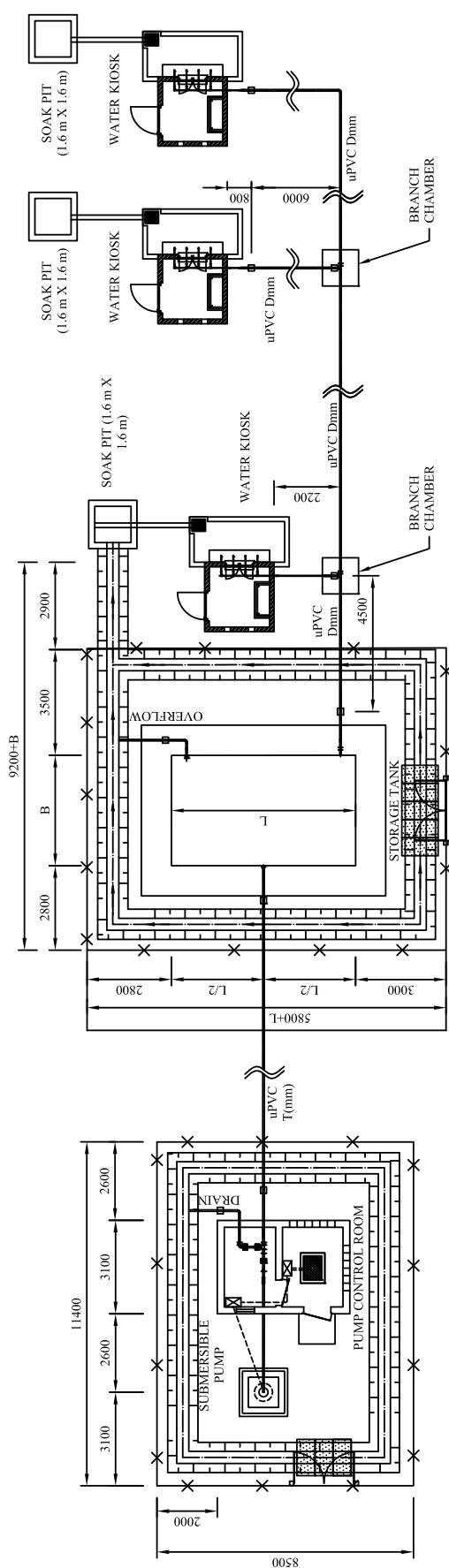
THE PROJECT FOR
RURAL WATER SUPPLY

OWNER:

THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP
LAYOUT PLAN OF TYPE S3

| | | |
|-------|-----------|-------------|
| SCALE | DATE | DRAWING NO. |
| 1:150 | OCT. 2010 | SP-003 |



SERIAL NO. 134A

| SERIAL No. | L (mm) | B (mm) | uPVC T (mm) | uPVC D (mm) |
|------------|--------|--------|-------------|-------------|
| 158 | 6100 | 3660 | 63 | 40 |
| 180 | 6100 | 3660 | 63 | 50 |

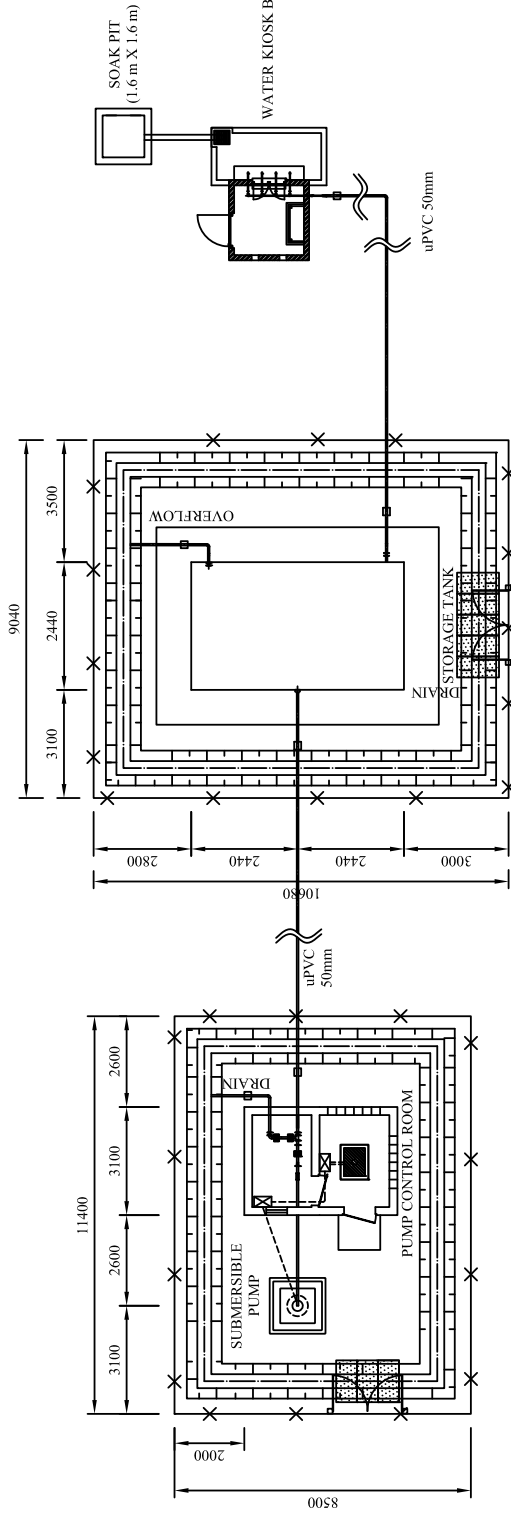
- NOTES:**
- FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN uPVC DITCH, SEE DRAWING No. SP-469 & 070.
 - CONSTRUCTION WORKS FOR 1) FENCES, AND 2) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.

- LEGEND:**
- : PRECAST CONCRETE COVER
 - : GATE
 - : CHAIN-LINK FENCE
 - : CUT SLOPE (GRADIENT 1:0.5)
 - : WATER SUPPLY PIPE
 - : CABLE

| | | | | |
|---|--|--|---|--|
| OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY | | CONSULTING ENGINEERS: NIPPON KOEI CO., LTD. | TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP LAYOUT PLAN OF TYPE S4 |
| | SCALE 1:150 | | DATE OCT 2010 | DRAWING NO. SP-004 |

NOTES:

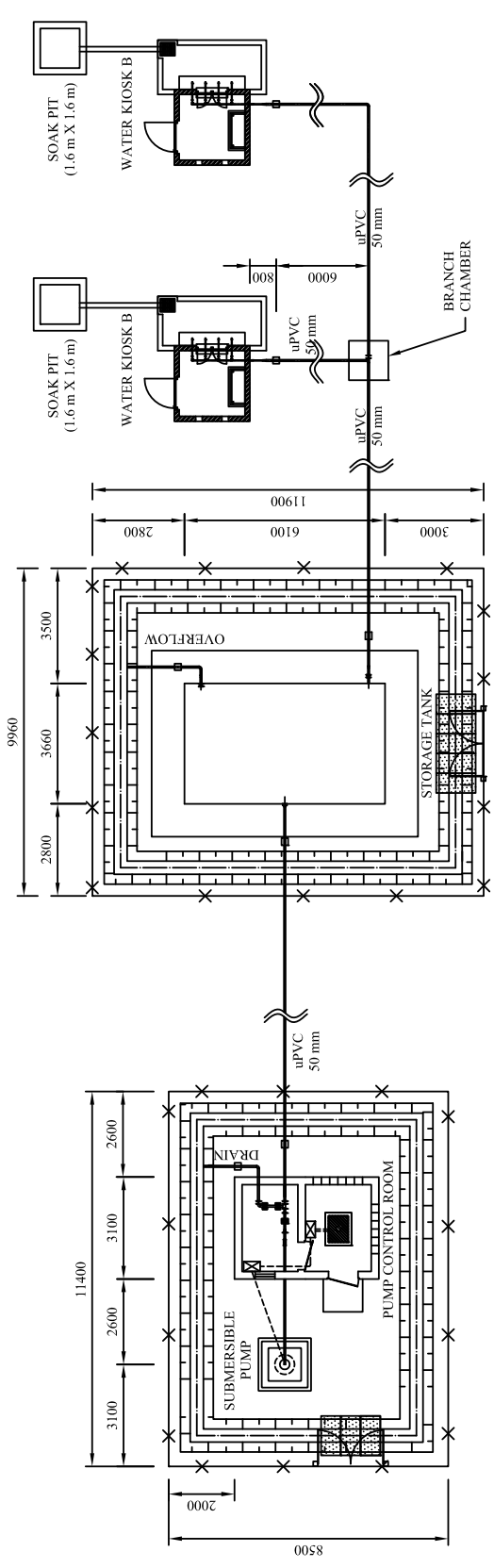
- FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN uPVC DITCH, SEE DRAWING No. SP-069 & 070.
- CONSTRUCTION WORKS FOR 1) FENCES, AND 2) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.



SERIAL NO. 177

- LEGEND:**
- : PRECAST CONCRETE COVER
 - : GATE
 - : CHAIN-LINK FENCE
 - : CUT SLOPE (GRADIENT 1:0.5)
 - : WATER SUPPLY PIPE
 - : CABLE

| | | | |
|---|--|------------------------------|---|
| OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | CONSULTING ENGINEERS: NIPPON KOEI CO., LTD. | | TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP LAYOUT PLAN OF TYPE S6 |
| | PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY | SCALE 1:150 | DATE OCT 2010 |
| | | DRAWING NO. SP-006 | |



SERIAL NO. 183

- LEGEND:**
- : PRECAST CONCRETE COVER
 - : GATE
 - : CHAIN-LINK FENCE
 - : CUT SLOPE (GRADIENT 1:0.5)
 - : WATER SUPPLY PIPE
 - : CABLE

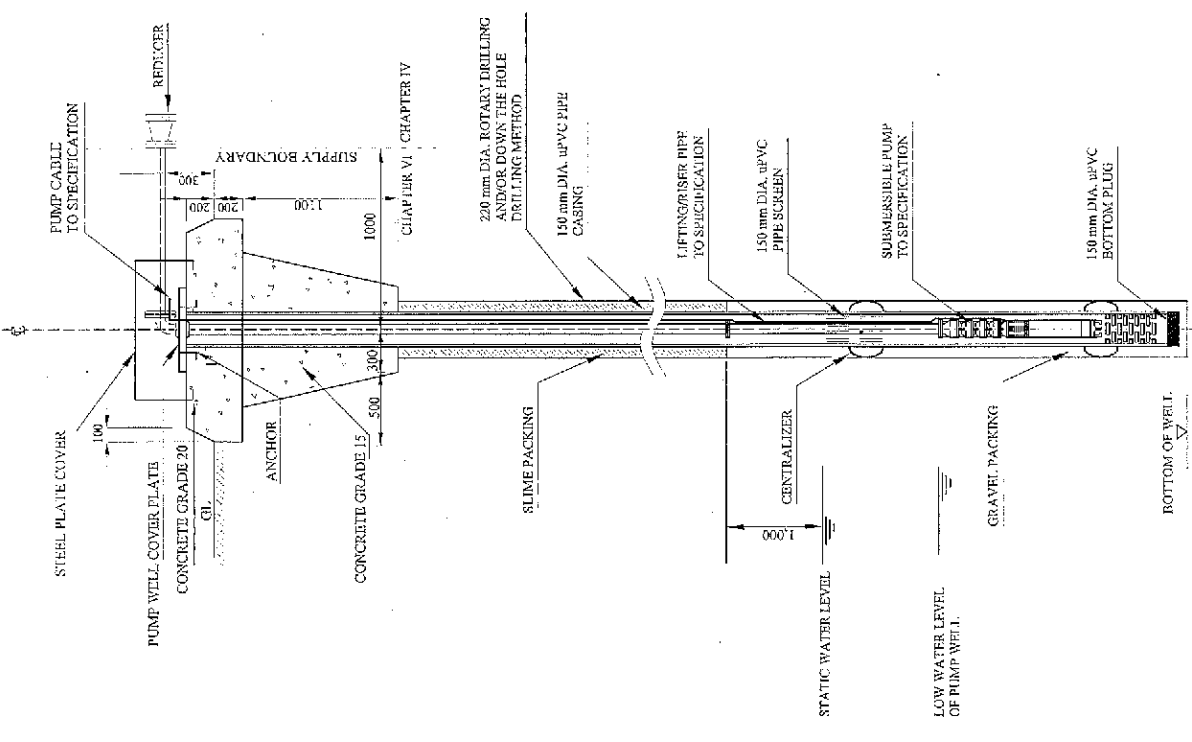
- NOTES:**
- FOR DETAILS OF PRECAST CONCRETE COVER, GATE, FENCE AND DRAIN uPVC DITCH, SEE DRAWING No. SP-069 & 070.
 - CONSTRUCTION WORKS FOR 1) FENCES AND 2) DRAIN OUTLETS ARE DONE BY RURAL COMMUNITY PARTICIPATION BASED ON THE UNDERTAKINGS OF THE GOVERNMENT OF KENYA.

| | | | | |
|---|---|------------------------------|---|-------------------------|
| OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY | | CONSULTING ENGINEERS: NIPPON KOEI CO., LTD. | |
| | TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP LAYOUT PLAN OF TYPE S9 | | SCALE 1:150 | DATE OCT 2010 |
| | | DRAWING NO. SP-009 | | |

DESIGN DATA FOR PUMPS

| Serial No. | Discharge (m ³ /day) | Well Depth (m) | Ground Elevation (m) | Static Water Level (OL-ab) | Pipe Dia. (mm) | Length (m) | Transmission Pipe Dia. (mm) | Length (m) | High Water Rise (m) | Power Source | Remarks |
|------------|---------------------------------|----------------|----------------------|----------------------------|----------------|------------|-----------------------------|------------|---------------------|-----------------|-------------------|
| 96A | 4.55 | 100.0 | GL | 20.0 | 50 | 42.8 | 50 | 12.3 | 3.09 | Generator | |
| 98A | 2.83 | 100.0 | GL | 20.0 | 50 | 50.5 | 50 | 12.3 | 3.30 | Generator | Existing Borehole |
| 102 | 1.02 | 155.0 | 1135.0 | 3.0 | 32 | 101.2 | 40 | 8.0 | 2.37 | Windmill | Existing Borehole |
| 121 | 5.07 | 100.0 | 1033.0 | 9.2 | 30 | 37.3 | 40 | 12.3 | 3.39 | Solar | Existing Borehole |
| 125 | 0.98 | 97.0 | 1144.0 | 5.3 | 32 | 62.3 | 40 | 11.9 | 3.15 | Generator | Existing Borehole |
| 127A | 2.50 | 100.0 | GL | 40.0 | 40 | 69.6 | 50 | 12.3 | 3.40 | Generator | Existing Borehole |
| 133 | 3.47 | 120.0 | 1311.0 | 16.3 | 50 | 57.3 | 30 | 12.2 | 3.39 | Windmill | Existing Borehole |
| 137A | 3.17 | 100.0 | 1026.0 | 1.9 | 30 | 67.4 | 40 | 12.3 | 3.39 | Generator | Existing Borehole |
| 142 | 0.99 | 84.0 | 1016.0 | 31.1 | 32 | 65.3 | 40 | 11.9 | 3.39 | Generator | Existing Borehole |
| 151 | 2.81 | 54.0 | 959.0 | 11.8 | 30 | 35.3 | 40 | 12.3 | 3.39 | Generator | Existing Borehole |
| 156A | 4.00 | 150.0 | GL | 24.0 | 50 | 158.3 | 40 | 12.3 | 3.39 | Generator | Existing Borehole |
| 158 | 4.05 | 85.0 | 1119.0 | 4.7 | 45 | 57.3 | 65 | 201.2 | 3.65 | Generator | Existing Borehole |
| 162 | 1.01 | 140.0 | 1139.0 | 44.6 | 40 | 108.3 | 40 | 11.9 | 3.39 | Generator | Existing Borehole |
| 163 | 5.78 | 137.0 | 1185.0 | 31.5 | 30 | 118.3 | 40 | 11.9 | 3.39 | Generator | Existing Borehole |
| 167 | 2.00 | 110.0 | 1453.5 | 20.2 | 30 | 60.3 | 30 | 56.6 | 3.40 | Generator | Existing Borehole |
| 172 | 3.23 | 92.0 | 1259.0 | 4.4 | 50 | 28.3 | 30 | 12.3 | 3.50 | Generator | Existing Borehole |
| 173A | 2.01 | 95.0 | GL | 33.0 | 40 | 48.3 | 40 | 18.1 | 1.59 | Generator | Existing Borehole |
| 177 | 2.97 | 80.0 | 1263.4 | 5.0 | 40 | 42.3 | 50 | 15.7 | 3.50 | Generator | Existing Borehole |
| 178A | 3.05 | 105.0 | GL | 35.0 | 50 | 58.3 | 50 | 164.7 | 3.50 | Generator | Existing Borehole |
| 180 | 4.16 | 100.0 | 1354.0 | 6.4 | 65 | 78.3 | 65 | 64.7 | 3.50 | Generator | Existing Borehole |
| 183 | 1.14 | 170.0 | 1463.3 | 9.8 | 50 | 111.3 | 50 | 101.2 | 3.50 | Generator | Existing Borehole |
| 185 | 2.05 | 120.0 | 1477.0 | 7.5 | 50 | 94.3 | 50 | 113.3 | 3.58 | Generator | Existing Borehole |
| 189A | 2.14 | 100.0 | GL | 20.0 | 50 | 48.3 | 50 | 124.3 | 3.88 | Generator | Existing Borehole |
| 189 | 3.00 | 92.0 | 1270.3 | 11.3 | 50 | 52.6 | 50 | 48.0 | 1.58 | Electrical Line | Existing Borehole |
| 192A | 3.09 | 100.0 | GL | 30.0 | 50 | 50.6 | 50 | 160.0 | 3.50 | Generator | Existing Borehole |
| 195A | 3.30 | 100.0 | GL | 30.0 | 50 | 50.6 | 50 | 11.3 | 3.50 | Generator | Existing Borehole |
| 197 | 5.30 | 60.0 | 1093.0 | 6.0 | 50 | 51.3 | 50 | 11.3 | 3.50 | Generator | Existing Borehole |
| 200 | 0.60 | 150.0 | 1484.7 | 44.7 | 40 | 128.3 | 40 | 19.8 | 2.15 | Solar | Existing Borehole |

NOTE:
 1. PIPELINE LENGTHS FROM THE SUPPLY BOUNDARY (10 M FROM THE CENTERLINE OF "A" HP) TO THE STORAGE TANK, ACCORDING TO THE DIAMETER OF PIPING IS FOR TRANSMISSION PIPELINE.
 2. EXISTING BOREHOLES ARE 15 CM.
 3. SCREENS FOR THE BOREHOLES ARE REFERENCED ONLY, AND THESE SCREENS SHALL BE RESET AFTER COMPLETION OF THE AVAILABLE BOREHOLES AND SHALL BE CONFIRMED BY THE PUMPING TEST.
 4. LOCATION OF THE IRON FILTER SHALL BE DETERMINED BASED ON THE CHEMICAL ANALYSIS.



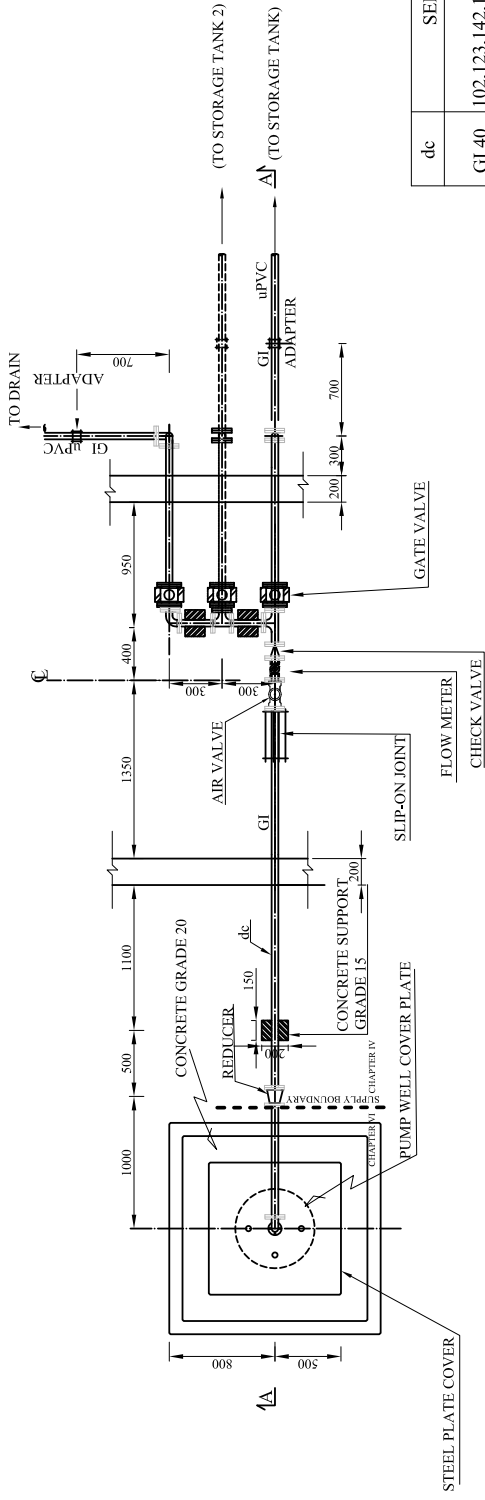
OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA

PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY

CONSULTING ENGINEER: NIPPON KOEI CO., LTD.

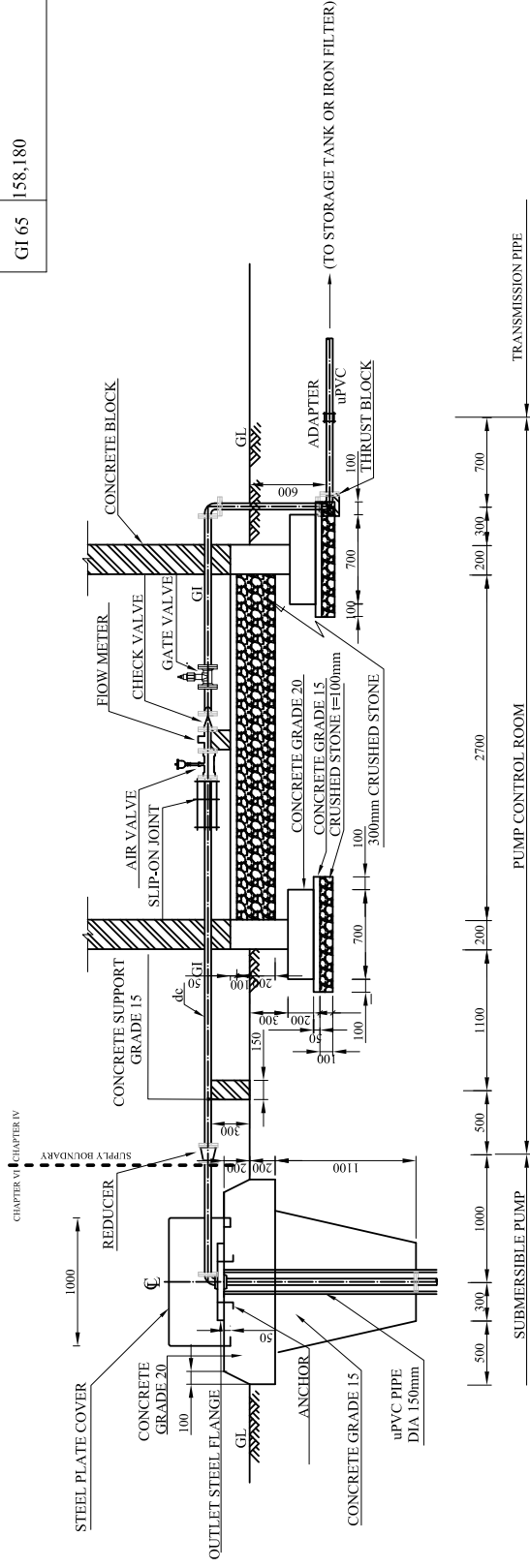
TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP SUBMERSIBLE MOTOR PUMP

SCALE: NONE DATE: JAN 2010 DRAWING NO: SP-042



PLAN OF CONTROL ROOM

| dc | SERIAL No. |
|-------|---|
| GI 40 | 102,123,142,162,173A,186,200 |
| GI 50 | 96A,98A,121,127A,133,137A,151,156A,163,167,172,177,178A,183,187A,188A,189,191A,195A,197 |
| GI 65 | 158,180 |



SECTION A-A

OWNER:

THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:

THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:



NIPPON KOEI CO., LTD.

TITLE:

CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP
PIPEWORK OF PUMP CONTROL ROOM

SCALE

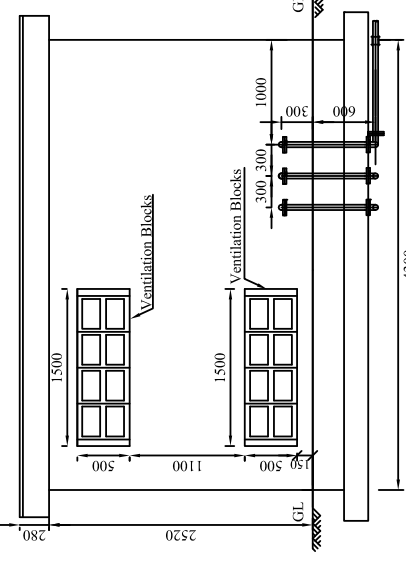
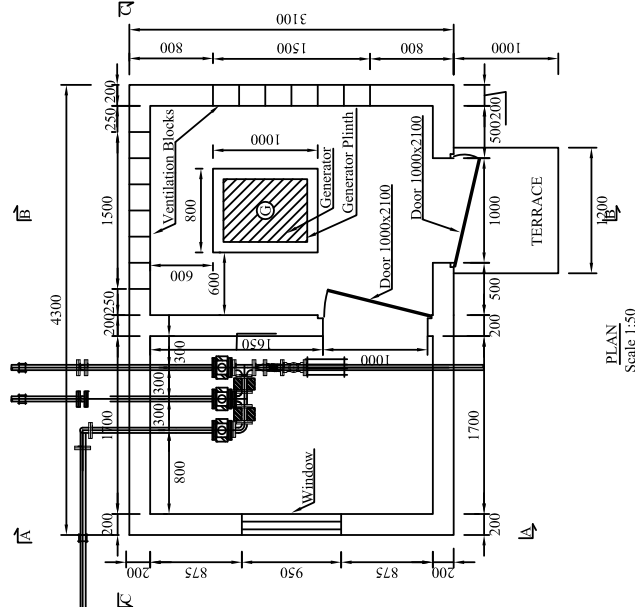
1:40

DATE

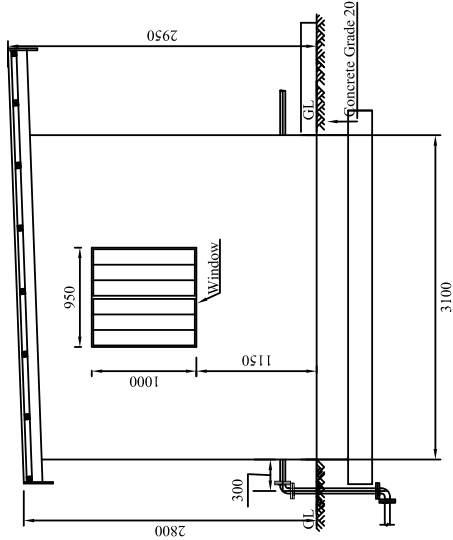
OCT 2010

DRAWING NO.

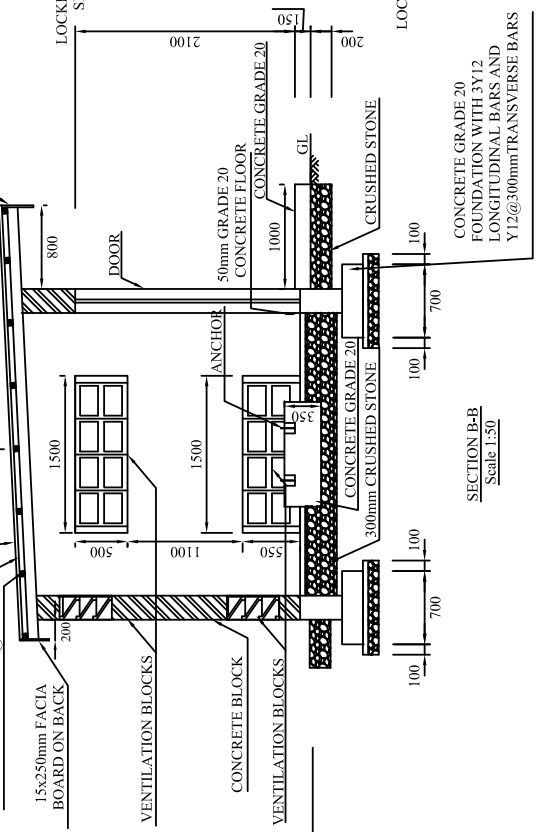
SP-043



VIEW A-A Scale 1:50

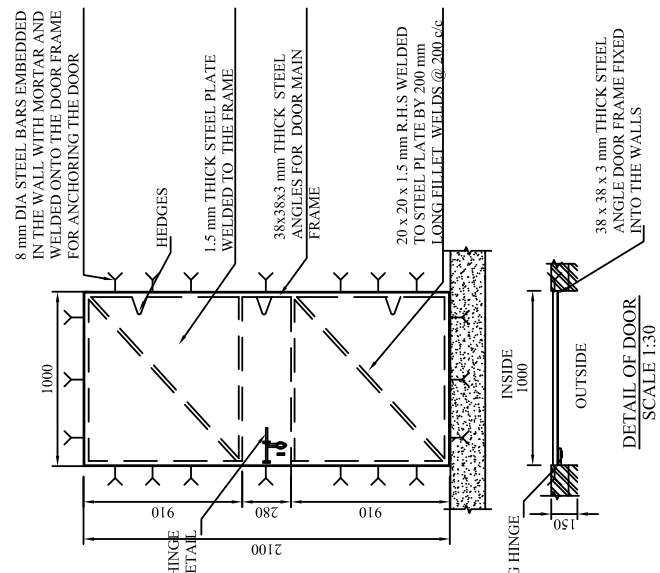


VIEW B-B Scale 1:50

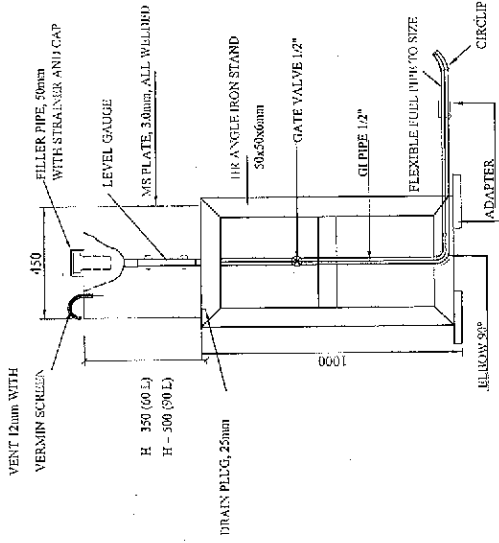


NOTE:

- THIS LAYOUT PLAN SHALL BE APPLIED TO TYPE S2, S3, S4, S6 AND S9 AS SHOWN IN DRAWINGS NO SP-002 TO SP-009
- IN THE EVENT OF ELECTRICAL LINE FOR POWER SOURCE, GENERATOR SHALL BE CANCELED
- FOR DETAILS OF LOCKING HINGE AND WINDOW SEE DRAWING NO SP-468B
- FOUNDATION LEVEL DEPENDS ON SITE CONDITIONS

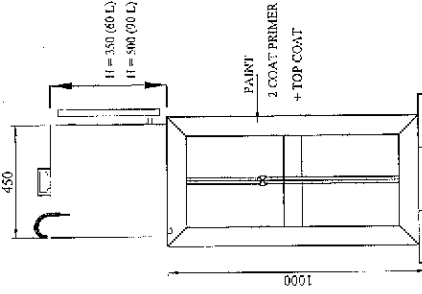


| | | | | | | | |
|---|--|---------------------------------------|--|-----------------------|--|-----------------------------|--|
| OWNER: | | PROJECT NAME: | | CONSULTING ENGINEERS: | | TITLE: | |
| THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | | THE PROJECT FOR RURAL WATER SUPPLY | | NIPPON KOEI CO., LTD. | | LAYOUT PLAN OF CONTROL ROOM | |
| SCALE | | DATE | | DRAWING NO. | | | |
| 1:30 1:50 | | OCT 2010 | | SP-044A | | | |

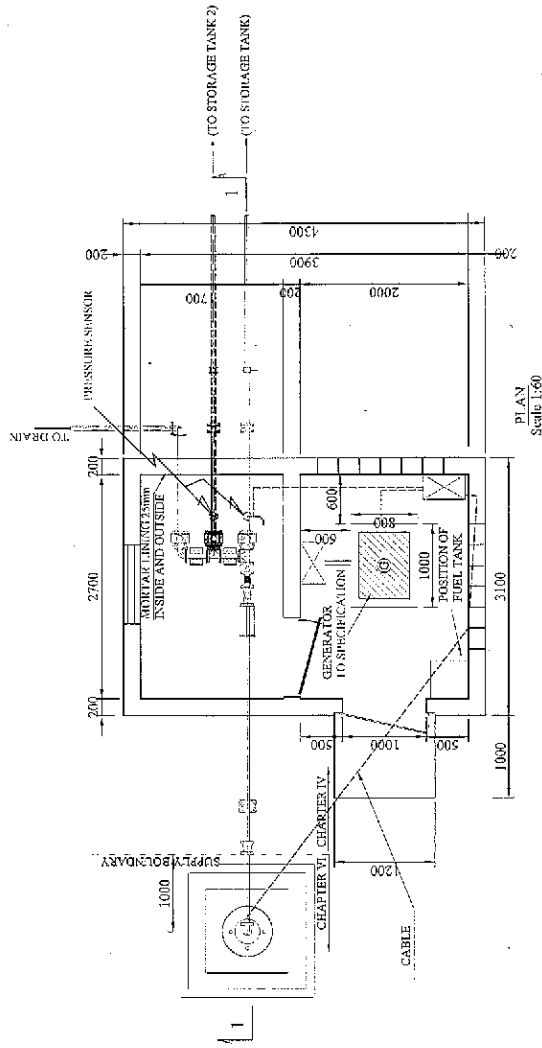


BASE PLATES,
75x75x3mm (4 Nos.)

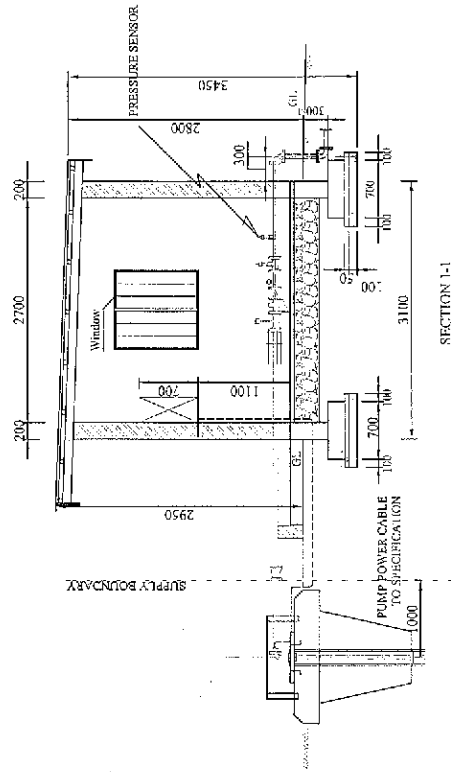
FUEL TANK - FRONT VIEW
Scale 1:20



FUEL TANK - SIDE VIEW
Scale 1:20



PLAN
Scale 1:50



SECTION 1-1
Scale 1:50

| POWER SOURCE | SERIAL NO. |
|-----------------|---|
| GENERATOR | 96A, 97A, 97A, 114A, 151, 156A, 158, 163, 164, 172, 173, 177, 178A, 180, 181, 186, 187A, 188A, 191A, 195A, 197, |
| ELECTRICAL LINE | 135, 189 |

NOTE

- THIS DRAWING TO BE READ IN CONNECTION WITH DRAWING Nos. SP-043 TO SP-047.
- POWER SOURCE SHALL BE SELECTED TO MEET THE TABLE
- IN THE EVENT OF ELECTRICAL LINE FOR POWER SOURCE, GENERATOR AND FUEL TANK SHALL BE CANCELED

CONSULTING ENGINEERS:

PROJECT NAME:

GWSER:

TITLE:
CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP
LAYOUT OF DIESEL CABLE SYSTEM

 **NIPPON KOEI CO., LTD.**

THE PROJECT FOR
RURAL WATER SUPPLY

THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

SCALE
1:20
1:50

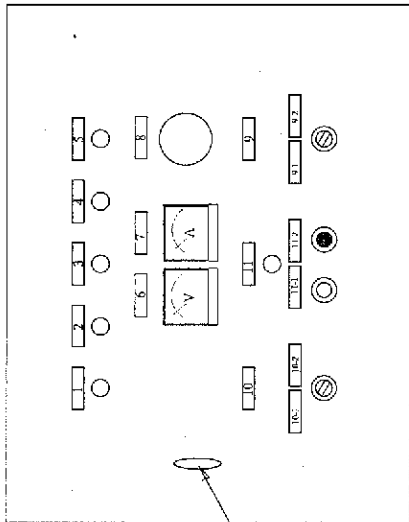
DATE

OCT 2010

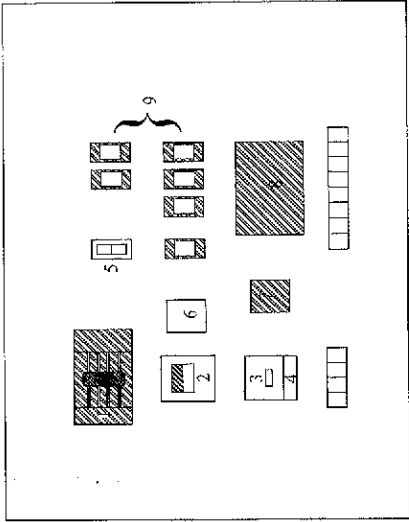
DRAWING NO.

SP-045A

CONTROL PANEL FRONT VIEW



CONTROL PANEL INSIDE VIEW



PANEL DESIGN
CASTING SHEET METAL
THICKNESS: 2MM
PROTECTION: IP54
PAINT: RAL7032, GREEN
DEPTH: 200MM

LEGEND

| No. | Device | Name plate Indication |
|------|--------------------|-----------------------|
| 1 | STATUS INDICATOR | POWER |
| 2 | STATUS INDICATOR | RUN |
| 3 | STATUS INDICATOR | OVER LOAD |
| 4 | STATUS INDICATOR | WELL LEVEL LOW |
| 5 | STATUS INDICATOR | TANK FULL |
| 6 | VOLTAGH METER | SUPPLY POW |
| 7 | AMMETER | LOAD CURRENT |
| 8 | BZZZER | BZZZER |
| 9 | CHANGE OVER SWITCH | BZZZER |
| 9-1 | | NO USE |
| 9-2 | | USE |
| 10 | CHANGE OVER SWITCH | PUMP AUTO STOP |
| 10-1 | | USE |
| 10-2 | | NO USE |
| 8-2 | | STOP |
| 11 | STATUS INDICATOR | PUMP RUN |
| 11-1 | PUSH BUFTON SWITCH | STOP |
| 11-2 | PUSH BUFTON SWITCH | START |

PROJECT NAME:

THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

CONSULTING ENGINEERS:

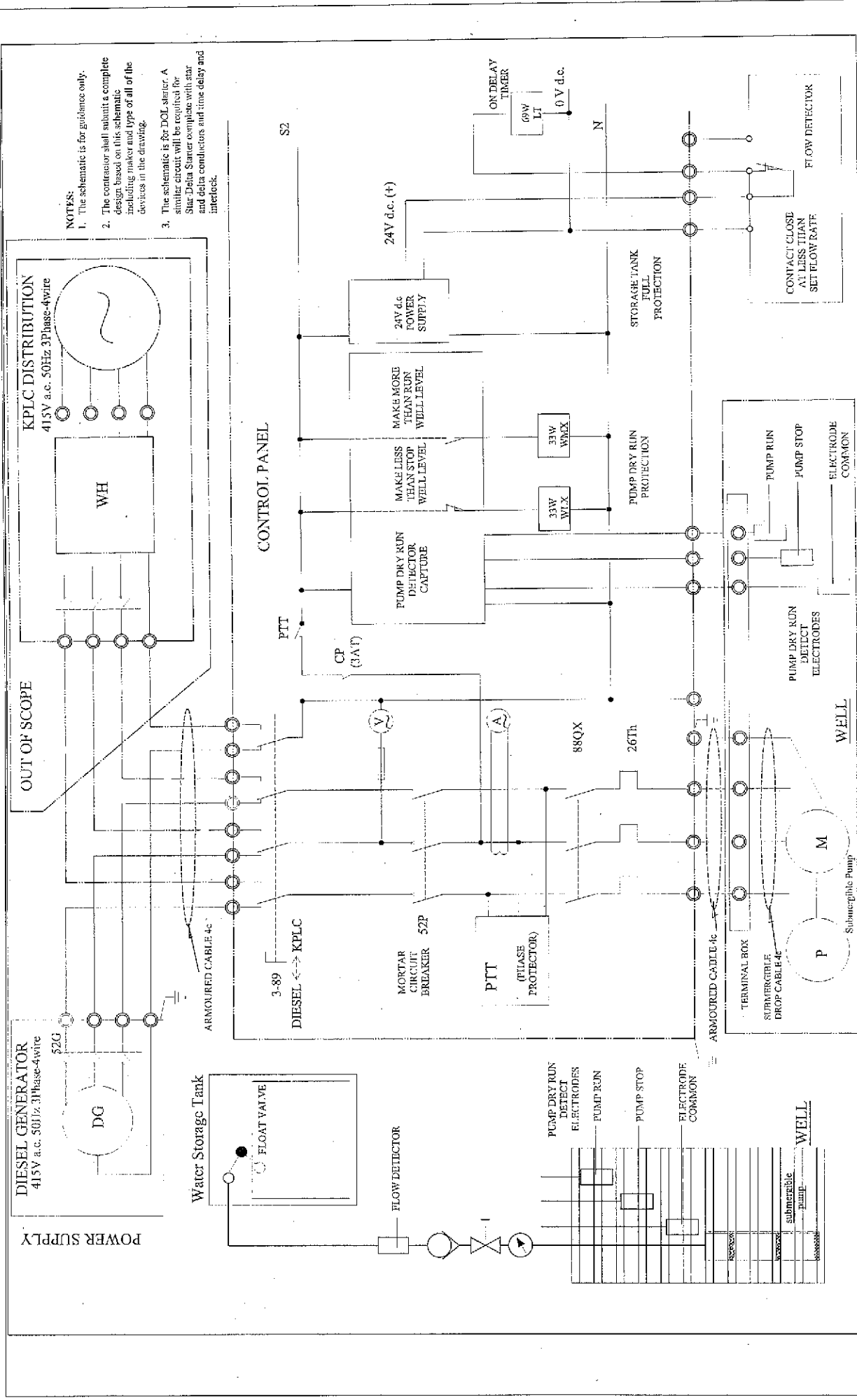


NIPPON KOEI CO., LTD.

TITLE:
CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP
AC ELECTRIC PUMP-I

| | | |
|-------|----------|-------------|
| SCALE | DATE | DRAWING NO. |
| NONE | JAN 2010 | SP-046A |

| No. | Device | Name plate Indication |
|-----|----------------------------|---|
| 1 | 3-89: CHANGE OVER SWITCH | POW SELECT |
| 1-1 | | KPLC |
| 1-2 | | DIESEL |
| 2 | 52: MORTER CIRCUIT BREAKER | POWER SWITCH |
| 3 | 88Q: MAGNETIC CONTACTOR | 88Q |
| 4 | 26Th: THERMAL RELAY | 26Th |
| 5 | CP (CIRCUIT PROTECTOR) | CONTROL POWER |
| 6 | 24V d.c POWER SUPPLY | DC 24V |
| 7 | PTT: PHASE PROTECTIONRY | 29th |
| 8 | WATER LEVEL DETECTOR | PUMP DRY RUN DETECT |
| 9 | AUXILIARY RELAYS | 33WLX, 33WMX, 33WLY, 69WX, 69WY, 26ThX |



- NOTES:**
1. The schematic is for guidance only.
 2. The contractor shall submit a complete design based on this schematic including make and type of all of the devices in the drawing.
 3. The schematic is for DOL starter. A similar circuit will be required for Star Delta Starter compatible with star and delta conductors and time delay and interlock.

OWNER:
**THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA**

PROJECT NAME:
**THE PROJECT FOR
RURAL WATER SUPPLY**

CONSULTING ENGINEERS:
NIPON KOEI CO., LTD.

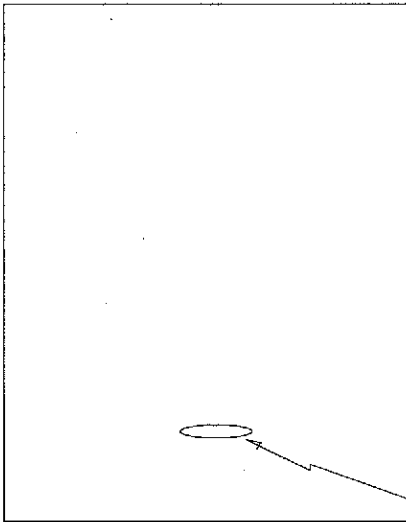
TITLE:
**CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERGIBLE PUMP
AC ELECTRIC PUMP-2**

SCALE: NONE

DATE: JAN 2010

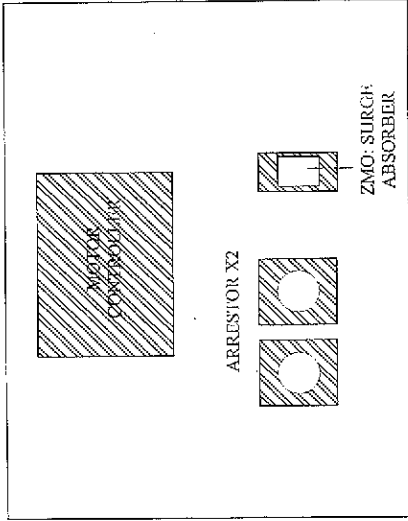
DRAWING NO: ST-046B

CONTROL PANEL FRONT VIEW



HANDLE

CONTROL PANEL INSIDE VIEW



OWNER:

THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:

THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:


NIPPON KOEI CO., LTD.

TITLE:

CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBURBIRIE MWP.

SOLAR PUMP-1

SCALE

NONF.

DATE

JAN 2010

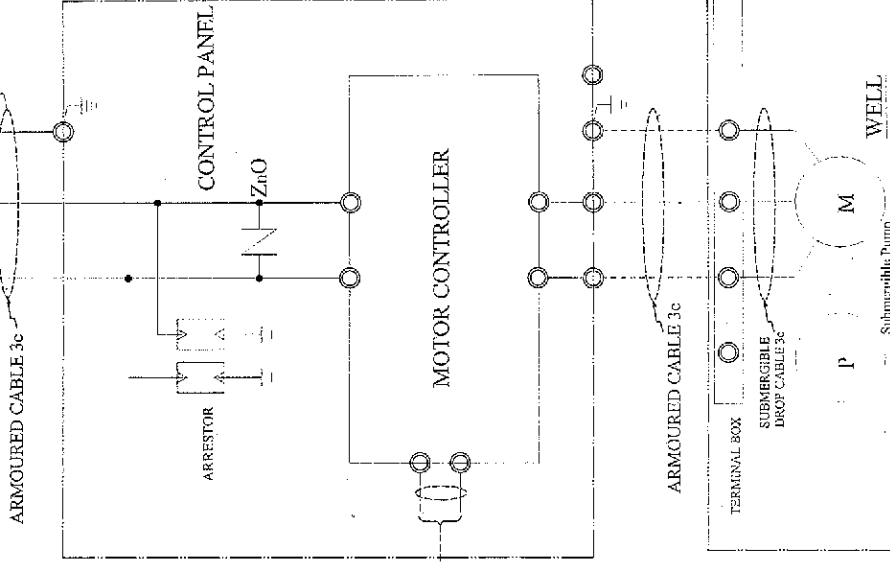
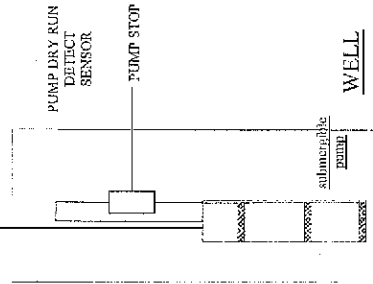
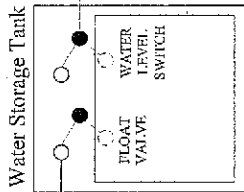
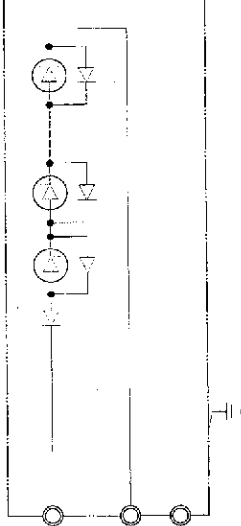
DRAWING NO.

SP-047A

PV ARRAY: Consist of String_ V_ W x _ Modules

(PANELS)
 [V d.c.]
 [V d.c.]
 [V d.c.]
 [V d.c.]

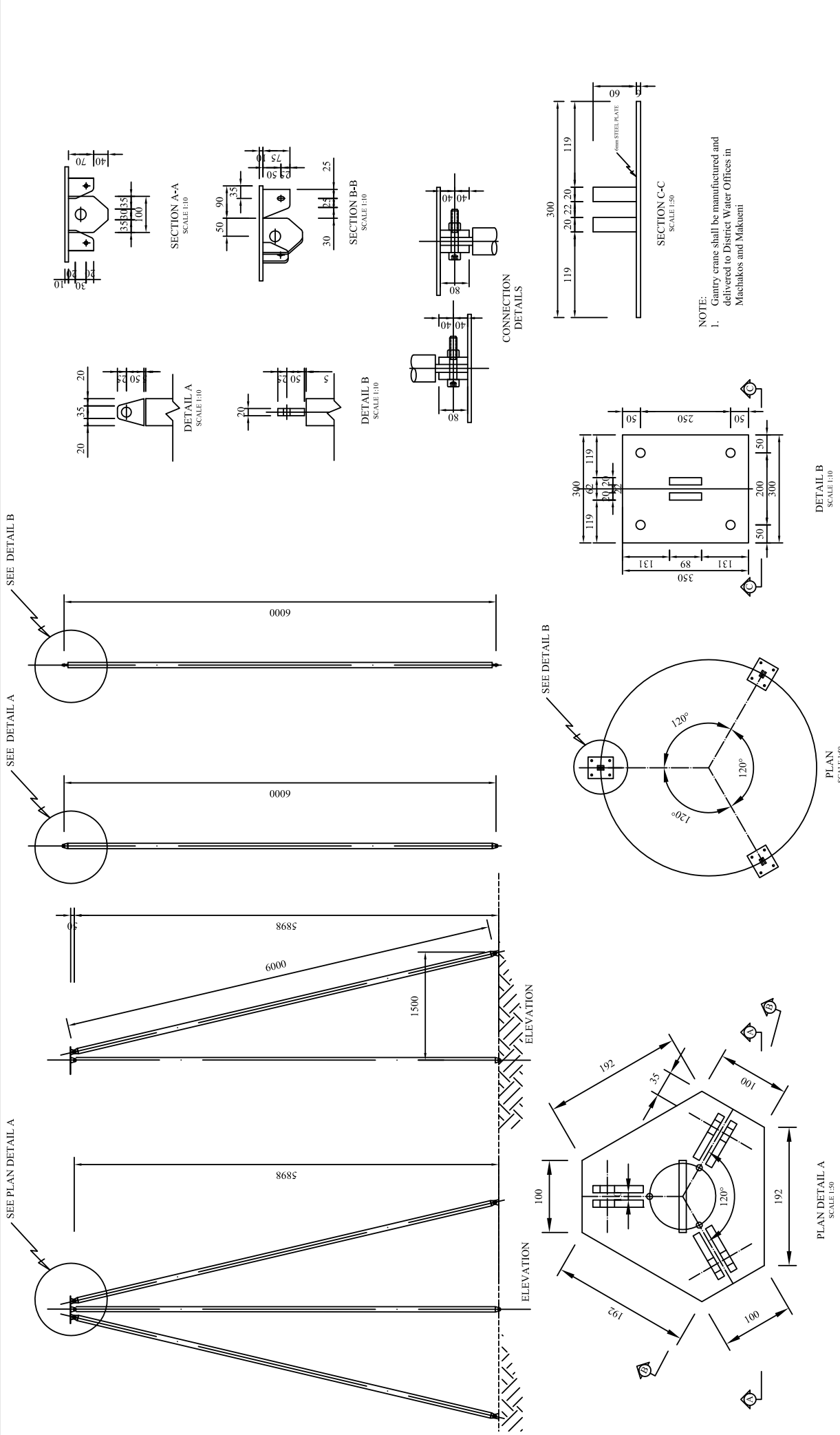
Nos of MODULE:
 OPEN VOLTAGE :
 RATED VOLTAGE :
 RATED POWER :
 RATED VOLTAGE :



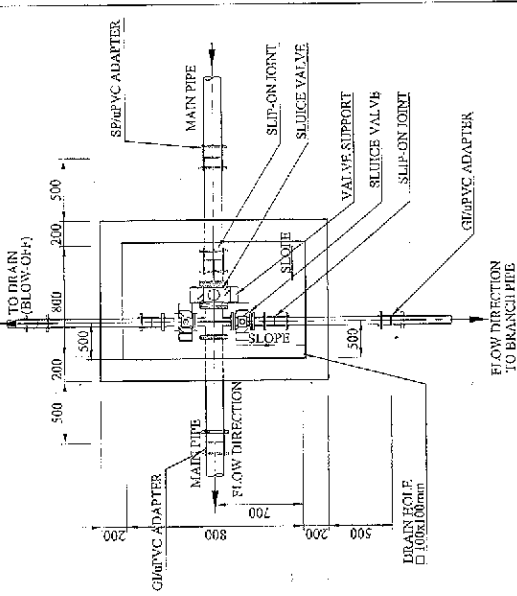
| CONTROL FUNCTION | | PROTECTION | STATUS MONITOR |
|------------------|---------------|-----------------------|----------------|
| PUMP MANUAL STOP | PUMP DRY RUN | GENERATED SOLAR POWER | |
| PUMP AUTO STOP | OVER VOLTAGE | SUPPLY VOLTAGE | |
| PUMP AUTO STOP | UNDER VOLTAGE | PUMP CURRENT | |
| TANK WATER LEVEL | OVER CURRENT | | |

NOTE:
 1. The schematic is for guidance only.
 2. The Contractor shall submit a complete design based on this schematic including Make and Type of all of the devices in the drawing.

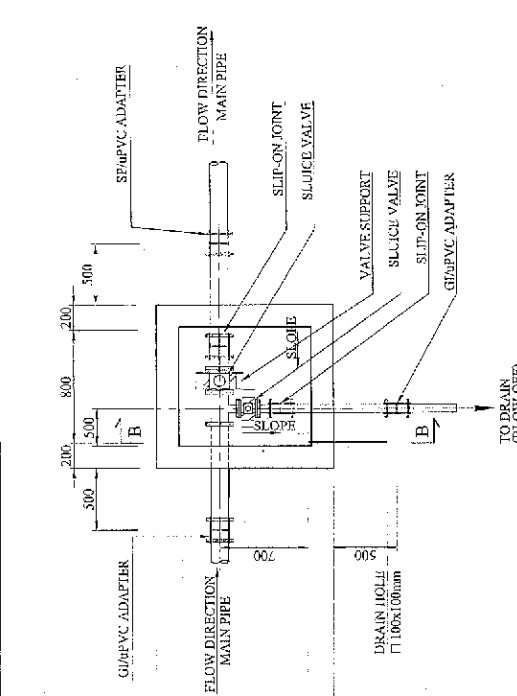
| | | | |
|---|------|--|----------|
| OWNER: | | PROJECT NAME: | |
| THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | | THE PROJECT FOR RURAL WATER SUPPLY | |
| CONSULTING ENGINEERS: | | TITLE: | |
| NIPPON KOEI CO., LTD. | | CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP. | |
| SCALE: | NONE | DATE: | JAN 2010 |
| DRAWING NO.: | | | ST-047B |



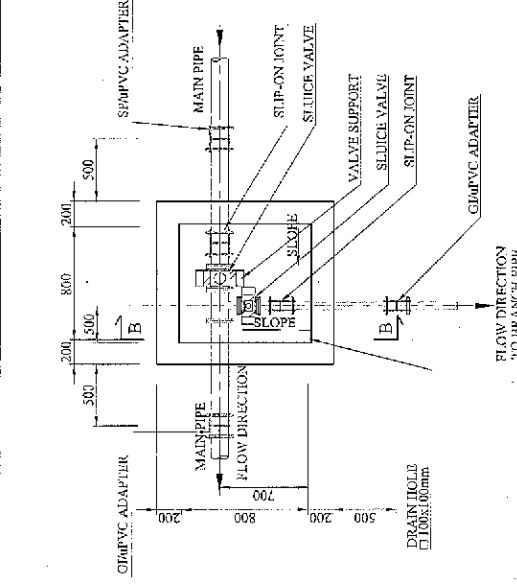
| | | | | | |
|---|--|-------------------------|---|---|--|
| OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | PROJECT NAME: THE PROJECT FOR RURAL WATER SUPPLY | | CONSULTING ENGINEERS: NIPPON KOEI CO., LTD. | TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP MOBILIZED GANTRY CRANE | |
| | SCALE 1:10 1:50 1:100 | DATE OCT 2010 | | DRAWING NO. SP-048 | |



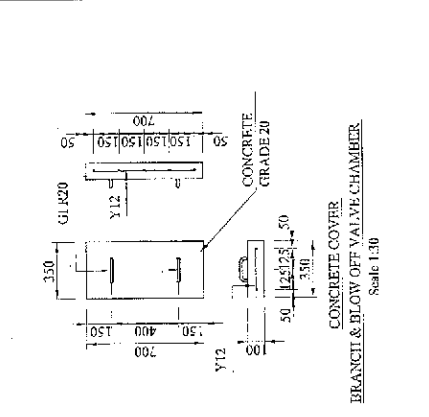
PLAN
BRANCH CHAMBER WITH BLOW OFF VALVE
 Scale 1:40



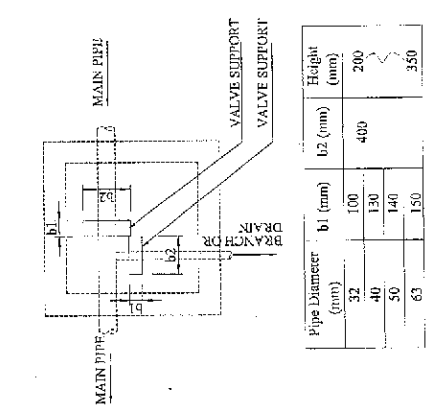
PLAN
BLOW-OFF VALVE CHAMBER
 Scale 1:40



PLAN
BRANCH CHAMBER
 Scale 1:40



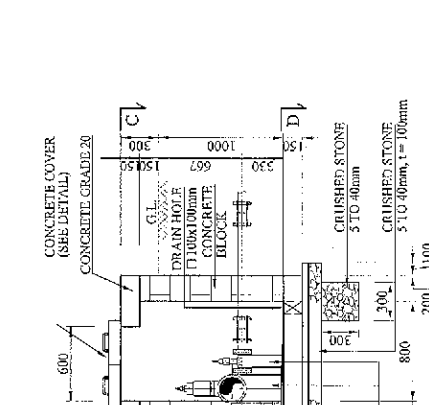
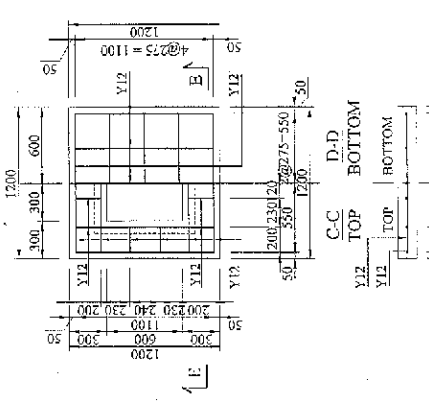
CONCRETE COVER
BRANCH & BLOW OFF VALVE CHAMBER
 Scale 1:30



| Pipe Diameter (mm) | b1 (mm) | b2 (mm) | Height (mm) |
|--------------------|---------|---------|-------------|
| 32 | 100 | 400 | 200 |
| 40 | 130 | 440 | 230 |
| 50 | 140 | 450 | 240 |
| 63 | 150 | 460 | 250 |

VALVE SUPPORT
 SCALE 1:40

Note:
 1. SURFACE OF STONE BLOCK SHALL BE PLASTERED WITH 25mm THICKNESS.
 2. DIMENSION OF VALVE SUPPORT SHALL BE VARIED BASED ON THE VALVE LENGTH.



SECTION B-B (TYPICAL)
BRANCH & BLOW OFF VALVE CHAMBER
 Scale 1:40

OWNER: THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA

PROJECT NAME: RURAL WATER SUPPLY

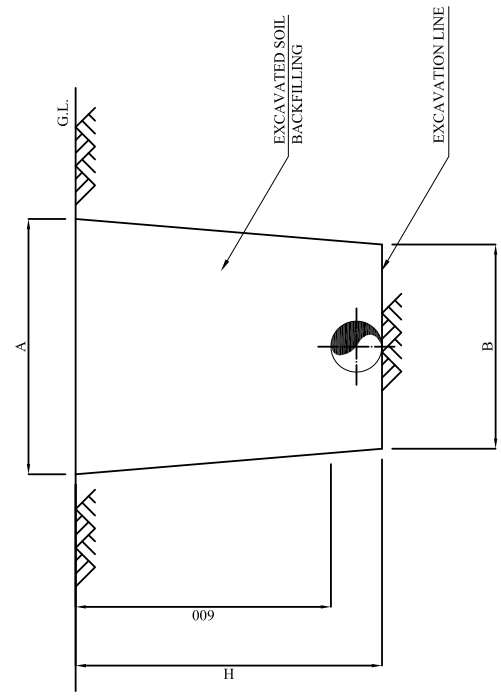
TITLE: CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP BRANCH, BLOW OFF & AIR VALVE CHAMBER (1/2)

DATE: NOV 2007

DRAWING NO: ST-049

SCALE: 1:40 1:30

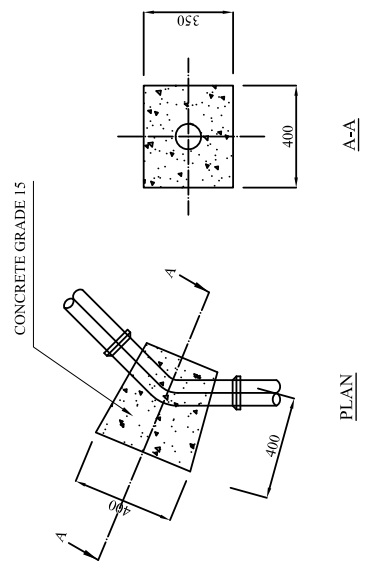
CONSULTING ENGINEERS: NIPPON KOEI CO., LTD.



EXCAVATION

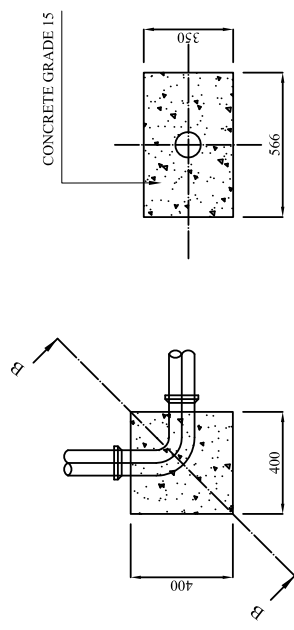
| Pipe Diameter (mm) | Excavation | Width (m) | | Excavation Depth: H (m) |
|--------------------|------------|-----------|------|-------------------------|
| | | A | B | |
| 50 ≤ | Manual | 0.60 | 0.50 | 0.65 |
| | Machine | 0.50 | 0.50 | |
| >50 | Manual | 0.60 | 0.50 | 0.70 |
| | Machine | 0.65 | 0.65 | |

Note: Excavated soil shall be used for backfilling
 : Surplus soil shall be spoiled.
 : Sand with 100mm in thickness shall be bedded below the pipe in case of hard ground formation such as rock, stone and etc.
 : Line marker shall be installed at valve chambers and at all changes of horizontal alignment and of transmission and distribution pipeline at 200m intervals
 : Thrust block shall be installed at all changes of vertical and horizontal alignment of transmission and distribution pipeline



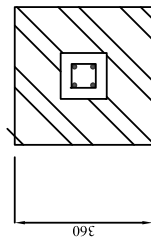
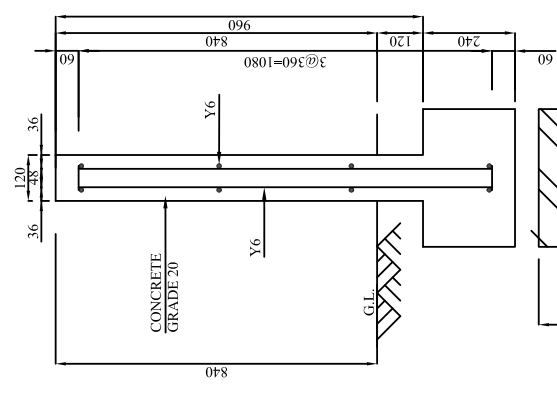
THRUST BLOCK FOR DEGREE OF BEND (LESS 45°)

SCALE 1:20



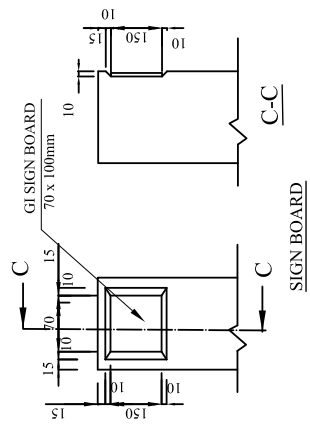
THRUST BLOCK FOR DEGREE OF BEND (45° - 90°)

SCALE 1:20



LINE MARKER

SCALE 1:20



SIGN BOARD

SCALE 1:15

| | | | | | | | |
|---|--|---------------------------------------|--|-----------------------|--|---|--|
| OWNER: | | PROJECT NAME: | | CONSULTING ENGINEERS: | | TITLE: | |
| THE MINISTRY OF WATER AND IRRIGATION THE REPUBLIC OF KENYA | | THE PROJECT FOR RURAL WATER SUPPLY | | NIPPON KOEI CO.,LTD. | | CONSTRUCTION OF WATER SUPPLY FACILITIES BY SUBMERSIBLE PUMP | |
| SCALE | | DATE | | DRAWING NO. | | PIPE INSTALLATION, LINE MARKER AND THRUST BLOCK | |
| 1:15 | | NOV 2007 | | SP-051 | | | |
| 1:20 | | | | | | | |
| NONE | | | | | | | |